



**GENERAL REQUIREMENTS**

1. SITE WORK SHALL BE COMPLETED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS (U.S. CELLULAR STANDARD PLANS AND SPECIFICATIONS) AND THE REFERENCED STANDARDS.
  - A. ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES AND REGULATIONS.
  - B. UNIFORM BUILDING CODE (UBC) BUILDING OFFICIALS & CODE ADMINISTRATORS (BOCA) AS APPLICABLE.
  - C. AMERICAN CONCRETE INSTITUTE (ACI).
  - D. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM).
  - E. ELECTRONICS INDUSTRIES ASSOCIATION STANDARDS (EIA/TIA-222-F) MOST CURRENT VERSION ADOPTED BY SUBJECT STATE.
  - F. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA).
2. WHERE A CONFLICT OCCURS BETWEEN REFERENCED STANDARDS AND U.S. CELLULAR STANDARD PLANS AND SPECIFICATIONS, THE MORE STRINGENT STANDARD SHALL APPLY.
3. THE FACILITY IS AN UNOCCUPIED SPECIALIZED MOBILE RADIO FACILITY.
4. PLANS ARE NOT TO BE SCALED AND ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY, UNLESS NOTED OTHERWISE THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
5. PRIOR TO THE SUBMISSIONS OF THE BIDS, THE CONTRACTOR SHALL VISIT THE JOB SITE AND BECOME FAMILIAR WITH THE FIELD CONDITIONS. ANY DISCREPANCIES ARE TO BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE.
6. THE CONTRACTOR SHALL RECEIVE IN WRITING, AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEM NOT CLEARLY IDENTIFIED BY THE CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE NOTED.
8. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING BEST SKILLED PERSONNEL. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT INCLUDING CONTACT AND COORDINATION WITH THE LANDLORDS AUTHORIZED REPRESENTATIVE.
9. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS OF THE SITE AND NOTIFY THE OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES BEFORE STARTING ANY WORK.
10. WHEN CONTRACTOR'S ACTIVITIES IMPEDE OR OBSTRUCT TRAFFIC FLOW, CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL DEVICES, SIGNS, AND FLAGMEN IN ACCORDANCE WITH PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AS PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.
11. THE CONTRACTOR SHALL COORDINATE SITE ACCESS AND SECURITY WITH THE PROPERTY OWNER AND U.S. CELLULAR PRIOR TO CONSTRUCTION.
12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS SUCH AS BUT NOT LIMITED TO, PAVING, CURBS, AGRICULTURAL CROPS, DRAIN TILE, FENCES, LANDSCAPING, GALVANIZED SURFACES, ETC. AND UPON COMPLETION OF WORK REPAIR ANY DAMAGE THAT OCCURRED DURING CONSTRUCTION.
13. THE LOCATIONS OF UTILITIES SHOWN ON THE PLAN ARE BASED ON EXISTING RECORDS, FIELD LOCATIONS OR OWNER SUPPLIED INFORMATION AND MAY NOT BE ACCURATE. THE CONTRACTOR SHALL MARK ALL PUBLIC & PRIVATE UTILITIES. THE CONTRACTOR SHALL CALL THE LOCAL "ONE CALL" PROVIDER A MINIMUM OF THREE BUSINESS DAYS PRIOR TO EXCAVATING TO ALLOW MEMBER UTILITIES TO LOCATE THEIR FACILITIES. THE PROPERTY OWNER SHALL BE NOTIFIED IN A SIMILAR FASHION TO ALLOW HIM TO LOCATE HIS PRIVATE UTILITIES.
14. WHEN EXCAVATING AROUND UTILITIES, THE CONTRACTOR SHALL USE REASONABLE CARE IN LOCATING AND PROTECTING UTILITIES. U.S. CELLULAR SHALL BE NOTIFIED IMMEDIATELY OF ANY CONFLICTS BETWEEN EXISTING UTILITIES AND PROPOSED CONSTRUCTION.
15. DAMAGE TO PUBLIC OR PRIVATE UTILITIES SHALL BE REPORTED TO U.S. CELLULAR AND THE OWNER OF THE UTILITY IMMEDIATELY. ANY DAMAGE RESULTING FROM CONTRACTOR'S NEGLIGENCE OR FAILURE TO ACT WITH DUE REGARD SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.
16. UNLESS OTHERWISE NOTED ON THE PLANS, CONTRACTOR SHALL ASSUME ALL SURFACE FEATURES SUCH AS BUILDINGS, PAVEMENTS, LANDSCAPING FEATURES AND PLANTS ARE TO BE SAVED AND PROTECTED FROM DAMAGE.
17. KEEP THE CONSTRUCTION SITE CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.

18. THE CONTRACTOR SHALL PROVIDE ON-SITE TRASH RECEPTACLES FOR COLLECTION OF NON-TOXIC DEBRIS. ALL TRASH SHALL BE COLLECTED ON A DAILY BASIS.
19. ALL TOXIC AND ENVIRONMENTALLY HAZARDOUS SUBSTANCES SHALL BE USED AND DISPOSED OF IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS. UNDER NO CIRCUMSTANCES SHALL RINSING OR DUMPING OF THESE SUBSTANCES OCCUR ON-SITE.
20. THE CONTRACTOR SHALL MAINTAIN AND SUPPLY U.S. CELLULAR WITH AS-BUILT PLANS UPON COMPLETION OF THE PROJECT.
21. MEANS AND METHODS OF CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, THE DESIGN AND PLACEMENT OF FORMS AND SHORING ARE THE RESPONSIBILITY OF THE CONTRACTOR.
22. THE GENERAL CONTRACTOR SHALL COORDINATE/ASSIST DIFFERENT TRADE CONTRACTORS IN TERMS OF COORDINATION OF SITE ACCESS.
23. ALL ARCHITECTURAL, MECHANICAL & ELECTRICAL SYSTEM AND COMPONENTS IN THIS FACILITY SHALL BE INSTALLED TO RESIST WIND, ICE AND SNOW FORCES AS PER NATIONAL STANDARDS AND BUILDING CODES (LATEST ADOPTED EDITION).
24. U.S. CELLULAR WILL OBTAIN NECESSARY PERMITS AND LICENSES FROM THE FEDERAL COMMUNICATIONS COMMISSION (FCC) AND THE FEDERAL AVIATION ADMINISTRATION (FAA). UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIAL PROVISIONS, CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL OTHER PERMITS NECESSARY FOR CONSTRUCTION.
25. U.S. CELLULAR WILL ORDER AND PAY FOR ANY NECESSARY ELECTRIC AND TELEPHONE UTILITY INSTALLATIONS TO THE POINT OF TERMINATION AS SHOWN ON THE PROJECT PLANS. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH UTILITIES.
26. U.S. CELLULAR WILL PROVIDE PRIMARY HORIZONTAL AND VERTICAL CONTROL FOR CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE TO CORRECTLY TRANSFER LINE AND GRADE. THE CONTRACTOR SHALL PROVIDE ANY ADDITIONAL STAKING OR RE-STAKING.
27. U.S. CELLULAR MAY RETAIN THE SERVICES OF A TESTING LABORATORY TO PERFORM QUALITY ASSURANCE TESTING ON VARIOUS PORTIONS OF THE CONTRACTORS WORK. WHEN REQUESTED, THE CONTRACTOR SHALL INFORM THE TESTING LABORATORY AND ASSIST THEM IN COMPLETING TESTS.
28. THE CONTRACTOR SHALL PROVIDE ANY TEMPORARY UTILITIES OR FACILITIES IT DEEMS NECESSARY TO COMPLETE ITS WORK. THIS INCLUDES, BUT IS NOT LIMITED TO WATER, SEWER, POWER, TELEPHONE, HEAT, LIGHTING OR SECURITY.
29. NOTIFY ENGINEER 2 DAYS IN ADVANCE OF INITIATING SITE CONSTRUCTION ACTIVITIES.

**DEMOLITION**

1. PERFORM DEMOLITION AND REMOVAL OF EXISTING MATERIALS OR STRUCTURES AS SHOWN ON THE PLANS AND AS SPECIFIED IN SPECIAL CONDITIONS. PROTECT EXISTING FACILITIES OR STRUCTURES THAT ARE TO REMAIN.
2. COMPLETE DEMOLITION IN A SYSTEMATIC MANNER BEGINNING AT THE HIGHEST LEVEL.
3. NEATLY SAW OR CUT JOINTS AT THE LIMITS OF REMOVAL; WHENEVER POSSIBLE LOCATE CUTS AT EXISTING JOINTS.
4. PATCH AND REPAIR ANY DAMAGED SURFACES OR STRUCTURAL MEMBERS AT THE LIMITS OF REMOVAL.
5. REMOVAL DEMOLITION DEBRIS FROM THE SITE ON A REGULAR BASIS. DISPOSE ALL DEBRIS OFFSITE IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. BURNING OF MATERIAL SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIAL PROVISIONS.

**CLEARING AND GRUBBING**

1. REMOVE TREES, STUMPS, SHRUBS, GRASS AND OTHER VEGETATION AS SHOWN ON THE PLANS TO ALLOW FOR CONSTRUCTION OF NEW CELLULAR FACILITIES.
2. WHEN POSSIBLE, NEATLY TRIM OR CUT BACK EXISTING TREES OR VEGETATION TO ALLOW FOR CONSTRUCTION OF NEW CELLULAR FACILITIES.
3. WHEN CLEARING TREES, PROTECT ALL SURROUNDING STRUCTURES, PAVEMENTS AND LANDSCAPING BY TOPPING, TRIMMING AND USING GUY LINES.
4. COMPLETELY REMOVE ALL STUMPS AND ROOTS. STUMPS AND ROOTS MAY BE REMOVED BY GRUBBING, CHIPPING OR GRINDING.
5. DISPOSE OF ALL DEBRIS OFFSITE IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS. BURNING OF MATERIAL SHALL NOT BE ALLOWED UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIAL PROVISIONS.

**EARTHWORK**

1. REMOVE TOPSOIL FROM BENEATH ALL PROPOSED ROADS, PARKING AREAS, BUILDINGS AND AREAS TO RECEIVE MORE THAN 6" OF FILL. STOCKPILE TOPSOIL FOR USE DURING RESTORATION.
2. ALL TREES DESIGNATED TO REMAIN SHALL BE PROTECTED DURING CONSTRUCTION BY A 5 FOOT HIGH TREE BARRIER UTILIZING WIRE FENCING, OR PROTECTIVE SAFETY NETTING.
3. GRADE AREAS IN ACCORDANCE WITH ELEVATIONS AND GRADES SHOWN ON THE PLANS OR AS NECESSARY IN GRADING TO PROVIDE DRAINAGE.
4. FILL MATERIAL USED IN GRADING OPERATIONS SHALL CONSIST OF EARTH WHICH IS FREE OF DEBRIS, BOULDERS OR ORGANIC MATERIAL. FILL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO 90% OF MODIFIED PROCTOR MAXIMUM DRY DENSITY.
5. ALL FILL SHALL BE TESTED FOR FIELD DENSITY. TESTS SHALL BE TAKEN IN EACH LIFT OF FILL AT LOCATIONS DESIGNATED BY THE OWNER'S REPRESENTATIVE.
6. SELECT GRANULAR FILL SHALL BE USED WHEN FILLING OR BACKFILLING BENEATH AND/OR AROUND ANY STRUCTURES, ROADS OR PARKING AREAS. SELECT FILL SHALL BE PLACED IN 8" LIFTS AND COMPACTED TO 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY. SELECT GRANULAR FILL SHALL CONSIST OF SAND, GRAVEL OR MIXTURE OF SAND AND GRAVEL FREE OF ORGANIC MATERIAL. THE MATERIAL SHALL HAVE A 2" MAXIMUM SIZE, LESS THAN 10% PASSING NO. 200 SIEVE, A PLASTICITY INDEX OF 6 OR LESS, AND A UNIFORMITY COEFFICIENT OF 5 OR GREATER.
7. ALL DISTURBED AREAS SHALL BE RESTORED AS SOON AS POSSIBLE WITH 4" TOPSOIL, SEED, FERTILIZER AND MULCH. GRASS SEED SHALL BE A SUITABLE MIX CONTAINING BOTH ANNUAL AND PERENNIAL VARIETIES OF FESCUE, RYE AND BLUEGRASS. FERTILIZER SHALL CONTAIN A MINIMUM OF 10% EACH OF NITROGEN, PHOSPHORIC ACID AND POTASH. MULCH SHALL BE A STRAW OR HAY MIXTURE FREE OF NOXIOUS WEED SEEDS. APPLY SEED AND FERTILIZER AS RECOMMENDED BY MANUFACTURER. MULCH SHALL BE CRIMPED AFTER APPLICATION.
8. THE CONTRACTOR SHALL VERIFY, UPON COMPLETION OF DEVELOPMENT, THE SITE IS PROPERLY STABILIZED AND ALL INDICATED SWALES AND STORMWATER FACILITIES ARE CONSTRUCTED AS INDICATED ON THE PLANS.
9. TOWER, TOWER FOUNDATIONS, SLABS, MODULAR BUILDINGS, AND ELECTRICAL AND MECHANICAL FEATURES ARE TO BE DESIGNED AND SPECIFIED BY OTHERS.

**EROSION CONTROL**

1. CONTRACTOR SHALL PROVIDE EROSION CONTROL MEASURES IN ACCORDANCE WITH THE MOST STRINGENT OF: PROJECT PLANS, SPECIAL PROVISIONS, APPLICABLE STATE DEPARTMENT OF NATURAL RESOURCES OR LOCAL ORDINANCES.
2. ESTABLISH EROSION CONTROL MEASURES PRIOR TO STARTING CONSTRUCTION AND MAINTAIN THROUGHOUT CONSTRUCTION. INSPECT EROSION CONTROL MEASURES FOLLOWING EACH RAINFALL EVENT AND REPAIR AS NECESSARY.
3. SEDIMENTATION CONTROL SHALL BE ACCOMPLISHED DURING CONSTRUCTION THROUGH THE USE OF SILT FENCING PLACED AS SHOWN ON THE ATTACHED PLAN. THE CONTROL DEVICES SHALL BE SET AT THE ONSET OF SITE GRADING TO PREVENT SILTING OF THE EXISTING STORMWATER FACILITIES.

**ROAD AND PARKING AREA CONSTRUCTION**

1. PREPARE SUBGRADE FOR ROADS AND PARKING AREAS IN ACCORDANCE WITH "EARTHWORK" SECTION.
2. PROOF ROLL ROAD TO IDENTIFY UNSUITABLE MATERIALS. EXCAVATE UNSUITABLE MATERIAL AND DISPOSE OFFSITE. BACKFILL UNDERCUT EXCAVATION USING 3" BREAKER RUN MATERIAL. BREAKER RUN MATERIAL SHALL BE CRUSHED STONE MEETING THE FOLLOWING GRADATION:

SIEVE SIZE	% WEIGHT PASSING
3"	100
1-1/2"	0-50
3/4"	0-20
#200	0-10

3. PLACE CRUSHED AGGREGATE BASE COURSE IN MAXIMUM OF 6" THICK LIFTS IN ACCORDANCE WITH DETAIL DRAWINGS. MOISTURE CONDITION BASE COURSE AS NECESSARY TO ACHIEVE COMPACTION. BASE COURSE SHALL BE COMPACTED TO 95% OF THE MODIFIED PROCTOR MAXIMUM DRY DENSITY. BASE COURSE MATERIAL SHALL MEET THE FOLLOWING REQUIREMENTS:

3" BASE COURSE		
SIEVE SIZE	% WEIGHT PASSING	
3"	100	
2-1/2"	25-60	
3/4"	0-20	
3/8"	0-5	

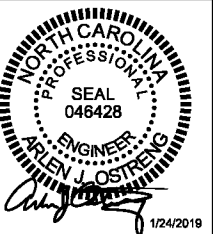
1-1/2" BASE COURSE		
SIEVE SIZE	% WEIGHT PASSING	
1-1/2"	100	
1"	70-100	
3/4"	55-95	
3/8"	30-65	
#4	25-55	
#10	15-40	
#200	0-10	

4. PLACE BASE COURSE WITH CROWN OR UNIFORM SLOPE AS NECESSARY TO PROVIDE DRAINAGE FROM THE SITE.
5. GEOTEXTILE FABRIC SHALL BE USED IN THE EVENT OF UNSTABLE SOIL CONDITIONS. VERIFICATION OF SUCH CONDITIONS IS THE RESPONSIBILITY OF THE CONTRACTOR.

CONSULTANT:



CLIENT:



**GENERAL SPECIFICATIONS**  
SE ERWIN (556891)  
ERWIN, NORTH CAROLINA

SHEET TITLE:

SUBMITTAL:

INT.	DATE	DESCRIPTION
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

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PLOT DATE	1/24/2019
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PROJECT NUMBER	18683
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SET TYPE	FINAL CDs
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SHEET NUMBER	<b>G-002</b>
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**CONCRETE AND STEEL REINFORCEMENT**

1. CONCRETE SHALL BE MIXED AND DELIVERED IN ACCORDANCE WITH ASTM C94. CONCRETE SHALL BE 6 BAG MIX HAVING A 28 DAY COMPRESSIVE STRENGTH OF 4000 PSI, MAXIMUM AGGREGATE SIZE OF 1", MAXIMUM WATER CEMENT RATIO OF 0.45, AIR ENTRAINMENT OF 6% +/- 1%, AND SLUMP OF 3" +/- 1". DEVIATIONS FROM THE MIX MUST BE APPROVED BY U.S. CELLULAR PRIOR TO USE.
2. CONCRETE CONSTRUCTION SHALL BE COMPLETED IN ACCORDANCE WITH THE MOST STRINGENT OF: PROJECT PLANS, SPECIAL PROVISIONS, OR THE AMERICAN CONCRETE INSTITUTE (ACI) PUBLICATIONS. CONCRETE WORK FOR TOWER FOUNDATIONS SHALL BE COMPLETED IN ACCORDANCE WITH PLANS AND SPECIFICATIONS PROVIDED BY THE TOWER VENDOR.
3. FORM MATERIALS WILL COMPLY WITH ACI 301. PLYWOOD FORMS SHALL BE APA B-B PLYFORM CLASS I SOUND SHEETS. LUMBER SHALL BE SPRUCE-PINE-FIR SPECIES #2 OR BETTER GRADE. TUBULAR COLUMN FORMS MAY BE SPIRALLY WOUND LAMINATED FIBER MATERIAL. FORM TIES SHALL BE REMOVABLE OR SNAP-OFF METAL TYPE.
4. CONCRETE SHALL BE MADE OF CEMENT MEETING THE REQUIREMENTS OF ASTM C150, NORMAL, TYPE I PORTLAND. FINE AND COARSE AGGREGATES FOR CONCRETE SHALL MEET THE REQUIREMENTS OF ASTM C33.
5. PLACE, SUPPORT AND SECURE REINFORCEMENT STEEL AT LOCATIONS SHOWN ON PLANS. REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE WITH ACI 315. REBAR YIELD STRENGTH = 60,000 PSI.
6. AIR ENTRAINING ADMIXTURES SHALL MEET THE REQUIREMENTS OF ASTM C260; WATER REDUCING ADMIXTURES SHALL MEET THE REQUIREMENTS OF ASTM C494, TYPE A. ALL OTHER ADMIXTURES ARE PROHIBITED WITHOUT PRIOR APPROVAL BY U.S. CELLULAR.
7. VAPOR BARRIER SHALL BE 6 MIL THICK POLYETHYLENE, MEETING THE REQUIREMENTS OF ASTM D2103.
8. CURING COMPOUND SHALL MEET THE REQUIREMENTS OF ASTM C309.
9. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185.
10. ALL CONSTRUCTION AND EXPANSION JOINTS SHALL BE INSTALLED PER THE DRAWINGS.
11. ALL EXPOSED CORNERS OF CONCRETE WORK SHALL BE CHAMFERED 3/4" UNLESS NOTED OTHERWISE.
12. PLACE, SUPPORT AND SECURE REINFORCEMENT STEEL AT LOCATIONS SHOWN ON PLANS. REINFORCING STEEL SHALL BE PLACED IN ACCORDANCE WITH ACI 315.
13. ALL FORM WORK SHALL BE RIGID, TIGHT, LEVEL, PLUMB AND SUFFICIENTLY SHORED TO RESIST CONSTRUCTION LOAD CONDITIONS. COAT FORMS WITH RELEASE AGENT PRIOR TO PLACING REINFORCING STEEL.
14. PREPARE SUBGRADE FOR CONCRETE IN ACCORDANCE WITH PROJECT PLANS AND SPECIAL PROVISION. DO NOT PLACE CONCRETE ON FROZEN SUBGRADE.
15. PROVIDE U.S. CELLULAR A MINIMUM OF 48 HRS. NOTICE PRIOR TO PLACING CONCRETE TO ALLOW FOR INSPECTION AND SCHEDULING OF TESTING.
16. UTILIZE CHUTES, TROUGHS OR CONVEYORS TO PLACE CONCRETE SO THAT HANDLING OF CONCRETE IS MINIMIZED. AVOID SEGREGATION OF THE AGGREGATE AND DISTURBING REINFORCING STEEL.
17. UNIFORMLY CONSOLIDATE CONCRETE USING HAND TOOLS OR MECHANICAL VIBRATORS. THOROUGHLY CONSOLIDATE EACH LAYER PRIOR TO PLACING SUBSEQUENT LAYERS.
18. WHEN PLACING OPERATIONS ARE TEMPORARILY SUSPENDED, THE UNFINISHED FACE OF THE POUR SHALL BE COVERED WITH WET BURLAP UNTIL PLACING OPERATIONS ARE RESUMED. WHEN PLACING OPERATIONS ARE SUSPENDED FOR MORE THAN 30 MINUTES, PROVIDE AN BONDING AGENT TO CONSTRUCTION JOINT.
19. TROWEL FINISH SURFACES UNLESS OTHERWISE DIRECTED ON THE PLANS.
20. AFTER FINAL FINISHING, PROVIDE POLYETHYLENE VAPOR BARRIER OR CURING COMPOUND TO MAINTAIN MOISTURE AND TEMPERATURE OF CONCRETE.
21. IN EXTREME WEATHER PLACE AND CURE CONCRETE IN ACCORDANCE WITH EITHER ACI 306R-89 FOR COLD WEATHER OR ACI 305R-89 FOR HOT WEATHER.
22. WELDING OF REINFORCING STEEL IS PROHIBITED.
23. REMOVE FORMS IN A MANNER THAT DOES NOT DAMAGE THE CONCRETE. FILL AND PATCH POCKETS OR HOLES ON EXPOSED SURFACES USING MORTAR MIXTURE.
24. PROVIDE TEST CYLINDERS AS FOLLOWS:
  - A. EQUIPMENT ENCLOSURE:
    - 1 CYLINDER AT 7 DAYS.
    - 1 CYLINDER AT 14 DAYS.
    - 2 CYLINDERS AT 28 DAYS.
25. NOTIFY ENGINEER 48 HOURS IN ADVANCE OF TOWER FOUNDATION INSTALLATION.
26. REFER TO TOWER MANUFACTURER SPECIFICATIONS REGARDING FOUNDATION REQUIREMENTS.

