



ATC SITE NAME: COLUMBIA (CHARLES) FL  
ATC SITE NUMBER: 417139  
T-MOBILE SITE NAME: 9JK2817A  
T-MOBILE SITE NUMBER: 9JK2817A  
SITE ADDRESS: 917 SW CHARLES TERRACE  
LAKE CITY, FL 32024-4402  
SITE CLASS: SELF SUPPORT



**SNW**  
ENGINEERING GROUP, LLC

**TOGETHER PLANNING A BETTER TOMORROW**  
158 BUSINESS CENTER DRIVE  
BIRMINGHAM, AL 35244  
TEL: 205-252-6985 [www.smweng.com](http://www.smweng.com)

ATC SITE NUMBER:  
**417139**

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**9JK2817A**

SITE ADDRESS:  
**917 SW CHARLES TERRACE  
LAKE CITY, FL 32024-4402**

SEAL: CA# 33693

|              |             |
|--------------|-------------|
| ATC PROJ. #: | 15322453_C8 |
| CUST. ID:    | 9JK2817A    |
| CUST. #:     | 9JK2817A    |

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| SHEET NUMBER:<br><b>G-001</b> | REVISION:<br><b>0</b> |
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| COMPLIANCE CODE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PROJECT SUMMARY                                                                                                                                                                                                                                                                                                                                                                                           | PROJECT DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SHEET INDEX                    |              |          |       |     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------|----------|-------|-----|
| ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNMENT AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.<br><br>2021 IBC<br>NATIONAL ELECTRICAL CODE (NFPA 70, NEC 2020)<br>2023 FLORIDA BUILDING CODE, MECHANICAL, 8TH EDITION (IMC 2021 W/ AMND)<br>2023 FLORIDA BUILDING CODE, PLUMBING, 8TH EDITION (IPC 2021 W/ AMND)<br>2023 FLORIDA BUILDING CODE, ENERGY CONSERVATION, 8TH EDITION (IECC 2021 W/ AMND)<br>2023 FLORIDA FIRE PREVENTION CODE, 8TH EDITION (NFPA 1, 2021 W/ AMND)<br>8TH ED (2023) FLORIDA BUILDING CODE<br>2023 FLORIDA BUILDING CODE, RESIDENTIAL, 8TH EDITION (IRC 2021 W/ AMND)<br>2023 FLORIDA BUILDING CODE, FUEL GAS, 8TH EDITION (IFGC 2018 W/ AMND)<br><br>2023 FLORIDA BUILDING CODE, EXISTING BUILDING, 8TH EDITION (IEBC 2021 W/ AMND) | <div><div><div><div><u>SITE ADDRESS:</u><br/>917 SW CHARLES TERRACE<br/>LAKE CITY, FL 32024-4402<br/>COUNTY: COLUMBIA</div><div><u>GEOGRAPHIC COORDINATES:</u><br/><br/>LATITUDE: 30.10632986<br/>30° 6' 22.787" N<br/>LONGITUDE: -82.76005675<br/>82° 45' 36.204" W<br/><br/>GROUND ELEVATION: 104' AMSL</div></div></div></div>                                                                         | THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW:<br><br>INSTALL: <ul style="list-style-type: none"><li>(1) VHLP3-11W/A MICROWAVE DISH</li><li>(1) FibeAir IP-20D-HP ODU</li><li>(1) 1/4" COAX CABLE</li><li>(1) 2.17" (55mm) HYBRID</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                       | SHEET NO:                      | DESCRIPTION: | REV:     | DATE: | BY: |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                           | G-001                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | TITLE SHEET                    | 0            | 06/25/25 | RA    |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                           | G-002                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | GENERAL NOTES                  | 0            | 06/25/25 | RA    |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                           | C-101                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DETAILED SITE PLAN             | 0            | 06/25/25 | RA    |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                           | C-102                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DETAILED EQUIPMENT PLAN        | 0            | 06/25/25 | RA    |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                           | C-201                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | TOWER ELEVATION                | 0            | 06/25/25 | RA    |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                           | C-401                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ANTENNA INFORMATION & SCHEDULE | 0            | 06/25/25 | RA    |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                           | C-501                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | CONSTRUCTION DETAILS           | 0            | 06/25/25 | RA    |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                           | E-501                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | GROUNDING DETAILS              | 0            | 06/25/25 | RA    |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                           | R-601                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SUPPLEMENTAL                   |              |          |       |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <div>PROJECT TEAM</div> <div><div><div><div><u>TOWER OWNER:</u><br/><br/>AMERICAN TOWER<br/>10 PRESIDENTIAL WAY<br/>WOBURN, MA 01801</div><div><u>APPLICANT:</u><br/><br/>T-MOBILE</div></div><div><div><u>ENGINEER:</u><br/><br/>SMW ENGINEERING<br/>158 BUSINESS CENTER DRIVE<br/>BIRMINGHAM, AL 35244<br/>CONTACT: JEREMY SHARIT, PE<br/>PHONE: 205-397-6781<br/>SMW#: 25-5156</div></div></div></div> | 1. THE FACILITY IS UNMANNED.<br>2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.<br>3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.<br>4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.<br>5. HANDICAP ACCESS IS NOT REQUIRED.<br>6. THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7). |                                |              |          |       |     |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                |              |          |       |     |
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| UTILITY COMPANIES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                |              |          |       |     |
| POWER COMPANY: VERIZON WIRELESS EAST<br>PHONE: 800-852-2671 (EAST)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                |              |          |       |     |
| TELEPHONE COMPANY:<br>PHONE:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                |              |          |       |     |
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GENERAL CONSTRUCTION NOTES:

1.

OWNER FURNISHED MATERIALS, T-MOBILE "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL
- A.

BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
- B.

AC/TELCO INTERFACE BOX (PPC)
- C.

ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
- D.

TOWERS, MONOPOLES
- E.

TOWER LIGHTING
- F.

GENERATORS & LIQUID PROPANE TANK
- G.

ANTENNA STANDARD BRACKETS, FRAMES AND PIPES FOR MOUNTING
- H.

ANTENNAS (INSTALLED BY OTHERS)
- I.

