

Siding rests on concrete notch

Basic Building Size is measured to the outside of the Base Rail

3-1/2" wide x 1-1/2" high Notch in Concrete outside of basic building dimensions

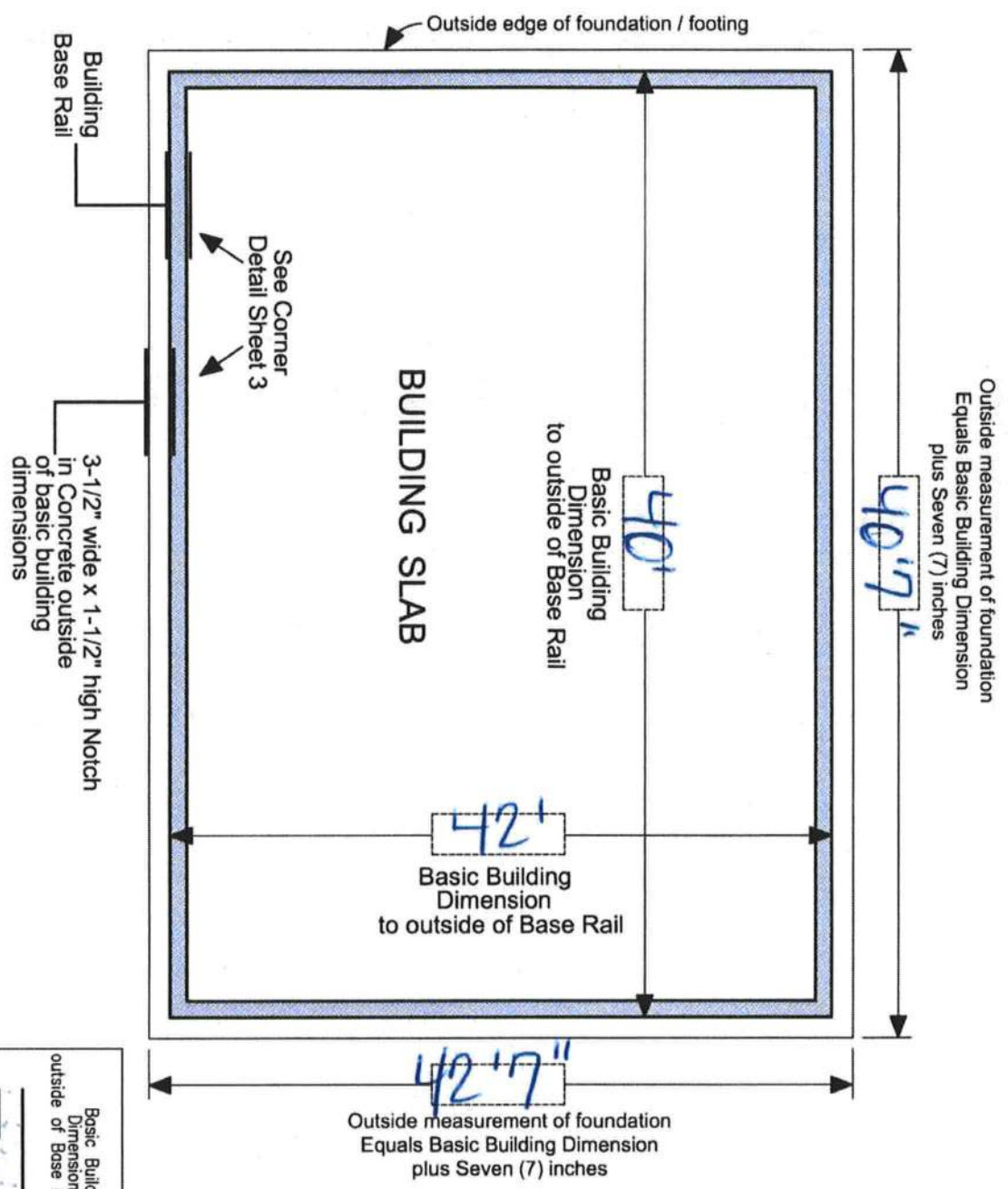
TYPICAL BUILDING

CORNER DETAIL





TYPICAL BUILDING FOUNDATION MEASUREMENTS

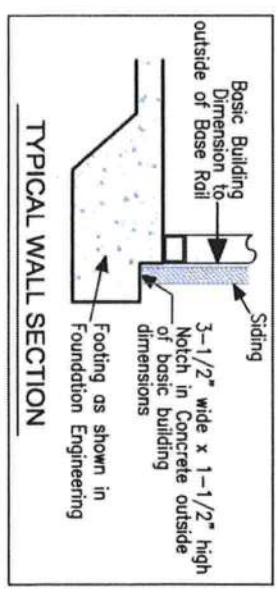


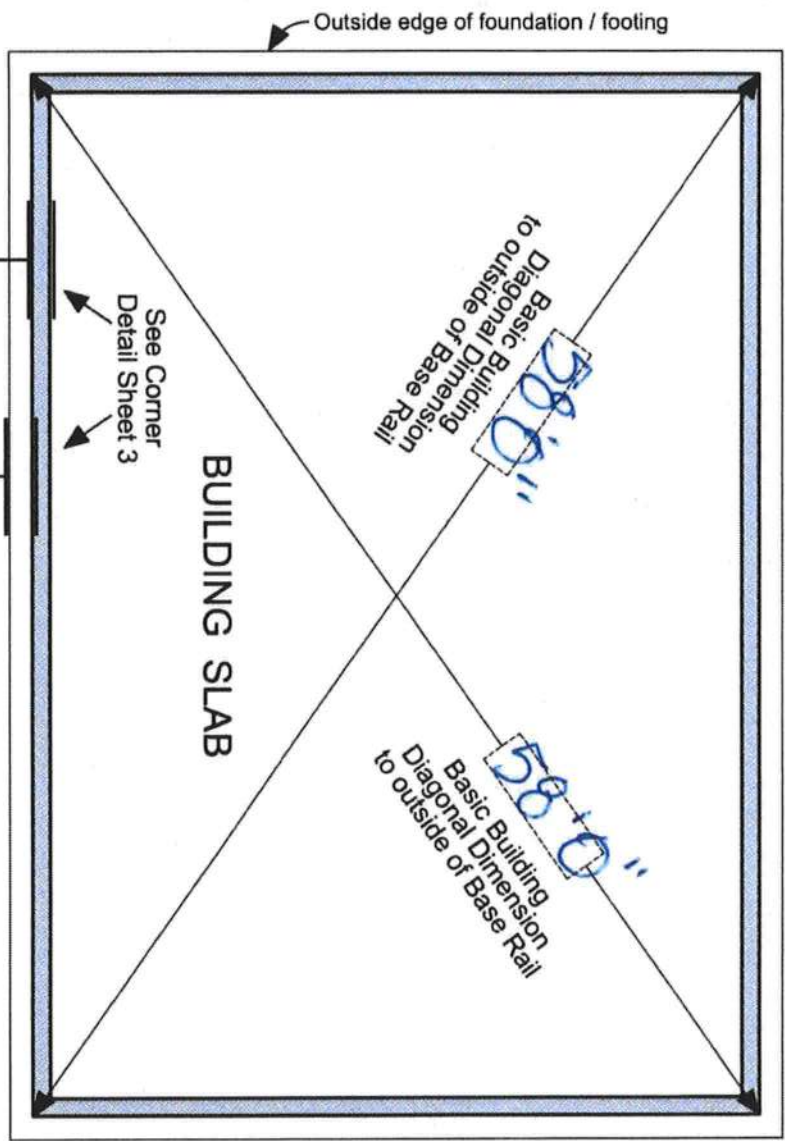
IMPORTANT - NOTES

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





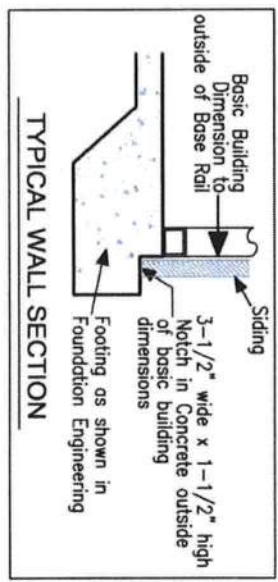
TYPICAL BUILDING FOUNDATION MEASUREMENTS DIAGONALS

