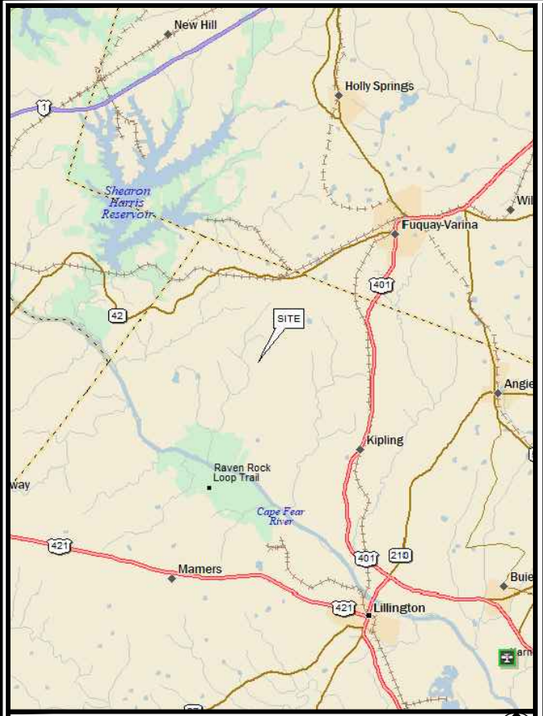

VICINITY MAP

PROJECT INFORMATION:

NOTICE TO CONTRACTOR
All construction must comply with current NC Building Codes and is subject to field inspection and verification.
APPROVED
Limited building only review
Permit holder responsible for full compliance with the code
08/07/2020
Harnett COUNTY NORTH CAROLINA

PROPOSED TELECOMMUNICATIONS FACILITY

SITE NAME:

OAKRIDGE RIVER ROAD

AERONAUTICAL STUDY NO:

2019-ASO-25741-OE

SITE ADDRESS:

1979 OAKRIDGE RIVER ROAD FUQUAY-VARINA, NC 27526 (HARNETT COUNTY)

APPLICANT/OWNER:

Harnett COUNTY NORTH CAROLINA

108 EAST FRONT STREET
LILLINGTON, NC 27546
OFFICE: (910) 814-6431

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TYRON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

N.C. LICENSE # C-1794

IF YOU DIG IN NORTH CAROLINA...
CALL US FIRST!
1-800-632-4949

NORTH CAROLINA ONE CALL
IT'S THE LAW

THE UTILITIES SHOWN HEREON ARE FOR THE CONTRACTORS CONVENIENCE ONLY. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE ENGINEER/SURVEYOR ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS SHOWN AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL UTILITIES WITHIN THE LIMITS OF THE WORK. ALL DAMAGE MADE TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

UTILITY STATEMENT

REV	DATE	ISSUED FOR:
1	06-30-20	CONSTRUCTION
0	10-10-19	PRELIMINARY CONSTRUCTION

DRAWN BY: GSB | CHECKED BY: JBG

LOCATION MAP

FROM RALEIGH, NC: TAKE EAST EDENTON STREET TO US-401 S/US-70 E/N DAWSON STREET. TURN LEFT ONTO US-401 S/US-70 E/N DAWSON STREET. KEEP RIGHT TO CONTINUE ON US-401 S. TURN RIGHT ONTO NC-42 W/W ACADEMY STREET. TURN LEFT ON BAREFOOT ROAD. CONTINUE ONTO CHRISTIAN LIGHT ROAD. TURN RIGHT ONTO OAKRIDGE RIVER ROAD. FOLLOW OAKRIDGE RIVER ROAD AS IT CURVES. AT THE INTERSECTION OF OAKRIDGE AND REVELS ROAD THE SITE WILL BE ON THE RIGHT.

DRIVING DIRECTIONS

LATITUDE	N	35° 31' 19.93" (NAD '83)*
LONGITUDE	W	78° 52' 54.65" (NAD '83)*

GROUND ELEVATION = 345.18'± (AMSL)*

* PER 1A CERTIFICATION LETTER BY TOWER ENGINEERING PROFESSIONALS, INC. DATED: AUGUST 19th, 2019

TOWER COORDINATES

TOWER OWNER:

NAME	HARNETT COUNTY
ADDRESS	108 EAST FRONT STREET
CITY, STATE, ZIP	LILLINGTON, NC 27546
CONTACT	MAIN OFFICE
PHONE	(910) 814-6431

APPLICANT / LESSEE:

NAME	HARNETT COUNTY
ADDRESS	108 EAST FRONT STREET
CITY, STATE, ZIP	LILLINGTON, NC 27546
CONTACT	MAIN OFFICE
PHONE	(910) 814-6431

PROPERTY OWNER:

NAME	HARNETT COUNTY
ADDRESS	P.O. BOX 759
CITY, STATE, ZIP	LILLINGTON, NC 27546
CONTACT	COUNTY MANAGER
PHONE	(910) 893-7555

AREA OF CONSTRUCTION:	5,000 SQ. FT.±
PRESENT OCCUPANCY TYPE:	RAWLAND
PROPOSED OCCUPANCY TYPE:	TELECOMMUNICATIONS FACILITY
CURRENT ZONING:	RA-30
PIN:	0634-540565.000
JURISDICTION:	HARNETT COUNTY

UTILITIES:

POWER COMPANY:	UNKNOWN
CONTACT:	N/A
PHONE:	N/A
POLE # NEAR SITE:	N/A
TELEPHONE COMPANY:	CENTURYLINK
CONTACT:	CUSTOMER SERVICE
PHONE:	(866) 642-0444
PEDESTAL # NEAR SITE:	1418 RP43N

PROJECT SUMMARY

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING:

1. NC BUILDING CODE (2018 EDITION)
2. ANSI/TIA/EIA-222-G
3. NC ELECTRIC CODE (2017 EDITION) (NEC 2017 & W/ NC ADDENDUMS)
4. LOCAL BUILDING CODE
5. CITY/COUNTY ORDINANCES

CODE COMPLIANCE

SURVEYOR:

NAME	TOWER ENGINEERING PROFESSIONALS, INC.
ADDRESS	326 TRYON RD
CITY, STATE, ZIP	RALEIGH, NC 27603
CONTACT	TIMOTHY L. FISH, P.L.S.
PHONE	(919) 661-6351

CIVIL ENGINEER:

NAME	TOWER ENGINEERING PROFESSIONALS, INC.
ADDRESS	326 TRYON RD
CITY, STATE, ZIP	RALEIGH, NC 27603
CONTACT	JOHN B. GOINS, P.E.
PHONE	(919) 661-6351

STRUCTURAL ENGINEER:

NAME	N/A
ADDRESS	N/A
CITY, STATE, ZIP	N/A
CONTACT	N/A
PHONE	N/A

ELECTRICAL ENGINEER:

NAME	TOWER ENGINEERING PROFESSIONALS, INC.
ADDRESS	326 TRYON RD
CITY, STATE, ZIP	RALEIGH, NC 27603
CONTACT	MARK S. QUAKENBUSH, P.E.
PHONE	(919) 661-6351

GEOTECHNICAL ENGINEER:

NAME	TOWER ENGINEERING PROFESSIONALS, INC.
ADDRESS	326 TRYON RD
CITY, STATE, ZIP	RALEIGH, NC 27603
CONTACT	JOHN D. LONGEST, P.E.
PHONE	(919) 661-6351

TOWER MANUFACTURER:

NAME	T.B.D.
ADDRESS	T.B.D.
CITY, STATE, ZIP	T.B.D.
CONTACT	T.B.D.
PHONE	T.B.D.

PROJECT TEAM

SHEET	DESCRIPTION	REV
T1	TITLE SHEET	1
T2	N.C. APPENDIX B, PART I	1
T3	N.C. APPENDIX B, PART II	1
T4	N.C. APPENDIX B, PART III	1
T5	N.C. APPENDIX B, PART IV	1
T6	N.C. APPENDIX B, PART V	1
N1	PROJECT NOTES	1
C1	SITE PLAN	1
C2	COMPOUND DETAIL	1
C3	TOWER ELEVATION	1
C4	SHELTER ELEVATIONS	1
C5	SHELTER FOUNDATION DETAILS	1
C6	GENERATOR FOUNDATION DETAILS	1
C7	ICE BRIDGE DETAILS	1
C8	ANTENNA & COAX MOUNTING DETAILS	1
C9	FENCE DETAILS	1
C10	GRADING PLAN	1
E1	ELECTRICAL NOTES	1
E2	SERVICE ROUTING PLAN	1
E3	ONE LINE DIAGRAM, PANEL SCHEDULE & NOTES	1
E4	EQUIPMENT GROUNDING PLAN & NOTES	1
E5	GROUNDING DETAILS I	1
E6	GROUNDING DETAILS II	1

INDEX OF SHEETS

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 032017 ENGINEER JOHN B. GOINS

June 30, 2020

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 042109 ENGINEER MARK S. QUAKENBUSH

June 30, 2020

SHEET NUMBER: **T-1**

REVISION: 1

TEP#: 153676.258201

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: OAKRIDGE RIVER ROAD
Address: 1979 OAKRIDGE RIVER ROAD, FUQUAY-VARINA, NC Zip Code 27526
Owner/Authorized Agent: STATE OF N.C. Phone # (919) 662 - 4440 E-Mail _____
Owned By: ☐ City/County ☒ Private ☐ State
Code Enforcement Jurisdiction: ☐ City_____ ☐ County_____ ☒ State

CONTACT: JOHN GOINS, P.E.

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural	N/A			( )	
Civil	TEP, INC	JOHN B. GOINS, P.E.	032017	(919) 661-6351	
Electrical	TEP, INC	MARK S. QUAKENBUSH, P.E.	042109	(919) 661-6351	
Fire Alarm				( )	
Plumbing				( )	
Mechanical				( )	
Sprinkler-Standpipe				( )	
Structural				( )	
Retaining Walls >5' High				( )	
Other				( )	

("Other" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC BUILDING CODE: ☒ New Building ☐ Addition ☐ Renovation
☐ 1st Time Interior Completion
☐ Shell/Core - Contact the local inspection jurisdiction for possible additional procedures and requirements
☐ Phased Construction - Shell/Core- Contact the local inspection jurisdiction for possible additional procedures and requirements

2018 NC EXISTING BUILDING CODE: EXISTING: ☐ Prescriptive ☐ Repair ☐ Chapter 14
Alteration: ☐ Level I ☐ Level II ☐ Level III
☐ Historic Property ☐ Change of Use

CONSTRUCTED: (date) _____ **CURRENT OCCUPANCY(S)** (Ch. 3): _____
RENOVATED: (date) _____ **PROPOSED OCCUPANCY(S)** (Ch. 3): _____

OCCUPANCY CATEGORY (Table 1604.5): **Current:** ☐ I ☐ II ☐ III ☐ IV
Proposed: ☐ I ☐ II ☐ III ☒ IV

BASIC BUILDING DATA
Construction Type: ☐ I-A ☒ II-A ☐ III-A ☐ IV ☐ V-A
(check all that apply) ☐ I-B ☐ II-B ☐ III-B ☐ V-B
Sprinklers: ☒ No ☐ Partial ☐ Yes ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☒ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Fire District: ☐ No ☒ Yes **Flood Hazard Area:** ☒ No ☐ Yes
Special Inspections Required: ☐ No ☒ Yes (Contact the local inspection jurisdiction for additional procedures and requirements.)

Gross Building Area Table

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
3rd Floor			
2nd Floor			
Mezzanine			
1st Floor	0	219	219
Basement			
TOTAL			219

ALLOWABLE AREA

Primary Occupancy Classification(s): Select one Select one Select one Select one Select one Select one
Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 Condition ☐ 1 ☐ 2
☐ I-2 Condition ☐ 1 ☐ 2
☐ I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
☐ I-4
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled
☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☒

Accessory Occupancy Classification(s): _____
Incidental Uses (Table 509): _____
Special Uses (Chapter 4 – List Code Sections): _____
Special Provisions: (Chapter 5 – List Code Sections): _____
Mixed Occupancy: ☒ No ☐ Yes Separation: _____ Hr. Exception: _____

☐ Non-Separated Use (508.3) - The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building.

☐ Separated Use (508.4) - See below for area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$

_____ + _____ + ... = _____ ≤ 1.00

2018 NC Administrative Code and Policies

PLANS PREPARED FOR:
Harnett County
108 EAST FRONT STREET
LILLINGTON, NC 27546
OFFICE: (910) 814-6431

PROJECT INFORMATION:
OAKRIDGE RIVER ROAD
1979 OAKRIDGE RIVER ROAD
FUQUAY-VARINA, NC 27526
(HARNETT COUNTY)

PLANS PREPARED BY:
TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

N.C. LICENSE # C-1794

SEAL:
NORTH CAROLINA PROFESSIONAL SEAL 032017 ENGINEER JOHN B. GOINS
June 30, 2020

REV	DATE	ISSUED FOR:
1	06-30-20	CONSTRUCTION
0	10-10-19	PRELIMINARY CONSTRUCTION

DRAWN BY: GSB CHECKED BY: JBG

SHEET TITLE:
NC APPENDIX B, PART I

SHEET NUMBER: **T-2**
REVISION: 1
TEP#: 153676.258201

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[4] AREA	(C) AREA FOR FRONTAGE INCREASE[1,5]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[2,3]
1	EQUIPMENT	219	19,000	N/A	19,000
	ROOM				

[1] Frontage area increases from Section 506.2 are computed thus:

a. Perimeter which fronts a public way or open space having 20 feet minimum width = _____ (F)
b. Total Building Perimeter = _____ (P)
c. Ratio (F/P) = _____ (F/P)
d. W = Minimum width of public way = _____ (W)
e. Percent of frontage increase $I_f = 100[F/P - 0.25] \times W/30$ = _____ (%)

[2] Unlimited area applicable under conditions of Section 507.

[3] Maximum Building Area = total number of stories in the building x D (maximum3 stories) (506.2).

[4] The maximum area of open parking garages must comply with Table 406.5.4. The maximum area of air traffic control towers must comply with Table 412.3.1.

[5] Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE
Building Height in Feet (Table 504.3)	65	9'-2"	
Building Height in Stories (Table 504.4)	1	1	

[1] Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/_____* REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
Structural Frame, including columns, girders, trusses		N/A					
Bearing Walls							
Exterior							
North		1	2	203953			
East		1	2	Sheet			
West		1	2	8 of 8			
South		1	2				
Interior		N/A					
Nonbearing Walls and Partitions Exterior walls		N/A					
North		N/A					
East		N/A					
West		N/A					
South		N/A					
Interior walls and partitions		N/A					
Floor Construction Including supporting beams and joists		0	2	203953 Sheet 8 of 8			
Floor Ceiling Assembly		N/A					
Columns Supporting Floors		N/A					
Roof Construction, including supporting beams and joists		0	2	203953 Sht. 8 of 8			
Roof Ceiling Assembly		N/A					
Columns Supporting Roof		N/A					
Shaft Enclosures - Exit		N/A					
Shaft Enclosures - Other		N/A					
Corridor Separation		N/A					
Occupancy/Fire Barrier Separation		N/A					
Party/Fire Wall Separation		N/A					
Smoke Barrier Separation		N/A					
Smoke Partition		N/A					
Tenant/Dwelling Unit/ Sleeping Unit Separation		N/A					
Incidental Use Separation		N/A					

* Indicate section number permitting reduction

2018 NC Administrative Code and Policies

PLANS PREPARED FOR:

Harnett County NORTH CAROLINA

108 EAST FRONT STREET
LILLINGTON, NC 27546
OFFICE: (910) 814-6431

PROJECT INFORMATION:

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SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 032017 ENGINEER JOHN B. GOINS

June 30, 2020

REV	DATE	ISSUED FOR:
1	06-30-20	CONSTRUCTION
0	10-10-19	PRELIMINARY CONSTRUCTION

DRAWN BY: GSB | CHECKED BY: JBG

SHEET TITLE:

NC APPENDIX B, PART II

SHEET NUMBER: **T-3**

REVISION: 1

TEP#: 153676.258201

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
>30' (North)	UP/NS	NO LIMIT	4

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☐ No ☒ Yes
Exit Signs: ☐ No ☒ Yes
Fire Alarm: ☐ No ☒ Yes
Smoke Detection Systems: ☐ No ☒ Yes ☐ Partial _____
Panic Hardware: ☐ No ☒ Yes

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: N/A

- ☐ Fire and/or smoke rated wall locations (Chapter 7)
- ☐ Assumed and real property line locations (if not on the site plan)
- ☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
- ☐ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
- ☐ Occupant loads for each area
- ☐ Exit access travel distances (1017)
- ☐ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
- ☐ Dead end lengths (1020.4)
- ☐ Clear exit widths for each exit door
- ☐ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
- ☐ Actual occupant load for each exit door
- ☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
- ☐ Location of doors with panic hardware (1010.1.10)
- ☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
- ☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
- ☐ Location of doors equipped with hold-open devices
- ☐ Location of emergency escape windows (1030)
- ☐ The square footage of each fire area (202)
- ☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
- ☐ Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS N/A
(SECTION 1107)

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED

ACCESSIBLE PARKING N/A
(SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES		# OF ACCESSIBLE SPACES PROVIDED			TOTAL # ACCESSIBLE PROVIDED
	REQUIRED	PROVIDED	REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	
TOTAL						

PLUMBING FIXTURE REQUIREMENTS N/A
(TABLE 2902.1)

USE		WATERCLOSETS			URINALS	LAVATORIES			SHOWERS /TUBS	DRINKING FOUNTAINS	
		MALE	FEMALE	UNISEX		MALE	FEMALE	UNISEX		REGULAR	ACCESSIBLE
SPACE	EXIST'G										
	NEW										
	REQ'D										

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, etc., describe below)
N/A

2018 NC Administrative Code and Policies

PLANS PREPARED FOR:

Harnett County NORTH CAROLINA

108 EAST FRONT STREET
LILLINGTON, NC 27546
OFFICE: (910) 814-6431

PROJECT INFORMATION:

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N.C. LICENSE # C-1794

SEAL:

June 30, 2020

REV	DATE	ISSUED FOR:
1	06-30-20	CONSTRUCTION
0	10-10-19	PRELIMINARY CONSTRUCTION

DRAWN BY: GSB | CHECKED BY: JBG

SHEET TITLE:

NC APPENDIX B, PART III

SHEET NUMBER: **T-4**

REVISION: 1

TEP#: 153676.258201

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: ☐ No ☐ Yes (The remainder of this section is not applicable)

Exempt Building: ☐ No ☐ Yes (Provide code or statutory reference): _____

Climate Zone: ☐ 3A ☒ 4A ☐ 5A

Method of Compliance: Energy Code ☐ Performance ☒ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive
(If "Other" specify source here)_____

THERMAL ENVELOPE (Prescriptive method only)

Roof/ceiling Assembly (each assembly)
Description of assembly: CONCRETE + INSULATION
U-Value of total assembly: 0.0909
R-Value of insulation: 6.53
Skylights in each assembly: _____
U-Value of skylight: _____
total square footage of skylights in each assembly: _____

Exterior Walls (each assembly)
Description of assembly: CONCRETE + INSULATION
U-Value of total assembly: 0.0909
R-Value of insulation: R-11
Openings (windows or doors with glazing)
U-Value of assembly: _____
Solar heat gain coefficient: _____
projection factor: _____
Door R-Values: R-4

Walls below grade (each assembly) N/A
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____

Floors over unconditioned space (each assembly) N/A
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____

Floors slab on grade N/A
Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Horizontal/vertical requirement: _____
slab heated: _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN
(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE)

DESIGN LOADS:

Importance Factors: Snow (I_S) 1.2
Seismic (I_E) 1.5

Live Loads: Roof 100 psf
Mezzanine N/A psf
Floor 125 psf

Ground Snow Load: 100 psf

Wind Load: Basic Wind Speed 90 mph (ASCE-7)
Exposure Category C

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☒ C ☐ D

Provide the following Seismic Design Parameters:
Risk Category (Table 1604.5) ☐ I ☐ II ☐ III ☒ IV
Spectral Response Acceleration S_S 17.6 %g S_1 8.4 %g
Site Classification (ASCE 7) ☐ A ☐ B ☐ C ☒ D ☐ E ☐ F
Data Source: ☐ Field Test ☒ Presumptive ☐ Historical Data
Basic structural system ☒ Bearing Wall ☐ Dual w/Special Moment Frame
☐ Building Frame ☐ Dual w/Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum
Analysis Procedure: ☐ Simplified ☒ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☒ Yes ☐ No

LATERAL DESIGN CONTROL: Earthquake ☐ Wind ☒

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) N/A psf
Presumptive Bearing capacity 2000 psf
Pile size, type, and capacity N/A

PLANS PREPARED FOR:

Harnett COUNTY NORTH CAROLINA
108 EAST FRONT STREET
LILLINGTON, NC 27546
OFFICE: (910) 814-6431

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1979 OAKRIDGE RIVER ROAD
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PLANS PREPARED BY:

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N.C. LICENSE # C-1794

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 032017 ENGINEER JOHN B. GOINS

June 30, 2020

REV	DATE	ISSUED FOR:
1	06-30-20	CONSTRUCTION
0	10-10-19	PRELIMINARY CONSTRUCTION

DRAWN BY: GSB | CHECKED BY: JBG

SHEET TITLE:

NC APPENDIX B, PART IV

SHEET NUMBER: **T-5**

REVISION: 1

TEP#: 153676.258201

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone

winter dry bulb: 20 F
summer dry bulb: 95 F

Interior design conditions

winter dry bulb: 70 F
summer dry bulb: 75 F
relative humidity: 50 %

Building heating load: NONE

Building cooling load: 40,000 BTU/H

Mechanical Spacing Conditioning System

Unitary
- description of unit: BARD 24,000 BTU/H COOLING (2 UNITS)
- heating efficiency: NONE
- cooling efficiency: 9.0 EER
- size category of unit: 24,000 BTU/H (2 UNITS)

Boiler
- Size category. If oversized, state reason.: N/A

Chiller
- Size category. If oversized, state reason.: N/A

List equipment efficiencies: _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance: Energy Code ☐ Performance ☒ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive

Lighting schedule (each fixture type)

lamp type required in fixture	34 W FL
number of lamps in fixture	2
ballast type used in the fixture	ELEC
number of ballasts in fixture	2
total wattage per fixture	60
total interior wattage specified vs. allowed (whole building or space by space)	600 VS. 331 (ONLY LIT WHEN OCCUPIED)
total exterior wattage specified vs. allowed	N/A

Additional Efficiency Package Options
(When using the 2018 NCECC; not required for ASHRAE 90.1)

- ☐ C406.2 More Efficient HVAC Equipment Performance
- ☐ C406.3 Reduced Lighting Power Density
- ☐ C406.4 Enhanced Digital Lighting Controls
- ☐ C406.5 On-Site Renewable Energy
- ☐ C406.6 Dedicated Outdoor Air System
- ☐ C406.7 Reduced Energy Use in Service Water Heating

PLANS PREPARED FOR:

Harnett County NORTH CAROLINA

108 EAST FRONT STREET
LILLINGTON, NC 27546
OFFICE: (910) 814-6431

PROJECT INFORMATION:

OAKRIDGE RIVER ROAD

1979 OAKRIDGE RIVER ROAD
FUQUAY-VARINA, NC 27526
(HARNETT COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

N.C. LICENSE # C-1794

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 032017 ENGINEER JOHN B. GOINS

June 30, 2020

REV	DATE	ISSUED FOR:
1	06-30-20	CONSTRUCTION
0	10-10-19	PRELIMINARY CONSTRUCTION

DRAWN BY: GSB | CHECKED BY: JBG

SHEET TITLE:

NC APPENDIX B, PART V

SHEET NUMBER: **T-6**

REVISION: 1

TEP#: 153676.258201

GENERAL NOTES:

1. ALL REFERENCES TO OWNER IN THESE DOCUMENTS SHALL BE CONSIDERED HARNETT COUNTY OR ITS DESIGNATED REPRESENTATIVE.

2. ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST HAVE CONSIDERABLE EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE OF NORTH CAROLINA.

3. WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE NORTH CAROLINA BUILDING CODE, 2018 EDITION.

4. UNLESS SHOWN OR NOTED OTHERWISE ON THE CONTRACT DRAWINGS, OR IN THE SPECIFICATIONS, THE FOLLOWING NOTES SHALL APPLY TO THE MATERIALS LISTED HEREIN, AND TO THE PROCEDURES TO BE USED ON THIS PROJECT.

5. ALL HARDWARE ASSEMBLY MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERCEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.

6. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND IT'S COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.

7. ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS SHOWN ON THE DRAWINGS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING ANY MATERIALS ORDERING, FABRICATION OR CONSTRUCTION WORK ON THIS PROJECT. CONTRACTOR SHALL NOT SCALE CONTRACT DRAWINGS IN LIEU OF FIELD VERIFICATIONS. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND THE OWNER'S ENGINEER. THE DISCREPANCIES MUST BE RESOLVED BEFORE THE CONTRACTOR IS TO PROCEED WITH THE WORK. THE CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISES AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTION OF THE PROTECTIVE MEASURES OR THE PROCEDURES.

8. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.

9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR INSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.

10. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS, WITH THE RESIDENT LEASING AGENT FOR APPROVAL.

11. BILL OF MATERIALS AND PART NUMBERS LISTED ON CONSTRUCTION DRAWINGS ARE INTENDED TO AID CONTRACTOR. CONTRACTOR SHALL VERIFY PARTS AND QUANTITIES WITH MANUFACTURER PRIOR TO BIDDING AND/OR ORDERING MATERIALS.

12. ALL PERMITS THAT MUST BE OBTAINED ARE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.

13. 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, THE CONTRACTOR MUST NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY OR CITY) ENGINEER.

14. THE CONTRACTOR SHALL REWORK (DRY, SCARIFY, ETC.) ALL MATERIAL NOT SUITABLE FOR SUBGRADE IN IT PRESENT STATE. AFTER REWORKING, IF THE MATERIAL REMAINS UNSUITABLE, THE CONTRACTOR SHALL UNDERCUT THIS MATERIAL AND REPLACE WITH APPROVED MATERIAL. ALL SUBGRADES SHALL BE PROOFROLLED WITH A FULLY LOADED TANDEM AXLE DUMP TRUCK PRIOR TO PAVING. ANY SOFTER MATERIAL SHALL BE REWORKED OR REPLACED.

15. THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL PIPES, DITCHES, AND OTHER DRAINAGE STRUCTURES FREE FROM OBSTRUCTION UNTIL WORK IS ACCEPTED BY THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGES CAUSED BY FAILURE TO MAINTAIN DRAINAGE STRUCTURE IN OPERABLE CONDITION.

16. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR ONE YEAR FROM ACCEPTANCE DATE.

17. ALL BUILDING DIMENSIONS SHALL BE VERIFIED WITH THE PLANS (LATEST REVISION) PRIOR TO COMMENCING CONSTRUCTION. NOTIFY THE ENGINEER IMMEDIATELY IF ANY DISCREPANCIES ARE DISCOVERED. THE OWNER SHALL HAVE A SET OF APPROVED PLANS AVAILABLE AT THE SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED. A DESIGNATED RESPONSIBLE EMPLOYEE SHALL BE AVAILABLE FOR CONTACT BY GOVERNING AGENCY INSPECTORS.

PLANS PREPARED FOR:

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SEAL:

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June 30, 2020

REV	DATE	ISSUED FOR:
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DRAWN BY: GSB | CHECKED BY: JBG

SHEET TITLE:

PROJECT NOTES

SHEET NUMBER: **N-1**

REVISION: 1

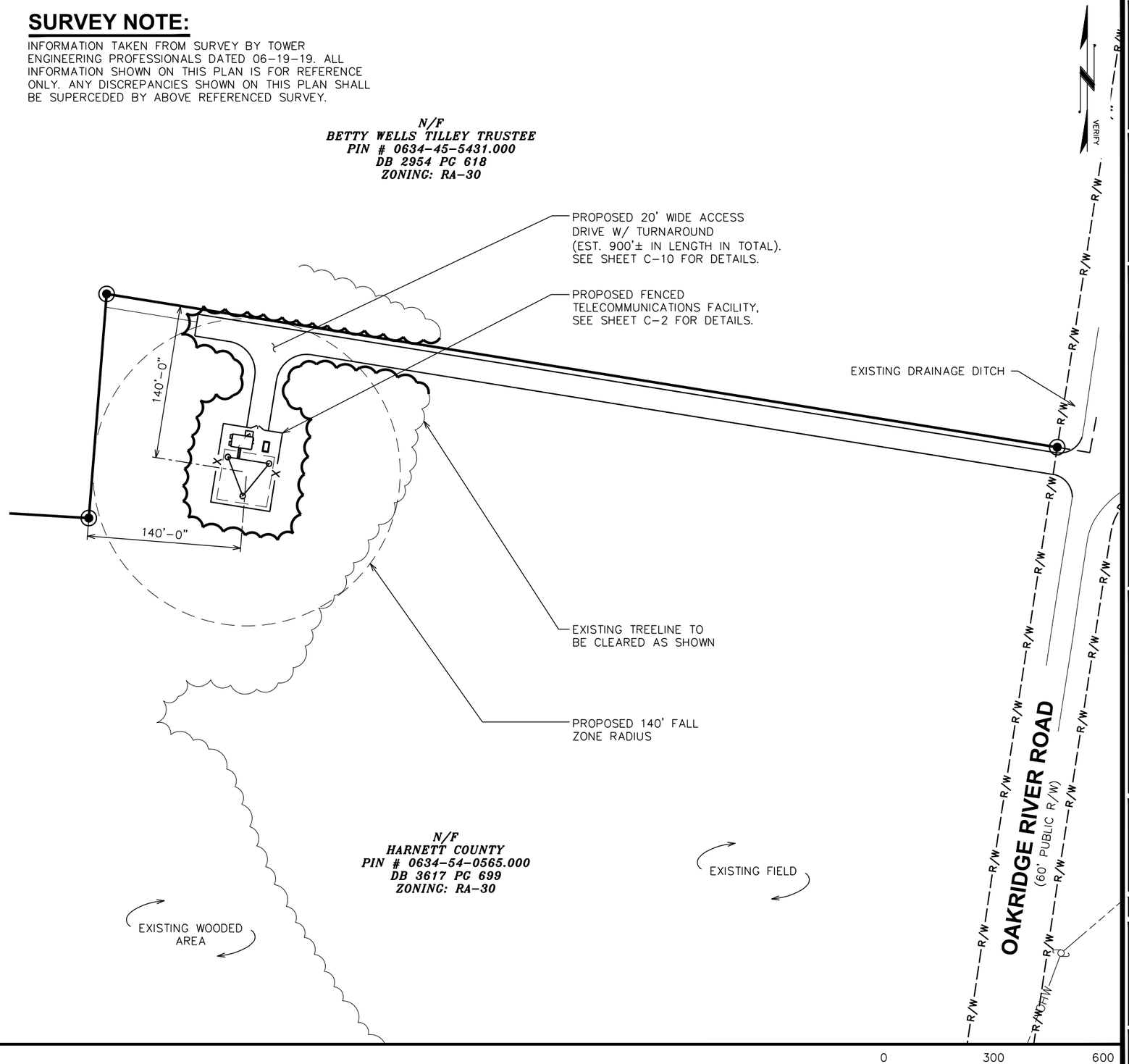
TEP#: 153676.258201

NOTES:

1. THIS PLAN DOES NOT REPRESENT A TITLE SURVEY.
2. THE BASIS OF THE BEARINGS AND COORDINATES IS THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM (NAD 83/2011) BASED ON DIFFERENTIAL GPS OBSERVATIONS PERFORMED ON JUNE 17, 2019; TIED TO THE NATIONAL SPATIAL REFERENCE SYSTEM VIA CORS STATION AND OPUS; AND EXPRESSED IN US SURVEY FEET.
3. VERTICAL INFORMATION SHOWN, BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD '88) IN US SURVEY FEET.
4. ALL DISTANCES ARE GROUND UNLESS OTHERWISE NOTED.
5. THE PROPOSED LOCATION OF THE TOWER IS LOCATED IN FLOOD ZONE "X", AREA TO BE DETERMINED OUTSIDE 0.2% ANNUAL CHANCE FLOODPLAIN. (FEMA/FIRM MAP NUMBER 3720062400J, EFFECTIVE OCTOBER 3, 2006).
6. PROPERTY OWNER: HARNETT COUNTY

SURVEY NOTE:

INFORMATION TAKEN FROM SURVEY BY TOWER ENGINEERING PROFESSIONALS DATED 06-19-19. ALL INFORMATION SHOWN ON THIS PLAN IS FOR REFERENCE ONLY. ANY DISCREPANCIES SHOWN ON THIS PLAN SHALL BE SUPERCEDED BY ABOVE REFERENCED SURVEY.



