

STRUCTURAL DESIGN ENCLOSED BUILDING

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

14 February 2020 Revision 8 M&A Project No. 16062S/16155S/16207S/17155S/17200S/18068S/18156S/18290S/20019S

Prepared for:



Steel Buildings and Structures, Inc. P.O. Box 1287 Mt. Airy, NC 27030

Prepared by:

Moore and Associates Engineering and Consulting, Inc.

1009 East Avenue North Augusta, SC 29841

401 S. Main St., Suite 200 Mt. Airy, NC 27030

Digitally signed by Wayne S Moore Date: 2020.02.28 09:32:01 -05'00'





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INSTALLATION NOTES AND SPECIFICATIONS

- I DESIGN IS FOR MAXIMUM 30'-0" WIDE x 20'-0" EAVE HEIGHT ENCLUSED STRUCTURES
- 2 DESIGN WAS DONE IN ACCORDANCE WITH THE 2017 FLORIDA BUILDING CODE (FBC) 6TH EDITION, 2018 NORTH CAROLINA BUILDING CODE, 2006 INTERNATIONAL BUILDING CODE (IBC), 2012 IBC, 2012 IBC, 2015 IBC AND 2018 IBC
- 3 DESIGN LOADS ARE AS FOLLOWS:

A) DEAD LOAD

= 15 PSF

B) LIVE LUAD

= 12 PSF

C) GROUND SNOW LOAD

= 30 PSF (<u><</u> 26'-0'), 35 PSF (26'-0' (W <u><</u> 30'-0')

NOTE: CUNBALANCED 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 = 50 FEET (UNLESS NOTED OTHERWISE)
- 6. END WALL COLUMNS (POSTS) ARE EQUIVALENT TO SIDE WALL POSTS IN SIZE AND SPACING (UNLESS NOTED OTHERWISE)
- 7. RISK CATEGORY I.
- 8 WIND EXPOSURE CATEGORY B
- 9 SPECIFICATIONS APPLICABLE TO 29 GAUGE METAL PANELS FASTENED DIRECTLY TO 2 1/2" × 2 1/2" 14 GAUGE TUBE STEEL (TS) FRAMING MEMBERS (UNLESS NOTED DTHERVISE).
- 10 AVERAGE FASTENER SPACING ON-CENTERS ALONG RAFTERS OR HAT CHANNELS, AND CULUMNS (INTERIOR OR END) = 8 INCHES
- IT FASTENERS CONSIST OF 1/4*x3/4* SELF-DRILLING FASTENER (SDF), USE CONTROL SEAL WASHER WITH EXTERIOR FASTENERS
 SPECIFICATIONS APPLICABLE ONLY FOR MEAN ROUF HEIGHT OF 20 FEET OR LESS, AND ROOF SLOPES OF 14* (3:12 PITCH) OR LESS SPACING
 REQUIREMENTS FOR OTHER ROOF HEIGHTS AND/OR SLOPES MAY VARY ROOF SLOPES LESS THAN 3:12 REQUIRE USE OF LAP JOINT SEALANT
- 12. GROUND ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL WITHIN 6° DF EACH COLUMN
- 13 STANDARD GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT x 36' LONG AND MAY BE USED IN SUITABLE SOILS AND MUST BE USED IN UNSUITABLE SOILS AS NOTED
- 14 WIND FORCES GOVERN OVER SEISMIC FORCES SEISMIC PARAMETERS ANALYZED ARE

