

## STRUCTURAL DESIGN ENCLOSED BUILDING

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

14 February 2020 Revision 8 M&A Project No. 16062S/16155S/16207S/17155S/17200S/18068S/18156S/18290S/20019S

Prepared for:

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

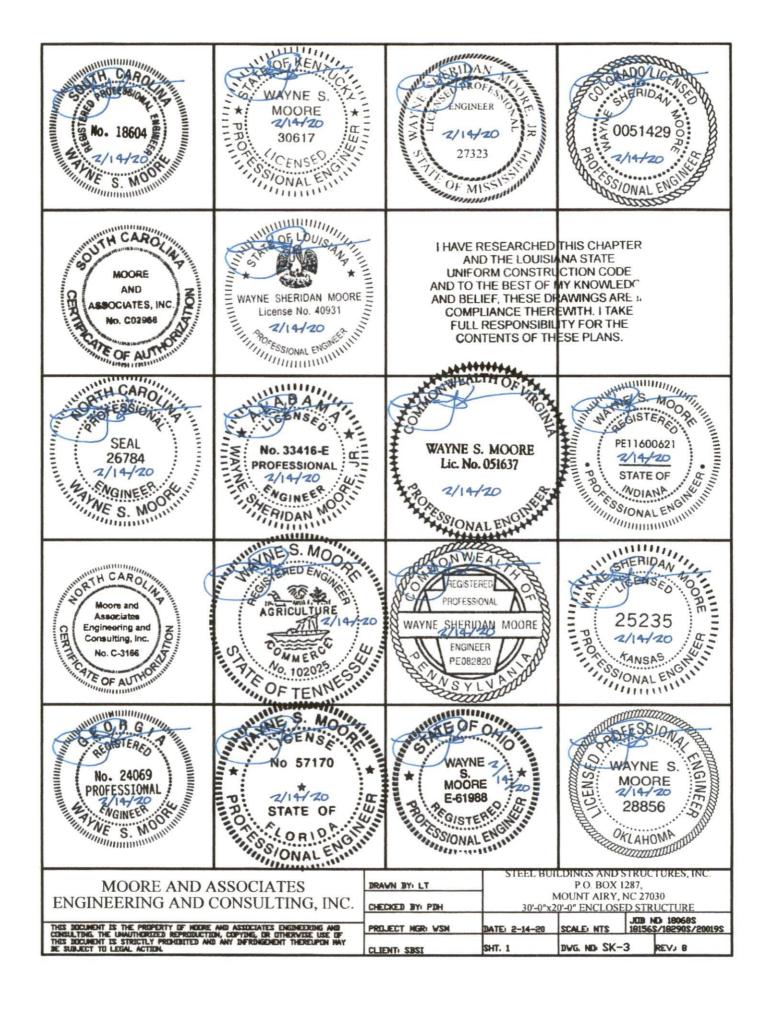
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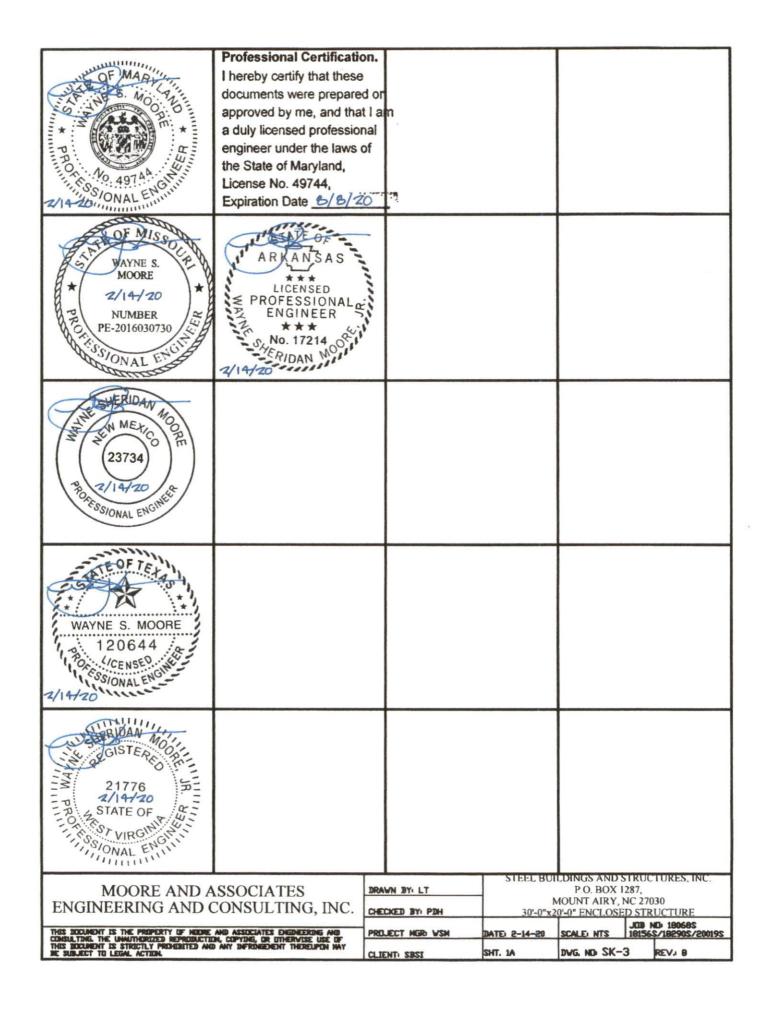
Moore and Associates Engineering and Consulting, Inc.

