

STRUCTURAL DESIGN ENCLOSED BUILDING

MAXIMUM 30'-0" WIDE X 16'-0" EAVE HEIGHT- BOX EAVE FRAME

2 July 2020 Revision 2 M&A Project No. 18315S/19179S/20176S

Prepared for:

NC Carports and Garages, LLC 309 S. Depot Street Pilot Mountain, NC 27041

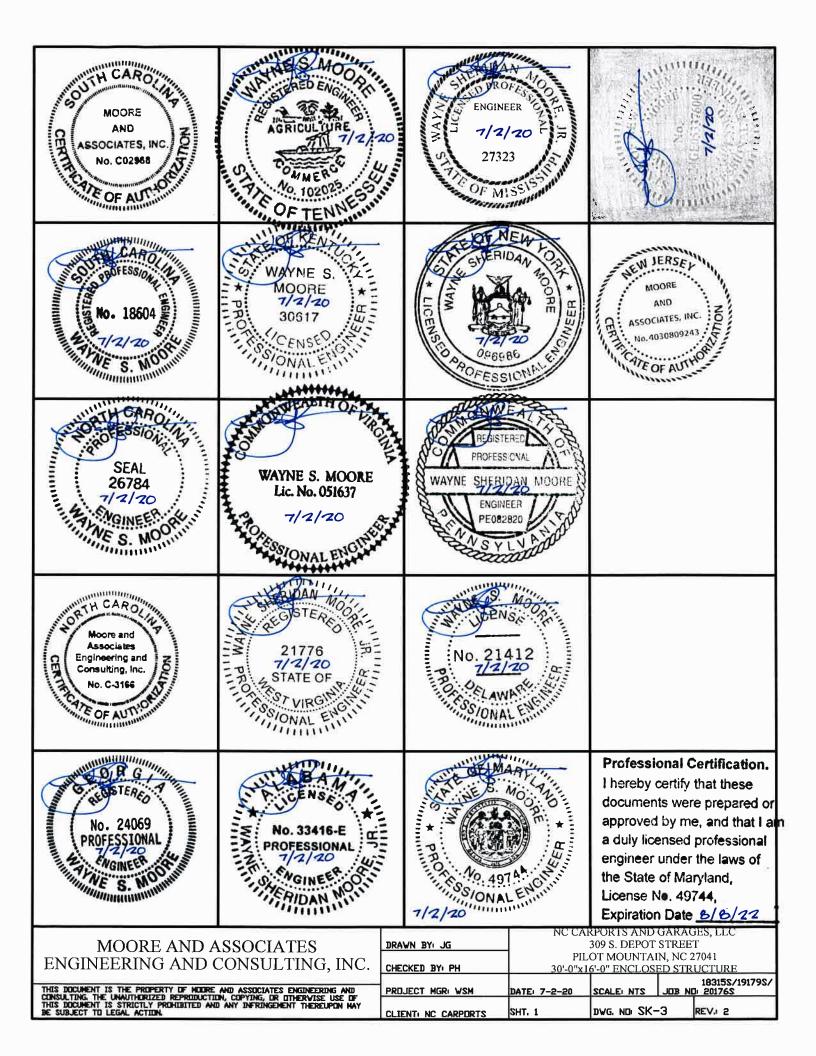
Prepared by:

Moore and Associates Engineering and Consulting, Inc.

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INSTALLATION NOTES AND SPECIFICATIONS

- 1. DESIGN IS FOR MAXIMUM 30'-0' WIDE x 16'-0' EAVE HEIGHT ENCLOSED STRUCTURES,
- 2. DESIGN WAS DONE IN ACCORDANCE WITH THE 2018 NORTH CAROLINA BUILDING CODE, 2009 INTERNATIONAL BUILDING CODE (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

= 30 PSF (W <u><_</u> 24'-0' WITH U-CHANNEL COLLAR TIE)

NOTE: UNBALANCED SNOW LOADS DUE TO DRIFTING HAVE NOT BEEN EVALUATED.

