

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:

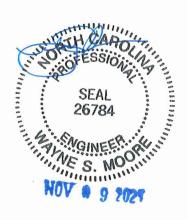
Moore and Associates Engineering and Consulting, Inc.

1009 East Avenue North Augusta, SC 29841

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







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OPTIONAL CONCRETE STRIP FOOTING

SHEET 21



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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, 2006 INTERNATIONAL BUILDING CODE (IBC), 2009 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 = 30 PSF (< 26'-0"), 35 PSF (26'-0" (W < 30'-0")

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

- 4. 3-SECOND GUST ULTIMATE WIND SPEED (V_{ULT}) = 105 TO 145 MPH (NOMINAL WIND SPEED = 82 TO 112 MPH):
- 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" 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) = 8 INCHES.
- 11. FASTENERS CONSIST OF 1/4*x3/4* 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.
- 12. GROUND ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL WITHIN 6' OF EACH COLUMN,

5. MAXIMUM RAFTER/COLUMN AND END COLUMN SPACING = 5.0 FEET (UNLESS NOTED OTHERWISE).

- 13. STANDARD GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT x 36' LONG AND MAY BE USED IN SUITABLE SOILS.

 OPTIONAL ANCHORAGE 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:

SDIL SITE CLASS = D

RISK CATEGORY I

R= 3.25

 $I_{F} = 1.0$ $\Lambda = C^2 \Lambda$

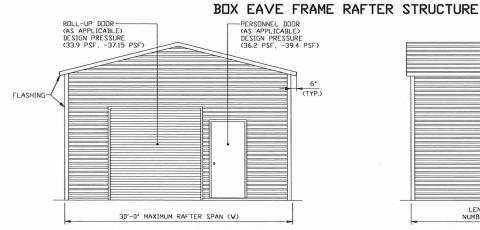
 $S_{DS} = 2.039 g$

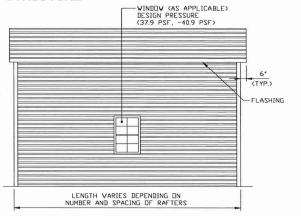
 $S_{D1} = 1.258 g$

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



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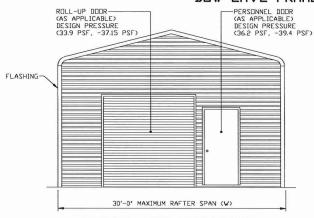
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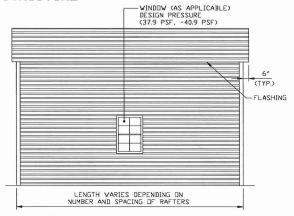
SCALE: NTS

TYPICAL SIDE ELEVATION

SCALE: NTS

BOW EAVE FRAME RAFTER STRUCTURE





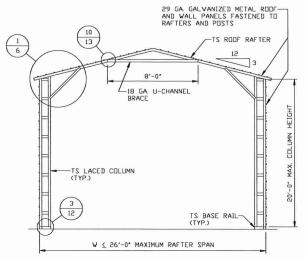
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SCALE: NTS

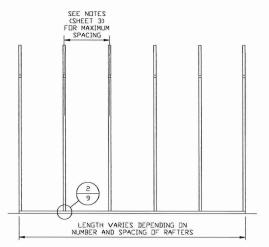
TYPICAL SIDE ELEVATION



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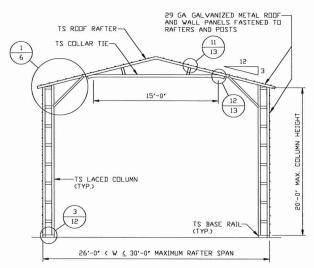


TYPICAL SCALE: NTS RAFTER/COLUMN FRAME SECTION

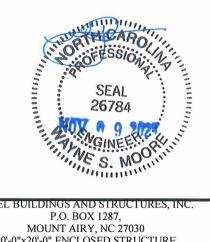


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

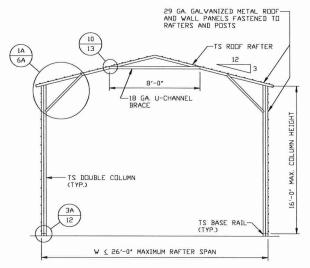
SCALE: NTS



TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS



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TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS

