

STRUCTURAL DESIGN

ENCLOSED BUILDING EXPOSURE B

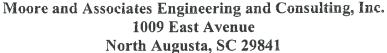
MAXIMUM 30'-0" WIDE X 20'-0" EAVE HEIGHT- BOX EAVE FRAME AND BOW FRAME

18 December 2017 Revision 4 M&A Project No. 16022S/17300S

Prepared for:

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

Prepared by:



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







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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 2017 FLORIDA BUILDING CODE (FBC) 6TH EDITION, 2012 INTERNATIONAL BUILDING CODE (1BC), AND 2015 IBC.
- 3. DESIGN LOADS ARE AS FOLLOWS:
 A) DEAD LOAD = 1.5 PSI
 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 III TIMATE VIND SPEED 141 TO 170 MPH (NOMINAL VIND SPEED 100 TO 122 MPH), MAXIMUM PARTED (POST AND END POST
- 5. HIGH ULTIMATE WIND SPEED 141 TO 170 MPH (NOMINAL WIND SPEED 109 TO 132 MPH): MAXIMUM RAFTER/POST AND END POST SPACING = 4.0 FEET.
- 6. LOW HAZARD RISK CATEGORY I (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 DTHERWISE 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" DF 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

SDIL SITE CLASS = D RISK CATEGORY I/II/III

R = 3.25 $I_E = 1.0$ $S_{DS} = 1.522$ $V = C_S W$ $S_{DI} = 0.839$

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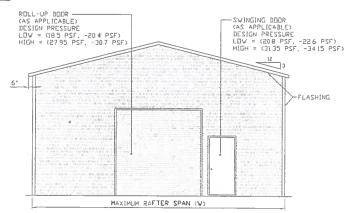
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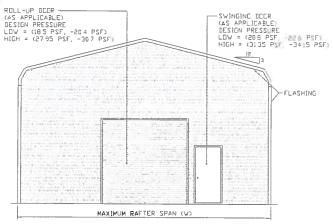
BOX EAVE FRAME RAFTER ENCLOSED BUILDING



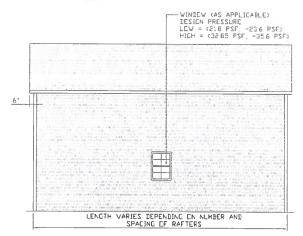
TYPICAL END ELEVATION-HORIZONTAL ROOF

SCALE NTS

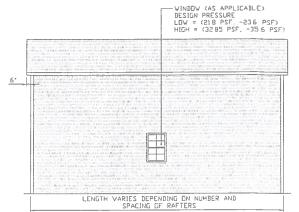
BOW FRAME RAFTER ENCLOSED BUILDING



TYPICAL END ELEVATION



TYPICAL SIDE ELEVATION



TYPICAL SIDE ELEVATION-HORIZONTAL ROOF

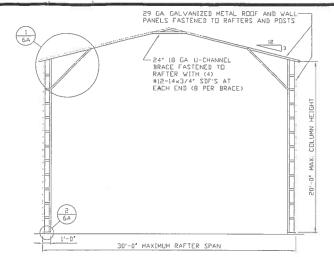
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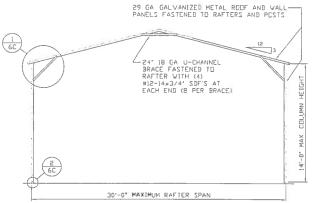
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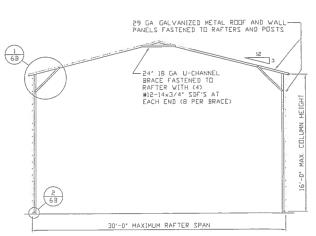
TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE: NTS