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





STRUCTURAL DESIGN

PARTIALLY ENCLOSED (UTILITY) BUILDING EXPOSURE B

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

18 December 2017

Revision 1

M&A Project No. 16154S/17300S

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

Digitally signed
by Wayne S
Moore

Date: 2017.12.19
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CHECKED BY: PDM

PROJECT MGR: WSM

CLIENT: TBS

**TUBULAR BUILDING SYSTEMS
30'-0"x20'-0" PARTIALLY ENCLOSED
(UTILITY) BUILDING EXP. B
PE SEAL COVER SHEET**

DATE: 12-18-17

SCALE: NTS

**JOB NO:
16154S/17300S**

SHT. 1

DWG. NO: SK-2

REV: 1

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MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: LT	TUBULAR BUILDING SYSTEMS 30'-0"x20'-0" PARTIALLY ENCLOSED (UTILITY) BUILDING EXP. B		
	CHECKED BY: PDM	PROJECT MGR: WSM	DATE: 12-18-17	SCALE: NTS
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INSTALLATION NOTES AND SPECIFICATIONS

1. DESIGN IS FOR A MAXIMUM 30'-0" WIDE x 20'-0" EAVE HEIGHT PARTIALLY ENCLOSED STRUCTURES.
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 = 15 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 = 50 FEET
5. HIGH ULTIMATE WIND SPEED 141 TO 170 MPH (NOMINAL WIND SPEED 109 TO 132 MPH) MAXIMUM RAFTER/POST AND END POST SPACING = 40 FEET.
6. LOW HAZARD RISK CATEGORY I (WIND)
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 (< 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_c = 10
 S_{ps} = 1.522 V = C_sW
 S_{p1} = 0.839



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30'-0"x20'-0" PARTIALLY ENCLOSED (UTILITY)
BUILDING EXP. B**

DATE: 12-18-17

SCALE: NTS

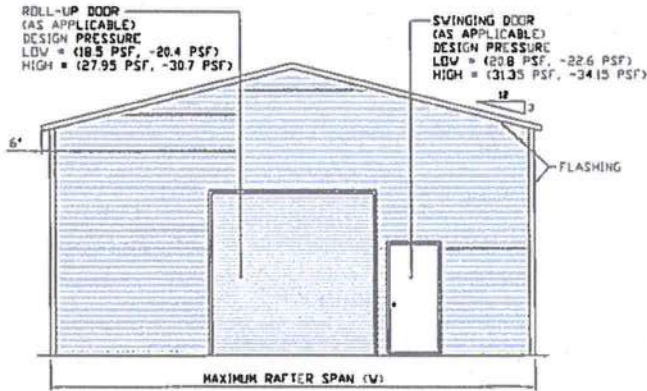
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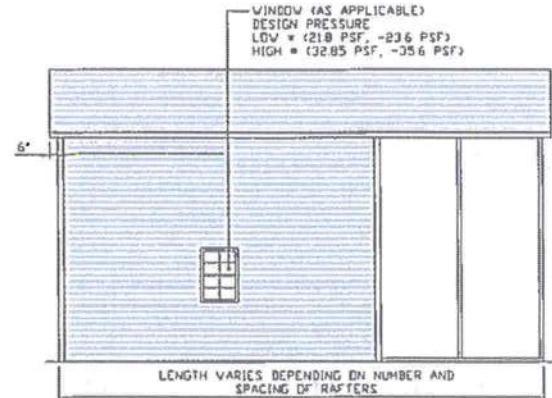
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BOX EAVE FRAME RAFTER ENCLOSED BUILDING



TYPICAL END ELEVATION-HORIZONTAL ROOF

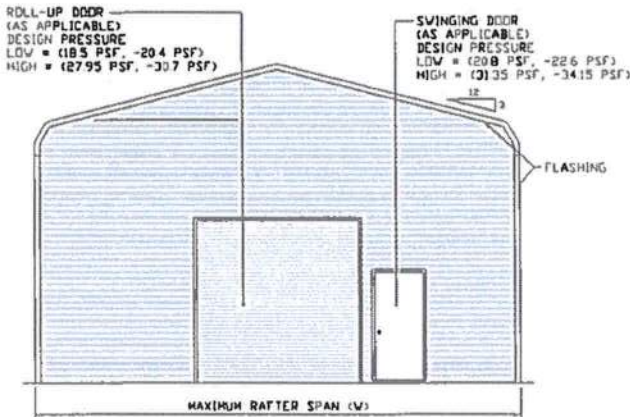
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TYPICAL SIDE ELEVATION-HORIZONTAL ROOF