**CHAINLINK FENCING**

- 1.0 **SCOPE:**
  - 1.1 THIS SECTION COVERS THE REQUIREMENTS FOR THE MATERIALS AND THE CONSTRUCTION OF SITE FENCING. SEE SITE PLAN AND DRAWINGS FOR DETAILS.
- 2.0 **SPECIAL REQUIREMENTS:**
  - 2.1 ALL WIRE, FABRIC, FITTINGS, HARDWARE AND STEEL MEMBERS USED FOR SITE AREA FENCING SHALL BE HOT DIPPED GALVANIZED (ASTM A153) OR OTHER APPROVED NON CORROSIVE MATERIAL AND CONFORM TO FEDERAL SPEC RR-F-191G (1-25-74).
  - 2.2 ALL NON-CORROSIVE MATERIAL SHALL BE PRE-APPROVED BY THE PROJECT MANAGER.
  - 2.3 ANY DAMAGE TO GALVANIZING OR NON-CORROSIVE COATING DURING CONSTRUCTION SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S RECOMMENDED METHODS.
- 3.0 **GATE:**
  - 3.1 LOCATION OF GATE SHALL CONFORM TO THE SITE PLAN.
  - 3.2 ALL JOINTS BETWEEN TUBULAR GATE MEMBERS SHALL BE WELDED OR HEAVY FITTINGS PROVIDING RIGID AND WATERTIGHT CONNECTIONS.
  - 3.3 GATE HINGES SHALL PROVIDE FOR 180 DEGREE RADIUS GATE SWING. ALL HINGE NUTS SHALL BE ON THE INSIDE AND DOUBLE-NUT TO DETER UNAUTHORIZED ENTRY.
  - 3.4 BARBED WIRE GUARD SHALL BE INSTALLED ON TOP OF GATES. ADEQUATE CLEARANCE SHALL BE MAINTAINED TO ALLOW GATE OPERATION.
  - 3.5 GATE SHALL BE INSTALLED PLUMB AND SHALL OPEN AND CLOSE FREELY.
  - 3.6 GATE POSTS SHALL NOT BE SHARED AS A CORNER POST.
- 4.0 **FENCE POSTS:**
  - 4.1 LOCATION OF CORNER POSTS SHALL BE DETERMINED FROM STAKES AND PROPERTY PINS INSTALLED BY THE REGISTERED LAND SURVEYOR UNDER CONTRACT FOR THE PROJECT. IF THE STAKES ARE NOT PRESENT OR DO NOT CONFORM TO THE SITE PLAN, CONSULT WITH THE PROJECT MANAGER.
  - 4.2 CORNER POSTS SHALL BE SET WITHIN ONE INCH (1") OF DIMENSIONS INDICATED ON THE SITE PLAN.
  - 4.3 FENCE POSTS SHALL BE VERTICALLY PLUMB IN ALL PLANES WITHIN 1/2 INCH (1/2").
  - 4.4 LINE POSTS BETWEEN CORNER AND GATE POSTS SHALL BE EQUALLY SPACED WITH A TEN FOOT (10') MAXIMUM SPACING. GATE POST LOCATIONS SHALL BE IN ACCORDANCE WITH SITE PLAN AND SHALL BE VERIFIED WITH THE PROJECT MANAGER.
  - 4.5 ALL FOUR CORNERS POSTS AND BOTH GATE POSTS SHALL BE CONNECTED TO THE SITE GROUNDING SYSTEM (REFER TO GROUNDING SYSTEM STANDARD).
  - 4.6 FENCE POST OUTSIDE DIAMETER (O.D.) ARE MINIMUM SPECIFICATIONS. LARGER SIZES MAY BE SUBSTITUTED WITH APPROVAL FROM PROJECT MANAGER.
- 5.0 **FABRIC:**
  - 5.1 FABRIC SHALL BE TENSIONED PER MANUFACTURER'S RECOMMENDATIONS TO PRESENT A NEAT APPEARANCE.
  - 5.2 FABRIC SHALL BE SECURED AT CORNER AND GATE POSTS USING STRETCHER BARS AND TENSION BAND CLIPS.
  - 5.3 FABRIC SHALL BE SECURED TO THE TOP RAIL AND BRACE RODS USING TIE CLIPS.

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**GENERAL SPECIFICATIONS**  
**SE ERWIN (556891)**  
**ERWIN, NORTH CAROLINA**

SHEET TITLE:

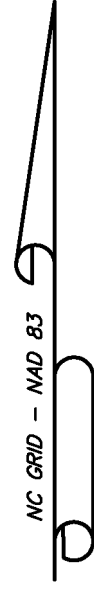
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PLOT DATE	1/24/2019
PROJECT NUMBER	18683
SET TYPE	FINAL CDs
SHEET NUMBER	<b>G-003</b>

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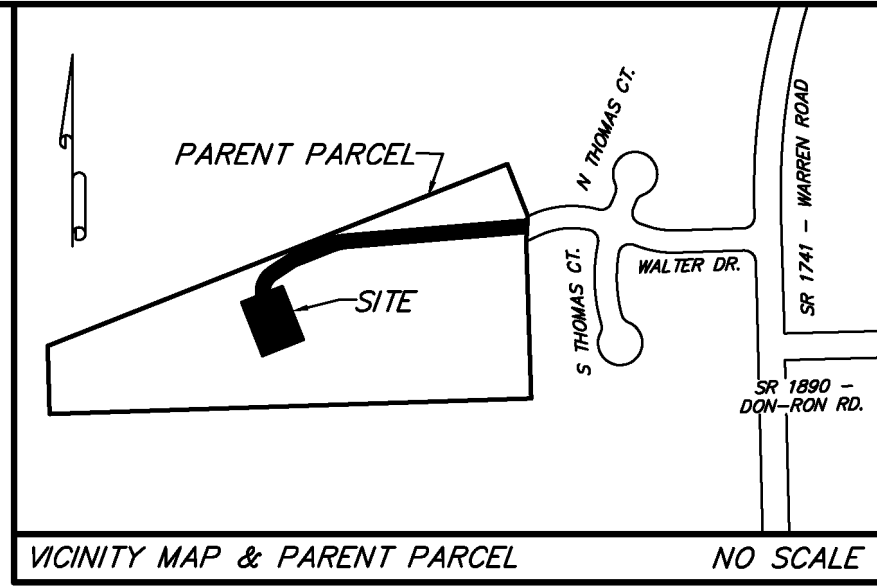




**PROPOSED 30' WIDE  
INGRESS-EGRESS & UTILITY EASEMENT  
FOR THE BENEFIT OF U.S. CELLULAR**

Line	Bearing	Distance	Radius
L1	S 3°-49'-59" W	30.34'	
L2	S 85°-15'-03" W	409.13'	
L3	S 76°-50'-09" W	24.88' Ch.	85.00'
L4	S 68°-25'-14" W	95.18'	
L5	S 56°-22'-32" W	52.64'	
L6	S 29°-21'-58" W	31.79' Ch.	35.00'
L7	N 68°-25'-14" E	31.99'	
L8	S 21°-34'-46" E	30.00'	
L9	S 68°-25'-14" W	100.00'	
L10	N 21°-34'-46" W	30.00'	
L11	N 68°-25'-14" E	36.57'	
L12	N 23°-42'-27" E	70.17' Ch.	65.00'
L13	N 56°-22'-32" E	55.81'	
L14	N 68°-25'-14" E	98.35'	
L15	N 76°-50'-09" E	33.66' Ch.	115.00'
L16	N 85°-15'-03" E	413.66'	

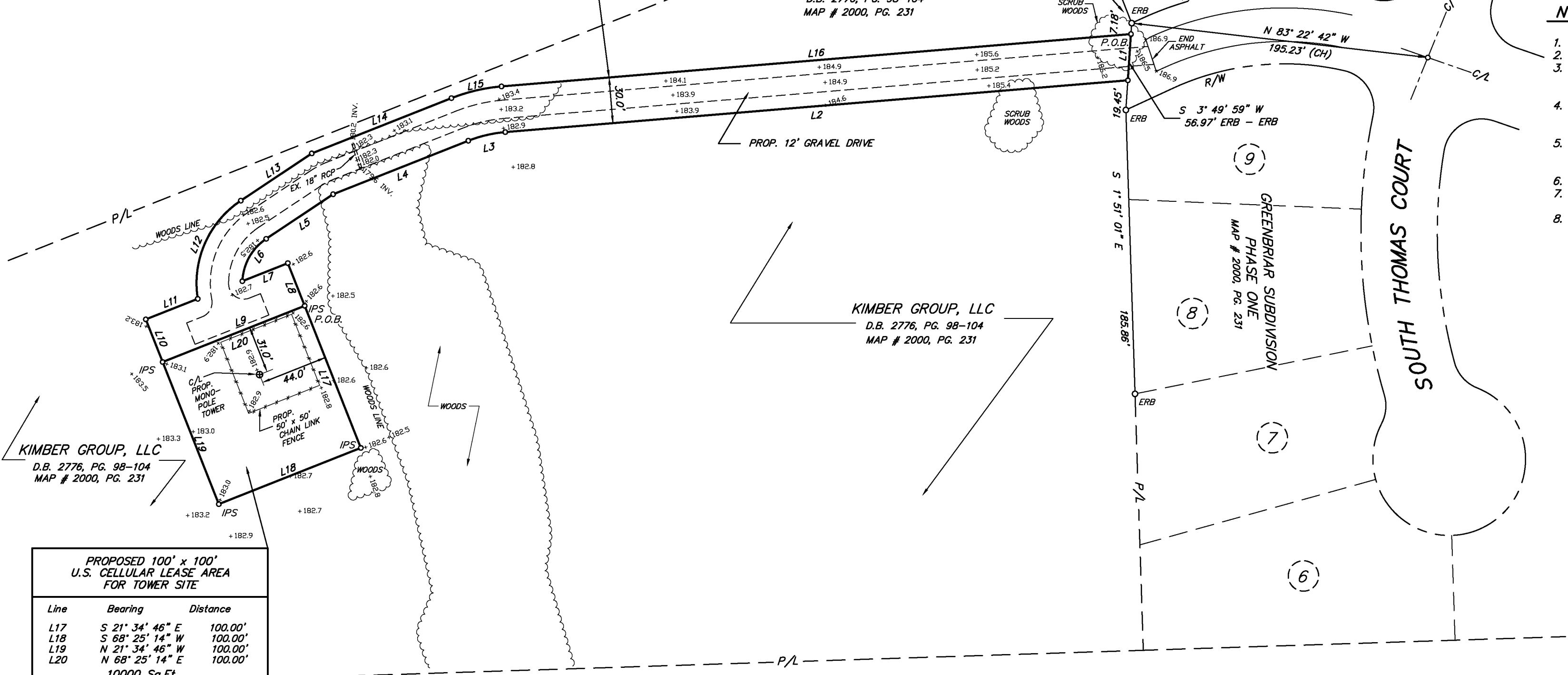
22,361 Sq.Ft.  
0.513 ACRES



- NOTES:**
- NO POINTS SET UNLESS OTHERWISE NOTED.
  - THIS SURVEY DOES NOT CREATE A SUBDIVISION OF LAND.
  - ELEVATIONS SHOWN ARE MEAN SEA LEVEL FROM NORTH CAROLINA GEODETIC MONUMENT "ERWIN". ELEVATION = 194.64' (NAVD 88)
  - THIS PROPERTY IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA. COMMUNITY PANEL # 3720059600J EFFECTIVE DATE 10-03-2006 - ZONE X.
  - C/L TOWER LATITUDE: 35° 18' 54.82" LONGITUDE: 78° 40' 08.07" NAD 83
  - CENTERLINE TOWER ELEVATION = 183' - NAVD 88
  - BASIS OF BEARING IS GRID NORTH BASED ON NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NAD 1983
  - THIS SURVEY WAS PREPARED WITH THE AID OF TITLE COMMITMENT NO. USC-1232175- C BY FIDELITY NATIONAL TITLE INSURANCE COMPANY HAVING AN EFFECTIVE DATE OF OCTOBER 1, 2018.

**LEGEND:**

ERB	EXISTING RE-BAR
IPS	IRON PIPE SET
R/W	RIGHT OF WAY
C/L	CENTERLINE
P/P	POWER POLE
G/W	GUY WIRE
T/P	TELEPHONE PEDESTAL
F/O	FIBER OPTIC WITNESS POST
O/H	OVERHEAD
P/L	PROPERTY LINE
x25.4'	SPOT ELEVATION
P/K	PARKER KALON
P.O.B.	POINT OF BEGINNING
TBM	TEMPORARY BENCHMARK
NCGS	NORTH CAROLINA GEODETIC SURVEY



**PROPOSED 100' x 100'  
U.S. CELLULAR LEASE AREA  
FOR TOWER SITE**

Line	Bearing	Distance
L17	S 21° 34' 46" E	100.00'
L18	S 68° 25' 14" W	100.00'
L19	N 21° 34' 46" W	100.00'
L20	N 68° 25' 14" E	100.00'

10,000 Sq.Ft.  
0.230 ACRES

**REFERENCE:**  
PIN # 0596-99-2982.000  
DEED BOOK 2776, PG. 98-104  
MAP NUMBER 2000, PG. 231



SHEET 1 OF 1

**SURVEY FOR  
USCOC  
of Greater North Carolina, LLC  
SE ERWIN SITE # 556891  
DUKE TOWNSHIP, HARNETT COUNTY, NORTH CAROLINA**

**OWNER(S)** KIMBER GROUP, LLC C/O RICKIE DAY  
**ADDRESS** P.O. BOX 181 ERWIN, NC 28339  
**PHONE** 910-890-4331

**GARY S. MILLER & ASSOCIATES, P.A.**  
LAND SURVEYORS  
1803 South Charles Blvd.  
Greenville, N.C. 27858  
License # C-0225

**SURVEYED:** MCP  
**APPROVED:** GSM  
**DRAWN:** GSM/BLW  
**DATE:** 11-16-18  
**CHECKED:** GSM  
**SCALE:** 1" = 60'

**LEGAL DESCRIPTION FOR INGRESS-EGRESS AND UTILITY EASEMENT:**

Beginning at a point located in the centerline intersection of South Thomas Court, North Thomas Court and Walter Drive thence a chord bearing and distance N 83°-22'-42" W, 195.23 feet to an existing re-bar located at the intersection of the northern right of way of Walter Drive and the southwest property corner of Lot 30, Phase One, Greenbriar Subdivision as recorded in Map # 2000, Page 231, Harnett County Registry; said existing re-bar having NC Grid Coordinates N 570047.75 and E 2099339.42; thence leaving the intersection of the northern right of way of Walter Drive and the southwest property corner of Lot 30 and running along the western right of way of Walter Drive S 03°-49'-59" W, 7.18 feet to a point located on the western right of way of Walter Drive the POINT OF BEGINNING; thence from said point of beginning and continuing along the western right of way of Walter Drive S 03°-49'-59" W, 30.34 feet to a point located on the western right of way of Walter Drive; thence leaving the western right of way of Walter Drive S 85°-15'-03" W, 409.13 feet to a point; thence with a curve to the left having a radius of 85.00 feet a chord bearing and distance S 76°-50'-09" W, 24.88 feet to a point; thence S 68°-25'-14" W, 95.18 feet to a point; thence with a curve to the left having a radius of 35.00 feet a chord bearing and distance S 29°-21'-58" W, 31.79 feet to a point; thence N 68°-25'-14" E, 31.99 feet to a point; thence S 21°-34'-46" E, 30.00 feet to an iron pipe set; thence S 68°-25'-14" W, 100.00 feet to an iron pipe set; thence N 21°-34'-46" W, 30.00 feet to a point; thence N 68°-25'-14" E, 36.57 feet to a point; thence with a curve to the right having a radius of 65.00 feet a chord bearing and distance N 23°-42'-27" E, 70.17 feet to a point; thence N 56°-22'-32" E, 55.81 feet to a point; thence N 68°-25'-14" E, 98.35 feet to a point; thence with a curve to the right having a radius of 115.00 feet a chord bearing and distance N 76°-50'-09" E, 33.66 feet to a point; thence N 85°-15'-03" E, 413.66 feet to the point of beginning containing 0.513 acres.

**LEGAL DESCRIPTION FOR TOWER SITE:**

Beginning at a point located in the centerline intersection of South Thomas Court, North Thomas Court and Walter Drive thence a chord bearing and distance N 83°-22'-42" W, 195.23 feet to an existing re-bar located at the intersection of the northern right of way of Walter Drive and the southwest property corner of Lot 30, Phase One, Greenbriar Subdivision as recorded in Map # 2000, Page 231, Harnett County Registry; said existing re-bar having NC Grid Coordinates N 570047.75 and E 2099339.42; thence leaving the intersection of the northern right of way of Walter Drive and the southwest property corner of Lot 30 and running along the western right of way of Walter Drive S 03°-49'-59" W, 37.52 feet to a point located on the western right of way of Walter Drive; thence leaving the western right of way of Walter Drive S 85°-15'-03" W, 409.13 feet to a point; thence with a curve to the left having a radius of 85.00 feet a chord bearing and distance S 76°-50'-09" W, 24.88 feet to a point; thence S 68°-25'-14" W, 95.18 feet to a point; thence with a curve to the left having a radius of 35.00 feet a chord bearing and distance S 29°-21'-58" W, 31.79 feet to a point; thence N 68°-25'-14" E, 31.99 feet to a point; thence S 21°-34'-46" E, 30.00 feet to an iron pipe set; thence S 68°-25'-14" W, 100.00 feet to an iron pipe set; thence N 21°-34'-46" E, 100.00 feet to an iron pipe set; thence S 68°-25'-14" W, 100.00 feet to an iron pipe set; thence N 21°-34'-46" W, 100.00 feet to an iron pipe set; thence N 68°-25'-14" E, 100.00 feet to the point of beginning containing 0.230 acres.

**REVISIONS**

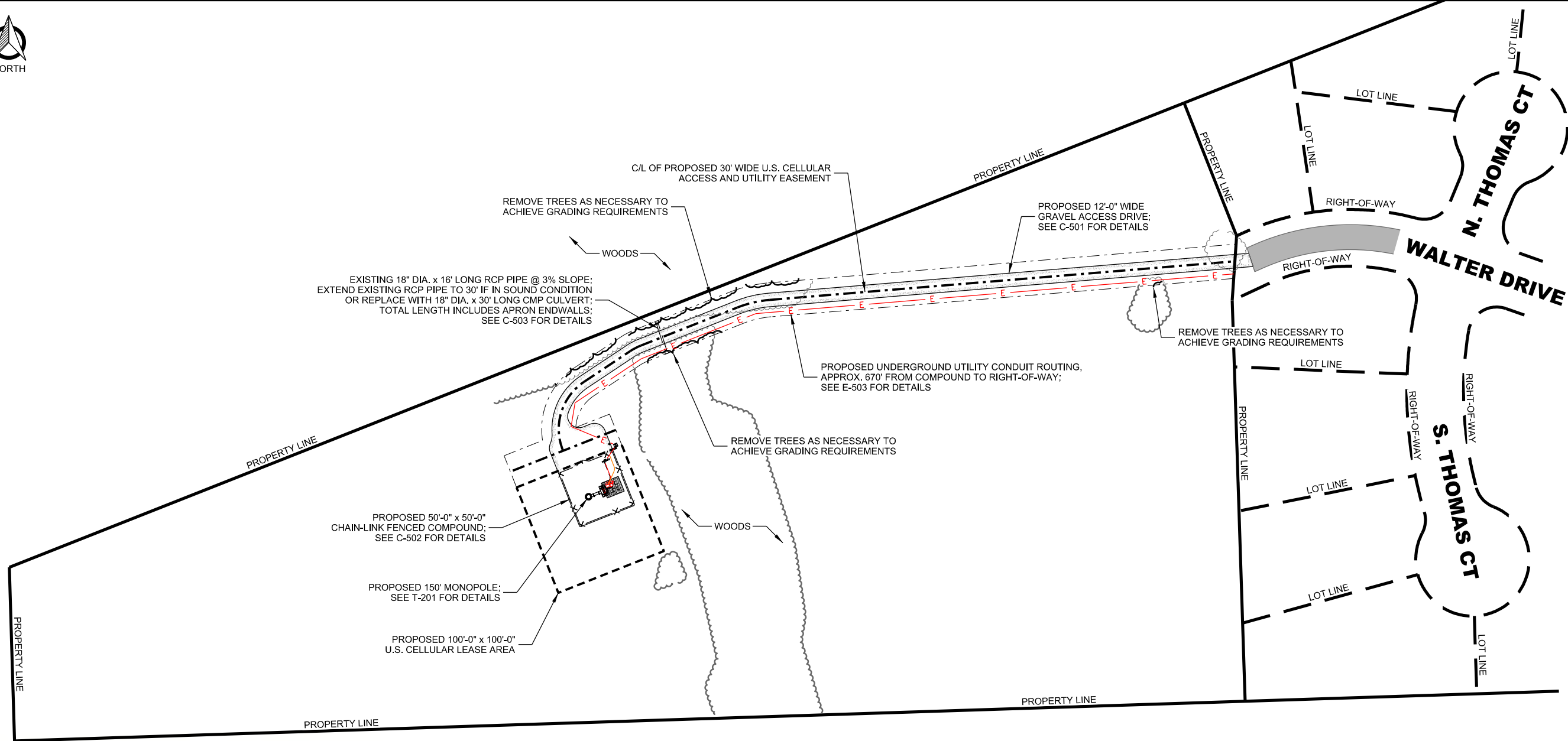
DATE	DESCRIPTION

**CERTIFICATION**  
I, Gary S. Miller, certify to the following:  
This survey is of another category, such as the recombination of existing parcels, a court ordered survey, or other exception to the definition of subdivision; that this map was drawn under my supervision from an actual survey made under my supervision (deed description recorded in Book 2776, Page 98-104 or other reference source SEE REF.); that the boundaries not surveyed are indicated as drawn from information in MAP # 2000, Page 231 or other reference source SEE REF.; that the ratio of precision or positional accuracy is 1:10,000+; and that this map meets the requirements of The Standards of Practice for Land Surveying in North Carolina (21 NCAC 56.1600).  
Witness my hand and seal this 16th day of NOVEMBER, 2018.

