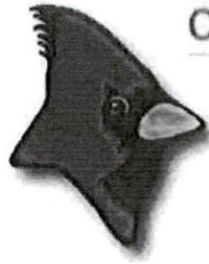


BRES1904-  
0059



**Carolina Carports, Inc.**

Carports • Buildings • Garages

## STRUCTURAL DESIGN

## ENCLOSED BUILDING

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

6 April 2017

Revision 6

M&A Project No. 15156S & 16135S

Prepared for:

**Carolina Carports, Inc.  
187 Cardinal Ridge Trail  
Dobson, NC 27017**

Prepared by:

**Moore and Associates Engineering and Consulting, Inc.  
1009 East Avenue  
North Augusta, SC 29841**

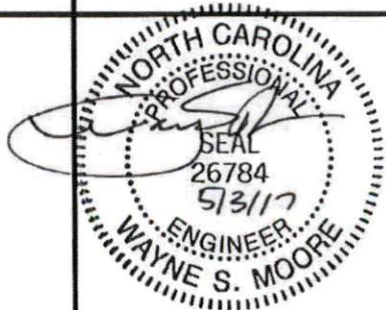
**401 S. Main Street, Suite 200  
Mt. Airy, NC 27030**



**MOORE AND ASSOCIATES  
ENGINEERING AND CONSULTING**







MOORE AND ASSOCIATES  
ENGINEERING AND CONSULTING, INC.

DRAWN BY: JRS

CHECKED BY: PDH

CAROLINA CARPORTS, INC.  
30'x20' ENCLOSED STRUCTURE  
PE SEAL COVER SHEET

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PROJECT MGR: VSM

CLIENT: CAROLINA  
CARPORTS

DATE: 4-6-17

SHT. 1A

SCALE: NTS

DWG. NO: SK-3

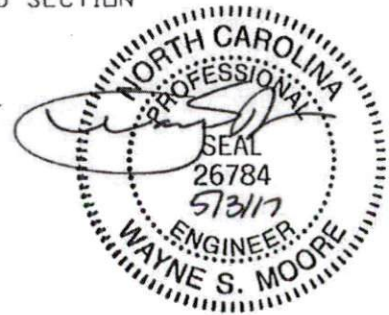
JOB NO: 15156S  
16135S

REV: 6



# DRAWING INDEX

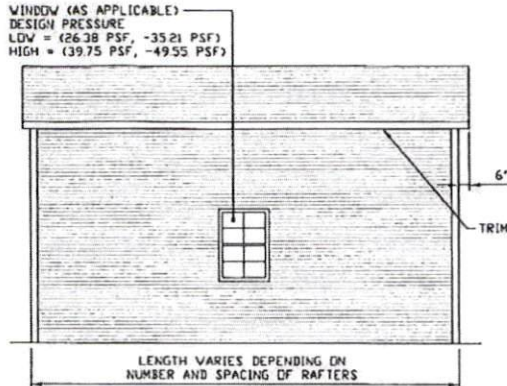
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SHEET 1A	PE SEAL COVER SHEET
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SHEET 20	OPTIONAL HEADER



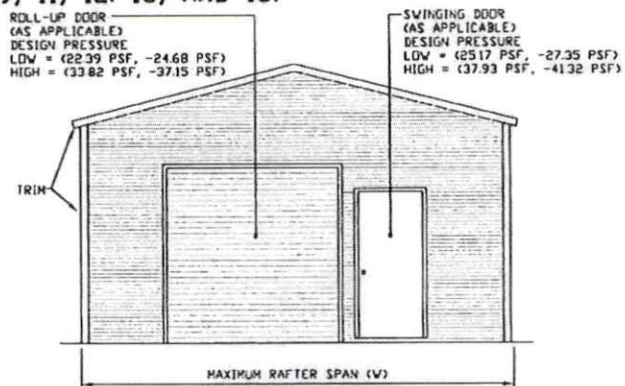
<b>MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.</b>	DRAWN BY: JRS	CAROLINA CARPORTS, INC. 187 CARDINAL RIDGE TRAIL DOBSON, NC 27017 30'x20' ENCLOSED STRUCTURE		
	CHECKED BY: PDH	DATE: 4-6-17	SCALE: NTS	JOB NO: 15156S 16135S
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	CLIENT: CAROLINA CARPORTS			



**BOX EAVE FRAME RAFTER STRUCTURE (Sheets 4, 4A, 4B, 4C, 4D, 5, 5A, 5B, 5C, 5D, 5E, 5F, 5G, 8, 9, 11, 12, 13, AND 15)**

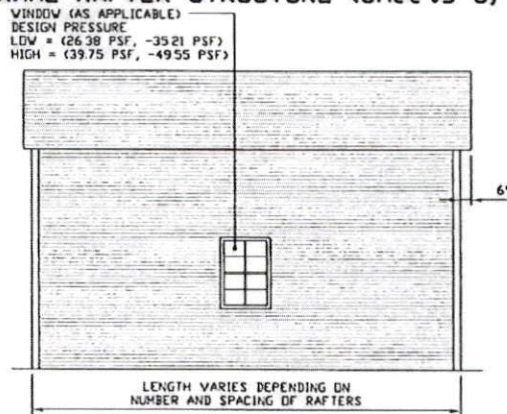


**TYPICAL SIDE ELEVATION-HORIZONTAL ROOF**  
SCALE: NTS

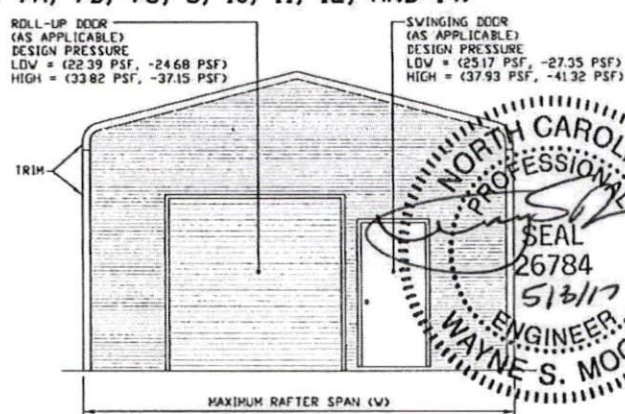


**TYPICAL END ELEVATION-HORIZONTAL ROOF**  
SCALE: NTS

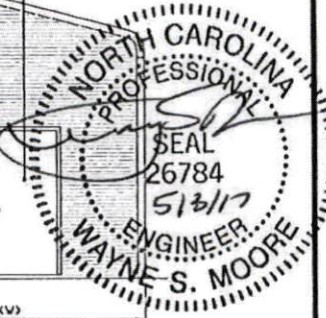
**BOX FRAME RAFTER STRUCTURE (Sheets 6, 6A, 7, 7A, 7B, 7C, 8, 10, 11, 12, AND 14)**



**TYPICAL SIDE ELEVATION**  
SCALE: NTS



**TYPICAL END ELEVATION**  
SCALE: NTS



**INSTALLATION NOTES AND SPECIFICATIONS**

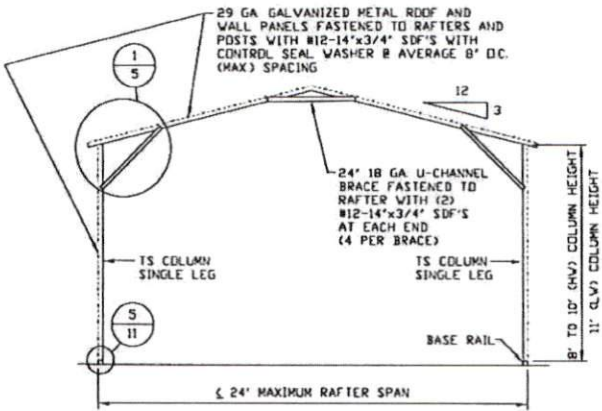
- DESIGN IS FOR MAXIMUM 30' WIDE x 20' EAVE HEIGHT ENCLOSED STRUCTURES.
- DESIGN WAS DONE IN ACCORDANCE WITH THE 2014 FLORIDA BUILDING CODE (FBC) 5TH EDITION, 2012 NORTH CAROLINA BUILDING CODE, 2006 INTERNATIONAL BUILDING CODE (IBC), 2009 IBC 2012 IBC AND 2015 IBC.
- DESIGN LOADS ARE AS FOLLOWS:
  - A) DEAD LOAD = 15 PSF
  - B) LIVE LOAD = 12 PSF
  - C) GROUND SNOW LOAD = 30 PSF (<math>\leq 24'</math>), 35 PSF (<math>24' < W \leq 30'</math>), 35 PSF @ 4'-0" O.C. SPACING (<math>\leq 24'</math>) (MAXIMUM 45 PSF FOR EXPOSURE B AND 55 PSF FOR EXPOSURE C AT 4'-0" O.C. SPACING)
- LOW ULTIMATE WIND SPEED (LW) 105 TO 140 MPH (NOMINAL WIND SPEED 81 TO 108 MPH); MAXIMUM RAFTER/POST AND END POST SPACING = 5.0 FEET.
- HIGH ULTIMATE WIND SPEED (HW) 141 TO 170 MPH (NOMINAL WIND SPEED 109 TO 132 MPH); MAXIMUM RAFTER/POST AND END POST SPACING = 4.0 FEET.
- LOW HAZARD RISK CATEGORY I (WIND).
- WIND EXPOSURE CATEGORY B OR C.
- SPECIFICATIONS APPLICABLE TO 29 GAUGE METAL PANELS FASTENED DIRECTLY TO 2 1/2" x 2 1/2" - 14 GAGE TUBE STEEL (TS) FRAMING MEMBERS (UNLESS NOTED OTHERWISE).
- AVERAGE FASTENER SPACING ON-CENTERS ALONG RAFTERS OR HAT CHANNELS, AND COLUMNS (INTERIOR OR END) = 8' O.C. (MAX.).
- 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.
- ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL WITHIN 6' OF EACH RAFTER COLUMN ALONG SIDES.
- GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT x 30" LONG IN SUITABLE SOIL CONDITIONS. OPTIONAL ANCHORAGE MAY BE USED IN SUITABLE SOILS AND MUST BE USED IN UNSUITABLE SOILS AS NOTED. NOT ALLOWED FOR HIGH WIND APPLICATION.
- WIND FORCES GOVERN OVER SEISMIC FORCES. SEISMIC PARAMETERS ANALYZED ARE:
  - SOIL SITE CLASS = D
  - RISK CATEGORY I/II/III
  - R = 3.25                      I<sub>e</sub> = 1.0
  - S<sub>DS</sub> = 1.522                  V = C<sub>s</sub>W
  - S<sub>D1</sub> = 0.839

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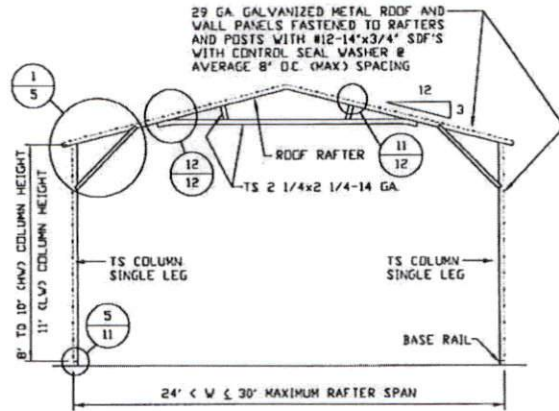
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CHECKED BY: PDH		DATE: 4-6-17	SCALE: NTS
PROJECT MGR: VSH	CLIENT: CAROLINA CARPORTS	SHT. 3	JOB NO: 151565 161355
		DWG. NO: SK-3	REV: 6

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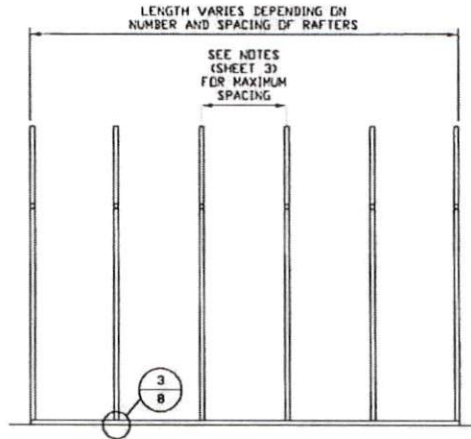
## EXPOSURE B



**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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CAROLINA CARPORTS, INC.  
187 CARDINAL RIDGE TRAIL  
DOBSON, NC 27017  
30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SHT. 4

SCALE: NTS

DWG. NO: SK-3

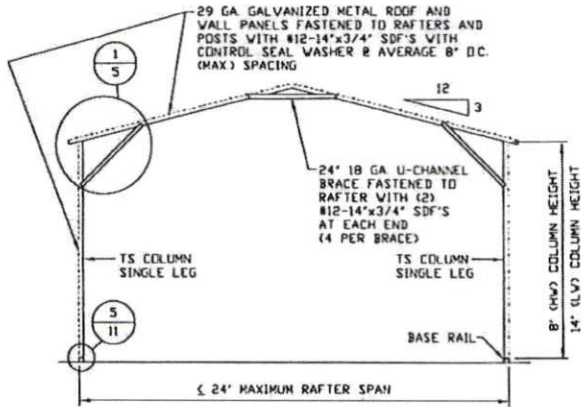
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REV: 6

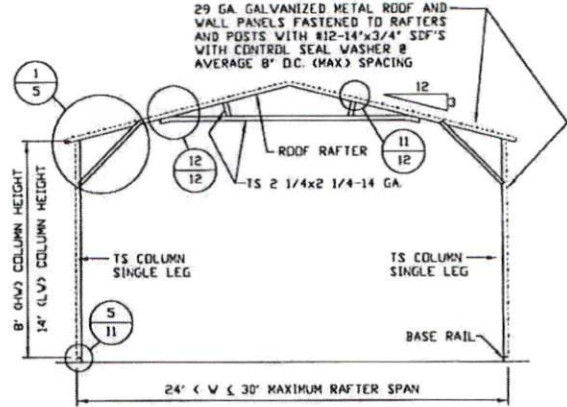
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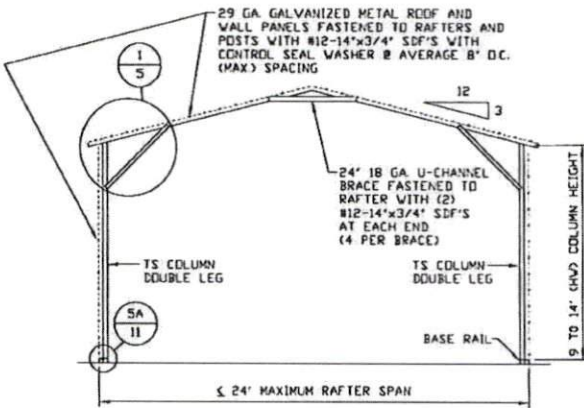
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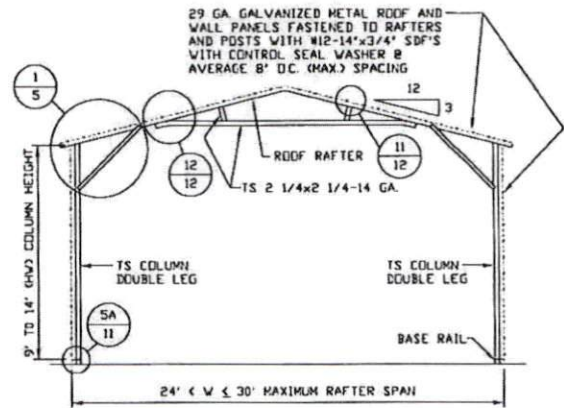
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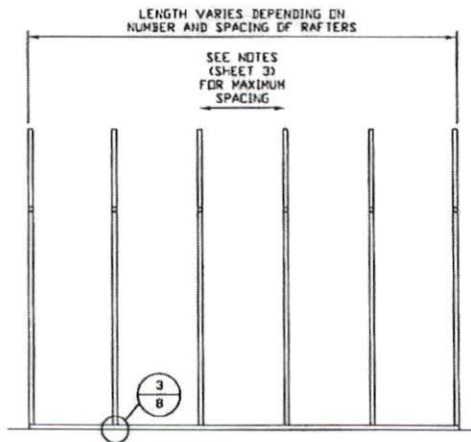
**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



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



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



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



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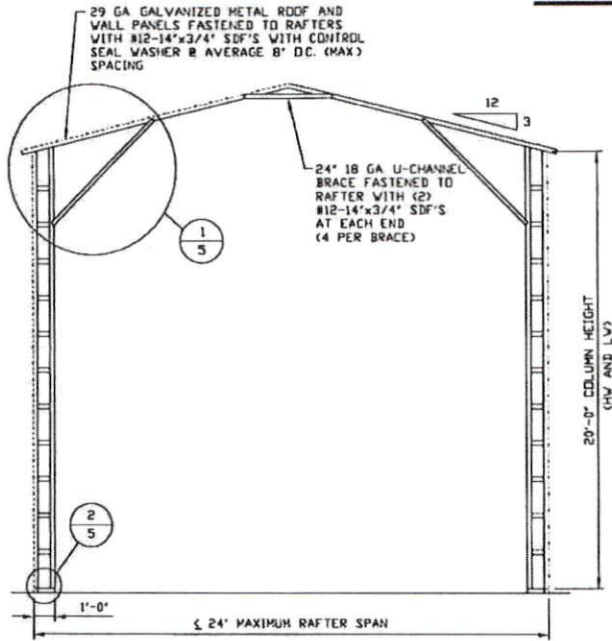
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187 CARDINAL RIDGE TRAIL  
DOBSON, NC 27017  
30'x20' ENCLOSED STRUCTURE

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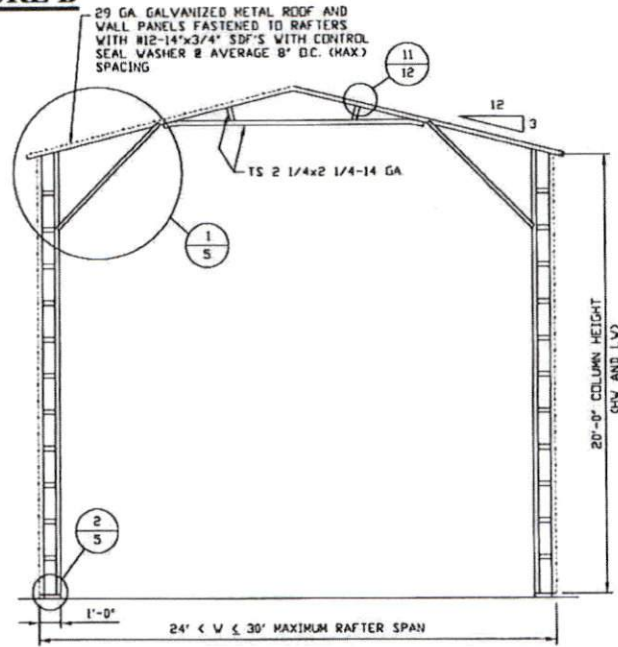
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CLIENT: CAROLINA CARPORTS	SHT. 4A	DWG. NO: SK-3	REV: 6



