ENCLOSED METAL BUILDING DESIGN
MAXIMUM 60'-0" WIDE X 20'-0" EAVE HEIGHT
BOX EAVE FRAME

APPLICABLE CODES AND STANDARDS

1. 2020 FLORIDA BUILDING CODE (7TH EDITION)
2. 2018 INTERNATIONAL BUILDING CODE
3. ASCE 7-16: MINIMUM DESIGN LOADS ON BUILDINGS AND OTHER STRUCTURES
4. AISC STEEL CONSTRUCTION MANUAL (15TH EDITION)
5. ACI 318-14: BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
6. TMS 402-16: BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES
7. AWS D1.1: STRUCTURAL WELDING

DESIGN LOADS

1. DEAD LOAD = 15 PSF
2. LIVE LOAD = 20 PSF
3. WIND LOAD (SEE TABLE 1)

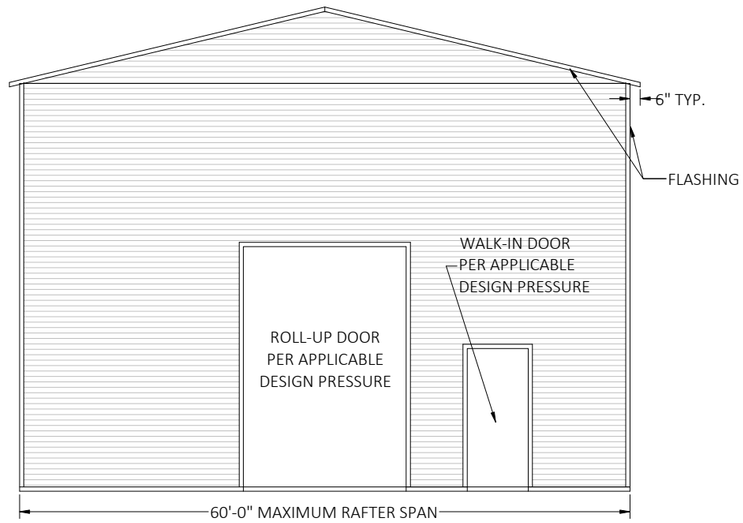
A. RISK CATEGORY = II
B. WIND EXPOSURE CATEGORY = C
C. ULTIMATE WIND SPEED = 120 MPH
NOMINAL WIND SPEED = 93 MPH

INSTALLATION NOTES AND SPECIFICATIONS

1. END WALL COLUMNS (POST) AND SIDE WALL COLUMNS ARE EQUIVALENT IN SIZE AND SPACING U.N.O.
2. 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.
3. AVERAGE FASTENER SPACING ON-CENTERS ALONG RAFTERS OR PURLINS, AND POSTS, INTERIOR = 9” AND END = 6” MAX.
4. 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 19° (4:12 PITCH) OR LESS. SPACING REQUIREMENTS FOR OTHER ROOF HEIGHTS AND/OR SLOPES MAY VARY.
5. ANCHORS SHALL BE INSTALLED THROUGH THE BASE RAIL WITHIN 6” OF EACH RAFTER COLUMN ALONG SIDES AND ENDS.
6. 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.
7. RAFTER SPACING IS 5'-0" FOR WIND SPEEDS BETWEEN 110 MPH AND 140 MPH AND 4'-0" FOR WIND SPEEDS BETWEEN 140 MPH AND 180 MPH.

DRAWING INDEX

PAGE NO.	DESCRIPTION
1	NOTES AND SPECIFICATIONS
2	BOX EAVE FRAME RAFTER ENCLOSED BUILDING
3	CONNECTION DETAILS (1-2)
4	BASE RAIL AND FOUNDATION ANCHORAGE
5	BOX EAVE RAFTER END WALL, SIDE WALL AND OPENING FRAMING
6	CONNECTION DETAILS (4-10)
7	CONNECTION DETAILS (11-14)
8	BOX EAVE RAFTER LEAN-TO OPTIONS
9	CONNECTION DETAILS (16-18)
10	BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION
11	OPTIONAL CONCRETE STRIP FOOTING
12	OPTIONAL HELICAL ANCHORING DETAIL



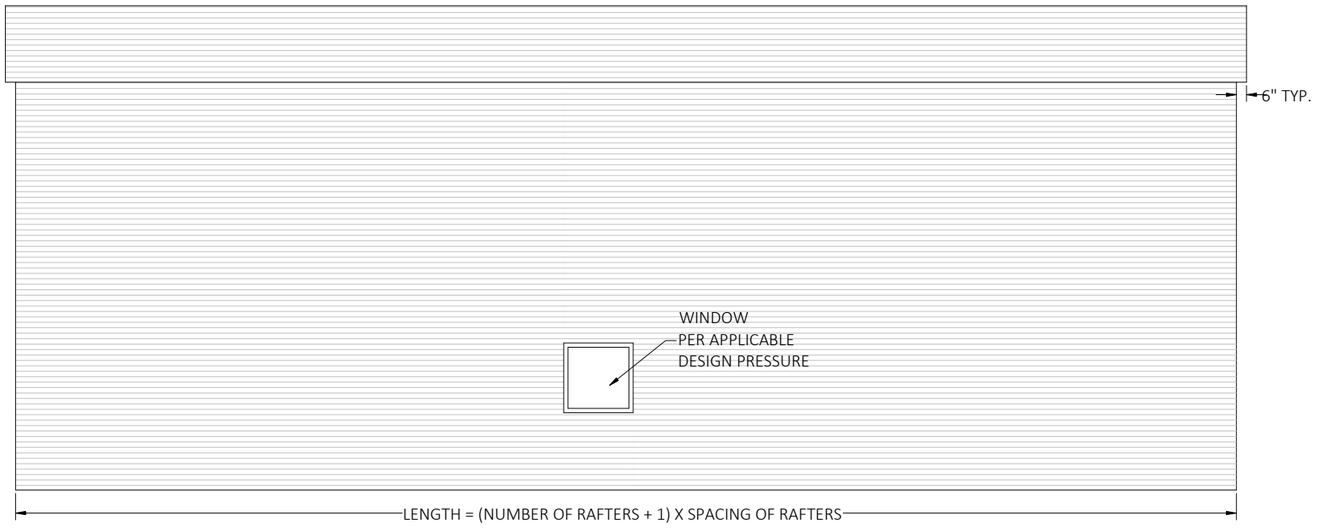
TYPICAL END ELEVATION - BOX EAVE

TABLE 1

MEMBER	PRODUCT APPROVAL NUMBER	WIND DESIGN PRESSURES
ROOF PANELS	FL39466	+12.1 PSF / -40.2 PSF
WALL PANELS	FL39594	+16.8 PSF / -21.3 PSF
GARAGE DOOR	CTP	+16.8 PSF / -21.3 PSF
WALK-IN DOOR	CTP	+16.8 PSF / -21.3 PSF

DESIGN WIND PRESSURES	120 MPH
ZONE 1	+12.1 PSF / -21.2 PSF
ZONE 2	+12.1 PSF / -34.5 PSF
ZONE 3	+12.1 PSF / -40.2 PSF
ZONE 4	+16.8 PSF / -18.4 PSF
ZONE 5	+16.8 PSF / -21.3 PSF

CTP = CONTRACTOR TO PROVIDE 2020 FBC APPROVED PRODUCTS THAT MEET OR EXCEED DESIGN PRESSURES AS TABLULATED



TYPICAL SIDE ELEVATION - HORIZONTAL ROOF

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(941) 391-5980
www.flengineeringllc.com
CA CERT. #30782

