

# STRUCTURAL DESIGN ENCLOSED BUILDING

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

11 December 2020 Revision 9 M&A Project No. 16062S/16155S/16207S/17155S/17200S/18068S/18156S/18290S/20019S/20324S

#### Prepared for:

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

#### Prepared by:

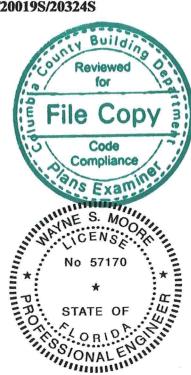
Moore and Associates Engineering and Consulting, Inc.

1009 East Avenue North Augusta, SC 29841

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

Wayne S Moore Date: 2022.09.06 10:12:19 -04'00'





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PROJECT MGR: WSM	DATE: 12-11-20	20'-0" ENCLOSED STRUCTURE  JOB ND 180685/1 18290\$/20019\$/20			
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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 2020 FLORIDA BUILDING CODE (FBC) 7TH EDITION, 2018 NORTH CAROLINA BUILDING CODE, 2006 INTERNATIONAL BUILDING CODE (1BC), 2019 IBC, 2015 IBC AND 2018 IBC.
- 3 DESIGN LOADS ARE AS FOLLOWS:

A) DEAD LOAD

= 15 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 (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\* x 2 1/2\* 14 GAUGE TUBE STEEL (TS) FRAMING MEMBERS (UNLESS NOTED DIHERWISE)
- 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° DF EACH COLUMN.
- 13. STANDARD GROUND ANCHORS (SQIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT × 36' LONG AND MAY BE USED IN SUITABLE SQILS OPTIONAL ANCHORAGE MAY BE USED IN SUITABLE SQILS AND MUST BE USED IN UNSUITABLE SQILS AS NOTED.
- WIND FORCES GOVERN OVER SEISMIC FORCES SEISMIC PARAMETERS ANALYZED ARE:

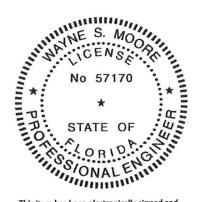
SDIL SITE CLASS = D RISK CATEGORY I

R= 325

IE= 10

2039 G Sw= 1528 g

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



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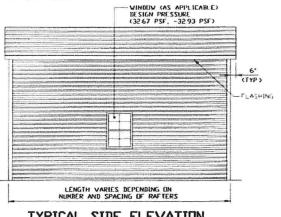
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			1	JOB NO 180685/1815
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85/181565 знт. з DVG. NO SK-3 REV. 9 CLIENT: SBSI

# BOX EAVE FRAME RAFTER STRUCTURE PERSONNEL DUOR (AS APPLICABLE) DESIGN PRESSURE (312 PSF. -3164 PSF) ROLL-UP DOOR (AS APPLICABLE) DESIGN PRESSURE (177 PSF. -1985 PSF) FLASHING -30'-0" HAXIMUM RAFTER SPAN (V)



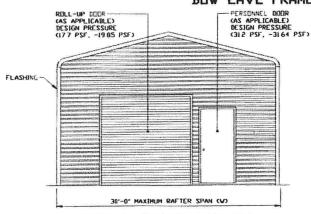
#### TYPICAL END ELEVATION

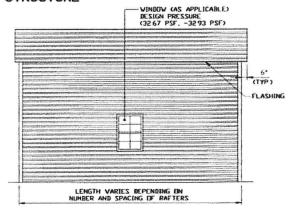
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#### TYPICAL SIDE ELEVATION

SCALE: NTS

#### BOW EAVE FRAME RAFTER STRUCTURE



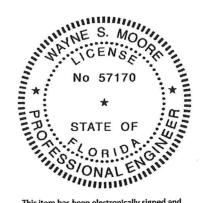


### TYPICAL END ELEVATION

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#### TYPICAL SIDE ELEVATION

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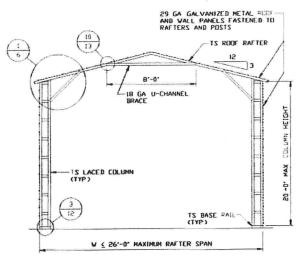
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TYPICAL RAFTER/COLUMN FRAME SECTION

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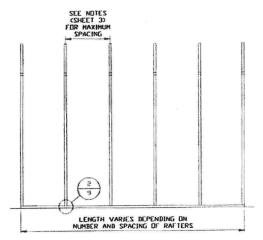
15 LACEN COLUMN

(TYP)

15 DASE RAIL

26'-0' ( V & 30'-0' HAXIMUM RAFTER SPAN

TYPICAL RAFTER/CULUMN FRAME SECTION
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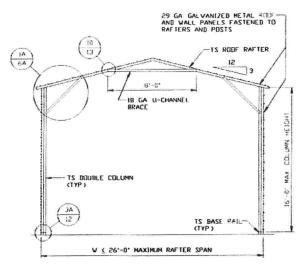


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

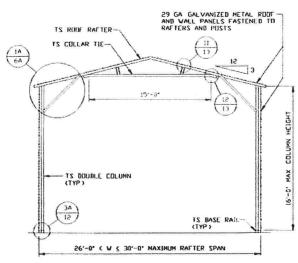


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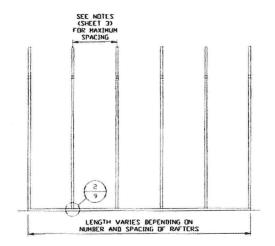
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### TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS



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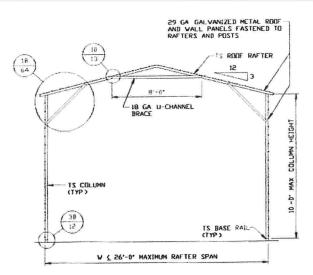


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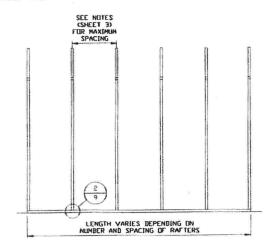
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### TYPICAL RAFTER/COLUMN FRAME SECTION

TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS

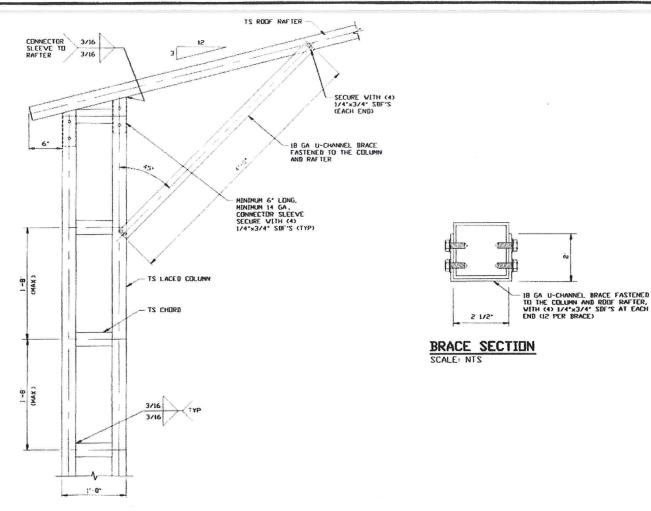


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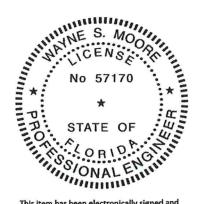
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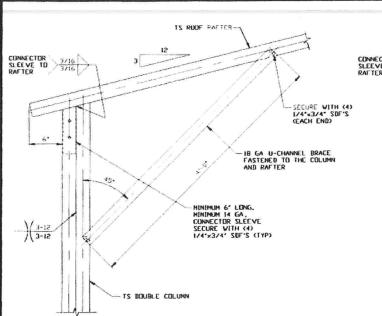
BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL

FOR HEIGHTS 16'-0' < TO \( \) 20'-0'

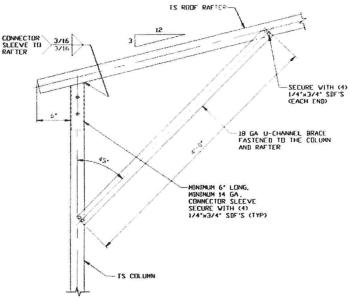


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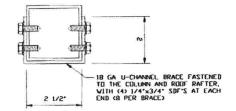
BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS 10'-0' < TO \( \) 16'-0'



BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS & 10'-0"

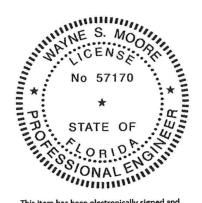
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1B



BRACE SECTION
SCALE: NTS

**1A** 



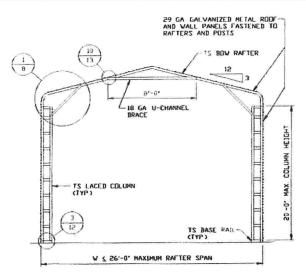
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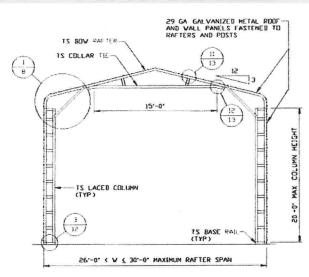
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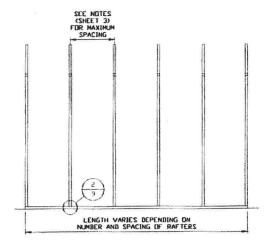
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TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

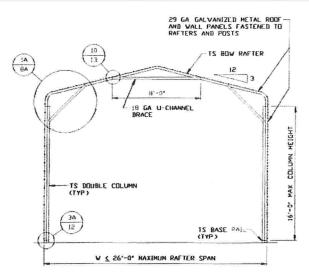


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS

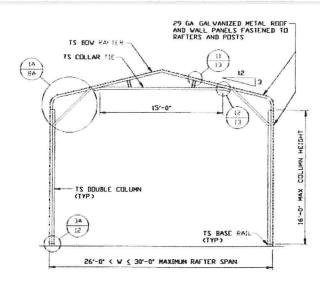


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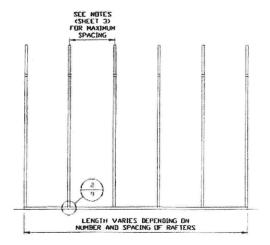
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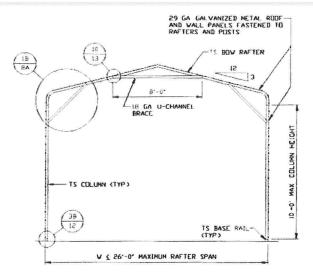


