

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

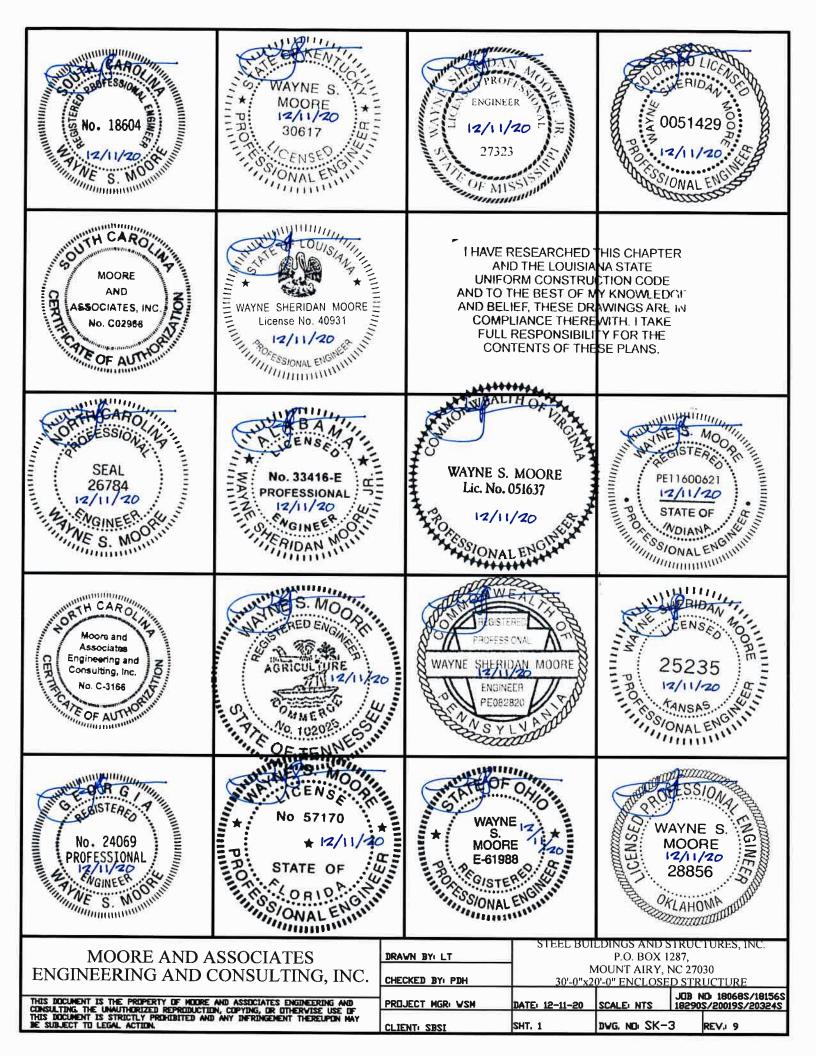
Prepared by:

Moore and Associates Engineering and Consulting, Inc.

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





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DRAWING INDEX

	BKITWING THEEX
SHEET 1	PE SEAL COVER SHEET (1 OF 2)
SHEET 1A	PE SEAL COVER SHEET (2 OF 2)
SHEET 2	DRAWING INDEX
SHEET 3	INSTALLATION NOTES AND SPECIFICATIONS
SHEET 4	TYPICAL SIDE AND END ELEVATIONS
SHEET 5	TYPICAL RAFTER/COLUMN FRAME AND SIDE FRAMING SECTION (BOX EAVE STRUCTURE)
SHEET 5A	TYPICAL RAFTER/COLUMN FRAME AND SIDE FRAMING SECTION (BOX EAVE STRUCTURE)
SHEET 5B	TYPICAL RAFTER/COLUMN FRAME AND SIDE FRAMING SECTION (BOX EAVE STRUCTURE)
SHEET 6	COLUMN CONNECTION DETAILS (BOX EAVE STRUCTURE)
SHEET 6A	COLUMN CONNECTION DETAILS (BOX EAVE STRUCTURE)
SHEET 7	TYPICAL RAFTER/COLUMN FRAME AND SIDE FRAMING SECTION (BOW EAVE STRUCTURE)
SHEET 7A	TYPICAL RAFTER/COLUMN FRAME AND SIDE FRAMING SECTION (BOW EAVE STRUCTURE)
SHEET 7B	TYPICAL RAFTER/COLUMN FRAME AND SIDE FRAMING SECTION (BOW EAVE STRUCTURE)
SHEET 8	COLUMN CONNECTION DETAILS (BOW EAVE STRUCTURE)
SHEET 8A	COLUMN CONNECTION DETAILS (BOW EAVE STRUCTURE)
SHEET 9	BASE RAIL ANCHORAGE OPTIONS
SHEET 9A	ADDITIONAL BASE RAIL ANCHORAGE OPTION
SHEET 10	BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS
SHEET 11	BOW EAVE RAFTER END WALL AND SIDE WALL OPENINGS
SHEET 12	CONNECTION DETAILS
SHEET 13	CONNECTION DETAILS
SHEET 14	BOX EAVE RAFTER LEAN-TO OPTIONS
SHEET 15	BOW EAVE RAFTER LEAN-TO OPTIONS
SHEET 16	VERTICAL ROOF/SIDING OPTION END AND SIDE ELEVATION AND SECTION
SHEET 17	SIDE WALL AND END WALL HEADER OPTIONS
SHEET 18	OPTIONAL BASE RAIL ON GRADE APPLICATION
SHEET 19	OPTIONAL BASE RAIL ON TIMBER BEAM
SHEET 20	OPTIONAL BASE RAIL ON TIMBER BEAM WITH SOIL NAIL
SHEET 21	OPTIONAL CONCRETE STRIP FOOTING