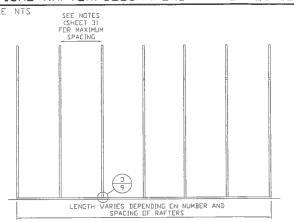


TYPICAL RAFTER/COLUMN END FRAME SECTION

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TYPICAL RAFTER/COLUMN END FRAME SECTION



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION SCALE NTS

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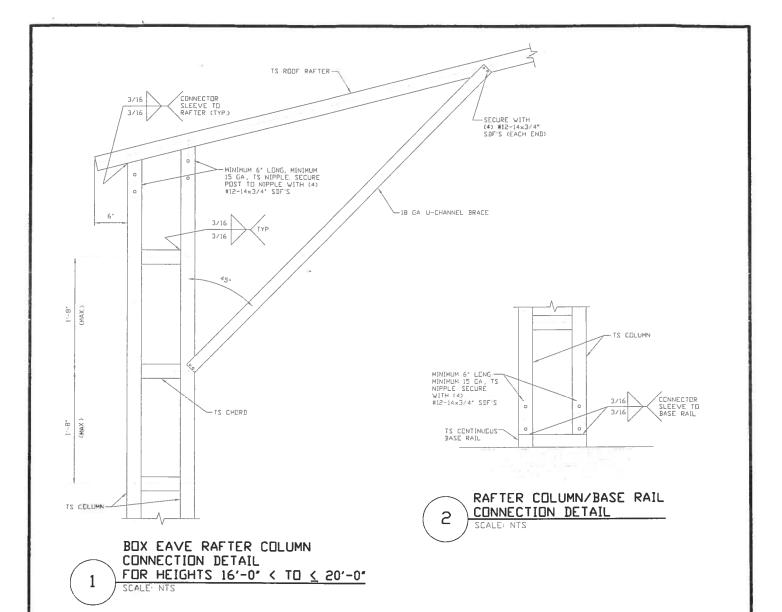
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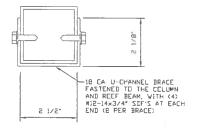
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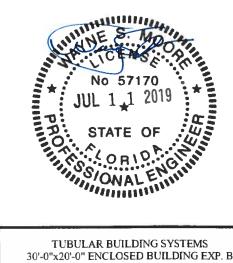
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CLIENT: TRS	SHT. 5	DVG. NO: SK-3	REV.: 4		

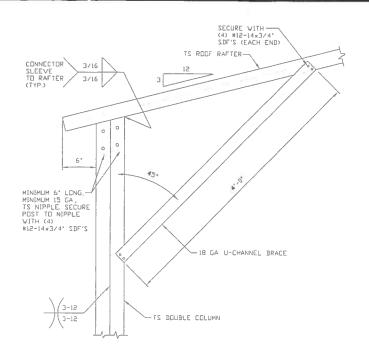




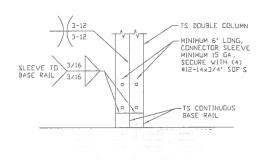
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SCALE: NTS



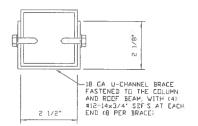
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BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 14'-0" < TO < 16'-0" 1 SCALE: NTS



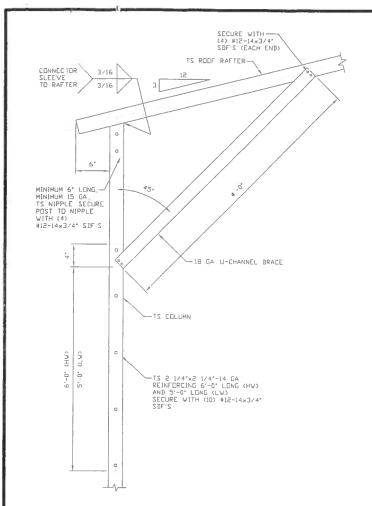
RAFTER COLUMN/BASE RAIL CONNECTION DETAIL 2 SCALE: NTS