- 4. 3-SECOND GUST ULTIMATE WIND SPEED (VULT) 105 TO 145 MPH (NOMINAL WIND SPEED 82 TO 112 MPH).
- 5. MAXIMUM RAFTER/COLUMN AND END COLUMN SPACING = 5.0 FEET (UNLESS NOTED OTHERWISE).
- 6. SIDEWALL COLUMNS AND ENDWALL COLUMNS ARE SIMILAR IN SIZE, UNLESS NOTED OTHERWISE,
- 7. RISK CATEGORY I.
- 8. WIND EXPOSURE CATEGORY B.
- 9. SPECIFICATIONS APPLICABLE TO 29 GAUGE METAL PANELS FASTENED DIRECTLY TO 2 1/2" x 2 1/2" 14 GAUGE TUBE STEEL (TS) FRAMING MEMBERS (UNLESS NOTED OTHERWISE).
- 10. AVERAGE FASTENER SPACING ON-CENTERS ALONG RAFTERS OR HAT CHANNELS, AND COLUMNS (INTERIOR OR END) = 9 INCHES.
- 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 16 FEET OR LESS, AND ROOF SLOPES OF 14" (3:12 PITCH) OR LESS SPACING REQUIREMENTS FOR OTHER ROOF HEIGHTS AND/OR SLOPES MAY VARY.
- 12. ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL WITHIN 6' OF EACH COLUMN.
- 13. STANDARD GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/WELDED NUT 30' LONG, SOIL NAILS MAY BE USED FOR WIND SPEEDS \$\angle\$ 145 MPH AND IN SUITABLE SOIL CONDITIONS. OPTIONAL ANCHORAGE MAY BE USED IN SUITABLE SOILS AND MUST BE USED FOR WIND SPEEDS > 145 MPH AND/OR IN SUITABLE SOILS AS NOTED.
- 14. WIND FORCES GOVERN OVER SEISMIC FORCES. SEISMIC PARAMETERS ANALYZED ARE:

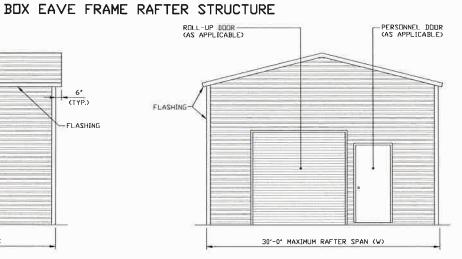
SDIL SITE CLASS = D RISK CATEGORY I

R= 3.25 $I_E= 1.0$ $V= C_S W$

S_{Di}= 1.258

				GARAGES, LLC	
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BOX EAVE FRA WINDOV (AS APPLICABLE) 6' (TYP.) FLASHING LENGTH VARIES DEPENDING ON NUMBER AND SPACING OF RAFTERS



TYPICAL SIDE ELEVATION

SCALE: NTS

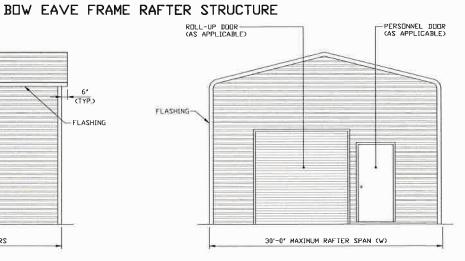
TYPICAL END ELEVATION SCALE: NTS

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	CLIENT: NC CARPORTS	SHT. 3B	DWG. NO SK-	.3	REV. 2

BOW EAVE FRAI



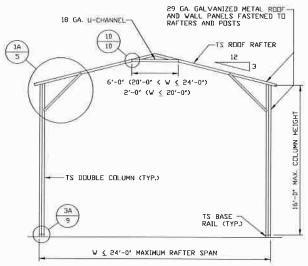
TYPICAL END ELEVATION
SCALE: NTS

TYPICAL SIDE ELEVATION
SCALE: NTS

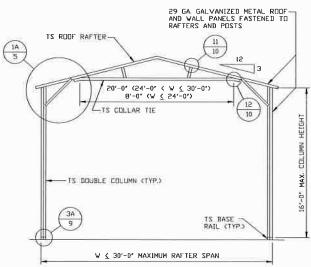
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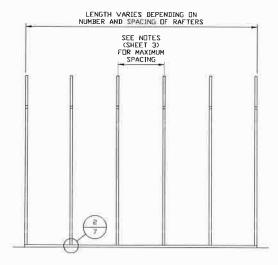
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TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

