

- APPLICABLE CODES
1. 2018 INTERNATIONAL BUILDING CODE W/ GEORGIA AMENDMENTS
 2. 2018 INTERNATIONAL RESIDENTIAL CODE W/ GEORGIA AMENDMENTS
 3. 2021 SOUTH CAROLINA BUILDING CODE
 4. 2021 SOUTH CAROLINA RESIDENTIAL CODE
 5. 2021 INTERNATIONAL BUILDING CODE
 6. 2021 INTERNATIONAL RESIDENTIAL CODE
 7. 2018 NORTH CAROLINA STATE BUILDING CODE: BUILDING CODE
 8. 2018 NORTH CAROLINA STATE BUILDING CODE: RESIDENTIAL CODE
 9. 2012 INTERNATIONAL BUILDING CODE
 10. 2018 INTERNATIONAL RESIDENTIAL CODE
 11. 2021 VIRGINIA CONSTRUCTION CODE
 12. 2021 VIRGINIA RESIDENTIAL CODE
 13. 2018 INTERNATIONAL BUILDING CODE
 14. 2018 INTERNATIONAL RESIDENTIAL CODE

- APPLICABLE STANDARDS
1. ASCE 7-22: MINIMUM DESIGN LOADS ON BUILDINGS AND OTHER STRUCTURES
 2. ASCE 7-16: MINIMUM DESIGN LOADS ON BUILDINGS AND OTHER STRUCTURES
 3. AISC STEEL CONSTRUCTION MANUAL (8TH EDITION)
 4. ACI 318-19: BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
 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(SELF WEIGHT) = 5 PSF
 1. SUPER IMPOSED DEAD LOAD = 1.5 PSF
 2. ROOF LIVE LOAD = 20 PSF
 3. GROUND SNOW LOAD = 35 PSF
 4. WIND LOAD
 - A. RISK CATEGORY = I
 - B. WIND EXPOSURE CATEGORY = C
 - C. ULTIMATE WIND SPEED = 145 MPH
NOMINAL WIND SPEED = 113 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 APROVED 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 WITH MINIMUM YIELD STRENGTH OF 54 KSI. 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 USING #12-14X3/4" SDF AT 9" O.C. U.N.O. FOR VERTICAL PANELS, 29 GA METAL PANELS SHALL BE FASTENED DIRECTLY TO 18 GA HAT CHANNELS USING #12-14X3/4" SDF AT 9" O.C. U.N.O.
 6. AVERAGE FASTENER SPACING ON-CENTERS ALONG RAFTERS OR PURLINS, AND POSTS, USING #12-14X3/4" SDF AT 9" O.C. U.N.O. PER THE MANUFACTURER'S SPECIFICATIONS.
 7. SPECIFICATIONS APPLICABLE ONLY FOR MEAN ROOF HEIGHT OF 21'-11" 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. MAXIMUM RAFTER SPACING IS 5'-0" U.N.O.
 10. THE PROPOSED STRUCTURE IS NOT DESIGNED TO BE INSTALLED IN SEISMIC DESIGN CATEGORY E/F.
 11. THE PROPOSED STRUCTURE IS NOT DESIGNED TO BE INSTALLED IN SPECIAL FLOOD HAZARD AREAS.
 12. LATERAL FORCE DUE TO WIND LOAD GOVERNS OVER THE SEISMIC LOAD.

DRAWING INDEX	
PAGE NO.	DESCRIPTION
1	TITLE PAGE WITH INDEX
2	ELEVATION VIEWS
3	TRUSS DESIGN LAYOUT
4	CONNECTION DETAILS (1-2)
5	BASE RAIL AND FOUNDATION ANCHORAGE
6	RAFTER END WALL, SIDE WALL AND OPENING FRAMING
7	CONNECTION DETAILS (4-13)
8	BOX EAVE RAFTER LEAN-TO OPTIONS
9	CONNECTION DETAILS (15-17)
10	BOX EAVE RAFTER VERTICAL ROOF/SIDING OPTION
11	OPTIONAL HELICAL ANCHORING DETAIL

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

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



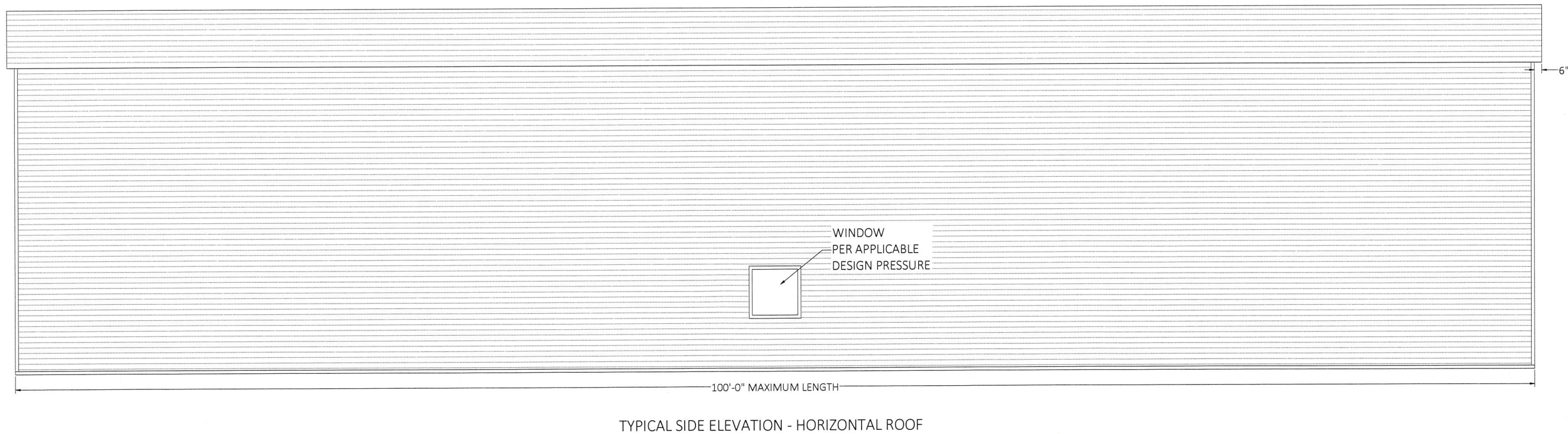
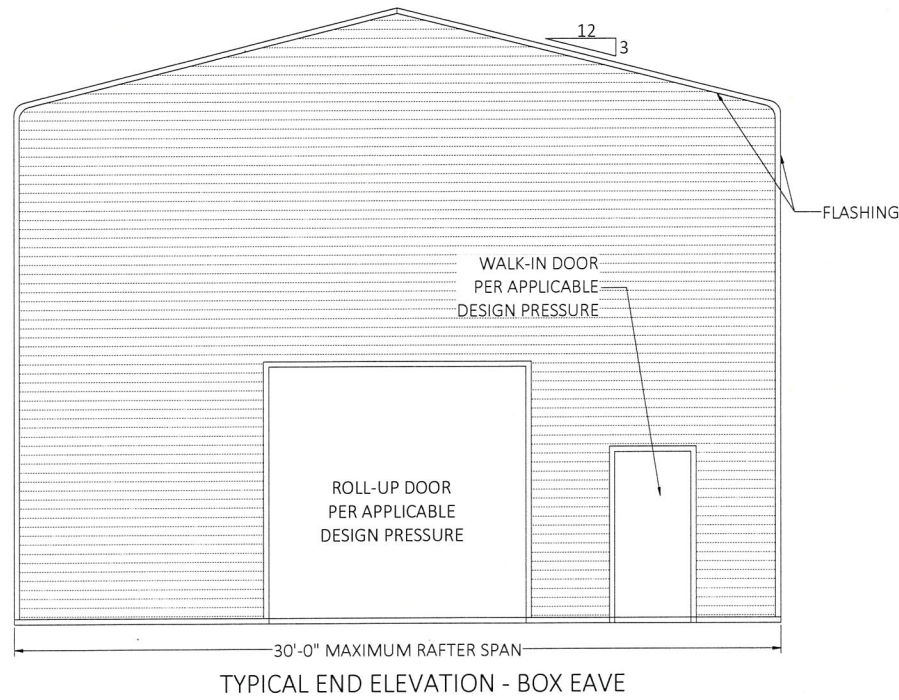
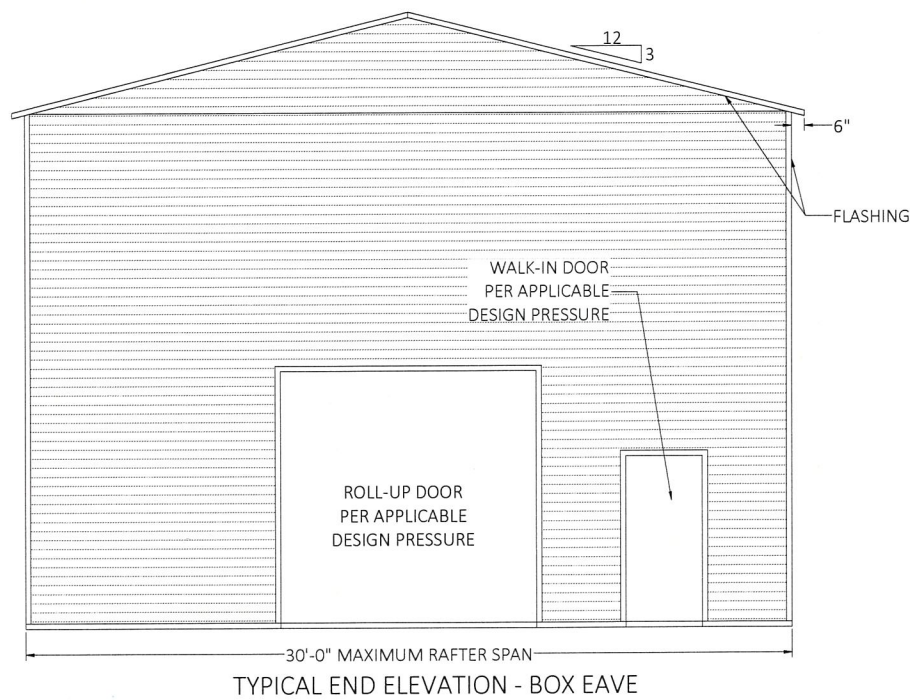
PROJECT NO. 25106114 - 30E

CONTRACTOR:
ELITE CARPORTS LLC
715 WILLOW ST
MT. AIRY, NC 27030

PROJECT ADDRESS:
GENERIC SETUP
30'-0" ENCLOSED

DESIGN DATE:	05/13/2025
REVISION 1:	DATE
REVISION 2:	DATE
DRAWN BY:	SH
SCALE:	NTS
PAGE :	1 OF 11

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



DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA,
WV, KY, PA, MD)
GUNDERSON ENGINEERING (SC, NC)
FLORIDA ENGINEERING LLC (AL)

4161 TAMAMI TRAIL, UNIT 101
PORT CHARLOTTE, FLORIDA 33952
(941) 391-5980
www.LightningEngineer.com
www.GundersonEngineering.com
FLEng.com



