

# STRUCTURAL DESIGN

# **ENCLOSED BUILDING**

# MAXIMUM 30'- 0" WIDE X 16'- 0" HEIGHT-BOX EAVE FRAME AND BOW FRAME

12 June 2020 Revision 6 M&A Project No. 17232S/18070S/18094S/19050S/20127S

Prepared for:

Steel Building Garages 1804 River Street Wilkesboro, NC 28697

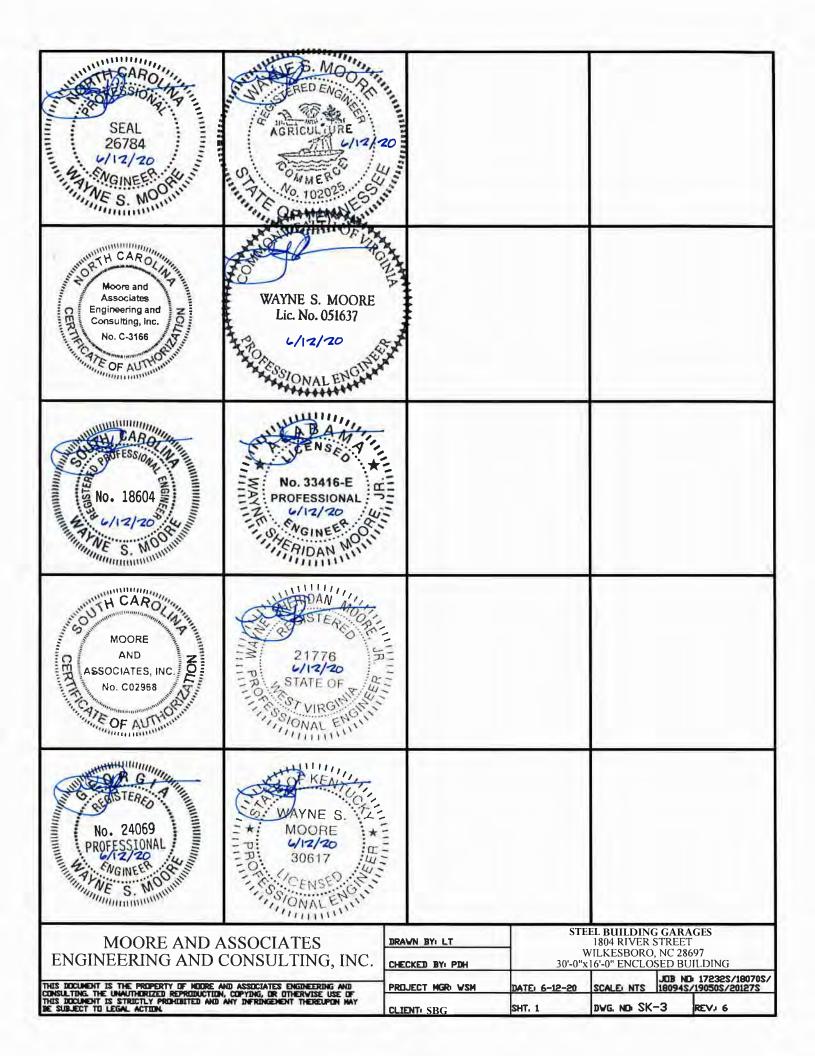
Prepared by:

Moore and Associates Engineering and Consulting, Inc.

1009 East Avenue North Augusta, SC 29841

401 S. Main Street, Suite 200 Mount Airy, NC 27030





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MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: LT	-	STEEL BUILDING GARAGES  1804 RIVER STREET  WILKESBORO, NC 28697  30'-0"×16'-0" ENCLOSED BUILDING				
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#### INSTALLATION NOTES AND SPECIFICATIONS

- 1 DESIGN IS FOR MAXIMUM 30'-0" WIDE x 15'-0" EAVE HEIGHT ENCLOSED STRUCTURES
- 2 DESIGN WAS DONE IN ACCORDANCE WITH THE 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

R) LIVE LOAD = 12 PSF

C) GROUND SNOW LOAD = 35 PSF (MAXIMUM 45 PSF AT 4'-0" DC RAFTER/PDST SPACING)

= 35 PSF < TO  $\le$  45 PSF WITH TS COLLAR TIE (W  $\le$  24'-0")

= 30 PSF WITH U-CHANNEL PEAK BRACE (W < 24'-0")

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

- 4 3-SECOND GUST ULTIMATE WIND SPEED (V<sub>ULT</sub>) = 105 TO 150 MPH (NOMINAL WIND SPEED = 81 TO 116 MPH)
- 5 MAXIMUM RAFTER/POST AND END POST SPACING = 50 FEET (UNLESS NOTED OTHERWISE)
- 6 END WALL COLUMNS/POSTS ARE EQUIVALENT TO SIDE WALL COLUMNS/POSTS IN SIZE AND SPACING UNLESS NOTED OTHERWISE
- 7 RISK CATEGORY ]
- 8 WIND EXPOSURE CATEGORY B
- 9 SPECIFICATIONS APPLICABLE TO 29 GAUGE METAL PANELS FASTENED DIRECTLY TO 2 \* x 3 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) = 10' OC (MAX)
- 11 FASTENERS CONSIST OF #12-14×3/4" 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 ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL WITHIN 6' OF EACH RAFTER COLUMN ALONG SIDES
- 13 GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT x 30' LONG AND MAY ONLY BE USED IN CONJUNCTION WITH OTHER (OPTIONAL) ANCHOR DEVICES AND ONLY IN SUITABLE SOILS OPTIONAL ANCHORAGE MAY BE USED IN SUITABLE SOILS AND MUST BE USED IN UNSUITABLE SOILS AS NOTED SOIL NAILS MAY ONLY BE USED FOR WIND SPEEDS < 145 MPH COURDINATE WITH LOCAL CODES/ORDINANCES REGARDING MINIMUM LENGTH FOR FROST DEPTH PROTECTION
- 14 WIND FORCES GOVERN OVER SEISMIC FORCES SEISMIC PARAMETERS ANALYZED ARE

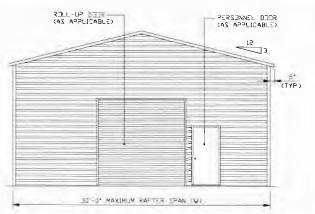
SDIL SITE CLASS = D RISK CATEGORY I

 $I_E = 10$ R= 325 S<sub>DS</sub>= 2039 9  $V = C_S W$ 

S<sub>D1</sub>= 1258 g

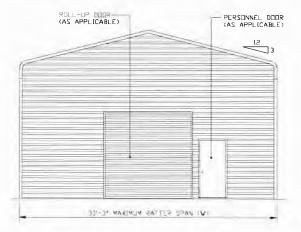
15 APPLY LAP SEALANT TO METAL ROOF PANELS FOR 192 ROOF SLOPE

