



**STRUCTURAL DESIGN**

**ENCLOSED BUILDING**

**EXPOSURE B**

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

**29 July 2021**

**Revision 6**

**M&A Project No. 16022S/17300S/20352S**

**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**



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<b>MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.</b>	DRAWN BY: JG		<b>TUBULAR BUILDING SYSTEMS 30'-0"x20'-0" ENCLOSED BUILDING EXP. B PE SEAL COVER SHEET</b>	
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	CLIENT: TBS	SHT. 1	DWG. NO: SK-3	REV: 6

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**TUBULAR BUILDING SYSTEMS  
631 SE INDUSTRIAL CIRCLE  
LAKE CITY, FLORIDA 32025  
30'-0"x20'-0" ENCLOSED BUILDING EXP. B**

**DATE: 7-29-21**

**SCALE: NTS**

**JOB NO: 16022S/  
17300S/20352S**

**SHT: 2**

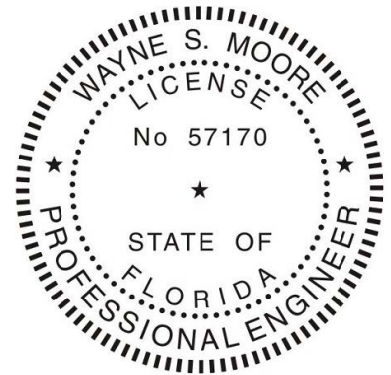
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## INSTALLATION NOTES AND SPECIFICATIONS

- 1 DESIGN IS FOR A MAXIMUM 30'-0" WIDE x 20'-0" EAVE HEIGHT ENCLOSED STRUCTURES
- 2 DESIGN WAS DONE IN ACCORDANCE WITH THE 2020 FLORIDA BUILDING CODE (FBC) 7TH EDITION, 2012 INTERNATIONAL BUILDING CODE (IBC), 2015 IBC, AND 2018 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 = 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 END WALL COLUMNS (POSTS) AND SIDE WALL COLUMNS ARE EQUIVALENT IN SIZE AND SPACING (UNLESS NOTED OTHERWISE)
- 7 RISK CATEGORY I.
- 8 WIND EXPOSURE CATEGORY B
- 9 SPECIFICATIONS APPLICABLE TO 29 GAUGE METAL PANELS FASTENED DIRECTLY TO 2 1/2" x 2 1/2" - 14 GAUGE TUBE STEEL (TS) FRAMING MEMBERS FOR VERTICAL PANELS. 29 GAUGE METAL PANELS SHALL BE FASTENED TO 18 GAUGE HAT CHANNELS (UNLESS OTHERWISE NOTED)
- 10 AVERAGE FASTENER SPACING ON-CENTERS ALONG RAFTERS OR PURLINS, AND POSTS INTERIOR = 9" OR END = 6" (MAX)
- 11 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. ROOF SLOPES LESS THAN 3:12 REQUIRE USE OF JOINT SEALANT
- 12 STANDARD ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL WITHIN 6" OF EACH COLUMN
- 13 STANDARD GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/WELDED NUT x 30" LONG IN SUITABLE SOIL CONDITIONS MAY BE USED FOR LOW (< 138 MPH NOMINAL) WIND SPEEDS ONLY. OPTIONAL ANCHORAGE MAY BE USED IN SUITABLE SOILS AND MUST BE USED IN UNSUITABLE SOILS AS NOTED. COORDINATE WITH LOCAL CODES/ORDINANCES REGARDING MINIMUM LENGTH FOR FROST DEPTH PROTECTION
- 14 WIND FORCES GOVERN OVER SEISMIC FORCES. SEISMIC PARAMETERS ANALYZED ARE:
  - SOIL SITE CLASS = D
  - RISK CATEGORY I
  - R = 325                      I<sub>e</sub> = 1.0
  - S<sub>DS</sub> = 1.522 g              V = 0.5W
  - S<sub>D1</sub> = 0.839 g



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**CLIENT: TBS**

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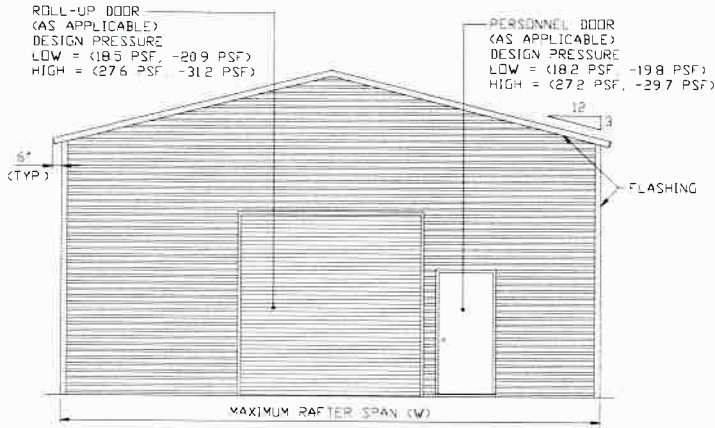
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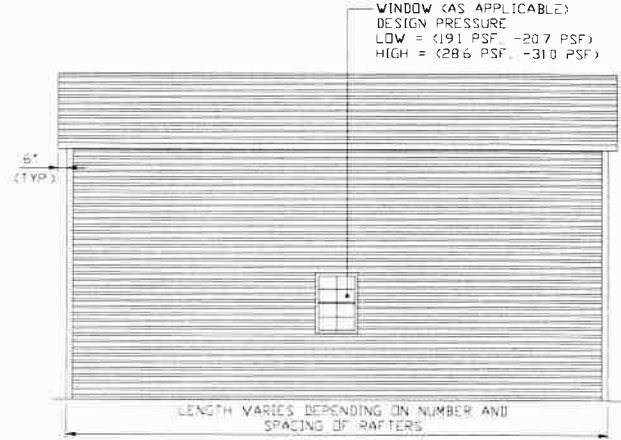
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### BOX EAVE FRAME RAFTER ENCLOSED BUILDING



**TYPICAL END ELEVATION**

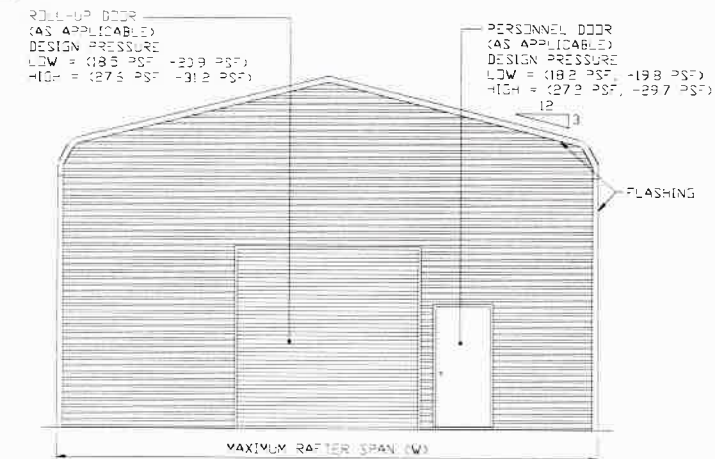
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**TYPICAL SIDE ELEVATION**

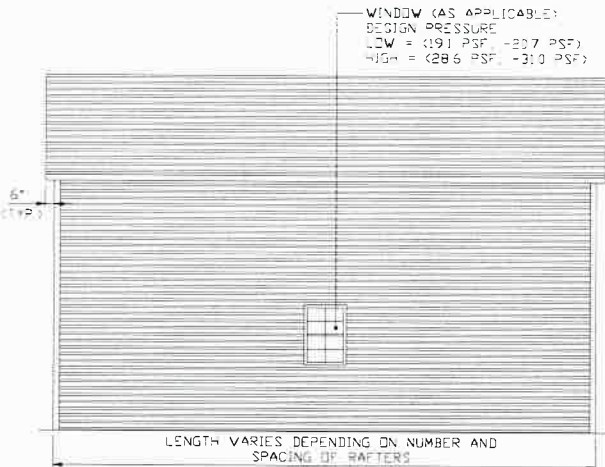
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### BOW FRAME RAFTER ENCLOSED BUILDING



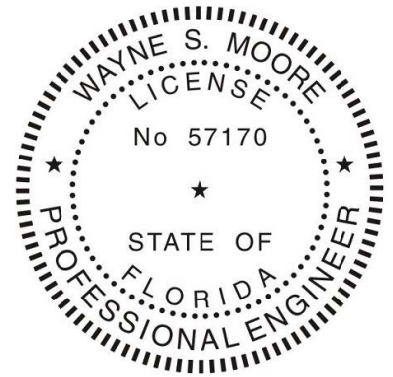
**TYPICAL END ELEVATION**

SCALE: NTS



**TYPICAL SIDE ELEVATION**

SCALE: NTS



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SHT. 4

SCALE: NTS

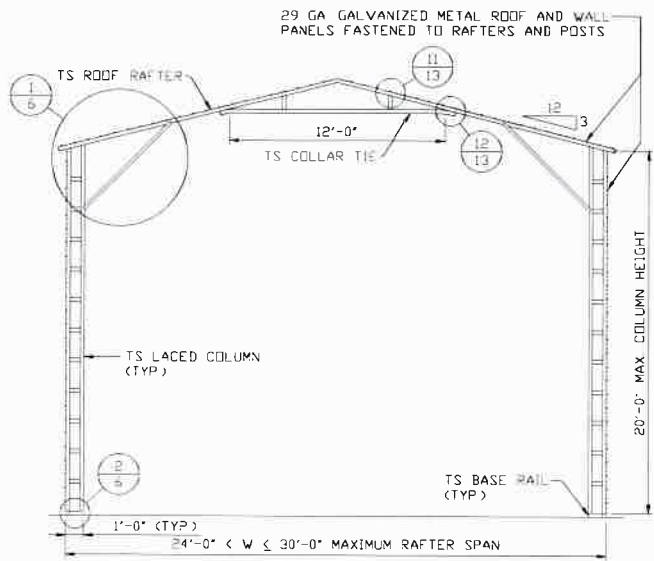
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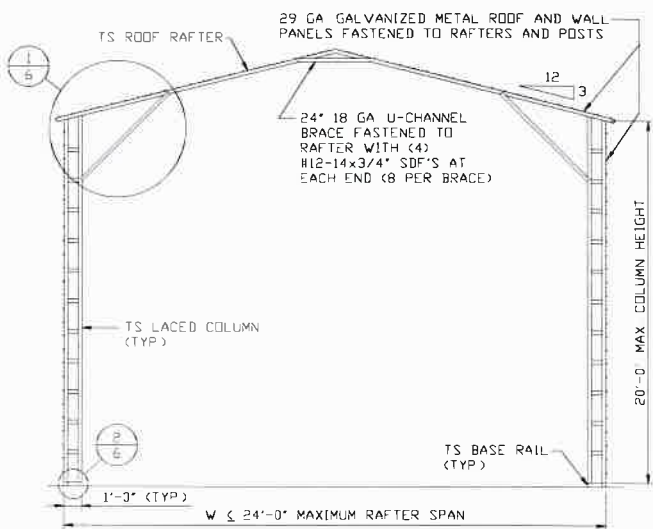
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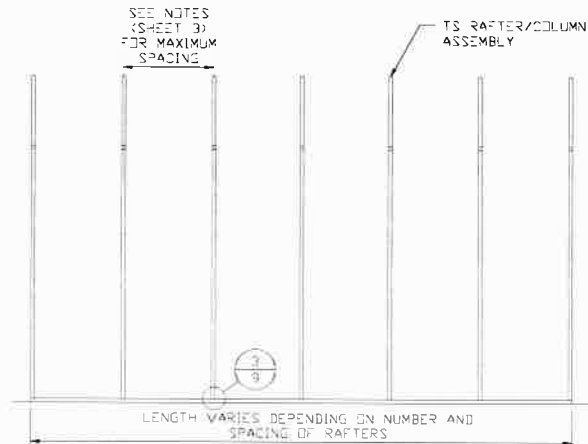




**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



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



**TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION**  
SCALE: NTS



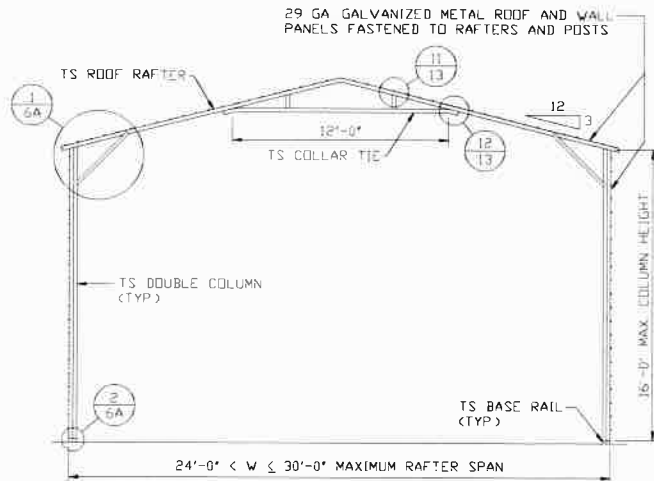
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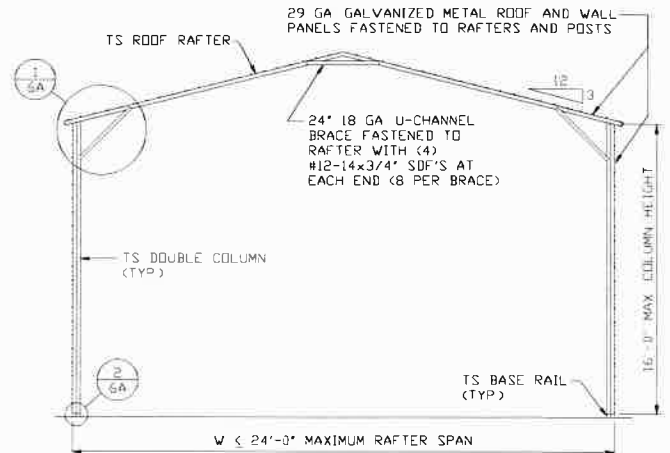
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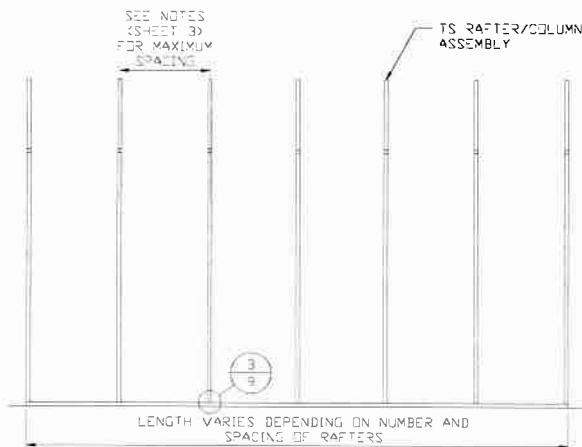
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SCALE: NTS