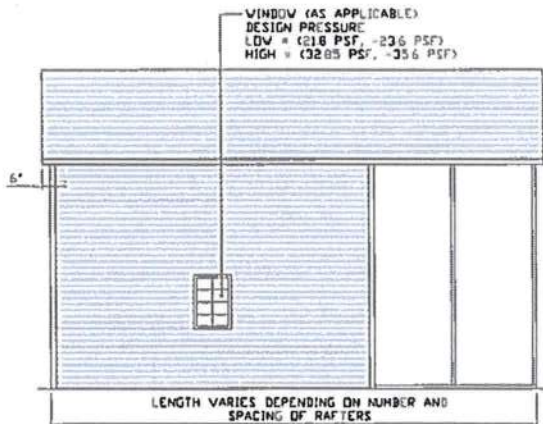
SCALE: NTS

BOW FRAME RAFTER ENCLOSED BUILDING



TYPICAL END ELEVATION

SCALE: NTS



TYPICAL SIDE ELEVATION

SCALE: NTS



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BUILDING EXP. B**

DATE: 12-18-17

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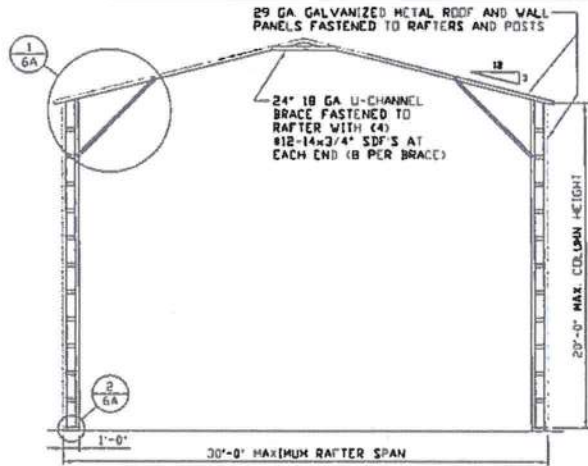
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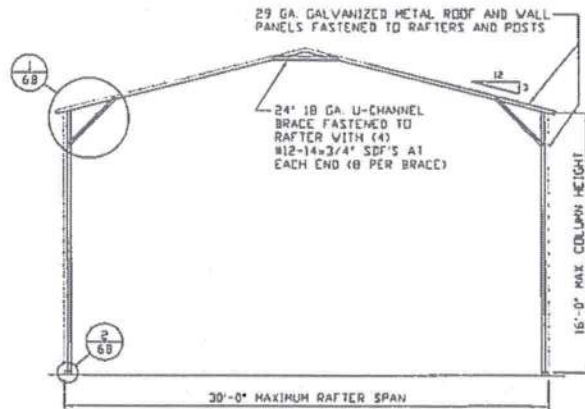
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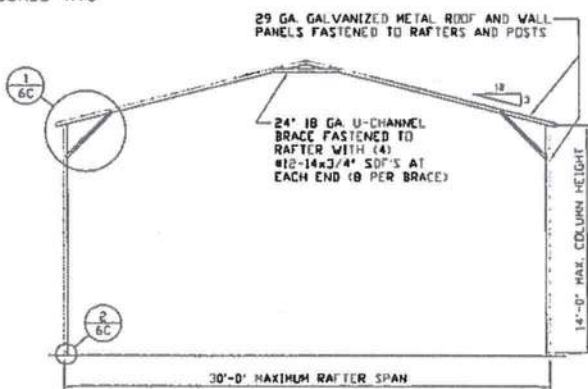
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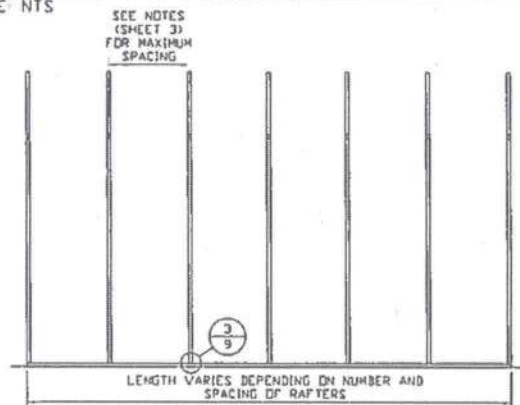
TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION
SCALE: NTS



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**TUBULAR BUILDING SYSTEMS
30'-0" x 20'-0" PARTIALLY ENCLOSED (UTILITY)
BUILDING EXP. B**

DATE: 12-18-17

SMT. 5

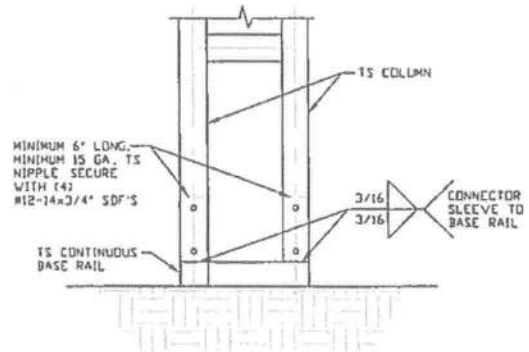
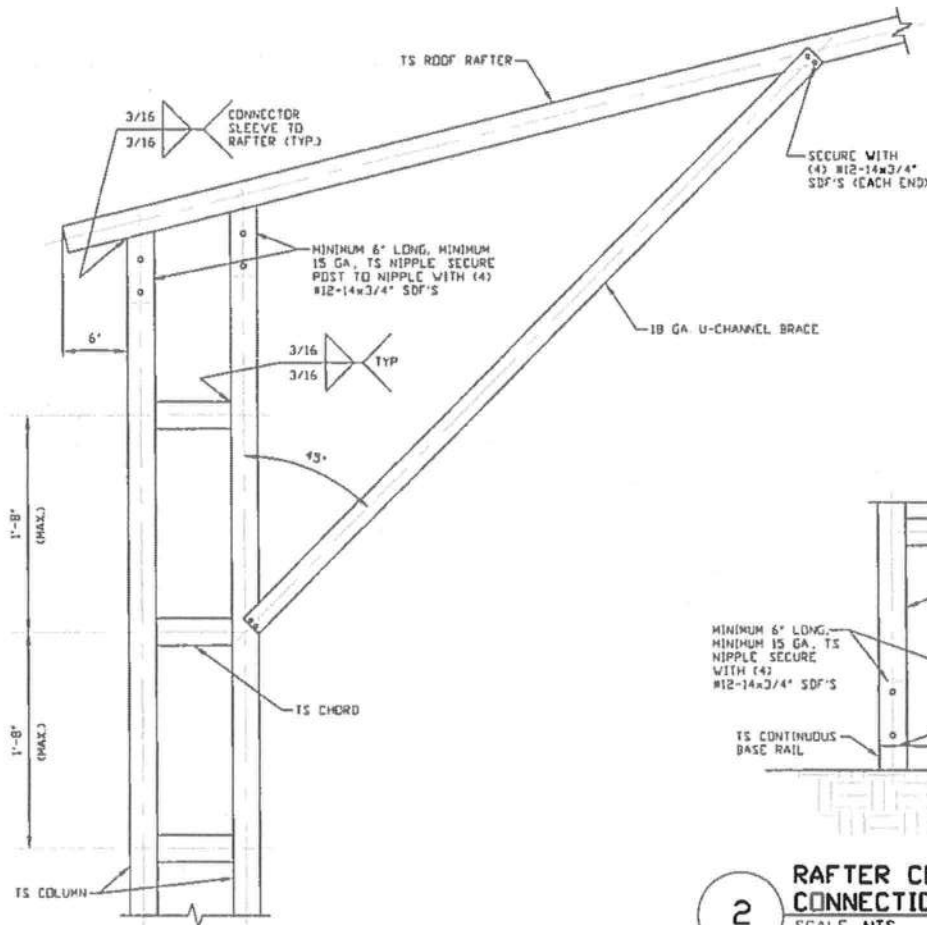
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161545/173005

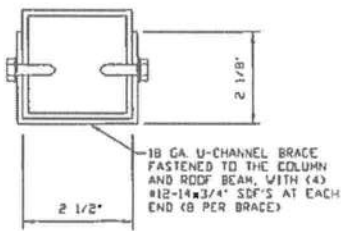
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1 BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 16'-0" < TO ≤ 20'-0" SCALE: NTS

2 RAFTER COLUMN/BASE RAIL CONNECTION DETAIL SCALE: NTS



BRACE SECTION SCALE: NTS



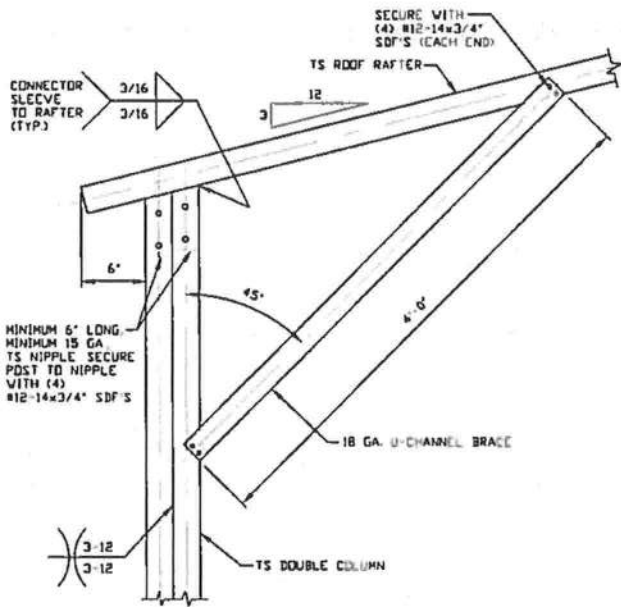
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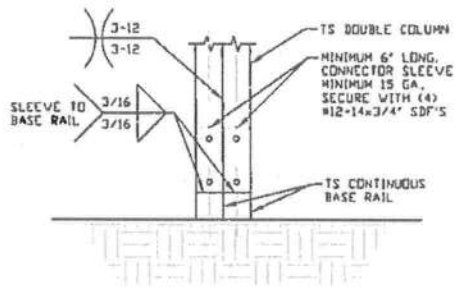
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PROJECT MGR: WSM	DATE: 12-18-17	SCALE: NTS	JOB NO: 161545/173005
CLIENT: TBS	SHT. 6A	DWG. NO: SK-2	REV: 1