LEGEND

———	EXIST. PROPERTY LINE
- - - - - - -	ADJ. PROPERTY LINE
◉	PROPERTY CORNER
● IRF	IRON ROD FOUND
☒ CM	CONCRETE MONUMENT
	EXIST. UTILITY POLE
T	EXIST. TELCO PEDESTAL
E	EXIST. POWER PEDESTAL
---200---	EXIST. CONTOUR LINE
	EDGE OF PAVEMENT
--OHW---	OVERHEAD WIRE
—— X ——	CHAIN LINK FENCE
	EXISTING TREE LINE

SITE PLAN

SCALE: 1" = 100'

0 300 600

SCALE IN FEET

PLANS PREPARED FOR:

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DRAWN BY: GSB | CHECKED BY: JBG

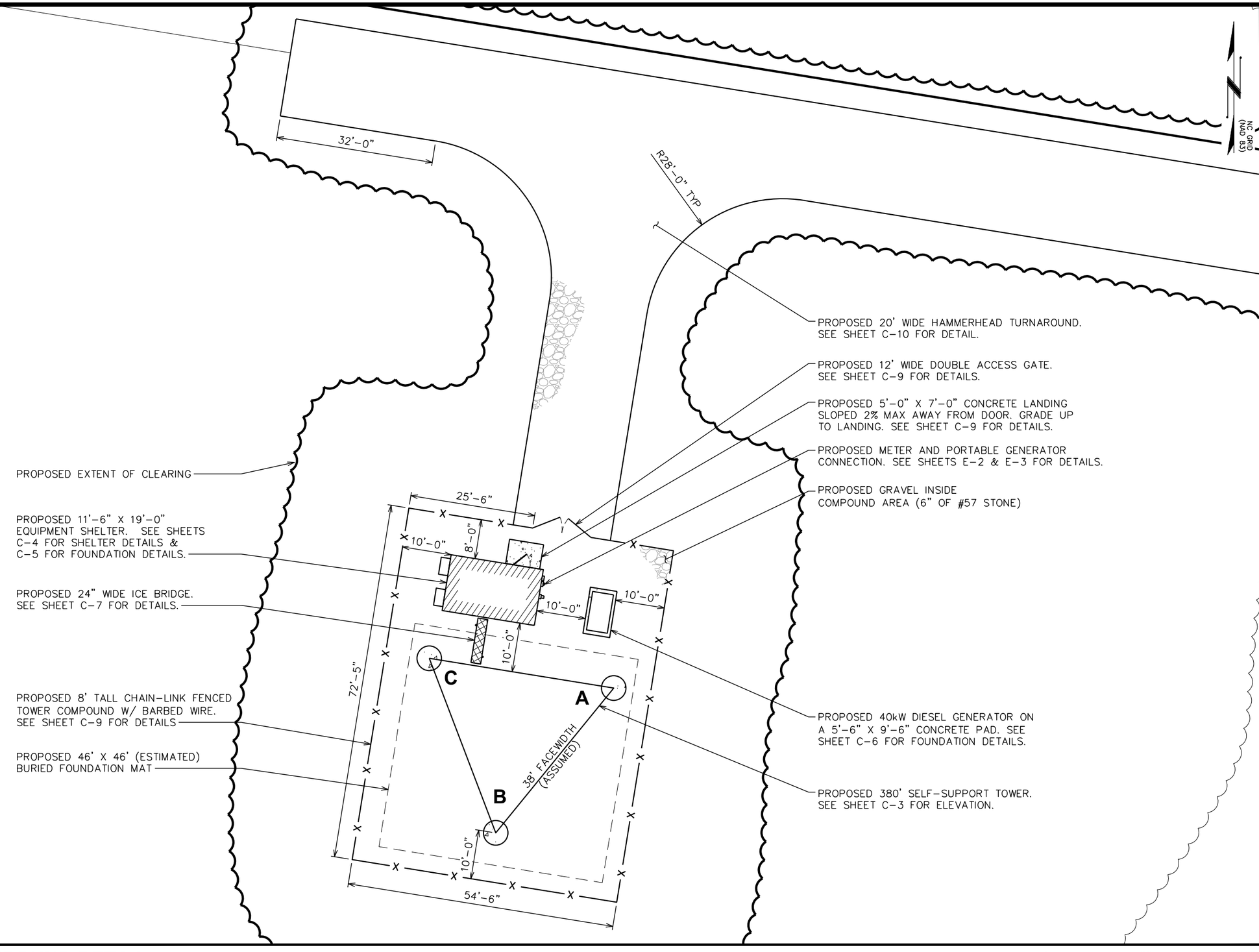
SHEET TITLE:

SITE PLAN

SHEET NUMBER: **C-1**

REVISION: 1

TEP#: 153676.258201



COMPOUND DETAIL

SCALE: 1" = 20'

0 20 40

SCALE IN FEET

PLANS PREPARED FOR:

Harnett COUNTY NORTH CAROLINA

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DRAWN BY: GSB | CHECKED BY: JBG

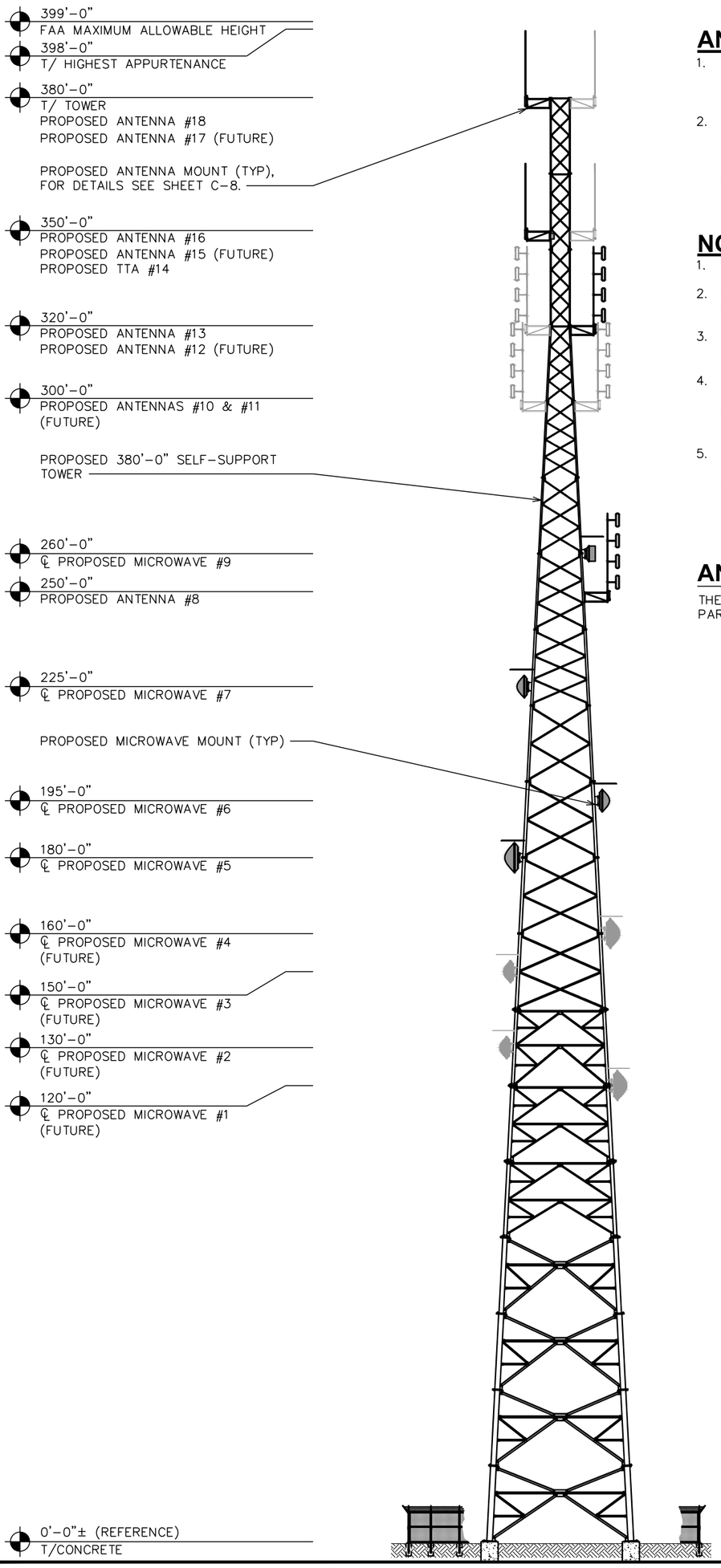
SHEET TITLE:

COMPOUND DETAIL

SHEET NUMBER: **C-2**

REVISION: 1

TEP#: 153676.258201



ANTENNA & MOUNT NOTE:

1. PROPOSED HARNETT COUNTY ANTENNAS AND MOUNTS SHOWN ON THIS SHEET. SEE SHEET C-8 FOR FUTURE ANTENNAS BY HARNETT COUNTY AND OTHERS.
2. PROPOSED ANTENNA/MICROWAVE MOUNTS ARE TO BE SUPPLIED BY MOTOROLA. MOUNTS SPECIFIED ON SHEET C-8 SHOULD NOT BE DUPLICATED IF EXISTING MOUNTS ARE PRESENT. SHEET C-8 SHOULD ALSO BE REFERENCED FOR ANY ANTENNA/MICROWAVE SPECIFIC INFORMATION.

NOTES:

1. PROPOSED COAX TO BE MOUNTED TO WAVEGUIDE LADDER.
2. HARNETT COUNTY ANTENNAS, MOUNTS, AND ASSOCIATED HARDWARE TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
3. NCSHP MOUNTS, ANTENNAS, AND LINES TO BE SUPPLIED AND INSTALLED BY OTHERS.
4. THE FAA CONDUCTED AN AERONAUTICAL STUDY (NO. 2019-ASO-25741-OE) AND DETERMINED THAT THIS TOWER POSES NO HAZARD TO AIR NAVIGATION AND DOES NOT REQUIRE OBSTRUCTION LIGHTING.
5. A SINGLE SIGN, 2 FEET SQUARE, IN A VISIBLE LOCATION SHALL BE REQUIRED WITH NAME AND EMERGENCY TELEPHONE NUMBER OF THE TOWER OWNER AND ALL COMPANIES OPERATING ON THE TOWER. NO ADVERTISING SHALL BE ATTACHED TO THE TOWER.

ANSI/TIA-222-G DESIGN NOTE:

THE PROPOSED TOWER SHALL BE DESIGNED PER THE FOLLOWING PARAMETERS:

STRUCTURE CLASSIFICATION: III
EXPOSURE CATEGORY: C
TOPOGRAPHIC CATEGORY: 1

* DESIGN WIND SPEED:
95mph(3sec GUST)

TOWER ELEVATION

SCALE: 1/32" = 1'-0"

0 32 64
SCALE IN FEET

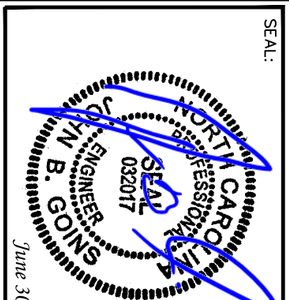
SHEET NUMBER: C-3
REVISION: 1
TEP#: 153676.258201

SHEET TITLE: TOWER ELEVATION

DRAWN BY: GSB
CHECKED BY: JBG

REV	DATE	ISSUED FOR:
0	10-10-19	PRELIMINARY CONSTRUCTION
1	06-30-20	CONSTRUCTION

SEAL:



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(HARNETT COUNTY)

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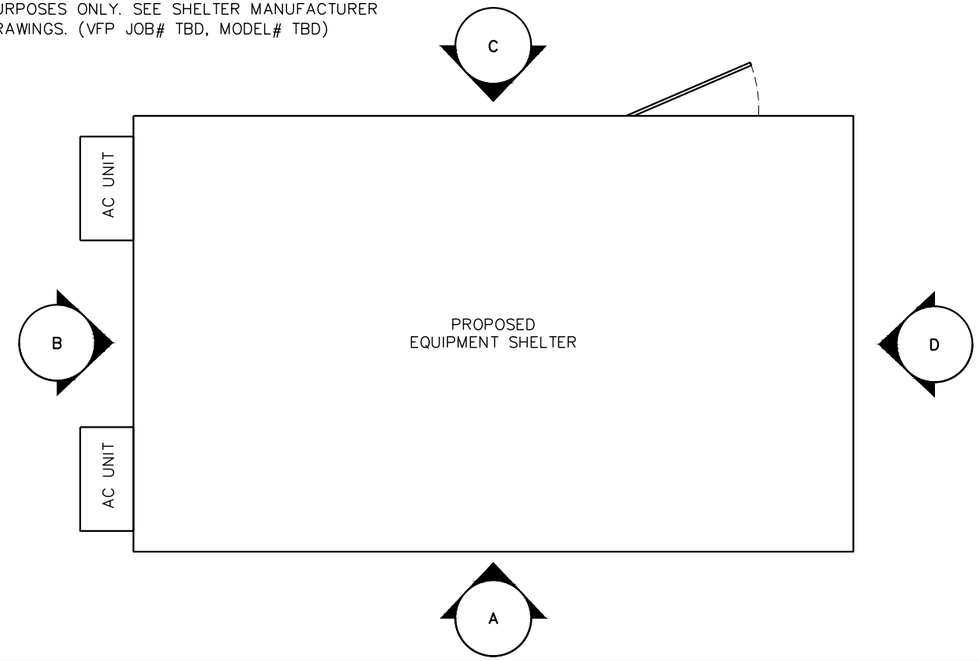
NOTE:

EQUIPMENT SHELTER LAYOUT SHOWN FOR LAYOUT PURPOSES ONLY. SEE SHELTER MANUFACTURER DRAWINGS. (VFP JOB# TBD, MODEL# TBD)

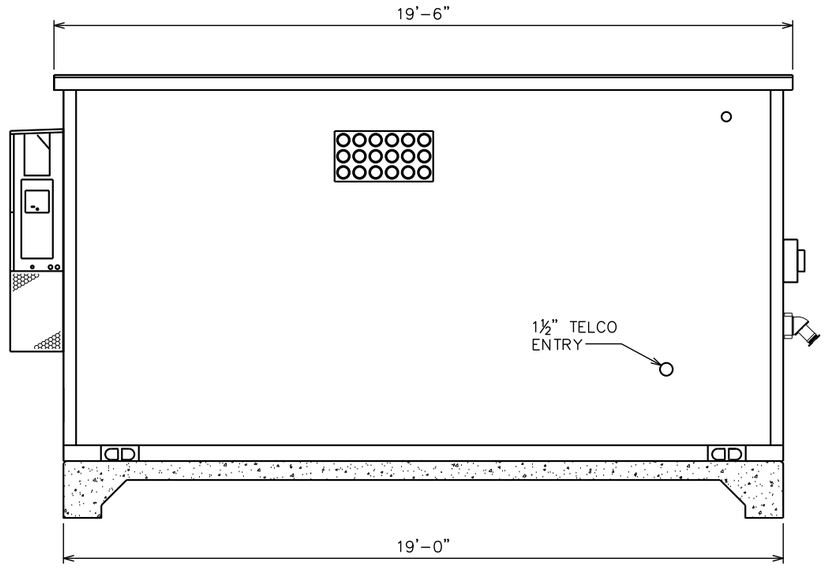


ELEVATION KEY

SCALE: ¼" = 1'–0"

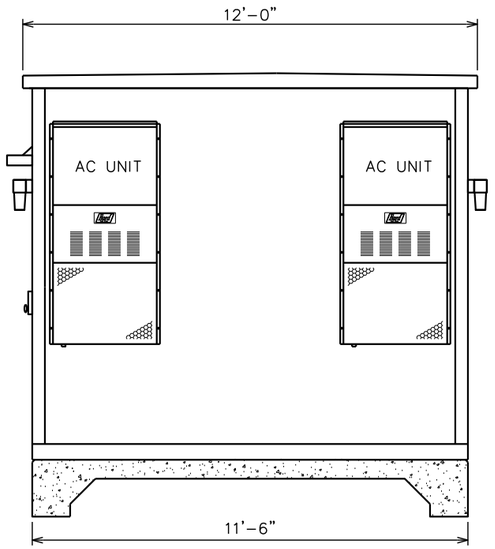
0 4 8

SCALE IN FEET



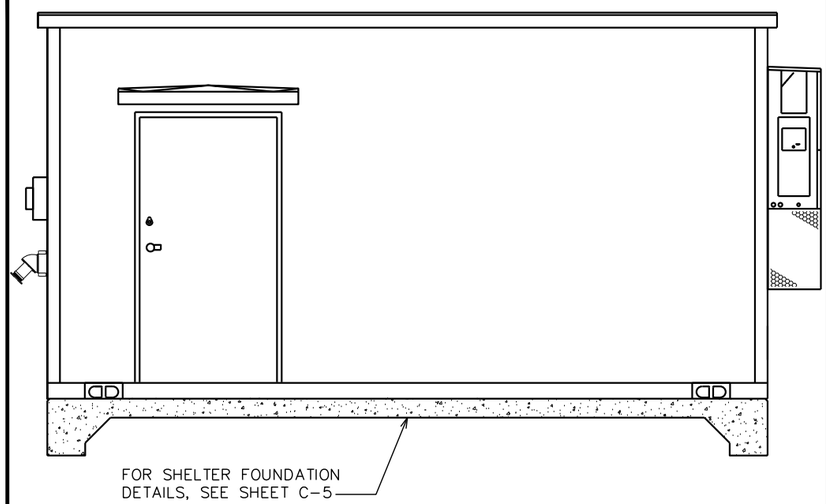
ELEVATION A

SCALE: ¼" = 1'–0"



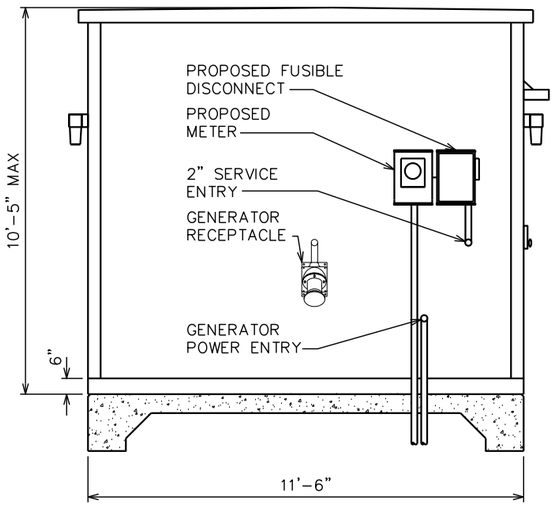
ELEVATION B

SCALE: ¼" = 1'–0"



ELEVATION C

SCALE: ¼" = 1'–0"



ELEVATION D

SCALE: ¼" = 1'–0"

PLANS PREPARED FOR:

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DRAWN BY: GSB | CHECKED BY: JBG

SHEET TITLE:

SHELTER ELEVATIONS

SHEET NUMBER: **C-4**

REVISION: 1

TEP#: 153676.258201

FOUNDATION NOTES:

1. FOUNDATION DESIGN BASED ON 2,000 PSF SOIL BEARING CAPACITY. IF OTHER CONDITIONS EXIST, FOUNDATION SHALL BE REDESIGNED. CONTRACTOR SHALL HAVE SOIL BEARING CAPACITY VERIFIED BY A LICENSED PROFESSIONAL GEOTECHNICAL ENGINEER PRIOR TO INITIATION OF CONSTRUCTION.
2. CONCRETE SHALL BE 3,000 PSI.
3. REINFORCING STEEL Fy = 60,000 PSI
4. ALL BACKFILL SHALL BE THOROUGHLY COMPACTED TO A MINIMUM OF 95% DENSITY USING THE MODIFIED PROCTOR METHOD.
5. SURFACE OF FINISHED SLAB SHALL BE LEVEL AND FLAT WITHIN ¼".
6. CONTRACTOR SHALL VERIFY WITH MANUFACTURER ACTUAL DIMENSIONS OF SHELTER PRIOR TO LAYING OUT FOUNDATION.

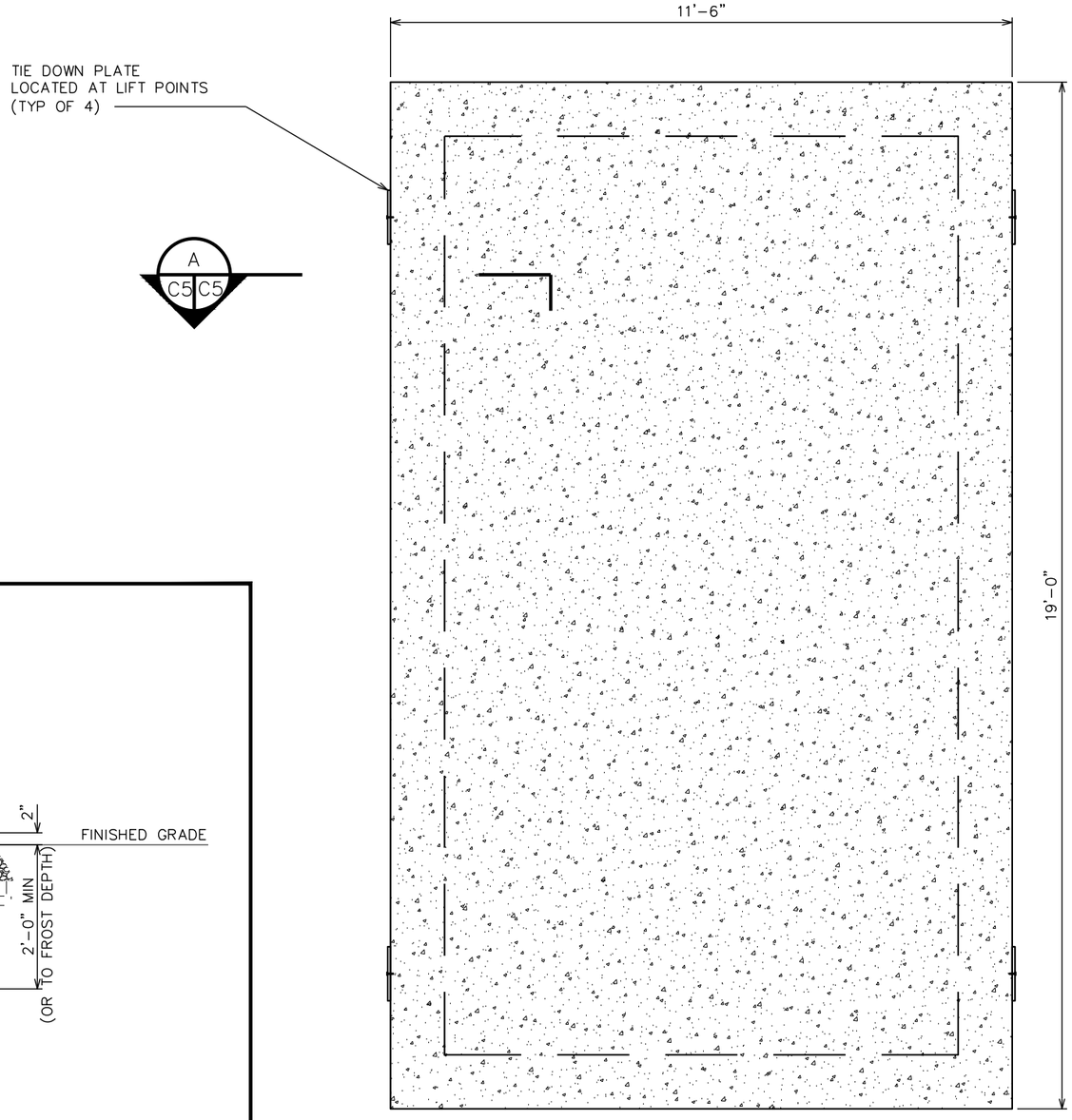
GENERAL STRUCTURAL NOTES:

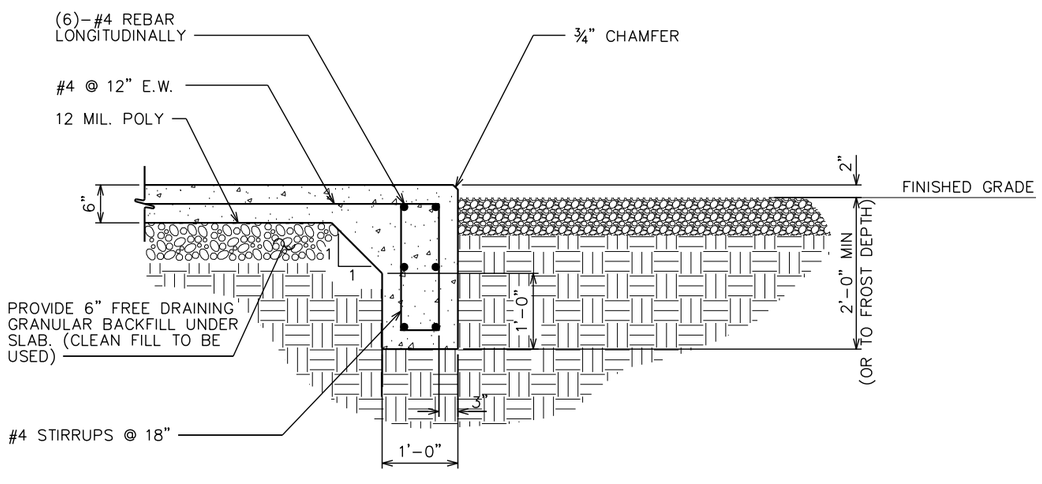
SPECIFICATIONS / CODES:

1. ALL CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE ACI CODE.
2. STEEL WORK SHALL BE PERFORMED IN ACCORDANCE WITH AISC STEEL CONSTRUCTION MANUAL, 15th EDITION.
3. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AMERICAN WELDING SOCIETY (AWS) D1.1–15 "STRUCTURAL WELDING CODE–STEEL.
4. REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE WITH THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI). "MANUAL OF STANDARD PRACTICE".

NOTES:

1. SHELTER TIE DOWN PLATE AND HARDWARE SUPPLIED BY SHELTER MANUFACTURER.
2. CONTRACTOR TO VERIFY THAT TIE DOWN PLATE LOCATED NEAR SHELTER DOOR DOES NOT INTERFERE WITH ACCESS RAMP. CONTRACTOR TO RELOCATE AS NEEDED.





SECTION A C5 C5
SCALE: ½" = 1'–0"

0 2 4
SCALE IN FEET

FOUNDATION PLAN
SCALE: ⅜" = 1'–0"

0 2 4
SCALE IN FEET

PLANS PREPARED FOR:

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SEAL:

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DRAWN BY: GSB | CHECKED BY: JBG

SHEET TITLE:

SHELTER FOUNDATION DETAILS

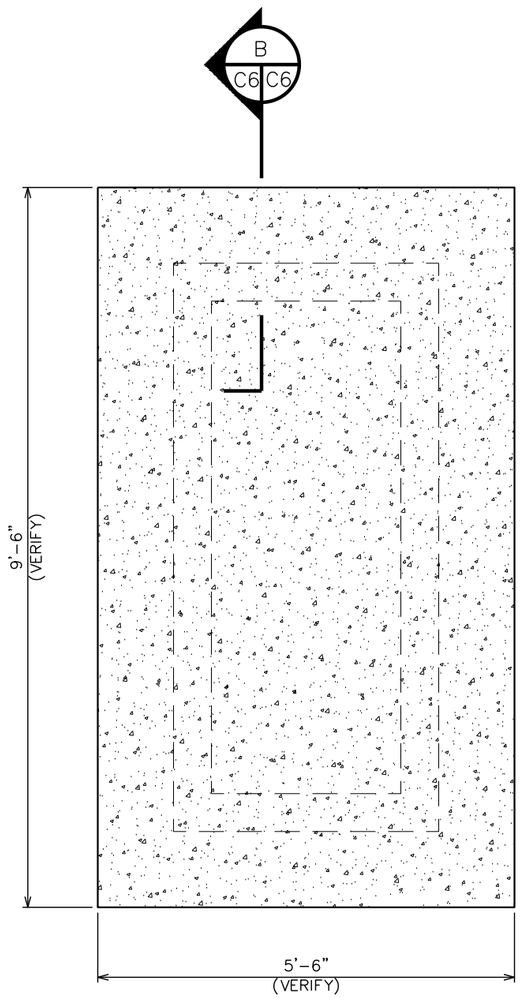
SHEET NUMBER: **C-5**

REVISION: 1

TEP#: 153676.258201

GENERATOR ANCHORAGE:

THE GENERATOR CONNECTION TO THE CONCRETE SLAB IS ACHIEVED WITH (8) ½"ø EXPANSION BOLT ASSEMBLIES [(4) BOLTS PER GENERATOR SIDE]. THE CURRENT GENERATOR ATTACHMENT SPECIFICATION IS TO USE (8) ½"ø BOA COIL ANCHORS BY RED HEAD EMBEDDED AT A MINIMUM DEPTH OF 2" OR APPROVED EQUAL. CONTACT TEP FOR APPROVAL OF ALTERNATE ATTACHMENT METHOD.



GENERATOR FOUNDATION PLAN

SCALE: ½" = 1'-0"

0 2 4
SCALE IN FEET

SPECIFICATIONS / CODES:

1. ALL CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN CONCRETE INSTITUTE (ACI) BUILDING CODE.
2. ALL STEEL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL, 15th EDITION.
3. ALL WELDING SHALL BE PERFORMED IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY (AWS), D1.1-15 "STRUCTURAL WELDING CODE-STEEL".
4. REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE WITH THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI), "MANUAL OF STANDARD PRACTICE".

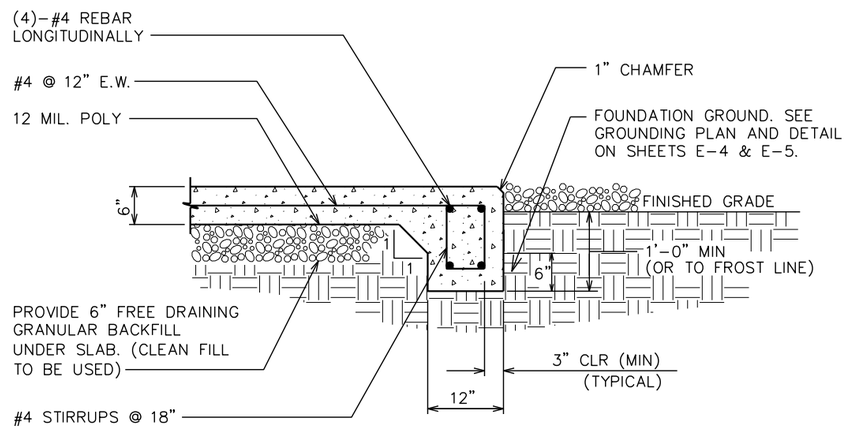
GENERAL STRUCTURAL NOTES:

SCALE: N.T.S.

1. FOUNDATION DESIGN IS BASED ON A 2,000 PSF SOIL BEARING CAPACITY. IF OTHER CONDITIONS EXIST, FOUNDATION SHALL BE REDESIGNED. CONTRACTOR SHALL HAVE SOIL BEARING CAPACITY VERIFIED BY A LICENSED PROFESSIONAL GEOTECHNICAL ENGINEER PRIOR TO INITIATION OF CONSTRUCTION ACTIVITIES.
2. CONCRETE SHALL BE 3,000 PSI @ 28 DAYS.
3. REBAR Fy = 60,000 PSI ASTM A615 GRADE 60
4. ALL BACKFILL SHALL BE THOROUGHLY COMPACTED TO A MINIMUM OF 95% DENSITY USING THE PROCTOR METHOD.
5. SURFACE OF FINISHED SLAB SHALL BE LEVEL AND FLAT WITHIN ¼".
6. CONTRACTOR SHALL VERIFY WITH THE MANUFACTURER ACTUAL DIMENSIONS OF THE GENERATOR PRIOR TO LAYING OUT FOUNDATION.

FOUNDATION NOTES:

SCALE: N.T.S.



SECTION

SCALE: ¾" = 1'-0"

B
C6 C6

0 1 2
SCALE IN FEET

PLANS PREPARED FOR:

Harnett COUNTY NORTH CAROLINA

108 EAST FRONT STREET
LILLINGTON, NC 27546
OFFICE: (910) 814-6431

PROJECT INFORMATION:

OAKRIDGE RIVER ROAD

1979 OAKRIDGE RIVER ROAD
FUQUAY-VARINA, NC 27526
(HARNETT COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

N.C. LICENSE # C-1794

SEAL:

June 30, 2020

REV	DATE	ISSUED FOR:
1	06-30-20	CONSTRUCTION
0	10-10-19	PRELIMINARY CONSTRUCTION

DRAWN BY: GSB | CHECKED BY: JBG

SHEET TITLE:

GENERATOR FOUNDATION DETAILS

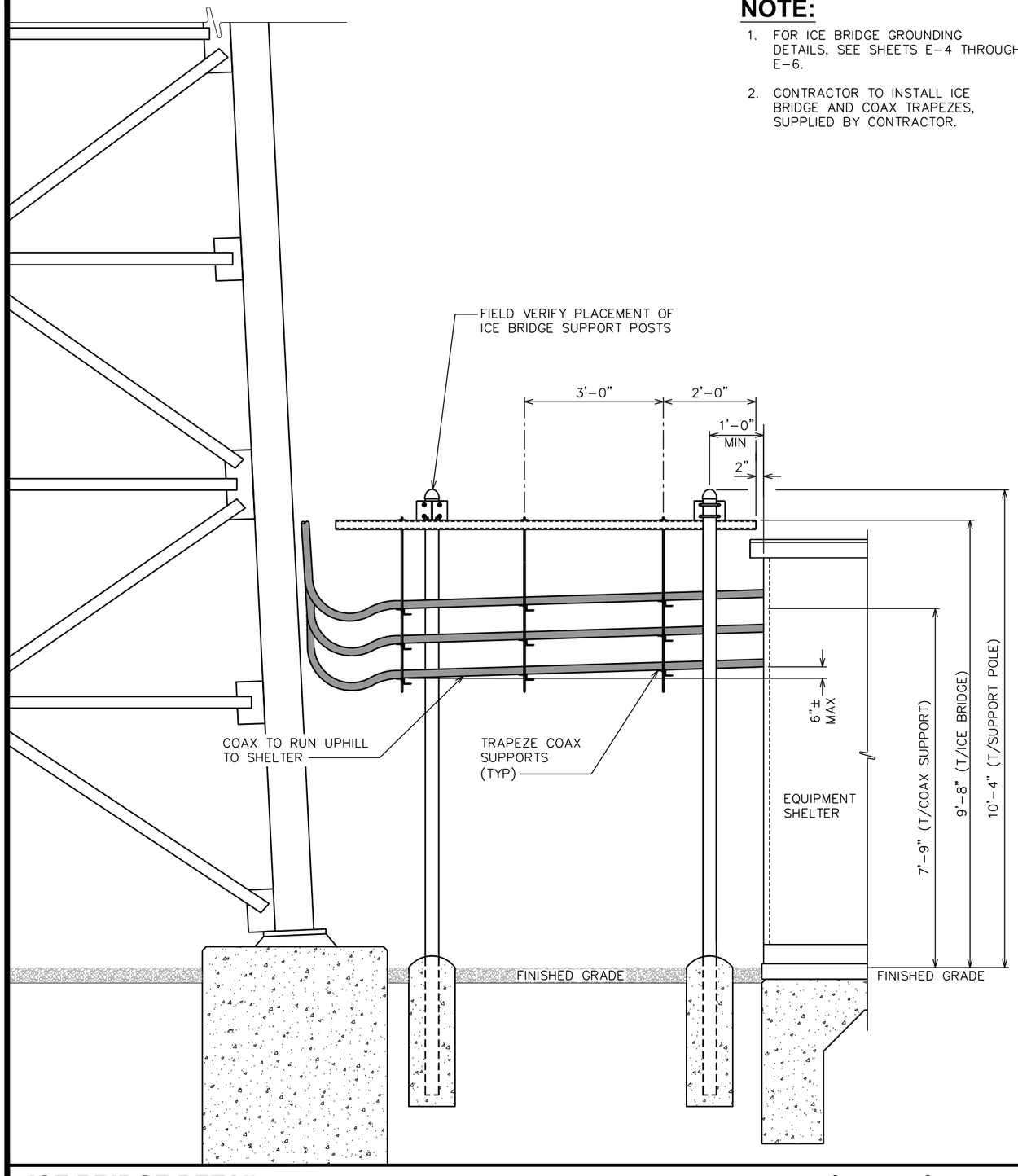
SHEET NUMBER: **C-6**

REVISION: 1

TEP#: 153676.258201

NOTE:

1. FOR ICE BRIDGE GROUNDING DETAILS, SEE SHEETS E-4 THROUGH E-6.
2. CONTRACTOR TO INSTALL ICE BRIDGE AND COAX TRAPEZES, SUPPLIED BY CONTRACTOR.

