

APPLICABLE CODES

- 1. 2021 INTERNATIONAL BUILDING CODE
- 2. 2018 INTERNATIONAL BUILDING CODE
- 3. 2015 INTERNATIONAL BUILDING CODE
- 4. 2012 INTERNATIONAL BUILDING CODE
- 5. 2021 INTERNATIONAL BUILDING CODE (WITH ALABAMA AMENDMENTS)
- 6. 2023 FLORIDA BUILDING CODE
- 7. 2018 INTERNATIONAL BUILDING CODE (WITH GEORGIA AMENDMENTS)
- 8. 2018 NORTH CAROLINA BUILDING CODE
- 9. 2021 SOUTH CAROLINA BUILDING CODE
- 10. 2012 INTERNATIONAL BUILDING CODE (WITH TENNESSEE AMENDMENTS)
- 11. 2018 VIRGINIA CONSTRUCTION CODE

APPLICABLE STANDARDS

- 1. ASCE 7-16: MINIMUM DESIGN LOADS ON BUILDINGS AND OTHER STRUCTURES
- 2. AISC STEEL CONSTRUCTION MANUAL (15TH EDITION)
- 3. ACI 318-14: BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
- 4. TMS 402-16: BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES
- 5. AWS D1.1: STRUCTURAL WELDING

DESIGN LOADS

- 1. DEAD LOAD = 15 PSF
- 2. ROOF LIVE LOAD = 12 PSF
- 3. FLOOR LIVE LOAD = 100 PSF
- 4. GROUND SNOW LOAD = 35 PSF
- 5. WIND LOAD
  - A. RISK CATEGORY = I
  - B. WIND EXPOSURE CATEGORY = C
  - C. ULTIMATE WIND SPEED = 110 MPH TO 150 MPH
  - NOMINAL WIND SPEED = 85 MPH TO 116 MPH

INSTALLATION NOTES AND SPECIFICATIONS

- 1. THESE PLANS BELONG EXCLUSIVELY TO THE STRUCTURE, INCLUDING MAIN WIND FORCE RESISTING SYSTEM (MWFRS), COMPONENTS AND CLADDING (C&C), AND BASE RAIL ANCHORAGE. OTHER DESIGN ISSUES, INCLUDING BUT NOT LIMITED TO PROPERTY SET-BACKS, ELECTRICAL, PLUMBING, INGRESS/EGRESS, FINISH FLOOR SLOPES AND ELEVATIONS, OR OTHER LOCAL ZONING REQUIREMENTS ARE THE LIABILITY OF OTHERS.
- 2. THESE STRUCTURES ARE ENGINEERED AS CAPABLE OF SUPPORTING DEAD LOAD OF THE STRUCTURE AND LIVE AND WIND LOADS. UPGRADES NOT SPECIFICALLY ADDRESSED HEREIN, SUCH AS WINDOWS, DOORS, OR ANOTHER COMPONENT NOT LISTED IN THE INTERNATIONAL BUILDING CODE APPROVED PRODUCT LIST, AND NOT PROVIDED AND INSTALLED BY THE CONTRACTOR, WHICH CAUSE ADDITIONAL LOADS ON THE STRUCTURE SHALL BE AT THE OWNER'S RISK. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR FAILURE OR STRUCTURAL DAMAGE DUE TO THE EXTRA LOAD.
- 3. ALL STEEL TUBING SHALL BE 50 KSI GALVANIZED STEEL. ALL FASTENERS SHALL BE ZINC COATED HARDWARE.
- 4. END WALL COLUMNS (POST) AND SIDE WALL COLUMNS ARE EQUIVALENT IN SIZE AND SPACING U.N.O.
- 5. SPECIFICATIONS APPLICABLE TO 29 GA METAL PANELS FASTENED DIRECTLY TO 2.5"x2.5"x14 GA TUBE STEEL (TS) FRAMING MEMBERS FOR VERTICAL PANELS. 29 GA METAL PANELS SHALL BE FASTENED DIRECTLY TO 18 GA HAT CHANNELS U.N.O.
- 6. AVERAGE FASTENER SPACING ON-CENTERS ALONG RAFTERS OR PURLINS, AND POSTS, INTERIOR = 9" AND END = 6" MAX.
- 7. FASTENERS CONSIST OF #12-14x3/4" SELF-DRILLING SCREWS (SDS), USE CONTROL SEAL WASHER WITH EXTERIOR FASTENERS. SPECIFICATIONS APPLICABLE ONLY FOR MEAN ROOF HEIGHT OF 20'-0" OR LESS, AND ROOF SLOPES OF 14° (3:12 PITCH) OR LESS. SPACING REQUIREMENTS FOR OTHER ROOF HEIGHTS AND/OR SLOPES MAY VARY.
- 8. ANCHORS SHALL BE INSTALLED THROUGH THE BASE RAIL WITHIN 6" OF EACH RAFTER COLUMN ALONG SIDES AND ENDS.
- 9. STANDARD GROUND ANCHORS (SOIL NAILS) CONSIST OF #4 REBARS WITH WELDED NUT X 30" 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. SOIL NAILS MAY BE USED FOR WIND SPEEDS LESS THAN OR EQUAL TO 145 MPH.
- 10. RAFTER SPACING IS 5'-0" FOR WIND SPEEDS BETWEEN 110 MPH AND 140 MPH AND 4'-0" FOR WIND SPEEDS BETWEEN 140 MPH AND 150 MPH.
- 11. WIND FORCES GOVERN OVER SEISMIC FORCES. SEISMIC PARAMETERS ANALYZED ARE:
  - SOIL SITE CLASS = D
  - RISK CATEGORY I/II/III
  - R = 3.25    Ie = 1.0    Sds = 0.087 g    V = CsW    Sdi = 0.084 g

DRAWING INDEX

PAGE NO.	DESCRIPTION
1	TITLE PAGE WITH INDEX
2	ELEVATION VIEWS
3	TRUSS DESIGN FOR RAFTER SPAN
4	CONNECTION DETAILS (1-2)
5	BASE RAIL AND FOUNDATION ANCHORAGE
6	RAFTER END WALL, SIDE WALL AND OPENING FRAMING
7	CONNECTION DETAILS (4-15)
8	BOX EAVE RAFTER LEAN-TO OPTIONS
9	CONNECTION DETAILS (17-19)
10	BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION
11	OPTIONAL HELICAL ANCHORING DETAIL

ENCLOSED METAL BUILDING DESIGN  
MAXIMUM 30'-0" WIDE X 100'-0" LONG X 20'-0" HIGH (EAVE)  
BOX EAVE FRAME / BOW EAVE FRAME

GENERIC PLANS ARE NOT VALID  
WITHOUT A RAISED SEAL & BLUE INK  
SIGNATURE.

(1) SET OF SIGNED AND SEALED GENERIC  
ENGINEERING IS VALID FOR  
(1) STRUCTURE ONLY.

FLORIDA ENGINEERING LLC (AL, FL)  
DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA)  
GUNDERSON ENGINEERING (SC, NC)  
4161 TAMAMI TRAIL, UNIT 101  
PORT CHARLOTTE, FLORIDA 33952  
(941) 391-5980  
www.FLeng.com  
www.LightningEngineer.com  
www.GundersonEngineering.com



