

# **Eagle Carports**

*"Flying High with Great Deals"*



## **STRUCTURAL DESIGN**

## **ENCLOSED BUILDING**

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

**23 December 2019**

**Revision 8**

**M&A Project No. 16166S/17207S/17293S/18012S/18260S/19320S**

**Prepared for:**

**Eagle Carports  
210 Airport Road  
Mount Airy, NC 27030**

**Prepared by:**

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

**1009 East Avenue  
North Augusta, SC 29841**

**401 S. Main Street, Suite 200  
Mount Airy, NC 27030**







**MOORE AND ASSOCIATES  
ENGINEERING AND CONSULTING**


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ENGINEERING AND CONSULTING, INC.**

DRAWN BY: LT	EAGLE CARPORTS 210 AIRPORT ROAD MOUNT AIRY, NC 27030 30'-0"x20'-0" SP ENCLOSED STRUCTURE		
CHECKED BY: PDH	PROJECT MGR: WSM	DATE: 12-23-19	SCALE: NTS JOB NO: 16166S/ 18012S/18260S/19320S
CLIENT: EAGLE CARPORTS	SHT. 1	DWG. NO: SK-3	REV: 8

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	<p>I HAVE RESEARCHED THIS CHAPTER AND THE LOUISIANA STATE UNIFORM CONSTRUCTION CODE AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, THESE DRAWINGS ARE IN COMPLIANCE THEREWITH. I TAKE FULL RESPONSIBILITY FOR THE CONTENTS OF THESE PLANS.</p>		
	<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>6/8/20</u></p>		
			

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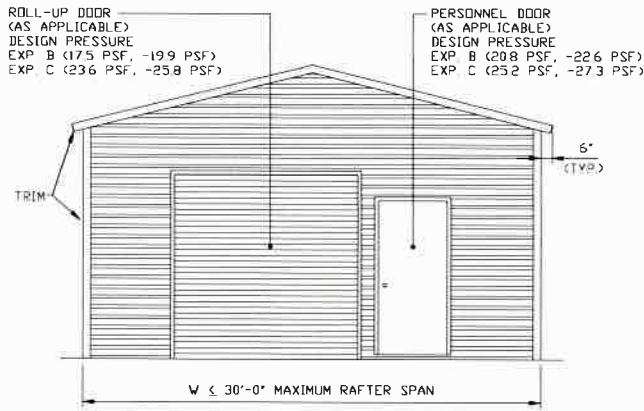
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	CLIENT: EAGLE CARPORTS	SHT. 2	DWG. NO: SK-3	REV: 8	

## 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 2017 FLORIDA BUILDING CODE (FBC) 6TH EDITION, 2018 NORTH CAROLINA BUILDING CODE, 2006 INTERNATIONAL BUILDING CODE (IBC), 2009 IBC, 2012 IBC, 2015 IBC, AND 2018 IBC
3. DESIGN LOADS ARE AS FOLLOWS:
  - A) DEAD LOAD = 1.5 PSF
  - B) LIVE LOAD = 12 PSF
  - C) GROUND SNOW LOAD = 35 PSF
 NOTE: DIFFERENTIAL LOADING DUE TO SNOW DRIFTING NOT ANALYZED.
4. 3-SECOND GUST ULTIMATE WIND SPEED ( $V_{ULT}$ ) 105 TO 140 MPH (NOMINAL WIND SPEED 81 TO 108 MPH).
5. MAXIMUM RAFTER/POST AND END POST SPACING = 5.0 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/C.
9. SPECIFICATIONS APPLICABLE TO 29 GAUGE METAL PANELS FASTENED DIRECTLY TO 2 1/2"x2 1/2"-14 GAUGE TUBE STEEL (TS) FRAMING MEMBERS.
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 36" LONG IN SUITABLE SOIL CONDITIONS. OPTIONAL ANCHORAGE MAY BE USED IN SUITABLE SOILS AND MUST BE USED IN UNSUITABLE SOILS AS NOTED.
14. WIND FORCES GOVERN OVER SEISMIC FORCES. SEISMIC PARAMETERS ANALYZED ARE:
  - SOIL SITE CLASS = D
  - RISK CATEGORY I
  - R= 3.25                       $I_e = 1.0$
  - $S_{DS} = 2.039 g$                $V = C_s W$
  - $S_{D1} = 1.258 g$

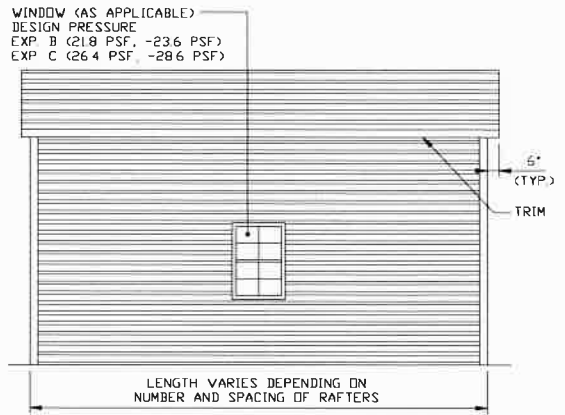
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### BOX EAVE FRAME RAFTER STRUCTURE



**TYPICAL END ELEVATION**

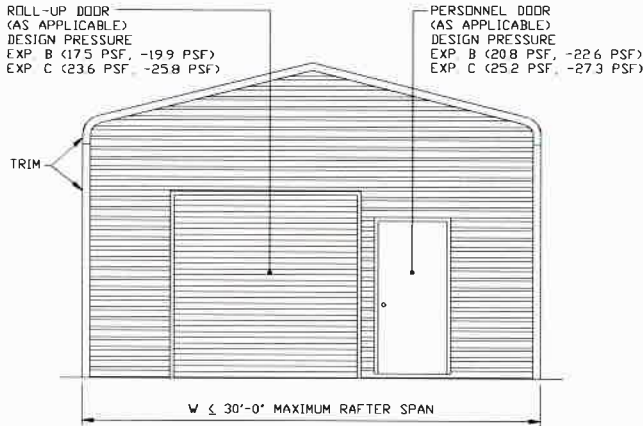
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**TYPICAL SIDE ELEVATION**

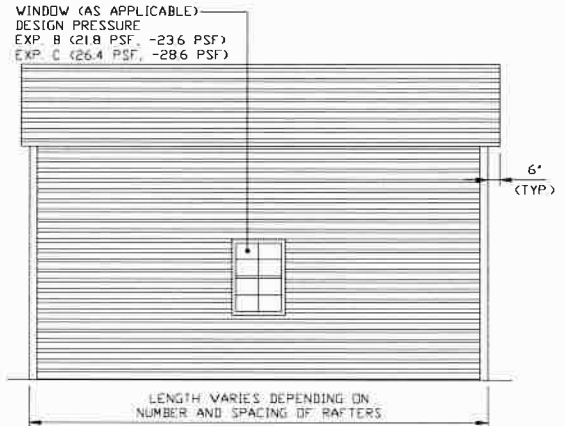
SCALE: NTS

### BOW FRAME RAFTER STRUCTURE



**TYPICAL END ELEVATION**

SCALE: NTS



**TYPICAL SIDE ELEVATION**

SCALE: NTS

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**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30-0"x20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SHT. 3A**

**SCALE: NTS**

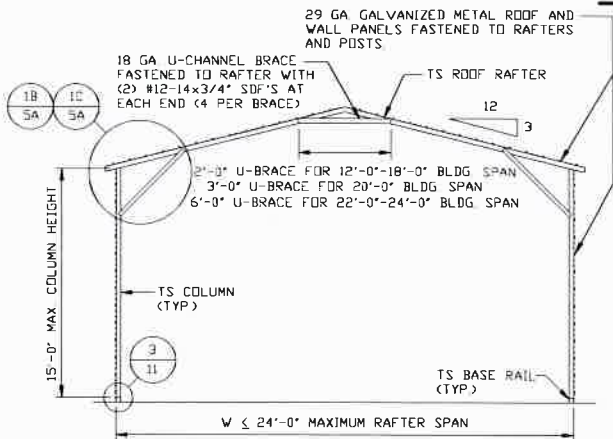
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**JOB NO: 16166S/  
18012S/18260S/19320S**

**REV: 0**

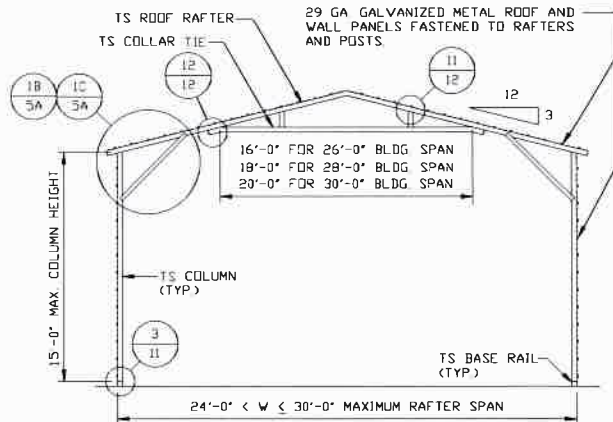
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## EXPOSURE B



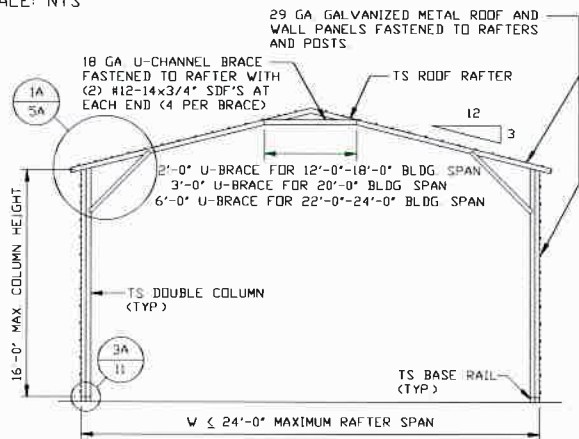
**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



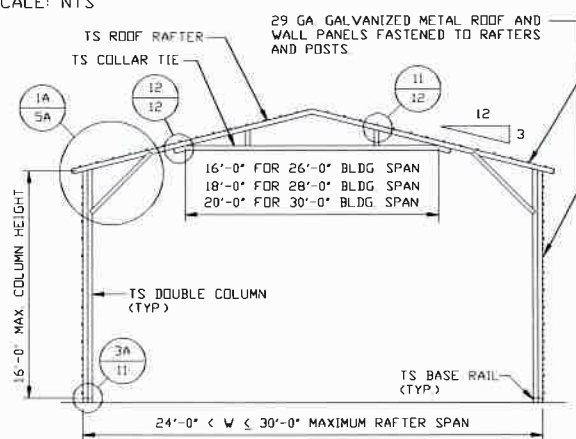
**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS

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EAGLE CARPORTS  
210 AIRPORT ROAD  
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30'-0"x20'-0" SP ENCLOSED STRUCTURE

DATE: 12-23-19

SHT. 4

SCALE: NTS

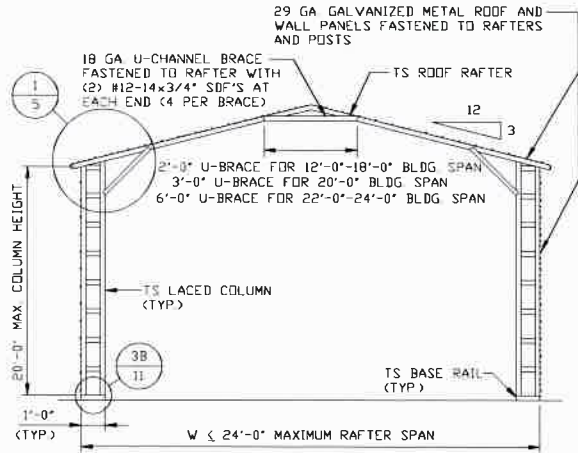
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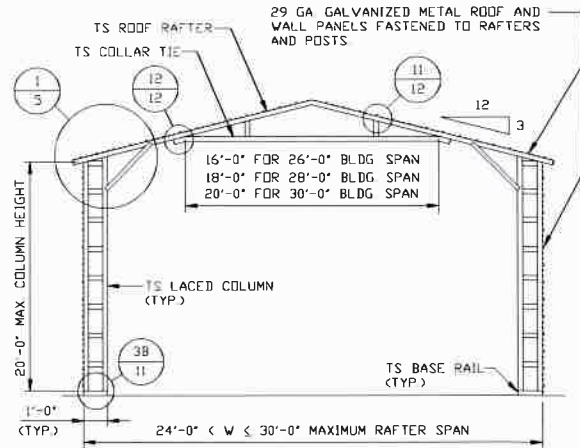
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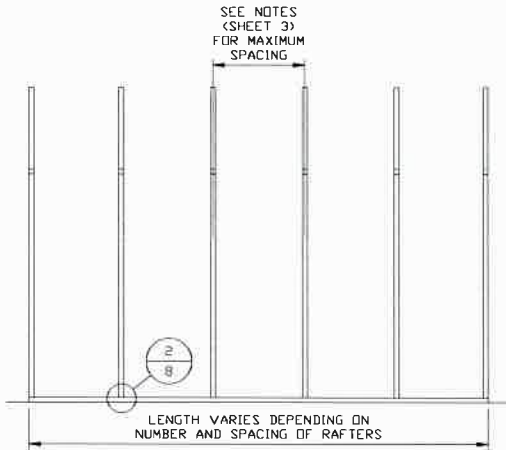
## EXPOSURE B



**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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**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SHT. 4A**

