



**Transmittal of Submittal**

**To:** Jeremy Estrada  
Noorda Architectural Metals Inc.  
2160 West 1700 South  
Salt Lake City, UT 84104  
Phone: 801.503.3000  
Fax:  
**JCC Job No. 13022-**

**Project:**  
**Logan Budge Clinic**  
1400 North 500 East  
Logan, UT  
Phone: Fax:

**April 25, 2014**

The following items have been reviewed by the project architect/engineer. Please note the status listed below and take action as needed.

**Submittal No. 075413.01 Revision No.1** Thermoplastic Membrane Roofing

Spec Section	Item No.	Description Drawing(s)	Qty	Reviewed Status
	1	Product Data	1	Make Corrections Noted
	2	Shop Drawings	1	Make Corrections Noted

**Submittal No. 076200.02 Revision No.1** Sheet Metal Flashing and Trim

Spec Section	Item No.	Description Drawing(s)	Qty	Reviewed Status
	1	Product Data	1	Make Corrections Noted
	3	Shop Drawings	1	Make Corrections Noted

Reviewed By: \_\_\_\_\_  
Jared Jensen - Project Engineer

# Logan Regional Hospital & Budge Clinic

Intermountain Medical Group

500 East 1400 North

Logan, UTAH 84341

**General Contractor**

Jacobsen Construction Company Inc  
3131 West 2210 South  
Salt Lake City, UTAH 84119  
P: 801-973-0500  
F: 801-973-7496

**Architect**

VCBO Architecture  
524 South 600 East  
Salt Lake City, UTAH 84102  
P: 801-575-8800  
F: 801-531-9850

Review Date  
March 21, 2014

Subcontractor: Noorda  
Supplier: See Submittal  
Manufacturer: See Submittal  
Submittal Number: 075413.01 R1  
JCC Review: Jared Jensen

Specification/Drawing Reference  
075413  
076200

**Contractor Remarks/Stamp**

- As requested in the first review, Noorda has confirmed with Carlisle the 1/2" Dens is not required. VCBO to issue change document.
- Noorda - coping/flashing finish to match metal panel sample previously provided.

**2.5 SUBSTRATE BOARDS**

- A. **Substrate Board:** ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/2-inch (13-mm) thick, **as indicated on drawings where required**
- Products: Subject to compliance with requirements of Contract Documents, available products that may be incorporated into the Work include, but are not limited to, the following:
    - Georgia-Pacific Corporation; Dens Deck.
    - Temple-Inland; GreenGlass.
  - Any product used shall be approved by the roofing system manufacturer and authorized as part of their comprehensive warranty.
  - Verify warrantability of substrate product on vertical surfaces (parapet walls). Provide product compatible with warranty requirements of roofing system.
- B. **Fasteners:** Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening substrate board to roof deck.
- C. **Tape:** Tape joints as required for fire rating of roofing system.

**JACOBSEN CONSTRUCTION INCORPORATED  
SHOP DRAWING/SUBMITTAL REVIEW**

- ( ) Reviewed ( ) Revise & Resubmit  
(X) Note Notation & Comments ( ) Rejected

This shop drawing/submittal is submitted for the purpose of fabrication/installation of the materials identified. Contractor has reviewed the submittal for general compliance with the contract documents. Any deviations from the contract documents observed by Contractor have been noted. The party supplying the material remains responsible for: (1) compliance with the contract documents, (2) the accuracy and completeness of details such as dimensions and quantities, (3) field measurements as required and (4) construction of a complete and workable installation satisfactory for the work included. Contractor is not a design professional and renders no opinion about the structural integrity or suitability of the materials for the project.

Date: 3/21/2014 By: Jared Jensen  
Jacobsen Construction Inc.

**Designer Remarks/Stamp**

**VCBO NOTES: Supplier/G.C.**

- Complete revised shops drawings** were sent back to VCBO on 04.22.2014, per attached emailed meeting minutes dated 04.16.2014 & 04.17.2014, and proposed saddle flashing details & detail examples. (see attachments for more information following replaced shop drawing set.)
- Refer** comments concerning "SCOPE OF WORK" on sheet **CV**.
- Protection Mat** is required at Ballasted Roof locations per spec section: 07 5413, R2.2 AUXILIARY MATERIALS, J. Protection Mat: Woven or nonwoven polypropylene, polyolefin, or polyester fabric, water permeable and resistant to UV degradation, type and weight as recommended by roofing manufacturer for application.; Refer to 3.7 LOOSELY LAID AND BALLASTED ROOFING INSTALLTION, 4. Install Protection mat over roofing:.....
- TPO Color samples?**
- Ballast Samples?**
- Appropriate MFRs Bonding Adhesive at all Vertical wall surfaces.
- Owner's risk consultant is also reviewing drawings and may have additional comments.

REVIEWED  REVISE & RESUBMIT  
 REJECTED  FURNISH AS CORRECTED

Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and satisfactory manner.

VCBO ARCHITECTURE, L.L.C.  
Date: 04/24/2014 By: Steven Tanner

# Logan Regional Hospital & Budge Clinic

Intermountain Medical Group

500 East 1400 North  
Logan, UTAH 84341

**General Contractor**

Jacobsen Construction Company Inc  
3131 West 2210 South  
Salt Lake City, UTAH 84119  
P: 801-973-0500  
F: 801-973-7496

**Architect**

VCBO Architecture  
524 South 600 East  
Salt Lake City, UTAH 84102  
P: 801-575-8800  
F: 801-531-9850

Review Date  
February 10, 2014

Subcontractor: Noorda  
Supplier: See Submittal  
Manufacturer: See Submittal  
Submittal Number: 075413.01  
JCC Review: Jared Jensen

Specification/Drawing Reference  
075413  
076200

Designer Remarks/Stamp

Contractor Remarks/Stamp

1. Arch: Please indicate coping color selections for physical samples.
2. Roof at addition: Sure Weld mech fastened
3. Roof at pool: Spectro-Weld Fleece Back fully adhered
4. Ballast roof: Sure Weld mech fastened
5. Arch: please review design at ballasted roof areas. Potential for snow and ice build-up at these areas.

VCBO COMMENTS TO CONTRACTOR REMARKS ABOVE:

1. Need samples of existing finishes to match, samples of Composite Mt Panels, Centria CS-620 Panels, Trim Flashing, Sealants & Curtain Wall/Storefront Frames.
2. Yes. Vertical surfaces to be fully adhered at Mechanically Fastened Roof System.
3. Yes
4. Yes. Vertical surfaces to be fully adhered at Mechanically Fastened Roof System.
5. Please explain concerns.

VCBO NOTES: Supplier &/or G.C.

1. Refer comments concerning "SCOPE OF WORK" on sheet CV.
2. **Some items have been questioned if needed. If there are cost savings, provide credit back to owner.**
3. Suppler; **Revise** roof plan and details as noted and refer to current Architectural Details. **Acquire** all current construction documents (*many items are referenced*) from General Contractor and any other required information needed to complete these shops for review. **Provide** additional details as noted on sheet RF and/or any other applicable roof & flashing details to this project. Some special conditions may need to be field determined not detailed in the documents.
4. **Submit** any additional product data as noted in specs & details not yet submitted for review per roof suppliers scope of work.
5. **COLORS/FINISHES: ALL METAL FLASHING & COLORED SEALANTS ARE TO BE INSTALLED WITH MOCK-UP FOR FINAL APPROVAL.** At physical Mock-up, provide alternate physical color sample options if the proposed colors are rejected. Note: colors to be similar in color to the specified Color "Champagne" that is to match the existing hospitals "WOMEN'S CENTER" metal wall panels, curtain wall & flashing.
6. Additional bookmarks have been added to electronic PDF. Please maintain added bookmarks with resubmittal.

**JACOBSEN CONSTRUCTION INCORPORATED  
SHOP DRAWING/SUBMITTAL REVIEW**

( ) Reviewed ( ) Revise & Resubmit  
(X) Note Notation & Comments ( ) Rejected

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Date: 2/10/2014 By:   
Jacobsen Construction Inc.

SUBMIT: PHYSICAL COLOR SAMPES OF METALS, SEALANTS, SAMPLES OF EXISTING MATERIAL FINISHES. "COLOR CHAMPAGNE"

REVIEWED  REVISE & RESUBMIT

REJECTED  FURNISH AS CORRECTED

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VCBO ARCHITECTURE, L.L.C.

Date: 02/21/2014 By: Karen Ferguson, AAIA



**JACOBSEN**  
CONSTRUCTION

# Revised Shop Drawings



# SYMBOLS LEGEND

← INDICATES ELEVATION NO.  
 ← INDICATES PAGE NO.

← INDICATES SECTION NO.  
 ← INDICATES PAGE NO.

○ INDICATES DETAIL NO.  
 ○ INDICATES PAGE NO.

○ INDICATES DETAIL NO.

## ABBREVIATIONS

(B.O.) - BY OTHERS  
 JT - JOINT  
 LBS - POUNDS  
 MAT - MATERIAL  
 MAX - MAXIMUM  
 MIN - MINIMUM  
 MO - MASONRY OPENING  
 MOD - MODIFIED  
 MTL - METAL  
 NO - NUMBER  
 NTS - NOT TO SCALE  
 OH - OPPOSITE HAND  
 OPNG - OPENING  
 PD - PANEL DIMENSION  
 PLT - PLATE  
 PLYWD - PLYWOOD  
 PSF - LBS PER SQ FT.  
 PT - POINT  
 R - RADIUS  
 REF - REFERENCE  
 REQ - REQUIRED  
 SHT - SHEET  
 SIM - SIMILAR  
 STL - STEEL  
 TOA - TOP OF ANGLE  
 TOB - TOP OF BLOCKING  
 TOC - TOP OF CONCRETE  
 TL - TANGENT LINE  
 TOP - TOP OF PANEL  
 TOS - TOP OF STEEL  
 TYP - TYPICAL  
 VIF - VERIFY IN FIELD  
 W/ - WITH  
 WD - WOOD  
 WP - WORK POINT  
 & - AND  
 @ - AT  
 < - ANGLE  
 O/ - OVER

# QUESTIONS & COMMENTS

PLEASE REVIEW THE DETAILS DATED:  
 31, JAN 2014  
 REVISIONS:  
 17, MAR 2014 A

# GENERAL NOTES

## SCOPE OF WORK

1. MEMBRANE ROOF- MAIN BUILDING  
 CARLISLE "SURE WELD" 60 MIL TPO SINGLE PLY  
 ROOFING MECH FASTENED  
 OCTAGUARD XT WEATHERING PACKAGE  
 R-30 5" POLY ISO THERMO INSULATION (2 LAYERS)  
 TAPERED INSULATION WHERE NEEDED  
 COLOR: WHITE
2. MEMBRANE ROOF- THERAPY POOLS  
 CARLISLE "SURE WELD" 135 MIL TPO SINGLE PLY  
 SINGLE PLY ROOFING FULLY ADHERED  
 R-30 5" POLY ISO THERMO INSULATION (2 LAYERS)  
 CARLISLE 725 TR 40 MIL VAPOR BARRIER  
 TAPERED INSULATION WHERE NEEDED  
 COLOR: WHITE
3. BALLASTED ROOF  
 CARLISLE "SURE WELD" 60 MIL TPO SINGLE PLY  
 ROOFING MECH FASTENED  
 OCTAGUARD XT WEATHERING PACKAGE  
 R-30 5" POLY ISO THERMO INSULATION (2 LAYERS)  
 TAPERED INSULATION WHERE NEEDED  
 COLOR: TBD
4. MEMBRANE ROOF- CANOPY  
 CARLISLE "SURE WELD" 60 MIL TPO SINGLE PLY  
 ROOFING MECH FASTENED  
 OCTAGUARD XT WEATHERING PACKAGE  
 1/2" POLY ISO THERMO INSULATION (2 LAYERS)  
 TAPERED INSULATION WHERE NEEDED  
 COLOR: TBD
5. SHEET METAL FLASHING  
 24 GA PRE-FINISHED  
 27 GA RFL FINISHED @ DOPING  
 COLOR: CHARLIE

# PROJECT DIRECTORY

ARCHITECT: VCBO ARCHITECTURE  
 GEN. CONT: JACOBSEN CONSTRUCTION  
 INSTALLER: NOORDA ARCHITECTURAL METALS

# NOORDA

## CONTACTS:

PRODUCTION MGR.- BRANDON  
 (SCHEDULING) (801)641-1381 M  
 PROJECT MGR.- EVAN W  
 (SCHEDULING) (801)380-4471 M  
 PROJECT MGR.- CRAIG C  
 (SCHEDULING) (801)597-6822  
 PROJECT MGR.- BOYD P  
 (SCHEDULING) (801)319-0048 M  
 PROJECT MGR.- JC. B  
 (SCHEDULING) (801)641-1386 M  
 PROJECT MGR.- SHANE R  
 ST GEORGE- (385)242-5679  
 PROJECT MGR.- HERB  
 ST GEORGE- (435)313-1207 M  
  
 OUTSIDE SALES- STEVE M  
 (435)313-5064 M  
 SALES- DARREN N  
 (801)631-4279 M  
 TIM P  
 (801)503-3000

ENTIRE SHEET  
 REPLACED -

04.22.2014



## PRINTS ISSUED FOR

LOGAN REGIONAL  
 HOSPITAL & BUDGE CLINIC

1400 NORTH 500 EAST  
 LOGAN UT 84341

## CONTRACT DOCUMENTS

PLANS DATED: 19, DEC 2013

## DRAWING INDEX

DESCRIPTION	PAGE
COVER SHEET	CV
ROOF PLAN 1	RF
DETAILS 1	D1
DETAILS 2	D2
DETAILS 3	D3
DETAILS 4	D4
DETAILS 5	D5
DETAILS 6	D6
DETAILS 7	D7
DETAILS 8	D8
DETAILS 9	D9

NOORDA SUBMITTAL APPROVAL  
 APPROVED \_\_\_\_\_   
 DENIED \_\_\_\_\_   
 NOTE:  
 NOORDA ARCHITECTURAL METALS  
 CANNOT PROCEED WITHOUT PROPER  
 APPROVAL OF SUBMITTALS



**NOTES**

DATE: 31, JAN 14

JOB NO.

DRAWN BY: MWU

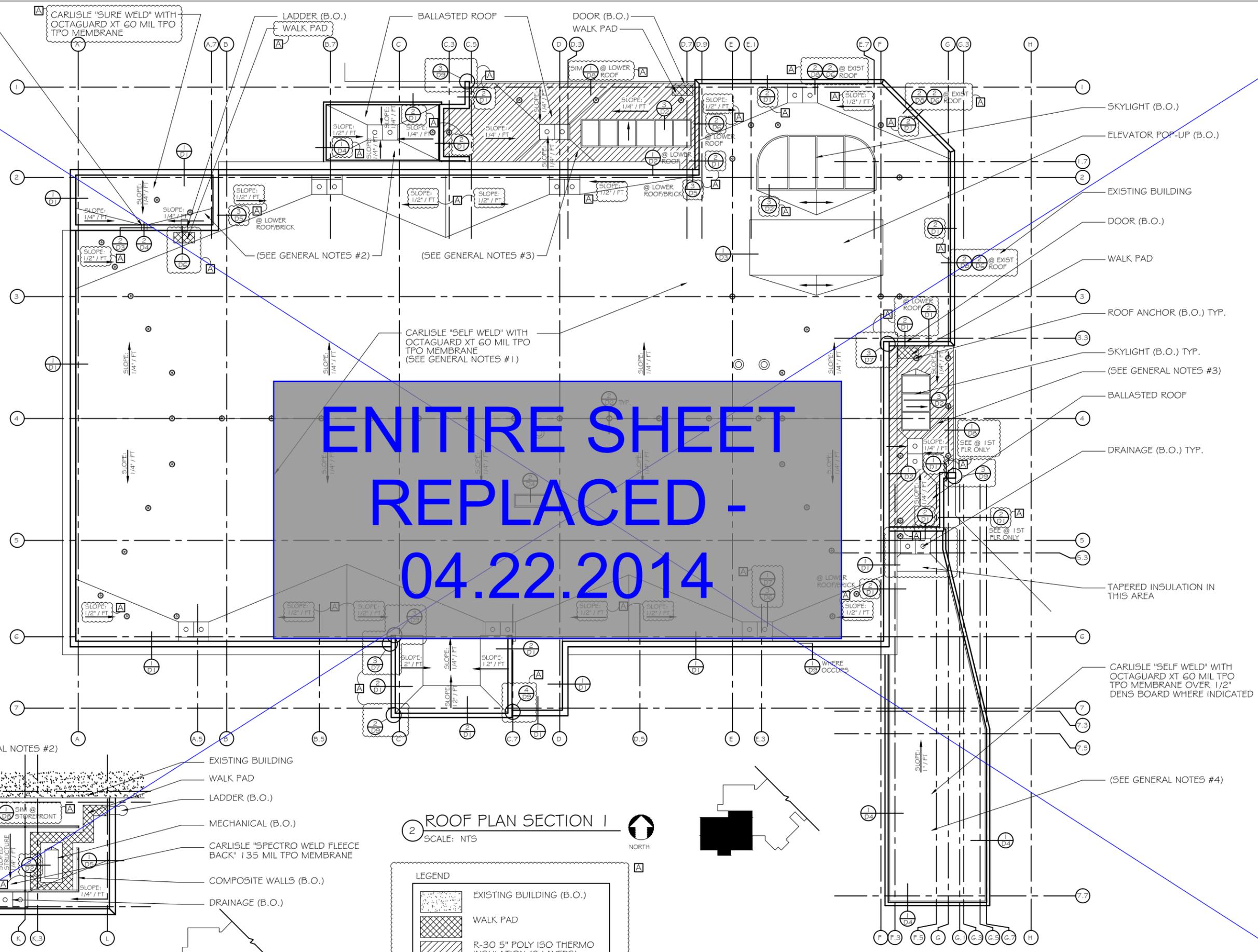
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**LOGAN REGIONAL HOSPITAL & BUDGE CLINIC**  
1400 NORTH 500 EAST  
LOGAN, UT 84341

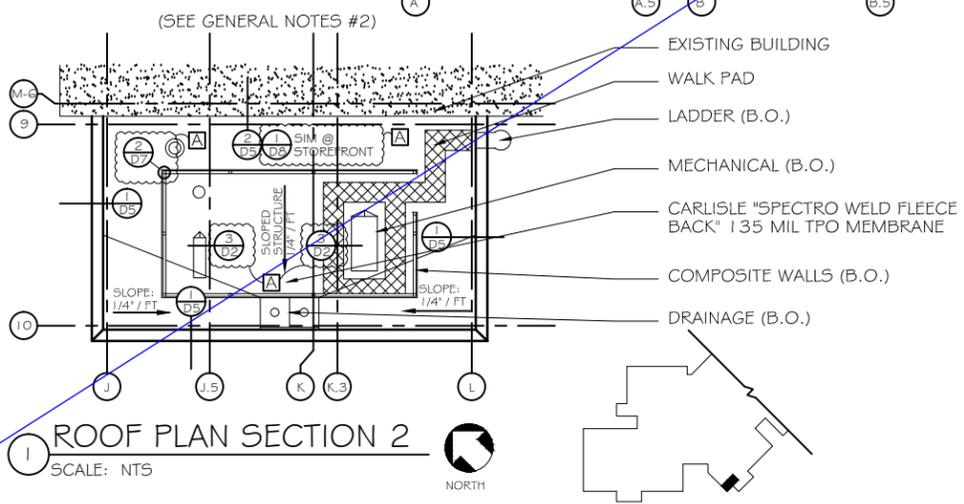
**NOORDA**  
ARCHITECTURAL METALS  
1700S 2160W S.L.C. UT (801)503-3000

RF

SHEET NO.

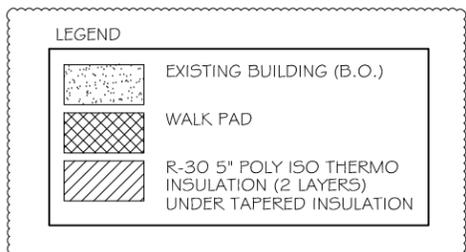


**ENTIRE SHEET  
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04.22.2014**



**1 ROOF PLAN SECTION 2**  
SCALE: NTS

**2 ROOF PLAN SECTION 1**  
SCALE: NTS







**NOTES**

DATE: 31, JAN 14  
JOB NO.

DRAWN BY: MWU  
REVISED: -

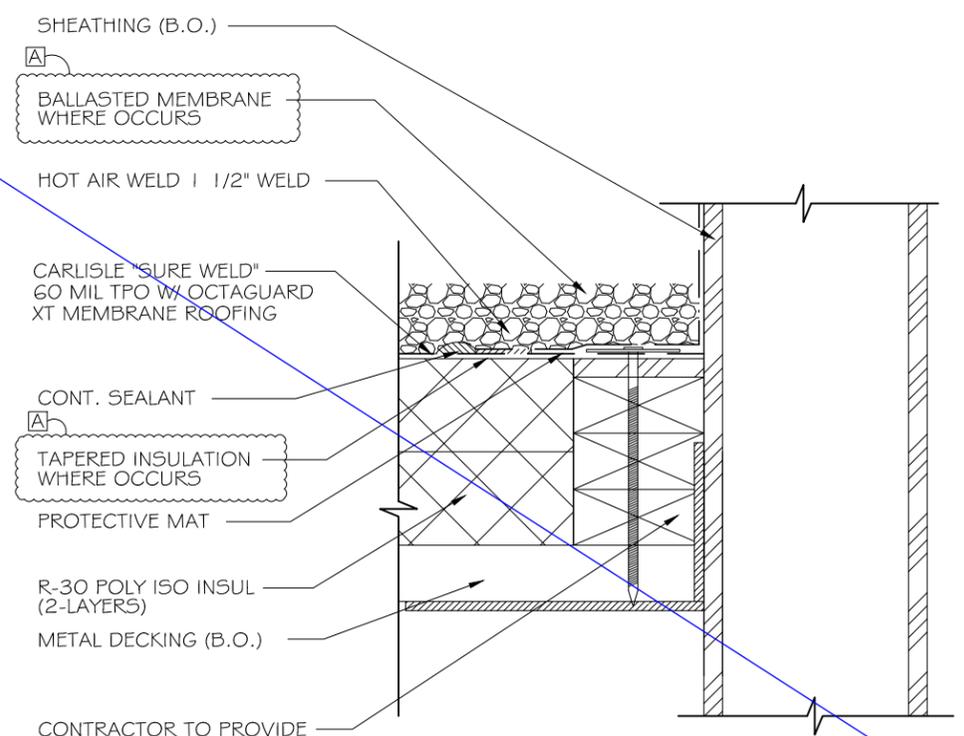
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REVISED: -

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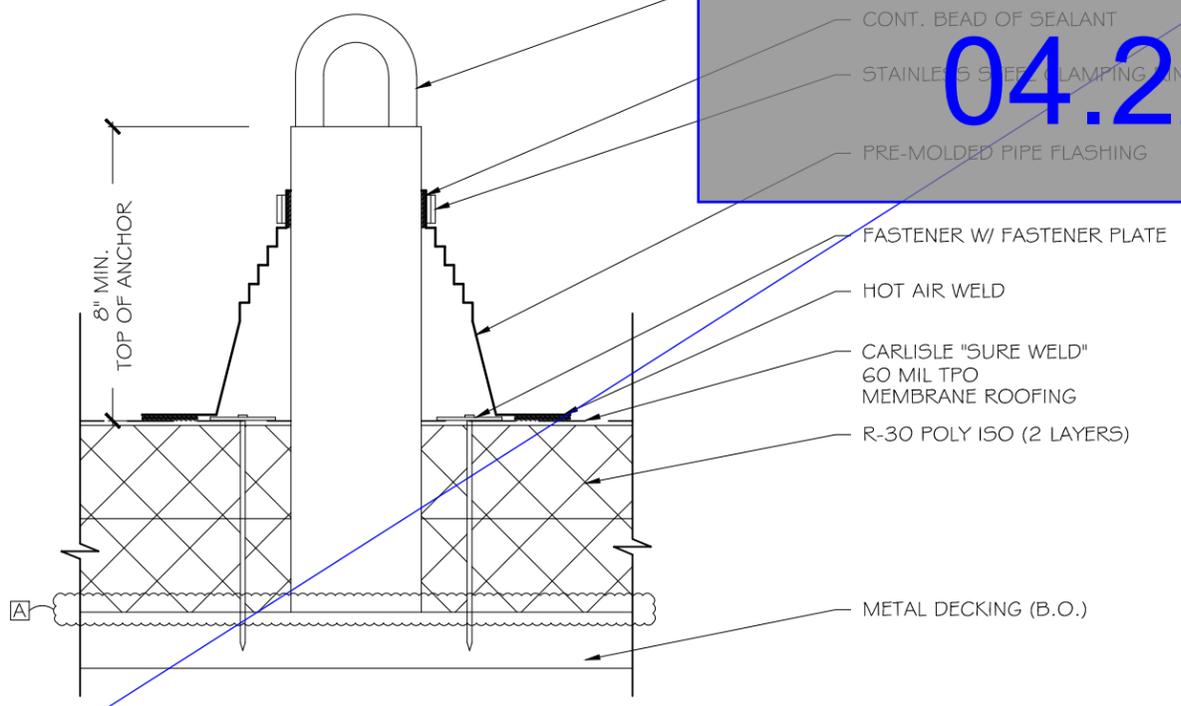
D2

SHEET NO.

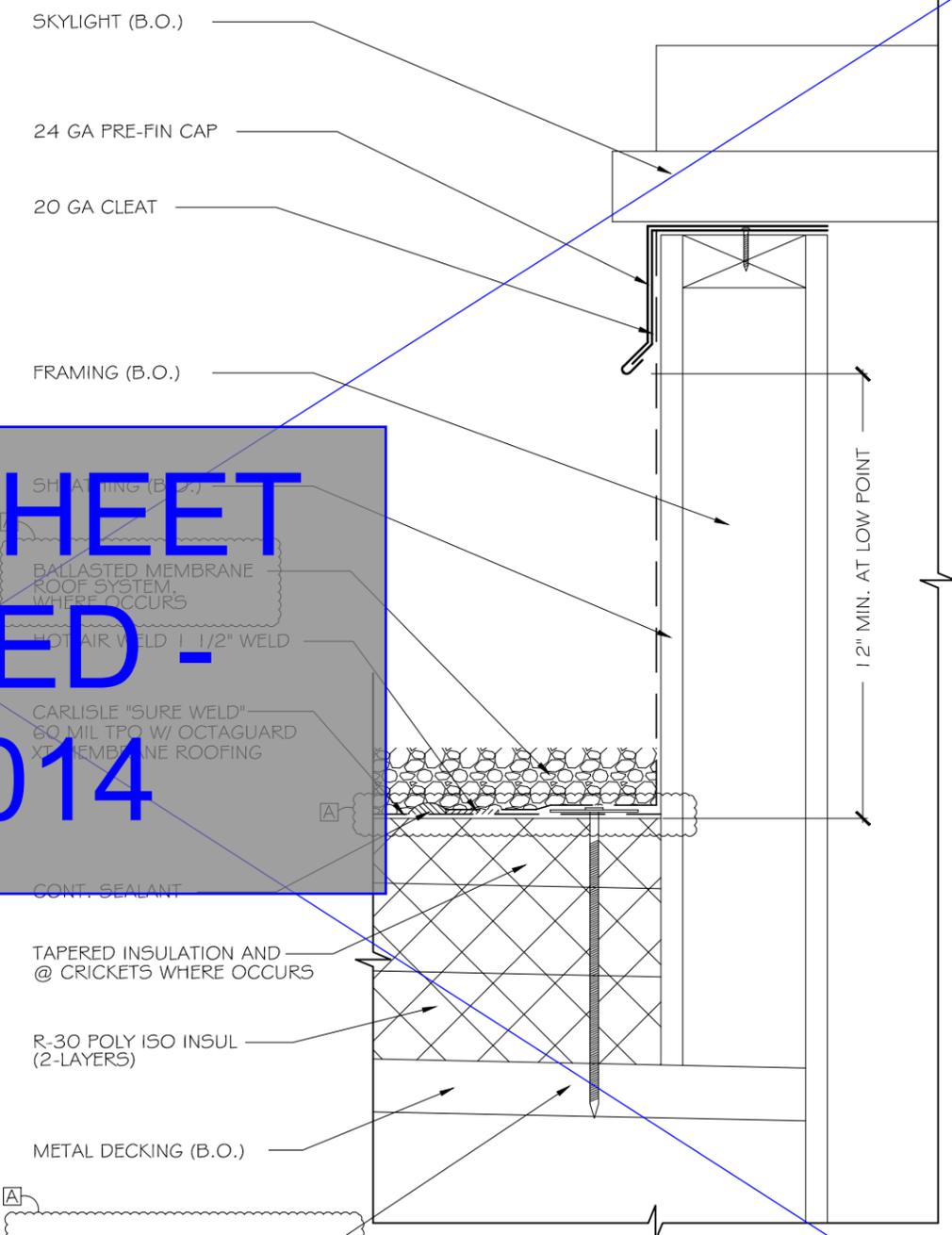


CONTRACTOR TO PROVIDE P.T. BLOCKING AS REQ'D FOR PROPER ATTACHMENTS SECURED TO ROOF STRUCTURE IF METAL ROOF DECK DOES NOT EXTEND COVER METAL BENT PLATE

① **PARAPET DETAIL**  
NTS  
REF: A6/A830



② **ROOF ANCHOR POST DETAIL**  
NTS  
REF: B6/A830 & C6/A830



CONTRACTOR TO PROVIDE P.T. BLOCKING AS REQ'D FOR PROPER ATTACHMENTS SECURED TO ROOF STRUCTURE IF METAL ROOF DECK DOES NOT EXTEND COVER METAL BENT PLATE

③ **SKYLIGHT DETAIL**  
NTS  
REF: C4/A830

**ENTIRE SHEET  
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04.22.2014**



NOTES	
DATE:	31, JAN 14
JOB NO.:	
DRAWN BY:	MWU
REVISED:	

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LOGAN, UT 84341

**NOORDA**  
ARCHITECTURAL METALS  
1700S 2160W S.L.C. UT (801) 503-3000

**D3**  
SHEET NO.

CARLISLE "SURE WELD"  
60 MIL TPO W/ OCTAGUARD  
XT MEMBRANE ROOFING

TAPERED INSULATION

R-30 POLY ISO INSUL  
(2-LAYERS)

CARLISLE "SURE WELD"  
60 MIL TPO  
MEMBRANE ROOFING

TAPERED INSULATION

R-30 POLY ISO INSUL  
(2-LAYERS)

METAL DECKING (B.O.)

CARLISLE "SURE WELD"  
60 MIL TPO W/ OCTAGUARD  
XT MEMBRANE ROOFING

WALL PER SCHEDULE (B.O.)

CONT. SEALANT

24 GA PRE-FIN FLASHING

**ENTIRE SHEET  
REPLACED -  
04.22.2014**

METAL SCUPPER FASTENED  
4" O.C., STAGGERED

24 GA PRE-FIN FLASHING

CONT. SEALANT

WALL PER SCHEDULE (B.O.)

1'-4" U.N.O.

① ROOF STEP @ ELEVATOR POP-UP DETAIL  
NTS  
REF: D4/A830

② SCUPPER JAMB DETAIL  
NTS  
REF: A4/A830



**NOTES**

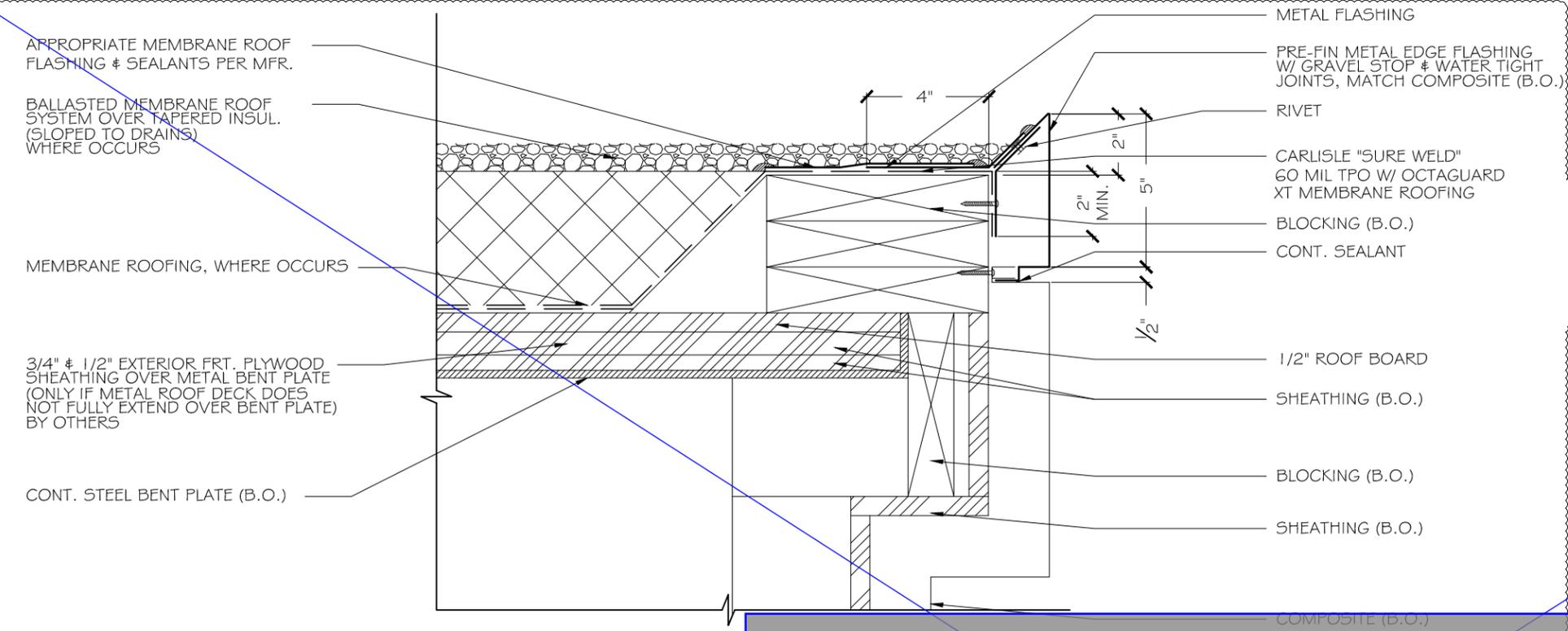
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DRAWN BY: MWU  
REVISED: -

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HOSPITAL & BUDGE CLINIC**  
1400 NORTH 500 EAST  
LOGAN, UT 84341

**NOORDA**  
ARCHITECTURAL METALS  
1700S 2160W S.L.C. UT (801) 503-3000

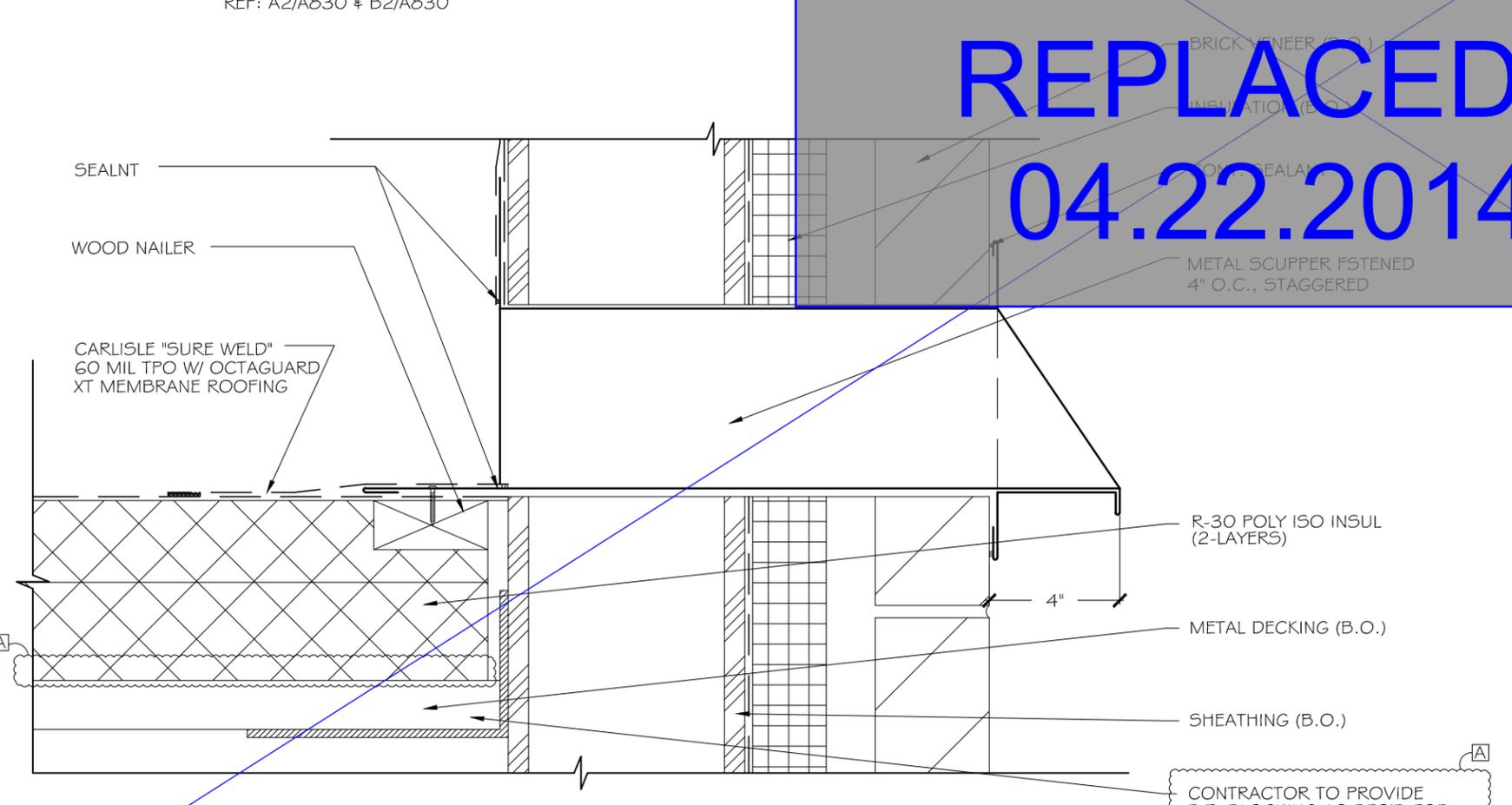
**D4**

SHEET NO.

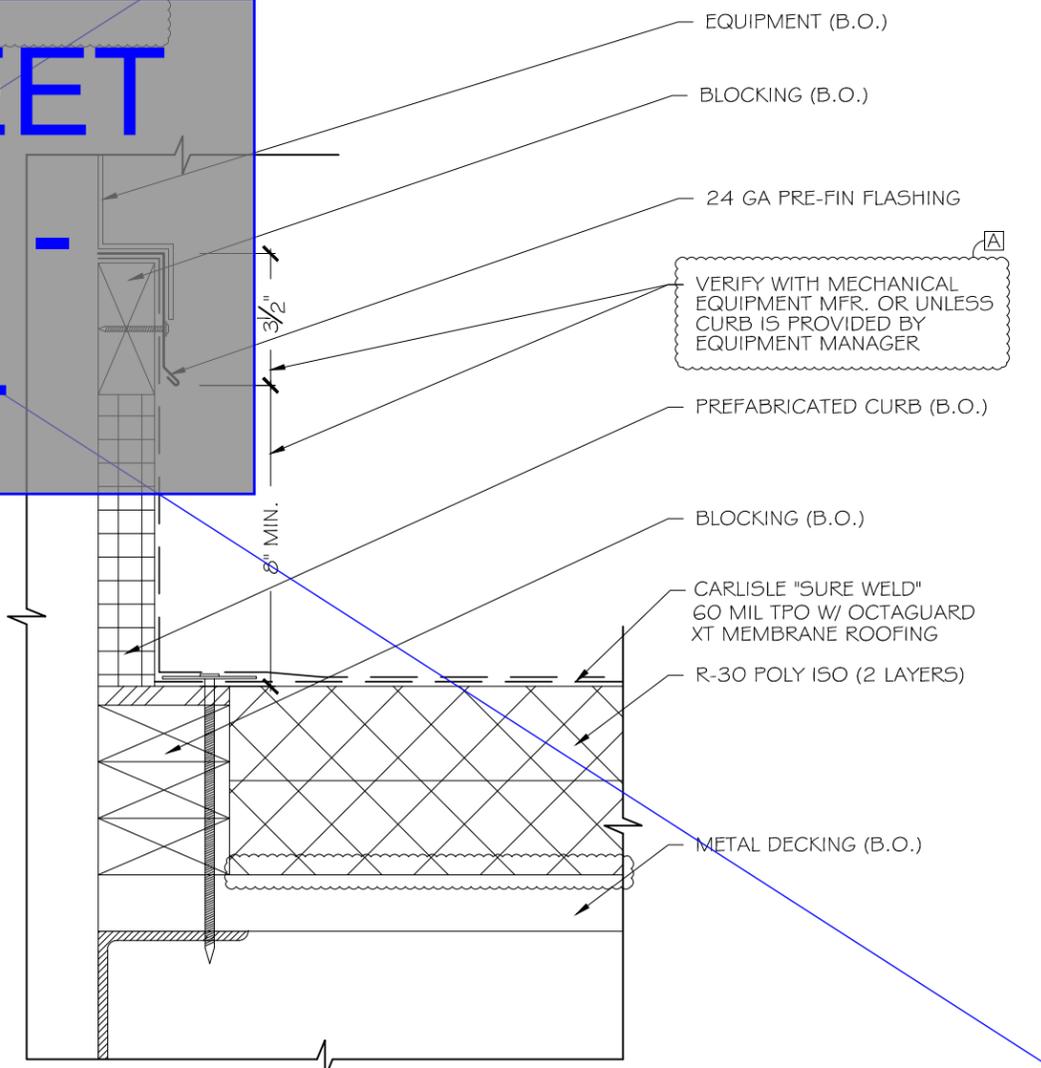


① **EDGE FLASHING @ CANOPY DETAIL**  
NTS  
REF: A2/A830 & B2/A830

**ENTIRE SHEET  
REPLACED -  
04.22.2014**



② **SCUPPER FLASHING DETAIL**  
NTS  
REF: B4/A830



② **ROOF CURB DETAIL**  
NTS  
REF: B5/A830

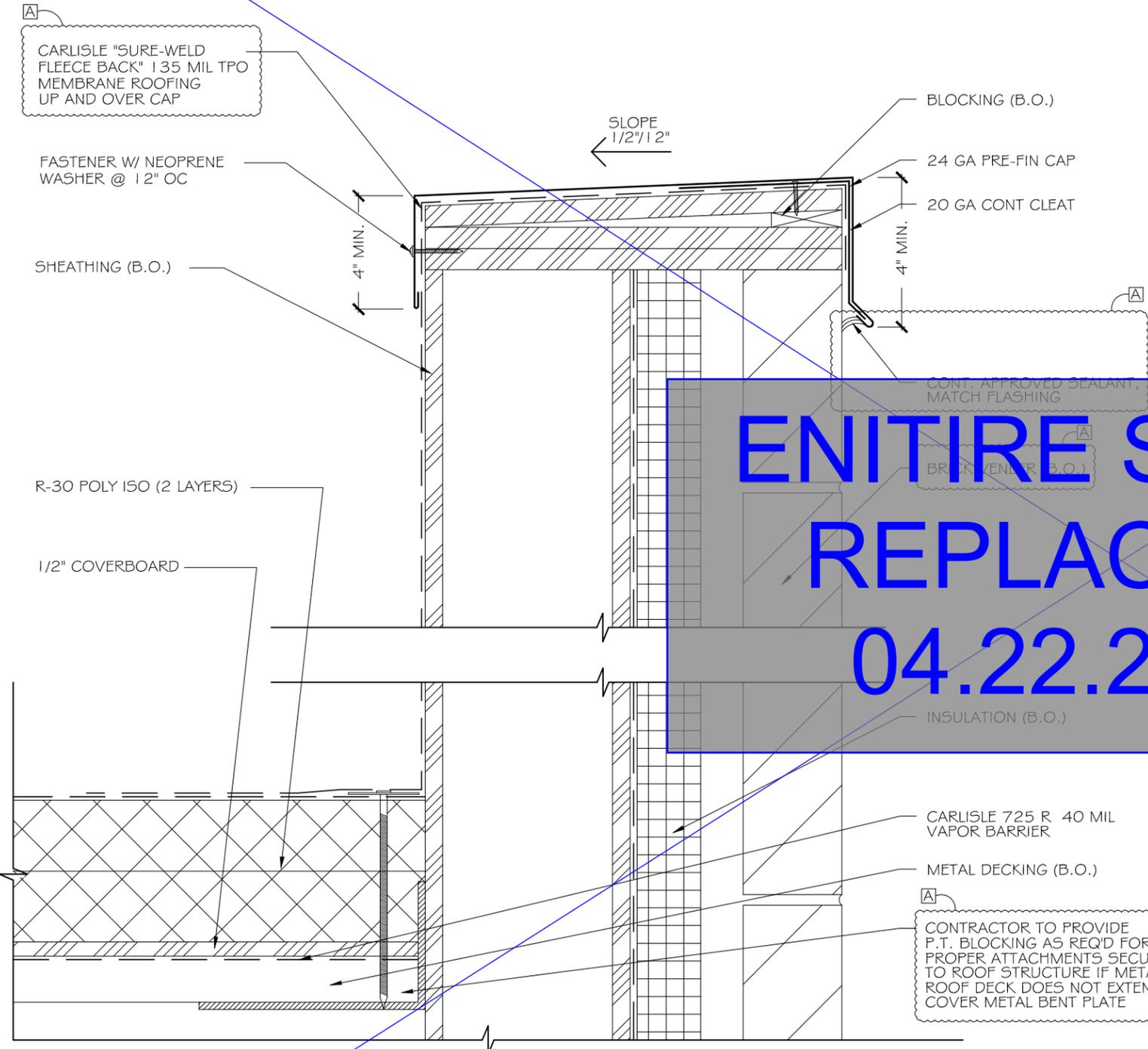


NOTES	
DATE:	31, JAN 14
JOB NO.:	
DRAWN BY:	MWU
REVISED:	

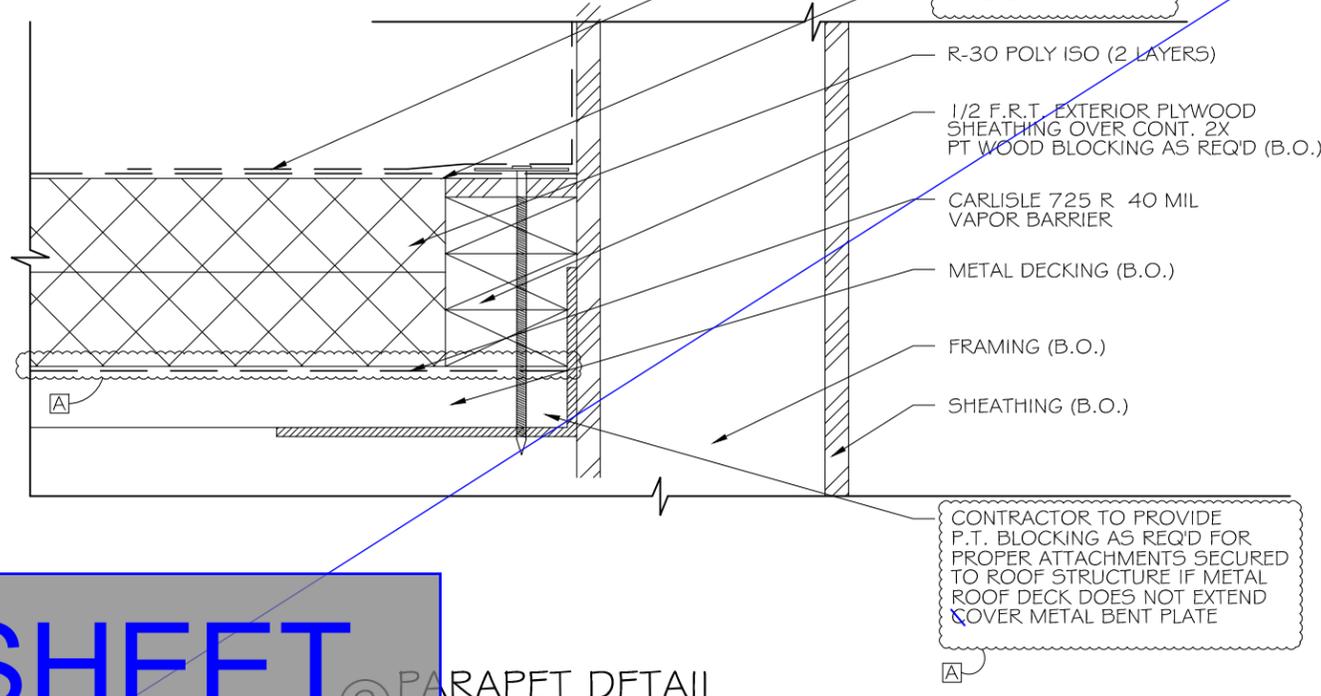
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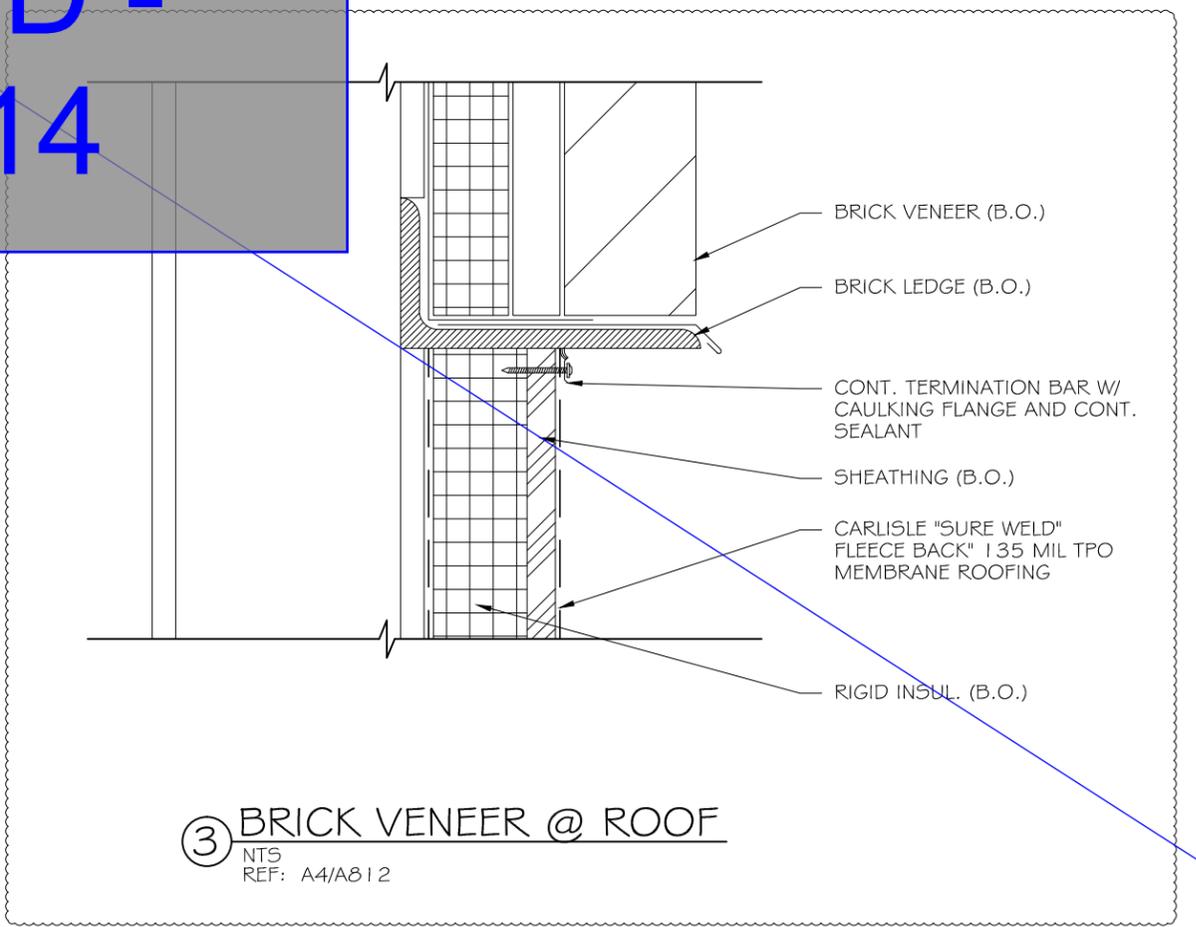
**D5**  
SHEET NO.



