FAIRGROUNDS
FA# 10091916
CROWN CASTLE BU# 846219

682 SOUTHWEST COMMERCE DRIVE
LAKE CITY, FL 32024

TOWER UPGRADE - 5G NR 1SR / 4TX4RX / 5G NR / BBU

PACE JOB# MRTFL026630 / MRTFL025754 / MRTFL025758 / MRTFL026836 / MRTFL025807
MRTFL026767 / MRTFL026832

REV	DATE	DESCRIPTION
A	12/07/22	PRELIMINARY CDs REV "A"
0	01/12/23	FINAL CDs ISSUED
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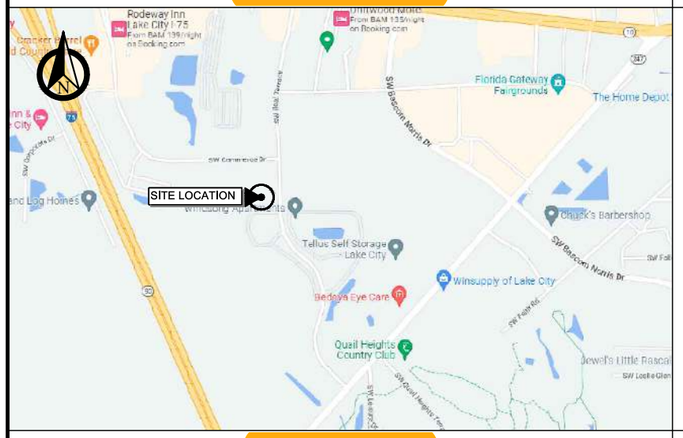
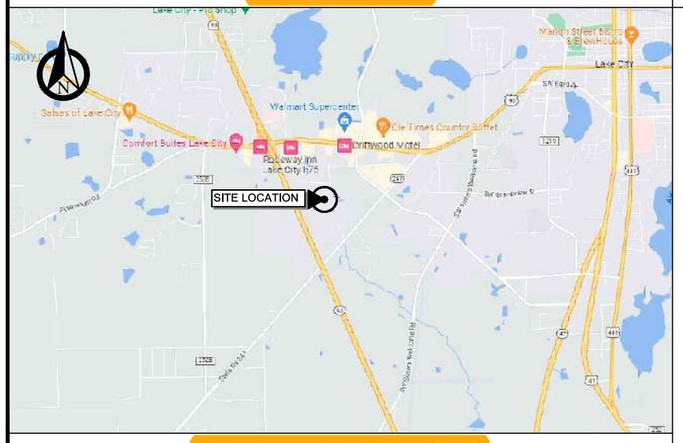
DRAWN BY:	CHECKED BY:
DP	MM

LOCATION MAP



VICINITY MAP



DRIVING DIRECTIONS

DEPART: AT&T OFFICE: 12150 RESEARCH PARKWAY, ORLANDO, FL 32826
1. Take Technology Pkwy, Science Dr, Ingenuity Dr and Challenger Pkwy to FL-408 W
2. Continue onto FL-408 W
3. Keep left at the fork to stay on FL-408 W
4. Use the right 2 lanes to merge onto Florida's Turnpike toward Ocala
5. Merge onto I-75 N
6. Take exit 427 to merge onto US-90 E/W US Hwy 90
7. Merge onto US-90 E/W US Hwy 90
8. Turn right onto SW Commerce Dr
9. Destination will be on the right in about 0.6mi

Arrive at 682 SOUTHWEST COMMERCE DRIVE LAKE CITY, FL 32024

APPROVALS

PROPERTY OWNER	DATE
RF ENGINEER	DATE
CONSTRUCTION	DATE
SITE ACQUISITION	DATE
ZONING	DATE
NETWORK	DATE
OPERATIONS	DATE
CONTRACTOR	DATE

PROJECT SUMMARY

SITE NAME:	FAIRGROUNDS
FA SITE NUMBER:	10091916
PROJECT INITIATIVE:	5G NR 1SR / 4TX4RX / 5G NR / BBU
FOLIO/PARCEL:	10091916
COUNTY:	COLUMBIA
JURISDICTION:	COLUMBIA COUNTY
SITE COORDINATES:	30° 10' 26.4"N (30.174008°) 82° 40' 49.9"W (-82.680519°)
STRUCTURE TYPE:	GUYED TOWER
TOWER HEIGHT:	184'-10" AGL
ANTENNA C.L. HEIGHT:	183'-0" AGL

PROJECT REFERENCES

1. THESE PLANS WERE COMPLETED PER 5G NR 1SR RFDS ID#:5042284, V2.00 UPDATED 11/07/22. CONTRACTOR SHALL REQUEST CURRENT RFDS & WORKBOOK FROM CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION.
2. THESE PLANS WERE COMPLETED PER TOWER ENGINEERING PROFESSIONALS MOUNT ANALYSIS, COMPLETED ON 11/30/22.

DESIGN CRITERIA

- FLORIDA BUILDING CODE (7TH EDITION) 2020
  ANSI/EIA/TIA-222-H (ALLOWED PER EXEMPTION #5 OF 1609.1.1)
  ASCE 7-16
  VULT = 118 MPH (ULTIMATE 3 SECOND GUST)
  VASD = 92 MPH (NOMINAL 3 SECOND GUST)
  RISK CATEGORY = II
  EXPOSURE = C
  IMPORTANCE FACTOR= 1.0
- NATIONAL ELECTRICAL CODE, 2017 EDITION (NFPA 70 2017)
- FLORIDA FIRE PREVENTION CODE (7TH EDITION) 2020
- CONTRACTOR TO CONFIRM THAT THE SITE IS COMPLIANT WITH RF WARNING SIGNAGE & EMERGENCY SIGNAGE AS REQUIRED BY THE FEDERAL GUIDELINES CONTAINED WITH OET 65 BULLETIN & AS PER AT&T GUIDELINES

CONSTRUCTION NOTES

1. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
2. CONTRACTOR SHALL NOTIFY OWNER FOR ACCESS TO SITE.
3. THIS PROJECT CONSISTS OF THE INSTALLATION OF:
   - (6) NEW ERICSSON AIR6419 B77G PANEL ANTENNAS
   - (6) NEW ERICSSON AIR6449 B77D PANEL ANTENNAS
   - (6) NEW ANDREW 2NN2HH-33B-R4 PANEL ANTENNAS
   - (12) NEW COMMSCOPE CBC1726-DP-2X DIPLEXERS
   - (6) NEW ERICSSON 4449 B5/B12 RRUS
   - (4) NEW DC9'S
   - (4) NEW DC POWER TRUNKS

   AND ALL ASSOCIATED WORK.

CONTACTS

APPLICANT:
AT&T MOBILITY
12150 RESEARCH PARKWAY
ORLANDO, FL 32826

TOWER OWNER:
CROWN CASTLE
4511 HIMES AVENUE SUITE 210
TAMPA, FL 33614

ENGINEER:
GEN3 ENGINEERING, INC.
27139 SEA BREEZE WAY
WESLEY CHAPEL, FL 33544
CONTACT: MARC MAIER, P.E.
(352) 634-1643

INDEX OF DRAWINGS

SHT. NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	
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ARCHITECTURAL / CIVIL PLANS		
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STRUCTURAL PLANS		
S-1	TOWER ELEVATION AND ANTENNA ORIENTATION	
S-2	MISCELLANEOUS DETAILS	
S-3	MISCELLANEOUS DETAILS	
ANTENNA SCHEDULE		
AN-1	ANTENNA SCHEDULE	

Columbia County Building Department
Plans Reviewed for Code Compliance
State of Florida

PROJECT INFORMATION

1. THIS IS AN UNMANNED FACILITY AND WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNALS FOR THE PURPOSE OF PROVIDING PUBLIC CELLULAR SERVICE.
2. AT&T CERTIFIES THAT THIS EQUIPMENT FACILITY WILL BE SERVICED ONLY BY AT&T EMPLOYEES AND SUBCONTRACTORS AND THE WORK ASSOCIATED WITH ANY EQUIPMENT CANNOT BE PERFORMED BY HANDICAPPED PERSONS. THIS FACILITY WILL BE FREQUENTED ONLY BY SERVICE PERSONNEL FOR REPAIR PURPOSES ONLY.
3. NO POTABLE WATER SUPPLY IS TO BE PROVIDED AT THIS LOCATION.
4. NO WASTEWATER WILL BE GENERATED AT THIS LOCATION.
5. NO SOLID WASTE WILL BE GENERATED AT THIS LOCATION.