**SCALE: NTS**

**DWG. NO SK-3**

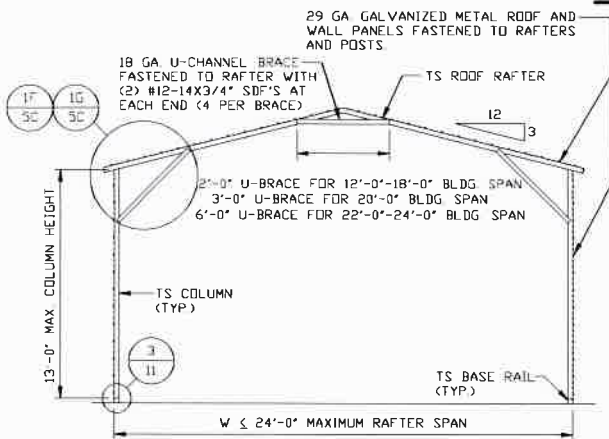
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**REV: 8**

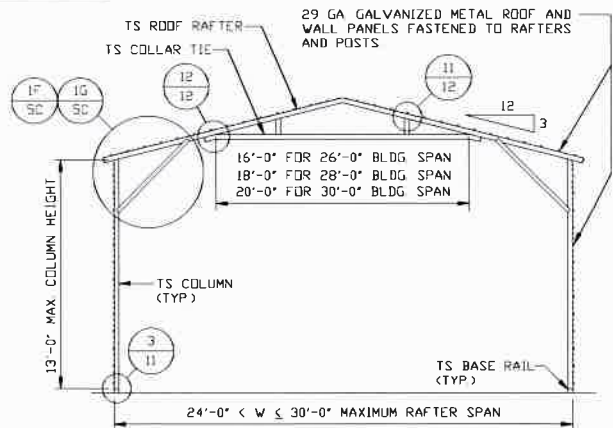
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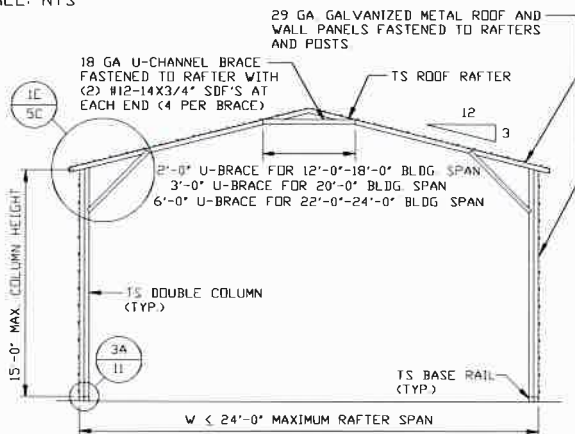
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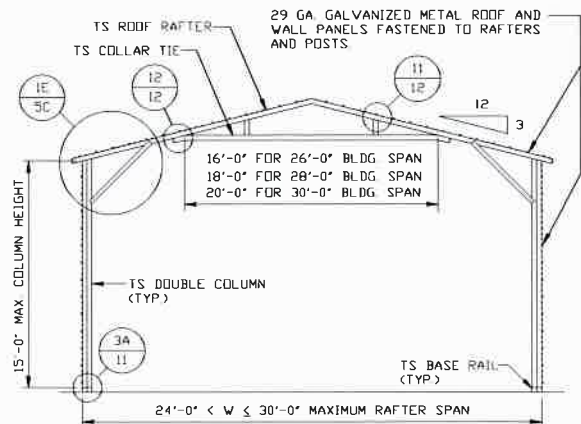
**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



**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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CLIENT: EAGLE CARPORTS

EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE

DATE: 12-23-19

SHT. 4B

SCALE: NTS

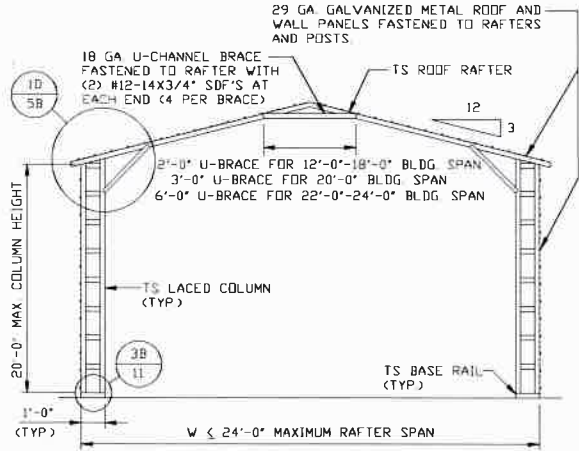
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JOB NO: 16166S/  
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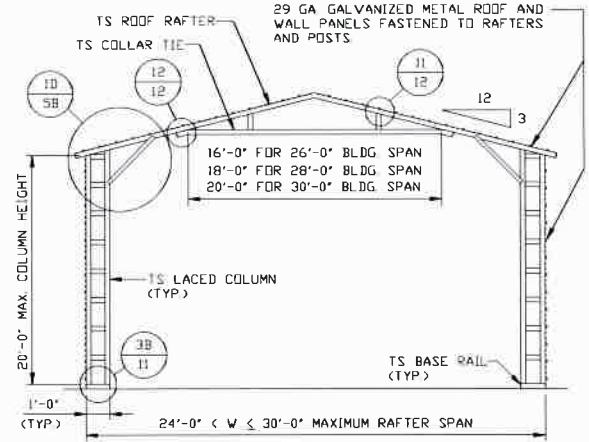
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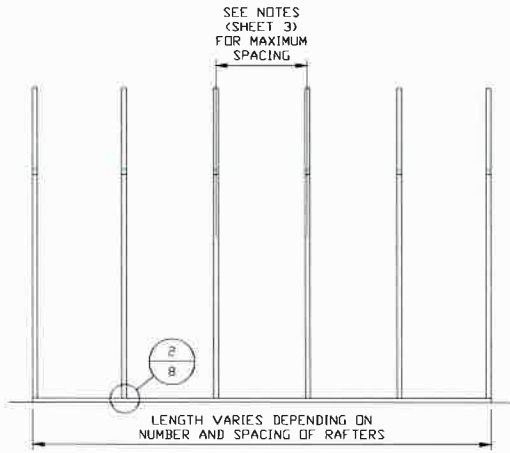
# EXPOSURE C



**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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**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
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**SHT. 4C**

**SCALE: NTS**

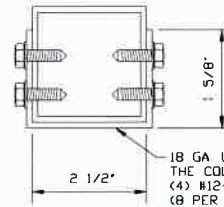
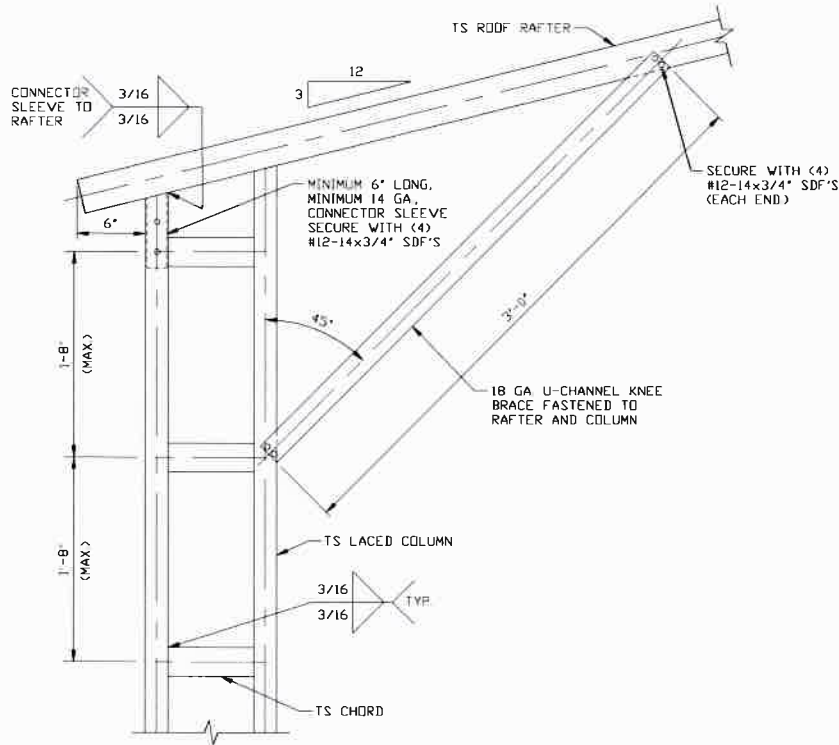
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# EXPOSURE B



**BRACE SECTION**  
SCALE: NTS

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

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**ENGINEERING AND CONSULTING, INC.**

**DRAWN BY: LT**

**CHECKED BY: PDH**

**EAGLE CARPORTS**  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE

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**CLIENT: EAGLE CARPORTS**

**DATE: 12-23-19**

**SHT. 5**

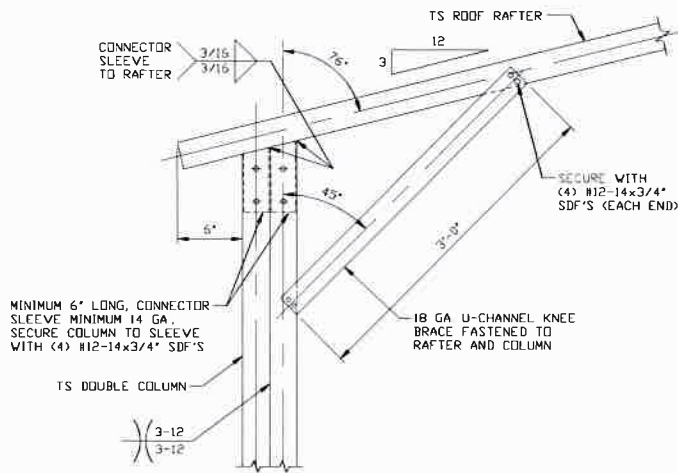
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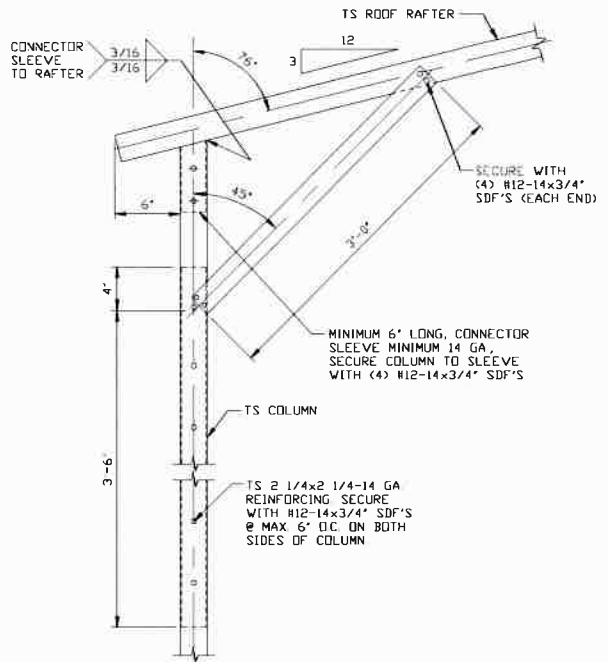
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**REV: 8**

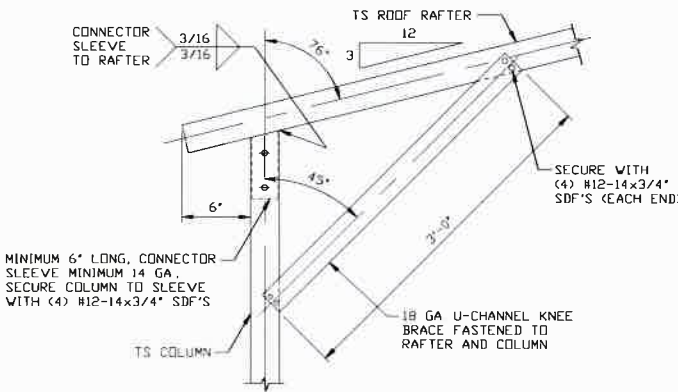
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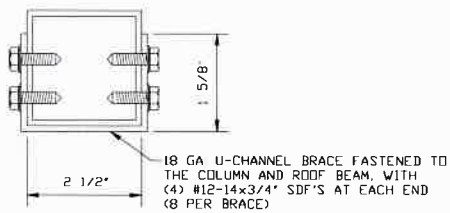
**1A** BOX EAVE RAFTER COLUMN CONNECTION  
DETAIL FOR HEIGHTS 15'-0" < TO <= 16'-0"  
SCALE: NTS



**1B** BOX EAVE RAFTER COLUMN CONNECTION  
DETAIL FOR HEIGHTS 12'-0" < TO <= 15'-0"  
SCALE: NTS



**1C** BOX EAVE RAFTER COLUMN  
CONNECTION DETAIL  
FOR HEIGHTS <= 12'-0"  
SCALE: NTS

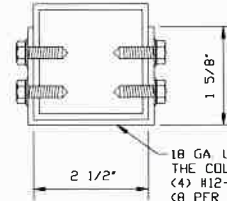
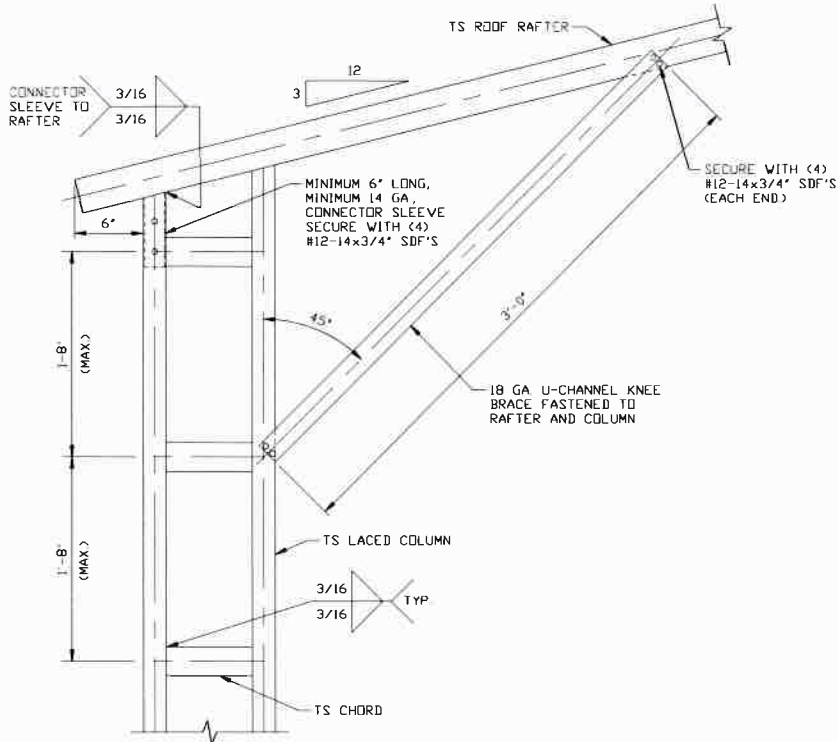


