

STRUCTURAL DESIGN

PARTIALLY ENCLOSED (UTILITY) BUILDING EXPOSURE B

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

8 January 2021 Revision 2 M&A Project No. 16154S/17300S/20352S

Prepared for:

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

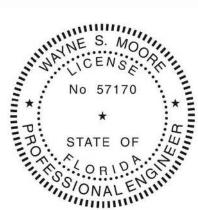
Prepared by:

Moore and Associates Engineering and Consulting, Inc. 1009 East Avenue North Augusta, SC 29841

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

Digitally signed by Wayne S Moore Date: 2021.01.12 15:45:59 -05'00'





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MOORE AND A ENGINEERING AND C		/N BY: JG :KED BY: PDH	30'-0"x20'-	JLAR BUILDING S' -0" UTILITY BUILI E SEAL COVER SH	DING EXP. B IEET
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MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: JG	63	TUBULAR BUILDING SYSTEMS 631 SE INDUSTRIAL CIRCLE LAKE CITY, FLORIDA 32025 30'-0"x20'-0" UTILITY BUILDING EXP. B		
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INSTALLATION NOTES AND SPECIFICATIONS

- 1. DESIGN IS FOR A MAXIMUM 30'-0" WIDE x 20'-0" EAVE HEIGHT PARTIALLY ENCLOSED UTILITY 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 LDADS ARE AS FDLLOWS: A) DEAD LDAD = 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. 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" × 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 × 30° LONG IN SUITABLE SOIL CONDITIONS MAY BE USED FOR LOW (≤ 108 MPH NOMINAL) WIND SPEEDS ONLY. □PTIONAL 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:

SDIL SITE CLASS = D RISK CATEGORY I

R= 3.25

S_{DS}= 1.522 g

S_{DI}= 0.839 g

 $\Lambda = C^2 M$



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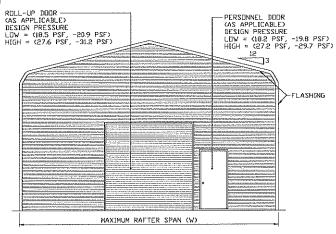
	TUBULAR BUILDING SYSTEMS					
DRAWN BY: JG	631	SE INDUSTRIAL	CIRCLE			
	LAKE CITY, FLORIDA 32025					
CHECKED BY: PDH	30'-0"x20'	-0" UTILITY BUI	LDING EXP. B			
 PROJECT MGR: VSM	DATE: 1-8-21	SCALE, NTS	JDB ND: 16154S/ 17300S/20352S			
PRUJECT MURI WSM	DAIE: 1-8-51	SCALE: NTS	1/3002/203322			
CLIENTI TBS	знт, з	DWG, NO: SK-2	REV. 2			

BOX EAVE FRAME RAFTER ENCLOSED BUILDING ROLL-UP DOOR (AS APPLICABLE) DESIGN PRESSURE LOW = (18.5 PSF, -20.9 PSF) HIGH = (27.6 PSF, -31.2 PSF) PERSONNEL DOOR PERSONNEL DUBUK (AS APPLICABLE) DESIGN PRESSURE LOW = (18.2 PSF, -19.8 PSF) HIGH = (27.2 PSF, -29.7 PSF) SI □3 -FLASHING

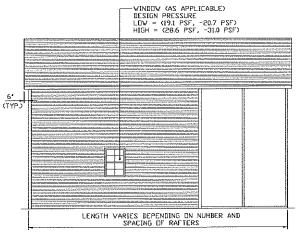
TYPICAL END ELEVATION

BOW FRAME RAFTER ENCLOSED BUILDING

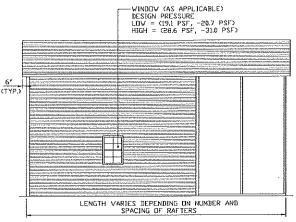
MAXIMUM RAFTER SPAN (W)



TYPICAL END ELEVATION SCALE: NTS

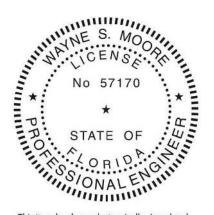


SIDE ELEVATION **TYPICAL** SCALE: NTS



TYPICAL SIDE ELEVATION

SCALE: NTS



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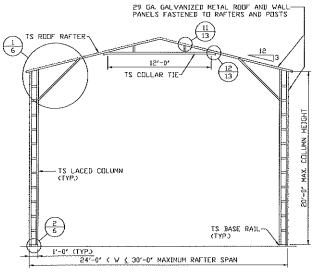
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TUBULAR BUILDING SYSTEMS 631 SE INDUSTRIAL CIRCLE LAKE CITY, FLORIDA 32025 30'-0"x20'-0" UTILITY BUILDING EXP. B

PROJECT MGR: WSM DATE: 1-8-21 SCALE: NTS JOB NO 16154S/ 17300\$/20352\$

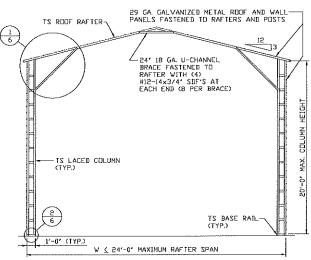
SHT. 4 DWG. NO: SK-2 CLIENT: TBS

REV. 2

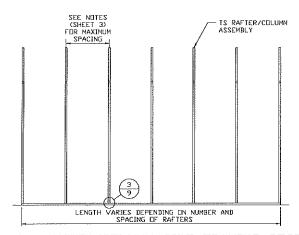


TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE: NTS

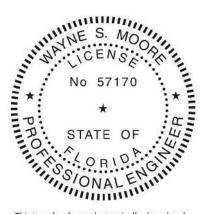


TYPICAL RAFTER/COLUMN END FRAME SECTION



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

SCALE: NTS



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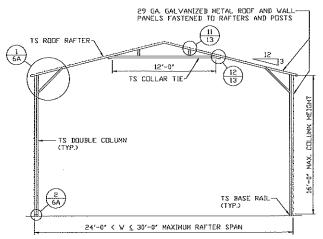
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TUBULAR BUILDING SYSTEMS 631 SE INDUSTRIAL CIRCLE LAKE CITY, FLORIDA 32025 30'-0"x20'-0" UTILITY BUILDING EXP. B