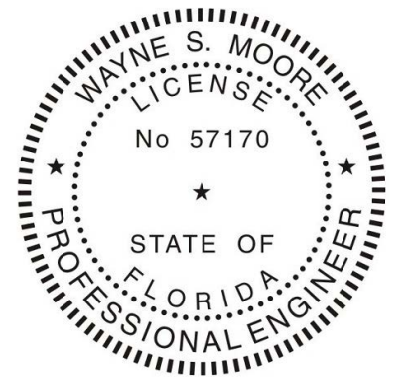
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**TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION**

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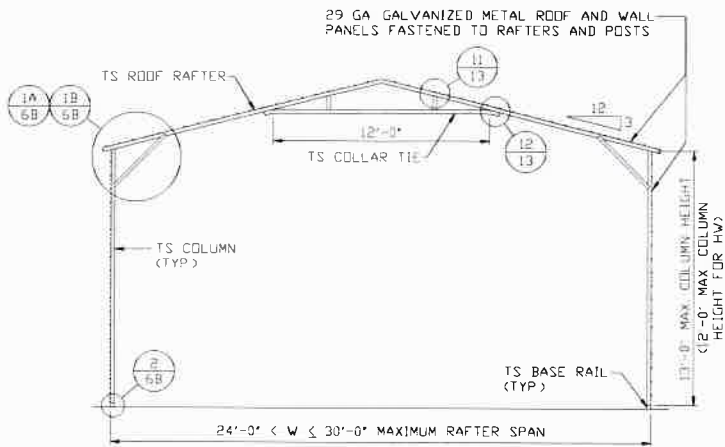
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**SHT. 5A**

**DWG. NO: SK-3**

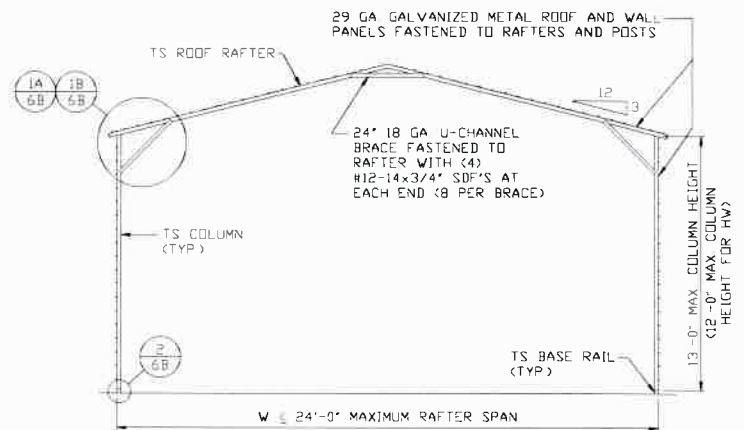
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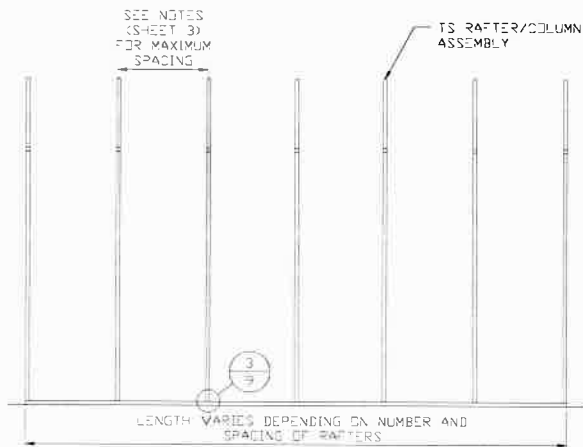
**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN END FRAME SECTION**

SCALE: NTS



**TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION**

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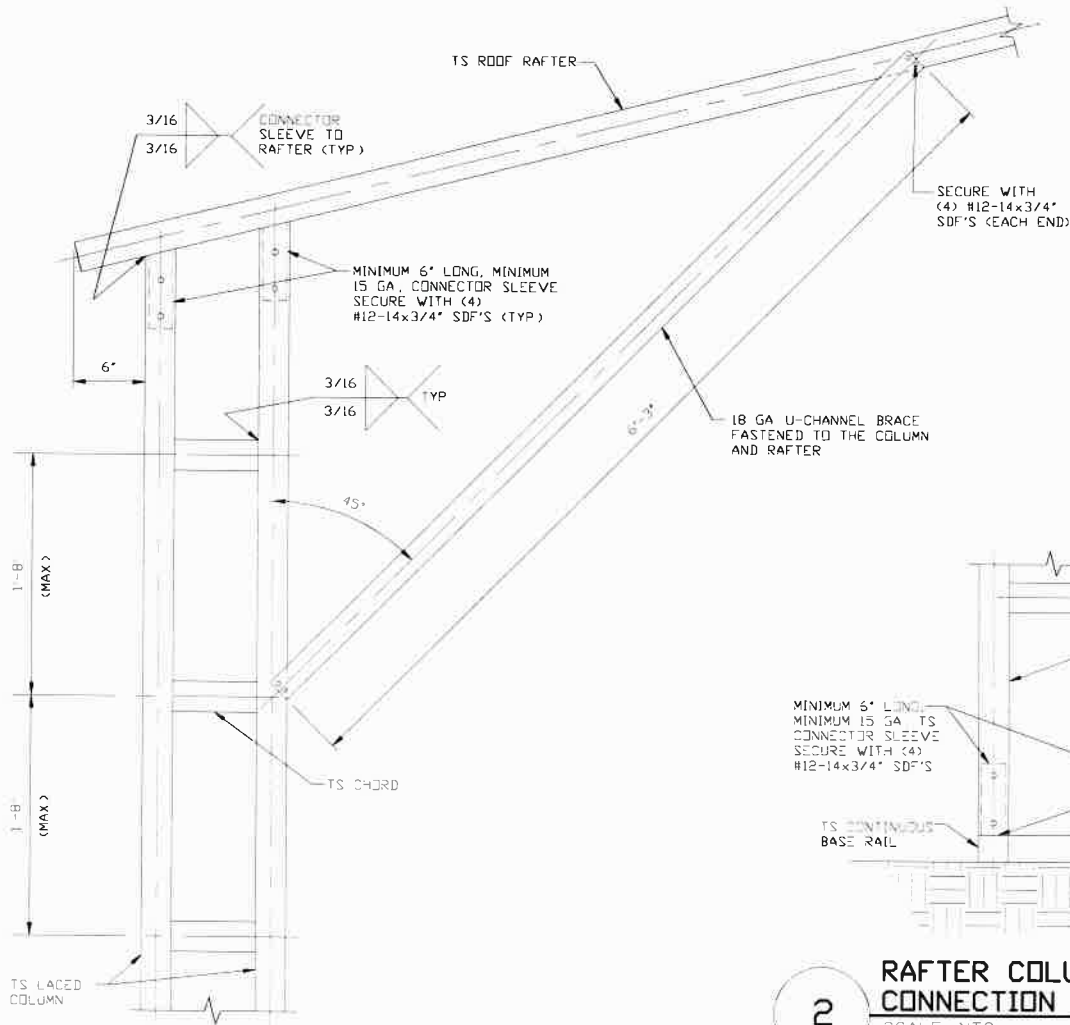
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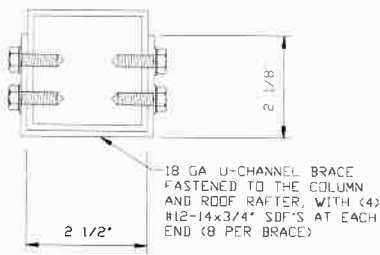
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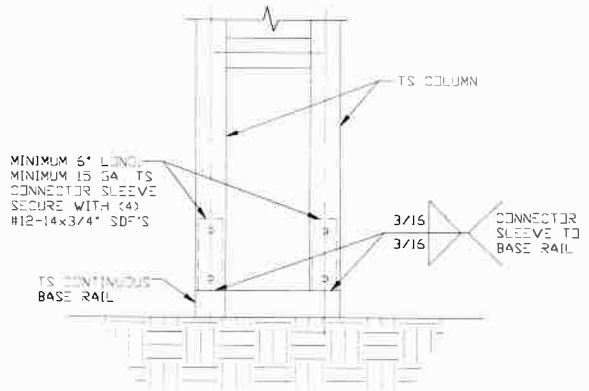


**1** BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 16'-0" < TO ≤ 20'-0" SCALE: NTS



**BRACE SECTION** SCALE: NTS

**2** RAFTER COLUMN/BASE RAIL CONNECTION DETAIL SCALE: NTS



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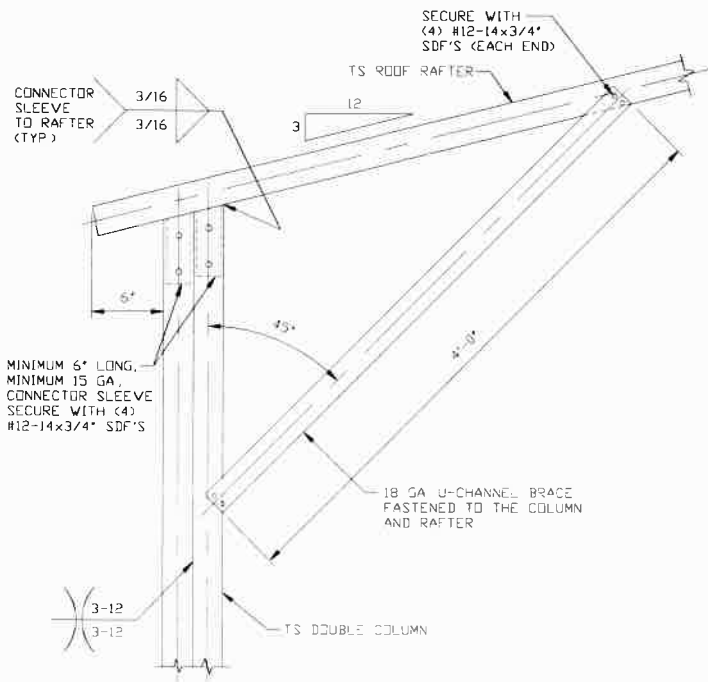
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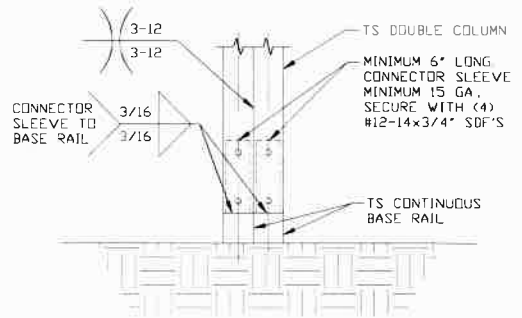
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**1** BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 13'-0" < TO ≤ 16'-0"

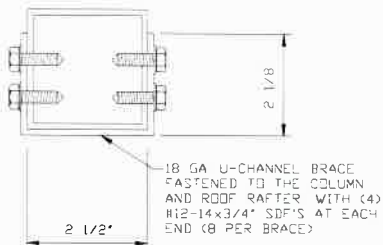
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NOTE: COLUMN HEIGHTS 12'-0" < TO ≤ 15'-0" FOR HIGH WIND



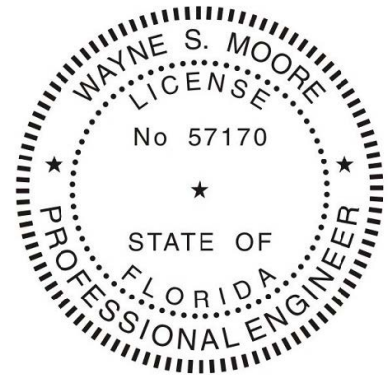
**2** RAFTER COLUMN/BASE RAIL CONNECTION DETAIL

