



## **STRUCTURAL DESIGN**

### **ENCLOSED BUILDING**

**MAXIMUM 30'- 0" WIDE X 20'- 0" HEIGHT-  
BOX EAVE FRAME AND BOW FRAME**

**23 October 2020**

**Revision 0**

**M&A Project No. 20193S**

**Prepared for:**

**Vega Metal Structures & Concrete, LLC**

**4047 US Hwy 311**

**Randleman, NC 27317**

**Prepared by:**

**Moore and Associates Engineering and Consulting, Inc.**

**1009 East Avenue**

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**401 S. Main Street, Suite 200**

**Mount Airy, NC 27030**



**MOORE AND ASSOCIATES**  
ENGINEERING AND CONSULTING

		<p><b>Professional Certification.</b> I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 49744, Expiration Date <u>6/6/2022</u>.</p>	

<p align="center"><b>MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.</b></p>	<p><b>DRAWN BY:</b> JG</p>	<p align="center">VEGA METAL STRUCTURES &amp; CONCRETE, LLC. 4047 US HWY 311 RANDLEMAN, NC 27317 30-0"x20'-0" ENCLOSED STRUCTURE</p>			
	<p><b>CHECKED BY:</b> PDH</p>	<p><b>PROJECT MGR:</b> WSM</p>	<p><b>DATE:</b> 10-23-20</p>	<p><b>SCALE:</b> NTS</p>	<p><b>JOB NO:</b> 20193S</p>
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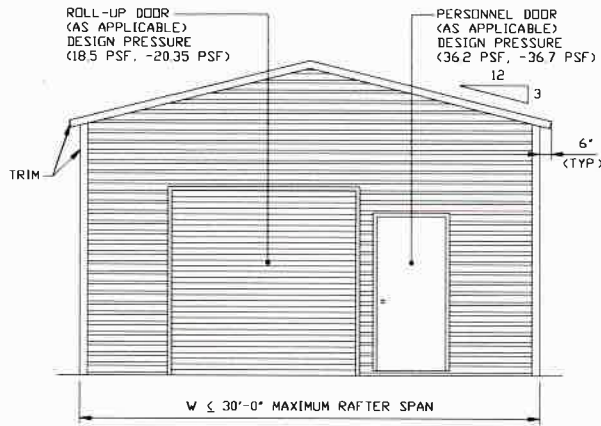
## INSTALLATION NOTES AND SPECIFICATIONS

1. DESIGN IS FOR MAXIMUM 30'-0" WIDE x 20'-0" EAVE HEIGHT ENCLOSED STRUCTURES
2. DESIGN WAS DONE IN ACCORDANCE WITH THE 2020 FLORIDA BUILDING CODE, 7TH EDITION, 2018 NORTH CAROLINA BUILDING CODE (NCBC), 2018 INTERNATIONAL BUILDING CODE (IBC), 2015 IBC AND 2012 IBC.
3. DESIGN LOADS ARE AS FOLLOWS:
  - A) DEAD LOAD = 15 PSF
  - B) LIVE LOAD = 12 PSF
  - C) GROUND SNOW LOAD = 45 PSF
  - = 30 PSF WITH U-CHANNEL PEAK BRACE (W ≤ 24'-0")

NOTE: DIFFERENTIAL LOADING DUE TO SNOW DRIFTING NOT ANALYZED.
4. 3-SECOND GUST ULTIMATE WIND SPEED (V<sub>ULT</sub>) = ≤ 145 MPH (NOMINAL WIND SPEED = ≤ 112 MPH)
5. MAXIMUM RAFTER/POST AND END POST SPACING = 50 FEET (UNLESS NOTED OTHERWISE)
6. END WALL COLUMNS (POSTS) ARE EQUIVALENT TO SIDE WALL POSTS IN SIZE AND SPACING (UNLESS NOTED OTHERWISE)
7. RISK CATEGORY I
8. WIND EXPOSURE CATEGORY B.
9. SPECIFICATIONS APPLICABLE TO 29 GAUGE METAL PANELS FASTENED DIRECTLY TO 2 1/2" x 2 1/2" - 14 GAUGE TUBE STEEL (TS) FRAMING MEMBERS (UNLESS NOTED OTHERWISE). WHERE TS 2 1/2" x 2 1/2" - 14 GAUGE IS SPECIFIED, TS 2 1/4" x 2 1/4" - 12 GAUGE MAY BE USED AS AN OPTION.
10. AVERAGE FASTENER SPACING ON-CENTERS ALONG RAFTERS OR HAT CHANNELS, AND COLUMNS (INTERIOR OR END) = 10" O.C. (MAX)
11. FASTENERS CONSIST OF #12-14x3/4" SELF-DRILLING FASTENER (SDF), USE CONTROL SEAL WASHER WITH EXTERIOR FASTENERS. SPECIFICATIONS APPLICABLE ONLY FOR MEAN ROOF HEIGHT OF 20 FEET OR LESS, AND ROOF SLOPES OF 14° (3:12 PITCH) OR LESS. SPACING REQUIREMENTS FOR OTHER ROOF HEIGHTS AND/OR SLOPES MAY VARY. ROOF SLOPES LESS THAN 3:12 REQUIRE USE OF LAP JOINT SEALANT.
12. ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL WITHIN 6" OF EACH RAFTER COLUMN ALONG SIDES.
13. STANDARD GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT x MINIMUM 36" LONG AND MAY ONLY BE USED IN SUITABLE SOILS. OPTIONAL ANCHORAGE MAY BE USED IN SUITABLE SOILS AND MUST BE USED IN UNSUITABLE SOILS AS NOTED. COORDINATE WITH LOCAL CODES/ORDINANCES REGARDING MINIMUM LENGTH FOR FROST DEPTH PROTECTION.
14. WIND FORCES GOVERN OVER SEISMIC FORCES, SEISMIC PARAMETERS ANALYZED ARE:
  - SOIL SITE CLASS = D
  - RISK CATEGORY I
  - R = 3.25                      I<sub>e</sub> = 10
  - S<sub>DS</sub> = 2.039 g              V = C<sub>s</sub>W
  - S<sub>D1</sub> = 1.258 g
15. DOOR AND WINDOW PRESSURE VALUES ARE APPLICABLE FOR THE STATE OF FLORIDA.

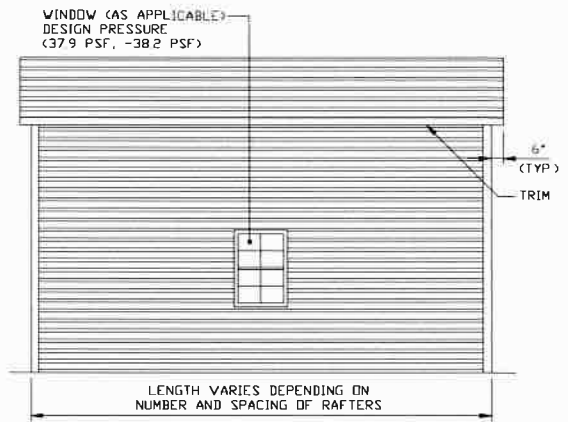
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## BOX EAVE RAFTER STRUCTURE



**TYPICAL END ELEVATION**

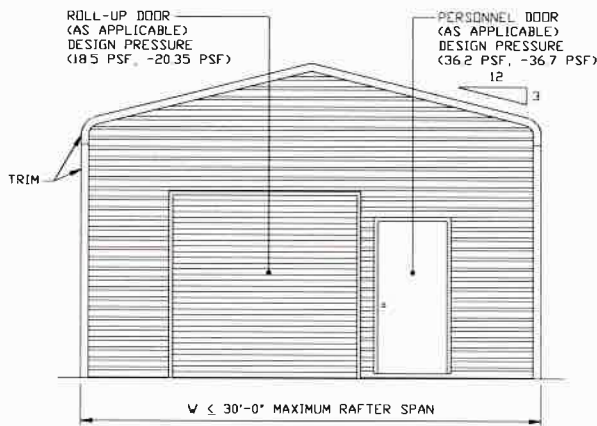
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**TYPICAL SIDE ELEVATION**

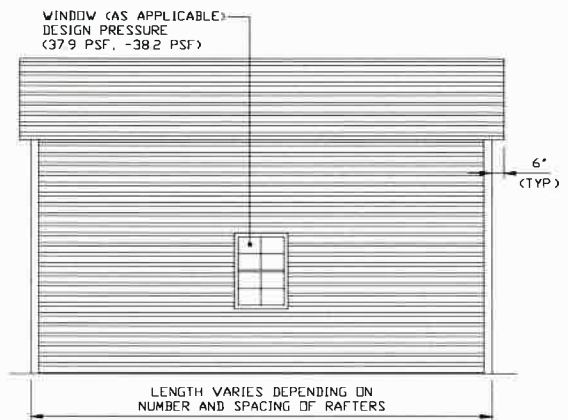
SCALE: NTS

## BOW FRAME RAFTER STRUCTURE



**TYPICAL END ELEVATION**

SCALE: NTS



**TYPICAL SIDE ELEVATION**

SCALE: NTS

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30'-0"x20'-0" ENCLOSED STRUCTURE

**DATE: 10-23-20**

**SHT. 4**

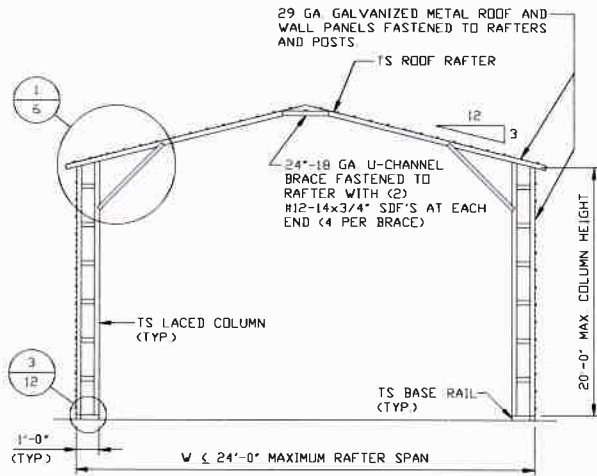
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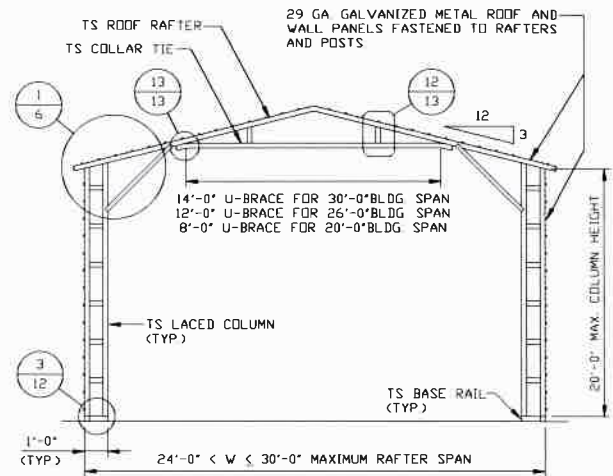
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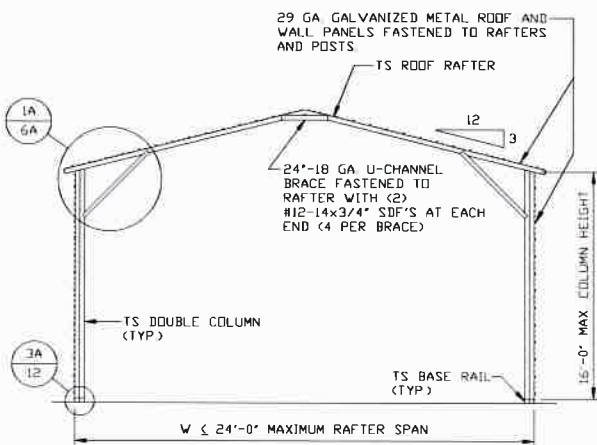
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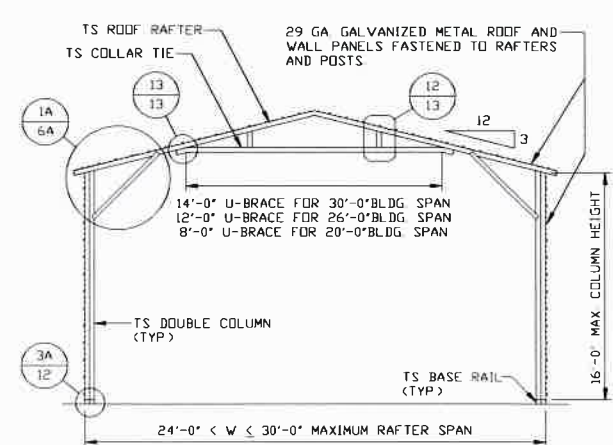
**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS

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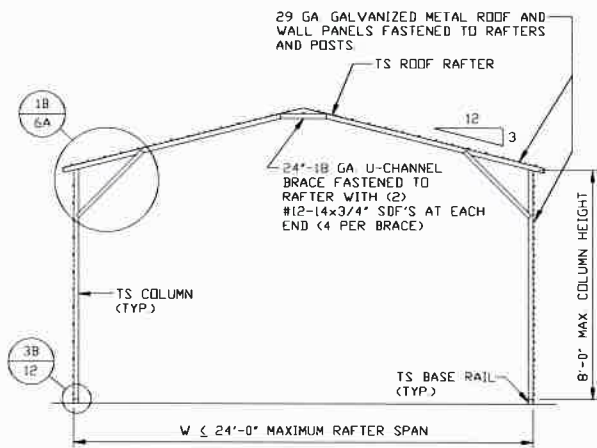
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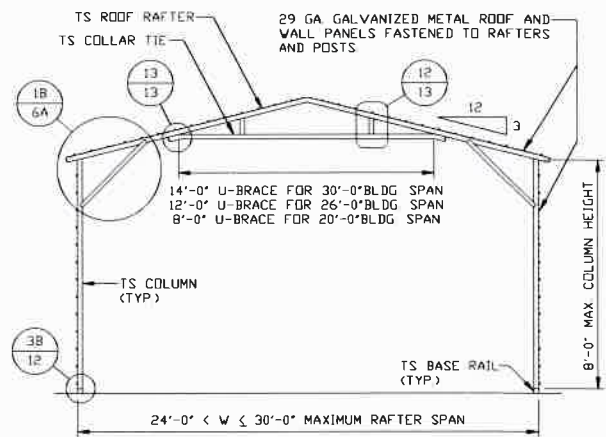
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**SCALE: NTS**  
**JOB NO: 20193S**  
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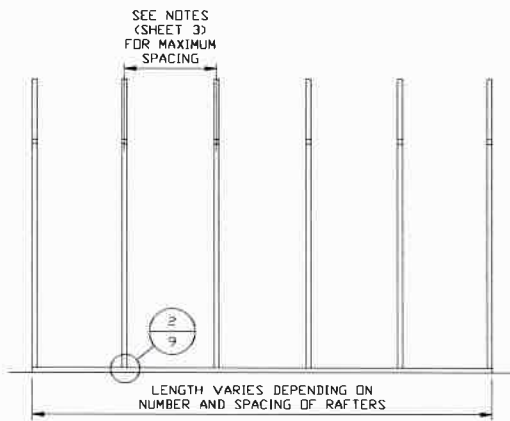
**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION**