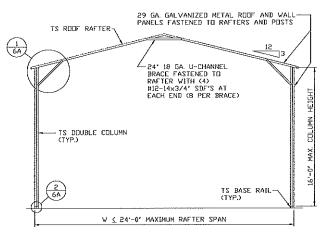
PROJECT MGR: VSM DATE: 1-8-21 SCALE: NTS 17300S/20352S

CLIENT: TBS SHT. 5 DWG. ND: SK-2 REV.: 2

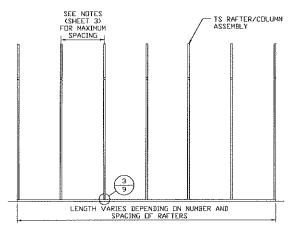


TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE: NTS

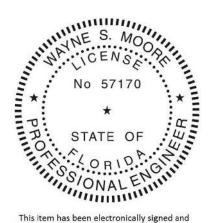


TYPICAL RAFTER/COLUMN END FRAME SECTION



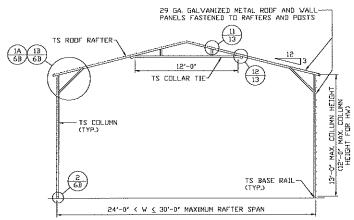
TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

SCALE: NTS



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TYPICAL RAFTER/COLUMN END FRAME SECTION SCALE: NTS

29 GA. GALVANIZED METAL RODF AND WALL
PANELS FASTENED TO RAFTERS AND POSTS

TS RODF RAFTER

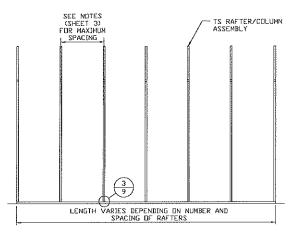
24' 18 GA. U-CHANNEL
BRACE FASTENED TO
RAFTER VITH (4)
H12-14x3/4' SDF'S AT
EACH END (8 PER BRACE)

TS COLUMN
(TYP.)

V

24'-0' MAXIMUM RAFTER SPAN

TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

SCALE: NTS



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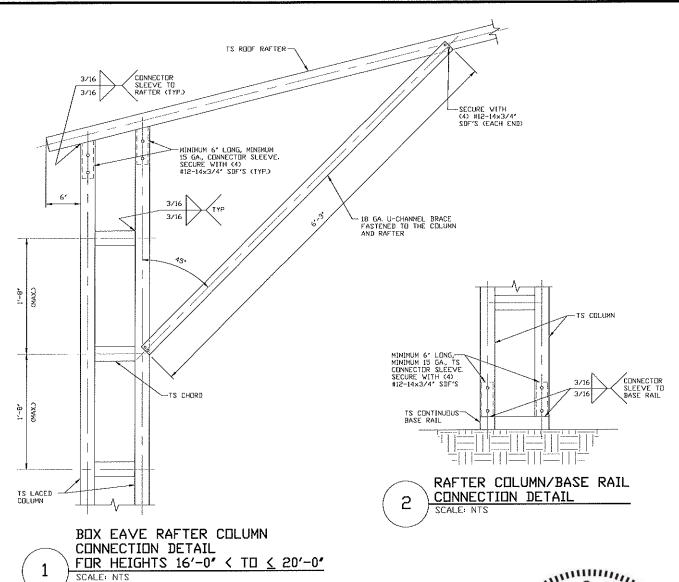
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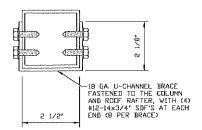
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TUBULAR BUILDING SYSTEMS 631 SE INDUSTRIAL CIRCLE LAKE CITY, FLORIDA 32025 30'-0"x20'-0" UTILITY BUILDING EXP. B

-	PROJECT MGR: WSM	DATE: 1-8-21	SCALE: NTS	JDB ND: 16154S/ 17300S/20352S
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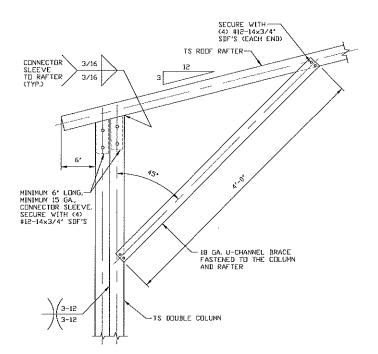


BRACE SECTION



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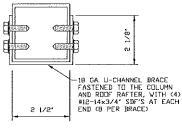


BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 13'-0" < TO < 16'-0"

SCALE: NTS

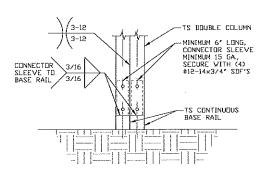
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NOTE: COLUMN HEIGHTS 12'-0" < TO ≤ 16'-0"" FOR HIGH WIND.



BRACE SECTION

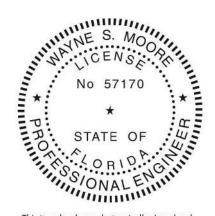
SCALE: NTS



RAFTER COLUMN/BASE RAIL CONNECTION DETAIL

SCALE: NTS

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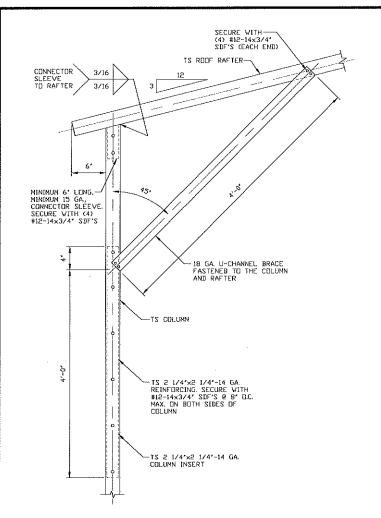
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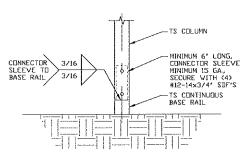
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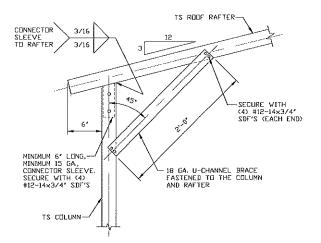
BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 10'-0" < TO < 13'-0" 1A

SCALE: NTS

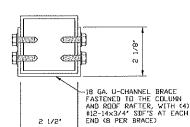
NOTE: MAXIMUM COLUMN HEIGHT IS 12'-0" FOR HIGH WIND.