MOORE AND ASSOCIATES	DRAWN BY: LT	ST	STEEL BUILDING GARAGES 1804 RIVER STREET				
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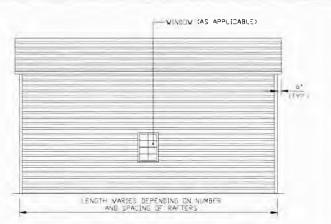


## TYPICAL END ELEVATION

SCALE: NTS

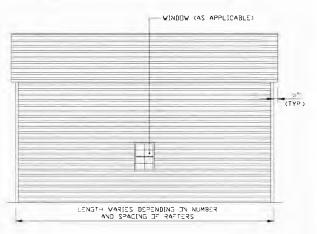


# TYPICAL END ELEVATION SCALE NTS



#### TYPICAL SIDE ELEVATION

SCALE: NTS

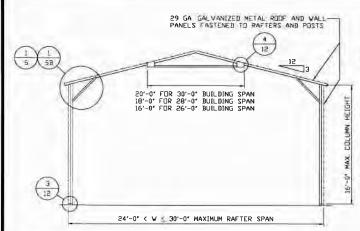


# TYPICAL SIDE ELEVATION SCALE NTS

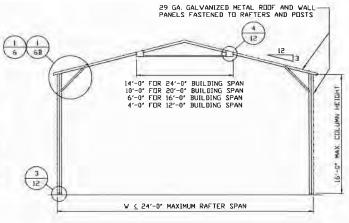
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# TYPICAL RAFTER/COLUMN END FRAME SECTION SCALE: NTS TYPICAL RAFTER/COLUMN END FRAME SECTION SCALE: NTS

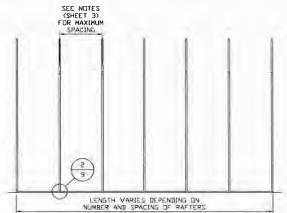


29 GA GALVANIZED METAL ROOF AND VALL
PANELS FASTENED TO RAFTERS AND POSTS

12
3

24'(MIN)-18 GA
U-CHANNEL BRACE
FASTENED TO RAFTER
WITH (2) #12-14x3/4'
SDF'S AT EACH END
(4 PER BRACE)

TYPICAL RAFTER/COLUMN END FRAME SECTION

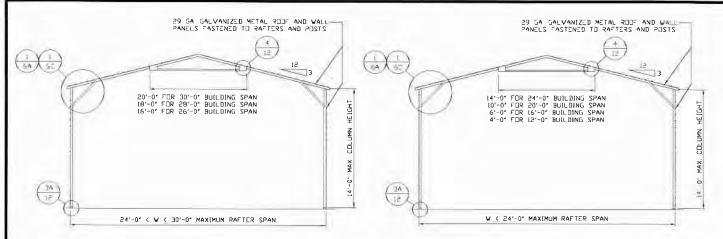


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION
SCALE: NTS

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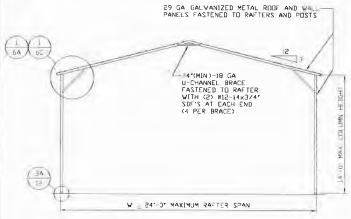
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	CHECKED BY: PDH		WILKESBORO, NC 28697 30'-0"x16'-0" ENCLOSED BUILDING					
÷	PROJECT MGR: VSM	DATE: 6-12-20	SCALE: NTS	JEB NO 18094S	17232S/18070S/ /19050S/20127S			
	CLIENTO SBG	SHT. 5	DVG. ND SK	-	REV. 6			

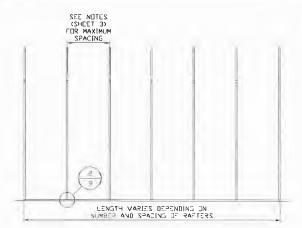


## TYPICAL RAFTER/COLUMN END FRAME SECTION

# TYPICAL RAFTER/COLUMN END FRAME SECTION SCALE NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE NTS



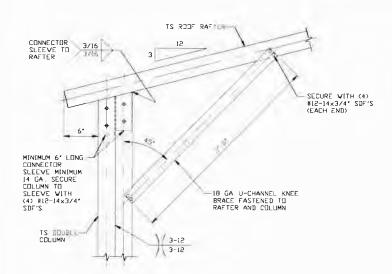
TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

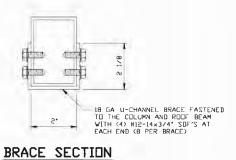
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CLIENT: SBG	SHT. 5A	DWG. NO: SK	<b>-3</b>	REV.1 6	

## **COLUMN CONNECTION DETAILS FOR WIND SPEEDS 105 < TO ≤ 150 MPH**





SCALE: NTS

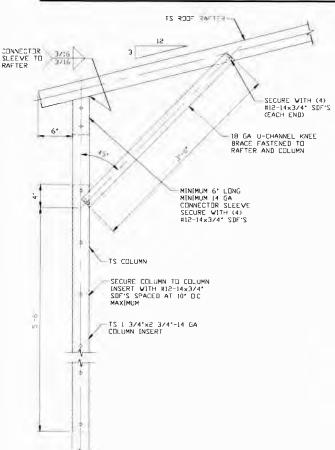
BOX EAVE RAFTER COLUMN CONNECTION DETAIL HEIGHTS 14'-0" < TO ≤ 16'-0"

1

SCALE: NTS NDTE: 2'-0' KNEE BRACE MAY BE USED FOR BUILDING WIDTHS < 26'-0'

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BE SUBJECT TO LEGAL ACTION	CLIENT: SBG	SHT. 6	DWG. NO SK	-3	REV. 6		

#### COLUMN CONNECTION DETAILS FOR WIND SPEEDS 105 < TO < 150 MPH



CONNECTOR 3/16
SLEEVE TO 3/16
SLEEVE TO 3/16
SLEEVE TO 3/16
SLEEVE WITH (4)
H12-14×3/4' SDF'S
(EACH END)

HINMUM 6' LING
(EACH END)

HI2-14×3/4' SDF'S

RAFTER AND COLUMN

TS COLUMN

TS COLUMN

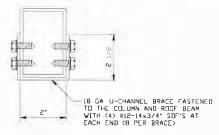
TS COLUMN

BOX EAVE RAFTER COLUMN CONNECTION DETAIL HEIGHTS < 10'-0'

1B

NOTE: 2'-0' KNEE BRACE MAY BE USED FOR BUILDING WIDTHS < 26'-0'

BOX EAVE RAFTER COLUMN CONNECTION DETAIL HEIGHTS 10'-0' < TO \( \) 14'-0'