SCALE: NTS

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**SHT. 5A**

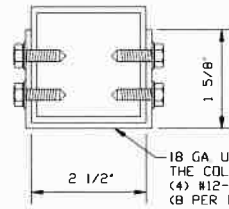
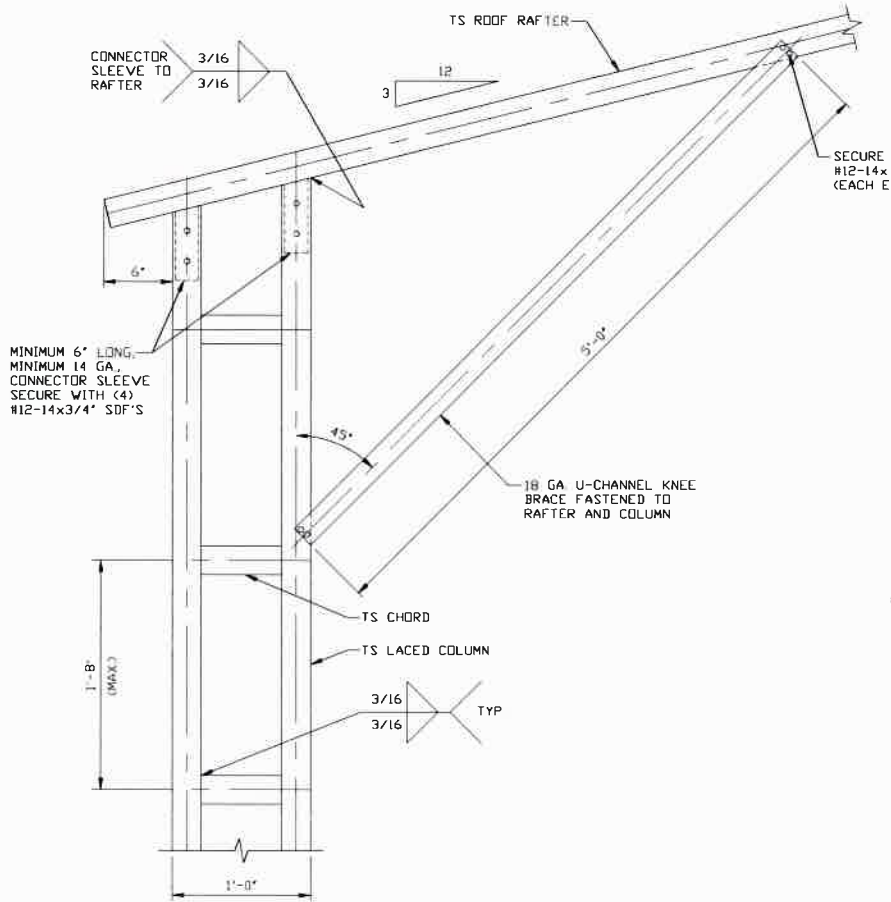
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**DWG. NO: SK-3**

**JOB NO: 20193S**

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18 GA U-CHANNEL BRACE FASTENED TO THE COLUMN AND ROOF BEAM, WITH (4) #12-14x3/4" SDF'S AT EACH END (8 PER BRACE)

**BRACE SECTION**  
SCALE: NTS

**1** **BOX EAVE RAFTER COLUMN CONNECTION**  
**DETAIL FOR HEIGHTS 16'-0" < TO ≤ 20'-0"**  
SCALE: NTS

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**JOB NO: 20193S**

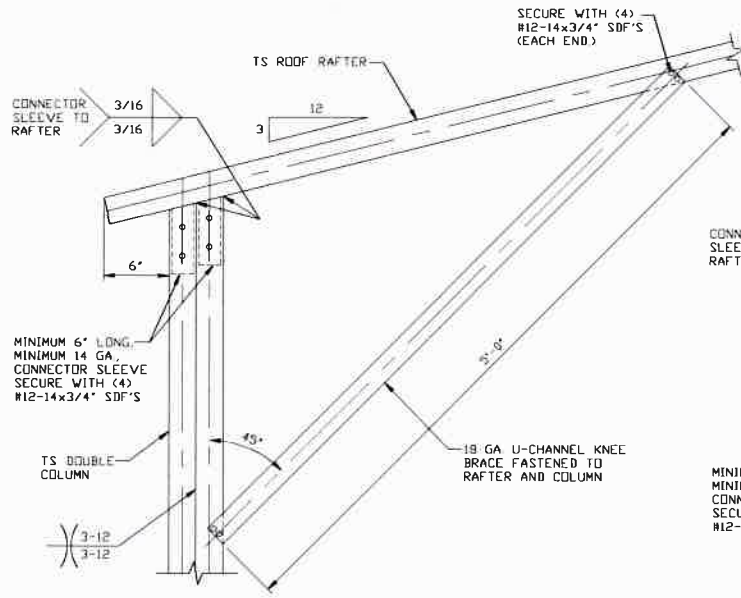
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**DWG. NO: SK-3**

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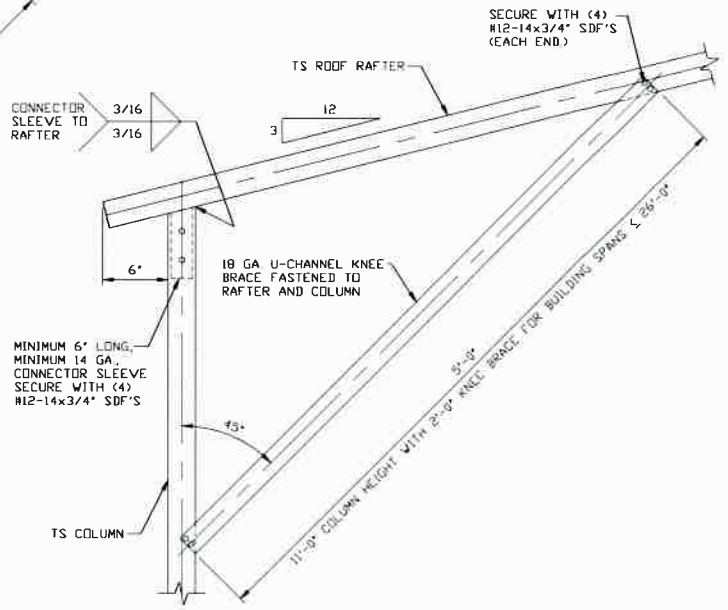




1A

**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 8'-0" < TO ≤ 16'-0"**

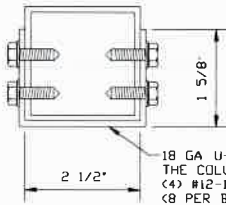
SCALE: NTS  
NOTE: 4'-0" KNEE BRACE MAY BE USED FOR BUILDING WIDTHS ≤ 26'-0"



1B

**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS ≤ 8'-0"**

SCALE: NTS  
NOTE: 2'-0" KNEE BRACE MAY BE USED FOR BUILDING WIDTHS ≤ 26'-0"



**BRACE SECTION**

SCALE: NTS

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**CLIENT: VEGA METAL**

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**SHT. 6A**

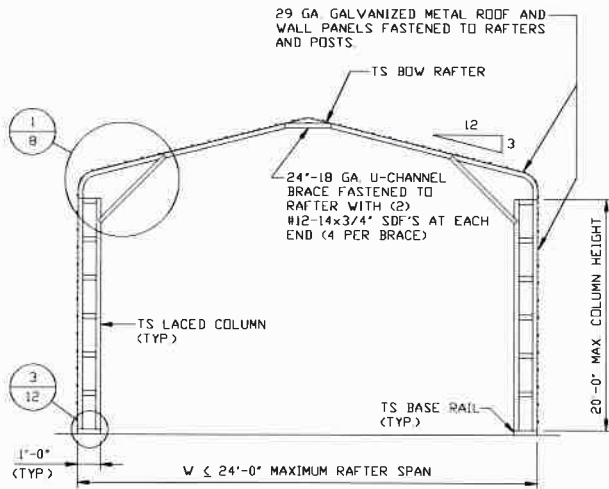
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**DWG. NO: SK-3**

**JOB NO: 20193S**

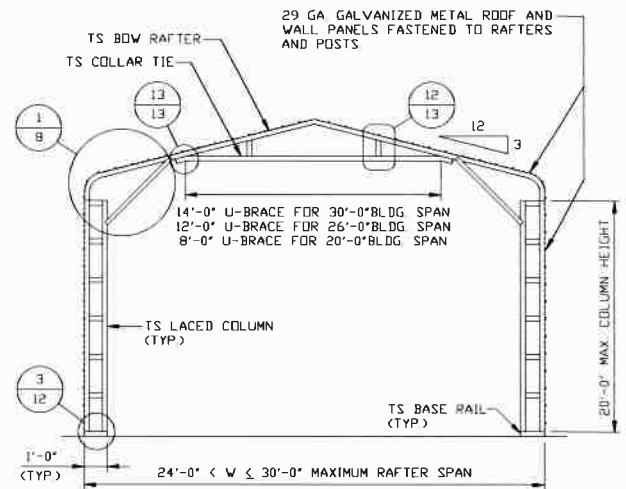
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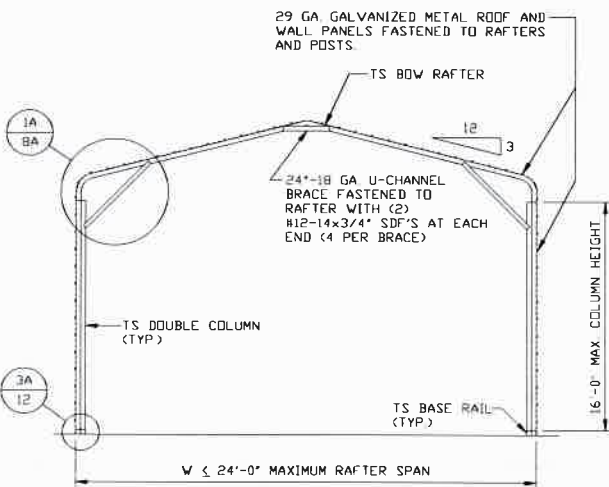
**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



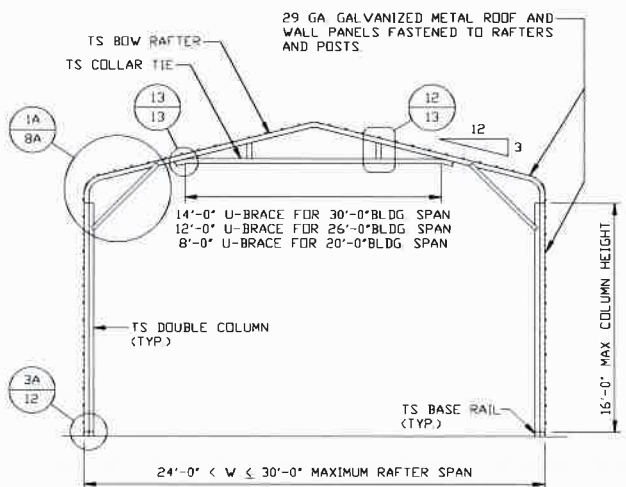
**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS

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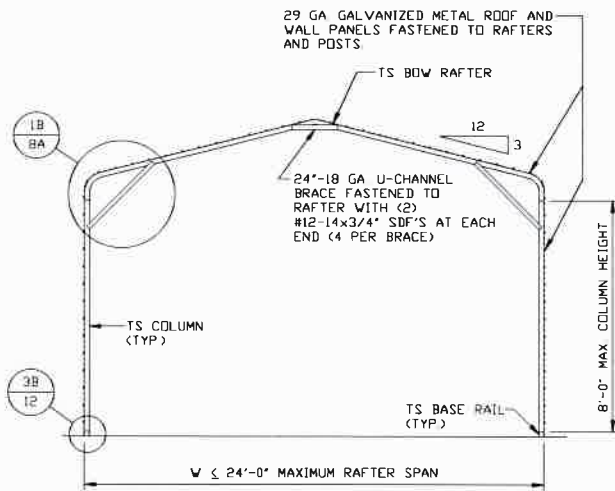
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**SHT. 7**