SCALE: NTS



**BRACE SECTION**

SCALE: NTS



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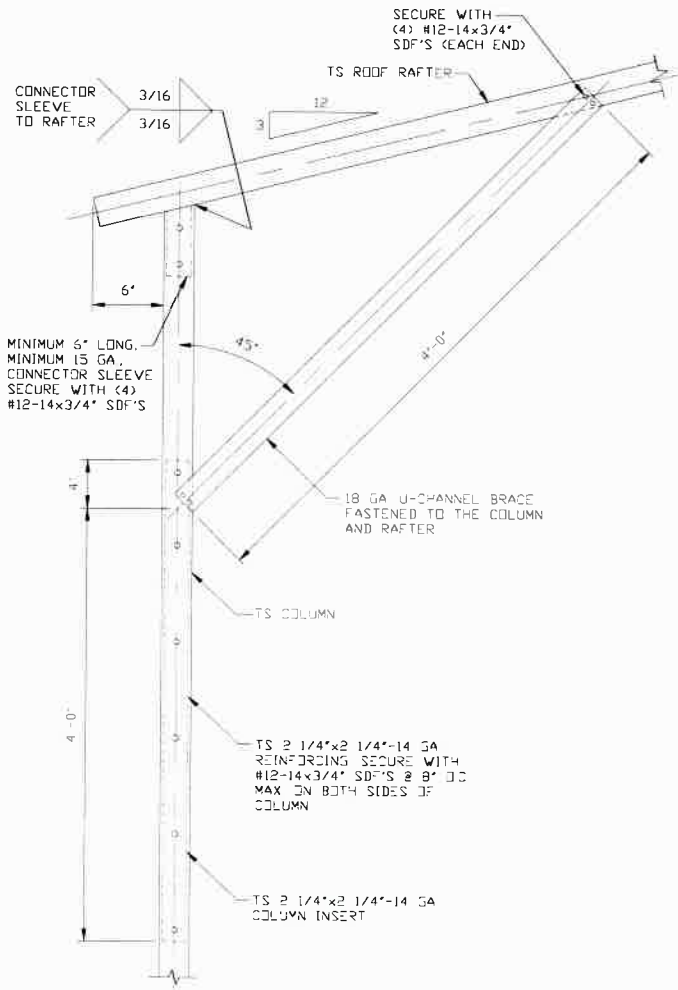
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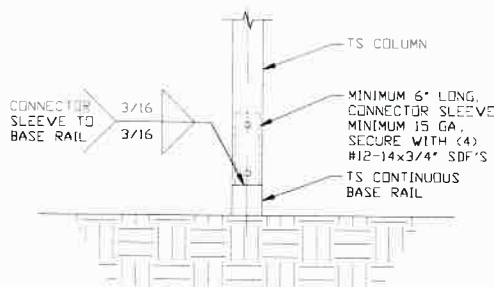
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1A

**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 10'-0" < TO <= 13'-0"**

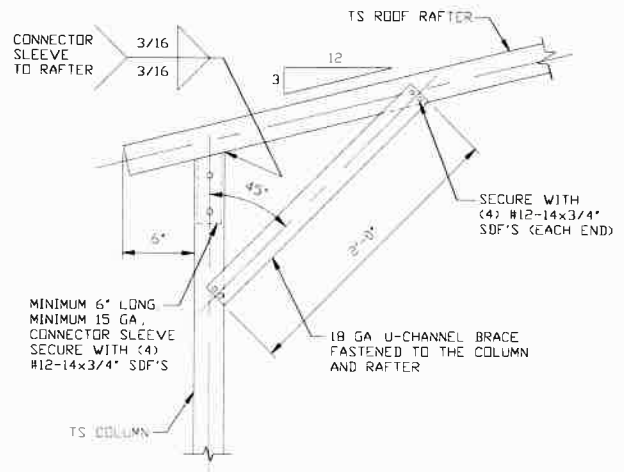
SCALE: NTS  
NOTE: MAXIMUM COLUMN HEIGHT IS 12'-0" FOR HIGH WIND



2

**RAFTER COLUMN/BASE RAIL CONNECTION DETAIL**

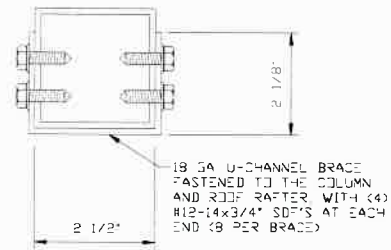
SCALE: NTS



1B

**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS <= 10'-0"**

SCALE: NTS



**BRACE SECTION**

SCALE: NTS



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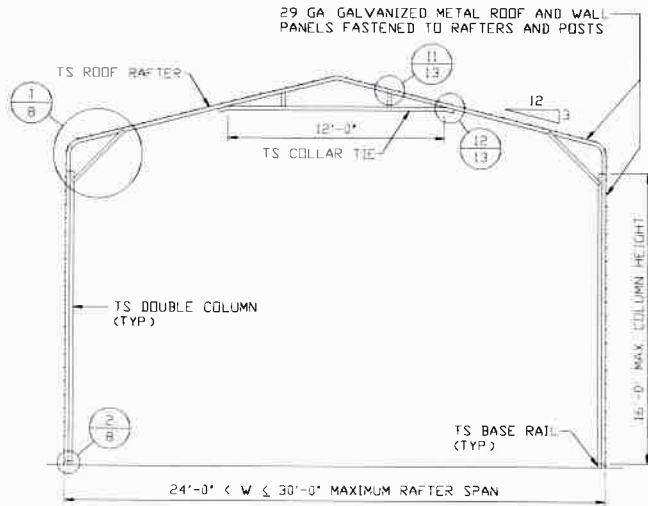
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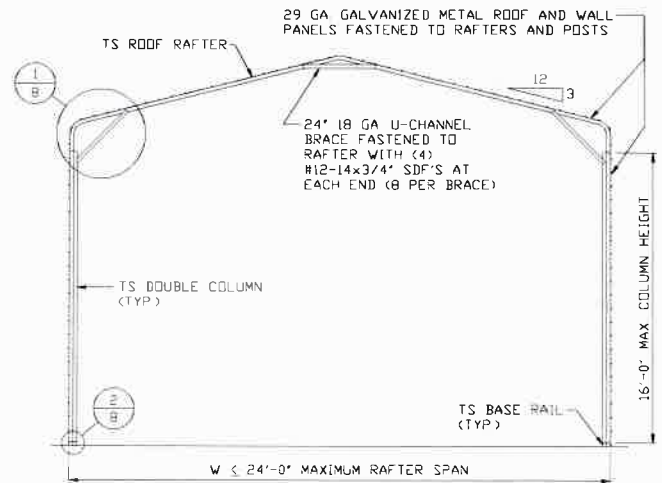
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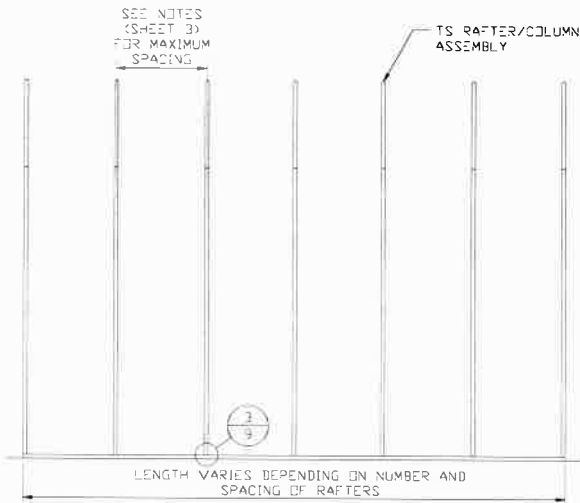
**TYPICAL RAFTER/COLUMN END FRAME SECTION**

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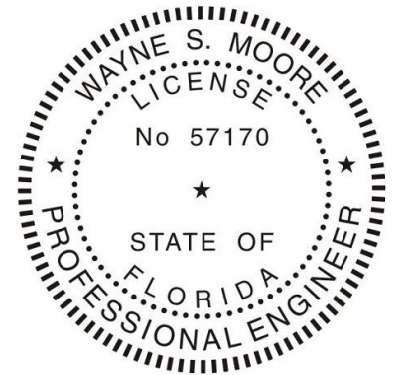
**TYPICAL RAFTER/COLUMN END FRAME SECTION**

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**TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION**

SCALE: NTS



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**DRAWN BY:** JG

**CHECKED BY:** PDH

**PROJECT MGR:** WSM

**CLIENT:** TBS

**TUBULAR BUILDING SYSTEMS  
631 SE INDUSTRIAL CIRCLE  
LAKE CITY, FLORIDA 32025  
30'-0" x 20'-0" ENCLOSED BUILDING EXP. B**

**DATE:** 7-29-21

**SHT.** 7

**SCALE:** NTS

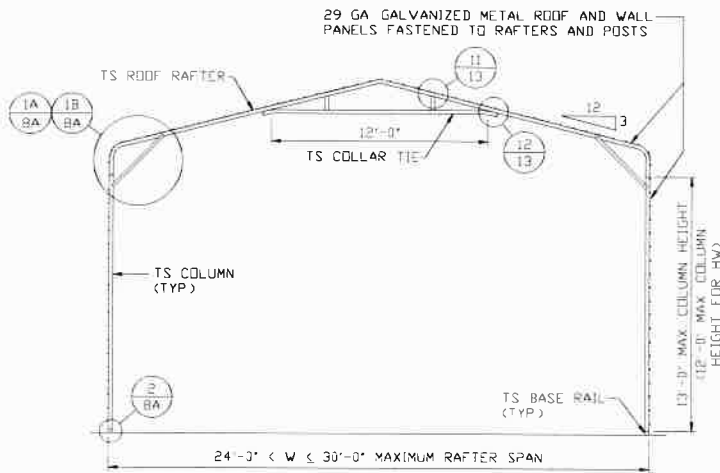
**DWG. NO:** SK-3

**JOB NO:** 16022S/  
17300S/20352S

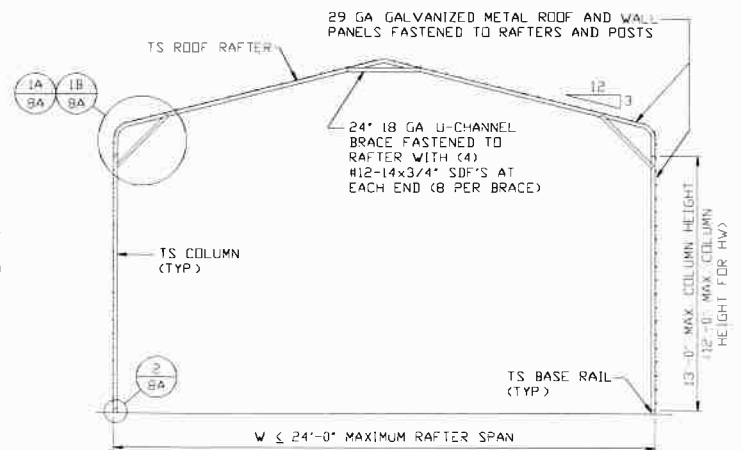
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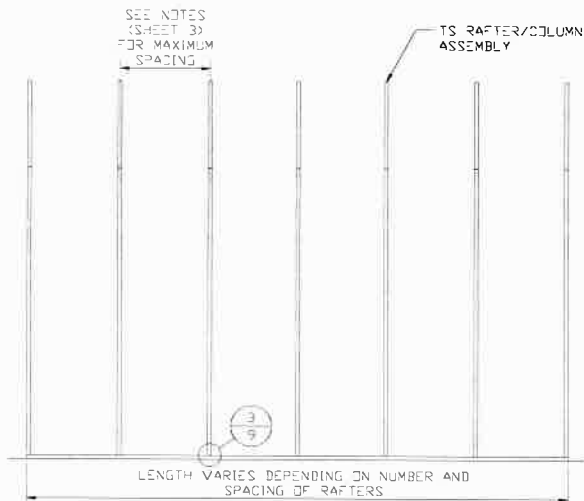




**TYPICAL RAFTER/COLUMN END FRAME SECTION**  
SCALE: NTS



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



**TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION**  
SCALE: NTS



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631 SE INDUSTRIAL CIRCLE  
LAKE CITY, FLORIDA 32025  
30'-0" x 20'-0" ENCLOSED BUILDING EXP. B

DATE: 7-29-21

SCALE: NTS

JOB NO: 16022S/  
17300S/20352S

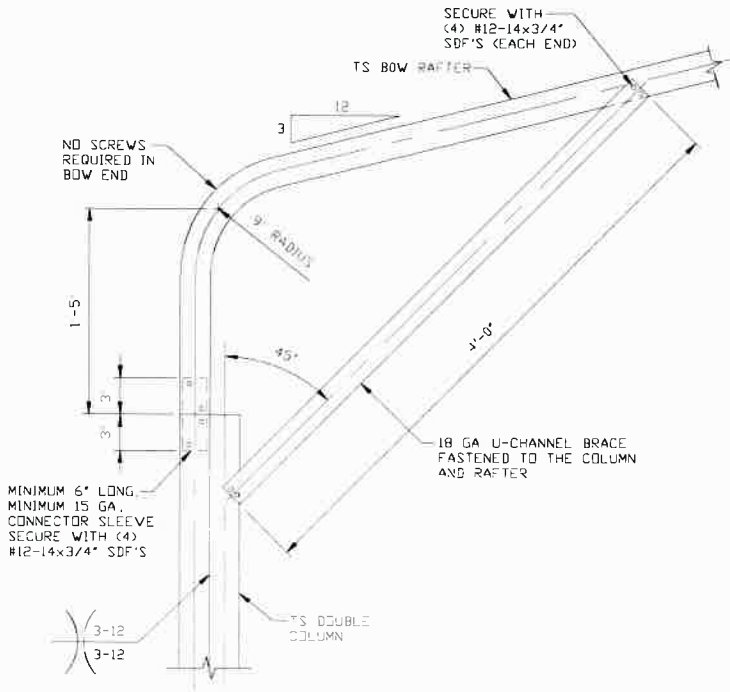
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DWG. NO: SK-3