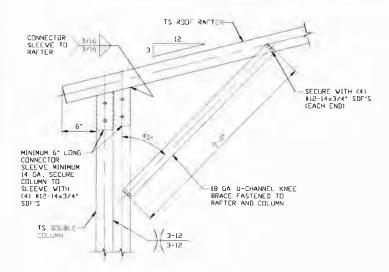
BRACE SECTION

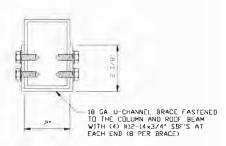
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	CLIENT: SBG	SHT. 6A	DWG. ND SK	(-3	REV. 6		

## **COLUMN CONNECTION DETAILS FOR WIND SPEEDS ≤ 105 MPH**





BRACE SECTION

BOX EAVE RAFTER COLUMN CONNECTION DETAIL

1C

HEIGHTS 14'-0" < T□ ≤ 16'-0"

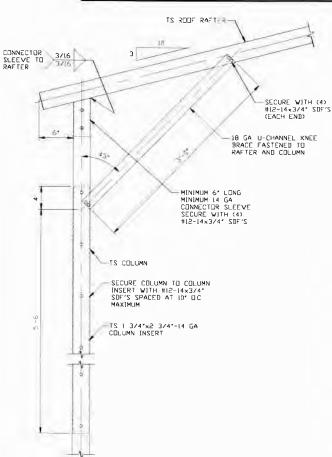
NDTE: 2'-0' KNEE BRACE MAY BE USED FOR BUILDING WIDTHS < 26'-0'

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	CLIENT: SBG	SHT. 6B	DWG. NO: SK-3		REV. 6		

## **COLUMN CONNECTION DETAILS FOR WIND SPEEDS ≤ 105 MPH**



CONNECTOR
SLEEVE TID 3/16

MINIMUM 6' LONG,
CDNNECTOR
SLEEVE MINIMUM
14 GA. SECURE
COLUMN TO
SLEEVE WITH
(4) BI2-14x3/4'
SDF'S

RAFTER AND COLUMN

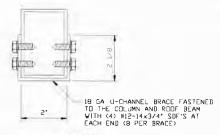
TS TIMM

BOX EAVE RAFTER COLUMN CONNECTION DETAIL HEIGHTS ≤ 13'-0'

1E

SCALE: NTS NOTE 2'-0' KNEE BRACE MAY BE USED FOR BUILDING WIDTHS & 26'-0'

BOX EAVE RAFTER COLUMN CONNECTION DETAIL HEIGHTS 13'-0" < TO < 14'-0"



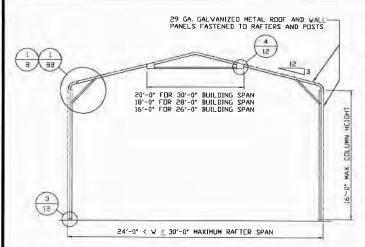
BRACE SECTION

1D

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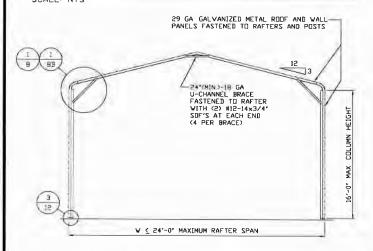
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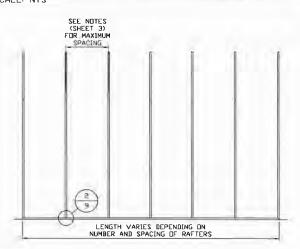


#### TYPICAL RAFTER/COLUMN END FRAME SECTION

# TYPICAL RAFTER/COLUMN END FRAME SECTION



TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE NTS

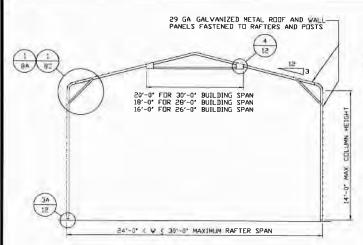


TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

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	PROJECT MGR VSM	DATE: 6-12-20	SCALE NTS	JEIB N 180945	0 17232S/19070S/ 5/19050S/20127S		
	CLIENT: SBG	SHT. 7	DVG ND SK-3		REVJ 6		



## TYPICAL RAFTER/COLUMN END FRAME SECTION

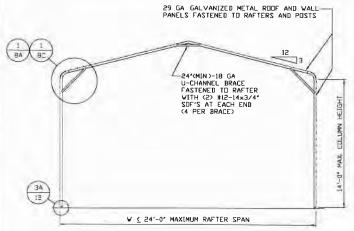
29 GA GALVANIZED METAL RODF AND VALL
PANELS FASTENED TO RAFTERS AND POSTS

4
12
14'-0' FOR 24'-0' BUILDING SPAN
10'-0' FOR 20'-0' BUILDING SPAN
6'-0' FOR 16'-0' BUILDING SPAN
4'-0' FOR 12'-0' BUILDING SPAN
4'-0' FOR 12'-0' BUILDING SPAN
4'-0' FOR 12'-0' BUILDING SPAN

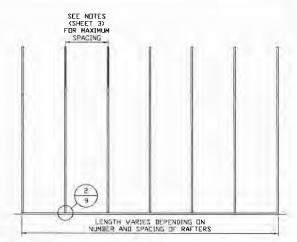
\*\*SOURCE SPAN

\*\*SOURC

# TYPICAL RAFTER/COLUMN END FRAME SECTION SCALE: NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION



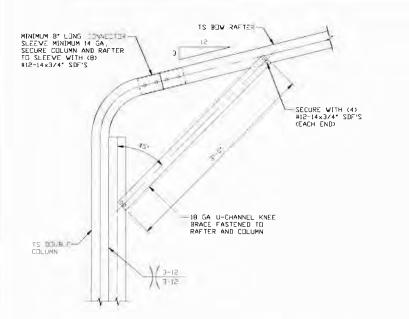
TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE: NTS

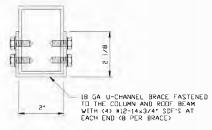
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CHECKED BY: PDH	, NC 286 SED BU	697 JILDING					
DRAWN BY: LT		STEEL BUILDING GARAGES 1804 RIVER STREET					

## **COLUMN CONNECTION DETAILS FOR WIND SPEEDS 105 < TO ≤ 150 MPH**





BRACE SECTION SCALE: NIS

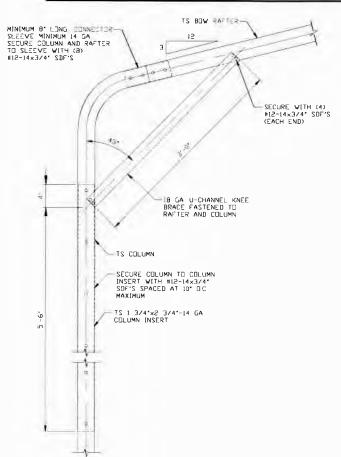
BOW EAVE RAFTER COLUMN CONNECTION DETAIL HEIGHTS 14'-0" < T□ < 16'-0"