① PARAPET DETAIL  
NTS  
REF: D5/A811 SIM



② PARAPET DETAIL  
NTS  
REF: A6/A830 SIM



③ BRICK VENEER @ ROOF  
NTS  
REF: A4/A812

**ENTIRE SHEET  
REPLACED -  
04.22.2014**



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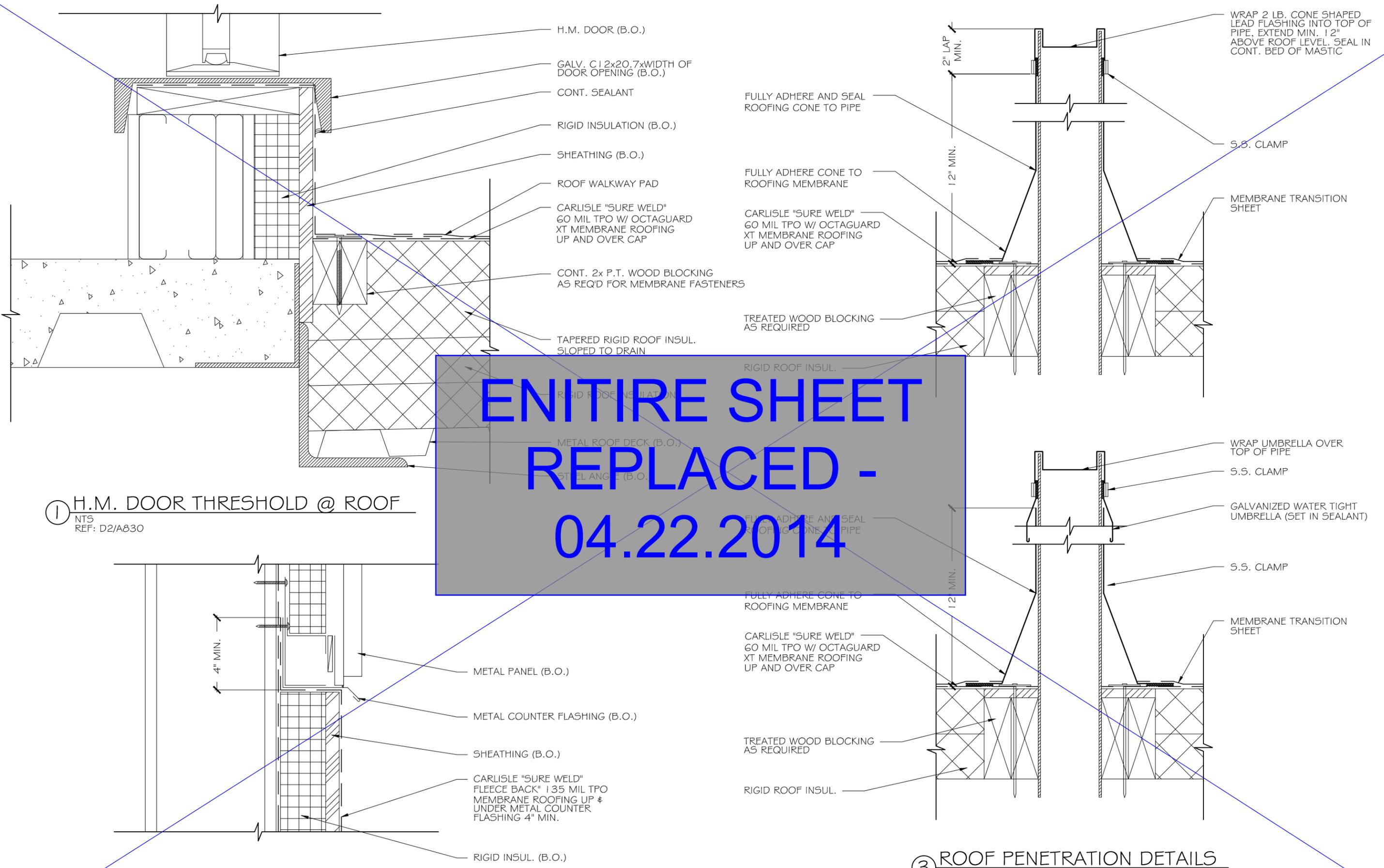
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REVISED: -

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A **D6**

SHEET NO.



① H.M. DOOR THRESHOLD @ ROOF  
NTS  
REF: D2/A830

② METAL PANEL BASE @ ROOF  
NTS  
REF: A3/A813

③ ROOF PENETRATION DETAILS  
NTS  
REF: D6/A830

**ENTIRE SHEET  
REPLACED -  
04.22.2014**



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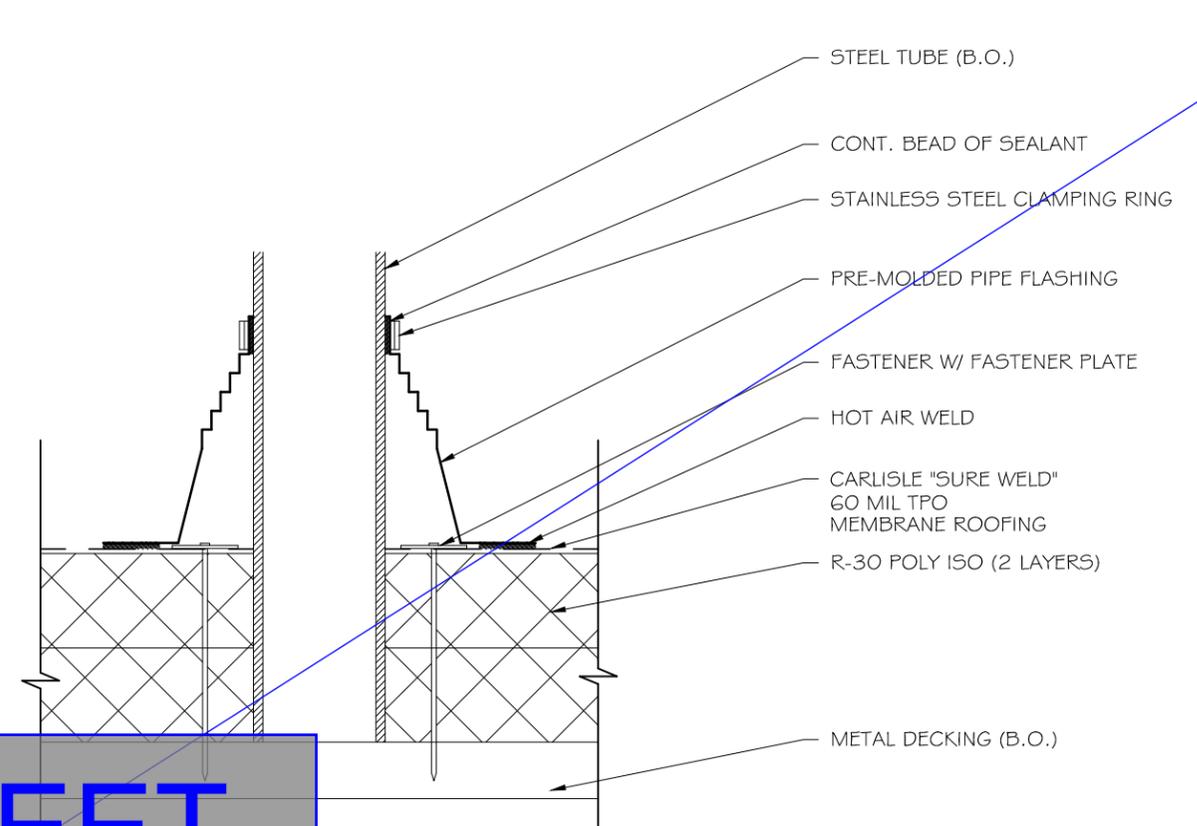
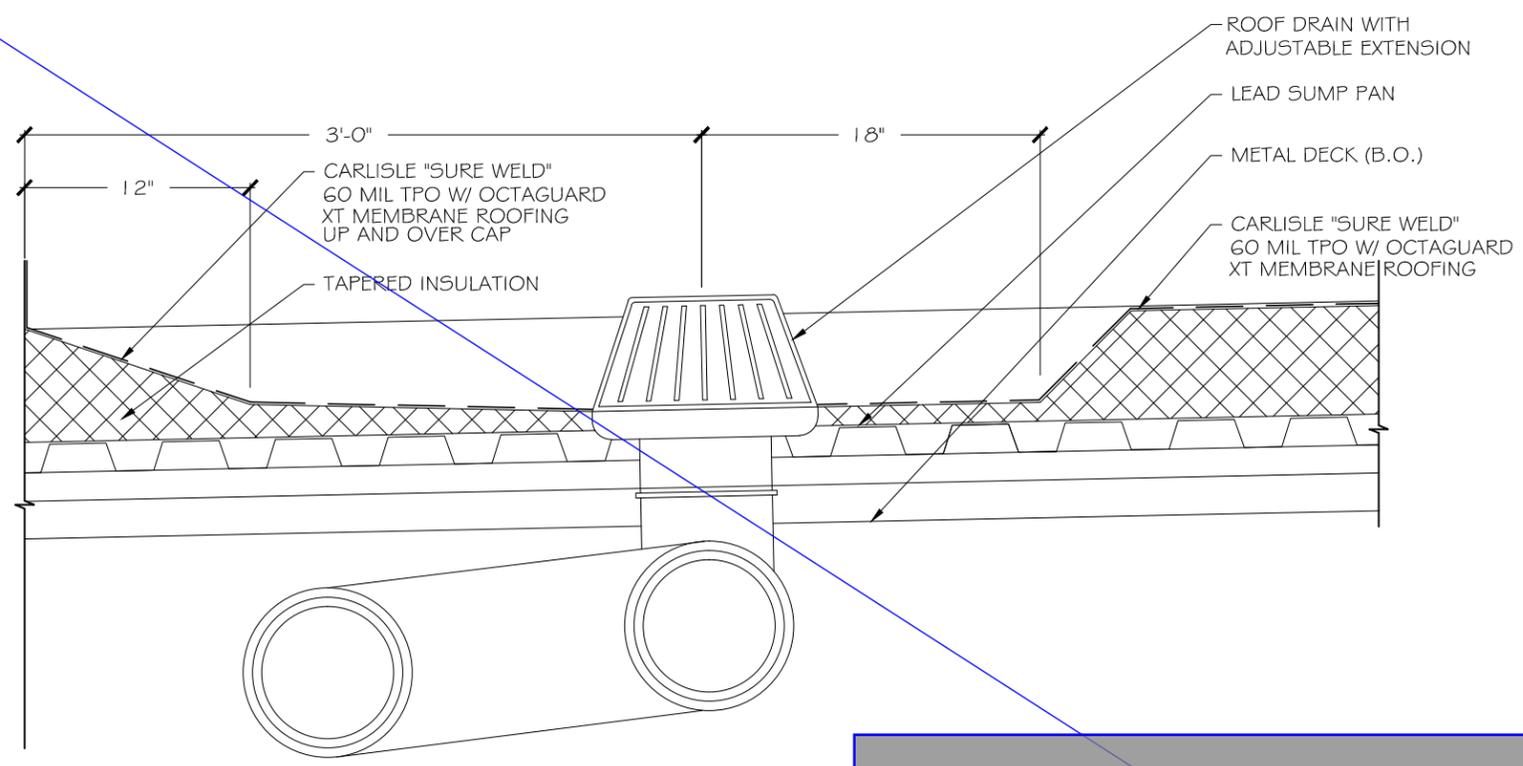
REVISED: -

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A D7

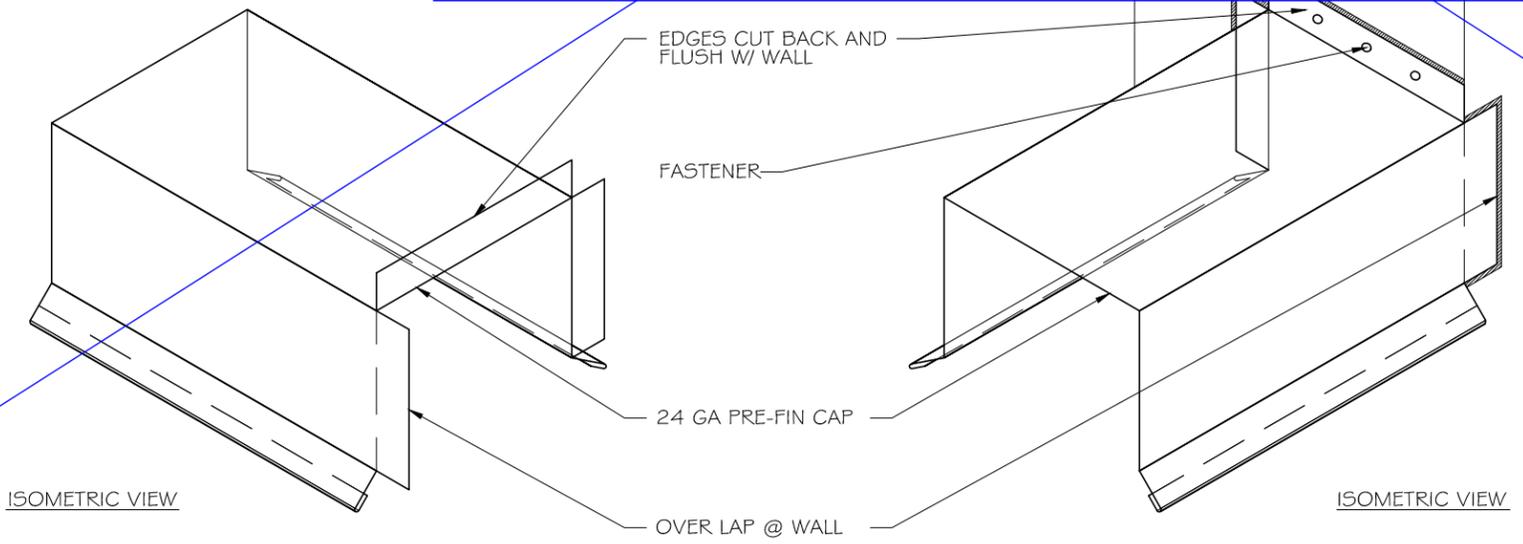
SHEET NO.



① ROOF DRAIN SECTION  
NTS  
REF: E4/A830

② MECH. SCREEN SECTION  
NTS  
REF: A5/A814

**ENTIRE SHEET  
REPLACED -  
04.22.2014**



③ FLASHING TERMINATION  
NTS  
REF: NONE

A





**NOTES**

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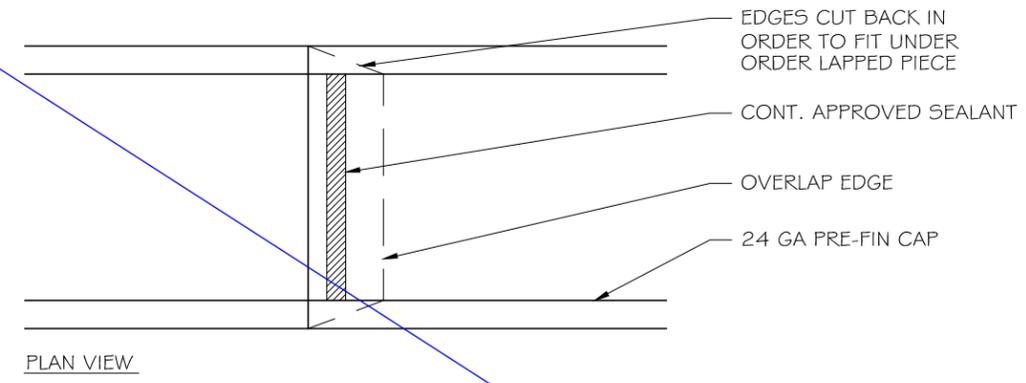
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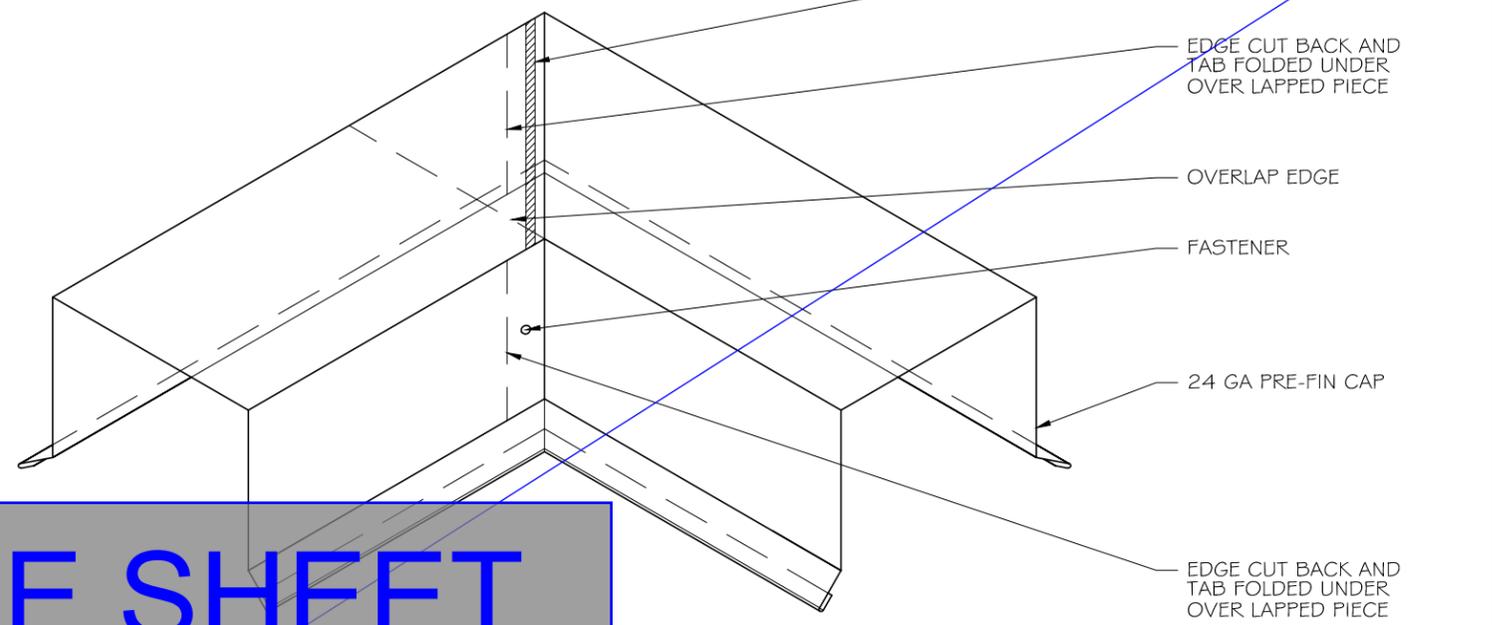
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SHEET NO.



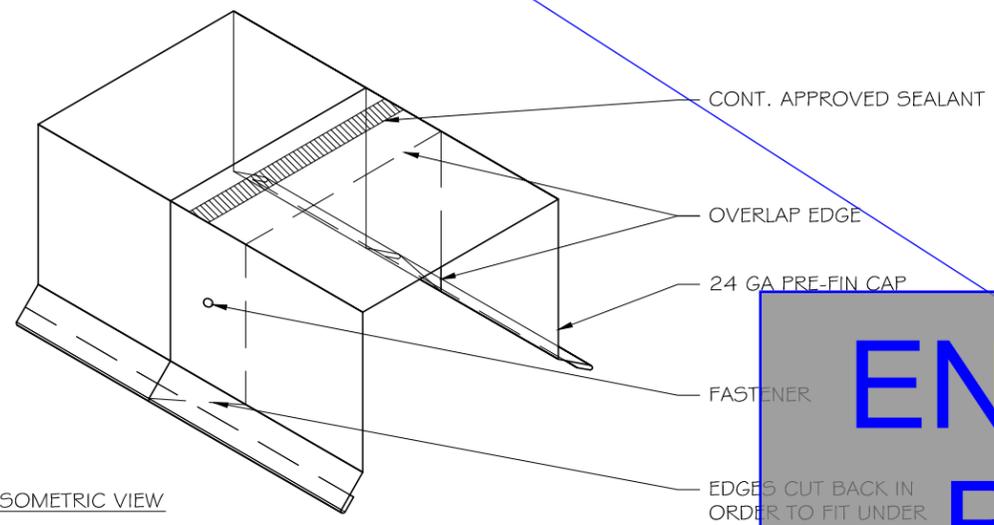
PLAN VIEW

EDGES CUT BACK IN ORDER TO FIT UNDER OVER LAPPED PIECE  
CONT. APPROVED SEALANT  
OVERLAP EDGE  
24 GA PRE-FIN CAP



ISOMETRIC VIEW

CONT. APPROVED SEALANT  
EDGE CUT BACK AND TAB FOLDED UNDER OVER LAPPED PIECE  
OVERLAP EDGE  
FASTENER  
24 GA PRE-FIN CAP  
EDGE CUT BACK AND TAB FOLDED UNDER OVER LAPPED PIECE



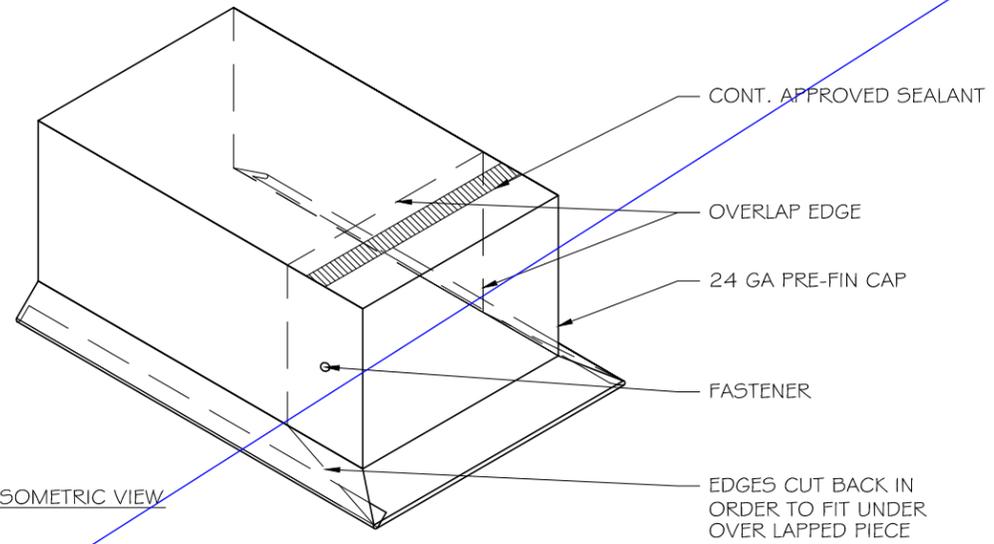
ISOMETRIC VIEW

CONT. APPROVED SEALANT  
OVERLAP EDGE  
24 GA PRE-FIN CAP  
FASTENER  
EDGES CUT BACK IN ORDER TO FIT UNDER OVER LAPPED PIECE

**ENTITRE SHEET  
REPLACED -  
04.22.2014**

**1 FLASHING SEAM/JOINT**  
NTS  
REF: NONE

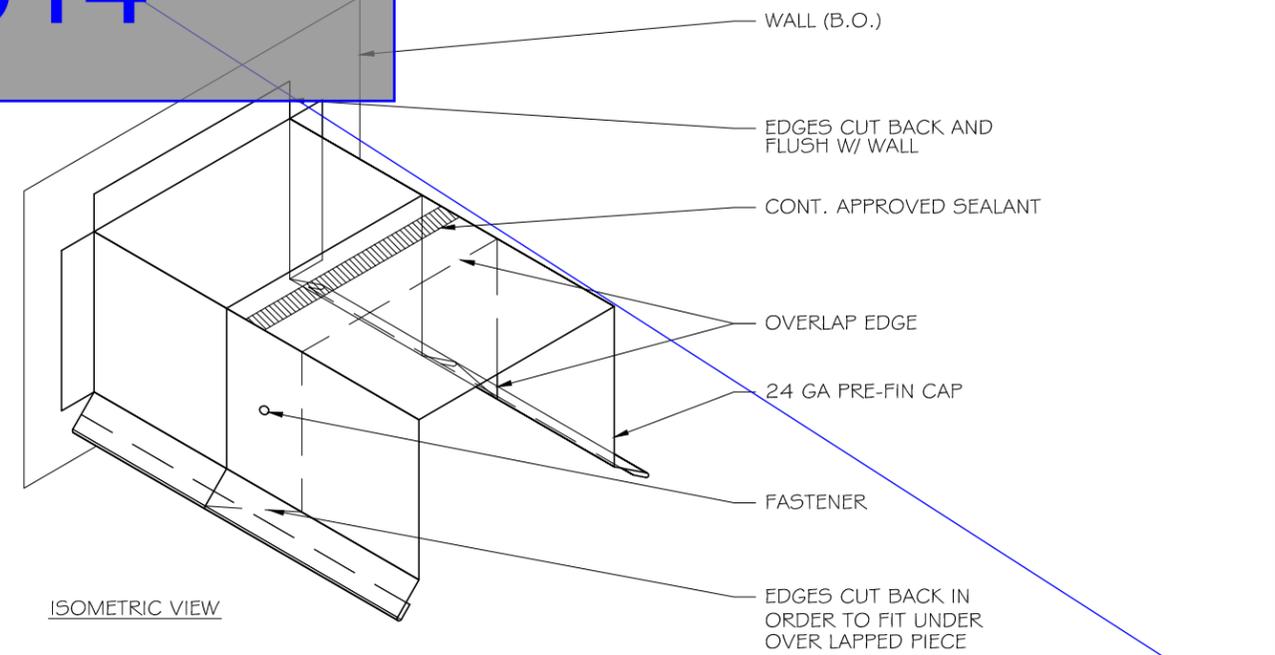
**2 FLASHING @ CORNER**  
NTS  
REF: NONE



ISOMETRIC VIEW

CONT. APPROVED SEALANT  
OVERLAP EDGE  
24 GA PRE-FIN CAP  
FASTENER  
EDGES CUT BACK IN ORDER TO FIT UNDER OVER LAPPED PIECE

**3 FLASHING END CAP**  
NTS  
REF: NONE



ISOMETRIC VIEW

WALL (B.O.)  
EDGES CUT BACK AND FLUSH W/ WALL  
CONT. APPROVED SEALANT  
OVERLAP EDGE  
24 GA PRE-FIN CAP  
FASTENER  
EDGES CUT BACK IN ORDER TO FIT UNDER OVER LAPPED PIECE

**4 FLASHING TERMINATION**  
NTS  
REF: NONE

A



Steven Tanner &lt;stanner@vcbo.com&gt;

---

## 12355 LRH & Budge Clinic - Submittal 075413.01 R1 Roofing - Questions

---

Steven Tanner &lt;stanner@vcbo.com&gt;

Wed, Apr 16, 2014 at 3:05 PM

To: Jared Jensen &lt;jjensen@jacobsenconstruction.com&gt;

Cc: Karen Ferguson &lt;kferguson@vcbo.com&gt;, Scott Greener &lt;sgreener@jacobsenconstruction.com&gt;, Jared Backman &lt;Jared@jacobsenconstruction.com&gt;, Jeff Pinegar &lt;jpinegar@vcbo.com&gt;

**Meeting Minutes - 04.16.2014; 1:30pm to 2:05pm****12355 LRH & Budge Clinic - Submittal 075413.01 R1 Roofing - Questions****Attendees (GoToMeeting):**

Steven Tanner, VCBO

Karen Ferguson, VCBO

Jared Jensen, JCC

Craig C., Noorda

Shane R., Noorda

**Responses & Comments in [Blue](#):**

1. Saddle flashing at the Coping to Wall Termination Details. (10 conditions, but are not all the same):  
[VCBO presented proposed sketch details of "FLASHING TERMINATION DETAILS" Types #1, 2, 3, 4 & 5.](#)  
[Noorda will provide additional detail options for Types #7 & 8.](#)

2. Coping to Wall Termination at Expansion Joint Details. (2 conditions)  
[VCBO presented proposed sketch detail of "FLASHING TERMINATION @ EXPANSION JOINT" Types #6 & 5.](#)  
[Noorda will provide additional detail option for Type #9.](#)

Currently the requested details from the first review that have been submitted with the revised submittal are not acceptable or don't relate to the condition being referenced. We are concerned about these items due to high potential of roof leakage and the finished appearance of the installation. We will be sending some design sketches concerning the items of concern to discuss and would like Noorda's feedback. We would like to know whether or not they already have other similar or better flashing solutions that could be included with their submittal in hopes of avoiding another "Revise & Resubmit".

3. [Noorda will further review the revised submittal and VCBO's proposed flashing details and incorporate additional details mentioned above to the revised Submittal "R1" for review and approval by VCBO. Submittal #075413.01 R1 - Roofing will not be sent back to JCC until VCBO has received and reviewed any revised and added sheets by Noorda. Issue & Returned dates T.B.D.](#)

In addition, there are no roof drawings or notes concerning physical Mockup installation. As noted in the specs (section 07 5413, 1.6, G) the roof installation and flashing are to be included in the free-standing building envelope Mock-up.

4. [Noorda will include roof plan and details for Mock-up with revised submittal.](#)

One other recent request by the owner is concerning the Southeast sloped canopy roof membrane. They've expressed their concerns about the roof membrane being only "white", where we don't have ballast. We will need Noorda to submit Carlisle's TPO color samples along with Ballast to choose from. Thanks for your help and cooperation.

- 5. Noorda will provide the following samples at JCC's Job Site Trailer for review and approval by Owner & VCBO:
  - a. TPO Membrane Colors: Tan & Gray.
  - b. Ballast: River Rock

If any content in these notes are incorrect or missing information, please send back to Steven Tanner for revisions by no later than 04.17.2014.

Thanks for your help and cooperation.

Jared, please forward these Meeting Minutes to Noorda.

Respectfully,

STEVEN TANNER, ASSOC. AIA  
Designer

---

**VCBO ARCHITECTURE**  
524 South 600 East  
Salt Lake City, UT 84102  
801.575.8800  
vcbo.com  
stanner@vcbo.com

[Quoted text hidden]



**2014-04-16\_12355\_075413.01 R1 - Roofing - Proposed Flashing Detail Sketches.pdf**  
5381K

**(15 pages)**



**NOTES**

DATE: 31, JAN 14  
JOB NO.

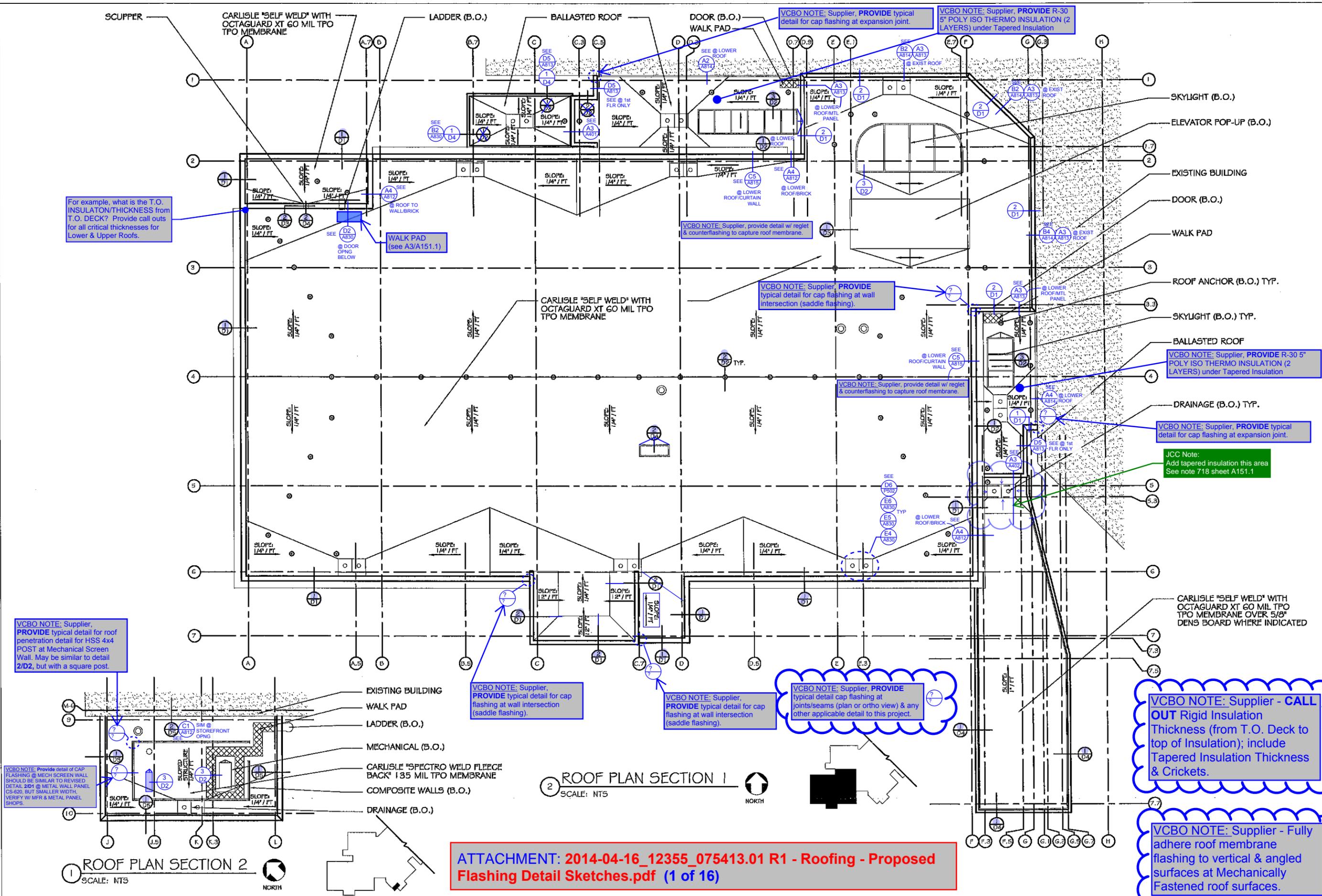
DRAWN BY: MWU  
REVISED: -

**LOGAN REGIONAL  
HOSPITAL & BUDGE CLINIC**  
1400 NORTH 500 EAST  
LOGAN, UT 84341

**NOORDA**  
ARCHITECTURAL METALS  
1700S 2160W S.L.C. UT (801)503-3000

RF

SHEET NO.



For example, what is the T.O. INSULATION/THICKNESS from T.O. DECK? Provide call outs for all critical thicknesses for Lower & Upper Roofs.

VCBO NOTE: Supplier, PROVIDE typical detail for cap flashing at expansion joint.

VCBO NOTE: Supplier, PROVIDE R-30 5" POLY ISO THERMO INSULATION (2 LAYERS) under Tapered Insulation

WALK PAD (see A3/A151.1)

VCBO NOTE: Supplier, provide detail w/ reglet & counterflashing to capture roof membrane.

VCBO NOTE: Supplier, PROVIDE typical detail for cap flashing at wall intersection (saddle flashing).

VCBO NOTE: Supplier, provide detail w/ reglet & counterflashing to capture roof membrane.

VCBO NOTE: Supplier, PROVIDE typical detail for cap flashing at expansion joint.

JCC Note: Add tapered insulation this area See note 718 sheet A151.1

VCBO NOTE: Supplier, PROVIDE typical detail for roof penetration detail for HSS 4x4 POST at Mechanical Screen Wall. May be similar to detail 2/D2, but with a square post.

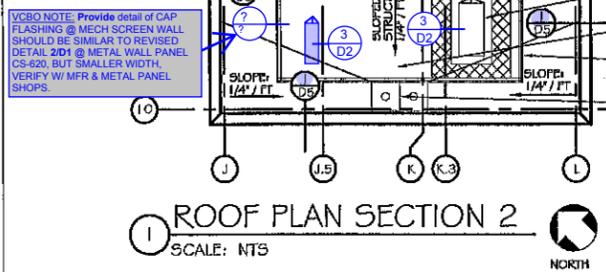
VCBO NOTE: Supplier, PROVIDE typical detail for cap flashing at wall intersection (saddle flashing).

VCBO NOTE: Supplier, PROVIDE typical detail for cap flashing at wall intersection (saddle flashing).

VCBO NOTE: Supplier, PROVIDE typical detail cap flashing at joints/seams (plan or ortho view) & any other applicable detail to this project.

VCBO NOTE: Supplier - CALL OUT Rigid Insulation Thickness (from T.O. Deck to top of Insulation); include Tapered Insulation Thickness & Crickets.

VCBO NOTE: Supplier - Fully adhere roof membrane flashing to vertical & angled surfaces at Mechanically Fastened roof surfaces.



- EXISTING BUILDING
- WALK PAD
- LADDER (B.O.)
- MECHANICAL (B.O.)
- CARLISLE "SPECTRO WELD FLEECE BACK" 135 MIL TPO MEMBRANE
- COMPOSITE WALLS (B.O.)
- DRAINAGE (B.O.)

ROOF PLAN SECTION 1  
SCALE: NTS

ATTACHMENT: 2014-04-16\_12355\_075413.01 R1 - Roofing - Proposed  
Flashing Detail Sketches.pdf (1 of 16)



**NOTES**

DATE: 31, JAN 14

JOB NO.

DRAWN BY: MWU

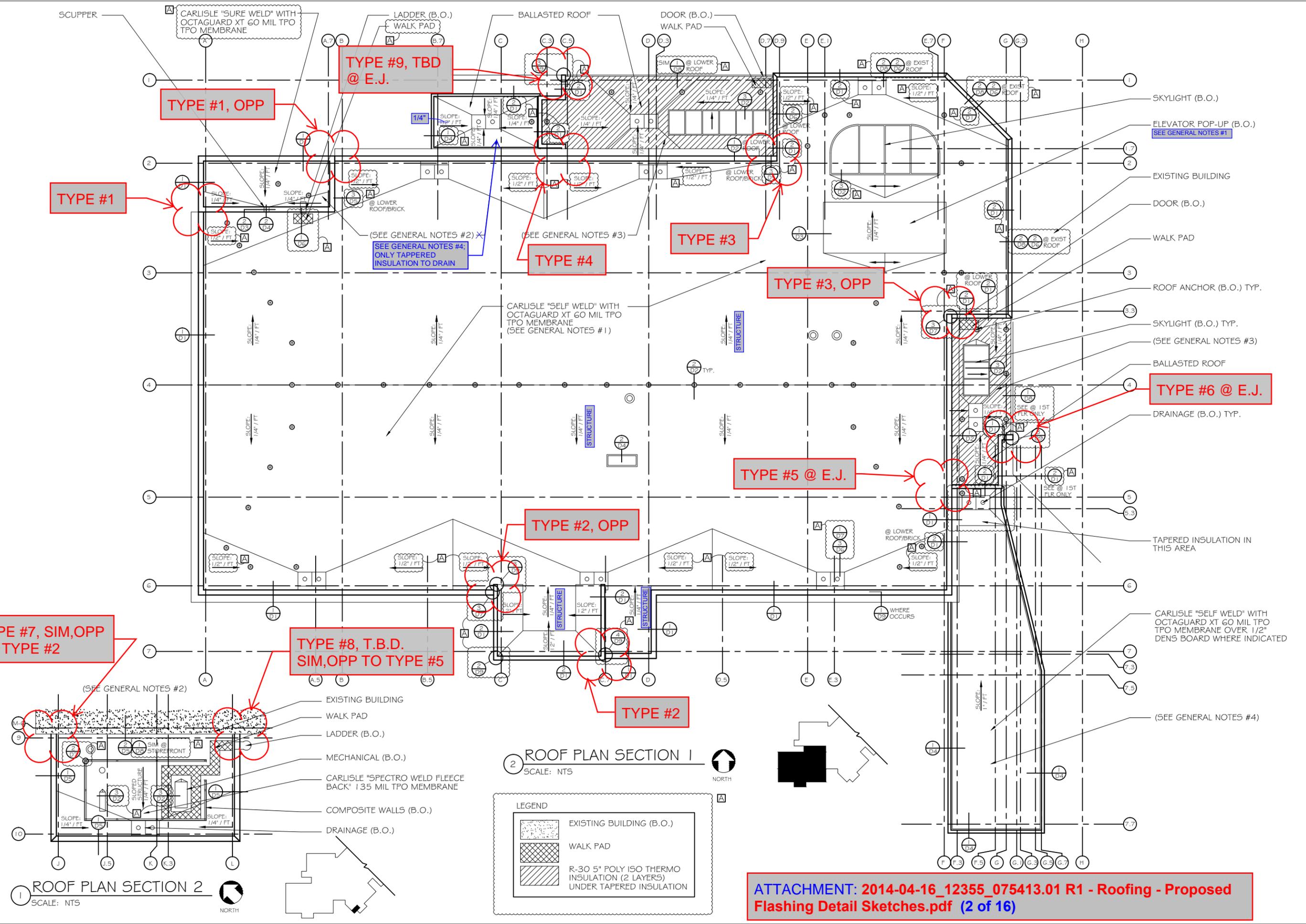
REVISED: -

**LOGAN REGIONAL HOSPITAL & BUDGE CLINIC**  
1400 NORTH 500 EAST  
LOGAN, UT 84341

**NOORDA**  
ARCHITECTURAL METALS  
1700S 2160W S.L.C. UT (801)503-3000

RF

SHEET NO.



**TYPE #9, TBD @ E.J.**

**TYPE #1, OPP**

**TYPE #1**

**TYPE #4**

**TYPE #3**

**TYPE #3, OPP**

**TYPE #6 @ E.J.**

**TYPE #5 @ E.J.**

**TYPE #2, OPP**

**TYPE #8, T.B.D. SIM, OPP TO TYPE #5**

**TYPE #7, SIM, OPP TO TYPE #2**

**TYPE #2**

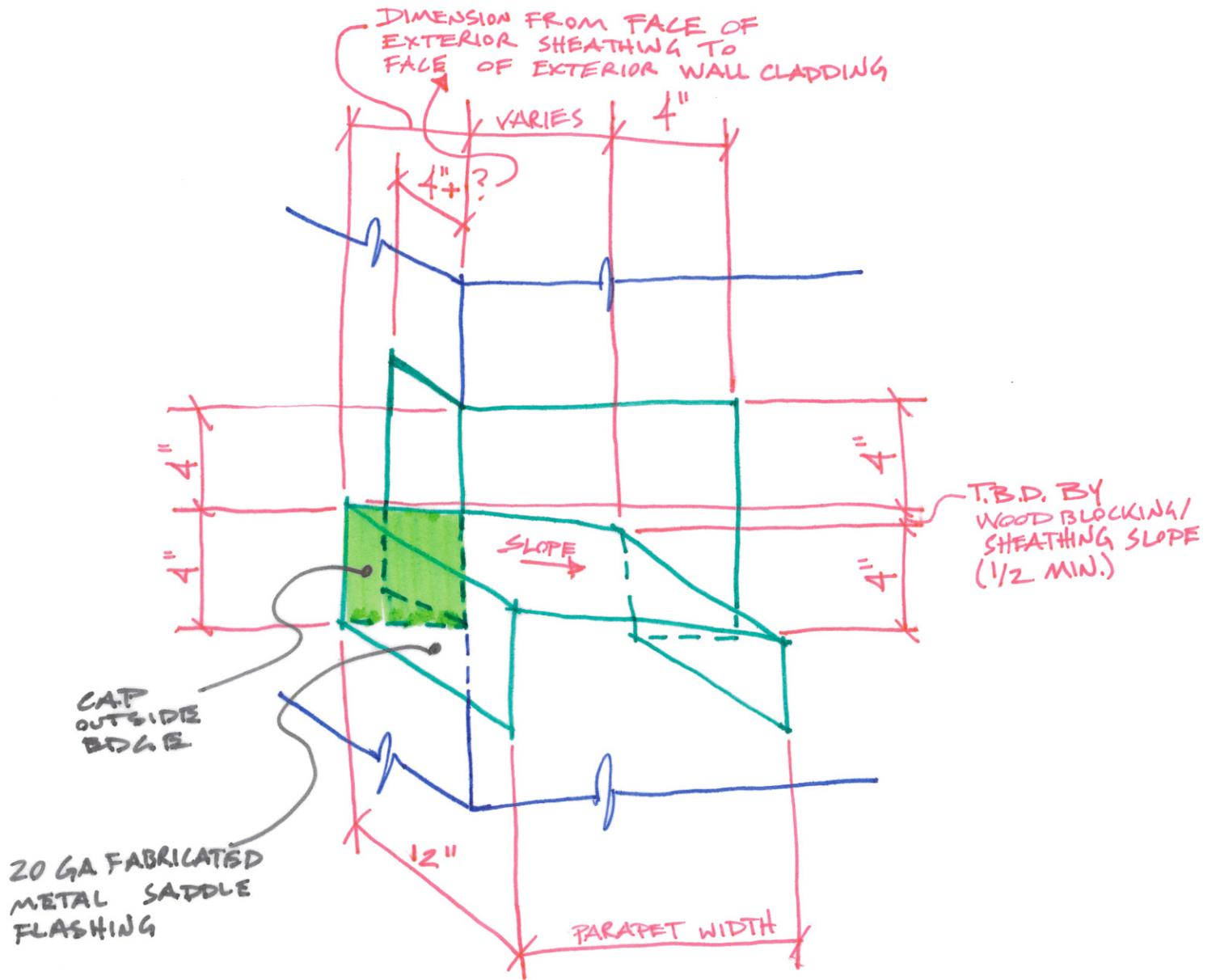
**ROOF PLAN SECTION 1**  
SCALE: NTS

**ROOF PLAN SECTION 2**  
SCALE: NTS

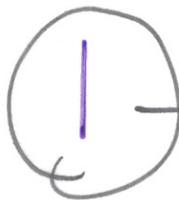
**LEGEND**

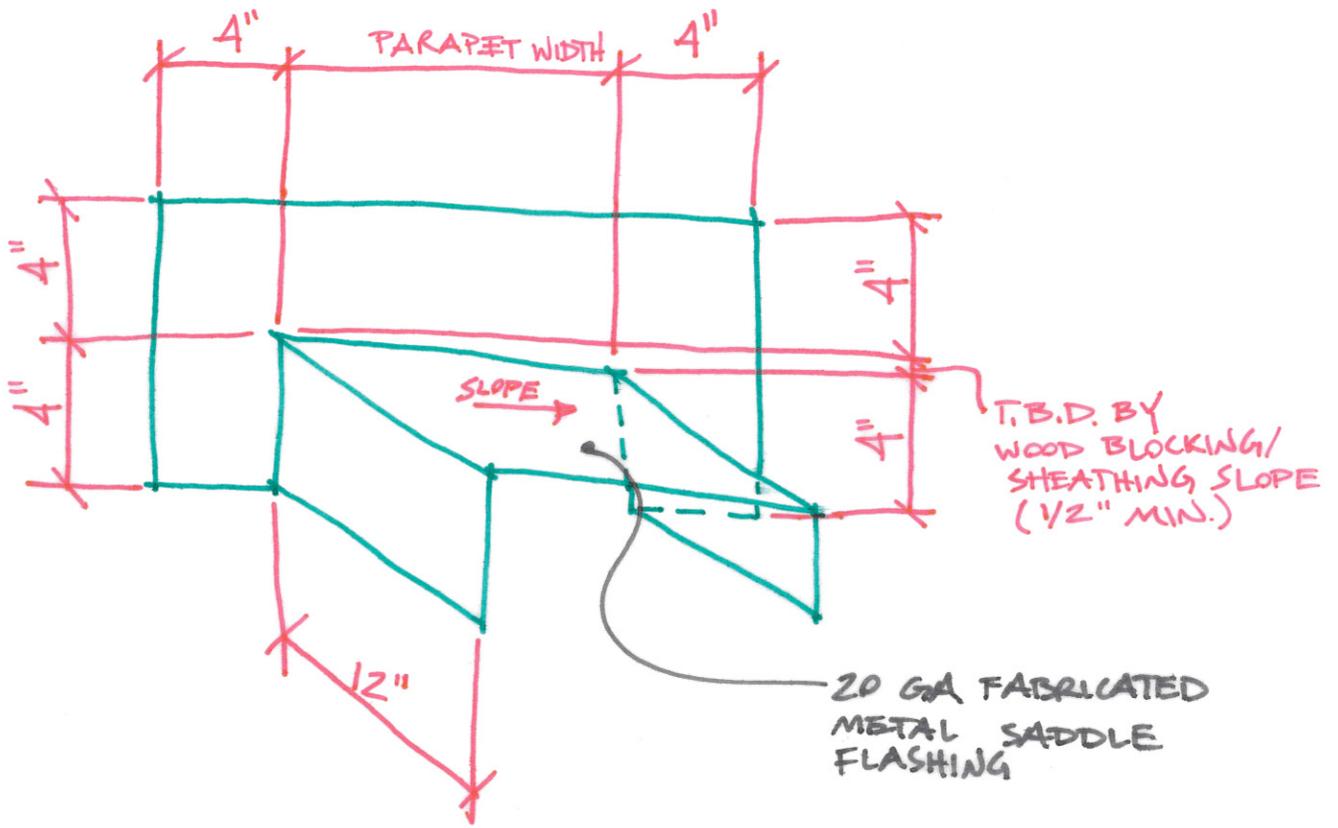
	EXISTING BUILDING (B.O.)
	WALK PAD
	R-30 5" POLY ISO THERMO INSULATION (2 LAYERS) UNDER TAPERED INSULATION

**ATTACHMENT: 2014-04-16\_12355\_075413.01 R1 - Roofing - Proposed Flashing Detail Sketches.pdf (2 of 16)**

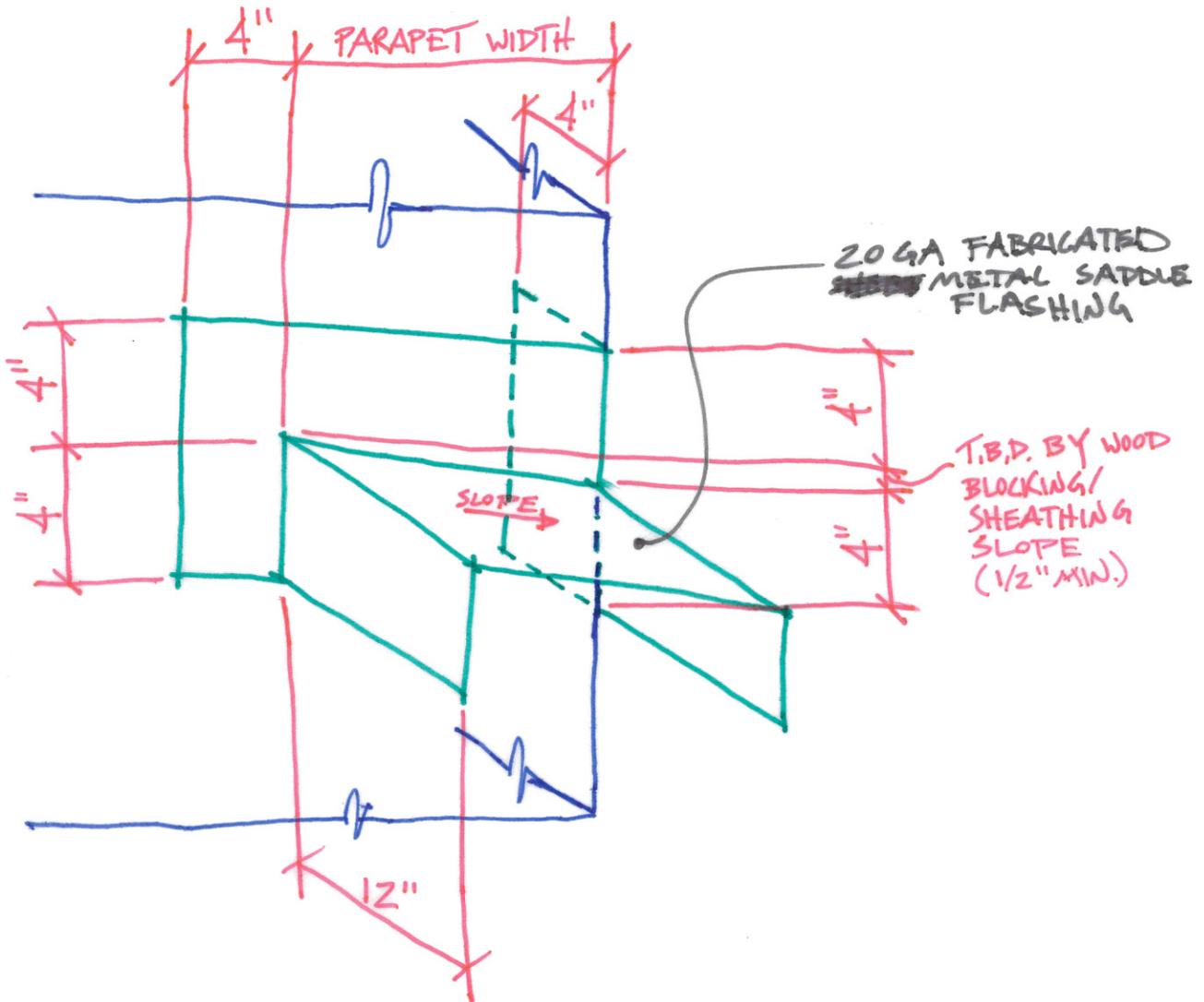


FLASHING TERMINATION  
 TYPE # 1 (RIGHT HAND)  
 NTS

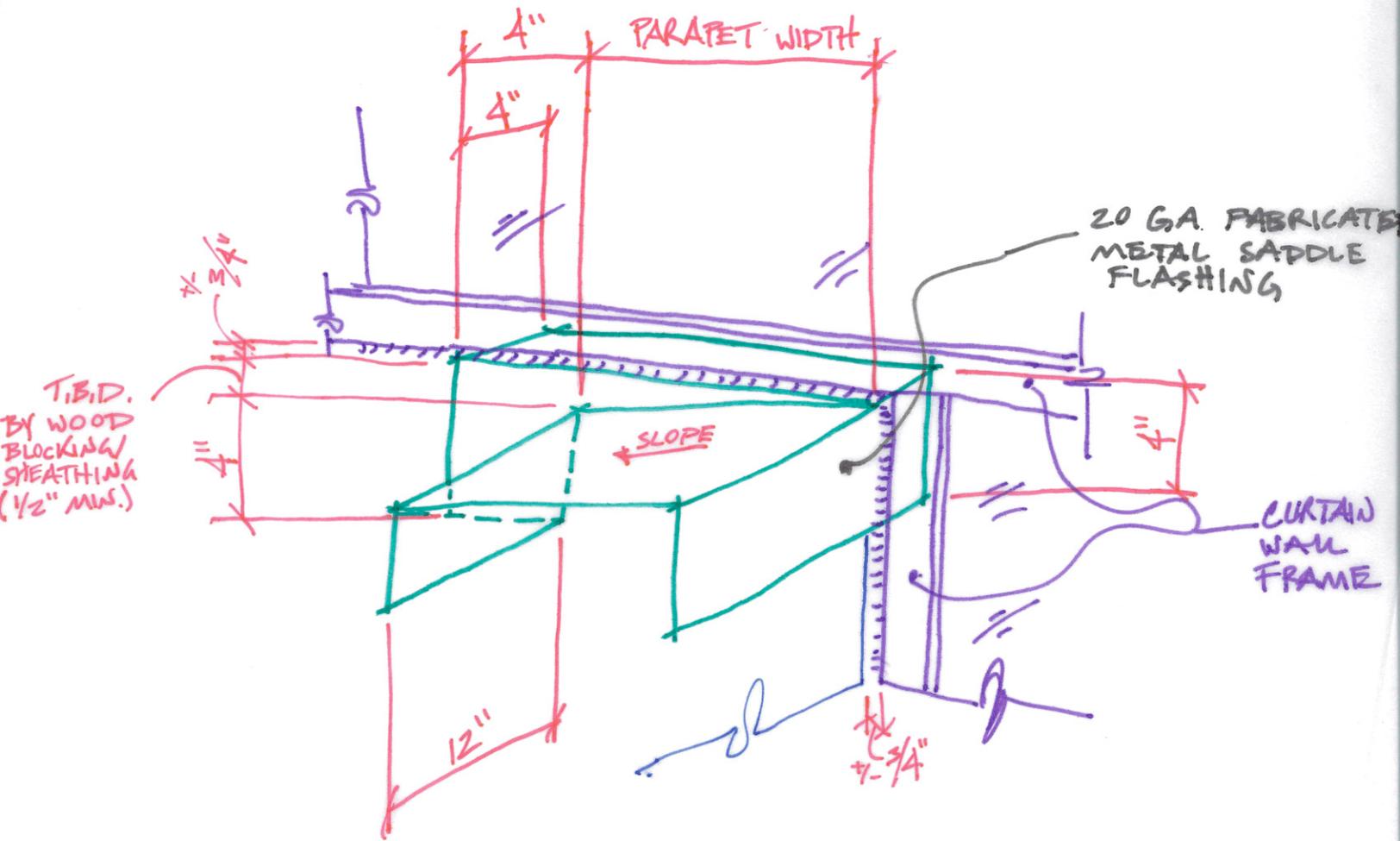




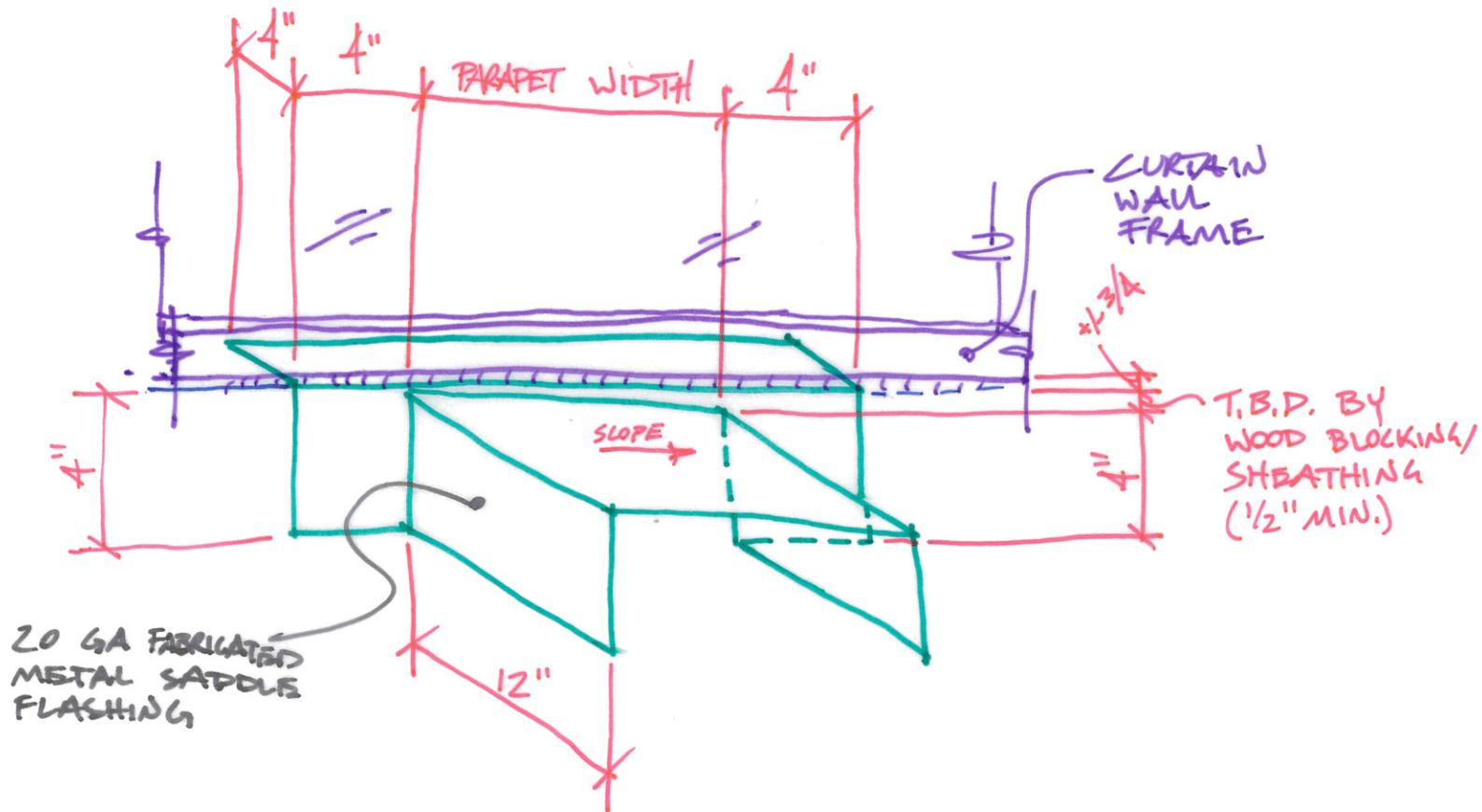
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 TYPE # 2 (RIGHT HAND)  
 NTS