PROJECT NO. 2217229

CONTRACTOR: ELITE METAL MANUFACTURING

PROJECT ADDRESS: 32'-60' PLANS 10121 88TH TRACE, LIVE OAK FL 32060

DESIGN DATE:	06/24/2022
REVISION 1:	DATE
REVISION 2:	DATE
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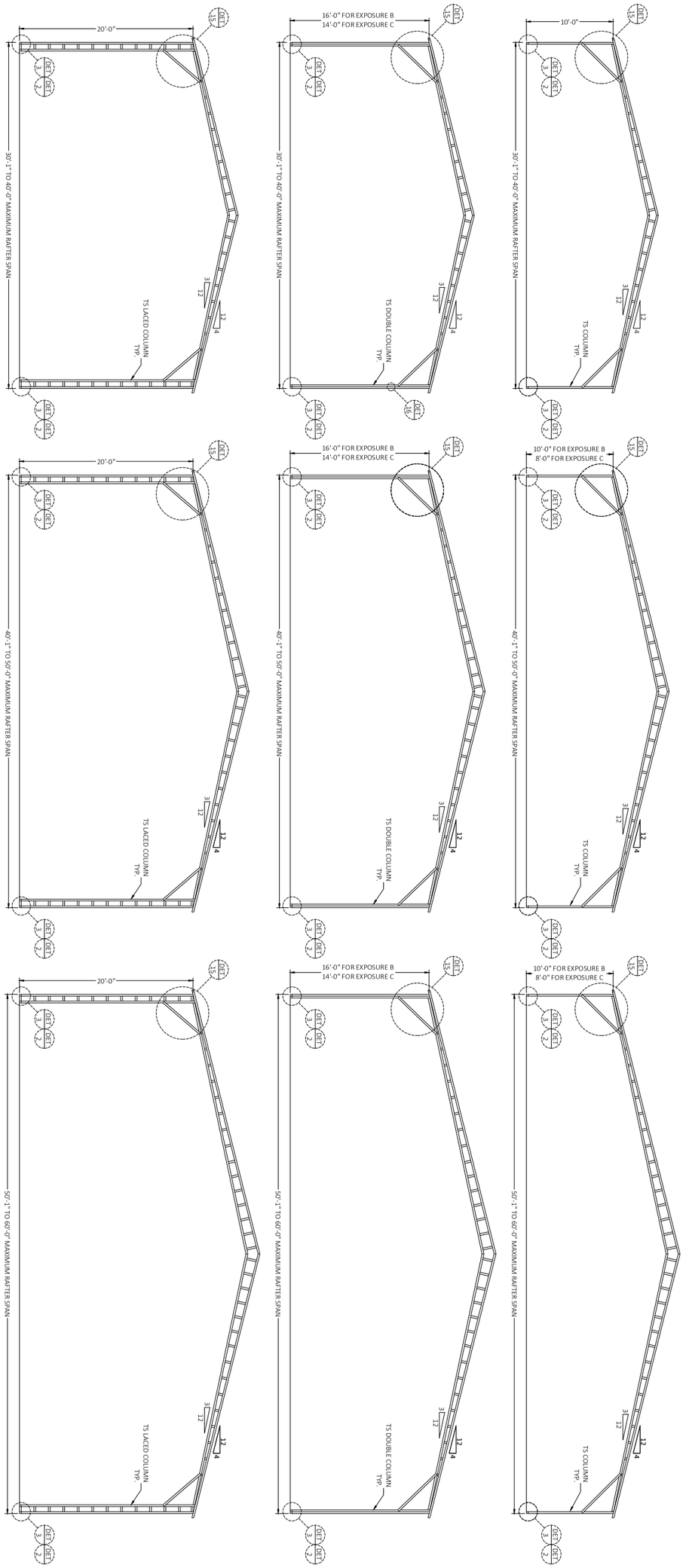
SCALE:	NTS



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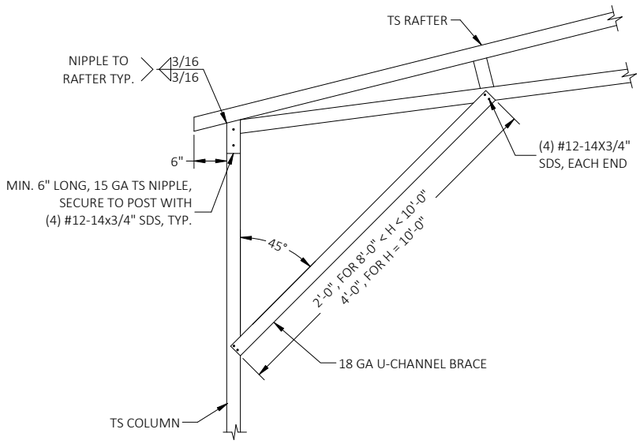
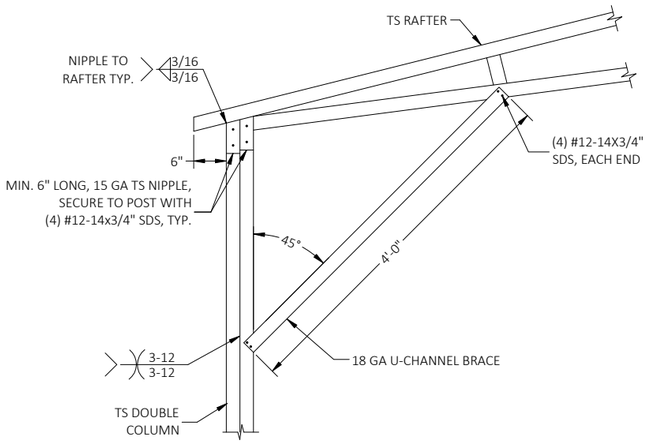
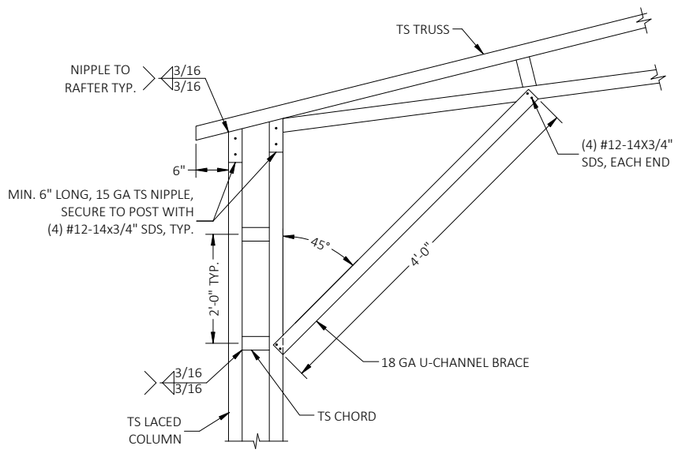


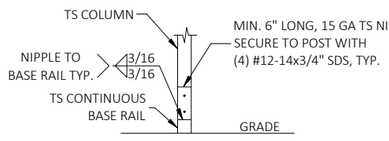
DETAIL 1A
BOX EAVE RAFTER/CORNER POST CONNECTION
30'(MAX.)W X 12'H



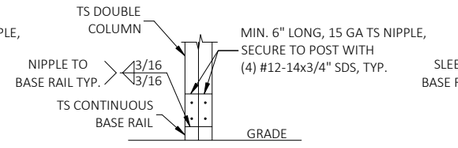
DETAIL 1C
BOX EAVE RAFTER/CORNER POST CONNECTION
30'(MAX.)W X 16'H



DETAIL 1E
BOX EAVE RAFTER/CORNER POST CONNECTION
30'(MAX.)W X 20'H



DETAIL 2A
POST/BASE RAIL CONNECTION



DETAIL 2B
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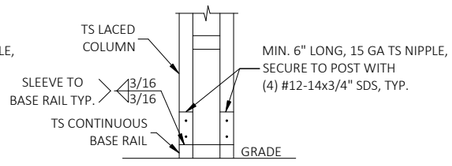

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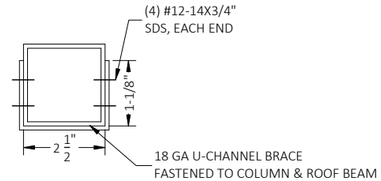

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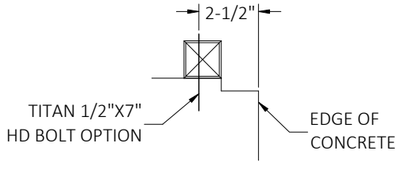

SECTION
(OPTION-2)

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GENERAL NOTES

CONCRETE MONOLITHIC SLAB DESIGN IS BASED ON A MINIMUM SOIL BEARING CAPACITY OF 1500 PSF.

