

STRUCTURAL DESIGN

ENCLOSED BUILDING

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

12 March 2020

Revision 0

M&A Project No. 19364S

Prepared for:

**Carports Outlet, LLC
123 Sunset Circle
Moultrie, GA 31768**

Prepared by:

Moore and Associates Engineering and Consulting, Inc.

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

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**MOORE AND ASSOCIATES
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	CHECKED BY: PDH			
	PROJECT MGR: WSM	DATE: 3-12-20	SCALE: NTS	JOB NO: 19364S
	CLIENT: CARPORTS OUTLET, LLC	SHT. 1	DWG. NO: SK-3	REV: 0

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**CLIENT: CARPORTS
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CARPORTS OUTLET, LLC

123 SUNSET CIRCLE

MOULTRIE, GA 31768

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

DATE: 3-12-20

SCALE: NTS

JOB NO: 19364S

SHT. 2

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INSTALLATION NOTES AND SPECIFICATIONS

1. DESIGN IS FOR MAXIMUM 30'-0" WIDE x 20'-0" EAVE HEIGHT ENCLOSED STRUCTURES.
2. DESIGN WAS DONE IN ACCORDANCE WITH THE 2017 FLORIDA BUILDING CODE (FBC) 6TH EDITION, 2018 NORTH CAROLINA BUILDING CODE, 2018 INTERNATIONAL BUILDING CODE (IBC), 2015 IBC, 2012 IBC AND 2009 IBC
3. DESIGN LOADS ARE AS FOLLOWS:
 - A) DEAD LOAD = 1.5 PSF
 - B) LIVE LOAD = 12 PSF
 - C) GROUND SNOW LOAD = 35 PSF WITH WELDED RAFTER TIE (W ≤ 30'-0")
 = 30 PSF WITH U-CHANNEL PEAK BRACE (W ≤ 24'-0")
 NOTE: DIFFERENTIAL LOADING DUE TO SNOW DRIFTING NOT ANALYZED.
4. 3-SECOND GUST LOW ULTIMATE WIND SPEED (LW) (V_{ULT}) = 105 TO 145 MPH (NOMINAL WIND SPEED = 81 TO 112 MPH).
5. 3-SECOND GUST HIGH ULTIMATE WIND SPEED (HW) (V_{ULT}) = 146 TO 170 MPH (NOMINAL WIND SPEED = 113 TO 132 MPH)
6. MAXIMUM RAFTER/COLUMN AND END COLUMN SPACING = 5.0 FEET FOR LOW WIND AND 4.0 FEET FOR HIGH WIND (UNLESS NOTED OTHERWISE).
7. END WALL COLUMNS (POSTS) ARE EQUIVALENT TO SIDE WALL COLUMNS IN SIZE AND SPACING (UNLESS NOTED OTHERWISE)
8. RISK CATEGORY I.
9. WIND EXPOSURE CATEGORY B.
10. SPECIFICATIONS APPLICABLE TO 29 GAUGE METAL PANELS FASTENED DIRECTLY TO 2 1/2" x 2 1/2" - 14 GAUGE TUBE STEEL (TS).
11. AVERAGE FASTENER SPACING ON-CENTERS ALONG RAFTERS OR HAT CHANNELS, AND COLUMNS (INTERIOR OR END) = 10" O.C. (MAX.) FOR LOW WIND AND 6" O.C. (MAX.) FOR HIGH WIND.
12. 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.
13. ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL WITHIN 6" OF EACH COLUMN (LEG).
14. STANDARD GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT x 36" LONG AND MAY BE USED IN SUITABLE SOIL CONDITIONS. SOIL NAILS MAY ONLY BE USED FOR WIND SPEEDS ≤ 145 MPH. OPTIONAL ANCHORAGE MINIMUM MAY BE USED IN SUITABLE SOILS AND MUST BE USED IN UNSUITABLE SOILS AND MUST BE USED FOR WIND SPEEDS > 145 MPH. COORDINATE WITH LOCAL BUILDING CODE AND/OR BUILDING OFFICIAL REGARDING FROST DEPTH (LENGTH) OF ANCHORAGE.
15. WIND FORCES GOVERN OVER SEISMIC FORCES. SEISMIC PARAMETERS ANALYZED ARE:
 SOIL SITE CLASS = D
 RISK CATEGORY I
 R = 3.25 I_E = 10
 S_{DS} = 2.039 g V = C_sW
 S_{DI} = 1.258 g



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MOULTRIE, GA 31768**

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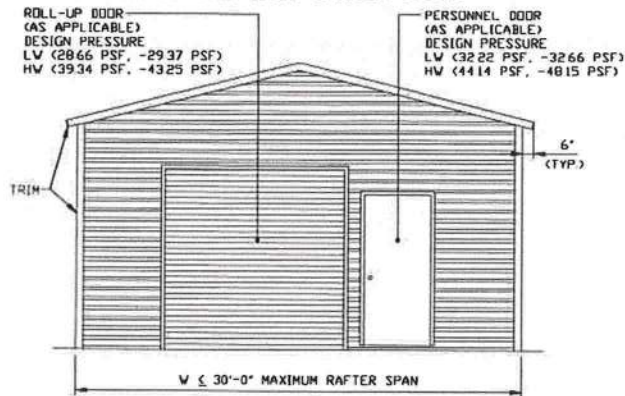
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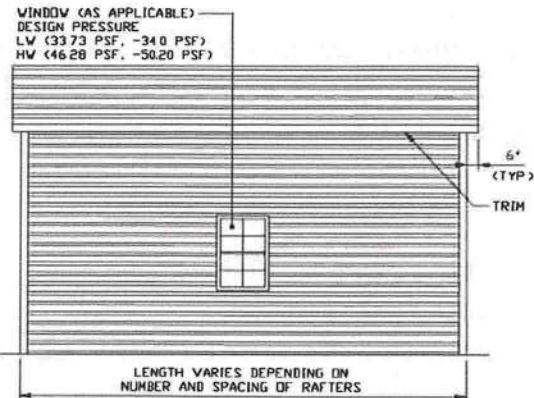
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BOX EAVE FRAME RAFTER STRUCTURE



TYPICAL END ELEVATION

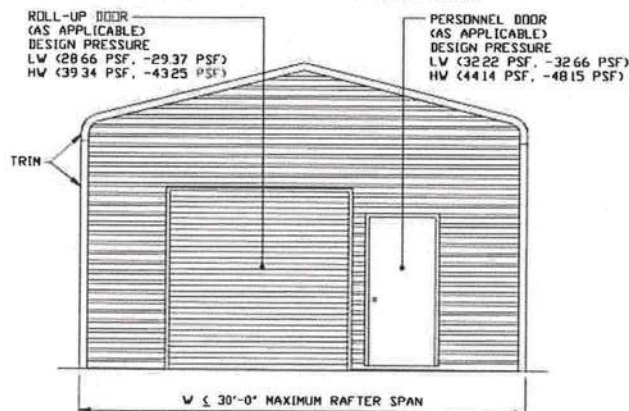
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TYPICAL SIDE ELEVATION

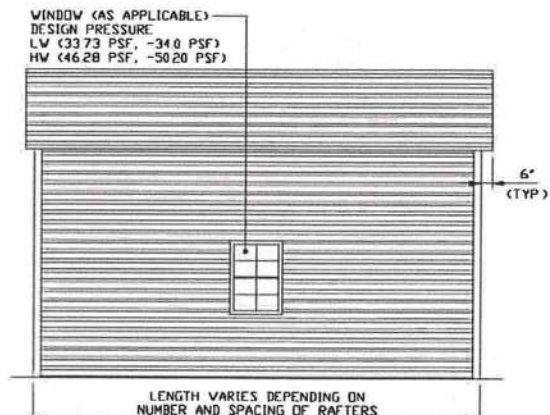
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BOX EAVE FRAME RAFTER STRUCTURE