PROJECT NO. 25106114 - 30E

CONTRACTOR:
ELITE CARPORTS LLC
715 WILLOW ST
MT. AIRY, NC 27030

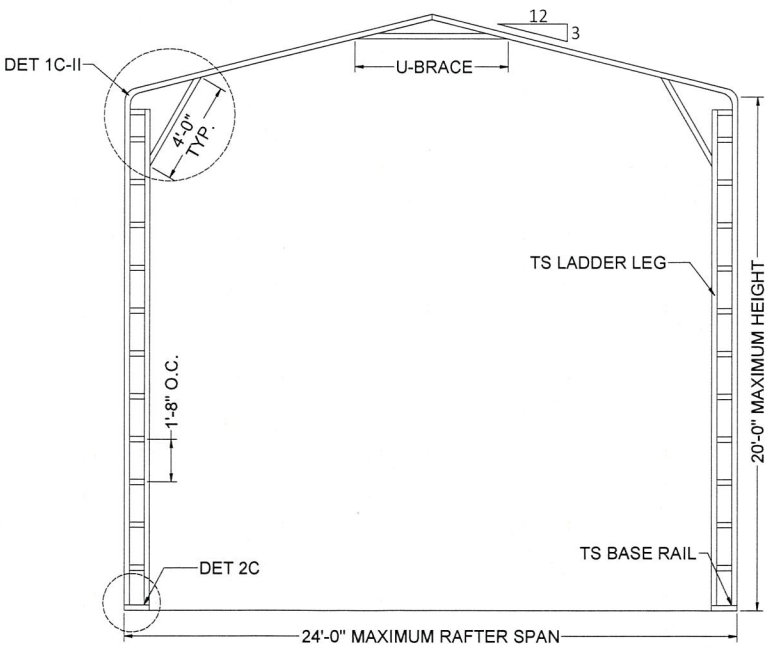
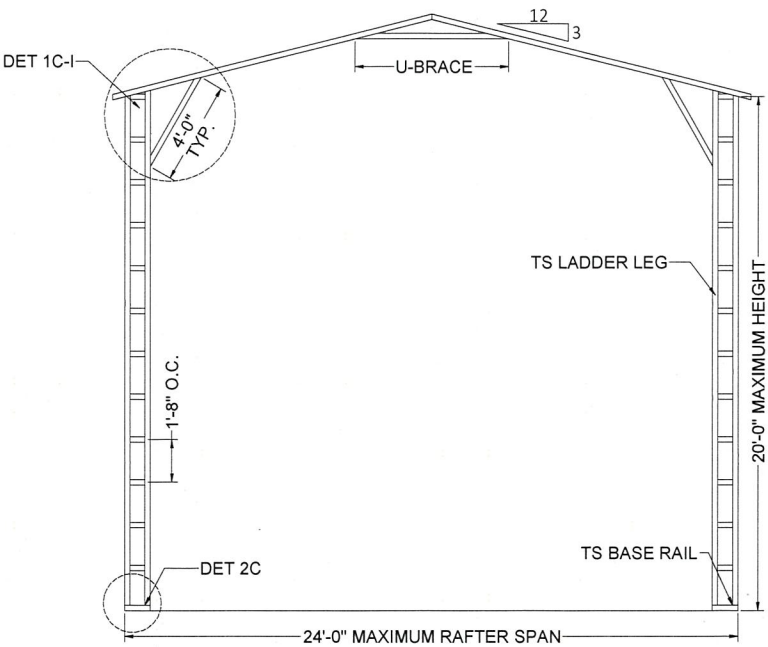
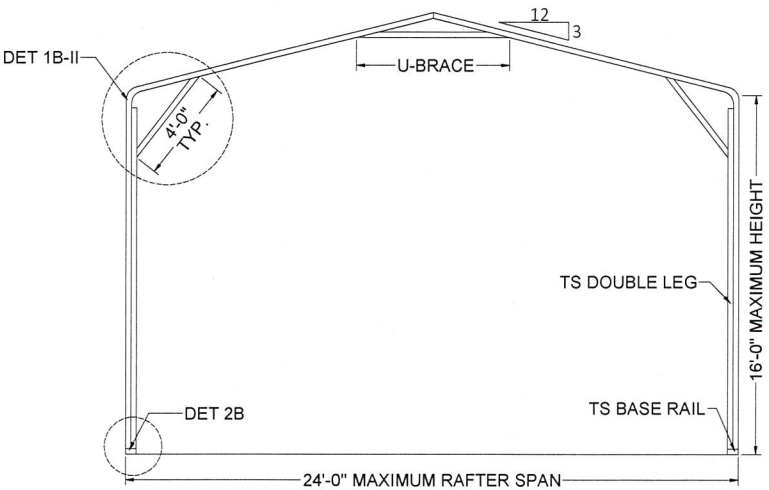
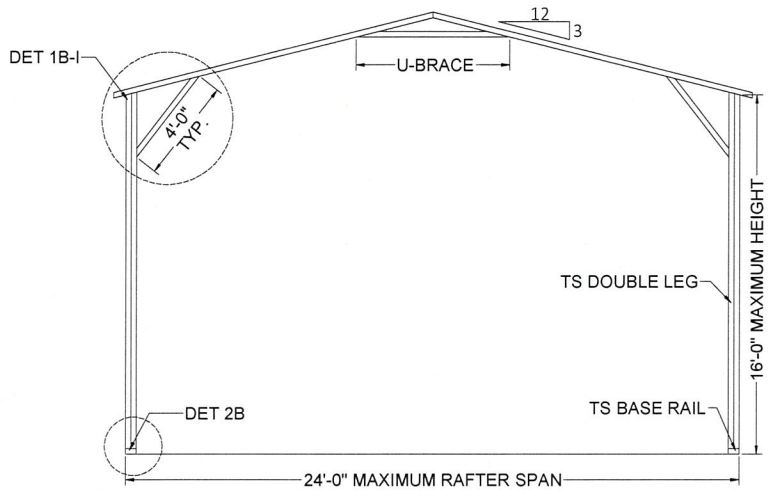
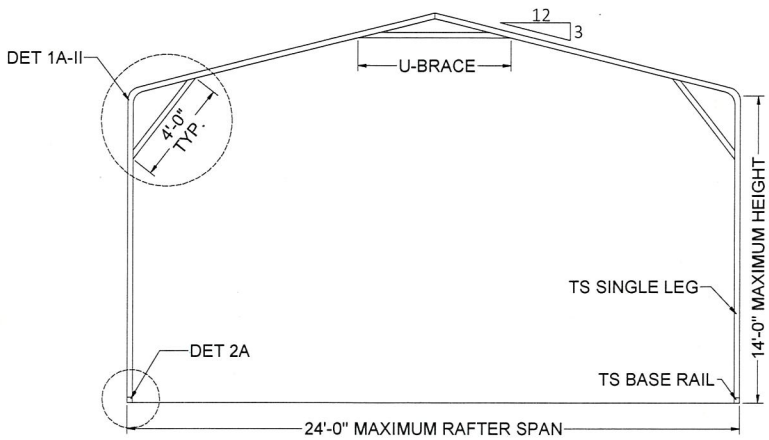
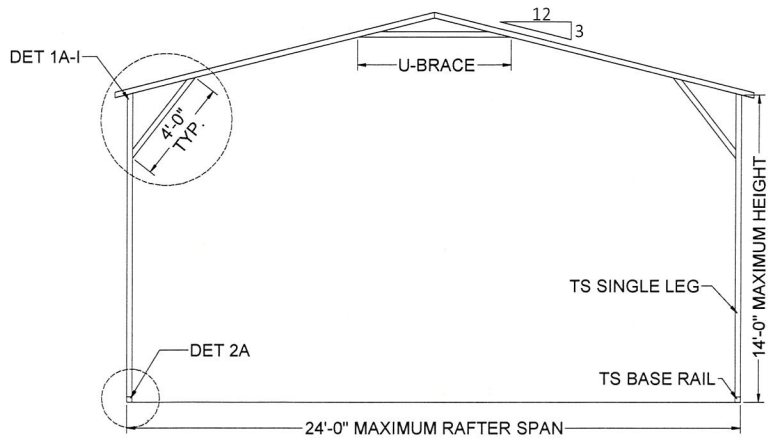
PROJECT ADDRESS:
GENERIC SETUP
30'-0" ENCLOSED

DESIGN DATE:	05/13/2025	
REVISION 1:	DATE	
REVISION 2:	DATE	PAGE :
DRAWN BY:	SH	2 OF 11
SCALE:	NTS	

- MEMBER LEGEND:
- 1. TS SINGLE LEG = 2.5X2.5X14GA TS U.N.O.
 - 2. TS DOUBLE LEG = (2)2.5X2.5X14GA TS U.N.O.
 - 3. TS LADDER LEG = 2.5X2.5X14GA TS LADDER U.N.O.
 - 4. TS MEMBERS = 2.5X2.5X14 GA TS U.N.O.
 - 5. KNEE-BRACE = 2.5"X2"X18GA CHANNEL
 - 6. U-BRACE = 2.5"X2"X18GA CHANNEL
 - 7. PURLIN = 1.5"X18GA HAT CHANNEL
 - 8. TS BASE RAIL = 2.5X2.5X14GA TS U.N.O.
 - 9. END WALL COLUMN
- I) UP TO 16'-0" - 2.5X2.5X14GA TS
II) UP TO 20'-0" - (2)2.5X2.5X14GA TS

U-BRACE SCHEDULE

BRACE SPAN	BUILDING WIDTH
2'-0"	UP TO 18'-0"
4'-0"	18'-1" TO 20'-0"
6'-0"	20'-1" TO 24'-0"



TRUSS LAYOUT- BOX EAVE

TRUSS LAYOUT- BOW EAVE

DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA,
WV, KY, PA, MD)
GUNDERSON ENGINEERING (SC, NC)
FLORIDA ENGINEERING LLC (AL)

4161 TAMAMI TRAIL, UNIT 101
PORT CHARLOTTE, FLORIDA 33952
(941) 391-5980
www.LightningEngineering.com
www.GundersonEngineering.com
FLEng.com



PROJECT NO. 25106114 - 30E

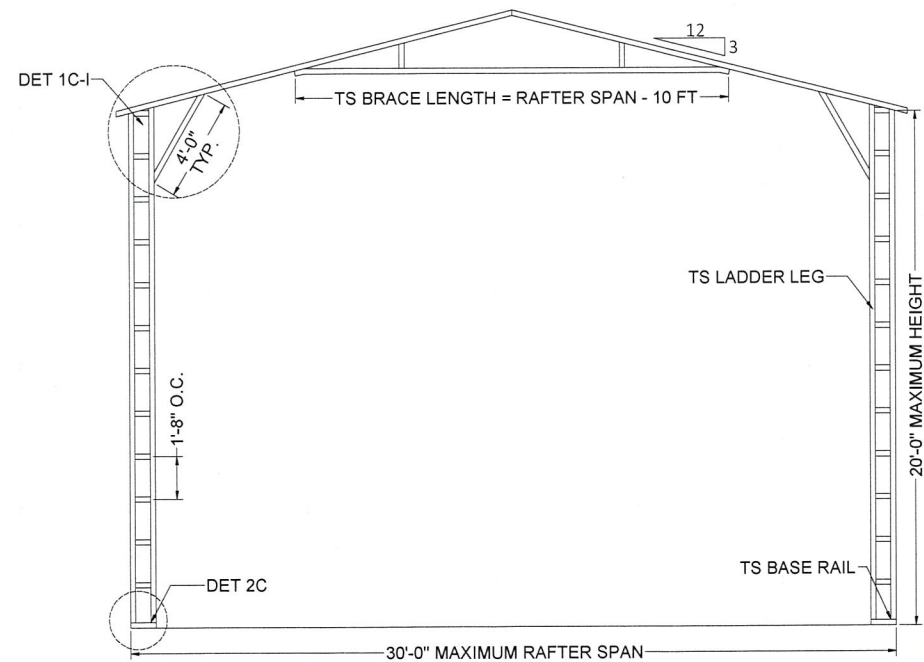
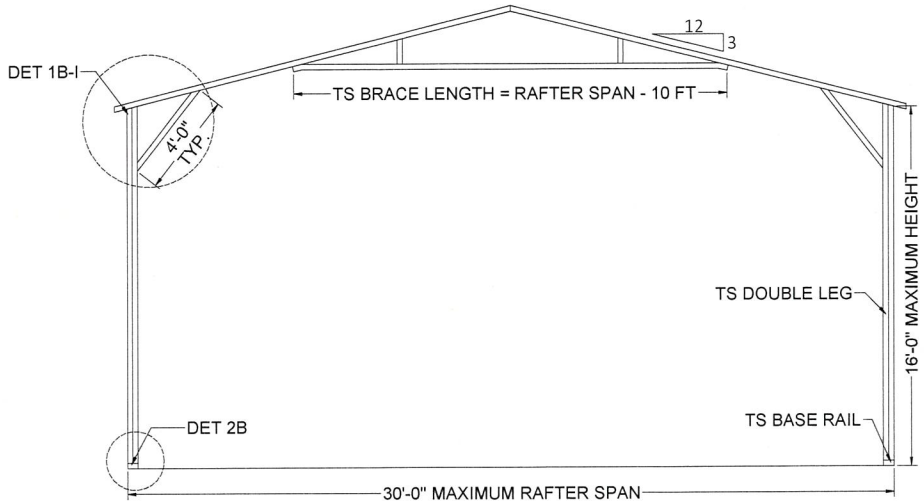
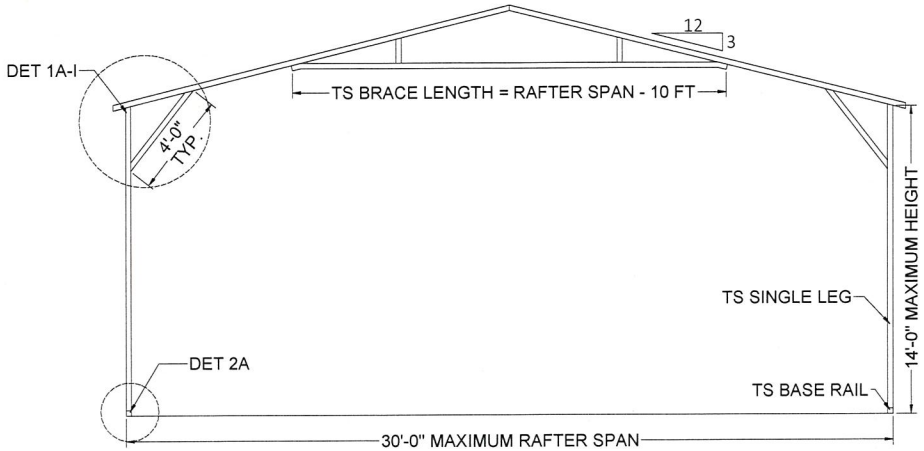
CONTRACTOR:
ELITE CARPORTS LLC
715 WILLOW ST
MT. AIRY, NC 27030