TRANSMISSION LINE
- J.

TRANSMISSION LINE JUMPERS
- K.

TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
- L.

TRANSMISSION LINE GROUND KITS
- M.

HANGERS
- N.

HOISTING GRIPS
- O.

BTS EQUIPMENT
2.

THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS. IT IS THE POSITION OF T-MOBILE TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.
3.

ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS.
4.

CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
5.

CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
6.

ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
7.

DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
8.

DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
9.

THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10.

CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
11.

CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
12.

INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE REP PRIOR TO PROCEEDING.
13.

EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
14.

CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE CONSTRUCTION MANAGER.
15.

ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
16.

WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE REP AND ENGINEER OF RECORD IMMEDIATELY.
17.

CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
18.

CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
19.

CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH AMERICAN TOWER CORPORATION (ATC) AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
20.

CONTRACTOR SHALL FURNISH T-MOBILE AND AMERICAN TOWER CORPORATION (ATC) WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
21.

PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.

22.

PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
23.

CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE SPECIFICATIONS AND REQUIREMENTS.
24.

CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
25.

ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
26.

THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
27.

CONTRACTOR SHALL NOTIFY T-MOBILE REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
28.

WHEN THE PROJECT SCOPE REQUIRES THE USE OF THE SAFETY CLIMB, THE GENERAL CONTRACTOR SHALL ENSURE THE SAFETY CLIMB IS FREE OF OBSTRUCTIONS, NOT RUBBING ON OR TRAPPED BY ANY INSTALLED CUSTOMER EQUIPMENT, IS VISUALLY TAUT, MEETS MANUFACTURER INSTALLATION SPECIFICATIONS, AND IS FIRMLY SECURED AT ALL CABLE GUIDE LOCATIONS UPON PROJECT COMPLETION.
29.

COMPLETION OF PROJECT SHALL NOT OBSTRUCT, TRAP, LOOSEN, OR OTHERWISE CAUSE FAILURE TO MEET MANUFACTURER INSTALLATION REQUIREMENTS FOR THE SAFETY CLIMB.
30.

CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
31.

THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
32.

ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE REP. ANY WORK FOUND BY THE T-MOBILE REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
33.

IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.
34.

T-MOBILE FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE T-MOBILE WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATE, PROTECTED AND INSTALLED BY THE CONTRACTOR WITH ALL APPURTENANCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING IT UP.
35.

T-MOBILE OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OWN OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO T-MOBILE OR THEIR ARCHITECT/ENGINEER.

SPECIAL CONSTRUCTION

ANTENNA INSTALLATION NOTES:

1.

WORK INCLUDED:
- A.

ANTENNA AND COAXIAL/HYBRID CABLES ARE FURNISHED BY T-MOBILE UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL.
- B.

INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND T-MOBILE SPECIFICATIONS.
- C.

INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
- D.

INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE.
- E.

INSTALL COAXIAL/HYBRID CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTIONS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL/HYBRID CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.
2.

ANTENNA AND COAXIAL/HYBRID CABLE GROUNDING:
- A.

ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTORS/SPlice WEATHERPROOFING KIT #221213 OR EQUAL.

- B.

ALL COAXIAL/HYBRID CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL/HYBRID CABLE (NOT WITHIN BENDS)

ALL DISCREPANCIES FROM WHAT IS SHOWN ON THESE CONSTRUCTION DRAWINGS SHALL BE COMMUNICATED TO ATC ENGINEERING IMMEDIATELY FOR CORRECTION OR RE-DESIGN. FAILURE TO COMMUNICATE DIRECTLY WITH ATC ENGINEERING OR ANY CHANGES FROM THE DESIGN CONDUCTED WITHOUT PRIOR APPROVAL FROM ATC ENGINEERING SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.



| REV. | DESCRIPTION | BY | DATE     |
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| A    | PRELIM      | RA | 06/12/25 |
| 0    | FINAL       | RA | 06/25/25 |
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T-MOBILE SITE NAME:  
**9JK2817A**

SITE ADDRESS:  
917 SW CHARLES TERRACE  
LAKE CITY, FL 32024-4402

SEAL: CA# 33693

THIS DOCUMENT HAS BEEN ELECTRONICALLY SIGNED & SEALED BY JEREMY D SHARIT, PE (#751337) USING A DIGITAL SIGNATURE IN ACCORDANCE IN ACCORDANCE WITH FAC 61G15-23.004, WITH A DIGITAL CERTIFICATION ISSUED BY ENTRUST INC. PLEASE REFERENCE SHEET T1 TO VIEW THE SIGNATURE AND VERIFY ITS PROPERTIES. PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

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GENERAL NOTES

SHEET NUMBER:

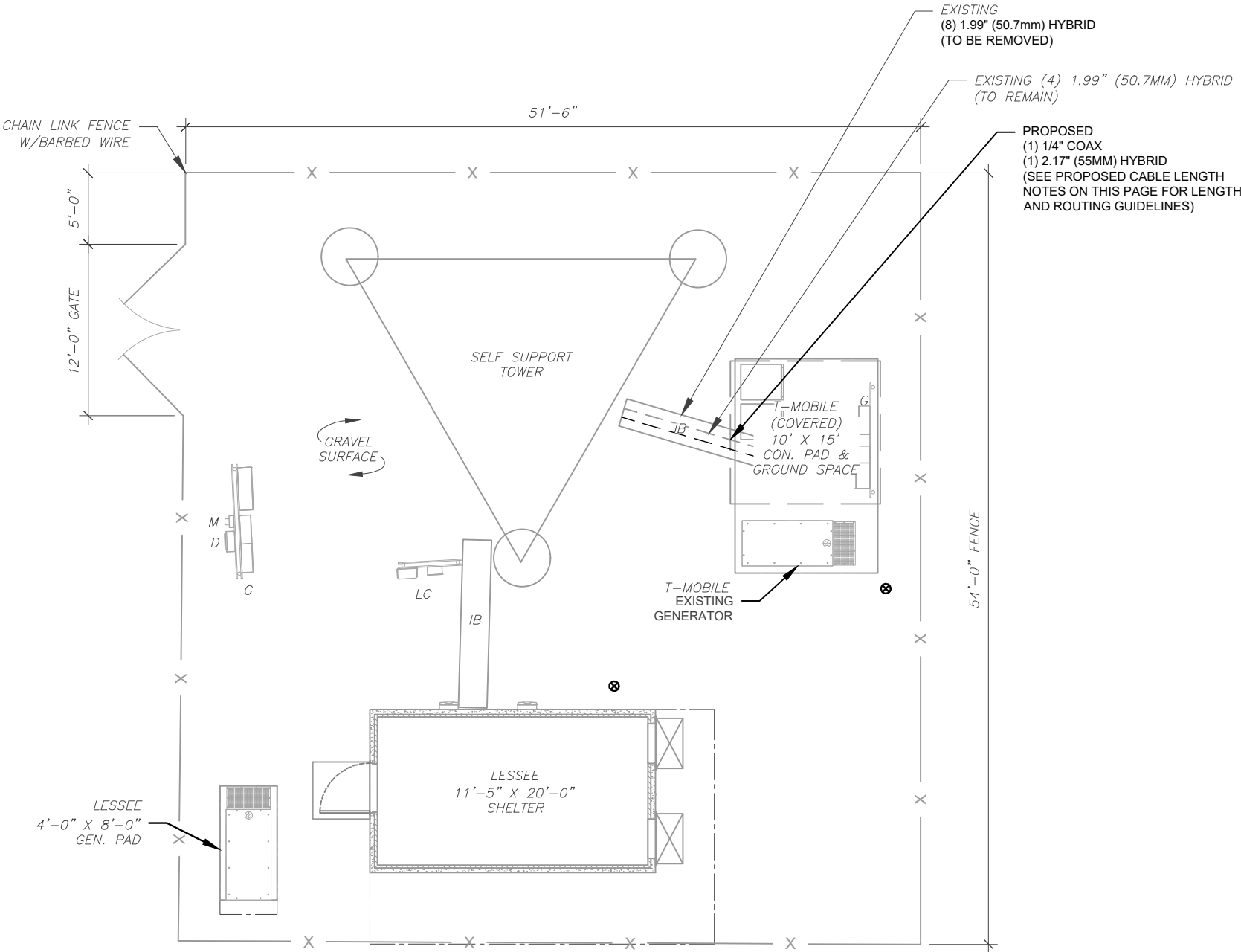
G-002

REVISION:

0

SITE PLAN NOTES:

1.
- THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
2.
- ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.
3.
- NO ELECTRICAL SCOPE IS INCLUDED IN THIS PROJECT.



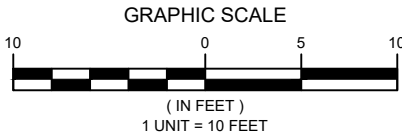
LEGEND

|       |                           |
|-------|---------------------------|
| ⊗     | GROUNDING TEST WELL       |
| ATS   | AUTOMATIC TRANSFER SWITCH |
| B     | BOLLARD                   |
| CSC   | CELL SITE CABINET         |
| D     | DISCONNECT                |
| E     | ELECTRICAL                |
| F     | FIBER                     |
| GEN   | GENERATOR                 |
| G     | GENERATOR RECEPTACLE      |
| HH, V | HAND HOLE, VAULT          |
| IB    | ICE BRIDGE                |
| K     | KENTROX BOX               |
| LC    | LIGHTING CONTROL          |
| M     | METER                     |
| PB    | PULL BOX                  |
| PP    | POWER POLE                |
| T     | TELCO                     |
| TRN   | TRANSFORMER               |
| —     | CHAINLINK FENCE           |

PROPOSED CABLE NOTES:

1.
- ESTIMATED LENGTH OF PROPOSED CABLE IS **±300'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES). CDS DEFER TO GREATEST CABLE LENGTH.
2.
- ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. WHERE POSSIBLE UTILIZE EXISTING CABLE SUPPORT STRUCTURES AS PROVIDED FOR CARRIER TO ADEQUATELY SECURE CABLES, USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER. OTHERWISE, ATTACH CABLES TO HORIZONTAL OR DIAGONAL TOWER MEMBERS USING PROPOSED STAINLESS STEEL ADAPTERS (DO NOT ATTACH TO TOWER LEG).

1 DETAILED SITE PLAN



| REV. | DESCRIPTION | BY | DATE     |
|------|-------------|----|----------|
| A    | PRELIM      | RA | 06/12/25 |
| 0    | FINAL       | RA | 06/25/25 |
|      |             |    |          |
|      |             |    |          |
|      |             |    |          |

ATC SITE NUMBER:  
**417139**

ATC SITE NAME:  
**COLUMBIA (CHARLES) FL**

T-MOBILE SITE NAME:  
**9JK2817A**

SITE ADDRESS:  
917 SW CHARLES TERRACE  
LAKE CITY, FL 32024-4402

SEAL: CA# 33693

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|              |             |
|--------------|-------------|
| ATC PROJ. #: | 15322453_C8 |
| CUST. ID:    | 9JK2817A    |
| CUST. #:     | 9JK2817A    |

DETAILED SITE PLAN

SHEET NUMBER:

C-101

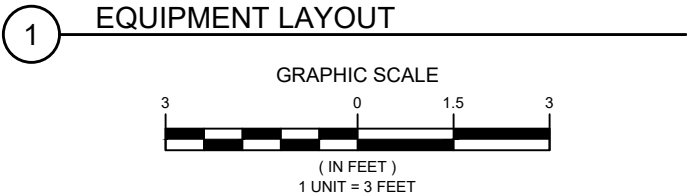
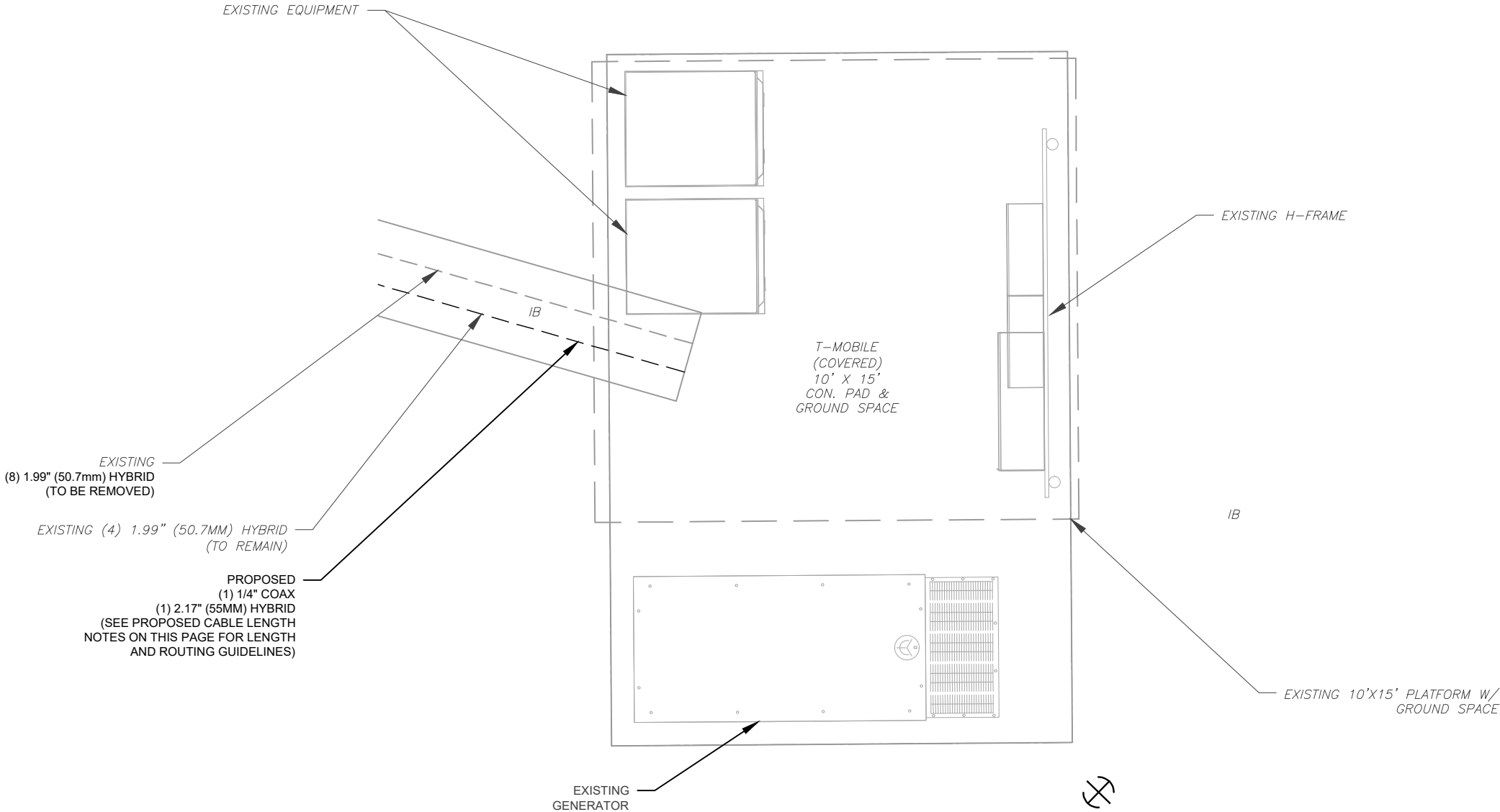
REVISION:

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SITE PLAN NOTES:

1. CONTRACTOR TO VERIFY THERE IS NO LIVE AAV FIBER RUNNING THROUGH EXISTING DEAD EQUIPMENT. IF SO, THIS WILL NEED TO BE RERUN THROUGH CONDUIT PRIOR TO REMOVING DEAD 2G (6201 CABS) EQUIPMENT.
2. ALL OPEN PORTS NEED TO BE SEALED / WEATHERPROOFED PROPERLY
3. ALL UNNEEDED / EXCESS EQUIPMENT AND GARBAGE TO BE REMOVED FROM EQUIPMENT AREA. DISPOSE OF MATERIALS PROPERLY OFF SITE.



| REV. | DESCRIPTION | BY | DATE     |
|------|-------------|----|----------|
| A    | PRELIM      | RA | 06/12/25 |
| 0    | FINAL       | RA | 06/25/25 |
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|--------------|-------------|
| ATC PROJ. #: | 15322453_C8 |
| CUST. ID:    | 9JK2817A    |
| CUST. #:     | 9JK2817A    |

| DETAILED EQUIPMENT PLAN       |                       |
|-------------------------------|-----------------------|
| SHEET NUMBER:<br><b>C-102</b> | REVISION:<br><b>0</b> |

TOP OF EXISTING  
HIGHEST APPURTENANCE  
ELEV 266.17'

TOP OF EXISTING TOWER  
ELEV 250'

EXISTING CARRIER ANTENNAS  
RAD CENTER @ ELEV 253'

EXISTING & PROPOSED T-MOBILE  
RAD CENTER @ 240'

EXISTING  
(8) 1.99" (50.7mm) HYBRID  
(TO BE REMOVED)

EXISTING (4) 1.99" (50.7MM) HYBRID  
(TO REMAIN)

PROPOSED  
(1) 1/4" COAX  
(1) 2.17" (55MM) HYBRID

EXISTING TOWER

EXISTING GRADE  
ELEV 0'

1 TOWER ELEVATION

SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY ATC,  
DATED 05/29/2025, THE EXISTING MOUNT MUST  
BE MODIFIED TO ADEQUATELY SUPPORT THE  
PROPOSED LOADING. THE MOUNT MODIFICATION  
DETAILED AT THE END OF THIS PLAN SET, MUST  
BE INSTALLED PRIOR TO THE INSTALLATION OF  
THE PROPOSED ANTENNAS AND OTHER  
EQUIPMENT.

ALL ELEVATIONS REFLECT ABOVE GROUND LEVEL (A.G.L.)

