

63



STRUCTURAL DESIGN

**OPEN STRUCTURE WITH ENCLOSED
LEAN-TO BUILDING OPTION
EXPOSURE B**

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

24 February 2021
Revision 2

M&A Project No. 16159S/18027S/20352S

Prepared for:

Tubular Building Systems, LLC
P.O. Box 2254
Lake City, Florida 32025



Prepared by:

Moore and Associates Engineering and Consul
1009 East Avenue
North Augusta, SC 29841

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



Wayne
S Moore

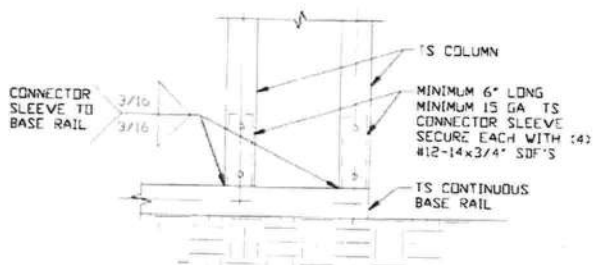
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Date: 2021.10.21
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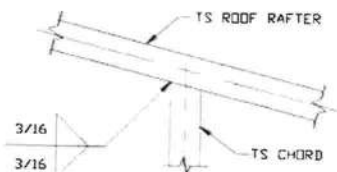
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CONNECTION DETAILS



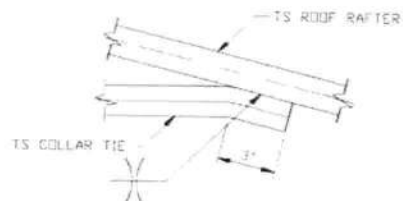
10 COLUMN/BASE RAIL CONNECTION DETAIL

SCALE: NTS



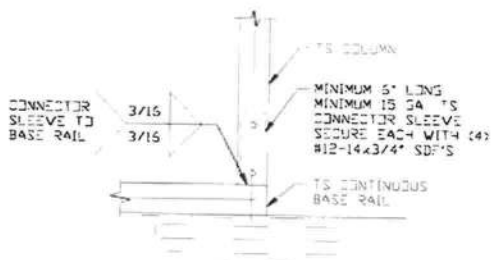
11 RAFTER TO CHORD CONNECTION DETAIL

SCALE: NTS



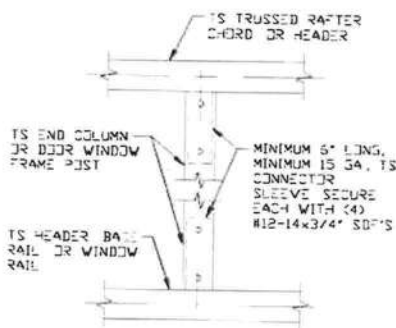
12 COLLAR TIE CONNECTION DETAIL

SCALE: NTS



13 COLUMN/BASE RAIL CONNECTION DETAIL

SCALE: NTS



14 COLUMN TO HEADER, BASE RAIL CONNECTION DETAIL

SCALE: NTS



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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

JOB NO: 16022S/
17300S/20352S

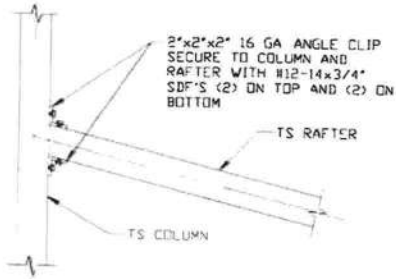
SHT. 13

DWG. NO: SK-3

REV: 6

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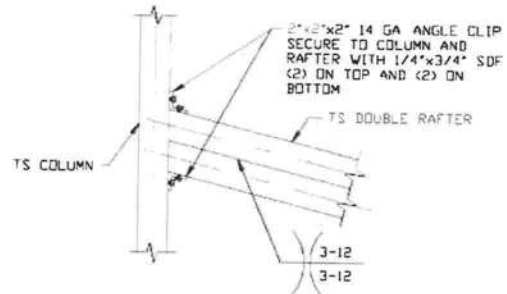
BOX EAVE RAFTER LEAN-TO OPTIONS



**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

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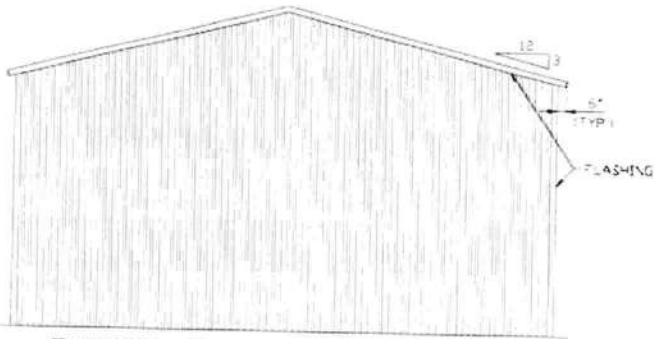
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DWG. NO: SK-3

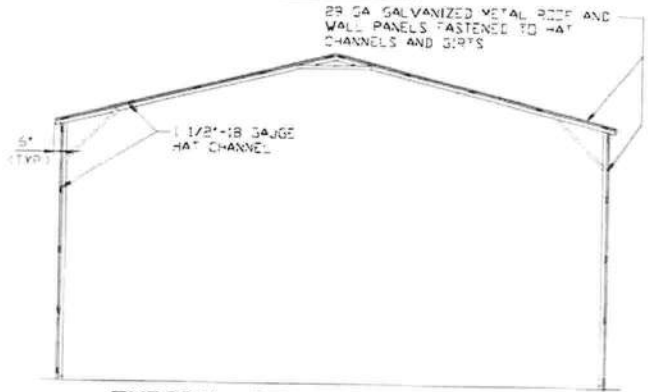
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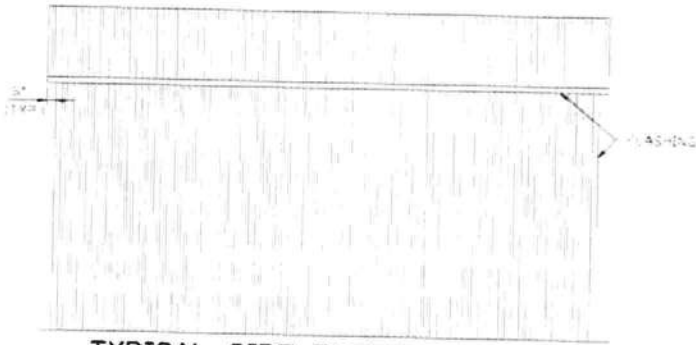
BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION



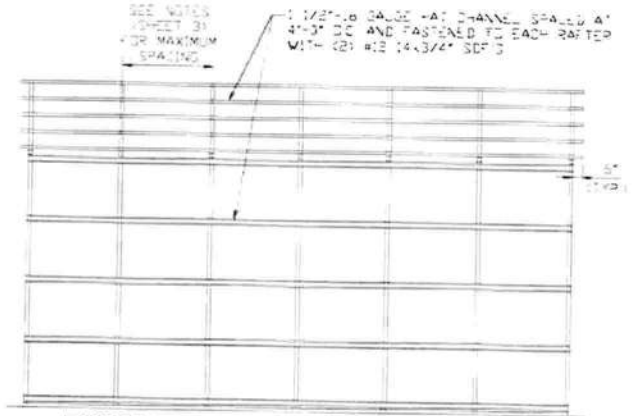
**TYPICAL END ELEVATION
VERTICAL ROOF/SIDING OPTION**
SCALE: NTS



