

# STRUCTURAL DESIGN ENCLOSED BUILDING

### MAXIMUM 30'- 0" WIDE X 16'- 0" HEIGHT-BOX EAVE FRAME AND BOW FRAME

17 June 2022 Revision 0 M&A Project No. 22057S

Prepared for:

USA Metal Structures, LLP 1495 East Pine St. Mt. Airy, NC 27030

Prepared by:

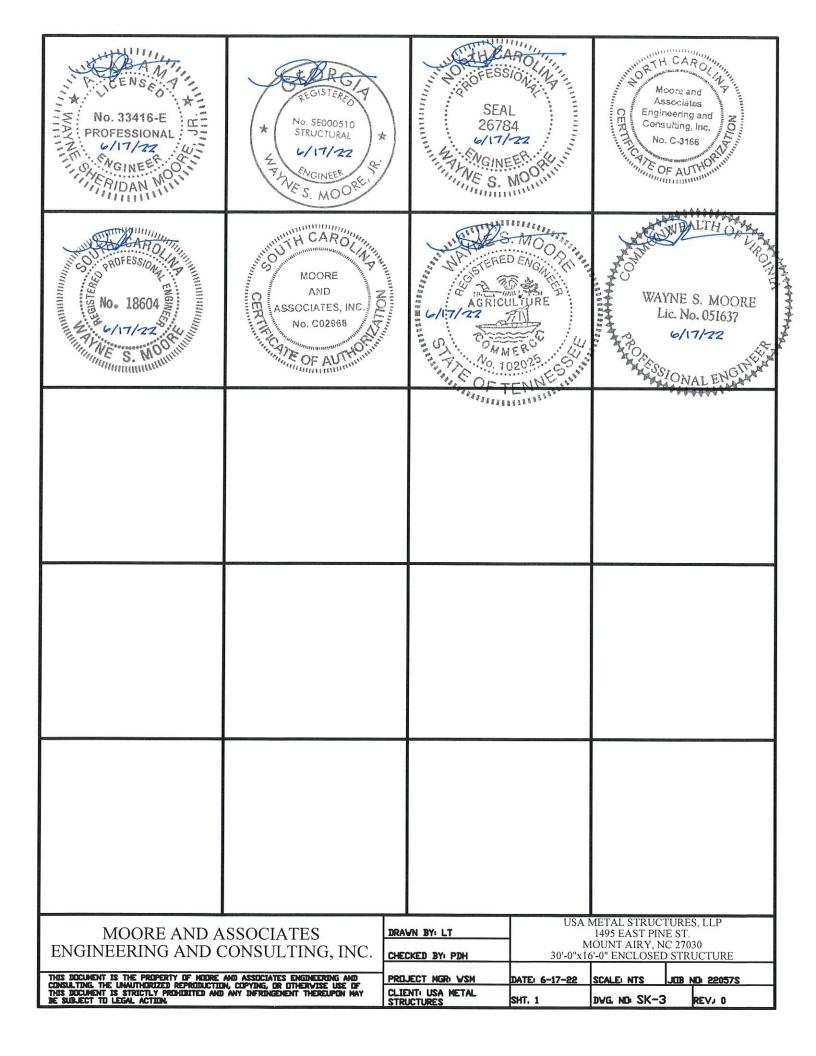
Moore and Associates Engineering and Consulting, Inc.

1009 East Avenue North Augusta, SC 29841

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



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ENGINEERING AND CONSULTING, INC.	CHECKED BY: PDH		MOUNT AIRY, NC 27030 30'-0"x16'-0" ENCLOSED STRUCTURE	
MOORE AND ASSOCIATES	DRAVN BY: LT	USA	METAL STRUC 1495 EAST PIN	

### INSTALLATION NOTES AND SPECIFICATIONS

- 1. DESIGN IS FOR MAXIMUM 30'-0" WIDE x 16'-0" EAVE HEIGHT ENCLOSED STRUCTURES.
- 2. DESIGN WAS DONE IN ACCORDANCE WITH ALL THE APPLICABLE BUILDING CODES LISTED ON SHEET 3A.
- 3. DESIGN LOADS ARE AS FOLLOWS:

A) ROOF DEAD LOADS:

