



COM21-143  
I-3

# at&t

**SITE NAME:**  
**FA# / SITE ID:**  
**PROJECT TYPE:**  
**PAGE:**  
**PTN:**

**I-25 & WIGWAM**  
**10099192 / COL06040**  
**LTE 5C / 5G NR**  
**MRUTH042878 / MRUTH042916**  
**3755A0WMM9 / 3755A0WMPR**

**Approved**  
By: Petra Rangel  
Date: 09/23/2021  
El Paso County Planning & Community Development



**smartlink**  
400 SOUTH COLORADO BOULEVARD, SUITE 820  
OFFICE: (989) 422-5465



319 CHAMBER RD, SUITE 118  
MILTON, NC 27053  
PH: (435) 346-7200 FAX: (435) 346-4653  
EL PASO COUNTY PROJECT ID: 64825-10099192-4-E-P1

REV.	DATE	DESCRIPTION	INITIALS
A	03/10/21	PRELIMINARY ISSUE	AND
B	04/05/21	CLIENT COMMENTS	AND
C	06/04/21	PDR CONSTRUCTION	ORA
1	06/12/21	CLIENT COMMENTS	AND
2	08/24/21	CLIENT COMMENTS	AND

Digitally signed by Richard Boelter  
Date: 2021.08.25 16:04:18 -0400



**I-25 & WIGWAM**  
**FA# / SITE ID:**  
**10099192 / COL06040**  
20367 E INDUSTRIAL BLVD  
FOUNTAIN, CO 80817

**TITLE SHEET**

**T1**

PCD File No. COM-21-043

### LOCATION MAP



### AERIAL PHOTO



### SITE REFERENCE PHOTO



### DRIVING DIRECTIONS

FROM CITY OF COLORADO SPRINGS MUNICIPAL AIRPORT:  
DEPART WEST ON MILTON E PROBY PKWY, IN 2.7 MI ROAD NAME CHANGES TO MILTON E PROBY PKWY, IN 1.1 MI TAKE RAMP LEFT FOR CO-83/S KADAMY BLVD, IN 2.2 MI TAKE RAMP LEFT FOR I-25, COLORADO BLVD, IN 0.9 MI TURN RIGHT ONTO PROBY BLVD, IN 0.2 MI TURN RIGHT ONTO WIGWAM RD, IN 1.2 MI TURN LEFT ONTO INDUSTRY AVE, IN 0.2 MI ARRIVE AT INDUSTRY AVE ON THE RIGHT.

### ONE CALL

**CALL COLORADO 811**  
3 WORKING DAYS BEFORE YOU DIG  
811 OR 1-800-822-1987

### PROJECT INFORMATION

**STRUCTURE TYPE:** COLLOCATION 147'-0" MONOPOLE  
**LATITUDE (NAD 83):** 38.5378683  
**LONGITUDE (NAD 83):** -104.63663  
**SITE LOCATION:** COL06040-I-25 & WIGWAM 20357 E INDUSTRIAL BLVD FOUNTAIN, CO 80817  
**GROUND ELEVATION:** 5223' AMSL  
**MARKET:** RMR  
**JURISDICTION:** EL PASO COUNTY  
**COUNTY:** EL PASO  
**OCCUPANCY TYPE:** UNMANNED  
**ADA COMPLIANCE:** FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.

### PROJECT TEAM

**ENGINEER/ARCHITECT:** TELAMON CLS  
**SITE ACQUISITION:** TAMARA SHVELEY  
**CLIENT:** EL PASO COUNTY  
**PHONE:** 801-230-4877

### CODE COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING APPLICABLE CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES:  
**BUILDING/DWELLING CODE:** IBC 2015  
**STRUCTURAL CODE:** IBC 2015  
**PLUMBING CODE:** IPC 2015  
**MECHANICAL CODE:** IMC 2015  
**ELECTRICAL CODE:** NEC 2017  
**FIRE & LIFE SAFETY CODE:** IFC 2015

### DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, COORDINATES AND ELEVATIONS ON THE SITE AND SHALL INCREASE BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE SAME.

### DRAWING INDEX

SHEET	SHEET DESCRIPTION	REV
T1	TITLE SHEET	1
GN1	GENERAL NOTES	0
A1	EXISTING SITE PLAN	0
A2	EQUIPMENT PLANS	0
A3	TOWER ELEVATIONS	0
A4	ANTENNA PLANS & SCHEDULE	2
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E1	ONE-LINE DIAGRAM	0
E2	PANEL SCHEDULE	0
G1-G2	GROUNDING DETAILS	0

### SCOPE OF WORK

- REMOVE (3) K&W AM-X-CO-17-65-00T-RET (1 PER SECTOR)
  - REMOVE (3) KATHREIN 80010765 (1 PER SECTOR)
  - REMOVE (3) POWERWAVE TT19-08BP-111-001 (1 PER SECTOR)
  - PIPS USING (3) MICROSEALZ PIPE MOUNT ASSEMBLY, RE: 2-3/47
  - INSTALL (6) NEW COMSCOPE NNH4-65C-86-43 ANTENNAS
  - INSTALL (3) NEW ARSCALE DUAL RHH 41R 85/29 240W
  - INSTALL (3) NEW ARSCALE DUAL RHH 41R 85/66 320W AHB1 (1 PER SECTOR), RE:3/AS
- GROUND SCOPES:**
- REMOVE GSM CABINET
  - REMOVE EXISTING 9412 CABINET
  - INSTALL NEW 9412 CABINET
  - INSTALL NEW 5000 OUTDOOR POWER PLANT W/ (3) STRINGS 190A BATTERIES (12) BATTERIES (10) RECTIFIERS AND (2) CONVERTERS, RE: 2/46
  - INSTALL NEW 5000 OUTDOOR POWER PLANT W/ (3) STRINGS 190A BATTERIES (12) BATTERIES (10) RECTIFIERS AND (2) CONVERTERS, RE: 2/46
  - INSTALL NEW 5G FSMA WITH (1) A&K (1) A&M AND (1) A&M IN NEW A&M IN EXISTING FSMA
  - RELOCATE EXISTING LTE FSMA FROM 8412 CABINET TO NEW REV. 21

### RFDS INFORMATION

**RFDS ID:** 4139287  
**RFDS REVISION:** 1/00  
**RFDS DATE:** 01/12/2021

### GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR - GENERAL CONTRACTOR  
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)  
 OWNER - AT&T MOBILITY  
 OEM - ORIGINAL EQUIPMENT MANUFACTURER  
 2. PRIOR TO THE SUBMISSIONS OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND TO CONSTRUCTION DRAWINGS. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS, QUANTITIES AND DIMENSIONS BEFORE STARTING ANY WORK. NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES OR INCONSISTENCIES BEFORE PROCEEDING WITH THE WORK.  
 3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LABEL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE INSTALLATION OF THE EQUIPMENT. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE LOCAL, STATE, FEDERAL AND COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.  
 4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.  
 5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.  
 6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.  
 7. DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.  
 8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONTROL THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR.  
 9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PARKWAYS, CURBS, SIDEWALKS AND UTILITIES. EXISTING UTILITIES SHALL BE REPAIRED AS NECESSARY. SUBCONTRACTOR SHALL VERIFY THE SATISFACTION OF THE OWNER. SUBCONTRACTOR SHALL TENDILY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FOR THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.  
 11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.  
 12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.  
 13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENT WITH AISC 13.  
 14. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC 13.  
 15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3485-4002-00002.  
 16. GENERAL CONSTRUCTION SERVICES:  
 SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.  
 17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT SHALL BE CONDUCTED WITH CONTRACTOR, ALSO WORK ON EXISTING EQUIPMENT SHALL BE CONDUCTED WHILE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.  
 18. WHEN THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUT DOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.  
 19. ALL ANTENNA SPECS SHALL BE SCHEDULE 80.  
 20. LUMPS OF LIABILITY - ITEMS REFERENCED ARE OWNER/CLIENT DICTATED ITEMS, OR SUPPLIED ITEMS WHICH ARE REPRODUCED WITHOUT ALTERATION AS DIRECTED BY OWNER/CLIENT AND OWNER/CLIENT ASSUMES ALL LIABILITY FOR USE OF ITEMS. WORK ON EXISTING EQUIPMENT SHALL BE CONDUCTED WITH CONTRACTOR, ALSO WORK ON EXISTING EQUIPMENT SHALL BE CONDUCTED WHILE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.  
 21. PROFESSIONAL SEAL - DETAILS, SPECIFICATIONS(S), OR ITEMS REFERENCED, ARE NOT PART OF THE PROFESSIONAL DESIGN PERFORMED BY LICENSEE AND THE PROFESSIONAL SEAL DOES NOT APPLY.