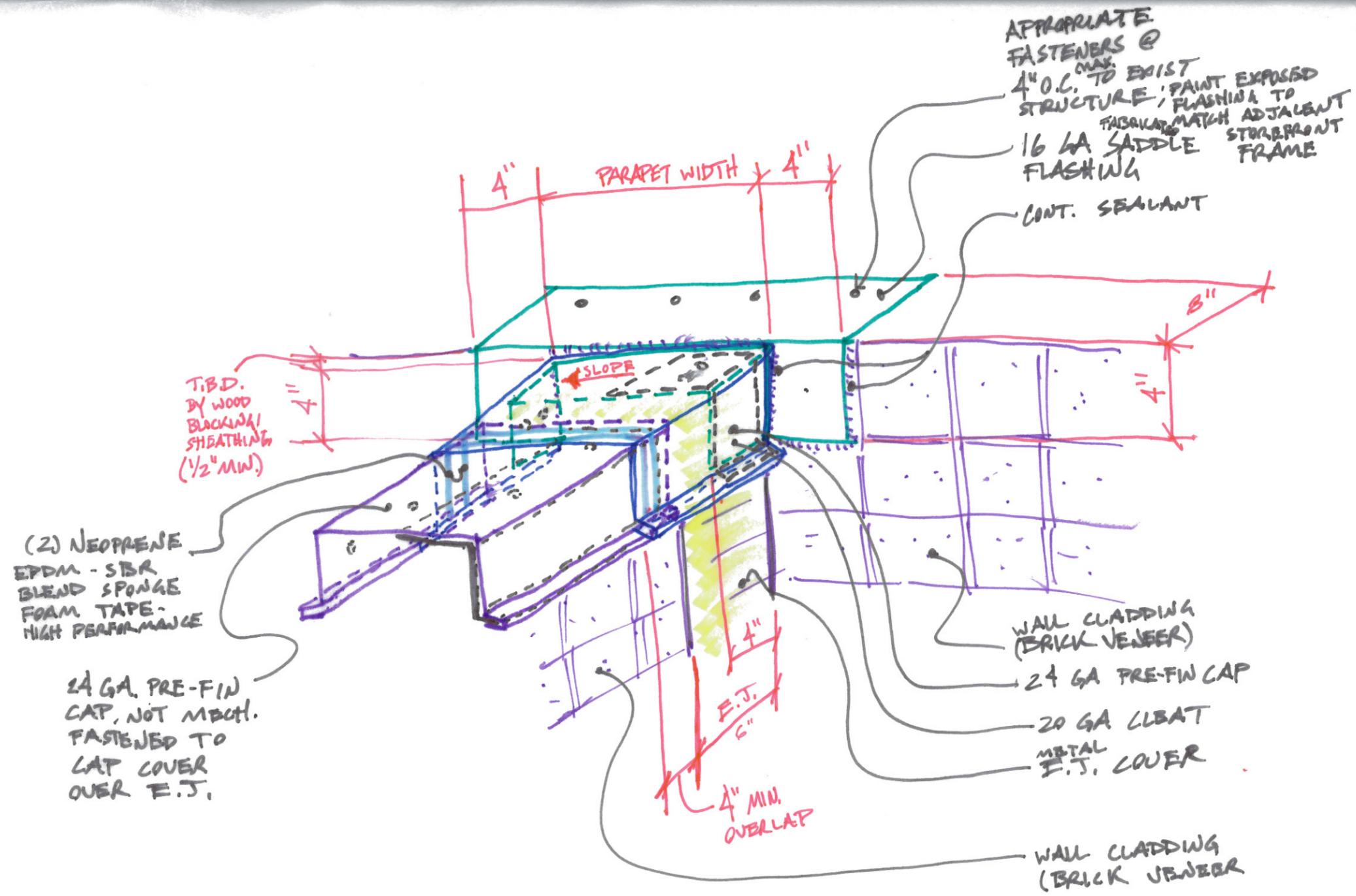
3 FLASHING TERMINATION  
 TYPE # 3 (RIGHT HAND)  
 NTS



4
 FLASHING TERMINATION  
 TYPE # 4 (LEFT HAND)  
 N.T.S.

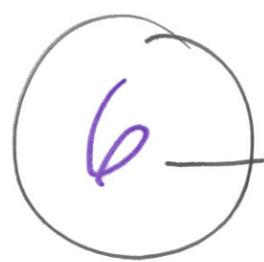


5 FLASHING TERMINATION  
 TYPE # 5 (RIGHT HAND)  
 NTS

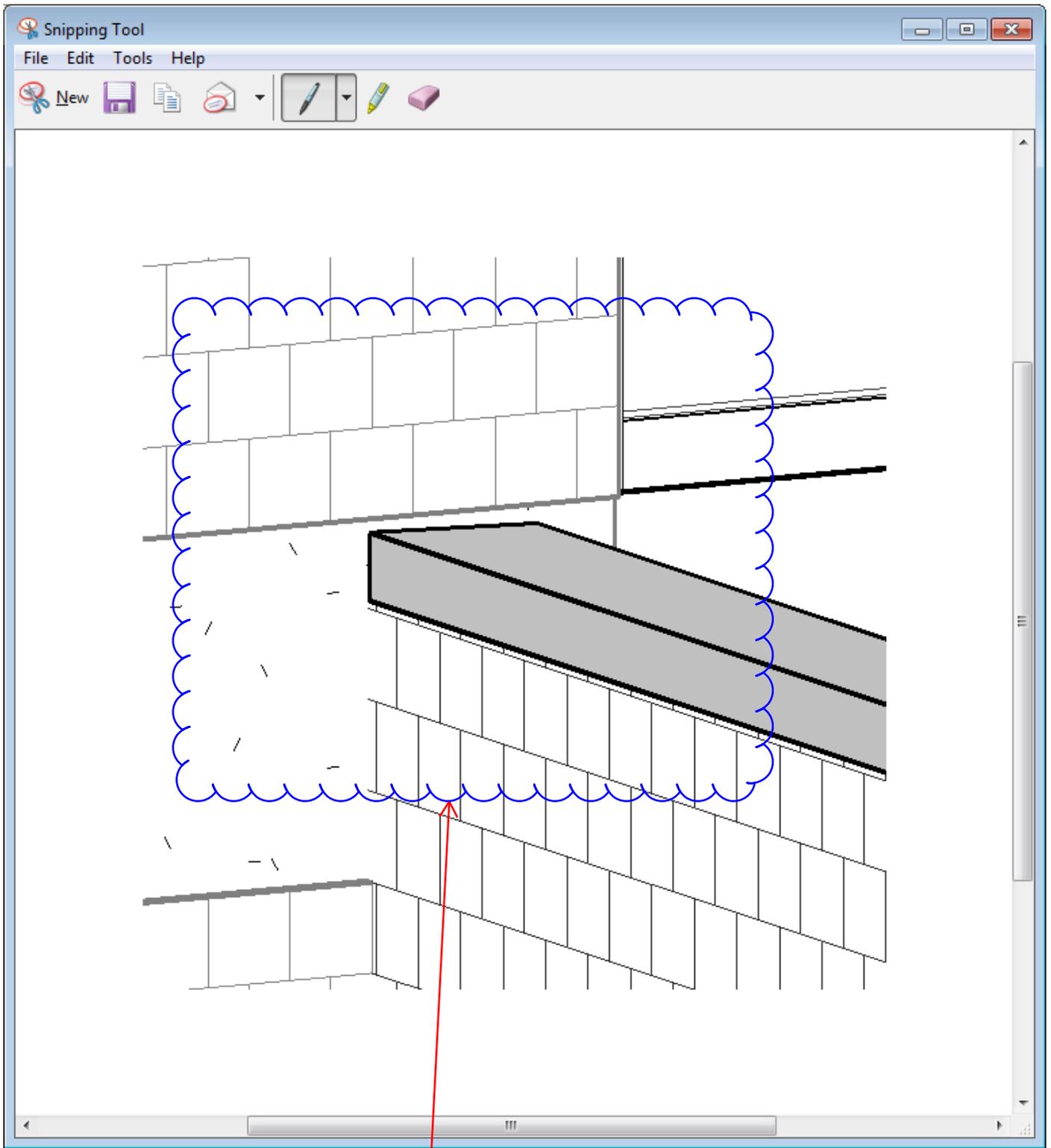


ATTACHMENT: 2014-04-16\_12355\_075413.01 R1 - Roofing - Proposed Flashing Detail Sketches.pdf (8 of 16)

FLASHING TERMINATION @ EXPANSION JOINT TYPE # 6 (LEFT HAND)

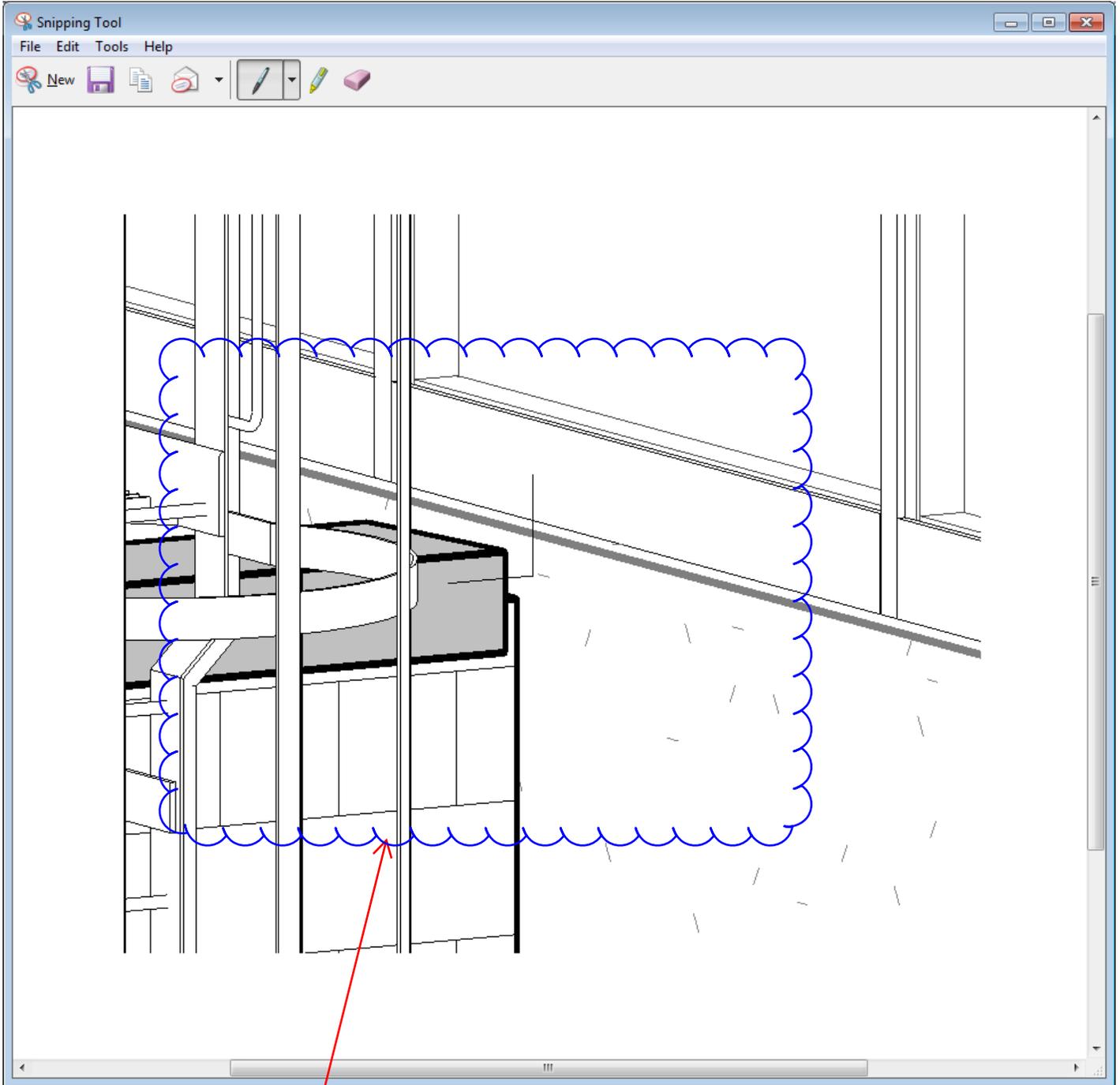


NTS



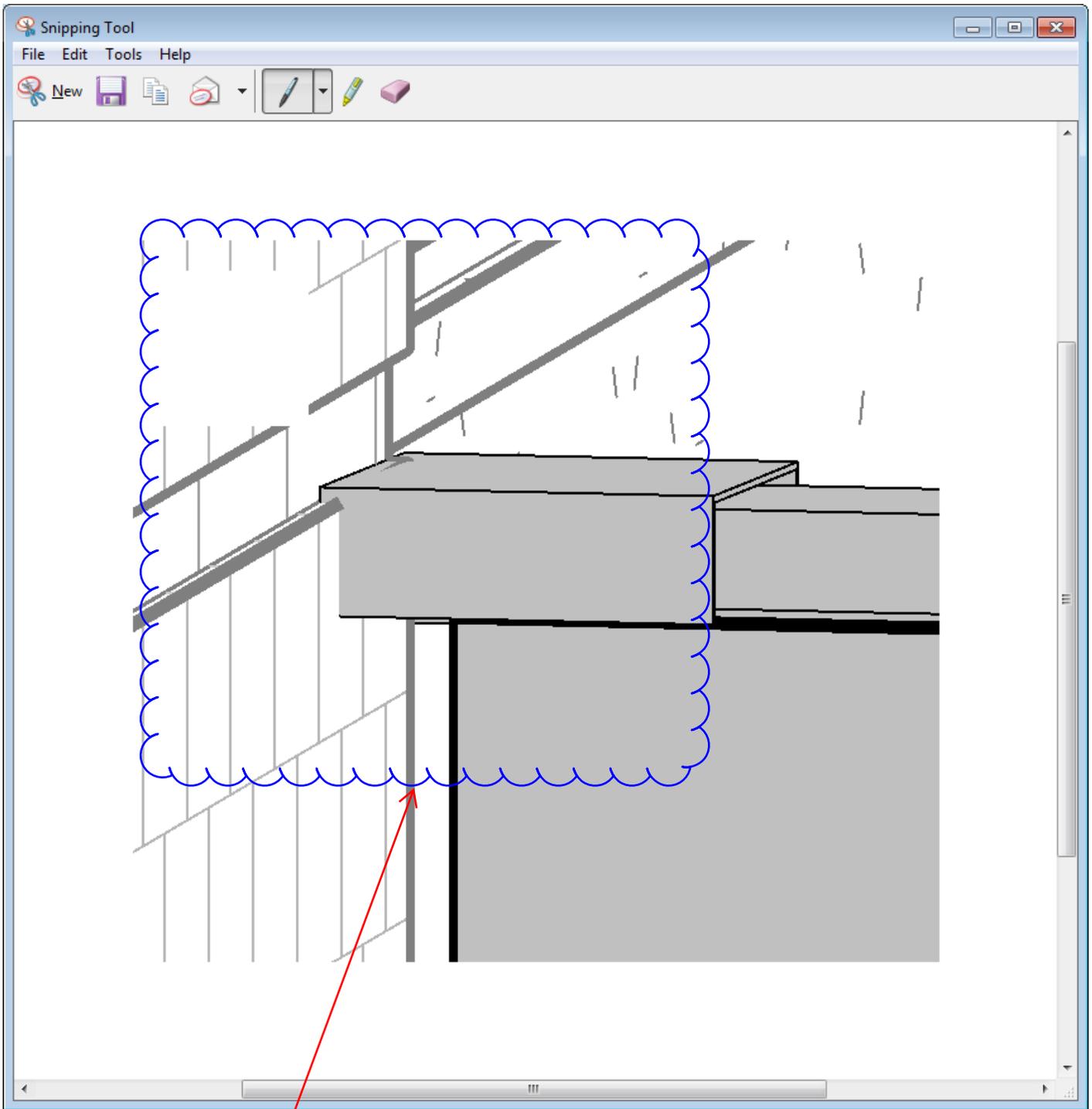
**TYPE #7, SIM,OPP  
TO TYPE #2**

**ATTACHMENT: 2014-04-16\_12355\_075413.01 R1 - Roofing - Proposed  
Flashing Detail Sketches.pdf (9 of 16)**



**TYPE #8, T.B.D.**  
**SIM,OPP TO TYPE #5**

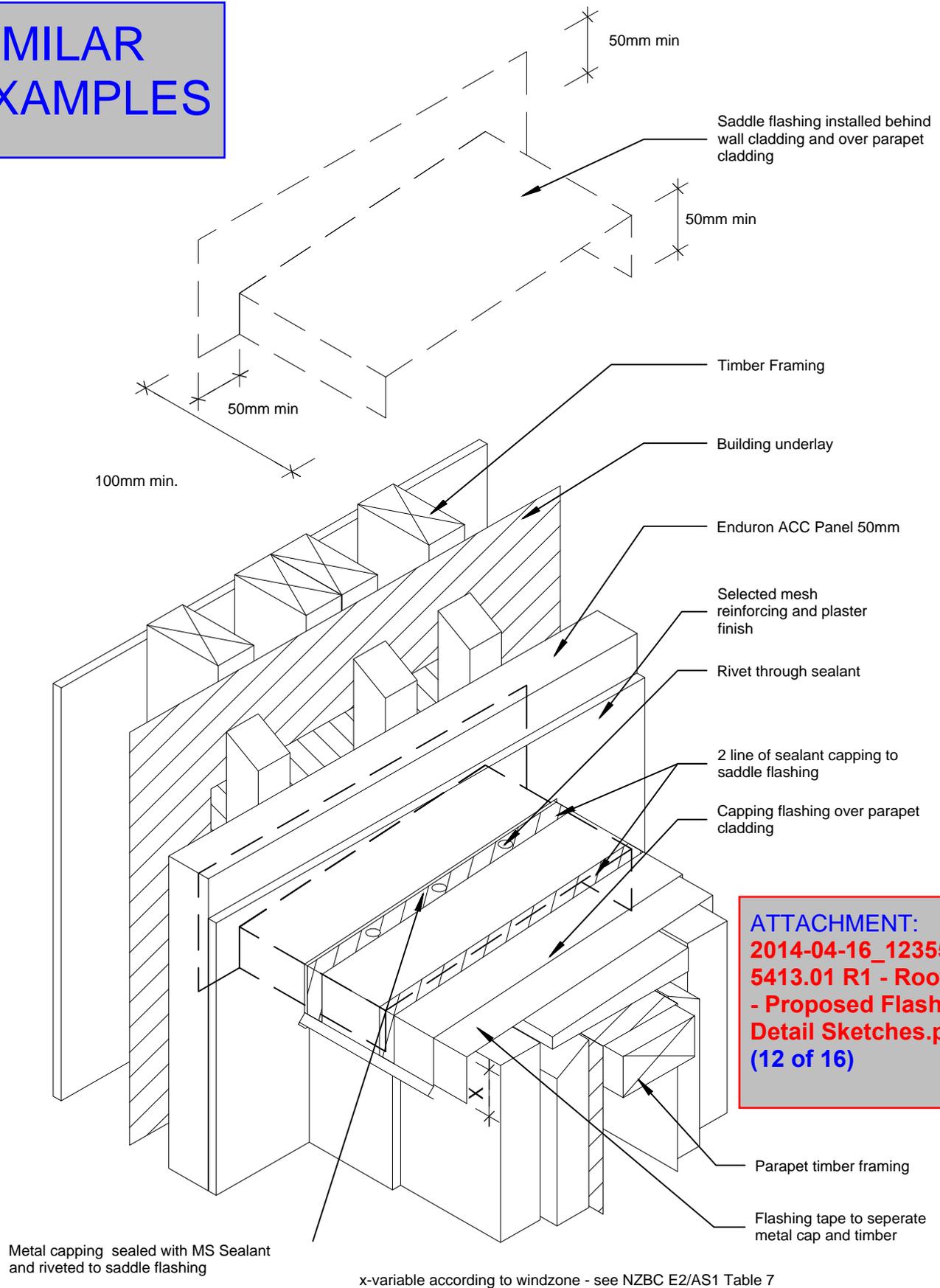
**ATTACHMENT: 2014-04-16\_12355\_075413.01 R1 - Roofing - Proposed  
Flashing Detail Sketches.pdf (10 of 16)**



**TYPE #9, TBD**  
@ E.J.

**ATTACHMENT: 2014-04-16\_12355\_075413.01 R1 - Roofing - Proposed Flashing Detail Sketches.pdf (11 of 16)**

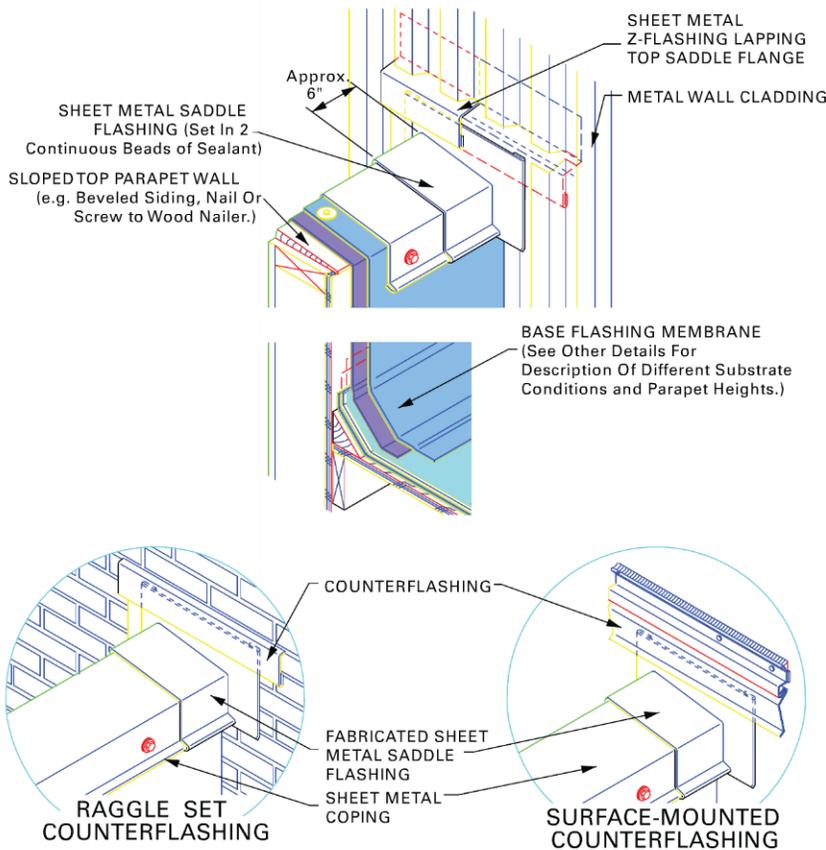
# SIMILAR EXAMPLES



**ATTACHMENT:**  
**2014-04-16\_12355\_07**  
**5413.01 R1 - Roofing**  
**- Proposed Flashing**  
**Detail Sketches.pdf**  
**(12 of 16)**

TradeSpec™ and RenderSpec™ are Registered Trademarks, both Documents are available on the Resene Construction Systems

# Coping-to-Wall Termination



**ATTACHMENT:**  
**2014-04-16\_12355\_075413**  
**.01 R1 - Roofing -**  
**Proposed Flashing Detail**  
**Sketches.pdf (13 of 16)**

**NOTES:**

1. Dimensions shown are recommended minimums and are intended to be approximate to allow for reasonable tolerances due to field conditions.
2. Attach top of membrane wall flashing approximately 6" O.C.
3. See Appendix A for gauge or thickness guide for sheet metal flashing.
4. Continuous cleats are recommended when flashing face dimension exceeds 3 inches and in areas deemed high wind zone as categorized by local building code.
5. Certain components as depicted in these details may not be provided by the roofing contractor.
6. Pre-flashing the coping-to-wall termination with membrane flashing (e.g. with self-adhering membrane) is suggested prior to installation of sheet metal saddle flashing.

■ Coping-to-wall detail courtesy of the Western States Roofing Contractors Association.

**A** critical and often overlooked design detail is at the termination of a parapet coping at a wall. The most common mistake at this intersection is to allow the metal coping to but up to the wall without the application of termination metal. The omittance of the termination metal leaves an opening at the top of the coping and allows for moisture infiltration at the space between the parapet wall and the structural wall. The installation of the coping-to-wall termination provides waterproofing protection and allows for differential movement between the two construction components.

Prior to the installation of the parapet coping, a metal flashing material shall be adhered to the structural wall. The metal flashing shall lap the parapet wall. The top of the

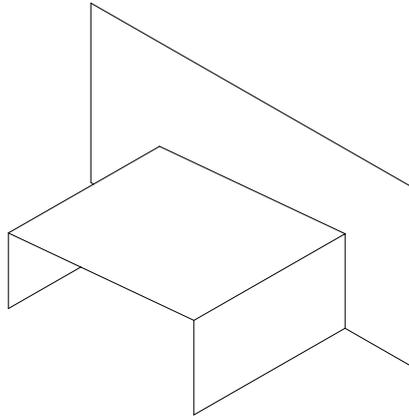
metal flashing shall be terminated with a counterflashing that is either surface mounted or set in a reglet.

The metal coping is then applied over the completed wall flashing and secured in accordance with local wind zone requirements. (Perimeter metal coping materials must be in compliance with ANSI/SPRI ES-1 requirements.) A prefabricated sheet metal saddle flashing is applied at the junction of the structural wall and parapet wall to terminate exposed openings. The saddle flashing shall be set in two continuous beads of sealant.

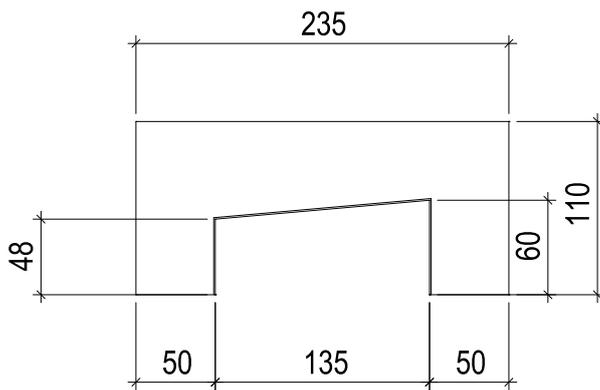
A bead of continuous sealant shall be applied at the top of the counterflashing and the seams of the sheet metal saddle flashing. **AR&W**

# SIMILAR EXAMPLES

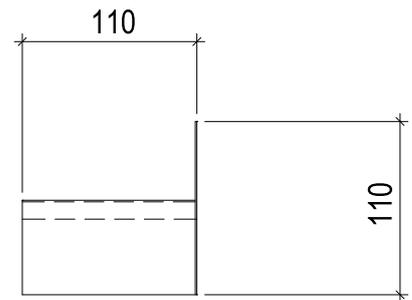
ATTACHMENT:  
**2014-04-16\_12355\_07541**  
**3.01 R1 - Roofing -**  
**Proposed Flashing Detail**  
**Sketches.pdf (14 of 16)**



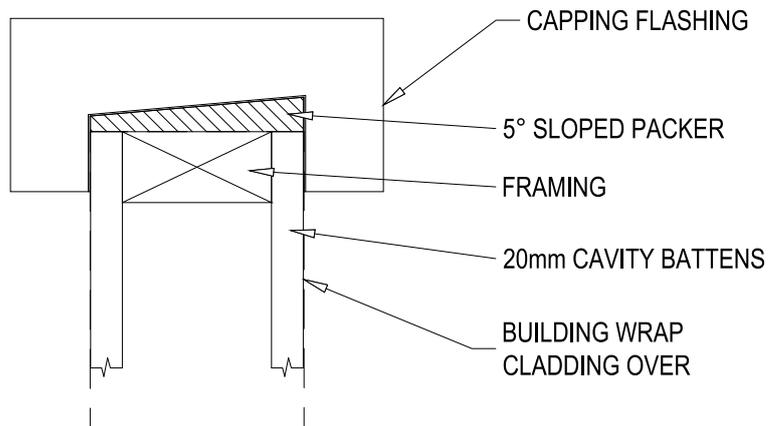
ISOMETRIC



FRONT ELEVATION



SIDE ELEVATION



ASSEMBLY

AVAILABLE IN:- 0.45 STAINLESS STEEL

**QUICKFLASH**  
**TASMAN CONTRACTING LTD**

Ph (03) 543 2145 Cell (021) 643214 Fax (03) 543 2146  
 15 CARLYON ROAD RD1, UPPER MOUTERE, NELSON  
 E-MAIL: info@quickflash.co.nz

**PARAPET OR BALUSTRADE**  
**SADDLE FLASHING**  
**20mm CAVITY**

CODE 107

SCALE  
 1:5

## RELATED WORK BY OTHERS

(A) Acceptable Parapet

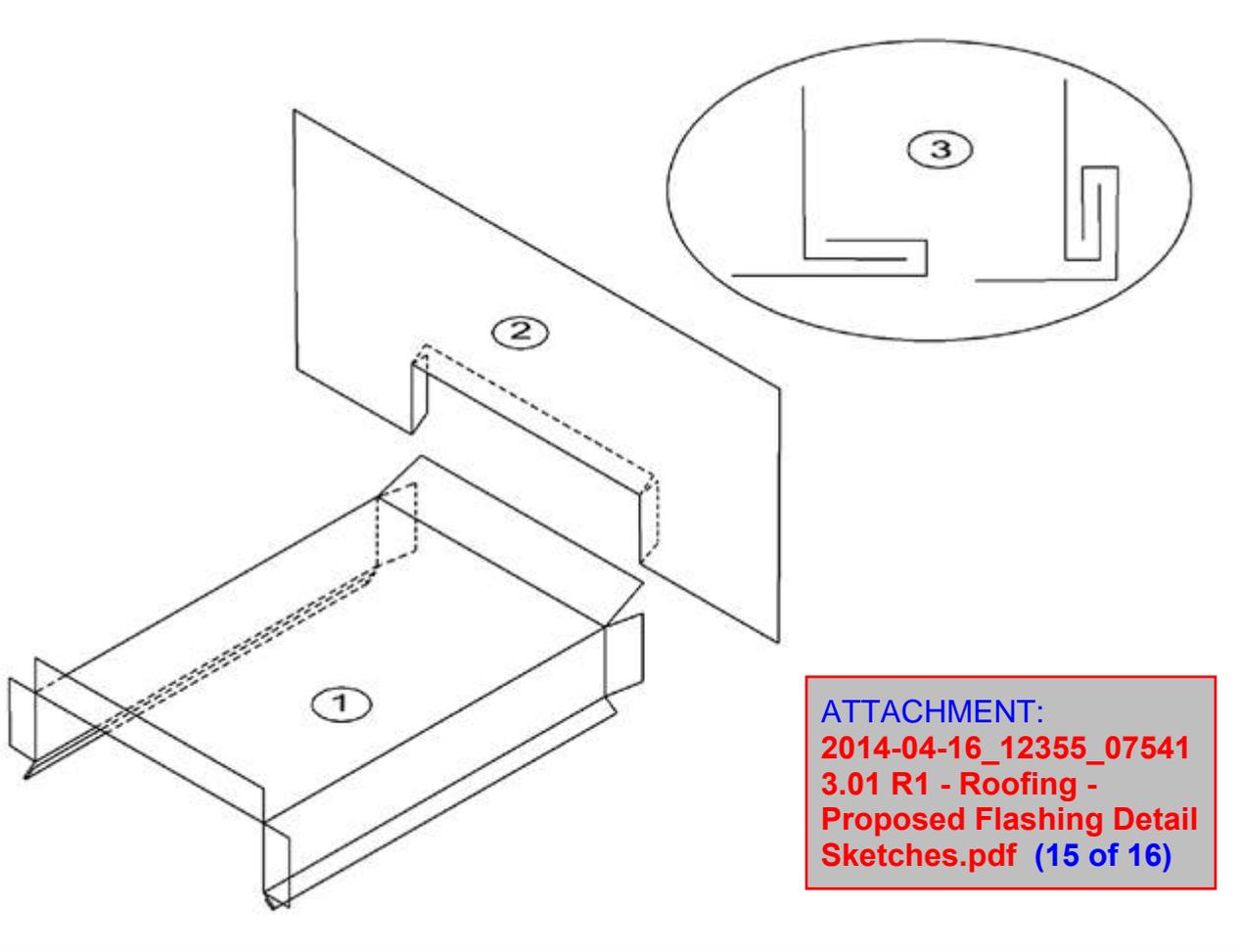
**SIMILAR ALTERNATE EXAMPLE**

(B) **Sloped Blocking:** Required over minimum 100 mm (4") parapet width. See *RGC Guarantee Standard A6.9*

NOTE

- Refer to *RGC Guarantee Standards* for additional requirements

### 10.2.1 FLASHING JOINTS - METAL CAP FLASHING SITE-FORMED WALL TRANSITION



## FABRICATION PROCEDURE

(1) **Metal Cap Flashing:** Cut to form a 25mm (1") wide flange for seam fabrication at cap flashing /wall transitions. Fasten outside face with continuous concealed clip-type fasteners **or** with two concealed discontinuous clips **or** cladding screws evenly spaced between seams. See *RoofStar Guarantee Standard A6.10* for additional requirements for metal flashings. Cap flashing over 100 mm (4") in width must provide positive slope to roof area. See *RGC Guarantee Standard A6.9*

(2) **Gusset Flange:** Site fabricated a minimum of 100mm (4") wider than the top, inside and outside face of metal cap flashing. Metal gusset flange to match profile of cap flashing with an additional allowance of 12.7 mm (1/2") of material for seaming. Gusset Flange must lap under sheathing membrane and wall cladding or finish by a minimum of 75mm (3").

(3) **Double Fold Seam:** Site formed standing seam folded flat on back surface of wall transition gusset to form double fold seam. **Optional:** Install polyurethane caulking seam tape prior to forming double folded seam.

NOTE

- Refer to the following *RGC Guarantee Standards* for additional requirements: **A6.7 Sheet Metal Standards**, **A6.8 Metal Flashing Seams**, **A6.9 Metal Parapet / Base Flashing and reglets** and **A6.10 Mechanical Attachment of Cap Flashing**.

ATTACHMENT:  
2014-04-16\_12355\_07541  
3.01 R1 - Roofing -  
Proposed Flashing Detail  
Sketches.pdf (16 of 16)



Steven Tanner &lt;stanner@vcbo.com&gt;

---

## 12355 LRH & Budge Clinic - Submittal 075413.01 R1 Roofing - Questions

---

Steven Tanner &lt;stanner@vcbo.com&gt;

Thu, Apr 17, 2014 at 2:29 PM

To: Jared Jensen &lt;jjensen@jacobsenconstruction.com&gt;, boyd@noorda.com, shane@noorda.com

Cc: Karen Ferguson &lt;kferguson@vcbo.com&gt;, Scott Greener &lt;sgreener@jacobsenconstruction.com&gt;, Jared Backman &lt;Jared@jacobsenconstruction.com&gt;, Jeff Pinegar &lt;jpinegar@vcbo.com&gt;

Meeting Minutes - 04.17.2014; 9:00am to 9:45am

12355 LRH &amp; Budge Clinic - Submittal 075413.01 R1 Roofing - Shop Drawing Details

### Attendees (GoToMeeting):

Steven Tanner, VCBO

Boyd Porter, Noorda

Shane R., Noorda

**04.17.2014 - Responses & Comments in Blue:****04.17.2014 - Responses & Comments in Green:**

1. Saddle flashing at the Coping to Wall Termination Details. (10 conditions, but are not all the same):  
VCBO presented proposed sketch details of "FLASHING TERMINATION DETAILS" Types #1, 2, 3, 4 & 5.  
Noorda will provide additional detail options for Types #7 & 8.

Noorda & VCBO agreed that detail Types #1,2,3, 4 & 5 could have saddle flashing constructed with TPO flashing membrane and applicable preformed miscellaneous accessories.

However, Type #4 would also include a prefinished metal receiver to match the cap flashing. Noorda will revise and provide additional details for each condition.

2. Coping to Wall Termination at Expansion Joint Details. (2 conditions)

VCBO presented proposed sketch detail of "FLASHING TERMINATION @ EXPANSION JOINT" Types #6.

Noorda will provide additional detail option for Type #9.

No additional comments.

Currently the requested details from the first review that have been submitted with the revised submittal are not acceptable or don't relate to the condition being referenced. We are concerned about these items due to high potential of roof leakage and the finished appearance of the installation. We will be sending some design sketches concerning the items of concern to discuss and would like Noorda's feedback. We would like to know whether or not they already have other similar or better flashing solutions that could be included with their submittal in hopes of avoiding another "Revise & Resubmit".

3. Noorda will further review the revised submittal and VCBO's proposed flashing details and incorporate additional details mentioned above to the revised Submittal "R1" for review and approval by VCBO. Submittal #075413.01 R1 - Roofing will not be sent back to JCC until VCBO has received and reviewed any revised and added sheets by Noorda. Issue & Returned dates T.B.D.

No additional comments.

In addition, there are no roof drawings or notes concerning physical Mockup installation. As noted in the specs

(section 07 5413, 1.6, G) the roof installation and flashing are to be included in the free-standing building envelope Mock-up.

4. Noorda will include roof plan and details for Mock-up with revised submittal.

No additional comments.

One other recent request by the owner is concerning the Southeast sloped canopy roof membrane. They've expressed their concerns about the roof membrane being only "white", where we don't have ballast. We will need Noorda to submit Carlisle's TPO color samples along with Ballast to choose from. Thanks for your help and cooperation.

5. Noorda will provide the following samples at JCC's Job Site Trailer for review and approval by Owner & VCBO:

- a. TPO Membrane Colors: Tan & Gray.
- b. Ballast: River Rock

No additional comments.

6. Noorda requested alternate metal options due to the availability of the 20 GA Cap Flashing.

- a. Alternate Option #1: .040 Aluminum
- b. Alternate Option #2: 22 Gauge Steel

VCBO agreed that Option#2: 22 Gauge Steel would be an acceptable substitution. Noorda will include change of steel Gauge in revised shop drawings.

If any content in these notes are incorrect or missing information, please send back to Steven Tanner for revisions by no later than 04.18.2014.

Thanks for your help and cooperation.

Respectfully,

STEVEN TANNER, ASSOC. AIA  
Designer

---

**VCBO ARCHITECTURE**  
524 South 600 East  
Salt Lake City, UT 84102  
801.575.8800  
vcbo.com  
[stanner@vcbo.com](mailto:stanner@vcbo.com)

[Quoted text hidden]



Steven Tanner &lt;stanner@vcbo.com&gt;

---

## Logan Regional Revised Shop Drawings

1 message

Tue, Apr 22, 2014 at 3:12 PM

**Shane Raddon** <shane@noorda.com>  
To: Jared Jensen <jjensen@jacobsenconstruction.com>  
Cc: Steven Tanner <stanner@vcbo.com>

Jared,

Please see attached revised shop drawings you can submit through the chain. Hopefully this round covers all the concerned areas.

Please let me know if/when the metal wall panel color gets approved so that I can order the flat sheets. I will also need to submit a caulk color once the metal color is selected.

Thanks,

**Shane Raddon, LEED® AP**

*Project Manager*

*O: 801.503.3000*

*F: 801.503.3004*

*C: 385.242.5679*

Check out our website @ [www.noorda.com](http://www.noorda.com)

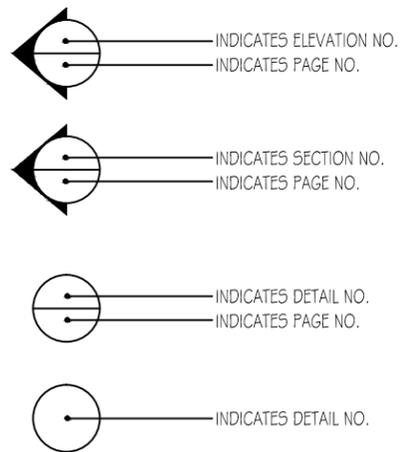


***Roofing-Wall Panel Systems-Sheet Metal***



**LOGAN REGIONAL REV 2014.04.16.pdf**  
5895K

# SYMBOLS LEGEND



## ABBREVIATIONS

- (B.O.) - BY OTHERS
- JT - JOINT
- LBS - POUNDS
- MAT - MATERIAL
- MAX - MAXIMUM
- MIN - MINIMUM
- MO - MASONRY OPENING
- MOD - MODIFIED
- MTL - METAL
- NO - NUMBER
- NTS - NOT TO SCALE
- OH - OPPOSITE HAND
- OPNG - OPENING
- PD - PANEL DIMENSION
- PLT - PLATE
- PLYWD - PLYWOOD
- PSF - LBS PER SQ FT.
- PT - POINT
- R - RADIUS
- REF - REFERENCE
- REQ - REQUIRED
- SHT - SHEET
- SIM - SIMILAR
- STL - STEEL
- TOA - TOP OF ANGLE
- TOB - TOP OF BLOCKING
- TOC - TOP OF CONCRETE
- TL - TANGENT LINE
- TOP - TOP OF PANEL
- TOS - TOP OF STEEL
- TYP - TYPICAL
- VIF - VERIFY IN FIELD
- W/ - WITH
- WD - WOOD
- WP - WORK POINT
- & - AND
- @ - AT
- < - ANGLE
- O/- OVER

# QUESTIONS & COMMENTS

PLEASE REVIEW THE DETAILS DATED:

31, JAN 2014

REVISIONS:

17, MAR 2014 A

28, MAR 2014 B

16, APR 2014 C

**VCBO NOTE:** Contractor, Supplier: **Protection Mat** is required at Ballasted Roof locations per spec section: 07 5413, R2.2 AUXILIARY MATERIALS, J. Protection Mat: Woven or nonwoven polypropylene, polyolefin, or polyester fabric, water permeable and resistant to UV degradation, type and weight as recommended by roofing manufacturer for application.; Refer to 3.7 LOOSELY LAID AND BALLASTED ROOFING INSTALLTION, H. Install Protection mat over roofing:.....

**VCBO NOTE:** Color submitted and approved for Mockup Review from Steel Encounters for Curtain Walls was: PPG Industries UC82644F Duranar Sunstorm "Medium Bronze"; and for Composite Metal Panels was Renyobond, Colorweld 500, "Anodic Bronze". Metal flashing from Noorda should match those approved color sample matches.

# GENERAL NOTES

## SCOPE OF WORK

1. MEMBRANE ROOF- MAIN BUILDING  
CARLISLE "SURE WELD" 60 MIL TPO SINGLE PLY ROOFING MECH FASTENED  
OCTAGUARD XT WEATHERING PACKAGE  
R-30 5" POLY ISO THERMO INSULATION (2 LAYERS)  
TAPERED INSULATION WHERE NEEDED  
COLOR: WHITE
2. MEMBRANE ROOF- THERAPY POOLS  
CARLISLE "SURE WELD" 135 MIL TPO SINGLE PLY SINGLE PLY ROOFING FULLY ADHERED  
R-30 5" POLY ISO THERMO INSULATION (2 LAYERS)  
CARLISLE 725 TR 40 MIL VAPOR BARRIER  
TAPERED INSULATION WHERE NEEDED  
COLOR: WHITE
3. BALLASTED ROOF - LOWER ROOF (MAIN BUILDING; North & East)  
CARLISLE "SURE WELD" 60 MIL TPO SINGLE PLY ROOFING MECH FASTENED  
OCTAGUARD XT WEATHERING PACKAGE  
R-30 5" POLY ISO THERMO INSULATION (2 LAYERS)  
TAPERED INSULATION WHERE NEEDED  
COLOR: TBD RIVER ROCK
4. MEMBRANE ROOF- CANOPY (BALLASTED ROOF WHERE OCCURS)  
CARLISLE "SURE WELD" 60 MIL TPO SINGLE PLY ROOFING MECH FASTENED  
OCTAGUARD XT WEATHERING PACKAGE  
1/2" COVERBOARD 5/8" ROOF BOARD  
ISO WHERE NEEDED TAPERED INSULATION WHERE NEEDED  
COLOR: TBD
5. SHEET METAL FLASHING  
22 GA PRE-FINISHED  
22 GA PRE-FINISHED @ CORING C  
COLOR: CHAMPAGNE

# PROJECT DIRECTORY

ARCHITECT: VCBO ARCHITECTURE  
GEN. CONT: JACOBSEN CONSTRUCTION  
INSTALLER: NOORDA ARCHITECTURAL METALS

Flat Roof/Roofing Membrane (TPO)

Sheet Metal (Flashing)

## PRINTS ISSUED FOR

## LOGAN REGIONAL HOSPITAL & BUDGE CLINIC

1400 NORTH 500 EAST  
LOGAN UT 84341

# NOORDA

## CONTACTS:

PRODUCTION MGR.- BRANDON  
(SCHEDULING) (801)641-1381 M

PROJECT MGR.- EVAN W  
(SCHEDULING) (801)380-4471 M

PROJECT MGR.- CRAIG C  
(SCHEDULING) (801)597-6822

PROJECT MGR.- BOYD P  
(SCHEDULING) (801)319-0048 M

PROJECT MGR.- JC. B  
(SCHEDULING) (801)641-1386 M

PROJECT MGR.- SHANE R  
ST GEORGE- (385)242-5679

PROJECT MGR.- HERB  
ST GEORGE- (435)313-1207 M

OUTSIDE SALES- STEVE M  
(435)313-5064 M

SALES- DARREN N  
(801)631-4279 M

TIM P  
(801)503-3000

# CONTRACT DOCUMENTS

PLANS DATED: 19, DEC 2013

# DRAWING INDEX

DESCRIPTION	PAGE
COVER SHEET	CV
ROOF PLAN 1	RF
DETAILS 1	D1
DETAILS 2	D2
DETAILS 3	D3
DETAILS 4	D4
DETAILS 5	D5
DETAILS 6	D6
DETAILS 7	D7
DETAILS 8	D8
DETAILS 9	D9
DETAILS 10	D10
DETAILS 11	D11

## NOORDA SUBMITTAL APPROVAL

APPROVED \_\_\_\_\_

DENIED \_\_\_\_\_

NOTE: REFER TO REMARKS/STAMPS SHEET

NOORDA ARCHITECTURAL METALS  
CANNOT PROCEED WITHOUT PROPER  
APPROVAL OF SUBMITTALS





**NOTES**

DATE: 31, JAN 14

JOB NO.

---

DRAWN BY: MWU

REVISED: 17, MAR 14

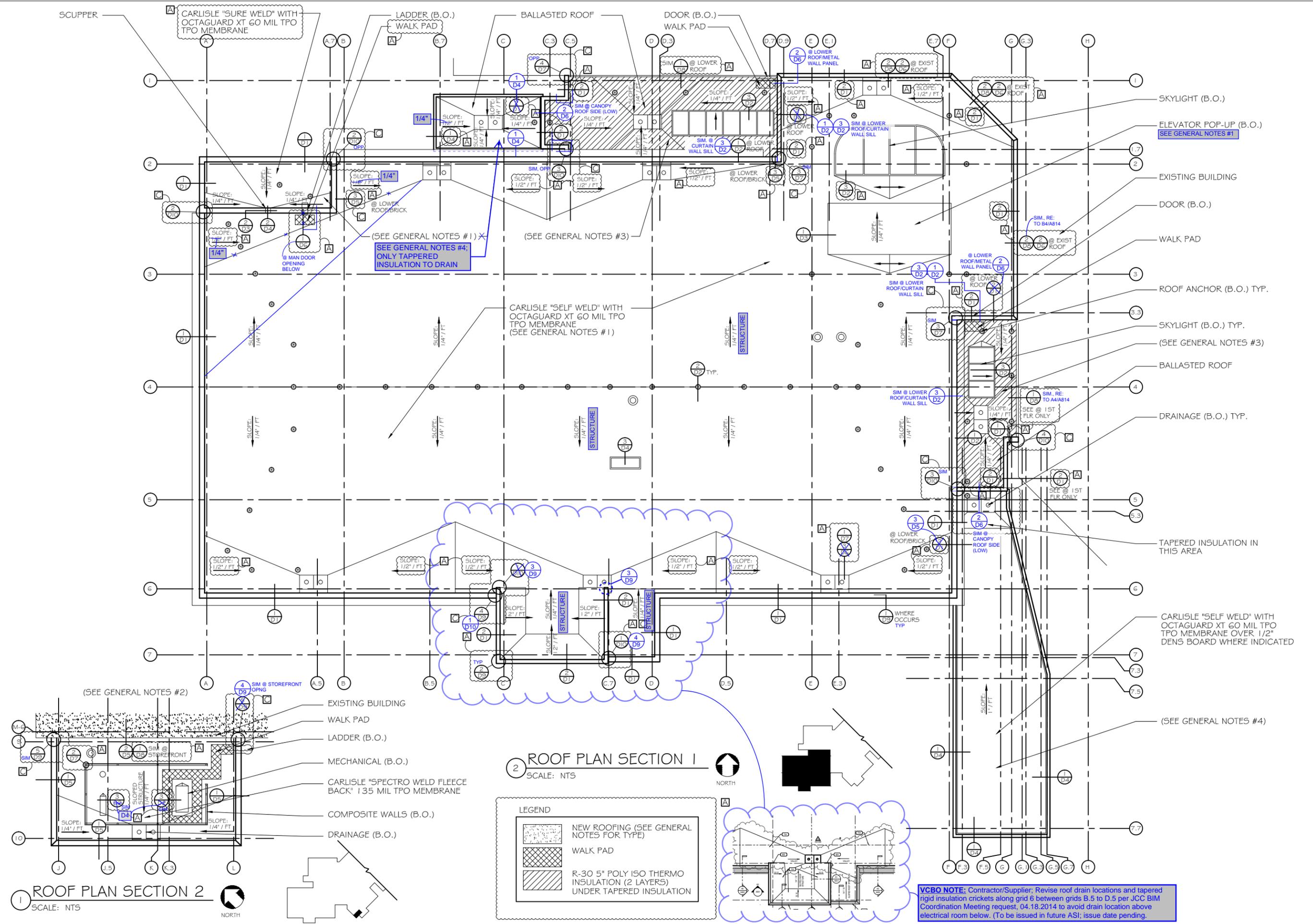
28, MAR 14

16, APR 14

**LOGAN REGIONAL HOSPITAL & BUDGE CLINIC**  
 1400 NORTH 500 EAST  
 LOGAN, UT 84341

**NOORDA**  
 ARCHITECTURAL METALS  
 1700S 2160W S.L.C. UT (801)503-3000

RF  
 SHEET NO.