12150 RESEARCH PARKWAY
ORLANDO, FL 32826

1997 ANNAPOLIS EXCHANGE PKWY.
SUITE 200
ANNAPOLIS, MD 21401

PREPARED BY:
GEN3 ENGINEERING
27139 SEA BREEZE WAY
WESLEY CHAPEL, FLORIDA 33544
(813)917-2671
COA # 35409

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Marc P Maier
Digitally signed by Marc P Maier
Date: 2023.01.12 12:53:26 -05'00'

MARC P. MAIER LICENSE No 72513 STATE OF FLORIDA PROFESSIONAL ENGINEER

JANUARY 12, 2023
MARC P. MAIER, PE
FL PROFESSIONAL ENGINEER LIC. # 72513

FAIRGROUNDS
FA#10091916

682 SOUTHWEST COMMERCE DRIVE
LAKE CITY, FL 32024

SHEET DESCRIPTION
TITLE SHEET

SHEET NUMBER
T-1

GENERAL NOTES:

1. ALL REFERENCES TO OWNER HEREIN SHALL BE CONSTRUED TO MEAN **AT&T** OR IT'S DESIGNATED REPRESENTATIVE.
2. ALL WORK PRESENTED ON THESE DRAWINGS MUST BE COMPLETED BY THE CONTRACTOR UNLESS NOTED OTHERWISE. THE CONTRACTOR MUST HAVE CONSIDERABLE EXPERIENCE IN PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY, THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED AND THAT HE IS PROPERLY LICENSED AND PROPERLY REGISTERED TO DO THIS WORK IN THE STATE AND/OR COUNTY IN WHICH IT IS TO BE PERFORMED.
3. UNLESS SHOWN OR NOTED OTHERWISE ON THE CONTRACT DRAWINGS, OR IN THE SPECIFICATIONS, THE FOLLOWING NOTES SHALL APPLY TO THE MATERIALS LISTED HEREIN, AND TO THE PROCEDURES TO BE USED ON THIS PROJECT.
4. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.
5. ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS SHOWN ON THE DRAWINGS SHALL BE FIELD VERIFIED BY THE CONTRACTOR AND THE TESTING AGENCY PRIOR TO BEGINNING ANY MATERIALS ORDERING, FABRICATION OR CONSTRUCTION WORK ON THIS PROJECT. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE OWNER AND THE OWNER'S ENGINEER. THE DISCREPANCIES MUST BE RESOLVED BEFORE THE CONTRACTOR IS TO PROCEED WITH THE WORK. THE CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTION OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES.
6. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF THE MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR INSURING THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK.
8. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE LATEST EDITION OF THE LOCAL BUILDING CODE.
9. ALL PROPOSED CELLULAR EQUIPMENT AND FIXTURES SHALL BE FURNISHED BY OWNER FOR INSTALLATION BY THE CONTRACTOR, UNLESS SPECIFICALLY NOTED OTHERWISE HEREIN.
10. ACCESS TO THE PROPOSED WORK SITE MAY BE RESTRICTED. THE CONTRACTOR SHALL COORDINATE INTENDED CONSTRUCTION ACTIVITY, INCLUDING WORK SCHEDULE AND MATERIALS ACCESS, WITH THE RESIDENT LEASING AGENT FOR APPROVAL.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE A.I.S.C. SPECIFICATIONS FOR STRUCTURAL STEEL BUILDINGS– ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN INCLUDING THE COMMENTARY AND THE A.I.S.C. CODE OF STANDARD PRACTICE.
2. STRUCTURAL STEEL PLATES AND SHAPES SHALL CONFORM TO ASTM A36. ALL STRUCTURAL STEEL PIPES SHALL CONFORM TO ASTM A53 GRADE B. ALL STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM A500 GRADE B. ALL STRUCTURAL STEEL COMPONENTS AND FABRICATED ASSEMBLIES SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
3. WELDING SHALL BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY (AWS) D.1.1/D1.1M:2010. STRUCTURAL WELDING CODE–STEEL WELD ELECTRODES SHALL BE E70XX.
4. ALL COAXIAL CABLE CONNECTORS AND TRANSMITTER EQUIPMENT SHALL BE AS SPECIFIED BY THE OWNER AND IS NOT INCLUDED IN THESE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL FURNISH ALL CONNECTION HARDWARE REQUIRED TO SECURE THE CABLES. CONNECTION HARDWARE SHALL BE GRADE 304 STAINLESS STEEL.
5. ALL REINFORCING STEEL SHALL CONFORM TO ASTM 615 GRADE 60, DEFORMED BILLET STEEL BARS. WELDED WIRE FABRIC REINFORCING SHALL CONFORM TO ASTM A185.
6. THE FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE LATEST A.I.S.C. SPECIFICATIONS.
7. ALL CONNECTIONS NOT FULLY DETAILED ON THESE PLANS SHALL BE DETAILED BY THE STEEL FABRICATOR IN ACCORDANCE WITH A.I.S.C. SPECIFICATIONS.
8. HOT–DIP GALVANIZE ITEMS SPECIFIED TO BE ZINC–COATED, AFTER FABRICATION WHERE PRACTICAL. GALVANIZING: ASTM A 123, ASTM, A 153/A 153M OR ASTM A 653/A 653M, G90, AS APPLICABLE.
9. REPAIR DAMAGED SURFACES WITH GALVANIZING REPAIR METHOD AND PAINT CONFORMING TO ASTM A 780 OR BY APPLICATION OF STICK OR THICK PASTE MATERIAL SPECIFICALLY DESIGNED FOR REPAIR OF GALVANIZING. CLEAN AREAS TO BE REPAIRED, AND REMOVE SLAG FROM WELDS. HEAT SURFACES TO WHICH STICK OR PASTE MATERIAL IS APPLIED WITH A TORCH TO A TEMPERATURE SUFFICIENT TO MELT THE METALLICS. IN STICK OR PASTE, SPREAD MOLTEN MATERIAL UNIFORMLY OVER SURFACES TO BE COATED AND WIPE OFF EXCESS MATERIAL.
10. CONTRACTOR SHALL FOLLOW THE MANUFACTURER'S INSTRUCTIONS/SPECIFICATIONS IF NO INFORMATION IS CONTAINED IN THESE PLANS OR IF THE MANUFACTURER'S SPECIFICATIONS ARE STRICTER.

PERMITS:

1. CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS FOR THIS PROJECT FROM ALL APPLICABLE GOVERNMENTAL AGENCIES.
2. ANY PERMITS WHICH MUST BE OBTAINED SHALL BE THE CONTRACTOR'S RESPONSIBILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ABIDING BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
3. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES AND THE ACI 318–14, "BUILDING REQUIREMENTS FOR STRUCTURAL CONCRETE".
4. THE CONTRACTOR SHALL NOTIFY THE APPLICABLE JURISDICTIONAL (STATE, COUNTY OR CITY) ENGINEER 24 HOURS PRIOR TO THE BEGINNING OF CONSTRUCTION.
5. ALL DIMENSIONS SHALL BE VERIFIED WITH THE PLANS (LATEST REVISION) PRIOR TO COMMENCING CONSTRUCTION. NOTIFY THE OWNER IMMEDIATELY IF DISCREPANCIES ARE DISCOVERED. THE CONTRACTOR SHALL HAVE A SET OF APPROVED PLANS AVAILABLE AT THE SITE AT ALL TIMES WHEN WORK IS BEING PERFORMED. A DESIGNATED RESPONSIBLE EMPLOYEE SHALL BE AVAILABLE FOR CONTACT BY GOVERNING AGENCY INSPECTORS.

