

VICINITY MAP

PROJECT INFORMATION:

# PROPOSED TOWER REPLACEMENT

DUKE SITE NAME:

## LILLINGTON RADIO

AERONAUTICAL STUDY NO:

### 2018-ASO-7886-OE

SITE ADDRESS:

## 1132 DOCS ROAD LILLINGTON, NC 27546 (HARNETT COUNTY)

PLANS PREPARED FOR:



400 SOUTH TRYON STREET  
CHARLOTTE, NC 28285  
Office: (704) 382-0913

PLANS PREPARED BY:



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

N.C. LICENSE # C-1794



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

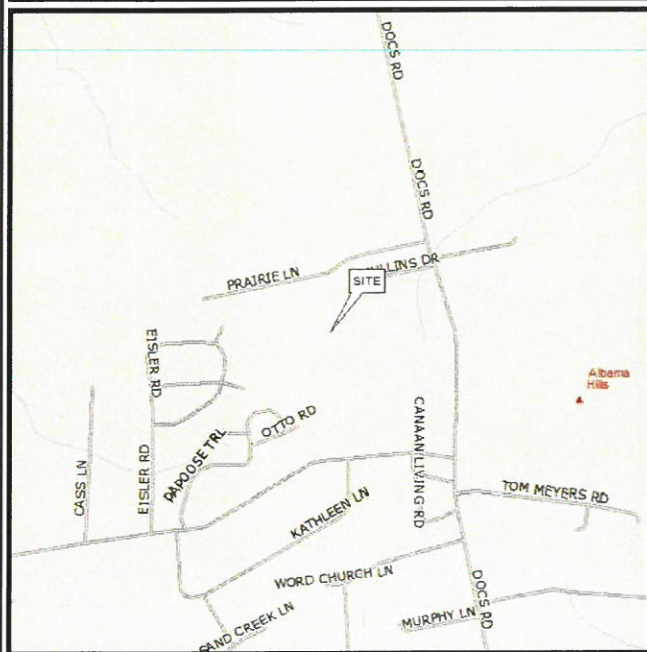
NORTH CAROLINA ONE CALL  
IT'S THE LAW

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

UTILITY STATEMENT

REV	DATE	ISSUED FOR:
2	11-02-18	JURISDICTION COMMENTS
1	10-09-18	CONSTRUCTION
0	07-24-18	DRAWING SET BY OTHERS

DRAWN BY: CKB CHECKED BY: JBG



LOCATION MAP

LATITUDE N 35° 19' 25.47" (NAD '83)  
LONGITUDE W 78° 59' 54.94" (NAD '83)  
GROUND ELEVATION (AMSL) = 472.0' ±  
\* INFORMATION TAKEN FROM AERONAUTICAL STUDY # 2018-ASO-7886-OE, DATED: JULY 2, 2018.

1-A CERTIFICATION

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING:  
1. NC BUILDING CODE (2012 EDITION)  
2. ANSI/TIA/EIA-222-G  
3. NC ELECTRIC CODE (2014 EDITION) (NEC 2014 & W/ NC ADDENDUMS)  
4. LOCAL BUILDING CODE  
5. CITY/COUNTY ORDINANCE

CODE COMPLIANCE

TOWER OWNER:

NAME DUKE ENERGY  
ADDRESS 401 SOUTH COLLEGE STREET  
CITY, STATE, ZIP CHARLOTTE, NC 28202  
CONTACT DENNIS KOROLL, P.E.  
PHONE (704) 382-4406

PROPERTY OWNER:

NAME P.E.C. COMMUNICATIONS LLC.  
ADDRESS 410 SOUTH WILMINGTON STREET  
CITY, STATE, ZIP RALEIGH, NC 27601  
CONTACT UNKNOWN  
PHONE N/A

SITE APPLICANT:

NAME DUKE ENERGY  
ADDRESS 401 SOUTH COLLEGE STREET  
CITY, STATE, ZIP CHARLOTTE, NC 28202  
CONTACT DENNIS KOROLL, P.E.  
PHONE (704) 382-4406

AREA OF CONSTRUCTION: 1390± S.F.  
PRESENT OCCUPANCY TYPE: TELECOMMUNICATIONS TOWER  
PROPOSED OCCUPANCY TYPE: TELECOMMUNICATIONS TOWER  
CURRENT ZONING: RA-20R  
PARCEL ID: 030507 0048 01  
JURISDICTION: HARNETT COUNTY

UTILITIES:

POWER COMPANY: DUKE ENERGY  
CONTACT: CUSTOMER SERVICE  
PHONE: (800) 452-2777  
POLE # NEAR SITE: UNKNOWN  
TELEPHONE COMPANY: UNKNOWN  
CONTACT: N/A  
PHONE: N/A  
PEDESTAL # NEAR SITE: N/A

PROJECT SUMMARY

SURVEYOR:

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

CIVIL ENGINEER:

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

STRUCTURAL ENGINEER:

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

ELECTRICAL ENGINEER:

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

GEOTECHNICAL ENGINEER:

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

TOWER MANUFACTURER:

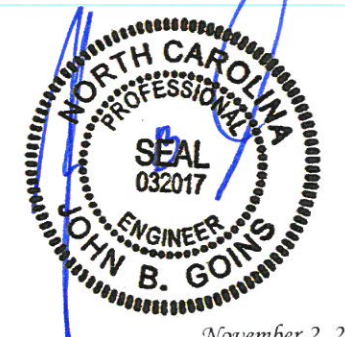
NAME TBD  
ADDRESS TBD  
CITY, STATE, ZIP TBD  
CONTACT TBD  
PHONE TBD

PROJECT TEAM

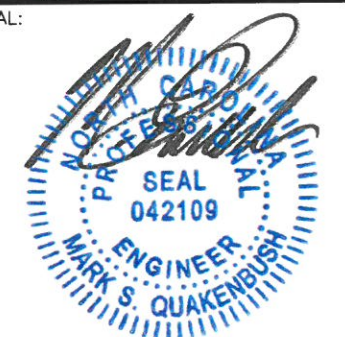
SHEET	DESCRIPTION	REV
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SEAL:



SHEET NUMBER: <b>T-1</b>	REVISION: <b>2</b>
TEP#: 50076.182952	



**GENERAL NOTES:**

- ALL REFERENCES TO OWNER IN THESE DOCUMENTS SHALL BE CONSIDERED DUKE ENERGY OR ITS DESIGNATED REPRESENTATIVE.
- ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST HAVE CONSIDERABLE EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE OF NORTH CAROLINA.
- STRUCTURE IS DESIGNED IN ACCORDANCE WITH ANSI/TIA-222-G, 2009, AND CONFORMS TO THE REQUIREMENTS OF THE NORTH CAROLINA STATE BUILDING CODE, 2012 EDITION.
- WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE NORTH CAROLINA STATE BUILDING CODE, 2012 EDITION.
- 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.
- ALL HARDWARE ASSEMBLY MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED EXACTLY AND SHALL SUPERSEDE ANY CONFLICTING NOTES ENCLOSED HEREIN.
- IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE, TO INSURE 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.
- ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS SHOWN ON THE DRAWINGS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO BEGINNING ANY MATERIALS ORDERING, FABRICATION OR CONSTRUCTION WORK ON THIS PROJECT. CONTRACTOR SHALL NOT SCALE CONTRACT DRAWINGS IN LIEU OF FIELD VERIFICATIONS. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND THE OWNER'S ENGINEER. THE DISCREPANCIES MUST BE RESOLVED BEFORE THE CONTRACTOR IS TO PROCEED WITH THE WORK. THE CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL 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.
- 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.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR INSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.
- ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS, WITH THE RESIDENT LEASING AGENT FOR APPROVAL.
- BILL OF MATERIALS AND PART NUMBERS LISTED ON CONSTRUCTION DRAWINGS ARE INTENDED TO AID CONTRACTOR. CONTRACTOR SHALL VERIFY PARTS AND QUANTITIES WITH MANUFACTURER PRIOR TO BIDDING AND/OR ORDERING MATERIALS.
- 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.
- 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, THE CONTRACTOR MUST NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY OR CITY) ENGINEER.
- 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 SOFTER MATERIAL SHALL BE REWORKED OR REPLACED.
- 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.
- ALL MATERIALS AND WORKMANSHIP SHALL BE WARRANTED FOR ONE YEAR FROM ACCEPTANCE DATE.
- ALL BUILDING DIMENSIONS SHALL BE VERIFIED WITH THE PLANS (LATEST REVISION) PRIOR TO COMMENCING CONSTRUCTION. NOTIFY THE ENGINEER IMMEDIATELY IF ANY DISCREPANCIES ARE DISCOVERED. THE OWNER SHALL HAVE A SET OF APPROVED PLANS AVAILABLE AT THE SITE AT ALL TIMES WHILE WORK IS BEING PERFORMED. A DESIGNATED RESPONSIBLE EMPLOYEE SHALL BE AVAILABLE FOR CONTACT BY GOVERNING AGENCY INSPECTORS.

**STRUCTURAL STEEL NOTES:**

- THE FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATIONS AND MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN, 13TH EDITION.
- UNLESS OTHERWISE NOTED, ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
  - STRUCTURAL STEEL, ASTM DESIGNATION A36 OR A992.
  - ALL BOLTS, ASTM A325 TYPE 1 GALVANIZED HIGH STRENGTH BOLTS.
  - ALL NUTS, ASTM A563 CARBON AND ALLOY STEEL NUTS.
  - ALL WASHERS, ASTM F436 HARDENED STEEL WASHERS.
- ALL CONNECTIONS NOT FULLY DETAILED ON THESE PLANS SHALL BE DETAILED BY THE STEEL FABRICATOR IN ACCORDANCE WITH AISC SPECIFICATIONS AND MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN, 13TH EDITION.
- HOLES SHALL NOT BE FLAME CUT THRU STEEL UNLESS APPROVED BY THE ENGINEER.
- HOT-DIP GALVANIZE ALL ITEMS UNLESS OTHERWISE NOTED, AFTER FABRICATION WHERE PRACTICABLE. GALVANIZING: ASTM A123, ASTM, A153/A153M OR ASTM A653/A653M, G90, AS APPLICABLE.
- REPAIR DAMAGED SURFACES WITH GALVANIZING REPAIR METHOD AND PAINT CONFORMING TO ASTM A780 OR BY APPLICATION OF STICK OR THICK PASTED MATERIAL SPECIFICALLY DESIGNED FOR REPAIR OF GALVANIZING. CLEAN AREAS TO BE REPAIRED AND REMOVE SLAG FROM WELDS. HEAT SURFACES TO WHICH STICK OR PASTE MATERIAL IS APPLIED, WITH A TORCH TO A TEMPERATURE SUFFICIENT TO MELT THE METALLICS IN STICK OR PASTE; SPREAD MOLTEN MATERIAL UNIFORMLY OVER SURFACES TO BE COATED AND WIPE OFF ANY EXCESS.
- A NUT LOCKING DEVICE SHALL BE INSTALLED ON ALL PROPOSED AND/OR REPLACED BOLTS.
- ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXCLUDE THE THREADS FROM THE SHEAR PLANE.
- ALL PROPOSED AND/OR REPLACED BOLTS SHALL BE OF SUFFICIENT LENGTH SUCH THAT THE END OF THE BOLT BE AT LEAST FLUSH WITH THE FACE OF THE NUT. IT IS NOT PERMITTED FOR THE BOLT END TO BE BELOW THE FACE OF THE NUT AFTER TIGHTENING IS COMPLETED.
- ALL ASSEMBLY AND ANCHOR BOLTS ARE TO BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED IN SECTION 8.1 OF THE AISC, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", DATED JUNE 30, 2004.
- FLAT WASHERS ARE TO BE INSTALLED WITH BOLTS OVER SLOTTED HOLES.
- DO NOT OVER TORQUE ASSEMBLY BOLTS. GALVANIZING ON BOLTS, NUTS, AND STEEL PARTS MAY ACT AS A LUBRICANT, THUS OVER TIGHTENING MAY OCCUR AND MAY CAUSE BOLTS TO CRACK AND SNAP OFF.
- PAL NUTS ARE TO BE INSTALLED AFTER NUTS ARE TIGHT AND WITH EDGE LIP OUT. PAL NUTS ARE NOT REQUIRED WHEN SELF-LOCKING NUTS ARE PROVIDED.
- GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED.
- WELDING SHALL BE PERFORMED IN ACCORDANCE WITH AMERICAN WELDING SOCIETY (AWS) D1.1-2010 STRUCTURAL WELDING CODE - STEEL.