1009 East Avenue North Augusta, SC 29841

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







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#### INSTALLATION NOTES AND SPECIFICATIONS

- 1 DESIGN IS FOR MAXIMUM 30'-0' WIDE x 20'-0' EAVE HEIGHT ENCLOSED STRUCTURES
- 2 DESIGN WAS DONE IN ACCORDANCE WITH THE 2017 FLORIDA BUILDING CODE (FBC) 6TH EDITION, 2018 NORTH CAROLINA BUILDING CODE, 2006 INTERNATIONAL BUILDING CODE (IBC), 2009 IBC, 2012 IBC, 2015 IBC AND 2018 IBC
- 3. DESIGN LOADS ARE AS FOLLOWS:

A) DEAD LOAD = 1.5 PSF

B) LIVE LOAD = 12 PSF

C) GROUND SNOW LOAD = 30 PSF (< 26'-0"), 35 PSF (26'-0" ( W ( 30'-0")

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

- 4 3-SECOND GUST ULTIMATE WIND SPEED (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 OTHERWISE).
- 10 AVERAGE FASTENER SPACING DN-CENTERS ALDING RAFTERS DR HAT CHANNELS, AND COLUMNS (INTERIOR DR 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 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 FURCES GOVERN OVER SEISMIC FORCES SEISMIC PARAMETERS ANALYZED ARE:

SDIL SITE CLASS = D RISK CATEGORY I

R= 325

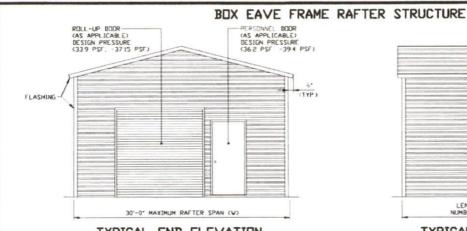
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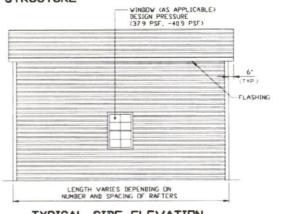
I<sub>E</sub>= 10 V= C<sub>5</sub>W

Sm= 1258 g

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

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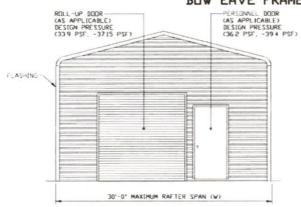
#### TYPICAL END ELEVATION

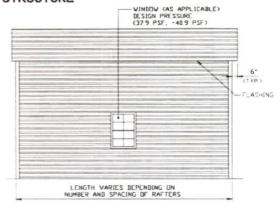
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#### TYPICAL SIDE ELEVATION

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#### BOW EAVE FRAME RAFTER STRUCTURE





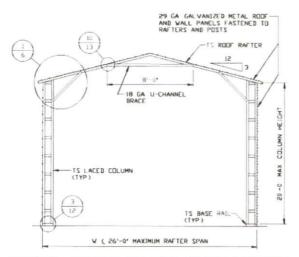
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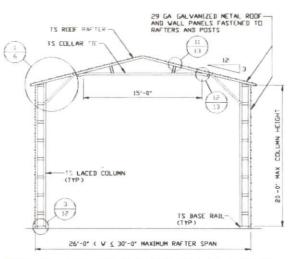
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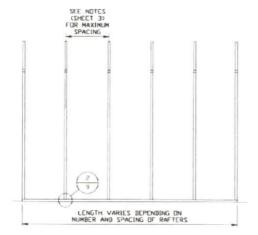
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## TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

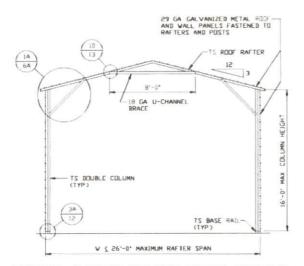


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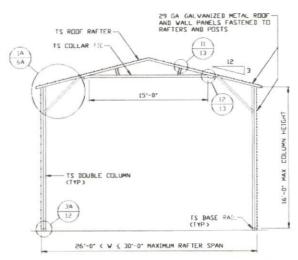


