

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

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

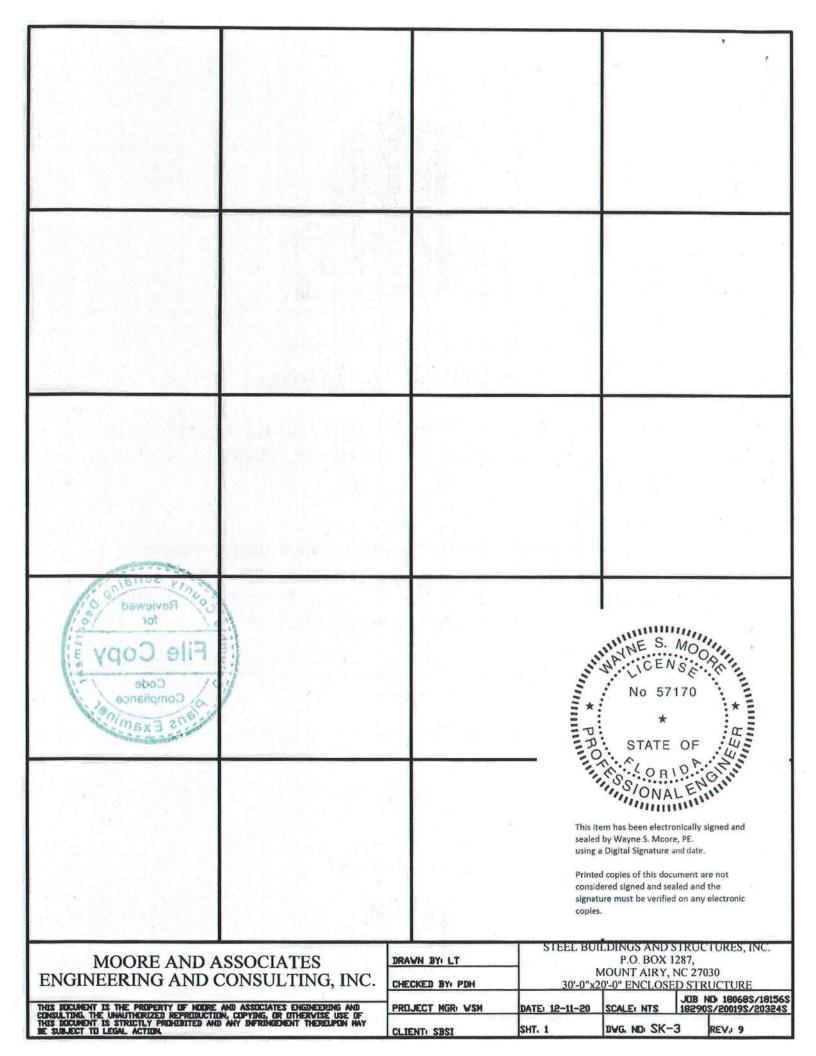


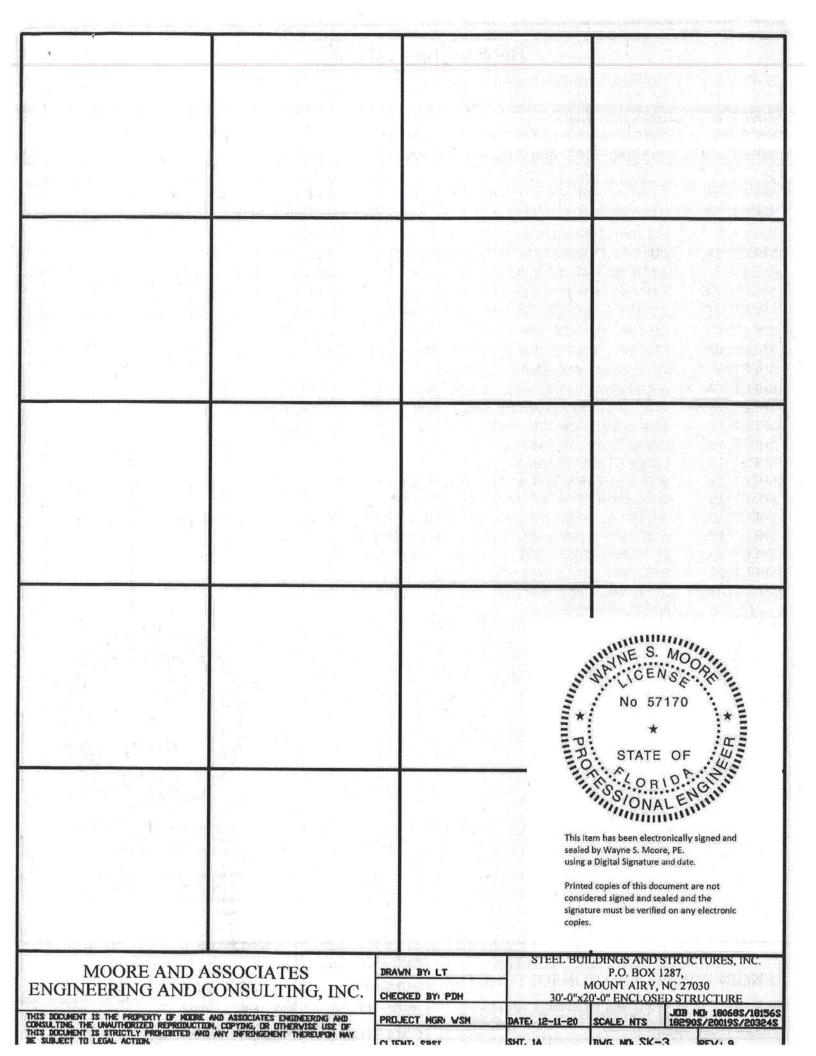




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STEEL BUILDINGS AND STRUCTURES, INC.
P.O. BOX 1287,
MOUNT AIRY, NC 27030
30'-0"x20'-0" ENCLOSED STRUCTURE

PROJECT NGR: WSM DATE: 12-11-20 SCALE: NTS 18290\$/20019\$/20324\$

CLIENT: SBSI SHT. 2 DWG. ND: SK-3 REV.: 9

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

= 15 PSF

B) LIVE LOAD

= 12 PSF

C) GROUND SNOW LOAD = 30

= 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 = 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° OF EACH COLUMN.
- 13. STANDARD GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT × 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= 325