PROJECT ADDRESS:
GENERIC SETUP
30'-0" ENCLOSED

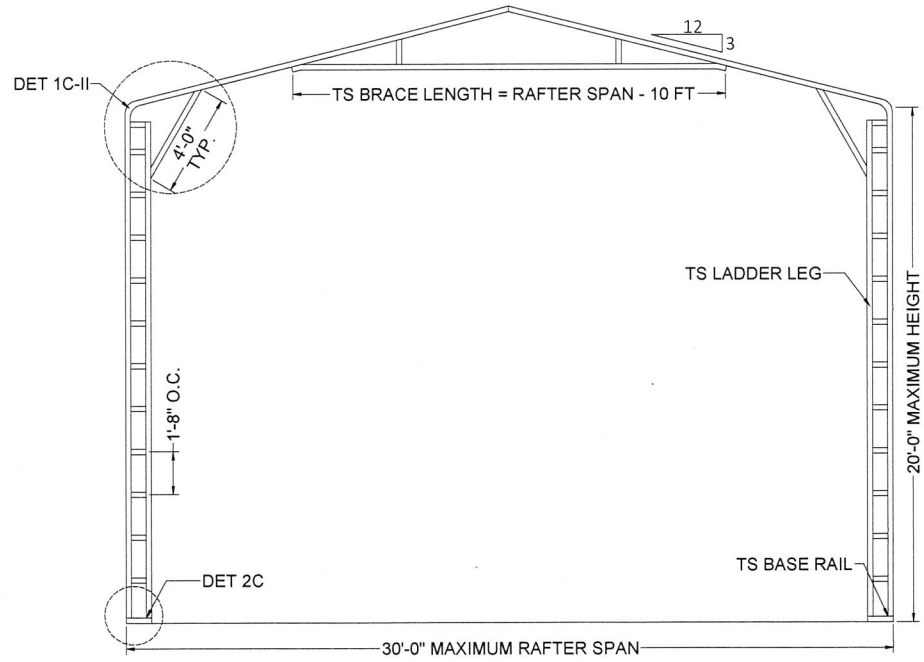
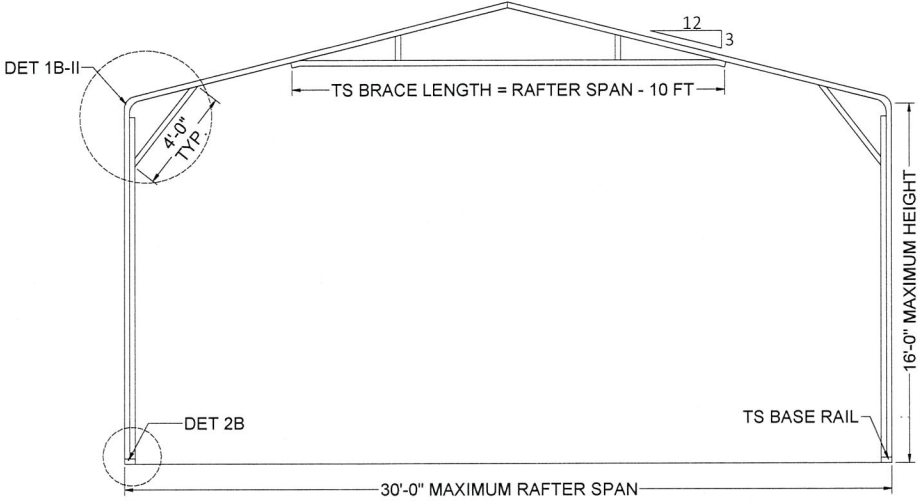
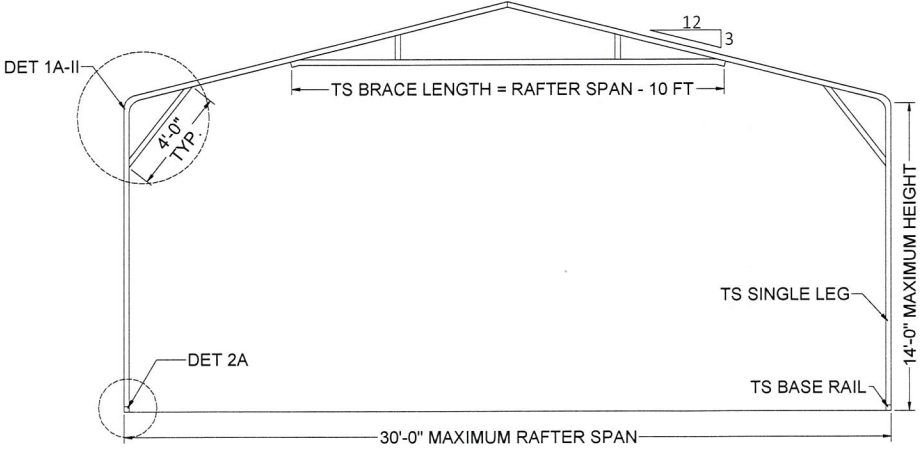
DESIGN DATE: 05/13/2025
REVISION 1: DATE
REVISION 2: DATE
DRAWN BY: SH
SCALE: NTS

PAGE :
3A OF 11

- MEMBER LEGEND:
- 1. TS SINGLE LEG = 2.5X2.5X14GA TS U.N.O.
 - 2. TS DOUBLE LEG = (2)2.5X2.5X14GA TS U.N.O.
 - 3. TS LADDER LEG = 2.5X2.5X14GA TS LADDER U.N.O.
 - 4. TS BRACE = 2.5X2.5X14 TS U.N.O.GA U.N.O.
 - 5. TS MEMBERS = 2.5X2.5X14 GA TS U.N.O.
 - 6. KNEE-BRACE = 2.5"X2"X18GA CHANNEL
 - 7. PURLIN = 1.5"X18GA HAT CHANNEL
 - 8. TS BASE RAIL = 2.5X2.5X14GA TS U.N.O.
 - 9. END WALL = SAME AS SIDE WALL



