631 SE Industrial Circle Lake City, FL 32025
Phone: 386.961.0006 Fax: 386.961.0008

Dear Customer –

To help us in our efforts of getting your building up in a timely manner we would appreciate you giving our office a call @ 386-961-0006 as soon as your concrete is complete (if applicable) and the required permits have been obtained.

We look forward to working with you and are here if you have any questions during the permitting process.

Thank you,

Tubular Building Systems

TUBULAR BUILDING SYSTEMS

Florida Product Approval Codes

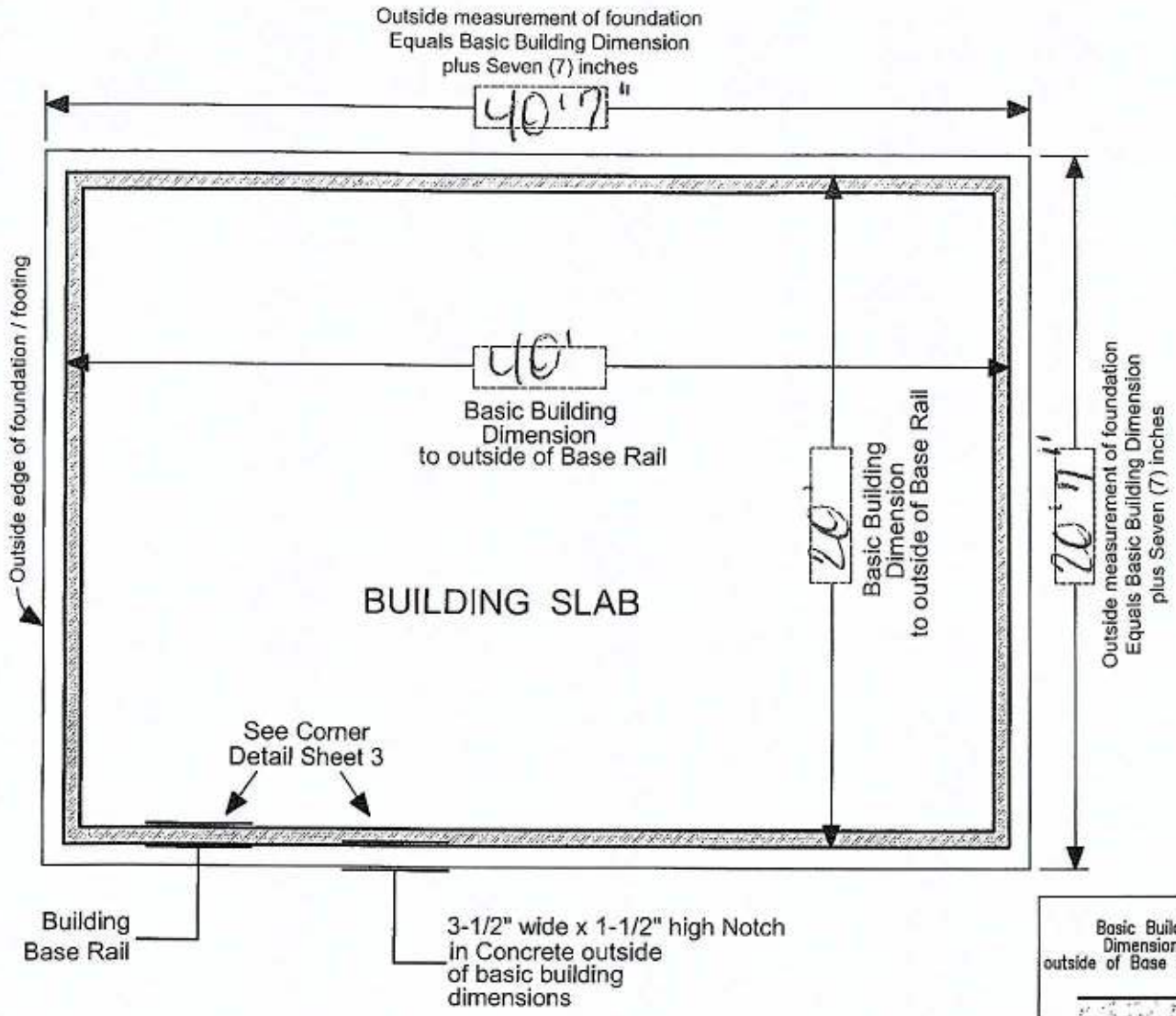
Roof Deck:

Capital Metal Supply Inc. Ag Panel: 20147.1 EXP 07/20/2020

Wall Panel:

Capital Metal Supply Inc. Ag Panel: 20148.1 EXP 07/20/2020

If you have any questions on concern, please contact Donald Little at 386-961-0006 or at tubularbuildingsystems@gmail.com.

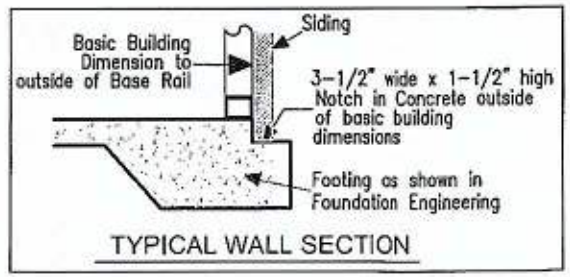


IMPORTANT - NOTES

Record Measurements in these spaces provided

All basic building dimensions are to the outside of the frame Base Rail and DO NOT INCLUDE the 3-1/2" x 1-1/2" notch in the concrete footing

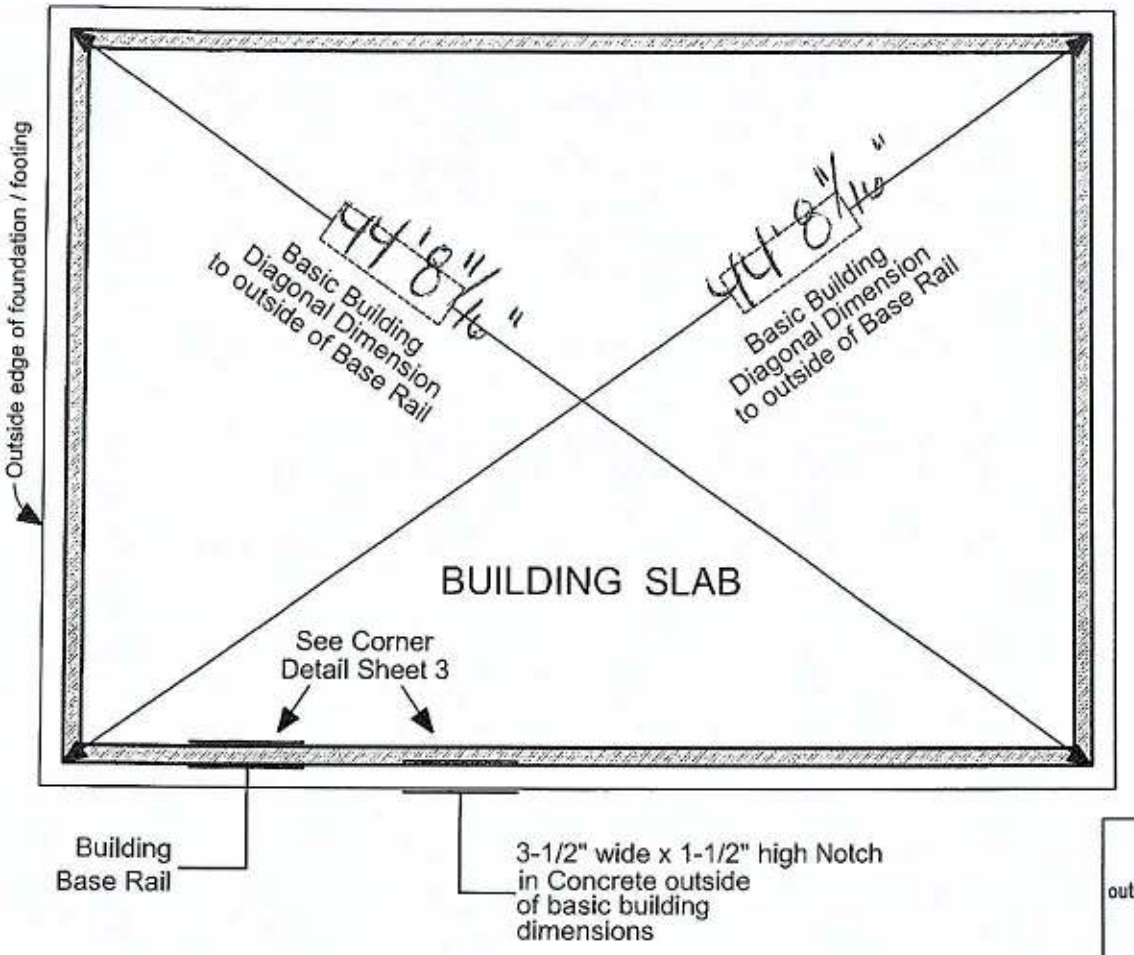
See Sheet 3 of 3 for Detail of Building corner configuration



TYPICAL WALL SECTION

TBS
TUBULAR BUILDING SYSTEMS

TYPICAL BUILDING
FOUNDATION MEASUREMENTS

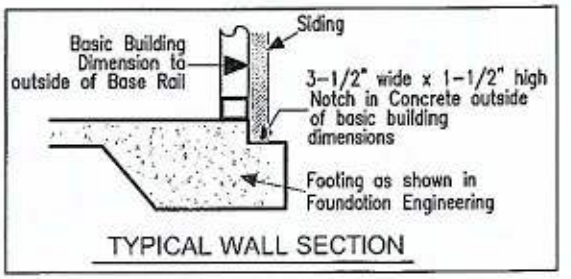


IMPORTANT - NOTES

Record Measurements in these spaces provided

All basic building diagonal dimensions are to the outside corner of the frame Base Rail and DO NOT INCLUDE the 3–1/2" x 1–1/2" notch in the concrete footing