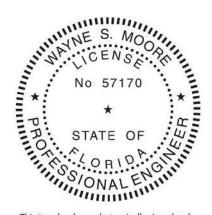
RAFTER COLUMN/BASE RAIL CONNECTION DETAIL 2 SCALE: NTS



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



BRACE SECTION SCALE: NTS



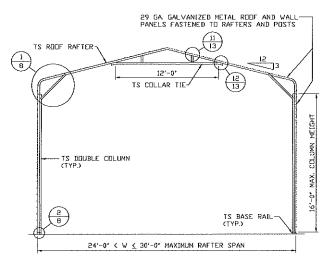
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	TUBU	ILAR BUILDING	SYSTEMS				
DRAWN BY: JG	631 SE INDUSTRIAL CIRCLE						
	LAKE CITY, FLORIDA 32025						
CHECKED BY: PDH	30'-0"x20'	30'-0"x20'-0" UTILITY BUILDING EXP. B					
			JDB NO: 16154S/				
PROJECT MGR: WSM	DATE: 1-8-21	SCALE: NTS	173008/203528				
CLIENT: TBS	SHT. 6B	DVG, NO; SK-2	REV. 2				



12 3 24' 18 GA. U-CHANNEL BRACE FASTENED TD RAFTER WITH (4) #12-14x3/4' SDF'S AT EACH END (8 PER BRACE) TS DOUBLE COLUMN (TYP.) TS BASE RAIL (TYP.) W & 24'-0' MAXIMUM RAFTER SPAN

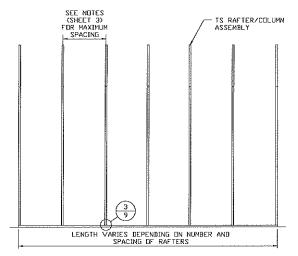
TS ROOF RAFTER

29 GA. GALVANIZED METAL ROOF AND WALL PANELS FASTENED TO RAFTERS AND POSTS

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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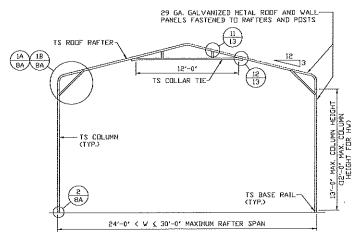
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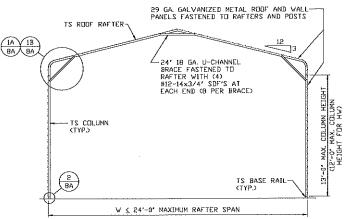
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DRAWN BYI JG		JLAK BUILDING SE INDUSTRIAL				
	LAKE CITY, FLORIDA 32025					
CHECKED BY: PDH	30'-0"x20'	<u>-0" UTILITY BUI</u>	LDING EXP. B			
 PROJECT MGR: WSM	DATE: 1-8-21	SCALE: NTS	JUB ND 16154S/ 17300S/20352S			
CLIENT: TBS	SHT. 7	DWG, NO: SK-2	REV. 2			

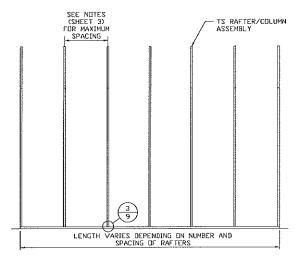




TYPICAL RAFTER/COLUMN END FRAME SECTION

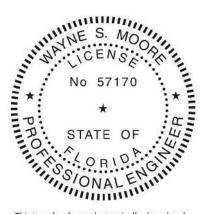
SCALE: NTS

TYPICAL RAFTER/COLUMN END FRAME SECTION SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

SCALE: NTS



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	DRAWN BY: JG			
	CHECKED BY: PDH			
_	DDD IECT MCD. VSM			

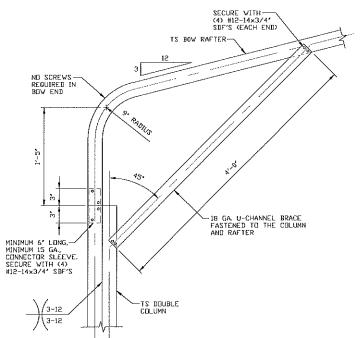
CLIENT: TBS

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

JJECT MGR: VSM	DATE: 1-8-21	SCALE: NTS
FNT: TRS	SHT. 7A	DWG, NO: SK-

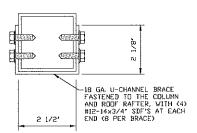
JOB NO: 16154S/ 17300S/20352S

REV. 2 DWG, NO SK-2



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

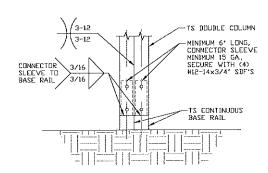
SCALE: NTS NOTE: COLUMN HEIGHTS 12'-0" < TO ≤ 16'-0" FOR HIGH WIND.