 $I_C = 1.0$ V= $C_S W$

 $S_{02} = 2039 g$ $S_{01} = 1258 g$

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



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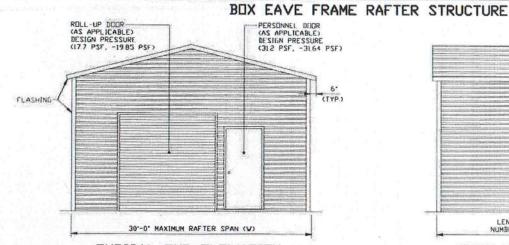
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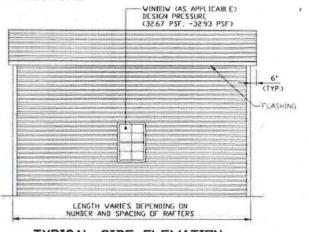
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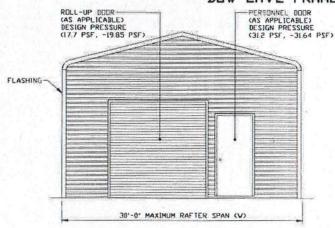
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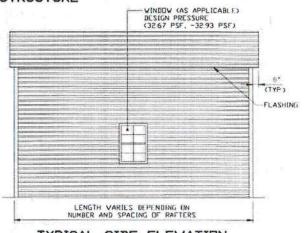
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TYPICAL SIDE ELEVATION

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BOW EAVE FRAME RAFTER STRUCTURE



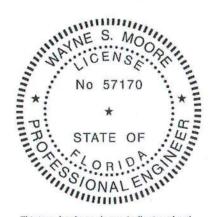


TYPICAL END ELEVATION

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TYPICAL SIDE ELEVATION

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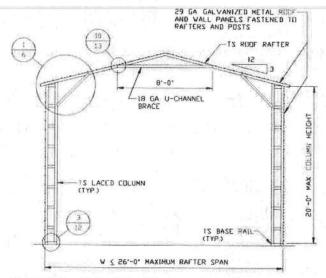
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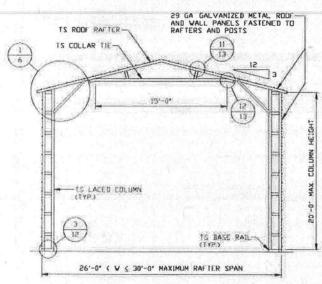
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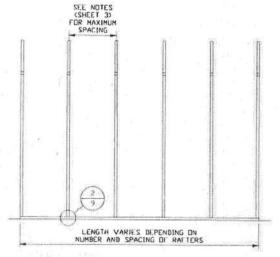
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TYPICAL RAFTER/COLUMN FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION



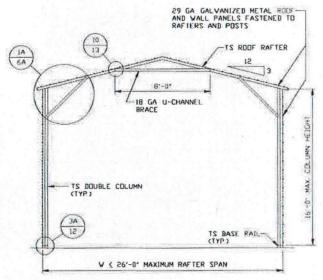
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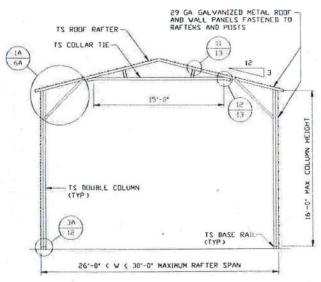
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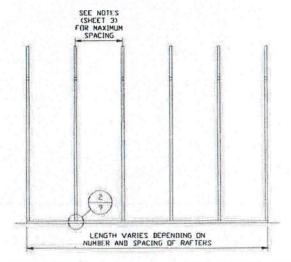
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TYPICAL RAFTER/COLUMN FRAME SECTION



TYPICAL RAFTER/COLUMN FRAME SECTION



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION



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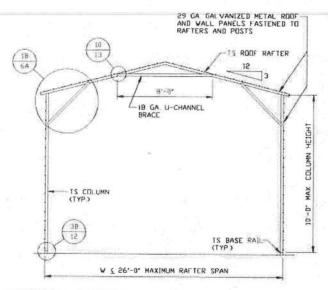
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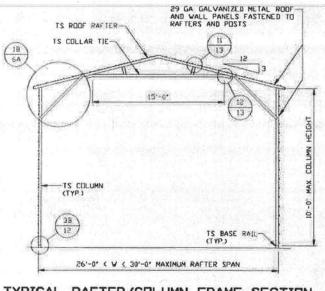
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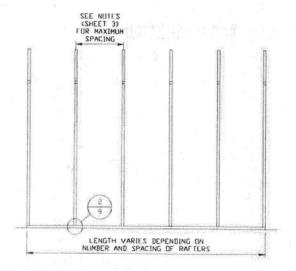
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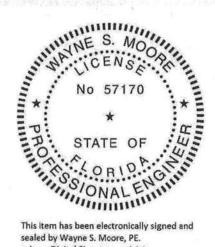
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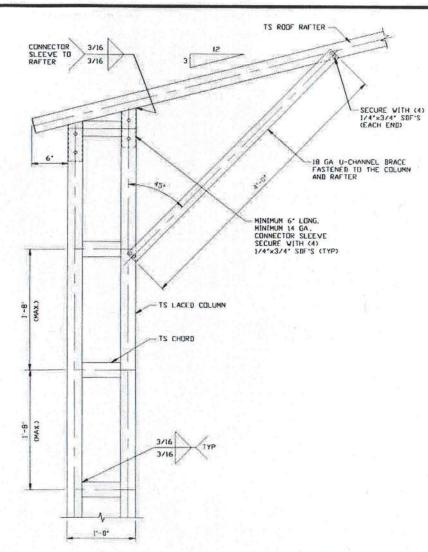
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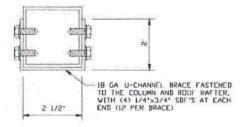
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JUB ND 18068\$/18156\$ 18290\$/20019\$/20324\$