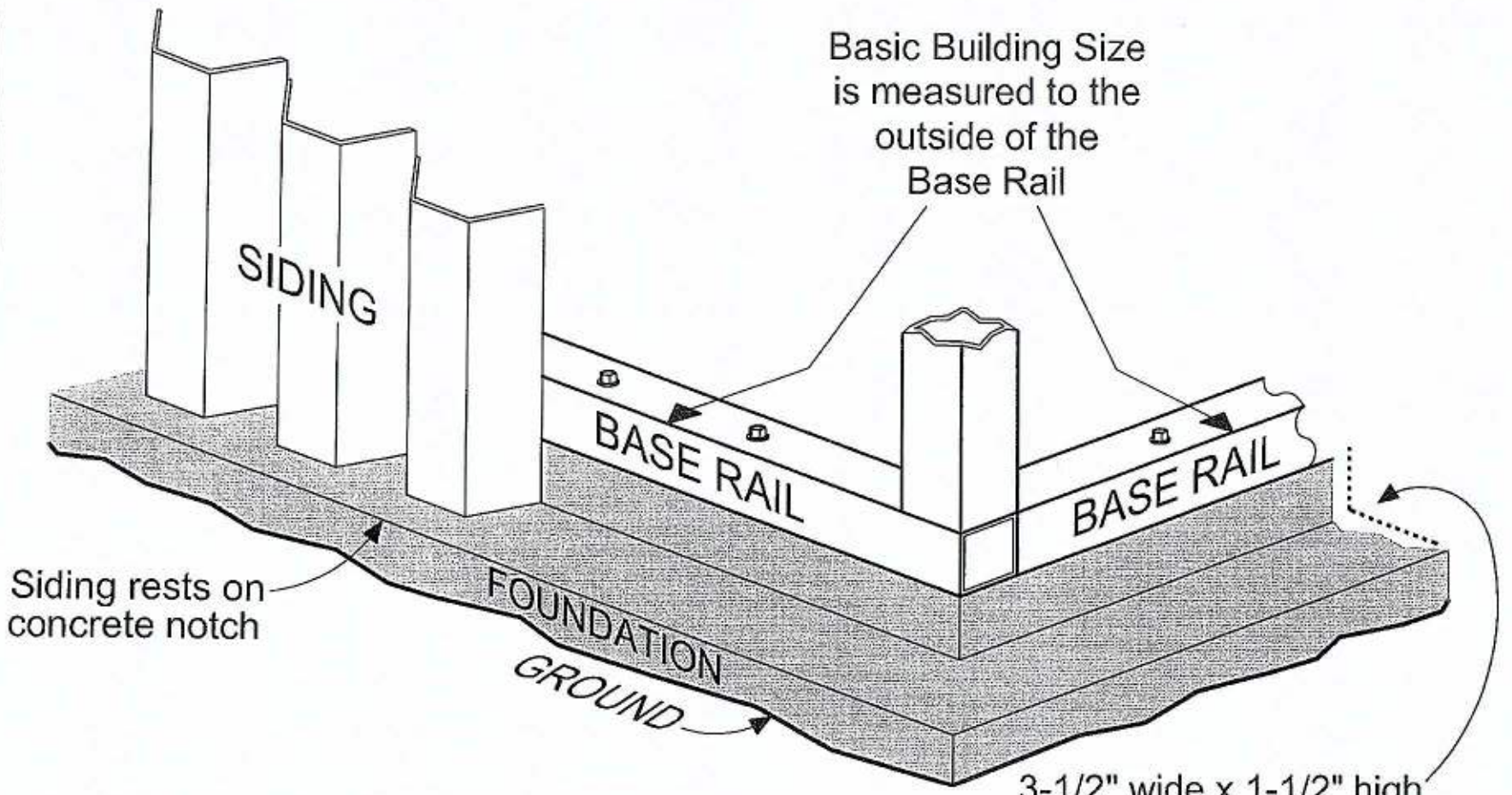
See Sheet 3 of 3 for Detail of Building corner configuration



TUBULAR BUILDING SYSTEMS

TYPICAL BUILDING

FOUNDATION MEASUREMENTS DIAGONALS



TBS
TUBULAR BUILDING SYSTEMS

TYPICAL BUILDING

CORNER DETAIL

STRUCTURAL DESIGN

FULLY OPEN CARPORT BUILDING
EXPOSURE B

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

20 February 2018
Revision 5
M&A Project No. 16022S/17300S/18028S

Prepared for:

Tubular Building Systems, LLC
631 SE Industrial Circle
Lake City, Florida 32025

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

MOORE AND ASSOCIATES
ENGINEERING AND CONSULTING

WAYNE S. MOORE
LICENSE
No 57170
MAR 20 2020
STATE OF FLORIDA
PROFESSIONAL ENGINEER

Columbia County Building Department
Plans Reviewed for Code Compliance
State of Florida

MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: JRS	TUBULAR BUILDING SYSTEMS 30'-0"x20'-0" FULLY OPEN CARPORT EXP. B PE SEAL COVER SHEET		
	CHECKED BY: PDH			
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	CLIENT: TBS	SHT. 1	DWG. NO: SK-1	REV.: 5

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INSTALLATION NOTES AND SPECIFICATIONS

1. DESIGN IS FOR A MAXIMUM 30'-0" WIDE x 20'-0" EAVE HEIGHT FULLY OPEN CARPORT.
2. DESIGN WAS DONE IN ACCORDANCE WITH THE 2017 FLORIDA BUILDING CODE (FBC) 6TH EDITION, 2012 INTERNATIONAL BUILDING CODE (IBC) AND 2015 IBC.
3. DESIGN LOADS ARE AS FOLLOWS:
   A) DEAD LOAD = 1.5 PSF
   B) LIVE LOAD = 12 PSF
   C) GROUND SNOW LOAD = 10 PSF
4. LOW ULTIMATE WIND SPEED 105 TO 140 MPH (NOMINAL WIND SPEED 81 TO 108 MPH): MAXIMUM RAFTER/POST AND END POST SPACING = 5.0 FEET.
5. HIGH ULTIMATE WIND SPEED 141 TO 170 MPH (NOMINAL WIND SPEED 109 TO 132 MPH): MAXIMUM RAFTER/POST AND END POST SPACING = 4.0 FEET.
6. LOW HAZARD RISK CATEGORY I.
7. WIND EXPOSURE CATEGORY B.
8. SPECIFICATIONS APPLICABLE TO 29 GAUGE METAL PANELS FASTENED DIRECTLY TO 2 1/2" x 2 1/2" - 14 GAUGE TUBE STEEL (TS) FRAMING MEMBERS. FOR VERTICAL PANELS, 29 GAUGE METAL PANELS SHALL BE FASTENED TO 18 GAUGE HAT CHANNELS (UNLESS OTHERWISE NOTED).
9. AVERAGE FASTENER SPACING ON-CENTERS ALONG RAFTERS OR PURLINS, AND POSTS, INTERIOR = 9" OR END = 6". (MAX.)
10. FASTENERS CONSIST OF #12-14x3/4" 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.
11. GROUND ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL WITHIN 6" OF EACH RAFTER COLUMN ALONG SIDES.
12. GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT x 30" LONG IN SUITABLE SOIL CONDITIONS MAY BE USED FOR LOW ($\leq$ 108 MPH NOMINAL) WIND SPEEDS ONLY. OPTIONAL ANCHORAGE MAY BE USED IN SUITABLE SOILS AND MUST BE USE IN UNSUITABLE SOILS AS NOTED.
13. OPTIONAL BASE RAIL ANCHORAGE MAY BE USED FOR LOW AND MUST BE USED FOR HIGH WIND SPEEDS.
14. WIND FORCES GOVERN OVER SEISMIC FORCES. SEISMIC PARAMETERS ANALYZED ARE:
    SOIL SITE CLASS = D
    RISK CATEGORY I/II/III
    R= 3.25 I_E= 1.0
    S_{DS}= 1.522 V= C_SW
    S_{D1}= 0.839

MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: JRS	TUBULAR BUILDING SYSTEMS 30'-0"x20'-0" FULLY OPEN CARPORT EXP. B		
	CHECKED BY: PDH			
	PROJECT MGR: WSH	DATE: 2-20-18	SCALE: NTS	JOB NO: 16022S/17300S/18028S
	CLIENT: TBS	SHT. 3	DWG. NO: SK-1	REV.: 5

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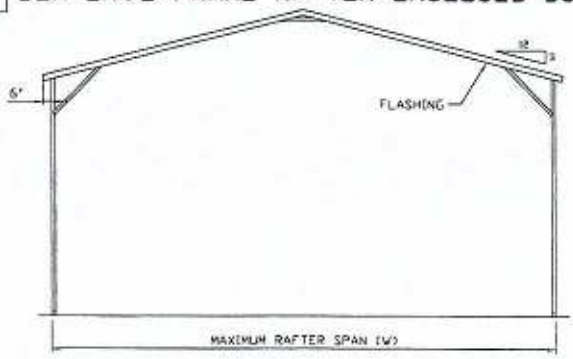
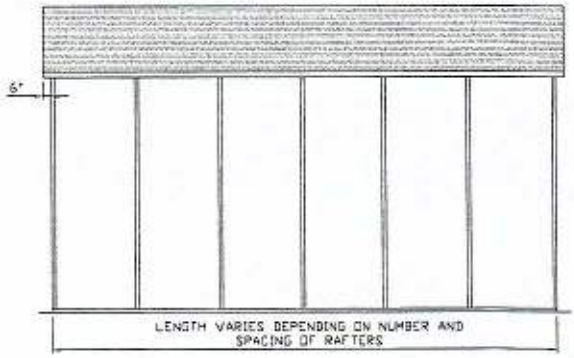
☐ BOX EAVE FRAME RAFTER ENCLOSED BUILDING