- SKYLIGHT (B.O.)
- ELEVATOR POP-UP (B.O.)  
SEE GENERAL NOTES #1
- EXISTING BUILDING
- DOOR (B.O.)
- WALK PAD
- ROOF ANCHOR (B.O.) TYP.
- SKYLIGHT (B.O.) TYP.
- (SEE GENERAL NOTES #3)
- BALLASTED ROOF
- DRAINAGE (B.O.) TYP.
- TAPERED INSULATION IN THIS AREA
- CARLISLE "SELF WELD" WITH OCTAGUARD XT 60 MIL TPO MEMBRANE OVER 1/2" DENS BOARD WHERE INDICATED
- (SEE GENERAL NOTES #4)

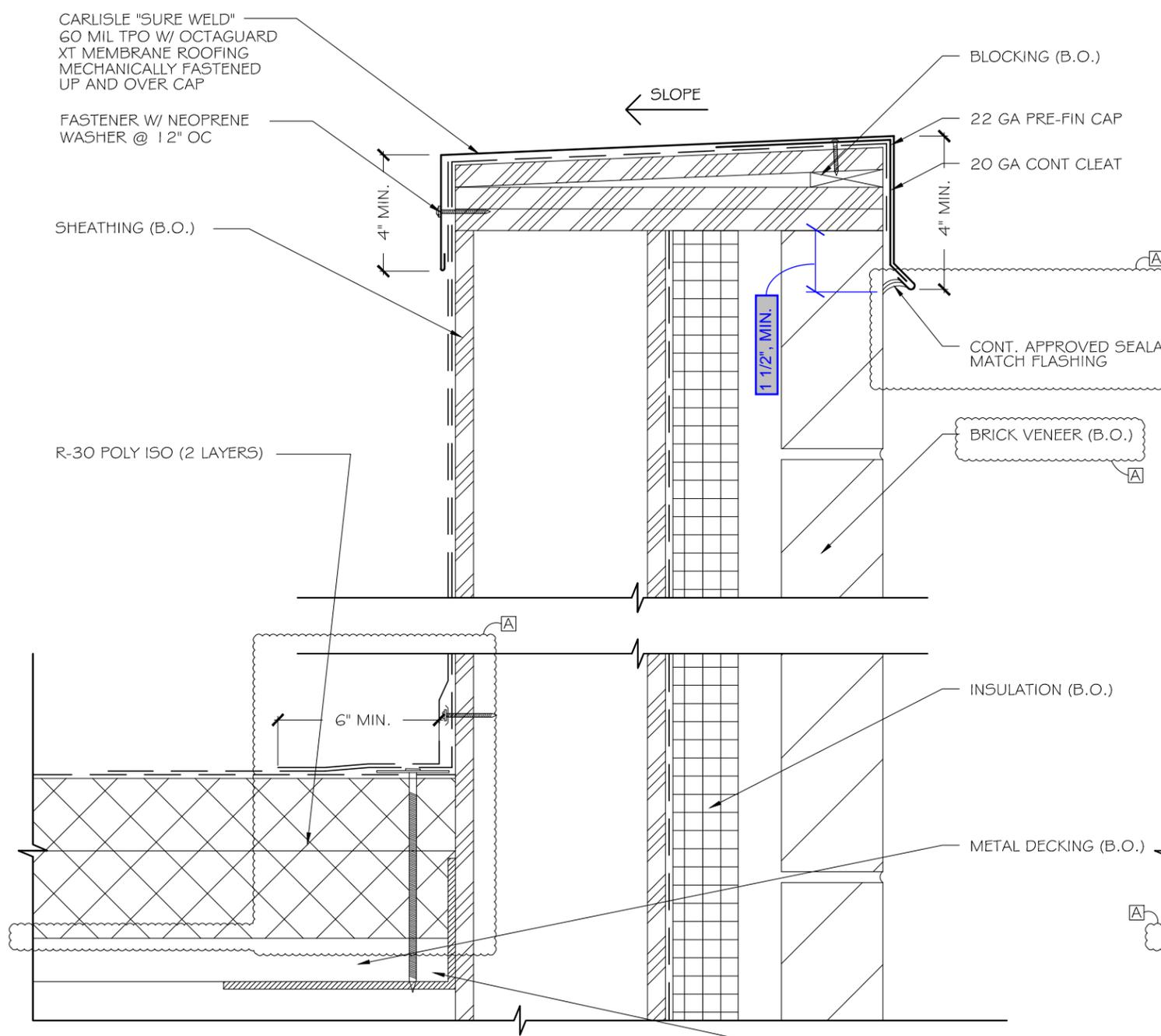


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 LOGAN, UT 84341

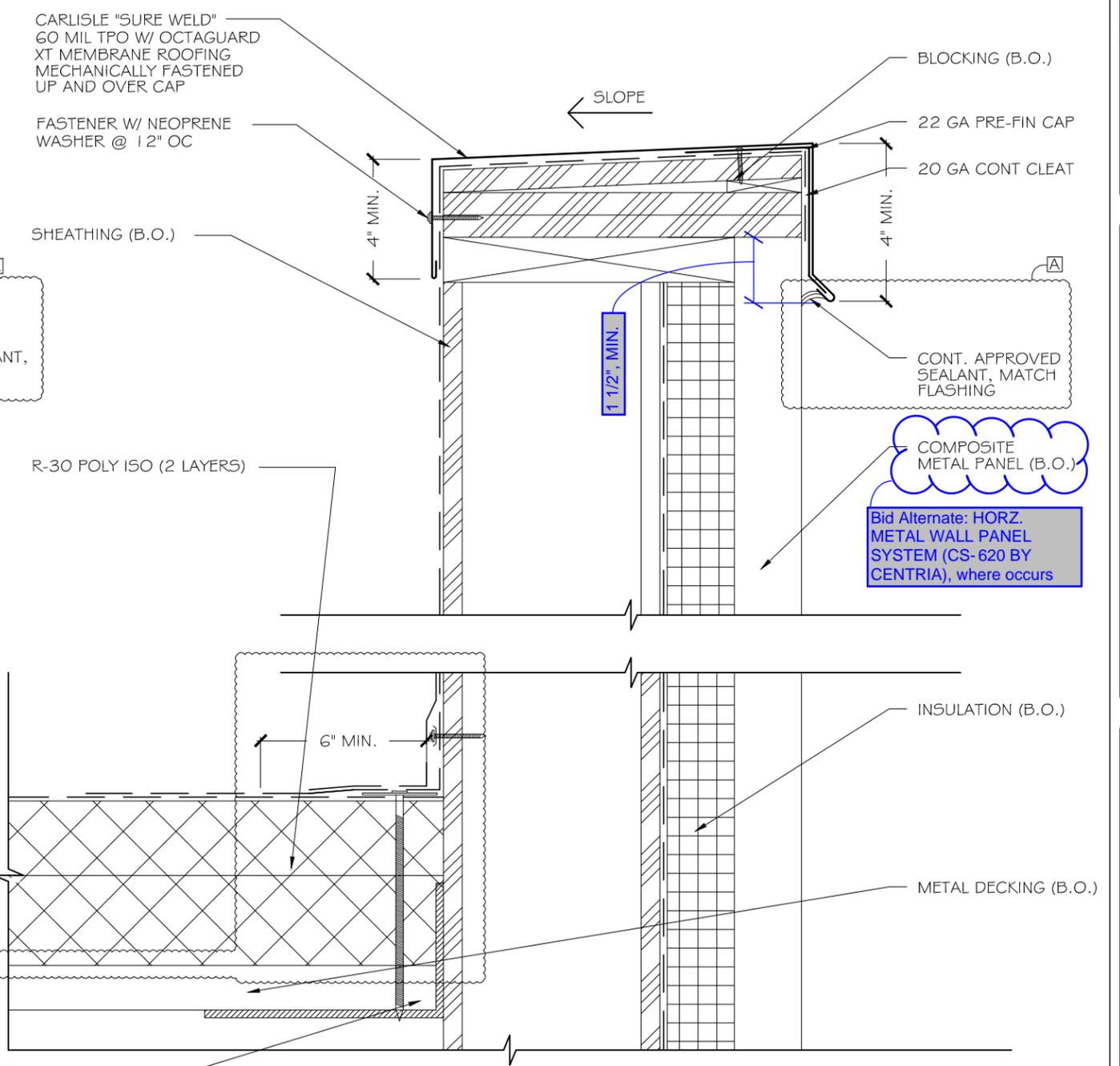
**NOORDA**  
 ARCHITECTURAL METALS  
 1700S 2160W S.L.C. UT (801)503-3000

**DI**  
 SHEET NO.



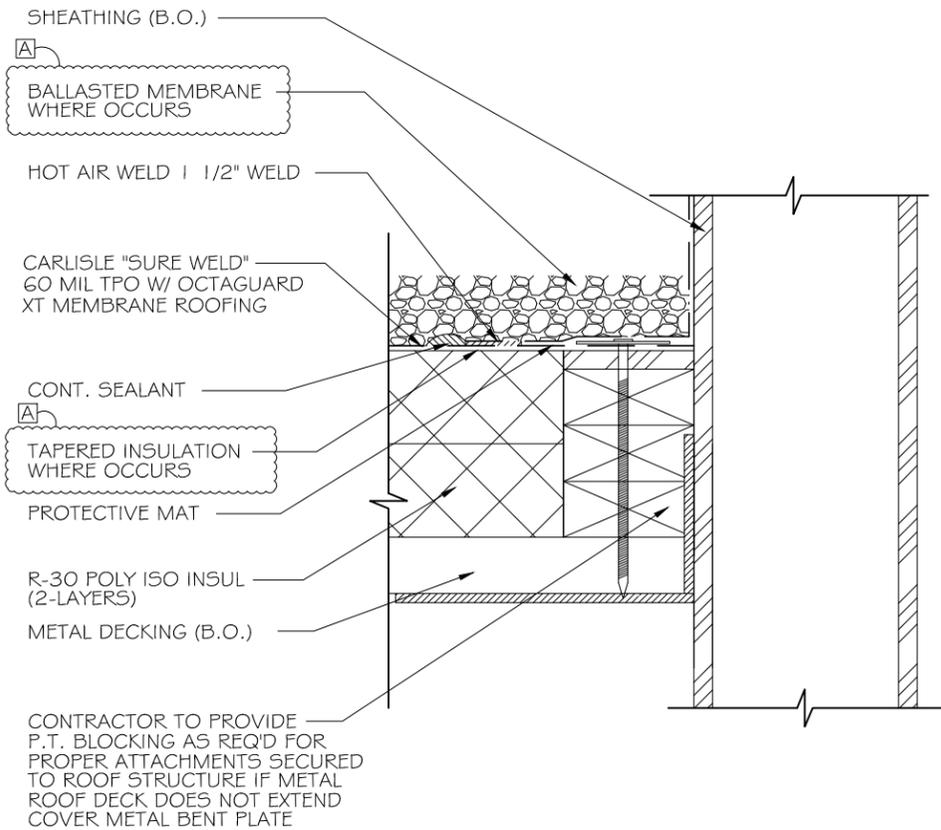
**1 PARAPET DETAIL**  
 NTS  
 REF: D5/A811

CONTRACTOR TO PROVIDE P.T. BLOCKING AS REQ'D FOR PROPER ATTACHMENTS SECURED TO ROOF STRUCTURE IF METAL ROOF DECK DOES NOT EXTEND COVER METAL BENT PLATE

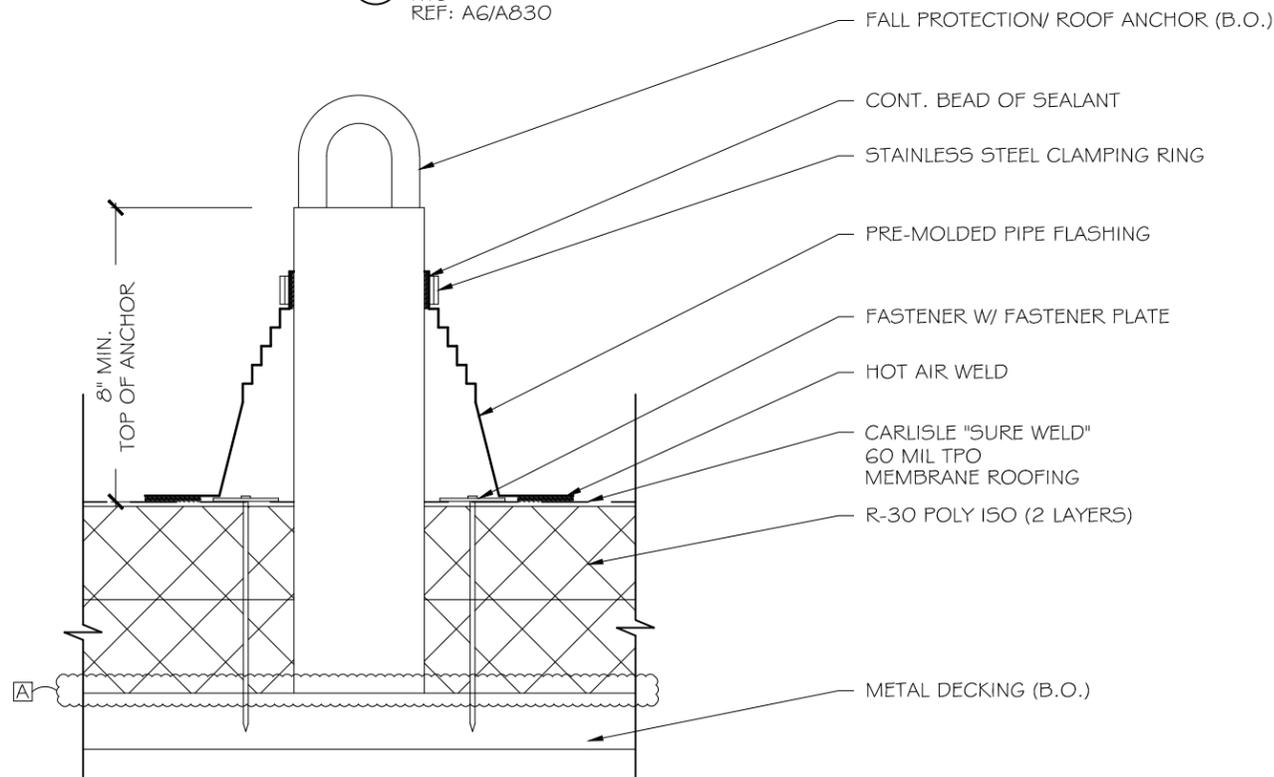


COMPOSITE METAL PANEL (B.O.)  
 Bid Alternate: HORZ. METAL WALL PANEL SYSTEM (CS-620 BY CENTRIA), where occurs

**2 PARAPET DETAIL**  
 NTS  
 REF: D5/A813

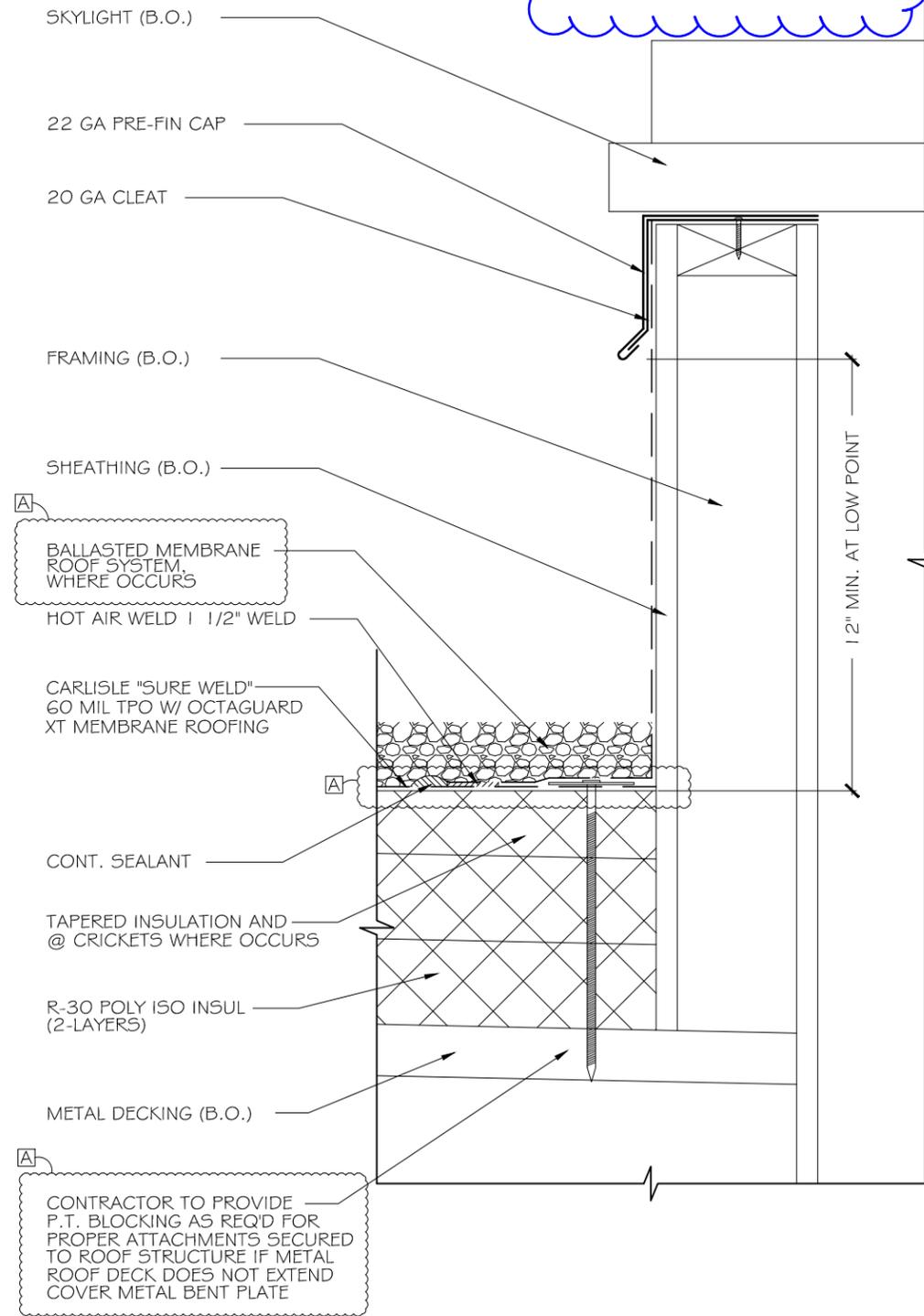
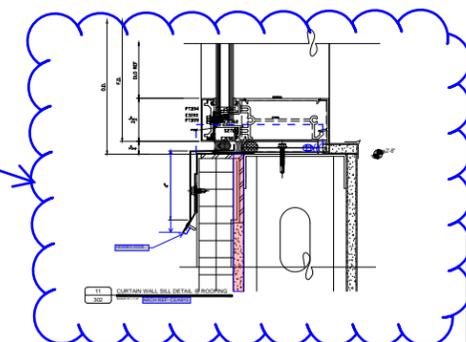


**1 TERMINATION DETAIL**  
 NTS  
 REF: A6/A830



**2 ROOF ANCHOR POST DETAIL**  
 NTS  
 REF: B6/A830 & C6/A830

**VCBO NOTE:** Similar (SIM) detail condition to 3/D2; Detail taken from submittal #084413.02 - Curtain Walls (VCBO Review); Occurs at Curtain Wall Sill @ Roof Condition; In addition to sill flashing, roofing supplier to create TPO welded end dams at Jambs (2" MIN).



**3 SKYLIGHT DETAIL**  
 NTS  
 REF: C4/A830

**LOGAN REGIONAL HOSPITAL & BUDGE CLINIC**  
 1400 NORTH 500 EAST  
 LOGAN, UT 84341

---

**NOORDA**  
 ARCHITECTURAL METALS  
 1700S 2160W S.L.C. UT (801)503-3000

---

D2

---

SHEET NO.

<b>NOTES</b>	
DATE:	31, JAN 14
JOB NO.:	
DRAWN BY:	MWU
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	28, MAR 14
	16, APR 14



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**NOORDA**  
ARCHITECTURAL METALS  
1700S 2160W S.L.C. UT (801) 503-3000

D3

SHEET NO.

CARLISLE "SURE WELD"  
60 MIL TPO W/ OCTAGUARD  
XT MEMBRANE ROOFING

TAPERED INSULATION

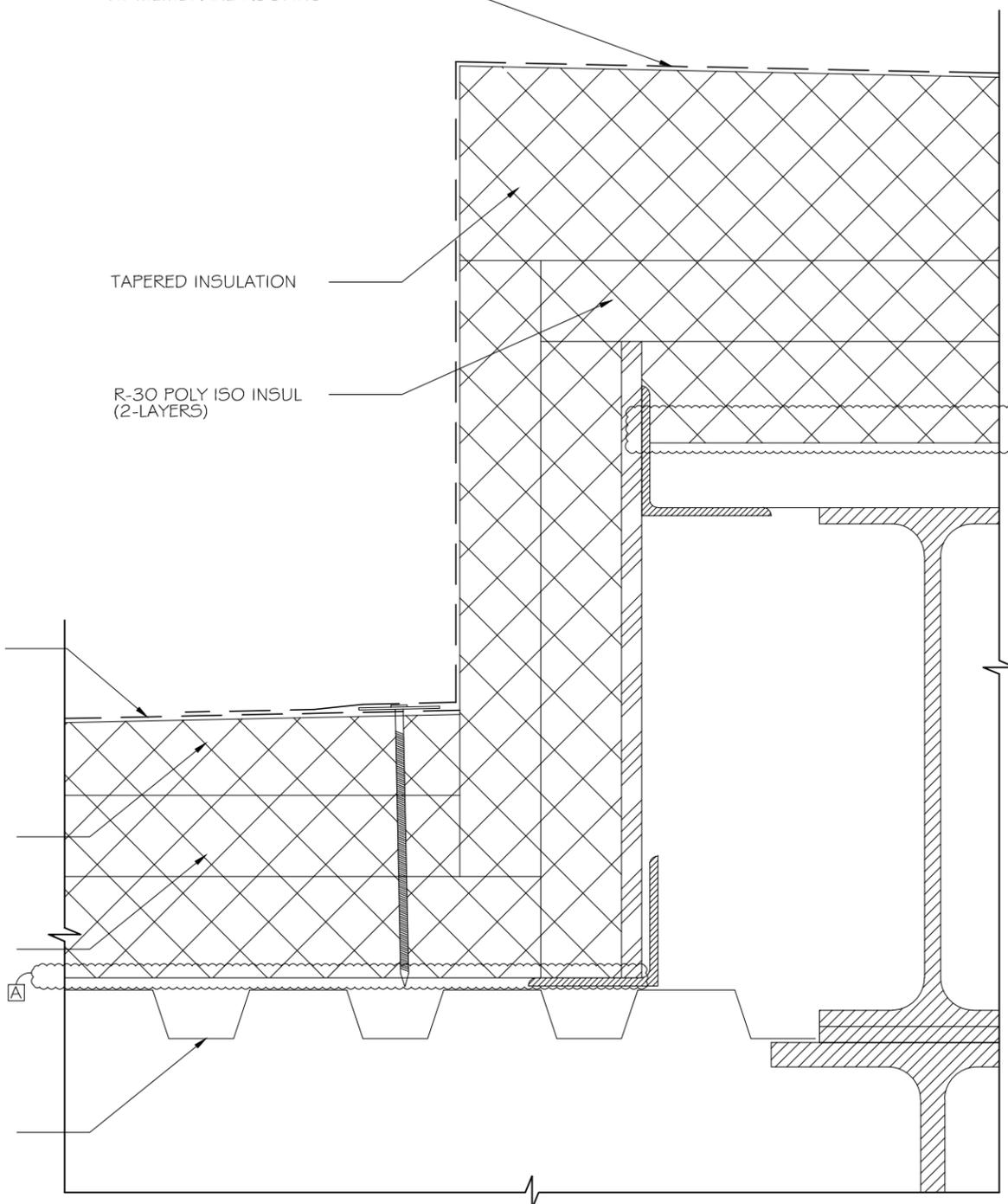
R-30 POLY ISO INSUL  
(2-LAYERS)

CARLISLE "SURE WELD"  
60 MIL TPO  
MEMBRANE ROOFING

TAPERED INSULATION

R-30 POLY ISO INSUL  
(2-LAYERS)

METAL DECKING (B.O.)



① ROOF STEP @ ELEVATOR POP-UP DETAIL  
NTS  
REF: D4/A830

CARLISLE "SURE WELD"  
60 MIL TPO W/ OCTAGUARD  
XT MEMBRANE ROOFING

WALL PER SCHEDULE (B.O.)

CONT. SEALANT

22 GA PRE-FIN FLASHING

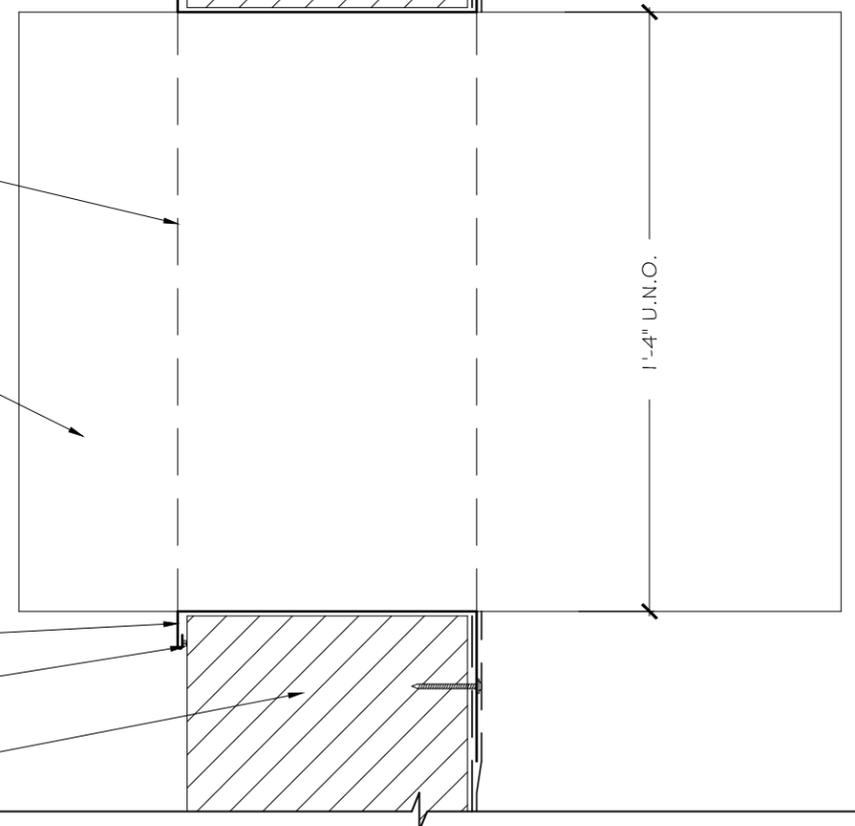
METAL SCUPPER FASTENED  
4" O.C., STAGGERED

22 GA PRE-FIN FLASHING

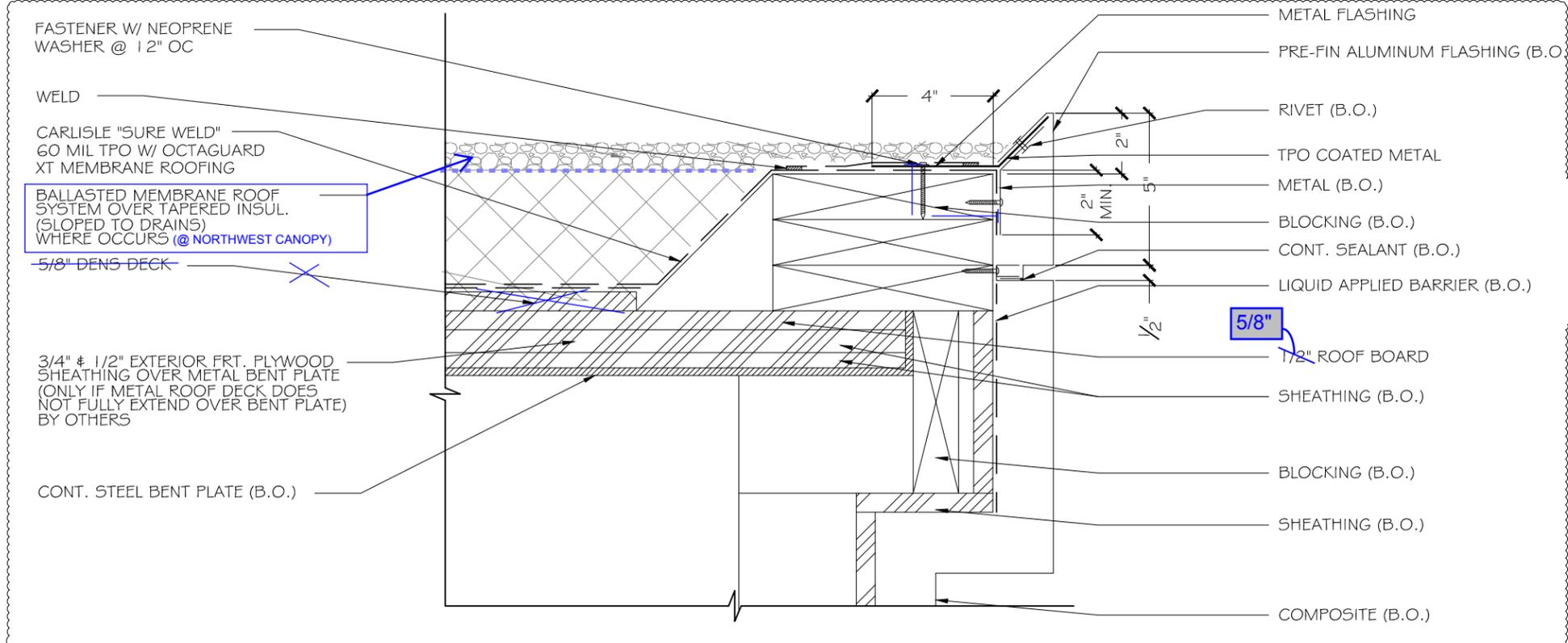
22 GA PRE-FIN FLASHING

CONT. SEALANT

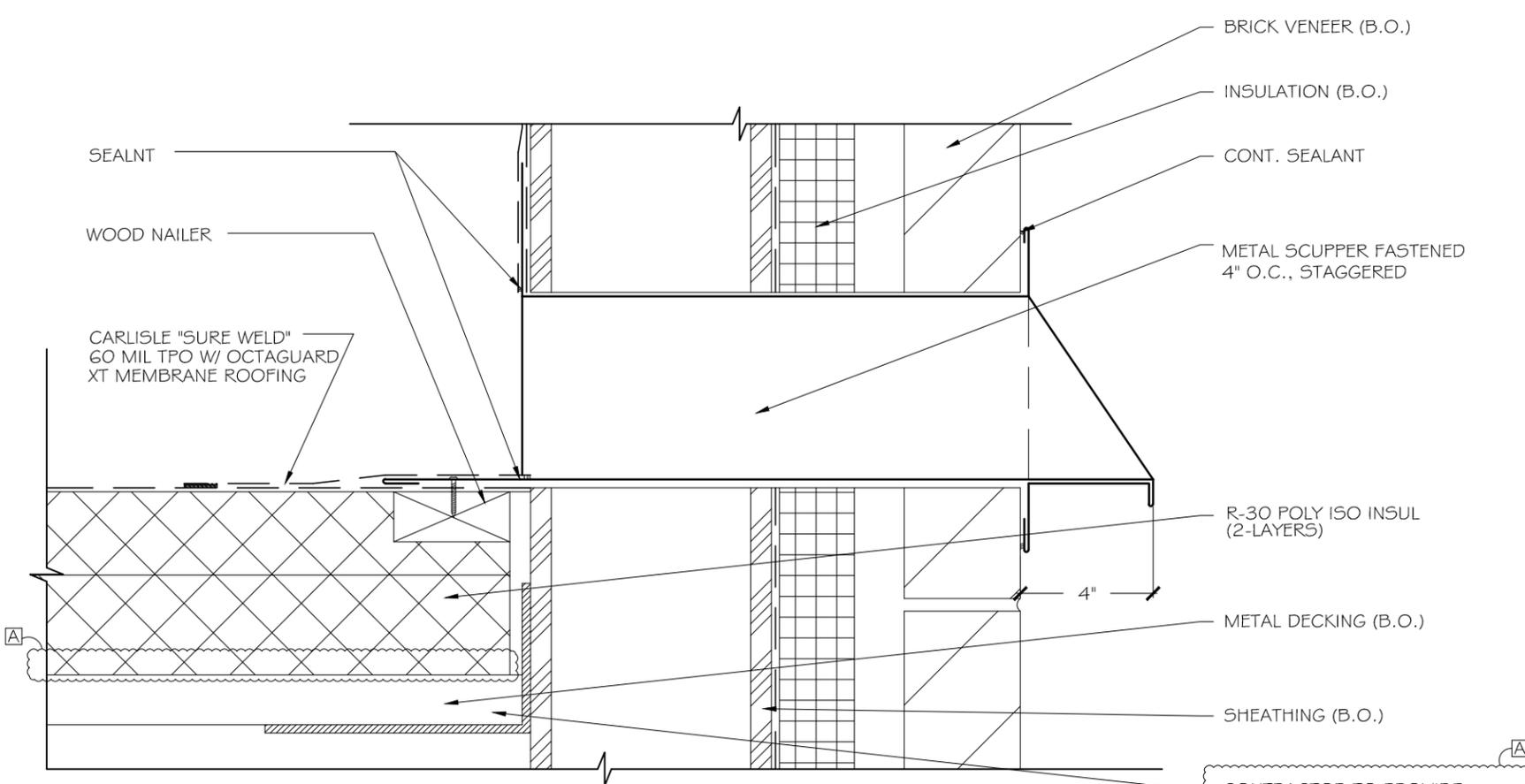
WALL PER SCHEDULE (B.O.)



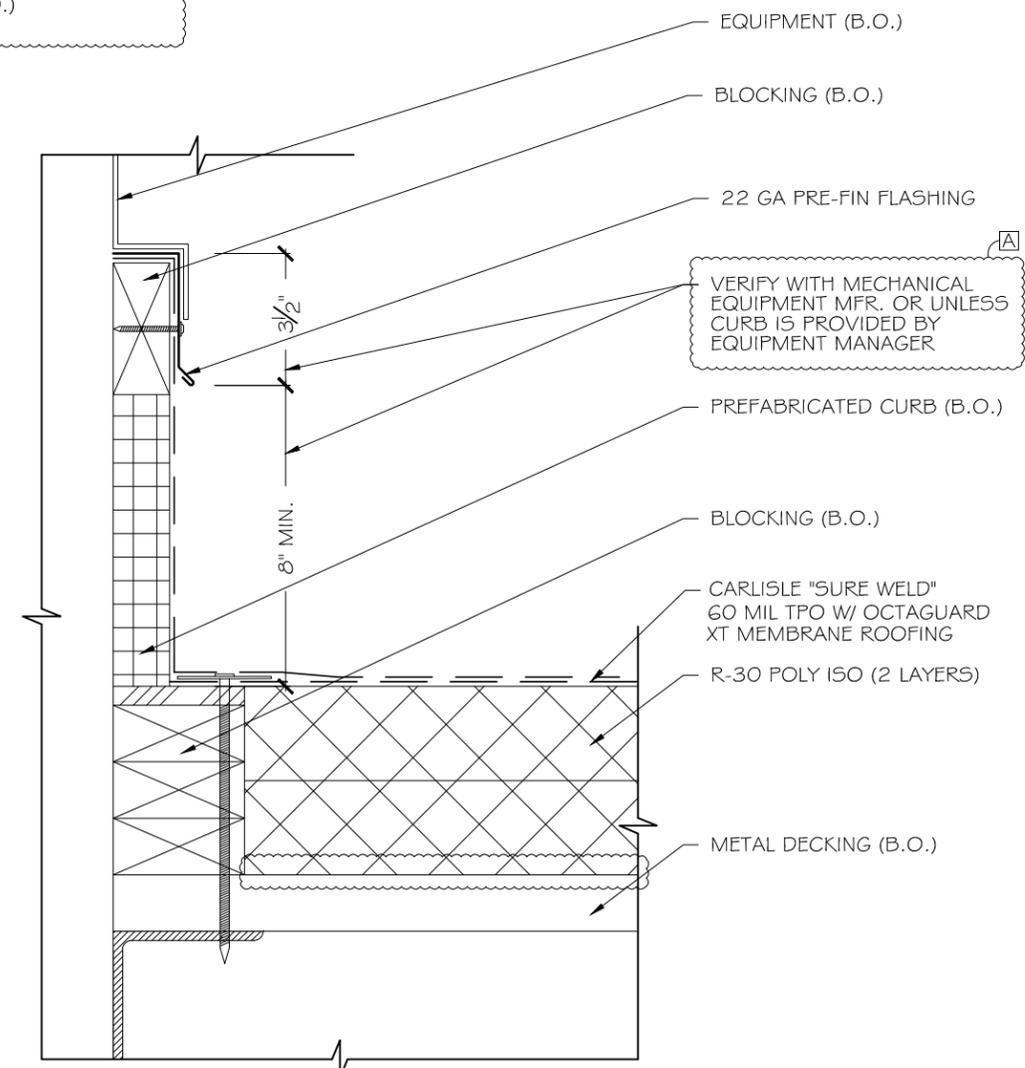
② SCUPPER JAMB DETAIL  
NTS  
REF: A4/A830



① **EDGE FLASHING @ CANOPY DETAIL**  
 NTS  
 REF: A2/A830 & B2/A830



② **SCUPPER FLASHING DETAIL**  
 NTS  
 REF: B4/A830



③ **ROOF CURB DETAIL**  
 NTS  
 REF: B5/A830



**NOTES**  
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 DRAWN BY: MWU  
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 28, MAR 14  
 16, APR 14

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 1400 NORTH 500 EAST  
 LOGAN, UT 84341

**NOORDA**  
 ARCHITECTURAL METALS  
 1700S 2160W S.L.C. UT (801) 503-3000

D4

SHEET NO.

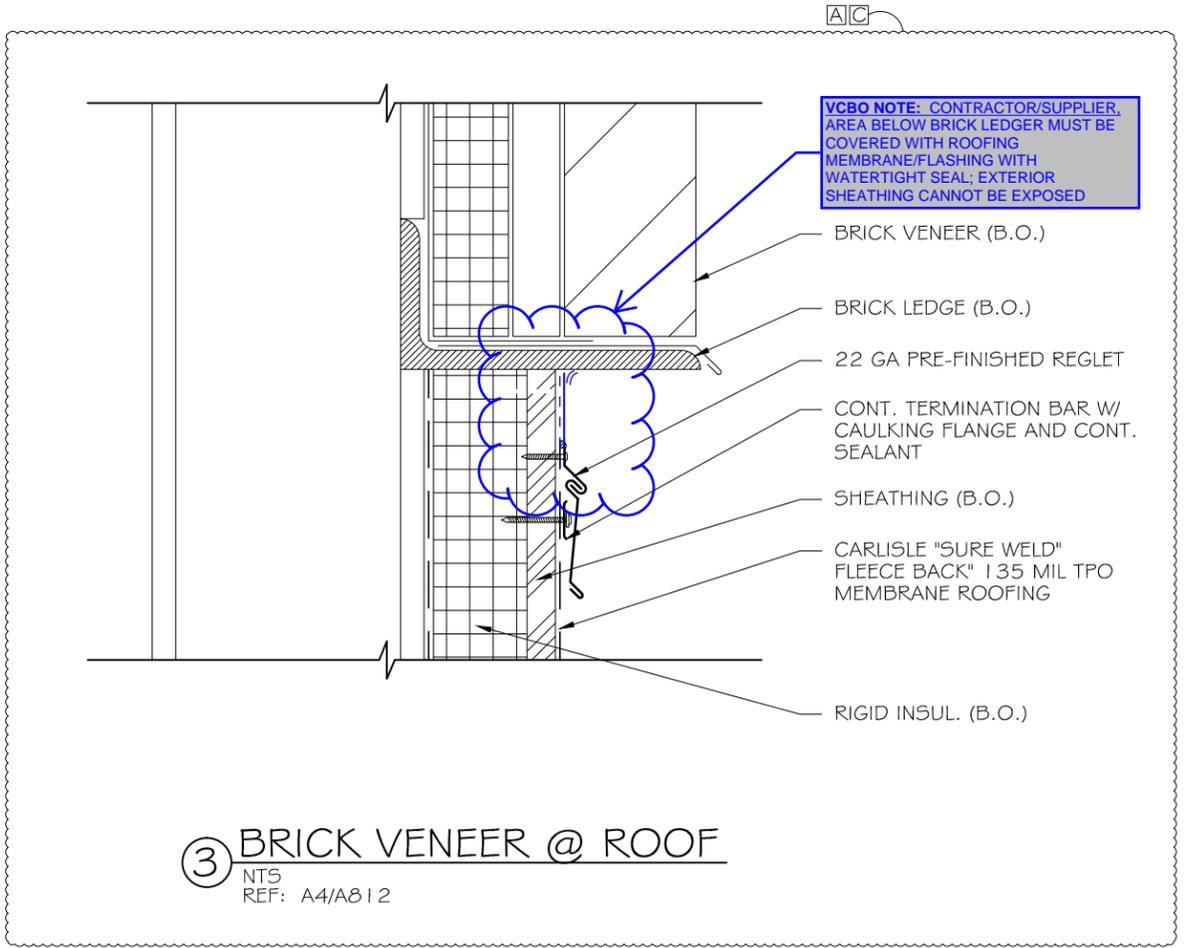
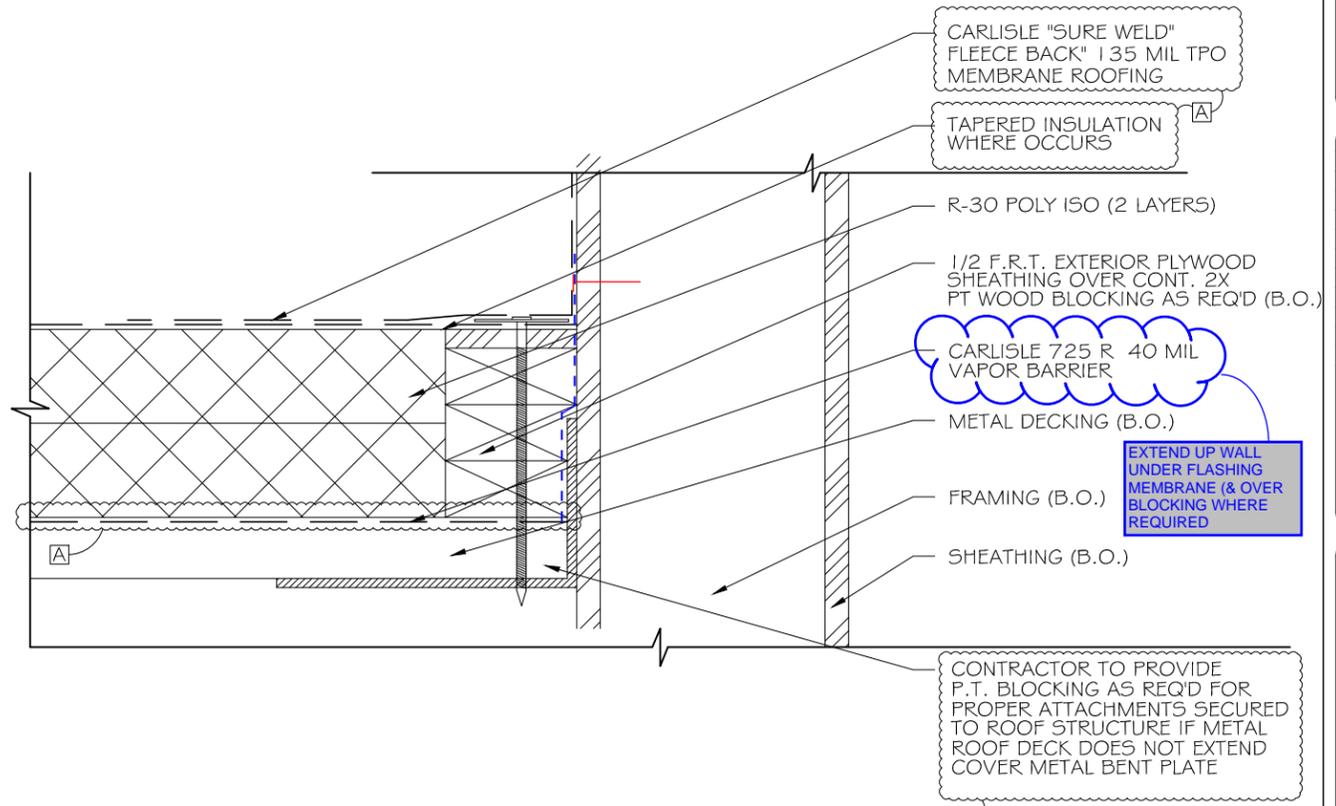
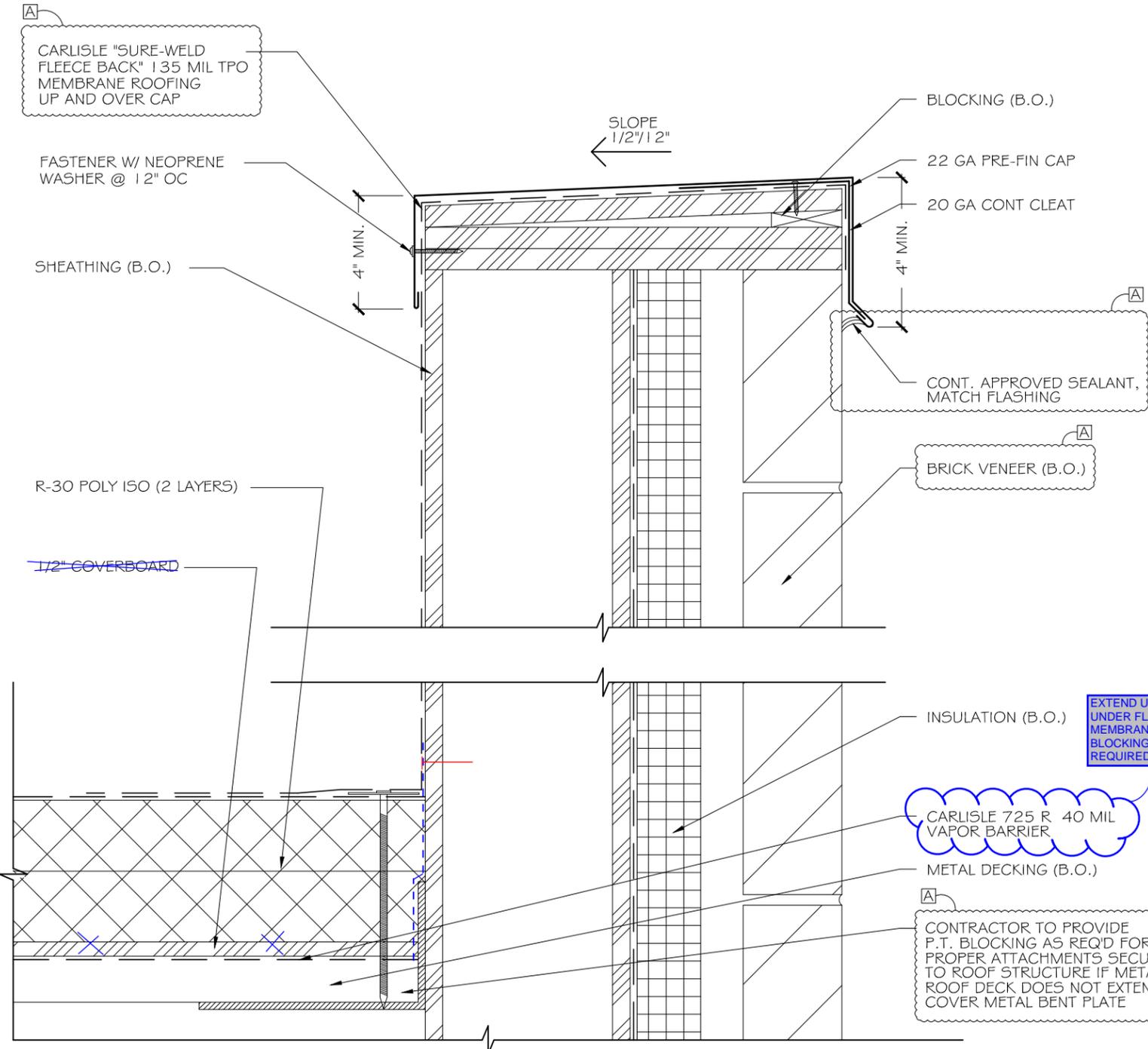


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 LOGAN, UT 84341

**NOORDA**  
 ARCHITECTURAL METALS  
 1700S 2160W S.L.C. UT (801)503-3000

D5  
 SHEET NO.