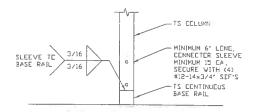
BRACE SECTION SCALE NTS



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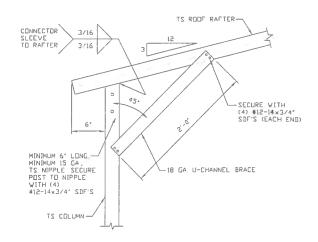


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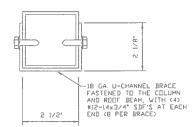


RAFTER COLUMN/BASE RAIL CONNECTION DETAIL

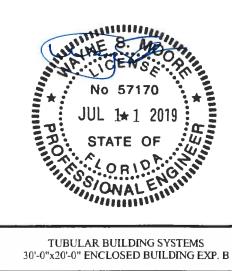
SCALE NTS



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



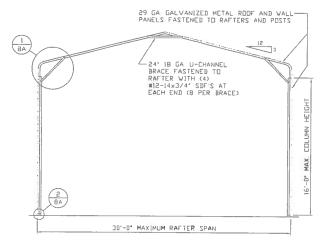
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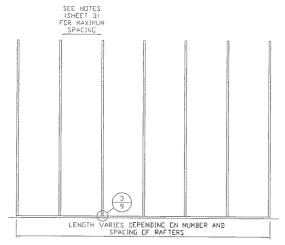
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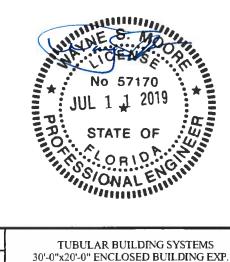
TYPICAL RAFTER/COLUMN END FRAME SECTION

SCALE NTS

TYPICAL RAFTER/COLUMN END FRAME SECTION



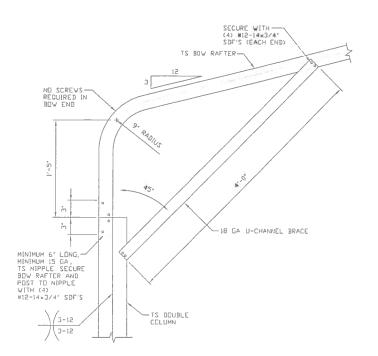
TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION



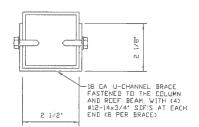
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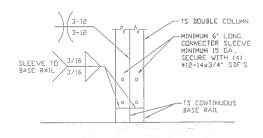


BOX EAVE RAFTER COLUMN
CONNECTION DETAIL
FOR HEIGHTS 14'-0" < TO < 16'-0"

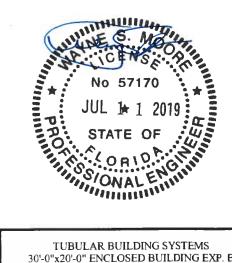


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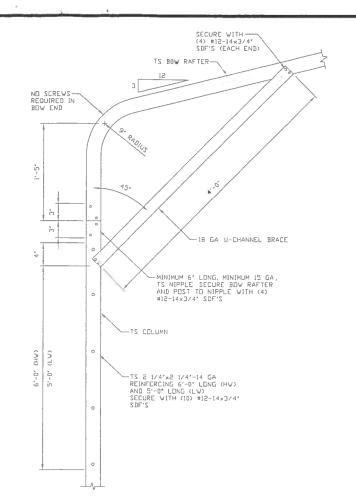
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2 RAFTER COLUMN/BASE RAIL
CONNECTION DETAIL
SCALE NTS

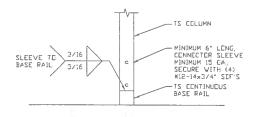


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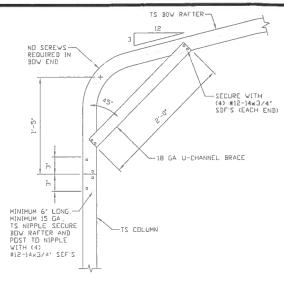


