



STRUCTURAL DESIGN

ENCLOSED BUILDING

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

2 May 2019

Revision 1

M&A Project No. 17270S/19118S

Prepared for:

GA Southern Steel Buildings Inc.
1086 Gene McQueen Road
Moultrie, GA 31788



Prepared by:

Moore and Associates Engineering and Consulting, Inc.

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Digitally signed
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Moore
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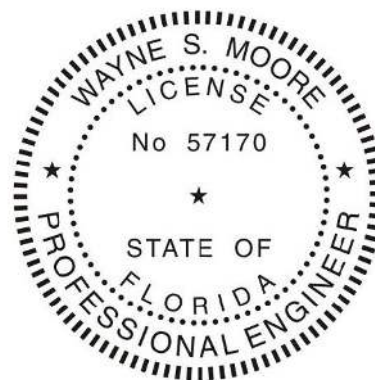
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	CHECKED BY: JM			
	PROJECT MGR: WSM	DATE: 5-2-19	SCALE: NTS	JOB NO: 17270S/19118S
	CLIENT: GA SOUTHERN	SHT. 1	DWG. NO: SK-3	REV: 1

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CLIENT: GA SOUTHERN

GA SOUTHERN STEEL BUILDINGS, INC.
1086 GENE McQUEEN ROAD
MOULTRIE, GA 31788
30'-0"x16'-0" ENCLOSED STRUCTURE

DATE: 5-2-19

SCALE: NTS

SHT. 2

DWG. NO: SK-3

**JOB NO:
17270S/19118S**

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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 2017 FLORIDA BUILDING CODE (FBC) 6TH EDITION, 2012 INTERNATIONAL BUILDING CODE (IBC) AND 2015 IBC.
3. DESIGN LOADS ARE AS FOLLOWS:
 - A) DEAD LOAD = 1.5 PSF
 - B) LIVE LOAD = 12 PSF
 - C) GROUND SNOW LOAD = 15 PSF (< 24'-0" WITH U-CHANNEL RAFTER TIE)

NOTE: UNBALANCED SNOW LOADING DUE TO DRIFTING HAS NOT BEEN ANALYZED.
4. ULTIMATE LOW WIND SPEED (LW) 105 TO 140 MPH (NOMINAL WIND SPEED 81 TO 108 MPH).
MAXIMUM RAFTER/POST AND END POST SPACING = 5.0 FEET (UNLESS NOTED OTHERWISE).
5. ULTIMATE HIGH WIND SPEED (HW) 141 TO 170 MPH (NOMINAL WIND SPEED 109 TO 132 MPH).
MAXIMUM RAFTER/POST AND END POST SPACING = 4.0 FEET (UNLESS NOTED OTHERWISE).
6. RISK CATEGORY I.
7. WIND EXPOSURE CATEGORY B.
8. SPECIFICATIONS APPLICABLE TO 29 GAUGE METAL PANELS FASTENED DIRECTLY TO 2 1/2" x 2 1/2" - 14 GAUGE TUBE STEEL (TS) FRAMING MEMBERS FOR LOW WIND OR 2 1/4" x 2 1/4" - 12 GAUGE TUBE STEEL (TS) FOR HIGH WIND (UNLESS NOTED OTHERWISE)
9. AVERAGE FASTENER SPACING ON-CENTERS ALONG RAFTERS OR HAT CHANNELS, AND COLUMNS (INTERIOR OR END) = 8" O.C. (MAX.) FOR (LW), 6" O.C. (MAX.) FOR (HW).
10. FASTENERS CONSIST OF #12-14x3/4" SELF-DRILLING FASTENER (SDF) FOR LOW WIND OR 1/4"x3/4" SELF DRILLING FASTENER (SDF) FOR HIGH WIND, 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.
11. GROUND ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL WITHIN 6' OF EACH RAFTER COLUMN ALONG SIDES AND ENDS.
12. GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT x 30" LONG MAY BE USED IN SUITABLE SOIL CONDITIONS. FOR WIND V ≤ 145 MPH, OPTIONAL ANCHORAGE MAY BE USED IN SUITABLE SOILS AND MUST BE USED IN UNSUITABLE SOILS AND FOR WIND V > 145 MPH.
13. WIND FORCES GOVERN OVER SEISMIC FORCES. SEISMIC PARAMETERS ANALYZED ARE:
 SOIL SITE CLASS = D
 RISK CATEGORY I/II/III
 R= 3.25 I_E= 1.0
 S_{DS}= 2.039 g V= C_sW
 S_{DI}= 1.258 g



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SHT. 3

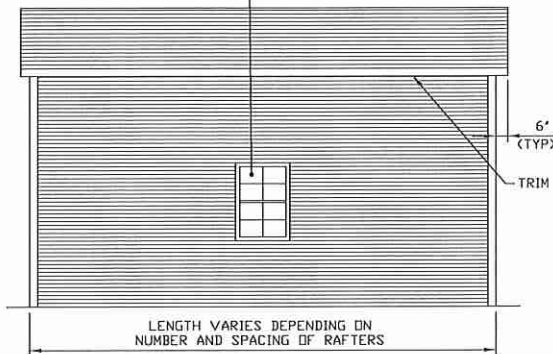
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BOX EAVE FRAME RAFTER STRUCTURE (Sheets 4, 5, 6, 10, 15, AND 17)

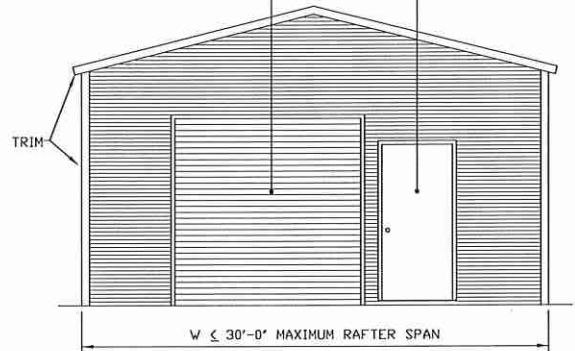
WINDOW (AS APPLICABLE)
DESIGN PRESSURE
LOW = (21.8 PSF, -23.6 PSF)
HIGH = (33.1 PSF, -35.6 PSF)



TYPICAL SIDE ELEVATION-HORIZONTAL ROOF
SCALE: NTS

ROLL-UP DOOR
(AS APPLICABLE)
DESIGN PRESSURE
LOW = (18.5 PSF, -20.4 PSF)
HIGH = (27.95 PSF, -30.7 PSF)

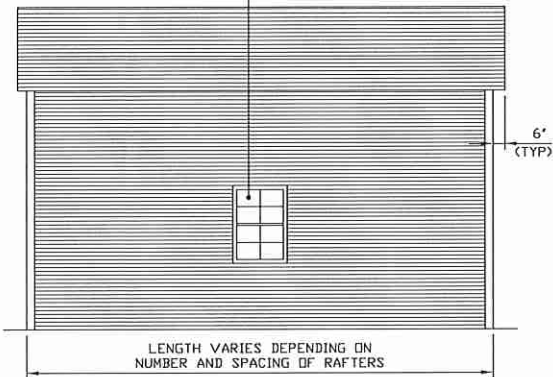
PERSONNEL DOOR
(AS APPLICABLE)
DESIGN PRESSURE
LOW = (20.8 PSF, -22.6 PSF)
HIGH = (31.35 PSF, -34.15 PSF)



TYPICAL END ELEVATION-HORIZONTAL ROOF
SCALE: NTS

BOW FRAME RAFTER STRUCTURE (Sheets 4, 7, 8, 11, AND 16)