PLANS PREPARED FOR:



400 SOUTH TRYON STREET  
CHARLOTTE, NC 28285  
OFFICE: (704) 382-0913

PROJECT INFORMATION:

**LILLINGTON RADIO**


1132 DOCS ROAD  
LILLINGTON, NC 27546  
(HARNETT COUNTY)

PLANS PREPARED BY:



**TOWER ENGINEERING PROFESSIONALS**  
326 TRYON ROAD  
RALEIGH, NC 27603-3530  
OFFICE: (919) 661-6351  
www.tepgroup.net  
N.C. LICENSE # C-1794

SEAL:



October 9, 2018

1	10-09-18	CONSTRUCTION
0	07-24-18	DRAWING SET BY OTHERS
REV	DATE	ISSUED FOR:
DRAWN BY: CKB		CHECKED BY: JBG

SHEET TITLE:

**PROJECT NOTES**

SHEET NUMBER: **N-1**

REVISION: **1**

TEP#: 50076.182952



**A.**



**SITE NAME: LILLINGTON RADIO**  
**SITE NO: NCLIL014**  
**ANTENNA SITE REG. NO: 1306803**

**UPON ENTRY & EXIT CALL:**  
**1-888-333-8251**

In case of emergency or if you have any concerns regarding the condition of this site, please call the number above or Corporate Security Command Center at 1-888-275-4357

WHITE BACKGROUND W/ BLACK LETTERING  
 QUANTITY: (1)  
 (DUKE WILL PROVIDE SIGN, CATALOG ID# 1549378. USE MAILBOX STYLE NUMBERS AND LETTERS TO ADD SITE INFORMATION)

**E.**



WHITE BACKGROUND  
 W/ BLACK LETTERING  
 QUANTITY: (1 TYPICAL)


**H.**

**DO NOT CLIMB  
 TOWER WITHOUT  
 OWNER'S WRITTEN  
 PERMISSION**

WHITE BACKGROUND W/ RED LETTERING  
 QUANTITY: (1)

**B.**

**NOTICE** ← BLUE



Radio frequency fields beyond this point may exceed the FCC general public exposure limit.


Obey all posted signs and site guidelines for working in radio frequency environments.

Follow all posted signs and site guidelines for working in a RF environment. Ref. FCC 47CFR1.1307(b)

WHITE/BLUE BACKGROUND  
 W/ BLACK LETTERING  
 QUANTITY: (1)

**C.**

**CAUTION** ← YELLOW



ON THIS TOWER:  
 Radio frequency fields near some antennas may exceed FCC rules for human exposure.

Personnel climbing this tower should be trained for working in radio frequency environments and use a personal RF monitor.

In accordance with Federal Communication Commission rules on radio frequency emissions 47CFR1.1307(b)

WHITE/YELLOW BACKGROUND  
 W/ BLACK LETTERING  
 QUANTITY: (1)

**D.**

**NOTICE** ← YELLOW

GUIDELINES FOR WORKING IN RADIO FREQUENCY ENVIRONMENTS

- ⚠ All personnel should have electromagnetic energy (EME) awareness training.
- ⚠ All personnel entering this site must be authorized.
- ⚠ Obey all posted signs.
- ⚠ Assume all antennas are active.
- ⚠ Before working on antennas, notify owners and disable appropriate transmitters.
- ⚠ Maintain minimum 3 feet clearance from all antennas.
- ⚠ Do not stop in front of antennas.
- ⚠ Use personal RF monitors while working near antennas.
- ⚠ Never operate transmitters without shields during normal operation.
- ⚠ Do not operate base station antennas in equipment room.

YELLOW BACKGROUND  
 W/ BLACK LETTERING  
 QUANTITY: (1)


**F.**

**1132  
 DOCS ROAD**

WHITE BACKGROUND W/ BLACK LETTERING  
 QUANTITY: (1 TYPICAL)

**G.**

**NO TRESPASSING** ← BLUE  
 VIOLATORS WILL BE PROSECUTED



**AUTHORIZED PERSONNEL ONLY!**

In case of emergency, or prior to performing maintenance on this site, call 1-888-275-4357 and reference cell site number.

WHITE/BLUE BACKGROUND W/ BLACK LETTERING  
 QUANTITY: (4)  
 (THIS SIGN WILL BE SUPPLIED BY DUKE ENERGY)

**I.**

**WARNING** ← ORANGE

**ARC FLASH AND SHOCK  
 HAZARD  
 APPROPRIATE PPE  
 REQUIRED**

WHITE/ORANGE BACKGROUND  
 W/ BLACK LETTERING  
 QUANTITY: (1, AS NECESSARY)


**SIGNAGE NOTES:**

- FOR FULL SIGNAGE LOCATIONS AROUND THE SITE COMPOUND, REFERENCE SHEET C-2.
- SIGNS SHALL MEASURE 8" X 12" (UNLESS OTHERWISE NOTED), BE FABRICATED FROM CORROSION RESISTANT PRESSED METAL, AND PAINTED WITH LONG LASTING UV RESISTANT COATINGS.
- ADDITIONAL E911 ADDRESS SIGNS ARE REQUIRED AT EACH ACCESS ROAD GATE LEADING TO THE COMPOUND AS WELL AS ON THE COMPOUND GATE ITSELF.
- ALL SIGNS ARE TO BE MOUNTED USING 17 GAUGE ALUMINUM FENCE WIRE UNLESS OTHERWISE NOTED. DO NOT USE PLASTIC TIE WRAPS TO MOUNT EXTERIOR SIGNS.
- RECOMMENDED SOURCE FOR OBTAINING SIGNAGE (AS NEEDED):

SITE INFORMATION / ASR SIGNS:  
 FLORIDA PRINT SOLUTIONS, INC.  
 432 31ST STREET NORTH  
 ST. PETERSBURG, FL 33713  
 (727) 327-5500

RF SAFETY SIGNS:  
 RICHARD TELL ASSOCIATES  
 10037 LONG MEADOW ROAD  
 MADISON, AL 35756  
 (256) 434-1273

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SHEET TITLE:

**SIGNAGE DETAILS**

SHEET NUMBER: **N-2** REVISION: **1**


TEP#: 50076.182952



**NOTES:**

1. INFORMATION SHOWN ON THIS PLAN IS TAKEN FROM SITE MEASUREMENTS BY BURNS & MCDONNELL, AND THE HARNETT COUNTY GIS. ALL INFORMATION SHOWN ON THIS PLAN IS FOR REFERENCE ONLY.
2. THE PROPOSED LOCATION OF THE TOWER IS LOCATED IN FLOOD ZONE "X", AREA TO BE DETERMINED OUTSIDE 0.2% ANNUAL CHANCE FLOODPLAIN. (FEMA/FIRM MAP NUMBER 3720050600J, EFFECTIVE OCTOBER 3, 2006).
3. EXISTING VEGETATION IS SHOWN SURROUNDING THE SITE AND IS BEING USED AS CREDIT IN LIEU OF A NEW LANDSCAPING BUFFER, PER HARNETT COUNTY ORDINANCE ARTICLE VII, SECTION 9.1.4.

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November 2, 2018

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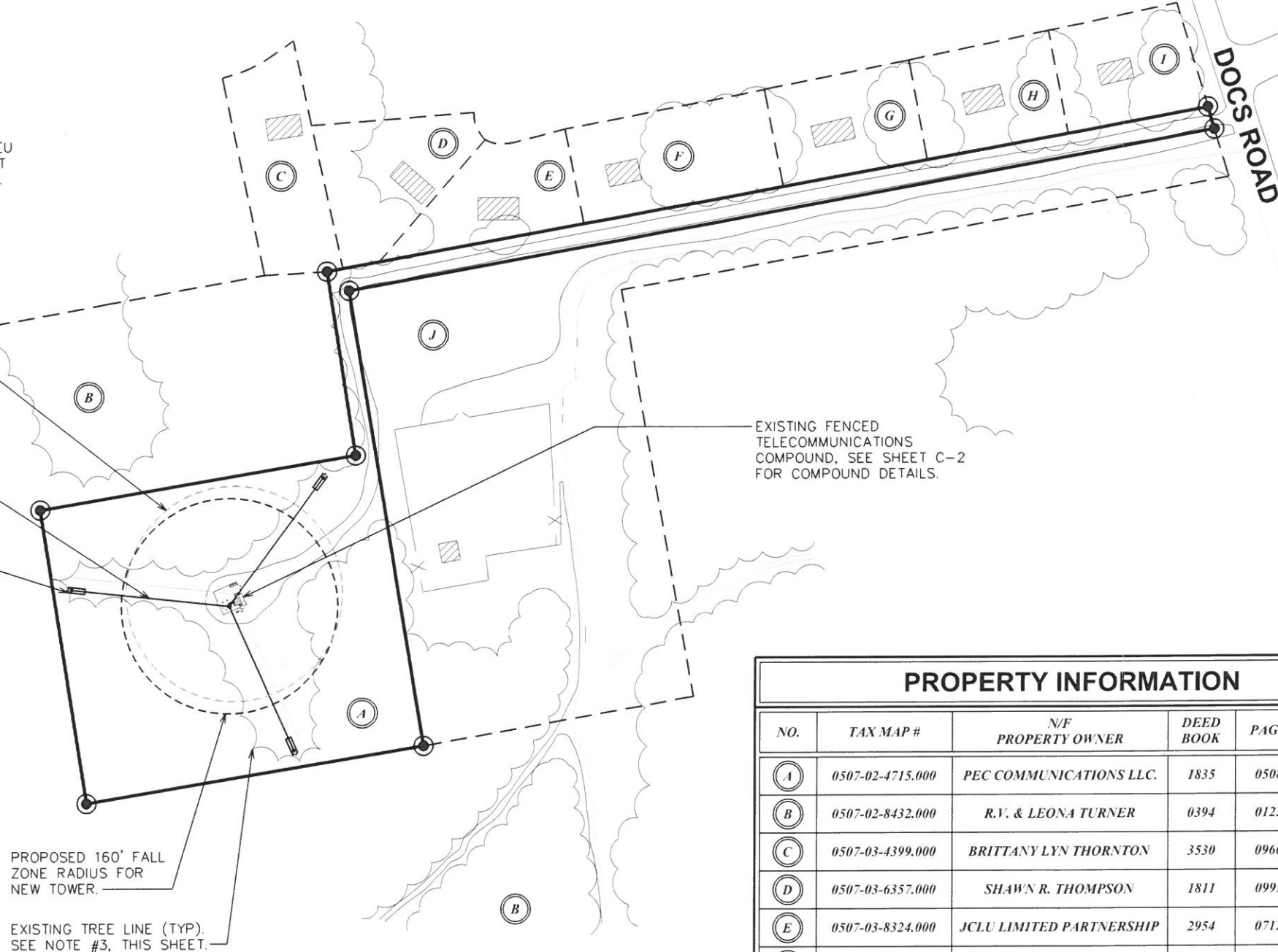
SHEET TITLE:

**SITE PLAN**

SHEET NUMBER: **C-1** REVISION: **2**  
 TEP#: 50076.182952

**LEGEND**

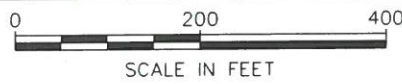
- EXIST. PROPERTY LINE
- ⊕ EXIST. UTILITY POLE
- ⊞ EXIST. TELCO PEDESTAL
- ⊞ EXIST. POWER METER
- ECM ⊞ EXISTING CONCRETE MONUMENT
- PROPERTY CORNER
- IPF IRON PIPE FOUND
- EXIST. CONTOUR LINE
- /// EDGE OF PAVEMENT
- R/W--- RIGHT-OF-WAY
- x — CHAIN LINK FENCE
- ~ EXISTING TREE LINE
- ~ PROPOSED TREE LINE



**PROPERTY INFORMATION**

NO.	TAX MAP #	N/F PROPERTY OWNER	DEED BOOK	PAGE	ZONING
(A)	0507-02-4715.000	PEC COMMUNICATIONS LLC.	1835	0508	RA-20R
(B)	0507-02-8432.000	R.V. & LEONA TURNER	0394	0122	RA-20R
(C)	0507-03-4399.000	BRITTANY LYN THORNTON	3530	0966	RA-20R
(D)	0507-03-6357.000	SHAWN R. THOMPSON	1811	0991	RA-20R
(E)	0507-03-8324.000	JCLU LIMITED PARTNERSHIP	2954	0712	RA-20R
(F)	0507-13-0480.000	GEORGE E. MOORE IV	2082	0291	RA-20R
(G)	0507-13-3435.000	EISHA M. EICHELBERGER	1601	0607	RA-20R
(H)	0507-13-5449.000	BOBBY RAY & EMMA EMERY	3636	0462	RA-20R
(I)	0507-13-7543.000	VICKIE YUNKER	2374	0334	RA-20R
(J)	0507-13-2248.000	CENTRAL ELECTRIC MEMBERSHIP CORP.	2446	0901	RA-20R

**SITE PLAN**  
 SCALE: 1" = 200'





**NOTES:**

1. LOCATE THE FOLLOWING SIGNS IN VISIBLE LOCATIONS WHERE INDICATED ON COMPOUND DETAIL. ALL SIGNS SHALL BE FOR OUTDOOR USE:

- A. DUKE ENERGY SITE INFORMATION
- B. RF NOTICE
- C. RF CAUTION
- D. GUIDELINES FOR WORKING IN RF ENVIRONMENTS
- E. DANGER - NO SMOKING OR OPEN FLAMES
- F. SITE ADDRESS
- G. AUTHORIZED PERSONNEL ONLY
- H. DO NOT CLIMB TOWER W/O OWNER'S WRITTEN PERMISSION
- I. WARNING - APPROPRIATE PPE REQUIRED

LOCATION OF SIGN G.  
SEE NOTE 1 FOR DETAILS.

EXISTING GRAVEL  
INSIDE COMPOUND

EXISTING FENCED  
TELECOMMUNICATIONS  
COMPOUND TO REMAIN  
UNCHANGED

PROPOSED 24" WIDE ICE  
BRIDGE (EST. 10'± IN LENGTH), SEE  
SHEET C-4 FOR DETAILS.

LOCATION OF SIGNS C AND H.  
SEE NOTE 1 FOR DETAILS.

PROPOSED 315' GUYED  
TOWER, SEE SHEET C-3 FOR  
ELEVATION DETAILS.

LOCATION OF SIGN G & E.  
SEE NOTE 1 FOR DETAILS.

EXISTING TELCO  
PEDESTAL TO REMAIN

EXISTING FOUNDATIONS AT  
GRADE TO BE REMOVED AS  
NEEDED (TYP OF 4)

LOCATION OF SIGN G.  
SEE NOTE 1 FOR DETAILS.

LOCATION OF SIGN D.  
SEE NOTE 1 FOR DETAILS.

EXISTING LPG TANK  
TO REMAIN

LOCATION OF SIGN E.  
SEE NOTE 1 FOR DETAILS.

EXISTING GUYED TOWER,  
FOUNDATION, AND GUY WIRES TO  
BE REMOVED AFTER CONSTRUCTION  
OF PROPOSED TOWER, SEE SHEET  
C-3 FOR DETAILS.

LOCATION OF SIGNS A, B, F,  
AND G. SEE NOTE 1 FOR DETAILS.

EXISTING GENERATOR TO REMAIN

EXISTING ICE BRIDGE  
TO BE REMOVED

EXISTING 10' X 10' EQUIPMENT  
SHELTER TO REMAIN

EXISTING METER TO REMAIN

LOCATIONS OF SIGN I. SEE  
NOTE 1 FOR DETAILS.


PROPOSED ENTRY PORT IN  
EXISTING SHELTER, SEE SHEET  
C-4 FOR DETAILS.

EXISTING PULLBOX TO REMAIN

EXISTING FIBER CABINET  
TO REMAIN



PLANS PREPARED FOR:



**DUKE ENERGY**  
400 SOUTH TRYON STREET  
CHARLOTTE, NC 28285  
OFFICE: (704) 382-0913

PROJECT INFORMATION:

**LILLINGTON RADIO**


1132 DOCS ROAD  
LILLINGTON, NC 27546  
(HARNETT COUNTY)

PLANS PREPARED BY:



**TOWER ENGINEERING PROFESSIONALS**  
326 TRYON ROAD  
RALEIGH, NC 27603-3530  
OFFICE: (919) 661-6351  
www.tepgroup.net  
N.C. LICENSE # C-1794

SEAL:



October 9, 2018

1	10-09-18	CONSTRUCTION
0	07-24-18	DRAWING SET BY OTHERS
REV	DATE	ISSUED FOR:

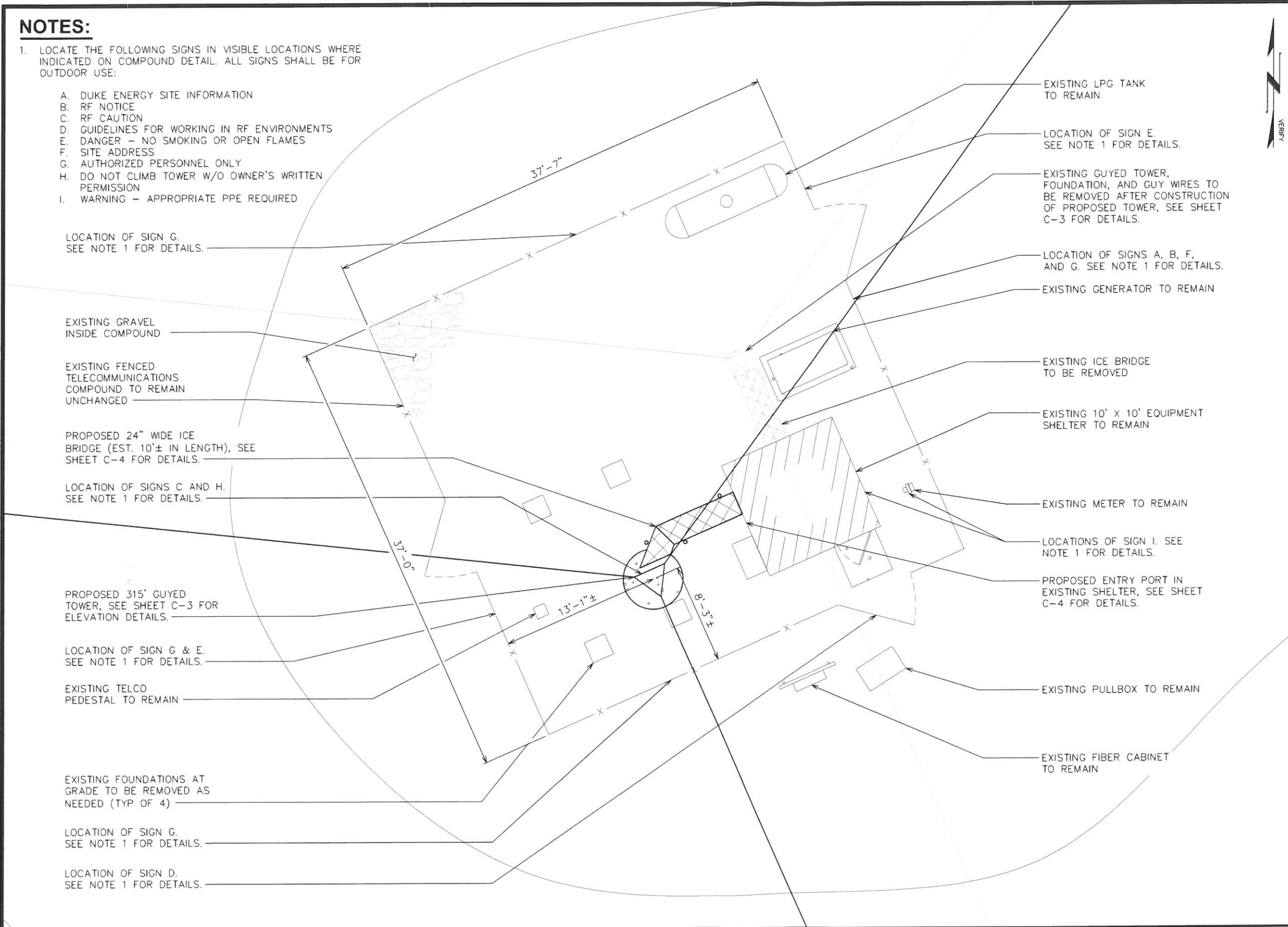
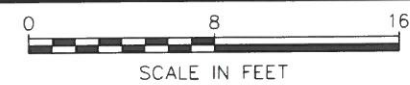
DRAWN BY: CKB    CHECKED BY: JBG

SHEET TITLE:  
**COMPOUND DETAIL**

SHEET NUMBER: **C-2**    REVISION: **1**  
TEP#: 50076.182952

**COMPOUND DETAIL**

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





**ANTENNA & MOUNT NOTE:**

1. PROPOSED ANTENNAS, EQUIPMENT AND MOUNTS SHOWN ON THIS SHEET. SEE SHEET C-5 FOR FUTURE ANTENNAS AND EQUIPMENT.
2. PROPOSED ANTENNA/MICROWAVE MOUNTS ARE TO BE SUPPLIED BY CONTRACTOR. MOUNTS SPECIFIED ON SHEET C-5 SHOULD NOT BE DUPLICATED IF EXISTING MOUNTS ARE PRESENT. SHEET C-5 SHOULD ALSO BE REFERENCED FOR ANY ANTENNA/MICROWAVE SPECIFIC INFORMATION.

**LIGHTING NOTE:**

THE FAA CONDUCTED AN AERONAUTICAL STUDY (NO. 2018-ASO-7886-OE) WITH THE MEDIUM-INTENSITY DUAL OBSTRUCTION LIGHT STANDARD (FAA STYLE E) SPECIFIED FOR THE PROPOSED TOWER (PER FAA AC 70/7460-1L).