29 GA. GALVANIZED METAL ROOF
AND WALL PANELS FASTENED TO
RAFTERS AND POSTS

TS COLLAR TIE

13

15'-0'

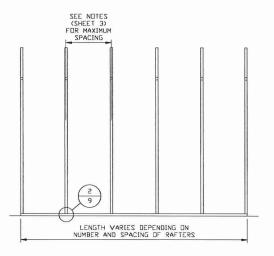
15'-0'

15 BASE RAIL

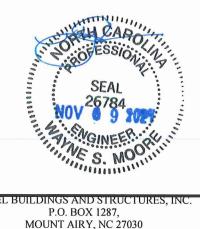
(TYP.)

26'-0' < W & 30'-0' MAXIMUM RAFTER SPAN

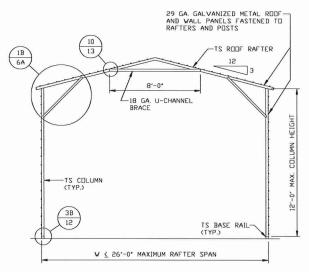
TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS



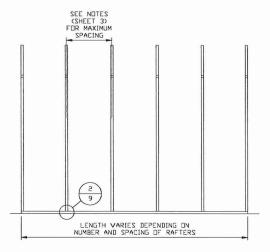
TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS



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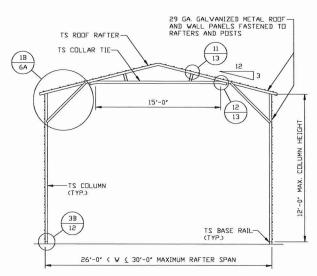


TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

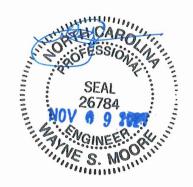


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

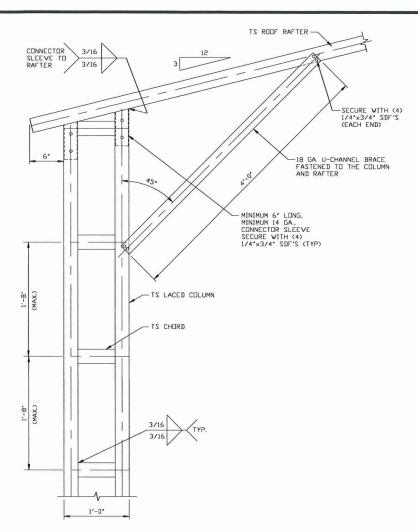
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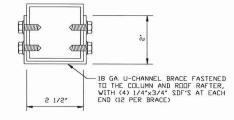


TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS



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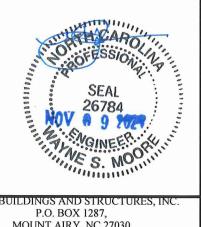




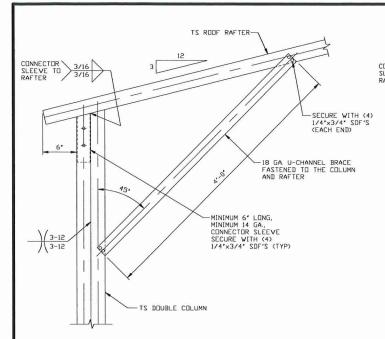
BRACE SECTION SCALE: NTS

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

1



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BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS 12'-0" < TO < 16'-0" SCALE: NTS

CONNECTOR 3/16
SLEEVE TO 3/16

SECURE WITH (4)
1/4*x3/4* SDF'S
(EACH END)

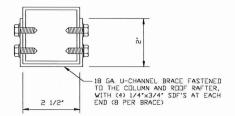
18 GA. U-CHANNEL BRACE
FASTENED TO THE COLUMN
AND RAFTER

MINIMUM 6* LONG,
MINIMUM 14 GA.,
CONNECTOR SLEEVE
SECURE WITH (4)
1/4*x3/4* SDF'S (TYP)

BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS ≤ 12'-0"