**BRACE SECTION**  
SCALE: NTS

<b>MOORE AND ASSOCIATES</b> <b>ENGINEERING AND CONSULTING, INC.</b>	<b>DRAWN BY:</b> LT	<b>EAGLE CARPORTS</b> 210 AIRPORT ROAD MOUNT AIRY, NC 27030 30'-0"x20'-0" SP ENCLOSED STRUCTURE		
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<b>CLIENT:</b> EAGLE CARPORTS	<b>SHT.</b> 5A	<b>DWG. NO:</b> SK-3	<b>REV:</b> 8	

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# EXPOSURE C



### BRACE SECTION

SCALE: NTS

18 GA U-CHANNEL BRACE FASTENED TO THE COLUMN AND ROOF BEAM, WITH (4) #12-14x3/4\"/>

1D

### BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 15'-0\"/>

SCALE: NTS

**MOORE AND ASSOCIATES  
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**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0\"/>**

**DATE: 12-23-19**

**SHT. 5B**

**SCALE: NTS**

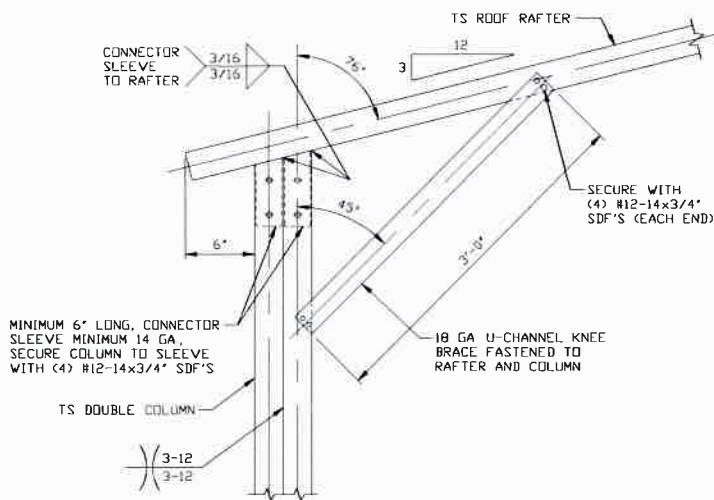
**DWG. NO: SK-3**

**JOB NO: 16166S/  
18012S/18260S/19320S**

**REV: 8**

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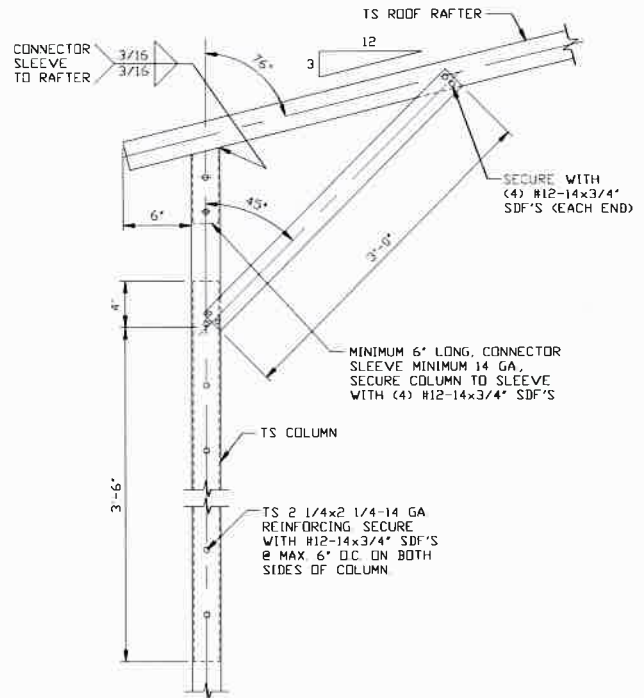
# EXPOSURE C



**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 13'-0" < TO <= 15'-0"**

1E

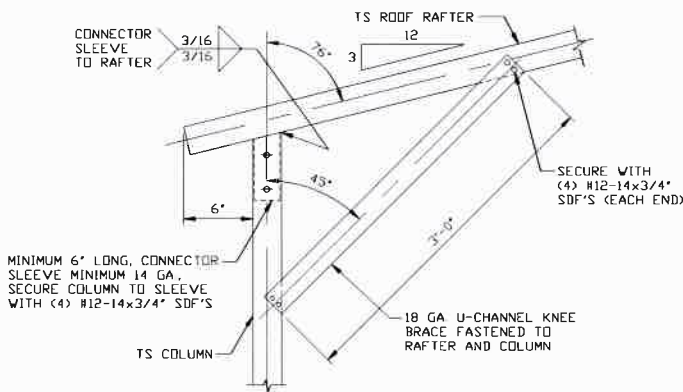
SCALE: NTS



**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 9'-0" < TO <= 13'-0"**

1F

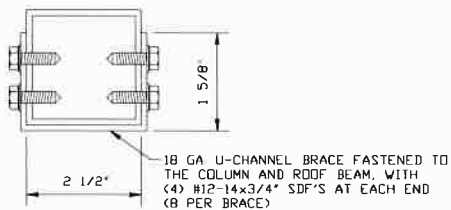
SCALE: NTS



**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS <= 9'-0"**

1G

SCALE: NTS



**BRACE SECTION**

SCALE: NTS

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

DRAWN BY: LT

CHECKED BY: PDH

PROJECT MGR: WSM

CLIENT: EAGLE CARPORTS

EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE

DATE: 12-23-19

SHT. 5C

SCALE: NTS

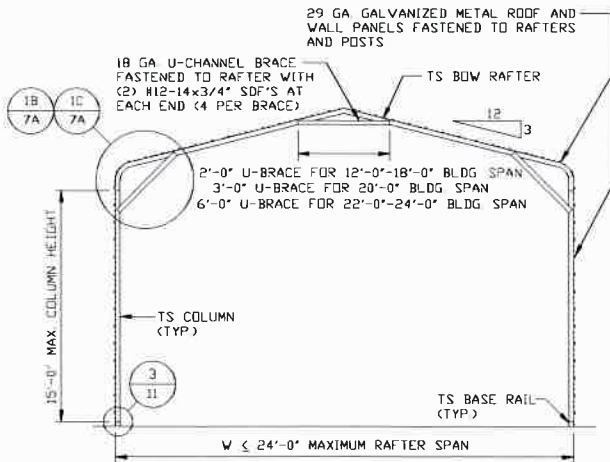
DWG. NO: SK-3

JOB NO: 16166S/  
18012S/18260S/19320S

REV: 8

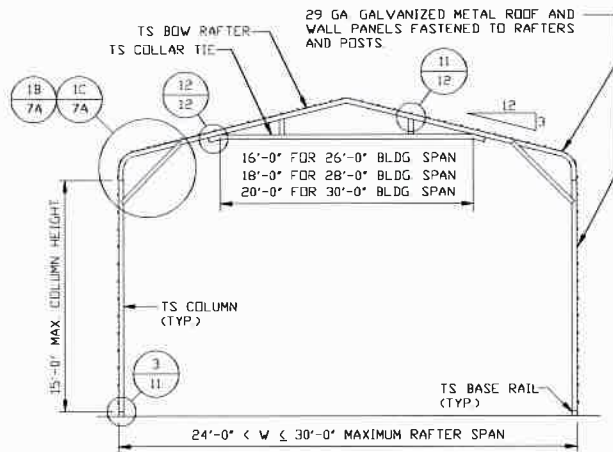
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## EXPOSURE B



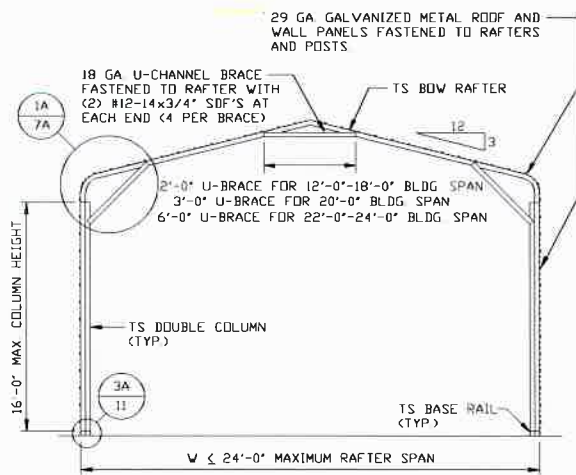
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SCALE: NTS



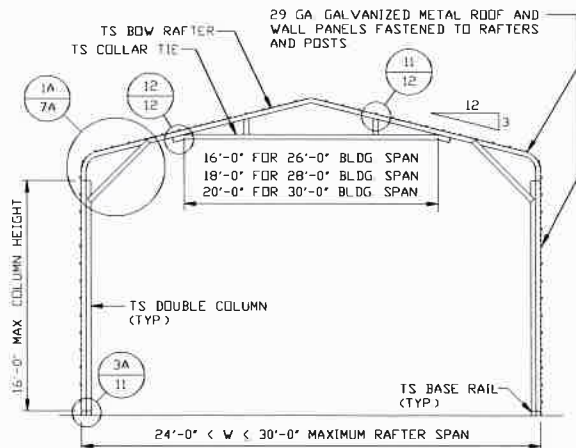
**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SHT. 6**

**SCALE: NTS**

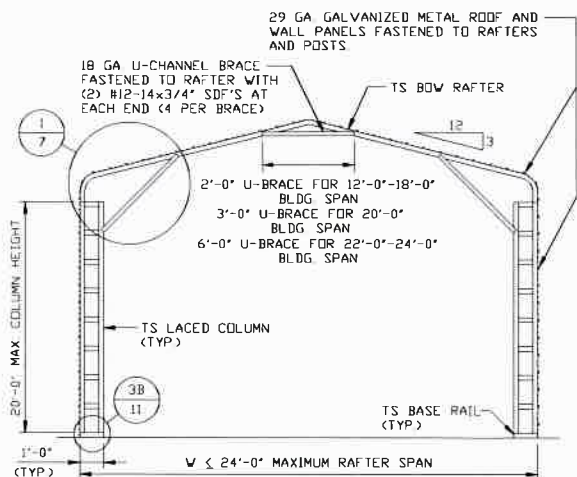
**DWG. NO SK-3**

**JOB NO: 16166S/  
18012S/18260S/19320S**

**REV: 8**

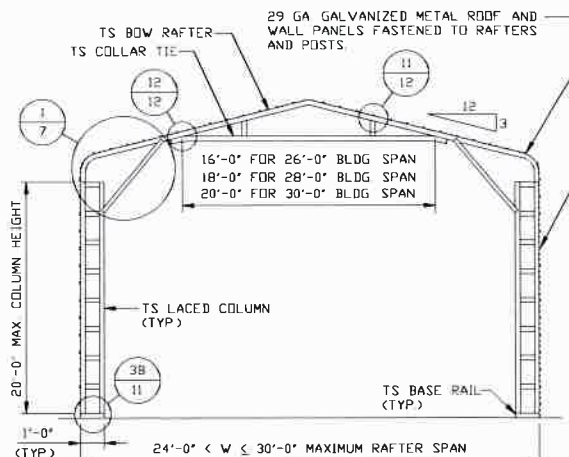
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## EXPOSURE B



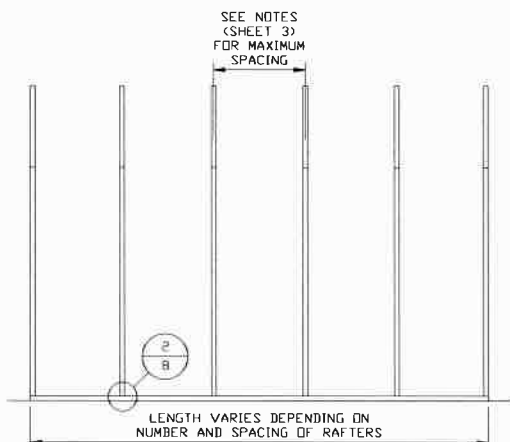
**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN FRAMING SIDE SECTION**

SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SHT. 6A**

**SCALE: NTS**

**DWG. NO: SK-3**

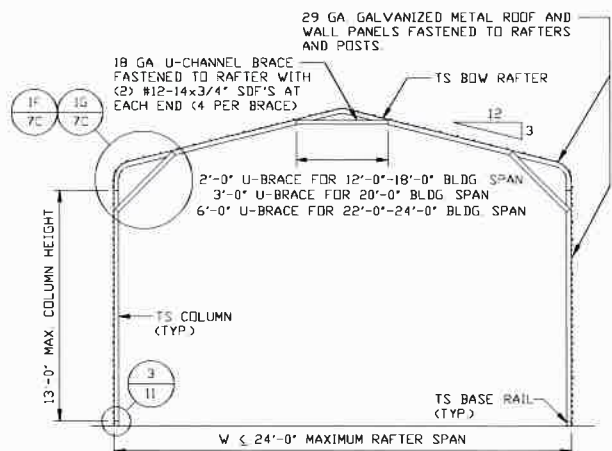
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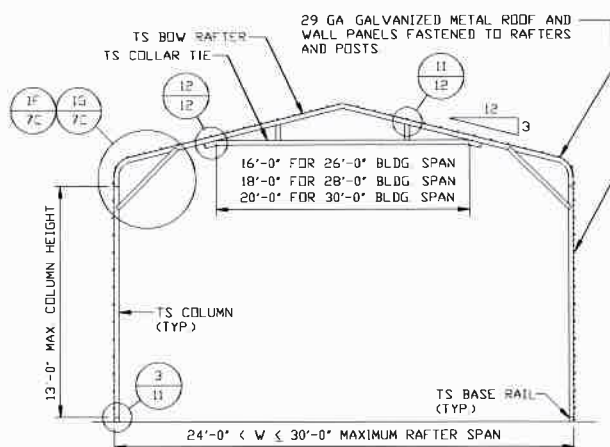