CONCRETE

MINIMUM 28-DAY SPECIFIED COMPRESSIVE STRENGTH = 3000 PSI

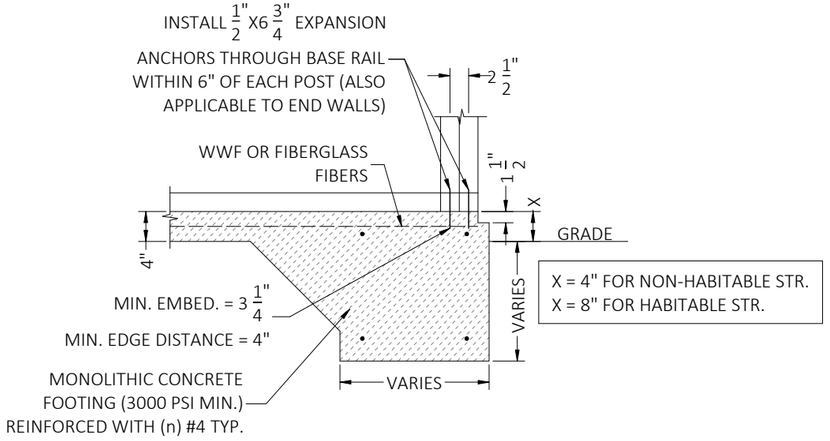
REINFORCING STEEL

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

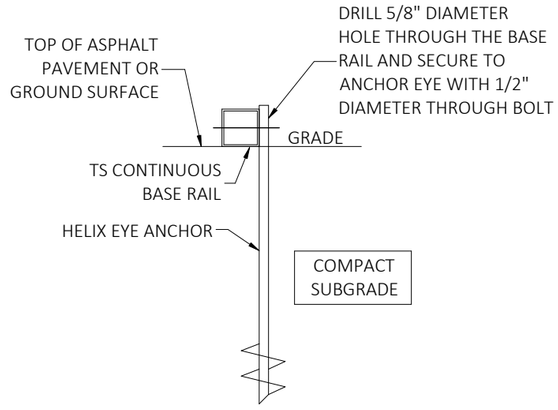
1. FOR VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND COBBLES, CALICHE, PRELOADED SILTS AND CLAYS, CORALS, MEDIUM DENSE COARSE SANDS, SANDY GRAVELS, VERY STIFF SILTS AND CLAYS, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT.
2. FOR LOOSE TO MEDIUM DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS, ALLUVIAL FILL, USE MINIMUM (2) 6" HELICES WITH MINIMUM 50" EMBEDMENT.
3. FOR VERY LOOSE TO MEDIUM DENSE SANDS, FIRM TO STIFFER CLAYS AND SILTS, ALLUVIAL FILL, USE MINIMUM (2) 8" HELICES WITH MINIMUM 60" EMBEDMENT.

MONOLITHIC FOOTER SIZE	
110 C - 140 C	8"X8" - (2) #4
ABOVE 140 C	16"X16" - (4) #4



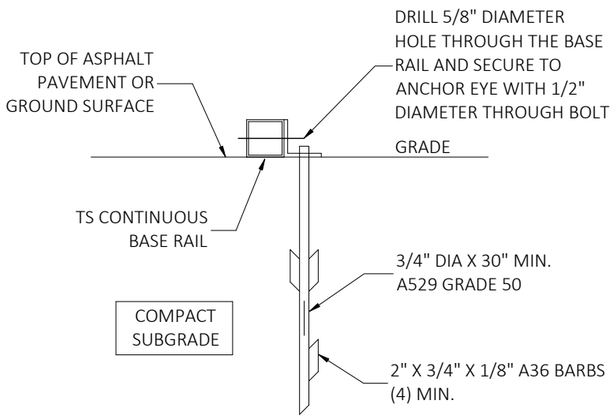
DETAIL 3A

CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE



DETAIL 3B

GROUND BASE HELIX ANCHORAGE

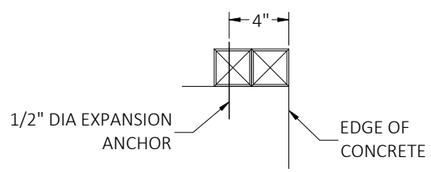


DETAIL 3C

ASPHALT BASE ANCHORAGE

(HP 9 BARBED DRIVE ANCHOR)

BASE RAIL ANCHORAGE OPTIONS



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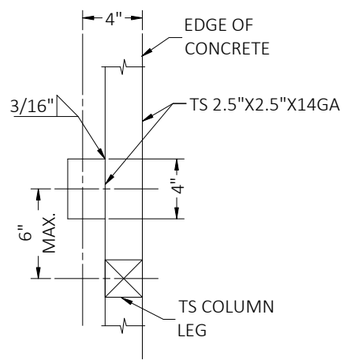
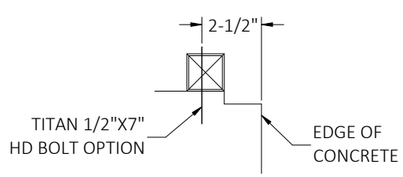


TOP VIEW

(OPTION-1)



SECTION

(OPTION-2)

TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

BASE RAIL ANCHORAGE OPTION

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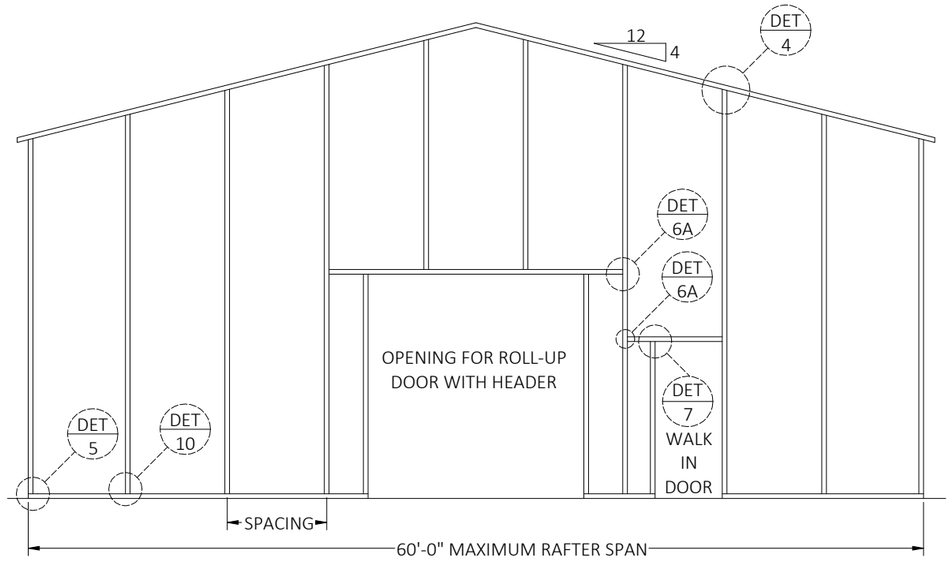
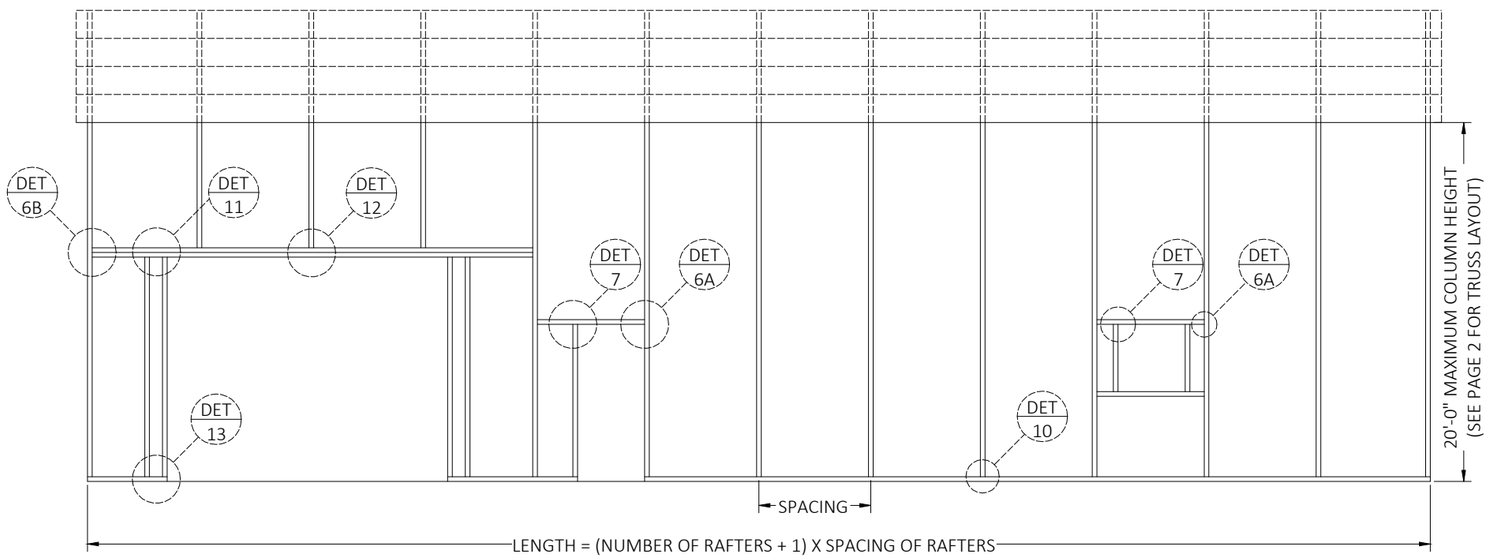


SPACING = 5'-0" FOR WIND SPEEDS BETWEEN 110 MPH AND 140 MPH
SPACING = 4'-0" FOR WIND SPEEDS BETWEEN 140 MPH AND 180 MPH

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 180 MPH

TYPICAL BOX EAVE RAFTER SIDE WALL FRAMING SECTION

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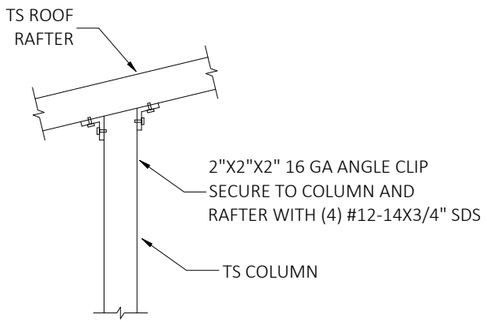
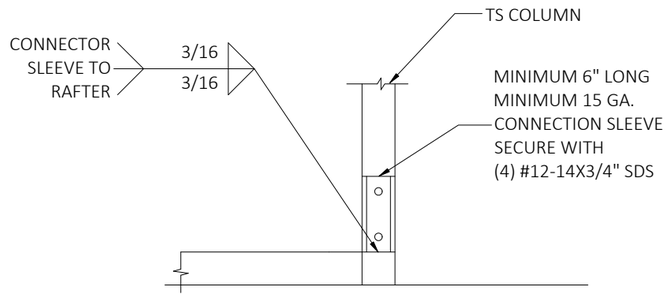
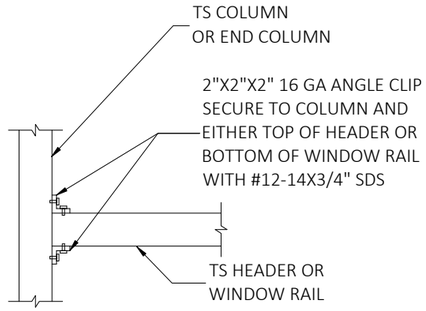
CONNECTION DETAILS



DETAIL 4
END COLUMN/RAFTER CONNECTION



DETAIL 5
END POST/BASE RAIL CONNECTION

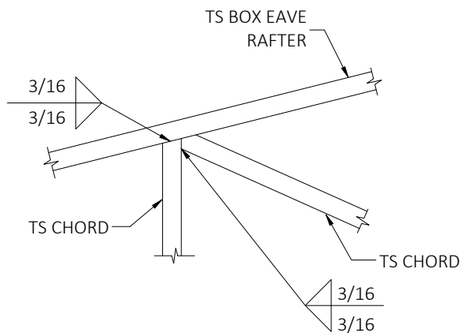


DETAIL 6A
HEADER TO COLUMN CONNECTION

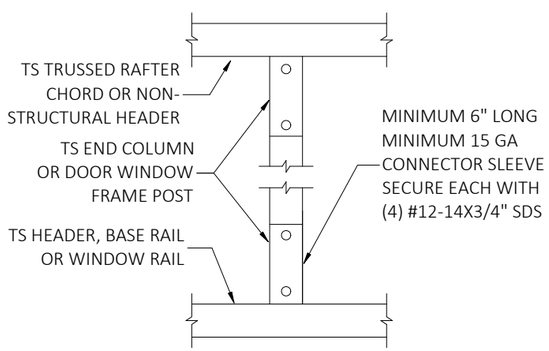
DETAIL 6B
DOUBLE HEADER TO COLUMN CONNECTION

DETAIL 7
POST TO HEADER, BASE RAIL OR WINDOW RAIL CONNECTION

DETAIL 8
RAFTER TO CHORD CONNECTION



DETAIL 9
TRUSS POST AND CHORD TO RAFTER CONNECTION



DETAIL 10
POST TO HEADER, BASE RAIL CONNECTION

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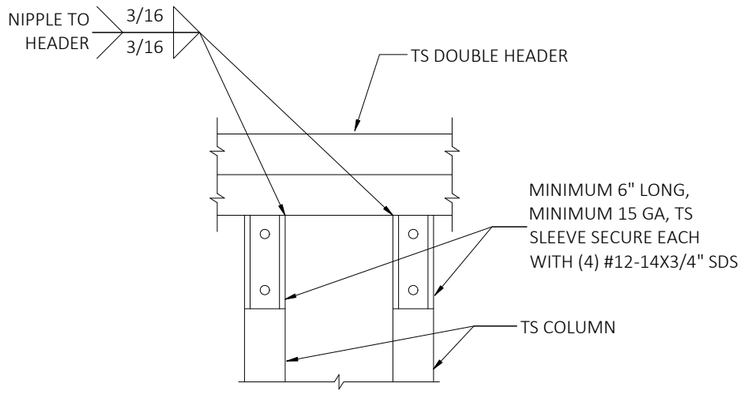
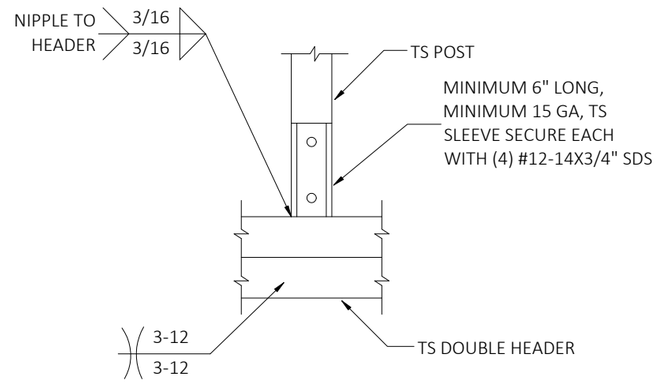
PAGE : 6