BRACE SECTION

SCALE: NTS

BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL

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

SCALE: NTS



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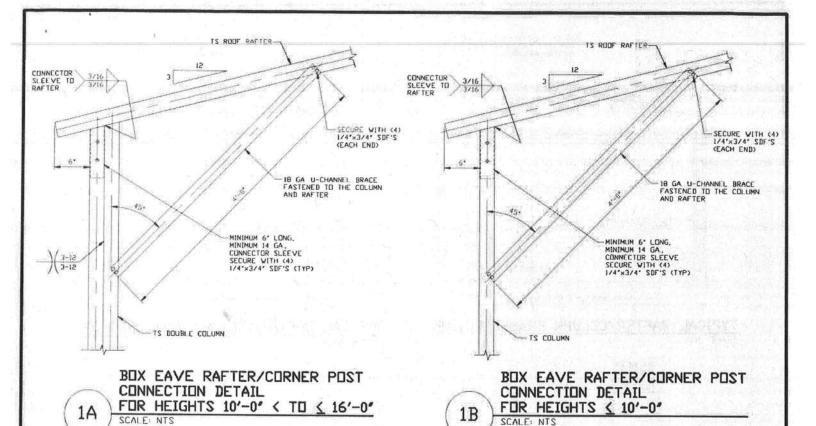
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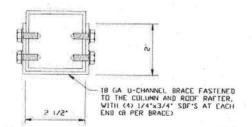
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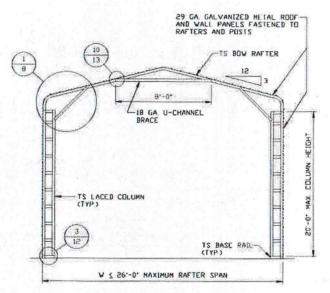
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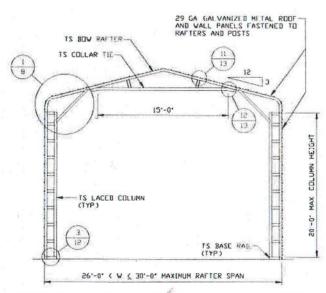
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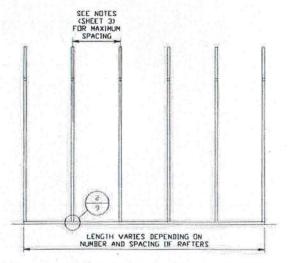
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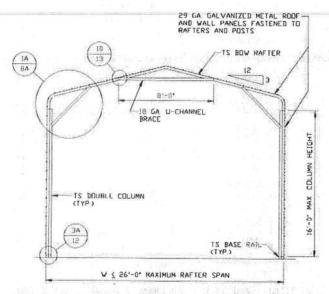
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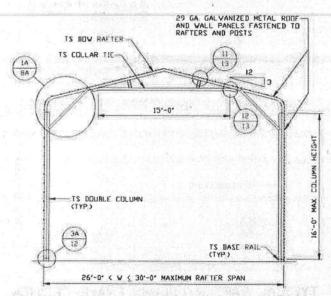
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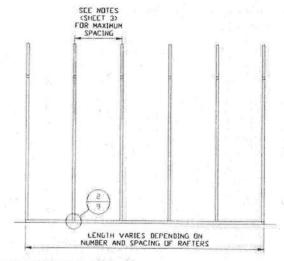
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TYPICAL RAFTER/COLUMN FRAME SECTION



TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION



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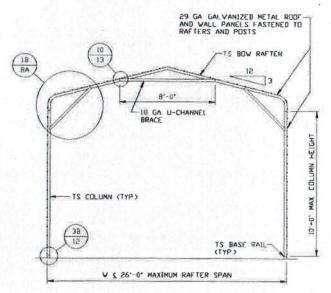
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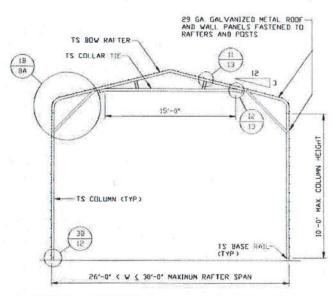
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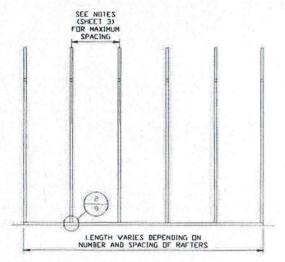
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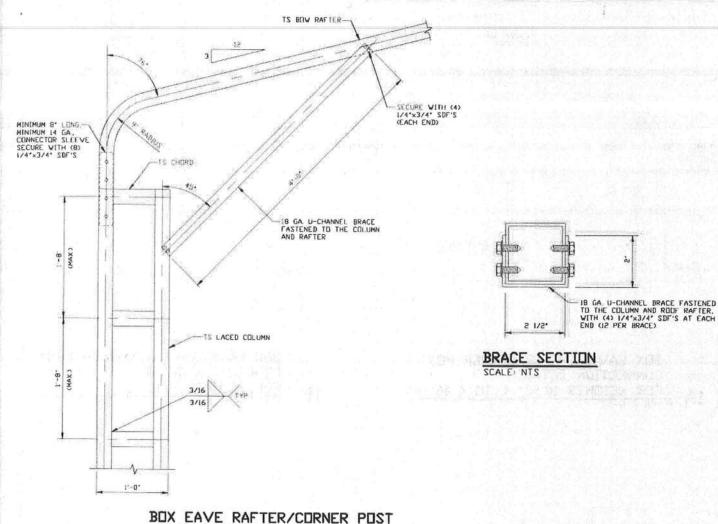
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| BE SUBJECT TO LE | VIAI APTIMA | |

| PROJECT MGR. VSM | DATE: 12-11-20 | SCALE, NTS | JOB NO 180685/18156 | | |
|------------------|--|----------------|---------------------|--|--|
| CHECKED BY: PDH | MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE | | | | |
| DRAWN BY: LT | | P.O. BOX 1287, | | | |