TYPICAL END ELEVATION

SCALE: NTS



TYPICAL SIDE ELEVATION

SCALE: NTS



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SHT. 4

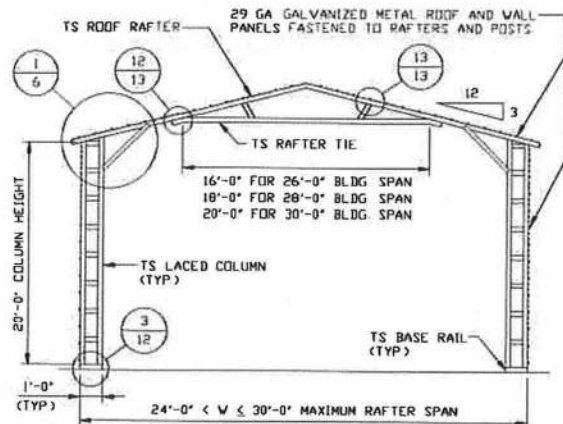
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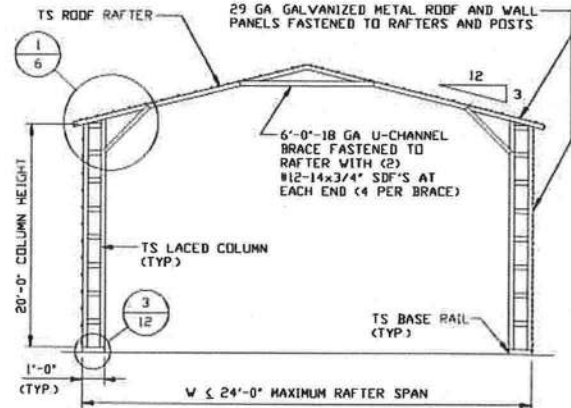
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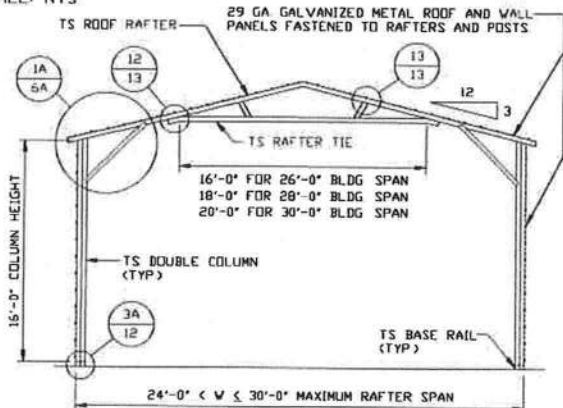
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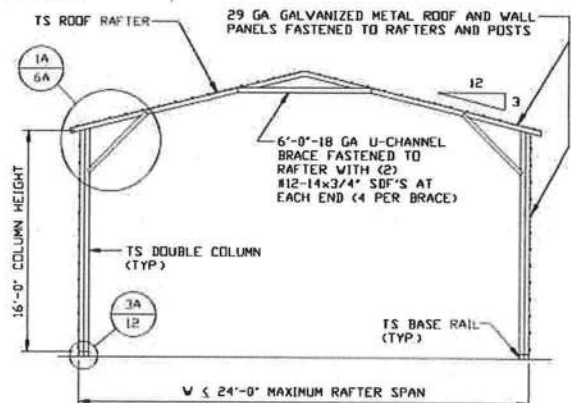
TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



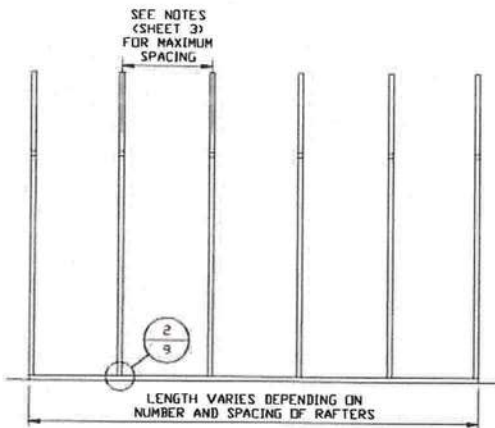
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SCALE: NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION
SCALE: NTS



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SHT. 5

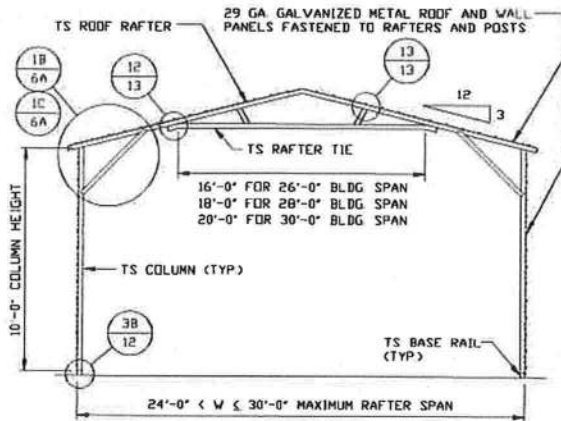
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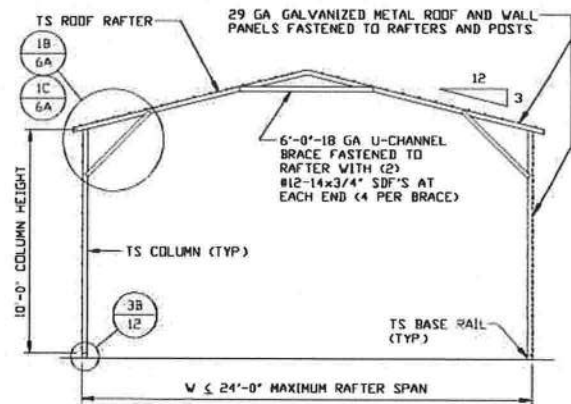
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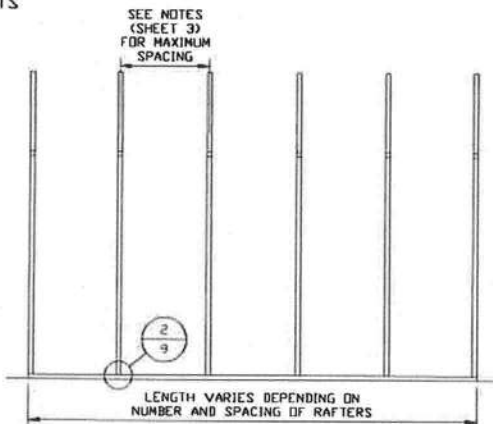
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TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION
SCALE: NTS



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SHT. 5A

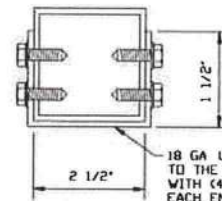
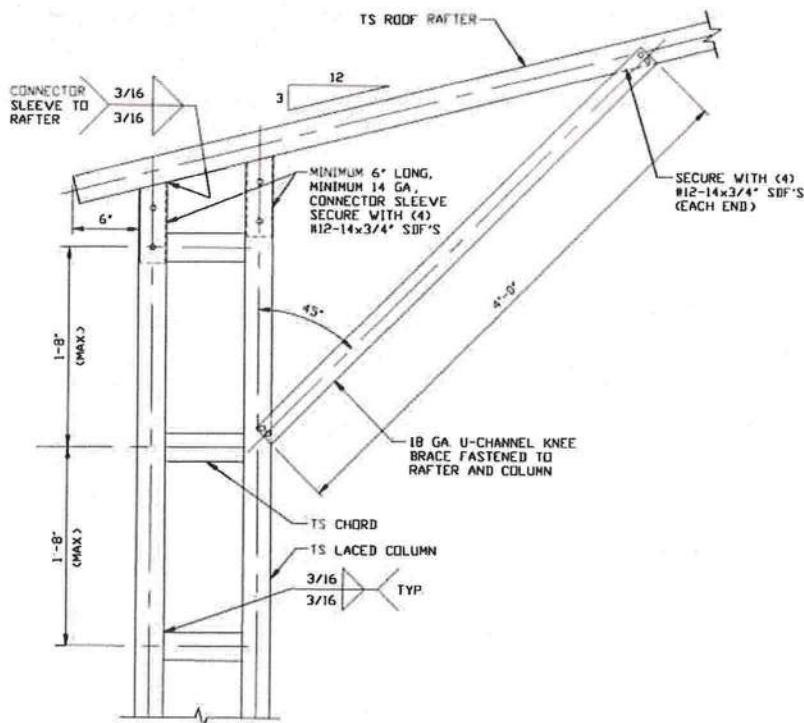
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BRACE SECTION
SCALE: NTS

