



## **STRUCTURAL DESIGN** **ENCLOSED BUILDING**

**MAXIMUM 30'-0" WIDE X 14'-0" EAVE HEIGHT-  
BOX EAVE FRAME AND BOW FRAME**

**HIGH WIND SPEED (140 MPH < VULT ≤ 170 MPH) PACKAGE FOR  
THE STATES OF FLORIDA, SOUTH CAROLINA AND GEORGIA**

**12 February 2021**

**Revision 6**

**M&A Project No. 15079S/16195S/17155S/17200S/18068S/20019S/20324S**

**Prepared for:**

**Steel Buildings and Structures, Inc.  
P.O. Box 1287  
Mt. Airy, NC 27030**

**Prepared by:**

**Moore and Associates Engineering and Consulting,**

**1009 East Avenue  
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**401 S. Main St., Suite 200  
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**Wayne  
S Moore**

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by Wayne S  
Moore

Date: 2022.09.22  
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**PROJECT MGR: WSM**

**CLIENT: SBSI**

**STEEL BUILDINGS AND STRUCTURES, INC.**  
P.O. BOX 1287,  
MOUNT AIRY, NC 27030  
30'-0"x14'-0" HW ENCLOSED STRUCTURE

**DATE: 2-12-21**

**SCALE: NTS**

**SHT. 1**

**DWG. NO: SK-3**

**JOB NO: 17200S/  
18068S/20019S/20324S**

**REV: 6**

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# DRAWING INDEX

SHEET 1	PE SEAL COVER SHEET
SHEET 2	DRAWING INDEX
SHEET 3	INSTALLATION NOTES AND SPECIFICATIONS
SHEET 4	TYPICAL SIDE AND END ELEVATIONS
SHEET 5	TYPICAL RAFTER/COLUMN END AND SIDE FRAMING SECTION (BOX EAVE RAFTER)
SHEET 6	COLUMN CONNECTION DETAILS (BOX EAVE RAFTER)
SHEET 7	TYPICAL RAFTER/COLUMN END AND SIDE FRAMING SECTION (BOW EAVE RAFTER)
SHEET 8	COLUMN CONNECTION DETAILS (BOW EAVE RAFTER)
SHEET 9	BASE RAIL ANCHORAGE
SHEET 9A	BASE RAIL ANCHORAGE OPTION
SHEET 10	TYPICAL END WALL AND SIDE WALL FRAMING SECTIONS (BOX EAVE RAFTER)
SHEET 11	TYPICAL END WALL AND SIDE WALL FRAMING SECTIONS (BOW EAVE RAFTER)
SHEET 12	CONNECTION DETAILS
SHEET 13	CONNECTION DETAILS
SHEET 14	LEAN-TO OPTIONS (BOX EAVE RAFTER)
SHEET 14A	LEAN-TO OPTIONS (BOX EAVE RAFTER)
SHEET 15	LEAN-TO OPTIONS (BOW EAVE RAFTER)
SHEET 15A	LEAN-TO OPTIONS (BOW EAVE RAFTER)
SHEET 16	VERTICAL ROOF/SIDING OPTION END AND SIDE ELEVATION AND SECTION
SHEET 17	OPTIONAL HEADERS



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**SHT. 2**

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## INSTALLATION NOTES AND SPECIFICATIONS

- 1 DESIGN IS FOR MAXIMUM 30'-0" WIDE x 14'-0" EAVE HEIGHT ENCLOSED STRUCTURES
- 2 DESIGN WAS DONE IN ACCORDANCE WITH THE 2020 FLORIDA BUILDING CODE (FBC) 7TH EDITION, 2012 INTERNATIONAL BUILDING CODE (IBC), 2015 IBC AND 2018 IBC
- 3 DESIGN LOADS ARE AS FOLLOWS:
  - A) DEAD LOAD = 15 PSF
  - B) LIVE LOAD = 12 PSF
  - C) GROUND SNOW LOAD = 10 PSFNOTE: (UNBALANCED SNOW LOADS DUE TO DRIFTING HAVE NOT BEEN EVALUATED)
- 4 3-SECOND GUST HIGH ULTIMATE WIND SPEED = 141 TO 170 MPH (NOMINAL WIND SPEED = 108 TO 132 MPH)
- 5 MAXIMUM RAFTER/COLUMN AND END COLUMN SPACING = 40 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)
- 10 AVERAGE FASTENER SPACING ON-CENTERS ALONG RAFTERS OR HAT CHANNELS, AND COLUMNS (INTERIOR AND EDGE) = 8 INCHES; 6 INCHES (FL)
- 11 FASTENERS CONSIST OF 1/4"x3/4" 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 GROUND ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL WITHIN 6' OF EACH RAFTER COLUMN ALONG SIDES
- 13 WIND FORCES GOVERN OVER SEISMIC FORCES. SEISMIC PARAMETERS ANALYZED ARE:  
SOIL SITE CLASS = D  
RISK CATEGORY I  
 $R = 3.25$   $I_E = 10$   
 $S_{DS} = 2.039 g$   $V = C_s W$   
 $S_{DI} = 1.258 g$
- 14 WINDOW AND DOOR DESIGN PRESSURES ARE APPLICABLE TO THE STATE OF FLORIDA ONLY



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**SHT. 3**

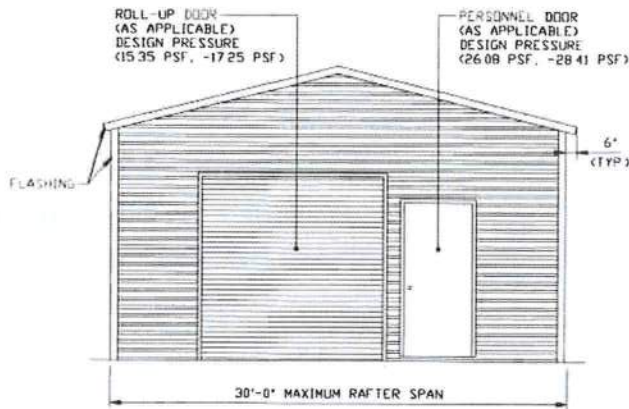
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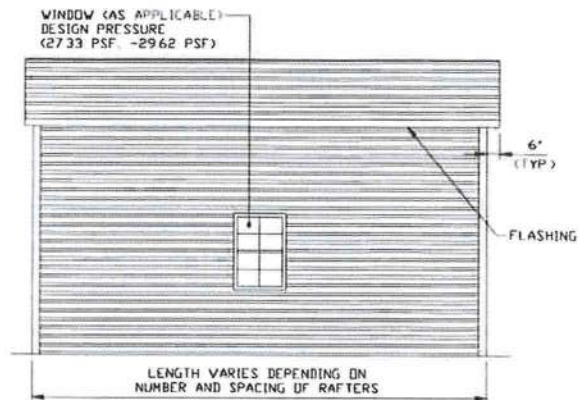
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## BOX EAVE FRAME RAFTER STRUCTURE



**TYPICAL END ELEVATION-HORIZONTAL ROOF**

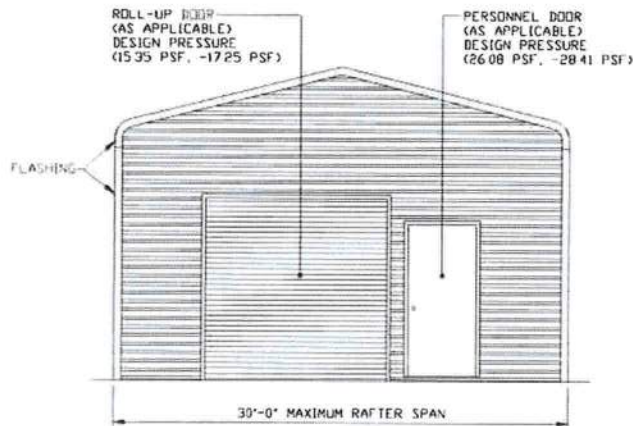
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**TYPICAL SIDE ELEVATION-HORIZONTAL ROOF**