REV: 6

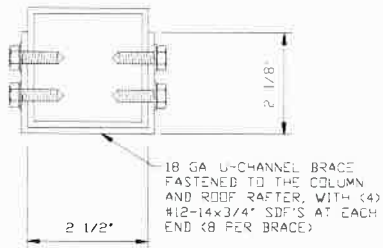
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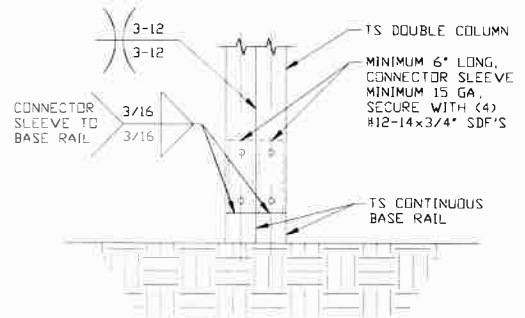


**1** BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 13'-0" < TO ≤ 16'-0"

SCALE: NTS  
NOTE: COLUMN HEIGHTS 12'-0" < TO ≤ 15'-0" FOR HIGH WIND



**BRACE SECTION**  
SCALE: NTS



**2** RAFTER COLUMN/BASE RAIL CONNECTION DETAIL

SCALE: NTS



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**PROJECT MGR:** WSM

**CLIENT:** TBS

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631 SE INDUSTRIAL CIRCLE  
LAKE CITY, FLORIDA 32025  
30'-0" x 20'-0" ENCLOSED BUILDING EXP. B**

**DATE:** 7-29-21

**SCALE:** NTS

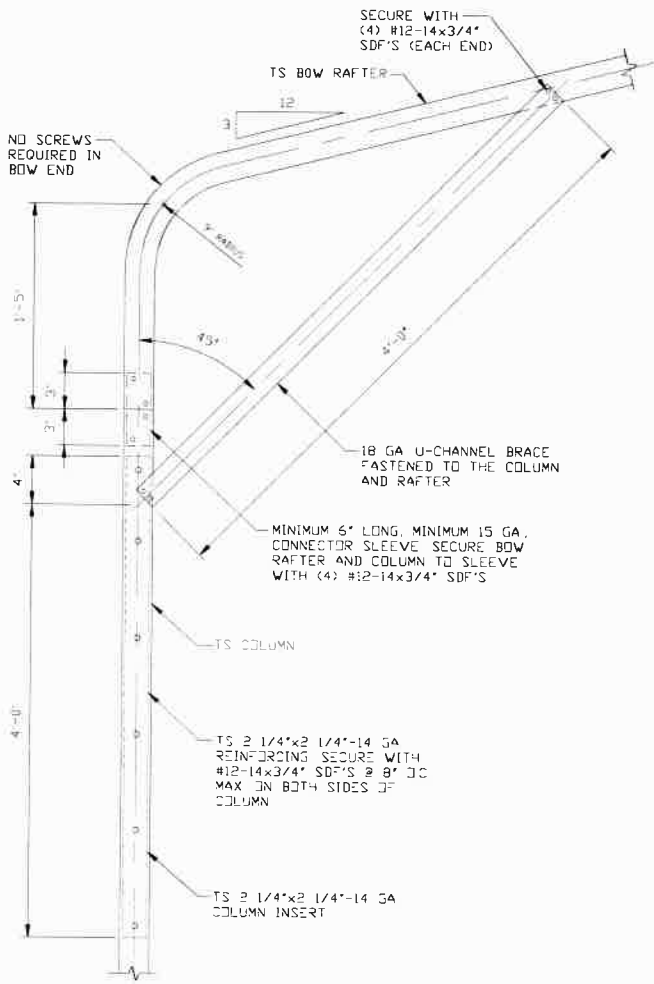
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**DWG. NO.:** SK-3

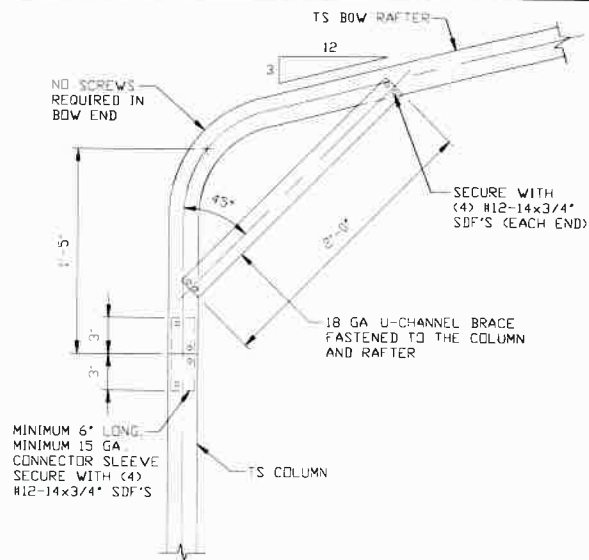
**JOB NO.:** 16022S/  
17300S/20352S

**REV.:** 6

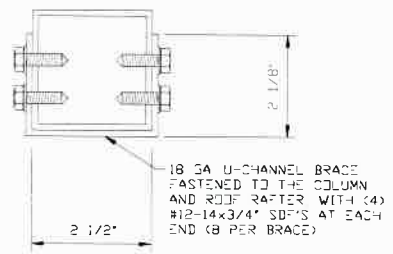
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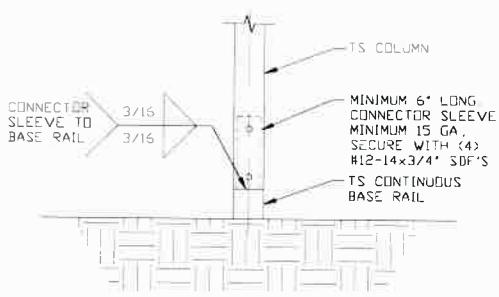
**1A**  
**BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 10'-0" < TO ≤ 13'-0"**  
 SCALE: NTS  
 NOTE: MAXIMUM COLUMN HEIGHT IS 12'-0" FOR HIGH WIND



**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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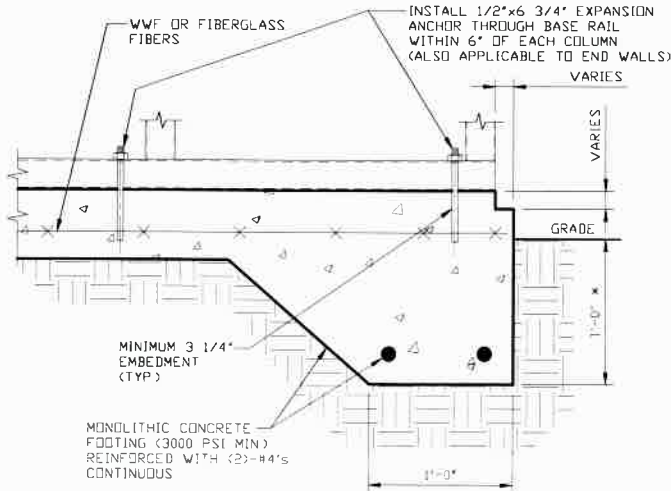
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CHECKED BY: PDH		631 SE INDUSTRIAL CIRCLE	
PROJECT MGR: WSM		LAKE CITY, FLORIDA 32025	
CLIENT: TBS		30'-0" x 20'-0" ENCLOSED BUILDING EXP. B	
DATE: 7-29-21	SCALE: NTS	JOB NO: 16022S/17300S/20352S	
SHT. 8A	DWG. NO: SK-3	REV: 6	

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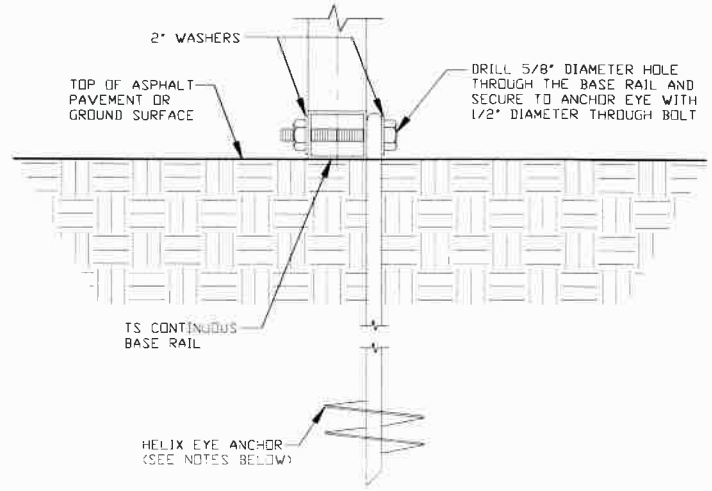
# BASE RAIL ANCHORAGE OPTIONS FOR LOW AND HIGH WIND SPEED



3A

## CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

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



3B

## GROUND BASE HELIX ANCHORAGE

SCALE: NTS  
 (CAN BE USED FOR ASPHALT)  
 \* COORDINATE WITH LOCAL CODES/ORD REGARDING MINIMUM FROST DEPTH REQ

### GENERAL NOTES

NOTE: CONCRETE MONOLITHIC SLAB DESIGN ON MINIMUM SOIL BEARING CAPACITY OF 1500 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-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 SO 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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JOB NO: 16022S/  
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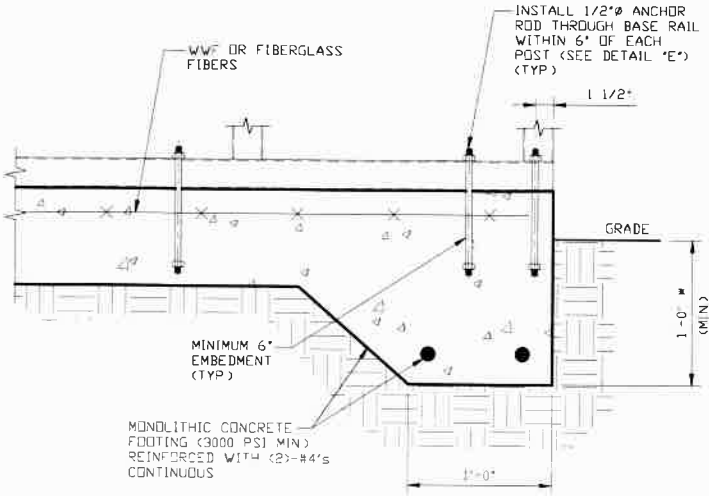
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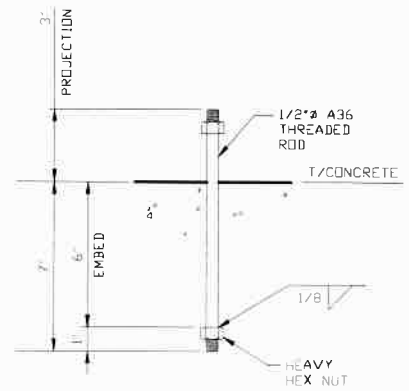
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# OPTIONAL FOUNDATION ANCHORAGE FOR LOW AND HIGH WIND SPEED



**3C CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE**  
 SCALE: NTS  
 MINIMUM ANCHOR EDGE DISTANCE IS 1 1/2"  
 \* COORDINATE WITH LOCAL CODES/ORD REGARDING MINIMUM FROST DEPTH REQ



**3D ANCHOR ROD THROUGH BASE RAIL DETAIL**  
 SCALE: NTS

## GENERAL NOTES

NOTE: CONCRETE MONOLITHIC SLAB DESIGN 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-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



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**CHECKED BY:** PDH

**PROJECT MGR:** WSM

**CLIENT:** TBS

**TUBULAR BUILDING SYSTEMS**  
 631 SE INDUSTRIAL CIRCLE  
 LAKE CITY, FLORIDA 32025  
 30'-0" x 20'-0" ENCLOSED BUILDING EXP. B

**DATE:** 7-29-21

**SCALE:** NTS

**SHT.** 9A

**DWG. NO.:** SK-3

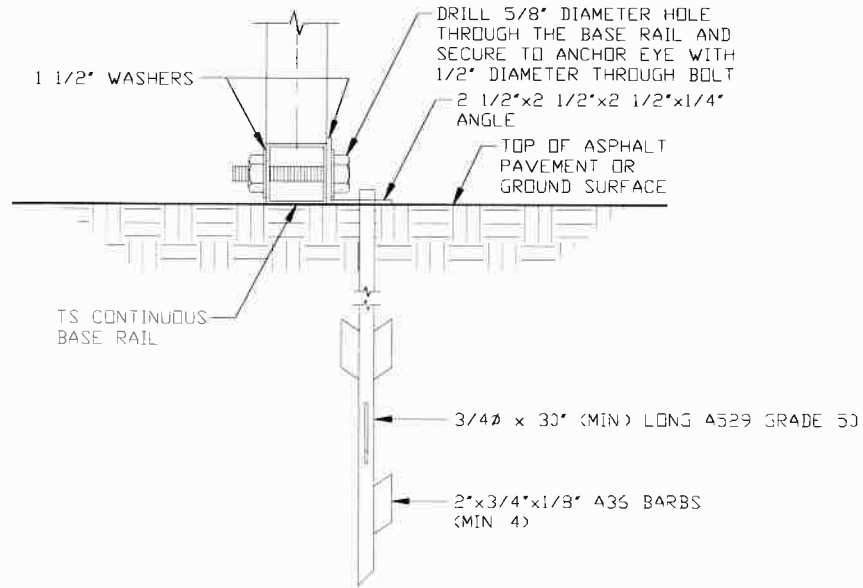
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# BASE RAIL ANCHORAGE OPTION



**3E ASPHALT BASE ANCHORAGE (HP 9 BARBED DRIVE ANCHOR)**  
 SCALE: NTS  
 (CAN BE USED FOR ASPHALT)  
 \* COORDINATE WITH LOCAL CODES/ORD  
 REGARDING MINIMUM FROST DEPTH REQ



