App No: 2020071203

Revised 7.20.20- JR

Application General Infomation

Applicant Name	NB+C	Updated	7/1/2020
Application Type	Minor Modification	Ann. Plan?	Yes
Carrier	T-Mobile	Will site be used to support government telecommunications facilities or other equipment for government use?	No
Solution Type	Macro		
Existing	Existing	Gvt. Use Desc.	

Application Description TMAs

T-Mobile proposes removing (3) antennas, (3) ~~RRUs~~, and (1) Cabinet, and installing (3) antennas, (3) RRUs, and (1) cabinet at the existing telecommunications facility.

Site Infomation

Site Id	279	Zoning	LSC-1.0
Structure Type	Building	Latitude	39.102939
Address	9420 Key West Ave, Rockville	Longitude	-77.193847
County Site Name	Phillips Office Building	Ground Elevation	470
Carrier Site Name	7WAN094C	City	Rockville
Site Owner	Key West III LP	Lease Status	In Process
Structure Owner	Key West III LLC / DANAC	Does the structure require an antenna structure registration under FCC Title 47	No
Existing Structure Height	54		
Provide the proposed height of the replacement structure without any antenna (New, Replacement Apps Only)		Distance to Residential Property (New, Replacement, Colocation Only)	
		Distance to Commercial Property (New, Replacement, Colocation Only)	

Justification of why this site was selected:

Existing Telecommunications Facility

NearbySites (New, Replacement Apps Only):

Thursday, July 2, 2020

8:12:15 AM

App No: 2020071203

Screening considerations(New, Colocations, Replacement Apps Only):

Thursday, July 2, 2020

8:12:19 AM

App No: 2020071203

6409 Questions

Does this qualify as a 6409 application? (Minor Mod, Colocations Only): Yes

For towers outside the public ROW will the proposed installation increase the height of the structure by: (1) more than 10% or (2) more than 20 feet, whichever is greater? No

Will the proposed installation increase the width by adding appurtenance to the body of the structure that would protrude from the edge of the structure by more than 6 feet? No

For towers outside the public ROW will the proposed installation increase the width by adding appurtenance to the body of the structure that would protrude from the edge of the structure by more than 20 feet? No

More than four Equipment Cabinets? YN: No

Will the proposed installation require excavation or expansion outside the current boundaries of the site? No

Does the structure or current installation have concealment elements/measures? No

Will the proposed installation increase the height of the structure by: (1) more than 10% or (2) more than 10 feet, whichever is greater? No

If yes, describe how the proposed installation does not defeat the existing concealment.

Small Wireless Facility Informatio

Small Wireless Facility Questions

Small Wireless Facility? No

Is the structure 10% taller than adjacent structures?

Cumulative volume of the proposed wireless equipment(s) exclusive of antennas in cubic feet: 0

Please list adjacent structure heights

Tribal Lands? No

Cumulative volume of the proposed antenna antenna(s) exclusive of equipment

ROW Information

PROW? No

Pole Number

ROW owner

ROW width

Thursday, July 2, 2020

8:12:19 AM

App No: 2020071203

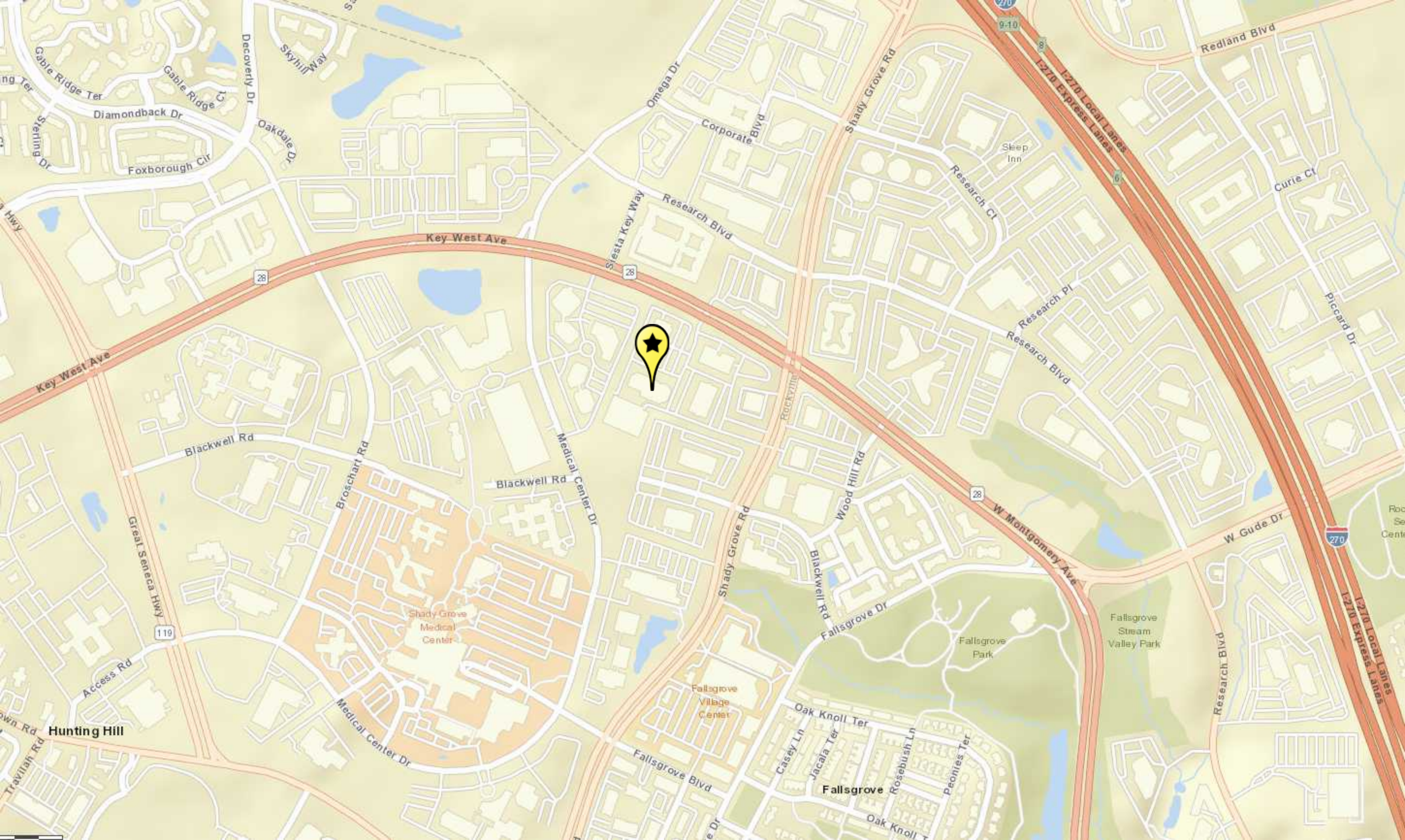
Antenna Infomation

Antenna Compliance	Yes
Compliance Desc	
Antenna Location	Yes
Antenna Loc. Desc.	
Env. Assessment	
Cat. Excluded?	checked
Routine Env. Evaluation	

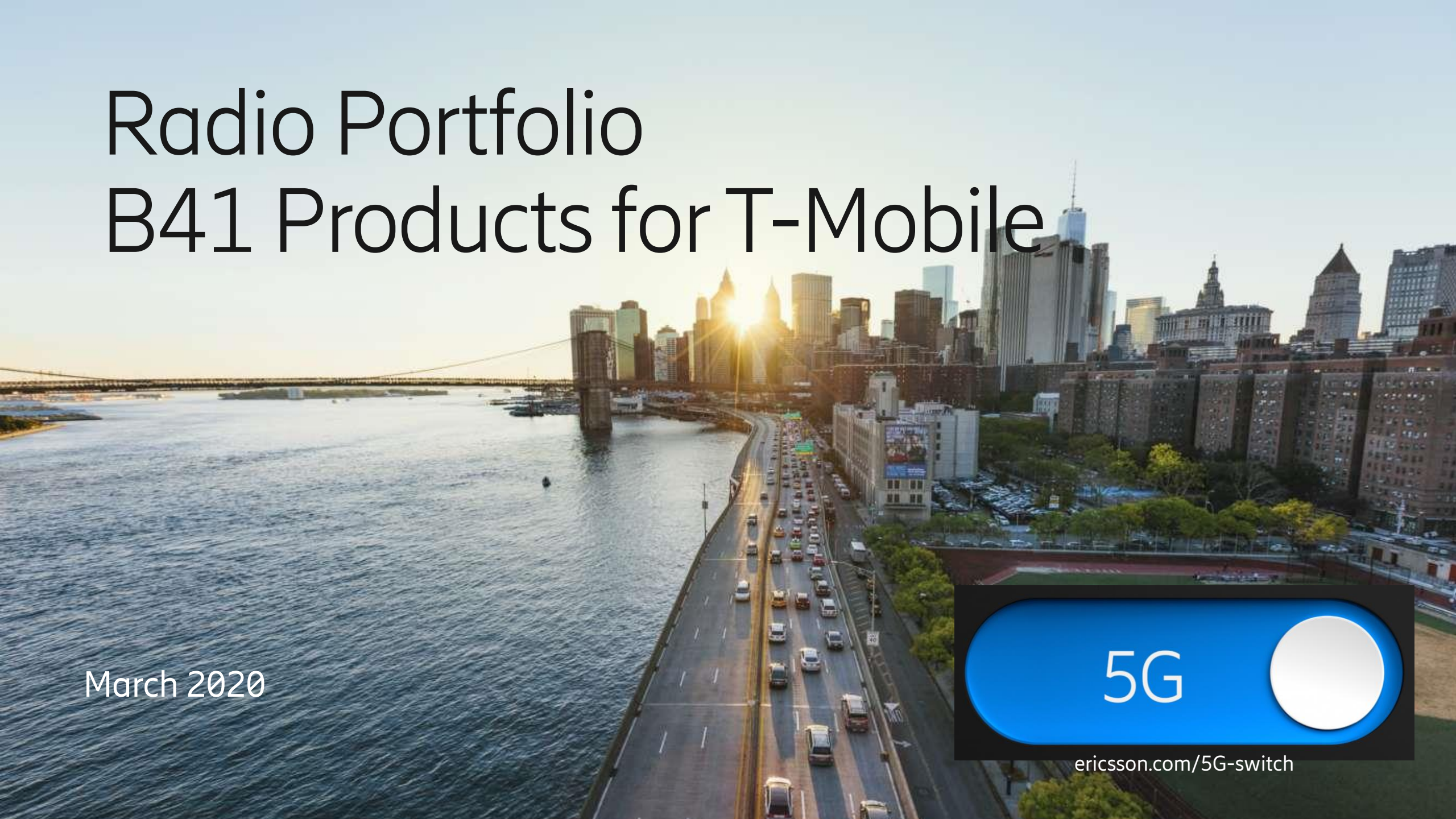
Antenna Model	Ericsson AIRE6449 B41						
Frequency	Tx & Rx: 2496-2690						
RAD Center	70.5	Max ERP	854	Antenna Dimensions	33.1"x20.6"x8.6"	Quantity	3

Thursday, July 2, 2020

8:12:19 AM


Gable Ridge Ter
Diamondback Dr
Gable Ridge Ct
Decoverly Dr
Skyhill Way
Sterling Dr
Foxborough Cir
Oakdale Dr
Omega Dr
Corporate Blvd
Shady Grove Rd
Research Ct
Sleep Inn
Redland Blvd
I-270 Local Lanes
I-270 Express Lanes
Curie Ct
Piccard Dr
Research Pl
Research Blvd
Key West Ave
Siesta Key Way
Research Blvd
Rockville
Blackwell Rd
Broschart Rd
Medical Center Dr
Great Seneca Hwy
Access Rd
Travilah Rd
Hunting Hill
Shady Grove Medical Center
Fallsgrove Village Center
Fallsgrove Blvd
Wood Hill Rd
W Montgomery Ave
W Gude Dr
Fallsgrove Dr
Fallsgrove Park
Fallsgrove Stream Valley Park
Research Blvd
Oak Knoll Ter
Casey Ln
Jacala Ter
Rosebush Ln
Peonies Ter
Fallsgrove

Radio Portfolio
B41 Products for T-Mobile



March 2020

ericsson.com/5G-switch

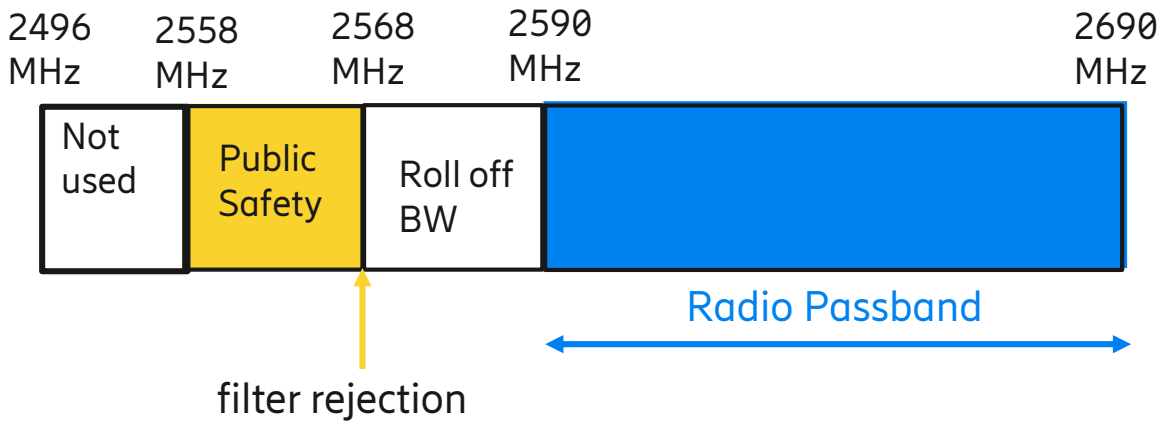
AIR 6488, B41

- Advanced Antenna System (AAS)
- 64TX/64RX with 128 AE
- Support operation frequency range 2496-2690 MHz
- Support output power up to 200W
- Support 100 MHz IBW & CBW
- Support NR and NR+LTE in split mode
- 3 x 10 Gbps eCPRI
- Power consumption < 1290W
- Weight: 58 kg
- Size (H x W x D): 884x520x183 mm
- -48 VDC (3-wire or 2-wire)
- -40 to +55˚C
- Multi-layer MU MIMO
  - DL/UL: 16/8

AIR 6488, B41M

- Advanced Antenna System (AAS)
- 64TX/64RX with 128 AE
- Support operation frequency range 2590-2690 MHz
- Support output power up to 200W
- Support 100 MHz IBW & CBW
- Support NR and NR+LTE in split mode
- 3 x 10 Gbps eCPRI
- Power consumption < 1290W
- Weight: 58 kg
- Size (H x W x D): 884x520x183 mm
- -48 VDC (3-wire or 2-wire)
- -40 to +55˚C
- Multi-layer MU MIMO
  - DL/UL: 16/8

AIR 6488M for New York City Band 41M support

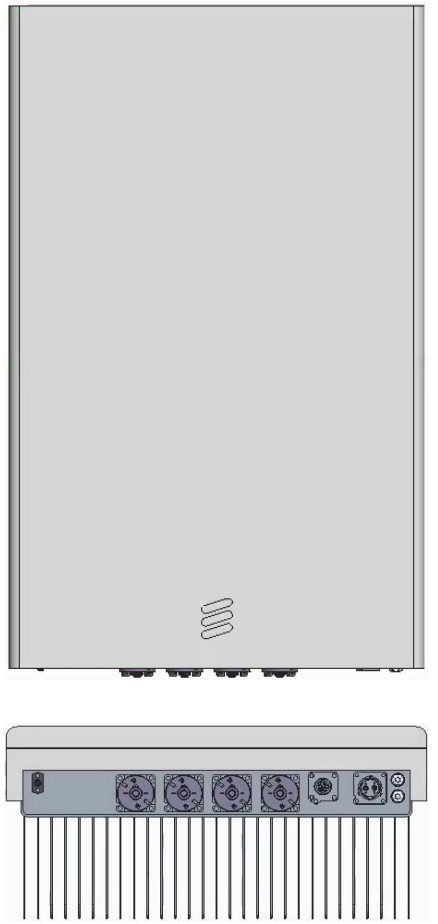


B41 in New York City currently has a UMTS Public Safety Network that requires OOBE interference protection from New T-Mobile Network

AIR 6449

Preliminary

- 192 antenna elements, 3:1 subarray
- Up to 300W
- Up to 200 MHz Operating BW & Carrier BW
- Two 25 Gb/s SFP(C2) and Two 10 Gb/s QSFP(C1FD and C2 backup)
- -48V 45 A Two wire and three wire versions
- APC light connector and Self test push button
- Sensor support but undefined
- Size B41:
  - 841 x 521 x 217 mm (H x W x D)
  - Volume: 95 liter
  - Weight: 47 kg



PRA: July 2020

Radio 8863

Preliminary

- 8TX/8RX
- Support split mode (2 x 4T4R or 4 x 2T2R as multi-sector solution)
- Tx Power 8x40W
- 200MHz IBW TDD
- 2x10.1/25Gbps CPRI
- 21.5 liter, 21kg
- External antenna calibration
- -48 VDC 3-wire
- AISG RET support via RS-485 or RF connectors
- Optional fan for increased site flexibility
- 2 external alarm
- Convectional cooling
- IP 65, -40 to +55˚C

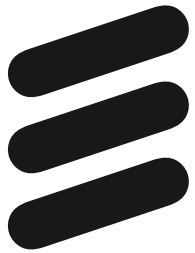
Radio Details: Mid Band TDD (Massive) MIMO (Band 41)

AIR or Radio Type	AIR 6488 (G2) 	AIR 6449 (G4) 	Radio 8863 
RATs supported	L, NR	L, NR	L, NR
Power capability	200W	300W	8x40W
Modulation	256QAM	256QAM	256QAM
Bandwidth (IBW/CBW)	100 MHz or 60L+60N	194 MHz	196 MHz
Tx and Rx Array	64T64R	64T64R	8 CSI-RS ports
MIMO layers (DL/UL)	16 DL / 8 UL	16 DL / 8 UL	16 DL / 8 UL
CPRI ports	3 x 10G	4 x 25G* (2x10G+2x25G)	2 x 25G*
Dimensions (HxWxD)	884mm x 520mm x 183mm (34.8" x 20.5" x 7.2")	840mm x 520mm x 210mm (33.1" x 20.5" x 8.3")	(21.5 ltr)
Weight	58 kg (128 lbs)	47 kg (103 lbs)	Approx. 21 kg (46 lbs)
Cooling	Convection	Convection	Convection
Power	-48VDC	-48VDC	-48VDC
Power Consumption	1290W	<1100W	TBD
Availability	Q2 2019	Q3 2020	Q2 2020

* requires Baseband 6648

Radio 4408 B41

- 4TX/4RX TDD
- 4x5W
- IBW up to 150 MHz CBW
- Up to 6 LTE carriers
- 2x 2.5/5/9.8/10.1Gbps CPRI
- 4 liter, less than 5kg incl bracket and cover
- AC or -48 VDC
- Integrated or external antenna
- 2 external alarm
- IP 65
- -40 to +55˚C



T-Mobile

Engineering & Operations

Ericsson 6230 Design Specification

The methods for configuring the 6230 for field deployment are presented.

[illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible]		[illegible]	
[illegible]			
[illegible]	[illegible]		
[illegible]	[illegible]		

Table of Contents

1 Introduction / Project Summary

1.1 Purpose of Project

[illegible]

1.2 Product Description

[illegible]

1.3 Assumptions

[illegible]

2 General Equipment Overview

[illegible]

Mechanical Specification	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Power System	
[illegible]	[illegible]
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[illegible]	[illegible]
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[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Operating Environmental	

Acoustic Noise	
Remote Management	
Performance Management	
Configuration Management	
Inventory Management	

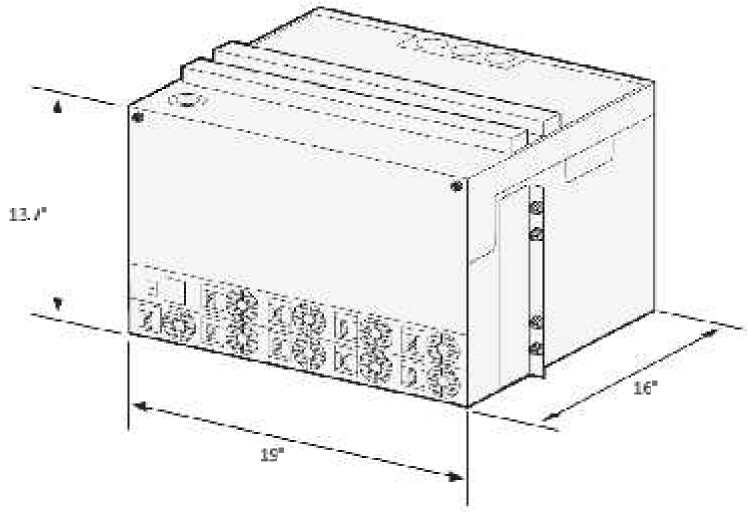

Figure 1

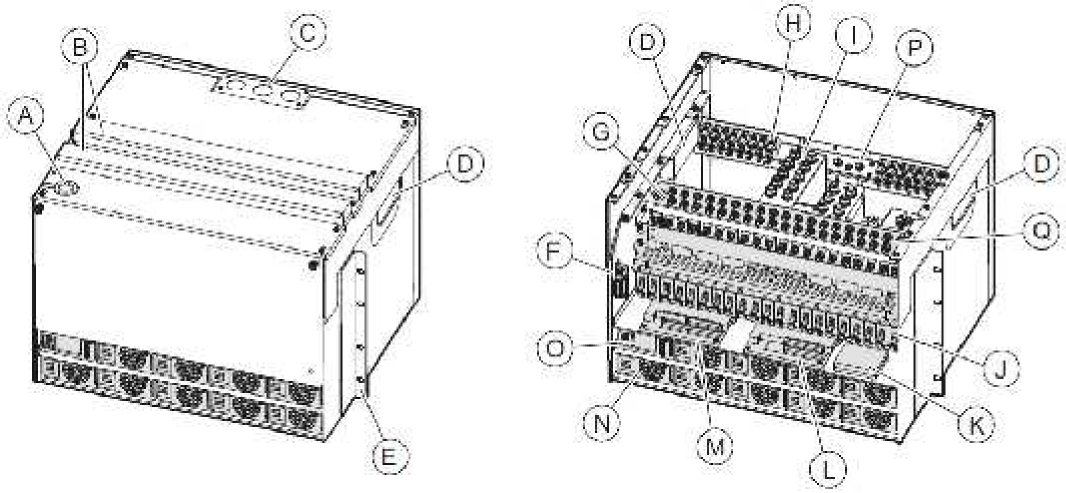

Figure 2

Feature	Unit
A	A□r□ □□r□□□□r□□□□r [cable, te □ pe r□tu re s□□s□r, S□□ □□□□ □r□□□□□
□	C □ble r□□□□□□
C	A□ [cab e int rface
D	Ba tery □□□□□□ in et
□	Ad□□□□r□br acke □for□wall mo □nt ng kit
F	RT□ ala r□
G	0 V bu s ba r D□ con e tion
H	A□ in ut
I	0□□ RT□ □□r batt ry cable s
□	D□ d s r□□□□□□□□r□□□□ breake r
□	D□ S□D
L	□□□□d□d□□□□r□□□□boa rd (EI)
M	Int rf ce □□□□rd (IB2)
N	R□□□□□r
O	□□□ r□□on rolle r□nit □□□□
□	A□ gr□und ing
Q	-4 □□D□ d s r□□□□□□

3 6230 Placement

[illegible]

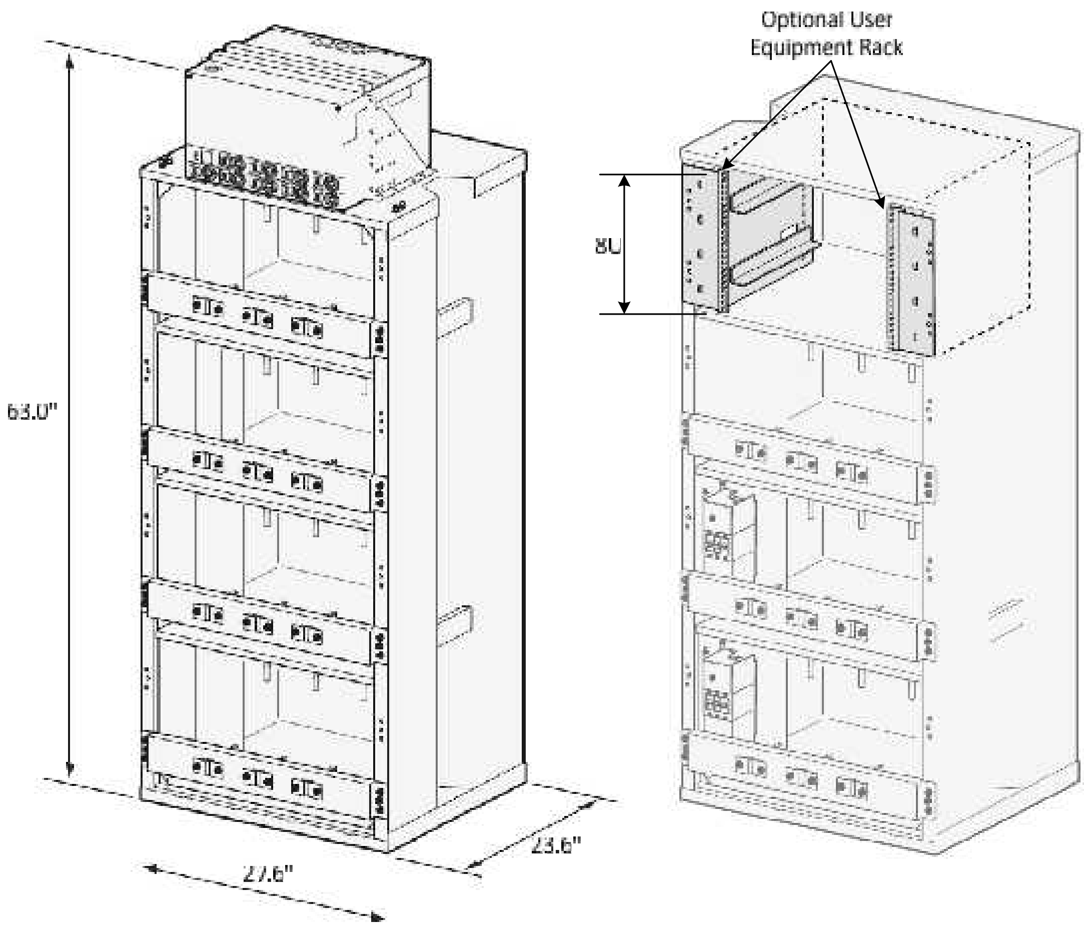

Figure 3

4 Baseline Capacity

[illegible]

Product Number	Description	Qty	Comment
BMG 907 157/1	6230 indoor Power rack	1	Power Unit and Battery Rack. Identity Label SVF 191 040/1 included
KDU 127 170/3	SCU 09 01, Support Control Unit	1	
SXK 109 1052/1	SCU/SAU Holder	2	
RPM 777 143/00500	Signal cable SCU - power system	1	
RPM 777 080/01000	Power Cable -> SCU	1	
KET 109 70/2	Temp sensor 10m	1	One included as standard
SXK 109 2011/7	SCU/SAU bracket extender	2	To attach SCU/SAU holder to
BML 901 450/1	Rectifier 3,5 kW HE	4	4 Rectifiers in base configuration
SXA 114 8381/1	Dummy plate Rectifier	5	
NFS 899 001/200	Bullet CB, 200A	2	For bulk feed of SPD boxes for regular radios
NFS 899 001/050	Bullet CB, 50A	3	For higher pc radios like AIR3246, AIR6488
NFS 899 001/030	Bullet CB, 30A	1	
NFS 899 001/010	Bullet CB, 10A	5	
BAF 903 46/1	6230 indoor Battery rack	1	
SXK 109 2010/2	Power Unit Mounting battery rack	1	
NTB 101 0646/2	Battery power cable to 3rd shelf	1	Support for 3rd battery string. Kit for two battery strings always included in BMG 907157/1
NTB 101 0637/1	Battery CB Connection box	1	For 3rd battery shelf. x2 included in BMG. 300A included
SXK 109 2011/6	19inch adaption plate 8U	1	Convert first battery shelf to 19-inch space
NTB 101 0558/3	Adjustable bracket 170Ah-200Ah	3	
ZHY 601 19/1	SAU 02 01	1	
SXA 134 5524/3	Cable Ladder 19 inch	1	
NTB 101 0429/1	Quantity package (for SAU)	1	
RPM 777 405/01000	Signal and Power Cable SCU to SAU	1	
NFD 302 34/08	OVP-ALM 8	2	
RPM 777 143/01000	Signal Cable SAU - OVP	4	Length adapted to mounting of OVP in 19'' rack
NTM 503 019	DIN bar (19")	1	For OVPs in the 19" adaption plate 8U option.
NTB 101 0693/2	35mm², 6m GND cable kit, dual-lug	1	