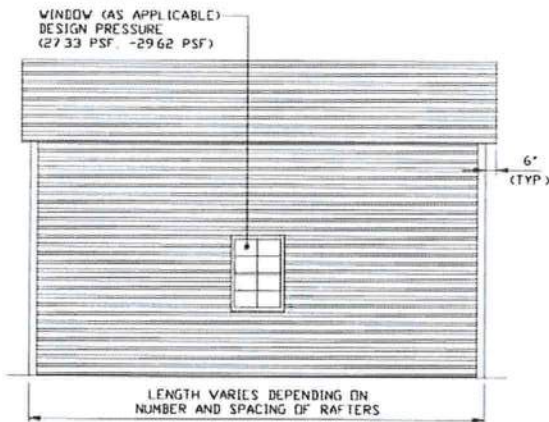
SCALE: NTS

## BOW EAVE FRAME RAFTER STRUCTURE



**TYPICAL END ELEVATION**

SCALE: NTS



**TYPICAL SIDE ELEVATION**

SCALE: NTS



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**SHT. 4**

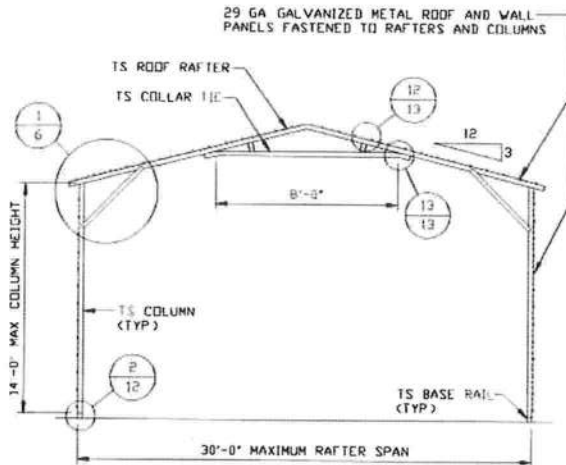
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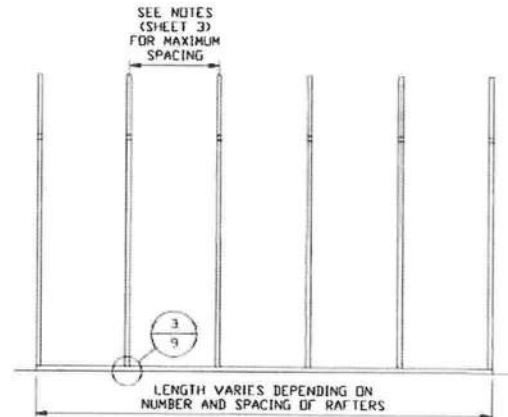
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**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



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



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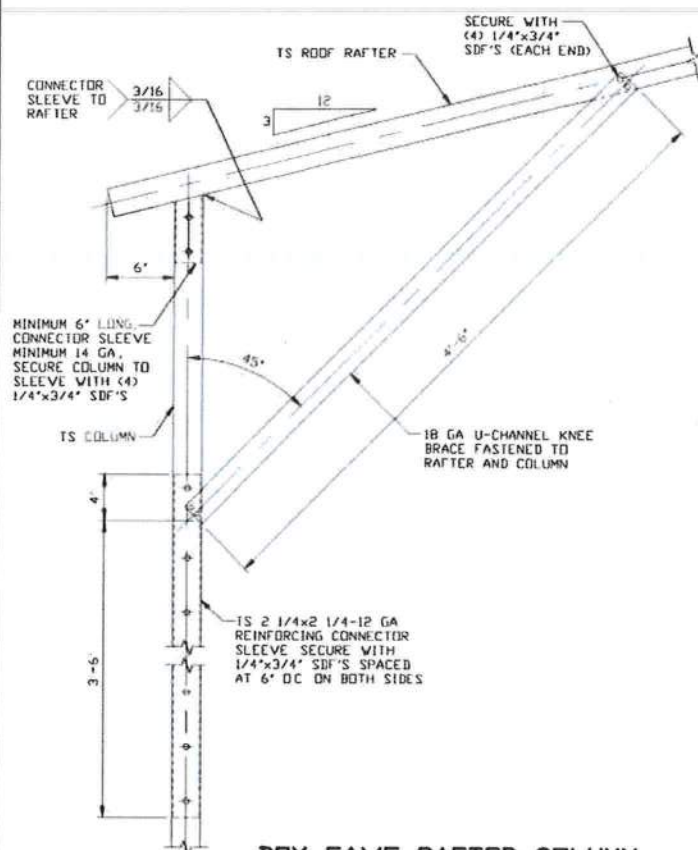
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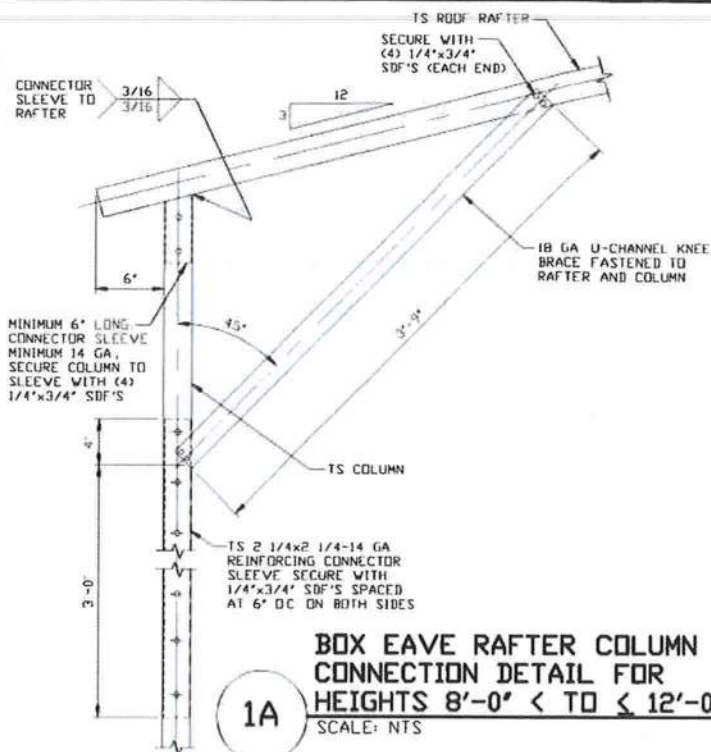
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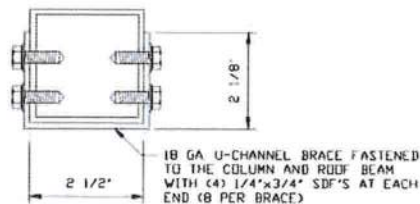
BOX EAVE RAFTER COLUMN  
CONNECTION DETAIL FOR  
HEIGHTS 12'-0" < TO < 14'-0"