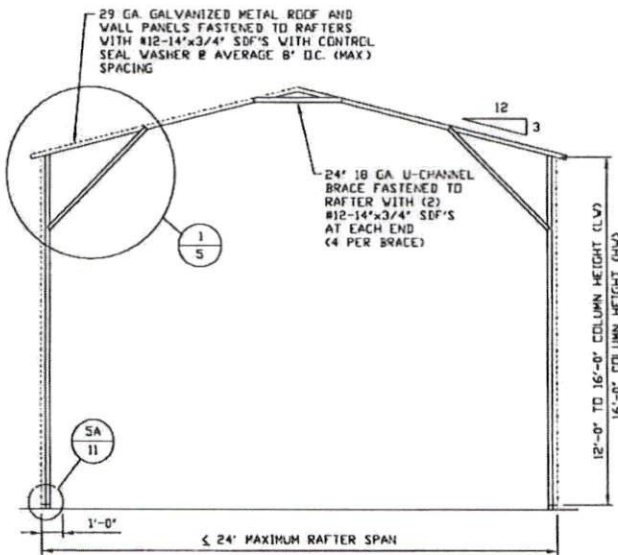
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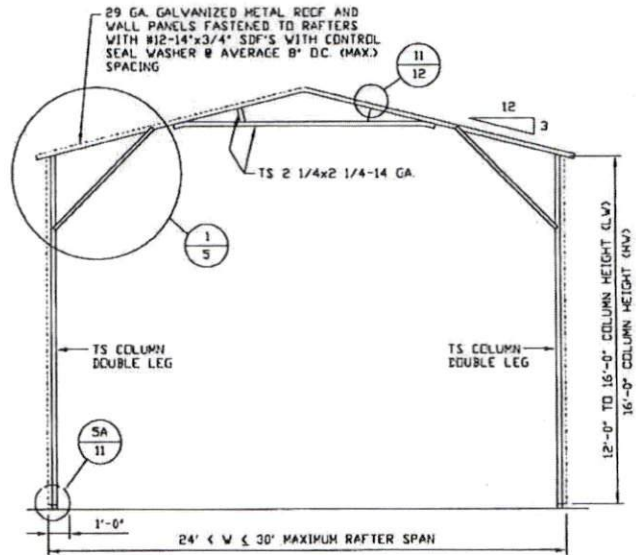
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**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
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**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
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**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
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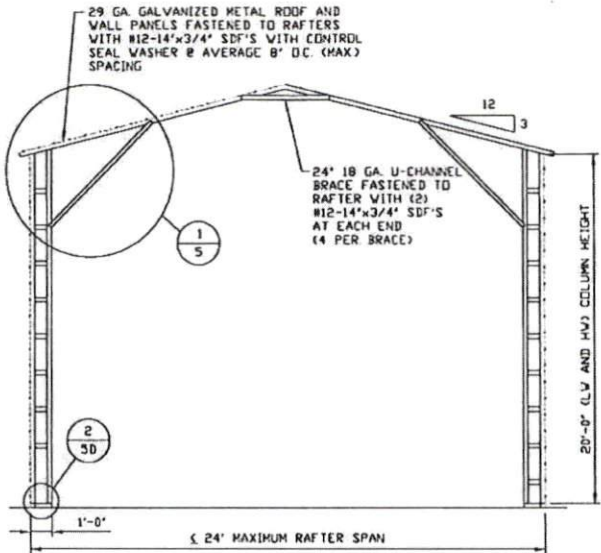


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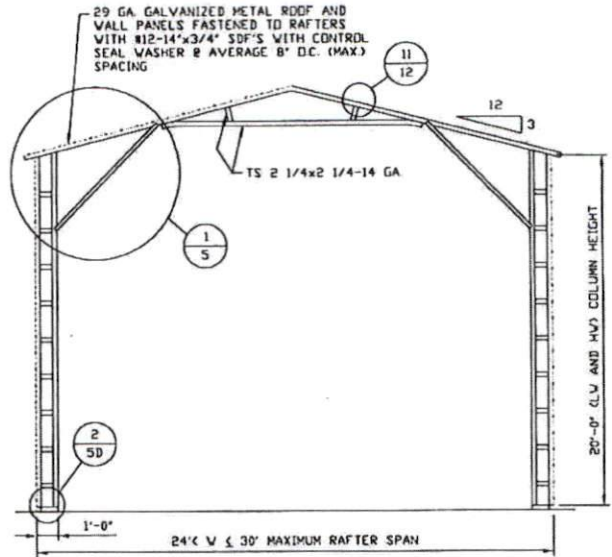
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PROJECT MGR: VSH	CLIENT: CAROLINA CARPORTS	SHT. 4B	DWG. NO: SK-3 REV: 6

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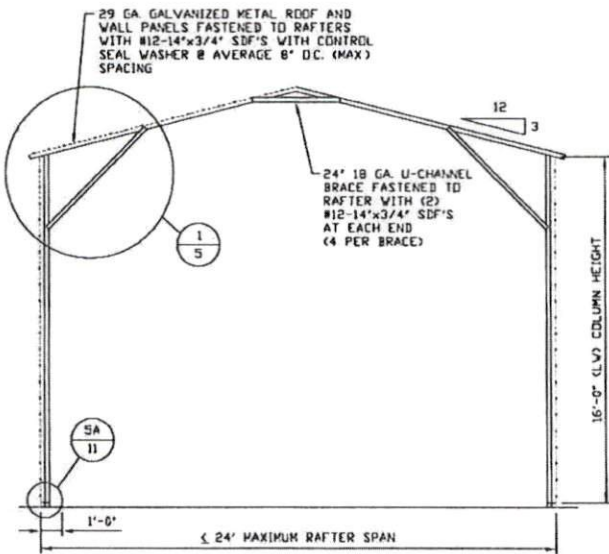
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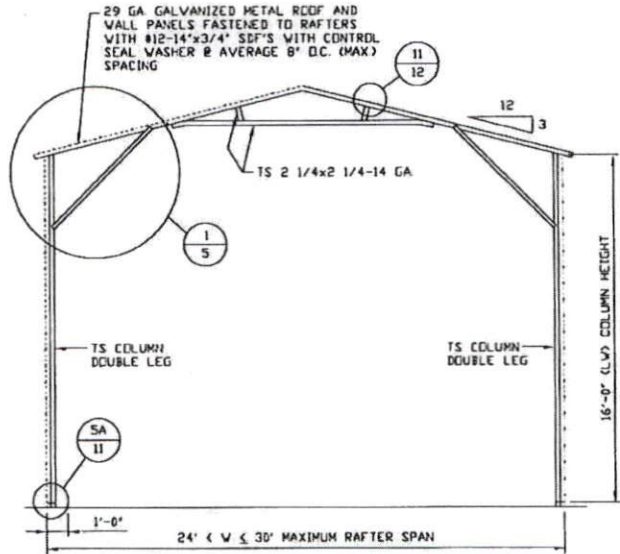
**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



**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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PROJECT MGR: WSM

CLIENT: CAROLINA  
CARPORTS

CAROLINA CARPORTS, INC.  
187 CARDINAL RIDGE TRAIL  
DOBSON, NC 27017  
30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

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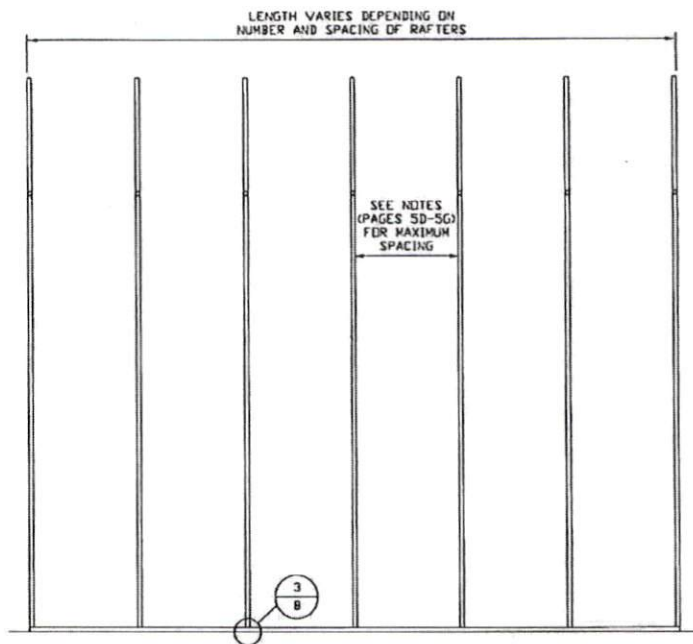
DWG. NO: SK-3

JOB NO: 15156S  
16135S

REV: 6

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SHT. 4C



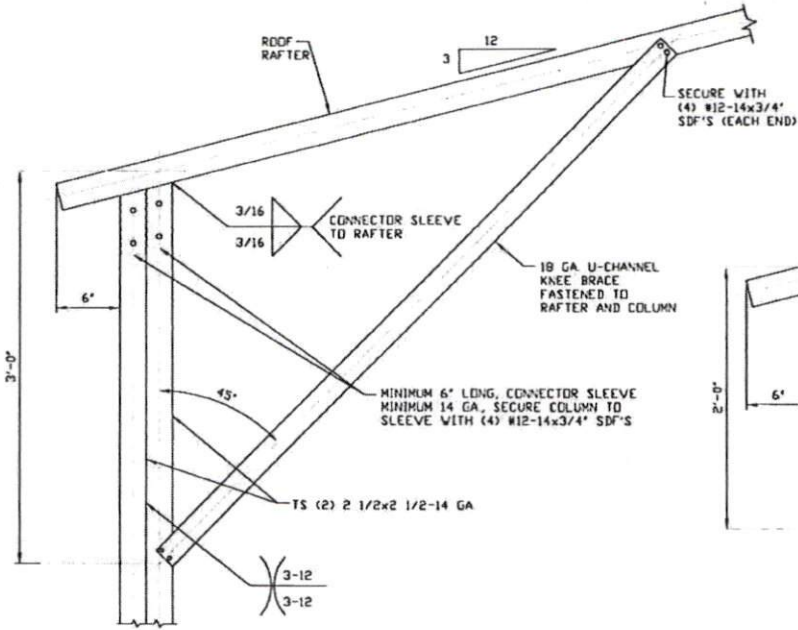
**TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION**  
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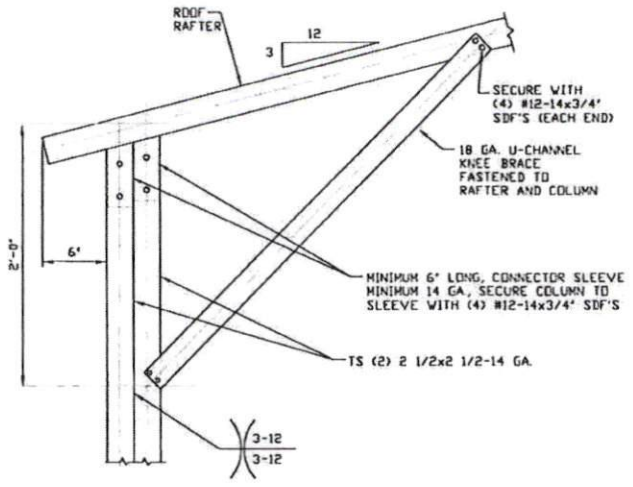
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	CHECKED BY: PDH	DATE: 4-6-17	SCALE: NTS	JOB NO: 15156S 16135S
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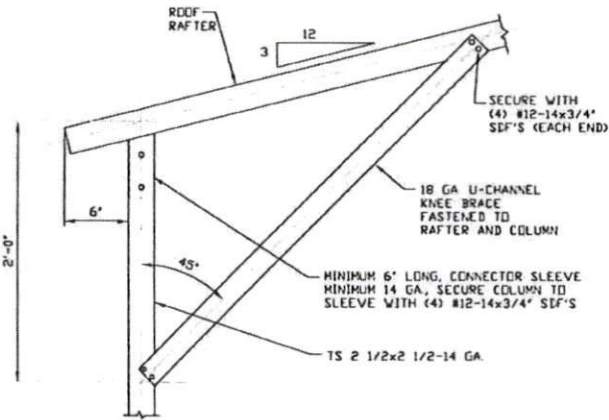
**EXPOSURE B (140 MPH)**



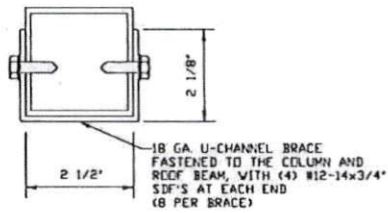
**1A**  
**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 12' < TO <= 14'**  
 SCALE: NTS



**1B**  
**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 11' < TO <= 12'**  
 SCALE: NTS



**1C**  
**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS <= 11'**  
 SCALE: NTS



**BRACE SECTION**  
 SCALE: NTS

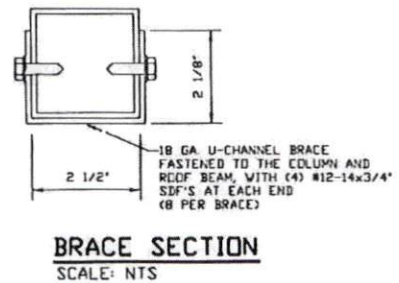
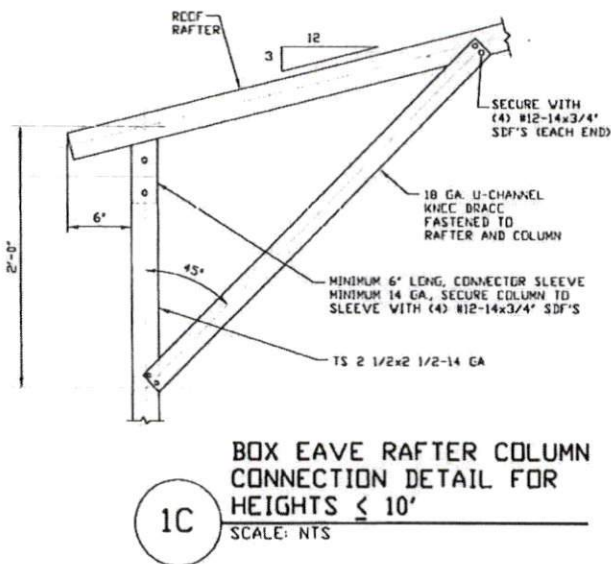
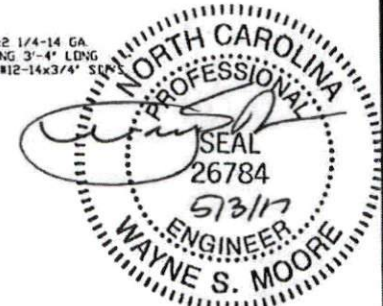
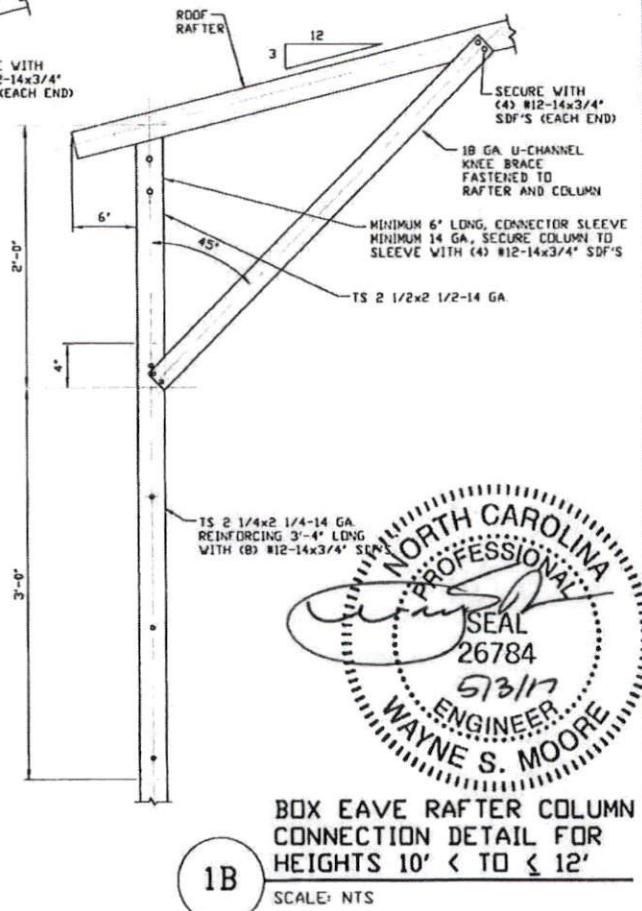
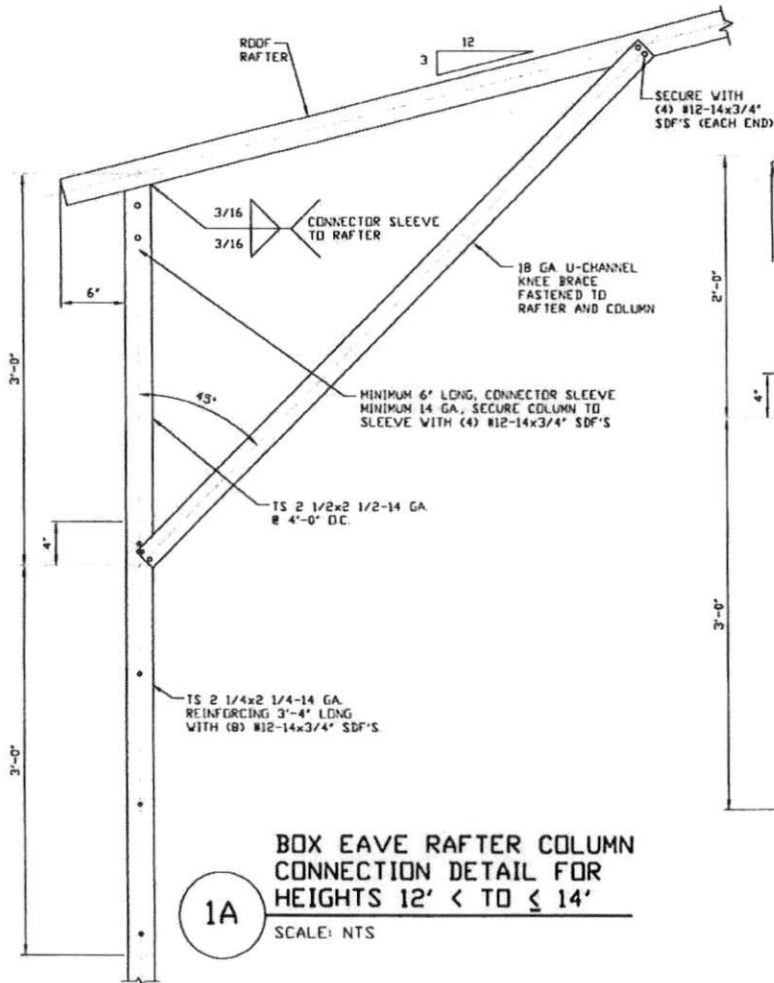