Signed G. S. Miller  
Professional Land Surveyor No. L-2562



WO # 18188 FB # 379



C/L OF PROPOSED 30' WIDE U.S. CELLULAR ACCESS AND UTILITY EASEMENT

REMOVE TREES AS NECESSARY TO ACHIEVE GRADING REQUIREMENTS

WOODS

EXISTING 18" DIA. x 16' LONG RCP PIPE @ 3% SLOPE; EXTEND EXISTING RCP PIPE TO 30' IF IN SOUND CONDITION OR REPLACE WITH 18" DIA. x 30' LONG CMP CULVERT; TOTAL LENGTH INCLUDES APRON ENDWALLS; SEE C-503 FOR DETAILS

PROPOSED 12'-0" WIDE GRAVEL ACCESS DRIVE; SEE C-501 FOR DETAILS

PROPOSED UNDERGROUND UTILITY CONDUIT ROUTING, APPROX. 670' FROM COMPOUND TO RIGHT-OF-WAY; SEE E-503 FOR DETAILS

REMOVE TREES AS NECESSARY TO ACHIEVE GRADING REQUIREMENTS

WOODS

PROPOSED 50'-0" x 50'-0" CHAIN-LINK FENCED COMPOUND; SEE C-502 FOR DETAILS

PROPOSED 150' MONOPOLE; SEE T-201 FOR DETAILS

PROPOSED 100'-0" x 100'-0" U.S. CELLULAR LEASE AREA

REMOVE TREES AS NECESSARY TO ACHIEVE GRADING REQUIREMENTS

WOODS

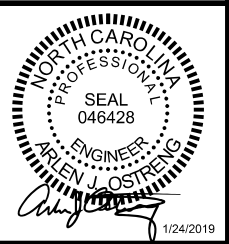


**A** AERIAL OVERVIEW OF SITE

K:\186801\186891\CAD\Construction\_Drawings\PlotC-101.dgn

CONSULTANT:  
**Edge**  
 Consulting Engineers, Inc.  
 624 WATER STREET  
 PRAIRIE DU SAC, WI 53678  
 608.844.1449 VOICE  
 608.844.1549 FAX  
 www.edgeconsult.com  
 LICENSE NO.: C-4515

CLIENT:  
**U.S. Cellular**  
 U.S. CELLULAR - OMAHA  
 10343 MILITARY AVENUE  
 OMAHA, NE 68134  
 PHONE: 402.515.4698

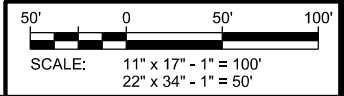


**SITE PLAN**  
 SE ERWIN (556891)  
 ERWIN, NORTH CAROLINA

SHEET TITLE:

SUBMITTAL:		
INT.	DATE	DESCRIPTION:
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

CHECKED BY	ABB
PLOT DATE	1/24/2019
PROJECT NUMBER	18683
SET TYPE	FINAL CDs

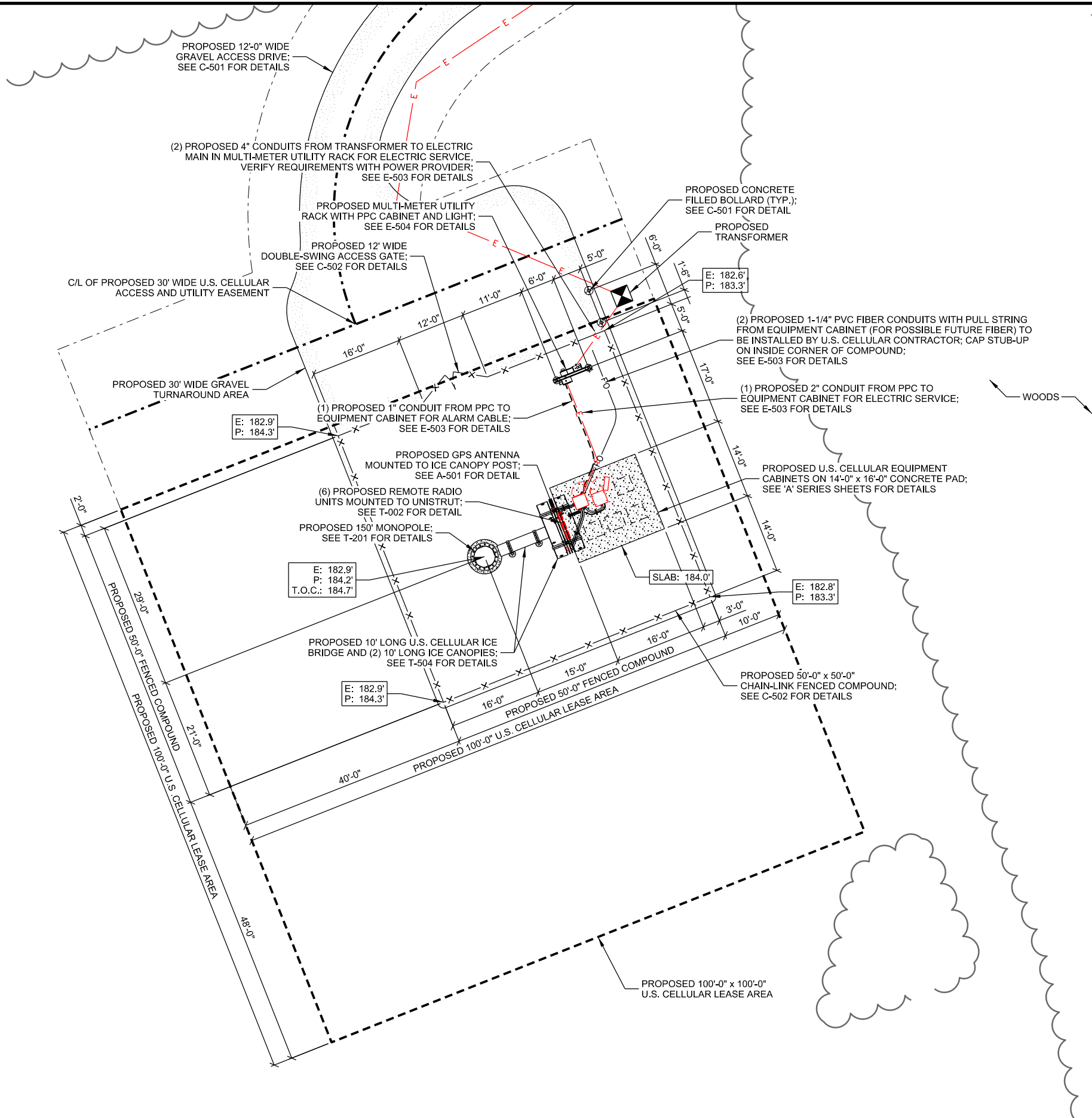


SHEET NUMBER **C-101**





PROPERTY LINE



CONSULTANT:

**Edge**  
Consulting Engineers, Inc.  
624 WATER STREET  
PRAIRIE DU SAC, WI 53578  
608.644.1449 VOICE  
608.644.1549 FAX  
www.edgeconsult.com  
LICENSE NO.: C-4515

CLIENT:

**U.S. Cellular**  
U.S. CELLULAR - OMAHA  
10343 MILITARY AVENUE  
OMAHA, NE 68134  
PHONE: 402.515.4698



**ENLARGED SITE PLAN**  
**SE ERWIN (556891)**  
**ERWIN, NORTH CAROLINA**

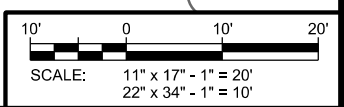
SHEET TITLE:

SUBMITTAL:

INT.	DATE:	DESCRIPTION:
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

CHECKED BY:	ABB
PLOT DATE:	1/24/2019
PROJECT NUMBER:	18683
SET TYPE:	FINAL CDs

SHEET NUMBER: **C-102**



K:\186801\18683\CAD\Construction\_Drawings\Plan\C-102.dgn







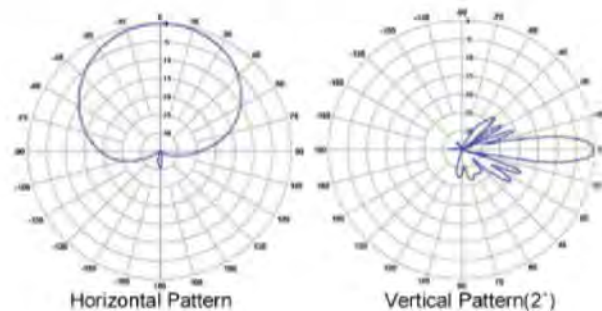


# AM-X-CD-17-65-00T-RET

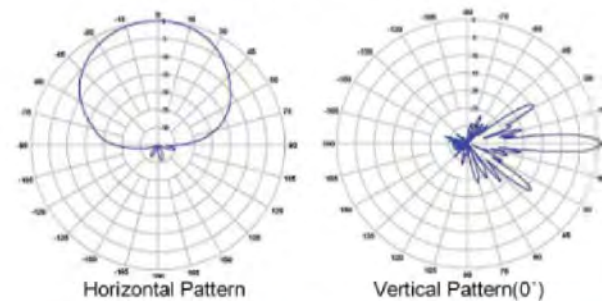
8' 65" Dual Broadband Electrical Downtilt Antenna  
 698 ~ 894MHz, X-pol., H65° / V9.5°  
 1710 ~ 2170MHz, X-pol., H65° / V6.4°

## Electrical Specification

Frequency(MHz)	698-806	824-894	1710-1755	1850-1900	2110-2155
Impedance(Ω)	50	50	50	50	50
Polarization	±45°	±45°	±45°	±45°	±45°
Gain(dBi/dBd)	16.8 / 14.65	17.5 / 15.35	17.3 / 15.05	17.8 / 15.55	18.1 / 15.75
Beamwidth	Horizontal	66°	64°	62°	65°
	Vertical	10°	9°	6.7°	6.4°
VSWR	≤1.5:1	≤1.5:1	≤1.5:1	≤1.5:1	≤1.5:1
Front-to-Back Ratio(dB)	≥27	≥27	≥27	≥27	≥27
Electrical Downtilt	0° ~ 12°	0° ~ 12°	0° ~ 10°	0° ~ 10°	0° ~ 10°
Isolation Ports(dB)	≥30	≥30	≥30	≥30	≥30
Isolation Frequency(dB)	≥35	≥35	≥35	≥35	≥35
Cross Pole Discrimination	10.0 dB @ ±90°	10.0 dB @ ±90°	10.0 dB @ ±90°	10.0 dB @ ±90°	10.0 dB @ ±90°
	15.0 dB @ 0°	15.0 dB @ 0°	15.0 dB @ 0°	15.0 dB @ 0°	15.0 dB @ 0°
USLS(dB)	16	16	16	16	16
Side Lobe Suppression	> 16dB @ 0-6°	> 16dB @ 0-6°	> 16dB @ 0-6°	> 16dB @ 0-6°	> 16dB @ 0-6°
	> 18dB @ 7-12°	> 18dB @ 7-12°	> 18dB @ 7-10°	> 18dB @ 7-10°	> 18dB @ 7-10°
PIM (2x20w, dBc)	≤ -150	≤ -150	≤ -150	≤ -150	≤ -150
Input Power(W)	500	500	300	300	300



700MHz Band Pattern



AWS Band Pattern

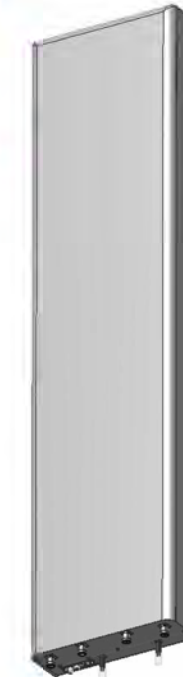


# 696-900 / 1710-2170 MHz

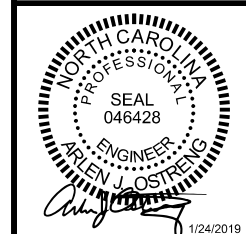
## HTXCW331821x000

XX-Pol | Dual Band VET Panel | 33° / 33° | 17.5 / 19.5 dBi

Ordering Options	Part Number			
When ordering...	Replace "X" with "M" for Manual Electrical Tilt or "R" for Remote Electrical Tilt			
Manual Electrical Tilt	HTXCW331821M000			
Remote Electrical Tilt AISG v1.1	HTXCW331821R000			
Remote Electrical Tilt AISG v2.0 / 3GPP	HTXCW331821R000G			
Electrical Characteristics	696-900 MHz		1710-2170 MHz	
Frequency bands (MHz)	696-806	806-900	1710-1880	1850-1990 1920-2170
Polarization	±45°			
Horizontal beamwidth	42°	33°	35°	32° 30°
Vertical beamwidth	11°	9.5°	6.0°	5.8° 5.1°
Gain	16.5 dBi	17.5 dBi	19.0 dBi	19.3 dBi 19.5 dBi
Electrical downtilt	0-12°		0-8°	
Impedance	50Ω			
VSWR	≤1.5:1		≤1.5:1	
Upper sidelobe suppression	-16 dB		-16 dB	
Front-to-back ratio	> 25 dB		> 27 dB	
In-band isolation	> 23 dB		> 28 dB	
Isolation between ports	> 28 dB		> 28 dB	
IM3 (2x20W carrier)	< -150 dBc		< -150 dBc	
Input power	1 x 500 W		1 x 300 W	
Lightning protection	Direct Ground			
Operating temperature	-40° to +60° C (-40° to +140° F)			
Connector(s)	4 Ports / 7-16 DIN / Female / Bottom			
Mechanical Characteristics	2107 x 520 x 177 mm		83.0 x 20.5 x 7.0 in	
Dimensions (Length x Width x Depth)	30.5 kg		67 lbs	
Weight without mounting brackets: MET	30.8 kg		67.7 lbs	
Weight without mounting brackets: RET	> 241 km/hr		> 150 mph	
Survival wind speed	Front: 1333 N; Side: 455 N		Front: 300 lbf; Side: 102 lbf	
Wind loads (160 km/hr or 100 mph)				
Remote Electrical Downtilt Control				
Remote Electrical Tilt (RET) Control	The remote control of the electrical tilt is managed by a module (MDCU) totally inserted at the bottom of the antenna. One single module controls individually the tilt of each band (no need of daisy chain cables between the bands). This module does not add any additional length at the bottom of the antenna. For RET control, the transparent caps must be in place and locked. The tilt angle indicators always remain visible and the antenna still has manual tilt control (manual override). This module is available in AISG v1.1 and AISG v2.0 and is considered a type 17 configuration.			
RET Module Part Number (one per antenna)	MDCU-A0000 for AISG v1.1 protocol (one unit included in HTXCW331821R000) MDCU-G0000 for 3GPP/AISG v2.0 protocol (one unit included in HTXCW331821R000G)			
Important Installation Instructions	In order to operate RET control, the transparent caps covering the tilt adjustment indicators must be engaged and locked. Do not cut them from the antenna.			
Mounting Options	Part Number	Fits Pipe Diameter	Weight	
3-Point Mounting Bracket Kit	MKS09P03	50-115 mm 2.0-4.5 in	2.7 kg 6 lbs	
3-Point Mounting & Downtilt Bracket Kit	MKS09T03	50-115 mm 2.0-4.5 in	4.1 kg 9 lbs	



Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.



**ANTENNA SPECIFICATIONS**  
 SE ERWIN (556891)  
 ERWIN, NORTH CAROLINA

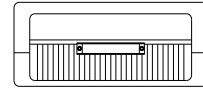
SHEET TITLE:

INT.	DATE	DESCRIPTION
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

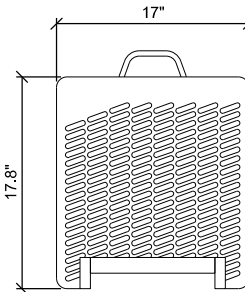
CHECKED BY	ABB
PLOT DATE	1/24/2019
PROJECT NUMBER	18683
SET TYPE	FINAL CDs
SHEET NUMBER	<b>T-001</b>



MANUFACTURER: ERICSSON  
 MODEL: RRUS-11  
 DIMENSIONS: 17.8" x 17" x 7.2" (H x W x D)  
 WEIGHT: 51.0 LBS



PLAN VIEW



FRONT VIEW



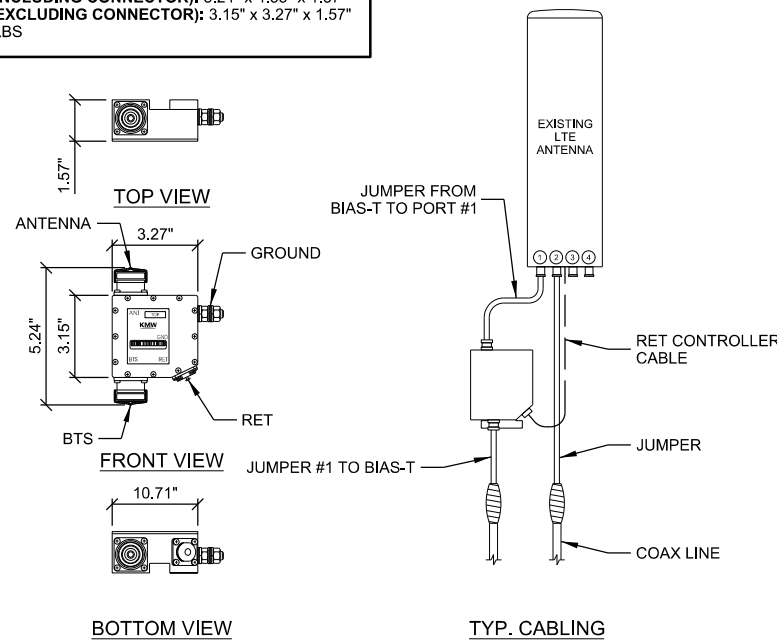
SIDE VIEW

NOTES:

1. REMOTE RADIO UNITS MUST BE POWERED UP WITHIN 48 HOURS OF INSTALLATION ON TOWER.

**A** REMOTE RADIO UNIT (RRU)

MANUFACTURER: KMW  
 MODEL: KASCTPR82008  
 DIMENSIONS (INCLUDING CONNECTOR): 5.24" x 4.33" x 1.57"  
 DIMENSIONS (EXCLUDING CONNECTOR): 3.15" x 3.27" x 1.57"  
 WEIGHT: 1.32 LBS



NOTES:

1. DO NOT COVER THE WATER-PROOF VENT VALVE; THE UNIT IS VENTILATED THROUGH WATER-PROOF VENT VALVE; IT IS IMPORTANT THE VALVE IS NOT SILTED UP.
2. THE BIAS-T CAN BE PAINTED AS LONG AS THE WATER-PROOF VENT VALVE IS NOT CLOGGED AND THE CONNECTORS ARE NOT PAINTED.
3. MOUNT THE BIAS-T IN AN UPRIGHT VERTICAL POSITION WITH RET-CONNECTOR POINTING DOWNWARDS.

**B** BIAS-T UNIT

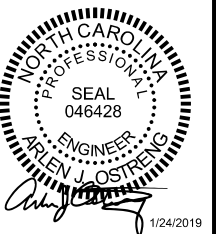
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CONSULTANT:

**Edge**  
 Consulting Engineers, Inc.  
 624 WATER STREET  
 PRAIRIE DU SAC, WI 53678  
 608.644.1449 VOICE  
 608.644.1549 FAX  
 www.edgeconsult.com  
 LICENSE NO.: C-4515

CLIENT:

**U.S. Cellular**  
 U.S. CELLULAR - OMAHA  
 10343 MILITARY AVENUE  
 OMAHA, NE 68134  
 PHONE: 402.515.4698



**EQUIPMENT SPECIFICATIONS**  
 SE ERWIN (556891)  
 ERWIN, NORTH CAROLINA

SHEET TITLE:

SUBMITTAL:

INT.	DATE	DESCRIPTION:
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

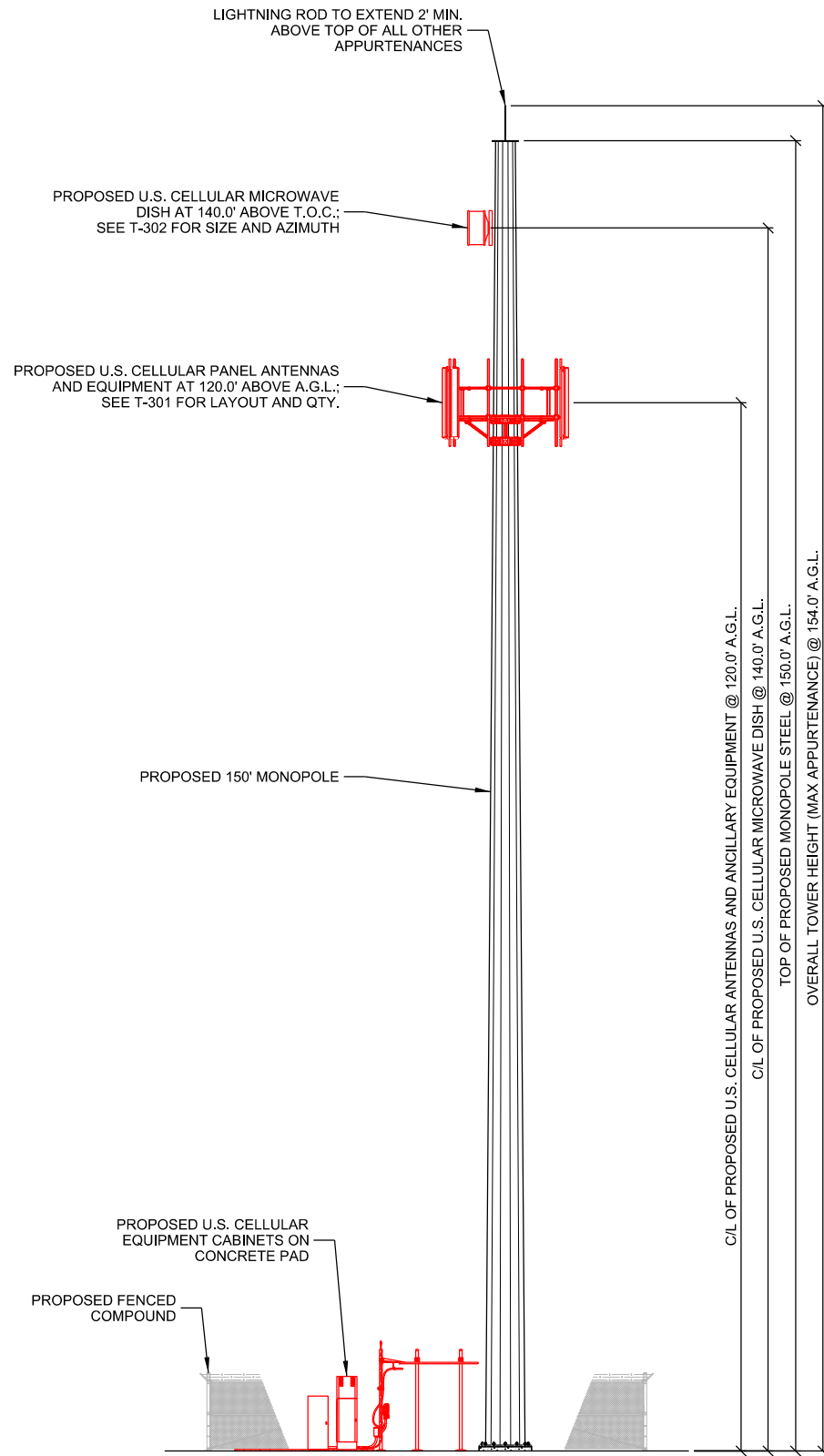
CHECKED BY	ABB
PLOT DATE	1/24/2019
PROJECT NUMBER	18683
SET TYPE	FINAL CDs
SHEET NUMBER	<b>T-002</b>

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K:\186801\18689\CAD\Construction\_Drawings\Plot\T-201.dgn



- NOTES:
1. CONTRACTOR TO VERIFY HEIGHT AND DIRECTION OF ANTENNAS WITH PROJECT MANAGER.
  2. CONTRACTOR TO VERIFY LIGHTNING ROD EXTENDS 2' MIN. ABOVE ALL ANTENNAS & EQUIPMENT.