5 Provisioning for Deployment

5.1 Prerequisite Grounding

[illegible]

[illegible]

5.2 AC Power Feed

[illegible]

[illegible]

Number of Rectifiers	Input Current (A)	Recommended AC Fuses (A)
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

5.3 Rectifier Dimensioning

[illegible]

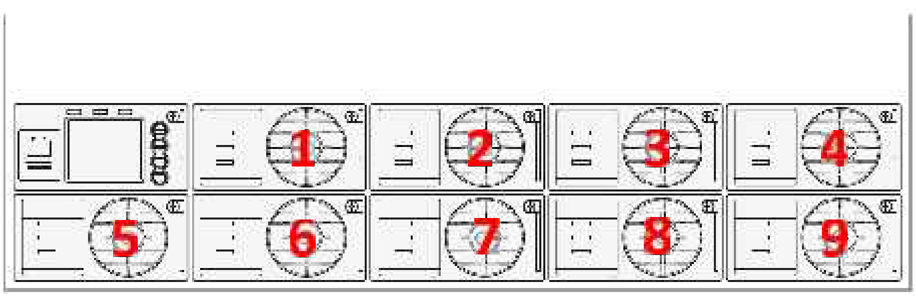

Figure 6

5.4 DC Breaker/LLVD Assignment

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

- [illegible]
- [illegible]
- [illegible]

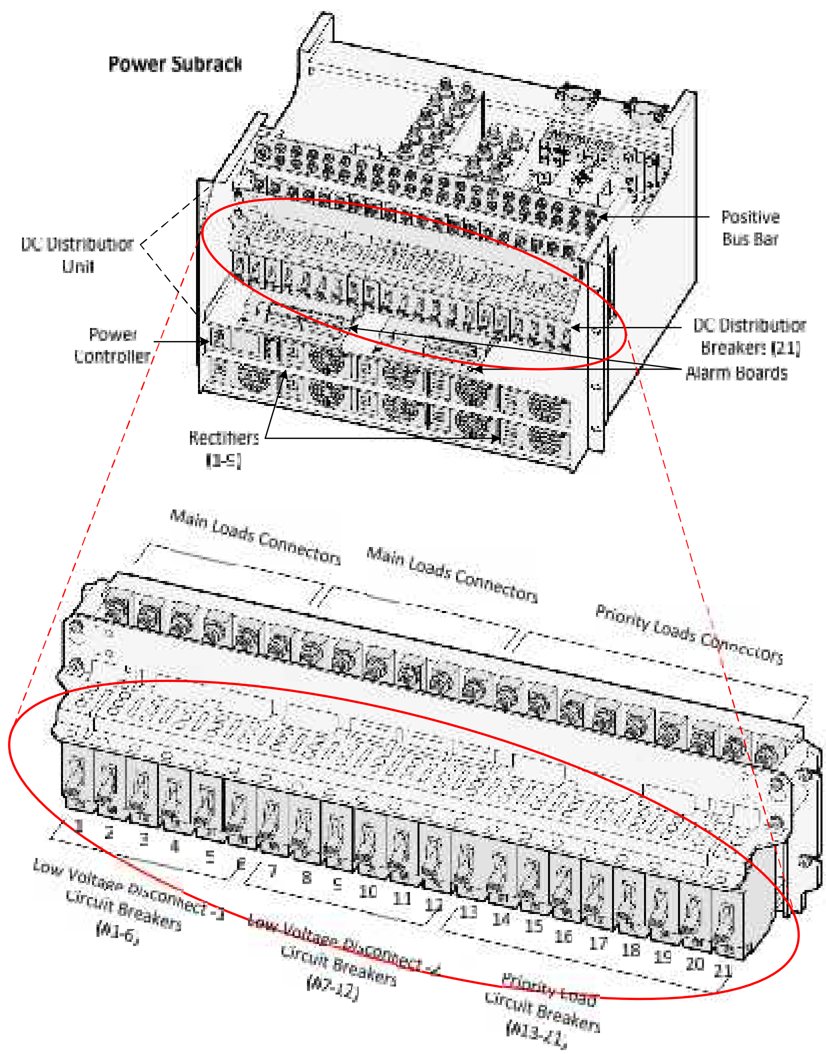
Power Subrack
DC Distribution Unit
Positive Bus Bar
Power Controller
DC Distribution Breakers (21)
Alarm Boards
Rectifiers (1-5)
Main Loads Connectors
Main Loads Connectors
Priority Loads Connectors
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
Low Voltage Disconnect -1 Circuit Breakers (#1-6)
Low Voltage Disconnect -2 Circuit Breakers (#7-12)
Priority Load Circuit Breakers (#13-21)

Figure 10

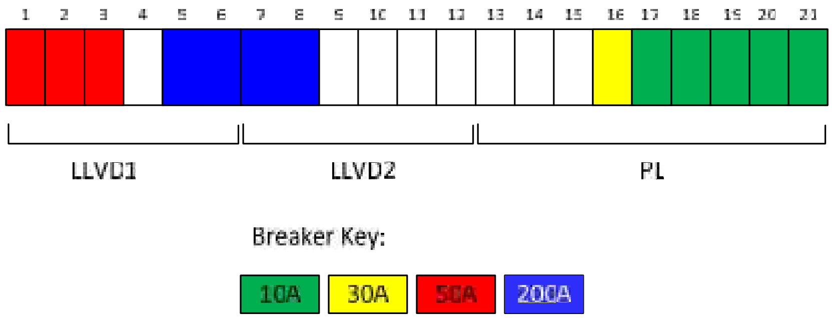

Figure 11

[illegible]

5.5 SPD Function

[illegible]

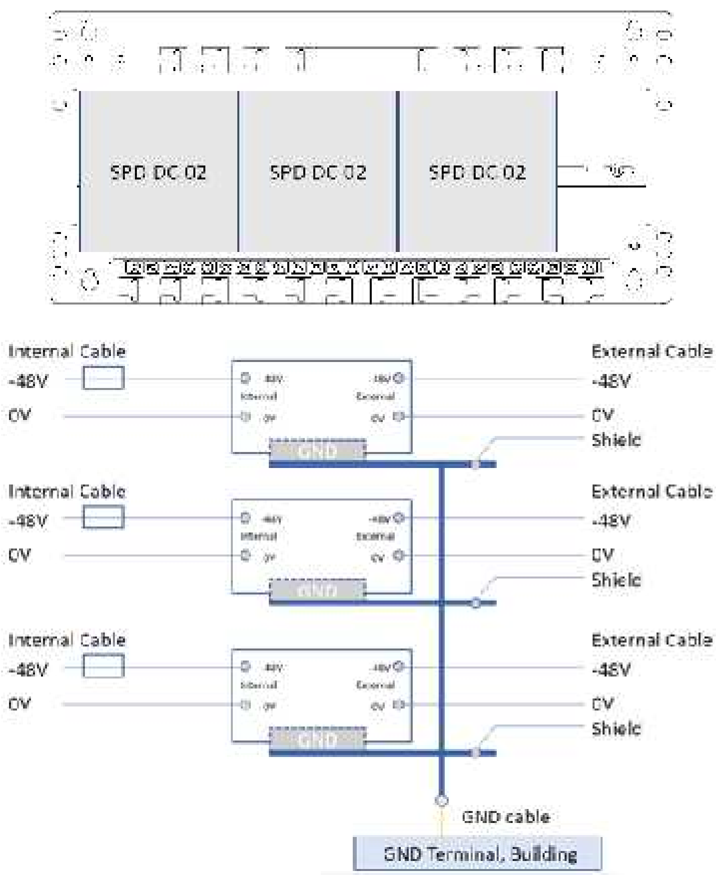

Figure 12

5.6 ENM Integration

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

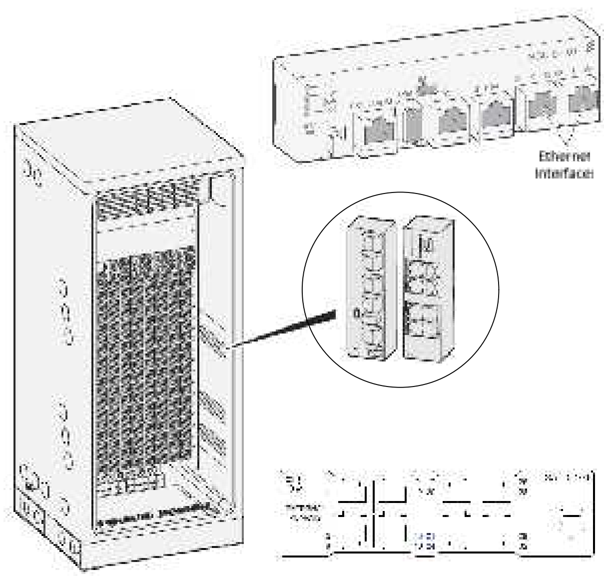

Figure 13

[illegible]

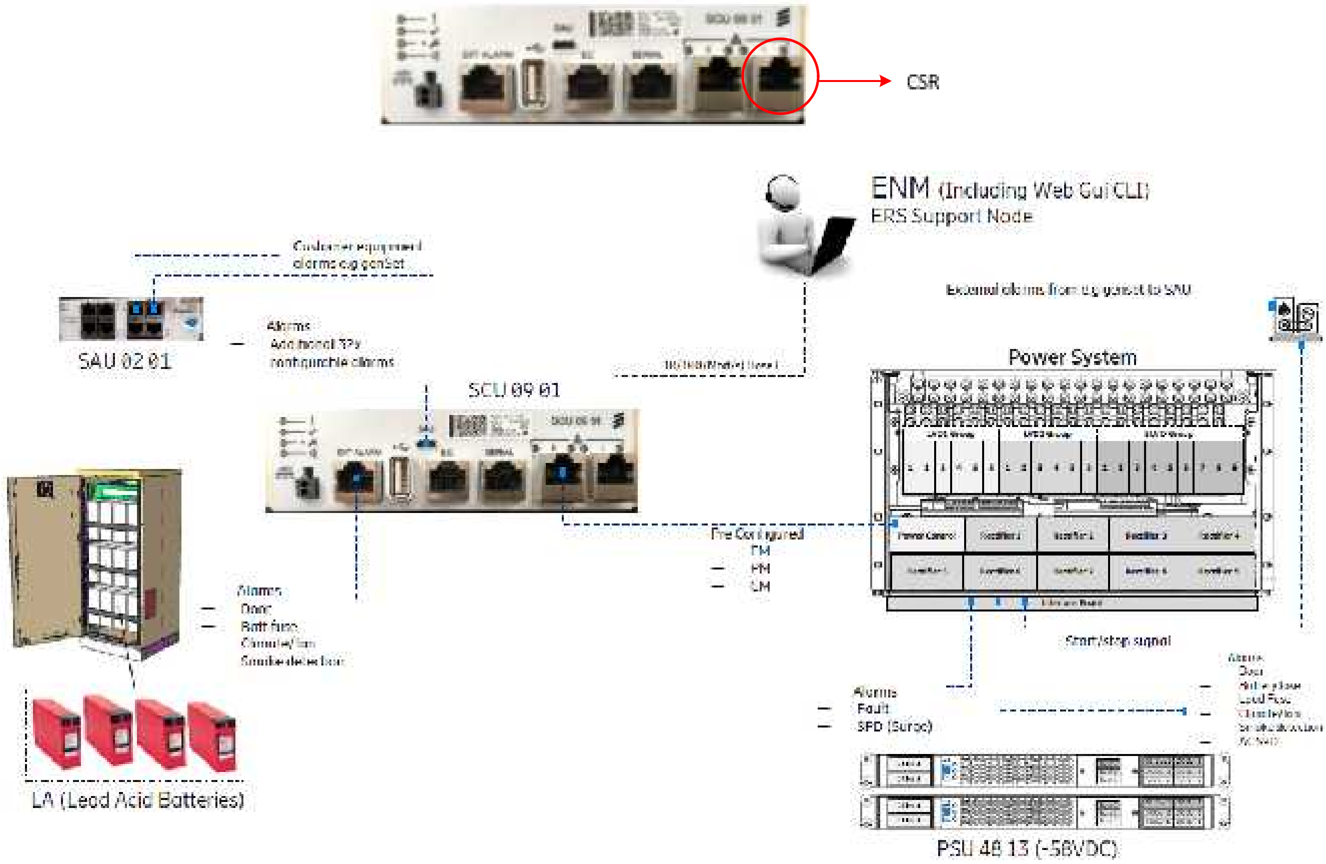
CSR
SCU 09 01
ENM (Including Web Gui CLI)
ERS Support Node
Customer equipment alarms e.g genSet
External alarms from e.g genset to SAU
SAU 02 01
Alarms
Additional 32x configurable alarms
Power System
Pre Configured
FM
PM
CM
Alarms
Door
Batt fuse
Climate/fan
Smoke detection
LA (Lead Acid Batteries)
Start/stop signal
Alarms
Fault
SPD (Surge)
PSU 48 13 (-58VDC)

Figure 14

[illegible]

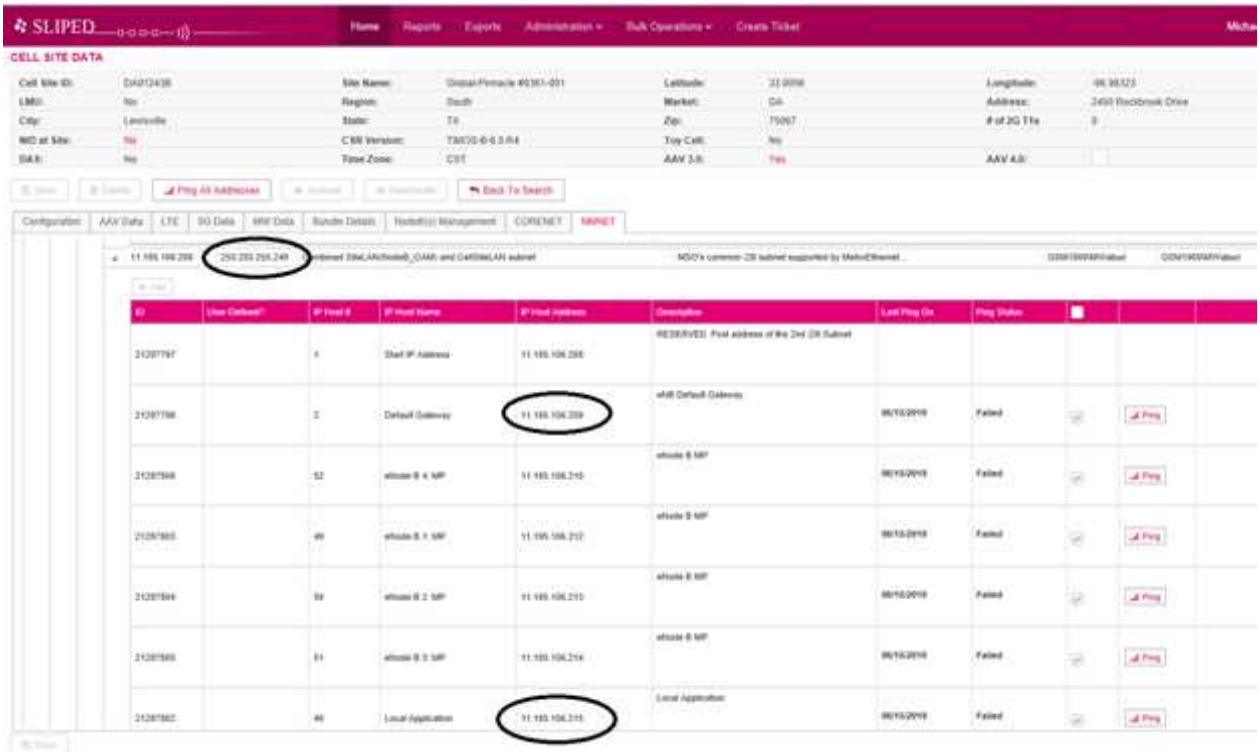

Figure 15

T□□□□SR□□ □□□□□□□□□□□□□s□□□r□□□□□□□□r□□□□□□□□T□M□□□□□□□□□□r□□□□□□□r□□□□□□□□ □□□□s□□□s□□□□ □□□r□□r□□□□□□□□□s□□□□□□□□r□□□□□□□ □□□□□□□□□S□□s□□□□□□□□□□□□□□□□d□□□□□□□□□□□□SR□

SAR□M□□ □□□□□□□s□□□□□□□□□□□□□□□□

SAR□A□□□□□□□□□□

SAS□M□□ □□□□□□□□□□

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Figure 16

5.7 External Alarm Integration

[illegible]

6 Battery Backup Integration

6.1 Battery Terminals & Breakers

[illegible]

6.2 Battery Temperature Sensor and Compensation

[illegible]

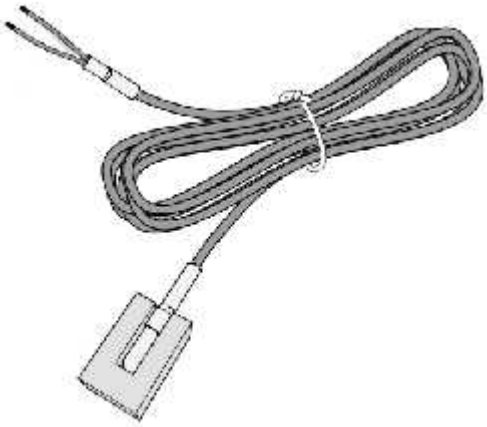


Figure 15

T-Mobile

[illegible]

SITE NUMBER: 7WAN094C

SITE NAME: KEY WEST - ROCKVILLE

T-MOBILE ANCHOR INSTALLATION, DESIGN 4SEC-67D5A997DBA INDOOR

[illegible]

NOTE: DESIGN BASED ON RFDS VERSION: 9.0 DATED: 06/26/2020.

Know what's below. Call before you dig.

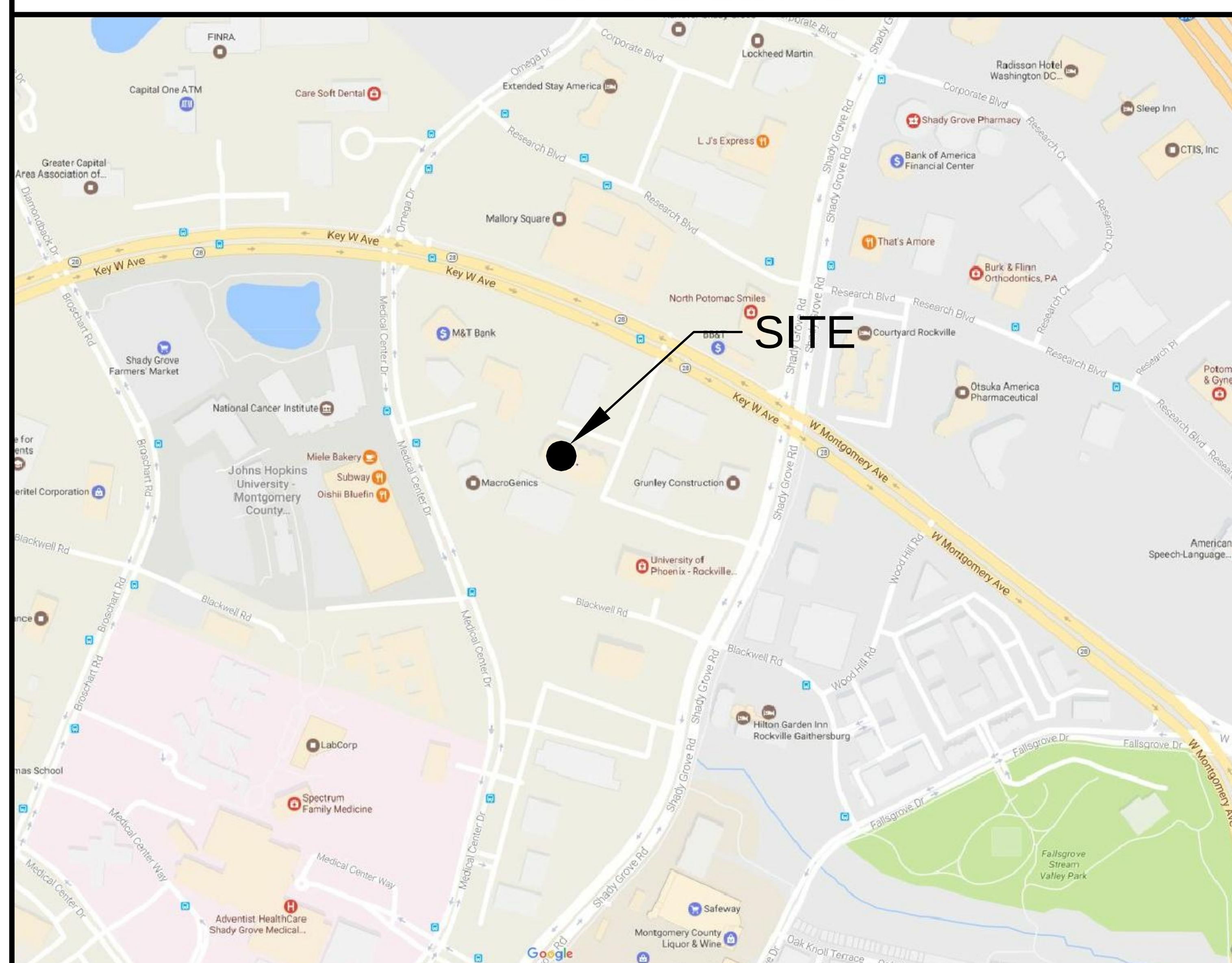
[illegible] (site information)

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible] ADDRESS	[illegible] MD [illegible]
[illegible]	[illegible]
[illegible]	[illegible]
ADDRESS	[illegible] MD [illegible]
[illegible]	[illegible]

[illegible] (project team)

APPLICANT	T-Mobile [illegible]
[illegible]	NB+C [illegible] MARS [illegible] MD [illegible]
[illegible]	[illegible] MARS [illegible] MD [illegible]

[illegible] MAP



DIRECTIONS

[illegible]

[illegible] (code compliance)

[illegible]

DRAWING INDEX

T-1	TITLE SHEET
[illegible]	[illegible]

[illegible] DRAWINGS

[illegible]

APPLICANT

T-Mobile

[illegible]

ENGINEER

NB+C TOTALLY COMMITTED.

NB+C ENGINEERING SERVICES, LLC.

[illegible]

SITE INFORMATION

[illegible]

DESIGN RECORD

REVISIONS

REV	DATE	DESCRIPTION	BY
1	07/13/2020	REV PER COMMENTS	DH
0	06/29/2020	FINAL CDs	CAR

PROFESSIONAL STAMP

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 55491, EXPIRATION DATE 01/08/2022

ENGINEER

[illegible]

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

ELECTRICAL & GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING AT EXPOSED INDOOR LOCATIONS SHALL BE IN ELECTRICAL METALLIC TUBING OR RIGID NONMETALLIC TUBING (RIGID SCHEDULE 40 PVC OR RIGID SCHEDULE 80 PVC FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) (AS PERMITTED BY CODE).
6. ELECTRICAL AND TELCO WIRING AT CONCEALED INDOOR LOCATIONS SHALL BE IN ELECTRICAL METALLIC TUBING, ELECTRICAL NONMETALLIC TUBING, OR RIGID NONMETALLIC TUBING (RIGID SCHEDULE 40 PVC AS PERMITTED BY CODE).
7. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING, ABOVE GRADE AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS (RGS) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
8. BURIED CONDUIT SHALL BE RIGID NONMETALLIC CONDUIT (RIGID SCHEDULE 40 PVC); DIRECT BURIED IN AREAS OF OCCASIONAL LIGHT TRAFFIC, ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY TRAFFIC.
9. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED INDOORS AND OUTDOORS IN AREAS WHERE VIBRATION OCCURS AND FLEXIBILITY IS NEEDED.
10. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE THHN, THWN-2, OR THIN INSULATION.
11. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
12. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
13. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
14. GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTING PROTECTION SHALL BE DONE IN ACCORDANCE WITH T-MOBILE CELL SITE GROUNDING STANDARDS.
15. GROUND CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
16. INSTALL #2 AWG GREEN-INSULATED STRANDED WIRE FOR ABOVE GRADE GROUNDING AND #2 BARE TINNED COPPER WIRE FOR BELOW GRADE GROUNDING UNLESS OTHERWISE NOTED.
17. ALL POWER AND GROUND CONNECTIONS TO BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY HARGER (OR APPROVED EQUAL) RATED FOR OPERATION AT NO LESS THAN 75'C OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
18. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
19. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
20. APPLY OXIDE INHIBITING COMPOUND TO ALL MECHANICAL GROUND CONNECTIONS.
21. CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXISTING TOWER/ MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.
22. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMNS MINIMUM RESISTANCE REQUIRED.
23. CONTRACTOR SHALL CONDUCT ANTENNA, CABLE, AND LNA RETURN-LOSS AND DISTANCE-TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
24. THE T-MOBILE ELECTRICAL EQUIPMENT INCLUDING PANEL, SWITCH GEAR AND DISCONNECT ARE TO BE LABELED WITH ENGRAVED BAKELITE LABELS.

GENERAL NOTES

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITIES COMPANY OR OTHER PUBLIC AUTHORITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
3. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK. MINOR OMISSIONS OR ERRORS IN THE BID DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR THE OVERALL INTENT OF THESE DRAWINGS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED AS A RESULT OF CONSTRUCTION OF THIS FACILITY.
5. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING A BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
7. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTH WITH RF ENGINEERING PRIOR TO INSTALLATION.
8. TRANSMITTER EQUIPMENT AND ANTENNAS ARE DESIGNED TO MEET ANSI/EIA/TIA 222-G REQUIREMENTS.
9. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
10. CONTRACTOR SHALL MAKE A UTILITY "ONE CALL" TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
11. IF ANY UNDERGROUND UTILITIES OR STRUCTURES EXIST BENEATH THE PROJECT AREA, CONTRACTOR MUST LOCATE IT AND CONTACT THE APPLICANT & THE OWNER'S REPRESENTATIVE.
12. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION BY TECHNICIANS APPROXIMATELY 2 TIMES PER MONTH.
13. PROPERTY LINE INFORMATION WAS PREPARED USING DEEDS, TAX MAPS, AND PLANS OF RECORD AND SHOULD NOT BE CONSTRUED AS AN ACCURATE BOUNDARY SURVEY.
14. THIS PLAN IS SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD.
15. THE PROPOSED FACILITY WILL CAUSE ONLY A "DE MINIMIS" INCREASE IN STORMWATER RUNOFF. THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
16. NO SIGNIFICANT NOISE, SMOKE, DUST, OR ODOR WILL RESULT FROM THIS FACILITY.
17. THE FACILITY IS UNMANNED AND NOT INTENDED FOR HUMAN HABITATION (NO HANDICAP ACCESS REQUIRED).
18. THE FACILITY IS UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
19. POWER TO THE FACILITY WILL BE MONITORED BY A SEPARATE METER.