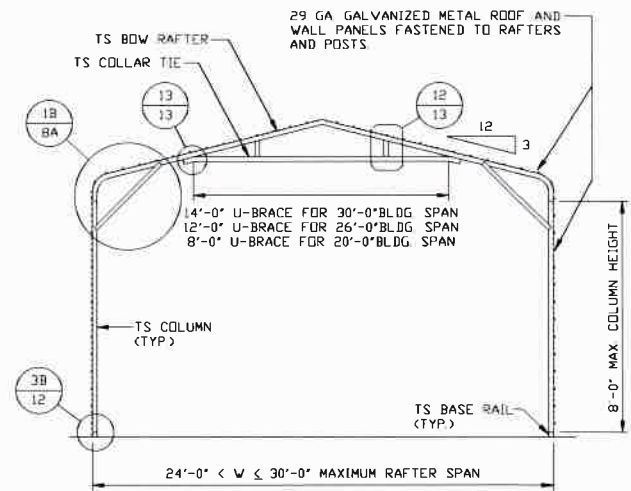
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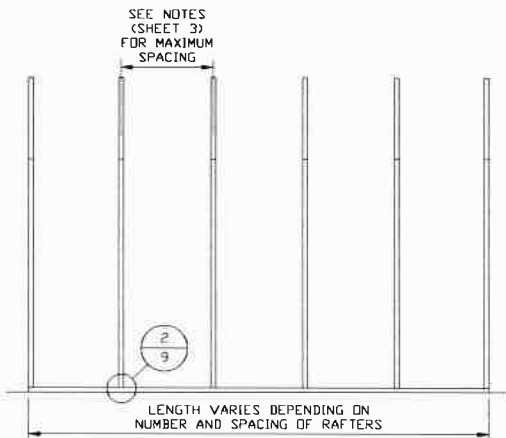
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**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



**TYPICAL RAFTER/COLUMN FRAMING SIDE SECTION**  
SCALE: NTS

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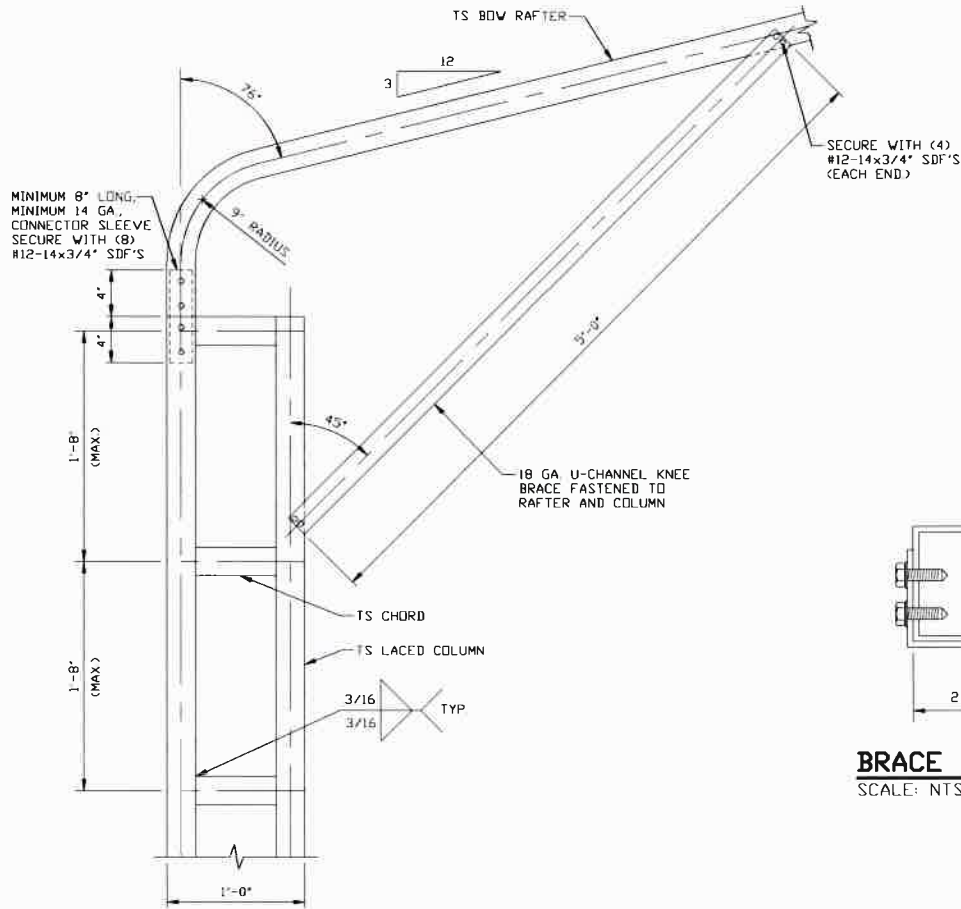
**JOB NO: 20193S**

**SHT. 7A**

**DWG. NO: SK-3**

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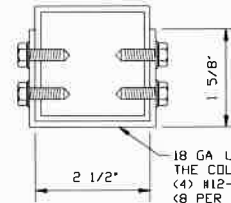
SECURE WITH (4)  
#12-14x3/4" SDF'S  
(EACH END)

MINIMUM 8" LONG,  
MINIMUM 14 GA,  
CONNECTOR SLEEVE  
SECURE WITH (8)  
#12-14x3/4" SDF'S

18 GA U-CHANNEL KNEE  
BRACE FASTENED TO  
RAFTER AND COLUMN

TS CHORD  
TS LACED COLUMN

3/16  
3/16 TYP



18 GA U-CHANNEL BRACE FASTENED TO  
THE COLUMN AND ROOF BEAM, WITH  
(4) #12-14x3/4" SDF'S AT EACH END  
(8 PER BRACE)

**BRACE SECTION**

SCALE: NTS

1

**BOW EAVE RAFTER COLUMN CONNECTION  
DETAIL FOR HEIGHTS 16'-0" < TO ≤ 20'-0"**

SCALE: NTS

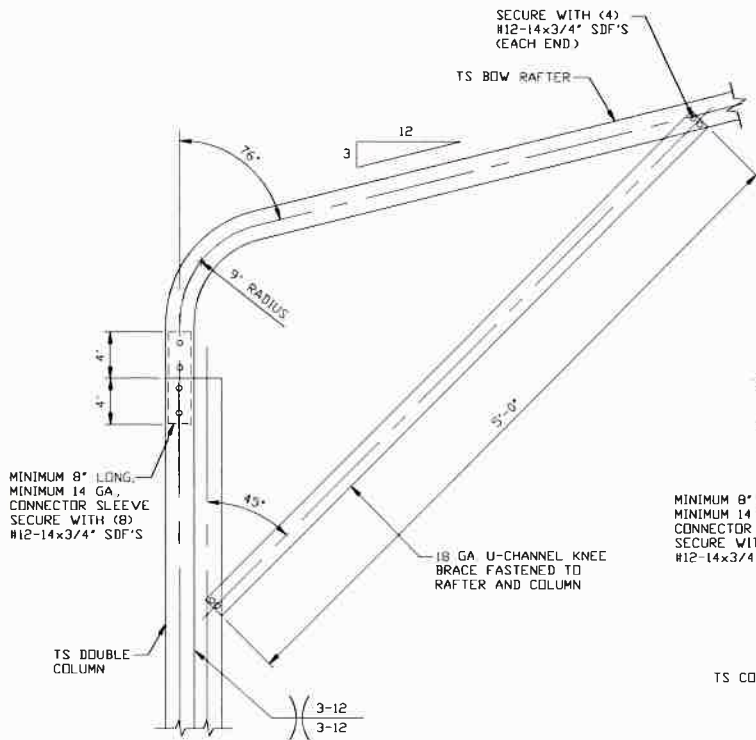
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RANDLEMAN, NC 27317  
30'-0"x20'-0" ENCLOSED STRUCTURE

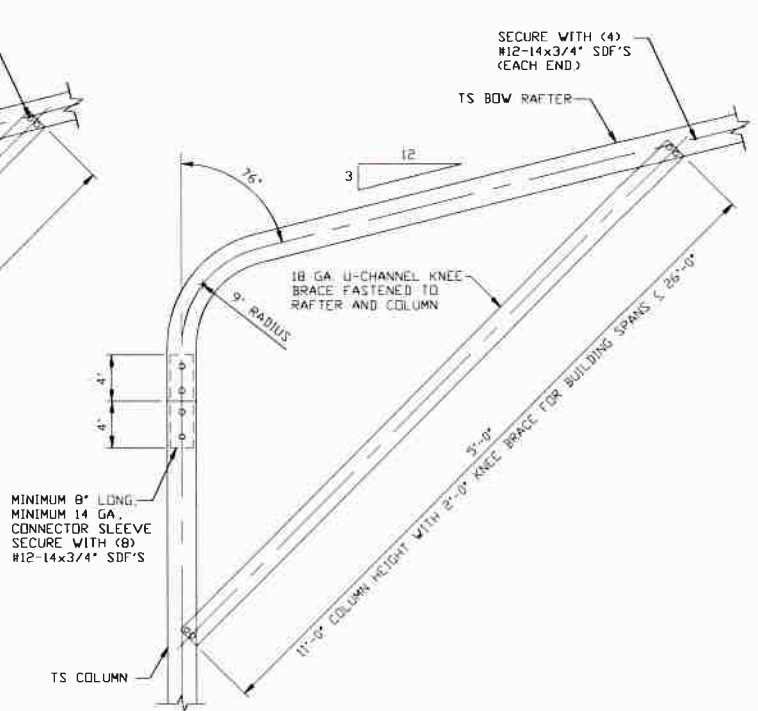
<b>PROJECT MGR: WSM</b>	<b>DATE: 10-23-20</b>	<b>SCALE: NTS</b>	<b>JOB NO: 20193S</b>
<b>CLIENT: VEGA METAL</b>	<b>SHT. 8</b>	<b>DWG. NO: SK-3</b>	<b>REV: 0</b>

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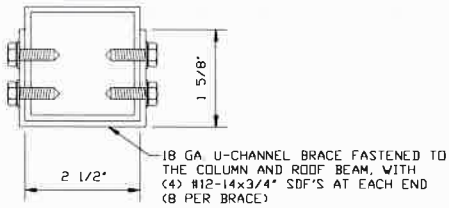
**1A** BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 8'-0" < TO ≤ 16'-0"

SCALE: NTS  
NOTE: 4'-0" KNEE BRACE MAY BE USED FOR BUILDING WIDTHS ≤ 26'-0"



**1B** BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS ≤ 8'-0"

SCALE: NTS  
NOTE: 2'-0" KNEE BRACE MAY BE USED FOR BUILDING WIDTHS ≤ 26'-0"



**BRACE SECTION**  
SCALE: NTS

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DRAWN BY: JG

CHECKED BY: PDH

PROJECT MGR: VSM

CLIENT: VEGA METAL

VEGA METAL STRUCTURES & CONCRETE, LLC.  
4047 US HWY 311  
RANDLEMAN, NC 27317  
30'-0"x20'-0" ENCLOSED STRUCTURE

DATE: 10-23-20

SHT. 8A

SCALE: NTS

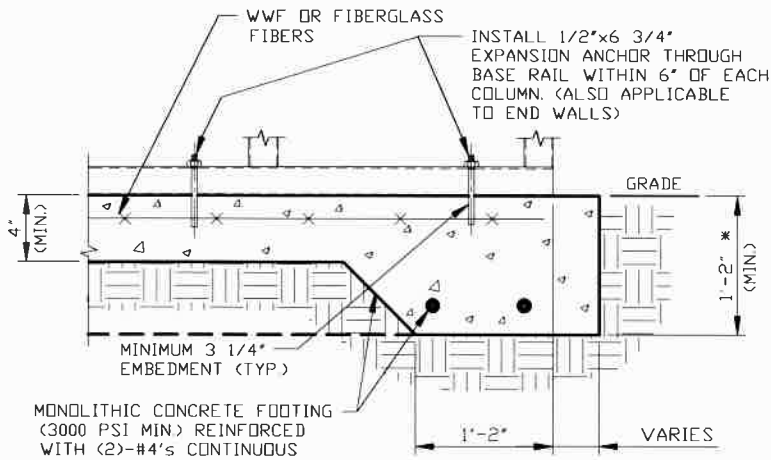
DWG. NO: SK-3

JOB NO: 20193S

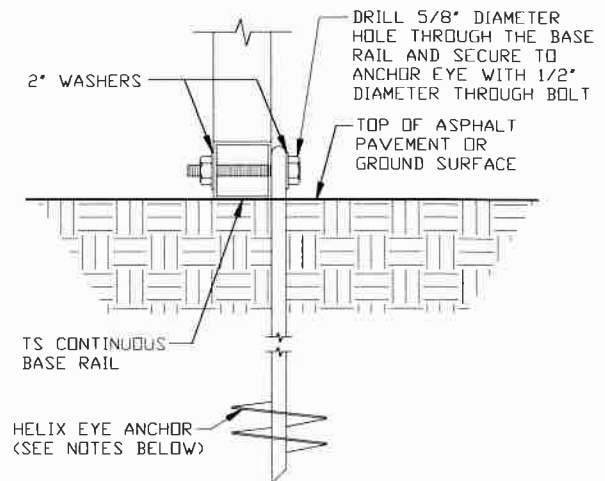
REV: 0

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## BASE RAIL ANCHORAGE OPTIONS



**2 CONCRETE MONOLITHIC SLAB  
BASE RAIL ANCHORAGE**  
SCALE: NTS  
MINIMUM ANCHOR EDGE DISTANCE IS 4"  
\* COORDINATE WITH LOCAL BUILDING CODE  
AND/OR BUILDING OFFICIAL REGARDING  
REQUIRED FOOTING DEPTH.



**2A GROUND BASE HELIX ANCHORAGE**  
SCALE: NTS (CAN BE USED FOR ASPHALT)  
\* COORDINATE WITH LOCAL CODES/ORD.  
REGARDING MIN. FROST DEPTH (LENGTH).

### GENERAL NOTES

NOTE: CONCRETE MONOLITHIC SLAB DESIGN BASED ON MINIMUM SOIL BEARING CAPACITY OF 1,500 PSF.

#### **CONCRETE:**

CONCRETE SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.

#### **COVER OVER REINFORCING STEEL:**

FOR FOUNDATIONS, MINIMUM CONCRETE COVER OVER REINFORCING BARS SHALL BE PER ACI-318:  
3" IN FOUNDATIONS WHERE THE CONCRETE IS CAST AGAINST AND PERMANENTLY IN CONTACT WITH THE EARTH OR EXPOSED TO THE EARTH OR WEATHER, AND 1 1/2" ELSEWHERE.

#### **REINFORCING STEEL:**

THE TURNDOWN REINFORCING STEEL SHALL BE ASTM A615 GRADE 60. THE SLAB REINFORCEMENT SHALL BE WELDED WIRE FABRIC MEETING ASTM A185 OR FIBERGLASS FIBER REINFORCEMENT.