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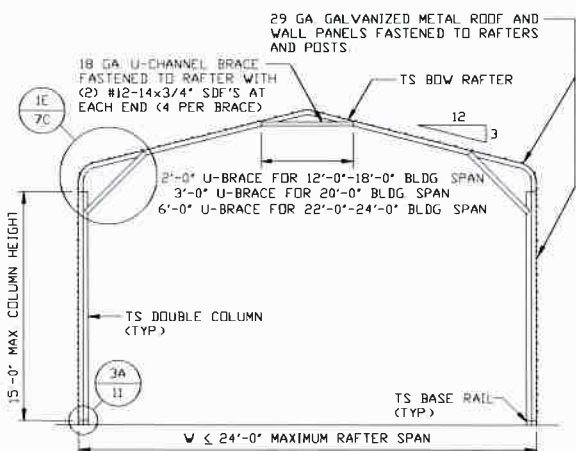
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SCALE: NTS



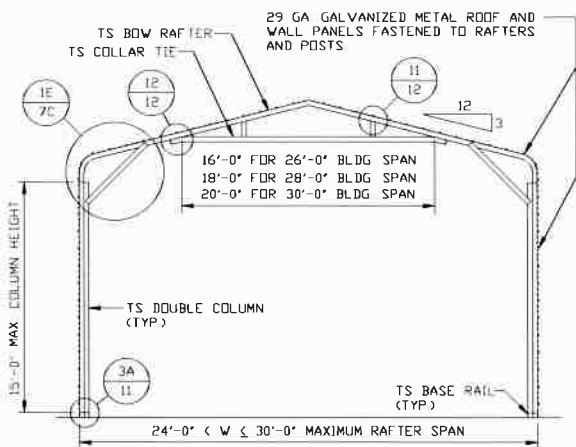
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SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS

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

**DRAWN BY:** LT  
**CHECKED BY:** PDH  
**PROJECT MGR:** WSM  
**CLIENT:** EAGLE CARPORTS

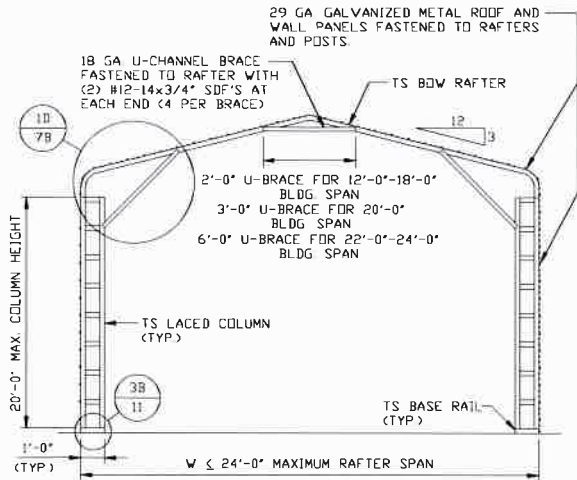
**EAGLE CARPORTS**  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE

**DATE:** 12-23-19  
**SCALE:** NTS  
**SHT.** 68  
**DWG. NO.:** SK-3  
**REV.:** 8

**JOB NO.:** 16166S/  
18012S/18260S/19320S

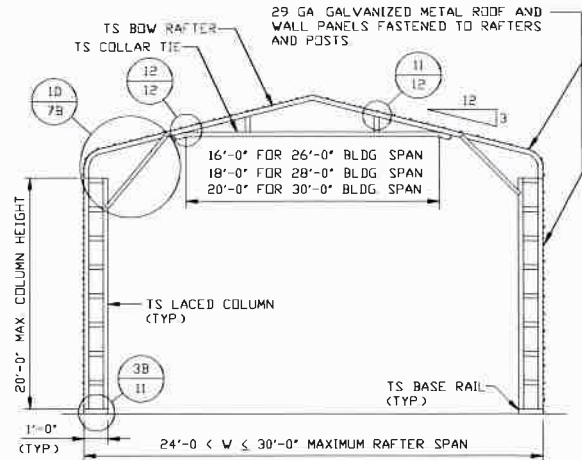
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# EXPOSURE C



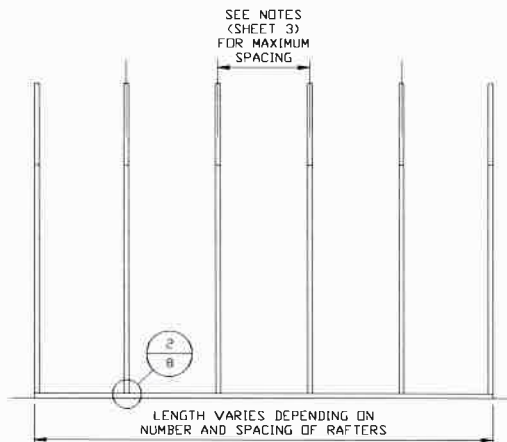
**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN FRAMING SIDE SECTION**

SCALE: NTS

**MOORE AND ASSOCIATES  
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**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
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MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SHT. 6C**

**SCALE: NTS**

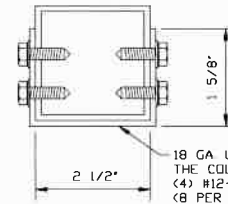
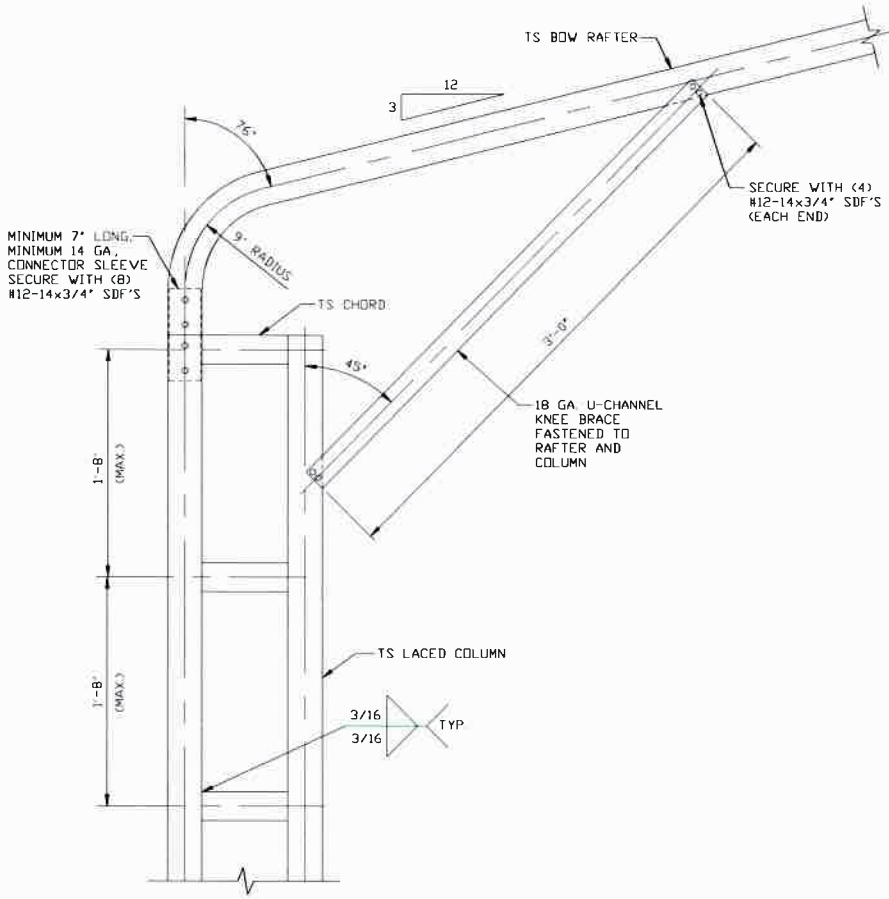
**DWG. NO: SK-3**

**JOB NO: 16166S/  
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# EXPOSURE B



### BRACE SECTION

SCALE: NTS

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

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS**  
 210 AIRPORT ROAD  
 MOUNT AIRY, NC 27030  
 30'-0"x20'-0" SP ENCLOSED STRUCTURE

**DATE: 12-23-19**

**SHT. 7**

**SCALE: NTS**

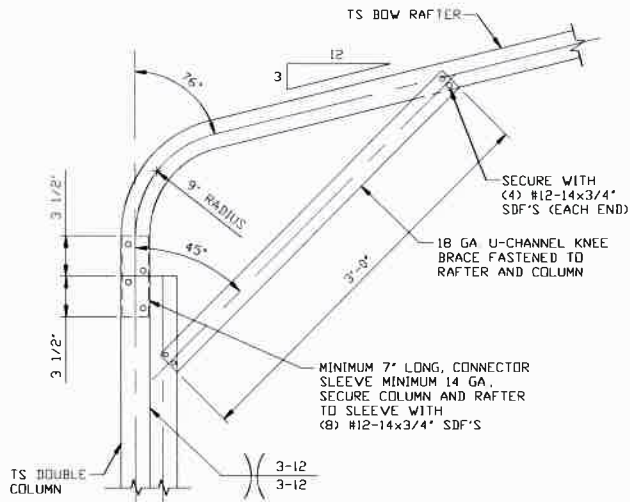
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**JOB NO: 16166S/  
18012S/18260S/19320S**

**REV: 8**

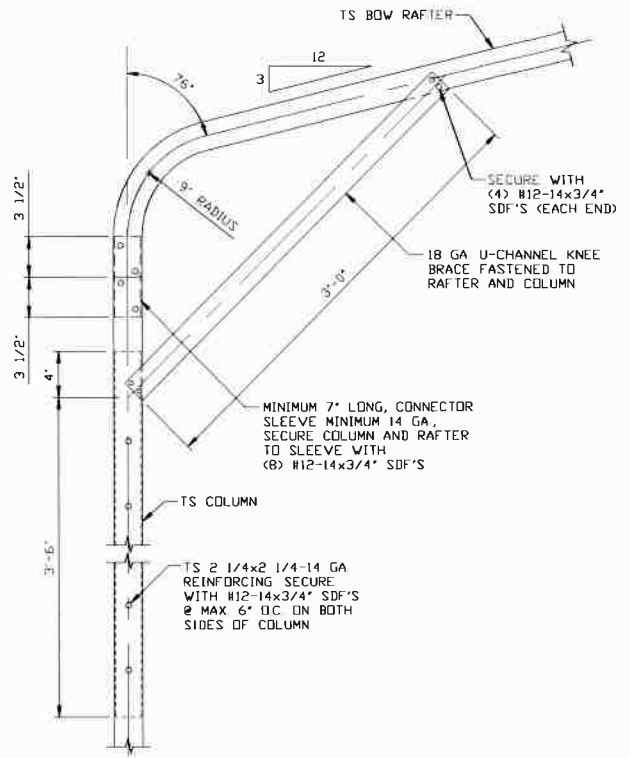
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# EXPOSURE B