SCALE: NTS

1B

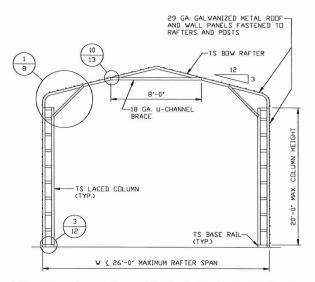


BRACE SECTION SCALE: NTS

1A



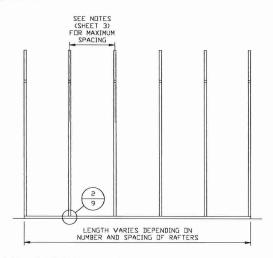
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TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

29 GA. GALVANIZED METAL ROOF-AND WALL PANELS FASTENED TO RAFTERS AND POSTS TS BOW RAFTER-11 TS COLLAR TIE-1 12 TS LACED COLUMN TS BASE RAIL 26'-0' (W < 30'-0' MAXIMUM RAFTER SPAN

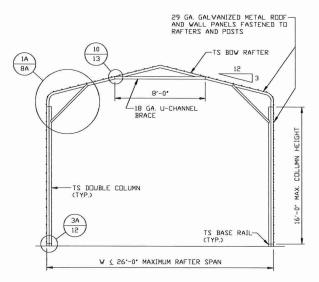
TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS



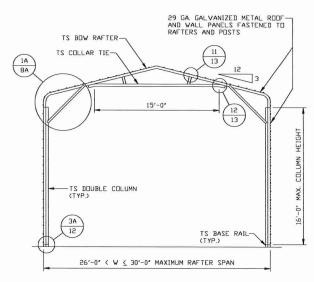
TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION



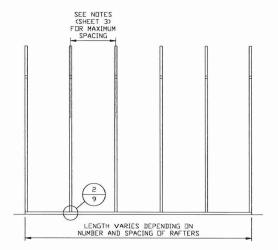
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TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS



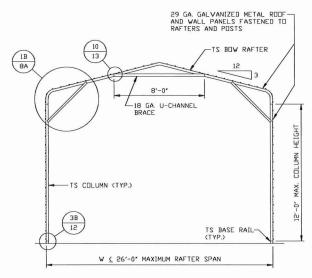
TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS



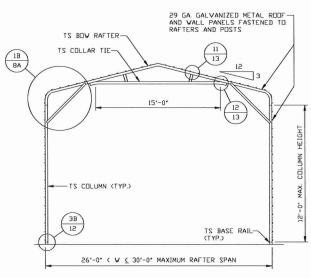
TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS



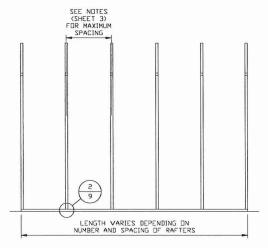
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TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS



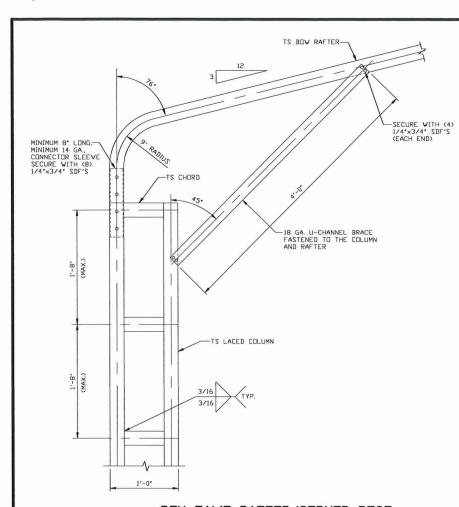
TYPICAL RAFTER/COLUMN FRAME SECTION

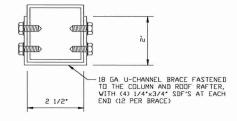


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION



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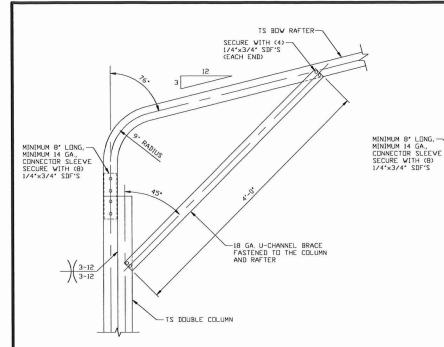


BRACE SECTION SCALE: NTS

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



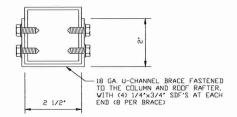
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BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS 12'-0" < TO < 16'-0" SCALE: NTS

BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS ≤ 12'-0"

1B) FUR HEI

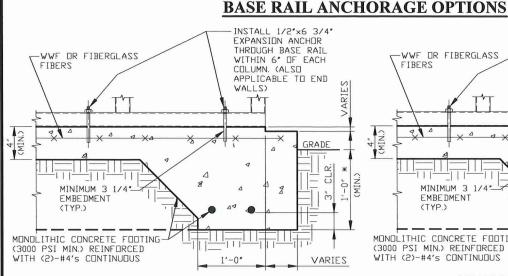


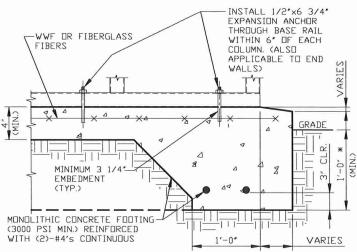
BRACE SECTION
SCALE: NTS

1A



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		N	OUNT AIRY, N	NC 270	30
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2

CONCRETE MONOLITHIC SLAB BASE RAIL ANCHURAGE

SCALE: NTS 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

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

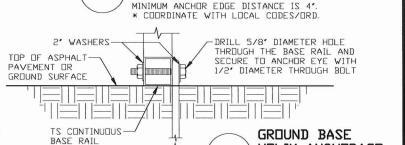
THE TURNDOWN REINFORCING STEEL SHALL BE ASTM A615 GRADE 60. THE SLAB REINFORCEMENT SHALL BE WELDED WIRE FABRIC MEETING ASTM A185 OR FIBERGLASS FIBER REINFORCEMENT.

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:

- 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.



CONCRETE SLAB BASE

RAIL ANCHORAGE

HELIX EYE ANCHOR (SEE NOTES BELOW)

2A

HELIX ANCHORAGE SCALE: NTS (CAN BE USED FOR ASPHALT)

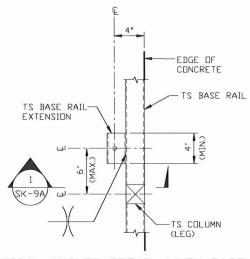
VOAROLN'S SEAL 26784 WOV 698021

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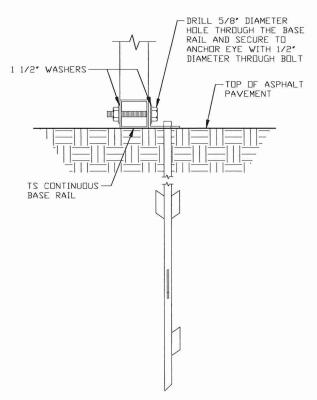
_							
	· ·	STEEL BUIL	LDINGS AND S	TRUC	TURES, INC.		
	DRAWN BY: LT		P.O. BOX 13	287,	2		
		MOUNT AIRY, NC 27030					
	CHECKED BY: PDH	30'-0"x20'-0" ENCLOSED STRUCTURE					
				JOB N	ID: 18069S		
	PROJECT MGR: WSM	DATE: 2-14-20	SCALE: NTS		\$/18290\$/20019\$		
	CLIENTI SBSI	SRST SHT. 9 DWG. ND: SK-		3	REV. 8		

ADDITIONAL BASE RAIL ANCHORAGE OPTION

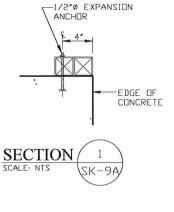


TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

SCALE: NTS



2C ASPHALT BASE ANCHURAGE





REV. 8

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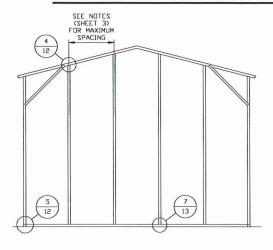
	STEEL BUILDINGS AND STRUCTURES, INC.						
DRAWN BY: LT	P.O. BOX 1287,						
	MOUNT AIRY, NC 27030						
CHECKED BY: PDH	30'-0"x20'-0" ENCLOSED STRUCTURE						
PROJECT MGR: WSM	DATE: 2-14-20	SCALE: NTS	JOB NO 18068S 18156\$/18290\$/20019\$				