SELF-WEIGHT = 1.5 PSF

MEP = 0 PSFCOLLATERAL = 0 PSF

- B> ROOF LIVE LOAD
  - = 12 PSF
- C) FLOOR LIVE LOAD
  - = 100 PSF (4" CONCRETE SLAB)
- = 35 PSF D) GROUND SNOW LOAD

NOTE: UNBALANCED LOADING DUE TO SNOW DRIFTING FROM AN ADJACENT TALLER STRUCTURE HAS NOT BEEN EVALUATED,

- 4. 3-SECOND GUST ULTIMATE WIND SPEED ( $V_{ULT}$ ) = 140 MPH (NOMINAL WIND SPEED = 108 MPH).
- 5. MAXIMUM RAFTER/POST SPACING = 5.0 FEET
- 6. END WALL COLUMNS (POSTS) ARE EQUIVALENT TO SIDE WALL POSTS IN SIZE AND SPACING (UNLESS NOTED OTHERWISE).
- 7. RISK CATEGORY I (NOT FOR HUMAN HABITATION).
- 8. WIND EXPOSURE CATEGORY B.
- 9. SPECIFICATIONS APPLICABLE TO 29 GAUGE METAL PANELS FASTENED DIRECTLY TO 2 1/2\*x2 1/2\*-14 GAUGE TUBE STEEL (TS) FRAMING MEMBERS (UNLESS NOTED OTHERWISE), TS 2 1/4\*x2 1/4\*-12 GAUGE MAY BE USED AS AN OPTION.
- 10. CONNECTOR SLEEVES ARE MINIMUM 6' LONG, TS 2 1/4'x2 1/4'-14 GAUGE FOR 2 1/2'x2 1/2'-14 GAUGE AND TS 2'x2'-12 GAUGE FOR 2 1/4'x2 1/4'-12 GAUGE FRAMING MEMBERS (UNLESS NOTED OTHERWISE),
- 11. STRUCTURAL ANALYSIS/DESIGN IS BASED ON TS MEETING THE REQUIREMENTS OF ASTM A653 GRADE 50 WITH MINIMUM YIELD STRENGTH (Fy) OF 54 KSI AND GALVANIZING MEETING THE MINIMUM REQUIREMENTS OF G60.
- 12. AVERAGE PANEL FASTENER SPACING UN-CENTERS = 10" D.C. (MAX.
- 13. FASTENERS CONSIST OF #12-14×3/4" 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 LAP JOINT SEALANT.
- 14. ANCHORS SHALL BE INSTALLED THROUGH BASE RAIL AT OR WITHIN 6" OF EACH COLUMN.
- 15. STANDARD GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBAR W/ WELDED NUT x 36° LONG AND MAY BE USED IN SUITABLE SOILS, OPTIONAL ANCHORAGE MAY BE USED IN SUITABLE SOILS AND MUST BE USED IN UNSUITABLE SOILS AS NOTED.
- 16. CONTRACTOR TO PROVIDE ADEQUATE BRACING FOR STRUCTURE SO THAT IT WILL BE STABLE DURING ALL STAGES OF CONSTRUCTION, THE STRUCTURE AND FOUNDATIONS ARE DESIGNED FOR A COMPLETED CONDITION ONLY AND, THEREFORE, REQUIRE ADDITIONAL SUPPORT TO MAINTAIN STABILITY BEFORE COMPLETION.
- 17. WIND FORCES GOVERN OVER SEISMIC FORCES, SEISMIC PARAMETERS ANALYZED ARE:

SDIL SITE CLASS = D RISK CATEGORY I

R = 3.25

 $I_{\rm F} = 1.0$  $V = C_S W$  $S_{DS} = 2.625 g$ 

 $S_{mi} = 2.13 g$ 

- 18. IF MORE THAN 50% OF COLUMNS (LEGS) ARE REMOVED IN ANY LONGITUDINAL (SIDE) WALLS OF A BUILDING, THE ENGINEER IS TO BE NOTIFIED TO DETERMINE WHETHER PORTAL FRAMES OR OTHER LONGITUDINAL STABILITY ELEMENTS WILL BE REQUIRED.
- 19. THIS MASTER DESIGN IS A GENERIC MASTER DESIGN PRIMARILY INTENDED FOR PLANT FABRICATION AND ERECTION AKIN TO SHIP DRAWINGS. THE MASTER DESIGN IS NOT PRIMARILY INTENDED FOR CONSTRUCTION PERMIT, WHEN APPLYING FOR BUILDING PERMIT, THE CERTIFIED BUILDING DEFICIAL MIST DE CONSULTED TO VERIFY WHETHER THE USE OF THE MASTER DESIGN IS ADEQUATE OR IF A SITE-SPECIFIC DESIGN IS REQUIRED FOR DUILDING PERMIT, ANY VARIATION FROM THE ANALYSIS/DESIGN PARAMETERS OF THE MASTER DESIGN REQUIRES THE DEVELOPMENT OF A SITE-SPECIFIC DESIGN.

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### LIST OF APPLICABLE BUILDING CODES

2021 INTERNATIONAL BUILDING CODE (IBC 2021)

2018 INTERNATIONAL BUILDING CODE (IBC 2018)

2015 INTERNATIONAL BUILDING CODE (IBC 2015)

2012 INTERNATIONAL BUILDING CODE (IBC 2012)

BUILDING CODE 2021 OF ALABAMA
(ADOPTS THE IBC 2021 WITHOUT AMENDMENTS)
(IBC 2015, IBC 2018, IBC 2021 (DEPENDENT UPON LOCAL JURISDICTION))

GEORGIA STATE MINIMUM STANDARD BUILDING CODE CADOPTS THE IBC 2018 WITH AMENDMENTS>

2018 NORTH CAROLINA BUILDING CODE (ADOPTS THE IBC 2015 WITH AMENDMENTS)

2018 SOUTH CAROLINA BUILDING CODE (ADOPTS THE IBC 2018 WITH AMENDMENTS)

BUILDING CODE 2012 OF TENNESSEE
(ADDPTS THE IBC 2012 WITH AMENDMENTS)
BUILDING CODE 2018 OF NASHVILLE AND DAVIDSON
COUNTY (ADOPTS THE IBC 2018 WITH AMENDMENTS)

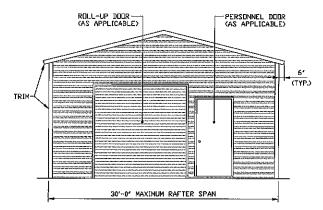
2018 VIRGINIA CONSTRUCTION CODE (ADOPTS THE IBC 2018 WITH AMENDMENTS)