MISCELLANEOUS:

1. ALL THREADED STRUCTURAL FASTENERS FOR ANTENNA SUPPORT ASSEMBLES SHALL CONFORM TO ASTM A307 OR ASTM 36. ALL STRUCTURAL FASTENERS FOR STRUCTURAL STEEL FRAMING SHALL CONFORM TO ASTM A325. FASTENERS SHALL BE 5/8" MIN. DIA. BEARING TYPE CONNECTIONS WITH THREADS EXCLUDED FROM THE PLANE. ALL EXPOSED FASTENERS, NUTS, AND WASHERS SHALL BE GALVANIZED UNLESS OTHERWISE NOTED. ALL ANCHORS INTO CONCRETE SHALL BE STAINLESS STEEL.
2. THE CONTRACTOR SHALL FURNISH ALL CONNECTION HARDWARE REQUIRED TO SECURE THE CABLES. CONNECTION HARDWARE SHALL BE STAINLESS STEEL.
3. NORTH ARROW SHOWN ON PLANS REFERS TO TRUE NORTH. CONTRACTOR SHALL VERIFY NORTH AND NOTIFY CONSULTANT OF ANY DISCREPANCY BEFORE STARTING CONSTRUCTION.
4. PROVIDE LOCK WASHERS FOR ALL MECHANICAL CONNECTIONS FOR GROUND CONDUCTORS. USE GRADE 304 STAINLESS STEEL HARDWARE THROUGHOUT.
5. THOROUGHLY REMOVE ALL PAINT AND CLEAN ALL DIRT FROM SURFACES REQUIRING GROUND CONNECTIONS.
6. MAKE ALL GROUND CONNECTIONS AS SHORT AND DIRECT AS POSSIBLE. AVOID SHARP BENDS. ALL BENDS TO BE A MIN. OF 8" RADIUS.
7. FOR GROUNDING TO BUILDING FRAME AND HATCH PLATE GROUND BARS, USE A TWO–BOLT HOLE NEPA DRILLED CONNECTOR SUCH AS T&B 32007 OR APPROVED EQUAL.
8. FOR ALL EXTERNAL GROUND CONNECTIONS, CLAMPS AND CADWELDS, APPLY A LIBERAL PROTECTIVE COATING OR AN ANTI–OXIDE COMPOUND SUCH AS 'NO–OXIDE A' BY DEARBORN CHEMICAL COMPANY.
9. REPAIR ALL METAL SURFACES THAT HAVE BEEN CUT OR DAMAGED BY REMOVING ANY EXISTING RUST AND APPLYING COLD GALVANIZATION.
10. ANTENNA CABLE LENGTHS HAVE BEEN DETERMINED BASED ON THESE PLANS. CABLE LENGTHS LISTED ARE APPROXIMATED AND ARE NOT INTENDED TO BE USED FOR FABRICATION. DUE TO FIELD CONDITIONS, ACTUAL CABLE LENGTHS VARY. CONTRACTOR MUST FIELD VERIFY ANTENNA CABLE LENGTHS PRIOR TO ORDER.

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WESLEY CHAPEL, FLORIDA 33544
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COA # 35409

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MARC P. MAIER
LICENSE
No 72513
STATE OF FLORIDA
PROFESSIONAL ENGINEER

JANUARY 12, 2023

MARC P. MAIER, PE
FL PROFESSIONAL ENGINEER LIC. # 72513

FAIRGROUNDS
FA#10091916

682 SOUTHWEST COMMERCE DRIVE
LAKE CITY, FL 32024

SHEET DESCRIPTION

GENERAL NOTES

SHEET NUMBER

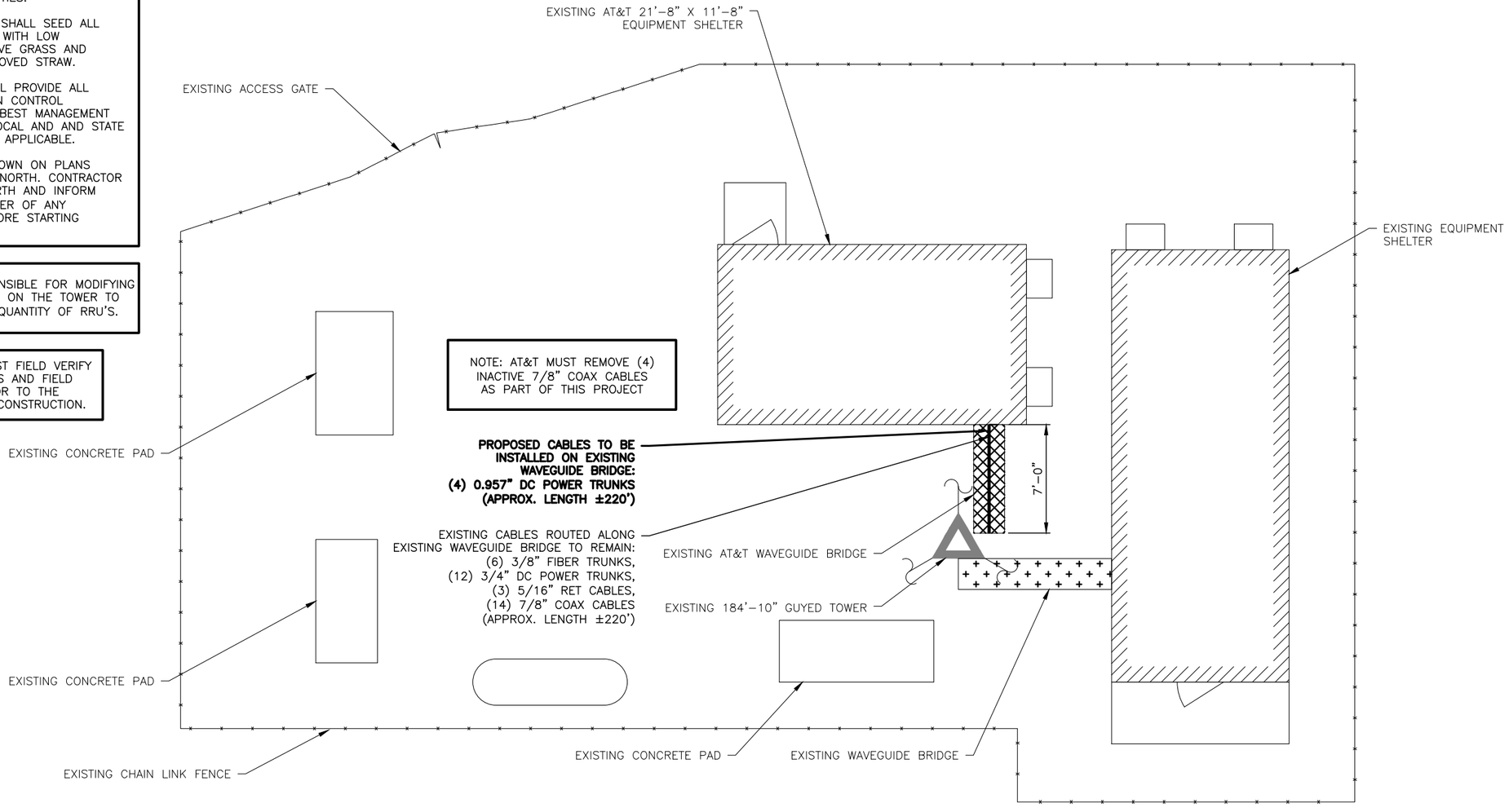
GN-1

NOTES:

1. CONTRACTOR TO FILL ANY EXISTING GRAVEL AREAS THAT ARE DISTURBED DURING THE COURSE OF CONSTRUCTION, GRAVEL TO MATCH EXISTING.
2. THE CONTRACTOR TO ENSURE THAT NO DAMAGE OR DEBRIS OCCURS ON THE ADJACENT PROPERTIES.
3. THE CONTRACTOR SHALL SEED ALL DISTURBED AREAS WITH LOW MAINTENANCE NATIVE GRASS AND COVER WITH APPROVED STRAW.
4. CONTRACTOR SHALL PROVIDE ALL REQUIRED EROSION CONTROL TECHNIQUES AND BEST MANAGEMENT PRACTICES PER LOCAL AND AND STATE REQUIREMENTS AS APPLICABLE.
5. NORTH ARROW SHOWN ON PLANS REFERS TO TRUE NORTH. CONTRACTOR SHALL VERIFY NORTH AND INFORM ARCHITECT/ENGINEER OF ANY DISCREPANCY BEFORE STARTING CONSTRUCTION.

CONTRACTOR IS RESPONSIBLE FOR MODIFYING THE RAYCAP INSTALL ON THE TOWER TO ACCOMMODATE THE QUANTITY OF RRU'S.

THE CONTRACTOR MUST FIELD VERIFY ALL MEASUREMENTS AND FIELD CONDITIONS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.