SHT. 9A

CLIENT: SBSI

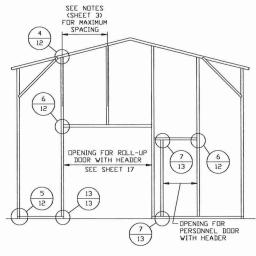
DWG. NO SK-3

BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



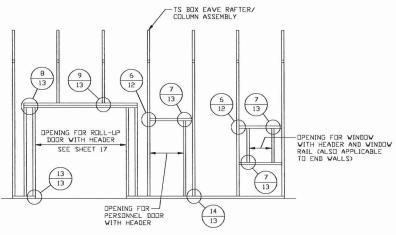
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SCALE: NTS

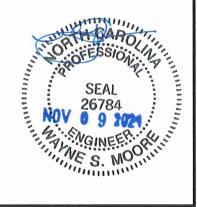


TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS

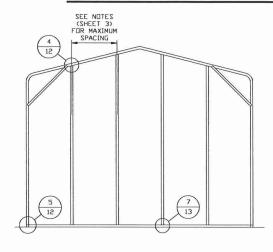


TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION



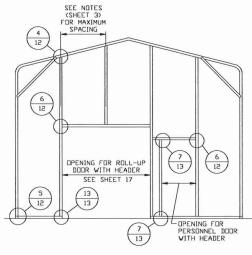
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ENGINEEDING AND CONCULTING INC	CHECKED BY: PDH	1900	MOUNT AIRY, N 0'-0" ENCLOSE	NC 27030 ED STRUCTURE
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BOW EAVE RAFTER END WALL AND SIDE WALL OPENINGS



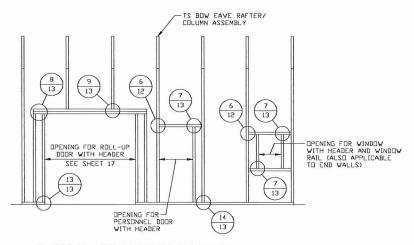
TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS

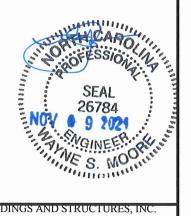


TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

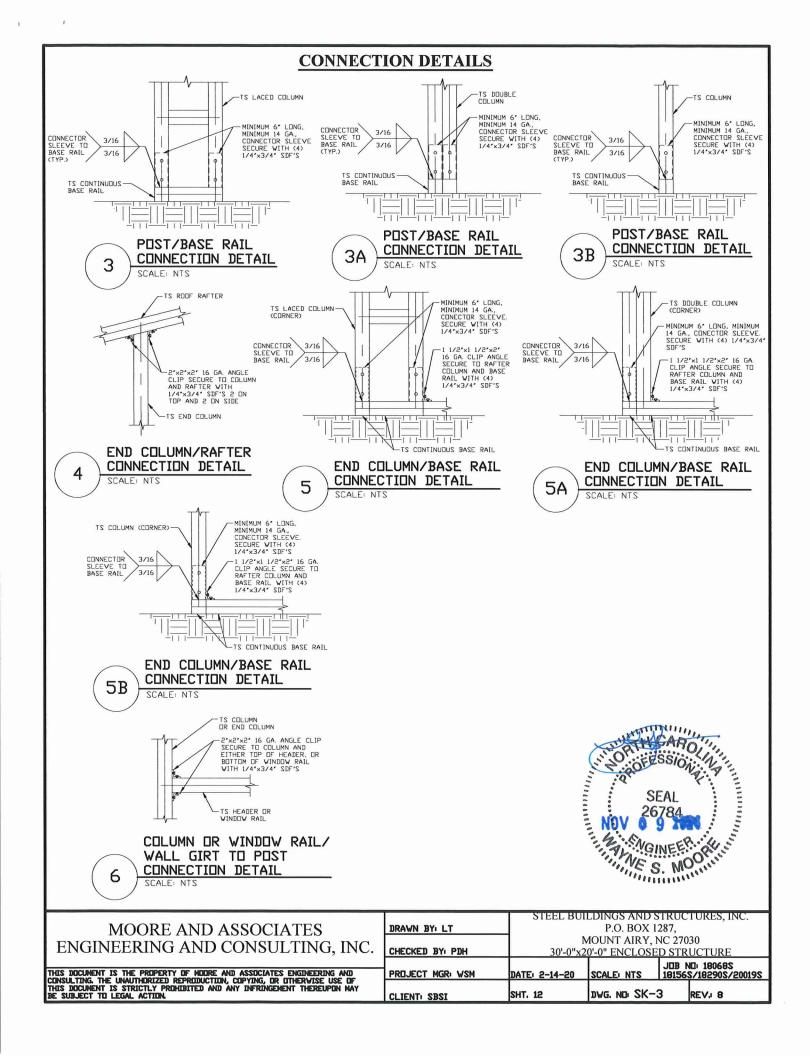
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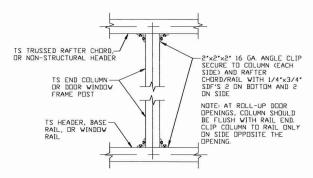
TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