BRACE SECTION

SCALE: NTS

1



RAFTER COLUMN/BASE RAIL

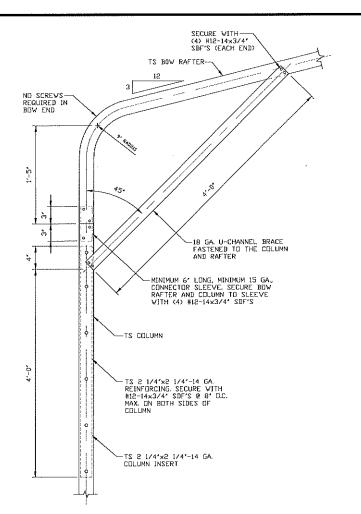
CONNECTION DETAIL

SCALE MIS

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TUBULAR BUILDING SYSTEMS MOORE AND ASSOCIATES DRAWN BY: JG 631 SE INDUSTRIAL CIRCLE LAKE CITY, FLORIDA 32025 ENGINEERING AND CONSULTING, INC. 30'-0"x20'-0" UTILITY BUILDING EXP. B CHECKED BY PDH JDB ND: 16154S/ 17300S/20352S THIS DOCUMENT IS THE PROPERTY OF MODRE AND ASSOCIATES ENGINEERING AND CONSULTING, THE UNAUTHORIZED REPRODUCTION, COPYING, OR OTHERWISE USE OF THIS DOCUMENT IS STRICTLY PROHIBITED AND ANY INFRINGEMENT THEREUPON MAY BE SUBJECT TO LEGAL ACTION. PROJECT MGR: WSM DATE: 1-8-21 SCALE: NTS в тнг DWG. NO: SK-2 REV. 2 CLIENT: TBS

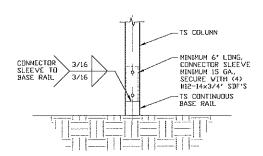


BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 10'-0" < TO <u><</u> 13'-0"

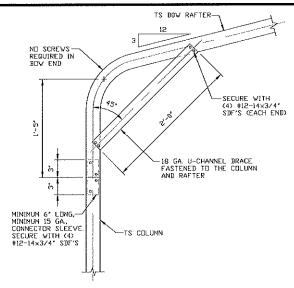
SCALE: NTS

1A

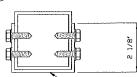
NOTE: MAXIMUM COLUMN HEIGHT IS 12'-0" FOR HIGH WIND.



RAFTER COLUMN/BASE RAIL CONNECTION DETAIL 2 SCALE: NTS



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



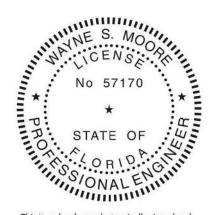
SCALE: NTS

-18 GA. U-CHANNEL BRACE FASTENED TO THE COLUMN AND RODE RAFTER, WITH (4) BI2-14×3/4' SBF'S AT EACH END (8 PER BRACE)

5 1/5, BRACE SECTION

SCALE: NTS

1B



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	CHECKED BY: PDH	
_		[

CLIENT: TBS

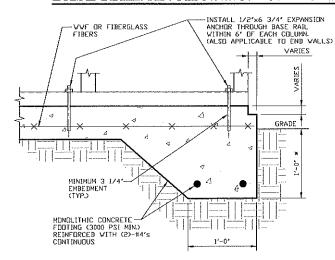
TUBULAR BUILDING SYSTEMS 631 SE INDUSTRIAL CIRCLE LAKE CITY, FLORIDA 32025 30'-0"x20'-0" UTILITY BUILDING EXP. B

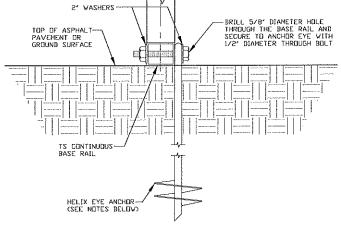
SCALE: NTS DATE: 1-8-21 PROJECT MGR: WSM SHT. BA

JOB NO 16154S/ 17300S/20352S REV. 2

DWG. NO: SK-2

BASE RAIL ANCHORAGE OPTIONS FOR LOW AND HIGH WIND SPEED





GROUND BASE HELIX ANCHORAGE

SCALE: NTS

(CAN BE USED FOR ASPHALT)

* COORDINATE WITH LOCAL CODES/ORD.

REGARDING MINIMUM FROST DEPTH REQ.

3A

CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

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

GENERAL NOTES

NOTE: CONCRETE MONOLITHIC SLAB DESIGN ON MINIMUM SOIL BEARING CAPACITY DF 1,500 PSF.

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

COVER OVER REINFORCING STEEL!

FOR FOUNDATIONS, MINIMUM CONCRETE COVER DVER 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 FIFI D 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 CHARSE SANDS, SANDY GRAVELS, VERY STIFF SILTS, AND CLAYS USE MINIMUM (2) 4' HELICES WITH MINIMUM 30 INCH EMBEDMENT.
- 4. FOR LODGE 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) B' HELICES WITH MINIMUM 60 INCH EMBEDMENT.





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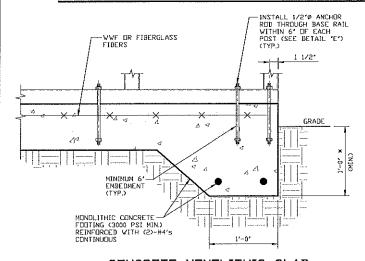
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	CLIENT: TBS	SHT. 9	DVG. NO: SK-2	REV. 2		
_	PROJECT MGR: WSM	DATE: 1-8-21	SCALE: NTS	JDB ND: 16154\$/ 17300\$/20352\$		
	CHECKED BY: PDH	LAKE CITY, FLORIDA 32025 30'-0"x20'-0" UTILITY BUILDING EXP. B				
	DRAWN BY: JG	TUBULAR BUILDING SYSTEMS 631 SE INDUSTRIAL CIRCLE				

OPTIONAL FOUNDATION ANCHORAGE FOR LOW AND HIGH WIND SPEED



30

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.

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 I 1/2 INCHES ELSEWHERE.

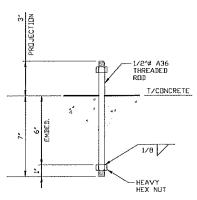
REINFORCING STEEL

THE TURNDOWN REINFORCING STEEL SHALL BE ASTM A615 GRADE 60. THE SLAB REINFORCEMENT SHALL BE VELDED 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.

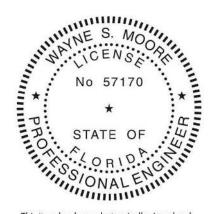
 3. REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT
- BE FIELD BENT.