**A SITE ELEVATION**  
 SCALE: 11" x 17" - 1" = 20'-0"  
 22" x 34" - 1" = 10'-0"

CONSULTANT:

**Edge**  
 Consulting Engineers, Inc.  
 624 WATER STREET  
 PRAIRIE DU SAC, WI 53578  
 608.844.1449 VOICE  
 608.844.1549 FAX  
 www.edgeconsult.com  
 LICENSE NO.: C-4515

CLIENT:

**U.S. Cellular**  
 U.S. CELLULAR - OMAHA  
 10343 MILITARY AVENUE  
 OMAHA, NE 68134  
 PHONE: 402.515.4698

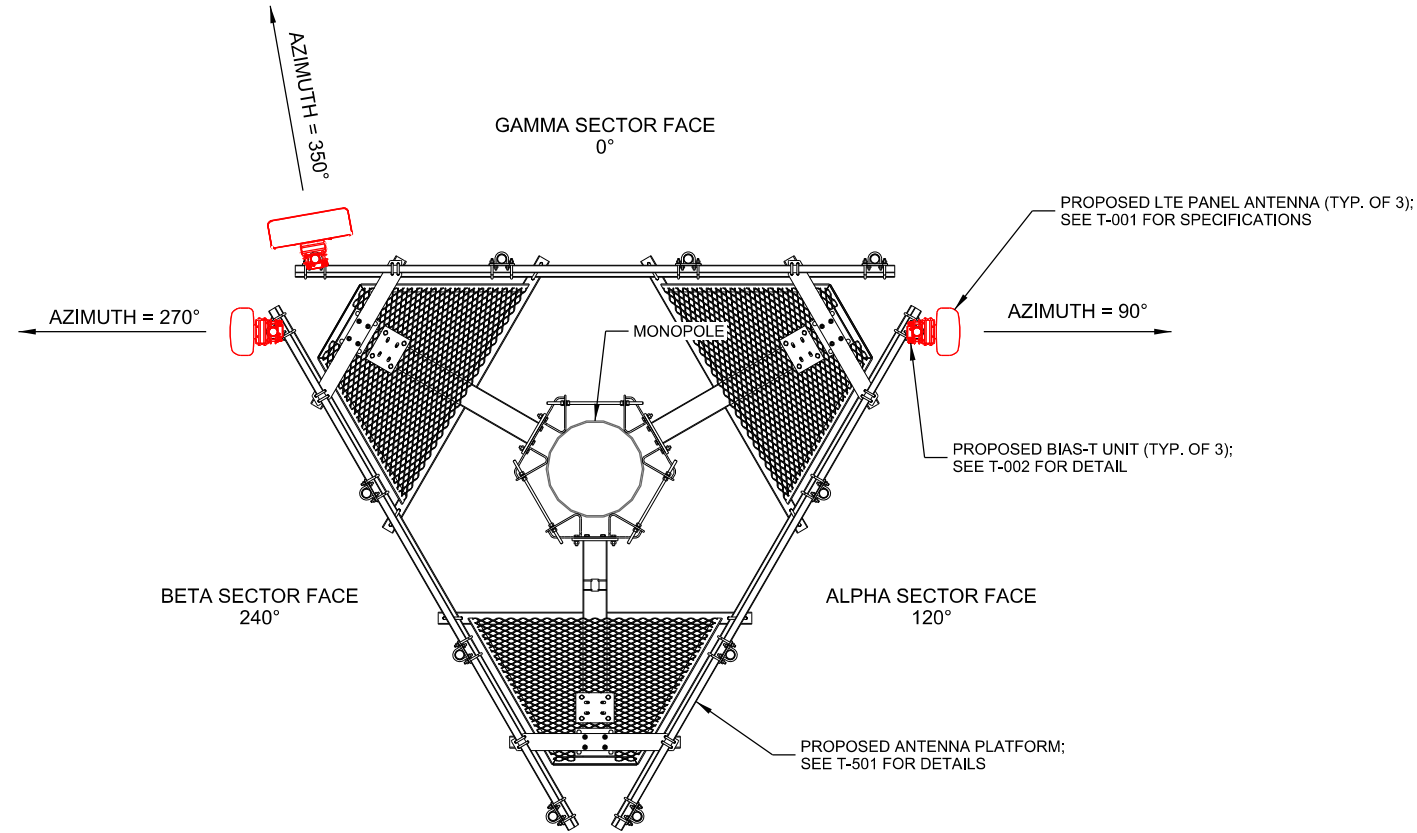
NORTH CAROLINA  
 PROFESSIONAL  
 SEAL  
 046428  
 ENGINEER  
 ARLEN J. OSTRENG  
 1/24/2019

**SITE ELEVATION**  
**SE ERWIN (556891)**  
**ERWIN, NORTH CAROLINA**

SHEET TITLE:

INT.	DATE	DESCRIPTION
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

CHECKED BY	ABB
PLOT DATE	1/24/2019
PROJECT NUMBER	18683
SET TYPE	FINAL CDs
SHEET NUMBER	<b>T-201</b>



Proposed Loading :									
Antenna Information :									
Sector	Ant ID	Ant Manufac.	Ant Model	Ant Qty	Rad Ctr.	Mech Tilt	Radome Notes	Azi	
Alpha	3	KMW	AM-X-CD-17-65-00RET	1	120	0		90	
Alpha									
Beta	3	KMW	AM-X-CD-17-65-00RET	1	120	0		270	
Beta									
Gamma	3	Amphenol	HTXCW331821R000G	1	120	0		350	
Gamma									
<b>Total :</b>				<b>3</b>					

Radio Information:			
Tech	Band		
	B12 Radio	Radio Qty	
LTE	RRU 11	1	GM-2T2R
LTE	RRU 11	1	GM-2T2R
LTE	RRU 11	1	GM-2T2R
		<b>3</b>	

Other:	
Cable Qty	Coax Size
2	1-5/8"
2	1-5/8"
2	1-5/8"
<b>6</b>	

NOTE:  
1. ALL ANTENNA AZIMUTHS TO BE FROM TRUE NORTH.

**A ANTENNA AND EQUIPMENT LAYOUT**  
SCALE: 11" x 17" - 1/4" = 1'-0"  
22" x 34" - 1/2" = 1'-0"

CONSULTANT:  
**Edge**  
Consulting Engineers, Inc.  
624 WATER STREET  
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CLIENT:  
**U.S. Cellular**  
U.S. CELLULAR - OMAHA  
10343 MILITARY AVENUE  
OMAHA, NE 68134  
PHONE: 402.515.4698



**ANTENNA AND EQUIPMENT CONFIGURATION**  
SE ERWIN (556891)  
ERWIN, NORTH CAROLINA

SHEET TITLE:

SUBMITTAL:		
INT.	DATE	DESCRIPTION:
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

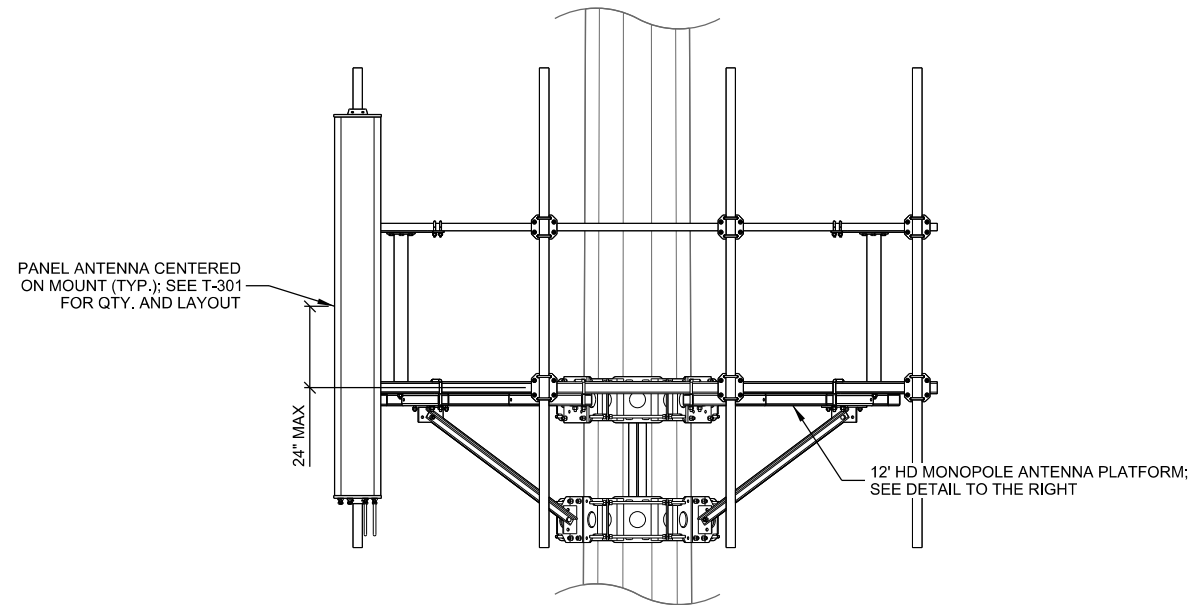
CHECKED BY	ABB
PLOT DATE	1/24/2019
PROJECT NUMBER	18683
SET TYPE	FINAL CDs
SHEET NUMBER	<b>T-301</b>

PER U.S. CELLULAR RDP DATED 12/05/2018 PROVIDED BY OTHERS

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PANEL ANTENNA CENTERED ON MOUNT (TYP.); SEE T-301 FOR QTY. AND LAYOUT

24" MAX

12' HD MONOPOLE ANTENNA PLATFORM; SEE DETAIL TO THE RIGHT

NOTE:

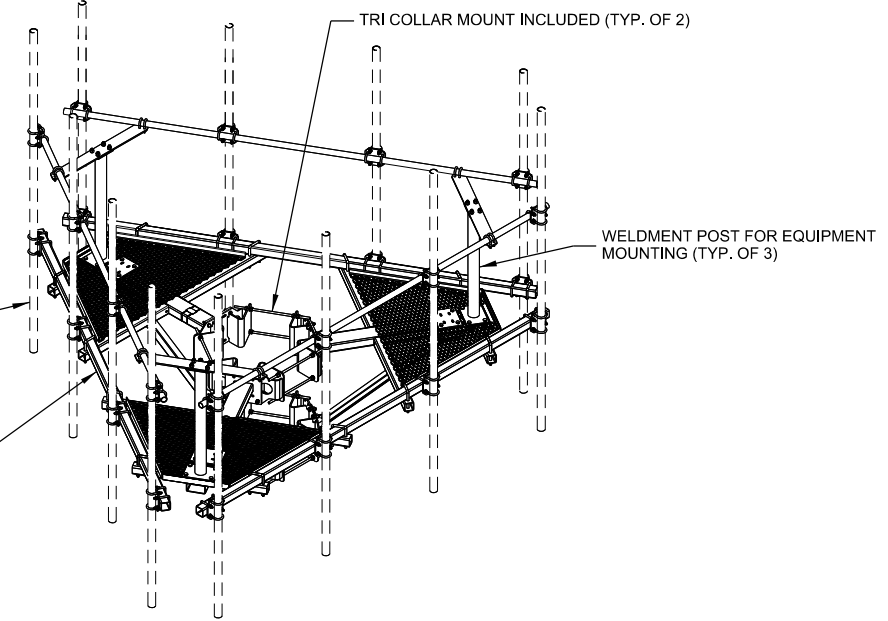
1. JUMPER CABLES FROM DIPLEXER TO ANTENNA TO BE SECURED TO ANTENNA PLATFORM WITH STAND-OFF KIT; SEE T-502 FOR DETAIL.
2. PER TIA STANDARDS: FALL PROTECTION ANCHORAGES SHALL BE AVAILABLE AT A MAXIMUM SPACING OF FOUR (4) FEET OVER THE HEIGHT NOT EQUIPPED WITH A SAFETY CLIMB SYSTEM OR OVER THE LENGTH OF THE OBSTRUCTION TO THE CLIMBING FACILITY.

**A ANTENNA & EQUIPMENT MOUNTING**

MANUFACTURER: SABRE  
 MODEL: C10855666C  
 12' HD MONOPOLE ANTENNA PLATFORM  
 KIT INCLUDES (2) TRI COLLAR MOUNTS THAT FIT 10" DIA. TO 40" DIA. MONOPOLES

2" SCH 40 (2-3/8" O.D.) x 9' LONG MAST PIPES ORDERED SEPARATELY (4 PER SECTOR, 12 TOTAL)

12' HD MONOPOLE ANTENNA PLATFORM



NOTE:

1. CONTRACTOR TO VERIFY POLE DIAMETER AND SUITABILITY OF PROPOSED MOUNT FOR SITUATION. IF AN ALTERNATIVE SOLUTION IS PROPOSED, NOTIFY ENGINEER AND OWNER PRIOR TO PROCEEDING.

**B 12' HD MONOPOLE ANTENNA PLATFORM**

THIS SPACE INTENTIONALLY LEFT BLANK

CONSULTANT:  
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 624 WATER STREET  
 PRAIRIE DU SAC, WI 53678  
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 www.edgeconsult.com  
 LICENSE NO.: C-4515

CLIENT:  
**U.S. Cellular**  
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 PHONE: 402.515.4698

NORTH CAROLINA PROFESSIONAL SEAL  
 046428  
 ENGINEER  
 ARLEN J. OSTRENG  
 1/24/2019

**INSTALLATION DETAILS**  
 SE ERWIN (556891)  
 ERWIN, NORTH CAROLINA

SHEET TITLE

SUBMITTAL:

INT.	DATE	DESCRIPTION
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

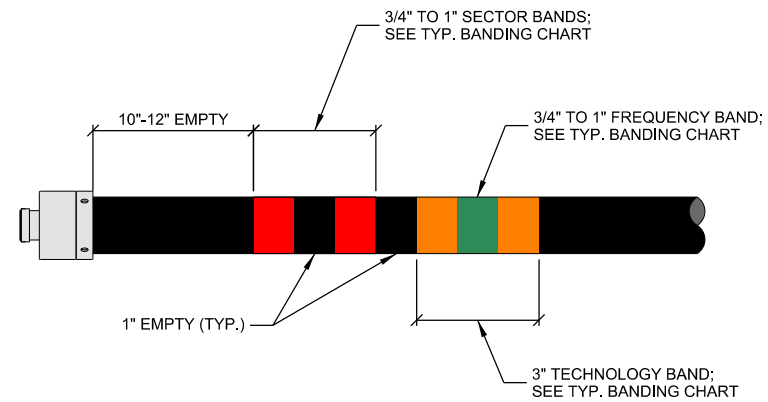
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PLOT DATE	1/24/2019
PROJECT NUMBER	18683
SET TYPE	FINAL CDs
SHEET NUMBER	<b>T-501</b>



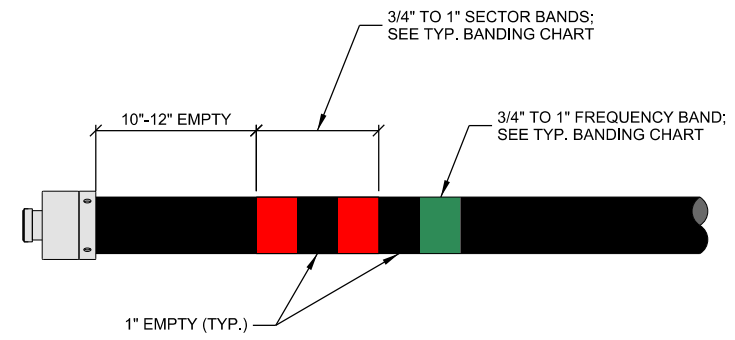


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**A** DETAIL NOT REQUIRED



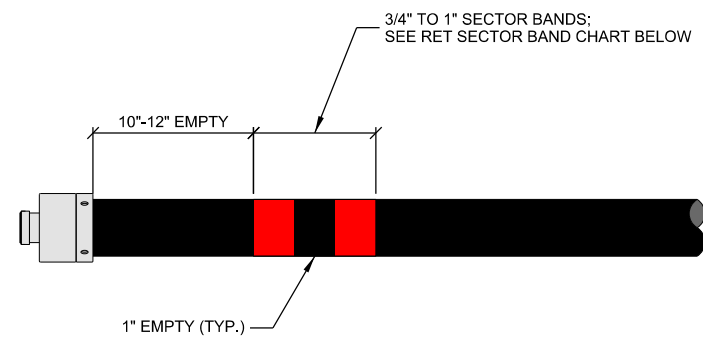
**B** TYP. COAX JUMPER BANDING



**C** TYP. POWER JUMPER BANDING

THIS SPACE INTENTIONALLY LEFT BLANK

**D** DETAIL NOT REQUIRED



**E** TYP. RET CABLE BANDING

RET SECTOR BAND		
SECTOR	LINE 1 1st TECHNOLOGY	LINE 2 1st TECHNOLOGY
ALPHA	(1) RED BAND	(2) RED BANDS
BETA	(1) WHITE BAND	(2) WHITE BANDS
GAMMA	(1) BLUE BAND	(2) BLUE BANDS

SECTOR BAND				
SECTOR	LINE 1 1st TECHNOLOGY	LINE 2 1st TECHNOLOGY	LINE 1 2nd TECHNOLOGY (IF APPLICABLE)	LINE 2 2nd TECHNOLOGY (IF APPLICABLE)
ALPHA	(1) RED BAND	(2) RED BANDS	(1) RED BAND	(2) RED BANDS
BETA	(1) WHITE BAND	(2) WHITE BANDS	(1) WHITE BAND	(2) WHITE BANDS
GAMMA	(1) BLUE BAND	(2) BLUE BANDS	(1) BLUE BAND	(2) BLUE BANDS
DELTA (IF APPLICABLE)	(1) GREEN BAND	(2) GREEN BANDS	(1) GREEN BAND	(2) GREEN BANDS
EPSILON (IF APPLICABLE)	(1) VIOLET BAND	(2) VIOLET BANDS	(1) VIOLET BAND	(2) VIOLET BANDS
ZETA (IF APPLICABLE)	(1) BROWN BAND	(2) BROWN BANDS	(1) BROWN BAND	(2) BROWN BANDS

TECHNOLOGY BAND	
TECHNOLOGY	BANDING
CDMA	YELLOW
GSM	VIOLET
LTE	ORANGE

FREQUENCY BAND		
BAND	TECHNOLOGY	BANDING
B12	700	GREEN
B5	800	BROWN
B2	1900	BLUE
B4	2100	WHITE

**F** TYP. BANDING CHART

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**CABLE BANDING DETAILS**  
 SE ERWIN (556891)  
 ERWIN, NORTH CAROLINA

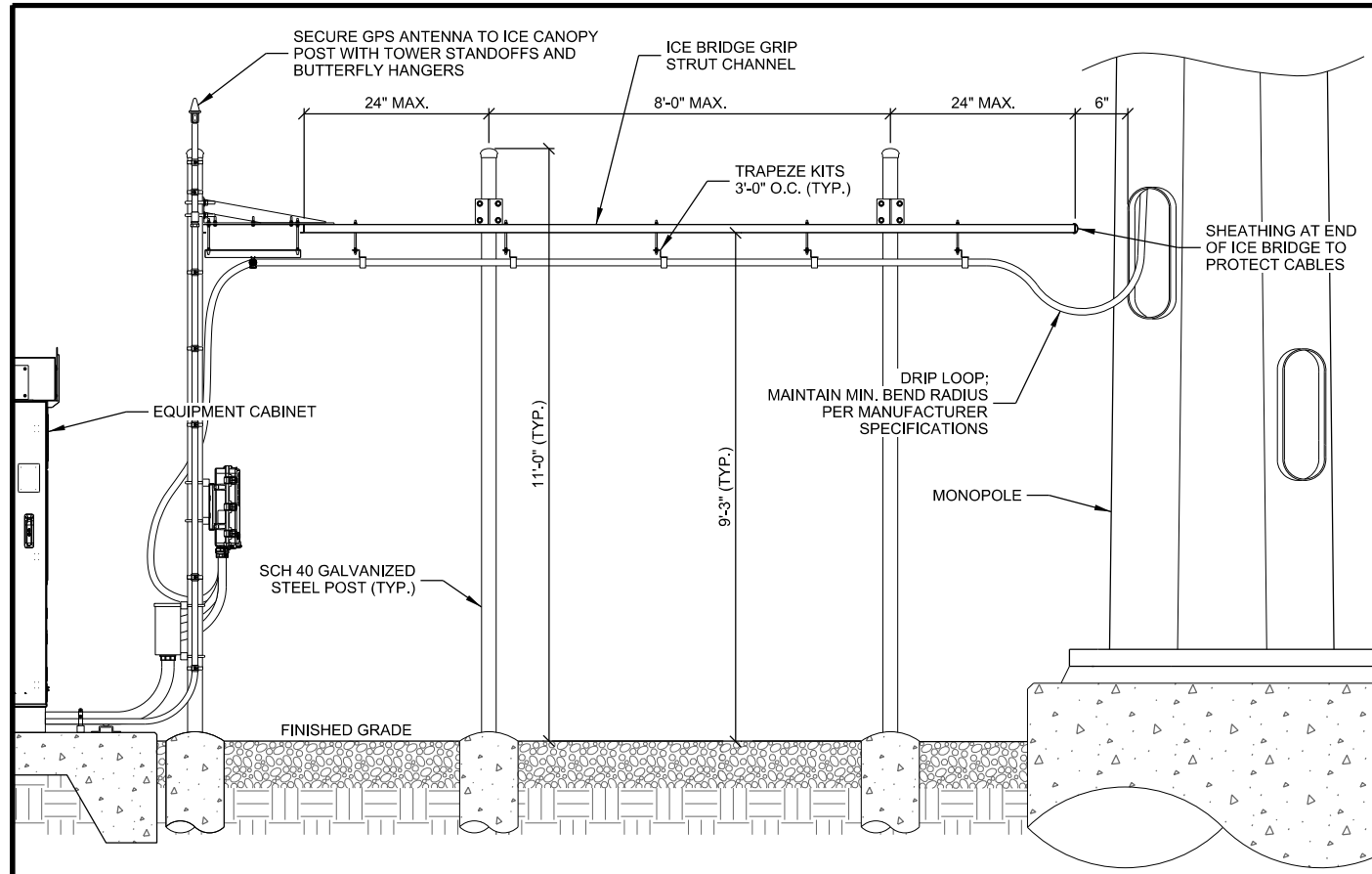
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TAS	01/24/2019	REV. 0

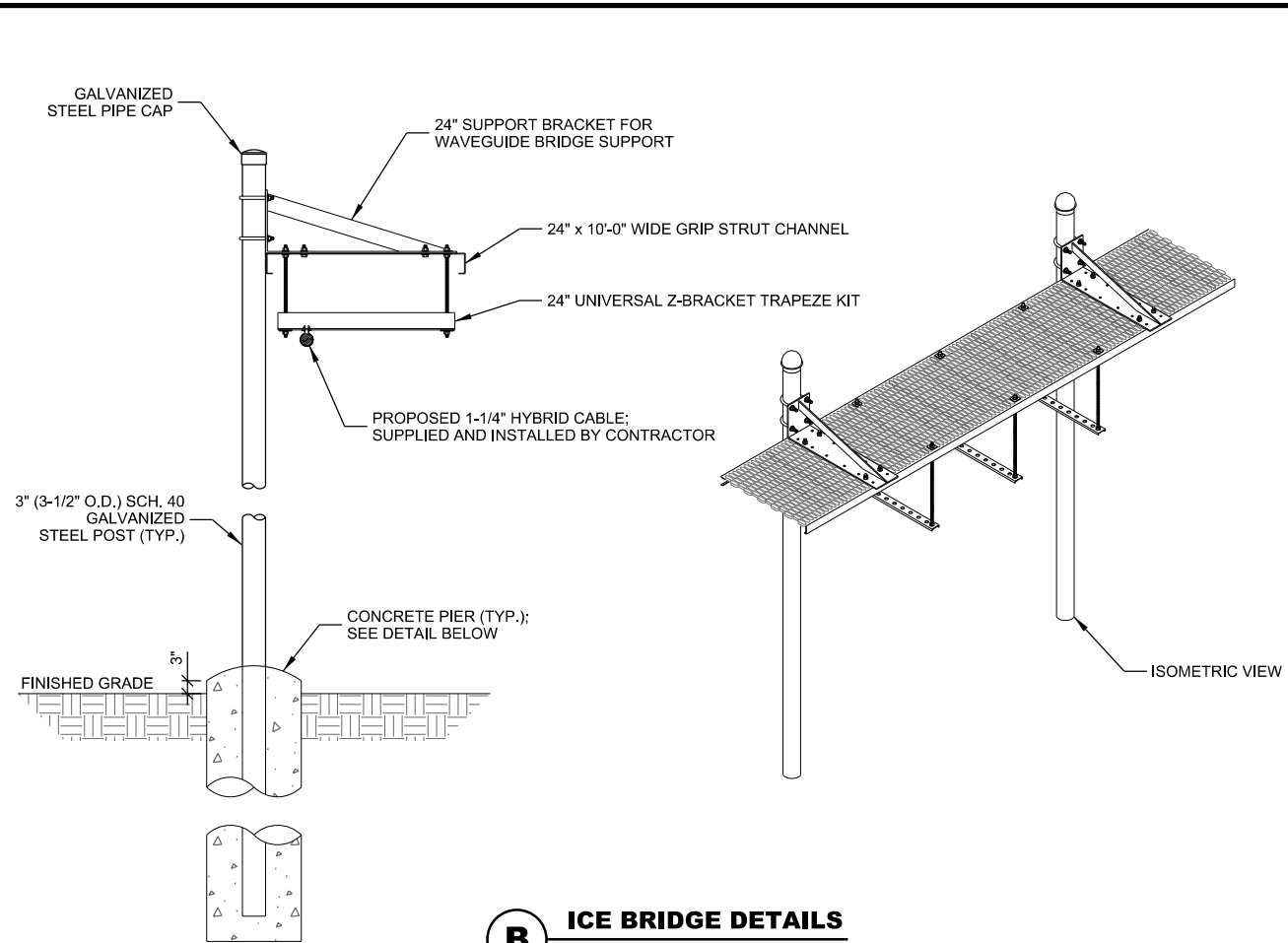
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PLOT DATE:	1/24/2019
PROJECT NUMBER:	18683
SET TYPE:	FINAL CDs
SHEET NUMBER:	<b>T-503</b>