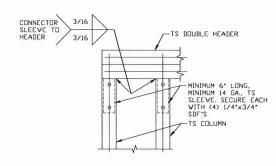


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		N N	MOUNT AIRY, N	NC 2703	30
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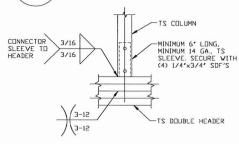
CONNECTION DETAILS

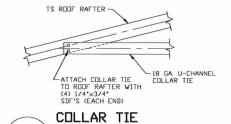


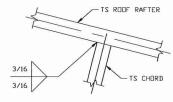


COLUMN TO HEADER, BASE RAIL, OR WINDOW RAIL CONNECTION DETAIL SCALE: NTS

DOUBLE HEADER/COLUMN CONNECTION DETAIL 8



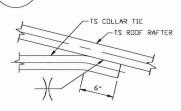


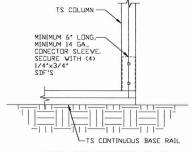


CONNECTION DETAIL 10 SCALE: NTS

RAFTER TO CHORD CONNECTION DETAIL SCALE: NTS

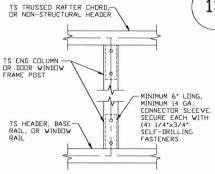


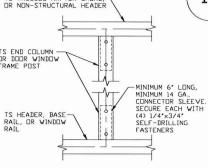




COLLAR TIE CONNECTION DETAIL SCALE: NTS

COLUMN/BASE RAIL CONNECTION DETAIL 13 SCALE: NTS





COLUMN TO HEADER OR BASE RAIL CONNECTION DETAIL SCALE: NTS

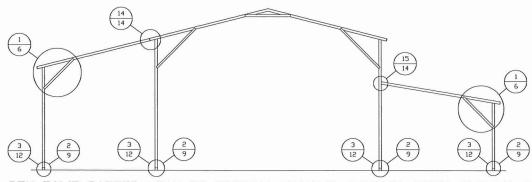


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	DRAWN BY: LT	STEEL BUIL	TRUC 287,	CTURES, INC.			

BOX EAVE RAFTER LEAN-TO OPTIONS



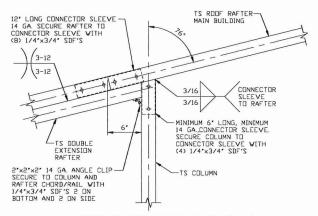
TYPICAL BOX EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION (BOTH OPTIONS SHOWN)

SCALE: NTS

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

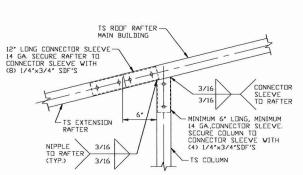
MAXIMUM WIDTH DF DOUBLE MEMBER RAFTER RODF EXTENSION LEAN-TO IS 16'-0'.