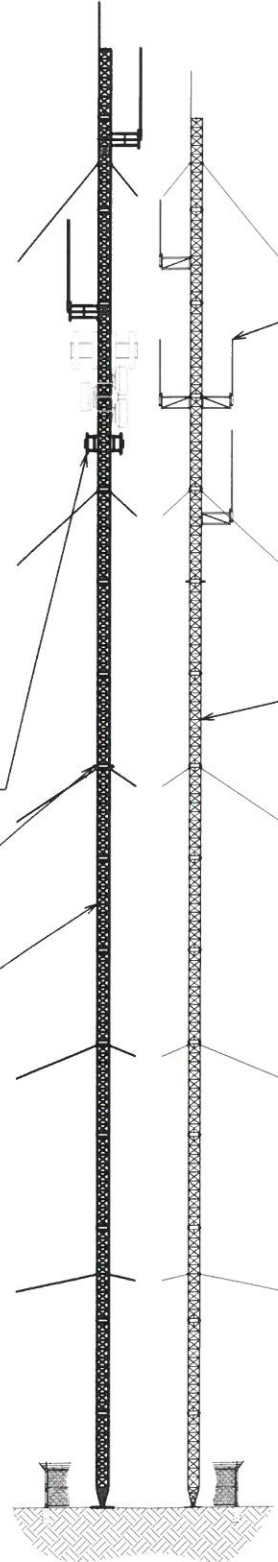
- 325'-0" (AGL)  
T/LIGHTNING ROD
- 315'-0" (AGL)  
T/TOWER
- 306'-5" (AGL)  
Q/OMNI #24
- 293'-0" (AGL)  
Q/TTAS #22-23
- 269'-5" (AGL)  
Q/OMNI #21
- 250'-0" (AGL)  
Q/ANTENNAS #6-20 (FUTURE)
- 243'-0" (AGL)  
Q/MW DISH #8 (FUTURE)
- 240'-0" (AGL)  
Q/MW DISH #5-7 (FUTURE)
- 237'-0" (AGL)  
Q/MW DISH #5 (FUTURE)
- 230'-0" (AGL)  
Q/CAMBIUM RADIOS #1-4

PROPOSED ANTENNA AND ANTENNA MOUNT (TYP). SEE SHEET C-5 FOR DETAILS & SCHEDULE.

PROPOSED TOWER LIGHTING. SEE NOTE, THIS SHEET.

PROPOSED 315' GUYED TOWER. TOWER MANUFACTURER TO BE DETERMINED.

0'-0"± (REFERENCE)  
T/CONCRETE



300'-0" (AGL)  
T/TOWER

EXISTING ANTENNAS AND MOUNTS TO BE REMOVED AFTER CONSTRUCTION OF PROPOSED GUYED TOWER.

EXISTING GUYED TOWER TO BE REMOVED AFTER CONSTRUCTION OF GUYED PROPOSED TOWER.

0'-0"± (REFERENCE)  
T/CONCRETE

**TOWER ELEVATION**

SCALE: 1" = 40'



PLANS PREPARED FOR:

400 SOUTH TRYON STREET  
CHARLOTTE, NC 28285  
OFFICE: (704) 382-0913

PROJECT INFORMATION:

**LILLINGTON RADIO**

1132 DOCS ROAD  
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PLANS PREPARED BY:

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N.C. LICENSE # C-1794

SEAL:

November 2, 2018

REV	DATE	ISSUED FOR:
2	11-02-18	JURISDICTION COMMENTS
1	10-09-18	CONSTRUCTION
0	07-24-18	DRAWING SET BY OTHERS

DRAWN BY: CKB CHECKED BY: JBG

SHEET TITLE:


**TOWER ELEVATION**

SHEET NUMBER: **C-3** REVISION: **2**

TEP#: 50076.182952



SEAL:



October 9, 2018

1	10-09-18	CONSTRUCTION
0	07-24-18	DRAWING SET BY OTHERS
REV	DATE	ISSUED FOR:
DRAWN BY: CKB		CHECKED BY: JBG

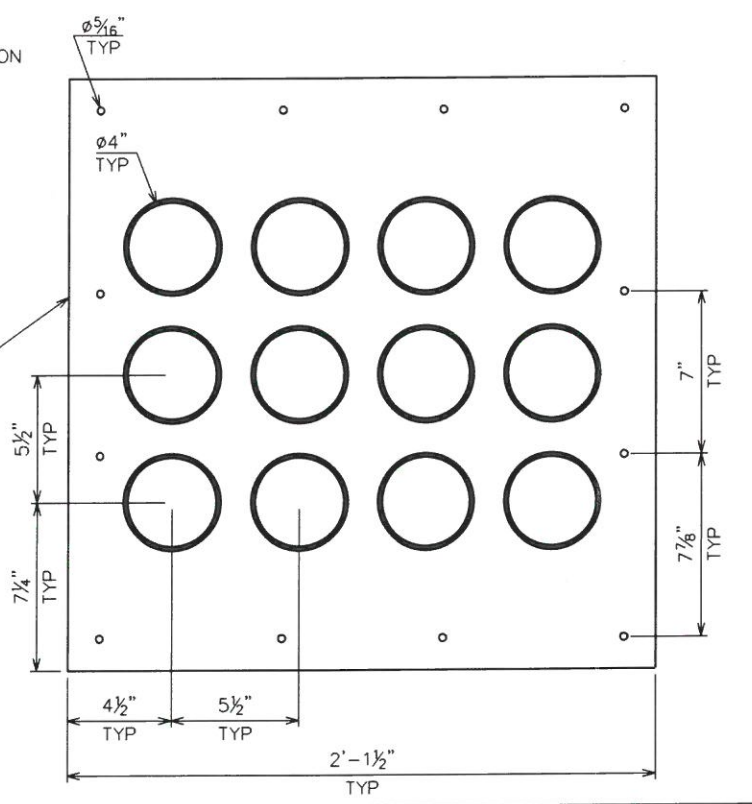
SHEET TITLE:  
**COAX ROUTING DETAILS**

SHEET NUMBER: **C-4** REVISION: **1**  
 TEP#: 50076.182952

**NOTES:**

- CONTRACTOR TO CONFIRM CONSTRUCTION AND PORT PLACEMENT. CONSTRUCT ENTRY PORT PER MANUFACTURER'S RECOMMENDATIONS.
- COAX TO BE SEALED USING SITE PRO ENTRY BOOTS OR APPROVED EQUIVALENTS THAT MATCH CABLE GROUPING REQUIREMENTS.

PROPOSED COAX ENTRY PORT BY SITEPRO (P/N: E1118) OR APPROVED EQUAL



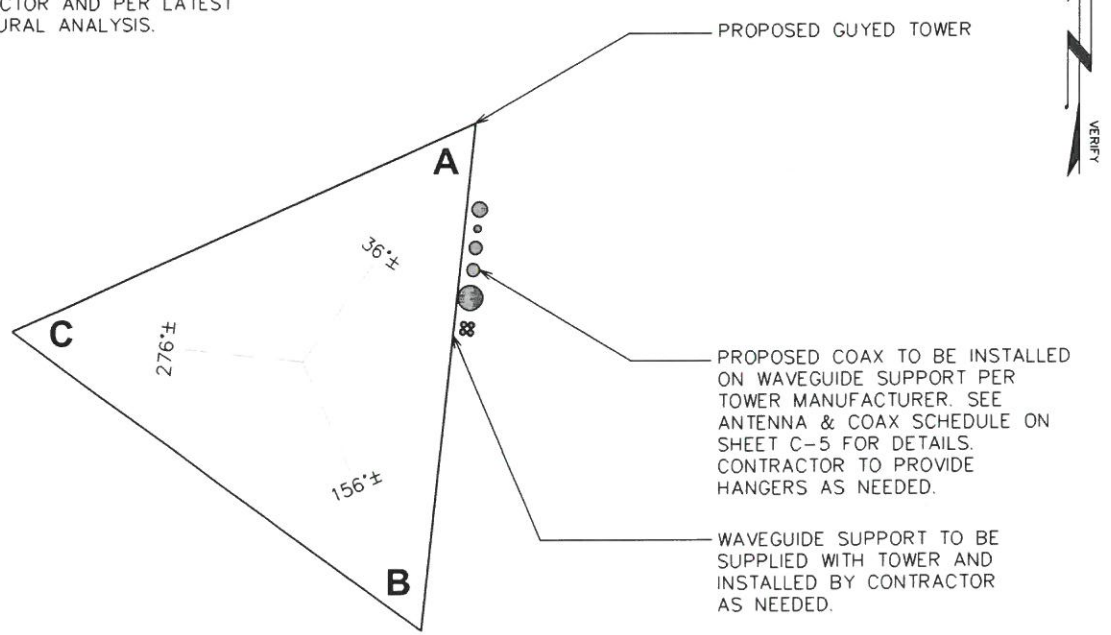
**COAX PORT DETAIL**

SCALE: 1 1/2" = 1'-0"



**NOTE:**

COAX TO BE PLACED BY CONTRACTOR AND PER LATEST STRUCTURAL ANALYSIS.