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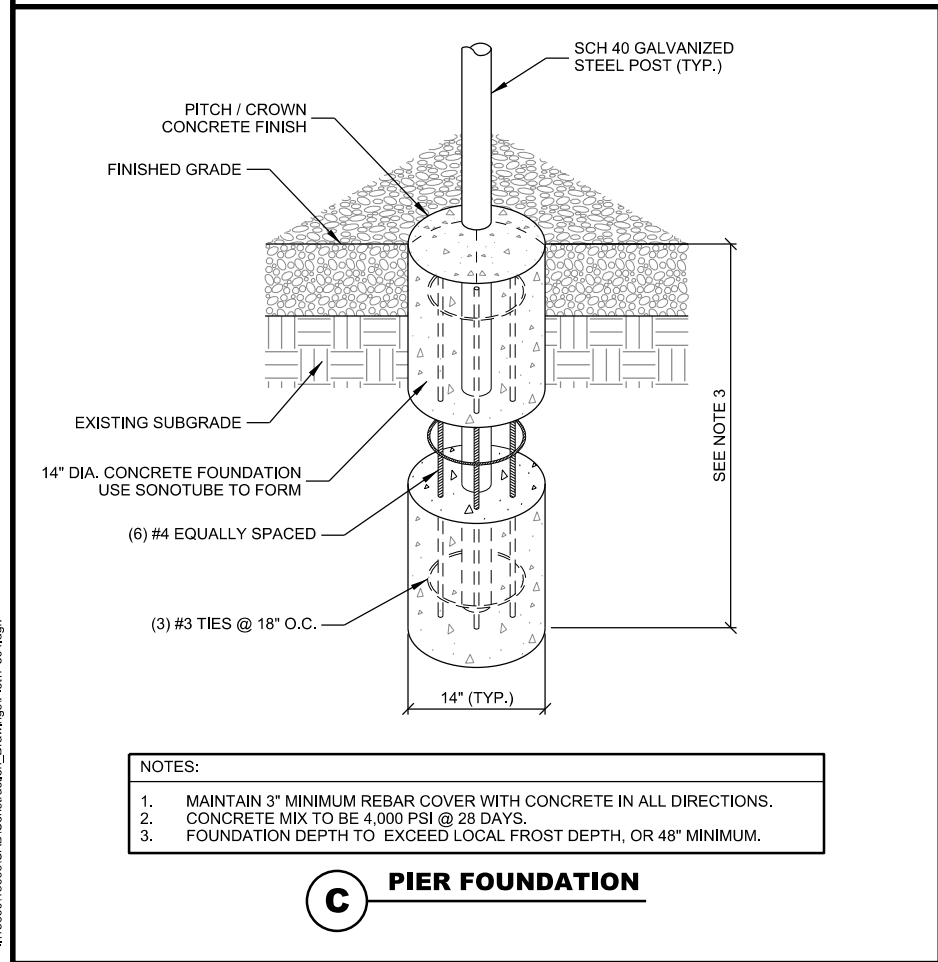




**A ICE BRIDGE INSTALLATION**



**B ICE BRIDGE DETAILS**



**C PIER FOUNDATION**

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- ICE BRIDGE NOTES : (THIS SHEET)**
1. FOR COMPONENTS AS SHOWN IN STANDARD DETAILS, MAXIMUM ALLOWABLE SPAN BETWEEN SUPPORTS ON A CONTINUOUS SINGLE SECTION OF BRIDGE CHANNEL SHALL BE 8' FOR A 10' SECTION.
  2. SPLICES IN SECTIONS OF BRIDGE CHANNEL SHALL BE INSTALLED AT SUPPORTS, WHERE POSSIBLE, OR AT MOST 2' FROM A SUPPORT.
  3. FREE ENDS OF ICE BRIDGE CHANNELS SHALL NOT EXCEED A CANTILEVER DISTANCE OF 2' FROM A SUPPORT.
  4. CUT BRIDGE CHANNEL SECTIONS SHALL HAVE RAW EDGES TREATED WITH COLD GALVANIZING SPRAY.
  5. DEVIATIONS FROM STANDARDS FOR COMPONENT INSTALLATIONS ARE PERMITTED WITH MANUFACTURER'S AND ENGINEER'S APPROVAL.
  6. DEVIATIONS FROM ICE BRIDGE FOUNDATIONS SHOWN ON SITE SPECIFIC DRAWINGS OR STANDARD DETAILS REQUIRE ENGINEERING APPROVAL.

CONSULTANT:

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NORTH CAROLINA PROFESSIONAL SEAL  
046428  
ENGINEER  
ARLEN J. OSTRENG  
1/24/2019

**ICE BRIDGE DETAILS  
SE ERWIN (56891)  
ERWIN, NORTH CAROLINA**

SHEET TITLE:

SUBMITTAL:

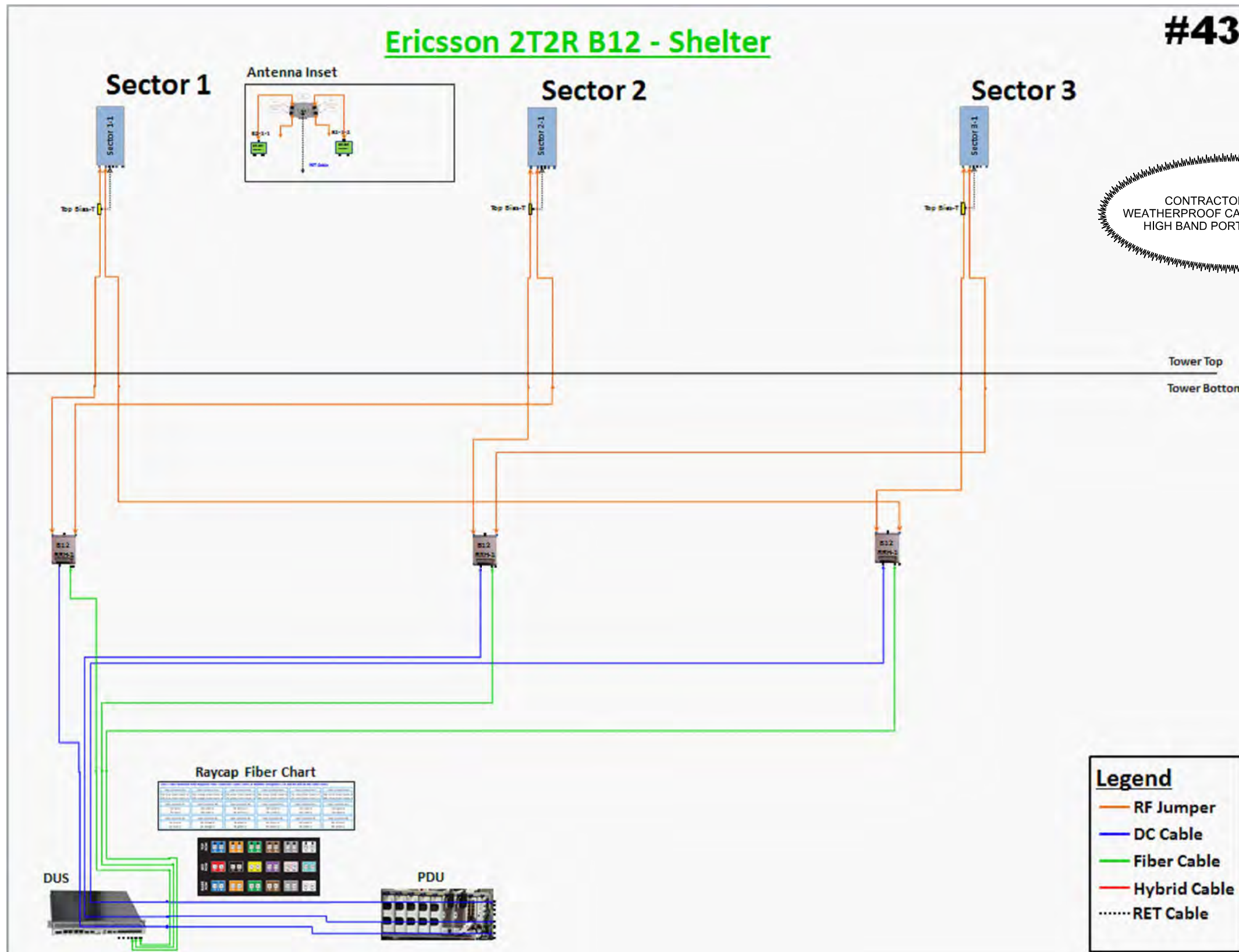
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TAS	01/24/2019	REV. 0

CHECKED BY:	ABB
PLOT DATE:	1/24/2019
PROJECT NUMBER:	18683
SET TYPE:	FINAL CDs
SHEET NUMBER:	<b>T-504</b>

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# Ericsson 2T2R B12 - Shelter

# #43



CONTRACTOR TO INSTALL WEATHERPROOF CAP AT BOTH UN-USED HIGH BAND PORTS ON ANTENNAS

**Legend**

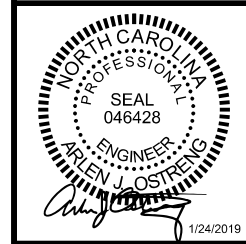
- RF Jumper
- DC Cable
- Fiber Cable
- Hybrid Cable
- ..... RET Cable

- NOTES:**
- CONTRACTOR TO INSTALL WEATHERPROOF CAP AT BOTH UN-USED HIGH BAND PORTS ON ANTENNAS.
  - CONTRACTOR TO INSTALL TERMINATION LOADS AT UN-USED JUMPER PORTS ON DIPLEXERS WHEN SPECIFIED; ROSENBERGER # L-2-DM-01
  - EXCESS JUMPER AND RET CABLES TO BE SECURED AND ROUTED WITH GROMMETS WITH SNAP-INS; VELCRO TIES MAY NOT BE USED.

**A PLUMBING DIAGRAM**

CONSULTANT:  
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**PLUMBING DIAGRAM**  
 SE ERWIN (556891)  
 ERWIN, NORTH CAROLINA

SHEET TITLE:

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INT.	DATE:	DESCRIPTION:
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

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PLOT DATE:	1/24/2019
PROJECT NUMBER:	18683
SET TYPE:	FINAL CDs
SHEET NUMBER:	<b>T-505</b>

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- EQUIPMENT:**
- (A) LTE EQUIPMENT CABINET WITH MOUNTING PLINTH;  
SEE A-002 FOR DETAILS
  - (B) BATTERY BACKUP CABINET;  
SEE A-002 FOR DETAILS
  - (C) REMOTE RADIO UNIT SECURED TO UNISTRUT;  
SEE C-102 FOR QUANTITY
  - (D) 12" x 12" x 6" JUNCTION BOX SECURED TO UNISTRUT
  - (E) GROUND BAR ON INSULATORS

- CONDUITS:**
- (F) 1-1/4" (1.66" O.D.) SCH. 40 PVC CONDUIT STUB-UPS WITH PULL STRING TO FIBER VAULT (TYP. OF 2); STUB-UP CONDUITS IN FRONT CORNER OF COMPOUND FOR MICROWAVE DISH INSTALLATIONS
  - (G) 2" (2-3/8" O.D.) SCH. 40 PVC CONDUIT STUB-UP WITH PULL STRING TO PPC
  - (H) 1" (1-1/4" O.D.) SCH. 40 PVC CONDUIT STUB-UP TO WITH PULL STRING FOR ALARM CABLING TO PPC
  - (I) 2-1/2" (2-7/8" O.D.) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FROM LTE EQUIPMENT CABINET PLINTH TO JUNCTION BOX (TYP. OF 2)
  - (J) 2-1/2" (2-7/8" O.D.) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FROM BATTERY BACKUP CABINET TO LTE EQUIPMENT CABINET PLINTH FOR POWER
  - (K) 2" (2-3/8" O.D.) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FROM LTE EQUIPMENT CABINET TO UNISTRUT RACK FOR MICROWAVE DISH CABLING (IF APPLICABLE)
  - (L) 1" (1-1/4" O.D.) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FROM LTE EQUIPMENT CABINET PLINTH TO UNISTRUT RACK FOR GPS CABLING
  - (M) ROXTEC GLANDS INSTALLED THROUGH SIDE OF JUNCTION BOX FOR CABLE ROUTING (TYP. OF 2); SEE A-501 FOR DETAIL
  - (N) PROPOSED RET SURGE ARRESTOR
  - (O) 3/4" (1" O.D.) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FROM LTE EQUIPMENT CABINET FOR GROUND LEAD (TYP. OF 2)
  - (P) 3/4" (1" O.D.) LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT FROM BATTERY BACKUP CABINET FOR GROUND LEAD
  - (Q) LIQUID-TIGHT CONDUIT FITTING (TYP.)
  - (R) ROXTEC WEATHERPROOF SEAL (IF APPLICABLE);  
SIZE TO ACCEPT MICROWAVE DISH CABLING QUANTITY AND DIAMETER
  - (S) 1'-0" UNISTRUT CONDUIT TIE DOWN (TYP.);  
SEE A-501 FOR DETAILS

- EQUIPMENT PAD RACK:**
- (T) 2'-0" WIDE x 10'-0" LONG ICE BRIDGE (TYP. OF 2);  
SEE A-501 FOR DETAILS
  - (U) P-1000T GALV. UNISTRUT OR APPROVED EQUIV.;  
UNISTRUT TO BE CUT TO LENGTH TO ENSURE PROPER FASTENING TO POST WITHOUT EXCESS
  - (V) UNISTRUT END CAP AT EACH END OF UNISTRUT;  
SITE PRO 1 #: UNICAP OR APPROVED EQUIV.;
  - (W) HEAVY-DUTY UNIVERSAL COAX SUPPORT BRACKET;  
SEE A-501 FOR DETAILS
  - (X) GPS ANTENNA SECURED TO ICE BRIDGE POST;  
SEE A-501 FOR DETAILS
  - (Y) CONCRETE PIER;  
SEE A-501 FOR DETAILS

- CONCRETE AND REINFORCING NOTES:**
1. ALL CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH LOCAL BUILDING CODE REQUIREMENTS AND MOST CURRENT VERSION OF ACI STANDARDS.
  2. ALL CONCRETE UNLESS SPECIFICALLY NOTED SHALL BE NORMAL WEIGHT(145 PCF) AND SHALL ACHIEVE A 28-DAY COMPRESSIVE STRENGTH (f<sub>c</sub>) OF 4,000 PSI. EXPOSED EXTERIOR CONCRETE TO BE AIR ENTRAINED WITH 6% +/- 1% AIR CONTENT. CONTRACTOR TO PERFORM CONCRETE SLUMP TEST (4" MAX SLUMP). NO WATER TO BE ADDED AFTER SLUMP HAS BEEN MEASURED.
  3. ALL CONCRETE REINFORCING SHALL BE ASTM A615 GRADE 60 AND PLACED IN ACCORDANCE WITH ACI STANDARDS
  4. REMOVE ALL ORGANIC MATERIAL, SOFT AND/OR UNSUITABLE SOILS WITHIN FOUNDATION FOOTPRINT. DO NOT UTILIZE THESE SOILS FOR BACKFILL.
  5. CONSULT GEOTECHNICAL INVESTIGATION REPORT FOR ANTICIPATED SOIL CONDITIONS AND CONSTRUCTION CONSIDERATIONS.
  6. FOUNDATION DESIGN BASED ON A PRESUMPTIVE SOIL BEARING CAPACITY OF 2000 PSF AND MAX. PLASTICITY INDEX OF 20, CONTRACTOR TO CONFIRM BEARING SOILS MEET THESE CONDITIONS BEFORE INSTALLATION.
  7. SOILS NOT MEETING THE DESIGN BEARING STRENGTH SHALL BE UNDERCUT AND REPLACED WITH 3-INCH BREAKER STONE. UNDERCUT ONE FOOT ON EACH SIDE OF THE FOOTING FOR EVERY FOOT IN DEPTH. CONSULT WITH ENGINEER FOR REQUIRED UNDERCUT DEPTH.
  8. CONTRACTOR TO ENSURE POSITIVE DRAINAGE FROM ALL FOUNDATIONS.

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 PHONE: 402.515.4698



**EQUIPMENT PAD NOTES**  
 SE ERWIN (556891)  
 ERWIN, NORTH CAROLINA

SHEET TITLE

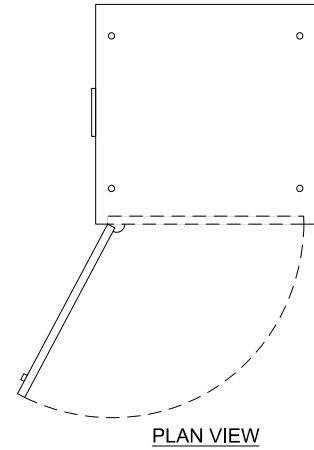
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INT.	DATE:	DESCRIPTION:
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

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PLOT DATE	1/24/2019
PROJECT NUMBER	18683
SET TYPE	FINAL CDs
SHEET NUMBER	<b>A-001</b>

**DESCRIPTION:** RADIO BASE STATION  
**MANUFACTURER:** ERICSSON  
**MODEL:** RBS 6120  
**DIMENSIONS:** 60" x 27.56" x 27.56" (H x W x D)  
**WEIGHT:** 837.8 LBS

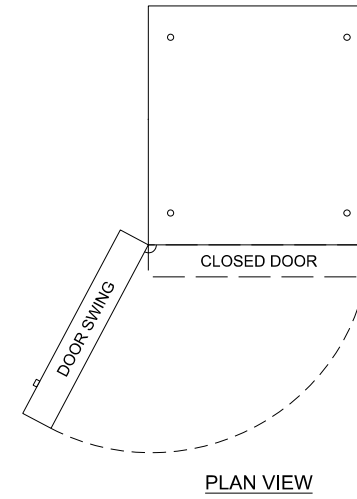
**CLEARANCE REQUIREMENTS:**  
 FRONT: 47.24" (1200 mm)  
 REAR: 7.87" (200 mm)  
 LEFT: 3.94" (100 mm)  
 RIGHT: 3.94" (100 mm)

**DESCRIPTION:** GLOBAL BASE FRAME (GBF)  
**MANUFACTURER:** ERICSSON  
**MODEL:** 5/BYB 701 01  
**DIMENSIONS:** 10.38" x 27.09" x 27.56" (H x W x D)  
**WEIGHT:** 80.5 LBS



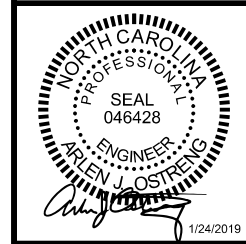
**MANUFACTURER:** ERICSSON  
**MODEL:** B174  
**DIMENSIONS:** 72.8 x 27.6" x 33.9" (H x W x D)  
**WEIGHT:** 297.6 LBS (WITHOUT BATTERIES)  
**DESCRIPTION:** A -48 V/840 AH OUTDOOR BATTERY BACKUP SYSTEM

**CLEARANCE REQUIREMENTS:**  
 FRONT: 28" (700 mm)  
 REAR: 8" (200 mm)  
 LEFT: 39" (1000 mm)  
 RIGHT: 10" (250 mm)



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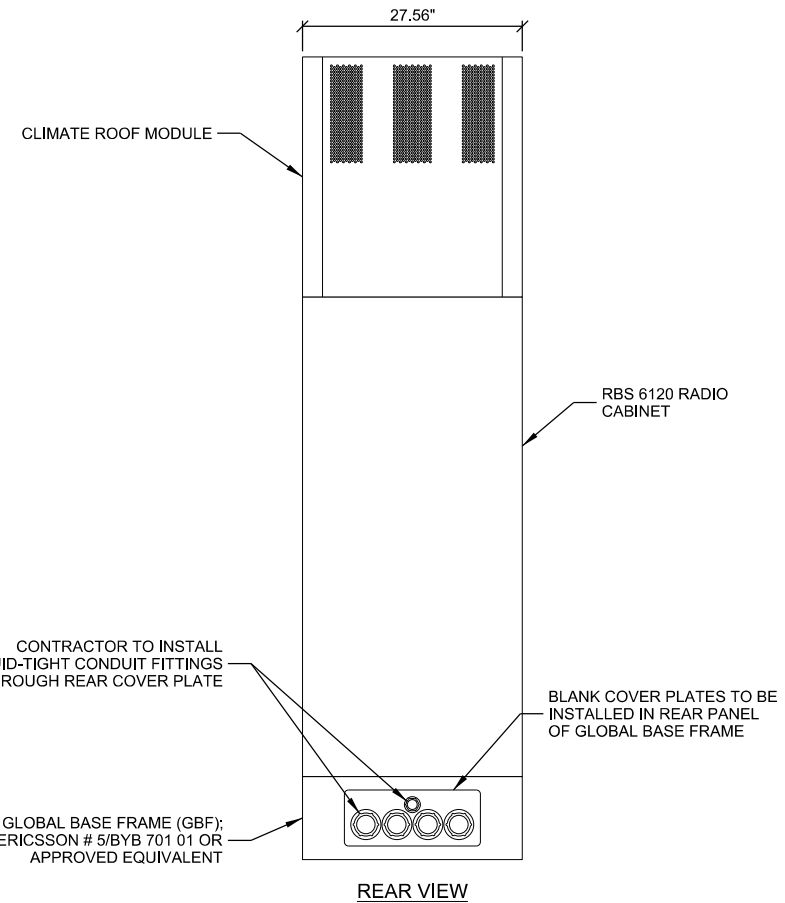
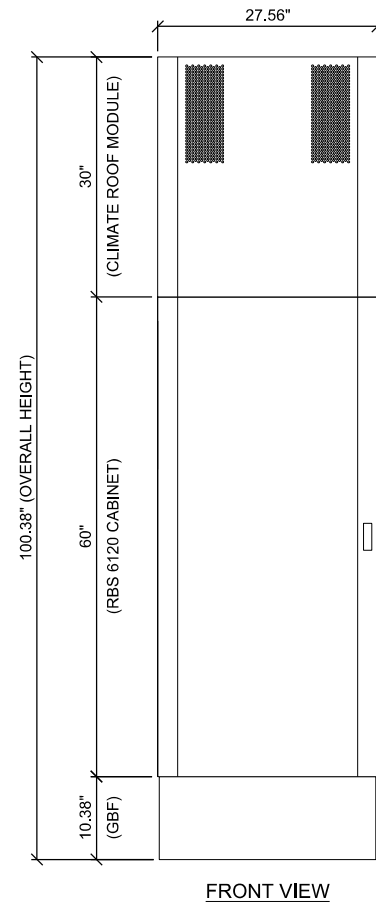


**EQUIPMENT CABINET SPECIFICATIONS**  
 SE ERWIN (556891)  
 ERWIN, NORTH CAROLINA

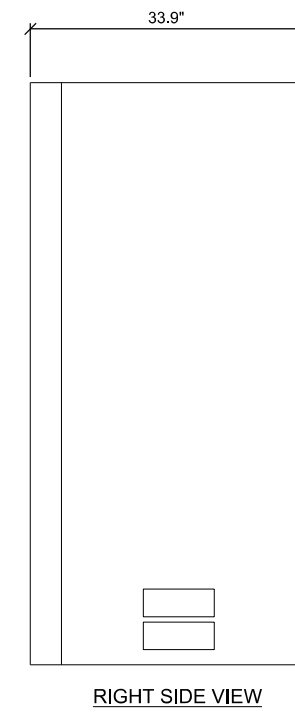
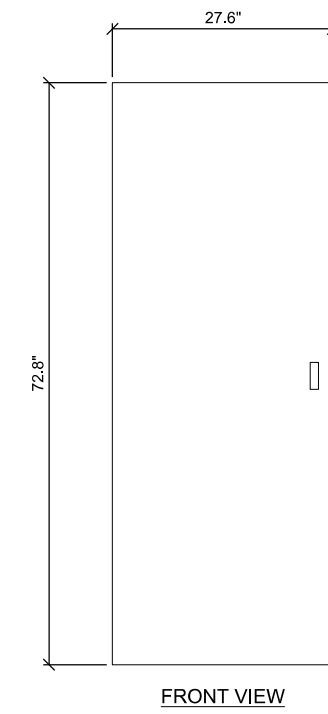
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PLOT DATE	1/24/2019
PROJECT NUMBER	18683
SET TYPE	FINAL CDs
SHEET NUMBER	<b>A-002</b>