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	CHECKED BY: PDH	PROJECT MGR: VSM	DATE: 4-6-17	SCALE: NTS
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# EXPOSURE C (140 MPH)



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ENGINEERING AND CONSULTING, INC.**

DRAWN BY: JRS

CHECKED BY: PDH

PROJECT MGR: WSH

CLIENT: CAROLINA  
CARPORTS

CAROLINA CARPORTS, INC.  
187 CARDINAL RIDGE TRAIL  
DOBSON, NC 27017  
30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SHT. 5B

SCALE: NTS

DWG. NO: SK-3

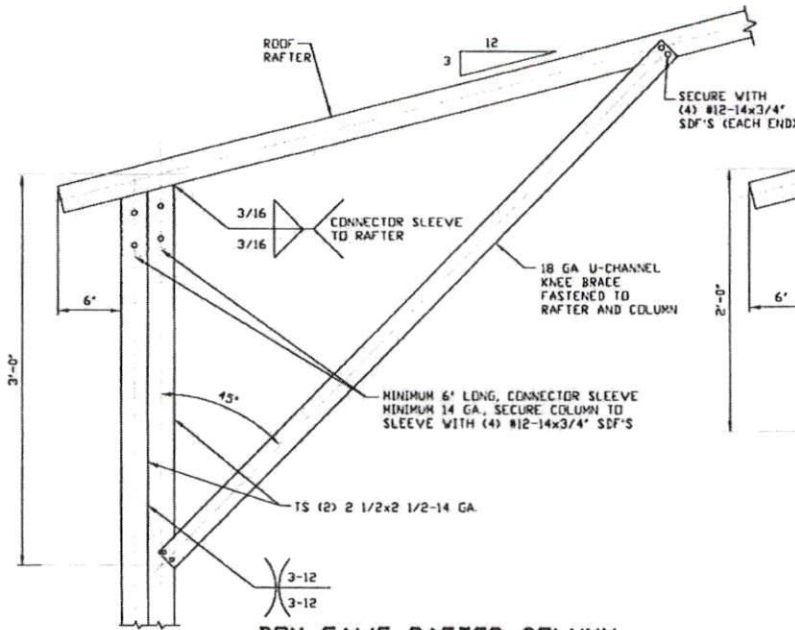
JOB NO: 15156S  
16135S

REV: 6

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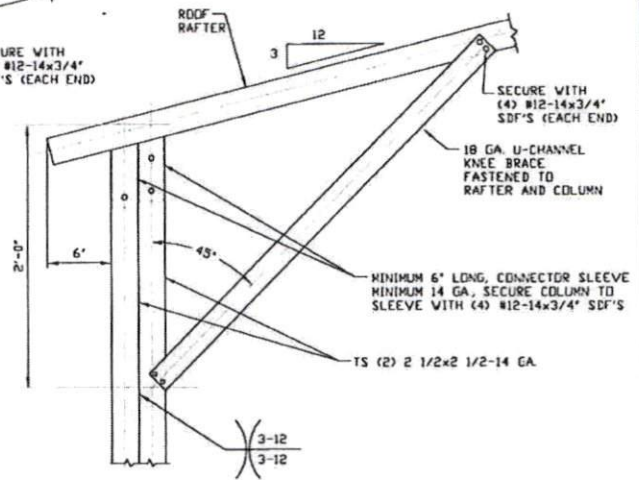


# EXPOSURE C (170 MPH)



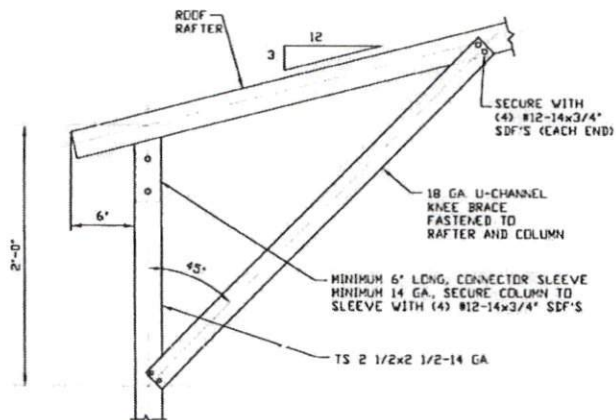
**1A** BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 12' < TO <= 14'

SCALE: NTS



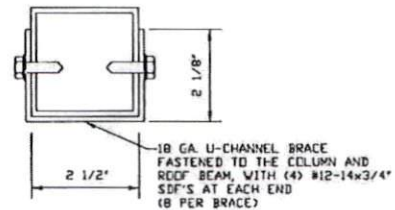
**1B** BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 8' < TO <= 12'

SCALE: NTS



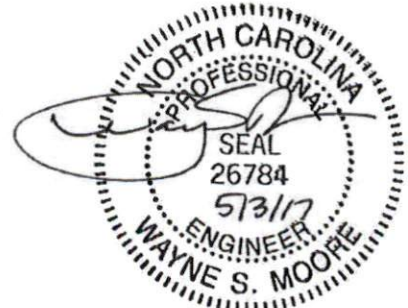
**1C** BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS <= 8'

SCALE: NTS



**BRACE SECTION**

SCALE: NTS



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

DRAWN BY: JRS

CHECKED BY: PDM

PROJECT MGR: VSH

CLIENT: CAROLINA CARPORTS

CAROLINA CARPORTS, INC.  
187 CARDINAL RIDGE TRAIL  
DOBSON, NC 27017  
30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SHT. 5C

SCALE: NTS

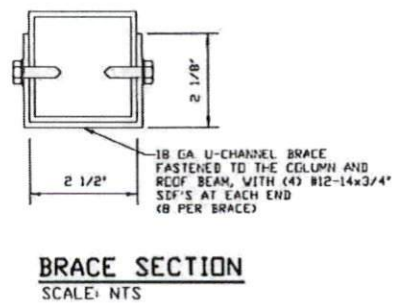
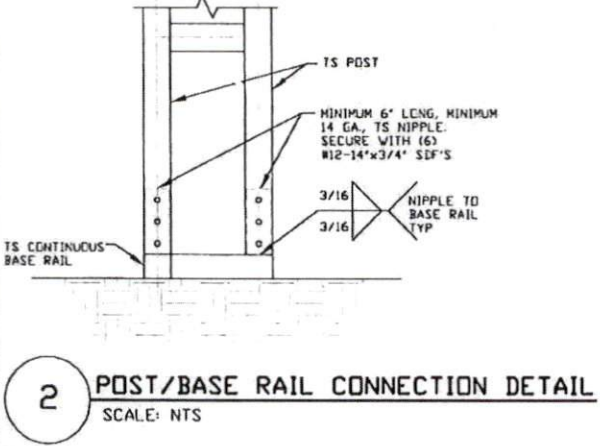
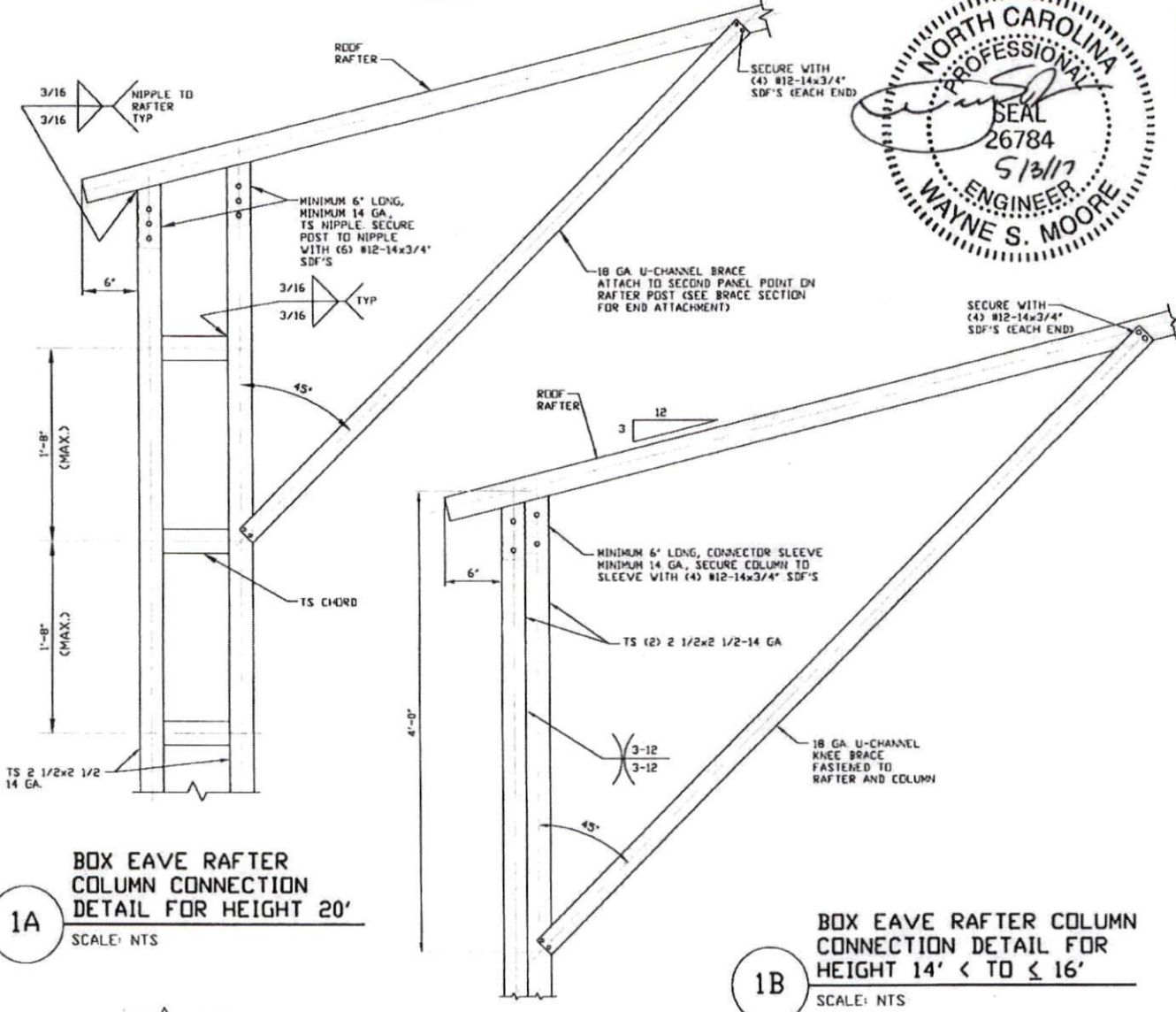
DWG. NO: SK-3

JOB NO: 15156S  
16135S

REV.: 6

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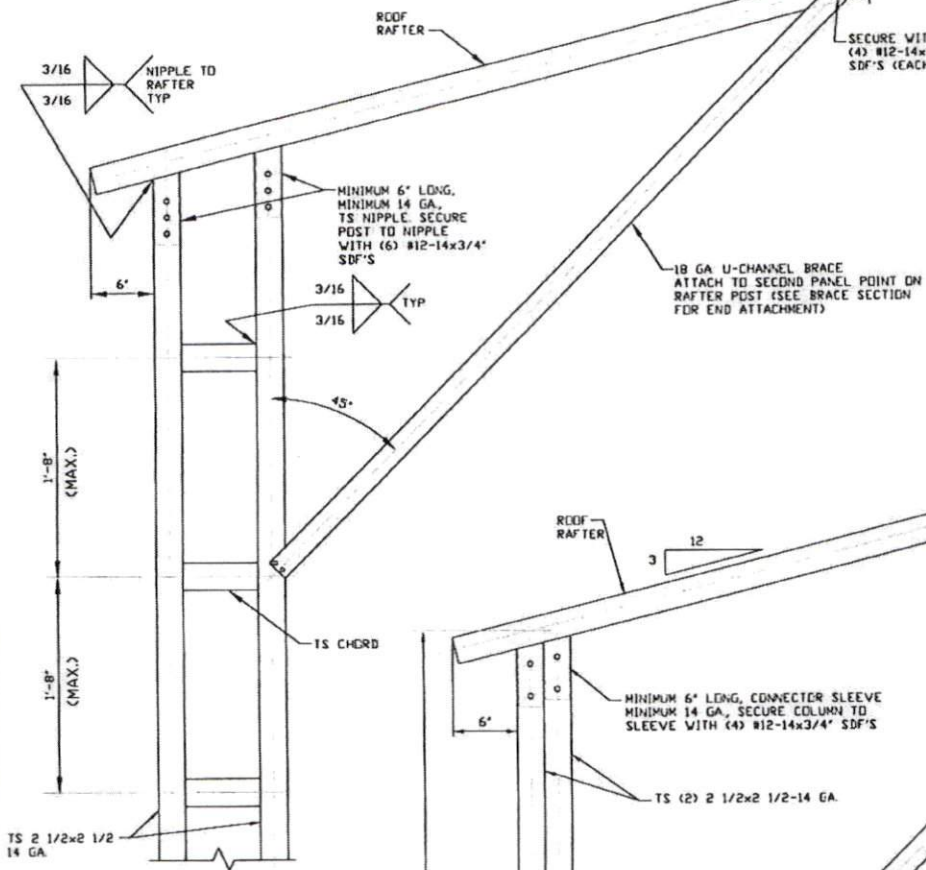
**EXPOSURE B (140 MPH)**



<b>MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.</b>		DRAWN BY: JRS		CAROLINA CARPORTS, INC. 187 CARDINAL RIDGE TRAIL DOBSON, NC 27017 30'x20' ENCLOSED STRUCTURE	
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		CLIENT: CAROLINA CARPORTS	SHT. 5D	DWG. NO: SK-3	REV: 6



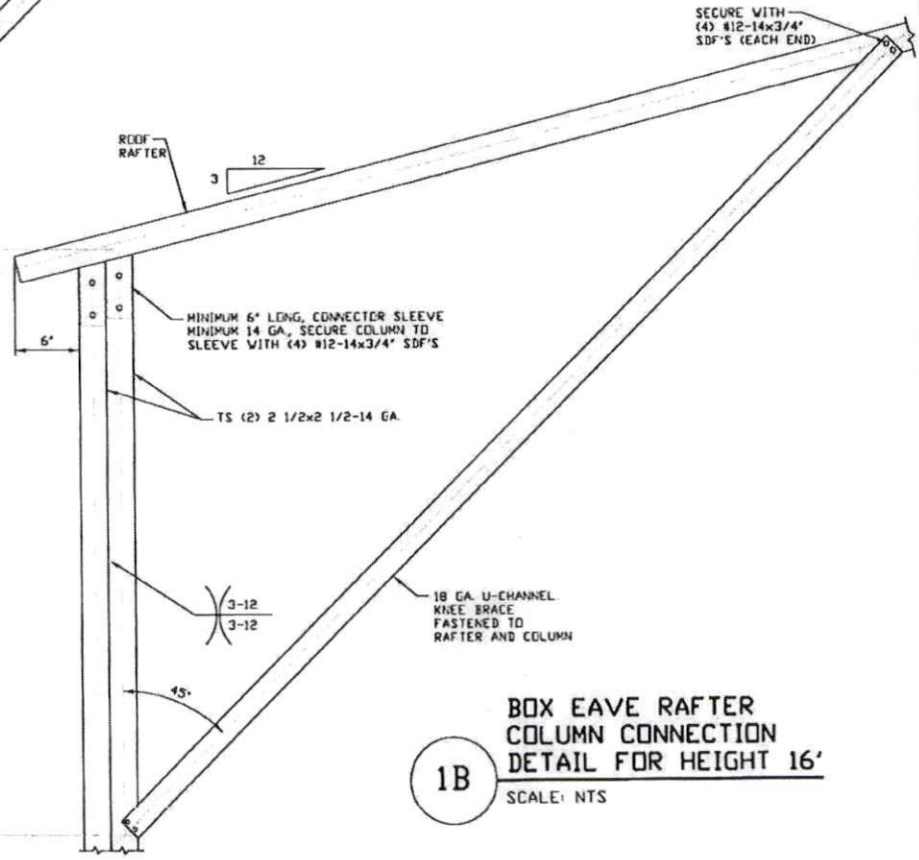
**EXPOSURE B (170 MPH)**



**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHT 20'**

1A

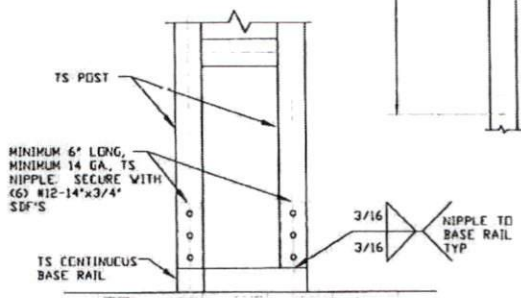
SCALE: NTS



**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHT 16'**

1B

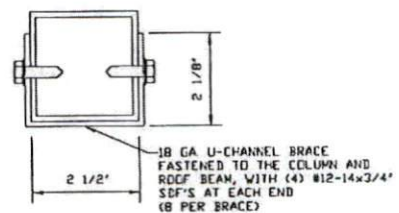
SCALE: NTS



**2 POST/BASE RAIL CONNECTION DETAIL**

2

SCALE: NTS



**BRACE SECTION**

SCALE: NTS

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

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PROJECT MGR: VSM

CLIENT: CAROLINA CARPORTS

CAROLINA CARPORTS, INC.  
187 CARDINAL RIDGE TRAIL  
DOBSON, NC 27017  
30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SHT. 5E