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

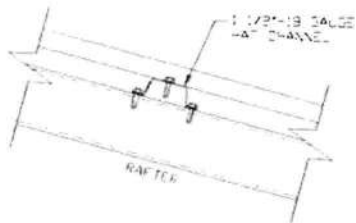


**TYPICAL SIDE ELEVATION
VERTICAL ROOF/SIDING OPTION**
SCALE: NTS



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

NOTE: 1/2\"/>



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



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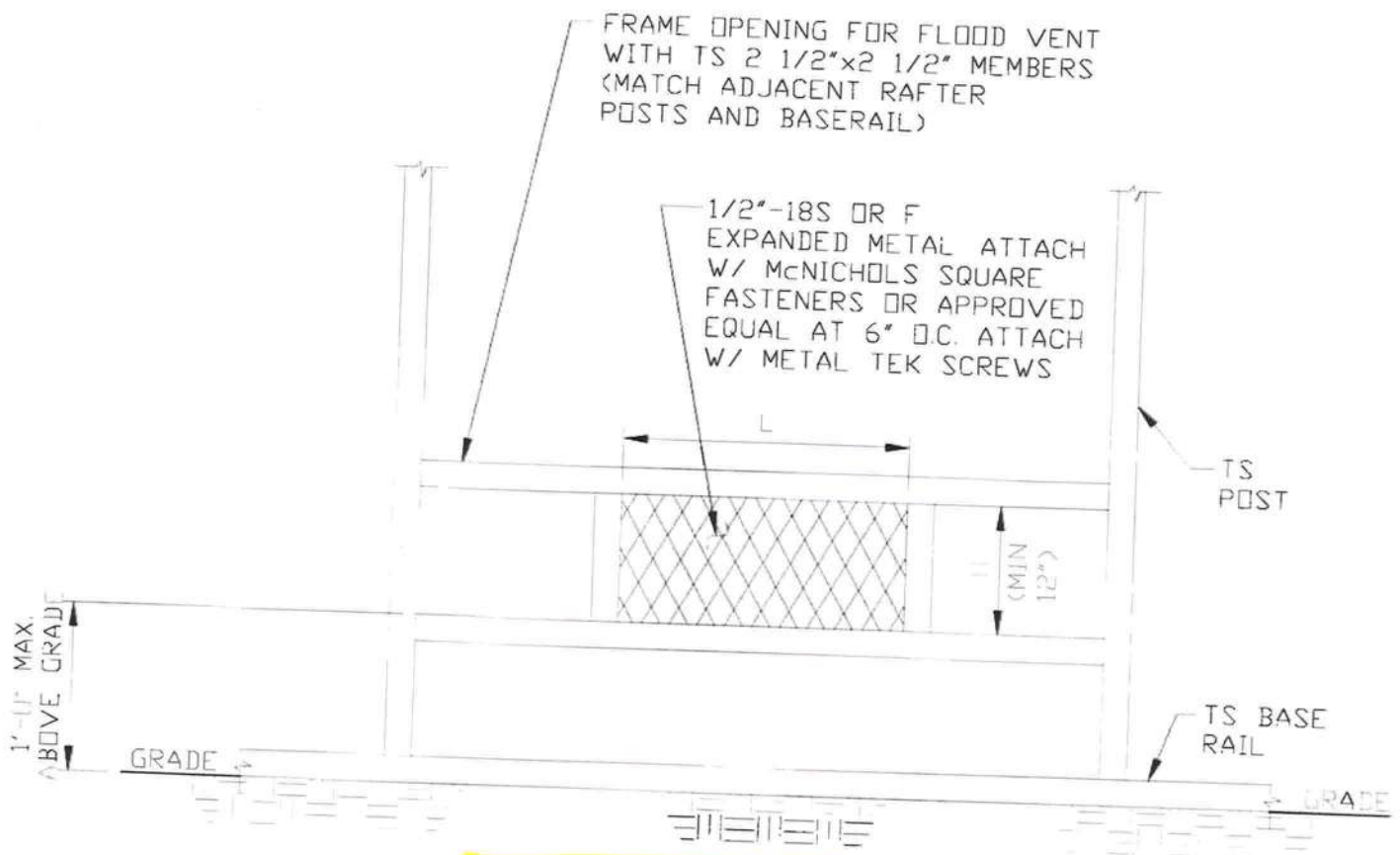
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CHECKED BY: PDH			
PROJECT MGR: WSM	DATE: 7-29-21	SCALE: NTS	JOB NO: 16022S/ 17300S/20352S
CLIENT: TBS	SHT. 16	DWG. NO: SK-3	REV: 6

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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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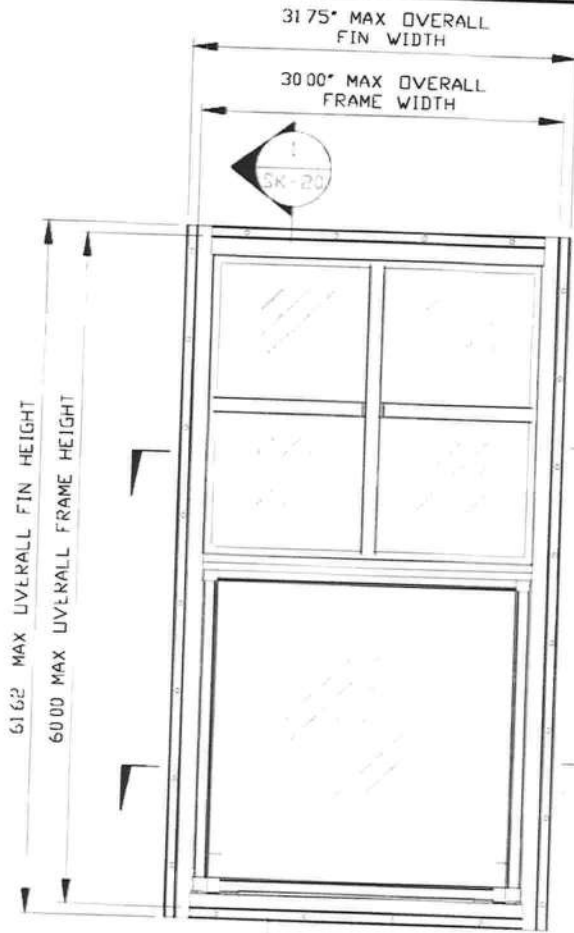
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VERTICAL SLIDING WINDOW DETAIL



ELEVATION VIEW
SCALE: NTS

#12x3/4\"/>

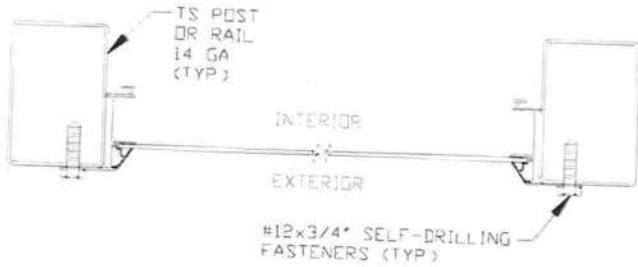
EXTERIOR INTERIOR

TS POST
OR RAIL
14 GA
(TYP)

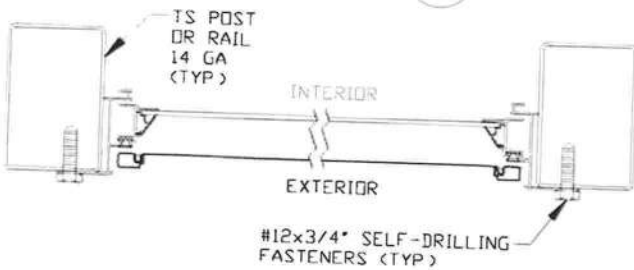
SECTION
SCALE: 3\"/>

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

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



SECTION
SCALE: 3\"/>



SECTION
SCALE: 3\"/>



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SHT. 20

SCALE: NTS

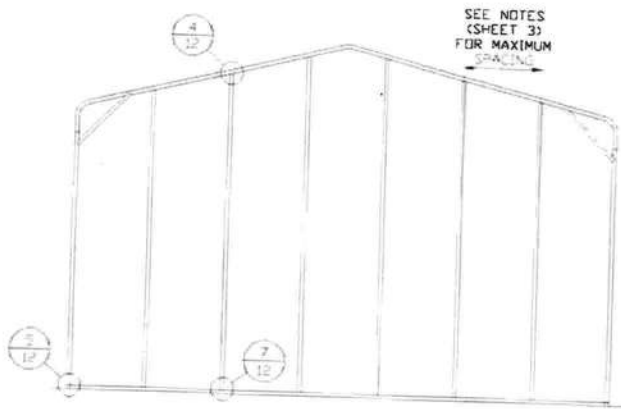
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**JOB NO: 16022S/
17300S/20352S**