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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 (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 ($\underline{\langle}$ 26'-0"), 35 PSF (26'-0" \langle W $\underline{\langle}$ 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):
- 5. MAXIMUM RAFTER/COLUMN AND END COLUMN SPACING = 5.0 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 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' 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 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 $I_E = 1.0$ $V = C_S W$

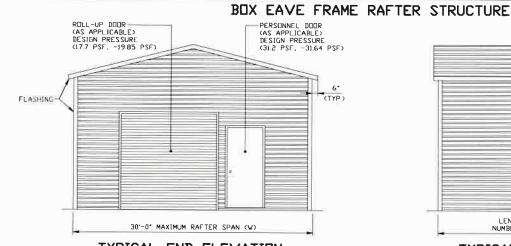
 $S_{DI} = 1.258 g$

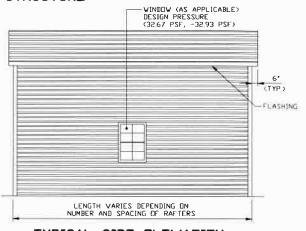
15 WINDOW AND DOOR DESIGN PRESSURES ARE APPLICABLE TO THE STATE OF FLORIDA ONLY.

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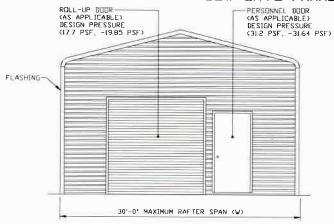
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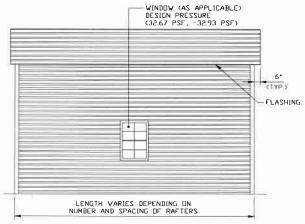
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TYPICAL SIDE ELEVATION

SCALE: NTS

BOW EAVE FRAME RAFTER STRUCTURE





TYPICAL END ELEVATION

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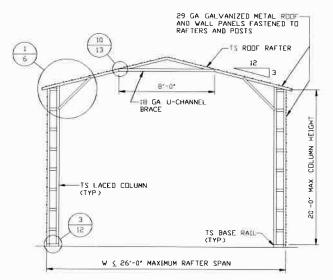
TYPICAL SIDE ELEVATION

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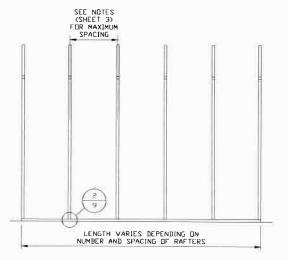
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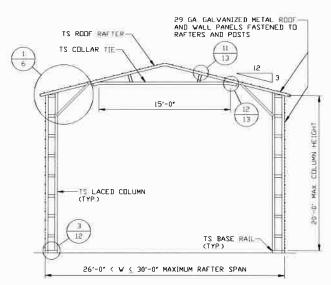
TYPICAL RAFTER/COLUMN FRAME SECTION

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TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

SCALE: NTS

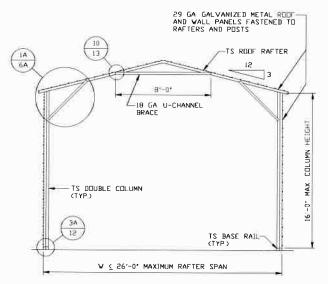


TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

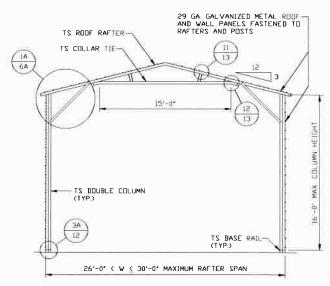
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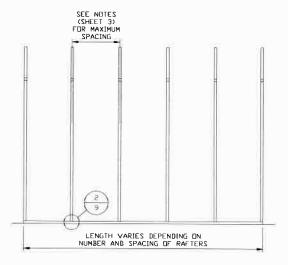
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TYPICAL RAFTER/COLUMN FRAME SECTION

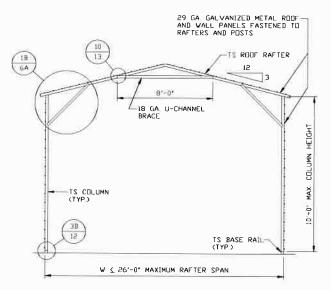


TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS

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TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

SEE NOTES
(SHEET 3)
FOR MAXIMUM
SPACING

TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

LENGTH VARIES DEPENDING ON NUMBER AND SPACING OF RAFTERS

29 GA GALVANIZED METAL RODF
AND WALL PANELS FASTENED TO
RAFTERS AND POSTS

TS COLLAR TIE

13

12

15'-0'

15'-0'