SOIL SITE CLASS = D RISK CATEGORY I

R= 325

 $1_{E} = 10$ V= $C_{S}W$

15 WINDOW AND DOOR DESIGN PRESSURES ARE APPLICABLE TO THE STATE OF FLORIDA ONLY



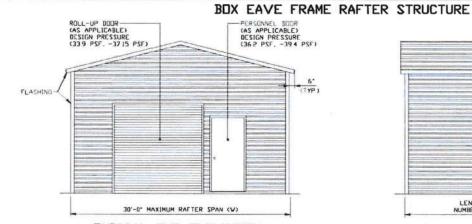
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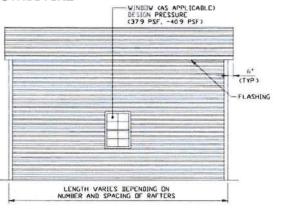
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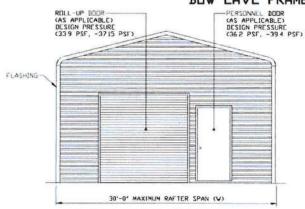
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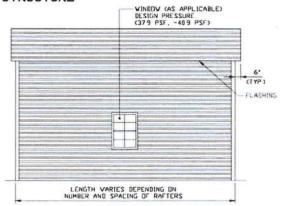
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TYPICAL SIDE ELEVATION

SCALE: NTS

BOW EAVE FRAME RAFTER STRUCTURE





TYPICAL END ELEVATION

SCALE: NTS

TYPICAL SIDE ELEVATION

SCALE: NTS



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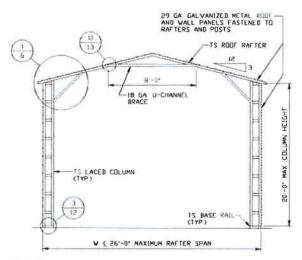
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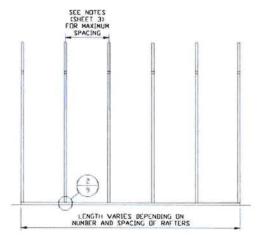
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TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS

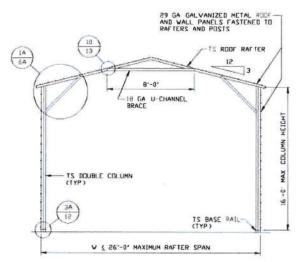


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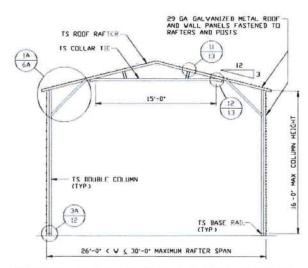
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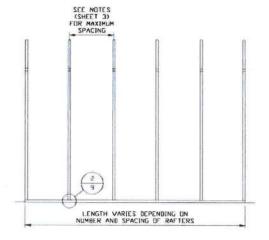
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TYPICAL RAFTER/COLUMN FRAME SECTION
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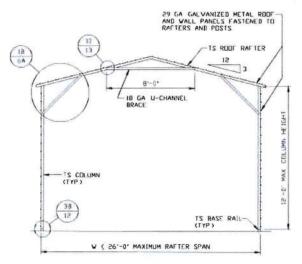


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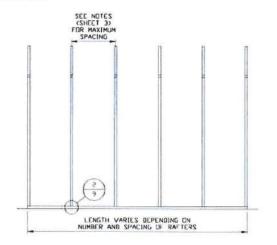
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TYPICAL RAFTER/COLUMN FRAME SECTION

29 GA GALVANIZED METAL ROOF-AND WALL PANELS FASTENED TO RAFTERS AND POSTS TS ROOF RAFTER (H 13) TS COLLAR TIE (1B) 6A MAX COLUMN TS COLUMN -0-di 26'-0' C W C 30'-0' MAXIMUM RAFTER SPAN