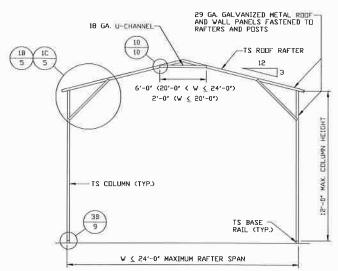


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS

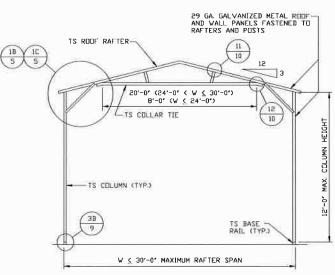
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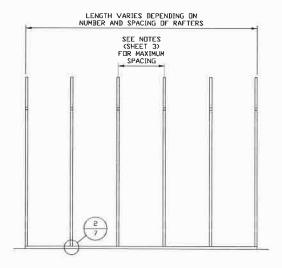
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$\frac{\mathsf{TYPICAL}}{\mathsf{SCALE}^!} \; \mathsf{NTS} \; \frac{\mathsf{RAFTER/COLUMN}}{\mathsf{FRAME}} \; \frac{\mathsf{SECTION}}{\mathsf{SCALE}^!} \; \mathsf{NTS}$



TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS

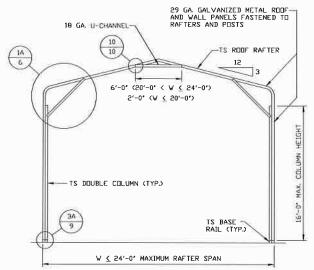


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS

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TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS

29 GA. GAL VANIZED METAL RODFAND WALL PANELS FASTENED TO
RAFTERS AND POSTS

TS RODF RAFTER

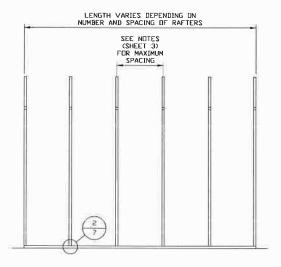
11
10
12
30'-0' (24'-0' (W \ 30'-0')
8'-0' (W \ 24'-0')
12
TS COLLAR TIE

TS DOUBLE COLUMN (TYP.)

TS BASE
RAIL (TYP.)

V \(\) 30'-0' MAXIMUM RAFTER SPAN

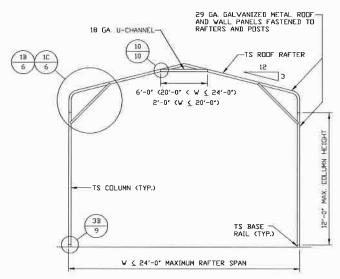
TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS

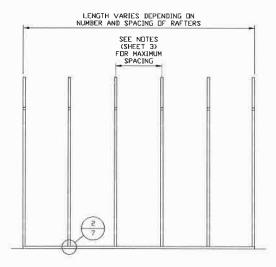
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TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS

TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS

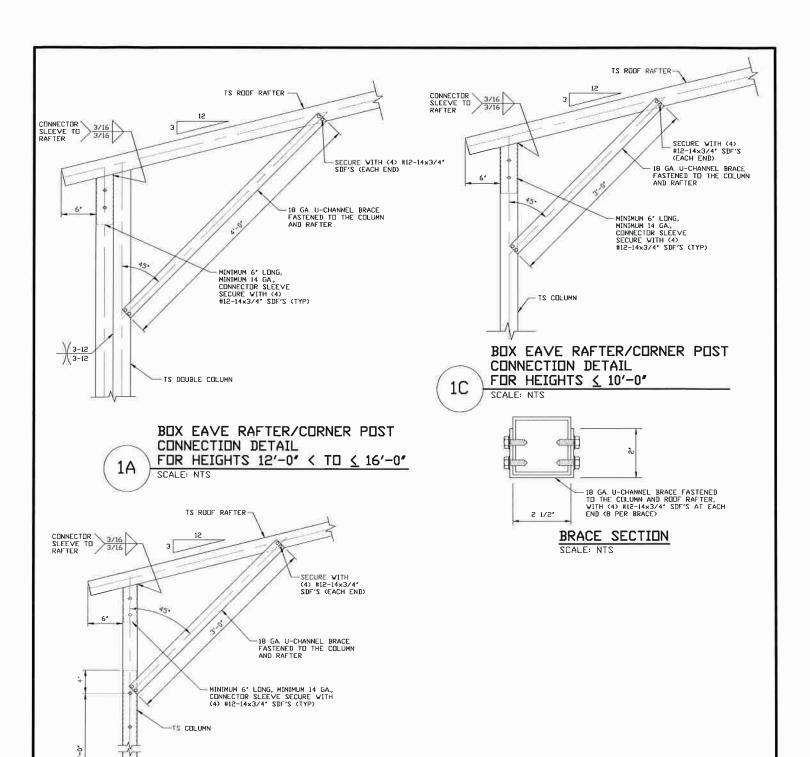


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS

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BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL
FOR HEIGHTS 10'-0" < TO < 12'-0"