15 BASE RAIL
(TYP)

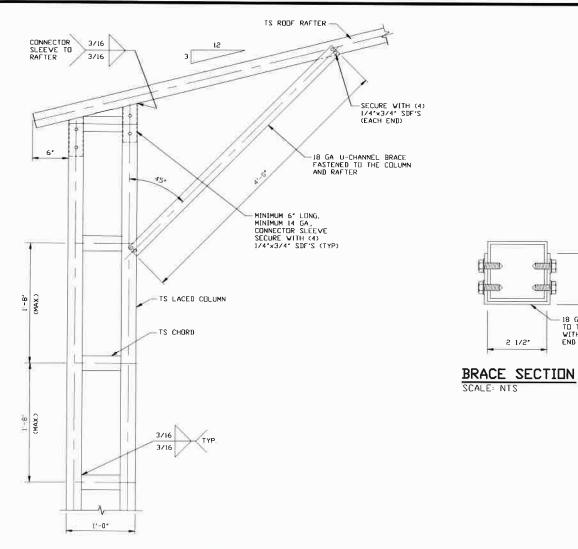
26'-0' < V < 30'-0' MAXIMUM RAFTER SPAN

TYPICAL RAFTER/COLUMN FRAME SECTION

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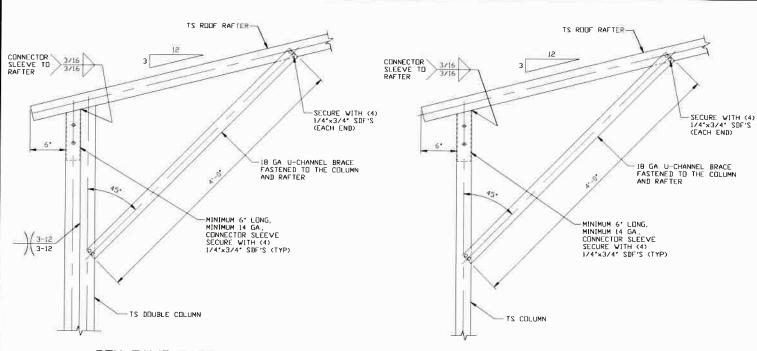
-18 GA U-CHANNEL BRACE FASTENED TO THE COLUMN AND ROOF RAFTER, WITH (4) 1/4'x3/4' SDF'S AT EACH END (12 PER BRACE)

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

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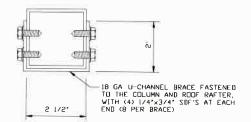
BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL

FOR HEIGHTS 10'-0' < TO \(\) 16'-0'

SCALE: NTS

BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL

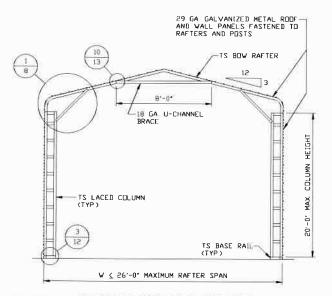
1B | FOR HEIGHTS \(\) 10'-0"



BRACE SECTION
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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

12

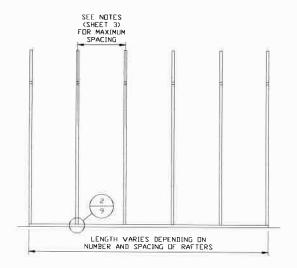
15'-0'

TS BASE RAIL

(TYP)

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

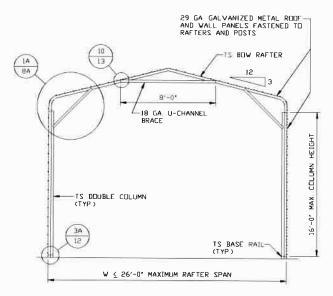
TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

SCALE NTS

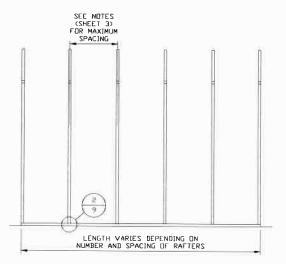
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TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

29 GA. GALVANIZED METAL ROOF-AND WALL PANELS FASTENED TO RAFTERS AND POSTS TS BOW RAFTER-13 TS COLLAR TIE (IA) BA 12]3 15'-0" 13 HEIGHT COLUMN TS DOUBLE COLUMN 16'-0" 15 TS BASE RAIL-26'-0" < ₩ < 30'-0" MAXIMUM RAFTER SPAN

TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS



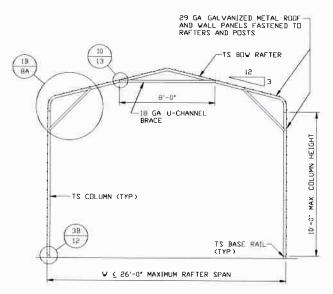
TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

SCALE: NTS

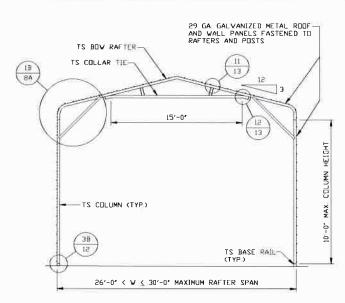
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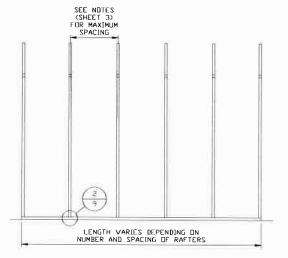
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 $\frac{\texttt{TYPICAL} \ \ \mathsf{RAFTER/COLUMN} \ \ \mathsf{FRAME} \ \ \mathsf{SECTION}}{\mathsf{SCALE}: \ \mathsf{NTS}}$