SCALE: NTS

DWG. NO: SK-3

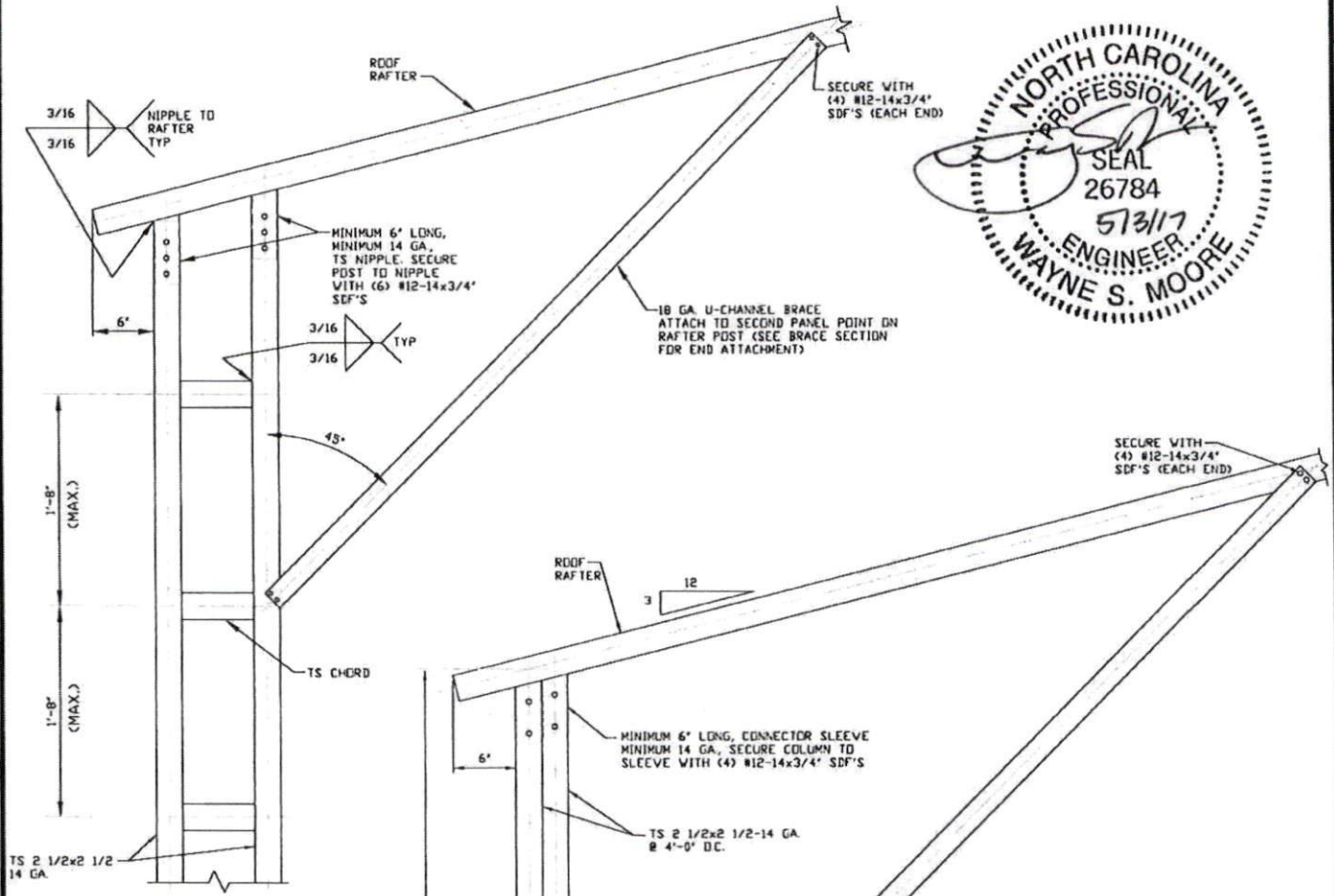
JOB NO: 15156S  
16135S

REV: 6

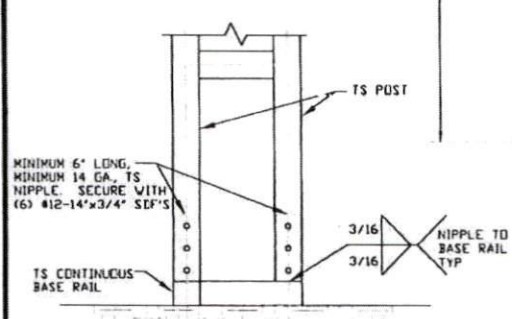
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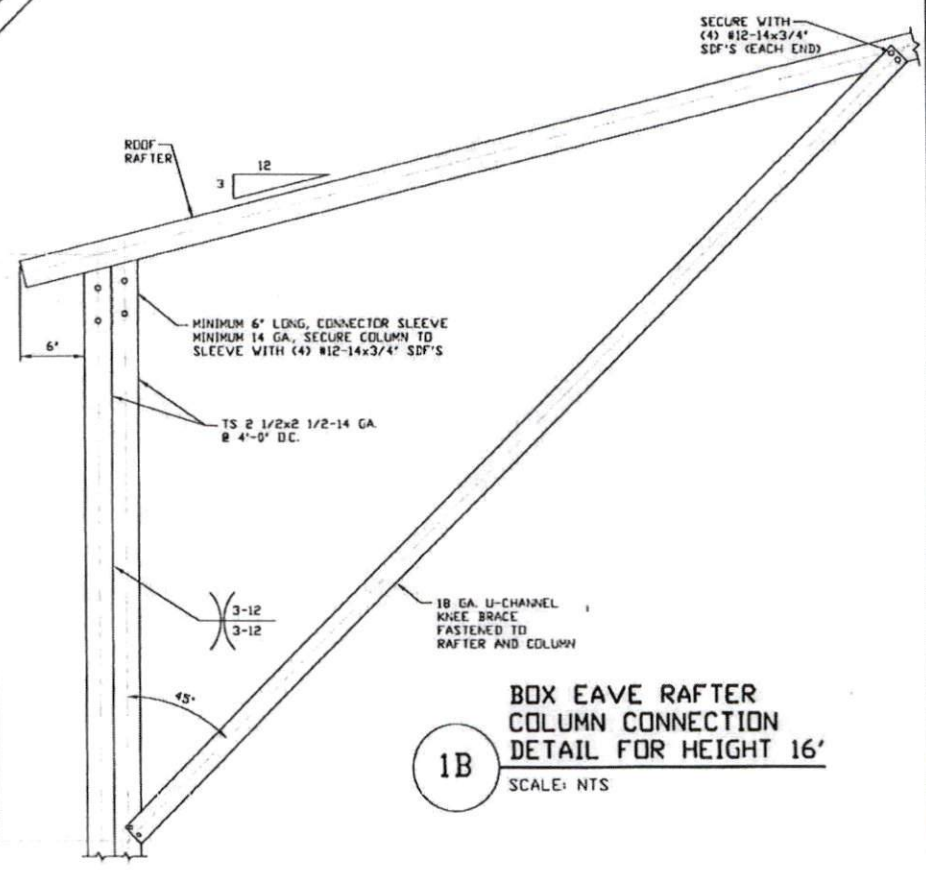
# EXPOSURE C (140 MPH)



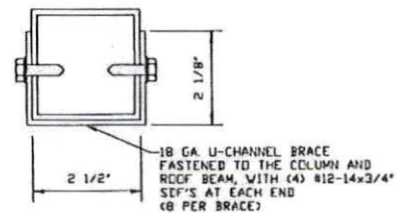
**1A** BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHT 20'  
SCALE: NTS



**2** POST/BASE RAIL CONNECTION DETAIL  
SCALE: NTS



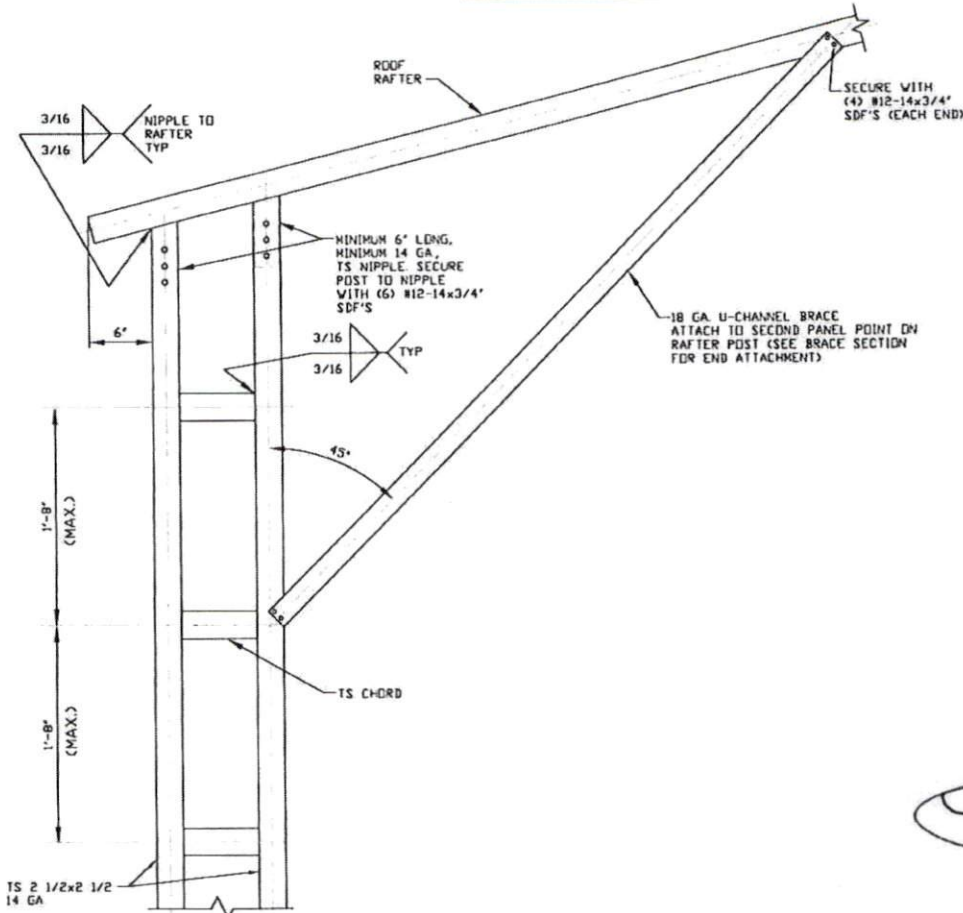
**1B** BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHT 16'  
SCALE: NTS



**BRACE SECTION**  
SCALE: NTS

<b>MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.</b>		DRAWN BY: JRS		CAROLINA CARPORTS, INC. 187 CARDINAL RIDGE TRAIL DOBSON, NC 27017 30'x20' ENCLOSED STRUCTURE	
		CHECKED BY: PDH			
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		CLIENT: CAROLINA CARPORTS	SHT. 5F	DWG. NO: SK-3	REV: 6

**EXPOSURE C (170 MPH)**



**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHT 16' ≤ W ≤ 20'**

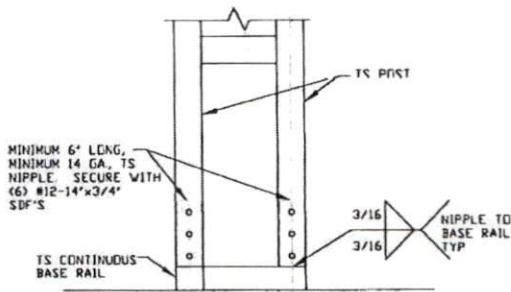
1A

SCALE: NTS

**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHT 16'**

1B

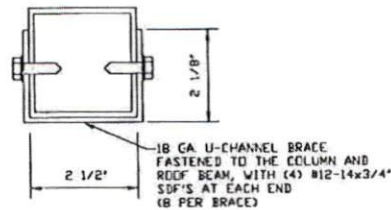
SCALE: NTS



2

**POST/BASE RAIL CONNECTION DETAIL**

SCALE: NTS



**BRACE SECTION**

SCALE: NTS

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

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CHECKED BY: PDM

PROJECT MGR: WSM

CLIENT: CAROLINA CARPORTS

CAROLINA CARPORTS, INC.  
187 CARDINAL RIDGE TRAIL  
DOBSON, NC 27017  
30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SHT. 5G

SCALE: NTS

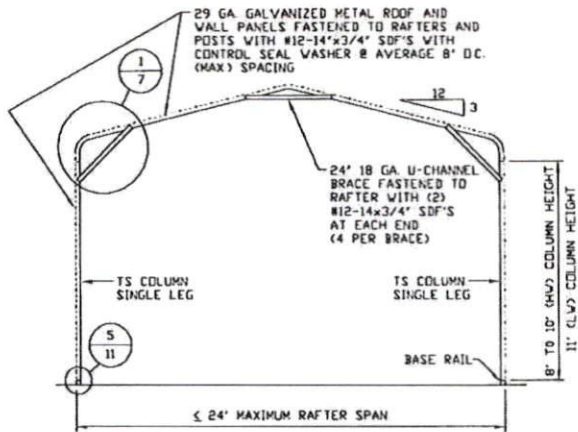
DWG. NO: SK-3

JOB NO: 15156S  
16135S

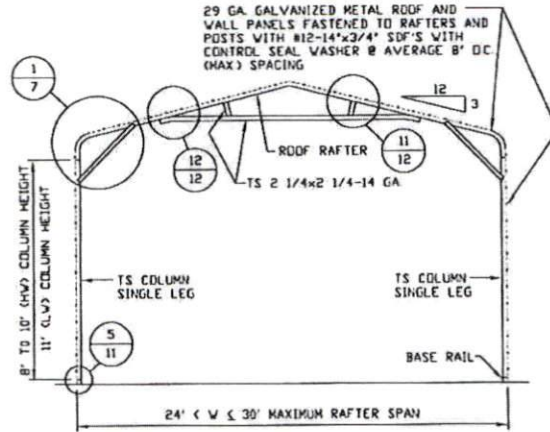
REV: 6

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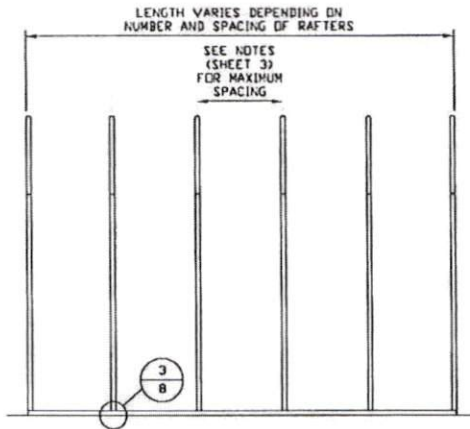
## EXPOSURE B



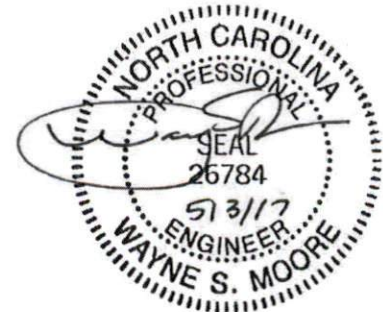
**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



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



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



**MOORE AND ASSOCIATES  
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PROJECT MGR: WSH

CLIENT: CAROLINA  
CARPORTS

CAROLINA CARPORTS, INC.  
187 CARDINAL RIDGE TRAIL  
DOBSON, NC 27017  
30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SHT. 6

SCALE: NTS

DWG. NO: SK-3

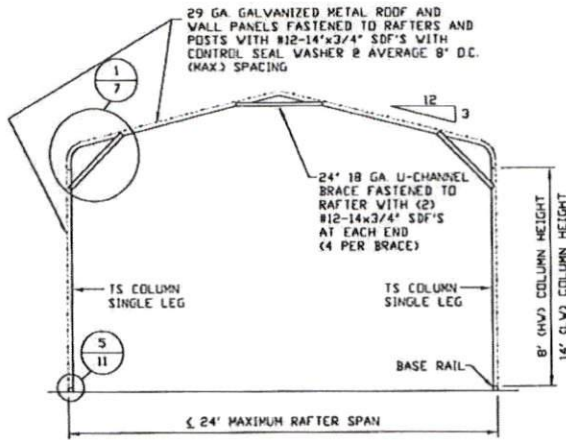
JOB NO: 15156S  
16135S

REV: 6

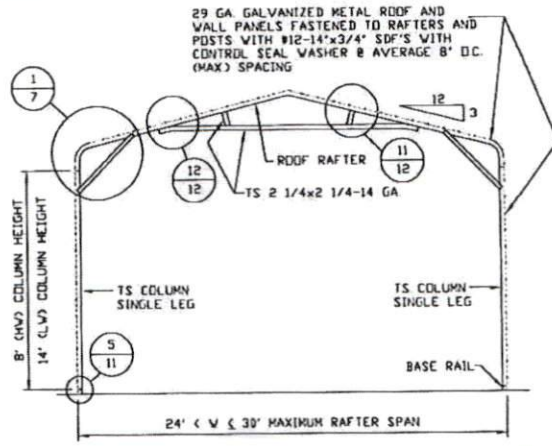
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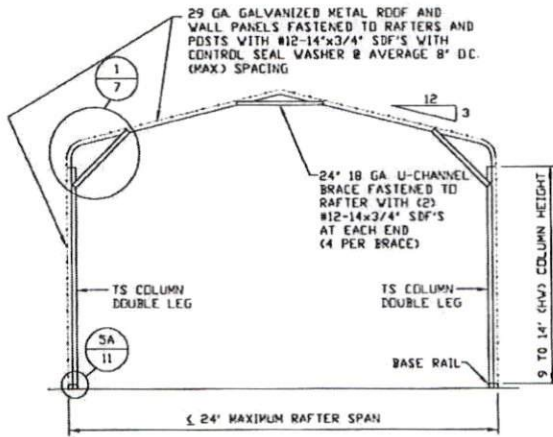
## EXPOSURE C



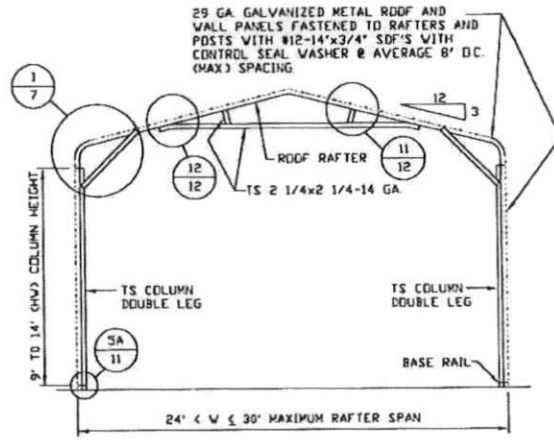
**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