### ELECTRICAL INSTALLATION NOTES

1. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE SUBCONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING CABLE TRAYS AS REQUIRED TO SUPPORT RF MODIFICATIONS TO CONTRACTOR FOR APPROVAL.  
 2. ALL CIRCUITS SHALL BE SERVICED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELLONDA.  
 3. CABLES SHALL BE ROUTED THROUGH LADDER-SHIELD CABLE TRAY RUNS.  
 4. EACH END OF EVERY POWER, GROUNDING OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL).  
 5. CONDUCTOR SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL. PHASE CONDUCTORS SHALL CONFORM WITH THE NEC & OSHA, OR EQUAL. PHASE CONDUCTORS SHALL CONFORM WITH THE NEC & OSHA, OR EQUAL. MATCH EXISTING INSTALLATION REQUIREMENTS.  
 6. POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL).  
 7. LABELS SHALL BE LABELED WITH ENGRAVED ALUMINUM PLASTIC CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).  
 8. PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED ALUMINUM PLASTIC LABELS.  
 9. ALL THE WRAPS WHERE PERMITTED SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES. USE LOW PROFILES THE WRAPS.  
 10. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION. LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED. UNLESS OTHERWISE SPECIFIED, SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCKED INDOORS SHALL BE SINGLE CONDUCTOR CABLE RATED FOR 90°C (WET AND DRY) OPERATION. LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED. UNLESS OTHERWISE SPECIFIED, SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCKED OUTDOORS SHALL BE SINGLE CONDUCTOR CABLE RATED FOR 90°C (WET AND DRY) OPERATION. LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED. UNLESS OTHERWISE SPECIFIED, SINGLE CONDUCTOR 2 AWG SOLID THINNED COPPER CABLE UNLESS OTHERWISE SPECIFIED, POWER WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (12 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90°C (WET AND DRY) OPERATION. LISTED OR LABELED FOR THE LOCATION USED. UNLESS OTHERWISE SPECIFIED.  
 14. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRAMP-SHIELD, COMPRESSION WIRE LUGS AND WIRENUTS BY THOMS AND BETTS (OR EQUAL), LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT OR LESS THAN 75°C (90°C IF AVAILABLE).  
 15. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANS/IEEE, AND NEC.  
 16. NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.  
 17. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.  
 18. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (RIGID PVC SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.  
 19. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.  
 20. RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40, OR RIGID PVC SCHEDULE 80) SHALL BE USED OUTDOOR, DIRECT BORED, IN AREAS OF HIGH WIND, LIGHTNING, OR OTHER HAZARDOUS CONDITIONS. RIGID PVC SCHEDULE 40 SHALL BE USED INDOORS AND 22 CONDUIT WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.  
 21. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.  
 22. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED ACCORDANCE WITH NEMA, UL, ANS/IEEE AND NEC.  
 23. CABINETS, BOXES, AND WIREWAYS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED ACCORDANCE WITH NEMA, UL, ANS/IEEE AND NEC.  
 24. CABINETS, BOXES AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.  
 25. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A NINGED COVER, DESIGNED TO SWING OPEN DOWNWARD. SHALL BE PANOUT TYPE E (OR EQUAL). AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 34 (OR BETTER) OUTDOORS.  
 26. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL, SHALL WEAR OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 34 (OR BETTER) OUTDOORS.  
 27. METAL RECEIVING, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING, SHALL WEAR OR EXCEED UL 514 AND NEMA OS 11, AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.  
 28. AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.  
 29. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.  
 30. THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

### GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY (GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHO). THE SITE-SPECIFIC (UL, LP, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELLONDA AND TIA GROUNDING STANDARDS SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION OR ADDRESS FINDINGS TO THE CONTRACTOR FOR RESOLUTION.  
 2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GESS) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDED CONDUCTORS IN ACCORDANCE WITH THE NEC.  
 3. THE SUBCONTRACTOR SHALL PERFORM IEEE FAL-01-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 911) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-315-10300-0001. DESIGN & TESTING OF METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BITS EQUIPMENT.  
 5. EACH BITS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES. 6 AWG STRANDED COPPER OR LARGER INDOORS BITS; 2 AWG STRANDED COPPER FOR OUTDOORS BITS.  
 6. BELOW GRADE CONDUIT SHALL BE USED FOR ALL GROUNDING CONNECTIONS.  
 7. APPROVED ANTI-OXIDANT COMINGS (I.E., CONDUCTIVE GEL, OR PASTE) SHALL BE USED ON ALL CONNECTIONS AND BOLTED GROUND CONNECTIONS.  
 8. BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.  
 9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.  
 10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPLIES SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.  
 11. METAL CONDUIT AND TRAY SHALL BE GROUNDING AND BONDED ELECTRICALLY CONTINUOUSLY WITH LISTED BONDING FITTINGS OR BY WELDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.  
 12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR SUCH AS METALLIC CONDUITS, METAL SUPPORT LUGS OR SLEEVES THROUGH METAL METEOR CODE REQUIREMENTS, OR LOCAL CONDITIONS. NON-METALLIC MATERIAL, SUCH AS PVC PLASTIC CONDUIT SHALL BE USED, WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.  
 13. ALL TOWER GROUND SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANS/TLA 222. FOR TOWERS BEING BUILT TO REV G OF THE STANDARD, THE WIRE SIZE OF THE BURRED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURRED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FOR 8 FEET TO 10 FEET.  
 14. ALL GROUND WIRE TO RAILS SHALL BE #2 GREEN STRANDED.  
 15. SHALL UNDER EARTH-HEAT SHIELD BLACK HEAT SHRINK AND INDOOR LUGS SHALL BE LONG BARREL, 2 HOLE WITHOUT INSPECTION HOLES AND INDOOR LUGS TO HAVE INSPECTION HOLES.

### ABBREVIATIONS

ABOVE GRADE LEVEL	MAX	MAXIMUM
AMERICAN WIRE GAUGE	MWG	MASTERS GROUND BAR
BUILDING	MNS	MINIMUM
CONDUIT	CON	CONDUIT SCALE
FLOOR	FLOOR	POWER PROTECTION CABINET
ELECTRICAL METALLIC TUBING	RBS	RAIL BASE STATION
ELECTRICAL METALLIC TUBING	RBS	RAIL BASE STATION
ELECTRICAL METALLIC TUBING	RBS	RAIL BASE STATION
EXISTING	IN	INCHES
EXT	EXT	EXTENSION
FOUNDATION	FOUN	FOUNDATION
GALVANIZED	GF	SQUARE FOOT
GLOBAL POSITIONING SYSTEM	GPS	TYPICAL
GROUND	GRND	TRANSFORMER
IND	IND	
INDUCTION	INDU	

1-25 & WIGWAM  
 FA # / SITE ID:  
 10099192 / COL06040  
 20567 E. INDUSTRIAL BLVD  
 FOUNTAIN CO 80817

SHEET TITLE  
**GENERAL NOTES**

SHEET NUMBER  
**GN1**

PROFESSIONAL SEAL  
 RICHARD A. BOLTER  
 37880  
 08/25/2021  
 REGISTERED PROFESSIONAL ENGINEER

REV.	DATE	DESCRIPTION	INITIALS
1	03/10/21	PRELIMINARY ISSUE	AND
2	04/05/21	CLIENT COMMENTS	AND
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318 OSWALDORF RD. SUITE 118  
 PHILADELPHIA, PA 19104  
 PH: (481) 944-2100  
 FAX: (481) 944-4653  
 CLS PROJECT ID: 64925-10099192-A&E-P1

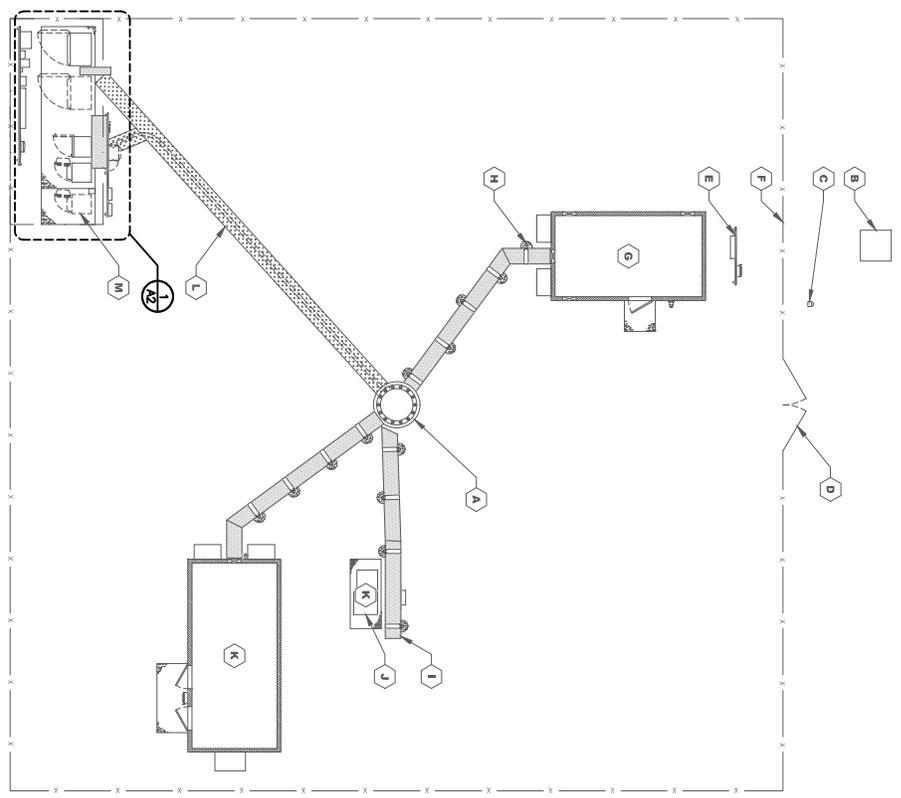
**relamon cls**

400 SOUTH OSWALDORF BOULEVARD, SUITE 820  
 FT. COLLINS, CO 80526-5465  
 PH: (970) 822-5465

**smartlink**

**at&t**

- EQUIPMENT KEYNOTES:**
- A. 147'-0" MONOPOLE
  - B. TRANSFORMER
  - C. METER
  - D. 12'-0" DOUBLE SWING ACCESS GATE
  - E. H-FRAME
  - F. CHAIN-LINK FENCE WITH BARBED WIRE
  - G. 11'-6" X 20'-0" SHELTER (OTHER CARRIER)
  - H. ICE BRIDGE
  - I. EQUIPMENT ON ELEVATED STEEL PLATFORM (OTHER CARRIER)
  - J. VERZON 25'-0" X 12'-0" SHELTER
  - K. CABLE TRAY
  - L. AT&T EQUIPMENT ON CONCRETE PAD