#### **REINFORCEMENT MAY BE BENT IN THE SHOP OR THE FIELD PROVIDED:**

- 1 REINFORCEMENT IS BENT COLD.
- 2 THE DIAMETER OF THE BEND, MEASURED ON THE INSIDE OF THE BAR, IS NOT LESS THAN SIX-BAR DIAMETERS.
- 3 REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT.

#### **HELIX ANCHOR NOTES:**

1. FOR VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND COBBLES, CALICHE, PRELOADED SILTS AND CLAYS, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30' EMBEDMENT OR SINGLE 6" HELIX WITH MINIMUM 50' EMBEDMENT.
2. FOR CORAL USE MINIMUM (2) 4" HELICES WITH MINIMUM 30' EMBEDMENT OR SINGLE 6" HELIX WITH MINIMUM 50' EMBEDMENT.
3. FOR MEDIUM DENSE COARSE SANDS, SANDY GRAVELS, VERY STIFF SILTS, AND CLAYS USE MINIMUM (2) 4" HELICES WITH MINIMUM 30 INCH EMBEDMENT OR SINGLE 6" HELIX WITH MINIMUM 50' EMBEDMENT.
4. FOR LOOSE TO MEDIUM DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS ALLUVIAL FILL, USE MINIMUM (2) 6" HELICES WITH MINIMUM 50' EMBEDMENT.
5. FOR VERY LOSE TO MEDIUM DENSE SANDS, FIRM TO STIFFER CLAYS AND SILTS, ALLUVIAL FILL, USE MINIMUM (2) 8" HELICES WITH MINIMUM 60' EMBEDMENT.

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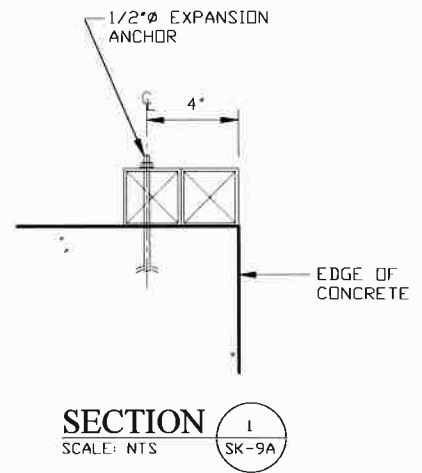
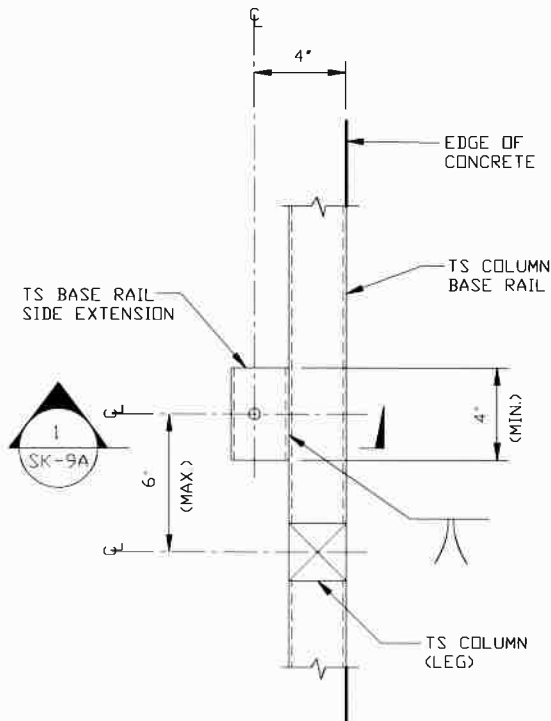
**DRAWN BY: JG**  
**CHECKED BY: PDH**

VEGA METAL STRUCTURES & CONCRETE, LLC.  
4047 US HWY 311  
RANDLEMAN, NC 27317  
30'-0"x20'-0" ENCLOSED STRUCTURE

PROJECT MGR: WSM	DATE: 10-23-20	SCALE: NTS	JOB NO: 20193S
CLIENT: VEGA METAL	SHT. 9	DWG. NO: SK-3	REV: 0

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## ADDITIONAL BASE RAIL ANCHORAGE OPTION



**TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE**

SCALE: NTS

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**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: VEGA METAL**

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 4047 US HWY 311  
 RANDLEMAN, NC 27317  
 30'-0"x20'-0" ENCLOSED STRUCTURE

**DATE: 10-23-20**

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**JOB NO: 20193S**

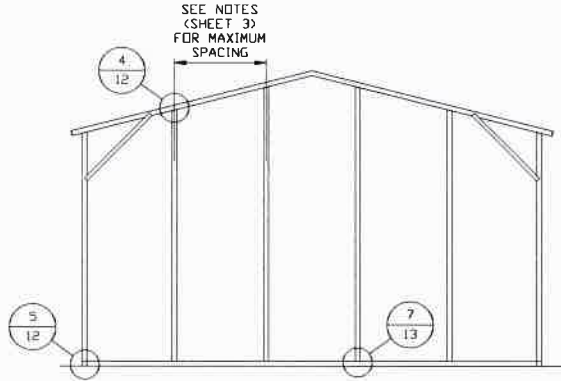
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**DWG. NO: SK-3**

**REV: 0**

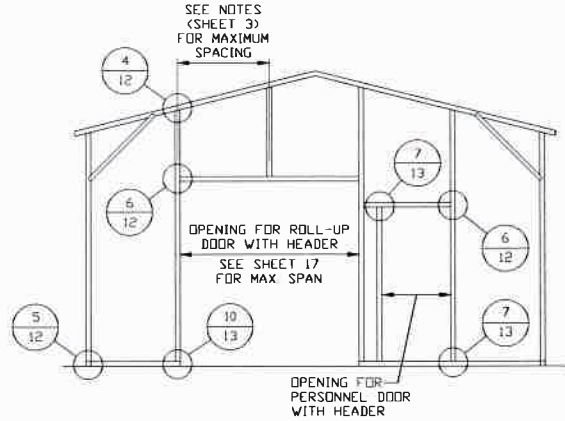
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## BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



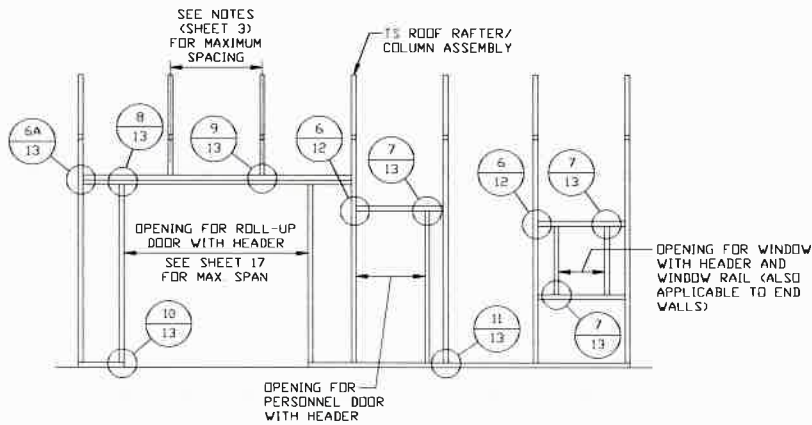
**TYPICAL BOX EAVE RAFTER  
END WALL FRAMING SECTION**

SCALE: NTS



**TYPICAL BOX EAVE RAFTER END WALL  
OPENINGS FRAMING SECTION**

SCALE: NTS



**TYPICAL BOX EAVE RAFTER SIDE  
WALL OPENINGS FRAMING SECTION**

SCALE: NTS

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**SHT. 10**

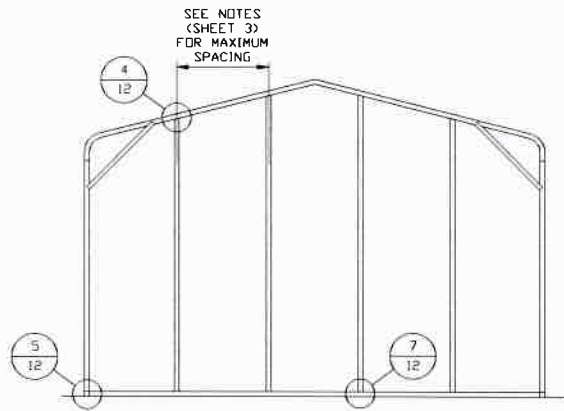
**DWG. NO: SK-3**

**REV: 0**

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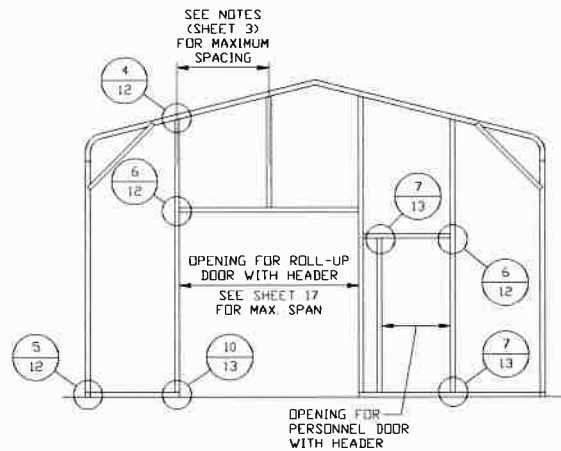


## BOW RAFTER END WALL AND SIDE WALL OPENINGS



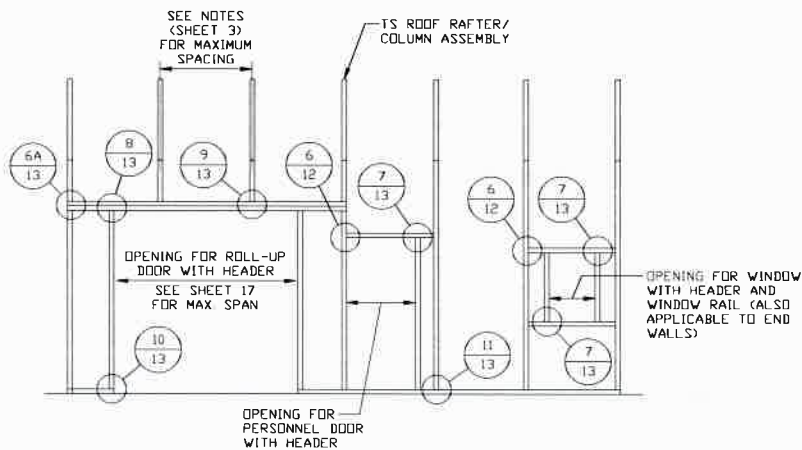
**TYPICAL BOW RAFTER  
END WALL FRAMING SECTION**

SCALE: NTS



**TYPICAL BOW RAFTER END WALL  
OPENINGS FRAMING SECTION**

SCALE: NTS



**TYPICAL BOW RAFTER SIDE  
WALL OPENINGS FRAMING SECTION**

SCALE: NTS

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**CHECKED BY: PDH**

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RANDLEMAN, NC 27317  
30'-0" x 20'-0" ENCLOSED STRUCTURE

**DATE: 10-23-20**

**SHT. 11**

**SCALE: NTS**

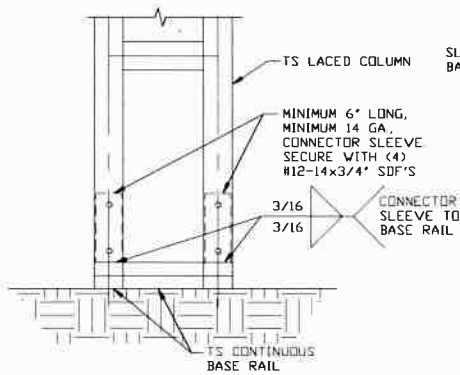
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**JOB NO: 20193S**

**REV: 0**

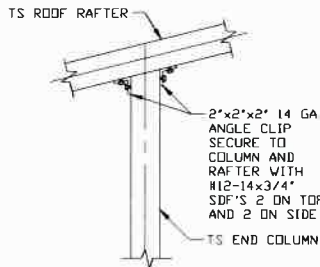
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# CONNECTION DETAILS



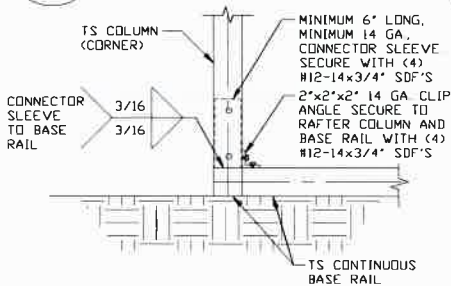
**3**  
**RAFTER COLUMN/  
 BASE RAIL  
 CONNECTION DETAIL**

SCALE: NTS



**4**  
**END COLUMN/RAFTER  
 CONNECTION DETAIL**

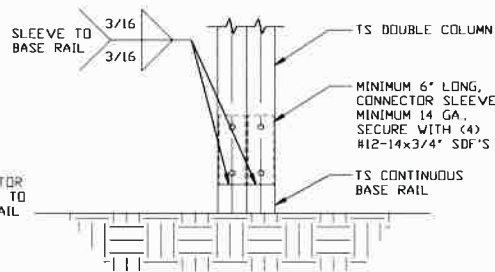
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**5B**

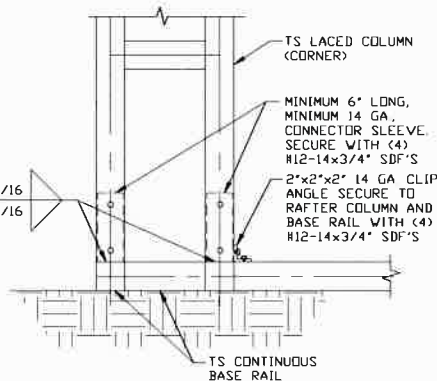
**END COLUMN/BASE RAIL  
 CONNECTION DETAIL**

SCALE: NTS



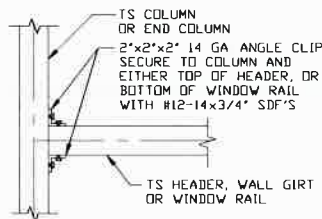
**3A**  
**RAFTER COLUMN/  
 BASE RAIL  
 CONNECTION DETAIL**