PROJECT NO. 2323719

CONTRACTOR:  
UNIFIED STEEL  
STRUCTURES INC.  
464 CITYVIEW DR.,  
MT. AIRY, NC 27030

PROJECT ADDRESS:  
12'-30' WIDE ENCLOSED

DESIGN DATE: 03/13/2024

REVISION 1: DATE

REVISION 2: DATE

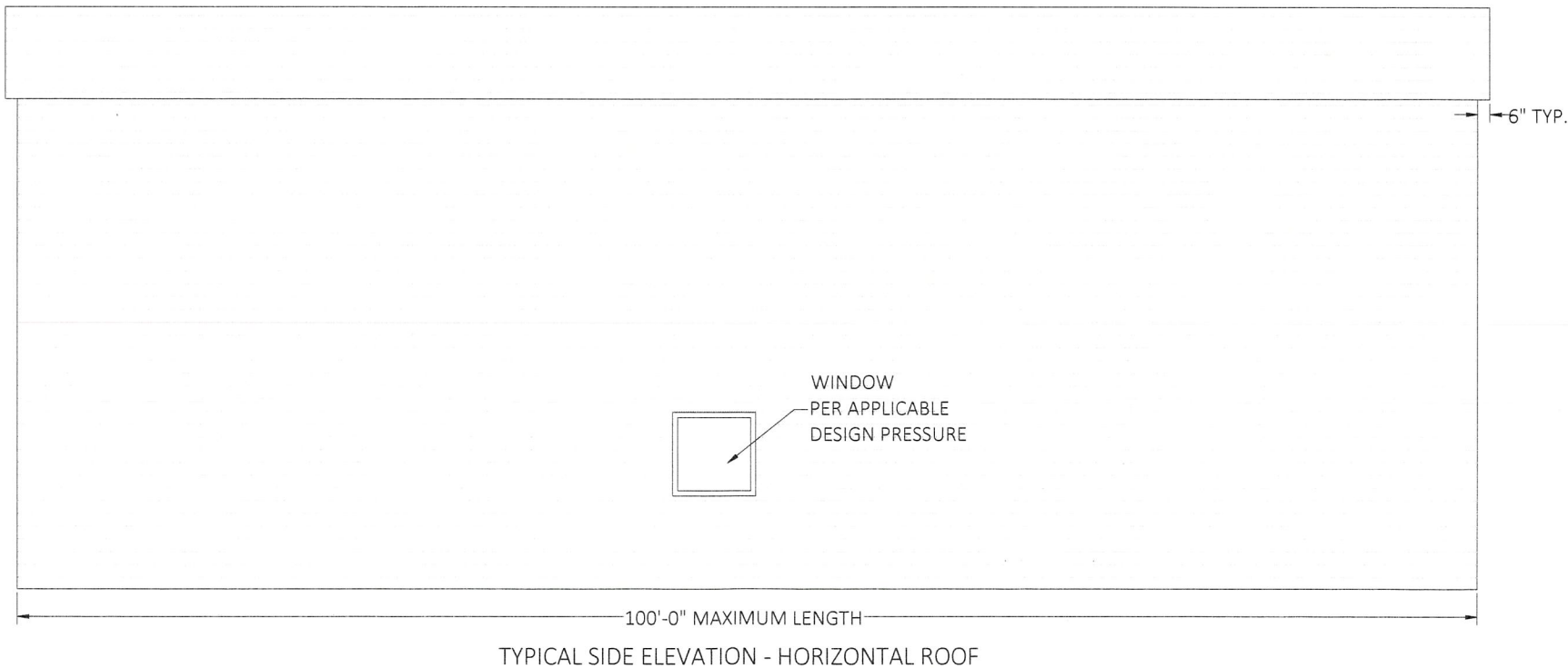
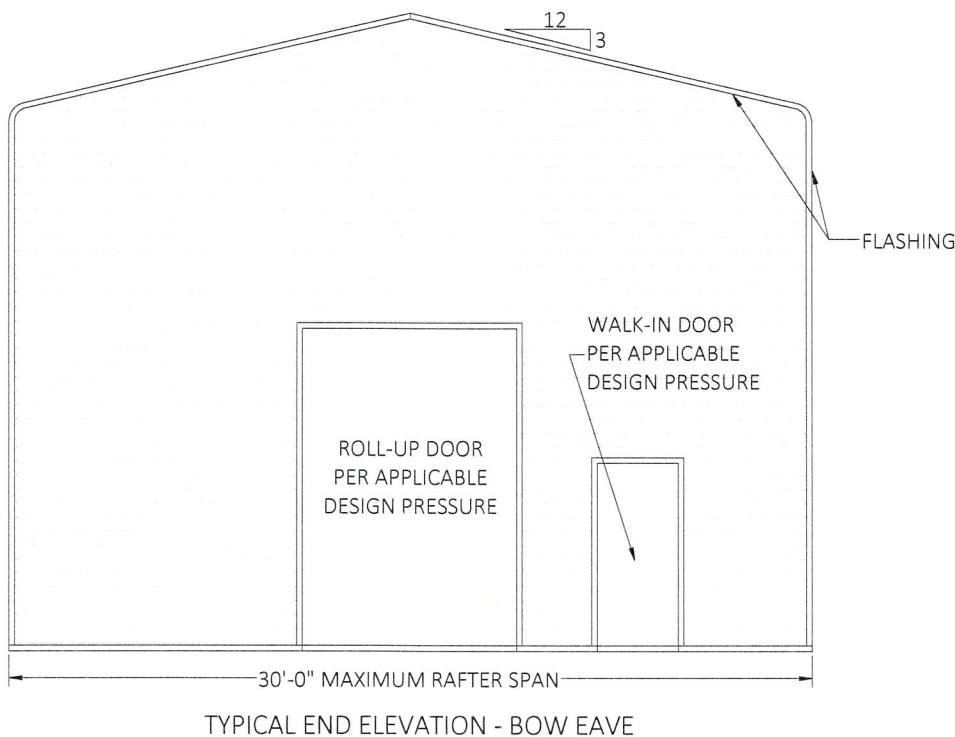
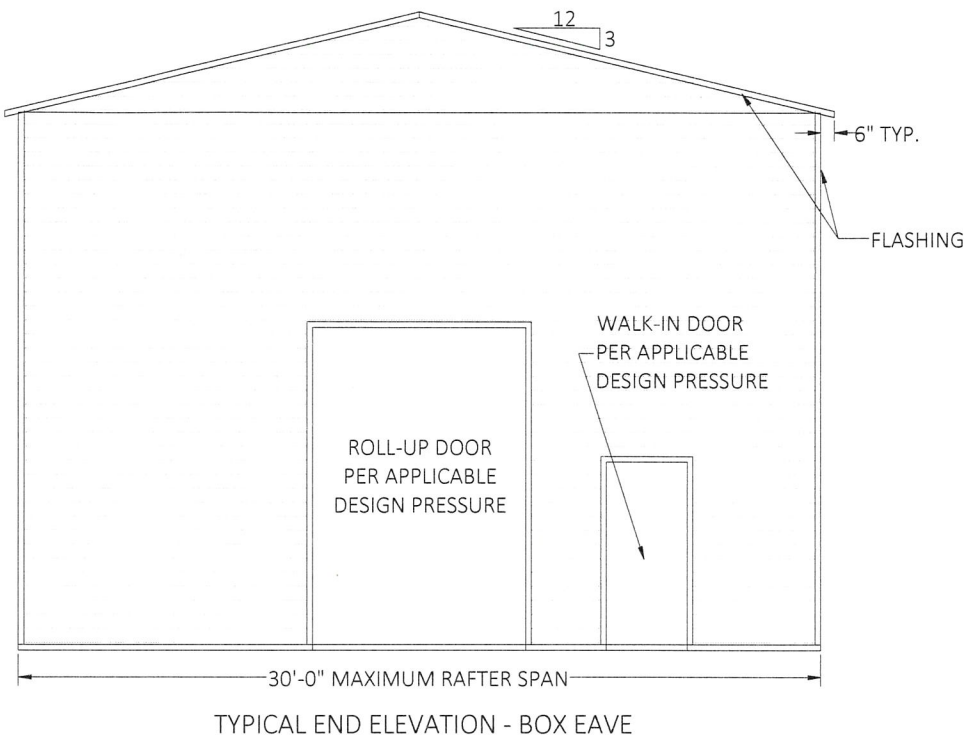
DRAWN BY: NRB

SCALE: NTS

PAGE : 1 OF 11



ENCLOSED METAL BUILDING DESIGN  
MAXIMUM 30'-0" WIDE X 100'-0" LONG X 20'-0" HIGH (EAVE)  
BOX EAVE FRAME / BOW EAVE FRAME



GENERIC PLANS ARE NOT VALID  
WITHOUT A RAISED SEAL & BLUE INK  
SIGNATURE.

(1) SET OF SIGNED AND SEALED GENERIC  
ENGINEERING IS VALID FOR  
(1) STRUCTURE ONLY.



FLORIDA ENGINEERING LLC (AL, FL)  
DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA)  
GUNDERSON ENGINEERING (SC, NC)  
4161 TAMiami TRAIL, UNIT 101  
PORT CHARLOTTE, FLORIDA 33952  
(941) 391-5980  
www.FLeng.com  
www.LightningEngineer.com  
www.GundersonEngineering.com

PROJECT NO. 2323719

CONTRACTOR:  
UNIFIED STEEL  
STRUCTURES INC.  
464 CITYVIEW DR.,  
MT. AIRY, NC 27030

PROJECT ADDRESS:  
12'-30' WIDE ENCLOSED

DESIGN DATE: 03/13/2024

REVISION 1: DATE

REVISION 2: DATE

DRAWN BY: NRB

SCALE: NTS

PAGE :  
2 OF 11

- MEMBER LEGEND:  
1. COLUMNS PER TABLE 3A/3B/3C  
2. RAFTER = 2.5X2.5X14 GA U.N.O.  
3. TRUSS MEMBERS = 2.5X2.5X14 GA U.N.O.  
4. KNEE-BRACE = 2.5"X1.625"X18GA CHANNEL  
5. PURLIN = 1.5"X18GA HAT CHANNEL  
6. U-BRACE = 2.5"X1.625"X18GA CHANNEL

TRUSS LAYOUT- BOX EAVE

TRUSS LAYOUT- BOW EAVE

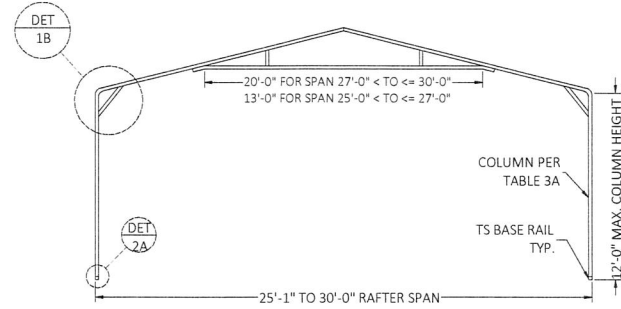
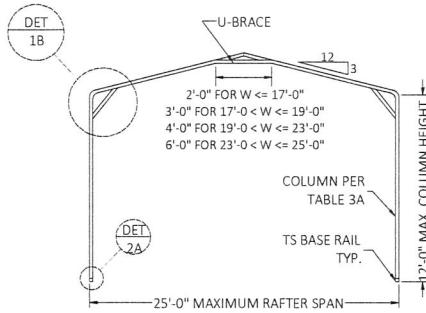
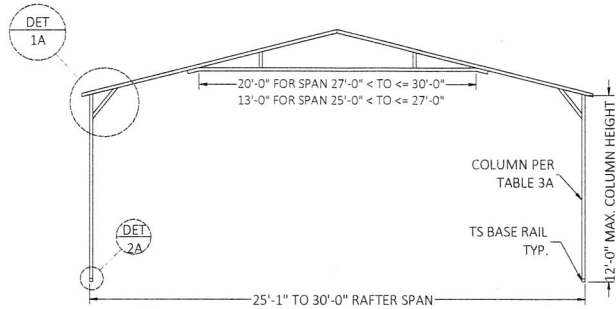
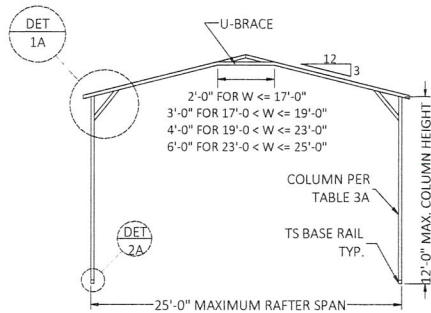


TABLE 3A:

FOR COLUMN HEIGHT OF MAX. 12'-0"		
WALL	BUILDING LENGTH	COLUMN DIMENSIONS
SIDE WALL	<= 55'-0"	ALL COLUMNS TO BE 2.5X2.5X12 GA
	55'-1" TO 100'-0"	(N-12) CENTRAL COLUMNS TO BE (2) 2.5X2.5X14 GA REST 2.5X2.5X12 GA
END WALL	<= 100'-0"	ALL COLUMNS TO BE 2.5X2.5X14 GA

\*N = NO. OF COLUMNS PER SIDE ELEVATION

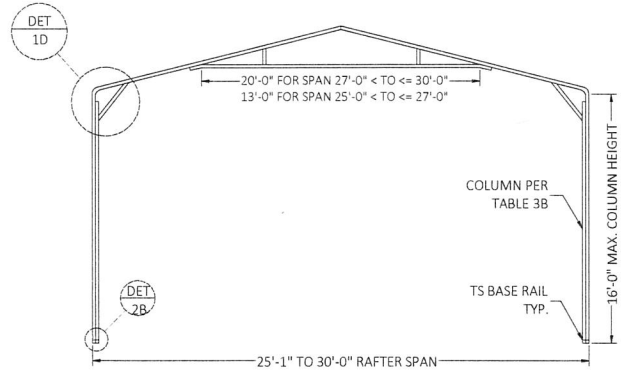
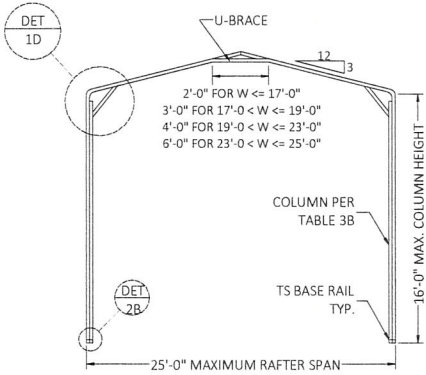
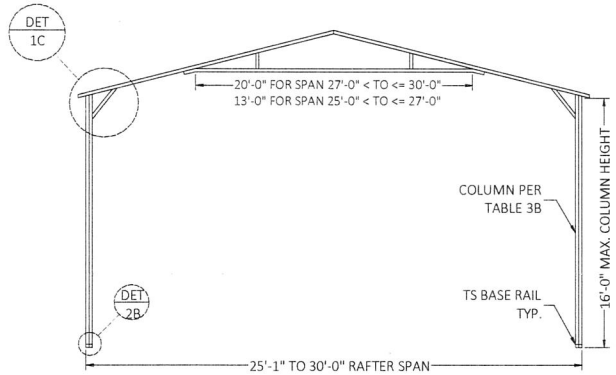
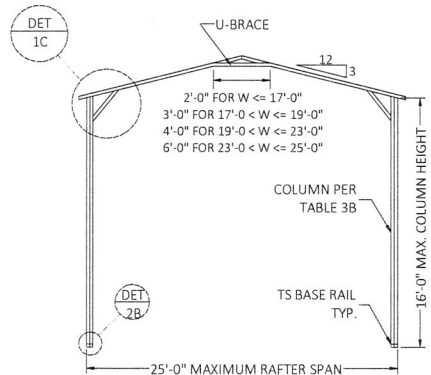


