

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: HWY 401 KIPLING
Address: 4921 US-401, FUQUAY VARINA, NC 27526 Zip Code 27526
Owner/Authorized Agent: GLENN PENNINGTON Phone # (864) 423 - 6200 E-Mail gpennington@ctowergroup.com

Owned By: ☐ City/County ☒ Private ☐ State
Code Enforcement Jurisdiction: ☐ City ☒ County HARNETT ☐ State

CONTACT: TEP OPCO, LLC
DESIGNER FIRM NAME LICENSE # TELEPHONE # E-MAIL
Architectural _____
Civil TEP OPCO, LLC Scott C. Brantley 056896 (919) 661-6351 sbrantley@tepgroup.net
Electrical TEP OPCO, LLC Mark S. Quakenbush 042109 (919) 661-6351 mquakenbush@tepgroup.net
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.)

2018 NC Administrative Code and Policies

Gross Building Area Table			
FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
3 rd Floor		N/A	
2 nd Floor		N/A	
Mezzanine		N/A	
1 st Floor		N/A	
Basement		N/A	
TOTAL		N/A	

ALLOWABLE AREA
Primary Occupancy Classification(s): 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): N/A

Incidental Uses (Table 509): N/A

Special Uses (Chapter 4 – List Code Sections): N/A

Special Provisions: (Chapter 5 – List Code Sections): N/A

Mixed Occupancy: ☒ No ☐ Yes Separation: Exception:

☐ Non-Separated Use (508.3) - The required type of construction for the building shall be determined by applying the least restrictive type of construction for each of the applicable occupancy classifications. The most restrictive type of construction shall apply to the entire building.

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

Actual Area of Occupancy A Area of Occupancy B ≤ 1
Allowable Area of Occupancy A Allowable Area of Occupancy B
+ = ≤ 1.00

2018 NC Administrative Code and Policies

PLANS PREPARED FOR:



GTGI LLC
15720 BRIXHAM HILL AVE., STE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:

SITE NAME:
HWY 401 KIPLING
ID: CTGI-NC 0010023
4921 US-401
FUQUAY VARINA, NC 27526
(HARNETT COUNTY)

PLANS PREPARED BY:



TEP OPCO, LLC
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

N.C. LICENSE # P-1403

SEAL:



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DRAWN BY: SAB CHECKED BY: DAO

SHEET TITLE:

APPENDIX B

SHEET NUMBER:

T-2

REVISION:

2

TEP #: 72596

THIS IS A FAMILY OF COMPANIES LICENSED TO PROVIDE DIFFERENT SERVICES IN DIFFERENT JURISDICTIONS. OPERATING ON THE JURISDICTION OF PROFESSIONAL ENGINEERING AND SURVEYING SERVICES ARE PROVIDED BY TEP OPCO, LLC, A DELAWARE LIMITED LIABILITY COMPANY. TEP ENGINEERS, LLC, A NORTH CAROLINA PROFESSIONAL ENGINEERING FIRM, IS PROVIDING THESE SERVICES. GENERAL CONTRACTOR SERVICES ARE PROVIDED BY TEP OPCO, LLC, A NEW YORK PROFESSIONAL LIMITED LIABILITY COMPANY. WE ACQUIRE THE REQUIRED LICENSES IN EACH STATE. ADDITIONAL INFORMATION CAN BE OBTAINED FROM THE COMPANY.

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 Frontage area increases from Section 506.2 are:
- Perimeter which fronts a public way
 - Total Building Perimeter
 - Ratio (F/P) = _____ (F/P)
 - W = Minimum width of public way
 - Percent of frontage increase = $\frac{F}{P} \times W/30 = \text{_____} (\%)$
- ² Unlimited area applicable under conditions of Section 507.
- ³ Maximum Building Area = total number of stories in the building x D (maximum 3 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 412.4.1.
- ⁵ Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE	PLANS	CODE REFERENCE
Building Height in Feet (Table 504.3)			
Building Height in Stories (Table 504.4)			

¹ Provide code reference if the "Shown on Plans" quantity is not based on the code.

FIRE PROTECTION REQUIREMENTS

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

* Indicate section number permitting reduction

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T-3	2
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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 (%)

LIFE SAFETY PLAN REQUIREMENTS

Emergency Lighting:
Exit Signs:
Fire Alarm:
Smoke Detection Systems:
Panic Hardware:

☐ Full ☐ Partial

☐ Yes ☐ No ☐ Yes

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #:

☐ 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)
☐ Dead end lengths (1020.4)
☐ Clear exit widths for each exit door
☐ Maximum calculated occupant load for each exit door can accommodate based on egress width (1005.3)
☐ Actual occupant load for each exit door
☐ A separate schematic plan indicating the location of each exit door/ceiling and/or roof structure is provided for purposes of occupancy separation
☐ Location of doors with panic hardware (1010)
☐ 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 (SECTION 1107)						
TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED

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

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1)											
USE		WATERCLOSETS			URINALS	LAVATORIES			SHOWERS /TUBS	DRINKING FOUNTAINS	
		MALE	FEMALE	UNISEX		MALE	FEM	UNISEX		REGULAR	ACCESSIBLE
SPACE	EXIST*G										
	NEW										
	REQ'D										

SPECIAL APPROVAL

Special approval: (Local Jurisdiction, Department of Social Services, DPI, DHHS, etc., describe below)

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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 (Provide code on _____)

Exempt Building: ☐ No ☐ Yes (Provide code on _____)

Climate Zone: ☐ 3A ☐ 4A ☐ _____

Method of Compliance: Energy _____ ☐ Prescriptive
ASAP _____ ☐ Prescriptive
(Provide code on _____)

THERMAL ENVELOPE (Prescriptive)

Roof/ceiling Assembly (each assembly)

Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Skylights in each assembly: _____
U-Value of skylight: _____
total square footage of skylights in each assembly: _____

Exterior Walls (each assembly)

Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Openings (windows or doors with glazing)
U-Value of assembly: _____
Solar heat gain coefficient: _____
projection factor: _____
Door R-Values: _____

Walls below grade (each assembly)

Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____

Floors over unconditioned space (each assembly)

Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____

Floors slab on grade

Description of assembly: _____
U-Value of total assembly: _____
R-Value of insulation: _____
Horizontal/vertical requirement: _____
slab heated: _____

2018 NC Administrative Code and Policies

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) _____
Seismic (I_E) _____

Live Loads: Roof _____ psf
Mezzanine _____ psf
Floor _____ psf

Ground Snow Load: _____ psf

Wind Load: Basic Wind Speed _____ (ASCE-7)
Exposure Category _____

SEISMIC DESIGN CATEGORY: ☐ I ☐ II ☐ III ☐ IV

Provide the following Seismic Design Parameters:

Risk Category (Table 1601) _____ %g

Spectral Response Acceleration (S_a) _____ %g

Site Classification (ASCE 7.9.1) _____
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) _____ psf

Presumptive Bearing capacity _____ psf

Pile size, type, and capacity _____

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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: _____

summer dry bulb: _____

Interior design conditions

winter dry bulb: _____

summer dry bulb: _____

relative humidity: _____

Building heating load: _____

Building cooling load: _____

Mechanical Spacing Conditioning System

Unitary

description of unit: _____

heating efficiency: _____

cooling efficiency: _____

size category of unit: _____

Boiler

Size category. If oversized, state reason.: _____

Chiller

Size category. If oversized, state reason.: _____

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 ASHRAE 90.1 ☐ Prescriptive

Lighting schedule (each fixture type)

lamp type required in fixture _____

number of lamps in fixture _____

ballast type used in fixture _____

number of ballasts _____

total wattage per fixture _____

total interior wattage _____

total exterior wattage _____

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

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PROJECT NOTES:

1. ALL REFERENCES MADE TO OWNER IN THESE DOCUMENTS SHALL BE CONSIDERED CTG 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 TO HAVE SUFFICIENT EXPERIENCE AND ABILITY, IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT IS PROPERLY LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE OF NORTH CAROLINA.
3. THE STRUCTURE SHALL BE DESIGNED IN ACCORDANCE WITH ANSI/TIA-222-H AND CONFORM TO THE REQUIREMENTS OF THE NORTH CAROLINA BUILDING CODE, 2024 EDITION.
4. WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE NORTH CAROLINA BUILDING CODE, 2024 EDITION.
5. 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.
6. ALL HARDWARE ASSEMBLY MANUFACTURER’S INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
7. IT IS THE CONTRACTOR’S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO ENSURE THE SAFETY OF THE STRUCTURE AND ITS 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.
8. 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 VERIFICATION. 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 SUPERVISE 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.
9. 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.
10. 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 ENSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK. RENTAL CHARGES, SAFETY, PROTECTION, AND MAINTENANCE OF RENTED EQUIPMENT SHALL BE THE CONTRACTOR’S RESPONSIBILITY.
11. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS, WITH THE OWNER PROJECT MANAGER.
12. BILL OF MATERIALS AND PART NUMBERS LISTED ON CONSTRUCTION DRAWINGS ARE INTENDED TO AID CONTRACTOR/OWNER. CONTRACTOR/OWNER SHALL VERIFY PARTS AND QUANTITIES WITH MANUFACTURER PRIOR TO BIDDING AND/OR ORDERING MATERIALS.
13. 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.
14. 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, THE CONTRACTOR MUST NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY OR CITY) ENGINEER.
15. THE CONTRACTOR SHALL REWORK (DRY, SCARIFY, ETC.) ALL MATERIAL NOT SUITABLE FOR SUBGRADE IN ITS 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 SOFT MATERIAL SHALL BE REWORKED OR REPLACED.
16. 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.
17. 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.

18. ANY BUILDINGS ON THIS SITE ARE INTENDED TO SHELTER EQUIPMENT WHICH WILL ONLY BE PERIODICALLY MAINTAINED AND ARE NOT INTENDED FOR HUMAN OCCUPANCY.
19. TEMPORARY FACILITIES FOR PROTECTION OF TOOLS AND EQUIPMENT SHALL CONFORM TO LOCAL REGULATIONS AND SHALL BE THE CONTRACTOR’S RESPONSIBILITY.
20. THE CONTRACTOR AND ITS SUBCONTRACTORS SHALL CARRY LIABILITY INSURANCE IN THE AMOUNTS AND FORM IN ACCORDANCE WITH OWNER SPECIFICATIONS. CERTIFICATES DEMONSTRATING PROOF OF COVERAGE SHALL BE PROVIDED TO OWNER PRIOR TO THE START OF THE WORK ON THE PROJECT.
21. THE CONTRACTOR SHALL CONTACT ALL APPLICABLE UTILITY SERVICES TO VERIFY LOCATIONS OF EXISTING UTILITIES AND REQUIREMENTS FOR NEW UTILITY CONNECTIONS PRIOR TO EXCAVATING.
22. THE CONTRACTOR SHALL MAINTAIN THE JOB CLEAR OF TRASH AND DEBRIS. ALL WASTE MATERIALS SHALL BE REMOVED FROM THE SITE PRIOR TO SUBSTANTIAL COMPLETION AND PRIOR TO FINAL ACCEPTANCE. THE CONTRACTOR SHALL FURNISH ONE 55 GALLON BARREL, AND TRASH BAGS, AND SHALL REMOVE TRASH, DEBRIS, ETC., ON A DAILY BASIS.
23. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL CONDITIONS PRIOR TO SUBMITTING THE PROPOSAL. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS SHOWN ON THESE DRAWINGS WITH THOSE AT THE SITE. ANY VARIATION WHICH REQUIRES PHYSICAL CHANGE SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER PROJECT ENGINEER FOR FACILITIES/CONSTRUCTION.
24. THE CONTRACTOR SHALL GUARANTEE THE WORK PERFORMED ON THE PROJECT BY THE CONTRACTOR AND ANY OR ALL OF THE SUBCONTRACTORS WHO PERFORMED WORK FOR THE CONTRACTOR ON THIS PROJECT. THE GUARANTEE SHALL BE FOR A FULL YEAR FOLLOWING ISSUANCE OF THE FINAL PAYMENT OF RETAINAGE. ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR ONE YEAR FROM ACCEPTANCE DATE.

UTILITY NOTES

1. APPLY FOR THE UTILITY SERVICE (ELECTRIC) NO LATER THAN THE NEXT BUSINESS DAY FOLLOWING AWARD OF CONTRACT. COORDINATE WITH THE ELECTRIC UTILITY COMPANY FOR EXACT TRANSFORMER LOCATION, METERING REQUIREMENTS, AND THE SERVICE ROUTING. COORDINATE WITH THE TELEPHONE UTILITY COMPANY FOR EXACT TELEPHONE REQUIREMENTS AND ROUTING OF SERVICE.
2. ALL UTILITY RELATED WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE UTILITY REQUIREMENTS. FIELD VERIFY EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL CONTACT UTILITIES AND LOCATOR SERVICE A MINIMUM OF 72 HOURS PRIOR TO THE START OF CONSTRUCTION. (NC ONE-CALL 1-800-632-4949).
4. CONTRACTOR SHALL PROVIDE TRENCHING AND CONDUITS AS SHOWN OR AS REQUIRED BY LOCAL UTILITY.
5. NO PENETRATIONS TO THE TOWER FOUNDATION OF ANY KIND.

PLANS PREPARED FOR:



GTGI LLC
15720 BRIXHAM HILL AVE., STE 300
CHARLOTTE, NC 28277

PROJECT INFORMATION:

SITE NAME:
HWY 401 KIPLING
ID: CTGI-NC 0010023
4921 US-401
FUQUAY VARINA, NC 27526
(HARNETT COUNTY)

PLANS PREPARED BY:



TEP OPCO, LLC
326 TRYON ROAD
RALEIGH, NC 27603-3530
OFFICE: (919) 661-6351
www.tepgroup.net

N.C. LICENSE # P-1403

SEAL:



January 21, 2025

2	01-21-25	CONSTRUCTION
1	12-16-24	CONSTRUCTION
0	11-27-24	CONSTRUCTION
B	08-21-24	PRELIMINARY
REV	DATE	ISSUED FOR:

DRAWN BY: SAB CHECKED BY: DAO

SHEET TITLE:

**PROJECT
NOTES**

SHEET NUMBER:

N-1

REVISION:

2

TEP #: 72596

TEP IS A FAMILY OF COMPANIES LICENSED TO PROVIDE DIFFERENT SERVICES IN DIFFERENT JURISDICTIONS. DEPENDING ON THE JURISDICTION, PROFESSIONAL ENGINEERING AND LAND SURVEYING SERVICES ARE PROVIDED BY TEP OPCO, LLC, A DELAWARE LIMITED LIABILITY COMPANY. TEP ENGINEERS, LLC, A NORTH CAROLINA PROFESSIONAL ENGINEERING FIRM, PROVIDES PROFESSIONAL ENGINEERING AND LAND SURVEYING SERVICES. GENERAL CONTRACTOR SERVICES ARE PROVIDED BY TEP OPCO, LLC, A DELAWARE LIMITED LIABILITY COMPANY. WE ACQUIRE THE REQUIRED LICENSES IN EACH STATE. ADDITIONAL INFORMATION CAN BE OBTAINED FROM THE COMPANY.

SCALE: 1" = 150'
ORIGINAL MAP SIZE 11.00" X 17.00'

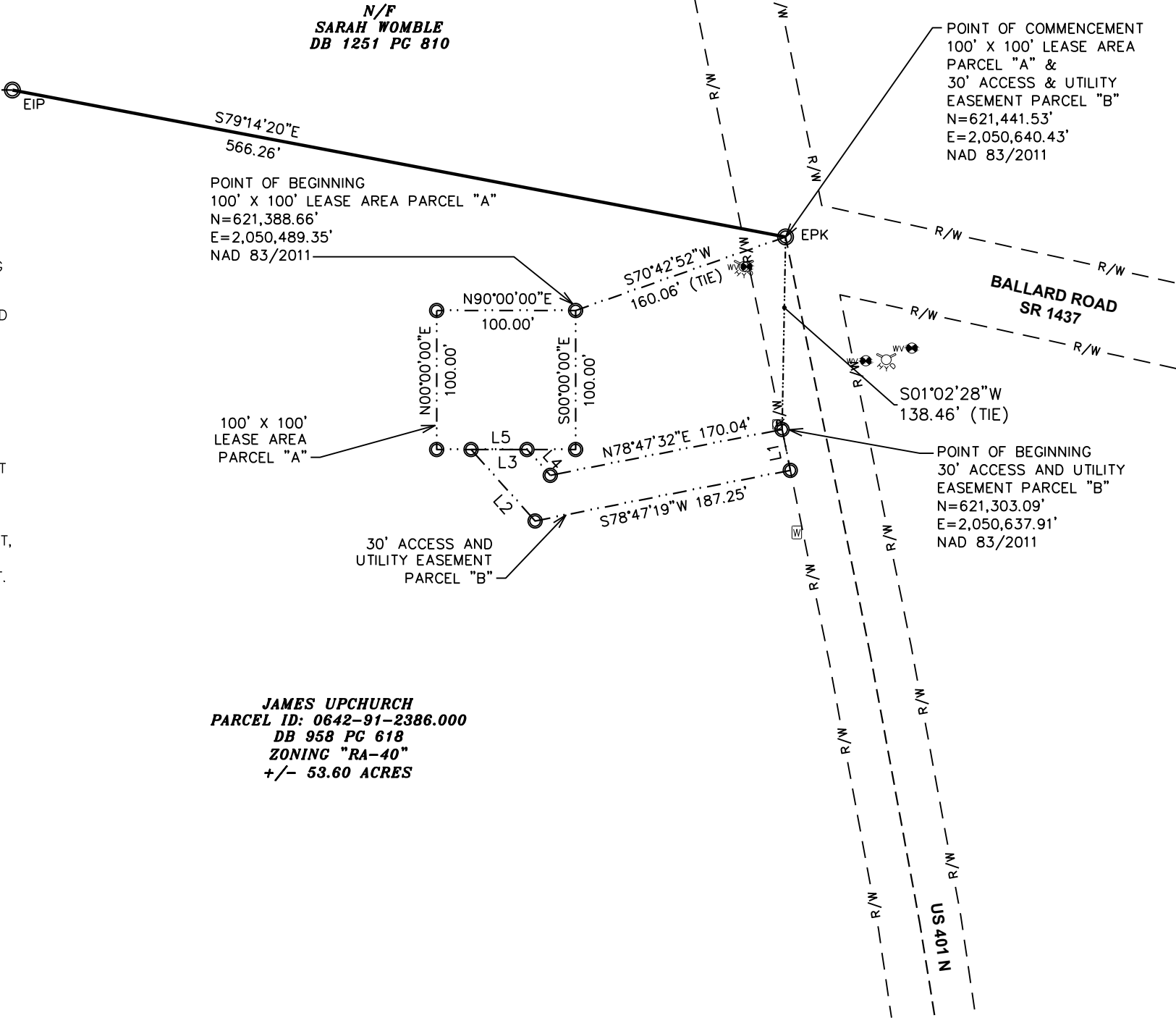
LEGAL DESCRIPTION OF 100' X 100' LEASE AREA PARCEL "A"

ALL THAT CERTAIN LEASE AREA PARCEL OF LAND, SITUATE, LYING AND BEING IN HECTORS TOWNSHIP, HARNETT COUNTY, NORTH CAROLINA, BEING A PORTION OF THE LANDS DESCRIBED IN DEED BOOK 958 AT PAGE 618 OF THE HARNETT COUNTY REGISTER OF DEEDS AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT EXISTING PK NAIL AT THE NORTHEAST CORNER OF THE PARCEL DESCRIBED IN DEED BOOK 958 AT PAGE 618, SAID PK NAIL BEING A COMMON CORNER OF THE PARCEL DESCRIBED IN DEED BOOK 1251, PAGE 810, AND HAVING NORTH CAROLINA STATE PLANE COORDINATES OF NORTHING = 621,441.53', AND EASTING = 2,050,640.43'; THENCE FROM THE POINT OF COMMENCEMENT, SOUTH 70°42'52" WEST, A DISTANCE OF 160.06 FT. TO A POINT ON THE NORTHEAST CORNER OF THE DESCRIBED 100' X 100' LEASE AREA, SAID POINT BEING THE TRUE POINT OF BEGINNING, AND HAVING NORTH CAROLINA STATE PLANE COORDINATES OF NORTHING = 621,388.66', AND EASTING = 2,050,489.35'; THENCE FROM THE POINT OF BEGINNING SOUTH 00°00'00" EAST, A DISTANCE OF 100.00 FT. TO A POINT; THENCE NORTH 90°00'00" WEST FOR A DISTANCE OF 100.00 FT. TO A POINT; THENCE NORTH 00°00'00" EAST FOR A DISTANCE OF 100.00 FT. TO A POINT. THENCE SOUTH 90°00'00" EAST FOR A DISTANCE OF 100.00 FT. TO THE POINT OF BEGINNING.
SAID LEASE AREA PARCEL CONTAINING 10,000 SQ. FT. OR 0.23 ACRES MORE OR LESS.

LEGAL DESCRIPTION OF 30' ACCESS AND UTILITY EASEMENT PARCEL "B"

ALL THAT CERTAIN EASEMENT AREA PARCEL OF LAND, SITUATE, LYING AND BEING IN HECTORS CREEK TOWNSHIP, HARNETT COUNTY, NORTH CAROLINA, BEING A PORTION OF THE LANDS DESCRIBED IN DEED BOOK 958 AT PAGE 618 OF THE HARNETT COUNTY REGISTER OF DEEDS AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT EXISTING PK NAIL AT THE NORTHEAST CORNER OF THE PARCEL DESCRIBED IN DEED BOOK 958 AT PAGE 618, SAID PK NAIL BEING A COMMON CORNER OF THE PARCEL DESCRIBED IN DEED BOOK 1251, PAGE 810, AND HAVING NORTH CAROLINA STATE PLANE COORDINATES OF NORTHING = 621,441.53', AND EASTING = 2,050,640.43'; THENCE FROM THE POINT OF COMMENCEMENT, SOUTH 01°02'28" WEST, A DISTANCE OF 138.46 FT. TO A POINT ON THE NORTHEAST CORNER OF A 30' ACCESS EASEMENT; SAID POINT BEING LOCATED ON THE WESTERN RIGHT OF WAY OF US HIGHWAY 401 NORTH, AND BEING THE TRUE POINT OF BEGINNING OF A DESCRIBED 30' ACCESS AND UTILITY EASEMENT, AND HAVING NORTH CAROLINA STATE PLANE COORDINATES OF: NORTHING = 621,303.09'; AND EASTING = 2,050,637.91'; THENCE FROM THE POINT OF BEGINNING, AND ALONG SAID RIGHT OF WAY, SOUTH 11°28'19" EAST A DISTANCE OF 30.00 FT. TO A POINT, THENCE LEAVING SAID RIGHT OF WAY SOUTH 78°47'19" WEST A DISTANCE OF 187.25 FT. TO A POINT; THENCE NORTH 41°53'41" WEST A DISTANCE OF 69.03 FT. TO A POINT ON THE SOUTHERN LIMITS OF THE HEREIN DESCRIBED LEASE AREA (PARCEL "A"); THENCE ALONG NORTHERN LIMITS NORTH 90°00'00" EAST A DISTANCE OF 40.30 FT. TO A POINT; THENCE LEAVING SAID NORTHERN LIMITS SOUTH 41°53'41" EAST A DISTANCE OF 25.02 FT. TO A POINT; THENCE NORTH 78°47'32" EAST A DISTANCE OF 170.04 FT. TO THE POINT OF BEGINNING.
SAID EASEMENT AREA PARCEL CONTAINING 6,771 SQ. FT. OR 0.155 ACRES MORE OR LESS.

LINE TABLE		
LINE #	BEARING	DISTANCE
L1	S11°28'19"E	30.00'
L2	N41°53'41"W	69.03'
L3	N90°00'00"E	40.30'
L4	S41°53'41"E	25.02'
L5	N90°00'00"W	100.00'



JAMES UPCHURCH
PARCEL ID: 0642-91-2386.000
DB 958 PG 618
ZONING "RA-40"
+/- 53.60 ACRES

N/F
SARAH WOMBLE
DB 1251 PG 810

TEP ENGINEERING, PLLC
326 TRYON ROAD
RALEIGH, NC 27603-3530
(919) 661-6351
COA # P-1403

SHEET #: 2 OF 2 | TEP #: 72596

LEGAL DESCRIPTIONS



Alan H. Allbert

ALAN H. ALLBERT
NORTH CAROLINA PLS # L-3738

PROJECT INFORMATION:

HWY 401 KIPLING
CTG-NC 0010023

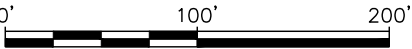
4899 US HIGHWAY 401 N
FUQUAY VARINA, NC 27526
HECTORS CREEK TOWNSHIP
(HARNETT COUNTY)

PROPOSED TELECOMMUNICATIONS SURVEY
PREPARED FOR:



COMMUNICATIONS TOWER GROUP, LLC
15720 BRIXHAM HILL AVE, SUITE 300
CHARLOTTE, NC 28277

FIELD WORK PERFORMED ON: 09/22/16



SCALE: 1" = 100'
ORIGINAL MAP SIZE 11.00" X 17.00"

REV	DATE	ISSUED FOR	INITIALS
0	10/03/2016	PRELIMINARY	
1	10/26/2016	FINAL	
2	12/14/2021	REVISION	DDS

NOTES:

1. THE BASIS OF THE MERIDIANS AND COORDINATES FOR THIS PLAT IS THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NORTH AMERICAN DATUM 1983 (NCSPCS NAD 83), BASED ON DIFFERENTIAL GPS OBSERVATIONS PERFORMED ON SEPTEMBER 22, 2016.
2. VERTICAL INFORMATION SHOWN, BASED ON THE NORTH AMERICAN VERTICAL DATUM OF NAVD 1988 IN FEET.
3. ALL DISTANCES ARE GROUND UNLESS OTHERWISE NOTED.
4. THE TOWER IS LOCATED IN ZONE "X." AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN ACCORDING TO FEMA COMMUNITY PANEL #3720064200J, DATED OCTOBER 3, 2006.
5. THIS IS AN UNMANNED FACILITY THAT OPERATES 24/7.
6. TOWER TO BE DESIGNED WITH A BREAKPOINT AT 37-FT TO ALLOW FOR A 138-FT FALLZONE RADIUS.
7. SEE SHEET C-1A FOR ADJACENT PROPERTY OWNER INFORMATION TABLE.

LEGEND

—

EXIST. PROP. LINE

W

EXIST. WATER METER

⦿

EXIST. UTILITY POLE

T

EXIST. TELCO PED.