TRUE NORTH

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JANUARY 12, 2023
MARC P. MAIER, PE
FL PROFESSIONAL ENGINEER LIC. # 72513

FAIRGROUNDS
FA#10091916

682 SOUTHWEST COMMERCE DRIVE
LAKE CITY, FL 32024

SHEET DESCRIPTION
SITE PLAN

SHEET NUMBER
C-1

Sunshine State 811 One Call

CALL FLORIDA 811
ONE CALL - DIAL 811
CALL 3 WORKING DAYS
BEFORE YOU DIG
1-800-638-4097

1 / C-1 **SITE PLAN**
SCALE: 1" = 8'
SCALE BASED ON 11"x17" ONLY

GRAPHIC SCALE
0 4 8 16
(IN FEET)

NOTES:

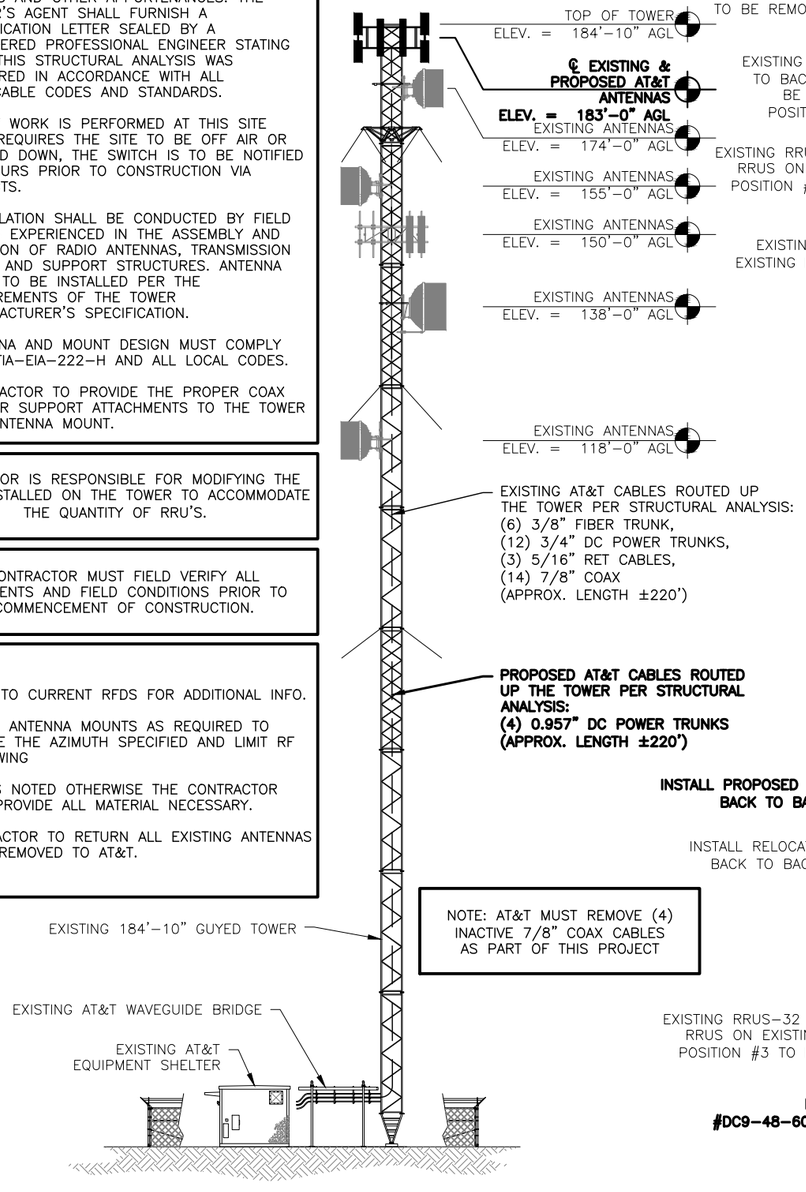
1. A STRUCTURAL ANALYSIS SHALL BE PERFORMED BY THE OWNER'S AGENT TO CERTIFY THAT THE EXISTING/PROPOSED COMMUNICATION STRUCTURE AND COMPONENTS ARE STRUCTURALLY ADEQUATE TO SUPPORT ALL EXISTING AND PROPOSED ANTENNAS, COAXIAL CABLES AND OTHER APPURTENANCES. THE OWNER'S AGENT SHALL FURNISH A CERTIFICATION LETTER SEALED BY A REGISTERED PROFESSIONAL ENGINEER STATING THAT THIS STRUCTURAL ANALYSIS WAS PREPARED IN ACCORDANCE WITH ALL APPLICABLE CODES AND STANDARDS.
2. IF ANY WORK IS PERFORMED AT THIS SITE THAT REQUIRES THE SITE TO BE OFF AIR OR TURNED DOWN, THE SWITCH IS TO BE NOTIFIED 48 HOURS PRIOR TO CONSTRUCTION VIA NCR/CTS.
3. INSTALLATION SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS, TRANSMISSION LINES, AND SUPPORT STRUCTURES. ANTENNA WORK TO BE INSTALLED PER THE REQUIREMENTS OF THE TOWER MANUFACTURER'S SPECIFICATION.
4. ANTENNA AND MOUNT DESIGN MUST COMPLY WITH TIA-EIA-222-H AND ALL LOCAL CODES.
5. CONTRACTOR TO PROVIDE THE PROPER COAX JUMPER SUPPORT ATTACHMENTS TO THE TOWER AND ANTENNA MOUNT.

CONTRACTOR IS RESPONSIBLE FOR MODIFYING THE RAYCAP INSTALLED ON THE TOWER TO ACCOMMODATE THE QUANTITY OF RRU'S.

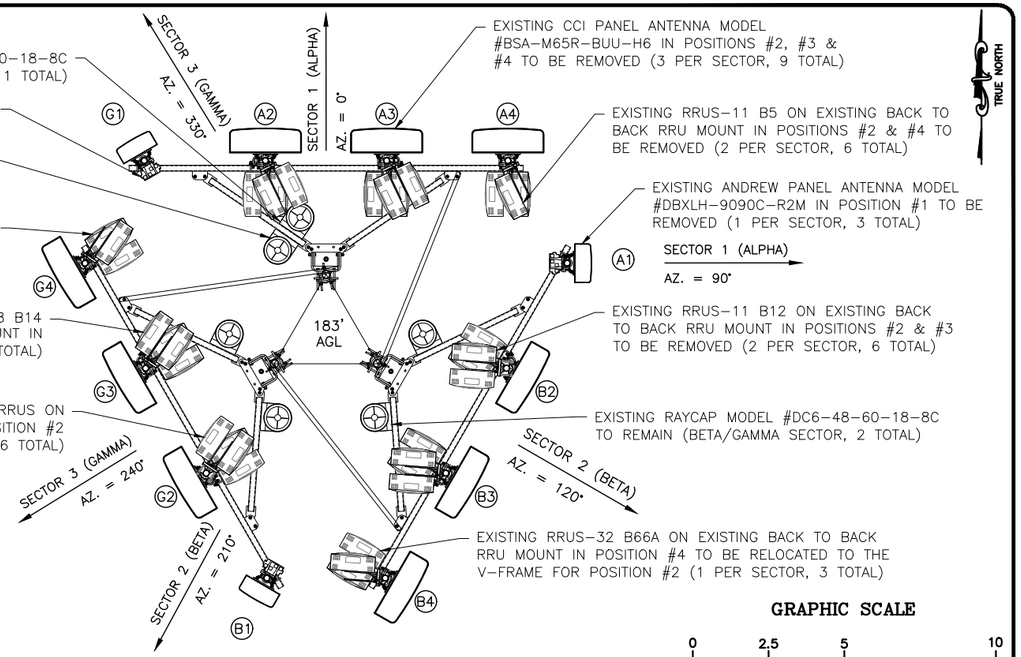
THE CONTRACTOR MUST FIELD VERIFY ALL MEASUREMENTS AND FIELD CONDITIONS PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

NOTES:

1. REFER TO CURRENT RFDS FOR ADDITIONAL INFO.
2. ADJUST ANTENNA MOUNTS AS REQUIRED TO ACHIEVE THE AZIMUTH SPECIFIED AND LIMIT RF SHADOWING
3. UNLESS NOTED OTHERWISE THE CONTRACTOR MUST PROVIDE ALL MATERIAL NECESSARY.
4. CONTRACTOR TO RETURN ALL EXISTING ANTENNAS BEING REMOVED TO AT&T.