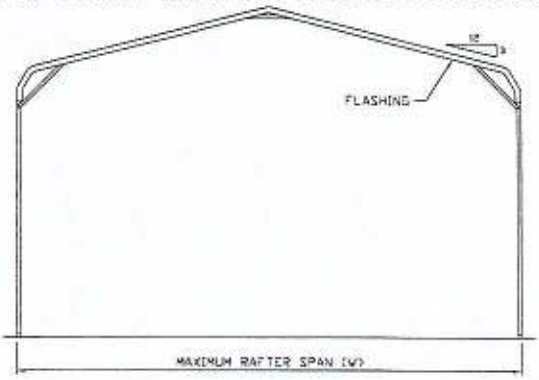


TYPICAL END ELEVATION-HORIZONTAL ROOF
SCALE: NTS



TYPICAL SIDE ELEVATION-HORIZONTAL ROOF
SCALE: NTS

☐ BOW FRAME RAFTER ENCLOSED BUILDING



TYPICAL END ELEVATION
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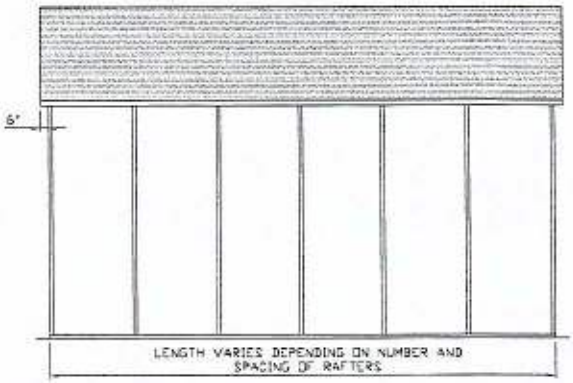

TYPICAL SIDE ELEVATION
SCALE: NTS

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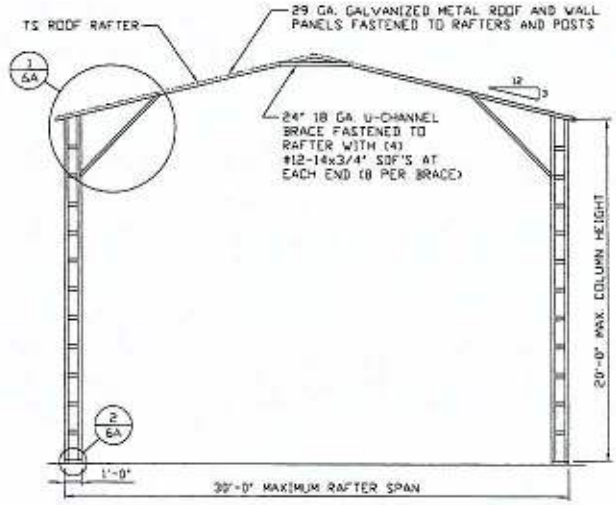

TYPICAL RAFTER/COLUMN END FRAME SECTION

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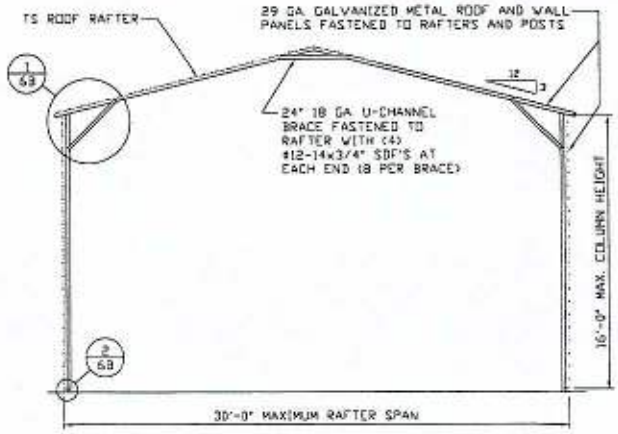

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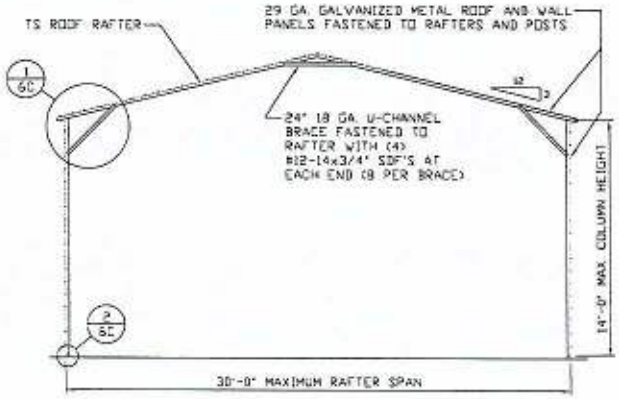

TYPICAL RAFTER/COLUMN END FRAME SECTION

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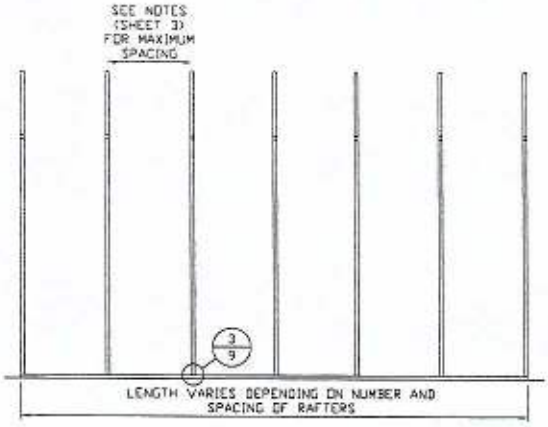

TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

SCALE: NTS

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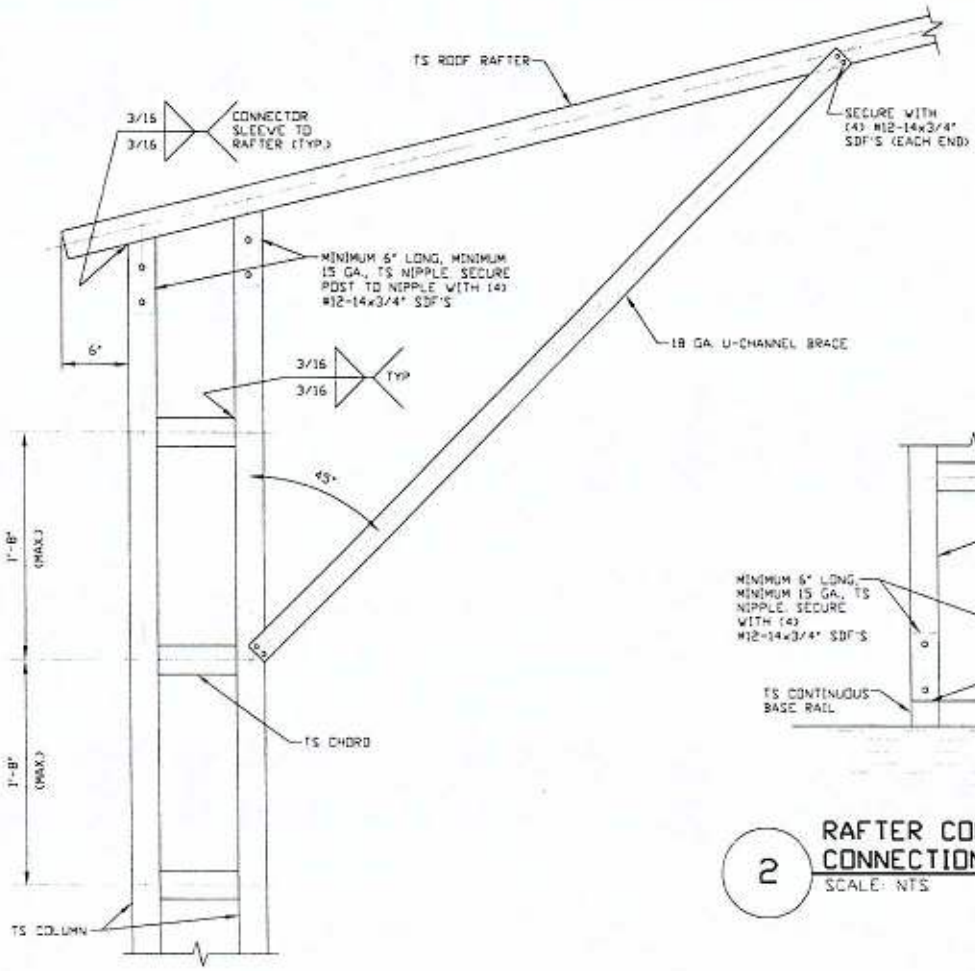

BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 16'-0" < TO ≤ 20'-0"

1

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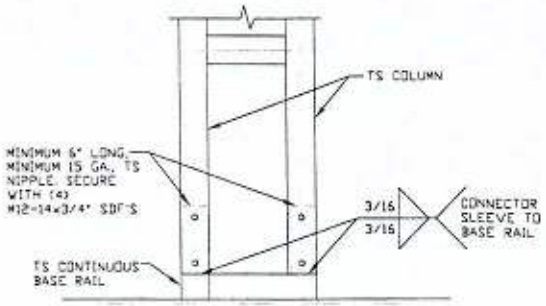
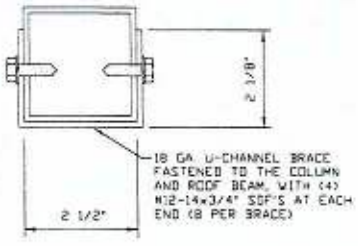