PROJECT MGR: VSM DATE: 12-11-20 SCALE: NTS 18290S/20019S/20324S

CLIENT: SBSI SHT. 7B DVG. ND: SK-3 REV.: 9



CONNECTION DETAIL FOR HEIGHTS 16'-0' < TO < 20'-0" SCALE: NTS



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| ENGINEERING AND THERVISE USE OF | P |

DRAWN BY LT

CLIENTI SEST

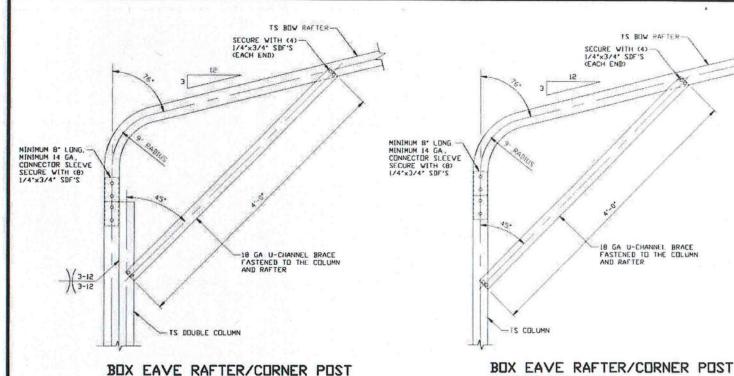
| į | STEEL BUILDINGS AND STRUCTURES, INC |
|---|-------------------------------------|
| | P.O. BOX 1287, |
| | MOUNT AIRY, NC 27030 |

HECKED BY: PDH 30'-0"x20'-0" ENCLOSED STRUCTURE ROJECT MGR: WSM

JOB NO 18068\$/18156\$ 18290\$/20019\$/20324\$

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SHT. 8 DWG. NDI SK-3



BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL

FOR HEIGHTS 10'-0" < TO < 16'-0"

SCALE NTS

18 GA U-CHANNEL BRACE FASTENED
10 THE COLUMN AND RODE RAFTER.
WITH (4) 1/4'×3/4' SAF'S AT EACH
END (8) PER BRACE)

BRACE SECTION
SCALE: NTS



CONNECTION DETAIL

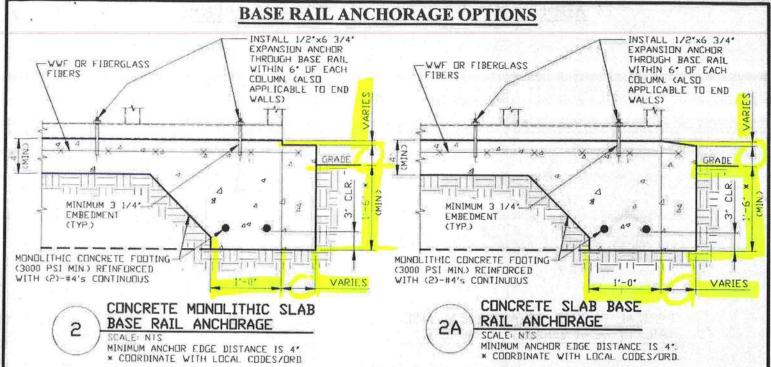
1B

FOR HEIGHTS ≤ 10'-0"

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|---|------------------|--|-------------|----|---------------------------------------|--|
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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 REINFURCING STEEL SHALL BE ASTM A615 GRADE 60. THE SLAB REINFURCEMENT SHALL BE WELDED WIRE FABRIC MEETING ASTM A185 OR FIBERGLASS FIBER REINFURCEMENT.

REINFORCEMENT MAY BE BENT IN THE SHOP OR THE FIELD PROVIDED

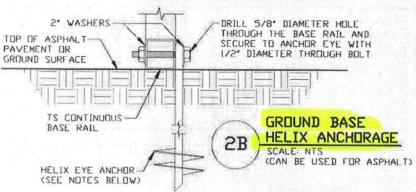
REINFORCEMENT IS BENT COLD

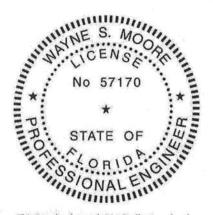
THE DIAMETER OF THE BEND, MEASURED ON THE INSIDE OF THE BAR, IS NOT LESS THAN SIX-BAR DIAMETERS

REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT.

HELIX ANCHOR NOTES

- FOR VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND CUBBLES, CALICHE, PRELDADED 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.





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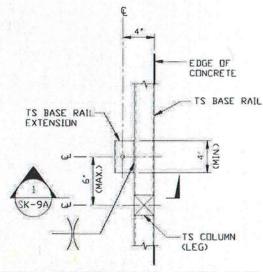
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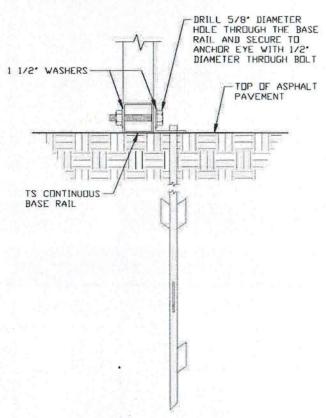
STEEL BUILDINGS AND STRUCTURES, INC. P.O. BOX 1287, DRAWN BY: LT MOUNT AIRY, NC 27030 CHECKED BY: PDH 30'-0"x20'-0" ENCLOSED STRUCTURE JOB NO 18068\$/19156\$ 18290\$/20019\$/20324\$ PROJECT MGR: WSM DATE: 12-11-20 SCALE NTS SHT. 9 DWG. NO SK-3

ADDITIONAL BASE RAIL ANCHORAGE OPTION

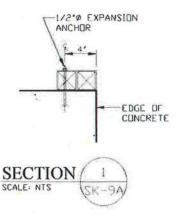


TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

SCALE: NTS









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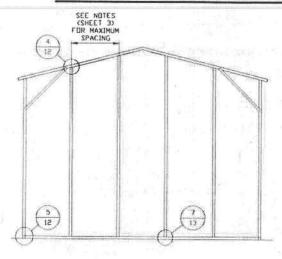
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| DRAWN BY: LT | STEEL BU | STEEL BUILDINGS AND STRUCTURES, INC. P.O. BOX 1287, | | |