1 S-1 **TOWER ELEVATION**
SCALE: 1" = 25'
SCALE BASED ON 11"x17" ONLY

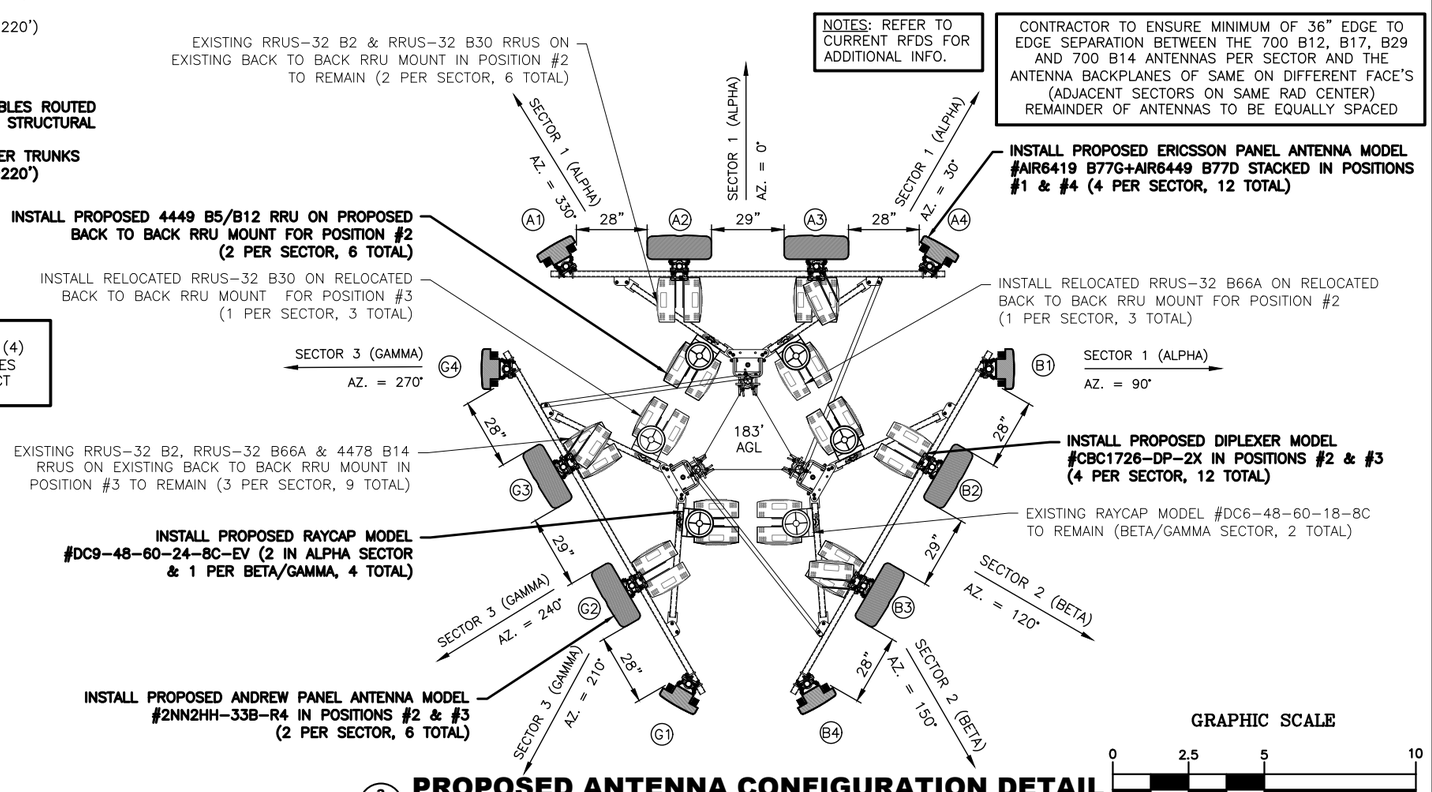


2 S-1 **EXISTING ANTENNA CONFIGURATION DETAIL**
SCALE: 1" = 5'
SCALE BASED ON 11"x17" ONLY

GRAPHIC SCALE
0 2.5 5 10
(IN FEET)

NOTES: REFER TO CURRENT RFDS FOR ADDITIONAL INFO.

CONTRACTOR TO ENSURE MINIMUM OF 36" EDGE TO EDGE SEPARATION BETWEEN THE 700 B12, B17, B29 AND 700 B14 ANTENNAS PER SECTOR AND THE ANTENNA BACKPLANES OF SAME ON DIFFERENT FACE'S (ADJACENT SECTORS ON SAME RAD CENTER) REMAINDER OF ANTENNAS TO BE EQUALLY SPACED



3 S-1 **PROPOSED ANTENNA CONFIGURATION DETAIL**
SCALE: 1" = 5'
SCALE BASED ON 11"x17" ONLY

GRAPHIC SCALE
0 2.5 5 10
(IN FEET)

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MARC P. MAIER LICENSE No 72513 STATE OF FLORIDA PROFESSIONAL ENGINEER

JANUARY 12, 2023
MARC P. MAIER, PE
FL PROFESSIONAL ENGINEER LIC. # 72513

FAIRGROUNDS
FA#10091916

682 SOUTHWEST COMMERCE DRIVE
LAKE CITY, FL 32024

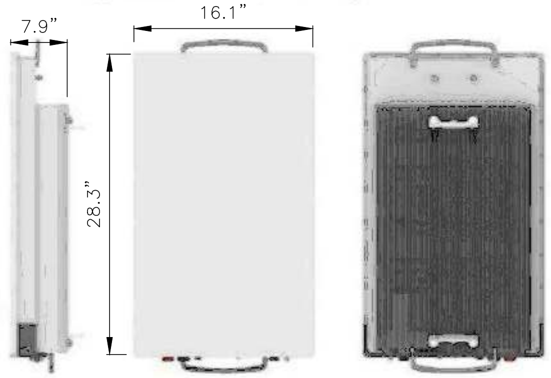
SHEET DESCRIPTION
TOWER ELEVATION AND ANTENNA ORIENTATION

SHEET NUMBER
S-1

AIR 6419 B77G (320W) Candidate

Not to exceed figures

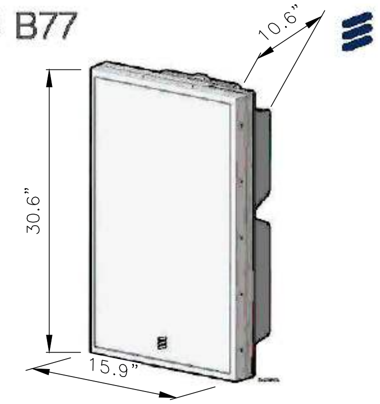
• Antenna Elements	192
• TRX Branches	64T64R
• Antenna configuration	(3x1)x(4x8)
• Operation band:	3450~3550 MHz
• IBW	100 MHz
• TCBW	100MHz
• Output Power	320W
• Peak EIRP	79dBm
• PSD	4W/MHz (Target 8W/MHz for rural)
• Size(HxWxD)	720x410x200mm (28.3x16.1x7.9 in)
• Weight	30kg (66.1 lbs)
• Type of cooling	Passive
• eCPRI link	2*25G
• Power Supply	-48V VDC 3-wires
• Multi-layer MU MIMO:	16/8 DL/UL layer

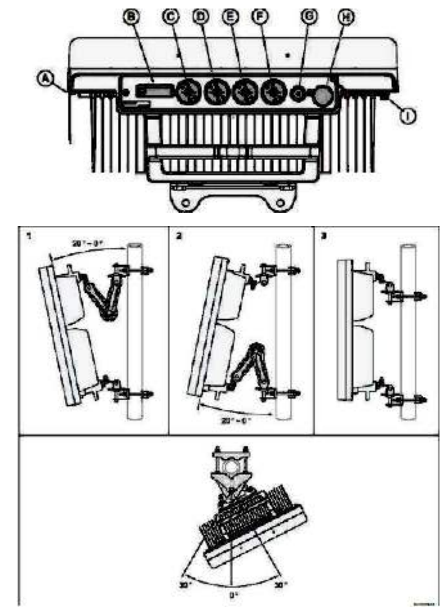


1 S-2 **ERICSSON AIR 6419 B77G**
SCALE: N.T.S.

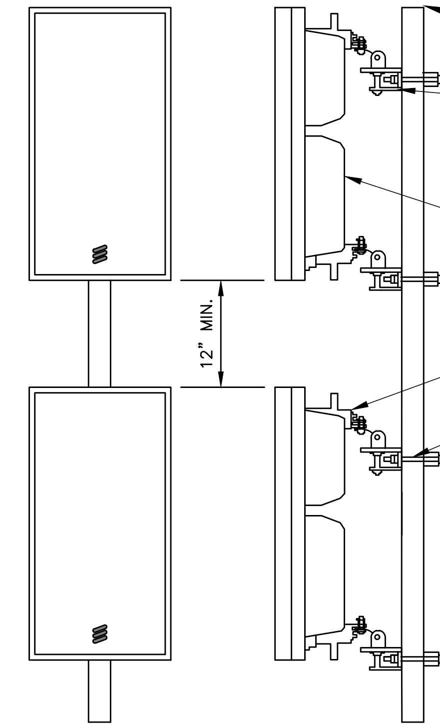
ERICSSON AIR 6449 B77

- ERICSSON AIR 6449 has a total of 4 ECPRI connections @ 25 Gbps
- Operates over B77 band (3.3-4.2 GHz)
- Breaker size = 50A DC, DC Power Consumption = 1250W (for dimensioning)
- Dimensions
  - Height: 30.6" (778 mm)
  - Width: 15.9" (403 mm)
  - Depth: 10.6" (268 mm)
- Weight, excl. mounting hardware = 82.5 lbs (37.5 kg)
- Weight with Mounting Hardware = 95.5 lbs (43.4 kg)
- Max Frontal Wind Load @ 42m/s = 478 N
- Horizontal Separation Required between AIR 6449 = 100mm
- Minimum Vertical Space Required below AIR 6449 = 300mm
- Minimum Height Above Users = 5m
- Outdoor Installation locations to avoid:
  - Hot microclimate caused by, for example heat radiated or reflected from dark or metallic wall surfaces
  - Chimney mouths or ventilation system outlets
  - In front of large glass surfaces or concrete surfaces
- Avoid radio interference by keeping the area directly in front of the antenna clear of metal surfaces such as railing, ladders or chains or equipment generating electromagnetic fields, for example, electric motors in air conditioners or diesel generators in front of antenna
- Do not use metallic paint to cover the AIR 6449 if painting is required. Do not paint underside of AIR 6449.