STRUCTURAL NOTES

1. THE STRUCTURAL STEEL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ANCHOR BOLT LOCATIONS, ELEVATION OF TOP OF CONCRETE AND BEARING PLATES, ALIGNMENT ETC. PRIOR TO START OF STEEL ERECTION.
2. THE LATEST EDITION OF THE FOLLOWING SPECIFICATIONS SHALL GOVERN:
   A. AISC – "ALLOWABLE STRESS DESIGN SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS".
   B. AISC – "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".
   C. AWS – "D1.1 STRUCTURAL WELDING CODE – STEEL".
3. MATERIAL, UNLESS OTHERWISE NOTED, SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS

STRUCTURAL WIDE FLANGE & M SHAPES	A992 OR A572 FY = 50KSI
OTHER STRUCTURAL SHAPES AND PLATES	A36, FY = 36 KSI
STRUCTURAL TUBING	A500, GRADE B FY = 46 KSI
HIGH STRENGTH BOLTS	A325
THREADED RODS	A354, GRADE BC
ANCHOR BOLTS	A325 OR A354 BC
PIPE (HANDRAIL)	SCH 40 PIPE

4. ALL WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1 USING E70XX ELECTRODES. UNLESS OTHERWISE NOTED PROVIDE CONTINUOUS MINIMUM SIZED FILLET WELDS PER AISC REQUIREMENTS.
5. HOLES IN STEEL SHALL BE DRILLED OR PUNCHED. ALL SLOTTED HOLES SHALL BE PROVIDED WITH SMOOTH EDGES. BURNING OF HOLES AND TORCH CUTTING AT THE SITE IS NOT PERMITTED. ALL HOLES IN BEARING PLATES SHALL BE DRILLED.
6. ALL STEEL TO BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123.
7. EPOXY ANCHORS TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
8. ALL BOLTS SHALL BE TIGHTENED USING TURN-OF-THE-NUT METHOD PER AISC SPECIFICATIONS USING STANDARD HOLES.
9. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND FIT PRIOR TO FABRICATION.

APPLICANT

T·Mobile

ENGINEER

NB+C TOTALLY COMMITTED.

NB+C ENGINEERING SERVICES, LLC.

SITE INFORMATION

DESIGN RECORD

1	07/13/2020	REV PER COMMENTS	DH
0	06/29/2020	FINAL CDs	CAR
R	DAT	D S R T	

PROFESSIONAL STAMP

STATE OF MARYLAND · 55491 · PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 55491, EXPIRATION DATE 01/08/2022

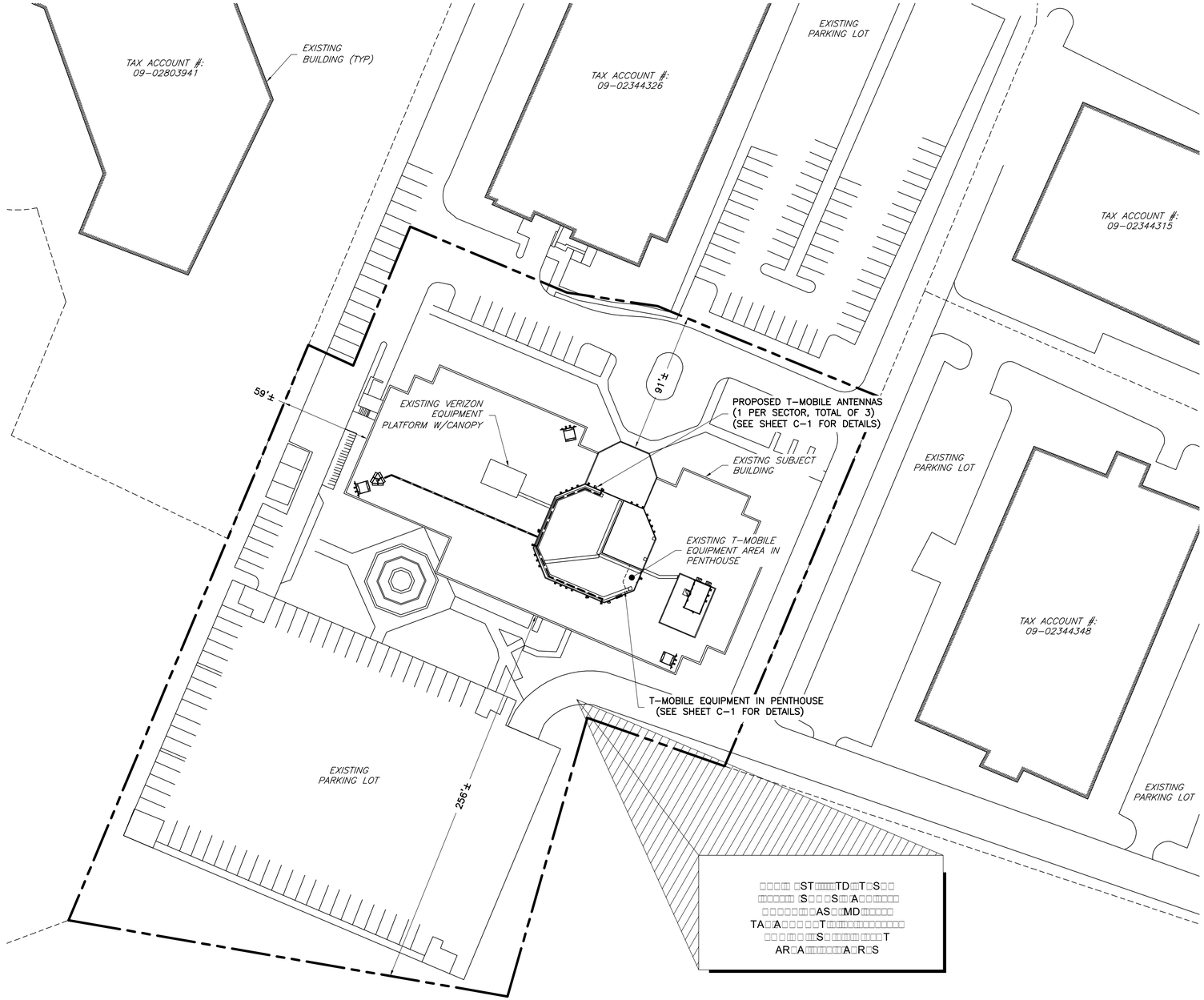
ENGINEER

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-1



ZONING INFORMATION

LEGEND

- PROPERTY LINE – SUBJECT PARCEL
- PROPERTY LINE – ABUTTERS
- EXISTING FENCE LINE
- EXISTING ROAD
- EXISTING BUILDING

APPLICANT

T-Mobile

APPLICANT INFORMATION

ENGINEER

NB+C TOTALLY COMMITTED.

NB+C ENGINEERING SERVICES, LLC.

SITE INFORMATION

DESIGN RECORD

REVISIONS

1	07/13/2020	REV PER COMMENTS	DH
0	06/29/2020	FINAL CDs	CAR

PROFESSIONAL STAMP

STATE OF MARYLAND
5549
PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 55491, EXPIRATION DATE 01/08/2022

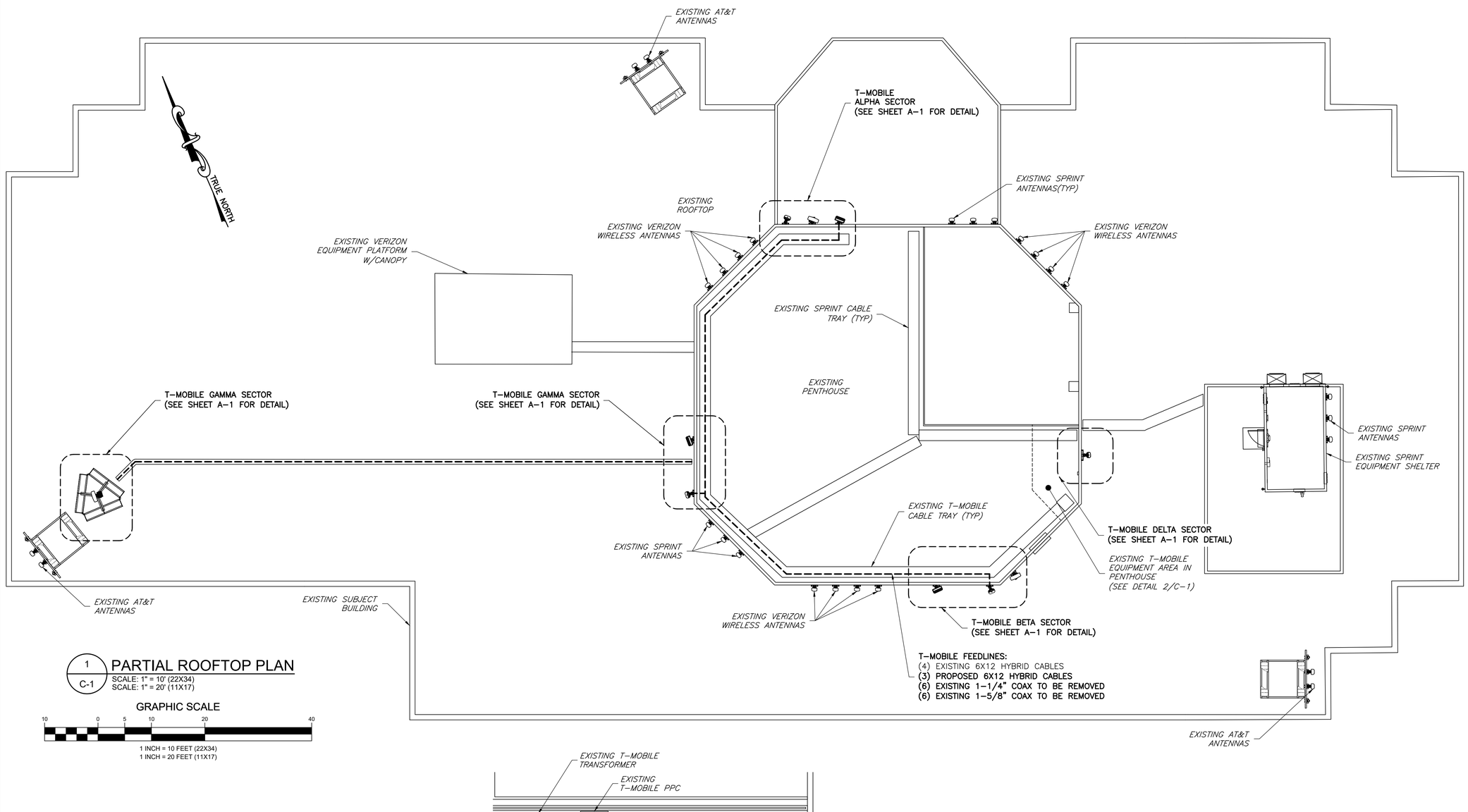
ENGINEER

SHEET TITLE

SITE PLAN

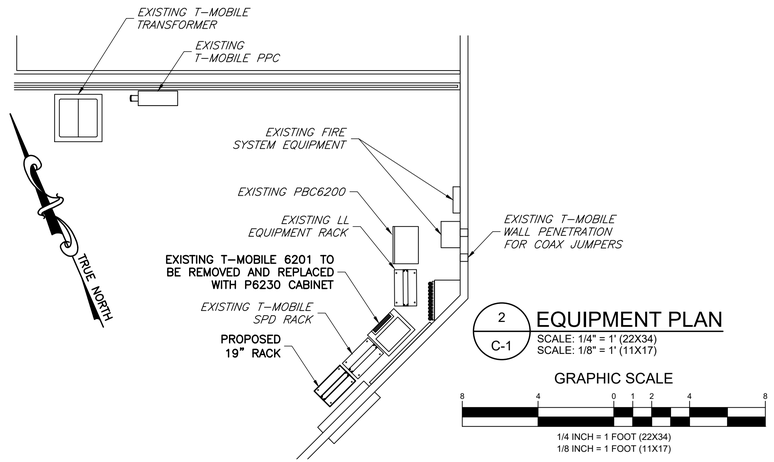
SHEET NUMBER

SP-1



1 / C-1 PARTIAL ROOFTOP PLAN
SCALE: 1" = 10' (22X34)
SCALE: 1" = 20' (11X17)

GRAPHIC SCALE
10 0 5 10 20 40
1 INCH = 10 FEET (22X34)
1 INCH = 20 FEET (11X17)



2 / C-1 EQUIPMENT PLAN
SCALE: 1/4" = 1' (22X34)
SCALE: 1/8" = 1' (11X17)

GRAPHIC SCALE
8 4 0 1 2 4 8
1/4 INCH = 1 FOOT (22X34)
1/8 INCH = 1 FOOT (11X17)

STRUCTURAL NOTE:
REFER TO THE PASSING STRUCTURAL ANALYSIS OF THE EXISTING BUILDING WITH THE EXISTING AND PROPOSED LOADS PERFORMED BY NB+C.

NB+C PROJECT #: 100595.

APPLICANT

T-Mobile

T-MOBILE NORTHEAST LLC

12050 BALTIMORE AVENUE
BELTSVILLE, MD 20705
OFFICE: (240) 264-8600
FAX: (240) 264-8610

ENGINEER

NB+C TOTALLY COMMITTED.

NB+C ENGINEERING SERVICES, LLC.
6095 MARSHALEE DRIVE, SUITE 300
ELKRIDGE, MD 21075
(410) 712-7092

SITE INFORMATION

7WAN094C
KEYWEST - ROCKVILLE
9420 KEY WEST AVENUE
ROCKVILLE, MD 20850
MONTGOMERY COUNTY

DESIGN RECORD

REVISIONS

REV	DATE	DESCRIPTION	BY
1	07/13/2020	REV PER COMMENTS	DH
0	06/29/2020	FINAL CDs	CAR

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STATE OF MARYLAND
07/13/20
55491
PROFESSIONAL ENGINEER

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ENGINEER

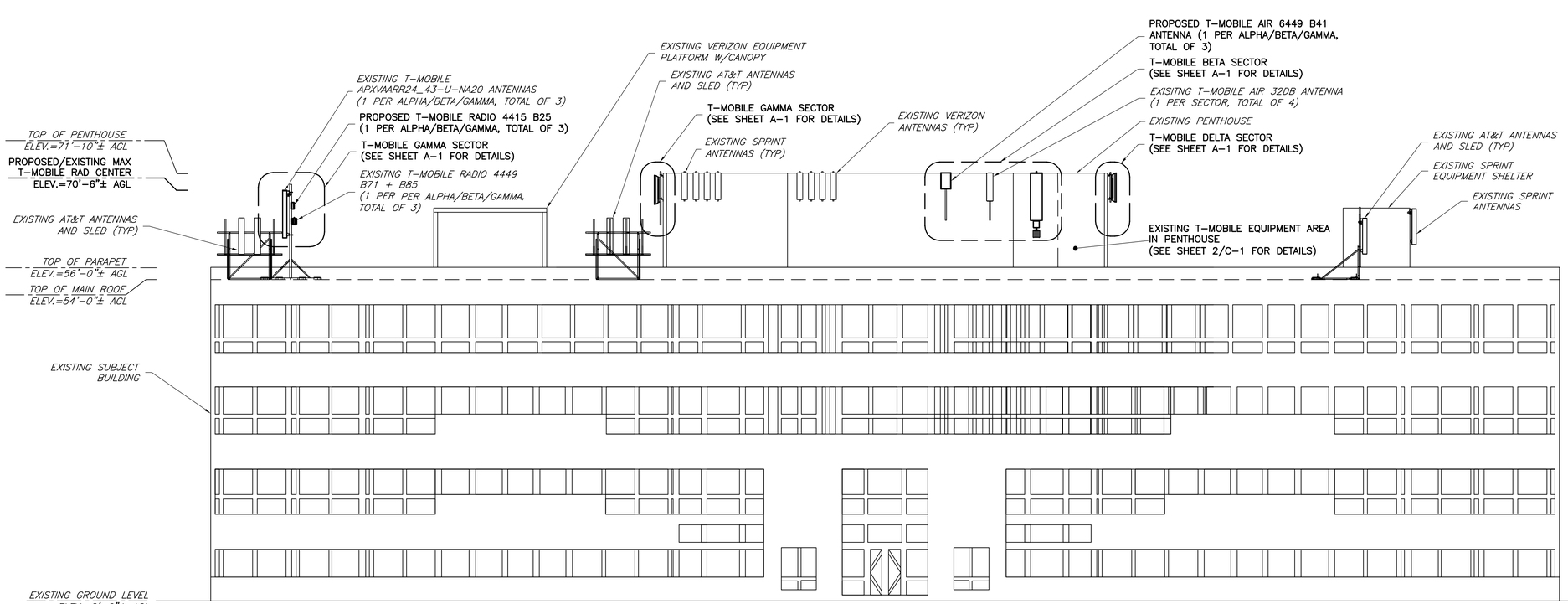
TRENT TRAVIS SNARR, P.E.
MARYLAND PROFESSIONAL ENGINEER
LICENSE #55491

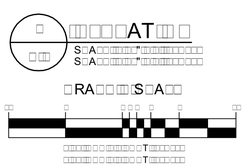
SHEET TITLE

ROOFTOP & EQUIPMENT PLAN

SHEET NUMBER

C-1





NOTE:
ANTENNAS ARE TO BE MOUNTED FLUSH LEVEL WITH THE TOP OF THE WALL IN WHICH THEY ARE SUPPORTED BY.

STRUCTURAL NOTE:
REFER TO THE PASSING STRUCTURAL ANALYSIS OF THE EXISTING BUILDING WITH THE EXISTING AND PROPOSED LOADS PERFORMED BY NB+C.

NB+C PROJECT #: 100595.

APPLICANT

T-Mobile

ENGINEER

NB+C
TOTALLY COMMITTED.
NB+C ENGINEERING SERVICES, LLC.

SITE INFORMATION

DESIGN RECORD

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1	07/13/2020	REV PER COMMENTS	DH
0	06/29/2020	FINAL CDs	CAR

PROFESSIONAL STAMP

STATE OF MARYLAND
5491
PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 55491, EXPIRATION DATE 01/08/2022

ENGINEER

SHEET TITLE

ELEVATION

SHEET NUMBER

C-2

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A1	*EXISTING*	*ERICSSON*	*AIR32DB B2A/B66Aa*	*56.6"x12.9"x8.7"*	*0*	*4°/4°/4°/4°*	*69'–6'*	*45°*	–	(2) EXISTING 1–1/4" COAX CABLES (TO BE REMOVED) (2) EXISTING 1–5/8" COAX CABLES (TO BE REMOVED) (1) PROPOSED 6x12 HYBRID CABLE *(1) EXISTING 6X12 HYBRID CABLES*	*160'–0"±*
A2	*EXISTING*	*RFS*	*APXVAARR24_43–U–NA20*	*95.9"x24.0"x8.7"*	*0°*	*6°/6°/4°/4°*	*67'–0"*	*45°*	*(1) EXISTING 4449 B71+B85* (1) PROPOSED 4415 B25		
A3	EXISTING TO BE REMOVED	ANDREW	TMBXX–6516–A2M	59.0"x11.9"x6.3"	0°	4°	69'–6"	45°	(1) ERICSSON TWIN PCS TMA STYLE 1A (TO BE REMOVED)		
A3	PROPOSED	ERICSSON	AIR6449 B41	33.1"x20.6"x8.6"	0°	2°/2°	70'–6"	45°	□		
B1	*EXISTING*	*RFS*	*APXVAARR24_43–U–NA20*	*95.9"x24.0"x8.7"*	*0°*	*6°/6°/4°/4°*	*67'–0"*	*180°*	*(1) EXISTING 4449 B71+B85* (1) PROPOSED 4415 B25	(2) EXISTING 1–1/4" COAX CABLES (TO BE REMOVED) (2) EXISTING 1–5/8" COAX CABLES (TO BE REMOVED) (1) PROPOSED 6x12 HYBRID CABLE *(1) EXISTING 6X12 HYBRID CABLES*	*35'–0"±*
B2	*EXISTING*	*ERICSSON*	*AIR32DB B2A/B66Aa*	*56.6"x12.9"x8.7"*	*0*	*4°/4°/4°/4°*	*69'–6"*	*180°*	–		
B3	EXISTING TO BE REMOVED	ANDREW	TMBXX–6516–A2M	59.0"x11.9"x6.3"	0°	3°	69'–6'	180°	(1) ERICSSON TWIN PCS TMA STYLE 1A (TO BE REMOVED)		
B3	PROPOSED	ERICSSON	AIR6449 B41	33.1"x20.6"x8.6"	0°	2°/2°	70'–6"	180°	–		
C1	*EXISTING*	*ERICSSON*	*AIR32DB B2A/B66Aa*	*56.6"x12.9"x8.7"*	*0*	*4°/4°/4°/4°*	*69'–6"*	*275°*	–	(2) EXISTING 1–1/4" COAX CABLES (TO BE REMOVED) (2) EXISTING 1–5/8" COAX CABLES (TO BE REMOVED) (1) PROPOSED 6x12 HYBRID CABLE *(1) EXISTING 6X12 HYBRID CABLES*	*95'–0"±*
C2	*EXISTING*	*RFS*	*APXVAARR24_43–U–NA20*	*95.9"x24.0"x8.7"*	*0°*	*6°/6°/4°/4°*	*67'–0"*	*275°*	*(1) EXISTING 4449 B71+B85* (1) PROPOSED 4415 B25		
C3	EXISTING TO BE REMOVED	ANDREW	TMBXX–6516–A2M	59.0"x11.9"x6.3"	0°	7°	69'–6"	275°	(1) ERICSSON TWIN PCS TMA STYLE 1A (TO BE REMOVED)		
C3	PROPOSED	ERICSSON	AIR6449 B41	33.1"x20.6"x8.6"	0°	2°/2°	70'–6"	275°	–		
D1	*EXISTING*	*ERICSSON*	*AIR32DB B2A/B66Aa*	*56.6"x12.9"x8.7"*	*0°*	*4°/4°/4°/4°*	*69'–6"*	*110°*	–	*(1) EXISTING 6X12 HYBRID CABLE*	*40'–0"±*
D1	EXISTING	ERICSSON	AIR32DB B2A/B66Aa	56.6"x12.9"x8.7"	0°	4°/4°/4°/4°	69'–6"	110°	–	(1) EXISTING 6X12 HYBRID CABLE	40'–0"±

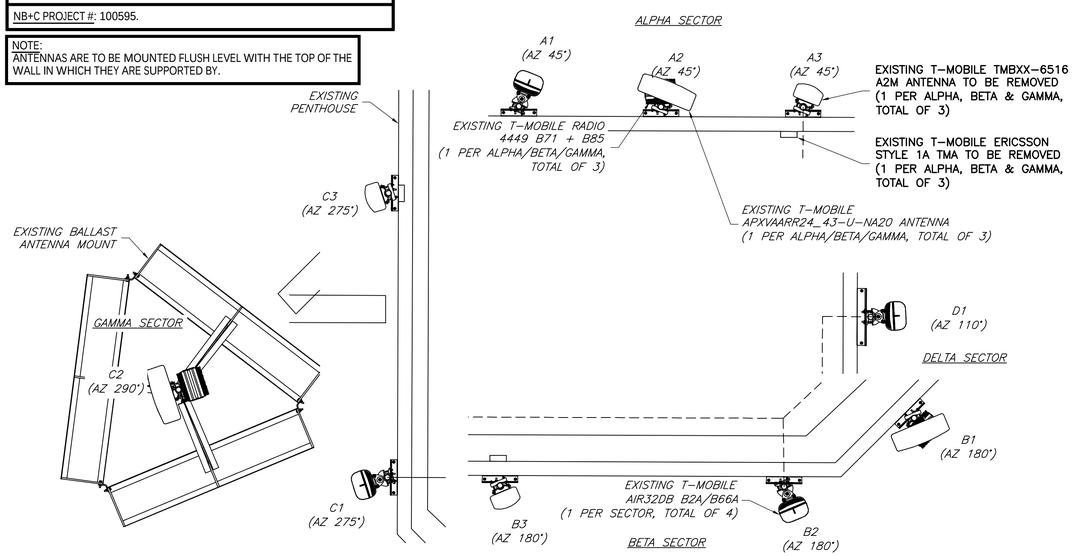
NOTES:
1. CONTRACTOR TO VERIFY PROPOSED ANTENNA INFORMATION IS THE MOST CURRENT DATA AT TIME OF CONSTRUCTION.
2. CONTRACTOR TO CONFIRM CABLE LENGTHS PRIOR TO CONSTRUCTION.

NOTE: DESIGN BASED ON RFDS VERSION: 9.0 DATED: 06/26/2020.

STRUCTURAL NOTE:
REFER TO THE PASSING STRUCTURAL ANALYSIS OF THE EXISTING BUILDING WITH THE EXISTING AND PROPOSED LOADS PERFORMED BY NB+C.

NB+C PROJECT #: 100595.

NOTE:
ANTENNAS ARE TO BE MOUNTED FLUSH LEVEL WITH THE TOP OF THE WALL IN WHICH THEY ARE SUPPORTED BY.



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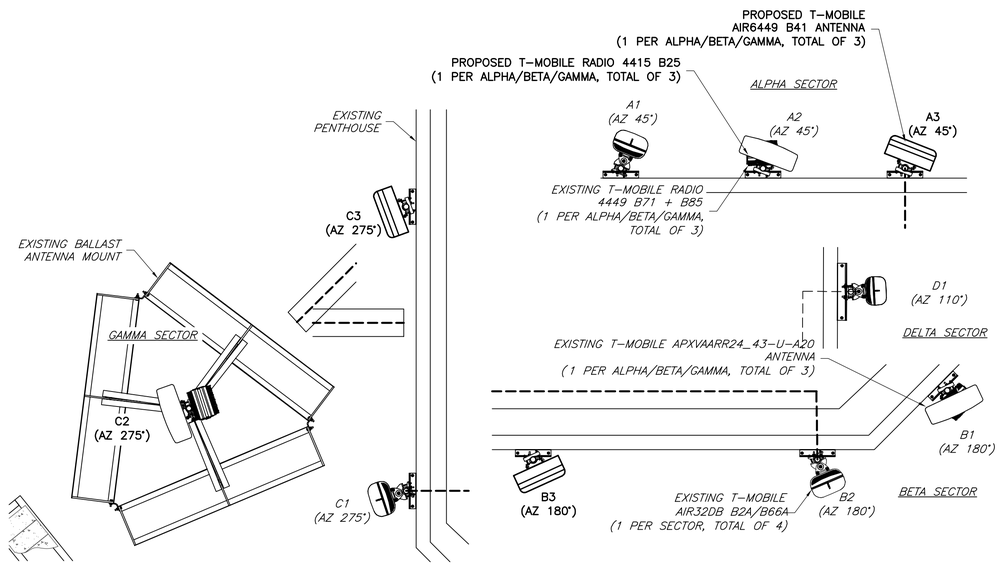
APPROX TRUE NORTH



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APPROX TRUE NORTH

APPLICANT

T-Mobile

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ENGINEER

NB+C TOTALLY COMMITTED.