TYPICAL RAFTER/COLUMN FRAME SECTION

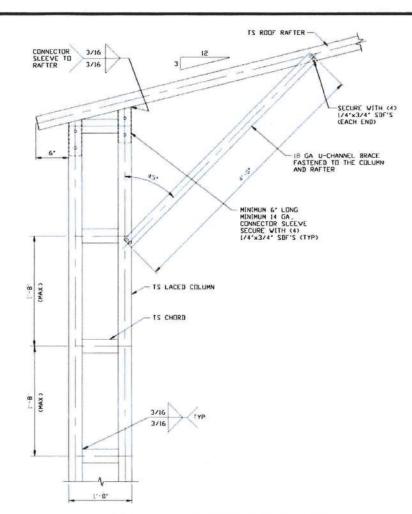


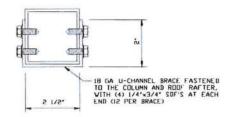
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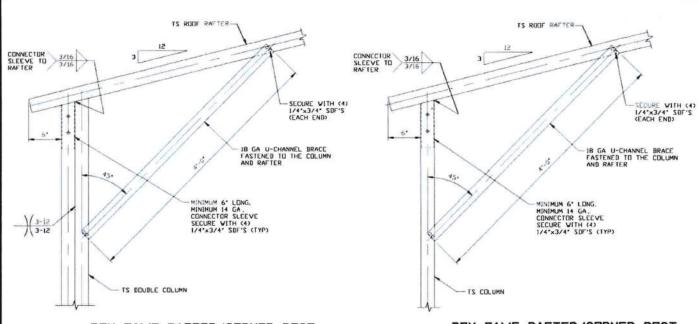
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BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS 16'-0" < TO ≤ 20'-0" 1



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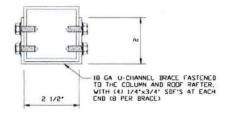


BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL

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

BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL

FOR HEIGHTS \(\) 12'-0'

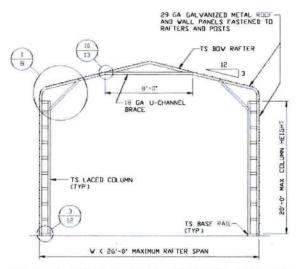


BRACE SECTION



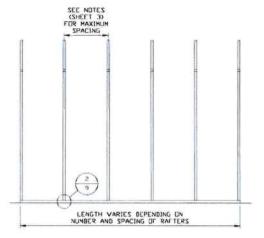
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TYPICAL RAFTER/COLUMN FRAME SECTION
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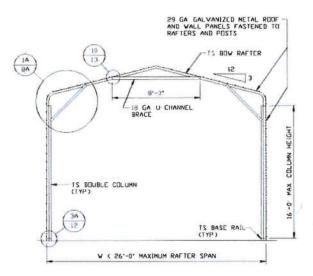


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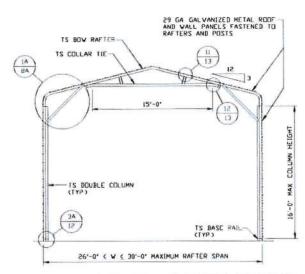


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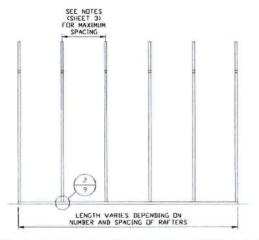
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TYPICAL RAFTER/COLUMN FRAME SECTION
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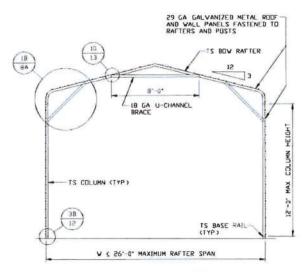


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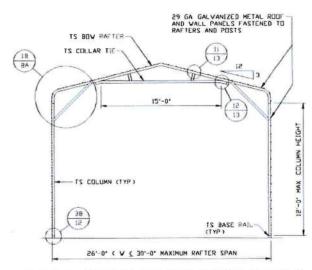


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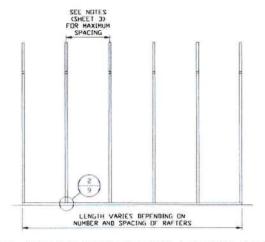
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TYPICAL RAFTER/COLUMN FRAME SECTION