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SCALE NTS

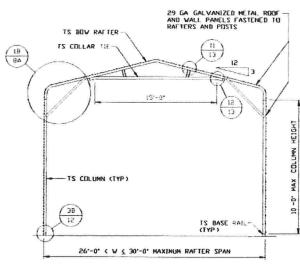


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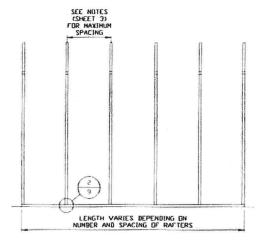
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### TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS



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SCALE: NTS



### $\frac{\text{TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION}}{\text{SCALE: NTS}}$



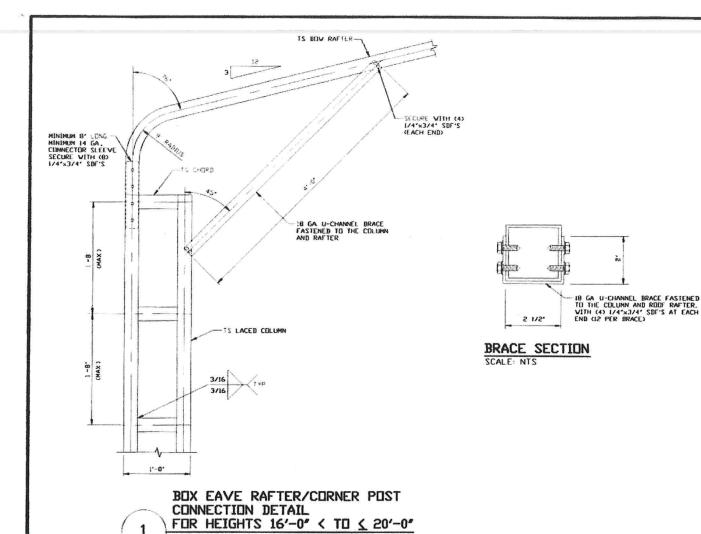
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1	PROJECT NGR- VSN	DATE: 12-11-20	SCALE: NTS	JUB NID 180695/18150 182905/200195/20324			
	CLIENT: SBSI	SHT. 7B	DWG. NO SK-	-3	REV. 9		

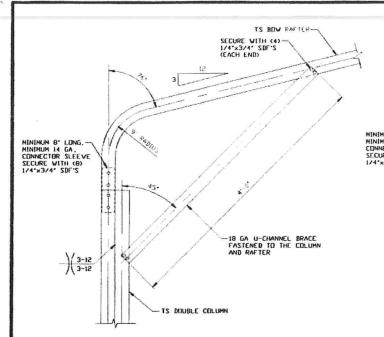


1

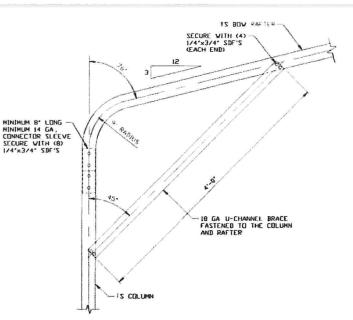
SCALE: NTS

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MOORE AND ASSOCIATES	DRAWN BY: LT	P.O. BOX 1287, MOUNT AIRY, NC 27030				
ENGINEERING AND CONSULTING, INC.	CHECKED BY: PBH	30'-0"x2	0'-0" ENCLOSE		The state of the s	
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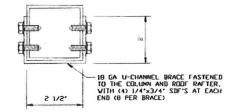


BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS 10'-0" < TO < 16'-0"



BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS & 10'-0"

1B



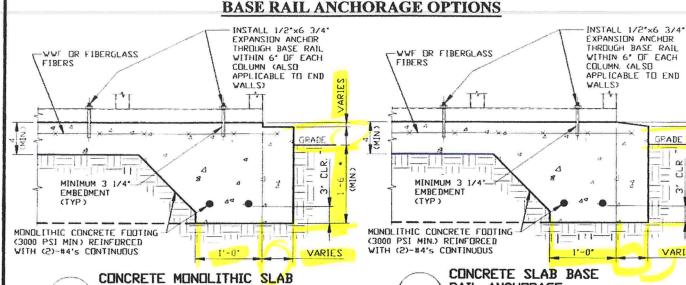
BRACE SECTION

**1A** 



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		STEEL BUILDINGS AND STRUCTURES, INC.			
MOORE AND ASSOCIATES	DRAWN BY: LT	l	P.O. BOX 1	287,	
	1	1	MOUNT AIRY, I	NC 270	30
ENGINEERING AND CONSULTING, INC	CHECKED BY: PDH	30'-0"x2	0'-0" ENCLOSE	DSTR	UCTURE
				JOB N	D 18068S/18156S
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GENERAL NOTES

2

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

BASE RAIL ANCHURAGE

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

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 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, PRELBADEB 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 LOOSE 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 **2A** 

SCALE: NTS MINIMUM ANCHOR EDGE DISTANCE IS 4° 
\* COURDINATE WITH LOCAL CODES/ORD VARIES

GRADE

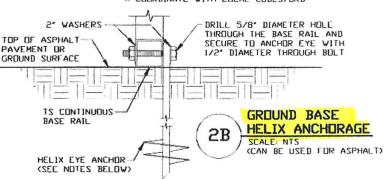
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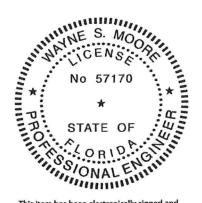
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C