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

1



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SHT. 6

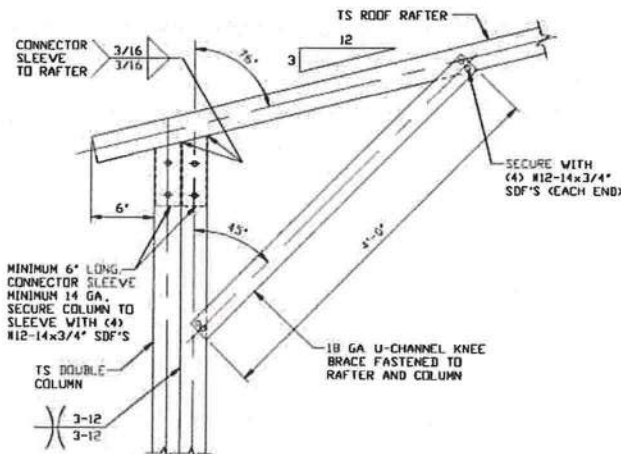
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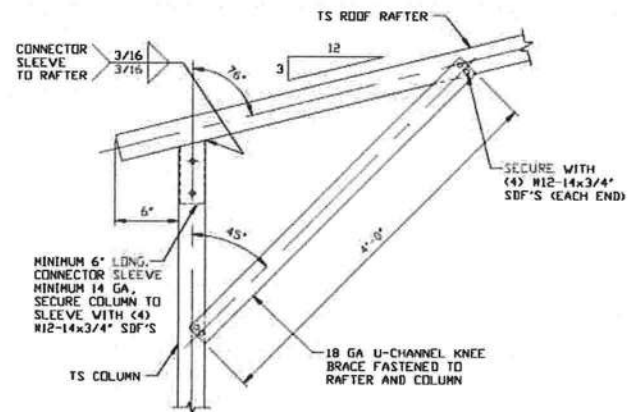
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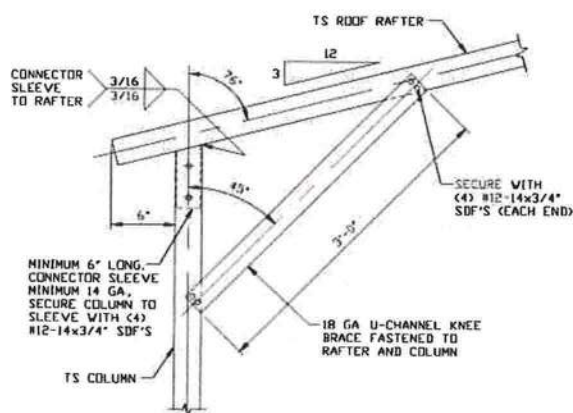
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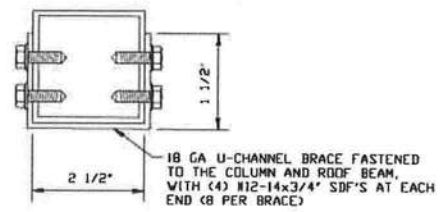
1A BOX EAVE RAFTER COLUMN
CONNECTION DETAIL FOR
HEIGHTS 10'-0" < TO ≤ 16'-0"
SCALE: NTS



1B BOX EAVE RAFTER COLUMN
CONNECTION DETAIL
FOR HEIGHTS 8'-0" < TO ≤ 10'-0"
SCALE: NTS



1C BOX EAVE RAFTER COLUMN
CONNECTION DETAIL
FOR HEIGHTS ≤ 8'-0"
SCALE: NTS



BRACE SECTION
SCALE: NTS

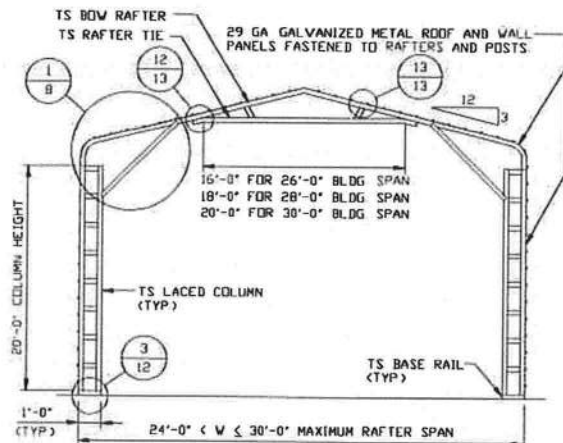


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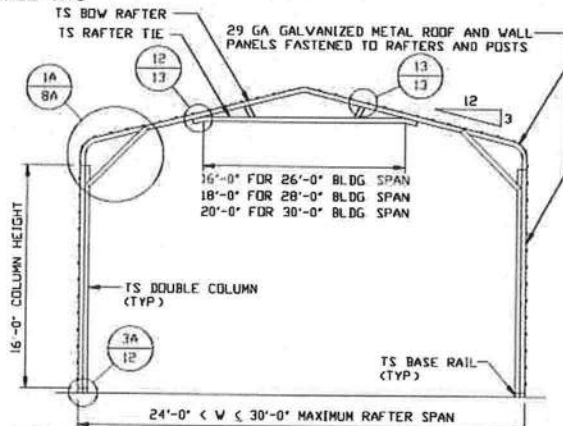
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MOULTRIE, GA 31768
30'-0"x20'-0" ENCLOSED STRUCTURE
DATE: 3-12-20
SCALE: NTS
SHT. 6A
DWG. NO: SK-3
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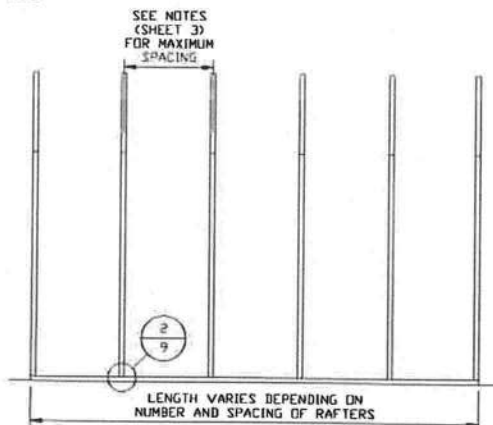
TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE: NTS



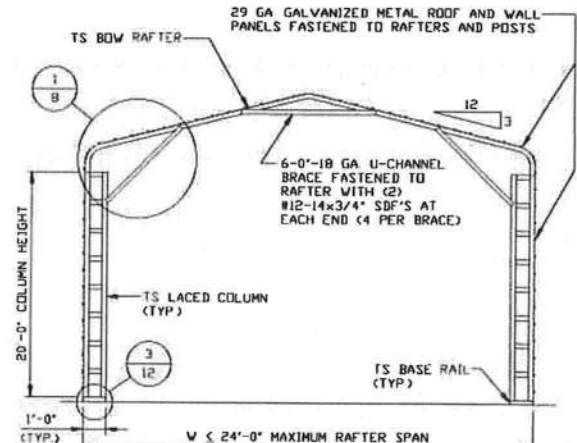
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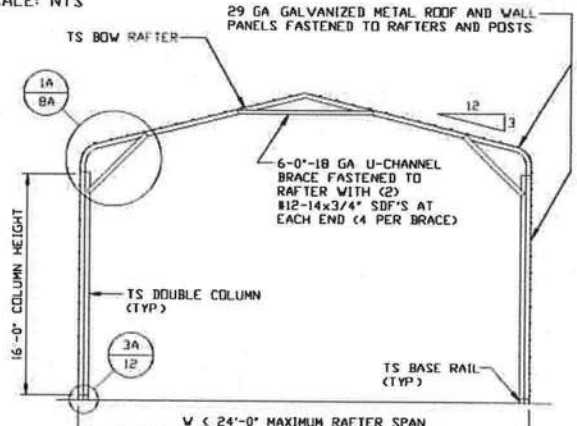
TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

