

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

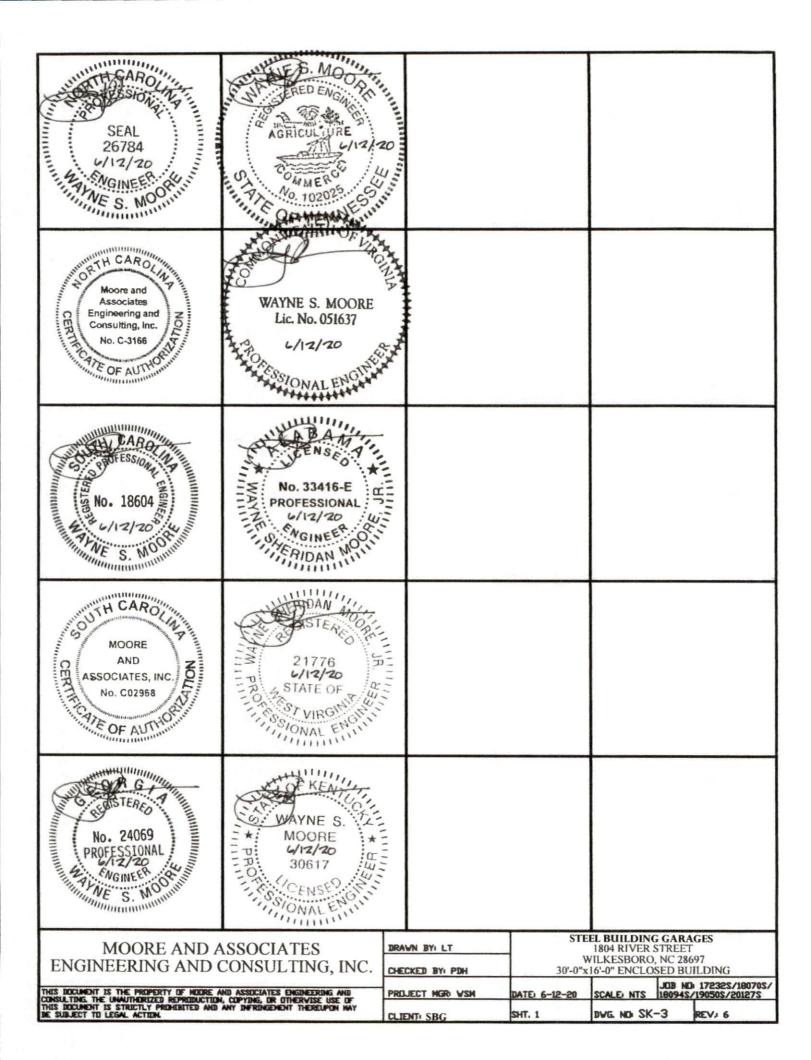
Prepared by:

Moore and Associates Engineering and Consulting, Inc.

1009 East Avenue North Augusta, SC 29841

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





INSTALLATION NOTES AND SPECIFICATIONS

- 1 DESIGN IS FOR MAXIMUM 30'-3" WIDE x 15'-3" EAVE HEIGHT ENCLOSED STRUCTURES
- 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:

= 15 PSF A) DEAD LOAD B) LIVE LOAD = 12 PSF

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

= 35 PSF (TO & 45 PSF WITH TS COLLAR TIE (W < 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_{ULT}) = 105 TO 150 MPH (NOMINAL WIND SPEED = 81 TO 116 MPH)
- 5 MAXIMUM RAFTER/PDST AND END POST SPACING = 50 FEET (UNLESS NOTED DTHERWISE)
- 6 END WALL COLUMNS/POSTS ARE EQUIVALENT TO SIDE WALL COLUMNS/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 * 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 #12-14x3/4" SELF-DRILLING FASTENER (SDF), USE CONTROL SEAL WASHER WITH EXTERIOR FASTENERS SPECIFICATIONS APPLICABLE DNLY 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 (SDIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT x 30" LONG AND MAY DNLY BE USED IN CONJUNCTION WITH DTHER (OPTIONAL) ANCHOR DEVICES AND DNLY IN SUITABLE SDILS OPTIONAL ANCHORAGE MAY BE USED IN SUITABLE SDILS AND MUST BE USED IN UNSUITABLE SDILS AS NOTED SDIL NAILS MAY DNLY BE USED FOR WIND SPEEDS < 145 MPH COORDINATE 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