TABLE 3B:

FOR COLUMN HEIGHT OF MAX. 16'-0"		
WALL	BUILDING LENGTH	COLUMN DIMENSIONS
SIDE WALL	<= 100'-0"	ALL COLUMNS TO BE (2) 2.5X2.5X12 GA
END WALL	<= 100'-0"	ALL COLUMNS TO BE (2) 2.5X2.5X14 GA

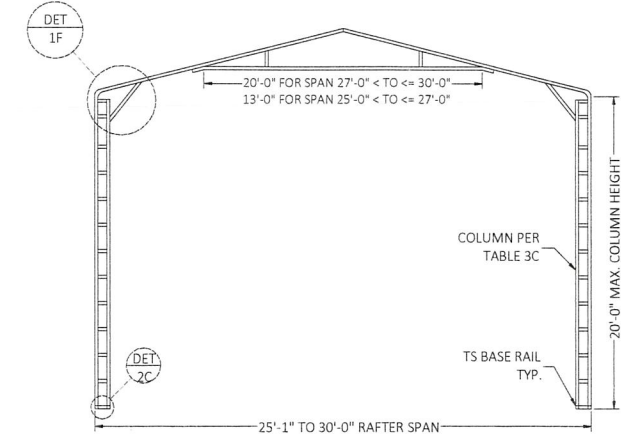
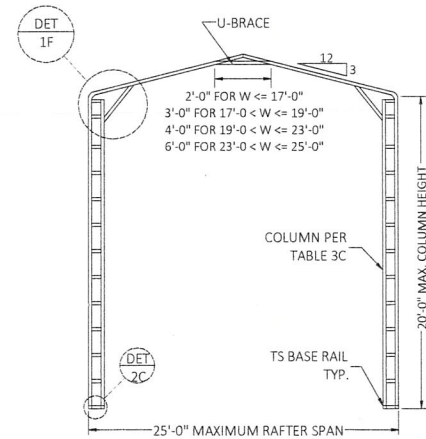
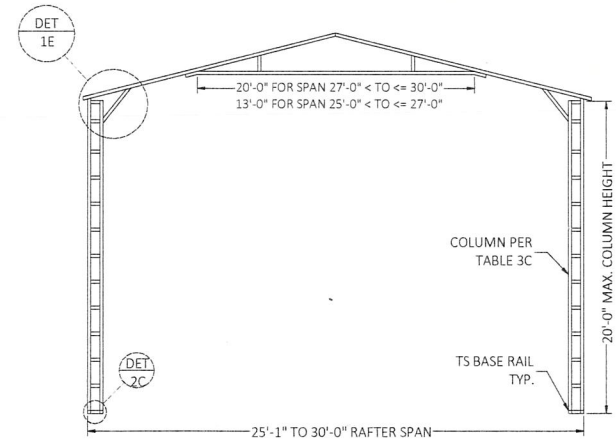
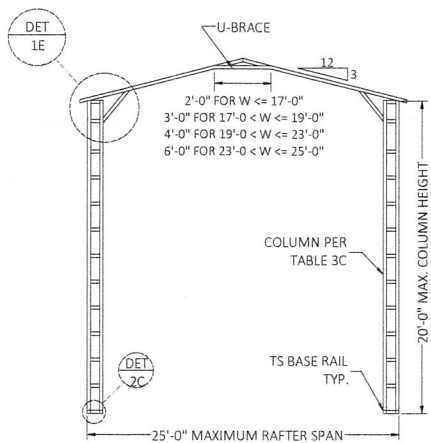


TABLE 3C:

FOR COLUMN HEIGHT OF MAX. 20'-0"		
WALL	BUILDING LENGTH	COLUMN DIMENSIONS
SIDE WALL	<= 100'-0"	ALL COLUMNS TO BE 2.5X2.5X14 GA LACED
END WALL	<= 100'-0"	ALL COLUMNS TO BE 2.5X2.5X14 GA LACED

GENERIC PLANS ARE NOT VALID  
WITHOUT A RAISED SEAL & BLUE INK  
SIGNATURE.  
(1) SET OF SIGNED AND SEALED GENERIC  
ENGINEERING IS VALID FOR  
(2) STRUCTURE ONLY.

FLORIDA ENGINEERING LLC (AL, FL)  
DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA)  
GUNDERSON ENGINEERING (SC, NC)  
4161 TAMiami TRAIL, UNIT 101  
PORT CHARLOTTE, FLORIDA 33952  
(941) 391-5980  
www.FLEng.com  
www.LightningEngineering.com  
www.GundersonEngineering.com



PROJECT NO. 2323719

CONTRACTOR:  
UNIFIED STEEL  
STRUCTURES INC.  
464 CITYVIEW DR.,  
MT. AIRY, NC 27030

PROJECT ADDRESS:  
12'-30" WIDE ENCLOSED

DESIGN DATE: 03/13/2024

REVISION 1: DATE

REVISION 2: DATE

DRAWN BY: NRB

SCALE: NTS

PAGE :

3 OF 11



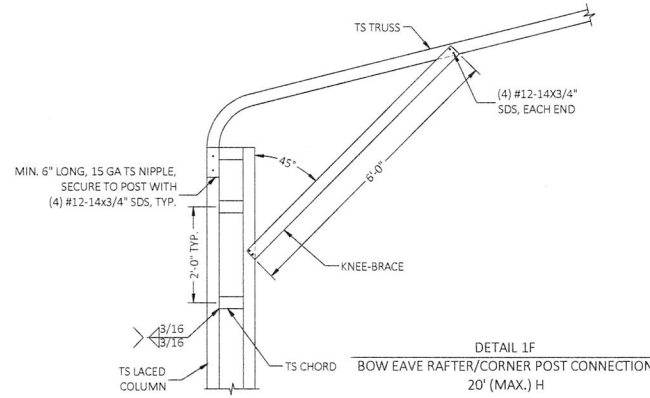
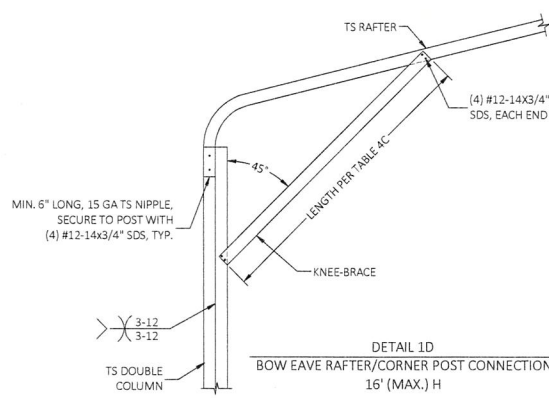
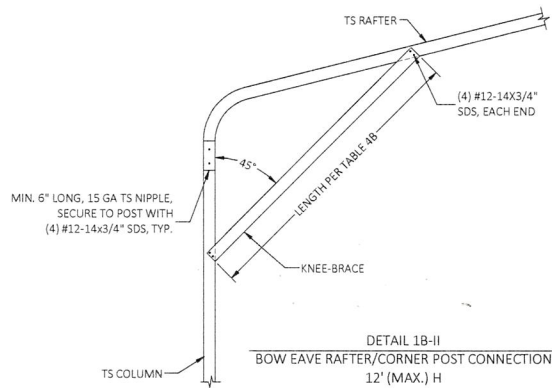
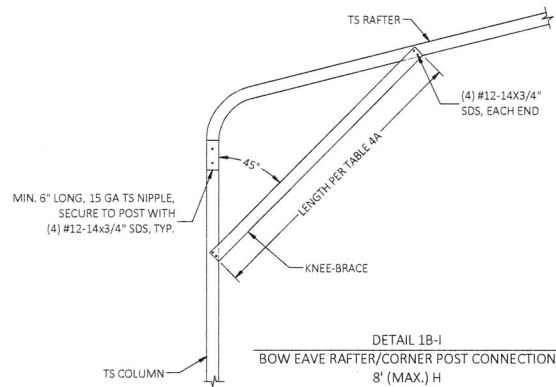
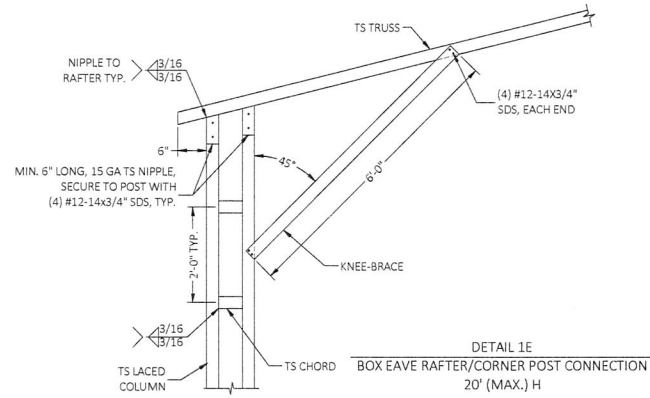
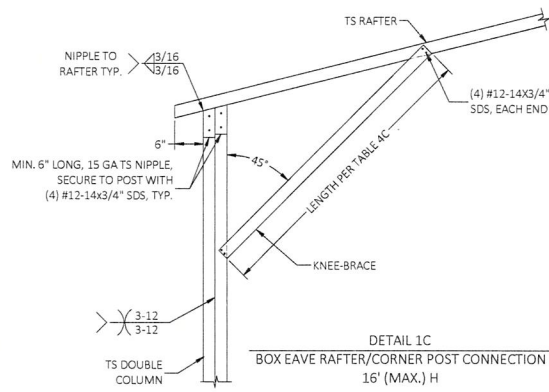
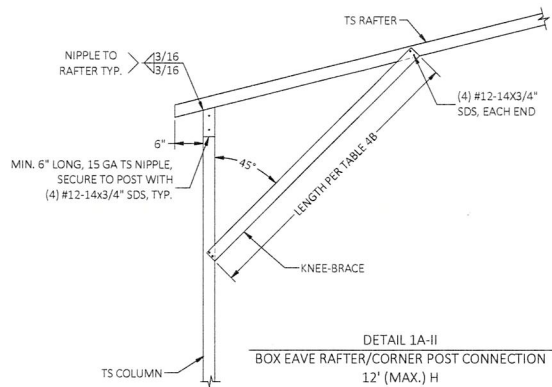
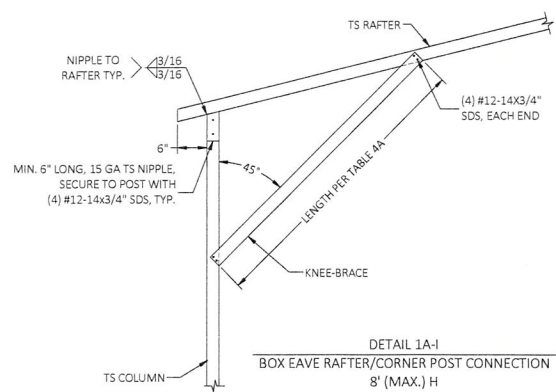
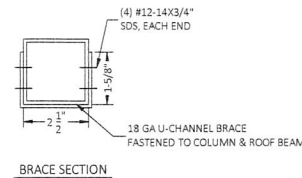
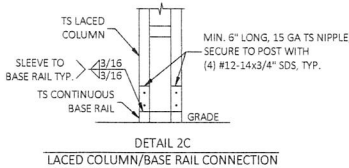
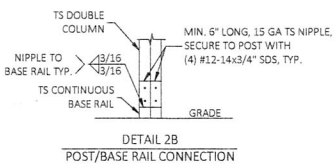
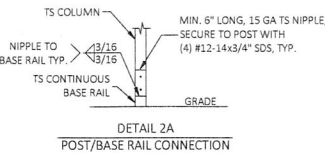