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 30'-0" x 20'-0" ENCLOSED BUILDING EXP. B**

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**SHT. 9B**

**SCALE: NTS**

**DWG. NO: SK-3**

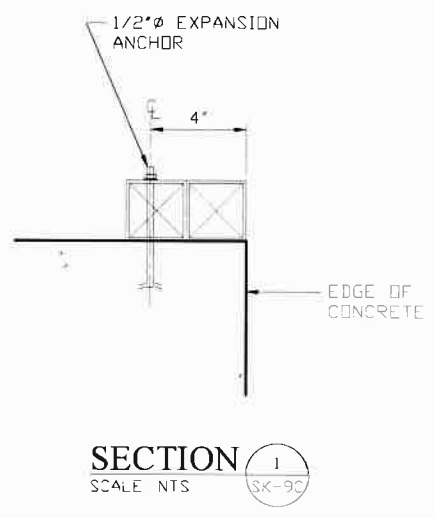
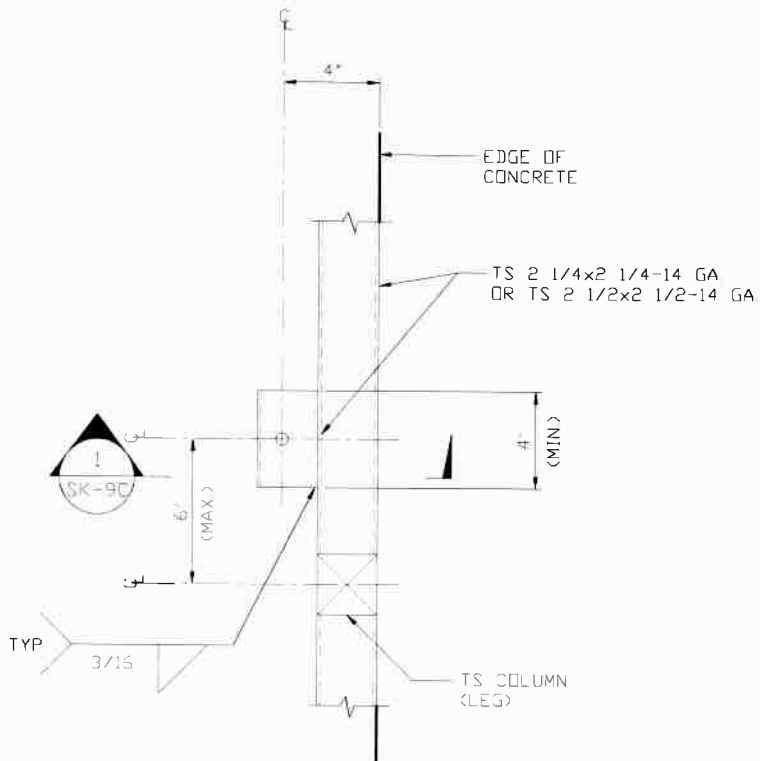
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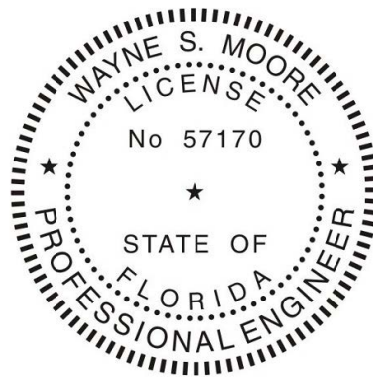


# BASE RAIL ANCHORAGE OPTIONS



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

SCALE: NTS



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**SHT. 9C**

**SCALE: NTS**

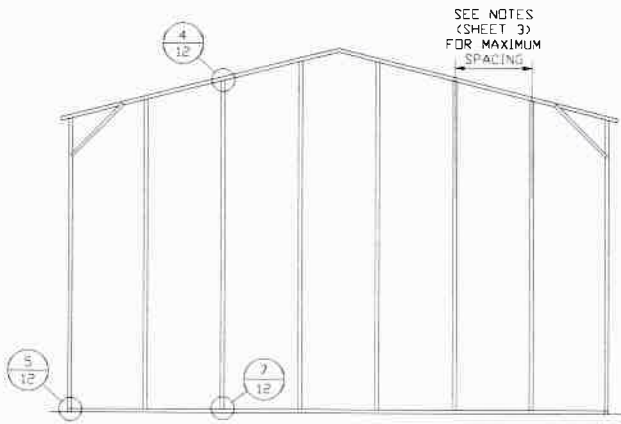
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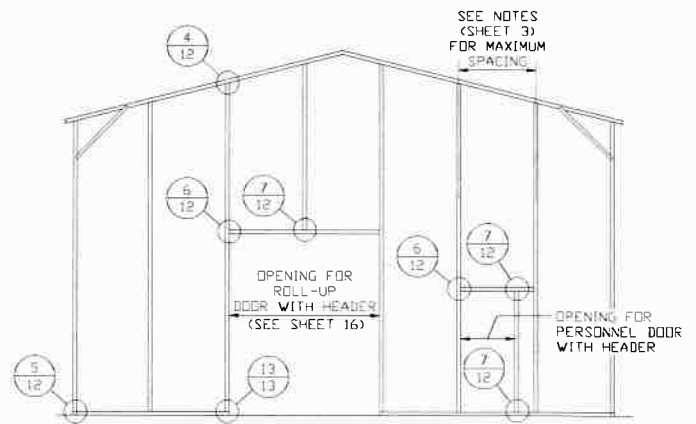
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# BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



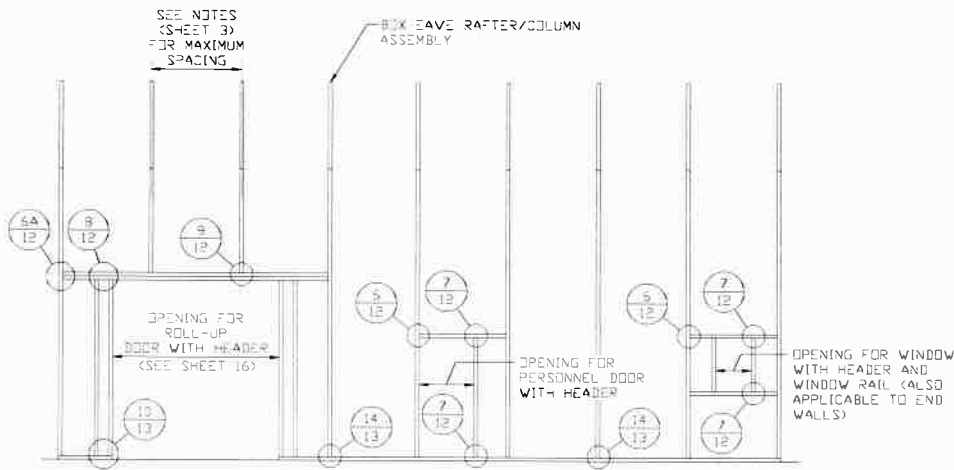
**TYPICAL BOX EAVE RAFTER  
END WALL FRAMING SECTION**

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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**JOB NO: 16022S/  
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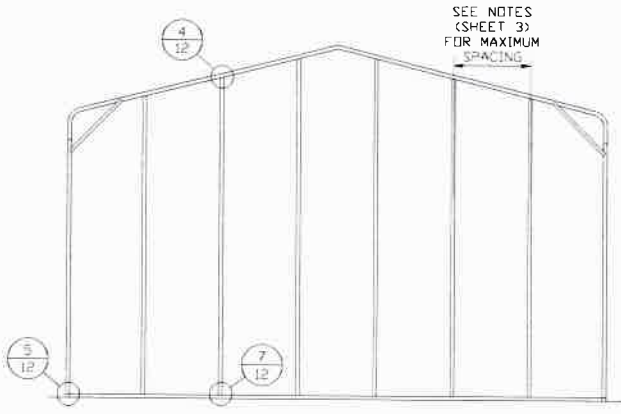
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**REV. 6**

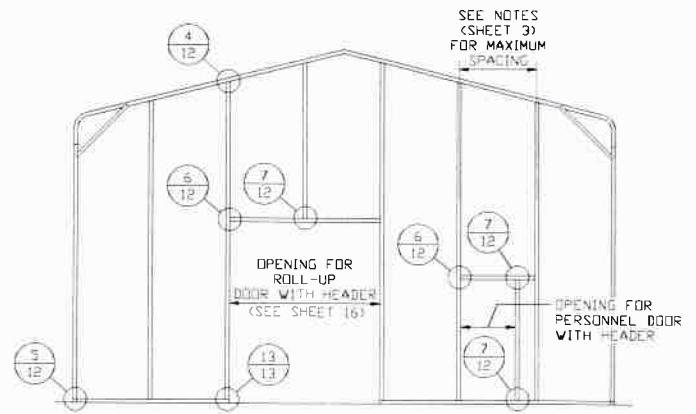
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# BOW RAFTER END WALL AND SIDE WALL OPENINGS



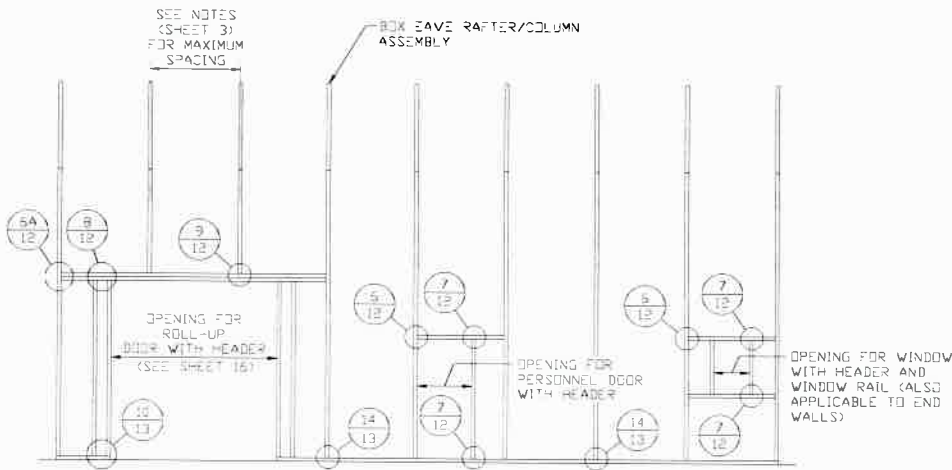
**TYPICAL BOX EAVE RAFTER  
END WALL FRAMING SECTION**

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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**SCALE: NTS**

**JOB NO: 16022S/  
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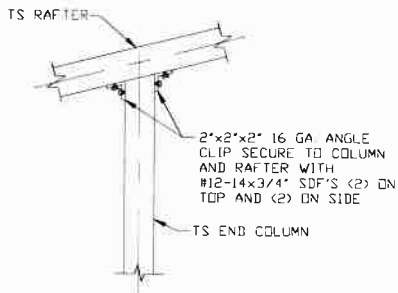
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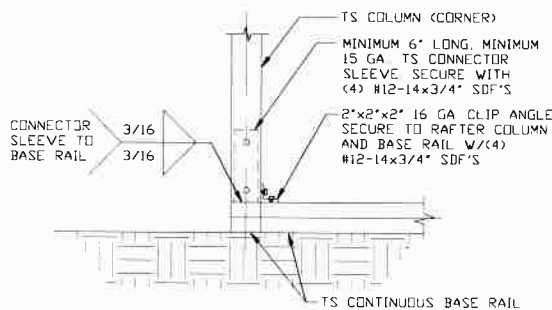
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# CONNECTION DETAILS



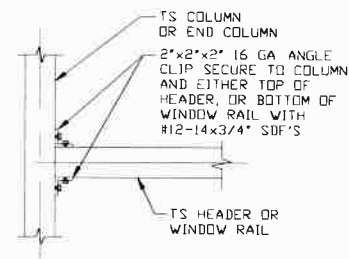
**4** **END COLUMN/RAFTER CONNECTION DETAIL**

SCALE: NTS



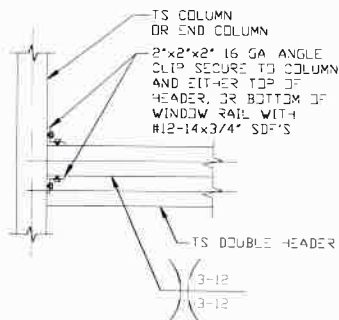
**5** **END COLUMN/BASE RAIL CONNECTION DETAIL**

SCALE: NTS



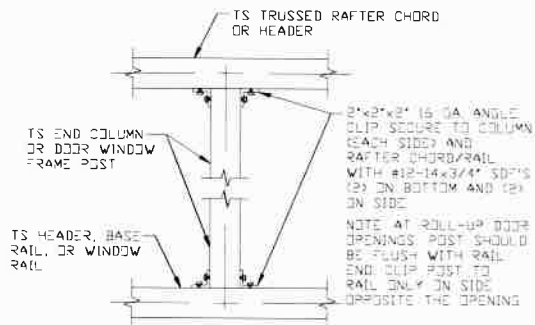
**6** **HEADER OR WINDOW RAIL TO COLUMN CONNECTION DETAIL**

SCALE: NTS



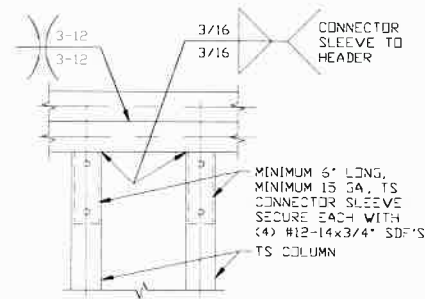
**6A** **DOUBLE HEADER TO COLUMN CONNECTION DETAIL**