RAFTER COLUMN/BASE RAIL CONNECTION DETAIL

2

SCALE: NTS



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SCALE: NTS

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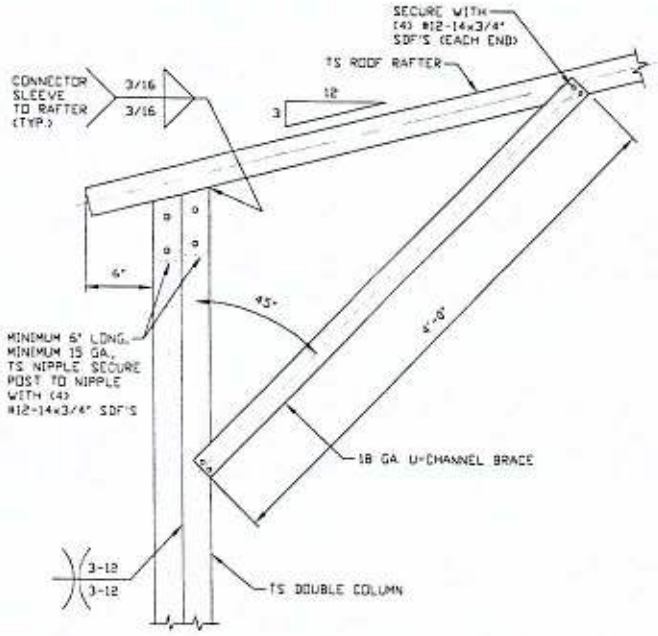

1 BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 14'-0" < TO ≤ 16'-0"

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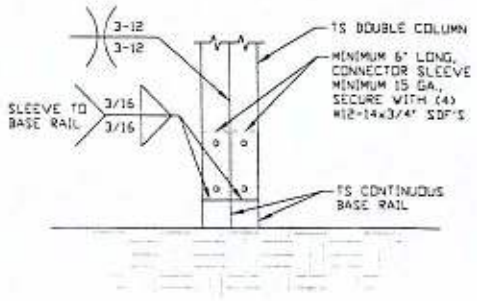

2 RAFTER COLUMN/BASE RAIL CONNECTION DETAIL

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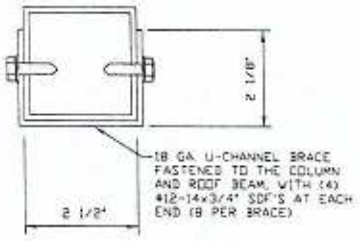

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	CLIENT: TBS	SHT. 6B	DWG. NO: SK-1	REV.: 5

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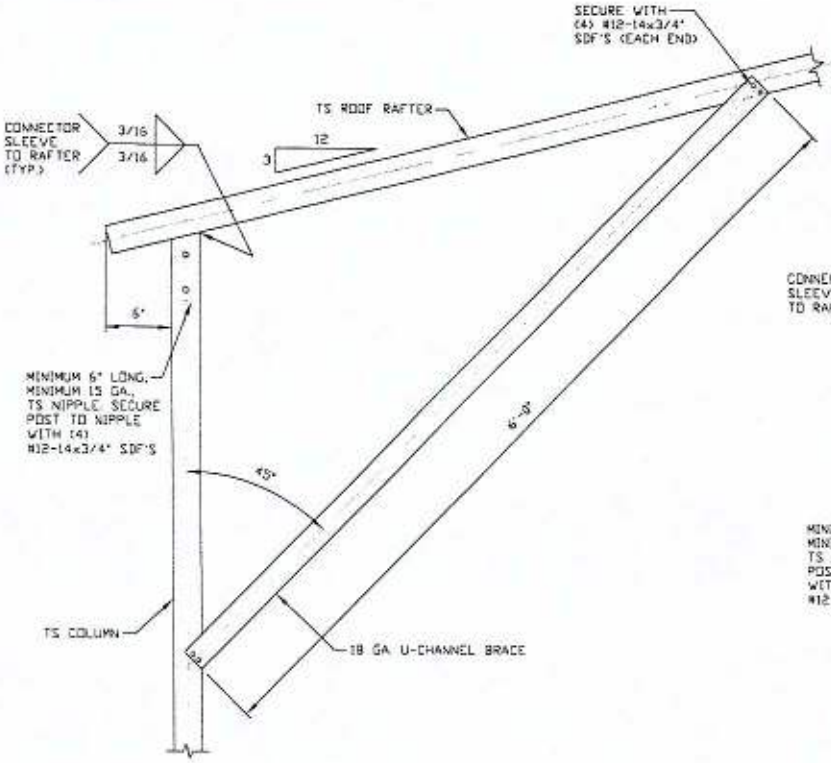

1A BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 12'-0" < TO ≤ 14'-0"
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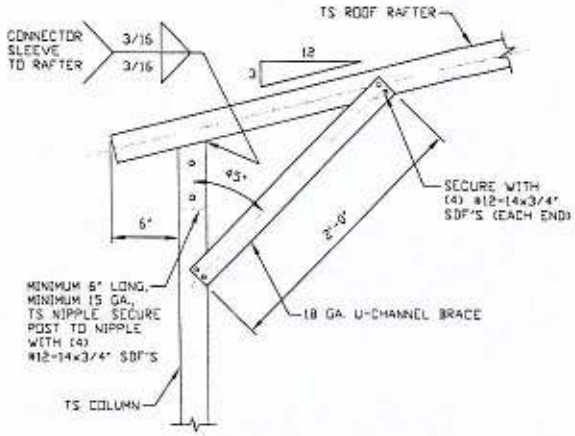

1B BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS ≤ 12'-0"
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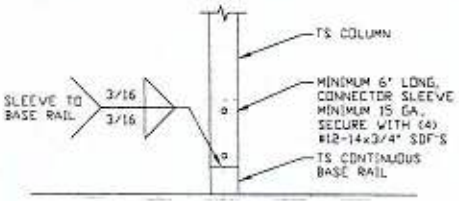

2 RAFTER COLUMN/BASE RAIL CONNECTION DETAIL
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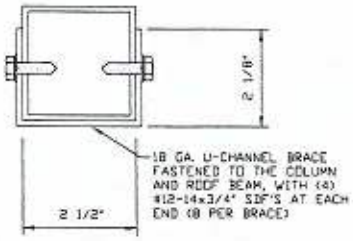

BRACE SECTION
SCALE: NTS

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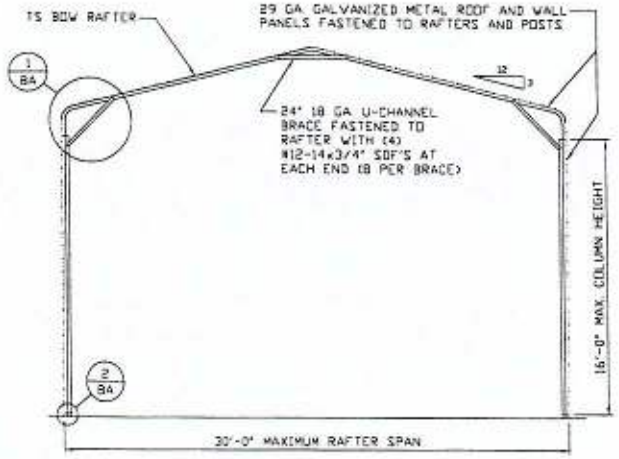
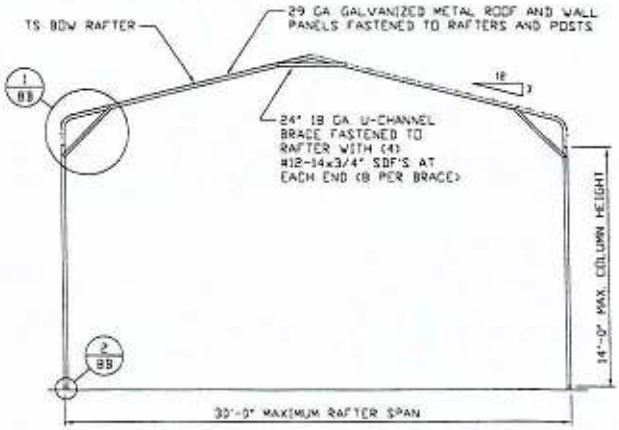


TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE: NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION

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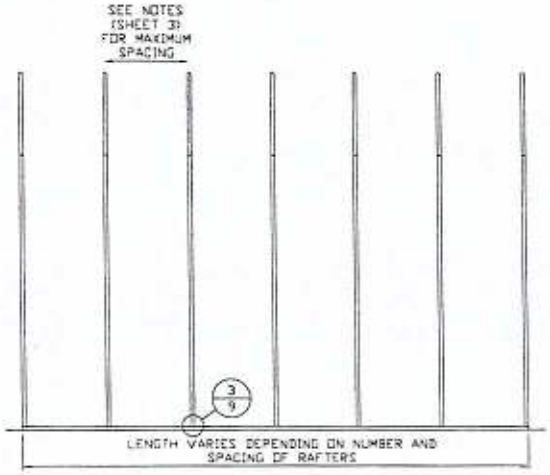

TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

SCALE: NTS

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	CLIENT: TBS	SHT. 7	DWG. NO: SK-1	REV.: 5