BOX EAVE RAFTER COLUMN CONNECTION DETAIL

FOR HEIGHTS 10'-0" < TO < 14'-0"



2 RAFTER COLUMN/BASE RAIL CONNECTION DETAIL
SCALE: NTS



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

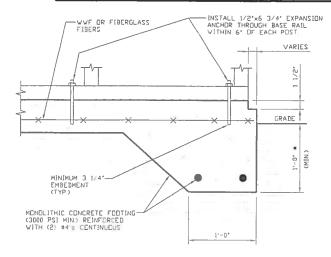
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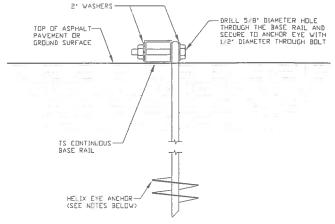
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BASE RAIL ANCHORAGE OPTIONS FOR LOW AND HIGH WIND SPEED





3A

CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

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

GROUND BASE HELIX ANCHORAGE 3B (CAN BE USED FOR ASPHALT) STALE NITS

GENERAL NOTES

CONCRETE:

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

COVER OVER REINFORCING STEEL:

FOR FOUNDATIONS, MINIMUM CONCRETE COVER OVER REINFORCING POR FOUNDATIONS, MINIMUM CONCRETE COVER GIVER REINFORCING BARS SHALL BE PER ACI-318

3 INCHES IN FOUNDATIONS WHERE THE CONCRETE IS CAST ACAINST 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 CRADE 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

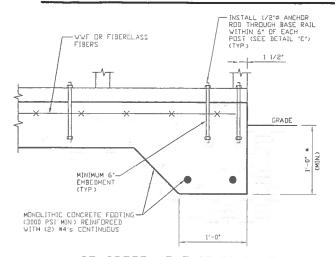
HELIX ANCHOR NOTES:

- 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 EMBERMENT
- 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 LODSE TO MEDIUM CENSE 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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OPTIONAL FOUNDATION ANCHORAGE FOR LOW & HIGH WIND SPEED





CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

(MINIMUM ANCHOR EDGE DISTANCE IS 1 1/2") * COORDINATE WITH LOCAL CODES/ORD

GENERAL NOTES

CONCRETE:

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

COVER OVER REINFORCING STEEL:

FOR FOUNDATIONS, MINIMUM CONCRETE COVER OVER REINFORCING BARS SHALL BE PER ACI-318

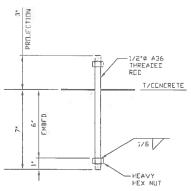
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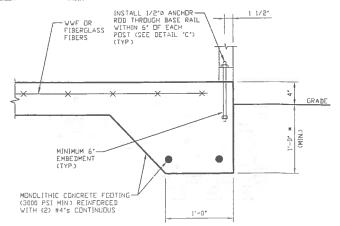
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 3 REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT
- BE FIELD BENT





ANCHOR ROD THROUGH BASE RAIL DETAIL



1B

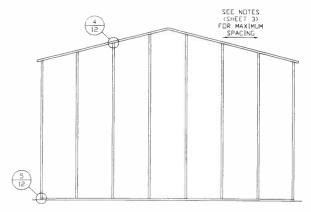
CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

SCALE: NTS (MINIMUM ANCHOR EDGE DISTANCE IS 1 1/2") * COORDINATE WITH LOCAL CODES/ORD



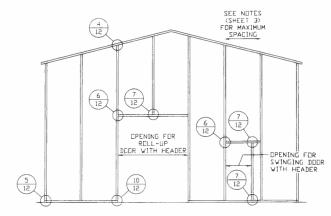
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BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS



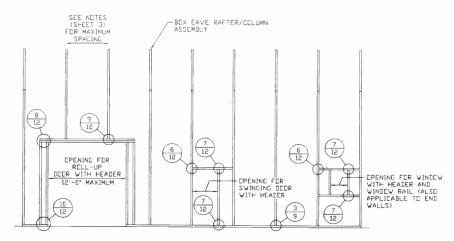
TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

END WALL FRAMING SECTION SCALE: NTS



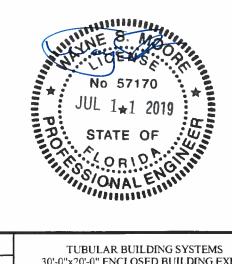
TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS



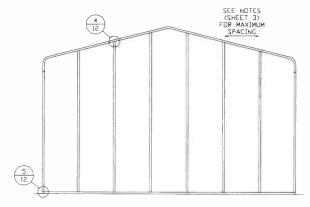
TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

SCALE: NTS



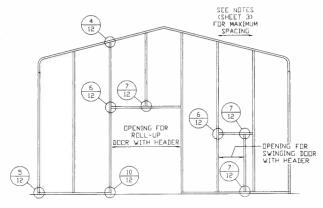
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BOW RAFTER END WALL AND SIDE WALL OPENINGS



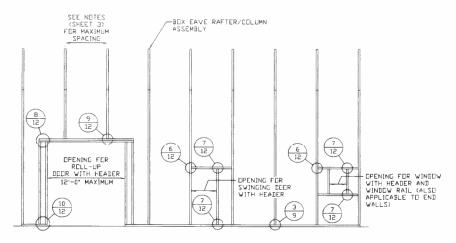
TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS



TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS



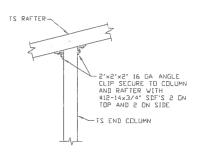
TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

SCALE: NTS



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BOW AND BOX EAVE RAFTER WALL OPENING DETAILS



TS CDLUMN (CDRNER)

MINIMUM 6' LDNG, MINIMUM
IS GA., TS NIPPLE SECURE
WITH (4) #12-14x3/4' SDF'S

NIPPLE TO 3/16

O 2'x2'x2' 16 GA CLIP ANGLE
SECURE TO RAFTER COLUMN
AND BASE RAIL W/(4)
#12-14x3/4' SDF'S

TS CDNTINUOUS BASE RAIL

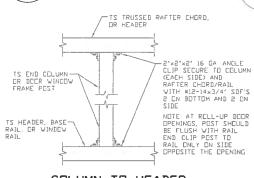
TS COLUMN
OR END COLUMN
AND EITHER TOP OF
HEADER, OR BOTTOM OF
WINDOW RAIL WITH
HI2-14x3/4' SDF'S