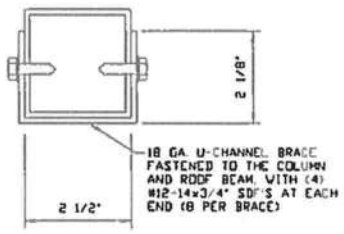
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1 BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 14'-0" < TO ≤ 16'-0" SCALE: NTS



2 RAFTER COLUMN/BASE RAIL CONNECTION DETAIL SCALE: NTS



BRACE SECTION SCALE: NTS

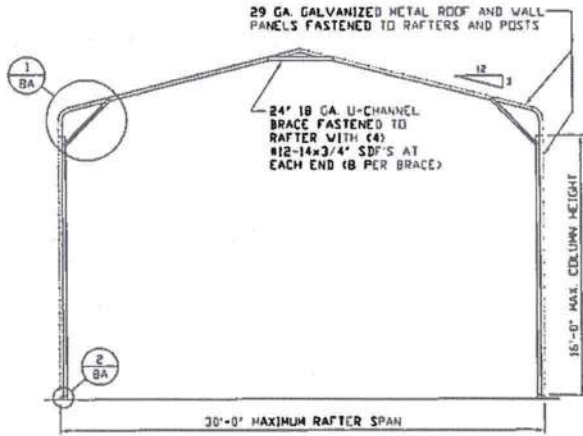


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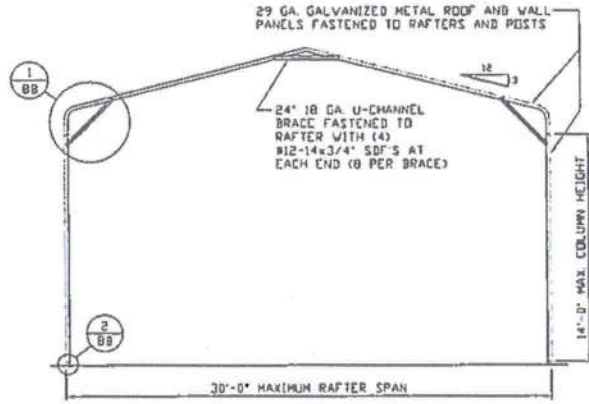
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	CHECKED BY: PDM			
PROJECT MGR: WSM	DATE: 12-18-17	SCALE: NTS	JOB NO: 161545/173005	
CLIENT: TBS	SHT. 6B	DWG. NO: SK-2	REV: 1	

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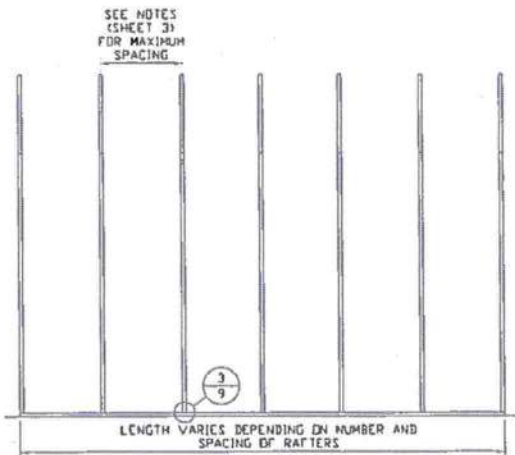
TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE: NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

SCALE: NTS



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**TUBULAR BUILDING SYSTEMS
30'-0"x20'-0" PARTIALLY ENCLOSED (UTILITY)
BUILDING EXP. B**

DATE: 12-18-17

SHT. 7

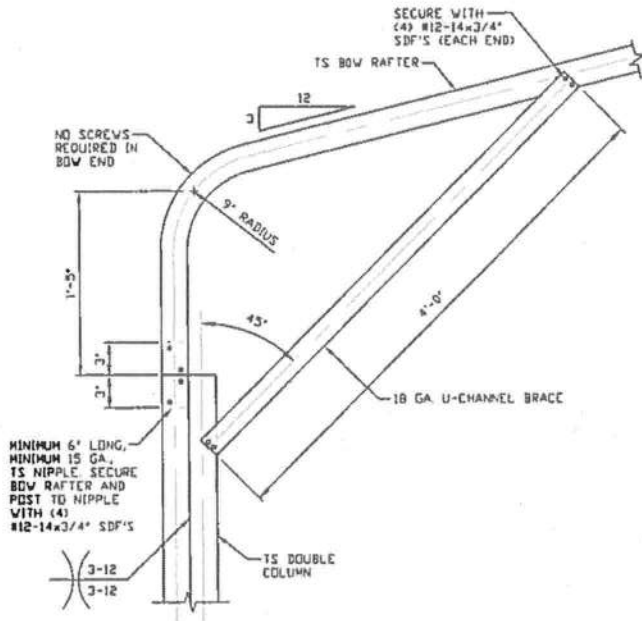
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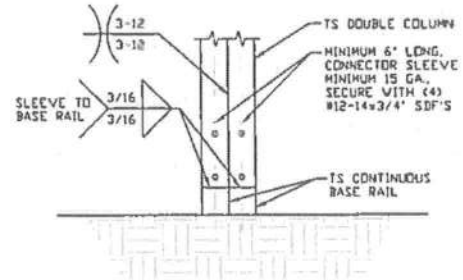
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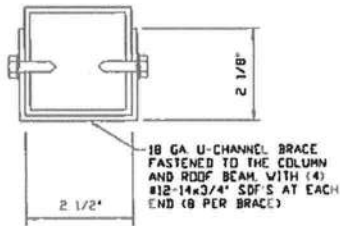
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1 BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 14'-0" < TO <= 16'-0" SCALE: NTS



2 RAFTER COLUMN/BASE RAIL CONNECTION DETAIL SCALE: NTS



BRACE SECTION SCALE: NTS



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TUBULAR BUILDING SYSTEMS
30'-0"x20'-0" PARTIALLY ENCLOSED (UTILITY)
BUILDING EXP. B