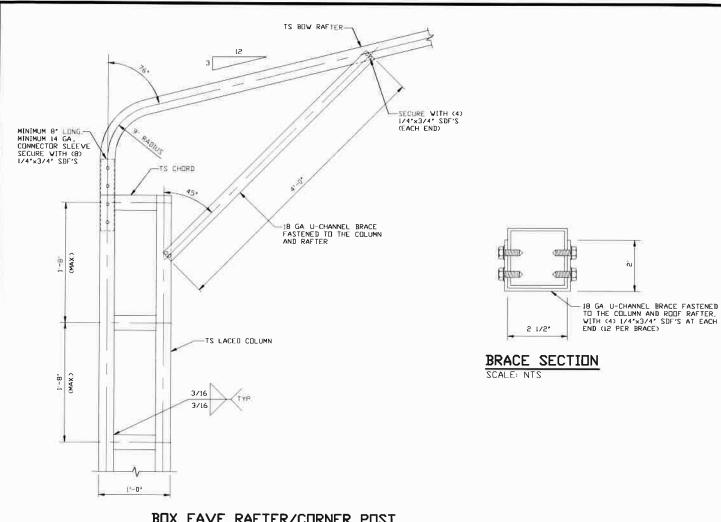
TYPICAL RAFTER/COLUMN FRAME SECTION
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TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS

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BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL

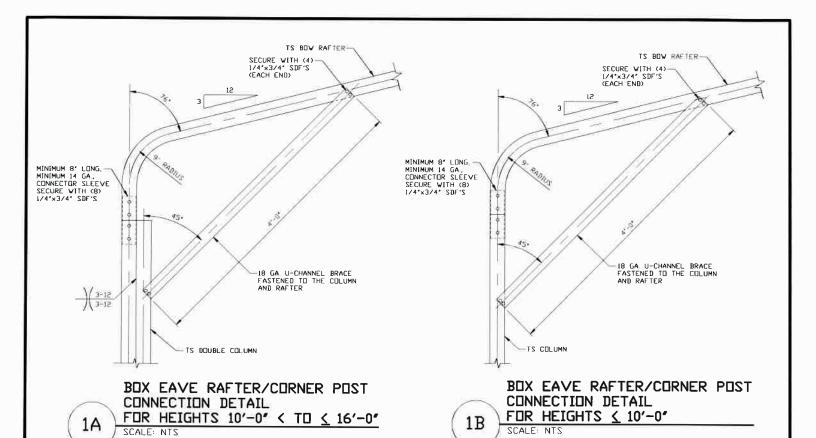
FOR HEIGHTS 16'-0' < TO < 20'-0'

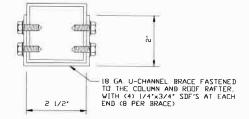
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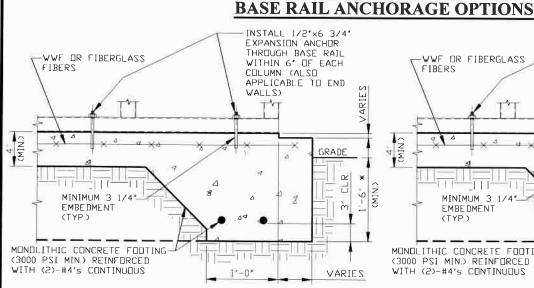


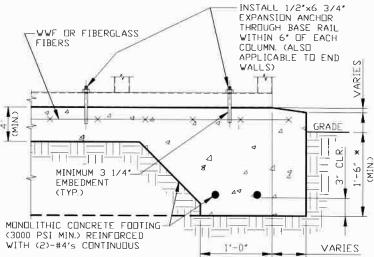


BRACE SECTION

SCALE: NTS

MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: LT	STEEL BUILDINGS AND STRUCTURES, INC. P.O. BOX 1287, MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE			030
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2

CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

SCALE: NTS MINIMUM ANCHOR EDGE DISTANCE IS 44 * 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.

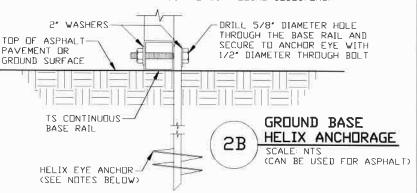
- 1 REINFORCEMENT IS BENT COLD
- THE DIAMETER OF THE BEND, MEASURED ON THE INSIDE OF THE BAR, IS NOT LESS THAN SIX-BAR DIAMETERS
- REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT

HELIX ANCHOR NOTES:

- 1. FOR VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND CUBBLES, 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 CHARSE 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 LODSE 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 2A SCALE: NTS

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

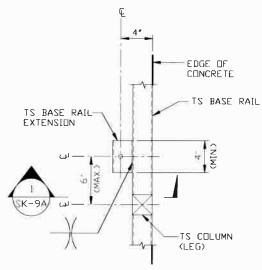


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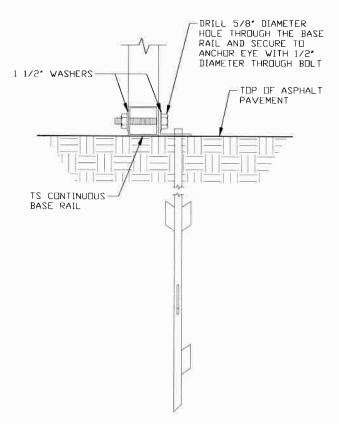
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	CHECKED BY: PDH	MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE				
	PROJECT MGR: VSM		SCALE: NTS	JOB N	D 18068\$/18156\$ \$/20019\$/20324\$	
	CLIENT: SBSI	SHT. 9	DVG. NO: SK-	3	REV.: 9	

ADDITIONAL BASE RAIL ANCHORAGE OPTION



TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

SCALE: NTS



ASPHALT BASE ANCHORAGE

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SCALE: NTS

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CLIENT, SRSI	SHT. 9A	DWG. NO SK-	3	REV. 9		
PROJECT MGRI VSM	DATE: 12-11-20	SCALE: NTS	JOB N 18290	18068\$/18156\$ \$/20019\$/20324\$		
CHECKED BY: PDH		0'-0" ENCLOSE				
	1 ,	MOUNT AIRY, NC 27030				
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	STEEL BUI	LDINGS AND	STRUC	TURES, INC.		