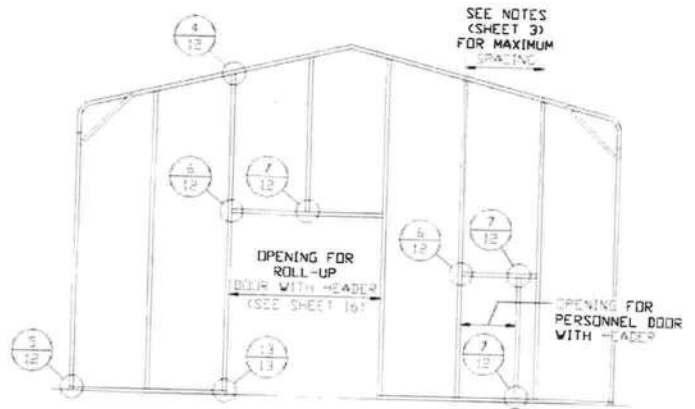
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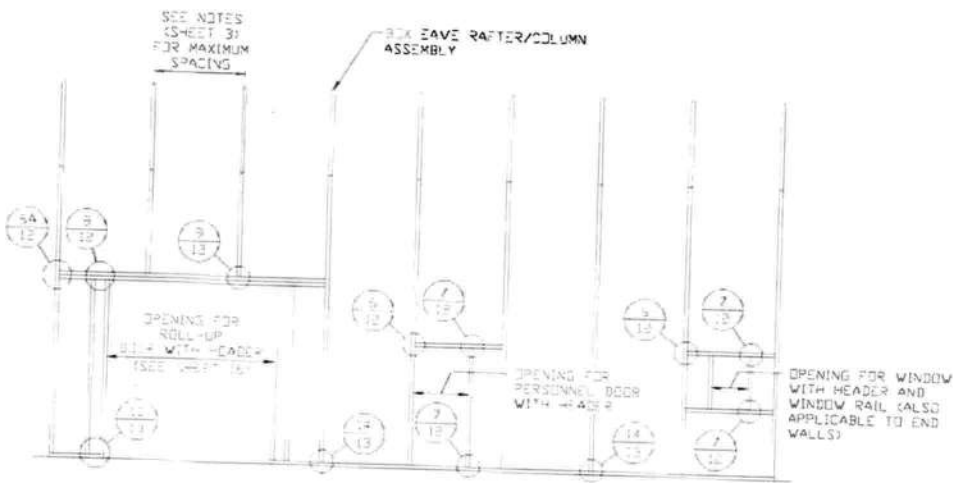
BOW RAFTER END WALL AND SIDE WALL OPENINGS



**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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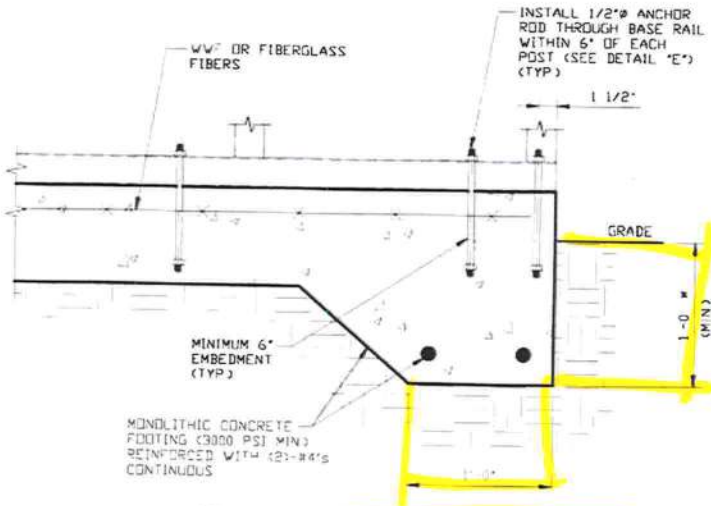
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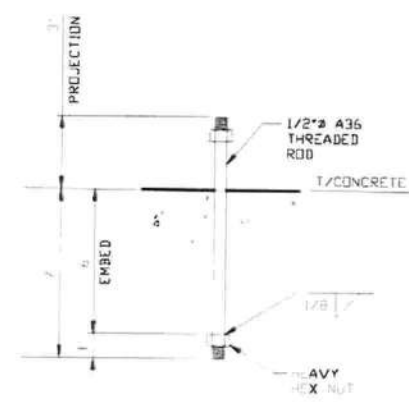
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OPTIONAL FOUNDATION ANCHORAGE FOR LOW AND HIGH WIND SPEED



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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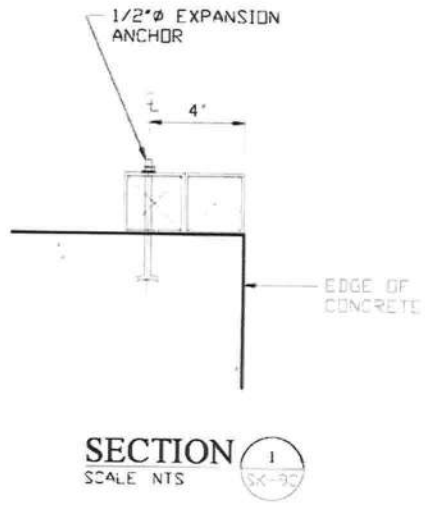
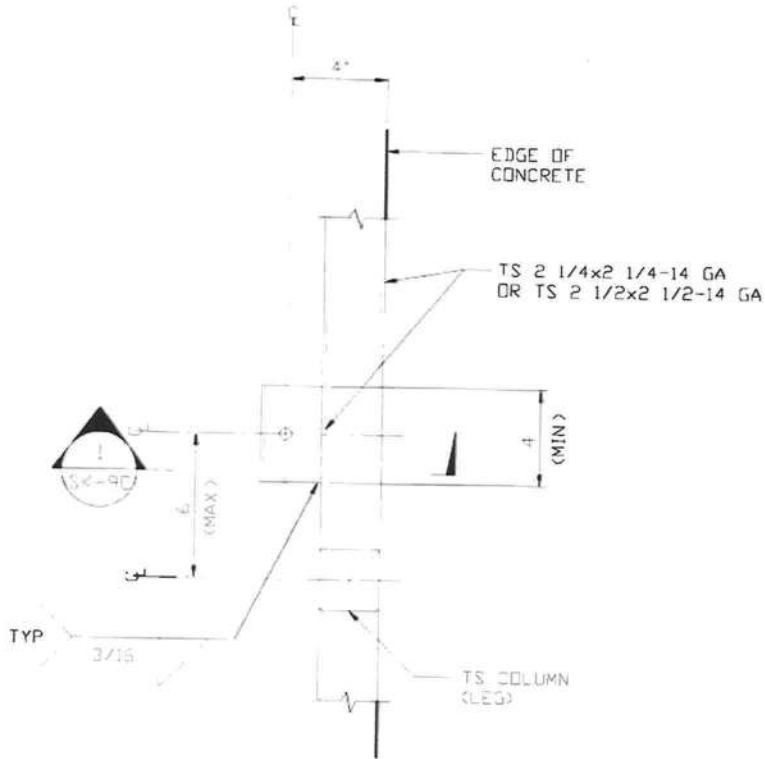
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CHECKED BY: PDH					
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BASE RAIL ANCHORAGE OPTIONS



TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

SCALE: NTS



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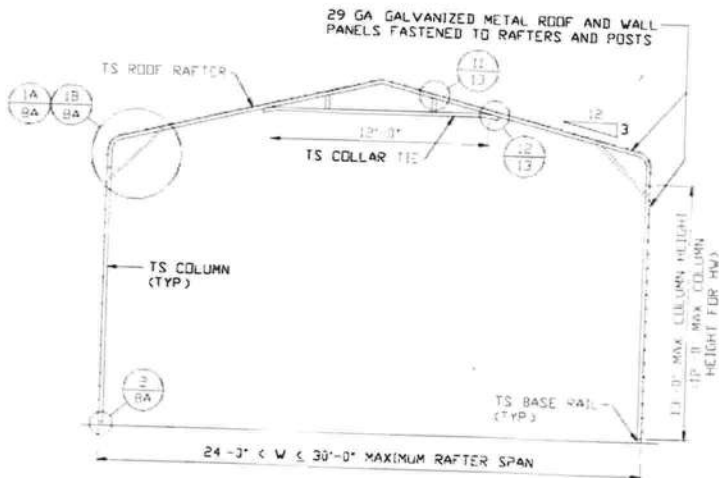
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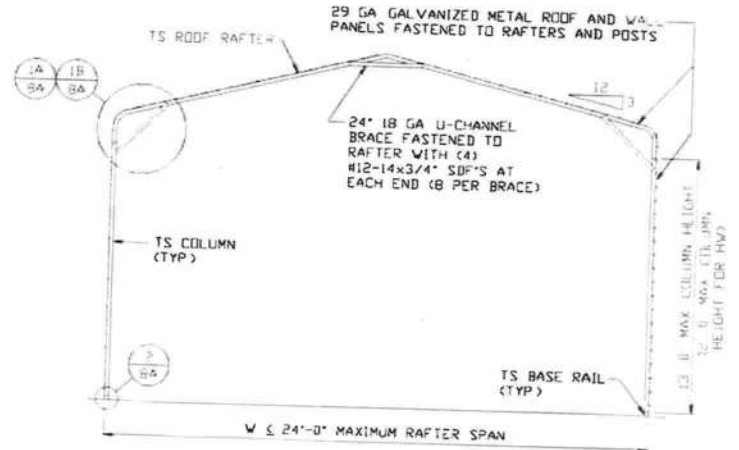
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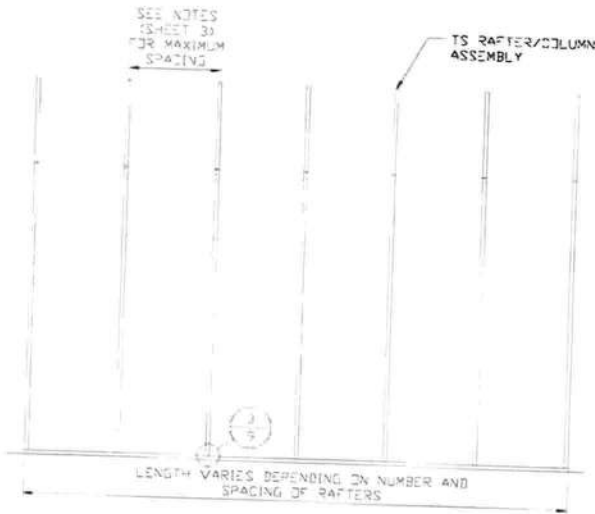
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TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION
SCALE: NTS



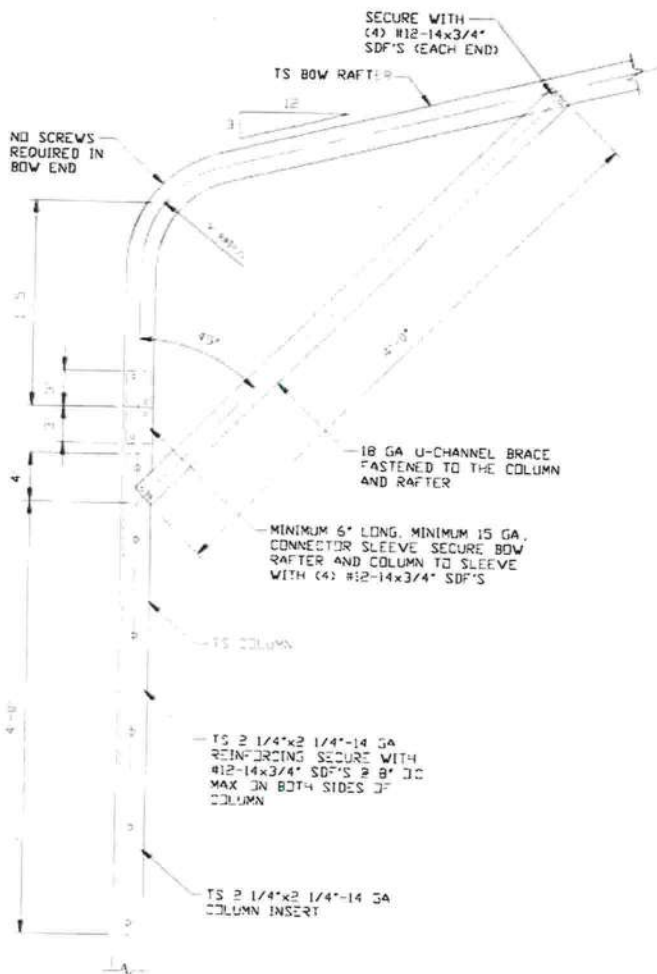
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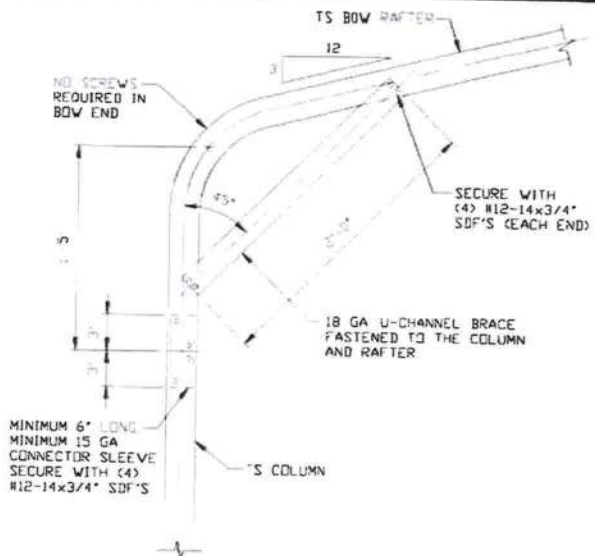
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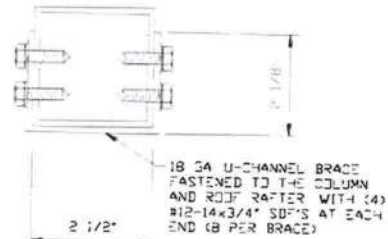
1A BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 10'-0" < TO ≤ 13'-0"

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



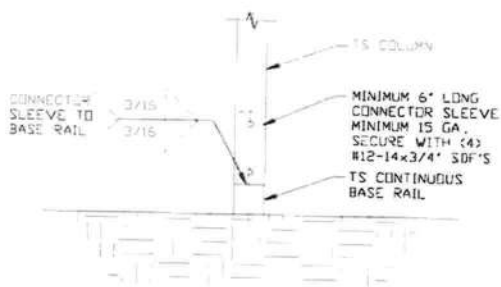
1B BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS ≤ 10'-0"

