

# 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.

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





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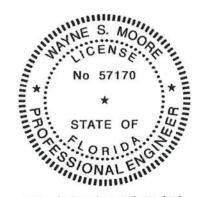
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	CHECKED BY: PDH		MOUNT AIRY, 20'-0" ENCLOS	, NC 27030 ED STRUCTURE				
	DRAWN BY: LT	P.O. BOX 1287,						

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### INSTALLATION NOTES AND SPECIFICATIONS

- 1. DESIGN IS FOR MAXIMUM 30'-0' VIDE x 20'-0' EAVE HEIGHT ENCLOSED STRUCTURES.
- 2 BESIGN WAS DONE IN ACCORDANCE WITH THE 2020 FLORIDA BUILDING CODE (FBC) 7TH EDITION, 2018 NORTH CAROLINA BUILDING CODE, 2006 INTERNATIONAL BUILDING CODE (18C), 2009 IBC, 2015 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 LIJAD

= 30 PSF (( 26'-0"), 35 PSF (26'-0" ( V ( 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" 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

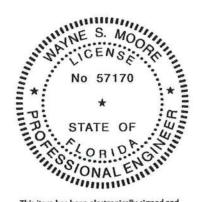
R= 325

IE= 10 V= CsW

2033 8

g 8251 = u2

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



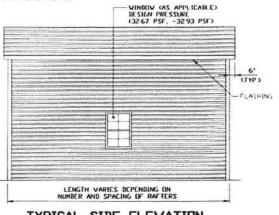
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# BOX EAVE FRAME RAFTER STRUCTURE PERSONNEL DIDOR (AS APPLICABLE) DESIGNO PRESSURE (312 PSF. -3164 PSF) DESIGNO PRESSURE (312 PSF. -3164 PSF)



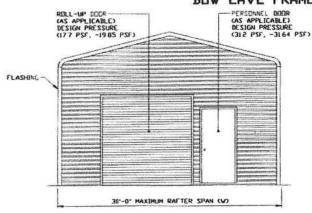
### TYPICAL END ELEVATION

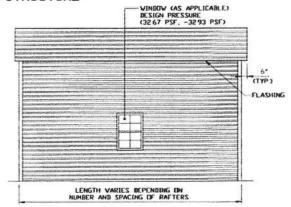
SCALE: NTS

### TYPICAL SIDE ELEVATION

SCALE: NTS

### BOW EAVE FRAME RAFTER STRUCTURE





### TYPICAL END ELEVATION

SCALE: NTS

### TYPICAL SIDE ELEVATION

SCALE: NTS



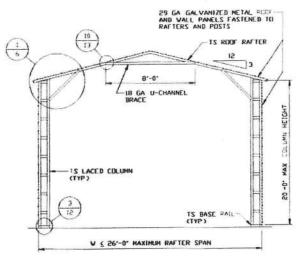
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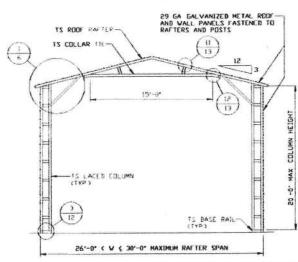
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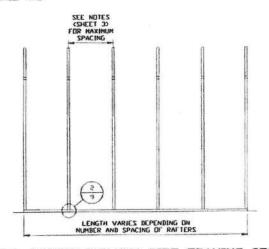
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TYPICAL RAFTER/COLUMN FRAME SECTION



TYPICAL RAFTER/CULUMN FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION



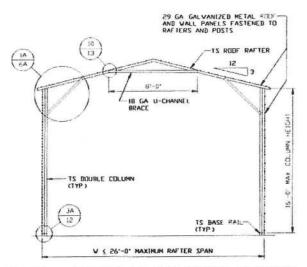
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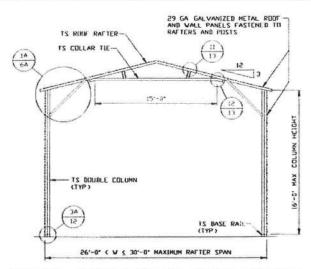
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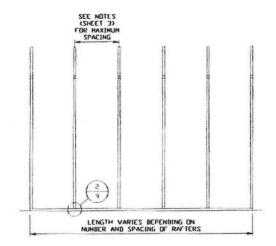
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I	CHECKED BY: PDH		MOUNT AIRY, 20'-0" ENCLOS	NC 27				
1	PROJECT NGR: VSN	DATE: 12-11-20	SCALE: NTS	JUB 1829	ND 180685/181565 0\$/20019\$/20324\$			
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TYPICAL RAFTER/COLUMN FRAME SECTION
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TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS

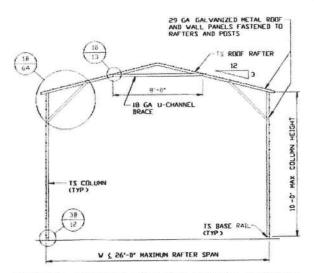


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION



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### TYPICAL RAFTER/COLUMN FRAME SECTION