DATE: 12-18-17

SHT. BA

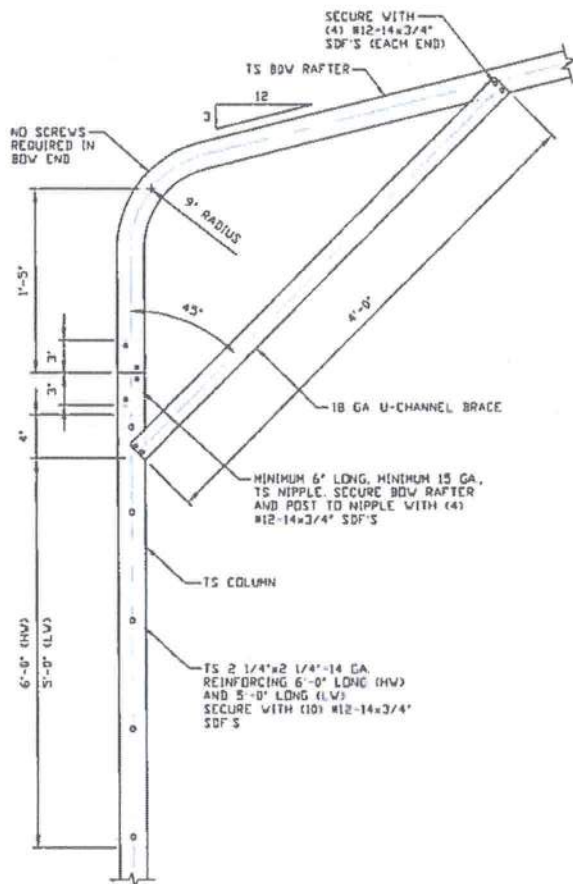
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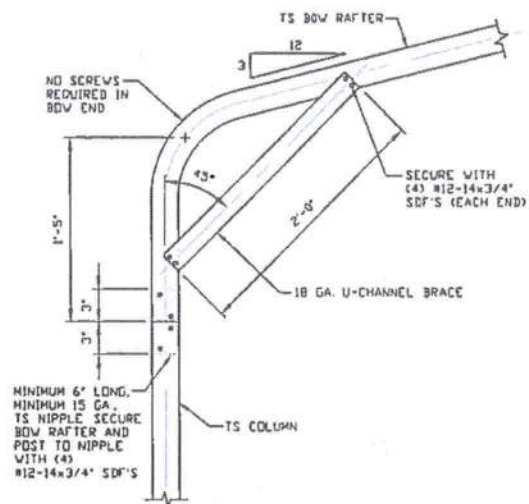
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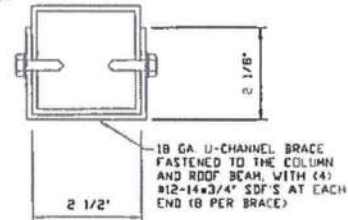
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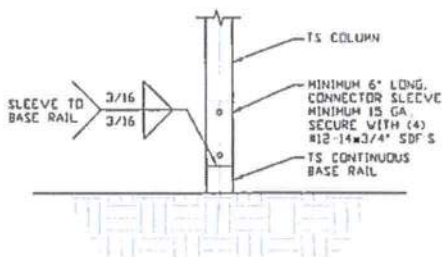
1A BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 10'-0" < TO < 14'-0" SCALE: NTS



1B BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS < 10'-0" SCALE: NTS



BRACE SECTION SCALE: NTS



2 RAFTER COLUMN/BASE RAIL CONNECTION DETAIL SCALE: NTS



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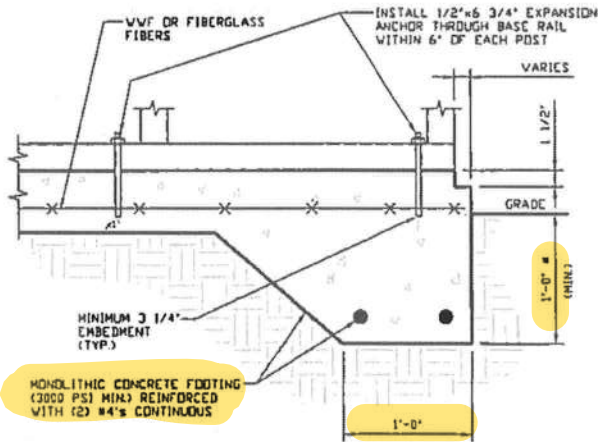
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CHECKED BY: PDH		30'-0" x 20'-0" PARTIALLY ENCLOSED (UTILITY) BUILDING EXP. B	
PROJECT MGR: VSM	DATE: 12-18-17	SCALE: NTS	JOB NO: 16154S/17300S
CLIENT: TBS	SHT. 8B	DWG. NO: SK-2	REV. 1

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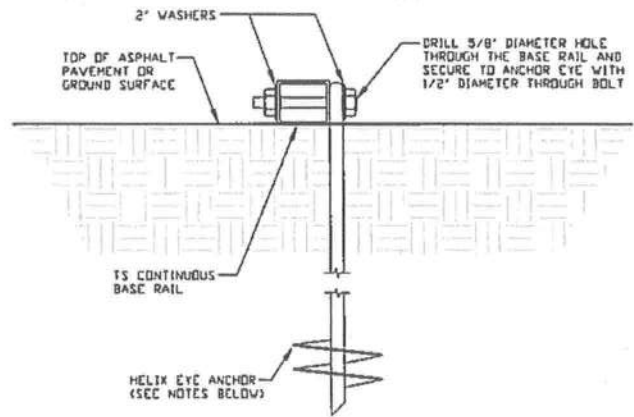
BASE RAIL ANCHORAGE OPTIONS FOR LOW AND HIGH WIND SPEED



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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**MOORE AND ASSOCIATES
ENGINEERING AND CONSULTING, INC.**

DRAWN BY: LT

CHECKED BY: PDH

PROJECT MGR: VSM

CLIENT: TBS

**TUBULAR BUILDING SYSTEMS
30'-0" X 20'-0" PARTIALLY ENCLOSED (UTILITY)
BUILDING EXP. B**

DATE: 12-18-17

SHT. 9A

SCALE: NTS

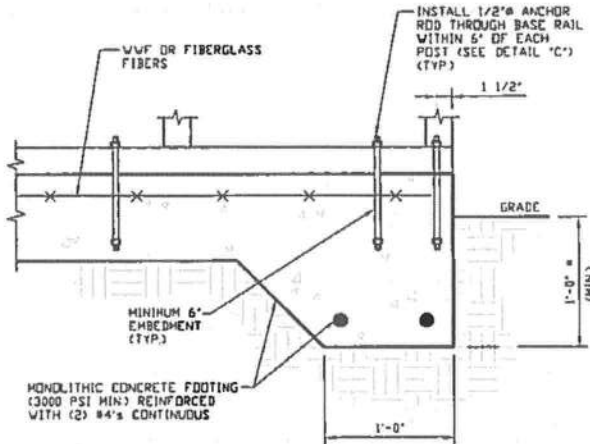
DWG. NO: SK-2

**JOB NO:
161545/173005**

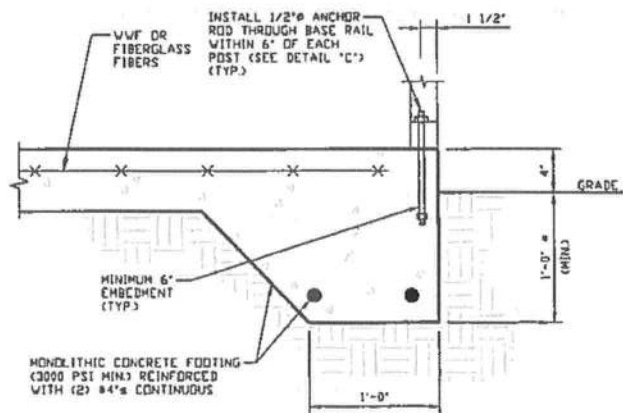
REV: 1

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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/DRD.



3B CONCRETE MONOLITHIC SLAB
BASE RAIL ANCHORAGE
SCALE: NTS
(MINIMUM ANCHOR EDGE DISTANCE IS 1 1/2")
* COORDINATE WITH LOCAL CODES/DRD.