SCALE: NTS



BRACE SECTION

SCALE: NTS



2 RAFTER COLUMN/BASE RAIL CONNECTION DETAIL

SCALE: NTS



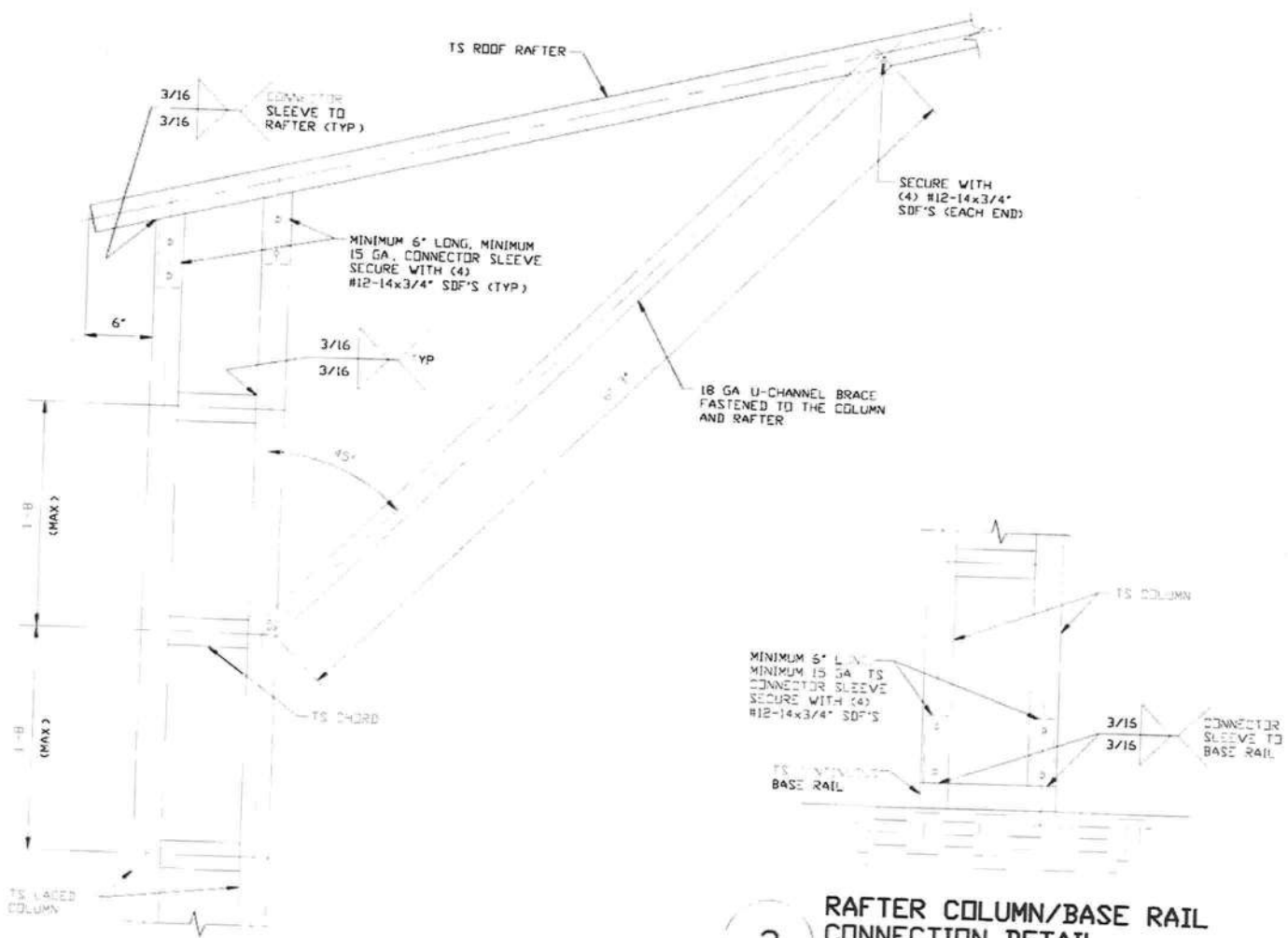
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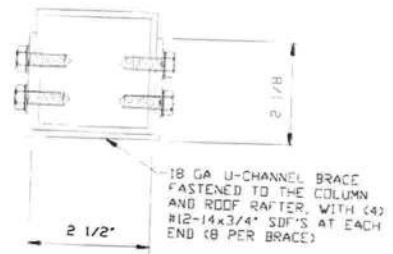
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CHECKED BY: PDH		631 SE INDUSTRIAL CIRCLE	
PROJECT MGR: WSM		LAKE CITY, FLORIDA 32025	
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1 BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 16'-0" < TO ≤ 20'-0" SCALE: NTS

2 RAFTER COLUMN/BASE RAIL CONNECTION DETAIL SCALE: NTS



BRACE SECTION SCALE: NTS



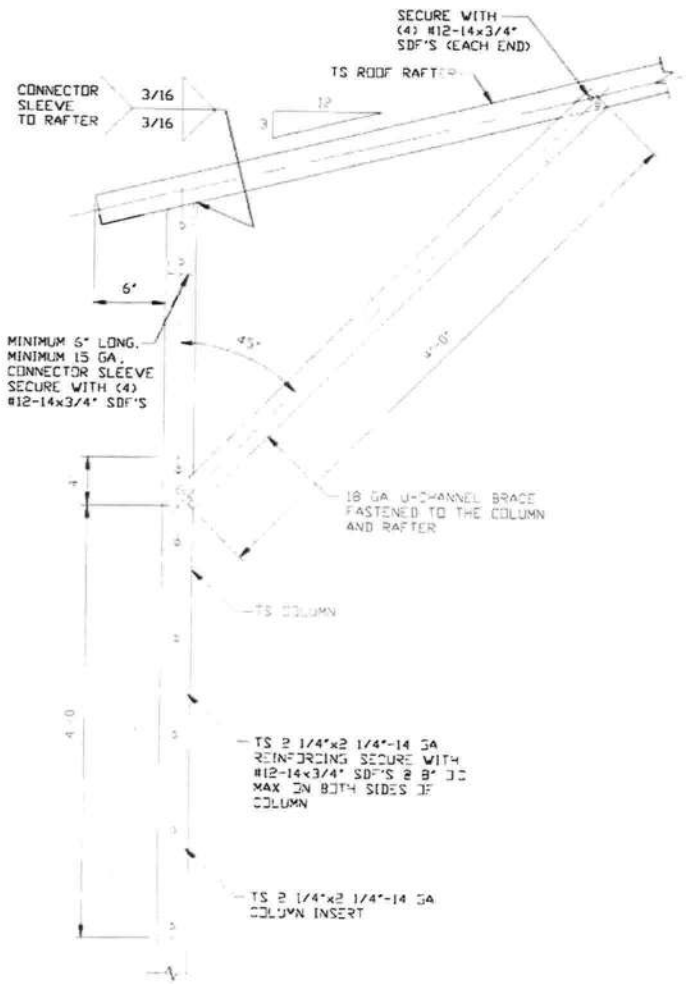
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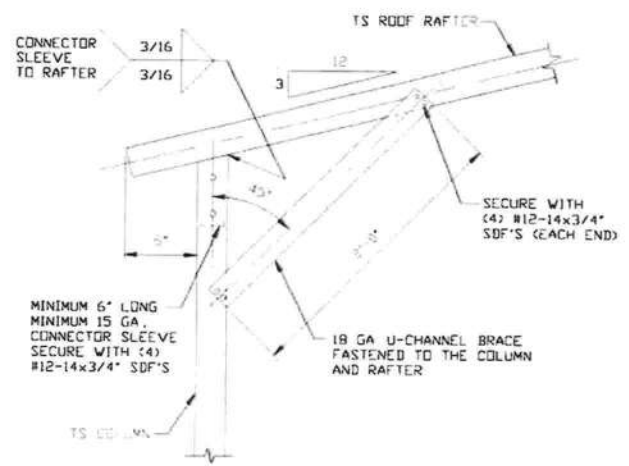
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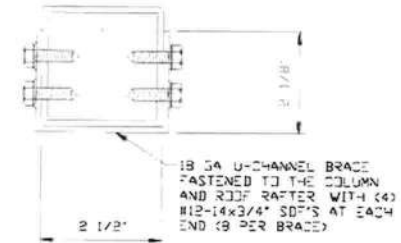


1A BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 10'-0" < TO <= 13'-0" SCALE: NTS

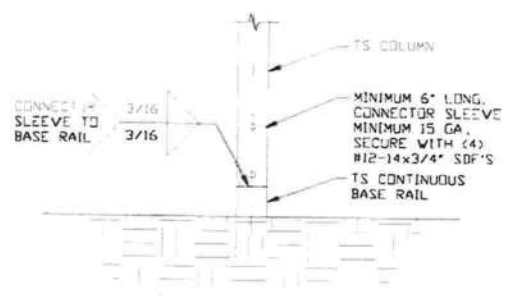
NOTE: MAXIMUM COLUMN HEIGHT IS 12'-0" FOR HIGH WIND