R= 325

IE= 10 V= CsW

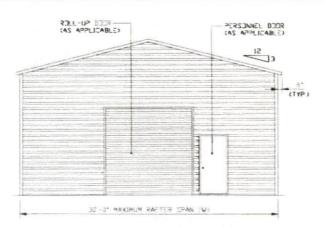
Sps= 2039 g

S_{D1}= 1258 9

15 APPLY LAP SEALANT TO METAL ROOF PANELS FOR 112 ROOF SLOPE

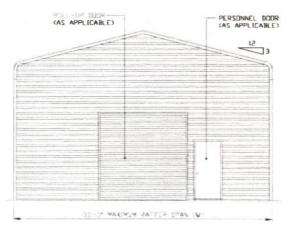
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		IC.

DRAWN BY: LT		1804 RIVER	STREET	Г
CHECKED BY: PDH		WILKESBORG x16'-0" ENCLO		
PROJECT MGR VSM	DATE: 6-12-20	SCALE: NTS	JUB NO 18094S	17232S/18070S/ /19050S/20127S
CLIENT SBG	SHT. 3	DVG. NO SK	(-3	REV. 6

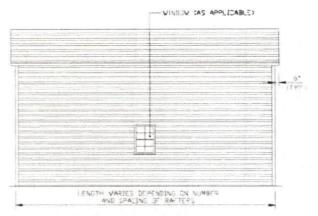


TYPICAL END ELEVATION

SCALE: NTS

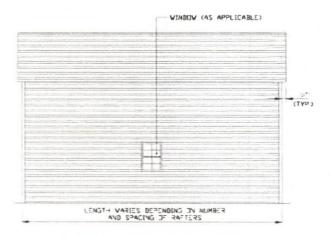


TYPICAL END ELEVATION



TYPICAL SIDE ELEVATION

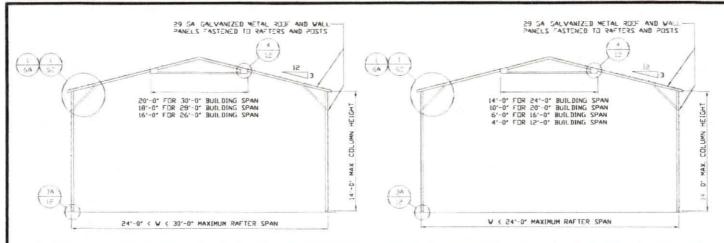
SCALE: NTS



TYPICAL SIDE ELEVATION

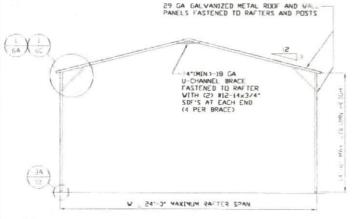
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PROJECT MGR: VSM	DATE: 6-12-20	Lat.	JOB NO	17232S/18070S/ /19050S/20127S
CI TENT, SRC	SHT. 4	DVG. NO SK	(-3	REV. 6



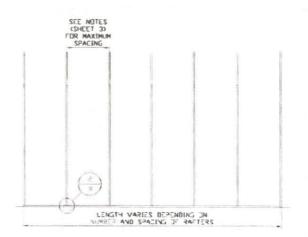
TYPICAL RAFTER/COLUMN END FRAME SECTION SCALE: NTS

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TYPICAL RAFTER/COLUMN END FRAME SECTION