SCALE- NTS



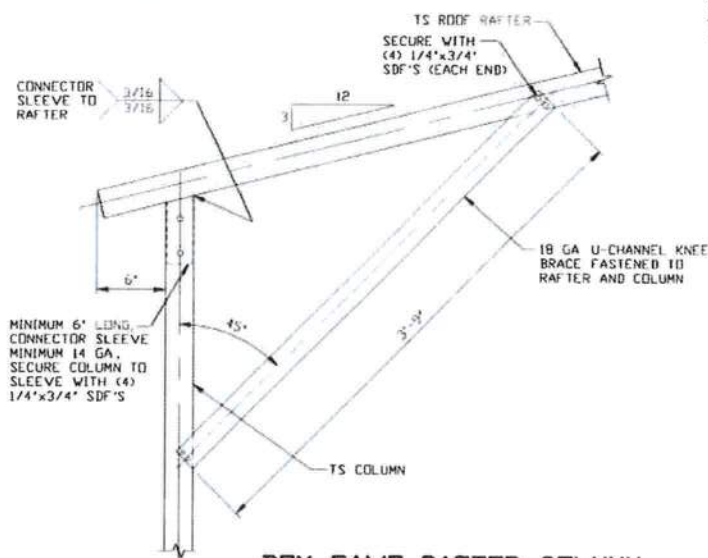
BOX EAVE RAFTER COLUMN  
CONNECTION DETAIL FOR  
HEIGHTS 8'-0" < TO ≤ 12'-0"

SCALE: NTS



### BRACE SECTION

SCALE: NTS



BOX EAVE RAFTER COLUMN  
CONNECTION DETAIL FOR  
HEIGHTS  $\leq 8'-0"$

SCALE: NTS



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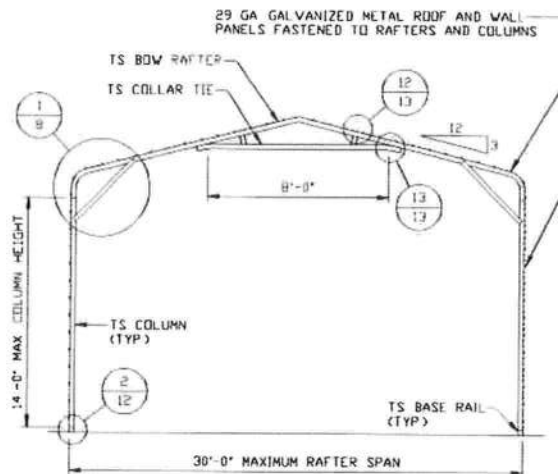
SHT. 6

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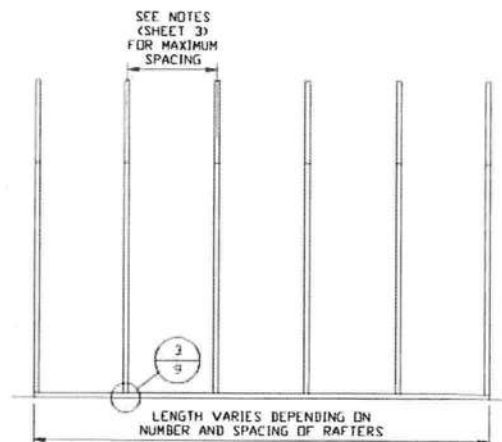
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**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN FRAMING SIDE SECTION**

SCALE: NTS



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SHT. 7

SCALE: NTS

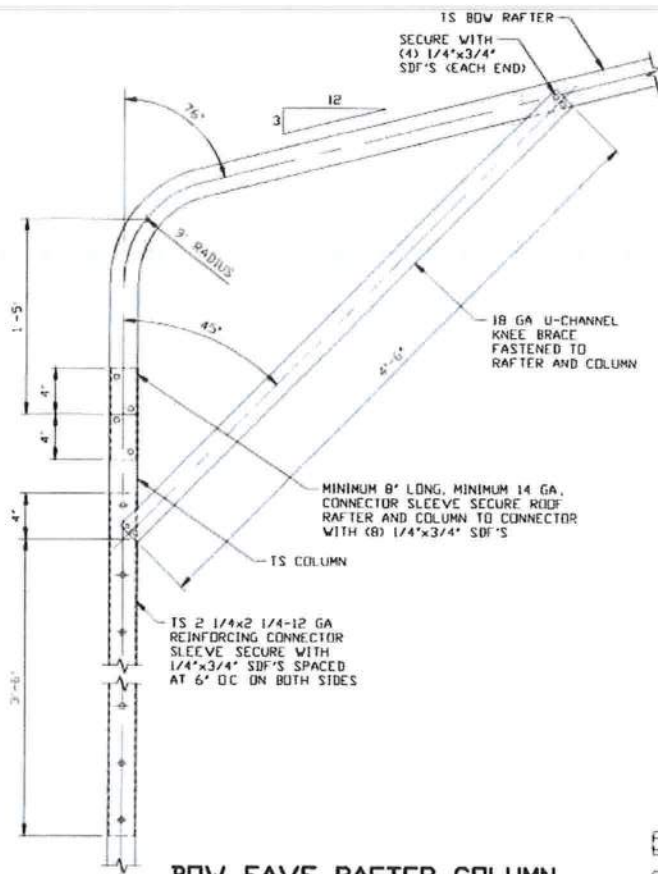
DWG. NO: SK-3

JOB NO: 17200S/  
18068S/20019S/20324S

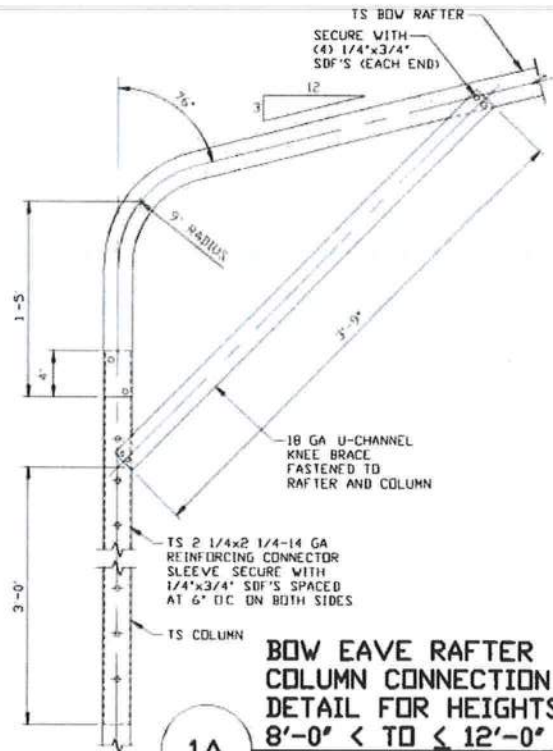
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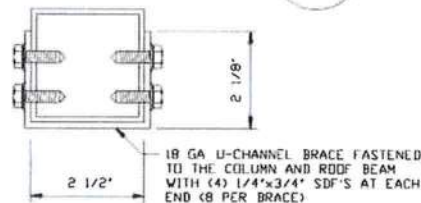




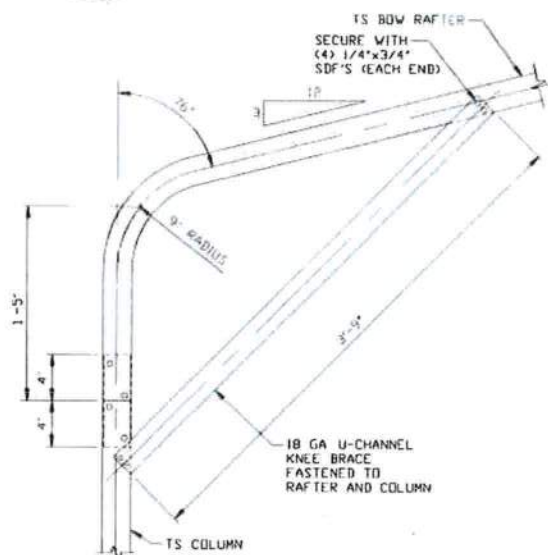
**BOW EAVE RAFTER COLUMN  
CONNECTION DETAIL FOR  
HEIGHTS 12'-0" < TO <= 14'-0"**  
SCALE: NTS