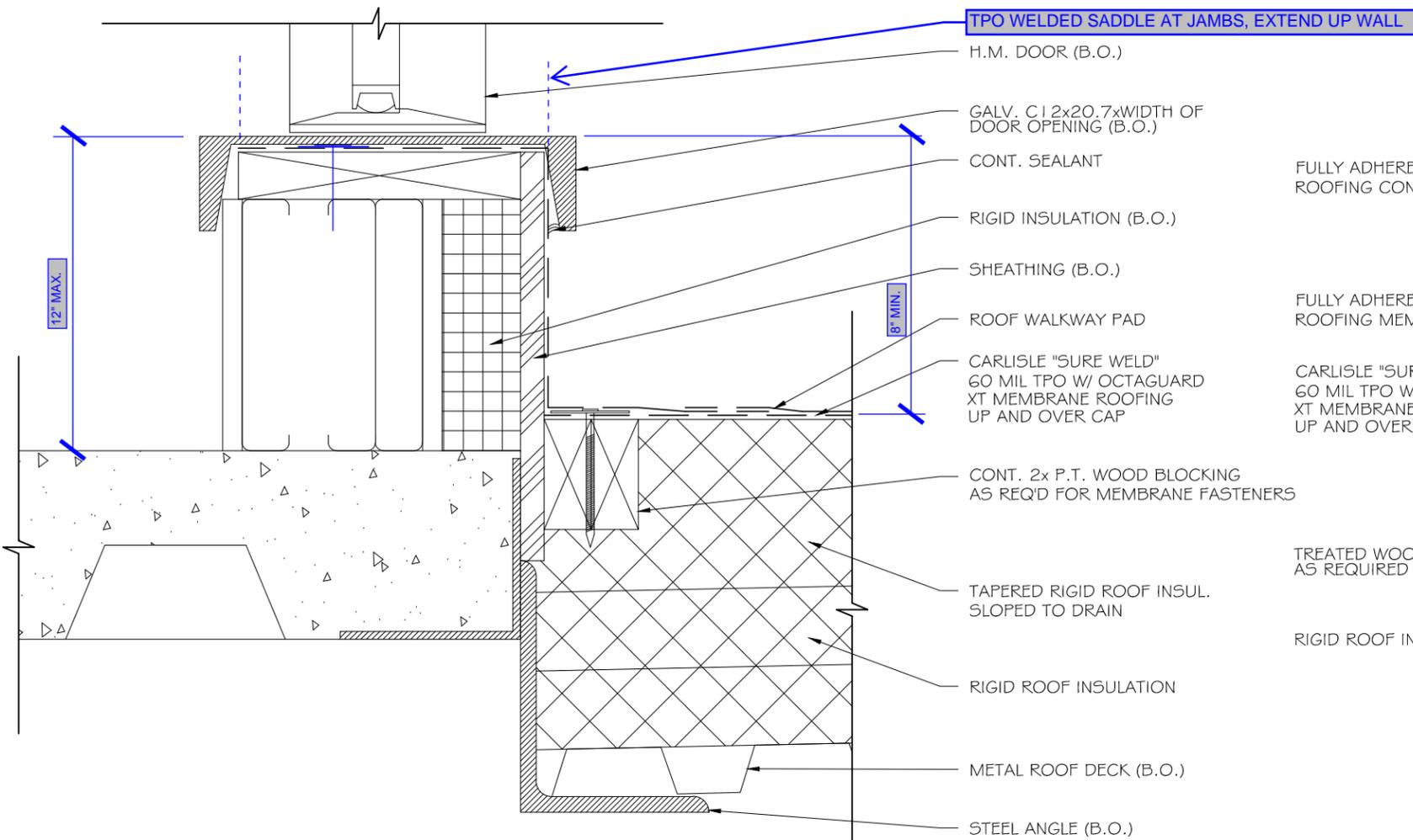


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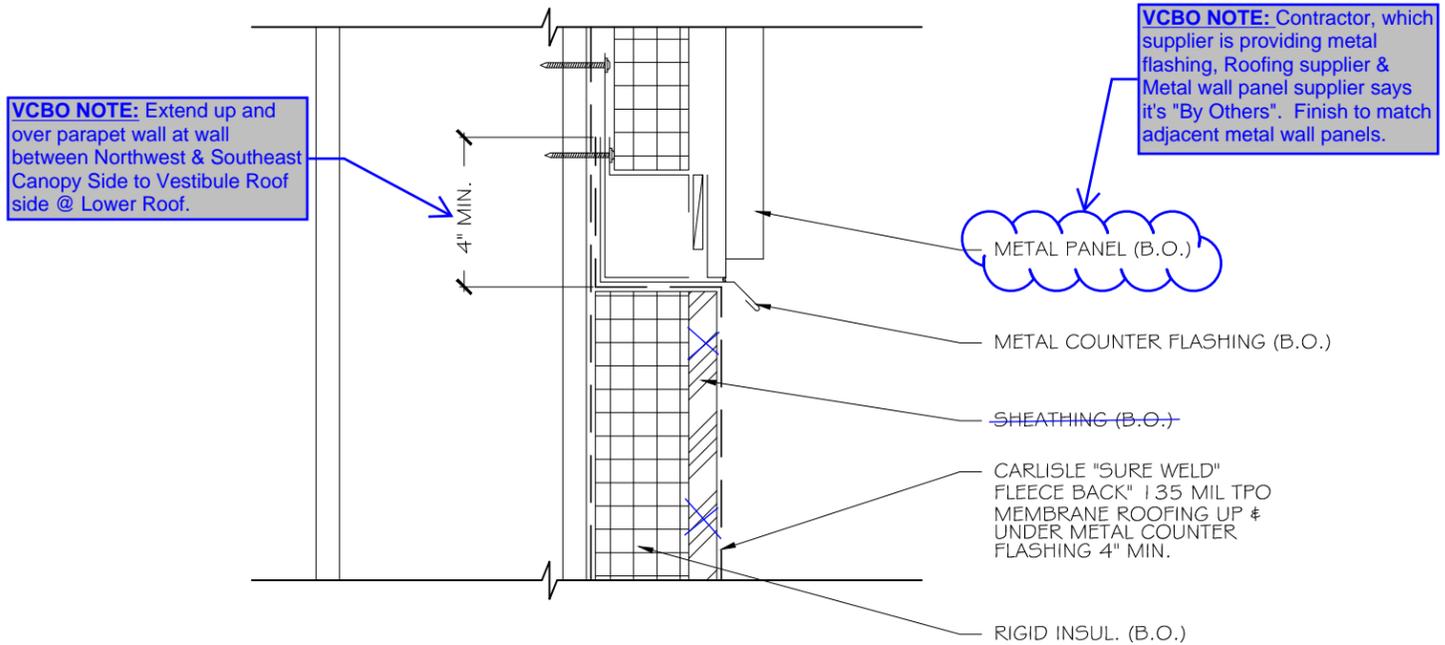
**LOGAN REGIONAL HOSPITAL & BUDGE CLINIC**  
 1400 NORTH 500 EAST  
 LOGAN, UT 84341

**NOORDA**  
 ARCHITECTURAL METALS  
 1700S 2160W S.L.C. UT (801) 503-3000

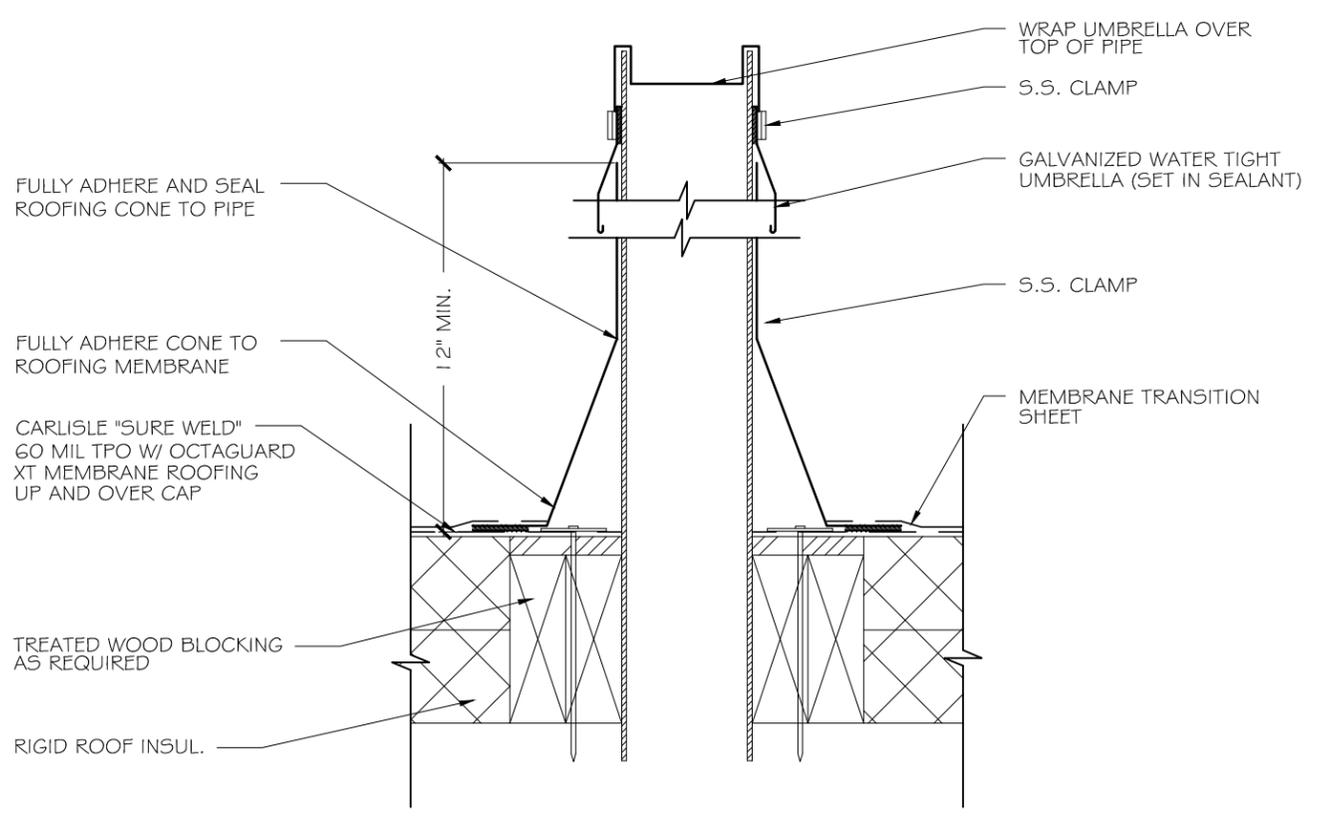
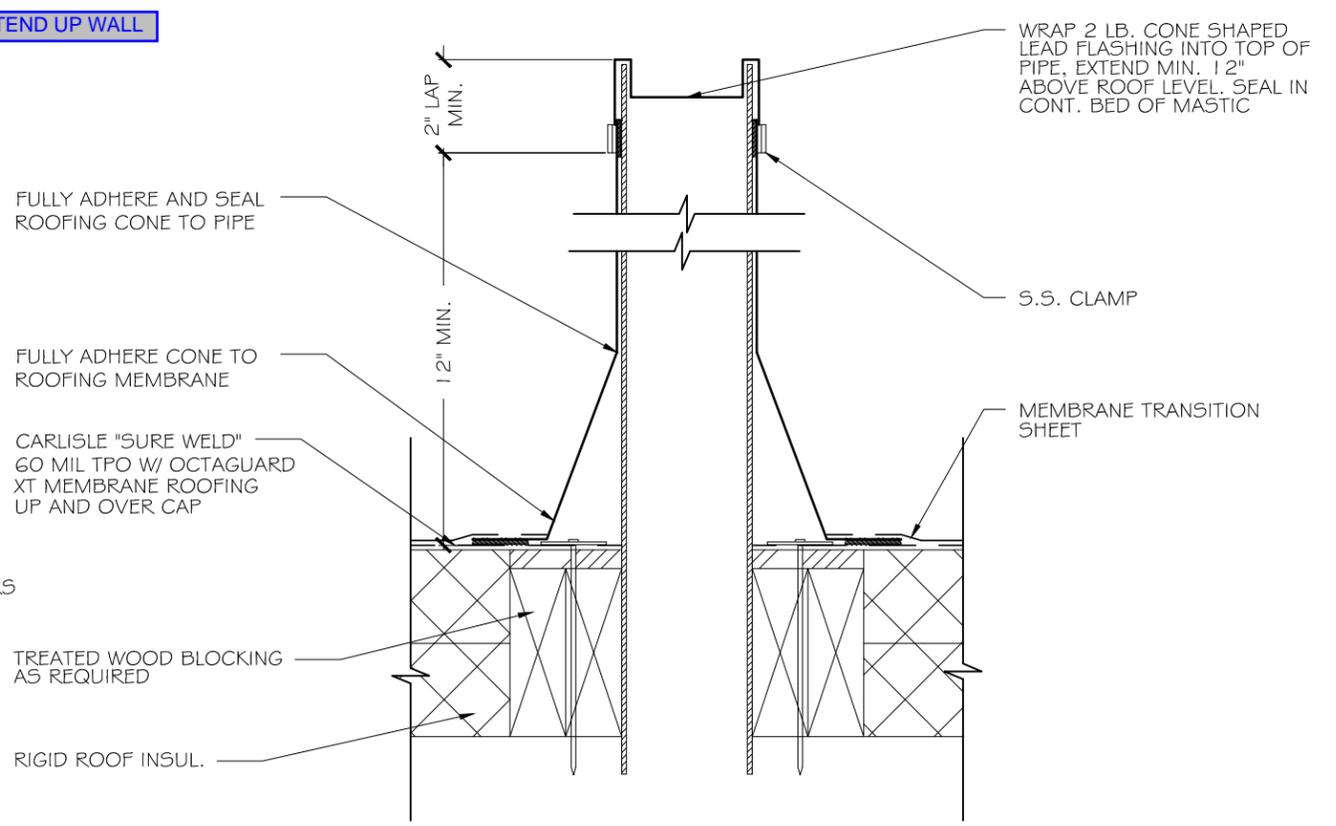
A **D6**  
 SHEET NO.



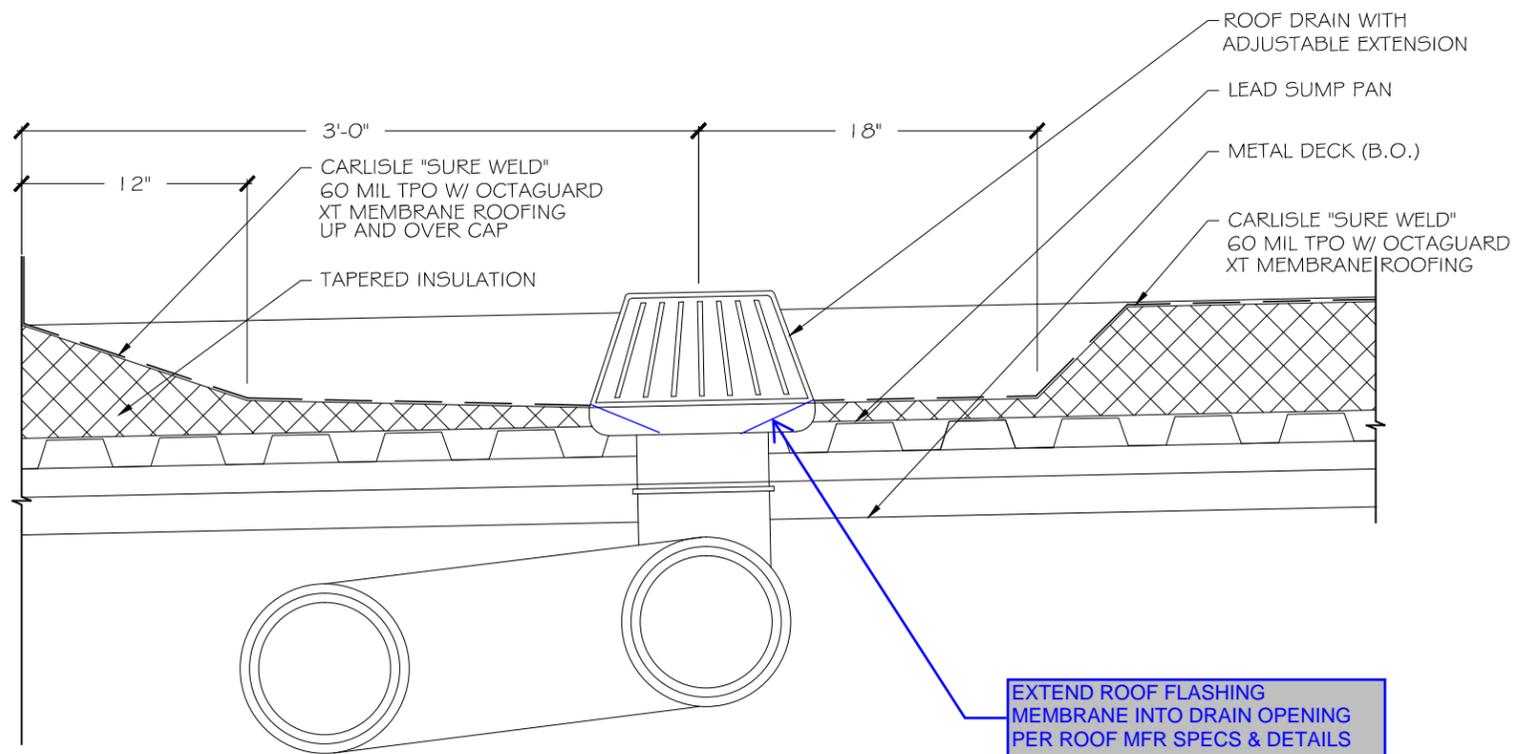
**1 H.M. DOOR THRESHOLD @ ROOF**  
 NTS  
 REF: D2/A830



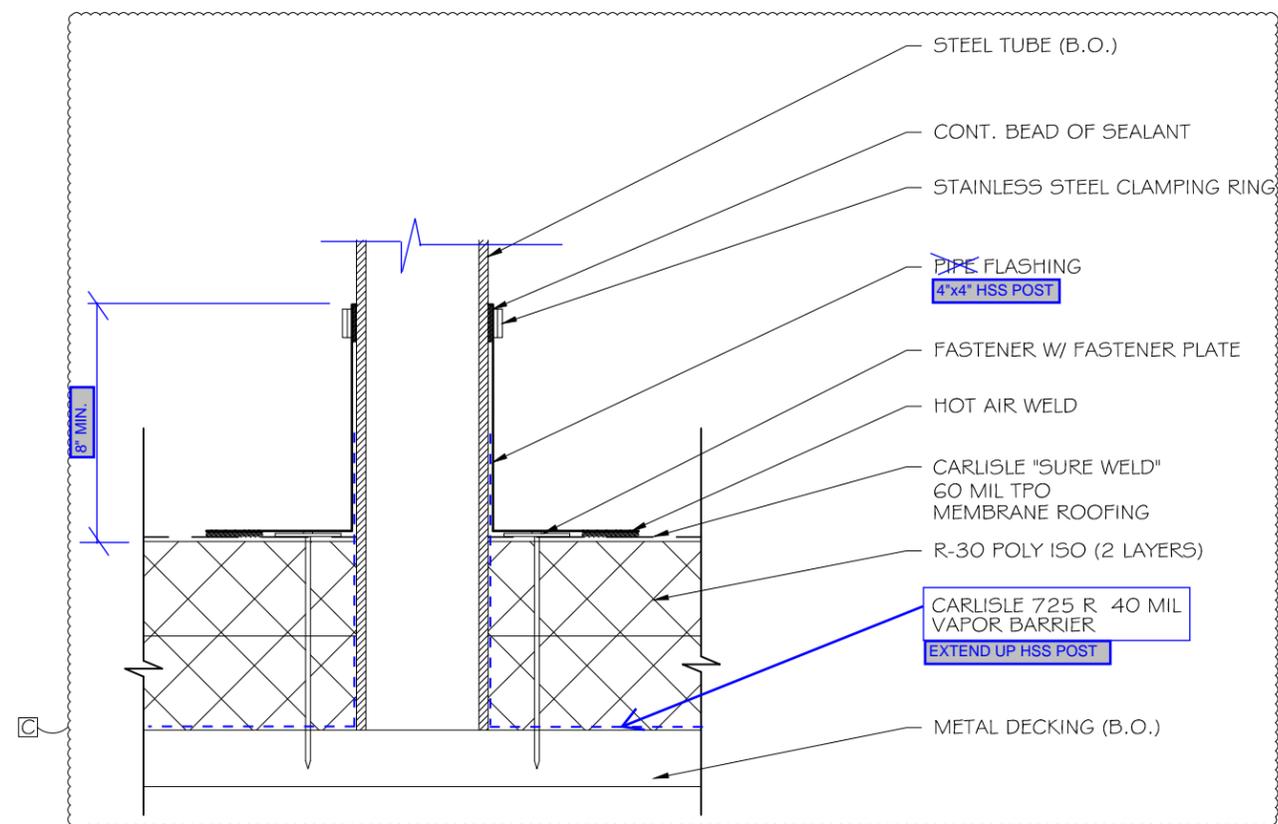
**2 METAL PANEL BASE @ ROOF**  
 NTS  
 REF: A3/A813



**3 ROOF PENETRATION DETAILS**  
 NTS  
 REF: D6/A830



① ROOF DRAIN SECTION  
NTS  
REF: E4/A830



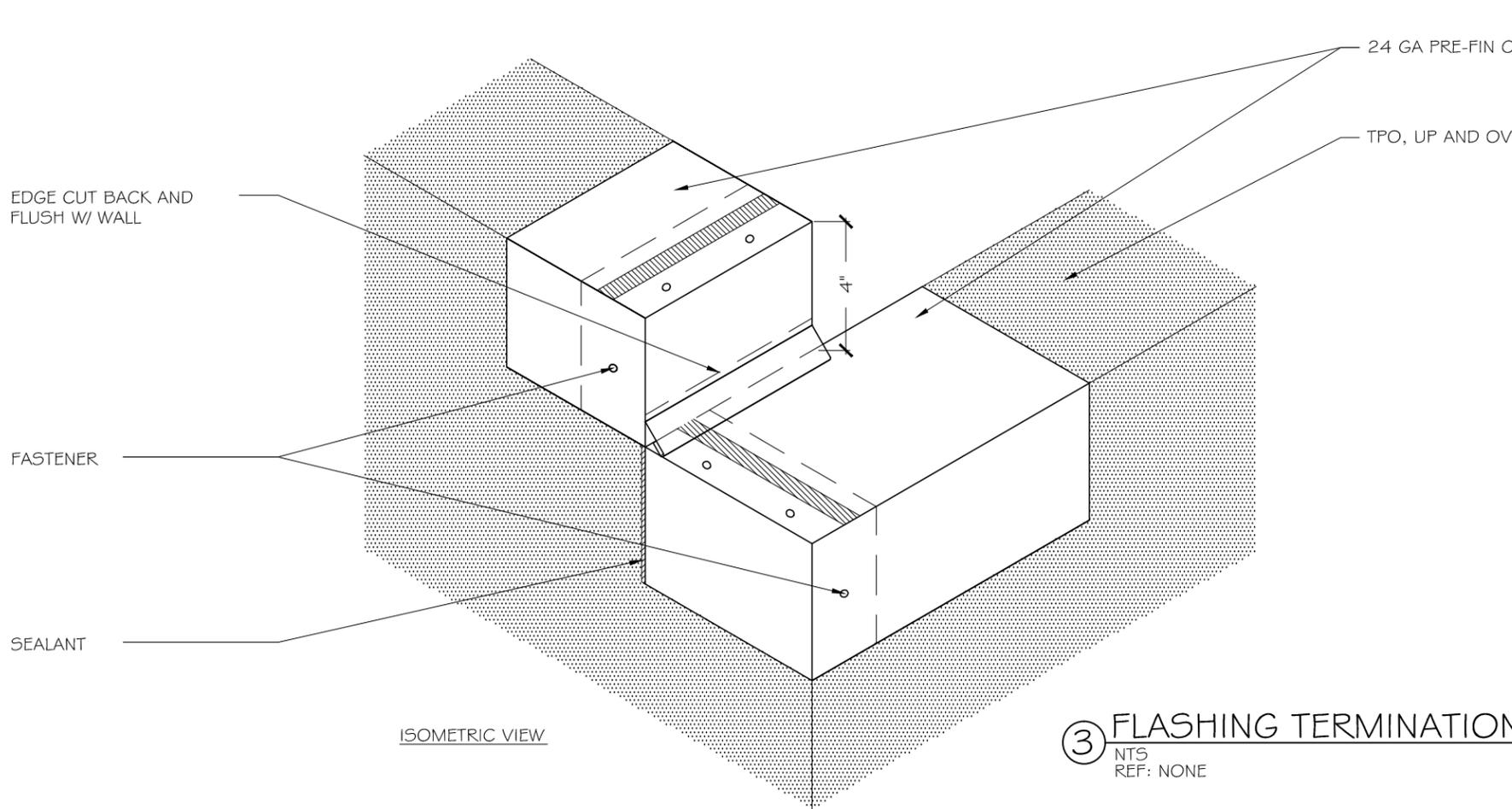
② MECH. SCREEN SECTION @ POOL ADDITION  
NTS  
REF: A5/A814

<b>NOTES</b>	
DATE:	31, JAN 14
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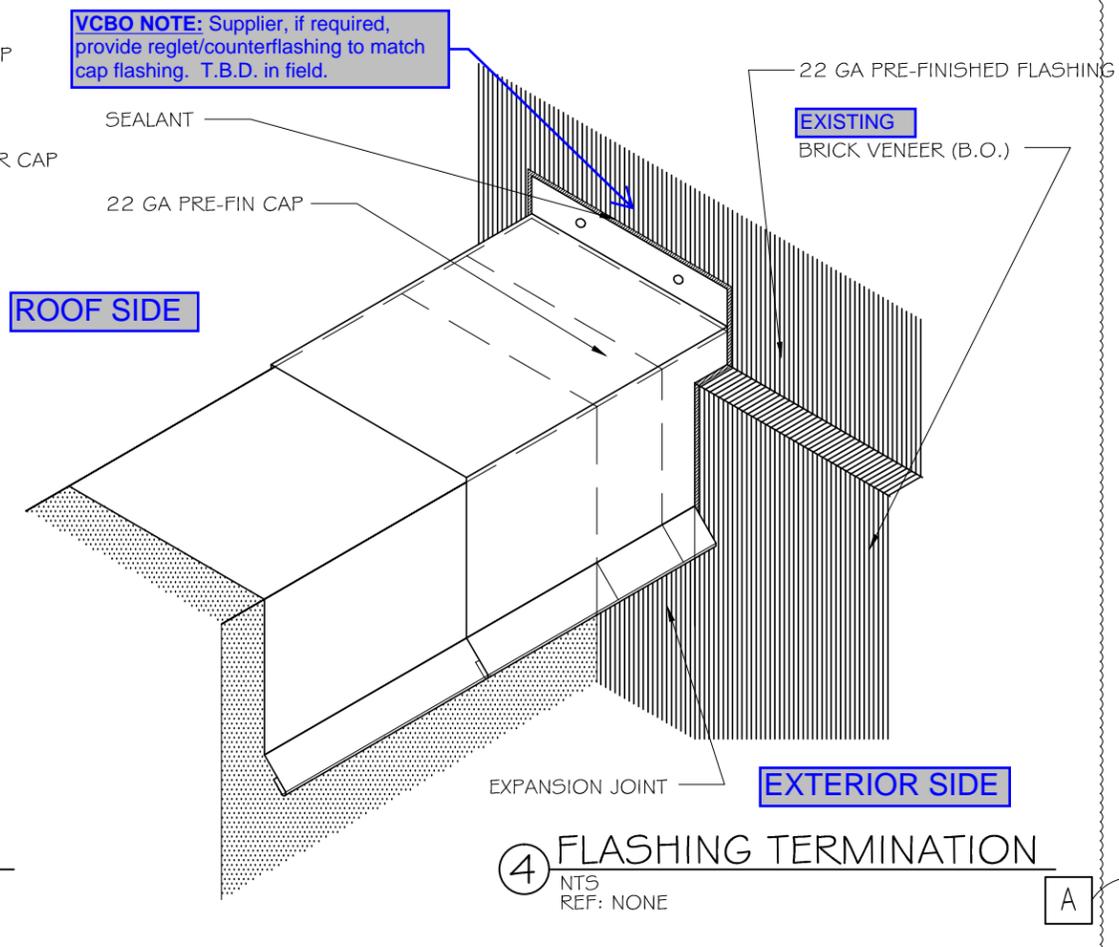
**LOGAN REGIONAL HOSPITAL & BUDGE CLINIC**  
 1400 NORTH 500 EAST  
 LOGAN, UT 84341

**NOORDA**  
 ARCHITECTURAL METALS  
 1700S 2160W S.L.C. UT (801) 503-3000

SHEET NO. **D7**



③ FLASHING TERMINATION  
NTS  
REF: NONE



④ FLASHING TERMINATION  
NTS  
REF: NONE

A

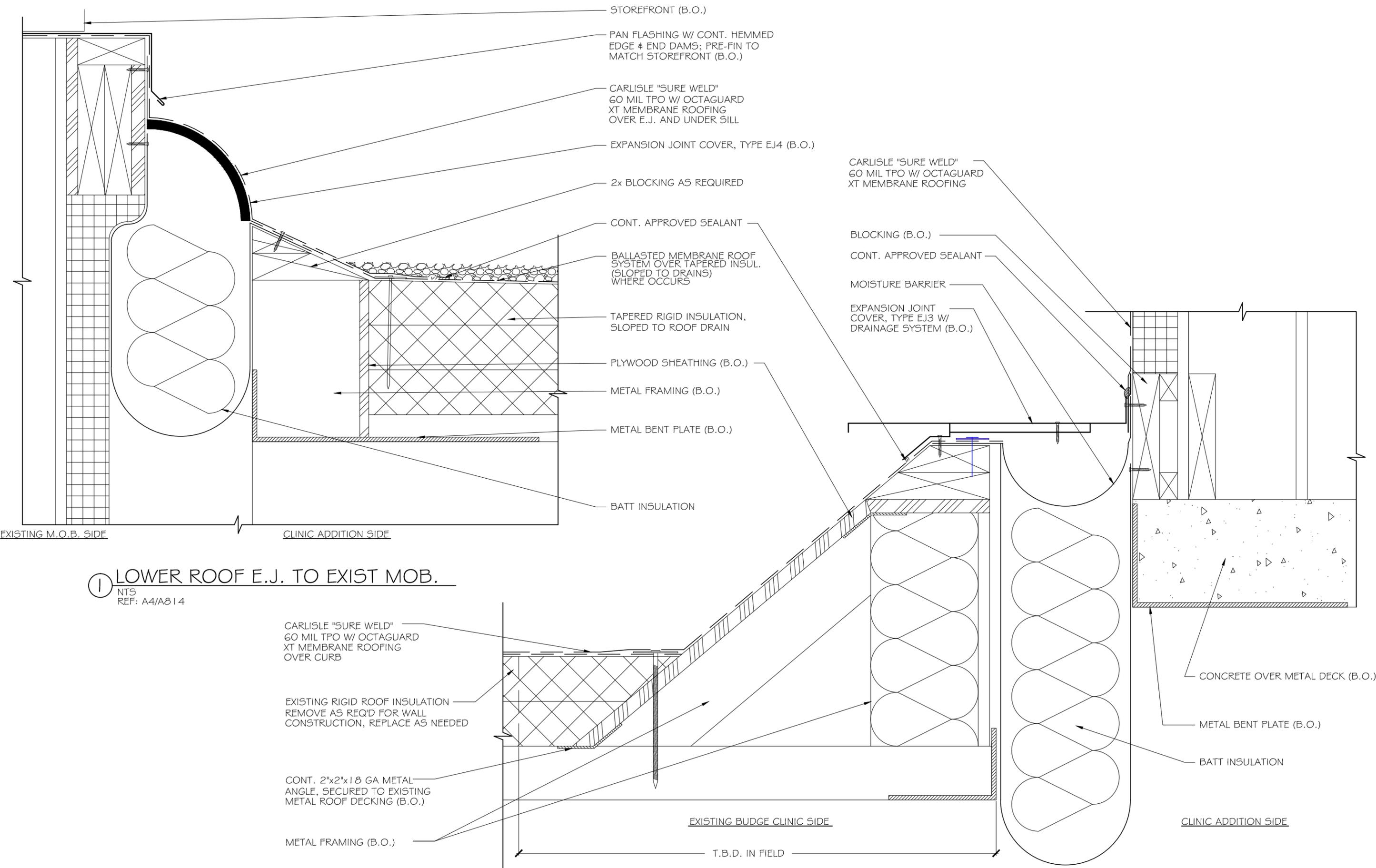


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 1400 NORTH 500 EAST  
 LOGAN, UT 84341

**NOORDA**  
 ARCHITECTURAL METALS  
 1700S 2160W S.L.C. UT (801) 503-3000

A **D8**  
 SHEET NO.



STOREFRONT (B.O.)  
 PAN FLASHING W/ CONT. HEMMED  
 EDGE & END DAMS; PRE-FIN TO  
 MATCH STOREFRONT (B.O.)  
 CARLISLE "SURE WELD"  
 60 MIL TPO W/ OCTAGUARD  
 XT MEMBRANE ROOFING  
 OVER E.J. AND UNDER SILL

EXPANSION JOINT COVER, TYPE EJ4 (B.O.)  
 2x BLOCKING AS REQUIRED

CONT. APPROVED SEALANT  
 BALLASTED MEMBRANE ROOF  
 SYSTEM OVER TAPERED INSUL.  
 (SLOPED TO DRAINS)  
 WHERE OCCURS

TAPERED RIGID INSULATION,  
 SLOPED TO ROOF DRAIN  
 PLYWOOD SHEATHING (B.O.)  
 METAL FRAMING (B.O.)  
 METAL BENT PLATE (B.O.)  
 BATT INSULATION

CARLISLE "SURE WELD"  
 60 MIL TPO W/ OCTAGUARD  
 XT MEMBRANE ROOFING

BLOCKING (B.O.)  
 CONT. APPROVED SEALANT  
 MOISTURE BARRIER  
 EXPANSION JOINT  
 COVER, TYPE EJ3 W/  
 DRAINAGE SYSTEM (B.O.)

**1 LOWER ROOF E.J. TO EXIST MOB.**  
 NTS  
 REF: A4/A814

CARLISLE "SURE WELD"  
 60 MIL TPO W/ OCTAGUARD  
 XT MEMBRANE ROOFING  
 OVER CURB  
 EXISTING RIGID ROOF INSULATION  
 REMOVE AS REQ'D FOR WALL  
 CONSTRUCTION, REPLACE AS NEEDED  
 CONT. 2"x2"x1/8 GA METAL  
 ANGLE, SECURED TO EXISTING  
 METAL ROOF DECKING (B.O.)  
 METAL FRAMING (B.O.)

**2 UPPER ROOF E.J. TO EXIST CLINIC**  
 NTS  
 REF: B2/A814

EXISTING BUDGE CLINIC SIDE  
 T.B.D. IN FIELD  
 CLINIC ADDITION SIDE

CONCRETE OVER METAL DECK (B.O.)  
 METAL BENT PLATE (B.O.)  
 BATT INSULATION



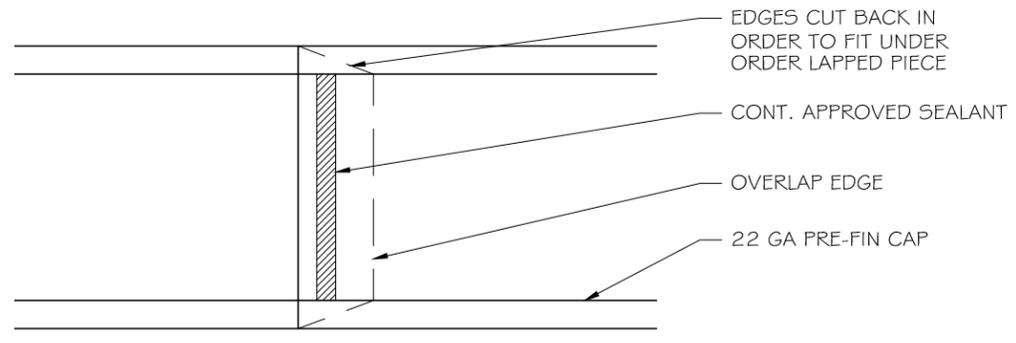
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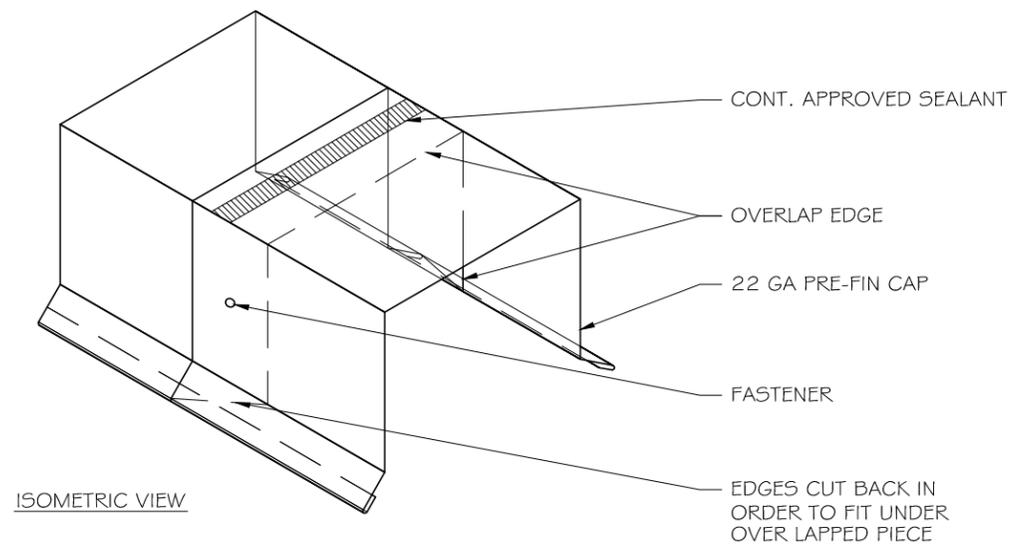
**NOORDA**  
 ARCHITECTURAL METALS  
 1700S 2160W S.L.C. UT (801) 503-3000

D9

SHEET NO.

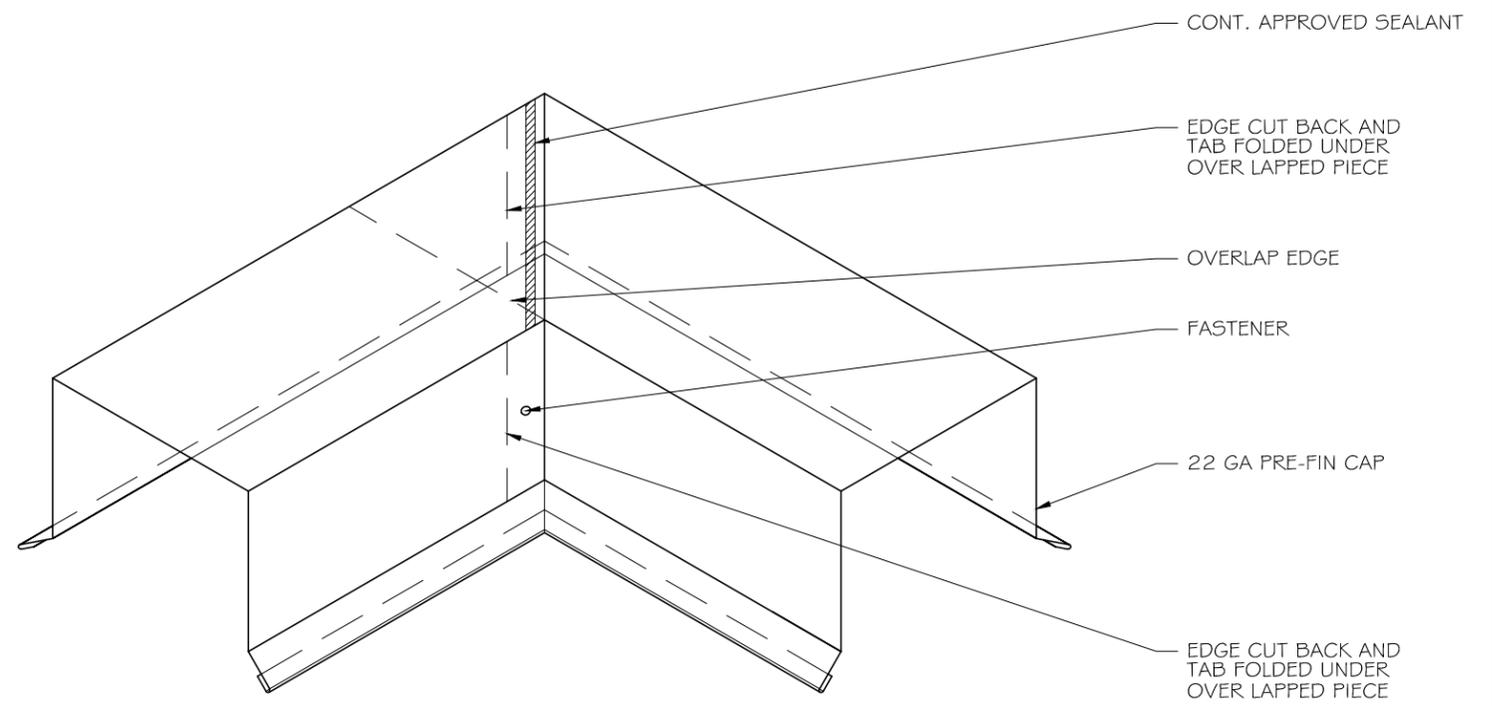


PLAN VIEW



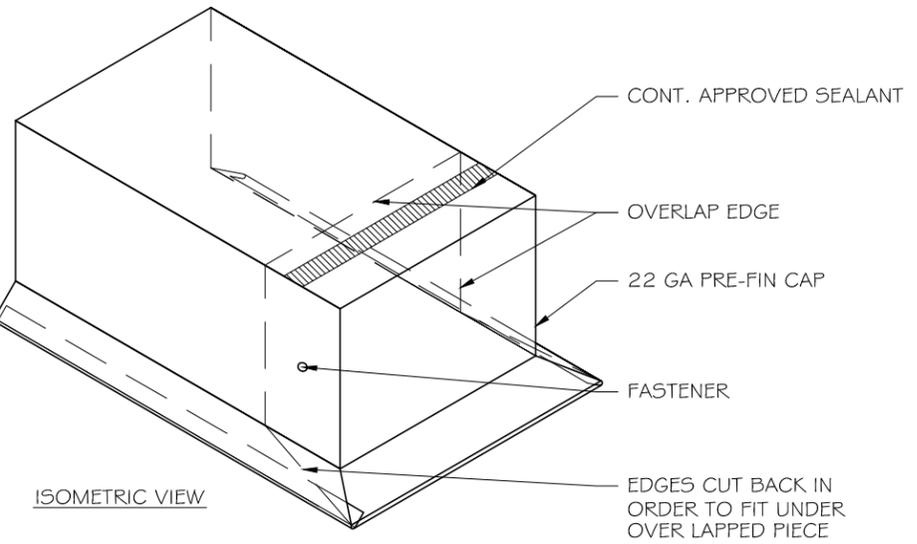
ISOMETRIC VIEW

**1 FLASHING SEAM/JOINT**  
 NTS  
 REF: NONE



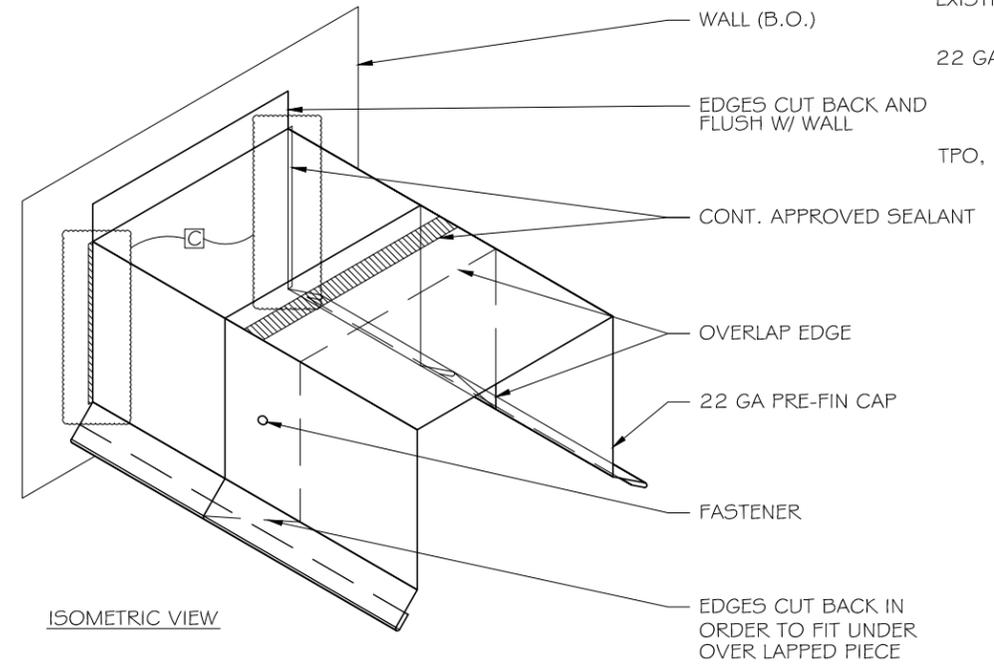
ISOMETRIC VIEW

**2 FLASHING @ CORNER**  
 NTS  
 REF: NONE



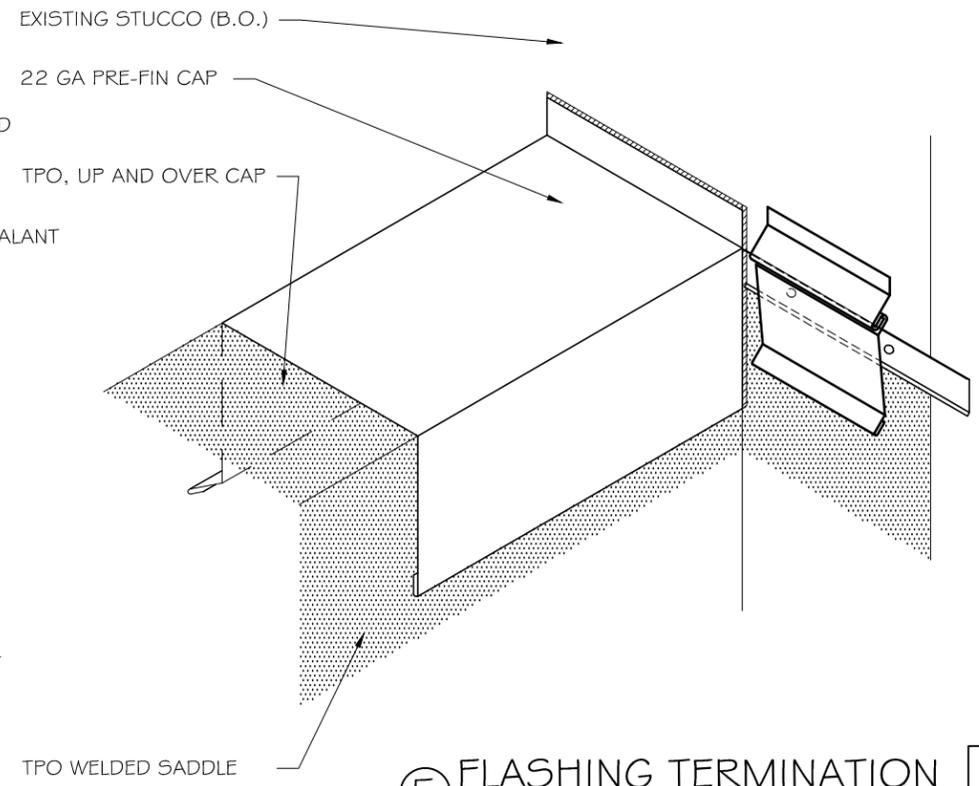
ISOMETRIC VIEW

**3 FLASHING END CAP**  
 NTS  
 REF: NONE



ISOMETRIC VIEW

**4 FLASHING TERMINATION**  
 NTS  
 REF: NONE



**5 FLASHING TERMINATION** A  
 NTS  
 REF: NONE

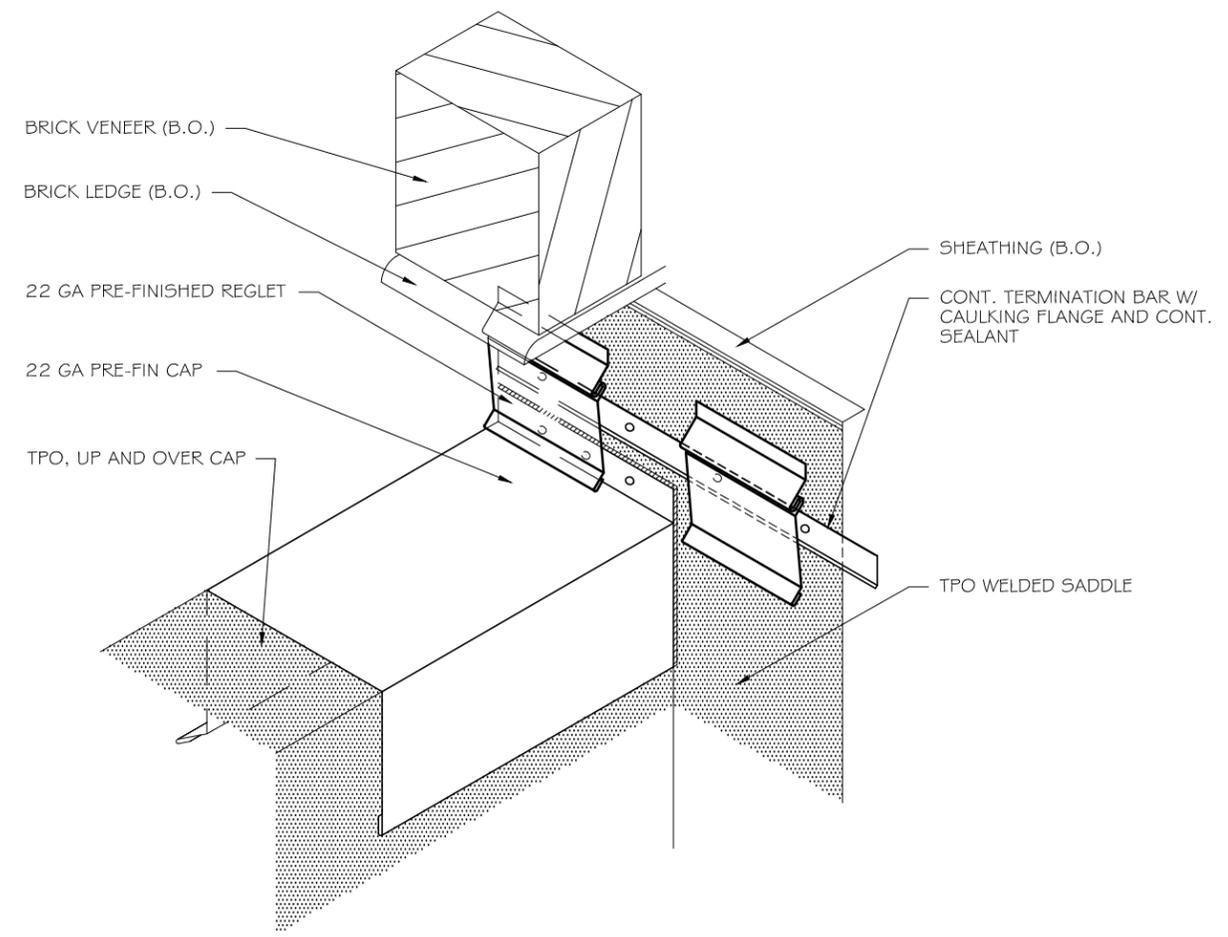
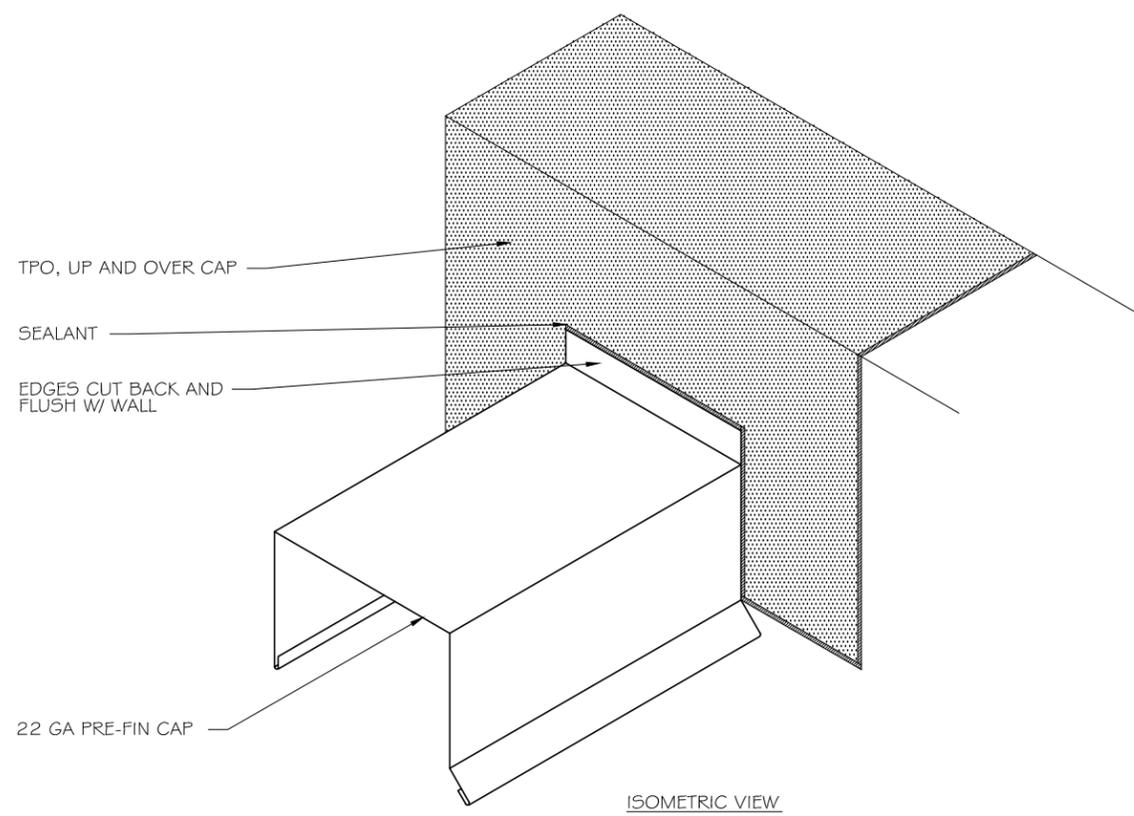


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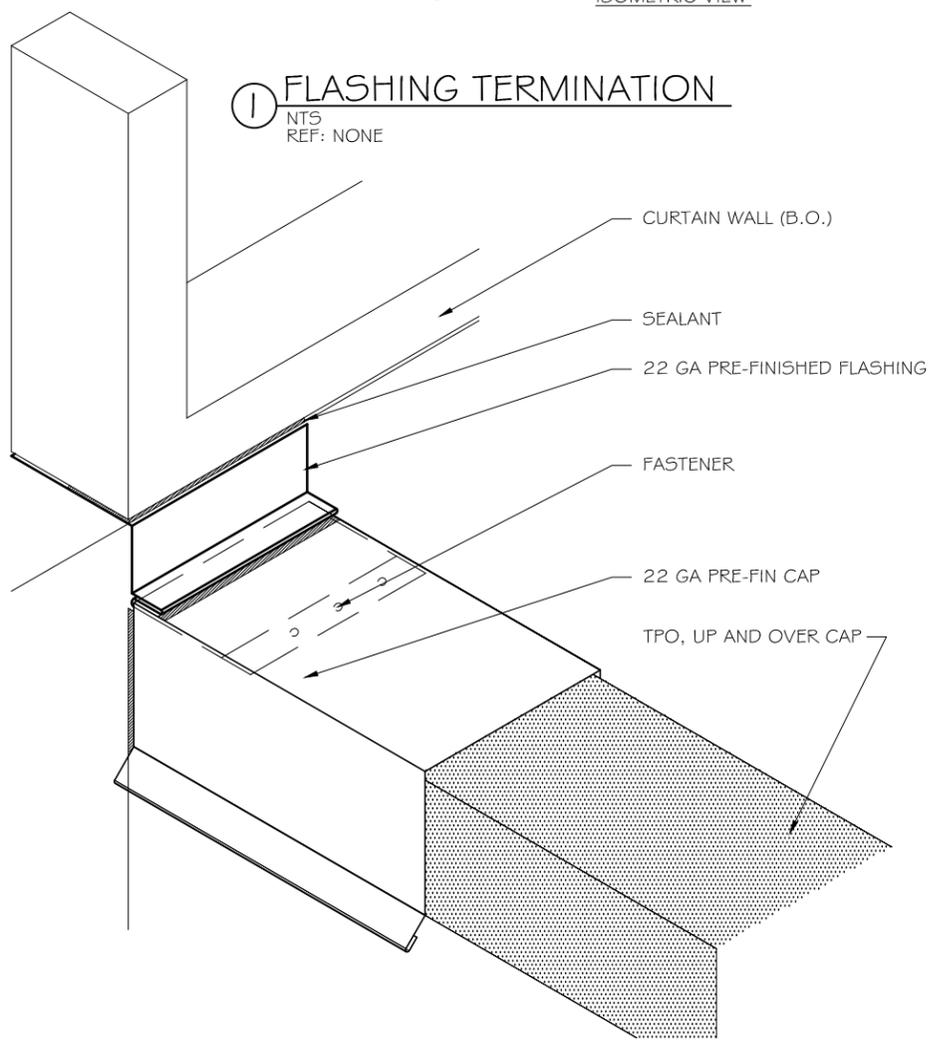
**LOGAN REGIONAL HOSPITAL & BUDGE CLINIC**  
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 LOGAN, UT 84341

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 ARCHITECTURAL METALS  
 1700S 21600W S.L.C., UT (801)503-3000

**DIO**  
 SHEET NO.

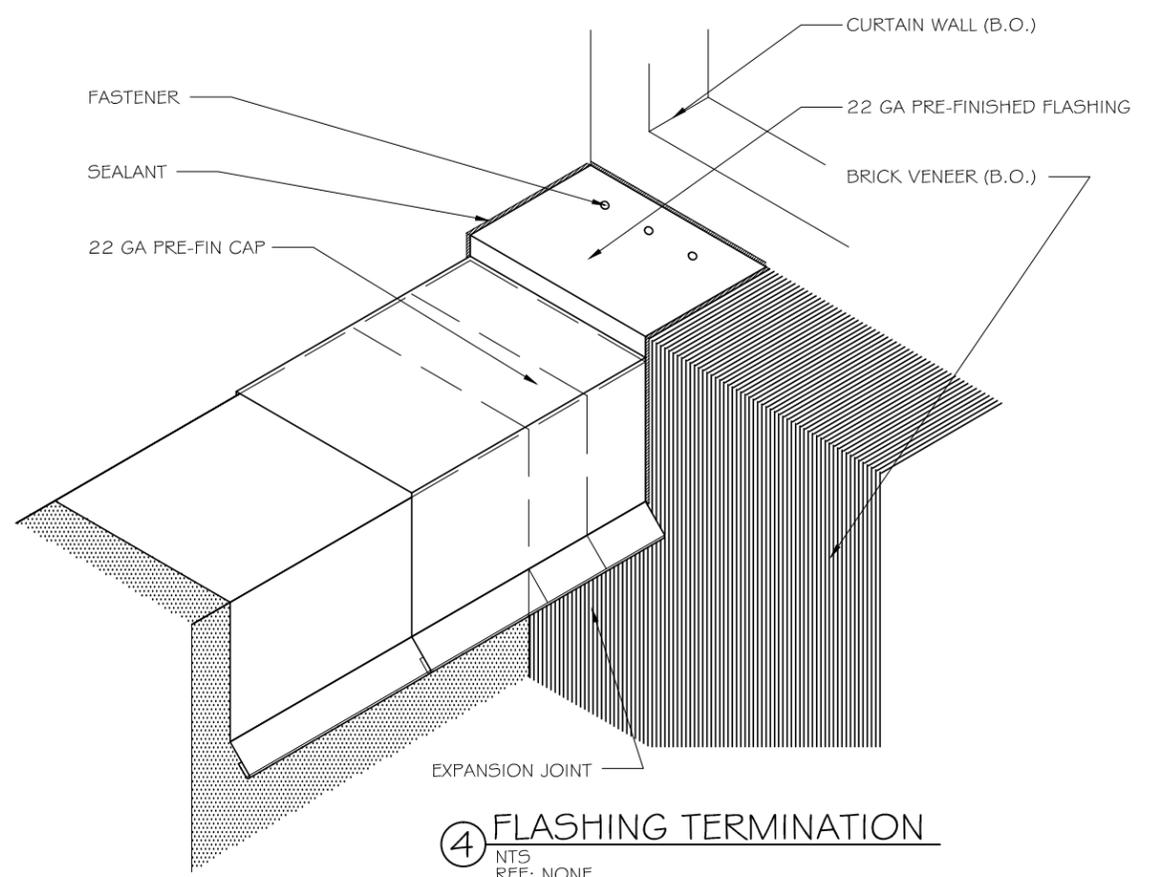


**1 FLASHING TERMINATION**  
 NTS  
 REF: NONE



**3 FLASHING TERM. @ CURTAIN WALL**  
 NTS  
 REF: NONE

**2 FLASHING TERMINATION**  
 NTS  
 REF: NONE



**4 FLASHING TERMINATION**  
 NTS  
 REF: NONE

C

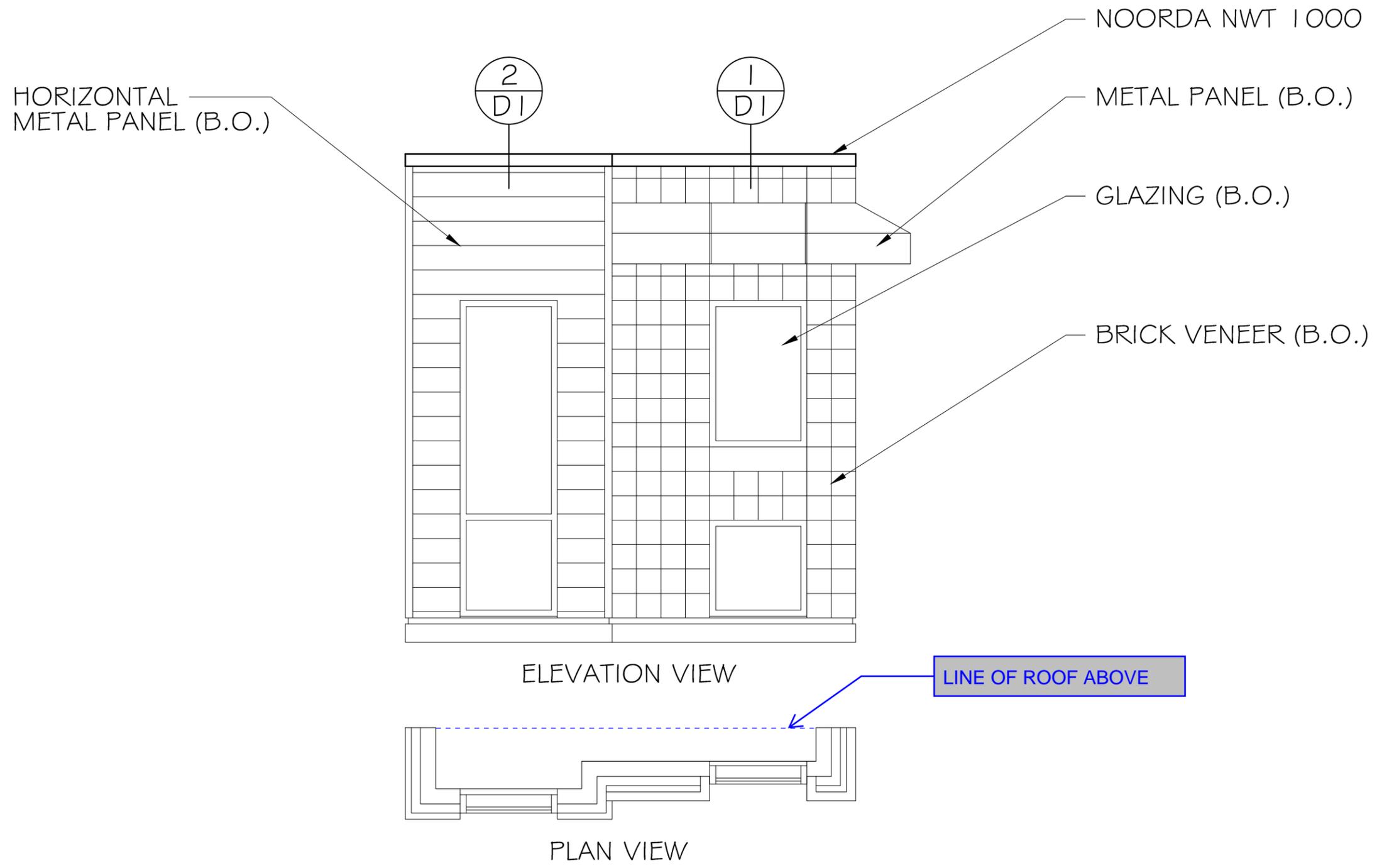


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ARCHITECTURAL METALS  
1700S 2160W S.L.C., UT (801)503-3000

**DII**  
SHEET NO.



**MOCK UP PLAN & ELEVATION**  
SCALE: NTS

C

# Product Data

Membrane



# FleeceBACK® TPO

## Membranes



Full spray application of Flexible FAST™ Adhesive.

