

# **GENERAL NOTES**

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION, THEREFORE HANDICAP ACCESS IS NOT REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

# **SCOPE OF WORK**

PROPOSED SCOPE OF WORK INCLUDES INSTALLATION OF A NEW 65'X55' COMPOUND WITH A NEW 300' SELF SUPPORT TOWER, NEW 13'X25' PREFABRICATED SHELTER, A NEW GENERATOR AND A NEW FUEL TANK.

### **CODE COMPLIANCE**

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 FOLLOWING CODES:

- 2018 N.C BUILDING CODE (2015 IBC WITH N.C. AMENDMENTS)
- 2018 N.C FIRE CODE (2015 IFC WITH N.C. AMENDMENTS)
- 2018 N.C FUEL GAS CODE (2015 IFGC WITH N.C. AMENDMENTS)
- 2018 N.C MECHANICAL CODE (2015 IMC WITH N.C. AMENDMENTS)
- 2018 INTERNATIONAL PLUMBING CODE (2015 IPC WITH N.C. AMENDMENTS)
- 2018 INTERNATIONAL EXISTING BUILDING CODE (2015 IEBC WITH N.C. AMENDMENTS)
- 2017 N.C ELECTRICAL CODE (2017 NEC)



# SITE NAME:

ERWIN RADIO BLDG
SITE NUMBER:
NCDUN017

**SITE ADDRESS:** 

465 RED HILL CHURCH ROAD DUNN, NC 28334

LATITUDE & LONGITUDE:
N 35° 20' 06 22" W 78° 39' 20 77"

N 3	5° 20' 06.22", W 78° 39' 20.77"
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## SITE PHOTO



SITE SU	MMARY
SITE TYPE:	NEW CONSTRUCTION
STRUCTURE TYPE:	SELF SUPPORT
STRUCTURE OWNER:	DUKE ENERGY
ANTENNA SITE REG. NO.:	1310171
STRUCTURE HEIGHT (AGL):	308' ±
OCCUPANCY TYPE:	UTILITY & MISCELLANEOUS (U)
STRUCTURE LATITUDE:	N 35° 20' 06.22" (35.335061)
STRUCTURE LONGITUDE:	W 78° 39' 20.77" (-78.655769)
JURISDICTION:	HARNETT COUNTY
COUNTY:	HARNETT
PARCEL ID:	021507 9002
GROUND ELEV. (AMSL):	204'
POWER PROVIDER:	DUKE ENERGY
TELCO PROVIDER	TBD





SITE NAME:

ERWIN RADIO BLDG

SITE NUMBER: NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD DUNN, NC 28334

LATITUDE/LONG/TUDE: 35.335061%, -78.55769°



REV	DATE	DETAILS
0	11/05/2020	CONSTRUCTION
1	12/14/2020	CLIENT COMMENTS
		<u> </u>

DRAWN BY: HA CHECKED BY: AD

SHEET TITLE:

**TITLE PAGE** 

CURRENT REV #:1
ETS #: 204581.AE.02

TREELINE

7' CHAIN LINK FENCE

## PARENT PARCEL

OWNER: CAROLINA POWER AND LIGHT COMPANY (PER TAX ASSESSOR)

SITE ADDRESS: 465 RED HILL CHURCH RD, DUNN, NC 28334

PARCEL ID: 021507 9002

AREA: 38.63 ACRES (PER TAX ASSESSOR)

ZONED: M1 - INDUSTRIAL

ALL ZONING INFORMATION SHOULD BE VERIFIED WITH THE PROPER ZONING OFFICIALS

PARENT PARCEL CAROLINA POWER AND LIGHT COMPANY

(PER TAX ASSESSOR)

PARCEL 021507 9002 ZONED M1

## **GPS NOTES**

THE FOLLOWING GPS STATISTICS UPON WHICH THIS SURVEY IS BASED HAVE BEEN PRODUCED AT THE 95% CONFIDENCE LEVEL:

UTILITY POLE

**●/GUY** 

PROPOSED COMPOUND

CENTER OF

POSITIONAL ACCURACY: 0.00 FEET (HORZ) 0.20 FEET (VERT) TYPE OF EQUIPMENT: GEOMAX ZENITH35 PRO BASE AND ROVER, DUAL FREQUENCY TYPE OF GPS FIELD PROCEDURE: ONLINE POSITION USER INTERFACE TYPE OF GPS FIELD PROCEDURE: ONLINE POSITION USI
DATES OF SURVEY: 10/30/2020
DATUM / EPOCH: NAD, 83(2011)(EPOCH:2010.0000)
PUBLISHED / FIXED CONTROL USE: N/A
GEOID MODEL: 18
COMBINED GRID FACTOR(S): 0.99986935
CONVERGENCE ANGLE: 0.19912500°
BENCHMARKS USED: DR4334, DK5550, AM7024

## SITE INFORMATION

LATITUDE = 35°20'06.32" (NAD 83) (35.335089°) LONGITUDE = -78°39'20.74" (NAD 83) (-78.655761°) AT CENTER PROPOSED TOWER

ELEVATION AT CENTER OF PROPOSED TOWER = 204.6' A.M.S.L.

202-

203



# **VICINITY MAP**

NOT TO SCALE

## **GENERAL NOTES**

\* THIS SPECIFIC PURPOSE SURVEY WAS PREPARED FOR THE EXCLUSIVE USE OF ENGINEERED TOWER SOLUTIONS, P.L.C. BOUNDARY INFORMATION SHOWN HEREON HAS BEEN COMPILED FROM TAX MAPS AND DEED DESCRIPTIONS ONLY. NO BOUNDARY

#### THIS DRAWING DOES NOT REPRESENT A BOUNDARY SURVEY.

THIS SPECIFIC PURPOSE SURVEY WAS PREPARED WITHOUT BENEFIT OF A TITLE REPORT WHICH MAY REVEAL ADDITIONAL CONVEYANCES, EASEMENTS, OR RIGHTS-OF-WAY NOT SHOWN HEREON.

EQUIPMENT USED FOR ANGULAR & LINEAR MEASUREMENTS; LEICA TPS 1200 ROBOTIC & GEOMAX ZENITH 35. [DATE OF LAST FIELD VISIT: 10/30/2020]

THE 1' CONTOURS AND SPOT ELEVATIONS SHOWN ON THIS SPECIFIC PURPOSE SURVEY ARE ADJUSTED TO NAVD 88 DATUM (COMPUTED USING GEOID18) AND HAVE A VERTICAL ACCURACY OF  $\pm$  0.5'. CONTOURS OUTSIDE THE IMMEDIATE SITE AREA ARE

BEARINGS SHOWN ON THIS SPECIFIC PURPOSE SURVEY ARE BASED ON NC GRID NORTH (NAD 83) NORTH CAROLINA ZONE.

PER THE FEMA FLOODPLAIN MAPS, THE SITE IS LOCATED IN AN AREA DESIGNATED AS ZONE X (AREA OF MINIMAL FLOOD HAZARD). COMMUNITY PANEL NO. : 3720150600J DATED: 10/03/2006

NO WETLAND AREAS HAVE BEEN INVESTIGATED BY THIS SPECIFIC PURPOSE SURVEY.

#### ALL ZONING INFORMATION SHOULD BE VERIFIED WITH THE PROPER ZONING OFFICIALS.

ANY UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM ABOVE GROUND ANY UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM ABOVE GROUND FIELD SURVEY INFORMATION. THE SURVEYOR MAKES NO GUARANTEES THAT ANY UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT ANY UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED ANY UNDERGROUND UTILITIES.



DATE REVISION

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.565.4497 nse Number: C-4145 ernors Trace, Ste. 103 city, GA 30269 65.4440 (f) 678.565.44



SPECIFIC PURPOSE SURVEY PREPARED FOR:



ENGINEERED TOWER SOLUTIONS, PLLC 8774 YATES DRIVE, SUITE 150 WESTMINSTER, CO 80031

**ERWIN** 

TOWNSHIP OF DUKE, HARNETT COUNTY, NORTH CAROLINA

SHEET:

DRAWN BY: AJT

CHECKED BY: JKL

APPROVED: D. MILLER

DATE: NOVEMBER 5, 2020

SURVEYOR CERTIFICATION I HEREBY CERTIFY THAT THIS MAP IS CORRECT AND WAS DRAWN UNDER MY DIRECT SUPERVISION. ANY VISIBLE ENCROACHMENTS ARE SHOWN HEREON.

DATE: 11/05/2020 G. DARRELL TAYLOR, NORTH CAROLINA PROFESSIONAL LAND SURVEYOR #L-3729 POINT TO POINT LAND SURVEYORS, INC.

THIS MAP MAY NOT BE A CERTIFIED SURVEY AND HAS NOT BEEN REVIEWED BY A LOCAL GOVERNMENT AGENCY FOR COMPLIANCE WITH ANY APPLICABLE LAND DEVELOPMENT REGULATIONS AND HAS NOT BEEN REVIEWED FOR COMPLIANCE WITH RECORDING REQUIREMENTS FOR PLATS.

Know what's **below**. Call before you dig. P2P JOB #: 201892NC

GRAPHIC SCALE IN FEET SCALE: 1'' = 30'

#### **GENERAL NOTES**

- ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND CARRIER
- 2. GENERAL CONTRACTOR SHALL VISIT THE SITE AND SHALL FAMILIARIZE THEMSELVES WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, DIMENSIONS, AND SHALL CONFIRM THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES, GENERAL CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF WORK.
- ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED IN
- PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. DIMENSIONS SHOWN ARE TO FINISHED SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS THE MINIMUM REQUIRED CLEARANCE. THEREFORE IT IS CRITICAL TO FIFLD VERIFY DIMENSIONS. SHOULD THERE BE ANY QUESTIONS. REGARDING THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF WORK AND PREPARED BY THE ENGINEER PRIOR TO PROCEEDING WITH WORK.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE
- . IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN IN THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE ENGINEER PRIOR TO PROCEEDING
- GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF WORK AREA. ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS AND THE LOCAL
- IO. GENERAL CONTRACTOR SHALL COORDINATE WORK AND SCHEDULE WORK ACTIVITIES WITH OTHER DISCIPLINES.
- I 1 FRECTION SHALL BE DONE IN WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMEN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED IN THE DRAWINGS
- 12. SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH UL LISTED MATERIALS APPROVED BY LOCAL JURISDICTION. CONTRACTOR SHALL KEEP AREA CLEAN, HAZARD FREE, AND DISPOSE OF
- 13. THE SCOPE OF WORK FOR THIS PROJECT IS REPRESENTED BY DARK SHADED LINES AND NOTES, CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR OF ANY EXISTING CONDITIONS THAT DEVIATE FROM THE DRAWINGS PRIOR TO BEGINNING CONSTRUCTION
- 14. CONTRACTOR SHALL PROVIDE WRITTEN NOTICE TO THE CONSTRUCTION MANAGER 48 HOURS PRIOR TO THE COMMENCEMENT OF WORK
- 15. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS. LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
- 16. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF
- 7. GENERAL CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS FOR ALL TRADES AND CONTRACTORS TO THE SITE AND/OR BUILDING
- IS THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION.
- 19 THE GENERAL CONTRACTOR SHALL MAINTAIN IN GOOD CONDITION ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS ON THE PREMISES AT ALL TIMES
- 20.THE GENERAL CONTRACTOR SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS WITH A RATING OF NO LESS THAN 2-A OT 2-A:10-B:C AND SHALL BE WITHIN 25 FEET OF TRAVEL DISTANCE TO ALL PORTIONS OF WHERE THE WORK IS BEING COMPLETED DURING CONSTRUCTION.

### **GENERAL NOTES**

- 21. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES SHALL BE PROTECTED AT ALL TIMES. AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS SHALL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, AND D) TRENCHING & **EXCAVATION**
- 22. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED, CAPPED. PLUGGED OR OTHERWISE DISCONNECTED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES
- 23. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.
- 24. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE FEDERAL AND LOCAL JURISDICTION FOR EROSION AND SEDIMENT CONTROL
- 25. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUNDING. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR
- 26. THE SUBGRADE SHALL BE BROUGHT TO A SMOOTH UNIFORM GRADE AND COMPACTED TO 95 PERCENT STANDARD PROCTOR DENSITY UNDER PAVEMENT AND STRUCTURES AND 80 PERCENT STANDARD PROCTOR DENSITY IN OPEN SPACE. ALL TRENCHES IN PUBLIC RIGHT OF WAY SHALL BE BACKFILLED WITH FLOWABLE FILL OR OTHER MATERIAL PRE-APPROVED BY THE LOCAL JURISDICTION.
- 27. ALL NECESSARY RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LAWFUL MANNER.
- 28. ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS, AND OTHER DOCUMENTS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR AT COMPLETION OF CONSTRUCTION AND PRIOR TO PAYMENT.
- 29. CONTRACTOR SHALL SUBMIT A COMPLETE SET OF AS-BUILT REDLINES TO THE GENERAL CONTRACTOR UPON COMPLETION OF PROJECT AND PRIOR TO FINAL
- 30. CONTRACTOR SHALL LEAVE PREMISES IN A CLEAN CONDITION.
- 31. THE PROPOSED FACILITY WILL BE UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SEWER SERVICE, AND IS NOT FOR HUMAN HABITAT (NO HANDICAP ACCESS
- 32. STRUCTURE IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION, APPROXIMATELY 2 TIMES PER MONTH, BY CARRIER TECHNICIANS.
- 33. NO OUTDOOR STORAGE OR SOLID WASTE CONTAINERS ARE PROPOSED.
- 34. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST CARRIER GROUNDING STANDARD. IN CASE OF A CONFLICT BETWEEN THE CONSTRUCTION SPECIFICATION AND THE DRAWINGS, THE DRAWINGS SHALL GOVERN
- 35. CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION. IF CONTRACTOR CANNOT OBTAIN A PERMIT, THEY MUST NOTIFY THE GENERAL CONTRACTOR IMMEDIATELY.
- 36. CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY
- 37. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM SITE VISITS AND/OR DRAWINGS PROVIDED BY THE SITE OWNER. CONTRACTORS SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION
- 38. ALL CABLE INSTALLATIONS TO FOLLOW MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS
- 39. NO WHITE STROBE LIGHTS ARE PERMITTED. LIGHTING IF REQUIRED, WILL MEET FAA STANDARDS AND REQUIREMENTS.

#### **ANTENNA MOUNTING**

- 40. DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANSI/TIA-222 OR APPLICABLE LOCAL CODES.
- ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS". UNLESS NOTED OTHERWISE.
- 42. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS NOTED OTHERWISE.
- 43. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780
- 44. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK NUTS. DOUBLE NUTS AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS
- 45. CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.
- 46. PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB. ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH AND BE ORIENTED WITHIN +/- 5% AS DEFINED BY THE RFDS. ANTENNA DOWNTILTS SHALL BE WITHIN +/-0.5% AS DEFINED BY THE RFDS. REFER TO ND-00246

### **TORQUE REQUIREMENTS**

- 47. ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.
- 48. ALL RF CONNECTIONS, GROUNDING HARDWARE AND ANTENNA HARDWARE SHALL HAVE A TORQUE MARK INSTALLED IN A CONTINUOUS STRAIGHT LINE FROM BOTH SIDES OF THE CONNECTION.
- RF CONNECTION BOTH SIDES OF THE CONNECTOR
- GROUNDING AND ANTENNA HARDWARE ON THE NUT SIDE STARTING FROM THE THREADS TO THE SOLID SURFACE. EXAMPLE OF SOLID SURFACE: GROUND BAR. ANTENNA BRACKET METAL
- 49. ALL 8M ANTENNA HARDWARE SHALL BE TIGHTENED TO 9 LB-FT (12 NM).
- 50. ALL 12M ANTENNA HARDWARE SHALL BE TIGHTENED TO 43 LB-FT (58 NM).
- 51. ALL GROUNDING HARDWARE SHALL BE TIGHTENED UNTIL THE LOCK WASHER COLLAPSES AND THE GROUNDING HARDWARE IS NO LONGER LOOSE.
- 52. ALL DIN TYPE CONNECTIONS SHALL BE TIGHTENED TO 18-22 LB-FT (24.4-29.8 NM).
- 53. ALL N TYPE CONNECTIONS SHALL BE TIGHTENED TO 15-20 LB-IN (1.7-2.3 NM).





SITE NAME:

#### ERWIN RADIO BLDG

SITE NUMBER:

NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD **DUNN. NC 28334** 

LATITUDE/LONGITUDE 35.335061°**,/-7**8**,63**5769°



REV	DATE	DETAILS
0	11/05/2020	CONSTRUCTION
1	12/14/2020	CLIENT COMMENTS

DRAWN BY: HA CHECKED BY: AD

SHEET TITLE

**GENERAL NOTES I** 

SHEET # GN-1 | CURRENT NE. 7... | ETS #: 204581.AE.02

#### **COAXIAL CABLE NOTES**

- TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED
- 55. CONTRACTOR SHALL VERIFY THE DOWN-TILT OF EACH ANTENNA WITH A DIGITAL LEVEL
- 56. CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION. REFER TO "ANTENNA SYSTEM LABELING STANDARD" ND-00027 LATEST VERSION.
- 57. COAXIAL CABLE NOTES
- 58. TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO ORDERING CABLE. CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED
- 59. CONTRACTOR SHALL VERIFY THE DOWN-TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.
- 60. CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION REFER TO "ANTENNA SYSTEM LABELING STANDARD" ND-00027 LATEST VERSION
- 61. ALL JUMPERS TO THE ANTENNAS SHALL BE 1/2" DIA. LDF AND SHALL NOT EXCEED 6'-0".
- 62. ALL COAXIAL CABLE SHALL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE, IN AN APPROVED MANNER, AT DISTANCES NOT TO EXCEED 4'-0" OC
- 63 CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING BOTH THE INSTALLATION AND GROUNDING OF ALL COAXIAL CABLES, CONNECTORS, ANTENNAS, AND ALL OTHER FOUIPMENT
- CONTRACTOR SHALL WEATHERPROOF ALL ANTENNA CONNECTORS WITH SELF AMALGAMATING TAPE. WEATHERPROOFING SHALL BE COMPLETED IN STRICT ACCORDANCE

# **GENERAL CABLE AND EQUIPMENT NOTES**

- 65. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ANTENNA, TMAS, DIPLEXERS, AND COAX CONFIGURATION. MAKE AND MODELS PRIOR TO INSTALLATION.
- 66. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS
- 67. CONTRACTOR SHALL REFERENCE THE STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING
- 68. ALL OUTDOOR RF CONNECTORS/CONNECTIONS SHALL BE WEATHERPROOFED, EXCEPT THE RET CONNECTORS, USING BUTYL TAPE AFTER INSTALLATION AND FINAL CONNECTIONS ARE MADE. BUTYL TAPE SHALL HAVE A MINIMUM OF ONE-HALF TAPE WIDTH OVERLAP ON EACH TURN AND EACH LAYER SHALL BE WRAPPED THREE TIMES. WEATHERPROOFING SHALL BE SMOOTH WITHOUT BUCKLING. BUTYL BLEEDING IS NOT ALLOWED.
- 69. IF REQUIRED TO PAINT ANTENNAS AND/OR COAX:
- TEMPERATURE SHALL BE ABOVE 50° F
- PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
- FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED
- DO NOT PAINT OVER COLOR CODING OR ON EQUIPMENT MODEL NUMBERS.
- 70. ALL PROPOSED GROUND BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUND BAR DOWNLEADS A MINIMUM DISTANCE OF 4'-0" BELOW GROUND BAR TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION
- 71. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATION & RECOMMENDATIONS.