TRUSS LAYOUT- BOX EAVE



TRUSS LAYOUT- BOW EAVE

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



PROJECT NO. 25106114 - 30E

CONTRACTOR:
ELITE CARPORTS LLC
715 WILLOW ST
MT. AIRY, NC 27030

PROJECT ADDRESS:
GENERIC SETUP
30'-0" ENCLOSED

DESIGN DATE: 05/13/2025

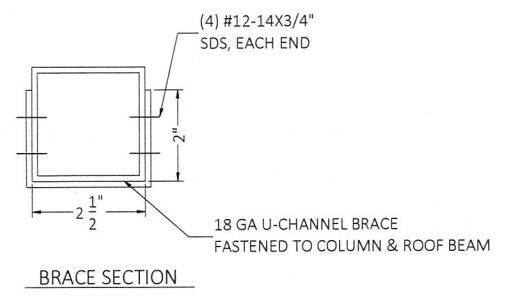
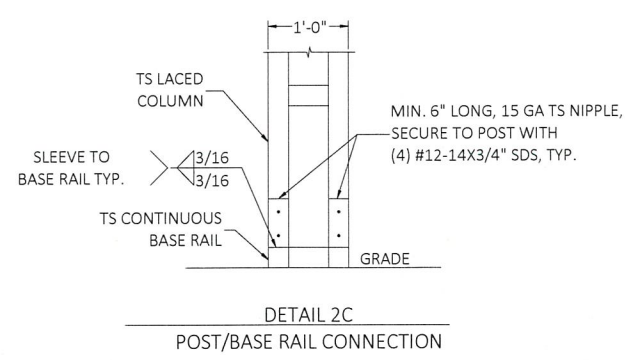
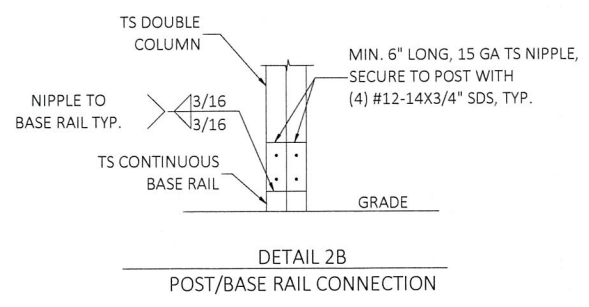
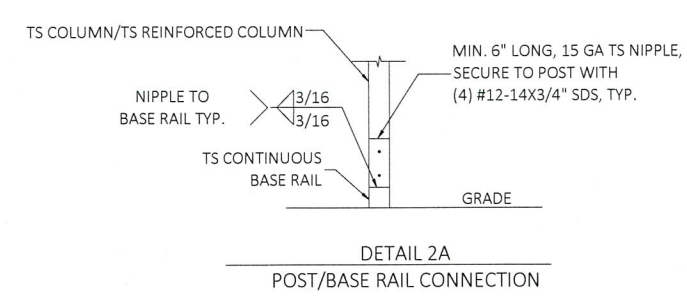
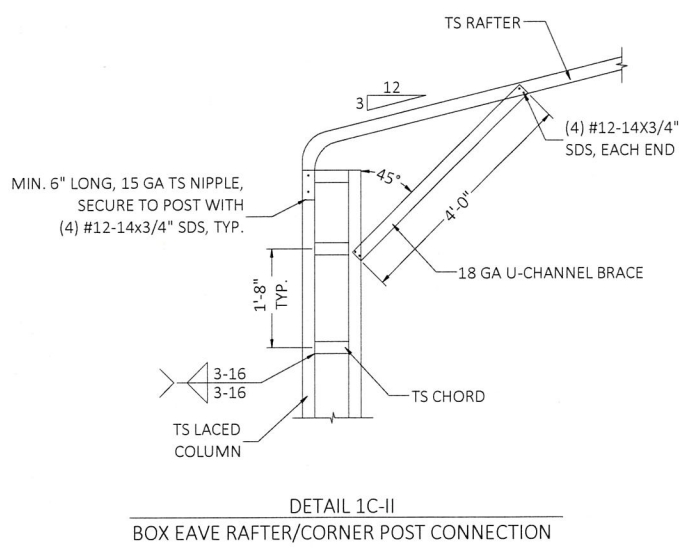
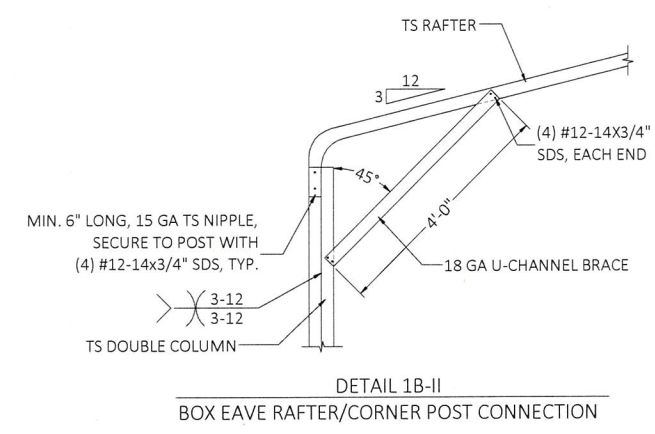
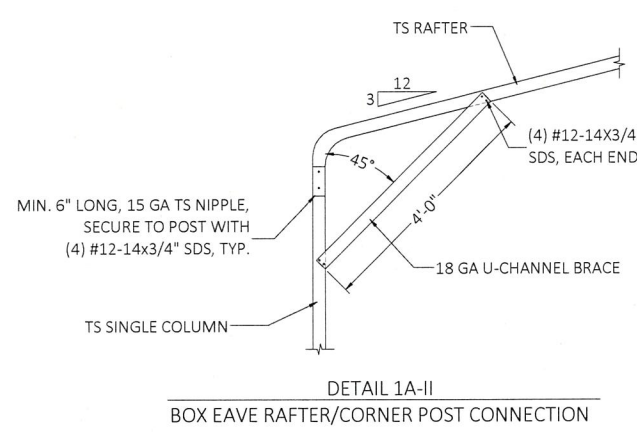
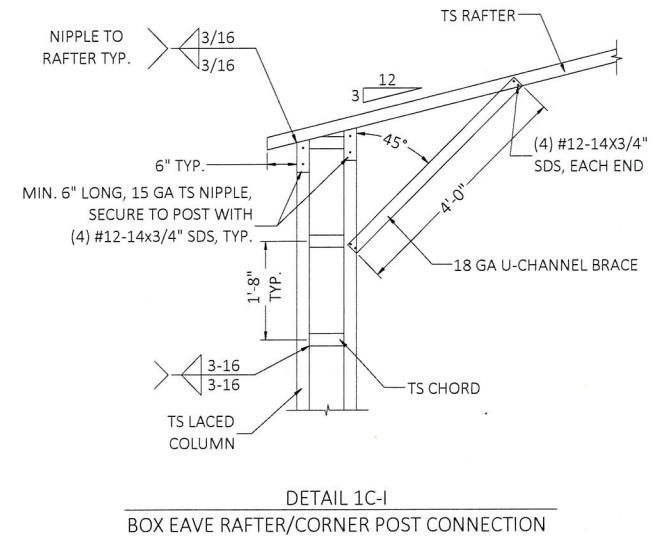
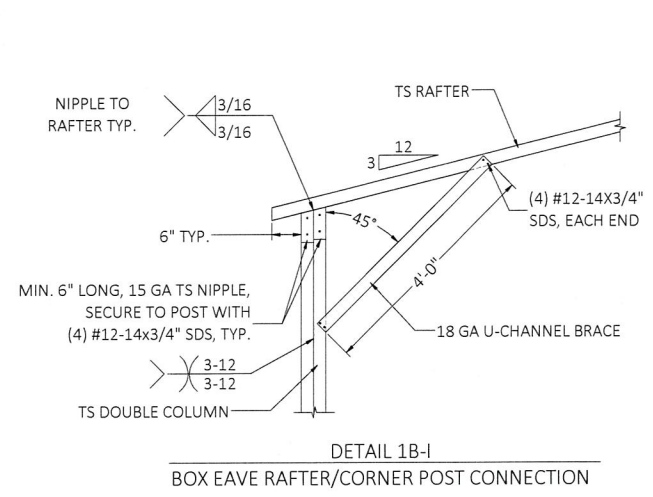
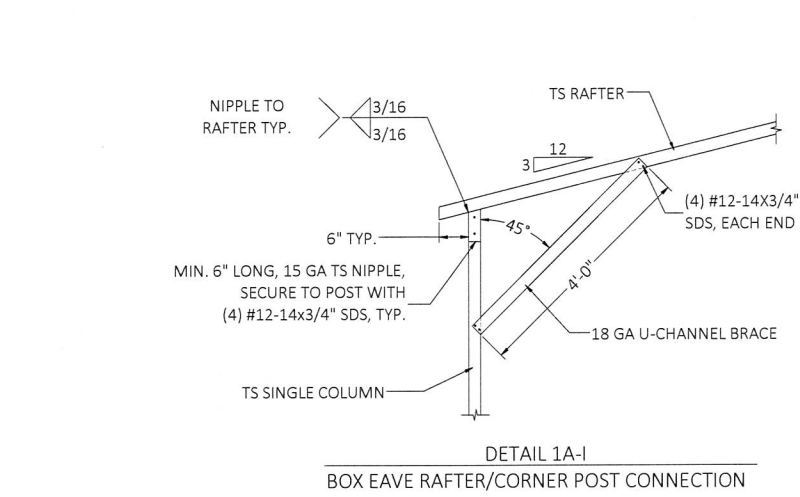
REVISION 1: DATE

REVISION 2: DATE

DRAWN BY: SH

SCALE: NTS

PAGE :
3B OF 11



DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA,
WV, KY, PA, MD)
GUNDERSON ENGINEERING (SC, NC)
FLORIDA ENGINEERING LLC (AL)

4161 TAMiami TRAIL, UNIT 101
PORT CHARLOTTE, FLORIDA 33952
(941) 391-5980
www.LightningEngineer.com
www.GundersonEngineering.com
FLEng.com



PROJECT NO. 25106114 - 30E

CONTRACTOR:
ELITE CARPORTS LLC
715 WILLOW ST
MT. AIRY, NC 27030

PROJECT ADDRESS:
GENERIC SETUP
30'-0" ENCLOSED

DESIGN DATE:	05/13/2025	PAGE : 4 OF 11
REVISION 1:	DATE	
REVISION 2:	DATE	
DRAWN BY:	SH	
SCALE:	NTS	

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

- CONCRETE:
1. CONCRETE SHALL HAVE A MINIMUM SPECIFIED COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
 2. ALL OPEN AREAS OF CONCRETE OUTSIDE OF THE PROPOSED STRUCTURE SHALL BE DESIGNED TO SLOPE AWAY FROM THE STRUCTURE.
 3. WHERE CONCRETE SPECIFICATIONS ARE REQUIRED, BY ONE OR MORE REGULATORY AGENCY, THE FOLLOWING SPECIFICATIONS ARE APPLICABLE:
 - a. CONCRETE SHALL CONFORM TO ASTM C94 FOR THE FOLLOWING COMPONENTS:
 - i. PORTLAND CEMENT TYPE 1 - ASTM C 150
 - ii. AGGREGATES - LARGE AGGREGATE 3/4" MAX. - ASTM C 33
 - iii. AIR ENTRAINING +/- 1 % - ASTM C 260
 - iv. WATER REDUCING AGENT - ASTM C 494
 - v. CLEAN POTABLE WATER
 - vi. OTHER ADMIXTURES NOT PERMITTED
 - b. CONCRETE SLUMP AT DISCHARGE CHUTE NOT LESS THAN 3" OR MORE THAN 5". WATER ADDED AFTER BATCHING IS NOT PERMITTED.
 - c. PREPARE & PLACE CONCRETE PER AMERICAN CONCRETE INSTITUTE MANUAL OF STANDARD PRACTICE, PART 1, 2, & 3 INCLUDING HOT WEATHER RECOMMENDATIONS.
 - d. MOIST CURE OR POLYETHYLENE CURING PERMITTED.
 - e. PRIOR TO PLACING CONCRETE, TREAT THE ENTIRE SUBSURFACE AREA FOR TERMITES IN COMPLIANCE WITH THE BUILDING CODE (FOR RISK CATEGORY II, III, & IV STRUCTURES ONLY).
 - f. CONCRETE SLAB SHALL BE PLACED OVER A MIN. 6 MIL POLYETHYLENE VAPOR BARRIER (SLAB ONLY).
 4. CONTROL JOINTS SHALL BE PROVIDED AT EVERY 12' O.C. OR 18' O.C. FOR 4" THICK OR 6" THICK CONCRETE SLAB RESPECTIVELY.

- REINFORCING STEEL:
1. THE REINFORCING STEEL SHALL BE ASTM A615 GRADE 60. THE SLAB REINFORCEMENT SHALL BE WELDED WIRE FABRIC MEETING ASTM A185 OR FIBERGLASS FIBER REINFORCEMENT.
 2. REINFORCEMENT MAY BE BENT IN THE FIELD OR SHOP AS LONG AS:
 - a. IT IS BENT COLD;
 - b. REINFRCEMENT PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT;
 - c. THE DIAMETER OF THE BEND, MEASURED ON THE INSIDE OF THE BAR, IS NOT LESS THAN SIX-BAR DIAMETERS.
 3. FOR FOUNDATIONS, MINIMUM CONCRETE COVER OVER REINFORCING BARS SHALL BE PER ACI-318: 3 INCHES WHERE THE CONCRETE IS POURED AGAINST AND TEMPORARY IN CONTACT WITH THE EARTH OR UNPROTECTED FROM THE EARTH OR WEATHER, OTHERWISE 1-1/2 INCHES.

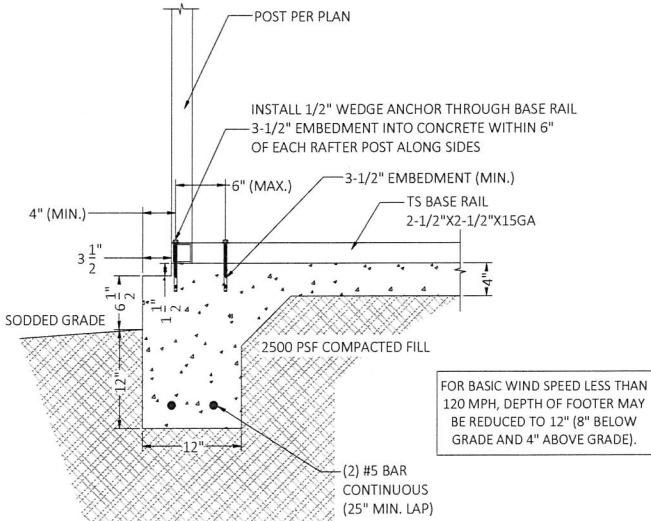
- FROST PROTECTION:
1. FOUNDATION SHALL BE PROTECTED AGAINST FROST USING RIGID FOAM INSULATION (EPS OR EQUIVALENT). FOR NO FROST PROTECTION OPTION, COORDINATE WITH LOCAL BUILDING CODE AND/OR BUILDING OFFICIAL REGARDING REQUIRED FOOTING DEPTH BASED ON FROST LINE DEPTH.

- 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, MEDIUM TO VERY LOOSE DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS, ALLUVIAL FILL, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT INSTALLED AT EVERY POST (LEG) / MAX. RAFTER SPACING.
 2. THE UPLIFT/BEARING CAPACITY OF HELICAL ANCHOR MUST BE EQUAL TO OR GREATER THAN 8.5 KIPS FOR ANCHORS INSTALLED AT EVERY POST (LEG) / MAX. RAFTER SPACING.
 3. THE UPLIFT/BEARING CAPACITY OF HELICAL ANCHORS MUST BE AS SHOWN IN TABLE A FOR ANCHORS PROVIDED AT THE JAMBS OF DOOR OPENINGS. THE INCREASE IN HELICAL ANCHOR CAPACITY MAY BE ACHIEVED BY INCREASING THE DIAMETER AND/OR THE EMBEDMENT OF THE ANCHORS, OR BY USING DIFFERENT ANCHORS DEPENDING ON THE MANUFACTURER'S SPECIFICATIONS.