●

PROPERTY CORNER

--200--

EXIST. CONTOUR

///

EDGE OF PAVEMENT

--OHW--

OVERHEAD WIRE

--R/W--

RIGHT-OF-WAY

— X —

CHAIN LINK FENCE

~~~~~

EXISTING TREE LINE

| SETBACK TABLE |                       |                        |
|---------------|-----------------------|------------------------|
|               | REQUIRED SETBACK (FT) | MEASURED DISTANCE (FT) |
| NORTH         | 250                   | 139                    |
| WEST SIDE     | 250                   | 1,095                  |
| EAST SIDE     | 250                   | 218                    |
| SOUTH         | 250                   | 731                    |

| SITE DATA TABLE      |                     |
|----------------------|---------------------|
| TOTAL PARCEL AREA:   | 57.25 ACRES±        |
| EXISTING IMPERVIOUS: | 1.71 ACRES± (2.99%) |
| PROPOSED IMPERVIOUS: | 0.20 ACRES± (0.35%) |
| TOTAL IMPERVIOUS:    | 1.91 ACRES± (3.34%) |
| WATERSHED:           | 030300040502        |

SITE PLAN

FULL SCALE: 1" = 600' (22"x34")

HALF SCALE: 1" = 300' (11"x17")

0300600

SCALE IN FEET

PLANS PREPARED FOR:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

**SITE NAME:**  
**HWY 401 KIPLING**  
**ID: CTGI-NC 0010023**  
4921 US-401  
FUQUAY VARINA, NC 27526  
(HARNETT COUNTY)

PLANS PREPARED BY:



**TEP OPCO, LLC**  
326 TRYON ROAD  
RALEIGH, NC 27603-3530  
OFFICE: (919) 661-6351  
www.tepgroup.net

N.C. LICENSE # P-1403

SEAL:



|     |          |              |
|-----|----------|--------------|
| 3   | 05-02-25 | CONSTRUCTION |
| 2   | 01-21-25 | CONSTRUCTION |
| 1   | 12-16-24 | CONSTRUCTION |
| 0   | 11-27-24 | CONSTRUCTION |
| REV | DATE     | ISSUED FOR:  |

DRAWN BY: SAB    CHECKED BY: DAO

SHEET TITLE:

SITE PLAN

SHEET NUMBER:

C-1

REVISION:

3

TEP #: 72596



ADJACENT PROPERTY OWNER TABLE

SCALE: N.T.S.

| ADJACENT PROPERTY OWNER INFORMATION |                  |                |                                                              |              |               |                              |
|-------------------------------------|------------------|----------------|--------------------------------------------------------------|--------------|---------------|------------------------------|
| NUMBER                              | PIN #            | PARCEL ID      | N/F<br>PROPERTY OWNER                                        | VESTING DEED | ZONING        | LAND USE                     |
| 1                                   | 0642-71-4596.000 | 080642 0030 02 | FRANCO KEVIN & ABUNDEZ<br>CELSO FRANCO                       | 4079 / 724   | RA-30         | RESIDENTIAL/<br>AGRICULTURAL |
| 2                                   | 0642-82-5087.000 | 080642 0013    | TILLEY BETTY WELLS TRUSTEE &<br>BETTY WELLS TILLEY REV TRUST | 2954 / 622   | RA-30 & RA-40 | RESIDENTIAL/<br>AGRICULTURAL |
| 3                                   | 0642-92-7082.000 | 080652 0153    | DRFL LLC                                                     | 3968 / 541   | RA-40         | RESIDENTIAL/<br>AGRICULTURAL |
| 4                                   | 0652-10-3694.000 | 080652 0042    | C AND M PROPERTIES OF<br>FUQUAY LLC                          | 3862 / 123   | RA-30         | RESIDENTIAL/<br>AGRICULTURAL |
| 5                                   | 0642-90-2998.000 | 080642 0019    | ROGERS JUSTIN JOHN                                           | 4265 / 1882  | RA-30         | RESIDENTIAL                  |
| 6                                   | 0642-90-6424.000 | 080642 0036    | DRFL LLC                                                     | 3968 / 541   | RA-30 & RA-40 | RESIDENTIAL/<br>AGRICULTURAL |
| 7                                   | 0641-99-0540.000 | 080642 0014    | DRFL LLC                                                     | 3968 / 541   | RA-30         | RESIDENTIAL/<br>AGRICULTURAL |
| 8                                   | 0642-70-7206.000 | 080642 0016    | STEPHENSON LORA HONEYCUTT                                    | 4164 / 1022  | RA-30         | RESIDENTIAL                  |
| 9                                   | 0642-70-8434.000 | 080642 0015    | DE HOOG GARLAND & DE<br>HOOG RUTH                            | 3322 / 0773  | RA-30         | RESIDENTIAL                  |
| 10                                  | 0642-70-9640.000 | 080642 0033    | DEHOOG GARLAND EUGENE &<br>DEHOOG RUTH ELAINE                | 3534 / 921   | RA-30         | RESIDENTIAL                  |
| 11                                  | 0642-70-5978.000 | 080641 0005 01 | SLOAN JUNE ANNETTE COTTON &<br>EVANS BETTY JANE COTTON       | 648 / 171    | RA-30         | RESIDENTIAL/<br>AGRICULTURAL |

PLANS PREPARED FOR:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

SITE NAME:  
HWY 401 KIPLING  
ID: CTGI-NC 0010023  
4921 US-401  
FUQUAY VARINA, NC 27526  
(HARNETT COUNTY)

PLANS PREPARED BY:



TEP OPCO, LLC  
326 TRYON ROAD  
RALEIGH, NC 27603-3530  
OFFICE: (919) 661-6351  
www.tepgroup.net

N.C. LICENSE # P-1403

SEAL:



January 21, 2025

|     |          |              |
|-----|----------|--------------|
| 2   | 01-21-25 | CONSTRUCTION |
| 1   | 12-16-24 | CONSTRUCTION |
| 0   | 11-27-24 | CONSTRUCTION |
| B   | 08-21-24 | PRELIMINARY  |
| REV | DATE     | ISSUED FOR:  |

DRAWN BY: SAB | CHECKED BY: DAO

SHEET TITLE:

ADJACENT  
PROPERTY  
OWNER DETAILS

SHEET NUMBER:

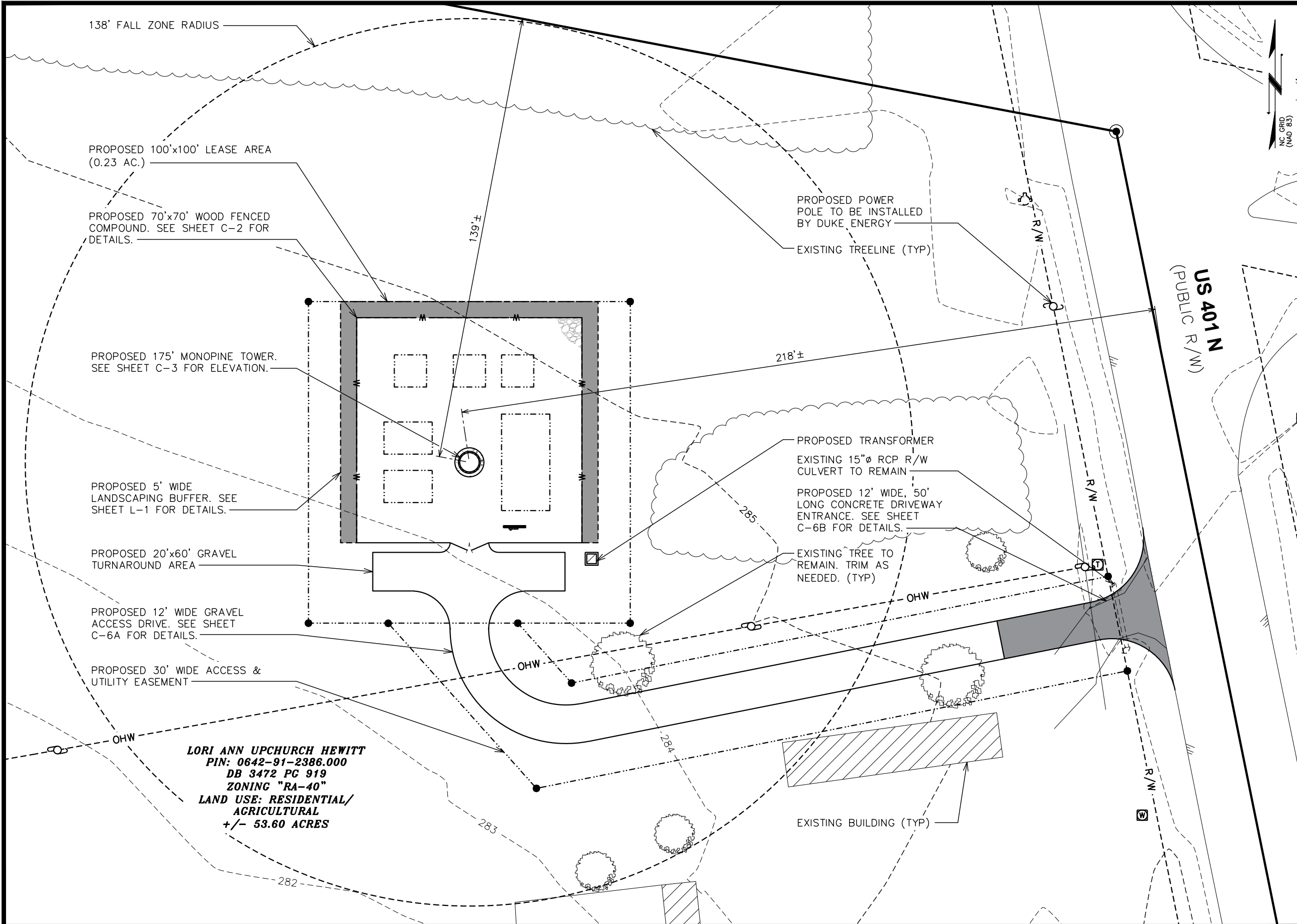
C-1A

REVISION:

2

TEP #: 72596

THIS IS A FAMILY OF COMPANIES LICENSED TO PROVIDE DIFFERENT SERVICES IN DIFFERENT JURISDICTIONS. DEPENDING ON THE JURISDICTION, PROFESSIONAL ENGINEERING AND LAND SURVEYING SERVICES ARE PROVIDED BY TEP OPCO LLC, A DELAWARE LIMITED LIABILITY COMPANY. TEP ENGINEERS, LLC, A NORTH CAROLINA PROFESSIONAL LIMITED LIABILITY COMPANY, OR W&H ENGINEERING, LLC, A NEW YORK PROFESSIONAL LIMITED LIABILITY COMPANY. GENERAL CONTRACTOR SERVICES ARE PROVIDED BY TEP OPCO LLC, A DELAWARE LIMITED LIABILITY COMPANY. WE ACQUIRE THE REQUISITE LICENSES IN EACH STATE. ADDITIONAL INFORMATION CAN BE OBTAINED FROM THE COMPANY.



PLANS PREPARED FOR:

**ctg**

GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

**SITE NAME:**  
**HWY 401 KIPLING**  
**ID: CTGI-NC 0010023**

4921 US-401  
FUQUAY VARINA, NC 27526  
(HARNETT COUNTY)

PLANS PREPARED BY:

**TEP**

**TEP OPCO, LLC**  
326 TRYON ROAD  
RALEIGH, NC 27603-3530  
OFFICE: (919) 661-6351  
www.tepgroup.net

N.C. LICENSE # P-1403

SEAL:

**NORTH CAROLINA**  
**PROFESSIONAL**  
**SEAL**  
**048226**  
**ENGINEER**  
**SCOTT C. BRANTLEY**

May 2, 2025

|     |          |              |
|-----|----------|--------------|
| 3   | 05-02-25 | CONSTRUCTION |
| 2   | 01-21-25 | CONSTRUCTION |
| 1   | 12-16-24 | CONSTRUCTION |
| 0   | 11-27-24 | CONSTRUCTION |
| REV | DATE     | ISSUED FOR:  |

DRAWN BY: SAB | CHECKED BY: DAO

SHEET TITLE:

**SITE LAYOUT**

SHEET NUMBER:  
**C-1B**

REVISION:  
**3**  
TEP #: 72596

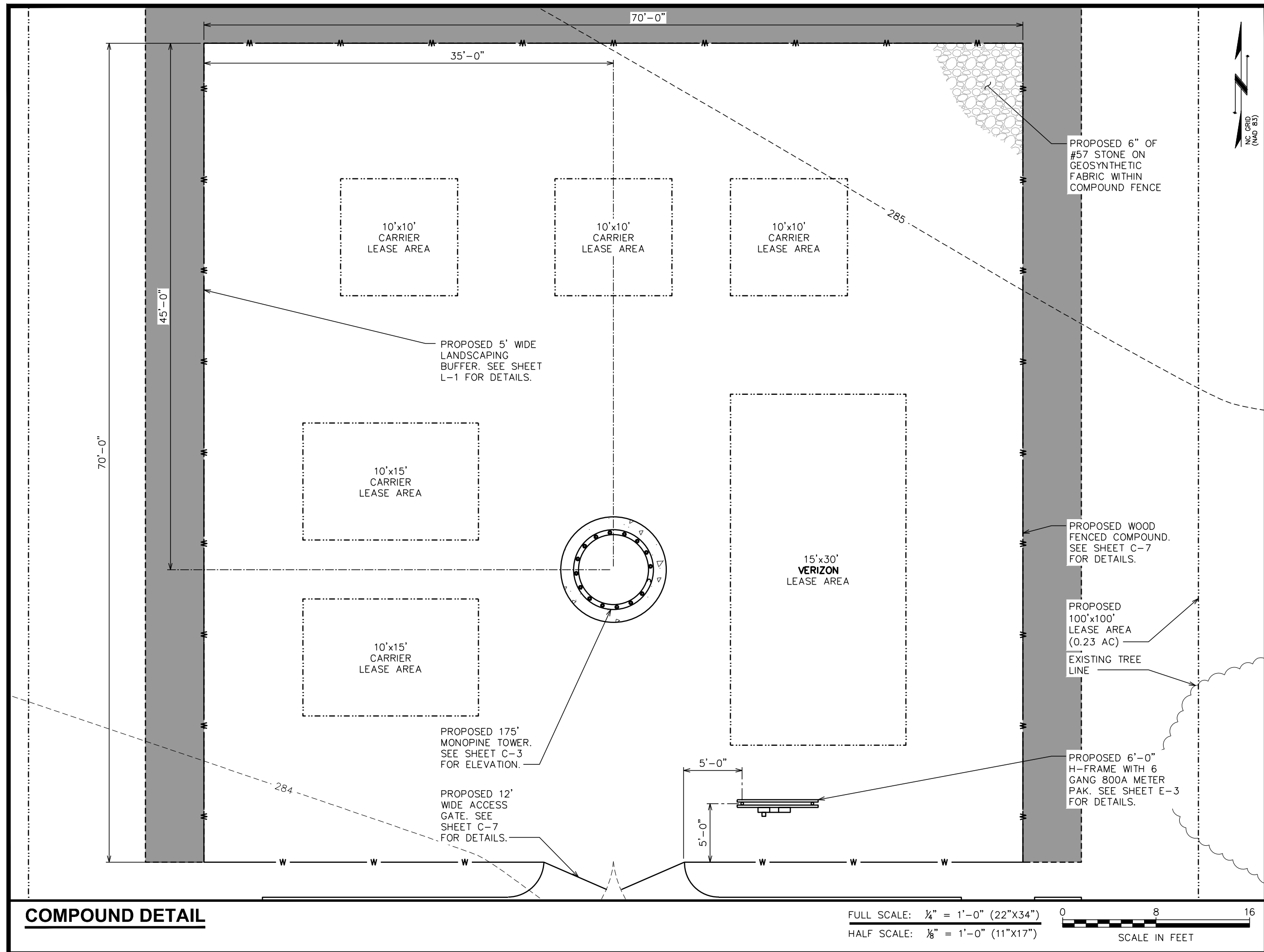
**SITE PLAN**

FULL SCALE: 1" = 60' (22"x34")  
HALF SCALE: 1" = 30' (11"x17")

0 30 60  
SCALE IN FEET

THIS IS A FAMILY OF COMPANIES LICENSED TO PROVIDE DIFFERENT SERVICES IN DIFFERENT JURISDICTIONS OPERATING ON THE JURISDICTION OF PROFESSIONAL ENGINEERING AND SURVEYING SERVICES ARE PROVIDED BY TEP OPCO, LLC, A DELAWARE LIMITED LIABILITY COMPANY. TEP ENGINEERING, LLC IS A NORTH CAROLINA PROFESSIONAL LIMITED LIABILITY COMPANY OR ARCH ENGINEERING, LLC, A NEW YORK PROFESSIONAL LIMITED LIABILITY COMPANY. GENERAL CONTRACTOR SERVICES ARE PROVIDED BY TEP OPCO, LLC, A DELAWARE LIMITED LIABILITY COMPANY. WE ACQUIRE THE REQUIRED LICENSES IN EACH STATE. ADDITIONAL INFORMATION CAN BE OBTAINED FROM THE COMPANY.





PLANS PREPARED FOR:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

#### PROJECT INFORMATION:

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4921 US-401  
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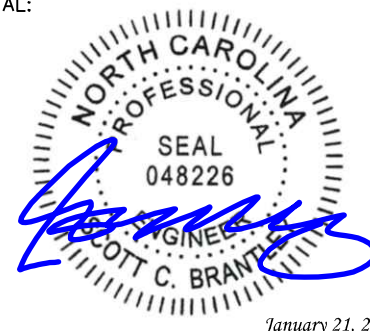
PLANS PREPARED BY:



**TEP OPCO, LLC**  
326 TRYON ROAD  
RALEIGH, NC 27603-3530  
OFFICE: (919) 661-6351  
[www.tepgroup.net](http://www.tepgroup.net)

N.C. LICENSE # P-1403

SEAL:



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| 2   | 01-21-25 | CONSTRUCTION |
| 1   | 12-16-24 | CONSTRUCTION |
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| B   | 08-21-24 | PRELIMINARY  |
| REV | DATE     | ISSUED FOR:  |

|               |                 |
|---------------|-----------------|
| DRAWN BY: SAB | CHECKED BY: DAC |
|---------------|-----------------|

SHEET TITLE:

## COMPOUND DETAIL

SHEET NUMBER:

**C-2**

REVISION:

2

TEP #: 72596

NOTES:

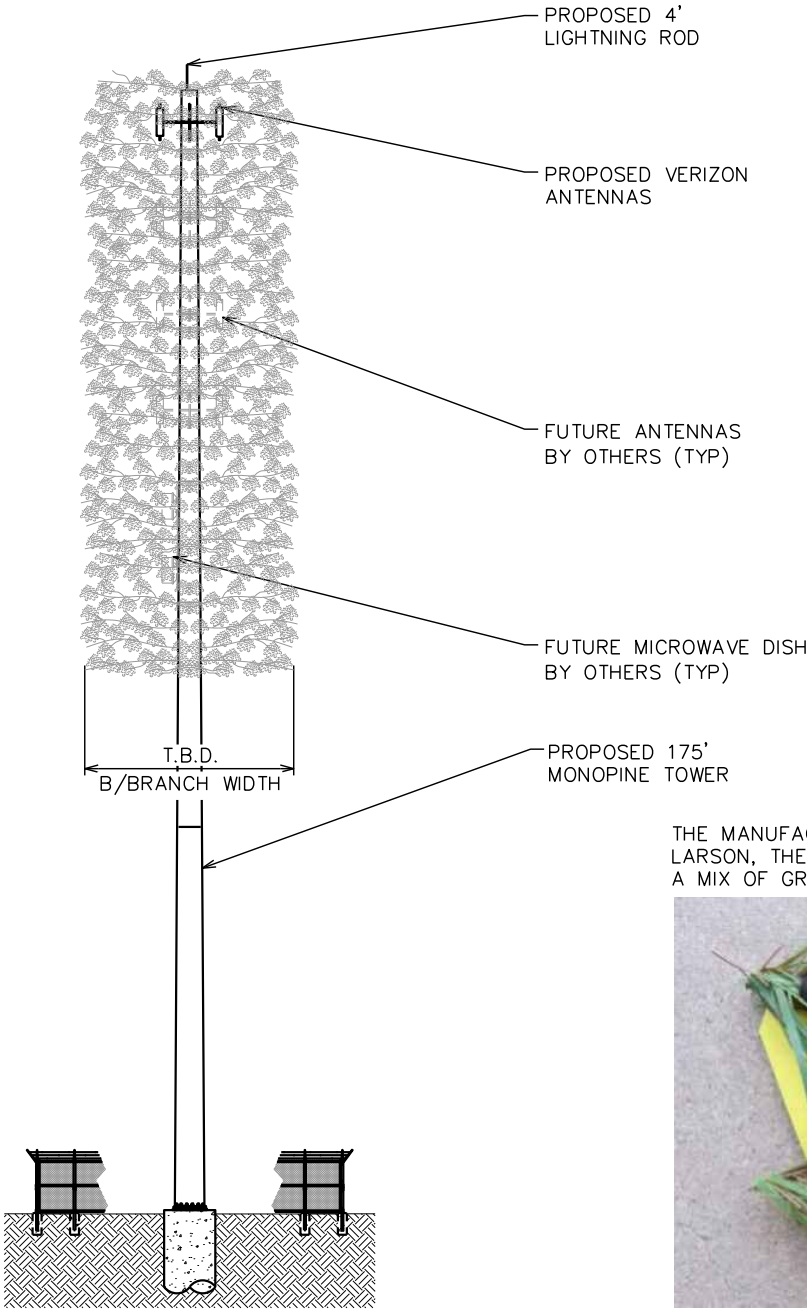
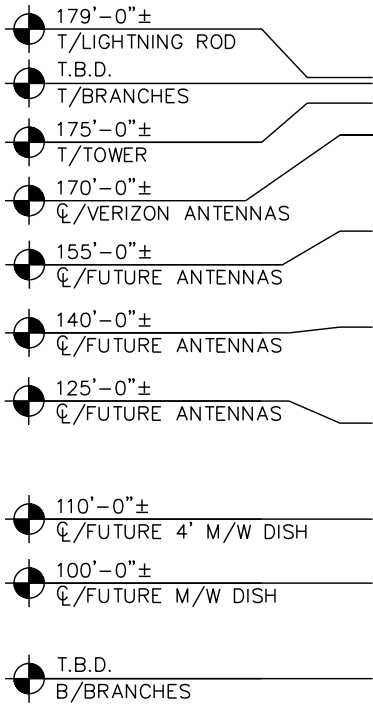
1. PROPOSED CABLES TO BE ROUTED PER SPECIFICATIONS OF STRUCTURAL ANALYSIS.
2. THE TOWER DRAWING IS ONLY A GRAPHIC REPRESENTATION OF THE STRUCTURE. THE ACTUAL TOWER IN THE FIELD MAY VARY.
3. CONTRACTOR TO VERIFY PROPOSED LOADING AND ANY LOADING TO BE REMOVED WITH PASSING STRUCTURAL ANALYSIS PRIOR TO CONSTRUCTION AND CONTACT COMMUNICATIONS TOWER GROUP I IN THE EVENT OF ANY DISCREPANCIES.
4. A BALLOON TEST WILL BE CONDUCTED AND PHOTOSIMS WILL SHOW THE MONOPINE FROM DIFFERENT LOCATIONS.
5. TOWER TO BE DESIGNED FOR LOADING FOR (6) CARRIERS.
6. TOWER DESIGN SHALL BE IN ACCORDANCE WITH ANSI/TIA-222-H AND CONFORM TO THE REQUIREMENTS OF THE NORTH CAROLINA BUILDING CODE, 2024 EDITION.
7. ALL ANTENNA PORTS SHOULD BE SEALED TO PREVENT MOISTURE AND WILDLIFE INTRUSION.

CTGI WILL CONVEY TO THE ANCHOR TENANT AT THE TOP OF THE TOWER THAT THEY WOULD INSTALL EQUIPMENT SOCKS ON THE EQUIPMENT TO MATCH THE COLOR OF THE BRANCHES FROM THE TOWER MANUFACTURER. ALSO, ANY OTHER CARRIER WOULD BE REQUIRED TO DO THE SAME THING.

SHERWIN WILLIAMS 8103 LARSON BASE BROWN, COLOR SPEC BELOW.



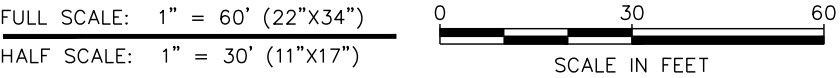
TOWER ELEVATION



THE MANUFACTURER FOR THE BRANCH FOLIAGE IS VALMONT | LARSON, THEY HAVE NOT PROVIDED A COLOR SPEC, THEY USE A MIX OF GREENS, PLEASE SEE THE FOLLOWING IMAGE.



- (252) 8FT LONG BRANCHES
- (3) 6FT LONG BRANCHES FOR THE TOP PLATE
- (1) 5FT LONG TOP BRANCH
- START HEIGHT: 90FT AGL
- 3.0 BRANCHES PER FOOT
- THE MAX BRANCH DIAMETER WILL BE 16FT+ SHAFT DIAMETER



PLANS PREPARED FOR:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

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**HWY 401 KIPLING**  
**ID: CTGI-NC 0010023**  
4921 US-401  
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PLANS PREPARED BY:



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N.C. LICENSE # P-1403

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|     |          |              |
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DRAWN BY: SAB    CHECKED BY: DAO

SHEET TITLE:

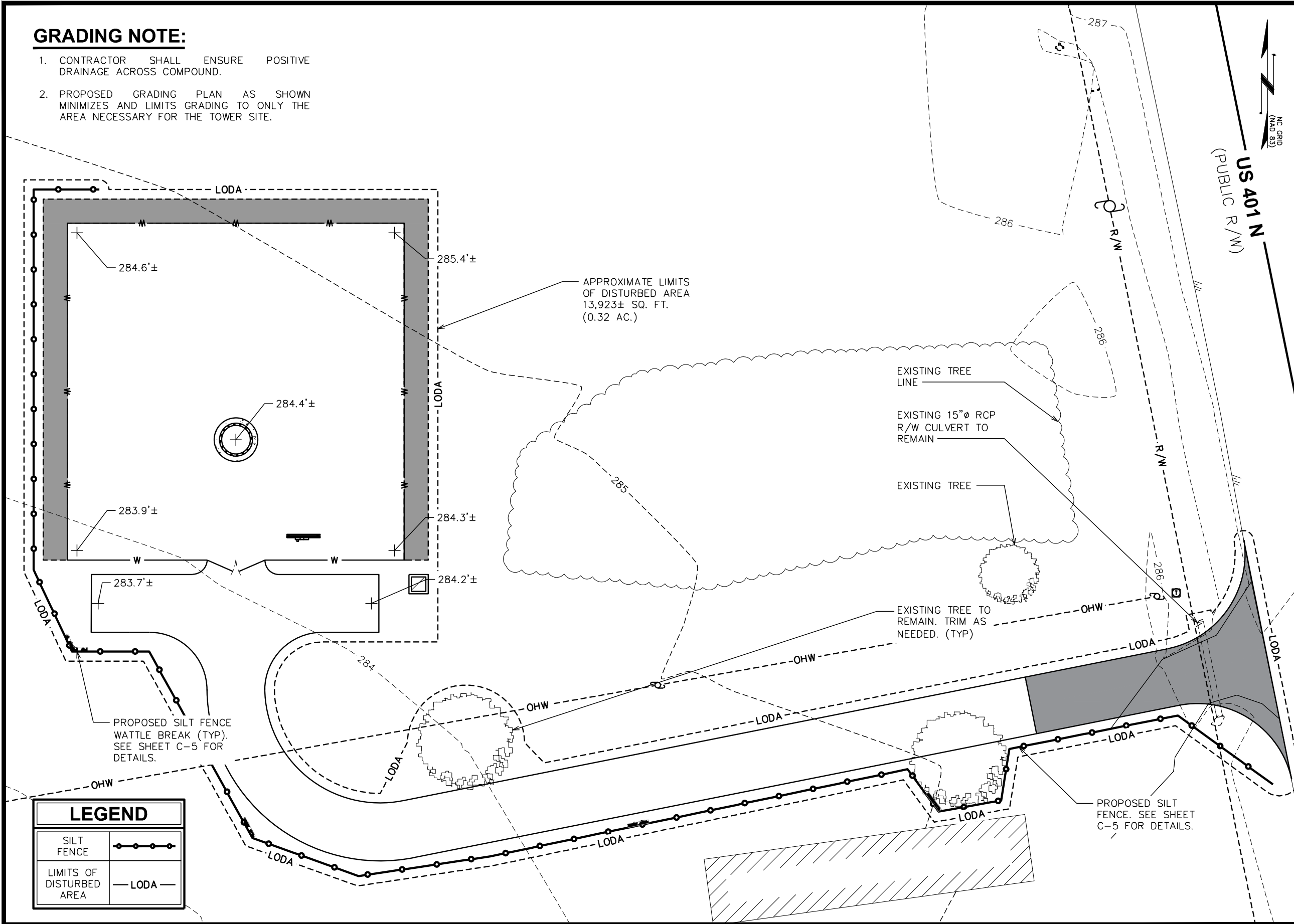
**TOWER ELEVATION**

|               |              |
|---------------|--------------|
| SHEET NUMBER: | REVISION:    |
| <b>C-3</b>    | <b>3</b>     |
|               | TEP #: 72596 |

THIS IS A FAMILY OF COMPANIES LICENSED TO PROVIDE DIFFERENT SERVICES IN DIFFERENT JURISDICTIONS. OPERATING ON THE JURISDICTION PROFESSIONAL ENGINEERING AND LAND SURVEYING SERVICES ARE PROVIDED BY TEP OPCO LLC, A DELAWARE LIMITED LIABILITY COMPANY. TEP ENGINEERING, LLC IS A NORTH CAROLINA PROFESSIONAL ENGINEERING AND LAND SURVEYING COMPANY. GENERAL CONTRACTOR SERVICES ARE PROVIDED BY TEP OPCO LLC, A NEW YORK PROFESSIONAL LIMITED LIABILITY COMPANY. WE ACQUIRE THE REQUISITE LICENSES IN EACH STATE. ADDITIONAL INFORMATION CAN BE OBTAINED FROM THE COMPANY.

GRADING NOTE:

1. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE ACROSS COMPOUND.
2. PROPOSED GRADING PLAN AS SHOWN MINIMIZES AND LIMITS GRADING TO ONLY THE AREA NECESSARY FOR THE TOWER SITE.



PLANS PREPARED FOR:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

**SITE NAME:**  
**HWY 401 KIPLING**  
**ID: CTGI-NC 0010023**  
4921 US-401  
FUQUAY VARINA, NC 27526  
(HARNETT COUNTY)

PLANS PREPARED BY:



**TEP OPCO, LLC**  
326 TRYON ROAD  
RALEIGH, NC 27603-3530  
OFFICE: (919) 661-6351  
www.tepgroup.net

N.C. LICENSE # P-1403

SEAL:



|     |          |              |
|-----|----------|--------------|
| 2   | 01-21-25 | CONSTRUCTION |
| 1   | 12-16-24 | CONSTRUCTION |
| 0   | 11-27-24 | CONSTRUCTION |
| B   | 08-21-24 | PRELIMINARY  |
| REV | DATE     | ISSUED FOR:  |

DRAWN BY: SAB CHECKED BY: DAO

SHEET TITLE:

**GRADING & EROSION  
CONTROL PLAN**

SHEET NUMBER: REVISION:

**C-4**

**2**

TEP #: 72596

GRADING & EROSION CONTROL PLAN

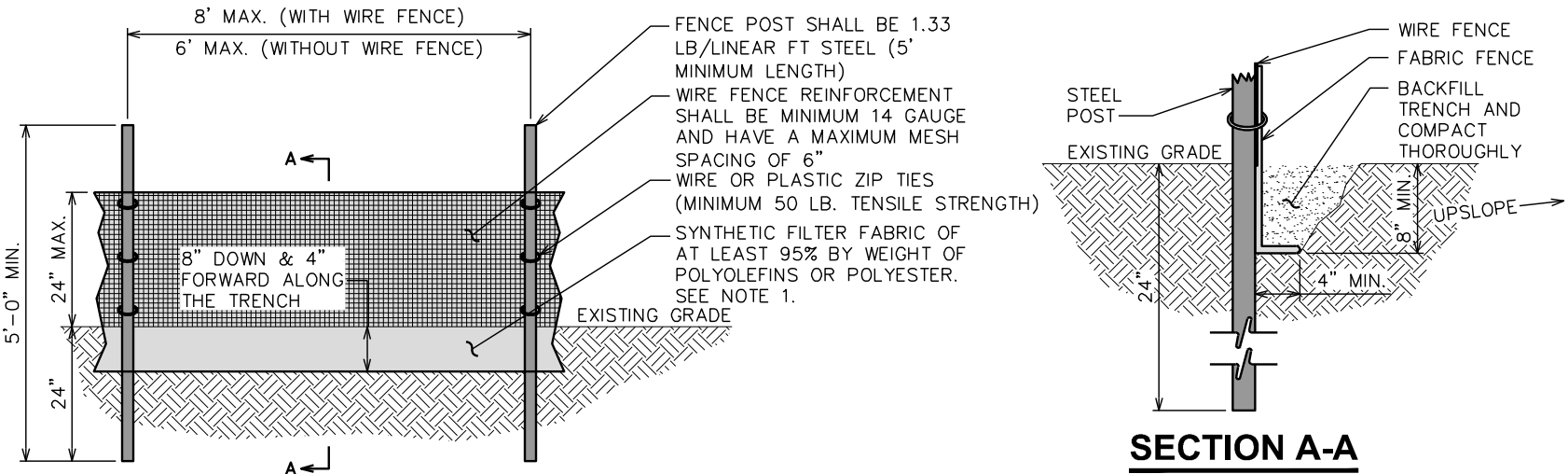
FULL SCALE: 1" = 40' (22"X34")  
HALF SCALE: 1" = 20' (11"X17")  
SCALE IN FEET

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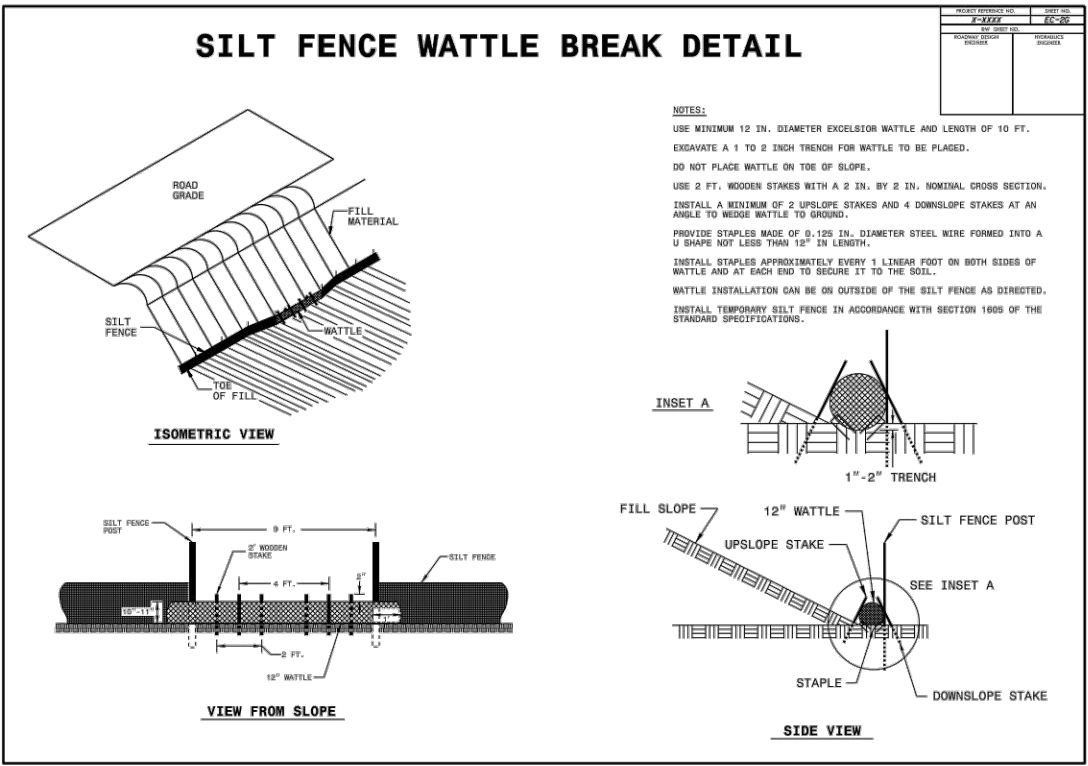
NOTES:

- 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. PACE 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: N.T.S.



STANDARD SILT FENCE WATTLE BREAK DETAIL

SCALE: N.T.S.

PLANS PREPARED FOR:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

**SITE NAME:**  
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4921 US-401  
FUQUAY VARINA, NC 27526  
(HARNETT COUNTY)

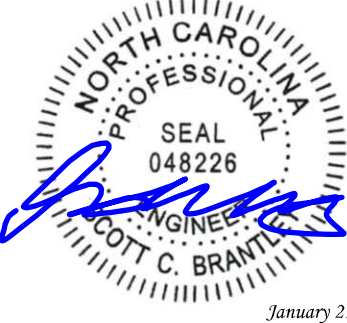
PLANS PREPARED BY:



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N.C. LICENSE # P-1403

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| REV | DATE     | ISSUED FOR:  |

DRAWN BY: SAB    CHECKED BY: DAO

SHEET TITLE:

**SILT FENCE DETAILS**

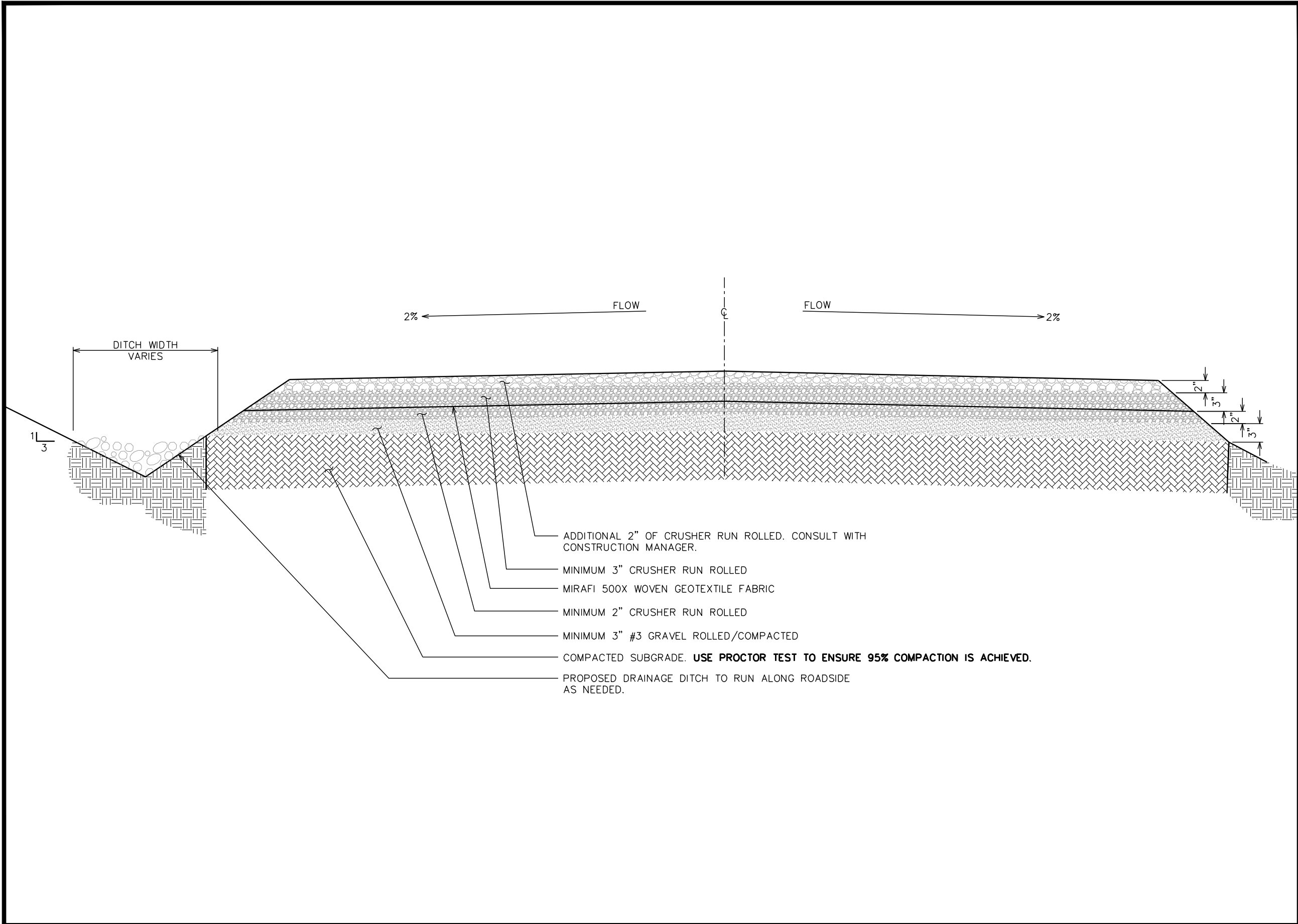
SHEET NUMBER:

**C-5**

REVISION:

**2**

TEP #: 72596



## STANDARD ROAD SECTION

SCALE: N.T.S.

PLANS PREPARED FOR:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

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(HARNETT COUNTY)

PLANS PREPARED BY:



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N.C. LICENSE # P-1403

SEAL:



January 21, 2025

| 2   | 01-21-25 | CONSTRUCTION |
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| 1   | 12-16-24 | CONSTRUCTION |
| 0   | 11-27-24 | CONSTRUCTION |
| B   | 08-21-24 | PRELIMINARY  |
| REV | DATE     | ISSUED FOR:  |

DRAWN BY: S&BW CHECKED BY: D&GB

SHEET TITLE:

**ACCESS ROAD  
DETAILS**

SHEET NUMBER:

**C-6A**

REVISION:

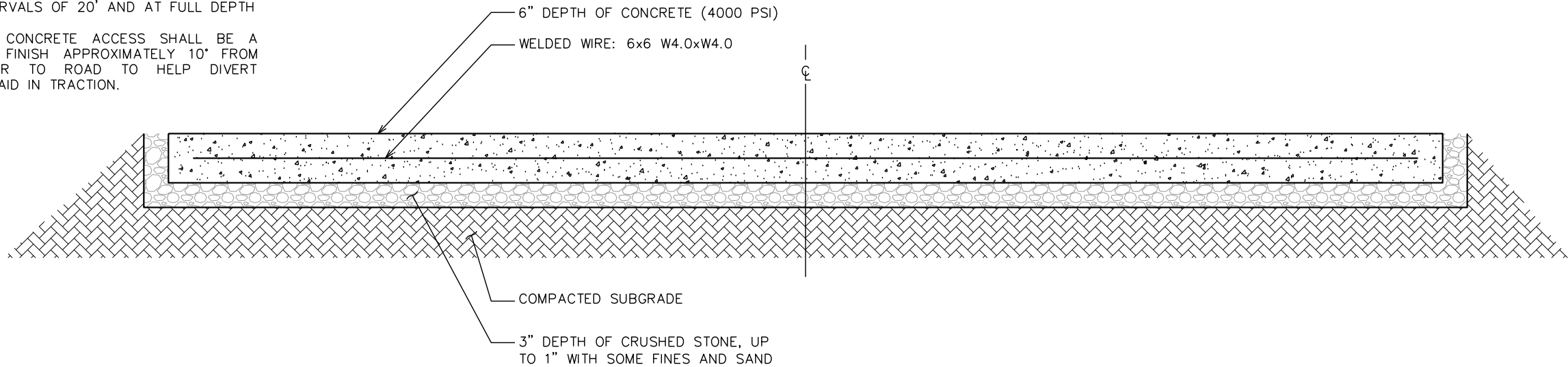
**2**

TEP #: 72596

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NOTES:

- 1. SUBGRADE AND FILL SHALL CONSIST OF CLEAN SOIL OR ROCK. NO DELETERIOUS MATERIALS OR ORGANICS TO BE USED.
- 2. REMOVE ALL TOP SOIL AND ORGANICS BEFORE COMMENCING ACCESS ROAD.
- 3. EXPANSION JOINS OF 1/2' THICK PREFORMED EXPANSION JOIN FILLER SHALL BE PLACED AT MAXIMUM INTERVALS OF 20' AND AT FULL DEPTH
- 4. SURFACE OF CONCRETE ACCESS SHALL BE A HEAVE RAKE FINISH APPROXIMATELY 10' FROM PERPENDICULAR TO ROAD TO HELP DIVERT RUNOFF AND AID IN TRACTION.

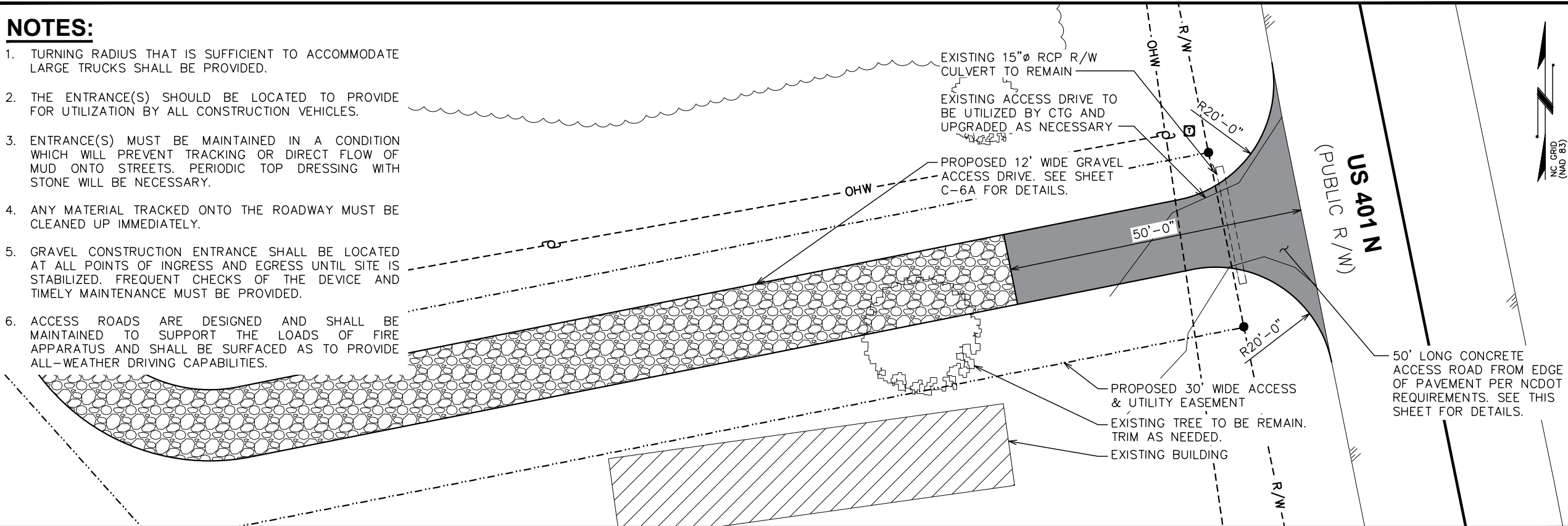


CONCRETE APRON CROSS SECTION

SCALE: N.T.S.

NOTES:

- 1. TURNING RADIUS THAT IS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS SHALL BE PROVIDED.
- 2. THE ENTRANCE(S) SHOULD BE LOCATED TO PROVIDE FOR UTILIZATION BY ALL CONSTRUCTION VEHICLES.
- 3. ENTRANCE(S) MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOP DRESSING WITH STONE WILL BE NECESSARY.
- 4. ANY MATERIAL TRACKED ONTO THE ROADWAY MUST BE CLEANED UP IMMEDIATELY.
- 5. GRAVEL CONSTRUCTION ENTRANCE SHALL BE LOCATED AT ALL POINTS OF INGRESS AND EGRESS UNTIL SITE IS STABILIZED. FREQUENT CHECKS OF THE DEVICE AND TIMELY MAINTENANCE MUST BE PROVIDED.
- 6. ACCESS ROADS ARE DESIGNED AND SHALL BE MAINTAINED TO SUPPORT THE LOADS OF FIRE APPARATUS AND SHALL BE SURFACED AS TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES.



DRIVEWAY APRON DETAIL

SCALE: N.T.S.

PLANS PREPARED FOR:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

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**HWY 401 KIPLING**  
**ID: CTGI-NC 0010023**  
4921 US-401  
FUQUAY VARINA, NC 27526  
(HARNETT COUNTY)

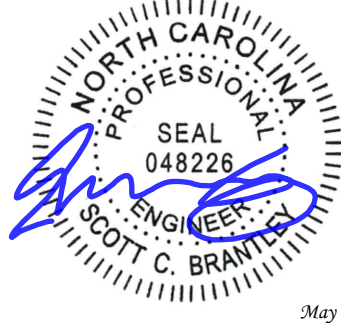
PLANS PREPARED BY:



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OFFICE: (919) 661-6351  
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N.C. LICENSE # P-1403

SEAL:



|     |          |              |
|-----|----------|--------------|
| 3   | 05-02-25 | CONSTRUCTION |
| 2   | 01-21-25 | CONSTRUCTION |
| 1   | 12-16-24 | CONSTRUCTION |
| 0   | 11-27-24 | CONSTRUCTION |
| REV | DATE     | ISSUED FOR:  |

DRAWN BY: SAB | CHECKED BY: DAO

SHEET TITLE:  
**CONCRETE DRIVEWAY  
DETAILS**

|                              |                                       |
|------------------------------|---------------------------------------|
| SHEET NUMBER:<br><b>C-6B</b> | REVISION:<br><b>3</b><br>TEP #: 72596 |
|------------------------------|---------------------------------------|

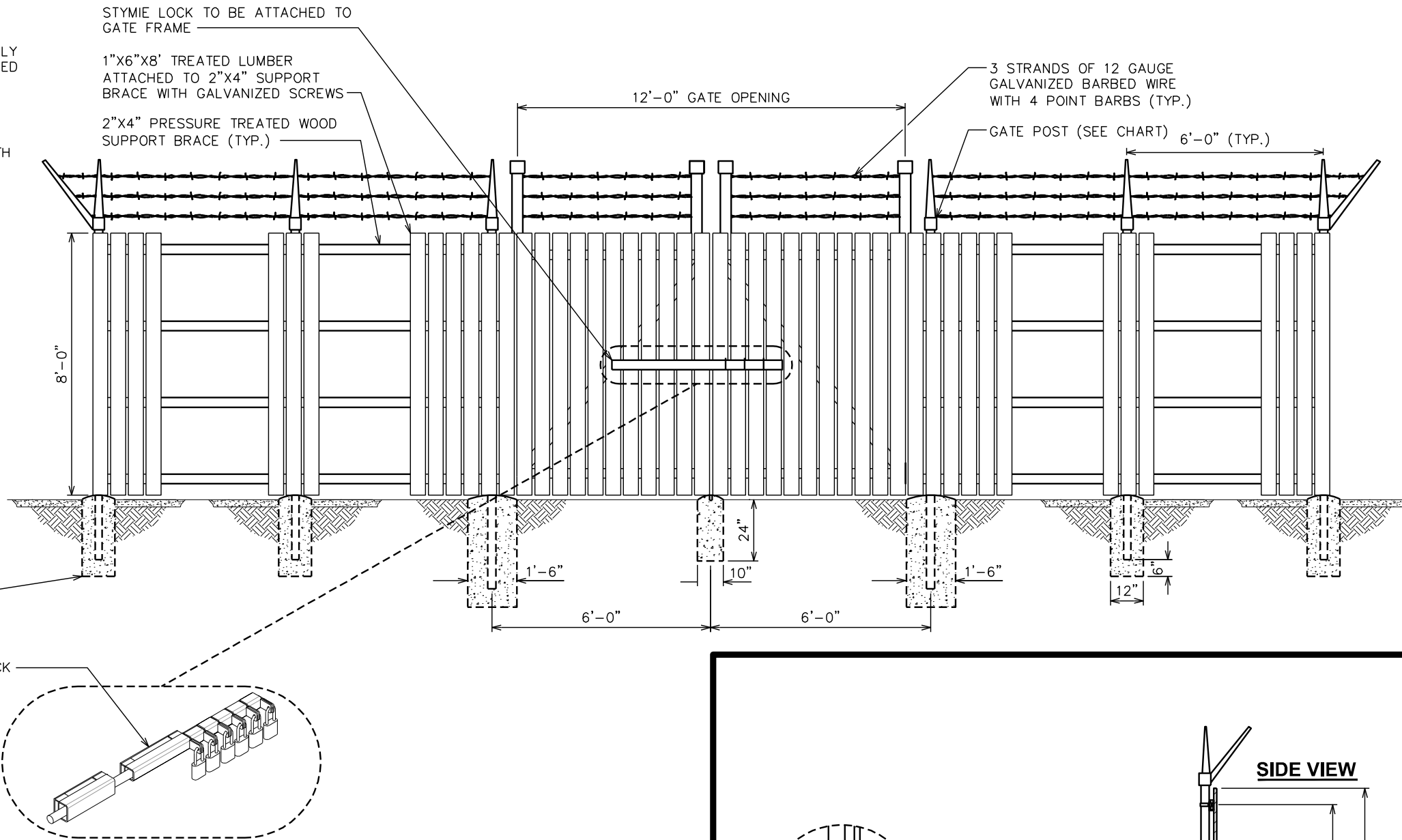


FENCE NOTE:

FENCE TO BE MAINTAINED BY CTGI. ONLY TREATED LUMBER AND HOT DIPPED GALVANIZED STEEL SCREWS ARE TO BE USED.

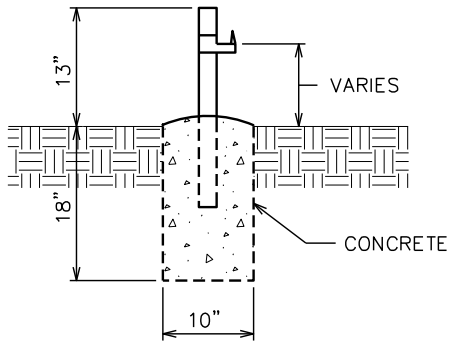
DRAWING NOTES:

- 1 1x6 TREATED WOOD. ATTACH TO 2x4'S WITH HOT DIPPED GALVANIZED STEEL SCREWS.
- 2 2x4 TREATED WOOD. ATTACH TO GALVANIZED FENCE POST WITH SUPPORT BRACKET AND 3/8"Ø X 1" LAG BOLT (TYP.)
- 3 GALVANIZED FENCE POST
- 4 CONTRACTOR TO STAIN TREATED LUMBER TO MATCH TOWER COLOR-BROWN OR PURCHASE PRE-STAINED TREATED LUMBER TO MATCH TOWER COLOR.



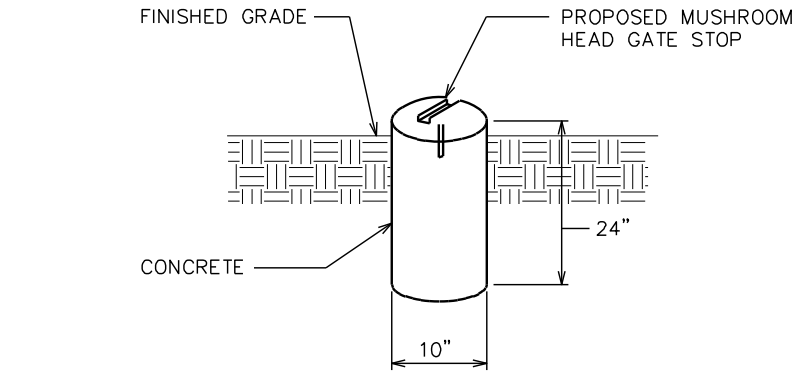