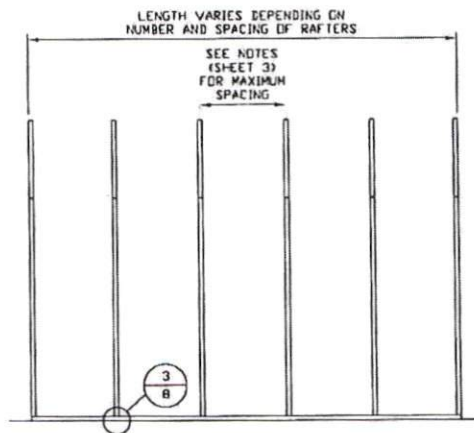
**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



**TYPICAL RAFTER/COLUMN 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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CAROLINA CARPORTS, INC.  
187 CARDINAL RIDGE TRAIL  
DOBSON, NC 27017  
30'x20' ENCLOSED STRUCTURE

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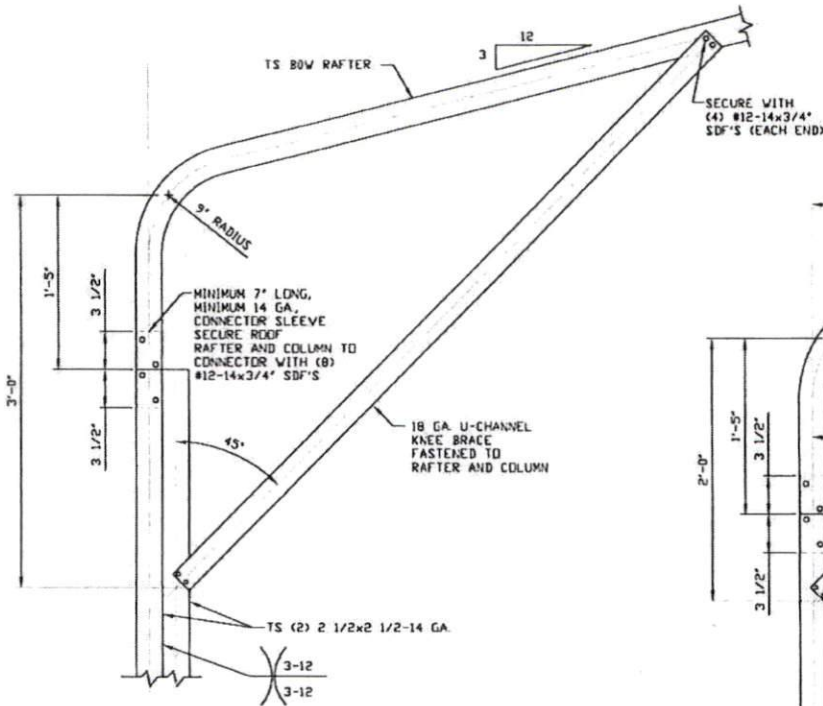
PROJECT MGR: WSM  
CLIENT: CAROLINA CARPORTS

DATE: 4-6-17  
SHT. 6A

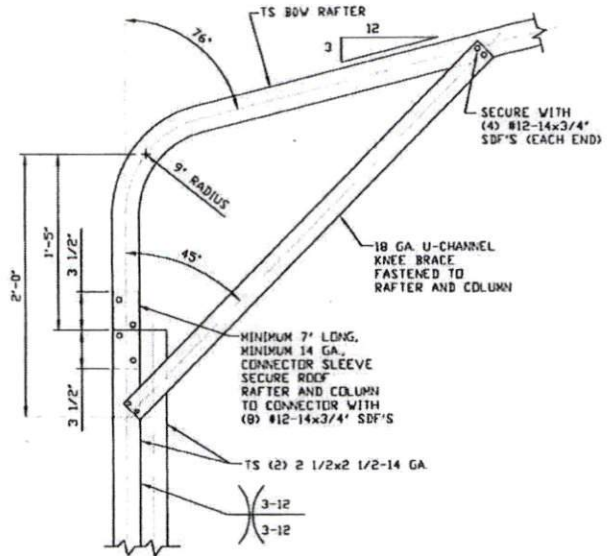
SCALE: NTS  
DWG. NO: SK-3

JOB NO: 15156S  
16135S  
REV: 6

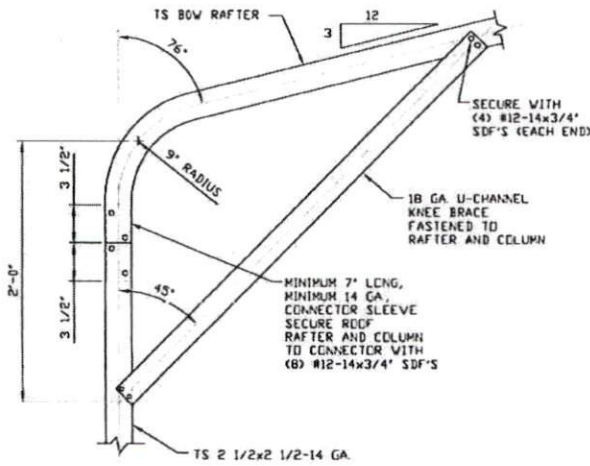
**EXPOSURE B (140 MPH)**



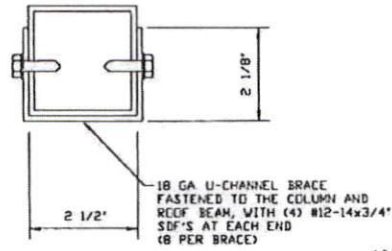
**1A**  
**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 12' < TO <= 14'**  
 SCALE: NTS



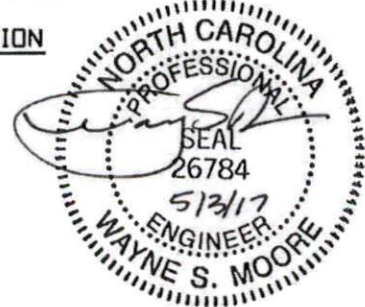
**1B**  
**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 11' < TO <= 12'**  
 SCALE: NTS



**1C**  
**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS <= 11'**  
 SCALE: NTS



**BRACE SECTION**  
 SCALE: NTS



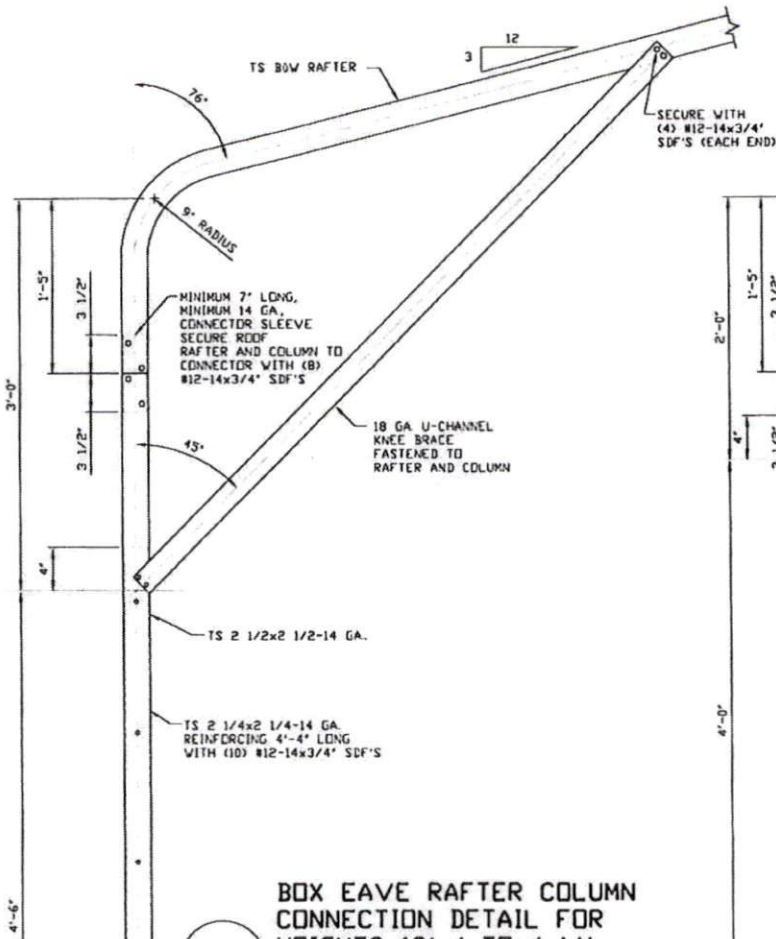
**MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.**

DRAWN BY: JRS CHECKED BY: PDH PROJECT MGR: VSH CLIENT: CAROLINA CARPORTS	CAROLINA CARPORTS, INC. 187 CARDINAL RIDGE TRAIL DOBSON, NC 27017 30'x20' ENCLOSED STRUCTURE	DATE: 4-6-17 SHT. 7	SCALE: NTS DWG. NO: SK-3	JOB NO: 15156S 16135S REV: 6
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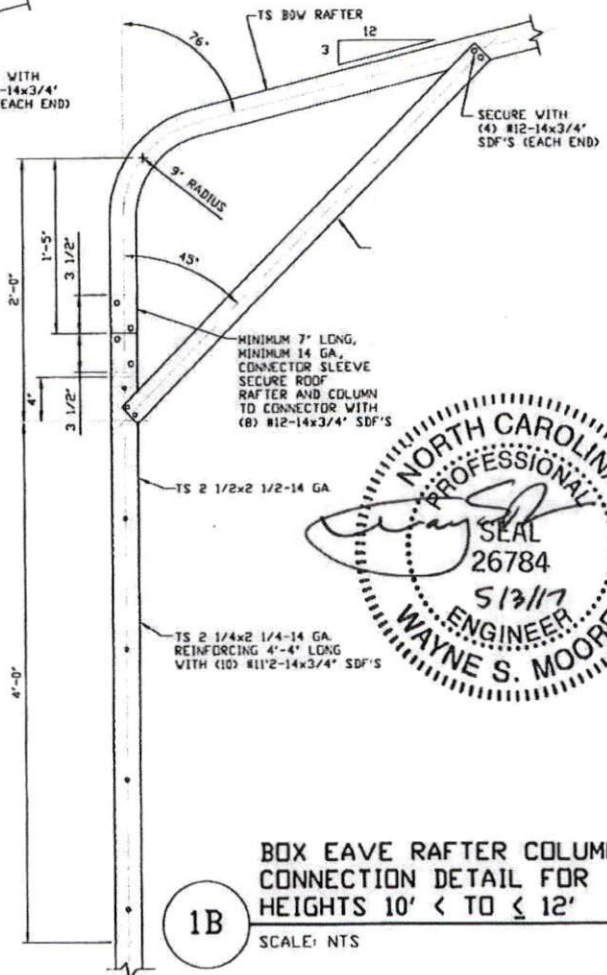


# EXPOSURE B (170 MPH)



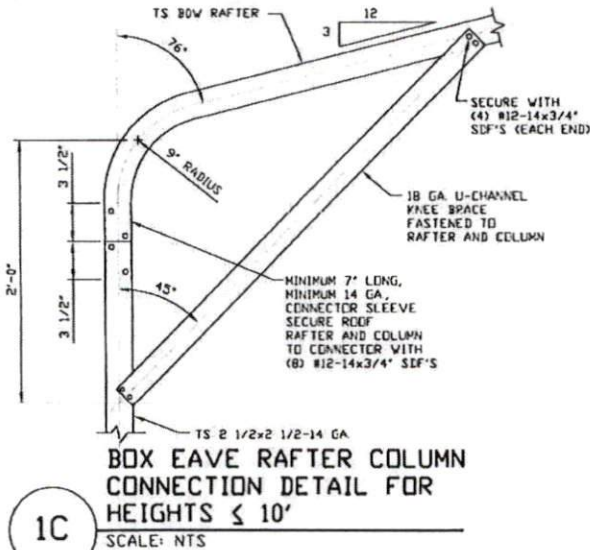
**1A** BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 12' < TO <= 14'

SCALE: NTS



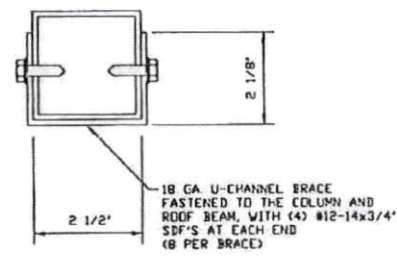
**1B** BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 10' < TO <= 12'

SCALE: NTS



**1C** BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS <= 10'

SCALE: NTS

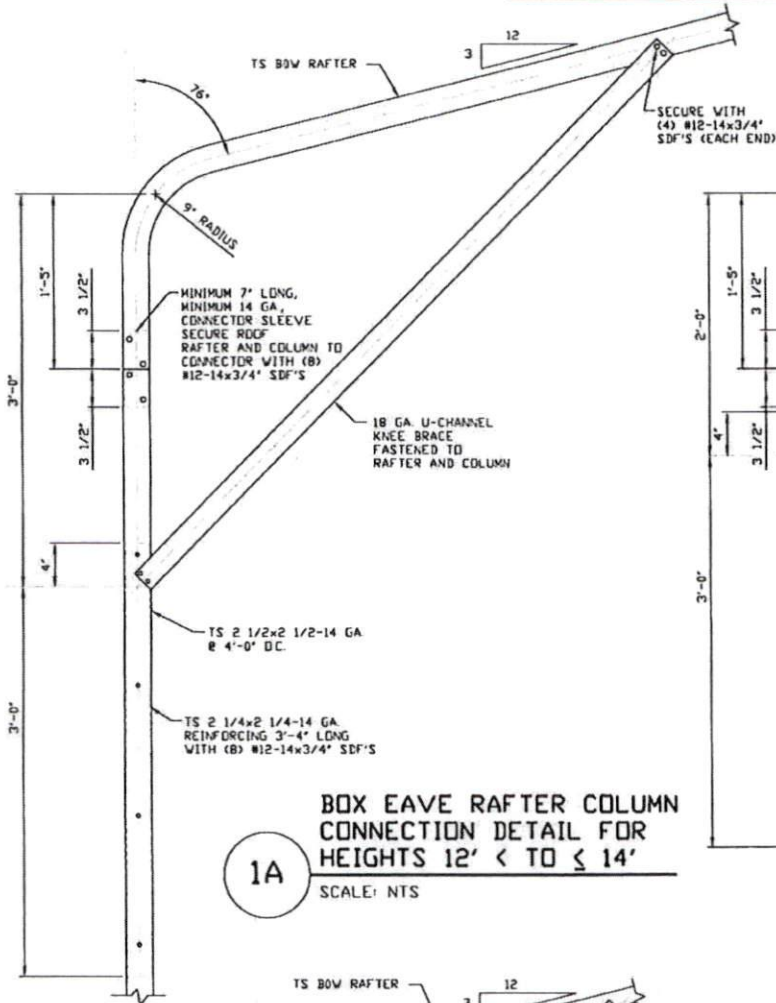


**BRACE SECTION**  
SCALE: NTS

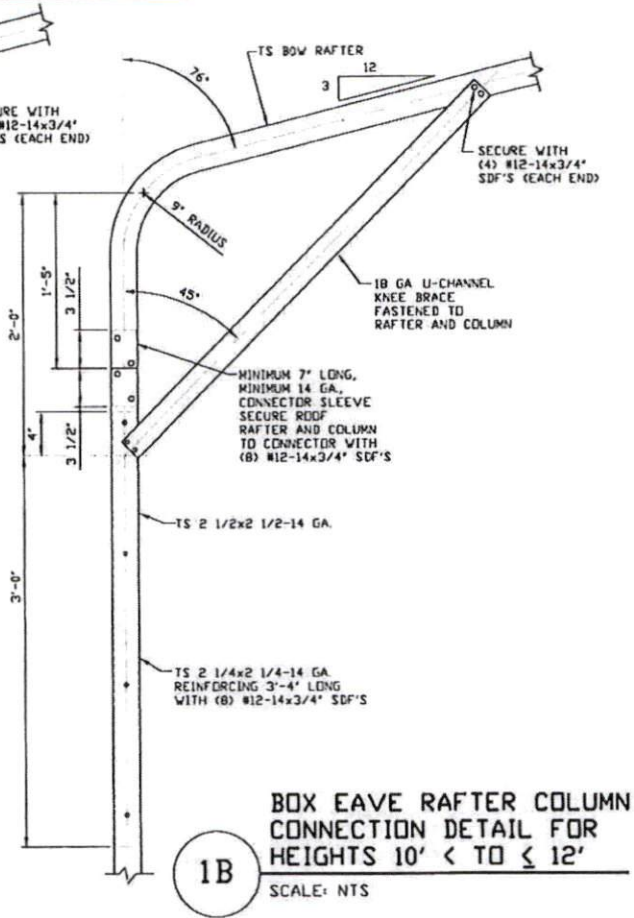


<b>MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.</b>		DRAWN BY: JRS		CAROLINA CARPORTS, INC. 187 CARDINAL RIDGE TRAIL DOBSON, NC 27017 30'x20' ENCLOSED STRUCTURE	
		CHECKED BY: PDH			
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		CLIENT: CAROLINA CARPORTS	SHT. 7A	DWG. NO: SK-3	REV: 6

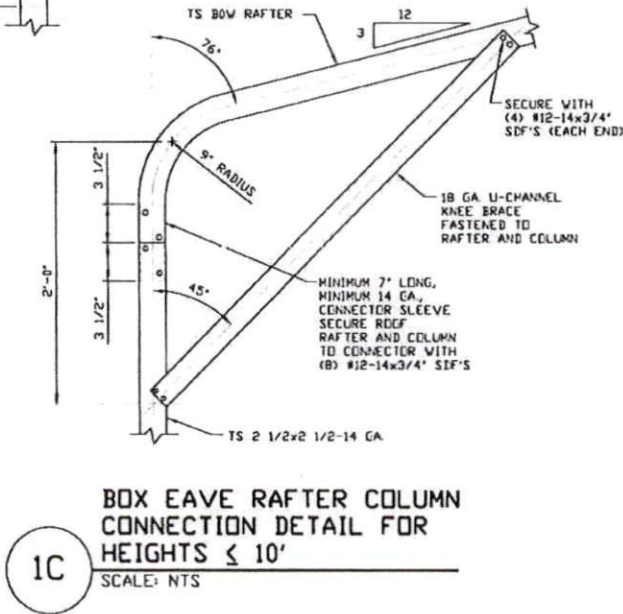
# EXPOSURE C (140 MPH)