SCALE: NTS



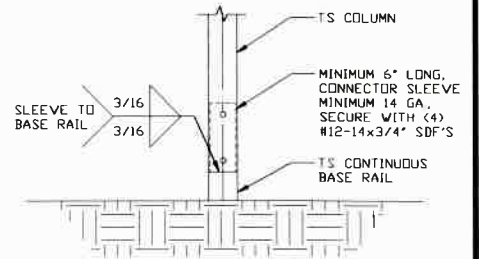
**5**  
**END COLUMN/BASE RAIL  
 CONNECTION DETAIL**

SCALE: NTS



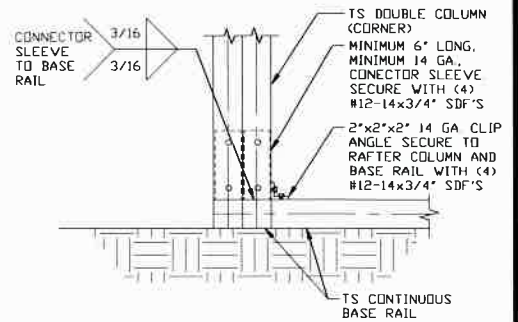
**6**  
**COLUMN OR WINDOW  
 RAIL/WALL GIRT  
 TO POST  
 CONNECTION DETAIL**

SCALE: NTS



**3B**  
**RAFTER COLUMN/  
 BASE RAIL  
 CONNECTION DETAIL**

SCALE: NTS



**5A**  
**END COLUMN/BASE RAIL  
 CONNECTION DETAIL**

SCALE: NTS

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**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: VEGA METAL**

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**DATE: 10-23-20**

**SHT. 12**

**SCALE: NTS**

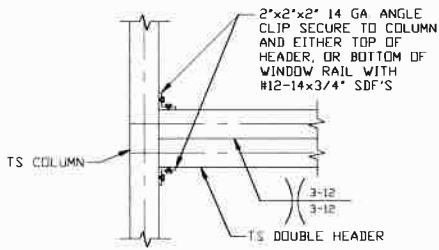
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**JOB NO: 20193S**

**REV: 0**

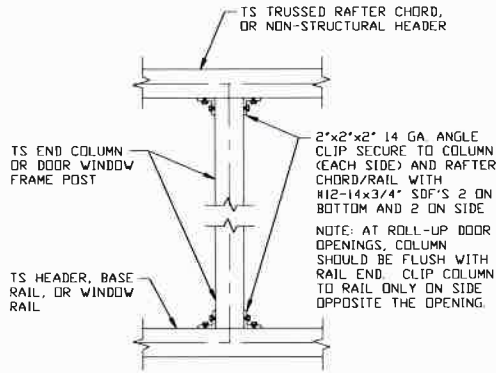
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# CONNECTION DETAILS



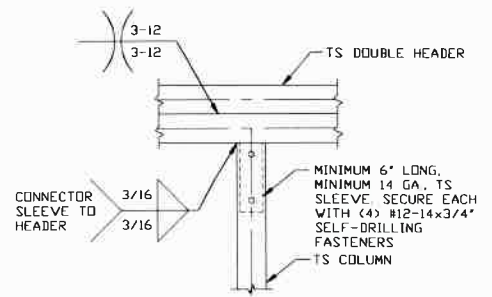
**6A**  
**COLUMN OR DOUBLE  
HEADER TO POST  
CONNECTION DETAIL**

SCALE: NTS



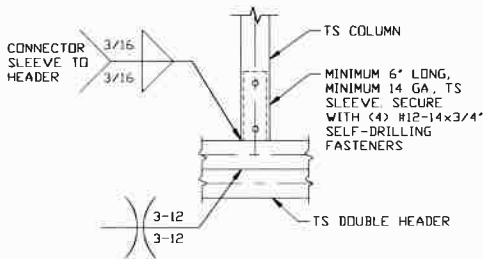
**7**  
**COLUMN TO WINDOW RAIL  
CONNECTION DETAIL**

SCALE: NTS



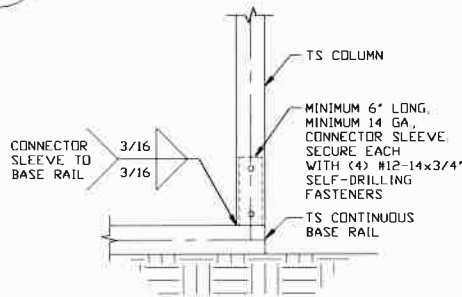
**8**  
**DOUBLE HEADER/  
COLUMN  
CONNECTION DETAIL**

SCALE: NTS



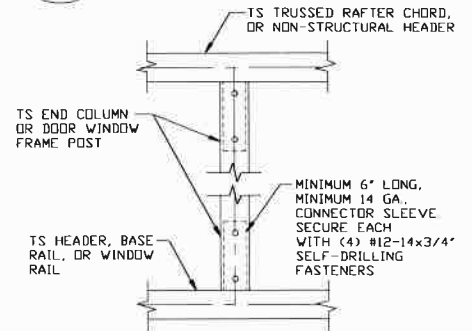
**9**  
**COLUMN/DOUBLE HEADER  
CONNECTION DETAIL**

SCALE: NTS



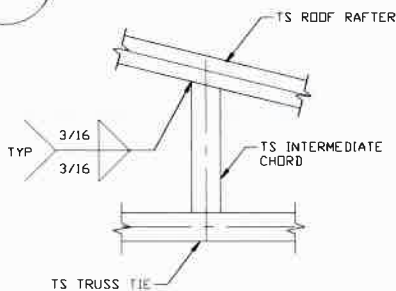
**10**  
**COLUMN/BASE RAIL  
CONNECTION DETAIL**

SCALE: NTS



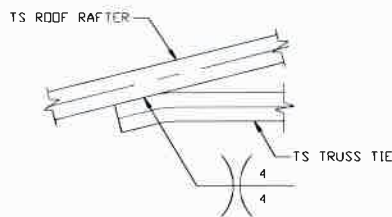
**11**  
**COLUMN TO HEADER  
OR BASE RAIL  
CONNECTION DETAIL**

SCALE: NTS



**12**  
**RAFTER TO CHORD  
CONNECTION DETAIL**

SCALE: NTS



**13**  
**COLLAR TIE  
CONNECTION DETAIL**

SCALE: NTS

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CHECKED BY: PDH

PROJECT MGR: WSM

CLIENT: VEGA METAL

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DATE: 10-23-20

SHT. 13

SCALE: NTS

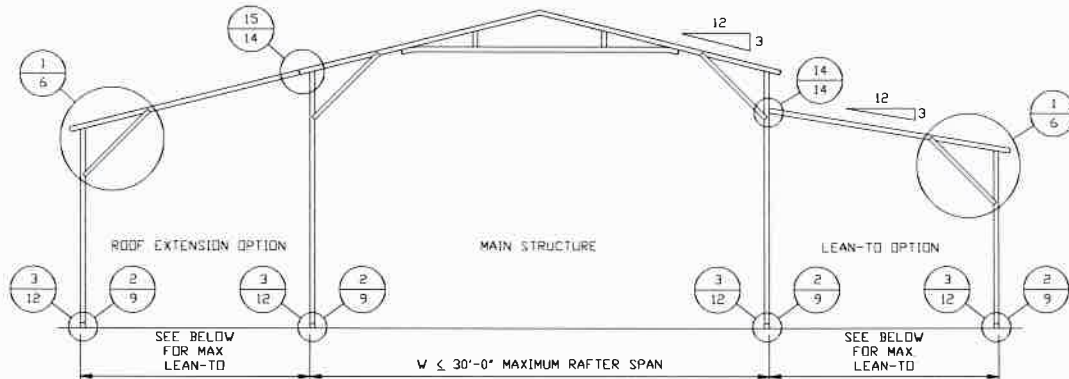
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# BOX EAVE RAFTER LEAN-TO OPTIONS



**TYPICAL BOX EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION (BOTH OPTIONS SHOWN)**

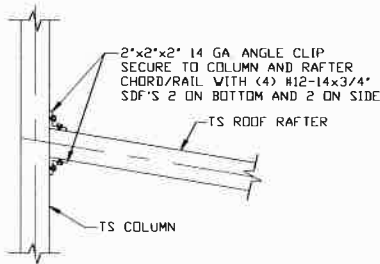
SCALE: NTS

MAXIMUM WIDTH OF SINGLE MEMBER ROOF EXTENSION AND LEAN-TO IS 10'-0"

MAXIMUM WIDTH OF DOUBLE MEMBER ROOF EXTENSION AND LEAN-TO IS 16'-0"

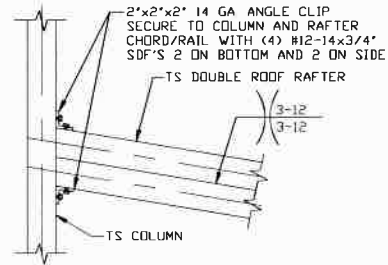
MAXIMUM WIDTH OF LACED MEMBER ROOF EXTENSION AND LEAN-TO IS 20'-0"

FOR SHARED COLUMN HEIGHTS REFERENCE RAFTER COLUMN CONNECTION DETAILS FOR APPROPRIATE COLUMN HEIGHT AND TUBING SPECIFICATIONS.



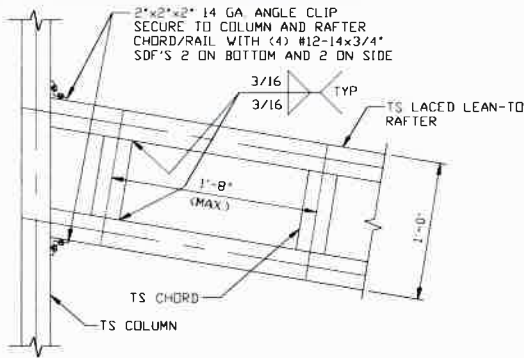
**14** LEAN-TO RAFTER TO RAFTER  
COLUMN CONNECTION DETAIL  
FOR RAFTER SPANS  $\leq 10'-0"$

SCALE: NTS



**14A** LEAN-TO RAFTER TO RAFTER  
COLUMN CONNECTION DETAIL  
FOR RAFTER SPANS  $10'-0" < TO \leq 16'-0"$

SCALE: NTS



**14B** LEAN-TO RAFTER TO RAFTER  
COLUMN CONNECTION DETAIL  
FOR RAFTER SPANS  $16'-0" < TO \leq 20'-0"$

SCALE: NTS

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**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: VEGA METAL**

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30'-0"×20'-0" ENCLOSED STRUCTURE

**DATE: 10-23-20**

**SHT. 14**

**SCALE: NTS**

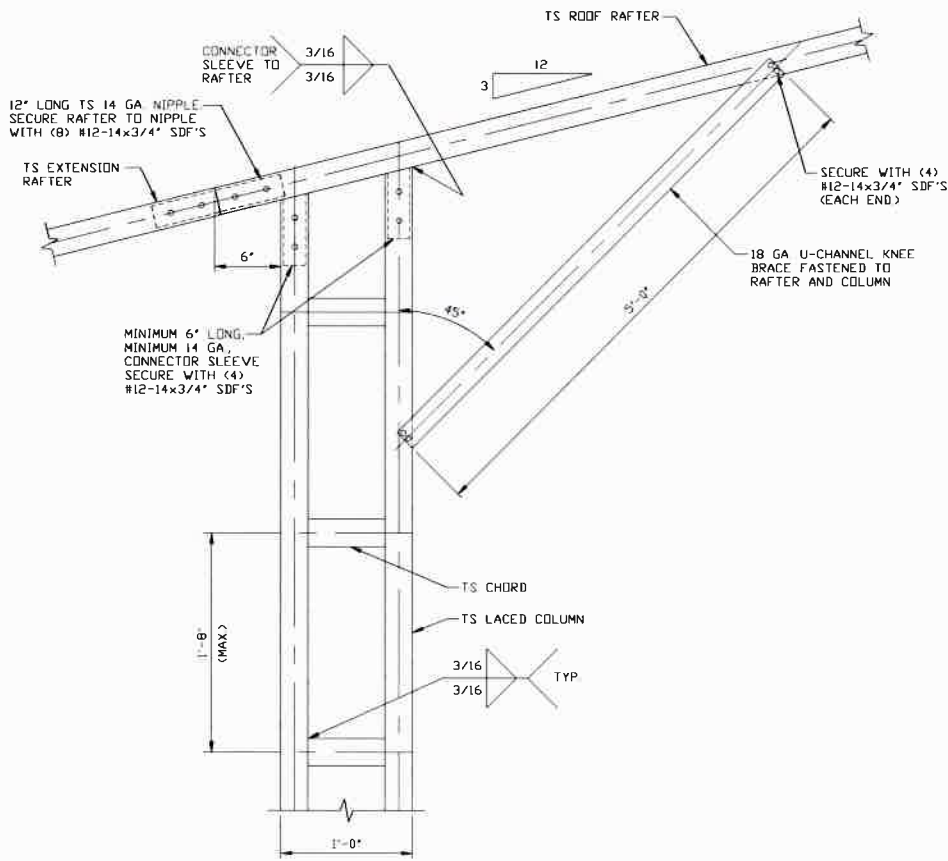
**DWG. NO: SK-3**

**JOB NO: 20193S**

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**BOX EAVE RAFTER LEAN-TO OPTION FOR RAFTER SPANS ≤ 10'-0"**



**SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS 16'-0" < TO ≤ 20'-0"**

15

SCALE: NTS.