TYPICAL FENCE ELEVATION

SCALE: N.T.S.



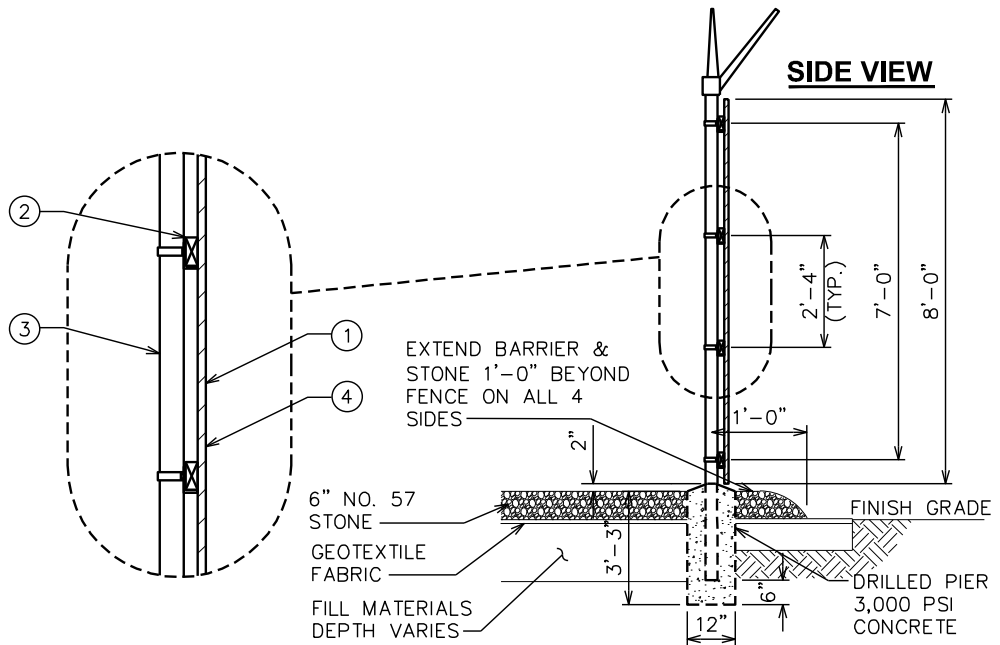
GATE STOP / KEEPER DETAIL

SCALE: N.T.S.



CENTER STOP MALLEABLE MUSHROOM DETAIL

SCALE: N.T.S.



FENCE DETAIL (SIDE VIEW)

SCALE: N.T.S.

PLANS PREPARED FOR:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

**SITE NAME:**  
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**ID: CTGI-NC 0010023**  
4921 US-401  
FUQUAY VARINA, NC 27526  
(HARNETT COUNTY)

PLANS PREPARED BY:



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N.C. LICENSE # P-1403

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DRAWN BY: SAB CHECKED BY: DAO

SHEET TITLE:

**FENCE  
DETAILS**

SHEET NUMBER:

**C-7**

REVISION:

**2**

TEP #: 72596

NOTES:

1. SIGNS SHALL BE FABRICATED FROM CORROSION RESISTANT PRESSED METAL, AND PAINTED WITH LONG LASTING UV RESISTANT COATINGS.
2. CTGI SHALL SUPPLY THESE VARIOUS SIGNS TO BE SENT TO GC CONSTRUCTING THE SITE TO INSTALL ON FRONT COMPOUND GATE WITH STAINLESS STEEL SCREWS.



Qty (x1)

- CTGI SHALL VERIFY ADDRESS PRIOR TO ORDERING SIGNAGE.
- RED LETTERS (ALL OTHERS BLACK)
- CTGI TO COORDINATE NUMBERS (TYP)



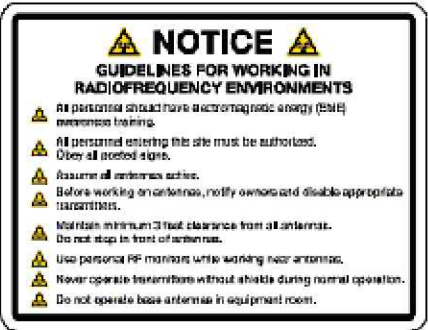
Qty (x1)



Qty (x1)



Qty (x1)



Qty (x1)

PLANS PREPARED FOR:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

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FUQUAY VARINA, NC 27526  
(HARNETT COUNTY)

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DRAWN BY: SAB CHECKED BY: DAO

SHEET TITLE:

**SIGNAGE DETAILS**

SHEET NUMBER:

**C-8**

REVISION:

**2**

TEP #: 72596

TYPICAL SIGNS AND SPECIFICATIONS

SCALE: N.T.S.

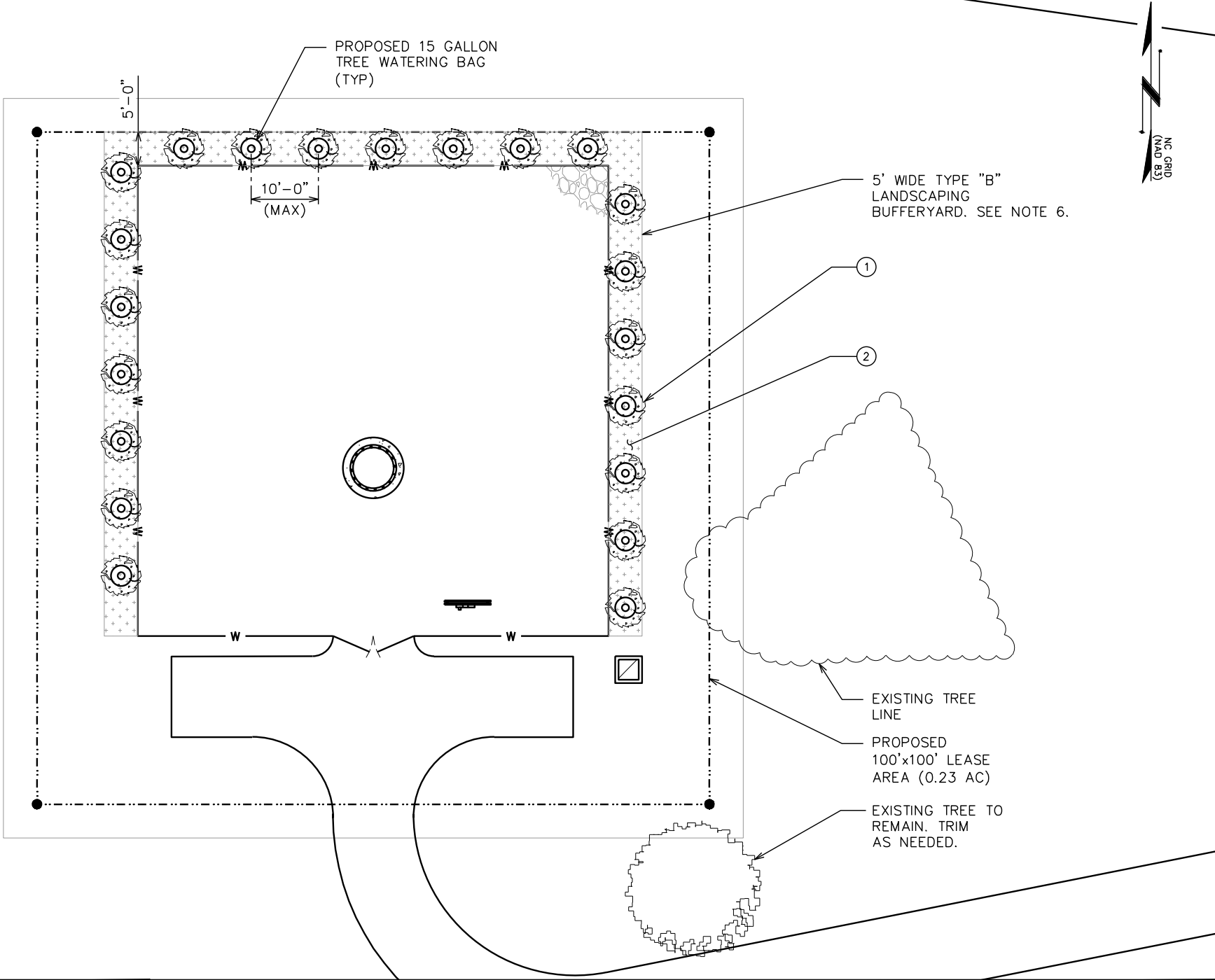
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PLANTING SCHEDULE

| ITEM            | QTY. | BOTANICAL NAME    | COMMON NAME         | HEIGHT @ PLANTING | HEIGHT @ 3 YRS. | SPREAD/ CALIPER | SPACING       | REMARKS                                                                                             |
|-----------------|------|-------------------|---------------------|-------------------|-----------------|-----------------|---------------|-----------------------------------------------------------------------------------------------------|
| EVERGREEN TREES |      |                   |                     |                   |                 |                 |               |                                                                                                     |
| ①               | 21   | (Myrlca Cerifera) | SOUTHERN WAX MYRTLE | 6'-0" (MIN.)      | -               | 2" (MIN.)       | 10'-0" (MAX.) | SHOWN AS         |
| MULCH           |      |                   |                     |                   |                 |                 |               |                                                                                                     |
| ②               | -    | -                 | MULCH               | -                 | -               | -               | -             | MULCH SHALL HAVE A MINIMUM DEPTH OF 2 INCHES AND PINE STRAW SHALL HAVE A MINIMUM DEPTH OF 4 INCHES. |

LANDSCAPING NOTES:

1. TOPSOIL TO BE PROVIDED BY SITE CONTRACTOR IN ROUGH GRADE TO WITHIN 1" OF FINISH GRADE
2. EACH PLANT TO BE FREE FROM DISEASE, INSECT INFESTATION, AND MECHANICAL INJURIES, AND IN ALL RESPECTS BE SUITABLE FOR FIELD PLANTING.
3. ALL PLANTS TO BE FULLY GUARANTEED (LABOR AND MATERIALS) FOR A PERIOD OF NOT LESS THAN ONE (1) YEAR FROM DATE OF INSTALLATION.
4. ALL PLANTS SHALL CONFORM TO THE AMERICAN STANDARD FOR NURSERY STOCK, ANSI Z60.1-1973 IN REGARD TO SIZING, GROWING, AND B&B SPECIFICATIONS.
5. THE CONTRACTOR SHALL PROTECT ALL EXISTING TREES AND SHRUBS WITHIN THE CONSTRUCTION AREA IDENTIFIED AS "TO REMAIN" FROM DAMAGE BY EQUIPMENT AND CONSTRUCTION ACTIVITIES.
6. LANDSCAPING BUFFERYARD TYPE IS DETERMINED BY THE PROPOSED LAND USE TYPE AS WELL AS THE LAND USE TYPE OF ADJACENT PARCELS. BY IDENTIFYING THE PROPOSED LAND USE AS COMMUNICATION TOWER AND THE ADJACENT LAND USE AS RESIDENTIAL/AGRICULTURE, IT CAN BE DETERMINED THAT A TYPE "B" BUFFERYARD IS REQUIRED PER SECTION 9.1.7. OF THE HARNETT COUNTY ORDINANCE.
7. PURPOSE OF THIS PLAN IS TO SUPPLEMENT EXISTING VEGETATION. DO NOT REMOVE EXISTING TREES UNAFFECTED BY COMPOUND CONSTRUCTION.



PLANS PREPARED FOR:



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4921 US-401  
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DRAWN BY: SAB    CHECKED BY: DAO

SHEET TITLE:

**LANDSCAPING PLAN**

SHEET NUMBER:

**L-1**

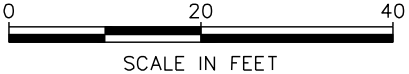
REVISION:

**2**

TEP #: 72596

LANDSCAPING PLAN

FULL SCALE: 1" = 40' (22"x34")  
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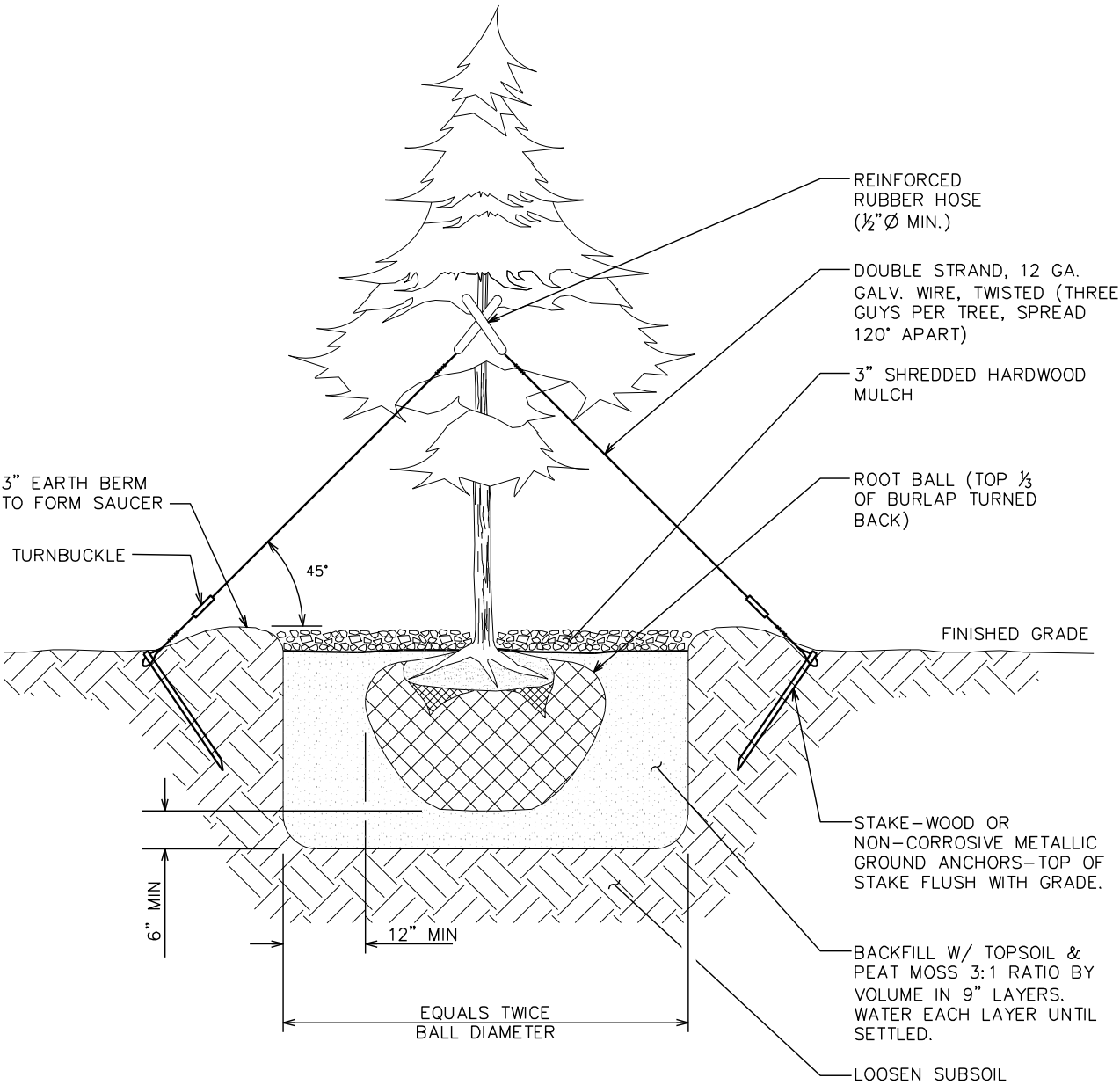
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NOTE:

SEE LANDSCAPING NOTES ON L-1



LANDSCAPING DETAILS

SCALE: N.T.S.

PLANS PREPARED FOR:



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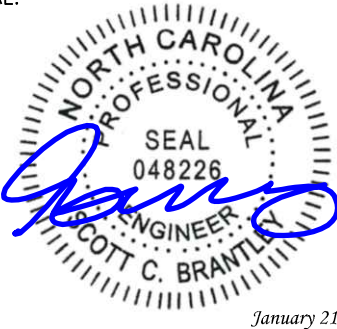
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DRAWN BY: SAB    CHECKED BY: DAO

SHEET TITLE:

**LANDSCAPING  
DETAILS**

SHEET NUMBER:

**L-2**

REVISION:

**2**

TEP #: 72596

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SCOPE:

1. PROVIDE LABOR, MATERIALS, INSPECTION, AND TESTING TO PROVIDE CODE COMPLIANCE FOR ELECTRIC, TELEPHONE, AND GROUNDING/LIGHTNING SYSTEMS.

CODES:

1. THE INSTALLATION SHALL COMPLY WITH APPLICABLE LAWS AND CODES. THESE INCLUDE BUT ARE NOT LIMITED TO THE LATEST ADOPTED EDITIONS OF:
- A. THE NATIONAL ELECTRICAL SAFETY CODE

B. THE NATIONAL ELECTRIC CODE – NFPA–70

C. REGULATIONS OF THE SERVING UTILITY COMPANY

D. LOCAL AND STATE AMENDMENTS

E. THE INTERNATIONAL ELECTRIC CODE – IEC (WHERE APPLICABLE)
2. PERMITS REQUIRED SHALL BE OBTAINED BY THE CONTRACTOR.
3. AFTER COMPLETION AND FINAL INSPECTION OF THE WORK, THE OWNER SHALL BE FURNISHED A CERTIFICATE OF COMPLETION AND APPROVAL.

TESTING:

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

GUARANTEE:

1. 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 AND WITHOUT EXPENSE TO THE OWNER.
2. THE WARRANTEE CERTIFICATES & GUARANTEES FURNISHED BY THE MANUFACTURERS SHALL BE TURNED OVER TO THE OWNER.

UTILITY CO-ORDINATION:

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

EXAMINATION OF SITE:

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

CUTTING, PATCHING AND EXCAVATION:

1. COORDINATION OF SLEEVES, CHASES, ETC., BETWEEN SUBCONTRACTORS WILL BE REQUIRED PRIOR TO THE CONSTRUCTION OF ANY PORTION OF THE WORK. CUTTING AND PATCHING OF WALLS, PARTITIONS, FLOORS, AND CHASES IN CONCRETE, WOOD, STEEL OR MASONRY SHALL BE DONE AS PROVIDED ON THE DRAWINGS.
2. NECESSARY EXCAVATIONS AND BACKFILLING INCIDENTAL TO THE ELECTRICAL WORK SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWING.
3. SEAL PENETRATIONS THROUGH RATED WALLS, FLOORS, ETC., WITH APPROVED METHOD AS LISTED BY UL.

RACEWAYS / CONDUITS GENERAL:

1. CONDUCTORS SHALL BE INSTALLED IN LISTED RACEWAYS. CONDUIT SHALL BE RIGID STEEL, EMT, SCH40 PVC, OR SCH80PVC AS INDICATED ON THE DRAWINGS. THE RACEWAY SYSTEM SHALL BE COMPLETE COMPLETE BEFORE INSTALLING CONDUCTORS.
2. EXTERIOR RACEWAYS AND GROUNDING SLEEVES SHALL BE SEALED AT POINTS OF ENTRANCE AND EXIT. THE RACEWAY SYSTEM SHALL BE BONDED PER NEC.

EXTERIOR CONDUIT:

1. EXPOSED CONDUIT SHALL BE NEATLY INSTALLED AND RUN PARALLEL OR PERPENDICULAR TO STRUCTURAL ELEMENTS. SUPPORTS AND MOUNTING HARDWARE SHALL BE HOT DIPPED GALVANIZED STEEL.
2. THE CONDUIT SHALL BE RIGID STEEL AT GRADE TRANSITIONS OR WHERE EXPOSED TO DAMAGE.
3. UNDERGROUND CONDUITS SHALL BE RIGID STEEL, SCH40 PVC, OR SCH80 PVC AS INDICATED ON THE DRAWINGS.
4. BURIAL DEPTH OF CONDUITS SHALL BE AS REQUIRED BY CODE FOR EACH SPECIFIC CONDUIT TYPE AND APPLICATION, BUT SHALL NOT BE LESS THAN THE FROST DEPTH AT THE SITE.
5. CONDUIT ROUTES ARE SCHEMATIC. CONTRACTOR SHALL FIELD VERIFY ROUTES BEFORE BID. COORDINATE ROUTE WITH WIRELESS CARRIER AND/OR BUILDING OWNER.

INTERIOR CONDUIT:

1. CONCEALED CONDUIT IN WALLS OR INTERIOR SPACES ABOVE GRADE MAY BE EMT OR PVC.
2. CONDUIT RUNS SHALL USE APPROVED COUPLINGS AND CONNECTORS. PROVIDE INSULATED BUSHING FOR ALL CONDUIT TERMINATIONS. CONDUIT RUNS IN A WET LOCATION SHALL HAVE WATERPROOF FITTINGS.
3. PROVIDE SUPPORTS FOR CONDUITS IN ACCORDANCE WITH NEC REQUIREMENTS. CONDUITS SHALL BE SIZED AS REQUIRED BY NEC.

EQUIPMENT:

1. DISCONNECT SWITCHES SHALL BE SERVICE ENTRANCE RATED, HEAVY DUTY TYPE.
2. CONTRACTOR SHALL VERIFY MAXIMUM AVAILABLE FAULT CURRENT AND COORDINATE INSTALLATION WITH THE LOCAL UTILITY BEFORE STARTING WORK. CONTRACTOR WILL VERIFY THAT EXISTING CIRCUIT BREAKERS ARE RATED FOR MORE THAN AVAILABLE FAULT CURRENT AND REPLACE AS NECESSARY.
3. NEW CIRCUIT BREAKERS SHALL BE RATED TO WITHSTAND THE MAXIMUM AVAILABLE FAULT CURRENT AS DETERMINED BY THE LOCAL UTILITY.

CONDUCTORS:

1. FURNISH AND INSTALL CONDUCTORS SPECIFIED IN THE DRAWNGS. CONDUCTORS SHALL BE COPPER AND SHALL HAVE TYPE THWN (MIN) (75° C) INSULATION, RATED FOR 600 VOLTS.
2. THE USE OF ALUMINUM CONDUCTORS SHALL BE LIMITED TO THE SERVICE FEEDERS INSTALLED BY THE UTILITY.
3. CONDUCTORS SHALL BE PROVIDED AND INSTALLED AS FOLLOWS:
- A. MINIMUM WIRE SIZE SHALL BE #12 AWG.

B. CONDUCTORS SIZE #8 AND LARGER SHALL BE STRANDED. CONDUCTORS SIZED #10 AND #12 MAY BE SOLID OR STRANDED.

C. CONNECTION FOR #10 AWG #12 AWG SHALL BE BY TWISTING TIGHT AND INSTALLING INSULATED PRESSURE OR WIRE NUT CONNECTIONS.

D. CONNECTION FOR #8 AWG AND LARGER SHALL BE BY USE OF STEEL CRIMP–ON SLEEVES WITH NYLON INSULATOR.
3. CONDUCTORS SHALL BE COLOR CODED IN ACCORDANCE WITH NEC STANDARDS.

UL COMPLIANCE:

1. ELECTRICAL MATERIALS, DEVICES, CONDUCTORS, APPLIANCES, AND EQUIPMENT SHALL BE LABELED/LISTED BY UL OR ACCEPTED BY JURISDICTION (I.E., LOCAL COUNTY OR STATE) APPROVED THIRD PARTY TESTING AGENCY.

GROUNDING:

1. 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 AT A SINGLE POINT.
2. PROVIDE GROUND CONDUCTOR IN RACEWAYS PER NEC.
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, RADIO EQUIPMENT MANUFACTURERS, AND MOTOROLA R56 (AS APPLICABLE).

| ABBREVIATIONS AND LEGEND |                                 |                                      |
|--------------------------|---------------------------------|--------------------------------------|
| A                        | – AMPERE                        | PNLBD – PANELBOARD                   |
| AFG                      | – ABOVE FINISHED GRADE          | PVC – RIGID NON–METALLIC CONDUIT     |
| ATS                      | – AUTOMATIC TRANSFER SWITCH     | RGS – RIGID GALVANIZED STEEL CONDUIT |
| AWG                      | – AMERICAN WIRE GAUGE           | SW – SWITCH                          |
| BCW                      | – BARE COPPER WIRE              | TGB – TOWER GROUND BAR               |
| BFG                      | – BELOW FINISHED GRADE          | UL – UNDERWRITERS LABORATORIES       |
| BKR                      | – BREAKER                       | V – VOLTAGE                          |
| C                        | – CONDUIT                       | W – WATTS                            |
| CKT                      | – CIRCUIT                       | XFMR – TRANSFORMER                   |
| DISC                     | – DISCONNECT                    | XMTR – TRANSMITTER                   |
| EGR                      | – EXTERNAL GROUND RING          |                                      |
| 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        |                                      |
| PCS                      | – PERSONAL COMMUNICATION SYSTEM |                                      |
| PH                       | – PHASE                         |                                      |
| PNL                      | – PANEL                         |                                      |

|       |                                                                                       |      |                                              |
|-------|---------------------------------------------------------------------------------------|------|----------------------------------------------|
| ----  | 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:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

**SITE NAME:**  
**HWY 401 KIPLING**  
**ID: CTGI-NC 0010023**  
4921 US–401  
FUQUAY VARINA, NC 27526  
(HARNETT COUNTY)

PLANS PREPARED BY:



**TEP OPCO, LLC**  
326 TRYON ROAD  
RALEIGH, NC 27603-3530  
OFFICE: (919) 661-6351  
www.tepgroup.net

N.C. LICENSE # P-1403

SEAL:



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| 2   | 01-21-25 | CONSTRUCTION |
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| REV | DATE     | ISSUED FOR:  |

DRAWN BY: SAB    CHECKED BY: DAO

SHEET TITLE:

**ELECTRICAL**  
**NOTES**

SHEET NUMBER:

**E-1**

REVISION:

**2**

TEP #: 72596

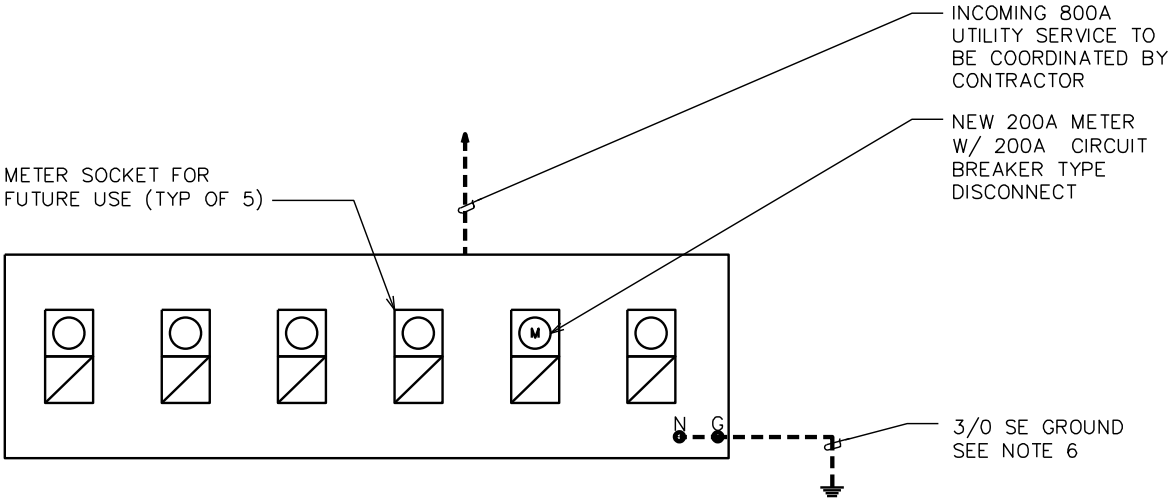
THIS IS A FAMILY OF COMPANIES LICENSED TO PROVIDE DIFFERENT SERVICES IN DIFFERENT JURISDICTIONS. OPERATING ON THE JURISDICTION OF PROFESSIONAL ENGINEERING AND SURVEYING SERVICES ARE PROVIDED BY TEP OPCO LLC, A DELAWARE LIMITED LIABILITY COMPANY. TEP ENGINEERING, LLC, A NORTH CAROLINA PROFESSIONAL LIMITED LIABILITY COMPANY, OR W&H ENGINEERING, LLC, A NEW YORK PROFESSIONAL LIMITED LIABILITY COMPANY. GENERAL CONTRACTOR SERVICES ARE PROVIDED BY TEP OPCO LLC, A DELAWARE LIMITED LIABILITY COMPANY. WE ACQUIRE THE REQUISITE LICENSES IN EACH STATE. ADDITIONAL INFORMATION CAN BE OBTAINED FROM THE COMPANY.

ONE-LINE DIAGRAM NOTE:

ELECTRICAL SERVICE SHALL BE 800A, 240/120V, 1Ø, 3W.

NOTES:

1. CONTRACTOR SHALL VERIFY AVAILABLE FAULT CURRENT WITH POWER COMPANY AND ENSURE ALL ELECTRICAL EQUIPMENT IS SUITABLE FOR AVAILABLE FAULT CURRENT.
2. CONTRACTOR SHALL COORDINATE UTILITY SERVICES WITH LOCAL UTILITY COMPANIES. VERIFY ALL REQUIREMENTS WITH UTILITY COMPANY STANDARDS.
3. ONE-LINE DIAGRAM IS SCHEMATIC ONLY AND NOT INDICATIVE OF ACTUAL EQUIPMENT LAYOUT.
4. CONTRACTOR SHALL PERMANENTLY LABEL METER SOCKET WITH SERVICE OWNER NAMEPLATE W/ ½" MINIMUM LETTERS.
5. ALL EQUIPMENT WILL HAVE A MINIMUM AIC OF 10KA. CONTRACTOR TO DETERMINE AVAILABLE FAULT CURRENT BEFORE ENERGIZING EQUIPMENT.
6. GROUNDING ELECTRODE CONDUCTOR IS SIZED FOR A COMMON NEUTRAL/GROUND.
7. CONDUCTOR SIZES BASED ON TYPICAL CONFIGURATIONS. CONTRACTOR WILL VERIFY WITH MANUFACTURER SPECIFICATIONS BEFORE ORDERING OR INSTALLING PARTS.



ONE LINE DIAGRAM

SCALE: N.T.S.

PLANS PREPARED FOR:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

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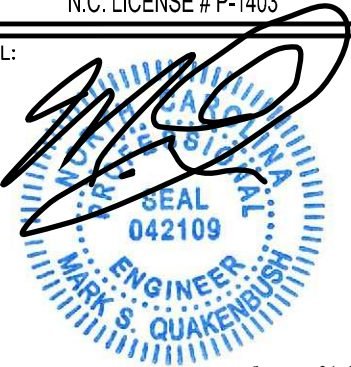
PLANS PREPARED BY:



**TEP OPCO, LLC**  
326 TRYON ROAD  
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OFFICE: (919) 661-6351  
www.tepgroup.net

N.C. LICENSE # P-1403

SEAL:



January 21, 2025

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DRAWN BY: SAB    CHECKED BY: DAO

SHEET TITLE:

**CTG POWER PANEL  
SCHEDULE & ONE LINE  
DIAGRAM**

SHEET NUMBER:

**E-2**

REVISION:

**2**

TEP #: 72596

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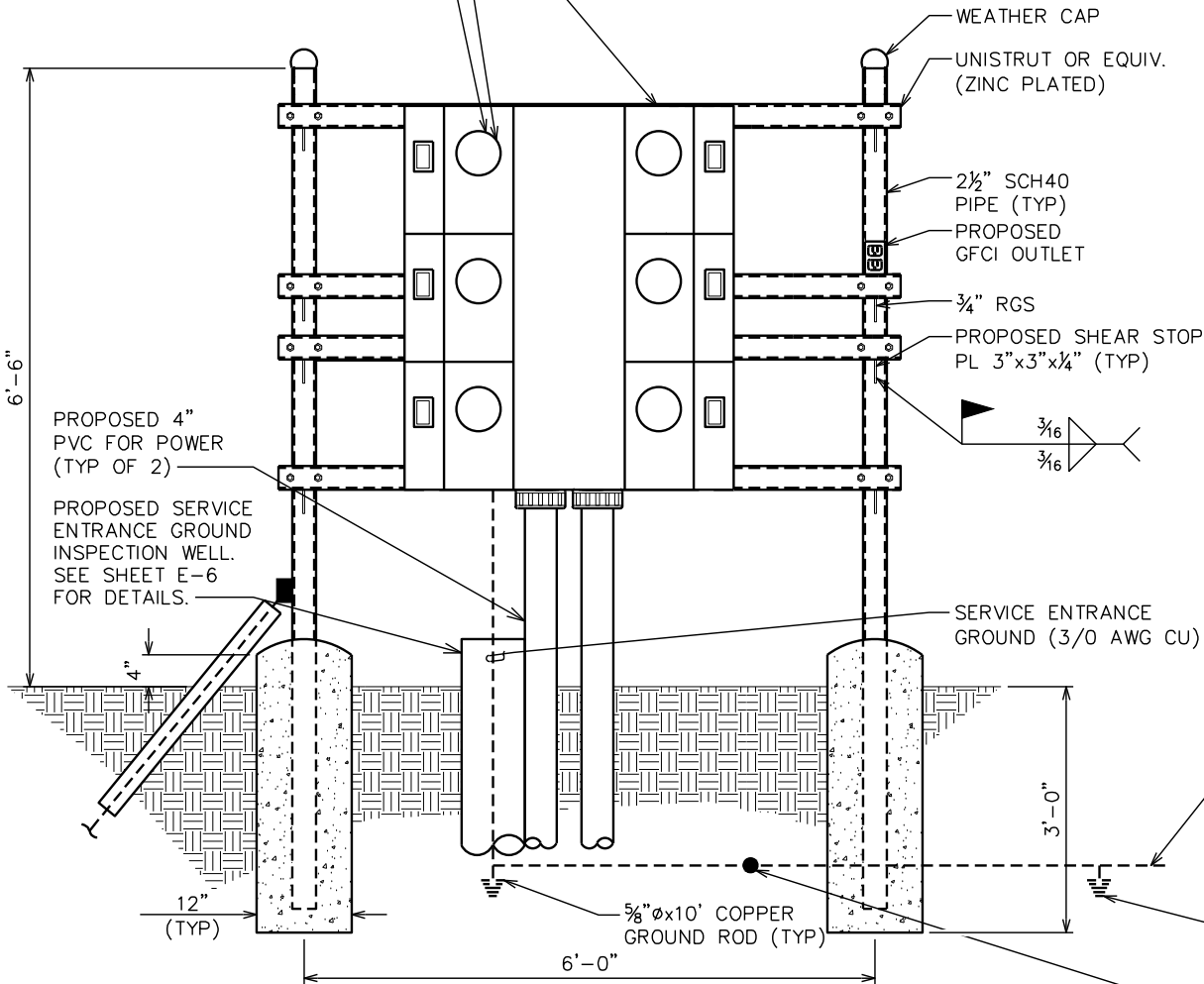
NOTES:

- 1
- WATT-HOUR SOCKETS/SERVICE DISCONNECT MEANS. UTILITY COMPANY TO PROVIDE METERS. PROVIDE IN ACCORDANCE WITH UTILITY COMPANY REQUIREMENTS.
- 2
- ALL NEW STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 G90 AFTER FABRICATION.
- 3
- FIELD ABRASIONS SHALL BE TOUCH UP PAINTED WITH ZINC RICH GALVANIZING REPAIR IN ACCORDANCE WITH ASTM A780.
- 4
- ALL EXPOSED ENDS OF CONDUIT SHALL HAVE WEATHERPROOF CAPS.
- 5
- PROVIDE 200LB. TEST PULL WIRES IN EACH TELEPHONE AND POWER CONDUIT. STUB CONDUITS INTO ENCLOSURE AND LABEL.
- 6
- THE POWER COMPANY SHALL TERMINATE THE POWER CABLES (SUPPLIED AND INSTALLED BY THE POWER COMPANY) AT THE UTILITY METERS LOCATED ON THE EQUIPMENT RACK.

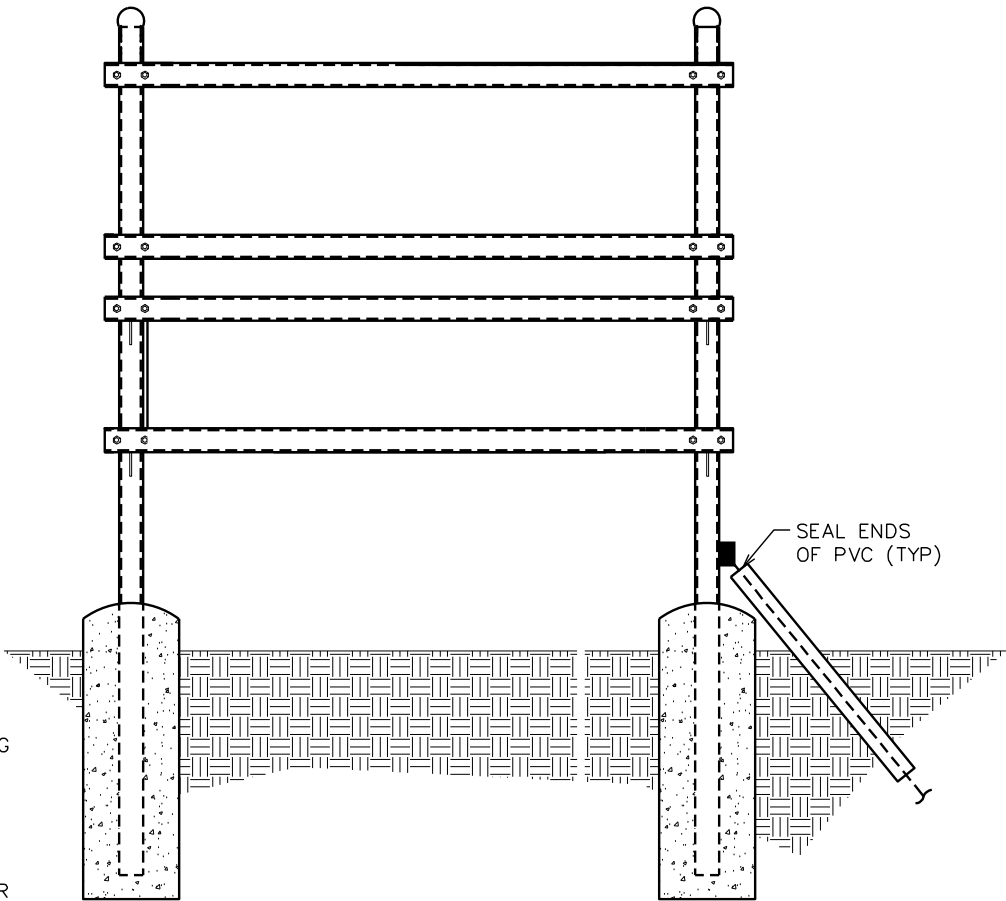
PROPOSED 6-GANG METER RACK.  
(6) 120/240V, 1Ø, 3 WIRE @ 200A  
EACH W/ CIRCUIT BREAKER TYPE  
DISCONNECT (120/240V BREAKERS  
@ 200A). SEE NOTE 1.

PROPOSED VERIZON 200A METER  
SOCKET & 200A CIRCUIT BREAKER  
TYPE DISCONNECT. SEE SHEET E-2  
FOR SERVICE INFO. SEE NOTE 1.

- 7
- CONTRACTOR TO VERIFY RACK DIMENSIONS AND STRUT SPACING RELATIVE TO METER BASE MODEL NUMBER.
- 8
- BREAKER AND CONDUCTOR SIZES ARE BASED ON TYPICAL CONFIGURATIONS. CONTRACTOR WILL VERIFY WITH MANUFACTURER SPECIFICATIONS BEFORE ORDERING OR INSTALLING PARTS.
- 9
- DUKE PROGRESS REQUIREMENTS WITH THE METER CENTER IS AS BELOW: OUR NEW STANDARD FOR OUR METER BASES TO BE RINGLESS AND ON THE MEG APPROVED LIST.



SERVICE RACK - FRONT



SERVICE RACK - REAR

CTG SERVICE RACK DETAILS

SCALE: N.T.S.

PLANS PREPARED FOR:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

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**ID: CTGI-NC 0010023**  
4921 US-401  
FUQUAY VARINA, NC 27526  
(HARNETT COUNTY)

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326 TRYON ROAD  
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N.C. LICENSE # P-1403

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DRAWN BY: SAB CHECKED BY: DAO

SHEET TITLE:

**CTG SERVICE  
RACK DETAILS**

SHEET NUMBER:

**E-3**

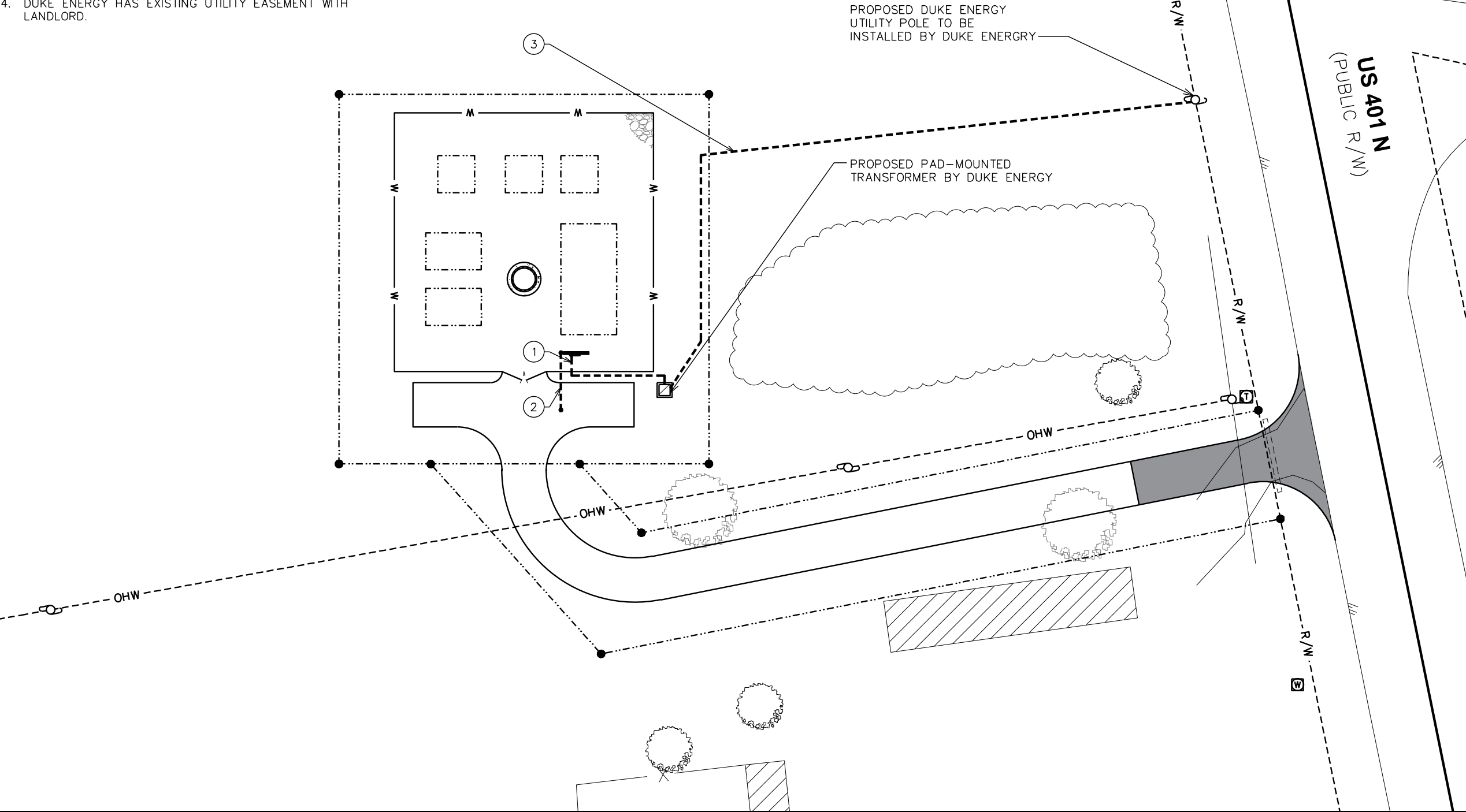
REVISION:

**2**

TEP #: 72596

DRAWING NOTES:

- 1. CONTRACTOR TO INSTALL (2) 3" CONDUIT W/ PULL CORDS (200 LBS. TEST) FROM METER BASE TO TRANSFORMER, UNLESS OTHERWISE DIRECTED BY LOCAL UTILITY.
- 2. CONTRACTOR SHALL RUN (2) 4" PVC CONDUIT WITH PULL CORDS 5' INSIDE COMPOUND/25' OUTSIDE OF COMPOUND (BEYOND THE TURNAROUND) AND CAP AND MARK WITH ORANGE REBAR CAP "FIBER".
- 3. PROPOSED UNDERGROUND POWER FROM POWER POLE TO TRANSFORMER TO BE PROVIDED BY DUKE ENERGY.
- 4. DUKE ENERGY HAS EXISTING UTILITY EASEMENT WITH LANDLORD.



ROUTING PLAN

FULL SCALE: 1" = 60' (22"x34")  
HALF SCALE: 1" = 30' (11"x17")  
SCALE IN FEET

PLANS PREPARED FOR:

**ctg**

GTGI LLC  
15720 BRIKHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

PROJECT INFORMATION:

**SITE NAME:**  
**HWY 401 KIPLING**  
**ID: CTGI-NC 0010023**

4921 US-401  
FUQUAY VARINA, NC 27526  
(HARNETT COUNTY)

PLANS PREPARED BY:

**TEP**

**TEP OPCO, LLC**  
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OFFICE: (919) 661-6351  
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N.C. LICENSE # P-1403

SEAL:

January 21, 2025

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DRAWN BY: SAB    CHECKED BY: DAO

SHEET TITLE:

**ROUTING PLAN**

|               |              |
|---------------|--------------|
| SHEET NUMBER: | REVISION:    |
| <b>E-4</b>    | <b>2</b>     |
|               | TEP #: 72596 |

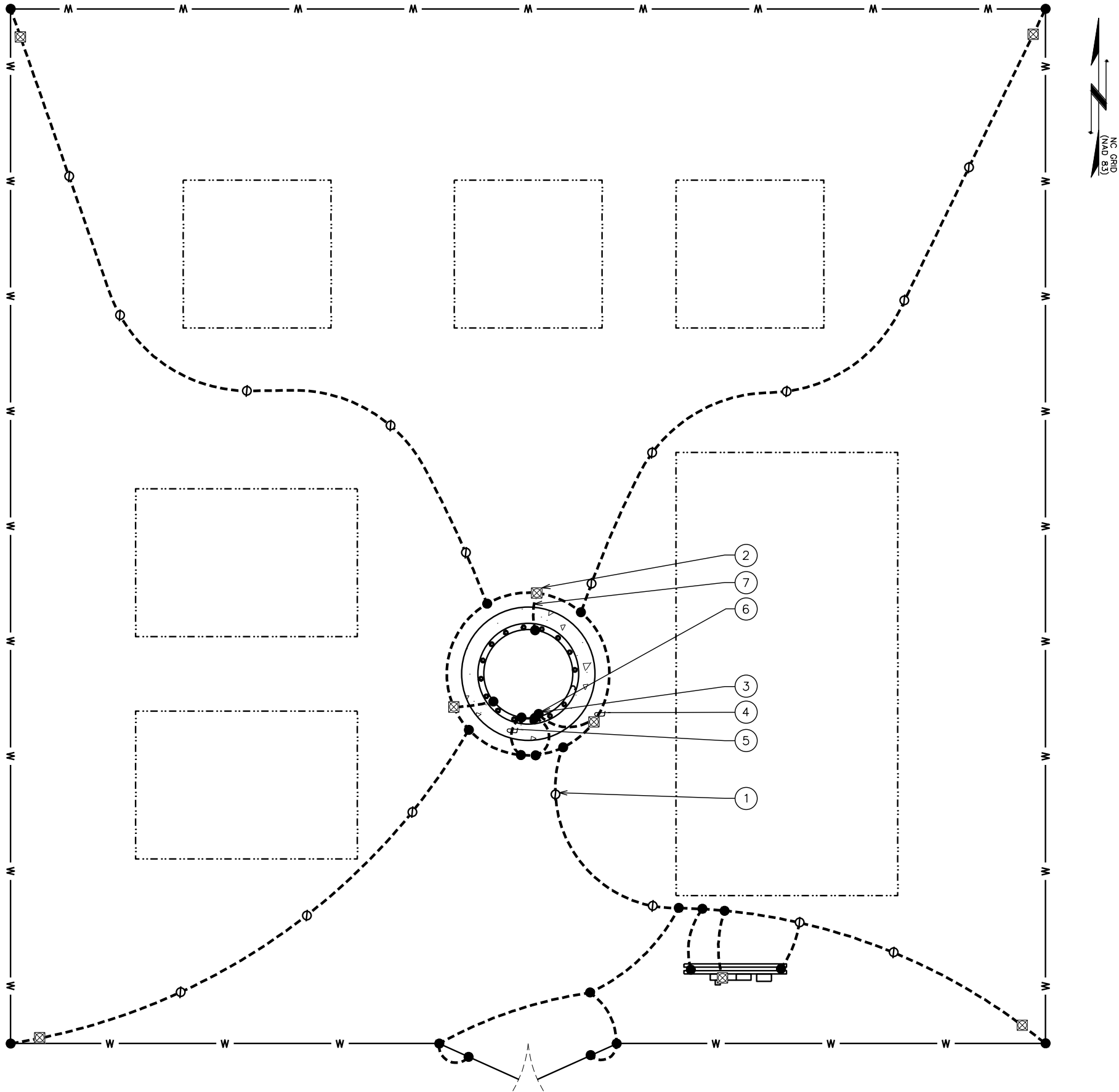
GROUNDING NOTES:

1. CONTRACTOR SHALL VERIFY THAT GROUNDING ELECTRODES SHALL BE CONNECTED IN A RING USING #2 TIN-PLATED SOLID GROUND WIRE. THE TOP OF THE GROUND RODS AND THE RING CONDUCTOR SHALL BE 30 INCHES BELOW FINISHED GRADE. GROUNDING ELECTRODES SHALL BE DRIVEN ON 20'-0" CENTERS (PROVIDE AND INSTALL AS REQUIRED. REQUIRED PER PLAN BELOW).
2. BONDING OF THE GROUNDED CONDUCTOR (NEUTRAL) AND THE GROUNDING CONDUCTOR SHALL BE AT THE SERVICE DISCONNECTING MEANS. BONDING JUMPER SHALL BE INSTALLED PER N.E.C. ARTICLE 250.30.
3. GROUND RING CONNECTION CONDUCTORS SHALL BE OF EQUAL LENGTH, MATERIAL, AND BONDING TECHNIQUE.
4. CONTRACTOR SHALL ENSURE GROUND RING IS WITHIN 12 TO 36 INCHES OF THE EQUIPMENT PAD. PROVIDE AND INSTALL GROUNDING CONNECTIONS SHOWN BELOW AS NEEDED PER EXISTING SITE GROUNDING SYSTEM. CONTRACTOR SHALL VERIFY EXISTING SITE GROUNDING CONDITIONS BEFORE STARTING WORK OR PURCHASING EQUIPMENT.
5. ALL DOWN CONDUCTORS MUST GO DOWN.
6. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER WHEN THE GROUNDING SYSTEM IS COMPLETE. THE CONSTRUCTION MANAGER SHALL INSPECT THE GROUNDING SYSTEM PRIOR TO BACKFILLING.
7. EXOTHERMIC PROCESS TO GROUND STAB ON TOWER LEG APPROXIMATELY 48" ABOVE TOP PLATE (TYP OF 3).
8. OFFSET GROUND ROD INSPECTION SLEEVE 12" FROM FENCE CORNER (TYP OF 4).
9. IF UNABLE TO DRIVE GROUND ROD VERTICALLY DUE TO ROCK, SURROUND ANCHOR RODS AND GROUND WIRES WITH ERICO-GEM (GROUND ENHANCEMENT MATERIAL) A MINIMUM OF 2 INCHES.
10. CONTRACTOR TO PERFORM FALL OF POTENTIAL MEG TEST BEFORE THE GROUNDING IS COVERED. IF NOT BELOW 5 OHMS CONTACT CONSTRUCTION MANAGER FOR DIRECTION. USE BOOLEAN EQUATION WITH THE DIAGONAL DIMENSION OF FENCE COMPOUND. USUALLY GO OUT 300'-400' AND GET 10 READINGS COMING IN 10% AT A TIME. DO NOT RUN PARALLEL TO OVERHEAD OR UNDERGROUND POWER/TELCO LINES. CAN CROSS ONCE PERPENDICULAR UNDER OVERHEAD OR OVER UNDERGROUND POWER LINES. PLOT ON LOGARITHMIC GRAPH FOR CLOSEOUTS.

DRAWING NOTES:

- 1 GROUND ROD 5/8"x10' LONG (TYP)
- 2 GROUND ROD WITH 8"Ø INSPECTION WELL W/ COVERS (TYP)
- 3 CADWELD (TYP)
- 4 PROPOSED TOWER GROUND RING
- 5 GROUND LEAD FROM TOWER TO TOWER GROUND RING
- 6 TOWER LEG MOUNTED GROUND BAR
- 7 PROPOSED GROUND LEAD FROM INSPECTION TEST WELL TO GROUNDING STABS LOCATED ON TOWER AT 48" ABOVE TOP OF BASE PLATE THROUGH 1" PVC

TOWER GROUNDING PLAN



PLANS PREPARED FOR:



GTGI LLC  
15720 BRIXHAM HILL AVE., STE 300  
CHARLOTTE, NC 28277

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SHEET TITLE:

**GROUNDING PLAN**

SHEET NUMBER:

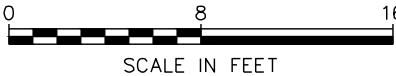
**E-5**

REVISION:

**2**

TEP #: 72596

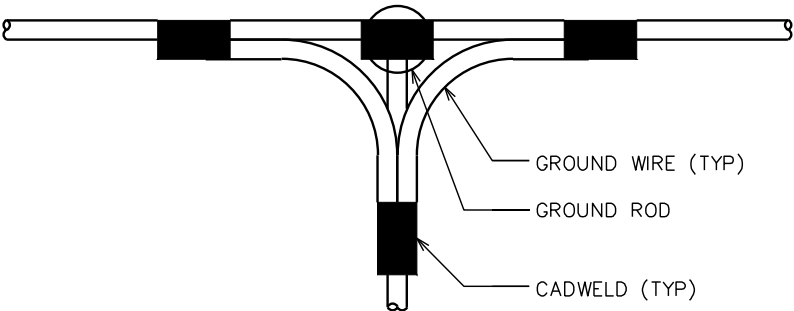
FULL SCALE: 1/4" = 1'-0" (22"x34")  
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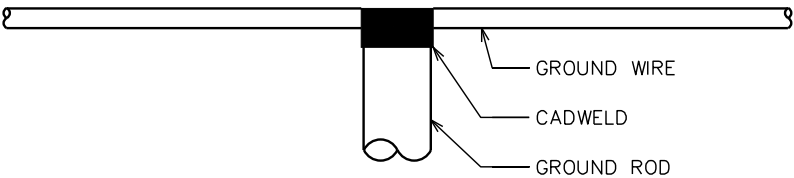


NOTE:

MINIMUM SPACING OF 12" BETWEEN ALL CADWELDS



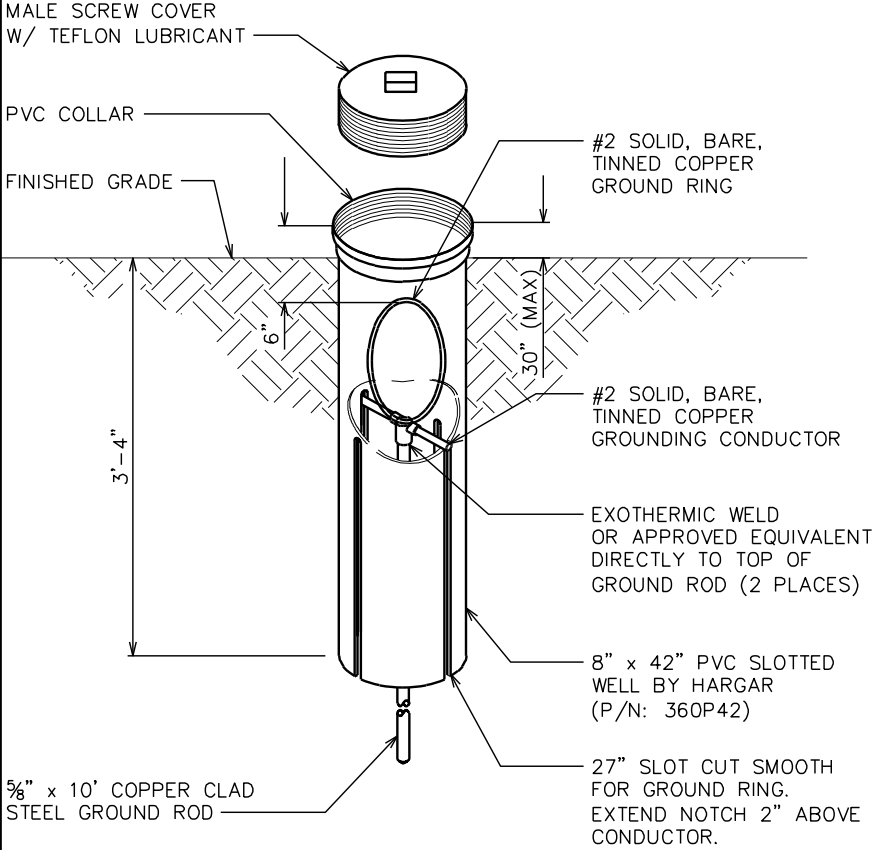
TOP VIEW



SIDE VIEW

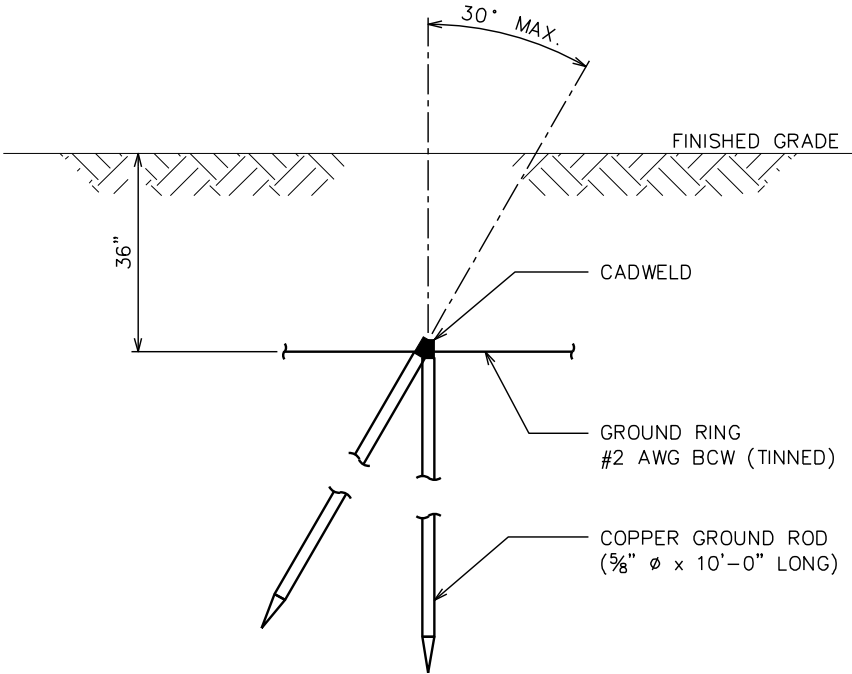
CADWELD GROUNDING DETAIL

SCALE: N.T.S.



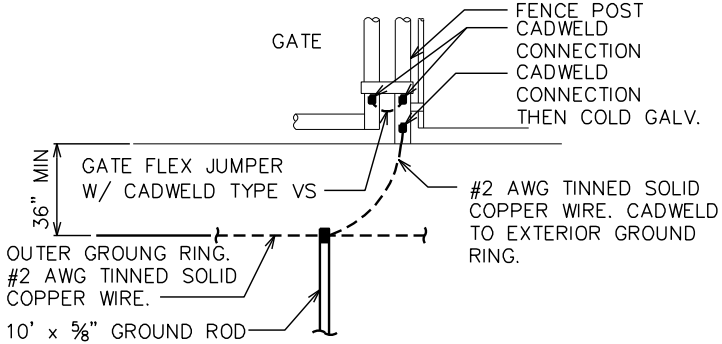
GROUND ROD W/ INSPECTION WELL DETAIL

SCALE: N.T.S.



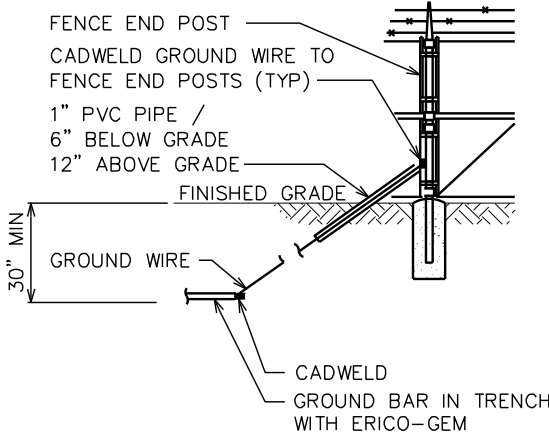
COPPER-CLAD STEEL GROUND ROD DETAIL

SCALE: N.T.S.



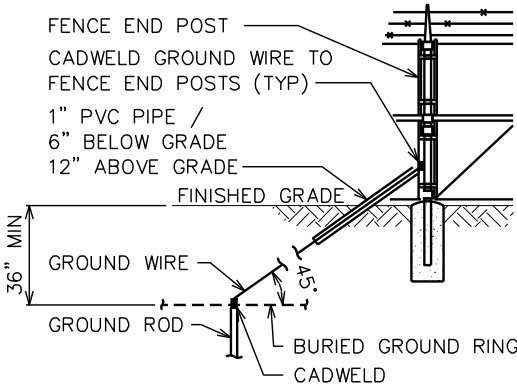
TYP. GATE POST GROUNDING DETAIL

SCALE: N.T.S.



ALT. FENCE GROUNDING DETAIL

SCALE: N.T.S.



FENCE GROUNDING DETAIL

SCALE: N.T.S.

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|-----|----------|--------------|
| 2   | 01-21-25 | CONSTRUCTION |
| 1   | 12-16-24 | CONSTRUCTION |
| 0   | 11-27-24 | CONSTRUCTION |
| B   | 08-21-24 | PRELIMINARY  |
| REV | DATE     | ISSUED FOR:  |

DRAWN BY: SAB CHECKED BY: DAO

SHEET TITLE:

**GROUNDING**  
**DETAILS**

SHEET NUMBER: E-6 REVISION: 2

TEP #: 72596

NOT USED

SCALE: N.T.S.

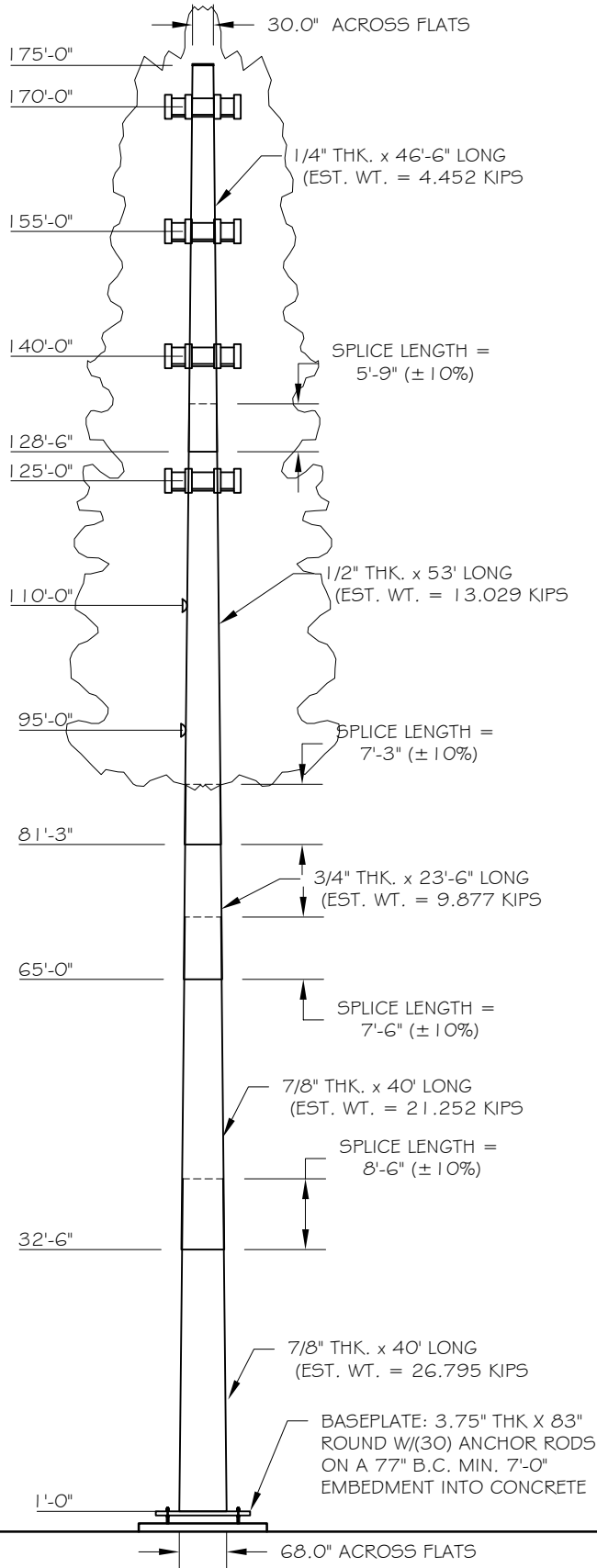
THIS IS A FAMILY OF COMPANIES LICENSED TO PROVIDE DIFFERENT SERVICES IN DIFFERENT JURISDICTIONS. OPERATING ON THE JURISDICTION OF PROFESSIONAL ENGINEERING AND SURVEYING SERVICES ARE PROVIDED BY TEP OPCO, LLC, A DELAWARE LIMITED LIABILITY COMPANY. TEP ENGINEERING, LLC, A NORTH CAROLINA PROFESSIONAL LIMITED LIABILITY COMPANY, OR W&H ENGINEERING, LLC, A NEW YORK PROFESSIONAL LIMITED LIABILITY COMPANY. GENERAL CONTRACTOR SERVICES ARE PROVIDED BY TEP OPCO, LLC, A DELAWARE LIMITED LIABILITY COMPANY. WE ACQUIRE THE REQUISITE LICENSES IN EACH STATE. ADDITIONAL INFORMATION CAN BE OBTAINED FROM THE COMPANY.



# TAPP

2427 Kelly Lane  
Houston, Texas 77066  
81-444-8277

QUALITY STEEL POLES. DELIVERED.



|               |                                             |
|---------------|---------------------------------------------|
| Page 1 of 2   | Job Number: 23524-768                       |
| Eng: MFP      | Customer Ref: TP-24230                      |
|               | Date: 3/5/2025                              |
| Structure:    | 175-FT PINE TREE MONOPOLE                   |
| Site:         | CTG-NC-0010023 HWY 401 KIPLING              |
| Location:     | HARNETT CO., NC / 35°27'25.6", -78°49'50.2" |
| Owner:        | CTG                                         |
| Revision No.: | Revision Date:                              |

## DESIGN

|                                                      |               |                 |              |
|------------------------------------------------------|---------------|-----------------|--------------|
| Building Code: 2024 NORTH CAROLINA BUILDING CODE     |               |                 |              |
| Design Standard: TIA-222-H                           |               |                 |              |
| Wind Speed Load Cases:                               |               | ASCE-7-16       |              |
| Load Case #1: 117 MPH Design Wind Speed              |               |                 |              |
| Load Case #2: 30 MPH Wind with 1.5" Ice Accumulation |               |                 |              |
| Load Case #3 60 MPH Service Wind Speed               |               |                 |              |
| Structure Class<br>Risk Category                     | Exposure Cat. | Topography Cat. | Crest Height |
| II                                                   | C             | I               |              |

STRUCTURE MEETS THE MINIMUM REQUIREMENTS OF TIA-222-I

## EQUIPMENT LIST

| Elev. | Description                          |
|-------|--------------------------------------|
| 170   | ANTENNAS + MOUNTING (EPA 40,000 IN2) |
| 170   | GENERIC ANTENNA MOUNT                |
| 155   | ANTENNAS + MOUNTING (EPA 30,000 IN2) |
| 155   | GENERIC ANTENNA MOUNT                |
| 140   | ANTENNAS + MOUNTING (EPA 30,000 IN2) |
| 140   | GENERIC ANTENNA MOUNT                |
| 125   | ANTENNAS + MOUNTING (EPA 30,000 IN2) |
| 125   | GENERIC ANTENNA MOUNT                |
| 110   | (1) 4-FT DISH                        |
| 110   | MICROWAVE MOUNT                      |
| 95    | (1) 4-FT DISH                        |
| 95    | MICROWAVE MOUNT                      |

ANTENNA FEED LINES ROUTED ON THE INSIDE OF THE POLE

POLE DESIGNED FOR A MAX 86.5-FT FALL RADIUS

8-FT PINE TREE BRANCHES SPACED EVENLY FROM 90'-0"

## STRUCTURE PROPERTIES

| Cross-Section: 18-Sided                    |             |                | Taper: 0.24569 in/ft             |               |               |
|--------------------------------------------|-------------|----------------|----------------------------------|---------------|---------------|
| Shaft Steel: ASTM A572 GR 65               |             |                | Baseplate Steel: ASTM A572 GR 50 |               |               |
| Anchor Rods: 2.5 in. F1554 GR. 105 X 8'-0" |             |                |                                  |               |               |
| Sect.                                      | Length (ft) | Thickness (in) | Splice (ft)                      | Top Dia. (in) | Bot Dia. (in) |
| 1                                          | 46.50       | 0.2500         | 5.75                             | 30.00         | 41.42         |
| 2                                          | 53.00       | 0.5000         | 7.25                             | 39.51         | 52.53         |
| 3                                          | 23.50       | 0.7500         | 7.50                             | 49.75         | 55.53         |
| 4                                          | 40.00       | 0.8750         | 8.50                             | 52.18         | 62.01         |
| 5                                          | 40.00       | 0.8750         | 0.00                             | 58.17         | 68.00         |



## BASE REACTIONS FOR FOUNDATION DESIGN

Moment: 18469 ft-kip  
Shear: 138 kip  
Axial: 125 kip



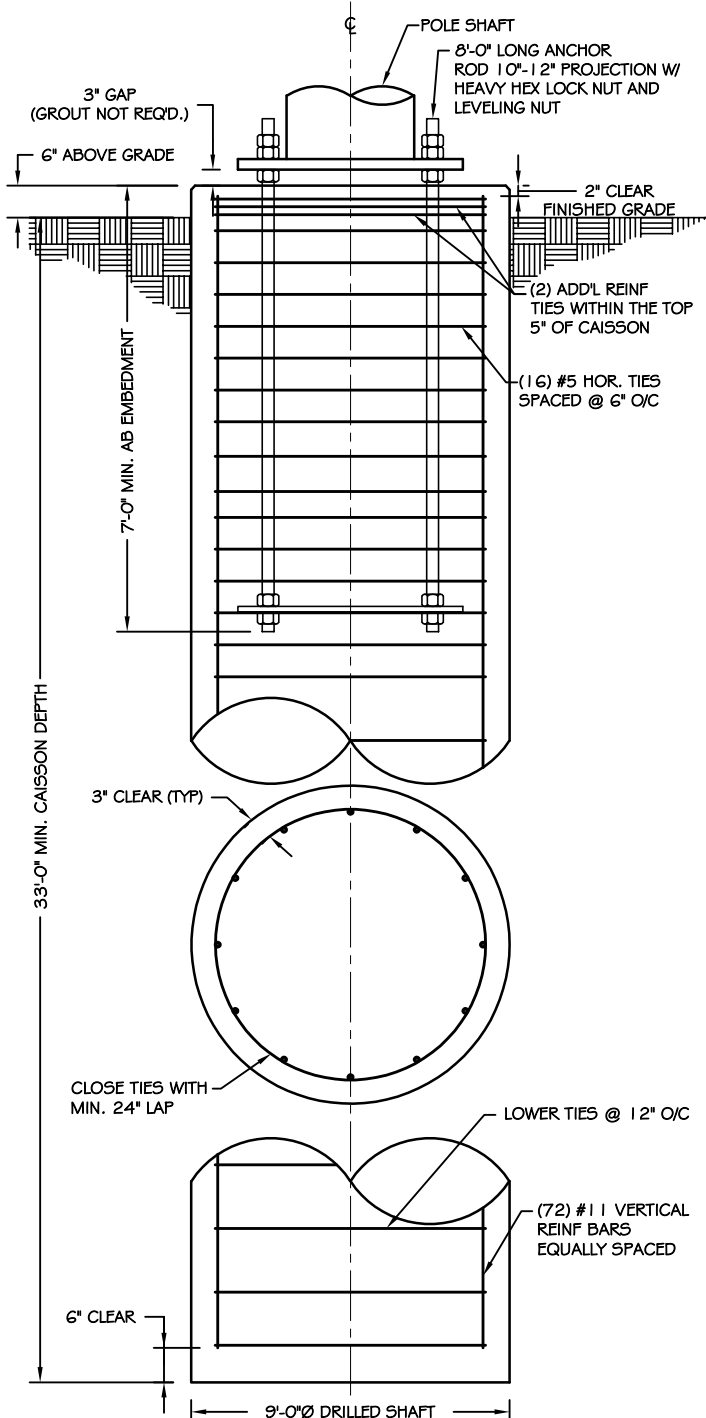
2427 Kelly Lane  
Houston, Texas 77066  
281-444-8277

**QUALITY STEEL POLES. DELIVERED.**

|               |                                             |           |
|---------------|---------------------------------------------|-----------|
| Page 2 of 2   | Job Number:                                 | 23524-768 |
| Eng: MFP      | Customer Ref:                               | TP-24230  |
|               | Date:                                       | 3/5/2025  |
| Structure:    | 175-FT PINE TREE MONOPOLE                   |           |
| Site:         | CTG-NC-0010023 HWY 401 KIPLING              |           |
| Location:     | HARNETT CO., NC / 35°27'25.6", -78°49'50.2" |           |
| Owner:        | CTG                                         |           |
| Revision No.: | Revision Date:                              |           |

FOUNDATION NOTES:

1. ALL FOUNDATION CONCRETE SHALL CONFORM TO ACI TYPE II CEMENT AND ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 4500 PSI AT 28 DAYS. CONCRETE SHALL HAVE A MAXIMUM WATER/CEMENT RATIO OF 0.45. IN AREAS OF POTENTIAL FREEZING, CONCRETE SHALL BE AIR ENTRAINED 6% ( $\pm 1.5\%$ ). ALL CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH ACI 318, "THE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE", LATEST EDITION.
2. ALL REINFORCING STEEL SHALL CONFORM TO ASTM A615 VERTICAL BARS SHALL BE GRADE 60, AND TIES OR STIRRUPS SHALL BE A MINIMUM OF GRADE 40. THE PLACEMENT OF ALL REINFORCEMENT SHALL CONFORM TO ACI 315, "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", LATEST EDITION.
3. CAISSON FOUNDATION INSTALLATION SHALL BE IN ACCORDANCE WITH ACI 336, "STANDARD SPECIFICATIONS FOR THE CONSTRUCTION OF DRILLED PIERS", LATEST EDITION.
4. THE CONTRACTOR SHALL DETERMINE THE MEANS AND METHODS TO SUPPORT THE EXCAVATION DURING CONSTRUCTION. THE CONTRACTOR SHALL READ THE GEOTECHNICAL REPORT AND SHALL CONSULT THE GEOTECHNICAL ENGINEER AS NECESSARY PRIOR TO CONSTRUCTION.
5. FOUNDATION DESIGN IS BASED ON GEOTECHNICAL REPORT BY:  
ENGINEER: TOWER ENGINEERING PROFESSIONALS  
REPORT NO.: 72596.698898 (DATED 5/18/22)
6. ESTIMATED CONCRETE VOLUME = 79 CUBIC YARDS.
7. THE FOUNDATION HAS BEEN DESIGNED TO RESIST THE FOLLOWING FACTORED LOADS:  
MOMENT: 18469 FT\*KIPS  
SHEAR: 138 KIPS  
AXIAL: 125 KIPS
8. GEOTECHNICAL REPORT INDICATES GROUNDWATER MAY BE ENCOUNTERED AT 18'-0" BELOW GRADE.



## CAISSON FOUNDATION

NOT TO SCALE





|                                                                                                                                                        |                |                                     |                    |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------|--------------------|-------------------|
| <b>tnxTower</b><br><br><b>Michael Plahovinsak, P.E.</b><br>18301 State Route 161<br>Plain City, OH 43064<br>Phone: 614-398-6250<br>FAX: mike@mpeng.com | <b>Job</b>     | 175-ft Monopine - MFP #23524-768 r1 | <b>Page</b>        | 1 of 8            |
|                                                                                                                                                        | <b>Project</b> | CTG-NC 0010023 401 Kipling          | <b>Date</b>        | 13:42:18 03/05/25 |
|                                                                                                                                                        | <b>Client</b>  | TP-24230                            | <b>Designed by</b> | Mike              |

## Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower base elevation above sea level: 285.00 ft.

Basic wind speed of 117 mph.

Risk Category II.

Exposure Category C.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 1.5000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 30 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

Non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Tapered Pole Section Geometry

| Section | Elevation<br>ft | Section<br>Length<br>ft | Splice<br>Length<br>ft | Number<br>of<br>Sides | Top<br>Diameter<br>in | Bottom<br>Diameter<br>in | Wall<br>Thickness<br>in | Bend<br>Radius<br>in | Pole Grade          |
|---------|-----------------|-------------------------|------------------------|-----------------------|-----------------------|--------------------------|-------------------------|----------------------|---------------------|
| L1      | 175.00-128.50   | 46.50                   | 5.75                   | 18                    | 30.0000               | 41.4246                  | 0.2500                  | 1.0000               | A572-65<br>(65 ksi) |
| L2      | 128.50-81.25    | 53.00                   | 7.25                   | 18                    | 39.5119               | 52.5334                  | 0.5000                  | 2.0000               | A572-65<br>(65 ksi) |
| L3      | 81.25-65.00     | 23.50                   | 7.50                   | 18                    | 49.7522               | 55.5259                  | 0.7500                  | 3.0000               | A572-65<br>(65 ksi) |
| L4      | 65.00-32.50     | 40.00                   | 8.50                   | 18                    | 52.1832               | 62.0108                  | 0.8750                  | 3.5000               | A572-65<br>(65 ksi) |
| L5      | 32.50-1.00      | 40.00                   |                        | 18                    | 58.1724               | 68.0000                  | 0.8750                  | 3.5000               | A572-65<br>(65 ksi) |

## Tapered Pole Properties

| Section | Tip Dia.<br>in | Area<br>in <sup>2</sup> | I<br>in <sup>4</sup> | r<br>in | C<br>in | I/C<br>in <sup>3</sup> | J<br>in <sup>4</sup> | It/Q<br>in <sup>2</sup> | w<br>in | w/t    |
|---------|----------------|-------------------------|----------------------|---------|---------|------------------------|----------------------|-------------------------|---------|--------|
| L1      | 30.4242        | 23.6066                 | 2639.6436            | 10.5612 | 15.2400 | 173.2050               | 5282.7605            | 11.8056                 | 4.8400  | 19.36  |
|         | 42.0250        | 32.6720                 | 6997.9618            | 14.6170 | 21.0437 | 332.5446               | 14005.1317           | 16.3391                 | 6.8507  | 27.403 |
| L2      | 41.4788        | 61.9118                 | 11904.3069           | 13.8492 | 20.0720 | 593.0796               | 23824.2778           | 30.9618                 | 6.0741  | 12.148 |
|         | 53.2667        | 82.5770                 | 28246.2707           | 18.4719 | 26.6870 | 1058.4293              | 56529.7085           | 41.2964                 | 8.3659  | 16.732 |
| L3      | 52.2127        | 116.6496                | 35387.6053           | 17.3958 | 25.2741 | 1400.1532              | 70821.7746           | 58.3359                 | 7.4364  | 9.915  |

|                                                                                                                                                        |                |                                     |                    |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------|--------------------|-------------------|