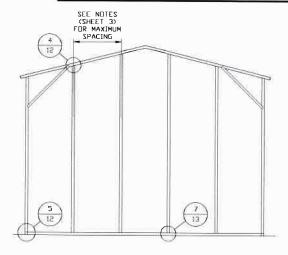
1/2°Ø EXPANSION ANCHOR

SK-9A

SECTION SCALE: NTS EDGE OF

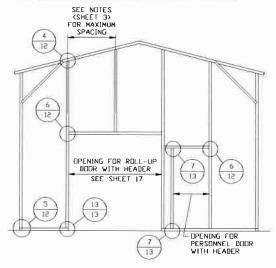
CONCRETE

BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



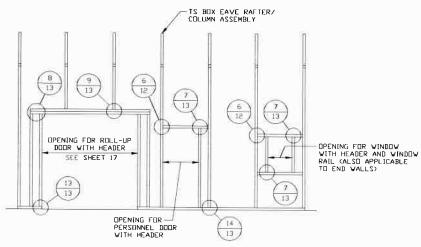
TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS



TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS



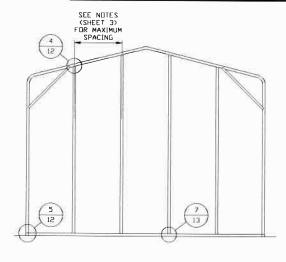
TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

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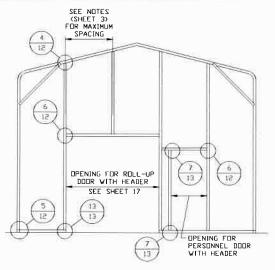
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	CHECKED BY: PDH	MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE			
	PROJECT MGR: VSM	DATE: 12-11-20	SCALE: NTS	JOB N 18290	ID: 18068\$/18156\$ \$/20019\$/20324\$
	CLIENT: SBSI	SHT. 10	DWG. NO SK-3	3	REV. 9

BOW EAVE RAFTER END WALL AND SIDE WALL OPENINGS



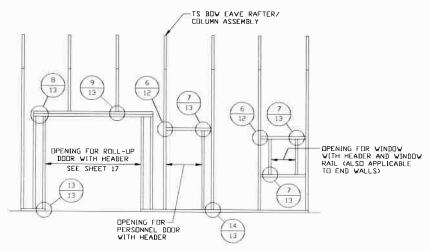
TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS



TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS



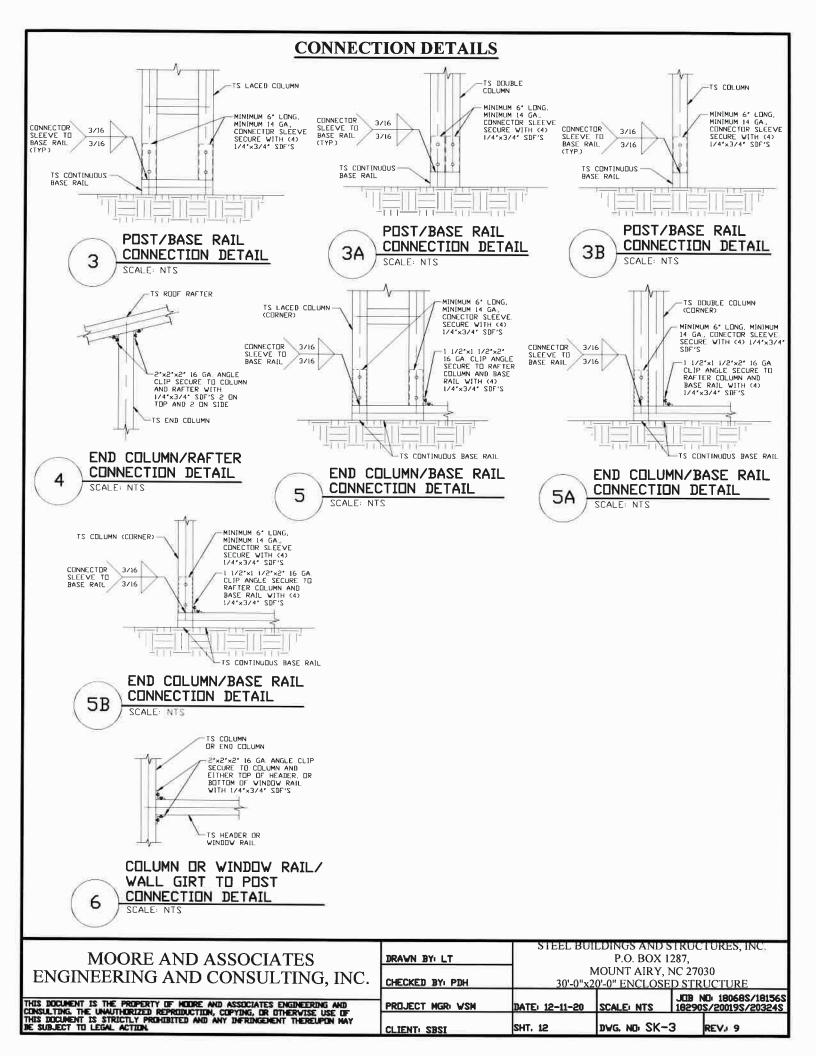
TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