TABLE 4A: EAVE HEIGHT OF MAX. 8'-0"		
MAX. RAFTER SPAN	MAX. BUILDING LENGTH	KNEE BRACE LENGTH
19'-0"	100'-0"	2'-0"
23'-0"	55'-0"	2'-0"
	100'-0"	5'-0"
25'-0"	55'-0"	2'-0"
	100'-0"	5'-0"
27'-0"	65'-0"	2'-0"
	100'-0"	5'-0"
30'-0"	65'-0"	2'-0"
	100'-0"	4'-0"

TABLE 4B: EAVE HEIGHT OF MAX. 12'-0"		
MAX. RAFTER SPAN	MAX. BUILDING LENGTH	KNEE BRACE LENGTH
19'-0"	100'-0"	3'-0"
23'-0"	55'-0"	3'-0"
	100'-0"	5'-0"
25'-0"	55'-0"	3'-0"
	100'-0"	6'-0"
27'-0"	65'-0"	3'-0"
	100'-0"	5'-0"
30'-0"	65'-0"	3'-0"
	100'-0"	4'-0"

TABLE 4C: EAVE HEIGHT OF MAX. 16'-0"		
MAX. RAFTER SPAN	MAX. BUILDING LENGTH	KNEE BRACE LENGTH
19'-0"	100'-0"	4'-0"
23'-0"	55'-0"	4'-0"
	100'-0"	6'-0"
25'-0"	55'-0"	4'-0"
	100'-0"	6'-0"
27'-0"	65'-0"	4'-0"
	100'-0"	6'-0"
30'-0"	100'-0"	4'-0"



GENERIC PLANS ARE NOT VALID  
WITHOUT A RAISED SEAL & BLUE INK  
SIGNATURE.

(1) SET OF SIGNED AND SEALED GENERIC  
ENGINEERING IS VALID FOR  
(1) STRUCTURE ONLY.

FLORIDA ENGINEERING LLC (AL, FL)  
DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA)  
GUNDERSON ENGINEERING (SC, NC)  
4161 TAMAMI TRAIL, UNIT 101  
PORT CHARLOTTE, FLORIDA 33952  
(941) 391-5980  
www.FLENG.com  
www.LightningEngineering.com  
www.GundersonEngineering.com



PROJECT NO. 2323719

CONTRACTOR:  
UNIFIED STEEL  
STRUCTURES INC.  
464 CITYVIEW DR.,  
MT. AIRY, NC 27030

PROJECT ADDRESS:  
12'-30' WIDE ENCLOSED

DESIGN DATE: 03/13/2024

REVISION 1: DATE

REVISION 2: DATE

DRAWN BY: NRB

SCALE: NTS

PAGE :

4 OF 11

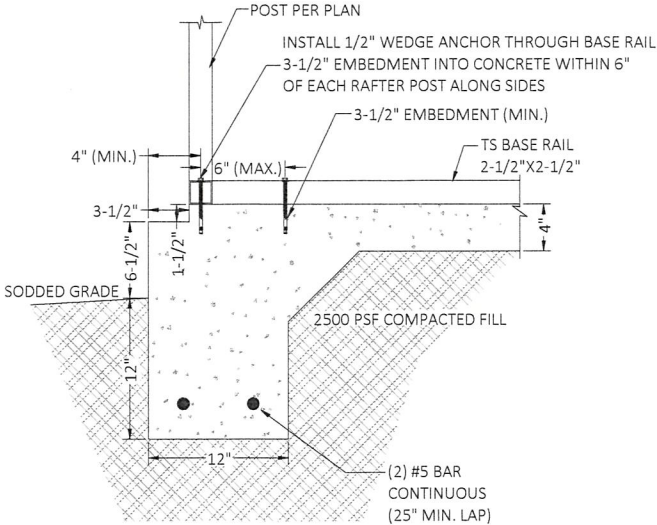


GENERAL NOTES  
CONCRETE MONOLITHIC SLAB DESIGN IS BASED ON A MINIMUM SOIL BEARING CAPACITY OF 2500 PSF.

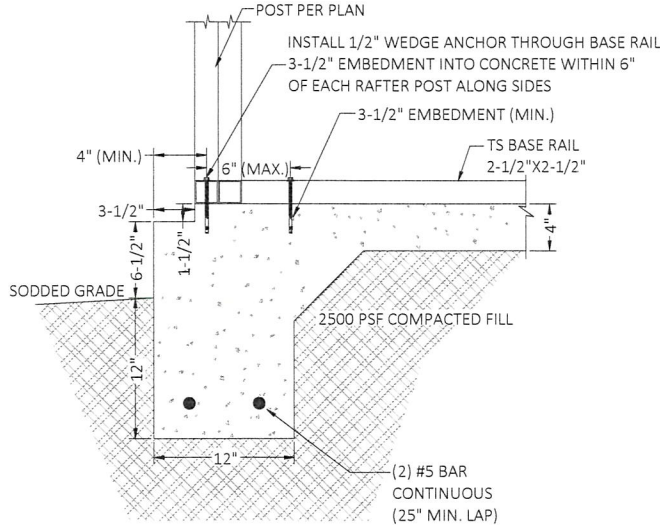
CONCRETE  
MINIMUM 28-DAY SPECIFIED COMPRESSIVE STRENGTH = 3000 PSI

REINFORCING STEEL  
1. TURNDOWN REINFORCING STEEL = ASTM A615 GRADE 60  
2. SLAB REINFORCEMENT = WELDED WIRE FABRIC PER ASTM A185 OR FIBERGLASS FIBER REINFORCEMENT  
3. REINFORCING STEEL COVER = 3" WHERE CASE AGAINST AND PERMENENTLY EXPOSED TO SOIL OR WATER, 1.5" EVERYWHERE ELSE.  
4. REINFORCEMENT IS BENT COLD.  
5. MINIMUM INSIDE DIAMETER OF BEND = (6) BAR DIAMETERS  
6. REINFORCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT.

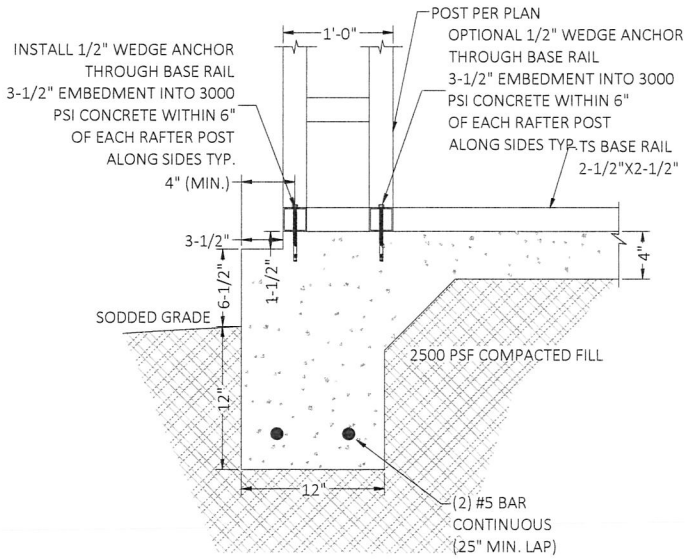
HELIX ANCHOR NOTES  
1. FOR VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND COBBLES, CALICHE, PRELOADED SILTS AND CLAYS, CORALS, MEDIUM DENSE COARSE SANDS, SANDY GRAVELS, VERY STIFF SILTS AND CLAYS, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT EVERY 10'.  
2. FOR MEDIUM TO VERY LOOSE DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS, ALLUVIAL FILL, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT EVERY 5' OR EVERY POST (LEG).  
3. THE UPLIFT/BEARING CAPACITY OF EACH ANCHOR MUST BE EQUAL TO OR GREATER THAN 8.5 KIPS.