SCALE: NTS



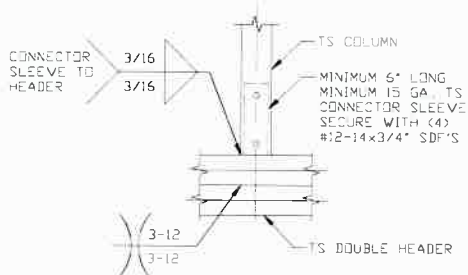
**7** **COLUMN TO HEADER, BASE RAIL, OR WINDOW RAIL CONNECTION DETAIL**

SCALE: NTS



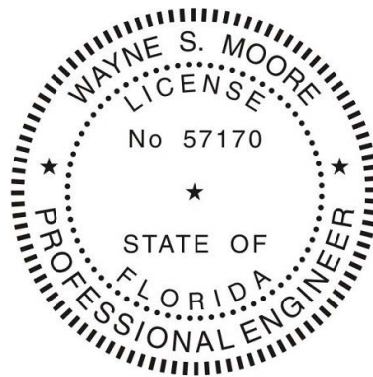
**8** **DOUBLE HEADER/COLUMN CONNECTION DETAIL**

SCALE: NTS



**9** **COLUMN/DOUBLE HEADER CONNECTION DETAIL**

SCALE: NTS



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**TUBULAR BUILDING SYSTEMS  
631 SE INDUSTRIAL CIRCLE  
LAKE CITY, FLORIDA 32025  
30'-0" x 20'-0" ENCLOSED BUILDING EXP. B**

**DATE: 7-29-21**

**SCALE: NTS**

**JOB NO: 16022S/  
17300S/20352S**

**SHT. 12**

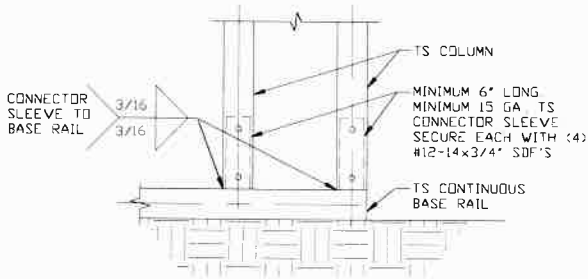
**DWG. NO: SK-3**

**REV: 6**

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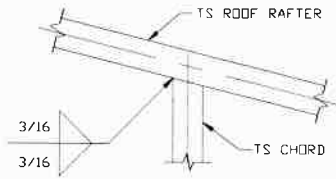


# CONNECTION DETAILS



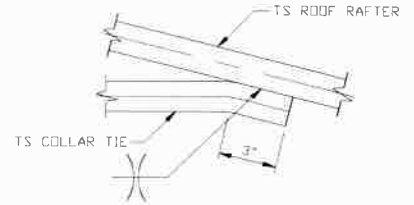
**10** COLUMN/BASE RAIL CONNECTION DETAIL

SCALE: NTS



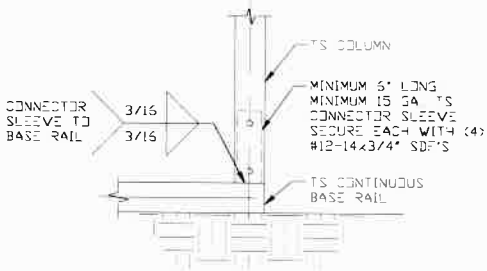
**11** RAFTER TO CHORD CONNECTION DETAIL

SCALE: NTS



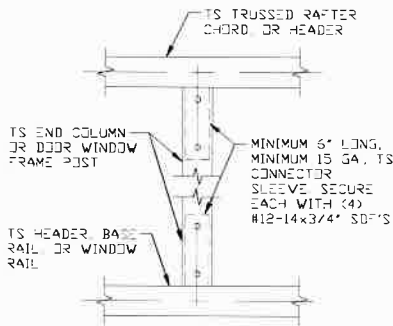
**12** COLLAR TIE CONNECTION DETAIL

SCALE: NTS



**13** COLUMN/BASE RAIL CONNECTION DETAIL

SCALE: NTS



**14** COLUMN TO HEADER, BASE RAIL CONNECTION DETAIL

SCALE: NTS



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CHECKED BY: PDH

PROJECT MGR: WSM

CLIENT: TBS

TUBULAR BUILDING SYSTEMS  
631 SE INDUSTRIAL CIRCLE  
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SCALE: NTS

SHT. 13

DWG. NO: SK-3

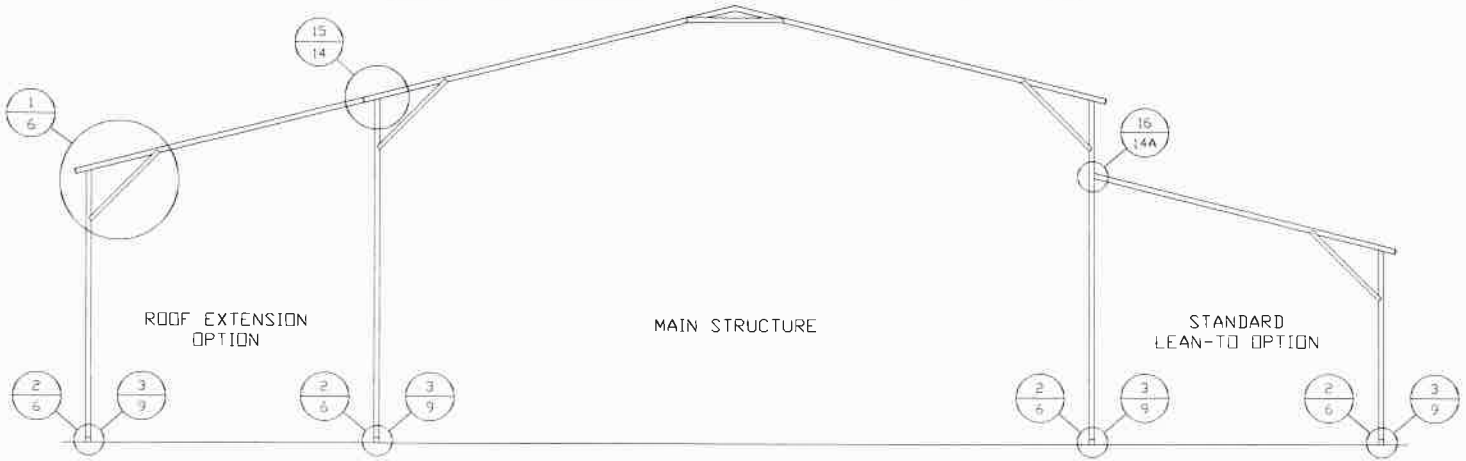
JOB NO: 16022S/  
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# BOX EAVE RAFTER LEAN-TO OPTIONS



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

SCALE: NTS

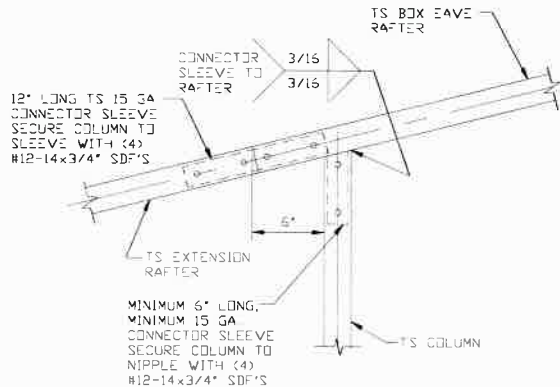
MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE LACED COLUMNS FOR EAVE HEIGHTS 16'-0" < TO < 20'-0"

MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE DOUBLE COLUMNS FOR EAVE HEIGHTS 13'-0" (12'-0" FOR HIGH WIND) < TO < 15'-0"

MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE SINGLE COLUMNS FOR EAVE HEIGHTS 10'-0" < TO < 13'-0" (12'-0" FOR HIGH WIND) (WITH 4'-4" INSERT)

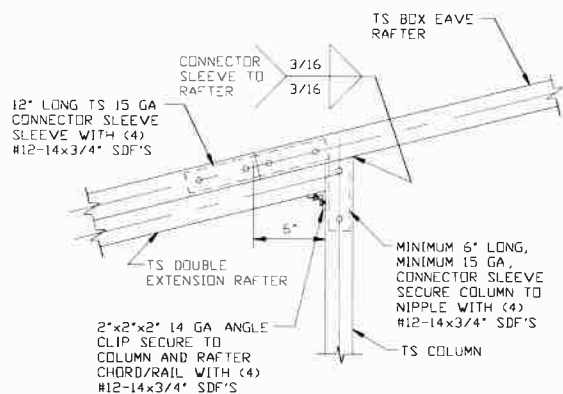
MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE SINGLE COLUMNS FOR EAVE HEIGHTS < 10'-0"

KNEE BRACES MUST BE 4'-0" (5'-0" FOR HIGH WIND) WHEN LEAN-TO'S ARE ADDED.



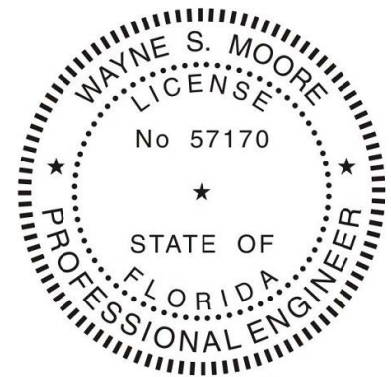
### 15 SIDE EXTENSION RAFTER/COLUMN DETAIL FOR RAFTER SPANS <= 15'-0"

SCALE: NTS



### 15A SIDE EXTENSION RAFTER/COLUMN DETAIL FOR RAFTER SPANS 15'-0" < TO <= 24'-0"

SCALE: NTS



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CHECKED BY: PDH

PROJECT MGR: WSM

CLIENT: TBS

TUBULAR BUILDING SYSTEMS  
631 SE INDUSTRIAL CIRCLE  
LAKE CITY, FLORIDA 32025  
30'-0" x 20'-0" ENCLOSED BUILDING EXP. B

DATE: 7-29-21

SHT. 14

SCALE: NTS

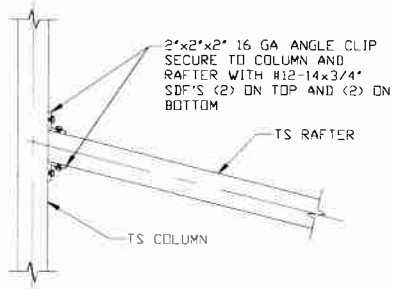
DWG. NO: SK-3

JOB NO: 16022S/  
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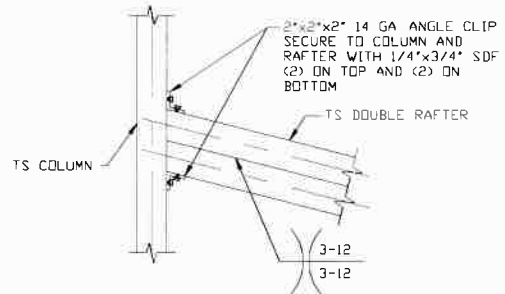
# BOX EAVE RAFTER LEAN-TO OPTIONS



**LEAN-TO RAFTER TO RAFTER  
COLUMN CONNECTION DETAIL  
FOR RAFTER SPANS  $\leq$  15'-0"**

16

SCALE: NTS



**LEAN-TO RAFTER TO RAFTER  
COLUMN CONNECTION DETAIL  
FOR RAFTER SPANS  
15'-0" < TO  $\leq$  24'-0"**

16A

SCALE: NTS



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SCALE: NTS

JOB NO: 16022S/  
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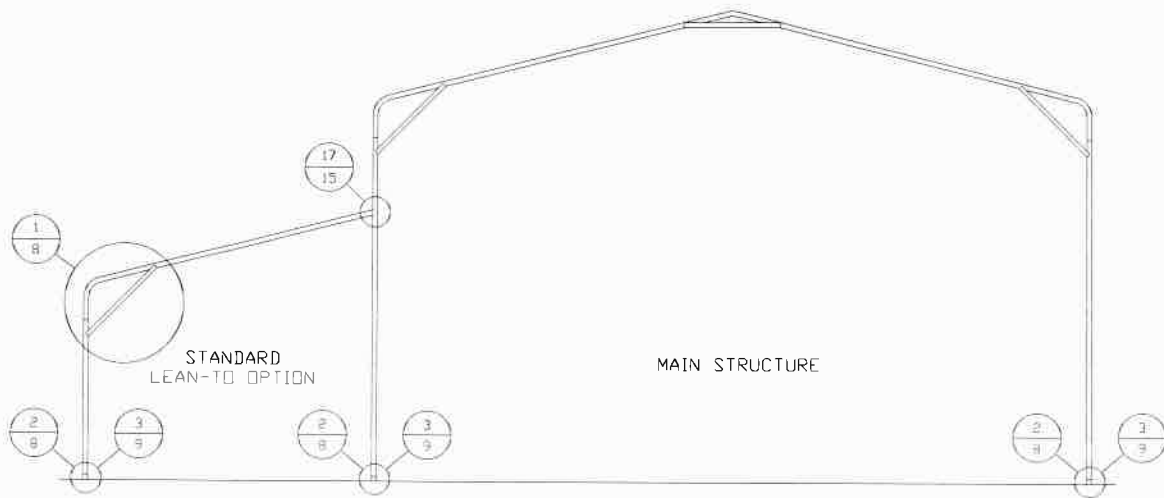
SHT. 14A

DWG. NO: SK-3

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# BOW RAFTER LEAN-TO OPTIONS