**BOW EAVE RAFTER  
COLUMN CONNECTION  
DETAIL FOR HEIGHTS  
8'-0" < TO <= 12'-0"**  
SCALE: NTS



**BRACE SECTION**  
SCALE: NTS



**BOW EAVE RAFTER COLUMN  
CONNECTION DETAIL FOR  
HEIGHTS <= 8'-0"**  
SCALE: NTS



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**SHT. 8**

**SCALE: NTS**

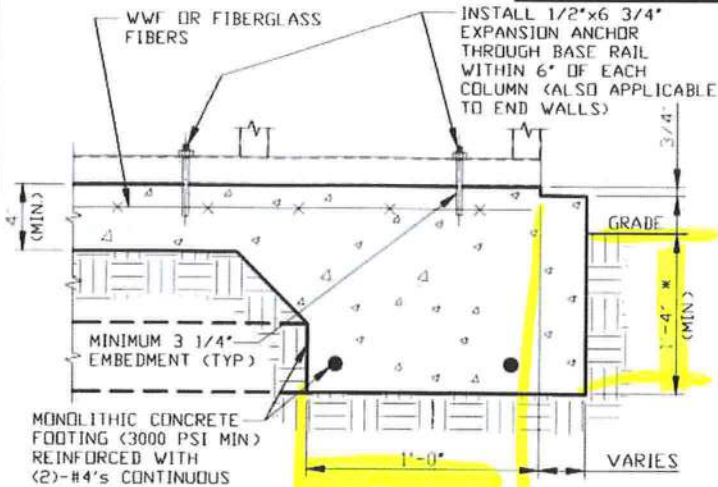
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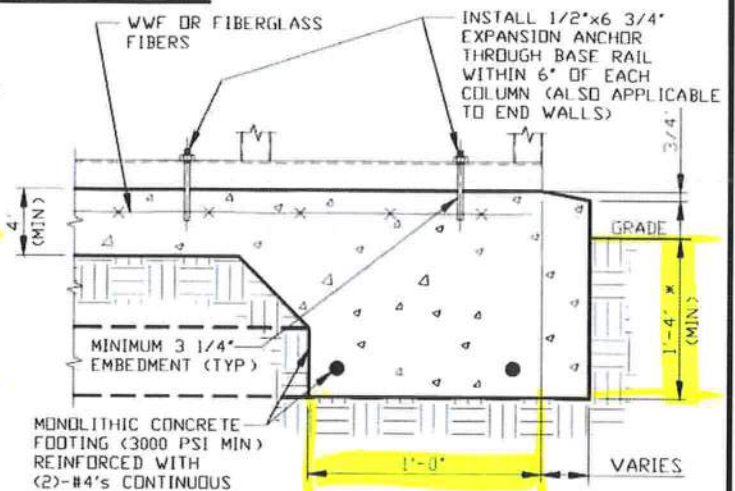
## BASE RAIL ANCHORAGE



3

### CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

SCALE: NTS  
MINIMUM ANCHOR EDGE DISTANCE IS 4"  
\* COORDINATE WITH LOCAL CODES/ORD



3A

### CONCRETE SLAB BASE RAIL ANCHORAGE

SCALE: NTS  
MINIMUM ANCHOR EDGE DISTANCE IS 4"  
\* COORDINATE WITH LOCAL CODES/ORD

## 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:

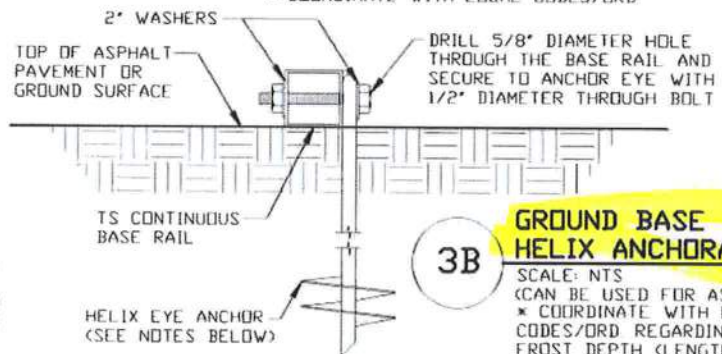
THE TURNDOWN REINFORCING STEEL SHALL BE ASTM A615 GRADE 60 THE SLAB REINFORCEMENT SHALL BE WELDED WIRE FABRIC MEETING ASTM A185 OR FIBERGLASS FIBER REINFORCEMENT

### 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



3B

### GROUND BASE HELIX ANCHORAGE

SCALE: NTS  
(CAN BE USED FOR ASPHALT)  
\* COORDINATE WITH LOCAL CODES/ORD REGARDING MIN FROST DEPTH (LENGTH)



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SCALE: NTS

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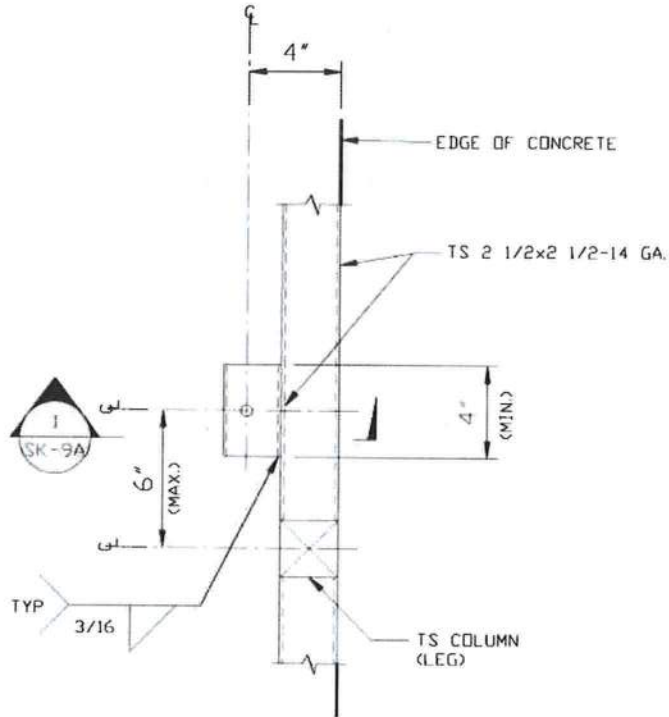
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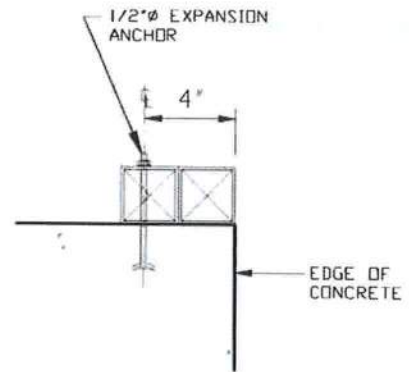


## BASE RAIL ANCHORAGE OPTION



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

SCALE: NTS



**SECTION**

SCALE: NTS



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SHT. 9A

SCALE: NTS

DWG. NO SK-3

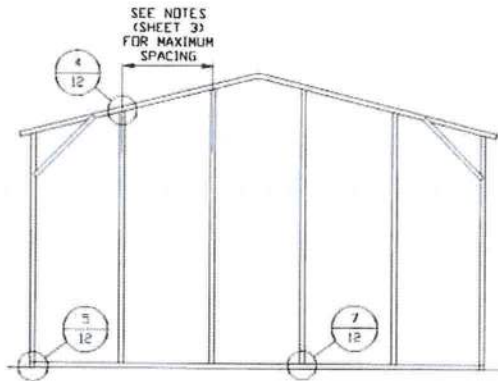
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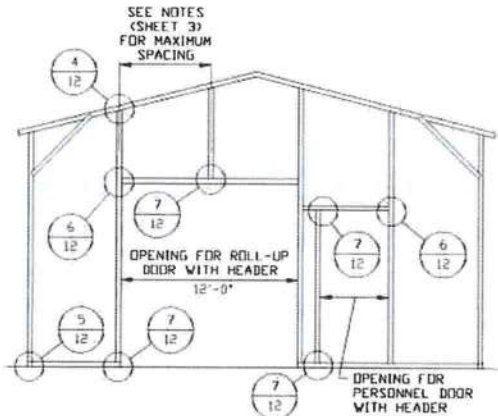


## BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



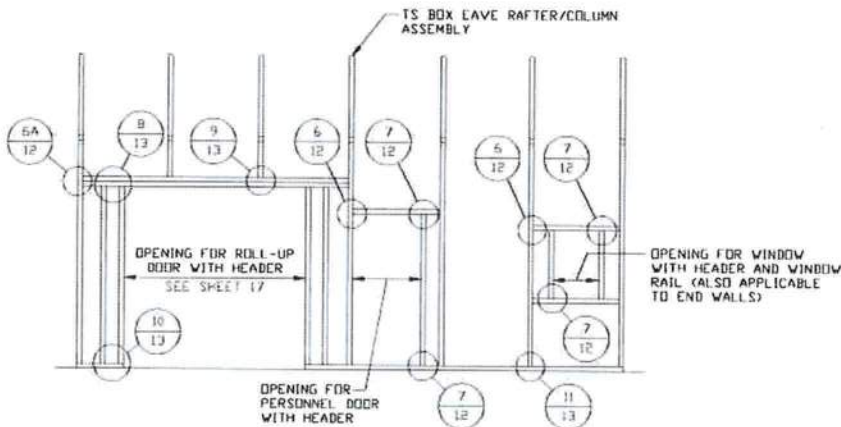
**TYPICAL BOX EAVE RAFTER  
END WALL FRAMING SECTION**

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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**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: VSM**

**CLIENT: SBSI**

**STEEL BUILDINGS AND STRUCTURES, INC.**  
P.O. BOX 1287,  
MOUNT AIRY, NC 27030  
30'-0"x14'-0" HW ENCLOSED STRUCTURE

**DATE: 2-12-21**

**SCALE: NTS**

**SHT. 10**

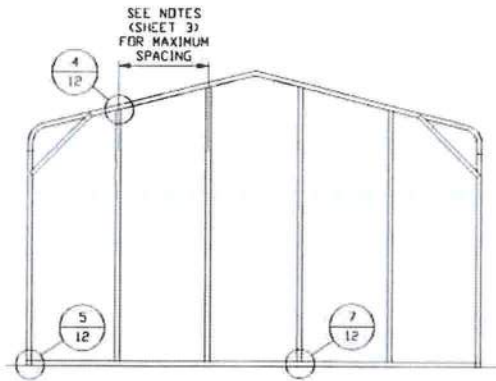
**DWG. NO: SK-3**

**JOB NO: 17200S/  
18068S/20019S/20324S**

**REV: 6**

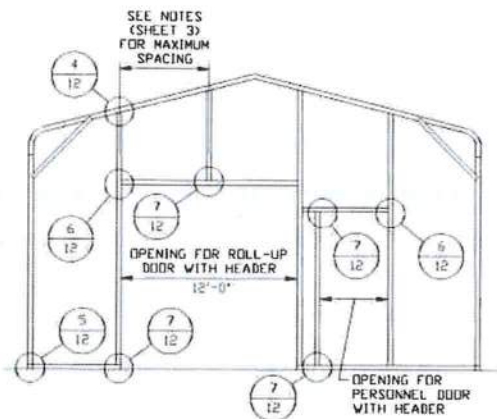
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## BOW EAVE RAFTER END WALL AND SIDE WALL OPENINGS



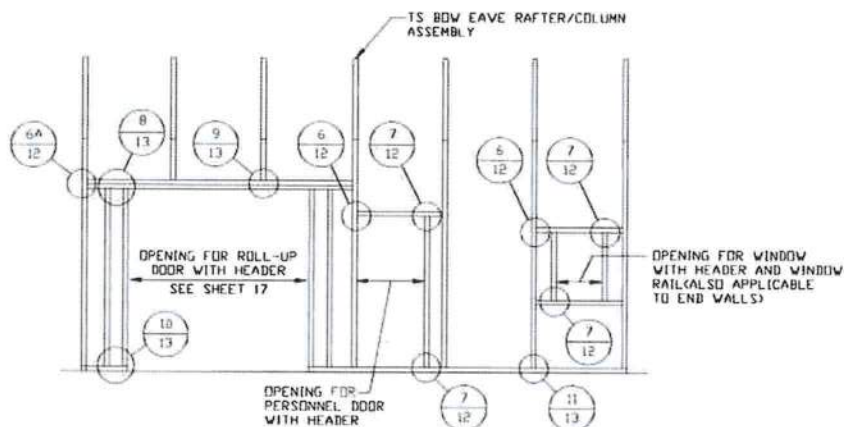
**TYPICAL BOW RAFTER  
END WALL FRAMING SECTION**

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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**SHT. 11**

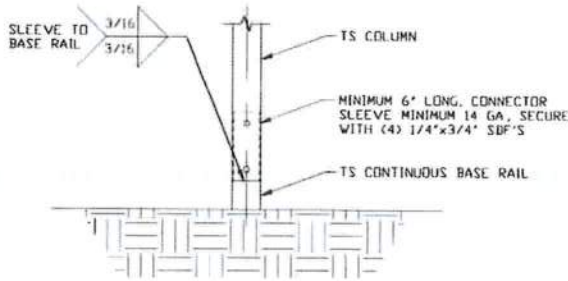
**DWG. NO SK-3**

**JOB NO: 17200S/  
18068S/20019S/20324S**

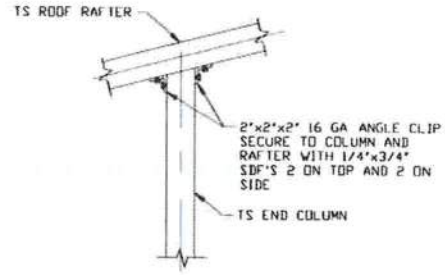
**REV: 6**

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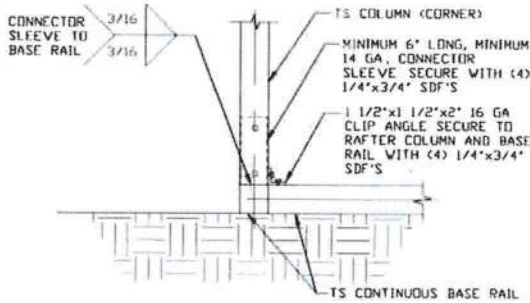
## CONNECTION DETAILS



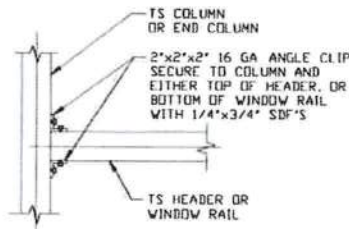
**2 RAFTER COLUMN/BASE RAIL CONNECTION DETAIL**  
SCALE: NTS



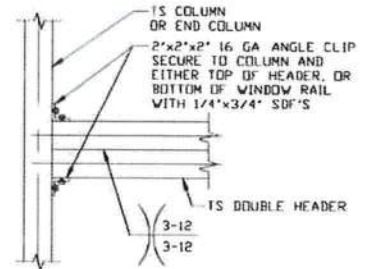
**4 END COLUMN/RAFTER CONNECTION DETAIL**  
SCALE: NTS