**EXISTING SITE PLAN**  
 SCALE: 1/8"=1'-0" (FULL SIZE)  
 1/8"=1'-0" (1:96)

TRUE NORTH  
 RE: 6N20/GN1

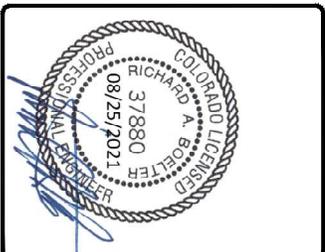


**smartlink**  
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 OFFICE: (303) 752-5465

**Telamon CLS**  
 319 CHAMBERLAIN RD, SUITE 118  
 DENVER, CO 80231  
 PH: (303) 444-3444  
 CLS PROJECT ID: 64925-10099192-A+E-P1

**REVISIONS**

REV.	DATE	DESCRIPTION	INITIALS
A	03/10/21	PRELIMINARY ISSUE	AND
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0	08/04/21	FOR CONSTRUCTION	O&A
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L-25 & WIGWAM  
 FA # / SITE ID:  
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 20857 E. INDUSTRIAL BLVD  
 FOUNTAIN, CO 80817

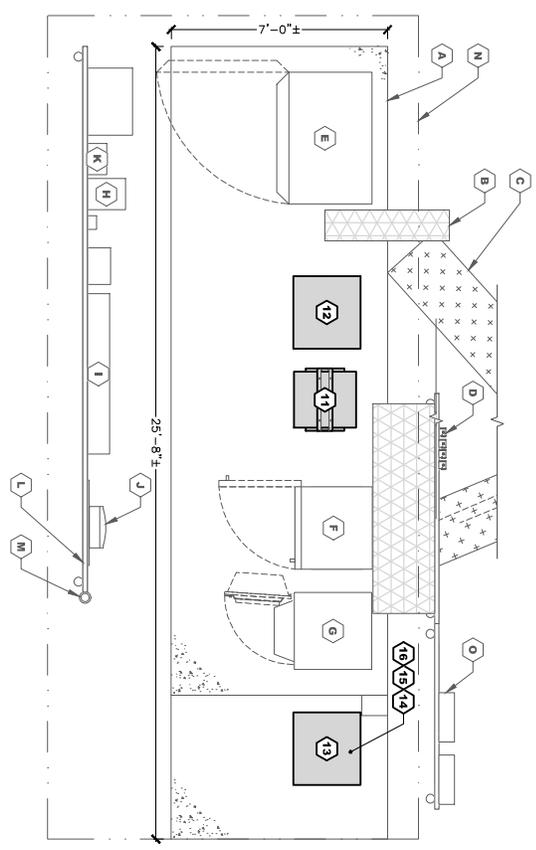
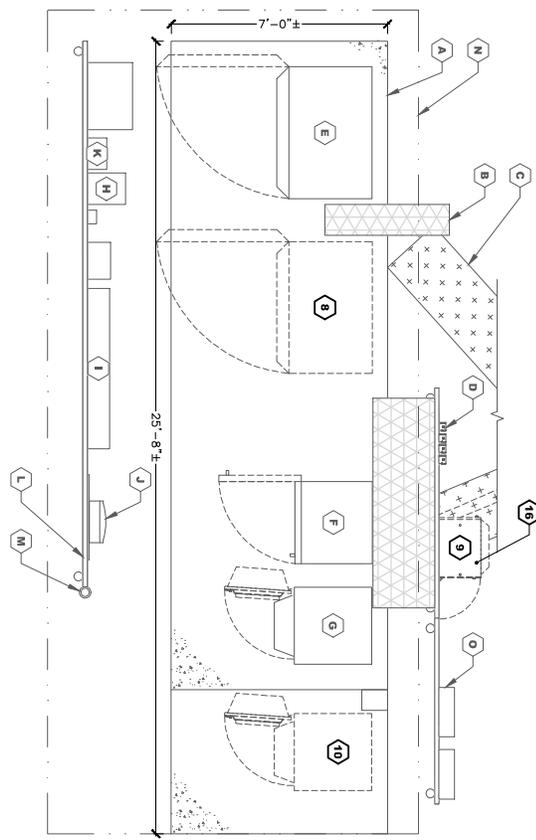
SHEET TITLE  
**EXISTING SITE PLAN**

SHEET NUMBER  
**A1**

- EXISTING EQUIPMENT KENNOTES:**
- A. 25'-8" X 7'-0" CONCRETE PAD
  - B. ICE BRIDGE
  - C. DIRECTION H-FRAME
  - D. GSM CABINET
  - E. UMTS CABINET
  - F. MICROVAE CABINET
  - G. PENNIX
  - H. AC PENNIX
  - I. CENA BOX
  - J. MAIN DISCONNECT
  - K. AT&T H-FRAME
  - L. UPS
  - M. UPS-ABIA
  - N. OUTDOOR DC SURGE SUPPRESSORS ON EXISTING H-FRAME

- SOW KENNOTES**
- TOWER SCOPE:**
1. REMOVE (3) KMW AM-X-CD-17-65-001-RET (1 PER SECTOR)
  2. REMOVE (3) KATHREN 80010765 (1 PER SECTOR)
  3. REMOVE (3) POWERVAE TT19-089B-111-001 (1 PER SECTOR)
  4. INSTALL (6) NEW RR-FAG (3 KITS) W/ (3) 2-3/8" MOUNT PEGS USING (3) MICROSPINZ PIPE MOUNT ASSEMBLY, RE: 1/A5
  5. INSTALL (6) NEW COMSCOPE NH4-85C-R6-V3 ANTENNAS (2 PER SECTOR), RE:1/A5
  6. INSTALL (3) NEW ARSCALE DUAL RHH 41R 825/86 240W AMB0 (1 PER SECTOR), RE:2/A5
  7. REMOVE (3) NEW ARSCALE DUAL RHH 41R 825/86 220W AMB1 (1 PER SECTOR), RE:2/A5
- GROUND SCOPE:**
8. REMOVE GSM CABINET
  9. REMOVE EXISTING 9412 CABINET

10. REMOVE EXISTING DC POWER PLANT AND (12) BATTERIES
11. REMOVE EXISTING 1300H BATTERIES, (12) BATTERIES, (10) RECTIFIERS AND (2) CONVERTERS, RE: 2/A6
12. NEW VERTY OUTDOOR BATTERY CABINET W/ (2) STRINGS OF 190AH BATTERIES (8 BATTERIES), RE: 1/A6
13. REMOVE (1) EXISTING 190AH BATTERY CABINET W/ (2) STRINGS OF 190AH BATTERIES (8 BATTERIES), RE: 1/A7
14. INSTALL NEW 4G FSMA WITH (1) SSK (1) ABL AND (1) AMA IN NEW TELY21 CABINET, RE: 1/A7
15. INSTALL (1) NEW ABA IN EXISTING FSMA
16. RELOCATE EXISTING LTE FSMA FROM 8412 CABINET TO NEW TELY 21



**1 EXISTING EQUIPMENT PLAN**

SCALE: 1/8"=1'-0" (1:60)

TRUE NORTH

**2 PROPOSED EQUIPMENT PLAN**

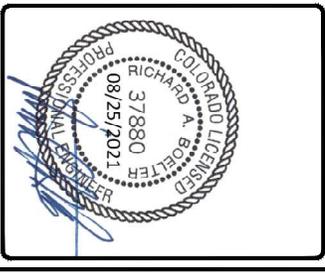
SCALE: 1/8"=1'-0" (1:60)

TRUE NORTH



**REVISIONS**

REV.	DATE	DESCRIPTION	INITIALS
A	03/10/21	PRELIMINARY ISSUE	AND
B	04/05/21	CLIENT COMMENTS	AND
0	08/04/21	FOR CONSTRUCTION	O&A
2	08/24/21	CLIENT COMMENTS	AND