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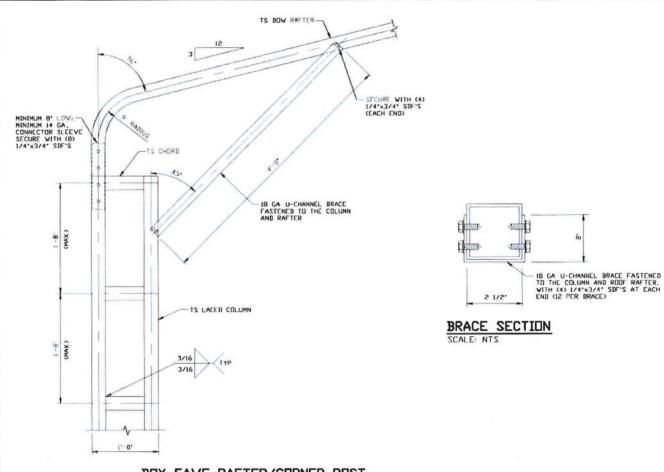


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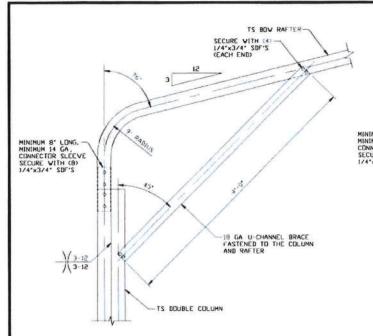
BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS 16'-0" < TO \(\) 20'-0"

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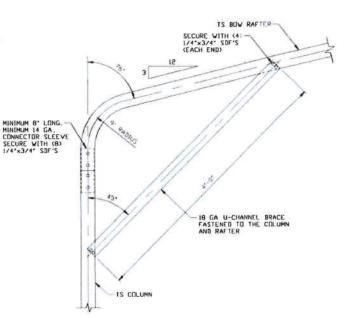
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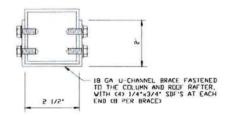
BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL

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

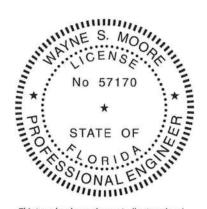


BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL \FOR HEIGHTS \(\) 12'-0"

1B FOR HEIG

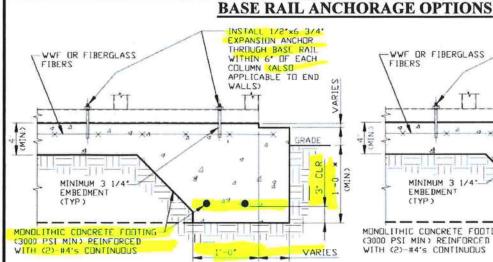


BRACE SECTION
SCALE: NTS



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ENGINEERING AND CONSULTING, INC.	CHECKED BY: PDH		MOUNT AIRY, NC 2 '-0"x20'-0" ENCLOSED S			
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INSTALL 1/2'x6 3/4" EXPANSION ANCHOR THROUGH BASE RAIL WITHIN 6' OF EACH COLUMN. (ALSO WWF DR FIBERGLASS FIBERS APPLICABLE TO END WALLS) VARI CMIND C 1-0 MINIMUM 3 1/4 'n EMBEDMENT MUNULITHIC CONCRETE FOOTING (3000 PSI MIN) REINFORCED WITH (2)-#4's CONTINUOUS VARIES

CONCRETE MONOLITHIC SLAB BASE RAIL ANCHURAGE

MINIMUM ANCHOR EDGE DISTANCE IS 4'
* COORDINATE WITH LOCAL CODES/ORD.

GENERAL NOTES

NOTE: CONCRETE MONOLITHIC SLAB DESIGN BASED ON MINIMUM SOIL BEARING CAPACITY OF 1,500 PSF

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 I 1/2' ELSEWHERE

REINFORCING STEEL

THE TURNDOWN REINFORCING STEEL SHALL BE ASTM AGIS 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:

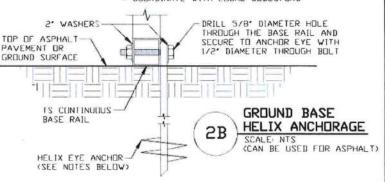
- REINFORCEMENT IS BENT COLD
- THE DIAMETER OF THE BEND, MEASURED ON THE INSIDE OF THE BAR, IS NOT LESS THAN SIX-BAR DIAMETERS REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT
- BE FIELD BENT