1

SCALE NTS NOTE 2'-3' KNEE BRACE MAY BE USED FOR BUILDING WIDTHS < 26'-9"

MOORE AND ASSOCIATES	DRAWN BY: LT		EEL BUILDIN 1804 RIVER	STREET	
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### **COLUMN CONNECTION DETAILS FOR WIND SPEEDS 105 < TO ≤ 150 MPH**



MINIMUM B' LONG, CONNECTOR
SLEEVE MINIMUM 14 GA.
12
12
SECURE CULUMN AND RAFTER
TO SLEEVE WITH (B)
BI2-14x3/4' SDF'S

SECURE WITH (4)
BI2-14x3/4' SDF'S

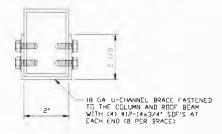
LB GA U-CHANNEL KNEE
BRACE FASTENED TO
RAFTER AND COLUMN

BOW EAVE RAFTER COLUMN CONNECTION DETAIL HEIGHTS ≤ 10'-0"

1B

SCALE NTS NOTE: 2'-0' KNEE BRACE MAY BE USED FOR BUILDING WIDTHS & 26'-0'

BOW EAVE RAFTER COLUMN CONNECTION DETAIL HEIGHTS 10'-0' < TO < 14'-0' SCALE NTS



BRACE SECTION

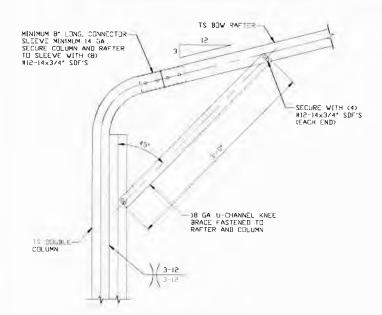
1A

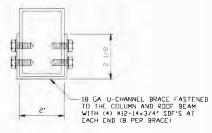
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ENGINEERING AND CONSULTING, INC.

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CONSULTING. THE	UNAUTHORIZED REPRO	DUCTION, COPYING, OR	OTHERVISE USE OF
DE SUBJECT TO L	EGAL ACTION.	ED AND ANY INFRINGE	MENT THEREUPEN MAY

CLIENT: SBG	SHT. 8A	DWG. NO SK	(-3	REV. 6
PROJECT MGR: WSM	DATE: 6-12-20	SCALE: NTS	JOB NO 180945	17232S/18070S/ /19050S/20127S
CHECKED BY: PDH		WILKESBORO, NC 28697 30'-0"x16'-0" ENCLOSED BUILDING		
DRAWN BY: LT		EEL BUILDIN 1804 RIVER	STREET	•

## **COLUMN CONNECTION DETAILS FOR WIND SPEEDS ≤ 105 MPH**





BRACE SECTION
SCALE: NTS

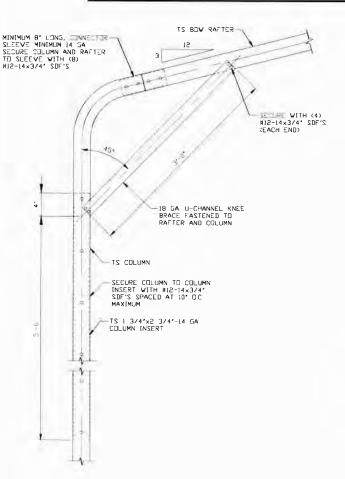
BOW EAVE RAFTER COLUMN CONNECTION DETAIL HEIGHTS 14'-0" < T□ < 16'-0"

1C

SCALE: NTS NDTE: 2'-0' KNEE BRACE MAY BE USED FOR BUILDING WIDTHS < 26'-0'

MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: LT CHECKED BY: PDH	- v	STEEL BUILDING GARAGES 1804 RIVER STREET WILKESBORO, NC 28697 30'-0"x16'-0" ENCLOSED BUILDING			
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### **COLUMN CONNECTION DETAILS FOR WIND SPEEDS ≤ 105 MPH**



MINIMUM 8' LDNG, DONNECTOR
SLEEVE MINIMUM 14 GA,
SECURE COLUMN AND RAFTER
TD SLEEVE WITH (8)
H12-14×3/4' SDF'S

18 GA U-CHANNEL KNEE
BRACE FASTENED TD
RAFTER AND COLUMN

TS COLUMN

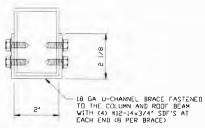
BOW EAVE RAFTER COLUMN CONNECTION DETAIL HEIGHTS & 13'-0'

HEIGHTS & 13'-0'

1E

SCALE NTS NDTE: 2'-0' KNEE BRACE MAY BE USED FOR BUILDING WIDTHS & 26'-0'

BOW EAVE RAFTER COLUMN CONNECTION DETAIL HEIGHTS 13'-0' < TO \( \) 14'-0' SCALE NTS



BRACE SECTION
SCALE: NTS

1D

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	DRAWN BY: LT	STI	EEL BUILDIN 1804 RIVER		
J.	CHECKED BY: PDH		VILKESBORC :16'-0" ENCLC		
	PROJECT MGR: VSM	DATE: 6-12-20	SCALE: NTS	JOB NO 18094S	17232S/18070S/ /19050S/20127S
	CLIENT: SBG	SHT. 8C	DWG. ND SK	(-3	REV. 6

## BASE RAIL ANCHORAGE OPTIONS WWF OR FIBERGLASS FIBERS INSTALL 1/2"x5 1/4" EXPANSION ANCHOR THROUGH BASE RAIL WITHIN 5° OF EACH COLUMN (ALSO APPLICABLE TO END WALLS) GRADE (MIM) MINIMUM 3 1/4" — EMBEDMENT (TYP) MONDLITHIC CONCRETE FOOTING (3000 PSI MIN) REINFORCED VARIES WITH (2)-#4's CONTINUOUS



#### CONCRETE MONOLITHIC SLAB BASE RAIL ANCHURAGE

SCALE NTS NOTE: MIN ANCHOR EDGE DISTANCE IS 4' ★ COORDINATE WITH LOCAL BUILDING CODE AND/OR BUILDING OFFICIAL REGARDING REQUIRED FOOTING DEPTH

#### **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-31B:
3' IN FOUNDATIONS WHERE THE CONCRETE IS CAST ASAINST AND PERMANENTLY IN CONTACT WITH THE EARTH OR EXPOSED TO THE EARTH OR WEATHER, AND 1 1/2' ELSEWHERE

#### REINFORCING STEEL

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

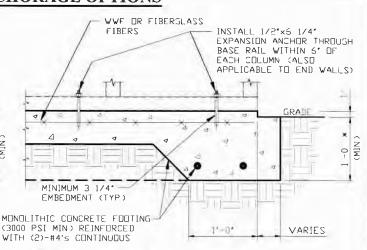
#### REINFORCEMENT MAY BE BENT IN THE SHOP OR THE FIELD PROVIDED