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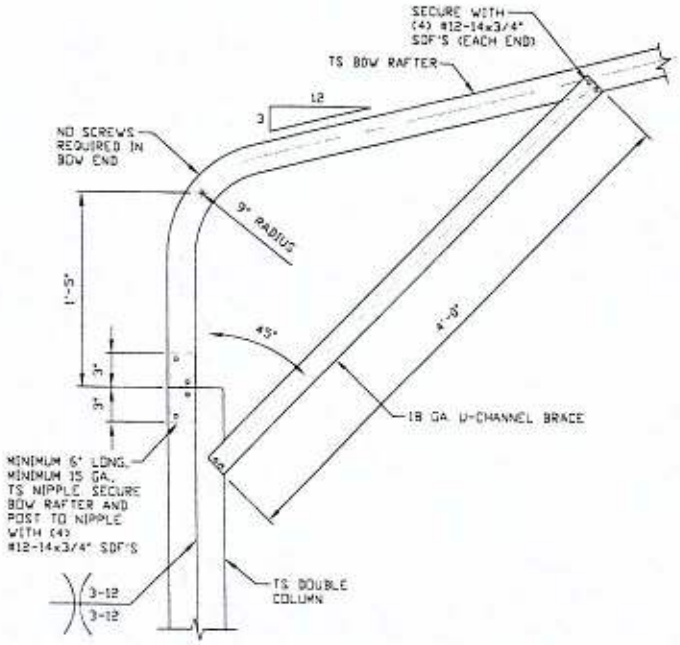
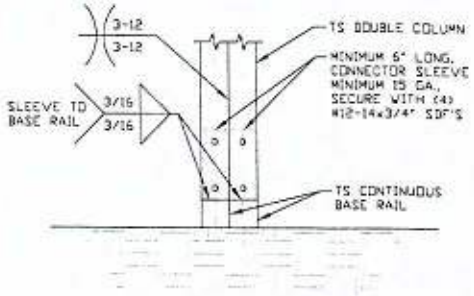


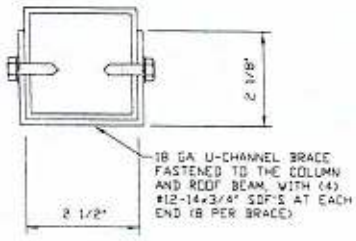
1 BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 14'-0" < TO ≤ 16'-0"

SCALE: NTS



2 RAFTER COLUMN/BASE RAIL CONNECTION DETAIL

SCALE: NTS



BRACE SECTION

SCALE: NTS

WAYNE S. MOORE
LICENSE
No 57170
MAR 2 0 2020
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: JRS	TUBULAR BUILDING SYSTEMS 30'-0"x20'-0" FULLY OPEN CARPORT EXP. B		
	CHECKED BY: PDH			
	PROJECT MGR: WSH	DATE: 2-20-18	SCALE: NTS	JOB NO: 16022S/17300S/18028S
	CLIENT: TBS	SHT. 8A	DWG. NO: SK-1	REV.: 5

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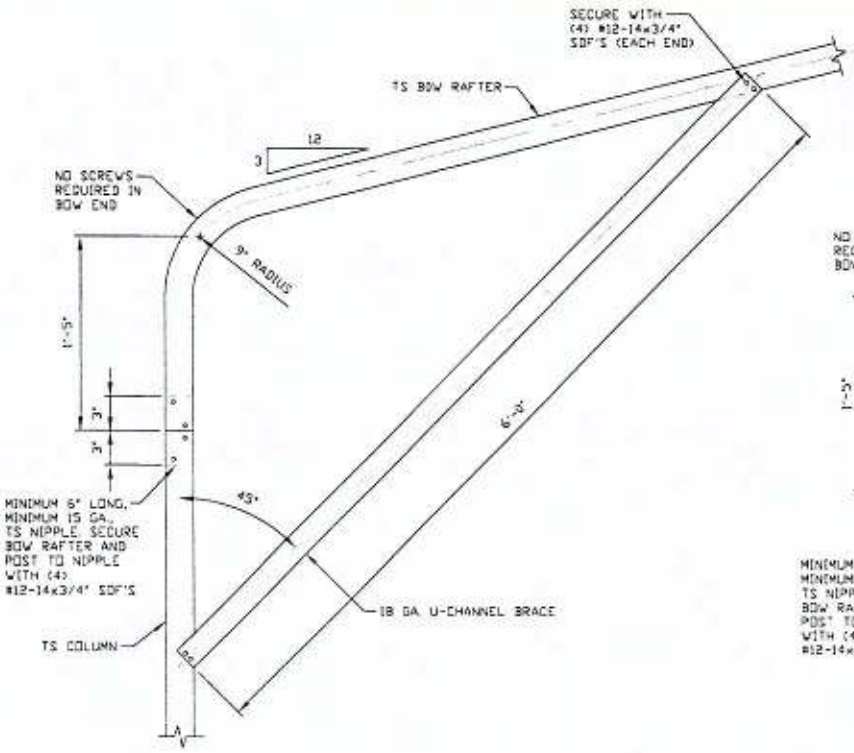
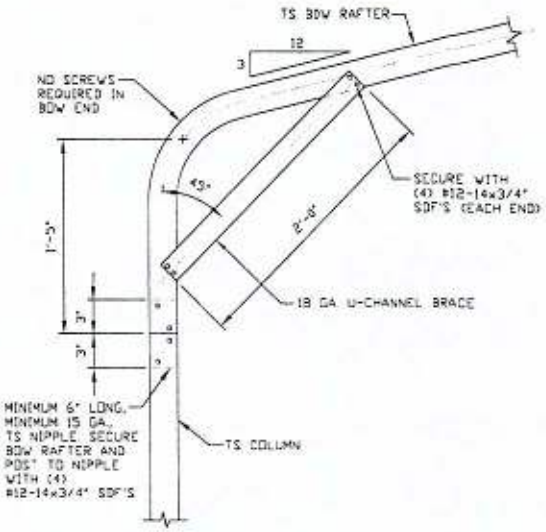
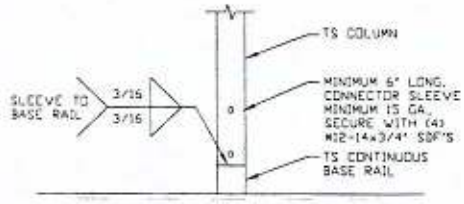


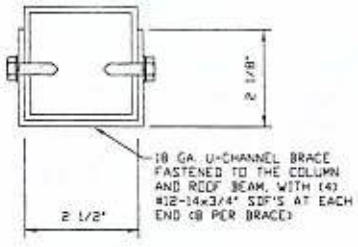
1A BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 12'-0" < TO ≤ 14'-0"
SCALE: NTS



1B BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS ≤ 12'-0"
SCALE: NTS



2 RAFTER COLUMN/BASE RAIL CONNECTION DETAIL
SCALE: NTS



BRACE SECTION
SCALE: NTS

WAYNE S. MOORE LICENSE No 57170 MAR 2 0 2020 STATE OF FLORIDA PROFESSIONAL ENGINEER

MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: JRS	TUBULAR BUILDING SYSTEMS 30'-0"x20'-0" FULLY OPEN CARPORT EXP. B		
	CHECKED BY: PDH			
	PROJECT MGR: WSH	DATE: 2-20-18	SCALE: NTS	JOB NO: 16022S/17300S/18028S
	CLIENT: TBS	SHT. 8B	DWG. NO: SK-1	REV.: 5

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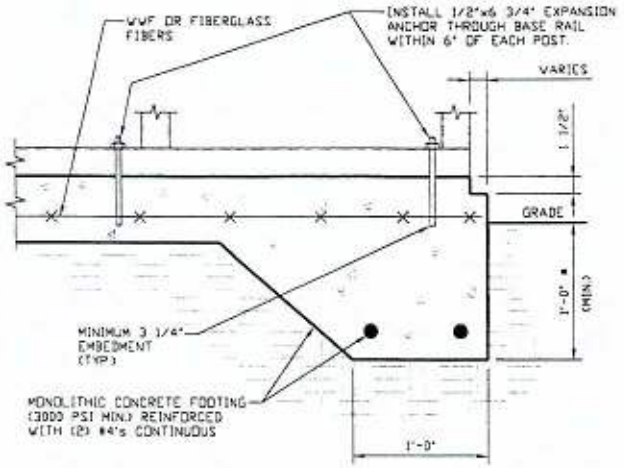
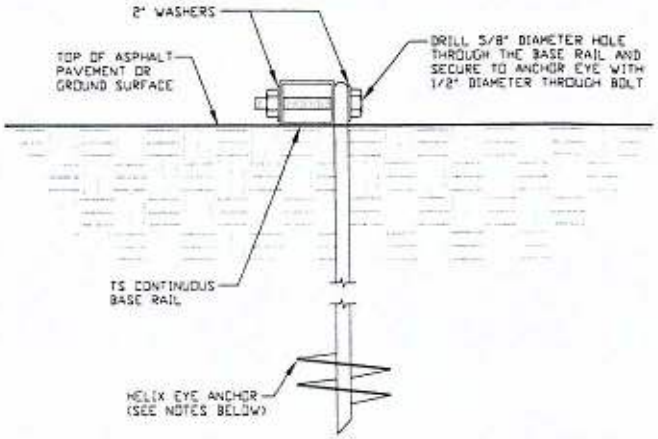
BASE RAIL ANCHORAGE OPTIONS FOR LOW AND HIGH WIND SPEED



3A CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

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



3B GROUND BASE HELIX ANCHORAGE

SCALE: NTS (CAN BE USED FOR ASPHALT)

GENERAL NOTES

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 INCHES 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 INCHES ELSEWHERE.

REINFORCING STEEL:

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

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

1. REINFORCEMENT IS BENT COLD.
2. THE DIAMETER OF THE BEND, MEASURED ON THE INSIDE OF THE BAR, IS NOT LESS THAN SIX-BAR DIAMETERS.
3. 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, PRELOADED SILTS AND CLAYS USE MINIMUM (2) 4" HELICES WITH MINIMUM 30 INCH EMBEDMENT.
2. FOR CORAL USE MINIMUM (2) 4" HELICES WITH MINIMUM 30 INCH EMBEDMENT.
3. FOR MEDIUM DENSE COARSE SANDS, SANDY GRAVELS, VERY STIFF SILTS, AND CLAYS USE MINIMUM (2) 4" HELICES WITH MINIMUM 30 INCH EMBEDMENT.
4. FOR LOOSE TO MEDIUM DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS ALLUVIAL FILL USE MINIMUM (2) 6" HELICES WITH MINIMUM 50 INCH 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 INCH EMBEDMENT.