NB+C ENGINEERING SERVICES, LLC.
□□□□MARS□A□□□DR□□S□T□□□□
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SITE INFORMATION

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DESIGN RECORD

R□□□S□□ □S

1	07/13/2020	REV PER COMMENTS	DH
0	06/29/2020	FINAL CDs	CAR
R□□	DAT□	D□S□R□T□□□	□□

PROFESSIONAL STAMP

STATE OF MARYLAND
55491
PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 55491, EXPIRATION DATE 01/08/2022

ENGINEER

TR□□T□TRA□S□S□ARR□□□□
MAR□□A□D□□R□□□SS□□ □A□□□□ □□□□R
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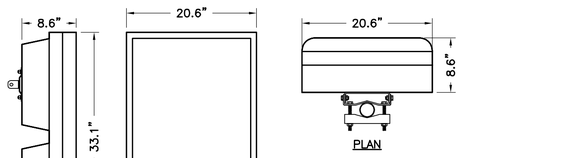
SHEET TITLE

ANTENNA PLANS & ANTENNA SCHEDULE

SHEET NUMBER

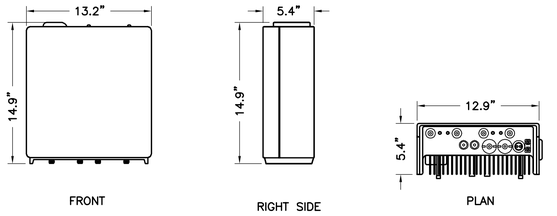
A-1



SIDE FRONT PLAN

MECHANICAL SPECIFICATIONS
ERICSSON PART # – MASSIVE MIMO
MID–BAND AIR6449 B41
HEIGHT: 33.1 IN
WIDTH: 20.6 IN
DEPTH: 8.6 IN
WEIGHT: 104.0 LBS (W/OUT MOUNTING BRACKET)

□ / A□ □□R□□SS□ □□A□T□□□A□D□TA□□
S□A□□□TS



FRONT RIGHT SIDE PLAN

SIZE AND WEIGHT TABLE

RRU	WIDTH	DEPTH	HEIGHT	WEIGHT W/O BRACKET
RADIO 4415 B25	13.2"	5.4"	14.9"	46.3 LBS. (21 kg)

NOTES:

1. DO NOT PAINT THE RRU. RRU SOLAR SHIELD CAN BE PAINTED PER MANUFACTURER'S METHOD OF PROCEDURE.

□ / A□□ □□R□□SS□ □□R□M□T□□RAD□□ □□□T□□RR□□
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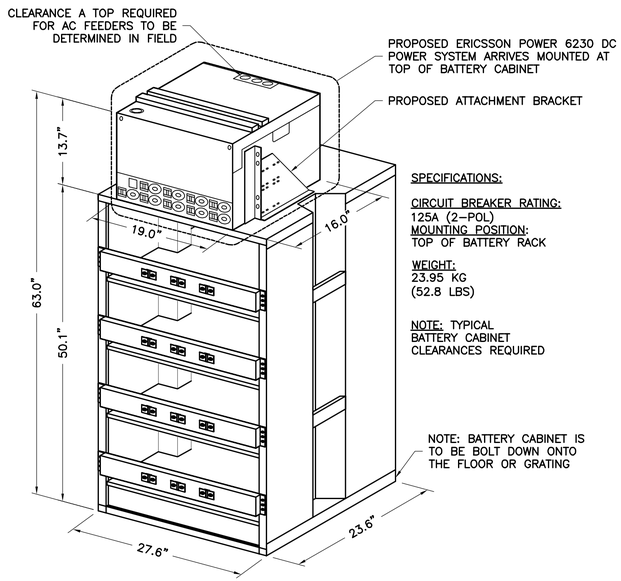

SPECIFICATIONS:

CIRCUIT BREAKER RATING:
125A (2–POL)
MOUNTING POSITION:
TOP OF BATTERY RACK

WEIGHT:
23.95 KG
(52.8 LBS)

NOTE: TYPICAL BATTERY CABINET CLEARANCES REQUIRED

NOTE: BATTERY CABINET IS TO BE BOLT DOWN ONTO THE FLOOR OR GRATING

□ / A□□ □□R□□SS□ □□□□□□□□A□□□□T□D□TA□□
□TS

NOTE: SEE SHEET G–1 FOR RRU AND ANTENNA GROUNDING

APPLICANT

T··Mobile···

T□M□□□□□□□RT□□AST□□□□

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SITE INFORMATION

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DESIGN RECORD

R□□□S□□□S

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0	06/29/2020	FINAL CDs	CAR

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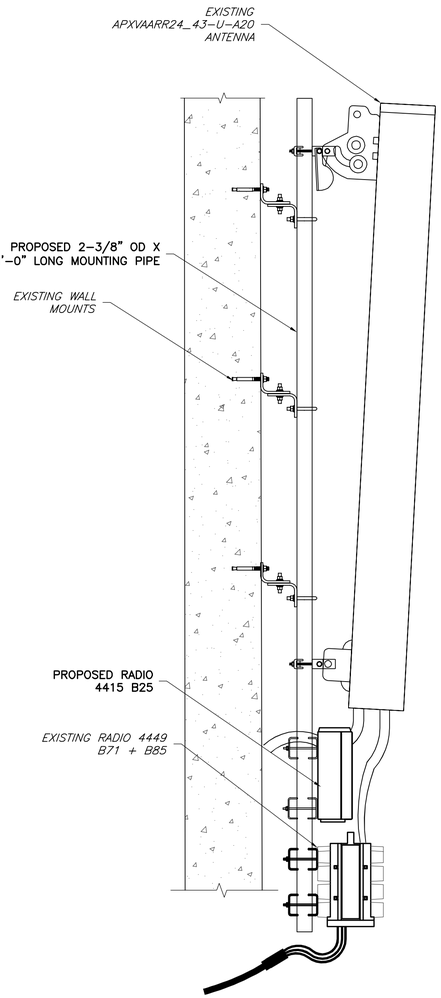
SHEET TITLE

ANTENNA SPECIFICATIONS & DETAILS

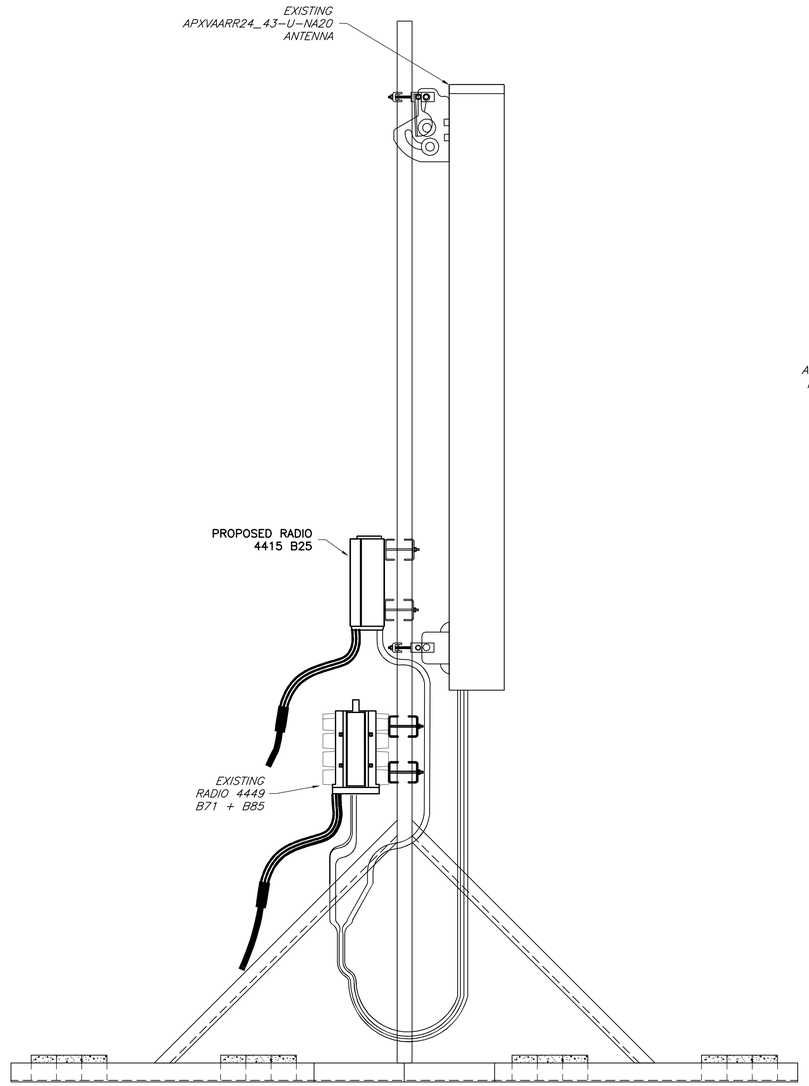
SHEET NUMBER

A-2



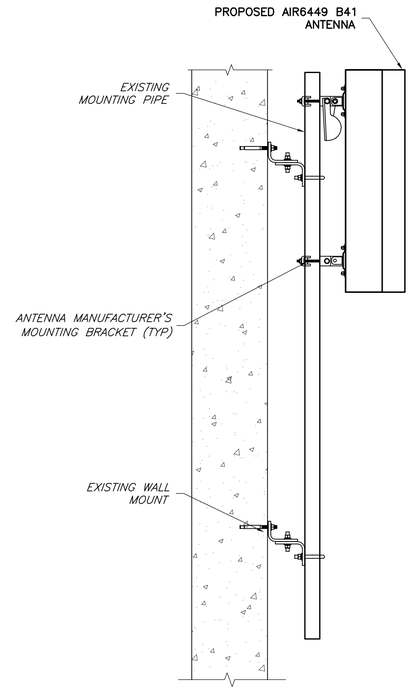
NOTE: SEE SHEET G-1 FOR RRU AND ANTENNA GROUNDING

A RRU MOUNT DETAIL



NOTE: REFER TO STRUCTURAL REPORT COMPLETED BY NB+C ENGINEERING SERVICES, LLC FOR REQUIRED BALLAST WEIGHT

A RRU TRUNK DIMENSIONAL DETAIL



ALPHA/BETA/GAMMA

NOTE: SEE SHEET G-1 FOR RRU AND ANTENNA GROUNDING

A ANTENNA MOUNT DETAIL

NOTE:
ANTENNAS ARE TO BE MOUNTED FLUSH LEVEL WITH THE TOP OF THE WALL IN WHICH THEY ARE SUPPORTED BY.

APPLICANT

T-Mobile

ENGINEER

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SITE INFORMATION

DESIGN RECORD

1	07/13/2020	REV PER COMMENTS	DH
0	06/29/2020	FINAL CDs	CAR

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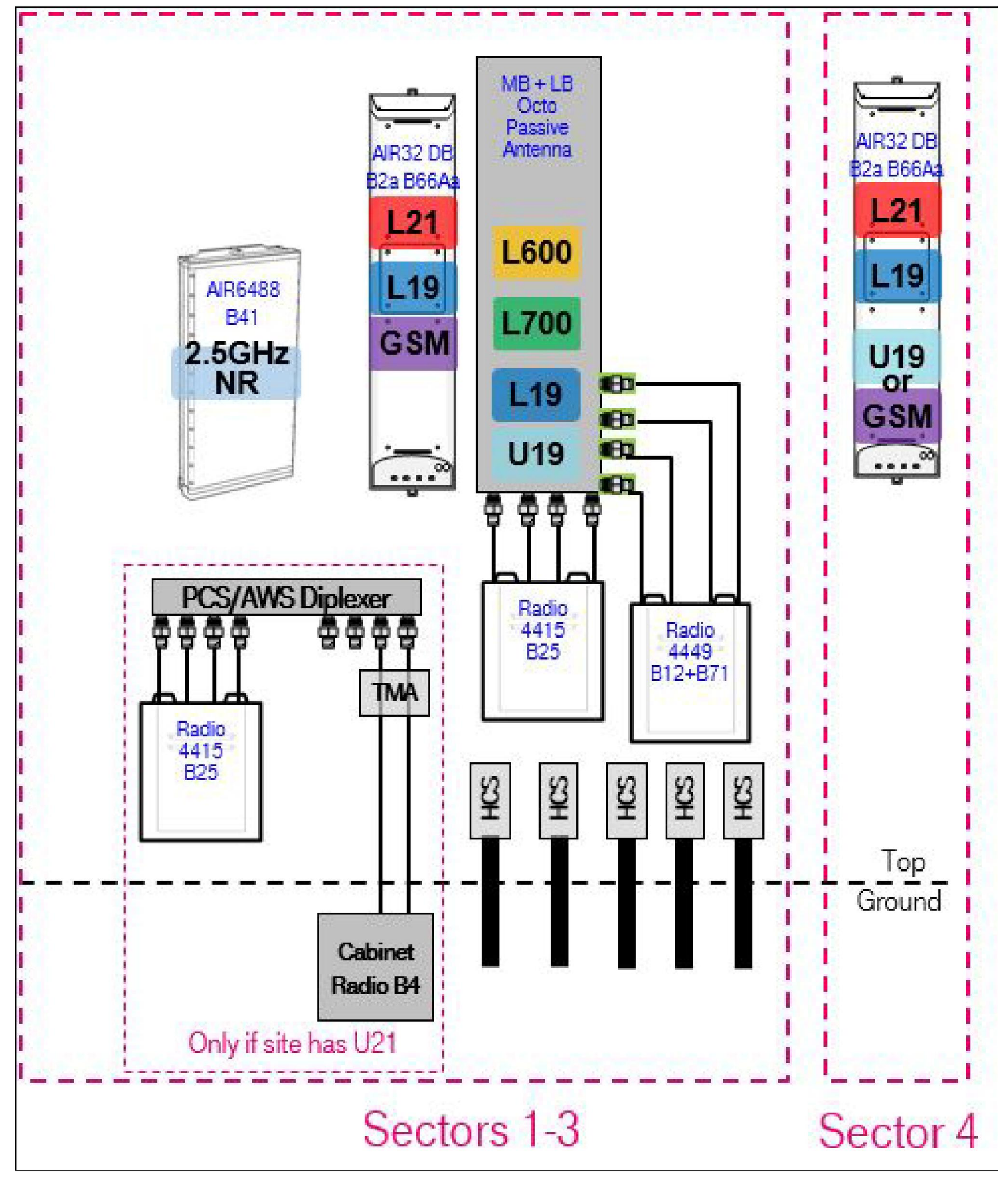
SHEET TITLE

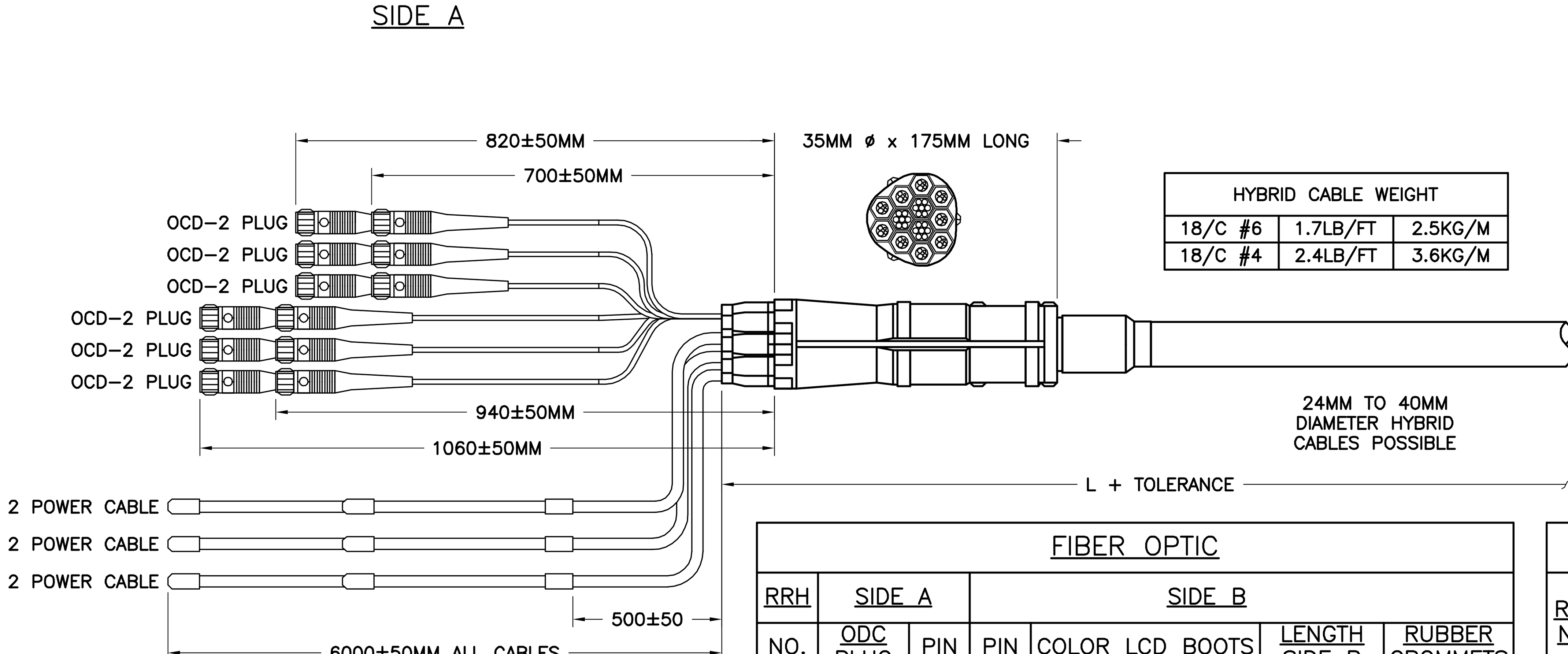
ANTENNA & RRU MOUNTING DETAILS

SHEET NUMBER

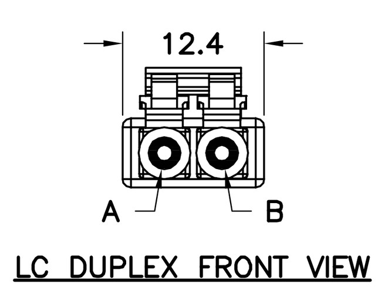
A-3



M D A RAM



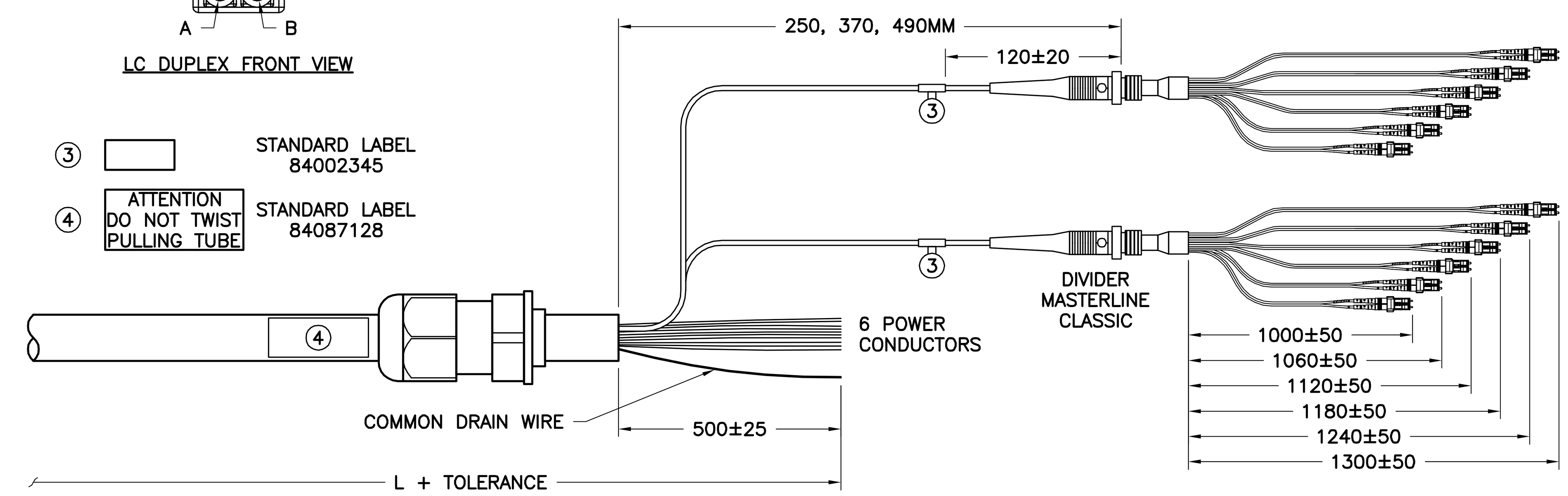
HYBRID CABLE WEIGHT		
18/C #6	1.7LB/FT	2.5KG/M
18/C #4	2.4LB/FT	3.6KG/M



STANDARD LABEL 84002345

ATTENTION DO NOT TWIST PULLING TUBE

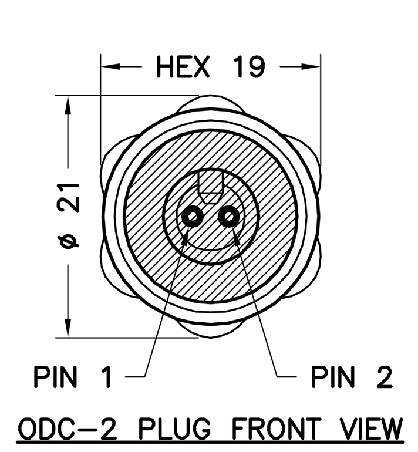
STANDARD LABEL 84087128



FIBER OPTIC						
RRH	SIDE A		SIDE B			
NO.	ODC PLUG	PIN	PIN	COLOR LCD BOOTS	LENGTH SIDE B	RUBBER GROMMETS
1	ODC–2 RED	1	B	RED (SHORT BREAKOUT)	1000 ± 50	1
		2	A			
2	ODC–2 GREEN	1	B	GREEN	1060 ± 50	
		2	A			
3	ODC–2 BLUE	1	B	BLUE	1120 ± 50	1
		2	A			
4	ODC–2 YELLOW	1	B	RED (SHORT BREAKOUT)	1180 ± 50	
		2	A			
5	ODC–2 WHITE	1	B	GREEN	1240 ± 50	1
		2	A			
6	ODC–2 BLACK	1	B	BLUE	1300 ± 50	
		2	A			

POWER				
RRH NO.	REF HOOK UP	SIDE A WIRE COLOR	SIDE A CABLE DESIGNATOR	SIDE B WIRE COLOR
1	–48V	BLACK	RED	RED
	0V	GREY		BLACK
	GROUND	DRAIN		COMMON DRAIN
2	–48V	BLACK	GREEN	GREEN
	0V	GREY		WHITE
	GROUND	DRAIN		COMMON DRAIN
3	–48V	BLACK	BLUE	BLUE
	0V	GREY		ORANGE
	GROUND	DRAIN		COMMON DRAIN

POWER				
RRH NO.	REF HOOK UP	SIDE A WIRE COLOR	SIDE A CABLE DESIGNATOR	SIDE B WIRE COLOR
4	–48V	BLACK	RED 2X BANDS	RED
	0V	GREY		BLACK
	GROUND	DRAIN		COMMON DRAIN
5	–48V	BLACK	GREEN 2X BANDS	GREEN
	0V	GREY		WHITE
	GROUND	DRAIN		COMMON DRAIN
6	–48V	BLACK	BLUE 2X BANDS	BLUE
	0V	GREY		ORANGE
	GROUND	DRAIN		COMMON DRAIN



TOLERANCE	ASSEMBLY LENGTH
+80	L < 5M
+2%	L ≥ 5M

POWER	
LENGTH	DIAMETER
L ≤ 60M	6MM²(10AWG)
L ≥ 60M	10MM²(8AWG)

M R D A R R

APPLICANT

T-Mobile

ENGINEER

NB+C TOTALLY COMMITTED.

NB+C ENGINEERING SERVICES, LLC.

SITE INFORMATION

DESIGN RECORD

1	07/13/2020	REV PER COMMENTS	DH
0	06/29/2020	FINAL CDs	CAR
R	DAT	D S R T	

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ENGINEER

SHEET TITLE

CABLING DETAILS & PLUMBING DIAGRAM

SHEET NUMBER

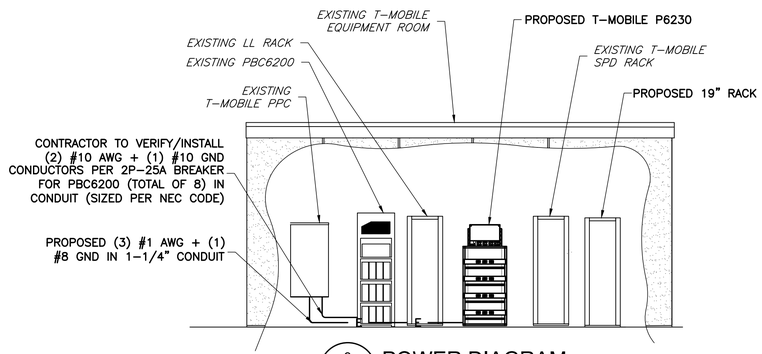
A-4

PPC PANEL

PANEL NAME: PPC 120/240 VOLTS 3 WIRE 1 PHASE MAIN BREAKER: 200A

LOAD DESCRIPTION		LOAD PER PHASE A	LOAD PER PHASE B	TRIP	POLES		LOAD PER PHASE TOTALS A	LOAD PER PHASE TOTALS B		POLES	TRIP	LOAD PER PHASE A	LOAD PER PHASE B	LOAD DESCRIPTION	
1	SURGE ARRESTOR	0		60	2		180			1	10	180		FAN	2
3			0					360		1	15		360	GFCI RECEPTACLE	4
5	*PBC6200 CABINET	1350		25	2		2700			2	25	1350		*PBC6200 CABINET	6
7			1350					2700					1350		8
9	*PBC6200 CABINET	1350		25	2		2700			2	25	1350		*PBC6200 CABINET	10
11			1350					2700					1350		12
13	*PBC6200 CABINET	1350		25	2		2700			2	25	1350		*PBC6200 CABINET	14
15			1350					2700					1350		16
17	*PBC6200 CABINET	1350		25	2		8350			2	100	7000		*P6230	18
19			1350					8350					7000		20
21	*PBC6200 CABINET	1350		25	2		1350			-	-	0		SPACE	22
23			1350					1350		-	-		0	SPACE	24
							SUBTOTALS								
	NOTES:						17980	18160		TOTAL CONNECTED LOAD (VA):		36140			
	*EXISTING PBC6200 REQUIRES (8) 2P–25A BREAKERS, CONTRACTOR TO INSTALL REMAINING BREAKERS **INSTALL (1) 2P–100A BREAKER FOR PROPOSED P6230						149.8	151.3		MAXIMUM LOAD CURRENT:		151.3			
										PANEL CAPACITY:		200			
										SPARE CAPACITY:		48.7			

1 / E-1 PANEL SCHEDULE
NTS



3 / G-1 POWER DIAGRAM
NTS

ELECTRICAL LEGEND

	SAFETY DISCONNECT SWITCH	A	AMPERE
	PANEL BOARD	C	CONDUIT
M	KILOWATT HOUR METER	EMT	ELECTRICAL METALLIC TUBING
T	TRANSFORMER	G	GROUND
	CIRCUIT BREAKER	GFI	GROUND FAULT INTERRUPTING
	MANUAL TRANSFER SWITCH	KWH	KILOWATT HOUR
		MCB	MAIN CIRCUIT BREAKER
	AC GENERATOR CONNECTOR	P	POLE
	WEATHERPROOF GFI DUPLEX RECEPTACLE	SW	SWITCH
E	ELECTRICAL WIRING	V	VOLT
T	TELCO WIRING	W	WIRE

APPLICANT

T-MOBILE NORTHEAST LLC

12050 BALTIMORE AVENUE
BELTSVILLE, MD 20705
OFFICE: (240) 264-8600
FAX: (240) 264-8610

ENGINEER

NB+C ENGINEERING SERVICES, LLC.
6095 MARSHALEE DRIVE, SUITE 300
ELKRIDGE, MD 21075
(410) 712-7092

SITE INFORMATION

7WAN094C
KEYWEST - ROCKVILLE
9420 KEY WEST AVENUE
ROCKVILLE, MD 20850
MONTGOMERY COUNTY

DESIGN RECORD

REVISIONS

REV	DATE	DESCRIPTION	BY
1	07/13/2020	REV PER COMMENTS	DH
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STATE OF MARYLAND
TRENT TRAVIS SNARR
07/13/20
55491
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ENGINEER

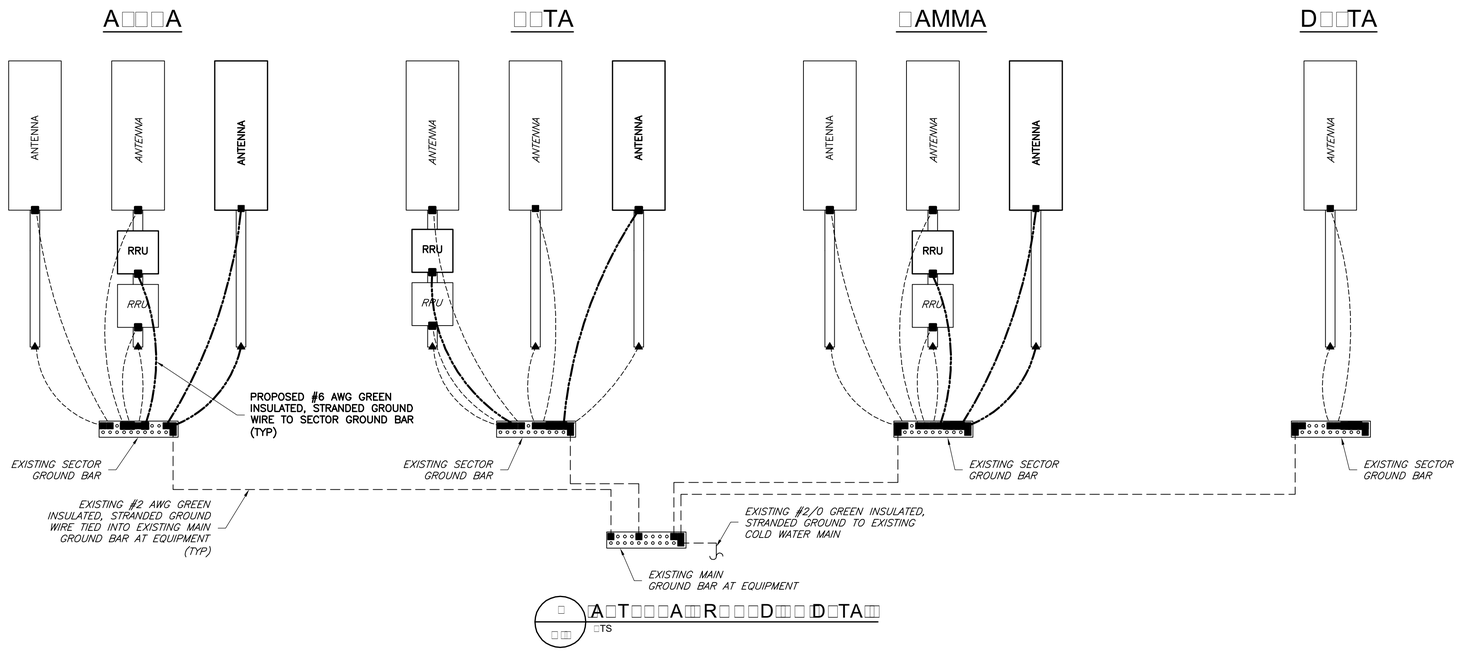
TRENT TRAVIS SNARR, P.E.
MARYLAND PROFESSIONAL ENGINEER
LICENSE #55491

SHEET TITLE

ELECTRICAL DETAILS

SHEET NUMBER

E-1



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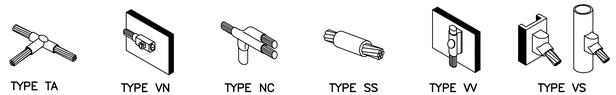

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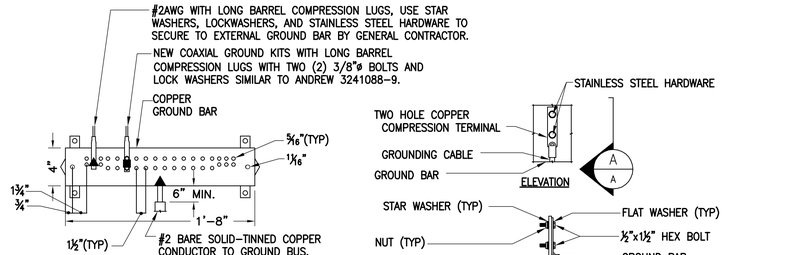

□ R□□D□□□AR□□□□□T□□S

GROUNDING LEGEND

■	MECHANICAL FITTING CONNECTION
▲	CADWELD CONNECTION
●	EXOTHERMIC WELD CONNECTION
———	PROPOSED GROUND WIRING
- - - - - - - - - -	EXISTING GROUND WIRING

APPLICANT

T-Mobile

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SITE INFORMATION

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DESIGN RECORD

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SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

G-1

App No: 2020071203

Application General Infomation

Applicant Name	NB+C	Updated	7/1/2020
Application Type	Minor Modification	Ann. Plan?	Yes
Carrier	T-Mobile	Will site be used to support government telecommunications facilities or other equipment for government use?	No
Solution Type	Macro		
Existing	Existing	Gvt. Use Desc.	