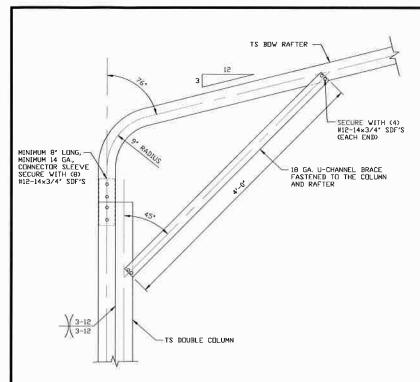
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TS 2 1/4×2 1/4-14 GA.
REINFORCING SECURE
WITH #12-14×3/4" SDF'S
@ MAX. 6" D.C. ON BOTH
SIDES OF COLUMN

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BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL

FOR HEIGHTS 12'-0' < TO \(\lefta \) 16'-0"

TS BOW RAFTER

SECURE WITH (4)

WI2-14×3/4' SDF'S

CEACH END

TS COLUMN

TS 2 1/4×2 1/4-14 GA.

REINFORCING SECURE

WITH WI2-14×3/4' SDF'S

@ MAX. 6' DC. DN BOTH

SIDES OF COLUMN.

BOW RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS 10'-0' < TO < 12'-0" SCALE: NTS

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DRAWN BY: JG	NC CARPORTS AND GARAGES, LLC 309 S. DEPOT STREET PILOT MOUNTAIN, NC 27041 30'-0"x16'-0" ENCLOSED STRUCTURE					
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CLIENT: NC CARPORTS	SHT. 6	DWG. NIII SK-	3	REV. 2		

TS BOW RAFTER

TS COLUMN

CONNECTION DETAIL

SCALE: NTS

2 1/2*

FOR HEIGHTS ≤ 10'-0'

BOX EAVE RAFTER/CORNER POST

18 GA. U-CHANNEL BRACE FASTENED TO THE COLUMN AND ROOF RAFTER, WITH (4) #12-14×3/4' SDF'S AT EACH END (8 PER BRACE)

BRACE SECTION

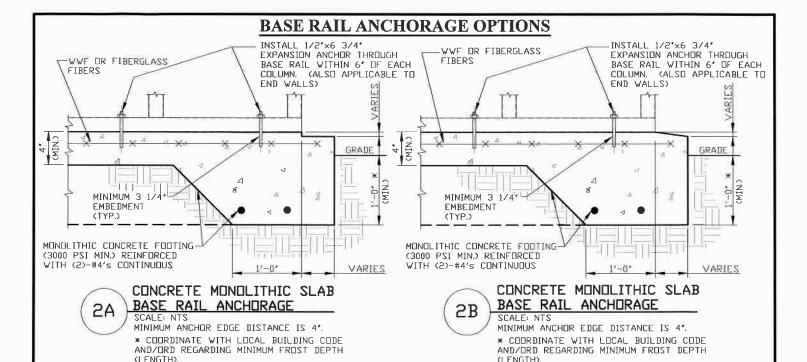
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MINIMUM 8' LONG. — MINIMUM 14 GA., CONNECTOR SLEEVE SECURE WITH (8) #12-14x3/4' SDF'S

1C

SECURE WITH (4) #12-14×3/4' SDF'S (EACH END)

18 GA. U-CHANNEL BRACE FASTENED TO THE COLUMN AND RAFTER



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:

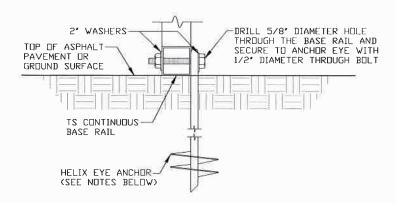
- REINFORCEMENT IS BENT COLD.
- THE DIAMETER OF THE BEND, MEASURED ON THE INSIDE OF THE BAR, IS NOT LESS THAN SIX-BAR DIAMETERS.
 REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT
- BE FIELD BENT.

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 LODSE TO MEDIUM DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS ALLUVIAL FILL, USE MINIMUM (2) 6' HELICES WITH MINIMUM 50" EMBEDMENT.
- 5. FOR VERY LOSE TO MEDIUM DENSE SANDS, FIRM TO STIFFER CLAYS AND SILTS, ALLUVIAL FILL, USE MINIMUM (2) 8' HELICES WITH MINIMUM 60' EMBEDMENT.