PRIJECT MGR: VSM DATE: 12-11-20 SCALE: NTS | 182905/200195/2032

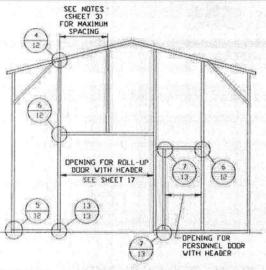
CLIENT: SBSI SHT. 9A DVG. ND: SK-3 REV.: 9

BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



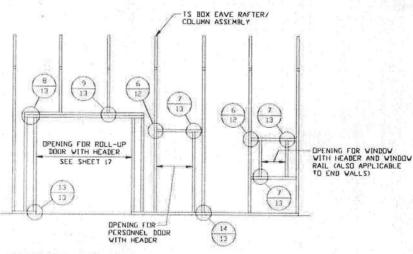
TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS



TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS



TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

SCALE: NTS



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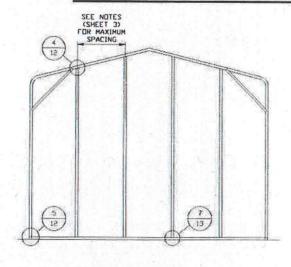
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| CHECKED BY: PDH | MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE | | | |
| DRAWN BY: LT | STEEL BU | STEEL BUILDINGS AND STRUCTURES, INC. P.O. BOX 1287, | | |

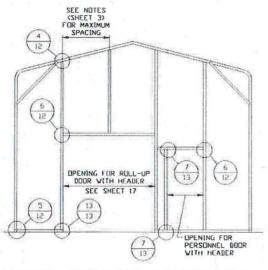
TENT. CDCT SHT. 10 THUR. NO. SK-3

BOW EAVE RAFTER END WALL AND SIDE WALL OPENINGS



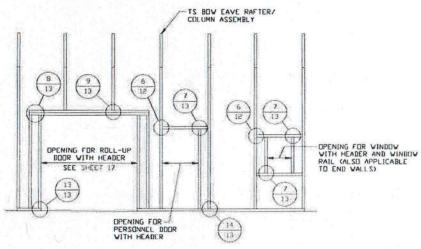
TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

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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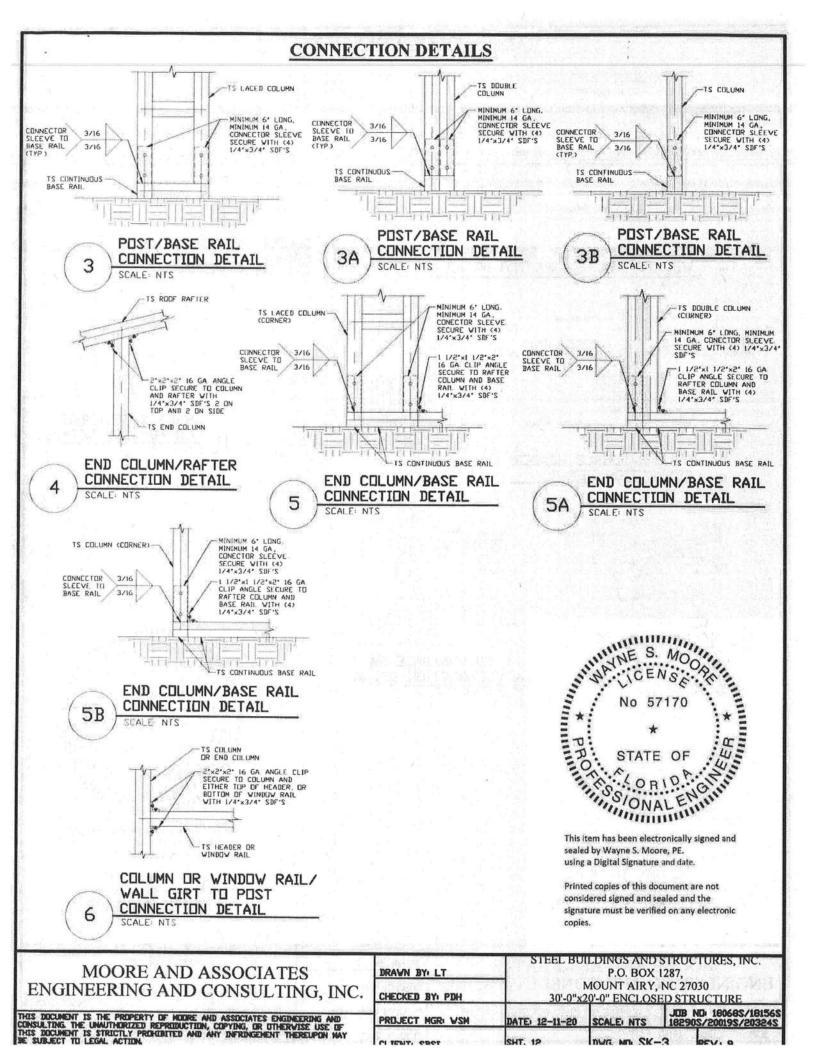
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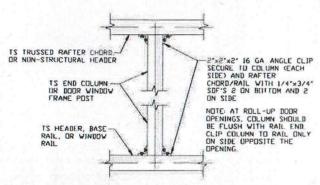
| | JUB ND: 18069S/19156 | | |
|-----------------|--|--|--|
| CHECKED BY: PDH | MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE | | |
| DRAWN BY: LT | P.O. BOX 1287, | | |
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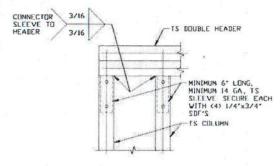
PRIJECT MGR: WSM DATE: 12-11-20 SCALE: NTS 18290S/20019S/20324S

CLIENT: SBSI SHT. 11 DWG. ND: SK-3 REV.: 9



CONNECTION DETAILS



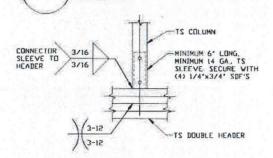


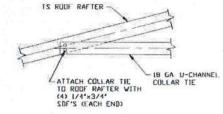
COLUMN TO HEADER, BASE RAIL, OR WINDOW RAIL CONNECTION DETAIL