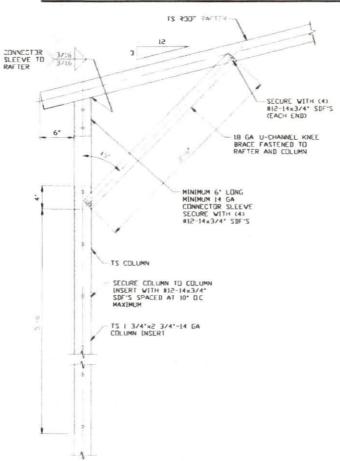
TYPICAL RAFTER/COLUMN END FRAME SECTION SCALE NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE NTS

MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: LT CHECKED BY: PDH	- ,	EEL BUILDIN 1804 RIVER WILKESBORO (16'-0" ENCLO	STREET , NC 280	597
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COLUMN CONNECTION DETAILS FOR WIND SPEEDS 105 < TO ≤ 150 MPH



CONNECTOR
SLEEVE TO
SLEEVE TO
SLEEVE MINIMUM
14 GA, SECURE
COLUMN TO
SLEEVE MINIMUM
14 GA, SECURE
COLUMN TO
SLEEVE WITH
(4) NI2-14×3/4*

BRACE FASTENED TO
RAFTER AND COLUMN

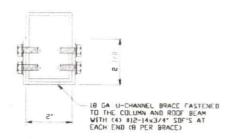
TS COLUMN

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

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'



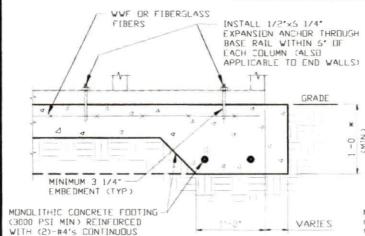
BRACE SECTION

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0	DRAWN BY: LT	- ,	EEL BUILDIN 1804 RIVER WILKESBORG	STREET O, NC 286	597
	CHECKED BY: PDH	30'-0":	x16'-0" ENCLO	DSED BU	ILDING
	PROJECT MGR VSM	DATE: 6-12-20	SCALE: NTS	JOB NO 180945	17232\$/18070\$/ /19050\$/20127\$
	CLIENT SBG	SHT. 6A	DVG. NO SK	(-3	REV. 6

BASE RAIL ANCHORAGE OPTIONS





CONCRETE MONOLITHIC SLAB BASE RAIL ANCHURAGE

SCALE NTS NOTE: MIN ANCHOR EDGE DISTANCE IS 4" * COURDINATE 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

SVEZSAGMOS DEFISSES MUMINIM & SVAL BALL HAVE A MINIMUM SPECIFIC STANDARD SVAD 85 TA 129 CCC, E OF HTGMSTZ

COVER OVER REINFORCING STEEL!

FOR FOUNDATIONS, MINIMUM SUNCRETE SOVER OVER REINFORSING BE PER ACI-318: 3' IN FOUNDATIONS WHERE THE CONCRETE IS CAST AGAINST AND PERMANENTLY IN CONTACT WITH THE EARTH OR EXPOSED TO THE EARTH OR WEATHER, AND 1 1/2' ELSEWHERE.

REINFORCING STEEL

THE TURNDOWN REINFORCING STEEL SHALL BE ASTM 4615 GRADE 60 THE SLAB REINFORCEMENT SHALL BE WELDED WIRE FABRIC MEETING ASTM 4185 OR FIBERGLASS FIBER REINFORCEMENT

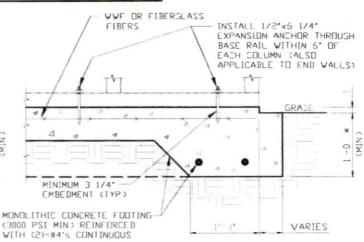
REINFORCEMENT MAY BE BENT IN THE SHOP OR THE FIELD PROVIDED:

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

RE FIFI D RENT

HELIX ANCHOR NOTES:

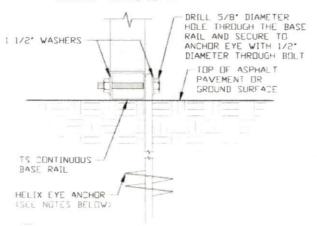
- I FOR VERY DENSE AND/OR CEMENTED SANDS. COARSE GRAVEL AND COBBLES, CALICHE, PRELDADED SILTS AND CLAYS, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT OR SINGLE 6' HELIX WITH MINIMUM 50' EMBEDMENT
- 2 FOR CORAL USE MINIMUM (2) 4' HELICES WITH MINIMUM 30' EMBEDMENT OR SINGLE 6' HELIX WITH MINIMUM 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
- 4 FOR LODSE TO MEDIUM DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS ALLUVIAL FILL, USE MINIMUM (2) 6' HELICES WITH MINIMUM
- 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



2A

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



GROUND BASE HELIX ANCHORAGE

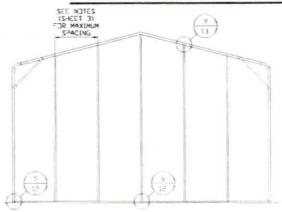
* COORDINATE WITH LOCAL CODES/ORD REGARDING MIN FROST DEPTH (LENGTH)

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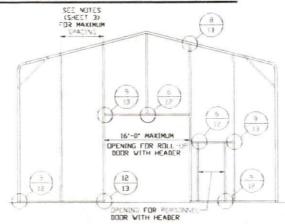
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_	PROJECT MGR: VSM	DATE: 6-12-20	SCALE: NTS	JOB NO 180945	17232S/18070S/ /19050S/20127S
	CLIENT: SRC	SHT. 9	DVG. ND SK	-3	REVJ 6

BOW EAVE RAFTER END WALL AND SIDE WALL OPENINGS

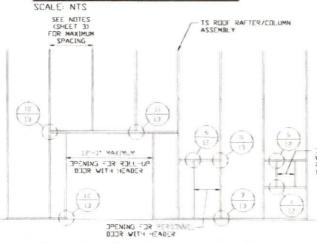


TYPICAL BOW EAVE RAFTER END WALL FRAMING SECTION



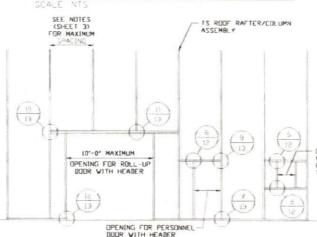
TYPICAL BOW EAVE RAFTER END WALL OPENING FRAMING SECTION

SCALE NTS



OPENING FOR VINDOV VITY HEADER AND VINDOV RAIL (ALSO APPLICABLE TO END VALLS)

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



DPENING FOR VINDOV VITH HEADER AND VINDOV RAIL (ALSD APPLICABLE TO END VALLS)

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

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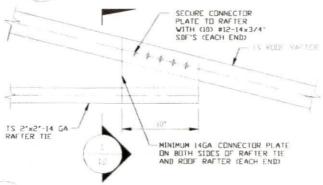
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CHECKED BY: PDH	WILKESBORO, NC 28697 30'-0"x16'-0" ENCLOSED BUILDING
	JOB ND: 172325/180705/

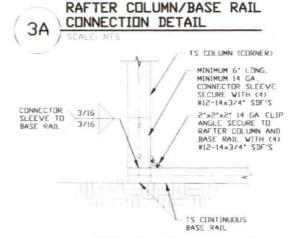
PROLJECT MGR: VSM | DATE: 6-12-20 | SCALE: NTS | 180945/190505/201275 |
CLIENT: SBG | SHT. 11 | DVG. ND: SK-3 | REV. 6

CONNECTION DETAILS TS DOUBLE COLUMN TS DOUBLE COLUMN MINIMUM 8' LONG, MINIMUM 14 GA, CONNECTOR SLEEVE SECURE VITH (4) BASE RAIL TS CONTINUOUS BASE RAIL TS CONTINUOUS

CONNECTOR 3/16 CONNECTOR 3/16 SLEEVE TO SECURE WITH (4) BASE RAIL 3/16 TS COLUMN MINIMUM 14 GA, CONNECTOR SLEEVE SECURE WITH (4) B12-14x3/4" SDF'S TS CONTINUOUS BASE RAIL