- HP 9 BARBED DRIVE ANCHOR NOTES:
1. ANCHOR TO BE 3/4" DIA (A529 GRADE 50) WITH 30" MIN. EMBEDMENT & (4) MIN. BARBS AS SHOWN IN DETAIL 3C.
 2. 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, MEDIUM TO VERY LOOSE DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS, ALLUVIAL FILL, ANCHOR SHALL BE INSTALLED AT EVERY POST (LEG) / MAX. RAFTER SPACING.
 3. THE UPLIFT/BEARING CAPACITY OF EACH ANCHOR MUST BE EQUAL TO OR GREATER THAN 8.5 KIPS FOR ANCHORS INSTALLED AT EVERY POST (LEG) / MAX. RAFTER SPACING.
 4. THE UPLIFT/BEARING CAPACITY OF THE ANCHORS MUST BE AS SHOWN IN TABLE A FOR ANCHORS PROVIDED AT THE JAMBS OF DOOR OPENINGS. THE INCREASE IN ANCHOR CAPACITY MAY BE ACHIEVED BY INCREASING THE DIAMETER AND/OR THE EMBEDMENT OF THE ANCHORS, OR BY USING DIFFERENT ANCHORS DEPENDING ON THE MANUFACTURER'S SPECIFICATIONS.

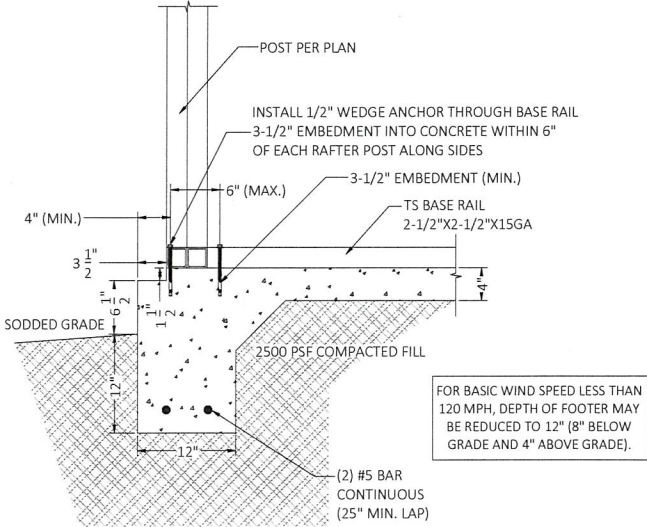
TABLE A

REQUIRED UPLIFT / BEARING CAPACITY OF HELICAL ANCHORS		RAFTER SPACING (FT.)	
OPENING WIDTH (FT.)	4	5	
	6	11.0	9.5
	8	13.0	11.5
	10	15.0	13.0
	12	17.0	14.5
	14	19.5	16.5
	16	21.5	18.0
	18	23.5	20.0
	20	25.5	21.5



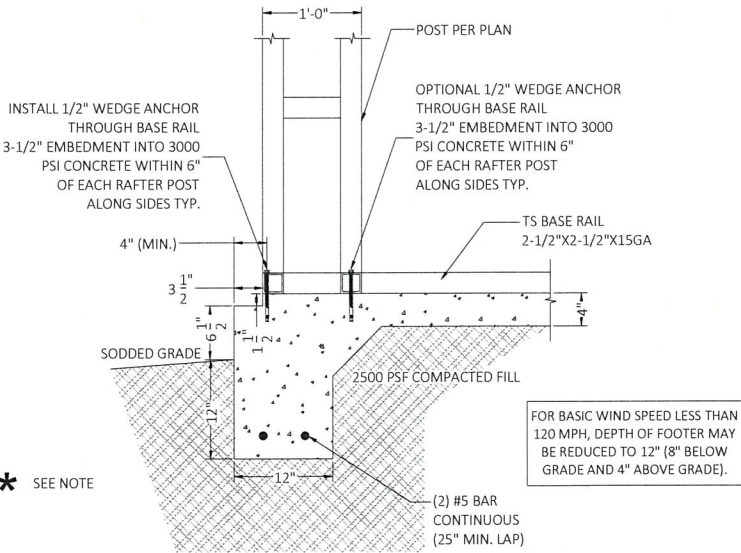
* SEE NOTE

DETAIL 3A-I
CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE



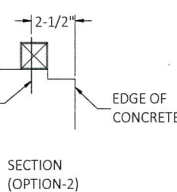
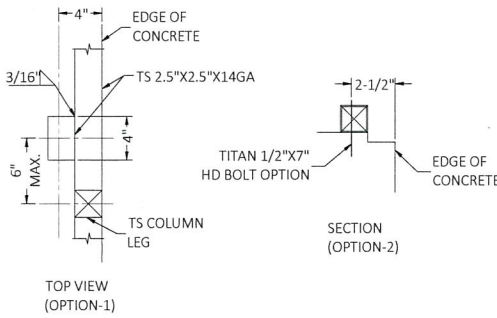
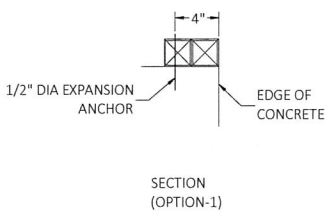
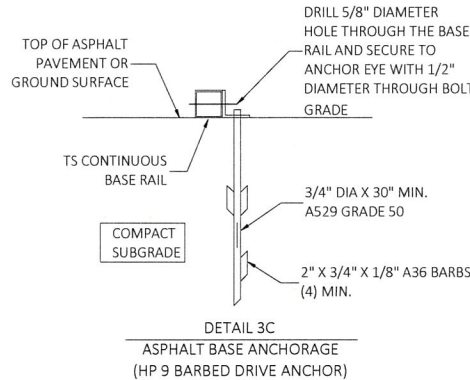
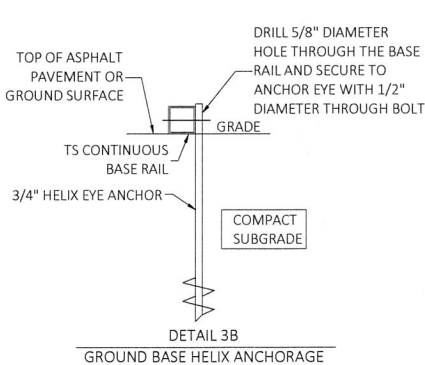
* SEE NOTE

DETAIL 3A-II
CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE



* SEE NOTE

DETAIL 3A-III
CONCRETE MONOLITHIC SLAB BASE RAIL ANCHORAGE



* = COORDINATE WITH LOCAL BUILDING CODE AND/OR BUILDING OFFICIAL REGARDING REQUIRED FOOTING DEPTH BASED ON FROST LINE DEPTH.

TYPICAL ANCHOR DETAIL WHEN BASE RAIL IS NEAR EDGE OF CONCRETE

BASE RAIL ANCHORAGE OPTION

DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA, WV, KY, PA, MD)
GUNDERSON ENGINEERING (SC, NC)
FLORIDA ENGINEERING LLC (AL)

4161 TAMiami TRAIL, UNIT 101
PORT CHARLOTTE, FLORIDA 33952
(941) 391-5980
www.LightningEngineer.com
www.GundersonEngineering.com
FLEng.com



PROJECT NO. 25106114 - 30E

CONTRACTOR:
ELITE CARPORTS LLC
715 WILLOW ST
MT. AIRY, NC 27030

PROJECT ADDRESS:
GENERIC SETUP
30'-0" ENCLOSED

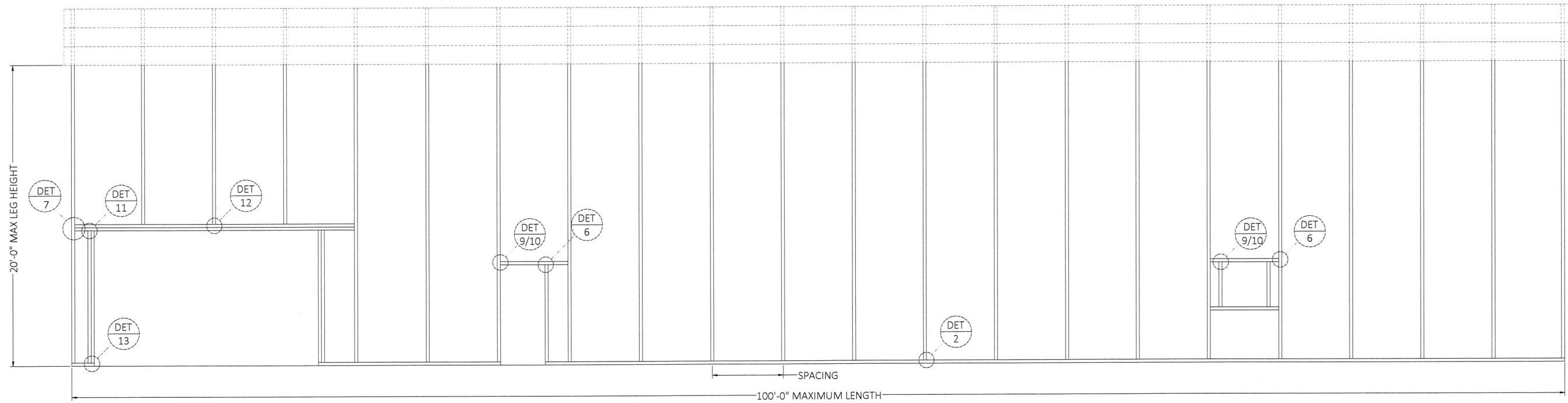
DESIGN DATE: 05/13/2025

REVISION 1: DATE

REVISION 2: DATE PAGE :

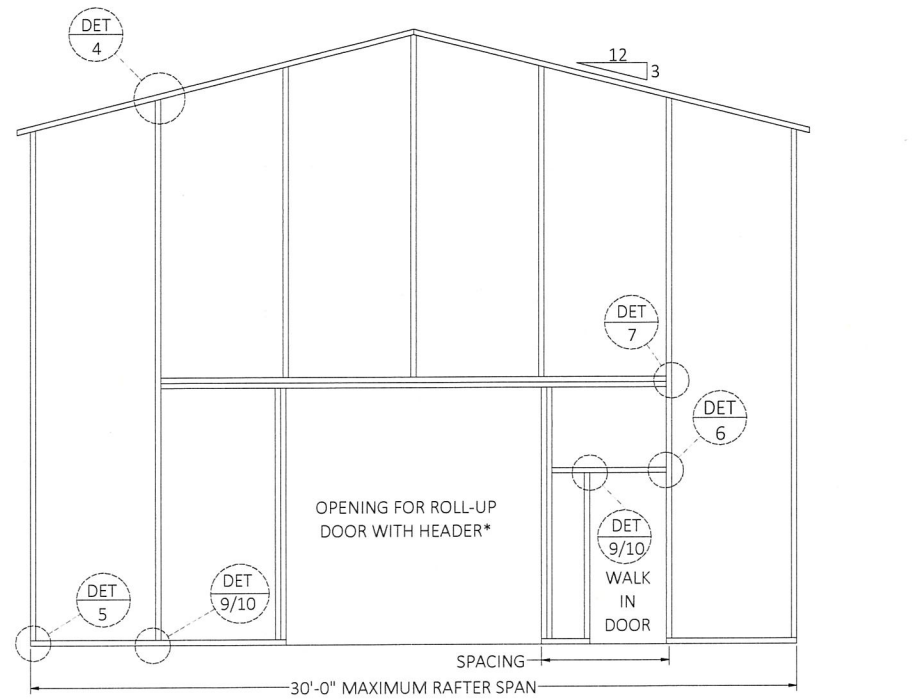
DRAWN BY: SH

SCALE: NTS 5 OF 11



TYPICAL BOX EAVE RAFTER SIDE WALL FRAMING SECTION

*SEE PAGE 10 FOR
HEADER REQUIREMENT



TYPICAL BOX EAVE RAFTER END WALL FRAMING SECTION

CONTRACTOR:
ELITE CARPORTS LLC
715 WILLOW ST
MT. AIRY, NC 27030

PROJECT ADDRESS:
GENERIC SETUP
30'-0" ENCLOSED

DESIGN DATE: 05/13/2025

REVISION 1: DATE

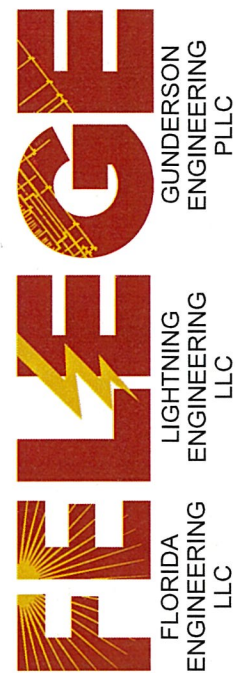
REVISION 2: DATE

DRAWN BY: SH

SCALE: NTS

PAGE :