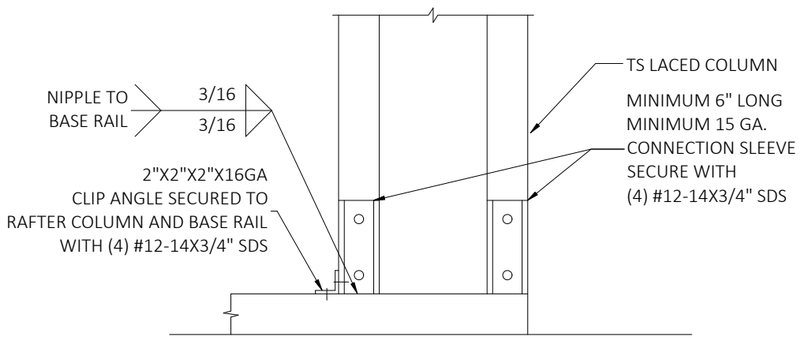
CONNECTION DETAILS



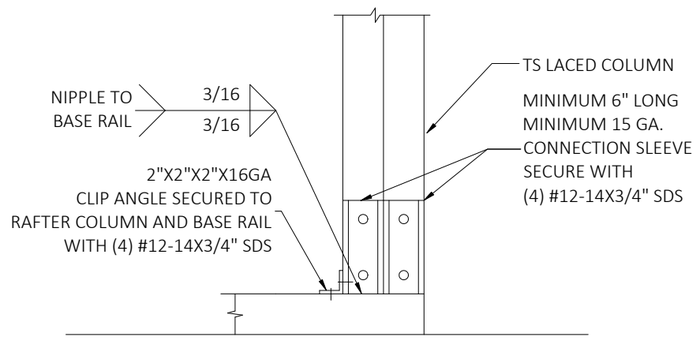
DETAIL 11
DOUBLE HEADER TO POST CONNECTION



DETAIL 12
POST/DOUBLE HEADER CONNECTION



DETAIL 13A
POST/BASE RAIL CONNECTION



DETAIL 13B
POST/BASE RAIL CONNECTION

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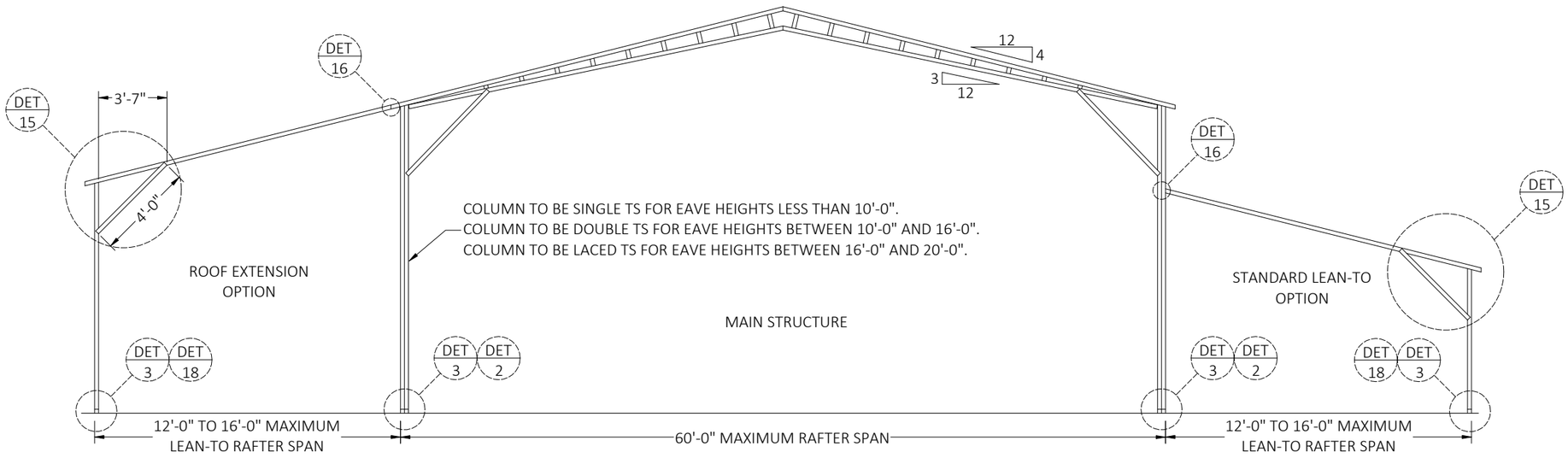
FLORIDA ENGINEERING LLC
4161 TAMIAMI TRAIL, UNIT 101
PORT CHARLOTTE, FLORIDA 33952
(941) 391-5980
www.flengineeringllc.com
CA CERT. #30782

PROJECT NO. 2217229

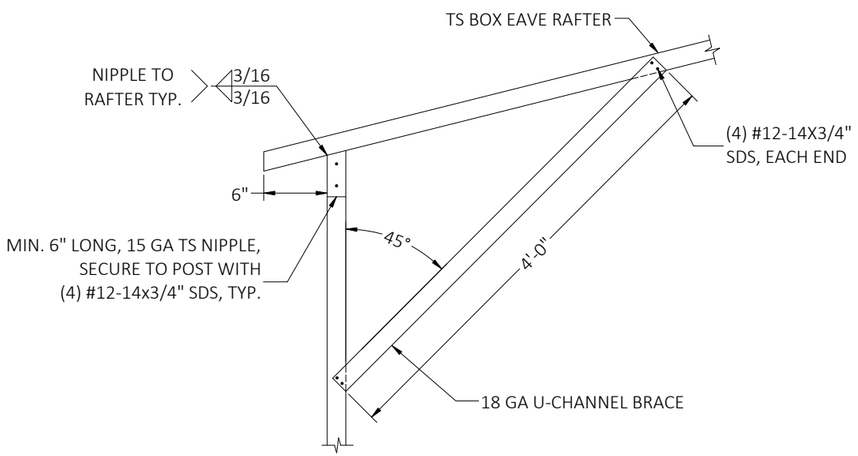
CONTRACTOR:
ELITE METAL MANUFACTURING

PROJECT ADDRESS:
32'-60' PLANS
10121 88TH TRACE,
LIVE OAK FL 32060

DESIGN DATE:	06/24/2022
REVISION 1:	DATE
REVISION 2:	DATE
DRAWN BY:	SK
SCALE:	NTS



TYPICAL BOX EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION



DETAIL 15

LEAN-TO RAFTER/CORNER POST CONNECTION

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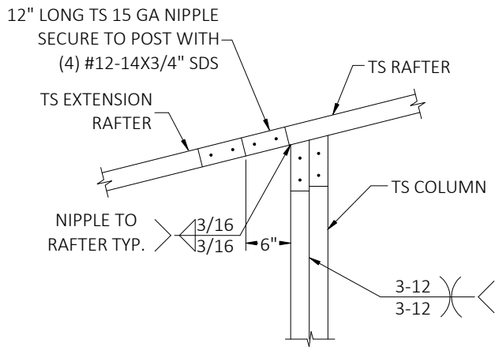
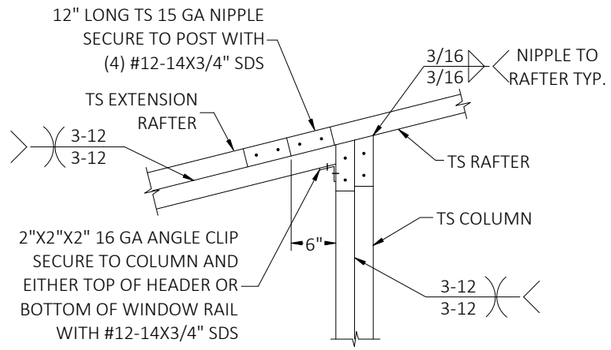
CONNECTION DETAILS