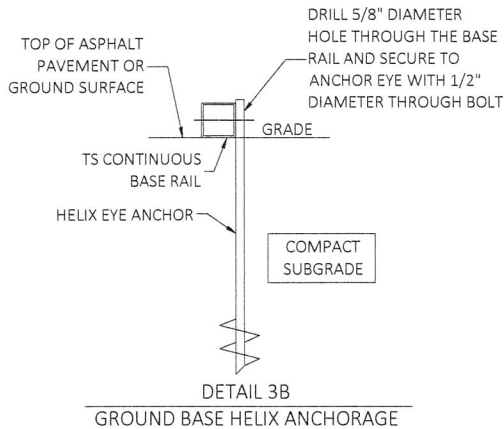
DETAIL 3A-I  
CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE



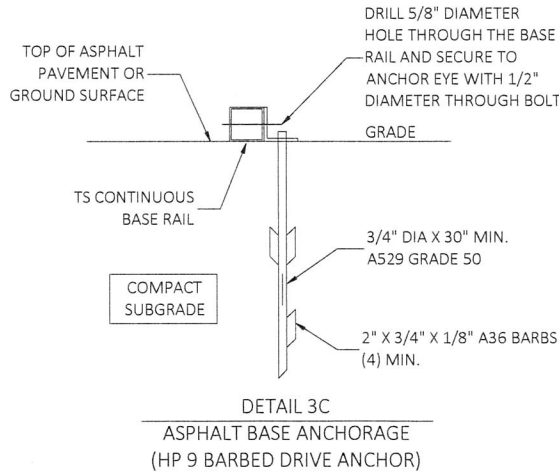
DETAIL 3A-II  
CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE



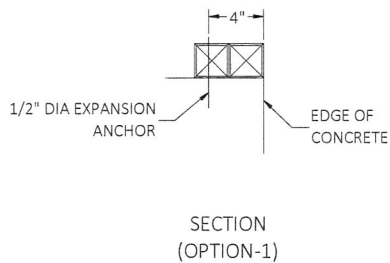
DETAIL 3A-III  
CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE



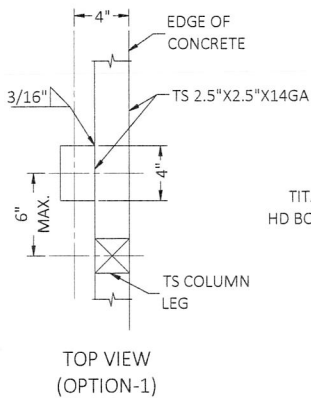
DETAIL 3B  
GROUND BASE HELIX ANCHORAGE



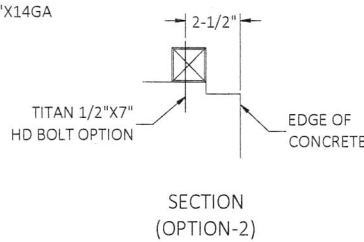
DETAIL 3C  
ASPHALT BASE ANCHORAGE  
(HP 9 BARBED DRIVE ANCHOR)



SECTION  
(OPTION-1)



TOP VIEW  
(OPTION-1)



SECTION  
(OPTION-2)

TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

BASE RAIL ANCHORAGE OPTION

GENERIC PLANS ARE NOT VALID WITHOUT A RAISED SEAL & BLUE INK SIGNATURE.  
(1) SET OF SIGNED AND SEALED GENERIC ENGINEERING IS VALID FOR (1) STRUCTURE ONLY.

FLORIDA ENGINEERING LLC (AL, FL)  
DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA)  
GUNDERSON ENGINEERING (SC, NC)  
4161 TAMiami TRAIL, UNIT 101  
PORT CHARLOTTE, FLORIDA 33952  
(941) 391-5980  
www.FLEng.com  
www.LightningEngineer.com  
www.GundersonEngineering.com



PROJECT NO. 2323719

CONTRACTOR:  
UNIFIED STEEL  
STRUCTURES INC.  
464 CITYVIEW DR.,  
MT. AIRY, NC 27030

PROJECT ADDRESS:  
12'-30' WIDE ENCLOSED

DESIGN DATE: 03/13/2024

REVISION 1: DATE

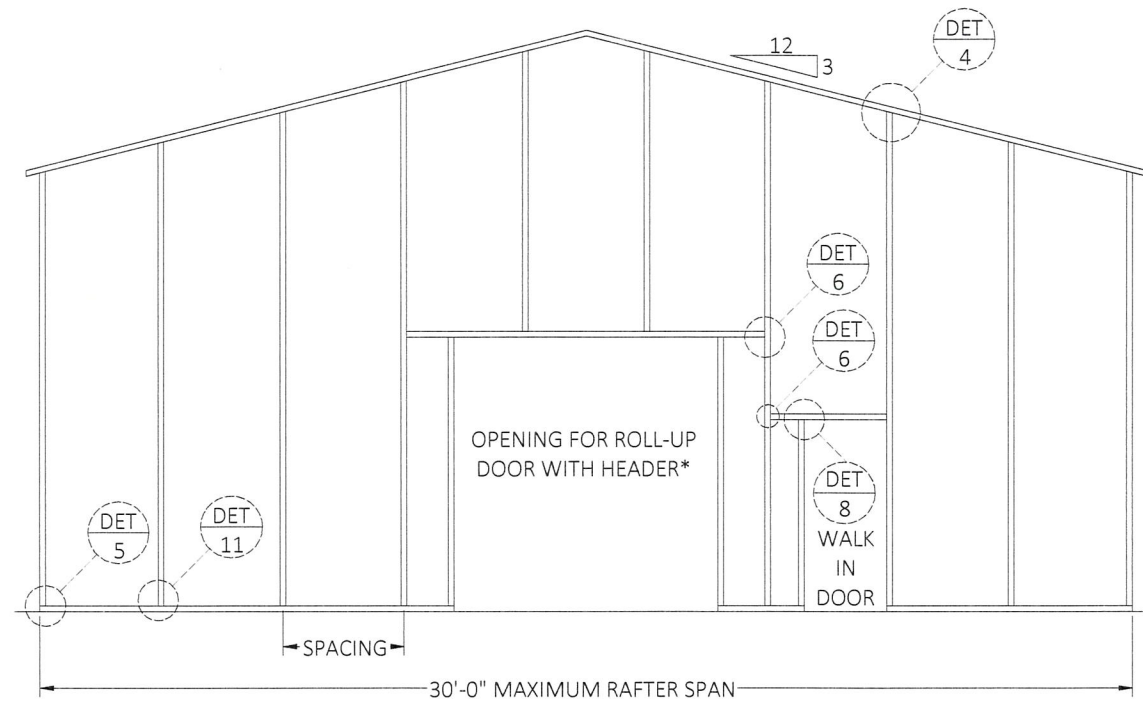
REVISION 2: DATE

DRAWN BY: NRB

SCALE: NTS

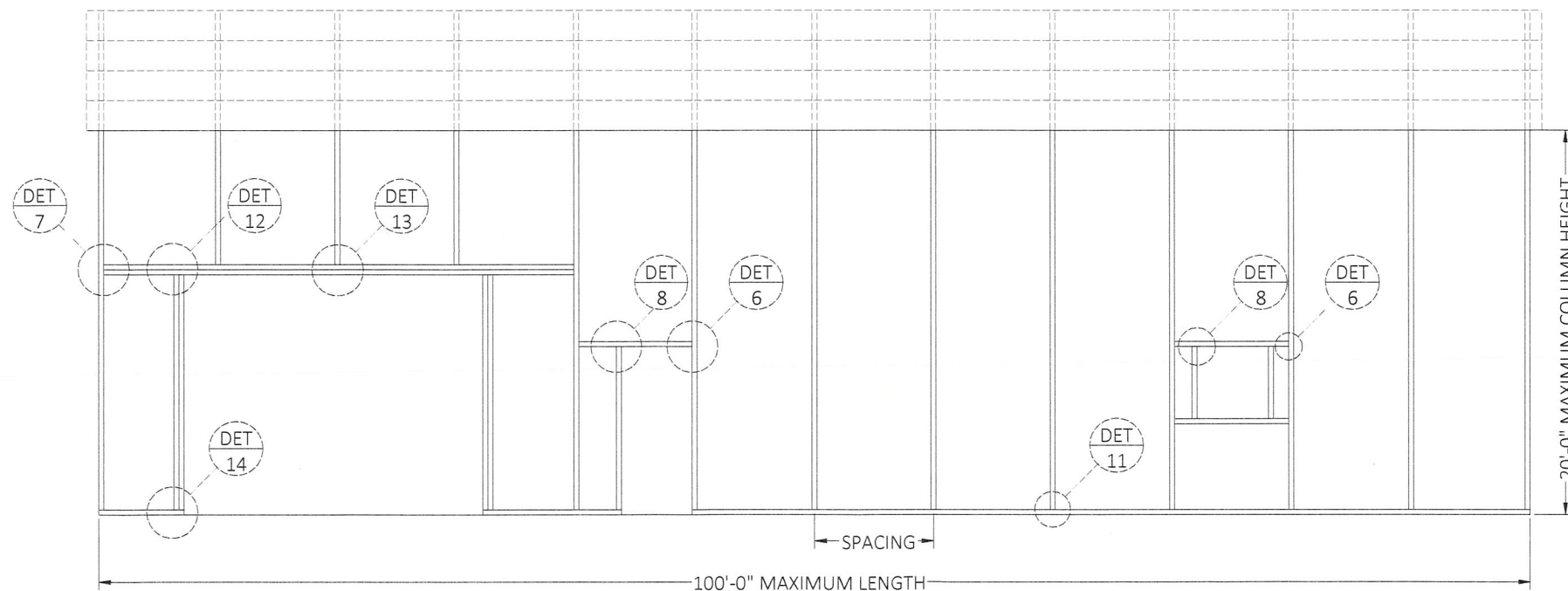
PAGE :  
5 OF 11

\*SEE PAGE 10 FOR  
HEADER REQUIREMENT



SPACING = 5'-0" FOR WIND SPEEDS BETWEEN 110 MPH AND 140 MPH  
SPACING = 4'-0" FOR WIND SPEEDS BETWEEN 140 MPH AND 150 MPH

TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION



SPACING = 5'-0" FOR WIND SPEEDS BETWEEN 110 MPH AND 140 MPH  
SPACING = 4'-0" FOR WIND SPEEDS BETWEEN 140 MPH AND 150 MPH

TYPICAL BOX EAVE RAFTER SIDE WALL FRAMING SECTION

GENERIC PLANS ARE NOT VALID  
WITHOUT A RAISED SEAL & BLUE INK  
SIGNATURE.

(1) SET OF SIGNED AND SEALED GENERIC  
ENGINEERING IS VALID FOR  
(1) STRUCTURE ONLY.

FLORIDA ENGINEERING LLC (AL, FL)  
DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA)  
GUNDERSON ENGINEERING (SC, NC)  
4161 TAMiami TRAIL, UNIT 101  
PORT CHARLOTTE, FLORIDA 33952  
(941) 391-5980  
www.FLeng.com  
www.LightningEngineering.com  
www.GundersonEngineering.com



PROJECT NO. 2323719

CONTRACTOR:  
UNIFIED STEEL  
STRUCTURES INC.  
464 CITYVIEW DR.,  
MT. AIRY, NC 27030

PROJECT ADDRESS:  
12'-30' WIDE ENCLOSED

DESIGN DATE: 03/13/2024

REVISION 1: DATE

REVISION 2: DATE

DRAWN BY: NRB

SCALE: NTS

PAGE :

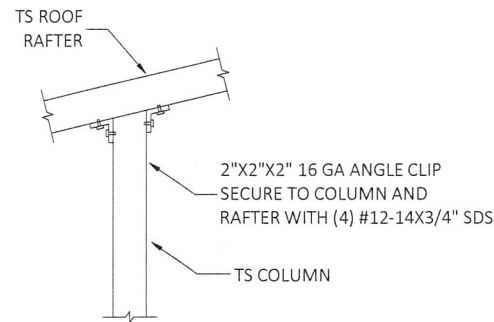
6 OF 11



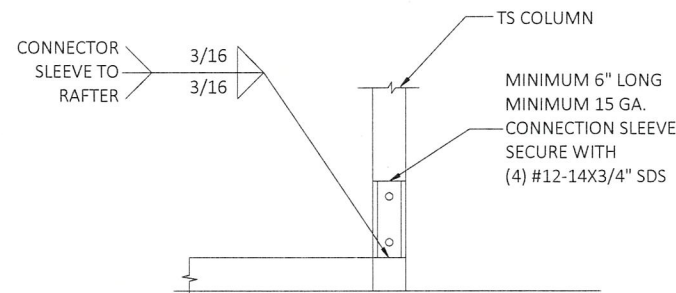
CONNECTION DETAILS

GENERIC PLANS ARE NOT VALID  
WITHOUT A RAISED SEAL & BLUE INK  
SIGNATURE.