ANCHOR ROD THROUGH BASE RAIL DETAIL

SCALE: NTS

3D



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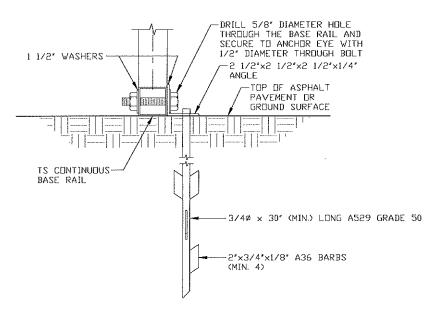
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TUBULAR BUILDING SYSTEMS 631 SE INDUSTRIAL CIRCLE LAKE CITY, FLORIDA 32025 30'-0"x20'-0" UTILITY BUILDING EXP. B

JOB NO 16154S/ SCALE: NTS PROJECT MGR: WSM DATE: 1-8-21 173005/203525 SHT. 9A DWG. NO: SK-2 REV. 2 CLIENT: TBS

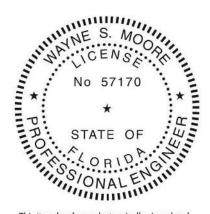
BASE RAIL ANCHORAGE OPTION



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.

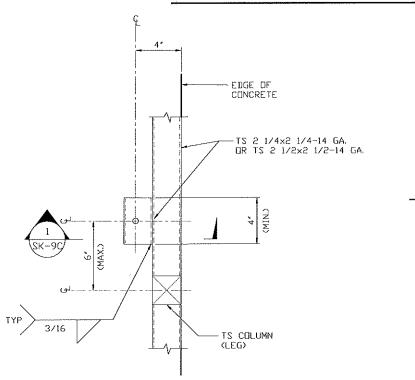
3E

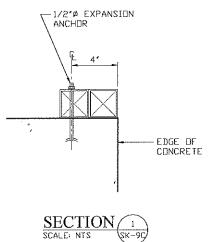


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MOORE AND ASSOCIATES	DRAWN BYI JG		JLAR BUILDING SE INDUSTRIAL	
ENCONFEDING AND CONCULTING INC	CHECKED BY: PDH		KE CITY, FLORID '-0" UTILITY BUII	
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BASE RAIL ANCHORAGE OPTIONS





TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

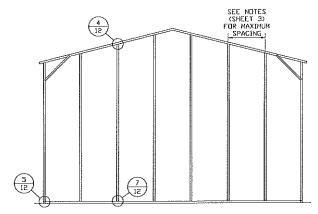
SCALE: NTS



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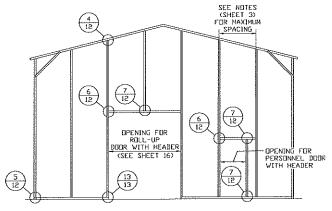
MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BY: JG	631 LA	10BULAR BUILDING SYSTEMS 631 SE INDUSTRIAL CIRCLE LAKE CITY, FLORIDA 32025 30'-0"x20'-0" UTILITY BUILDING EXP. B	
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BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



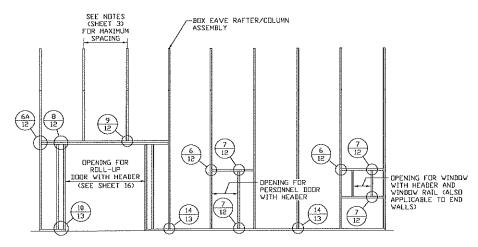
TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

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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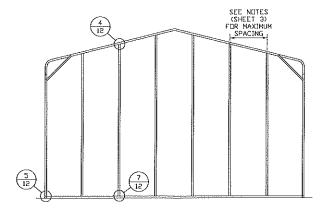
CLIENT: TBS

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

JDB ND: 16154S/ 17300S/20352S SCALE: NTS PROJECT MGR: WSM DATE: 1-8-21 SHT. 10

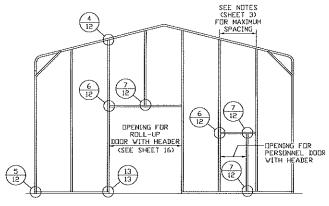
REV. 2 DWG. ND: SK-2

BOW RAFTER END WALL AND SIDE WALL OPENINGS



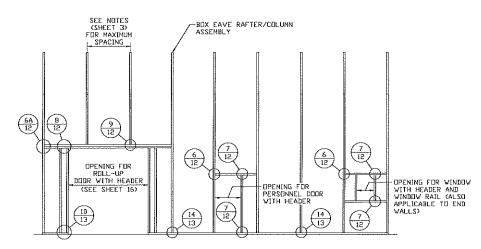
TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

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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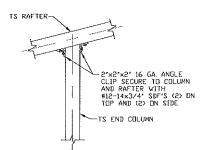
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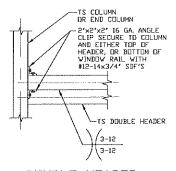
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-						
		TUBULAR BUILDING SYSTEMS				
	DRAWN BY: JG	631 SE INDUSTRIAL CIRCLE LAKE CITY, FLORIDA 32025 30'-0"x20'-0" UTILITY BUILDING EXP. B				
	CHECKED BY: PDH					
	PROJECT MGR: WSM	DATE: 1-8-21	SCALE: NTS		ND: 16154S/ 00S/20352S	
	CLIENT: TBS	SHT. 11	DWG, NO: SK-2		REV. 2	

CONNECTION DETAILS



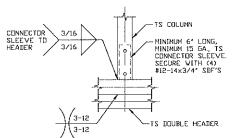
END COLUMN/RAFTER CONNECTION DETAIL 4 SCALE: NTS



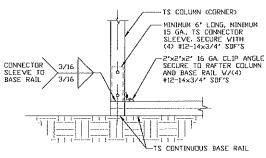
DOUBLE HEADER TO COLUMN CONNECTION DETAIL SCALE: NTS

6A

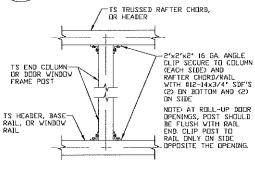
9



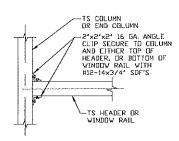
COLUMN/DOUBLE HEADER CONNECTION DETAIL SCALE: NTS