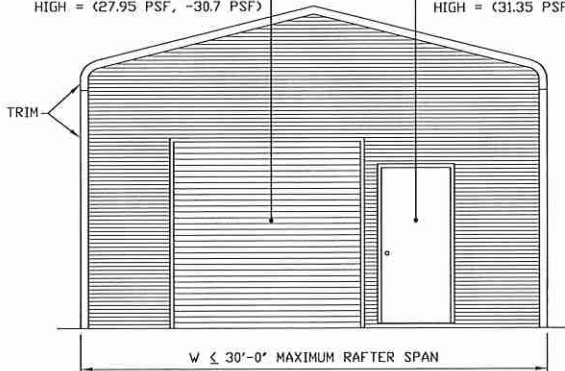
WINDOW (AS APPLICABLE)
DESIGN PRESSURE
LOW = (21.8 PSF, -23.6 PSF)
HIGH = (33.1 PSF, -35.6 PSF)



TYPICAL SIDE ELEVATION
SCALE: NTS

ROLL-UP DOOR
(AS APPLICABLE)
DESIGN PRESSURE
LOW = (18.5 PSF, -20.4 PSF)
HIGH = (27.95 PSF, -30.7 PSF)

PERSONNEL DOOR
(AS APPLICABLE)
DESIGN PRESSURE
LOW = (20.8 PSF, -22.6 PSF)
HIGH = (31.35 PSF, -34.15 PSF)



TYPICAL END ELEVATION
SCALE: NTS



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SHT. 4

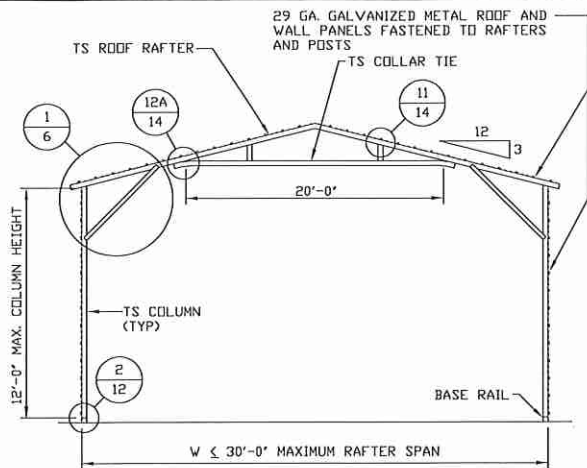
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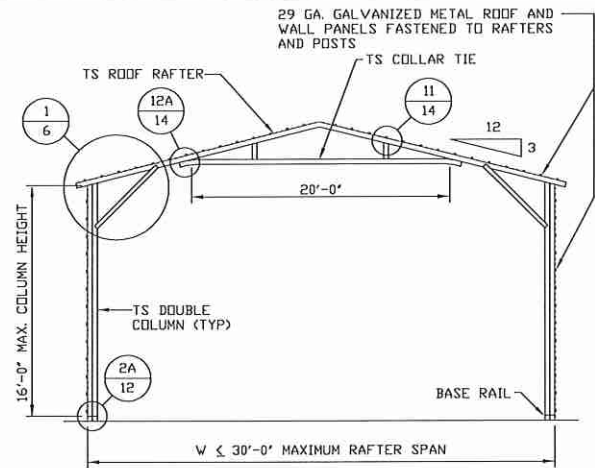
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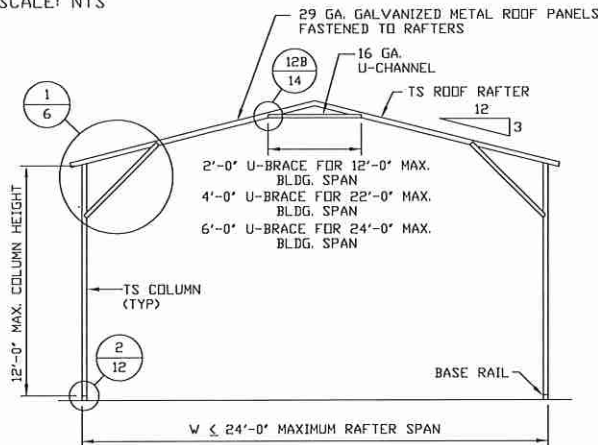
TYPICAL RAFTER/COLUMN FRAME SECTION

SCALE: NTS



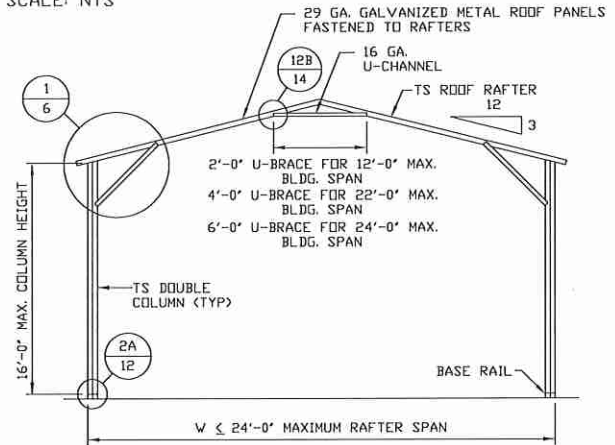
TYPICAL RAFTER/COLUMN FRAME SECTION

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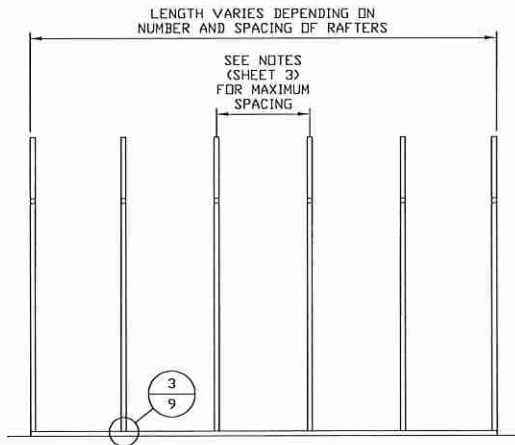
TYPICAL RAFTER/COLUMN FRAME SECTION