#### FIBER & POWER CABLE MOUNTING

- 72. THE FIBER OPTIC TRUNK CABLES SHALL BE INSTALLED INTO CONDUITS. CHANNEL CABLE TRAYS, OR CABLE TRAY. WHEN INSTALLING FIBER OPTIC TRUNK CABLES INTO A CABLE TRAY SYSTEM. THEY SHALL BE INSTALLED INTO AN INTER DUCT AND A PARTITION BARRIER SHALL BE INSTALLED BETWEEN THE 600 VOLT CABLES AND THE INTER DUCT IN ORDER TO SEGREGATE CABLE TYPES. OPTIC FIBER TRUNK CABLES SHALL HAVE APPROVED CABLE RESTRAINTS EVERY (60) SIXTY FEET AND SECURELY FASTENED TO THE CABLE TRAY SYSTEM. NFPA 70 (NEC) ARTICLE 770 RULES SHALL APPLY
- 73. THE TYPE TC-ER CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY AND SHALL BE SECURED AT INTERVALS NOT EXCEEDING (6) SIX FEET. AN EXCEPTION: WHERE TYPE TC-ER CABLES ARE NOT SUBJECT TO PHYSICAL DAMAGE. CABLES SHALL BE PERMITTED TO MAKE A TRANSITION BETWEEN CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY WHICH ARE SERVING UTILIZATION EQUIPMENT OR DEVICES. A DISTANCE (6) SIX FEET SHALL NOT BE EXCEEDED WITHOUT CONTINUOUS SUPPORTING, NFPA 70 (NEC) ARTICLES 336 AND 392 RULES SHALL APPLY
- WHEN INSTALLING OPTIC FIBER TRUNK CABLES OR TYPE TC-ER CABLES INTO CONDUITS, NFPA 70 (NEC) ARTICLE 300 RULES SHALL APPLY

# **ROW CONSTRUCTION NOTE STANDALONE**

- 75. NO BOLT THREADS TO PROTRUDE MORE THAN 1-1/2" [.038M]
- 76. 90 SHORT SWEEPS UNDER ANTENNA ARM. ALL CABLES MUST ONLY TRANSITION ON THE INSIDE OR BOTTOM OF ARMS (NO CABLE ON TOP OF ARMS).
- 77 USE 90 CONNECTOR AT CABLE CONNECTION TO ANTENNAS
- 78. PLACE GPS ON ARM WITH SOUTHERN SKY EXPOSURE AT MINIMUM 6' [1.83] FROM TRANSMIT ANTENNA, WHICH IS 24" [.61M] AWAY FROM CENTER OF POLE.
- 79. USE 1/2" [.013M] CABLE ON ANTENNAS UNLESS OTHERWISE SPECIFIED
- 80. FILL VOID AROUND CABLES AT CONDUIT OPENING WITH FOAM SEALANT TO PREVENT WATER

#### FENCING DETAILS

- 81. ALL FABRIC, WIRE RAILS, POLES, HARDWARE, AND OTHER STEEL MATERIAL SHALL BE HOT-DIPPED GALVANIZED AND CONFIRM TO ALL ASTM REGULATIONS FOR GALVANIZING.
- 82. THE CONTRACTOR SHALL MATCH THE FENCING HEIGHT, STYLE, BANDING, BARBED WIRES, SUPPORTS, AND MEASUREMENTS OF THE EXISTING FENCE WHEREVER THE PROJECT REQUIRES THE EXTENSION OR MODIFICATIONS OF AN EXISTING FENCED AREA
- 83 FARRIC SHALL BE 6'-0" HIGH X 2" CHAIN LINK MESH OF NO. 9 GALIGE (0.148) WIRE THE FARRIC SHALL HAVE A TWISTED AND BARBED FINISH FOR THE TOP EDGES AND A KNUCKLED FINISH FOR THE BOTTOM EDGES. FABRIC SHALL CONFORM TO THE SPECIFICATIONS OF ASTM A-329 CLASS-1
- 84.BARBED WIRE SHALL BE DOUBLE-STRAND, 12 GAUGE TWISTED WIRE, WITH 14 GAUGE 4 POINT ROUND BARBS SPACED AT 5" ON CENTER.
- 85.ALL POSTS SHALL BE SCHEDULE 20-GALVANIZED STEEL PIPE OF THE FOLLOWING DIAMETERS LINE = 2-3/8" CORNER = 3" GATE = 3"
- 86.EXTEND GATE AND CORNER POSTS 1'-0" INCLUDING THE METAL DOME CAP TO PROVIDE FOR
- 87.ALL TOP AND BRACED RAILS SHALL BE 1-5/8" DIAMETER SCHEDULE 20 MECHANICAL BRACE, SECURED IN PLACE BY USE OF GAE BRACE CLAMPS
- 88. GATE FRAMES SHALL HAVE A FULL HEIGHT VERTICAL BRACE AND A FULL WIDTH HORIZONTAL BRACE, SECURED IN PLACE BY USE OF GATE BRACE CLAMPS.
- 89. HINGES SHALL BE A MINIMUM OF 200 DEGREES WITH A HINGE ADAPTER, LATCHES, STOPS AND KEEPERS SHALL BE PROVIDED FOR ALL GATES. THE GUIDE LATCH ASSEMBLY SHALL BE TAMPER PROOF. ALL STOPS AND DOUBLE GATES SHALL HAVE A FULL HEIGHT PLUNGER BAR WITH A METAL DOME CAP
- 90. USE A NO. 7 GAUGE ZINC COATED TENSION WIRE AT THE BOTTOM OF THE FABRIC, TERMINATED WITH BEND CLIPS AT CORNER AND GATE POSTS
- 91. USE A 6" X 1/2" EYEBOLT TO HOLD TENSION WIRE AT LINE POSTS.
- 92. STRETCHER BARS SHALL BE 3/16 X 3/4" OR HAVE EQUIVALENT CROSS SECTION AREA
- 93. ALL CORNER, GATE AND END PANELS SHALL HAVE A 3/8" TRUSS ROD WITH TURNBUCKLES AND BE BRACED WITH 1-5/8" HORIZONTAL COMPRESSION MEMBER, SECURELY ATTACHED WITH IRON
- 94. PROVIDE ALL OTHER HARDWARE NECESSARY TO ATTACH, TENSION, CLIP, BAND, HINGE, FASTEN AND FINISH THE FENCING PROPERLY
- 95. BARBED WIRE SUPPORT ARMS SHALL BE SCHEDULE 40 GALVANIZED STEEL WITH SET BOLT AND
- 96. ALL POSTS, GATE GUARDS, AND OTHER PIPES SHALL BE CAPPED WITH A HOT DIPPED GALVANIZED CAST STEEL DOME CAP.
- 97. ALL POSTS SHALL HAVE A MINIMUM OF 6" OF CONCRETE UNDER THE LOWER MOST PORTION TO A MINIMUM OF 8" LARGER THAN THE DIAMETER AT THE FINISHED GRADE.
- 98. ALL FENCE POSTS SHALL BE SCHEDULE 40 GALVANIZED STEEL POSTS WITH SET BOLT AND
- 99. ATTACH FABRIC TO BRACE RAILS. TENSION WIRE AND TRUSS RODS WITH THE TIE CLIPS AT 2'-0" INTERVALS
- 100. ALL FABRIC, WIRE RAILS, POLES, HARDWARE, AND OTHER STEEL MATERIAL SHALL BE HOT-DIPPED GALVANIZED AND CONFIRM TO ALL ASTM REGULATIONS FOR GALVANIZING.
- 101. THE CONTRACTOR SHALL MATCH THE FENCING HEIGHT, STYLE, BANDING, BARBED WIRES, SUPPORTS, AND MEASUREMENTS OF THE EXISTING FENCE WHEREVER THE PROJECT REQUIRES THE EXTENSION OR MODIFICATIONS OF AN EXISTING FENCED AREA
- 102. FABRIC SHALL BE 6'-0" HIGH X 2" CHAIN LINK MESH OF NO. 9 GAUGE (0.148) WIRE. THE FABRIC SHALL HAVE A TWISTED AND BARBED FINISH FOR THE TOP EDGES AND A KNUCKLED FINISH FOR THE BOTTOM EDGES. FABRIC SHALL CONFORM TO THE SPECIFICATIONS OF ASTM A-329 CLASS-1.
- 103. BARBED WIRE SHALL BE DOUBLE-STRAND, 12 GAUGE TWISTED WIRE, WITH 14 GAUGE 4 POINT ROUND BARBS SPACED AT 5" ON CENTER

- 104. ALL POSTS SHALL BE SCHEDULE 20-GALVANIZED STEEL PIPE OF THE FOLLOWING DIAMETERS LINE = 2-3/8" CORNER = 3" GATE = 3"
- 105 EXTEND GATE AND CORNER POSTS 1'-0" INCLUDING THE METAL DOME CAP TO PROVIDE FOR ATTACHMENT OF THE BARBED WIRE
- 106. ALL TOP AND BRACED RAILS SHALL BE 1-5/8" DIAMETER SCHEDULE 20 MECHANICAL BRACE,
- SECURED IN PLACE BY USE OF GAE BRACE CLAMPS 107. GATE FRAMES SHALL HAVE A FULL HEIGHT VERTICAL BRACE AND A FULL WIDTH HORIZONTAL BRACE, SECURED IN PLACE BY USE OF GATE BRACE CLAMPS.
- 108. HINGES SHALL BE A MINIMUM OF 200 DEGREES WITH A HINGE ADAPTER. LATCHES. STOPS AND KEEPERS SHALL BE PROVIDED FOR ALL GATES. THE GUIDE LATCH ASSEMBLY SHALL BE TAMPER PROOF ALL STOPS AND DOUBLE GATES SHALL HAVE A FULL HEIGHT PLUNGER BAR WITH A METAL
- DOME CAP 109. USE A NO. 7 GAUGE ZINC COATED TENSION WIRE AT THE BOTTOM OF THE FABRIC.
- TERMINATED WITH BEND CLIPS AT CORNER AND GATE POSTS. 110. USE A 6" X 1/2" EYEBOLT TO HOLD TENSION WIRE AT LINE POSTS
- . STRETCHER BARS SHALL BE 3/16 X 3/4" OR HAVE EQUIVALENT CROSS SECTION AREA.
- I 12 ALL CORNER, GATE AND END PANELS SHALL HAVE A 3/8" TRUSS ROD WITH TURNBUCKLES AND BE BRACED WITH 1-5/8" HORIZONTAL COMPRESSION MEMBER. SECURELY ATTACHED WITH IRON FITTINGS
- 113. PROVIDE ALL OTHER HARDWARE NECESSARY TO ATTACH, TENSION, CLIP, BAND, HINGE, FASTEN AND FINISH THE FENCING PROPERLY.
- 114. BARBED WIRE SUPPORT ARMS SHALL BE SCHEDULE 40 GALVANIZED STEEL WITH SET BOLT AND LOCK WIRE IN THE ARM.
- 115. ALL POSTS, GATE GUARDS, AND OTHER PIPES SHALL BE CAPPED WITH A HOT DIPPED GALVANIZED CAST STEEL DOME CAP
- 116 ALL POSTS SHALL HAVE A MINIMUM OF 6" OF CONCRETE UNDER THE LOWER MOST PORTION TO A MINIMUM OF 8" LARGER THAN THE DIAMETER AT THE FINISHED GRADE I 17. ALL FENCE POSTS SHALL BE SCHEDULE 40 GALVANIZED STEEL POSTS WITH SET BOLT AND
- 118. ATTACH FABRIC TO BRACE RAILS, TENSION WIRE AND TRUSS RODS WITH THE TIE CLIPS AT 2'-0" NTERVALS.

### **ABBREVIATIONS**

	7122112171		
A/C	AIR CONDITIONING	MCR	MANAGER
AFF	ABOVE FINISHED FLOOR	MIN	MINIMUM
AGL	ABOVE GROUND LEVEL,	MISC	MISCELLANEOUS
	ABOVE GRADE LEVEL	NA	NOT APPLICABLE
AWS	ADVANCED WIRELESS SERVICE	NIC	NOT IN CONTRACT
BBU	BATTERY BACKUP UNIT	NO	NUMBER
BLDG	BUILDING	NTS	NOT TO SCALE
BLK	BLOCKING	OC	ON CENTER
CLG	CEILING	OD	OUTSIDE DIAMETER
CLR	CLEAR	PCS	PERSONAL COMMUNICATION
			SERVICE
CONC	CONCRETE	PDS	POWER DISTRIBUTION UNIT
CONT	CONTINUOUS	PROJ	PROJECT
D	DEPTH	PROP	PROPERTY
DBL	DOUBLE	PT	PRESSURE TREATED
DEG	DEGREE	PVC	POLYVINYL CHLORIDE
Φ, DIA	DIAMETER	REQ	REQUIRED
DIAG	DIAGONAL	RF	RADIO FREQUENCY
DN	DOWN	RM	RAOOM
DET	DETAIL	RO	ROUGH OPENING
DWG	DRAWING	RRJ	REMOTE RADIO HEAD
E	EXISTING	SHT	SHEET
EA	EACH	SIM	SIMILAR
ELEV, EL		SPEC	SPECIFICATION
ELEC	ELECTRICAL	SF	STAINLESS STEEL
EQ	EQUAL	SS	STAINLESS STEEL
EQUIP	EQUIPMENT	STL	STEEL
EXT	EXTERIOR	SUSP	SUSPENDED
FIF	FIBER INTERFACE FRAME,	TMA	TOWER MOUNTED AMPLIFIER
	FACILITY INTERFACE FRAME	TND	TINNED
FIN	FINISH	TYP	TYPICAL
FLOUR	FLOURESCENT	UMTS	UNIVERSAL MOBILE
FLR	FLOOR		TELECOMMUNICATION
			SERVICE
FT	FOOT, FEET	UNO	UNLESS NOTED OTHERWISE
GA	GAUGE	VERT	VERTICAL
GALV	GALVANIZED	W/	WITH
GC	GENERAL CONTRACTOR	W/O	WITHOUT
GRND	GROUND	WCS	WIRELESS COMMUNICATION
GSM	GLOBAL SYSTEM MOBILE		SERVICE
GYP	GYPSUM BOARD	WP	WATERPROOF
HORZ	HORIZONTAL		

HOUR

INSUL

LBS

LTE

MECH

MTL

MFR

HEIGHT

INSIDE DIAMETER

LONG TERM EVOLUTION

INCH. INCHES

INSULATION

INTERIOR

LENGTH

POUNDS

MAXIMUM

MECHANICAL

MANUFACTURER





SITE NAME:

#### ERWIN RADIO BLDG

SITE NUMBER:

NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD **DUNN. NC 28334** 



ı	REV	DATE	DETAILS
l	0	11/05/2020	CONSTRUCTION
l	1	12/14/2020	CLIENT COMMENTS
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DRAWN BY: HA SHEET TITLE

**GENERAL NOTES II** 

SHEET # GN-2 | CURRENT NEV .... | ETS #: 204581.AE.02

CHECKED BY: AD

#### STRUCTURAL STEEL NOTES

- THE FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AISC SPECIFICATION FOR MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN 15TH EDITION
- UNLESS OTHERWISE NOTED, ALL STRUCTURAL ELEMENTS SHALL CONFORM TO THE FOLLOWING REQUIREMENTS

#### STRUCTURAL STEEL:

- ANGLE: ASTM A36
- PIPE/TUBE: ASTM A500-50
- PLATE: ASTM A36
- A. ALL BOLTS, ASTM A325 TYPE I GALVANIZED HIGH STRENGTH BOLTS.
- B. ALL U-BOLTS, ASTM A193 GRADE B7
- C. ALL NUTS, ASTM A563 CARBON AND ALLOY STEEL NUTS.
- D. 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 SPECIFICATION FOR MANUAL OF STEEL CONSTRUCTION, LOAD AND RESISTANCE FACTOR DESIGN, 15TH 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 PASTED; SPREAD MOLTEN MATERIAL UNIFORMLY OVER SURFACES TO BE COATED AND WIPE OFF
- 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.
- GALVANIZED ASTM A325 BOLTS SHALL NOT BE REUSED

## **BOLT TIGHTENING PROCEDURE**

- CONNECTION BOLTS SUBJECT TO DIRECT TENSION SHALL BE INSTALLED AND TIGHTENED AS PER SECTION 8.2 OF THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS, LOCATED IN THE AISC MANUAL OF STEEL CONSTRUCTION. THE INSTALLATION PROCEDURE IS PARAPHRASED AS FOLLOWS:
- FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES AND TIGHTENED BY ONE OF THE METHODS DESCRIBED IN SUBSECTION 8.2.1 THROUGH 8.2.4.

#### 8.2.1 TURN-OF-THE-NUT TIGHTENING

BOLTS SHALL BE INSTALLED IN ALL HOLES OF THE CONNECTION AND BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1. UNTIL ALL THE BOLTS ARE SIMULTANEOUSLY SNUG TIGHT AND THE CONNECTION IS FULLY COMPACTED. FOLLOWING THIS INITIAL OPERATION ALL BOLTS IN THE CONNECTION SHALL BE TIGHTENED FURTHER BY THE APPLICABLE AMOUNT OF ROTATION SPECIFIED ABOVE. DURING THE TIGHTENING OPERATION THERE SHALL BE NO ROTATION OF THE PART NOT TURNED BY THE WRENCH. TIGHTENING SHALL PROGRESS SYSTEMATICALLY FROM THE MOST RIGID PART OF THE JOINT IN A MANNER THAT WILL MINIMIZE RELAXATION OF PREVIOUSLY PRETENSIONED BOLTS.

TIGHTEN CONNECTION BOLTS BY AISC - "TURN OF THE NUT" METHOD, USING THE CHART BFI OW

#### BOLT LENGTHS UP TO AND INCLUDING FOUR DIA.

1/2"	BOLTS UP TO AND INCLUDING 2.0 INCH LENGTH	+1/3 TURN BEYOND SNUG TIGHT
5/8"	BOLTS UP TO AND INCLUDING 2.5 INCH LENGTH	+⅓ TURN BEYOND SNUG TIGHT
3/4"	BOLTS UP TO AND INCLUDING 3.0 INCH LENGTH	+1/4 TURN BEYOND SNUG TIGHT

7∕8" BOLTS UP TO AND INCLUDING 4.0 INCH LENGTH +1/2 TURN BEYOND SNUG TIGHT

BOLTS UP TO AND INCLUDING 3.5 INCH LENGTH +1/4 TURN BEYOND SNUG TIGHT

#### BOLT LENGTHS OVER FOUR DIA. BUT NOT EXCEEDING EIGHT DIA.

1	<b>2"</b>	BOLTS 2.25 TO 4.0 INCH LENGTH	$+\frac{1}{2}$ TURN BEYOND SNUG TIGHT
5	/s"	BOLTS 2.75 TO 5.0 INCH LENGTH	$+\frac{1}{2}$ TURN BEYOND SNUG TIGHT
3	<b>4</b> "	BOLTS 3.25 TO 6.0 INCH LENGTH	+ $\frac{1}{2}$ TURN BEYOND SNUG TIGHT
7,	<b>%</b> "	BOLTS 3.75 TO 7.0 INCH LENGTH	+ $\frac{1}{2}$ TURN BEYOND SNUG TIGHT
1	"	BOLTS 4.25 TO 8.0 INCH LENGTH	+½ TURN BEYOND SNUG TIGHT

ALL OTHER BOLTED CONNECTIONS SHALL BE BROUGHT TO A SNUG TIGHT CONDITION AS DEFINED IN SECTION 8.1 OF THE SPECIFICATION.

#### **FOUNDATION NOTES**

#### **FOUNDATION GENERAL NOTES**

- FOUNDATION INSTALLATION SHALL BE SUPERVISED BY PERSONNEL KNOWLEDGEABLE. AND EXPERIENCED WITH THE PROPOSED FOUNDATION TYPE CONSTRUCTION SHALL BE IN ACCORDANCE WITH GENERALLY ACCEPTED PRACTICES AND IN A GOOD WORKMANLIKE
- CONTRACTOR TO VERIEY DIMENSIONS WITH ORIGINAL TOWER DRAWINGS. ETS SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN FIELD MEASURED DIMENSIONS AND ORIGINAL TOWER DRAWINGS
- FOUNDATION DESIGN MODIFICATIONS MAY BE REQUIRED IN THE EVENT THE DESIGN PARAMETERS ARE NOT APPLICABLE FOR THE SUBSURFACE CONDITIONS ENCOUNTERED DURING CONSTRUCTION
- FOR FOUNDATION TOLERANCES. SEE ORIGINAL TOWER DRAWINGS
- THE FOUNDATION MODIFICATION DESIGN IS IN ACCORDANCE WITH GENERALLY ACCEPTED PROFESSIONAL ENGINEERING PRINCIPLES AND PRACTICES WITHIN THE LIMITS OF SUBSURFACE DATA PROVIDED.
- THE FOUNDATION DEPTH INDICATED IS BASED ON THE GRADE LINE DESCRIBED IN THE REFERENCE GEOTECHNICAL REPORT. FOUNDATION MODIFICATION MAY BE REQUIRED IN THE EVENT CUT OR FILL OPERATIONS HAVE TAKEN PLACE SUBSEQUENT TO THE GEOTECHNICAL INVESTIGATION
- THE FOUNDATION DESIGN ASSUMES THAT INSTALLATION METHODS WILL INCORPORATE THE PROCEDURES RECOMMENDED IN THIS REPORT
- THE FOUNDATION DESIGN ASSUMES FIELD INSPECTIONS WILL BE PERFORMED TO VERIFY THAT CONSTRUCTION MATERIALS, INSTALLATION METHODS, AND ASSUMED DESIGN PARAMETERS ARE ACCEPTABLE BASED ON THE CONDITIONS AT THE SITE.
- THE FOUNDATION DESIGN ASSUMES NO CONSTRUCTION JOINTS, HOWEVER, CONSTRUCTION JOINTS SHALL BE PERMITTED UPON APPROVAL BY THE OWNER/ENGINEER.

#### FXCAVATION

- WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND SAFETY REGULATIONS. PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION, AND UTILITIES SHALL BE ESTABLISHED PRIOR TO BEGINNING WORK
- THE SIDES OF THE EXCAVATION SHALL BE ROUGH AND FREE OF CUTTINGS.
- LOOSE MATERIAL TO BE REMOVED FROM THE BOTTOM OF EXCAVATION PRIOR TO CONCRETE PLACEMENT

#### REINFORCING STEEL

- THE REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-615, GRADE 60. IT SHALL BE DEFORMED AND SPLICES SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED.
- WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS
- REINFORCING CAGES SHALL BE BRACED TO RETAIN PROPER DIMENSIONS DURING HANDLING AND THROUGHOUT PLACEMENT OF CONCRETE. WHEN TEMPORARY CASING IS UTILIZED, BRACING SHALL BE ADEQUATE TO RESIST FORCES OCCURRING FROM FLOWING CONCRETE DURING CASING EXCAVATION
- SPACERS SHALL BE ATTACHED INTERMITTENTLY THROUGHOUT THE ENTIRE LENGTH OF TIEBACK REINFORCING TO INSURE CONCENTRIC PLACEMENT OF CASING IN EXCAVATIONS
- MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE 3" UNLESS OTHERWISE NOTED. APPROVED SPACERS SHALL BE USED TO INSURE A 3" MINIMUM COVER FOR REINFORCEMENT.
- THE CONCRETE COVER FROM THE TOP OF THE FOUNDATION TO THE ENDS OF THE VERTICAL REINFORCEMENT SHALL NOT BE LESS THAN 3"

#### CONCRETE

- WORK SHALL BE IN ACCORDANCE WITH THE ACI 318-14, "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE AND COMMENTARY"
- THE CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3000-PSI IN 28 DAYS.
- PROPORTIONS OF CONCRETE MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION METHOD UTILIZED AND SHALL RESULT IN DURABLE CONCRETE FOR RESISTANCE TO LOCAL ANTICIPATED AGGRESSIVE ACTIONS. THE DURABILITY REQUIREMENTS OF ACI 318-14 SHALL BE SATISFIED BASED ON THE CONDITIONS EXPECTED AT THE SITE.
- CONCRETE SHALL BE PLACED IN A MANNER THAT WILL PREVENT SEGREGATION OF CONCRETE MATERIALS, INFILTRATION OF WATER OR SOIL, AND OTHER OCCURRENCES THAT MAY DECREASE THE STRENGTH OR DURABILITY OF THE FOUNDATION.
- FREE FALL CONCRETE MAY BE USED PROVIDED FALL IS VERTICAL DOWN WITHOUT HITTING THE SIDES OF THE EXCAVATION, FORMWORK, REINFORCING BARS, FORM TIES, CAGE BRACING, OR OTHER OBSTRUCTIONS. UNDER NO CIRCUMSTANCES SHALL CONCRETE FALL THROUGH
- THE MAXIMUM SIZE OF THE AGGREGATE SHALL NOT EXCEED A SIZE SUITABLE FOR THE INSTALLATION METHODS UTILIZED OR 2/3-CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING. THE MAXIMUM SIZE MAY BE INCREASED TO 2/3-CLEAR DISTANCE PROVIDED WORKABILITY AND METHODS OF CONSOLIDATION SUCH AS VIBRATING WILL PREVENT HONEYCOMBS AND VOIDS

- THE TOP OF THE FOUNDATION SHALL BE SLOPED TO DRAIN WITH A FLOATED FINISH.
- THE EXPOSED EDGES OF THE CONCRETE SHALL BE CHAMFERED 1" X 1".