END COLUMN/BASE RAIL CONNECTION DETAIL 5 SCALEL NTS

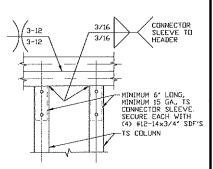


COLUMN TO HEADER, BASE RAIL, DR WINDOW RAIL CONNECTION DETAIL 7 SCALE: NTS



HEADER OR WINDOW RAIL TO COLUMN CONNECTION DETAIL SCALE: NTS

6



DOUBLE HEADER/COLUMN CONNECTION DETAIL 8 SCALE: NTS



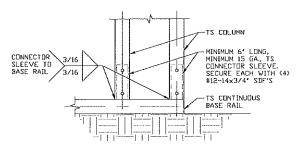
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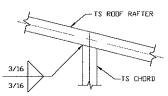
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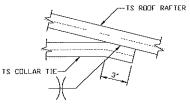
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•	DRAWN BY: JG CHECKED BY: PDH	631 LAI	ILAR BUILDING SE INDUSTRIAL KE CITY, FLORIE -0" UTILITY BUII	CIR DA 3' LDIN	CLE 2025 NG EXP, B
	PROJECT MGR: WSM	DATE: 1-8-21	SCALE: NTS		ND: 16154S/ 00S/20352S
	CLIENT: TBS	SHT. 12	DVG. NO SK-2		REV. 2

CONNECTION DETAILS



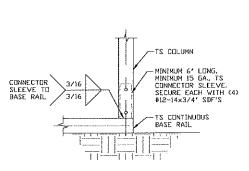




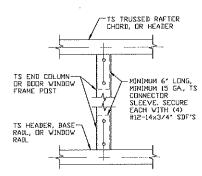
10 COLUMN/BASE RAIL CONNECTION DETAIL SCALE: NTS

RAFTER TO CHORD CONNECTION DETAIL
SCALE: NTS

12 COLLAR TIE CONNECTION DETAIL
SCALE: NTS



COLUMN/BASE RAIL CONNECTION DETAIL
SCALE: NTS



COLUMN TO HEADER, BASE RAIL CONNECTION DETAIL

14) SCALE: NTS



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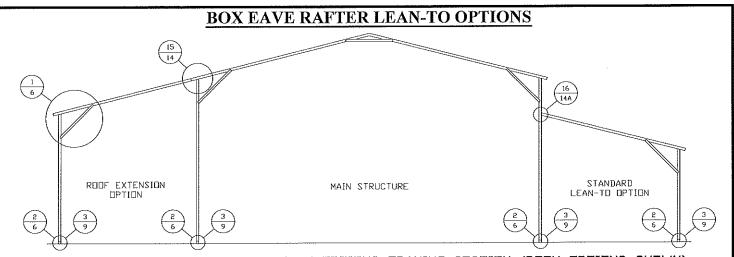
DRAWN BY: JG

CHECKED BY: PDH

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

PROJECT MGRI WSM DATE: 1-8-21 SCALE: NTS 17300S/20352S

CLIENT: TBS SHT. 13 DWG. ND: SK-2 REV.: 2



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

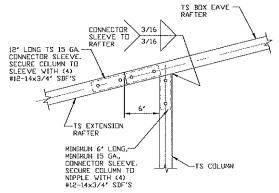
SCALE: NTS
MAIN BUILDING COLUMNS WITH LEAN-TO DR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE LACED COLUMNS FOR
EAVE HEIGHTS 16'-0' < TO < 20'-0'.

MAIN BUILDING COLUMNS WITH LEAN-TO DR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE DOUBLE COLUMNS FOR
EAVE HEIGHTS 13'-0' (12'-0' FOR HIGH WIND) < TO < 16'-0'.

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

MAIN BUILDING COLUMNS WITH LEAN-TO DR 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.



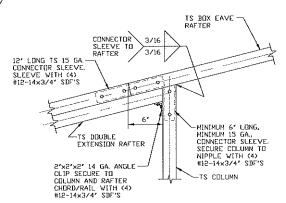
SIDE EXTENSION RAFTER/COLUMN DETAIL

FOR RAFTER SPANS

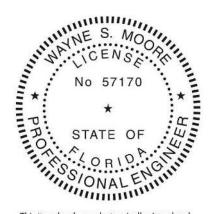
15'-0"

SCALE: NTS

15A



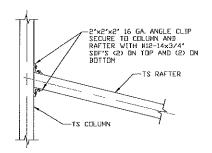
SIDE EXTENSION RAFTER/COLUMN DETAIL FOR RAFTER SPANS 15'-0" < TO < 24'-0" SCALE: NTS



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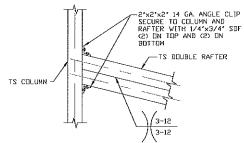
	DRAWN BY: JG	631 LAI	TUBULAR BUILDING SYSTEMS 631 SE INDUSTRIAL CIRCLE LAKE CITY, FLORIDA 32025 30'-0"x20'-0" UTILITY BUILDING EXP. B		
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BOX EAVE RAFTER LEAN-TO OPTIONS



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

16 SCALE NTS



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

SCALE: NTS

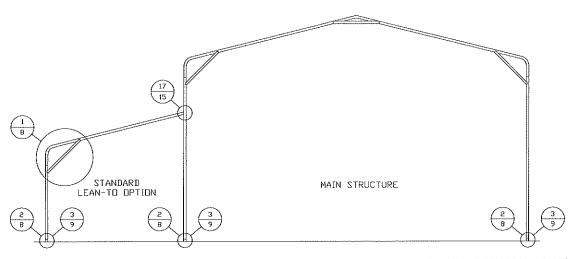
16A



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ENGREEDING AND CONGULTING INC	CHECKED BY: PDH	LAKE CITY, FLORIDA 32025 30'-0"x20'-0" UTILITY BUILDING EXP. B		
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BOW RAFTER LEAN-TO OPTIONS



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

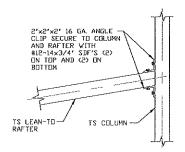
SCALE: NTS

MAIN BUILDING COLUMNS WITH LEAN-TO DR RODF EXTENSION ATTACHED ARE REQUIRED TO BE DOUBLE COLUMNS FOR EAVE HEIGHTS 13'-0' (12'-0' FOR HIGH WIND) < TO _ 16'-0'.