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### BOX EAVE FRAME RAFTER STRUCTURE

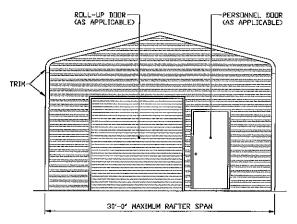


TYPICAL END ELEVATION
SCALE: NTS

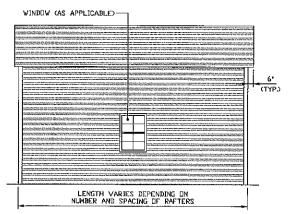
# VINDOV (AS APPLICABLE) 6' (TYP:) TRIM LENGTH VARIES DEPENDING ON NUMBER AND SPACING OF RAFTERS

TYPICAL SIDE ELEVATION
SCALE: NTS

### BOW EAVE FRAME RAFTER STRUCTURE



TYPICAL END ELEVATION
SCALE: NTS

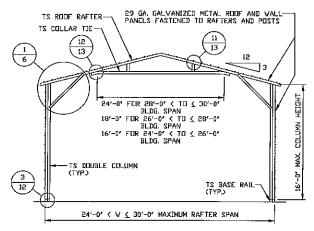


TYPICAL SIDE ELEVATION SCALE: NTS

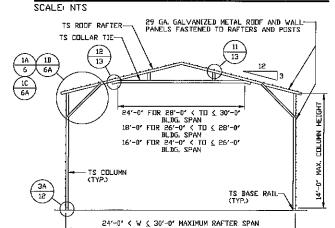
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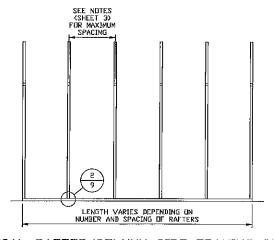
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### TYPICAL RAFTER/COLUMN FRAME SECTION

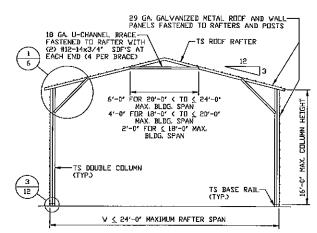


# TYPICAL RAFTER/COLUMN FRAME SECTION SCALE: NTS

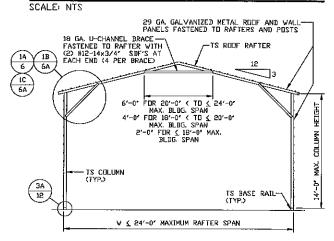


### TYPICAL RAFTER/COLUMN SIDE FRAMING SECTION

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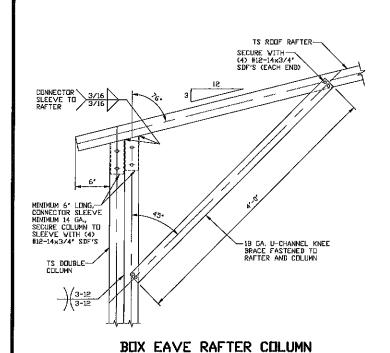


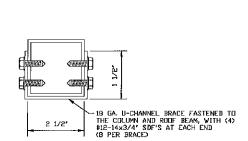
## TYPICAL RAFTER/COLUMN FRAME SECTION



# TYPICAL RAFTER/COLUMN FRAME SECTION SCALE NTS

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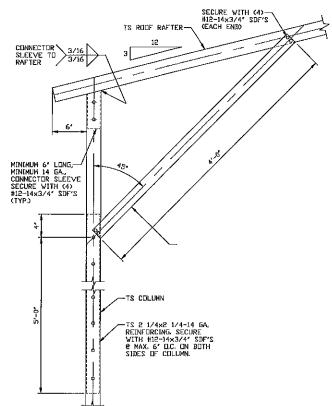


CONNECTION DETAIL FOR HEIGHTS 14'-0" < TO < 16'-0"

BRACE SECTION
SCALE: NTS

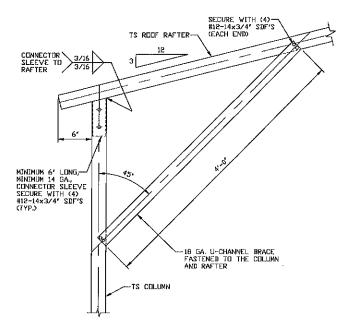
SCALE: NTS

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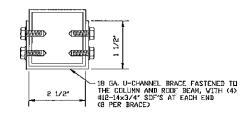


BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 11'-0" < TO < 14'-0"

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BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR 1B SCALE: NTS



# BRACE SECTION SCALE: NTS

CDINNECTOR 3/16 SLEEVE TO 3/16 RAFTER 3/16	TS ROOF RAFTER  12  3
6' 25.	SECURE WITH (4) #12-14x3/4* SDF'S (EACH END)
MINIMUM 6' LONG, CONNECTOR SLEEVE MINIMUM 14 GA, SECURE COLLIMN TO SLEEVE WITH (4) #12-14x3/4' SDF'S	18 GA. U-CHANNEL KNEE BRACE FASTENED TO RAFTER AND COLUMN

BOX EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS ≤ 8'-0"

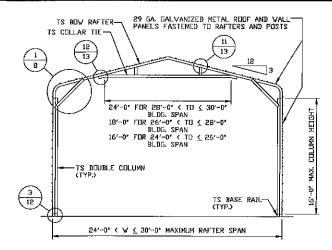
SCALE: NTS NDTE: FOR 3'-0" KNEE BRACE FOR 28'-0" < TO ≤ 30'-0" BLDG. SPAN.