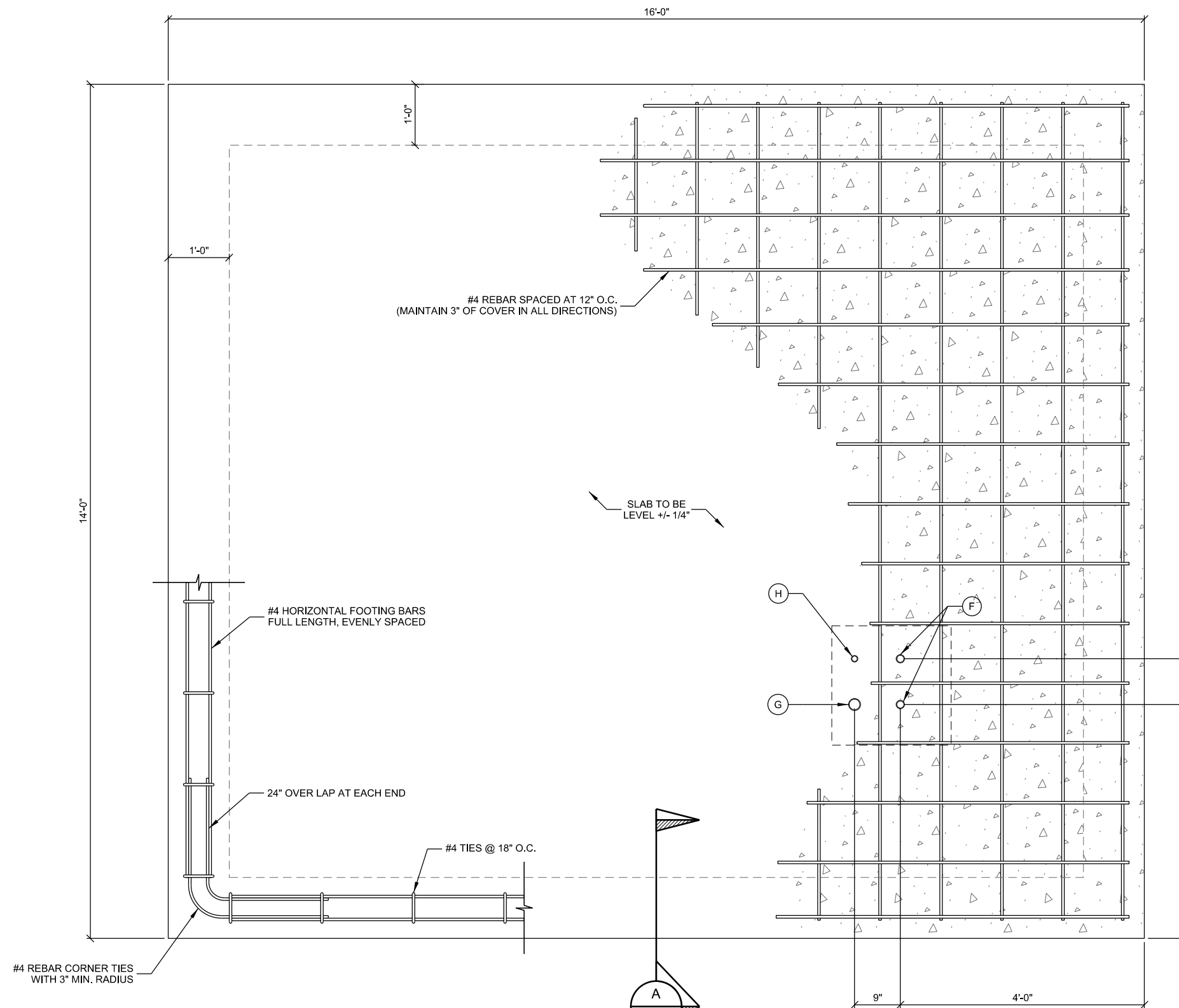
**A EQUIPMENT CABINET**



- NOTES:**
- CONTRACTOR TO INSTALL 1/2" THICK SKIRTBOARD RUBBER MAT BENEATH CABINET; PAD TO HAVE A 1/2" SMALLER FOOTPRINT THAN THE CABINET, PERIMETER OF PAD TO BE SEALED WITH OUTDOOR GRADE 100% SILICONE CAULK.
  - ERICSSON IS RESPONSIBLE FOR FINAL INSTALLATION OF PROPOSED BBS 6101 BATTERY SYSTEM WITH ASSOCIATED PLUMBING AND EQUIPMENT.
  - CONTRACTOR TO VERIFY EQUIPMENT REQUIREMENTS WITH ERICSSON PRIOR TO INSTALLATION.

**B BATTERY BACKUP SYSTEM**

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**A** **EQUIPMENT LAYOUT**  
 SCALE: 11" x 17" - 1/2" = 1'-0"  
 22" x 34" - 1" = 1'-0"

CONSULTANT:  
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 OMAHA, NE 68134  
 PHONE: 402.515.4698



**EQUIPMENT PAD PLAN**  
 SE ERWIN (56891)  
 ERWIN, NORTH CAROLINA

SHEET TITLE:

SUBMITTAL:

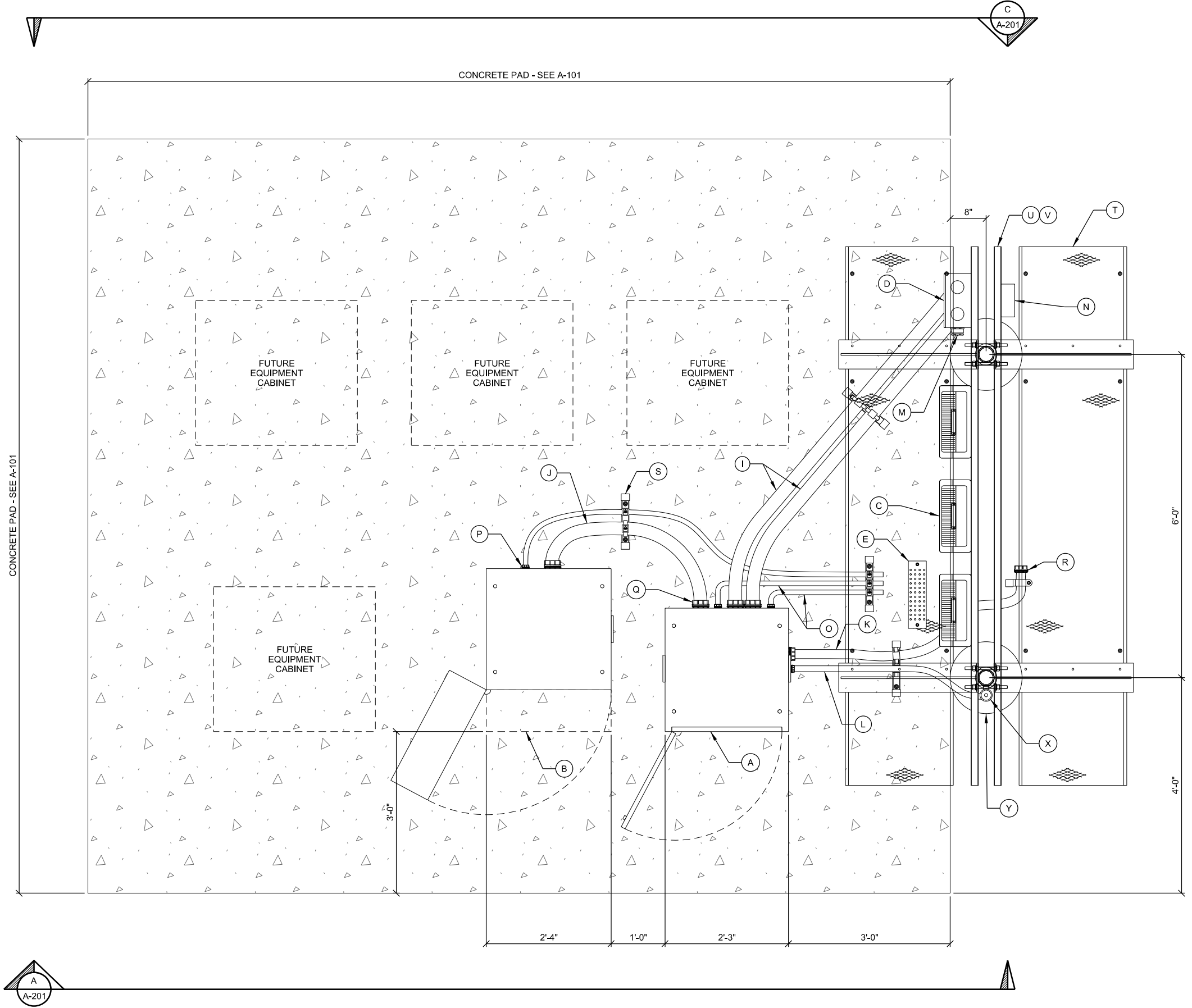
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TAS	01/24/2019	REV. 0

CHECKED BY	ABB
PLOT DATE	1/24/2019
PROJECT NUMBER	18683
SET TYPE	FINAL CDs
SHEET NUMBER	<b>A-101</b>



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D  
A-201



CONCRETE PAD - SEE A-101

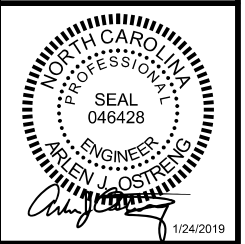
A  
A-201

B  
A-201

**A** **EQUIPMENT LAYOUT**  
 SCALE: 11" x 17" - 1/2" = 1'-0"  
 22" x 34" - 1" = 1'-0"

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**EQUIPMENT PAD PLAN**  
 SE ERWIN (56891)  
 ERWIN, NORTH CAROLINA

SHEET TITLE:  
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TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

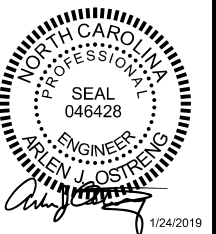
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PLOT DATE	1/24/2019
PROJECT NUMBER	18683
SET TYPE	FINAL CDs
SHEET NUMBER	<b>A-102</b>

CONSULTANT:

**Edge**  
 Consulting Engineers, Inc.  
 624 WATER STREET  
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 LICENSE NO.: C-4515

CLIENT:

**U.S. Cellular**  
 U.S. CELLULAR - OMAHA  
 10343 MILITARY AVENUE  
 OMAHA, NE 68134  
 PHONE: 402.515.4698



**EQUIPMENT PAD ELEVATIONS**  
 SE ERWIN (556891)  
 ERWIN, NORTH CAROLINA

SHEET TITLE:

SUBMITTAL:

INT.	DATE	DESCRIPTION:
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

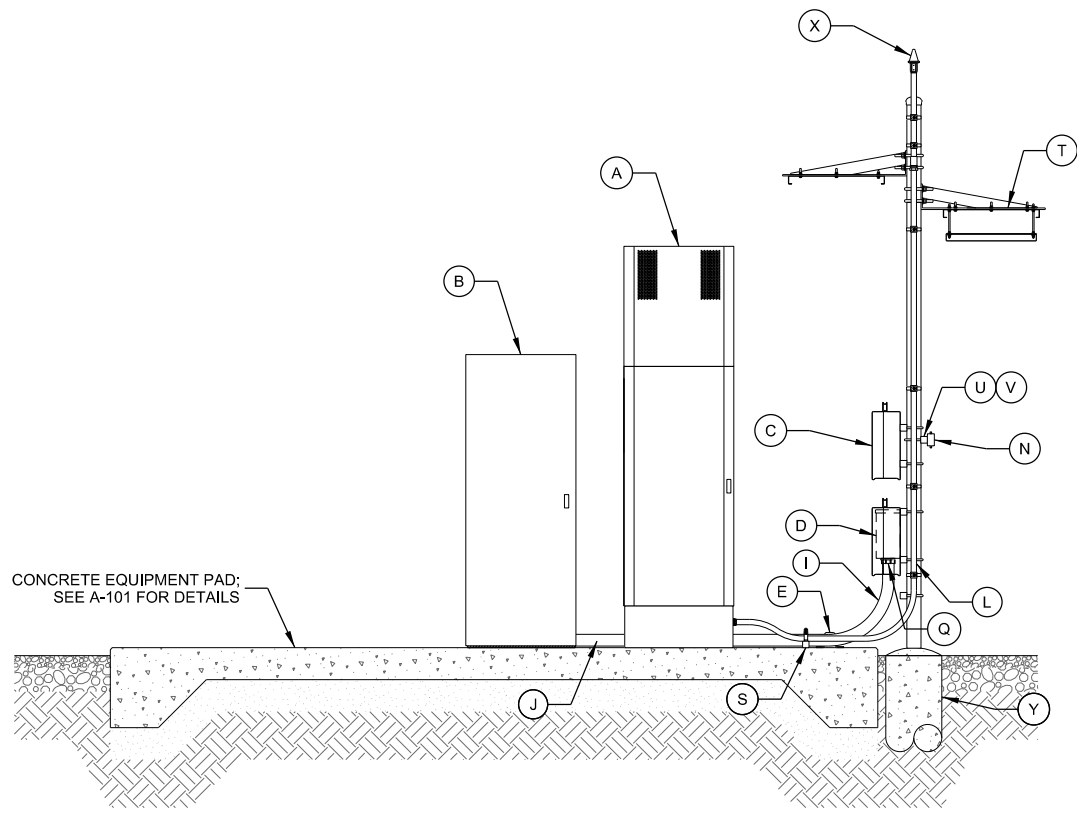
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PLOT DATE: 1/24/2019

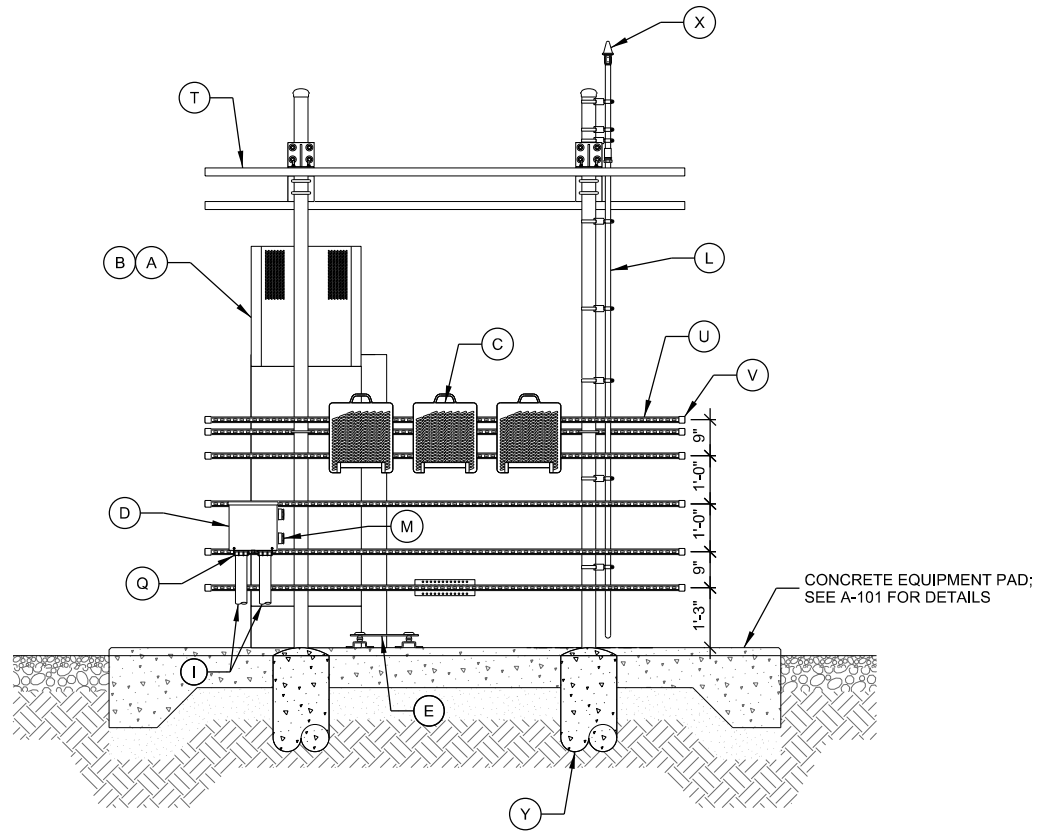
PROJECT NUMBER: 18683

SET TYPE: FINAL CDs

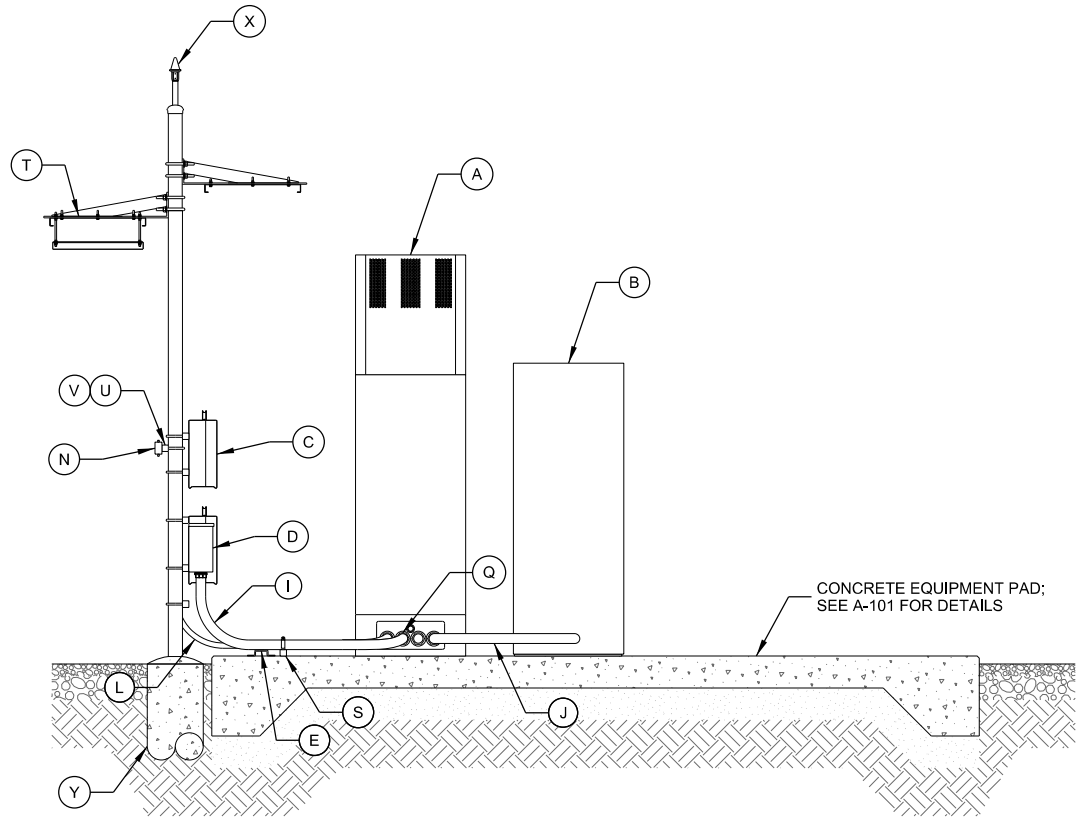
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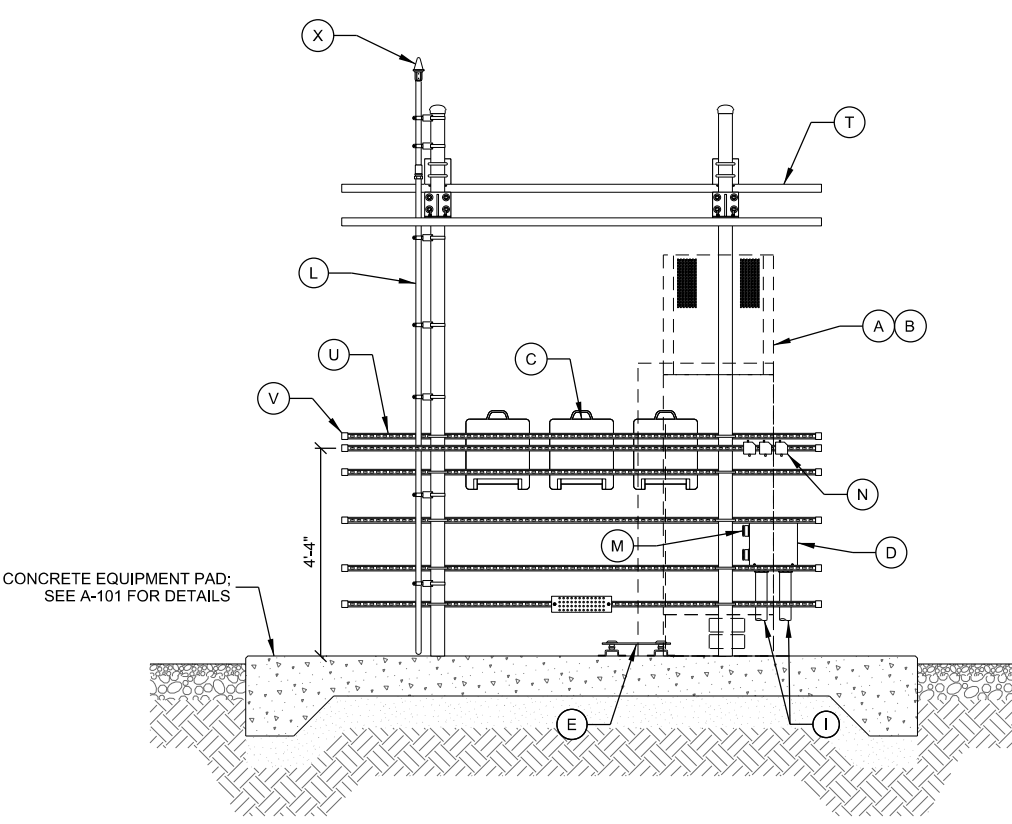
**A** **EQUIPMENT PAD ELEVATION**  
 SCALE: 11" x 17" - 1/4" = 1'-0"  
 22" x 34" - 1/2" = 1'-0"