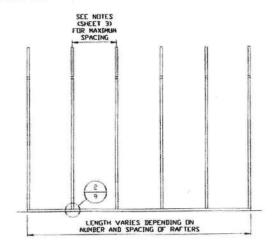
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TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

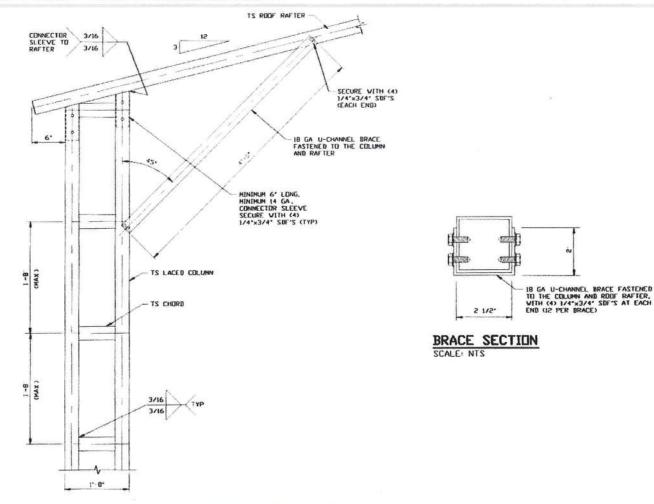


# TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS



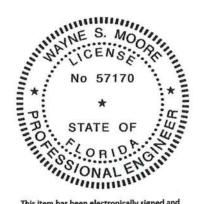
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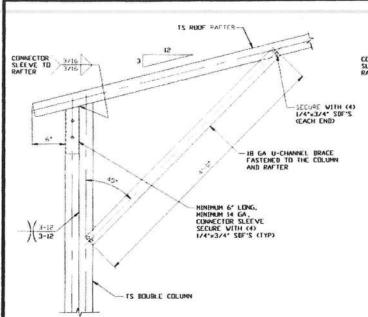
BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS 16'-0' < TO < 20'-0' | SCALE: NTS

1



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

CONNECTOR 3/16

SLEEVE TO 3/16

SECURE VITH (4)

1/4\*x3/4\* SDF'S

(EACH FND)

SECURE VITH (4)

1/4\*x3/4\* SDF'S

(EACH FND)

18

MINDRUM 6\* LDNG,

MUNDRUM 18 SLEEVE

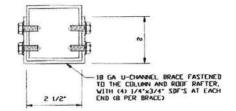
SECURE VITH (4)

1/4\*x3/4\* SDF'S (TYP)

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

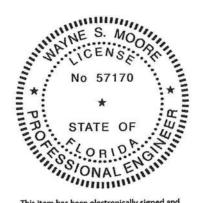
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1B



BRACE SECTION

1A



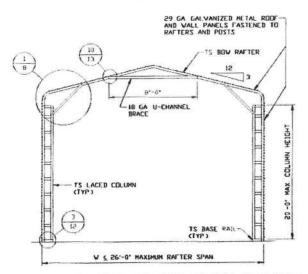
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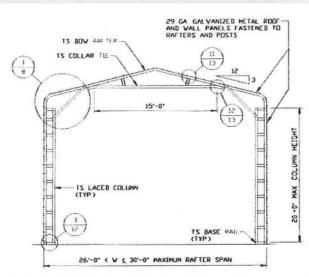
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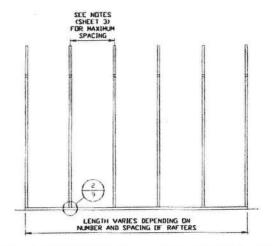
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TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS



TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

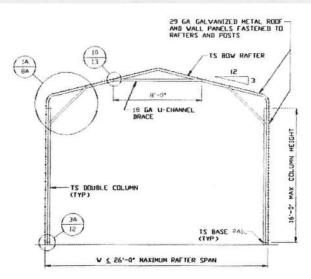


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION
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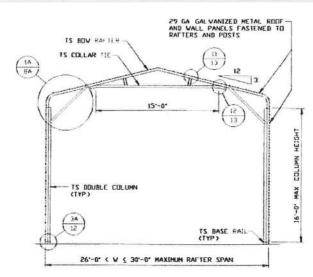


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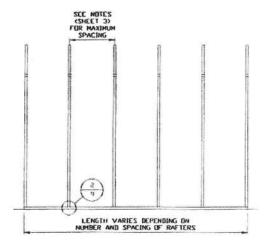
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TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