#### **FOUNDATION NOTES**

#### FPOXY NOTES

- EPOXY AGENTS SHOULD BE ALLOWED TO CURE ACCORDING TO MANUFACTURERS RECOMMENDATIONS
- ALL HARDWARE ASSEMBLY AND MANUFACTURER'S INSTRUCTIONS SHALL BE FOLLOWED; ANY CONTRADICTION BETWEEN THE MANUFACTURER'S RECOMMENDATIONS AND THESE DRAWINGS ARE TO BE BROUGHT IMMEDIATELY TO THE ATTENTION OF THE ENGINEER AND
- ANY CONTRACTOR INSTALLING ADHESIVE ANCHORING SYSTEMS SHALL BE TRAINED, IN PERSON BY A MANUFACTURER'S REPRESENTATIVE, ON THE PROPER INSTALLATION TECHNIQUES THIS TRAINING SHALL INCLUDE PROPER DRILLING HOLE CLEANING AND INSTALLATION METHODS FOR THE ADHESIVE ANCHORING SYSTEM AND CONSTRUCTION CONDITIONS ON THIS PROJECT, ALL TRAINING TO BE CONDUCTED PRIOR TO CREWS STEPPING ON SITE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT MANUFACTURER REPRESENTATIVE TO SET UP TRAINING, ETS IS NOT RESPONSIBLE FOR ANY COST OCCURRED FOR OR DURING ADHESIVE ANCHORING SYSTEM TRAINING.

#### SOIL COMPACTION

- SUBGRADE PREPARATION
- SHAPE TOP OF SUBGRADE TO THE LINES AND GRADES SHOWN ON THE DRAWINGS.
- MAINTAIN TOP OF SUBGRADE IN A FREE-DRAINING CONDITION
- DO NOT STOCKPILE MATERIALS ON TOP OF SUBGRADE UNLESS AUTHORIZED BY 1.3. CONSTRUCTION MANAGER
- FOR SUBGRADES CONSISTING OF IN-PLACE NATIVE SOILS, SOILS SHALL BE FREE OF 1.4. CUTTING AND OTHER LOOSE MATERIAL AND SHALL MEET THE MINIMUM BEARING CAPACITY REQUIREMENTS NOTES UNDER SOIL STRENGTH
- 1.5. FOR SUBGRADES CONSISTING OF PLACED STRUCTURAL FILL, STRUCTURAL FILL SHOULD BE PLACED IN 6 INCH LIFTS AND COMPACTED TO A MINIMUM OF 95 PERCENT OF THE MAXIMUM DRY DENSITY AS OBTAINED BY THE STANDARD PROCTOR METHOD
- CONSTRUCT TOP OF SUBGRADE WITHIN ONE INCH OF ESTABLISHED GRADE AND CROSS-SECTION.

#### SOIL STRENGTH

FOLINDATION DESIGN IS BASED ON A 2000 PSE SOIL BEARING CAPACITY IF OTHER CONDITIONS EXIST. FOUNDATION SHALL BE REDESIGNED. CONTRACTOR SHALL HAVE SOIL BEARING CAPACITY VERIFIED BY A LICENSED PROFESSIONAL GEOTECHNICAL ENGINEER PRIOR TO INITIATION OF CONSTRUCTION ACTIVITIES

#### **WELDING NOTES**

- ALL WELDING SHALL BE IN ACCORDANCE WITH THE AWS D1.1/D1.1M: 2015 "STRUCTURAL WELDING CODE-STEEL
- ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS
- CONTRACTOR SHALL RETAIN AN AWS CERTIFIED WELD INSPECTOR TO PERFORM VISUAL INSPECTIONS ON FIELD WELDS. A LETTER AND REPORT SHALL BE ISSUED TO THE CONTRACTOR. CONTRACTOR SHALL SUBMIT LETTER AND REPORT TO TOWER OWNER.
- GRIND THE SURFACE ADJACENT TO THE WELD FOR A DISTANCE OF 2" MINIMUM ALL AROUND. GRIND THE SURFACE OF THE ROD TO BE INSTALLED FOR A DISTANCE OF 2" MINIMUM ALL AROUND THE AREA TO BE WELDED. ENSURE BOTH AREAS ARE 100% FREE OF ALL GALVANIZING SURFACES TO BE WELDED SHALL BE FREE FROM SCALE SLAG RUST MOISTURE. GREASE OR ANY OTHER FOREIGN MATERIAL THAT WOULD PREVENT PROPER WELDING
- DO NOT WELD IF THE TEMPERATURE OF THE STEEL IN THE VICINITY OF THE WELD AREA IS BELOW 0°F. WHEN THE TEMPERATURE IS BETWEEN 0°F AND 32°F, PREHEAT AND MAINTAIN THE STEEL IN THE VICINITY OF THE WELD AREA AT 70°F DURING THE WELDING PROCESS.
- DO NOT WELD ON WET OR FROST-COVERED SURFACES & PROVIDE ADEQUATE PROTECTION FROM HIGH WINDS
- FOR ALL WELDING, USE E70XX ELECTRODES.
- AFTER FINAL INSPECTION, THE AREA OF THE WELDS, THE INSTALLATION AND ALL SURFACES DAMAGED BY WELDING OR GRINDING SHALL RECEIVE A COLD-GALVANIZED COATING. THIS COATING SHALL BE APPLIED BY BRUSH THE GALVANIZING COMPOUND SHALL CONTAIN A MINIMUM OF 95% ± PURE ZINC. THE FINISHED COATING SHALL BE A MINIMUM THICKNESS OF 3





SITE NAME:

#### ERWIN RADIO BLDG

SITE NUMBER:

NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD **DUNN NC 28334** 

LATITUDE/LONGITUDE 35.335061°, **/**78.6**56**769



DRAWN BY: HA CHECKED BY: AD

SHEET TITLE

**GENERAL NOTES III** 

SHEET # GN-3 | CURRENT NEV .... | ETS #: 204581.AE.02

# 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)

Address: 465 Rec Proposed Use: To Owner or Author Owned By:	Erwin Radio Bldg  d Hill Church Road, Du elecommunications rized Agent: Duke Ene City/ at Jurisdiction: City	ergy County	Phone# _ ☑ Private ☑ County_Harne	☐ Sta	ate
DESIGNER Architectural Civil Electrical Fire Alarm Plumbing Mechanical Sprinkler-Standpi Structural	PROFESSIONAL: Ch FIRM Engineered Tower Solut ipe >5' High	ons, PLLC Christophe		JICENSE # 27825	TELEPHONE #()
YEAR EDITION	OF CODE: 2018 Construction	Renovation (Existing Blo	lg) 🗌 Upfit	☐ Alter	ation
BUILDING DATA Construction Typ		☐ I-B ☐ II-A ☐ V-A   ☑ V-B ruction: ☐ No [	☐ II-B [	] III-A [	□ III-B
Sprinklers: Standpipes: Fire District: Building Height: Mezzanine: High Rise:	⋈ No       ☐ Yes         ⋈ No       ☐ Yes         ⋈ No       ☐ Yes         10.625       Feet       1         ⋈ No       ☐ Yes	☐ NFPA 13	☐ NFPA 13R ☐ Ⅲ ☐ Wet ☐ Unlimited per		
Gross Building A					-Total
6 <sup>th</sup> Floor 5 <sup>th</sup> Floor 4 <sup>th</sup> Floor 3 <sup>rd</sup> Floor 2 <sup>nd</sup> Floor Mezzanine					
1 <sup>st</sup> Floor Basement TOTAL	0 0 n and Enforcement	328.2 328.2			29
ING MUHHHISTRATION	i and Emorcement				<b>43</b>

			ALLOWA	BLE AREA			
	Business High-Hazard Institutional I- Mercantile	H-1 I-1 Use Condition Residential S-1	□ S-2	☐ H-3 ☐ I-3 1 ☐ 2 R-1 ☐ R-2 ☐ High-p	□ R-3 □ R- iled _	F-2 4	☐ A-5
Secondary O	ccupancy: _						
Special Occu		_	_	3.4 🗌 508.5		508.7	508.8
7 1	Non-Separated Non-Separated Non-Separated type imitations for exconstruction, so	Mixed Occupan be of constructi ach of the appl	cy (302.3.2) on for the build icable occupan	cies to the entir	termined by ap		ht and area
	<u>ctual Area of Oc</u> wable Area of (			Area of Occup le Area of Occu		1	
		(A) BLDG AREA	+	(c)	pancy B +  (D) AREA FOR	(E) ALLOWABLE	≤1.00 (F) MAXIMUM
Allo	wable Area of (	Occupancy A  (A)	Allowabl +	le Area of Occu	pancy B = +	=	(F) MAXIMUM
Allo	wable Area of (	(A) BLDG AREA PER STORY	+	(C) AREA FOR OPEN SPACE	pancy B +  (D)  AREA FOR SPRINKLER	(E) ALLOWABLE AREA OR	(F) MAXIMUM BUILDING
Allo STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL) 328.2	Allowable  +	(C) AREA FOR OPEN SPACE INCREASE NA	(D) AREA FOR SPRINKLER INCREASE <sup>2</sup>	(E) ALLOWABLE AREA OR UNLIMITED <sup>3</sup>	(F) MAXIMUM BUILDING AREA <sup>4</sup>

PREPARED BY: 3227 WELLINGTON COURT RALEIGH, NC 27615 o: 919-782-2710, f: 919-435-0631 www.engineeredtowersolutions.com PREPARED FOR:

SITE NAME: ERWIN RADIO BLDG

> SITE NUMBER: NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD DUNN, NC 28334

LATITUDE/LONGITUDE: 35.335061°, 73.655769°



REV	DATE	DETAILS
0	11/05/2020	CONSTRUCTION
1	12/14/2020	CLIENT COMMENTS
DRAV	VN BY: HA	CHECKED BY: AD

SHEET TITLE:

NC APPENDIX B I

SHEET # GN-4 | CURRENT REV #: 1 | ETS #: 204581.AE.02

#### ALLOWABLE HEIGHT

	ALLOWABLE (TABLE 503)	INCREASE FOR SPRINKLERS	SHOWN ON PLANS	CODE REFERENCE
Type of Construction	Type V-B		Type	2018
Building Height in Feet	Feet 40	Feet = H + 20' =60	10.625	2018
Building Height in Stories	Stories 1	Stories + 1 =2	Stories 1	2018

#### FIRE PROTECTION REQUIREMENTS

Life Safety Plan Sheet #, if Provided

BUILDING ELEMENT	FIRE		RATING	DETAIL#	DESIGN# FOR RATED ASSEMBLY	DESIGN# FOR RATED PENETRATION	DESIGN# FOR RATED JOINTS
	SEPARATION DISTANCE (FEET)	REQ'D	PROVIDED (W/* REDUCTION)	AND SHEET#			
Structural frame, including columns, girders, trusses		N/A					
Bearing walls							
Exterior							
North	10	1	2	SDUK13 SHEET 0-0			
East	10	1	2				
West	10	1	2				
South	10	1	2				
Interior		N/A					
Nonbearing walls and partitions Exterior		N/A					
North		N/A					
East		N/A					
West		N/A					
South		N/A					
Interior		N/A					
Floor construction Including supporting beams and joists		0	2				
Roof construction Including supporting beams and joists	N/A	0	2	SDUK13 SHEET 0-0			
Shafts - Exit		N/A					
Shafts - Other		N/A					
Corridor Separation		N/A					
Occupancy Separation		N/A					
Party/Fire Wall Separation		N/A					
Smoke Barrier Separation		N/A					
Tenant Separation		N/A					

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**NC Administration and Enforcement** 

#### LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting:		<b>∠</b> Yes
Exit Signs:	☐ No	X Yes
Fire Alarm:		X Yes
Smoke Detection Systems:	☐ No	X Yes
Panic Hardware:	🛛 No	☐ Yes

#### EXIT REQUIREMENTS

#### NUMBER AND ARRANGEMENT OF EXITS

FLOOR, ROOM OR SPACE DESIGNATION	MINIMUM <sup>2</sup> NUMBER OF EXITS		TRAVEL DISTA	ARRANGEMENT MEANS OF EGRESS <sup>1,3</sup> (SECTION 1004.1)		
	REQUIRED	SHOWN ON PLANS	ALLOWABLE TRAVEL DISTANCE (TABLE 1004.2.4)	ACTUAL TRAVEL DISTANCE SHOWN ON PLANS	REQUIRED DISTANCE BETWEEN EXIT DOORS	ACTUAL DISTANCE SHOWN ON PLANS
EQUIPMENT SHELTER	1	1				

- Corridor dead ends (Section 1004.3.2.3)
  Single exits (Table 1005.2.2)
- <sup>3</sup> Common Path of Travel (Section 1004.2.5)

#### EXIT WIDTH

USE GROUP	(a)	(b)	(c)		EXIT WIDTH (in) <sup>2,3,4,5,6</sup>			
OR SPACE DESCRIPTION	AREA <sup>1</sup> sq. ft.  PER OCCUPANT (TABLE 1003.2.2.2)	EGRESS WIDTH PER OCCUPANT (TABLE 1003.2.3)		REQUIRED WIDTH (SECTION 1003.2.3) (a+b) x c		ACTUAL WIDTH SHOWN ON PLANS		
		(TABLE 1003.2.2.2)	STAIR	LEVEL	STAIR	LEVEL	STAIR	LEVEL
EQUIPMENT SHELTER	328.2							

- $^{1}$  See Table 1003.2.2.2 to determine whether net or gross area is applicable.
- See definition "Area, Gross" and "Area, Net" (Section 1002)
- <sup>2</sup> Minimum stairway width (Section 1003.3.3); min. corridor width (Section 1004.3.2.2); min. door width (Section 1003.3.1)

- 3 Minimum width of exit passageway (Section 1005.3.3)
  4 See Section 1003.2.2.7 for converging exits.
  5 The loss of one means of egress shall not reduce the available capacity to less than 50 percent of the total required (Section 1003.2.2.7)
- <sup>6</sup> Assembly occupancies (Section 1008)

**NC Administration and Enforcement** 32





# SITE NAME: **ERWIN RADIO BLDG**

SITE NUMBER: NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD DUNN, NC 28334

LATITUDE/LONGITUDE: 35.335061°, 78.65769°



REV	DATE	DETAILS
0	11/05/2020	CONSTRUCTION
1	12/14/2020	CLIENT COMMENTS

CHECKED BY: AD DRAWN BY: HA

SHEET TITLE:

NC APPENDIX B II

SHEET # **GN-5** | CURRENT REV #:1 | ETS #: 204581.AE.02

<sup>\*</sup> Indicate section number permitting reduction

#### STRUCTURAL DESIGN DESIGN LOADS: Wind (I<sub>W</sub>) \_\_\_\_1 **Importance Factors:** Snow (I<sub>S</sub>) 1 Roof 94 psf Mezzanine N/A psf 196 psf Live Loads: \_\_\_\_111\_\_\_psf Snow Load: Basic Wind Speed 128 mph (ASCE-7-98) Wind Load: Exposure Category CWind Base Shears (for MWFRS) $V_x = 77.39 \text{ k}$ $V_y = 0 \text{k}$ SEISMIC DESIGN CATEGORY A Compliance with Section 1616.4 only? ☐ Yes ☐ No SEISMIC DESIGN CATEGORY B, C, & D Provide the following Seismic Design Parameters: Seismic Use Group Site Classification В Basic structural system (check one) Bearing Wall Dual w/Special Moment Frame X Building Frame Dual w/Intermediate R/C or Special Steel Moment Frame \_\_\_\_\_ Inverted Pendulum Seismic base shear $V_X = N/A$ $V_Y = N/A$ Analysis Procedure Simplified Equivalent Lateral Force X Modal Architectural, Mechanical, Components anchored? N/ALATERAL DESIGN CONTROL: Earthquake \_\_\_\_\_ Wind \_\_\_X SOIL BEARING CAPACITIES: Field Test (provide copy of test report) \_\_\_\_ psf Presumptive Bearing capacity Pile size, type, and capacity

#### PLUMBING FIXTURE REQUIREMENTS

OCCUPANCY	WATER	WATERCLOSETS		URINALS LAVATORIES		SHOWERS/	DRINKING FOUNTAINS	
	MALE	FEMALE		MALE	FEMALE	TUBS	REGULAR	ACCESSIBLE

#### ACCESSIBLE PARKING

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

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	SPECIAL APPROVALS
Special approval: (I	Local Jurisdiction, Department of Insurance, SBCCI, ICC, etc., describe below)
	ENERGY SUMMARY
also be provided. Ea If energy cost budg	shall be considered minimum and any special attribute required to meet the energy code shall ach Designer shall furnish the required portions of the project information for the plan data sheet. The test method, state the annual energy cost budget vs allowable annual energy cost budget.
THERMAL ENVEL	OPE
_	Compliance:  Performance  Energy Cost Budget
Roof/ceilin	ng Assembly (each assembly)
U R	Description of assembly CONCRETE + PANELING & INSULATION 0.059  -Value of insulation 16.901  kylights in each assembly U-Value of skylight total square footage of skylights in each assembly
Exterior V	Valls (each assembly)
D U R	Description of assembly U-Value of total assembly 2-Value of insulation U-Value of assembly
Б	shading coefficient projection factor low e required, if applicable poor R-Values 6.250
Walls adia	acent to unconditioned space (each assembly)
D U R	Description of assembly I-Value of total assembly -Value of insulation I-Value of insulation I-Value of insulation I-Value of insulation I-Value (windows or doors with glazing)

U-Value of assembly Low e required, if applicable

Door R-Values Walls below grade (each assembly) Description of assembly U-Value of total assembly

**NC Administration and Enforcement** 

R-Value of insulation

١	PREPARED BY:
١	
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١	
١	
١	
١	ENGINEERED TOWER
١	SOLUTIONS, PLLC
١	3227 WELLINGTON COURT
1	RALEIGH, NC 27615
١	o: 919-782-2710, f: 919-435-0631
Т	www.engineeredtowersolutions.com

PREPARED FOR:



SITE NAME:

# **ERWIN RADIO BLDG**

SITE NUMBER:

# NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD DUNN, NC 28334

LATITUDE/LONGITUDE: 35.335061°, 78.655769°



REV	DATE	DETAILS
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SHEET TITLE:

**NC APPENDIX B III** 

SHEET # **GN-6** | CURRENT REV #:1 | ETS #: 204581.AE.02

#### Floors over unconditioned space (each assembly)

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

#### Floors slab on grade

CONCRETE + TILE Description of assembly 0.191 U-Value of total assembly R-Value of insulation 5.237 Horizontal/vertical requirement slab heated

#### ELECTRICAL SUMMARY

#### ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance:

 ▼ Prescriptive ☐ Performance ☐ Energy Cost Budget

#### Lighting schedule

32W FL lamp type required in fixture number of lamps in fixture ELEC ballast type used in the fixture number of ballasts in fixture total wattage per fixture

total interior wattage specified vs allowed 600 VS 331 (ONLY LIT WHEN OCCUPIED)

total exterior wattage specified vs allowed

#### Equipment schedules with motors (not used for mechanical systems)

motor horsepower number of phases minimum efficiency motor type # of poles

#### MECHANICAL SUMMARY

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# MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

**Method of Compliance** 

▼ Prescriptive □ Energy Cost Budget

Thermal Zone

winter dry bulb summer dry bulb

#### **Interior design conditions**

winter dry bulb summer dry bulb relative humidity

NC Administration and E forceme

#### **Building heating load**

#### **Building cooling load**

#### **Mechanical Spacing Conditioning System**

Unitary description of unit MARVAIR: AVPA48ACA050NU-100 heating efficiency cooling efficiency 11.75 EER heat output of unit cooling output of unit 11,000-72,000 BTUH total boiler output. If oversized, state reason. Chiller total chiller capacity. If oversized, state reason.