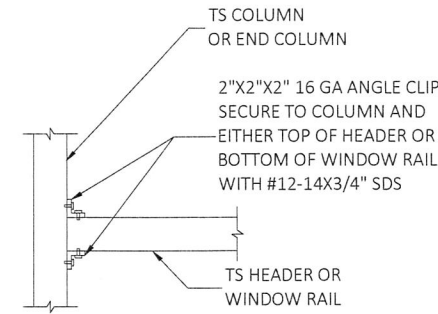
(1) SET OF SIGNED AND SEALED GENERIC  
ENGINEERING IS VALID FOR  
(1) STRUCTURE ONLY.



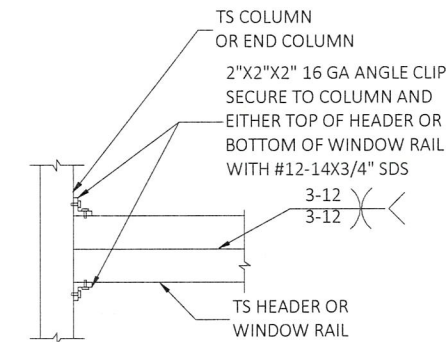
DETAIL 4  
END COLUMN/RAFTER CONNECTION



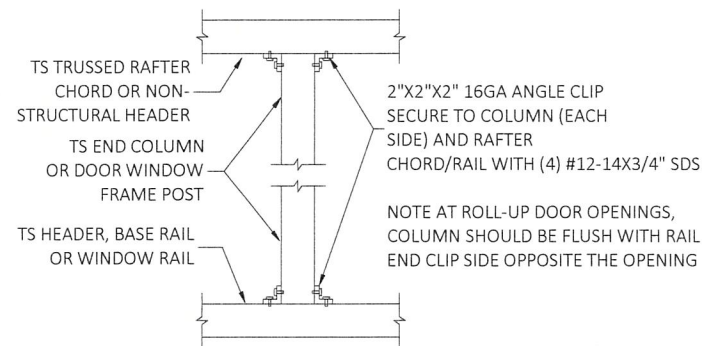
DETAIL 5  
END POST/BASE RAIL CONNECTION



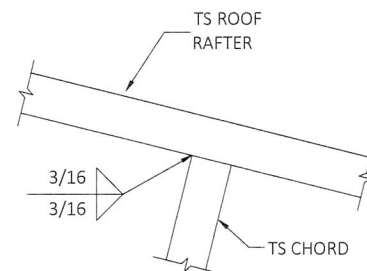
DETAIL 6  
HEADER TO COLUMN CONNECTION



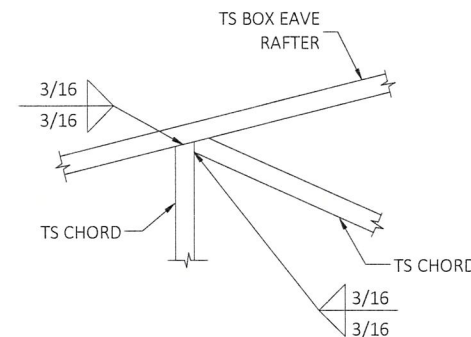
DETAIL 7  
DOUBLE HEADER TO COLUMN CONNECTION



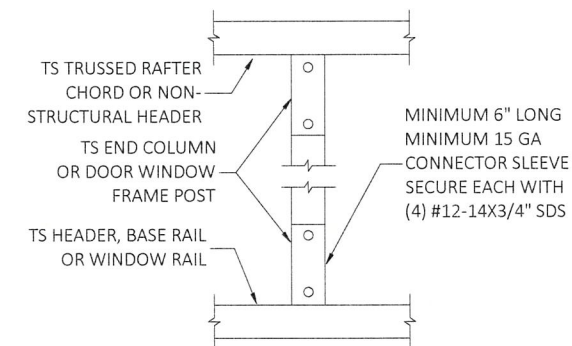
DETAIL 8  
POST TO HEADER, BASE RAIL OR WINDOW RAIL CONNECTION



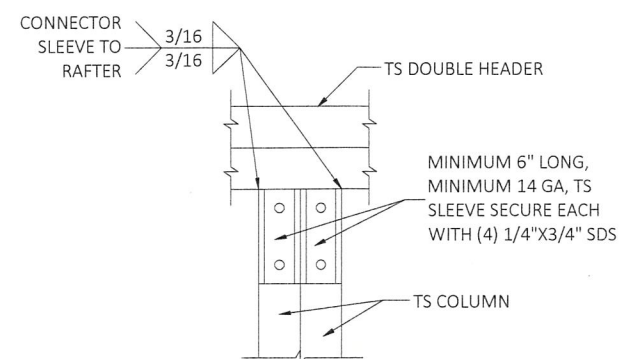
DETAIL 9  
RAFTER TO CHORD CONNECTION



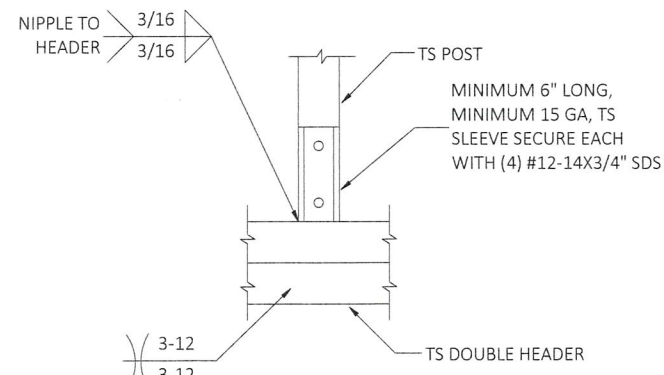
DETAIL 10  
TRUSS POST AND CHORD TO RAFTER CONNECTION



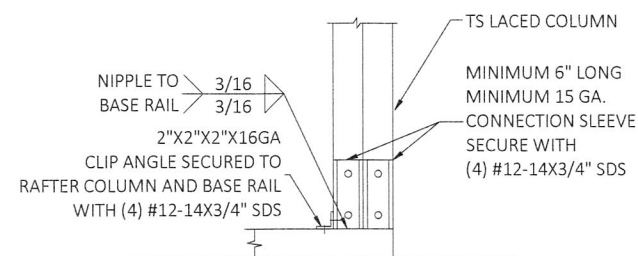
DETAIL 11  
POST TO HEADER, BASE RAIL CONNECTION



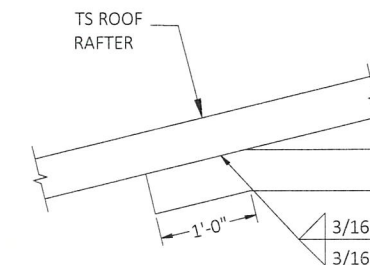
DETAIL 12  
DOUBLE HEADER TO COLUMN CONNECTION



DETAIL 13  
POST/DOUBLE HEADER CONNECTION



DETAIL 14  
POST/BASE RAIL CONNECTION



DETAIL 15  
COLLAR TIE CONNECTION

FLORIDA ENGINEERING LLC (AL, FL)  
DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA)  
GUNDERSON ENGINEERING (SC, NC)  
4161 TAMiami TRAIL, UNIT 101  
PORT CHARLOTTE, FLORIDA 33952  
(941) 391-5980  
www.FLeng.com  
www.LightningEngineer.com  
www.GundersonEngineering.com



PROJECT NO. 2323719

CONTRACTOR:  
UNIFIED STEEL  
STRUCTURES INC.  
464 CITYVIEW DR.,  
MT. AIRY, NC 27030

PROJECT ADDRESS:  
12'-30' WIDE ENCLOSED

DESIGN DATE: 03/13/2024

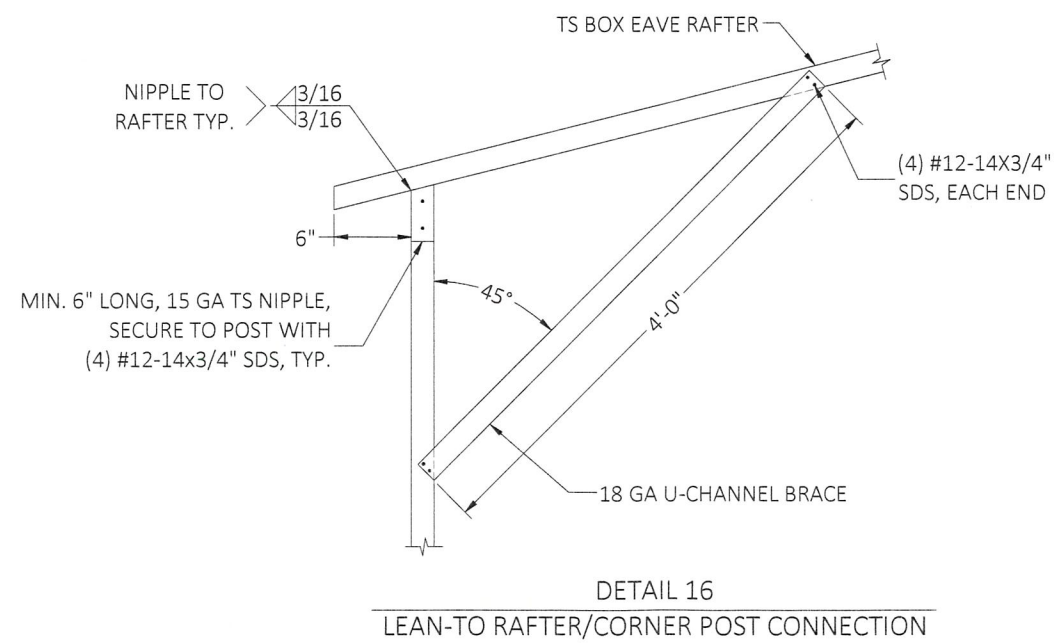
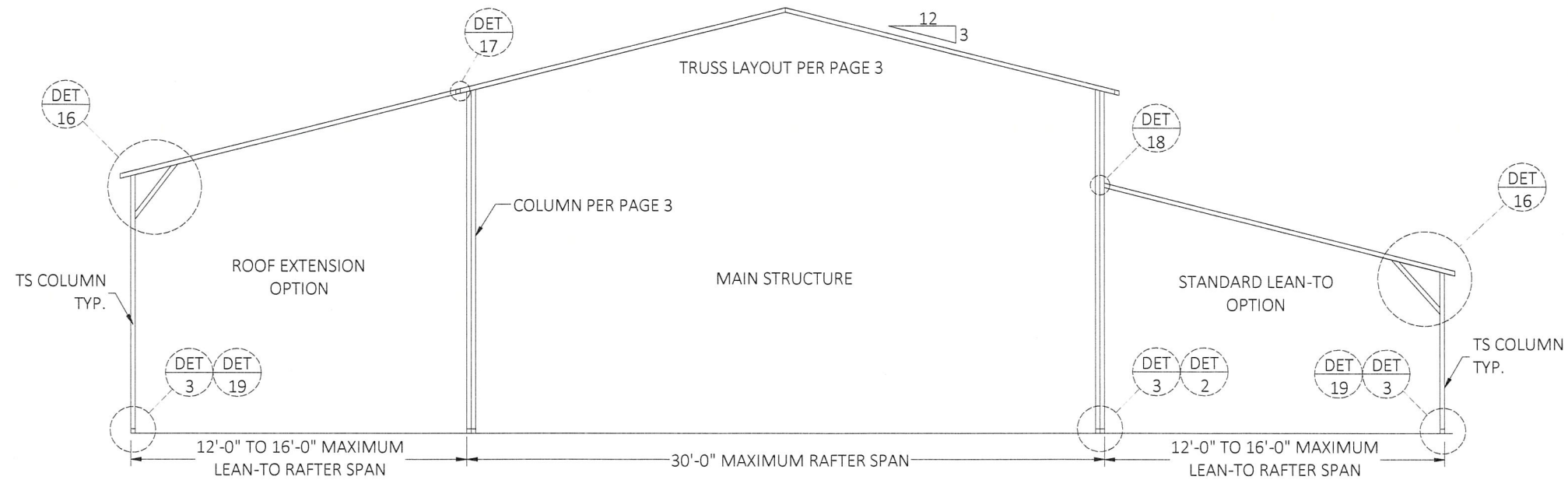
REVISION 1: DATE