HELIX ANCHOR NOTES:

- FOR VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND COBBLES, CALICHE, PRELIDADED SILTS AND CLAYS, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT OR SINGLE 6" HELIX WITH MINIMUM 50" EMBEDMENT
- FOR CORAL USE MINIMUM (2) 4' HELICES WITH MINIMUM 30' EMBEDMENT OR SINGLE 6' HELIX WITH MINIMUM 50' EMBEDMENT.
- 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
- FOR LODSE TO MEDIUM DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS ALLUVIAL FILL, USE MINIMUM (2) 6' HELICES WITH MINIMUM 50' EMBEDMENT
- FOR VERY LOSE TO MEDIUM DENSE SANDS, FIRM TO STIFFER CLAYS AND SILTS, ALLUVIAL FILL, USE MINIMUM (2) 8' HELICES WITH MINIMUM 60' EMBEDMENT

CONCRETE SLAB BASE RAIL ANCHORAGE 24

MINIMUM ANCHOR EDGE DISTANCE IS 4" COORDINATE WITH LOCAL CODES/ORD





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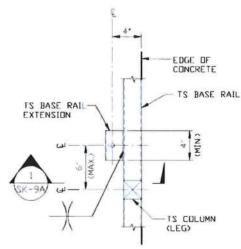
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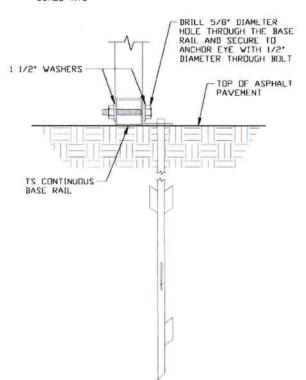
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PROJECT MGR: WSM	DATE: 2-14-20	SCALE: NTS	JOB	ND: 18068\$ \$/18290\$/20019\$			
CLIENT: SBSI	SHT. 9	DVG. ND SK	-3	REV. 8			

ADDITIONAL BASE RAIL ANCHORAGE OPTION

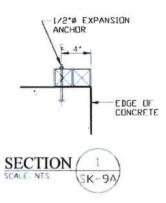


TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

SCALE: NTS





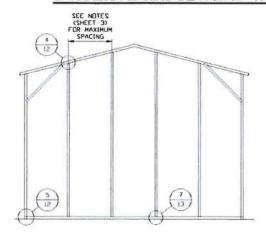




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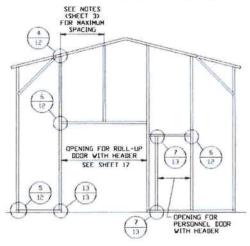
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BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



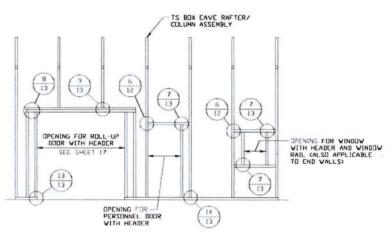
TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS



TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS



TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

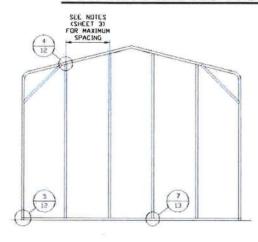
SCALE: NTS



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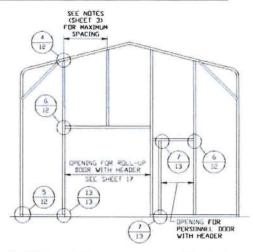
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BOW EAVE RAFTER END WALL AND SIDE WALL OPENINGS



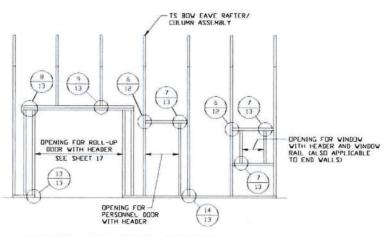
TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS



TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS



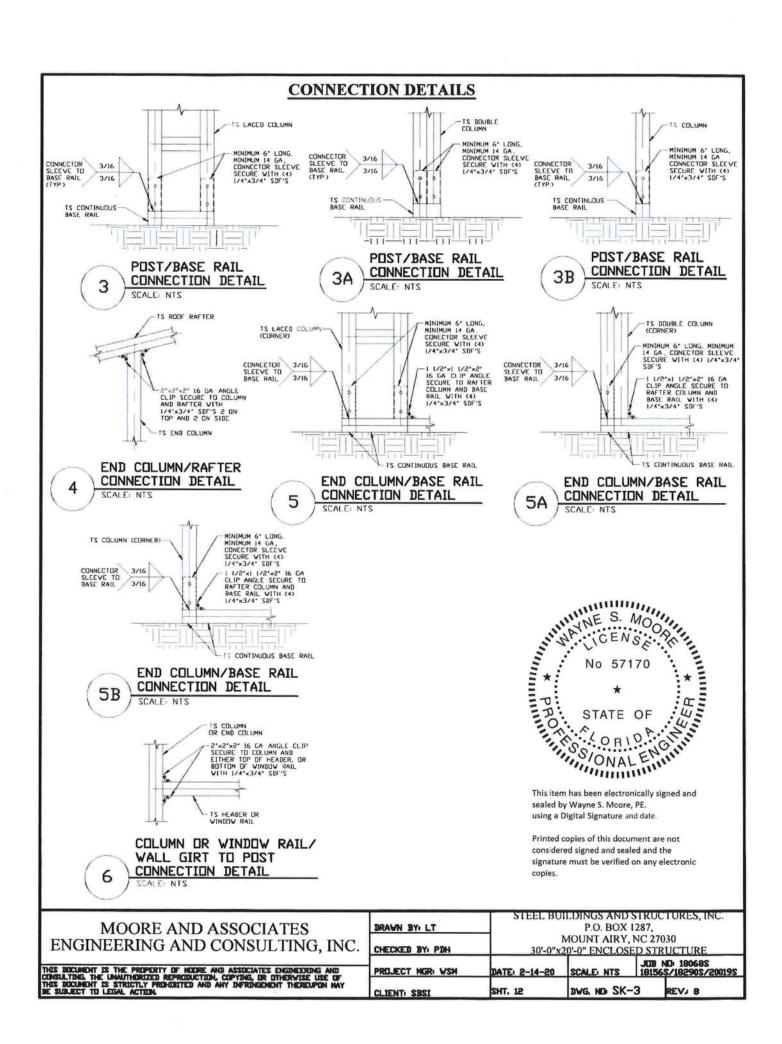
TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

SCALE NTS

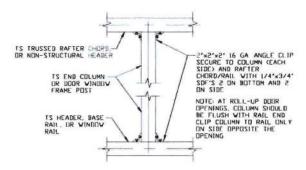


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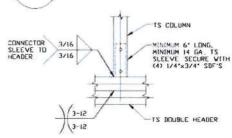
CONNECTION DETAILS



CONNECTOR SLEEVE TO HEADER 3/16 TE DOUBLE HEADER 3/16 MINIMUM 6' LONG, MINIMUM 14 GA, TS SLEEVE SECURE EACH VITH (4) 1/4'*3/4' SDF'S IS COLUMN

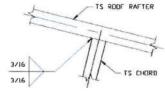
COLUMN TO HEADER, BASE RAIL, OR WINDOW RAIL CONNECTION DETAIL

DOUBLE HEADER/COLUMN CONNECTION DETAIL 8



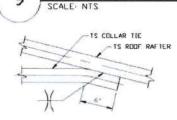
CONNECTION DETAIL

TS ROOF RAFTER 18 GA U-CHANNEL COLLAR TIE ATTACH CULLAR DE TO ROOF RAFTER W(TH (4) L/4"×3/4" SDF'S (EACH END)