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



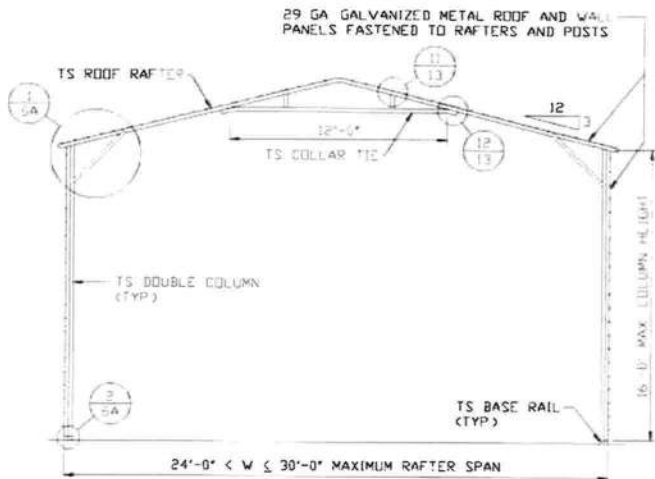
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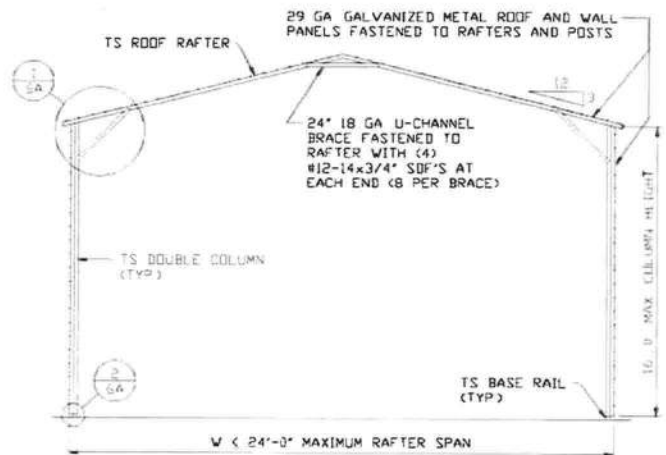
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DRAWN BY: JG		TUBULAR BUILDING SYSTEMS	
CHECKED BY: PDH		631 SE INDUSTRIAL CIRCLE	
PROJECT MGR: VSM		LAKE CITY, FLORIDA 32025	
CLIENT: TBS		30'-0" x 20'-0" ENCLOSED BUILDING EXP. B	
DATE: 7-29-21	SCALE: NTS	JOB NO: 16022S/17300S/20352S	
SHT. 6B	DWG.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

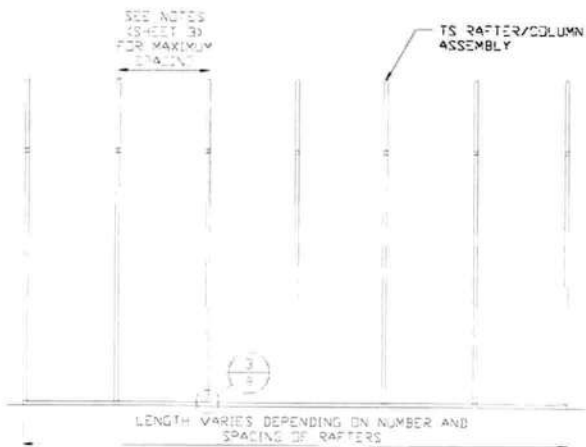
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TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN END FRAME SECTION
SCALE: NTS



TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION
SCALE: NTS



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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. 5A

SCALE: NTS

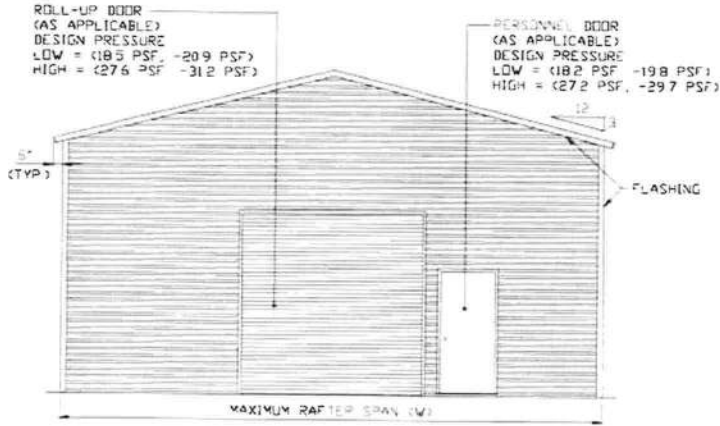
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JOB NO: 16022S/
17300S/20352S

REV: 6

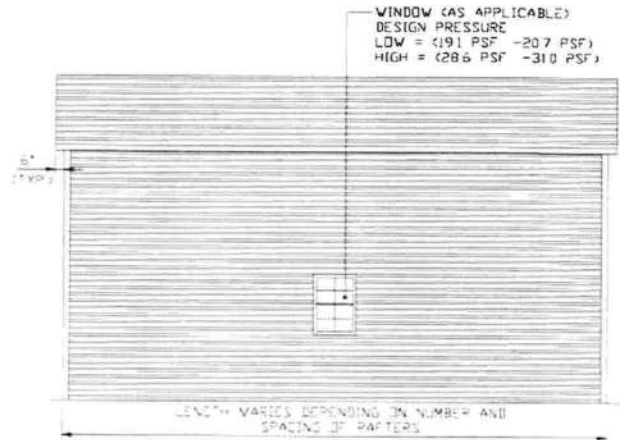
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BOX EAVE FRAME RAFTER ENCLOSED BUILDING



TYPICAL END ELEVATION

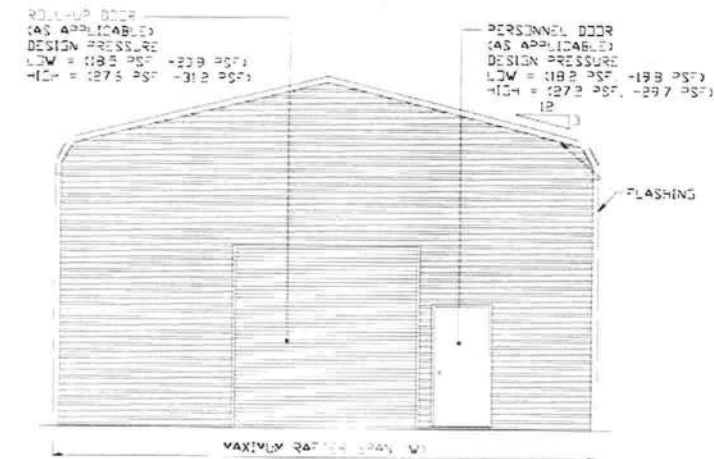
SCALE: NTS



TYPICAL SIDE ELEVATION

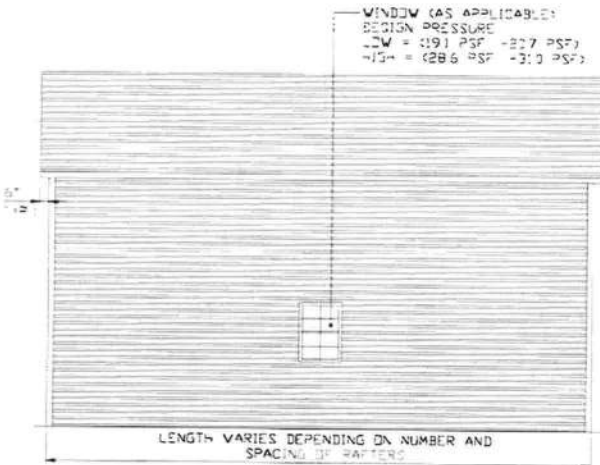
SCALE: NTS

BOW FRAME RAFTER ENCLOSED BUILDING



TYPICAL END ELEVATION

SCALE: NTS



TYPICAL SIDE ELEVATION

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

SCALE: NTS

DWG. NO: SK-3

JOB NO: 16022S/
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SHT. 4

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SHEET 2	DRAWING INDEX
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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/
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SHT. 2

DWG. NO: SK-3

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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