SCALE: NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE: NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE: NTS



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MOULTRIE, GA 31768

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SHT. 7

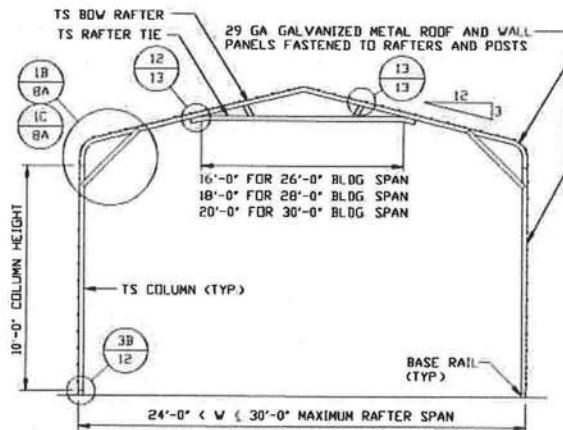
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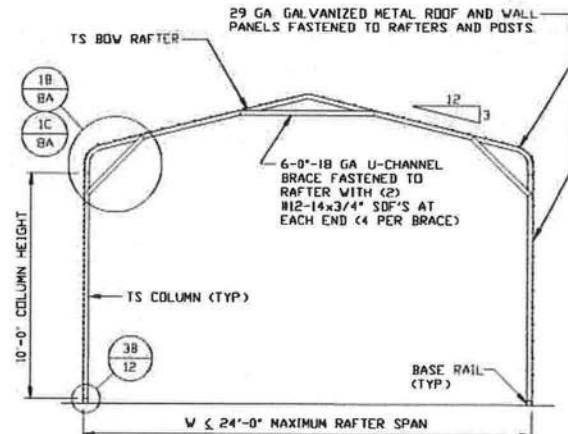
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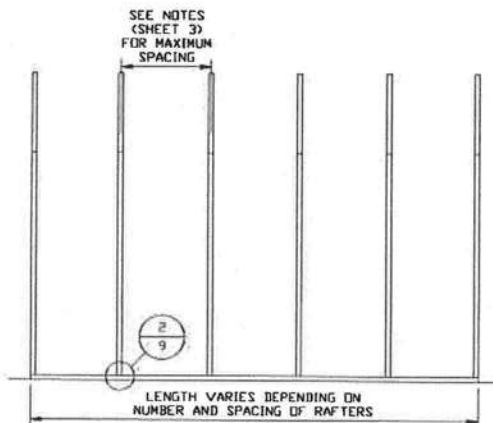
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TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION
SCALE: NTS



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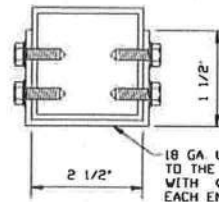
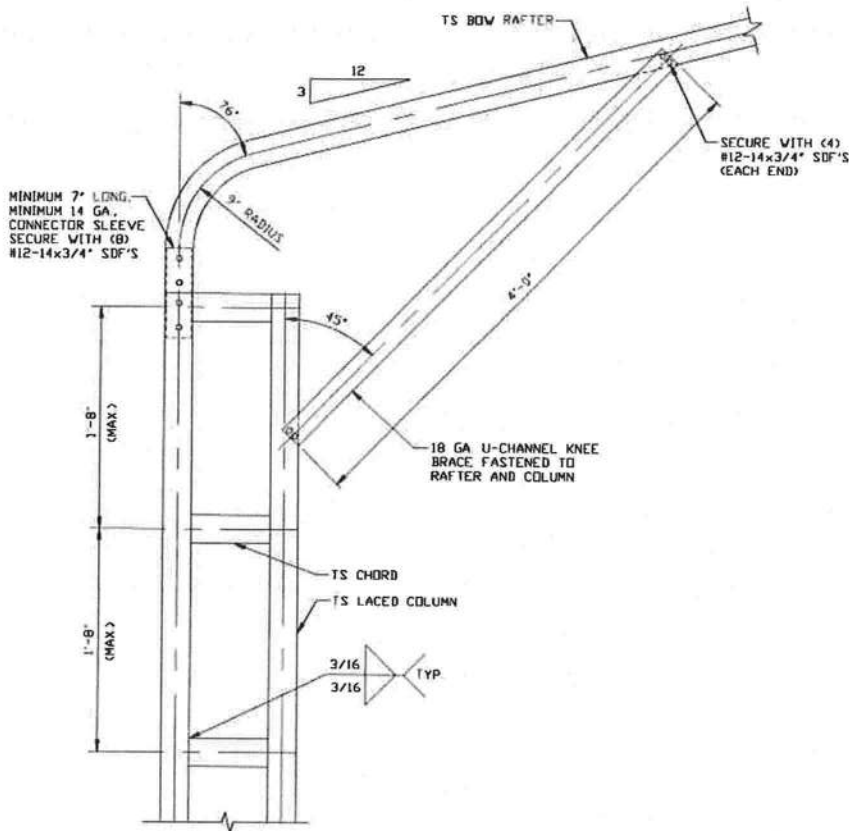
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BRACE SECTION
SCALE: NTS

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



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123 SUNSET CIRCLE

MOULTREE, GA 31768

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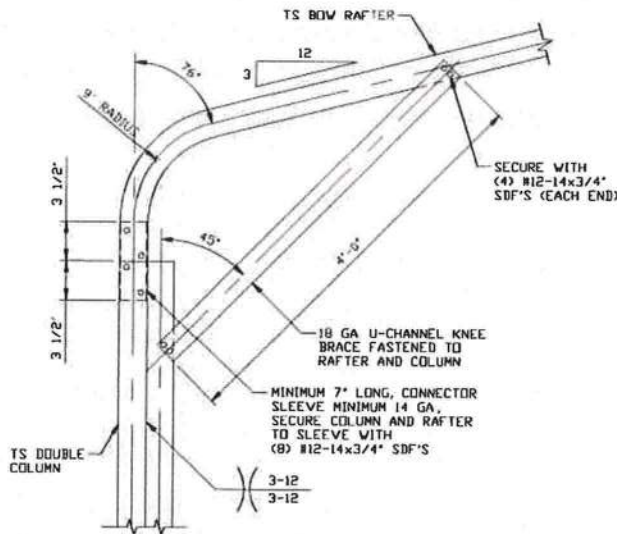
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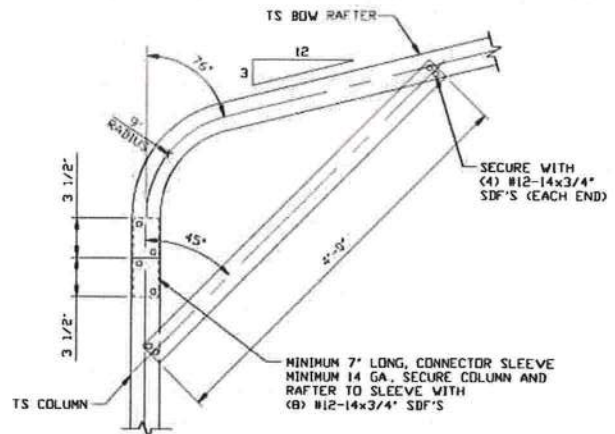
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1A