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**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: VEGA METAL**

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4047 US HWY 311  
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**SCALE: NTS**

**JOB NO: 20193S**

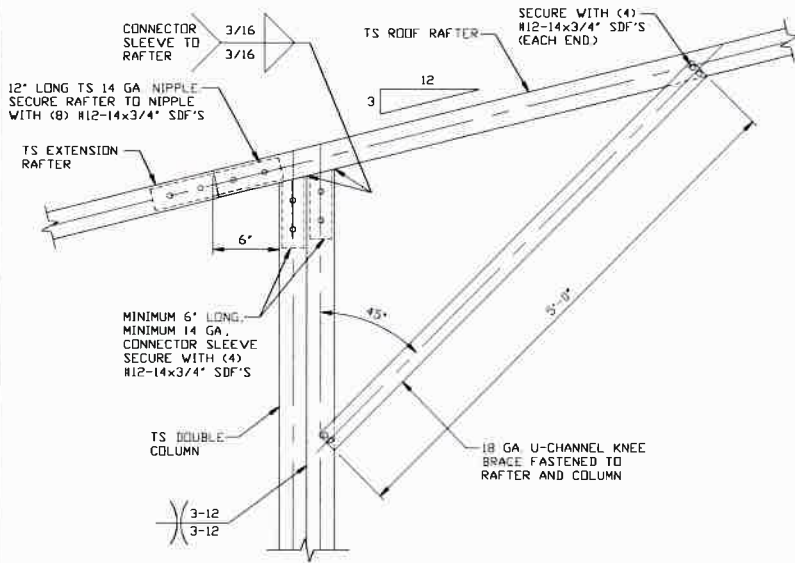
**SHT. 14A**

**DWG. NO: SK-3**

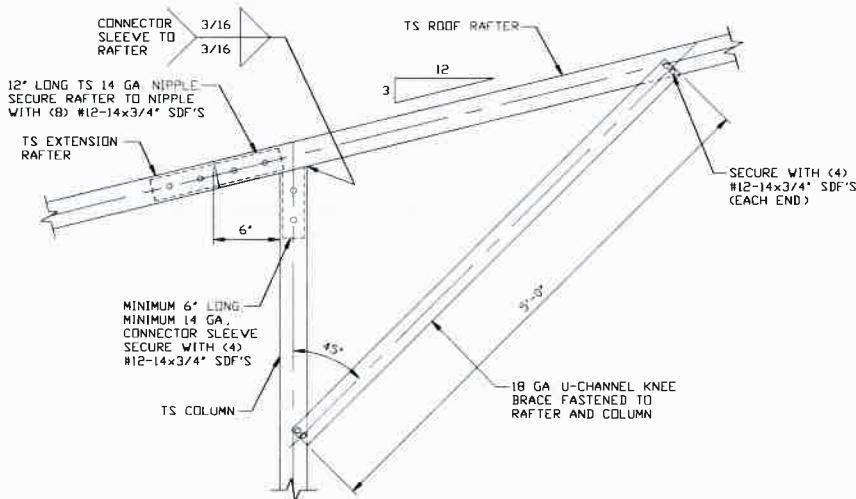
**REV: 0**

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# BOX EAVE RAFTER LEAN-TO OPTIONS FOR RAFTER SPANS $\leq 10'-0''$



**15A** SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS  $12'-0'' < TO \leq 16'-0''$   
SCALE: NTS



**15B** SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS  $< 12'-0''$   
SCALE: NTS

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**DRAWN BY: JG**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: VEGA METAL**

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4047 US HWY 311  
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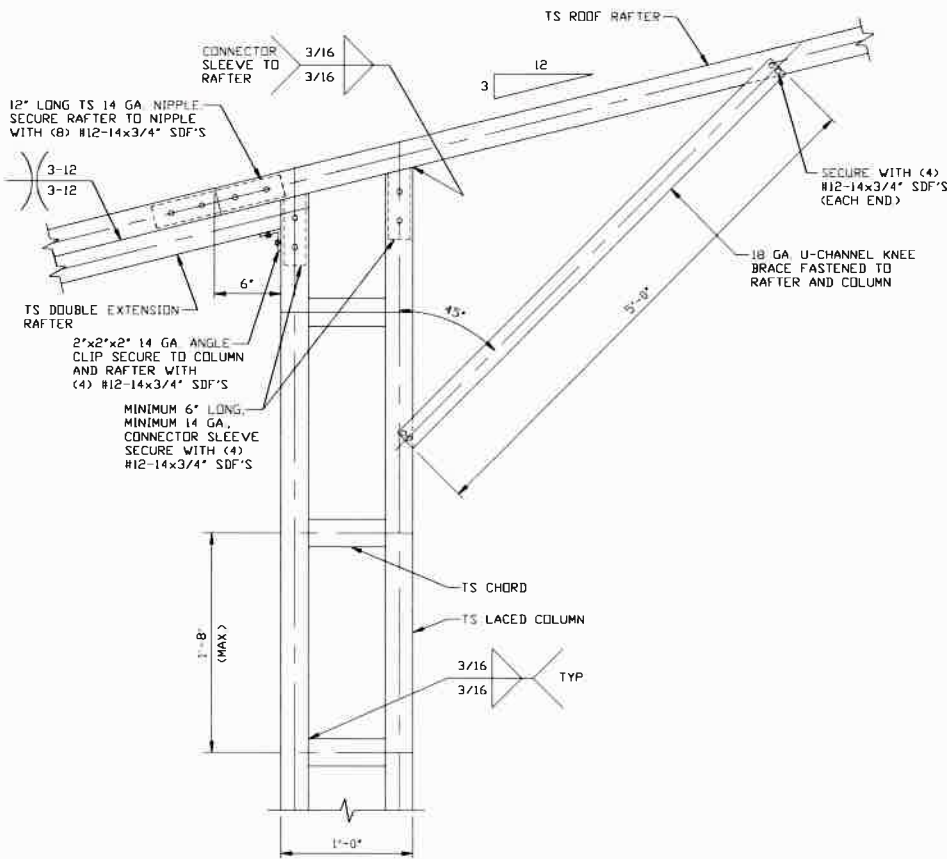
**SHT. 14B**

**DWG. NO: SK-3**

**REV: 0**

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# BOX EAVE RAFTER LEAN-TO OPTION FOR RAFTER SPANS 10'-0" < TO ≤ 16'-0"



**SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS 16'-0" < TO ≤ 20'-0"**

15C

SCALE: NTS

**MOORE AND ASSOCIATES  
ENGINEERING AND CONSULTING, INC.**

**DRAWN BY: JG**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: VEGA METAL**

VEGA METAL STRUCTURES & CONCRETE, LLC.  
4047 US HWY 311  
RANDLEMAN, NC 27317  
30'-0"x20'-0" ENCLOSED STRUCTURE

**DATE: 10-23-20**

**SCALE: NTS**

**JOB NO: 20193S**

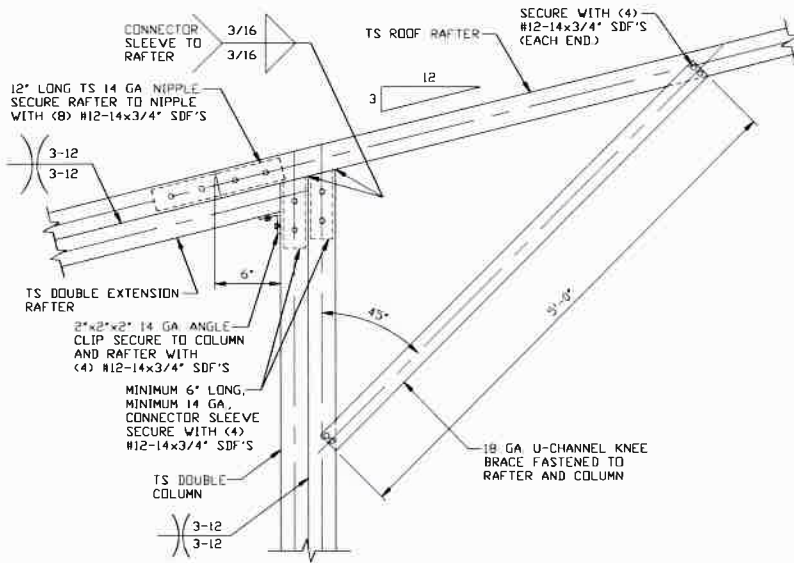
**SHT. 14C**

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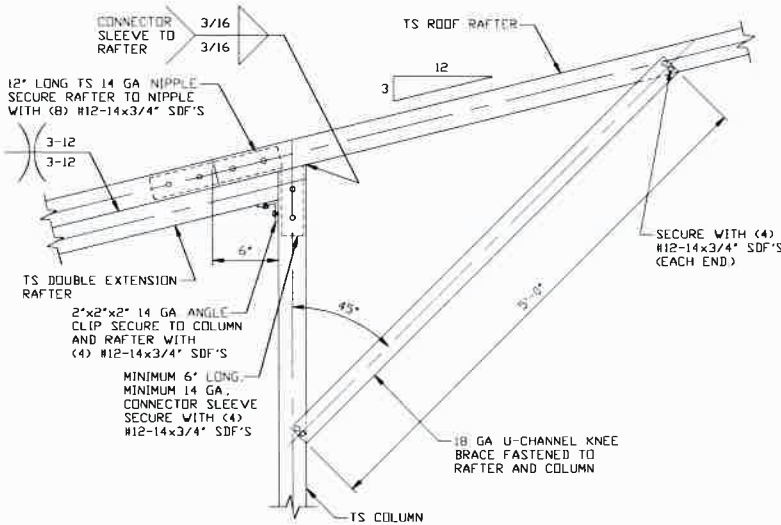
# BOX EAVE RAFTER LEAN-TO OPTIONS FOR RAFTER SPANS 10'-0" < TO ≤ 16'-0"



15D

**SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS 12'-0" < TO ≤ 16'-0"**

SCALE: NTS



15E

**SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS ≤ 12'-0"**

SCALE: NTS

**MOORE AND ASSOCIATES  
ENGINEERING AND CONSULTING, INC.**

**DRAWN BY: JG**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: VEGA METAL**

**VEGA METAL STRUCTURES & CONCRETE, LLC.**  
4047 US HWY 311  
RANDLEMAN, NC 27317  
30-0"x20-0" ENCLOSED STRUCTURE

**DATE: 10-23-20**

**SCALE: NTS**

**JOB NO: 20193S**

**SHT. 14D**

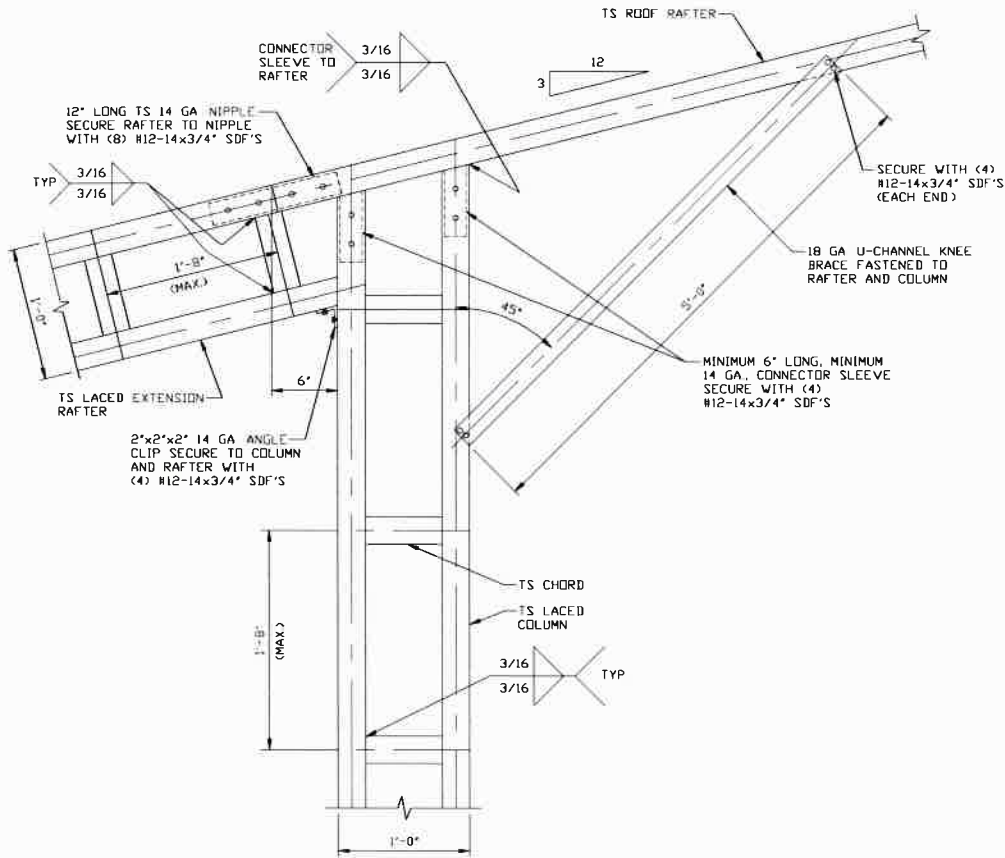
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**BOX EAVE RAFTER LEAN-TO OPTION FOR RAFTER SPANS 16'-0" < TO ≤ 20'-0"**