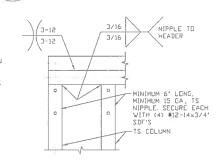
TS HEADER OR
WINDOW RAIL

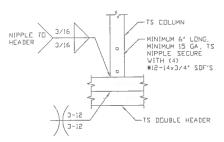
4 END COLUMN/RAFTER CONNECTION DETAIL

5 END COLUMN/BASE RAIL CONNECTION DETAIL
SCALE NTS

HEADER OR WINDOW
RAIL TO COLUMN
CONNECTION DETAIL
SCALE NTS





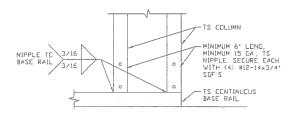


COLUMN TO HEADER, BASE RAIL, OR WINDOW RAIL CONNECTION DETAIL

7

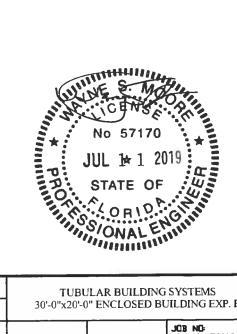
8 DOUBLE HEADER/COLUMN
SCALE: NTS

9 COLUMN/DOUBLE HEADER
CONNECTION DETAIL
SCALE NTS



COLUMN/BASE RAIL CONNECTION DETAIL

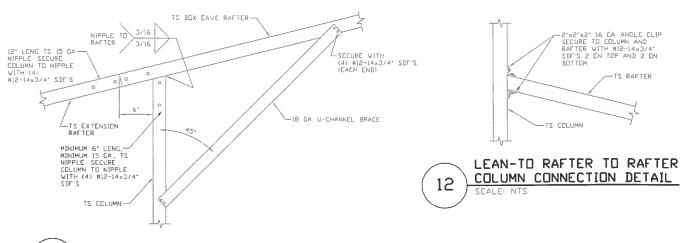
SCALE NTS



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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'



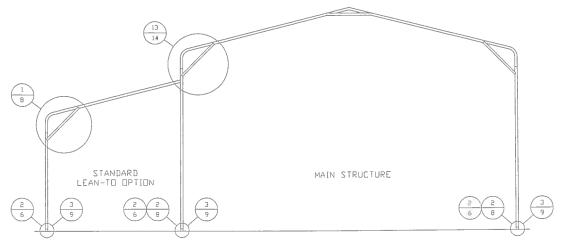
SIDE EXTENSION RAFTER/COLUMN DETAIL

SCALE: NTS



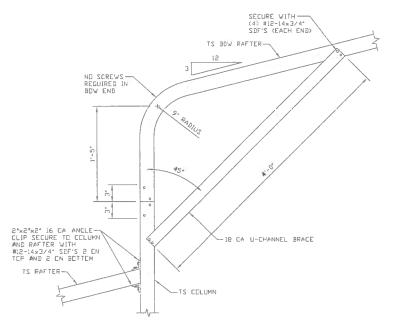
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BOW RAFTER LEAN-TO OPTIONS



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

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



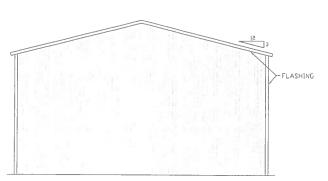
SIDE EXTENSION RAFTER/COLUMN DETAIL

SCALE: NTS

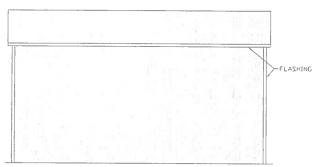


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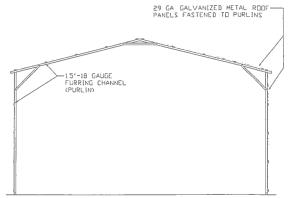
BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



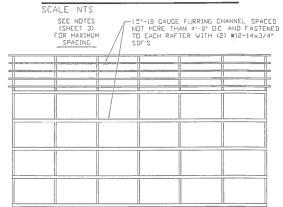
TYPICAL END ELEVATION VERTICAL ROOF/SIDING OPTION



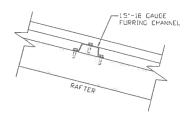
TYPICAL SIDE ELEVATION VERTICAL ROOF/SIDING OPTION



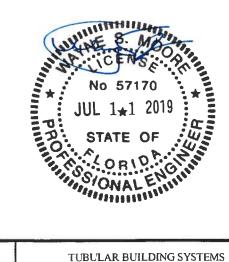
TYPICAL SECTION VERTICAL ROOF/SIDING OPTION



TYPICAL FRAMING SECTION
VERTICAL ROOF/SIDING OPTION

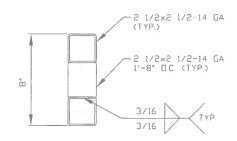


ROOF PANEL ATTACHMENT
(ALTERNATE FOR VERTICAL ROOF PANELS)
SCALE: NTS



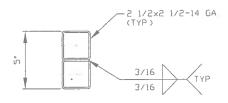
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OPTIONAL DOOR HEADER