GENERAL NOTES

CONCRETE:

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

COVER OVER REINFORCING STEEL:

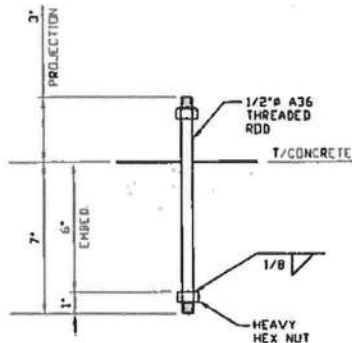
FOR FOUNDATIONS, MINIMUM CONCRETE COVER OVER REINFORCING BARS SHALL BE PER ACI-318
3 INCHES IN FOUNDATIONS WHERE THE CONCRETE IS CAST AGAINST AND PERMANENTLY IN CONTACT WITH THE EARTH OR EXPOSED TO THE EARTH OR WEATHER, AND 1 1/2 INCHES ELSEWHERE

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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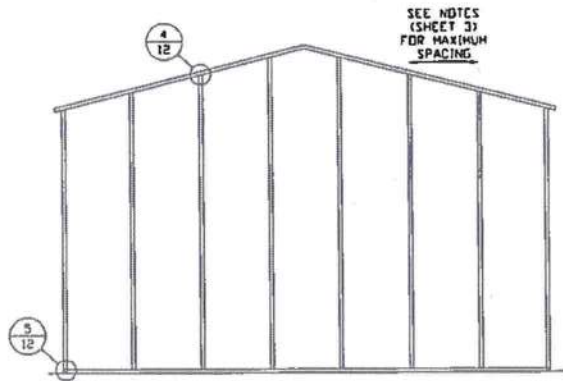
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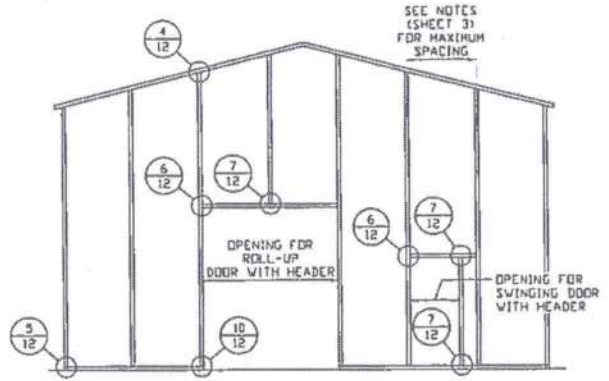
DRAWN BY: LT	TUBULAR BUILDING SYSTEMS 30'-0" x 20'-0" PARTIALLY ENCLOSED (UTILITY) BUILDING EXP. B		
CHECKED BY: PDH	PROJECT MGR: VSM	DATE: 12-18-17	SCALE: NTS
CLIENT: TBS	SHT. 9B	DATE: 12-18-17	REV: 1

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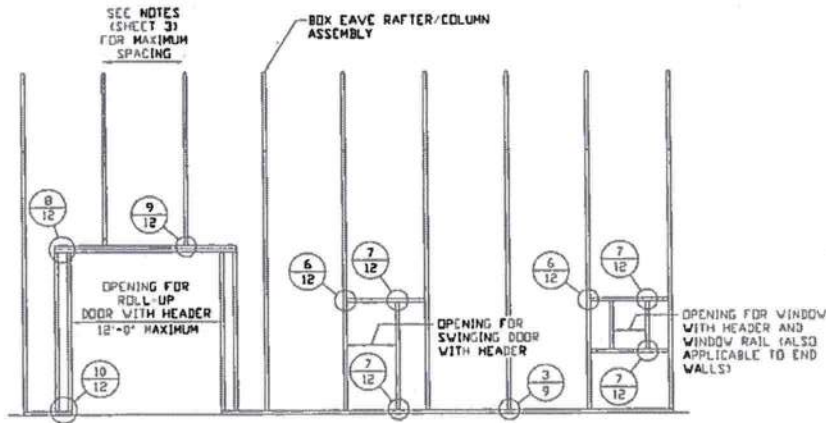
BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



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



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



**TYPICAL BOX EAVE RAFTER SIDE
WALL OPENINGS FRAMING SECTION**
SCALE: NTS



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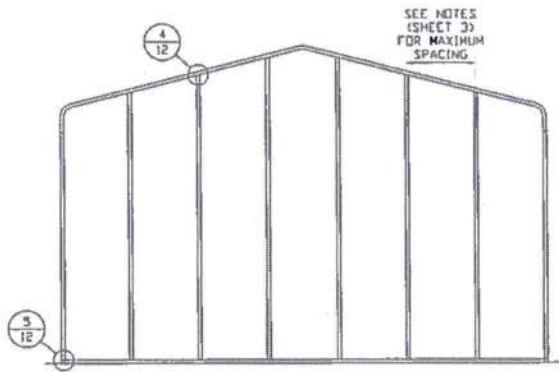
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DRAWN BY: LT	TUBULAR BUILDING SYSTEMS 30'-0" x 20'-0" PARTIALLY ENCLOSED (UTILITY) BUILDING EXP. B		
CHECKED BY: PDH	PROJECT MGR: VSM	DATE: 12-18-17	JOB NO: 161545/173005
CLIENT: TBS	SHT. 10	DWG. NO: SK-2	REV: 1

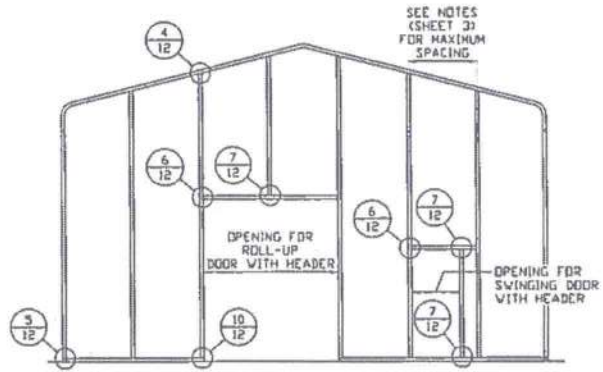
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BOW RAFTER END WALL AND SIDE WALL OPENINGS



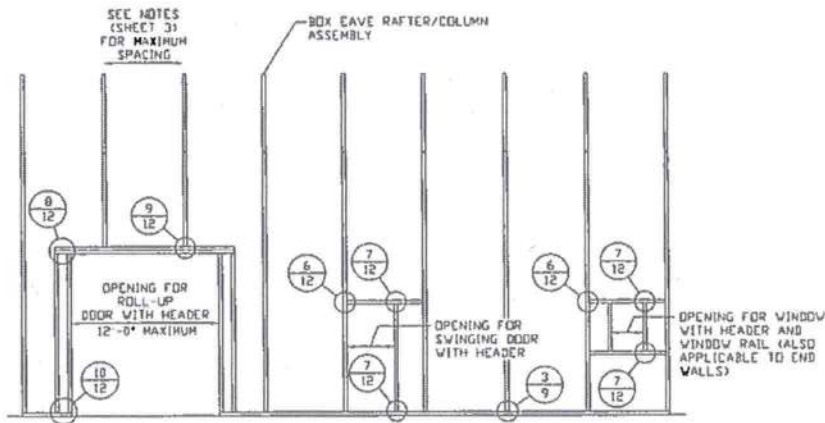
**TYPICAL BOX EAVE RAFTER
END WALL FRAMING SECTION**

SCALE: NTS



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

SCALE: NTS



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

SCALE: NTS



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PROJECT MGR: WSM

CLIENT: TBS

**TUBULAR BUILDING SYSTEMS
30'-0" x 20'-0" PARTIALLY ENCLOSED (UTILITY)
BUILDING EXP. B**

DATE: 12-18-17

SHT. 11

SCALE: NTS

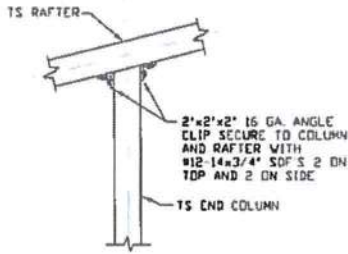
DWG. NO: SK-2

**JOB NO:
16154S/17300S**

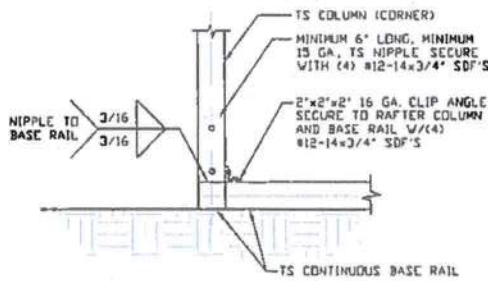
REV: 1

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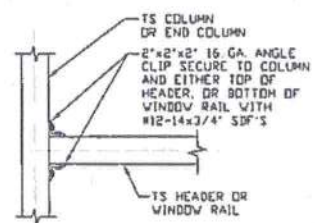
BOW AND BOX EAVE RAFTER WALL OPENING DETAILS