1C

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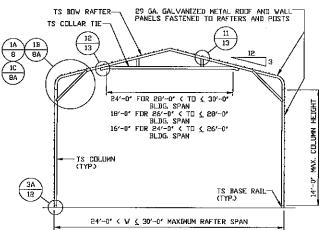
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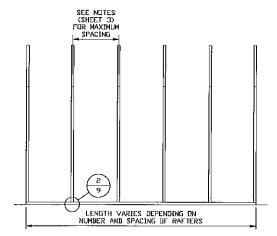
### TYPICAL RAFTER/COLUMN FRAME SECTION

SCALE: NTS



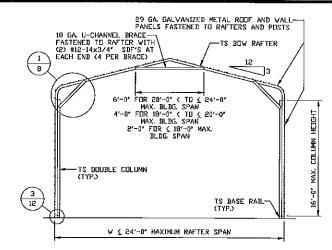
### TYPICAL RAFTER/COLUMN FRAME SECTION

SCALE: NTS



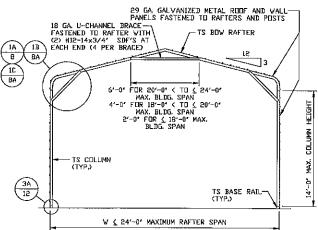
### TYPICAL RAFTER/COLUMN FRAMING SIDE SECTION

SCALE: NTS



### TYPICAL RAFTER/COLUMN FRAME SECTION

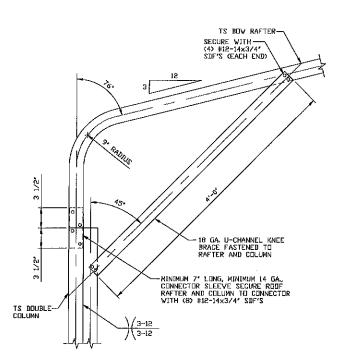
SCALE: NTS



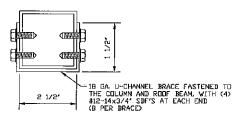
### TYPICAL RAFTER/COLUMN FRAME SECTION

SCALE: NTS

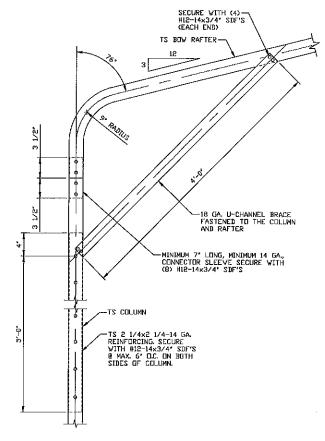
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BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 14'-0" < TO < 16'-0"



BRACE SECTION

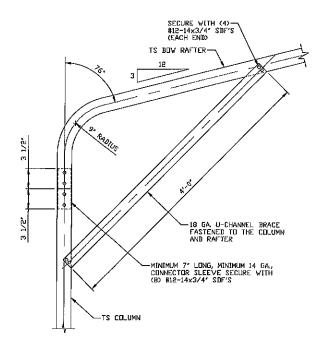


BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 11'-0" < TO < 14'-0"

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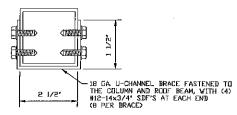
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	USA I	METAL STRUC		S, LLP		



BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS 8'-0" < T□ < 11'-0" 1B

SCALE: NTS



BRACE SECTION SCALE NTS

TS BOW RAFTER
3. Quit
SECURE WITH (4) #12-14x3/4'
SDF-2 (FACH END)
18 GA U-CHANNEL KNEE BRACE FASTENED TO RAFTER AND COLUMN
MINIMUM 7' LONG, CONNECTOR SLEEVE MINIMUM 14 GA, SECURE COLUMN TO SLEEVE WITH (8) #12-14x3/4' SDF'S

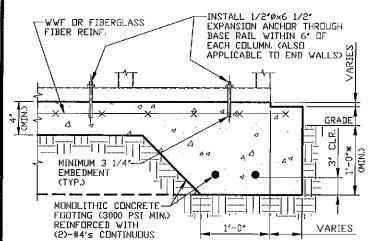
BOW EAVE RAFTER COLUMN CONNECTION DETAIL FOR HEIGHTS ≤ 8'-0"

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SCALE; NTS NDTE: FOR 3'-0" KNEE BRACE FOR 28'-0" < TO < 30'-0" BLDG. SPAN.

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### BASE RAIL ANCHORAGE OPTIONS



2

### CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

MINIMUM ANCHOR EDGE DISTANCE IS 4". COORDINATE WITH LOCAL BUILDING CODE AND/OR BUILDING OFFICIAL REGARDING REQUIRED FOOTING DEPTH.

### GENERAL NOTES

NOTE: CONCRETE MONOLITHIC SLAB DESIGN BASED 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" 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.

### REINFORCING STEEL:

THE TURNDOWN REINFORCING STEEL SHALL BE ASTM A615 GRADE 60. THE SLAB REINFORCEMENT SHALL BE WELDED WIRE FABRIC MEETING ASTM A185 OR FIBERGLASS FIBER REINFORCEMENT.