#### List equipment efficiencies

#### **Equipment schedules with motors (mechanical systems)**

motor horsepower

number of phases SINGLE

minimum efficiency motor type

RECIPROCATING # of poles

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SITE NAME:

# **ERWIN RADIO BLDG**

SITE NUMBER: NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD DUNN, NC 28334

LATITUDE/LONGITUDE: 35.335061°, -78.65769°



REV	DATE	DETAILS
0	11/05/2020	CONSTRUCTION
1	12/14/2020	CLIENT COMMENTS

DRAWN BY: HA CHECKED BY: AD

SHEET TITLE:

**NC APPENDIX B IV** 

SHEET # **GN-7** | CURRENT REV #:1 | ETS #: 204581.AE.02

NC Administration and Enforcement







PREPARED FOR:



SITE NAME:

# **ERWIN RADIO BLDG**

SITE NUMBER: NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD DUNN, NC 28334

LATITUDE/LONG TUDE: 35.335061°, 78.655769°



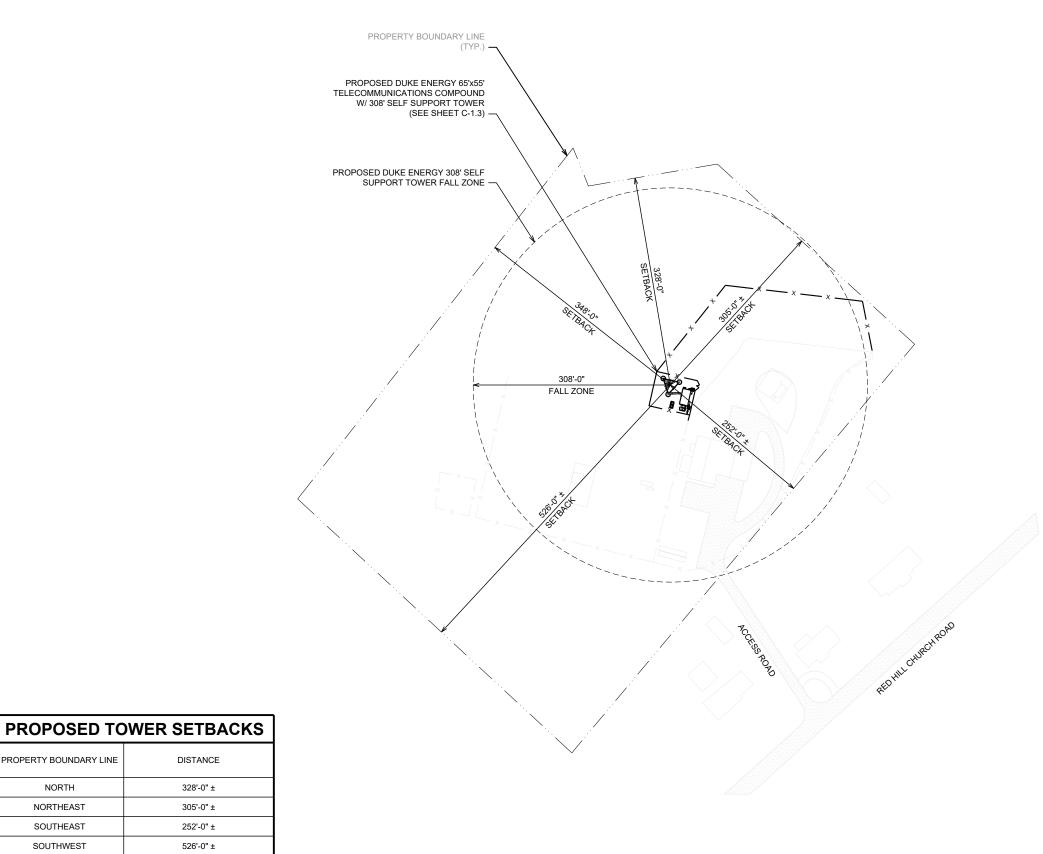
REV	DATE	DETAILS					
0	11/05/2020	CONSTRUCTION					
1	12/14/2020	CLIENT COMMENTS					

DRAWN BY: HA CHECKED BY: AD

SHEET TITLE:

OVERALL SITE PLAN

SHEET # C-1.0 | CURRENT REV #: 1 | ETS #: 204581.AE.02



PROPERTY BOUNDARY LINE

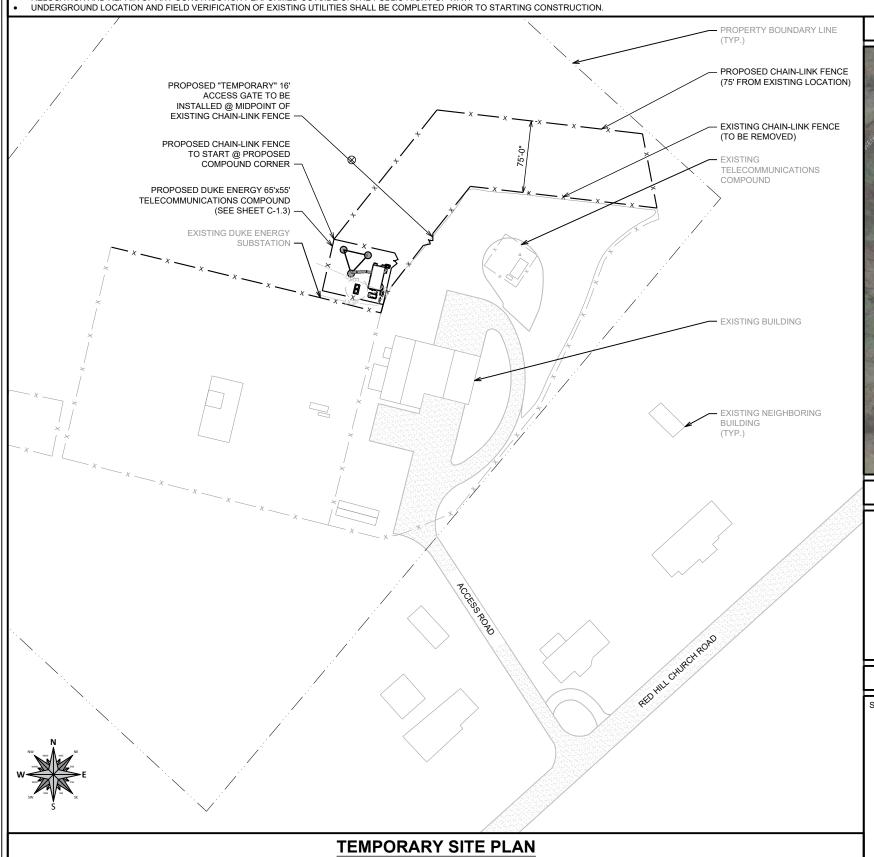
348'-0" ±

NORTHWEST

**OVERALL SITE PLAN** 

## **CONTRACTOR NOTES**

- CONTRACTOR SHALL MAINTAIN UNINTERRUPTED ACCESS TO ALL DRIVEWAYS, SIDE STREETS, AND WALKWAYS AT ALL TIMES UNLESS OTHERWISE PERMITTED.
  CONTRACTOR SHALL PREPARE A MAINTENANCE OF TRAFFIC (M.O.T.) PLAN FOR PEDESTRIAN TRAFFIC AND WORK WITHIN THE PUBLIC RIGHT-OF-WAY, INCLUDING VEHICLE PARKING AND EQUIPMENT STAGING.
- CONTRACTOR SHALL RESTORE ANY DISTURBED AREAS TO ORIGINAL CONDITION OR BETTER.
- PRIOR TO INSTALLATION THE CONTRACTOR SHALL VERIFY THE PROPOSED WORK IS LOCATED WITHIN THE PUBLIC RIGHT-OF-WAY. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER FOR RESOLUTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RELOCATION AND REPAIR OF ANY CONSTRUCTION PERFORMED OUTSIDE OF THE PUBLIC RIGHT-OF-WAY.



# SITE MAP



# **LEGEND**

MAN-HOLE — EASEMENT --- PROPERTY LINE HYDRANT UNDERGROUND GAS LINE PROPOSED UTILITY POLE UNDERGROUND POWER T EXISTING TRAFFIC LIGHT —UGF—— UNDERGROUND FIBER EXISTING LIGHT POLE —□- WOODEN FENCE — x —— METAL FENCE

# **NOTES**

SITE PLAN BASED ON SURVEY COMPLETED BY POINT TO POINT LAND SURVEYING.



PREPARED FOR:



SITE NAME:

# **ERWIN RADIO BLDG**

SITE NUMBER:

NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD DUNN, NC 28334

LATITUDE/LONGITUDE: 35.335061°, -78.656769°



REV	DATE	DETAILS
0	11/05/2020	CONSTRUCTION
1	12/14/2020	CLIENT COMMENTS
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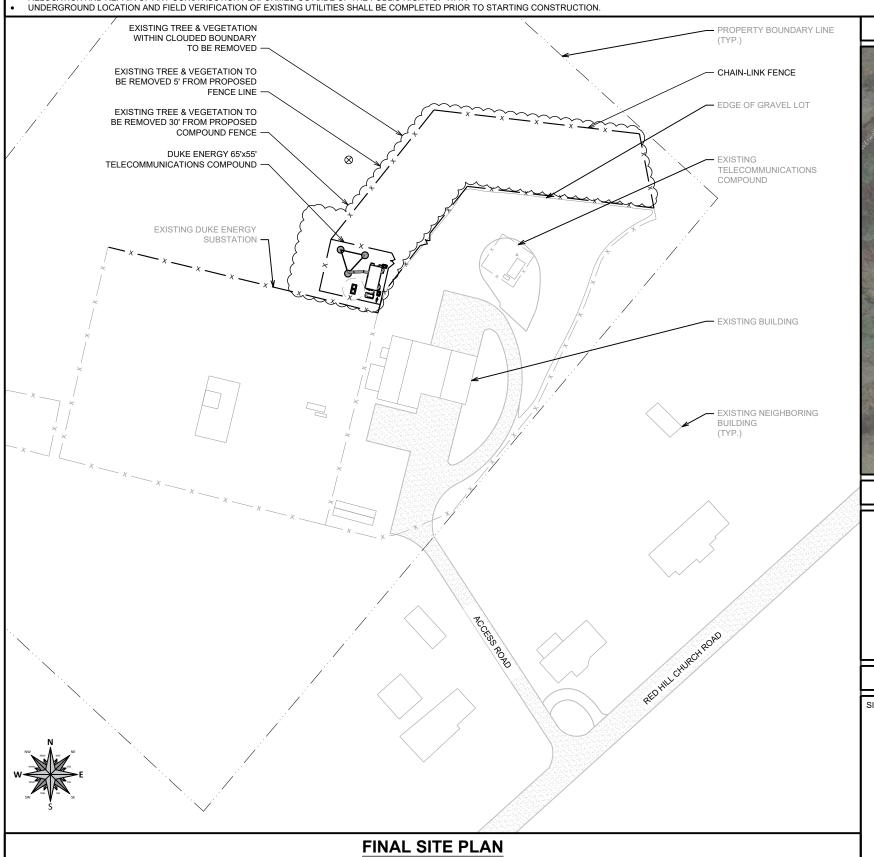
SHEET TITLE:

**TEMPORARY SITE PLAN** 

SHEET # C-1.1 | CURKENI NE. .... | ETS #: 204581.AE.02

### **CONTRACTOR NOTES**

- CONTRACTOR SHALL MAINTAIN UNINTERRUPTED ACCESS TO ALL DRIVEWAYS, SIDE STREETS, AND WALKWAYS AT ALL TIMES UNLESS OTHERWISE PERMITTED.
  CONTRACTOR SHALL PREPARE A MAINTENANCE OF TRAFFIC (M.O.T.) PLAN FOR PEDESTRIAN TRAFFIC AND WORK WITHIN THE PUBLIC RIGHT-OF-WAY, INCLUDING VEHICLE PARKING AND EQUIPMENT STAGING.
- CONTRACTOR SHALL RESTORE ANY DISTURBED AREAS TO ORIGINAL CONDITION OR BETTER.
- PRIOR TO INSTALLATION THE CONTRACTOR SHALL VERIFY THE PROPOSED WORK IS LOCATED WITHIN THE PUBLIC RIGHT-OF-WAY. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER FOR RESOLUTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RELOCATION AND REPAIR OF ANY CONSTRUCTION PERFORMED OUTSIDE OF THE PUBLIC RIGHT-OF-WAY.



# SITE MAP



# **LEGEND**

MAN-HOLE — EASEMENT ·· — PROPERTY LINE HYDRANT UNDERGROUND GAS LINE PROPOSED UTILITY POLE - UNDERGROUND POWER T EXISTING TRAFFIC LIGHT —UGF—— UNDERGROUND FIBER EXISTING LIGHT POLE —□- WOODEN FENCE — X — METAL FENCE

# **NOTES**

SITE PLAN BASED ON SURVEY COMPLETED BY POINT TO POINT LAND SURVEYING.





SITE NAME:

# **ERWIN RADIO BLDG**

SITE NUMBER: NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD DUNN, NC 28334

LATITUDE/LONGITUDE: 35.335061°, 78.635769°

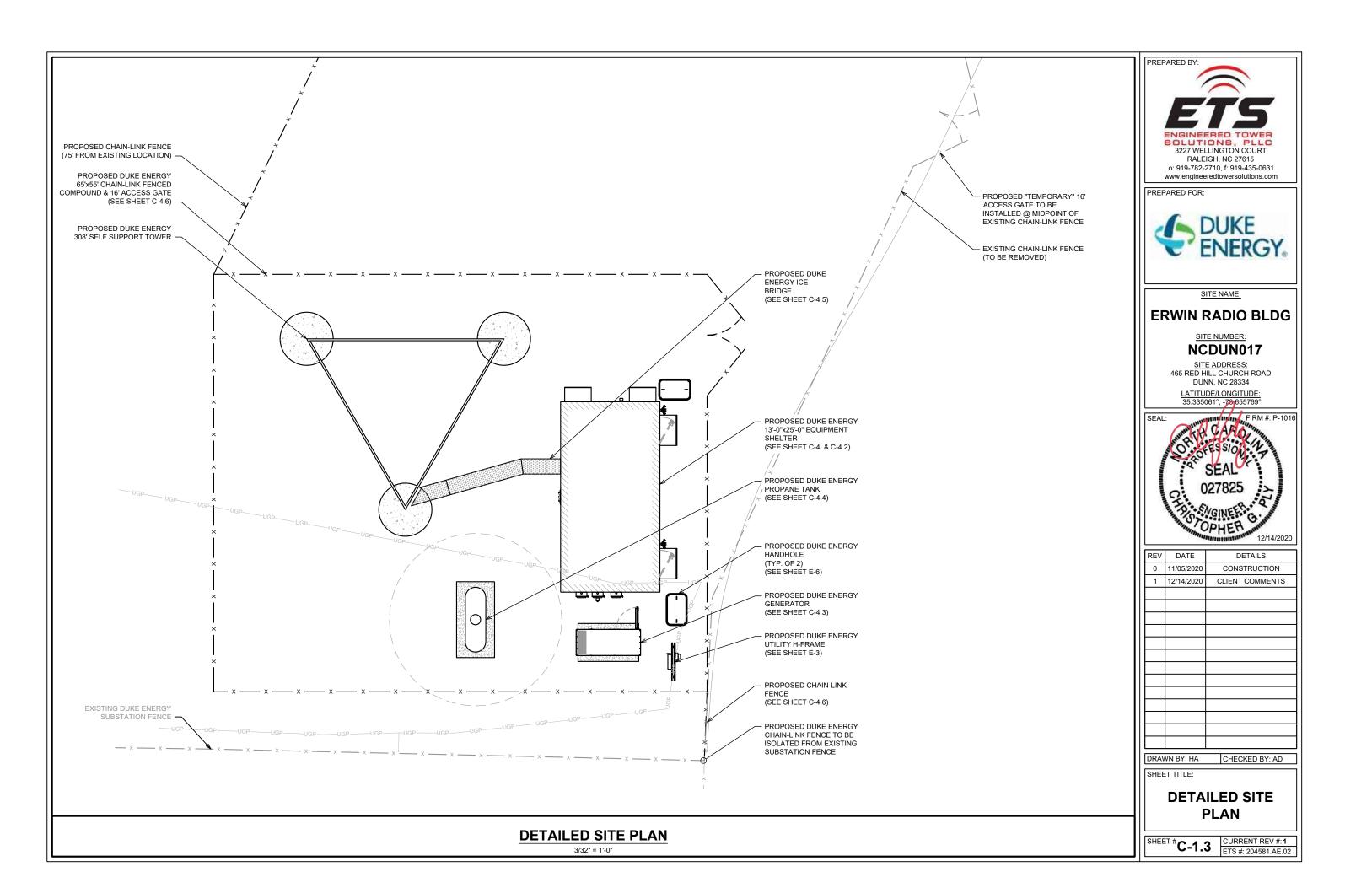


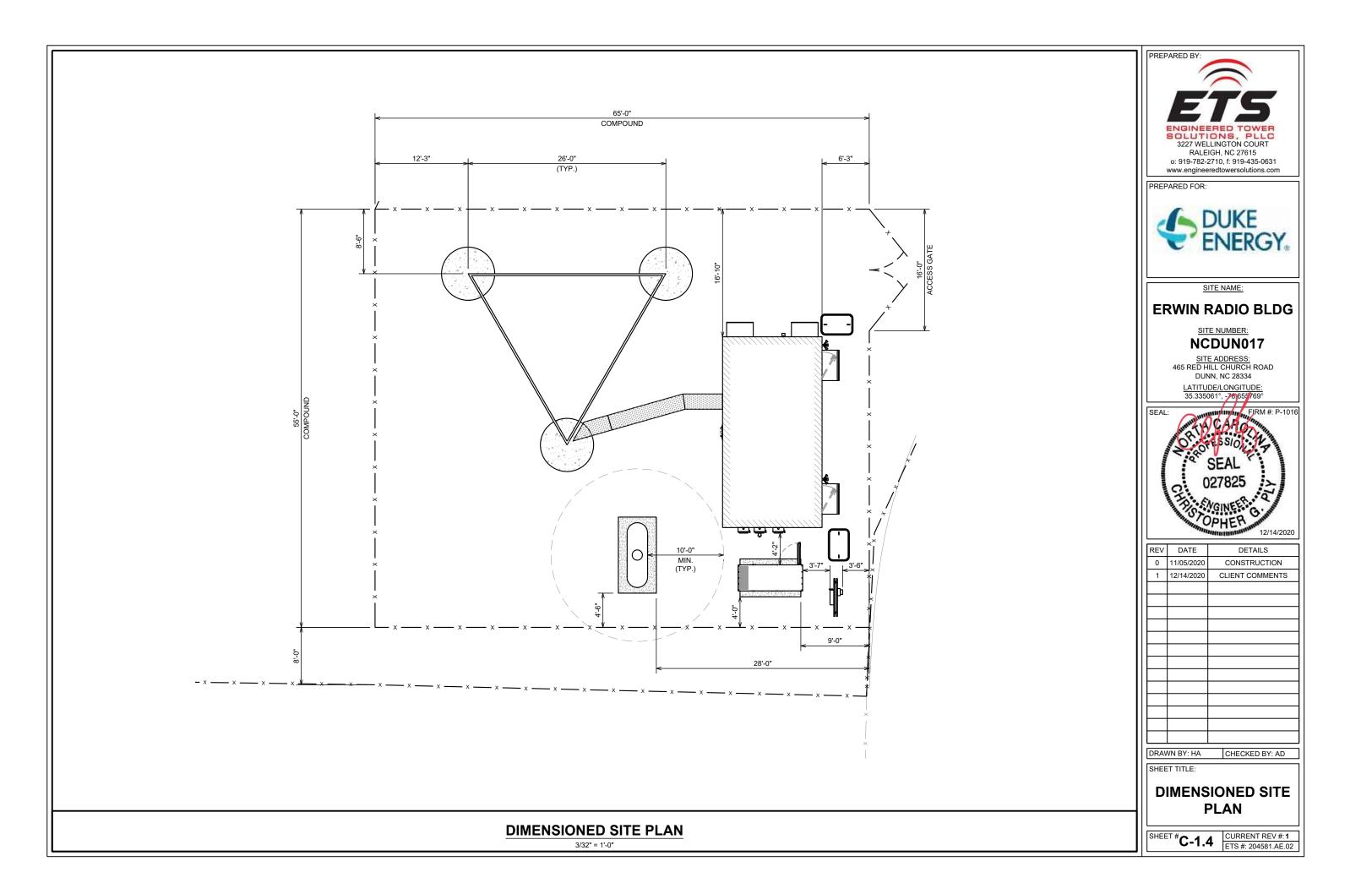
REV DATE		DETAILS
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DRAV	VN BY: HA	CHECKED BY: AD

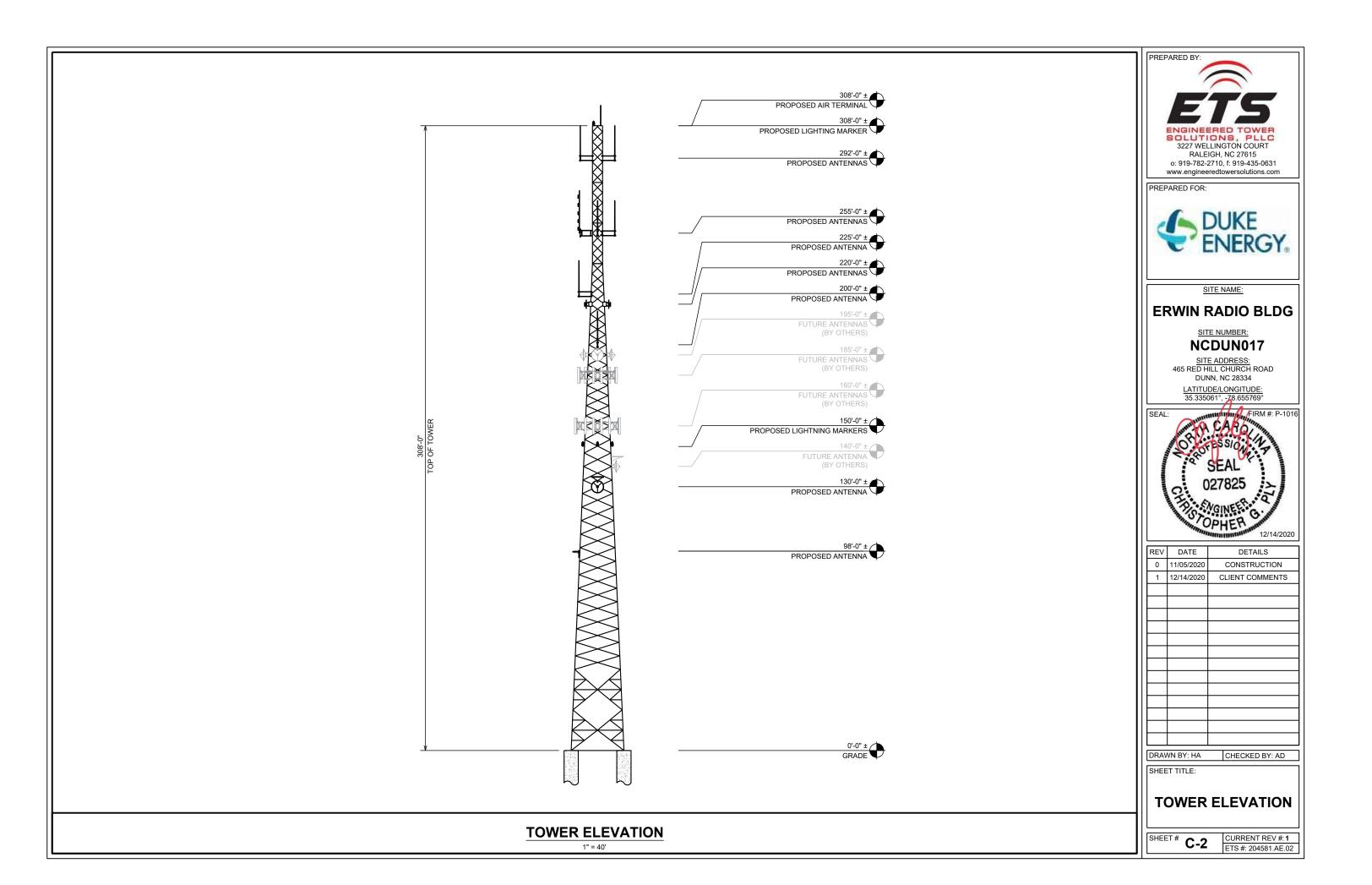
SHEET TITLE:

**FINAL SITE PLAN** 

SHEET # C-1.2 | CURRENT REV #:1 | ETS #: 204581.AE.02







#### PROPOSED ANTENNA SCHEDULE SIZE **ELEV FCC TRANSMIT** FREQ. **MOUNT OWNER SYSTEM TYPE** MANUFACTURE PART# LOC. AZ. (FT) (FT) LICENSE **POWER** DUKE AIR TERMINAL 10 308 PIPE FH370D DUKE LIGHTING **FLASHEAD** 308 TOP FLASH TECH. --800 MHz P25 DUKE 292 В 806-869 NEW 6' SIDE ARM 14.5 OMNI DBSPECTRA DS8A10P36U-D (RX) DUKE 800 MHz P25 2 TTA DBSPECTRA DS7TMD17C 292 В LEG 900 MHz WAN DUKE **OMNI** С 6' SIDE ARM 14.7 DBSPECTRA DS9A10P36U-D 292 896-900 TRUNKING (RX) 900MHz WAN DUKE 2 DS9TMD5C 292 С LEG TTA DBSPECTRA TRUNKING (RX) DUKE VHF PAGING 21 FOLDED DIPOLE COMMSCOPE DB224-A 255 150-160 6' SIDE ARM Α 800 MHz P25 DUKE 14.5 806-869 OMNI DBSPECTRA DS8A10P36U-D 255 В NEW 6' SIDE ARM (TX) 900 MHz WAN С 6' SIDE ARM DUKE OMNI DBSPECTRA DS9A10P36U-D 935-939 100 14.7 255 TRUNKING (TX) **PUBLIC SAFETY NCSHP** 15 OMNI RFI CC807-11 225 В 6' SIDE ARM 800MHz (RX) **PUBLIC SAFETY NCSHP** 2 TXRX В LEG TTA 225 800MHz (TTA) CAMBIUM **INTEGRATED** DUKE 2 **CAMBIUM** (2) PMP 450m 220 Α 90°, 180° 5 GHz 2' STANDOFF ----RADIO **HIGH GAIN** CAMBIUM INTEGRATED 5 GHz DUKE 2 **CAMBIUM** (2) PMP 450m С 0°, 270° 2' STANDOFF 220 RADIO **HIGH GAIN PUBLIC SAFETY NCSHP** 15 OMNI RFI CC807-11 200 В 6' SIDE ARM 800MHz (TX) **FUTURE** DISH RFS PADX6-W57AC 195 Α 6 PIPE **FUTURE** 6 DISH RFS PADX6-W57AC 195 В PIPE 6 ---FUTURE 6 DISH RFS PADX6-W57AC 195 C PIPE 4 PANEL, 3 SEC 185 A,B,C **FUTURE LTE VARIOUS FUTURE LTE** 4 PANEL. 3 SEC **VARIOUS** 160 A.B.C 8 \_\_\_ DUKE LIGHTING **MARKER** FLASH TECH. L-810 MARKER 150 Α LIGHTING DUKE **MARKER** FLASH TECH. L-810 MARKER 150 В DUKE LIGHTING **MARKER** FLASH TECH. L-810 MARKER 150 С ------------**FUTURE MW** 6 RFS PAD6-65B 140 Α 63.32 NCSHP **PUBLIC SAFETY NCSHP** 6 DISH **ANDREW** В PL6-65-PXA 130 234.8 MICROWAVE MOSCAD DUKE 2 DECIBEL DB436 С LEG HARRIS SIREN YAGI 98 303 451-457 --5 CONTROL

SOLUTIONS, PLLC 3227 WELLINGTON COURT RALEIGH, NC 27615 o: 919-782-2710, f: 919-435-0631 www.engineeredtowersolutions.com PREPARED FOR

PREPARED BY:



# **ERWIN RADIO BLDG**

SITE NAME:

SITE NUMBER: NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD **DUNN. NC 28334** 

LATITUDE/LONGITUDE: 35.335061°, -78.655769°



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REV	DATE	DETAILS
0	11/05/2020	CONSTRUCTION
1	12/14/2020	CLIENT COMMENTS

CHECKED BY: AD DRAWN BY: HA

SHEET TITLE:

ANTENNA SCHEDULE

SHEET # C-3.1 | CURRENT NE. 2.... | ETS #: 204581.AE.02

VERIFY FINAL DESIGN AND LOADING WITH STRUCTURAL ANALYSIS PRIOR TO CONSTRUCTION

PROPOSED TRANSMISSION LINE SCHEDULE						
OWNER	LOCATION	SIZE	DIELECTRIC	MANUFACTURE	PART#	
DUKE						
DUKE		2/C #6 AWG		FLASH TECH.	TEK90	
DUKE		(1) 1/2" JUMPER TO TTA	FOAM	EUPEN	EC4-50	
DUKE		(1) 7/8" (1) 1/2"	FOAM	EUPEN	EC5-50A EC4-50	
DUKE	AB	(1) 1/2" JUMPER TO TTA	FOAM	EUPEN	EC4-50A	
DUKE	AB	(1) 7/8" (1) 1/2"	FOAM	EUPEN	EC5-50A EC4-50	
DUKE		(1) 7/8"	FOAM	EUPEN	EC5-50A	
DUKE		(1) 1-5/8"	FOAM	EUPEN	EC7-50A	
DUKE	AB	(1) 1-5/8"	FOAM	EUPEN	EC7-50A	
NCSHP		(1) 7/8"	FOAM	EUPEN	EC5-50A	
NCSHP		(1) 7/8" (1) 1/2"	FOAM	EUPEN	EC5-50A EC4-50A	
DUKE		(2) CAT 5E	COPPER	SUPERIOR ESSEX	CAT5E	
DUKE		(2) CAT 5E COPPER		SUPERIOR ESSEX	CAT5E	
NCSHP		(1) 1-5/8"	FOAM	EUPEN	EC7-50A	
FUTURE	no es	(2) EU63	AIR	EUPEN	EU63	
FUTURE	no es	(2) EU63	AIR	EUPEN	EU63	
FUTURE	en en	(2) EU63	AIR	EUPEN	EU63	
FUTURE	no es	(15) 1-5/8"	FOAM	EUPEN	EC7-50A	
FUTURE	en en	(15) 1-5/8"	FOAM	EUPEN	EC7-50A	
DUKE		2/C #6 AWG		FLASH TECH.	TEK90	
DUKE		2/C #6 AWG		FLASH TECH.	TEK90	
DUKE	<del></del>	2/C #6 AWG		FLASH TECH.	TEK90	
NCSHP - FUTURE						
NCSHP		(1) EW63	AIR	ANDREW	EW63	
DUKE		(1) 1/2"	FOAM	EUPEN	EC4-50A	





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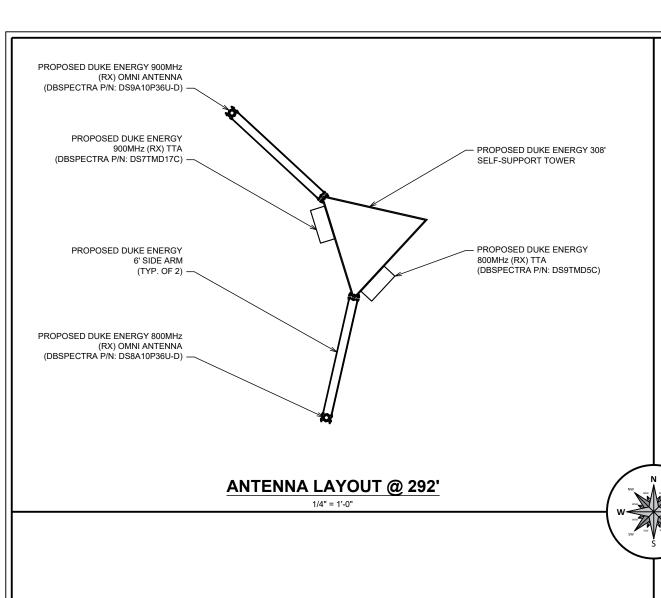
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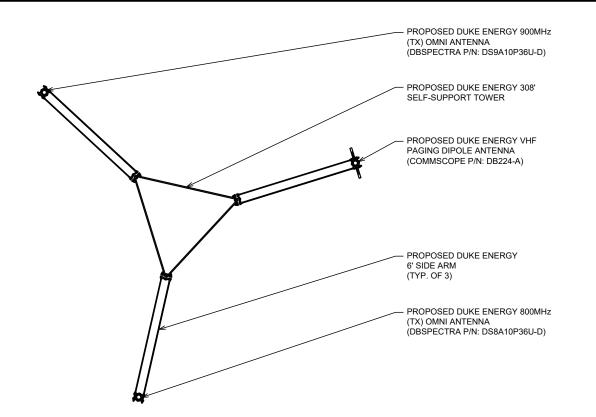
SHEET TITLE:

TRANSMISSION LINE **SCHEDULE** 

SHEET # C-3.2 | CURRENT REV #: 1 | ETS #: 204581.AE.02

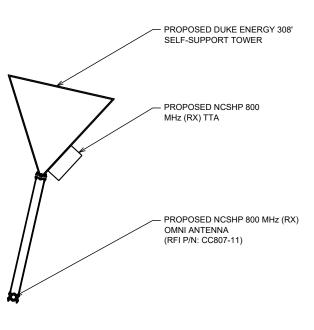


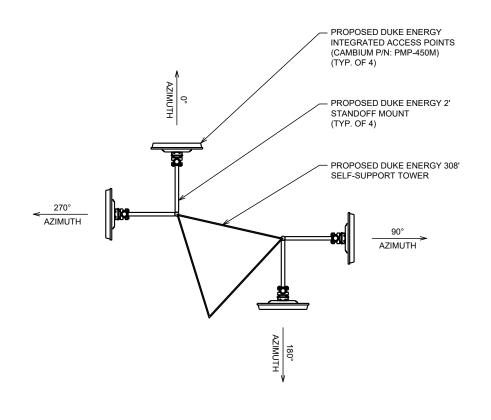
**ANTENNA LAYOUT @ 225'** 



# **ANTENNA LAYOUT @ 255'**

1/4" = 1'-0"





**ANTENNA LAYOUT @ 220'** 



SITE NAME:

# **ERWIN RADIO BLDG**

SITE NUMBER:

NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD DUNN, NC 28334

LATITUDE/LONG/TUDE: 35.335061°, 78 6,5769°



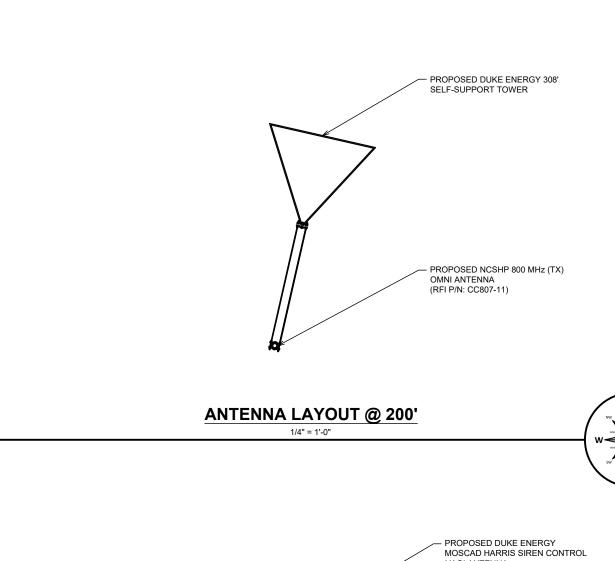
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0	11/05/2020	CONSTRUCTION				
1	12/14/2020	CLIENT COMMENTS				

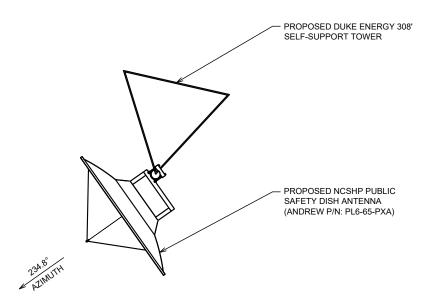
CHECKED BY: AD DRAWN BY: HA

SHEET TITLE:

**ANTENNA LAYOUTS** 

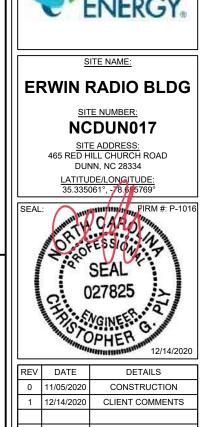
SHEET #**C-3.3** | CURRENT REV #:1 | ETS #: 204581.AE.02





# **ANTENNA LAYOUT @ 130'**

1/4" = 1'-0"

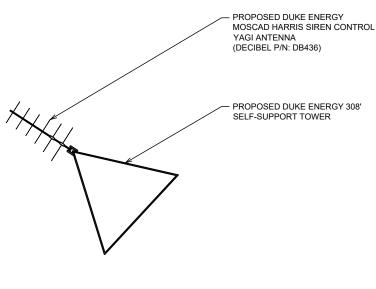


3227 WELLINGTON COURT RALEIGH, NC 27615

o: 919-782-2710, f: 919-435-0631 www.engineeredtowersolutions.com

PREPARED BY:

PREPARED FOR:



ANTENNA LAYOUT @ 98'

**NOT USED** 

USED

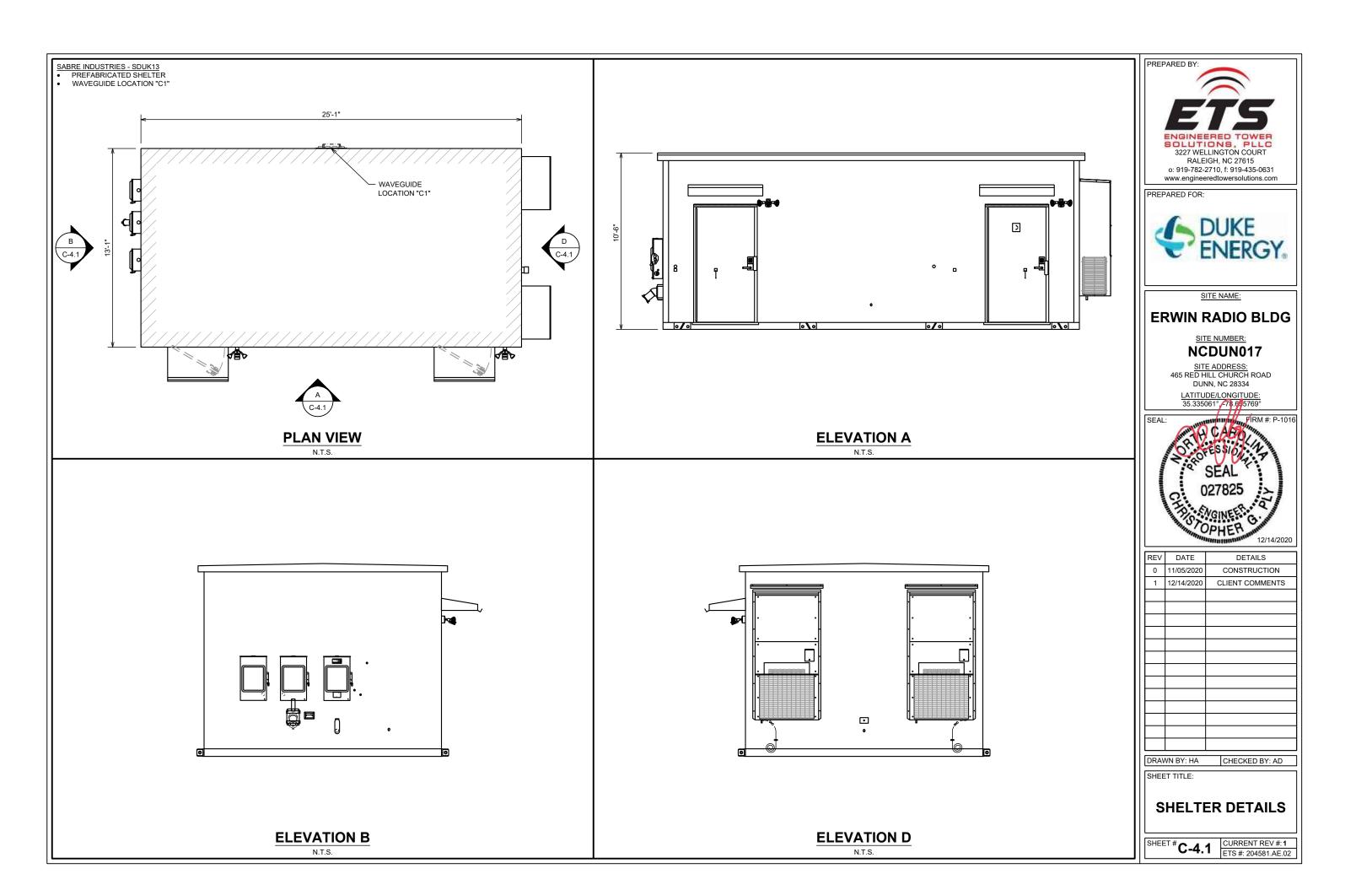
SHEET # C-3.4 | CURRENT REV #:1 | ETS #: 204581.AE.02