L-25 & WIGWAM  
 FA # / SITE ID:  
 10099192 / COL06040  
 20857 E INDUSTRIAL BLVD  
 FOUNTAIN, CO 80817

SHEET TITLE  
**EQUIPMENT PLANS**

SHEET NUMBER  
**A2**

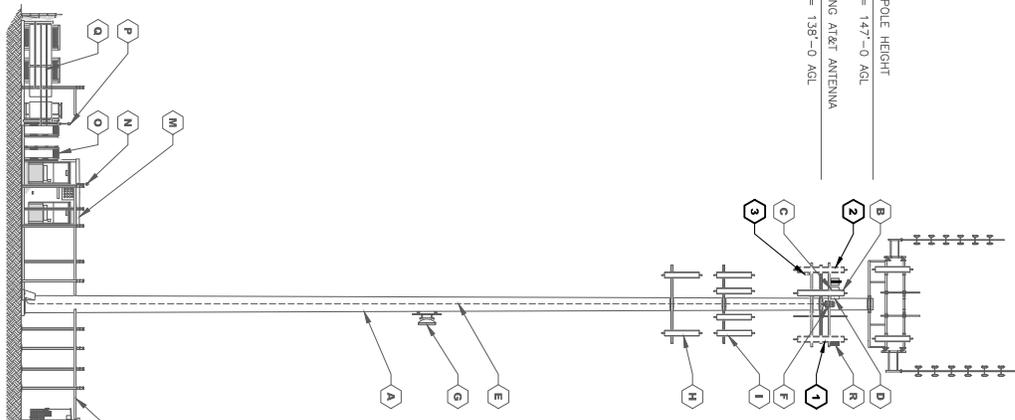
**LOADING NOTES:**  
OTHER CARRIERS EQUIPMENT MAY BE OMITTED FOR CLARITY

**TOWER NOTES:**  
147'-0" MONOPOLE IS SHOWN FOR ILLUSTRATION ONLY AND FOR LOCATION OF APPURTENANCES). REFER TO 147'-0" MONOPOLE SURVEY FOR ALL EXISTING 147'-0" MONOPOLE COMPONENTS TO INCLUDE ANTENNAS, LIGHTS, LIGHTNING ROD & 147'-0" MONOPOLE HEIGHT. CONTRACTOR(S) TO COMPLY WITH ALL FCC AND FAA REGULATIONS ON THIS PROJECT. COAX ROUTING MUST BE PER STRUCTURAL ANALYSIS. PRIOR TO CONSTRUCTION: CONTRACTOR SHALL VERIFY THAT A 147'-0" MONOPOLE AND MOUNT STRUCTURAL ANALYSIS, DEPICTING THE LOADING SHOWN, HAS BEEN PERFORMED AND SHOWS A "PASS" OR AN ACCEPTABLE RATING. UNDER NO CIRCUMSTANCE SHALL THE PROPOSED EQUIPMENT BE INSTALLED UNLESS THE STRUCTURAL ANALYSIS REQUIRES THAT THE 147'-0" MONOPOLE AND/OR MOUNT BE MODIFIED. SUCH MODIFICATIONS SHALL BE COMPLETED PRIOR TO INSTALLATION OF THE PROPOSED EQUIPMENT. MOUNT ANALYSIS DONE BY TELAMON CLS, PROJECT #64925-10099192-01-MA, DATED FEBRUARY 2, 2021. STRUCTURAL ANALYSIS DONE BY TOWER ENGINEERING SOLUTIONS, TES PROJECT #111429, DATED JULY 23, 2021.

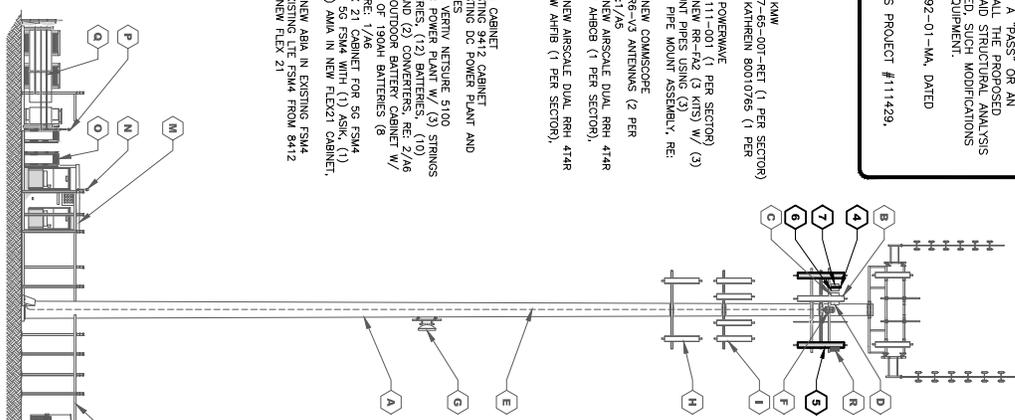
**1 EXISTING ELEVATION**

SCALE: 3/8"=1'-0" (1x1/2)

RE: GN20/GN1



- EXISTING EQUIPMENT KEYNOTES:**
- A. 147'-0" MONOPOLE
  - B. KATHREIN 800-10992K (1 PER SECTOR, 3 TOTAL)
  - C. ARSCALE DUAL RHH 414R B5 160W (1 PER SECTOR, 3 TOTAL)
  - D. ALU B2S RRR4X20-4R (1 PER SECTOR, 3 TOTAL)
  - E. DC POWER TRUNKS, (3) FIBER TRUNK
  - F. RAYCAP DCG-48-60-18-BF SQUID (1 PER SECTOR, 3 TOTAL)
  - G. DISH (OTHER CARRIER)
  - H. ANTENNAS (OTHER CARRIER)
  - I. ANTENNAS (VERIZON)
  - J. VE BRIDGE EQUIPMENT SHELTER
  - K. CHAIN-LINK FENCE
  - L. EQUIPMENT SHELTER (OTHER CARRIER)
  - M. OPS UNIT
  - N. AT&T EQUIPMENT ON CONCRETE PAD
  - O. AT&T EQUIPMENT ON H-FRAME
  - P. ALU RRR2X40-07L-AT (1 PER SECTOR, 3 TOTAL)
  - Q. AT&T EQUIPMENT ON CONCRETE PAD
  - R. ALU RRR2X40-07L-AT (1 PER SECTOR, 3 TOTAL)



- SOB KEYNOTES**
- TOWER SCOPE:**
1. REMOVE (3) XAW
  2. REMOVE (3) KATHREIN 80010765 (1 PER SECTOR)
  3. REMOVE (3) POWERWAVE
  4. INSTALL (1) NEW ARSCALE DUAL RHH 414R B5 160W (1 PER SECTOR)
  5. INSTALL (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  6. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  7. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  8. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  9. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  10. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  11. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  12. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  13. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  14. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  15. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  16. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
- GROUND SCOPE:**
1. REMOVE (3) XAW
  2. REMOVE (3) KATHREIN 80010765 (1 PER SECTOR)
  3. REMOVE (3) POWERWAVE
  4. INSTALL (1) NEW ARSCALE DUAL RHH 414R B5 160W (1 PER SECTOR)
  5. INSTALL (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  6. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  7. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  8. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  9. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  10. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  11. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  12. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  13. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  14. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  15. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS
  16. REMOVE (3) NEW ARSCALE DUAL RHH 414R B5/29 240W AHRCO (1 PER SECTOR), REZ/AS

**2 PROPOSED ELEVATION**

SCALE: 3/8"=1'-0" (1x1/2)

RE: GN20/GN1

MONOPOLE HEIGHT  
ELEV. = 147'-0" AGL  
**PROPOSED AT&T ANTENNA**  
ELEV. = 138'-0" AGL

REV.	DATE	DESCRIPTION	INTNS
A	03/10/21	PRELIMINARY ISSUE	AND
B	04/05/21	CLIENT COMMENTS	AND
0	08/04/21	100% CONSTRUCTION	ORA
2	08/24/21	CLIENT COMMENTS	AND