**B** **EQUIPMENT PAD ELEVATION**  
 SCALE: 11" x 17" - 1/4" = 1'-0"  
 22" x 34" - 1/2" = 1'-0"

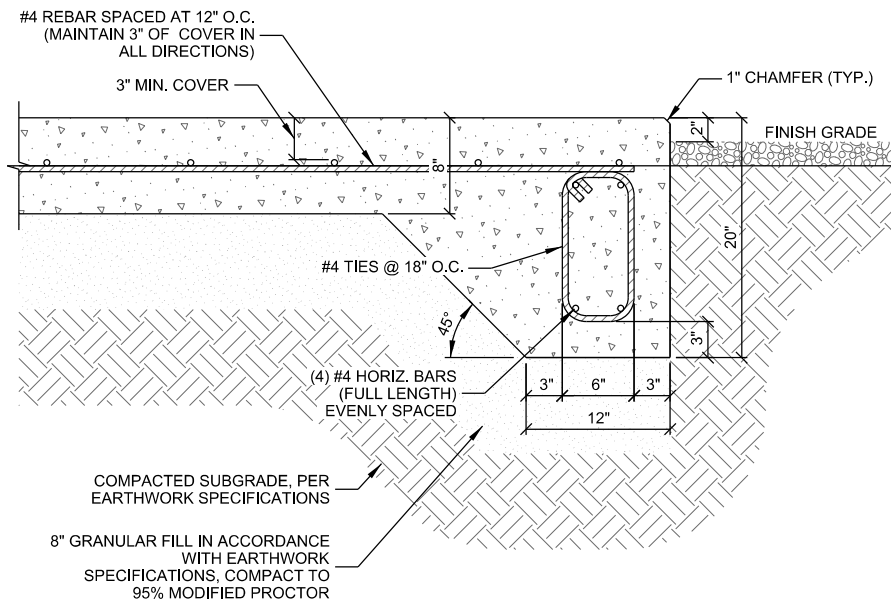


**C** **EQUIPMENT PAD ELEVATION**  
 SCALE: 11" x 17" - 1/4" = 1'-0"  
 22" x 34" - 1/2" = 1'-0"

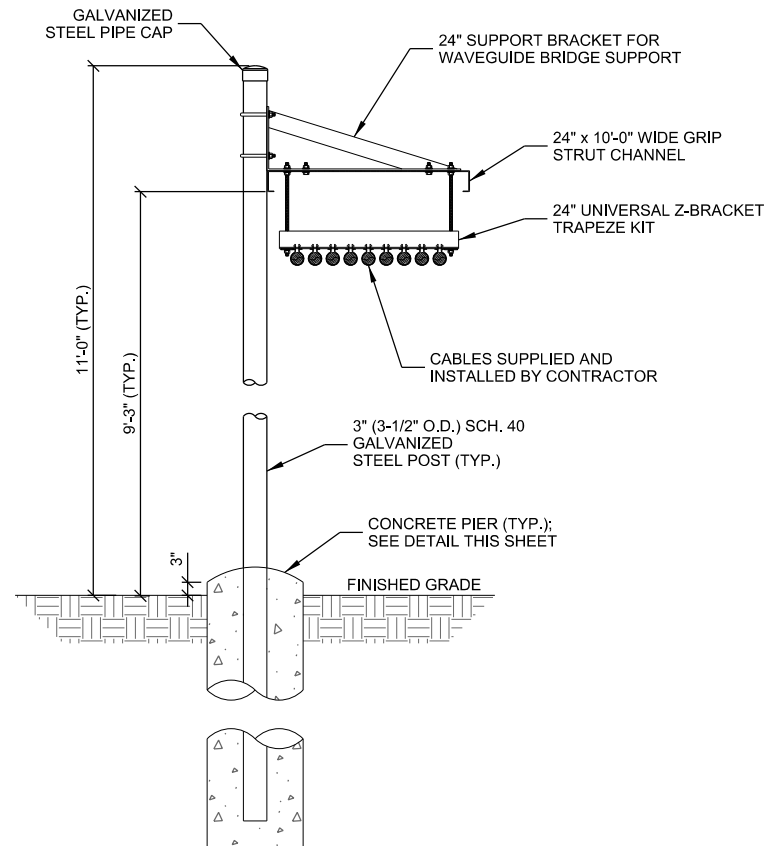


**D** **EQUIPMENT PAD ELEVATION**  
 SCALE: 11" x 17" - 1/4" = 1'-0"  
 22" x 34" - 1/2" = 1'-0"

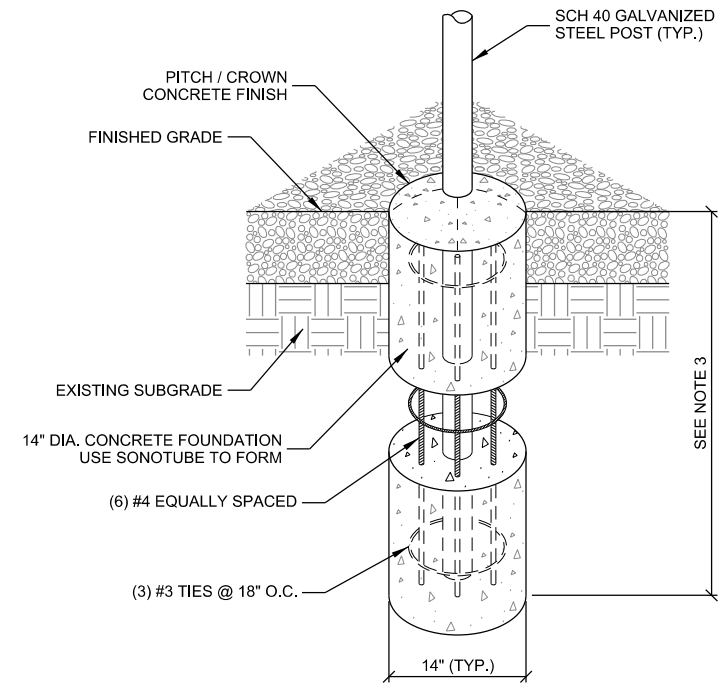
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**A TYPICAL FOUNDATION**



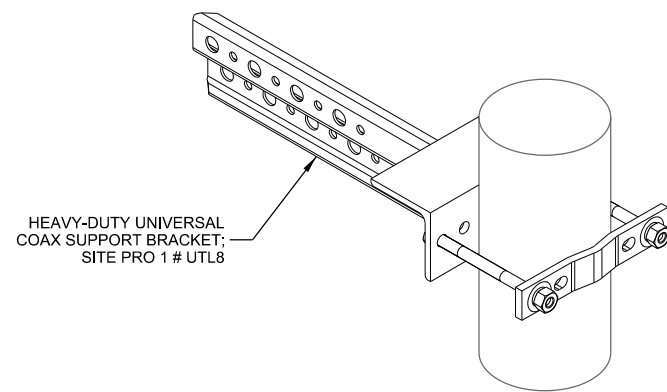
**B ICE BRIDGE DETAILS**



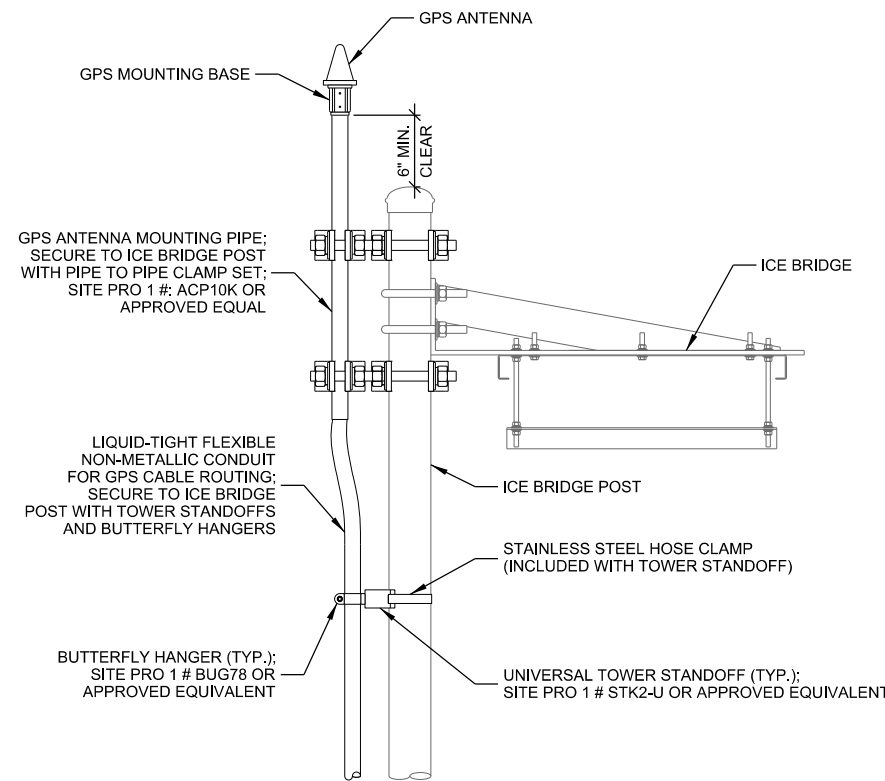
- NOTES:**
1. MAINTAIN 3" MINIMUM REBAR COVER WITH CONCRETE IN ALL DIRECTIONS.
  2. CONCRETE MIX TO BE 4,000 PSI @ 28 DAYS.
  3. FOUNDATION DEPTH TO EXCEED LOCAL FROST DEPTH, OR 48" MINIMUM.

**C PIER FOUNDATION**

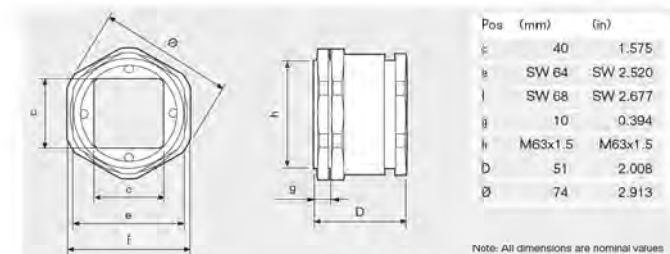
**MANUFACTURER:** SITE PRO 1  
**MODEL:** UTL8  
 HEAVY-DUTY UNIVERSAL SUPPORT BRACKET  
 MOUNTS TO ROUND MEMBERS (1-1/2" O.D. TO 5-1/2" O.D.)  
 PUNCHED WITH 3/4" DIA. HOLES FOR SNAP-IN HANGERS AND 7/16" DIA. HOLES FOR HARDWARE  
 HOT-DIP GALVANIZED  
 CAN BE BOLTED DIRECTLY TO PIROD KNOCK-DOWN LEGS WITH INCLUDED HARDWARE



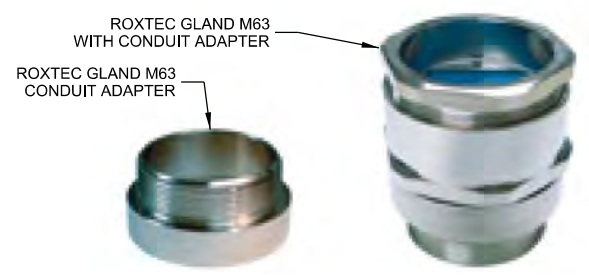
**D HEAVY-DUTY UNIVERSAL COAX SUPPORT BRACKET**



**E GPS ANTENNA MOUNTING**



**ROXTEC # RG M63/9 KIT**  
 ALLOWS PASSAGE OF UP TO NINE (9) CABLES RANGING FROM 0.138" TO 0.413" DIA.



**ROXTEC GLAND M63 CONDUIT ADAPTER**  
 THE RG M63 ADAPTER ALLOWS THE GLAND TO THREAD INTO ONE END, WHILE THE OTHER END THREADS DIRECTLY INTO 2" NPT

**F ROXTEC CABLE ENTRY SEAL**

**CONSULTANT:**  
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**EQUIPMENT PAD DETAILS**  
**SE ERWIN (556891)**  
**ERWIN, NORTH CAROLINA**

**SHEET TITLE:**

**SUBMITTAL:**

INT.	DATE	DESCRIPTION:
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

CHECKED BY	ABB
PLOT DATE	1/24/2019
PROJECT NUMBER	18683
SET TYPE	FINAL CDs
SHEET NUMBER	<b>A-501</b>









**KEYNOTES: (THIS SHEET)**

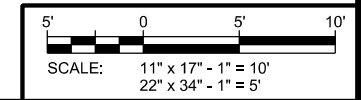
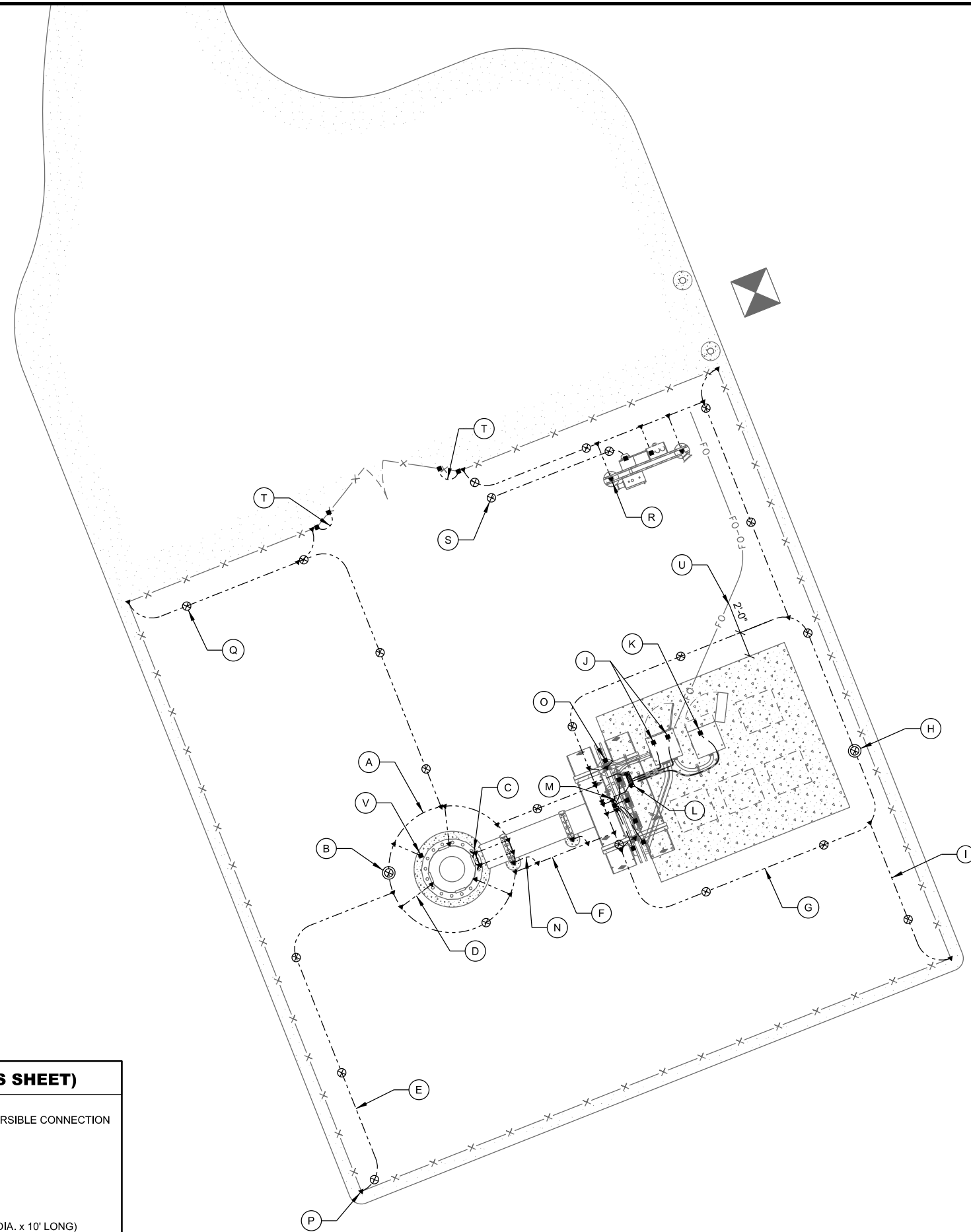
- (A) TOWER GROUND RING, #2 SOLID TINNED COPPER
- (B) TOWER GROUND RING INSPECTION WELL; SEE E-502 FOR DETAIL
- (C) TOWER GROUND BAR (TGB) WITH (2) GROUNDS FROM TGB TO TOWER GROUND RING; SEE E-501 FOR DETAIL
- (D) GROUND LEAD FROM TOWER STEEL TO TOWER GROUND RING (TYP. OF 3); SEE E-501 FOR DETAIL
- (E) GROUND LEAD FROM TOWER GROUND RING TO CORNER FENCE POST (TYP.); SEE E-502 FOR DETAIL
- (F) GROUND LEAD FROM EQUIPMENT GROUND RING TO TOWER GROUND RING (TYP. OF 2), #2 SOLID TINNED COPPER
- (G) EQUIPMENT GROUND RING, #2 SOLID TINNED COPPER
- (H) EQUIPMENT GROUND RING INSPECTION WELL; SEE E-502 FOR DETAIL
- (I) GROUND LEAD FROM EQUIPMENT GROUND RING TO CORNER FENCE POST (TYP. OF 2); SEE E-502 FOR DETAIL
- (J) LTE EQUIPMENT CABINET GROUNDING: (1) LEAD FROM MASTER GROUND BAR TO GROUND BAR INSIDE RBS CABINET AND (1) LEAD FROM MASTER GROUND BAR TO RBS PLINTH, #2 INSULATED COPPER (TYP.); ROUTE THROUGH NEW PENETRATIONS AND LIQUID-TIGHT CONDUIT FITTINGS THROUGH BACK OF MOUNTING PLINTH
- (K) (1) GROUND LEAD FROM BATTERY CABINET STEEL TO MASTER GROUND BAR, #2 INSULATED COPPER; ROUTE IN LIQUID TIGHT FLEXIBLE NON-METALLIC CONDUIT BETWEEN BATTERY CABINET AND LTE CABINET AND OUT NEW PENETRATION THROUGH SIDE OF LTE CABINET PLINTH
- (L) MASTER GROUND BAR (MGB) MOUNTED HORIZONTALLY TO CONCRETE PAD ON INSULATORS; (2) GROUNDS FROM MGB TO EQUIPMENT GROUND RING; SEE E-501 FOR DETAIL
- (M) COLLECTOR GROUND BAR (CGB) MOUNTED TO UNISTRUT RACK ON INSULATORS; (2) CGB GROUNDS FROM CGB TO EQUIPMENT GROUND RING; SEE E-501 FOR JUNCTION BOX AND RAYCAP SPD GROUNDING DETAILS
- (N) GROUND LEAD FROM ICE BRIDGE POST TO BURIED GROUND RING (TYP.)
- (O) GROUND GPS UNIT TO ICE CANOPY POST
- (P) EXOTHERMIC CONNECTION AT FENCE CORNER (TYP.); SEE SHEET E-502 FOR DETAIL
- (Q) GROUND ROD (TYP.)
- (R) GROUND UTILITY RACK CABINETS AND POSTS (TYP.), #2 SOLID TINNED COPPER
- (S) GROUND ELECTRIC METER TO (2) INDEPENDENT GROUND RODS, SPACED 10' O.C. WITH #2 SOLID TINNED COPPER
- (T) GATE GROUND LEAD GROUND LEADS TO GATE POST; SEE E-502 FOR DETAIL
- (U) MAINTAIN 2' SEPARATION BETWEEN GROUND RINGS AND FOUNDATIONS (TYP.)
- (V) TOWER FOUNDATION GROUND, #2 SOLID TINNED COPPER; SEE E-502 FOR DETAIL


**NOTES: (THIS SHEET)**

1. ALL EXTERIOR GROUNDING SHALL MEET OR EXCEED THE CURRENT NEC AND NFPA 780 CODE.
2. THE GROUNDING SYSTEM & CONDUCTORS SHALL BE INSPECTED PRIOR TO BACK FILLING WITH RESULTS APPROVED BY THE CARRIER. THE SYSTEM SHALL PROVIDE 5 OHM OR LESS RESISTANCE UPON COMPLETION.
3. HIGH COMPRESSION TYPE CONNECTORS SHALL BE USED FOR SECONDARY GROUNDING CONDUCTOR TO MAIN GROUNDING CONDUCTOR CONNECTIONS. AFTER INSPECTION CONNECTIONS SHALL BE WRAPPED WITH ELECTRICAL VINYL TAPE.
4. ALL MECHANICAL CONNECTIONS SHALL INCLUDE ANTI-OXIDANT COMPOUND BETWEEN LUG & CONNECTION POINT. SCRAPE PAINT FROM OBJECT BEING CONNECTED TO. TOUCH UP PAINT ANY EXPOSED METAL AFTER CONNECTION IS INSTALLED.
5. GROUNDING CONDUCTORS SHALL MAINTAIN, TO THE EXTENT PRACTICAL, A HORIZONTAL OR DOWNWARD DIRECTION FREE FROM UP AND DOWN POCKETS. THE RADIUS OF BEND SHALL NOT BE LESS THAN 8" AND THE ANGLE OF ANY BEND SHALL NOT BE SHARPER (LESS) THAN 90°. THE MAXIMUM HORIZONTAL AND VERTICAL SPACING BETWEEN GROUNDING CONDUCTOR (NOT IN CONDUIT) SUPPORTS SHALL NOT EXCEED 4 FT.
7. IF A GROUNDING CONDUCTOR IS INSTALLED IN FERROUS METAL CONDUITS, THE CONDUCTOR SHALL BE BONDED TO THE TOP AND BOTTOM OF THE CONDUIT.
8. ALL NON-INSULATED GROUND LEADS EXTENDING ABOVE GROUND LEVEL SHALL BE ENCASED IN 3/4" PVC & SEALED WITH SILICONE ON BOTH ENDS.
9. ALL CADWELD CONNECTIONS SHALL BE COATED WITH ZINGO TO PREVENT CORROSION.
10. GROUND RINGS & TOP OF RODS SHALL BE INSTALLED AT 30" BELOW FINISHED GRADE.
11. INSTALL 18" x 18" COPPER PLATES IN LIEU OF GROUND RODS WHEN INSTALLING OVER TOWER FOUNDATION OR WHERE DRIVING GROUND RODS IS NOT FEASIBLE. REFER TO GEOTECH REPORT FOR SOIL CONDITIONS.

**GROUNDING LEGEND: (THIS SHEET)**

-  EXOTHERMIC OR UL RATED IRREVERSIBLE CONNECTION
-  MECHANICAL CONNECTION
-  GROUND LEAD
-  GROUND INSPECTION WELL
-  COPPER CLAD GROUND ROD, (3/4" DIA. x 10' LONG) SPACE @ 10' O.C. MAX.
-  COPPER PLATE, (18" x 18" x .032" THK) SPACE @ 10' O.C. MAX.