| <b>tnxTower</b><br><br><b>Michael Plahovinsak, P.E.</b><br>18301 State Route 161<br>Plain City, OH 43064<br>Phone: 614-398-6250<br>FAX: mike@mpeng.com | <b>Job</b>     | 175-ft Monopine - MFP #23524-768 r1 | <b>Page</b>        | 2 of 8            |
|                                                                                                                                                        | <b>Project</b> | CTG-NC 0010023 401 Kipling          | <b>Date</b>        | 13:42:18 03/05/25 |
|                                                                                                                                                        | <b>Client</b>  | TP-24230                            | <b>Designed by</b> | Mike              |

| Section | Tip Dia.<br>in | Area<br>in <sup>2</sup> | I<br>in <sup>4</sup> | r<br>in | C<br>in | I/C<br>in <sup>3</sup> | J<br>in <sup>4</sup> | It/Q<br>in <sup>2</sup> | w<br>in | w/t    |
|---------|----------------|-------------------------|----------------------|---------|---------|------------------------|----------------------|-------------------------|---------|--------|
| L4      | 56.2667        | 130.3939                | 49428.0296           | 19.4454 | 28.2071 | 1752.3235              | 98921.0979           | 65.2094                 | 8.4526  | 11.27  |
|         | 54.7243        | 142.4957                | 47392.8154           | 18.2144 | 26.5091 | 1787.7969              | 94847.9914           | 71.2614                 | 7.6442  | 8.736  |
|         | 62.8324        | 169.7893                | 80174.9528           | 21.7032 | 31.5015 | 2545.1175              | 160455.401           | 84.9108                 | 9.3739  | 10.713 |
| L5      | 61.0554        | 159.1292                | 66002.0599           | 20.3406 | 29.5516 | 2233.4524              | 132090.967           | 79.5797                 | 8.6983  | 9.941  |
|         |                |                         |                      |         |         |                        | 9                    |                         |         |        |
|         | 68.9140        | 186.4229                | 106121.974           | 23.8294 | 34.5440 | 3072.0812              | 212383.587           | 93.2292                 | 10.4280 | 11.918 |
|         |                |                         | 5                    |         |         |                        | 0                    |                         |         |        |

| Tower<br>Elevation  | Gusset<br>Area<br>(per face) | Gusset<br>Thickness | Gusset Grade | Adjust. Factor<br>A <sub>f</sub> | Adjust.<br>Factor<br>A <sub>r</sub> | Weight Mult. | Double Angle<br>Stitch Bolt<br>Spacing<br>Diagonals<br>in | Double Angle<br>Stitch Bolt<br>Spacing<br>Horizontals<br>in | Double Angle<br>Stitch Bolt<br>Spacing<br>Redundants<br>in |
|---------------------|------------------------------|---------------------|--------------|----------------------------------|-------------------------------------|--------------|-----------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|
| ft                  | ft <sup>2</sup>              | in                  |              |                                  |                                     |              |                                                           |                                                             |                                                            |
| L1<br>175.00-128.50 |                              |                     |              | 1                                | 1                                   | 1            |                                                           |                                                             |                                                            |
| L2<br>128.50-81.25  |                              |                     |              | 1                                | 1                                   | 1            |                                                           |                                                             |                                                            |
| L3 81.25-65.00      |                              |                     |              | 1                                | 1                                   | 1            |                                                           |                                                             |                                                            |
| L4 65.00-32.50      |                              |                     |              | 1                                | 1                                   | 1            |                                                           |                                                             |                                                            |
| L5 32.50-1.00       |                              |                     |              | 1                                | 1                                   | 1            |                                                           |                                                             |                                                            |

## Feed Line/Linear Appurtenances - Entered As Area

| Description                          | Face<br>or<br>Leg | Allow<br>Shield | Exclude<br>From<br>Torque<br>Calculation | Component<br>Type     | Placement<br>ft | Total<br>Number |          | C <sub>A</sub> A <sub>A</sub><br>ft <sup>2</sup> /ft | Weight<br>plf |
|--------------------------------------|-------------------|-----------------|------------------------------------------|-----------------------|-----------------|-----------------|----------|------------------------------------------------------|---------------|
| Safety Climb & Step<br>Bolts Exposed | C                 | No              | Yes                                      | CaAa (Out<br>Of Face) | 175.00 - 1.00   | 1               | No Ice   | 0.06                                                 | 0.09          |
|                                      |                   |                 |                                          |                       |                 |                 | 1/2" Ice | 0.14                                                 | 0.63          |
|                                      |                   |                 |                                          |                       |                 |                 | 1" Ice   | 0.24                                                 | 1.77          |
|                                      |                   |                 |                                          |                       |                 |                 | 2" Ice   | 0.44                                                 | 5.90          |
| 1 5/8"                               | C                 | No              | Yes                                      | Inside Pole           | 170.00 - 1.00   | 12              | No Ice   | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 1/2" Ice | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 1" Ice   | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 2" Ice   | 0.00                                                 | 0.92          |
| 1 5/8"                               | C                 | No              | Yes                                      | Inside Pole           | 155.00 - 1.00   | 12              | No Ice   | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 1/2" Ice | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 1" Ice   | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 2" Ice   | 0.00                                                 | 0.92          |
| 1 5/8"                               | C                 | No              | Yes                                      | Inside Pole           | 140.00 - 1.00   | 12              | No Ice   | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 1/2" Ice | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 1" Ice   | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 2" Ice   | 0.00                                                 | 0.92          |
| 1 5/8"                               | C                 | No              | Yes                                      | Inside Pole           | 125.00 - 1.00   | 12              | No Ice   | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 1/2" Ice | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 1" Ice   | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 2" Ice   | 0.00                                                 | 0.92          |
| 1 5/8"                               | C                 | No              | Yes                                      | Inside Pole           | 110.00 - 1.00   | 2               | No Ice   | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 1/2" Ice | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 1" Ice   | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 2" Ice   | 0.00                                                 | 0.92          |
| 1 5/8"                               | C                 | No              | Yes                                      | Inside Pole           | 95.00 - 1.00    | 2               | No Ice   | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 1/2" Ice | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 1" Ice   | 0.00                                                 | 0.92          |
|                                      |                   |                 |                                          |                       |                 |                 | 2" Ice   | 0.00                                                 | 0.92          |

|                                                                                                                                                         |                |                                     |                    |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------|--------------------|-------------------|
| <b>tnxTower</b><br><br><b>Michael Plahovinsak, P.E.</b><br>18301 State Route 161<br>Plain City, OH 43064<br>Phone: 614-398-6250<br>FAX: mike@mfpeng.com | <b>Job</b>     | 175-ft Monopine - MFP #23524-768 r1 | <b>Page</b>        | 3 of 8            |
|                                                                                                                                                         | <b>Project</b> | CTG-NC 0010023 401 Kipling          | <b>Date</b>        | 13:42:18 03/05/25 |
|                                                                                                                                                         | <b>Client</b>  | TP-24230                            | <b>Designed by</b> | Mike              |

### Feed Line/Linear Appurtenances Section Areas

| Tower Section | Tower Elevation<br>ft | Face | $A_R$<br>ft <sup>2</sup> | $A_F$<br>ft <sup>2</sup> | $C_A A_A$<br>In Face<br>ft <sup>2</sup> | $C_A A_A$<br>Out Face<br>ft <sup>2</sup> | Weight<br>K |
|---------------|-----------------------|------|--------------------------|--------------------------|-----------------------------------------|------------------------------------------|-------------|
| L1            | 175.00-128.50         | A    | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | B    | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | C    | 0.000                    | 0.000                    | 0.000                                   | 2.558                                    | 0.88        |
| L2            | 128.50-81.25          | A    | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | B    | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | C    | 0.000                    | 0.000                    | 0.000                                   | 2.599                                    | 2.12        |
| L3            | 81.25-65.00           | A    | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | B    | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | C    | 0.000                    | 0.000                    | 0.000                                   | 0.894                                    | 0.78        |
| L4            | 65.00-32.50           | A    | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | B    | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | C    | 0.000                    | 0.000                    | 0.000                                   | 1.788                                    | 1.55        |
| L5            | 32.50-1.00            | A    | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | B    | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | C    | 0.000                    | 0.000                    | 0.000                                   | 1.732                                    | 1.50        |

### Feed Line/Linear Appurtenances Section Areas - With Ice

| Tower Section | Tower Elevation<br>ft | Face or Leg | Ice Thickness<br>in | $A_R$<br>ft <sup>2</sup> | $A_F$<br>ft <sup>2</sup> | $C_A A_A$<br>In Face<br>ft <sup>2</sup> | $C_A A_A$<br>Out Face<br>ft <sup>2</sup> | Weight<br>K |
|---------------|-----------------------|-------------|---------------------|--------------------------|--------------------------|-----------------------------------------|------------------------------------------|-------------|
| L1            | 175.00-128.50         | A           | 1.746               | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | B           |                     | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | C           |                     | 0.000                    | 0.000                    | 0.000                                   | 17.982                                   | 1.10        |
| L2            | 128.50-81.25          | A           | 1.683               | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | B           |                     | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | C           |                     | 0.000                    | 0.000                    | 0.000                                   | 18.272                                   | 2.35        |
| L3            | 81.25-65.00           | A           | 1.624               | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | B           |                     | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | C           |                     | 0.000                    | 0.000                    | 0.000                                   | 6.078                                    | 0.85        |
| L4            | 65.00-32.50           | A           | 1.559               | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | B           |                     | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | C           |                     | 0.000                    | 0.000                    | 0.000                                   | 11.775                                   | 1.69        |
| L5            | 32.50-1.00            | A           | 1.402               | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | B           |                     | 0.000                    | 0.000                    | 0.000                                   | 0.000                                    | 0.00        |
|               |                       | C           |                     | 0.000                    | 0.000                    | 0.000                                   | 11.006                                   | 1.63        |

### Discrete Tower Loads

| Description           | Face<br>or<br>Leg | Offset<br>Type | Offsets:<br>Horz<br>Lateral<br>Vert<br>ft<br>ft<br>ft | Azimuth<br>Adjustment<br>° | Placement<br>ft |        | C <sub>A</sub> A <sub>A</sub><br>Front<br>ft <sup>2</sup> | C <sub>A</sub> A <sub>A</sub><br>Side<br>ft <sup>2</sup> | Weight<br>K |
|-----------------------|-------------------|----------------|-------------------------------------------------------|----------------------------|-----------------|--------|-----------------------------------------------------------|----------------------------------------------------------|-------------|
| 8' Pine Tree Branches | C                 | None           |                                                       | 0.0000                     | 172.80          | No Ice | 149.00                                                    | 149.00                                                   | 1.28        |



|                                                                                                                                                        |                                     |                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------|
| <b>tnxTower</b><br><br><b>Michael Plahovinsak, P.E.</b><br>18301 State Route 161<br>Plain City, OH 43064<br>Phone: 614-398-6250<br>FAX: mike@mpeng.com | <b>Job</b>                          | <b>Page</b>        |