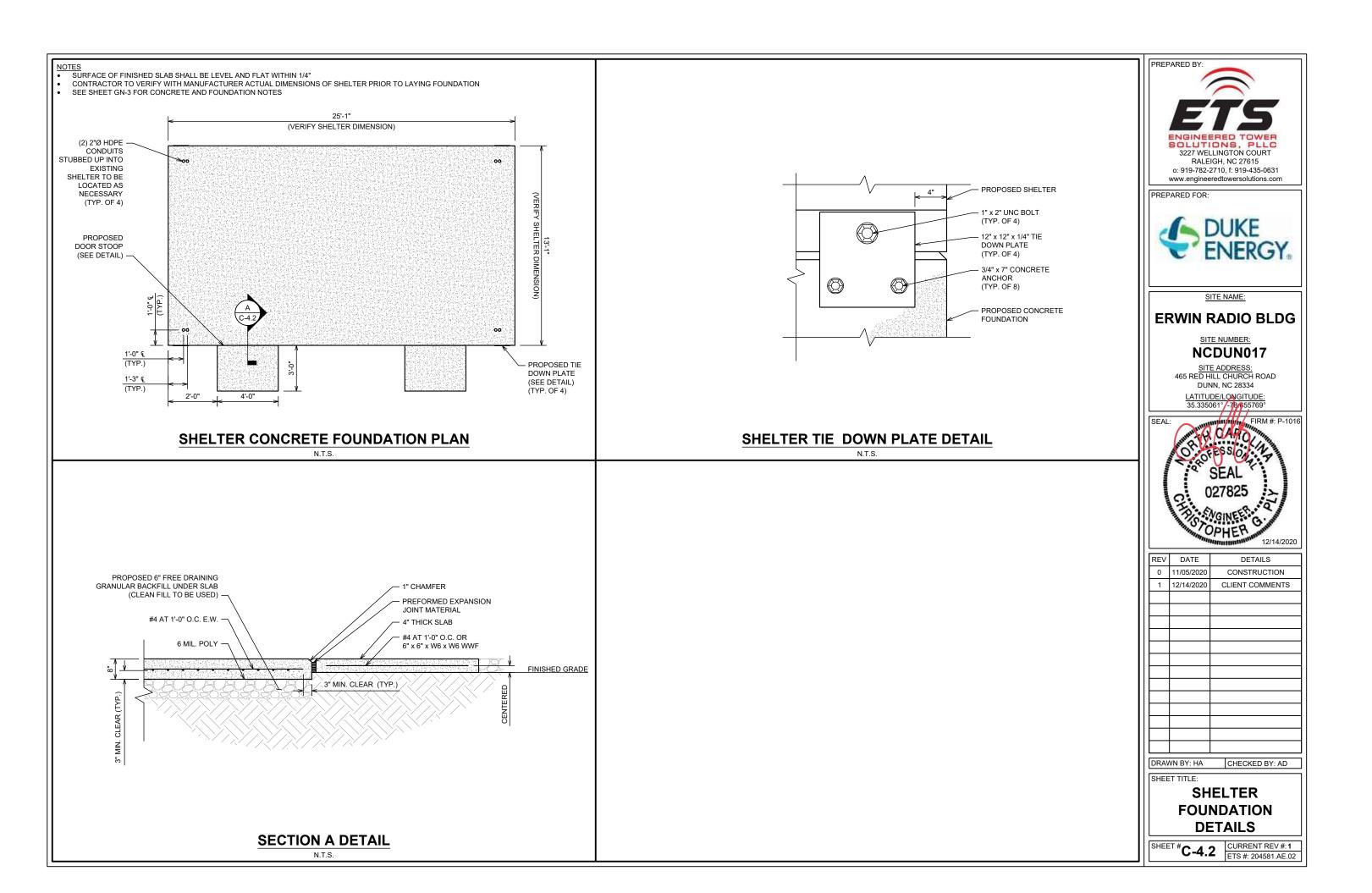
**ANTENNA LAYOUTS** 

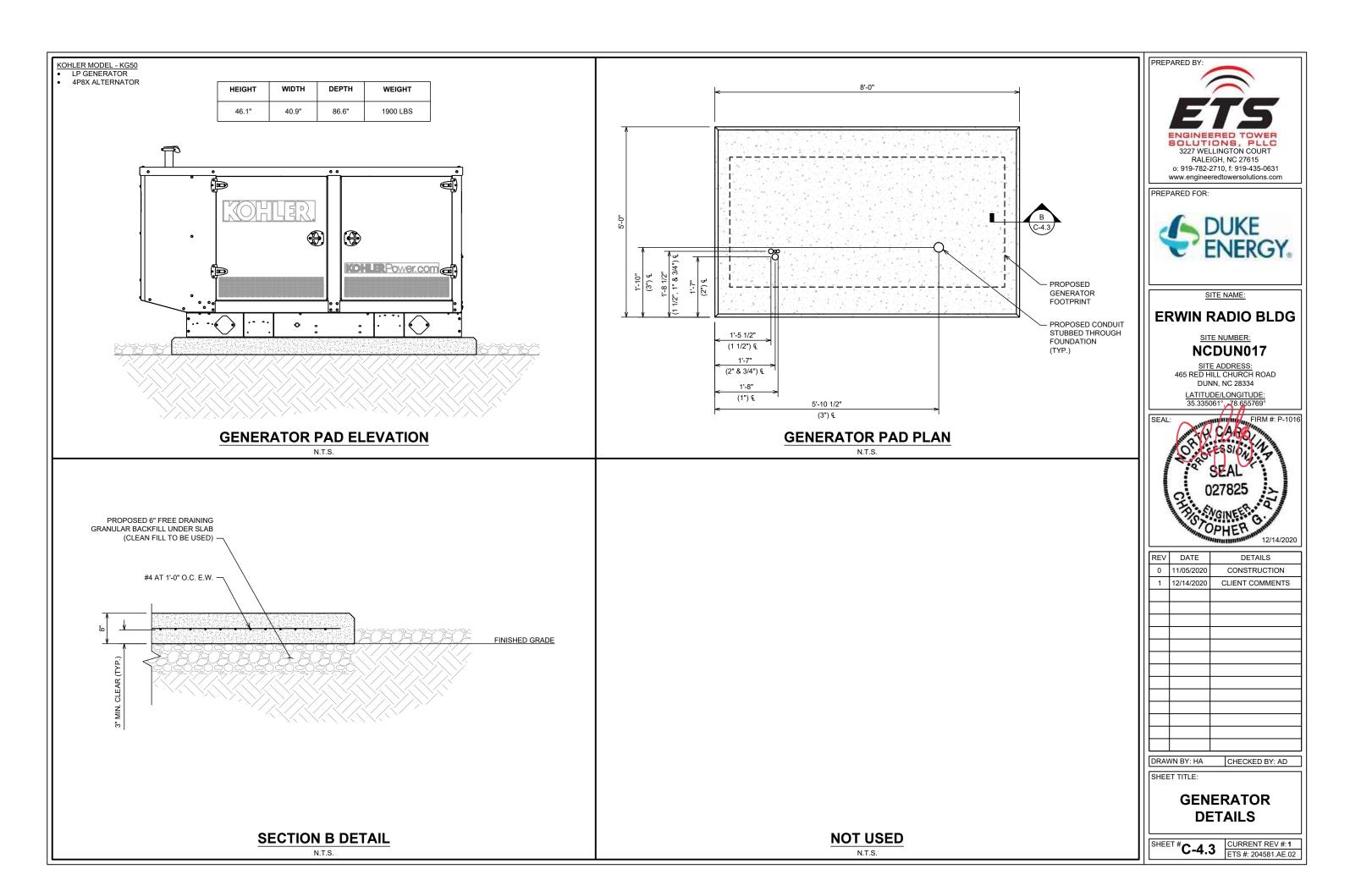
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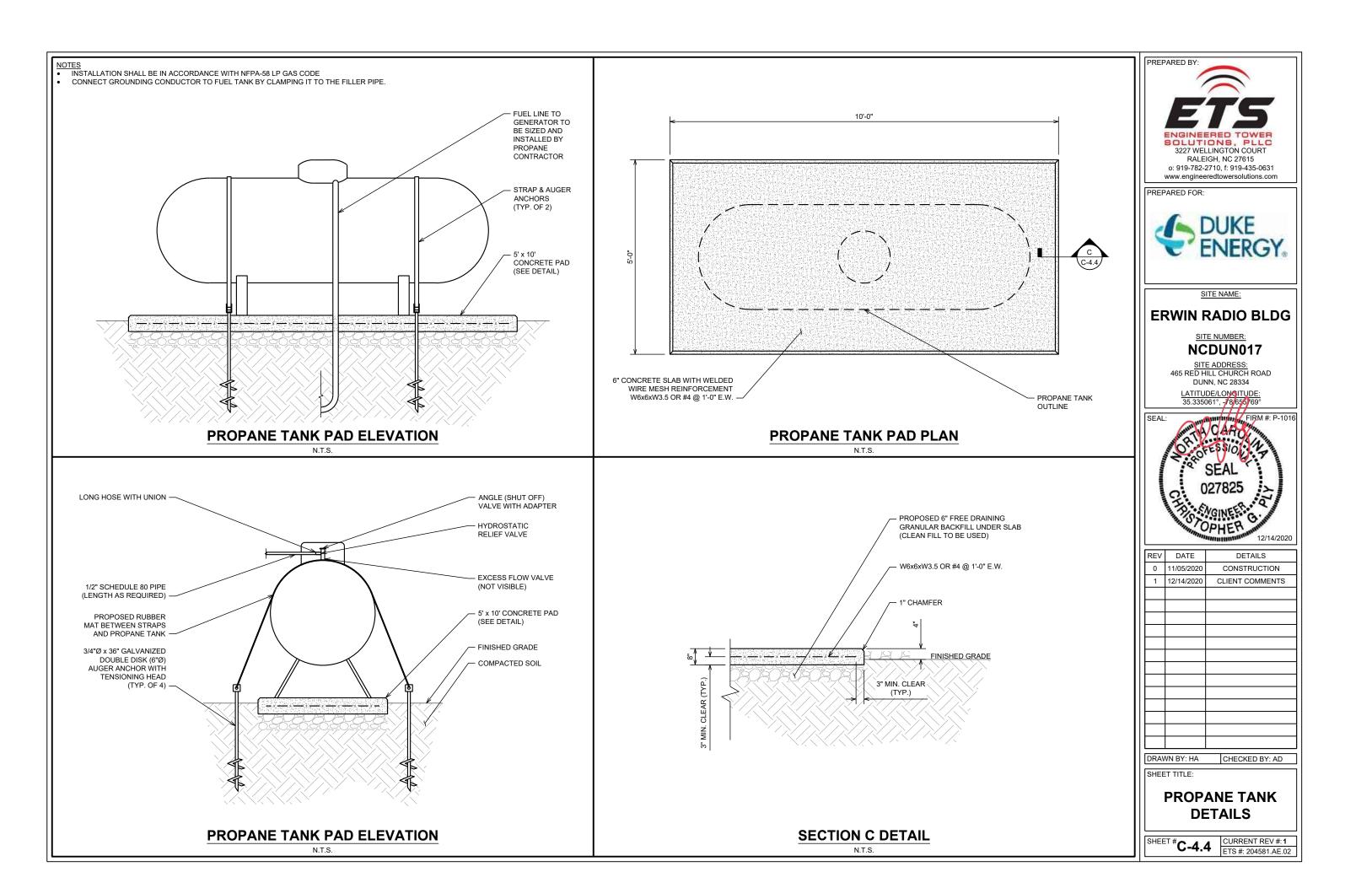
DRAWN BY: HA

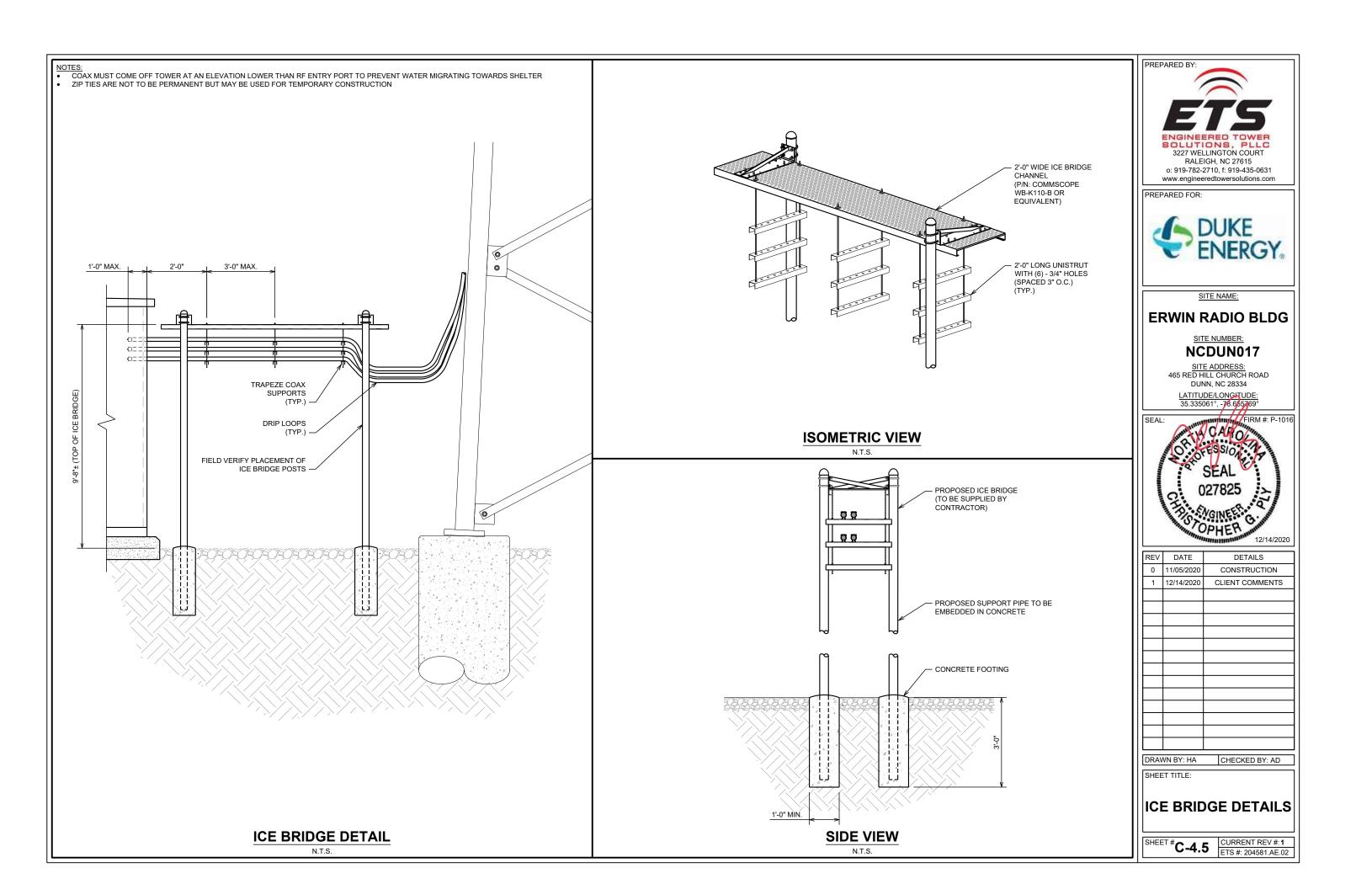
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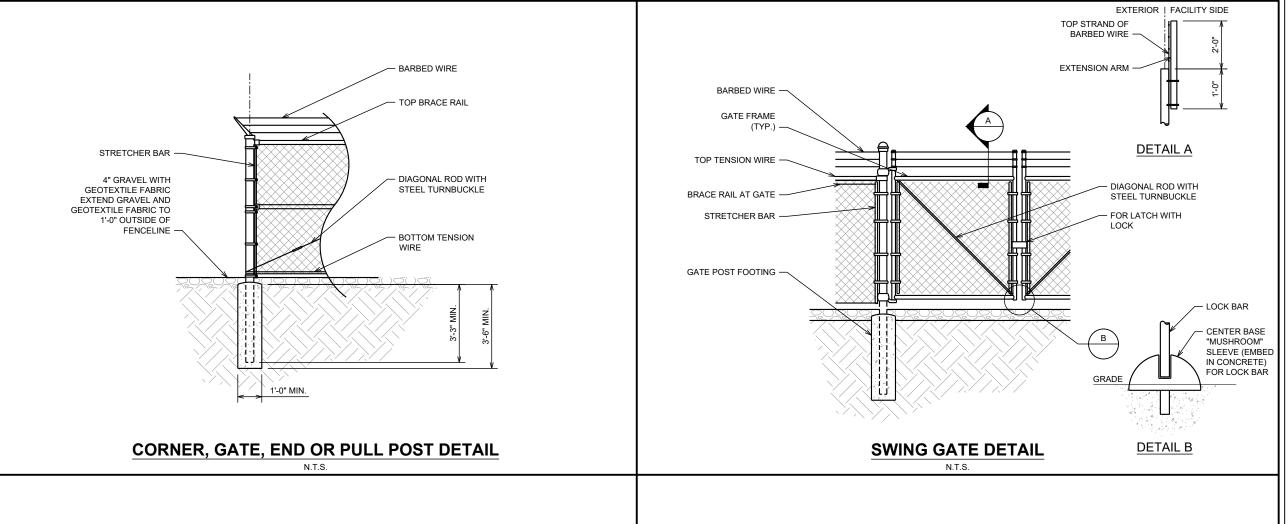


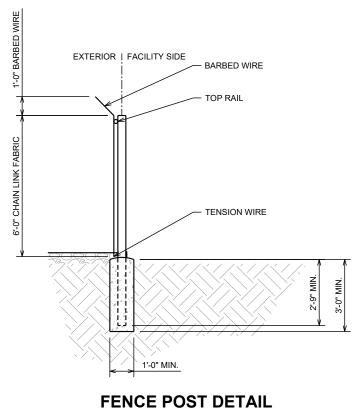


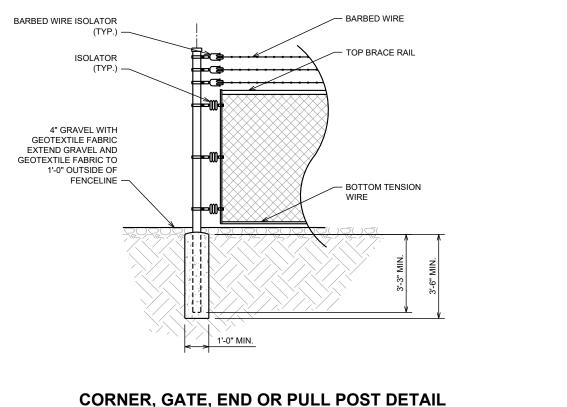
















# **ERWIN RADIO BLDG**

SITE NUMBER: NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD DUNN, NC 28334

LATITUDE/LONGITUDE: 35.335061°, 78.655769° FIRM #: P-1016 SEAL:

REV	DATE	DETAILS
0	11/05/2020	CONSTRUCTION
1	12/14/2020	CLIENT COMMENTS

DRAWN BY: HA CHECKED BY: AD

SHEET TITLE:

**FENCE DETAILS** 

SHEET # **C-4.6** | CURRENT REV #:1 | ETS #: 204581.AE.02

## **ELECTRICAL NOTES**

# 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:
- A. ELECTRIC SERVICE
- B. CONDUIT AND RACEWAY
- C. CONDUCTORS
- D. MISCELLANEOUS MATERIALS
- E. TELEPHONE CONDUITS
- F. 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 ICC 2012, ADMINISTRATIVE RULES WITH THE NATIONAL ELECTRIC CODE, AND ANY LOCAL CODES AND ORDINANCES WITH THE REGULATION OF THE SERVING UTILITY COMPANY. ALL PERMITS REQUIRED SHALL BE OBTAINED AND, AFTER COMPLETION OF WORK, THE OWNER SHALL BE FURNISHED A CERTIFICATE OF FINAL INSPECTION AND APPROVAL.

#### 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.

#### **GURANTEE**

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

#### **EXAMINATION OF SITE**

1. 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 SYSTEMS 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.
- 2. ALL NECESSARY EXCAVATIONS AND BACKFILLING INCIDENTAL TO THE WORK UNLESS SPECIFICALLY NOTED OTHERWISE ON THE DRAWING SHALL BE PROVIDED BY THIS CONTRACTOR
- 3. SEAL ALL PENETRATION THROUGH WALL AND FLOORS WITH APPROVED GROUT.

#### **RACEWAYS**

- ALL CONDUCTORS SHALL BE INSTALLED IN CONDUIT. ALL CONDUIT SHALL BE RIGID STEEL EMT OR SCH40 PVC. AS INDICATED ON THE DRAWINGS.
- 2. WHERE INSTALLED ON EXTERIORS AND EXPOSED TO DAMAGE, ALL CONDUIT SHALL BE RIGID STEEL. ALUMINUM CONDUIT SHALL NOT BE ALLOWED.
- 3. CONCEALED CONDUIT IN WALLS OR INTERIOR SPACES ABOVE GRADE MAY BE EMT.
- 4. UNDERGROUND CONDUITS SHALL BE RIGID STEEL OR SCHEDULE 40 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 LOCATION SHALL HAVE WATERPROOF FITTINGS.
- PROVIDE SUPPORTS FOR ALL CONDUITS IN ACCORDANCE WITH NEC REQUIREMENTS. ALL CONDUITS SHALL BE SIZED AS REQUIRED BY NEC.
- 7. BURIAL DEPTH OF ALL CONDUITS SHALL BE AS REQUIRED BY CODE FOR EACH SPECIFIC CONDUIT TYPE AND APPLICATION.
- 8. CONDUIT ROUTES ARE SCHEMATIC. CONTRACTOR SHALL FIELD VERIFY BEFORE BID. COORDINATE ROUTE WITH WIRELESS CARRIER AND BUILDING OWNER.

#### EXTERIOR CONDUIT

. 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.

**ELECTRICAL NOTES** 

#### **EQUIPMENT**

- 1. 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

#### **CONDUCTORS**

- . FURNISH AND INSTALL CONDUCTORS CALLED FOR IN THE DRAWINGS. ALL CONDUCTORS SHALL HAVE TYPE THWN (MIN) (75 DEGREE) INSULATION, RATED FOR 600 VOLTS.
- 2. ALL CONDUCTORS SHALL BE UL LISTED AND SHALL BE PROVIDED AND INSTALLED AS FOLLOWS:
  - A. MINIMUM WIRE SIZE SHALL BE #12 AWG
  - B. ALL CONDUCTORS SIZE #8 AND LARGER SHALL BE STRANDED. CONDUCTORS SIZED #10 AND SMALLER MAY BE SOLID OR STRANDED.
  - C. CONNECTION FOR #10 AWG AND SMALLER SHALL BE BY TWISTING TIGHT AND INSTALLING INSULATED PRESSURE OR WIRE NUT CONNECTIONS.
  - D. CONNECTION FOR #8 AWG AND LARGER SHALL BE BY USE OF STEEL CRIMP-ON SLEEVES WITH NYLON INSULATOR.
- 3. ALL CONDUCTORS SHALL BE COLOR CODED IN ACCORDANCE WITH NEC STANDARDS.
- THE RACEWAY SYSTEM SHALL BE COMPLETE BEFORE INSTALLING CONDUCTORS

#### **PENETRATIONS**

 CONTRACTOR SHALL COMPLY WITH UL PENETRATION DETAILS FOR PENETRATIONS OF ALL RATED WALLS, ROOF, ETC.

#### **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 MINIMI IM
- ALL GROUNDING SHALL BE INSTALLED IN ACCORDANCE WITH MOTOROLA R-56 GUIDELINES, SECTION 4.