SCALE: NTS



TYPICAL RAFTER/COLUMN FRAME SECTION

SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

SCALE: NTS



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SHT. 5

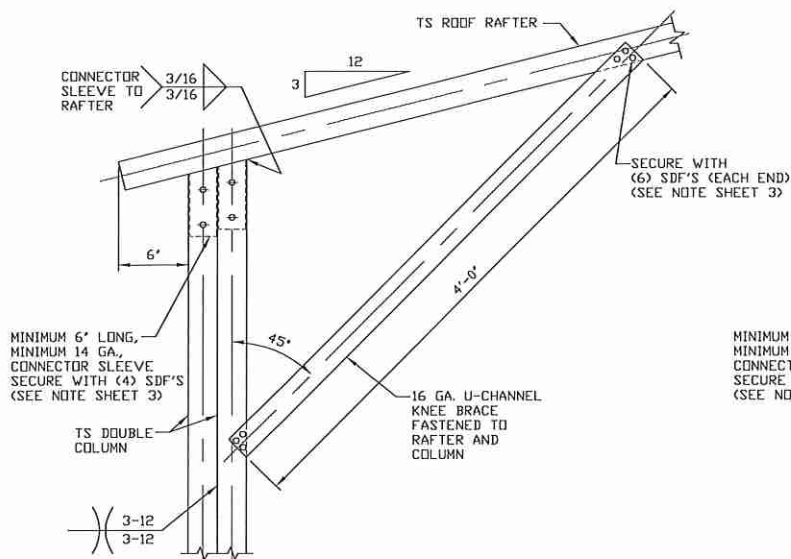
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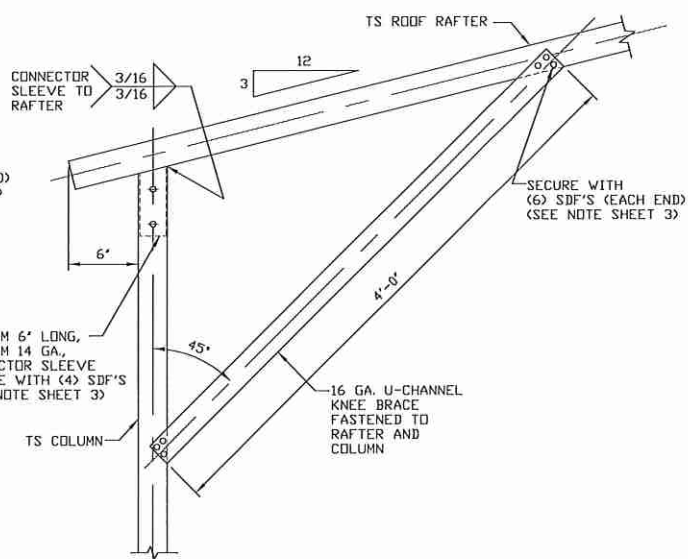
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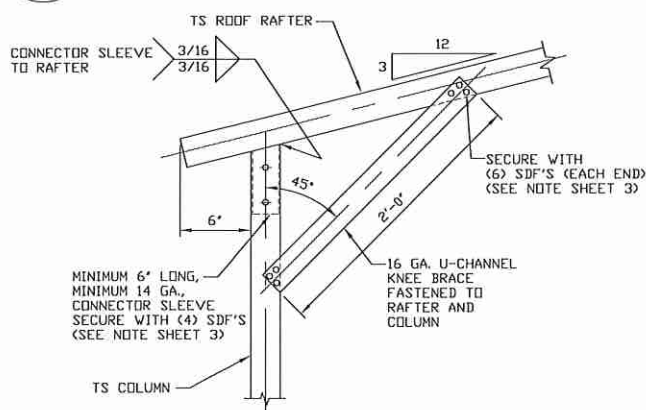
1A

**BOX EAVE RAFTER COLUMN
CONNECTION DETAIL FOR
HEIGHTS 12'-0" < TO ≤ 16'-0" (HW & LW)**
SCALE: NTS



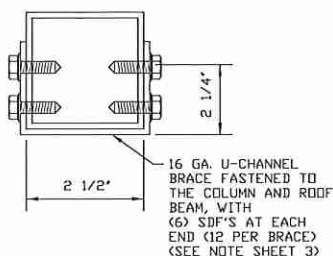
1B

**BOX EAVE RAFTER COLUMN
CONNECTION DETAIL FOR HEIGHTS
10'-0" < TO ≤ 12'-0" (HW & LW)**
SCALE: NTS

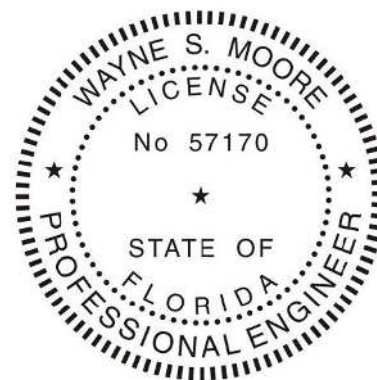


1C

**BOX EAVE RAFTER COLUMN
CONNECTION DETAIL FOR
HEIGHTS ≤ 10'-0" (HW & LW)**
SCALE: NTS



BRACE SECTION
SCALE: NTS



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SHT. 6

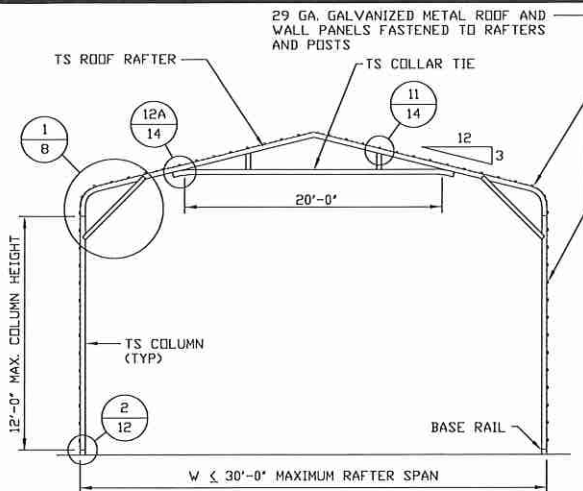
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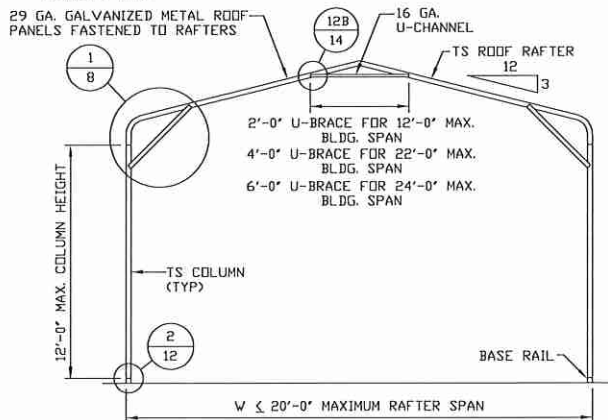
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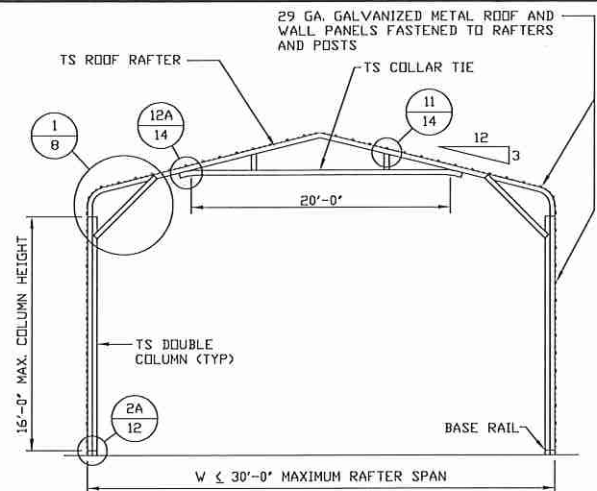
TYPICAL RAFTER/COLUMN FRAME SECTION

SCALE: NTS



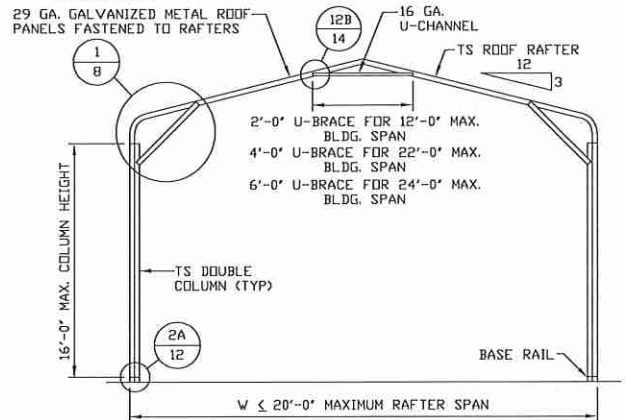
TYPICAL RAFTER/COLUMN FRAME SECTION

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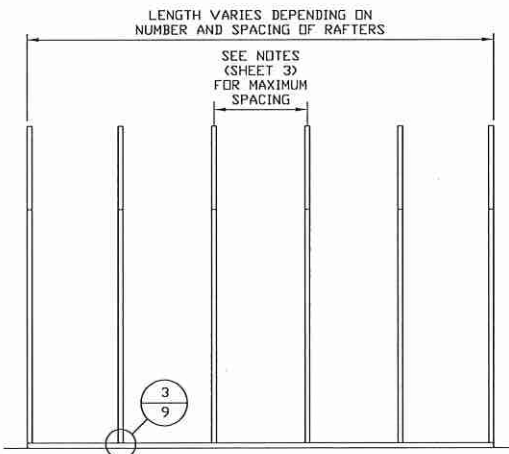
TYPICAL RAFTER/COLUMN FRAME SECTION