'n

VARIES

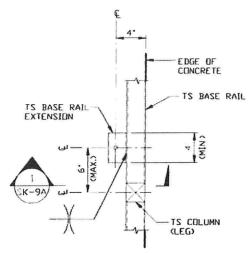




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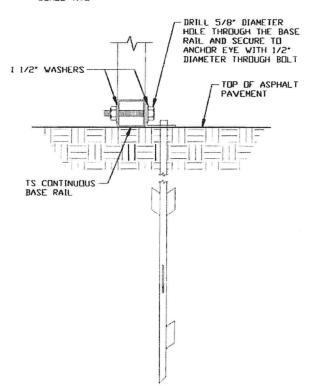
				WY - F - V - T - V		
		STEEL BUILDINGS AND STRUCTURES, INC.				
MOORE AND ASSOCIATES	BRAWN BY: LT		P.O. BOX 1	287,		
		1 1	MOUNT AIRY.	NC 270	30	
ENGINEERING AND CONSULTING, INC.	CHECKED BY: PDH	30'-0"x20'-0" ENCLOSED STRUC	UCTURE			
				JOB N	180685/181565	
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### ADDITIONAL BASE RAIL ANCHORAGE OPTION

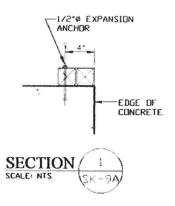


#### TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

SCALE: NTS









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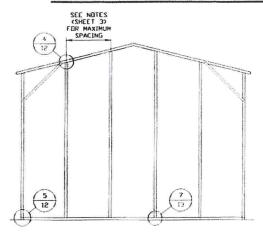
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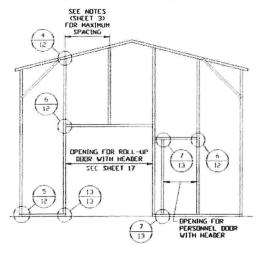
-		STEEL BUILDINGS AND STRUCTURES, INC.						
	DRAWN BY: LT		P.O. BOX 1287,					
	CHECKED BY PDH	MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE						
	PROJECT HGR VSH	DATE: 12-11-20	SCALE NTS	JDB 1829	ND 180685/18156S 0S/20019S/20324S			
	CLIENT: SBSI	SHT. 9A	DVG. ND SK-3		REV. 9			

### BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



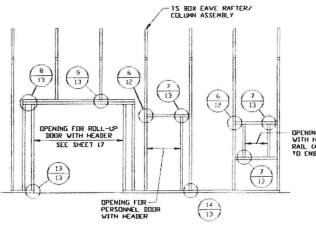
## TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS



### TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS



OPENING FOR VINDOV VITH HEADER AND VINDOV RAIL (ALSO APPLICABLE TO END VALLS)

# TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

SCALE: NTS



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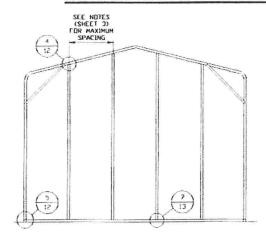
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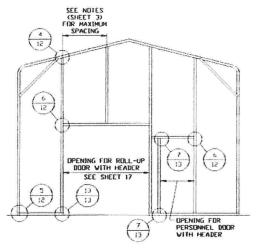
-	PROJECT NGR: VSN	DATE: 12-11-20	SCALE NTS	J039 1829	ND 180685/181565 15/200195/203245				
•>	CHECKED BY: PDH		30'-0"x20'-0" ENCLOSED STRUCTURE						
	DRAWN BY: LT	-	P.O. BOX 1287, MOUNT AIRY, NC 27030						
		STEEL BO	STEEL BUILDINGS AND STRUCTURES, INC.						

#### BOW EAVE RAFTER END WALL AND SIDE WALL OPENINGS



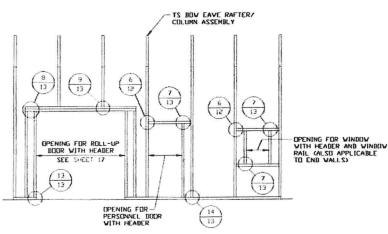
## TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS



### TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS



## TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

SCALE: NTS



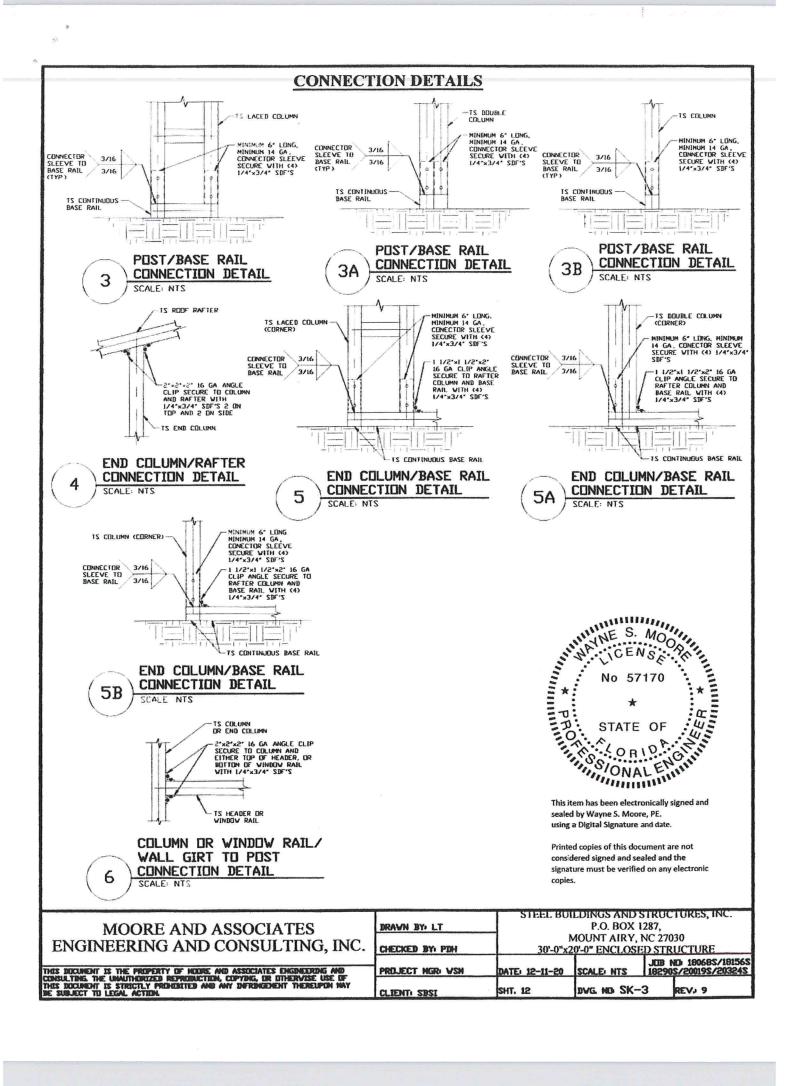
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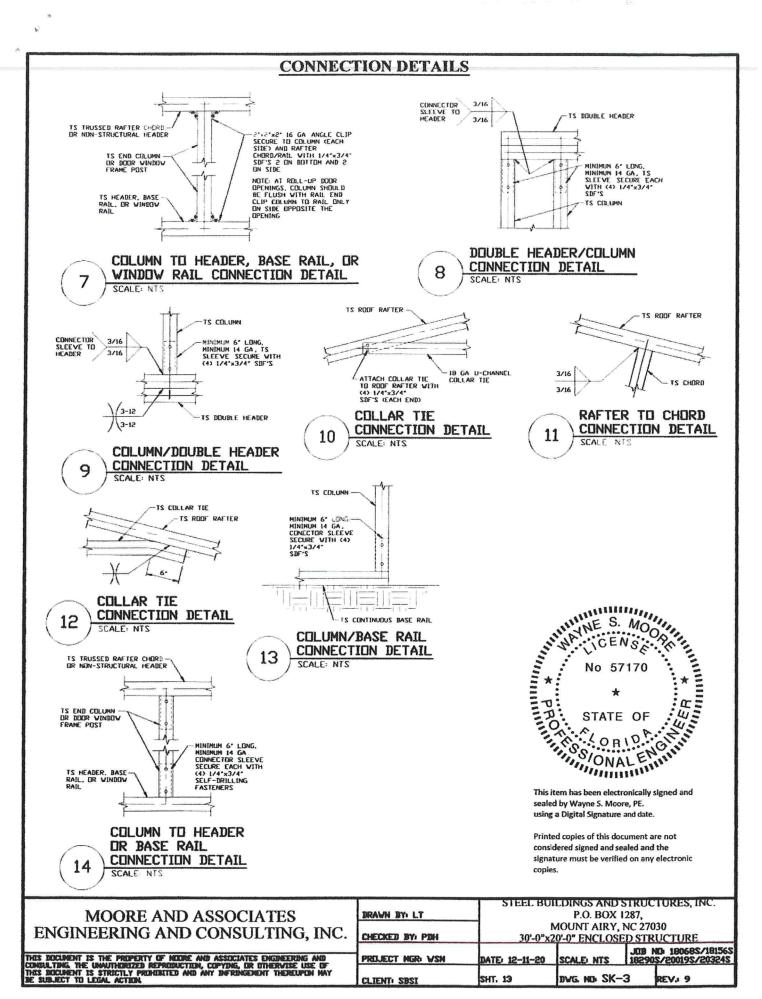
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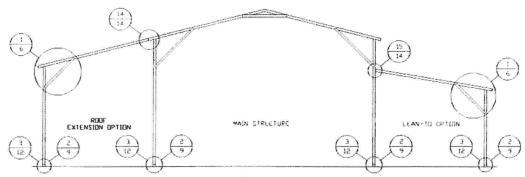
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	CLIENT: SBSI	SHT. 11	DVG. NO SK-3		REV. 9			
_	PROJECT MGR: VSM	DATE: 12-11-20	SCALE: NTS	JEB 18290	ND 180685/181565 15/200195/203245			
-	CHECKED BY: PBH		MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE					
	DRAWN BY: LT		STEEL BUILDINGS AND STRUCTURES, INC. P.O. BOX 1287,					