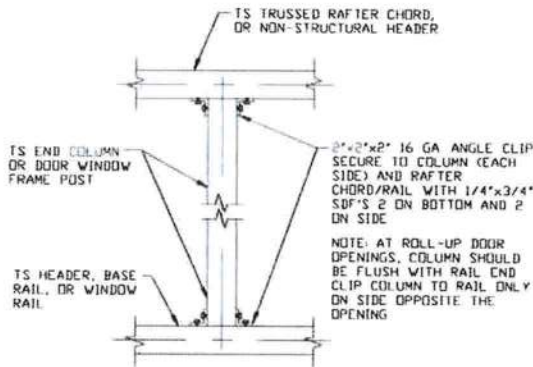
**5 END COLUMN/BASE RAIL CONNECTION DETAIL**  
SCALE: NTS



**6 COLUMN OR WINDOW RAIL/GIRT TO POST CONNECTION DETAIL**  
SCALE: NTS



**6A COLUMN OR DOUBLE HEADER TO POST CONNECTION DETAIL**  
SCALE: NTS



**7 COLUMN TO HEADER, BASE RAIL, OR WINDOW RAIL CONNECTION DETAIL**  
SCALE: NTS



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**PROJECT MGR: VSM**

**CLIENT: SBSI**

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P.O. BOX 1287,  
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30'-0"x14'-0" HW ENCLOSED STRUCTURE

**DATE: 2-12-21**

**SCALE: NTS**

**JOB NO: 17200S/  
18069S/20019S/20324S**

**SHT. 12**

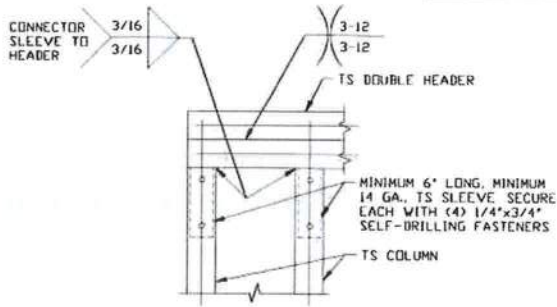
**DWG. NO: SK-3**

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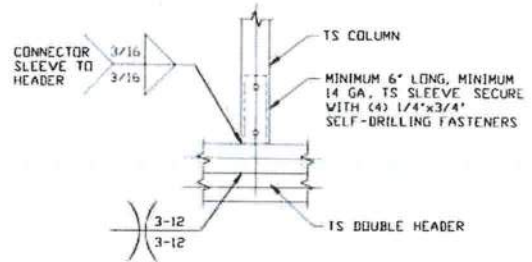
## CONNECTION DETAILS



8

### DOUBLE HEADER/COLUMN CONNECTION DETAIL

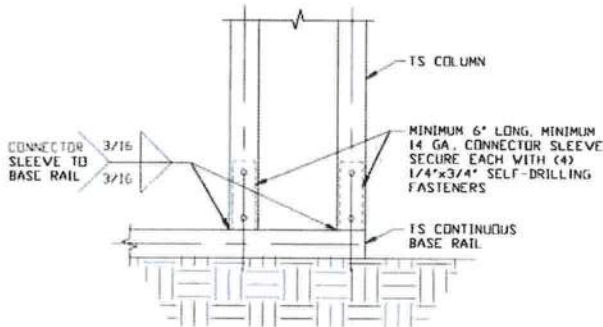
SCALE: NTS



9

### COLUMN/DOUBLE HEADER CONNECTION DETAIL

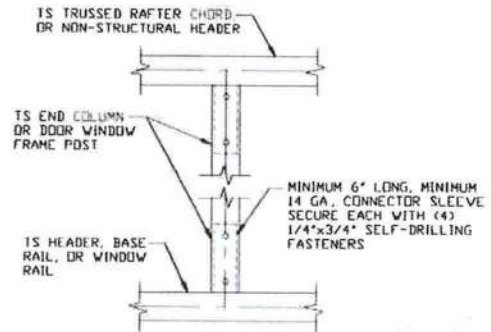
SCALE: NTS



10

### COLUMN/BASE RAIL CONNECTION DETAIL

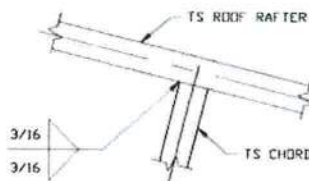
SCALE: NTS



11

### COLUMN TO HEADER OR BASE RAIL CONNECTION DETAIL

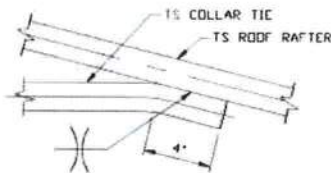
SCALE: NTS



12

### RAFTER TO CHORD CONNECTION DETAIL

SCALE: NTS



13

### COLLAR TIE CONNECTION DETAIL

SCALE: NTS



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P.O. BOX 1287,  
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30'-0"x14'-0" HW ENCLOSED STRUCTURE

DATE: 2-12-21

SHT. 13

SCALE: NTS

DWG. NO: SK-3

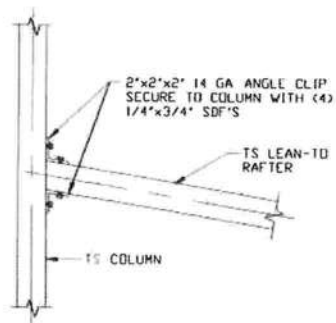
JOB NO: 17200S/  
18068S/20019S/20324S

REV: 6

SCALE: NTS

MAXIMUM WIDTH OF STANDARD ROOF EXTENSION AND LEAN-TO IS 12'-0"