SCALE: NTS



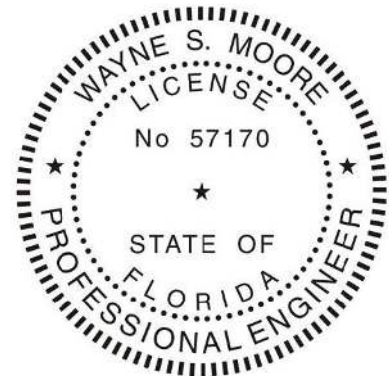
TYPICAL RAFTER/COLUMN FRAME SECTION

SCALE: NTS



TYPICAL RAFTER/COLUMN FRAMING SIDE SECTION

SCALE: NTS



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SHT. 7

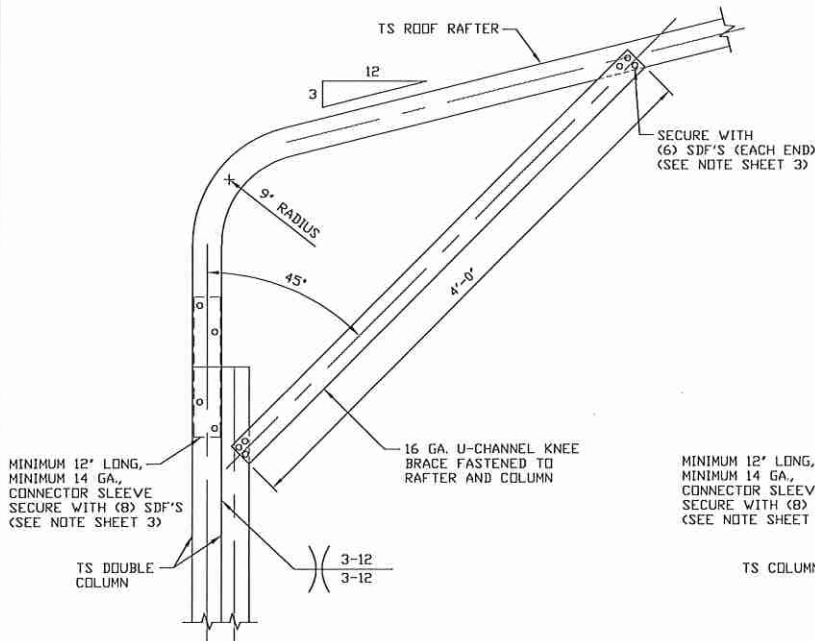
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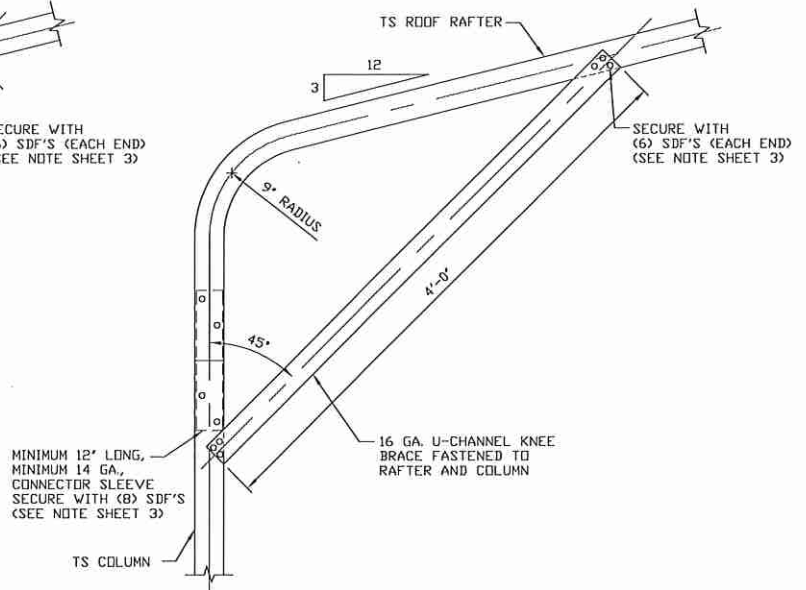
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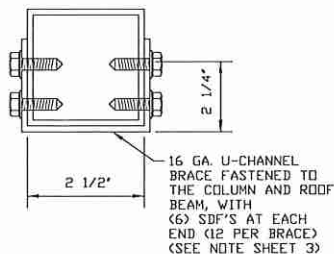
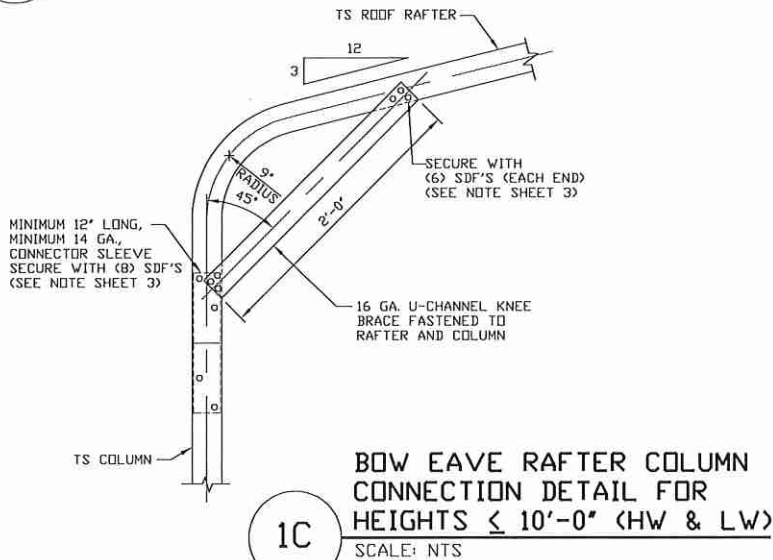
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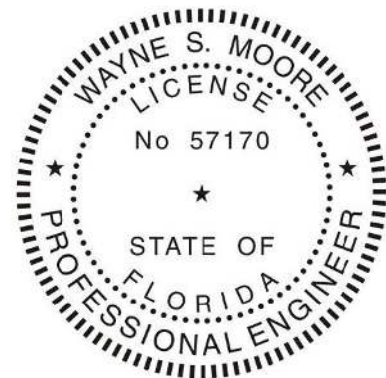
1A BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 12'-0" < TO ≤ 16'-0" (HW & LW)
SCALE: NTS



1B BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 10'-0" < TO ≤ 12'-0" (HW & LW)
SCALE: NTS