Application Description

T-Mobile proposes removing (3) antennas, (3) RRUs, and (1) Cabinet, and installing (3) antennas, (3) RRUs, and (1) cabinet at the existing telecommunications facility.

Site Infomation

Site Id	279	Zoning	LSC-1.0
Structure Type	Building	Latitude	39.102939
Address	9420 Key West Ave, Rockville	Longitude	-77.193847
County Site Name	Phillips Office Building	Ground Elevation	470
Carrier Site Name	7WAN094C	City	Rockville
Site Owner	Key West III LP	Lease Status	In Process
Structure Owner	Key West III LLC / DANAC	Does the structure require an antenna structure registration under FCC Title 47	No
Existing Structure Height	54		
Provide the proposed height of the replacement structure without any antenna (New, Replacement Apps Only)		Distance to Residential Property (New, Replacement, Colocation Only)	
		Distance to Commercial Property (New, Replacement, Colocation Only)	

Justification of why this site was selected:

Existing Telecommunications Facility

NearbySites (New, Replacement Apps Only):

App No: 2020071203

Screening considerations(New, Colocations, Replacement Apps Only):

Thursday, July 2, 2020

8:12:19 AM

App No: 2020071203

6409 Questions

Does this qualify as a 6409 application? (Minor Mod, Colocations Only): Yes

For towers outside the public ROW will the proposed installation increase the height of the structure by: (1) more than 10% or (2) more than 20 feet, whichever is greater? No

Will the proposed installation increase the width by adding appurtenance to the body of the structure that would protrude from the edge of the structure by more than 6 feet? No

For towers outside the public ROW will the proposed installation increase the width by adding appurtenance to the body of the structure that would protrude from the edge of the structure by more than 20 feet? No

More than four Equipment Cabinets? YN: No

Will the proposed installation require excavation or expansion outside the current boundaries of the site? No

Does the structure or current installation have concealment elements/measures? No

Will the proposed installation increase the height of the structure by: (1) more than 10% or (2) more than 10 feet, whichever is greater? No

If yes, describe how the proposed installation does not defeat the existing concealment.

Small Wireless Facility Informatio

Small Wireless Facility Questions

Small Wireless Facility? No

Is the structure 10% taller than adjacent structures?

Cumulative volume of the proposed wireless equipment(s) exclusive of antennas in cubic feet: 0

Please list adjacent structure heights

Tribal Lands? No

Cumulative volume of the proposed antenna antenna(s) exclusive of equipment

ROW Information

PROW? No

Pole Number

ROW owner

ROW width

Thursday, July 2, 2020

8:12:19 AM

App No: 2020071203

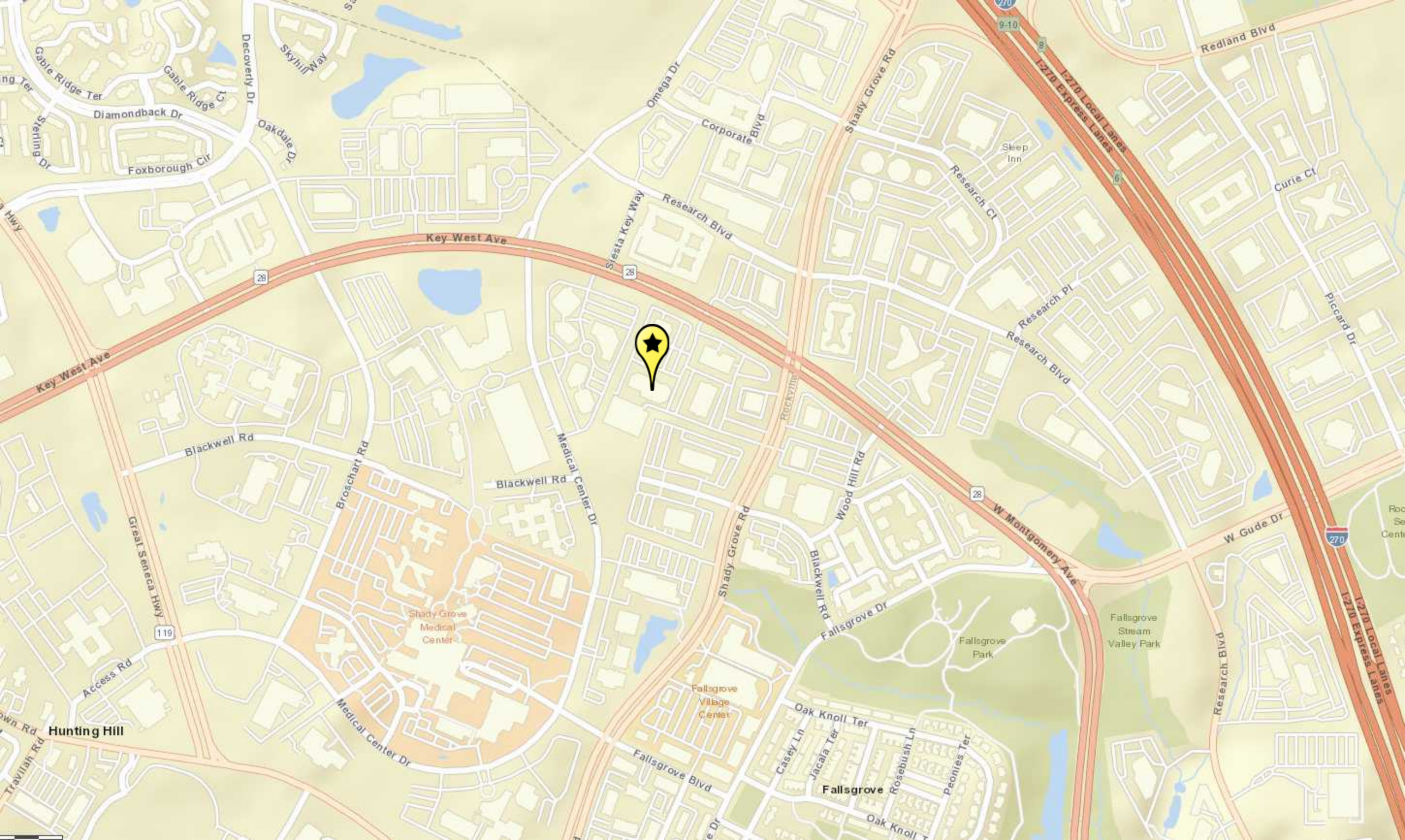
Antenna Infomation

Antenna Compliance	Yes
Compliance Desc	
Antenna Location	Yes
Antenna Loc. Desc.	
Env. Assessment	
Cat. Excluded?	checked
Routine Env. Evaluation	

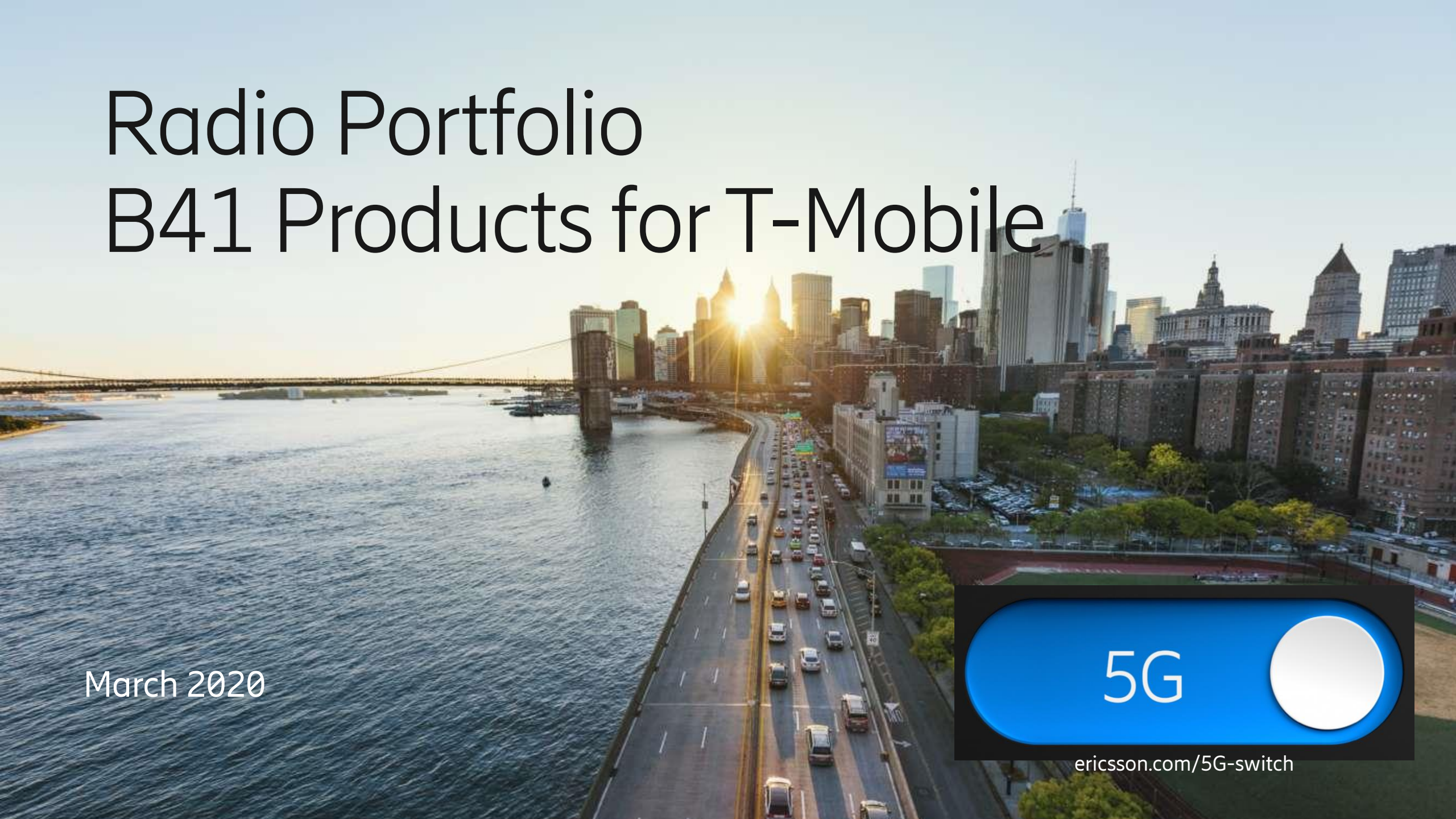
Antenna Model	Ericsson AIRE6449 B41						
Frequency	Tx & Rx: 2496-2690						
RAD Center	70.5	Max ERP	854	Antenna Dimensions	33.1"x20.6"x8.6"	Quantity	3

Thursday, July 2, 2020

8:12:19 AM


Gable Ridge Ter
Diamondback Dr
Gable Ridge Ct
Decoverly Dr
Skyhill Way
Sterling Dr
Foxborough Cir
Oakdale Dr
Omega Dr
Corporate Blvd
Shady Grove Rd
Research Ct
Sleep Inn
Redland Blvd
I-270 Local Lanes
I-270 Express Lanes
Curie Ct
Piccard Dr
Research Pl
Research Blvd
Key West Ave
Siesta Key Way
Research Blvd
Rockville
Blackwell Rd
Broschart Rd
Medical Center Dr
Great Seneca Hwy
Access Rd
Travilah Rd
Hunting Hill
Shady Grove Medical Center
Fallsgrove Village Center
Fallsgrove Blvd
Wood Hill Rd
W Montgomery Ave
W Gude Dr
Fallsgrove Dr
Fallsgrove Park
Fallsgrove Stream Valley Park
Research Blvd
Oak Knoll Ter
Casey Ln
Jacala Ter
Rosebush Ln
Peonies Ter
Fallsgrove

Radio Portfolio
B41 Products for T-Mobile



March 2020

ericsson.com/5G-switch

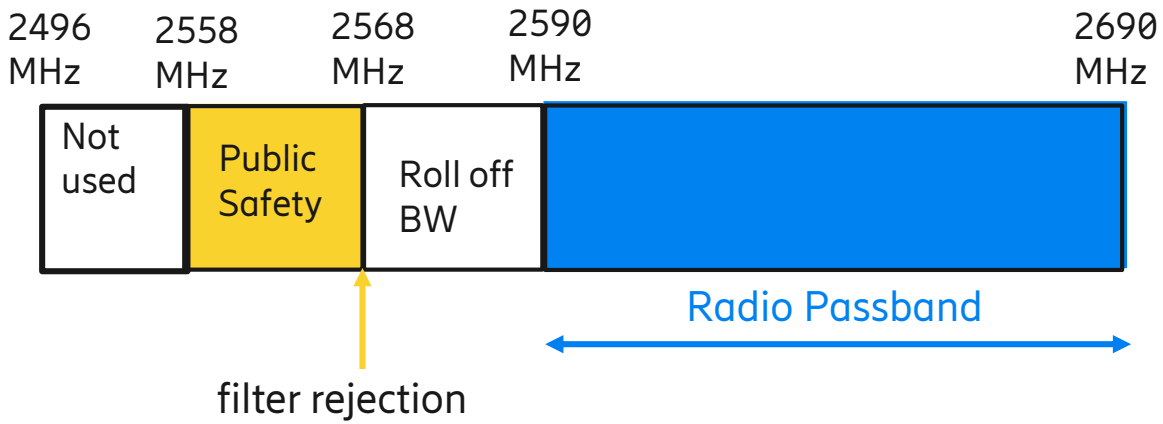
AIR 6488, B41

- Advanced Antenna System (AAS)
- 64TX/64RX with 128 AE
- Support operation frequency range 2496-2690 MHz
- Support output power up to 200W
- Support 100 MHz IBW & CBW
- Support NR and NR+LTE in split mode
- 3 x 10 Gbps eCPRI
- Power consumption < 1290W
- Weight: 58 kg
- Size (H x W x D): 884x520x183 mm
- -48 VDC (3-wire or 2-wire)
- -40 to +55˚C
- Multi-layer MU MIMO
  - DL/UL: 16/8

AIR 6488, B41M

- Advanced Antenna System (AAS)
- 64TX/64RX with 128 AE
- Support operation frequency range 2590-2690 MHz
- Support output power up to 200W
- Support 100 MHz IBW & CBW
- Support NR and NR+LTE in split mode
- 3 x 10 Gbps eCPRI
- Power consumption < 1290W
- Weight: 58 kg
- Size (H x W x D): 884x520x183 mm
- -48 VDC (3-wire or 2-wire)
- -40 to +55˚C
- Multi-layer MU MIMO
  - DL/UL: 16/8

AIR 6488M for New York City Band 41M support

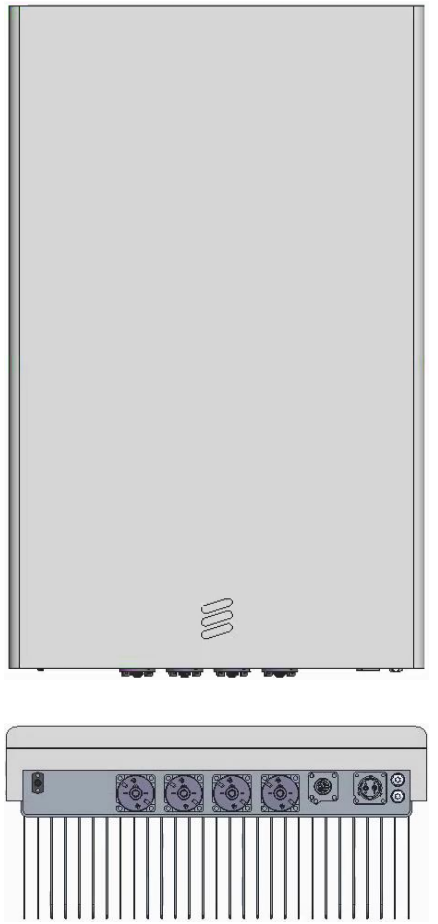


B41 in New York City currently has a UMTS Public Safety Network that requires OOBE interference protection from New T-Mobile Network

AIR 6449

Preliminary

- 192 antenna elements, 3:1 subarray
- Up to 300W
- Up to 200 MHz Operating BW & Carrier BW
- Two 25 Gb/s SFP(C2) and Two 10 Gb/s QSFP(C1FD and C2 backup)
- -48V 45 A Two wire and three wire versions
- APC light connector and Self test push button
- Sensor support but undefined
- Size B41:
  - 841 x 521 x 217 mm (H x W x D)
  - Volume: 95 liter
  - Weight: 47 kg



PRA: July 2020

Radio 8863

Preliminary

- 8TX/8RX
- Support split mode (2 x 4T4R or 4 x 2T2R as multi-sector solution)
- Tx Power 8x40W
- 200MHz IBW TDD
- 2x10.1/25Gbps CPRI
- 21.5 liter, 21kg
- External antenna calibration
- -48 VDC 3-wire
- AISG RET support via RS-485 or RF connectors
- Optional fan for increased site flexibility
- 2 external alarm
- Convectional cooling
- IP 65, -40 to +55˚C

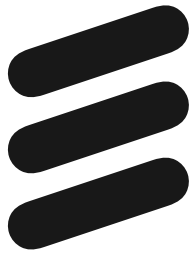
Radio Details: Mid Band TDD (Massive) MIMO (Band 41)

AIR or Radio Type	AIR 6488 (G2) 	AIR 6449 (G4) 	Radio 8863 
RATs supported	L, NR	L, NR	L, NR
Power capability	200W	300W	8x40W
Modulation	256QAM	256QAM	256QAM
Bandwidth (IBW/CBW)	100 MHz or 60L+60N	194 MHz	196 MHz
Tx and Rx Array	64T64R	64T64R	8 CSI-RS ports
MIMO layers (DL/UL)	16 DL / 8 UL	16 DL / 8 UL	16 DL / 8 UL
CPRI ports	3 x 10G	4 x 25G* (2x10G+2x25G)	2 x 25G*
Dimensions (HxWxD)	884mm x 520mm x 183mm (34.8" x 20.5" x 7.2")	840mm x 520mm x 210mm (33.1" x 20.5" x 8.3")	(21.5 ltr)
Weight	58 kg (128 lbs)	47 kg (103 lbs)	Approx. 21 kg (46 lbs)
Cooling	Convection	Convection	Convection
Power	-48VDC	-48VDC	-48VDC
Power Consumption	1290W	<1100W	TBD
Availability	Q2 2019	Q3 2020	Q2 2020

* requires Baseband 6648

Radio 4408 B41

- 4TX/4RX TDD
- 4x5W
- IBW up to 150 MHz CBW
- Up to 6 LTE carriers
- 2x 2.5/5/9.8/10.1Gbps CPRI
- 4 liter, less than 5kg incl bracket and cover
- AC or -48 VDC
- Integrated or external antenna
- 2 external alarm
- IP 65
- -40 to +55˚C



Ericsson 6230 Design Specification

The methods for configuring the 6230 for field deployment are presented.

[illegible]

[illegible] | MTS [illegible]
[illegible] | M[illegible]

[illegible]		[illegible]	
[illegible]			
[illegible]	[illegible]		
[illegible]	[illegible]		

[illegible]

Table of Contents

1 Introduction / Project Summary

1.1 Purpose of Project

[illegible]

1.2 Product Description

[illegible]

1.3 Assumptions

[illegible]

2 General Equipment Overview

[illegible]

Mechanical Specification	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Power System	
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
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[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Operating Environmental	

Acoustic Noise	
Remote Management	
Performance Management	
Configuration Management	
Inventory Management	

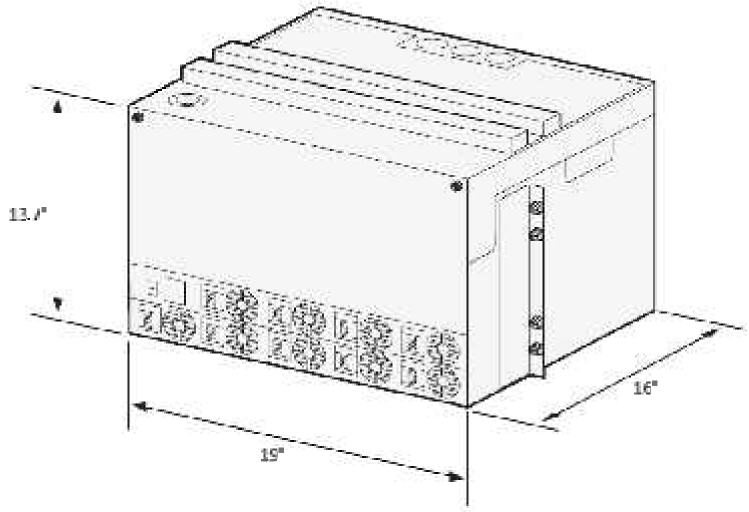


Figure 1

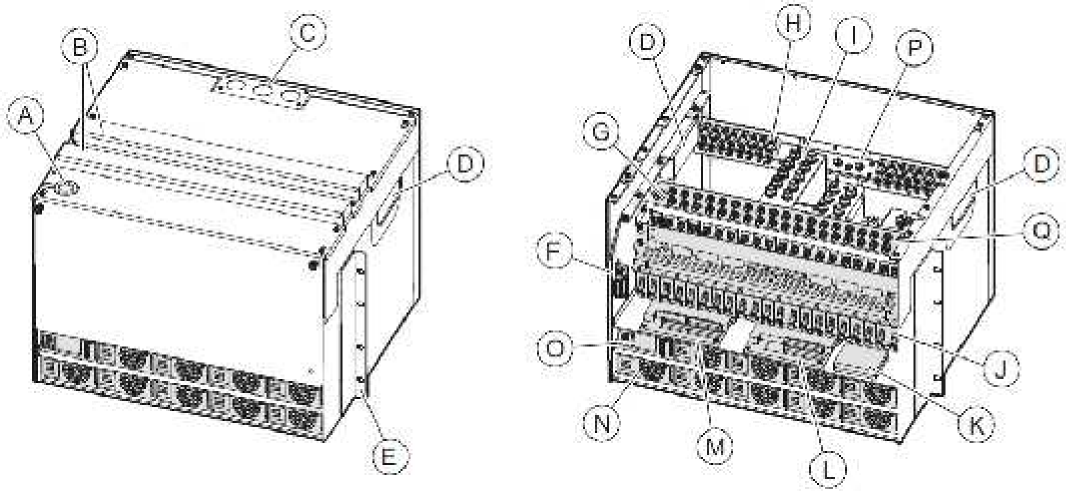


Figure 2

Feature	Unit
A	A□r□ □□r□□□□r□□□□r [cable, te □ pe r□tu re s□□s□r, S□□ □□□□ □r□□□□□
□	C □ble r□□□□□□
C	A□ [cab e int rface
D	Ba tery □□□□□□ in et
□	Ad□□□□r□br acke □for□wall mo □nt ng kit
F	RT□ ala r□
G	0 V bu s ba r D□ con e tion
H	A□ in ut
I	0□□ RT□ □□r batt ry cable s
□	D□ d s r□□□□□□□□r□□□□ breake r
□	D□ S□D
L	□□□□d□d□□□□r□□□□boa rd (EI)
M	Int rf ce □□□□rd (IB2)
N	R□□□□□r
O	□□□ r□□on rolle r□nit □□□□
□	A□ gr□und ing
Q	-4 □□D□ d s r□□□□□□

3 6230 Placement

[illegible]