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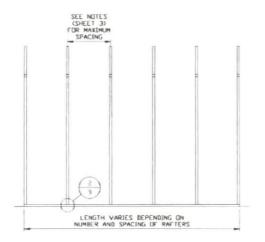
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TYPICAL RAFTER/COLUMN FRAME SECTION
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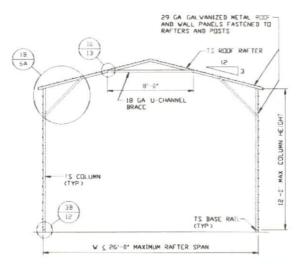


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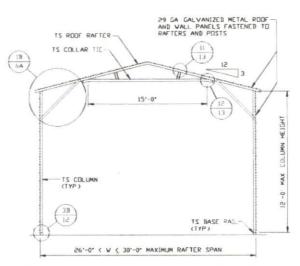
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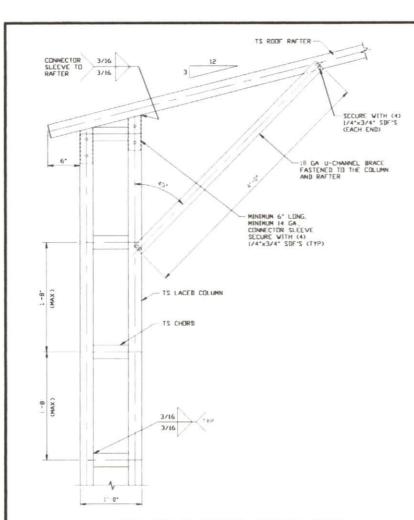
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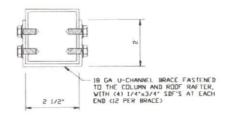
SEE NOTES (SHEET 3) FOR MAXIMUM SPACING LENGTH VARIES DEPENDING ON NUMBER AND SPACING OF RAFTERS

#### TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

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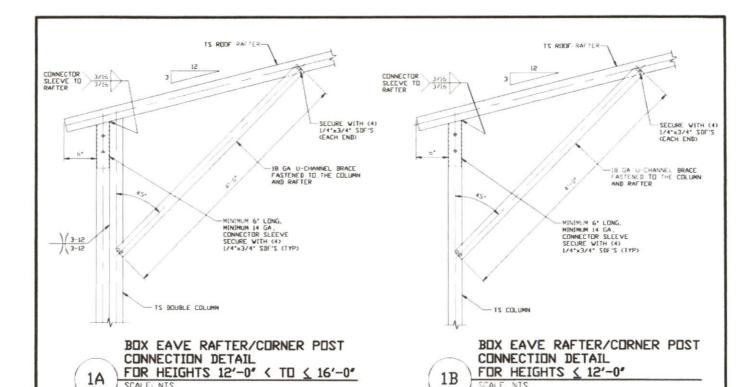
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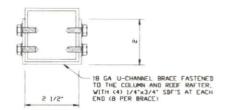
BOX EAVE RAFTER/CORNER POST CONNECTION DETAIL FOR HEIGHTS 16'-0" < TO ≤ 20'-0" 1 SCALE: NTS

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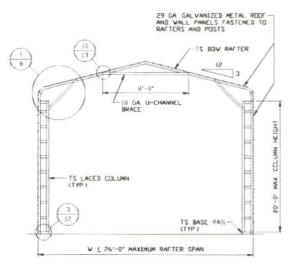
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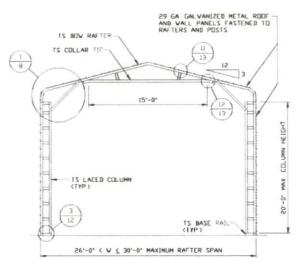


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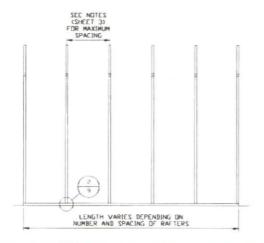
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## TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

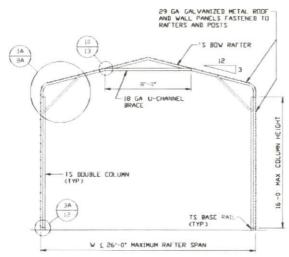


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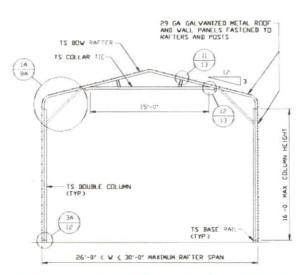