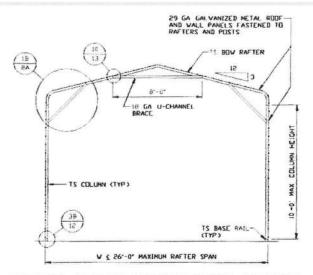


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION
SCALE NTS

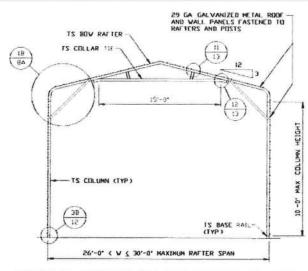


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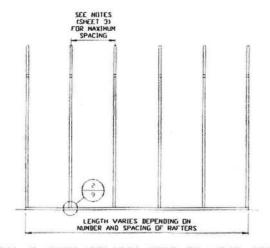
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# TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS



TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS



# TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS



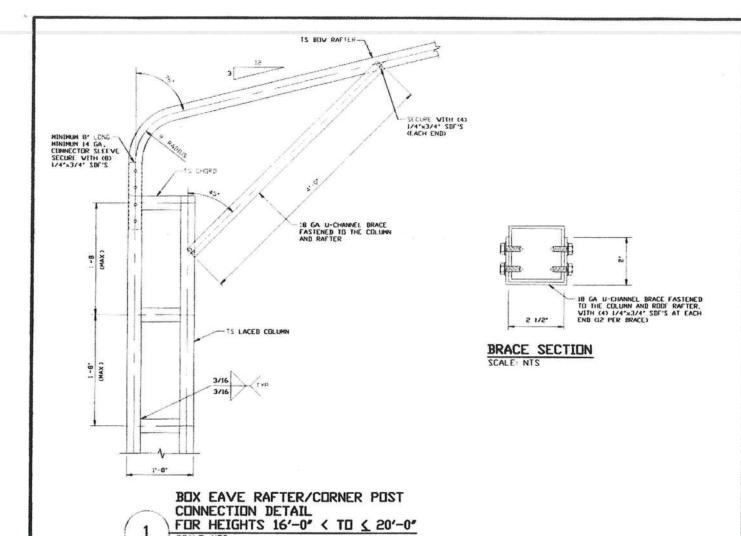
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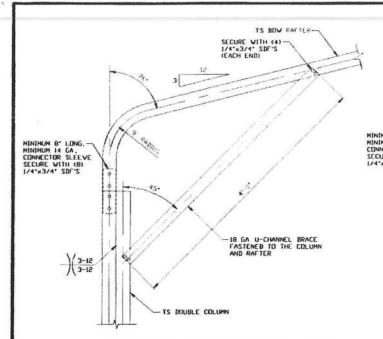
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CHECKED BY: PDH	MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE						
PROJECT NGR: VSN	DATE: 12-11-20	SCALE: NTS	JUB ND: 18068S				
CLIENT: SBSI	SHT. 73	DVG. NO SK-	-3	REV. 9			



SCALE: NTS

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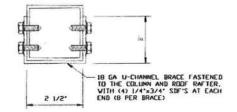


BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS 10'-0" < TO ≤ 16'-0"

12 BOW PAT 15H SECURE WITH (4) 1/4'x3/4" SDF'S (EACH END) HINIMUM 14 GA, CONNECTOR SLCEVE SCEURE VITH (8) 1/4'x-3/4' SDF'S IB GA U-CHANNEL BRACE FASTENED TO THE COLUMN AND RAFTER

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

1B



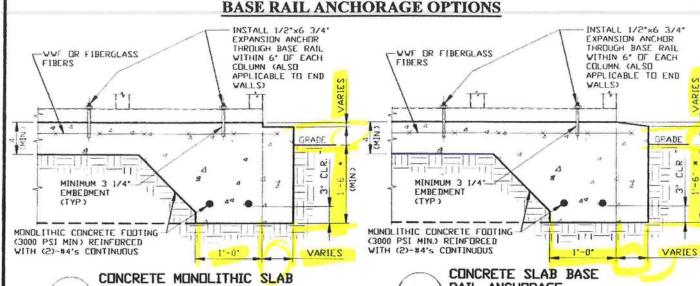
BRACE SECTION

1A



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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 VELDED WIRE FABRIC MEETING ASTM A185 OR FIBERGLASS FIBER REINFORCEMENT

### REINFORCEMENT MAY BE BENT IN THE SHOP OR THE FIELD PROVIDED

- REINFORCEMENT IS BENT COLD

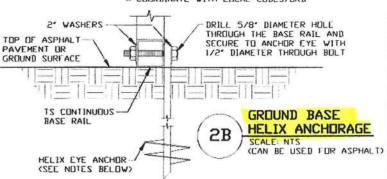
- THE DIAMETER OF THE BEND, MEASURED ON THE INSIDE OF THE BAR, IS NOT LESS THAN SIX-BAR DIAMETERS
  REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT

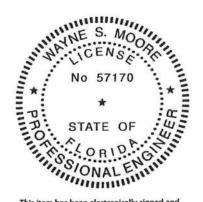
### HELIX ANCHOR NOTES

- 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 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