MAIN BUILDING COLUMNS WITH LEAN-TO DR 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 DR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE SINGLE COLUMNS FOR EAVE HEIGHTS _ 10'-0'.

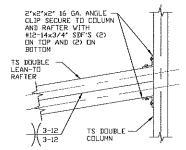
KNEE BRACES MUST BE 4'-0' (5'-0' FOR HIGH WIND) WHEN LEAN-TO'S ARE ADDED.



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

 $17)\frac{100}{\text{SCALE}}$

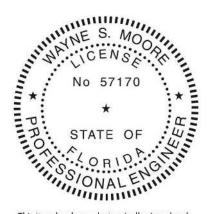
SCALE: NTS



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

[17A]

SCALE: NTS



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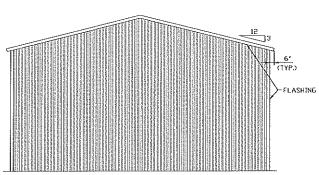
BRAWN BY: JG	
CHECKED BY: PDH	

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

PROJECT MGR: WSM DATE: 1-8-21 SCALE: NTS JOB NO: 16154S/
17300S/20352S

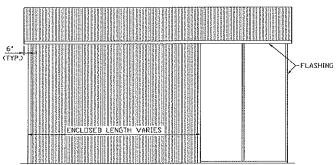
CLIENT: TBS SHT. 15 DWG. NO: SK-2 REV.: 2

BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



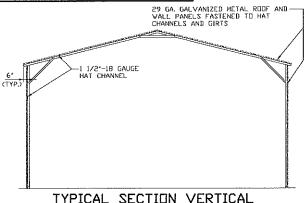
TYPICAL END ELEVATION VERTICAL ROOF/SIDING OPTION

SCALE: NTS



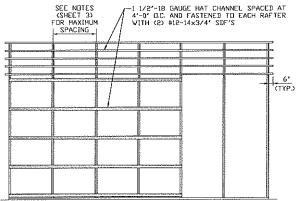
TYPICAL SIDE ELEVATION VERTICAL ROOF/SIDING OPTION

SCALE: NTS



TYPICAL SECTION VERTICAL ROOF/SIDING OPTION

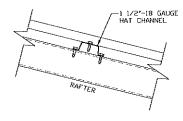
SCALE: NTS



TYPICAL FRAMING SECTION VERTICAL ROOF/SIDING OPTION

SCALE: NTS

OF HAT CHANNELS. TS GIRTS MUST BE SPACD AT 4'-0' (MAX.) D.C.



ROOF PANEL ATTACHMENT

(ALTERNATE FOR VERTICAL ROOF PANELS) SCALE: NTS



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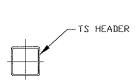
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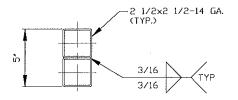
_			SCALE: NTS	1730	ND: 16154S/ 00S/20352S REV.: 2	
. [CHECKED BY: PDH		-0" UTILITY BUI	LDII	IG EXP. B	
1	DRAWN BY: JG	631 SE INDUSTRIAL CIRCLE LAKE CITY, FLORIDA 32025				

SIDE WALL HEADER OPTIONS



HEADER DETAIL FOR DOOR OPENINGS ≤ 10'-0"

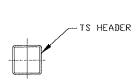
SCALE: NTS



HEADER DETAIL FOR DOOR OPENINGS 10'-0" < LENGTH ≤ 15'-0"

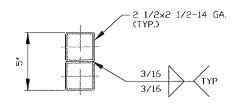
SCALE: NTS

END WALL HEADER OPTIONS



HEADER DETAIL FOR DOOR OPENINGS ≤ 12'-0"

SCALE: NTS



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

SCALE: NTS



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	TUBULAR BUILDING SYSTEMS
DRAWN BY: JG	631 SE INDUSTRIAL CIRCLE
	LAKE CITY, FLORIDA 32025
CHECKED BY: PDH	30'-0"x20'-0" UTILITY BUILDING EXP. B

			JOB NO: 16154S/
PROJECT MGR: VSM	DATE: 1-8-21	SCALE: NTS	17300S/20352S
CLIENT: TBS	SHT, 17	DMC' ND 2K-5	REV. 2

FRAME OPENING FOR FLOOD VENT WITH TS 2 1/2"x2 1/2" MEMBERS (MATCH ADJACENT RAFTER POSTS AND BASERAIL) -1/2"-18S OR F EXPANDED METAL. ATTACH W/ McNICHOLS SQUARE FASTENERS OR APPROVED EQUAL AT 6" D.C. ATTACH W/ METAL TEK SCREWS. TS POST (MIN. I MAX. GRADE TS BASE 1'-0" BOVE RAIL GRADE GRADE Œ

TYPICAL FLOOD VENT DETAIL

FLOOD VENT DETAIL

1. MINIMUM VENT SPACE REQUIRED = 1 SQ. INCH OF OPEN VENT AREA PER SQ. FOOT OF BUILDING AREA.

SCALE: NTS

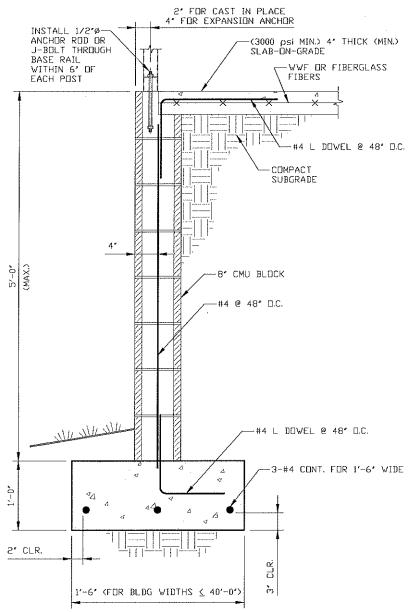
- 2. THERE SHALL BE A MINIMUM OF TWO OPENINGS ON DIFFERENT SIDES FOR EACH ENCLOSED BUILDING.
- 3. APPLY 1.3 FACTOR WHEN CALCULATING TOTAL OPEN AREA WHEN USING $1/2^\prime 18 {\rm Ga}$ S or F expanded metal.
- 4. TOTAL OPEN AREA OF VENT = LxH(MIN. 12").
- 5. FLOOD VENT DETAIL COMPLIES WITH FEMA/NFIP.
- 6. PREFABRICATED FLOOD VENTS MEETING THE REQUIREMENTS OF FEMA/NIFIP MAY BE USED.