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	CLIENT: TBS	SHT. 9A	DWG. NO: SK-1	REV.: 5

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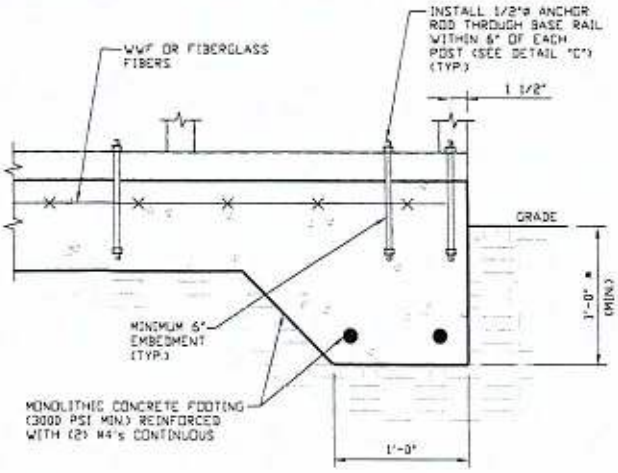
OPTIONAL FOUNDATION ANCHORAGE FOR LOW & HIGH WIND SPEED

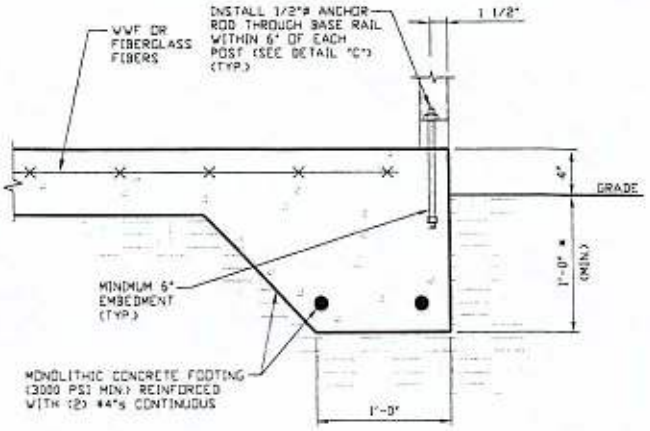


3A CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

SCALE: NTS

(MINIMUM ANCHOR EDGE DISTANCE IS 1 1/2")

* COORDINATE WITH LOCAL CODES/ORD.



3B CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

SCALE: NTS

(MINIMUM ANCHOR EDGE DISTANCE IS 1 1/2")

* COORDINATE WITH LOCAL CODES/ORD

GENERAL NOTES

CONCRETE:

CONCRETE SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS.

COVER OVER REINFORCING STEEL:

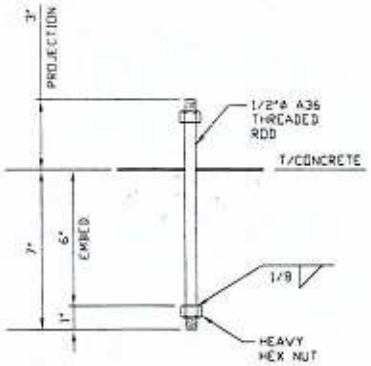
FOR FOUNDATIONS, MINIMUM CONCRETE COVER OVER REINFORCING BARS SHALL BE PER ACI-318:
3 INCHES IN FOUNDATIONS WHERE THE CONCRETE IS CAST AGAINST AND PERMANENTLY IN CONTACT WITH THE EARTH OR EXPOSED TO THE EARTH OR WEATHER, AND 1 1/2 INCHES ELSEWHERE.

REINFORCING STEEL:

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

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

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



3C ANCHOR ROD THROUGH BASE RAIL DETAIL

SCALE: NTS

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	CHECKED BY: PDH			
	PROJECT MGR: WSH	DATE: 2-20-18	SCALE: NTS	JOB NO: 16022S/17300S/18028S
	CLIENT: TBS	SHT. 9B	DWG. NO: SK-1	REV.: 5

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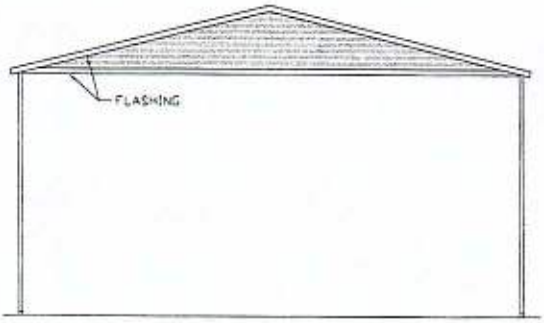
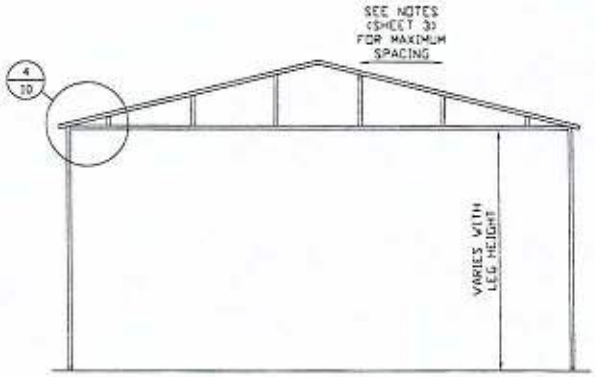
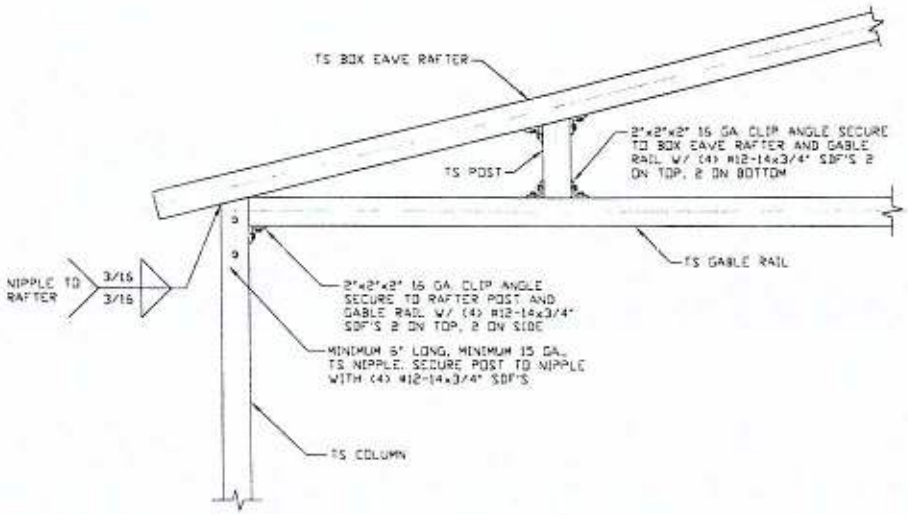
BOX EAVE RAFTER GABLE END OPTION



TYPICAL BOX EAVE RAFTER
END WALL FRAMING SECTION
SCALE: NTS



TYPICAL BOX EAVE RAFTER END
WALL OPENINGS FRAMING SECTION
SCALE: NTS



4 BOX EAVE RAFTER GABLE RAIL TO
RAFTER POST CONNECTION DETAIL
SCALE: NTS

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	CHECKED BY: PDH			
	PROJECT MGR: WSM	DATE: 2-20-18	SCALE: NTS	JOB NO: 16022S/17300S/18028S
	CLIENT: TBS	SHT. 10	DWG. NO: SK-1	REV.: 5

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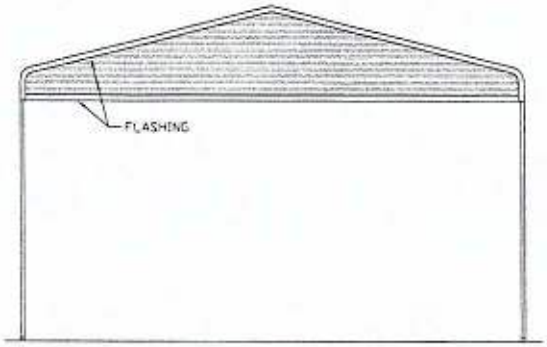
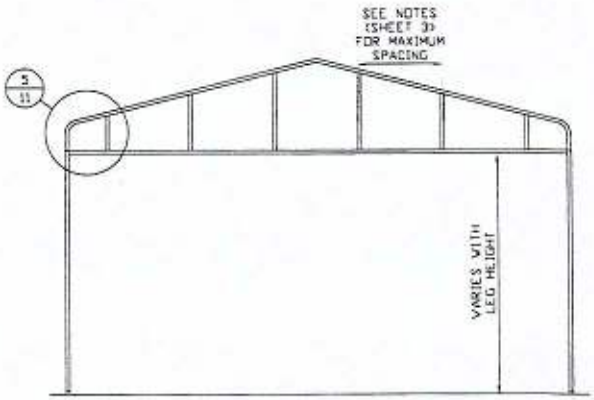
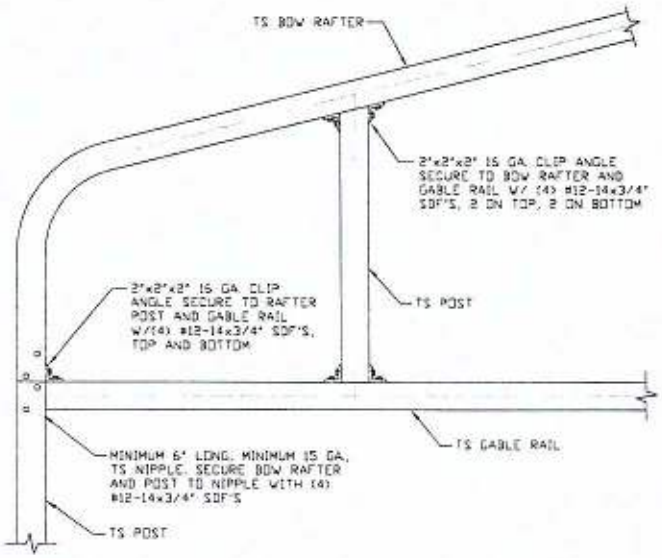
BOW RAFTER GABLE END OPTION