## **ABBREVIATIONS**

AMPERE
ABOVE FINISHED GRADE
AUTOMATIC TRANSFER SWITCH
AMERICAN WIRE GAUGE
BARE COPPER WIRE
BELOW FINISHED GRADE

BELOW FINISHED GR BREAKER CONDUIT CIRCUIT

ATS

AWG

**BCW** 

REG

BKR

CKT

DISC

EGR

EMT

**FSC** 

GEN

GPS

GRD

IGB

**IGR** 

KW

DISCONNECT
EXTERNAL GROUND RING
ELECTRIC METALLIC TUBING
FLEXIBLE STEEL CONDUIT
GENERATOR

GLOBAL POSITIONING SYSTEM GROUND ISOLATED GROUND BAR INTERIOR GROUND RING (HALO)

KILOWATTS

# NEC NATIONAL ELECTRIC CODE PH PHASE

PNL PANEL
PNLBD PANELBOARD
PVC SCH 40 RIGID NON-METALLIC

RGS RIGID GALVANIZED STEEL CONDUIT

SW SWITCH
TGB TOWER GROUND BAR
UL UNDERWRITERS
LABORATORIES
V VOLTAGE
W WATTS
TEANSCORMED

XFMR TRANSFORMER
XMTR TRANSMITTER





SITE NAME:

#### **ERWIN RADIO BLDG**

SITE NUMBER:

# NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD DUNN, NC 28334

LATITUDE/LONGITUDE: 35.335061°/-78.655769°



**DETAILS** 

0	11/05/2020	CONSTRUCTION
1	12/14/2020	CLIENT COMMENTS
DRA	NN BY: HA	CHECKED BY: AD

SHEET TITLE:

**ELECTRICAL NOTES** 

SHEET# **E-1** 

REV

DATE

CURRENT REV #: 1 ETS #: 204581.AE.02

— E — UNDERGROUND ELECTRICAL CONDUIT

— T — UNDERGROUND TELEPHONE CONDUIT

— KILOWATT-HOUR METER

— UNDERGROUND BONDING AND
GROUNDING CONDUCTOR

— GROUND ROD

— GROUND ROD WITH INSPECTION WELL

— CADWELD (EXOTHERMIC)

# 200A, 120/240V, POWER PANEL SCHEDULE, MCB.

LOAD SERVED	(WA		WIRE	BREA	AKER	CKT #	Pł	PHASE		PHASE CK		PHASE CKT		PHASE				WIRE	VA (WATTS)		LOAD SERVED
SERVED	L1	L2		Р	TRIP	#				Ħ	Р	TRIP		L1	L2						
HVAC #1	2940			2	50A	1		Α	<u>~</u>	2	2	50A		2940		HVAC #2					
HVAC#1		2940		2	SUA	3		В	$\bot$	4	2	DUA			2940	HVAC #2					
LIGHTS	320			1	20A	5	igwedge	Α	$\sim$	6	1	20A		180		TWIST REC					
QUAD REC		720		1	20A	7	$\setminus$	В	$\langle$	8	1	20A			180	TWIST REC					
QUAD REC	1080			1	20A	9	ackslash	Α	$\sim$	10	1	20A		180		TWIST REC					
SMOKE		9.6		1	20A	11	$\setminus$	В	$\langle$	12	1	20A			180	TWIST REC					
DEHYDRATOR	55			1	20A	13	$\setminus$	Α	$\langle$	14	1	20A		180		TWIST REC					
TOWER LIGHT		386.1		1	20A	15	$\setminus$	В	$\langle$	16	1	20A			180	TWIST REC					
						17	$\setminus$	Α	$\langle$	18	1	20A		180		TWIST REC					
TWIST REC		1750		1	20A	19	$\setminus$	В	$\langle$	20						SPARE					
TWISTLOCK	1750			2	20A	21	<u></u>	Α	$\langle$	22						SPARE					
REC		1750			20/1	23	$\downarrow \downarrow$	В	<u></u>	24	2	60A			4	SURGE					
TWISTLOCK	1750			2	20A	25	<u></u>	Α	$\bot$	26		00/1		4		ARRESTOR					
REC		1750		2	20/1	27	$\downarrow \downarrow$	В	$\sim$	28						SPARE					
TWISTLOCK	1750			2	20A	29	<u></u>	Α	$\sim$	30						SPARE					
REC		1750			20/1	31	$\downarrow \land$	В	$\sim$	32						SPARE					
TWISTLOCK	1750			2	20A	33	<u> </u>	Α	$\sim$	34						SPARE					
REC		1750			20/1	35	$\downarrow \land$	В	$\sim$	36						SPARE					
TWISTLOCK	1750			2	20A	37	$\downarrow \uparrow \uparrow$	Α	_	38						SPARE					
REC		1750			2 20A		$\downarrow \wedge$	В	_	40						SPARE					
GFCI REC	180			1	20A	41		Α	$\sim$	42						SPARE					
VOLT AMPS	13,325	14,55	6											3,664	3,484	VOLT AMPS					

16,989	18,040	TOTAL VOLT AMPERES
142 150		TOTAL AMPS PER LEG
152	2.50	CONNECTED
163	3.70	DEMAND
36	.30	SPARE





# SITE NAME: ERWIN RADIO BLDG

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REV	DATE	DETAILS	
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1	12/14/2020	CLIENT COMMENTS	

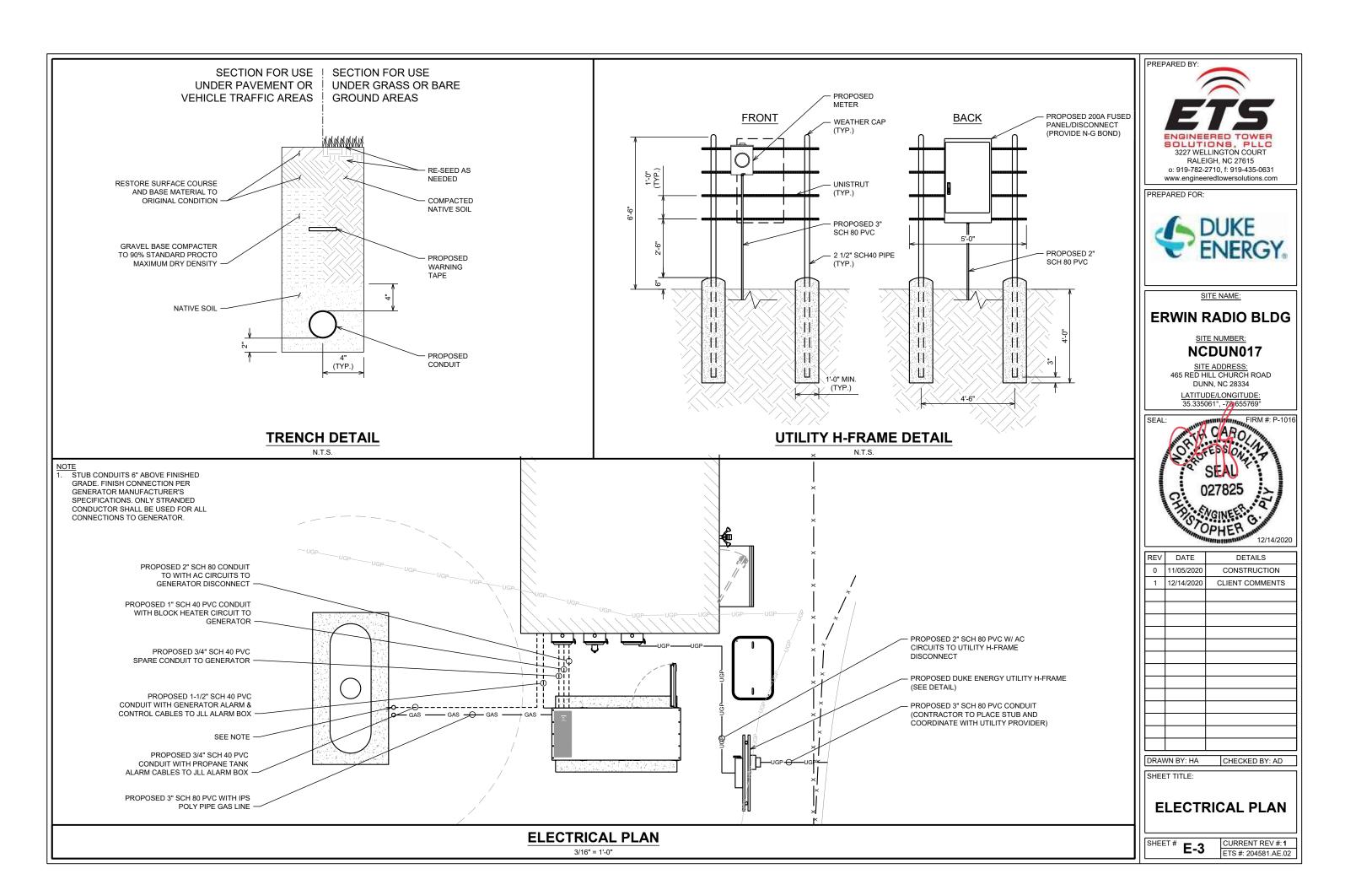
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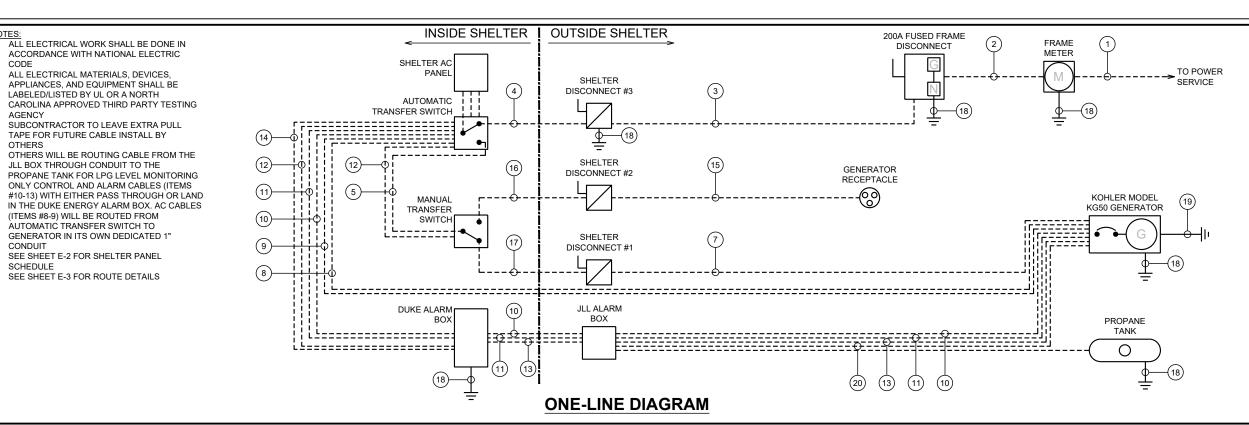
SHEET TITLE:

SHELTER PANEL SCHEDULE

HEET# E-2

CURRENT REV #: 1 ETS #: 204581.AE.02





# CIRCUIT SCHEDULE

AGENCY

OTHERS

SCHEDULE

	FROM	ТО	CONDUCTOR	RACEWAY	BY	FUNCTION	NOTES
1	SOURCE	METER	(3) 3/0 (1) #4 G	3" SCH 80 PVC	LOCAL UTILITY	POWER SOURCE	2 1/2" SCH 80 PVC RISER TO METER, 3" SCH 80 PVC UNDERGROUND
2	METER	FRAME DISCONNECT SWITCH	(3) 3/0 (1) #4 G	2" SCH 80 PVC	SUBCONTRACTOR	METER DISCONNECT	
3	FRAME DISCONNECT SWITCH	#3 SHELTER DISCONNECT SWITCH	(3) 3/0 (1) #4 G	2" SCH 80 PVC	SUBCONTRACTOR	MAIN DISCONNECT	
4	#3 SHELTER DISCONNECT SWITCH	AUTOMATIC TRANSFER SWITCH	(3) 3/0 (1) #4 G	2" RGSC	SHELTER MANUFACTURER	SERVICE ENTRANCE	
5	AUTOMATIC TRANSFER SWITCH	MANUAL TRANSFER SWITCH	(3) 3/0 (1) #4 G	2" RGSC	SHELTER MANUFACTURER	TEMPORARY EMERGENCY POWER	
6	AUTOMATIC TRANSFER SWITCH	AC POWER PANEL	(3) 3/0 (1) #4 G	2" RGSC	SHELTER MANUFACTURER	AC POWER TO BREAKERS	
7	STANDBY GENERATOR	#1 SHELTER DISCONNECT SWITCH	(3) 3/0 (1) #4 G	2" SCH 80 PVC	SUBCONTRACTOR	AUTO EMERGENCY POWER	
8	AC POWER PANEL	STANDBY GENERATOR CONTROL BOARD	(2) #12	1" SCH 40 PVC	SUBCONTRACTOR	BATTERY CHARGER	ROUTE CABLES THROUGH AUTOMATIC TRANSFER SWITCH TO GENERATOR USING DEDICATED
9	AC POWER PANEL	STANDBY GENERATOR CONTROL BOARD	(2) #12 (1) #12 G	1" SCH 40 PVC	SUBCONTRACTOR	ENGINE HTR/COOLANT	1" CONDUITS
10	STANDBY GENERATOR CONTROL BOARD	AUTOMATIC TRANSFER SWITCH	(2) #14 (DC)	1-1/2" SCH 40 PVC	SUBCONTRACTOR	CONTROL	ROUTE VIA DUKE ENERGY ALARM BOX. CABLE WILL BE ROUTED THROUGH 2 SEPARATE CONDUITS. AUTOMATIC TRANSFER SWITCH TO DUKE ENERGY ALARM BOX AND THEN JLL ALARM BOX TO GENERATOR
11	STANDBY GENERATOR CONTROL BOARD	AUTOMATIC TRANSFER SWITCH	2-WIRE RS485	1-1/2" SCH 40 PVC	SUBCONTRACTOR	CONTROL	
12	MANUAL TRANSFER SWITCH	DUKE ENERGY ALARM BOX	(4) #18	1" PVC	SUBCONTRACTOR	MANUAL TRANSFER SWITCH ALARM	ROUTE VIA AUTOMATIC TRANSFER SWITCH. SEE E-## ON WHERE TO LAND CABLES IN DUKE ENERGY ALARM BOX. CABLE PART #: BELDEN 83351E
13	STANDBY GENERATOR CONTROL BOARD	DUKE ENERGY ALARM BOX	(15) #18	1-1/2" SCH 40 PVC	SUBCONTRACTOR	GENERATOR ALARMS	SEE E-5 ON WHERE TO TERMINATE CABLES WITHIN DUKE ENERGY ALARM BOX CABLE PART # BELDEN 8874MN
14	AUTOMATIC TRANSFER SWITCH	DUKE ENERGY ALARM BOX	(8) #18	1" PVC	SUBCONTRACTOR	AUTOMATIC TRANSFER SWITCH ALARMS	SEE E-5 ON WHERE TO TERMINATE CABLES WITHIN DUKE ENERGY ALARM BOX CABLE PART # BELDEN 8448
15	PORTABLE GENERATOR RECEPTACLE	#2 SHELTER DISCONNECT SWITCH	(3) 3/0 (1) #4 G	2" RGSC	SHELTER MANUFACTURER	PORTABLE EMERGENCY POWER	
16	#2 SHELTER DISCONNECT SWITCH	MANUAL TRANSFER SWITCH	(3) 3/0 (1) #4 G	2" RGSC	SHELTER MANUFACTURER	PORTABLE EMERGENCY POWER	
17	#1 SHELTER DISCONNECT SWITCH	MANUAL TRANSFER SWITCH	(3) 3/0 (1) #4 G	2" RGSC	SHELTER MANUFACTURER	AUTO EMERGENCY POWER	
18	EQUIPMENT	GROUND RING	#2 THHN	NONE	SUBCONTRACTOR	GROUND CONNECTION	
19	GENERATOR	GROUND RING	2/0 BCW	NONE	SUBCONTRACTOR	GROUND CONNECTION	
20	STANDBY GENERATOR CONTROL BOARD	JLL ALARM BOX	(10) #18	1-1/2" SCH 40 PVC	SUBCONTRACTOR	GENERATOR ALARMS	LEAVE CABLE 20 IN JLL ALARM BOX, CABLE PART #: BELDEN 5308UE





# **ERWIN RADIO BLDG**

SITE NAME:

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LATITUDE/LONGITUDE: 35.335061°, -78.655769°



REV	DATE	DETAILS
0	11/05/2020	CONSTRUCTION
1	12/14/2020	CLIENT COMMENTS
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DRAWN BY: HA CHECKED BY: AD

SHEET TITLE:

**ONE-LINE DIAGRAM** 

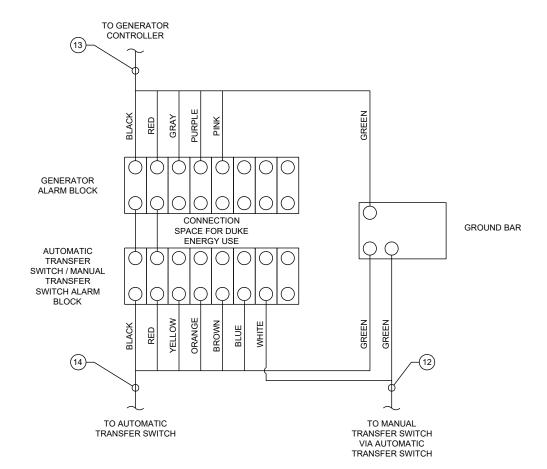
SHEET # E-4 CURRENT REV #: 1 ETS #: 204581.AE.02



- START (BLACK) STOP (RED)
- ACPF (YELLOW)
- ENGR (ORANGE)
- TVSJ (BROWN)
- EPOT (BLUE)
- MTSN (WHITE)
- FUTURE (UNASSIGNED)

#### GENERATOR ALARM TERMINAL BLOCK ALARM ASSIGNMENT (CABLE COLOR)

- 9. START (BLACK)
- 11. ENGN (GRAY)
- 12. ENGJ (PURPLE)
- 13. EETA (PINK)
- 14. FUTURE (TAN)
- 15. FUTURE (AQUA) 16. FUTURE (LIGHT BLUE)

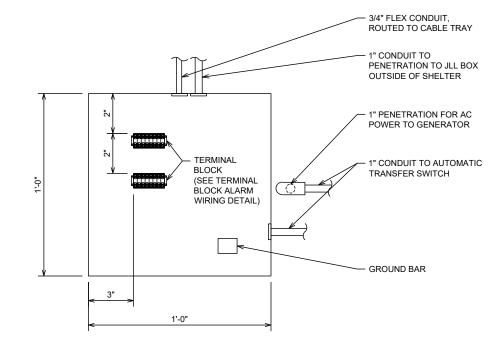


- NOTES

  1. SEE REFERENCE DOCUMENT (ENGINE CONTROL & ALARM DIAGRAMS) FOR EQUIPMENT SIDE TERMINATIONS
- NUMBERING TO FOLLOW WHAT IS DEPICTED IN TERMINAL BLOCK ALARM WIRING DETAIL. SUBCONTRACTOR TO LABEL BLOCK POSITIONS FOR EACH TERMINAL BLOCK (P/N: UTILITECH GTB-408-UT)
- SEE SHEET E-3 FOR CABLE TYPE AND DESTINATION ROUTING
- ITEM 12 (P/N: BELDEN 83351E) 4 CONDUCTOR #18 AWG SHIELDED. SUBCONTRACTOR TO CUT TO LENGTH AND COIL EXTRA CONDUCTORS. THIS CABLE WILL TERMINATE ON THE AUTOMATIC TRANSFER SWITCH/MANUAL TRANSFER SWITCH ALARM BLOCK AND LAND IN THE MANUAL TRANSFER SWITCH VIA THE AUTOMATIC TRANSFER SWITCH
- ITEM 13 (P/N: BELDEN 8874MN) 15 CONDUCTOR #18 AWG SHIELDED. SUBCONTRACTOR TO CUT TO LENGTH AND COIL EXTRA CONDUCTORS. THIS CABLE WILL TERMINATE ON THE GENERATOR ALARM BLOCK AN DLAND INSIDE THE GENERATOR.
- ITEM 14 (P/N: BELDEN 8448) 8 CONDUCTOR #18 AWG. SUBCONTRACTOR TO CUT TO LENGTH AND COIL EXTRA CONDUCTORS. THIS CABLE WILL TERMINATE ON THE AUTOMATIC TRANSFER SWITCH/MANUAL TRANSFER SWITCH ALARM BLOCK AND LAND INSIDE THE AUTOMATIC TRANSFER SWITCH. SUBCONTRACTOR TO FOLLOW DUKE ENERGY ALARM WIRING DIAGRAM TO TERMINATE ALARM WIRING WIHTIN THE AUTOMATIC TRANSFER SWITCH.