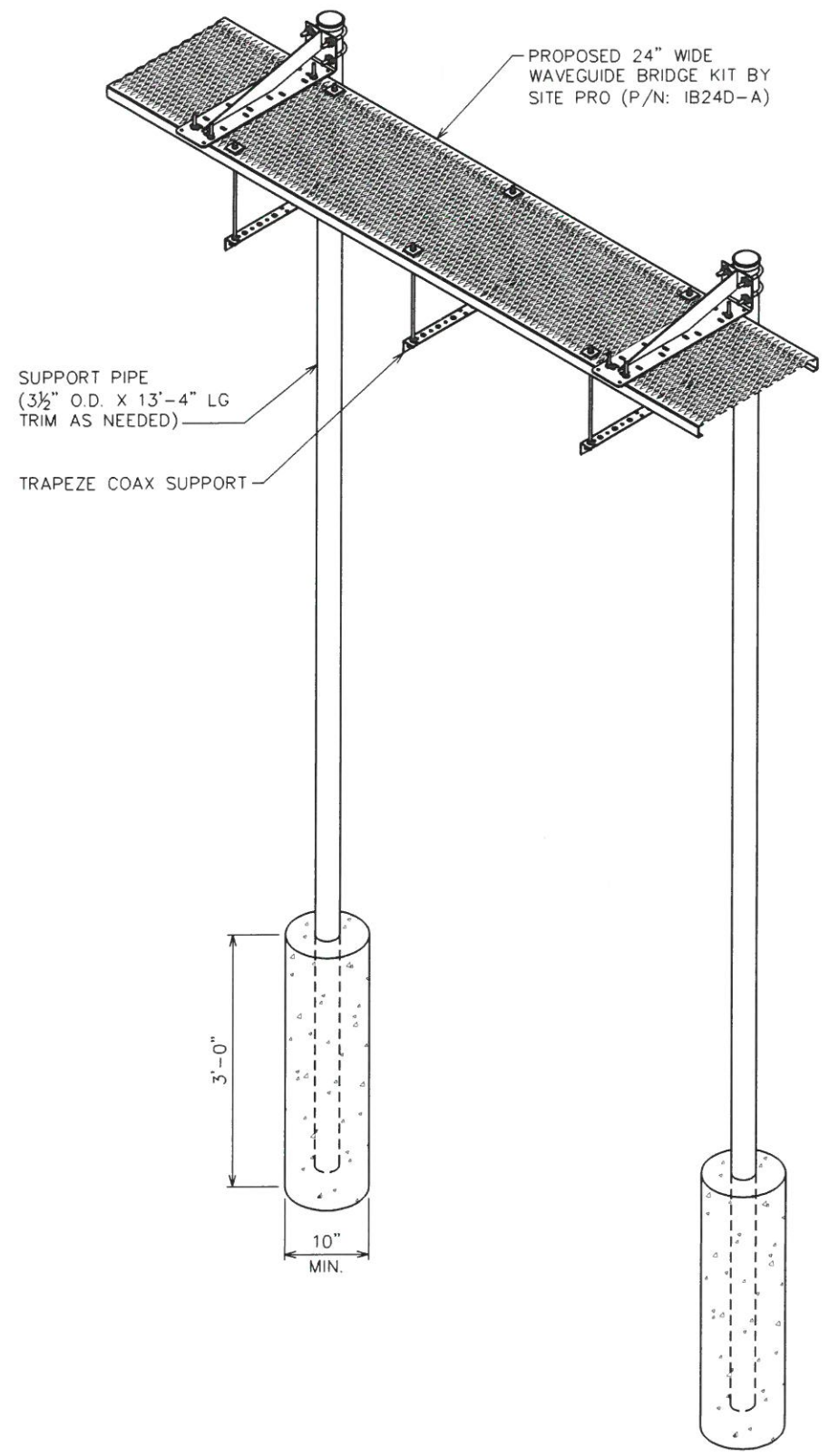


PROPOSED COAX TO BE INSTALLED ON WAVEGUIDE SUPPORT PER TOWER MANUFACTURER. SEE ANTENNA & COAX SCHEDULE ON SHEET C-5 FOR DETAILS. CONTRACTOR TO PROVIDE HANGERS AS NEEDED.

WAVEGUIDE SUPPORT TO BE SUPPLIED WITH TOWER AND INSTALLED BY CONTRACTOR AS NEEDED.

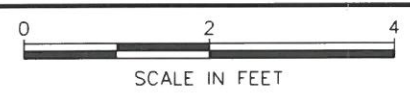
**COAX MOUNTING DETAILS**

SCALE: N.T.S.



**ICE BRIDGE DETAILS**

SCALE: 1/2" = 1'-0"

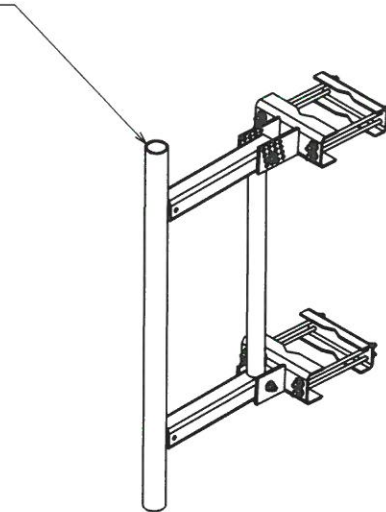




**NOTE:**

VERIFY LEG SIZE WITH TOWER MANUFACTURER DRAWINGS

PROPOSED 2' LONG STAND-OFF BRACKET BY SITE PRO (P/N: USF-2U) OR APPROVED EQUAL, INSTALLED BY CONTRACTOR.



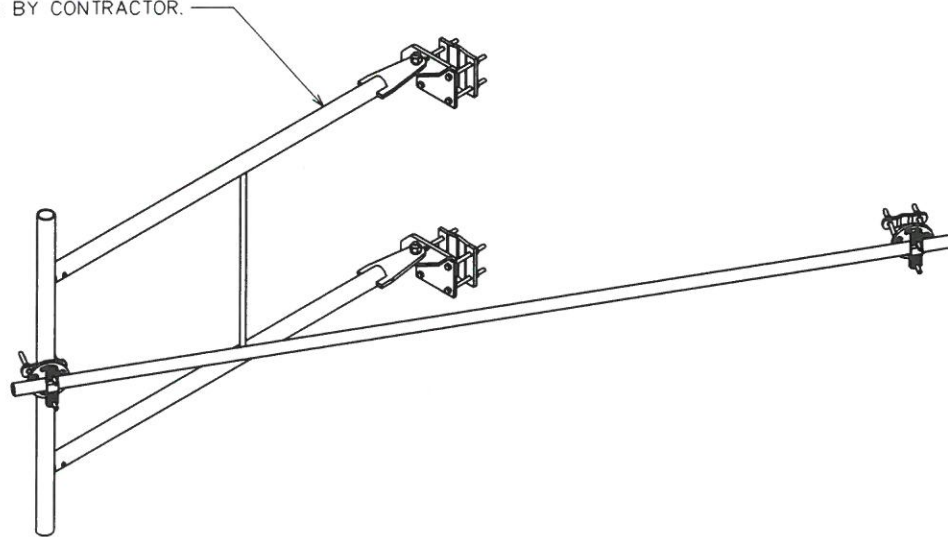
**PROPOSED 2' STANDOFF MOUNT (TYP)**

SCALE: N.T.S.

**NOTE:**

VERIFY LEG SIZE WITH TOWER MANUFACTURER DRAWINGS

PROPOSED 6' LONG STAND-OFF BRACKET W/ STIFF ARM BY SITE PRO (P/N: PSA6) OR APPROVED EQUAL, INSTALLED BY CONTRACTOR.



**PROPOSED 6' STANDOFF MOUNT (TYP)**

SCALE: N.T.S.

PROPOSED EQUIPMENT IN BOLD

**PROPOSED ANTENNA / COAX SCHEDULE**

ITEM NUMBER	TECHNOLOGY	MANUFACTURER (MODEL #)	MOUNTING HEIGHT	LEG	AZIMUTH	COAX SIZE	COAX LENGTH
1-4	<b>RADIO</b>	<b>(4) CAMBIUM PMP 450m</b>	ε @ 230'-0"	(2) A & (2) B	30°, 300° & 120°, 210°	(4) CAT5e	*260'±
5	MICROWAVE (FUTURE)	RFS PADX6-W57AC	ϕ @ 237'-0"	TBD	TBD	(2) EU63	*267'±
6-7	MICROWAVE (FUTURE)	(2) RFS PADX6-W57AC	ϕ @ 240'-0"	TBD	TBD	(4) EU63	*270'±
8	MICROWAVE (FUTURE)	RFS PADX6-W57AC	ϕ @ 243'-0"	TBD	TBD	(2) EU63	*273'±
9-20	PANEL ANTENNA (FUTURE)	CSS (3) X7C-865 (3) X7CAP-86-865-V (6) X7CQAP-880-V	ϕ @ 250'-0"	A, B, & C	TBD	(12) 1 5/8"	*280'±
21	<b>OMNI</b>	<b>COMMSCOPE DB810KE-SY</b>	ε @ 269'-5"	<b>B</b>	N/A	1 5/8"	*300'±
22-23	<b>TTA</b>	<b>(2) TX / RX 430-94C-09168-T</b>	ε @ 293'-0"	<b>AB FACE</b>	N/A	(2) 7/8"	*323'±
24	<b>OMNI</b>	<b>COMMSCOPE DB810KE-SY</b>	ε @ 306'-5"	<b>A</b>	N/A	1/2"	*337'±

\* CONTRACTOR TO FIELD VERIFY COAX LENGTH PRIOR TO CONSTRUCTION.

**PROPOSED ANTENNA / COAX SCHEDULE**

SCALE: N.T.S.

PLANS PREPARED FOR:



400 SOUTH TRYON STREET  
CHARLOTTE, NC 28285  
OFFICE: (704) 382-0913

PROJECT INFORMATION:

**LILLINGTON RADIO**

1132 DOCS ROAD  
LILLINGTON, NC 27546  
(HARNETT COUNTY)

PLANS PREPARED BY:



**TOWER ENGINEERING PROFESSIONALS**  
326 TRYON ROAD  
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OFFICE: (919) 661-6351  
www.tepgroup.net

N.C. LICENSE # C-1794

SEAL:



October 9, 2018

REV	DATE	ISSUED FOR:
1	10-09-18	CONSTRUCTION
0	07-24-18	DRAWING SET BY OTHERS

DRAWN BY: CKB CHECKED BY: JBG

SHEET TITLE:

**ANTENNA MOUNTING DETAILS**

SHEET NUMBER:	REVISION:
<b>C-5</b>	<b>1</b>
	TEP #: 50076.182952



## SCOPE:

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

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

## CODES:

THE INSTALLATION SHALL COMPLY WITH ALL LAWS APPLYING TO ELECTRICAL INSTALLATION IN EFFECT WITH THE REGULATIONS OF THE LATEST EDITION OF THE NATIONAL ELECTRICAL SAFETY CODE AND THE NEC 2014 (WITH NORTH CAROLINA AMENDMENTS), ADMINISTRATIVE RULES WITH THE NATIONAL ELECTRIC CODE, ALL LOCAL GOVERNING CODES AND ORDINANCES WITH THE REGULATION OF THE SERVING UTILITY COMPANY, AND FULLY COMPLIANT WITH THE STATE CONSTRUCTION OFFICE ELECTRICAL GUIDELINES. ALL PERMITS REQUIRED SHALL BE OBTAINED AND, AFTER COMPLETION OF WORK, THE OWNER SHALL BE FURNISHED A CERTIFICATE OF FINAL INSPECTION AND APPROVAL.

## MATERIALS:

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

## TESTING:

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

## GUARANTEE:

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

## COORDINATION:

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

## EXAMINATION OF SITE:

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

## CUTTING, PATCHING AND EXCAVATION:

- COORDINATION OF ALL SLEEVES, CHASES, ETC., WILL BE REQUIRED PRIOR TO THE CONSTRUCTION OF ANY PORTION OF THE WORK. ALL CUTTING AND PATCHING OF WALLS, PARTITIONS, FLOORS, AND CHASES IN CONCRETE, WOOD, STEEL OR MASONRY SHALL BE DONE AS PROVIDED ON THE DRAWINGS.
- ALL EXCAVATIONS AND BACKFILLING INCIDENTAL TO THE WORK UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR.

## EXTERIOR CONDUIT:

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

## RACEWAYS:

- ALL CONDUCTORS SHALL BE INSTALLED IN CONDUIT. CONDUIT SHALL BE RIGID STEEL, EMT, OR SCH40 PVC. AS INDICATED ON THE DRAWINGS. ALUMINUM CONDUIT SHALL NOT BE ALLOWED.
- WHERE INSTALLED ON EXTERIORS AND EXPOSED TO DAMAGE, ALL CONDUIT SHALL BE RIGID STEEL.
- CONCEALED CONDUIT IN WALLS OR INTERIOR SPACES ABOVE GRADE MAY BE EMT.
- UNDERGROUND CONDUITS SHALL BE RIGID STEEL OR SCH40 PVC AS INDICATED ON THE DRAWINGS.
- ALL CONDUIT RUNS SHALL USE APPROVED COUPLINGS AND CONNECTORS. PROVIDE INSULATED BUSHING FOR ALL CONDUIT TERMINATIONS. ALL CONDUIT RUNS IN A WET LOCATIONS SHALL HAVE WATERPROOF FITTINGS. ALL EMT TERMINATIONS AND COUPLINGS SHALL BE MADE UTILIZING HEXAGONAL COMPRESSION CONNECTORS. NO POT METAL, SETSCREW, OR INDENTED TYPE FITTINGS SHALL BE UTILIZED.
- PROVIDE SUPPORTS FOR ALL CONDUITS IN ACCORDANCE WITH NEC REQUIREMENTS. ALL CONDUITS SHALL BE SIZED AS REQUIRED BY NEC.
- BURIAL DEPTH OF ALL CONDUITS SHALL BE AS REQUIRED BY CODE FOR EACH SPECIFIC CONDUIT TYPE AND APPLICATION.
- CONDUIT ROUTES ARE SCHEMATIC. CONTRACTOR SHALL FIELD VERIFY BEFORE BID. COORDINATE ROUTE WITH WIRELESS CARRIER AND BUILDING OWNER.
- UNDERGROUND AND ABOVE GROUND RACEWAYS SHALL NOT BE RELIED ON FOR GROUNDING CONTINUITY.