TYPICAL BOX EAVE RAFTER
END WALL FRAMING SECTION
SCALE: NTS



TYPICAL BOX EAVE RAFTER END
WALL OPENINGS FRAMING SECTION
SCALE: NTS



5 BOW RAFTER GABLE RAIL TO
RAFTER/POST CONNECTION DETAIL
SCALE: NTS

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	CHECKED BY: PDH			
	PROJECT MGR: WSM	DATE: 2-20-18	SCALE: NTS	JOB NO: 16022S/17300S/18028S
	CLIENT: TBS	SHT. 11	DWG. NO: SK-1	REV.: 5

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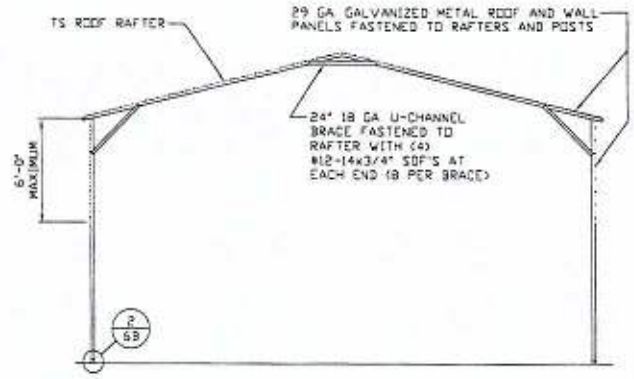
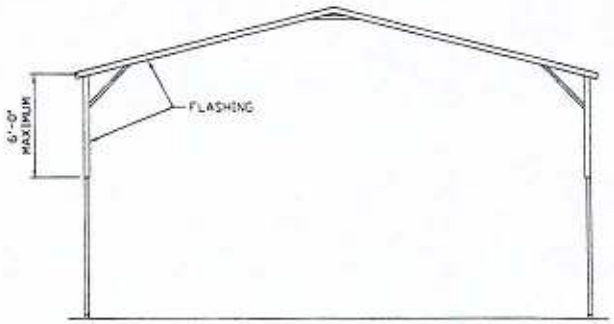
BOX EAVE RAFTER EXTRA SIDE PANEL OPTION



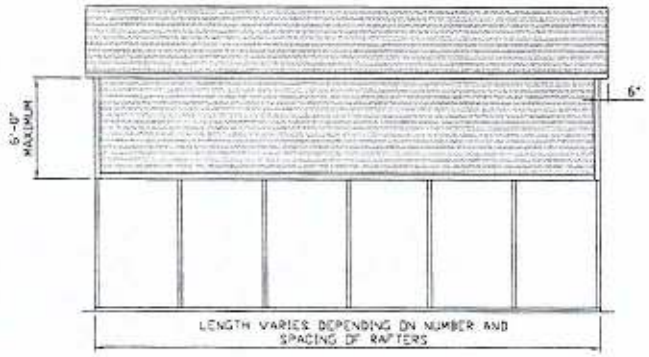
TYPICAL RAFTER/POST FRAME SECTION EXTRA SIDE PANELS

SCALE: NTS



TYPICAL END ELEVATION EXTRA SIDE PANELS

SCALE: NTS



TYPICAL SIDE ELEVATION EXTRA SIDE PANELS

SCALE: NTS

WAYNE S. MOORE
LICENSE
No 57170
MAR 2 0 2020
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: JRS	TUBULAR BUILDING SYSTEMS 30'-0"x20'-0" FULLY OPEN CARPORT EXP. B		
	CHECKED BY: PDH			
	PROJECT MGR: WSM	DATE: 2-20-18	SCALE: NTS	JOB NO: 16022S/17300S/18028S
	CLIENT: TBS	SHT. 12	DWG. NO: SK-1	REV.: 5

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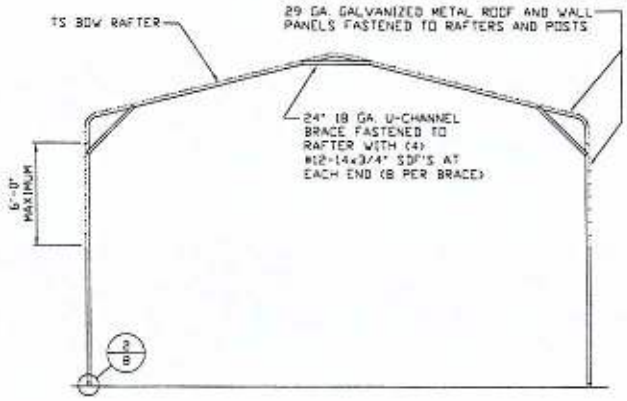
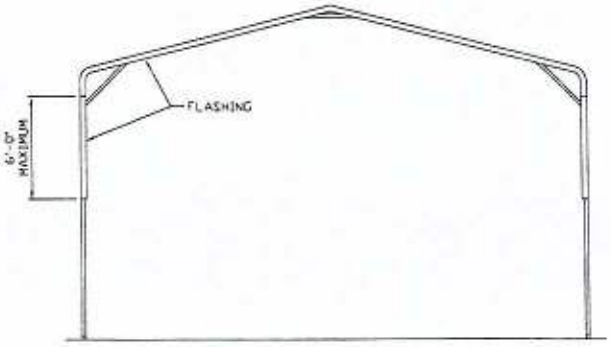
BOW RAFTER EXTRA SIDE PANEL OPTION



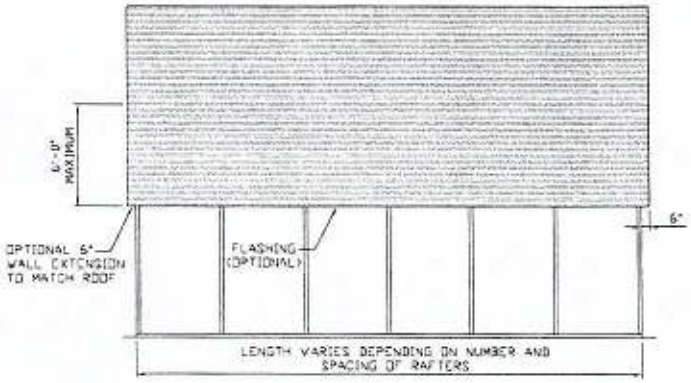
TYPICAL RAFTER/POST FRAME SECTION EXTRA SIDE PANELS

SCALE: NTS



TYPICAL END ELEVATION EXTRA SIDE PANELS

SCALE: NTS



TYPICAL SIDE ELEVATION EXTRA SIDE PANELS

SCALE: NTS

WAYNE S. MOORE LICENSE No 57170 MAR 2 0 2020 STATE OF FLORIDA PROFESSIONAL ENGINEER

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	CHECKED BY: PDH			
	PROJECT MGR: WSM	DATE: 2-20-18	SCALE: NTS	JOB NO: 160225/17300S/18028S
	CLIENT: TBS	SHT. 13	DWG. NO: SK-1	REV.: 5

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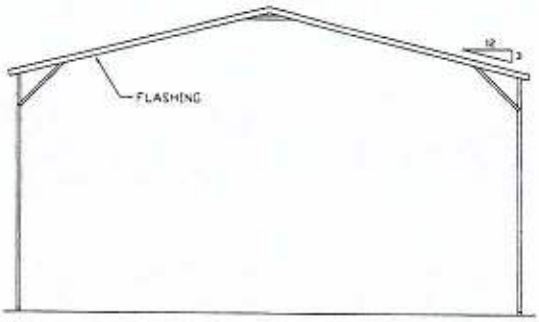
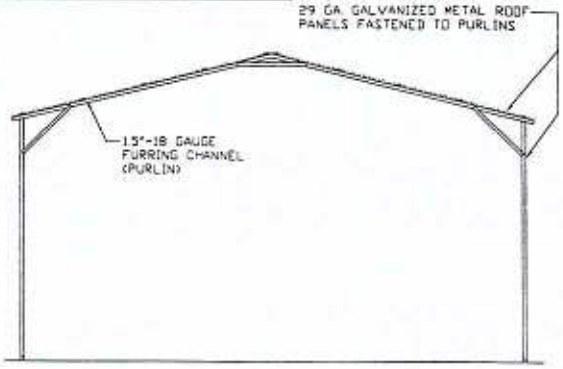
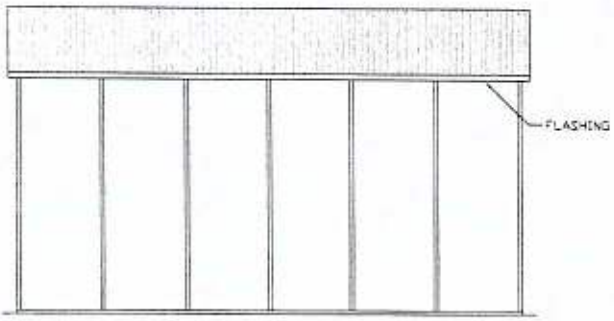
BOX EAVE RAFTER VERTICAL ROOF OPTION