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

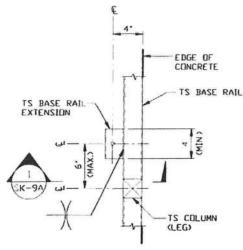




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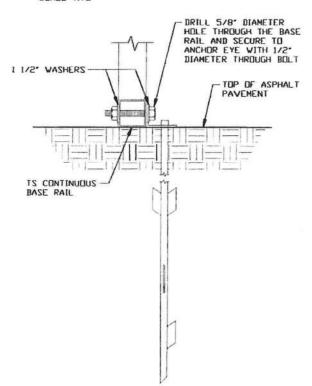
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### ADDITIONAL BASE RAIL ANCHORAGE OPTION

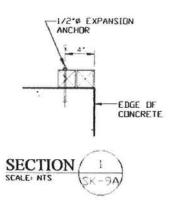


### TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

SCALE: NTS



2C ASPHALT BASE ANCHURAGE





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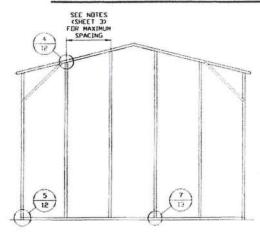
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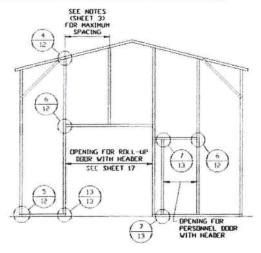
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Ţ	PROJECT NGR VSH	DATE: 12-11-20	1	JOB	ND 180685/181565 05/200195/203245		
I	CLIENT: SRST	SHT, 9A	DVG. NO SK	-3	REV. 9		

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



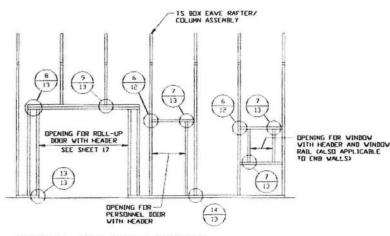
# TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS



# TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS



# TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

SCALE: NTS



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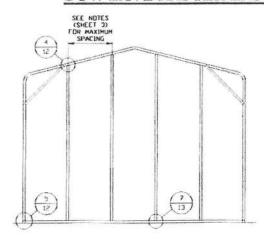
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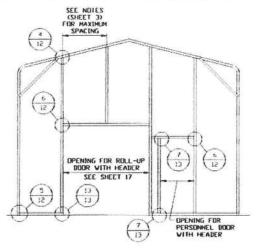
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CLIENT: SBSI	SHT. 10	BVG. ND SK-3		REV. 9			

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



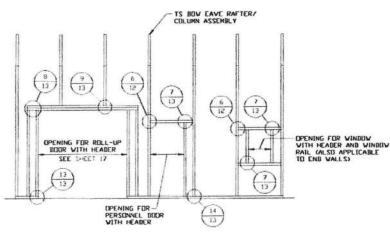
# TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS



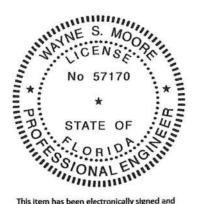
# TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS



# TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

SCALE: NTS



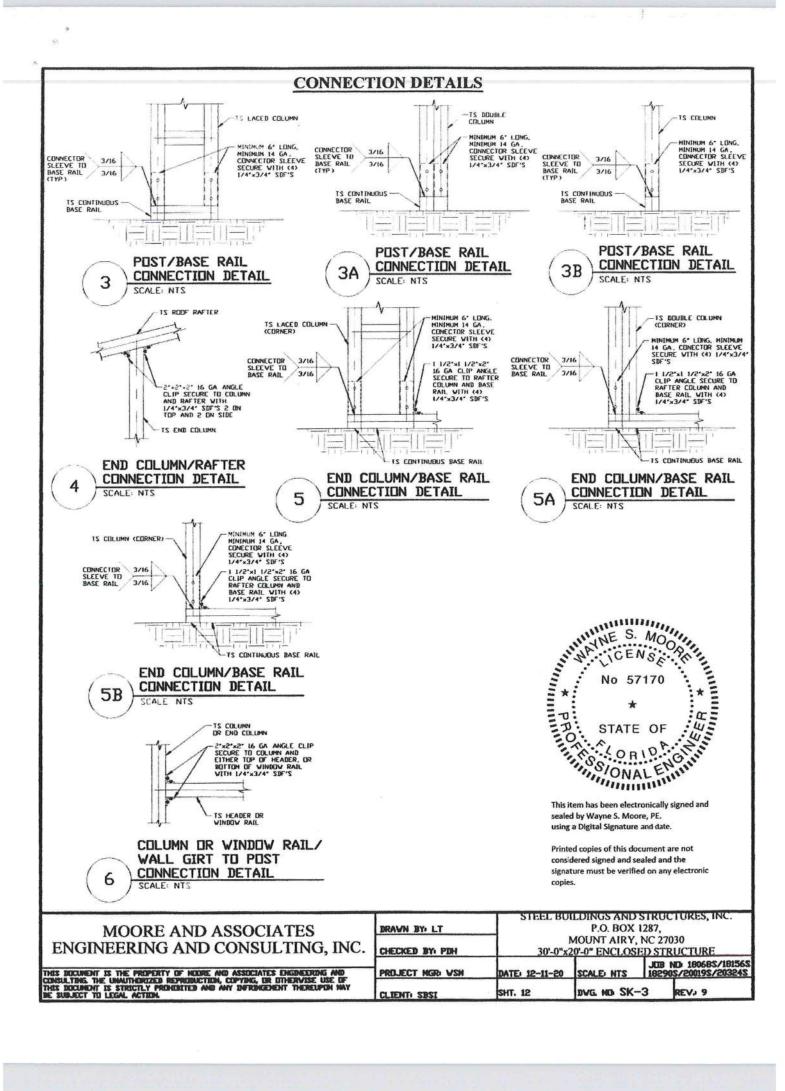
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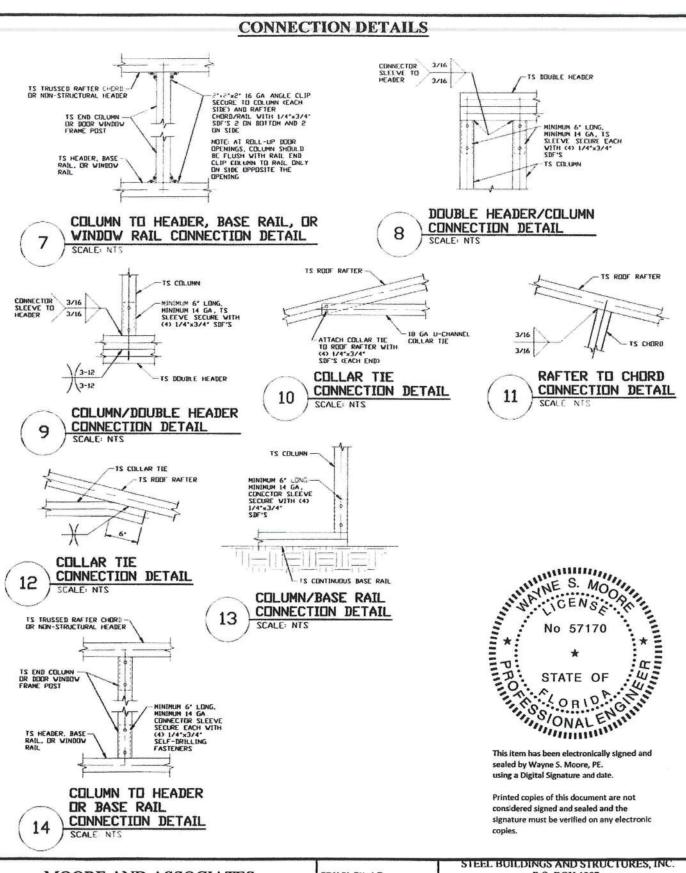
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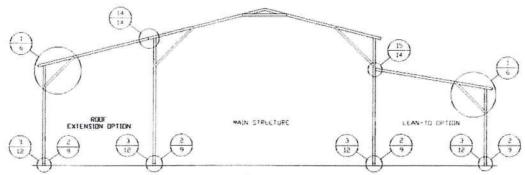
-	BRAWN BY: LT		P.O. BOX 1287, MOUNT AIRY, NC 27030				
	CHECKED BY: PBH		20'-0" ENCLOS				
-	PROJECT HGR: VSN	DATE: 12-11-20	SCALE: NTS	JEB 18290	ND 180685/181565 05/200195/203245		
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### **BOX EAVE RAFTER LEAN-TO OPTIONS**



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

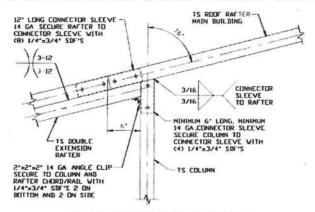
SCALE: NTS

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

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

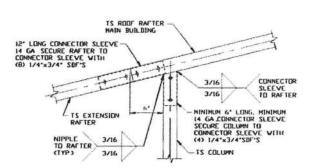
MAXIMUM SINGLE COLLUMN HEIGHT FOR MAIN BUILDING WITH ROOF EXTENSION LEAN-TO ATTACHED IS 8'-0'

FOR COLUMN CONFIGURATIONS REFERENCE RAFTER COLUMN CONNECTION DETAILS.