Wayne
S Moore

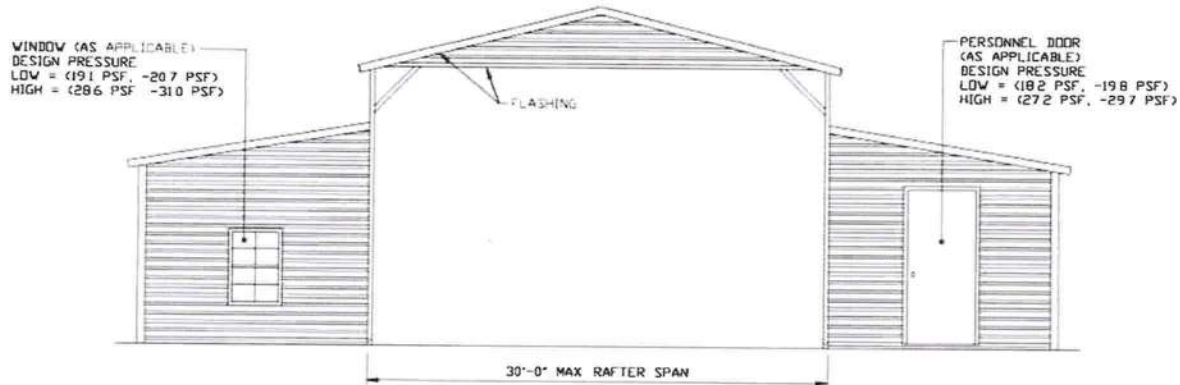
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Moore
Date: 2021.10.21
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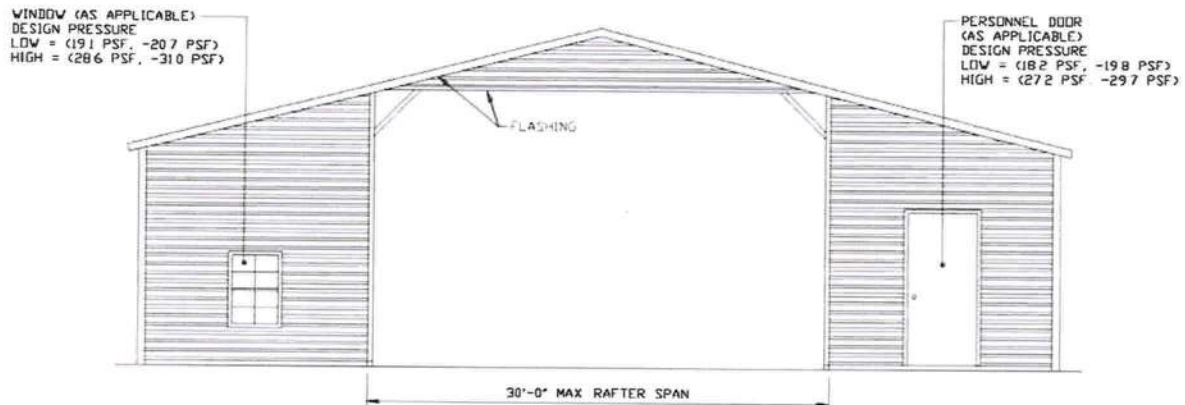
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BOX EAVE RAFTER VERTICAL ROOF LEAN-TO OPTION



TYPICAL END ELEVATION VERTICAL ROOF-STANDARD LEAN-TO
SCALE: NTS



TYPICAL END ELEVATION VERTICAL ROOF-ROOF EXTENSION LEAN-TO
SCALE: NTS

NOTE: SEE MASTER DESIGN FOR MAXIMUM 30'-0" WIDE x 13'-0" EAVE HEIGHT
-BOX EAVE FRAME AND BOW FRAME OPEN BUILDING-EXPOSURE B
(RISK CATEGORY 1) FOR STRUCTURAL PLAN, ELEVATION, SECTION AND
DETAIL INFORMATION



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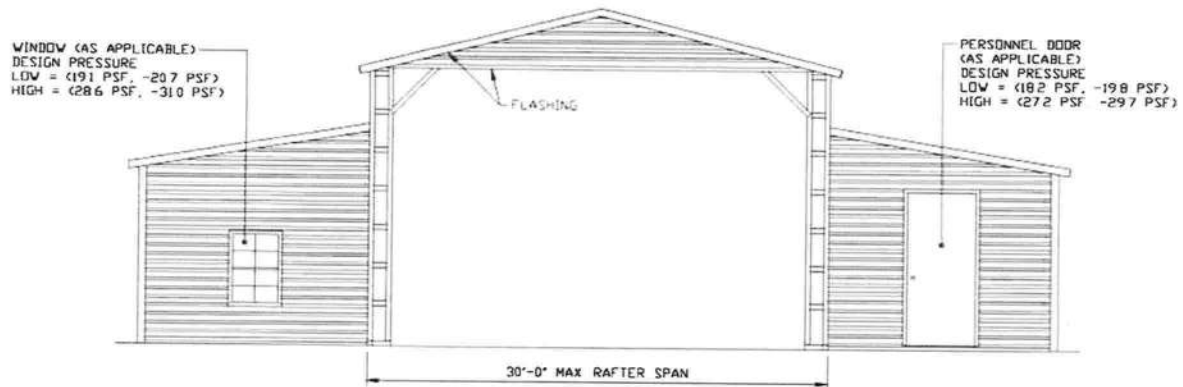
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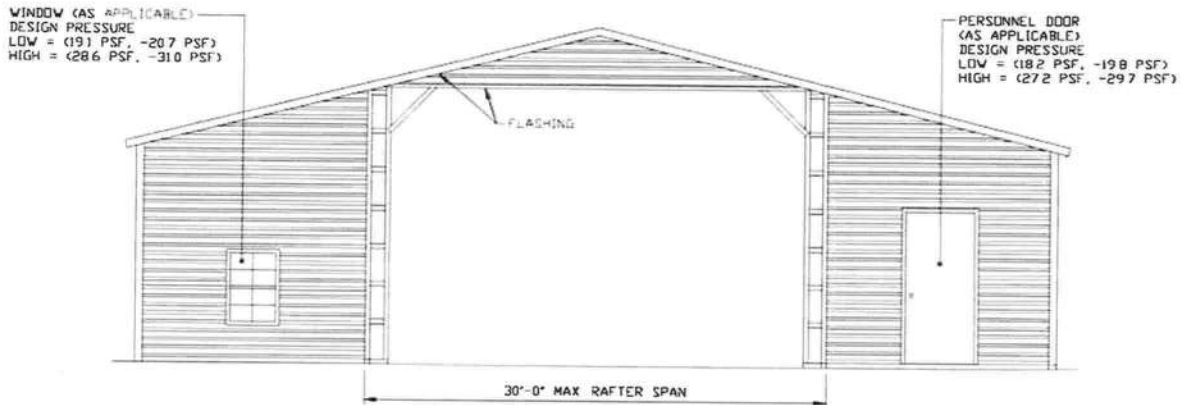
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CHECKED BY: PDH	30'-0"x20'-0" LEAN-TO STRUCTURE		
PROJECT MGR: WSM	DATE: 2-24-21	SCALE: NTS	JOB NO: 16159S/ 18027S/20352S
CLIENT: TBS	SHT. 4	DWG. NO: SK-1	REV: 2

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BOX EAVE RAFTER VERTICAL ROOF LEAN-TO OPTION



TYPICAL END ELEVATION VERTICAL ROOF-STANDARD LEAN-TO
SCALE: NTS



TYPICAL END ELEVATION VERTICAL ROOF-ROOF EXTENSION LEAN-TO
SCALE: NTS

NOTE: SEE MASTER DESIGN FOR MAXIMUM 30'-0" WIDE x 20'-0" EAVE HEIGHT
-BOX EAVE FRAME AND BOW FRAME OPEN BUILDING-EXPOSURE B
(RISK CATEGORY 1) FOR STRUCTURAL PLAN, ELEVATION, SECTION AND
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30'-0"x20'-0" LEAN-TO STRUCTURE
OPTION EXP. B