6 OF 11

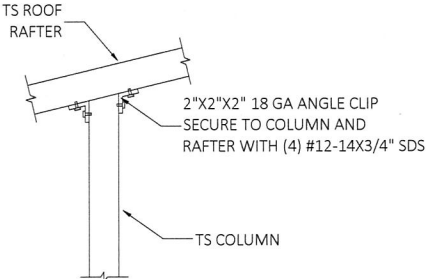


GUNDERSON
ENGINEERING
PLLC

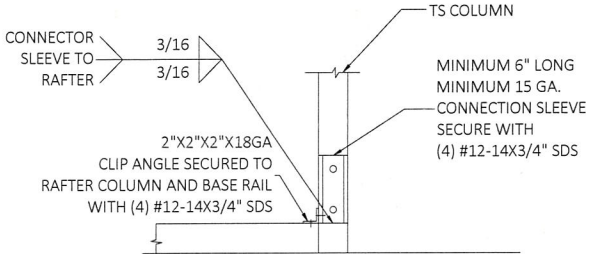
DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA,
WV, KY, PA, MD)
GUNDERSON ENGINEERING (SC, NC)
FLORIDA ENGINEERING LLC (AL)
4161 TAMiami TRAIL, UNIT 101
PORT CHARLOTTE, FLORIDA 33952
(941) 391-5980
www.LightningEngineer.com
www.GundersonEngineering.com
FLEng.com

PROJECT NO. 25106114 - 30E

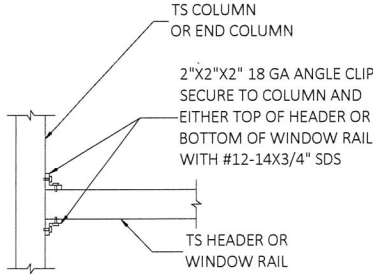
CONNECTION DETAILS



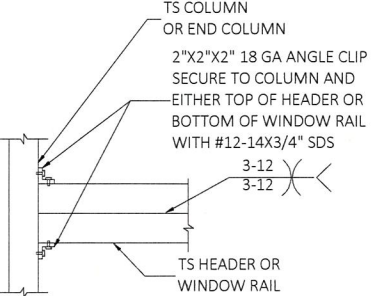
DETAIL 4
END COLUMN/RAFTER CONNECTION



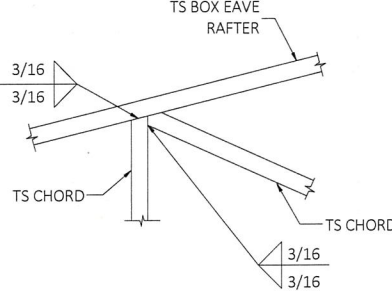
DETAIL 5
END POST/BASE RAIL CONNECTION



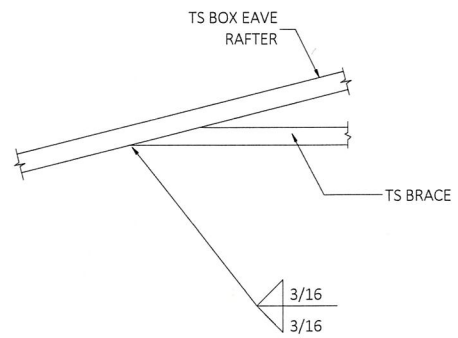
DETAIL 6
HEADER TO COLUMN CONNECTION



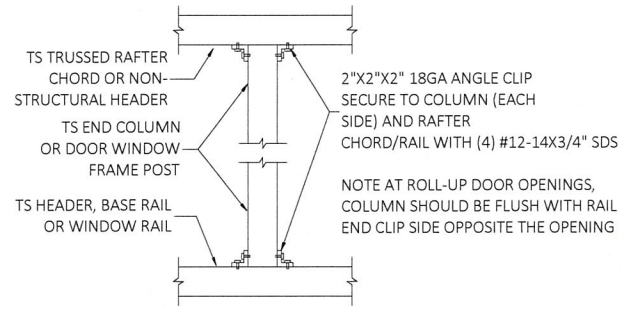
DETAIL 7
DOUBLE HEADER TO COLUMN CONNECTION



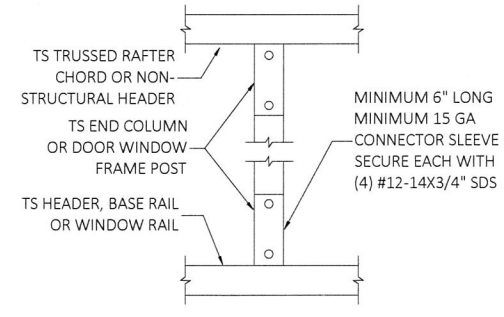
DETAIL 8A
TRUSS POST AND CHORD TO RAFTER CONNECTION



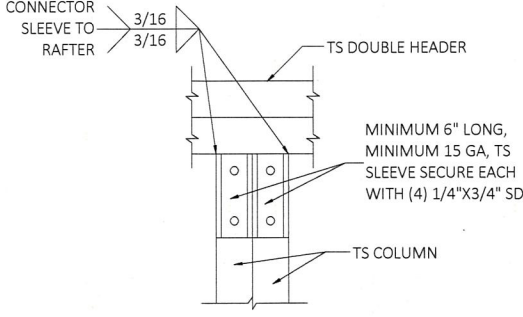
DETAIL 8B
BRACE TO RAFTER CONNECTION



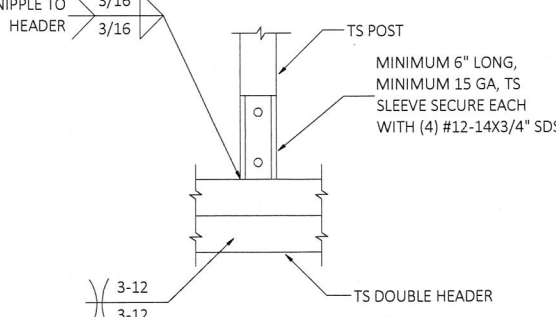
DETAIL 9
POST TO HEADER, BASE RAIL OR WINDOW RAIL CONNECTION
(OPTION-1)



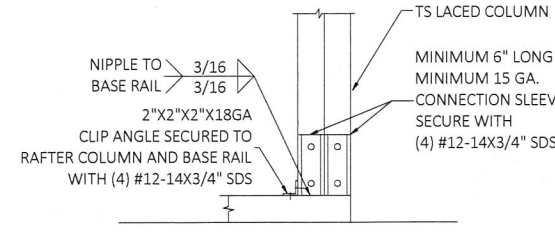
DETAIL 10
POST TO HEADER, BASE RAIL CONNECTION
(OPTION-2)



DETAIL 11
DOUBLE HEADER TO COLUMN CONNECTION



DETAIL 12
POST/DOUBLE HEADER CONNECTION



DETAIL 13
POST/BASE RAIL CONNECTION

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

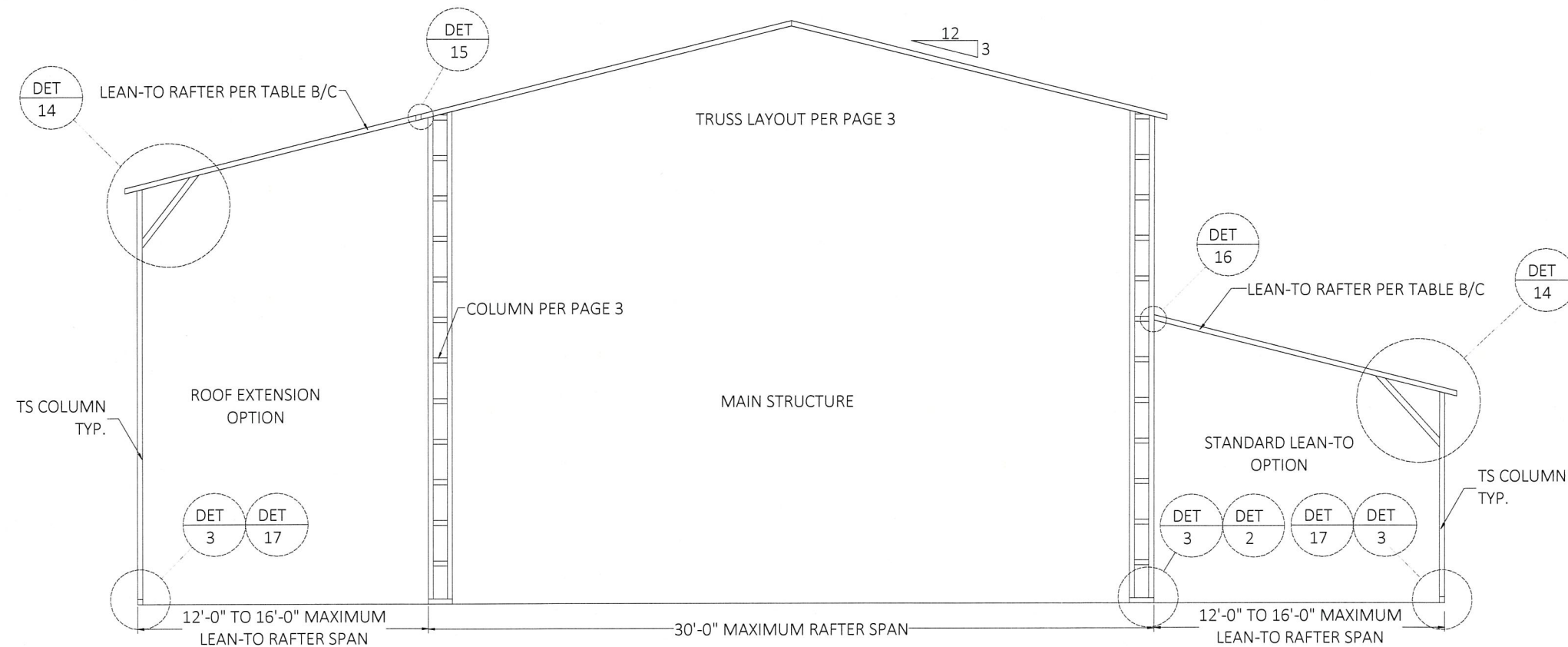


PROJECT NO. 25106114 - 30E

CONTRACTOR:
ELITE CARPORTS LLC
715 WILLOW ST
MT. AIRY, NC 27030

PROJECT ADDRESS:
GENERIC SETUP
30'-0" ENCLOSED

DESIGN DATE:	05/13/2025	PAGE : 7 OF 11
REVISION 1:	DATE	
REVISION 2:	DATE	
DRAWN BY:	SH	
SCALE:	NTS	



TYPICAL BOX EAVE RAFTER LEAN-TO OPTIONS FRAMING SECTION

TABLE B:

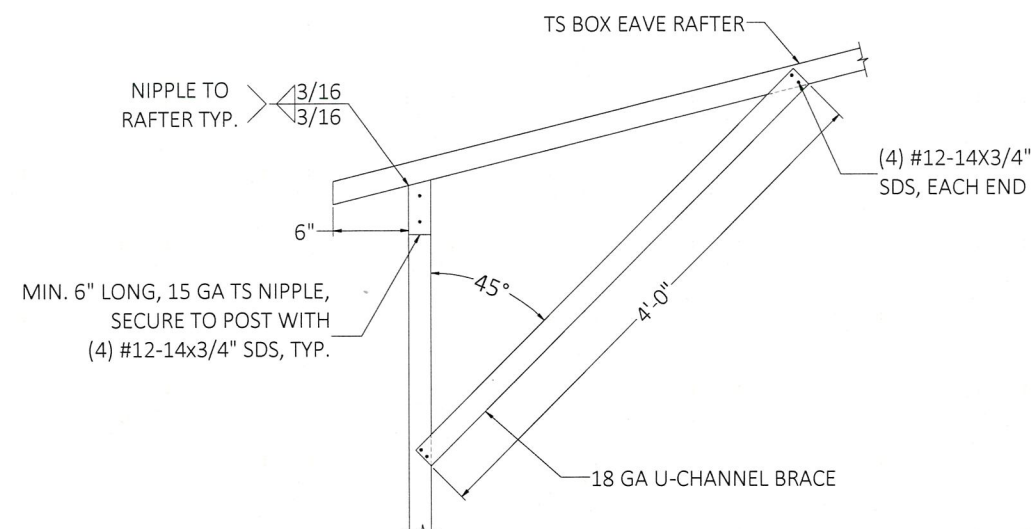
MAX GROUND SNOW LOAD = 20 PSF

LEAN-TO RAFTER	MAX WIDTH
2.5X2.5X14GA	12'-0"
(2)2.5X2.5X14GA	16'-0"