**BOW EAVE RAFTER COLUMN
CONNECTION DETAIL FOR
HEIGHTS 10'-0" < TO ≤ 16'-0"**

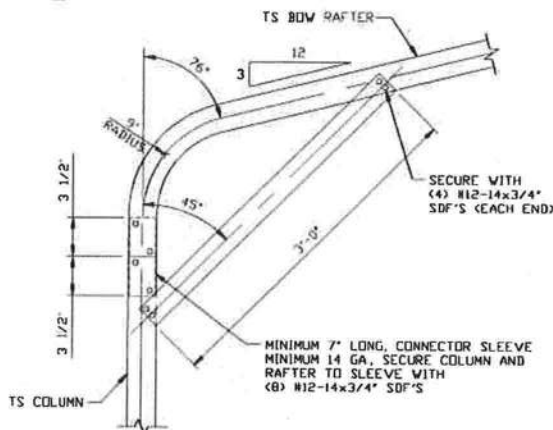
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1B

**BOW EAVE RAFTER COLUMN
CONNECTION DETAIL FOR
HEIGHTS 8'-0" < TO ≤ 10'-0"**

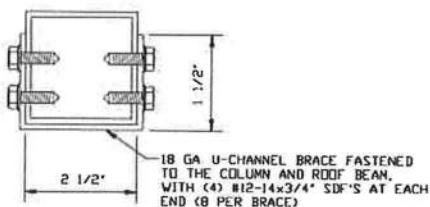
SCALE: NTS



1C

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

SCALE: NTS



BRACE SECTION

SCALE: NTS



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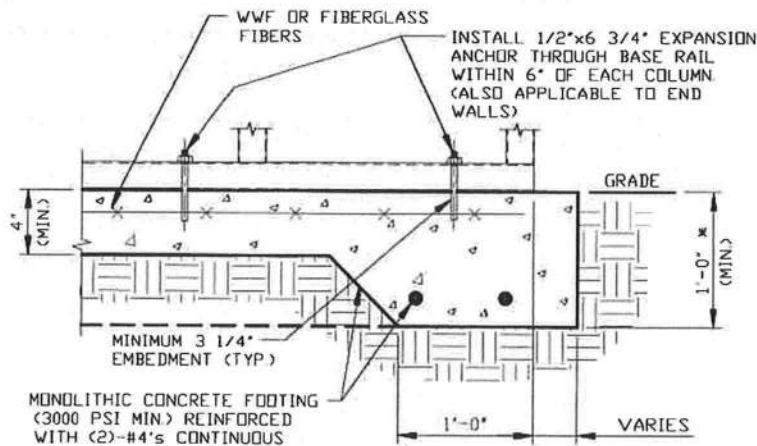
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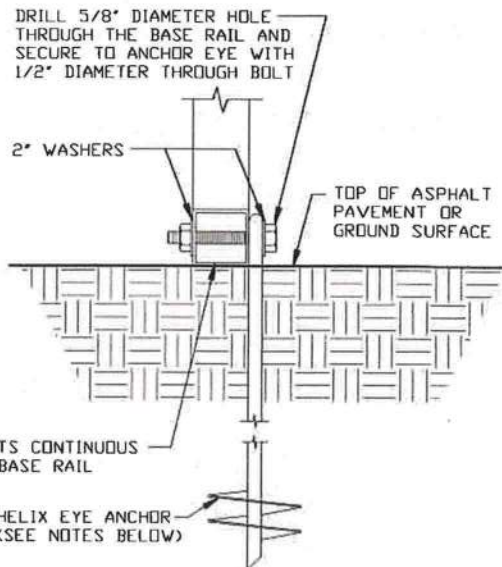
BASE RAIL ANCHORAGE OPTIONS



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)
* COORDINATE WITH LOCAL BUILDING CODE
AND/OR BUILDING OFFICIAL REGARDING
REQUIRED ANCHORAGE DEPTH.

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: JG

CHECKED BY: PDM

PROJECT MGR: VSM

CLIENT: CARPORTS
OUTLET, LLC

CARPORTS OUTLET, LLC
123 SUNSET CIRCLE
MOULTRIE, GA 31768
30'-0"x20'-0" ENCLOSED STRUCTURE

DATE: 3-12-20

SHT. 9

SCALE: NTS

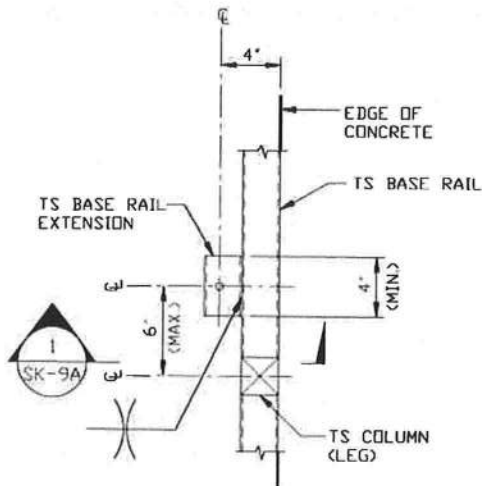
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JOB NO: 19364S

REV: 0

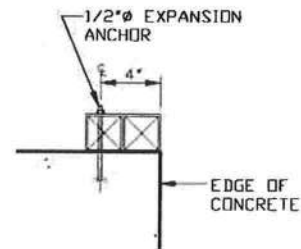
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ADDITIONAL BASE RAIL ANCHORAGE OPTION



TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

SCALE: NTS



SECTION 1
SCALE: NTS



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CARPORTS OUTLET, LLC

123 SUNSET CIRCLE

MOULTRIE, GA 31768

30'-0" x 20'-0" ENCLOSED STRUCTURE

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SCALE: NTS

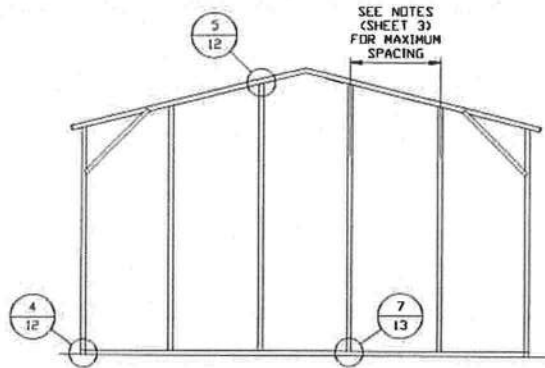
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JOB NO: 19364S

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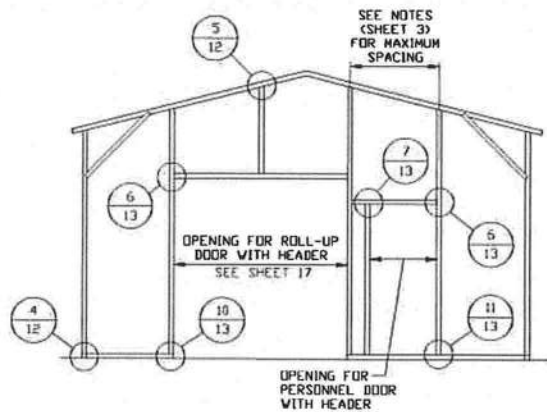
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BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



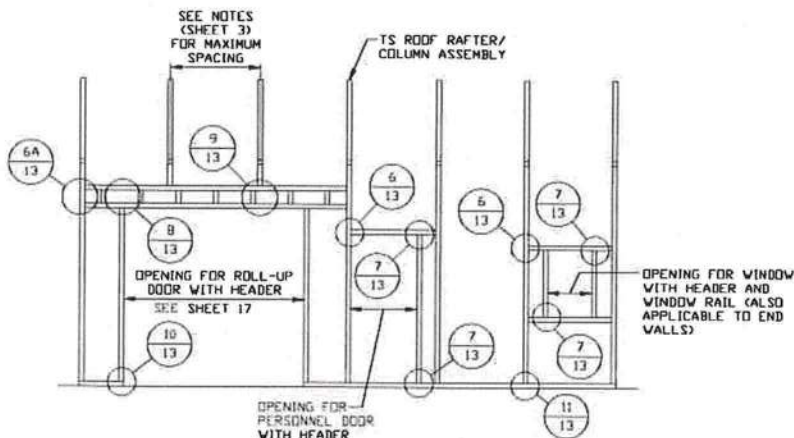
**TYPICAL BOX EAVE RAFTER
END WALL FRAMING SECTION**