### **TERMINAL BLOCK ALARM WIRING**

- DETAIL SHOWING JUNCTION BOX WITH COVER REMOVED (P/N: EATON 12126HC)
  SUBCONTRACTOR TO GROUND JUNCTION BOX TO SHELTER GROUND







# SITE NAME: **ERWIN RADIO BLDG**

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REV	DATE	DETAILS	
0	11/05/2020	CONSTRUCTION	
1	12/14/2020	CLIENT COMMENTS	
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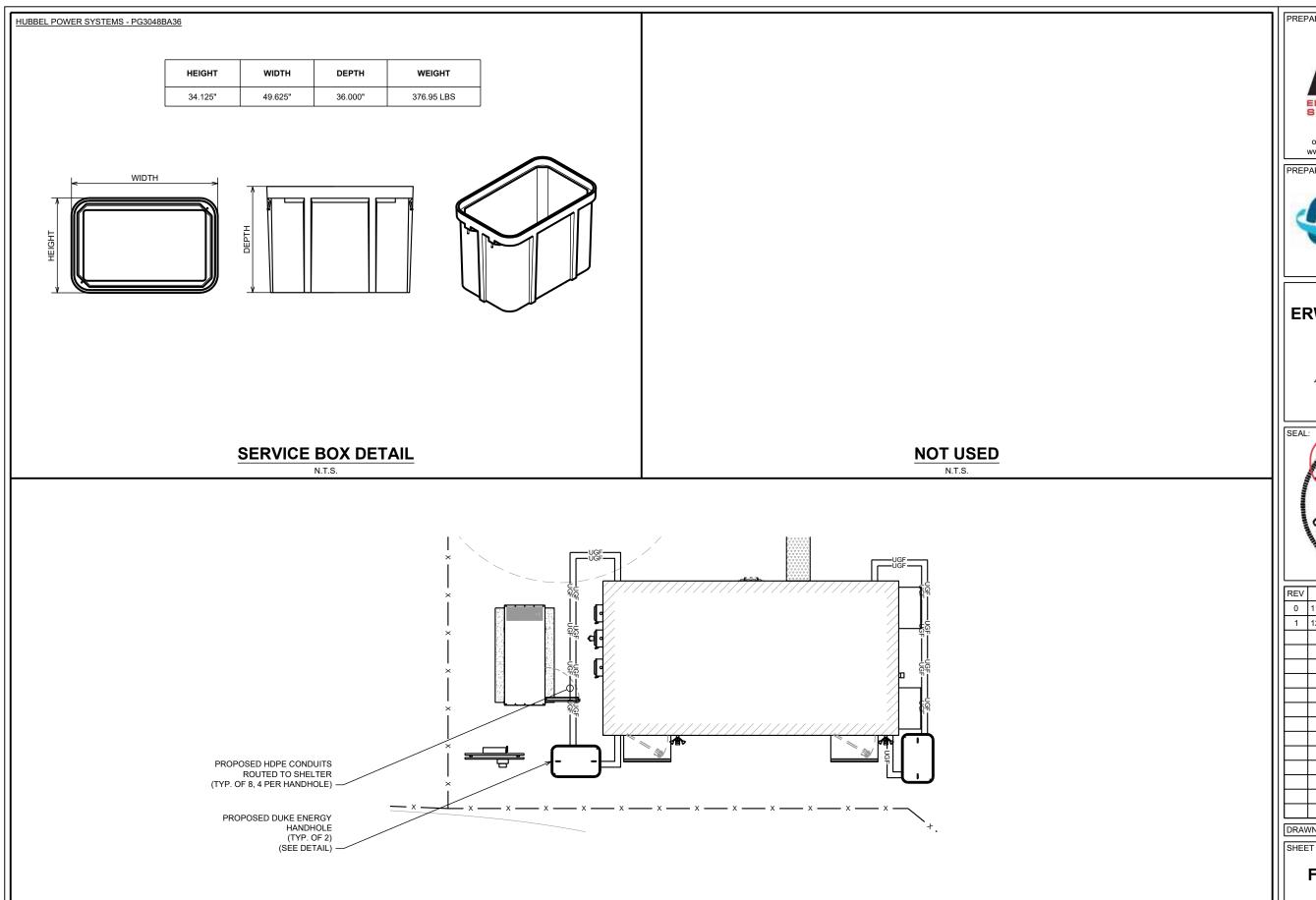
SHEET TITLE:

**ALARM WIRING DETAILS** 

E-5

CURRENT REV #: 1 ETS #: 204581.AE.02

**DUKE ENERGY ALARM BOX INSTALLATION** 



**FIBER ROUTING PLAN** 

PREPARED BY: 3227 WELLINGTON COURT RALEIGH, NC 27615 o: 919-782-2710, f: 919-435-0631 www.engineeredtowersolutions.com





SITE NAME:

# **ERWIN RADIO BLDG**

SITE NUMBER:

NCDUN017

SITE ADDRESS: 465 RED HILL CHURCH ROAD DUNN, NC 28334

LATITUDE/LONGITUDE: 35.335061°, 78.655769°



REV	DATE	DETAILS
0	11/05/2020	CONSTRUCTION
1	12/14/2020	CLIENT COMMENTS

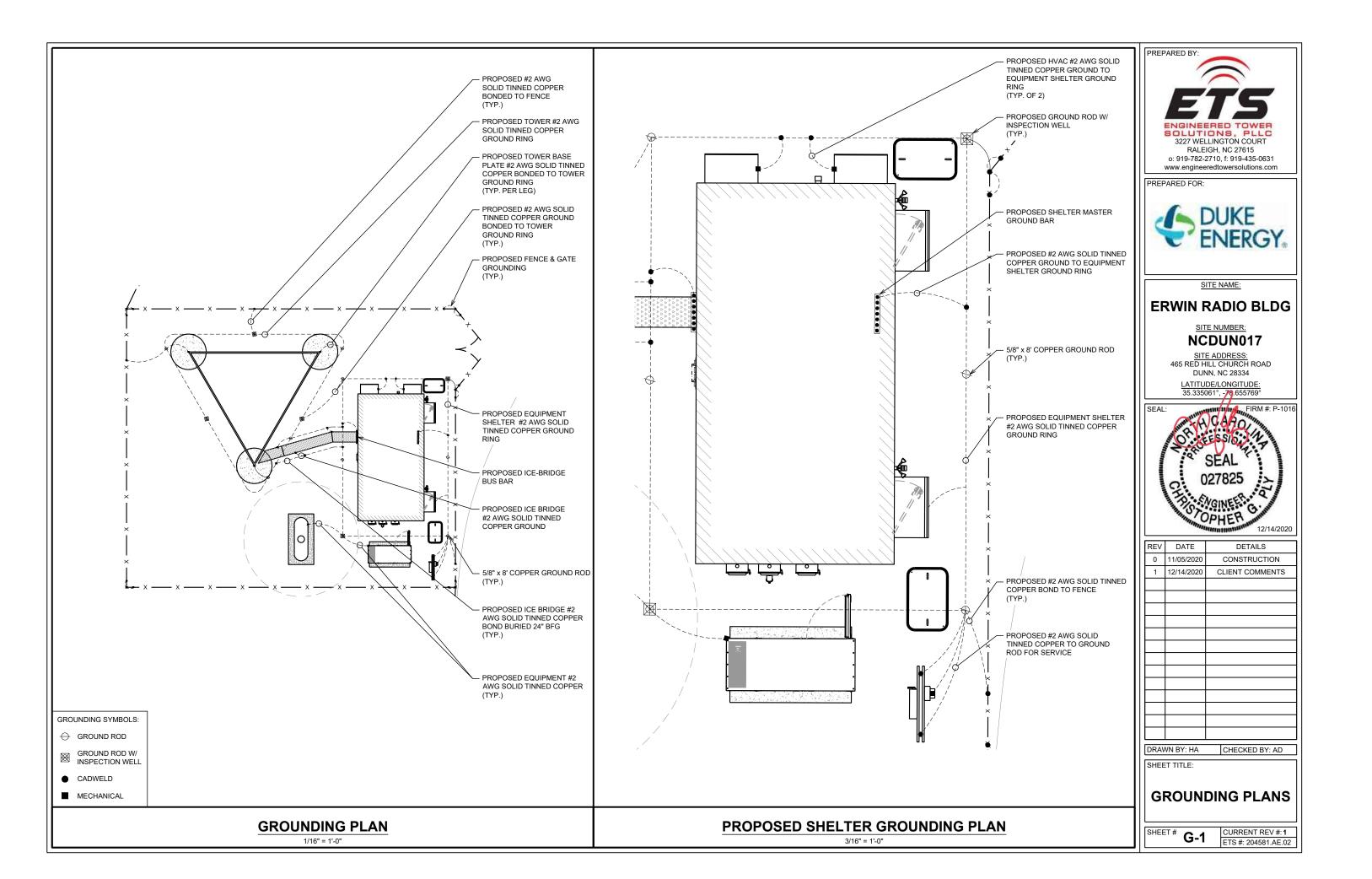
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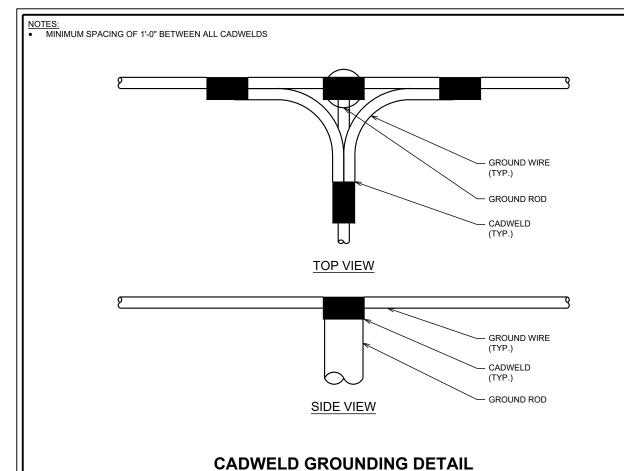
SHEET TITLE:

# **FIBER ROUTING PLAN**

SHEET# E-6

CURRENT REV #: 1 ETS #: 204581.AE.02





N.T.S.

PVC COLLAR

5/8" x 8' COPPER CLAD

STEEL GROUND ROD

MALE SCREW COVER WITH

**TEFLON LUBRICANT** 

FINISHED GRADE

CONDUCTOR

(2 PLACES)

(P/N: 360P42)

#2 AWG SOLID TINNED

COPPER GROUND RING

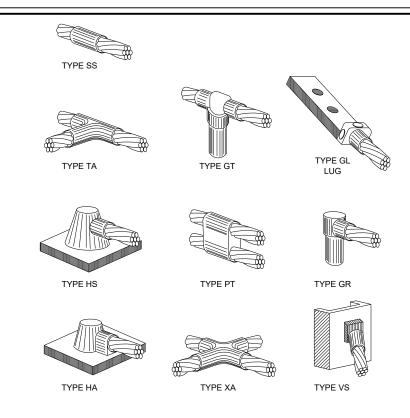
#2 AWG SOLID TINNED COPPER GROUNDING

TOP OF GROUND ROD

EXOTHERMIC WELD THERMOWELD OR APPROVED EQUIVALENT DIRECTLY TO

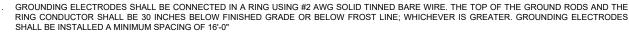
8" x 42" PVC SLOTTED WELL BY HARGAR

27" SLOT CUT SMOOTH FOR GROUND RING (EXTEND NOTCH 2" ABOVE CONDUCTOR)



# STANDARD CADWELD DETAILS

N.T.S.



- 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. CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER WHEN THE GROUNDING SYSTEM IS COMPLETE. THE CONSTRUCTION MANAGER SHALL INSPECT THE GROUNDING SYSTEM PRIOR TO BACKFILLING.
- GROUND RINGS SHALL BE INSTALLED IN DIRECT CONTACT WITH THE EARTH AT A DEPTH OF 30 INCHES BELOW THE EARTH'S SURFACE WHEREVER POSSIBLE, OR BELOW THE FROST LINE, WHICHEVER IS DEEPER (ANSI T1.334-2002, SECTION 5.3.1 AND NFPA 70-2005, ARTICLE 250.53)
  - A. BUILDING GROUND RINGS SHALL BE INSTALLED AT LEAST 3 FEET FROM THE BUILDING FOUNDATION AND SHOULD BE INSTALLED BEYOND THE DRIP LINE OF THE ROOF. IT IS RECOMMENDED THAT THE BUILDING GROUND RING AND GROUND RODS BE POSITIONED 2 FEET TO 6 FEET OUTSIDE OF THE DRIP LINE OF THE BUILDING OR STRUCTURE TO ENSURE THAT PRECIPITATION WETS THE EARTH AROUND THE GROUND RING AND RODS (MIL-HDBK-419A AND MIL-STD-188-124B)
- B. TOWER GROUND RINGS SHALL BE INSTALLED AT LEAST 2 FEET FROM THE TOWER FOUNDATION (ANSI T1.334-2002, SECTION 5.3.1)
- . BOND PPC AND EQUIPMENT ENCLOSURES TO BURIED GROUNDING CONDUCTOR. USE A NEMA DRILLED TWO-HOLE CONNECTOR FOR BONDS TO EQUIPMENT ENCLOSURES; USE AN APPROVED CONDUIT CLAMP FOR CONNECTIONS TO SERVICE CONDUITS. EXOTHERMICALLY WELD CONNECTIONS TO GROUNDING CONDUCTOR.
- 5. 5/8" x 8'-0" LONG GROUND ROD. SPACING BETWEEN RODS, AS SHOWN (NON-LINEAR). PROVIDE TEE TYPE EXOTHERMIC WELD TO BOND GROUND ROD TO BURIED GROUND RING. TYPICAL FOR ALL GROUND RODS SHOWN AROUND TOWER. SEE GROUND ROD INSPECTION SLEEVE DETAIL.
- BOND ALL EXTERIOR CONDUITS, PIPES AND CYLINDRICAL METALLIC OBJECTS WITH A PENN-UNION GT SERIES CLAMP, BLACKBURN GUV SERIES CLAMP OR A BURNDY GAR 3900BU SERIES CLAMP.
- 8. BEFORE AND AFTER INSTALLATION IS COMPLETED IN CONFORMANCE WITH THESE DRAWINGS AND THE STANDARD SPECIFICATIONS, THE CONTRACTOR SHALL CONFIRM THE IMPEDANCE (GROUND RESISTANCE) TO EARTH AND BETWEEN GROUNDING CIRCUITS. THE GROUNDING SYSTEM IS EXPECTED TO PROVIDE FOR A MAXIMUM EARTH RESISTANCE OF 5 OHMS. THE CONTRACTOR SHALL NOTIFY THE OWNER PRIOR TO ALL TESTING AND SHALL FURTHER NOTIFY THE OWNER IN THE EVENT THE EARTH RESISTANCE IS GREATER THAN 10 OHMS. USE 3 POINT FALL OF POTENTIAL METHOD.
- 9. ALL GROUNDING CONNECTIONS SHALL BE MADE WITH CADWELDS U.N.O.
- 10. CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF EXISTING UNDERGROUND UTILITIES. HAND DIG IN THIS VICINITY TO PROTECT FROM DAMAGE.
- 11. ALL BENDS ON THE GROUND CONDUCTOR TO BE MADE WITH A MINIMUM 8" RADIUS. BENDS ARE NOT TO EXCEED 90° PER NFPA 780-2004, SECTION 4.9.5 AND ANSI T1.313-2003.
- GROUNDING SHALL BE IN ACCORDANCE WITH THE FOLLOWING MOTOROLA R56 STANDARD PRACTICES (AS REQUIRED): (GENERAL CONTRACTOR SHALL CONFIRM LATEST STANDARDS)
- A. SSEO 3.018.02.004 BONDING, GROUNDING AND TRANSIENT PROTECTION
- B. SSEO 3.018.10.002 SITE RESISTANCE TO EARTH TESTING
- C. REFER TO DETAILS FOR ADDITIONAL INFORMATION AND REQUIREMENTS
- 13. CONTRACTOR SHALL TEST EXISTING GROUND RING FOR TOWER BEFORE START OF AND AFTER COMPLETION OF CONSTRUCTION TO VERIFY LESS THAN 5 OHMS RESISTANCE.





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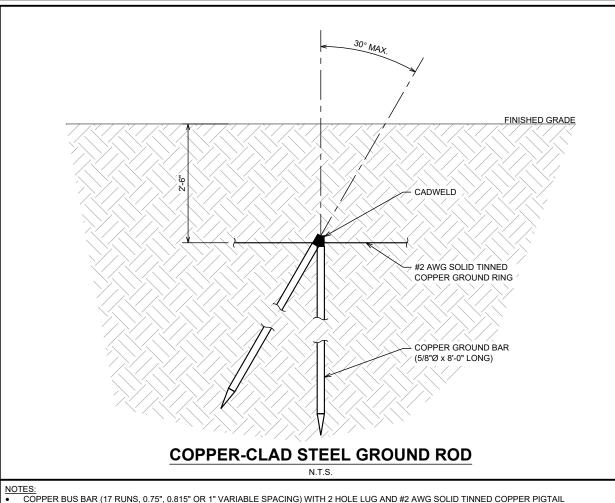
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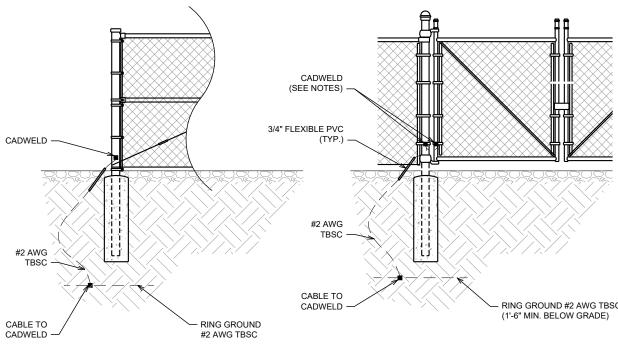
GROUNDING DETAILS I

CURRENT REV #:1
ETS #: 204581.AE.02

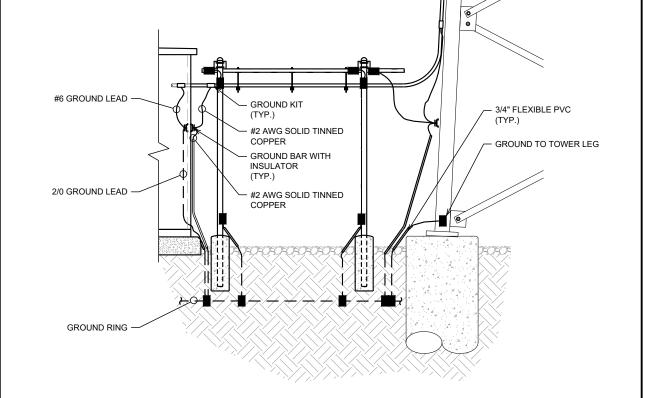




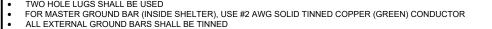
- VERTICAL POSTS SHALL BE BONDED TO THE GROUND RING AT EACH CORNER AND AT EACH GATE POST. AT MINIMUM, ONE VERTICAL POST SHALL BE BONDED TO THE GROUND RING IN EVERY 100 - FOOT STRAIGHT RUN OF FENCE.



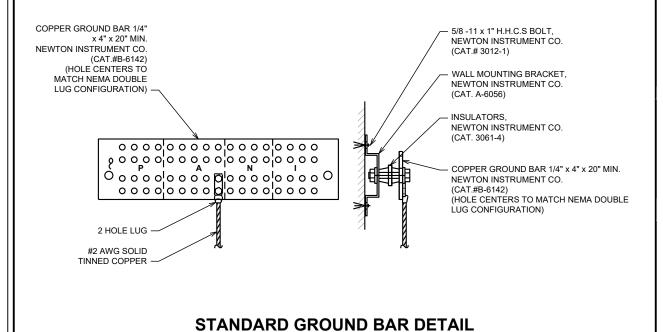
**FENCE GROUNDING DETAILS** 

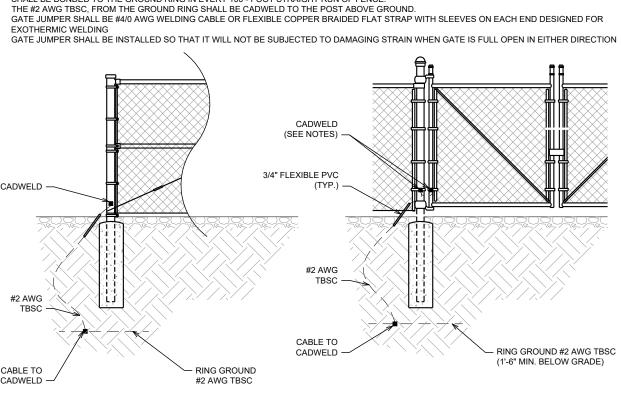


# ICE BRIDGE/COAX/GROUNDING BAR ELEVATION N.T.S.



PANI SCHEME ONLY APPLIES TO MASTER GROUND BAR





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PREPARED FOR:

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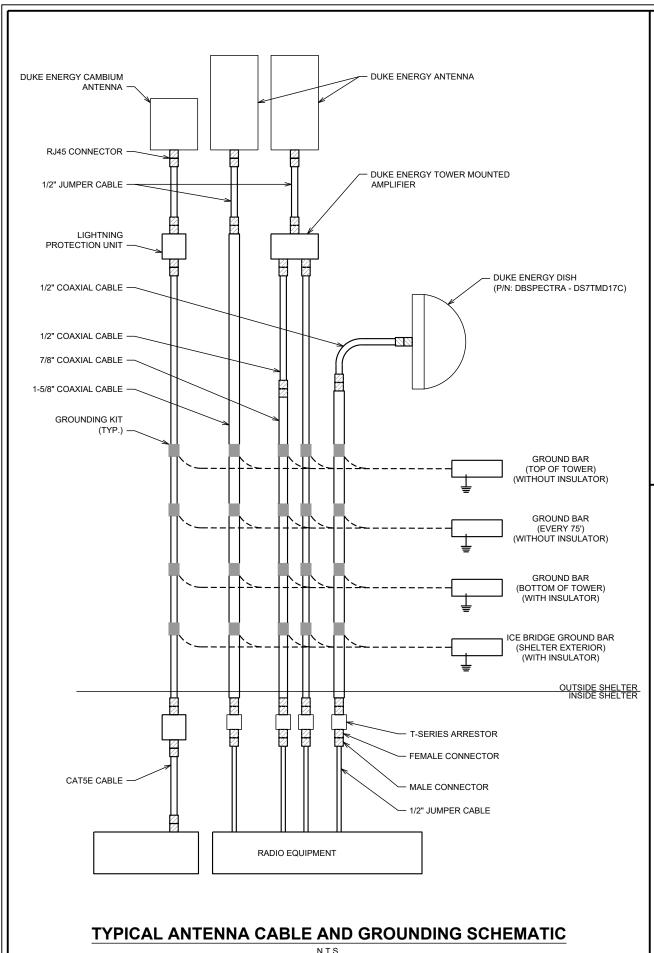


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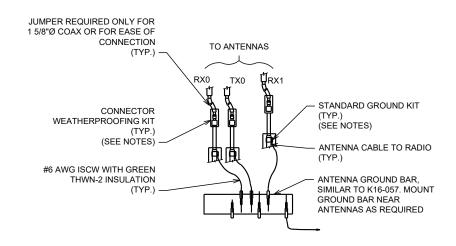
SHEET TITLE:

**GROUNDING DETAILS II** 

CURRENT REV #: 1 ETS #: 204581.AE.02



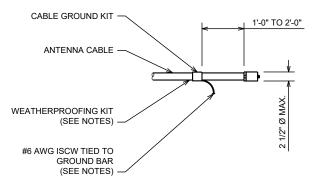
- DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
- WEATHER PROOFING SHALL BE ANDREWS (TYPE & PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER).



## **GROUND WIRE TO GROUND BAR CONNECTION AT ANTENNAS** N.T.S.

- NOTES:

  DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR
- GROUNDING KIT SHALL BE ANDREW SUREGROUND TYPE KIT WITH TWO-HOLE LUG
- WEATHER PROOFING SHALL INCORPORATE PPC WEATHERPROOFING TAPE KIT; COLD SHRINK SHALL NOT BE USED



**CABLE GROUNDING DETAIL** 





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SHEET TITLE:

**GROUNDING DETAILS III** 

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