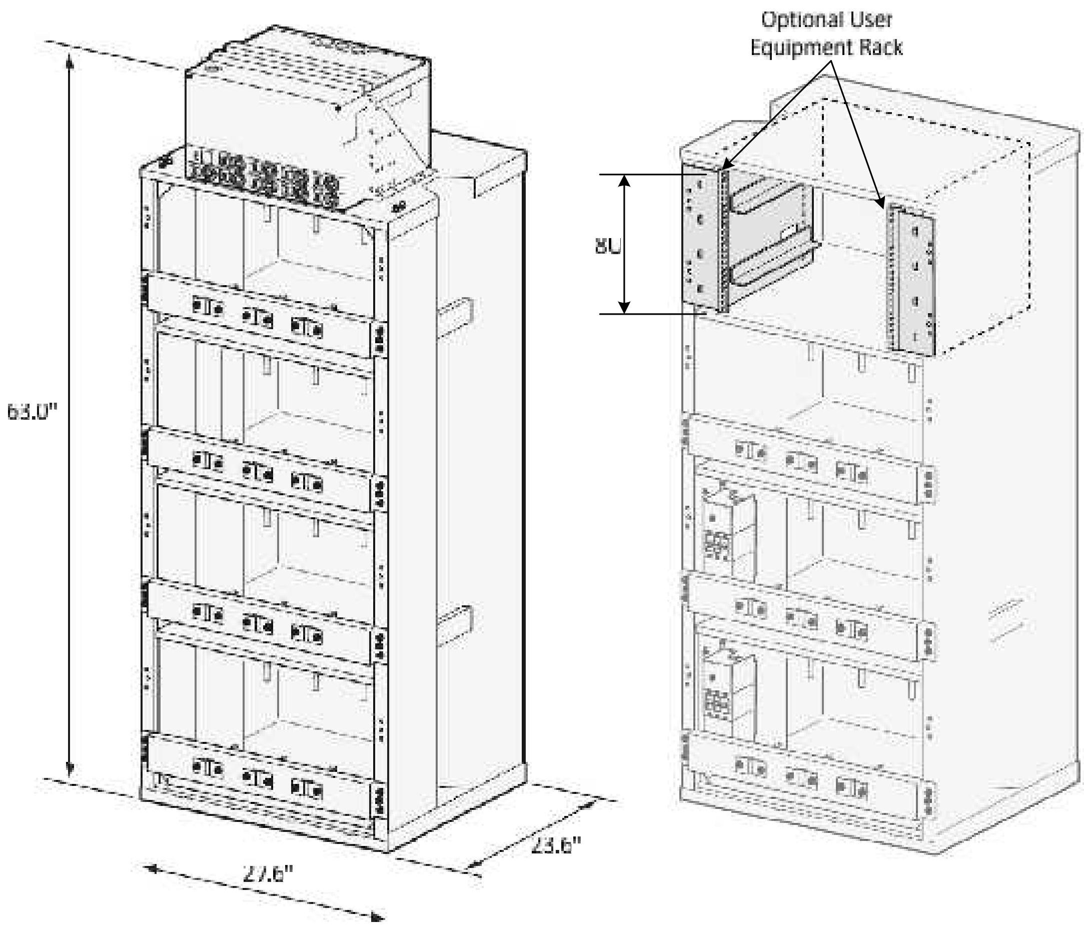


Figure 3

4 Baseline Capacity

[illegible]

Product Number	Description	Qty	Comment
BMG 907 157/1	6230 indoor Power rack	1	Power Unit and Battery Rack. Identity Label SVF 191 040/1 included
KDU 127 170/3	SCU 09 01, Support Control Unit	1	
SXK 109 1052/1	SCU/SAU Holder	2	
RPM 777 143/00500	Signal cable SCU - power system	1	
RPM 777 080/01000	Power Cable -> SCU	1	
KET 109 70/2	Temp sensor 10m	1	One included as standard
SXK 109 2011/7	SCU/SAU bracket extender	2	To attach SCU/SAU holder to
BML 901 450/1	Rectifier 3,5 kW HE	4	4 Rectifiers in base configuration
SXA 114 8381/1	Dummy plate Rectifier	5	
NFS 899 001/200	Bullet CB, 200A	2	For bulk feed of SPD boxes for regular radios
NFS 899 001/050	Bullet CB, 50A	3	For higher pc radios like AIR3246, AIR6488
NFS 899 001/030	Bullet CB, 30A	1	
NFS 899 001/010	Bullet CB, 10A	5	
BAF 903 46/1	6230 indoor Battery rack	1	
SXK 109 2010/2	Power Unit Mounting battery rack	1	
NTB 101 0646/2	Battery power cable to 3rd shelf	1	Support for 3rd battery string. Kit for two battery strings always included in BMG 907157/1
NTB 101 0637/1	Battery CB Connection box	1	For 3rd battery shelf. x2 included in BMG. 300A included
SXK 109 2011/6	19inch adaption plate 8U	1	Convert first battery shelf to 19-inch space
NTB 101 0558/3	Adjustable bracket 170Ah-200Ah	3	
ZHY 601 19/1	SAU 02 01	1	
SXA 134 5524/3	Cable Ladder 19 inch	1	
NTB 101 0429/1	Quantity package (for SAU)	1	
RPM 777 405/01000	Signal and Power Cable SCU to SAU	1	
NFD 302 34/08	OVP-ALM 8	2	
RPM 777 143/01000	Signal Cable SAU - OVP	4	Length adapted to mounting of OVP in 19'' rack
NTM 503 019	DIN bar (19")	1	For OVPs in the 19" adaption plate 8U option.
NTB 101 0693/2	35mm², 6m GND cable kit, dual-lug	1	

5 Provisioning for Deployment

5.1 Prerequisite Grounding

[illegible]

[illegible]

5.2 AC Power Feed

[illegible]

[illegible]

Number of Rectifiers	Input Current (A)	Recommended AC Fuses (A)
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

5.3 Rectifier Dimensioning

[illegible]

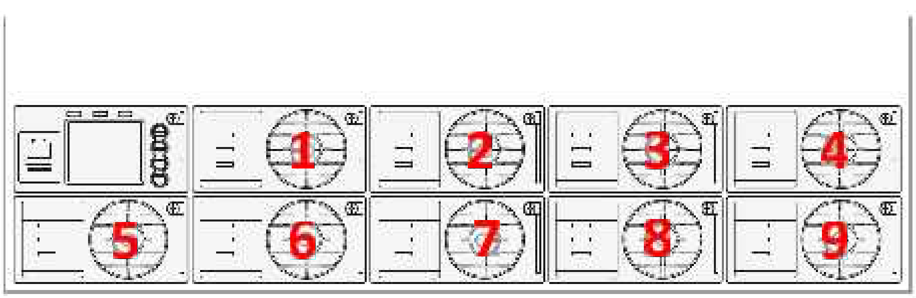


Figure 6

5.4 DC Breaker/LLVD Assignment

[illegible]

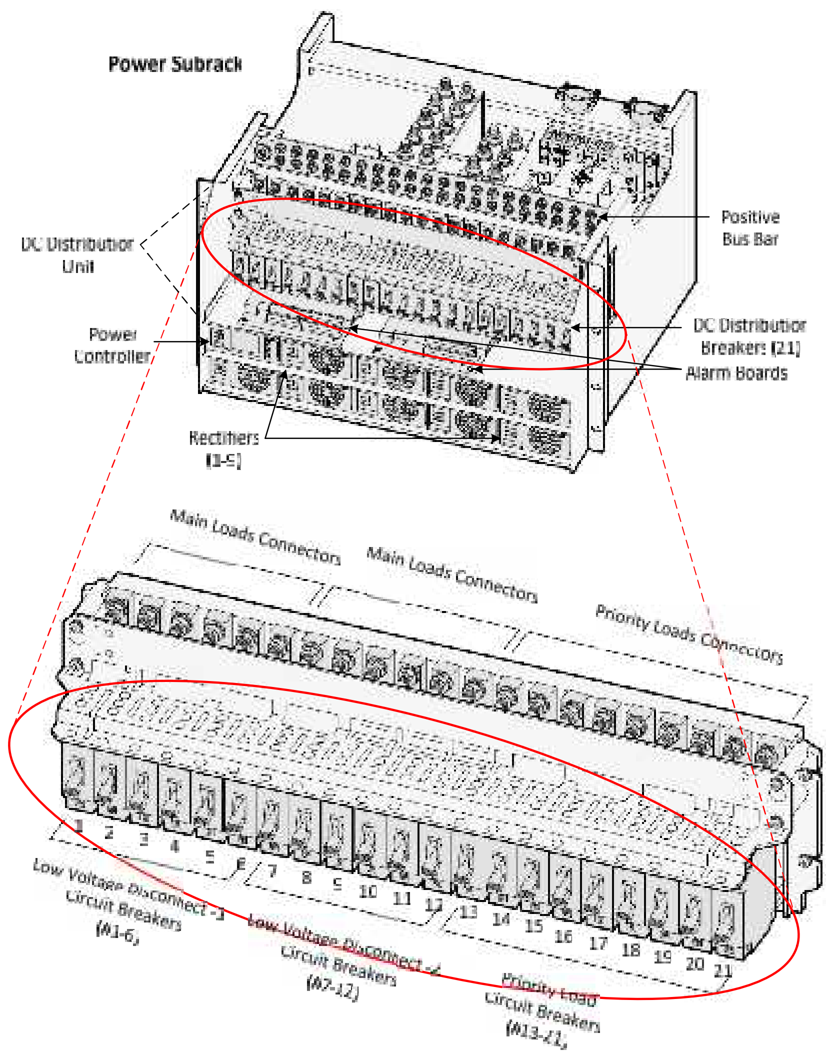

Power Subrack
DC Distribution Unit
Power Controller
Rectifiers (1-5)
Positive Bus Bar
DC Distribution Breakers (21)
Alarm Boards
Main Loads Connectors
Main Loads Connectors
Priority Loads Connectors
Low Voltage Disconnect -1 Circuit Breakers (#1-6)
Low Voltage Disconnect -2 Circuit Breakers (#7-12)
Priority Load Circuit Breakers (#13-21)

Figure 10

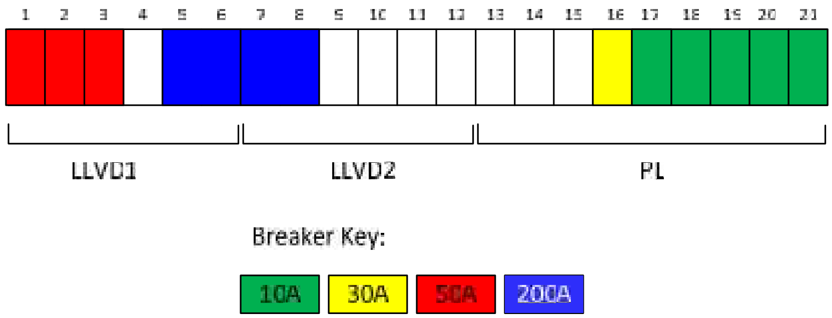


Figure 11

[illegible]

5.5 SPD Function

[illegible]

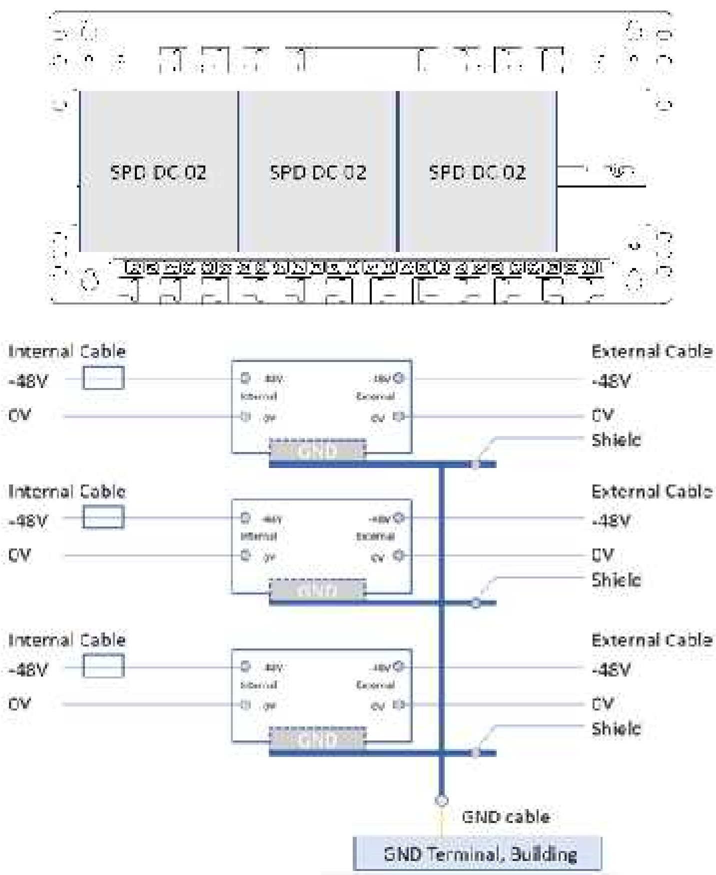


Figure 12

5.6 ENM Integration

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

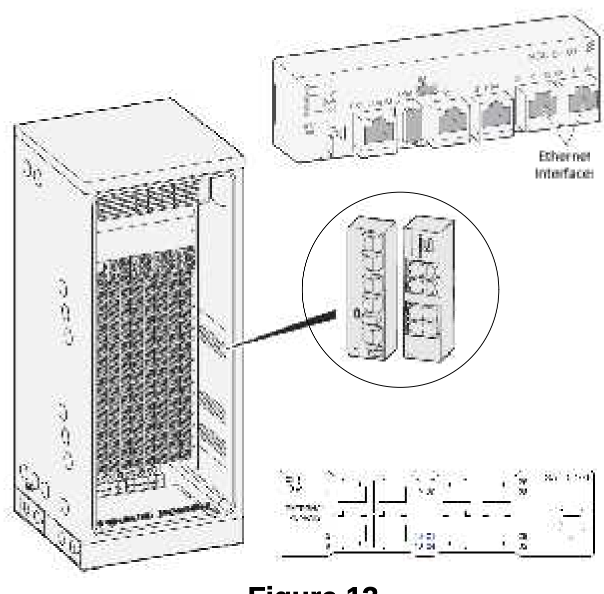


Figure 13

[illegible]

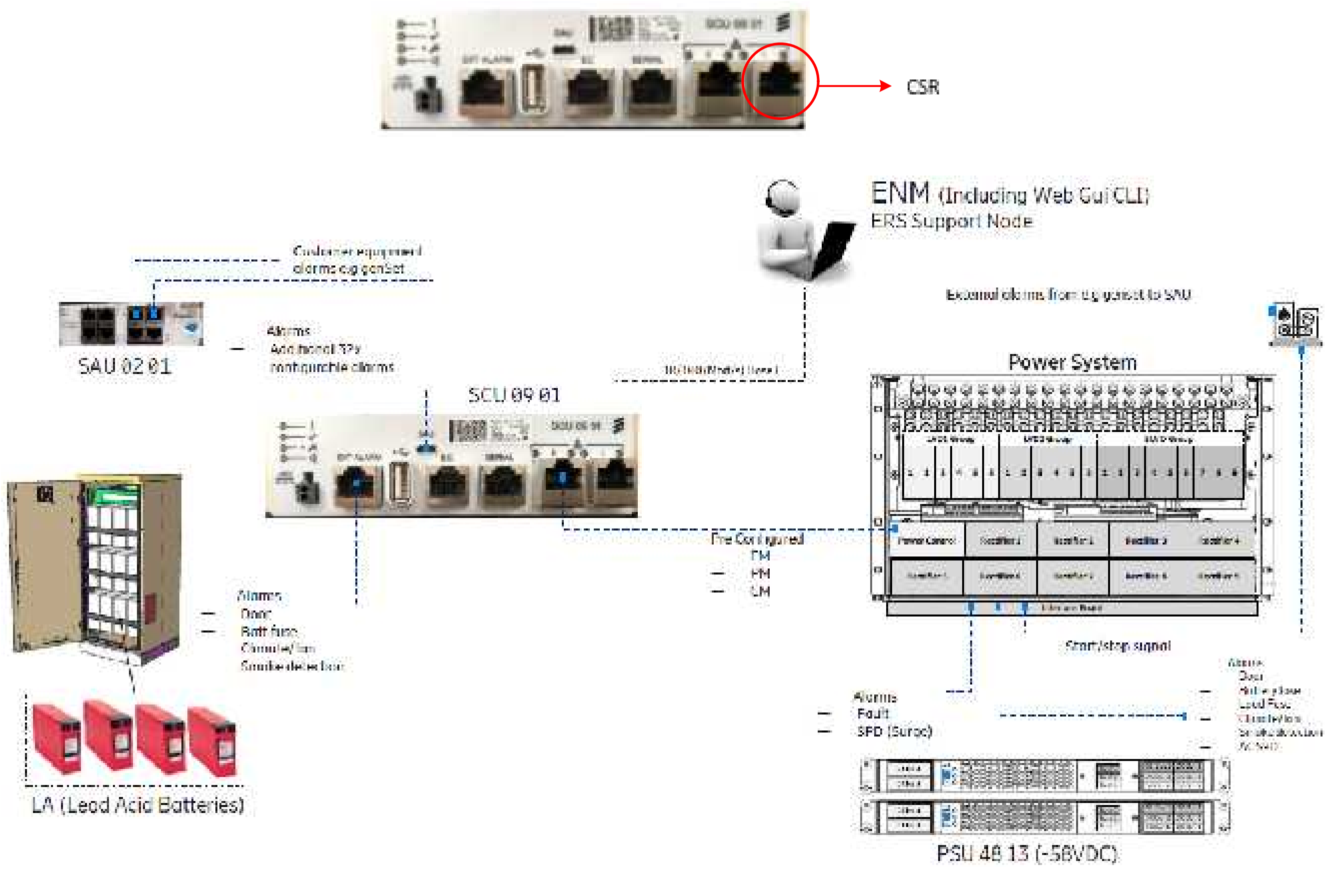

CSR
ENM (Including Web Gui CLI)
ERS Support Node
Customer equipment alarms e.g genSet
SAU 02 01
Alarms
Additional 32x configurable alarms
SCU 09 01
External alarms from e.g genset to SAU
Power System
Pre Configured
FM
PM
CM
Alarms
Door
Batt fuse
Climate/fan
Smoke detection
LA (Lead Acid Batteries)
Start/stop signal
Alarms
Fault
SPD (Surge)
PSU 48 13 (-58VDC)

Figure 14

[illegible]

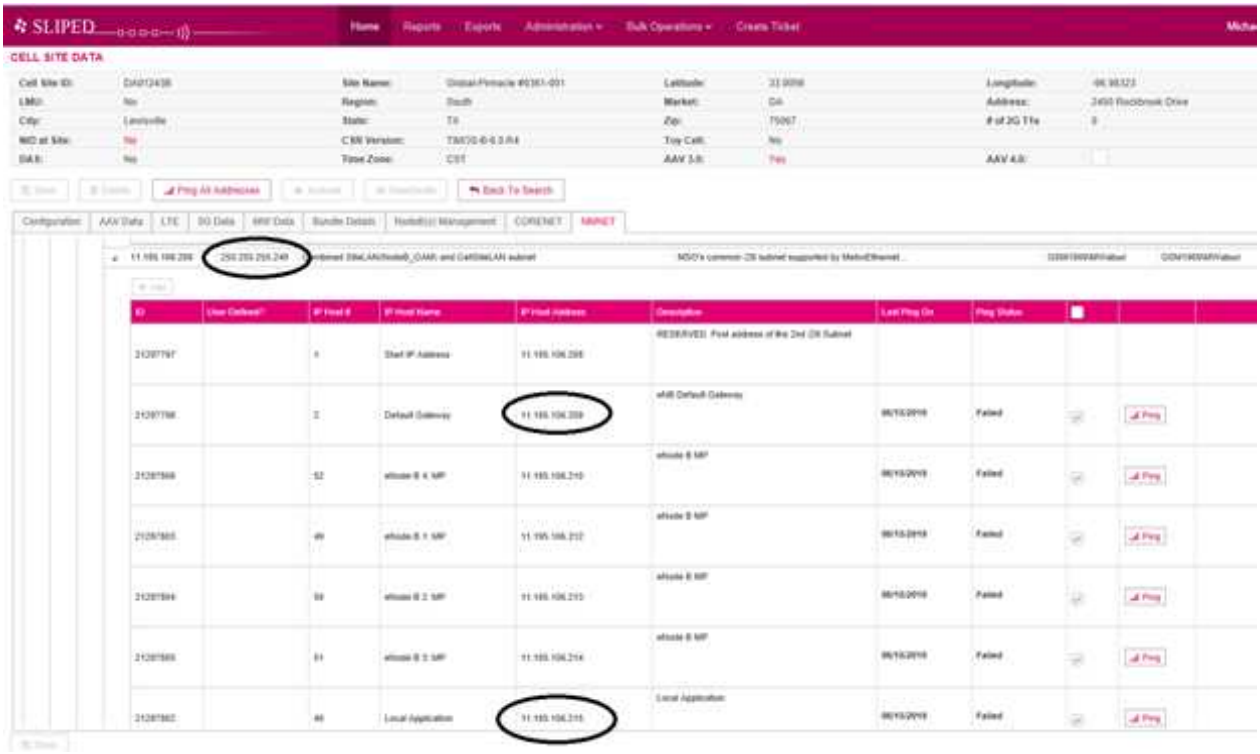


Figure 15

T□□□□SR□□ □□□□□□□□□□□□□s□□□r□□□□□□□□r□□□□□□□□T□M□□□□□□□□□□r□□□□□□□r□□□□□□□□ □□□□s□□□s□□□□ □□□r□□r□□□□□□□□□s□□□□□□□□r□□□□□□□ □□□□□□□□□S□□s□□□□□□□□□□□□□□□□d□□□□□□□□□□□□SR□

SAR□M□□ □□□□□□□s□□□□□□□□□□□□□□□□

SAR□A□□□□□□□□□□

SAS□M□□ □□□□□□□□□□

□□ □□□□r□□□ss□□□□d□□□□□□□□SAR□M□□ □□□□□□□□□□□□□□s□□□□□□rd□SAR□□ □□SAR□□□

Figure 16

5.7 External Alarm Integration

[illegible]

6 Battery Backup Integration

6.1 Battery Terminals & Breakers

[illegible]

6.2 Battery Temperature Sensor and Compensation

[illegible]

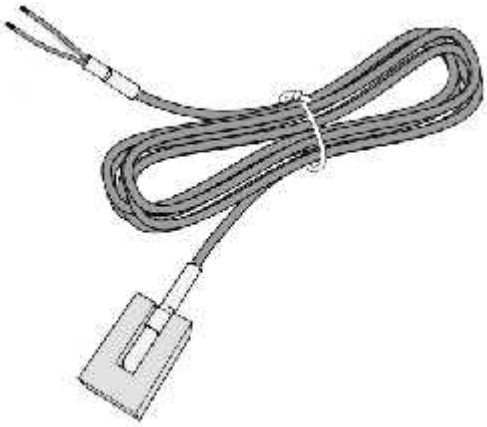


Figure 15

T-MOBILE NORTHEAST LLC

SITE NUMBER: 7WAN094C

SITE NAME: KEY WEST - ROCKVILLE

T-MOBILE ANCHOR INSTALLATION, DESIGN 4SEC-67D5A997DBA INDOOR

9420 KEY WEST AVENUE
ROCKVILLE, MD 20850
MONTGOMERY COUNTY

811 Know what's below. Call before you dig.

NOTE: DESIGN BASED ON RFDS
VERSION: 9.0 DATED: 06/26/2020.

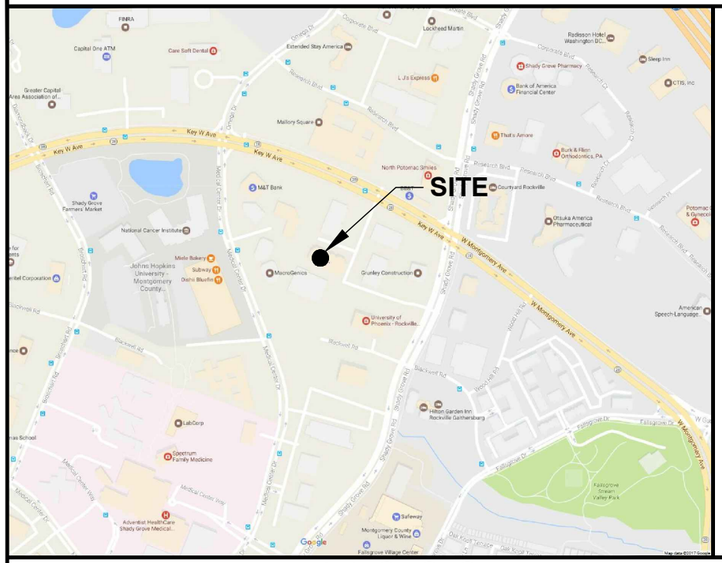
SITE INFORMATION

SCOPE OF WORK:	PROJECT CONSISTS OF THE FOLLOWING TO THE EXISTING WIRELESS TELECOMMUNICATIONS FACILITY: REMOVING: (3) EXISTING ANTENNAS (3) EXISTING TMAS (12) EXISTING COAX (1) EXISTING CABINET INSTALLING: (3) PROPOSED ANTENNAS (3) PROPOSED RRUS (1) PROPOSED P6230 CABINET (3) PROPOSED 6X12 HYBRID CABLES (1) PROPOSED 19" RACK
PROJECT DESIGN:	4SEC-67D5A997DBA INDOOR (AS IDENTIFIED ON RFDS)
SITE ID NUMBER:	7WAN094C
911 SITE ADDRESS:	9420 KEY WEST AVENUE ROCKVILLE, MD 20850
LATITUDE (NAD 83):	39.103055°
LONGITUDE (NAD 83):	-77.193888°
JURISDICTION:	MONTGOMERY COUNTY
ZONING:	LSC-1.0/H-110T
TAX ACCOUNT NUMBER:	09-02344337
PARCEL AREA:	3.62± ACRES
PARCEL OWNER:	KEY WEST III LTD PTNSHP C/O DANAC, LLC
ADDRESS:	5404 WISCONSIN AVENUE #301 CHEVY CHASE, MD 20815
GROUND ELEVATION:	470.0' (AMSL)
STRUCTURE TYPE:	ROOFTOP
STRUCTURE HEIGHT:	54.0' (AGL)

PROJECT TEAM

APPLICANT:	T-MOBILE NORTHEAST LLC 12050 BALTIMORE AVENUE BELTSVILLE, MD 20705 OFFICE: (240) 264-8600 FAX: (240) 264-8610
PROJECT MANAGEMENT FIRM:	NETWORK BUILDING + CONSULTING, LLC. 6095 MARSHALEE DRIVE, SUITE 300 ELKRIDGE, MD 21075 (410) 712-7092
ENGINEERING FIRM:	NB+C ENGINEERING SERVICES, LLC. 6095 MARSHALEE DRIVE, SUITE 300 ELKRIDGE, MD 21075 (410) 712-7092 MARCO GROTTI mgrotti@nbcllc.com (410)712-7092 - EXT 1556

VICINITY MAP



DIRECTIONS

FROM: 12050 BALTIMORE AVENUE, BELTSVILLE, MD 20705.
DEPART US-1 / BALTIMORE AVE TOWARD RITZ WAY. TURN LEFT ONTO RITZ WAY. TURN RIGHT ONTO VIRGINIA MANOR RD. KEEP STRAIGHT ONTO KONTERRA DR. TAKE RAMP LEFT FOR MD-200 W / MD-200 TOLL. ROAD NAME CHANGES TO I-370 W. ROAD NAME CHANGES TO SAM EIG HWY. TURN LEFT ONTO MD-119 E / GREAT SENECA HWY. TURN LEFT ONTO MD-28 E / KEY WEST AVE. ARRIVE AT MD-28 E / KEY WEST AVE.

CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.

- 2015 INTERNATIONAL BUILDING CODE
- 2014 NATIONAL ELECTRICAL CODE
- 2015 NFPA 101, LIFE SAFETY CODE
- AMERICAN CONCRETE INSTITUTE
- AMERICAN INSTITUTE OF STEEL CONSTRUCTION
- MANUAL OF STEEL CONSTRUCTION 13TH EDITION
- ANSI/TIA-222-G
- TIA 607
- INSTITUTE FOR ELECTRICAL & ELECTRONICS ENGINEER 81
- IEEE C2 NATIONAL ELECTRIC SAFETY CODE LATEST EDITION
- TELECORDIA GR-1275
- ANSI/T 311

DRAWING INDEX

DO NOT SCALE DRAWINGS

THESE DRAWINGS ARE FORMATTED TO BE FULL-SIZE AT 22"X34". CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE DESIGNER / ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR MATERIAL ORDERS OR BE RESPONSIBLE FOR THE SAME. CONTRACTOR SHALL USE BEST MANAGEMENT PRACTICE TO PREVENT STORM WATER POLLUTION DURING CONSTRUCTION.