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS

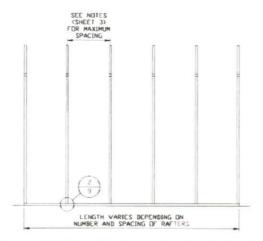
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TYPICAL RAFTER/COLUMN FRAME SECTION
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TYPICAL RAFTER/COLUMN FRAME SECTION

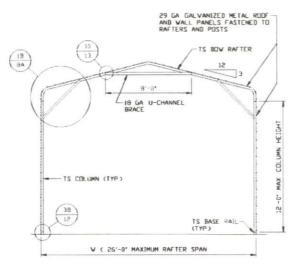


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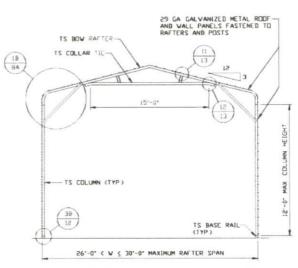
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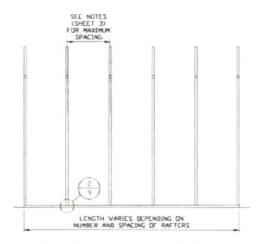
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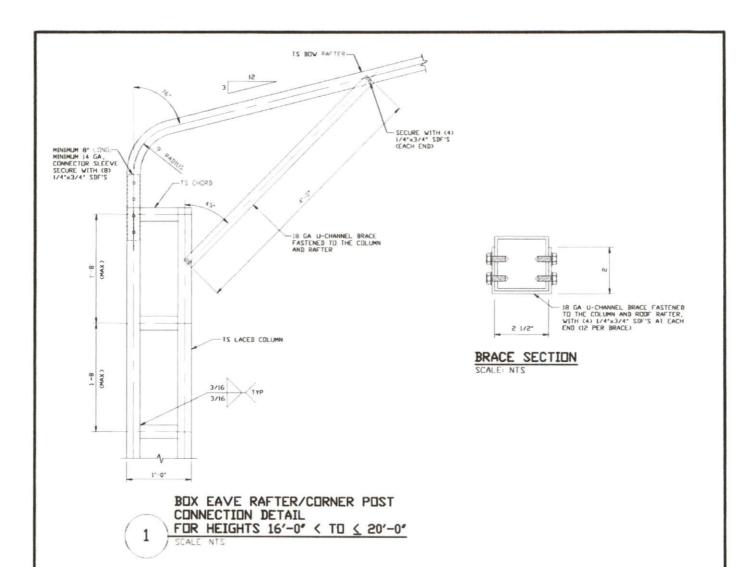


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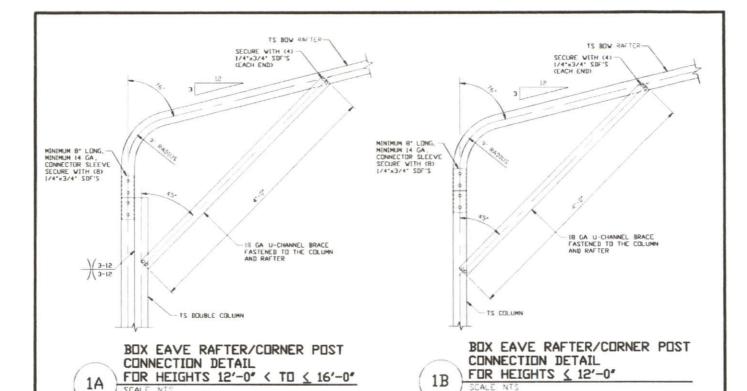


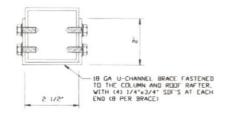
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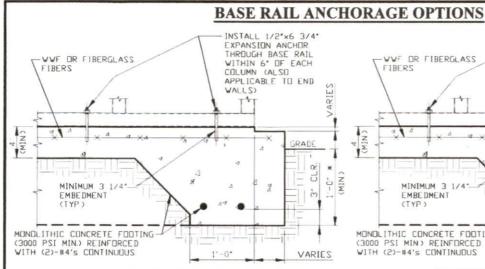
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CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE 2

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

#### **GENERAL NOTES**

NOTE: CONCRETE MONDLITHIC SLAB DESIGN BASED ON MINIMUM SOIL BEARING CAPACITY OF 1,500 PSF

#### CONCRETE

CONCRETE SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH DF 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 I 1/2" ELSEWHERE