TOWER NOTE:

- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE PROJECT MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
- WHERE APPLICABLE, ALL NEW ANTENNAS, EQUIPMENT, MOUNTS, CABLING, ETC. SHALL BE PAINTED/SOCKED TO MATCH EXISTING EQUIPMENT IN ACCORDANCE WITH FAA, JURISDICTION, AND/OR OTHER LOCAL REQUIREMENTS.
- ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. WHERE POSSIBLE UTILIZE EXISTING CABLE SUPPORT STRUCTURES AS PROVIDED FOR CARRIER TO ADEQUATELY SECURE CABLES, USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER. OTHERWISE, ATTACH CABLES TO HORIZONTAL OR DIAGONAL TOWER MEMBERS USING PROPOSED STAINLESS STEEL ADAPTERS (DO NOT ATTACH TO TOWER LEG).
- TOWER ELEVATION DEPICTION MAY NOT REFLECT ALL EQUIPMENT INCLUDED IN STRUCTURAL ANALYSIS. REFER TO STRUCTURAL ANALYSIS FOR FULL TOWER LOADING.



| REV. | DESCRIPTION | BY | DATE     |
|------|-------------|----|----------|
| A    | PRELIM      | RA | 06/12/25 |
| 0    | FINAL       | RA | 06/25/25 |
|      |             |    |          |
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|      |             |    |          |

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SITE ADDRESS:  
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LAKE CITY, FL 32024-4402

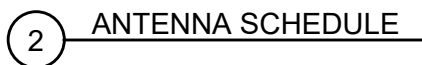
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|              |             |
|--------------|-------------|
| ATC PROJ. #: | 15322453_C8 |
| CUST. ID:    | 9JK2817A    |
| CUST. #:     | 9JK2817A    |

TOWER ELEVATION

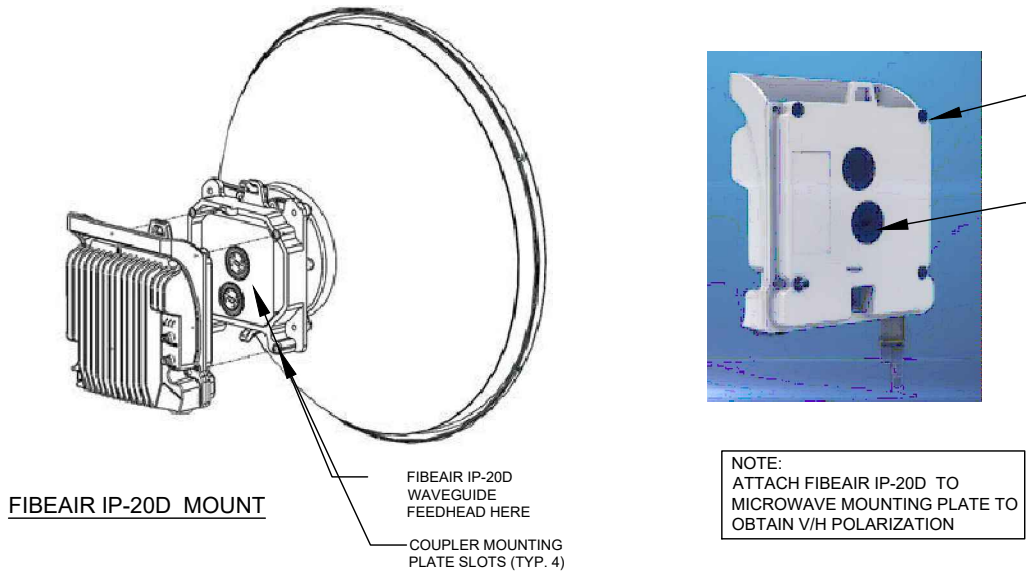
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|---------------|-----------|
| SHEET NUMBER: | REVISION: |
| C-201         | 0         |



| PROPOSED ANTENNA AND RF EQUIPMENT SCHEDULE |      |         |                 |              |        |                     |                        |        |                                          |        |
|--------------------------------------------|------|---------|-----------------|--------------|--------|---------------------|------------------------|--------|------------------------------------------|--------|
| LOCATION                                   |      |         | ANTENNA SUMMARY |              |        | NON ANTENNA SUMMARY |                        |        | PROPOSED CABLING SUMMARY                 |        |
| SECTOR                                     | RAD  | AZ      | POS             | MODEL NUMBER | STATUS | POS                 | MODEL NUMBER           | STATUS | COAX/ELLIPTICAL                          | STATUS |
| D1                                         | 240° | 217.89° | D1              | VHLP3-11WA   | ADD    | D1                  | (1) FIBEAIR IP-20D ODU | ADD    | (1) 1/4" COAX<br>(1) 2.17" (55MM) HYBRID | ADD    |

|                               |                       |
|-------------------------------|-----------------------|
| SHEET NUMBER:<br><b>C-401</b> | REVISION:<br><b>0</b> |
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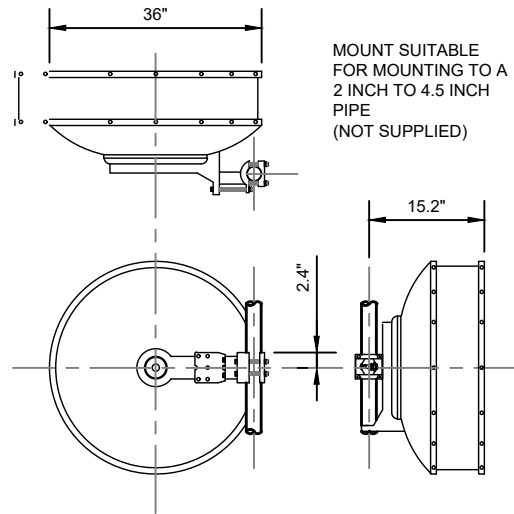
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- THIS IS A BRIEF DESCRIPTION OF FIBEAIR IP-20D PIPE MOUNTING.
- FIBEAIR IP-20D PROVIDE (4) MOUNTING BOLTS AS SHOWN TO ATTACH TO THE DIRECT MOUNT COUPLER PLATE AS SHOWN.
- THE HANDLE OF THE FIBEAIR IP-20D SHOULD ALWAYS BE ORIENTED (TOWARD THE SKY)TO HELP PROTECT THE CONNECTION INTERFACES FROM THE WEATHER.
- THE COUPLER INCLUDES DETAILED INSTRUCTIONS FOR MOUNTING AND GASKET PLACEMENT.