#### **BOX EAVE RAFTER LEAN-TO OPTIONS**



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

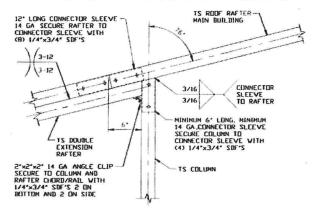
SCALE: NTS

MAXIMUM WIDTH OF SINGLE TS ROOF EXTENSION LEAN-TO IS 12'-0'

MAXIMUM WIDTH OF DOUBLE TS ROOF EXTENSION LEAN-TO IS 16'-0'

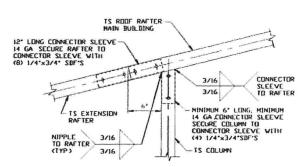
MAXIMUM SINGLE COLLUMN HEIGHT FOR MAIN BUILDING WITH ROOF EXTENSION LEAN-TO ATTACHED IS 8'-0'

FOR COLUMN CONFIGURATIONS REFERENCE RAFTER COLUMN CONNECTION DETAILS.

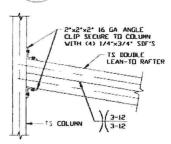


SIDE EXTENSION RAFTER/
COLUMN DETAIL FOR RAFTER

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'%2'%2" 16 GA ANGLE
CLIP SECURE TO COLUNN
WITH (4) 1/4'%3/4' SDF'S
TS LEAN-TO
RAFTER

TS COLUNN

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



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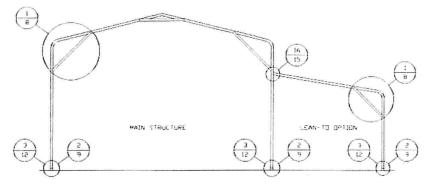
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	PROJECT HGR: VSH	DATE: 12-11-20	SCALE: NTS	J08	ND 180685/181565 05/200195/203245			
	CLIENT: SBSI	SHT. 14	DVG. NO SK-3		REV. 9			

### **BOW EAVE RAFTER LEAN-TO OPTIONS**



#### TYPICAL BOW EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION

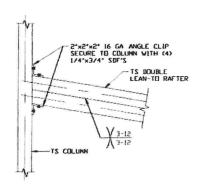
SCALE: NTS

MAXIMUM WIDTH OF SINGLE TS ROOF EXTENSION LEAN-TO IS 12'-0"

MAXIMUM WIDTH OF DOUBLE TS ROOF EXTENSION LEAN-TO IS 16'-0".

MAXIMUM SINGLE COLLUMN HEIGHT FOR MAIN BUILDING WITH ROOF EXTENSION LEAN-TO ATTACHED IS 8'-0"

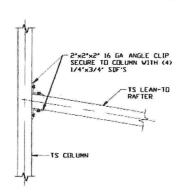
FOR COLLUMN CONFIGURATIONS REFERENCE RAFTER COLLUMN CONNECTION DETAILS.



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

SCALE: NTS

16



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

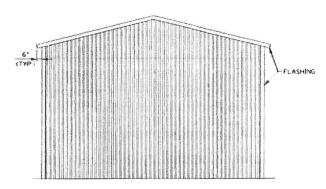
16A



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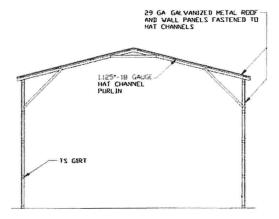
MOORE AND ASSOCIATES	DRAWN BY: LT	STEEL BUI	P.O. BOX 1287,				
ENGREEPING AND CONGULTING DIC	CHECKED BY: PDH	MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE					
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### BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



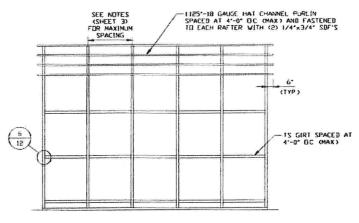
## TYPICAL END ELEVATION VERTICAL ROOF/SIDING

SCALE NTS



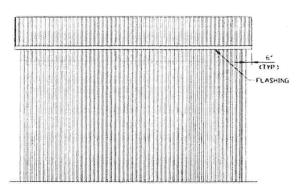
# TYPICAL SECTION VERTICAL ROOF/SIDING OPTION

SCALE: NTS



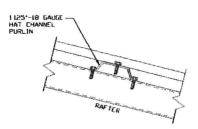
# TYPICAL FRAMING SECTION VERTICAL ROOF/SIDING OPTION

SCALE: NTS



### TYPICAL SIDE ELEVATION VERTICAL ROOF/SIDING

SCALE: NTS



### PANEL ATTACHMENT

(ALTERNATE FOR VERTICAL ROOF PANELS)
SCALE NTS

No 57170

\*

STATE OF

ORIOA

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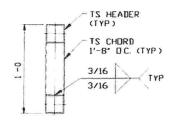
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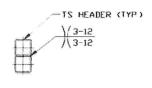
MOORE AND ASSOCIATES	
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CLIENT: SBSI	SHT. 16	DWG. NG SK-3		REV. 9	
PROJECT HGR: VSH	DATE: 12-11-20	SCALE: NTS	JUB ND 18068S/1815 18290S/20019S/2032		
CHECKED BY: PDH	MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE				
DRAVN BY: LT	P.O. BOX 1287,				

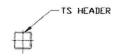
### SIDE WALL HEADER OPTIONS





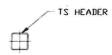
LACED HEADER DETAIL FOR DOOR OPENINGS 12'-0' < LENGTH < 20'-0'