COLLAR TIE CONNECTION DETAIL 10 COLUMN/DOUBLE HEADER

RAFTER TO CHORD CONNECTION DETAIL 11 SCALE: NTS

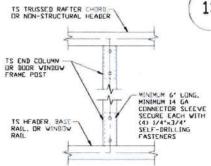


9

TS COLUMN MINIMUM 6' LONG.— MINIMUM 14 GA., CONECTOR SLEEVE SECURE WITH (4) 1/4'x3/4' SOF'S TS CONTINUOUS BASE RAIL

COLLAR TIE CONNECTION DETAIL

COLUMN/BASE RAIL CONNECTION DETAIL 13



COLUMN TO HEADER OR BASE RAIL CONNECTION DETAIL SCALE: NTS

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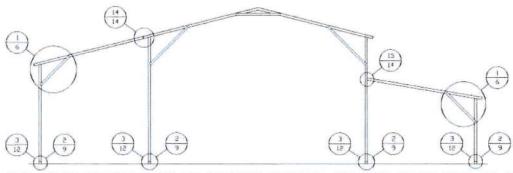
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BOX EAVE RAFTER LEAN-TO OPTIONS

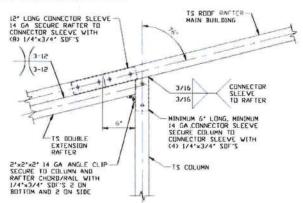


TYPICAL BOX EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION (BOTH OPTIONS SHOWN)

SCALE: NTS

MAXIMUM WIDTH DF SINGLE MEMBER (RAFTER) RODF EXTENSION LEAN-TO IS 12'-0'
MAXIMUM WIDTH OF DOUBLE MEMBER RAFTER ROOF EXTENSION LEAN-TO IS 16'-0'.

FOR SHARED COLUMN HEIGHTS REFERENCE RAFTER COLUMN CONNECTION DETAILS FOR APPROPRIATE COLUMN HEIGHT AND TUBING SPECIFICATIONS



18' LONG CONNECTOR SLEEVE
11 GA SECURE RAFTER 10
CONNECTOR SLEEVE VITH
(B) 1/4'x3/4' SDF'S

15 EXTENSION
RAFTER

NIPPLE
10 SAFTER
3/16
174'x3/4'SDF'S

175 COLUMN
177 CALL STEEVE
178 SAFTER
178 SAFTER
179 SAFTER
179 SAFTER
170 SAFTER
171 SAFTER
171 SAFTER
171 SAFTER
171 SAFTER
172 SAFTER
173 SAFTER
173 SAFTER
174 SAFTER
175 COLUMN

IS ROOF RAFTER MAIN BUILDING

SIDE EXTENSION RAFTER/
COLUMN DETAIL FOR
RAFTER SPANS \(\sigma\) 12'-0"

SIDE EXTENSION RAFTER/ COLUMN DETAIL FOR RAFTER SPANS 12'-0' < TO < 16'-0'

S'x3'x2' 16 GA ANGLE
CLIP SECURE TO COLUMN
VITH (4) 1/4'x3/4' SDF'S

1'S DOUBLE
LEAN-TO RAFTER

3-12

14

COLUMN

2'x2'x2' 16 GA ANGLE
CLIP SECURE TO COLUMN

VITH (4) 1/4'x3/4' SDF'S

TS LEAN-TO
RAFTER

TS COLUMN

LEAN-TO RAFTER
TO RAFTER POST
CONNECTION DETAIL
FOR WIDTHS
12'-0" < TO < 16'-0"

TS COLUMN

15

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

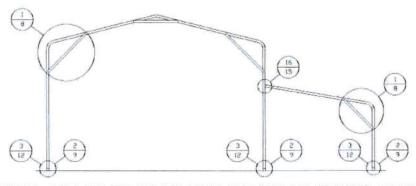
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BOW EAVE RAFTER LEAN-TO OPTIONS



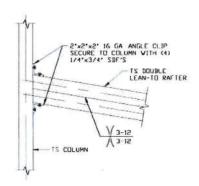
TYPICAL BOW EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION

SCALE: NTS

MAXIMUM WIDTH OF SINGLE MEMBER (RAFTER) ROOF EXTENSION LEAN-TO IS 12'-0'

MAXIMUM WIDTH OF DOUBLE MEMBER RAFTER ROOF EXTENSION LEAN-TO IS 16'-0'.