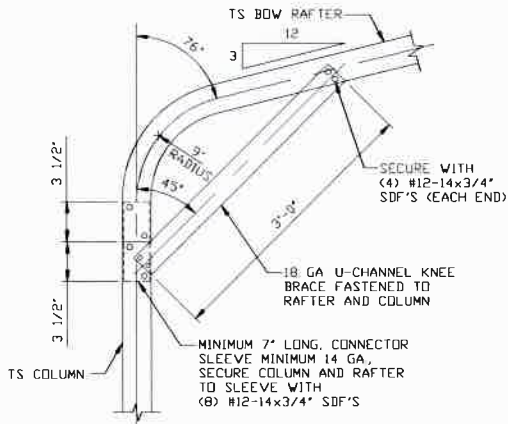
**1A**

**BOW EAVE RAFTER COLUMN CONNECTION  
DETAIL FOR HEIGHTS 15'-0" < TO ≤ 16'-0"**  
SCALE: NTS



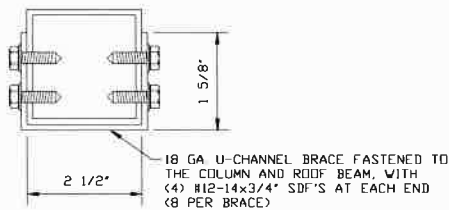
**1B**

**BOW EAVE RAFTER COLUMN  
CONNECTION DETAIL  
FOR HEIGHTS 12'-0" < TO ≤ 15'-0"**  
SCALE: NTS



**1C**

**BOW EAVE RAFTER COLUMN  
CONNECTION DETAIL  
FOR HEIGHTS ≤ 12'-0"**  
SCALE: NTS



**BRACE SECTION**  
SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SHT. 7A**

**SCALE: NTS**

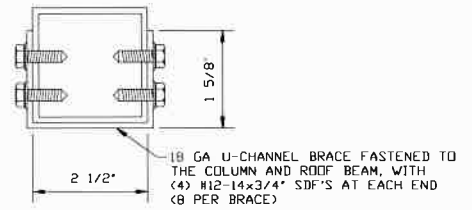
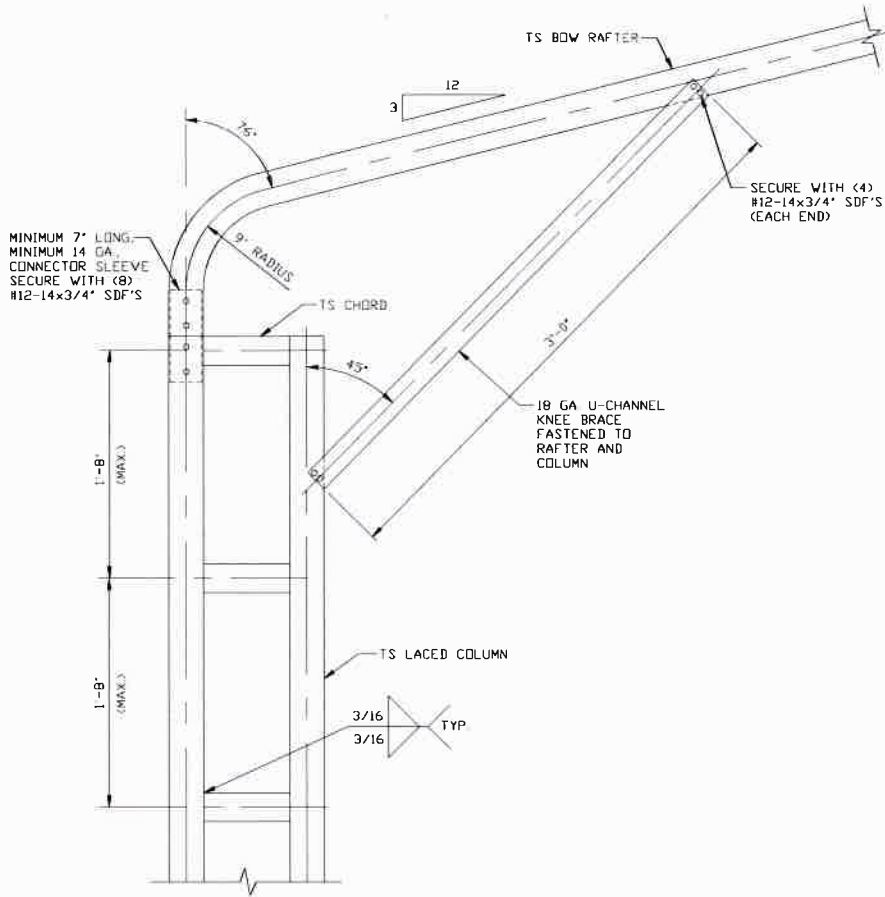
**DWG. NO SK-3**

**JOB NO: 16166S/  
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# EXPOSURE C



**BRACE SECTION**  
SCALE: NTS

**1D BOW EAVE RAFTER COLUMN CONNECTION**  
**DETAIL FOR HEIGHTS 15'-0" < TO ≤ 20'-0"**  
SCALE: NTS

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

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**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS**  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE

**DATE: 12-23-19**

**SHT. 7B**

**SCALE: NTS**

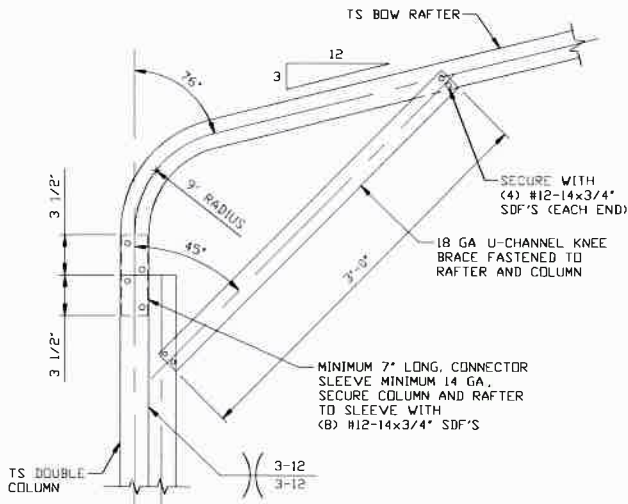
**DWG. NO. SK-3**

**JOB NO: 16166S/  
18012S/18260S/19320S**

**REV: 8**

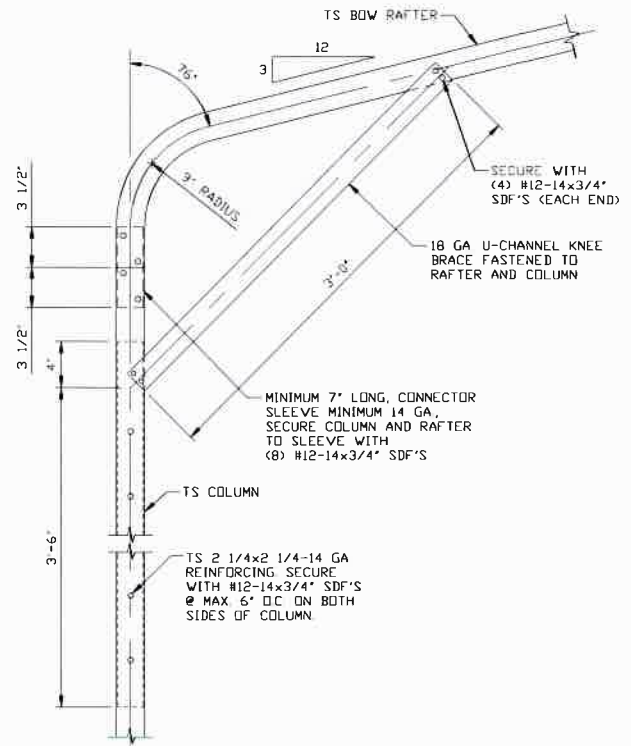
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# EXPOSURE C



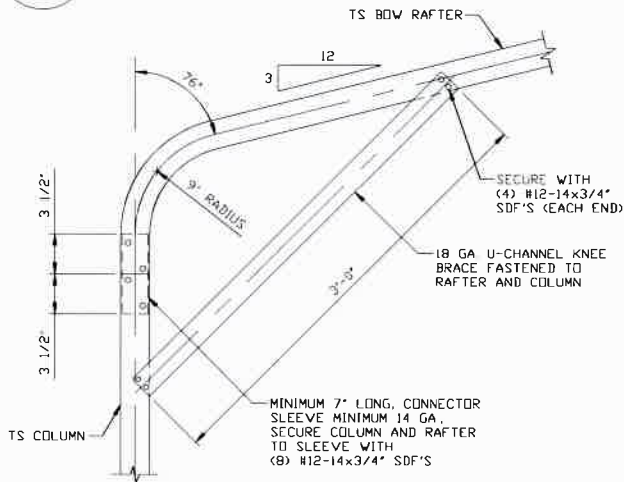
**BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 13'-0" < TO <= 15'-0"**  
SCALE: NTS

1E



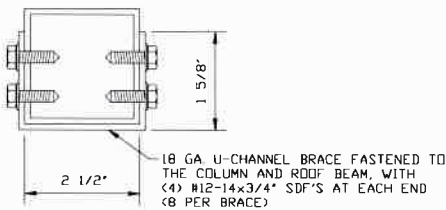
**BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 9'-0" < TO <= 13'-0"**  
SCALE: NTS

1F



**BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS <= 9'-0"**  
SCALE: NTS

1G



**BRACE SECTION**  
SCALE: NTS

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

DRAWN BY: LT

CHECKED BY: PDH

PROJECT MGR: WSH

CLIENT: EAGLE CARPORTS

EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE

DATE: 12-23-19

SHT. 7C

SCALE: NTS

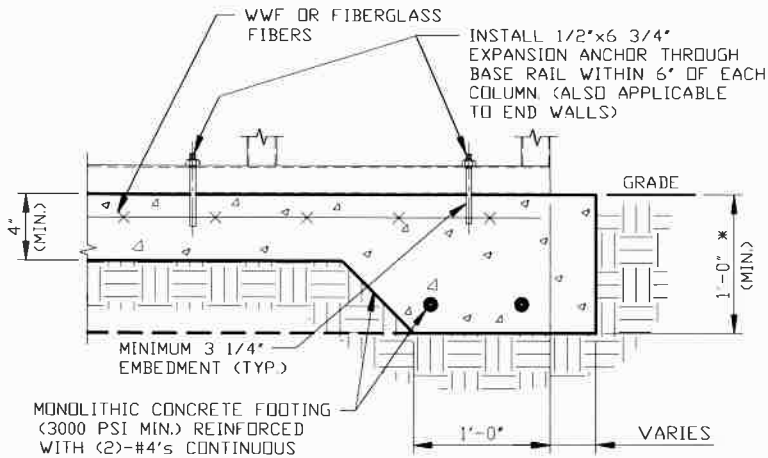
DWG. NO: SK-3

JOB NO: 16166S/  
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## BASE RAIL ANCHORAGE OPTIONS

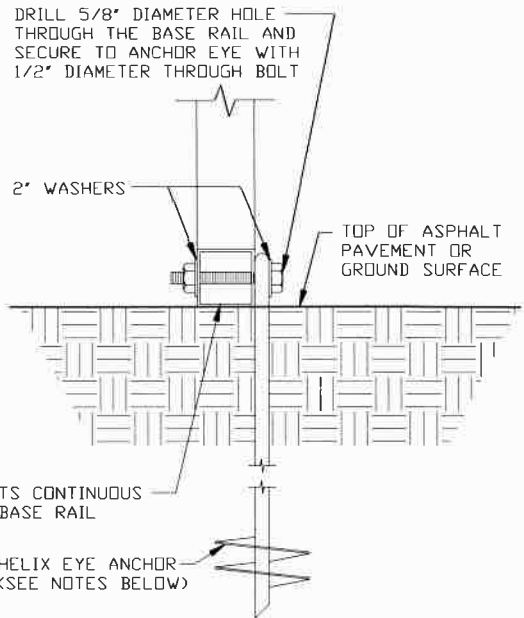


2A

### 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.



2B

### GROUND BASE HELIX ANCHORAGE

SCALE: NTS (CAN BE USED FOR ASPHALT)

## 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.

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

DRAWN BY: LT

CHECKED BY: PDH

PROJECT MGR: WSM

CLIENT: EAGLE CARPORTS

EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE

DATE: 12-23-19

SHT. 8

SCALE: NTS

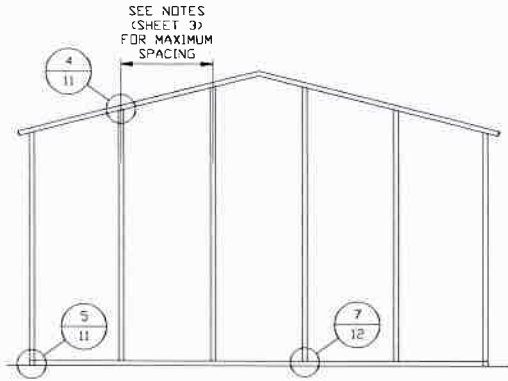
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JOB NO: 16166S/  
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REV: 8

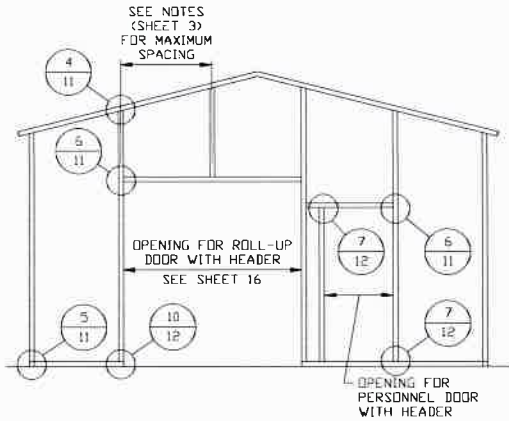
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## BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



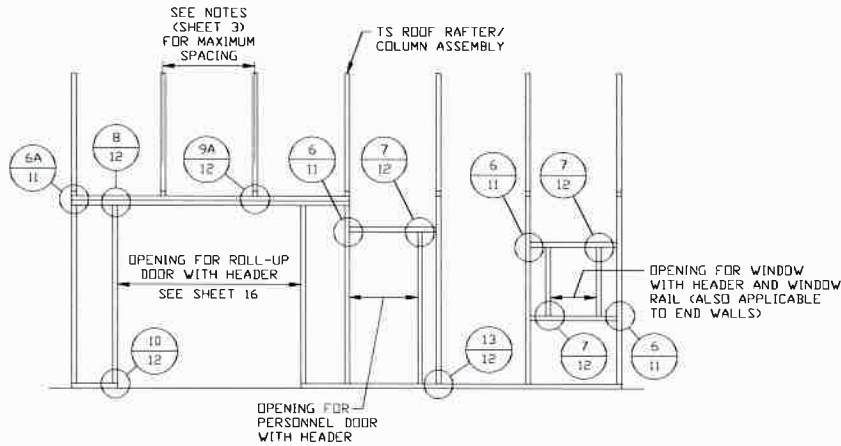
**TYPICAL BOX EAVE RAFTER  
END WALL FRAMING SECTION**

SCALE: NTS



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

SCALE: NTS



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

SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0" x 20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SHT. 9**

**SCALE: NTS**

**DWG. NO: SK-3**

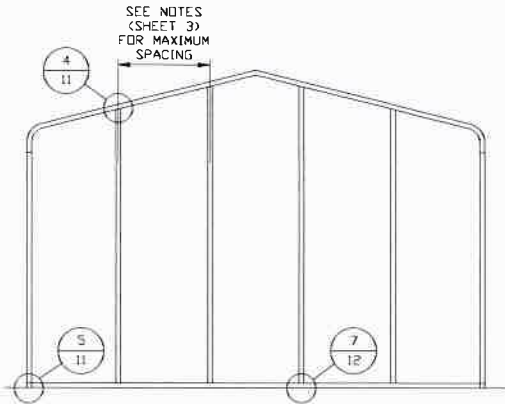
**JOB NO: 16166S/  
18012S/18260S/19320S**