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BASE RAIL ANCHORAGE OPTIONS

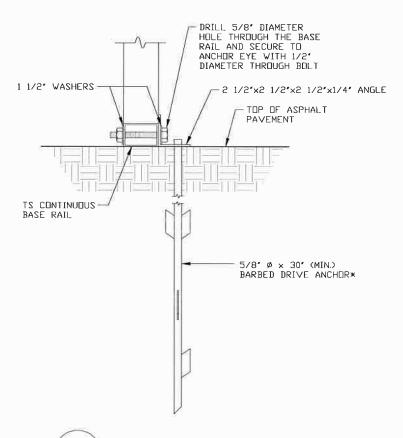


2C

GROUND BASE HELIX ANCHORAGE

SCALE: NTS (CAN BE USED FOR ASPHALT)

* COORDINATE WITH LOCAL BUILDING CODE AND/ORD REGARDING MINIMUM FROST DEPTH (LENGTH).



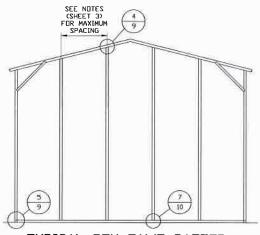
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ASPHALT BASE ANCHORAGE

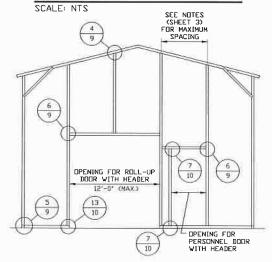
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MOORE AND ASSOCIATES	DRAWN BY: JG		RPORTS AND 309 S. DEPOT		,

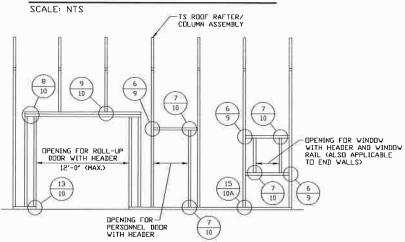
BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION



TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION



TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION SCALE: NTS

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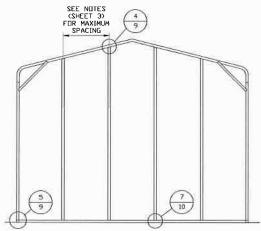
CLIENT: NC CARPORTS	SHT. B	DWG. NE SK	-3	REV. 2		
PROJECT MGR: WSM	DATE: 7-2-20	SCALE: NTS	18315\$/19179\$. JDB ND 20176\$			
CHECKED BY: PH	PILOT MOUNTAIN, NC 27041 30'-0"x16'-0" ENCLOSED STRUCTURE					
DRAWN BY: JG		ARPORTS AND 309 S. DEPOT	STRE	ET		

SEE NOTES (SHEET) FOR MAXIMUM SPACING DPENING FOR ROLL-UP DOOR WITH HEADER 20'-0' (MAX.) TOPENING FOR PERSONNEL DOOR WITH HEADER WITH HEADER

TYPICAL BUX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

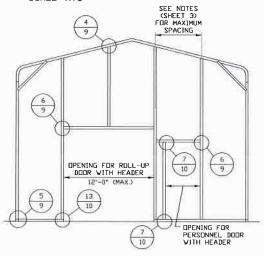
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BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS

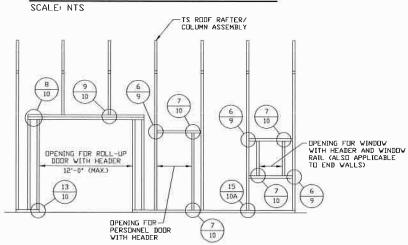


TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS



TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION



TYPICAL BOX EAVE RAFTER
SIDE WALL OPENINGS FRAMING SECTION
SCALE: NTS

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CLIENT: NC CARPURTS	SHT. BA	DVG. ND: SK	-3	REV.: 2				
PROJECT MGR: WSM	DATE: 7-2-20	SCALE: NTS	18315S/19179 JDB ND 20176S					
CHECKED BY: PH		PILOT MOUNTAIN, NC 27041 30'-0"x16'-0" ENCLOSED STRUCTURE						
DRAWN BY: JG		309 S. DEPOT STREET						
	NC CA	RPORTS AND	_					

SEE NOTES
(SHEET 3)
FOR MAXIMUM
SPACING

DPENING FOR ROLL-UP
DODGR VITH HEADER
207-0* (MAX.)