|                                                                                                                                                        | 175-ft Monopine - MFP #23524-768 r1 | 4 of 8             |
|                                                                                                                                                        | <b>Project</b>                      | <b>Date</b>        |
|                                                                                                                                                        | CTG-NC 0010023 401 Kipling          | 13:42:18 03/05/25  |
|                                                                                                                                                        | <b>Client</b>                       | <b>Designed by</b> |
|                                                                                                                                                        | TP-24230                            | Mike               |

| Description           | Face<br>or<br>Leg | Offset<br>Type | Offsets:<br>Horz<br>Lateral<br>Vert<br>ft<br>ft<br>ft | Azimuth<br>Adjustment<br>° | Placement<br>ft | C <sub>A</sub> A <sub>A</sub><br>Front<br>ft <sup>2</sup> | C <sub>A</sub> A <sub>A</sub><br>Side<br>ft <sup>2</sup> | Weight<br>K |
|-----------------------|-------------------|----------------|-------------------------------------------------------|----------------------------|-----------------|-----------------------------------------------------------|----------------------------------------------------------|-------------|
| 8' Pine Tree Branches | C                 | None           | 0.0000                                                | 157.10                     | 1/2" Ice        | 172.00                                                    | 172.00                                                   | 1.51        |
|                       |                   |                |                                                       |                            | 1" Ice          | 195.00                                                    | 195.00                                                   | 1.73        |
|                       |                   |                |                                                       |                            | 2" Ice          | 241.00                                                    | 241.00                                                   | 2.18        |
|                       |                   |                |                                                       |                            | No Ice          | 227.00                                                    | 227.00                                                   | 1.96        |
|                       |                   |                |                                                       |                            | 1/2" Ice        | 262.00                                                    | 262.00                                                   | 2.30        |
| 8' Pine Tree Branches | C                 | None           | 0.0000                                                | 138.20                     | 1" Ice          | 297.00                                                    | 297.00                                                   | 2.64        |
|                       |                   |                |                                                       |                            | 2" Ice          | 367.00                                                    | 367.00                                                   | 3.33        |
|                       |                   |                |                                                       |                            | No Ice          | 229.00                                                    | 229.00                                                   | 1.97        |
|                       |                   |                |                                                       |                            | 1/2" Ice        | 264.00                                                    | 264.00                                                   | 2.31        |
|                       |                   |                |                                                       |                            | 1" Ice          | 299.00                                                    | 299.00                                                   | 2.66        |
| 8' Pine Tree Branches | C                 | None           | 0.0000                                                | 119.30                     | 2" Ice          | 369.00                                                    | 369.00                                                   | 3.35        |
|                       |                   |                |                                                       |                            | No Ice          | 230.00                                                    | 230.00                                                   | 1.98        |
|                       |                   |                |                                                       |                            | 1/2" Ice        | 265.00                                                    | 265.00                                                   | 2.33        |
|                       |                   |                |                                                       |                            | 1" Ice          | 300.00                                                    | 300.00                                                   | 2.67        |
|                       |                   |                |                                                       |                            | 2" Ice          | 370.00                                                    | 370.00                                                   | 3.37        |
| 8' Pine Tree Branches | C                 | None           | 0.0000                                                | 100.40                     | No Ice          | 231.00                                                    | 231.00                                                   | 1.99        |
|                       |                   |                |                                                       |                            | 1/2" Ice        | 267.00                                                    | 267.00                                                   | 2.34        |
|                       |                   |                |                                                       |                            | 1" Ice          | 303.00                                                    | 303.00                                                   | 2.69        |
|                       |                   |                |                                                       |                            | 2" Ice          | 375.00                                                    | 375.00                                                   | 3.38        |
|                       |                   |                |                                                       |                            | **              |                                                           |                                                          |             |
| EPA 40,000 in2        | C                 | None           | 0.0000                                                | 170.00                     | No Ice          | 277.78                                                    | 277.78                                                   | 4.00        |
|                       |                   |                |                                                       |                            | 1/2" Ice        | 300.00                                                    | 300.00                                                   | 5.00        |
|                       |                   |                |                                                       |                            | 1" Ice          | 322.22                                                    | 322.22                                                   | 6.00        |
|                       |                   |                |                                                       |                            | 2" Ice          | 366.66                                                    | 366.66                                                   | 8.00        |
| EPA 30,000 in2        | C                 | None           | 0.0000                                                | 155.00                     | No Ice          | 208.33                                                    | 208.33                                                   | 4.00        |
|                       |                   |                |                                                       |                            | 1/2" Ice        | 225.00                                                    | 225.00                                                   | 5.00        |
|                       |                   |                |                                                       |                            | 1" Ice          | 241.67                                                    | 241.67                                                   | 6.00        |
|                       |                   |                |                                                       |                            | 2" Ice          | 275.01                                                    | 275.01                                                   | 8.00        |
| EPA 30,000 in2        | C                 | None           | 0.0000                                                | 140.00                     | No Ice          | 208.33                                                    | 208.33                                                   | 4.00        |
|                       |                   |                |                                                       |                            | 1/2" Ice        | 225.00                                                    | 225.00                                                   | 5.00        |
|                       |                   |                |                                                       |                            | 1" Ice          | 241.67                                                    | 241.67                                                   | 6.00        |
|                       |                   |                |                                                       |                            | 2" Ice          | 275.01                                                    | 275.01                                                   | 8.00        |
| EPA 30,000 in2        | C                 | None           | 0.0000                                                | 125.00                     | No Ice          | 208.33                                                    | 208.33                                                   | 4.00        |
|                       |                   |                |                                                       |                            | 1/2" Ice        | 225.00                                                    | 225.00                                                   | 5.00        |
|                       |                   |                |                                                       |                            | 1" Ice          | 241.67                                                    | 241.67                                                   | 6.00        |
|                       |                   |                |                                                       |                            | 2" Ice          | 275.01                                                    | 275.01                                                   | 8.00        |

## Dishes

| Description   | Face<br>or<br>Leg | Dish<br>Type             | Offset<br>Type | Offsets:<br>Horz<br>Lateral<br>Vert<br>ft | Azimuth<br>Adjustment<br>° | 3 dB<br>Beam<br>Width<br>° | Elevation<br>ft | Outside<br>Diameter<br>ft | Aperture<br>Area<br>ft <sup>2</sup> | Weight<br>K |      |
|---------------|-------------------|--------------------------|----------------|-------------------------------------------|----------------------------|----------------------------|-----------------|---------------------------|-------------------------------------|-------------|------|
| 4 ft standard | A                 | Paraboloid w/o<br>Radome | From<br>Face   | 1.00                                      | 0.0000                     |                            | 110.00          | 4.00                      | No Ice                              | 12.57       | 0.10 |
|               |                   |                          |                | 0.00                                      |                            |                            |                 |                           | 1/2" Ice                            | 13.10       | 0.18 |
|               |                   |                          |                | 0.00                                      |                            |                            |                 |                           | 1" Ice                              | 13.62       | 0.25 |
|               |                   |                          |                |                                           |                            |                            |                 |                           | 2" Ice                              | 14.68       | 0.39 |
| 4 ft standard | A                 | Paraboloid w/o<br>Radome | From<br>Face   | 1.00                                      | 0.0000                     |                            | 95.00           | 4.00                      | No Ice                              | 12.57       | 0.10 |
|               |                   |                          |                | 0.00                                      |                            |                            |                 |                           | 1/2" Ice                            | 13.10       | 0.18 |
|               |                   |                          |                | 0.00                                      |                            |                            |                 |                           | 1" Ice                              | 13.62       | 0.25 |
|               |                   |                          |                |                                           |                            |                            |                 |                           |                                     |             |      |

|                                                                                                                                                         |                |                                     |                    |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------|--------------------|-------------------|
| <b>tnxTower</b><br><br><b>Michael Plahovinsak, P.E.</b><br>18301 State Route 161<br>Plain City, OH 43064<br>Phone: 614-398-6250<br>FAX: mike@mfpeng.com | <b>Job</b>     | 175-ft Monopine - MFP #23524-768 r1 | <b>Page</b>        | 5 of 8            |
|                                                                                                                                                         | <b>Project</b> | CTG-NC 0010023 401 Kipling          | <b>Date</b>        | 13:42:18 03/05/25 |
|                                                                                                                                                         | <b>Client</b>  | TP-24230                            | <b>Designed by</b> | Mike              |

| Description | Face<br>or<br>Leg | Dish<br>Type | Offset<br>Type | Offsets:<br>Horz<br>Lateral<br>Vert | Azimuth<br>Adjustment<br>° | 3 dB<br>Beam<br>Width<br>° | Elevation<br>ft | Outside<br>Diameter<br>ft | Aperture<br>Area<br>ft <sup>2</sup> | Weight<br>K |
|-------------|-------------------|--------------|----------------|-------------------------------------|----------------------------|----------------------------|-----------------|---------------------------|-------------------------------------|-------------|
|             |                   |              |                |                                     |                            |                            |                 |                           | 2" Ice                              | 14.68       |