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



## 14

SCALE: NTS



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SCALE: NTS

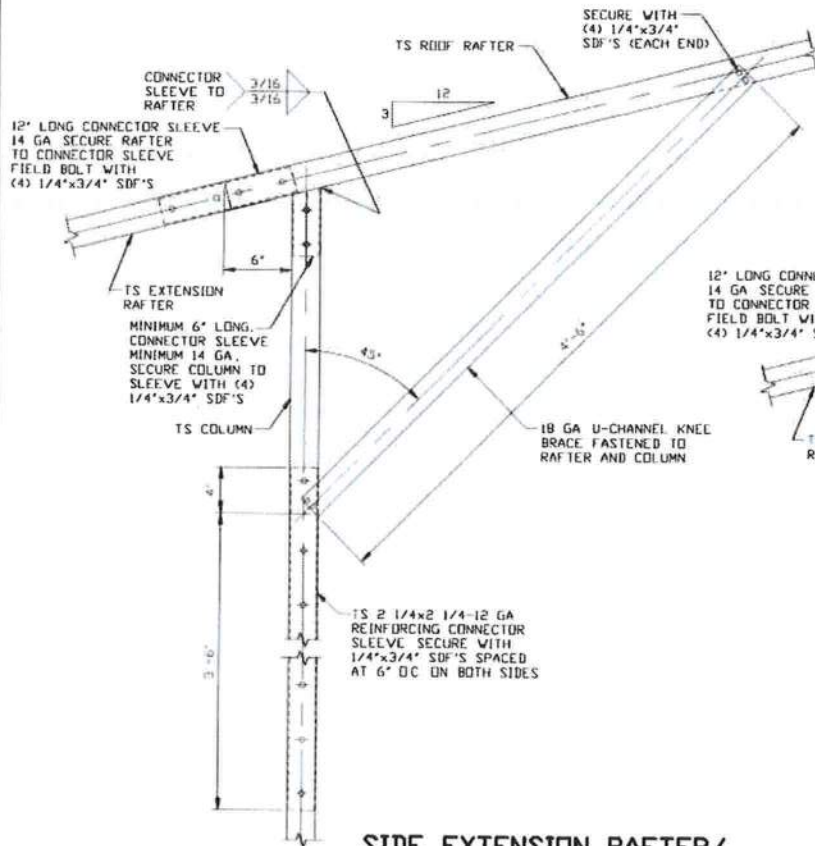
DWG. NO. SK-3

JOB NO: 17200S/  
18068S/20019S/20324S

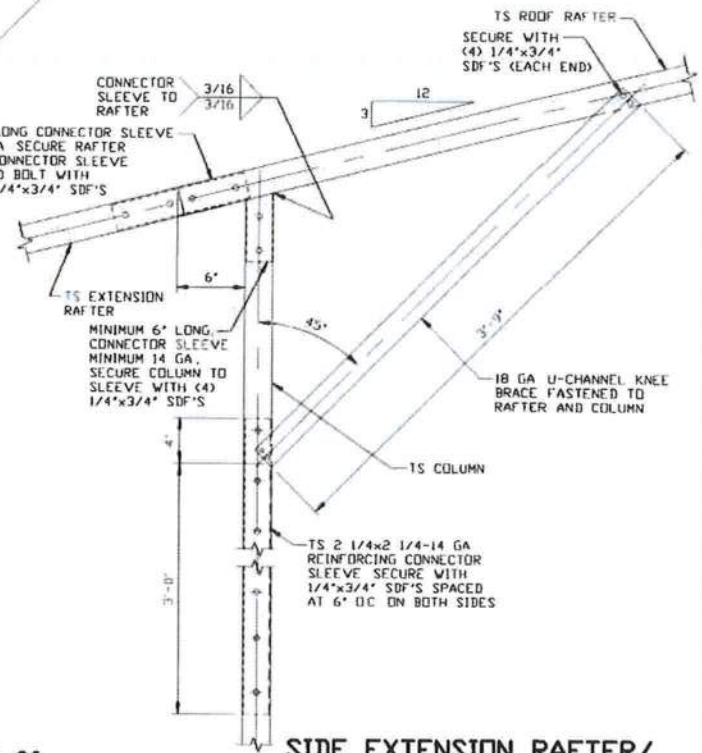
REV. 6

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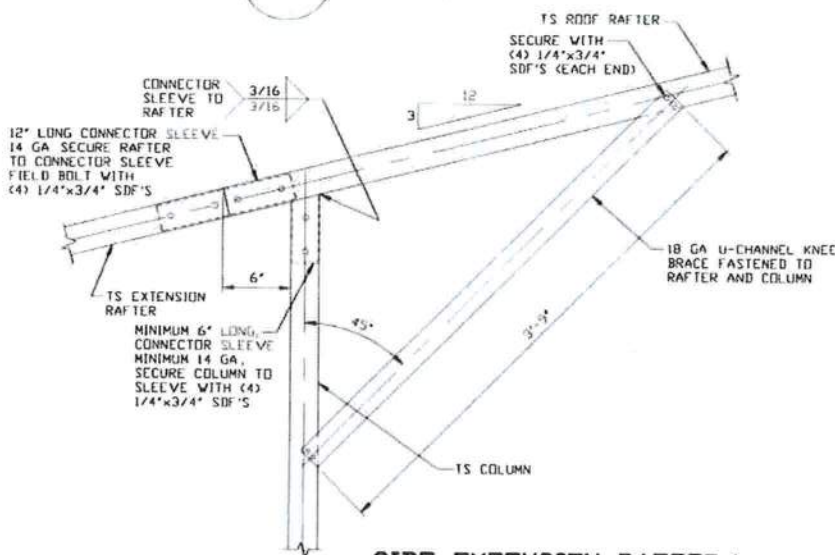
# BOX EAVE RAFTER LEAN-TO OPTIONS



**15** SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS 12'-0" < TO ≤ 14'-0"  
SCALE: NTS



**15A** SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS 8'-0" < TO ≤ 12'-0"  
SCALE: NTS



**15B** SIDE EXTENSION RAFTER/  
COLUMN DETAIL FOR  
HEIGHTS ≤ 8'-0"  
SCALE: NTS



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**DATE: 2-12-21**

**SHT. 14A**

**SCALE: NTS**

**DWG. NO: SK-3**

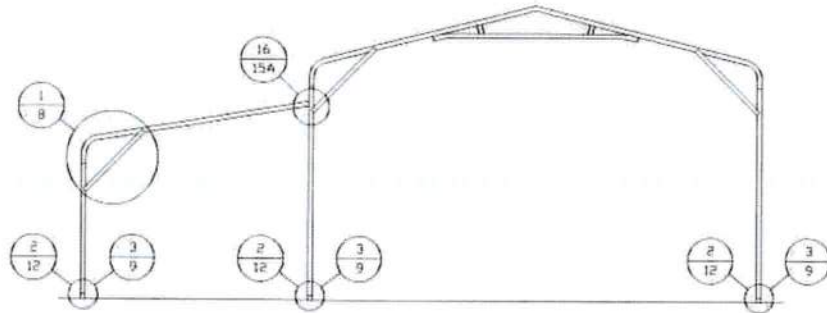
**JOB NO: 17200S/  
18068S/20019S/20324S**

**REV: 6**

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## BOW RAFTER LEAN-TO OPTION



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

SCALE: NTS

MAXIMUM WIDTH OF STANDARD ROOF EXTENSION AND LEAN-TO IS 12'-0"

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



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**DATE: 2-12-21**

**SCALE: NTS**

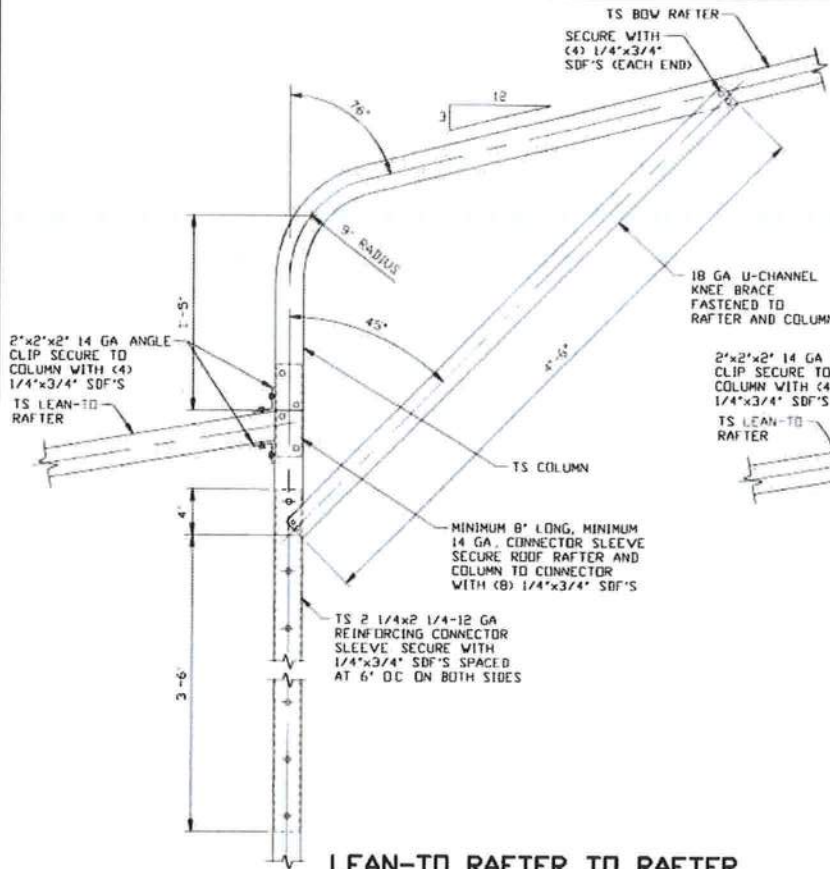
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**JOB NO: 17200S/  
1806BS/20019S/20324S**