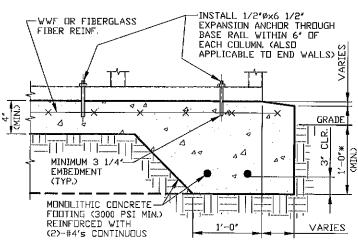
### REINFORCEMENT MAY BE BENT IN THE SHOP OR THE FIELD PROVIDED:

- 1. REINFORCEMENT IS BENT COLD.
- 2. THE DIAMETER OF THE BEND, MEASURED ON THE INSIDE OF THE BAR, IS NOT LESS THAN SIX-BAR DIAMETERS.

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

### HELIX ANCHOR NOTES:

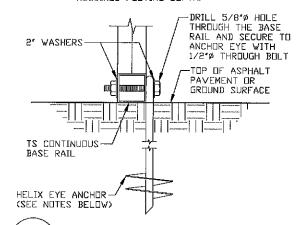
- 1. FOR VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND COBBLES, CALICHE, PRELIDADED SILTS AND CLAYS, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT OR SINGLE 6" HELIX WITH MINIMUM 50" EMBEDMENT
- 2. FOR CORAL USE MINIMUM (2) 4" HELICES WITH MINIMUM 30' EMBEDMENT OR SINGLE 6' HELIX WITH MINIMUM 50' EMBEDMENT.
- 3. FOR MEDIUM DENSE COARSE SANDS, SANDY GRAVELS, VERY STIFF SILTS, AND CLAYS USE MINIMUM (2) 4' HELICES WITH MINIMUM 30 INCH EMBEDMENT OR SINGLE 6' HELIX WITH MINIMUM 50" EMBEDMENT.
- 4. FOR LOOSE TO MEDIUM DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS ALLUVIAL FILL, USE MINIMUM (2) 6' HELICES WITH MINIMUM 50" 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" EMBEDMENT,



**2A** 

### CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE

MINIMUM ANCHOR EDGE DISTANCE IS 4". \* COORDINATE WITH LOCAL BUILDING CODE AND/OR BUILDING OFFICIAL REGARDING REQUIRED FOOTING DEPTH.



### GROUND BASE HELIX ANCHORAGE

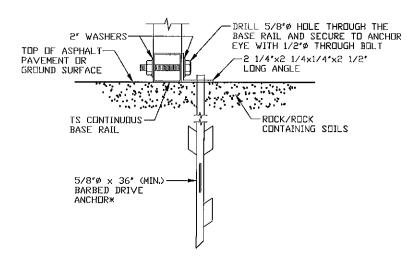
(CAN BE USED FOR ASPHALT) \* COORDINATE WITH LOCAL CODES/ORD. REGARDING MIN, FROST DEPTH (LENGTH)

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ENGINEERING AND CONSULTING. INC	7

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CLIENT: USA METAL STRUCTURES	SHT. 9	DAG" ND 2K-3		REV. 0		
PROJECT MGR: VSM	DATE: 6-17-22	SCALE: NTS	JICOB I	NO 22057S		
CHECKED BY: PDH		MOUNT AIRY, NC 27030 30'-0"x16'-0" ENCLOSED STRUCTURE				
DRAWN BY: LT	USA METAL STRUCTURES, LLP 1495 EAST PINE ST.					
	LICAL	METAL CTRICT	ri id C	CIID		

### **BASE RAIL ANCHORAGE OPTIONS**



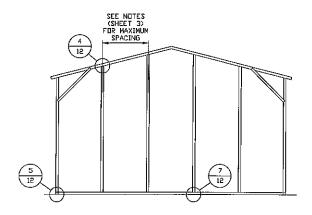
BARBED DRIVE ANCHURAGE
SCALE: NTS
\* COURDINATE WITH LOCAL CODES/ORD.
REGARDING MINIMUM FROST DEPTH REQ.

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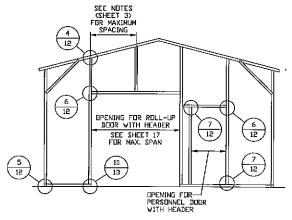
	CLIENT: USA METAL STRUCTURES	SHT. 9A	DWG. ND: SK-3	REV. 0		
_	PROJECT MGR: VSM	DATE: 6-17-22	SCALE: NTS	JOB NO 22057S		
	CHECKED BY: PDH	MOUNT AIRY, NC 27030 30'-0"x16'-0" ENCLOSED STRUCTURE				
	DRAWN BY: LT	USA I	METAL STRUC 1495 EAST PIN			

### **BOX EAVE RAFTER END WALL AND SIDE WALL OPENINGS**



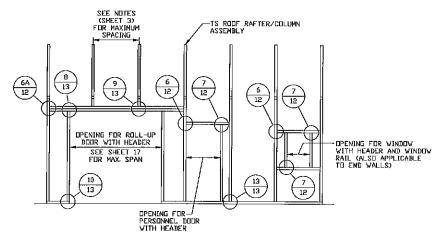
# TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

SCALE: NTS



# TYPICAL BOX EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS

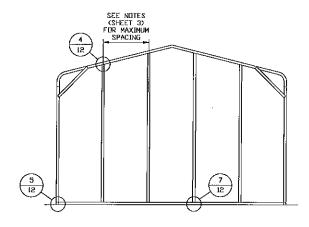


# TYPICAL BOX EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

SCALE: NTS

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ENGINEERING AND CONSULTING, INC.	CHECKED BY: PDH		10UNT AIRY, N 6'-0" ENCLOSEI	
MOORE AND ASSOCIATES	DRAWN_BY: LT	USA	METAL STRUC' 1495 EAST PIN	