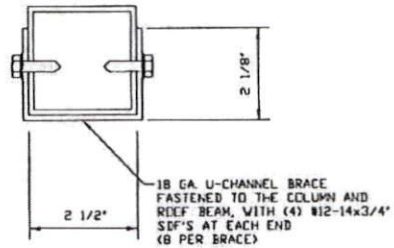
**1A**  
BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 12' < TO <= 14'  
SCALE: NTS



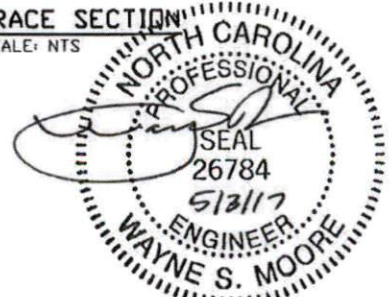
**1B**  
BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 10' < TO <= 12'  
SCALE: NTS



**1C**  
BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS <= 10'  
SCALE: NTS



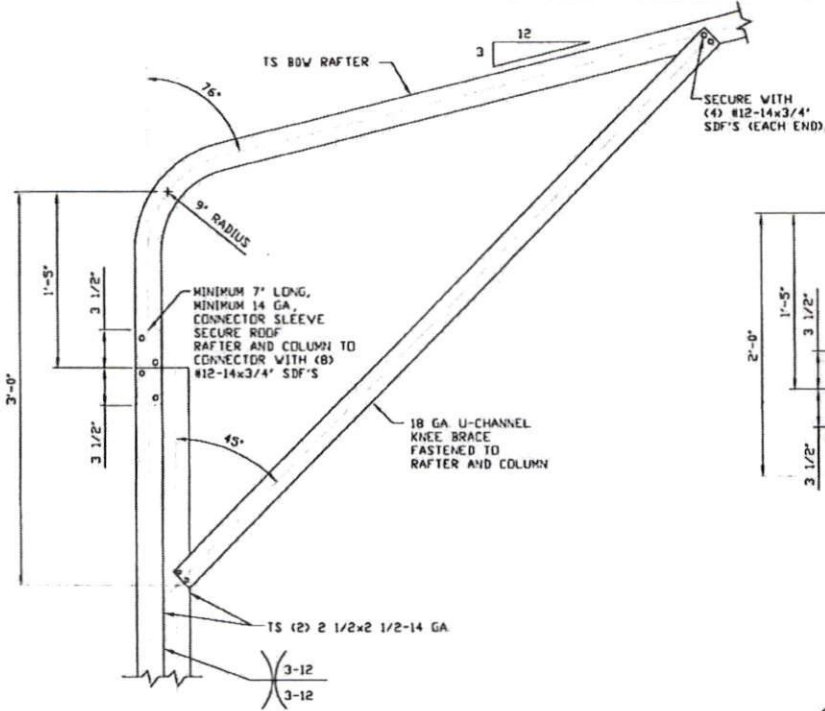
**BRACE SECTION**  
SCALE: NTS



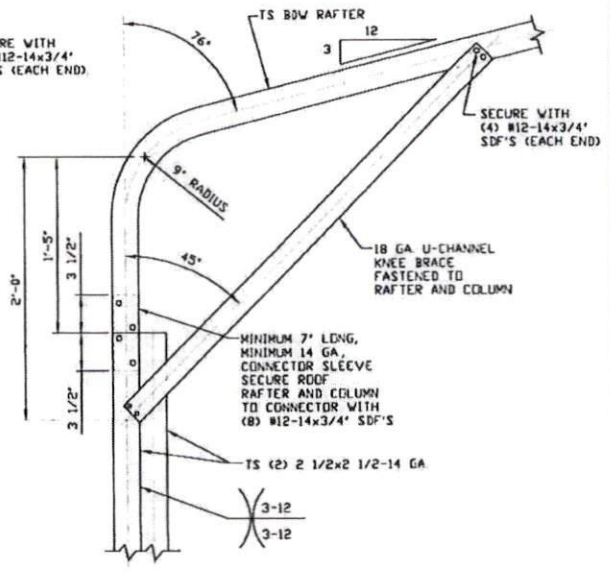
<b>MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.</b>	DRAWN BY: JRS	CAROLINA CARPORTS, INC. 187 CARDINAL RIDGE TRAIL DOBSON, NC 27017 30'x20' ENCLOSED STRUCTURE		
	CHECKED BY: PDH	PROJECT MGR: WSH	DATE: 4-6-17	SCALE: NTS
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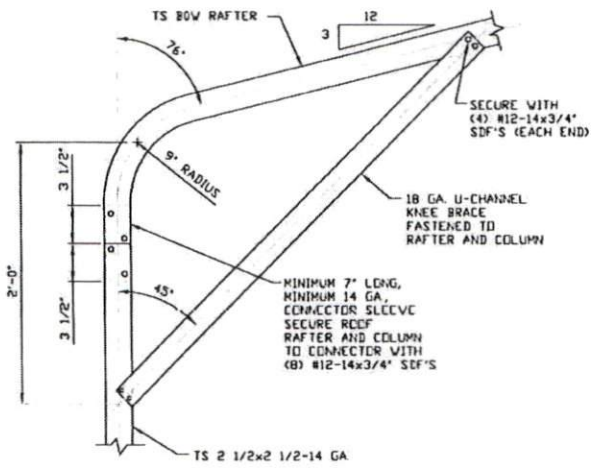
**EXPOSURE C (170 MPH)**



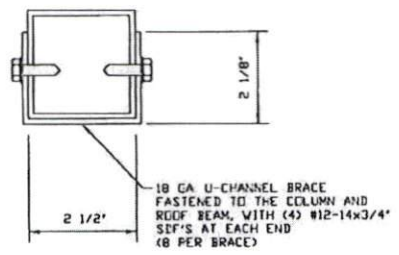
**1A**  
 BOX EAVE RAFTER COLUMN  
 CONNECTION DETAIL FOR  
 HEIGHTS 12' < TO <= 14'  
 SCALE: NTS



**1B**  
 BOX EAVE RAFTER COLUMN  
 CONNECTION DETAIL FOR  
 HEIGHTS 8' < TO <= 12'  
 SCALE: NTS



**1C**  
 BOX EAVE RAFTER COLUMN  
 CONNECTION DETAIL FOR  
 HEIGHTS <= 8'  
 SCALE: NTS



**BRACE SECTION**  
 SCALE: NTS



<b>MOORE AND ASSOCIATES                  ENGINEERING AND CONSULTING, INC.</b>		DRAWN BY: JRS		CAROLINA CARPORTS, INC. 187 CARDINAL RIDGE TRAIL DOBSON, NC 27017 30'x20' ENCLOSED STRUCTURE	
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		CLIENT: CAROLINA CARPORTS		SHT. 7C	
				SCALE: NTS	
				DWG. NO: SK-3	
				REV: 6	

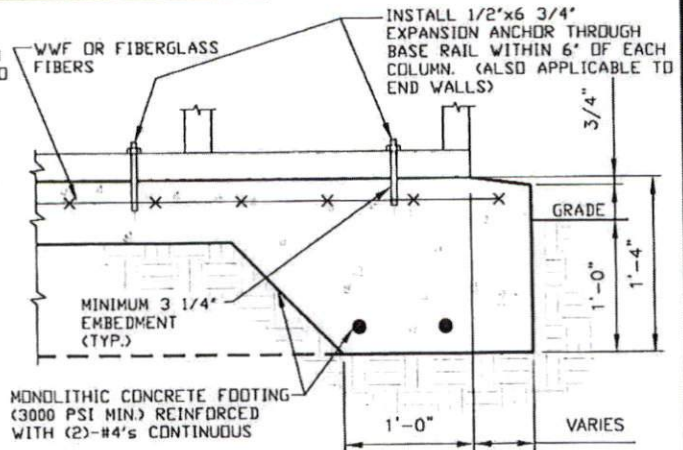
## BASE RAIL ANCHORAGE OPTIONS



3A

### CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

SCALE: NTS  
(MINIMUM ANCHOR EDGE DISTANCE IS 4")



3B

### CONCRETE SLAB BASE RAIL ANCHORAGE

SCALE: NTS  
(MINIMUM ANCHOR EDGE DISTANCE IS 4")

### GENERAL NOTES

#### 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:

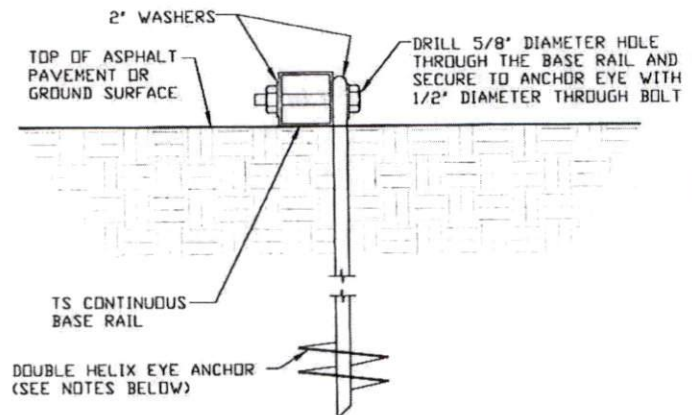
THE TURNDOWN REINFORCING STEEL SHALL BE ASTM A615 GRADE 60. THE SLAB REINFORCEMENT SHALL BE WELDED WIRE FABRIC MEETING ASTM A185 OR FIBERGLASS FIBER REINFORCEMENT.

#### 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:

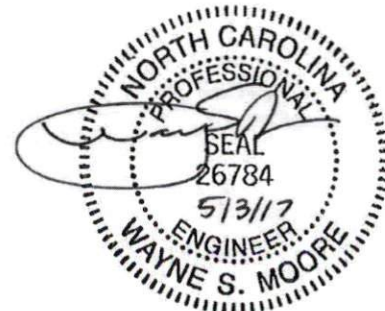
1. FOR VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND COBBLES, CALICHE, PRELOADED SILTS AND CLAYS, USE MINIMUM (2) 4' HELICES WITH MINIMUM 30' EMBEDMENT OR SINGLE 6' HELIX WITH MINIMUM 50' EMBEDMENT
2. FOR CORAL USE MINIMUM (2) 4' HELICES WITH MINIMUM 30' EMBEDMENT OR SINGLE 6' HELIX WITH MINIMUM 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.



3C

### GROUND BASE HELIX ANCHORAGE

SCALE: NTS (CAN BE USED FOR ASPHALT)



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CHECKED BY: PDH

PROJECT MGR: VSM

CLIENT: CAROLINA  
CARPORTS

CAROLINA CARPORTS, INC.  
187 CARDINAL RIDGE TRAIL  
DOBSON, NC 27017  
30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SHT. 8

SCALE: NTS

DWG. NO: SK-3

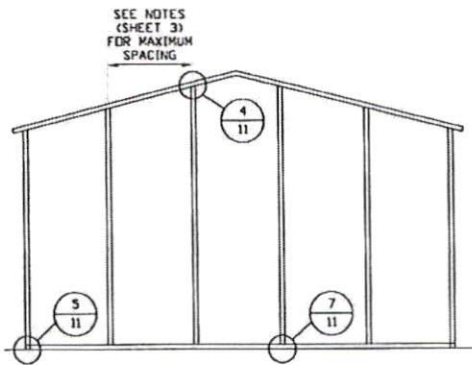
JOB NO: 151565  
161355

REV: 6

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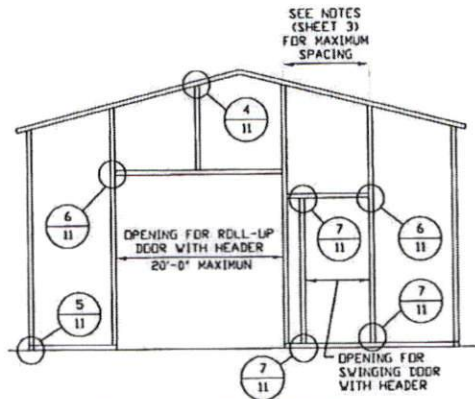


## BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



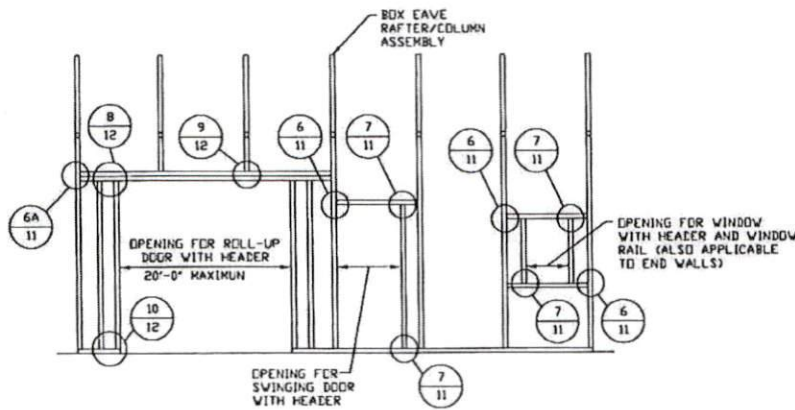
**TYPICAL BOX EAVE RAFTER  
END WALL FRAMING SECTION**

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. 9

SCALE: NTS

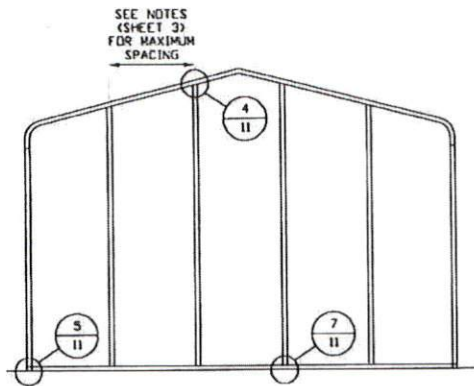
DWG. NO: SK-3

JOB NO: 15156S  
16135S

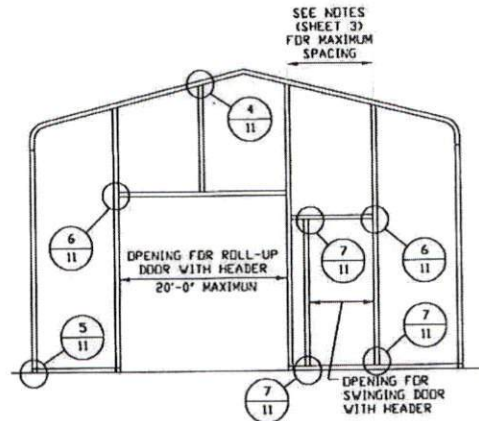
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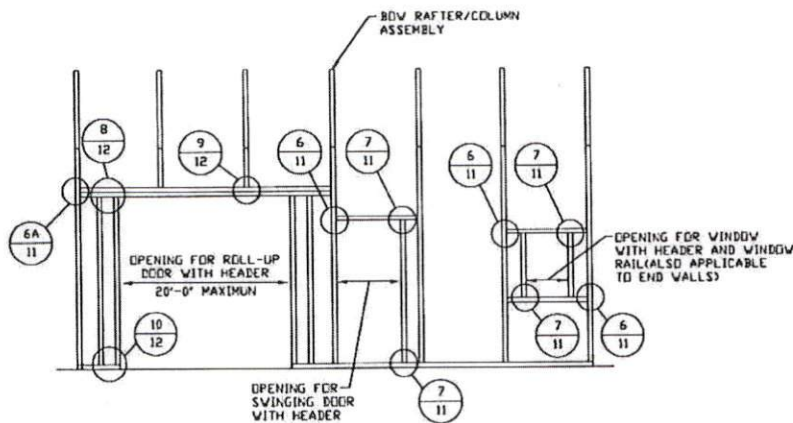
## BOW RAFTER END WALL AND SIDE WALL OPENINGS



**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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30'x20' ENCLOSED STRUCTURE

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SHT. 10

SCALE: NTS

DWG. NO: SK-3

JOB NO: 15156S

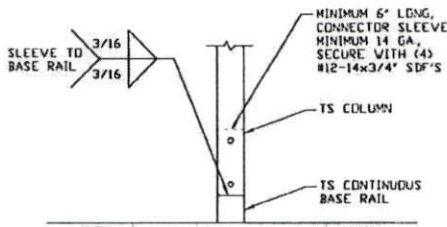
16135S

REV: 6

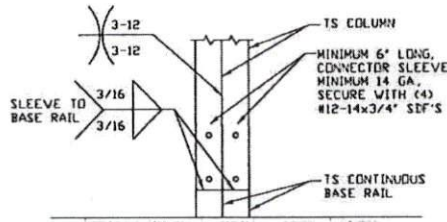
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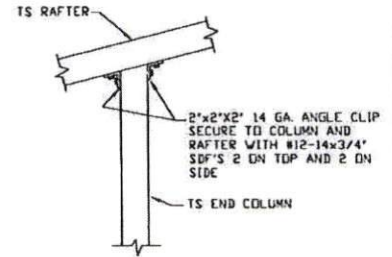
# BOW AND BOX EAVE RAFTER WALL OPENING DETAILS



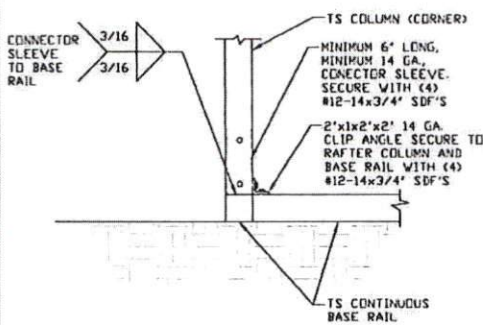
**2** RAFTER COLUMN/BASE RAIL CONNECTION DETAIL  
SCALE: NTS



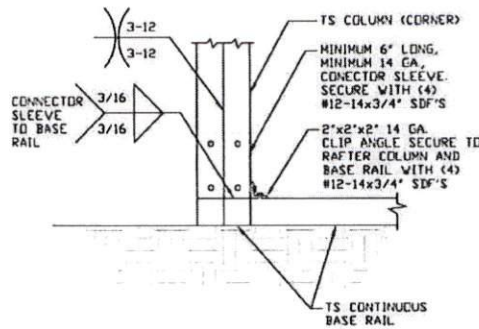
**2A** RAFTER COLUMN/BASE RAIL CONNECTION DETAIL  
SCALE: NTS