**telamon cls**  
318 CHAMBERLAIN RD, SUITE 118  
PH: (430) 346-2700  
TELAMON CLS PROJECT ID: 64925-10099192-A&E-P1

**smartlink**  
400 SOUTH COLORADO BOULEVARD, SUITE 820  
OFFICE: (989) 822-5465

**at&t**

PROFESSIONAL SEAL  
RICHARD A. BOLTER  
37880  
08/25/2021  
REGISTERED PROFESSIONAL ENGINEER

L-25 & WIGWAM  
FA # / SITE ID:  
10099192 / COL06040  
20357 E INDUSTRIAL BLVD  
FOUNTAIN, CO 80817

SHEET TITLE  
**TOWER ELEVATIONS**

SHEET NUMBER  
**A3**

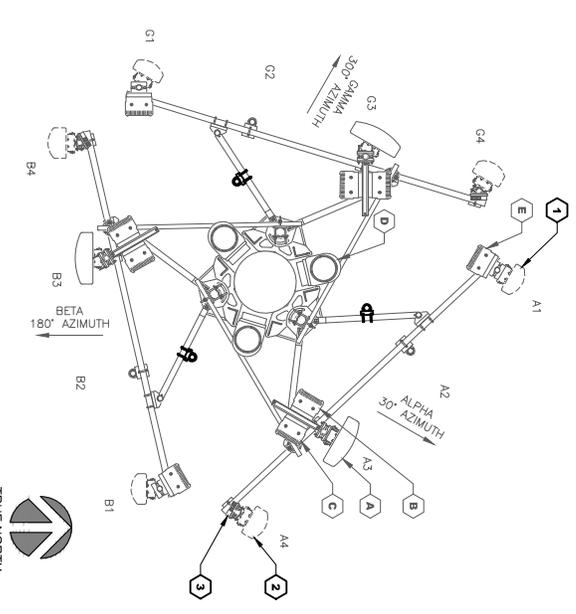
### 1 EXISTING ANTENNA PLAN

SCALE: 1"=2'-0" (1/4"=1'-0")  
 TRUE NORTH

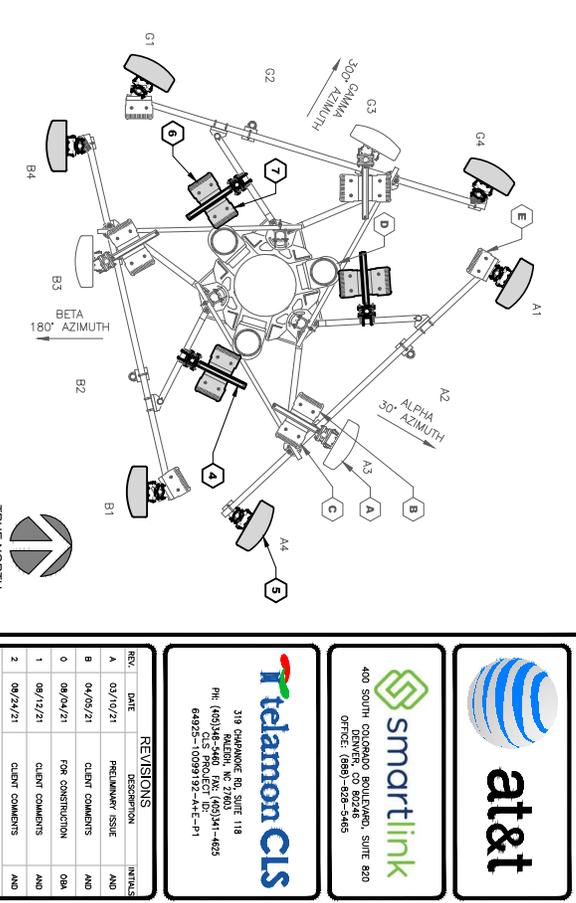


### 2 PROPOSED ANTENNA PLAN

SCALE: 1"=2'-0" (1/4"=1'-0")  
 TRUE NORTH



- # EXISTING EQUIPMENT KENOTES:
  - A. KATHREIN 800-10992K (1 PER SECTOR, 3 TOTAL)
  - B. ARSCOLE DUAL RRH 4T4R B5 160W AHCA (1 PER SECTOR, 3 TOTAL)
  - C. AUU B25 RRHX30-4R (1 PER SECTOR, 3 TOTAL)
  - D. RAYCAP DC6-48-60-18-8F SQUID (1 PER SECTOR, 3 TOTAL)
  - E. AUU RRHX40-07L-AT (1 PER SECTOR, 3 TOTAL)
- # NEW KENOTES:
  - 1. REMOVE (3) KMW AM-X-CD-17-65-00-RET (1 PER SECTOR)
  - 2. REMOVE (3) KATHREIN 80010785 (1 PER SECTOR)
  - 3. REMOVE (3) POWERWAVE 1119-088R-111-501 (1 PER SECTOR)
  - 4. INSTALL (6) NEW RR-F42 (3 KITS) W/ (2) 2-3/8" MOUNT PEPES USING (3) MFC3055M2 PIPE MOUNT ASSEMBLY, RE: 2-3/8" (6) NEW COMPASSCOPE NNH4-65C-R6-V3 ANTENNAS
  - 5. (2) PER SECTOR, RE:1/AS
  - 6. INSTALL (3) NEW ARSCOLE DUAL RRH 4T4R B5/29 240W AHBCB (1 PER SECTOR), RE:2/AS
  - 7. INSTALL (3) NEW ARSCOLE DUAL RRH 4T4R B25/66 320W AHFB (1 PER SECTOR), RE:3/AS
- # GROUND SCOPE:
  - 8. REMOVE GSM CABINET
  - 9. REMOVE EXISTING 9412 CABINET
  - 10. REMOVE EXISTING DC POWER PLANT AND (12) BATTERIES
  - 11. INSTALL NEW VERTIV NETSURE 5100 OUTDOOR DC POWER (12) NEW VERTIV 190AH BATTERIES, (12) BATTERIES, (12) NEW VERTIV 190AH BATTERIES, (12) BATTERIES, (12) NEW VERTIV OUTDOOR BATTERY CABINET W/ (2) STRINGS OF 190AH BATTERIES (8 BATTERIES), RE: 1/AS
  - 13. INSTALL NEW DC POWER PLANT (1) ASK, (1) ABL AND (1) AHB (1) PER SECTOR, RE:3/AS
  - 14. INSTALL NEW DC POWER PLANT (1) ASK, (1) ABL AND (1) AHB (1) PER SECTOR, RE:3/AS
  - 15. INSTALL (1) NEW 96W IN EXISTING FSM4
  - 16. RELOCATE EXISTING LIE FSM4 FROM 8412 CABINET TO NEW FLEX 21



ANTENNA MARK	SECTOR	RAD CENTER	AZIMUTH	ANTENNAS	TIME	ANTENNA EQUIPMENT & CABLE SCHEDULE (BOLD DENOTES PROPOSED OR RECONFIGURED EQUIPMENT) (E) = EXISTING (N) = RELOCATED (P) = PROPOSED	RRUS	COAX/CABLE	TECHNOLOGY	CABLE LENGTH
A1	ALPHA	138-0	30°	(P) COMMSCOPE NNH4-65C-R6-V3	--	(E) (1) RAYCAP DC6-48-60-18-8F SQUID	(P) (1) ARSCOLE DUAL RRH 4T4R B5/29 240W AHBCB	(E) (4) 1-5/8" COAX (E) (4) 2" INNERDUCT (E) (6) #8AWG DC POWER FIBERS DC (E) (3) FIBER TRUNK	LIE 700_3 50NR 850	±180-0°
A2	ALPHA	---	---	---	---	---	(E) (1) ARSCOLE DUAL RRH 4T4R B5 160W AHCA	---	LIE 700_2 LIE 1900	---
A3	ALPHA	138-0	30°	(E) KATHREIN 800-10992K	---	---	(E) (1) AUU B25 RRHX30-4R	---	LIE 700_2 LIE 1900	---
A4	ALPHA	138-0	30°	(P) COMMSCOPE NNH4-65C-R6-V3	(E) (1)	---	(P) (1) ARSCOLE DUAL RRH 4T4R B25/66 320W AHFB	---	LIE 700_3 LIE 1900	---
B1	BETA	138-0	180°	(P) COMMSCOPE NNH4-65C-R6-V3	---	---	(P) (1) ARSCOLE DUAL RRH 4T4R B5/29 240W AHBCB	---	LIE 700_3 LIE 1900	---
B2	BETA	---	---	---	---	---	---	---	LIE 700_2 LIE 1900	---
B3	BETA	138-0	180°	(E) KATHREIN 800-10992K	---	---	(E) (1) AUU B25 RRHX30-4R	---	LIE 700_2 LIE 1900	---
B4	BETA	138-0	180°	(P) COMMSCOPE NNH4-65C-R6-V3	(E) (1)	---	(P) (1) ARSCOLE DUAL RRH 4T4R B25/66 320W AHFB	---	LIE 700_3 LIE 1900	---
G1	GAMMA	138-0	300°	(P) COMMSCOPE NNH4-65C-R6-V3	---	---	(P) (1) ARSCOLE DUAL RRH 4T4R B5/29 240W AHBCB	---	LIE 700_3 LIE 1900	---
G2	GAMMA	---	---	---	---	---	---	---	LIE 700_2 LIE 1900	---
G3	GAMMA	138-0	300°	(E) KATHREIN 800-10992K	---	(E) (1) RAYCAP DC6-48-60-18-8F SQUID	(E) (1) ARSCOLE DUAL RRH 4T4R B5 160W AHCA	---	LIE 700_2 LIE 1900	---
G4	GAMMA	138-0	300°	(P) COMMSCOPE NNH4-65C-R6-V3	(E) (1)	---	(P) (1) ARSCOLE DUAL RRH 4T4R B25/66 320W AHFB	---	LIE 700_3 LIE 1900	---

### 3 FINAL EQUIPMENT SCHEDULE

SCALE: N.T.S.

RE: GN20/GN1

400 SOUTH COLORADO BOULEVARD, SUITE 820  
 OFFICE: (969) 822-5465

318 CHAMBERLAIN RD, SUITE 118  
 PH: (430) 341-1411  
 CLS PROJECT ID: 64925-10099192-A&E-P1

REV.	DATE	DESCRIPTION	INITIALS
A	03/10/21	PRELIMINARY ISSUE	AND
B	04/05/21	CLIENT COMMENTS	AND
1	08/04/21	FOR CONSTRUCTION	ORA
0	08/13/21	CLIENT COMMENTS	AND
2	08/24/21	CLIENT COMMENTS	AND