RAFTER COLUMN/BASE RAIL CONNECTION DETAIL SCALE NTS

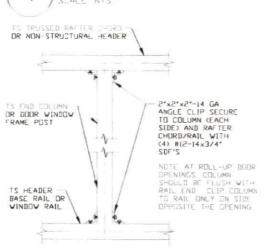


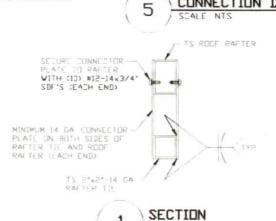


END COLUMN/BASE RAIL

CONNECTION DETAIL

ROOF RAFTER TIE CONNECTION DETAIL





COLUMN TO WINDOW RAIL CONNECTION DETAIL SCALE: NTS

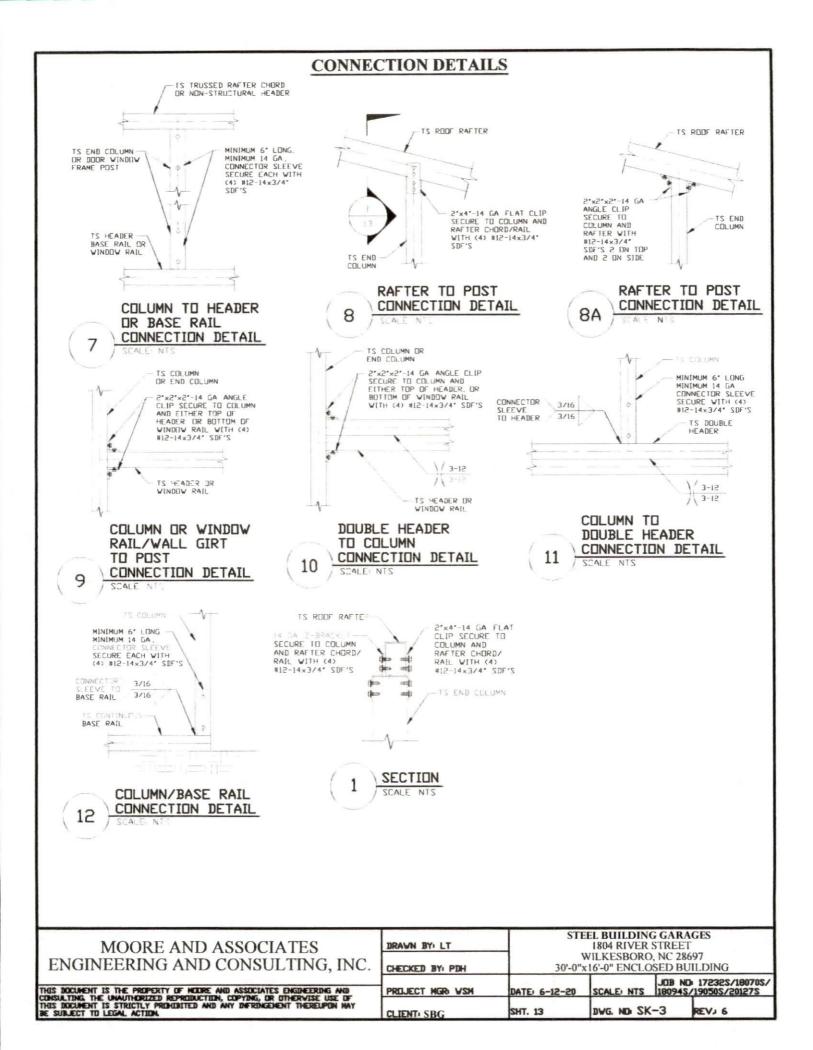
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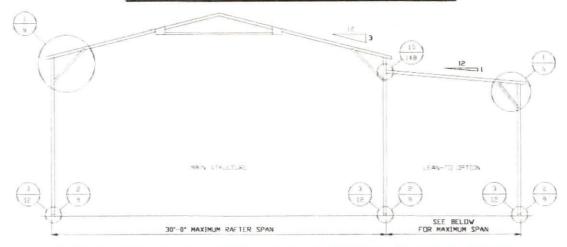
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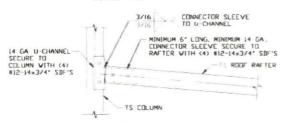
BOX EAVE RAFTER LEAN-TO OPTIONS