## EQUIPMENT:

- ALL DISCONNECT SWITCHES SHALL BE SERVICE ENTRANCE RATED, HEAVY DUTY TYPE.
- NEW CIRCUIT BREAKERS SHALL BE RATED TO WITHSTAND THE MAXIMUM AVAILABLE FAULT CURRENT AS DETERMINED BY THE LOCAL UTILITY. CONTRACTOR SHALL VERIFY MAXIMUM AVAILABLE FAULT CURRENT, AND COORDINATE INSTALLATION WITH THE LOCAL UTILITY BEFORE STARTING WORK. CONTACT TEP IF FAULT CURRENT EXCEEDS BREAKER RATING.

## CONDUCTORS:

- FURNISH AND INSTALL CONDUCTORS CALLED FOR IN THE DRAWINGS. ALL CONDUCTORS SHALL HAVE TYPE THWN OR THW (75 °C) INSULATION, RATED FOR 600 VOLTS.
- ALL CONDUCTORS SHALL BE COPPER, THE USE OF ALUMINUM CONDUCTORS SHALL NOT BE ALLOWED. ALL CONDUCTORS SHALL BE UL LISTED AND SHALL BE PROVIDED AND INSTALLED AS FOLLOWS:
  - MINIMUM WIRE SIZE SHALL BE #12 AWG.
  - ALL CONDUCTORS SIZE #8 AND LARGER SHALL BE STRANDED. CONDUCTORS SIZED #10 AND SMALLER MAY BE SOLID OR STRANDED.
  - CONNECTION FOR #10 AWG AND SMALLER SHALL BE BY TWISTING TIGHT AND INSTALLING INSULATED PRESSURE OR WIRE NUT CONNECTORS.
  - CONNECTION FOR #8 AWG AND LARGER SHALL BE BY USE OF STEEL CRIMP-ON SLEEVES WITH NYLON INSULATOR.
- ALL CONDUCTORS SHALL BE COLOR CODED IN ACCORDANCE WITH NEC STANDARDS.
- THE RACEWAY SYSTEM SHALL BE COMPLETE BEFORE INSTALLING CONDUCTORS.
- A FULL SIZE NEUTRAL SHALL BE PROVIDED FOR EACH CIRCUIT. NO SHARING OF NEUTRAL BETWEEN CIRCUITS ALLOWED.

## PENETRATIONS:

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

## GROUNDING:

- ALL ELECTRICAL NEUTRALS, RACEWAYS AND NON-CURRENT CARRYING PARTS OF ELECTRICAL EQUIPMENT AND ASSOCIATED ENCLOSURES SHALL BE GROUNDED IN ACCORDANCE WITH NEC ARTICLE 250. THIS SHALL INCLUDE NEUTRAL CONDUCTORS, CONDUITS, SUPPORTS, CABINETS, BOXES, GROUND BUSSES, ETC. THE NEUTRAL CONDUCTOR FOR EACH SYSTEM SHALL BE GROUNDED BY ONE POINT ONLY.
- PROVIDE GROUND CONDUCTOR IN ALL RACEWAYS.
- PROVIDE BONDING AND GROUND TO MEET NFPA 780 - LIGHTNING PROTECTION AS A MINIMUM.
- PROVIDE GROUNDING SYSTEM AS INDICATED ON THE DRAWINGS, AS REQUIRED BY THE NATIONAL ELECTRIC CODE AND EQUIPMENT MANUFACTURER'S GROUNDING SPECIFICATIONS.

## INSPECTION:

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

## ABBREVIATIONS AND LEGEND

A	- AMPERE	PNL	- PANEL
AFG	- ABOVE FINISHED GRADE	PNLBD	- PANELBOARD
ATS	- AUTOMATIC TRANSFER SWITCH	PVC	- SCH40 RIGID NON-METALLIC CONDUIT
AWG	- AMERICAN WIRE GAUGE	RGS	- RIGID GALVANIZED STEEL CONDUIT
BCW	- BARE COPPER WIRE	UL	- UNDERWRITERS LABORATORIES
BFG	- BELOW FINISHED GRADE	V	- VOLTAGE
BKR	- BREAKER	W	- WATTS
CKT	- CIRCUIT	XFMR	- TRANSFORMER
DISC	- DISCONNECT	XMTR	- TRANSMITTER
EMT	- ELECTRIC METALLIC TUBING	----	-----E----- UNDERGROUND ELECTRICAL CONDUIT
FSC	- FLEXIBLE STEEL CONDUIT	----	-----T----- UNDERGROUND TELEPHONE CONDUIT
GEN	- GENERATOR	⊞	KILOWATT-HOUR METER
GPS	- GLOBAL POSITIONING SYSTEM	----	----- UNDERGROUND BONDING AND GROUNDING CONDUCTOR.
GRD	- GROUND	⊙	GROUND ROD
IGB	- ISOLATED GROUND BAR	●	CADWELD
IGR	- INTERIOR GROUND RING (HALO)	⊞	GROUND ROD WITH INSPECTION WELL
KW	- KILOWATTS		
NEC	- NATIONAL ELECTRIC CODE		
PH	- PHASE		

PLANS PREPARED FOR:

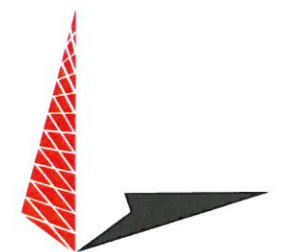


PROJECT INFORMATION:

## LILLINGTON RADIO

1132 DOCS ROAD  
LILLINGTON, NC 27546  
(HARNETT COUNTY)

PLANS PREPARED BY:

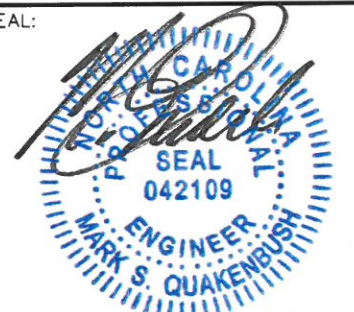


**TOWER ENGINEERING PROFESSIONALS**

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www.tepgroup.net

N.C. LICENSE # C-1794

SEAL:



October 9, 2018

1	10-09-18	CONSTRUCTION
0	07-24-18	DRAWING SET BY OTHERS
REV	DATE	ISSUED FOR:

DRAWN BY: CKB CHECKED BY: JBG

SHEET TITLE:

## ELECTRICAL NOTES

SHEET NUMBER: <b>E-1</b>	REVISION: <b>1</b> TEP#: 50076.182952
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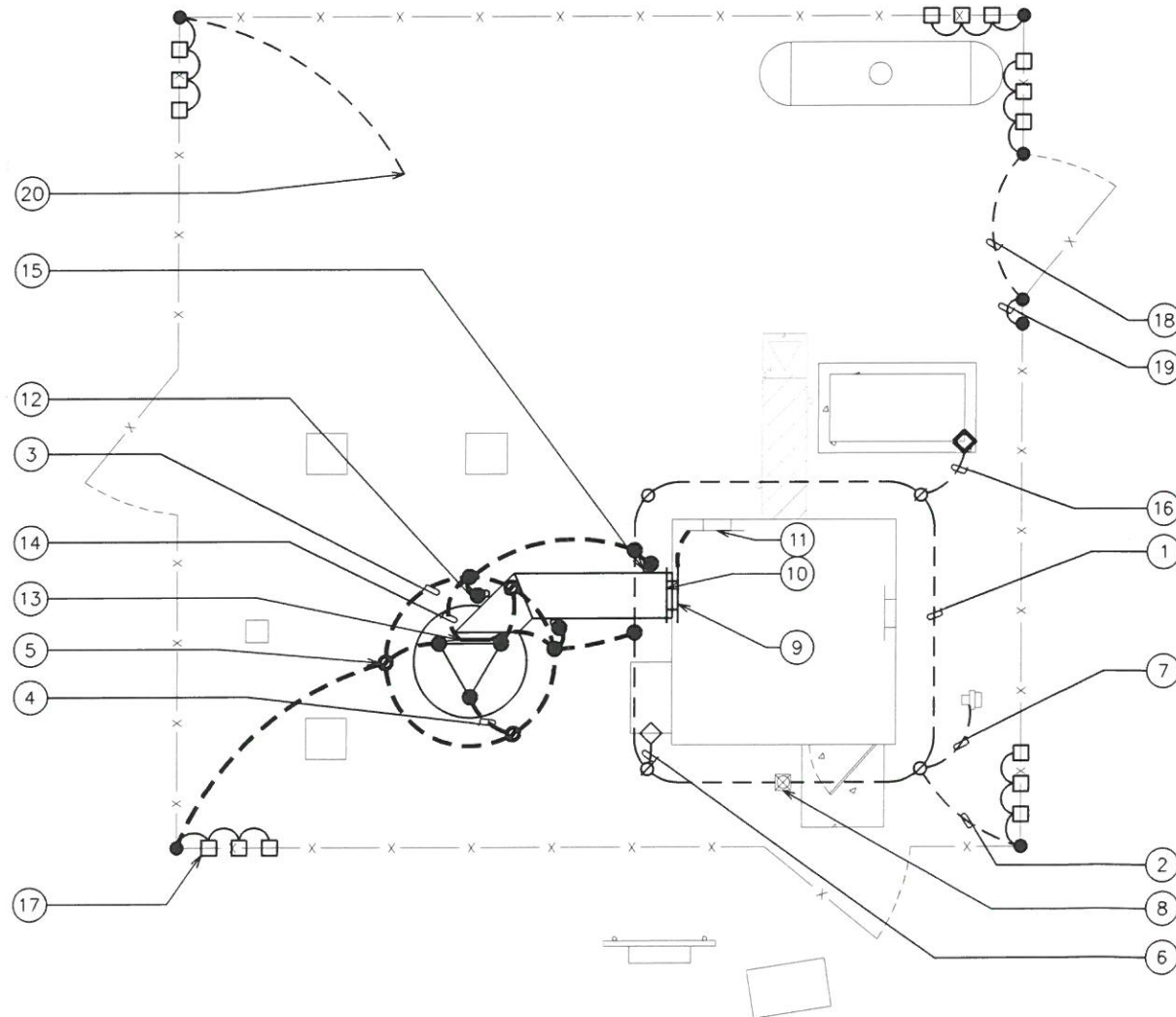


## GROUNDING NOTES

1. ALL GROUNDING IS TO BE INSTALLED PER MOTOROLA R-56 STANDARDS.
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 SHELTER FOUNDATION. PROVIDE AND INSTALL GROUNDING CONNECTIONS SHOWN BELOW AS NEEDED PER EXISTING SITE GROUNDING SYSTEM. CONTRACTOR SHALL VERIFY ALL EXISTING SITE GROUNDING CONDITIONS BEFORE STARTING WORK OR PURCHASING EQUIPMENT.
5. BOND CIGBE TO EXTERNAL GROUND RING WITH 2 RUNS OF #2 BARE, TINNED, SOLID COPPER CONDUCTOR IN PVC. CONNECT BAR END WITH 2 HOLE LUG, AND "CADWELD" THE OTHER END TO THE EXTERNAL GROUND ROD.
6. BONDING CONDUCTORS SHALL BE ROUTED THROUGH A 3/4" PVC CONDUIT SLEEVE RUN UNDER THE FOUNDATION. REFER TO THE GROUNDING PLAN BELOW.