|             |                   |              |                |                                     |                            |                            |                 |                           |                                     | 0.39        |

## Load Combinations

| Comb.<br>No. | Description                                |
|--------------|--------------------------------------------|
| 1            | Dead Only                                  |
| 2            | 1.2 Dead+1.0 Wind 0 deg - No Ice           |
| 3            | 0.9 Dead+1.0 Wind 0 deg - No Ice           |
| 4            | 1.2 Dead+1.0 Wind 90 deg - No Ice          |
| 5            | 0.9 Dead+1.0 Wind 90 deg - No Ice          |
| 6            | 1.2 Dead+1.0 Wind 180 deg - No Ice         |
| 7            | 0.9 Dead+1.0 Wind 180 deg - No Ice         |
| 8            | 1.2 Dead+1.0 Ice+1.0 Temp                  |
| 9            | 1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp   |
| 10           | 1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp  |
| 11           | 1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp |
| 12           | Dead+Wind 0 deg - Service                  |
| 13           | Dead+Wind 90 deg - Service                 |
| 14           | Dead+Wind 180 deg - Service                |

## Maximum Member Forces

| Section<br>No. | Elevation<br>ft | Component<br>Type | Condition        | Gov.<br>Load<br>Comb. | Axial<br>K | Major Axis<br>Moment<br>kip-ft | Minor Axis<br>Moment<br>kip-ft |
|----------------|-----------------|-------------------|------------------|-----------------------|------------|--------------------------------|--------------------------------|
| L1             | 175 - 128.5     | Pole              | Max Tension      | 4                     | 0.00       | 0.00                           | 0.00                           |
|                |                 |                   | Max. Compression | 8                     | -43.34     | 0.00                           | 0.00                           |
|                |                 |                   | Max. Mx          | 4                     | -18.90     | -1514.48                       | -0.18                          |
|                |                 |                   | Max. My          | 6                     | -18.91     | -0.27                          | -1514.49                       |
|                |                 |                   | Max. Vy          | 4                     | 71.59      | -1514.48                       | -0.18                          |
|                |                 |                   | Max. Vx          | 6                     | 71.59      | -0.27                          | -1514.49                       |
|                |                 |                   | Max. Torque      | 6                     |            |                                | 0.00                           |
|                |                 |                   | Max Tension      | 1                     | 0.00       | 0.00                           | 0.00                           |
| L2             | 128.5 - 81.25   | Pole              | Max. Compression | 8                     | -80.97     | 1.88                           | 1.08                           |
|                |                 |                   | Max. Mx          | 4                     | -45.47     | -5787.13                       | -13.51                         |
|                |                 |                   | Max. My          | 6                     | -45.50     | -21.92                         | -5782.53                       |
|                |                 |                   | Max. Vy          | 4                     | 110.68     | -5787.13                       | -13.51                         |
|                |                 |                   | Max. Vx          | 6                     | 110.33     | -21.92                         | -5782.53                       |
|                |                 |                   | Max. Torque      | 2                     |            |                                | 2.23                           |
|                |                 |                   | Max Tension      | 1                     | 0.00       | 0.00                           | 0.00                           |
|                |                 |                   | Max. Compression | 8                     | -94.77     | 1.88                           | 1.08                           |
| L3             | 81.25 - 65      | Pole              | Max. Mx          | 4                     | -57.86     | -7574.97                       | -28.68                         |
|                |                 |                   | Max. My          | 6                     | -57.89     | -46.55                         | -7564.85                       |
|                |                 |                   | Max. Vy          | 4                     | 112.70     | -7574.97                       | -28.68                         |
|                |                 |                   | Max. Vx          | 6                     | 112.35     | -46.55                         | -7564.85                       |
|                |                 |                   | Max. Torque      | 2                     |            |                                | 2.22                           |
|                |                 |                   | Max Tension      | 1                     | 0.00       | 0.00                           | 0.00                           |
|                |                 |                   | Max. Compression | 8                     | -124.79    | 1.88                           | 1.08                           |
|                |                 |                   | Max. Mx          | 4                     | -85.63     | -11183.43                      | -58.55                         |
| L4             | 65 - 32.5       | Pole              | Max. My          | 6                     | -85.64     | -95.06                         | -11162.44                      |
|                |                 |                   | Max. Vy          | 4                     | 116.04     | -11183.43                      | -58.55                         |
|                |                 |                   | Max. Vx          | 6                     | 115.69     | -95.06                         | -11162.44                      |
|                |                 |                   | Max. Torque      | 2                     |            |                                | 2.22                           |

|                                                                                                                                                        |                |                                     |                    |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------|--------------------|-------------------|
| <b>tnxTower</b><br><br><b>Michael Plahovinsak, P.E.</b><br>18301 State Route 161<br>Plain City, OH 43064<br>Phone: 614-398-6250<br>FAX: mike@mpeng.com | <b>Job</b>     | 175-ft Monopine - MFP #23524-768 r1 | <b>Page</b>        | 6 of 8            |
|                                                                                                                                                        | <b>Project</b> | CTG-NC 0010023 401 Kipling          | <b>Date</b>        | 13:42:18 03/05/25 |
|                                                                                                                                                        | <b>Client</b>  | TP-24230                            | <b>Designed by</b> | Mike              |

| Section No. | Elevation ft | Component Type | Condition        | Gov. Load Comb. | Axial K | Major Axis Moment kip-ft | Minor Axis Moment kip-ft |
|-------------|--------------|----------------|------------------|-----------------|---------|--------------------------|--------------------------|
| L5          | 32.5 - 1     | Pole           | Max. Torque      | 2               |         |                          | 2.22                     |
|             |              |                | Max Tension      | 1               | 0.00    | 0.00                     | 0.00                     |
|             |              |                | Max. Compression | 8               | -166.77 | 1.88                     | 1.08                     |
|             |              |                | Max. Mx          | 4               | -125.14 | -15880.90                | -96.20                   |
|             |              |                | Max. My          | 6               | -125.14 | -156.21                  | -15846.18                |
|             |              |                | Max. Vy          | 4               | 118.21  | -15880.90                | -96.20                   |
|             |              |                | Max. Vx          | 6               | 117.87  | -156.21                  | -15846.18                |
|             |              |                | Max. Torque      | 2               |         |                          | 2.22                     |

### Maximum Tower Deflections - Service Wind

| Section No. | Elevation ft   | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|-------------|----------------|---------------------|-----------------|--------|---------|
| L1          | 175 - 128.5    | 31.992              | 13              | 1.6615 | 0.0001  |
| L2          | 134.25 - 81.25 | 18.571              | 13              | 1.3676 | 0.0001  |
| L3          | 88.5 - 65      | 7.785               | 13              | 0.8167 | 0.0000  |
| L4          | 72.5 - 32.5    | 5.259               | 13              | 0.6714 | 0.0000  |
| L5          | 41 - 1         | 1.708               | 13              | 0.3772 | 0.0000  |

### Critical Deflections and Radius of Curvature - Service Wind

| Elevation ft | Appurtenance          | Gov. Load Comb. | Deflection in | Tilt ° | Twist ° | Radius of Curvature ft |
|--------------|-----------------------|-----------------|---------------|--------|---------|------------------------|
| 172.80       | 8' Pine Tree Branches | 13              | 31.230        | 1.6490 | 0.0004  | 38399                  |
| 170.00       | EPA 40,000 in2        | 13              | 30.260        | 1.6331 | 0.0004  | 38399                  |
| 157.10       | 8' Pine Tree Branches | 13              | 25.847        | 1.5550 | 0.0004  | 10725                  |
| 155.00       | EPA 30,000 in2        | 13              | 25.142        | 1.5410 | 0.0004  | 9599                   |
| 140.00       | EPA 30,000 in2        | 13              | 20.305        | 1.4234 | 0.0004  | 5484                   |
| 138.20       | 8' Pine Tree Branches | 13              | 19.754        | 1.4067 | 0.0004  | 5217                   |
| 125.00       | EPA 30,000 in2        | 13              | 15.954        | 1.2635 | 0.0003  | 4677                   |
| 119.30       | 8' Pine Tree Branches | 13              | 14.450        | 1.1930 | 0.0003  | 4657                   |
| 110.00       | 4 ft standard         | 13              | 12.177        | 1.0735 | 0.0003  | 4625                   |
| 100.40       | 8' Pine Tree Branches | 13              | 10.067        | 0.9518 | 0.0003  | 4592                   |
| 95.00        | 4 ft standard         | 13              | 8.985         | 0.8874 | 0.0003  | 4574                   |

### Maximum Tower Deflections - Design Wind

| Section No. | Elevation ft   | Horz. Deflection in | Gov. Load Comb. | Tilt ° | Twist ° |
|-------------|----------------|---------------------|-----------------|--------|---------|
| L1          | 175 - 128.5    | 136.123             | 4               | 7.0755 | 0.0013  |
| L2          | 134.25 - 81.25 | 79.081              | 4               | 5.8265 | 0.0009  |
| L3          | 88.5 - 65      | 33.175              | 4               | 3.4809 | 0.0002  |
| L4          | 72.5 - 32.5    | 22.412              | 4               | 2.8620 | 0.0001  |
| L5          | 41 - 1         | 7.279               | 4               | 1.6079 | 0.0001  |



|                                                                                                                                                         |                |                                     |                    |                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------|--------------------|-------------------|
| <b>tnxTower</b><br><br><b>Michael Plahovinsak, P.E.</b><br>18301 State Route 161<br>Plain City, OH 43064<br>Phone: 614-398-6250<br>FAX: mike@mpfeng.com | <b>Job</b>     | 175-ft Monopine - MFP #23524-768 r1 | <b>Page</b>        | 7 of 8            |
|                                                                                                                                                         | <b>Project</b> | CTG-NC 0010023 401 Kipling          | <b>Date</b>        | 13:42:18 03/05/25 |
|                                                                                                                                                         | <b>Client</b>  | TP-24230                            | <b>Designed by</b> | Mike              |

### Critical Deflections and Radius of Curvature - Design Wind

| Elevation | Appurtenance          | Gov. Load Comb. | Deflection | Tilt   | Twist  | Radius of Curvature |
|-----------|-----------------------|-----------------|------------|--------|--------|---------------------|
| ft        |                       |                 | in         | °      | °      | ft                  |
| 172.80    | 8' Pine Tree Branches | 4               | 132.882    | 7.0227 | 0.0017 | 9274                |
| 170.00    | EPA 40,000 in2        | 4               | 128.763    | 6.9551 | 0.0017 | 9274                |
| 157.10    | 8' Pine Tree Branches | 4               | 110.008    | 6.6232 | 0.0017 | 2587                |
| 155.00    | EPA 30,000 in2        | 4               | 107.015    | 6.5637 | 0.0017 | 2315                |
| 140.00    | EPA 30,000 in2        | 4               | 86.457     | 6.0639 | 0.0017 | 1319                |
| 138.20    | 8' Pine Tree Branches | 4               | 84.113     | 5.9928 | 0.0017 | 1254                |
| 125.00    | EPA 30,000 in2        | 4               | 67.950     | 5.3833 | 0.0016 | 1119                |
| 119.30    | 8' Pine Tree Branches | 4               | 61.553     | 5.0834 | 0.0015 | 1112                |
| 110.00    | 4 ft standard         | 4               | 51.879     | 4.5746 | 0.0014 | 1101                |
| 100.40    | 8' Pine Tree Branches | 4               | 42.893     | 4.0563 | 0.0012 | 1089                |
| 95.00     | 4 ft standard         | 4               | 38.287     | 3.7822 | 0.0011 | 1083                |

### Compression Checks

### Pole Design Data

| Section No. | Elevation       | Size                    | L     | L <sub>u</sub> | Kl/r | A               | P <sub>u</sub> | φP <sub>n</sub> | Ratio                  |
|-------------|-----------------|-------------------------|-------|----------------|------|-----------------|----------------|-----------------|------------------------|
|             | ft              |                         | ft    | ft             |      | in <sup>2</sup> | K              | K               | $\frac{P_u}{\phi P_n}$ |
| L1          | 175 - 128.5 (1) | TP41.4246x30x0.25       | 46.50 | 0.00           | 0.0  | 31.5510         | -18.91         | 1845.74         | 0.010                  |
| L2          | 128.5 - 81.25   | TP52.5334x39.5119x0.5   | 53.00 | 0.00           | 0.0  | 79.7502         | -45.47         | 4665.38         | 0.010                  |
|             | (2)             |                         |       |                |      |                 |                |                 |                        |
| L3          | 81.25 - 65 (3)  | TP55.5259x49.7522x0.75  | 23.50 | 0.00           | 0.0  | 126.007         | -57.86         | 7371.44         | 0.008                  |
|             |                 |                         |       |                |      | 0               |                |                 |                        |
| L4          | 65 - 32.5 (4)   | TP62.0108x52.1832x0.875 | 40.00 | 0.00           | 0.0  | 163.989         | -85.63         | 9593.38         | 0.009                  |
|             |                 |                         |       |                |      | 0               |                |                 |                        |
| L5          | 32.5 - 1 (5)    | TP68x58.1724x0.875      | 40.00 | 0.00           | 0.0  | 186.423         | -125.14        | 10905.70        | 0.011                  |
|             |                 |                         |       |                |      | 0               |                |                 |                        |