DATE: 2-24-21

SHT. 2

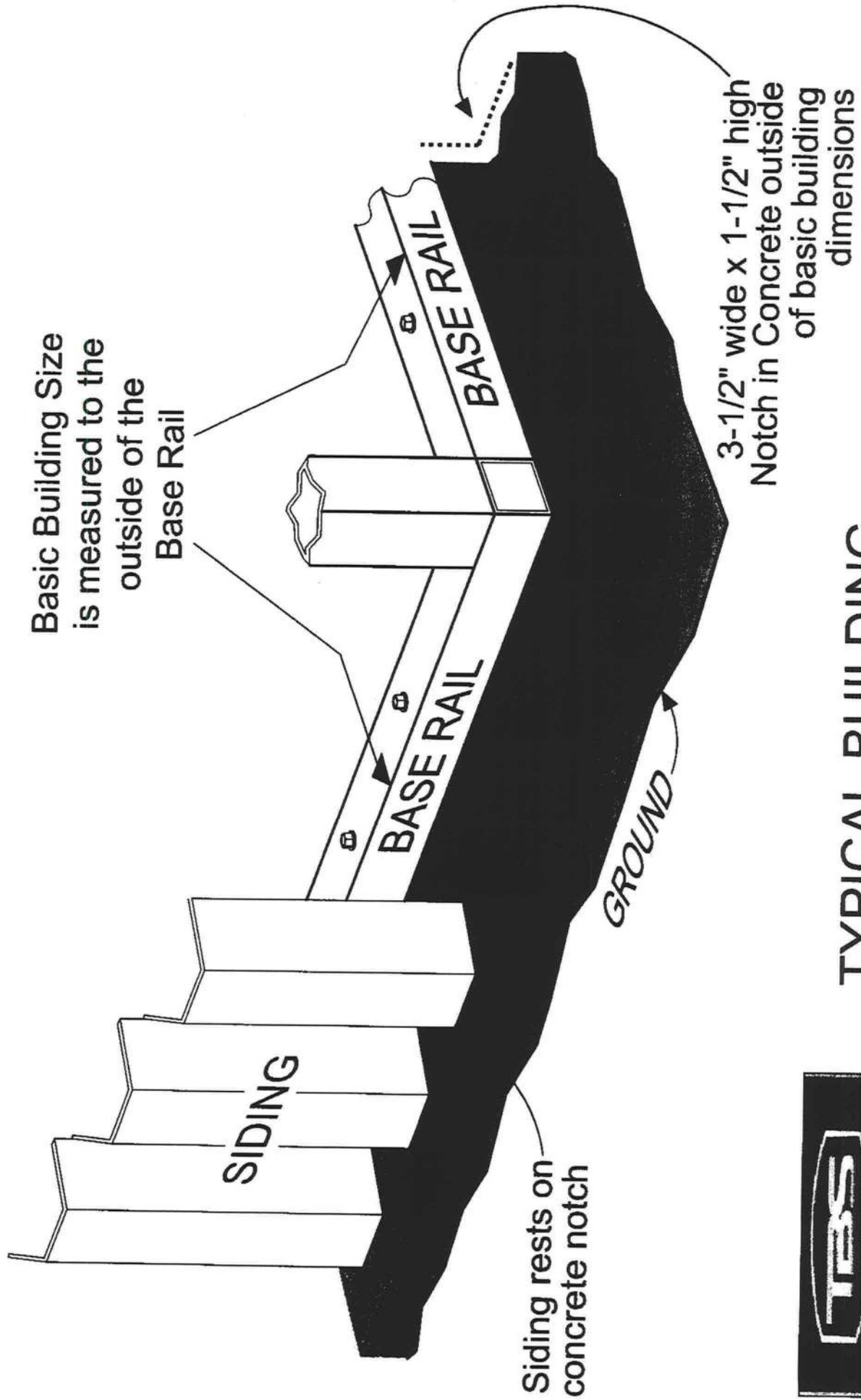
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TYPICAL BUILDING

CORNER DETAIL



Outside measurement of foundation
 Equals Basic Building Dimension
 plus Seven (7) inches

25' 7"

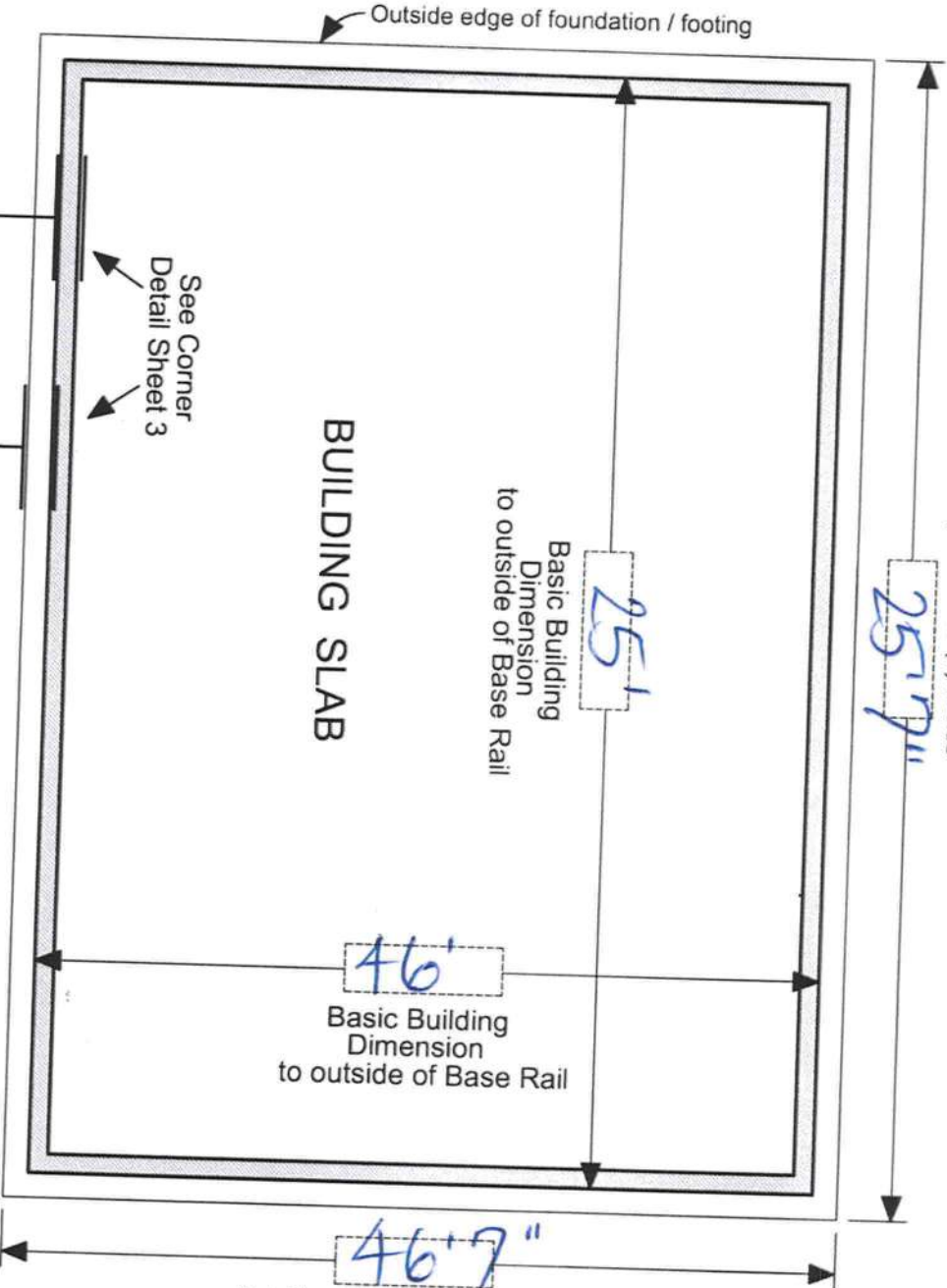
Basic Building
 Dimension
 to outside of Base Rail

25'

Basic Building
 Dimension
 to outside of Base Rail

46'

46' 7"
 Outside measurement of foundation
 Equals Basic Building Dimension
 plus Seven (7) inches



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



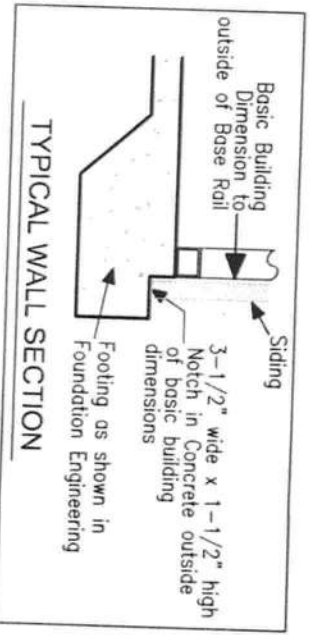
TYPICAL BUILDING FOUNDATION MEASUREMENTS

IMPORTANT - NOTES

Record Measurements
 in these spaces provided

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

See Sheet 3 of 3
 for Detail of Building
 corner configuration



TYPICAL WALL SECTION