## 1 PROPOSED FIBEAIR IP-20D INSTALLATION DETAIL

SCALE: NOT TO SCALE



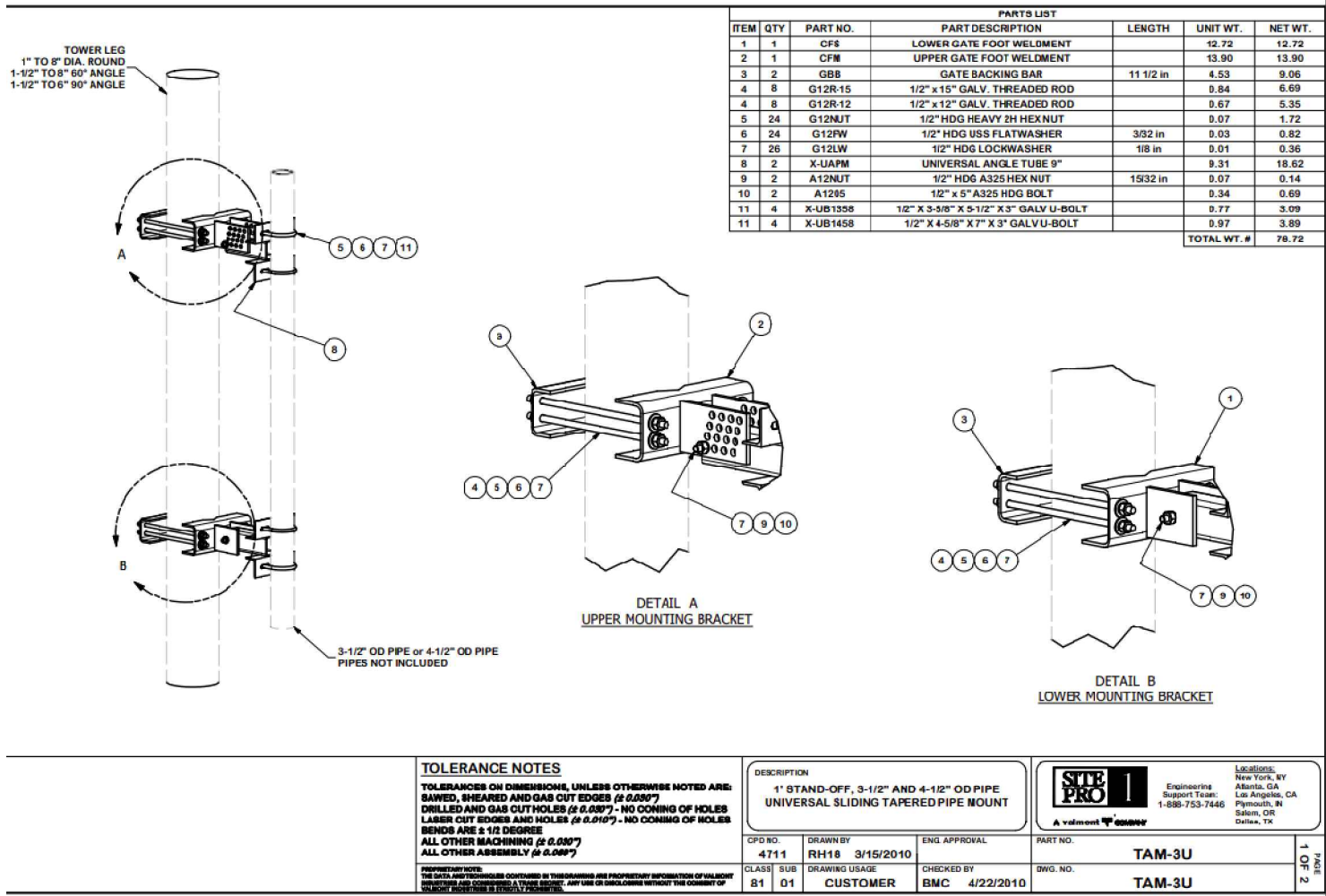
| ELECTRICAL SPECIFICATIONS       |           |
|---------------------------------|-----------|
| FREQUENCY BAND, GHz             | 17.7-19.7 |
| LOW BAND GAIN, dBi              | 43.1      |
| MID BAND GAIN, dBi              | 43.5      |
| TOP BAND GAIN, dBi              | 43.7      |
| BEAMWIDTH, DEGREES              | 1.1       |
| FRONT/BACK dB                   | 40.2      |
| XPD, dB                         | 30.0      |
| RETURN LOSS dB<br>10.125-11.700 | 17.7      |

### NOTES:

- CONTRACTOR TO PROVIDE AND INSTALL APPROPRIATE PIPE CLAMPS AND MOUNTING HARDWARE PER MANUFACTURER'S RECOMMENDATIONS AND SITE CM.
- PROPOSED RFU'S SHALL BE MOUNTED SUCH THAT THEY ARE ACCESSIBLE FOR MAINTENANCE.
- CONTRACTOR SHALL CONFIRM STRUCTURAL CAPACITY/INTEGRITY OF EXISTING MOUNT PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL FIELD VERIFY THE INSTALLATION LOCATION OF RFU'S AT ANTENNA ELEVATION SUCH TO NOT CREATE A TRIPPING HAZARD OR INTERFERE WITH ANTENNAS AND ASSOCIATED EQUIPMENT.