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

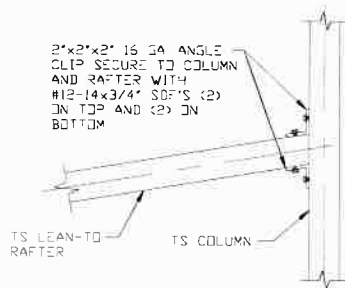
SCALE: NTS

MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE DOUBLE COLUMNS FOR EAVE HEIGHTS 13'-0" (12'-0" FOR HIGH WIND) < TO < 15'-0"

MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE SINGLE COLUMNS FOR EAVE HEIGHTS 10'-0" < TO < 13'-0" (12'-0" FOR HIGH WIND) (WITH 4'-4" INSERT)

MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE SINGLE COLUMNS FOR EAVE HEIGHTS < 10'-0"

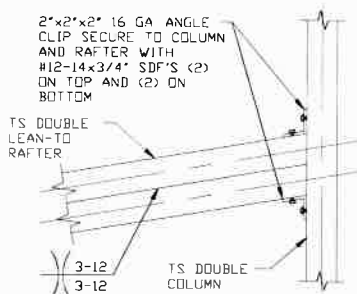
KNEE BRACES MUST BE 4'-0" (<5'-0" FOR HIGH WIND) WHEN LEAN-TO'S ARE ADDED



### LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS ≤ 15'-0"

17

SCALE: NTS



### LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 15'-0" < TO ≤ 24'-0"

17A

SCALE: NTS



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**PROJECT MGR: WSM**

**CLIENT: TBS**

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631 SE INDUSTRIAL CIRCLE  
LAKE CITY, FLORIDA 32025  
30'-0"x20'-0" ENCLOSED BUILDING EXP. B

**DATE: 7-29-21**

**SHT. 15**

**SCALE: NTS**

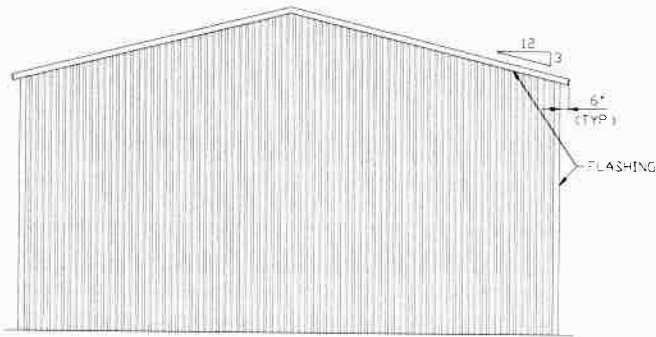
**DWG. NO: SK-3**

**JOB NO: 16022S/  
17300S/20352S**

**REV: 6**

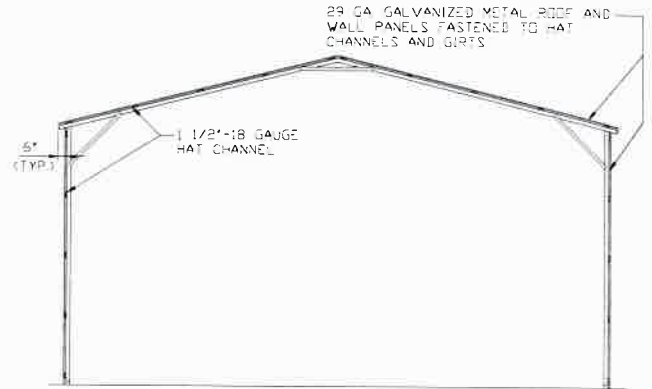
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# BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



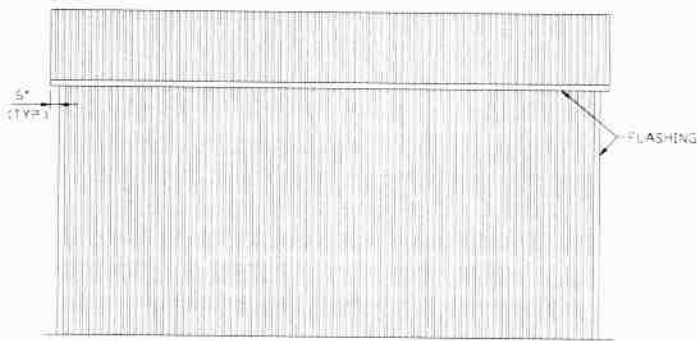
**TYPICAL END ELEVATION  
VERTICAL ROOF/SIDING OPTION**

SCALE: NTS



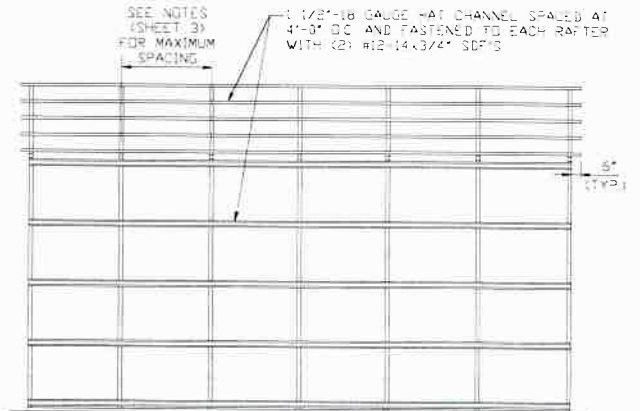
**TYPICAL SECTION VERTICAL  
ROOF/SIDING OPTION**

SCALE: NTS



**TYPICAL SIDE ELEVATION  
VERTICAL ROOF/SIDING OPTION**

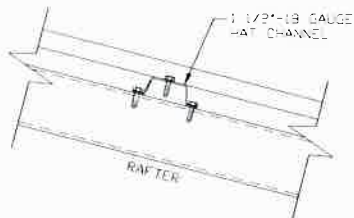
SCALE: NTS



**TYPICAL FRAMING SECTION  
VERTICAL ROOF/SIDING OPTION**

SCALE: NTS

NOTE: ITS WALL GIRTS CAN BE USED AS AN OPTION IN PLACE OF HAT CHANNELS. ITS GIRTS MUST BE SPACED AT 4'-0" (MAX) OC.



**ROOF PANEL ATTACHMENT**

(ALTERNATE FOR VERTICAL ROOF PANELS)  
SCALE: NTS



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**CHECKED BY:** PDH

**PROJECT MGR:** WSM

**CLIENT:** TBS

**TUBULAR BUILDING SYSTEMS  
631 SE INDUSTRIAL CIRCLE  
LAKE CITY, FLORIDA 32025  
30'-0"x20'-0" ENCLOSED BUILDING EXP. B**

**DATE:** 7-29-21

**SHT.** 16

**SCALE:** NTS

**DWG. NO.:** SK-3

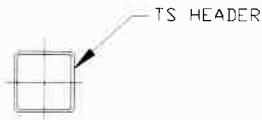
**JOB NO.:** 16022S/  
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**REV.:** 6

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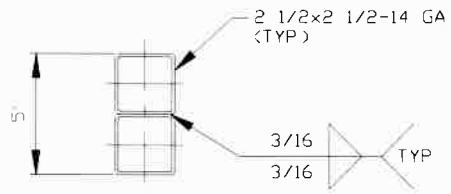


## SIDE WALL HEADER OPTIONS



**HEADER DETAIL FOR DOOR  
OPENINGS  $\leq 10'-0''$**

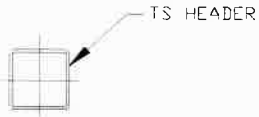
SCALE: NTS



**HEADER DETAIL FOR DOOR  
OPENINGS  $10'-0'' < \text{LENGTH} \leq 15'-0''$**

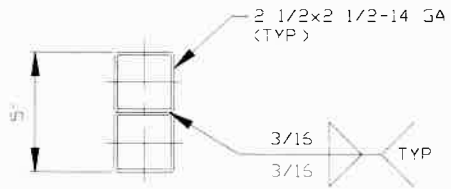
SCALE: NTS

## END WALL HEADER OPTIONS



**HEADER DETAIL FOR DOOR  
OPENINGS  $\leq 12'-0''$**

SCALE: NTS



**HEADER DETAIL FOR DOOR  
OPENINGS  $12'-0'' < \text{LENGTH} \leq 15'-0''$**

SCALE: NTS



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**DATE: 7-29-21**

**SHT. 17**

**SCALE: NTS**

**DWG. NO: SK-3**

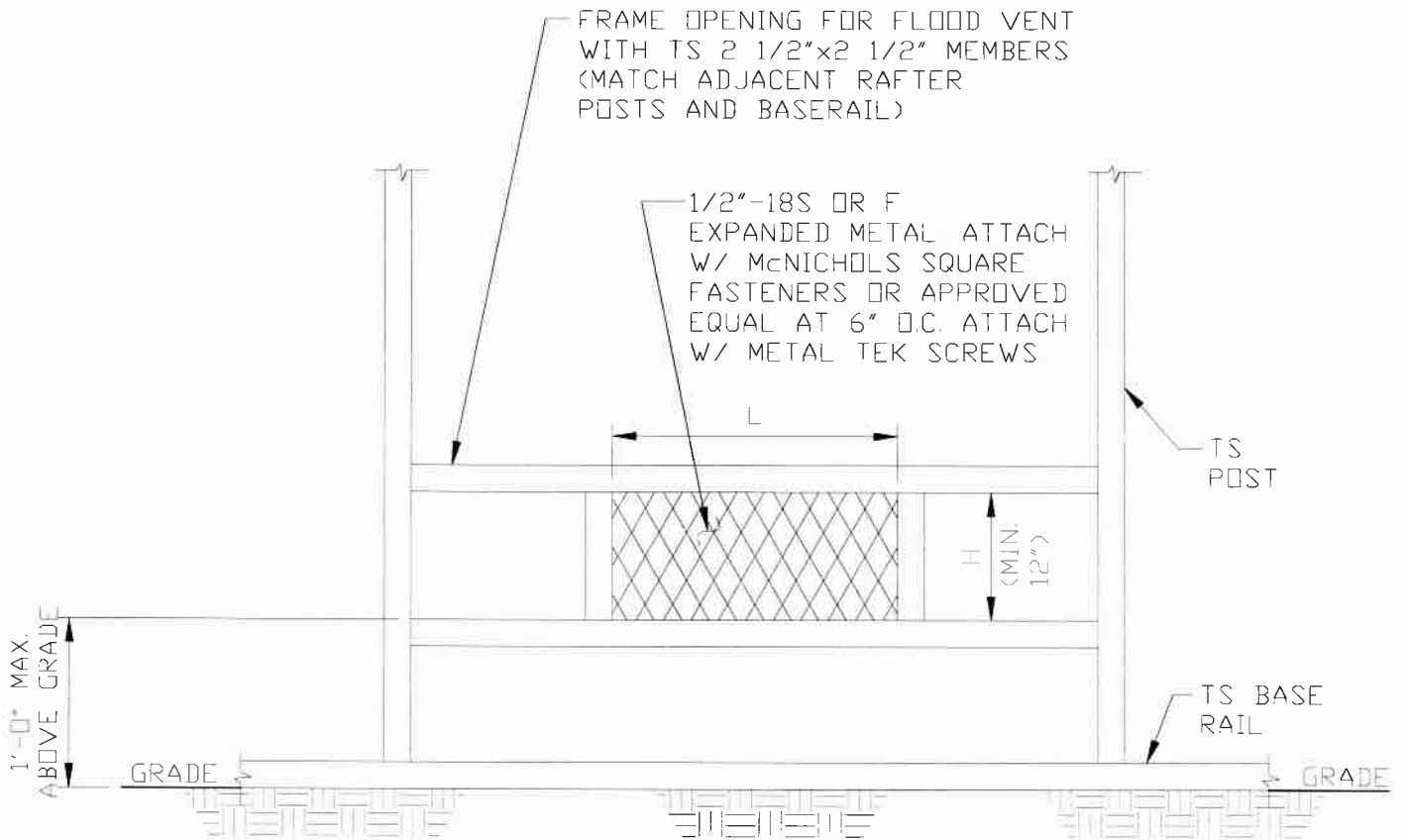
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## FLOOD VENT DETAIL



### TYPICAL FLOOD VENT DETAIL

SCALE: NTS

1. MINIMUM VENT SPACE REQUIRED = 1 SQ INCH OF OPEN VENT AREA PER SQ FOOT OF BUILDING AREA
2. THERE SHALL BE A MINIMUM OF TWO OPENINGS ON DIFFERENT SIDES FOR EACH ENCLOSED BUILDING
3. APPLY 13 FACTOR WHEN CALCULATING TOTAL OPEN AREA WHEN USING 1/2"-18GA S OR F EXPANDED METAL.
4. TOTAL OPEN AREA OF VENT =  $L \times H (\text{MIN } 12")$
5. FLOOD VENT DETAIL COMPLIES WITH FEMA/NFIP
6. PREFABRICATED FLOOD VENTS MEETING THE REQUIREMENTS OF FEMA/NIFIP MAY BE USED