APPLICANT

T-MOBILE NORTHEAST LLC

12050 BALTIMORE AVENUE
BELTSVILLE, MD 20705
OFFICE: (240) 264-8600
FAX: (240) 264-8610

ENGINEER

NB+C ENGINEERING SERVICES, LLC.
6095 MARSHALEE DRIVE, SUITE 300
ELKRIDGE, MD 21075
(410) 712-7092

SITE INFORMATION

7WAN094C
KEYWEST - ROCKVILLE
9420 KEY WEST AVENUE
ROCKVILLE, MD 20850
MONTGOMERY COUNTY

DESIGN RECORD

REVISIONS

REV	DATE	DESCRIPTION	BY
0	06/29/2020	FINAL CDs	CAR

PROFESSIONAL STAMP

STATE OF MARYLAND
TRENT TRAVIS SNARR
06/29/20
55491
PROFESSIONAL ENGINEER

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 55491, EXPIRATION DATE 01/06/2022

ENGINEER

TRENT TRAVIS SNARR, P.E.
MARYLAND PROFESSIONAL ENGINEER
LICENSE #55491

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1

ELECTRICAL & GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING AT EXPOSED INDOOR LOCATIONS SHALL BE IN ELECTRICAL METALLIC TUBING OR RIGID NONMETALLIC TUBING (RIGID SCHEDULE 40 PVC OR RIGID SCHEDULE 80 PVC FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) (AS PERMITTED BY CODE).
6. ELECTRICAL AND TELCO WIRING AT CONCEALED INDOOR LOCATIONS SHALL BE IN ELECTRICAL METALLIC TUBING, ELECTRICAL NONMETALLIC TUBING, OR RIGID NONMETALLIC TUBING (RIGID SCHEDULE 40 PVC AS PERMITTED BY CODE).
7. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING, ABOVE GRADE AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS (RGS) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
8. BURIED CONDUIT SHALL BE RIGID NONMETALLIC CONDUIT (RIGID SCHEDULE 40 PVC); DIRECT BURIED IN AREAS OF OCCASIONAL LIGHT TRAFFIC, ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY TRAFFIC.
9. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED INDOORS AND OUTDOORS IN AREAS WHERE VIBRATION OCCURS AND FLEXIBILITY IS NEEDED.
10. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE THHN, THWN-2, OR THIN INSULATION.
11. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
12. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
13. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
14. GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTING PROTECTION SHALL BE DONE IN ACCORDANCE WITH T-MOBILE CELL SITE GROUNDING STANDARDS.
15. GROUND CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
16. INSTALL #2 AWG GREEN-INSULATED STRANDED WIRE FOR ABOVE GRADE GROUNDING AND #2 BARE TINNED COPPER WIRE FOR BELOW GRADE GROUNDING UNLESS OTHERWISE NOTED.
17. ALL POWER AND GROUND CONNECTIONS TO BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY HARGER (OR APPROVED EQUAL) RATED FOR OPERATION AT NO LESS THAN 75°C OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
18. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
19. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
20. APPLY OXIDE INHIBITING COMPOUND TO ALL MECHANICAL GROUND CONNECTIONS.
21. CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXISTING TOWER/ MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.
22. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMNS MINIMUM RESISTANCE REQUIRED.
23. CONTRACTOR SHALL CONDUCT ANTENNA, CABLE, AND LNA RETURN-LOSS AND DISTANCE-TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.
24. THE T-MOBILE ELECTRICAL EQUIPMENT INCLUDING PANEL, SWITCH GEAR AND DISCONNECT ARE TO BE LABELED WITH ENGRAVED BAKELITE LABELS.

GENERAL NOTES

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES ORDINANCES, LAWS AND REGULATIONS OF ALL MUNICIPALITIES, UTILITIES COMPANY OR OTHER PUBLIC AUTHORITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY OR MUNICIPAL AUTHORITIES.
3. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK. MINOR OMISSIONS OR ERRORS IN THE BID DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR THE OVERALL INTENT OF THESE DRAWINGS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED AS A RESULT OF CONSTRUCTION OF THIS FACILITY.
5. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING A BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
7. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTH WITH RF ENGINEERING PRIOR TO INSTALLATION.
8. TRANSMITTER EQUIPMENT AND ANTENNAS ARE DESIGNED TO MEET ANSI/EIA/TIA 222-G REQUIREMENTS.
9. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
10. CONTRACTOR SHALL MAKE A UTILITY "ONE CALL" TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
11. IF ANY UNDERGROUND UTILITIES OR STRUCTURES EXIST BENEATH THE PROJECT AREA, CONTRACTOR MUST LOCATE IT AND CONTACT THE APPLICANT & THE OWNER'S REPRESENTATIVE.
12. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION BY TECHNICIANS APPROXIMATELY 2 TIMES PER MONTH.
13. PROPERTY LINE INFORMATION WAS PREPARED USING DEEDS, TAX MAPS, AND PLANS OF RECORD AND SHOULD NOT BE CONSTRUED AS AN ACCURATE BOUNDARY SURVEY.
14. THIS PLAN IS SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD.
15. THE PROPOSED FACILITY WILL CAUSE ONLY A "DE MINIMIS" INCREASE IN STORMWATER RUNOFF. THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
16. NO SIGNIFICANT NOISE, SMOKE, DUST, OR ODOR WILL RESULT FROM THIS FACILITY.
17. THE FACILITY IS UNMANNED AND NOT INTENDED FOR HUMAN HABITATION (NO HANDICAP ACCESS REQUIRED).
18. THE FACILITY IS UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SANITARY SERVICE.
19. POWER TO THE FACILITY WILL BE MONITORED BY A SEPARATE METER.

STRUCTURAL NOTES

1. THE STRUCTURAL STEEL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ANCHOR BOLT LOCATIONS, ELEVATION OF TOP OF CONCRETE AND BEARING PLATES, ALIGNMENT ETC. PRIOR TO START OF STEEL ERECTION.
2. THE LATEST EDITION OF THE FOLLOWING SPECIFICATIONS SHALL GOVERN:
   A. AISC – "ALLOWABLE STRESS DESIGN SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS".
   B. AISC – "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".
   C. AWS – "D1.1 STRUCTURAL WELDING CODE – STEEL".
3. MATERIAL, UNLESS OTHERWISE NOTED, SHALL CONFORM TO THE FOLLOWING ASTM SPECIFICATIONS

STRUCTURAL WIDE FLANGE & M SHAPES	A992 OR A572 FY = 50KSI
OTHER STRUCTURAL SHAPES AND PLATES	A36, FY = 36 KSI
STRUCTURAL TUBING	A500, GRADE B FY = 46 KSI
HIGH STRENGTH BOLTS	A325
THREADED RODS	A354, GRADE BC
ANCHOR BOLTS	A325 OR A354 BC
PIPE (HANDRAIL)	SCH 40 PIPE

4. ALL WELDING SHALL BE IN ACCORDANCE WITH AWS D1.1 USING E70XX ELECTRODES. UNLESS OTHERWISE NOTED PROVIDE CONTINUOUS MINIMUM SIZED FILLET WELDS PER AISC REQUIREMENTS.
5. HOLES IN STEEL SHALL BE DRILLED OR PUNCHED. ALL SLOTTED HOLES SHALL BE PROVIDED WITH SMOOTH EDGES. BURNING OF HOLES AND TORCH CUTTING AT THE SITE IS NOT PERMITTED. ALL HOLES IN BEARING PLATES SHALL BE DRILLED.
6. ALL STEEL TO BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123.
7. EPOXY ANCHORS TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
8. ALL BOLTS SHALL BE TIGHTENED USING TURN-OF-THE-NUT METHOD PER AISC SPECIFICATIONS USING STANDARD HOLES.
9. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND FIT PRIOR TO FABRICATION.

APPLICANT

T-Mobile

T-MOBILE NORTHEAST LLC

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ENGINEER

NB+C TOTALLY COMMITTED.

NB+C ENGINEERING SERVICES, LLC.
6095 MARSHALEE DRIVE, SUITE 300
ELKRIDGE, MD 21075
(410) 712-7092

SITE INFORMATION

7WAN094C
KEYWEST - ROCKVILLE
9420 KEY WEST AVENUE
ROCKVILLE, MD 20850
MONTGOMERY COUNTY

DESIGN RECORD

REVISIONS

REV	DATE	DESCRIPTION	BY
0	06/29/2020	FINAL CDs	CAR

PROFESSIONAL STAMP

STATE OF MARYLAND
TRENT TRAVIS SNARR
55491
PROFESSIONAL ENGINEER
06/29/20

PROFESSIONAL CERTIFICATION. I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE NO. 55491, EXPIRATION DATE 01/08/2022

ENGINEER

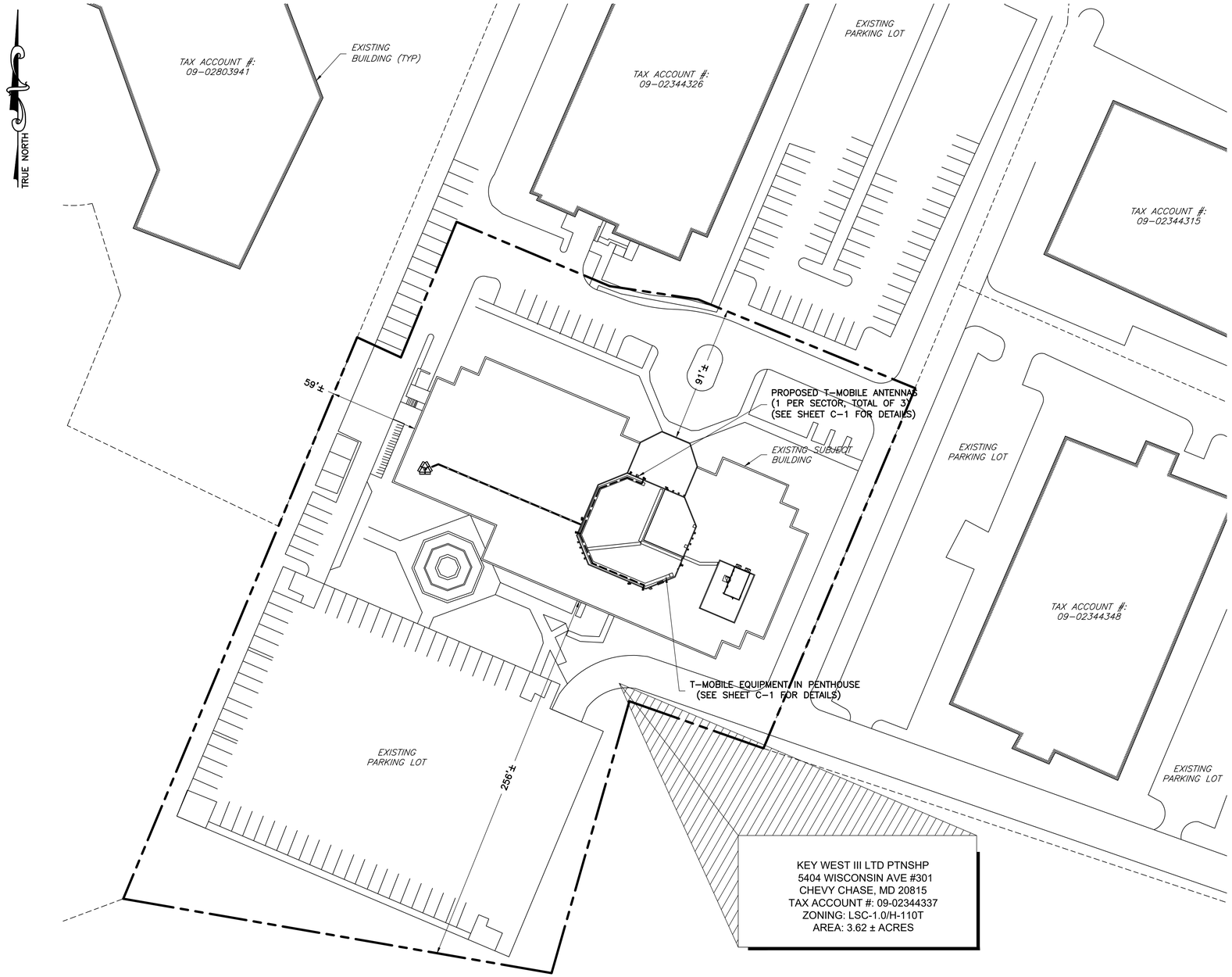
TRENT TRAVIS SNARR, P.E.
MARYLAND PROFESSIONAL ENGINEER
LICENSE #55491

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

GN-1



1 / SP-1 SITE PLAN
SCALE: 1" = 40' (22X34)
SCALE: 1" = 80' (11X17)

GRAPHIC SCALE

40 0 20 40 80 160

1 INCH = 40 FEET (22X34)
1 INCH = 80 FEET (11X17)

ZONING INFORMATION

JURISDICTION: MONTGOMERY COUNTY

ZONING: LSC-1.0 / H-100T

DIMENSION	EXISTING ±	PROPOSED ±
FRONT YARD SETBACK:	256'	NO CHANGE
SIDE YARD SETBACK:	59'	NO CHANGE
REAR YARD SETBACK:	91'	NO CHANGE

LOT AREA: 3.62 ± ACRES

(ALL MEASUREMENTS ARE IN FEET ± UNLESS OTHERWISE NOTED)

NOTES:

1) SITE PLAN IS NOT THE RESULT OF A SURVEY. IT IS BASED ON FIELD MEASUREMENTS AND SCALED ASSESSORS MAPS AVAILABLE. ALL INFORMATION SHOWN IS APPROXIMATE ONLY AND SUBJECT TO ANY CONDITION THAT A SURVEY MAY REVEAL.

2) ALL SETBACKS SHOWN ARE FROM EXISTING BUILDING TO EXISTING PROPERTY LINES.

LEGEND

- PROPERTY LINE – SUBJECT PARCEL
- PROPERTY LINE – ABUTTERS
- EXISTING FENCE LINE
- EXISTING ROAD
- EXISTING BUILDING

APPLICANT

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SITE INFORMATION

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MONTGOMERY COUNTY

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ENGINEER

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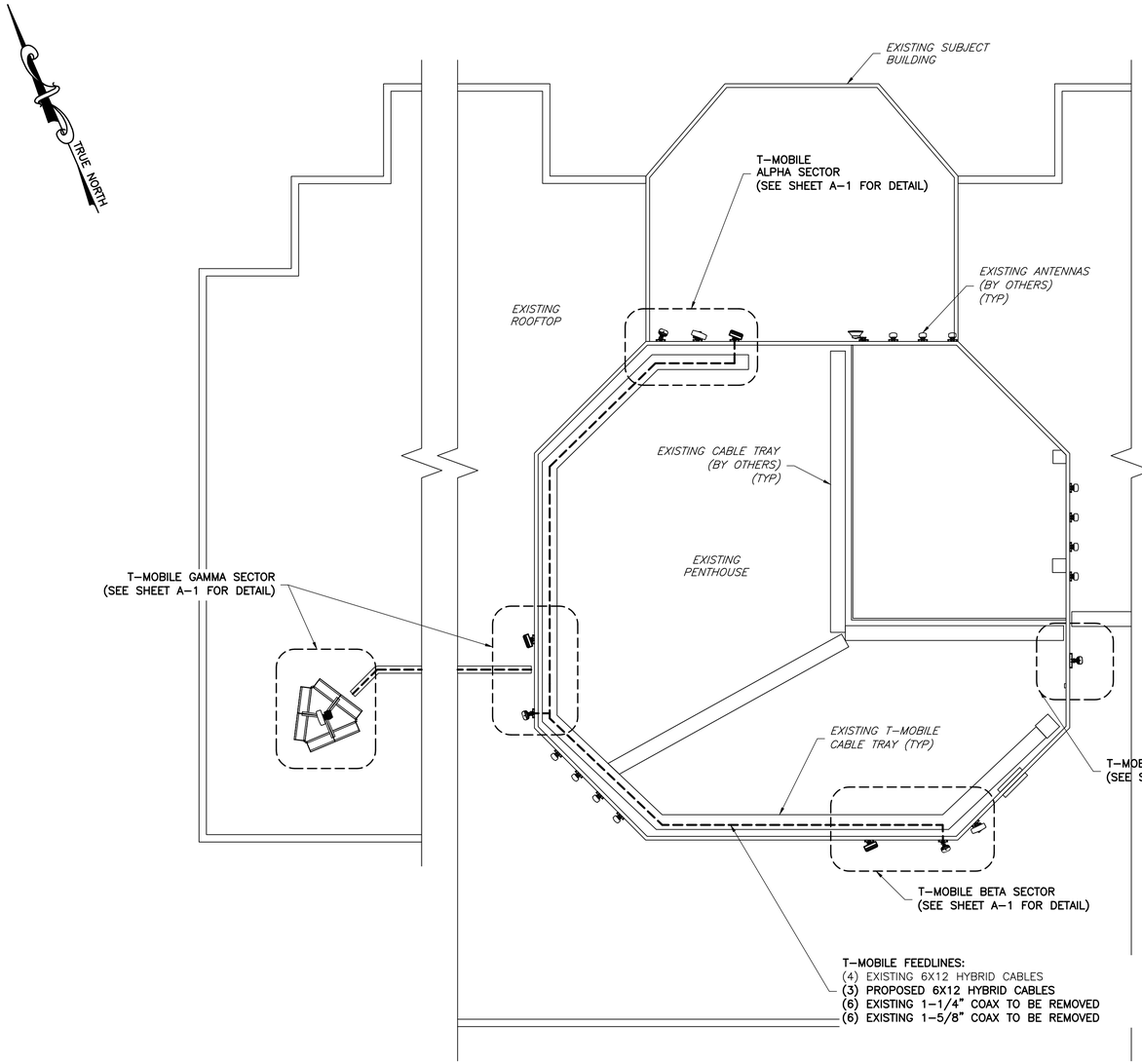
MARYLAND PROFESSIONAL ENGINEER
LICENSE #55491

SHEET TITLE

SITE PLAN

SHEET NUMBER

SP-1



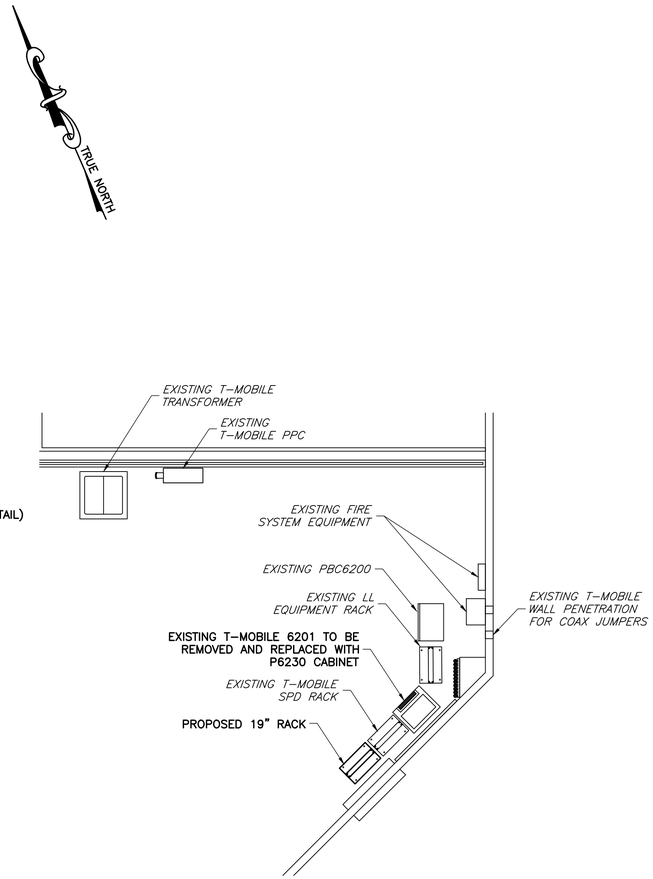
1 / C-1 PARTIAL ROOFTOP PLAN

SCALE: 1" = 10' (22X34)
SCALE: 1" = 20' (11X17)

GRAPHIC SCALE

10 0 5 10 20 40

1 INCH = 10 FEET (22X34)
1 INCH = 20 FEET (11X17)



2 / C-1 EQUIPMENT PLAN

SCALE: 1/4" = 1' (22X34)
SCALE: 1/8" = 1' (11X17)

GRAPHIC SCALE

8 4 0 1 2 4 8

1/4 INCH = 1 FOOT (22X34)
1/8 INCH = 1 FOOT (11X17)

STRUCTURAL NOTE:
REFER TO THE PASSING STRUCTURAL ANALYSIS OF THE EXISTING BUILDING WITH THE EXISTING AND PROPOSED LOADS PERFORMED BY NB+C.

NB+C PROJECT #: 100595.

APPLICANT

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SITE INFORMATION

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ENGINEER

TRENT TRAVIS SNARR, P.E.
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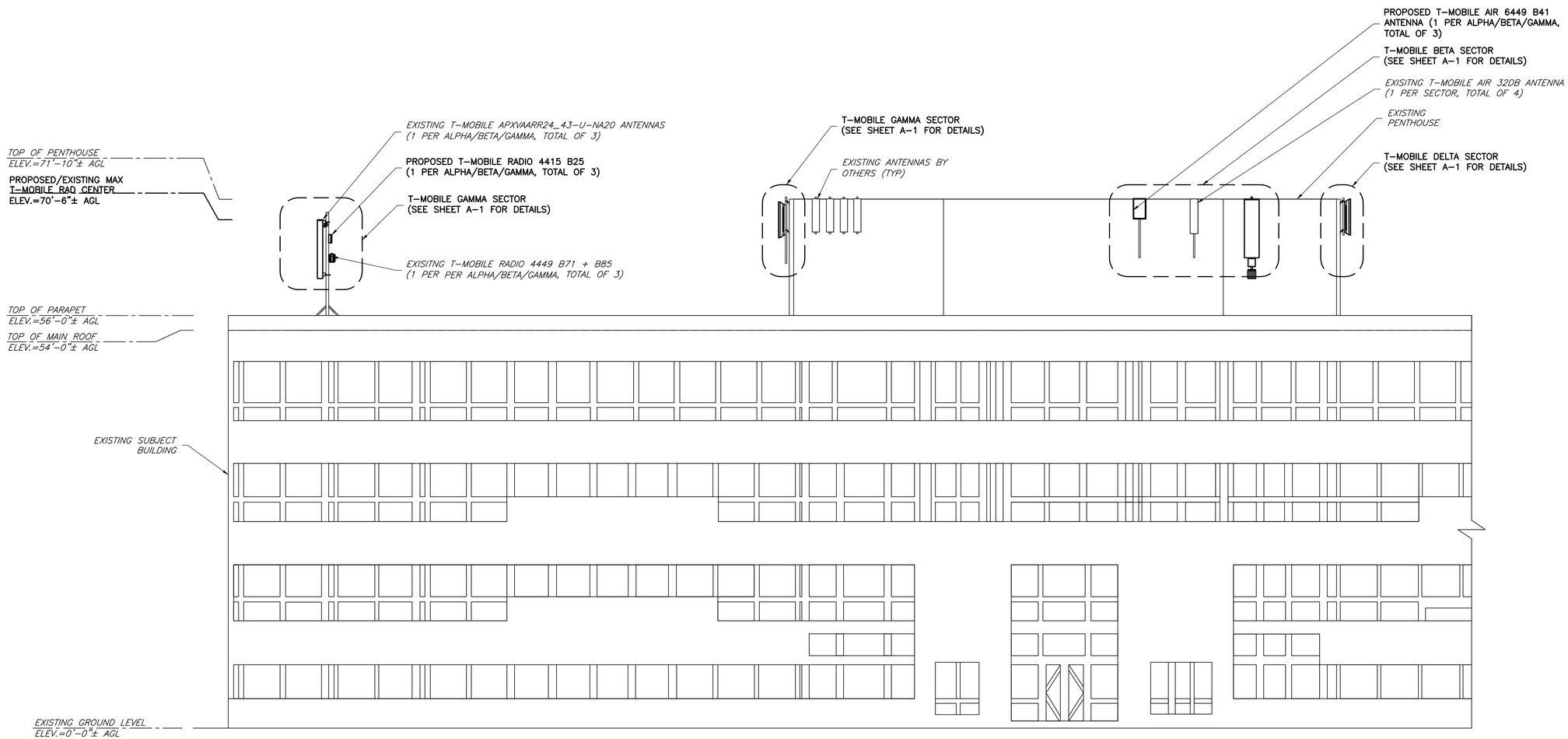
LICENSE #55491

SHEET TITLE

ROOFTOP & EQUIPMENT PLAN

SHEET NUMBER

C-1



NOTE:
ANTENNAS ARE TO BE MOUNTED FLUSH LEVEL WITH THE TOP OF THE WALL IN WHICH THEY ARE SUPPORTED BY.

STRUCTURAL NOTE:
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NB+C PROJECT #: 100595.

1 / C-2 ELEVATION
SCALE: 1/8" = 1' (22X34)
SCALE: 1/16" = 1' (11X17)

GRAPHIC SCALE

16 8 0 1 2 4 8 16

1/8 INCH = 1 FOOT (22X34)
1/16 INCH = 1 FOOT (11X17)

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LICENSE #55491

SHEET TITLE

ELEVATION

SHEET NUMBER

C-2

ANTENNA INFORMATION

SECTOR	STATUS	ANTENNA MANUFACTURER	ANTENNA MODEL	ANTENNA DIMENSIONS (HxWxD)	MECHANICAL DOWN TILT	ELECTRICAL DOWN TILT	RAD CENTER	AZIMUTH	TMA/RRU QUANTITY & MODEL	CABLE QUANTITY & TYPE	CABLE LENGTH
A1	*EXISTING*	*ERICSSON*	*AIR32DB B2A/B66Aa*	*56.6"x12.9"x8.7"*	*0*	*4°/4°/4°/4°*	*69'-6'*	*45°*	–	(2) EXISTING 1-1/4" COAX CABLES (TO BE REMOVED) (2) EXISTING 1-5/8" COAX CABLES (TO BE REMOVED) (1) PROPOSED 6x12 HYBRID CABLE *(1) EXISTING 6X12 HYBRID CABLES*	*160'-0"±*
A2	*EXISTING*	*RFS*	*APXVAARR24_43-U-NA20*	*95.9"x24.0"x8.7"*	*0°*	*6°/6°/4°/4°*	*67'-0"*	*45°*	*(1) EXISTING 4449 B71+B85* (1) PROPOSED 4415 B25		
A3	EXISTING TO BE REMOVED	ANDREW	TMBXX-6516-A2M	59.0"x11.9"x6.3"	0°	4°	69'-6"	45°	(1) ERICSSON STYLE 1A TMA (TO BE REMOVED)		
A3	PROPOSED	ERICSSON	AIR6449 B41	33.1"x20.6"x8.6"	0°	2°/2°	70'-6"	45°	-		
B1	*EXISTING*	*RFS*	*APXVAARR24_43-U-NA20*	*95.9"x24.0"x8.7"*	*0°*	*6°/6°/4°/4°*	*67'-0"*	*180°*	*(1) EXISTING 4449 B71+B85* (1) PROPOSED 4415 B25	(2) EXISTING 1-1/4" COAX CABLES (TO BE REMOVED) (2) EXISTING 1-5/8" COAX CABLES (TO BE REMOVED) (1) PROPOSED 6x12 HYBRID CABLE *(1) EXISTING 6X12 HYBRID CABLES*	*35'-0"±*
B2	*EXISTING*	*ERICSSON*	*AIR32DB B2A/B66Aa*	*56.6"x12.9"x8.7"*	*0*	*4°/4°/4°/4°*	*69'-6"*	*180°*	–		
B3	EXISTING TO BE REMOVED	ANDREW	TMBXX-6516-A2M	59.0"x11.9"x6.3"	0°	3°	69'-6"	180°	(1) ERICSSON STYLE 1A TMA (TO BE REMOVED)		
B3	PROPOSED	ERICSSON	AIR6449 B41	33.1"x20.6"x8.6"	0°	2°/2°	70'-6"	180°	–		
C1	*EXISTING*	*ERICSSON*	*AIR32DB B2A/B66Aa*	*56.6"x12.9"x8.7"*	*0*	*4°/4°/4°/4°*	*69'-6"*	*275°*	–	(2) EXISTING 1-1/4" COAX CABLES (TO BE REMOVED) (2) EXISTING 1-5/8" COAX CABLES (TO BE REMOVED) (1) PROPOSED 6x12 HYBRID CABLE *(1) EXISTING 6X12 HYBRID CABLES*	*95'-0"±*
C2	*EXISTING*	*RFS*	*APXVAARR24_43-U-NA20*	*95.9"x24.0"x8.7"*	*0°*	*6°/6°/4°/4°*	*67'-0"*	*275°*	*(1) EXISTING 4449 B71+B85* (1) PROPOSED 4415 B25		
C3	EXISTING TO BE REMOVED	ANDREW	TMBXX-6516-A2M	59.0"x11.9"x6.3"	0°	7°	69'-6"	275°	(1) ERICSSON STYLE 1A TMA (TO BE REMOVED)		
C3	PROPOSED	ERICSSON	AIR6449 B41	33.1"x20.6"x8.6"	0°	2°/2°	70'-6"	275°	–		
D1	*EXISTING*	*ERICSSON*	*AIR32DB B2A/B66Aa*	*56.6"x12.9"x8.7"*	*0°*	*4°/4°/4°/4°*	*69'-6"*	*110°*	–	*(1) EXISTING 6X12 HYBRID CABLE*	*40'-0"±*

NOTES:
1. CONTRACTOR TO VERIFY PROPOSED ANTENNA INFORMATION IS THE MOST CURRENT DATA AT TIME OF CONSTRUCTION.
2. CONTRACTOR TO CONFIRM CABLE LENGTHS PRIOR TO CONSTRUCTION.