SCALE: NTS

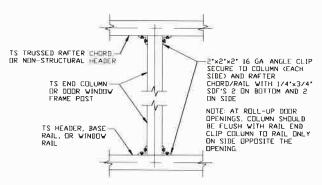
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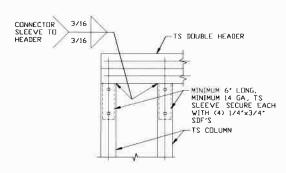
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CLIENT: SBSI	SHT. 11	DWG, NO: SK-3 REV.: 9		REV.: 9			



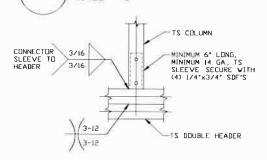
CONNECTION DETAILS

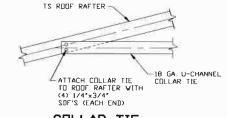


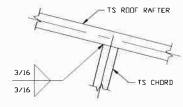


COLUMN TO HEADER, BASE RAIL, OR WINDOW RAIL CONNECTION DETAIL

DOUBLE HEADER/COLUMN CONNECTION DETAIL 8 SCALE: NTS



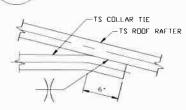




COLUMN/DOUBLE HEADER CONNECTION DETAIL SCALE: NTS

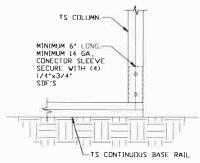
COLLAR TIE CONNECTION DETAIL 10 SCALE: NTS

RAFTER TO CHORD CONNECTION DETAIL 11 SCALE NTS



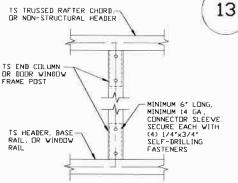
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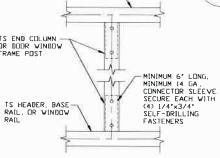
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COLLAR TIE CONNECTION DETAIL SCALE: NTS

COLUMN/BASE RAIL CONNECTION DETAIL SCALE: NTS





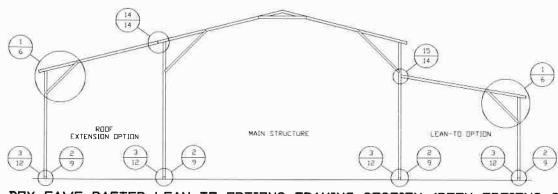
COLUMN TO HEADER OR BASE RAIL CONNECTION DETAIL SCALE NTS

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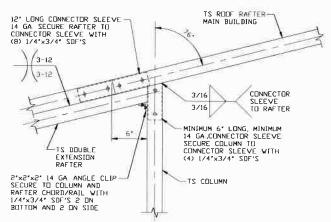
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	CLIENT: SBSI	SHT, 13	DWG, NO: SK-3		REV.i 9			

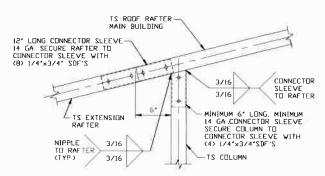
BOX EAVE RAFTER LEAN-TO OPTIONS



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

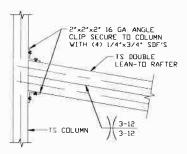
MAXIMUM WIDTH OF SINGLE TS ROOF EXTENSION LEAN-TO IS 12'-0"
MAXIMUM WIDTH OF DOUBLE TS ROOF EXTENSION LEAN-TO IS 16'-0".
MAXIMUM SINGLE COLUMN HEIGHT FOR MAIN BUILDING WITH ROOF EXTENSION LEAN-TO ATTACHED IS 8'-0". FOR COLUMN CONFIGURATIONS REFERENCE RAFTER COLUMN CONNECTION DETAILS.





SIDE EXTENSION RAFTER/ COLUMN DETAIL FOR RAFTER SPANS 12'-0" < TO < 16'-0" SCALE: NTS

SIDE EXTENSION RAFTER/ COLUMN DETAIL FOR RAFTER SPANS < 12'-0" 14A SCALE: NTS



x2'x2' 16 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'-0" < T□ < 16'-0" SCALE: NTS

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

CLIENT: SBSI

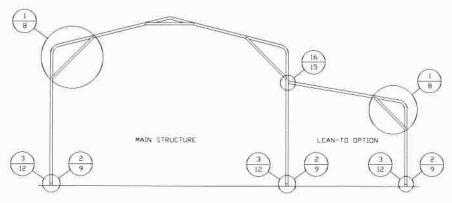
15A

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BOW EAVE RAFTER LEAN-TO OPTIONS



TYPICAL BOW EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION

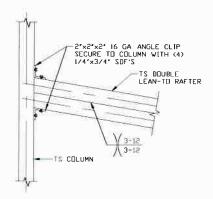
SCALE: NTS

MAXIMUM WIDTH OF SINGLE 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'

16 SCALE: NTS

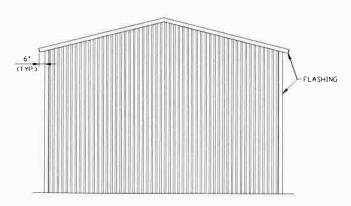
2'x2'x2' 16 GA ANGLE CLIP SECURE TO COLUMN WITH (4) 11/4'x3/4' SDF'S TS LEAN-TO RAFTER

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

16A) SCALE NTS

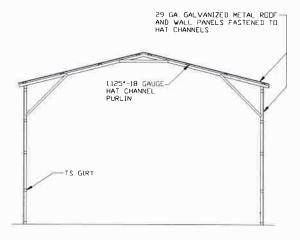
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BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