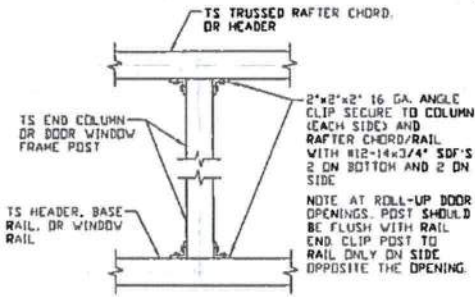
4 END COLUMN/RAFTER CONNECTION DETAIL
SCALE: NTS



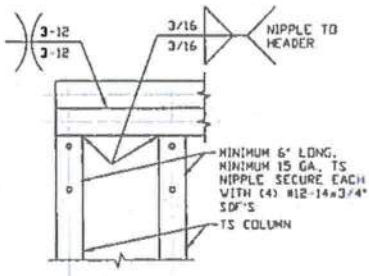
5 END COLUMN/BASE RAIL CONNECTION DETAIL
SCALE: NTS



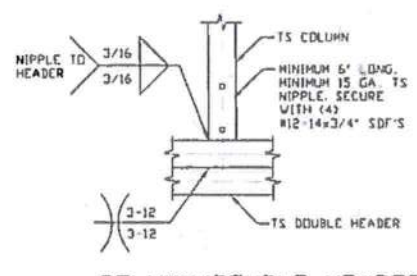
6 HEADER OR WINDOW RAIL TO COLUMN CONNECTION DETAIL
SCALE: NTS



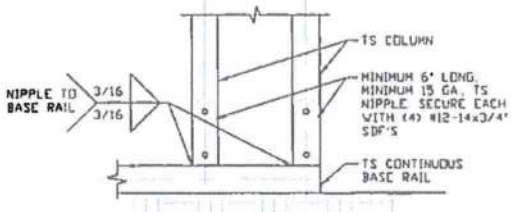
7 COLUMN TO HEADER, BASE RAIL, OR WINDOW RAIL CONNECTION DETAIL
SCALE: NTS



8 DOUBLE HEADER/COLUMN CONNECTION DETAIL
SCALE: NTS



9 COLUMN/DOUBLE HEADER CONNECTION DETAIL
SCALE: NTS



10 COLUMN/BASE RAIL CONNECTION DETAIL
SCALE: NTS



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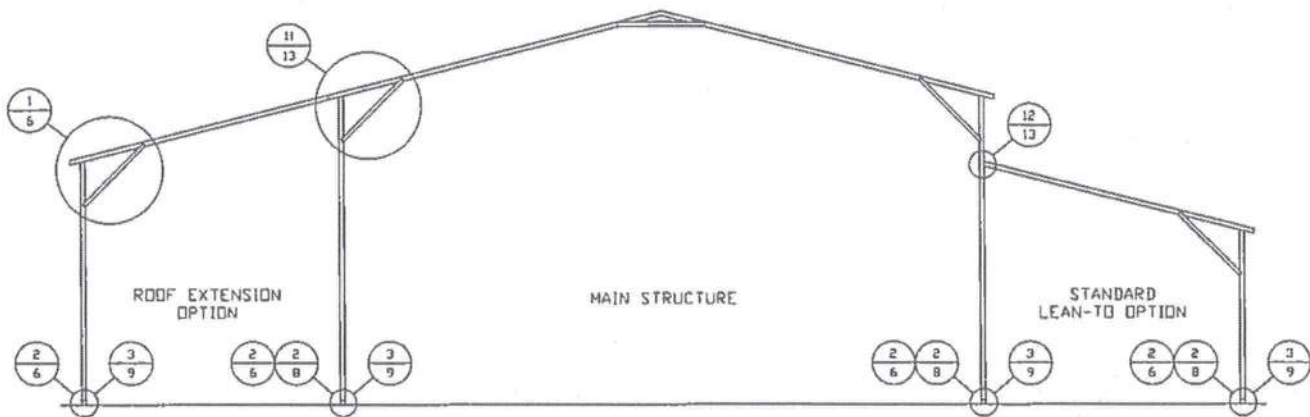
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TUBULAR BUILDING SYSTEMS
30'-0" x 20'-0" PARTIALLY ENCLOSED (UTILITY)
BUILDING EXP. B

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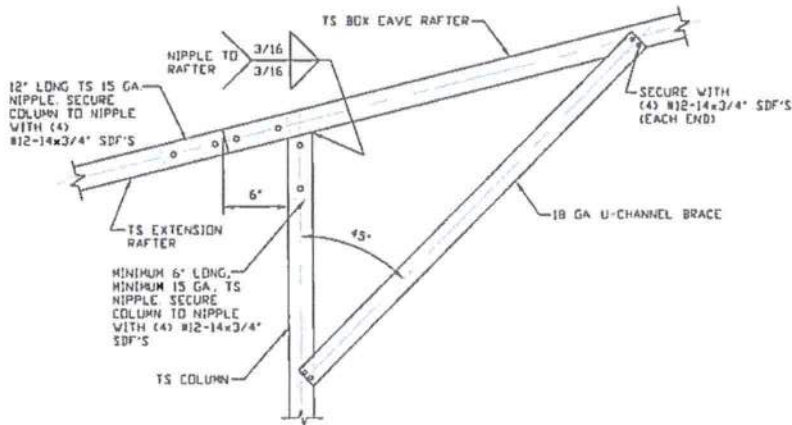
PROJECT MGR: VSM	DATE: 12-18-17	SCALE: NTS	JOB NO: 16154S/17300S
CLIENT: TBS	SHT. 12	DWG. NO: SK-2	REV: 1

BOX EAVE RAFTER LEAN-TO OPTIONS



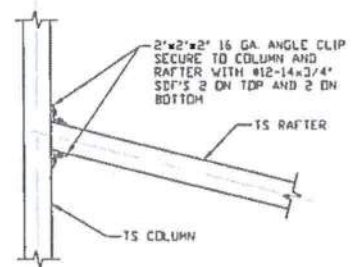
TYPICAL BOX EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION (BOTH OPTIONS SHOWN)