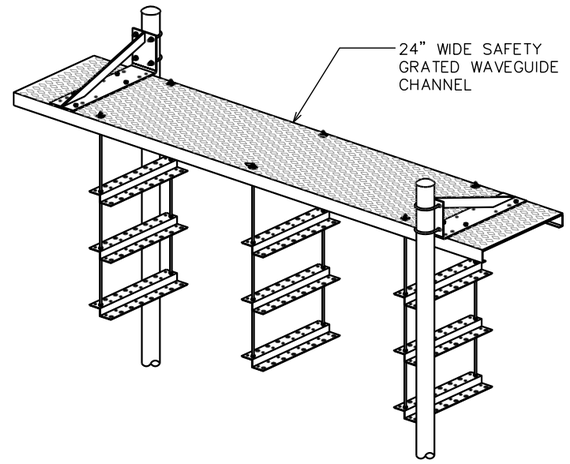


ICE BRIDGE DETAIL

SCALE: 3/8" = 1'-0"

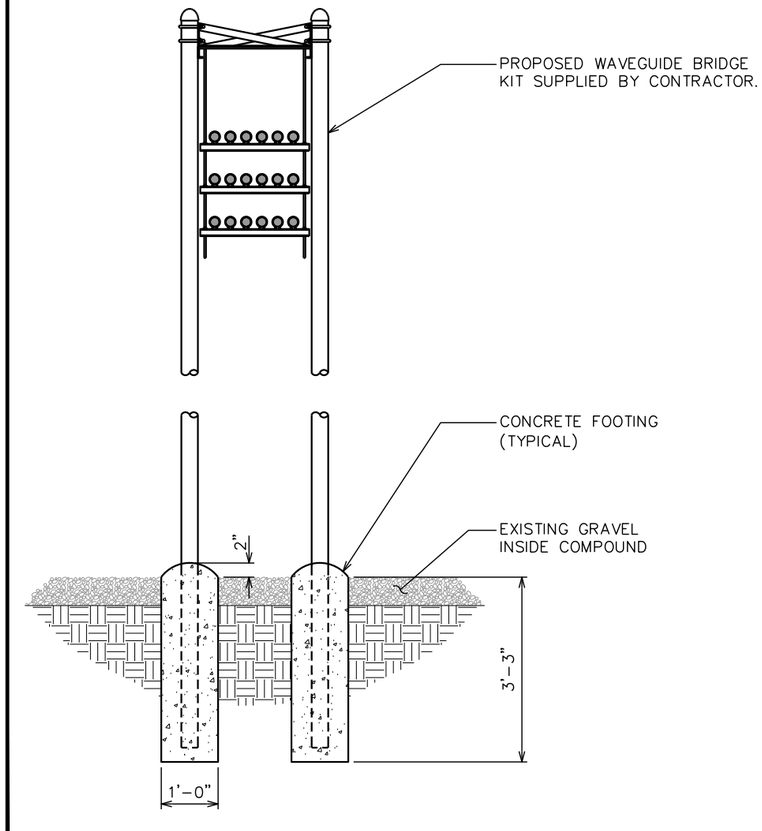
0 2 4

SCALE IN FEET



ISOMETRIC VIEW

SCALE: N.T.S.



SIDE VIEW

SCALE: 3/8" = 1'-0"

0 2 4

SCALE IN FEET

PLANS PREPARED FOR:

Harnett COUNTY NORTH CAROLINA

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LILLINGTON, NC 27546
OFFICE: (910) 814-6431

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SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 032017 ENGINEER JOHN B. GOINS

June 30, 2020

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DRAWN BY: GSB | CHECKED BY: JBG

SHEET TITLE:

ICE BRIDGE DETAILS

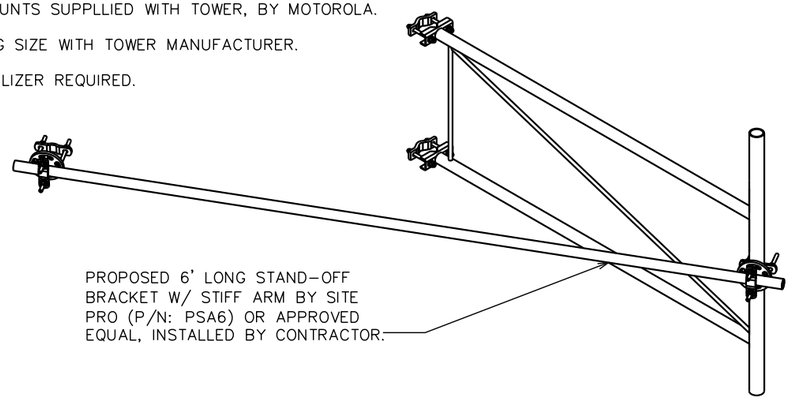
SHEET NUMBER: **C-7**

REVISION: 1

TEP#: 153676.258201

NOTE:

1. NCSHP MOUNTS SUPPLLIED WITH TOWER, BY MOTOROLA.
2. VERIFY LEG SIZE WITH TOWER MANUFACTURER.
3. SIDE STABILIZER REQUIRED.

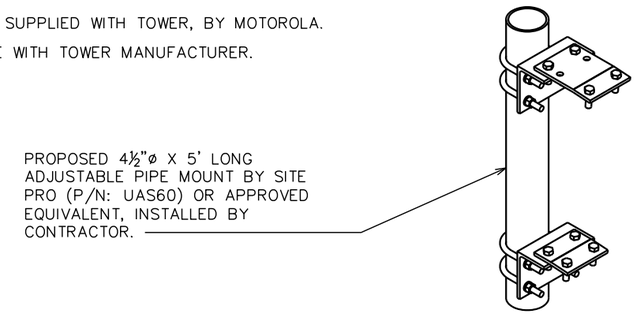


TYPICAL OMNI MOUNT DETAIL

SCALE: N.T.S.

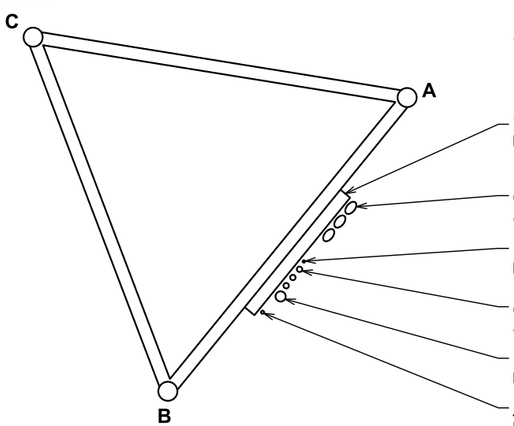
NOTE:

1. NCSHP MOUNTS SUPPLIED WITH TOWER, BY MOTOROLA.
2. VERIFY LEG SIZE WITH TOWER MANUFACTURER.



TYPICAL MICROWAVE MOUNT DETAIL

SCALE: N.T.S.



NOTE:

COAX TO BE PLACED BY CONTRACTOR AND PER STRUCTURAL ANALYSIS.

WAVEGUIDE LADDER. CONTRACTOR TO VERIFY PROPOSED WAVEGUIDE LADDER LOCATION PRIOR TO CONSTRUCTION. SEE NOTE, THIS SHEET.

(3) EW63 CABLE TO BE ROUTED TO 180', 195', & 225' ON PROPOSED WAVEGUIDE LADDER

⅜" CABLE TO BE ROUTED TO 260' ON PROPOSED WAVEGUIDE LADDER

(3) ⅞" CABLE TO BE ROUTED TO 250', 320', & 350' ON PROPOSED WAVEGUIDE LADDER

1⅝" CABLE TO BE ROUTED TO 380' ON PROPOSED WAVEGUIDE LADDER

½" CABLE TO BE ROUTED TO 350' ON PROPOSED WAVEGUIDE LADDER

COAX PLAN

SCALE: N.T.S.

NOTE:

1. TX/RX ANTENNAS TO BE INSTALLED BY CONTRACTOR.
2. AZIMUTH OF TOWER A-LEG IS 69°. SEE SHEET C-1 & C-2 FOR DETAILS.
3. COAX LENGTH TO BE VERIFIED BEFORE CONSTRUCTION.
4. NEW EQUIPMENT IN BOLD.

ANTENNA / COAX SCHEDULE

ITEM	MANUFACTURER (MODEL #)	SYSTEM	ITEM DESCRIPTION	AZIMUTH	TILT	LEG	*MOUNT HEIGHT	CABLE MAKE/MODEL	COAX SIZE	COAX LENGTH
1	+ RFS PAD8-65AC7S1R	(FUTURE) NCSHP M/W	DISH	TBD	TBD	TBD	120'-0"±	COMMSCOPE EW63	EW63	140'±
2	+ RFS SP6-W60CC	(FUTURE) NCSHP M/W	DISH	TBD	TBD	TBD	130'-0"±	COMMSCOPE EW63	EW63	150'±
3	+ RFS SB6-W60CC	(FUTURE) NCSHP M/W	DISH	TBD	TBD	TBD	150'-0"±	COMMSCOPE EW63	EW63	170'±
4	+ RFS PAD8-65AC7S1R	(FUTURE) NCSHP M/W	DISH	TBD	TBD	TBD	160'-0"±	COMMSCOPE EW63	EW63	180'±
5	**+ RFS SB6-W60CC**	**NCSHP M/W TO DUNCAN**	**DISH**	**41.69°**	**0.21°**	**A**	**180'-0"±**	**COMMSCOPE EW63**	**EW63**	**200'±**
6	**+ RFS SB6-W60CC**	**NCSHP M/W TO TRAMWAY**	**DISH**	**250°**	**0.07°**	**C**	**195'-0"±**	**COMMSCOPE EW63**	**EW63**	**220'±**
7	**+ RFS PAD8-65AC7S1R**	**NCSHP M/W TO TRAMWAY**	**DISH**	**250°**	**0.07°**	**C**	**225'-0"±**	**COMMSCOPE EW63**	**EW63**	**250'±**
8	RFI CC807-11	(FUTURE) NCSHP 700 MHz (Tx)	OMNI	N/A	N/A	B	350'-0"±	-	1⅝"	370'±
9	**RFI CC807-11**	**NCSHP 700 MHz (Rx)**	**OMNI**	**N/A**	**N/A**	**A**	**350'-0"±**	**-**	**⅞"**	**370'±**
10	**TX/RX CORP**	**NCSHP 700 MHz**	**TTA**	**N/A**	**N/A**	**A**	**350'-0"±**	**-**	**½"**	**370'±**
11	RFI CC807-11	(FUTURE) NCSHP 700 MHz (Rx)	OMNI	N/A	N/A	B	380'-0"±	-	⅞"	400'±
12	**RFI CC807-11**	**NCSHP 700 MHz (Tx)**	**OMNI**	**N/A**	**N/A**	**A**	**380'-0"±**	**-**	**1⅝"**	**400'±**

NON-NCSHP ANTENNA / COAX SCHEDULE

ITEM	MANUFACTURER (MODEL #)	SYSTEM	ITEM DESCRIPTION	AZIMUTH	LEG	*MOUNT HEIGHT	CABLE MAKE/MODEL	COAX SIZE	COAX LENGTH
1	**ANDREW DB-224**	**COUNTY**	**DIPOLE**	**N/A**	**C**	**250'-0"±**	**-**	**⅞"**	**270'±**
2	**+ RADIOWAVES HPD4-4.7**	**COUNTY M/W**	**DISH**	**N/A**	**C**	**260'-0"±**	**-**	**⅜"**	**280'±**
3	ANDREW DB-224	(FUTURE) COUNTY	DIPOLE	N/A	B	300'-0"±	-	⅞"	320'±
4	ANDREW DB-224	(FUTURE) COUNTY	DIPOLE	N/A	C	300'-0"±	-	⅞"	320'±
5	ANDREW DB-224	(FUTURE) COUNTY	DIPOLE	N/A	C	320'-0"±	-	⅞"	340'±
6	**ANDREW DB-224**	**COUNTY**	**DIPOLE**	**N/A**	**C**	**320'-0"±**	**-**	**⅞"**	**340'±**

+ ICE SHIELD, SUPPLIED BY CONTRACTOR, TO BE INSTALLED ABOVE MICROWAVE

* MICROWAVE AND DIPOLE ELEVATIONS ARE CENTERLINE, ALL OTHER ANTENNAS ARE LISTED AT TOP OF MOUNT

ANTENNA LOADING SCHEDULE

SCALE: N.T.S.

PLANS PREPARED FOR:

Harnett COUNTY NORTH CAROLINA

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LILLINGTON, NC 27546
OFFICE: (910) 814-6431

PROJECT INFORMATION:

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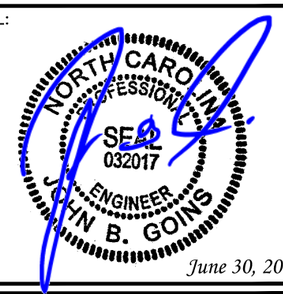
SEAL:



June 30, 2020

REV	DATE	ISSUED FOR:
1	06-30-20	CONSTRUCTION
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DRAWN BY: GSB | CHECKED BY: JBG

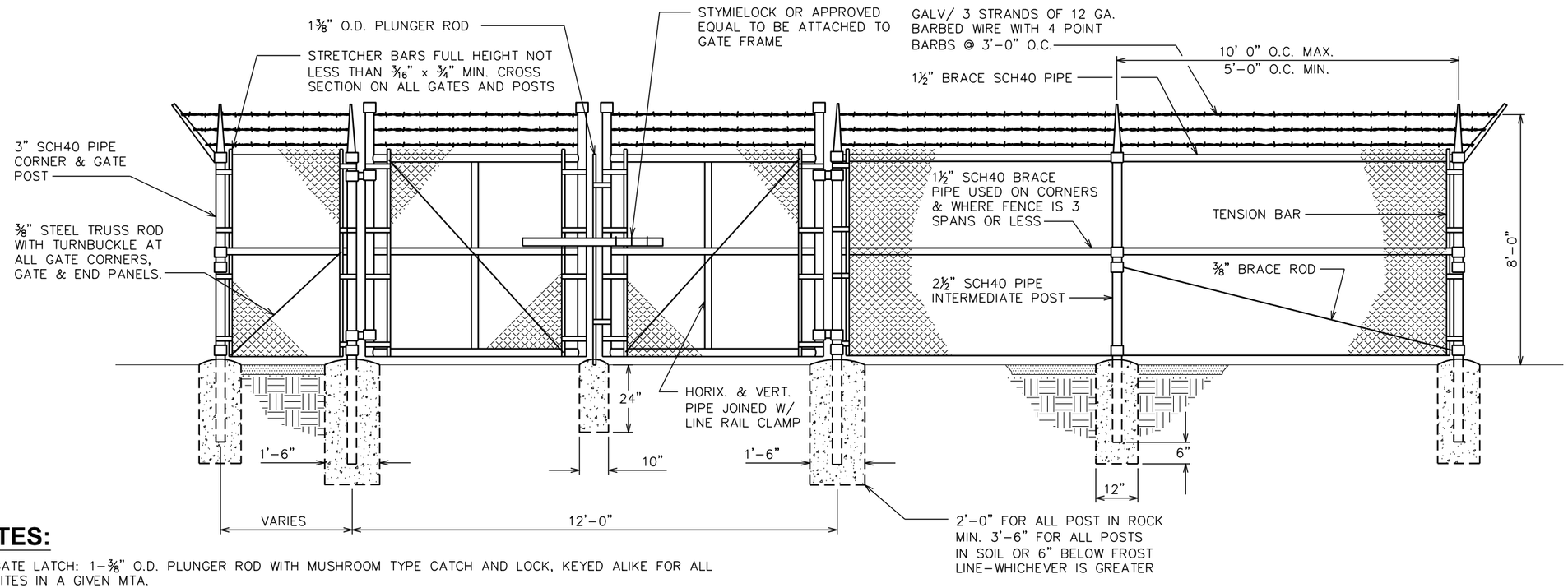
SHEET TITLE:

ANTENNA & COAX MOUNTING DETAILS

SHEET NUMBER: **C-8**

REVISION: 1

TEP#: 153676.258201

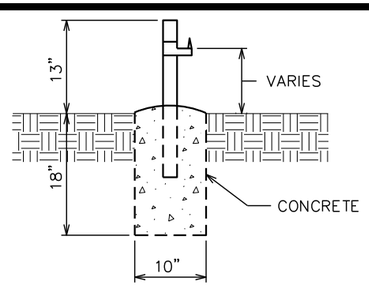


NOTES:

1. GATE LATCH: 1-⅜" O.D. PLUNGER ROD WITH MUSHROOM TYPE CATCH AND LOCK, KEYED ALIKE FOR ALL SITES IN A GIVEN MTA.
2. LOCAL ORDINANCE OF BARBED WIRE PERMIT REQUIREMENT SHALL BE COMPLIED IF REQUIRED.
3. HEIGHT = 7' VERTICAL (UNLESS NOTED OTHERWISE) OR MATCH EXISTING FENCE (IF APPLICABLE AND 1' BARBED WIRE VERTICAL DIMENSION.
4. WARNING SIGNS USING THE INTERNATIONAL SYMBOL OF ELECTRICAL SHOCK HAZARD SHALL BE FURNISHED AND INSTALLED ON THE EXTERIOR OF ALL SIDES OF THE MAIN PERIMETER FENCE AND THE GATE. ADDITIONALLY, SIGNS SHALL BE FURNISHED AND INSTALLED THAT STATE "NO TRESPASSING" IN ENGLISH. THE SIGNS SHALL BE IMPERVIOUS TO WEATHERING AND BE MOUNTED TO AVOID EASE OF REMOVAL BY VANDALS.
5. MAXIMUM 1½" GAP UNDER FENCE.
6. ALL OPEN POST REQUIRE CAPS.
7. INSTALL DUCK BILL OPEN GATE HOLDER. VERIFY LOCATION IN FIELD PRIOR TO INSTALLATION.
8. TENSION WIRE: 6 GA. MIN. GALVANIZED STEEL, SHOULD BE CONTINUOUS.

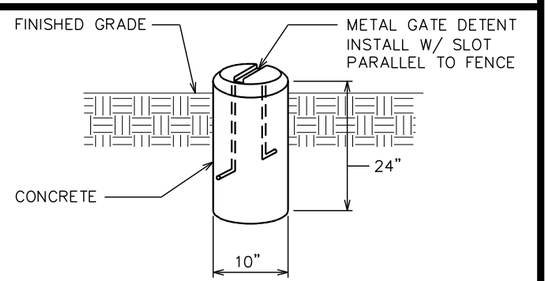
TYPICAL FENCE ELEVATION

SCALE: N.T.S.



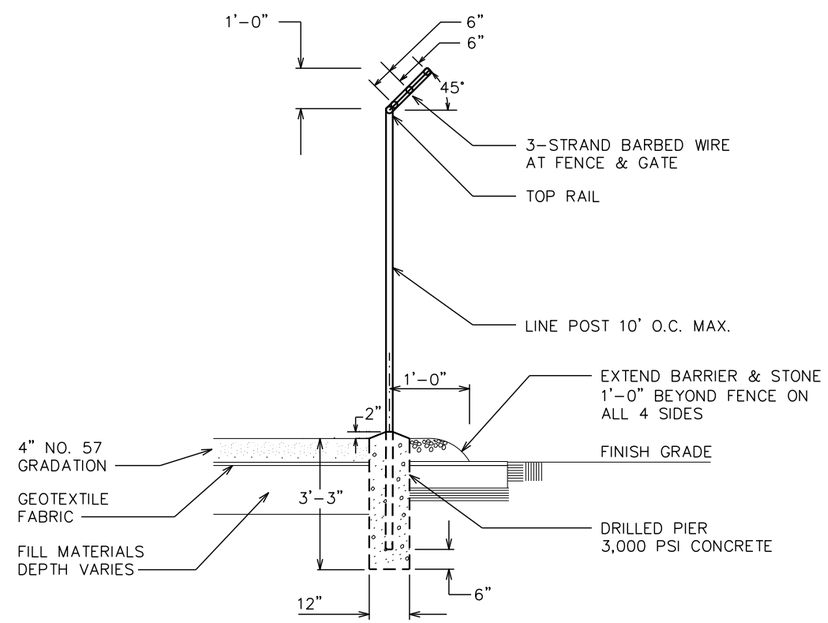
GATE STOP / KEEPER DETAIL

SCALE: N.T.S.



GATE DETENT DETEN

SCALE: N.T.S.



FENCE / BARBED WIRE ARM DETAIL

SCALE: N.T.S.

PLANS PREPARED FOR:

Harnett County NORTH CAROLINA

108 EAST FRONT STREET
LILLINGTON, NC 27546
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PROJECT INFORMATION:

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N.C. LICENSE # C-1794

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 032017 ENGINEER JOHN B. GOINS

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DRAWN BY: GSB | CHECKED BY: JBG

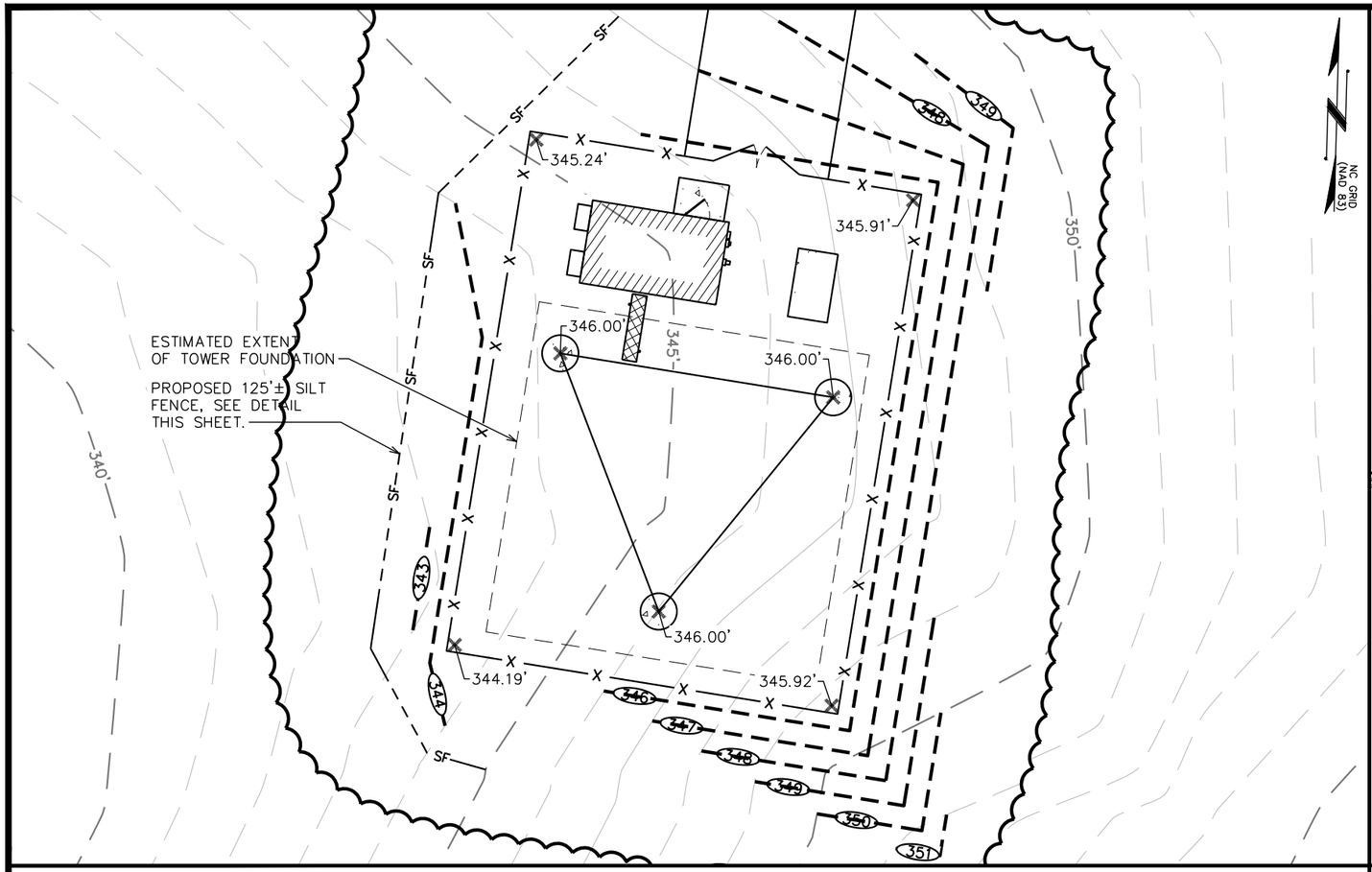
SHEET TITLE:

FENCE DETAILS

SHEET NUMBER: **C-9**

REVISION: 1

TEP#: 153676.258201

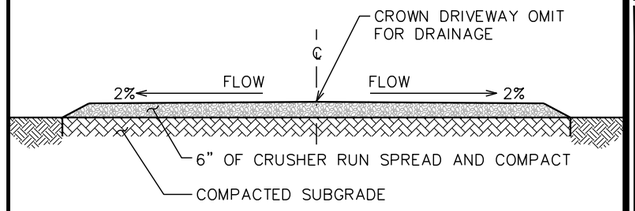


SITE GRADING PLAN

SCALE: 1" = 20'

0 20 40

SCALE IN FEET

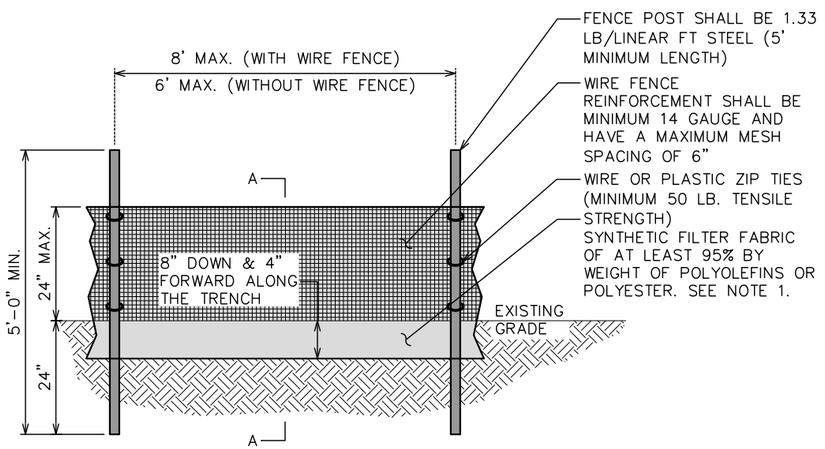


STANDARD ROAD SECTION

SCALE: ¼" = 1'-0"

SILT FENCE NOTES:

1. FILTER FABRIC SHALL CONFORM TO THE REQUIREMENTS LISTED IN ASTM D 6461.
2. ENDS OF INDIVIDUAL FILTER FABRIC SHALL BE SECURELY FASTENED AT A SUPPORT POST WITH 4 FEET MINIMUM OVERLAP TO THE NEXT POST
3. PLACE 12 INCHES OF FABRIC ALONG THE BOTTOM AND SIDE OF THE TRENCH.
4. INSPECT SEDIMENT FENCE(S) AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL.
5. REMOVE SEDIMENT DEPOSITS AS NECESSARY TO PROVIDE ADEQUATE STORAGE VOLUME FOR THE NEXT RAIN AND TO REDUCE PRESSURE ON THE FENCE.
6. AFTER CONSTRUCTION IS COMPLETE, THE CONTRACTOR SHALL REMOVE ALL FENCING MATERIALS AND UNSTABLE SEDIMENT DEPOSITS, BRING THE AREA TO GRADE AND PROPERLY STABILIZE THE SITE.

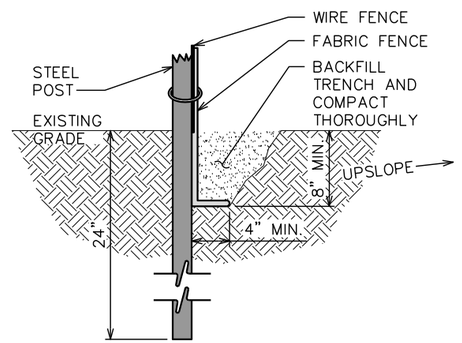


SILT FENCE DETAIL

SCALE: ¼" = 1'-0"

0 4 8

SCALE IN FEET



SECTION A-A

SCALE: ¼" = 1'-0"

0 4 8

SCALE IN FEET

PLANS PREPARED FOR:

Harnett COUNTY NORTH CAROLINA

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DRAWN BY: GSB | CHECKED BY: JBG

SHEET TITLE:

GRADING PLAN

SHEET NUMBER: **C-10**

REVISION: 1

TEP#: 153676.258201

SCOPE:

ALL ELECTRICAL WORK SHALL BE PERFORMED BY COMPANIES PROPERLY LICENSED BY THE NC STATE ELECTRICAL BOARD OF EXAMINERS. SCOPE SHALL INCLUDE ALL LABOR, MATERIALS AND APPLIANCES REQUIRED FOR THE FURNISHING, INSTALLING AND TESTING, COMPLETE AND READY FOR OPERATION OF ALL WORK SHOWN ON THE DRAWING AS SPECIFIED HEREIN:

1. ELECTRIC SERVICE
2. CONDUIT AND RACEWAY
3. CONDUCTORS
4. MISCELLANEOUS MATERIALS
5. TELEPHONE CONDUITS
6. LIGHTNING ARRESTING SYSTEM

CODES:

THE INSTALLATION SHALL COMPLY WITH ALL LAWS APPLYING TO ELECTRICAL INSTALLATION IN EFFECT WITH THE REGULATIONS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL SAFETY CODE AND THE NEC 2017 (WITH NORTH CAROLINA AMENDMENTS), ADMINISTRATIVE RULES WITH THE NATIONAL ELECTRIC CODE, ALL LOCAL GOVERNING CODES AND ORDINANCES WITH THE REGULATION OF THE SERVING UTILITY COMPANY, AND FULLY COMPIANT WITH THE STATE CONSTRUCTION OFFICE ELECTRICAL GUIDELINES. ALL PERMITS REQUIRED SHALL BE OBTAINED AND, AFTER COMPLETION OF WORK, THE OWNER SHALL BE FURNISHED A CERTIFICATE OF FINAL INSPECTION AND APPROVAL.

MATERIALS:

MATERIALS TO BE NEW. USE OF USED OR SUB STANDARD MATERIAL IS NOT ACCEPTABLE. IN THE CASE OF EXISTING METERING EQUIPMENT OR PANELS, REQUIRED COMPONENTS SHALL BE NEW.

TESTING:

UPON COMPLETION OF THE INSTALLATION, OPERATE AND ADJUST ALL EQUIPMENT AND SYSTEMS TO MEET SPECIFIED PERFORMANCE REQUIREMENTS. ALL TESTING SHALL BE DONE BY QUALIFIED PERSONNEL.

GUARANTEE:

IN ADDITION TO THE GUARANTEE OF THE EQUIPMENT BY THE MANUFACTURER, EACH PIECE OF EQUIPMENT SPECIFIED HEREIN SHALL ALSO BE GUARANTEED FOR DEFECTS OF MATERIAL OR WORKMANSHIP OCCURRING DURING A PERIOD OF ONE (1) YEAR FROM FINAL ACCEPTANCE OF THE WORK BY THE OWNER WITHOUT EXPENSE TO THE OWNER. ALL WARRANTEE CERTIFICATES AND GUARANTEES FURNISHED BY THE MANUFACTURERS SHALL BE TURNED OVER TO THE OWNER.

COORDINATION:

CONTRACTOR SHALL COORDINATE ALL WORK WITH THE POWER AND TELEPHONE COMPANIES AND SHALL COMPLY WITH ALL SERVICE REQUIREMENTS OF EACH UTILITY COMPANY.

EXAMINATION OF SITE:

PRIOR TO BEGINNING WORK, THE CONTRACTOR SHALL VISIT THE SITE OF THE JOB AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED ELECTRICAL INSTALLATION AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. FAILURE TO COMPLY WITH THE INTENT OF THIS PARAGRAPH WILL IN NO WAY RELIEVE THE CONTRACTOR OF PERFORMING ALL WORK NECESSARY FOR A COMPLETE AND WORKING SYSTEM OR SYSTEMS.

CUTTING, PATCHING AND EXCAVATION:

1. COORDINATION OF ALL SLEEVES, CHASES, ETC., WILL BE REQUIRED PRIOR TO THE CONSTRUCTION OF ANY PORTION OF THE WORK. ALL CUTTING AND PATCHING OF WALLS, PARTITIONS, FLOORS, AND CHASES IN CONCRETE, WOOD, STEEL OR MASONRY SHALL BE DONE AS PROVIDED ON THE DRAWINGS.

2. ALL EXCAVATIONS AND BACKFILLING INCIDENTAL TO THE WORK UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR.

EXTERIOR CONDUIT:

UNDERGROUND RACEWAYS SHALL COMPLY WITH STATE CONSTRUCTION ELECTRIAL GUIDELINES, SECTION 26 05 33. ALL EXPOSED CONDUIT SHALL BE NEATLY INSTALLED AND RUN PARALLEL OR PERPENDICULAR TO STRUCTURAL ELEMENTS. SUPPORTS AND MOUNTING HARDWARE SHALL BE HOT DIPPED GALVANIZED STEEL.

RACEWAYS:

1. ALL CONDUCTORS SHALL BE INSTALLED IN CONDUIT. CONDUIT SHALL BE RIGID STEEL, EMT, OR SCH40 PVC. AS INDICATED ON THE DRAWINGS. ALUMINUM CONDUIT SHALL NOT BE ALLOWED.

2. WHERE INSTALLED ON EXTERIORS AND EXPOSED TO DAMAGE, ALL CONDUIT SHALL BE RIGID STEEL.

3. CONCEALED CONDUIT IN WALLS OR INTERIOR SPACES ABOVE GRADE MAY BE EMT.

4. UNDERGROUND CONDUITS SHALL BE RIGID STEEL OR SCH40 PVC AS INDICATED ON THE DRAWINGS.

5. ALL CONDUIT RUNS SHALL USE APPROVED COUPLINGS AND CONNECTORS. PROVIDE INSULATED BUSHING FOR ALL CONDUIT TERMINATIONS. ALL CONDUIT RUNS IN A WET LOCATIONS SHALL HAVE WATERPROOF FITTINGS. ALL EMT TERMINATIONS AND COUPLINGS SHALL BE MADE UTILIZING HEXAGONAL COMPRESSION CONNECTORS. NO POT METAL, SETSCREW, OR INDENTED TYPE FITTINGS SHALL BE UTILIZED.

6. PROVIDE SUPPORTS FOR ALL CONDUITS IN ACCORDANCE WITH NEC REQUIREMENTS. ALL CONDUITS SHALL BE SIZED AS REQUIRED BY NEC.

7. BURIAL DEPTH OF ALL CONDUITS SHALL BE AS REQUIRED BY CODE FOR EACH SPECIFIC CONDUIT TYPE AND APPLICATION.

8. CONDUIT ROUTES ARE SCHEMATIC. CONTRACTOR SHALL FIELD VERIFY BEFORE BID. COORDINATE ROUTE WITH WIRELESS CARRIER AND BUILDING OWNER.