REVISION 2: DATE

DRAWN BY: NRB

SCALE: NTS

PAGE :  
7 OF 11



GENERIC PLANS ARE NOT VALID  
WITHOUT A RAISED SEAL & BLUE INK  
SIGNATURE.

(1) SET OF SIGNED AND SEALED GENERIC  
ENGINEERING IS VALID FOR  
(1) STRUCTURE ONLY.

FLORIDA ENGINEERING LLC (AL, FL)  
DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA)  
GUNDERSON ENGINEERING (SC, NC)  
4161 TAMAMI TRAIL, UNIT 101  
PORT CHARLOTTE, FLORIDA 33952  
(941) 391-5980  
www.FLEng.com  
www.LightningEngineering.com  
www.GundersonEngineering.com



PROJECT NO. 2323719

CONTRACTOR:  
UNIFIED STEEL  
STRUCTURES INC.  
464 CITYVIEW DR.,  
MT. AIRY, NC 27030

PROJECT ADDRESS:  
12'-30' WIDE ENCLOSED

DESIGN DATE: 03/13/2024

REVISION 1: DATE

REVISION 2: DATE

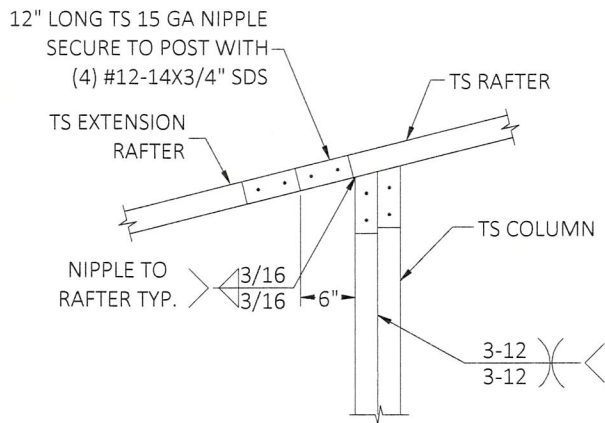
DRAWN BY: NRB

SCALE: NTS

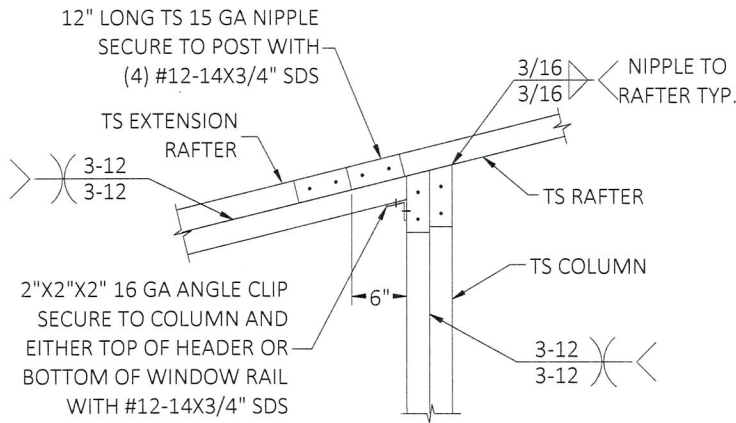
PAGE :  
**8** OF 11



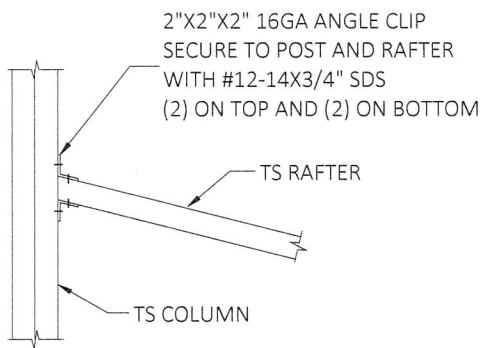
CONNECTION DETAILS



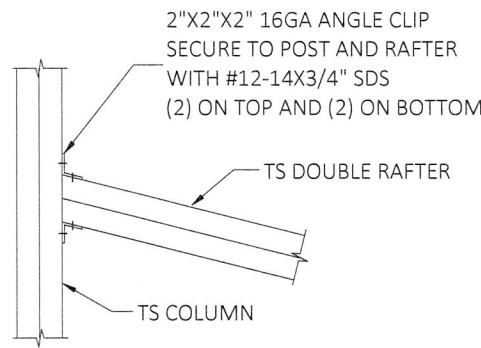
DETAIL 17A  
SIDE EXTENSION RAFTER/COLUMN CONNECTION  
FOR RAFTER SPANS LESS THAN 12'-0"



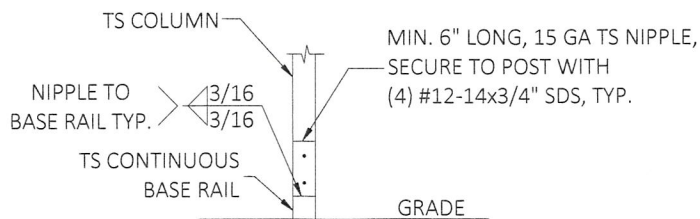
DETAIL 17B  
SIDE EXTENSION RAFTER/COLUMN CONNECTION  
FOR RAFTER SPANS BETWEEN 12'-0" AND 16'-0"



DETAIL 18A  
LEAN TO RAFTER/COLUMN CONNECTION  
FOR RAFTER SPANS LESS THAN 12'-0"



DETAIL 18B  
LEAN TO RAFTER/COLUMN CONNECTION  
FOR RAFTER SPANS BETWEEN 12'-0" AND 16'-0"



DETAIL 19  
LEAN-TO POST CONNECTION

GENERIC PLANS ARE NOT VALID  
WITHOUT A RAISED SEAL & BLUE INK  
SIGNATURE.

(1) SET OF SIGNED AND SEALED GENERIC  
ENGINEERING IS VALID FOR  
(1) STRUCTURE ONLY.

FLORIDA ENGINEERING LLC (AL, FL)  
DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA)  
GUNDERSON ENGINEERING (SC, NC)  
4161 TAMiami TRAIL, UNIT 101  
PORT CHARLOTTE, FLORIDA 33952  
(941) 391-5980  
www.FLENG.com  
www.LightningEngineer.com  
www.GundersonEngineering.com



PROJECT NO. 2323719

CONTRACTOR:  
UNIFIED STEEL  
STRUCTURES INC.  
464 CITYVIEW DR.,  
MT. AIRY, NC 27030

PROJECT ADDRESS:  
12'-30' WIDE ENCLOSED

DESIGN DATE: 03/13/2024

REVISION 1:

DATE

REVISION 2:

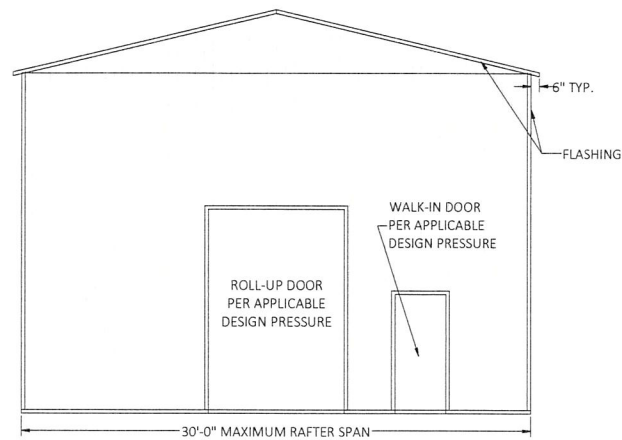
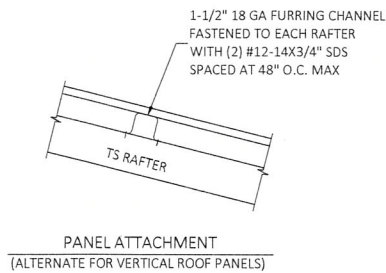
DATE

DRAWN BY: NRB

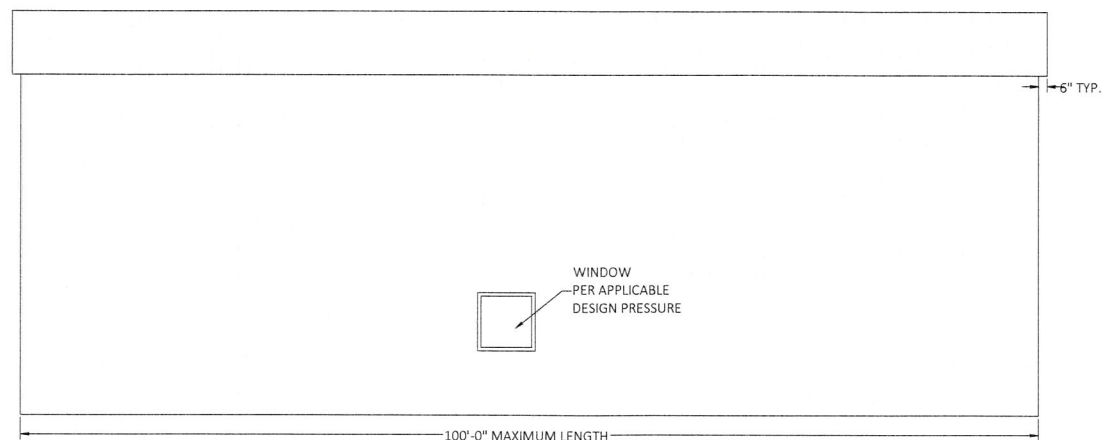
SCALE: NTS

PAGE :