#### REINFORCING STEEL

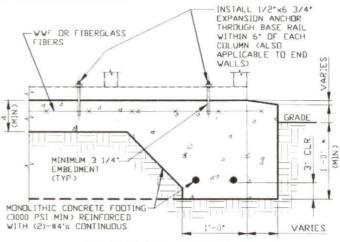
THE TURNDOWN REINFORCING STEEL SHALL BE ASTM A615 GRADE 60 THE SLAB REINFORCEMENT SHALL BE WELDED WIRE FABRIC MEETING ASTM A185 OR FIBERGLASS FIBER REINFORCEMENT

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

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

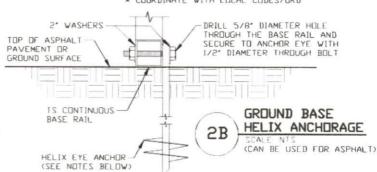
#### HELIX ANCHOR NOTES:

- FOR VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND COBBLES, CALICHE, PRELOADED SILTS AND CLAYS, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT OR SINGLE 6' HELIX WITH MINIMUM 50' EMBEDMENT
- 2 FOR CORAL USE MINIMUM (2) 4' HELICES WITH MINIMUM 30' EMBEDMENT OR SINGLE 6' HELIX WITH MINIMUM 50' EMBEDMENT
- 3 FOR MEDIUM DENSE COARSE SANDS, SANDY GRAVELS, VERY STIFF SILTS, AND CLAYS USE MINIMUM (2) 4" HELICES WITH MINIMUM 30 INCH EMBEDMENT OR SINGLE 6" HELIX WITH MINIMUM 50' EMBEDMENT
- 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

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

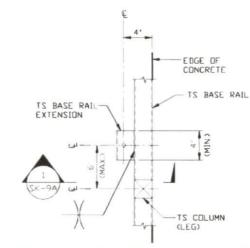


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ENGINEERING AND CONSULTING, IN	C.

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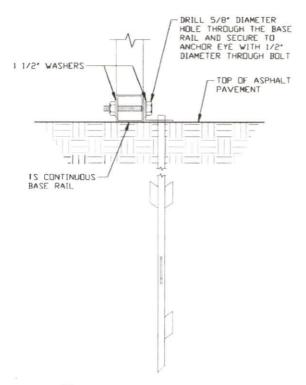
DRAWN BY: LT	-	ILDINGS AND STRUCTURES, INC. P.O. BOX 1287, MOUNT AIRY, NC 27030 20'-0" ENCLOSED STRUCTURE			
PROJECT MGR: VSM	DATE: 2-14-20	SCALE: NTS	JOB	ND 18068S S/18290S/20019S	
CLIENT: SBSI	SHT. 9	DVG. ND SK-	-3	REV. 8	

#### ADDITIONAL BASE RAIL ANCHORAGE OPTION



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

SCALE: NTS



MOORE AND ASSOCIATES

SCALE: NTS

ASPHALT BASE ANCHURAGE

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PROJECT MGR: VSM	DATE: 2-14-20	SCALE: NTS	JUB ND 18068\$ 18156\$/18290\$/20019\$
CHECKED BY: PDH	0.777777777	MOUNT AIRY, 20'-0" ENCLOS	, NC 27030 ED STRUCTURE
DRAWN BY: LT	STEEL BO	P.O. BOX	1287,

DWG. ND SK-3

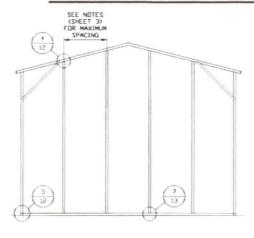
REV. 8

SHT. 9A

CLIENT: SBSI

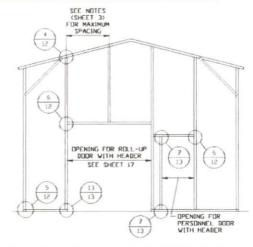
ANCH	Ø EXPANSION HOR
- 1	EDGE OF CONCRETE
SECTION SCALE: NTS	(SK-9A)

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



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

SCALE: NTS

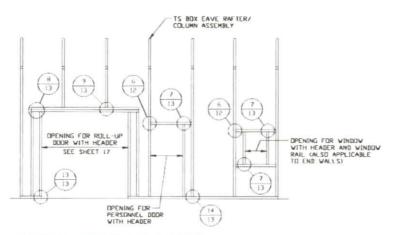


#### TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

STRUCTURES, INC.