2 S-2 **ERICSSON AIR 6449 B77D**
SCALE: N.T.S.

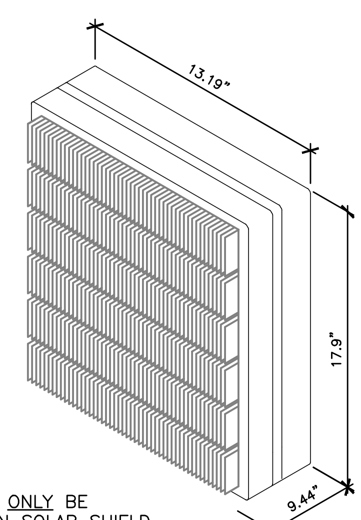


NOTES:

1. CONTRACTOR TO MAKE SURE THAT VERTICAL SEPARATION FROM TIP OF LOWER C-BAND ANTENNA TO BOTTOM OF THE HIGHER C-BAND ANTENNA IS AT LEAST 1 FT. DO NOT OBSTRUCT NEARBY ANTENNAS FROM OTHER CARRIERS.
2. IF ONLY (1) AIR6449 ANTENNA IS PROPOSED, INSTALL AT THE TOP OF THE MOUNT PIPE TO ALLOW A FUTURE ANTENNA TO BE INSTALLED BELOW.

3 S-2 **AIR ANTENNA MOUNTING DETAIL**
SCALE: N.T.S.

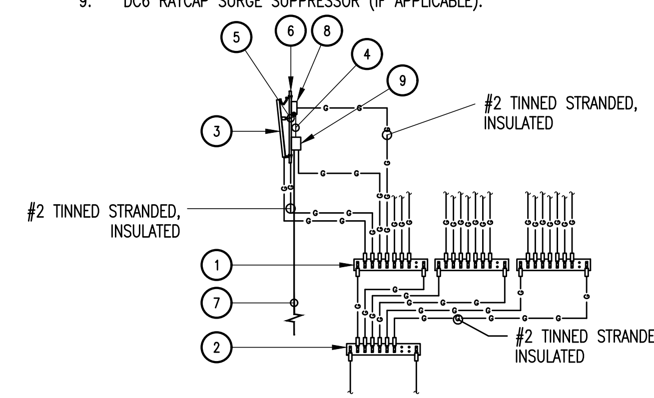
ERICSSON RRUS-4449 B5/B12
-DIMENSIONS (H x W x D):
17.9" x 13.19" x 9.44" (INCLUDES SUNSHIELD)
-WEIGHT: 71 LBS
-B5 TX=869-894 MHZ, B12 TX=729-746 MHZ
-B5 RX=824-849 MHZ, B12 RX=699-716 MHZ
-BREAKER SIZE=2x25A, DC POWER CONSUMPTION = 1440 W



NOTE:
RRUS CAN ONLY BE PAINTED ON SOLAR SHIELD.

4 S-2 **RRUS 4449 B5/B12 DETAIL**
SCALE: N.T.S.

KEYNOTE LEGEND:
1. SECTOR GROUND BAR (TYP).
2. COLLECTOR GROUND BAR.
3. NEW ANTENNA.
4. SINGLE PAIR FIBER & DC POWER.
5. JUMPER CABLE, 1/2" (TYP).
6. PIPE MOUNT.
7. DC POWER & FIBER TO RAYCAP UNIT.
8. REMOTE RADIO HEAD (RRH) (IF APPLICABLE).
9. DC6 RAYCAP SURGE SUPPRESSOR (IF APPLICABLE).



1. UTILIZE EXISTING AT&T GROUND BARS AND GROUNDING.
2. ADD GROUND BARS IF THERE ARE INSUFFICIENT LUG POSITIONS.
3. REFERENCE AT&T BONDING & GROUNDING PRACTICE TP76416.

5 S-2 **ANTENNA GROUNDING SCHEMATIC**
SCALE: N.T.S.

REV	DATE	DESCRIPTION
A	12/07/22	PRELIMINARY CDs REV "A"
0	01/12/23	FINAL CDs ISSUED
1		
2		
3		
4		
5		
6		
7		
8		

DRAWN BY:	CHECKED BY:
DP	MM

at&t
12150 RESEARCH PARKWAY
ORLANDO, FL 32826

smartlink
1997 ANNAPOLIS EXCHANGE PKWY. SUITE 200
ANNAPOLIS, MD 21401

PREPARED BY:

GEN3 ENGINEERING
27139 SEA BREEZE WAY
WESLEY CHAPEL, FLORIDA 33544
(813)917-2671
COA # 35409

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No 72513
STATE OF FLORIDA
PROFESSIONAL ENGINEER

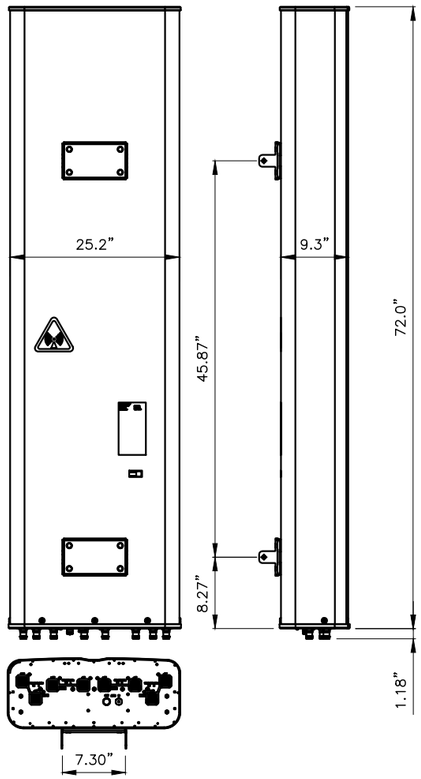
JANUARY 12, 2023
MARC P. MAIER, PE
FL PROFESSIONAL ENGINEER LIC. # 72513

FAIRGROUNDS
FA#10091916

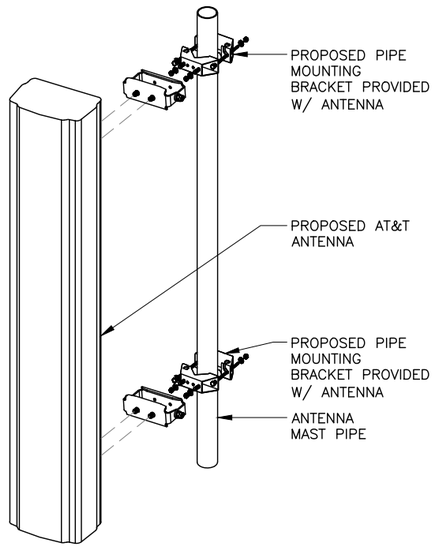
682 SOUTHWEST COMMERCE DRIVE
LAKE CITY, FL 32024