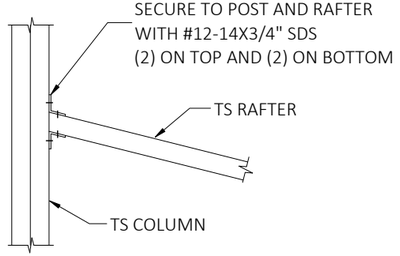
DETAIL 16A

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



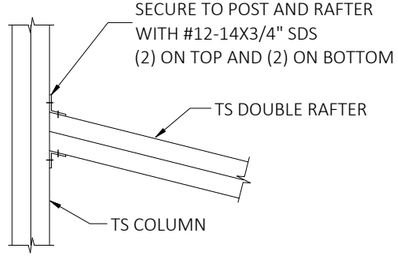
DETAIL 16B

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



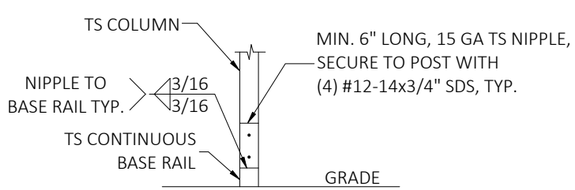
DETAIL 17A

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



DETAIL 17B

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



DETAIL 18

LEAN-TO POST CONNECTION

COLUMN TO BE SINGLE TS FOR EAVE HEIGHTS LESS THAN 10'-0".
COLUMN TO BE DOUBLE TS FOR EAVE HEIGHTS BETWEEN 10'-0" AND 16'-0".
COLUMN TO BE LACED TS FOR EAVE HEIGHTS BETWEEN 16'-0" AND 20'-0".

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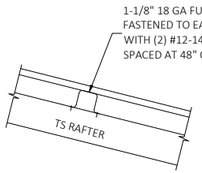
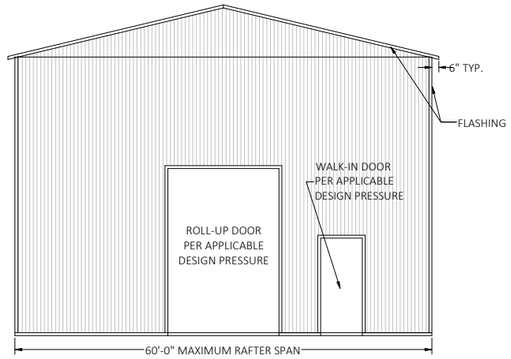
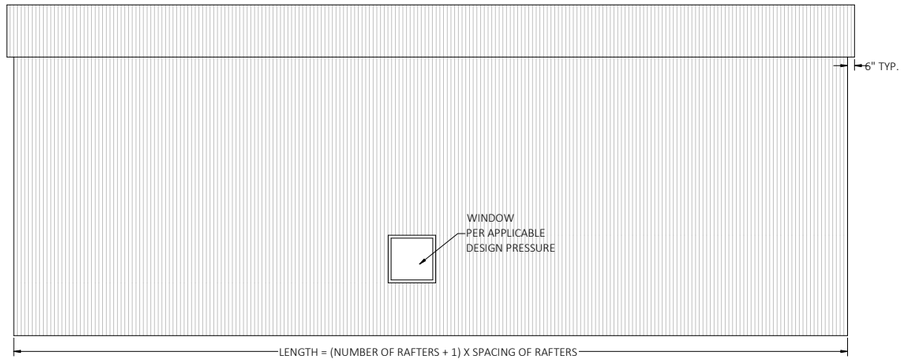


PANEL ATTACHMENT
(ALTERNATE FOR VERTICAL ROOF PANELS)