**REV: 6**

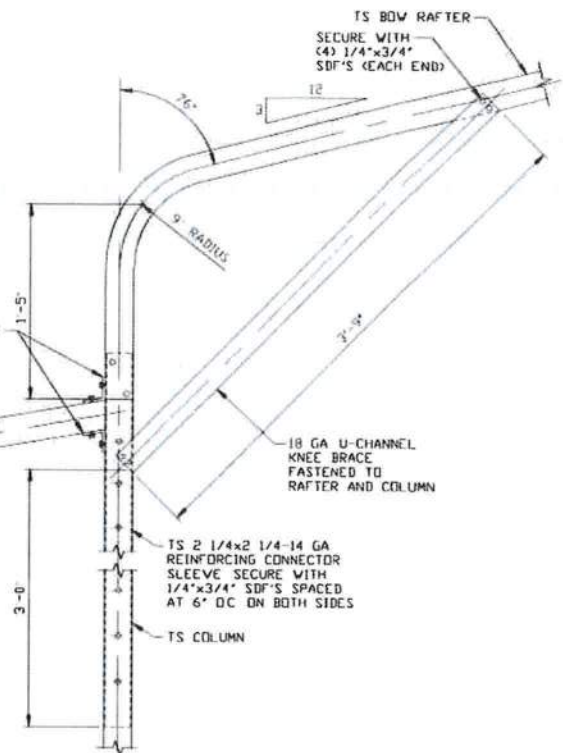
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# BOW RAFTER LEAN-TO OPTION



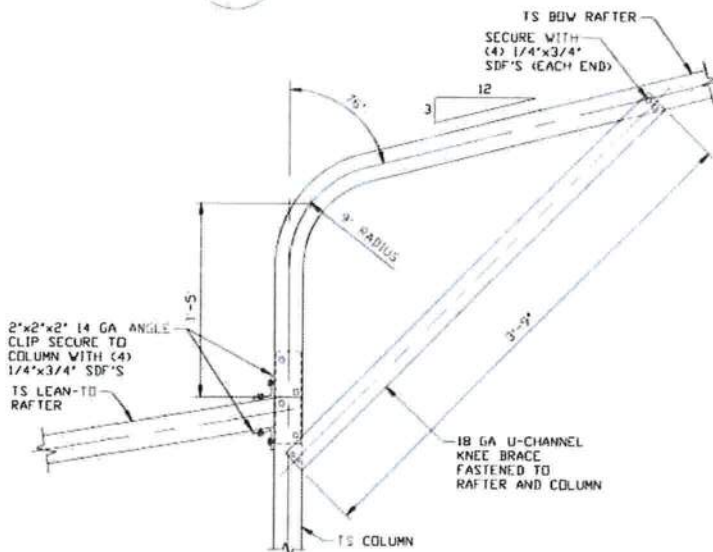
16

LEAN-TO RAFTER TO RAFTER  
COLUMN DETAIL FOR  
HEIGHTS 12'-0" < TO ≤ 14'-0"  
SCALE: NTS



16A

LEAN-TO RAFTER TO RAFTER  
COLUMN DETAIL FOR  
HEIGHTS 8'-0" < TO ≤ 12'-0"  
SCALE: NTS



16B

LEAN-TO RAFTER TO RAFTER  
COLUMN DETAIL FOR  
HEIGHTS ≤ 8'-0"  
SCALE: NTS



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SHT. 15A

SCALE: NTS

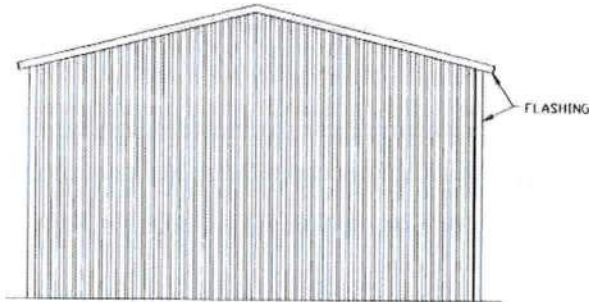
DWG. NO: SK-3

JOB NO: 17200S/  
18069S/20019S/20324S

REV: 6

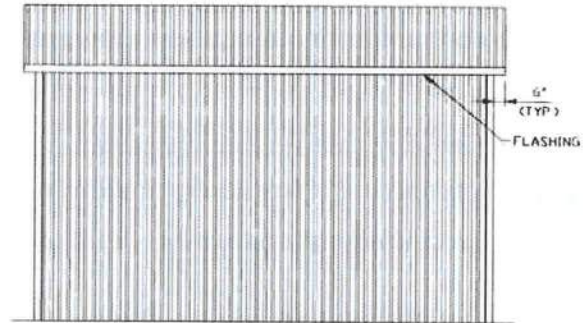
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# BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



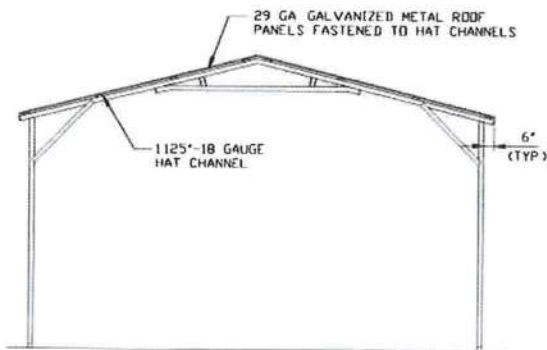
**TYPICAL END ELEVATION  
VERTICAL ROOF/SIDING**

SCALE: NTS



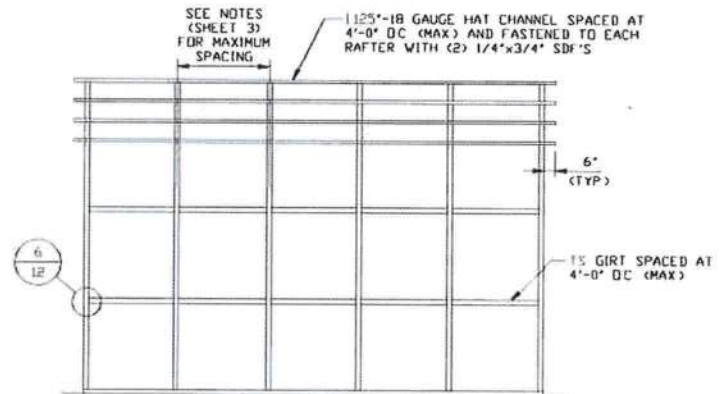
**TYPICAL SIDE ELEVATION  
VERTICAL ROOF/SIDING**

SCALE: NTS



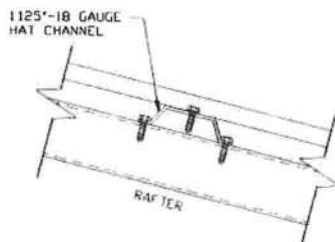
**TYPICAL SECTION  
VERTICAL ROOF/SIDING OPTION**

SCALE: NTS



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

SCALE: NTS



**PANEL ATTACHMENT**

(ALTERNATE FOR VERTICAL ROOF PANELS)  
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**DATE: 2-12-21**

**SHT. 16**

**SCALE: NTS**

**DWG. NO: SK-3**

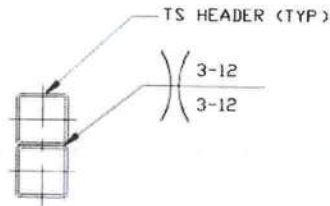
**JOB NO: 17200S/  
18068S/20019S/20324S**

**REV: 6**

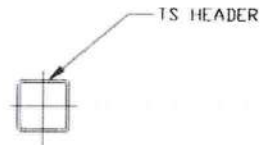
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## OPTIONAL HEADERS



**DOUBLE HEADER DETAIL FOR DOOR  
OPENINGS 10'-0" < LENGTH < 12'-0"**  
SCALE: NTS



**SINGLE HEADER DETAIL FOR  
DOOR OPENINGS LENGTH < 10'-0"**  
SCALE: NTS



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**SHT. 17**

**SCALE: NTS**

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