BRACE SECTION
SCALE: NTS



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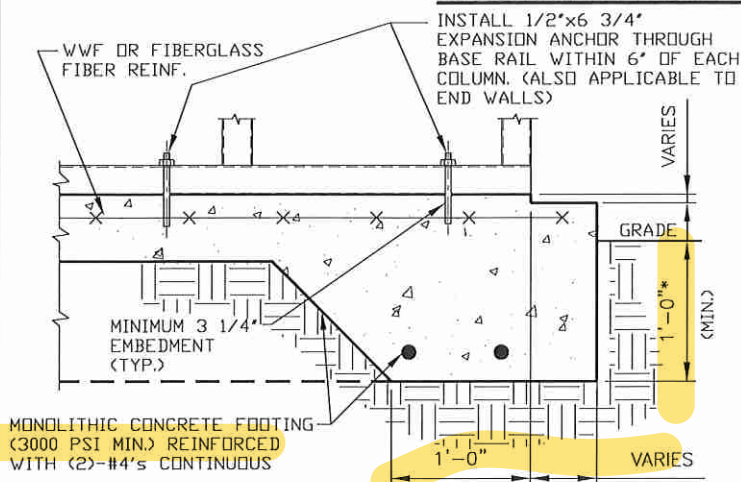
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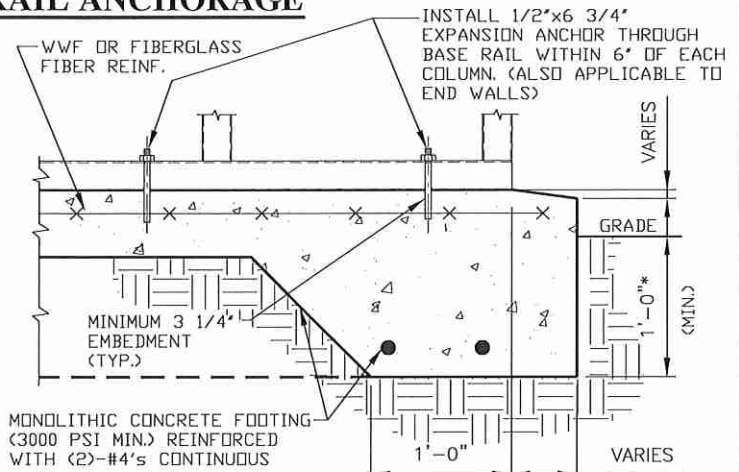
OPTIONAL BASE RAIL ANCHORAGE



3A

CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

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



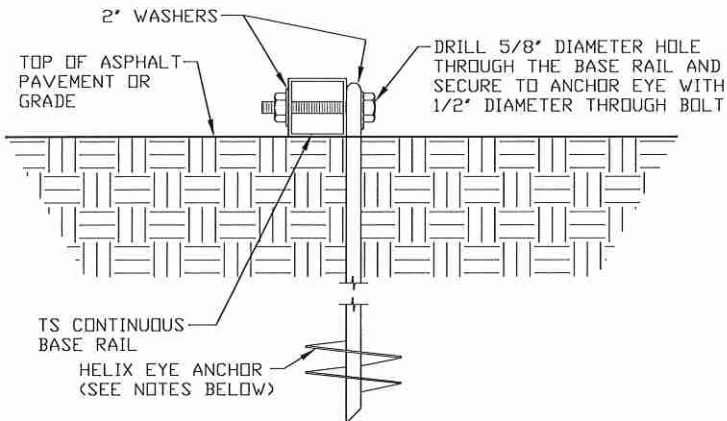
3B

CONCRETE SLAB BASE RAIL ANCHORAGE

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

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)

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.



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ENGINEERING AND CONSULTING, INC.

DRAWN BY: SH

CHECKED BY: JM

PROJECT MGR: WSM

CLIENT: GA SOUTHERN

GA SOUTHERN STEEL BUILDINGS, INC.
1086 GENE McQUEEN ROAD
MOULTRIE, GA 31788
30'-0"x16'-0" ENCLOSED STRUCTURE

DATE: 5-2-19

SHT. 9

SCALE: NTS

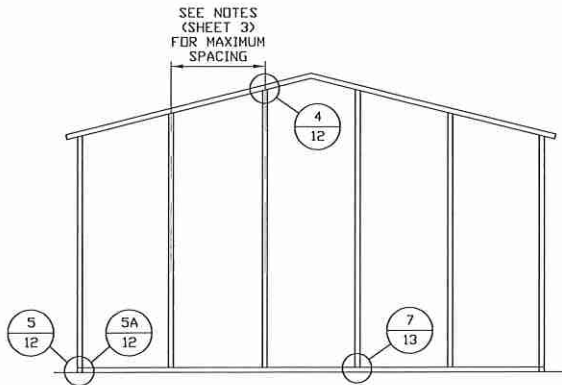
DWG. NO: SK-3

JOB NO:
17270S/19118S

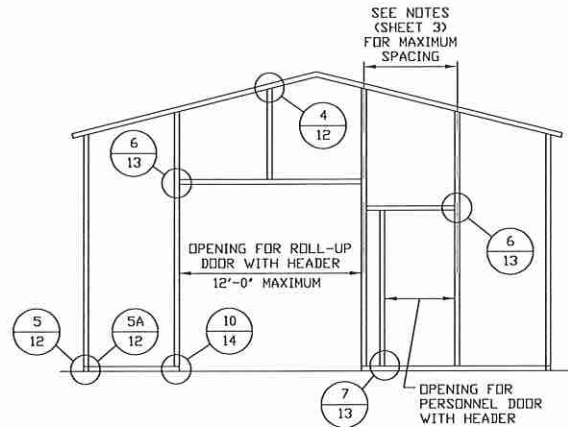
REV: 1

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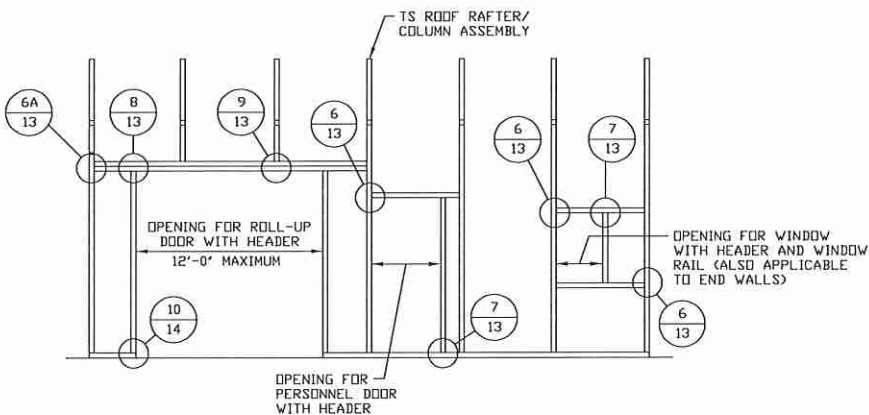
BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



**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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1086 GENE McQUEEN ROAD
MOULTRIE, GA 31788
30'-0"x16'-0" ENCLOSED STRUCTURE

DATE: 5-2-19

SHT. 10

SCALE: NTS

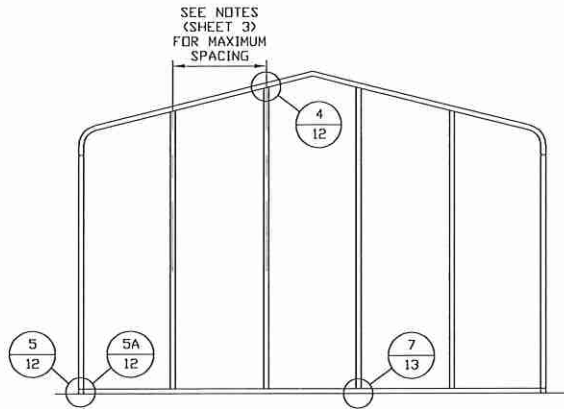
DWG. NO: SK-3

**JOB NO:
17270S/19118S**

REV: 1

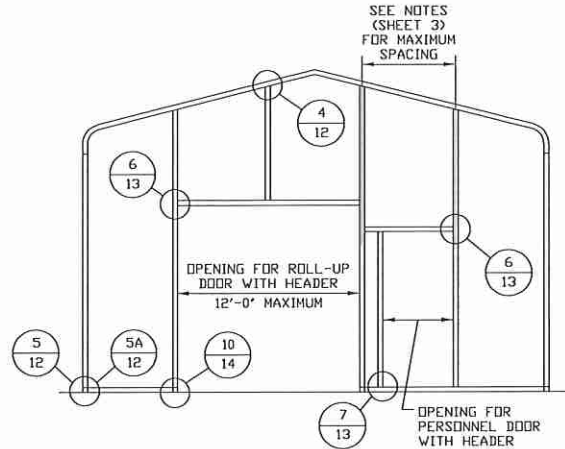
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BOW RAFTER END WALL AND SIDE WALL OPENINGS