PROFESSIONAL ENGINEER  
 RICHARD A. BOLTER  
 37880  
 08/25/2021

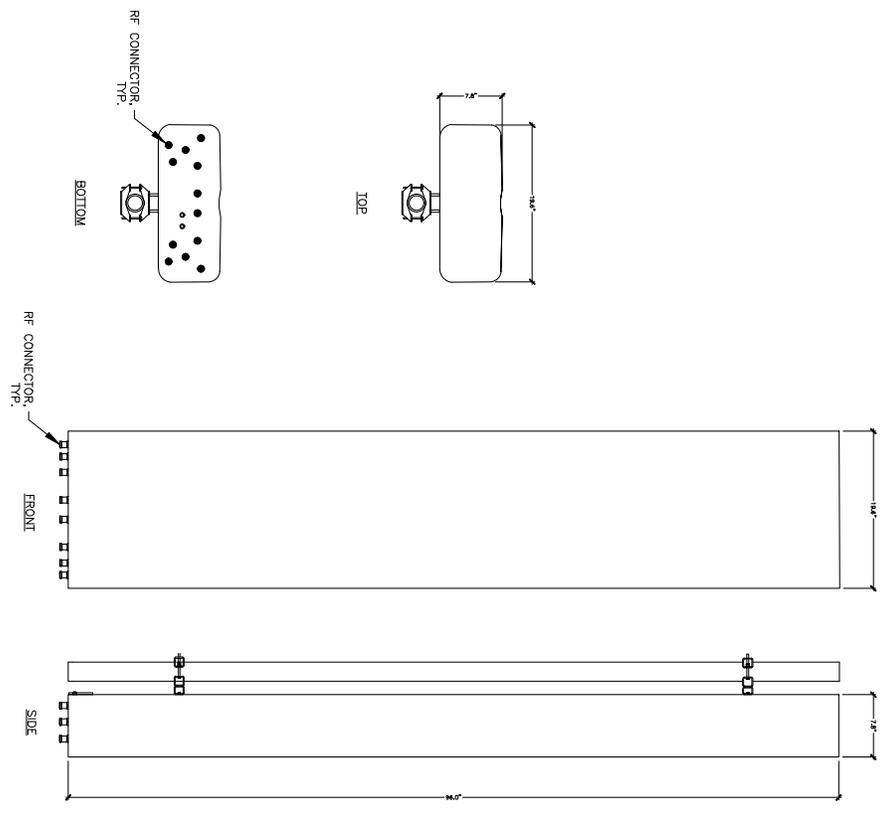
L-25 & WIGWAM  
 FA # / SITE ID:  
 10099192 / COL06040  
 20857 E INDUSTRIAL BLVD  
 FOUNTAIN, CO 80817

SHEET TITLE  
 ANTENNA PLANS  
 & SCHEDULE

SHEET NUMBER  
 A4

NOTE:  
ANTENNA INFORMATION  
PULLED FROM PRELIMINARY  
PRODUCT DATA SHEET

<b>NNH4-65C-R6-V3</b>	
MANUFACTURER:	COMSCOPE
MODEL:	NNH4-65C-R6-V3
DIMENSIONS: (HxWxD)	96.0" X 19.6" X 7.8"
WEIGHT:	102.1 LBS
FREQUENCY:	REFER TO RF DATA SHEET



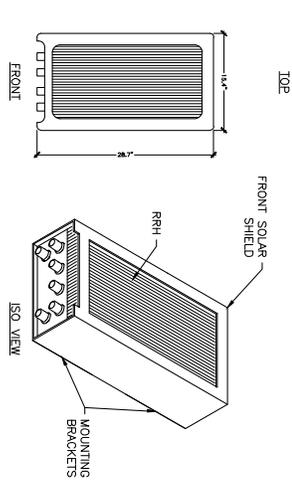
**1 ANTENNA SPECIFICATIONS**

SCALE: N.T.S.

RE: GN20/GN1

NOTE:  
RRHS CAN ONLY BE PAINTED  
ON SOLAR SHIELD.

<b>AIRSCALE DUAL RRH</b>	
MANUFACTURER:	NOKIA
MODEL:	AIRSCALE DUAL RRH 4TR
DIMENSIONS: (HxWxD)	28.7" X 15.4" X 9.4"
WEIGHT (LBS):	101.4 LBS
FREQUENCY:	REFER TO RF DATA SHEET



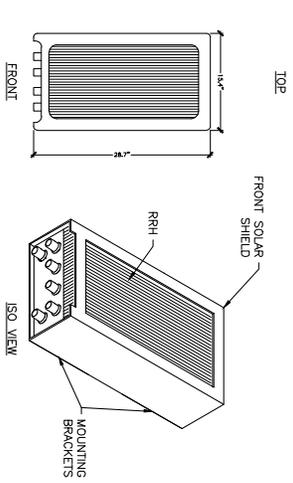
**2 RADIO SPECIFICATIONS**

SCALE: N.T.S.

RE: GN20/GN1

NOTE:  
RRHS CAN ONLY BE PAINTED  
ON SOLAR SHIELD.

<b>AIRSCALE DUAL RRH</b>	
MANUFACTURER:	NOKIA
MODEL:	AIRSCALE DUAL RRH 4TR
DIMENSIONS: (HxWxD)	28.7" X 15.4" X 9.4"
WEIGHT (LBS):	88.2 LBS
FREQUENCY:	REFER TO RF DATA SHEET



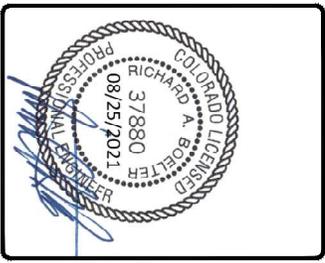
**3 RADIO SPECIFICATIONS**

SCALE: N.T.S.

RE: GN20/GN1



REV.	DATE	DESCRIPTION	INITIALS
A	03/10/21	PRELIMINARY ISSUE	AND
B	04/05/21	CLIENT COMMENTS	AND
0	08/04/21	FOR CONSTRUCTION	ORA
2	08/24/21	CLIENT COMMENTS	AND



I-25 & WIGWAM  
FA # / SITE ID:  
10099192 / COL06040  
20357 E INDUSTRIAL BLVD  
FOUNTAIN, CO 80817

SHEET TITLE  
**EQUIPMENT SPECIFICATIONS**

SHEET NUMBER  
**A5**

## NetSure™ VRLA Battery Rack

### Description

The NetSure VRLA Battery Rack provides back-up capacity up to 2100 amp-hours per bay for +24 V applications and 1050 amp-hours per bay for +48 V applications. Designed for use in wireline and wireless communication systems installed in small offices, huts, CEVs and CUES, this battery rack is compatible with NetSure DC power systems and most DC power equipment.

### Technical Specifications

<b>Rated Output Capacity</b>	+24 Volts DC or +48 Volts DC
<b>Output Capacity</b>	1200 amps per bay
<b>Physical Characteristics</b>	-48V 6U x 27.5" x 22.7" -24V 6U x 28.8" x 22.5"
<b>Rack dimensions (H x W x D)</b>	-48V 45L, 1b. -24V 600L
<b>Environmental</b>	
<b>Operating Temperature</b>	-40 °C to +40 °C (-40 °F to +104 °F)
<b>Storage Range</b>	-40 °C to +85 °C (-40 °F to +185 °F)
<b>Safety Compliance</b>	UL Listed and Seismic Zone 4 compliant

### Ordering Information

AT&T Number	Vertiv Number	Description	System
-------------	---------------	-------------	--------

- Circuit breaker alarm, form-C relay
- Compatible with any DC power system for versatility
- Battery connection cables are supplied with factory installed lugs
- Circuit breakers provide individual battery string disconnect with alarm
- Complies with industry standards: UL Listed and Seismic Zone 4 compliant



-48 V NetSure VRLA battery rack

NET20026	55923D4C0200	-48 V NetSure VRLA battery rack 84" H x 27.5" W x 22.7" D UL listed and Seismic Zone 4 compliant 200 A CB per string	NetSure 5100 NetSure 7100
NET03571	558192002Z001	+24 V NetSure VRLA battery rack 84" H x 28.8" W x 22.5" D UL listed and Seismic Zone 4 compliant A CB per string	NetSure 5100 NetSure 7100

### Accessories & Spare Parts

NET03478*	552839	Kit w/4 (3) SNT&EP and (3) temperature probes, 33 fuses (556155)
NET03586	23783900	Isolation pad kit

\*The kit is required when ordering a battery rack for a NetSure 7100, NetSure 721 or NetSure 710 DC power system.

## BATTERY RACK

SCALE: N.T.S.

REF: 6N20/GN1

## Vertiv™ XTE 601P Enclosure, NetSure 512 Power System

### Description

This outdoor power solution includes a NetSure™ 512 DC Power System and an environmentally controlled Vertiv™ XTE 601P enclosure that offers separate individually-cooled chambers for power equipment and batteries. Temperature is monitored with an Environmental Control Unit (ECU) that adjusts thermal settings to maintain ideal conditions within each chamber, while simultaneously decreasing system power consumption and noise. All DC power-feed cables to customer equipment are surge protected at the distribution bus. The battery chamber houses 3 shelves of front-post VRLA batteries and SAFT batteries up to 180 Ah in size.

### Technical Specifications

DC Power System Features	
<b>Nominal System Voltage</b>	-48 VDC or +24 VDC
<b>Control</b>	NCU controller
<b>Rated Output Capacity - Maximum Configuration</b>	525 amps at +48 VDC plus redundancy 400 amps at +24 VDC plus redundancy
<b>System</b>	Top Wind for (B) +24 V and (C) +48 V built positions Bottom (D) -48 V built positions
<b>Distribution Panel</b>	
<b>Environmental</b>	
<b>Operating Temperature</b>	-40 °F to 115 °F (-40 °C to +45 °C) continuous operation 0 to 85°C non-condensing
<b>Humidity</b>	20% (not dehumidated) to 95% (dehumidated)
<b>Thermal Solutions</b>	Fan cooled, front air ventilation, holds up to (3) battery strings 2 RU available space for surge protection
<b>Power Chamber</b>	
<b>Battery Chamber</b>	
<b>Equipment</b>	10 positions
<b>Ground Bar</b>	
<b>Terminal Block</b>	13-position Phoenix alarm block, 32-position Phoenix alarm busching block
<b>Safety</b>	UL 1801 Listed (US & Canada), NEMA Level 3 98-143, UL 60950, and Seismic Zone 4 compliant
<b>Enclosure</b>	

### NetSure 512 DC Power System

- ensure™ rectifiers provide high energy efficiency
- Great output power at high temperatures
- Advanced remote monitoring with NCU controller

### Vertiv™ XTE Enclosure

- Separate temperature-controlled zones for power and batteries
- Door-mounted cooling system & rear cable-entry compartment



**Ordering Process**  
Follow the steps below for each DC power system required

1. Order +48VDC 2000 watt rectifiers, quantity as required, NEO15930 (TR4E2000E3)
2. Order +48VDC to +24VDC 1500 watt converters, quantity as required, NEO 15929 (1CA824500).
3. Order load circuit breakers and GMT fuse module NEO15981 (549071) as required per Bullet Noise Type Circuit Breakers on page 22 and GMT Fuse Modules on page 23.