SHEET DESCRIPTION
MISCELLANEOUS DETAILS

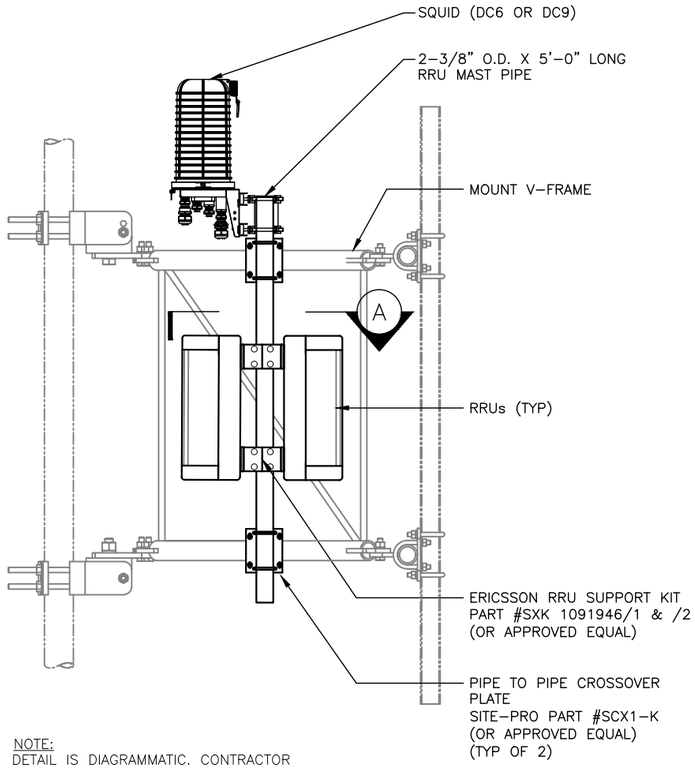
SHEET NUMBER
S-2



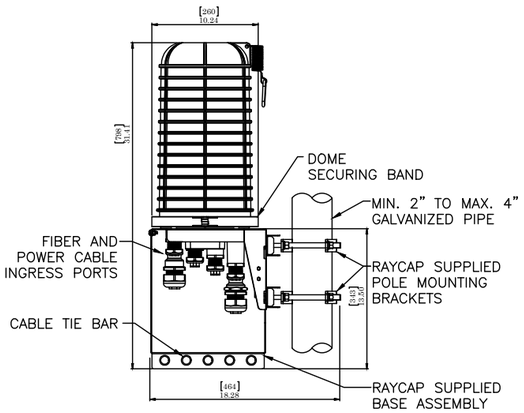
1 S-3 2NN2HH-33B-R4
SCALE: N.T.S.



2 S-3 ANTENNA MOUNTING DETAIL
SCALE: N.T.S.

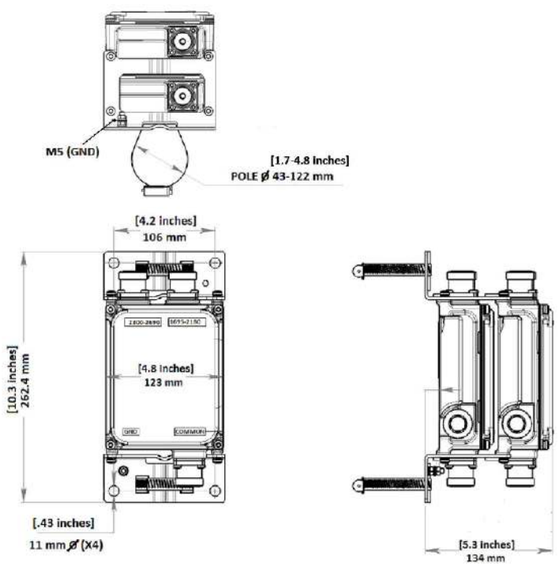


NOTE:
DETAIL IS DIAGRAMMATIC. CONTRACTOR TO INSTALL RRU'S ON RRU MOUNT BEST SUITED FOR ANTENNA CONFIGURATION.

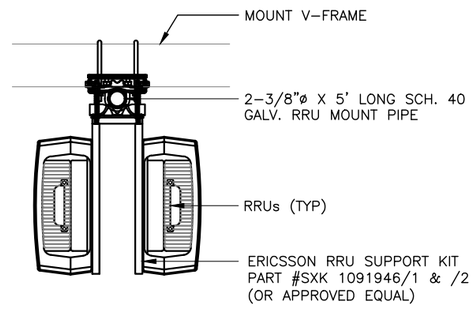


NOTES:
1. UNIT SHALL BE MOUNTED AS PER MANUFACTURER'S RECOMMENDATIONS.
2. CONTRACTOR SHALL TIGHTEN ALL BOLTS TO A "SNUG TIGHT" CONDITION AS DEFINED BY AISC.
3. CONTRACTOR SHALL INSTALL RAYCAP DISTRIBUTION UNIT WITHIN 15 FEET FROM ALL RRH'S.

3 S-3 DC9-48-60-24-8C-EV MOUNT DETAIL
SCALE: N.T.S.



4 S-3 COMMSCOPE CBC1726-DP-2X DETAIL
SCALE: N.T.S.



SECTION A

5 S-3 RRU MOUNTING DETAIL
SCALE: N.T.S.

REV	DATE	DESCRIPTION
A	12/07/22	PRELIMINARY CDs REV "A"
0	01/12/23	FINAL CDs ISSUED
1		
2		
3		
4		
5		
6		
7		
8		

DRAWN BY:	CHECKED BY:
DP	MM

at&t
12150 RESEARCH PARKWAY
ORLANDO, FL 32826

smartlink
1997 ANNAPOLIS EXCHANGE PKWY.
SUITE 200
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JANUARY 12, 2023

MARC P. MAIER, PE
FL PROFESSIONAL ENGINEER LIC. # 72513

FAIRGROUNDS
FA#10091916

682 SOUTHWEST COMMERCE DRIVE
LAKE CITY, FL 32024

SHEET DESCRIPTION
MISCELLANEOUS DETAILS

SHEET NUMBER
S-3

DC / FIBER DEMARCATION BOX

RAYCAP DC FIBER DEMARCATION BOX			CABLES				NOTES
MOUNTING HEIGHT	MODEL	QTY	MODEL	SIZE	QTY	LENGTH PER LINE	
183'-0"	DC6-48-60-18-8C	2	ROSENBERGER (18) PAIR FIBER TRUNK	3/8"	6	220'-0"	
183'-0"	**DC9-48-60-24-8C-EV**	4	(6)- #8 AWG TINNED COPPER CONDUCTORS	3/4"	12	220'-0"	
			(6)- #6 AWG TINNED COPPER CONDUCTORS	**0.957"**	4	**220'-0"**	