**REV: 0**

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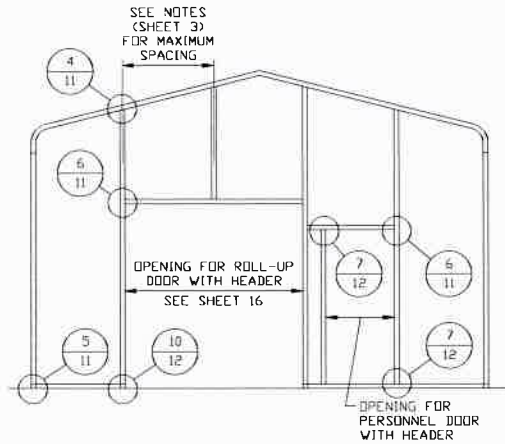


## BOW RAFTER END WALL AND SIDE WALL OPENINGS



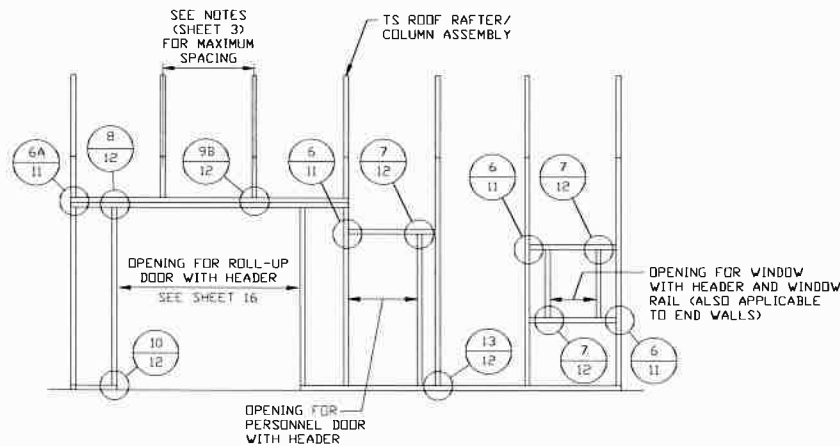
**TYPICAL BOW RAFTER  
END WALL FRAMING SECTION**

SCALE: NTS



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

SCALE: NTS



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

SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0" x 20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SHT. 10**

**SCALE: NTS**

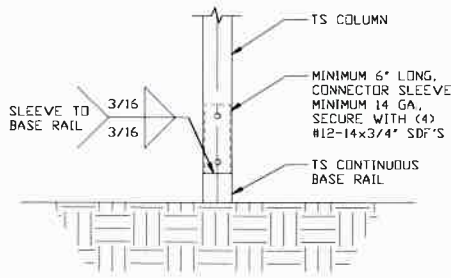
**DWG. NO: SK-3**

**JOB NO: 16166S/  
18012S/18260S/19320S**

**REV: 8**

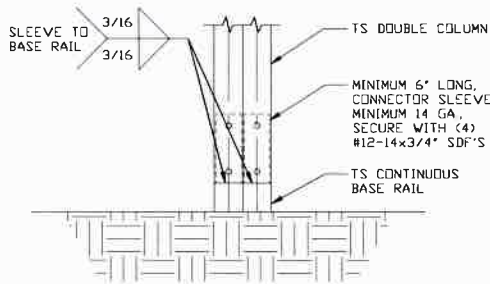
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# CONNECTION DETAILS



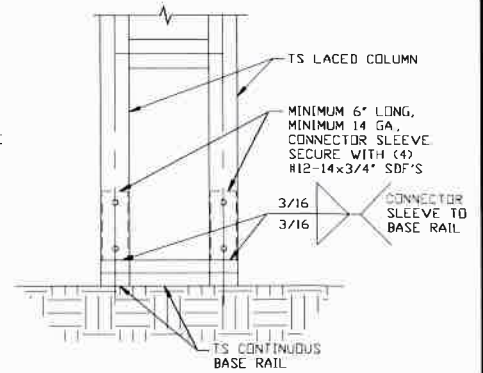
**3**  
**RAFTER COLUMN/  
 BASE RAIL  
 CONNECTION DETAIL**

SCALE: NTS



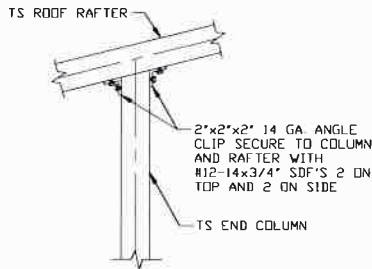
**3A**  
**RAFTER COLUMN/  
 BASE RAIL  
 CONNECTION DETAIL**

SCALE: NTS



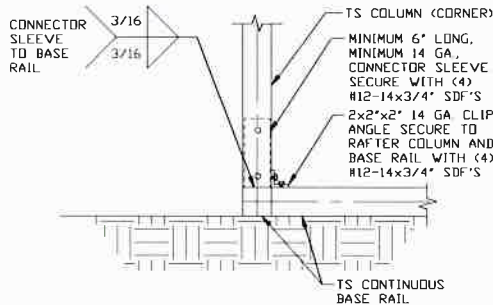
**3B**  
**RAFTER COLUMN/  
 BASE RAIL  
 CONNECTION DETAIL**

SCALE: NTS



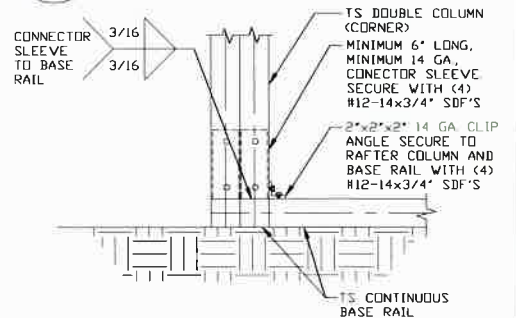
**4**  
**END COLUMN/RAFTER  
 CONNECTION DETAIL**

SCALE: NTS



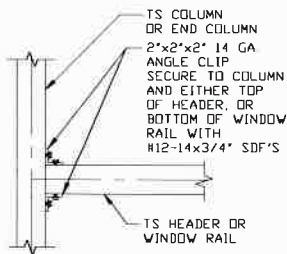
**5**  
**END COLUMN/BASE RAIL  
 CONNECTION DETAIL**

SCALE: NTS



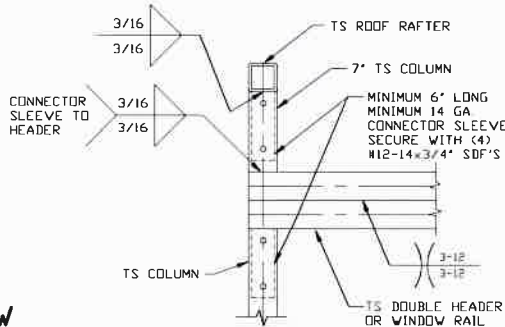
**5A**  
**END COLUMN/BASE RAIL  
 CONNECTION DETAIL**

SCALE: NTS



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

SCALE: NTS



**6A**  
**COLUMN OR WINDOW  
 RAIL TO POST  
 CONNECTION DETAIL**

SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
 210 AIRPORT ROAD  
 MOUNT AIRY, NC 27030  
 30-0"x20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SHT. 11**

**SCALE: NTS**

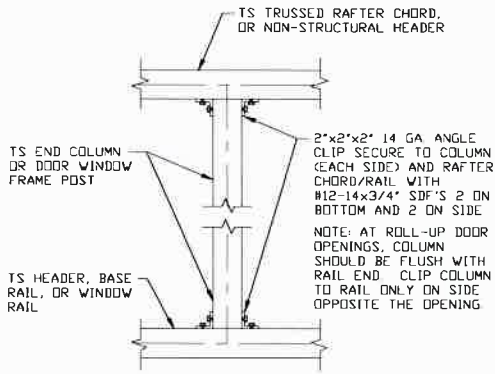
**DWG. NO: SK-3**

**JOB NO: 16166S/  
 18012S/18260S/19320S**

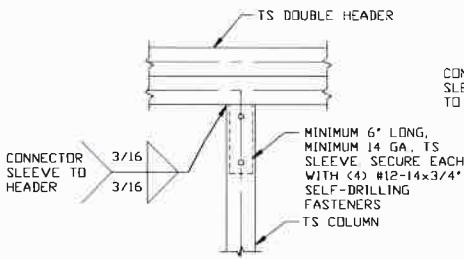
**REV: 8**

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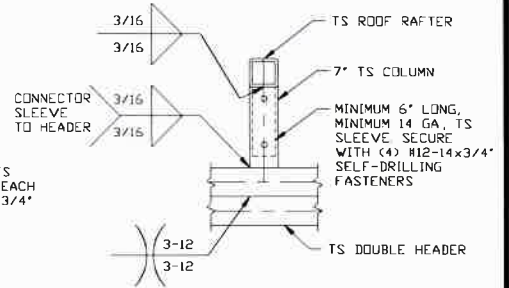
# CONNECTION DETAILS



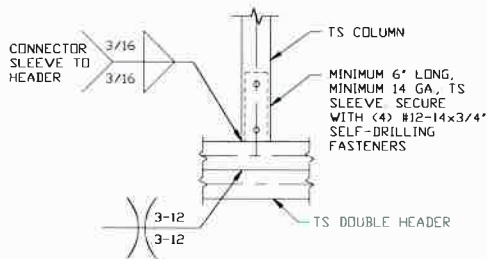
**7** COLUMN TO WINDOW RAIL CONNECTION DETAIL  
SCALE: NTS



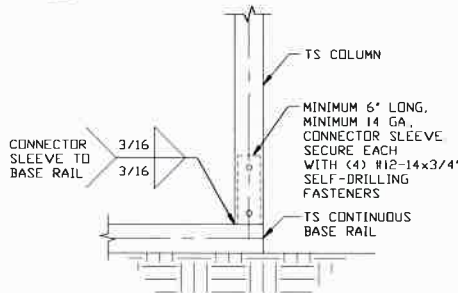
**8** DOUBLE HEADER/COLUMN CONNECTION DETAIL  
SCALE: NTS



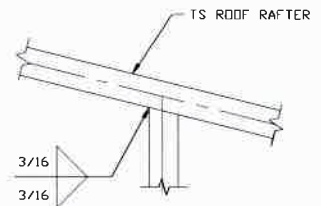
**9A** COLUMN/DOUBLE HEADER CONNECTION DETAIL  
SCALE: NTS



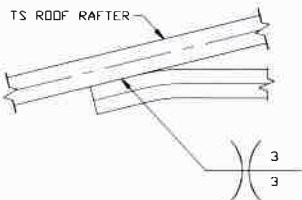
**9B** COLUMN/DOUBLE HEADER CONNECTION DETAIL  
SCALE: NTS



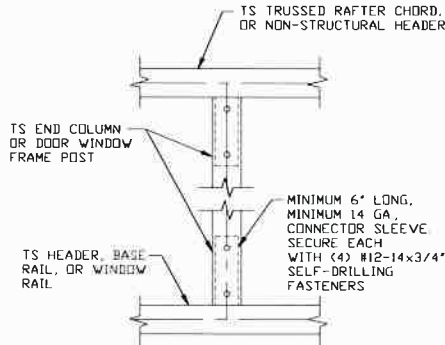
**10** COLUMN/BASE RAIL CONNECTION DETAIL  
SCALE: NTS



**11** RAFTER TO CHORD CONNECTION DETAIL  
SCALE: NTS



**12** COLLAR TIE CONNECTION DETAIL  
SCALE: NTS



**13** COLUMN TO HEADER OR BASE RAIL CONNECTION DETAIL  
SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0" x 20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SHT. 12**

**SCALE: NTS**

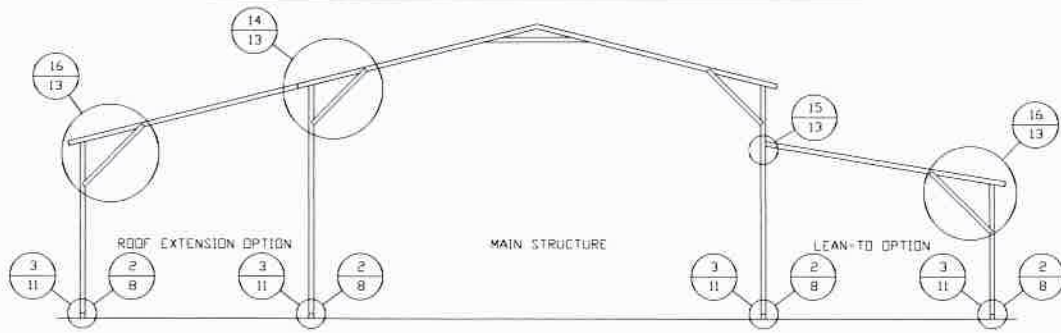
**DWG. NO: SK-3**

**JOB NO: 16166S/  
118012S/18260S/19320S**

**REV: 8**

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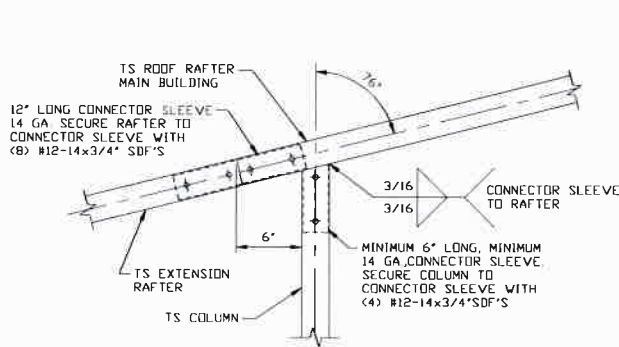
# BOX EAVE RAFTER LEAN-TO OPTIONS