### **BOW EAVE RAFTER END WALL AND SIDE WALL OPENINGS**



# TYPICAL BOW EAVE RAFTER END WALL FRAMING SECTION

SPACING

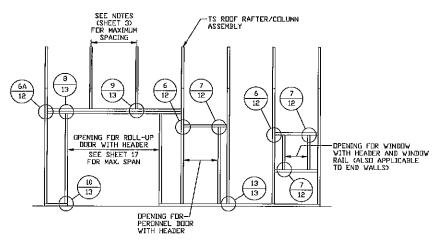
DPENING FOR ROLL-UP
DOUR WITH HEADER
SEE SHEET 17
FOR MAX. SPAN

DPENING FOR
PERSONNEL DOOR
PERSONNEL DOOR
TYPICAL POLY FAVE DAFTED END

SEE NOTES (SHEET 3) FOR MAXIMUM SPACING

# TYPICAL BOW EAVE RAFTER END WALL OPENINGS FRAMING SECTION

SCALE: NTS



# TYPICAL BOW EAVE RAFTER SIDE WALL OPENINGS FRAMING SECTION

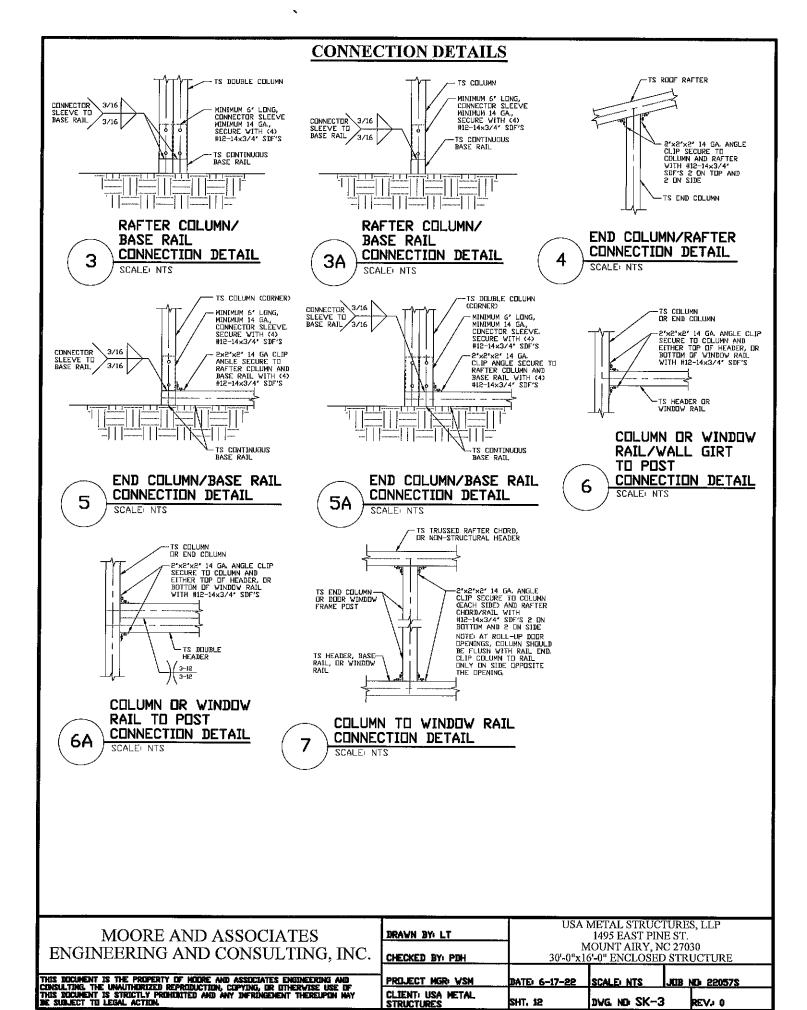
SCALE: NTS

SCALE: NTS

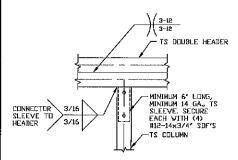
MOORE AND ASSOCIATES
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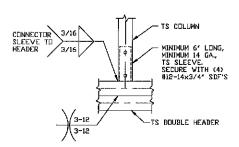
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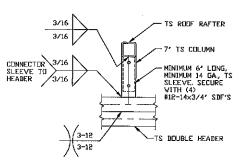
CLIENT: USA METAL STRUCTURES		DWG. ND: SK-3		REV. 0		
PROJECT MGR: VSM	DATE: 6-17-22	SCALE: NTS	ו פרונ.	ND: 22057S		
CHECKED BY: PDH	USA METAL STRUCTURES, LLP 1495 EAST PINE ST. MOUNT AIRY, NC 27030 30'-0"x16'-0" ENCLOSED STRUCTURE					
BRAVN BY LT						