REINFORCEMENT IS BENT COLD

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

#### HELIX ANCHOR NOTES:

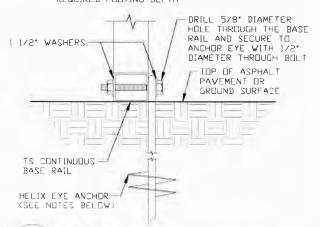
- 1 FOR VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND COBBLES, CALICHE, PRELIADED SILTS AND CLAYS, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT OR SINGLE 6" HELIX WITH MINIMUM 50" EMBEDMENT
- 2 FOR CORAL USE MINIMUM (2) 4' HELICES WITH MINIMUM 30' EMBEDMENT OR SINGLE 6' HELIX WITH MINIMUM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



24

#### CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE WITH NOTCH

SCALE: NTS NOTE: MIN ANCHOR EDGE DISTANCE IS 4" \* COORDINATE WITH LOCAL BUILDING CODE AND/OR BUILDING OFFICIAL REGARDING REQUIRED FOOTING DEPTH



2B

#### GROUND BASE HELIX ANCHORAGE

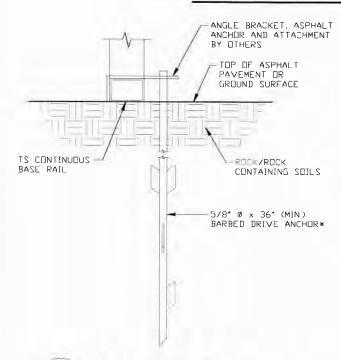
COURDINATE WITH LOCAL CODES/ORD REGARDING MIN FROST DEPTH (LENGTH)

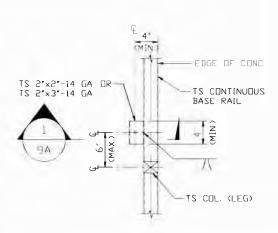
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ENGINEERING AND CONSULTING, INC.	

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	N BY: LT		STEEL BUILDING GARAGES 1804 RIVER STREET WILKESBORO, NC 28697 30'-0"x16'-0" ENCLOSED BUILDING			
CHEC	KED BY: PDH	30'-0":				
PROJ	ECT MGR: VSM	MGRI VSM DATE: 6-12-20		JOB NO 180945	17232S/18070S/ /19050S/20127S	
CLIE	NT: SBG	SHT. 9	DVG. NO SK	(-3	REV.1 6	

### **BASE RAIL ANCHORAGE OPTIONS**



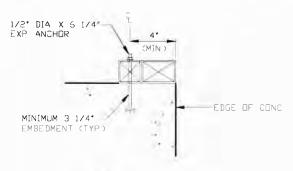


TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

CALE: NITS

# 2C BARBED DRIVE ANCHORAGE

SCALE: NTS
\* COORDINATE WITH LOCAL CODES/ORD
REGARDING MIN FROST DEPTH (LENGTH)



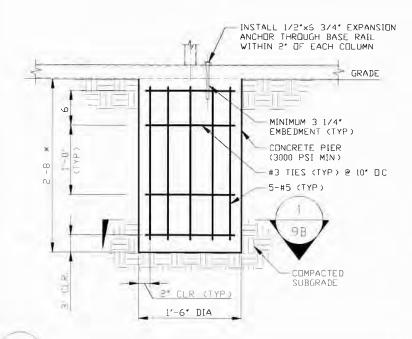
SECTION SCALE: NTS

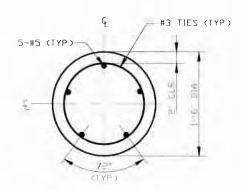
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DRAWN BY: LT		FEEL BUILDING GARAGES  1804 RIVER STREET  WILKESBORO, NC 28697  "x16'-0" ENCLOSED BUILDING		597
PREJECT MGR: VSM	ECT MGRI VSM DATE: 6-12-20		JUB NO 172325/180705 180945/190505/201275	
CLIENT: SBG	SHT. 9A	DVG. NO SK	<b>(-3</b>	REV. 6

## **BASE RAIL ANCHORAGE OPTIONS**





1 SECTION SCALE: NTS

DRILLED CONCRETE PIER BASE RAIL ANCHORAGE

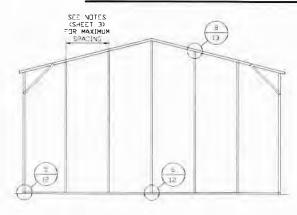
SCALE: NTS
(NOTE: MIN ANCHOR EDGE DISTANCE IS 4\*)
\* COORDINATE WITH LOCAL BUILDING CODE
AND/OR BUILDING OFFICIAL RESARDING
REQUIRED FOOTING DEPTH

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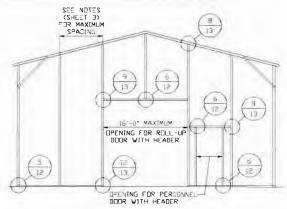
DRAWN BYI LT	STI	EEL BUILDIN 1804 RIVER		
CHECKED BY: PDH		WILKESBORG x16'-0" ENCLO		
PROJECT MGR: VSM	DATE: 6-12-20	SCALE: NTS	JOB NO 180945	17232S/19070S/ /19050S/20127S
CLIENT: SBG	SHT. 9B	DVG. NO SK	(-3	REV. 6

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



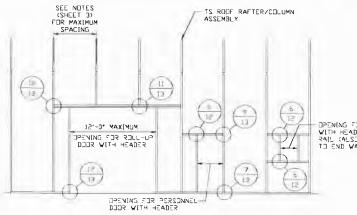
# TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS

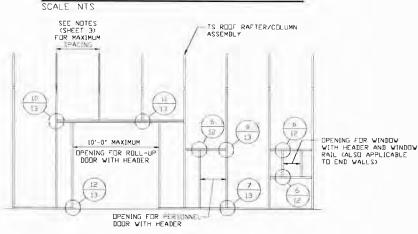


# TYPICAL BOX EAVE RAFTER END WALL OPENING FRAMING SECTION

SCALE: NTS



# TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION FOR GROUND SNOW LOADS ≤ 35 PSF



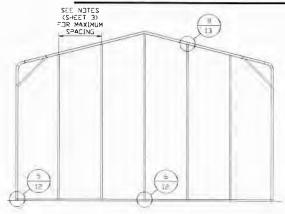
TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION FOR GROUND SNOW LOADS 35 PSF < TO < 45 PSF

MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.