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



SINGLE HEADER DETAIL FOR DOOR OPENINGS LENGTH & 7'-0'

### **END WALL HEADER OPTIONS**

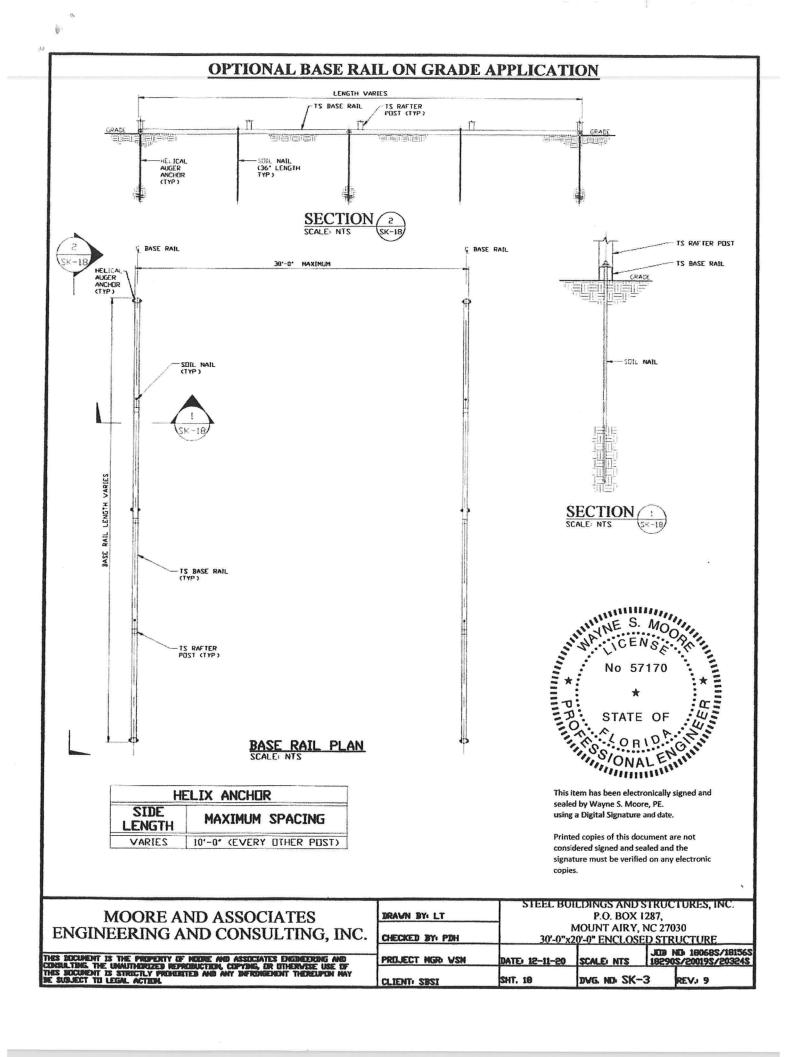


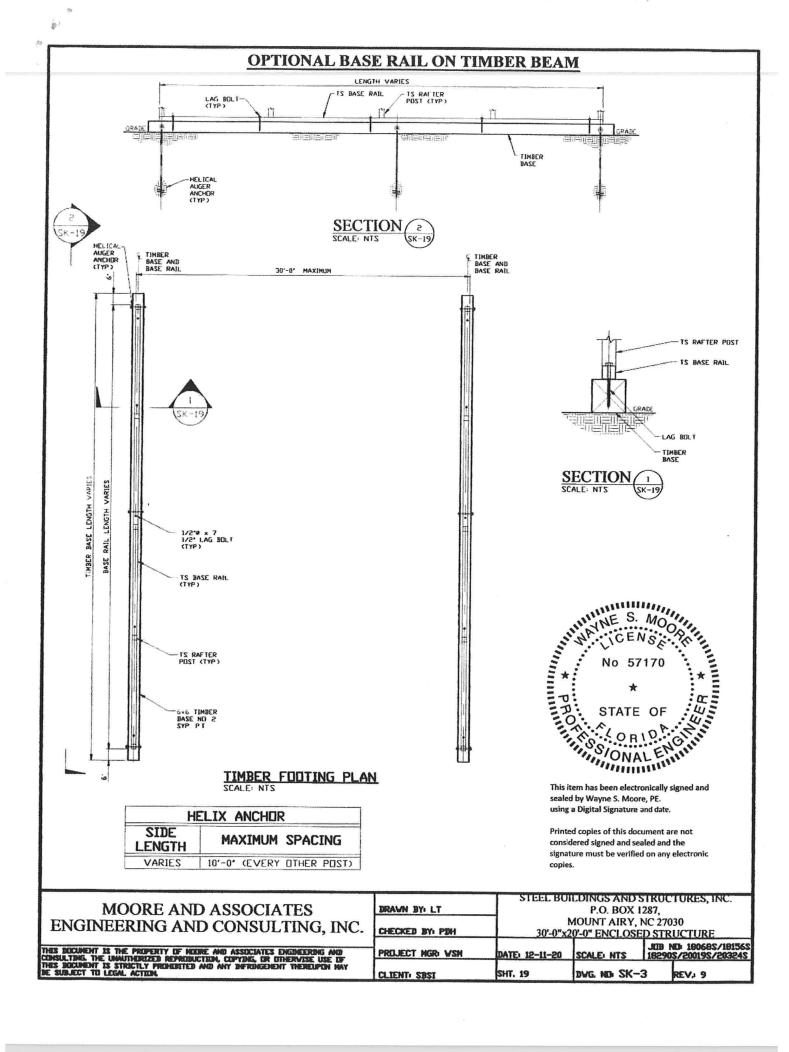
SINGLE HEADER DETAIL FOR DOOR OPENINGS LENGTH < 12'-0' SCALE: NTS