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

SCALE! NTS

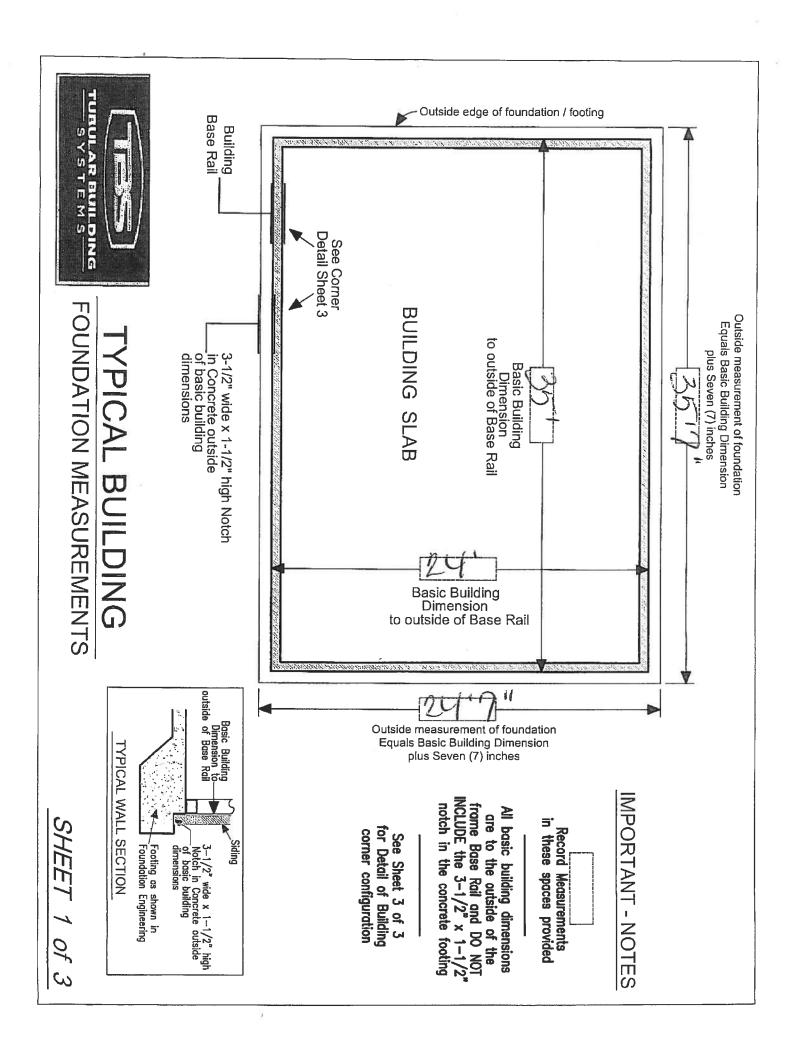


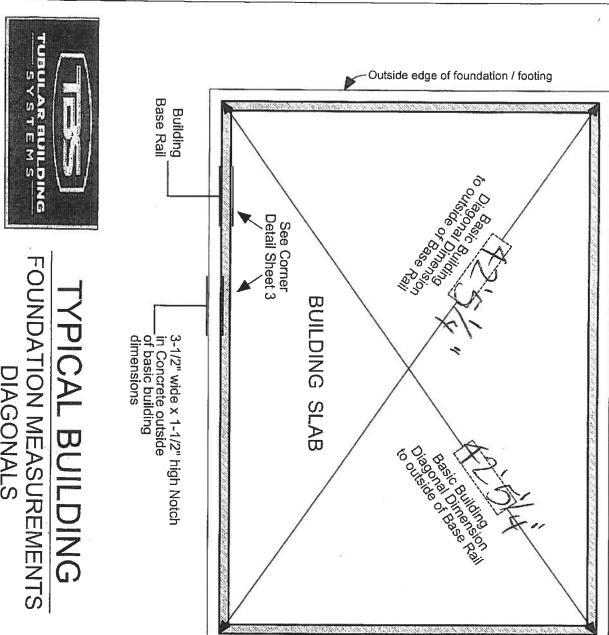
HEADER DETAIL FOR DOOR OPENINGS LENGTH ≤ 12'-0"