TABLE C:

MAX GROUND SNOW LOAD = 35 PSF

LEAN-TO RAFTER	MAX WIDTH
2.5X2.5X14GA	10'-0"
(2)2.5X2.5X14GA	14'-0"
2.5X2.5X14GA LADDER	16'-0"



DETAIL 14

LEAN-TO RAFTER/CORNER POST CONNECTION

DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA,
WV, KY, PA, MD)
GUNDERSON ENGINEERING (SC, NC)
FLORIDA ENGINEERING LLC (AL)

4161 TAMiami TRAIL, UNIT 101
PORT CHARLOTTE, FLORIDA 33952
(941) 391-5980
www.LightningEngineer.com
www.GundersonEngineering.com
FLEng.com



PROJECT NO. 25106114 - 30E

CONTRACTOR:
ELITE CARPORTS LLC
715 WILLOW ST
MT. AIRY, NC 27030

PROJECT ADDRESS:
GENERIC SETUP
30'-0" ENCLOSED

DESIGN DATE: 05/13/2025

REVISION 1: DATE

REVISION 2: DATE

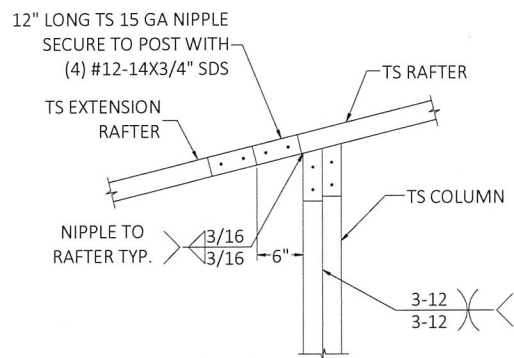
DRAWN BY: SH

SCALE: NTS

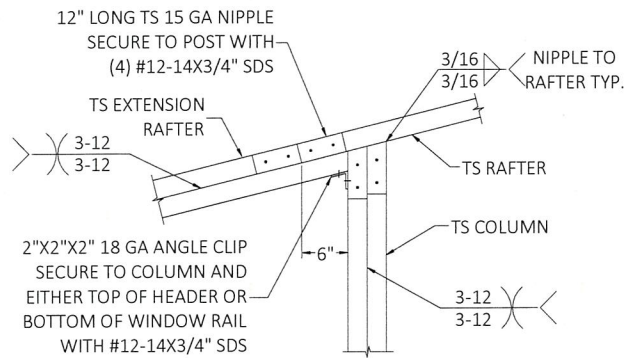
PAGE :

8 OF 11

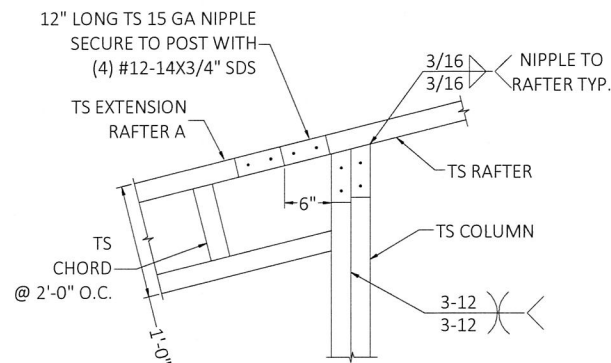
CONNECTION DETAILS



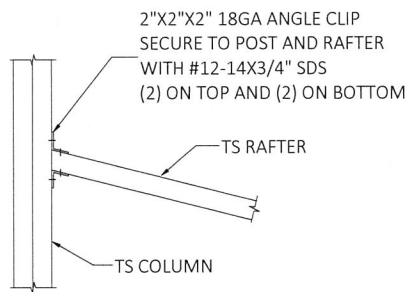
DETAIL 15A
SIDE EXTENSION RAFTER/COLUMN CONNECTION
FOR MAXIMUM RAFTER SPANS OF 12'-0"



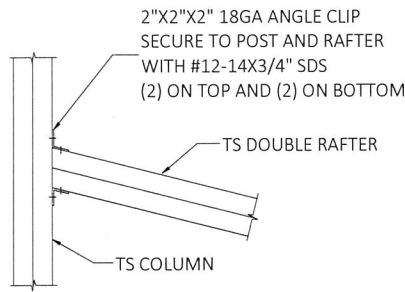
DETAIL 15B
SIDE EXTENSION RAFTER/COLUMN CONNECTION
FOR MAXIMUM RAFTER SPANS OF 14'-0"



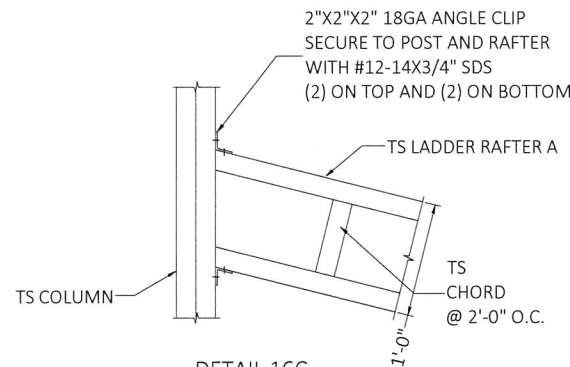
DETAIL 15C
SIDE EXTENSION RAFTER/COLUMN CONNECTION
FOR MAXIMUM RAFTER SPANS OF 16'-0"



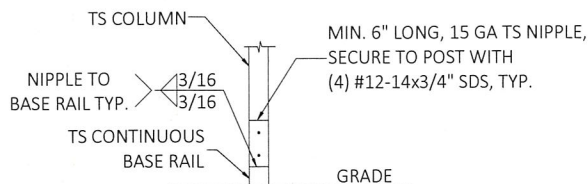
DETAIL 16A
LEAN TO RAFTER/COLUMN CONNECTION
FOR MAXIMUM RAFTER SPANS OF 12'-0"



DETAIL 16B
LEAN TO RAFTER/COLUMN CONNECTION
FOR MAXIMUM RAFTER SPANS OF 14'-0"



DETAIL 16C
LEAN TO RAFTER/COLUMN CONNECTION
FOR MAXIMUM RAFTER SPANS OF 16'-0"



DETAIL 17
LEAN-TO POST CONNECTION

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

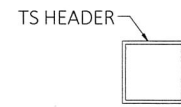
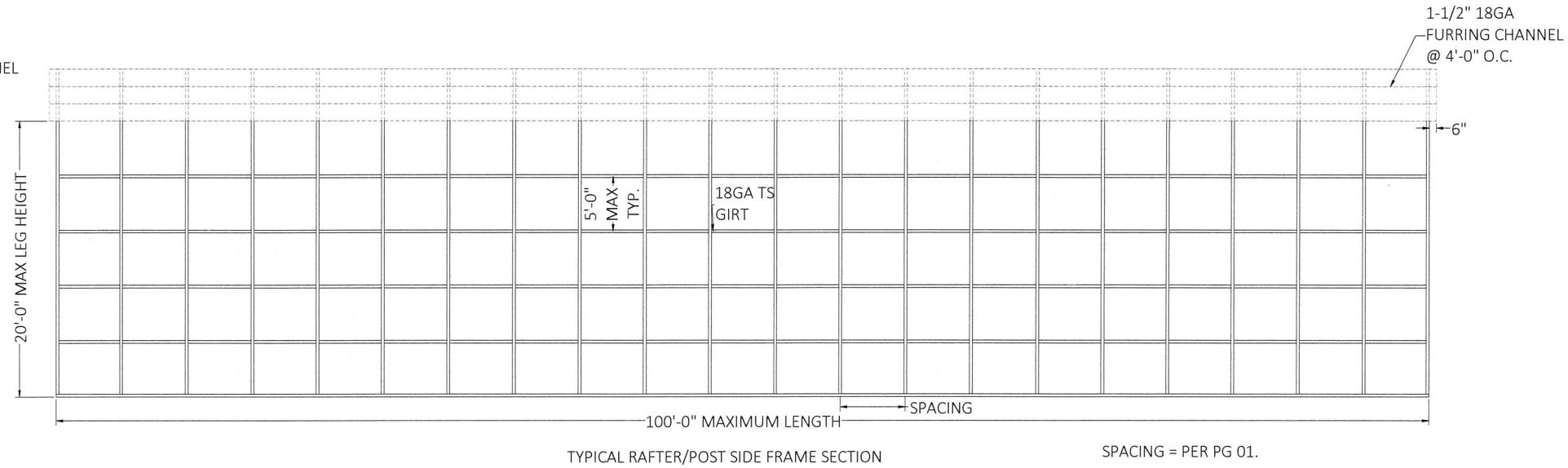
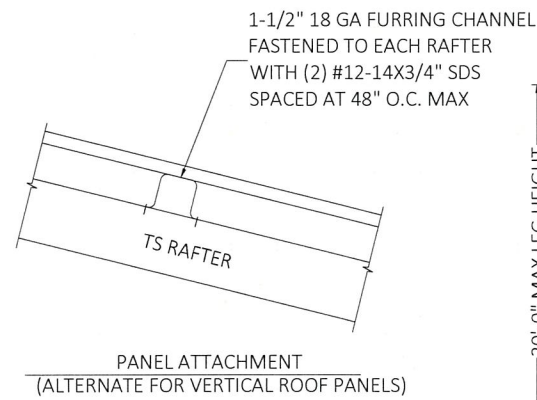
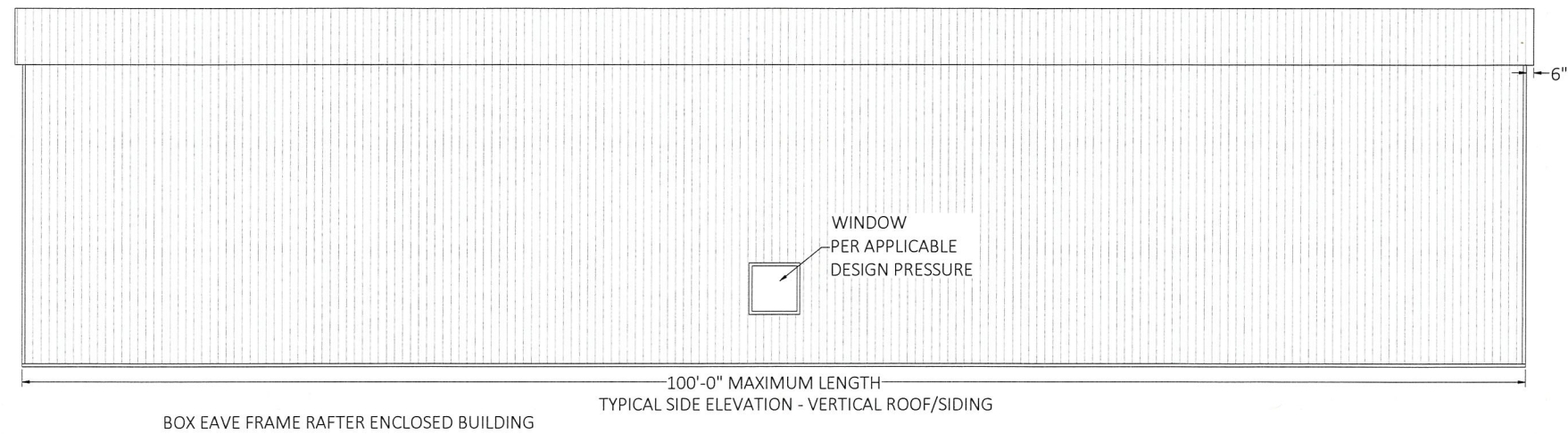
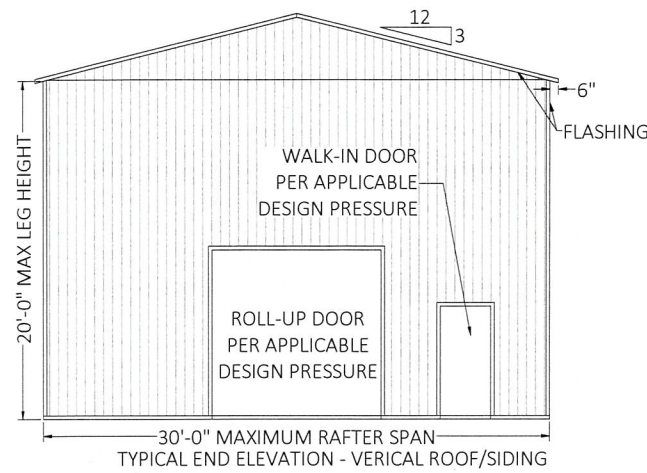