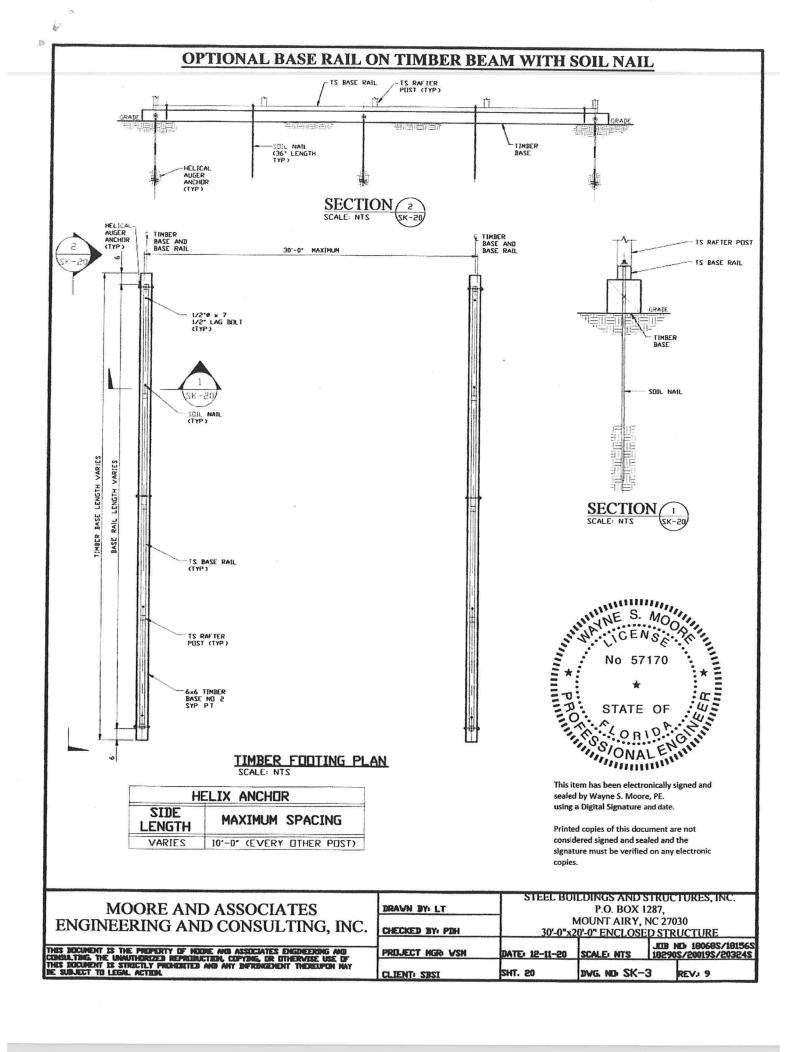


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### **OPTIONAL CONCRETE STRIP FOOTING** FOOTING AND BASE RAIL 30'-8" MAXIMUM RAIL LENGTH VARIES FOOTING LENGTH VARIES 1/2"# EXPANSION ANCHOR (TYP) BASE TS BASE RAGL CONCRETE STRIP FOOTING (3000 PSI MIN) CONCRETE STRIP FOOTING PLAN SCALE: NTS IS RAFTER POST TS BASE RAIL S N 2-84, CONT T&B INSTALL 1/2"x6 3/4" EXPANSION ANCHOR THROUGH BASE RAIL WITHIN 6" OF EACH EULUMN MININUM 3 1/4" EMBEDMENT (TYP) This item has been electronically signed and 5. CFB CLR sealed by Wayne S. Moore, PE. using a Digital Signature and date. COMPACT SUBGRADE Printed copies of this document are not SECTION (1 considered signed and sealed and the signature must be verified on any electronic SCALE: NTS SK-51 copies. M COORDINATE WITH LOCAL CODES/ORD STEEL BUILDINGS AND STRUCTURES, INC. DRAWN BY: LT P.O. BOX 1287, MOORE AND ASSOCIATES MOUNT AIRY, NC 27030 ENGINEERING AND CONSULTING, INC. 30'-0"x20'-0" ENCLOSED STRUCTURE CHECKED BY: PDH JUB NO 18068S/18156S THIS BUCUMENT IS THE PROPERTY OF MODRE AND ASSOCIATES ENGINEERING AND CONSULTING. THE UNMITHORIZED REPRODUCTION, COPYING, OR OTHERWISE USE OF THIS BUCUMENT IS STREETLY PROHIBITED AND ANY INFRINGEMENT THEREUPON MAY BE SUBJECT TO LEGAL ACTION. PROJECT MGR: VSM DATE: 12-11-20 SCALE: NTS 18290\$/20019\$/20324\$

SHT. 21

CLIENT: SBSI

DVG. NO SK-3

REV. 9

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