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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CARPORTS OUTLET, LLC

123 SUNSET CIRCLE

MOULTREE, GA 31768

30'-0"X20'-0" ENCLOSED STRUCTURE

DATE: 3-12-20

SCALE: NTS

JOB NO: 19364S

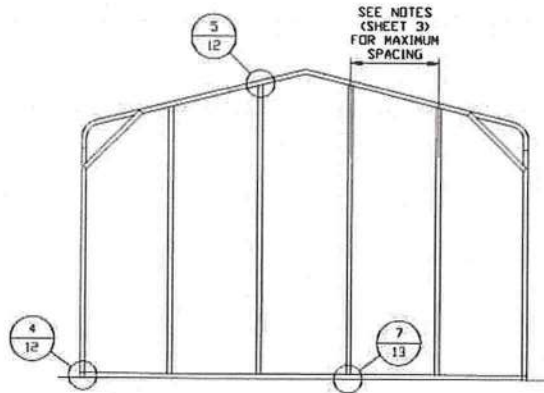
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DWG. NO: SK-3

REV: 0

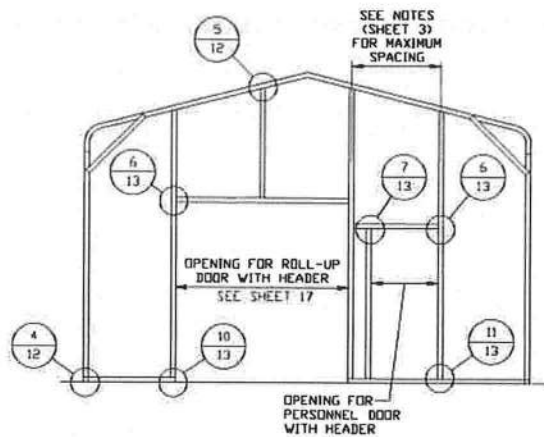
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BOW EAVE RAFTER END WALL AND SIDE WALL OPENINGS



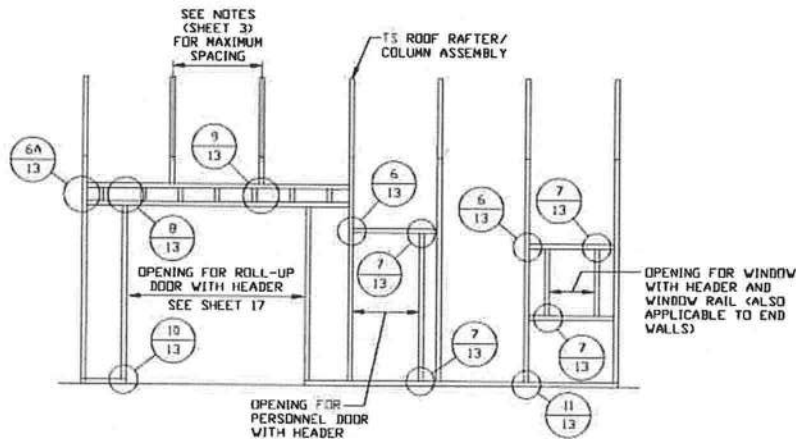
**TYPICAL BOW EAVE RAFTER
END WALL FRAMING SECTION**

SCALE: NTS



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

SCALE: NTS



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

SCALE: NTS



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OUTLET, LLC**

**CARPORTS OUTLET, LLC
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MOULTREE, GA 31768
30'-0"x20'-0" ENCLOSED STRUCTURE**

DATE: 3-12-20

SHT. 11

SCALE: NTS

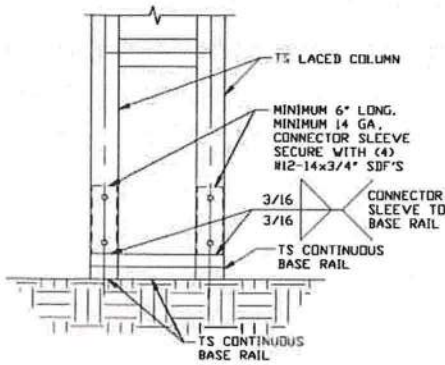
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JOB NO: 19364S

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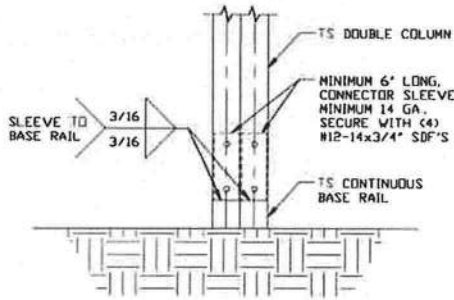
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CONNECTION DETAILS



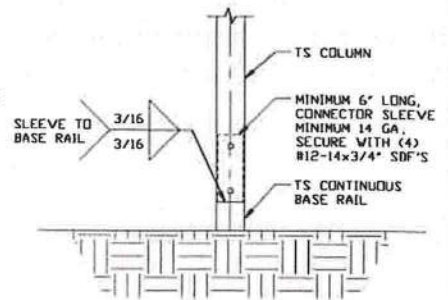
3 **RAFTER COLUMN/BASE RAIL CONNECTION DETAIL**

SCALE: NTS



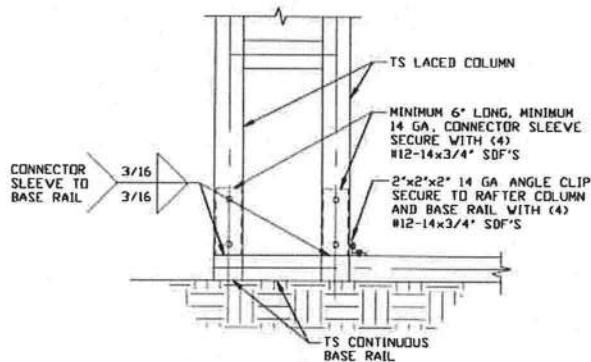
3A **RAFTER COLUMN/BASE RAIL CONNECTION DETAIL**

SCALE: NTS



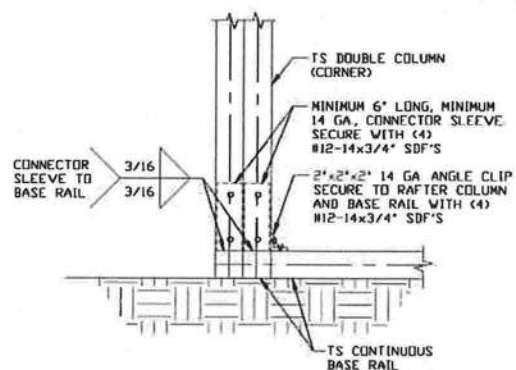
3B **RAFTER COLUMN/BASE RAIL CONNECTION DETAIL**

SCALE: NTS



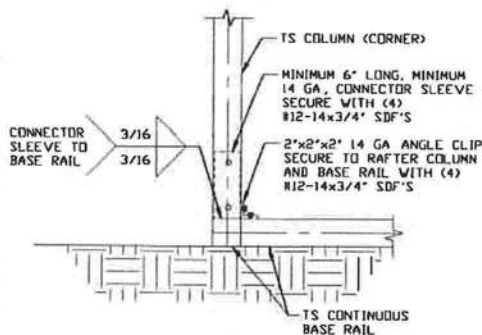
4 **END COLUMN/BASE RAIL CONNECTION DETAIL**