### **CONNECTION DETAILS**



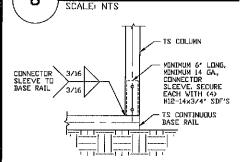


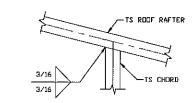


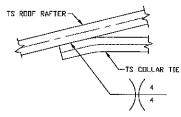
8 CONNECTION DETAIL

9A COLUMN/DOUBLE HEADER
CONNECTION DETAIL

9B COLUMN/DOUBLE HEADER
CONNECTION DETAIL
SCALFL NIS



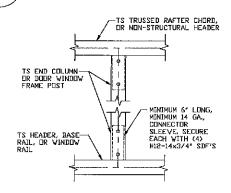




10 COLUMN/BASE RAIL
CONNECTION DETAIL
SCALE: NTS

RAFTER TO CHORD CONNECTION DETAIL
SCALE NTS

12 COLLAR TIE CONNECTION DETAIL
SCALE NTS



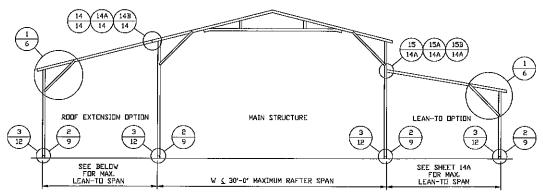
COLUMN TO HEADER
OR BASE RAIL
CONNECTION DETAIL
SCALE NTS

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	PROJECT MGR: VSM	DATE: 6-17-22	SCALE: NTS .	JOB NO: 22057S			
.	CHECKED BY: PDH		30'-0"x16'-0" ENCLOSED STRUCTURE				
		1 N	MOUNT AIRY, NC 27030				
	DRAVN BY: LT	•	1495 EAST PINE ST.				
		I USA I	USA METAL STRUCTURES, LLP				

### **BOX EAVE RAFTER LEAN-TO OPTIONS**



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

SCALE: NTS

SCALE NTS

MAXIMUM WIDTH DF SINGLE MEMBER ROOF EXTENSION AND LEAN-TO IS 12'-0',

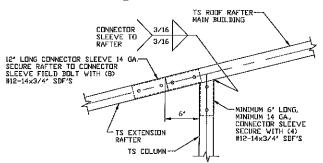
MAXIMUM WIDTH DF DOUBLE MEMBER ROOF EXTENSION AND LEAN-TO IS 16'-0',

MAXIMUM WIDTH DF LACED MEMBER ROOF EXTENSION AND LEAN-TO IS 20'-0',

MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE DOUBLE COLUMNS
FOR EAVE HEIGHTS 11'-0' < TO \( \) 16'-0',

MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE SINGLE COLUMNS
FOR EAVE HEIGHTS (11'-0')

FOR EAVE HEIGHTS ≤ 11'-0".



### SIDE EXTENSION RAFTER/ COLUMN DETAIL FOR RAFTER SPANS ≤ 12'-0"

14 SCALE: NTS

CONNECTOR SLEEVE TO RAFTER 3/16 3/16 TS ROOF RAFTER MAIN BUILDING LONG CONNECTOR SLEEVE 14 GA, SECURE RAFTER TO CONNECTOR SLEEVE WITH (B) #12-14x3/4' SDF'S TYP -MINIMUM 6' LONG, MINIMUM 14 GA., CONNECTUR SLEEVE. SECURE POST TO NIPPLE WITH (4) #12-14x3/4' SDF'S TS LACED EXTENSION-RAFTER 2'x2'x2' 16 GA, ANGLE CLIP— SECURE TO COLUMN AND RAFTER WITH #12-14x3/4' SDF'S (2) ON TOP AND (2) ON SIDE

> SIDE EXTENSION RAFTER/COLUMN DETAIL FOR RAFTER SPANS 16'-0" < T□ ≤ 20'-0"

SCALE: NTS

14B

TS ROOF RAFTER MAIN BUILDING 12' LONG CONNECTOR SLEEVE 14 GA: SECURE RAFTER TO CONNECTOR SLEEVE FIELD BOLT WITH (8) #12-14x3/4' SDF'S TS EXTENSION— DOUBLE RAFTER CONNECTOR SLEEVE TO RAFTER 3/16 3/16 MINIMUM 6' LONG, MINIMUM 14 GA., CONNECTOR SLEEVE SECURE WITH (4) #12-14x3/4' SDF'S 3-12 TS COLUMN

> SIDE EXTENSION RAFTER/COLUMN DETAIL FOR RAFTER SPANS

12'-0" < T□ ≤ 16'-0"

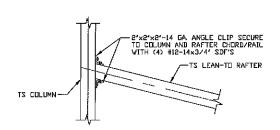
14A SCALE: NTS

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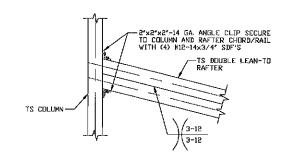
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	DRAWN BY: LT	USA I	USA METAL STRUCTURES, LLP 1495 EAST PINE ST.				

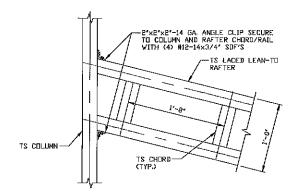
### **BOX EAVE RAFTER LEAN-TO OPTIONS**



LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS & 12'-0"



LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 12'-0' < TO < 16'-0' SCALE: NTS



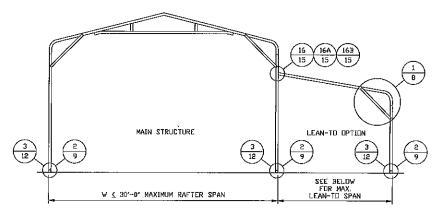
LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 16'-0' < TO < 20'-0'

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CHECKED BY: PDH		MOUNT AIRY, NC 27030 30'-0"x16'-0" ENCLOSED STRUCTURE				
DRAVN BY: LT	USA METAL STRUCTURES, LLP 1495 EAST PINE ST.					