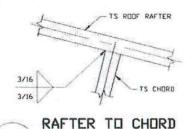
DOUBLE HEADER/COLUMN CONNECTION DETAIL SCALE: NTS

11

SCALE







CONNECTION DETAIL

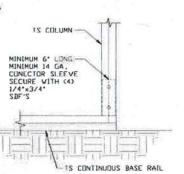
COLUMN/DOUBLE HEADER CONNECTION DETAIL

TS ROOF RAFTER

10

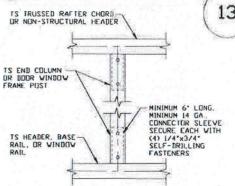
9 SCALE: NTS TS CULLAR TIE





COLLAR TIE CONNECTION DETAIL 12

COLUMN/BASE RAIL CONNECTION DETAIL 13 SCALE: NTS





COLUMN TO HEADER OR BASE RAIL CONNECTION DETAIL

14

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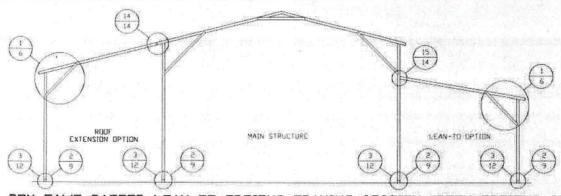
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JOB NO: 180685/181565 SCALE: NTS PROJECT MGR: WSM DATE: 12-11-20 18290\$/20019\$/20324\$ SHT. 13 DWG. NO SK-3 REV. 9 CLIENT: SBSI

BOX EAVE RAFTER LEAN-TO OPTIONS



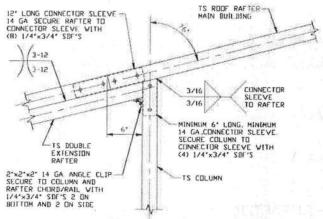
TYPICAL BOX EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION (BOTH OPTIONS SHOWN)

SCALE: NTS SCALE: NIS

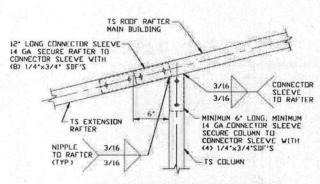
MAXIMUM WIDTH OF SINGLE TS ROOF EXTENSION LEAN-TO IS 12'-0'.

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

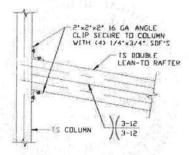
MAXIMUM SINGLE COLUMN HEIGHT FOR MAIN BUILDING WITH ROOF EXTENSION LEAN-TO ATTACHED IS 8'-0':
FOR COLUMN CONFIGURATIONS REFERENCE RAFTER COLUMN CONNECTION DETAILS.



SIDE EXTENSION RAFTER/ COLUMN DETAIL FOR RAFTER SPANS 12'-0" < T□ < 16'-0"



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



14

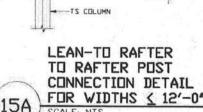
15

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

SCALE: NTS

CLIP SECURE TO COLUMN WITH (4) 1/4'x3/4' SDF' TS LEAN-TO TS COLUMN

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





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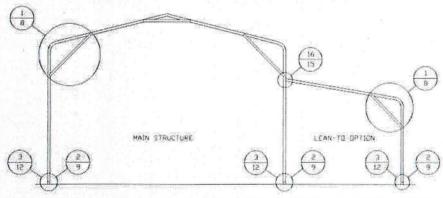
MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE

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PROJECT MGR: WSM

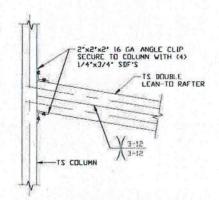
JOB NO 180685/181565 182905/200195/203245

BOW EAVE RAFTER LEAN-TO OPTIONS



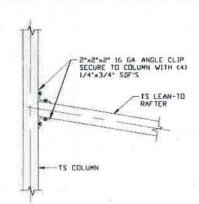
TYPICAL BOW EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION

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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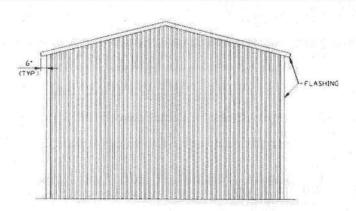
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P.O. BOX 1287,
MOUNT AIRY, NC 27030
CHECKED BY PDH 30'-0" ENCLOSED STRUCTURE

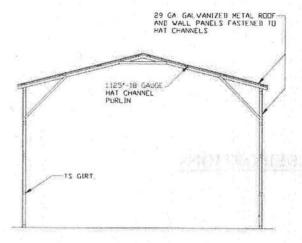
PROJECT MGR: VSM DATE: 12-11-20 SCALE: NTS 182905/200195/203245

CLIENT: SBSI SHT. 15 DVG. ND: SK-3 REV.: 9

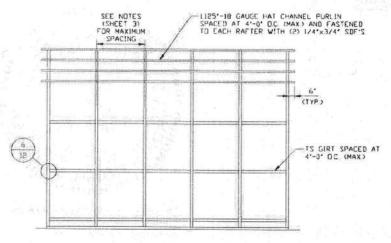
BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



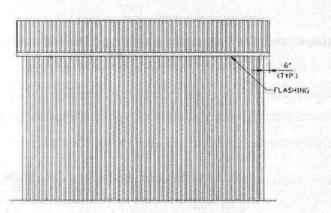
TYPICAL END ELEVATION VERTICAL ROOF/SIDING



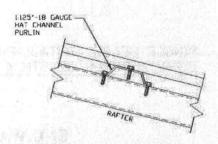
TYPICAL SECTION VERTICAL ROOF/SIDING OPTION



TYPICAL FRAMING SECTION VERTICAL ROOF/SIDING OPTION SCALE: NTS



TYPICAL SIDE ELEVATION VERTICAL ROOF/SIDING



PANEL ATTACHMENT

(ALTERNATE FOR VERTICAL ROOF PANELS) SCALE NTS



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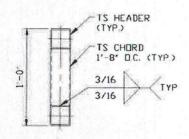
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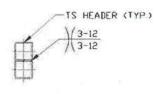
DRAWN BY LT CHECKED BY: PDH STEEL BUILDINGS AND STRUCTURES, INC. P.O. BOX 1287, MOUNT AIRY, NC 27030