SCALE: NTS



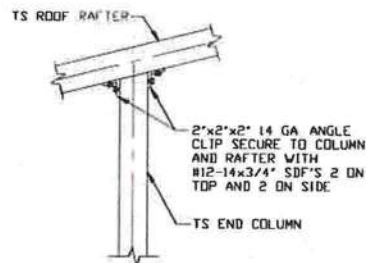
4A **END COLUMN/BASE RAIL CONNECTION DETAIL**

SCALE: NTS



4B **END COLUMN/BASE RAIL CONNECTION DETAIL**

SCALE: NTS



5 **END COLUMN/RAFTER CONNECTION DETAIL**

SCALE: NTS



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CARPORTS OUTLET, LLC

123 SUNSET CIRCLE

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

DATE: 3-12-20

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SCALE: NTS

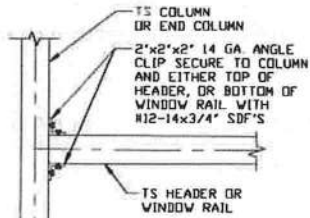
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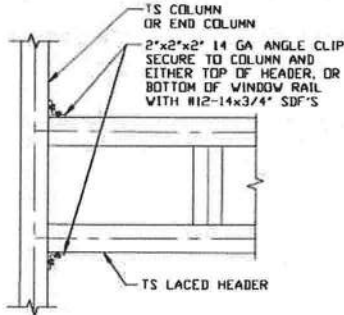
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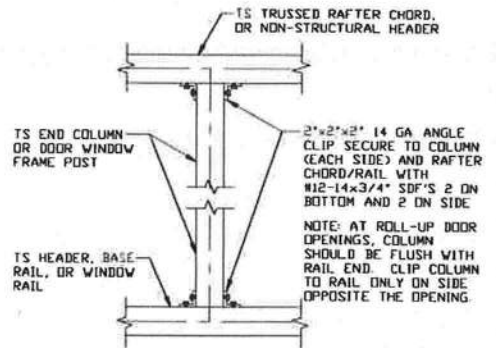
CONNECTION DETAILS



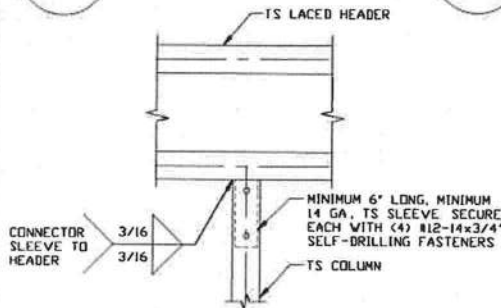
6
**COLUMN OR WINDOW
RAIL/WALL GIRT
TO POST
CONNECTION DETAIL**
SCALE: NTS



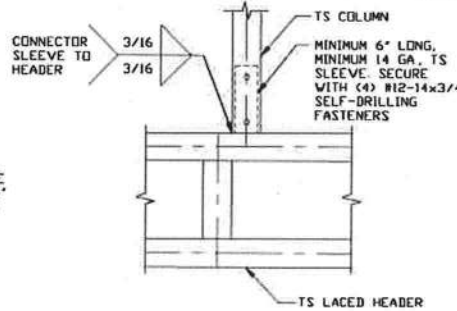
6A
**LACED HEADER/COLUMN
CONNECTION DETAIL**
SCALE: NTS



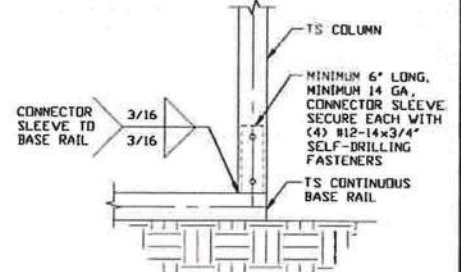
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**COLUMN TO WINDOW RAIL
CONNECTION DETAIL**
SCALE: NTS



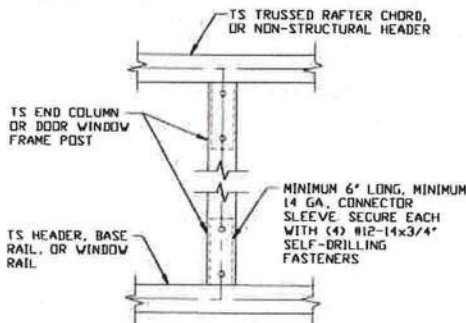
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**LACED HEADER/COLUMN
CONNECTION DETAIL**
SCALE: NTS



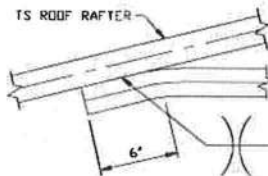
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**COLUMN/LACED HEADER
CONNECTION DETAIL**
SCALE: NTS



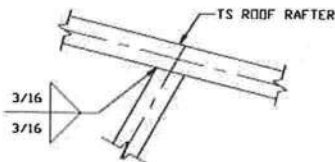
10
**COLUMN/BASE RAIL
CONNECTION DETAIL**
SCALE: NTS



11
**COLUMN TO HEADER
OR BASE RAIL
CONNECTION DETAIL**
SCALE: NTS



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



13
**RAFTER TO CHORD
CONNECTION DETAIL**
SCALE: NTS



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SCALE: NTS

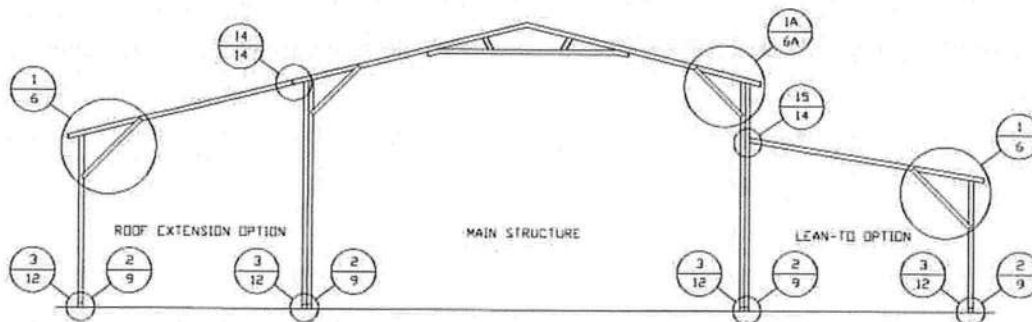
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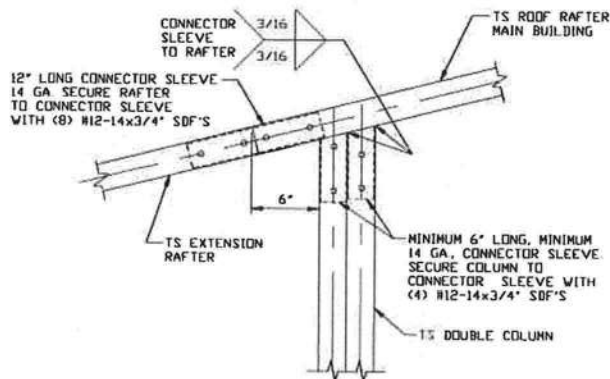
BOX EAVE RAFTER LEAN-TO OPTIONS



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

SCALE: NTS

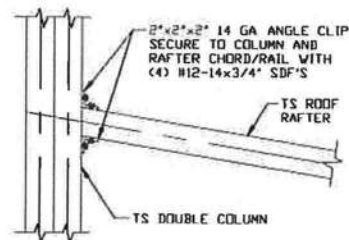
MAXIMUM WIDTH OF SINGLE RAFTER ROOF EXTENSION AND LEAN-TO IS 12'-0".
MAXIMUM HEIGHT OF SINGLE COLUMN IS 10'-0".