9. UNDERGROUND AND ABOVE GROUND RACEWAYS SHALL NOT BE RELIED ON FOR GROUNDING CONTINUITY.

EQUIPMENT:

1. ALL DISCONNECT SWITCHES SHALL BE SERVICE ENTRANCE RATED, HEAVY DUTY TYPE.

2. NEW CIRCUIT BREAKERS SHALL BE RATED TO WITHSTAND THE MAXIMUM AVAILABLE FAULT CURRENT AS DETERMINED BY THE LOCAL UTILITY. CONTRACTOR SHALL VERIFY MAXIMUM AVAILABLE FAULT CURRENT, AND COORDINATE INSTALLATION WITH THE LOCAL UTILITY BEFORE STARTING WORK. CONTACT TEP IF FAULT CURRENT EXCEEDS BREAKER RATING.

CONDUCTORS:

1. FURNISH AND INSTALL CONDUCTORS CALLED FOR IN THE DRAWINGS. ALL CONDUCTORS SHALL HAVE TYPE THWN OR THW (75 °C) INSULATION, RATED FOR 600 VOLTS.

2. ALL CONDUCTORS SHALL BE COPPER, THE USE OF ALUMINUM CONDUCTORS SHALL NOT BE ALLOWED. ALL CONDUCTORS SHALL BE UL LISTED AND SHALL BE PROVIDED AND INSTALLED AS FOLLOWS:

   A. MINIMUM WIRE SIZE SHALL BE #12 AWG.

   B. ALL CONDUCTORS SIZE #8 AND LARGER SHALL BE STRANDED. CONDUCTORS SIZED #10 AND SMALLER MAY BE SOLID OR STRANDED.

   C. CONNECTION FOR #10 AWG AND SMALLER SHALL BE BY TWISTING TIGHT AND INSTALLING INSULATED PRESSURE OR WIRE NUT CONNECTORS.

   D. CONNECTION FOR #8 AWG AND LARGER SHALL BE BY USE OF STEEL CRIMP-ON SLEEVES WITH NYLON INSULATOR.

3. ALL CONDUCTORS SHALL BE COLOR CODED IN ACCORDANCE WITH NEC STANDARDS.

4. THE RACEWAY SYSTEM SHALL BE COMPLETE BEFORE INSTALLING CONDUCTORS.

5. A FULL SIZE NEUTAL SHALL BE PROVIDED FOR EACH CIRCUIT. NO SHARING OF NEUTRAL BETWEEN CIRCUITS ALLOWED.

PENETRATIONS:

CONTRACTOR SHALL COMPLY WITH THE LATEST UL PENETRATION DETAILS FOR PENETRATIONS OF ALL RATED WALLS, ROOF, ETC. SEE SHELTER MANUFACTURER DRAWINGS FOR ANY AND ALL PENETRATION DETAILS.

GROUNDING:

1. ALL ELECTRICAL NEUTRALS, RACEWAYS AND NON-CURRENT CARRYING PARTS OF ELECTRICAL EQUIPMENT AND ASSOCIATED ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH NEC ARTICLE 250. THIS SHALL INCLUDE NEUTRAL CONDUCTORS, CONDUITS, SUPPORTS, CABINETS, BOXES, GROUND BUSSES, ETC. THE NEUTRAL CONDUCTOR FOR EACH SYSTEM SHALL BE GROUNDED BY ONE POINT ONLY.

2. PROVIDE GROUND CONDUCTOR IN ALL RACEWAYS.

3. PROVIDE BONDING AND GROUND TO MEET NFPA 780 – LIGHTNING PROTECTION AS A MINIMUM.

4. PROVIDE GROUNDING SYSTEM AS INDICATED ON THE DRAWINGS, AS REQUIRED BY THE NATIONAL ELECTRIC CODE AND EQUIPMENT MANUFACTURER'S GROUNDING SPECIFICATIONS.

INSPECTION:

1. THE CONTRACTOR IS TO CONTACT THE OFFICE OF THE STATE ELECTRICAL INSPECTOR TO SCHEDULE THE REQUIRED INSPECTIONS.

ABBREVIATIONS AND LEGEND

A	–	AMPERE
AFG	–	ABOVE FINISHED GRADE
ATS	–	AUTOMATIC TRANSFER SWITCH
AWG	–	AMERICAN WIRE GAUGE
BCW	–	BARE COPPER WIRE
BFG	–	BELOW FINISHED GRADE
BKR	–	BREAKER
CKT	–	CIRCUIT
DISC	–	DISCONNECT
EMT	–	ELECTRIC METALLIC TUBING
FSC	–	FLEXIBLE STEEL CONDUIT
GEN	–	GENERATOR
GPS	–	GLOBAL POSITIONING SYSTEM
GRD	–	GROUND
IGB	–	ISOLATED GROUND BAR
IGR	–	INTERIOR GROUND RING (HALO)
KW	–	KILOWATTS
NEC	–	NATIONAL ELECTRIC CODE
PH	–	PHASE
PNL	–	PANEL
PNLBD	–	PANELBOARD
PVC	–	SCH40 RIGID NON-METALLIC CONDUIT
RGS	–	RIGID GALVANIZED STEEL CONDUIT
UL	–	UNDERWRITERS LABORATORIES
V	–	VOLTAGE
W	–	WATTS
XFMR	–	TRANSFORMER
XMTR	–	TRANSMITTER

----E----	UNDERGROUND ELECTRICAL CONDUIT
----T----	UNDERGROUND TELEPHONE CONDUIT
	KILOWATT-HOUR METER
---------	UNDERGROUND BONDING AND GROUNDING CONDUCTOR.
⌀	GROUND ROD
●	CADWELD
⊠	GROUND ROD WITH INSPECTION WELL

PLANS PREPARED FOR:

Harnett County NORTH CAROLINA

108 EAST FRONT STREET
LILLINGTON, NC 27546
OFFICE: (910) 814-6431

PROJECT INFORMATION:

OAKRIDGE RIVER ROAD

1979 OAKRIDGE RIVER ROAD
FUQUAY-VARINA, NC 27526
(HARNETT COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

N.C. LICENSE # C-1794

SEAL:

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042109 MARK S. QUAKENBUSH

June 30, 2020

REV	DATE	ISSUED FOR:
1	06-30-20	CONSTRUCTION
0	10-10-19	PRELIMINARY CONSTRUCTION

DRAWN BY: GSB | CHECKED BY: JBG

SHEET TITLE:

ELECTRICAL NOTES

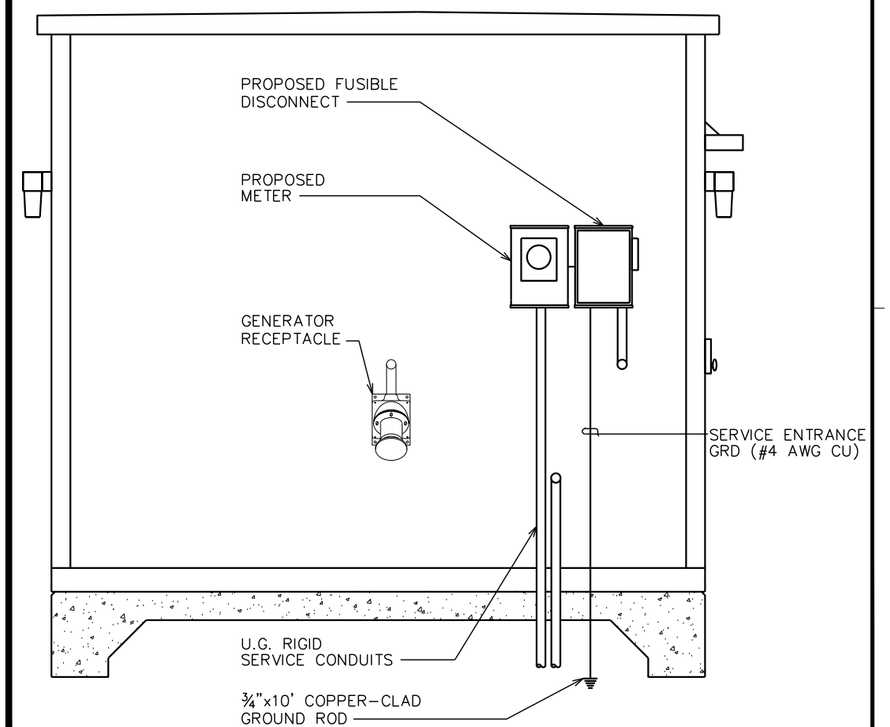
SHEET NUMBER: **E-1**

REVISION: 1

TEP#: 153676.258201

DRAWING NOTES:

1. 200 AMP, 1ø METER
2. 200 AMP, 1ø DISCONNECT
3. 2½" PVC CONDUIT FOR GENERATOR SERVICE (200 AMP, 3W PLUS GROUND, 1ø)
4. (2)–¾" PVC CONDUITS FOR GENERATOR CONTROL WIRING
5. 2½" PVC CONDUIT FOR MAIN SERVICE (200AMP, 120/240V, 3W, 1ø)
6. GENERATOR RECEPTACLE BY APPLETON (P/N: ADJA20044–250 OR APPROVED EQUAL) W/ (4) WIRES – (2) POWER, (1) NEUTRAL, (1) GROUND TO BE INSTALLED ON EXTERIOR OF SHELTER. SEE RECEPTACLE ELEVATION, THIS SHEET. REQUIRED APPLETON PLUG (P/N: AP20044E)



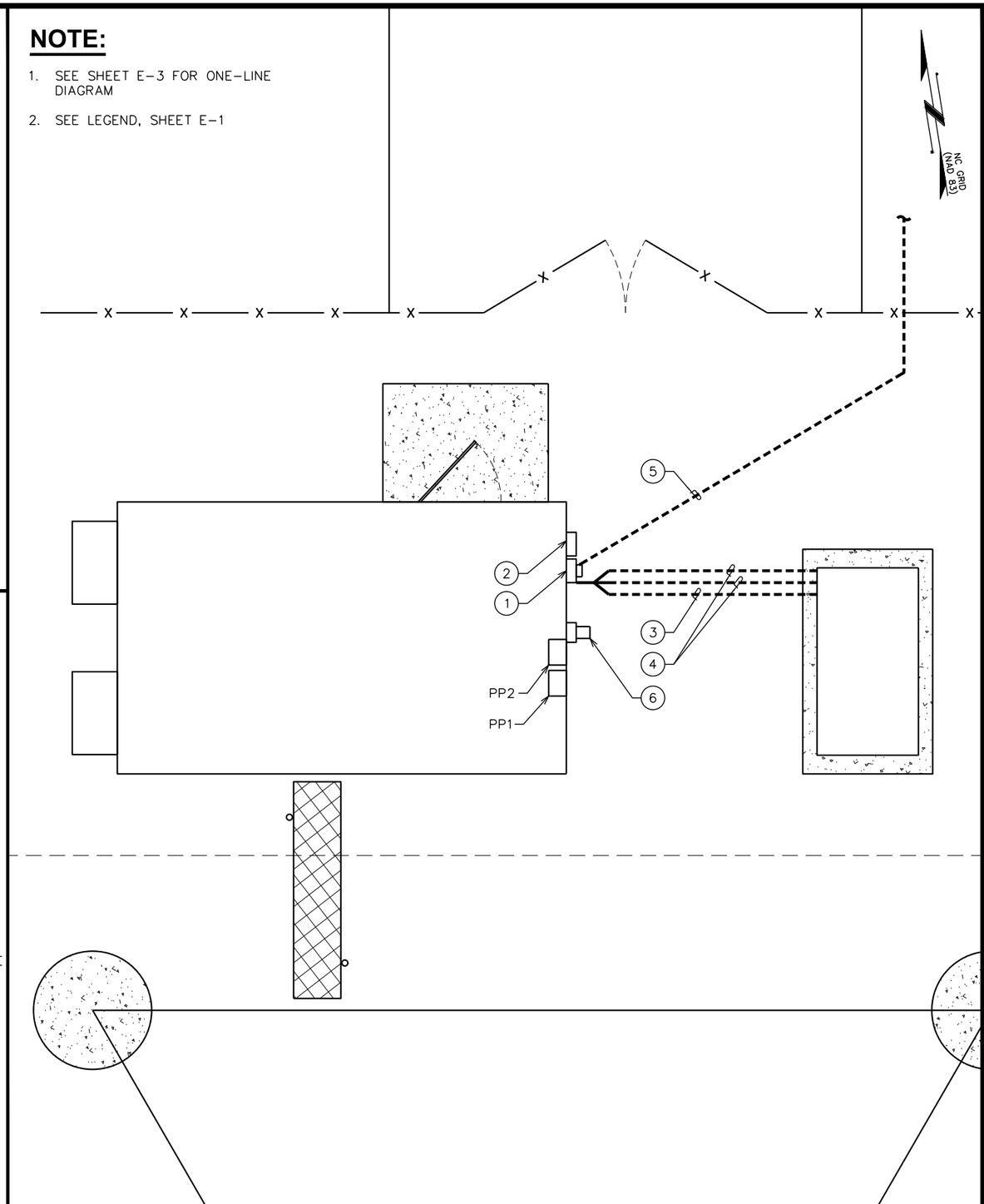
SERVICE METER DETAILS

SCALE: ⅜" = 1'–0"

0 2 4
SCALE IN FEET

NOTE:

1. SEE SHEET E–3 FOR ONE–LINE DIAGRAM
2. SEE LEGEND, SHEET E–1



SERVICE ROUTING PLAN

SCALE: 3/16" = 1'–0"

0 4 8
SCALE IN FEET

PLANS PREPARED FOR:

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DRAWN BY: GSB | CHECKED BY: JBG

SHEET TITLE:

SERVICE ROUTING PLAN

SHEET NUMBER: **E-2**

REVISION: 1

TEP#: 153676.258201

PP1 UTILITY — 200AMP, 120/240VAC, 1Ø/3W, 60Hz, M.BKR, 10K AIC

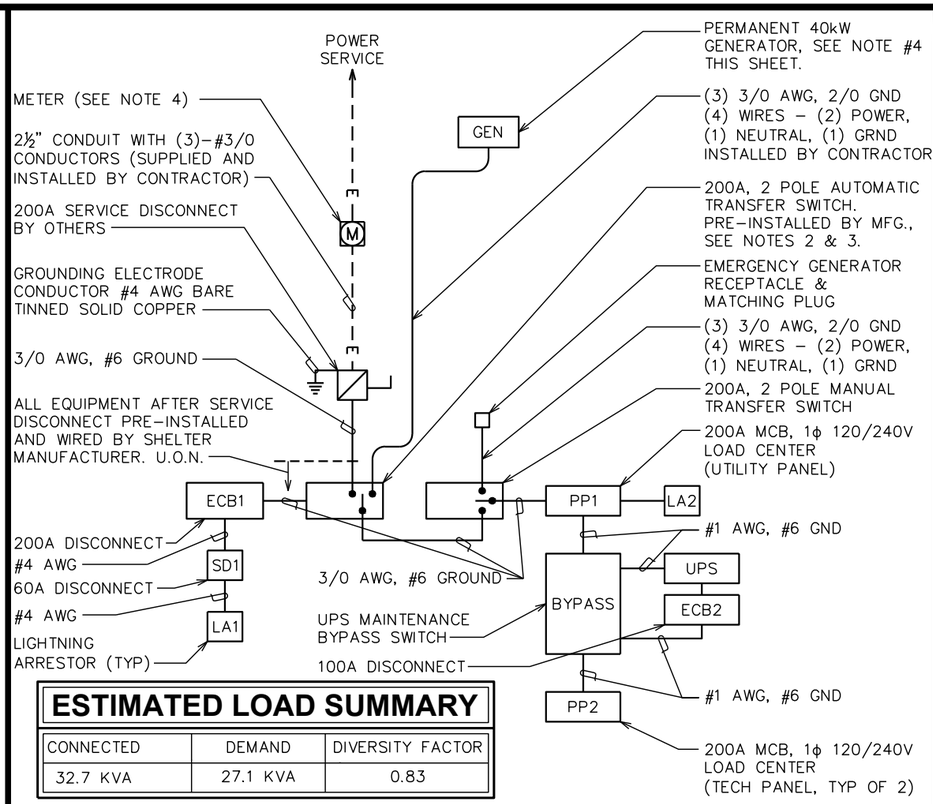
LOAD SERVED	VOLT AMPERES (WATTS) A	VOLT AMPERES (WATTS) B	WIRE	BREAKER P	BREAKER TRIP	CKT #	PHASE	CKT #	BREAKER TRIP	BREAKER P	WIRE	VOLT AMPERES (WATTS) A	VOLT AMPERES (WATTS) B	LOAD SERVED
LIGHTNING ARRESTOR	60		4	2	60	1	A	2	30	2	10	2880		ACH2
		60					B						2880	
ACH1	2880		10	2	30	5	A	6	20	1	12	540		INTERIOR RECEPTACLES
		2880					B	8	20	1	12		120	SMOKE DETECTOR
INTERIOR RECEPTACLES	540		12	1	20	9	A	10	125	2	1	5040		*UPS
INTERIOR LIGHTS		768	12	1	20	11	B						5040	TECH PANEL PP2
EXTERIOR RECEPTACLE	180		12	1	20	13	A	14	30	1	–	–		SPARE
EXTERIOR LIGHTS		200	12	1	20	15	B	16	20	1	–		–	SPARE
WATER HEATER JACKET	120		12	1	20	17	A	18	20	1	–	–		SPARE
GEN. BATT. CHARGER		120	12	1	20	19	B	20	20	1	–		–	SPARE
SPARE	–		–	1	20	21	A	22	20	1	–	–		SPARE
SPARE		–	–	1	20	23	B	24	20	1	–		–	SPARE
SPARE	–		–	1	20	25	A	26	20	1	–	–		SPARE
SPARE		–	–	1	20	27	B	28	20	1	–		–	SPARE
SPARE	–		–	1	20	29	A	30	20	1	–	–		SPARE
SPARE		–	–	1	20	31	B	32	20	1	–		–	SPARE
SPARE	–		–	1	20	33	A	34	20	1	–	–		SPARE
SPARE		–	–	1	20	35	B	36	20	1	–		–	SPARE
BATTERY CHARGER	2500		10	2	30	37	A	38	20	1	–	–		SPARE
		2500					B	40	20	1			–	SPARE
VOLT AMPS PER LEG	6280	6528										8460	8040	VOLT AMPS PER LEG
* ASSUMED LOADS						14740		14568						TOTAL VOLT AMPERES
						123		122						TOTAL AMPS PER LEG
						154								X 125% FOR GROWTH
						135								X 110% FOR MAIN

PP2 TECH — 200AMP, 120/240VAC, 1Ø/3W, 60Hz, M.BKR, 10K AIC

LOAD SERVED	VOLT AMPERES (WATTS) A	VOLT AMPERES (WATTS) B	WIRE	BREAKER P	BREAKER TRIP	CKT #	PHASE	CKT #	BREAKER TRIP	BREAKER P	WIRE	VOLT AMPERES (WATTS) A	VOLT AMPERES (WATTS) B	LOAD SERVED
* EQUIPMENT RCPT-1	360		12	1	20	1	A	2	20	1	12	360		* EQUIPMENT RCPT-2
* EQUIPMENT RCPT-3		360	12	1	20	7	B	8	20	1	12		360	* EQUIPMENT RCPT-4
* EQUIPMENT RCPT-5	360		12	1	20	5	A	6	20	1	12	360		* EQUIPMENT RCPT-6
* EQUIPMENT RCPT-7		360	12	1	20	7	B	8	20	1	12		360	* EQUIPMENT RCPT-8
* EQUIPMENT RCPT-9	360		12	1	20	9	A	10	20	1	12	360		* EQUIPMENT RCPT-10
* EQUIPMENT RCPT-11		360	12	1	20	11	B	12	20	1	12		360	* EQUIPMENT RCPT-12
* EQUIPMENT RCPT-13	360		12	1	20	13	A	14	20	1	12	360		* EQUIPMENT RCPT-14
* EQUIPMENT RCPT-15		360	12	1	20	15	B	16	20	1	12		360	* EQUIPMENT RCPT-16
* TRANS. CKT#17	360		12	1	20	17	A	18	20	1	12	360		* TRANS. CKT#18
* TRANS. CKT#19		360	12	1	20	19	B	20	20	1	12		360	* TRANS. CKT#20
* TRANS. CKT#21	360		12	1	20	21	A	22	20	1	12	360		* TRANS. CKT#22
* TRANS. CKT#23		360	12	1	20	23	B	24	20	1	12		360	* TRANS. CKT#24
* EQUIPMENT RCPT-25	360		12	1	20	25	A	26	20	1	12	360		* EQUIPMENT RCPT-26
* EQUIPMENT RCPT-27		360	12	1	20	27	B	28	20	1	12		360	* EQUIPMENT RCPT-28
SPARE	–		–	1	20	29	A	30	20	1	–	–		SPARE
SPARE		–	–	1	20	31	B	32	20	1	–		–	SPARE
SPARE	–		–	1	20	33	A	34	20	1	–	–		SPARE
SPARE		–	–	1	20	35	B	36	20	1	–		–	SPARE
SPARE	–		–	1	20	37	A	38	60	1	–	–		SPARE
SPARE		–	–	1	20	39	B	40	20	1	–		–	SPARE
VOLT AMPS PER LEG	2520	2520										2520	2520	VOLT AMPS PER LEG
* ASSUMED LOADS						5040		5040						TOTAL VOLT AMPERES
						42		42						TOTAL AMPS PER LEG
						53								X 125% FOR GROWTH
						58								X 110% FOR MAIN

PANEL SCHEDULE

SCALE: N.T.S.



ESTIMATED LOAD SUMMARY

CONNECTED	DEMAND	DIVERSITY FACTOR
32.7 KVA	27.1 KVA	0.83

NOTES:

1. ELECTRICAL SERVICE SHALL BE 200A, 240/120V, 1ø/3W.
2. PROVIDE SERVICE ENTRANCE RATED FUSIBLE SERVICE DISCONNECT SWITCH (200A, 3W, 1ø, FUSED AT 200A). DOOR TO POWER PANEL CONTAINING MAIN DISCONNECT TO REMAIN UNLOCKED.
3. FOR COMPLETE INTERNAL WIRING AND ARRANGEMENT, REFER TO VENDOR PRINTS PROVIDED BY EQUIPMENT SHELTER MANUFACTURER.
4. GENERATOR CONDUCTORS SIZED BASED ON A MAXIMUM GENERATOR BREAKER RATING OF 200A.
5. PROPOSED METER EATON/CUTLER–HAMMER (P/N: UTH7213C) OR APPROVED EQUAL.
6. WHEN UTILITY COMPANY REQUIRES A SERVICE DISCONNECT OTHER THAN THE MAIN BREAKER IN POWER PANEL OF THE UTILITY CABINET, REMOVE BONDING JUMPER IN UTILITY CABINET AND BOND SERVICE DISCONNECT PER NEC REQUIREMENTS.
7. ELECTRICAL CONTRACTOR TO VERIFY LOAD. LOAD IS NOT TO EXCEED 200A. IF LOAD DOES EXCEED 200A CONTACT VFP, INC. ENGINEER OF RECORD FOR CORRECTIVE ACTION.
8. ALL EXTERIOR ENCLOSURES TO BE NEMA 3 RATED.
9. CONTRACTOR TO VERIFY BUILT–IN CIRCUIT BREAKER ON PERMANENT GENERATOR. ONE MUST BE PROVIDED BY PER NEC 700.12.
10. PERSONNEL WILL BE TRAINED ON THE USE OF THE PORTABLE GENERATOR AND MANUAL DISCONNECT SWITCH UNDER STANDARD OPERATING PROCEDURES.
11. AN EMERGENCY SIGN SHALL BE PLACED AT THE SERVICE ENTRANCE EQUIPMENT, INDICATING TYPE AND LOCATION OF ON–SITE EMERGENCY POWER SOURCES PER NEC 700.7 (B) & 702.7 (B).
12. AN WARNING SIGN SHALL BE PLACED AT THE PORTABLE GENERATOR POWER INLET, INDICATING TYPE AND LOCATION OF ON–SITE EMERGENCY POWER SOURCES PER NEC 702.7 (C).
13. THE SERVICE EQUIPMENT MUST BE MARKED IN THE FIELD WITH THE MAXIMUM AVAILABLE FAULT

ONE LINE DIAGRAM

SCALE: N.T.S.

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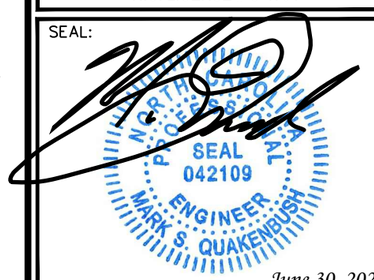

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DRAWN BY: GSB | CHECKED BY: JBG

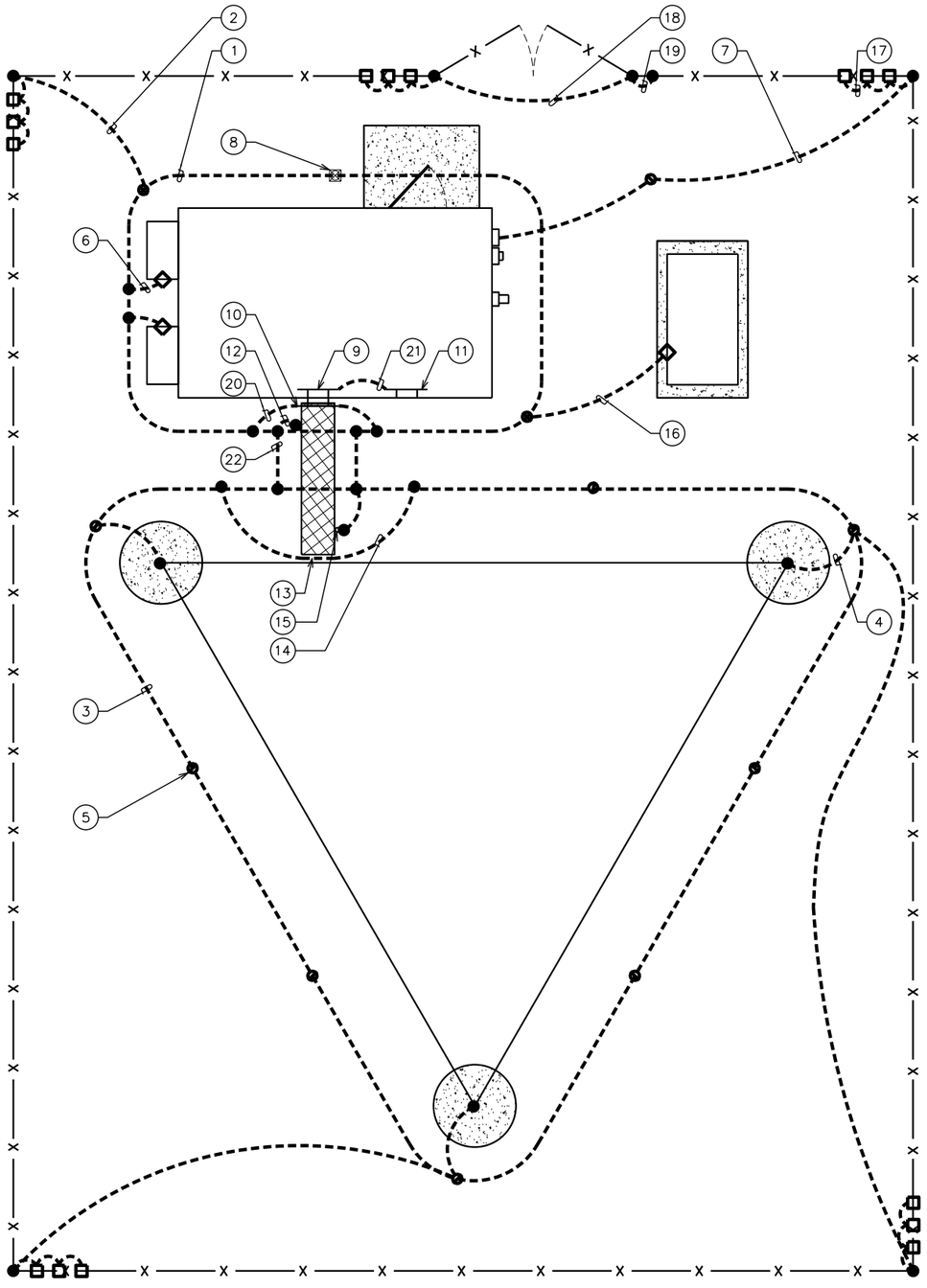
SHEET TITLE:

ONE-LINE DIAGRAM, PANEL SCHEDULE & NOTES

SHEET NUMBER: **E-3**

REVISION: 1

TEP#: 153676.258201



EQUIPMENT GROUNDING PLAN

SCALE: N.T.S.

GROUNDING NOTES

1. ALL GROUNDING IS TO BE INSTALLED PER MOTOROLA R-56 STANDARDS.
2. BONDING OF THE GROUNDED CONDUCTOR AND THE NEUTRAL CONDUCTOR SHALL BE AT THE SERVICE DISCONNECTING MEANS ONLY. BONDING JUMPER SHALL BE INSTALLED AT THE SERVICE DISCONNECT PER NEC 250.30. THE SERVICE DISCONNECT SHALL BE CONSIDERED ONLY THE METER DISCONNECT, THE GENERATOR FEED SHALL NOT CONSTITUTE A SEPARATELY DERIVED SYSTEM.
3. GROUND RING CONNECTION CONDUCTORS SHALL BE OF EQUAL SIZE, MATERIAL, AND BONDING TECHNIQUE.
4. CONTRACTOR SHALL ENSURE GROUND RING IS WITHIN 12 TO 36 INCHES OF THE SHELTER FOUNDATION. PROVIDE AND INSTALL GROUNDING CONNECTIONS SHOWN BELOW AS NEEDED PER EXISTING SITE GROUNDING SYSTEM. CONTRACTOR SHALL VERIFY ALL EXISTING SITE GROUNDING CONDITIONS BEFORE STARTING WORK OR PURCHASING EQUIPMENT.
5. BOND CGBE TO EXTERNAL GROUND RING WITH 2 RUNS OF #2 BARE, TINNED, SOLID COPPER CONDUCTOR IN PVC. CONNECT BAR END WITH 2 HOLE LUG, AND "CADWELD" THE OTHER END TO THE EXTERNAL GROUND ROD.
6. BONDING CONDUCTORS SHALL BE ROUTED THROUGH A 3/4" PVC CONDUIT SLEEVE RUN UNDER THE FOUNDATION. REFER TO THE GROUNDING PLAN BELOW.
7. BOND CGBE TO MGB WITH 2 RUNS OF #2 BARE, TINNED, SOLID COPPER CONDUCTOR.

NC GRID (NAD 83)

DRAWING NOTES:

1. #2 AWG SHELTER GROUND RING BURIED 30" BFG OR 6" BELOW FROST DEPTH (WHICHEVER IS GREATER).
2. #2 AWG BOND FROM SHELTER RING TO THE FENCE POST (TYP OF 2)
3. #2 AWG TOWER GROUND RING BURIED 30" BFG OR 6" BELOW FROST DEPTH (WHICHEVER IS GREATER). CONTRACTOR TO VERIFY LOCATION.
4. #2 AWG TOWER BOND TO TOWER GROUND RING (TYP OF 3).
5. ¾" X 10' COPPER CLAD STEEL GROUND ROD (TYP)
6. #2 AWG A/C BONDING CONDUCTOR (TYP OF 2)
7. #4 AWG SERVICE BONDING CONDUCTOR (COORDINATE WITH UTILITY)
8. GROUND ROD W/ INSPECTION WELL. SEE DETAIL, SHEET E-5
9. MASTER GROUND BAR (MGB). SEE NOTE #7, THIS SHEET.
10. COAX GROUND BAR EXTERIOR (CGBE) SEE NOTE #7, THIS SHEET.
11. TELCO GROUND BAR (AS NEEDED) (TGB)
12. #2 AWG ICE BRIDGE POST BONDING CONDUCTOR
13. TOWER BUSS BAR
14. #2 AWG TOWER BUSS BAR BONDING CONDUCTOR (TYP OF 2)
15. TYPICAL ICE BRIDGE POST
16. #2 AWG GENERATOR BONDING CONDUCTOR
17. FENCE FABRIC & DETERRENT WIRE BONDING JUMPER. SEE DETAIL, SHEET E-5.
18. #2 AWG GATE BONDING CONDUCTOR
19. GATE HINGE GROUND. SEE DETAIL, SHEET E-5.
20. CGBE BONDING CONDUCTOR (SEE NOTE #5, THIIS SHEET)
21. #2 AWG BONDING CONDUCTOR
22. #2 AWG BONDING CONDUCTOR (TYP OF 2)

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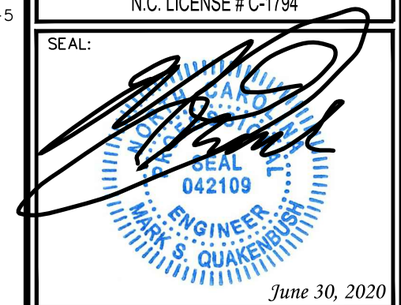

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DRAWN BY: GSB | CHECKED BY: JBG

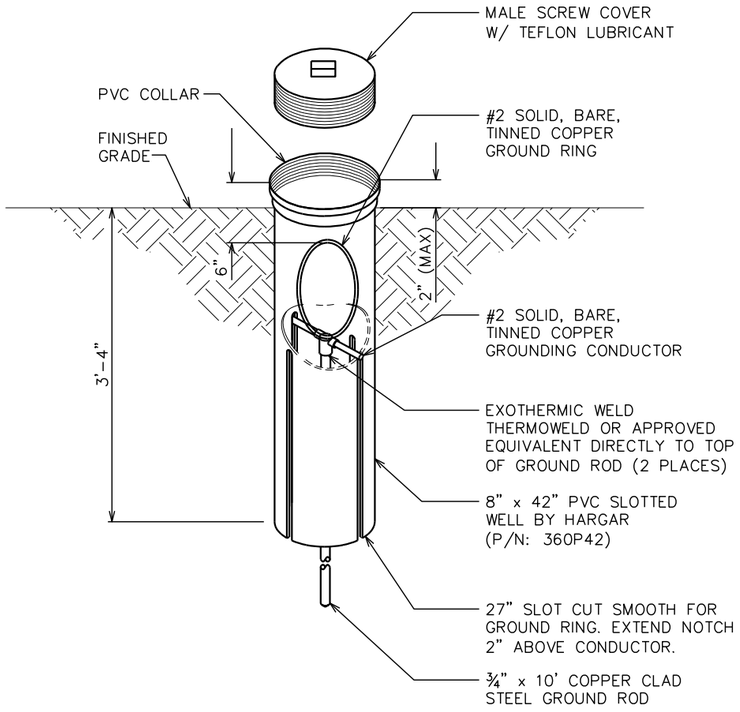
SHEET TITLE:

EQUIPMENT GROUNDING PLAN AND NOTES

SHEET NUMBER: **E-4**

REVISION: 1

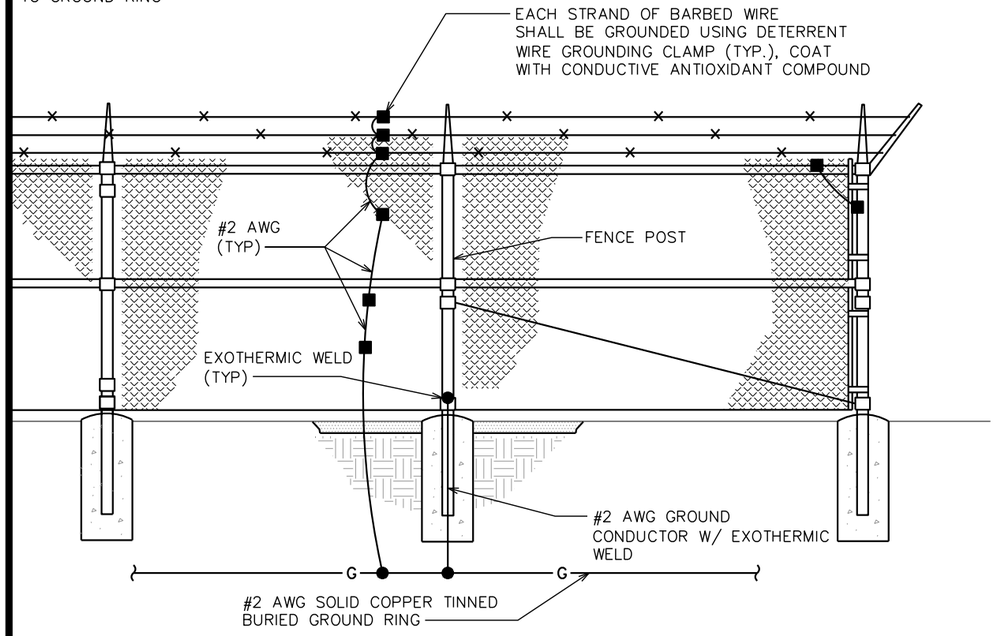
TEP#: 153676.258201



GROUND ROD WITH INSPECTION WELL

SCALE: N.T.S.