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

SCALE: NTS

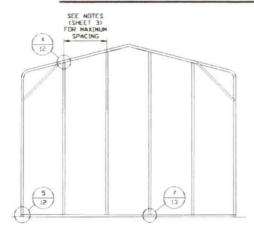


#### TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

SCALE: NTS

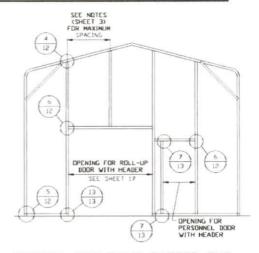
	THIS BOUNENT IS STRICTLY PROMORTED AND ANY DIFRINGEMENT THEREUPON MAY BE SUBJECT TO LEGAL ACTION.	CLIENT: SBSI	SHT. 10	DVG. ND SK-	3	REV. 8
	THIS DOCUMENT IS THE PROPERTY OF NOORE AND ASSOCIATES ENGINEERING AND CONSULTING. THE UMAINTORIZED REPRODUCTION, COPYING, OR OTHERWISE USE OF	PROJECT HGR: VSH	DATE: 2-14-20	SCALE: NTS		289081 (D)
	ENCINEEDING AND CONCULTING INC	CHECKED BY: PDH	AND SALES OF SALES	OUNT AIRY, 1 0'-0" ENCLOSE		
١	MOORE AND ASSOCIATES	DRAWN BY: LT	STEEL BUIL	P.O. BOX 1		URES, IN

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



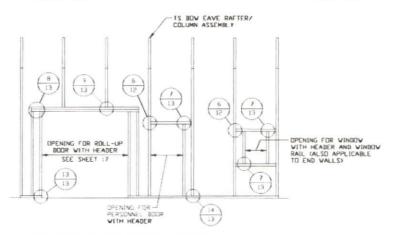
## TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS



## TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

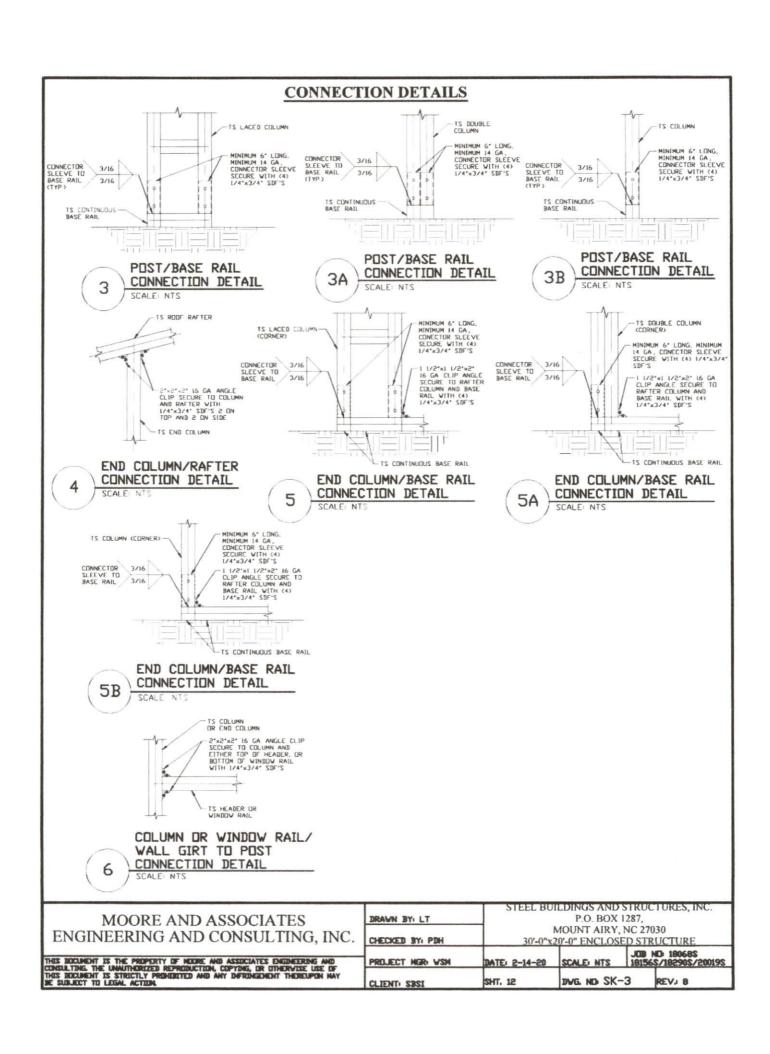
SCALE: NTS

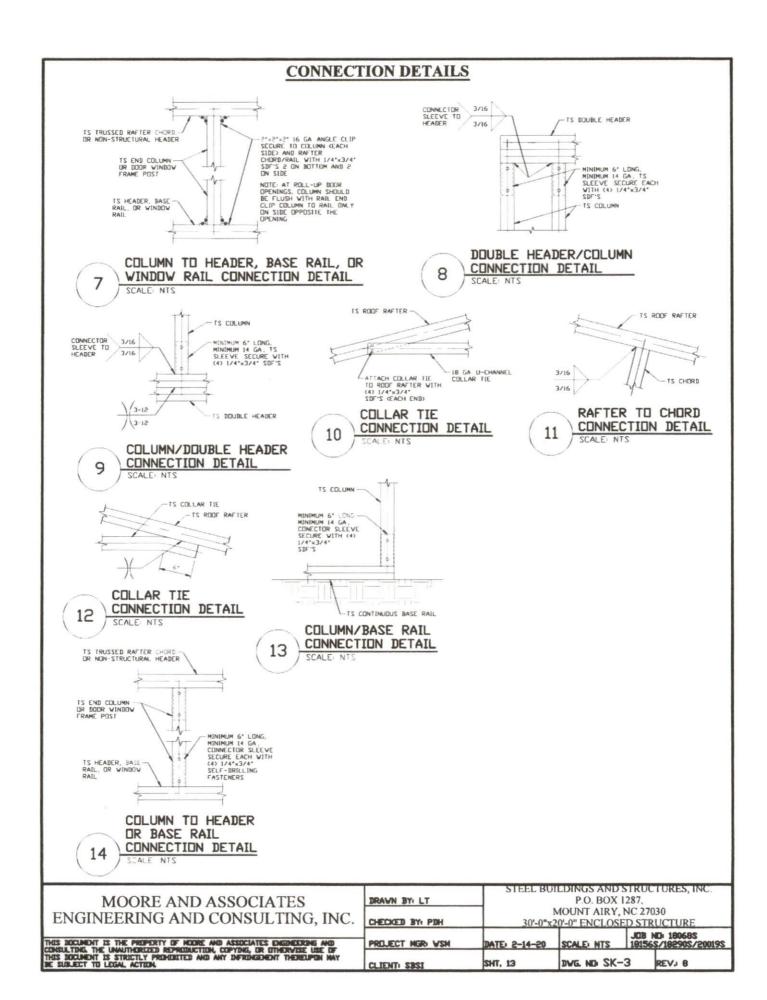


## TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

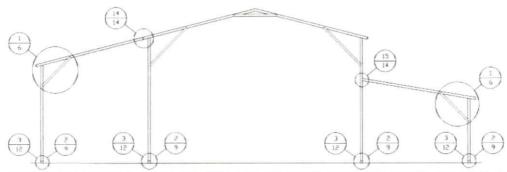
SCALE: NTS

MOORE AND ASSOCIATES	DRAWN BY: LT	STEEL BUI	TRUCTURES, INC. 287,	
ENGINEEDING AND CONCULTING INC	CHECKED BY: PDH	MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCTURE		
OS BUCLHENT IS THE PROPERTY OF HOORE AND ASSOCIATES ENGINEERING AND	PROJECT HGR: VSH	DATE: 2-14-20	SCALE: NTS	JUB ND: 180685 201005/206501/295181
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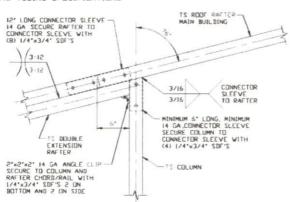
#### BOX EAVE RAFTER LEAN-TO OPTIONS



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

SCALE: NTS

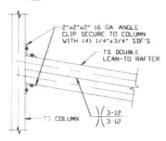
MAXIMUM WIDTH OF SINGLE MEMBER (RAFTER) ROOF EXTENSION LEAN-TO IS 12'-0'
MAXIMUM WIDTH OF DOUBLE MEMBER RAFTER ROOF EXTENSION LEAN-TO IS 16'-0'
MAXIMUM WIDTH OF DOUBLE MEMBER RAFTER ROOF EXTENSION LEAN-TO IS 16'-0'
MAXIMUM WIDTH OF DOUBLE MEMBER RAFTER ROOF EXTENSION LEAN-TO IS 16'-0'
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MAXIMUM WIDTH OF SINGLE MEMBER RAF



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

TS ROOF RAFTER MAIN BUILDING L2" LONG CONNECTOR SLEEVE 14 GA SECURE RAFTER TO CONNECTOR SLEEVE WITH (8) 1/4"x3/4" SDF'S 3/16 SLEEVE TO RAFTER 3716 MINIMUM 6" LONG, MINIMUM 14 GA CONNECTOR SLEEVE SECURE COLUMN TO CONNECTOR SLEEVE WITH (4) 1/4"x3/4"SDF"S TS EXTENSION RAFTER NIPPLE 3/16 TO RAFTER (TYP) 3/16 TS COLUMN 3/16

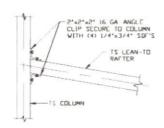
> SIDE EXTENSION RAFTER/ COLUMN DETAIL FOR RAFTER SPANS ≤ 12'-0' 14A