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



11 SIDE EXTENSION RAFTER/COLUMN DETAIL

SCALE: NTS



12 LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL

SCALE: NTS



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PROJECT MGR: WSM

CLIENT: TBS

**TUBULAR BUILDING SYSTEMS
 30'-0" x 20'-0" PARTIALLY ENCLOSED (UTILITY)
 BUILDING EXP. B**

DATE: 12-18-17

SHT. 13

SCALE: NTS

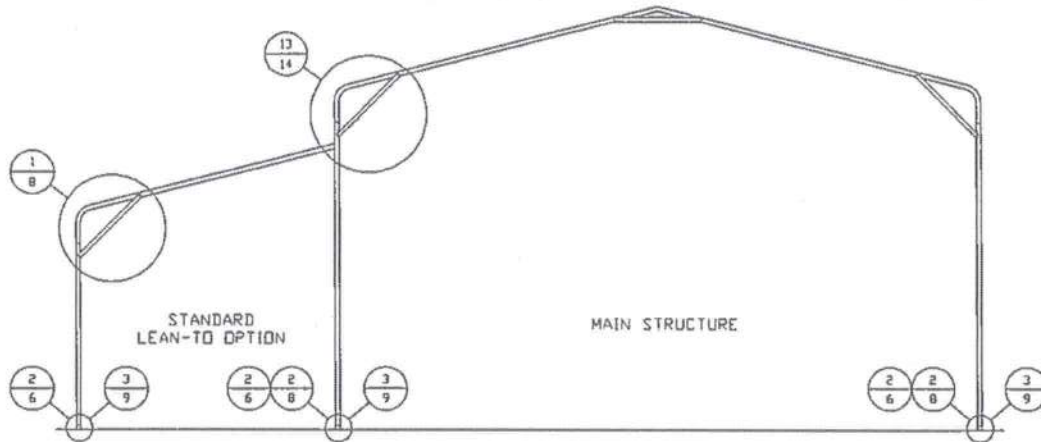
DWG. NO: SK-2

JOB NO:
 16154S/17300S

REV: 1

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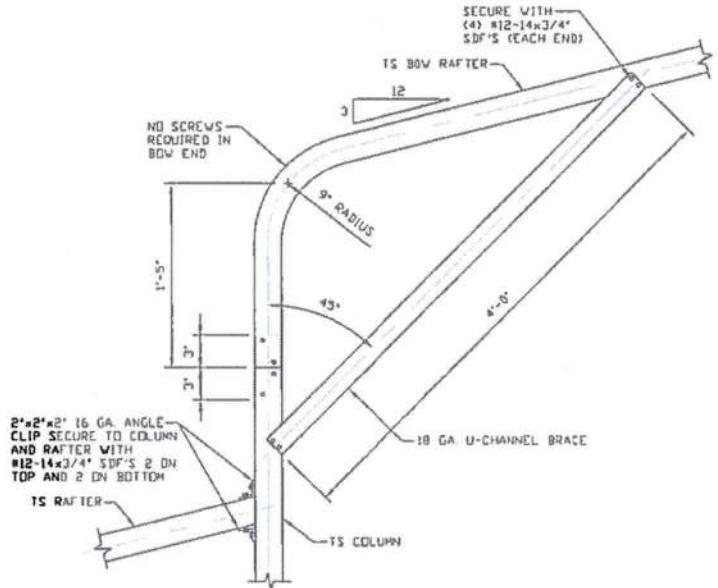
BOW RAFTER LEAN-TO OPTIONS



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

SCALE: NTS

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



13

SIDE EXTENSION RAFTER/COLUMN DETAIL

SCALE: NTS



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PROJECT MGR: VSM

CLIENT: TBS

**TUBULAR BUILDING SYSTEMS
30'-0" x 20'-0" PARTIALLY ENCLOSED (UTILITY)
BUILDING EXP. B**

DATE: 12-18-17

SHT. 14

SCALE: NTS

DWG. NO: SK-2

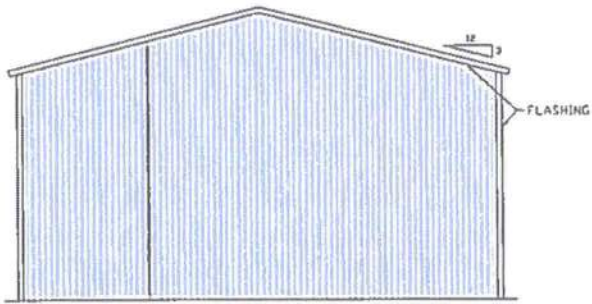
JOB NO:

161545/17300S

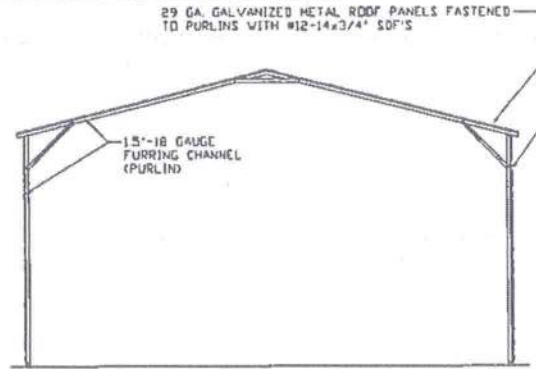
REV: 1

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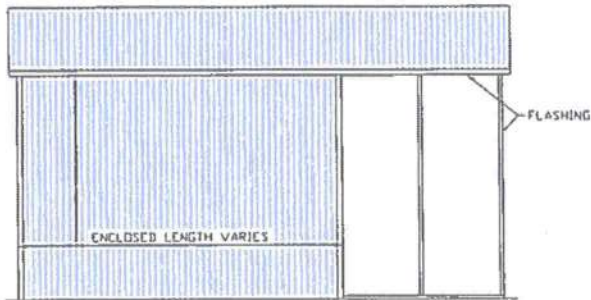
BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



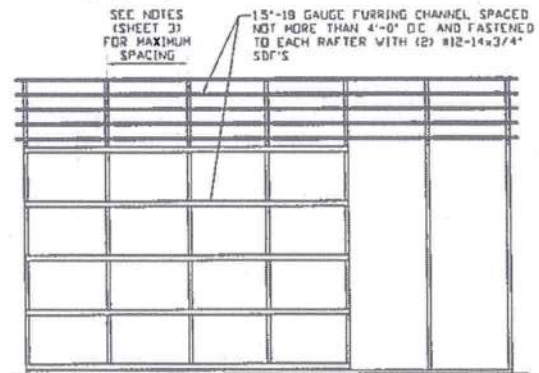
**TYPICAL END ELEVATION
VERTICAL ROOF/SIDING OPTION**
SCALE: NTS



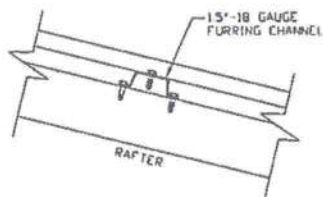
**TYPICAL SECTION VERTICAL
ROOF/SIDING OPTION**
SCALE: NTS



**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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**TUBULAR BUILDING SYSTEMS
30'-0"x20'-0" PARTIALLY ENCLOSED (UTILITY)
BUILDING EXP. B**

DATE: 12-18-17

SHT. 15

SCALE: NTS

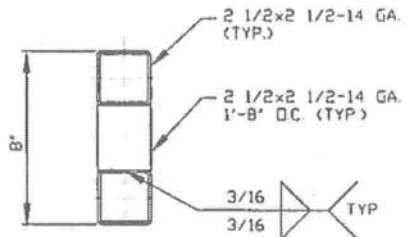
DWG. NO: SK-2

JOB NO:
161545/17300S

REV: 1

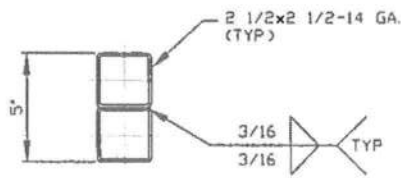
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OPTIONAL DOOR HEADER



**HEADER DETAIL FOR DOOR
OPENINGS 12'-0" < LENGTH ≤ 15'-0"**

SCALE: NTS



**HEADER DETAIL FOR DOOR
OPENINGS LENGTH ≤ 12'-0"**

SCALE: NTS



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PROJECT MGR: VSM

CLIENT: TBS

**TUBULAR BUILDING SYSTEMS
30'-0"x20'-0" PARTIALLY ENCLOSED (UTILITY)
BUILDING EXP. B**

DATE: 12-18-17

SCALE: NTS

BVG. NO: SK-2

JOB NO:
161545/173005

REV: 1

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