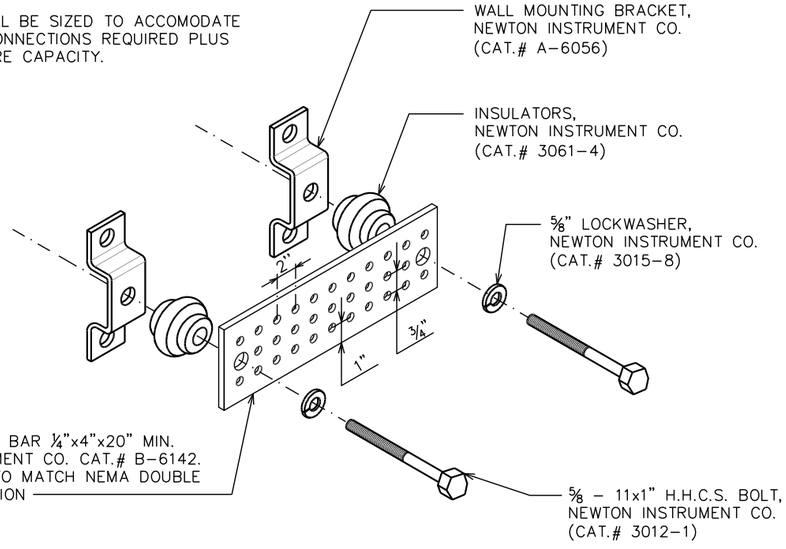
NOTE:
GROUND EACH FENCE SECTION
TO GROUND RING



FENCE FABRIC GROUNDING DETAIL

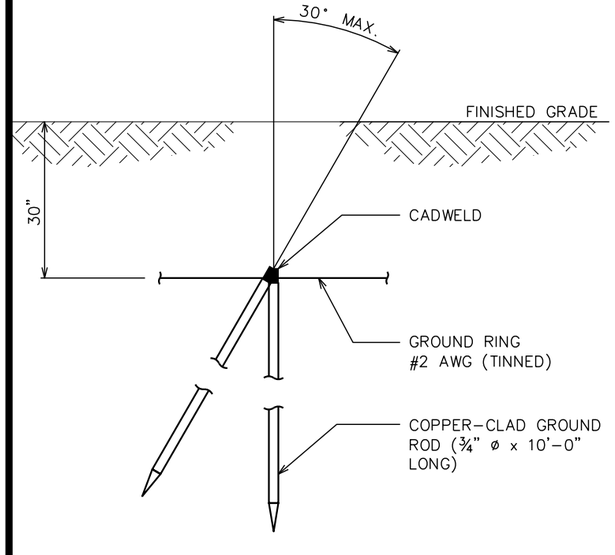
SCALE: N.T.S.

NOTE:
GROUND BAR SHALL BE SIZED TO ACCOMODATE ALL GROUNDING CONNECTIONS REQUIRED PLUS PROVIDE 50% SPARE CAPACITY.



STANDARD GROUND BAR DETAIL

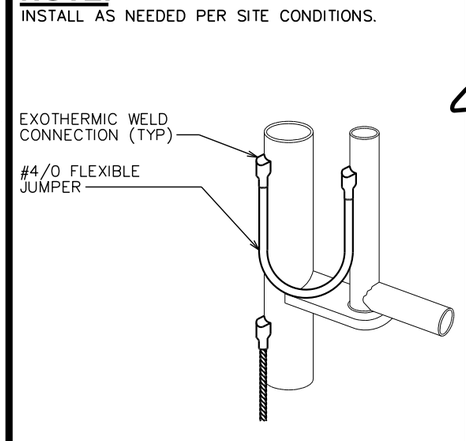
SCALE: N.T.S.



COPPER-CLAD STEEL GROUND ROD

SCALE: N.T.S.

NOTE:
INSTALL AS NEEDED PER SITE CONDITIONS.



GATE POST GROUND

SCALE: N.T.S.

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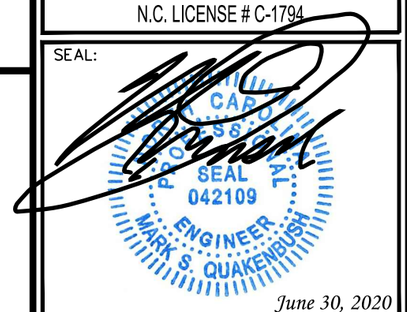
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

N.C. LICENSE # C-1794

SEAL:



June 30, 2020

REV	DATE	ISSUED FOR:
1	06-30-20	CONSTRUCTION
0	10-10-19	PRELIMINARY CONSTRUCTION

DRAWN BY: GSB | CHECKED BY: JBG

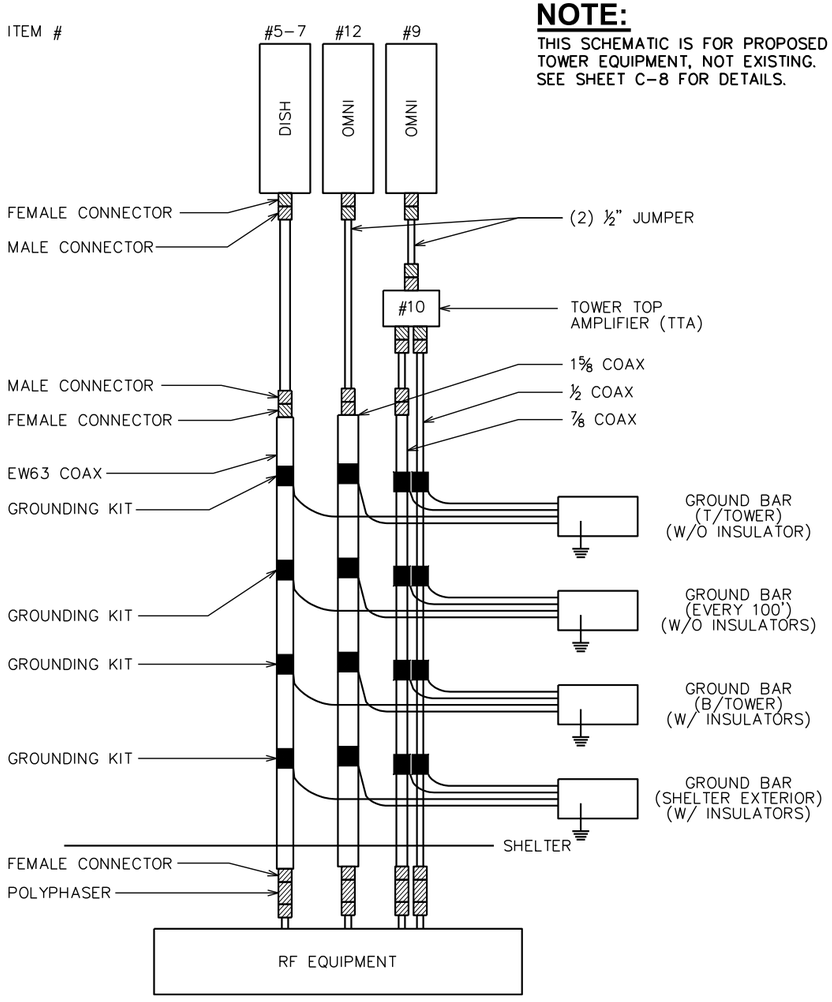
SHEET TITLE:

GROUNDING DETAILS I

SHEET NUMBER: **E-5**

REVISION: 1

TEP#: 153676.258201

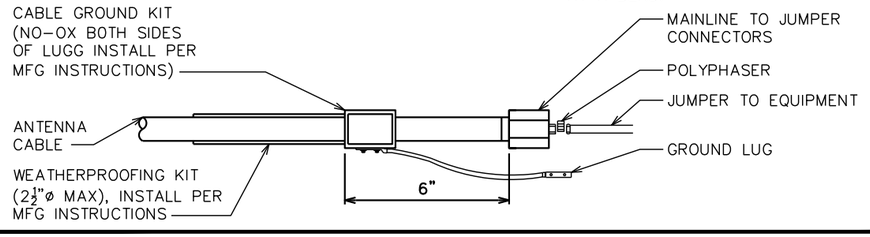


NOTE:
THIS SCHEMATIC IS FOR PROPOSED TOWER EQUIPMENT, NOT EXISTING. SEE SHEET C-8 FOR DETAILS.

ANTENNA CABLE & GROUNDING SCHEMATIC

SCALE: N.T.S.

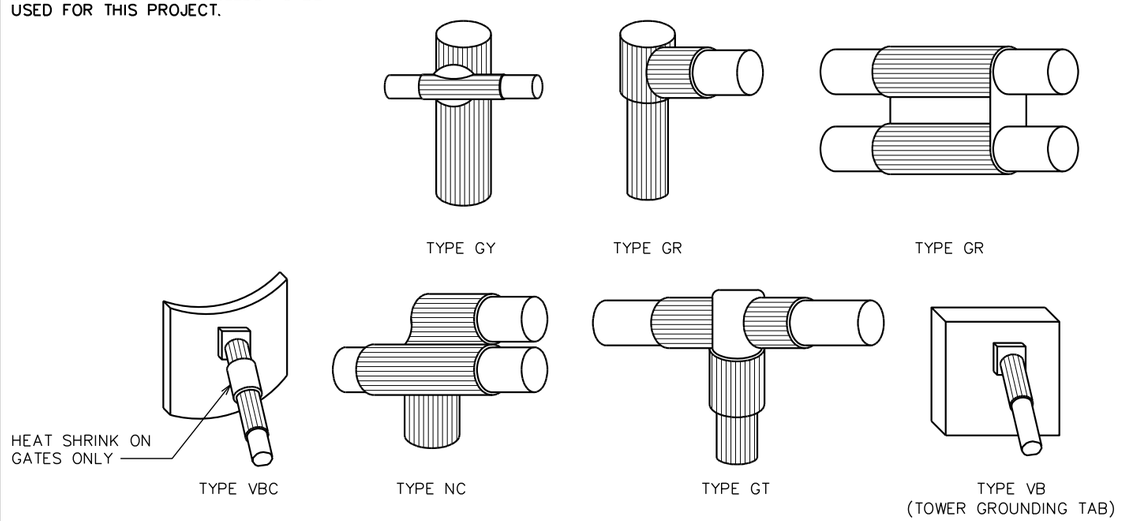
NOTE:
DO NOT INSTALL CABLE GROUND KIT AT A BEND.



CABLE GROUNDING DETAIL

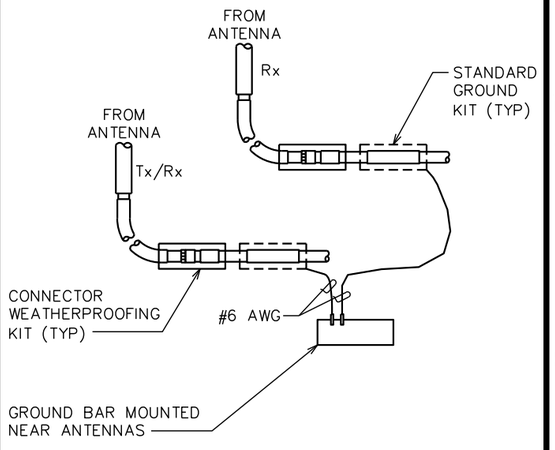
SCALE: N.T.S.

NOTE:
CADWELD "TYPES" SHOWN ARE EXAMPLES. CONSULT WITH PROJECT MANAGER FOR SPECIFIC TYPES OF CADWELDS TO BE USED FOR THIS PROJECT.



CADWELD DETAILS

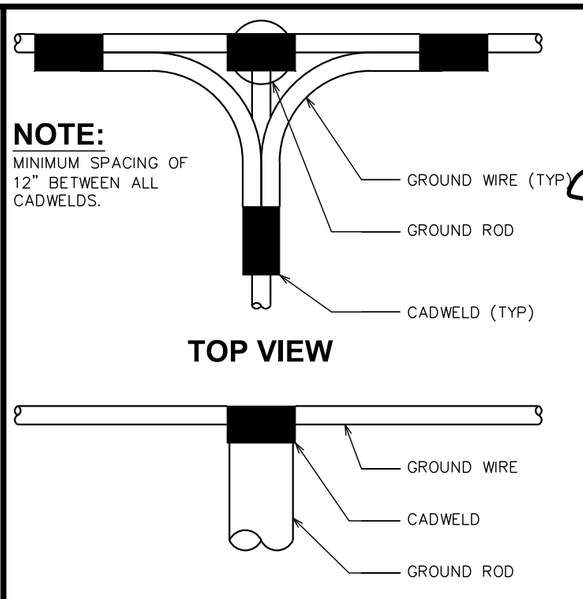
SCALE: N.T.S.



GROUND WIRE TO GROUND BAR CONNECTION AT ANTENNA

SCALE: N.T.S.

NOTE:
MINIMUM SPACING OF 12" BETWEEN ALL CADWELDS.



CADWELD GROUNDING DETAIL

SCALE: N.T.S.

PLANS PREPARED FOR:

Harnett County
NORTH CAROLINA

108 EAST FRONT STREET
LILLINGTON, NC 27546
OFFICE: (910) 814-6431

PROJECT INFORMATION:

OAKRIDGE RIVER ROAD

1979 OAKRIDGE RIVER ROAD
FUQUAY-VARINA, NC 27526
(HARNETT COUNTY)

PLANS PREPARED BY:

TOWER ENGINEERING PROFESSIONALS
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

N.C. LICENSE # C-1794

SEAL:

NORTH CAROLINA PROFESSIONAL SEAL 042109 ENGINEER MARK S. QUAKENBUSH

June 30, 2020

REV	DATE	ISSUED FOR:
1	06-30-20	CONSTRUCTION
0	10-10-19	PRELIMINARY CONSTRUCTION

DRAWN BY: GSB | CHECKED BY: JBG

SHEET TITLE:

GROUNDING DETAILS II

SHEET NUMBER: **E-6**

REVISION: 1

TEP#: 153676.258201

Sabre Industries™
INNOVATION DELIVERED

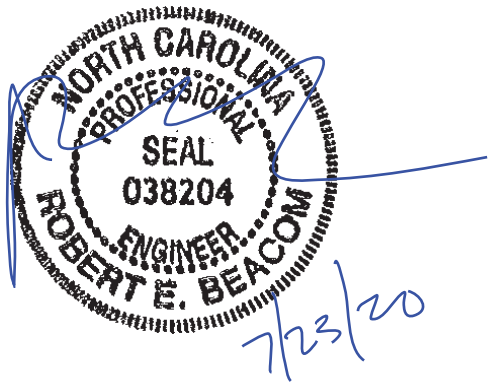
Structural Design Report

380' S3TL Series HD1 Self-Supporting Tower
Site: Oakridge River Road, NC

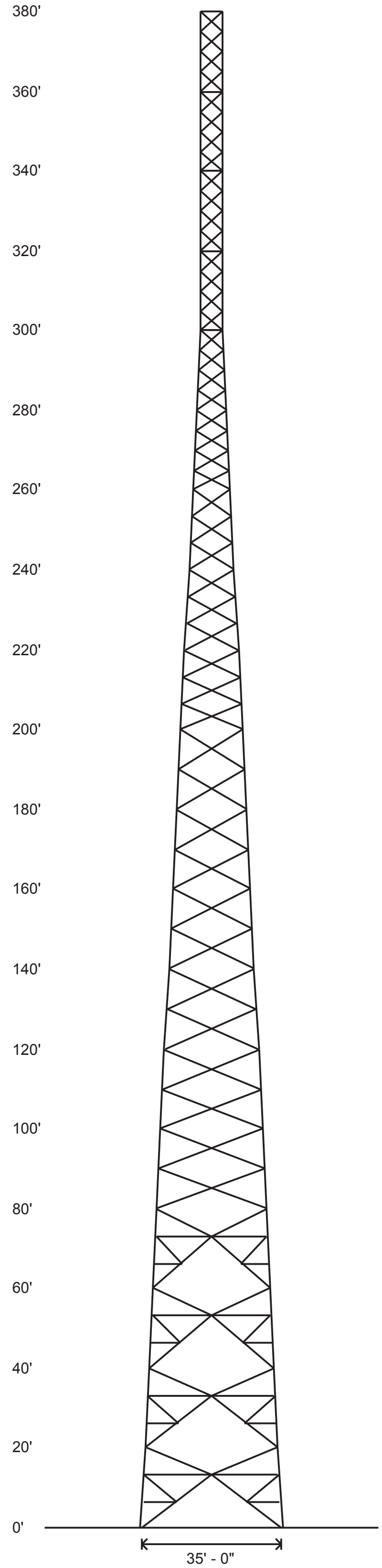
Prepared for: HARNETT COUNTY
by: Sabre Industries ™

Job Number: 21-1221-JDS

July 23, 2020



Section	Legs	Diagonals	Horizontals	Internals	Sub-Diagonals	Sub-Horizontals	Brace Bolts	Top Face Width	Panel Count/Height	Section Weight
360'–380'	D		NONE / Q							706
340'–360'	C	L 2 X 2 X 1/8	NONE / Q							847
320'–340'	B		NONE / Q					5'	24 @ 5'	1171
300'–320'	A	N	Q / NONE / N				(1) 5/8"			1574
280'–300'										1866
260'–280'	5.563 OD X .375	L 2 X 2 X 1/8						7'		1910
240'–260'		N						9'		2457
220'–240'		M		NONE	NONE	NONE		11'		2684
200'–220'	5.563 OD X .500	L						13'	9 @ 6.6667'	3130
180'–200'		K	NONE					15'		4459
160'–180'		J					(1) 3/4"	17'		4518
140'–160'		I						19'		4864
120'–140'	8.625 OD X .500							21'	12 @ 10'	5468
100'–120'		L 4 X 4 X 5/16						23'		6051
80'–100'		H					(2) 5/8"	25'		7083
60'–80'		E / G	I	R	L	S		27'	T / U	7685
40'–60'	12.75 OD X .375	E / G	P / O	R / O	R / O	R / O		29'	T / U	8117
20'–40'		E / F	P / O	J / O	R / O	R / O		31'	T / U	9579
0'–20'	12.75 OD X .500	E / F	H / O	J / O	R / O	R / O	(2) 3/4"	33'	T / U	10083



Design Criteria - ANSI/TIA-222-G

ASCE 7-16 Ultimate Wind Speed (No Ice)	129 mph
Wind Speed (Ice)	30 mph
Design Ice Thickness	1.50 in
Structure Class	III
Risk Category	IV
Exposure Category	C
Topographic Category	1

Base Reactions

Total Foundation		Individual Footing	
Shear (kips)	118.02	Shear (kips)	70.52
Axial (kips)	298.14	Compression (kips)	702
Moment (ft-kips)	20140	Uplift (kips)	592
Torsion (ft-kips)	156.66		

Material List

Display	Value
A	5.563 OD X .258
B	3.500 OD X .300
C	2.875 OD X .203
D	2.375 OD X .154
E	L 6 X 4 X 3/8
F	L 5 X 5 X 3/8
G	L 5 X 5 X 5/16
H	L 4 X 4 X 3/8
I	L 4 X 4 X 1/4
J	L 3 1/2 X 3 1/2 X 1/4
K	L 3 X 3 X 5/16
L	L 3 X 3 X 3/16
M	L 2 1/2 X 2 1/2 X 3/16
N	L 2 X 2 X 3/16
O	NONE
P	L 4 X 4 X 5/16
Q	L 2 X 2 X 1/8
R	L 3 X 3 X 1/4
S	L 2 1/2 X 2 1/2 X 1/4
T	1 @ 13.333'
U	1 @ 6.667'

Notes

1) All legs are A500 (50 ksi Min. Yield).
2) All braces are A572 Grade 50.
3) All brace bolts are A325-X.
4) The tower model is S3TL Series HD1.
5) Transmission lines are to be attached to standard 12 hole waveguide ladders with 3ft rung spacing.
6) Azimuths are relative (not based on true north).
7) Foundation loads shown are maximums.
8) All unequal angles are oriented with the short leg vertical.
9) Weights shown are estimates. Final weights may vary.
10) Tower Rating: 94.71%

Sabre Industries
INNOVATION DELIVERED

Sabre Industries
7101 Southbridge Drive
P.O. Box 658
Sioux City, IA 51102-0658
Phone: (712) 258-6690
Fax: (712) 279-0814

Job:	**21-1221-JDS**
Customer:	HARNETT COUNTY
Site Name:	Oakridge River Road, NC
Description:	380' S3TL
Date:	7/23/2020 By: REB

Designed Appurtenance Loading

Elev	Description	Tx-Line
388.71	(1) CC807-11	
388.71	(1) CC807-11	
380	6ft Sidearm	
380	6ft Sidearm	
380	Lights, Lightning Rod & Extension	(1) 1"
380		(1) 7/8"
380		(1) 1 5/8"
358.71	(1) CC807-11	
358.71	(1) CC807-11	
350	6ft Sidearm	
350	6ft Sidearm	
350		(1) 1 5/8"
350		(1) 7/8"
350	(1) TTA (25" x 18" x 6.7")	(1) 1/2"
330.62	(1) DB224	
330.62	(1) DB224	
320	6ft Sidearm	
320	6ft Sidearm	
320		(1) 7/8"
320		(1) 7/8"
310.62	(1) DB224	
310.62	(1) DB224	
300	6ft Sidearm	
300	6ft Sidearm	
300		(1) 7/8"
300		(1) 7/8"
265	(1) 4' Ice Shield	

Elev	Description	Tx-Line
260.62	(1) DB224	
260	Leg Dish Mount	
260	(1) 4' H.P. Dish	(1) 3/8"
250	6ft Sidearm	
250		(1) 7/8"
230	(1) 8' Ice Shield	
225	Leg Dish Mount	
225	(1) 8' Solid Dish W/ Radome	(1) EW63
200	(1) 6' Ice Shield	
195	Leg Dish Mount	
195	(1) 6' H.P. Dish	(1) EW63
190	Adder for Mid-Lights & Ice Shields	
185	(1) 6' Ice Shield	
180	Leg Dish Mount	
180	(1) 6' H.P. Dish	(1) EW63
165	(1) 8' Ice Shield	
160	Leg Dish Mount	
160	(1) 8' Solid Dish W/ Radome	(1) EW63
155	(1) 6' Ice Shield	
150	Leg Dish Mount	
150	(1) 6' H.P. Dish	(1) EW63
135	(1) 6' Ice Shield	
130	Leg Dish Mount	
130	(1) 6' H.P. Dish	(1) EW63
125	(1) 8' Ice Shield	
120	Leg Dish Mount	
120	(1) 8' Solid Dish W/ Radome	(1) EW63

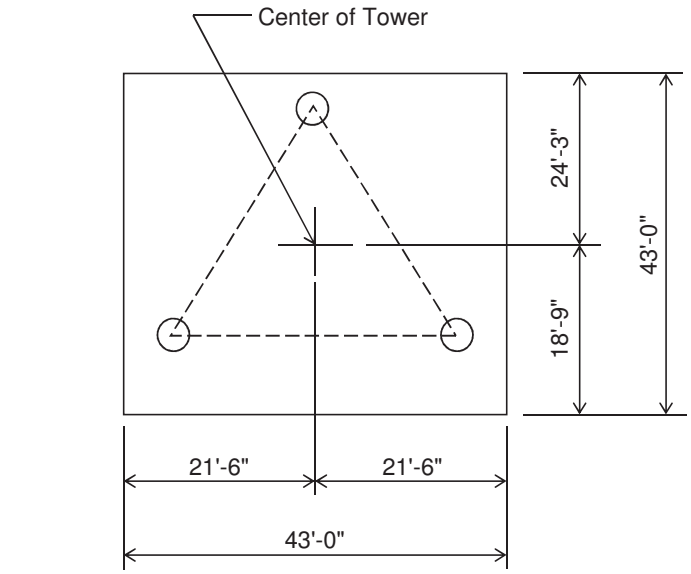
Sabre Industries
INNOVATION DELIVERED
Sabre Industries
7101 Southbridge Drive
P.O. Box 658
Sioux City, IA 51102-0658
Phone: (712) 258-6690
Fax: (712) 279-0814

Job:	**21-1221-JDS**
Customer:	HARNETT COUNTY
Site Name:	Oakridge River Road, NC
Description:	380' S3TL
Date:	7/23/2020 By: REB

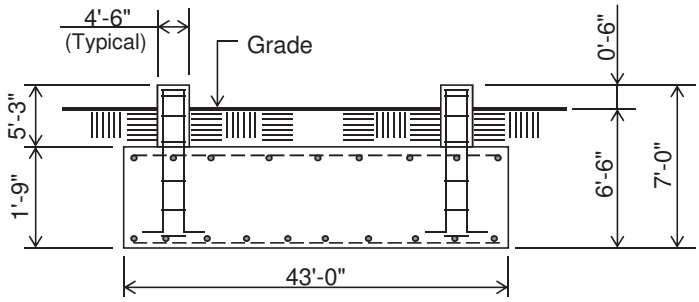
No.: 21-1221-JDS
Date: 07/23/20
By: REB

Customer: HARNETT COUNTY
Site: Oakridge River Road, NC

380 ft. Model S3TL Series HD1 Self Supporting Tower



PLAN VIEW



ELEVATION VIEW

(129.1 cu. yds.)
(1 REQD.; NOT TO SCALE)

CAUTION: Center of tower is not in center of slab.

Notes:

1) Concrete shall have a minimum 28-day compressive strength of 4,500 psi, in accordance with ACI 318-11.
2) Rebar to conform to ASTM specification A615 Grade 60.
3) All rebar to have a minimum of 3" concrete cover.
4) All exposed concrete corners to be chamfered 3/4".
5) The foundation design is based on the geotechnical report by TEP project no. 153676.258205, dated: 4/2/20.
6) See the geotechnical report for compaction requirements, if specified.
7) The foundation is based on the following factored loads:
   Factored download (kips) = 112.13
   Factored overturn (kip-ft) = 20,140.45
   Factored shear (kips) = 118.02
8) 4.75' of soil cover is required over the entire area of the foundation slab.
9) The bottom anchor bolt template shall be positioned as closely as possible to the bottom of the anchor bolts.
10) This foundation is designed for a max capacity ratio of 95%.

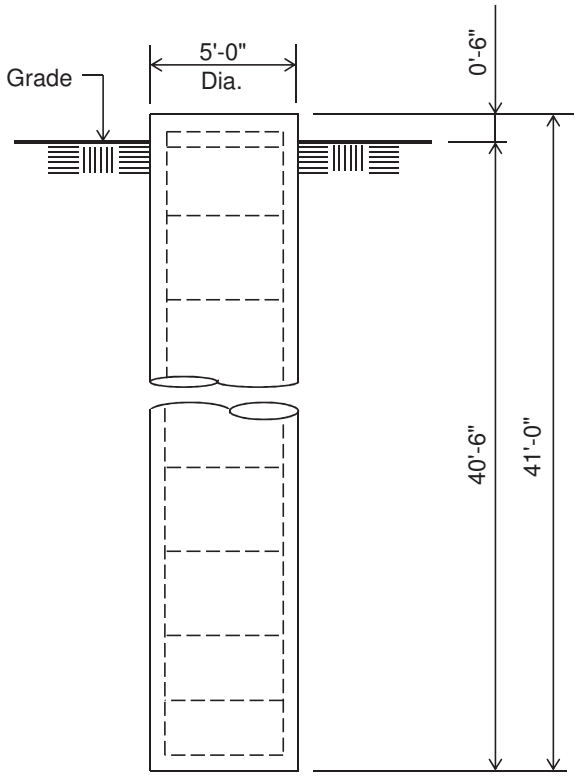
Rebar Schedule per Mat and per Pier	
Pier	(24) #8 vertical rebar w/ hooks at bottom w/ #4 rebar ties, two (2) within top 5" of pier then 8" C/C
Mat	(72) #10 horizontal rebar evenly spaced each way top and bottom. (288 total)
Anchor Bolts per Leg	
(6) 1.75" dia. x 87" F1554-105 on a 18" B.C. w/ 10.5" max. projection above concrete.	

7101 Southbridge Dr - P.O. Box 658 - Sioux City, IA 51102-0658 - Phone 712.258.6690 - Fax 712.258.8250

No.: 21-1221-JDS
Date: 07/23/20
By: REB

Customer: HARNETT COUNTY
Site: Oakridge River Road, NC

380 ft. Model S3TL Series HD1 Self Supporting Tower



ELEVATION VIEW
(29.8 cu. yds.)
(3 REQUIRED; NOT TO SCALE)

Notes:

1) Concrete shall have a minimum 28-day compressive strength of 4,500 psi, in accordance with ACI 318-11.

2) Rebar to conform to ASTM specification A615 Grade 60.

3) All rebar to have a minimum of 3" concrete cover.

4) All exposed concrete corners to be chamfered 3/4".

5) The foundation design is based on the geotechnical report by TEP project no. 153676.258205, dated: 4/2/20.

6) See the geotechnical report for drilled pier installation requirements, if specified.

7) The foundation is based on the following factored loads:
   Factored uplift (kips) = 592.00
   Factored download (kips) = 702.00
   Factored shear (kips) = 71.00

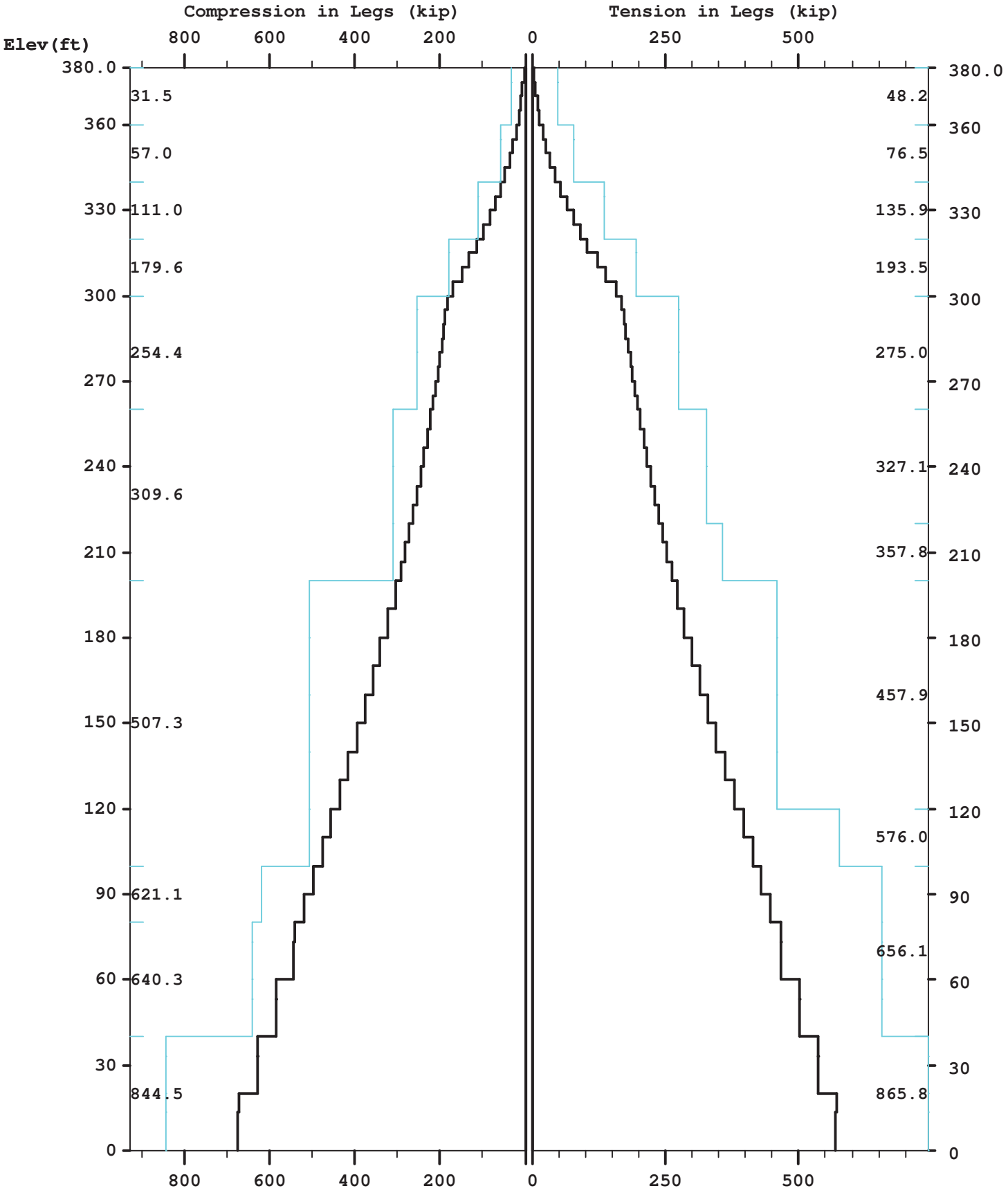
8) The bottom anchor bolt template shall be positioned as closely as possible to the bottom of the anchor bolts.