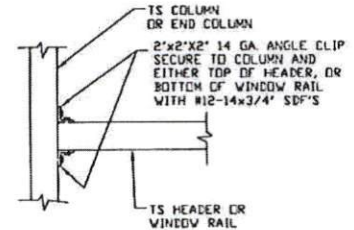
**4** END COLUMN/RAFTER CONNECTION DETAIL  
SCALE: NTS



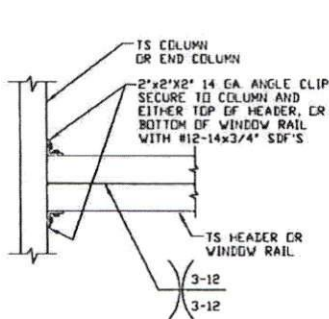
**5** END COLUMN/BASE RAIL CONNECTION DETAIL  
SCALE: NTS



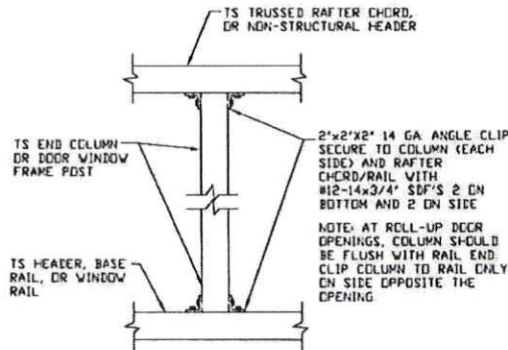
**5A** END COLUMN/BASE RAIL CONNECTION DETAIL  
SCALE: NTS



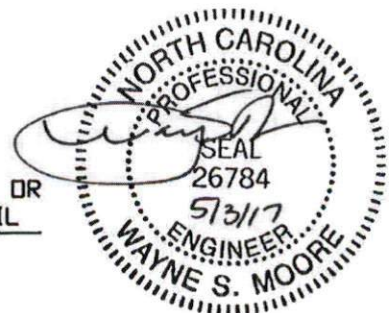
**6** COLUMN OR WINDOW RAIL TO POST CONNECTION DETAIL  
SCALE: NTS



**6A** COLUMN OR WINDOW RAIL 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: WSM

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187 CARDINAL RIDGE TRAIL  
DOBSON, NC 27017  
30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SCALE: NTS

JOB NO: 15156S  
16135S

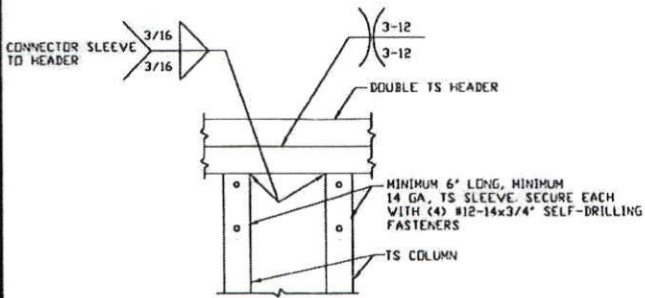
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DWG. NO: SK-3

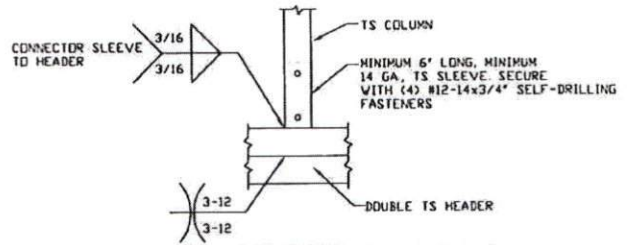
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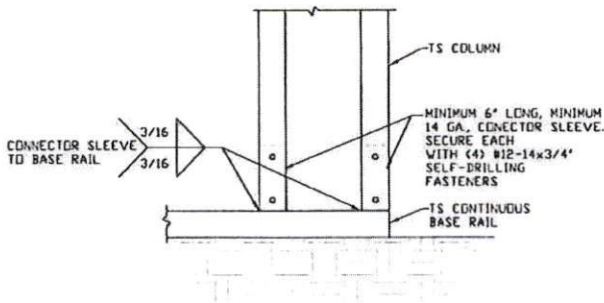
## BOW AND BOX EAVE RAFTER WALL OPENING DETAILS



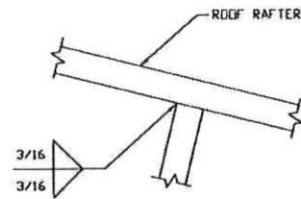
**8** DOUBLE HEADER/COLUMN CONNECTION DETAIL  
SCALE: NTS



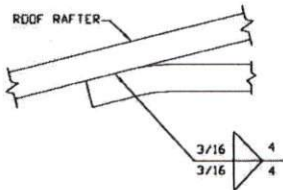
**9** COLUMN/DOUBLE HEADER CONNECTION DETAIL  
SCALE: NTS



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



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



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



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30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SHT. 12

SCALE: NTS

DWG. NO: SK-3

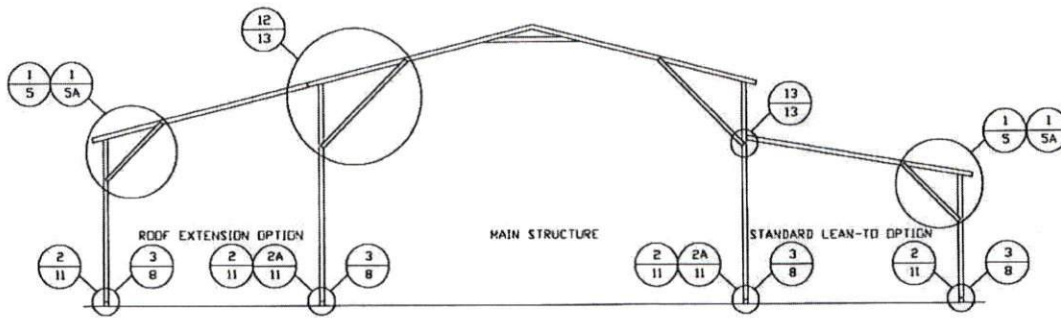
JOB NO: 15156S  
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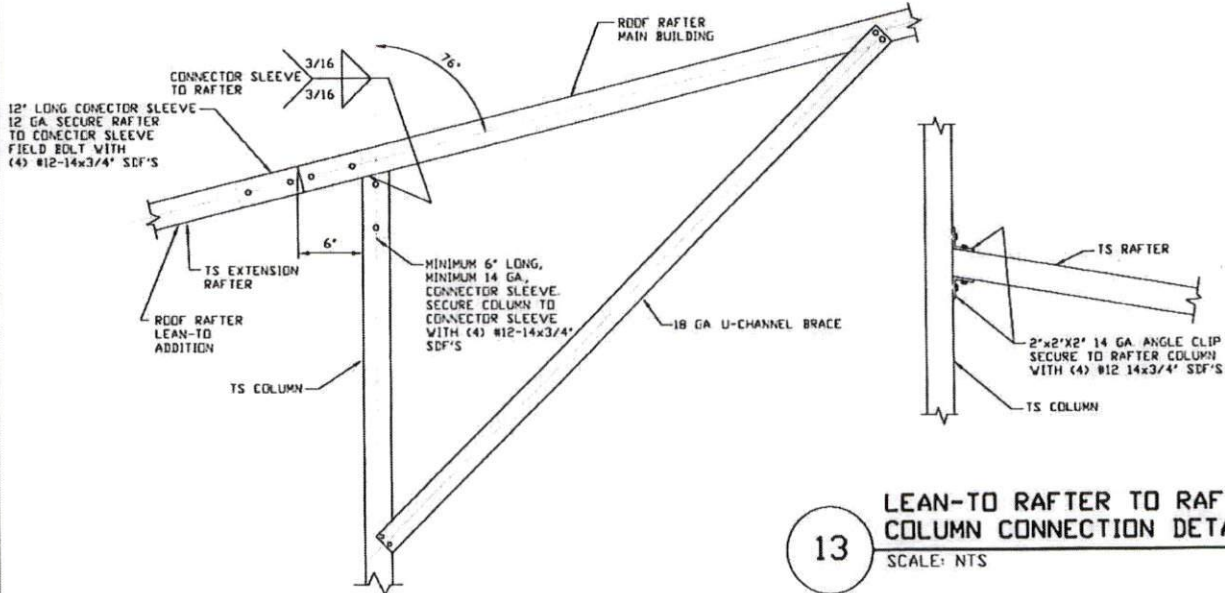


## BOX EAVE RAFTER LEAN-TO OPTIONS



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

SCALE: NTS



13

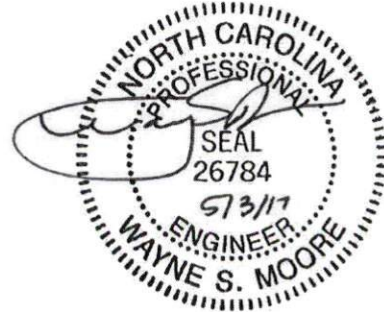
**LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL**

SCALE: NTS

12

**SIDE EXTENSION RAFTER/COLUMN DETAIL**

SCALE: NTS



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30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SHT. 13

SCALE: NTS

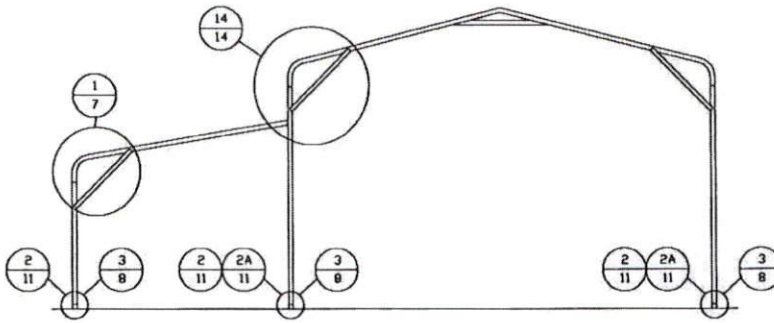
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JOB NO: 15156S  
16135S

REV: 6

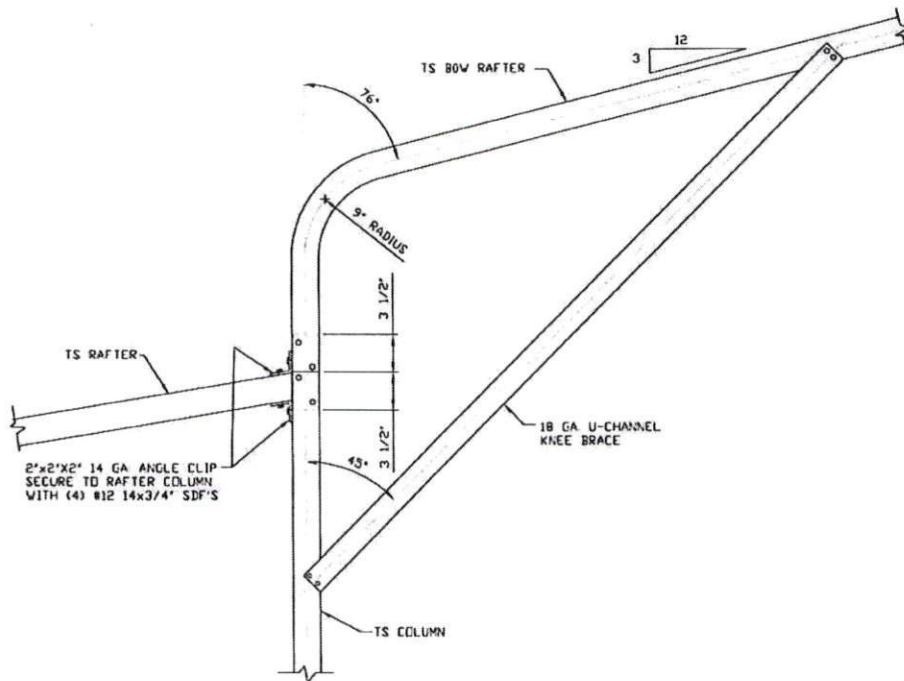
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## BOW RAFTER LEAN-TO OPTION



**TYPICAL BOW RAFTER LEAN-TO OPTION FRAMING SECTION**

SCALE: NTS



**LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL**

14

SCALE: NTS



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30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SHT. 14

SCALE: NTS

DWG. NO: SK-3

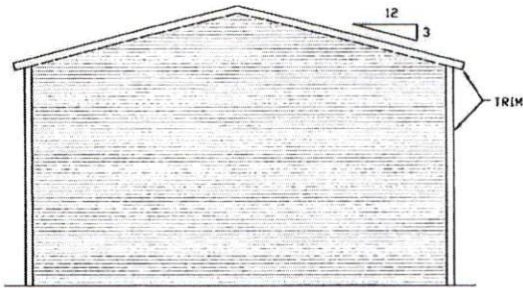
JOB NO: 15156S  
16135S

REV: 6

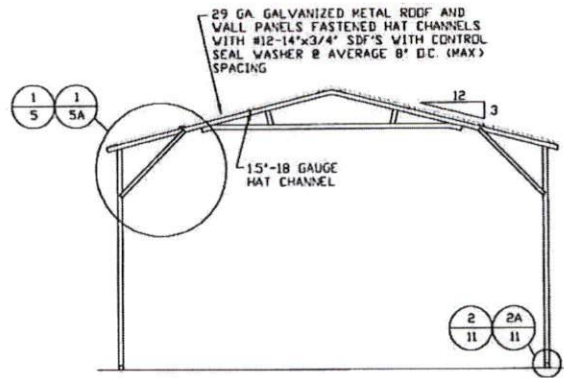
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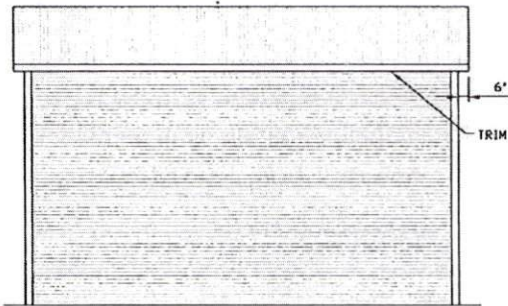
## BOX EAVE RAFTER VERTICAL ROOF OPTION



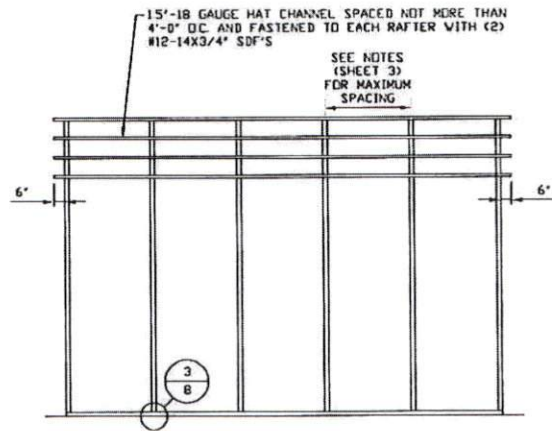
**TYPICAL END ELEVATION  
VERTICAL ROOF**  
SCALE: NTS



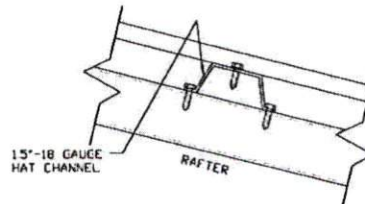
**TYPICAL SECTION  
VERTICAL ROOF OPTION**  
SCALE: NTS



**TYPICAL SIDE ELEVATION  
VERTICAL ROOF**  
SCALE: NTS



**TYPICAL FRAMING SECTION  
VERTICAL ROOF OPTION**  
SCALE: NTS



**ROOF PANEL ATTACHMENT**  
(ALTERNATE FOR VERTICAL ROOF PANELS)  
SCALE: NTS

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30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SCALE: NTS

JOB NO: 15156S  
16135S

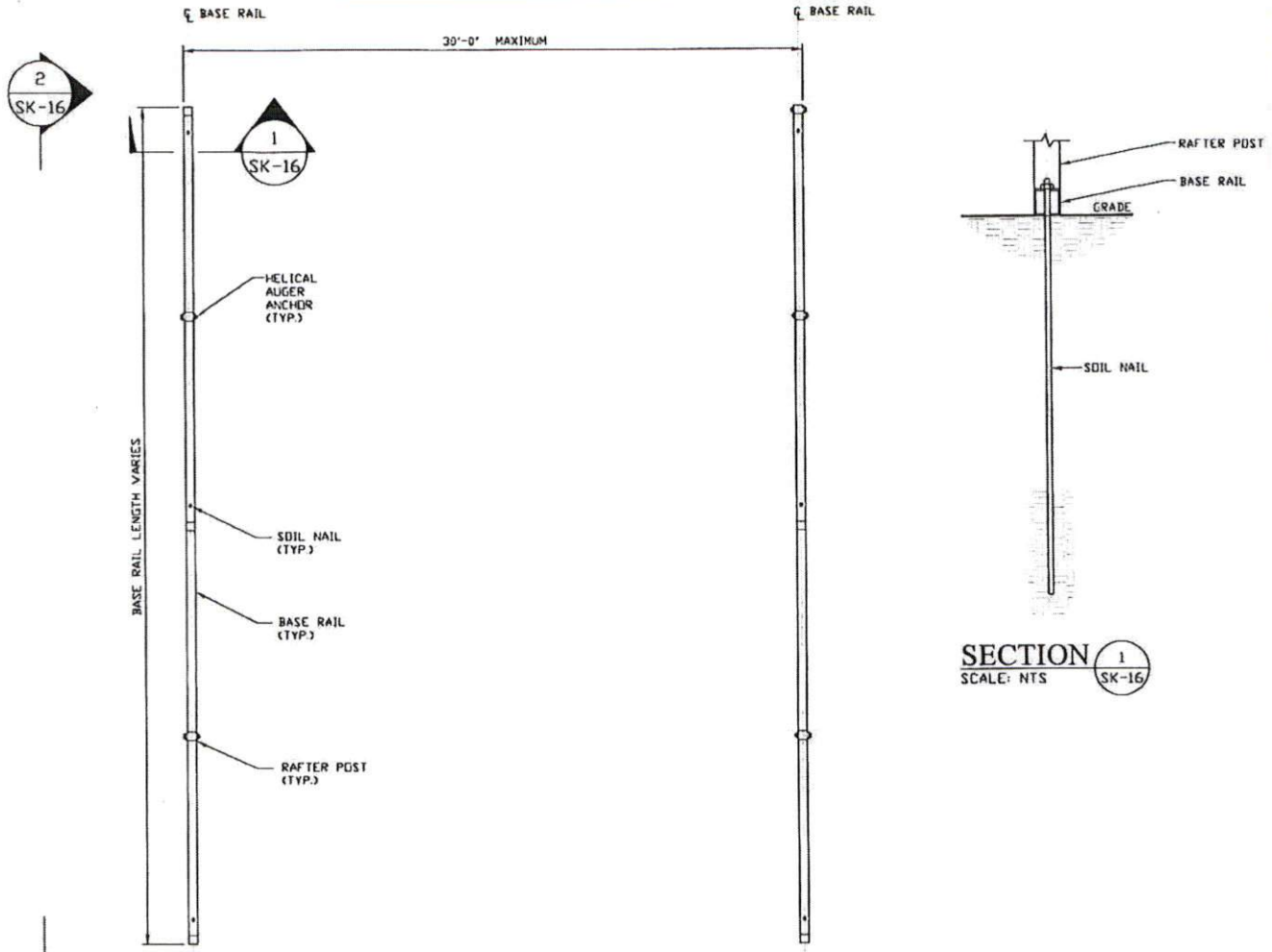
SHT. 15

DWG. NO: SK-3

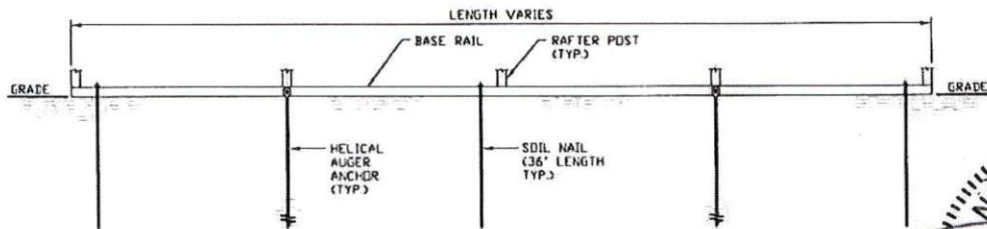
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# BASE RAIL ON GRADE APPLICATION