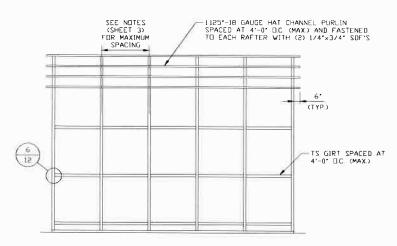
TYPICAL END ELEVATION VERTICAL ROOF/SIDING

SCALE: NTS



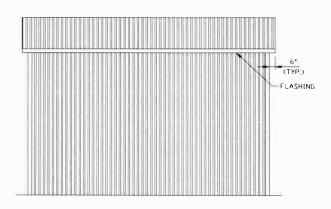
TYPICAL SECTION VERTICAL ROOF/SIDING OPTION

SCALE: NTS



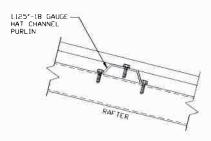
TYPICAL FRAMING SECTION VERTICAL ROOF/SIDING OPTION

SCALE: NTS



TYPICAL SIDE ELEVATION VERTICAL ROOF/SIDING

SCALE: NTS

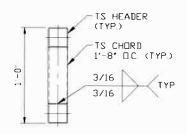


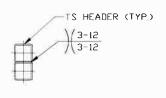
PANEL ATTACHMENT

(ALTERNATE FOR VERTICAL ROOF PANELS)
SCALE NTS

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SIDE WALL HEADER OPTIONS





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

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



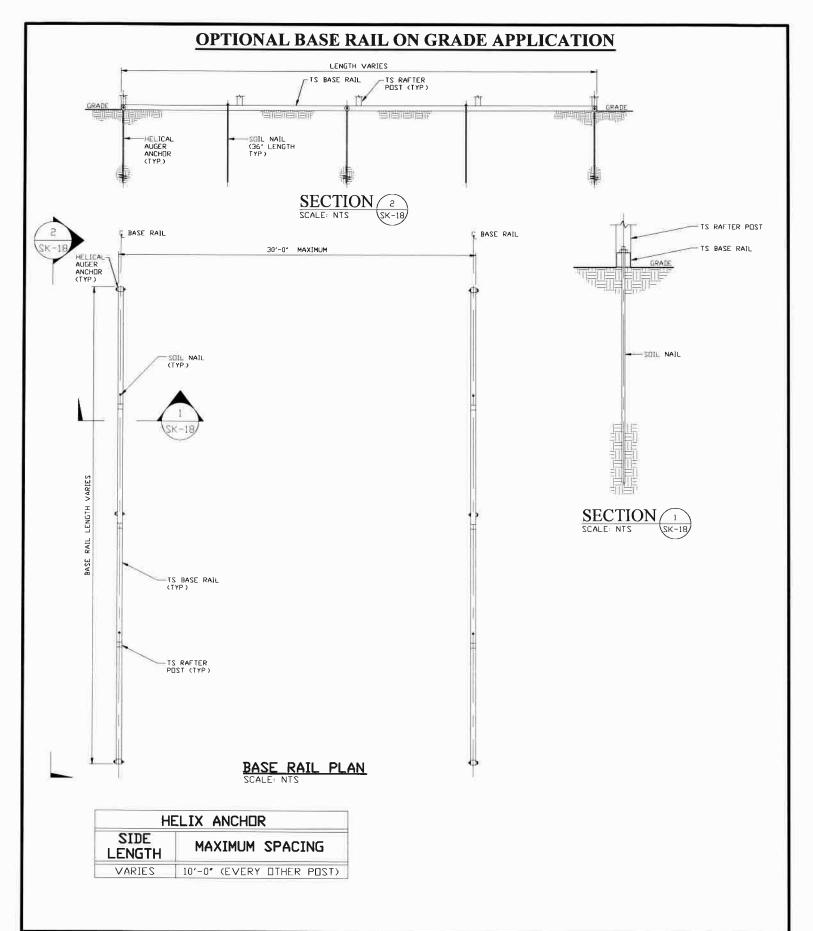
END WALL HEADER OPTIONS



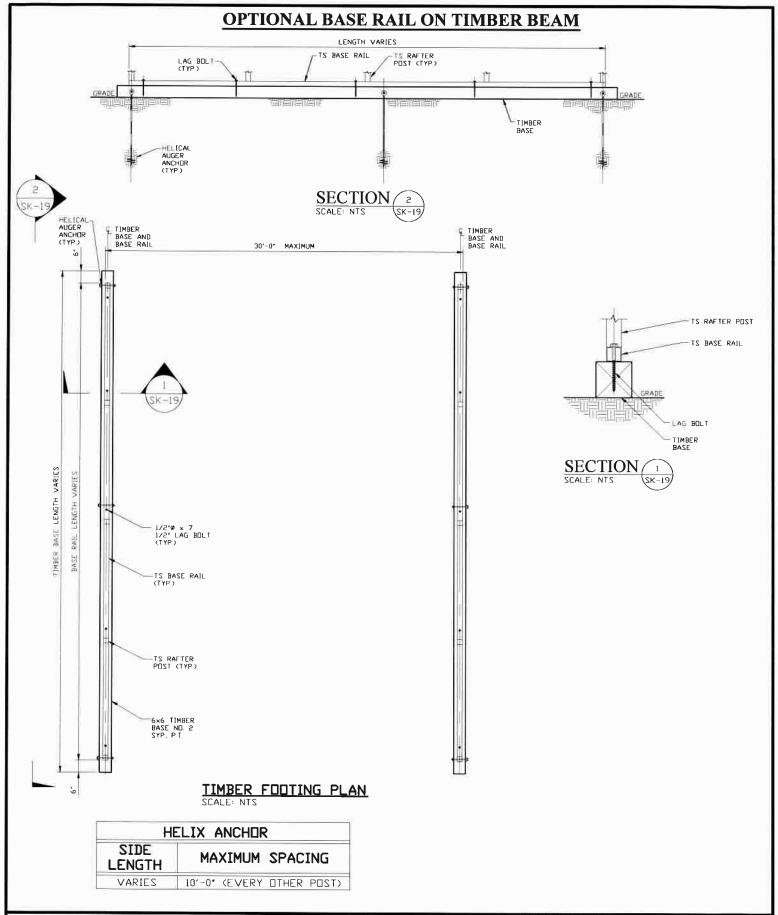
SINGLE HEADER DETAIL FOR DOOR OPENINGS LENGTH & 12'-0'