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

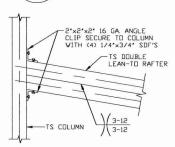


SIDE EXTENSION RAFTER/
COLUMN DETAIL FOR RAFTER

SPANS 12'-0" < TO < 16'-0"



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



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

SCALE: NTS

15

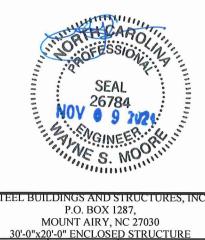
2'x2'x2' 16 GA. ANGLE
CLIP SECURE TO COLUMN
VITH (4) 1/4'x3/4' SDF'S

TS LEAN-TO
RAFTER

TS COLUMN

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

(15A)



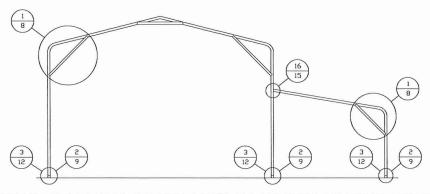
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CLIENT: SBSI SHT. 14 DWG, ND: SK-3 REV.: 8

BOW EAVE RAFTER LEAN-TO OPTIONS



TYPICAL BOW EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION

SCALE: NTS

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

MAXIMUM WIDTH DF DOUBLE MEMBER RAFTER RODF EXTENSION LEAN-TO IS 16'-0'.

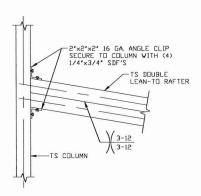
MAXIMUM WIDTH DF DOUBLE MEMBER RAFTER RODF EXTENSION LEAN-TO IS 16'-0'.

MAXIMUM WIDTH DEVELOP.

MAXIMUM WIDTH DEVELOP.

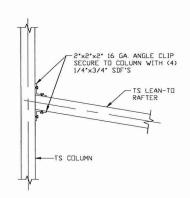
MAXIMUM WIDTH DEVELOP.

MAXIMUM WIDTH DOUBLE MEMBER RAFTER COLUMN CONNECTION DETAILS FOR APPROPRIATE COLUMN HEIGHT AND TUBING SPECIFICATIONS.



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

16 SCALE: NTS

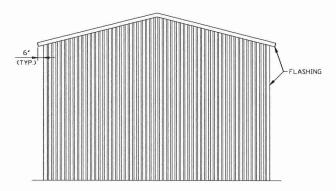


LEAN-TO RAFTER
TO RAFTER POST
CONNECTION DETAIL
FOR WIDTHS & 12'-0"

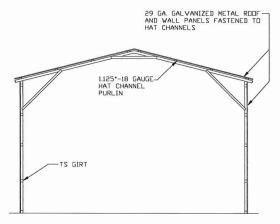
SEAL 26784
NOV 1 9 2021

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BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION

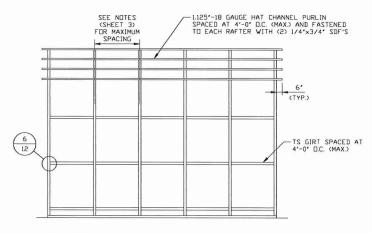


TYPICAL END ELEVATION VERTICAL ROOF/SIDING

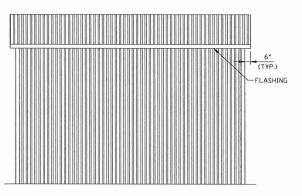


TYPICAL SECTION VERTICAL ROOF/SIDING OPTION

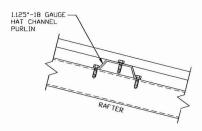
SCALE: NTS



TYPICAL FRAMING SECTION VERTICAL ROOF/SIDING OPTION



TYPICAL SIDE ELEVATION VERTICAL ROOF/SIDING

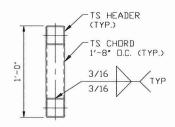


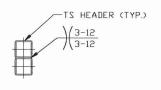
PANEL ATTACHMENT
(ALTERNATE FOR VERTICAL ROOF PANELS)
SCALE: NTS

SEAL 26784
NOV 9 2021

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SIDE WALL HEADER OPTIONS





LACED HEADER DETAIL FOR DOOR □PENINGS 12'-0" < LENGTH ≤ 20'-0"</pre>

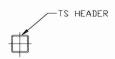
□PENINGS 7'-0" < LENGTH ≤ 12'-0"</pre> SCALE: NTS

DOUBLE HEADER DETAIL FOR DOOR



SINGLE HEADER DETAIL FOR DOOR OPENINGS LENGTH < 7'-0"

END WALL HEADER OPTIONS



SINGLE HEADER DETAIL FOR DOOR OPENINGS LENGTH < 12'-0"
SCALE: NTS



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