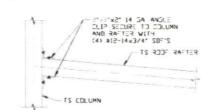
TYPICAL BOX EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION

SCALE NTS

15



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



LEAN-TO RAFTER TO RAFTER
COLUMN CONNECTION DETAIL
15D FOR RAFTER SPANS \(\leq 11'-0'' \)

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

3/16 CONNECTOR SLEEVE TO U-CHANNEL

14 GA U-CHANNEL
SECURE TO CONNECTOR SLEEVE TO CONNECTOR SLEEVE SECURE TO RAFTER WITH (4) BI2-14x3/4* SDF'S

15 COLUMN TITH (4) REPLAY OF SLEEVE SECURE TO RAFTER WITH (4) BI2-14x3/4* SDF'S

15 COLUMN TITH (4) REPLAY OF SLEEVE SECURE TO RAFTER WITH (4) BI2-14x3/4* SDF'S

15 COLUMN TITH (4) REPLAY OF SLEEVE TO RAFTER REPLAY OF SLEEVE TO REPLAY OF SLEEVE TO

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

TS COLUMN

2'x2'x2' 14 GA ANGLE
CLIP SECURE TO COLUMN
AND RAFTER VITH
(4) #12-14x3/4' SDF'S

-15 ROOF RAFTER

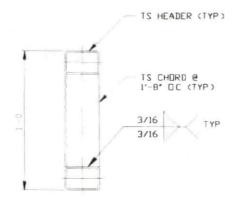
TS COLUMN

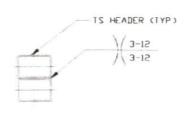
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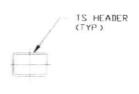
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PROJECT HGR: VSM	DATE: 6-12-20	SCALE: NTS		17232S/18070S/ /19050S/20127S	
 CLIENT: SBG	SHT. 14B	DWG. NO SK	(-3	REV. 6	

SIDE WALL HEADER OPTIONS 35 < TO ≤ 45 PSF







HEADER DETAIL FOR SPANS 9'-0" < TO ≤ 16'-0"

SCALE NITS

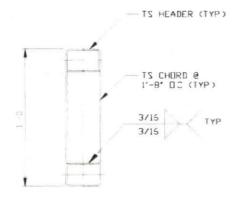
HEADER DETAIL FOR SPANS 6'-0' < TO < 9'-0"

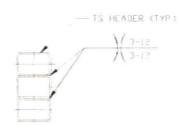
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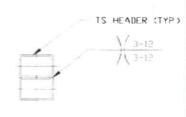
HEADER DETAIL FOR SPANS ≤ 6'-0"

SCALE NTS

SIDE WALL HEADER OPTIONS ≤ 35 PSF







HEADER DETAIL FOR SPANS 15'-0' < TO ≤ 16'-0'

SCALE NTS

HEADER DETAIL FOR SPANS 11'-0" < TO ≤ 15'-0"

SCALE NTS

HEADER DETAIL FOR SPANS 7'-0" < TO ≤ 11'-0"

SCALE NIS



HEADER DETAIL FOR SPANS & 7'-0"

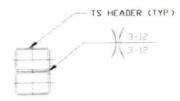
SCALE NTS

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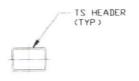
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			1	JUB ND: 172325/180705		
	CHECKED BY: PDH	WILKESBORO, NC 28697 30'-0"x16'-0" ENCLOSED BUILDING				
	DRAWN BY: LT	STI	STEEL BUILDING GARAGES 1804 RIVER STREET			

END WALL HEADER OPTIONS



HEADER DETAIL FOR SPANS 13'-0" < TO ≤ 16'-0"

SCALE: NTS



HEADER DETAIL FOR SPANS & 13'-0"

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