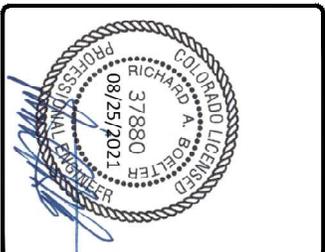
## 48V VERTIV NETSURE 512 OUTDOOR DC POWER PLANT

SCALE: N.T.S.

REF: 6N20/GN1



REV.	DATE	DESCRIPTION	INITIALS
A	03/10/21	PRELIMINARY ISSUE	AND
B	04/05/21	CLIENT COMMENTS	AND
0	08/04/21	10% CONSTRUCTION	08A
2	08/24/21	CLIENT COMMENTS	AND



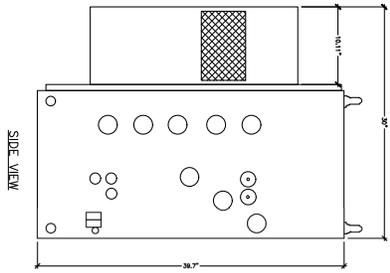
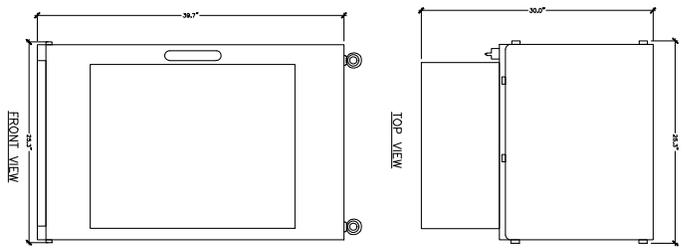
L-25 & WIGWAM  
FA # / SITE ID:  
10099192 / COL06040  
20857 E. INDUSTRIAL BLVD  
FOUNTAIN, CO 80817

SHEET TITLE  
EQUIPMENT  
SPECIFICATIONS

SHEET NUMBER  
A6

**PURCELL FLX21-2520 CABINET**

MANUFACTURER: PURCELL  
 MODEL: FLX21-2520  
 DIMENSIONS: 39.7" X 25.3" X 30"  
 H X W X D (IN)  
 WEIGHT (LBS): 140.0 LBS



**1 FLEX21 CABINET**

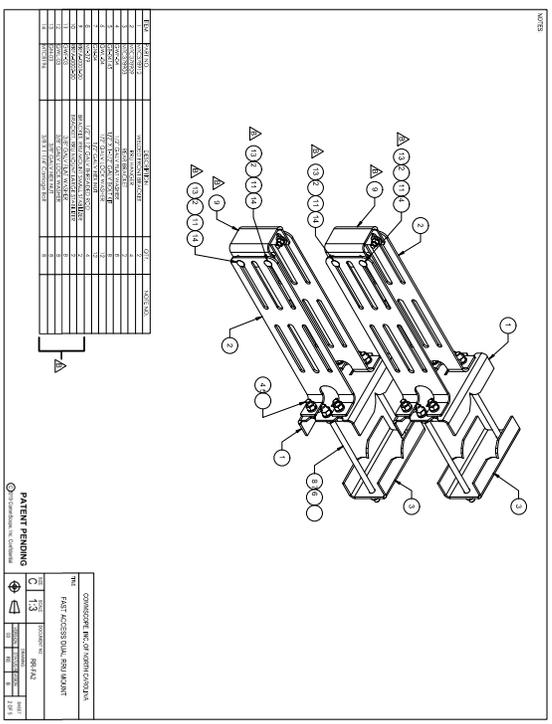
SCALE: N.T.S.

RE: GN20/GN1

**2 COMMSCOPE RR-FA2**

SCALE:

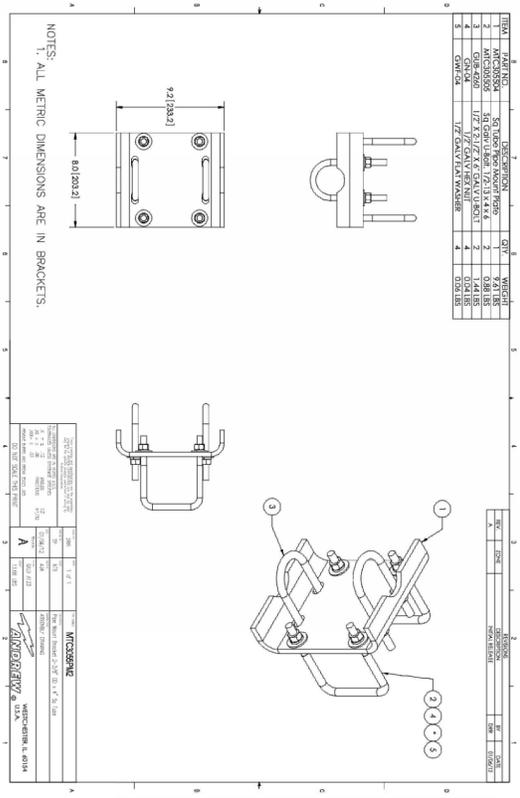
RE: GN20/GN1



**3 COMMSCOPEMTC3055FPM2**

SCALE:

RE: GN20/GN1



400 SOUTH COLORADO BOULEVARD, SUITE 820  
 OFFICE: (989) 822-5465

319 CHANDLER RD, SUITE 118  
 PH: (405) 400-3441-4625  
 CLS PROJECT ID: 64925-10099192-A+E-P1

REV.	DATE	DESCRIPTION	INITIALS
A	03/10/21	PRELIMINARY ISSUE	AND
B	04/05/21	CLIENT COMMENTS	AND
0	08/04/21	FOR CONSTRUCTION	ORA
2	08/24/21	CLIENT COMMENTS	AND

**1-25 & WIGWAM**  
 FA # / SITE ID:  
 10099192 / COL06040  
 20957 E INDUSTRIAL BLVD  
 FOUNTAIN, CO 80817

SHEET TITLE  
**EQUIPMENT SPECIFICATION**

SHEET NUMBER  
**A7**



### AT&T PANEL SCHEDULE

MANU 200 AMP MAIN BREAKER		VOLTAGE/PHASE 120/240V, 1-PHASE, 3-WIRE		SHORT CIRCUIT CURRENT RATING 10,000 AMPS													
MOUNTING: SURFACE		ENCLOSURE: NEMA 3R		SURGE PROTECTION DEVICE: YES													
BUS: 200 AMPS		MANUFACTURER: GENERAL ELECTRIC		MODEL NUMBER: ----													
DESCRIPTION	HOT	CONDUCTORS & CONDUIT		LOAD (VA)	CIR No.	C/B	C or NC	LOAD (VA)	CIR No.	C/B	C or NC	LOAD (VA)	HOT	NEUTRAL	GROUND	CONDUIT	DESCRIPTION
		NEUTRAL	GROUND														
1900 CABINET				2400 C	50	3		2900	2	20	C	500					GFCl RECEPTACLE & LIGHTS
880 CABINET				2400 C	50	5		6240	4	20	NC	190					TELCO RECEPTACLE
				2400 C	50	7		6240	8	80	C	3840					UMTS CABINET
SURGE PROTECTION DEVICE				0 NC	60	9		850	10	20	C	850					CEWA
SPARE				0 NC	60	11		850	12	20	C	850					CEWA
SPARE				0 NC	60	13		990	14	30	C	990	10				RECTIFIERS #5 & #6**
RECTIFIERS #1 & #2**	10			990 C	30	17		1980	18	30	C	990	10				RECTIFIERS #7 & #8**
	10			990 C	30	19		1980	20	30	C	990	10				RECTIFIERS #9 & #10**
RECTIFIERS #3 & #4**	10			990 C	30	21		1980	22	30	C	990	10				
	10			990 C	30	23		1980	24	30	C	990	10				
ARGOUS GFCl RECEPTACLE				180 NC	30	25		180	26								
						27			28								
						29		0	30								
						31		0	32								
						33		0	34								
						35		0	36								
						37		0	38								
						39		0	40								
		BASE LOAD (VA) =		15120				14820									
		25% OF CONTINUOUS LOAD (VA) =		3735				3610									
		TOTAL LOAD (VA) =		18855				18230									
		TOTAL LOAD (A) =		158				152									

\*\* NEW LOAD: USE EXISTING 30A, 2-POLE BREAKER FOR NEW RECTIFIER. CONTRACTOR MAY USE EXISTING WIRE AND CONDUIT IF IT MEETS OR EXCEEDS WHAT IS SPECIFIED IN PANEL SCHEDULE.