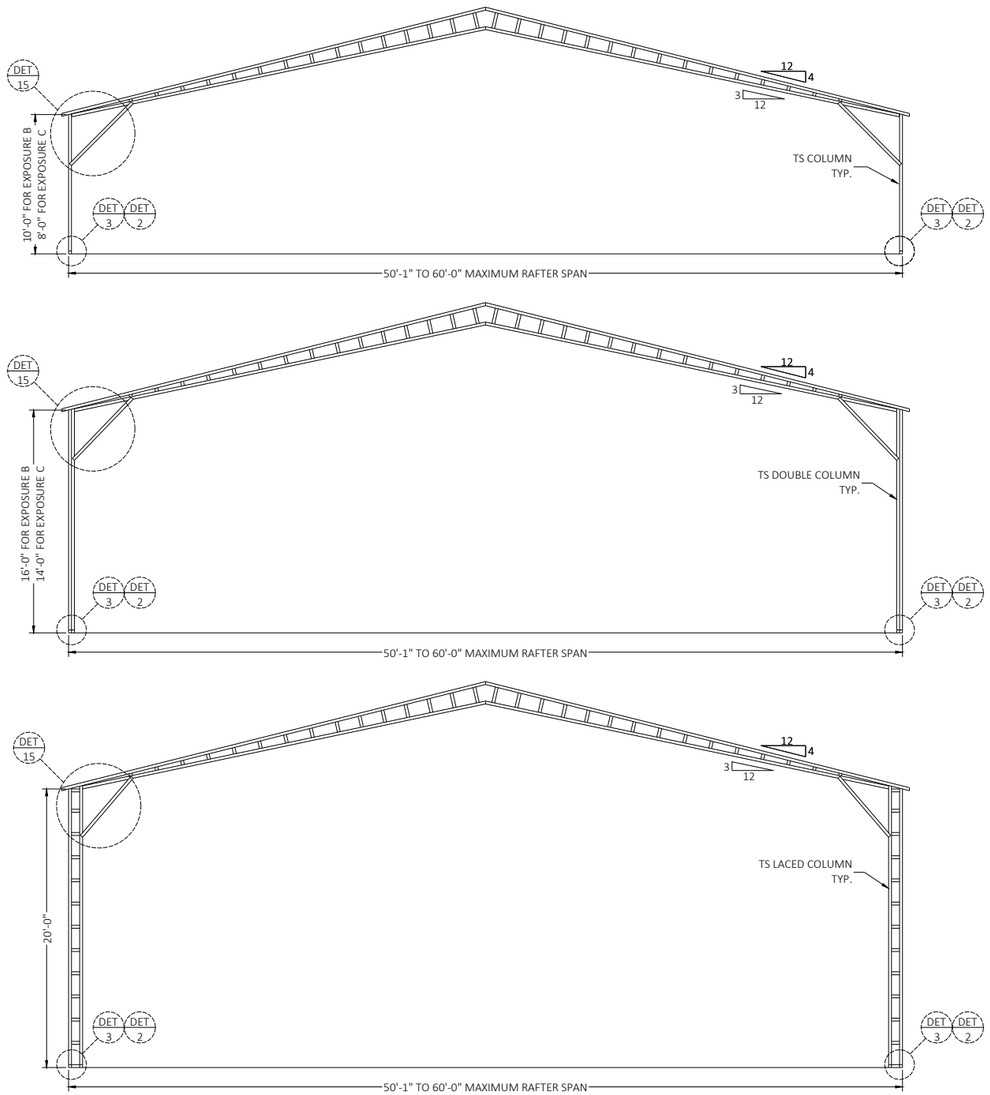


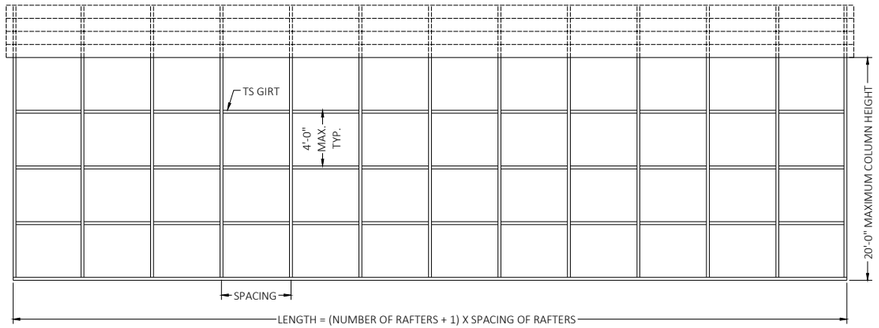
TYPICAL END ELEVATION - VERICAL ROOF/SIDING



TYPICAL SIDE ELEVATION - VERTICAL ROOF/SIDING

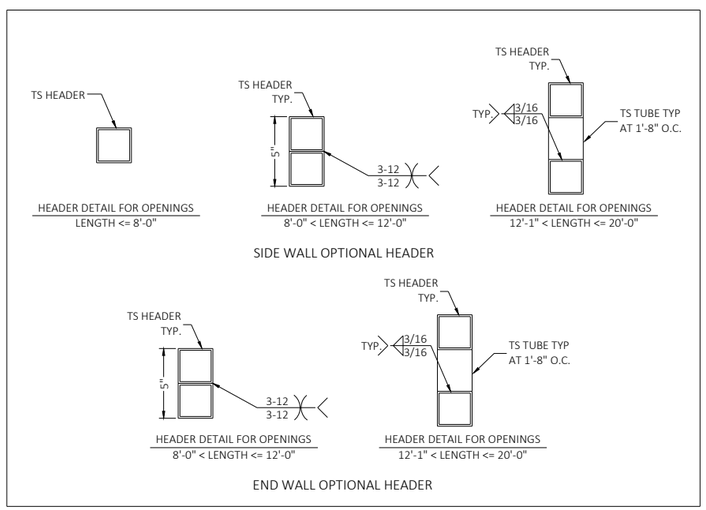
BOX EAVE FRAME RAFTER ENCLOSED BUILDING





SPACING = 5'-0" FOR WIND SPEEDS BETWEEN 110 MPH AND 140 MPH
SPACING = 4'-0" FOR WIND SPEEDS BETWEEN 140 MPH AND 170 MPH
1-1/8" 18 GA HAT CHANNELS CAN BE USED IN LIEU OF TS FOR GIRTS.

TYPICAL RAFTER/POST SIDE FRAME SECTION



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PAGE : 10

OPTIONAL CONCRETE STRIP FOOTING

GENERAL NOTES

CONCRETE MONOLITHIC SLAB DESIGN IS BASED ON A MINIMUM SOIL BEARING CAPACITY OF 1500 PSF.

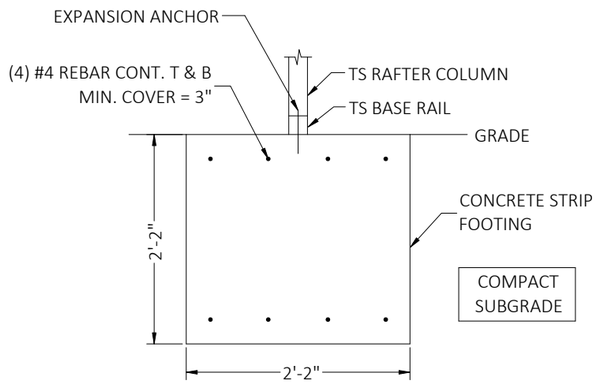
CONCRETE

MINIMUM 28-DAY SPECIFIED COMPRESSIVE STRENGTH = 3000 PSI

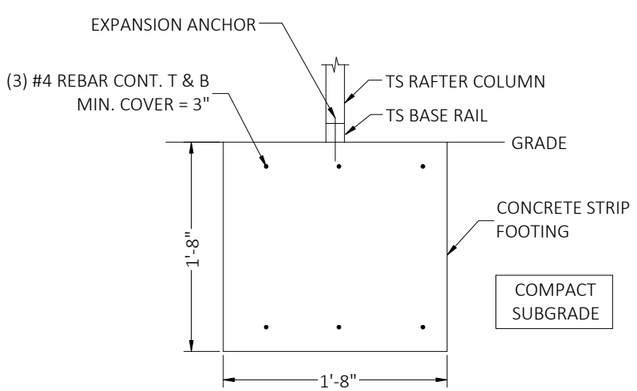
REINFORCING STEEL

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.

STRIP FOOTER SIZE	
110 C - 140 C	20"X20"
ABOVE 140 C	26"X26"



SECTION X-X



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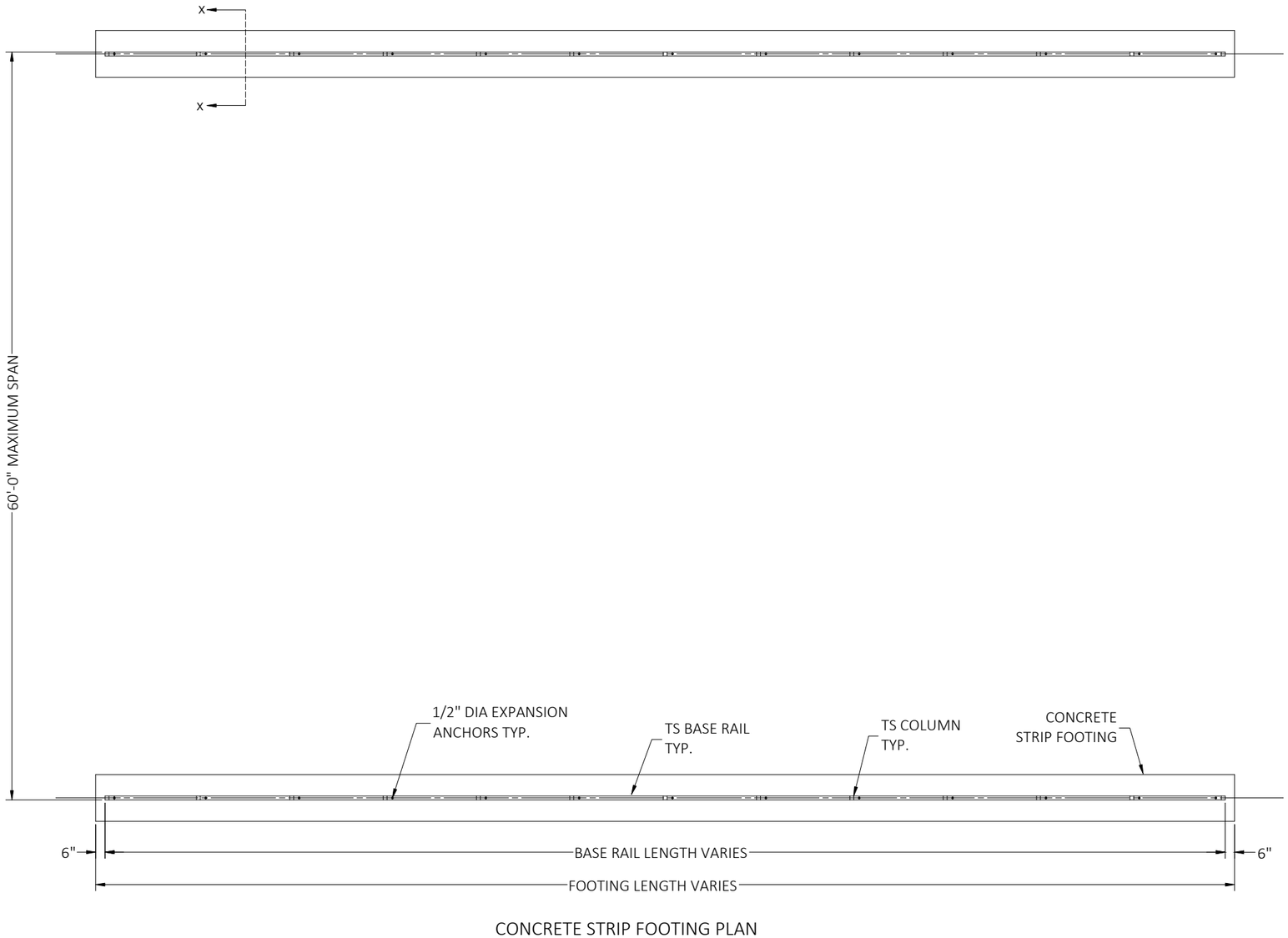