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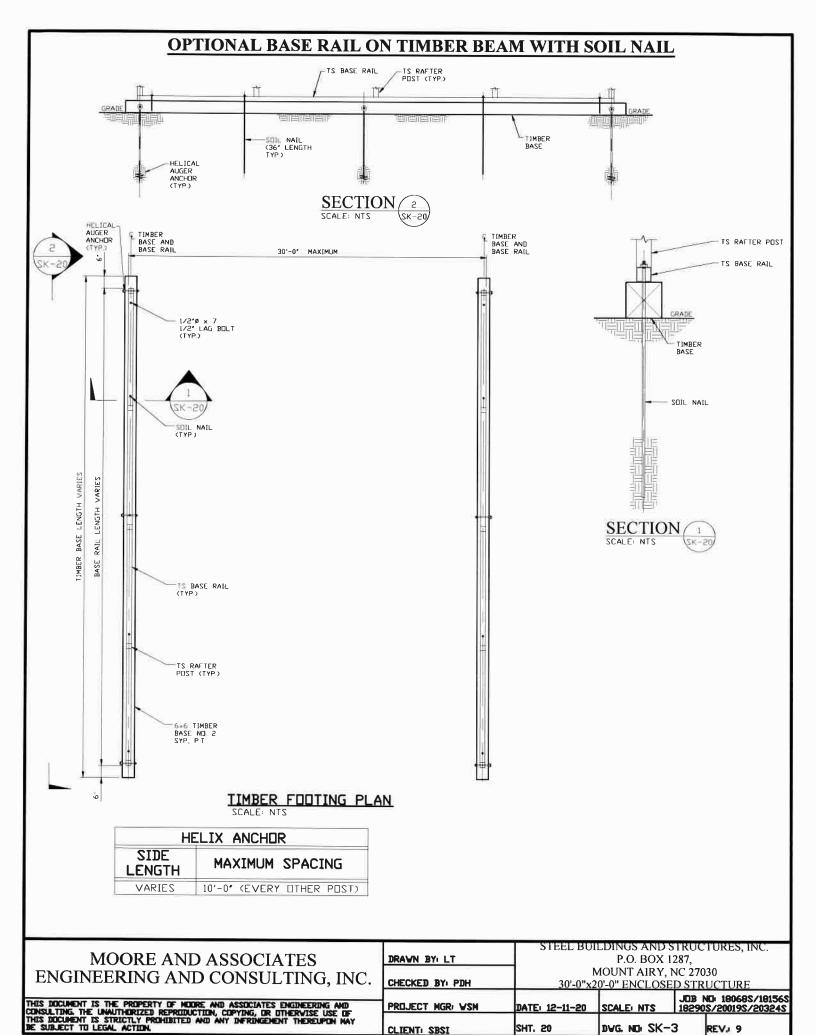
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MOORE AND ASSOCIATES	DRAWN BY: LT	P.O. BOX 1287, MOUNT AIRY, NC 27030			• 100



CLIENT: SBSI

SHT. 20

DAC" NO 2K-3

REV. 9

OPTIONAL CONCRETE STRIP FOOTING FOOTING AND BASE RAIL FOOTING AND BASE RAIL 30'-0" MAXIMUM VARIES VARIES LENGTH 1/2'# EXPANSION ANCHOR (TYP) RAIL FOOT ING BASE TS BASE RAIL TS RAFTER POST (TYP) CONCRETE STRIP FOOTING (3000 PSI MIN) CONCRETE STRIP FOOTING PLAN 1--6 TS RAFTER POST TS BASE RAIL GRADE 1-6' * 2-#4, CONT T&B -INSTALL 1/2'x6 3/4' EXPANSION ANCHOR THROUGH BASE RAIL WITHIN 6' OF EACH COLUMN. MINIMUM 3 1/4' EMBEDMENT (TYP) 2' CLR CLR SECTION 1 SCALE: NTS (2K-51 * COORDINATE WITH LOCAL CODES/ORD STEEL BUILDINGS AND STRUCTURES, INC. MOORE AND ASSOCIATES DRAWN BY LT P.O. BOX 1287, MOUNT AIRY, NC 27030 ENGINEERING AND CONSULTING, INC. CHECKED BY: PDH 30'-0"x20'-0" ENCLOSED STRUCTURE JUB NO: 18068\$/18156\$ 18290\$/20019\$/20324\$ THIS DOCUMENT IS THE PROPERTY OF MODRE AND ASSOCIATES ENGINEERING AND CONSULTING. THE UNAUTHORIZED REPRODUCTION, COPYING, OR OTHERWISE USE OF THIS DOCUMENT IS STRICTLY PROMIBITED AND ANY INFRINGEMENT THEREUPON MAY BE SUBJECT TO LEGAL ACTION. DATE: 12-11-20 PROJECT MGR: WSM SCALE: NTS

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DVG. ND: SK-3

REV. 9