## EXISTING GROUNDING NOTE:

LOCATION OF EXISTING GROUND SYSTEM IS APPROXIMATE UNKNOWN AS SHOWN. CONTRACTOR SHALL VERIFY IN FIELD ALL EXISTING COMPONENTS AND LOCATIONS. ANY AND ALL EXISTING GROUNDING SHALL NOT BE DUPLICATED.



## DRAWING NOTES:

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

PLANS PREPARED FOR:



400 SOUTH TRYON STREET  
CHARLOTTE, NC 28285  
OFFICE: (704) 382-0913

PROJECT INFORMATION:

## LILLINGTON RADIO

1132 DOCS ROAD  
LILLINGTON, NC 27546  
(HARNETT COUNTY)

PLANS PREPARED BY:

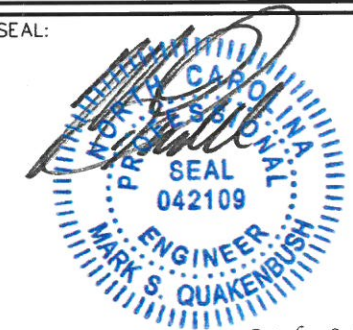


**TOWER ENGINEERING PROFESSIONALS**

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

N.C. LICENSE # C-1794

SEAL:



October 9, 2018

REV	DATE	ISSUED FOR:
1	10-09-18	CONSTRUCTION
0	07-24-18	DRAWING SET BY OTHERS

DRAWN BY: CKB CHECKED BY: JBG

SHEET TITLE:

## GROUNDING AND ROUTING PLAN

SHEET NUMBER:

**E-2**

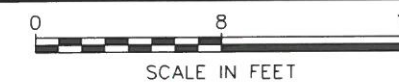
REVISION:

**1**

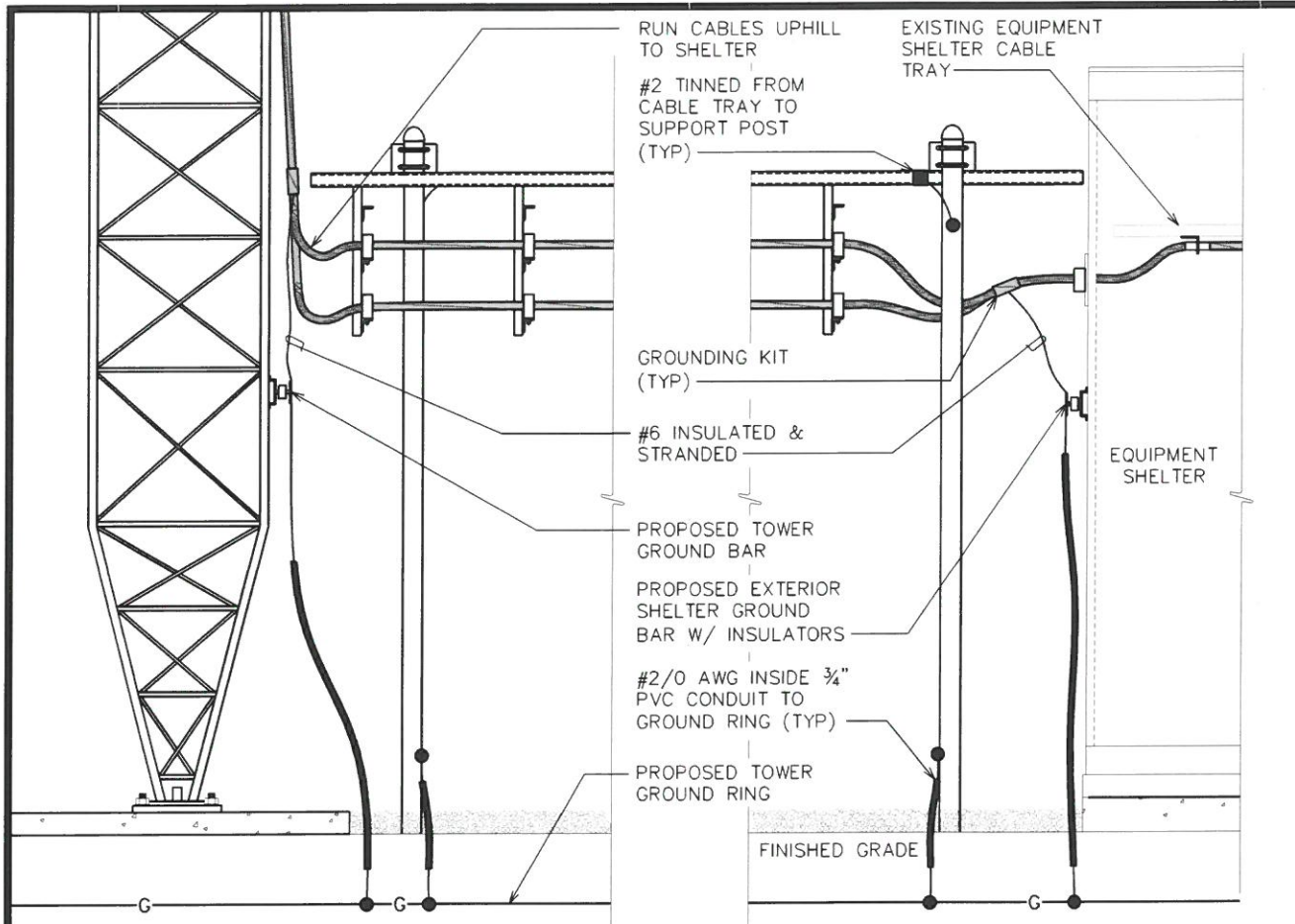
TEP#: 50076.182952

## TOWER GROUNDING PLAN

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

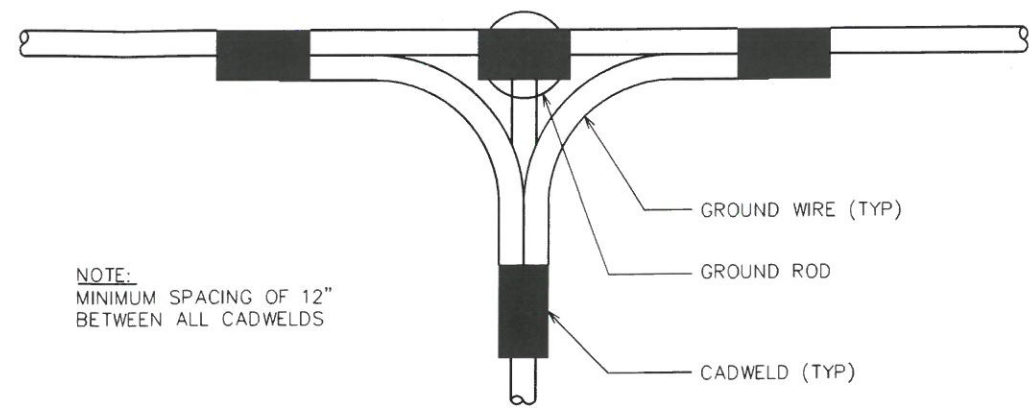
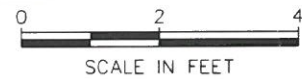






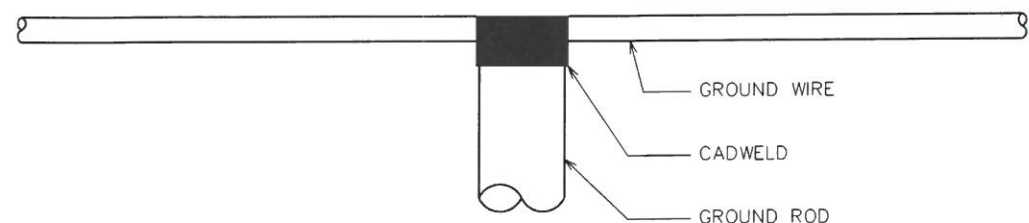
**ICE BRIDGE/COAX/GROUND BAR ELEVATION**

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



NOTE:  
MINIMUM SPACING OF 12"  
BETWEEN ALL CADWELDS

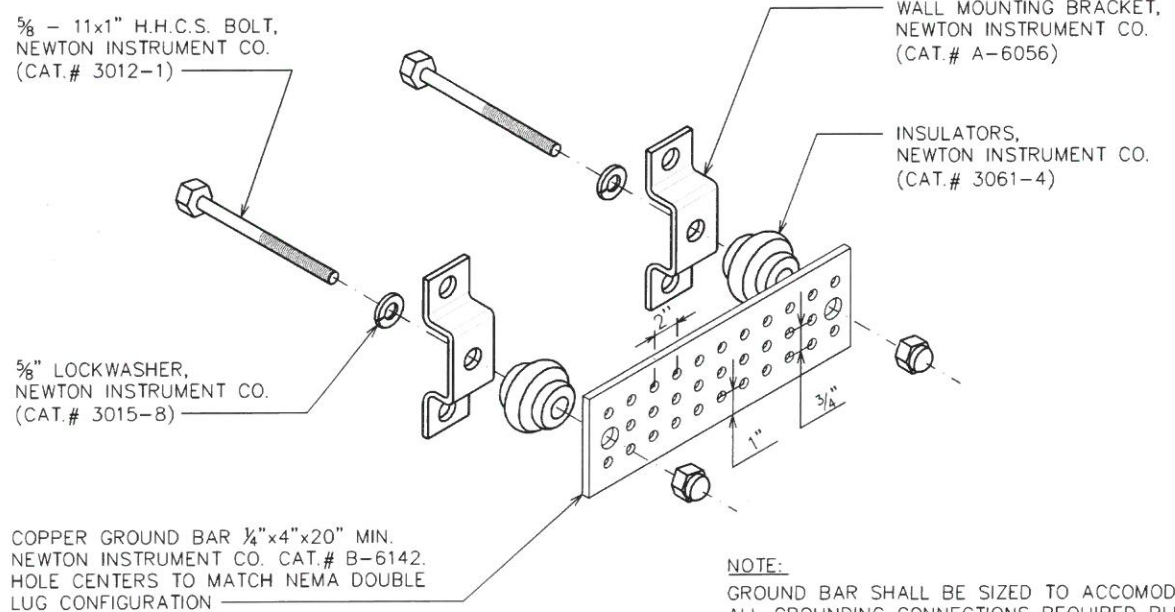
**TOP VIEW**



**SIDE VIEW**

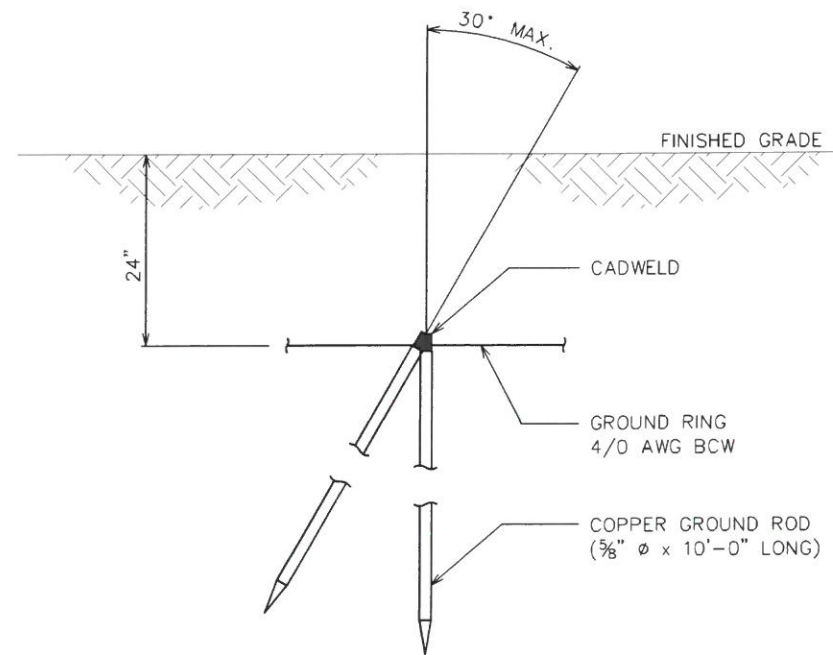
**CADWELD GROUNDING DETAIL**

SCALE: N.T.S.