30'-0"x20'-0" ENCLOSED STRUCTURE PROJECT MGR: WSM DATE: 12-11-20

JUB NO 18068\$/18156\$ 18290\$/20019\$/20324\$

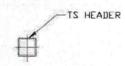
SIDE WALL HEADER OPTIONS





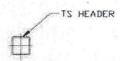
LACED HEADER DETAIL FOR DOOR OPENINGS 12'-0' < LENGTH \(\leq \) 20'-0' SCALE: NTS

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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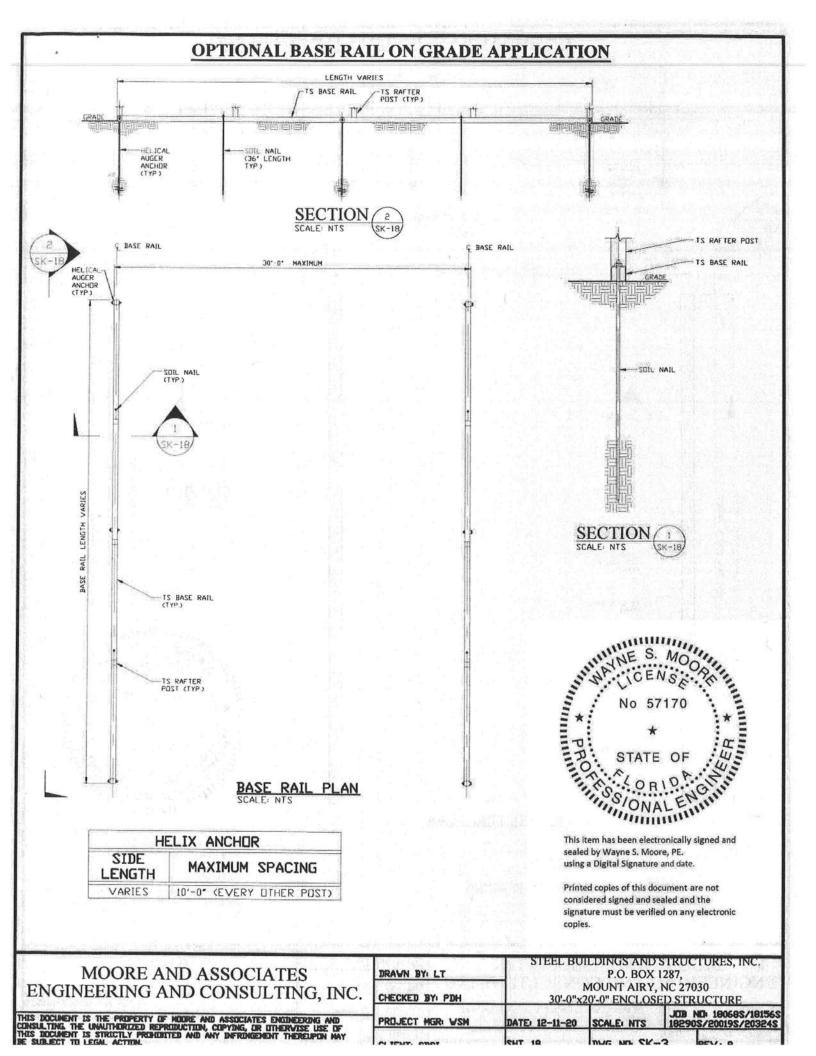
| ENGINEERING AND CONSULTING, INC. | CHECKED BY: PDH | |
|--|-----------------|--|
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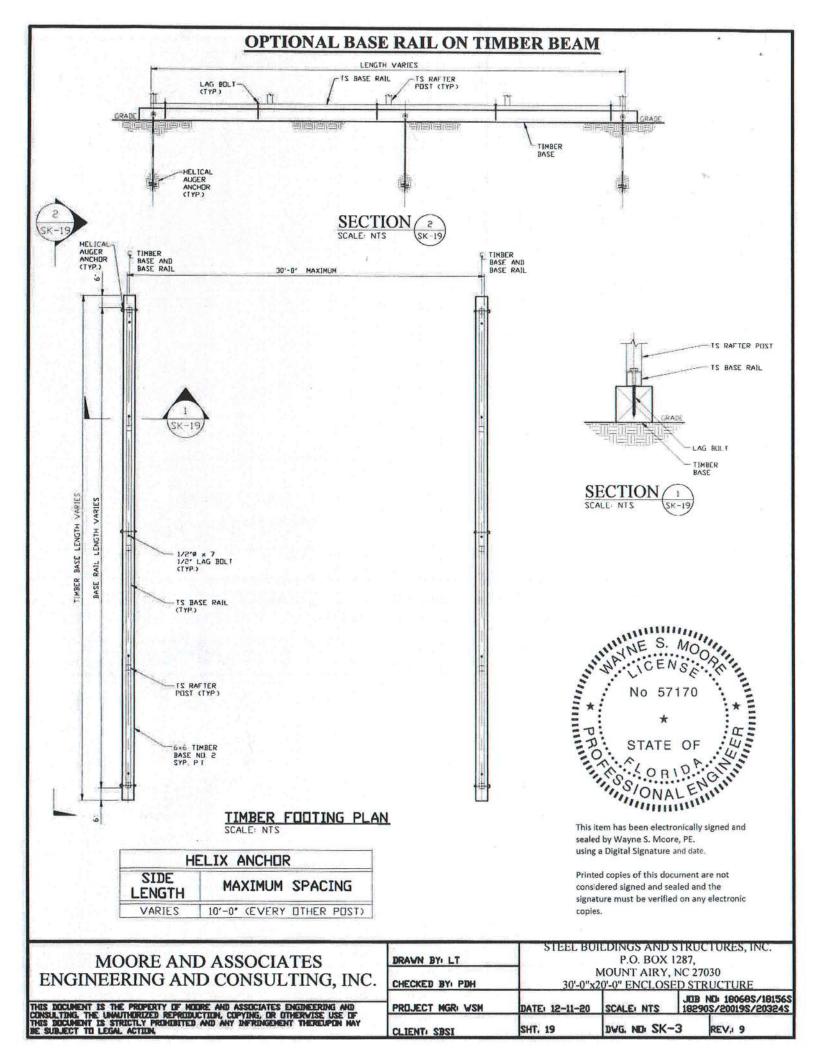
DRAWN BY LT