9 OF 11

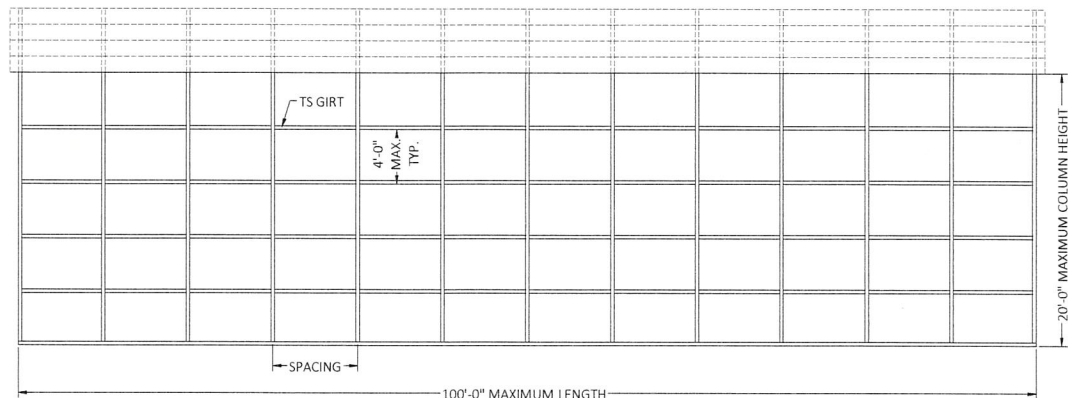


TYPICAL END ELEVATION - VERICAL ROOF/SIDING



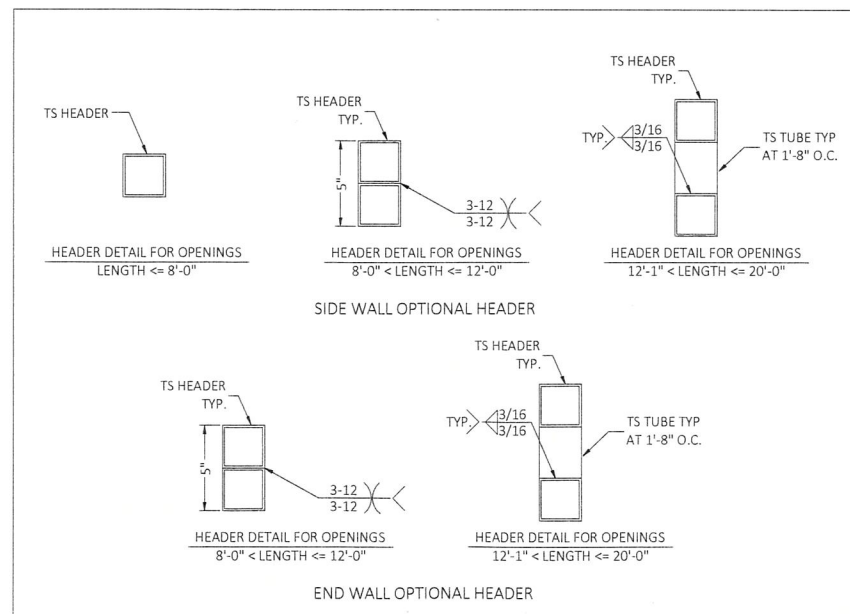
TYPICAL SIDE ELEVATION - VERTICAL ROOF/SIDING

BOX EAVE FRAME RAFTER ENCLOSED BUILDING



1-1/2" 18 GA HAT CHANNELS CAN BE USED IN LIEU OF TS FOR GIRTS.  
SPACING = 5'-0" FOR WIND SPEEDS BETWEEN 110 MPH AND 140 MPH  
SPACING = 4'-0" FOR WIND SPEEDS BETWEEN 140 MPH AND 170 MPH

TYPICAL RAFTER/POST SIDE FRAME SECTION



GENERIC PLANS ARE NOT VALID  
WITHOUT A RAISED SEAL & BLUE INK  
SIGNATURE.

(1) SET OF SIGNED AND SEALED GENERIC  
ENGINEERING IS VALID FOR  
(1) STRUCTURE ONLY.

FLORIDA ENGINEERING LLC (AL, FL)  
DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA)  
GUNDERSON ENGINEERING (SC, NC)  
4161 TAMiami TRAIL, UNIT 101  
PORT CHARLOTTE, FLORIDA 33952  
(941) 391-5980  
www.FLeng.com  
www.LightningEngineer.com  
www.GundersonEngineering.com



PROJECT NO. 2323719

CONTRACTOR:  
UNIFIED STEEL  
STRUCTURES INC.  
464 CITYVIEW DR.,  
MT. AIRY, NC 27030

PROJECT ADDRESS:  
12'-30' WIDE ENCLOSED

DESIGN DATE: 03/13/2024

REVISION 1: DATE

REVISION 2: DATE

DRAWN BY: NRB

SCALE: NTS

PAGE :

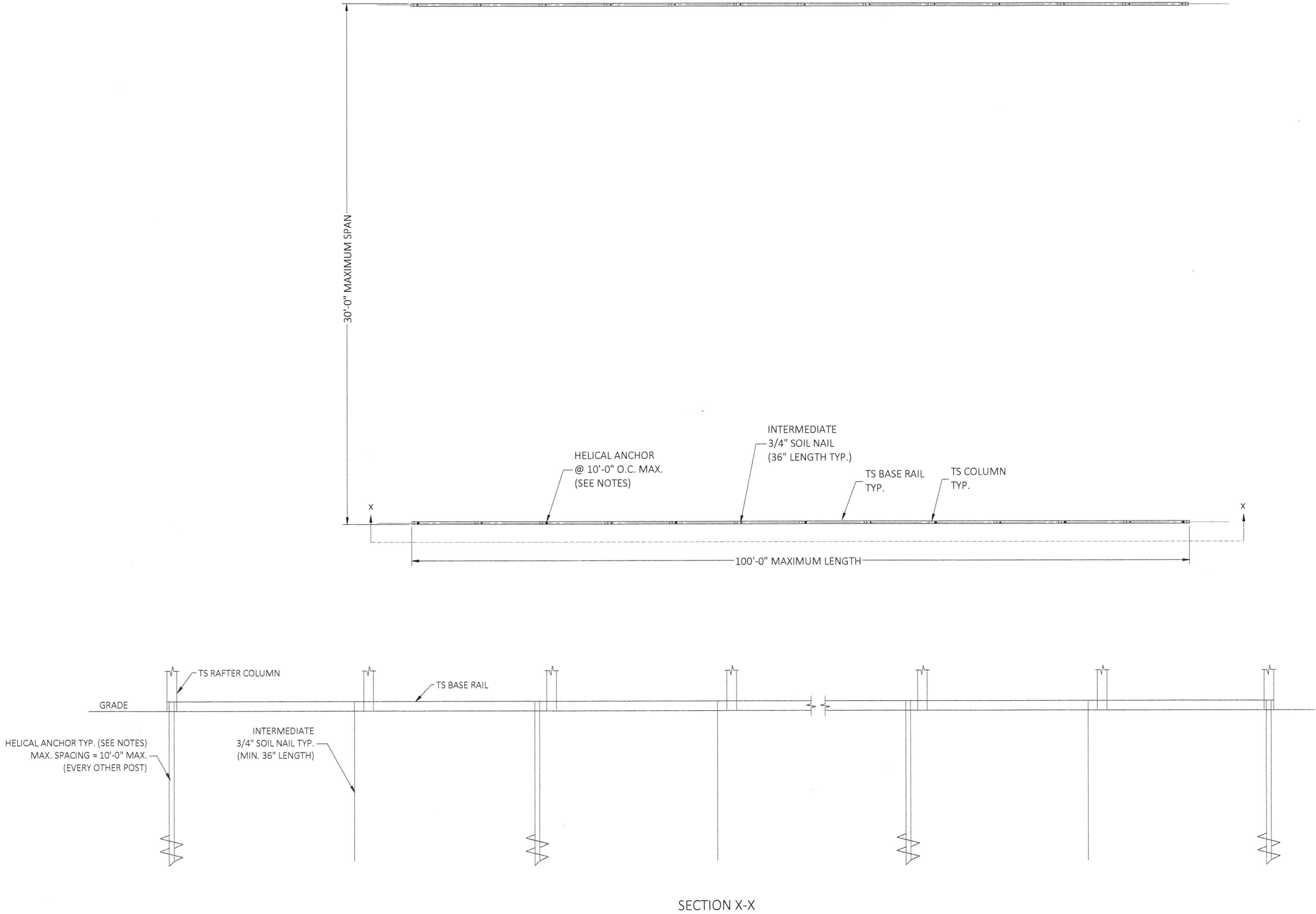
10 OF 11



HELIX ANCHOR NOTES  
1. FOR VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND COBBLES, CALICHE, PRELOADED SILTS AND CLAYS, CORALS, MEDIUM DENSE COARSE SANDS, SANDY GRAVELS, VERY STIFF SILTS AND CLAYS, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT EVERY 10'.  
2. FOR MEDIUM TO VERY LOOSE DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS, ALLUVIAL FILL, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT EVERY 5' OR EVERY POST (LEG).  
3. THE UPLIFT/BEARING CAPACITY OF EACH ANCHOR MUST BE EQUAL TO OR GREATER THAN 8.5 KIPS.

GENERIC PLANS ARE NOT VALID  
WITHOUT A RAISED SEAL & BLUE INK  
SIGNATURE.  
  
(1) SET OF SIGNED AND SEALED GENERIC  
ENGINEERING IS VALID FOR  
(1) STRUCTURE ONLY.

OPTIONAL HELICAL ANCHORING DETAIL



FLORIDA ENGINEERING LLC (AL, FL)  
DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA)  
GUNDERSON ENGINEERING (SC, NC)  
4161 TAMiami TRAIL, UNIT 101  
PORT CHARLOTTE, FLORIDA 33952  
(941) 391-5980  
www.FLeng.com  
www.LightningEngineer.com  
www.GundersonEngineering.com



PROJECT NO. 2323719

CONTRACTOR:  
UNIFIED STEEL  
STRUCTURES INC.  
464 CITYVIEW DR.,  
MT. AIRY, NC 27030

PROJECT ADDRESS:  
12'-30' WIDE ENCLOSED

DESIGN DATE: 03/13/2024

REVISION 1: DATE

REVISION 2: DATE

DRAWN BY: NRB

SCALE: NTS

PAGE :

11 OF 11