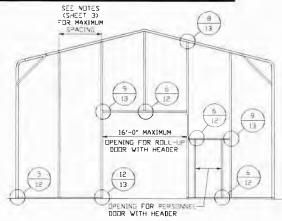
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PROJECT MGR: VSM	DATE: 6-12-20	SCALE: NTS	JOB NO 180945	17232S/18070S/ /19050S/20127S			
CHECKED BY: PDH		WILKESBORG x16'-0" ENCLO	SED BU	ILDING			
DRAVN BY: LT	STI	STEEL BUILDING GARAGES 1804 RIVER STREET					

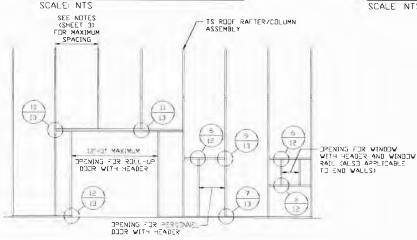
#### BOW EAVE RAFTER END WALL AND SIDE WALL OPENINGS



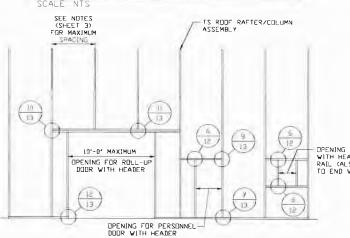
#### TYPICAL BOW EAVE RAFTER END WALL FRAMING SECTION



#### TYPICAL BOW EAVE RAFTER END WALL OPENING FRAMING SECTION



#### TYPICAL BOW EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION FOR GROUND SNOW LOADS < 35 PSF



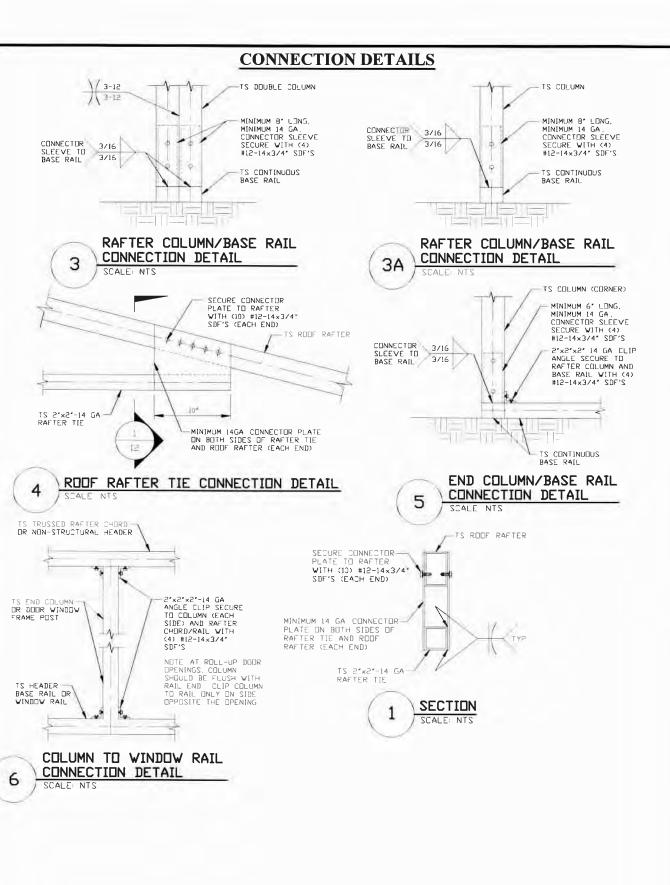
OPENING FOR WINDOW WITH HEADER AND WINDOW RAIL (ALSO APPLICABLE TO END WALLS)

TYPICAL BOW EAVE RAFTER SIDE WALL DPENINGS FRAMING SECTION FOR GROUND SNOW LOADS 35 PSF < TO < 45 PSF

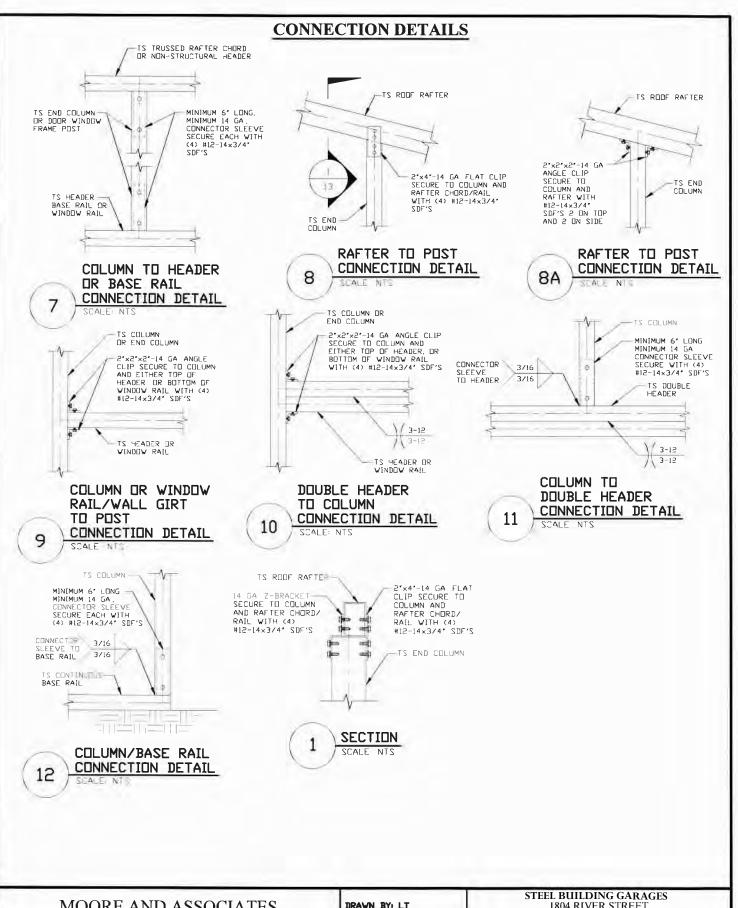
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-	DRAWN BY: LT	-	EEL BUILDIN 1804 RIVER WILKESBORG	STREET ), NC 286	97
	CHECKED BY: PDH	30'-0"	x16'-0" ENCLC	DSED BU	ILDING
1	PROJECT MGR: VSM	DATE: 6-12-20	SCALE: NTS	JOB NO 180945/	17232S/18070S/ /19050S/20127S
	CLIENT: SBG	SHT. 11	DWG. ND SK	<b>-3</b>	REV. 6