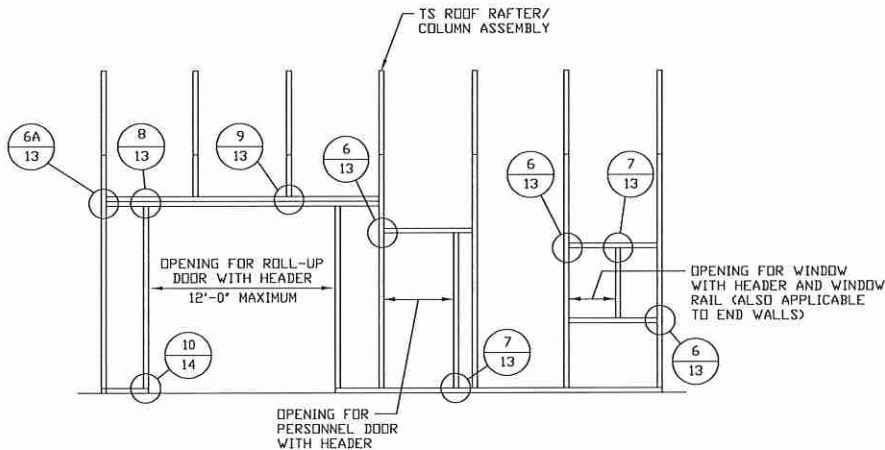
**TYPICAL BOW RAFTER
END WALL FRAMING SECTION**

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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1086 GENE McQUEEN ROAD
MOULTRIE, GA 31788
30'-0"x16'-0" ENCLOSED STRUCTURE

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SHT. 11

SCALE: NTS

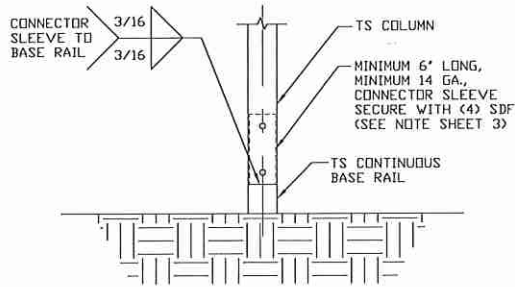
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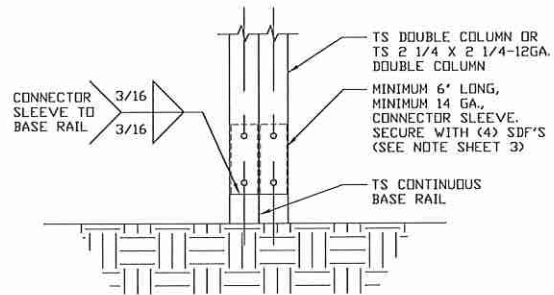
BOW AND BOX EAVE RAFTER WALL OPENING DETAILS



2

RAFTER COLUMN/BASE RAIL CONNECTION DETAIL

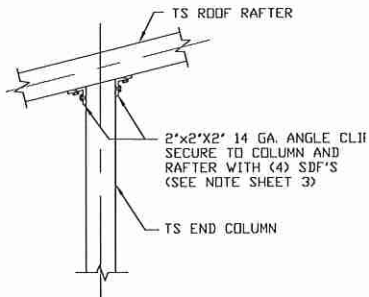
SCALE: NTS



2A

RAFTER COLUMN/BASE RAIL CONNECTION DETAIL

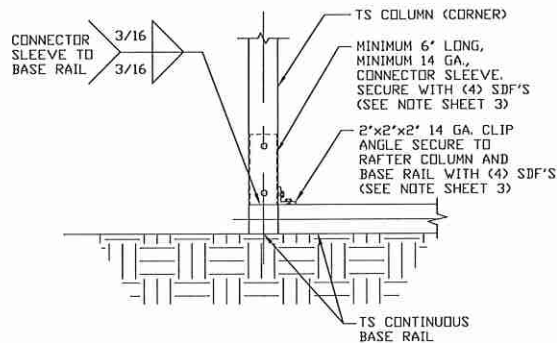
SCALE: NTS



4

END COLUMN/RAFTER CONNECTION DETAIL

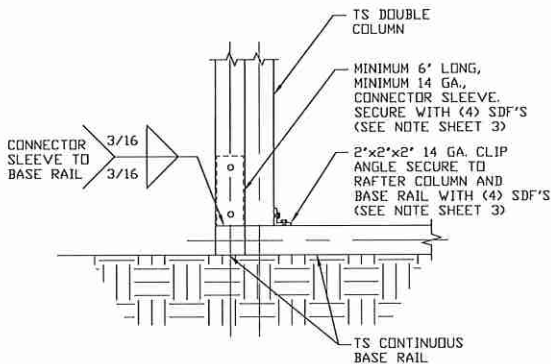
SCALE: NTS



5

END COLUMN/BASE RAIL CONNECTION DETAIL

SCALE: NTS



5A

END COLUMN/BASE RAIL CONNECTION DETAIL

SCALE: NTS



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1086 GENE McQUEEN ROAD
MOULTRIE, GA 31788
30'-0"x16'-0" ENCLOSED STRUCTURE

DATE: 5-2-19

SHT. 12

SCALE: NTS

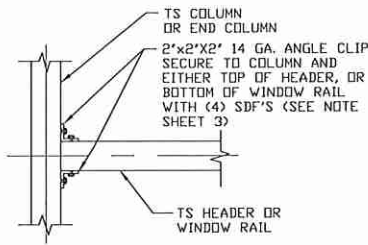
DWG. NO: SK-3

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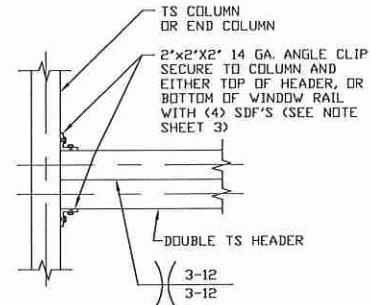
BOW AND BOX EAVE RAFTER WALL OPENING DETAILS