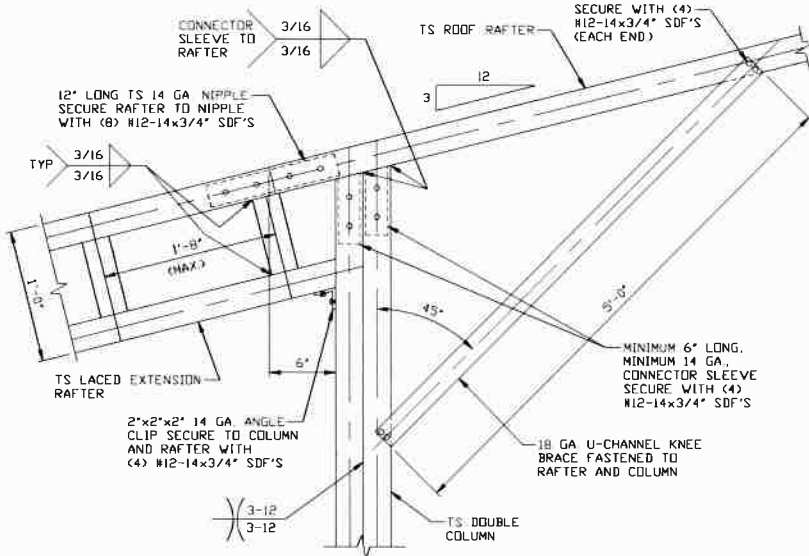


**SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS 16'-0" < TO ≤ 20'-0"**  
SCALE: NTS

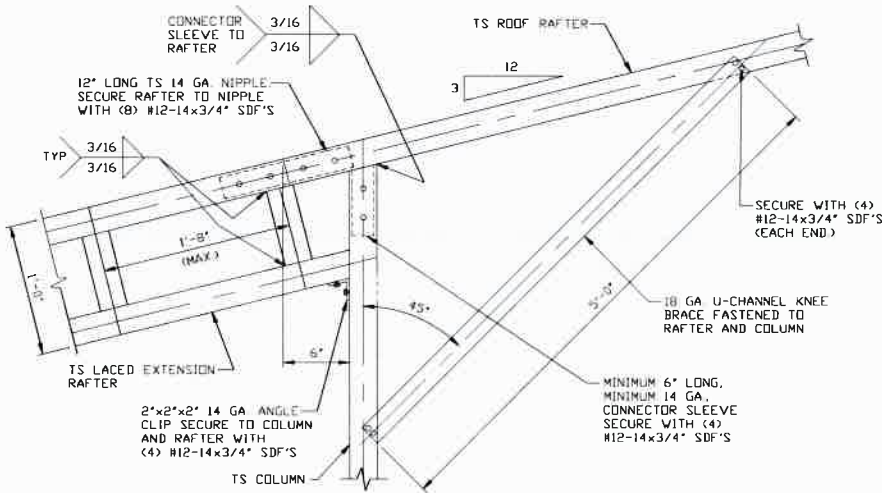
15F

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	CLIENT: VEGA METAL	SHT. 14E	DWG. NO: SK-3	REV: 0

# BOX EAVE RAFTER LEAN-TO OPTIONS FOR RAFTER SPANS 16'-0" < TO ≤ 20'-0"



**15G** SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS 12'-0" < TO ≤ 16'-0"  
SCALE: NTS



**15H** SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS ≤ 12'-0"  
SCALE: NTS

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PROJECT MGR: WSM

CLIENT: VEGA METAL

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4047 US HWY 311  
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30'-0"x20'-0" ENCLOSED STRUCTURE

DATE: 10-23-20

SCALE: NTS

JOB NO: 20193S

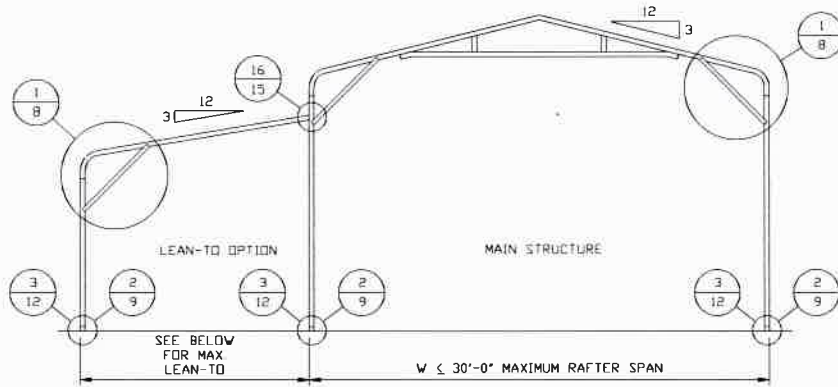
SHT. 14F

DWG. NO: SK-3

REV: 0

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## BOW EAVE RAFTER LEAN-TO OPTION



### TYPICAL BOW EAVE RAFTER LEAN-TO OPTION FRAMING SECTION

SCALE: NTS

MAXIMUM WIDTH OF SINGLE MEMBER ROOF EXTENSION AND LEAN-TO IS 10'-0"

MAXIMUM WIDTH OF DOUBLE MEMBER ROOF EXTENSION AND LEAN-TO IS 16'-0"

MAXIMUM WIDTH OF LACED MEMBER ROOF EXTENSION AND LEAN-TO IS 20'-0"

FOR SHARED COLUMN HEIGHTS REFERENCE RAFTER COLUMN CONNECTION DETAILS FOR APPROPRIATE COLUMN HEIGHT AND TUBING SPECIFICATIONS.

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ENGINEERING AND CONSULTING, INC.**

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**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: VEGA METAL**

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RANDLEMAN, NC 27317  
30'-0"x20'-0" ENCLOSED STRUCTURE

**DATE: 10-23-20**

**SHT. 15**

**SCALE: NTS**

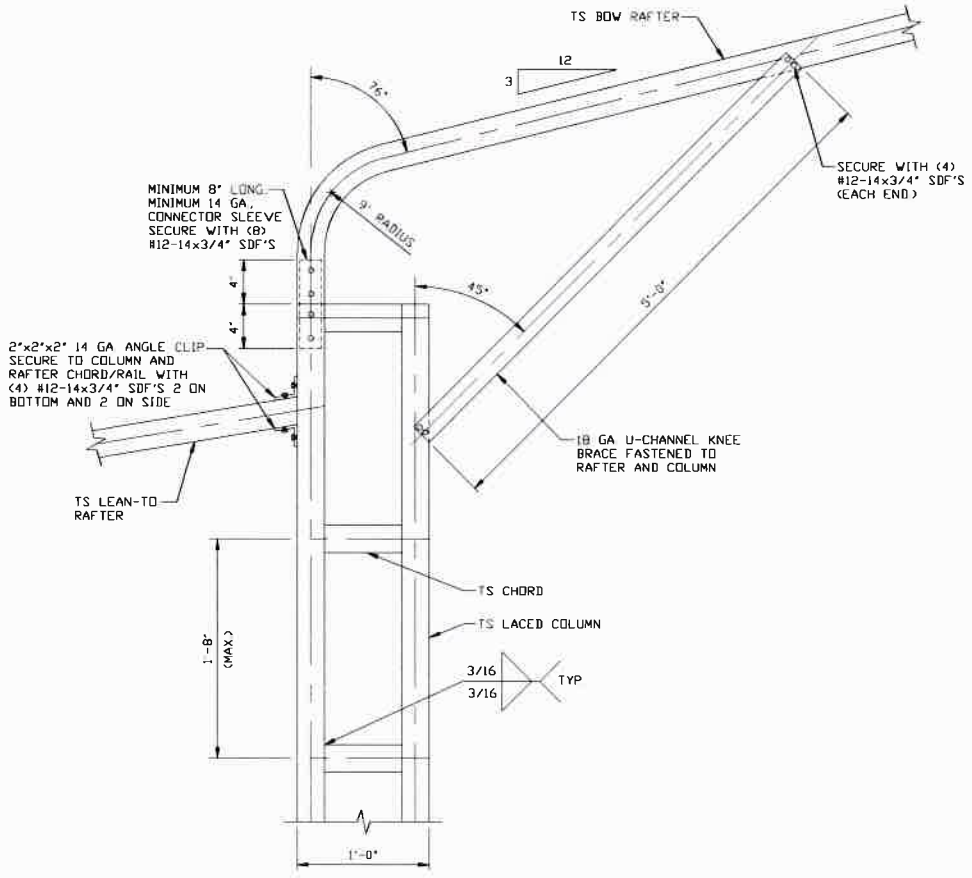
**DWG. NO: SK-3**

**JOB NO: 20193S**

**REV: 0**

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**BOW EAVE RAFTER LEAN-TO OPTION FOR RAFTER SPANS ≤ 10'-0"**

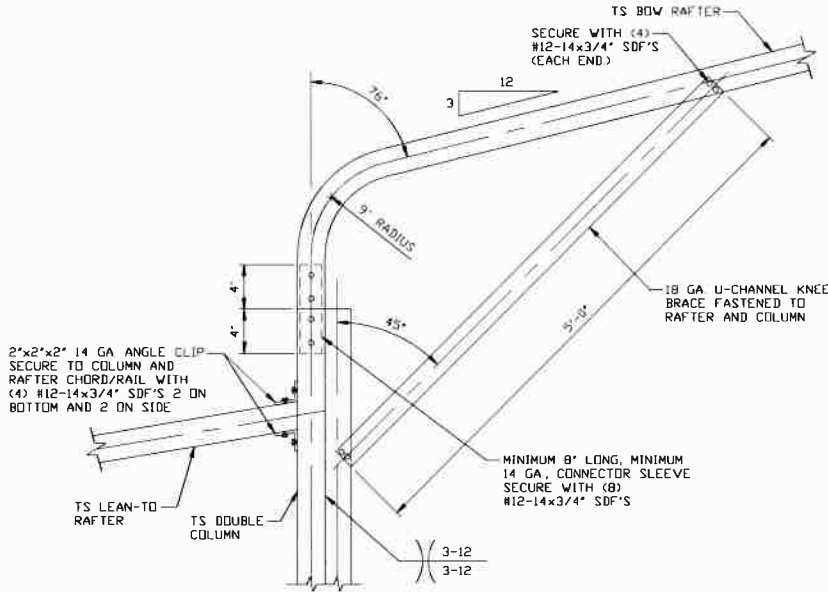


16

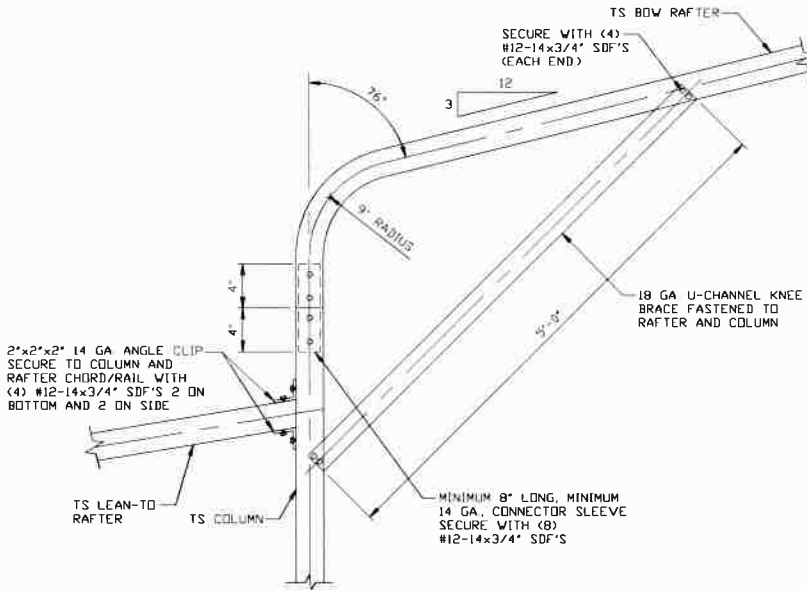
**SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS 16'-0" < TO ≤ 20'-0"**  
SCALE: NTS

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	CHECKED BY: PDH			
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	CLIENT: VEGA METAL	SHT. 15A	DWG. NO: SK-3	REV: 0

# BOW EAVE RAFTER LEAN-TO OPTIONS FOR RAFTER SPANS $\leq 10'-0''$



**16A** SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS 12'-0" < TO  $\leq$  16'-0"  
SCALE: NTS



**16B** SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS  $\leq$  12'-0"  
SCALE: NTS

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**DRAWN BY: JG**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: VEGA METAL**

**VEGA METAL STRUCTURES & CONCRETE, LLC.**  
4047 US HWY 311  
RANDLEMAN, NC 27317  
30-0"x20-0" ENCLOSED STRUCTURE

**DATE: 10-23-20**

**SCALE: NTS**

**JOB NO: 20193S**

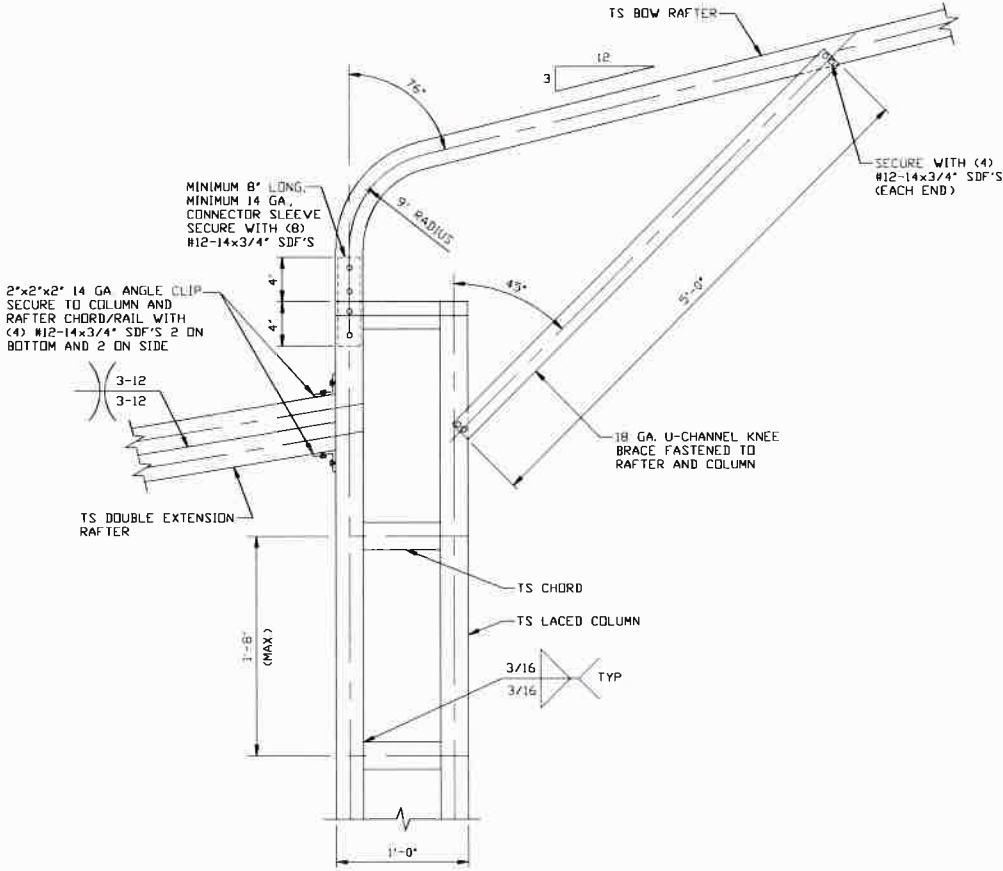
**SHT. 15B**

**DWG. NO: SK-3**

**REV: 0**

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**BOW EVAE RAFTER LEAN-TO OPTION FOR RAFTER SPANS 10'-0" < TO ≤ 16'-0"**



**SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS 16'-0" < TO ≤ 20'-0"**

16C

SCALE: NTS

**MOORE AND ASSOCIATES  
ENGINEERING AND CONSULTING, INC.**

**DRAWN BY: JG**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: VEGA METAL**

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RANDLEMAN, NC 27317  
30'-0"x20'-0" ENCLOSED STRUCTURE

**DATE: 10-23-20**

**SCALE: NTS**

**JOB NO: 20193S**

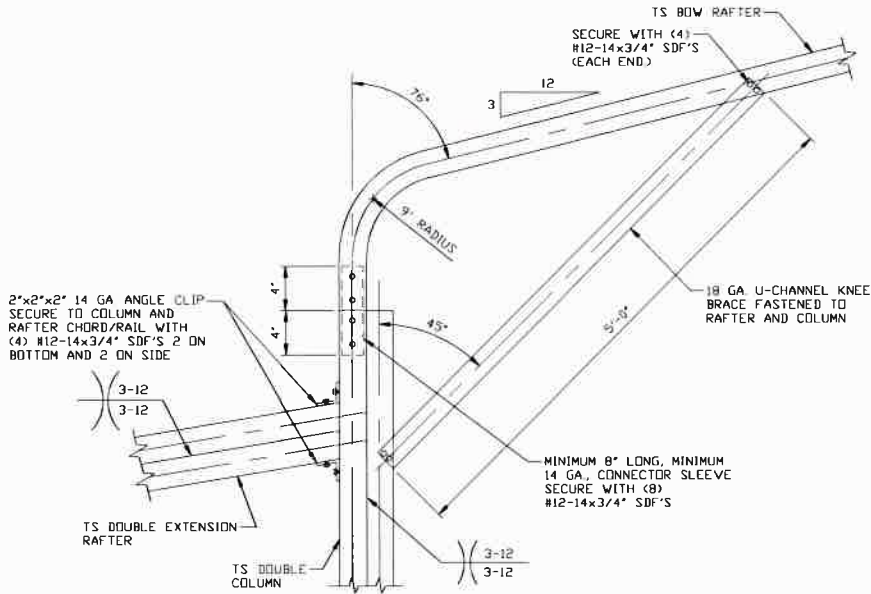
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**DWG. NO: SK-3**

**REV: 0**

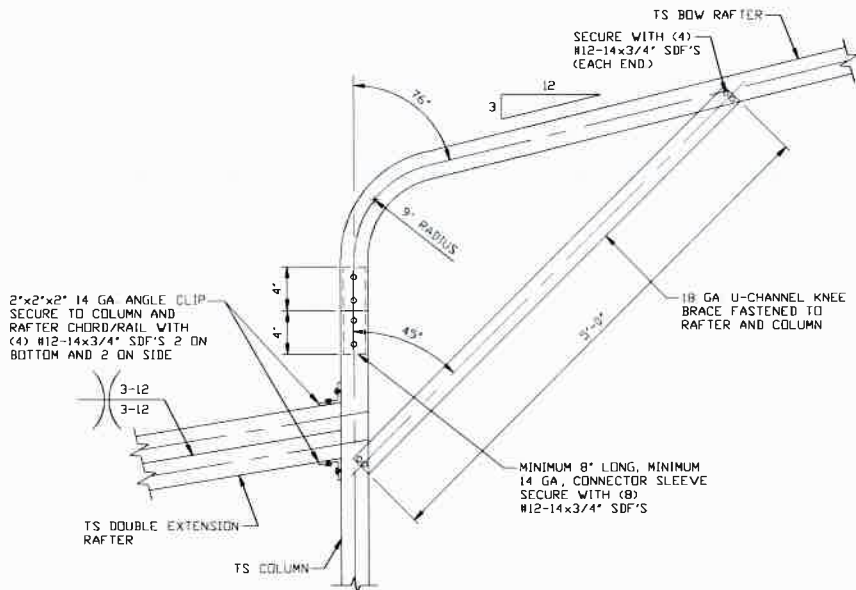
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# BOW EAVE RAFTER LEAN-TO OPTIONS FOR RAFTER SPANS 10'-0" < TO ≤ 16'-0"



16D

**SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS 12'-0" < TO ≤ 16'-0"**  
SCALE: NTS



16E

**SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS ≤ 12'-0"**  
SCALE: NTS

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ENGINEERING AND CONSULTING, INC.**

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**PROJECT MGR: WSM**

**CLIENT: VEGA METAL**

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4047 US HWY 311  
RANDLEMAN, NC 27317  
30-0"x20'-0" ENCLOSED STRUCTURE

**DATE: 10-23-20**

**SHT. 15D**

**SCALE: NTS**

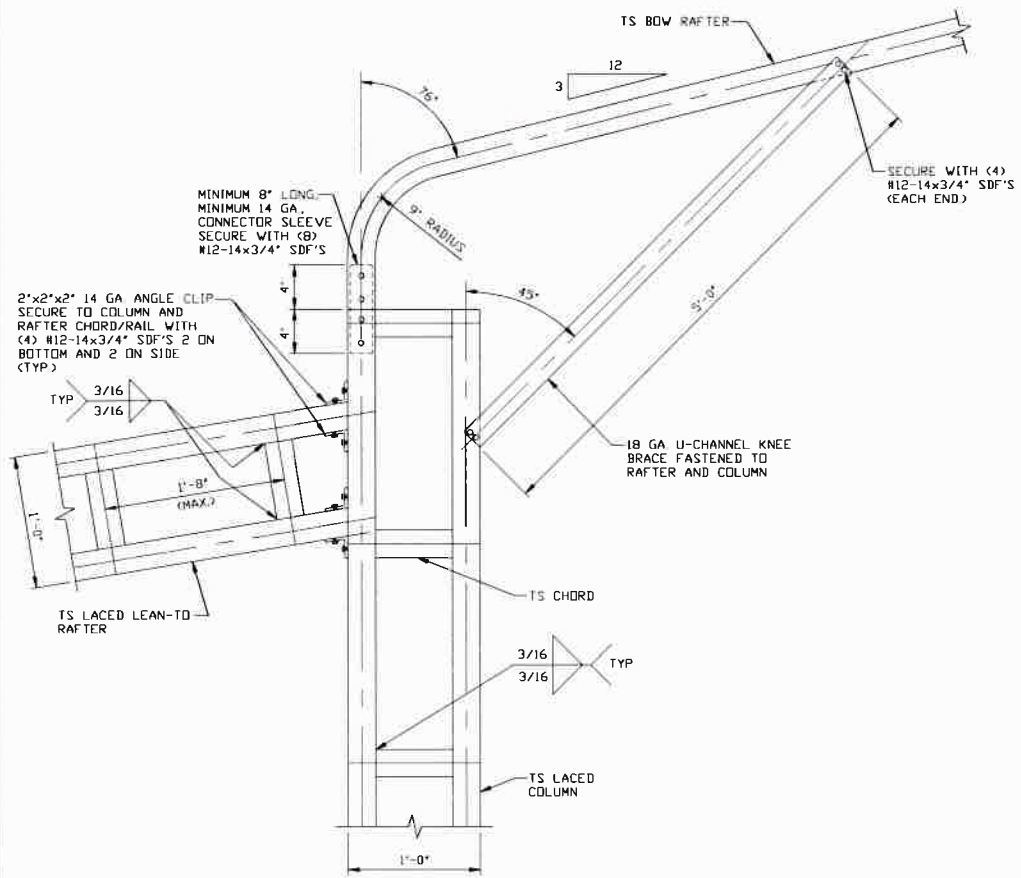
**DWG. NO: SK-3**

**JOB NO: 20193S**

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**BOW EAVE RAFTER LEAN-TO OPTION FOR RAFTER SPANS 16'-0" < TO ≤ 20'-0"**



**SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS 16'-0" < TO ≤ 20'-0"**  
SCALE: NTS

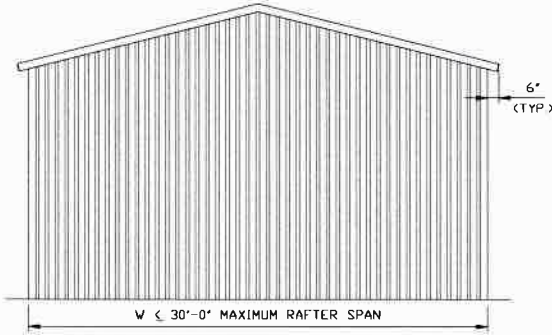
16F

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	<b>CLIENT:</b> VEGA METAL	<b>SHT.</b> 15E	<b>DWG. NO:</b> SK-3	<b>REV:</b> 0



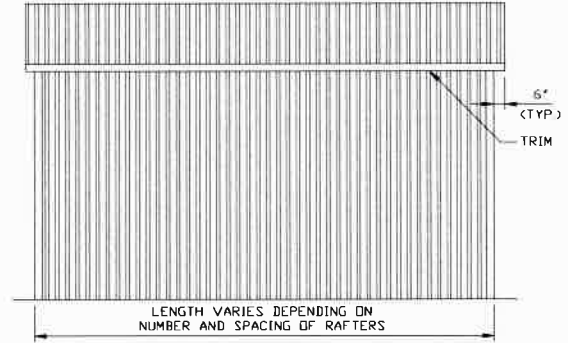


# BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



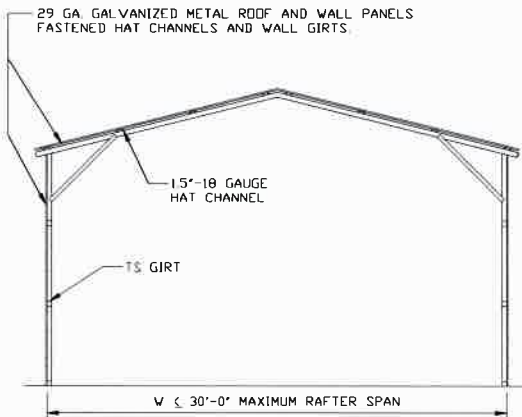
**TYPICAL END ELEVATION  
VERTICAL ROOF/SIDING**

SCALE: NTS



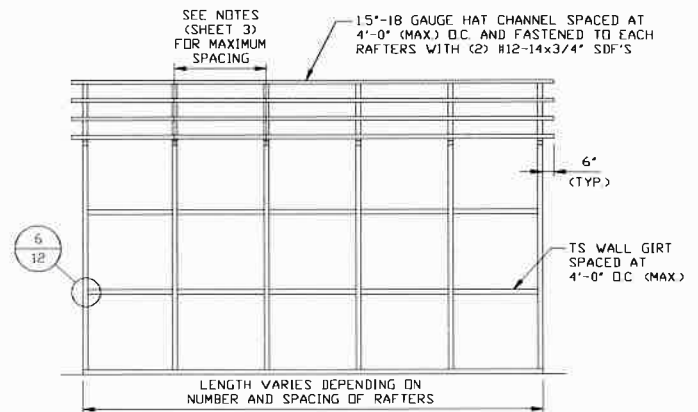
**TYPICAL SIDE ELEVATION  
VERTICAL ROOF/SIDING**

SCALE: NTS



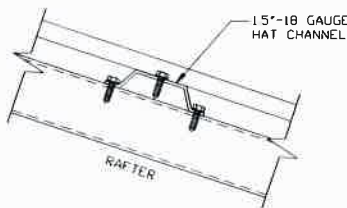
**TYPICAL SECTION VERTICAL  
ROOF/SIDING OPTION**

SCALE: NTS



**TYPICAL FRAMING SECTION  
VERTICAL ROOF/SIDING OPTION**

SCALE: NTS



**PANEL ATTACHMENT**

(ALTERNATE FOR VERTICAL ROOF PANELS)

SCALE: NTS

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**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: VEGA METAL**

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**DATE: 10-23-20**

**SHT. 16**

**SCALE: NTS**

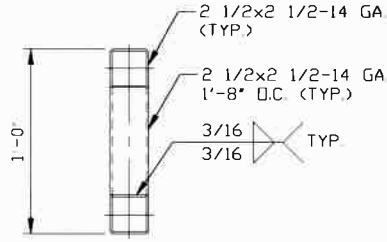
**DWG. NO: SK-3**

**JOB NO: 20193S**

**REV: 0**

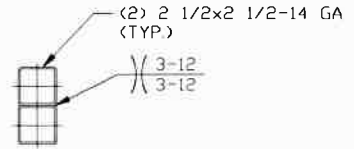
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## SIDE WALL HEADER OPTIONS



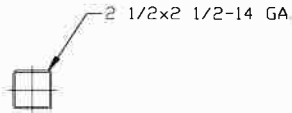
**HEADER DETAIL FOR DOOR OPENINGS  
10'-0" < LENGTHS ≤ 16'-0"**

SCALE: NTS



**HEADER DETAIL FOR DOOR OPENINGS  
6'-0" < LENGTHS ≤ 10'-0"**

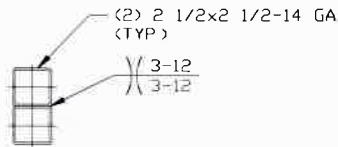
SCALE: NTS



**HEADER DETAIL FOR DOOR OPENINGS  
LENGTHS ≤ 6'-0"**

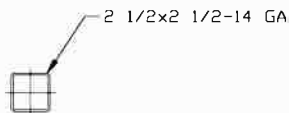
SCALE: NTS

## END WALL HEADER OPTIONS



**HEADER DETAIL FOR DOOR OPENINGS  
13'-0" < LENGTHS ≤ 16'-0"**

SCALE: NTS



**HEADER DETAIL FOR DOOR OPENINGS  
LENGTHS ≤ 13'-0"**

SCALE: NTS

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**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: VEGA METAL**

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30-0"x20'-0" ENCLOSED STRUCTURE

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**SHT. 17**

**SCALE: NTS**

**DWG. NO: SK-3**

**JOB NO: 20193S**

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