ANTENNA AND COAX SCHEDULE

		ANTENNAS						CABLES					RRU			COMPONENT			TMA	
SECTOR	AZ	RAD CENTER	ANTENNA MAKE	ANTENNA MODEL	(QTY)	APPROXIMATE ANTENNA SPECS	DOWN TILT ELEC	DOWN TILT MECH	MODEL	SIZE	(QTY)	LENGTH/ LINE	COLOR CODE	MODEL	TWR (QTY)	GRND (QTY)	MODEL	TWR (QTY)	GRND (QTY)	MODEL	(QTY)
ALPHA (A1)	330°	183'-0"	ERICSSON	AIR6419 B77G	1	H=28.3" x W=16.1" x D=7.9"	-	-	ROSENBERGER FIBER JUMPER (DC9 TO ANTENNA)	3/8"	4	15'-0"	1 RED	-	-	-	-	-	-	-	-
				AIR6449 B77D	1	H=30.6" x W=15.9" x D=10.6"			ROSENBERGER SINGLE PAIR DC CABLE (DC9 TO ANT)	7/16"	2	15'-0"	1 RED								
ALPHA (A2)	0°	183'-0"	ANDREW	2NN2HH-33B-R4	1	H=72" x W=25" x D=9.3"	4/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
									ROSENBERGER FIBER JUMPER (DC9 TO RRU)	3/8"	7	15'-0"	2 RED	4449 B5/B12	2	-	CBC1726-DP-2X	2	-		
									ROSENBERGER SINGLE PAIR DC CABLE (DC9 TO RRU)	7/16"	7	15'-0"	2 RED	RRUS-32 B2	1	-					
									1/2" COAX JUMPER (RRU TO DIPLEXER)	1/2"	8	6'-0"	2 RED	RRUS-32 B66A	1	-					
									1/2" COAX JUMPER (DIPLEXER TO ANTENNA)	1/2"	4	6'-0"	2 RED	RRUS-32 B30	1	-					
									1/2" COAX JUMPER (RRU TO ANTENNA)	1/2"	12	10'-0"	2 RED								
ALPHA (A3)	0°	183'-0"	ANDREW	2NN2HH-33B-R4	1	H=72" x W=25" x D=9.3"	4/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
									ROSENBERGER FIBER JUMPER (DC9 TO RRU)	3/8"	5	15'-0"	3 RED	4478 B14	1	-	CBC1726-DP-2X	2	-		
									ROSENBERGER SINGLE PAIR DC CABLE (DC9 TO RRU)	7/16"	4	15'-0"	3 RED	RRUS-32 B2	1	-					
									1/2" COAX JUMPER (RRU TO DIPLEXER)	1/2"	8	6'-0"	3 RED	RRUS-32 B66A	1	-					
									1/2" COAX JUMPER (DIPLEXER TO ANTENNA)	1/2"	4	6'-0"	3 RED	RRUS-32 B30	1	-					
									1/2" COAX JUMPER (RRU TO ANTENNA)	1/2"	8	10'-0"	3 RED								
ALPHA (A4)	30°	183'-0"	ANDREW	AIR6419 B77G	1	H=28.3" x W=16.1" x D=7.9"	-	-	ROSENBERGER FIBER JUMPER (DC9 TO ANTENNA)	3/8"	4	15'-0"	4 RED	-	-	-	-	-	-	-	-
				AIR6449 B77D	1	H=30.6" x W=15.9" x D=10.6"			ROSENBERGER SINGLE PAIR DC CABLE (DC9 TO ANT)	1/2"	2	15'-0"	4 RED								
BETA (B1)	90°	183'-0"	ERICSSON	AIR6419 B77G	1	H=28.3" x W=16.1" x D=7.9"	-	-	ROSENBERGER FIBER JUMPER (DC9 TO RRU)	3/8"	4	15'-0"	1 BLUE	-	-	-	-	-	-	-	-
				AIR6449 B77D	1	H=30.6" x W=15.9" x D=10.6"			ROSENBERGER SINGLE PAIR DC CABLE (DC9 TO RRU)	7/16"	2	15'-0"	1 BLUE								
BETA (B2)	120°	183'-0"	ANDREW	2NN2HH-33B-R4	1	H=72" x W=25" x D=9.3"	4/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
									ROSENBERGER FIBER JUMPER (DC9 TO ANTENNA)	3/8"	7	15'-0"	2 BLUE	4449 B5/B12	2	-	CBC1726-DP-2X	2	-		
									ROSENBERGER SINGLE PAIR DC CABLE (DC9 TO ANT)	7/16"	7	15'-0"	2 BLUE	RRUS-32 B2	1	-					
									1/2" COAX JUMPER (RRU TO DIPLEXER)	1/2"	8	6'-0"	2 BLUE	RRUS-32 B66A	1	-					
									1/2" COAX JUMPER (DIPLEXER TO ANTENNA)	1/2"	4	6'-0"	2 BLUE	RRUS-32 B30	1	-					
									1/2" COAX JUMPER (RRU TO ANTENNA)	1/2"	12	10'-0"	2 BLUE								
BETA (B3)	120°	183'-0"	ANDREW	2NN2HH-33B-R4	1	H=72" x W=25" x D=9.3"	4/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
									ROSENBERGER FIBER JUMPER (DC9 TO RRU)	3/8"	5	15'-0"	3 BLUE	4478 B14	1	-	CBC1726-DP-2X	2	-		
									ROSENBERGER SINGLE PAIR DC CABLE (DC9 TO RRU)	7/16"	4	15'-0"	3 BLUE	RRUS-32 B2	1	-					
									1/2" COAX JUMPER (RRU TO DIPLEXER)	1/2"	8	6'-0"	3 BLUE	RRUS-32 B66A	1	-					
									1/2" COAX JUMPER (DIPLEXER TO ANTENNA)	1/2"	4	6'-0"	3 BLUE	RRUS-32 B30	1	-					
									1/2" COAX JUMPER (RRU TO ANTENNA)	1/2"	8	10'-0"	3 BLUE								
BETA (B4)	150°	183'-0"	ANDREW	AIR6419 B77G	1	H=28.3" x W=16.1" x D=7.9"	-	-	ROSENBERGER FIBER JUMPER (DC9 TO ANTENNA)	3/8"	4	15'-0"	4 BLUE	-	-	-	-	-	-	-	-
				AIR6449 B77D	1	H=30.6" x W=15.9" x D=10.6"			ROSENBERGER SINGLE PAIR DC CABLE (DC9 TO ANT)	1/2"	2	15'-0"	4 BLUE								
GAMMA (G1)	210°	183'-0"	ERICSSON	AIR6419 B77G	1	H=28.3" x W=16.1" x D=7.9"	-	-	ROSENBERGER FIBER JUMPER (DC9 TO RRU)	3/8"	4	15'-0"	1 GREEN	-	-	-	-	-	-	-	-
				AIR6449 B77D	1	H=30.6" x W=15.9" x D=10.6"			ROSENBERGER SINGLE PAIR DC CABLE (DC9 TO RRU)	7/16"	2	15'-0"	1 GREEN								
GAMMA (G2)	240°	183'-0"	ANDREW	2NN2HH-33B-R4	1	H=72" x W=25" x D=9.3"	6/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
									ROSENBERGER FIBER JUMPER (DC9 TO ANTENNA)	3/8"	7	15'-0"	2 GREEN	4449 B5/B12	2	-	CBC1726-DP-2X	2	-		
									ROSENBERGER SINGLE PAIR DC CABLE (DC9 TO ANT)	7/16"	7	15'-0"	2 GREEN	RRUS-32 B2	1	-					
									1/2" COAX JUMPER (RRU TO DIPLEXER)	1/2"	8	6'-0"	2 GREEN	RRUS-32 B66A	1	-					
									1/2" COAX JUMPER (DIPLEXER TO ANTENNA)	1/2"	4	6'-0"	2 GREEN	RRUS-32 B30	1	-					
									1/2" COAX JUMPER (RRU TO ANTENNA)	1/2"	12	10'-0"	2 GREEN								
GAMMA (G3)	240°	183'-0"	ANDREW	2NN2HH-33B-R4	1	H=72" x W=25" x D=9.3"	6/3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
									ROSENBERGER FIBER JUMPER (DC9 TO RRU)	3/8"	5	15'-0"	3 GREEN	4478 B14	1	-	CBC1726-DP-2X	2	-		
									ROSENBERGER SINGLE PAIR DC CABLE (DC9 TO RRU)	7/16"	4	15'-0"	3 GREEN	RRUS-32 B2	1	-					
									1/2" COAX JUMPER (RRU TO DIPLEXER)	1/2"	8	6'-0"	3 GREEN	RRUS-32 B66A	1	-					
									1/2" COAX JUMPER (DIPLEXER TO ANTENNA)	1/2"	4	6'-0"	3 GREEN	RRUS-32 B30	1	-					
									1/2" COAX JUMPER (RRU TO ANTENNA)	1/2"	8	10'-0"	3 GREEN								
GAMMA (G4)	270°	183'-0"	ANDREW	AIR6419 B77G	1	H=28.3" x W=16.1" x D=7.9"	-	-	ROSENBERGER FIBER JUMPER (DC9 TO ANTENNA)	3/8"	4	15'-0"	4 GREEN	-	-	-	-	-	-	-	-
				AIR6449 B77D	1	H=30.6" x W=15.9" x D=10.6"			ROSENBERGER SINGLE PAIR DC CABLE (DC9 TO ANT)	1/2"	2	15'-0"	4 GREEN								
			TOTAL		18									TOTAL	27	0	TOTAL	12	0	TOTAL	0

TOTAL 7/8"COAX (INACTIVE TO REMAIN)	14	3080'-0"	
TOTAL FIBER JUMPER	60	900'-0"	
TOTAL DC JUMPER	45	675'-0"	
TOTAL 1/2" COAX JUMPERS	132	1032'-0"	
TOTAL 5/16" RET JUMPERS	6	90'-0"	
TOTAL 5/16" RET CABLES	3	660'-0"	

- ANTENNA AND COAX INFORMATION PROVIDED FROM THE 5G NR 1SR RFDS V2.00 DATED 11/07/22.
- CONTRACTOR TO VERIFY RF INFO WITH CLIENT PRIOR TO CONSTRUCTION.
- COAX LENGTHS ARE APPROXIMATE AND MUST BE VERIFIED PRIOR TO CONSTRUCTION.
- ALL COAX SHALL BE COLOR CODED AT TOP AN BOTTOM JUMPER AND AT TOP OF TOWER BOTTOM OF TOWER, AND INSIDE SHELTER ON MAIN COAX.
- EACH MAIN COAX SHALL HAVE CORROSION PROOF "ID TAGS" INSTALLED INSIDE THE SHELTER AT THE PORT AND AT THE ANTENNA.
- QUANTITIES GIVEN ARE TOTAL EXISTING AND PROPOSED.

NOTE: AT&T MUST REMOVE (4) INACTIVE 7/8" COAX CABLES AS PART OF THIS PROJECT

1 AN-1 **ANTENNA & COAX SCHEDULE**
SCALE: N.T.S.

REV	DATE	DESCRIPTION
A	12/07/22	PRELIMINARY CDs REV "A"
0	01/12/23	FINAL CDs ISSUED
1		
2		
3		
4		
5		
6		
7		
8		

DRAWN BY:	CHECKED BY:
DP	MM

at&t
12150 RESEARCH PARKWAY
ORLANDO, FL 32826

smartlink
1997 ANNAPOLIS EXCHANGE PKWY.
SUITE 200
ANNAPOLIS, MD 21401

PREPARED BY:
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(813)917-2671
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FAIRGROUNDS
FA#10091916

682 SOUTHWEST COMMERCE DRIVE
LAKE CITY, FL 32024

SHEET DESCRIPTION
ANTENNA SCHEDULE

SHEET NUMBER
AN-1