The pening for personnel dodge vith Header

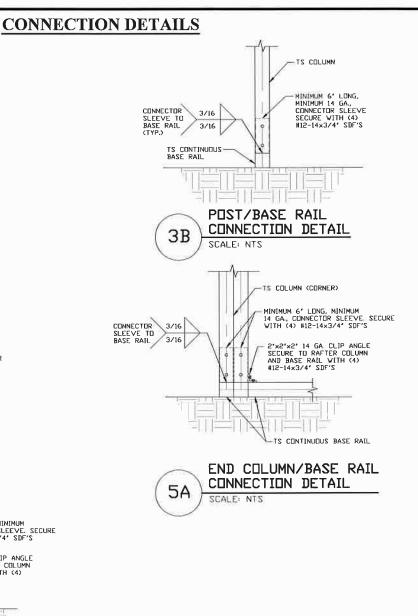
The pening for personnel dodge vith Header

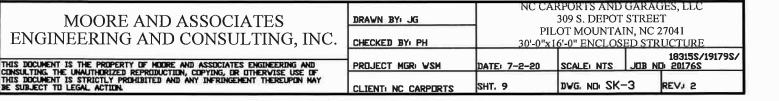
The pening for personnel dodge vith Header

TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

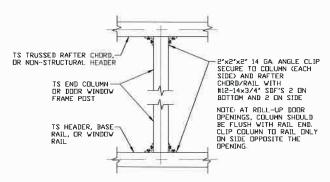
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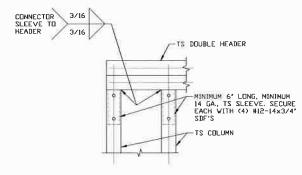
TS DOUBLE COLUMN MINIMUM 6' LONG, MINIMUM 14 GA., CONNECTOR SLEEVE SECURE WITH (4) #12-14x3/4' SDF'S CONNECTOR SLEEVE TO BASE RAIL (TYP.) 3/16 3/16 TS CONTINUOUS: BASE RAIL POST/BASE RAIL CONNECTION DETAIL 3A SCALE: NTS TS ROOF RAFTER 2"x2"x2" 14 GA. ANGLE CLIP SECURE TO COLUMN AND RAFTER WITH #12-14x3/4" SDF'S 2 DN TOP AND 2 DN SIDE TS END CHLUMN END COLUMN/RAFTER CONNECTION DETAIL 4 SCALE: NTS TS COLUMN (CORNER) MINIMUM 6' LONG, MINIMUM 14 GA., CONECTOR SLEEVE. SECURE WITH (4) #12-14×3/4' SDF'S CONNECTOR SLEEVE TO BASE RAIL 3/16 2'x2'x2' 14 GA CLIP ANGLE SECURE TO RAFTER COLUMN AND BASE RAIL WITH (4) #12-14x3/4" SDF'S TS CONTINUOUS BASE RAIL END COLUMN/BASE RAIL CONNECTION DETAIL 5B SCALE: NTS -2'x2'x2' 14 GA. ANGLE CLIP SECURE TO COLUMN AND EITHER TOP OF HEADER, OR BOTTOM OF WINDOW RAIL WITH #12-14x3/4' SDF'S TS HEADER OR WINDOW RAIL COLUMN OR WINDOW RAIL TO POST CONNECTION DETAIL 6 SCALE: NTS





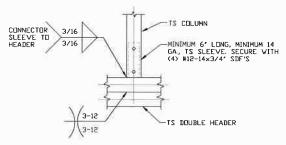
CONNECTION DETAILS

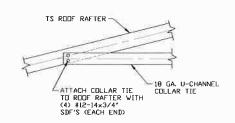


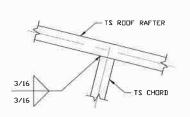


COLUMN TO HEADER, BASE RAIL, OR WINDOW RAIL CONNECTION DETAIL 7 SCALE: NTS

DOUBLE HEADER/COLUMN CONNECTION DETAIL 8



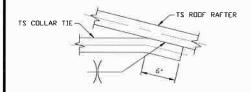




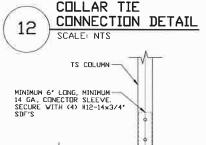
COLUMN/DOUBLE HEADER CONNECTION DETAIL SCALE: NTS