## 2 PROPOSED 3'-0" MICROWAVE SPECIFICATION

SCALE: NOT TO SCALE



## 3 PROPOSED MICROWAVE MOUNT

SCALE: NOT TO SCALE



| REV. | DESCRIPTION | BY | DATE     |
|------|-------------|----|----------|
| A    | PRELIM      | RA | 06/12/25 |
| O    | FINAL       | RA | 06/25/25 |
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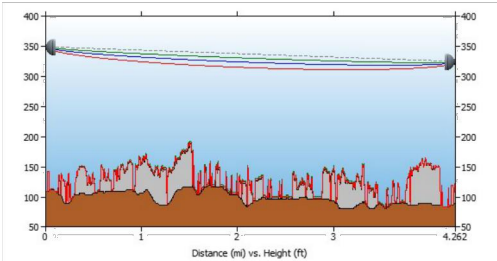
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ATC PROJ. #: 15322453\_C8  
CUST. ID: 9JK2817A  
CUST. #: 9JK2817A

## CONSTRUCTION DETAILS

SHEET NUMBER:  
**C-501**  
REVISION:  
**0**





| 9JK2817A                | Frequency (GHz) = 11.00 GHz | 9JK0785A                |
|-------------------------|-----------------------------|-------------------------|
| Latitude: 30-06-22.8 N  | K1: [PL-K1]                 | Latitude: 30-03-26.9 N  |
| Longitude: 82-45-36.2 W | %F1: [PL-F1]                | Longitude: 82-48-13.5 W |
| Azimuth: 217.89 Deg     | K2: [PL-K2]                 | Azimuth: 37.86 Deg      |
| Elevation: 108.27 ft    | %F2: [PL-F2]                | Elevation: 88.58 ft     |

|                           |                             |                           |
|---------------------------|-----------------------------|---------------------------|
| Antenna CL: 240.00 ft AGL | K3: [PL-K3]<br>%F3: [PL-F3] | Antenna CL: 235.00 ft AGL |
|---------------------------|-----------------------------|---------------------------|

4-2-25: Equip appears to be the same as 9JK1172B as listed on that data sheet  
(1) VHL P3 Dish  
(1) IP-20D/RPU-D-HP ODU  
(1) 1/4" coax power cable and  
(1) .55mm fiber cable

| Transmission details               |                         |                     |
|------------------------------------|-------------------------|---------------------|
| SITE ID:                           | 9JK2817A                | 9JK0785A            |
| [CLUSTER_ID_LABEL]:                | [CLUSTER_ID_A]          | [CLUSTER_ID_B]      |
| [CALL_SIGN_LABEL]:                 | [CALL_SIGN_A]           | [CALL_SIGN_B]       |
| ASR #:                             |                         |                     |
| AAV_CONTRACT_ID:                   | ATT224                  | [AAV_CONTRACT_ID_B] |
| AAV_CONTRACT_STATUS:               | [AAV_CONTRACT_STATUS_A] | Not Available       |
| Ethernet Installed:                | [1_95_STATUS_A]         | [1_95_STATUS_B]     |
| Latitude:                          | 30-06-22.8 N            | 30-03-26.9 N        |
| Longitude:                         | 82-45-36.2 W            | 82-48-13.5 W        |
| Azimuth (deg):                     | 217.89 Deg              | 37.86 Deg           |
| Vertical angle (deg):              | 0.08 Down               | 0.04 Up             |
| Elevation:                         | 108.27 ft               | 88.58 ft            |
| Antenna model:                     | VHLP3-11WA              | VHLP3-11WA          |
| Antenna manufacturer:              | ANDREW CORPORATION      | ANDREW CORPORATION  |
| Antenna Id:                        | 220                     | 220                 |
| Antenna gain (dBi):                | 38.50 dBi               | 38.50 dBi           |
| Antenna diameter:                  | 2.95 ft                 | 2.95 ft             |
| Antenna CL:                        | 240.00 ft AGL           | 235.00 ft AGL       |
| Diversity Antenna model:           |                         |                     |
| Diversity Antenna manufacturer:    |                         |                     |
| Diversity Antenna Id:              |                         |                     |
| Diversity Antenna gain (dBi):      |                         |                     |
| Diversity Antenna diameter:        |                         |                     |
| Diversity Antenna CL:              |                         |                     |
| Branch Loss Tx/Rx (dB):            | 1.00 dB/1.00 dB         | 1.00 dB/1.00 dB     |
| Attenuator Common/Tx/Rx (dB):      |                         |                     |
| Waveguide #1 Model, Len, Loss(dB): |                         |                     |
| Waveguide #2 Model, Len, Loss(dB): |                         |                     |
| Waveguide #3 Model, Len, Loss(dB): |                         |                     |

|                                   |                       |                       |
|-----------------------------------|-----------------------|-----------------------|
| Total Waveguide Loss (dB):        |                       |                       |
| Other Losses (dB):                | 1.00 dB               | 1.00 dB               |
| Frequency (GHz):                  | 11.00 GHz             |                       |
| Path length:                      | 4.26 mi               |                       |
| Free space loss (dB):             | 130.00 dB             |                       |
| Atmospheric absorption loss (dB): | 0.10 dB               |                       |
| Obstruction Loss (dB):            | 0.00 dB (oLOS)        |                       |
| Field margin (dB):                | 1.00 dB               |                       |
| Net path loss (dB):               | 58.10 dB              | 58.10 dB              |
| Configuration:                    | 2+0/DP/DM/OMT         | 2+0/DP/DM/OMT         |
| Radio model:                      | IP20D-HP11-80X-A_4501 | IP20D-HP11-80X-A_4501 |
| Radio manufacturer:               | Ceragon Networks      | Ceragon Networks      |
| Radio Id:                         | 754                   | 754                   |
| Frequency Plan: Frequency (MHz):  | High: N/A             | Low: N/A              |
| Polarization:                     | N/A                   | N/A                   |
| Emission designator:              | 80MOD7W               | 80MOD7W               |
| Climatic factor:                  | 2.00                  |                       |
| Terrain roughness factor:         | 4.00                  |                       |
| Average annual temperature:       | 68.26 degF            |                       |
| Design Path Polarity:             | Vertical              |                       |
| Rain region:                      | Jacksonville, Florida |                       |
| 0.01% Rain Rate:                  | 72.9 mm/hr            |                       |

| Modulation / Throughput | Tx Power A/B (dBm) |       | EIRP A/B (dBm) |       | Receive Signal A/B (dBm) |        | Composite Fade Margin A/B (dB) |       | Radio Threshold/ ACM Drop Level A/B (dBm) |        |
|-------------------------|--------------------|-------|----------------|-------|--------------------------|--------|--------------------------------|-------|-------------------------------------------|--------|
| BPSK 67.00 Mbps         | 36.00              | 36.00 | 72.50          | 72.50 | -21.10                   | -21.10 | 60.66                          | 60.66 | -86.30                                    | -86.30 |