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

14

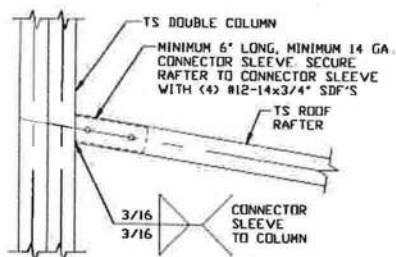
SCALE: NTS



LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS ≤ 12'-0"

15

SCALE: NTS



OPTIONAL LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS ≤ 12'-0"

15A

SCALE: NTS



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SHT. 14

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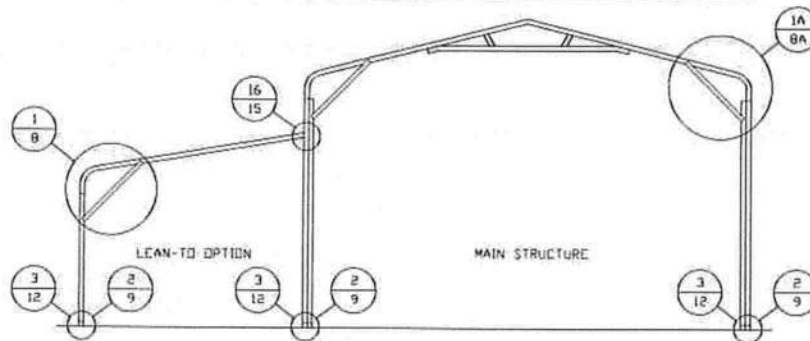
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JOB NO: 19364S

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BOW EAVE RAFTER LEAN-TO OPTIONS

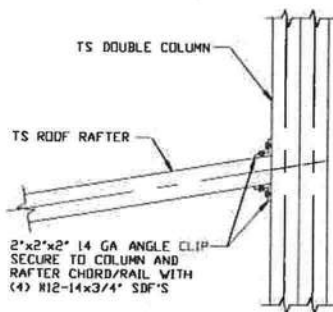


TYPICAL BOW RAFTER LEAN-TO OPTION FRAMING SECTION

SCALE: NTS

MAXIMUM WIDTH OF SINGLE RAFTER ROOF EXTENSION AND LEAN-TO IS 12'-0".

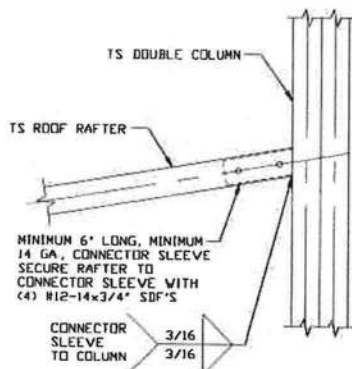
MAXIMUM HEIGHT OF SINGLE COLUMN IS 10'-0".



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

SCALE: NTS

16



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

SCALE: NTS

16A



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123 SUNSET CIRCLE
MOULTRIE, GA 31768

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

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SHT. 15

SCALE: NTS

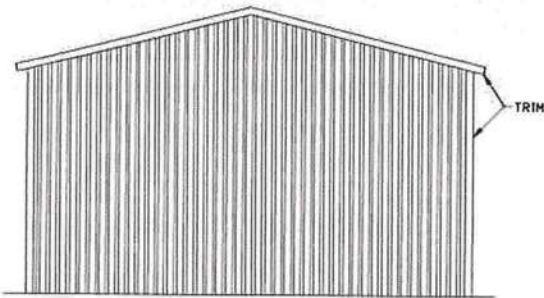
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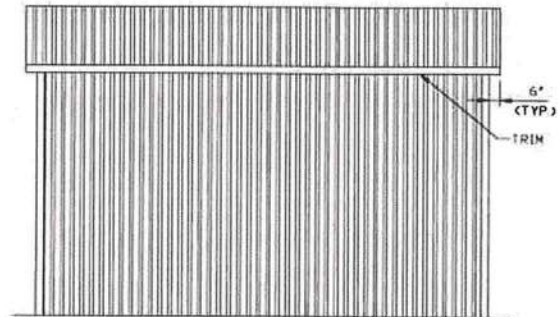
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BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



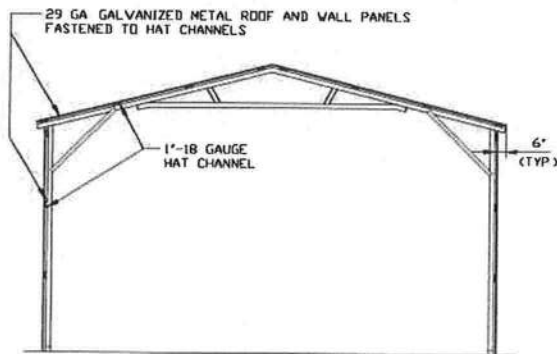
**TYPICAL END ELEVATION
VERTICAL ROOF/SIDING**

SCALE: NTS



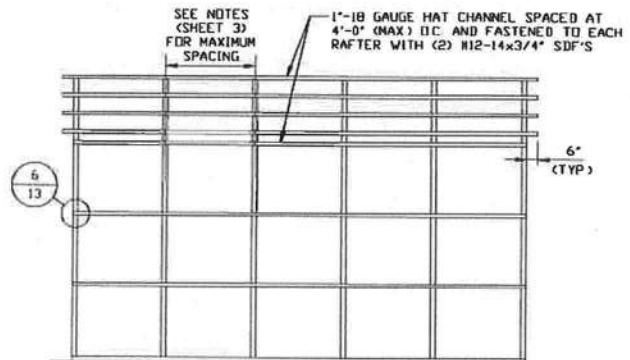
**TYPICAL SIDE ELEVATION
VERTICAL ROOF/SIDING**

SCALE: NTS



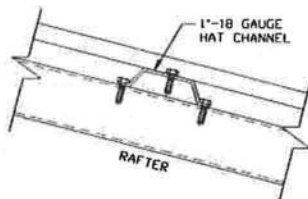
**TYPICAL SECTION VERTICAL
ROOF/SIDING OPTION**

SCALE: NTS



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

SCALE: NTS



PANEL ATTACHMENT

(ALTERNATE FOR VERTICAL ROOF AND WALL PANELS)
SCALE: NTS



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**123 SUNSET CIRCLE
MOULTREE, GA 31768
30'-0"x20'-0" ENCLOSED STRUCTURE**

DATE: 3-12-20

SCALE: NTS

JOB NO: 19364S

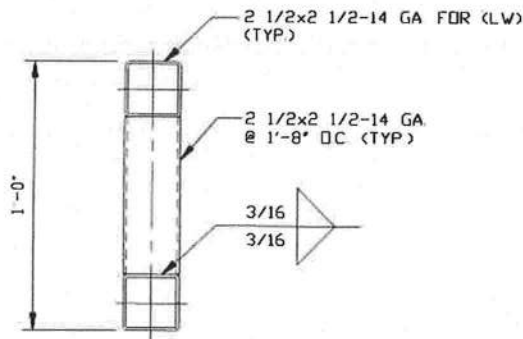
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REV: 0

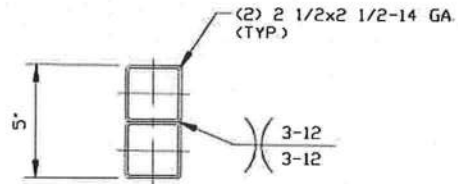
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SIDE WALL HEADER OPTIONS



**HEADER DETAIL FOR SPANS
12'-0" < TO < 14'-0"**

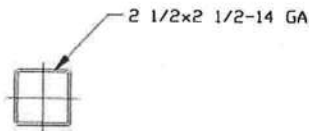
SCALE: NTS



HEADER DETAIL FOR SPANS < 12'-0"

SCALE: NTS

END WALL HEADER OPTIONS



HEADER DETAIL FOR SPANS < 14'-0"

SCALE: NTS



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OUTLET, LLC**

**CARPORTS OUTLET, LLC
123 SUNSET CIRCLE
MOULTRIE, GA 31768
30'-0"x20'-0" ENCLOSED STRUCTURE**

DATE: 3-12-20

SHT. 17

SCALE: NTS

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JOB NO: 19364S

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