9) This foundation is designed for a max capacity ratio of 95%.

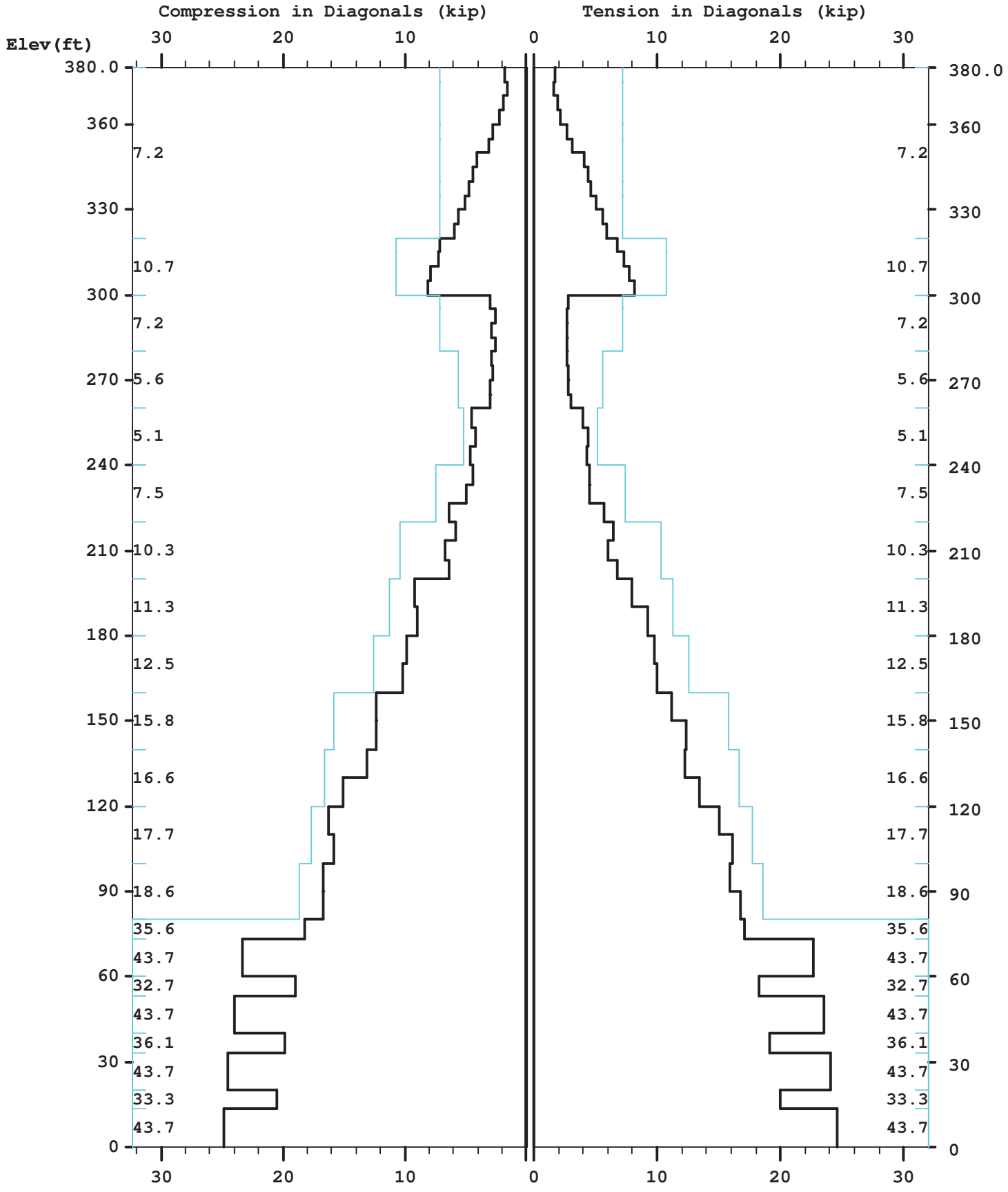
Rebar Schedule per Pier	
Pier	(18) #10 vertical rebar w/ #4 rebar ties, two (2) within top 5" of pier then 12" C/C
Anchor Bolts per Leg	
(6) 1.75" dia. x 87" F1554-105 on a 18" B.C. w/ 10.5" max. projection above concrete.	

7101 Southbridge Dr - P.O. Box 658 - Sioux City, IA 51102-0658 - Phone 712.258.6690 - Fax 712.258.8250

Maximum

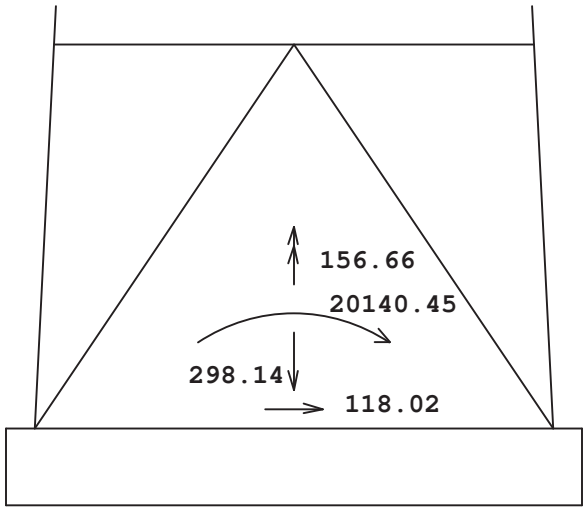

Compression in Legs (kip)
Tension in Legs (kip)
Elev(ft)
800
600
400
200
0
250
500
380.0
360
330
300
270
240
210
180
150
120
90
60
30
0
31.5
57.0
111.0
179.6
254.4
309.6
507.3
621.1
640.3
844.5
48.2
76.5
135.9
193.5
275.0
327.1
357.8
457.9
576.0
656.1
865.8

Maximum

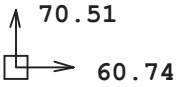

Compression in Diagonals (kip)
Tension in Diagonals (kip)
Elev(ft)
30 20 10 0 10 20 30
380.0
360
330
300
270
240
210
180
150
120
90
60
30
0
7.2
10.7
7.2
5.6
5.1
7.5
10.3
11.3
12.5
15.8
16.6
17.7
18.6
35.6
43.7
32.7
43.7
36.1
43.7
33.3
43.7

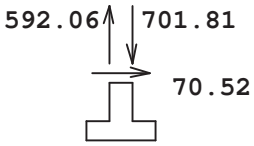
Maximum

TOTAL FOUNDATION LOADS (kip, ft-kip)



INDIVIDUAL FOOTING LOADS (kip)





Latticed Tower Analysis (Unguyed) (c)2015 Guymast Inc. 416-736-7453
Processed under license at:

Sabre Towers and Poles on: 23 jul 2020 at: 15:28:13

MAST GEOMETRY (ft)

PANEL TYPE	NO.OF LEGS	ELEV.AT BOTTOM	ELEV.AT TOP	F.W..AT BOTTOM	F.W..AT TOP	TYPICAL PANEL HEIGHT
X	3	375.00	380.00	5.00	5.00	5.00
X	3	360.00	375.00	5.00	5.00	5.00
X	3	355.00	360.00	5.00	5.00	5.00
X	3	340.00	355.00	5.00	5.00	5.00
X	3	335.00	340.00	5.00	5.00	5.00
X	3	320.00	335.00	5.00	5.00	5.00
X	3	315.00	320.00	5.00	5.00	5.00
X	3	300.00	315.00	5.00	5.00	5.00
X	3	295.00	300.00	5.50	5.00	5.00
X	3	280.00	295.00	7.00	5.50	5.00
X	3	260.00	280.00	9.00	7.00	5.00
X	3	240.00	260.00	11.00	9.00	6.67
X	3	220.00	240.00	13.00	11.00	6.67
X	3	200.00	220.00	15.00	13.00	6.67
X	3	180.00	200.00	17.00	15.00	10.00
X	3	160.00	180.00	19.00	17.00	10.00
X	3	140.00	160.00	21.00	19.00	10.00
X	3	120.00	140.00	23.00	21.00	10.00
X	3	100.00	120.00	25.00	23.00	10.00
X	3	80.00	100.00	27.00	25.00	10.00
V	3	73.33	80.00	27.67	27.00	6.67
A	3	60.00	73.33	29.00	27.67	13.33
V	3	53.33	60.00	29.67	29.00	6.67
A	3	40.00	53.33	31.00	29.67	13.33
V	3	33.33	40.00	31.67	31.00	6.67
A	3	20.00	33.33	33.00	31.67	13.33
V	3	13.33	20.00	33.67	33.00	6.67
A	3	0.00	13.33	35.00	33.67	13.33

MEMBER PROPERTIES

MEMBER TYPE	BOTTOM ELEV ft	TOP ELEV ft	X-SECTN AREA in.sq	RADIUS OF GYRAT in	ELASTIC MODULUS ksi	THERMAL EXPANSN /deg
LE	360.00	380.00	1.075	0.787	29000.	0.0000117
LE	340.00	360.00	1.704	0.787	29000.	0.0000117
LE	320.00	340.00	3.016	0.787	29000.	0.0000117
LE	300.00	320.00	4.299	0.787	29000.	0.0000117
LE	260.00	300.00	6.111	0.787	29000.	0.0000117
LE	200.00	260.00	7.952	0.787	29000.	0.0000117
LE	100.00	200.00	12.763	0.787	29000.	0.0000117
LE	40.00	100.00	14.579	0.787	29000.	0.0000117
LE	0.00	40.00	19.242	0.787	29000.	0.0000117
DI	320.00	380.00	0.484	0.626	29000.	0.0000117
DI	300.00	320.00	0.715	0.626	29000.	0.0000117
DI	260.00	300.00	0.484	0.626	29000.	0.0000117
DI	240.00	260.00	0.715	0.626	29000.	0.0000117
DI	220.00	240.00	0.902	0.626	29000.	0.0000117
DI	200.00	220.00	1.090	0.626	29000.	0.0000117
DI	180.00	200.00	1.777	0.626	29000.	0.0000117
DI	160.00	180.00	1.688	0.626	29000.	0.0000117
DI	140.00	160.00	1.938	0.626	29000.	0.0000117
DI	100.00	140.00	2.402	0.626	29000.	0.0000117
DI	80.00	100.00	2.859	0.626	29000.	0.0000117
DI	73.33	80.00	3.027	0.626	29000.	0.0000117
DI	60.00	73.33	3.609	0.626	29000.	0.0000117
DI	53.33	60.00	3.027	0.626	29000.	0.0000117
DI	40.00	53.33	3.609	0.626	29000.	0.0000117
DI	33.33	40.00	3.609	0.626	29000.	0.0000117
DI	20.00	33.33	3.609	0.626	29000.	0.0000117

DI	13.33	20.00	3.609	0.626	29000.	0.0000117
DI	0.00	13.33	3.609	0.626	29000.	0.0000117
HO	375.00	380.00	0.484	0.626	29000.	0.0000117
HO	355.00	360.00	0.484	0.626	29000.	0.0000117
HO	335.00	340.00	0.484	0.626	29000.	0.0000117
HO	315.00	320.00	0.715	0.626	29000.	0.0000117
HO	295.00	300.00	0.484	0.626	29000.	0.0000117
HO	60.00	73.33	1.938	0.626	29000.	0.0000117
HO	40.00	53.33	2.402	0.626	29000.	0.0000117
HO	20.00	33.33	2.402	0.626	29000.	0.0000117
HO	0.00	13.33	2.859	0.626	29000.	0.0000117
BR	60.00	73.33	1.438	0.000	29000.	0.0000117
BR	40.00	53.33	1.438	0.000	29000.	0.0000117
BR	20.00	33.33	1.688	0.000	29000.	0.0000117
BR	0.00	13.33	1.688	0.000	29000.	0.0000117

FACTORED MEMBER RESISTANCES
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BOTTOM ELEV ft	TOP ELEV ft	LEGS COMP kip	LEGS TENS kip	DIAGONALS COMP kip	DIAGONALS TENS kip	HORIZONTALS COMP kip	HORIZONTALS TENS kip	INT BRACING COMP kip	INT BRACING TENS kip
375.0	380.0	31.48	48.15	7.16	7.16	5.82	5.82	0.00	0.00
360.0	375.0	31.48	48.15	7.16	7.16	0.00	0.00	0.00	0.00
355.0	360.0	57.04	76.50	7.16	7.16	5.82	5.82	0.00	0.00
340.0	355.0	57.04	76.50	7.16	7.16	0.00	0.00	0.00	0.00
335.0	340.0	110.98	135.90	7.16	7.16	5.82	5.82	0.00	0.00
320.0	335.0	110.98	135.90	7.16	7.16	0.00	0.00	0.00	0.00
315.0	320.0	179.61	193.50	10.74	10.74	8.46	8.46	0.00	0.00
300.0	315.0	179.61	193.50	10.74	10.74	0.00	0.00	0.00	0.00
295.0	300.0	254.38	274.95	7.16	7.16	5.82	5.82	0.00	0.00
280.0	295.0	254.38	274.95	7.16	7.16	0.00	0.00	0.00	0.00
260.0	280.0	254.38	274.95	5.63	5.63	0.00	0.00	0.00	0.00
240.0	260.0	309.64	327.10	5.14	5.14	0.00	0.00	0.00	0.00
220.0	240.0	309.64	327.10	7.46	7.46	0.00	0.00	0.00	0.00
200.0	220.0	309.64	357.75	10.34	10.34	0.00	0.00	0.00	0.00
180.0	200.0	507.33	457.90	11.28	11.28	0.00	0.00	0.00	0.00
160.0	180.0	507.33	457.90	12.53	12.53	0.00	0.00	0.00	0.00
140.0	160.0	507.33	457.90	15.77	15.77	0.00	0.00	0.00	0.00
120.0	140.0	507.33	457.90	16.62	16.62	0.00	0.00	0.00	0.00
100.0	120.0	507.33	576.00	17.72	17.72	0.00	0.00	0.00	0.00
80.0	100.0	621.06	656.10	18.63	18.63	0.00	0.00	0.00	0.00
73.3	80.0	640.29	656.10	35.60	35.60	0.00	0.00	0.00	0.00
60.0	73.3	640.29	656.10	43.74	43.74	15.60	15.60	7.41	7.41
53.3	60.0	640.29	656.10	32.65	32.65	0.00	0.00	0.00	0.00
40.0	53.3	640.29	656.10	43.74	43.74	17.32	17.32	6.59	6.59
33.3	40.0	844.46	865.80	36.10	36.10	0.00	0.00	0.00	0.00
20.0	33.3	844.46	865.80	43.74	43.74	15.58	15.58	9.00	9.00
13.3	20.0	844.46	865.80	33.26	33.26	0.00	0.00	0.00	0.00
0.0	13.3	844.46	865.80	43.74	43.74	16.75	16.75	8.14	8.14

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* Only 3 condition(s) shown in full

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LOADING CONDITION A ==========

129 mph Ultimate wind with no ice. Wind Azimuth: 0◆ PL - 0

MAST LOADING
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LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	......FORCES...... HORIZ kip	DOWN kip	.....MOMENTS..... VERTICAL ft-kip	TORSNAL ft-kip
C	388.7	0.00	0.0	0.0	0.26	0.06	0.00	0.00
C	388.7	0.00	0.0	0.0	0.26	0.06	0.00	0.00
C	380.0	0.00	0.0	0.0	0.57	0.36	0.00	0.00
C	380.0	0.00	0.0	0.0	0.57	0.36	0.00	0.00
C	380.0	0.00	0.0	0.0	0.45	0.36	0.00	0.00
C	377.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	372.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	362.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	358.7	0.00	0.0	0.0	0.25	0.06	0.00	0.00

C	358.7	0.00	0.0	0.0	0.25	0.06	0.00	0.00
C	352.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	350.0	0.00	0.0	0.0	0.72	0.40	0.00	0.00
C	350.0	0.00	0.0	0.0	0.55	0.36	0.00	0.00
C	342.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	332.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	330.6	0.00	0.0	0.0	0.24	0.04	0.00	0.00
C	330.6	0.00	0.0	0.0	0.24	0.04	0.00	0.00
C	322.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	320.0	0.00	0.0	0.0	0.54	0.36	0.00	0.00
C	320.0	0.00	0.0	0.0	0.54	0.36	0.00	0.00
C	312.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	310.6	0.00	0.0	0.0	0.23	0.04	0.00	0.00
C	310.6	0.00	0.0	0.0	0.23	0.04	0.00	0.00
C	302.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	300.0	0.00	0.0	0.0	0.54	0.36	0.00	0.00
C	300.0	0.00	0.0	0.0	0.54	0.36	0.00	0.00
C	292.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	282.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	272.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	265.0	0.00	0.0	0.0	0.18	0.48	0.00	0.00
C	262.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	260.6	0.00	0.0	0.0	0.22	0.04	0.00	0.00
C	260.0	0.00	0.0	0.0	0.08	0.01	0.00	0.00
C	256.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	250.1	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	250.0	0.00	0.0	0.0	0.51	0.36	0.00	0.00
C	243.4	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	236.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	230.1	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	230.0	0.00	0.0	0.0	0.36	0.96	0.00	0.00
C	225.0	0.00	0.0	0.0	0.32	0.01	0.00	0.00
C	223.4	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	216.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	210.1	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	203.4	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	200.0	0.00	0.0	0.0	0.26	0.72	0.00	0.00
C	195.0	0.00	0.0	0.0	0.12	0.01	0.00	0.00
C	195.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	190.0	0.00	0.0	0.0	0.32	0.54	0.00	0.00
C	185.0	0.00	0.0	0.0	0.25	0.72	0.00	0.00
C	185.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	180.0	0.00	0.0	0.0	0.12	0.01	0.00	0.00
C	175.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	165.0	0.00	0.0	0.0	0.33	0.96	0.00	0.00
C	165.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	160.0	0.00	0.0	0.0	0.30	0.01	0.00	0.00
C	155.0	0.00	0.0	0.0	0.25	0.72	0.00	0.00
C	155.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	150.0	0.00	0.0	0.0	0.12	0.01	0.00	0.00
C	145.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	135.0	0.00	0.0	0.0	0.24	0.72	0.00	0.00
C	135.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	130.0	0.00	0.0	0.0	0.11	0.01	0.00	0.00
C	125.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	125.0	0.00	0.0	0.0	0.31	0.96	0.00	0.00
C	120.0	0.00	0.0	0.0	0.28	0.01	0.00	0.00
C	115.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	105.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	95.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	85.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	73.3	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	66.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	66.7	8.18	180.0	0.0	0.33	0.11	0.00	0.00
C	53.3	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	46.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	46.7	8.76	180.0	0.0	0.33	0.12	0.00	0.00
C	33.3	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	26.7	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	26.7	9.33	180.0	0.0	0.38	0.20	0.00	0.00
C	13.3	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	6.7	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	6.7	9.91	180.0	0.0	0.37	0.22	0.00	0.00
D	380.0	0.00	3.8	0.0	0.13	0.05	0.02	-0.02
D	375.0	0.00	3.8	0.0	0.13	0.05	0.02	-0.02
D	375.0	0.00	3.8	0.0	0.12	0.04	0.02	-0.02
D	360.0	0.00	3.8	0.0	0.12	0.04	0.02	-0.02
D	360.0	0.00	3.8	0.0	0.13	0.06	0.02	-0.02
D	355.0	0.00	3.8	0.0	0.13	0.06	0.02	-0.02

D	355.0	0.00	3.8	0.0	0.12	0.05	0.02	-0.02
D	350.0	0.00	3.8	0.0	0.12	0.05	0.02	-0.02
D	350.0	0.00	358.9	0.0	0.13	0.05	0.02	-0.03
D	340.0	0.00	358.9	0.0	0.13	0.05	0.02	-0.03
D	340.0	0.00	358.9	0.0	0.15	0.08	0.02	-0.03
D	335.0	0.00	358.9	0.0	0.15	0.08	0.02	-0.03
D	335.0	0.00	358.9	0.0	0.13	0.07	0.02	-0.03
D	320.0	0.00	358.9	0.0	0.13	0.07	0.02	-0.02
D	320.0	0.00	356.8	0.0	0.16	0.10	0.02	-0.03
D	315.0	0.00	356.8	0.0	0.16	0.10	0.02	-0.03
D	315.0	0.00	356.8	0.0	0.15	0.10	0.02	-0.03
D	300.0	0.00	356.8	0.0	0.15	0.10	0.02	-0.03
D	300.0	0.00	355.4	0.0	0.16	0.12	0.03	-0.03
D	260.0	0.00	357.1	0.0	0.17	0.12	0.04	-0.03
D	260.0	0.00	357.2	0.0	0.17	0.15	0.05	-0.03
D	240.0	0.00	357.1	0.0	0.17	0.15	0.06	-0.03
D	240.0	0.00	357.4	0.0	0.19	0.16	0.06	-0.03
D	226.7	0.00	357.5	0.0	0.19	0.16	0.06	-0.03
D	226.7	0.00	10.1	0.0	0.21	0.17	0.06	0.02
D	220.0	0.00	10.1	0.0	0.21	0.17	0.06	0.02
D	220.0	0.00	14.7	0.0	0.24	0.18	0.06	0.04
D	200.0	0.00	14.9	0.0	0.24	0.19	0.07	0.05
D	200.0	0.00	16.1	0.0	0.24	0.26	0.07	0.06
D	190.0	0.00	16.1	0.0	0.24	0.26	0.07	0.06
D	190.0	0.00	17.3	0.0	0.24	0.27	0.08	0.07
D	180.0	0.00	17.3	0.0	0.24	0.27	0.08	0.07
D	180.0	0.00	19.7	0.0	0.26	0.27	0.08	0.08
D	160.0	0.00	19.7	0.0	0.26	0.27	0.08	0.09
D	160.0	0.00	22.1	0.0	0.28	0.29	0.09	0.10
D	150.0	0.00	22.1	0.0	0.28	0.29	0.09	0.10
D	150.0	0.00	24.4	0.0	0.28	0.29	0.09	0.11
D	140.0	0.00	24.4	0.0	0.28	0.29	0.09	0.11
D	140.0	0.00	24.5	0.0	0.28	0.32	0.10	0.12
D	130.0	0.00	24.5	0.0	0.28	0.32	0.10	0.12
D	130.0	0.00	26.9	0.0	0.29	0.33	0.10	0.13
D	120.0	0.00	26.9	0.0	0.29	0.33	0.10	0.13
D	120.0	0.00	29.2	0.0	0.29	0.34	0.11	0.15
D	100.0	0.00	29.2	0.0	0.29	0.34	0.11	0.15
D	100.0	0.00	29.3	0.0	0.31	0.40	0.11	0.16
D	80.0	0.00	29.3	0.0	0.31	0.41	0.12	0.16
D	80.0	0.00	29.4	0.0	0.31	0.38	0.12	0.16
D	73.3	0.00	29.4	0.0	0.31	0.38	0.12	0.16
D	73.3	0.00	29.4	0.0	0.34	0.46	0.13	0.16
D	60.0	0.00	29.4	0.0	0.34	0.46	0.13	0.16
D	60.0	0.00	29.4	0.0	0.30	0.39	0.13	0.17
D	53.3	0.00	29.4	0.0	0.30	0.39	0.13	0.17
D	53.3	0.00	29.5	0.0	0.33	0.49	0.14	0.16
D	40.0	0.00	29.5	0.0	0.33	0.49	0.14	0.16
D	40.0	0.00	29.5	0.0	0.28	0.49	0.14	0.16
D	33.3	0.00	29.5	0.0	0.28	0.49	0.14	0.16
D	33.3	0.00	29.5	0.0	0.30	0.57	0.14	0.16
D	20.0	0.00	29.5	0.0	0.30	0.57	0.14	0.16
D	20.0	0.00	29.6	0.0	0.24	0.50	0.15	0.15
D	13.3	0.00	29.6	0.0	0.24	0.50	0.15	0.15
D	13.3	0.00	29.6	0.0	0.28	0.60	0.15	0.15
D	0.0	0.00	29.6	0.0	0.28	0.60	0.15	0.15

ANTENNA LOADING
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.....ANTENNA.....			ATTACHMENT		..........ANTENNA FORCES.....			
TYPE	ELEV ft	AZI	RAD ft	AZI	AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
HP	260.0	291.0	6.7	240.0	0.40	0.27	0.20	0.05
STD+R	225.0	181.0	8.7	240.0	-1.53	0.03	0.40	0.01
HP	195.0	181.0	10.4	240.0	-1.23	0.01	0.34	0.02
HP	180.0	333.0	11.3	0.0	1.46	0.26	0.34	-0.36
STD+R	160.0	291.0	12.5	240.0	0.67	0.96	0.40	0.75
HP	150.0	291.0	13.1	240.0	0.80	0.53	0.34	0.13
HP	130.0	291.0	14.2	240.0	0.78	0.52	0.34	0.13
STD+R	120.0	291.0	14.8	240.0	0.63	0.90	0.40	0.71

LOADING CONDITION k

129 mph Ultimate wind with no ice. Wind Azimuth: 0◆ PL - 0

MAST LOADING
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LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	......FORCES...... HORIZ kip	DOWN kip	.....MOMENTS..... VERTICAL ft-kip	TORSNAL ft-kip
C	388.7	0.00	0.0	0.0	0.26	0.04	0.00	0.00
C	388.7	0.00	0.0	0.0	0.26	0.04	0.00	0.00
C	380.0	0.00	0.0	0.0	0.57	0.27	0.00	0.00
C	380.0	0.00	0.0	0.0	0.57	0.27	0.00	0.00
C	380.0	0.00	0.0	0.0	0.45	0.27	0.00	0.00
C	377.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	372.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	362.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	358.7	0.00	0.0	0.0	0.25	0.04	0.00	0.00
C	358.7	0.00	0.0	0.0	0.25	0.04	0.00	0.00
C	352.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	350.0	0.00	0.0	0.0	0.72	0.30	0.00	0.00
C	350.0	0.00	0.0	0.0	0.55	0.27	0.00	0.00
C	342.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	332.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	330.6	0.00	0.0	0.0	0.24	0.03	0.00	0.00
C	330.6	0.00	0.0	0.0	0.24	0.03	0.00	0.00
C	322.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	320.0	0.00	0.0	0.0	0.54	0.27	0.00	0.00
C	320.0	0.00	0.0	0.0	0.54	0.27	0.00	0.00
C	312.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	310.6	0.00	0.0	0.0	0.23	0.03	0.00	0.00
C	310.6	0.00	0.0	0.0	0.23	0.03	0.00	0.00
C	302.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	300.0	0.00	0.0	0.0	0.54	0.27	0.00	0.00
C	300.0	0.00	0.0	0.0	0.54	0.27	0.00	0.00
C	292.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	282.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	272.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	265.0	0.00	0.0	0.0	0.18	0.36	0.00	0.00
C	262.5	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	260.6	0.00	0.0	0.0	0.22	0.03	0.00	0.00
C	260.0	0.00	0.0	0.0	0.08	0.01	0.00	0.00
C	256.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	250.1	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	250.0	0.00	0.0	0.0	0.51	0.27	0.00	0.00
C	243.4	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	236.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	230.1	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	230.0	0.00	0.0	0.0	0.36	0.72	0.00	0.00
C	225.0	0.00	0.0	0.0	0.32	0.01	0.00	0.00
C	223.4	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	216.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	210.1	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	203.4	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	200.0	0.00	0.0	0.0	0.26	0.54	0.00	0.00
C	195.0	0.00	0.0	0.0	0.12	0.01	0.00	0.00
C	195.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	190.0	0.00	0.0	0.0	0.32	0.41	0.00	0.00
C	185.0	0.00	0.0	0.0	0.25	0.54	0.00	0.00
C	185.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	180.0	0.00	0.0	0.0	0.12	0.01	0.00	0.00
C	175.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	165.0	0.00	0.0	0.0	0.33	0.72	0.00	0.00
C	165.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	160.0	0.00	0.0	0.0	0.30	0.01	0.00	0.00
C	155.0	0.00	0.0	0.0	0.25	0.54	0.00	0.00
C	155.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	150.0	0.00	0.0	0.0	0.12	0.01	0.00	0.00
C	145.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	135.0	0.00	0.0	0.0	0.24	0.54	0.00	0.00
C	135.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	130.0	0.00	0.0	0.0	0.11	0.01	0.00	0.00
C	125.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	125.0	0.00	0.0	0.0	0.31	0.72	0.00	0.00
C	120.0	0.00	0.0	0.0	0.28	0.01	0.00	0.00
C	115.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	105.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	95.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	85.0	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	73.3	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	66.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	66.7	8.18	180.0	0.0	0.33	0.08	0.00	0.00

C	53.3	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	46.7	0.00	0.0	0.0	0.02	0.00	0.00	0.00
C	46.7	8.76	180.0	0.0	0.33	0.09	0.00	0.00
C	33.3	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	26.7	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	26.7	9.33	180.0	0.0	0.38	0.15	0.00	0.00
C	13.3	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	6.7	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	6.7	9.91	180.0	0.0	0.37	0.16	0.00	0.00
D	380.0	0.00	3.8	0.0	0.13	0.04	0.01	-0.02
D	375.0	0.00	3.8	0.0	0.13	0.04	0.01	-0.02
D	375.0	0.00	3.8	0.0	0.12	0.03	0.01	-0.02
D	360.0	0.00	3.8	0.0	0.12	0.03	0.01	-0.02
D	360.0	0.00	3.8	0.0	0.13	0.04	0.01	-0.02
D	355.0	0.00	3.8	0.0	0.13	0.04	0.01	-0.02
D	355.0	0.00	3.8	0.0	0.12	0.04	0.01	-0.02
D	350.0	0.00	3.8	0.0	0.12	0.04	0.01	-0.02
D	350.0	0.00	358.9	0.0	0.13	0.04	0.02	-0.03
D	340.0	0.00	358.9	0.0	0.13	0.04	0.02	-0.03
D	340.0	0.00	358.9	0.0	0.15	0.06	0.02	-0.03
D	335.0	0.00	358.9	0.0	0.15	0.06	0.02	-0.03
D	335.0	0.00	358.9	0.0	0.13	0.05	0.02	-0.03
D	320.0	0.00	358.9	0.0	0.13	0.05	0.02	-0.02
D	320.0	0.00	356.8	0.0	0.16	0.08	0.02	-0.03
D	315.0	0.00	356.8	0.0	0.16	0.08	0.02	-0.03
D	315.0	0.00	356.8	0.0	0.15	0.07	0.02	-0.03
D	300.0	0.00	356.8	0.0	0.15	0.07	0.02	-0.03
D	300.0	0.00	355.4	0.0	0.16	0.09	0.02	-0.03
D	260.0	0.00	357.1	0.0	0.17	0.09	0.03	-0.03
D	260.0	0.00	357.2	0.0	0.17	0.11	0.04	-0.03
D	240.0	0.00	357.1	0.0	0.17	0.11	0.04	-0.03
D	240.0	0.00	357.4	0.0	0.19	0.12	0.05	-0.03
D	226.7	0.00	357.5	0.0	0.19	0.12	0.05	-0.03
D	226.7	0.00	10.1	0.0	0.21	0.13	0.04	0.02
D	220.0	0.00	10.1	0.0	0.21	0.13	0.04	0.02
D	220.0	0.00	14.7	0.0	0.24	0.14	0.05	0.04
D	200.0	0.00	14.9	0.0	0.24	0.14	0.05	0.05
D	200.0	0.00	16.1	0.0	0.24	0.20	0.05	0.06
D	190.0	0.00	16.1	0.0	0.24	0.20	0.05	0.06
D	190.0	0.00	17.3	0.0	0.24	0.20	0.06	0.07
D	180.0	0.00	17.3	0.0	0.24	0.20	0.06	0.07
D	180.0	0.00	19.7	0.0	0.26	0.20	0.06	0.08
D	160.0	0.00	19.7	0.0	0.26	0.20	0.06	0.09
D	160.0	0.00	22.1	0.0	0.28	0.22	0.07	0.10
D	150.0	0.00	22.1	0.0	0.28	0.22	0.07	0.10
D	150.0	0.00	24.4	0.0	0.28	0.22	0.07	0.11
D	140.0	0.00	24.4	0.0	0.28	0.22	0.07	0.11
D	140.0	0.00	24.5	0.0	0.28	0.24	0.07	0.12
D	130.0	0.00	24.5	0.0	0.28	0.24	0.07	0.12
D	130.0	0.00	26.9	0.0	0.29	0.25	0.08	0.13
D	120.0	0.00	26.9	0.0	0.29	0.25	0.08	0.13
D	120.0	0.00	29.2	0.0	0.29	0.25	0.08	0.15
D	100.0	0.00	29.2	0.0	0.29	0.26	0.08	0.15
D	100.0	0.00	29.3	0.0	0.31	0.30	0.09	0.16
D	80.0	0.00	29.3	0.0	0.31	0.30	0.09	0.16
D	80.0	0.00	29.4	0.0	0.31	0.28	0.09	0.16
D	73.3	0.00	29.4	0.0	0.31	0.28	0.09	0.16
D	73.3	0.00	29.4	0.0	0.34	0.34	0.09	0.16
D	60.0	0.00	29.4	0.0	0.34	0.34	0.09	0.16
D	60.0	0.00	29.4	0.0	0.30	0.29	0.10	0.17
D	53.3	0.00	29.4	0.0	0.30	0.29	0.10	0.17
D	53.3	0.00	29.5	0.0	0.33	0.37	0.10	0.16
D	40.0	0.00	29.5	0.0	0.33	0.37	0.10	0.16
D	40.0	0.00	29.5	0.0	0.28	0.37	0.10	0.16
D	33.3	0.00	29.5	0.0	0.28	0.37	0.10	0.16
D	33.3	0.00	29.5	0.0	0.30	0.43	0.11	0.16
D	20.0	0.00	29.5	0.0	0.30	0.43	0.11	0.16
D	20.0	0.00	29.6	0.0	0.24	0.38	0.11	0.15
D	13.3	0.00	29.6	0.0	0.24	0.38	0.11	0.15
D	13.3	0.00	29.6	0.0	0.28	0.45	0.12	0.15
D	0.0	0.00	29.6	0.0	0.28	0.45	0.12	0.15

ANTENNA LOADING
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.....ANTENNA.....			ATTACHMENT		.....ANTENNA FORCES.....			
TYPE	ELEV	AZI	RAD	AZI	AXIAL	SHEAR	GRAVITY	TORSION
	ft		ft		kip	kip	kip	ft-kip

HP	260.0	291.0	6.7	240.0	0.40	0.27	0.15	0.05
STD+R	225.0	181.0	8.7	240.0	-1.53	0.03	0.30	0.01
HP	195.0	181.0	10.4	240.0	-1.23	0.01	0.25	0.02
HP	180.0	333.0	11.3	0.0	1.46	0.26	0.25	-0.36
STD+R	160.0	291.0	12.5	240.0	0.67	0.96	0.30	0.75
HP	150.0	291.0	13.1	240.0	0.80	0.53	0.25	0.13
HP	130.0	291.0	14.2	240.0	0.78	0.52	0.25	0.13
STD+R	120.0	291.0	14.8	240.0	0.63	0.90	0.30	0.71