|                    |       |       |       |       |        |        |       |       |        |        |
|--------------------|-------|-------|-------|-------|--------|--------|-------|-------|--------|--------|
| 4QAM 119.00 Mbps   | 36.00 | 36.00 | 72.50 | 72.50 | -21.10 | -21.10 | 57.16 | 57.16 | -80.50 | -80.50 |
| 8QAM 195.00 Mbps   | 36.00 | 36.00 | 72.50 | 72.50 | -21.10 | -21.10 | 54.13 | 54.13 | -76.80 | -76.80 |
| 16QAM 244.00 Mbps  | 35.00 | 35.00 | 71.50 | 71.50 | -22.10 | -22.10 | 50.44 | 50.44 | -73.80 | -73.80 |
| 32QAM 321.00 Mbps  | 35.00 | 35.00 | 71.50 | 71.50 | -22.10 | -22.10 | 46.08 | 46.08 | -70.40 | -70.40 |
| 64QAM 394.00 Mbps  | 34.00 | 34.00 | 70.50 | 70.50 | -23.10 | -23.10 | 42.36 | 42.36 | -67.50 | -67.50 |
| 128QAM 466.00 Mbps | 33.00 | 33.00 | 69.50 | 69.50 | -24.10 | -24.10 | 38.52 | 38.52 | -64.50 | -64.50 |
| 256QAM 537.00 Mbps | 32.00 | 32.00 | 68.50 | 68.50 | -25.10 | -25.10 | 35.21 | 35.21 | -61.80 | -61.80 |
| 512QAM 590.00 Mbps | 32.00 | 32.00 | 68.50 | 68.50 | -25.10 | -25.10 | 32.63 | 32.63 | -59.10 | -59.10 |
| 1KLQAM 642.00 Mbps | 31.00 | 31.00 | 67.50 | 67.50 | -26.10 | -26.10 | 28.58 | 28.58 | -55.90 | -55.90 |
| 1KHQAM 682.00 Mbps | 31.00 | 31.00 | 67.50 | 67.50 | -26.10 | -26.10 | 28.22 | 28.22 | -55.50 | -55.50 |
| 2KQAM 722.00 Mbps  | 31.00 | 31.00 | 67.50 | 67.50 | -26.10 | -26.10 | 25.37 | 25.37 | -52.60 | -52.60 |

| Modulation/Throughput | Worst Month Multipath |        | Worst Month Rain |        | Annual Multipath |         | Annual Rain |        | Total Annual |         | Total Active In Mode |             |
|-----------------------|-----------------------|--------|------------------|--------|------------------|---------|-------------|--------|--------------|---------|----------------------|-------------|
|                       | (100-%)               | (s)    | (100-%)          | (s)    | (100-%)          | (s)     | (100-%)     | (s)    | (100-%)      | (s)     | (100-%)              | (s)         |
| BPSK 67.00 Mbps       | 99.999997             | 0.08   | 99.999225        | 20.37  | 99.999999        | 0.32    | 99.999921   | 25.04  | 99.999920    | 25.36   | 0.000024             | 7.63        |
| 4QAM 119.00 Mbps      | 99.999993             | 0.17   | 99.999033        | 25.40  | 99.999998        | 0.71    | 99.999898   | 32.28  | 99.999895    | 32.99   | 0.000029             | 9.20        |
| 8QAM 195.00 Mbps      | 99.999987             | 0.35   | 99.998816        | 31.12  | 99.999996        | 1.42    | 99.999871   | 40.77  | 99.999866    | 42.18   | 0.000032             | 16.37       |
| 16QAM 244.00 Mbps     | 99.999989             | 0.61   | 99.998458        | 40.53  | 99.999989        | 3.31    | 99.999625   | 55.24  | 99.999614    | 58.55   | 0.000101             | 31.85       |
| 32QAM 321.00 Mbps     | 99.999916             | 2.21   | 99.997940        | 56.79  | 99.999971        | 9.04    | 99.999742   | 81.37  | 99.999713    | 90.41   | 0.000148             | 46.77       |
| 64QAM 394.00 Mbps     | 99.999802             | 5.20   | 99.997063        | 77.19  | 99.999833        | 21.28   | 99.999632   | 115.80 | 99.999565    | 137.18  | 0.000270             | 85.18       |
| 128QAM 466.00 Mbps    | 99.999521             | 12.59  | 99.995894        | 108.16 | 99.999837        | 51.55   | 99.999458   | 170.82 | 99.999295    | 222.36  | 0.000418             | 131.70      |
| 256QAM 537.00 Mbps    | 99.998972             | 27.81  | 99.994399        | 147.19 | 99.99949         | 110.60  | 99.999228   | 243.45 | 99.998877    | 354.06  | 0.000539             | 170.14      |
| 512QAM 590.00 Mbps    | 99.998140             | 49.89  | 99.992820        | 188.70 | 99.999365        | 200.23  | 99.998973   | 323.06 | 99.998338    | 524.19  | 0.001592             | 502.04      |
| 1KLQAM 642.00 Mbps    | 99.995277             | 124.13 | 99.989203        | 283.74 | 99.998388        | 508.38  | 99.998358   | 517.86 | 99.996746    | 1026.24 | 0.000212             | 66.91       |
| 1KHQAM 682.00 Mbps    | 99.994864             | 134.99 | 99.988798        | 294.40 | 99.998247        | 552.65  | 99.998287   | 540.30 | 99.996534    | 1093.15 | 0.002336             | 736.66      |
| 2KQAM 722.00 Mbps     | 99.990098             | 200.24 | 99.984860        | 397.89 | 99.996620        | 1065.82 | 99.997577   | 763.96 | 99.994198    | 1829.80 | 99.994198            | 21534170.29 |

Multipath fading method - VIGANTS  
Rain fading method - Crane City/Jacksonville, Florida

SUPPLEMENTAL

SHEET NUMBER:

R-601

REVISION:

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