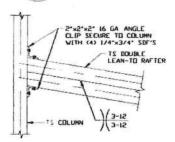


SIDE EXTENSION RAFTER/
COLUMN DETAIL FOR RAFTER

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



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

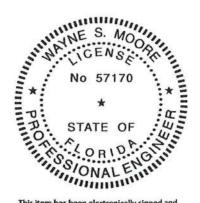


LEAN-TO RAFTER
TO RAFTER POST
CONNECTION DETAIL
FOR WIDTHS
12'-0' < TO < 16'-0'

15

2'x2'x2' 16 GA ANGLE
CLIP SECURE 18 COLUNN
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'



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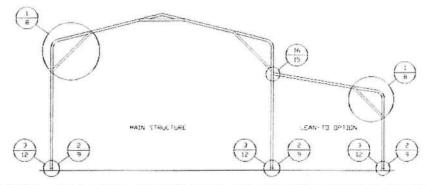
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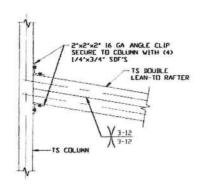
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	DRAWN BY: LT		P.O. BOX 1287,				

### BOW EAVE RAFTER LEAN-TO OPTIONS



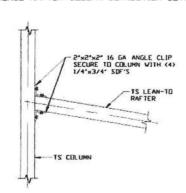
### TYPICAL BOW EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION

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 COLUMN HEIGHT FOR MAIN BUILDING WITH ROOF EXTENSION LEAN-TO ATTACHED IS 8'-0"
FOR COLUMN CONFIGURATIONS REFERENCE RAFTER COLUMN CONNECTION DETAILS.



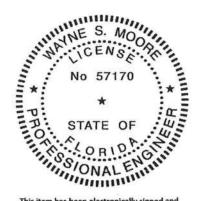
LEAN-TO RAFTER TO RAFTER POST CONNECTION DETAIL FOR WIDTHS 12'-0" < TO ≤ 16'-0" SCALE: NTS

16



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

16A



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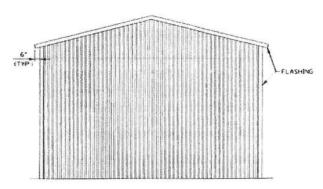
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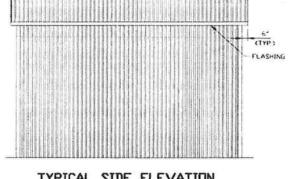
STEEL BUILDINGS AND STRUCTURES, INC. BRAWN BY LT P.O. BOX 1287, MOUNT AIRY, NC 27030 CHECKED BY: PDH 30'-0"x20'-0" ENCLOSED STRUCTURE JUB NIJ 18068\$/18156\$ 18290\$/20019\$/20324\$ PRELJECT NGR: VSN 03-11-S1 (3TAC SCALE: NTS SHT. 15 DVG. ND SK-3 REV. 9 CLIENT: SBSI

### BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



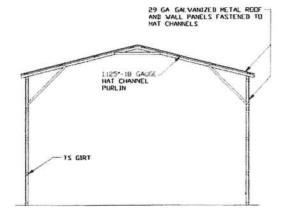
# TYPICAL END ELEVATION VERTICAL ROOF/SIDING

SCALE NTS



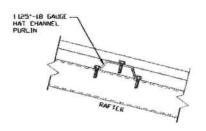
# TYPICAL SIDE ELEVATION VERTICAL ROOF/SIDING

SCALE: NTS



# TYPICAL SECTION VERTICAL ROOF/SIDING OPTION

SCALE: NTS



### PANEL ATTACHMENT

(ALTERNATE FOR VERTICAL ROOF PANELS)
SCALE NTS

SEE NOTES

CSINEET 3)

FOR MAXIMUM
SPACING

1125'-18 GAUGE HAT CHANNEL PURCIN

TO EACH RAFTER WITH (2) 1/4'x3/4' SDF'S

(TYP)

-15 GIRL SPACED AT

4'-0' DC (MAX.)

# TYPICAL FRAMING SECTION VERTICAL ROOF/SIDING OPTION

SCALE: NTS



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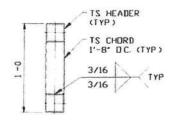
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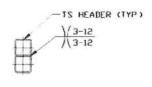
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	CHECKED BY: PDH					
	PROJECT HGR: VSH	DATE: 12-11-20	SCALE: NTS	JUB 1 18290	ND 180685/181565 05/200195/203245	
	CLIENT: SBSI	SHT. 16	DWG. NO SK-3		REV. 9	