COLLAR TIE CONNECTION DETAIL 10 SCALE: NTS

RAFTER TO CHORD CONNECTION DETAIL 11 SCALE: NTS



9



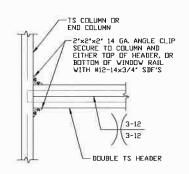


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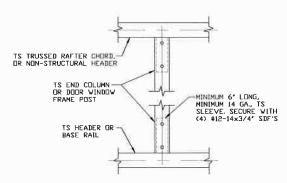
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	CLIENTI NC CARPORTS	SHT. 10	DWG. NO. SK	-3	REV. 2		
-	PROJECT MGR: WSM	DATE: 7-2-20	SCALE: NTS	18315S/19179S			
5€0	CHECKED BY: PH	PILOT MOUNTAIN, NC 27041 30'-0"x16'-0" ENCLOSED STRUCTURE					
	DRAWN BY: JG	309 S. DEPOT STREET					

CONNECTION DETAILS



DOUBLE HEADER
TO COLUMN
CONNECTION DETAIL
SCALE: NTS



COLUMN TO HEADER
OR BASE RAIL
CONNECTION DETAIL
SCALE: NTS

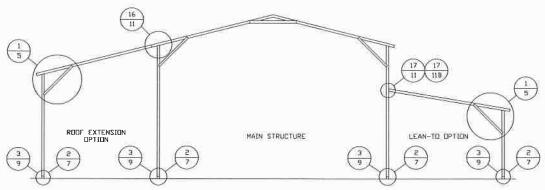
15

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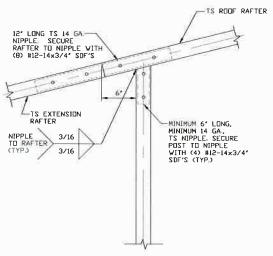
1	NC CA	NC CARPORTS AND GARAGES, LLC						
DRAWN BY: JG		309 S. DEPOT STREET						
	PI PI	PILOT MOUNTAIN, NC 27041						
CHECKED BY: PH	30'-0"x	30'-0"x16'-0" ENCLOSED STRUCTURE						
PROJECT MGR: WSM	DATE: 7-2-20	18315S/19179 0 SCALE: NTS JDB ND: 20176S						
CLIENT: NC CARPORTS	SHT. 10A	DWG. ND: SK-3		REV. 2				

BOX EAVE RAFTER LEAN-TO OPTIONS



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

SCALE: NTS MAXIMUM WIDTH DF SINGLE MEMBER ROOF EXTENSION AND LEAN-TO OPTION IS 12'-0'. MAXIMUM WIDTH OF DOUBLE MEMBER ROOF EXTENSION AND LEAN-TO OPTION IS 16'-0'.



3/16
NIPPLE TO COLUMN

MINIMUM 6' LONG, MINIMUM 14 GA., TS NIPPLE SECURE RAFTER TO NIPPLE WITH (4) B12-14×3/4' SDF'S

TS LEAN-TO RAFTER TO RAFTER TO RAFTER POST CONNECTION DETAIL

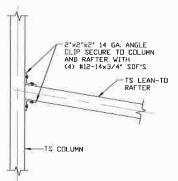
LEAN-TO RAFTER TO RAFTER POST CONNECTION DETAIL FOR WIDTHS & 12'-0' SCALE: NTS

ROOF EXTENSION RAFTER/CORNER POST DETAIL FOR WIDTHS ≤ 12'-0"

SCALE: NTS

17B

16



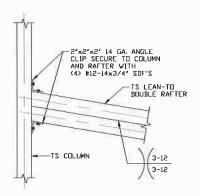
LEAN-TO RAFTER
TO RAFTER POST
CONNECTION DETAIL
FOR WIDTHS & 12'-0'

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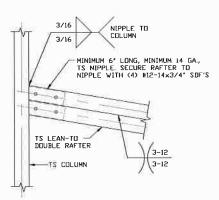
	NC CA	NC CARPORTS AND GARAGES, LLC					
DRAWN BY: JG		309 S. DEPOT STREET					
	PIL	PILOT MOUNTAIN, NC 27041					
CHECKED BY: PH	30'-0"x1	30'-0"x16'-0" ENCLOSED STRUCTURE					
PROJECT MGR: WSM	DATE: 7-2-20	SCALE: NTS	18315S/19179S/ JOB NO 20176S				
CLIENT: NC CARPORTS	SHT. 11	DWG. NO: SK-	-3 REV. 2				

BOX EAVE RAFTER LEAN-TO OPTIONS



LEAN-TO RAFTER TO RAFTER POST CONNECTION DETAIL FOR WIDTHS 12'-0" < T□ < 16'-0" 17C

SCALE: NTS



LEAN-TO RAFTER TO RAFTER POST CONNECTION DETAIL FOR WIDTHS 12'-0" < T□ < 16'-0"