LOADING CONDITION AU

30 mph wind with 1.5 ice. Wind Azimuth: 0◆ PL - 0

MAST LOADING

LOAD TYPE	ELEV	APPLY..LOAD..AT RADIUS	AZI	LOAD AZI	.....FORCES..... HORIZ	DOWN	.....MOMENTS..... VERTICAL	TORSNAL
	ft	ft			kip	kip	ft-kip	ft-kip
C	388.7	0.00	0.0	0.0	0.04	0.22	0.00	0.00
C	388.7	0.00	0.0	0.0	0.04	0.22	0.00	0.00
C	380.0	0.00	0.0	0.0	0.08	0.84	0.00	0.00
C	380.0	0.00	0.0	0.0	0.08	0.84	0.00	0.00
C	380.0	0.00	0.0	0.0	0.06	1.56	0.00	0.00
C	377.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	372.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	362.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	358.7	0.00	0.0	0.0	0.04	0.22	0.00	0.00
C	358.7	0.00	0.0	0.0	0.04	0.22	0.00	0.00
C	352.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	350.0	0.00	0.0	0.0	0.09	0.96	0.00	0.00
C	350.0	0.00	0.0	0.0	0.07	0.83	0.00	0.00
C	342.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	332.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	330.6	0.00	0.0	0.0	0.07	0.28	0.00	0.00
C	330.6	0.00	0.0	0.0	0.07	0.28	0.00	0.00
C	322.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	320.0	0.00	0.0	0.0	0.07	0.83	0.00	0.00
C	320.0	0.00	0.0	0.0	0.07	0.83	0.00	0.00
C	312.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	310.6	0.00	0.0	0.0	0.07	0.28	0.00	0.00
C	310.6	0.00	0.0	0.0	0.07	0.28	0.00	0.00
C	302.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	300.0	0.00	0.0	0.0	0.07	0.83	0.00	0.00
C	300.0	0.00	0.0	0.0	0.07	0.83	0.00	0.00
C	292.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	282.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	272.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	265.0	0.00	0.0	0.0	0.02	0.94	0.00	0.00
C	262.5	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	260.6	0.00	0.0	0.0	0.07	0.28	0.00	0.00
C	260.0	0.00	0.0	0.0	0.00	0.06	0.00	0.00
C	256.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	250.1	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	250.0	0.00	0.0	0.0	0.07	0.82	0.00	0.00
C	243.4	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	236.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	230.1	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	230.0	0.00	0.0	0.0	0.03	1.42	0.00	0.00
C	225.0	0.00	0.0	0.0	0.02	0.06	0.00	0.00
C	223.4	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	216.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	210.1	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	203.4	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	200.0	0.00	0.0	0.0	0.03	1.17	0.00	0.00
C	195.0	0.00	0.0	0.0	0.01	0.06	0.00	0.00
C	195.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	190.0	0.00	0.0	0.0	0.03	1.88	0.00	0.00
C	185.0	0.00	0.0	0.0	0.03	1.17	0.00	0.00
C	185.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	180.0	0.00	0.0	0.0	0.01	0.06	0.00	0.00
C	175.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	165.0	0.00	0.0	0.0	0.03	1.40	0.00	0.00
C	165.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	160.0	0.00	0.0	0.0	0.02	0.06	0.00	0.00
C	155.0	0.00	0.0	0.0	0.02	1.16	0.00	0.00

C	155.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	150.0	0.00	0.0	0.0	0.01	0.06	0.00	0.00
C	145.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	135.0	0.00	0.0	0.0	0.02	1.15	0.00	0.00
C	135.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	130.0	0.00	0.0	0.0	0.01	0.05	0.00	0.00
C	125.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	125.0	0.00	0.0	0.0	0.03	1.39	0.00	0.00
C	120.0	0.00	0.0	0.0	0.02	0.05	0.00	0.00
C	115.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	105.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	95.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	85.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	73.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	66.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	66.7	8.18	180.0	0.0	0.03	0.11	0.00	0.00
C	53.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	46.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	46.7	8.76	180.0	0.0	0.03	0.12	0.00	0.00
C	33.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	26.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	26.7	9.33	180.0	0.0	0.04	0.20	0.00	0.00
C	13.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	6.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	6.7	9.91	180.0	0.0	0.03	0.22	0.00	0.00
D	380.0	0.00	358.6	0.0	0.02	0.31	0.11	0.00
D	375.0	0.00	358.6	0.0	0.02	0.31	0.11	0.00
D	375.0	0.00	358.6	0.0	0.02	0.26	0.11	0.00
D	360.0	0.00	358.6	0.0	0.02	0.26	0.11	0.00
D	360.0	0.00	358.6	0.0	0.02	0.32	0.11	0.00
D	355.0	0.00	358.6	0.0	0.02	0.32	0.11	0.00
D	355.0	0.00	358.6	0.0	0.02	0.27	0.11	0.00
D	350.0	0.00	358.6	0.0	0.02	0.27	0.11	0.00
D	350.0	0.00	354.0	0.0	0.02	0.29	0.13	0.00
D	340.0	0.00	354.0	0.0	0.02	0.29	0.13	0.00
D	340.0	0.00	354.0	0.0	0.02	0.36	0.13	0.00
D	335.0	0.00	354.0	0.0	0.02	0.36	0.13	0.00
D	335.0	0.00	354.0	0.0	0.02	0.31	0.13	0.00
D	320.0	0.00	354.0	0.0	0.02	0.31	0.13	0.00
D	320.0	0.00	351.9	0.0	0.02	0.40	0.15	0.00
D	315.0	0.00	351.9	0.0	0.02	0.40	0.15	0.00
D	315.0	0.00	351.9	0.0	0.02	0.35	0.15	0.00
D	300.0	0.00	351.9	0.0	0.02	0.35	0.15	0.00
D	300.0	0.00	351.0	0.0	0.02	0.43	0.18	0.00
D	295.0	0.00	351.0	0.0	0.02	0.43	0.18	0.00
D	295.0	0.00	351.5	0.0	0.02	0.39	0.19	0.00
D	290.0	0.00	351.5	0.0	0.02	0.39	0.19	0.00
D	290.0	0.00	352.0	0.0	0.02	0.40	0.20	0.00
D	280.0	0.00	352.2	0.0	0.02	0.40	0.21	0.00
D	280.0	0.00	353.3	0.0	0.02	0.41	0.24	0.00
D	265.0	0.00	353.7	0.0	0.02	0.43	0.26	0.00
D	265.0	0.00	354.3	0.0	0.02	0.43	0.28	0.00
D	260.0	0.00	354.3	0.0	0.02	0.43	0.28	0.00
D	260.0	0.00	354.4	0.0	0.02	0.44	0.31	0.00
D	253.3	0.00	354.4	0.0	0.02	0.44	0.31	0.00
D	253.3	0.00	354.5	0.0	0.02	0.45	0.34	0.00
D	246.7	0.00	354.5	0.0	0.02	0.45	0.34	0.00
D	246.7	0.00	354.5	0.0	0.02	0.47	0.36	0.00
D	240.0	0.00	354.5	0.0	0.02	0.47	0.36	0.00
D	240.0	0.00	355.0	0.0	0.02	0.50	0.40	0.00
D	226.7	0.00	355.2	0.0	0.02	0.51	0.41	0.00
D	226.7	0.00	9.2	0.0	0.02	0.55	0.38	0.00
D	220.0	0.00	9.2	0.0	0.02	0.55	0.38	0.00
D	220.0	0.00	14.6	0.0	0.02	0.60	0.39	0.01
D	200.0	0.00	14.9	0.0	0.02	0.62	0.42	0.01
D	200.0	0.00	16.6	0.0	0.02	0.67	0.45	0.01
D	190.0	0.00	16.6	0.0	0.02	0.67	0.45	0.01
D	190.0	0.00	18.2	0.0	0.02	0.68	0.47	0.01
D	180.0	0.00	18.2	0.0	0.02	0.68	0.47	0.01
D	180.0	0.00	21.4	0.0	0.03	0.71	0.50	0.01
D	160.0	0.00	21.5	0.0	0.03	0.72	0.51	0.01
D	160.0	0.00	24.6	0.0	0.03	0.77	0.54	0.01
D	150.0	0.00	24.6	0.0	0.03	0.77	0.54	0.01
D	150.0	0.00	27.7	0.0	0.03	0.79	0.56	0.01
D	130.0	0.00	27.9	0.0	0.03	0.83	0.59	0.01
D	130.0	0.00	30.9	0.0	0.03	0.84	0.61	0.01
D	120.0	0.00	30.9	0.0	0.03	0.84	0.61	0.01
D	120.0	0.00	34.0	0.0	0.03	0.86	0.64	0.01
D	100.0	0.00	34.1	0.0	0.03	0.87	0.65	0.01

D	100.0	0.00	34.2	0.0	0.03	0.96	0.69	0.01
D	80.0	0.00	34.2	0.0	0.03	0.97	0.70	0.01
D	80.0	0.00	34.2	0.0	0.03	0.92	0.72	0.01
D	73.3	0.00	34.2	0.0	0.03	0.92	0.72	0.01
D	73.3	0.00	34.3	0.0	0.03	1.20	0.74	0.01
D	60.0	0.00	34.3	0.0	0.03	1.20	0.74	0.01
D	60.0	0.00	34.3	0.0	0.03	0.93	0.75	0.01
D	53.3	0.00	34.3	0.0	0.03	0.93	0.75	0.01
D	53.3	0.00	34.3	0.0	0.03	1.24	0.77	0.01
D	40.0	0.00	34.3	0.0	0.03	1.24	0.77	0.01
D	40.0	0.00	34.3	0.0	0.02	1.02	0.78	0.01
D	33.3	0.00	34.3	0.0	0.02	1.02	0.78	0.01
D	33.3	0.00	34.2	0.0	0.03	1.31	0.78	0.01
D	20.0	0.00	34.2	0.0	0.03	1.31	0.78	0.01
D	20.0	0.00	34.2	0.0	0.02	1.01	0.78	0.01
D	13.3	0.00	34.2	0.0	0.02	1.01	0.78	0.01
D	13.3	0.00	33.8	0.0	0.02	1.22	0.61	0.01
D	0.0	0.00	33.8	0.0	0.02	1.22	0.61	0.01

ANTENNA LOADING

.....ANTENNA.....			ATTACHMENT		...ANTENNA FORCES...			
TYPE	ELEV ft	AZI	RAD ft	AZI	AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
HP	260.0	291.0	6.7	240.0	0.03	0.02	0.94	0.00
STD+R	225.0	181.0	8.7	240.0	-0.09	0.00	1.84	0.00
HP	195.0	181.0	10.4	240.0	-0.08	0.00	1.32	0.00
HP	180.0	333.0	11.3	0.0	0.09	0.02	1.32	-0.02
STD+R	160.0	291.0	12.5	240.0	0.04	0.06	1.79	0.05
HP	150.0	291.0	13.1	240.0	0.05	0.03	1.30	0.01
HP	130.0	291.0	14.2	240.0	0.05	0.03	1.28	0.01
STD+R	120.0	291.0	14.8	240.0	0.04	0.06	1.75	0.05

MAXIMUM ANTENNA AND REFLECTOR ROTATIONS:

ELEV ft	AZI deg	TYPE *	.....BEAM DEFLECTIONS (deg)..... ROLL	YAW	PITCH	TOTAL
260.0	291.0	HP	1.294 G	0.206 AO	-1.323 h	1.333 P
225.0	181.0	STD+R	1.079 S	0.169 M	0.895 b	0.901 b
195.0	181.0	HP	0.848 S	0.129 R	0.702 b	0.706 b
180.0	333.0	HP	-0.727 V	0.117 R	-0.733 e	0.741 e
160.0	291.0	STD+R	0.620 G	0.106 AT	-0.644 h	0.652 h
150.0	291.0	HP	0.575 G	0.098 AT	-0.599 h	0.606 h
130.0	291.0	HP	0.487 G	0.082 AT	-0.508 h	0.514 h
120.0	291.0	STD+R	0.443 G	0.074 AT	-0.463 h	0.468 h

MAXIMUM TENSION IN MAST MEMBERS (kip)

ELEV ft	LEGS	DIAG	HORIZ	BRACE
380.0	----------		0.57 e	0.00 A
	1.54 k	1.73 z		
375.0	----------		0.11 A	0.00 A
	5.30 k	1.65 h		
370.0	----------		0.03 AC	0.00 A
	9.02 k	1.90 z		
365.0	----------		0.13 A	0.00 A
	13.59 k	2.18 h		
360.0	----------		0.36 B	0.00 A
	18.78 k	2.66 AA		
355.0	----------		0.25 B	0.00 A
	25.63 l	3.09 i		
350.0	----------		0.07 AC	0.00 A
	33.21 k	4.05 z		
345.0	----------		0.27 B	0.00 A
	42.98 k	4.36 P		
340.0	----------		0.58 A	0.00 A
	52.78 k	4.66 AR		
335.0	----------		0.32 A	0.00 A
	64.66 k	5.07 P		
330.0	----------		0.04 AC	0.00 A
	76.41 k	5.58 z		

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325.0  ----------------------          0.31 A       0.00 A
         89.88 k       5.90 P
320.0  ----------------------          0.96 A       0.00 A
        103.35 k       6.80 z
315.0  ----------------------          0.46 A       0.00 A
        121.19 k       7.27 P
310.0  ----------------------          0.13 AC      0.00 A
        137.34 k       7.78 AR
305.0  ----------------------          0.45 A       0.00 A
        156.50 k       8.15 P
300.0  ----------------------          2.15 AC      0.00 A
        166.83 k       2.81 AK
295.0  ----------------------          0.33 A       0.00 A
        172.15 k       2.71 I
290.0  ----------------------          0.03 A       0.00 A
        175.15 k       2.66 AK
285.0  ----------------------          0.22 A       0.00 A
        179.95 k       2.67 I
280.0  ----------------------          0.05 A       0.00 A
        183.60 k       2.67 AK
275.0  ----------------------          0.15 A       0.00 A
        188.22 k       2.76 I
270.0  ----------------------          0.08 Y       0.00 A
        192.22 k       2.82 AB
265.0  ----------------------          0.13 A       0.00 A
        196.73 k       3.02 R
260.0  ----------------------          0.08 Y       0.00 A
        201.83 k       4.02 y
253.3  ----------------------          0.14 A       0.00 A
        208.86 k       4.38 d
246.7  ----------------------          0.07 Y       0.00 A
        215.26 k       4.26 v
240.0  ----------------------          0.10 A       0.00 A
        222.44 k       4.53 d
233.3  ----------------------          0.09 P       0.00 A
        228.95 k       4.53 v
226.7  ----------------------          0.08 Y       0.00 A
        236.23 k       5.70 y
220.0  ----------------------          0.08 P       0.00 A
        244.65 k       6.42 X
213.3  ----------------------          0.09 Y       0.00 A
        252.81 k       6.03 y
206.7  ----------------------          0.07 P       0.00 A
        261.32 k       6.76 X
200.0  ----------------------          0.08 V       0.00 A
        271.45 k       7.96 m
190.0  ----------------------          0.08 M       0.00 A
        285.17 k       9.27 X
180.0  ----------------------          0.08 V       0.00 A
        299.66 k       9.82 AH
170.0  ----------------------          0.08 M       0.00 A
        313.82 k       9.97 X
160.0  ----------------------          0.06 V       0.00 A
        329.41 k      11.16 y
150.0  ----------------------          0.07 D       0.00 A
        345.41 k      12.31 g
140.0  ----------------------          0.07 A       0.00 A
        362.09 k      12.28 AQ
130.0  ----------------------          0.07 D       0.00 A
        378.02 k      13.47 y
120.0  ----------------------          0.05 A       0.00 A
        395.48 k      15.09 g
110.0  ----------------------          0.06 M       0.00 A
        412.88 k      16.09 g
100.0  ----------------------          0.22 AT      0.00 A
        430.24 k      15.92 AQ
 90.0  ----------------------          0.08 AC      0.00 A
        447.36 k      16.73 g
 80.0  ----------------------          0.35 A       0.00 A
        467.63 k      17.13 AQ
 73.3  ----------------------          1.36 k       0.00 AR
        466.55 k      22.67 g
 60.0  ----------------------          0.30 M       0.00 A
        502.03 k      18.21 AQ
 53.3  ----------------------          1.32 m       0.00 J
        500.89 k      23.47 g
 40.0  ----------------------          0.27 A       0.00 A
        536.66 k      19.08 AQ
 33.3  ----------------------          1.24 m       0.00 h
        535.30 k      24.06 g
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20.0	----------		0.08	A	0.00	h
	570.91 k	19.97 AQ				
13.3	----------		1.12	m	0.00	F
	569.49 k	24.58 g				
0.0	----------		0.00	A	0.00	A

MAXIMUM COMPRESSION IN MAST MEMBERS (kip)

ELEV ft	LEGS	DIAG	HORIZ	BRACE
380.0	----------		-0.53 w	0.00 A
	-2.25 S	-1.79 h		
375.0	----------		-0.09 AC	0.00 A
	-6.35 S	-1.63 z		
370.0	----------		-0.03 A	0.00 A
	-10.31 S	-1.92 h		
365.0	----------		-0.12 AC	0.00 A
	-15.25 S	-2.19 i		
360.0	----------		-0.32 AD	0.00 A
	-20.85 S	-2.75 H		
355.0	----------		-0.24 AD	0.00 A
	-28.44 T	-3.05 AR		
350.0	----------		-0.07 A	0.00 A
	-36.96 S	-4.08 h		
345.0	----------		-0.25 AD	0.00 A
	-47.46 S	-4.37 P		
340.0	----------		-0.56 AC	0.00 A
	-57.94 S	-4.76 G		
335.0	----------		-0.31 AC	0.00 A
	-70.88 S	-5.04 z		
330.0	----------		-0.04 A	0.00 A
	-83.51 S	-5.61 P		
325.0	----------		-0.30 AC	0.00 A
	-98.03 S	-5.91 P		
320.0	----------		-0.95 AC	0.00 A
	-112.85 S	-7.15 G		
315.0	----------		-0.45 AC	0.00 A
	-132.25 S	-7.21 z		
310.0	----------		-0.13 A	0.00 A
	-149.49 S	-7.84 P		
305.0	----------		-0.44 AC	0.00 A
	-170.11 S	-8.14 P		
300.0	----------		-2.16 A	0.00 A
	-181.62 S	-3.03 I		
295.0	----------		-0.33 AC	0.00 A
	-187.76 S	-2.56 AK		
290.0	----------		-0.03 AC	0.00 A
	-191.14 S	-2.85 I		
285.0	----------		-0.21 AC	0.00 A
	-196.63 S	-2.55 AB		
280.0	----------		-0.05 AC	0.00 A
	-200.77 S	-2.85 I		
275.0	----------		-0.15 AC	0.00 A
	-206.05 S	-2.73 AB		
270.0	----------		-0.08 q	0.00 A
	-210.61 S	-3.01 I		
265.0	----------		-0.13 AC	0.00 A
	-216.08 S	-3.03 j		
260.0	----------		-0.08 q	0.00 A
	-222.01 S	-4.50 g		
253.3	----------		-0.13 AC	0.00 A
	-230.27 S	-4.18 s		
246.7	----------		-0.07 q	0.00 A
	-237.76 S	-4.65 g		
240.0	----------		-0.09 AO	0.00 A
	-246.09 S	-4.44 s		
233.3	----------		-0.08 AC	0.00 A
	-253.96 S	-4.94 g		
226.7	----------		-0.07 q	0.00 A
	-262.77 S	-6.33 U		
220.0	----------		-0.07 AC	0.00 A
	-272.83 S	-5.82 AQ		
213.3	----------		-0.08 q	0.00 A

	-282.41 S	-6.70 U					
206.7	----------		-0.06	AC	0.00	A	
	-292.59 S	-6.32 AE					
200.0	----------		-0.07	AC	0.00	A	
	-305.17 S	-9.15 U					
190.0	----------		-0.07	q	0.00	A	
	-322.64 S	-9.00 AE					
180.0	----------		-0.07	n	0.00	A	
	-340.58 S	-9.82 U					
170.0	----------		-0.07	AO	0.00	A	
	-358.20 S	-10.18 AH					
160.0	----------		-0.06	AC	0.00	A	
	-376.85 S	-12.33 g					
150.0	----------		-0.06	q	0.00	A	
	-396.14 S	-12.31 g					
140.0	----------		-0.07	AC	0.00	A	
	-415.93 S	-13.07 g					
130.0	----------		-0.05	AO	0.00	A	
	-435.68 S	-15.08 g					
120.0	----------		-0.05	AC	0.00	A	
	-456.70 S	-16.22 g					
110.0	----------		-0.06	AR	0.00	A	
	-477.30 S	-15.79 g					
100.0	----------		-0.21	F	0.00	A	
	-498.21 S	-16.69 g					
90.0	----------		-0.08	A	0.00	A	
	-519.04 S	-16.70 g					
80.0	----------		-0.39	AC	0.00	A	
	-542.86 S	-18.17 g					
73.3	----------		-1.60	S	0.00	AT	
	-544.30 S	-23.36 g					
60.0	----------		-0.28	AO	0.00	A	
	-585.33 S	-18.96 g					
53.3	----------		-1.56	U	0.00	AO	
	-586.86 S	-23.95 g					
40.0	----------		-0.26	AC	0.00	A	
	-628.77 S	-19.87 g					
33.3	----------		-1.49	U	0.00	AB	
	-630.58 S	-24.56 g					
20.0	----------		-0.07	AC	0.00	AB	
	-672.81 S	-20.47 g					
13.3	----------		-1.36	S	0.00	AI	
	-674.70 S	-24.88 g					
0.0	----------		0.00	A	0.00	A	

FORCE/RESISTANCE RATIO IN LEGS
==========

MAST ELEV ft	-- LEG COMPRESSION - MAX COMP	COMP RESIST	FORCE/ RESIST RATIO	---- LEG TENSION --- MAX TENS	TENS RESIST	FORCE/ RESIST RATIO
380.00						
	2.25	31.48	0.07	1.54	48.15	0.03
375.00						
	6.35	31.48	0.20	5.30	48.15	0.11
370.00						
	10.31	31.48	0.33	9.02	48.15	0.19
365.00						
	15.25	31.48	0.48	13.59	48.15	0.28
360.00						
	20.85	57.04	0.37	18.78	76.50	0.25
355.00						
	28.44	57.04	0.50	25.63	76.50	0.34
350.00						
	36.96	57.04	0.65	33.21	76.50	0.43
345.00						
	47.46	57.04	0.83	42.98	76.50	0.56
340.00						
	57.94	110.98	0.52	52.78	135.90	0.39
335.00						
	70.88	110.98	0.64	64.66	135.90	0.48
330.00						
	83.51	110.98	0.75	76.41	135.90	0.56
325.00						
	98.03	110.98	0.88	89.88	135.90	0.66
320.00						
	112.85	179.61	0.63	103.35	193.50	0.53

315.00						
	132.25	179.61	0.74	121.19	193.50	0.63
310.00						
	149.49	179.61	0.83	137.34	193.50	0.71
305.00						
	170.11	179.61	0.95	156.50	193.50	0.81
300.00						
	181.62	254.38	0.71	166.83	274.95	0.61
295.00						
	187.76	254.38	0.74	172.15	274.95	0.63
290.00						
	191.14	254.38	0.75	175.15	274.95	0.64
285.00						
	196.63	254.38	0.77	179.95	274.95	0.65
280.00						
	200.77	254.38	0.79	183.60	274.95	0.67
275.00						
	206.05	254.38	0.81	188.22	274.95	0.68
270.00						
	210.61	254.38	0.83	192.22	274.95	0.70
265.00						
	216.08	254.38	0.85	196.73	274.95	0.72
260.00						
	222.01	309.64	0.72	201.83	327.10	0.62
253.33						
	230.27	309.64	0.74	208.86	327.10	0.64
246.67						
	237.76	309.64	0.77	215.26	327.10	0.66
240.00						
	246.09	309.64	0.79	222.44	327.10	0.68
233.33						
	253.96	309.64	0.82	228.95	327.10	0.70
226.67						
	262.77	309.64	0.85	236.23	327.10	0.72
220.00						
	272.83	309.64	0.88	244.65	357.75	0.68
213.33						
	282.41	309.64	0.91	252.81	357.75	0.71
206.67						
	292.59	309.64	0.94	261.32	357.75	0.73
200.00						
	305.17	507.33	0.60	271.45	457.90	0.59
190.00						
	322.64	507.33	0.64	285.17	457.90	0.62
180.00						
	340.58	507.33	0.67	299.66	457.90	0.65
170.00						
	358.20	507.33	0.71	313.82	457.90	0.69
160.00						
	376.85	507.33	0.74	329.41	457.90	0.72
150.00						
	396.14	507.33	0.78	345.41	457.90	0.75
140.00						
	415.93	507.33	0.82	362.09	457.90	0.79
130.00						
	435.68	507.33	0.86	378.02	457.90	0.83
120.00						
	456.70	507.33	0.90	395.48	576.00	0.69
110.00						
	477.30	507.33	0.94	412.88	576.00	0.72
100.00						
	498.21	621.06	0.80	430.24	656.10	0.66
90.00						
	519.04	621.06	0.84	447.36	656.10	0.68
80.00						
	542.86	640.29	0.85	467.63	656.10	0.71
73.33						
	544.30	640.29	0.85	466.55	656.10	0.71
60.00						
	585.33	640.29	0.91	502.03	656.10	0.77
53.33						
	586.86	640.29	0.92	500.89	656.10	0.76
40.00						
	628.77	844.46	0.74	536.66	865.80	0.62
33.33						
	630.58	844.46	0.75	535.30	865.80	0.62
20.00						
	672.81	844.46	0.80	570.91	865.80	0.66
13.33						
	674.70	844.46	0.80	569.49	865.80	0.66

FORCE/RESISTANCE RATIO IN DIAGONALS

MAST ELEV ft	- DIAG COMPRESSION - MAX COMP	COMP RESIST	FORCE/ RESIST RATIO	--- DIAG TENSION -- MAX TENS	TENS RESIST	FORCE/ RESIST RATIO
380.00						
	1.79	7.16	0.25	1.73	7.16	0.24
375.00						
	1.63	7.16	0.23	1.65	7.16	0.23
370.00						
	1.92	7.16	0.27	1.90	7.16	0.27
365.00						
	2.19	7.16	0.31	2.18	7.16	0.30
360.00						
	2.75	7.16	0.38	2.66	7.16	0.37
355.00						
	3.05	7.16	0.43	3.09	7.16	0.43
350.00						
	4.08	7.16	0.57	4.05	7.16	0.57
345.00						
	4.37	7.16	0.61	4.36	7.16	0.61
340.00						
	4.76	7.16	0.66	4.66	7.16	0.65
335.00						
	5.04	7.16	0.70	5.07	7.16	0.71
330.00						
	5.61	7.16	0.78	5.58	7.16	0.78
325.00						
	5.91	7.16	0.82	5.90	7.16	0.82
320.00						
	7.15	10.74	0.67	6.80	10.74	0.63
315.00						
	7.21	10.74	0.67	7.27	10.74	0.68
310.00						
	7.84	10.74	0.73	7.78	10.74	0.72
305.00						
	8.14	10.74	0.76	8.15	10.74	0.76
300.00						
	3.03	7.16	0.42	2.81	7.16	0.39
295.00						
	2.56	7.16	0.36	2.71	7.16	0.38
290.00						
	2.85	7.16	0.40	2.66	7.16	0.37
285.00						
	2.55	7.16	0.36	2.67	7.16	0.37
280.00						
	2.85	5.63	0.51	2.67	5.63	0.48
275.00						
	2.73	5.63	0.48	2.76	5.63	0.49
270.00						
	3.01	5.63	0.53	2.82	5.63	0.50
265.00						
	3.03	5.63	0.54	3.02	5.63	0.54
260.00						
	4.50	5.14	0.88	4.02	5.14	0.78
253.33						
	4.18	5.14	0.81	4.38	5.14	0.85
246.67						
	4.65	5.14	0.90	4.26	5.14	0.83
240.00						
	4.44	7.46	0.60	4.53	7.46	0.61
233.33						
	4.94	7.46	0.66	4.53	7.46	0.61
226.67						
	6.33	7.46	0.85	5.70	7.46	0.76
220.00						
	5.82	10.34	0.56	6.42	10.34	0.62
213.33						
	6.70	10.34	0.65	6.03	10.34	0.58
206.67						
	6.32	10.34	0.61	6.76	10.34	0.65
200.00						
	9.15	11.28	0.81	7.96	11.28	0.71
190.00						
	9.00	11.28	0.80	9.27	11.28	0.82

180.00						
	9.82	12.53	0.78	9.82	12.53	0.78
170.00						
	10.18	12.53	0.81	9.97	12.53	0.80
160.00						
	12.33	15.77	0.78	11.16	15.77	0.71
150.00						
	12.31	15.77	0.78	12.31	15.77	0.78
140.00						
	13.07	16.62	0.79	12.28	16.62	0.74
130.00						
	15.08	16.62	0.91	13.47	16.62	0.81
120.00						
	16.22	17.72	0.92	15.09	17.72	0.85
110.00						
	15.79	17.72	0.89	16.09	17.72	0.91
100.00						
	16.69	18.63	0.90	15.92	18.63	0.85
90.00						
	16.70	18.63	0.90	16.73	18.63	0.90
80.00						
	18.17	35.60	0.51	17.13	35.60	0.48
73.33						
	23.36	43.74	0.53	22.67	43.74	0.52
60.00						
	18.96	32.65	0.58	18.21	32.65	0.56
53.33						
	23.95	43.74	0.55	23.47	43.74	0.54
40.00						
	19.87	36.10	0.55	19.08	36.10	0.53
33.33						
	24.56	43.74	0.56	24.06	43.74	0.55
20.00						
	20.47	33.26	0.62	19.97	33.26	0.60
13.33						
	24.88	43.74	0.57	24.58	43.74	0.56
0.00						

MAXIMUM INDIVIDUAL FOUNDATION LOADS: (kip)

LOAD---COMPONENTS				TOTAL
NORTH	EAST	DOWN	UPLIFT	SHEAR
70.51 S	60.74 e	701.81 S	-592.06 k	70.52 S

MAXIMUM TOTAL LOADS ON FOUNDATION : (kip & kip-ft)

HORIZONTAL			DOWN	OVERTURNING			TORSION
NORTH	EAST	TOTAL @ 359.5		NORTH	EAST	TOTAL @ 359.4	
118.0 S	100.9 b	118.0 S	298.1 BI	20139.5 S	16972.0 b	20140.4 S	156.7 j

Latticed Tower Analysis (Unguyed) (c)2015 Guymast Inc. 416-736-7453
Processed under license at:

Sabre Towers and Poles on: 23 jul 2020 at: 15:29:18

********** Service Load Condition **********

* Only 1 condition(s) shown in full

LOADING CONDITION A

60 mph wind with no ice. Wind Azimuth: 0◆ PL - 0

MAST LOADING

LOAD TYPE	ELEV ft	APPLY..LOAD..AT RADIUS ft	AZI	LOAD AZI	....FORCES.... HORIZ kip	DOWN kip	....MOMENTS.... VERTICAL ft-kip	TORSNAL ft-kip
C	388.7	0.00	0.0	0.0	0.06	0.05	0.00	0.00
C	388.7	0.00	0.0	0.0	0.06	0.05	0.00	0.00
C	380.0	0.00	0.0	0.0	0.13	0.30	0.00	0.00
C	380.0	0.00	0.0	0.0	0.13	0.30	0.00	0.00
C	380.0	0.00	0.0	0.0	0.10	0.30	0.00	0.00
C	377.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	372.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	362.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	358.7	0.00	0.0	0.0	0.06	0.05	0.00	0.00
C	358.7	0.00	0.0	0.0	0.06	0.05	0.00	0.00
C	352.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	350.0	0.00	0.0	0.0	0.16	0.34	0.00	0.00
C	350.0	0.00	0.0	0.0	0.12	0.30	0.00	0.00
C	342.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	332.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	330.6	0.00	0.0	0.0	0.05	0.04	0.00	0.00
C	330.6	0.00	0.0	0.0	0.05	0.04	0.00	0.00
C	322.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	320.0	0.00	0.0	0.0	0.12	0.30	0.00	0.00
C	320.0	0.00	0.0	0.0	0.12	0.30	0.00	0.00
C	312.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	310.6	0.00	0.0	0.0	0.05	0.04	0.00	0.00
C	310.6	0.00	0.0	0.0	0.05	0.04	0.00	0.00
C	302.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	300.0	0.00	0.0	0.0	0.12	0.30	0.00	0.00
C	300.0	0.00	0.0	0.0	0.12	0.30	0.00	0.00
C	292.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	282.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	272.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	265.0	0.00	0.0	0.0	0.04	0.40	0.00	0.00
C	262.5	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	260.6	0.00	0.0	0.0	0.05	0.04	0.00	0.00
C	260.0	0.00	0.0	0.0	0.02	0.01	0.00	0.00
C	256.7	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	250.1	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	250.0	0.00	0.0	0.0	0.12	0.30	0.00	0.00
C	243.4	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	236.7	0.00	0.0	0.0	0.01	0.00	0.00	0.00
C	230.1	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	230.0	0.00	0.0	0.0	0.08	0.80	0.00	0.00
C	225.0	0.00	0.0	0.0	0.07	0.01	0.00	0.00
C	223.4	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	216.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	210.1	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	203.4	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	200.0	0.00	0.0	0.0	0.06	0.60	0.00	0.00
C	195.0	0.00	0.0	0.0	0.03	0.01	0.00	0.00
C	195.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	190.0	0.00	0.0	0.0	0.07	0.45	0.00	0.00
C	185.0	0.00	0.0	0.0	0.06	0.60	0.00	0.00
C	185.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	180.0	0.00	0.0	0.0	0.03	0.01	0.00	0.00
C	175.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	165.0	0.00	0.0	0.0	0.07	0.80	0.00	0.00
C	165.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	160.0	0.00	0.0	0.0	0.07	0.01	0.00	0.00
C	155.0	0.00	0.0	0.0	0.06	0.60	0.00	0.00
C	155.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	150.0	0.00	0.0	0.0	0.03	0.01	0.00	0.00
C	145.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	135.0	0.00	0.0	0.0	0.05	0.60	0.00	0.00
C	135.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	130.0	0.00	0.0	0.0	0.03	0.01	0.00	0.00
C	125.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	125.0	0.00	0.0	0.0	0.07	0.80	0.00	0.00
C	120.0	0.00	0.0	0.0	0.06	0.01	0.00	0.00