LEAN-TO RAFTER TO RAFTER POST CONNECTION DETAIL FOR WIDTHS

12'-0" < T□ ≤ 16'-0" SCALE: NTS

15



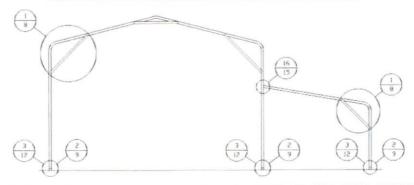
LEAN-TO RAFTER TO RAFTER POST CONNECTION DETAIL FOR WIDTHS ≤ 12'-0' 15A

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PROJECT MGR: VSM CLIENT: SBSI	DATE: 2-14-20 SHT. 14	SCALE: NTS BVG. ND: SK-	JEIB N 18156	ID 180685 \$/18290\$/20019\$ REV. 8		

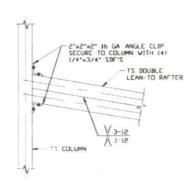
#### **BOW EAVE RAFTER LEAN-TO OPTIONS**



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

SCALE: NTS SCALE: NIS

MAXIMUM VIDTH OF SINGLE MEMBER (RAFTER) ROOF EXTENSION LEAN-TO IS 12'-0'
MAXIMUM WIDTH OF DOUBLE MEMBER RAFTER ROOF EXTENSION LEAN-TO IS 16'-0'.
FOR SHARED COLUMN HEIGHTS REFERENCE RAFTER COLUMN CONNECTION DETAILS FOR APPROPRIATE COLUMN HEIGHT AND TUBING SPECIFICATIONS.



LEAN-TO RAFTER TO RAFTER POST CONNECTION DETAIL FOR WIDTHS 12'-0' < T□ ≤ 16'-0'

-2"x2"x2" 16 GA ANGLE CLIP SECURE TO COLUMN WITH (4) 1/4"x3/4" SDF'S TS LEAN-TO TS COLUMN

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

CLIENT: SBSI

16A

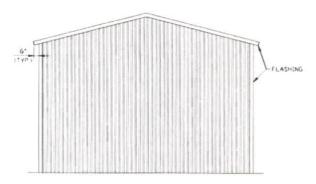
16 SCALE: NTS

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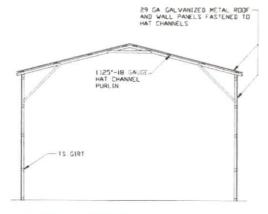
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-	PROJECT HGR: VSH	DATE: 2-14-20	SCALE NTS	JOB ND 18068S		
	CLIENT, SRSI	SHT. 15	DVG. ND SK-3		REV. 8	

#### **BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION**

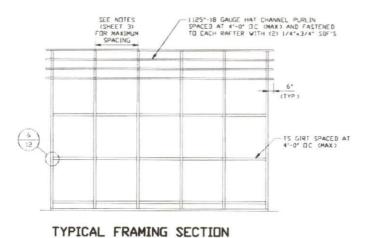


#### TYPICAL END ELEVATION VERTICAL ROOF/SIDING SCALE: NTS



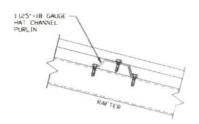
#### TYPICAL SECTION VERTICAL ROOF/SIDING OPTION

SCALE: NTS



# (TYP) -FLASHING

#### TYPICAL SIDE ELEVATION VERTICAL ROOF/SIDING



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

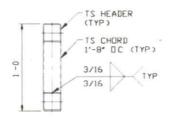
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ENGINEERING AND CONSULTING, IN	IC
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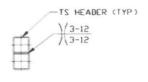
VERTICAL ROOF/SIDING OPTION

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					ERVISE USE OF
			ED AND ANY	INFRINCEDIENT	THEREUPTEN HAY
BE SUBJECT	TO LEGAL	ACTION			West-1111-2 St. W. S. G. P. M.

r	DRAWN BY: LT CHECKED BY: PDH	P.O. BOX 1287,  MOUNT AIRY, NC 27030 30'-0"x20'-0" ENCLOSED STRUCT			
T	PRILJECT HIGH: WSM CLIENT: SBSI	DATE: 2-14-20 SHT. 16	SCALE: NTS	JUB N 18156	ID: 18068\$ \$/18290\$/20019\$ REV: 8

#### 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'

MOORE THIS ASSOCIATES	DRAWN BY: LT		P.O. BOX I MOUNT AIRY.	287,	
ENGINEERING AND CONSULTING, INC.	CHECKED BY: PDH		0'-0" ENCLOSE	DSTR	UCTURE
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