### Overview

FleeceBACK TPO membranes with Octaguard XT™ are manufactured using a hot-melt extrusion process for complete scrim encapsulation. Once the TPO is reinforced and enhanced with fleece, the total sheet thicknesses available are 100, 115 and 135 mils, creating a very tough, durable and versatile sheet that is ideal for re-roofing or new construction projects. FleeceBACK TPO sheets are chlorine free and plasticizer free with excellent chemical resistance to acids, bases, restaurant oils and greases.

All FleeceBACK TPO membranes utilize Octaguard XT™ weathering package technology to withstand extreme durability testing intended to simulate exposure to severe climates. FleeceBACK TPO's advanced polymerization technology combines the flexibility of ethylene-propylene (EP) rubber with the heat weldability of polypropylene.

FleeceBACK TPO membranes are intended to be used with adhered or mechanically fastened roofing systems. FleeceBACK TPO is ideally suited for roof garden and solar panel applications and projects demanding superior wind uplift resistance due to its added toughness and durability. FleeceBACK TPO is also a great solution for buildings requiring low noise and odors during roofing application.

### Features and Benefits

- » Choice of white, gray or tan membranes that are UL Class A rated
- » Superior wind uplift performance and ratings (up to an FM 1-945) due to a mechanical bond between fleece and adhesive
- » 75% fewer seams than Modified Bitumen
- » Wide window of weldability

- » Fleece reinforcement adds toughness, durability and enhanced puncture resistance
  - 115-mil membrane delivers 33% greater puncture resistance and 33% greater breaking strength than 60-mil TPO
  - Greater puncture resistance than Modified Bitumen
- » Excellent hail damage resistance
  - Passes FM's severe hail test
  - Passes UL-2218 Class 4 rating
  - Passes National Bureau of Standards – 23 Ice Ball test up to 3"-diameter hail with the membrane cooled to 32°F

### Installation

Insulation is mechanically fastened or adhered with either FAST or Flexible FAST Adhesive to the roof deck. When adhering insulation with FAST Adhesive, the adhesive is applied to the substrate and allowed to rise and foam. Once FAST Adhesive develops string/body/gel (typically 1½-2 minutes), place insulation into the adhesive and walk it in. Roll the insulation with a 30"-wide, 150-pound weighted roller to ensure full embedment. Spray-apply or extrude FAST Adhesive to the substrate and allow foam to develop string/body/gel (typically 2 minutes) prior to setting FleeceBACK TPO into the FAST Adhesive. Roll FleeceBACK TPO membrane with a 30"-wide, 150-pound weighted roller to ensure full embedment. Splices are hot-air welded. End laps are butted and sealed with reinforced membrane or a head sheet may be utilized.

*Review Carlisle specifications and details for complete installation information.*

### Precautions

- » Use proper stacking procedures to ensure sufficient stability.
- » Exercise caution when walking on wet membrane.
- » UV-resistant sunglasses are required when working with FleeceBACK TPO membranes.
- » White surfaces reflect heat and may become slippery due to frost and ice accumulation.
- » Care must be exercised when working close to a roof edge when the surrounding area is snow covered.
- » FleeceBACK TPO membrane rolls must be tarped and elevated to keep dry prior to installation. If the fleece gets wet, use a wet vac system to help remove moisture from the fleece. **DO NOT INSTALL MEMBRANE IF FLEECE IS WET.**
- » FleeceBACK TPO membrane exposed to the weather must be prepared with Weathered Membrane Cleaner prior to hot-air welding.

# FleeceBACK TPO Membranes

## LEED® Information

Pre-consumer Recycled Content	10%
Post-consumer Recycled Content	0%
Manufacturing Location	Senatobia, MS Tooele, UT
Solar Reflectance Index	White: 99      Gray: 53      Tan: 86

## Radiative Properties for ENERGY STAR®\*, Cool Roof Rating Council (CRRC) and LEED

Physical Property	Test Method	White	Gray	Tan
ENERGY STAR – Initial solar reflectance	Solar Spectrum Reflectometer	0.79	N/A	0.71
ENERGY STAR – Solar reflectance after 3 years	Solar Spectrum Reflectometer (uncleaned)	0.70	N/A	0.64
CRRC – Initial solar reflectance	ASTM C1549	0.79	0.46	0.71
CRRC – Solar reflectance after 3 years	ASTM C1549 (uncleaned)	0.70	0.43	0.64
CRRC – Initial thermal emittance	ASTM C1371	0.90	0.89	0.86
CRRC – Initial thermal emittance after 3 years	ASTM C1371 (uncleaned)	0.86	0.88	0.87
LEED – Thermal emittance	C1371	0.90	0.89	0.86
Solar Reflectance Index (SRI)	ASTM E1980	99	53	86

## Carlisle Extreme Testing – Heat Aging

	ASTM Requirement	FleeceBACK TPO Results
ASTM Test      240°F	670 hours or 4 weeks	5,376 hours or 32 weeks*
Carlisle Extreme Test      275°F	N/A	1,344 hours or 8 weeks

\*Comparable to 1,024 weeks (20 years) at 185°F for 6 hrs/day.

Heat Aging accelerates the oxidation rate that roughly doubles for each 18°F (10°C) increase in roof membrane temperature. Oxidation (reaction with oxygen) is one of the primary chemical degradation mechanisms of roofing materials.

## Carlisle Extreme Testing – Environmental Cycling

-10 days heat aging at 240°F (116°C) followed by 5 days water immersion at 158°F (70°C)
Followed by 5,040 kJ/m² (2000 hrs. at 0.70 W/m² irradiance) xenon-arc exposure

Environmental Cycling subjects the membrane to repeated cycles of heat aging, hot-water immersion followed by xenon-arc exposure.

## Typical Properties and Characteristics

Physical Property	Test Method	SPEC. (Min.)	FleeceBACK TPO Typical
Tolerance on Nominal Thickness, %	ASTM D751	±10	±10
Thickness over Fleece, min 100-mil (2.54 mm) 115-mil (2.92 mm) 135-mil (3.43 mm)	— — —	— — —	.045 (1.14) .060 (1.52) .080 (2.03)
Weight, lbm/ft² 100-mil 115-mil 135-mil	— — —	— — —	0.27 0.33 0.46
Breaking Strength, min, lbf (kN) 100-mil 115-mil 135-mil	ASTM D751 Grab Method	220 (1)	350 (1.6) 450 (2) 500 (2.2)
Elongation at break of internal fabric, %	ASTM D751	15	25
Tearing Strength, min, lbf (N) 100- & 115-mil, 135-mil	ASTM D751 B Tongue Tear	55 (245)	100 (445)
Puncture Resistance, Joules 100-mil 115-mil 135-mil	ASTM D5635	— — —	17.5 22.5 30.0
Puncture Resistance, lbf 100-mil 115-mil 135-mil	FTM 101C Method 2031	350 400 425	450 500 525
Brittleness point, max, °F (°C)	ASTM D2137	-40 (-40)	-50 (-46)
Linear Dimensional Change, %	ASTM D1204	± 1 max	-0.2 typical
Field Seam Strength, lbf/in. (kN/m) ASTM D1876 tested in peel 100-mil 115-mil 135-mil	ASTM D1876	25 (4.4) 25 (4.4) 40 (7.0)	50 (8.8) 60 (10.5) 70 (12.3)
Water Vapor Permeance, perms	ASTM E96 Proc B	—	0.10 max 0.05 typical
Resistance to Microbial Surface Growth, Rating (1 is very poor, 10 is no growth)	ASTM D3274	—	9-10 typical
Properties after heat aging— ASTM D573, 670 hrs. at 240 °F Breaking strength, % retained Elongation reinf. % retained Tearing Strength, % retained Weight Change, %	ASTM D573	— — — —	90 min 90 min 60 min ± 1.0 max
Ozone Resistance 100 pphm, 168 hours	ASTM D1149	No cracks	No cracks
Resistance to Water Absorption After 7 days immersion @ 158°F (70°C) Change in mass, max, % (one side)	ASTM D471	± 3.0	0.90
Resistance to Outdoor (Ultraviolet) Weathering Xenon-Arc, total radiant exposure at 0.70 W/m² irradiance, 80°C black panel temp.  100-mil 115-mil 135-mil	ASTM G155	No cracks No loss of breaking or tearing strength	No cracks No loss of breaking or tearing strength  17,640 kJ/m² 20,160 kJ/m² 27,720 kJ/m²

# Sure-Weld® TPO

## Reinforced Membrane



### Overview

Carlisle's Sure-Weld membrane is a premium heat-weldable single-ply thermoplastic polyolefin (TPO) sheet designed for new roof construction and re-roofing applications. Sure-Weld High Slope (HS) membrane is formulated with additional flame retardant (compared to standard TPO) for higher-slope fire code approvals. Sure-Weld EXTRA is 80-mils-thick for significantly higher strength and weatherability.

Carlisle Sure-Weld TPO membrane features advanced polymerization technology that combines the flexibility of ethylene-propylene (EP) rubber with the heat weldability of polypropylene. All Sure-Weld TPO membranes include OctaGuard XT™, an industry-leading, state-of-the-art weathering package. OctaGuard XT technology enables Sure-Weld TPO to withstand extreme weatherability testing intended to simulate exposure to severe climates.

Physical properties of the membrane are enhanced by a strong polyester fabric that is encapsulated between the TPO-based top and bottom plies. The combination of the fabric and TPO plies provides Sure-Weld reinforced membranes with high breaking strength, tearing strength and puncture resistance. The relatively smooth surface of Sure-Weld membrane produces a total surface fusion weld that creates a consistent, watertight, monolithic roof assembly. The membrane is environmentally friendly and safe to install.

Sure-Weld Standard and HS products are available in highly reflective white, tan and gray, in both 45-mil and 60-mil thicknesses. Sure-Weld EXTRA (including HS) is available in 80-mil thickness, in white, gray and tan. Sixteen special colors are also available (see Carlisle's TPO Color Palette brochure). Available widths are 4-, 5- and 6-ft perimeter sheets and 8-, 10- and 12-ft field sheets.

Carlisle's Sure-Weld tan and white TPO membrane can contribute toward LEED® (Leadership in Energy and Environmental Design) credits. Tan and white Sure-Weld are ENERGY STAR®\*-qualified and California Title 24 compliant.

### Features and Benefits

- » Outstanding puncture resistance
- » Chlorine-free with no halogenated flame retardants
- » Plasticizer-free; does not contain liquid or polymeric plasticizers
- » Excellent low temperature impact resistance
- » Excellent chemical resistance to acids, bases and restaurant exhaust emissions
- » UL 2218 Class 4 hail rating
- » Exceptional resistance to heat, solar UV, ozone and oxidation
- » Hot-melt extrusion processed for complete scrim encapsulation
- » Sure-Weld is 100% recyclable (refer to Carlisle's Recyclability Statement)
- » Enhanced with the OctaGuard XT™ weathering package



### Installation

1. Sure-Weld Roofing Systems are quick to install, as minimal labor and few components are required. The systems may be installed utilizing labor-saving devices that make sheet welding fast, clean, consistent and easy to learn, while reducing strain on the roofing technician.
2. **The Carlisle Mechanically Fastened Roof System** installation starts with the insulation fastened with a minimum of 5 fasteners per 4 by 8 ft. board. The Sure-Weld reinforced membrane is mechanically fastened to the deck using HP-X™ Fasteners and Piranha Plates™ or HP-XTRA Fasteners and Piranha XTRA Plates. Adjoining sheets of Sure-Weld membrane are overlapped over the fasteners and plates and joined together with a minimum 1½-inch-(4 cm) wide hot-air weld.
3. **The Carlisle Fully Adhered Roofing System** application begins with the insulation fastened at the required density (max. 1 every 2 sq ft) necessary to resist the appropriate wind load. The substrate and membrane are coated with an appropriate Sure-Weld Bonding Adhesive and the membrane is rolled into place.

*Review Carlisle specifications and details for complete installation information.*

# Sure-Weld TPO

## Reinforced Membrane

### Precautions

- » Sunglasses that filter out ultraviolet light are strongly recommended, as tan and white surfaces are highly reflective. Roofing technicians should dress appropriately and wear sunscreen to protect skin.
- » Surfaces may become slippery due to frost and ice buildup. Exercise caution during cold conditions to prevent falls.
- » Care must be exercised when working close to a roof edge when surrounding area is snow-covered as the roof edge may not be clearly visible.
- » Use proper stacking procedures to ensure sufficient stability of the rolls.
- » Exercise caution when walking on wet membrane. Membranes may be slippery when wet.
- » Store Sure-Weld membrane in the original undisturbed plastic wrap in a cool, shaded area and cover with light-colored, breathable, waterproof tarpaulins. Sure-Weld membrane that has been exposed to the weather must be prepared with Weathered Membrane Cleaner prior to hot-air welding.
- » Take care not to stand or place heavy objects on the edge of folded over membrane, causing a hard crease in the membrane.

### Typical Properties and Characteristics

Physical Property	ASTM D6878 Requirement	45-mil	60-mil	80-mil EXTRA
Tolerance on nominal thickness, % ASTM D751 test method	+15, -10	± 10	± 10	± 10
Thickness over scrim, in. (mm) ASTM D7635 optical method, average of 3 areas	0.015 min (0.380)	0.018 typical (0.457)	0.024 typical (0.610)	0.034 typical (0.864)
Breaking strength, lbf (kN) ASTM D751 grab method	220 (976 N) min	225 (1.0) min 320 (1.4) typical	250 (1.1) min 360 (1.6) typical	350 (1.6) min 425 (1.9) typical
Elongation break of reinforcement, % ASTM D751 grab method	15 min	15 min 25 typical	15 min 25 typical	15 min 25 typical
Tearing strength, lbf (N) ASTM D751 proc. B 8 in. x 8 in.	55 (245) min	55 (245) min 130 (578) typical	55 (245) min 130 (578) typical	55 (245) min 130 (578) typical
Brittleness point, °F (°C) ASTM D2137	-40 (-40) max	-40 (-40) max -50 (-46) typical	-40 (-40) max -50 (-46) typical	-40 (-40) max -50 (-46) typical
Linear dimensional change, % ASTM D1204, 6 hours at 158°F	± 1 max	± 1 max -0.2 typical	± 1 max -0.2 typical	± 1 max -0.2 typical
Ozone Resistance, no cracks 7X ASTM D1149, 100 pphm, 168 hrs	PASS	PASS	PASS	PASS
Water absorption resistance, mass % ASTM D471 top surface only 166 hours at 158°F water	± 3.0 max	± 3.0 max 0.90 typical	± 3.0 max 0.90 typical	± 3.0 max 0.90 typical
Factory seam strength, lbf/in (kN/m) ASTM D751 grab method	66 (290) min	66 (290) min	66 (290) min	66 (290) min
Field seam strength, lbf/in (kN/m) ASTM D1876 tested in peel	No requirement	25 (4.4) min 50 (8.8) typical	25 (4.4) min 60 (10.5) typical	40 (7.0) min 70 (12.3) typical
Water vapor permeance, Perms ASTM E96 proc. B	No requirement	0.10 max 0.05 typical	0.10 max 0.05 typical	0.10 max 0.05 typical
Puncture resistance, lbf (kN) FTM 101C, method 2031 (see supplemental section)	No requirement	250 (1.1) min 325 (1.4) typical	300 (1.3) min 350 (1.6) typical	400 (1.8) min 450 (2.0) typical
Properties after heat aging ASTM D573, 5376 hours @ 240°F				
Breaking strength	198 (881) 90% min	205 (912) min	225 (1000) min	315 (1400) min
Elongation reinf.	13.5 (90%) min	13.5 min	13.5 min	13.5 min
Tearing Strength	33 (60%) min	33 min	33 min	33 min
Weight change, %	± 1.0 max	1.0 max	1.0 max	1.0 max
Typical Weights lb/ft <sup>2</sup> (kg/m <sup>2</sup> )	0.23 (1.1)		0.29 (1.4)	0.40 (2.0)

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product.

# Sure-Weld TPO

## Reinforced Membrane

### Extreme Testing For Severe Climates

ASTM Standard D6878 is the material specification for Thermoplastic Polyolefin-Based Sheet Roofing. It covers material property requirements for TPO roof sheeting and includes initial and aged properties after heat and xenon-arc exposure. As stated in the scope of the standard, “the tests and property limits used to characterize the sheet are values intended to ensure minimum quality for the intended purpose.” Carlisle’s goal is to produce TPO that ensures maximum performance for the intended purpose of roofing membranes. Maximum performance requires the membrane to far exceed the requirements of ASTM D6878. For severe climates like Miami, FL and Phoenix, AZ, EXTREME testing is required.

**Heat Aging** accelerates the oxidation rate that roughly doubles for each 10°C (18°F) increase in roof membrane temperature. Oxidation (reaction with oxygen) is one of the primary chemical degradation mechanisms of roofing materials.

#### Carlisle Extreme Testing – Heat Aging

	ASTM Requirement	Sure-Weld Requirement
<b>ASTM TEST</b> 240°F	32 weeks*	52 weeks
<b>Carlisle Extreme Test</b> 275°F	N/A	13 weeks

\*Comparable to 1,024 weeks (20 years) at 185°F for 6 hours/day.

- » Test specimen is 1" by 4" piece of 45-mil membrane unbacked, placed in circulating hot-air oven.
- » Criterion – no visible cracks after bending aged test specimen around 0.25"-diameter mandrel.

Xenon-Arc exposes the membrane samples to the combined effect of ultraviolet, visible and infrared radiation as well as ozone, heat and water spray, to greatly accelerate the effects of outdoor weathering. The radiation dose is measured in kilojoules per square meter (kJ/m<sup>2</sup>) at 340 nm machine UV wavelength. The irradiance power of the xenon-arc lamp is measured in Watts per square meter (W/m<sup>2</sup>).

#### Carlisle Extreme Testing – Xenon-Arc

ASTM TEST	Sure-Weld Results			
	ASTM D6878 Requirement	45-mil	60-mil	80-mil
kJ/m <sup>2</sup> at 340 nm	10,080	17,640	20,160	27,720

- » Test specimen is 2.75" by 5.5" piece of membrane, unbacked, weathering side facing arc lamp.
- » Criterion – no visible cracks viewed under 10x magnification while wrapped around 3"-diameter mandrel.

**Environmental Cycling** subjects the membrane to repeated cycles of heat aging, hot-water immersion followed by xenon-arc exposure. The acid fog accelerates acid etching that may occur from acid rain if the roof membrane is not resistant to acidic conditions.

- » ASTM requirement – none
- » Carlisle EXTREME test\*:
  - 10 days heat aging at 240°F (116°C) followed by
  - 5 days water immersion at 158°F (70°C) followed by
  - 5040 kJ/m<sup>2</sup> (2000 hours at 0.70 W/m<sup>2</sup> irradiance) xenon-arc exposure

\*Test specimen is 2.75" by 5.5" piece of membrane with edges sealed.

\*Criterion – after 3 complete cycles, test specimens shall remain flexible and not have any cracking under 10x magnification while wrapped around a 3"-diameter mandrel.

# Sure-Weld TPO

## Reinforced Membrane

### Supplemental Approvals, Statements and Characteristics:

1. Sure-Weld TPO meets or exceeds the requirements of ASTM D6878 Standard Specification for Thermoplastic Polyolefin-Based Sheet Roofing.
2. **Radiative Properties** for ENERGY STAR, Cool Roof Rating Council (CRRC) and LEED.
3. Sure-Weld TPO membranes conform to requirements of the U.S.E.P.A. Toxic Leachate Test (40 CFR part 136) performed by an independent analytical laboratory.
4. Sure-Weld reinforced TPO was tested for dynamic puncture resistance per ASTM D5635-04 using the most recently modified impact head. 45-mil was watertight after an impact energy of 12.5 J (9.2 ft-lbf) and 60-mil was watertight after 22.5 J (16.6 ft-lbf). 80-mil EXTRA was watertight after an impact energy of 30.0 J (22.1 ft-lbf).

### Radiative Properties for ENERGY STAR, Cool Roof Rating Council (CRRC) and LEED

	Test Method	White TPO	Tan TPO	Gray TPO
ENERGY STAR – initial solar reflectance	Solar Spectrum Reflectometer	0.79	0.71	N/A
ENERGY STAR –initial solar reflectance after 3 years	Solar Spectrum Reflectometer (uncleaned)	0.70	0.64	N/A
CRRC – initial solar reflectance	ASTM C1549	0.79	0.71	0.46
CRRC – solar reflectance after 3 years	ASTM C1549 (uncleaned)	0.70	0.64	0.43
CRRC – initial thermal emittance	ASTM C1371	0.90	0.86	0.89
CRRC – thermal emittance after 3 years	ASTM C1371 (uncleaned)	0.86	0.87	0.88
LEED – thermal emittance	PASS	0.90	0.86	0.86
*SRI (Solar Reflectance Index)		99	86	53

\*Solar Reflectance Index (SRI) is calculated per ASTM E1980. The SRI is a measure of the roof's ability to reject solar heat, as shown by a small temperature rise. It is defined so that a standard black (reflectance 0.05, emittance 0.90) is 0 and a standard white (reflectance 0.80, emittance 0.90) is 100. Materials with the highest SRI values are the coolest choices for roofing. Due to the way SRI is defined, particularly hot materials can even take slightly negative values and particularly cool materials can even exceed 100.

### LEED Information

Pre-consumer Recycled Content	10%
Post-consumer Recycled Content	0%
Manufacturing Location	Senatobia, MS Tooele, UT
Solar Reflectance Index	99 (white) 86 (tan)

**CARLISLE SURE-SEAL® HP PROTECTIVE MAT**

**GENERAL:**

Carlisle Sure-Seal HP Protective Mat is a nominal 6.0 ounce per square yard (140 grams per square meter) UV resistant polypropylene needle punched fabric. HP Mat can be used above the membrane as a slipsheet for crushed stone or pavers or below the membrane as a minimum underlayment mat for Carlisle's Mechanically-Fastened or Ballasted System applications. Consult current specifications for underlayment requirements.

**TYPICAL PROPERTIES AND CHARACTERISTICS:**

	<b>15' x 300'</b> <b>(4.6m x 92m)</b>	
Area/Roll	4500 ft <sup>2</sup> (405 m <sup>2</sup> )	
Weight/Roll	210 lbs. (83 Kg)	
Thickness	.065 in. (1.65 mm)	
Roll Diameter	18 in. (460 mm)	
	<b><u>ASTM</u></b>	<b><u>Average</u></b>
	<b><u>Test Method</u></b>	<b><u>Roll Values</u></b>
Tensile Strength (Grab)	D 4632	160 lbs. (68 Kg)
Burst Strength (Mullen)	D 3786	350 psi (2413 kPa)
Elongation (Ultimate)	D 4632	> 50%
Puncture Strength	D 4833	90 lbs. (41 Kg)
Trapezoidal Tear	D 4533	65 lbs. (30 Kg)
UV Resistance (500 Hr St. Ref)	D 4355	> 70%
Permeability Coefficient	D 4491	0.2 cm/sec
pH Resistance		2 - 13

**CAUTIONS AND WARNINGS:**

This product is not hazardous as defined in CFR 1910.1200.  
 Dust may be irritating to respiratory tract and eyes.  
 Material is flammable. Do not expose to open flame.

**MECHANICALLY-FASTENED APPLICATION  
SURE-SEAL HP PROTECTIVE MAT PLACEMENT:**

1. **When specified under EPDM membrane**, install Sure-Seal HP Protective Mat over the substrate with all edges overlapped a minimum of 3" (75 mm).

HP Protective Mat must be fastened to the roof deck; however, on Mechanically-Fastened Systems, the seam fastening plates used to secure the membrane will provide adequate fastening for the mat.

When the mat is not secured with the seam fastening plates used to secure the membrane, an acceptable fastener and plate must be installed every 50 linear feet (15 m). Spot bonding the HP Protective Mat with bonding adhesive is an acceptable alternative to mechanical fastening.

**BALLASTED APPLICATION  
SURE-SEAL HP PROTECTIVE MAT PLACEMENT:**

1. **When specified under EPDM membrane**, position Sure-Seal HP Protective Mat loosely over the substrate with all edges overlapped a minimum of 6" (150 mm).

The EPDM membrane must be positioned to completely cover the previously installed HP Protective Mat.

2. **When required above EPDM membrane** under the pavers or crushed stone, position Sure-Seal HP Protective Mat loosely over the membrane after completing all membrane and flashing splices. Adjacent edges must be overlapped a minimum of 6" (150 mm); end rolls must overlap 12" (300 mm). Prior to placement of ballast, extend the Sure-Seal HP Protective Mat a minimum of 2" (50 mm) above the anticipated ballast level at the perimeter and penetrations except the roof drains and scuppers.

The fabric must extend to drain bases and scupper openings but must not cover or restrict flow to the drains. Additional matting must be installed around penetrations to prevent direct contact between crushed stone and flashing.

**Note:** Following placement of the fabric, install ballast, temporary ballast, or spot adhere with bonding adhesive to prevent the movement or displacement of unballasted fabric.

# Material Safety Data Sheet

**SURE-WELD REINFORCED TPO MEMBRANE**

**MSDS No. 300428**

Date of Preparation: 09/09/2010

Revision: 008

## Section 1 - Chemical Product and Company Identification

**Product/Chemical Name:** Sure-Weld Reinforced TPO Membrane (Standard, HS, EXTRA, and FleeceBACK)  
**Chemical Formula:** Mixture  
**General Use:** Roof and Waterproofing Membrane  
**Manufacturer:** Carlisle Construction Materials Incorporated, 1285 Ritner Highway, Carlisle, PA 17013  
 Phone: 800-479-6832  
**Emergency Phone Number:** CHEMTREC (USA) 800-424-9300

## Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	% wt or % vol
Propylene ethylene copolymer	9010-79-1	>50
Magnesium hydroxide	1309-42-8	>15
Stabilizers (trade secret)		>5

**Hazardous Ingredients:**

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH IDLH
	TWA	STEL	TWA	STEL	TWA	STEL	
This product is considered to be a finished article as defined by 29 CFR 1910.1200 and is exempt from the requirements of the Hazard Communication standard. This product is nonhazardous as per 29 CFR 1910.1200.							

## Section 3 - Hazards Identification

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

<b>HMIS</b>	
<b>H</b>	0
<b>F</b>	1
<b>P</b>	0
<b>PPE†</b>	
	†Sec. 8

### Potential Health Effects

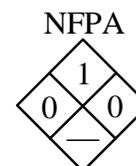
**Primary Entry Routes:** None  
**Target Organs:** Not Applicable  
**Acute Effects**  
**Inhalation:** Inhalation of vapor from this product during heat welding may cause respiratory tract irritation.  
**Eye:** Vapor from this product during heat welding may irritate eyes.  
**Skin:** Exposure to hot surfaces during heat welding may cause thermal burns.  
**Ingestion:** Ingestion difficult, no known health effects.  
**Carcinogenicity:** None Known  
**Medical Conditions Aggravated by Long-Term Exposure:** None Known  
**Chronic Effects:** None Known

## Section 4 - First Aid Measures

**Inhalation:** If breathing becomes difficult, remove person from heat welding area and get medical attention.  
**Eye Contact:** If eye irritation continues after welding, flush eyes with water for 15 minutes  
**Skin Contact:** If skin is burned from welding operation, cool with running water. Get medical attention if necessary.  
**Ingestion:** Not Applicable  
*After first aid, get appropriate in-plant, paramedic, or community medical support.*  
**Note to Physicians:** None  
**Special Precautions/Procedures:** None

## Section 5 - Fire-Fighting Measures

**Flash Point:** Above 329 °C  
**Flash Point Method:** Setchkin  
**Burning Rate:** Not Determined  
**Autoignition Temperature:** >357 °C  
**LEL:** Not Applicable  
**UEL:** Not Applicable  
**Flammability Classification:** Not flammable.



**Extinguishing Media:** Water spray, dry chemical, foam, or carbon dioxide.

**Unusual Fire or Explosion Hazards:** None

**Hazardous Combustion Products:** Toxic gases or vapors, such as carbon monoxide and other organic compounds may be released in a fire.

**Fire-Fighting Instructions:** Standard procedures for Class A fires. Use self-contained breathing apparatus (SCBA) and protective clothing for structural fire fighting.

**Fire-Fighting Equipment:** Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full face piece operated in pressure-demand or positive-pressure mode.

## Section 6 - Accidental Release Measures

**Spill /Leak Procedures:** Handle as normal solid waste.

**Regulatory Requirements:** Follow applicable OSHA regulations (29 CFR 1910.1200).

## Section 7 - Handling and Storage

**Handling Precautions:** Keep away from sparks and open flame.

**Storage Requirements:** This product may react with strong oxidizing agents and should not be stored near such materials. Best to store rolls in areas protected by automatic sprinklers. Store product below 60°C (140°F) to prevent roll sticking at installation

**Regulatory Requirements:** Not Applicable

## Section 8 - Exposure Controls / Personal Protection

**Engineering Controls:** Provide adequate ventilation during heat welding.

**Ventilation:** Heat welding in an outdoor environment will normally provide adequate ventilation.

**Administrative Controls:** Assure that adequate ventilation is provided during heat welding.

**Respiratory Protection:** A respiratory protection program that meets OSHA 1910.134, ANSI Z88.2 and / or CSA Z94.4-93 requirements must be followed whenever workplace conditions warrant use of a respirator.

**Protective Clothing/Equipment:** Work boots and work clothing recommended. Sunglasses which filter out ultraviolet light are strongly recommended since the white surface is highly reflective to sunlight. White surfaces reflect heat and light. Roofing technicians should dress appropriately and wear sunscreen to protect skin from the sun.

**Safety Stations:** Emergency eyewash stations or source of clean running water recommended in vicinity of project

**Contaminated Equipment:** Not Applicable

**Comments:** Never eat, drink, or smoke in work areas. Best to wash hands after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

## Section 9 - Physical and Chemical Properties

**Physical State:** Solid

**Appearance and Odor:** White-on-black sheet; slight waxy odor. (white may be replaced by tan, gray, etc)

**Odor Threshold(ppm):** Not Determined

**Vapor Pressure:** Not Applicable

**Vapor Density (Air=1):** Not Applicable

**Formula Weight:** Not Applicable

**Density:**

**Specific Gravity (H<sub>2</sub>O=1, at 4 °C):** 0.95-1.05

**pH:** Not Applicable

**Water Solubility:** Practically insoluble in water

**Other Solubilities:** Not Determined

**Boiling Point(°C):** Not Applicable

**Freezing/Melting Point(°C):** >120

**Viscosity:** Not Applicable

**Refractive Index:** Not Applicable

**Surface Tension:** Not Applicable

**% Volatile:** Not Determined

**Evaporation Rate:** Not Applicable

## Section 10 - Stability and Reactivity

**Stability:** Stable.

**Polymerization:** Will not occur.

**Chemical Incompatibilities:** Any strong oxidizing agent.

**Conditions to Avoid:** Keep away from heat, sparks or open flame

**Hazardous Decomposition Products:** Gases or vapors such as carbon monoxide, carbon dioxide, or oxides of nitrogen, and other organic compounds may be released in a fire.

## Section 11- Toxicological Information

### Toxicity Data:

**Eye Effects:** None Known  
**Skin Effects:** None Known

**Acute Inhalation Effects:** None Known  
**Acute Oral Effects:** None Known  
**Chronic Effects:** None Known  
**Carcinogenicity:** No evidence  
**Mutagenicity:** No evidence.  
**Teratogenicity:** No evidence.

## Section 12 - Ecological Information

**Ecotoxicity:** None Known  
**Environmental Fate:** This product is not readily biodegradable  
**Environmental Degradation:** Not Determined  
**Soil Absorption/Mobility:** Not Determined

## Section 13 - Disposal Considerations

**Disposal:** (1) Recycle / reprocess; (2) Incineration including energy recovery of waste material in a permitted facility in accordance with local, state or federal regulations; (3) Landfilling in a licensed facility in accordance with local, state or federal regulations  
**Disposal Regulatory Requirements:** This product is not judged to be a hazardous waste by any local, state or federal regulation. This product is not listed in the U.S. federal hazardous waste regulations, 40 CFR261.33 paragraphs (e) or (f)  
**Container Cleaning and Disposal:** Not Applicable

## Section 14 - Transport Information

### DOT Transportation Data (49 CFR 172.101):

This product is not regulated by DOT, IMO, IATA, Canadian TDG and associated regulations ADR or RID.

## Section 15 - Regulatory Information

### EPA Regulations:

RCRA Hazardous Waste Number: Not Listed  
 RCRA Hazardous Waste Classification: Not Classified  
 CERCLA Hazardous Substance: Not Listed  
 CERCLA Reportable Quantity (RQ): Not Listed  
 SARA 311/312 Codes: This product is not subject to SARA Title III requirements  
 SARA Toxic Chemical (40 CFR 372.65): Not listed  
 SARA EHS (Extremely Hazardous Substance) (40 CFR 355): Not Listed

### OSHA Regulations:

Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): Not listed  
 OSHA Specifically Regulated Substance: Not Listed

**State Regulations:** California Proposition 65: This product contains the following chemical(s) known to the state of California to cause cancer: None.

## Section 16 - Other Information

**Prepared By:** Research & Development (BG)  
**Revision Notes:** Section 1 – Carlisle SynTec Incorporated to Carlisle Construction Materials Incorporated

### Additional Hazard Rating Systems:

**Disclaimer:** The information contained in this document is based upon data that was supplied to Carlisle by other companies and organizations. No warranty of merchantability or fitness for a particular purpose is expressed or implied regarding the accuracy or completeness of the data and/or information in this material safety data sheet.

# Product Data

Fasteners and Plates



## FASTENERS & PLATES

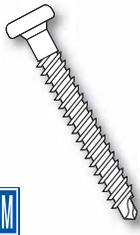
Carlisle SynTec Systems offers an array of fasteners and plates to complement our roofing systems. From pre-assembled choices for EPDM installations to Purlin fasteners for Metal Retrofit Systems and Piranha plates for Sure-Weld® options, our mission continues to be to provide all components necessary for the application of a long-lasting and secure single-ply roofing system from Carlisle.

 Sure-Seal® & Sure-White® EPDM

 Sure-Weld TPO

 Sure-Flex™ PVC

### HP FASTENER



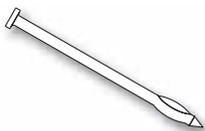
Applicable to steel, 22-gauge and heavier, CDX plywood and wood plank deck types. Can be used to secure Sure-Tough membranes, RUSS and insulation. Longer fastener sizes available as special order.

**Sizes Available:**  
1¼", 2"– 15" (1" Increments)

**Size & Quantity Per Box:**  
2"– 6": 1,000; 7"– 12": 500; 13"– 15": 250  
1¼": 1,000



### CD-10



Applicable for concrete decks. Used to secure Sure-Seal, Sure-Weld and Sure-Flex membranes and for insulation securement.

**Sizes Available:**  
2"– 6" (½" Increments)  
7"– 12" (1" Increments)

**Size & Quantity Per Box:**  
2"– 8": 500; 9"– 12": 250



### HP-X FASTENER™ & HP-XTRA FASTENER



A #15 diameter fastener applicable to steel, wood and CDX plywood. Can be used to secure Sure-Seal, Sure-Weld and Sure-Flex membranes.

**Sizes Available:**  
2"– 8" (1" Increments)  
10"– 16" (2" Increments)

**Size & Quantity Per Box:**  
2"– 4": 1,000; 5"– 12": 500; 14"– 16": 250



#### HP-XTRA FASTENER

*Also Available (Not shown)*

A #21 diameter fastener applicable to steel, wood and CDX plywood decks.

**Sizes Available:**  
2"– 8" (1" increments)

**Size & Quantity Per Box:**  
500 (2"– 6"), 250 (7"– 8")

### INSULFAST™



A #12 diameter fastener applicable to wood decks and steel, 22-gauge and heavier, decks. Used only for insulation attachment.

**Sizes Available:**  
2"– 8" (1" Increments)  
1½", 2¼", 3"– 8" (1" Increments)

**Size & Quantity Per Box:**  
2"– 8": 1,000

### SURE-TITE®



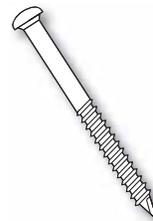
A 0.33" diameter fastener applicable to steel, 22-gauge and heavier. Can be used for Sure-Tough membrane securement in mechanically attached systems.

**Sizes Available:**  
2"– 8" (1" Increments)

**Size & Quantity Per Box:**  
2", 3": 500; 4"– 8": 250



### HD 14-10



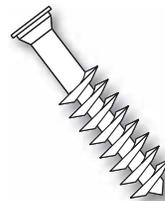
A #14 diameter fastener used for Sure-Tough, Sure-Weld and Sure-Flex membrane securement into wood and concrete decks. Also applicable to insulation securement into steel, wood and concrete decks.

**Sizes Available:**  
2"– 12" (1" Increments)  
14"– 24" (2" Increments)

**Size & Quantity Per Box:**  
2"– 4": 1,000; 5"– 11": 500; 12"– 24": 250



### GYPTEC FASTENER & PLATE



Applicable to cementitious wood fiber, lightweight concrete and gypsum decks. Can be used to secure Sure-Tough, Sure-Weld and Sure-Flex membranes and insulation.

**Sizes Available:**  
2½"– 10" (½" Increments)

**Size & Quantity Per Box:**  
2½"– 7": 500; 7½"– 10": 250



#### GYPTEC PLATE

**Sizes Available:**  
2" Metal membrane plate  
3" Metal insulation plate  
**Quantity Per Box:** 1,000

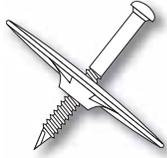
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## FASTENERS & PLATES

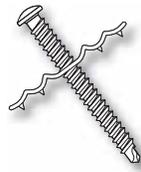
### ASAP WITH POLYMER PLATE



A pre-assembled #12 diameter fastener and plastic insulation plate applicable to steel and wood decks. Used to secure insulation only. Longer fastener sizes available as special order.

**Sizes Available:**  
2¼", 3"– 12" (1" Increments)  
**Size & Quantity Per Box:**  
2¼"– 8": 250; 9"– 12": 200

### HP-X ASAP



A pre-assembled HP-X Fastener and Piranha Plate™ applicable to steel, wood and CDX plywood decks. Used to secure Sure-Weld and Sure-Flex membranes.

**Sizes Available:**  
2"–10" (1" Increments)  
12"–16" (2" Increments)  
**Size & Quantity Per Box:**  
2"– 9": 250; 10"– 12": 200; 14"– 16": 150



### HP PRE-ASSEMBLED



Pre-assembled HP Fastener and Polymer seam plate applicable to steel, wood and CDX plywood decks. Used to secure Sure-Tough membranes.

**Sizes Available:**  
2¼", 3"– 12" (1" Increments)  
**Size & Quantity Per Box:**  
2¼", 3", 3¾", 3¾": 450; 4", 5": 400; 6": 350;  
7", 8": 300; 9": 250; 10"– 12": 200



### RHINOBOND® PLATE



3"-round, specially coated plates used with HP-X Fasteners and the RhinoBond induction welding system. Available in TPO and PVC versions.

**Sizes Available:**  
3" diameter  
**Quantity Per Box:** 500/carton



### HP POLYMER SEAM PLATE



Along with the HP Fastener, used to mechanically fasten reinforced Sure-Tough membrane and RUSS over steel decks.

**Sizes Available:**  
2" diameter  
**Quantity Per Box:** 1,000



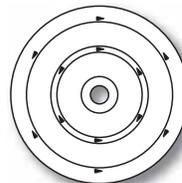
#### HP-XTRA POLYMER SEAM PLATE

Also Available (Not shown)

For use with HP-XTRA Fastener to secure Sure-Tough membranes to steel decks.

**Sizes Available:**  
2 ¾" diameter  
**Quantity Per Box:** 1,000

### PIRANHA PLATE



Along with the appropriate fastener, used to secure Sure-Weld and Sure-Flex membranes to steel, concrete and wood decks.

**Sizes Available:**  
2 ¾" diameter  
**Quantity Per Box:** 1,000



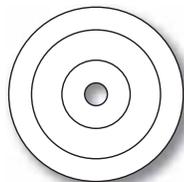
#### HP-XTRA PIRANHA PLATE

Also Available (Not shown)

For use with HP-XTRA Fastener to secure Sure-Weld and Sure-Flex membranes to steel and wood decks.

**Sizes Available:**  
2 ¾" diameter  
**Quantity Per Box:** 1,000

### SEAM FASTENING PLATE

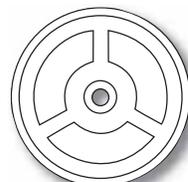


Applicable with HP, HD 14-10 and CD-10 fasteners to mechanically attach reinforced Sure-Tough membrane (excluding steel decks) and RUSS (except when used with mechanically fastened EPDM to steel decks).

**Sizes Available:**  
2" diameter  
**Quantity Per Box:** 1,000



### INSULATION FASTENING PLATE



Applicable with InsulFast, HP, CD-10 and HD 14-10 fasteners. Used for insulation securement only on steel, wood and concrete decks.

**Sizes Available:**  
3" diameter  
**Quantity Per Box:** 1,000

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**CARLISLE**  
SYNTEC SYSTEMS

# Product Data

Vapor Barrier



# 725TR Air & Vapor Barrier/Temporary Roof



## Overview

Carlisle's 725TR Air & Vapor Barrier/Temporary Roof is a 40-mil composite that consists of 35 mils of self-adhering rubberized asphalt laminated to a 5-mil woven polypropylene film. A siliconized one piece release liner prevents the material from bonding to itself in the roll and is easily removed for installation. 725TR is available in a 244-square-foot roll with dimensions of 39" x 75'. The factory-controlled thickness of the membrane ensures uniform barrier properties on the job, and the woven polypropylene film increases strength and has a non-skid surface suitable for the bonding of subsequent layers. Approved Carlisle adhesives for attaching insulation to 725TR are:

- » Flexible FAST™ Adhesive
- » FAST™ Adhesive
- » OlyBond 500™
- » One Step

Carlisle's 725TR can be used on concrete, plywood, exterior gypsum, DensDeck Prime®, SECUROCK® or other approved substrates in conjunction with Carlisle SynTec roofing systems. Gypsum decks may require additional securement with mechanical fasteners. Use of CAV-GRIP™, CCW-702 or CCW-702LV is required on all substrates. 725TR may be installed directly over a nailed Carlisle modified base sheet when primed with CAV-GRIP.

Carlisle's 725TR must be covered with roofing membrane within 120 days. T-joints must be sealed with an internal bead of Lap Sealant. Carlisle does not accept responsibility for the watertight integrity of the Carlisle 725TR related to workmanship issues or physical damage. For special situations, contact the Project Review and Warranty Services Department prior to specifying this material.

## Installation

**Surface Preparation:** Concrete shall be in place for 28 days minimum. The substrate must be completely dry. The surface shall have a smooth finish and be free of voids, spalled areas, sharp protrusions, loose aggregate, laitance and form-release agents. Some curing compounds may interfere with proper adhesion, and an adhesion test is recommended. In the event of rain, concrete must be allowed to dry before the application of primer. Special attention must be taken when installing over new concrete in temperatures below 50°F. Artificial drying methods such as torches are not acceptable. In the event of excessive rain or snow – please refer to the Rubber Mat Test on the next page.

**Adhesive:** Surfaces to receive 725TR must be clean and dry. Apply CAV-GRIP, CCW-702 or CCW-702LV to the substrate in a uniform manner avoiding puddles, globs or thin spots. Apply CCW-702 by spray, brush or with a long nap roller at 250 to 300 ft<sup>2</sup> per gallon for smooth structural concrete decks or 75 ft<sup>2</sup> per gallon for porous substrates. DensDeck Prime will require a coverage rate of 150 ft<sup>2</sup> per gallon. Other exterior gypsum boards may require heavier coverage rates or even multiple coats. CAV-GRIP shall be kept and stored above 60°F prior to application. **CCW-702 will require one hour minimum to dry at a temperature of 75°F. CCW-702 has sufficient cure when it will not transfer when touched.** Apply adhesive only to those areas that will be covered with membrane the same day. Re-prime any areas that become wet or dirty. Similar precautions should be followed with CAV-GRIP. CAV-GRIP is applied at a rate of 2,000-2,200 sq. ft. per cylinder using a spray gun assembly (sold separately). Dry time for CAV-GRIP is approximately 5-10 minutes.

**Application:** 725TR material must be stored and kept above 60°F prior to installation. Apply 725TR from low to high points, in a shingle fashion, so that the laps will shed water. Overlap all edges by at least 2½". End laps should be staggered. Position membrane carefully to avoid fish-mouths and wrinkles. **Roll the 725TR membrane immediately after installation with a 100-150-pound roller wrapped in a resilient material.** When the 725TR is applied on a vertical surface, hand rolling with a 2" hand roller is required. Vertical surfaces must be prepared in the same fashion as horizontal surfaces.

Note: For applications below 40°F – all materials must be kept above 60°F prior to installation and CAV-GRIP Primer must be used.

**Seaming:** Install a 2" -long bead of lap sealant internally along any T-joints or step-offs. Then use a hand roller or stand-up seam roller to mate the entire seam together, (ensure the seam's leading edge is rolled properly) paying particular attention to the T-joints and step-offs. If seam surface is contaminated, clean and prime with CCW-702, CCW-702LV or CAV-GRIP Primers.

# 725TR Air & Vapor Barrier/Temporary Roof

**Repairs:** Following application, inspect all membrane for tears, punctures, fish-mouths, blisters and voids caused by misalignment at seams. Remove damaged membrane. Apply CAV-GRIP or CCW-702 to the exposed substrate and allow to dry. Apply a new section of 725TR to prepared substrate, extending at least 6" onto underlying adhered membrane on all sides. Firmly roll repaired area with a 2" hand roller to ensure a good seal. Slit fish-mouths and overlap the edges. Apply CAV-GRIP or CCW-702 to the repair area and place a section of 725TR over the repair, allowing it to extend at least 6" in all directions. When repairs generate a T-joint, follow the directions above for application of lap sealant. Firmly roll repair section to ensure a good seal.

## Precautions

- » Use proper stacking procedures to ensure sufficient stability of the materials.
- » Exercise caution when walking on wet membrane. Membranes are slippery when wet.
- » Carlisle's 725TR membrane must be dry prior to installation of subsequent layers.
- » Carlisle's 725TR should be installed at temperatures above 40°F (air and substrate) or 25°F based on instructions stated above.
- » Avoid moving or stacking heavy loads on the installed membrane, particularly in hot weather. This could thin out the self-adhering barrier layer.
- » Refer to applicable Material Safety Data Sheets before using any Carlisle products.
- » Do not apply CAV-GRIP, CCW-702 or membrane to damp or contaminated surfaces.
- » Do not apply CAV-GRIP, CCW-702 or membrane to frozen substrates.
- » Do not allow Carlisle's 725TR to be exposed for more than 120 days.