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STAND -ALONE STEM WALL DETAIL



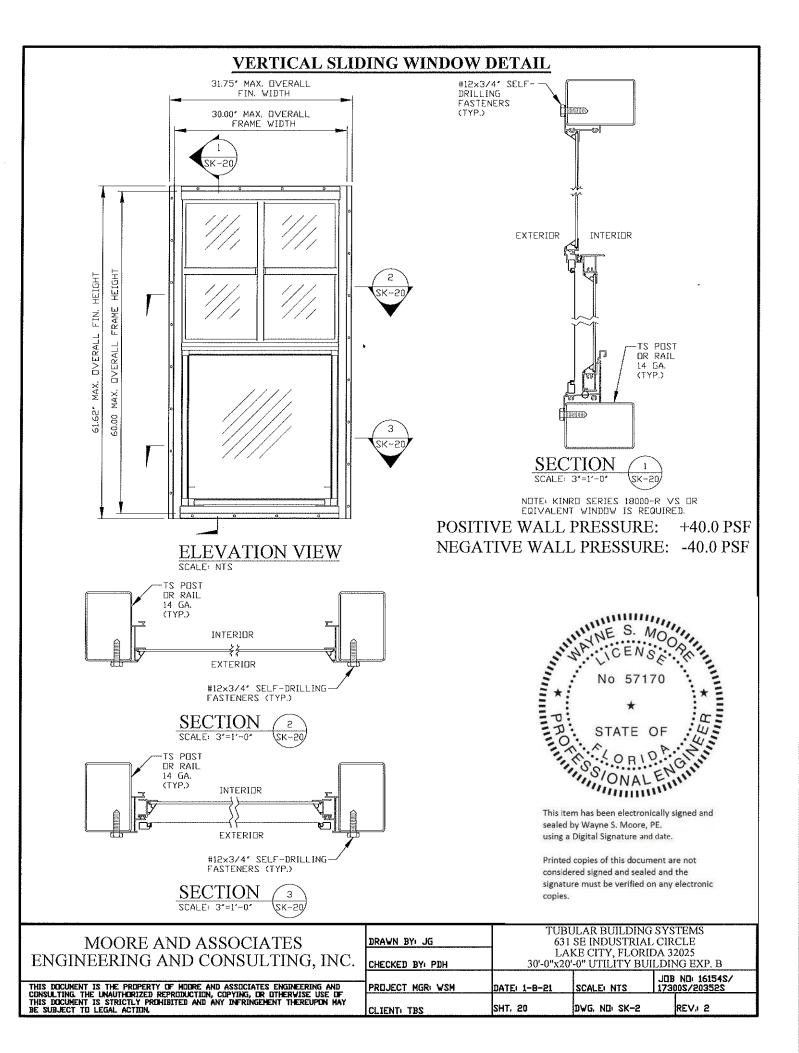
STAND-ALONE CONCRETE MASONRY UNIT (CMU) FOUNDATION STEM WALL DETAIL

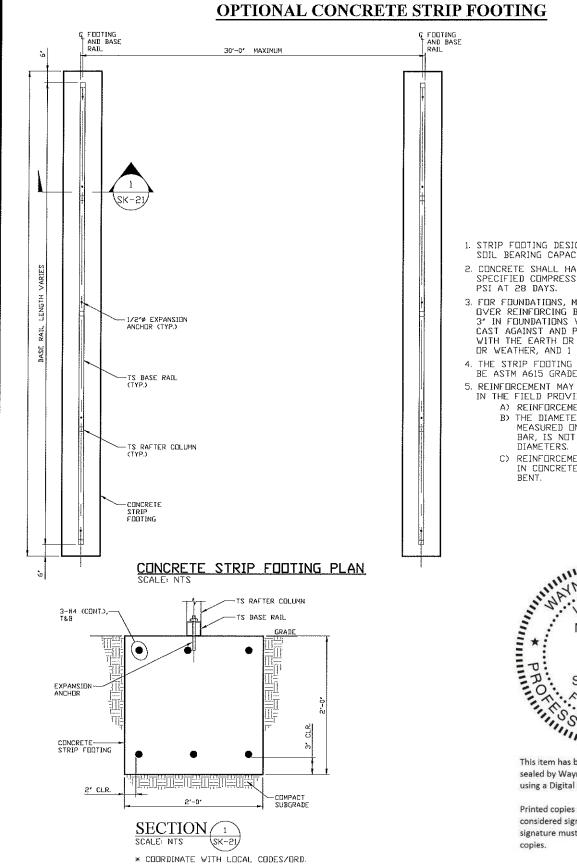
SCALE: NTS



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MOORE AND ASSOCIATES ENGINEERING AND CONSULTING, INC.	DRAWN BYI JG	TUBULAR BUILDING SYSTEMS 631 SE INDUSTRIAL CIRCLE			
	CHECKED BY: PDH	LAKE CITY, FLORIDA 32025 30'-0"x20'-0" UTILITY BUILDING EXP. B			
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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 ACT-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
 - REINFURCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD



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	CHECKED BY: PDH	LAKE CITY, FLORIDA 32025 30'-0"x20'-0" UTILITY BUILDING EXP. B						
_	PROJECT MGR: WSM	DATE: 1-8-21	SCALE: NTS		ND: 16154\$/ 00\$/20352\$			
	CLIENT: TBS	SHT. 21	DWG. NO: SK-2		REV. 2			