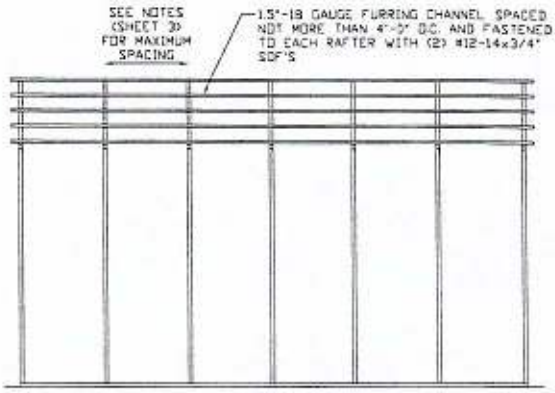
TYPICAL END ELEVATION
VERTICAL ROOF/SIDING OPTION
SCALE: NTS



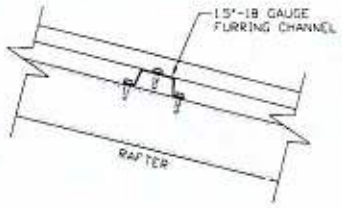
TYPICAL SECTION VERTICAL
ROOF/SIDING OPTION
SCALE: NTS



TYPICAL SIDE ELEVATION
VERTICAL ROOF/SIDING OPTION
SCALE: NTS



TYPICAL FRAMING SECTION
VERTICAL ROOF/SIDING OPTION
SCALE: NTS



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

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	CHECKED BY: PDH			
	PROJECT MGR: WSM	DATE: 2-20-18	SCALE: NTS	JOB NO: 16022S/17300S/18028S
	CLIENT: TBS	SHT. 14	DWG. NO: SK-1	REV.: 5

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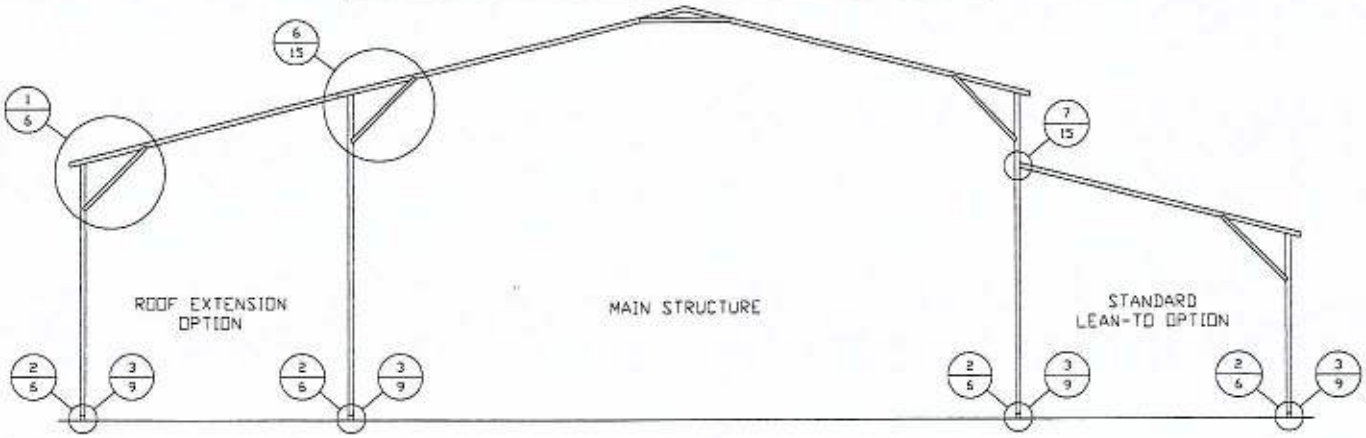
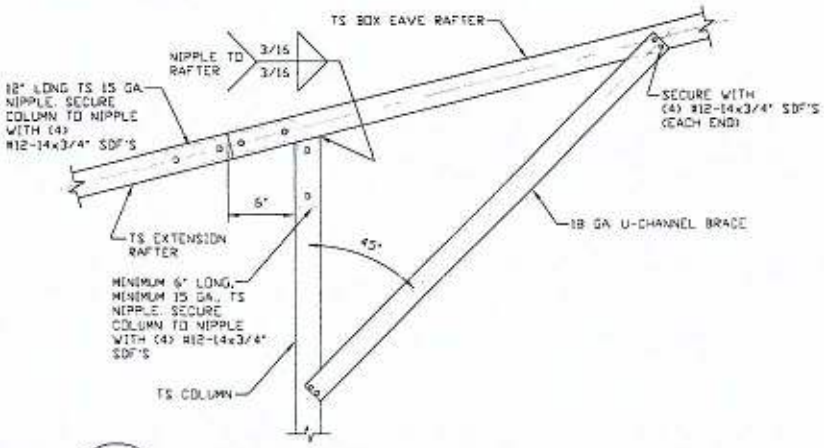
BOX EAVE RAFTER LEAN-TO OPTIONS

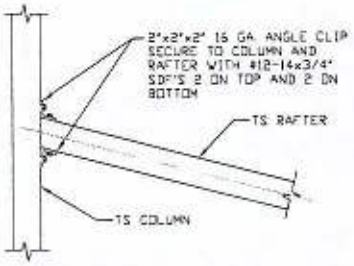


TYPICAL BOX EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION (BOTH OPTIONS SHOWN)

SCALE: NTS
MAXIMUM WIDTH OF SINGLE MEMBER RAFTER LEAN-TO IS 16'-0".



6 SIDE EXTENSION RAFTER/COLUMN DETAIL
SCALE: NTS



7 LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL
SCALE: NTS

MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: JRS	TUBULAR BUILDING SYSTEMS 30'-0"x20'-0" FULLY OPEN CARPORT EXP. B			
	CHECKED BY: PDH				
	PROJECT MGR: WSM	DATE: 2-20-18	SCALE: NTS	JOB NO: 16022S/17300S/18028S	
	CLIENT: TBS	SHT. 15	DWG. NO: SK-1	REV.: 5	

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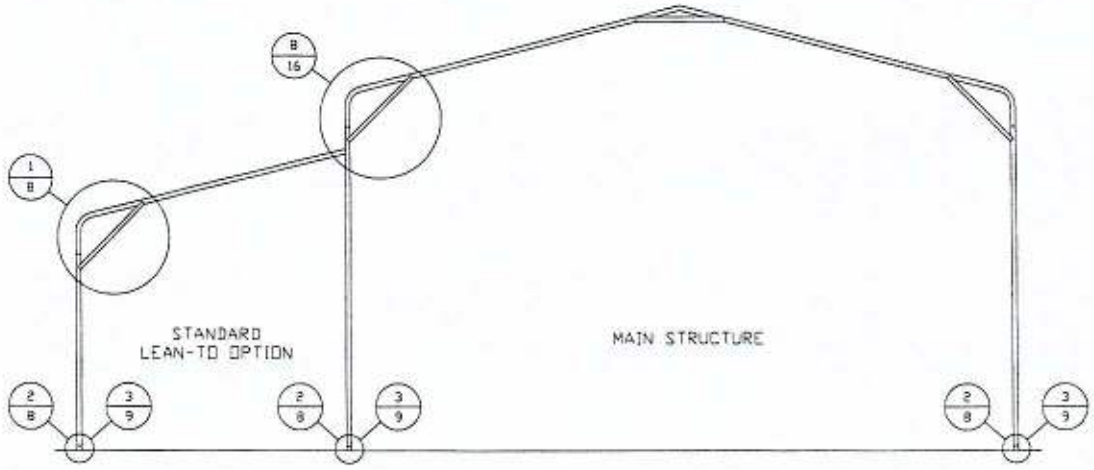
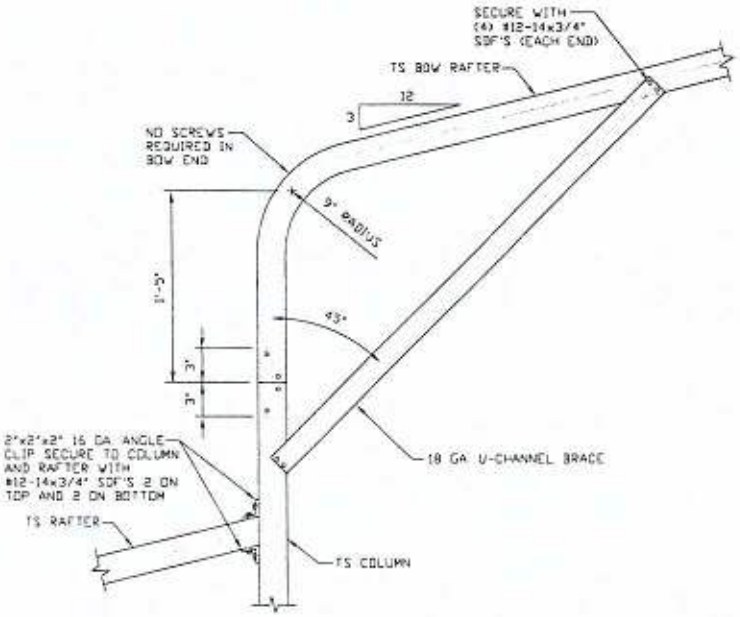
BOW RAFTER LEAN-TO OPTIONS



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

SCALE: NTS

MAXIMUM WIDTH OF SINGLE MEMBER RAFTER LEAN-TO IS 16'-0"



8 SIDE EXTENSION RAFTER/COLUMN DETAIL

SCALE: NTS

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	CHECKED BY: PDH			
	PROJECT MGR: WSM	DATE: 2-20-18	SCALE: NTS	JOB NO: 16022S/17300S/18028S
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