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CLIENT:  
  
**U.S. Cellular**  
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 NORTH CAROLINA  
 PROFESSIONAL  
 SEAL  
 046428  
 ENGINEER  
 ARLEN J. OSTRENG  
 1/24/2019

**GROUNDING PLAN**  
 SE ERWIN (556891)  
 ERWIN, NORTH CAROLINA

SHEET TITLE:

SUBMITTAL:		
INT.	DATE:	DESCRIPTION:
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

CHECKED BY:	ABB
PLOT DATE:	1/24/2019
PROJECT NUMBER:	18683
SET TYPE:	FINAL CDs

SHEET NUMBER: **E-101**

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**KEYNOTES: (THIS SHEET)**

- (A) WEATHERPROOF CABLE GROUND KIT
- (B) GROUND KIT #6 STRANDED INSULATED JUMPER CONNECTION TO GROUND BAR WITH 2 HOLE LONG BARREL LUG
- (C) ANTENNA GROUND BAR FOR CONNECTION OF MULTIPLE GROUND KITS AT ONE LEVEL MOUNT TO TOWER STEEL
- (D) FOR SINGLE ANTENNA AT ONE LEVEL OMIT ANTENNA GROUND BAR CONNECT GROUND KIT JUMPER DIRECTLY TO TOWER STEEL WITH UL LISTED BONDING CLAMP
- (E) UL LISTED BONDING CLAMP CABLE TO FLAT METAL BONDING CLAMP
- (F) TOWER GROUND BAR (TGB) INSTALLED ON TOWER (SEE DETAIL TO RIGHT); FOR LATTICE TOWERS, MOUNT TGB DIAGONALLY AT 12" ABOVE ICE BRIDGE FOR EASIER HOOK-UP OF GROUNDING KIT LEADS
- (G) TGB GROUNDS #2 SOLID TINNED COPPER ENCASED IN LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT TO 24" BELOW GRADE FROM TGB TO TOWER GROUND RING (2) REQ'D
- (H) TOWER STEEL GROUNDS (IF APPLICABLE) #2 SOLID TINNED COPPER ENCASED IN LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT TO 24" BELOW GRADE FROM TOWER STEEL TO TOWER GROUND RING (3) REQ'D (USE GROUNDING TABS WHEN AVAILABLE)
- (I) COLLECTOR GROUND BAR (CGB) MOUNTED TO UNISTRUT RACK ON INSULATORS; (2) CGB #2 SOLID TINNED COPPER GROUNDS ENCASED IN LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT TO 24" BELOW GRADE FROM CGB TO EQUIPMENT GROUND RING
- (J) MASTER GROUND BAR (MGB) MOUNTED HORIZONTALLY TO CONCRETE PAD ON INSULATORS; (2) #2 SOLID TINNED COPPER GROUNDS ENCASED IN LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT TO 24" BELOW GRADE FROM MGB TO EQUIPMENT GROUND RING
- (K) RAYCAP SPD AND JUNCTION BOX TO BE BONDED TO CGB WITH #6 STRANDED GREEN INSULATED
- (L) SECURE GPS TO ICE CANOPY POST WITH UL LISTED PIPE CLAMP; BOND WITH #2 SOLID TINNED COPPER LEAD
- (M) ICE BRIDGE POST GROUND #2 SOLID TINNED COPPER ENCASED IN LIQUID-TIGHT FLEXIBLE NON-METALLIC CONDUIT TO 24" BELOW GRADE
- (N) ICE BRIDGE SECTION GROUNDS #2 STRANDED INSULATED WITH 2 HOLE LONG BARREL ON EACH END (TYP.)
- (O) ICE BRIDGE SECTION TO POST GROUNDS #2 STRANDED INSULATED WITH 2 HOLE LONG BARREL ON SECTION; ORIENT LEAD WITH HIGH SIDE TOWARDS TOWER
- (P) TOWER FOUNDATION GROUND (IF APPLICABLE); SEE E-502 FOR DETAIL

**GROUNDING LEGEND: (THIS SHEET)**

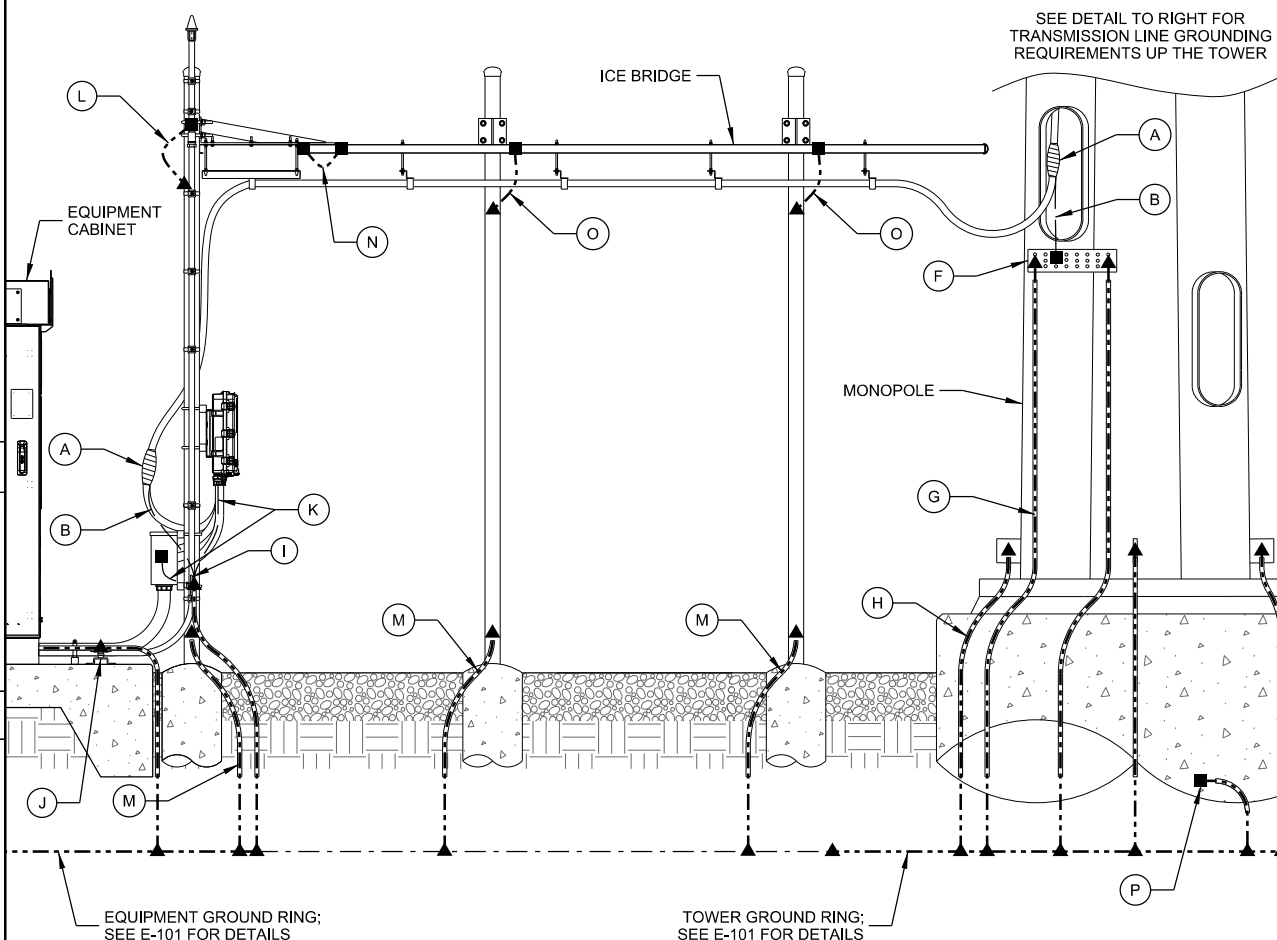
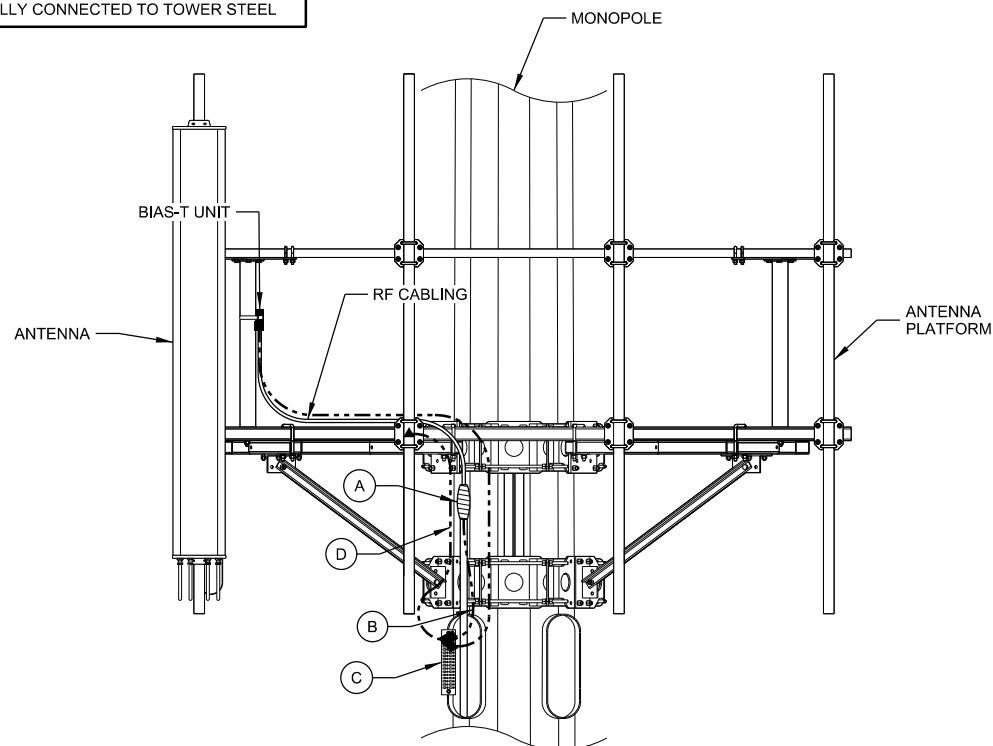
- ▲ EXOTHERMIC OR UL RATED IRREVERSIBLE CONNECTION
- MECHANICAL CONNECTION
- GROUND LEAD

**NOTES: (THIS SHEET)**

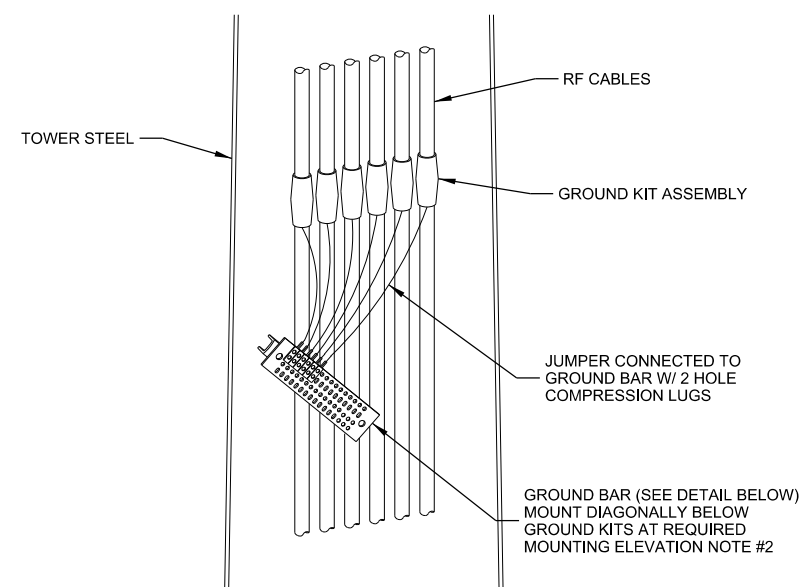
1. ALL BELOW-GRADE CONNECTIONS ARE TO BE EXOTHERMICALLY WELDED A MINIMUM OF 30" BELOW GRADE.
2. ALL LEADS EXTENDING ABOVE GRADE TO BE ENCASED IN 3/4" CONDUIT AND EXTEND A MINIMUM OF 6" ABOVE FINISHED GRADE AND 24" BELOW FINISHED GRADE.
3. COAT ALL EXOTHERMICALLY WELDED CONNECTIONS WITH ZINGA.
4. APPLY ANTI OXIDANT COMPOUND TO ALL MECHANICAL CONNECTIONS.
5. UPPER AND LOWER TOWER GROUND BARS TO BE BONDED DIRECTLY TO TOWER STEEL WITH #2 CONDUCTORS.
6. AIR TERMINAL TO EXTEND 2' ABOVE HIGHEST ANTENNA MIN. ON MAST PIPE MECHANICALLY FASTEN AIR TERMINAL TO MAST PIPE MAST PIPE TO BE MECHANICALLY CONNECTED TO TOWER STEEL

NOTE:

AIR TERMINAL TO EXTEND 2' ABOVE HIGHEST ANTENNA MIN. ON MAST PIPE MECHANICALLY FASTEN AIR TERMINAL TO MAST PIPE MAST PIPE TO BE MECHANICALLY CONNECTED TO TOWER STEEL



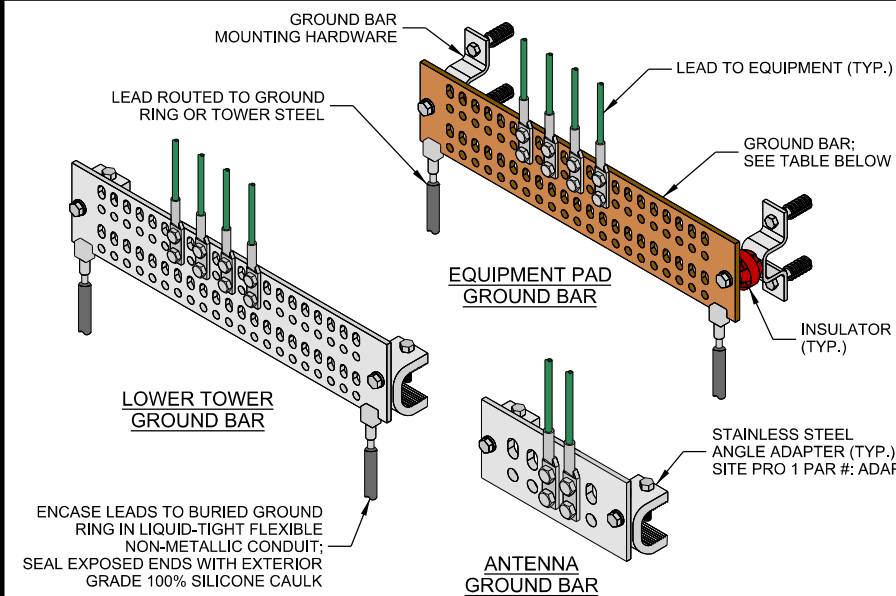
**A GROUNDING DETAILS**



NOTES:

1. INSTALL GROUND KITS ON EACH TRANSMISSION LINE IN THE FOLLOWING LOCATIONS:
  - A. ANTENNA / DISH LEVEL
  - B. AT 75 FOOT MAX INTERVALS FROM ANTENNA LEVEL TO BASE OF TOWER
  - C. TOWER BASE
  - D. COLLECTOR GROUND BAR / GROUND LEVEL
2. INSTALL ANTENNA GROUND BARS AT EACH ANTENNA TIER LEVEL FOR CONNECTION OF MULTIPLE ANTENNAS AT EACH LEVEL. WHEN ONLY ONE ANTENNA IS INSTALLED AT A LEVEL.

**B CABLING GROUND KITS**



GROUND BAR SCHEDULE:

EQUIPMENT PAD GROUND BAR	1/4" x 4" x 18" GROUND BAR WITH INSULATORS AND BRACKETS; SIZED FOR 42 SETS OF 2-HOLE LUGS SITE PRO PART #: MG418-U-K OR EQUIVALENT
LOWER TOWER GROUND BAR	1/4" x 4" x 18" GROUND BAR; SIZED FOR 42 SETS OF 2-HOLE LUGS SITE PRO PART #: TINMG418-U OR EQUIVALENT
ANTENNA GROUND BAR	1/4" x 2" x 6" GROUND BAR SIZED FOR 5 SETS OF 2-HOLE LUGS SITE PRO PART #: TINMG206U OR EQUIVALENT

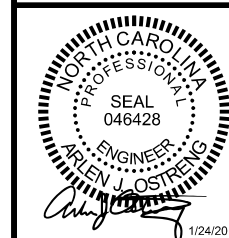
**C GROUND BAR**

CONSULTANT:

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Consulting Engineers, Inc.  
624 WATER STREET  
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LICENSE NO.: C-4515

CLIENT:

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PHONE: 402.515.4698



**GROUNDING DETAILS**  
SE ERWIN (56891)  
ERWIN, NORTH CAROLINA

SHEET TITLE:

SUBMITTAL:

INT.	DATE:	DESCRIPTION:
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

CHECKED BY:

ABB

PLOT DATE:

1/24/2019

PROJECT NUMBER:

18683

SET TYPE:

FINAL CDs

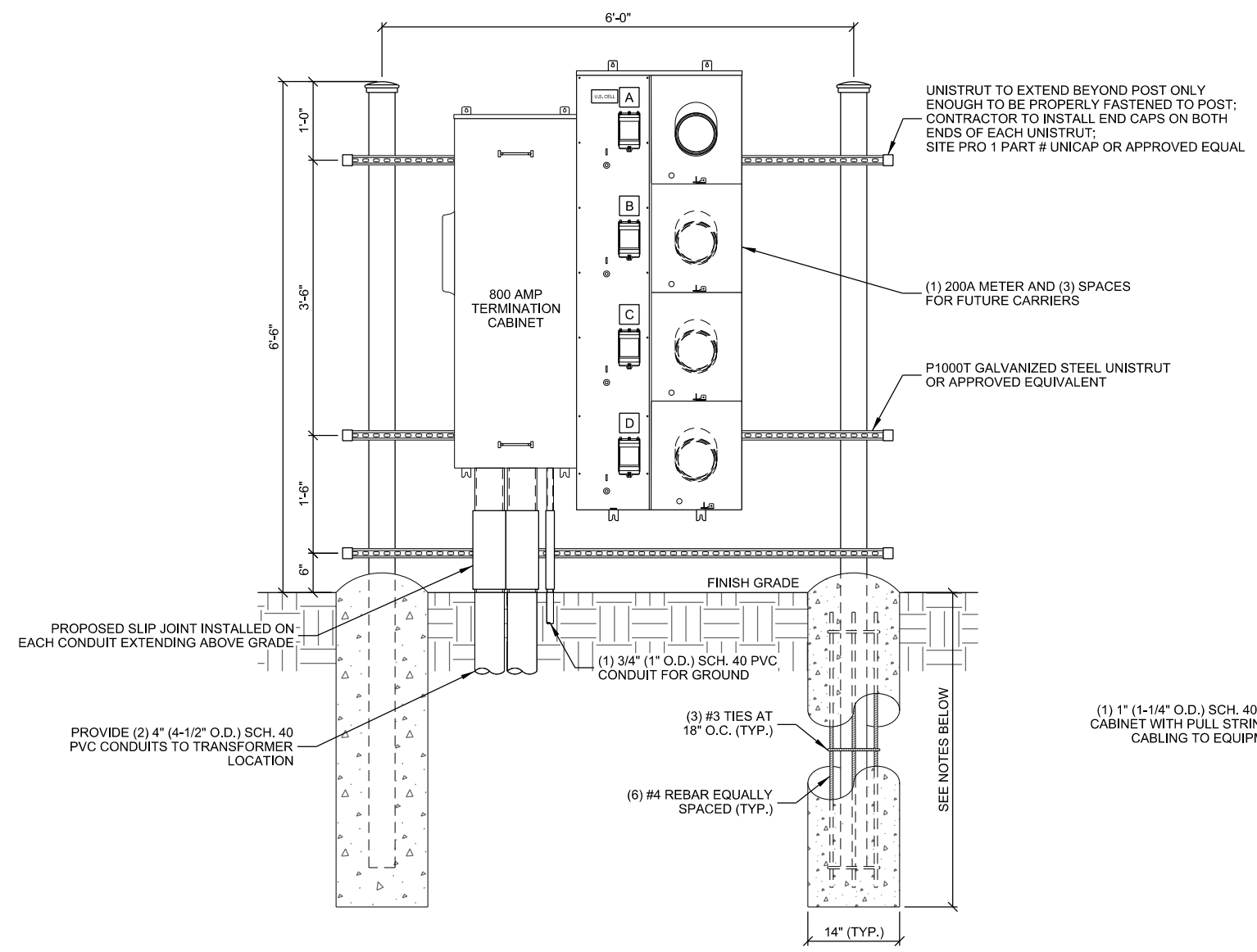
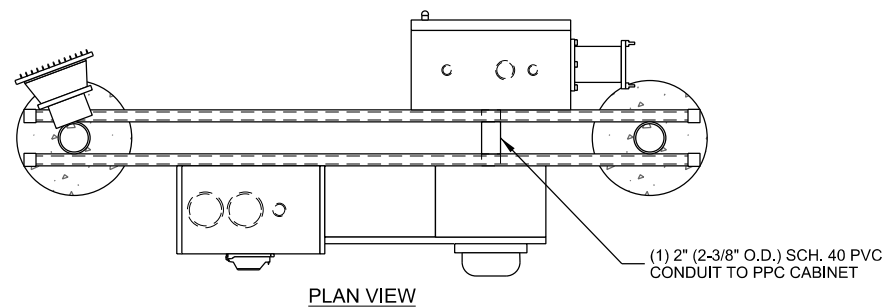
SHEET NUMBER:

**E-501**

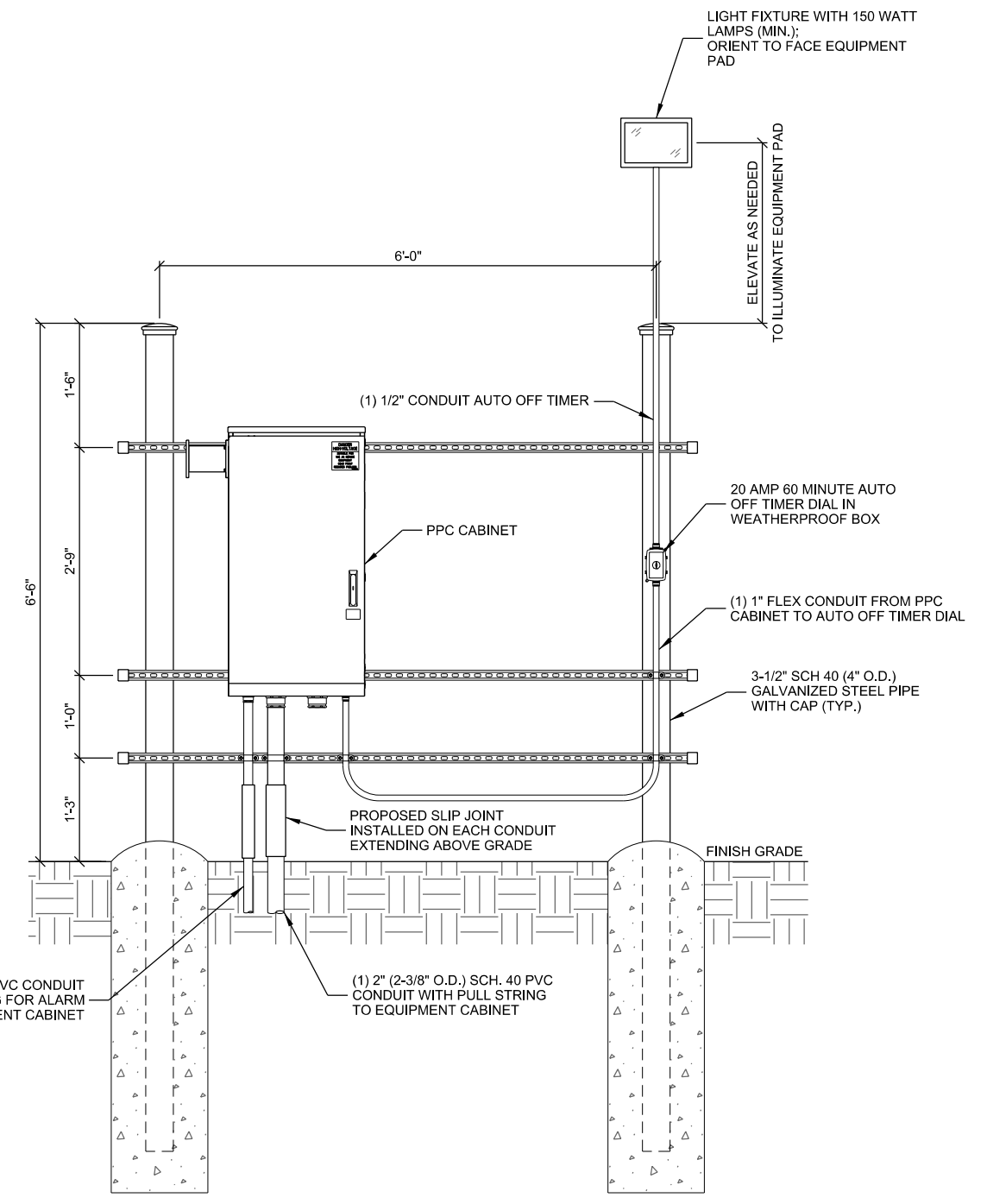








FRONT - ELECTRICAL SIDE



REAR - PPC SIDE

- NOTE:
1. CONTRACTOR TO INSTALL PVC CONDUITS FOR SERVICE LATERAL CONNECTION TO UTILITY.
  2. CONTRACTOR TO EXTEND CONDUITS UNDERGROUND BEYOND FENCELINE TO TRANSFORMER, CAP ENDS (NO DUCT TAPE ALLOWED) AND STAKE. EQUIP WITH PULL CORD, VERIFY REQUIREMENTS W/UTILITY PROVIDER.
  3. CONTRACTOR TO MARK CARRIER METER SLOT @ BREAKER OR SOCKET EXTERIOR.
  4. SOD EZ METER PAK, 120/240 VAC 1 PHASE, 3 WIRE OR EQUIV, VERIFY REQUIREMENTS WITH UTILITY PROVIDER.
  5. FINAL LAYOUT AND DESIGN DETERMINED BY CONTRACTOR/UTILITY, VERIFY FINAL DESIGN WITH U.S. CELLULAR.
  6. CONCRETE FOR PIER TO BE A MINIMUM OF 4,000 PSI AT 28 DAYS.
  7. MAINTAIN 3" MINIMUM REBAR COVER IN ALL DIRECTIONS.
  8. PIER FOUNDATION DEPTH TO BE A MINIMUM OF 48"; DEPTH TO EXCEED LOCAL FROST DEPTH.

**A MULTI-METER UTILITY RACK**  
 SCALE: 11" x 17" - 1/2" = 1'-0"  
 22" x 34" - 1" = 1'-0"

CONSULTANT:  
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NORTH CAROLINA  
 PROFESSIONAL  
 SEAL  
 046428  
 ENGINEER  
 ARLEN J. OSTRENG  
 1/24/2019

**UTILITY RACK DETAILS**  
 SE ERWIN (556891)  
 ERWIN, NORTH CAROLINA

SHEET TITLE:

SUBMITTAL:

INT.	DATE:	DESCRIPTION:
TAS	12/18/2018	REV. A
TAS	01/24/2019	REV. 0

CHECKED BY:	ABB
PLOT DATE:	1/24/2019
PROJECT NUMBER:	18683
SET TYPE:	FINAL CDs
SHEET NUMBER:	<b>E-504</b>

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