FOR SHARED COLUMN HEIGHTS REFERENCE RAFTER COLUMN CONNECTION DETAILS FOR APPROPRIATE COLUMN HEIGHT AND TUBING SPECIFICATIONS



LEAN-TO RAFTER TO RAFTER POST CONNECTION DETAIL FOR WIDTHS

12'-0" < T□ < 16'-0" SCALE: NTS

16

2'x2'x2' (6 GA ANGLE CLIP SECURE TO COLUMN WITH (4) 1/4'x3/4' SDF'S TS LEAN-TO RAFTER TS COLUMN

LEAN-TO RAFTER TO RAFTER POST CONNECTION DETAIL FOR WIDTHS & 12'-" 16A

SCALE: NTS

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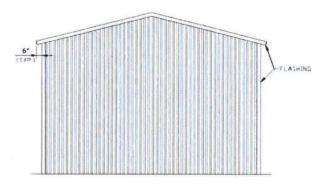
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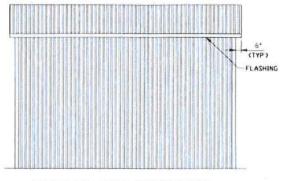
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CHECKED BY PURI	30-0 X	ND: 18068S				
CHECKED BY: PDH	MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE					
DRAWN BY: LT		P.O. BOX				

BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



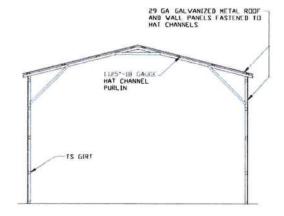
TYPICAL END ELEVATION VERTICAL ROOF/SIDING

SCALE: NTS



TYPICAL SIDE ELEVATION VERTICAL ROOF/SIDING

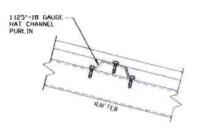
SCALE: NTS



TYPICAL SECTION VERTICAL ROOF/SIDING OPTION

SCALE: NTS

SCALE: NTS



PANEL ATTACHMENT (ALTERNATE FOR VERTICAL ROOF PANELS)

SEE NOTES
(SHEET 3)
FOR MAXINUM
SPACING

1125'-18 GAUGE HAT CHANNEL PURLIN
SPACED AT 4'-0' DC (MAX) AND FASTENED
TO EACH RAFTER VITH (2) 1/4'x3/4' SDF'S

(TYP)

15 GIRT SPACED AT
4'-0' DC (MAX)



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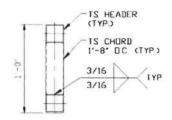
TYPICAL FRAMING SECTION

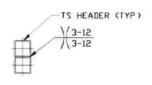
VERTICAL ROOF/SIDING OPTION

						INEERING AND
THUS	ALTING, TH BEICLEMENT	E UNAUTHOR	ZED REPRODU PROHODITED	AND ANY I	YING, OR OTHE NERDWINDS	RVISE USE OF THEREUPON MAY
BE SI	BLECT TO	LEGAL ACTI	DN			

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CHECKED BY: PDH	30'-0"x20'-0" ENCLOSED STRUCTURE				
PROJECT HOR: VSM	DATE: 2-14-20		SCALE: NTS 18156\$/182		
CLIENT: SBSI	SHT. 16	DWG. NO SK-3		REVI B	

SIDE WALL HEADER OPTIONS

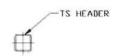




LACED HEADER DETAIL FOR DOOR OPENINGS 12'-0' < LENGTH < 20'-0'

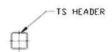
DOUBLE HEADER DETAIL FOR DOOR OPENINGS 7'-0' < LENGTH < 12'-0'

NTS SCA



SINGLE HEADER DETAIL FOR DOOR OPENINGS LENGTH < 7'-0' SCALE: NTS

END WALL HEADER OPTIONS



SINGLE HEADER DETAIL FOR DOOR OPENINGS LENGTH < 12'-0'



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