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**SHT. 10**

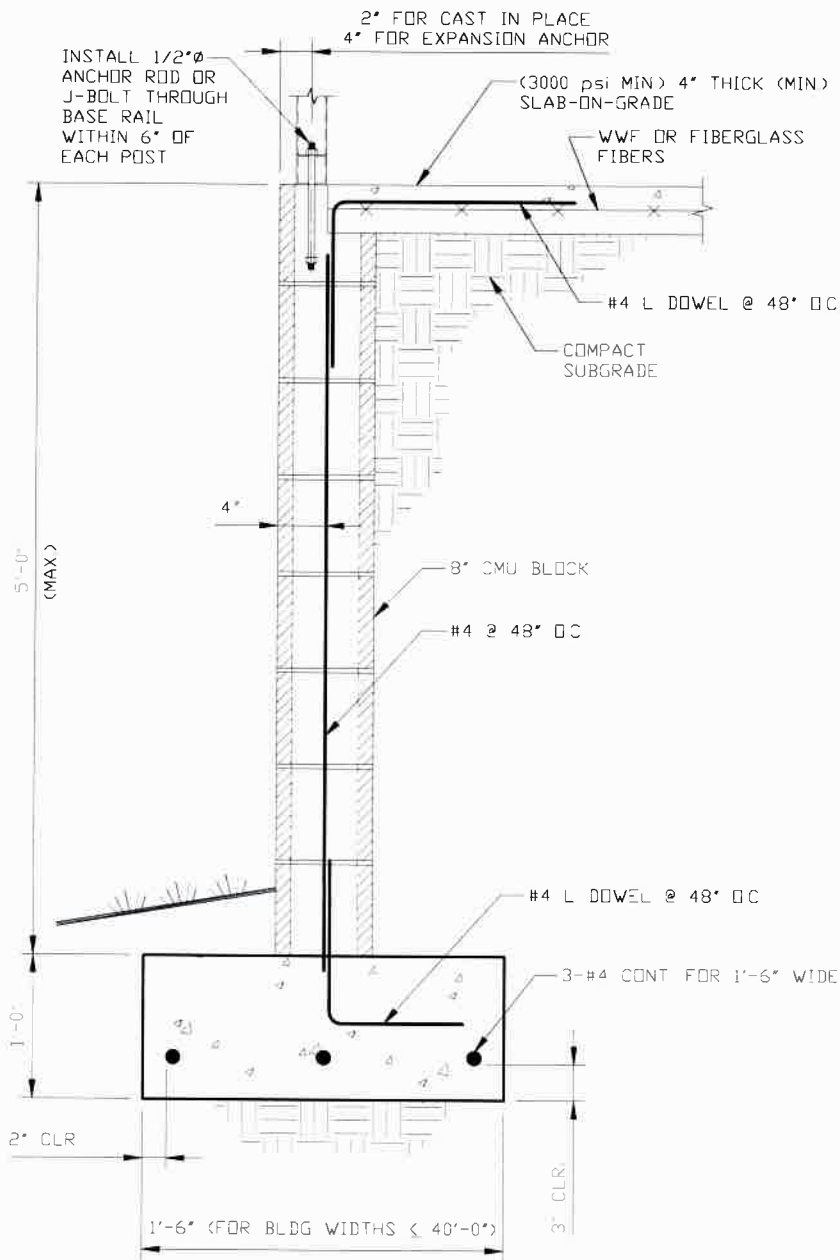
**DWG. NO: SK-3**

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# STAND-ALONE STEM WALL DETAIL



**STAND-ALONE CONCRETE MASONRY UNIT (CMU)  
FOUNDATION STEM WALL DETAIL**

SCALE: NTS



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**SCALE: NTS**

**JOB NO: 16022S/  
17300S/20352S**

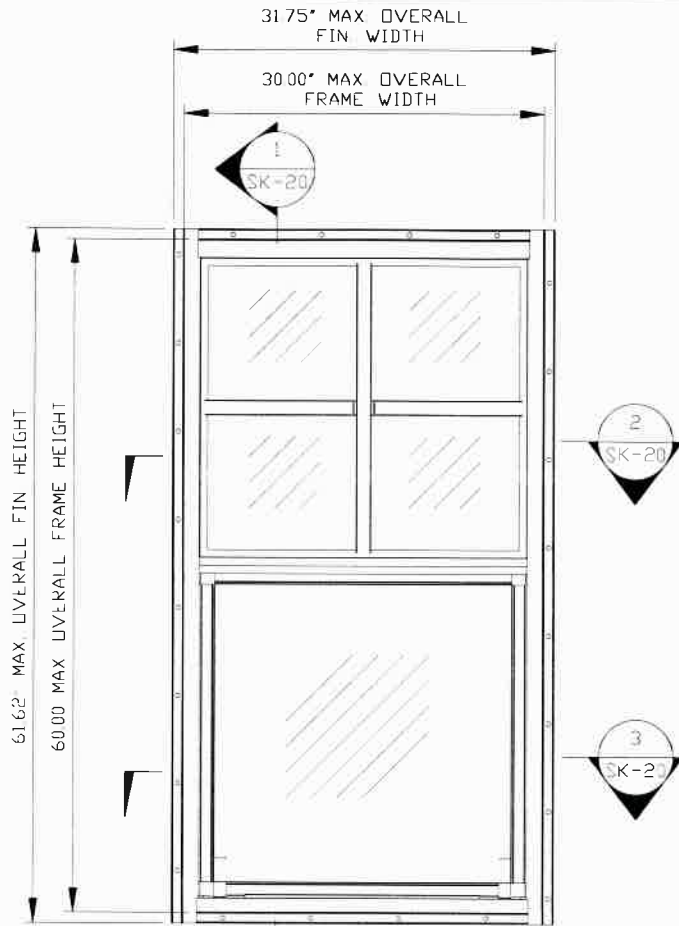
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**DWG. NO: SK-3**

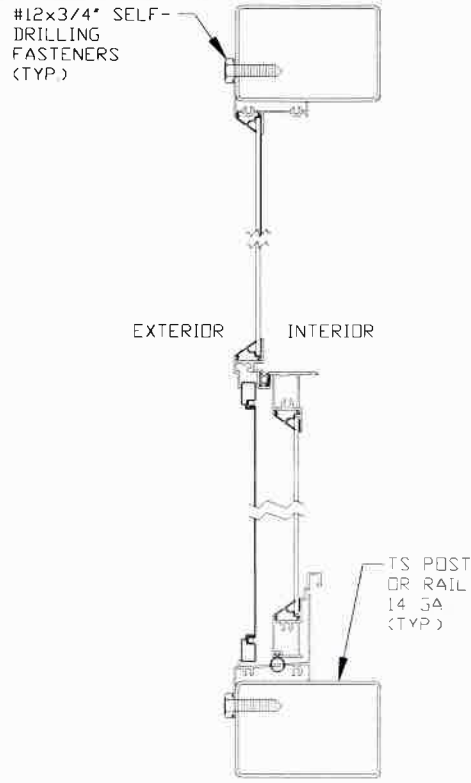
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# VERTICAL SLIDING WINDOW DETAIL



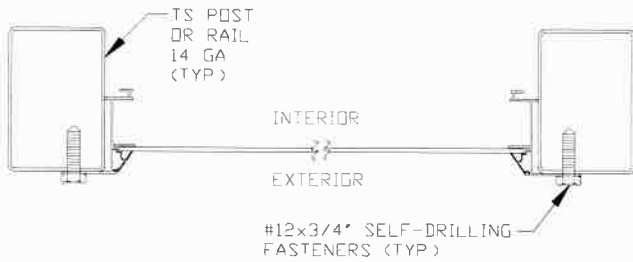
**ELEVATION VIEW**  
SCALE: NTS



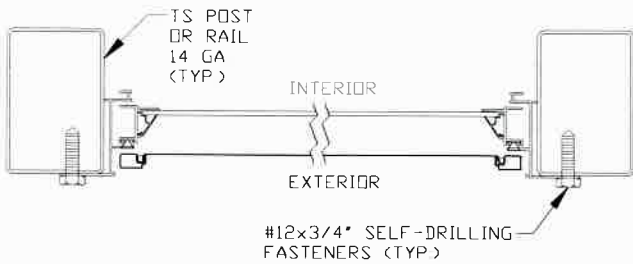
**SECTION 1**  
SCALE: 3"=1'-0" SK-20

NOTE: KINRO SERIES 18000-R VS OR EQUIVALENT WINDOW IS REQUIRED

**POSITIVE WALL PRESSURE: +40.0 PSF**  
**NEGATIVE WALL PRESSURE: -40.0 PSF**



**SECTION 2**  
SCALE: 3"=1'-0" SK-20



**SECTION 3**  
SCALE: 3"=1'-0" SK-20



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**SHT. 20**

**SCALE: NTS**

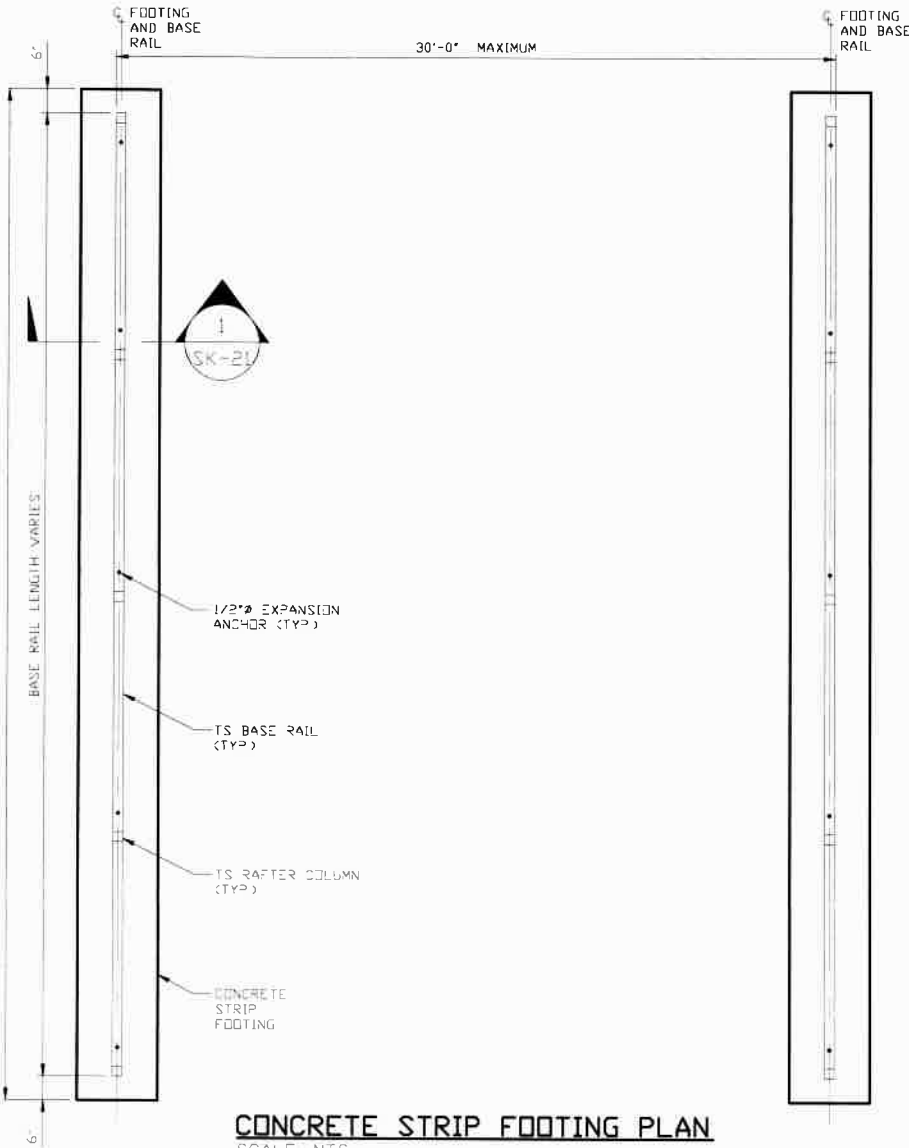
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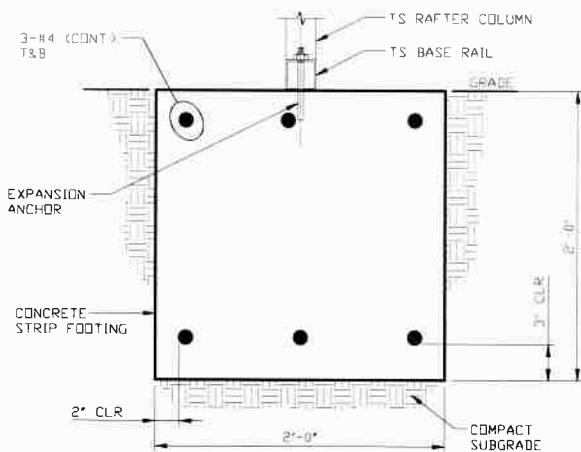
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# OPTIONAL CONCRETE STRIP FOOTING



**CONCRETE STRIP FOOTING PLAN**  
SCALE: NTS



**SECTION 1**  
SCALE: NTS (SK-21)

\* COORDINATE WITH LOCAL CODES/ORD

- 1 STRIP FOOTING DESIGN BASED ON MINIMUM SOIL BEARING CAPACITY OF 1,500 PSF
- 2 CONCRETE SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF 3,000 PSI AT 28 DAYS
- 3 FOR FOUNDATIONS, MINIMUM CONCRETE COVER OVER REINFORCING BARS SHALL BE PER ACI-318: 3" IN FOUNDATIONS WHERE THE CONCRETE IS CAST AGAINST AND PERMANENTLY IN CONTACT WITH THE EARTH OR EXPOSED TO THE EARTH OR WEATHER, AND 1 1/2" ELSEWHERE
- 4 THE STRIP FOOTING REINFORCING STEEL SHALL BE ASTM A615 GRADE 60
- 5 REINFORCEMENT MAY BE BENT IN THE SHOP OR IN THE FIELD PROVIDED
  - A) REINFORCEMENT IS BENT COLD
  - B) THE DIAMETER OF THE BEND, MEASURED ON THE INSIDE OF THE BAR, IS NOT LESS THAN SIX-BAR DIAMETERS
  - C) REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT



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**SCALE:** NTS

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