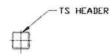
### SIDE WALL HEADER OPTIONS





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

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



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

### **END WALL HEADER OPTIONS**

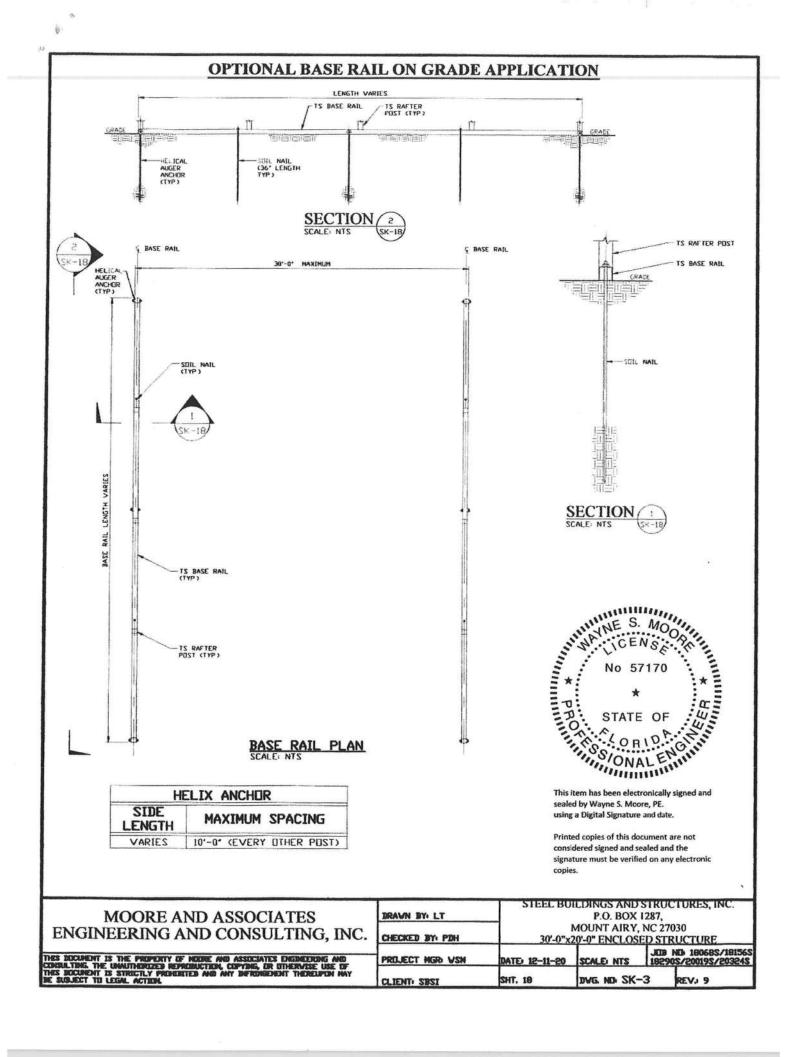


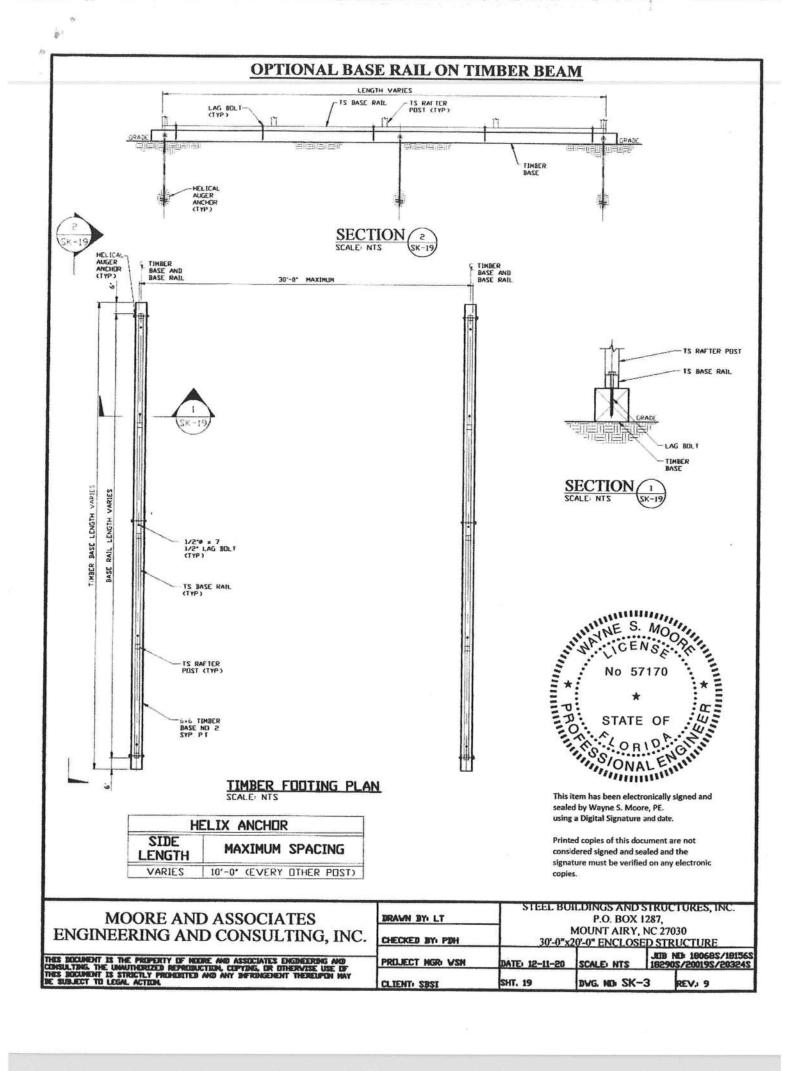
SINGLE HEADER DETAIL FOR DOOR OPENINGS LENGTH & 12'-0'