## Rubber Mat Test

The rubber mat test will identify the presence of excessive moisture in a concrete deck. Capillary moisture in concrete is detrimental to the adhesion and performance of many waterproofing systems.

### Materials:

- » 18" x 18" min. 4- to 6-mil polyethylene sheeting or
- » 18" x 18" min. .060" EPDM membrane
- » 2"-wide min. duct tape

**Test Conditions:** Conduct the rubber mat test at a minimum of 40°F for application of the waterproofing system.

Test in direct sunlight or use a sun lamp over the mat (max. distance 4 ft) in the absence of sunlight. The frequency of test shall be one test mat per 500 ft<sup>2</sup>.

**Procedure:** Tape the mat tightly to the concrete surface. Ensure all edges are sealed.

Allow the mat to remain in place 4 to 8 hours (4 hours minimum). After 4 hours, remove the mat and visually inspect the underside of the sheet and the corresponding concrete surface for moisture.

**Results:** Some dampness may be present; however, if visible droplets of moisture are present beneath the mat, the substrate is too wet to proceed with waterproofing. The concrete must be allowed to dry further and be retested before waterproofing begins.

## Typical Properties and Characteristics

Physical Property	Test Method	Typical
Thickness	ASTM D1970	40 mils
Tensile Strength	ASTM D412	250 psi
Elongation	ASTM D412	250%
Peel Adhesion	ASTM D903	5 lbs/in
Puncture Resistance	ASTM E154	60 lbs
Permeability	ASTM D1970	0.05 perms
Air Permeance	ASTM E2178	0.000 L*m <sup>2</sup> @ 75 Pa

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product.

## LEED® Information

Pre-consumer Recycled Content	0%
Post-consumer Recycled Content	0%
Manufacturing Location	Terrell, TX
VOC Content	0 g/L
Solar Reflectance Index	White: 110

# Material Safety Data Sheet

CARLISLE 725TR Temporary Roof / Air and Vapor Barrier

MSDS No. 309998 / 310632

Date of Preparation: 05/24/11

Revision: 001

## Section 1 - Chemical Product and Company Identification

**Product/Chemical Name:** CARLISLE 725TR Temporary Roof / Air and Vapor Barrier  
**Chemical Formula:** Mixture  
**Other Designations:** Self-Adhering Temporary Roof / Air and Vapor Barrier  
**Manufacturer:** Carlisle SynTec, 1285 Ritner Highway, Carlisle, PA 17013, Phone: 800-479-6832  
 24-Hour Emergency Phone Number: CHEMTREC (USA) 800-424-9300

## Section 2 - Hazards Identification

### ☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

Under normal conditions of use, this product is not expected to cause any unusual emergency hazards.

#### HMIS

H 2

F 1

R 0

PPE†

†Sec. 8

#### Emergency and Hazards Overview:

Repeated skin contact with rubberized asphalt may result in slight irritation. Prolonged or repeated skin contact with process oil in the rubberized asphalt may cause an increased risk of skin cancer, liver damage and reproductive effects based on laboratory animal testing. Skin cleansing studies, with aromatic oils, show that the toxic effects are not likely to occur in humans if good personal hygiene practices are used.

**Appearance:** Black membrane with textured plastic surface and mild asphaltic odor.

#### Potential Health Effects

**Primary Entry Routes:** Skin absorption, inhalation, eye contact, ingestion.

#### Acute Effects

**Inhalation:** Contact with dusts or fumes may cause irritation of the nose, throat and respiratory tract.

**Eye:** Irritation, if oil residue on hands is wiped or rubbed into eyes.

**Skin:** Possible irritation if oil residue is allowed to remain on skin for any length of time.

**Ingestion:** Ingestion is not considered to be likely due to the form of the material.

**Inhalation:** Inhalation is not considered to be likely due to the form of the material.

**Carcinogenicity:** See comments in Section 11. IARC Group 2 carcinogen.

**Chronic Effects:** Repeated or prolonged contact with oil in this product may produce effects including skin cancer (see comments in Section 11).

**Hazards:** Flammable/Combustible no Acute Toxin no Chronic Toxin no Carcinogen X  
 Pressure No Reactive No

## Section 3 - Ingredient Information

Hazardous Ingredients	CAS Number	% wt
Asphalt	8052-42-4	60-80
Hydrotreated Heavy Naphthenic Distillate	64742-52-5	<20
Additional Ingredients	CAS Number	% wt
Rubber Copolymer	9003-55-8	4-20

This product is hazardous according to OSHA 29 CFR 1910.1200

## Section 4 - First Aid Measures

**Inhalation:** Due to the nature of this product, inhalation is unlikely.

**Eye Contact:** Immediately flush with plenty of water for at least 15 minutes. Call a physician.

**Skin Contact:** Wash promptly with soap and water. Remove all material under fingernails. See a physician if irritation develops.

**Ingestion:** Due to the nature of this product, ingestion is unlikely. Should ingestion occur, seek the assistance of a physician immediately.

*After first aid, get appropriate in-plant, paramedic, or community medical support.*

**Note to Physicians:** This product contains asphalt and mineral process oil.

**Special Precautions/Procedures:** Gloves are recommended to prevent skin contact. Provide adequate ventilation in confined area or respirators if material is heated. Clothing as needed to prevent skin contact.

### Section 5 - Fire-Fighting Measures

**Flash Point:** Above 232 °C (450° F)  
**Flash Point Method:** COC.  
**Autoignition Temperature:** Not determined.  
**Extinguishing Media:** Standard fire extinguishers (CO<sub>2</sub>, foam, dry chemical)  
**Unusual Fire or Explosion Hazards:** None known



**Hazardous Combustion Products:** Toxic gases or vapors, such as carbon monoxide, carbon dioxide, or oxides of nitrogen may be released in a fire.

**Fire-Fighting Instructions:** Wear NIOSH/MSHA approved respirator, or self-contained breathing apparatus. Avoid breathing smoke.

**Fire-Fighting Equipment:** Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full face piece operated in pressure-demand or positive-pressure mode.

### Section 6 - Accidental Release Measures

**Spill /Leak Procedures:** The use of rubber gloves and/or barrier creams to minimize skin contact is recommended.

**Containment:** Unless molten, material will not flow.

**Cleanup:** Pick, scoop, or sweep up material for proper disposal.

**Regulatory Requirements:** Certain components of this product are defined as hazardous according to US EPA. Consult all applicable state and local regulations. For Canada, observe all precautions noted above.

### Section 7 - Handling and Storage

**Handling Precautions:** Avoid removing release paper where spark may ignite flammable vapors from other products.

**Storage Requirements:** Store inside or under cover. Avoid prolonged exposure to extreme temperature.

**Regulatory Requirements:** The information contained in this Material Safety Data Sheet is based on the product as shipped. According to preliminary toxicity testing during a two year study, asphalt fume condensate caused skin cancer in laboratory animals when repeatedly applied to skin and not washed off. The data also indicates that asphalt fume condensate is mutagenic to cells in bacterial tests. Occupational studies have provided no convincing evidence of lung cancer in humans exposed to petroleum asphalt alone without the presence of coal tar. It is prudent to avoid prolonged and repeated inhalation of heated asphalt fume and to use approved respiratory protection if engineering controls cannot maintain acceptable exposure levels. It is also prudent to avoid prolonged and repeated skin contact; **the use of protective gloves and/or barrier creams is highly recommended.**

A product containing a substance for which OSHA has established a permissible exposure limit (PEL) is considered hazardous. OSHA has established a PEL of 5mg/m<sup>3</sup> for worker exposure to airborne mists of mineral oil. Therefore, the presence of mineral oil brings this product within the provisions of OSHA hazard communication standard where the PEL reaches or exceeds 5mg/m<sup>3</sup>. According to the International Agency for Research on Cancer (IARC) monograph, there is evidence that oils of this type can induce cancer in animals under laboratory conditions. Inhalation of mists arising from products containing these materials may also present a cancer hazard. This specific product has not been tested in long-term, chronic exposure tests. The applicability of animal test data to determinations about the hazardous nature of lubricating oils to humans is unknown at this time. As with any industrial product, the practice of good personal hygiene is recommended where prolonged contact is anticipated.

This product has been reviewed in accordance with Sections 311 (MSDS Inventory) and Section 312 (Tier I/II Inventory) of the Superfund Amendments and Reauthorization Act of 1986 (40 CFR 370.2). The product meets the following categories: Immediate (acute) health hazard and delayed (chronic) health hazard.

### Section 8 - Exposure Controls / Personal Protection

**Exposure Limits:**

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH IDLH
	TWA	STEL	TWA	STEL	TWA	STEL	
Asphalt		none estab.	5 mg/m <sup>3</sup> (airborne)	none estab.	none estab.	5 mg/m <sup>3</sup> (airborne).	none estab.
Hydrotreated Naphthenic Distillate	5 mg/m <sup>3</sup> (airborne)	none estab.	10 mg/m <sup>3</sup>	none estab.	none estab.	none estab.	none estab.

**Engineering Controls:**

**Ventilation:** If material is heated, provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

**Administrative Controls:**

**Respiratory Protection:** Provide adequate ventilation in confined area or respirators if material is heated.

**Protective Clothing/Equipment:** Clothing as needed to avoid skin contact. Gloves or barrier creams are recommended to prevent skin contact. Eye/face protection is not required for normal use.

**Other:** Make emergency eyewash stations/bottles and washing facilities available in work area.

**Contaminated Equipment:** Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

**Comments:** Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics. Avoid rubbing face/eyes while handling this material.

### Section 9 - Physical and Chemical Properties

**Flash Point:** Above 232 °C (450° F)

**Flash Point Method:** COC.

**Autoignition Temperature:** Not determined.

**Physical State:** Solid

**Appearance and Odor:** Black rubberized asphalt with film backing with slight petroleum odor

**Specific Gravity (H<sub>2</sub>O=1, at 4 °C):** 1.0 – 1.2

**Water Solubility:** Negligible

**Percent Volatile by Volume:** Negligible

**Volatile Organic Content:** Negligible

**Viscosity at 77° F:** Solid

**Melting Point:** 190° F to 264° F

**Pour Point:** >300° F

### Section 10 - Stability and Reactivity

**Stability:** Stable under normal conditions.

**Possibility of Hazardous Reactions:** Will not occur.

**Chemical Incompatibilities:** Strong oxidizers or strong bases.

**Conditions to Avoid:** Extreme heat or open flames.

**Hazardous Decomposition Products:** Toxic gases or vapors, such as carbon monoxide, carbon dioxide, or oxides of nitrogen may be released in a fire.

### Section 11- Toxicological Information

**Eye Effects:** Irritating

**Skin Effects:** May be irritating

**Oral toxicity:** Mineral oil mist: LD<sub>50</sub> (mouse)  
22,000 mg/kg

**Toxicity Data:**

**Carcinogenicity:** Prolonged exposure to > 5mg/m<sup>3</sup> mineral oil mist may result in increased cancer risk. IARC Group 2 carcinogen.

### Section 12 - Ecological Information

**Ecotoxicity:** Not known

**Environmental Fate:** Not known

**Environmental Degradation:** Not known

**Soil Absorption/Mobility:** Not known

### Section 13 - Disposal Considerations

**Disposal:** Dispose of in accordance with all local, state, provincial, and federal regulations.

**Section 14 - Transport Information****DOT Transportation Data (49 CFR 172.101):****Highway/Rail (Bulk):** Not classified**Highway/Rail (non-bulk):** Not classified**International information****Vessel: IMDG Regulated:** Not classified **IMDG Not Regulated****Air: ICAO Regulated:** Not classified **ICAO Not Regulated****Section 15 - Regulatory Information****EPA Regulations:****California Proposition 65 Information: Warning!** This product contains substances known to the State of California to cause cancer.**USTSCA Inventory:** All components of the material are on the US TSCA inventory or are exempt from the listing on the TSCA Inventory.**SARA 311/312 Categories:** Acute Yes Chronic Yes Fire yes Pressure No Reactive No**WHMIS Classification:** B4**State Regulations:** FL, MA, MN, PA, RI, and WA**European Union Classification****Hazard Symbol:**

Toxic

**Risk Phrases:** R45**Safety Phrases:** S38, S45, S53**Section 16 - Other Information****Health and Environmental Label Language**

All ingredients contained in this product are included on the US EPA Toxic Substances Control Act (TSCA) inventory. All ingredients contained in this product comply with the requirements of the Canadian Environmental Protection Act (CEPA) and are listed on the Domestic Substance List (DSL) or Non-Domestic Substance List (NDSL).

**Prepared By:** Research & Development**Revision Notes:** Change in ingredients. General revisions.**Additional Hazard Rating Systems:****Disclaimer:** The information contained in this document is based upon data that was supplied to Carlisle by other companies and organizations. No warranty of merchantability or fitness for a particular purpose is expressed or implied regarding the accuracy or completeness of the data and/or information in this material safety data sheet.

# Product Data

Adhesives



# FAST™

## Dual Cartridge Adhesive



### Overview

Carlisle FAST Adhesive Dual Cartridge is a VOC-free construction grade, two-component, polyurethane adhesive. The low-rise, expanding characteristics are designed to bond Carlisle's FleeceBACK® membrane and insulations to a variety of substrates. Carlisle FAST Adhesive Dual Cartridge is compatible with: wood fiberboard, polyisocyanurate insulation, EPS, extruded polystyrene, DensDeck®, Securock® and OSB. Compatible deck types include concrete, cellular lightweight concrete, gypsum, cementitious wood fiber, wood and painted or galvanized steel. Carlisle FAST Adhesive Dual Cartridge is also compatible with the following roofing substrates: smooth BUR (previously exposed), mineral cap sheet, smooth (previously exposed) or granulated SBS Mod-Bit and Carlisle's 725TR Vapor Barrier. Previously unexposed asphalt must be primed with CAV-GRIP™ or 702 Primer. Carlisle FAST Adhesive Dual Cartridge is applied in beads or ribbons 4", 6" or 12" o.c. depending on the wind zone, building height and code requirements to produce a strong adhesive bond between the FleeceBACK membrane, insulation and the substrate. Factory Mutual approval over a variety of deck types and substrates has been achieved.

### Coverage Rate

FleeceBACK or insulation attachment to: Lightweight concrete, concrete, wood, steel, smooth (previously exposed) BUR, Mod-Bit, mineral cap, or multiple layers of insulation. Rough, uneven or porous surfaces will require more adhesive than the rates below.

Per carton - 4 cartridge sets

600 sq.ft. – 12" o.c.

300 sq.ft. – 6" o.c.

200 sq.ft. – 4" o.c.

### Application

1. The surface to which the adhesive is to be applied shall be smooth, dry, free of fins, sharp edges, loose and foreign materials, oil and grease and standing water. All sharp projections and loose material shall be removed by sweeping, blowing or vacuum cleaning. Previously unexposed asphalt must be primed with CAV-GRIP or 702 Primer.
2. Seal gaps between the wall/penetration and concrete deck with Carlisle 725TR or other suitable material to avoid condensation issues and positive pressure issues from air infiltration.
3. Proper adhesion of existing roof coatings to their substrate must be verified prior to bonding to these materials.
4. Fibrous cement decks must be investigated for their ability to retain liquid adhesive. (Some types of fibrous cement decks may allow liquid adhesive to flow through the deck).
5. Apply Carlisle FAST Adhesive Dual Cartridge when the substrate and ambient temperature is 50°F (10°C) and above.
6. Apply Carlisle FAST Adhesive Dual Cartridge IC (winter grade) when the substrate and ambient temperature is 25°–50°F (-4°–10°C).

### Insulation Attachment

1. Apply a ½" to ¾"-wide bead of Carlisle FAST Adhesive Dual Cartridge using a portable 1:1 applicator (oversized, dual-cartridge caulking gun)\* with beads spaced as outlined on the following chart for 5-, 10-, or 15-year or 55-mph warranties (20 yr or 72-mph warranties require 6" o.c. in the field):

Building Height	Bead Spacing	Bead Spacing
	(Perimeter)	(Field)
0-25'	6" o.c. - 4' perimeter	12" o.c.
25-50'	6" o.c. - 8' perimeter	12" o.c.
50-75'	6" o.c. - 12' perimeter	12" o.c.
75-100'	6" o.c. - 16' perimeter	12" o.c.
100' or greater	<i>Contact Carlisle for bead spacing requirements.</i>	

2. When following Factory Mutual guidelines, bead spacing in the perimeter and corner areas may differ from the table above. Beads at 12" o.c. are not acceptable at perimeters or corners.
3. Place 4' x 4' maximum insulation boards into Carlisle FAST Adhesive Dual Cartridge after allowing it to rise ½" and develop string/body (approx. 1 min. at room temperature) but before the adhesive reaches a "tack-free" state.

## FAST Dual Cartridge Adhesive

- Designate one person to walk and roll boards into place using a 150 lb. weighted roller adding constant weight or slitting boards where necessary until adhesive sets-up.

### FleeceBACK Attachment

- Unroll FleeceBACK sheet and position. Fold sheets in half width-wise.
- Apply FAST Adhesive Dual Cartridge to the substrate at 4", 6" or 12" on center (depending on building height, wind-speed warranty, warranty length and Factory Mutual guidelines).
- Allow adhesive to rise and develop string/body (approx. 1.5 – 2 minutes), then roll FleeceBACK membrane into FAST Adhesive. The time it takes for the adhesive to develop string will vary based on environmental conditions (temperature and humidity).
- Roll membrane with a roller (not to exceed 150 lbs.) to insure fleece embedment. If adhesive contaminates the splice area immediately remove with splice cleaner or splice primer.

### Precautions

- Review the applicable Material Safety Data Sheet for complete safety information prior to use.
- The foam produced is an organic material. It must be considered as combustible and may constitute a fire hazard. The foam adhesive must not be left exposed or unprotected. Shield from heat and sparks.
- Do not smoke during application.
- Use with adequate ventilation. Avoid breathing vapors. Wear a NIOSH or MSHA approved respirator for organic vapors with prefilters and solvent resistant cartridges if concentrations of MDI exceed the TLV or are unknown. Proper safety training is essential for all persons involved in the installation process. If inhaled, remove to fresh air and administer oxygen if breathing is difficult. Consult a physician immediately.
- Avoid contact with eyes. Safety glasses or goggles are required. If splashed in eyes, immediately flush eyes with plenty of clean water for at least 15 minutes. Contact a physician immediately.
- Avoid contact with skin. Wear long sleeves and pants. Wash thoroughly after handling. In case of contact with skin, thoroughly wash affected area with soap and water or corn oil.

NOTE: Nitrile gloves are required when handling Part A directly.

- Jobsite storage temperatures in excess of 90°F (32°C) may affect product shelf life and lead to leakage around the bottom seal. Should the components be stored at temperatures lower than 55°F (13°C), restore to room temperature prior to use. Do not allow Carlisle FAST Adhesive Dual Cartridge to freeze.
- High slope applications require beads to be applied to the back of the insulation board on a flat surface.
- REMOVE THE NOZZLE IMMEDIATELY from a partially used cartridge when stopping or pausing for more than 30–60 seconds. Wipe opening with a clean rag and reinstall plastic stopper. When ready to restart application of adhesive, ensure opening in each side is clear and install new nozzle.
- KEEP OUT OF THE REACH OF CHILDREN.

**WARNING (CAUTION): Failure to remove nozzle from partially used cartridge will cause increased internal pressure upon reuse, with possible rupture of the cartridge and result in personal injury.**

### FAST Dual Cartridge Adhesive

#### Typical Properties and Characteristics\*\*

Property	Part A (1) <i>Polymeric Isocyanate</i>	Part B (2) <i>Polyols, Surfactants &amp; Catalysts</i>
Viscosity (CPS @ 25°C)	250 cps 10.25 lbs/gal	250 cps 8.75 lbs/gal
Avg. Net Weight Packaging	0.2 gal (0.75 L) per cartridge	0.2 gal (0.75 L) per cartridge
Mixing Ratio by Volume	1:1 Part A to Part B	1:1 Part A to Part B
Shelf Life	1 year	1 year
VOC Content	0 g/L	0 g/L
Manufacturing Location	Carlisle, PA	Carlisle, PA
Pre/Post-consumer Recycled Content	0%	0%

\* The portable 1:1 applicator is a hand operated, lightweight, portable unit that consists of an oversized, dual-cartridge caulking gun used to transfer the 2-component Carlisle FAST Adhesive Dual Cartridge from the plastic cartridges to the substrate. From the applicator, the adhesive flows through a disposable static mixing nozzle and onto the substrate. Since the adhesive reaction occurs in the nozzle, clean up and maintenance is fast and easy. Each carton includes 4 cartridge sets and 6 static mixing tubes.

\*\* Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification or specification range for any particular property of this product.

# Material Safety Data Sheet

**FAST 100-LV Part A**

Date of Preparation: 05/01/10

**MSDS No. 304001,304003**

Revision: 005

## Section 1 - Chemical Product and Company Identification

**Product/Chemical Name:** FAST 100-LV Part A

**Chemical Name:** Polymeric Diphenylmethane Diisocyanate

**Chemical Formula:** Mixture

**General Use:** Spray Adhesive

**Manufacturer:** Carlisle SynTec, 1285 Ritner Highway, Carlisle, PA 17013, Phone: 800-4SYNTEC

**Emergency Phone Number:** CHEMTREC (USA) 800-424-9300

## Section 2 - Hazards Identification

### ☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

**Warning – Causes skin irritation**

**Warning – Causes eye irritation**

**Danger – May cause allergy or asthma symptoms or breathing difficulties if inhaled**

**Warning – May cause an allergic skin reaction**

**Warning – Suspected of causing genetic defects (inhalation)**

**Warning – May cause damage to organs (lungs)**

**Warning – May cause damage to organs (respiratory tract) through prolonged or repeated exposure**

### Potential Health Effects

**Primary Entry Routes:** Inhalation, skin contact, eye contact, ingestion.

**Target Organs:** Respiratory tract, skin, eyes.

#### Acute Effects

**Inhalation:** MDI vapors or mist at concentrations above the TLV can irritate (burning sensation) the mucous membranes in the respiratory tract (nose, throat, lungs) causing runny nose, sore throat, coughing, chest discomfort, shortness of breath and reduced lung function (breathing obstruction). Persons with a pre-existing, non-specific bronchial hyperactivity can respond to concentrations below the TLV with similar symptoms as well as asthma attack or asthma-like symptoms. Acute or chronic overexposure to isocyanates may cause sensitization in some individuals, resulting in allergic respiratory reactions including wheezing, shortness of breath and difficulty breathing. Airborne overexposure, well above the TLV, may lead to eye irritation, headache, chemical bronchitis, asthma-like findings, bronchial spasm and pulmonary edema (fluid in lungs). These effects are usually reversible. Chemical or hypersensitive pneumonitis, with flu-like symptoms (e.g., fever, chills) has also been reported. These symptoms can be delayed up to several hours after exposure.

**Eye:** Liquid, aerosols or vapors are irritating and can cause tearing, reddening and swelling. Eye contact with isocyanates may also result in conjunctival irritation and mild corneal opacity. If left untreated, corneal damage can occur and injury is slow to heal. However, damage is usually reversible. Vapor or aerosol may cause irritation with symptoms of burning and tearing.

**Skin:** Isocyanates react with skin protein and moisture and can cause irritation which may include the following symptoms: reddening, swelling, rash, scaling or blistering. Skin sensitization, irritation, and/or dermatitis (irritative or allergic) may develop after repeated and/or prolonged contact with human skin. Data derived from an animal model (guinea pig) demonstrate that dermal exposure to MDI can lead to respiratory sensitization. The data indicate that the greater the amount of MDI skin exposure, the greater risk of developing respiratory sensitization. Cured material is difficult to remove. Contact with MDI can cause discoloration.

**Ingestion:** Can result in irritation and corrosive action in the mouth, pharynx, stomach tissue and digestive tract. Symptoms can include sore throat, abdominal pain, nausea, vomiting and diarrhea. Acute oral LD50 in rat reported above 10,000 mg/kg.

**Carcinogenicity:** IARC, NTP, and OSHA do not list this product as a carcinogen.

**Medical Conditions Aggravated by Long-Term Exposure:** Individuals, who are sensitized to Isocyanates and those with preexisting lung diseases or conditions, including non-specific bronchial hyper reactivity or asthma, must avoid all exposure to isocyanates. Skin allergies and Eczema.

#### HMIS

**H** 2\*

**F** 1

**R** 1

**PPE**†

\*Chronic Health Hazard

†Sec. 8

**Chronic Effects:**

**Inhalation:** As a result of previous repeated overexposure or a single large dose, certain individuals develop isocyanate sensitization (chemical asthma) which will cause them to react to a later exposure to isocyanate at levels well below the TLV. These symptoms, which can include chest tightness, wheezing, cough, shortness of breath or asthma attack, could be immediate or delayed (up to several hours after exposure). Similar to many non-specific asthmatic responses, there are reports that once sensitized an individual can experience these symptoms upon exposure to dust, cold air or other irritants. This increased lung sensitivity can persist for weeks and in severe cases for several years. Overexposure to isocyanates has also been reported to cause lung damage (including decrease in lung function) which may be permanent. Sensitization can either be temporary or permanent.

**Skin:** Prolonged contact can cause reddening, swelling, rash, scaling, blistering and in some cases, skin sensitization. Individuals who have skin sensitization can develop these symptoms from contact with liquid or vapors. Animal tests have indicated that respiratory sensitization can result from skin contact with MDI. This data reinforces the need to prevent direct skin contact with MDI.

**Eye:** Prolonged vapor contact may cause conjunctivitis.

**Section 3 - Composition / Information on Ingredients**

Ingredient Name	CAS Number	% wt or % vol
4,4' Diphenylmethane Diisocyanate (MDI)	101-68-8	30-60
Polymeric Diphenylmethane Diisocyanate (polymeric MDI)	9016-87-9	40-70
Other MDI Isomers and Oligomers	26447-40-5	5-10

**Hazardous Ingredients:**

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH IDLH
	TWA	CEIL	TWA	STEL	TWA	STEL	
4,4' Diphenylmethane Diisocyanate (MDI)	0.005 ppm	0.02 ppm	0.005 ppm (8 hr., 40 hr/wk)	None estab.	0.005 ppm (10 hr, 40 hr/wk)	0.02 ppm (15 min)	75 mg/m <sup>3</sup>

**Section 4 - First Aid Measures**

**Inhalation:** Remove victim to fresh air and provide oxygen if breathing is difficult. Asthmatic symptoms may develop and may be immediate or delayed up to several hours. Extreme asthmatic reactions can be life threatening. Get medical attention.

**Eye Contact:** Immediately flush eyes with water for at least 15 minutes. Use lukewarm water if possible. Use fingers to ensure that eyelids are separated and that the eye is being irrigated. Get medical attention.

**Skin Contact:** Immediately remove contaminated clothing and shoes and wash skin with soap and water or corn oil. Wash contaminated clothing before reuse. If redness, itching, or a burning sensation develops, have skin examined and treated by medical personnel.

**Ingestion:** If swallowed, consult a physician immediately. Do not induce vomiting. Wash out mouth with water. If swallowed dilute with water. Do not give anything by mouth to an unconscious person.

*After first aid, get appropriate in-plant, paramedic, or community medical support.*

**Note to Physicians:**

**Eyes:** Stain for evidence of corneal injury. If cornea is burned, instill antibiotic/steroid preparation as needed. Workplace vapors could produce reversible corneal epithelial edema impairing vision.

**Skin:** This compound is a skin sensitizer. Treat symptomatically as for contact dermatitis or thermal burn.

**Ingestion:** Treat symptomatically. There is no specific antidote. Inducing vomiting is contraindicated because of the irritating nature of the compound.

**Inhalation:** Treatment is essentially symptomatic. An individual having a dermal or pulmonary sensitization reaction to this material should be removed from further exposure to any diisocyanate.

**Special Precautions/Procedures:** Whenever possible, remove the worker from the source of contamination.

**Section 5 - Fire-Fighting Measures**

**Flash Point:** 198.9°C, Pensky-Martens closed cup  
218°C (425°F), Open Cup

**Burning Rate:** Not Established

**Autoignition Temperature:** 240°C (464°F)

**LEL:** Not available.

**UEL:** Not available.

**Flammability Classification:** Class III B Combustible Liquid.



**Extinguishing Media:** Dry chemical, carbon dioxide, high expansion chemical foam, or water spray for large fires. If water is used, use very large quantities, as the reaction between water and hot isocyanate may be vigorous.

**Unusual Fire or Explosion Hazards:** At temperatures greater than 204°C, polymeric MDI can polymerize and decompose which can cause pressure build-up in closed containers. Explosive rupture is possible. Therefore, use cold water from a safe distance to cool fire-exposed containers. Water contamination of liquid will produce carbon dioxide. Do not reseal open containers if they are contaminated with water, since pressure build-up may rupture the container.

**Hazardous Combustion Products:** Carbon monoxide, carbon dioxide oxides of nitrogen, traces of HCN, MDI vapors or aerosols.

**Fire-Fighting Instructions:** Full emergency equipment with self-contained breathing apparatus and full protective clothing should be worn by firefighters. During a fire, MDI vapors and other irritating, highly toxic gases may be generated by thermal decomposition or combustion. Do not release runoff from fire control methods into sewers or waterways. Avoid contact with the product and decontaminate equipment and protective clothing prior to reuse.

**Fire-Fighting Equipment:** Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full-face piece operated in pressure-demand or positive-pressure mode. NFPA compliant helmet, hood, boots and gloves should also be worn.

## Section 6 - Accidental Release Measures

**Spill /Leak Procedures:** Evacuate and ventilate spill area. Remove ignition sources. Control the source of the leak. Dike spill to prevent entry into water system or soil. Wear full protective equipment including respiratory equipment during clean-up.

**Small Spills:** Absorb isocyanates with sawdust or other absorbent, shovel into suitable unsealed containers, transport to well-ventilated area (outside) and treat with neutralizing solution. Add about 10 parts of neutralizer per part of isocyanate, with mixing. Allow container to stand uncovered for 48 hours to let CO<sub>2</sub> escape. Cleanup spill area by scrubbing with decontaminate solution and letting it stand for 15 minutes. Clean up with suitable absorbent and place in uncovered container for 48 hours to let CO<sub>2</sub> escape.

**Large Spills:** If temporary control of isocyanate vapor is required, a blanket of protein foam or other suitable foam (available at most fire departments) may be placed over the spill. Large quantities may be pumped into closed, but not sealed, container for disposal.

**Containment:** For large spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or waterways.

**Cleanup:** Decontaminate floor with decontamination solution letting stand for at least 15 minutes.

**Regulatory Requirements:** Follow applicable OSHA regulations (29 CFR 1910.120).

### Additional Spill Procedures and Neutralization:

#### Neutralization Solutions:

- (1) A mixture of 75% water, 20% non-ionic surfactant (e.g. Poly-Tergent SL-62, Tergitol TMN-10) and 5% n-propanol.
- (2) A mixture of 80% water, 20% non-ionic surfactant (e.g. Poly-Tergent SL-62, Tergitol TMN-10).
- (3) A mixture of 90% water, 8% ammonium hydroxide or concentrated ammonia, and 2% liquid detergent.
- (4) A mixture of 90% water, 8% sodium carbonate and 2% liquid detergent.

## Section 7 - Handling and Storage

**Handling Precautions:** Do not breathe vapors, mists or dusts. Use adequate ventilation to keep airborne isocyanate levels below the exposure limits. Wear respiratory protection if material is heated, sprayed, used in a confined space or if the exposure limit may be exceeded. Warning properties (irritation of the eyes, nose and throat or odor) are not adequate to prevent overexposure from inhalation. This material can produce asthmatic sensitization upon either single inhalation exposure to a relatively high concentration or upon repeated inhalation exposure to lower concentrations. Individuals with lung or breathing problems or prior allergic reactions to isocyanates must not be exposed to vapor or spray mist. Avoid contact with skin and eyes. Wear appropriate eye and skin protection. Wash thoroughly after handling. Do not breath smoke or gases created by overheating or burning this material. Decomposition products can be highly toxic and irritating.

**Storage Requirements:** Store in dry, well-ventilated area between 60-90°F (15-32°C), in tightly closed containers to prevent moisture contamination. Do not reseal if contamination is suspected. Do not breathe aerosols or vapors. Do not allow material to freeze (storage below 0°F for 3 days). Low temperature exposure does increase liquid viscosity, requiring the material to be restored to room temperature prior to use.

## Section 8 - Exposure Controls / Personal Protection

### Engineering Controls:

**Ventilation:** Local exhaust should be used to maintain levels below the TLV whenever MDI is processed, heat or spray applied. Standard reference sources regarding industrial ventilation (i.e., ACGIH Industrial Ventilation) should be consulted for guidance about adequate ventilation. Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

### Administrative Controls:

**Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134). Concentrations greater than the TLV or PEL can occur when MDI is sprayed, heated or used in a poorly ventilated area. **In such cases or whenever concentrations of MDI exceed the TLV or are not known, respiratory protection MUST be worn. Use NIOSH or MSHA approved respirator for organic vapors with a pre-filter or a supplied airline respirator (SAR).** For emergency, non-routine operations (cleaning spills, reactor vessels, or storage tanks), where levels are unknown or where concentrations are Immediately Dangerous to Life or Health (IDLH) select and use an appropriate positive pressure air supplying respirator (airline or self-contained breathing apparatus (SCBA)). **Warning! Air purifying respirators do not protect workers in oxygen-deficient atmospheres.** When the atmospheric levels may exceed the occupational exposure limits (PEL or TLV) approved air-purifying respirators equipped with an organic vapor absorbent and particulate filter can be used as long as appropriate precautions and change out schedules are maintained. MDI has poor warning properties since the concentration at which MDI can be smelled is substantially higher than the maximum exposure limit. If respirators are used, OSHA requires a written respiratory protections program that includes at least: medical certification, training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning and convenient, sanitary storage areas.

#### Hazardous Ingredients:

4,4' – Diphenylmethane Diisocyanate	
ACGIH TLV	0.005 ppm (8 hr, 40 hr/week)
OSHA PEL CEILING	0.02 ppm
NIOSH TLV	0.005 ppm (10 hr, 40 hr/week)
NIOSH STEL	0.02 ppm (15 minute)

**NOTE: The Occupational Exposure Limits listed for isocyanates do not apply to previously sensitized individuals.**

#### Protective Clothing/Equipment:

**Hand Protection:** Permeation resistant gloves that meet ANSI/ISEA 105-2005 are required when handling the material directly or during its application.

**Eye Protection:** Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are NOT eye protective devices. Vapor resistant goggles should be worn when contact lenses are in use. In a splash hazard environment, chemical goggles should be used in combination with a full face-shield.

**Skin and Body Protection:** Industrial shoes to protect feet from contact with product. Long sleeves, long trousers to protect skin from contact with product. Protective skin creams or emollients useful.

**Safety Stations:** Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

**Contaminated Equipment:** Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

**Comments:** Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

### Section 9 - Physical and Chemical Properties

<b>Physical State:</b> Liquid.	<b>Flash Point:</b> 198.9°C, Pensky-Martens closed cup
<b>Appearance:</b> Dark brown.	218°C (425°F), Open Cup
<b>Odor:</b> Slight musty odor or aromatic	<b>Burning Rate:</b> Not Established
<b>Vapor Pressure:</b> Less than 0.0001 mm Hg at 25 °C	<b>Autoignition Temperature:</b> 240°C (464°F)
<b>Vapor Density (Air=1):</b> 8.5 for MDI	<b>LEL:</b> Not available.
<b>Density:</b> 10.3 lbs/gallon	<b>UEL:</b> Not available.
<b>Specific Gravity (H<sub>2</sub>O=1, at 4 °C):</b> 1.24 @ 25°C	<b>Water Solubility:</b> Not soluble-reacts slowly with water to liberate CO <sub>2</sub> gas.
<b>Boiling Point (°C):</b> 208°C(406°F) @ 5mm Hq for MDI	<b>pH:</b> Not applicable.
<b>Freezing/Melting Point (°C):</b> Below 0°C (32°F) for MDI	<b>VOC (gpl):</b> 0 g/L
<b>Viscosity:</b> 200 cps @ 20°C	

### Section 10 - Stability and Reactivity

**Stability:** Stable at room temperature in closed containers under normal storage and handling conditions.

**Possibility of Hazardous Reactions:** May occur. Contact with moisture, alkalines, tertiary amines, metal compounds or other products, which react with isocyanates, or temperatures above 160°C, may cause polymerization.

**Chemical Incompatibilities:** Water, amines, strong bases, alcohols. Will cause some corrosion to copper alloys and aluminum.

**Conditions to Avoid:** High temperatures above 160°C and freezing.

**Hazardous Decomposition Products:** By high heat and fire: Carbon monoxide, carbon dioxide, oxides of nitrogen, dense black smoke, isocyanate, isocyanic acid, traces of HCN, MDI vapors or aerosols.

## Section 11- Toxicological Information

### Toxicity Data:

**Eye Effects:** The aerosol, vapor or liquid will irritate human eyes following contact.

**Skin Effects:** Moderate irritant. Repeated and/or prolonged contact may cause skin sensitization. Animal studies have shown that respiratory sensitization can be induced by skin contact with known respiratory sensitizers including diisocyanates. These results emphasize the need for protective clothing including gloves to be worn at all times when handling these chemicals or in maintenance work.

**Carcinogenicity:** The ingredients of this product are not classified as carcinogenic by ACGIH or IARC, not regulated as carcinogens by OSHA, and not listed as carcinogens by NTP.

**Mutagenicity:** There is no substantial evidence of mutagenic potential.

**Teratogenicity:** There is no substantial evidence of teratogenic potential. Fetotoxicity seen only with maternal toxicity

### Acute Inhalation Effects:

Rat, inhalation,  $TC_{Lo}$ : 490 mg/m<sup>3</sup> per 4 hours (respirable aerosol)

### Acute Oral Effects:

Rat, oral, LD50: >2000 mg/kg

**Chronic Effects:** A study where groups of rats were exposed for 6 hours/day, 5 days/week for a lifetime to atmospheres of respirable polymeric MDI aerosol. Overall, the tumor incidence, both benign and malignant, and the number of animals with tumors were not different from controls. Only at the top level (6 mg/m<sup>3</sup>), there was a significant incidence of a benign tumor of the lung (adenoma) and one malignant tumor (adenocarcinoma). There were no lung tumors at 1 mg/m<sup>3</sup>. The increased incidence of lung tumors is associated with prolonged respiratory irritation and concurrent accumulation of yellow material in the lung, which occurred throughout the study. In the absence of prolonged exposure to high concentrations leading to chronic irritation and lung damage, it is highly unlikely that tumor formation will occur.

## Section 12 - Ecological Information

### Ecotoxicity:

#### Acute and Prolonged Toxicity to Fish:

LC0: > 1,000 mg/L (Zebra fish (*Brachydanio rerio*), 96 hrs)

LC0: > 3,000 mg/L (Killifish (*Oryzias latipes*), 96 hrs)

#### Acute Toxicity to Aquatic Invertebrates:

EC50: > 1,000 mg/L (Water flea (*Daphnia magna*), 24 hrs)

#### Toxicity to Aquatic Plants:

NOEC: 1,640 mg/L, End Point: growth (Green algae (*Scenedesmus subspicatus*), 72 hrs)

#### Toxicity to Microorganisms:

EC50: > 100 mg/L, (Activated sludge microorganisms, 3 hrs)

### Environmental Fate:

**Biodegradation:** 0%, Exposure time: 28 Days. Material is expected to degrade only very slowly. Fails to pass OECD modified MITI test: hydrolysis products degrade slowly.

**Bioaccumulation:** Rainbow trout, Exposure time 112 days, < 1 BCF. Does not bioaccumulate.

**Soil Absorption/Mobility:** Movement in the environment is expected to be limited by the formation of insoluble polymers.

## Section 13 - Disposal Considerations

### Disposal:

**Disposal Regulatory Requirements:** Waste must be disposed of in accordance with Federal, State, Provincial and local environmental control regulations. Incineration is the preferred method. Empty containers must be handled with care due to product residue.

**Container Cleaning and Disposal:** Decontaminate containers prior to disposal. Empty decontaminated containers should be crushed to prevent reuse. Do not heat or cut empty containers with electric or gas torch. Gases may be highly toxic.

## Section 14 - Transport Information

### DOT Transportation Data (49 CFR 172.101):

<b>Shipping Name:</b> Other regulated substance, liquid, n.o.s. (contains 4,4' Diphenylmethane Diisocyanate (MDI)) <b>Shipping Symbols:</b> D G <b>Hazard Class:</b> 9 <b>ID No.:</b> NA3082 <b>Packing Group:</b> III <b>Label:</b> Class 9 <b>Special Provisions (172.102):</b> IB3, T2, TP1	<b>Packaging Authorizations</b> <b>a) Exceptions:</b> 173.155 <b>b) Non-bulk Packaging:</b> 173.203 <b>c) Bulk Packaging:</b> 173.241  <b>DOT Product Reportable Quantity:</b> 5000 lbs (2270 kgs) *When in individual containers of less than the product RQ, this material ships as non-regulated	<b>Quantity Limitations</b> <b>a) Passenger, Aircraft, or Railcar:</b> No Limit <b>b) Cargo Aircraft Only:</b> No Limit  <b>Vessel Stowage Requirements</b> <b>a) Vessel Stowage:</b> A <b>b) Other:</b>
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## Section 15 - Regulatory Information

### EPA Regulations:

RCRA Hazardous Waste Number: Not listed (40 CFR 261.33)

RCRA Hazardous Waste Classification (40 CFR 261.11): MDI is not listed as a hazardous waste. However, under RCRA, it is the responsibility of the user of products to determine, at any time of disposal, whether a product meets any of the criteria for hazardous waste.

CERCLA Hazardous Substance (40 CFR 302.4) listed specific per RCRA, Sec. 3001; CWA, Sec. 311 (b)(4); CWA, Sec. 307(a), CAA, Sec. 112

CERCLA Reportable Quantity (RQ),

4,4' Diphenylmethane diisocyanate = 5,000 lbs

SARA 311/312 Codes:

Immediate Health Hazard, Delayed Health Hazard, Reactive Hazard, Acute Health Hazard, Chronic Health Hazard

SARA 313 Toxic Chemical (40 CFR 372.65):

Polymethylene polyphenyl isocyanate CAS Number: 9016-87-9 100%

Methylenebis (phenylisocyanate) (MDI) CAS Number: 101-68-8 ca 50%

SARA 302 EHS (Extremely Hazardous Substance) (40 CFR 355):

Not listed, Threshold Planning Quantity (TPQ)

TSCA Status

On the TSCA inventory

### OSHA Regulations:

Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): Not listed

OSHA This product is hazardous under the criteria of the Federal OSHA Communication Standard (29CFR 1910.1200)

### State Regulations:

#### California Proposition 65:

This product contains the following chemical(s) known to the state of California to cause cancer, birth defects or other reproductive harm: None

#### Delaware Air Quality Management List

<u>Chemical Name</u>	<u>CAS Number</u>	<u>DRQ</u>
Methylenebis(phenylisocyanate)	101-68-8	5000

Note: Must be reported to the DRQ

Polymeric diphenylmethane diisocyanate	9016-87-9	100
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Note: Does not agree with the federal reportable quantity requirements to report

#### Massachusetts Hazardous Substance List

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Code</u>
Methylene bisphenyl isocyanate	101-68-8	2, 4, F8, F9

**Minnesota Hazardous Substance List**

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Codes</u>	<u>Hazards</u>	<u>Carcinogen</u>
Diphenylmethane diisocyanate	101-68-8	ANO	--	False
Methylene bisphenyl isocyanate	101-68-8	ANO	--	False

**New York List of Hazardous Substances**

<u>Chemical Name</u>	<u>CAS Number</u>	<u>RQ Air</u>	<u>RQ Land</u>	<u>Note</u>
Methylene bisphenyl isocyanate	101-68-8	1	1	--

**Pennsylvania Hazardous Substances List**

<u>Chemical Name</u>	<u>CAS Number</u>	<u>Code</u>
1,1'-methylenebis[4-isocyanato] benzene	101-68-8	Environmental Hazard

**Washington Permissible Exposure Limits for Air Contaminants**

Methylene bisphenyl isocyanate		
Ceiling	0.02 ppm	0.2 mg/m <sup>3</sup>

## Section 16 - Other Information

**Prepared By:** Research & Development

**Revision Notes:** GHS revisions.

**Additional Hazard Rating Systems:**

**Disclaimer:** The information contained in this document is based upon data that was supplied to Carlisle by other companies and organizations. No warranty of merchantability or fitness for a particular purpose is expressed or implied regarding the accuracy or completeness of the data and/or information in this material safety data sheet.

# Material Safety Data Sheet

FAST 100 PART B

MSDS No. 302128  
302264

Date of Preparation: 07/20/07

Revision: 006

## Section 1 - Chemical Product and Company Identification

**Product/Chemical Name:** FAST 100 PART B

**Chemical Formula:** Mixture.

**General Use:** Adhesive component.

**Manufacturer:** Carlisle SynTec Incorporated, 1285 Ritner Highway, Carlisle, PA 17013, Phone: 800-4SYNTEC  
Emergency Phone Number: CHEMTREC (USA) 800-424-9300

## Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	% wt or % vol
Polyol Blend	Confidential	95%
Water	7732-18-5	5%

## Section 3 - Hazards Identification

☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

HMIS  
H 1  
F 1  
R 0  
PPE†  
†Sec. 8

### Potential Health Effects

**Primary Entry Routes:** Skin contact, skin absorption, eye contact, inhalation, and ingestion.

#### Acute Effects

**Inhalation:** Inhalation of vapors or mists of the product may be irritating to the respiratory system

**Eye:** This product may cause irritation to the eyes

**Skin:** Prolonged and/or repeated contact may cause irritation or redness

**Ingestion:** Ingestion of large amounts may produce gastrointestinal disturbances including irritation, nausea, and diarrhea.

**Carcinogenicity:** IARC, NTP, and OSHA do not list this product as a carcinogen.

**Medical Conditions Aggravated by Long-Term Exposure:** None determined. Note: This product may contain 1,4-Dioxane as a by-product, which can be absorbed by inhalation and through the skin. Be advised that 1,4-Dioxane is a cancer-suspect agent and can cause liver and kidney injury with over-exposure.

**Chronic Effects:** See above.

## Section 4 - First Aid Measures

**Inhalation:** If symptoms are experienced, remove source of contamination or move victim to fresh air,. If the affected person is not breathing, apply artificial respiration. If breathing is difficult, give oxygen. Seek medical attention.

**Eye Contact:** Immediately flush eyes with water for at least 15 minutes while holding eyelids open. Get medical attention.

**Skin Contact:** Immediately take off all contaminated clothing. Wash with large amounts of water. If irritation persists, get medical attention.

**Ingestion:** If ingestion of a large amount does occur, seek medical attention immediately.

*After first aid, get appropriate in-plant, paramedic, or community medical support.*

**Special Precautions/Procedures:** Whenever possible, remove the worker from the source of contamination.

## Section 5 - Fire-Fighting Measures

**Flash Point:** >201°F (>93.9°C)

**Flash Point Method:** Pensky-Martens closed cup.

**LEL:** Not determined.

**UEL:** Not determined.



**Extinguishing Media:** In case of fire, use dry chemical, carbon dioxide, foam or water fog.

**Unusual Fire or Explosion Hazards:** Under fire conditions, closed containers may build up pressure and possibly rupture.

**Hazardous Combustion Products:** Carbon Monoxide, Carbon Dioxide, Hydrogen Halides, and Phosphorus oxides.

**Fire-Fighting Instructions:** Fire fighters should wear full fire-fighting turn-out gear (full Bunker gear) including NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

**Fire-Fighting Equipment:** Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full face piece operated in pressure-demand or positive-pressure mode.

## Section 6 - Accidental Release Measures

**Spill /Leak Procedures:** Isolate spill or leak area immediately. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. Do not touch or walk through spilled material. Stop leak if you can do it without risk. Wear appropriate personal protective equipment during cleanup. Surfaces may become slippery after spillage.

**Small Spills:** Absorb with earth, sand or other non-combustible material and transfer to open containers for later disposal.

**Large Spills:** Dike ahead of liquid spill for later disposal. Prevent entry into waterways, sewers, basements or confined areas. Absorb with earth, sand or other non-combustible material and transfer to open containers for later disposal.

**Containment:** For large spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or waterways.

**Regulatory Requirements:** Follow applicable OSHA regulations (29 CFR 1910.120) and local, state and federal regulations.

## Section 7 - Handling and Storage

**Handling Precautions:** Wash with soap and water before eating, drinking, or smoking. Launder contaminated clothing. Avoid skin contact. KEEP OUT OF REACH OF CHILDREN.

**Storage Requirements:** Store in a dry, well-ventilated area between 65°-85°F (18-30°C). Store away from oxidizers, strong acids, strong bases and isocyanates.

## Section 8 - Exposure Controls / Personal Protection

**Ventilation:** Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

**Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. *Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.* If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

**Protective Clothing/Equipment:** Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Contact lenses are not eye protective devices. Appropriate eye protection must be worn instead of, or in conjunction with contact lenses.

**Safety Stations:** Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

**Contaminated Equipment:** Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

**Comments:** Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid.

**Appearance and Odor:** Amber, viscous liquid with musty odor

**Vapor Density (Air=1):** Estimated lighter than air.

**Density:** 9.18 lb/gal @ 25°C

**Specific Gravity (H<sub>2</sub>O=1, at 4 °C):** 1.103 g/ml

**VOC (gpl):** Negligible

**Water Solubility:** Not determined.

**Boiling Point(°C):** >100°C (212°F)

**Freezing/Melting Point(°C):** Not determined.

**Viscosity:** 100-250cps

**% Volatile:** 4-5

**Evaporation Rate(nBuAc=1):** Estimated slower than Ethyl Ether

## Section 10 - Stability and Reactivity

**Stability:** Stable at room temperature in closed containers under normal storage and handling conditions.

**Polymerization:** Hazardous polymerization will not occur under normal handling conditions.

**Chemical Incompatibilities:** Strong oxidizing agents.

**Conditions to Avoid:** Prolonged heating above 160°C or storage below 5°C

**Hazardous Decomposition Products:** Carbon Monoxide, Carbon Dioxide, Hydrogen Halides, and Phosphorous Oxides under fire conditions.

**Section 11- Toxicological Information****Toxicity Data:**

**Eye Effects:** Minor irritation and reddening  
**Skin Effects:** Irritation  
**Acute Inhalation Effects:** Minor Irritation  
**Acute Oral Effects:** Not Established  
**Chronic Effects:** None determined.

**Carcinogenicity:** None known.  
**Mutagenicity:** None known.  
**Teratogenicity:** None known.

**Section 12 - Ecological Information**

**Ecotoxicity:** Not Available  
**Environmental Fate:** Not Available  
**Environmental Degradation:** Not Available  
**Soil Absorption/Mobility:** Not Available

**Section 13 - Disposal Considerations**

**Disposal:** Contact a licensed contractor for detailed recommendations. Follow applicable federal, state, local and provincial regulations.  
**Disposal Regulatory Requirements:** Dispose of by incinerating according to local, state, provincial and federal regulations

**Section 14 - Transport Information**

Material is Non-Regulated

**Section 15 - Regulatory Information****EPA Regulations:**

SARA Toxic Chemical (40 CFR 372.65): Not listed

All components of this product are listed on the following inventories: U.S.A. (TSCA)

**State Regulations:** California Proposition 65: This product contains the following chemical(s) known to the state of California to cause cancer: None.

**Section 16 - Other Information**

**Prepared By:** Research & Development

**Revision Notes:** Added VOC content to Section 9.

**Additional Hazard Rating Systems:**

**Disclaimer:** The information contained in this document is based upon data that was supplied to Carlisle by other companies and organizations. No warranty of merchantability or fitness for a particular purpose is expressed or implied regarding the accuracy or completeness of the data and/or information in this material safety data sheet.

# Product Data

Dens

**Manufacturer**

Georgia-Pacific Gypsum LLC      Georgia-Pacific Canada LP  
133 Peachtree Street      2180 Meadowvale Boulevard, Suite 200  
Atlanta, GA 30303      Mississauga, ON L5N 5S3  
Technical Service Hotline: 1-800-225-6119

**Description**

**DensDeck® Roof Board** is an exceptional fire barrier, thermal barrier, coverboard and recovery board used in various commercial roofing systems. The DensDeck Roof Board design employs fiberglass mats front and back that are mechanically bonded to a high density gypsum core, providing excellent fire resistance and wind uplift properties. The unique construction of DensDeck Roof Board provides superior flute spanning that stiffens and provides increased foot traffic resistance to the roof deck. Additionally, DensDeck Roof Board has been shown to withstand delamination, deterioration and job-site damage far more effectively than roofing membrane substrates such as paperfaced gypsum board, fiberboard and perlite insulation. DensDeck Roof Board has scored a 10, the highest level of performance for mold resistance per the ASTM D3273 test method.

**Primary Uses**

Roof system manufacturers and designers have found DensDeck Roof Board to be compatible with many types of roofing systems, including: built-up, modified bitumen, single ply, metal systems, wood shingle and shake, tile, slate, as well as a recovery board and overlayment protection board for polyisocyanurate and polystyrene insulation. DensDeck Roof Board can also be used as a form board for poured gypsum concrete deck in roof applications as well as a substrate for spray foam roofing systems. 1/2" (12.7 mm) and 5/8" (15.9 mm) DensDeck Roof Board may also be used in vertical applications as a backer board or liner for the roof side of parapet walls.

Some membrane manufacturers have hot mop asphalt or torch applications directly to DensDeck Roof Board without using a primer or base sheet. Consult with the system manufacturer for their recommendations with this application. DensDeck Roof Board is the preferred substrate for vapor retarders.