6

COLUMN OR WINDOW RAIL TO POST CONNECTION DETAIL

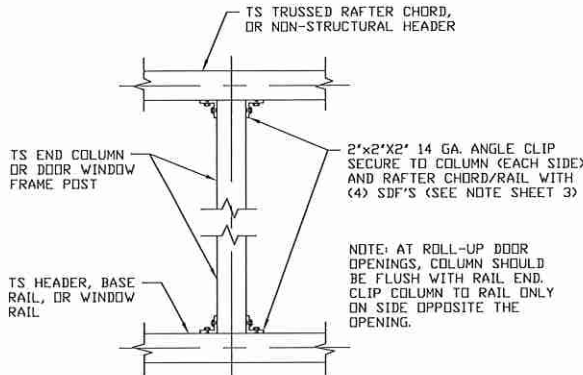
SCALE: NTS



6A

COLUMN OR WINDOW RAIL TO POST CONNECTION DETAIL

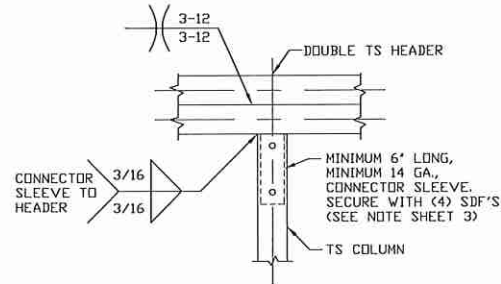
SCALE: NTS



7

COLUMN TO HEADER, BASE RAIL OR WINDOW RAIL CONNECTION DETAIL

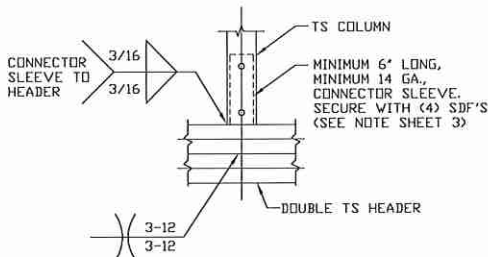
SCALE: NTS



8

HEADER/COLUMN CONNECTION DETAIL

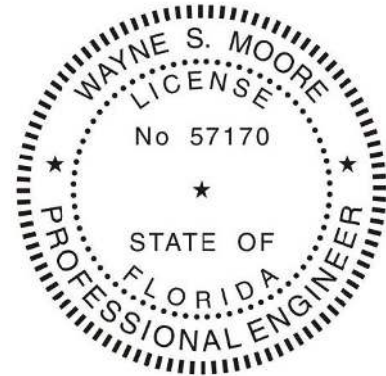
SCALE: NTS



9

HEADER/COLUMN CONNECTION DETAIL

SCALE: NTS



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GA SOUTHERN STEEL BUILDINGS, INC.
1086 GENE McQUEEN ROAD
MOULTRIE, GA 31788
30'-0"x16'-0" ENCLOSED STRUCTURE

DATE: 5-2-19

SHT. 13

SCALE: NTS

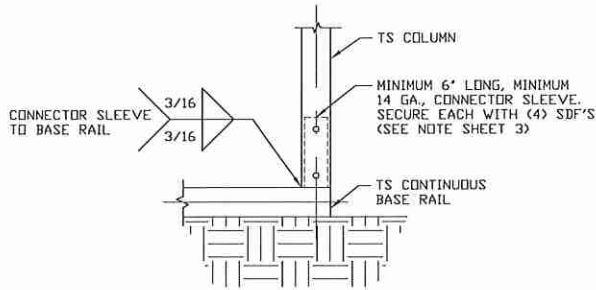
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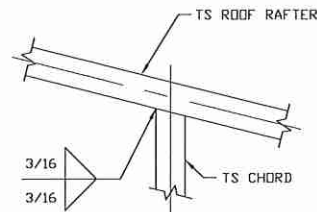
BOW AND BOX EAVE RAFTER WALL OPENING DETAILS



10

COLUMN/BASE RAIL CONNECTION DETAIL

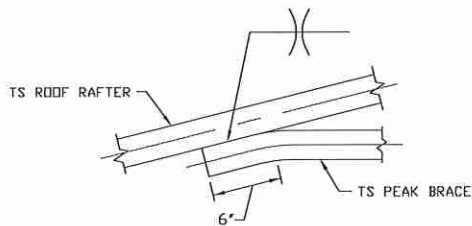
SCALE: NTS



11

RAFTER TO CHORD CONNECTION DETAIL

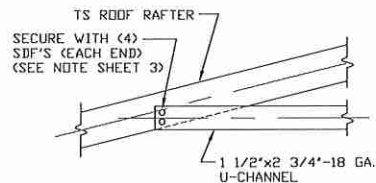
SCALE: NTS



12A

PEAK BRACE CONNECTION DETAIL

SCALE: NTS



12B

ROOF RAFTER TIE CONNECTION DETAIL

SCALE: NTS



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GA SOUTHERN STEEL BUILDINGS, INC.
1086 GENE McQUEEN ROAD
MOULTRIE, GA 31788
30'-0" x 16'-0" ENCLOSED STRUCTURE

DATE: 5-2-19

SCALE: NTS

DWG. NO: SK-3

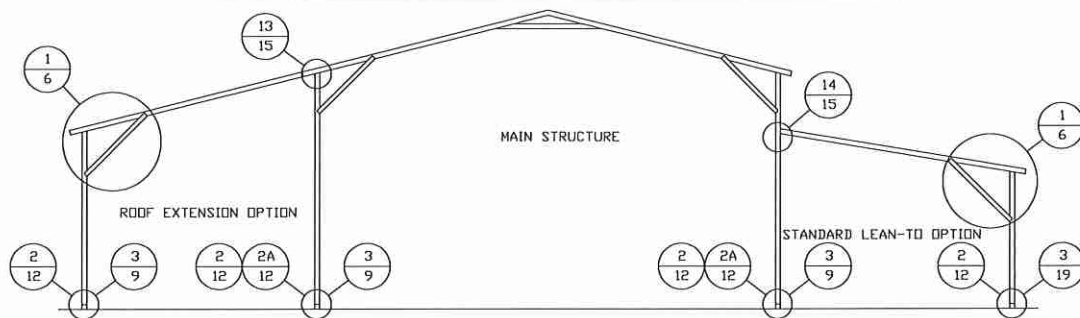
JOB NO:
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SHT. 14

REV: 1

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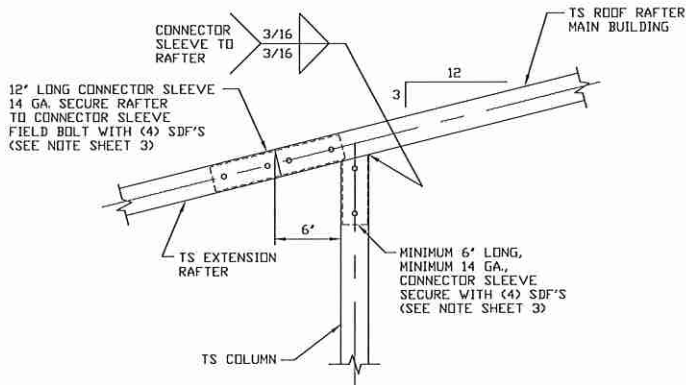
BOX EAVE RAFTER LEAN-TO OPTIONS



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

SCALE: NTS

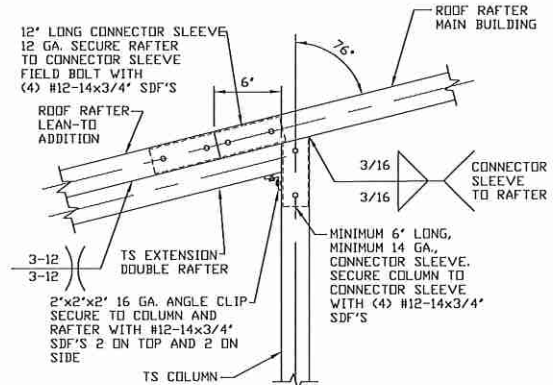
MAXIMUM STANDARD LEAN-TO WIDTH FOR SINGLE RAFTER IS 12'-0"
MAXIMUM STANDARD LEAN-TO WIDTH FOR DOUBLE RAFTER IS 24'-0"