C	115.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	105.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	95.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	85.0	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	73.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	66.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	66.7	8.18	180.0	0.0	0.08	0.09	0.00	0.00
C	53.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	46.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	46.7	8.76	180.0	0.0	0.08	0.10	0.00	0.00
C	33.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	26.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	26.7	9.33	180.0	0.0	0.10	0.17	0.00	0.00
C	13.3	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	6.7	0.00	0.0	0.0	0.00	0.00	0.00	0.00
C	6.7	9.91	180.0	0.0	0.10	0.18	0.00	0.00
D	380.0	0.00	3.8	0.0	0.03	0.04	0.02	0.00
D	365.0	0.00	3.8	0.0	0.03	0.04	0.02	0.00
D	365.0	0.00	3.8	0.0	0.03	0.04	0.02	0.00
D	360.0	0.00	3.8	0.0	0.03	0.04	0.02	0.00
D	360.0	0.00	3.8	0.0	0.03	0.05	0.02	0.00
D	340.0	0.00	358.9	0.0	0.03	0.04	0.02	-0.01
D	340.0	0.00	358.9	0.0	0.03	0.06	0.02	-0.01
D	320.0	0.00	358.9	0.0	0.03	0.06	0.02	-0.01
D	320.0	0.00	356.8	0.0	0.04	0.09	0.02	-0.01
D	300.0	0.00	356.8	0.0	0.03	0.08	0.02	-0.01
D	300.0	0.00	355.4	0.0	0.04	0.10	0.02	-0.01
D	260.0	0.00	357.1	0.0	0.04	0.10	0.04	-0.01
D	260.0	0.00	357.1	0.0	0.04	0.12	0.04	-0.01
D	226.7	0.00	357.4	0.0	0.05	0.14	0.05	-0.01
D	226.7	0.00	10.1	0.0	0.05	0.14	0.05	0.00
D	220.0	0.00	10.1	0.0	0.05	0.14	0.05	0.00
D	220.0	0.00	14.7	0.0	0.06	0.15	0.05	0.01
D	200.0	0.00	14.9	0.0	0.06	0.16	0.06	0.01
D	200.0	0.00	16.4	0.0	0.06	0.22	0.06	0.01
D	160.0	0.00	20.0	0.0	0.06	0.22	0.07	0.02
D	160.0	0.00	22.1	0.0	0.06	0.24	0.07	0.02
D	140.0	0.00	24.4	0.0	0.07	0.24	0.08	0.03
D	140.0	0.00	25.0	0.0	0.07	0.27	0.08	0.03
D	100.0	0.00	29.8	0.0	0.07	0.28	0.09	0.04
D	100.0	0.00	29.3	0.0	0.07	0.33	0.10	0.04
D	80.0	0.00	29.3	0.0	0.07	0.34	0.10	0.04
D	80.0	0.00	29.4	0.0	0.07	0.31	0.10	0.04
D	73.3	0.00	29.4	0.0	0.07	0.31	0.10	0.04
D	73.3	0.00	29.4	0.0	0.08	0.38	0.11	0.04
D	60.0	0.00	29.4	0.0	0.08	0.38	0.11	0.04
D	60.0	0.00	29.4	0.0	0.07	0.32	0.11	0.04
D	53.3	0.00	29.4	0.0	0.07	0.32	0.11	0.04
D	53.3	0.00	29.5	0.0	0.07	0.41	0.11	0.04
D	40.0	0.00	29.5	0.0	0.07	0.41	0.11	0.04
D	40.0	0.00	29.5	0.0	0.06	0.41	0.12	0.04
D	33.3	0.00	29.5	0.0	0.06	0.41	0.12	0.04
D	33.3	0.00	29.5	0.0	0.07	0.48	0.12	0.04
D	20.0	0.00	29.5	0.0	0.07	0.48	0.12	0.04
D	20.0	0.00	29.6	0.0	0.06	0.42	0.12	0.03
D	13.3	0.00	29.6	0.0	0.06	0.42	0.12	0.03
D	13.3	0.00	29.6	0.0	0.06	0.50	0.13	0.03
D	0.0	0.00	29.6	0.0	0.06	0.50	0.13	0.03

ANTENNA LOADING
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.....ANTENNA.....			ATTACHMENT		.....ANTENNA FORCES.....			
TYPE	ELEV ft	AZI	RAD ft	AZI	AXIAL kip	SHEAR kip	GRAVITY kip	TORSION ft-kip
HP	260.0	291.0	6.7	240.0	0.09	0.06	0.17	0.01
STD+R	225.0	181.0	8.7	240.0	-0.35	0.01	0.34	0.00
HP	195.0	181.0	10.4	240.0	-0.28	0.00	0.28	0.00
HP	180.0	333.0	11.3	0.0	0.33	0.06	0.28	-0.08
STD+R	160.0	291.0	12.5	240.0	0.15	0.22	0.34	0.17
HP	150.0	291.0	13.1	240.0	0.18	0.12	0.28	0.03
HP	130.0	291.0	14.2	240.0	0.18	0.12	0.28	0.03
STD+R	120.0	291.0	14.8	240.0	0.14	0.20	0.34	0.16

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MAXIMUM MAST DISPLACEMENTS:
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ELEV ft	------DEFLECTIONS (ft)----- NORTH	EAST	DOWN	--TILTS (DEG)--- NORTH	EAST	TWIST DEG
380.0	1.788 S	-1.515 J	0.018 S	0.729 S	-0.628 J	0.111 b
375.0	1.724 S	-1.460 J	0.018 S	0.728 S	-0.627 J	0.110 b
370.0	1.661 S	-1.405 J	0.017 S	0.724 S	-0.623 J	0.109 b
365.0	1.597 S	-1.351 J	0.017 S	0.716 S	-0.616 J	0.107 b
360.0	1.535 S	-1.297 J	0.016 S	0.706 S	-0.606 J	0.106 b
355.0	1.474 S	-1.244 J	0.016 S	0.697 S	-0.598 J	0.103 b
350.0	1.413 S	-1.192 J	0.016 S	0.684 S	-0.586 J	0.101 b
345.0	1.353 S	-1.141 J	0.015 S	0.667 S	-0.571 J	0.098 b
340.0	1.296 S	-1.092 J	0.015 S	0.646 S	-0.552 J	0.095 b
335.0	1.239 S	-1.043 J	0.014 S	0.632 S	-0.539 J	0.091 b
330.0	1.184 S	-0.997 J	0.014 S	0.614 S	-0.523 J	0.088 b
325.0	1.130 S	-0.951 J	0.014 S	0.592 S	-0.505 J	0.084 b
320.0	1.079 S	-0.907 J	0.013 S	0.568 S	-0.483 J	0.079 b
315.0	1.030 S	-0.865 J	0.013 S	0.547 S	-0.465 J	0.076 b
310.0	0.983 S	-0.825 J	0.013 S	0.524 S	-0.444 J	0.073 b
305.0	0.937 S	-0.786 J	0.012 S	0.497 S	-0.421 J	0.069 b
300.0	0.894 S	-0.750 J	0.012 S	0.467 S	-0.395 J	0.065 b
295.0	0.854 S	-0.716 J	0.012 S	0.445 S	-0.376 J	0.061 e
290.0	0.816 S	-0.684 J	0.012 S	0.425 S	-0.358 J	0.058 e
285.0	0.779 S	-0.654 J	0.012 S	0.406 S	-0.342 J	0.056 e
280.0	0.745 S	-0.624 J	0.011 S	0.388 S	-0.327 J	0.054 e
275.0	0.711 S	-0.596 J	0.011 S	0.371 S	-0.312 J	0.052 e
270.0	0.679 S	-0.570 J	0.011 S	0.355 S	-0.298 J	0.050 e
265.0	0.649 S	-0.544 J	0.011 S	0.339 S	-0.284 J	0.048 e
260.0	0.620 S	-0.519 J	0.011 S	0.324 S	-0.272 J	0.046 e
253.3	0.582 S	-0.488 J	0.010 S	0.309 S	-0.259 J	-0.044 M
246.7	0.547 S	-0.459 J	0.010 D	0.295 S	-0.247 J	-0.042 M
240.0	0.513 S	-0.430 J	0.010 D	0.281 S	-0.235 J	-0.040 M
233.3	0.480 S	-0.403 J	0.010 D	0.267 S	-0.223 J	-0.039 M
226.7	0.450 S	-0.378 J	0.010 D	0.254 S	-0.212 J	-0.037 M
220.0	0.420 S	-0.353 J	0.009 D	0.241 S	-0.201 J	-0.035 M
213.3	0.393 S	-0.330 J	0.009 D	0.228 S	-0.190 J	0.033 j
206.7	0.366 S	-0.308 J	0.009 D	0.215 S	-0.179 J	0.031 j
200.0	0.341 S	-0.287 J	0.009 D	0.203 S	-0.169 J	0.030 j
190.0	0.306 S	-0.258 J	0.008 D	0.191 S	-0.159 J	0.028 j
180.0	0.273 S	-0.231 J	0.008 D	0.180 S	-0.150 J	0.027 j
170.0	0.242 S	-0.205 J	0.008 D	0.168 S	-0.141 J	0.025 j
160.0	0.213 S	-0.181 J	0.008 D	0.157 S	-0.131 J	0.024 j
150.0	0.185 S	-0.158 J	0.007 D	0.146 S	-0.122 J	0.023 j
140.0	0.160 S	-0.136 J	0.007 D	0.135 S	-0.113 J	0.020 j
130.0	0.137 S	-0.117 J	0.006 D	0.124 S	-0.104 J	0.019 j
120.0	0.115 S	-0.099 J	0.006 b	0.112 S	-0.094 J	0.017 j
110.0	0.095 S	-0.082 J	0.006 b	0.101 S	-0.085 J	0.014 j
100.0	0.077 S	-0.067 J	0.005 b	0.090 S	-0.076 J	0.012 j
90.0	0.061 S	0.052 b	0.005 D	0.080 S	0.067 b	0.010 j
80.0	0.046 S	0.039 b	0.004 D	0.070 S	0.059 b	0.009 j
73.3	0.039 S	0.033 b	0.004 A	0.064 S	0.053 b	0.008 j
60.0	0.025 S	0.022 b	0.003 A	0.050 S	0.042 b	0.006 j
53.3	0.021 S	0.018 b	0.003 D	0.044 S	0.037 b	0.005 j
40.0	0.012 S	0.010 b	0.002 D	0.030 S	0.025 b	0.004 j
33.3	0.009 S	0.008 b	0.002 C	0.025 S	0.021 b	0.003 j
20.0	0.004 S	0.003 b	0.001 C	0.015 S	0.013 b	0.002 j
13.3	0.002 U	0.001 d	0.001 d	0.010 S	0.009 b	0.001 j
0.0	0.000 A	0.000 A	0.000 A	0.000 A	0.000 A	0.000 A

MAXIMUM ANTENNA AND REFLECTOR ROTATIONS:

ELEV ft	AZI deg	TYPE *	.....BEAM DEFLECTIONS (deg)..... ROLL	YAW	PITCH	TOTAL
260.0	291.0	HP	0.302 G	0.046 e	-0.307 h	0.309 h
225.0	181.0	STD+R	0.250 S	0.037 M	-0.209 J	0.210 J
195.0	181.0	HP	0.197 S	0.029 j	-0.164 J	0.165 J
180.0	333.0	HP	0.169 D	0.027 j	-0.170 e	0.172 e
160.0	291.0	STD+R	0.145 G	0.024 j	-0.150 h	0.152 h
150.0	291.0	HP	0.135 G	0.022 j	-0.139 h	0.141 h
130.0	291.0	HP	0.114 G	0.019 j	-0.118 h	0.120 h
120.0	291.0	STD+R	0.104 G	0.017 j	-0.108 h	0.109 h

MAXIMUM TENSION IN MAST MEMBERS (kip)

ELEV ft	LEGS	DIAG	HORIZ	BRACE

```
380.0  ---------------------          0.14 e       0.00 A
          0.09 A       0.38 P
375.0  ---------------------          0.03 A       0.00 A
          0.87 A       0.38 P
370.0  ---------------------          0.01 T       0.00 A
          1.69 A       0.43 P
365.0  ---------------------          0.04 A       0.00 A
          2.69 B       0.49 Q
360.0  ---------------------          0.10 B       0.00 A
          3.84 A       0.58 P
355.0  ---------------------          0.07 B       0.00 A
          5.28 B       0.72 P
350.0  ---------------------          0.01 S       0.00 A
          6.82 A       0.91 h
345.0  ---------------------          0.07 B       0.00 A
          8.98 A       0.99 P
340.0  ---------------------          0.15 A       0.00 A
         11.17 A       1.03 P
335.0  ---------------------          0.08 A       0.00 A
         13.74 A       1.16 h
330.0  ---------------------          0.01 S       0.00 A
         16.35 A       1.26 P
325.0  ---------------------          0.08 A       0.00 A
         19.34 A       1.34 P
320.0  ---------------------          0.24 A       0.00 A
         22.21 A       1.51 P
315.0  ---------------------          0.11 A       0.00 A
         26.08 A       1.68 P
310.0  ---------------------          0.03 S       0.00 A
         29.72 A       1.76 P
305.0  ---------------------          0.11 A       0.00 A
         33.97 A       1.87 P
300.0  ---------------------          0.44 S       0.00 A
         36.14 A       0.62 a
295.0  ---------------------          0.08 A       0.00 A
         37.18 A       0.65 I
290.0  ---------------------          0.01 A       0.00 A
         37.82 A       0.60 a
285.0  ---------------------          0.05 A       0.00 A
         38.79 A       0.64 I
280.0  ---------------------          0.01 A       0.00 A
         39.56 A       0.62 a
275.0  ---------------------          0.04 A       0.00 A
         40.51 A       0.66 I
270.0  ---------------------          0.02 Y       0.00 A
         41.36 A       0.66 a
265.0  ---------------------          0.03 A       0.00 A
         42.20 A       0.72 R
260.0  ---------------------          0.02 Y       0.00 A
         43.25 A       0.92 L
253.3  ---------------------          0.04 A       0.00 A
         44.64 A       1.05 d
246.7  ---------------------          0.02 Y       0.00 A
         45.94 A       0.99 L
240.0  ---------------------          0.03 A       0.00 A
         47.42 A       1.09 d
233.3  ---------------------          0.02 P       0.00 A
         48.67 A       1.06 L
226.7  ---------------------          0.02 Y       0.00 A
         50.04 A       1.30 O
220.0  ---------------------          0.02 P       0.00 A
         51.76 A       1.53 X
213.3  ---------------------          0.02 Y       0.00 A
         53.44 A       1.39 O
206.7  ---------------------          0.02 P       0.00 A
         55.16 A       1.61 X
200.0  ---------------------          0.02 V       0.00 A
         57.01 A       1.80 F
190.0  ---------------------          0.02 M       0.00 A
         59.42 A       2.20 X
180.0  ---------------------          0.02 V       0.00 A
         62.00 A       2.23 X
170.0  ---------------------          0.02 M       0.00 A
         64.59 A       2.37 X
160.0  ---------------------          0.02 V       0.00 A
         67.51 A       2.51 O
150.0  ---------------------          0.02 M       0.00 A
         70.45 A       2.90 g
140.0  ---------------------          0.02 A       0.00 A
```

	73.64	A	2.82	g			
130.0	----------				0.02	D	0.00 A
	76.41	A	3.09	O			
120.0	----------				0.01	A	0.00 A
	79.66	A	3.50	g			
110.0	----------				0.02	M	0.00 A
	82.93	A	3.75	g			
100.0	----------				0.04	j	0.00 A
	86.19	A	3.68	g			
90.0	----------				0.01	S	0.00 A
	89.27	A	3.88	g			
80.0	----------				0.09	A	0.00 A
	93.29	A	3.93	g			
73.3	----------				0.28	C	0.00 R
	92.09	A	5.22	g			
60.0	----------				0.09	A	0.00 A
	99.34	A	4.18	g			
53.3	----------				0.27	A	0.00 J
	98.07	A	5.40	g			
40.0	----------				0.08	A	0.00 A
	105.25	A	4.36	g			
33.3	----------				0.24	A	0.00 R
	103.74	A	5.52	g			
20.0	----------				0.02	A	0.00 R
	110.73	A	4.57	g			
13.3	----------				0.22	C	0.00 I
	109.15	A	5.64	g			
0.0	----------				0.00	A	0.00 A

MAXIMUM COMPRESSION IN MAST MEMBERS (kip)
==========

ELEV ft	LEGS		DIAG		HORIZ		BRACE
380.0	----------				-0.11	M	0.00 A
	-0.76	S	-0.43	P			
375.0	----------				-0.01	S	0.00 A
	-1.78	S	-0.36	P			
370.0	----------				-0.01	B	0.00 A
	-2.72	S	-0.45	i			
365.0	----------				-0.02	S	0.00 A
	-3.90	T	-0.50	Q			
360.0	----------				-0.05	T	0.00 A
	-5.21	S	-0.65	H			
355.0	----------				-0.04	T	0.00 A
	-7.06	T	-0.68	h			
350.0	----------				-0.02	A	0.00 A
	-9.19	S	-0.94	P			
345.0	----------				-0.05	T	0.00 A
	-11.65	S	-1.00	h			
340.0	----------				-0.11	S	0.00 A
	-14.07	S	-1.10	G			
335.0	----------				-0.06	S	0.00 A
	-17.14	S	-1.13	P			
330.0	----------				-0.01	A	0.00 A
	-20.07	S	-1.29	P			
325.0	----------				-0.06	S	0.00 A
	-23.47	S	-1.34	P			
320.0	----------				-0.19	S	0.00 A
	-27.02	S	-1.66	G			
315.0	----------				-0.09	S	0.00 A
	-31.63	S	-1.62	P			
310.0	----------				-0.03	A	0.00 A
	-35.63	S	-1.81	P			
305.0	----------				-0.09	S	0.00 A
	-40.49	S	-1.86	P			
300.0	----------				-0.54	A	0.00 A
	-43.34	S	-0.73	I			
295.0	----------				-0.07	S	0.00 A
	-44.96	S	-0.58	a			
290.0	----------				-0.01	S	0.00 A
	-45.84	S	-0.69	I			
285.0	----------				-0.04	S	0.00 A
	-47.28	S	-0.59	R			

280.0	----------		-0.01	S	0.00	A
	-48.37	S -0.69 I				
275.0	----------		-0.03	S	0.00	A
	-49.77	S -0.64 R				
270.0	----------		-0.02	G	0.00	A
	-50.96	S -0.72 I				
265.0	----------		-0.02	S	0.00	A
	-52.49	S -0.72 j				
260.0	----------		-0.02	V	0.00	A
	-54.06	S -1.09 g				
253.3	----------		-0.03	S	0.00	A
	-56.29	S -0.98 I				
246.7	----------		-0.01	G	0.00	A
	-58.31	S -1.13 g				
240.0	----------		-0.02	e	0.00	A
	-60.53	S -1.05 I				
233.3	----------		-0.01	S	0.00	A
	-62.70	S -1.19 g				
226.7	----------		-0.01	e	0.00	A
	-65.14	S -1.52 U				
220.0	----------		-0.01	S	0.00	A
	-67.77	S -1.36 g				
213.3	----------		-0.02	S	0.00	A
	-70.27	S -1.60 U				
206.7	----------		-0.01	S	0.00	A
	-72.93	S -1.48 U				
200.0	----------		-0.02	S	0.00	A
	-76.41	S -2.20 U				
190.0	----------		-0.01	G	0.00	A
	-81.28	S -2.10 U				
180.0	----------		-0.01	D	0.00	A
	-86.25	S -2.34 U				
170.0	----------		-0.01	G	0.00	A
	-91.06	S -2.35 X				
160.0	----------		-0.01	S	0.00	A
	-96.09	S -2.94 g				
150.0	----------		-0.01	G	0.00	A
	-101.33	S -2.86 g				
140.0	----------		-0.01	S	0.00	A
	-106.59	S -3.09 g				
130.0	----------		-0.01	G	0.00	A
	-112.08	S -3.53 g				
120.0	----------		-0.01	S	0.00	A
	-117.73	S -3.81 g				
110.0	----------		-0.01	h	0.00	A
	-123.25	S -3.67 g				
100.0	----------		-0.06	F	0.00	A
	-128.84	S -3.91 g				
90.0	----------		-0.02	A	0.00	A
	-134.52	S -3.87 g				
80.0	----------		-0.07	S	0.00	A
	-140.68	S -4.25 g				
73.3	----------		-0.39	S	0.00	M
	-141.87	S -5.43 g				
60.0	----------		-0.04	e	0.00	A
	-152.26	S -4.41 g				
53.3	----------		-0.39	U	0.00	b
	-153.53	S -5.55 g				
40.0	----------		-0.04	S	0.00	A
	-164.21	S -4.62 g				
33.3	----------		-0.38	U	0.00	P
	-165.72	S -5.68 g				
20.0	----------		-0.01	S	0.00	P
	-176.58	S -4.74 g				
13.3	----------		-0.35	U	0.00	X
	-178.16	S -5.75 g				
0.0	----------		0.00	A	0.00	A

MAXIMUM INDIVIDUAL FOUNDATION LOADS: (kip)
==========

LOAD---COMPONENTS				TOTAL
NORTH	EAST	DOWN	UPLIFT	SHEAR
17.56 S	15.12 e	185.20 S	-113.49 A	17.56 S

MAXIMUM TOTAL LOADS ON FOUNDATION : (kip & kip-ft)
==========

21-1221-JDS

------HORIZONTAL-----			DOWN	---------OVERTURNING---------			TORSION
NORTH	EAST	TOTAL @ 359.5		NORTH	EAST	TOTAL @ 359.3	
27.2	23.3	27.2	93.4	4669.5	3947.6	4669.9	35.7
S	b	S	I	S	b	S	j

==========

Leg Connection Details												
Bottom Elevation (ft)	Top Elevation (ft)	Pipe Dimensions	Top Splice					Bottom Splice/Base				
			Bolt Qty.	Bolt Dia. (in)	Bolt Circle (in)	Plate Thickness (in)	Plate Dia. (in)	Bolt Qty.	Bolt Dia. (in)	Bolt Circle (in)	Plate Thickness (in)	Plate Dia. (in)
360	380	2.375 OD X .154						6	0.75	6.50	0.75	8.50
340	360	2.875 OD X .203	6	0.75	6.50	1.00	8.50	6	0.75	6.50	1.00	8.50
320	340	3.500 OD X .300	6	0.75	6.50	1.00	8.50	6	1.00	9.00	1.25	11.50
300	320	5.563 OD X .258	6	1.00	9.00	1.25	11.50	6	1.00	9.00	1.25	11.50
280	300	5.563 OD X .375	6	1.00	9.00	1.25	11.50	6	1.00	9.00	1.25	11.50
260	280	5.563 OD X .375	6	1.00	9.00	1.25	11.50	6	1.00	9.00	1.25	11.50
240	260	5.563 OD X .500	6	1.00	9.00	1.25	11.50	6	1.00	9.00	1.25	11.50
220	240	5.563 OD X .500	6	1.00	9.00	1.25	11.50	6	1.00	9.00	1.25	11.50
200	220	5.563 OD X .500	6	1.00	9.00	1.25	11.50	6	1.25	12.50	1.75	15.75
180	200	8.625 OD X .500	6	1.25	12.50	1.50	15.75	6	1.25	12.50	1.50	15.75
160	180	8.625 OD X .500	6	1.25	12.50	1.50	15.75	6	1.25	12.50	1.50	15.75
140	160	8.625 OD X .500	6	1.25	12.50	1.50	15.75	6	1.25	12.50	1.50	15.75
120	140	8.625 OD X .500	6	1.25	12.50	1.50	15.75	6	1.25	12.50	1.50	15.75
100	120	8.625 OD X .500	6	1.25	12.50	1.50	15.75	8	1.50	17.25	2.00	21.00
80	100	12.75 OD X .375	8	1.50	17.25	1.75	21.00	8	1.50	17.25	1.75	21.00
60	80	12.75 OD X .375	8	1.50	17.25	1.75	21.00	8	1.50	17.25	1.75	21.00
40	60	12.75 OD X .375	8	1.50	17.25	1.75	21.00	8	1.50	17.25	1.75	21.00
20	40	12.75 OD X .500	8	1.50	17.25	1.75	21.00	8	1.50	17.25	1.75	21.00
0	20	12.75 OD X .500	8	1.50	17.25	1.75	21.00	6	1.75	18.00	2.00	22.50

Diagonal Bracing Connection Details								
Bottom Elevation (ft)	Top Elevation (ft)	Angle Shape	Bolt Qty.	Bolt Dia. (in)	Bolt End Distance (in)	Bolt Spacing (in)	Gage Distance From Heel (in)	Gusset Plate Thickness (in)
360	380	L 2 X 2 X 1/8	1	0.625	1.500		1.125	0.375
340	360	L 2 X 2 X 1/8	1	0.625	1.500		1.125	0.375
320	340	L 2 X 2 X 1/8	1	0.625	1.500		1.125	0.375
300	320	L 2 X 2 X 3/16	1	0.625	1.500		1.125	0.375
280	300	L 2 X 2 X 1/8	1	0.625	1.500		1.125	0.375
260	280	L 2 X 2 X 1/8	1	0.625	1.500		1.125	0.375
240	260	L 2 X 2 X 3/16	1	0.625	1.500		1.125	0.375
220	240	L 2 1/2 X 2 1/2 X 3/16	1	0.625	1.500		1.375	0.375
200	220	L 3 X 3 X 3/16	1	0.750	1.500		1.750	0.375
180	200	L 3 X 3 X 5/16	1	0.750	1.625		1.750	0.375
160	180	L 3 1/2 X 3 1/2 X 1/4	1	0.750	1.625		1.750	0.375
140	160	L 4 X 4 X 1/4	1	0.750	1.625		2.000	0.375
120	140	L 4 X 4 X 5/16	1	0.750	1.625		2.000	0.375
100	120	L 4 X 4 X 5/16	2	0.625	1.625	2.1250	2.000	0.500
80	100	L 4 X 4 X 3/8	2	0.625	1.625	2.1250	2.000	0.500
73.33	80	L 5 X 5 X 5/16	2	0.750	1.625	2.5000	2.500	0.500
60	73.33	L 6 X 4 X 3/8	2	0.750	1.625	2.5000	2.000	0.500
53.33	60	L 5 X 5 X 5/16	2	0.750	1.625	2.5000	2.500	0.500
40	53.33	L 6 X 4 X 3/8	2	0.750	1.625	2.5000	2.000	0.500
33.33	40	L 5 X 5 X 3/8	2	0.750	1.625	2.5000	2.500	0.500
20	33.33	L 6 X 4 X 3/8	2	0.750	1.625	2.5000	2.000	0.500
13.33	20	L 5 X 5 X 3/8	2	0.750	1.625	2.5000	2.500	0.500
0	13.33	L 6 X 4 X 3/8	2	0.750	1.625	2.5000	2.000	0.500

MAT FOUNDATION DESIGN BY SABRE INDUSTRIES

380' S3TL Series HD1 HARNETT COUNTY Oakridge River Road, NC (21-1221-JDS) 07/23/20 REB

Overall Loads:			
Factored Moment (ft-kips)	21200.47		
Factored Axial (kips)	313.83		
Factored Shear (kips)	124.23		
Individual Leg Loads:		Tower eccentric from mat (ft)=	2.75
Factored Uplift (kips)	623.16		
Factored Download (kips)	738.95		
Factored Shear (kips)	74.74		
Width of Tower (ft)	35	Allowable Bearing Pressure (ksf)	**4.25**
Ultimate Bearing Pressure	8.50	Safety Factor	**2.00**
Bearing Φs	0.75		
Bearing Design Strength (ksf)	6.375	Max. Factored Net Bearing Pressure (ksf)	3.00
Water Table Below Grade (ft)	**16**		
Width of Mat (ft)	43	Minimum Mat Width (ft)	42.17
Thickness of Mat (ft)	1.75		
Depth to Bottom of Slab (ft)	6.5		
Bolt Circle Diameter (in)	18		
Top of Concrete to Top of Bottom Threads (in)	72.625		
Diameter of Pier (ft)	4.5	Minimum Pier Diameter (ft)	2.83
Ht. of Pier Above Ground (ft)	0.5	Equivalent Square b (ft)	3.99
Ht. of Pier Below Ground (ft)	4.75		
Quantity of Bars in Mat	72		
Bar Diameter in Mat (in)	1.27		
Area of Bars in Mat (in^2)	91.21		
Spacing of Bars in Mat (in)	7.17	Recommended Spacing (in)	6 to 12
Quantity of Bars Pier	24		
Bar Diameter in Pier (in)	1		
Tie Bar Diameter in Pier (in)	0.5		
Spacing of Ties (in)	8		
Area of Bars in Pier (in^2)	18.85	Minimum Pier A_s (in^2)	11.45
Spacing of Bars in Pier (in)	6.00	Recommended Spacing (in)	5 to 12
f'c (ksi)	4.5		
fy (ksi)	60		
Unit Wt. of Soil (kcf)	0.11		
Unit Wt. of Concrete (kcf)	0.15		
Volume of Concrete (yd^3)	129.12		

MAT FOUNDATION DESIGN BY SABRE INDUSTRIES (CONTINUED)

Two-Way Shear:

Average d (in)	16.73		
ϕv_c (ksi)	0.228	v_u (ksi)	0.224
$\phi v_c = \phi(2 + 4/\beta_c)f'_c{}^{1/2}$	0.342		
$\phi v_c = \phi(\alpha_s d/b_o+2)f'_c{}^{1/2}$	0.298		
$\phi v_c = \phi 4f'_c{}^{1/2}$	0.228		
Shear perimeter, b_o (in)	207.10		
β_c	1		

Stability:

Overturning Design Strength (ft-k)	29745.7	Factored Overturning Moment (ft-k)	22070.1

One-Way Shear:

ϕV_c (kips)	984.5	V_u (kips)	686.3

Pier Design:

Design Tensile Strength (kips)	1017.9	Tu (kips)	623.2
ϕV_n (kips)	229.4	V_u (kips)	74.7
$\phi V_c = \phi 2(1+N_u/(500A_g))f'_c{}^{1/2}b_w d$	121.3		
V_s (kips)	127.2	*** V_s max = 4 $f'_c{}^{1/2}b_w d$ (kips)	626.0
Maximum Spacing (in)	8.67	(Only if Shear Ties are Required)	
Actual Hook Development (in)	15.46	Req'd Hook Development l_{dh} (in)	12.52
		*** Ref. ACI 11.5.5 & 11.5.6.3	

Anchor Bolt Pull-Out:

$\phi P_c = \phi\lambda(2/3)f'_c{}^{1/2}(2.8A_{SLOPE} + 4A_{FLAT})$	345.1	P_u (kips)	623.2
Pier Rebar Development Length (in)	55.63	Required Length of Development (in)	27.38

Flexure in Slab:

ϕM_n (ft-kips)	6297.5	M_u (ft-kips)	6291.8
a (in)	2.77		
Steel Ratio	0.01057		
β_1	0.825		
Maximum Steel Ratio (ρ_t)	0.0197		
Minimum Steel Ratio	0.0018		

Condition	1 is OK, 0 Fails
Minimum Mat Width	1
Maximum Soil Bearing Pressure	1
Pier Area of Steel	1
Pier Shear	1
Two-Way Shear	1
Overturning	1
Anchor Bolt Pull-Out	1
Flexure	1
Steel Ratio	1
Interaction Diagram	1
One-Way Shear	1
Hook Development	1
Minimum Mat Depth	1

DRILLED STRAIGHT PIER DESIGN BY SABRE INDUSTRIES

380' S3TL Series HD1 HARNETT COUNTY Oakridge River Road, NC (21-1221-JDS) 07/23/20 REB

Factored Uplift (kips)	623.16
Factored Download (kips)	738.95
Factored Shear (kips)	74.74
Ultimate Bearing Pressure	101.1
Bearing Φs	0.75
Bearing Design Strength (ksf)	75.825
Water Table Below Grade (ft)	16
Bolt Circle Diameter (in)	18
Top of Concrete to Top of Bottom Threads (in)	72.625
Pier Diameter (ft)	5
Ht. Above Ground (ft)	0.5
Pier Length Below Ground (ft)	40.5
Rebar Quantity	18
Rebar Diameter (in)	1.27
Rebar Area (in²)	22.80
Rebar Spacing (in)	8.98
Tie Diameter (in)	0.5
Tie Spacing (in)	12
f'c (ksi)	4.5
fy (ksi)	60
Unit Wt. of Concrete (kcf)	0.15
Volume of Concrete (yd³)	29.82

Minimum Pier Diameter (ft)	2.83
Minimum Area of Steel (in²)	14.14

Depth at Bottom of Layer (ft)	Ult. Skin Friction (ksf)	Ult. Skin Friction (Uplift)	γ (kcf)
3.5	0.00	0.00	0.11
6	1.65	1.65	0.11
8.5	0.71	0.71	0.11
13.5	0.93	0.93	0.11
16	0.78	0.78	0.11
18.5	0.88	0.88	0.11
23.5	0.93	0.93	0.11
28.5	1.08	1.08	0.11
33.5	1.70	1.70	0.11
38.5	1.88	1.88	0.11
42	1.92	1.92	0.11

Length to Ignore Download (ft) 0

DRILLED STRAIGHT PIER DESIGN BY SABRE INDUSTRIES (CONTINUED)

Download:			
Φ_s, Download Friction	0.75		
Q_f, Skin Friction (kips)	730.3	W_s (kips)	87.5
Q_b, End Bearing Strength (kips)	1985.1	W_c (kips)	120.8
Download Design Strength (kips)	2036.5	Factored Net Download (kips)	778.9
Uplift (skin friction):			
Φ_s, Uplift	0.75		
Q_f, Skin Friction (kips)	730.3		
W_c (kips)	120.8		
W_w (kips)	30.0		
Uplift Design Strength (kips)	629.4	Factored Uplift (kips)	623.2
Uplift (cone):			
$W_{s,cone}$ (kips)	3368.9		
$W_{w,cone}$ (kips)	490.2		
W_c (kips)	120.8		
$W_{w,cyl}$ (kips)	30.0		
Uplift Design Strength (kips)	2672.5	Factored Uplift (kips)	623.2
Tension:			
Design Tensile Strength (kips)	1231.3	Tu (kips)	623.2
Shear:			
ϕV_n (kips)	183.7	V_u (kips)	74.7
$\phi V_c=\phi 2(1+N_u/(500A_g))f'_c{}^{1/2}b_w d$ (kips)	183.7		
V_s (kips)	0.0	*** V_s max = 4 $f'_c{}^{1/2}b_w d$ (kips)	772.8
Maximum Spacing (in)	7.81	(Only if Shear Ties are Required)	
		*** Ref. ACI 11.5.5 & 11.5.6.3	
Anchor Bolt Pull-Out:			
$\phi P_c=\phi\lambda(2/3)f'_c{}^{1/2}(2.8A_{SLOPE}+4A_{FLAT})$	426.0	P_u (kips)	623.2
Rebar Development Length (in)	52.76	Required Development Length (in)	28.74

Condition	1 is OK, 0 Fails
Download	1
Uplift	1
Area of Steel	1
Shear	1
Anchor Bolt Pull-Out	1
Interaction Diagram	1