**Standards and Code Approvals**

DensDeck Roof Boards are manufactured to meet ASTM C1177 and have the following approvals:

- Florida Product Approved
- Miami-Dade County, Product Control Approved

**Recommendations and Limitations**

DensDeck Roof Boards are manufactured to act with a properly designed roof system following good roofing practices. The actual use of DensDeck Roof Board as a roofing component in any system or assembly is the responsibility of the roofing system's design authority. Consult with the appropriate system manufacturer and/or design authority for system and assembly specifications and instructions on applying other products to DensDeck Roof Board. Georgia-Pacific does not warrant and is not responsible for any systems or assemblies utilizing DensDeck Roof Board or any component in such systems or assemblies other than DensDeck Roof Board.

The need for a separator sheet between the DensDeck Roof Board and the roofing membrane must be determined by the roof membrane manufacturer or roofing system designer.

Confirm any priming requirements with the membrane manufacturer. When applying solvent-based adhesives or primers, allow sufficient time for the solvent to flash off to avoid damage to roofing components.

DensDeck Roof Boards should not be subjected to abnormal or excessive loads or foot traffic, such as, but not limited to, use on plaza decks or under steel-wheeled equipment that may fracture or damage the panels. Provide suitable roofing system protection when required.

When using DensDeck Roof Boards for hot-mopped applications, Georgia-Pacific recommends maximum asphalt application temperatures for Type III asphalt of 425°F (218°C) to 450°F (232°C). Application temperatures above these recommended temperatures may adversely affect roof system performance. For application temperatures in excess of 450°F (232°C) and for mopping of type IV asphalt, ribbon or spot mopping or the installation of a perforated base sheet are recommended methods of bonding asphalt in lieu of full mopping. Consult and follow the roofing system manufacturer's specifications for full mopping applications and temperature requirements.

Conditions beyond the control of Georgia-Pacific, such as weather conditions, dew, leaks, application temperatures and techniques may cause adverse effects with roofing systems.

**Moisture Management**

**DensDeck Roof Boards, like other components used in roofing systems, must be protected from exposure to moisture before, during and after installation.**

Remove the plastic packaging from all DensDeck Roof Board immediately upon receipt of delivery. Failure to remove the plastic packaging may result in entrapment of condensation or moisture. DensDeck Roof Board stored outside must be stored level and off the ground and protected by a breathable waterproof covering. Provide means for air circulation around and under stored bundles of DensDeck Roof Board. DensDeck Roof Board must be covered the same day as installed.

Avoid application of DensDeck Roof Boards during rain, heavy fog and any other conditions that may deposit moisture on the surface, and avoid the overuse of non-vented, direct-fired heaters during winter months. When roofing systems are installed on new poured concrete or light weight concrete decks or when re-roofing over an existing concrete deck, a vapor barrier should be installed above the concrete to limit the migration of water from the concrete into the roof assembly. Always consult the roofing system manufacturer or design authority for specific instructions for applying other products to DensDeck Roof Boards.

Moisture vapor movement by convection must be eliminated, and the flow of water by gravity through imperfections in the roof system must be controlled. After a leak has occurred, no condensation on the upper surface of the system should be tolerated, and the water introduced by the leak must be dissipated to the building interior in a minimum amount of time.

Although DensDeck Roof Boards are engineered with fiberglass facings and high density gypsum cores, the presence of free moisture can have a detrimental effect on the performance of the product and the installation of roofing membranes. For example, hot asphalt applications can blister; torched modified bitumen may not properly bond; and adhesives for single ply membranes may not dry properly. Moisture accumulation may also significantly decrease wind uplift and vertical pull resistance in the system or assembly. DensDeck Roof Boards containing excessive free moisture content may need to be evaluated for structural stability to assure wind uplift performance.

**Submittal Approvals**

Job Name \_\_\_\_\_

*continued* →

Contractor \_\_\_\_\_

Date \_\_\_\_\_

**Fire Resistance Classifications**

DensDeck® Roof Boards are excellent fire barriers over combustible and noncombustible roof decks, including steel decks.

**UL 790 Classification.** DensDeck Roof Boards have been classified by Underwriters Laboratories (UL) for use as a fire barrier over combustible and noncombustible decks in accordance with the ANSI/UL 790 test standard. The UL classification includes a comprehensive Class A, B or C rating. For additional information concerning the UL 790 classification, consult the UL Certification Directory.

**UL 1256 Classification.** DensDeck Roof Boards have also been classified by UL in roof deck constructions for internal (under deck) fire exposure in accordance with the ANSI/UL 1256 Steiner Tunnel test. For additional information concerning the UL 1256 classification, consult the UL Certification Directory.

**FM Class 1 Approvals.** DensDeck Roof Boards are included in numerous roofing assemblies with a Factory Mutual (FM) Class 1 fire rating. 1/4" (6.4 mm) DensDeck Roof Boards have passed testing under the FM Calorimeter Standard 4450 and have been approved by FM as such for insulated steel deck roofs when installed according to the conditions identified by FM. For more information concerning FM Approvals and FM Class 1 assemblies with DensDeck Roof Boards, consult FM or RoofNav®.

**Type X.** 5/8" (15.9 mm) DensDeck® Fireguard® Roof Boards are manufactured to meet the "Type X" requirements of ASTM C1177 for increased fire resistance beyond regular gypsum board.

**UL Fire Resistance Ratings.** 5/8" (15.9 mm) DensDeck Fireguard Roof Boards are designated as **Type DD** by UL and included in assembly designs investigated by UL for hourly fire resistance ratings. 5/8" (15.9 mm) DensDeck Fireguard Roof Boards may also replace any unclassified 5/8" (15.9 mm) gypsum board in an assembly in the UL Fire Resistance Directory under the prefix "P".

**Flame Spread and Smoke Developed.** When tested in accordance with ASTM E84, DensDeck Roof Boards had Flame Spread 0, Smoke Developed 0.

**Wind Uplift**

DensDeck Roof Boards are included in numerous assemblies evaluated by FM or other independent laboratories for wind uplift performance. For information concerning such assemblies, please visit [www.roofnav.com](http://www.roofnav.com).

**Handling and Use—CAUTION**

This product contains fiberglass facings which may cause skin irritation. Dust and fibers produced during the handling and installation of the product may cause skin, eye and respiratory tract irritation. Avoid breathing dust and minimize contact with skin and eyes. Wear long sleeve shirts, long pants and eye protection. Always maintain adequate ventilation. Use a dust mask or NIOSH/MSHA approved respirator as appropriate in dusty or poorly ventilated areas.

AT NORTHWEST & SOUTHEAST CANOPY, ONLY

**Physical Properties**

Properties	1/4" (6.4 mm)	1/2" (12.7 mm)	5/8" (15.9 mm)
Thickness, nominal	1/4" (6.4 mm) ± 1/16" (1.6 mm)	1/2" (12.7 mm) ± 1/32" (.8 mm)	5/8" (15.9 mm) ± 1/32" (.8 mm)
Width, standard	4' (1219 mm) ± 1/8" (3 mm)	4' (1219 mm) ± 1/8" (3 mm)	4' (1219 mm) ± 1/8" (3 mm)
Length, standard	8' (2438 mm) ± 1/4" (6.4 mm)	8' (2438 mm) ± 1/4" (6.4 mm)	8' (2438 mm) ± 1/4" (6.4 mm)
Weight, nominal, lbs./sq. ft. (Kg/m <sup>2</sup> )	1.2 (5.9)	2.0 (9.8)	2.5 (12.2)
Surfacing	Fiberglass mat	Fiberglass mat	Fiberglass mat
Flexural Strength <sup>1</sup> , parallel, lbf. min. (N)	≥40 (178)	≥80 (356)	≥100 (444)
Flute Spanability <sup>2</sup>	2-5/8" (67 mm)	5" (127 mm)	8" (203 mm)
Permeance <sup>3</sup> , Perms (ng/Pa•S•m <sup>2</sup> )	>50 (2850)	>35 (1995)	>32 (1824)
R Value <sup>4</sup> , ft <sup>2</sup> •°F•hr/BTU (m <sup>2</sup> •K/W)	.28	.56	.67
Linear Variation with Change in Temp., in/in °F (mm/mm/°C)	8.5 x 10 <sup>-6</sup> (15.3 x 10 <sup>-6</sup> )	8.5 x 10 <sup>-6</sup> (15.3 x 10 <sup>-6</sup> )	8.5 x 10 <sup>-6</sup> (15.3 x 10 <sup>-6</sup> )
Linear Variation with Change in Moisture	6.25 x 10 <sup>-6</sup>	6.25 x 10 <sup>-6</sup>	6.25 x 10 <sup>-6</sup>
Water Absorption <sup>5</sup> , % max	<10	<10	<10
Compressive Strength <sup>6</sup> , psi nominal	900	900	900
Surface Water Absorption, grams, nominal	<2.5	<2.5	<2.5
Flame Spread, Smoke Developed (ASTM E84)	0/0	0/0	0/0
Bending Radius	5' (1524 mm)	8' (2438 mm)	12' (3658 mm)

1. Tested in accordance with ASTM C473 method B.  
 2. Tested in accordance with ASTM E661.  
 3. Tested in accordance with ASTM E96 (dry cup method).

4. Tested in accordance with ASTM C518 (heat flow meter).  
 5. Tested in accordance with ASTM C1177.  
 6. Tested in accordance with ASTM C473.



U.S.A. – Georgia-Pacific Gypsum LLC  
 Canada – Georgia-Pacific Canada LP

**SALES INFORMATION AND ORDER PLACEMENT**

U.S.A. Midwest: **1-800-876-4746** West: **1-800-824-7503**  
 South: **1-800-327-2344** Northeast: **1-800-947-4497**

CANADA Canada Toll Free: **1-800-387-6823**  
 Quebec Toll Free: **1-800-361-0486**

**TECHNICAL INFORMATION**

U.S.A. and Canada: **1-800-225-6119**  
[www.gpgypsum.com](http://www.gpgypsum.com)

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**WARRANTIES, REMEDIES AND TERMS OF SALE** For current warranty information for this product, please go to [www.gpgypsum.com](http://www.gpgypsum.com) and select the product for warranty information. All sales of this product by Georgia-Pacific are subject to our Terms of Sale available at [www.gpgypsum.com](http://www.gpgypsum.com).

**UPDATES AND CURRENT INFORMATION** The information in this document may change without notice. Visit our website at [www.gpgypsum.com](http://www.gpgypsum.com) for updates and current information.

**CAUTION** For product fire, safety and use information, go to [www.gp.com/safetyinfo](http://www.gp.com/safetyinfo) or call **1-800-225-6119**.

**FIRE SAFETY CAUTION** Passing a fire test in a controlled laboratory setting and/or certifying or labeling a product as having a one-hour, two-hour, or any other fire resistance or protection rating and, therefore, as acceptable for use in certain fire rated assemblies/systems, does not mean that either a particular assembly/system incorporating the product, or any given piece of the product itself, will necessarily provide one-hour fire resistance, two-hour fire resistance, or any other specified fire resistance or protection in an actual fire. In the event of an actual fire, you should immediately take any and all actions necessary for your safety and the safety of others without regard for any fire rating of any product or assembly/system.

# Product Data

Insulation



## CARLISLE'S HP-H POLYISO



### Overview

HP-H is a rigid-roof insulation panel composed of a closed-cell polyisocyanurate foam core bonded on each side to fiber-reinforced facers.

### Features and Benefits

- HP-H polyiso insulation provides the highest R-value per inch of commercially available insulation products
- Environmentally friendly construction with 0% ozone-depleting components and CFC free
- Approved for direct application to steel decks

### Panel Characteristics

- Available in 4' x 4' (1220 mm x 1220 mm) and 4' x 8' (1220 mm x 2440 mm) panels in thickness of 1" (25 mm) to 4.0" (102 mm)
- Available in two grades of compressive strengths per ASTM C1289-05a, Type II, Class 1, Grade 2 (20 psi), Grade 3 (25 psi)

### Applications

- Constructions requiring FM Class 1 and UL Class A ratings
- Single-Ply Roof Systems (Ballasted, Mechanically Attached, Fully Adhered)

### HP-H Thermal Values

Thickness		LTTR R-Value*	Flute Spanability
(INCHES)	(MM)		
1.00"	25	6.00	2 5/8"
1.50"	38	9.00	4 3/8"
1.60"	41	9.60	4 3/8"
1.70"	43	10.30	4 3/8"
1.80"	46	10.90	4 3/8"
2.00"	51	12.10	4 3/8"
2.50"	64	15.30	4 3/8"
2.70"	69	16.60	4 3/8"
3.00"	76	18.50	4 3/8"
3.10"	79	19.10	4 3/8"
3.30"	84	20.40	4 3/8"
3.50"	89	21.70	4 3/8"
3.60"	91	22.40	4 3/8"
3.70"	94	23.00	4 3/8"
4.00"	102	25.00	4 3/8"

\* Long Term Thermal Resistance Foam Core Values are based on ASTM C1289-06 and CAN/ULC S770 which provides for a 15-year time-weighted average. All PIMA members have adopted this advanced standard for R-values measurement as of 01/01/03.

### Installation

#### BALLASTED SINGLE-PLY SYSTEMS

Each HP-H panel is loosely laid on the roof deck. Butt edges and stagger joints of adjacent panels. Install the roof membrane according to Carlisle's specifications.

#### MECHANICALLY ATTACHED SINGLE-PLY SYSTEMS

Each HP-H panel must be secured to the roof deck with fasteners and plates (appropriate to the deck type). Butt edges and stagger joints of adjacent panels. Install the roof membrane according to Carlisle's specifications.

#### FULLY ADHERED SINGLE-PLY SYSTEMS

Each HP-H panel must be secured to the roof deck with fasteners and plates (appropriate to deck type). Butt edges and stagger joints of adjacent panels. Install the roof membrane according to Carlisle's specifications.

HP-H 4' x 8' panels can be secured to the roof deck with Carlisle's FAST® Adhesive.

HP-H 4' x 4' panels may be adhered to prepared concrete deck with a full mopping of Type III or IV asphalt.

## CARLISLE'S HP-H POLYISO

### HP-H Codes and Compliances

- ASTM C1289-06, Type II, Class 1, Grade 2 (20 psi), Grade 3 (25 psi)
- International Building Code (IBC) Section 2603

NOTE: Please be aware the Federal Specification HH-I-1972/GEN has been replaced.

### Underwriters Laboratories, Inc.

- Component of Class A Roof Systems (UL 790)
- Hourly Rated P series roof assemblies (UL 263) P 225, 230, 259, 302, 303, 508, 510, 514, 519, 701, 710, 713, 717, 718, 719, 720, 722, 723, 727, 728, 729, 730, 732, 734, 735, 739, 741, 742, 743, 818, 819, 824, 827, 828
- Insulated metal deck assemblies - (UL 1256) nos. 120, 123, 292
- HP-H classified by ULC
- R18846

### Factory Mutual Research

- FM Class 1 approval for steel roof-deck constructions, (FM 4450)
- FM 4470  
(Subject to the conditions of approval described in Roofnav.com)
- FLORIDA BUILDING CODE APPROVAL FL#1296
- MIAMI-DADE COUNTY, FLORIDA NOA NO: 04-1018.01



CLASSIFIED  
C UL US

Foamed plastic as roof deck construction material with resistance to an internal fire exposure only for use in construction no.(s) 120 and 123. See UL Directory of Products Certified for Canada and UL Roofing Materials and Systems Directory. 99DL.



### Precautions

Insulation must be protected from open flame and kept dry at all times. Install only as much insulation as can be covered the same day by completed roof-covering material. Carlisle will not be responsible for specific building and roof design by others, for deficiencies in construction or workmanship, for dangerous conditions on the job site or for improper storage and handling. Technical specifications shown in this literature are intended to be used as general guidelines only and are subject to change without notice. Call Carlisle for more specific details, or refer to PIMA Technical Bulletin No. 109: Storage & Handling Recommendations for Polyiso Roof Insulation.

### Polyiso Foam Core Only

#### Typical Properties and Characteristics

Property	Test Method	Value
Compressive Strength	ASTM D1621 ASTM 1289-06	20 psi* minimum (138 kPa, Grade 2)
Dimensional Stability	ASTM D2126	2% linear change (7 days)
Moisture Vapor Transmission	ASTM E96 12.10	< 1 perm (57.5 ng/(Pa•s•m <sup>2</sup> ))
Water Absorption	ASTM C209	< 1% volume
Service Temperature		-100° to 250°F (-73°C to 122°C)

\* Also available in 25 psi minimum, Grade 3

### Other Polyiso Products by Carlisle

- **SecurShield** – Polyiso bonded to coated glass facer
- **HP-F** – Polyiso bonded to foil
- **HP-NB** – Polyiso bonded to oriented strand board
- **Tapered SecurShield** – Tapered polyiso bonded to coated glass facer
- **Tapered HP-H** – Tapered polyiso

Investing in Roofing Solutions for Over 45 Years

800-479-6832 • P.O. Box 7000 • Carlisle, PA 17013 • Fax: 717-245-7053 • www.carlisle-syntec.com

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REPRINT CODE: 600491- "HP-H Polyiso Product Data Sheet" – 031411 © 2011 Carlisle.



Carlisle SynTec

# Material Safety Data Sheet

## SURE-SEAL POLYISO HP

Date of Preparation: 01/02/13

Revision: 000

### Section 1 - Chemical Product and Company Identification

**Product/Chemical Name:** SURE-SEAL POLYISO HP

**Chemical Formula:** Not available.

**CAS Number:**

**Other Designations:**

**General Use:** Insulation Board

**Manufacturer:** Carlisle SynTec, 1285 Ritner Highway, Carlisle, PA 17013, Phone: 800-4SYNTEC

Emergency Phone Number: CHEMTREC (USA) 800-424-9300

### Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	% wt or % vol
Nonhazardous as per 29 CFR 1910.1200	None	100

#### Hazardous Ingredients:

Ingredient	OSHA PEL		ACGIH TLV		NIOSH REL		NIOSH IDLH
	TWA	STEL	TWA	STEL	TWA	STEL	
Polyisocyanurate	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.	none estab.
Proprietary Hydr-Chlorofluorocarbons	500 ppm						
Fibrous Glass	10 mg/m <sup>3</sup>	None estab.					
Cellulose	10 mg/m <sup>3</sup>	None estab.					

### Section 3 - Hazards Identification

#### ☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

#### Potential Health Effects

**Primary Entry Routes:** Skin contact, eye contact, inhalation.

**Target Organs:**

**Acute Effects**

**Inhalation:** irritation.

**Eye:** irritation

**Skin:** irritation

**Ingestion:**

**Carcinogenicity:** IARC, NTP, and OSHA do not list this product as a carcinogen.

**Medical Conditions Aggravated by Long-Term Exposure:**

**Chronic Effects:** Possible allergic reaction of respiratory system (sensitization)

#### HMIS

H #

F #

R #

PPE<sup>†</sup>

<sup>†</sup>Sec. 8

### Section 4 - First Aid Measures

**Inhalation:** Remove to fresh air.

**Eye Contact:** Flush with water for 15 minutes or until irritation ceases.

**Skin Contact:** Wash with soap and water.

**Ingestion:**

*After first aid, get appropriate in-plant, paramedic, or community medical support.*

**Note to Physicians:**

**Special Precautions/Procedures:** Persons who develop symptoms of allergy, irritation, respiratory problems, or puffiness around the eyes should be examined by a physician as soon as possible.

## Section 5 - Fire-Fighting Measures

**Flash Point:** N/A

**Flash Point Method:** N/A

**Burning Rate:**

**Autoignition Temperature:** Not available.

**LEL:** N/A

**UEL:** N/A

**Flammability Classification:** Division 4

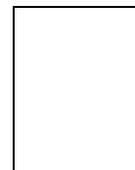
**Extinguishing Media:** In case of fire, use dry chemicals, carbon dioxide, foam, or water fog,

**Unusual Fire or Explosion Hazards:** None known.

**Hazardous Combustion Products:** Carbon monoxide, carbon dioxide.

**Fire-Fighting Instructions:** Fire-fighters should wear self-contained breathing apparatus.

**Fire-Fighting Equipment:** Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full face piece operated in pressure-demand or positive-pressure mode.



## Section 6 - Accidental Release Measures

**Spill /Leak Procedures:** Normal housekeeping.

**Small Spills:**

**Large Spills**

**Containment:** For large spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or waterways.

**Cleanup:**

**Regulatory Requirements:** Follow applicable OSHA regulations (29 CFR 1910.120).

## Section 7 - Handling and Storage

**Handling Precautions:** No special equipment required.

**Storage Requirements:** Protect from moisture.

**Regulatory Requirements:**

## Section 8 - Exposure Controls / Personal Protection

**Engineering Controls:** Sufficient ventilation (when cutting) to keep exposure to nuisance dust below 5 mg/m<sup>3</sup>.

**Ventilation:** Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

**Administrative Controls:**

**Respiratory Protection:** OSHA approved respirator or dust mask when cutting.

**Protective Clothing/Equipment:** Protective gloves. Safety glasses or goggles, especially when cutting. Protective clothing and footwear.

**Safety Stations:** Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

**Contaminated Equipment:** Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

**Comments:** Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

## Section 9 - Physical and Chemical Properties

**Physical State:** Solid

**Appearance and Odor:** Tan core foam with cellulose glass fiber facings-no odor.

**Odor Threshold:** N/A

**Vapor Pressure:** N/A

**Vapor Density (Air=1):** N/A

**Formula Weight:**

**Density:**

**Specific Gravity (H<sub>2</sub>O=1, at 4 °C):** Nominal 2.0 PCF

**pH:** N/A

**Water Solubility:** Not soluble.

**Other Solubilities:**

**Boiling Point:** N/A

**Freezing/Melting Point:** N/A

**Viscosity:**

**Refractive Index:**

**Surface Tension:**

**% Volatile:** N/A

**Evaporation Rate:** N/A

## Section 10 - Stability and Reactivity

**Stability:** Stable.

**Polymerization:** Will not occur.

**Chemical Incompatibilities:** Acetone, MEK, THF, chlorine, chloroform, hydrogen peroxide, ethylene dichloride, dimethyl sulfoxide, and dimethyl formamide.

**Conditions to Avoid:** Open flame. Will burn if exposed to fire of sufficient heat and intensity.

**Hazardous Decomposition Products:** Toxic smoke or vapors, such as carbon monoxide or carbon dioxide, may be released in a fire.

### Section 11- Toxicological Information

#### Toxicity Data:\*

**Eye Effects:**

**Acute Inhalation Effects:**

**Skin Effects:**

**Acute Oral Effects:**

**Chronic Effects:**

**Carcinogenicity:** No evidence.

**Mutagenicity:** No evidence.

**Teratogenicity:** No evidence.

\* See NIOSH, RTECS (000000), for additional toxicity data.

### Section 12 - Ecological Information

**Ecotoxicity:**

**Environmental Fate:**

**Environmental Degradation:**

**Soil Absorption/Mobility:**

### Section 13 - Disposal Considerations

**Disposal:** Dispose of in accordance with all local, state, and federal regulations.

**Disposal Regulatory Requirements:**

**Container Cleaning and Disposal:**

### Section 14 - Transport Information

#### DOT Transportation Data (49 CFR 172.101):

**Shipping Name:**

**Packaging Authorizations**

**Quantity Limitations**

**Shipping Symbols:**

a) **Exceptions:** 173.???

a) **Passenger, Aircraft, or Railcar:**

**Hazard Class:**

b) **Non-bulk Packaging:** 173.???

b) **Cargo Aircraft Only:**

**ID No.:**

c) **Bulk Packaging:** 173.???

**Packing Group:**

**Vessel Stowage Requirements**

**Label:**

a) **Vessel Stowage:**

**Special Provisions (172.102):**

b) **Other:**

### Section 15 - Regulatory Information

#### EPA Regulations:

RCRA Hazardous Waste Number: Not listed (40 CFR 261.33)

RCRA Hazardous Waste Classification (40 CFR 261.??): Not classified

CERCLA Hazardous Substance (40 CFR 302.4) listed/unlisted specific per RCRA, Sec. 3001; CWA, Sec. 311 (b)(4); CWA, Sec. 307(a), CAA, Sec. 112

CERCLA Reportable Quantity (RQ), ?? lb (?? kg)

SARA 311/312 Codes:

SARA Toxic Chemical (40 CFR 372.65): Not listed

SARA EHS (Extremely Hazardous Substance) (40 CFR 355): Not listed, Threshold Planning Quantity (TPQ)

#### OSHA Regulations:

Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): Not listed

OSHA Specifically Regulated Substance (29CFR 1910.????)

#### State Regulations:

### Section 16 - Other Information

**Prepared By:** Research & Development

**Revision Notes:**

**Additional Hazard Rating Systems:**

**Disclaimer:** The information contained in this document is based upon data that was supplied to Carlisle by other companies and organizations. No warranty of merchantability or fitness for a particular purpose is expressed or implied regarding the accuracy or completeness of the data and/or information in this material safety data sheet.

# Coping

**From:** Jared Jensen  
**Sent:** Monday, March 10, 2014 7:35 AM  
**To:** 'jeremy@noorda.com'  
**Cc:** Jared Backman; Scott Greener (sgreener@jacobsenconstruction.com)  
**Subject:** LRH Budge - Metal Color Sample  
**Attachments:** [Noorda.pdf](#)

Jeremy,

For the custom color specified for sheet metal flashing, the architect has indicated we are to match the exposed metals at the existing Women's Center. To assist in the process, we have obtained a color chip for you (see attached). The physical color chip is available for pickup at our main office.

At this time, please proceed with this color for the mockup material only. The material used for the actual building will be released based on the approval of the mockup.

Thanks.

**Jared Jensen, LEED AP**  
Project Engineer



***"Working Safely — Anticipating the Danger"***

3131 West 2210 South, Salt Lake City, UT 84119

CELL: 801.597.2924 | MAIN: 801.973.0500

[www.jacobsenconstruction.com](http://www.jacobsenconstruction.com)



**Letter of Transmittal**

**March 12, 2014**

**Transmitted To:**

Jeremy Estrada  
Noorda Architectural Metals Inc.  
2160 West 1700 South  
Salt Lake City, UT 84104  
Phone: 801.503.3000  
Fax:

**Logan Budge Clinic**  
1400 North 500 East  
Logan, UT  
Fax:

**Subject:** Metal Flashing Color Sample

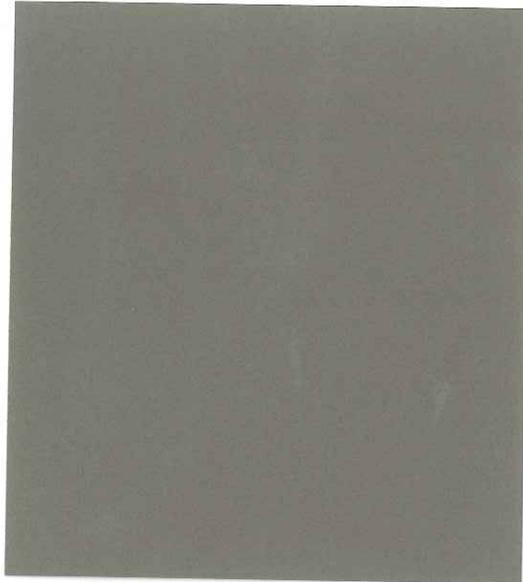
Doc Type	Document Reference	Description	Item Remarks	Transmittal No. 6
		Metal Flashing Color Sample		

**Comments:**

Dropped off at JCC main office for Noorda pickup. This sample is to be used for matching/custom color of flashing metal.

Transmitted By: Jared Jensen

REFER to reviewed submittal No. **074243.01 R1 - Composite Metal Samples;**  
dated 03.11.2014



 PPG Industries, Inc  
125 Colfax St  
Springdale, Pa 15144

**UC82644F**  
**Duranar® Sunstorm™**  
**Medium Bronze**

**use UC51742 primer only**  
This is a lab prepared color panel.  
A reasonable degree of color variation  
can be expected on production line  
spraying. Final color approval should  
be made with applicator prepared  
production line samples.

**2/25/2014**

STEELENCOUNTERS

Logan Regional Hospital  
Steel Encounters  
3/5/14

Sub 20902 08 41 13 A.5.01 Entrances Color Sample  
Sub 20902 08 42 29 C 01 Automatic Sliders color samples  
Sub 20902 08 44 13 D 01 Glazed Alum CW Color Samples  
FOR APPROVAL



REVIEWED     REVISE & RESUBMIT  
 REJECTED     FURNISH AS CORRECTED

Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with the design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for: confirming and correlating all quantities and dimensions; selecting fabrication processes and techniques of construction; coordinating his work with that of all other trades; and performing his work in a safe and satisfactory manner.

VCBO ARCHITECTURE, L.L.C.  
Date: 03/11/2014    By: Steven Tanner

# Sample Warranty



**JACOBSEN**  
CONSTRUCTION

**GOLDEN SEAL TOTAL ROOFING SYSTEM WARRANTY**

SERIAL NO.

DATE OF ISSUE:

BUILDING OWNER:

NAME OF BUILDING:

BUILDING ADDRESS:

DATE OF COMPLETION

DATE OF ACCEPTANCE BY CARLISLE:

**SAMPLE**

**Carlisle Roofing Systems, Inc.**, (Carlisle) warrants to the Building Owner (**Owner**) of the above described building, that; subject to the terms, conditions, and limitations stated in this warranty, Carlisle will repair any leak in the Carlisle Golden Seal™ Total Roofing System (**Carlisle Total Roofing System**) installed by a Carlisle Authorized Roofing applicator for a period of years commencing with the date of Carlisle's acceptance of the Carlisle Total Roofing System installation. However, in no event shall Carlisle's obligations extend beyond years subsequent to the date of substantial completion of the Carlisle Total Roofing System. See below for exact date of warranty expiration.

The Carlisle Total Roofing System is defined as the following Carlisle brand materials: Membrane, Flashings, Counterflashings, Adhesives and Sealants, Insulation, Cover Boards, Fasteners, Fastener Plates, Fastening Bars, Metal Work, Insulation Adhesives, and any other Carlisle brand products utilized in this installation.

**TERMS, CONDITIONS, LIMITATIONS**

- Owner shall provide Carlisle with written notice via letter, fax or email within thirty (30) days of the discovery of any leak in the Carlisle Total Roofing System. Owner should send written notice of a leak to Carlisle's Warranty Services Department at the address set forth at the bottom of this warranty. By so notifying Carlisle, the Owner authorizes Carlisle or its designee to investigate the cause of the leak. Should the investigation reveal the cause of the leak to be outside the scope of this Warranty, investigation and repair costs for this service shall be paid by the Owner.
- If, upon inspection, Carlisle determines that the leak is caused by a defect in the Carlisle Total Roofing System's materials, or workmanship of the Carlisle Authorized Roofing Applicator in installing the same, Owner's remedies and Carlisle's liability shall be limited to Carlisle's repair of the leak.
- This warranty shall not be applicable if, upon Carlisle's inspection, Carlisle determines that any of the following has occurred:
  - The Carlisle Total Roofing System (Membrane, Insulation or Accessory) is damaged by natural disasters, including, but not limited to, lightning, fire, insect infestations, earthquake, tornado, hail, hurricanes, and winds of (3 second) peak gust speeds of mph or higher measured at 10 meters above ground; or
  - Loss of integrity of the building envelope and, or structure including, but not limited to partial or complete loss of roof decking, wall siding, windows, doors or other envelope components or from roof damage by wind-blown objects, or;
  - The Carlisle Total Roofing System is damaged by any intentional or negligent acts, accidents, misuse, abuse, vandalism, civil disobedience, or the like.
  - Deterioration or failure of building components, including, but not limited to, the roof substrate, walls, mortar, HVAC units, non-Carlisle brand metal work, etc., occurs and causes a leak, or otherwise damages the Carlisle Total Roofing System; or
  - Acids, oils, harmful chemicals and the like come in contact with the Carlisle Total Roofing System and cause a leak, or otherwise damage the Carlisle Total Roofing System.
  - The Carlisle Total Roofing System encounters leaks or is otherwise damaged by condensation resulting from any condition within the building that may generate moisture.
- This Warranty shall be null and void if any of the following shall occur:
  - If, after installation of the Carlisle Total Roofing System by a Carlisle Authorized Roofing Applicator there are any alterations or repairs made on or through the roof or objects such as, but not limited to, structures, fixtures, solar panels, wind turbines, roof gardens or utilities are placed upon or attached to the roof without first obtaining written authorization from Carlisle; or
  - Failure by the Owner to use reasonable care in maintaining the roof, said maintenance to include, but not be limited to, those items listed on Carlisle's Care & Maintenance Information sheet which accompanies this Warranty.
- Only Carlisle brand insulation products are covered by this warranty. Carlisle specifically disclaims liability, under any theory of law, for damages sustained by or caused by non-Carlisle brand insulation products.
- During the term of this Warranty, Carlisle shall have free access to the roof during regular business hours.
- Carlisle shall have no obligation under this Warranty while any bills for installation, supplies, service, and warranty charges have not been paid in full to the Carlisle Authorized Roofing Applicator, Carlisle, or material suppliers.
- Carlisle's failure at any time to enforce any of the terms or conditions stated herein shall not be construed to be a waiver of such provision.
- Carlisle shall not be responsible for the cleanliness or discoloration of the Carlisle Total Roofing System caused by environmental conditions including, but not limited to, dirt, pollutants, or biological agents.
- Carlisle shall have no liability under any theory of law for any claims, repairs, restoration, or other damages including, but not limited to, consequential or incidental damages relating, directly or indirectly, to the presence of any irritants, contaminants, vapors, fumes, molds, fungi, bacteria, spores, mycotoxins, or the like in the building or in the air, land, or water serving the building.
- This warranty is not assignable by operation of law or otherwise. Application may be made by a new building owner for reissuance of the warranty during the original warranty period. Certain procedures including, but not limited to, an inspection of the Roofing System by a Carlisle representative and fees will apply to any reissuance. Carlisle reserves the right, in its sole discretion, to refuse to reissue this warranty.

**CARLISLE DOES NOT WARRANT PRODUCTS UTILIZED IN THIS INSTALLATION WHICH IT HAS NOT FURNISHED; AND SPECIFICALLY DISCLAIMS LIABILITY, UNDER ANY THEORY OF LAW, ARISING OUT OF THE INSTALLATION AND PERFORMANCE OF, OR DAMAGES SUSTAINED BY OR CAUSED BY, PRODUCTS NOT FURNISHED BY CARLISLE OR THE PRIOR EXISTING ROOFING MATERIAL OVER WHICH THE CARLISLE ROOFING SYSTEM HAS BEEN INSTALLED**

**THE REMEDIES STATED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES FOR FAILURE OF THE CARLISLE TOTAL ROOFING SYSTEM OR ITS COMPONENTS. THERE ARE NO WARRANTIES EITHER EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, WHICH EXTEND BEYOND THE FACE HEREOF. CARLISLE SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGE TO THE BUILDING OR ITS CONTENTS UNDER ANY THEORY OF LAW.**

BY: Robert H. McNeill

AUTHORIZED SIGNATURE

TITLE: Director, Technical and Warranty Services

**This Warranty Expires:**

# GRC Application



## Application for Acceptance of Roofing Installation

Submit to your Global Risk Consultants contact.

Submitter's Name: Craig Campbell Company Name: Noorda Architectural Metals	Submitter's Telephone No. 801-597-6822 Submitter's Email: ccampbell@noorda.com
---	---

### Project Details: Logan Regional Budge Clinic

Location's Name: <b>Logan Regional Budge Clinic</b> Locations' Address: 1350 N 500 E		Location Contact Name: Click here to enter text. Location Contact Email: Click here to enter text. Location Contact Tel: Click here to enter text.	
Roof Name or Designation: <b>Main Roof Deck</b>			
Roof Length: 200 ft	Roof Width: 114 ft	Roof Height: 59 ft	
Parapet Height (min): 12"	Parapet Height (max): 12"	Roof Slope: ¼"	

Type of Work: New <input checked="" type="checkbox"/> Recover <input type="checkbox"/> Reroof <input type="checkbox"/>
Installed per FM/UL/NOA/Local Code/Other: Click here to enter text.
UL Listing, FM RoofNav or NOA number if applicable: Click here to enter text.

### Roof Cover:

Trade name: Carlisle TPO membrane Sureweld	Thickness: .060 mil	Width: 10 ft
Trade name of additional plies for multi-ply systems: Click here to enter text.		
Fastened <input checked="" type="checkbox"/> Adhered <input type="checkbox"/> Ballasted <input type="checkbox"/>		
If adhered, adhesive trade name: Click here to enter text.		
Adhesive Application Rate:		
Field: Click here to enter text.	Perimeter: Click here to enter text.	Corners: Click here to enter text.
If fastened, fastener trade name: HP-X		
Seam Plate or Batten Bar trade name (if fastened): Click here to enter text.		
Fastener Length: 6"	Fastener Diameter: Click here to enter text. #15	
Spacing of membrane fasteners:		
Field: On center spacing: 12" Row Spacing: 10 ft		
Perimeter: On center spacing: 12" Row spacing: 6 ft		
Corners: On center spacing: 12" Row Spacing: 6 ft		
No. of Half Sheets used or Perimeter/Corner dimension: 2 "Picture-framed" or Intermediate rows used? Yes		
If ballasted, ballasting Material: Click here to enter text.		
Ballasting rate:		
Field: Click here to enter text.	Perimeter: Click here to enter text.	Corners: Click here to enter text.

Roof Surfacing Type (if applicable): Click here to enter text.
--

### Boardstock:

Layer	Trade name	Thickness	Fastened	Adhered
1. Top	HP-H Polyisocyanurate	2.5"	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1. Next	HP-H Polyisocyanurate	2.5"	<input type="checkbox"/>	<input type="checkbox"/>
2. Next	Click here to enter text.		<input type="checkbox"/>	<input type="checkbox"/>
3. Next	Click here to enter text.		<input type="checkbox"/>	<input type="checkbox"/>

<b>Boardstock Fastening Methods:</b>	
If adhered, adhesive trade name: Click here to enter text.	
Adhesive Application Rate: Field: Click here to enter text. Perimeter: Click here to enter text. Corners: Click here to enter text.	
If fastened, fastener trade name: Carlisle Insulfast	
Insulation Plate trade name (if fastened): Insulation plate - Carlisle	
Fastener Length: 6"	Fastener Diameter: #12
Fastener Installation Rate: Field: 8 per board 4'x8' Perimeter: 8 per board 4'x8' Corners: 8 per board 4'x8'	

**Base sheets and Vapor/Air barriers (if applicable):**

Base sheet <input type="checkbox"/> or Vapor/Air Barrier <input type="checkbox"/>	Trade name: Click here to enter text.
Fastened <input type="checkbox"/> or Adhered <input type="checkbox"/>	Width: Click here to enter text.
Adhesive Trade name (if adhered): Click here to enter text.	
Adhesive Application Rate: Click here to enter text.	
Fastener Trade name (if fastened): Click here to enter text.	
Fastener Plate (if fastened): Click here to enter text.	
Fastener Length: Click here to enter text.	Fastener Diameter: Click here to enter text.
<i>Spacing of fasteners (along laps):</i>	
Field: Click here to enter text. Perimeter: Click here to enter text. Corners: Click here to enter text.	
<i>Spacing of fasteners (intermediate rows):</i>	
No. of Rows - Field:	Perimeter: Corners:
On center spacing - Field:	Perimeter: Corners:

**Deck:**

Type of Deck: 22 ga. metal		
<i>Fastening for steel or other panel type decks:</i>		
Fastener Trade name or Weld size: Click here to enter text.		
<i>Spacing of Fasteners/Welds:</i>		
To structure - Field:	Perimeter:	Corners:
Side lap fastening - Field:	Perimeter:	Corners:

**Perimeter Flashing:**

Is perimeter metal rated to ANSI/SPRI ES1, FM or other: Click here to enter text.
Wind rating of perimeter metal if applicable: Click here to enter text.

**Provide Additional Clarification if needed:**

*Attach detail drawing of flashing and perimeter metal installation.*

## Application for Acceptance of Roofing Installation

Submit to your Global Risk Consultants contact.

Submitter's Name: Craig Campbell Company Name: Noorda Architectural Metals	Submitter's Telephone No. 801-597-6822 Submitter's Email: ccampbell@noorda.com
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### Project Details: Logan Regional Budge Clinic

Location's Name: <b>Logan Regional Budge Clinic</b> Locations' Address: 1350 N 500 E		Location Contact Name: Click here to enter text. Location Contact Email: Click here to enter text. Location Contact Tel: Click here to enter text.	
Roof Name or Designation: Pool Addition Roof			
Roof Length: 47 ft	Roof Width: 27 ft	Roof Height: Click here to enter text.	
Parapet Height (min): 2 ft	Parapet Height (max): 3 ft	Roof Slope: ¼"	

Type of Work: New <input checked="" type="checkbox"/> Recover <input type="checkbox"/> Reroof <input type="checkbox"/>
Installed per FM/UL/NOA/Local Code/Other: Click here to enter text.
UL Listing, FM RoofNav or NOA number if applicable: Click here to enter text.

### Roof Cover:

Trade name: Carlisle Sureweld Fleece back	Thickness: 135 mil	Width: 10 ft
Trade name of additional plies for multi-ply systems: Click here to enter text.		
Fastened <input type="checkbox"/>	Adhered <input checked="" type="checkbox"/>	Ballasted <input type="checkbox"/>
If adhered, adhesive trade name: Carlisle Fast 100		
Adhesive Application Rate: Field: 6" O.C. Perimeter: 6" O.C. Corners: 6" O.C.		
If fastened, fastener trade name: Click here to enter text.		
Seam Plate or Batten Bar trade name (if fastened): Click here to enter text.		
Fastener Length: Click here to enter text.	Fastener Diameter: Click here to enter text.	
Spacing of membrane fasteners: <i>Field:</i> On center spacing: Click here to enter text. Row Spacing: <i>Perimeter:</i> On center spacing: Click here to enter text. Row spacing: <i>Corners:</i> On center spacing: Click here to enter text. Row Spacing:		
No. of Half Sheets used or Perimeter/Corner dimension: "Picture-framed" or Intermediate rows used?		
If ballasted, ballasting Material: Click here to enter text.		
Ballasting rate: Field: Click here to enter text. Perimeter: Click here to enter text. Corners: Click here to enter text.		

Roof Surfacing Type (if applicable): Click here to enter text.
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**Boardstock:**

Layer	Trade name	Thickness	Fastened	Adhered
1. Top	HP-H Carlisle	2.5"	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1. Next	HP-H Carlisle	2.5"	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Next	Click here to enter text.		<input type="checkbox"/>	<input type="checkbox"/>
3. Next	Click here to enter text.		<input type="checkbox"/>	<input type="checkbox"/>

**Boardstock Fastening Methods:**

If adhered, adhesive trade name: Carlisle Fast 100

Adhesive Application Rate:

Field: 12" O.C. Perimeter: 6" O.C. Corners: 6" O.C.

If fastened, fastener trade name:

Insulation Plate trade name (if fastened):

Fastener Length: Fastener Diameter:

Fastener Installation Rate:

Field: Perimeter: Corners:

**Base sheets and Vapor/Air barriers (if applicable):**

Base sheet <input type="checkbox"/> or Vapor/Air Barrier <input checked="" type="checkbox"/>	Trade name: Carlisle 725 TR
Fastened <input type="checkbox"/> or Adhered <input checked="" type="checkbox"/>	Width: 39"
Adhesive Trade name (if adhered): Carlisle Cav grip Primer	
Adhesive Application Rate: Click here to enter text.	
Fastener Trade name (if fastened): Click here to enter text.	
Fastener Plate (if fastened): Click here to enter text.	
Fastener Length: Click here to enter text.	Fastener Diameter: Click here to enter text.
<i>Spacing of fasteners (along laps):</i>	
Field: Click here to enter text. Perimeter: Click here to enter text. Corners: Click here to enter text.	
<i>Spacing of fasteners (intermediate rows):</i>	
No. of Rows - Field:	Perimeter: Corners:
On center spacing - Field:	Perimeter: Corners:

**Deck:**

Type of Deck: 22 ga. metal		
<i>Fastening for steel or other panel type decks:</i>		
Fastener Trade name or Weld size: Click here to enter text.		
<i>Spacing of Fasteners/Welds:</i>		
To structure - Field:	Perimeter:	Corners:
Side lap fastening - Field:	Perimeter:	Corners:

**Perimeter Flashing:**

Is perimeter metal rated to ANSI/SPRI ES1, FM or other: Click here to enter text.
Wind rating of perimeter metal if applicable: Click here to enter text.

**Provide Additional Clarification if needed:**

*Attach detail drawing of flashing and perimeter metal installation.*

# Application for Acceptance of Roofing Installation

Submit to your Global Risk Consultants contact.

Submitter's Name: Craig Campbell Company Name: Noorda Architectural Metals	Submitter's Telephone No. 801-597-6822 Submitter's Email: ccampbell@noorda.com
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## Project Details: Logan Regional Budge Clinic

Location's Name: <b>Logan Regional Budge Clinic</b> Locations' Address: 1350 N 500 E		Location Contact Name: Click here to enter text. Location Contact Email: Click here to enter text. Location Contact Tel: Click here to enter text.	
Roof Name or Designation: <b>EntryWay</b>			
Roof Length: 70 ft	Roof Width: 23 ft	Roof Height: 18 ft	
Parapet Height (min): 12"	Parapet Height (max): 12"	Roof Slope: 1—1/2"	

Type of Work: New <input checked="" type="checkbox"/> Recover <input type="checkbox"/> Reroof <input type="checkbox"/>
Installed per FM/UL/NOA/Local Code/Other: Click here to enter text.
UL Listing, FM RoofNav or NOA number if applicable: Click here to enter text.

## Roof Cover:

Trade name: Carlisle Sureweld TPO	Thickness: .060 mil	Width: 10 ft
Trade name of additional plies for multi-ply systems: Click here to enter text.		
Fastened <input checked="" type="checkbox"/> Adhered <input type="checkbox"/> Ballasted <input type="checkbox"/>		
If <u>adhered</u> , adhesive trade name: Click here to enter text.		
Adhesive Application Rate: Field: Click here to enter text. Perimeter: Click here to enter text. Corners: Click here to enter text.		
If <u>fastened</u> , fastener trade name: Carlisle HP-X		
Seam Plate or Batten Bar trade name (if fastened): Click here to enter text.		
Fastener Length: 2"	Fastener Diameter: #15	
Spacing of membrane fasteners: <i>Field:</i> On center spacing: 12" Row Spacing: 10 ft <i>Perimeter:</i> On center spacing: 12" Row spacing: 6 ft <i>Corners:</i> On center spacing: 12" Row Spacing: 6 ft		
No. of Half Sheets used or Perimeter/Corner dimension: 2 "Picture-framed" or Intermediate rows used? Yes		
If <u>ballasted</u> , ballasting Material:		
Ballasting rate: Field: Click here to enter text. Perimeter: Corners: Click here to enter text.		

Roof Surfacing Type (if applicable): Click here to enter text.
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**Boardstock:**

Layer	Trade name	Thickness	Fastened	Adhered
1. Top	Carlisle Dens Deck	1/2"	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1. Next	Click here to enter text.	Click here to enter text.	<input type="checkbox"/>	<input type="checkbox"/>
2. Next	Click here to enter text.		<input type="checkbox"/>	<input type="checkbox"/>
3. Next	Click here to enter text.		<input type="checkbox"/>	<input type="checkbox"/>

<i>Boardstock Fastening Methods:</i>	
If adhered, adhesive trade name: Click here to enter text.	
Adhesive Application Rate: Field: 1 Perimeter: Click here to enter text. Corners: Click here to enter text.	
If fastened, fastener trade name: Carlisle Insulfast	
Insulation Plate trade name (if fastened): Carlisle Insulation Plate	
Fastener Length: 1-5/8"	Fastener Diameter: #12
Fastener Installation Rate: Field: 8 per 4'x8' Perimeter: 8 per 4'x8' Corners: 8 per 4'x8'	

**Base sheets and Vapor/Air barriers (if applicable):**

Base sheet <input type="checkbox"/> or Vapor/Air Barrier <input type="checkbox"/>	Trade name: Click here to enter text.
Fastened <input type="checkbox"/> or Adhered <input type="checkbox"/>	Width: Click here to enter text.
Adhesive Trade name (if adhered): Click here to enter text.	
Adhesive Application Rate: Click here to enter text.	
Fastener Trade name (if fastened): Click here to enter text.	
Fastener Plate (if fastened): Click here to enter text.	
Fastener Length: Click here to enter text.	Fastener Diameter: Click here to enter text.
<i>Spacing of fasteners (along laps):</i>	
Field: Click here to enter text. Perimeter: Click here to enter text. Corners: Click here to enter text.	
<i>Spacing of fasteners (intermediate rows):</i>	
No. of Rows - Field:	Perimeter: Corners:
On center spacing - Field:	Perimeter: Corners:

**Deck:**

Type of Deck: 22 ga. metal		
<i>Fastening for steel or other panel type decks:</i>		
Fastener Trade name or Weld size: Click here to enter text.		
<i>Spacing of Fasteners/Welds:</i>		
To structure - Field:	Perimeter:	Corners:
Side lap fastening - Field:	Perimeter:	Corners:

**Perimeter Flashing:**

Is perimeter metal rated to ANSI/SPRI ES1, FM or other: Click here to enter text.
Wind rating of perimeter metal if applicable: Click here to enter text.

**Provide Additional Clarification if needed:**

*Attach detail drawing of flashing and perimeter metal installation.*

## Application for Acceptance of Roofing Installation

Submit to your Global Risk Consultants contact.

Submitter's Name: Craig Campbell Company Name: Noorda Architectural Metals	Submitter's Telephone No. 801-597-6822 Submitter's Email: ccampbell@noorda.com
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### Project Details: Logan Regional Budge Clinic

Location's Name: <b>Logan Regional Budge Clinic</b> Locations' Address: 1350 N 500 E		Location Contact Name: Click here to enter text. Location Contact Email: Click here to enter text. Location Contact Tel: Click here to enter text.	
Roof Name or Designation: <b>Ballast Roof</b>			
Roof Length: 134 ft	Roof Width: 19 ft	Roof Height: 18 ft	
Parapet Height (min): 12"	Parapet Height (max): 12"	Roof Slope: 1/4"	

Type of Work: New <input checked="" type="checkbox"/> Recover <input type="checkbox"/> Reroof <input type="checkbox"/>
Installed per FM/UL/NOA/Local Code/Other: Click here to enter text.
UL Listing, FM RoofNav or NOA number if applicable: Click here to enter text.

### Roof Cover:

Trade name: Carlisle Sureweld TPO	Thickness: .060 mil	Width: 10 ft
Trade name of additional plies for multi-ply systems: Click here to enter text.		
Fastened <input type="checkbox"/>	Adhered <input type="checkbox"/>	Ballasted <input checked="" type="checkbox"/>
If adhered, adhesive trade name: Click here to enter text.		
Adhesive Application Rate:		
Field: Click here to enter text.	Perimeter: Click here to enter text.	Corners: Click here to enter text.
If fastened, fastener trade name: Click here to enter text.		
Seam Plate or Batten Bar trade name (if fastened): Click here to enter text.		
Fastener Length: Click here to enter text.	Fastener Diameter: Click here to enter text.	
Spacing of membrane fasteners:		
<i>Field:</i> On center spacing: Click here to enter text. Row Spacing:		
<i>Perimeter:</i> On center spacing: Click here to enter text. Row spacing:		
<i>Corners:</i> On center spacing: Click here to enter text. Row Spacing:		
No. of Half Sheets used or Perimeter/Corner dimension: "Picture-framed" or Intermediate rows used?		
If ballasted, ballasting Material: River Rock 1.5"		
Ballasting rate:		
Field: 1000 lbs per sq 1.5"	Perimeter: 1300 lbs per sq 2.5"	Corners: 1300 lbs per sq 2.5"

Roof Surfacing Type (if applicable): Click here to enter text.
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**Boardstock:**

Layer	Trade name	Thickness	Fastened	Adhered
1. Top	Carlisle HP-H Polyisocyanurate	2.5"	<input type="checkbox"/>	<input type="checkbox"/>
1. Next	Carlisle HP-H Polyisocyanurate	2.5"	<input type="checkbox"/>	<input type="checkbox"/>
2. Next	Click here to enter text.		<input type="checkbox"/>	<input type="checkbox"/>
3. Next	Click here to enter text.		<input type="checkbox"/>	<input type="checkbox"/>

<i>Boardstock Fastening Methods:</i>	
If adhered, adhesive trade name: Click here to enter text.	
Adhesive Application Rate: Field: 1 Perimeter: Click here to enter text. Corners: Click here to enter text.	
If fastened, fastener trade name: Click here to enter text.	
Insulation Plate trade name (if fastened): Click here to enter text.	
Fastener Length: Click here to enter text.	Fastener Diameter: Click here to enter text.
Fastener Installation Rate: Field: Click here to enter text. Perimeter: Click here to enter text. Corners:	

**Base sheets and Vapor/Air barriers (if applicable):**

Base sheet <input type="checkbox"/> or Vapor/Air Barrier <input type="checkbox"/>	Trade name: Click here to enter text.
Fastened <input type="checkbox"/> or Adhered <input type="checkbox"/>	Width: Click here to enter text.
Adhesive Trade name (if adhered): Click here to enter text.	
Adhesive Application Rate: Click here to enter text.	
Fastener Trade name (if fastened): Click here to enter text.	
Fastener Plate (if fastened): Click here to enter text.	
Fastener Length: Click here to enter text.	Fastener Diameter: Click here to enter text.
<i>Spacing of fasteners (along laps):</i>	
Field: Click here to enter text. Perimeter: Click here to enter text. Corners: Click here to enter text.	
<i>Spacing of fasteners (intermediate rows):</i>	
No. of Rows - Field:	Perimeter: Corners:
On center spacing - Field:	Perimeter: Corners:

**Deck:**

Type of Deck: 22 ga. metal		
<i>Fastening for steel or other panel type decks:</i>		
Fastener Trade name or Weld size: Click here to enter text.		
<i>Spacing of Fasteners/Welds:</i>		
To structure - Field:	Perimeter:	Corners:
Side lap fastening - Field:	Perimeter:	Corners:

**Perimeter Flashing:**

Is perimeter metal rated to ANSI/SPRI ES1, FM or other: Click here to enter text.
Wind rating of perimeter metal if applicable: Click here to enter text.

**Provide Additional Clarification if needed:**

*Attach detail drawing of flashing and perimeter metal installation.*