PROJECT NO. 25106114 - 30E

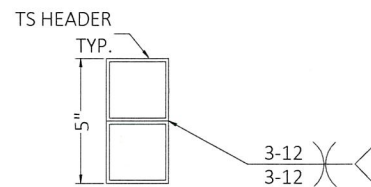
CONTRACTOR:
ELITE CARPORTS LLC
715 WILLOW ST
MT. AIRY, NC 27030

PROJECT ADDRESS:
GENERIC SETUP
30'-0" ENCLOSED

DESIGN DATE:	05/13/2025
REVISION 1:	DATE
REVISION 2:	DATE
DRAWN BY:	SH
SCALE:	NTS
PAGE :	9 OF 11

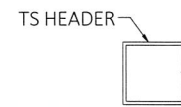


HEADER DETAIL FOR OPENINGS
LENGTH <= 4'-0"

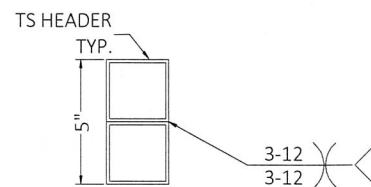


HEADER DETAIL FOR OPENINGS
4'-1" < LENGTH <= 12'-0"

SIDE WALL OPTIONAL HEADER

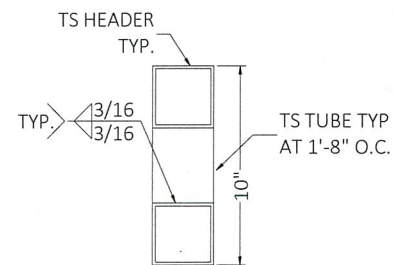


HEADER DETAIL FOR OPENINGS
LENGTH <= 7'-0"

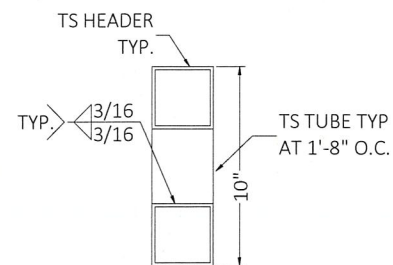


HEADER DETAIL FOR OPENINGS
7'-1" < LENGTH <= 16'-0"

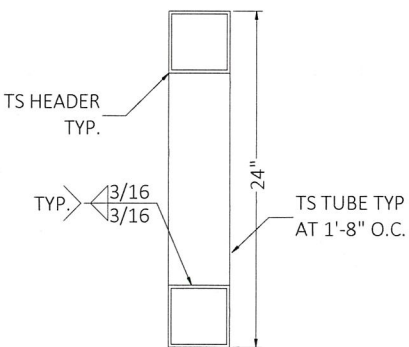
END WALL OPTIONAL HEADER



HEADER DETAIL FOR OPENINGS
12'-1" < LENGTH <= 15'-0"



HEADER DETAIL FOR OPENINGS
16'-1" < LENGTH <= 20'-0"



HEADER DETAIL FOR OPENINGS
15'-1" < LENGTH <= 20'-0"

DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA,
WV, KY, PA, MD)
GUNDERSON ENGINEERING (SC, NC)
FLORIDA ENGINEERING LLC (AL)

4161 TAMAMI TRAIL, UNIT 101
PORT CHARLOTTE, FLORIDA 33952
(941) 391-5980
www.LightningEngineer.com
www.GundersonEngineering.com
FLEng.com



PROJECT NO. 25106114 - 30E

CONTRACTOR:
ELITE CARPORTS LLC
715 WILLOW ST
MT. AIRY, NC 27030

PROJECT ADDRESS:
GENERIC SETUP
30'-0" ENCLOSED

DESIGN DATE:	05/13/2025
REVISION 1:	DATE
REVISION 2:	DATE
DRAWN BY:	SH
SCALE:	NTS
PAGE :	10 OF 11

HELIX ANCHOR NOTES:

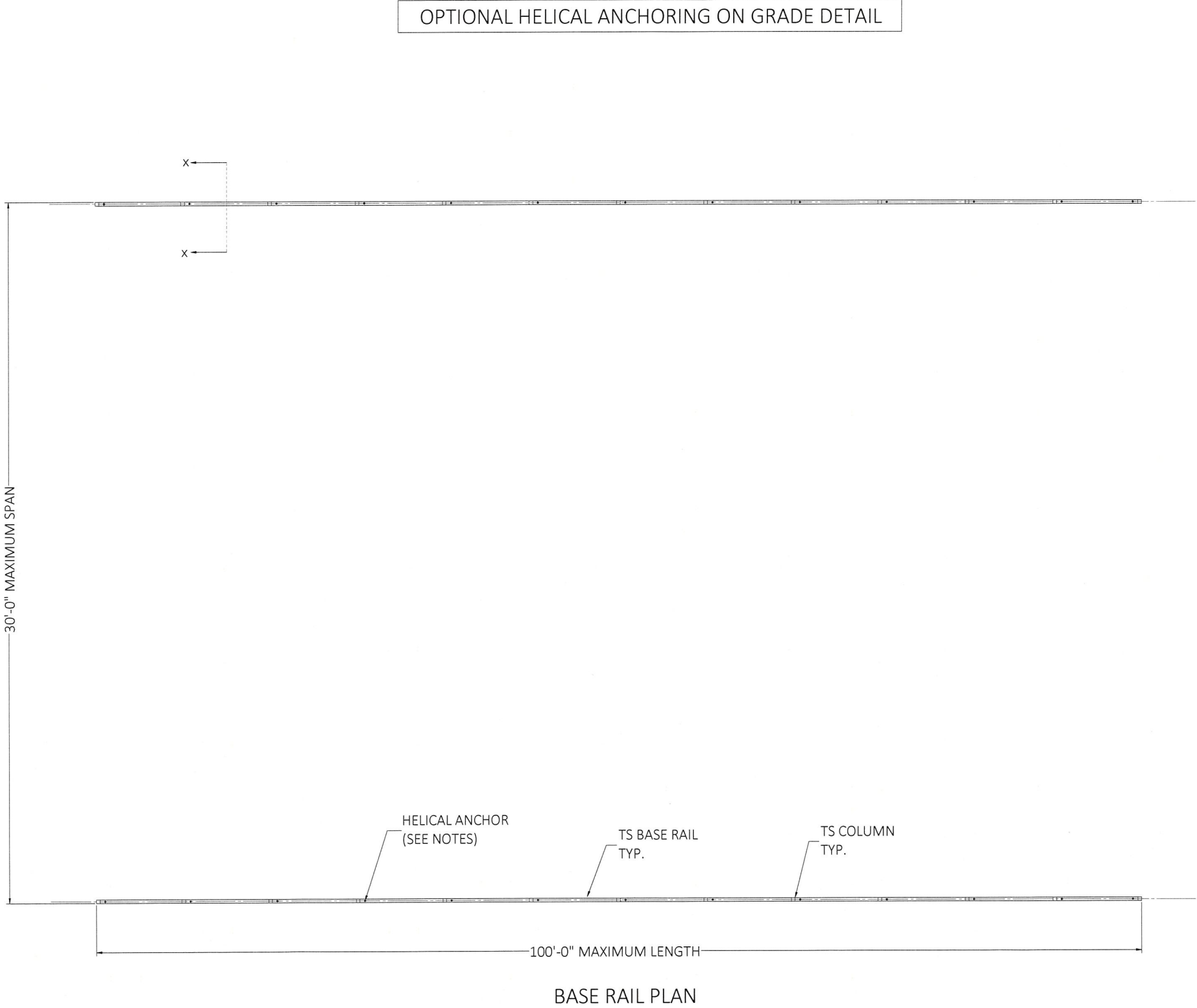
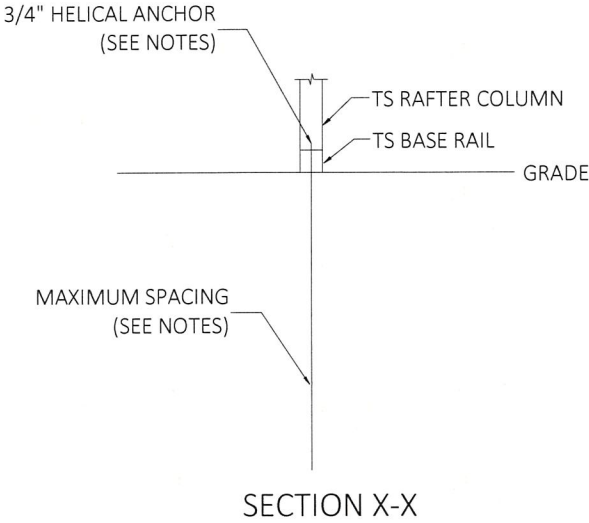
1. FOR VERY DENSE AND/OR CEMENTED SANDS, COARSE GRAVEL AND COBBLES, CALICHE, PRELOADED SILTS AND CLAYS, CORALS, MEDIUM DENSE COARSE SANDS, SANDY GRAVELS, VERY STIFF SILTS AND CLAYS, MEDIUM TO VERY LOOSE DENSE SANDS, FIRM TO STIFF CLAYS AND SILTS, ALLUVIAL FILL, USE MINIMUM (2) 4" HELICES WITH MINIMUM 30" EMBEDMENT INSTALLED AT EVERY POST (LEG) / MAX. RAFTER SPACING.

2. THE UPLIFT/BEARING CAPACITY OF HELICAL ANCHOR MUST BE EQUAL TO OR GREATER THAN 8.5 KIPS FOR ANCHORS INSTALLED AT EVERY POST (LEG) / MAX. RAFTER SPACING.

3. THE UPLIFT/BEARING CAPACITY OF HELICAL ANCHORS MUST BE AS SHOWN IN TABLE A FOR ANCHORS PROVIDED AT THE JAMBS OF DOOR OPENINGS. THE INCREASE IN HELICAL ANCHOR CAPACITY MAY BE ACHIEVED BY INCREASING THE DIAMETER AND/OR THE EMBEDMENT OF THE ANCHORS, OR BY USING DIFFERENT ANCHORS DEPENDING ON THE MANUFACTURER'S SPECIFICATIONS.

TABLE A

REQUIRED UPLIFT / BEARING CAPACITY OF HELICAL ANCHORS		RAFTER SPACING (FT.)	
OPENING WIDTH (FT.)	6	4	5
	8	11.0	9.5
	10	13.0	11.5
	12	15.0	13.0
	14	17.0	14.5
	16	19.5	16.5
	18	21.5	18.0
	20	23.5	20.0
	20	25.5	21.5



DBA: LIGHTNING ENGINEERING LLC (GA, TN, VA, WV, KY, PA, MD)
GUNDERSON ENGINEERING (SC, NC)
FLORIDA ENGINEERING LLC (AL)

4161 TAMiami TRAIL, UNIT 101
PORT CHARLOTTE, FLORIDA 33952
(941) 391-5980
www.LightningEngineer.com
www.GundersonEngineering.com
FLEng.com



PROJECT NO. 25106114 - 30E

CONTRACTOR:
ELITE CARPORTS LLC
715 WILLOW ST
MT. AIRY, NC 27030

PROJECT ADDRESS:
GENERIC SETUP
30'-0" ENCLOSED

DESIGN DATE:	05/13/2025	
REVISION 1:	DATE	
REVISION 2:	DATE	PAGE :
DRAWN BY:	SH	11 OF 11
SCALE:	NTS	