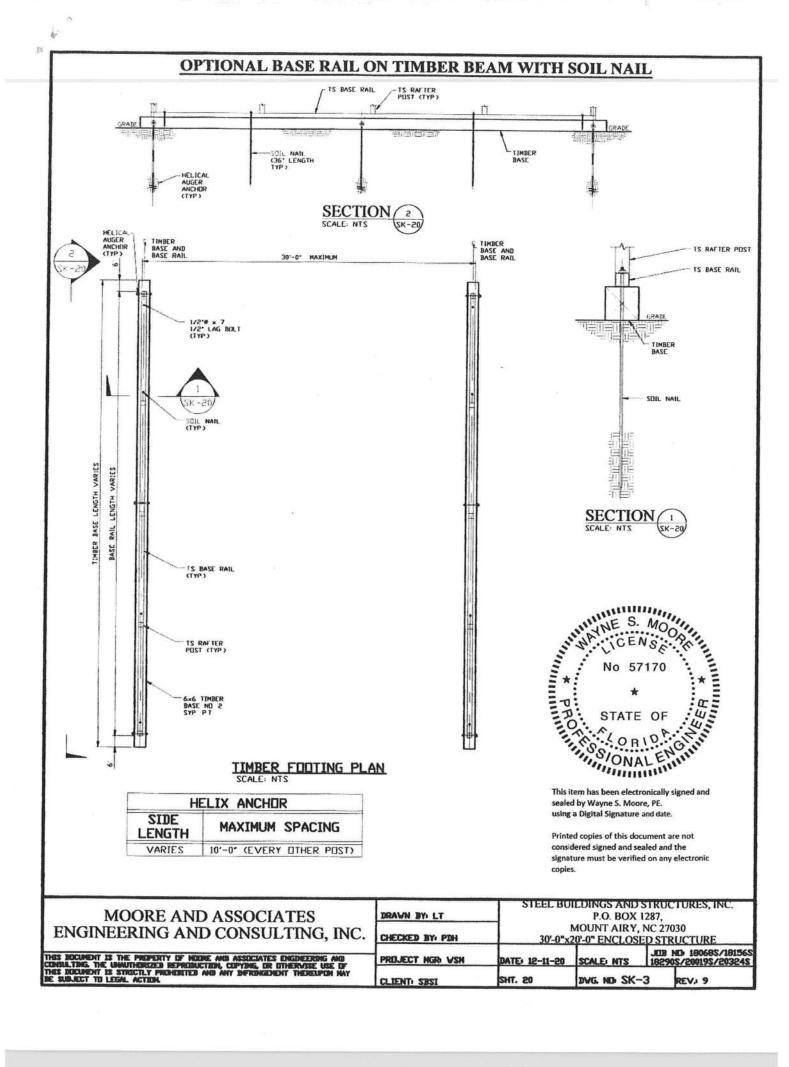


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### OPTIONAL CONCRETE STRIP FOOTING FOOTING AND BASE RAIL 30'-8' MAXIMUM VARIES FOOTING LENGTH VARIES RAD LENGTH 1/2" EXPANSION BASE TS BASE RAIL CONCRETE PINTER PAITCH SOURCES (3000 PSI MIN) CONCRETE STRIP FOOTING PLAN SCALE: NTS IS RAFTER POST TS BASE RAIL CMIN 2-84, CONT T&B INSTALL 1/2"x6 3/4" EXPANSION ANCHOR THROUGH BASE RAIL WITHIN 6" OF EACH COLUMN MININUM 3 1/4" EMBEDMENT (TYP) This item has been electronically signed and S. 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 SK-51 signature must be verified on any electronic copies. MANYSAGOS TASOT HELM SENIGAGOS STEEL BUILDINGS AND STRUCTURES, INC. BRAWN 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 COMSULTING. THE UNMITHORIZED REPRODUCTION, COPYING, OR OTHERWISE USE OF THIS BOCUMENT IS STRICTLY PROPERTED AND ANY DEFRINGEMENT THEREUPON MAY BE SUBJECT TO LEGAL ACTION. PROJECT MGR: WSM DATE: 12-11-20 SCALE: NTS 18290\$/20019\$/20324\$ SHT. 21 DVG. NO SK-3 REV. 9 CLIENT: SBSI

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