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

SCALE: NTS

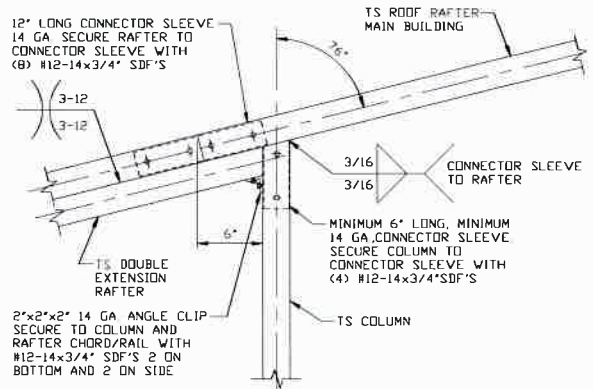
MAXIMUM WIDTH OF SINGLE MEMBER (RAFTER AND COLUMN) ROOF EXTENSION AND LEAN-TO IS 12'-0"  
 MAXIMUM WIDTH OF DOUBLE MEMBER (RAFTER AND COLUMN) ROOF EXTENSION AND LEAN-TO IS 15'-0"



### SIDE EXTENSION RAFTER/ COLUMN DETAIL FOR RAFTER SPANS $\leq$ 12'-0"

14

SCALE: NTS



### SIDE EXTENSION RAFTER/ COLUMN DETAIL FOR RAFTER SPANS 12'-0" < TO $\leq$ 15'-0"

14A

SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SHT. 13**

**SCALE: NTS**

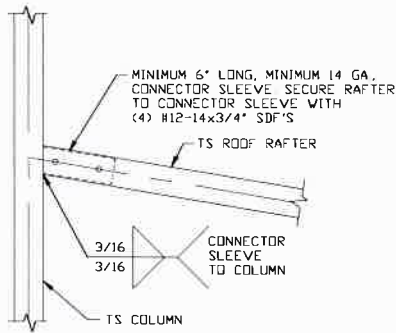
**DWG. NO: SK-3**

**JOB NO: 16166S/  
18012S/18260S/19320S**

**REV: 8**

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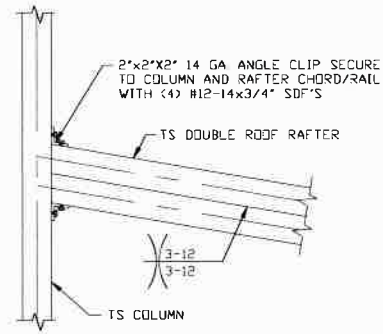
## BOX EAVE RAFTER LEAN-TO OPTIONS



15

**LEAN-TO RAFTER TO RAFTER  
COLUMN CONNECTION DETAIL  
FOR RAFTER SPANS  $\leq 12'-0"$**

SCALE: NTS



15A

**LEAN-TO RAFTER TO RAFTER  
COLUMN CONNECTION DETAIL  
FOR RAFTER SPANS  $12'-0" < TO \leq 15'-0"$**

SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30-0"x20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SHT. 13A**

**SCALE: NTS**

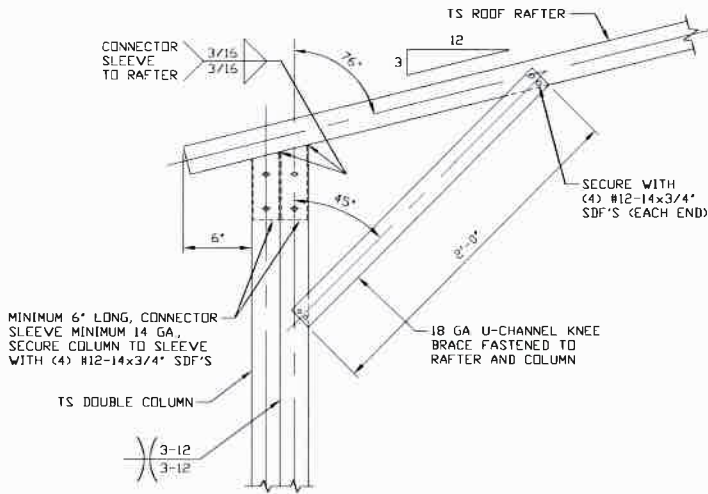
**DWG. NO: SK-3**

**JOB NO: 16166S/  
18012S/18260S/19320S**

**REV: 8**

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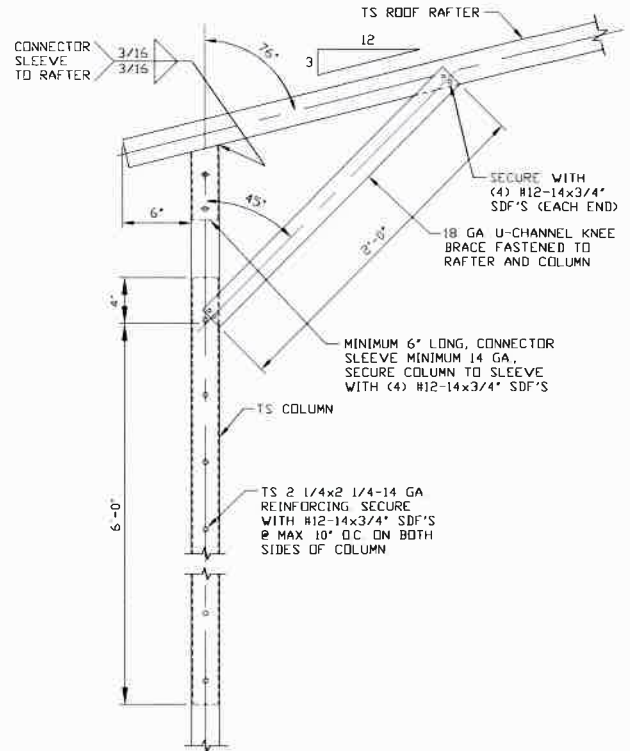
# BOX EAVE RAFTER LEAN-TO OPTION - EXPOSURE B



16

## BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 15'-0" < TO ≤ 16'-0"

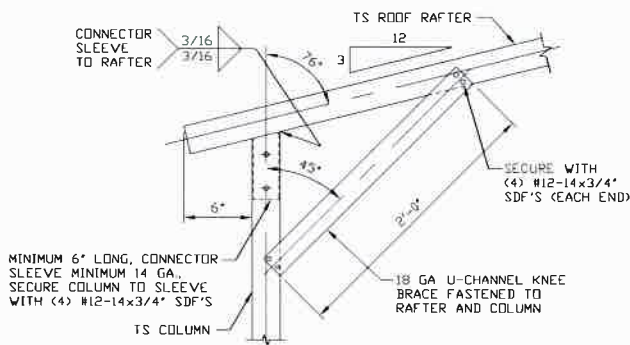
SCALE: NTS  
HORSE BARN OPTION (REQUIRES A LEAN-TO ON BOTH SIDES OF THE MAIN BUILDING).



16A

## BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 14'-0" < TO ≤ 15'-0"

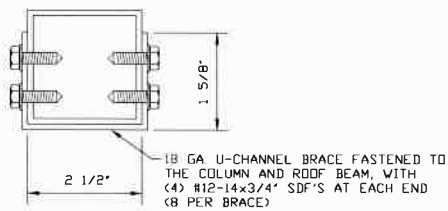
SCALE: NTS  
HORSE BARN OPTION (REQUIRES A LEAN-TO ON BOTH SIDES OF THE MAIN BUILDING).



16B

## BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS ≤ 14'-0"

SCALE: NTS  
HORSE BARN OPTION (REQUIRES A LEAN-TO ON BOTH SIDES OF THE MAIN BUILDING).



### BRACE SECTION

SCALE: NTS

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

DRAWN BY: LT

CHECKED BY: PDH

PROJECT MGR: WSH

CLIENT: EAGLE CARPORTS

EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE

DATE: 12-23-19

SHT. 13B

SCALE: NTS

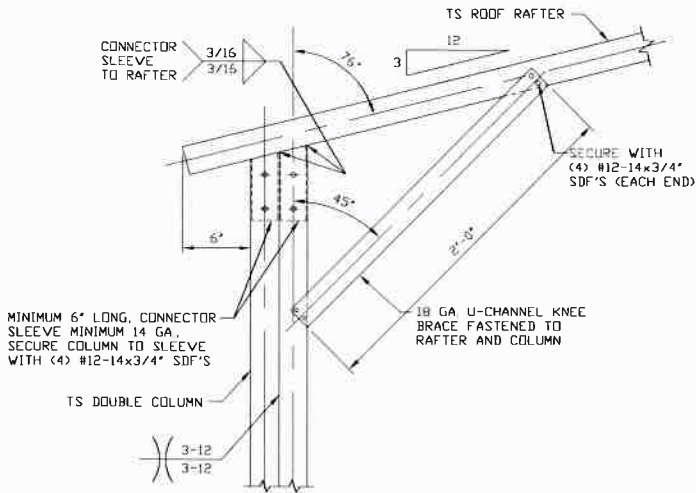
DWG. NO: SK-3

JOB NO: 16166S/  
18012S/18260S/19320S

REV: 8

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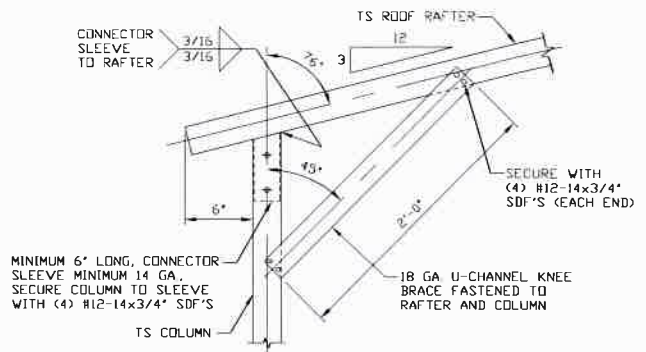
## BOX EAVE RAFTER LEAN-TO OPTION - EXPOSURE C



**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 13'-0" < TO ≤ 16'-0"**

16C

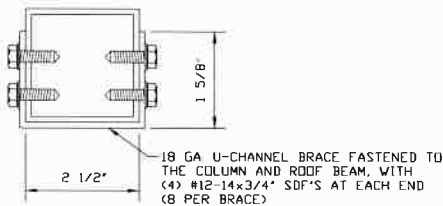
SCALE: NTS  
HORSE BARN OPTION (REQUIRES A LEAN-TO ON BOTH SIDES OF THE MAIN BUILDING).



**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS ≤ 13'-0"**

16D

SCALE: NTS  
HORSE BARN OPTION (REQUIRES A LEAN-TO ON BOTH SIDES OF THE MAIN BUILDING).



**BRACE SECTION**

SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SCALE: NTS**

**SHT. 13C**

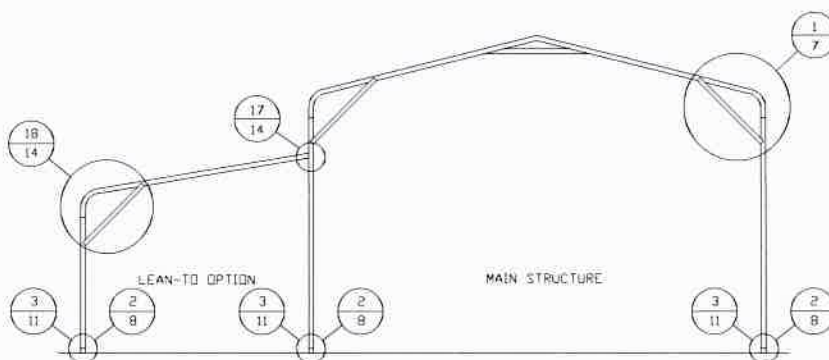
**DWG. NO: SK-3**

**JOB NO: 16166S/  
18012S/18260S/19320S**

**REV: 8**

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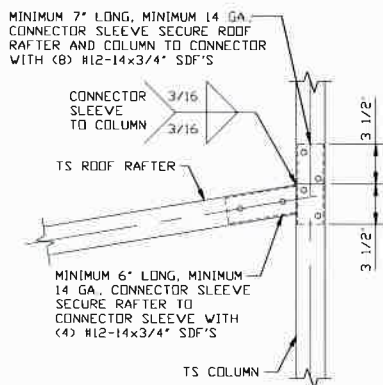
# BOW RAFTER LEAN-TO OPTION



## TYPICAL BOW RAFTER LEAN-TO OPTION FRAMING SECTION

SCALE: NTS

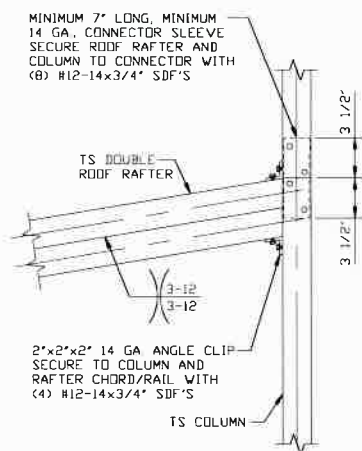
MAXIMUM WIDTH OF SINGLE MEMBER (RAFTER AND COLUMN) ROOF EXTENSION AND LEAN-TO IS 12'-0"  
 MAXIMUM WIDTH OF DOUBLE MEMBER (RAFTER AND COLUMN) ROOF EXTENSION AND LEAN-TO IS 15'-0"



### LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS $\leq$ 12'-0"

17

SCALE: NTS



### LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 12'-0" < TO $\leq$ 15'-0"

17A

SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

EAGLE CARPORTS  
 210 AIRPORT ROAD  
 MOUNT AIRY, NC 27030  
 30'-0"x20'-0" SP ENCLOSED STRUCTURE

**DATE: 12-23-19**

**SHT. 14**

**SCALE: NTS**

**DWG. NO SK-3**

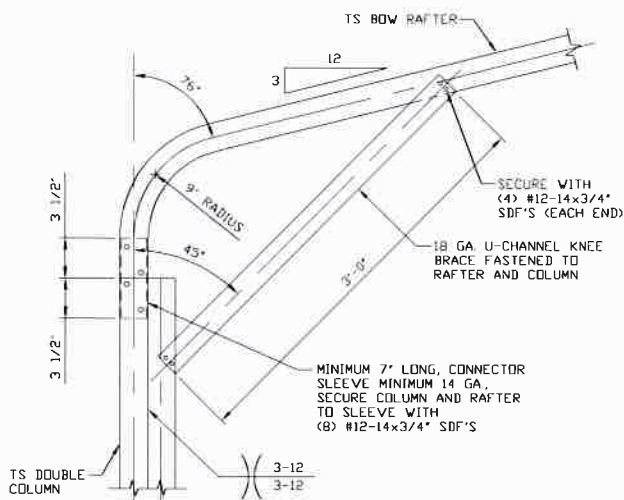
**JOB NO: 16166S/  
 18012S/18260S/19320S**

**REV: 8**

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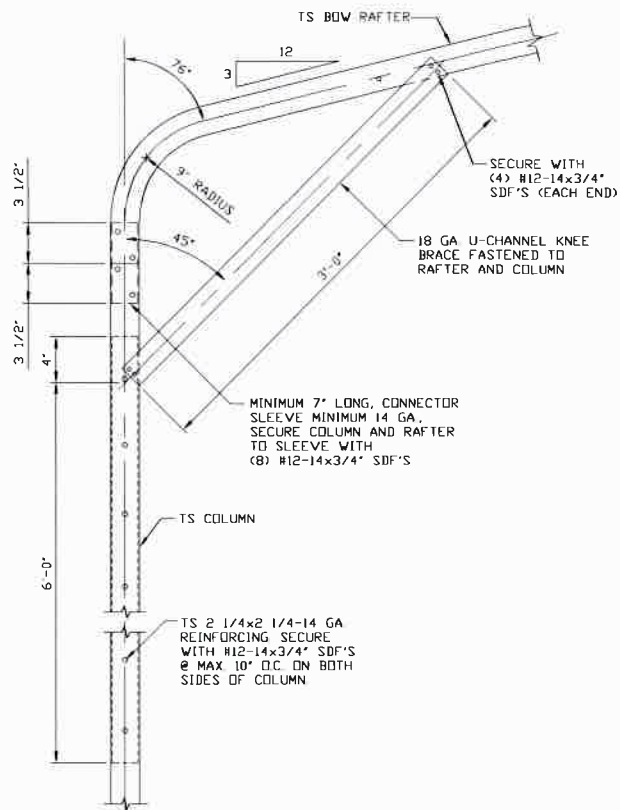


## BOW RAFTER LEAN-TO OPTION - EXPOSURE B



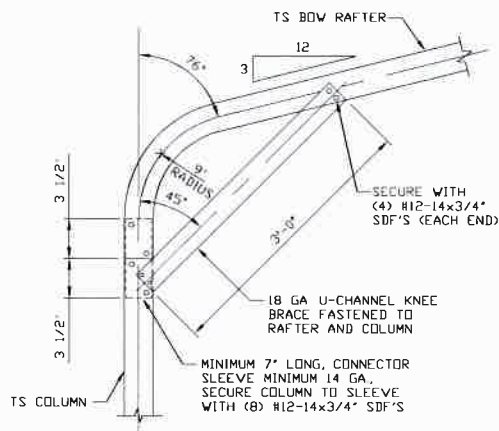
### 18 BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 15'-0" < TO ≤ 16'-0"

SCALE: NTS  
HORSE BARN OPTION (REQUIRES A LEAN-TO ON BOTH SIDES OF THE MAIN BUILDING)



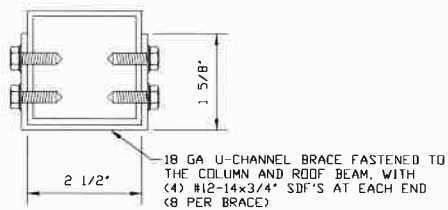
### 18A BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 14'-0" < TO ≤ 15'-0"

SCALE: NTS  
HORSE BARN OPTION (REQUIRES A LEAN-TO ON BOTH SIDES OF THE MAIN BUILDING)



### 18B BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS ≤ 14'-0"

SCALE: NTS  
(HORSE BARN OPTION (REQUIRES A LEAN-TO ON BOTH SIDES OF THE MAIN BUILDING))



**BRACE SECTION**  
SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30-0"x20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SCALE: NTS**

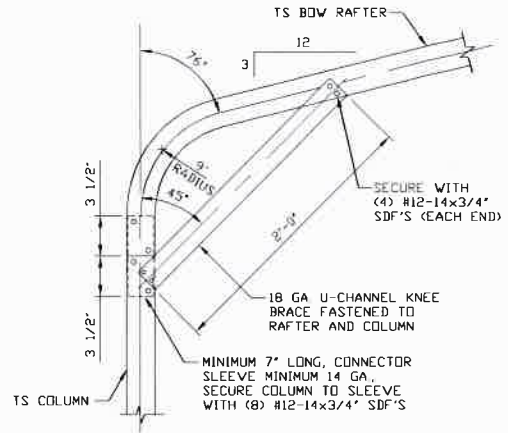
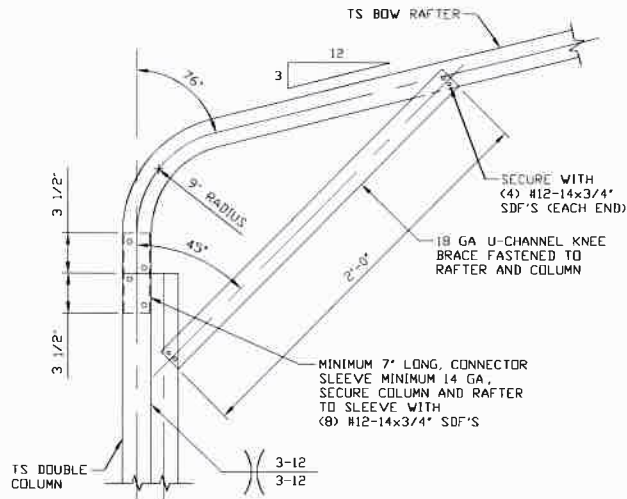
**DWG. NO: SK-3**

**JOB NO: 16166S/  
18012S/18260S/19320S**

**REV: 8**

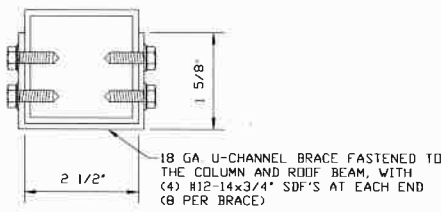
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## BOW RAFTER LEAN-TO OPTION - EXPOSURE C



**18C** BOW EAVE RAFTER COLUMN CONNECTION  
DETAIL FOR HEIGHTS 13'-0" < TO ≤ 16'-0"  
SCALE: NTS  
HORSE BARN OPTION (REQUIRES A LEAN-TO  
ON BOTH SIDES OF THE MAIN BUILDING)

**18D** BOW EAVE RAFTER COLUMN  
CONNECTION DETAIL  
FOR HEIGHTS ≤ 13'-0"  
SCALE: NTS  
HORSE BARN OPTION (REQUIRES A LEAN-TO  
ON BOTH SIDES OF THE MAIN BUILDING)

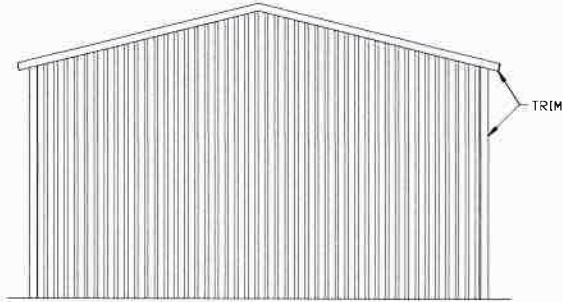


**BRACE SECTION**  
SCALE: NTS

<b>MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.</b>	DRAWN BY: LT	EAGLE CARPORTS 210 AIRPORT ROAD MOUNT AIRY, NC 27030 30'-0"x20'-0" SP ENCLOSED STRUCTURE		
	CHECKED BY: PDH			
PROJECT MGR: VSM	DATE: 12-23-19	SCALE: NTS	JOB NO: 16166S/ 18012S/18260S/19320S	
CLIENT: EAGLE CARPORTS	SHT. 14B	DWG. NO: SK-3	REV: 8	

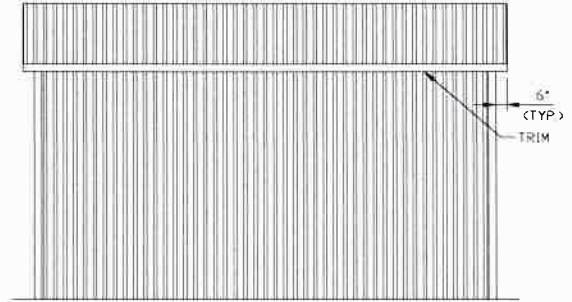
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# BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



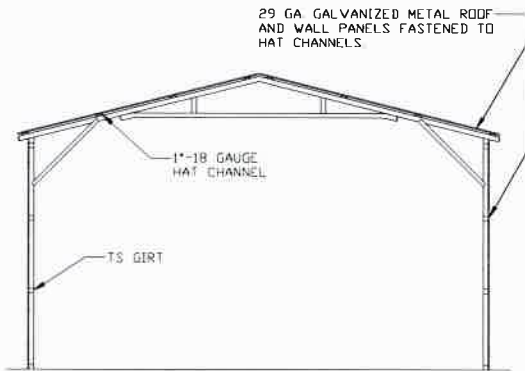
**TYPICAL END ELEVATION  
VERTICAL ROOF/SIDING**

SCALE: NTS



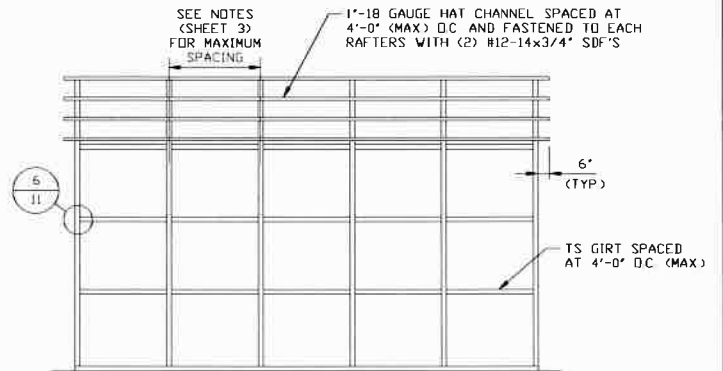
**TYPICAL SIDE ELEVATION  
VERTICAL ROOF/SIDING**

SCALE: NTS



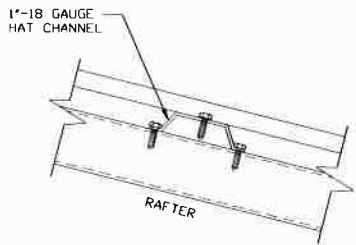
**TYPICAL SECTION VERTICAL  
ROOF/SIDING OPTION**

SCALE: NTS



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

SCALE: NTS



**PANEL ATTACHMENT**

(ALTERNATE FOR VERTICAL ROOF PANELS)  
SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30-0"x20'-0" SP ENCLOSED STRUCTURE

**DATE: 12-23-19**

**SHT. 15**

**SCALE: NTS**

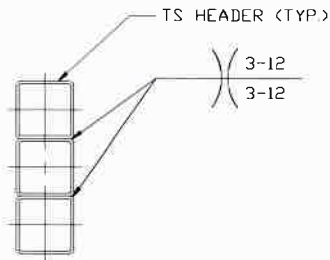
**DWG. NO: SK-3**

**JOB NO: 16166S/  
18012S/18260S/19320S**

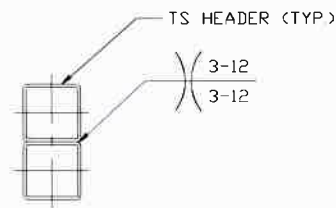
**REV: 8**

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## SIDE WALL HEADER OPTIONS

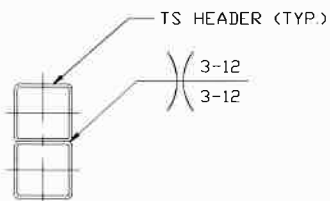


**HEADER DETAIL FOR  
12'-0" < LENGTHS ≤ 16'-0"**  
SCALE: NTS

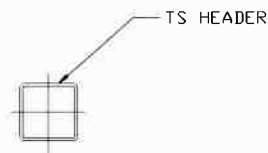


**HEADER DETAIL FOR  
LENGTHS < 12'-0"**  
SCALE: NTS

## END WALL HEADER OPTIONS



**HEADER DETAIL FOR  
14'-0" < LENGTHS ≤ 20'-0"**  
SCALE: NTS



**HEADER DETAIL FOR  
LENGTHS < 14'-0"**  
SCALE: NTS

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

**DRAWN BY: LT**

**CHECKED BY: PDH**

**PROJECT MGR: WSM**

**CLIENT: EAGLE CARPORTS**

**EAGLE CARPORTS  
210 AIRPORT ROAD  
MOUNT AIRY, NC 27030  
30'-0"x20'-0" SP ENCLOSED STRUCTURE**

**DATE: 12-23-19**

**SHT. 16**

**SCALE: NTS**

**DWG. NO: SK-3**

**JOB NO: 16166S/  
18012S/18260S/19320S**

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