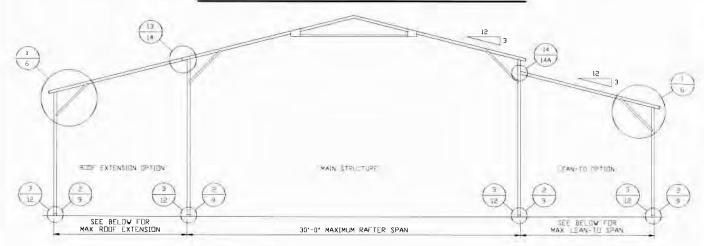


MOORE AND ASSOCIATES	DRAWN BYI LT	STE	EL BUILDING 1804 RIVER	
ENGINEERING AND CONSULTING, INC.	CHECKED BY: PDH		VILKESBORC 16'-0" ENCLC	), NC 28697 OSED BUILDING
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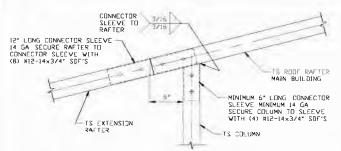
				_	
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ENGINEERING AND CONSULTING, INC.	CHECKED BY: PDH		WILKESBORO 416'-0" ENCLO	, NC 286	697

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

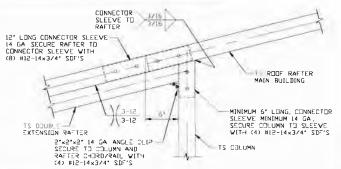


#### TYPICAL BOX EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION (BOTH OPTIONS SHOWN)

SCALE: NTS



SIDE EXTENSION RAFTER/COLUMN
DETAIL FOR RAFTER SPANS & 12'-0'



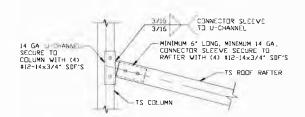
SIDE EXTENSION RAFTER/COLUMN DETAIL FOR RAFTER SPANS 12'-0' < TO < 15'-0'

MOORE AND ASSOCIATES
ENGINEERING AND CONSULTING, INC.

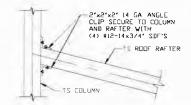
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CHECKED BY: PDH	30'-0":	WILKESBORG x16'-0" ENCLG	JOB NO	ILDING 172325/180705/
CLIENT: SBG	DATE: 6-12-20 SHT. 14	DWG. ND SK		/19050S/20127S REV. 6

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

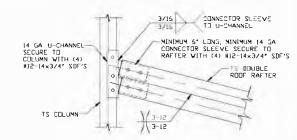


LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS & 12'-0"

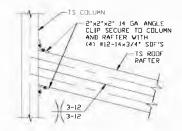


LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS \( \) 12'-0'

14B



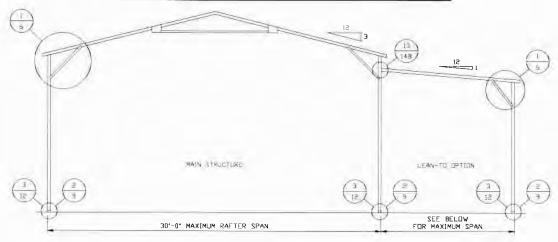
LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 12'-0' < TO < 15'-0'



LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 12'-0' < TO \( \) 15'-0'

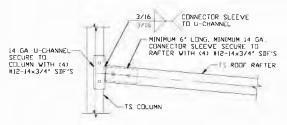
MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: LT	STEEL BUILDING GARAGES 1804 RIVER STREET WILKESBORO, NC 28697 30'-0"x16'-0" ENCLOSED BUILDING				
THIS DOCUMENT IS THE PROPERTY OF METERS AND ASSOCIATES SMITHSEPONG AND	PROJECT MGRI VSM	DATE: 6-12-20	SCALE: NTS	JOB NO	17232S/18070S/ /19050S/20127S	
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### **BOX EAVE RAFTER LEAN-TO OPTIONS**



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

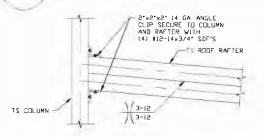
SCALE NTS



LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS ≤ 11'-0'

2' 2' 2' 14 3A ANGLE
CLIP SECURE TO ZOLUMN
AND RATTER WITH
(4) #12-14x3/4' SDF'S
TS ROOF RAFTER

LEAN-TO RAFTER TO RAFTER
COLUMN CONNECTION DETAIL
D FOR RAFTER SPANS 
11'-0'



LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 11'-0' < TO < 15'-0'

15C SCALE NTS

15

MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.

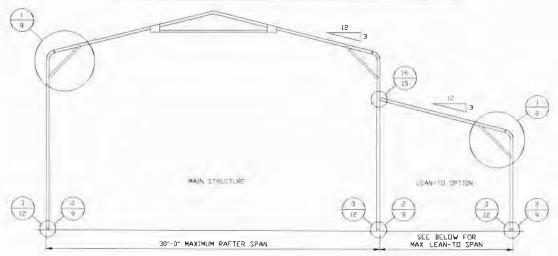
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DRAWN BY: LT		EEL BUILDIN 1804 RIVER WILKESBORO x16'-0" ENCLO	STREE O, NC 28	T 3697
PREJECT MGR: VSM	DATE: 6-12-20	Mary and	JUB N	D 17232S/18070S/ S/19050S/20127S
CLIENT: SRC	SHT. 14B	DVG. ND: SK	(-3	REV. 6

3/16 CONNECTOR SLEEVE TO U-CHANNEL CONNECTOR SLEEVE TO U-CHANNEL CONNECTOR SLEEVE SECURE TO RAFTER WITH (4) #12-14×3/4' SDF'S COLUMN WITH (4) #12-14×3/4' SDF'S 3-12

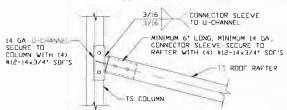
LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 11'-0' < TO ≤ 15'-0'

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



#### TYPICAL BOW RAFTER LEAN-TO OPTION FRAMING SECTION

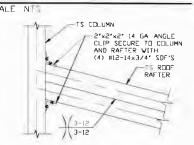
SCALE: NTS



#### LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS < 12'-0"

2'x2'x2'14 GA ANGLE CLIP SECURE TO COUNT AND RAFTER WITH (4) #12-14x3/4' SDE'S 15 ROOF RAFTER TS COLUMN

#### LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS < 12'-0" 16B



#### LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 12'-0" < T□ < 15'-0"

SCALE: NTS

16C

16

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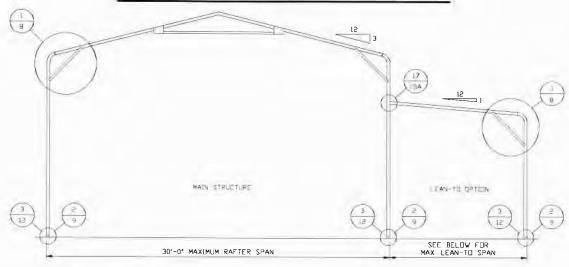
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DRAWN BY: LT		EEL BUILDIN 1804 RIVER WILKESBORG	STREET O, NC 286	697
PROJECT MGR: VSM	DATE: 6-12-20	SCALE: NTS	JOB NO	172325/180705/
CLIENT: SBG	SHT. 15	DVG. NO SK	(-3	REV. 6