### **BOW EAVE RAFTER LEAN-TO OPTION**



### TYPICAL BOW EAVE RAFTER LEAN-TO OPTION FRAMING SECTION

SCALE: NTS

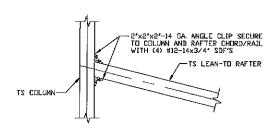
MAXIMUM WIDTH OF SINGLE MEMBER ROOF EXTENSION AND LEAN-TO IS 12'-0'.

MAXIMUM WIDTH OF DOUBLE MEMBER ROOF EXTENSION AND LEAN-TO IS 16'-0'.

MAXIMUM WIDTH OF LACED MEMBER ROOF EXTENSION AND LEAN-TO IS 20'-0'.

MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE DOUBLE COLUMNS FOR EAVE HEIGHTS 11'-0' < TO < 16'-0'.

MAIN BUILDING COLUMNS WITH LEAN-TO OR ROOF EXTENSION ATTACHED ARE REQUIRED TO BE SINGLE COLUMNS FOR EAVE HEIGHTS 1'-0'.



LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS &

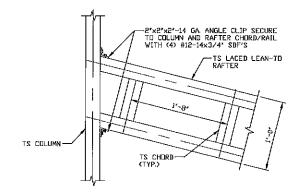
16

2"x2"x2"~14 GA, ANGLE CLIP SECURE TO COLUMN AND RAFTER CHORD/RAIL WITH (4) #12-14x3/4" SDF'S TS DOUBLE LEAN-TO RAFTER TS COLUMN

LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 12'-0" < T□ < 16'-0"

16A

SCALE: NTS



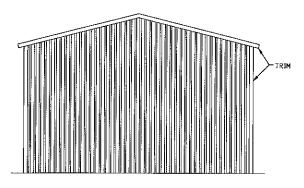
LEAN-TO RAFTER TO RAFTER COLUMN CONNECTION DETAIL FOR RAFTER SPANS 16'-0" < T□ < 20'-0"

SCALE: NTS

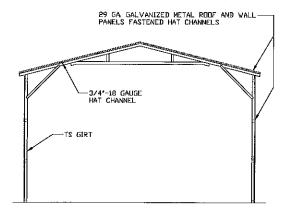
16B

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ENGINEERING AND CONSULTING, INC. CHECKED BY PDH		MOUNT AIRY, NC 27030 30'-0"x16'-0" ENCLOSED STRUCTURE			
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### BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION

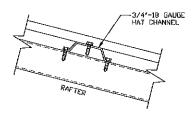


TYPICAL END ELEVATION VERTICAL ROOF/SIDING



### TYPICAL SECTION VERTICAL ROOF/SIDING OPTION

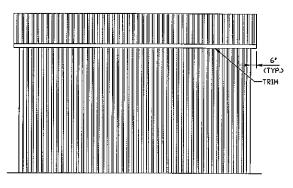
SCALE: NTS



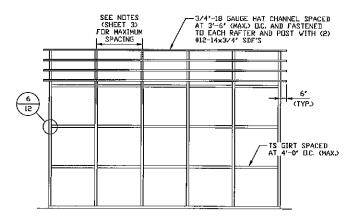
### ROOF PANEL ATTACHMENT

(ALTERNATE FOR VERTICAL ROOF PANELS)

SCALE: NTS



### TYPICAL SIDE ELEVATION VERTICAL ROOF/SIDING



### TYPICAL FRAMING SECTION VERTICAL ROOF/SIDING OPTION

SCALE: NTS

NOTE: HAT CHANNELS CAN BE USED AS AN OPTION IN PLACE OF TS GIRTS, HAT CHANNELS MUST BE SPACED AT 4'-0' O.C. MAX.

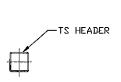
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ENGINEERING AND CONSULTING, INC	

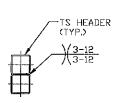
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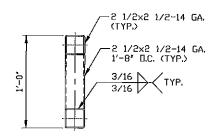
DRAWN BY: LT	USA METAL STRUCTURES, LLP 1495 EAST PINE ST.					
CHECKED BY: PDH	MOUNT AIRY, NC 27030 30'-0"x16'-0" ENCLOSED STRUCTURE					
PREJECT MGR: VSM	DATE: 6-17-22	SCALE: NTS	JOB ND: 22057S			
CLIENT: USA METAL STRUCTURES	SHT. 16	DWG. NO: SK-3	REV. 0			

### SIDE WALL HEADER OPTIONS

NOTE: HEADER DESIGN DOES NOT TAKE IN TO ACCOUNT ADDITIONAL ROOF LOADING FROM ATTACHED LEAN-TO STRUCTURES.







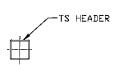
HEADER DETAIL FOR SPANS **₹** 7'-0"

SCALE: NTS

HEADER DETAIL FOR SPANS 7'-0" < T□ ≤ 12'-0" SCALE: NTS

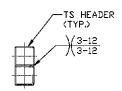
HEADER DETAIL FOR SPANS 12'-0" < T□ < 16'-0" SCALE: NTS

### **END WALL HEADER OPTIONS**



HEADER DETAIL FOR SPANS <u><</u> 12'-0"

SCALE: NTS



HEADER DETAIL FOR SPANS 12'-0" < T□ < 20'-0"

SCALE: NTS

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