**STANDARD GROUND BAR DETAIL**

SCALE: N.T.S.



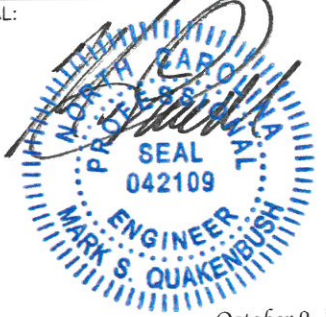
**COPPER-CLAD STEEL GROUND ROD**

SCALE: N.T.S.

PLANS PREPARED FOR:  
**DUKE ENERGY**  
 400 SOUTH TRYON STREET  
 CHARLOTTE, NC 28285  
 OFFICE: (704) 382-0913

PROJECT INFORMATION:  
**LILLINGTON RADIO**  
 1132 DOCS ROAD  
 LILLINGTON, NC 27546  
 (HARNETT COUNTY)

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**TOWER ENGINEERING PROFESSIONALS**  
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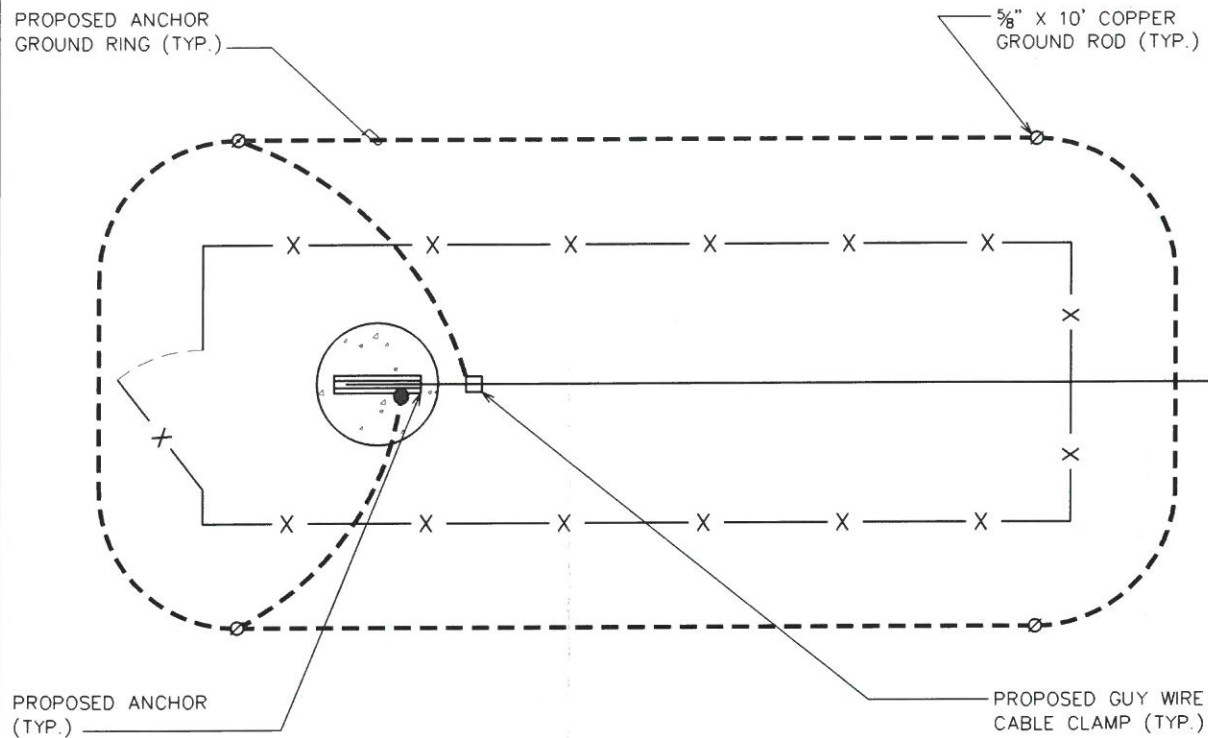
SEAL:  
  
 October 9, 2018

1	10-09-18	CONSTRUCTION
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REV	DATE	ISSUED FOR:
DRAWN BY: CKB		CHECKED BY: JBG

SHEET TITLE:  
**GROUNDING DETAILS I**

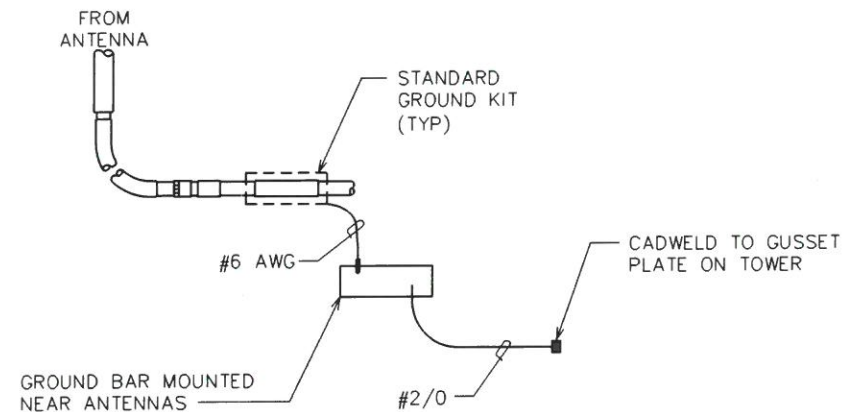
SHEET NUMBER: **E-3** REVISION: **1**  
 TEP#: 50076.182952





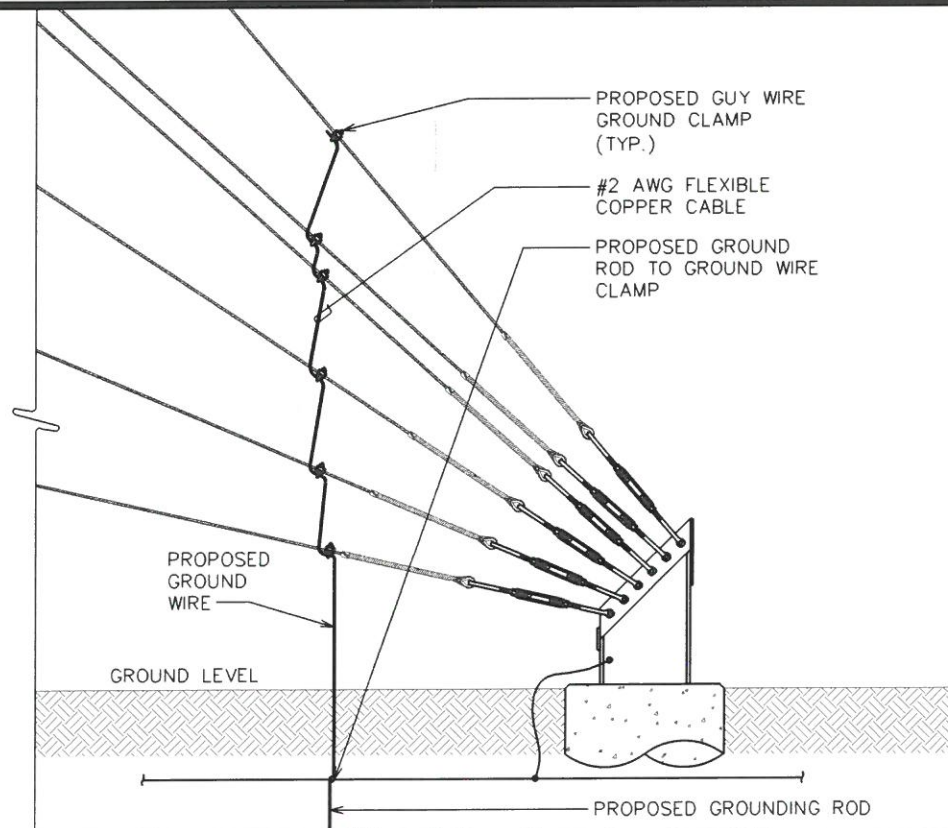
**GROUNDING PLAN VIEW AT GUY ANCHOR**

SCALE: N.T.S.



**GROUND WIRE TO GROUND BAR CONNECTION AT ANTENNAS**

SCALE: N.T.S.

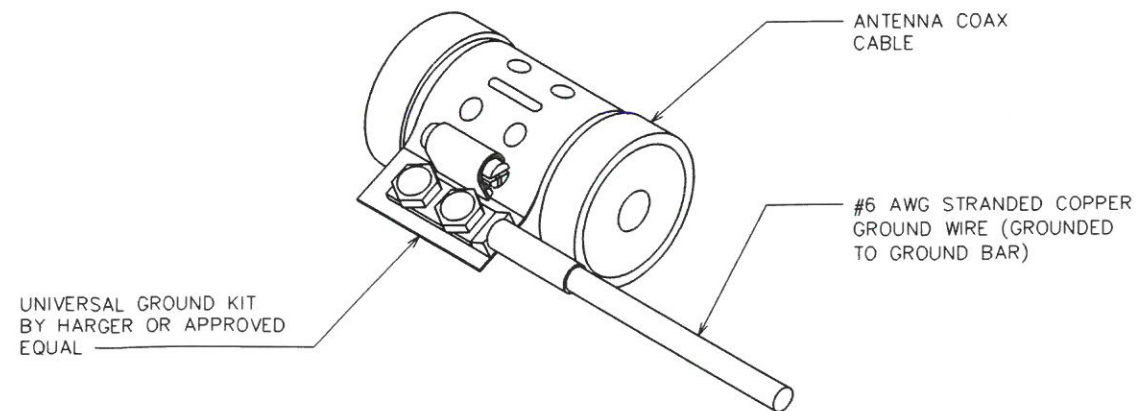


**GUY ANCHOR GROUNDING (TYP.)**

SCALE: N.T.S.

**NOTES:**

1. DO NOT INSTALL COAX GROUND KIT AT A BEND.
2. CONTRACTOR TO WEATHERPROOF COAX GROUND.
3. COAX AND WAVEGUIDE TO BE GROUNDED AT TOP, MIDDLE, AND BOTTOM OF TOWER.



**CABLE GROUNDING DETAIL**

SCALE: N.T.S.

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DRAWN BY: CKB    CHECKED BY: JBG

SHEET TITLE:

**GROUNDING DETAILS II**

SHEET NUMBER: **E-4**    REVISION: **1**

TEP#: 50076.182952