SCALE: NTS

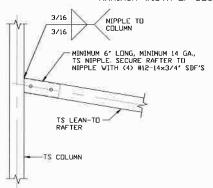
17D

MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: JG CHECKED BY: PH	NC CARPORTS AND GARAGES, LLC 309 S. DEPOT STREET PILOT MOUNTAIN, NC 27041 30'-0"x16'-0" ENCLOSED STRUCTURE			
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BOW EAVE RAFTER LEAN-TO OPTIONS 1 18 11B LEAN-TO OPTION MAIN STRUCTURE 9 2 9 9

TYPICAL BOW EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION

SCALE: NTS MAXIMUM WIDTH OF SINGLE MEMBER LEAN-TO OPTION IS 12'-0'. MAXIMUM WIDTH OF DOUBLE MEMBER LEAN-TO OPTION IS 16'-0'



LEAN-TO RAFTER TO RAFTER POST CONNECTION DETAIL

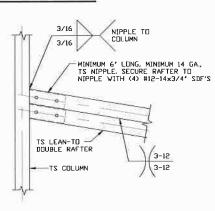
FOR WIDTHS & 12'-0' SCALE: NTS

18A

2'x2'x2' 14 GA. ANGLE CLIP SECURE TO COLUMN AND RAFTER WITH (4) #12-14x3/4' SDF'S TS COLUMN

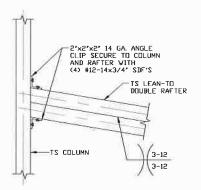
LEAN-TO RAFTER TO RAFTER POST CONNECTION DETAIL FOR WIDTHS ≤ 12'-0"

18B SCALE: NTS



LEAN-TO RAFTER TO RAFTER POST CONNECTION DETAIL FOR WIDTHS 12'-0' < T□ ≤ 16'-0'

18C SCALE: NTS



LEAN-TO RAFTER TO RAFTER POST CONNECTION DETAIL FOR WIDTHS

12'-0" < T□ <u></u> 16'-0" 18D SCALE: NTS

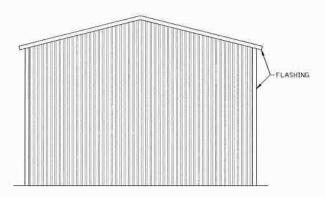
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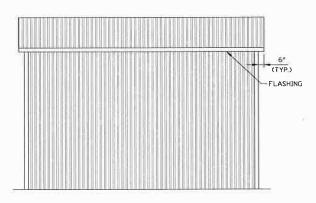
CLIENT: NC CARPORTS

BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



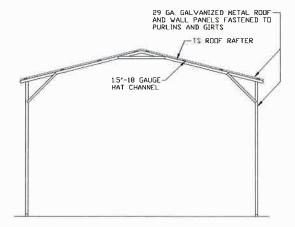
TYPICAL END ELEVATION VERTICAL ROOF/SIDING

SCALE: NTS



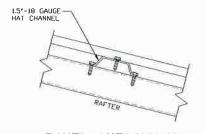
TYPICAL SIDE ELEVATION VERTICAL ROOF/SIDING

SCALE: NTS



TYPICAL SECTION
VERTICAL ROOF/SIDING OPTION

SCALE: NTS



PANEL ATTACHMENT

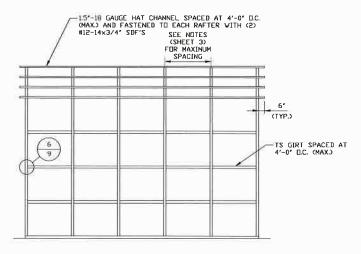
(ALTERNATE FOR VERTICAL ROOF PANELS)
SCALE: NTS

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ì		PILOT MOUNTAIN, NC 27041							
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_	PROJECT MGR: WSM	DATE: 7-2-20	SCALE: NTS	18315S/19179S/ JDB ND 20176S					
	CLIENT: NC CARPORTS	SHT. 12	DWG. NO SK		REV.: 2				

BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



TYPICAL FRAMING SECTION VERTICAL ROOF/SIDING OPTION WITH TS GIRTS
SCALE: NTS

ENCINEEDING AND CONGULTING INC	DRAWN BY: JG	NC CARPORTS AND GARAGES, LLC 309 S. DEPOT STREET			
	CHECKED BY: PH	PILOT MOUNTAIN, NC 27041 30'-0"x16'-0" ENCLOSED STRUCTURE			
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