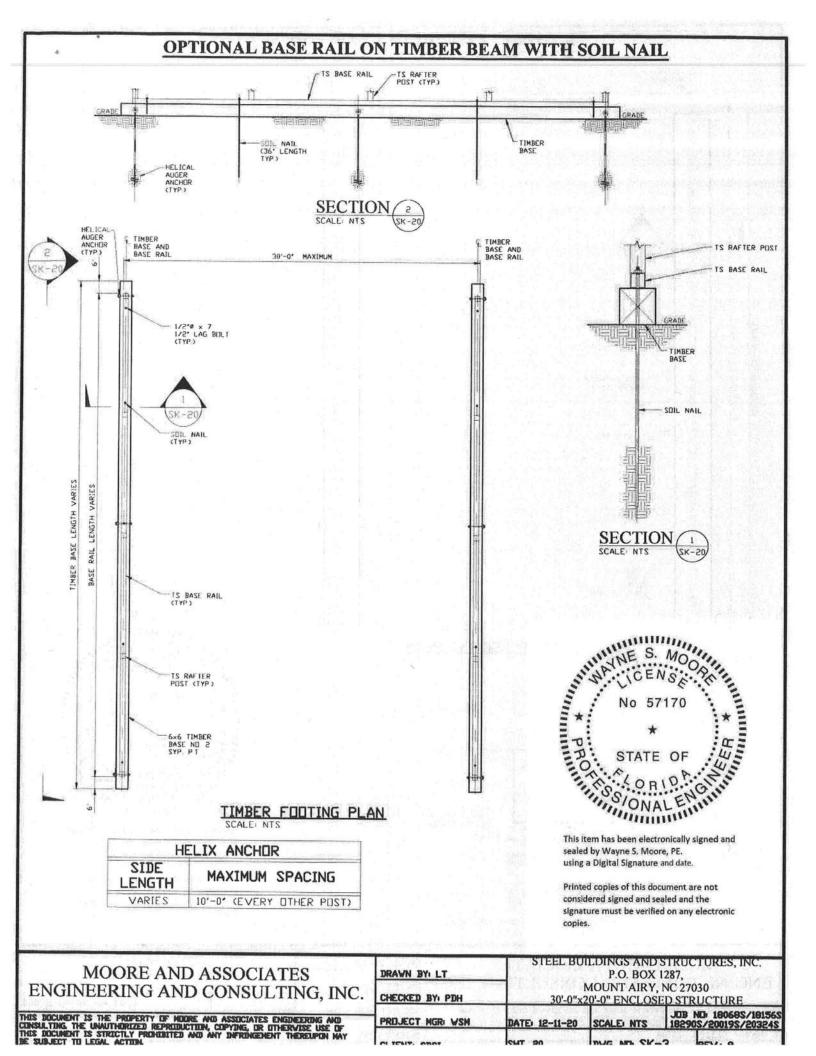
STEEL BUILDINGS AND STRUCTURES, INC.
P.O. BOX 1287,
MOUNT AIRY, NC 27030
30'-0"x20'-0" ENCLOSED STRUCTURE

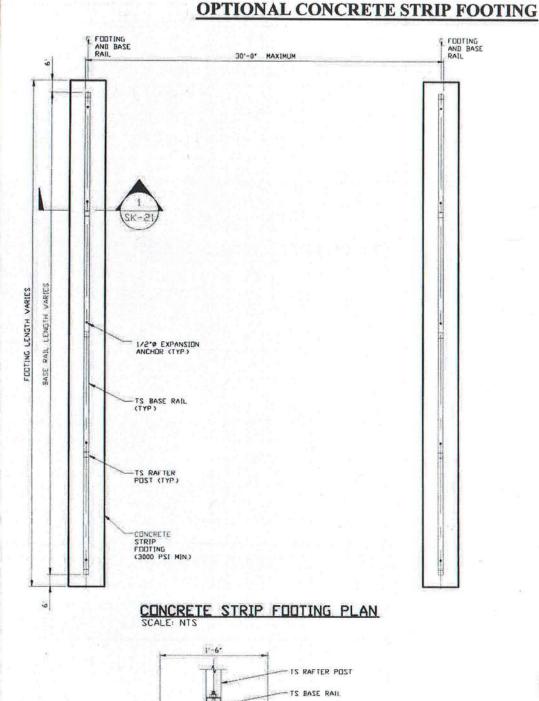
PROJECT MGR: WSM DATE: 12-11-20 SCALE: NTS 18290\$/20019\$/20324\$

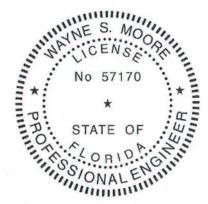
CLIENT: SBSI SHT. 17 DVG. ND: SK-3 REV. 9











This item has been electronically signed and sealed by Wayne S. Moore, PE. using a Digital Signature and date.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic

2-#4, CONT TER INSTALL 1/2'x6 3/4' EXPANSION ANCHOR THROUGH BASE RAIL WITHIN 6' OF EACH COLUMN MINIMUM 3 1/4' EMBEDMENT (TYP) S. CFE 1

SECTION SCALE: NTS SK-21,

* COORDINATE WITH LOCAL CODES/ORD

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* 9-CMIN

CLR

STEEL BUILDINGS AND STRUCTURES, INC. P.O. BOX 1287, DRAWN BY: LT MOUNT AIRY, NC 27030 CHECKED BY: PDH 30'-0"x20'-0" ENCLOSED STRUCTURE

JOB NO 18068\$/18156\$ 18290\$/20019\$/20324\$ PROJECT MGRI WSM DATE: 12-11-20 SCALE: NTS SHT. 21 DVG. NO SK-3 REV. 9 CLIENTI SBSI