### Pole Bending Design Data

| Section No. | Elevation       | Size                    | M <sub>ux</sub> | φM <sub>rx</sub> | Ratio                        | M <sub>uy</sub> | φM <sub>ry</sub> | Ratio                        |
|-------------|-----------------|-------------------------|-----------------|------------------|------------------------------|-----------------|------------------|------------------------------|
|             | ft              |                         | kip-ft          | kip-ft           | $\frac{M_{ux}}{\phi M_{rx}}$ | kip-ft          | kip-ft           | $\frac{M_{uy}}{\phi M_{ry}}$ |
| L1          | 175 - 128.5 (1) | TP41.4246x30x0.25       | 1514.49         | 1611.60          | 0.940                        | 0.00            | 1611.60          | 0.000                        |
| L2          | 128.5 - 81.25   | TP52.5334x39.5119x0.5   | 5787.15         | 6026.58          | 0.960                        | 0.00            | 6026.58          | 0.000                        |
|             | (2)             |                         |                 |                  |                              |                 |                  |                              |
| L3          | 81.25 - 65 (3)  | TP55.5259x49.7522x0.75  | 7575.03         | 10126.67         | 0.748                        | 0.00            | 10126.67         | 0.000                        |
| L4          | 65 - 32.5 (4)   | TP62.0108x52.1832x0.875 | 11183.58        | 14692.00         | 0.761                        | 0.00            | 14692.00         | 0.000                        |
| L5          | 32.5 - 1 (5)    | TP68x58.1724x0.875      | 15881.17        | 19020.00         | 0.835                        | 0.00            | 19020.00         | 0.000                        |

|                                                                                                                                                        |                |                                     |                    |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------|--------------------|-------------------|
| <b>tnxTower</b><br><br><b>Michael Plahovinsak, P.E.</b><br>18301 State Route 161<br>Plain City, OH 43064<br>Phone: 614-398-6250<br>FAX: mike@mpeng.com | <b>Job</b>     | 175-ft Monopine - MFP #23524-768 r1 | <b>Page</b>        | 8 of 8            |
|                                                                                                                                                        | <b>Project</b> | CTG-NC 0010023 401 Kipling          | <b>Date</b>        | 13:42:18 03/05/25 |
|                                                                                                                                                        | <b>Client</b>  | TP-24230                            | <b>Designed by</b> | Mike              |

### Pole Shear Design Data

| Section No. | Elevation<br>ft      | Size                    | Actual<br>$V_u$<br>K | $\phi V_n$<br>K | Ratio<br>$\frac{V_u}{\phi V_n}$ | Actual<br>$T_u$<br>kip-ft | $\phi T_n$<br>kip-ft | Ratio<br>$\frac{T_u}{\phi T_n}$ |
|-------------|----------------------|-------------------------|----------------------|-----------------|---------------------------------|---------------------------|----------------------|---------------------------------|
| L1          | 175 - 128.5 (1)      | TP41.4246x30x0.25       | 71.59                | 553.72          | 0.129                           | 0.00                      | 1928.13              | 0.000                           |
| L2          | 128.5 - 81.25<br>(2) | TP52.5334x39.5119x0.5   | 110.68               | 1399.62         | 0.079                           | 0.29                      | 6159.47              | 0.000                           |
| L3          | 81.25 - 65 (3)       | TP55.5259x49.7522x0.75  | 112.71               | 2211.43         | 0.051                           | 0.28                      | 10251.33             | 0.000                           |
| L4          | 65 - 32.5 (4)        | TP62.0108x52.1832x0.875 | 116.04               | 2878.01         | 0.040                           | 0.28                      | 14882.42             | 0.000                           |
| L5          | 32.5 - 1 (5)         | TP68x58.1724x0.875      | 118.22               | 3271.72         | 0.036                           | 0.28                      | 19232.75             | 0.000                           |

### Pole Interaction Design Data

| Section No. | Elevation<br>ft      | Ratio<br>$P_u$<br>$\phi P_n$ | Ratio<br>$M_{ux}$<br>$\phi M_{nx}$ | Ratio<br>$M_{uy}$<br>$\phi M_{ny}$ | Ratio<br>$V_u$<br>$\phi V_n$ | Ratio<br>$T_u$<br>$\phi T_n$ | Comb.<br>Stress<br>Ratio | Allow.<br>Stress<br>Ratio | Criteria |
|-------------|----------------------|------------------------------|------------------------------------|------------------------------------|------------------------------|------------------------------|--------------------------|---------------------------|----------|
| L1          | 175 - 128.5 (1)      | 0.010                        | 0.940                              | 0.000                              | 0.129                        | 0.000                        | 0.967                    | 1.000                     | ✓        |
| L2          | 128.5 - 81.25<br>(2) | 0.010                        | 0.960                              | 0.000                              | 0.079                        | 0.000                        | 0.976                    | 1.000                     | ✓        |
| L3          | 81.25 - 65 (3)       | 0.008                        | 0.748                              | 0.000                              | 0.051                        | 0.000                        | 0.758                    | 1.000                     | ✓        |
| L4          | 65 - 32.5 (4)        | 0.009                        | 0.761                              | 0.000                              | 0.040                        | 0.000                        | 0.772                    | 1.000                     | ✓        |
| L5          | 32.5 - 1 (5)         | 0.011                        | 0.835                              | 0.000                              | 0.036                        | 0.000                        | 0.848                    | 1.000                     | ✓        |

### Section Capacity Table

| Section No. | Elevation<br>ft | Component<br>Type | Size                    | Critical<br>Element | P<br>K  | $\phi P_{allow}$<br>K | %<br>Capacity        | Pass<br>Fail |
|-------------|-----------------|-------------------|-------------------------|---------------------|---------|-----------------------|----------------------|--------------|
| L1          | 175 - 128.5     | Pole              | TP41.4246x30x0.25       | 1                   | -18.91  | 1845.74               | 96.7                 | Pass         |
| L2          | 128.5 - 81.25   | Pole              | TP52.5334x39.5119x0.5   | 2                   | -45.47  | 4665.38               | 97.6                 | Pass         |
| L3          | 81.25 - 65      | Pole              | TP55.5259x49.7522x0.75  | 3                   | -57.86  | 7371.44               | 75.8                 | Pass         |
| L4          | 65 - 32.5       | Pole              | TP62.0108x52.1832x0.875 | 4                   | -85.63  | 9593.38               | 77.2                 | Pass         |
| L5          | 32.5 - 1        | Pole              | TP68x58.1724x0.875      | 5                   | -125.14 | 10905.70              | 84.8                 | Pass         |
|             |                 |                   |                         |                     |         |                       | Summary              |              |
|             |                 |                   |                         |                     |         |                       | Pole (L2)            | Pass         |
|             |                 |                   |                         |                     |         |                       | <b>RATING = 97.6</b> | <b>Pass</b>  |

|                                                                                                                                         |                                                          |                             |
|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-----------------------------|
| <b>Michael F. Plahovinsak, P.E.</b><br>18301 State Route 161 W<br>Plain City, OH 43064<br>Phone: 614-398-6250<br>email: mike@mfpeng.com | <b>Job</b><br>175-ft pine tree monopole - MFP #23524-768 | <b>Page</b><br>BP & AB Calc |
|                                                                                                                                         | <b>Project</b><br>CTG-NC-0010023 Hwy 401 Kipling         | <b>Date</b><br>3/5/2025     |
|                                                                                                                                         | <b>Client</b><br>TAPP TP-24230                           | <b>Designed by</b><br>Mike  |

## Anchor Rod and Base Plate Calculation

**TIA-222-H**

|                                 |                                      |                            |                         |
|---------------------------------|--------------------------------------|----------------------------|-------------------------|
| <b>Factored Base Reactions:</b> | <b>Pole Shape:</b>                   | <b>Anchor Rods:</b>        | <b>Base Plate:</b>      |
| Moment: 15881 ft-kips           | 18-Sided                             | (30) 2.5 in. F1554 GR. 105 | 3.75 in. x 83 in. Round |
| Shear: 118 kips                 | <b>Pole Dia. (<math>D_f</math>):</b> | Anchor Rods Evenly Spaced  | $f_y = 50$ ksi          |
| Axial: 125 kips                 | 68.00 in                             | On a 77 in Bolt Circle     |                         |

### Anchor Rod Calculation According to TIA-222-H

$$\begin{aligned} \phi_t, \phi_v &= 0.75 \text{ TIA 4.9.6} \\ I_{\text{bolts}} &= 22233.75 \text{ in}^2 \text{ Momet of Inertia} \\ P_u &= 326 \text{ kips Tension Force} \\ V_u &= 3.9 \text{ kips Shear Force} \\ R_{nt} &= 500.00 \text{ kips Nominal Tensile Strength} \\ R_{nv} &= 306.81 \text{ kips (0.5 x } f_u \text{ x ag)} \\ \text{Stress Rating} &= \mathbf{86.9\%} \text{ Satisfies TIA-H 4.9.9} \end{aligned}$$

### Base Plate Calculation According to TIA-222-H

$$\begin{aligned} \phi &= 0.90 \text{ TIA 4.7} \\ M_{PL} &= 909.2 \text{ in-kip Plate Moment} \\ L &= 7.1 \text{ in Section Length} \\ Z &= 25.0 \text{ Plastic Section Modulus} \\ M_P &= 1251.7 \text{ in-kip Plastic Moment} \\ \phi M_n &= 1126.6 \text{ in-kip Factored Resistance} \end{aligned}$$

*Calculated Moment vs Factored Resistance*

$$909.17 \text{ in-kip} \leq 1127 \text{ in-kip}$$

**Stress Rating = 80.7%**

|                                 |                                                  |
|---------------------------------|--------------------------------------------------|
| <b>Anchor Rods Are Adequate</b> | <b>86.9%</b> <input checked="" type="checkbox"/> |
| <b>Base Plate is Adequate</b>   | <b>80.7%</b> <input checked="" type="checkbox"/> |

|                                                                                                                                         |         |                                            |             |          |
|-----------------------------------------------------------------------------------------------------------------------------------------|---------|--------------------------------------------|-------------|----------|
| <b>Michael F. Plahovinsak, P.E.</b><br>18301 State Route 161 W<br>Plain City, OH 43064<br>Phone: 614-398-6250<br>email: mike@mfpeng.com | Job     | 175-ft pine tree monopole - MFP #23524-768 | Page        | FND      |
|                                                                                                                                         | Project | CTG-NC-0010023 Hwy 401 Kipling             | Date        | 3/5/2025 |
|                                                                                                                                         | Client  | TAPP TP-24230                              | Designed by | Mike     |

## Caisson Calculation

### According to TIA-222-H

- Foundation overturning resistance calculated with PLS Caisson, for Brom's method for rigid piles. Soil layers modeled after recommendations from the geotechnical report.
- Cohesion strength for the upper 27 ft has been reduced by 50%
- An additional load factor of 1.3 has been applied to the reinforcement design
- Foundation Loads Factored in Accordance with TIA-222-H
- Design water table = 18 ft below grade

\*\*\* PIER PROPERTIES      CONCRETE STRENGTH (ksi) = 4.50      STEEL STRENGTH (ksi) = 60.00

DIAMETER (ft) = 9.000      DISTANCE FROM TOP OF PIER TO GROUND LEVEL (ft) = 0.50

| *** SOIL PROPERTIES | LAYER | TYPE | THICKNESS (ft) | DEPTH AT TOP OF LAYER (ft) | DENSITY (pcf) | CU (psf) | KP    | PHI (degrees) |
|---------------------|-------|------|----------------|----------------------------|---------------|----------|-------|---------------|
|                     | 1     | S    | 4.00           | 0.00                       | 100.0         |          | 1.000 | -0.00         |
|                     | 2     | C    | 2.00           | 4.00                       | 113.0         | 1437.5   |       |               |
|                     | 3     | C    | 2.50           | 6.00                       | 112.0         | 1337.5   |       |               |
|                     | 4     | S    | 5.00           | 8.50                       | 113.0         |          | 3.690 | 35.00         |
|                     | 5     | S    | 4.50           | 13.50                      | 115.0         |          | 4.200 | 37.98         |
|                     | 6     | S    | 5.50           | 18.00                      | 50.0          |          | 3.390 | 32.98         |
|                     | 7     | C    | 3.50           | 23.50                      | 47.0          | 375.0    |       |               |
|                     | 8     | C    | 1.00           | 27.00                      | 47.0          | 750.0    |       |               |
|                     | 9     | S    | 5.00           | 28.00                      | 50.0          |          | 3.250 | 31.97         |
|                     | 10    | S    | 10.00          | 33.00                      | 50.0          |          | 3.120 | 30.97         |
|                     | 11    | S    | 6.50           | 43.00                      | 50.0          |          | 3.250 | 31.97         |

\*\*\* DESIGN (FACTORED) LOADS AT TOP OF PIER    MOMENT (ft-k) = 18469.0    VERTICAL (k) = 125.0    SHEAR (k) = 138.0  
ADDITIONAL SAFETY FACTOR AGAINST SOIL FAILURE = 1.33

\*\*\* CALCULATED PIER LENGTH (ft) = 33.500

\*\*\* CHECK OF SOILS PROPERTIES AND ULTIMATE RESISTING FORCES ALONG PIER

| TYPE | TOP OF LAYER BELOW TOP OF PIER (ft) | THICKNESS (ft) | DENSITY (pcf) | CU (psf) | KP    | FORCE (k) | ARM (ft) |
|------|-------------------------------------|----------------|---------------|----------|-------|-----------|----------|
| S    | 0.50                                | 4.00           | 100.0         |          | 1.000 | 21.60     | 3.17     |
| C    | 4.50                                | 2.00           | 113.0         | 1437.5   |       | 207.00    | 5.50     |
| C    | 6.50                                | 2.50           | 112.0         | 1337.5   |       | 240.75    | 7.75     |
| S    | 9.00                                | 5.00           | 113.0         |          | 3.690 | 592.05    | 11.70    |
| S    | 14.00                               | 4.50           | 115.0         |          | 4.200 | 882.69    | 16.36    |
| S    | 18.50                               | 1.62           | 50.0          |          | 3.390 | 300.17    | 19.31    |
| S    | 20.12                               | 3.88           | 50.0          |          | 3.390 | -770.09   | 22.09    |
| C    | 24.00                               | 3.50           | 47.0          | 375.0    |       | -94.50    | 25.75    |
| C    | 27.50                               | 1.00           | 47.0          | 750.0    |       | -54.00    | 28.00    |
| S    | 28.50                               | 5.00           | 50.0          |          | 3.250 | -1140.75  | 31.04    |
| S    | 33.50                               | 0.00           | 50.0          |          | 3.120 | -0.00     | 33.50    |

\*\*\* TOTAL REINFORCEMENT PCT = 1.18    REINFORCEMENT AREA (in^2) = 108.10  
\*\*\* USABLE AXIAL CAP. (k) = 125.0    USABLE MOMENT CAP. (ft-k) = 20394.4

### For Design:

|                                                                               |
|-------------------------------------------------------------------------------|
| 9-ft Diameter caisson x 33.5-ft long (33-ft Embedded with 0.5-ft above grade) |
| Concrete strength = 4500 PSI @ 28 days. Estimated Concrete Volume = 79 CY3.   |
| (72) #11 Vertical Rebar. Steel Cross-Section = 112.32 in2                     |