SCALE: NTS



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IMPORTANT - NOTES

in these spaces provided Record Measurements

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

DIAGONALS

SHEET 2 of 3

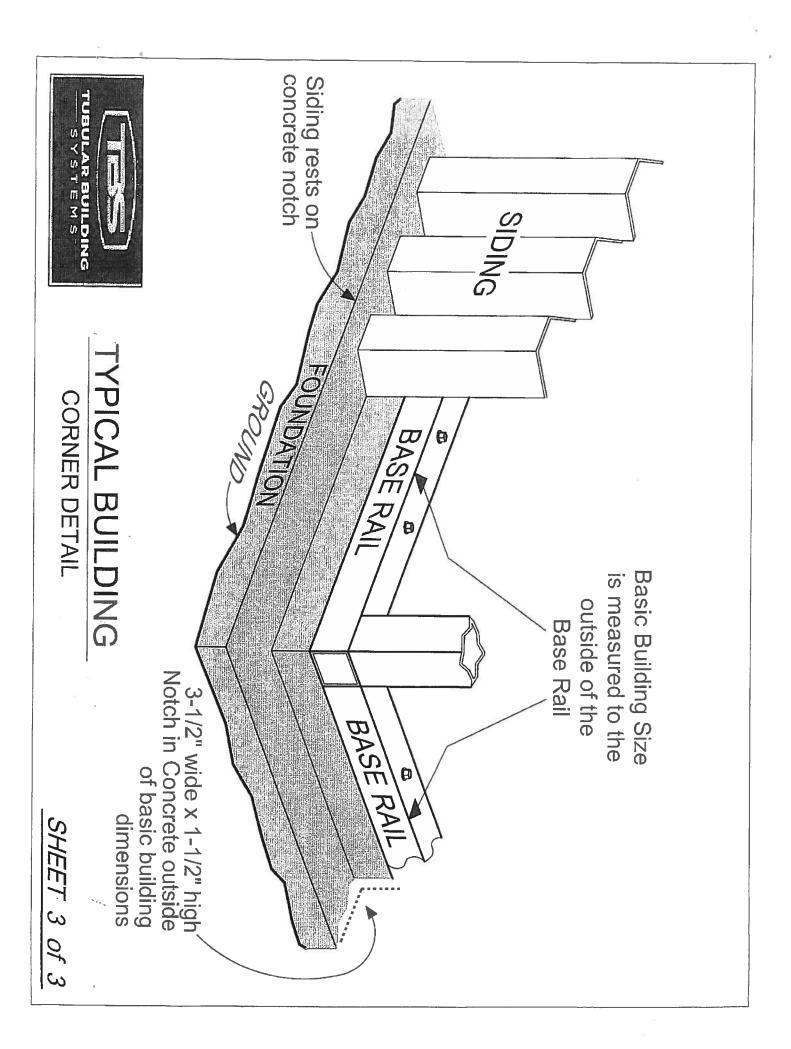
TYPICAL WALL SECTION

Foundation Engineering

Basic Building Dimension to outside of Base Rail

Siding

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





Florida Product Approval Codes

Roll-Up Doors:

Janus International Corporation Model 750: 21450.8

EXP 12/31/2019

Walk-In Door:

Elixir Door & Metal Company blank (no window): 17996.5

EXP 9/14/2020

Window:

Kinro 993.7

EXP 10/19/21

Roof Deck:

Capital Metal Supply Inc. Ag Panel: 20147.1

EXP 07/20/2020

Wall Panel:

Capital Metal Supply Inc. Ag Panel: 20148.1

EXP 07/20/2020

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