†1⊤	3/16 CONNECTOR SLEEVE TO U-CHANNEL
14 GA U-CHANNEL SECURE TO COLUMN WITH (4)	MINIMUM 6' LONG, MINIMUM 14 GA CONNECTOR SLEEVE SECURE TO RAFTER WITH (4) #12-14×3/4' SDF'S
#12-14x3/4" SDF'S	TS DOUBLE ROUF RAFTER
TS COLUMN	3-12

LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 12'-0' < T□ < 15'-0' 16A

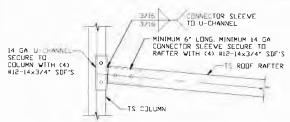
#### **BOW EAVE RAFTER LEAN-TO OPTIONS**



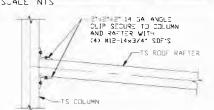
#### TYPICAL BOW RAFTER LEAN-TO OPTION FRAMING SECTION

TS COLUMN

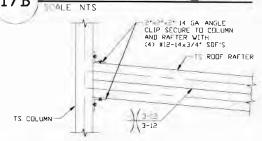
SCALE: NTS



LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS \( \) 11'-0'



LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS \( \) 11'-0'



LEAN-TO RAFTER TO RAFTER
COLUMN CONNECTION DETAIL FOR
RAFTER SPANS 11'-0' < TO < 15'-0'

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LEAN-TO RAFTER TO RAFTER

COLUMN CONNECTION DETAIL FOR RAFTER SPANS 11'-0" < TO < 15'-0"

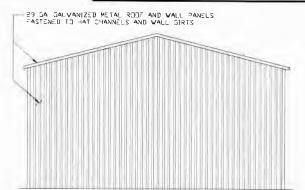
3/16 CONNECTOR SLEEVE TO U-CHANNEL

MINIMUM 6' LONG, MINIMUM 14 GA CONNECTOR SLEEVE SECURE TO RAFTER WITH (4) #12-14×3/4' SDF'S

TS DOUBLE ROOF

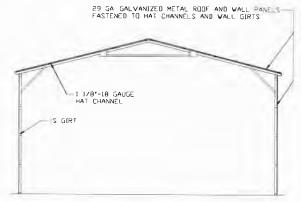
		STEEL BUILDING GARAGES			
	DRAWN BY: LT		1804 RIVER	<b>STREET</b>	•
	CHECKED BY: PDH	WILKESBORO, NC 28697 30'-0"x16'-0" ENCLOSED BUILDING			
	PROJECT MGR: VSM	DATE: 6-12-20	SCALE: NTS	JUB NO 180945	17232S/18070S/ /19050S/20127S
	CLIENT: SRG	SHT, 15A	DVG. NO SK	(-3	REVJ 6

## BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



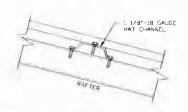
# TYPICAL END ELEVATION VERTICAL ROOF/SIDING

SCALE NTS

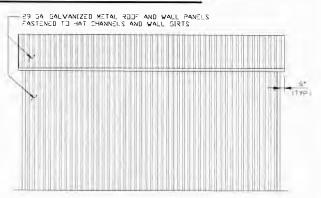


# TYPICAL SECTION VERTICAL ROOF OPTION

SCALE NTS

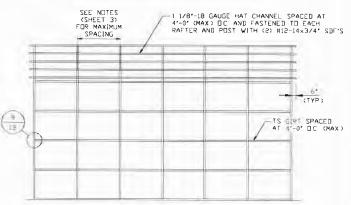


# ROOF PANEL ATTACHMENT (ALTERNATE FOR VERTICAL ROOF PANELS) SCALE NTS



# TYPICAL SIDE ELEVATION VERTICAL ROOF/SIDING

SCALE: NTS



# TYPICAL FRAMING SECTION VERTICAL ROOF/SIDING OPTION

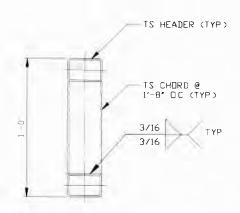
SCALE NTS

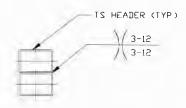
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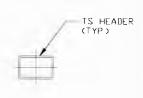
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CHECKED BY: PDH		WILKESBORO, NC 28697 30'-0"x16'-0" ENCLOSED BUILDING			
PREJECT MGR: VSM	DATE: 6-12-20	SCALE: NTS	JOB NO 180945	17232S/18070S/ /19050S/20127S	
CLIENT: SBG	SHT. 16	DVG. NO: SK-3		REV. 6	

## **SIDE WALL HEADER OPTIONS 35 < TO ≤ 45 PSF**





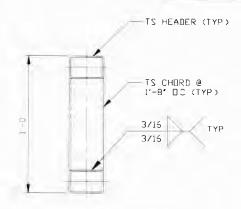


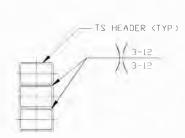
HEADER DETAIL FOR SPANS 9'-0" < T□ < 16'-0"

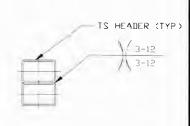
SCALE NTS

HEADER DETAIL FOR SPANS 6'-0" < T□ < 9'-0" HEADER DETAIL FOR SPANS < 6'-0"

## SIDE WALL HEADER OPTIONS $\leq$ 35 PSF





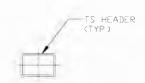


HEADER DETAIL FOR SPANS 15'-0" < T□ < 16'-0"

HEADER DETAIL FOR SPANS 11'-0" < T□ < 15'-0"

SCALE NTS

HEADER DETAIL FOR SPANS 7'-0" < T□ ≤ 11'-0"



HEADER DETAIL FOR SPANS < 7'-0"

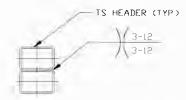
SCALE NTS

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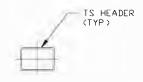
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	CHECKED BY: PDH		WILKESBORO, NC 28697 30'-0"x16'-0" ENCLOSED BUILDING			
	PROJECT MGR: VSM	DATE: 6-12-20	SCALE: NTS	JDB ND 180945/	17232S/18070S/ /19050S/20127S	
	CLIENT: SBG	SHT. 17	DVG. ND: SK-3		REV.1 6	

## **END WALL HEADER OPTIONS**



HEADER DETAIL FOR SPANS 13'-0' < TO & 16'-0'



HEADER DETAIL FOR SPANS ≤ 13'-0"

SCALE: NTS

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22444	ST	STEEL BUILDING GARAGES			
DRAWN BY: LT			04 RIVER STREET		
CHECKED BY: PDH	WILKESBORO, NC 28697 30'-0"x16'-0" ENCLOSED BUILDING				
PROJECT MGR: VSM	DATE: 6-12-20	SCALE: NTS	JDB ND 180945/	17232S/18070S/ 19050S/20127S	
CLIENT: SBG	SHT. 18	DVG. NO SK	(-3	RE√₁ 6	