CONCRETE STRIP FOOTING PLAN

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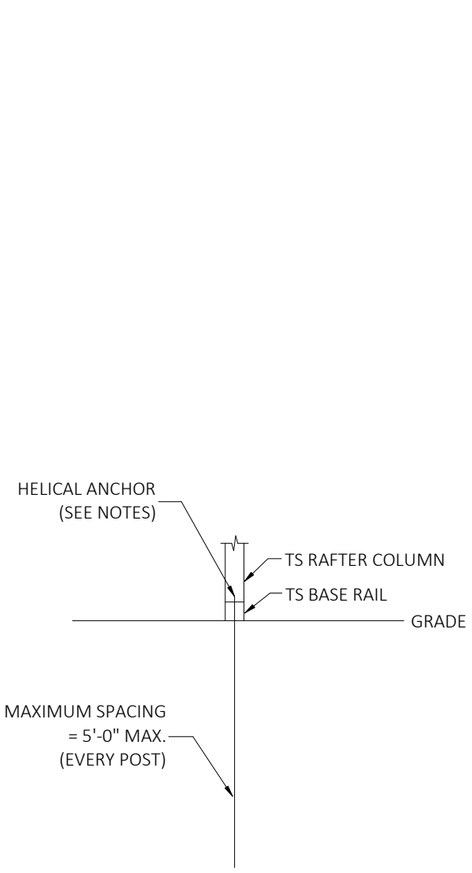
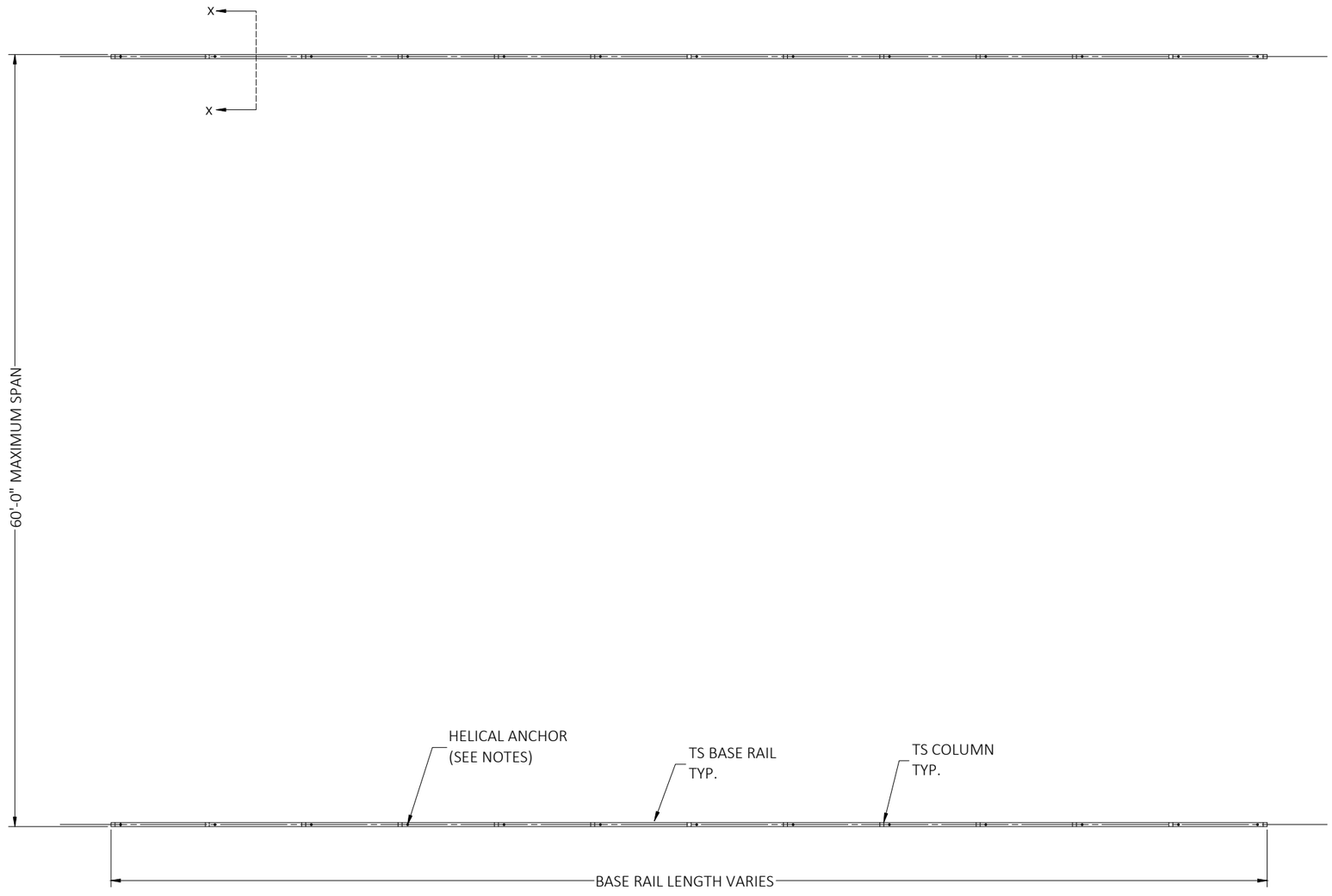
OPTIONAL HELICAL ANCHORING DETAIL

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.
2. FOR LOOSE TO MEDIUM DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS, ALLUVIAL FILL, USE MINIMUM (2) 6" HELICES WITH MINIMUM 50" EMBEDMENT.
3. FOR VERY LOOSE TO MEDIUM DENSE SANDS, FIRM TO STIFFER CLAYS AND SILTS, ALLUVIAL FILL, USE MINIMUM (2) 8" HELICES WITH MINIMUM 60" EMBEDMENT.



SECTION X-X



BASE RAIL PLAN

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