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

13

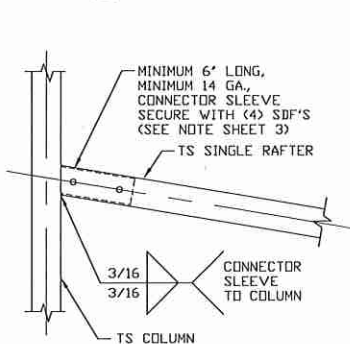
SCALE: NTS



**SIDE EXTENSION RAFTER/
COLUMN DETAIL FOR
RAFTER SPANS $12'-0' < TO \leq 24'-0"$**

13A

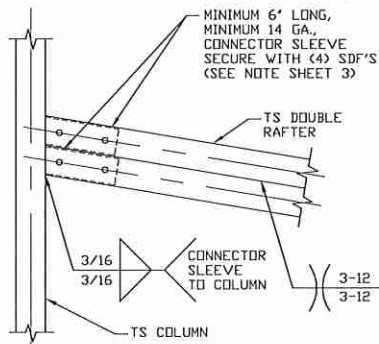
SCALE: NTS



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

14

SCALE: NTS



**LEAN-TO RAFTER TO
RAFTER COLUMN
CONNECTION DETAIL
FOR RAFTER SPANS
 $12'-0' < TO \leq 24'-0"$**

14A

SCALE: NTS



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GA SOUTHERN STEEL BUILDINGS, INC.
1086 GENE McQUEEN ROAD
MOULTRIE, GA 31788
30'-0"x16'-0" ENCLOSED STRUCTURE

DATE: 5-2-19

SHT. 15

SCALE: NTS

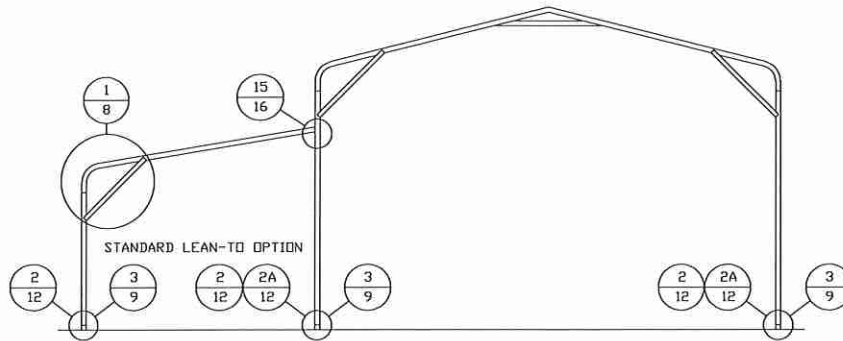
DWG. NO: SK-3

**JOB NO:
17270S/19118S**

REV: 1

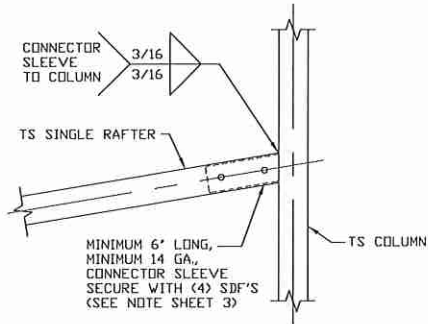
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BOW RAFTER LEAN-TO OPTION



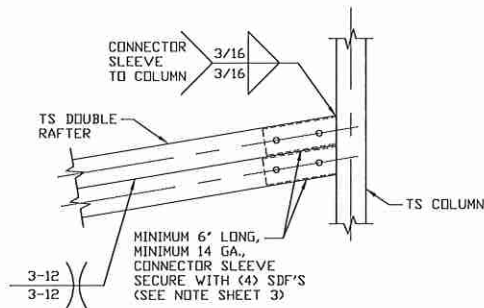
TYPICAL BOW RAFTER LEAN-TO OPTION FRAMING SECTION

SCALE: NTS MAXIMUM STANDARD LEAN-TO WIDTH FOR SINGLE RAFTER IS 12'-0"
MAXIMUM STANDARD LEAN-TO WIDTH FOR DOUBLE RAFTER IS 24'-0"



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

SCALE: NTS



15A LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 12'-0" < TO ≤ 24'-0"

SCALE: NTS



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SHT. 16

SCALE: NTS

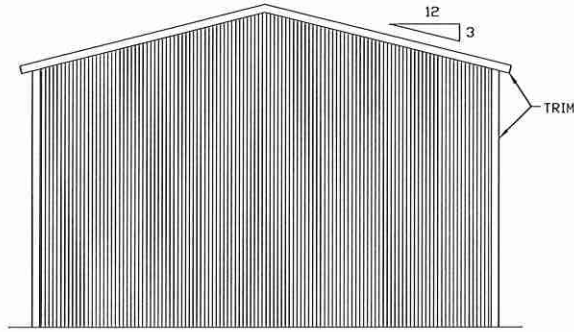
DWG. NO: SK-3

**JOB NO:
17270S/19118S**

REV: 1

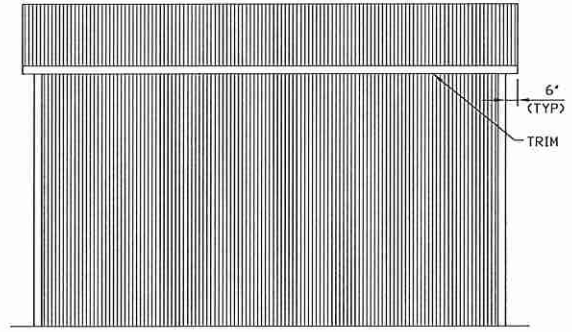
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BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



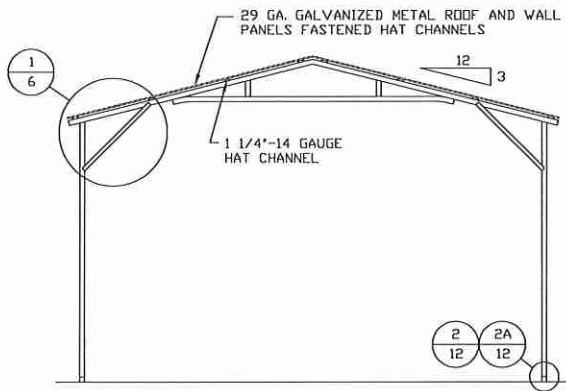
**TYPICAL END ELEVATION
VERTICAL ROOF/SIDING**

SCALE: NTS



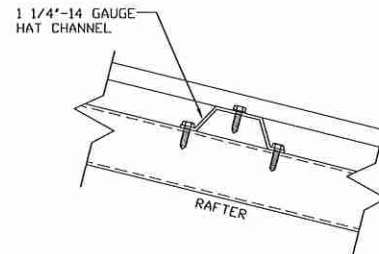
**TYPICAL SIDE ELEVATION
VERTICAL ROOF/SIDING**

SCALE: NTS



**TYPICAL SECTION
VERTICAL ROOF/SIDING OPTION**

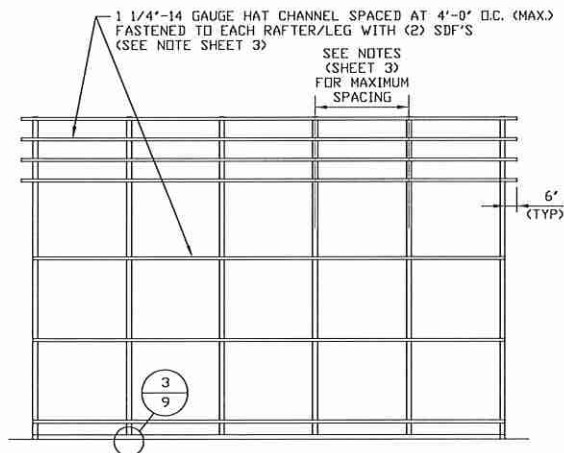
SCALE: NTS



PANEL ATTACHMENT

(ALTERNATE FOR VERTICAL ROOF PANELS)

SCALE: NTS



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

SCALE: NTS



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SHT. 17

SCALE: NTS

DWG. NO: SK-3

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