**BASE RAIL PLAN**  
SCALE: NTS



**SECTION 2**  
SCALE: NTS SK-16

**NOTES:**

1. INSTALLATION OF SOIL NAILS OR EXPANSION ANCHORS ALSO APPLY TO END WALLS
2. FOR EXPOSURE C USE 10' SPACING (EVERY OTHER POST)

HELIX ANCHOR	
SIDE LENGTH	SPACING
20'	20'
25'	25' NOTE 2
30'	10' (EVERY OTHER POST)



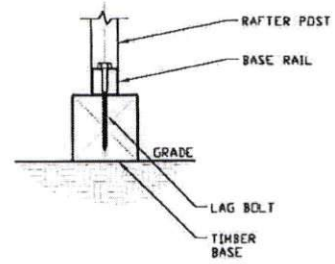
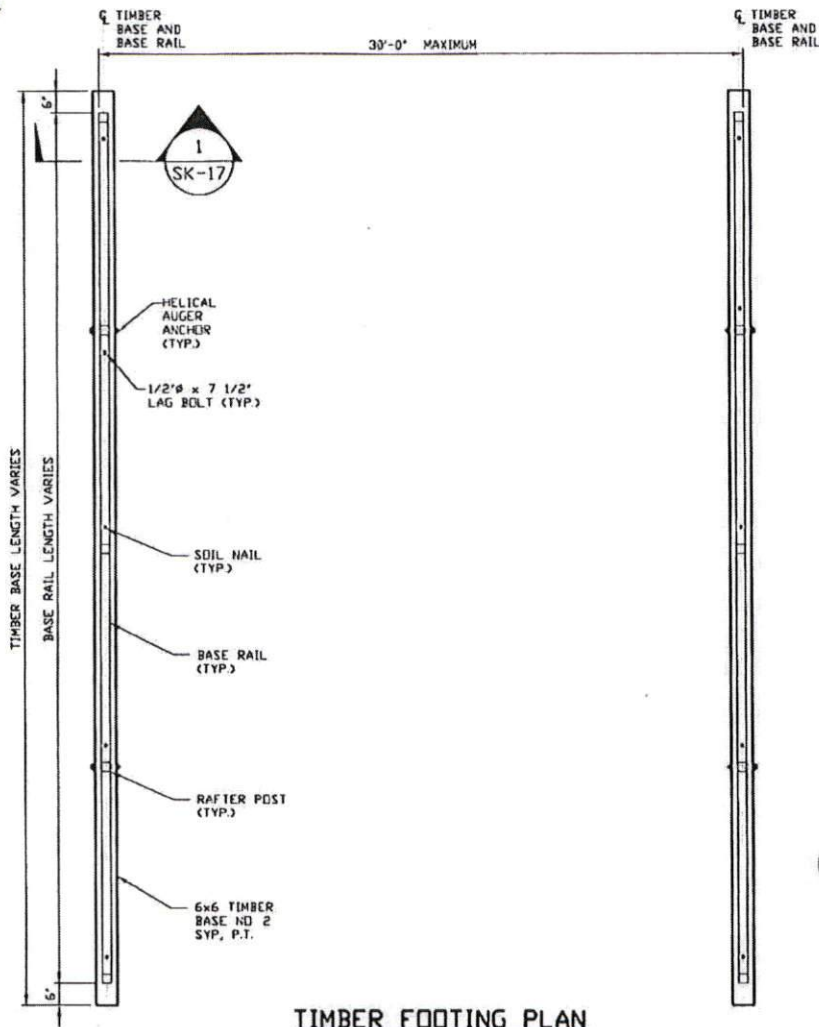
**MOORE AND ASSOCIATES  
ENGINEERING AND CONSULTING, INC.**

DRAWN BY: JRS		CAROLINA CARPORTS, INC. 187 CARDINAL RIDGE TRAIL DOBSON, NC 27017 30'x20' ENCLOSED STRUCTURE	
CHECKED BY: PDH		DATE: 4-6-17	SCALE: NTS
PROJECT MGR: VSM	CLIENT: CAROLINA CARPORTS	SHT. 16	JOB NO: 15156S 16135S
		DWG. NO: SK-3	REV: 6

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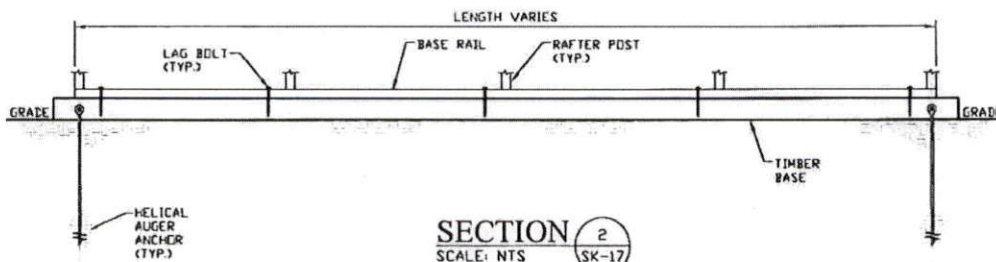
# OPTIONAL BASE RAIL ON TIMBER BEAM



**SECTION 1**  
SCALE: NTS



**TIMBER FOOTING PLAN**  
SCALE: NTS



**SECTION 2**  
SCALE: NTS

HELIX ANCHOR	
SIDE LENGTH	SPACING
20'	20'
25'	25' NOTE 2
30'	10' (EVERY OTHER POST)

**NOTES:**

1. INSTALLATION OF SOIL NAILS OR EXPANSION ANCHORS ALSO APPLY TO END WALLS
2. FOR EXPOSURE C USE 10' SPACING (EVERY OTHER POST)

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

DRAWN BY: JRS

CHECKED BY: PDH

PROJECT MGR: WSM

CLIENT: CAROLINA  
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187 CARDINAL RIDGE TRAIL  
DOBSON, NC 27017  
30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SCALE: NTS

SHT. 17

DWG. NO: SK-3

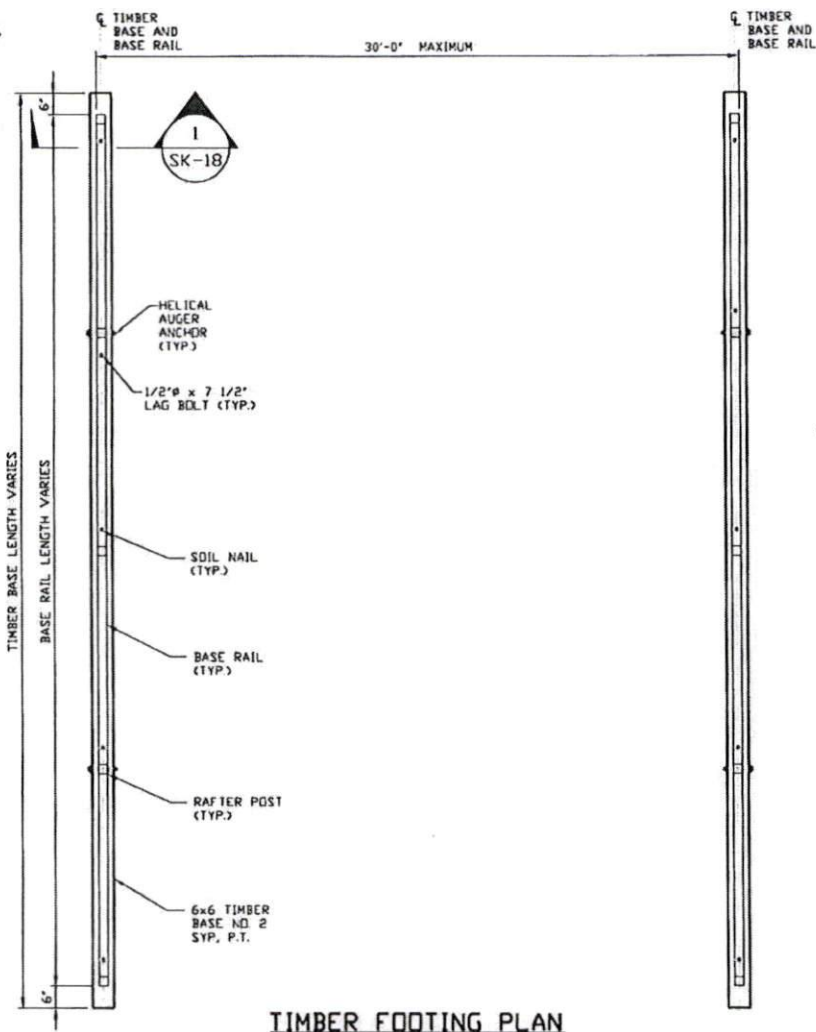
JOB NO: 15156S  
16135S

REV: 6

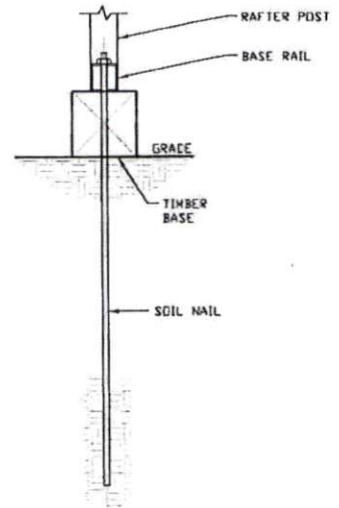
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# OPTIONAL BASE RAIL ON TIMBER BEAM WITH SOIL NAIL

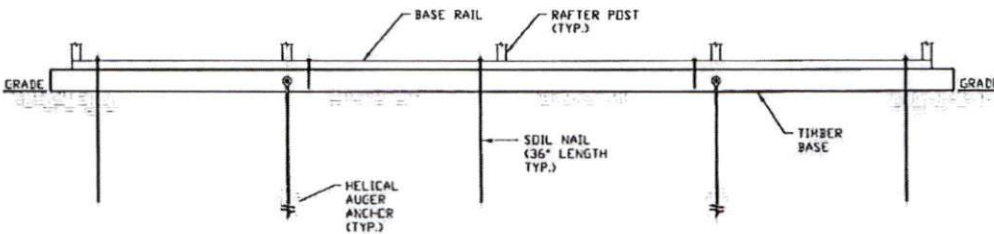
2  
SK-18



**TIMBER FOOTING PLAN**  
SCALE: NTS



**SECTION 1**  
SCALE: NTS



**SECTION 2**  
SCALE: NTS

HELIX ANCHOR	
SIDE LENGTH	SPACING
20'	20'
25'	25' NOTE 2
30'	10' (EVERY OTHER POST)

1. INSTALLATION OF SOIL NAILS OR EXPANSION ANCHORS ALSO APPLY TO END WALLS
2. FOR EXPOSURE C USE 10' SPACING (EVERY OTHER POST)

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

DRAWN BY: JRS

CHECKED BY: PMH

PROJECT MGR: WSM

CLIENT: CAROLINA  
CARPORTS

CAROLINA CARPORTS, INC.  
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DOBSON, NC 27017  
30'x20' ENCLOSED STRUCTURE

DATE: 4-6-17

SCALE: NTS

SHT. 18

DWG. NO: SK-3

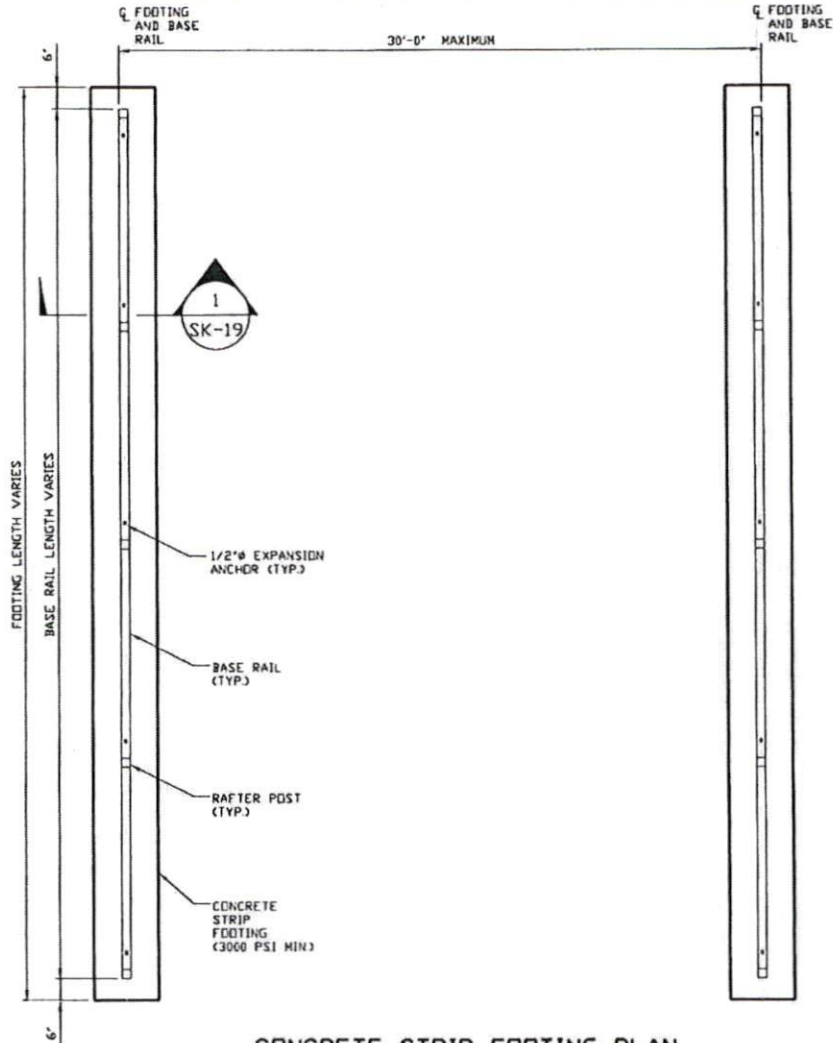
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16135S

REV: 6

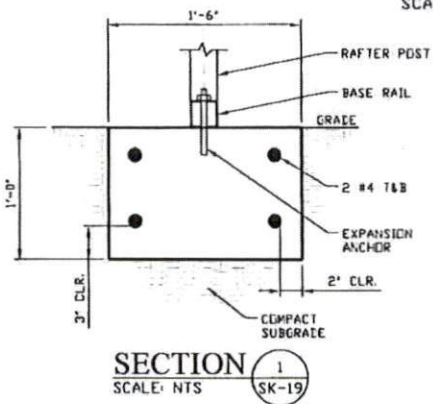
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# OPTIONAL CONCRETE STRIP FOOTING



**CONCRETE STRIP FOOTING PLAN**  
SCALE: NTS



**SECTION 1**  
SCALE: NTS



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CHECKED BY: PDH

PROJECT MGR: VSM

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DATE: 4-6-17

SCALE: NTS

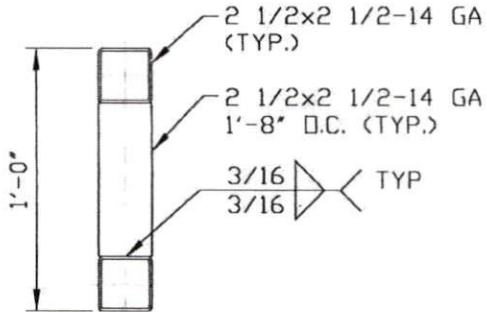
DWG. NO: SK-3

JOB NO: 15156S  
1613SS

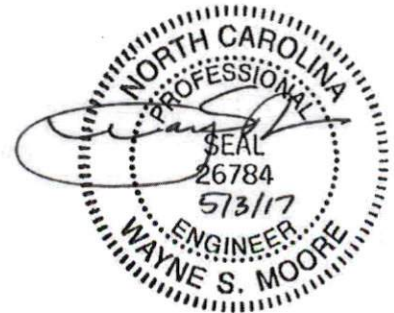
REV: 6

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## OPTIONAL DOOR HEADER



**HEADER DETAIL FOR DOOR  
OPENINGS 12' < LENGTH < 20'**  
SCALE: NTS



<b>MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.</b>	DRAWN BY: JRS	CAROLINA CARPORTS, INC. 187 CARDINAL RIDGE TRAIL DOBSON, NC 27017 30'x20' ENCLOSED STRUCTURE		
	CHECKED BY: PDH			
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	CLIENT: CAROLINA CARPORTS	SHT. 20	DWG. NO: SK-3	REV: 6