1. CONDUIT SIZES SHOWN ARE MINIMUM SIZES. CONTRACTOR TO FOLLOW SECTION 310-15 OF THE NEG AND ADJUST CONDUCTOR APPROACHES IF CONTRACTOR CHOOSES TO COMBINE CIRCUITS IN A CONDUIT.

2. ALL LOADS EXISTING UNLESS NOTED OTHERWISE.

3. RECTIFIER LOADS SHOWN ARE FOR THE VERTICAL SURGE 2000W RECTIFIER (MODEL NO. R48-2000a3). RECTIFIER DEMAND IS BASED ON ALL RECTIFIERS RUNNING CONTINUOUS AT 50% OF FULL LOAD.

4. AT&T HAS NOT PROVIDED THE RECTIFIER LOADS FOR LOAD CALCULATIONS. AT&T TO REVIEW AND VERIFY CORRECT ASSUMPTIONS FOR RECTIFIER LOADS.

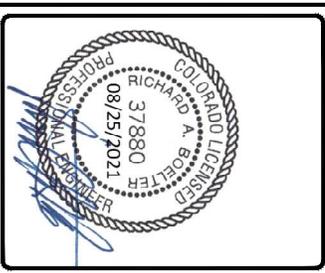
### PANEL SCHEDULE

SCALE: N.T.S.

RE: 08/20/21



REV.	DATE	DESCRIPTION	INITIALS
A	03/10/21	PRELIMINARY ISSUE	AND
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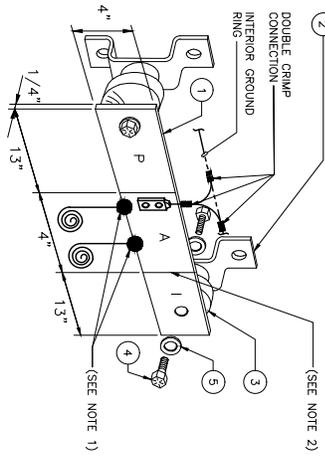
L-25 & WIGWAM  
 FA # / SITE ID:  
 10099192 / COL06040  
 20857 E INDUSTRIAL BLVD  
 FOUNTAIN, CO 80817

SHEET TITLE  
 PANEL SCHEDULE

SHEET NUMBER  
**E2**



NEWTON INSTRUMENT COMPANY, INC. BUTNER, N.C.			
NO	REQUIRED	PART NUMBER	DESCRIPTION
1	1	1/4"x4"x30"	SOLID GROUND BAR
2	2	A-6056	WALL MOUNTING BRACKET
3	2	3061-4	INSULATORS
4	4	3012-1	5/8"-11x1" H.H.C.S.
5	4	3015-8	5/8" LOCKWASHER



EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

**SECTION "P" - SURGE PROTECTORS**

- (EC) CELL REFERENCE GROUND BAR (IF COLLOCATED)
- (EC) GENERATOR FRAMEWORK (IF AVAILABLE) (#2 AWG)
- (EC) TELLER GROUND BAR (#2 AWG)
- (EC) COMMERCIAL POWER COMMON GROUNDING BOND (3/0)
- (EC) NEUTRAL/GROUNDING BOND (3/0)
- (EC) RIBBON GROUND BOND (#2 AWG)
- (EC) ROOF GROUND REFERENCE GROUND BAR (#2 AWG)
- (A1&2) RECTIFIER FRAMES

**SECTION "I" - ISOLATED GROUNDING ZONE**

- (A1&2) ALL ISOLATED GROUNDING REFERENCE
- (A1&2) GROUND WINDOW BAR

**SECTION "A" - SURGE ABSORBERS**

- (EC) INTERIOR GROUND RING (#2 AWG)
- (EC) EXTERNAL EARTH GROUNDING FIELD
- (EC) METALLIC COLD WATER PIPE (#2 AWG)
- (EC) (IF AVAILABLE) (1/0 AWG)
- (EC) BUILDING STEEL (IF AVAILABLE) (1/0 AWG)

**1 GROUND BAR DETAIL**

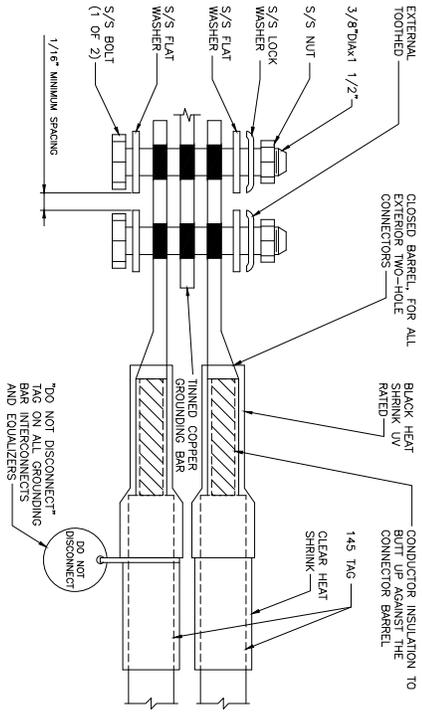
SCALE: N.T.S.

RE: GN20/GN1

**2 EXTERIOR TWO HOLE LUG DETAIL**

SCALE: N.T.S.

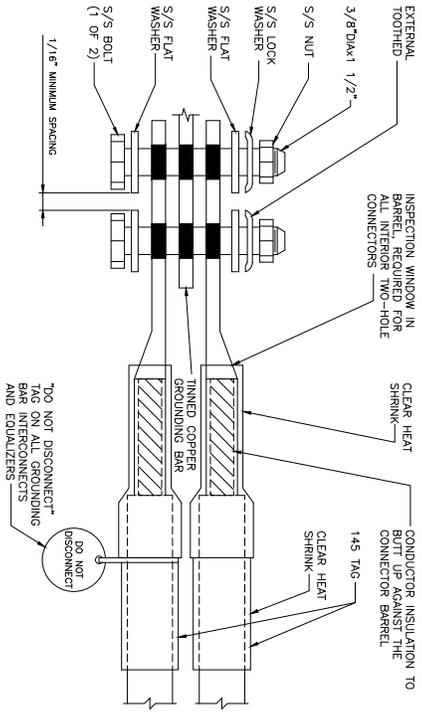
RE: GN20/GN1



**4 INTERIOR TWO HOLE LUG DETAIL**

SCALE: N.T.S.

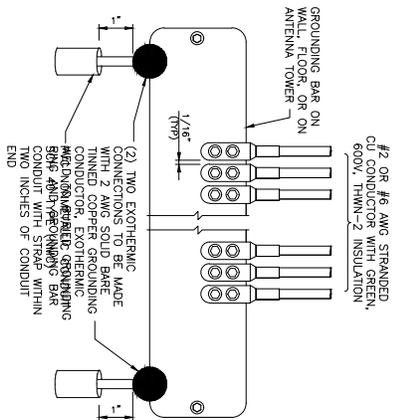
RE: GN20/GN1



**3 GROUND CONDUCTOR DETAIL**

SCALE: N.T.S.

RE: GN20/GN1



**5 GROUNDING NOTES**

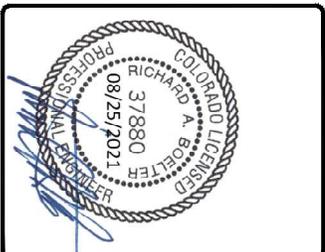
SCALE: N.T.S.

RE: GN20/GN1

1. EXOTHERMIC WELD (2) TWO #2 AWG BARE TINNED SOLID CONDUCTORS TOGETHER AND TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD.
2. ALL GROUND BARS SHALL BE STAMPED IN TO THE METAL. IF STOLEN DO NOT RECYCLE. THE CONTRACTOR SHALL USE IDENTIFICATION MARKER OR IDENTIFY THE VICES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "I") WITH 1" HIGH LETTERS.
3. ALL HARDWARE SHALL BE STAINLESS STEEL 3/8" DIAMETER OR LARGER. ALL HARDWARE 1/8-8 STAINLESS STEEL INCLUDING NUTS, WASHERS, AND SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MAKING.
4. FOR GROUND BOND TO STEEL ONLY: INSERT A CADMIUM FLAT WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH AN ANTI-OXIDANT COMPOUND BEFORE MAKING.
5. DO NOT INSTALL CABLE GROUNDING KIT AT A BEND AND ALWAYS DIRECT GROUND CONDUCTOR DOWN TO GROUNDING BUS.
6. NUT & WASHER SHALL BE PLACED ON THE FRONT SIDE OF THE GROUND BAR AND BOLTED ON THE BACK SIDE. INSTALL BLACK HEAT-SHRINKING TUBE, 600 VOLT INSULATION, ON ALL GROUNDING TERMINATIONS, THE INTENT IS TO WEATHERPROOF THE COMPRESSION CONNECTION.
7. ALL GROUNDING PARTS AND EQUIPMENT TO BE SUPPLIED AND INSTALLED BY CONTRACTOR.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING CONDUCTOR INSULATION TO BUTT UP AGAINST THE CONNECTOR BARREL AS REQUIRED, PROVIDING 50% SPARE CONNECTION POINTS.
9. ENSURE THE WIRE INSULATION TERMINATION IS WITHIN 1/8" OF THE BARREL (NO SHINERS).



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1-25 & WIGWAM  
FA # / SITE ID:  
10099192 / COL06040  
20367 E. INDUSTRIAL BLVD  
FOUNTAIN, CO 80817

SHEET TITLE  
**GROUNDING DETAILS**

SHEET NUMBER  
**G2**