NOTE: DESIGN BASED ON RFDS VERSION: 9.0 DATED: 06/26/2020.

STRUCTURAL NOTE:
REFER TO THE PASSING STRUCTURAL ANALYSIS OF THE EXISTING BUILDING WITH THE EXISTING AND PROPOSED LOADS PERFORMED BY NB+C.

NB+C PROJECT #: 100595.

NOTE:
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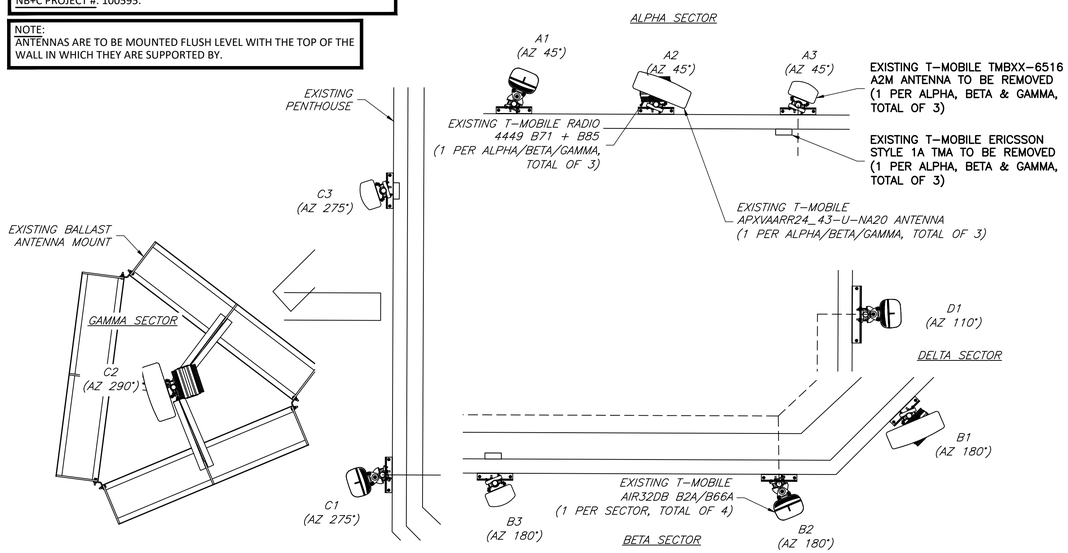
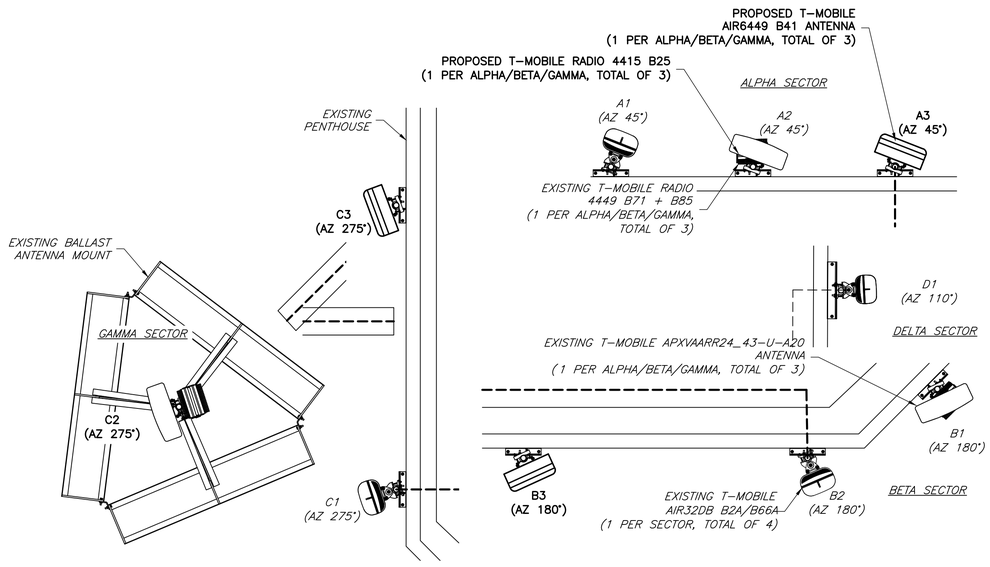


1 / A-1 EXISTING ANTENNA ORIENTATION PLAN
NTS

APPROX TRUE NORTH



2 / A-1 PROPOSED ANTENNA ORIENTATION PLAN
NTS

APPROX TRUE NORTH

APPLICANT

T-Mobile

T-MOBILE NORTHEAST LLC

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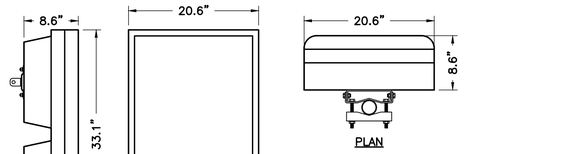
LICENSE #55491

SHEET TITLE

ANTENNA PLANS & ANTENNA SCHEDULE

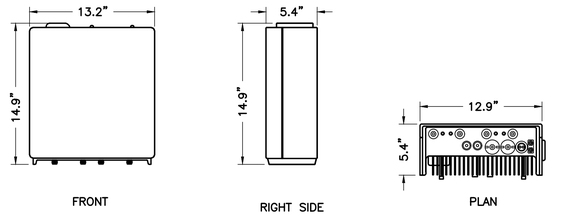
SHEET NUMBER

A-1



MECHANICAL SPECIFICATIONS
ERICSSON PART # – MASSIVE MIMO
MID–BAND AIR6449 B41
HEIGHT: 33.1 IN
WIDTH: 20.6 IN
DEPTH: 8.6 IN
WEIGHT: 104.0 LBS (W/OUT MOUNTING BRACKET)

1 / A-2 ERICSSON ANTENNA DETAIL
SCALE: NTS



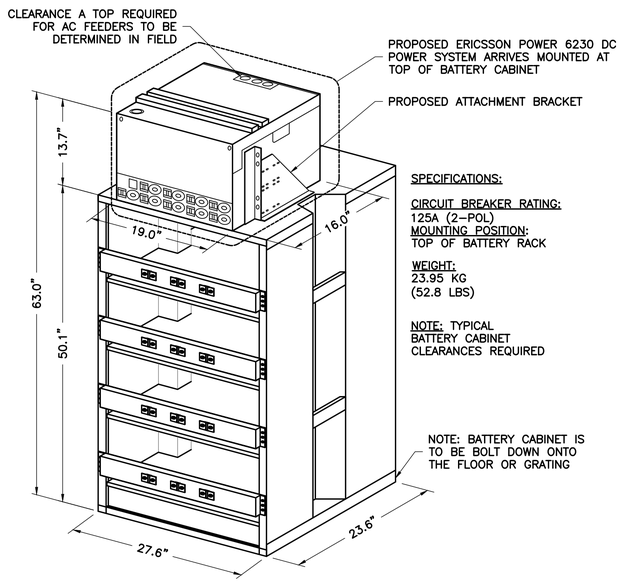
SIZE AND WEIGHT TABLE

RRU	WIDTH	DEPTH	HEIGHT	WEIGHT W/O BRACKET
RADIO 4415 B25	13.2"	5.4"	14.9"	46.3 LBS. (21 kg)

NOTES:

1. DO NOT PAINT THE RRU. RRU SOLAR SHIELD CAN BE PAINTED PER MANUFACTURER'S METHOD OF PROCEDURE.

2 / A-2 ERICSSON REMOTE RADIO UNIT (RRU)
NTS



SPECIFICATIONS:

CIRCUIT BREAKER RATING:
125A (2–POL)
MOUNTING POSITION:
TOP OF BATTERY RACK

WEIGHT:
23.95 KG
(52.8 LBS)

NOTE: TYPICAL
BATTERY CABINET
CLEARANCES REQUIRED

NOTE: BATTERY CABINET IS TO BE BOLT DOWN ONTO THE FLOOR OR GRATING

3 / A-2 ERICSSON 6230 CABINET DETAIL
NTS

NOTE: SEE SHEET G–1 FOR RRU AND ANTENNA GROUNDING

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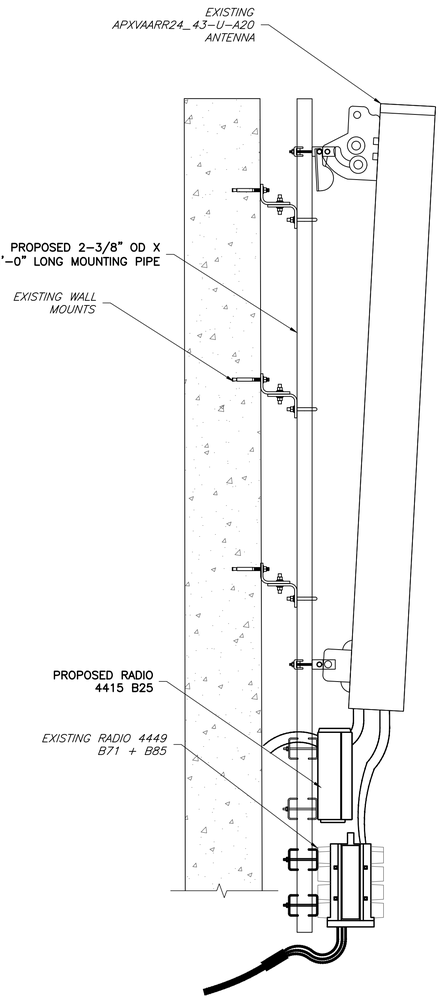
SHEET TITLE

ANTENNA SPECIFICATIONS & DETAILS

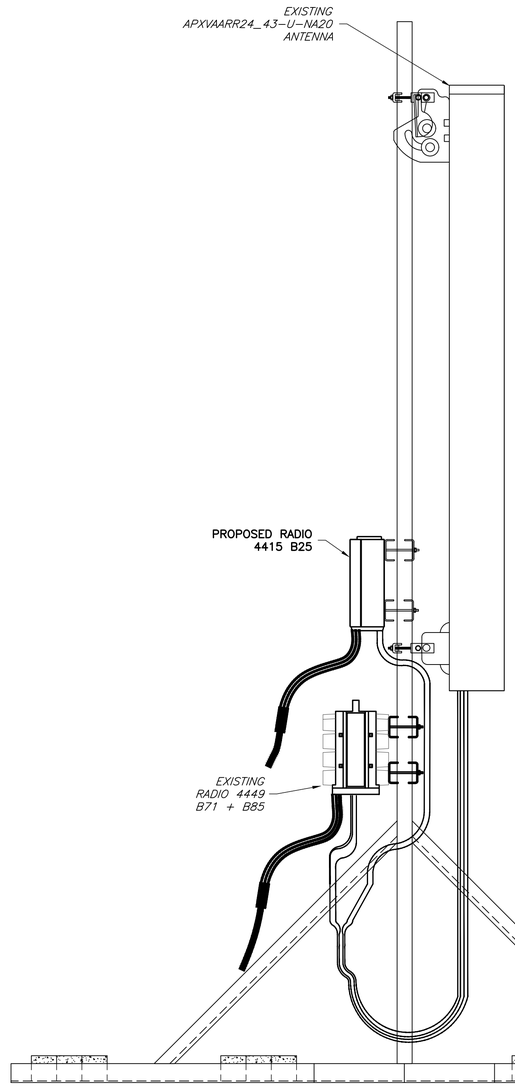
SHEET NUMBER

A-2



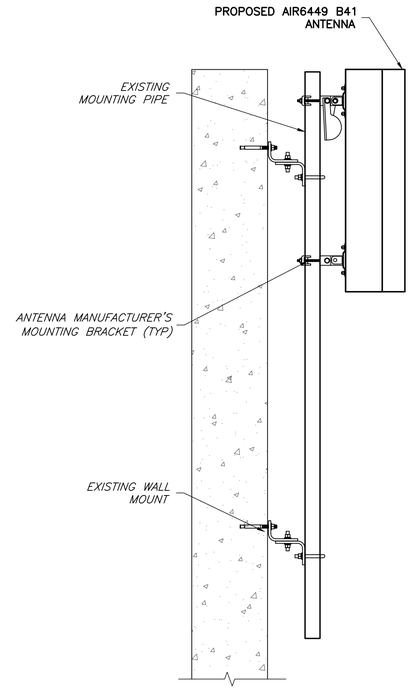
NOTE: SEE SHEET G-1 FOR RRU AND ANTENNA GROUNDING

1 / A-3 RRU MOUNTING (ALPHA & BETA) DETAIL
NTS



NOTE: REFER TO STRUCTURAL REPORT COMPLETED BY NB+C ENGINEERING SERVICES, LLC FOR REQUIRED BALLAST WEIGHT

2 / A-3 RRU TRIPOD MOUNTING DETAIL (GAMMA)
NTS



ALPHA/BETA/GAMMA

NOTE: SEE SHEET G-1 FOR RRU AND ANTENNA GROUNDING

3 / A-3 ANTENNA MOUNTING DETAIL
NTS

NOTE:
ANTENNAS ARE TO BE MOUNTED FLUSH LEVEL WITH THE TOP OF THE WALL IN WHICH THEY ARE SUPPORTED BY.

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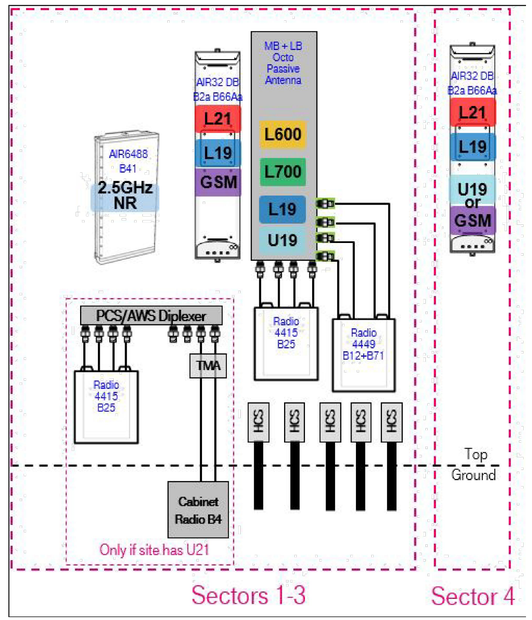
SHEET TITLE

ANTENNA & RRU MOUNTING DETAILS

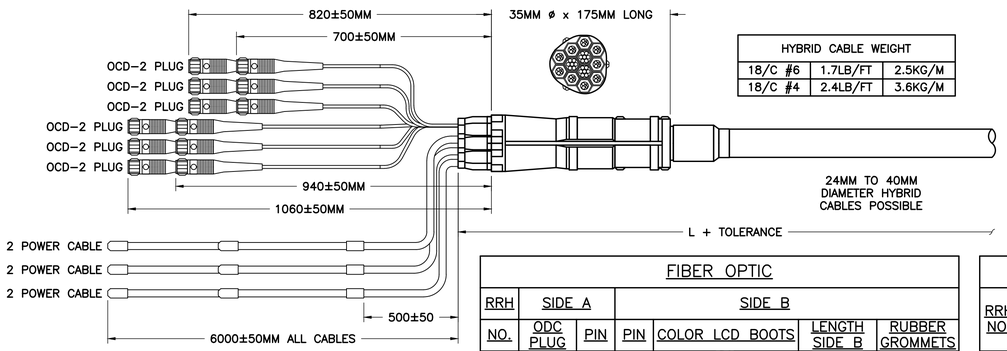
SHEET NUMBER

A-3

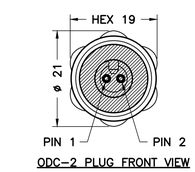


1 / A-3 PLUMBING DIAGRAM
NTS

SIDE A



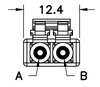
HYBRID CABLE WEIGHT		
18/C #6	1.7LB/FT	2.5KG/M
18/C #4	2.4LB/FT	3.6KG/M



ODC-2 PLUG FRONT VIEW

TOLERANCE	ASSEMBLY LENGTH
+80	L < 5M
+2%	L ≥ 5M

POWER	
LENGTH	DIAMETER
L ≤ 60M	6MM²(10AWG)
L ≥ 60M	10MM²(8AWG)

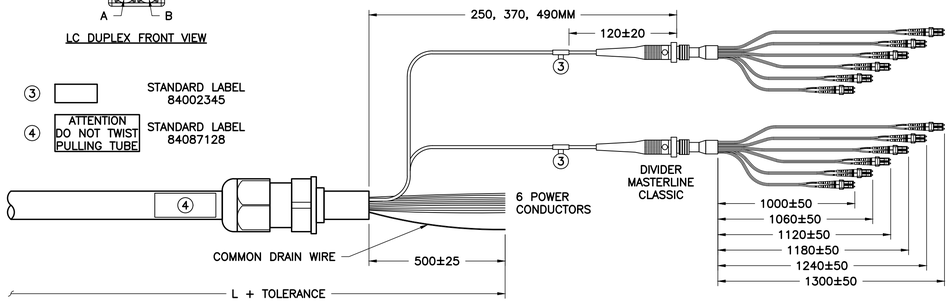


LC DUPLEX FRONT VIEW

③ STANDARD LABEL 84002345

④ ATTENTION DO NOT TWIST PULLING TUBE — STANDARD LABEL 84087128

SIDE B



FIBER OPTIC

RRH NO.	SIDE A ODC PLUG	SIDE A PIN	SIDE B PIN	SIDE B COLOR LCD BOOTS	SIDE B LENGTH	RUBBER GROMMETS
1	ODC-2 RED	1	B	RED (SHORT BREAKOUT)	1000 ± 50	1
		2	A			
2	ODC-2 GREEN	1	B	GREEN	1060 ± 50	
		2	A			
3	ODC-2 BLUE	1	B	BLUE	1120 ± 50	1
		2	A			
4	ODC-2 YELLOW	1	B	RED (SHORT BREAKOUT)	1180 ± 50	
		2	A			
5	ODC-2 WHITE	1	B	GREEN	1240 ± 50	1
		2	A			
6	ODC-2 BLACK	1	B	BLUE	1300 ± 50	
		2	A			

POWER

RRH NO.	REF HOOK UP	SIDE A WIRE COLOR	SIDE A CABLE DESIGNATOR	SIDE B WIRE COLOR
1	−48V	BLACK	RED	RED
	0V	GREY		BLACK
	GROUND	DRAIN		COMMON DRAIN
2	−48V	BLACK	GREEN	GREEN
	0V	GREY		WHITE
	GROUND	DRAIN		COMMON DRAIN
3	−48V	BLACK	BLUE	BLUE
	0V	GREY		ORANGE
	GROUND	DRAIN		COMMON DRAIN

POWER

RRH NO.	REF HOOK UP	SIDE A WIRE COLOR	SIDE A CABLE DESIGNATOR	SIDE B WIRE COLOR
4	−48V	BLACK	RED 2X BANDS	RED
	0V	GREY		BLACK
	GROUND	DRAIN		COMMON DRAIN
5	−48V	BLACK	GREEN 2X BANDS	GREEN
	0V	GREY		WHITE
	GROUND	DRAIN		COMMON DRAIN
6	−48V	BLACK	BLUE 2X BANDS	BLUE
	0V	GREY		ORANGE
	GROUND	DRAIN		COMMON DRAIN

2 / A-3 MLE HYBRID CABLE (6 POWER/12 FIBER)
NTS

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SHEET TITLE

CABLING DETAILS & PLUMBING DIAGRAM

SHEET NUMBER

A-4

PPC PANEL

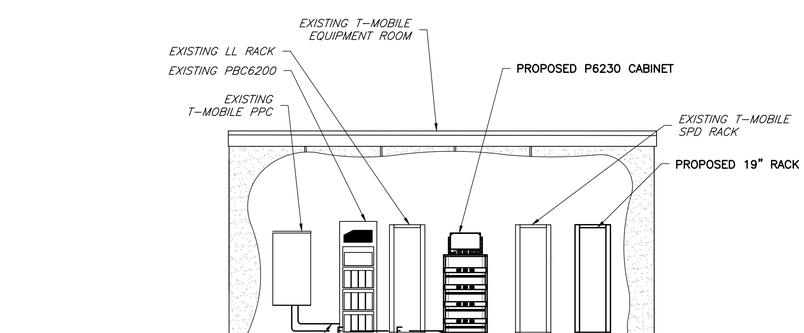
PANEL NAME: PPC 120/240 VOLTS 3 WIRE 1 PHASE MAIN BREAKER: 200A

LOAD DESCRIPTION		LOAD PER PHASE A	LOAD PER PHASE B	TRIP	POLES	(AMOUNT) #WIRE SIZE	LOAD PER PHASE TOTALS A	LOAD PER PHASE TOTALS B	(AMOUNT) #WIRE SIZE	POLES	TRIP	LOAD PER PHASE A	LOAD PER PHASE B	LOAD DESCRIPTION	
1	SURGE ARRESTOR	0		60	2	(3) #4	180		(3) #1/0	1	10	180		FAN	2
3			0					360	(3) #1/0	1	15		360	GFCI RECEPTACLE	4
5	*P6200 CABINET	1350		25	2	(2) #10	2700		(2) #10	2	25	1350		*P6200 CABINET	6
7			1350					2700					1350		8
9	*P6200 CABINET	1350		25	2	(2) #10	2700		(2) #10	2	25	1350		*P6200 CABINET	10
11			1350					2700					1350		12
13	*P6200 CABINET	1350		25	2	(2) #10	2700		(2) #10	2	25	1350		*P6200 CABINET	14
15			1350					2700					1350		16
17	*P6200 CABINET	1350		25	2	(2) #10	8350		(2) #10	2	100	7000		*P6230	18
19			1350					8350					7000		20
21	*P6200 CABINET	1350		25	2	(2) #10	1350		-	-	-	0		SPACE	22
23			1350					1350	-	-	-		0	SPACE	24
							SUBTOTALS								
							17980	18160	TOTAL CONNECTED LOAD (VA):			36140			
							149.8	151.3	MAXIMUM LOAD CURRENT:			151.3			
									PANEL CAPACITY:			200			
									SPARE CAPACITY:			48.7			

NOTES:

*EXISTING PBC 6200 REQUIRES (8) 2P-25A BREAKERS, CONTRACTOR TO INSTALL REMAINING BREAKERS
**INSTALL (1) 2P-100A BREAKER FOR PROPOSED P6230

1 / E-1 PANEL SCHEDULE
NTS



3 / G-1 POWER DIAGRAM
NTS

ELECTRICAL LEGEND

	SAFETY DISCONNECT SWITCH	A	AMPERE
	PANEL BOARD	C	CONDUIT
M	KILOWATT HOUR METER	EMT	ELECTRICAL METALLIC TUBING
T	TRANSFORMER	G	GROUND
	CIRCUIT BREAKER	GFI	GROUND FAULT INTERRUPTING
	MANUAL TRANSFER SWITCH	KWH	KILOWATT HOUR
		MCB	MAIN CIRCUIT BREAKER
	AC GENERATOR CONNECTOR	P	POLE
	WEATHERPROOF GFI DUPLEX RECEPTACLE	SW	SWITCH
E	ELECTRICAL WIRING	V	VOLT
T	TELCO WIRING	W	WIRE

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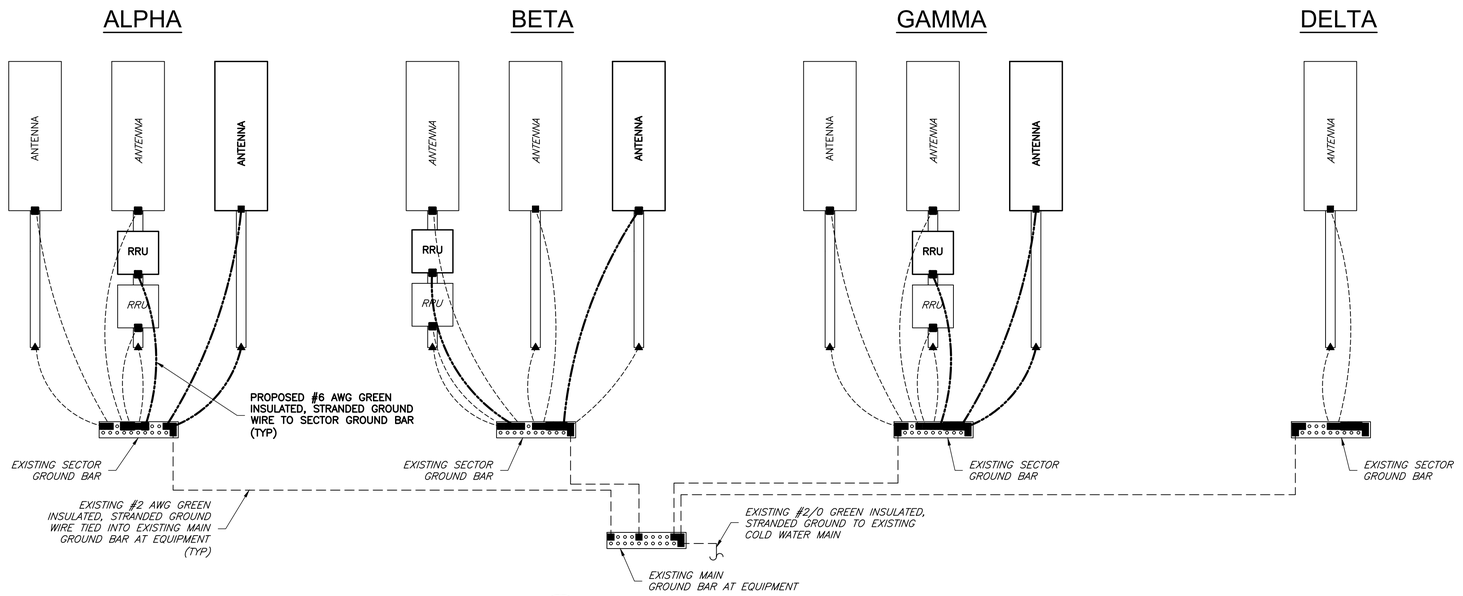
SHEET TITLE

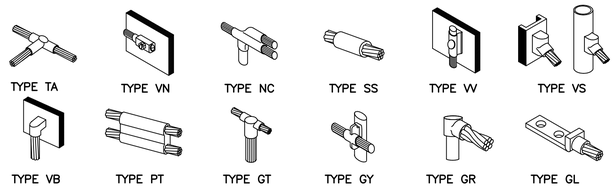
ELECTRICAL DETAILS

SHEET NUMBER

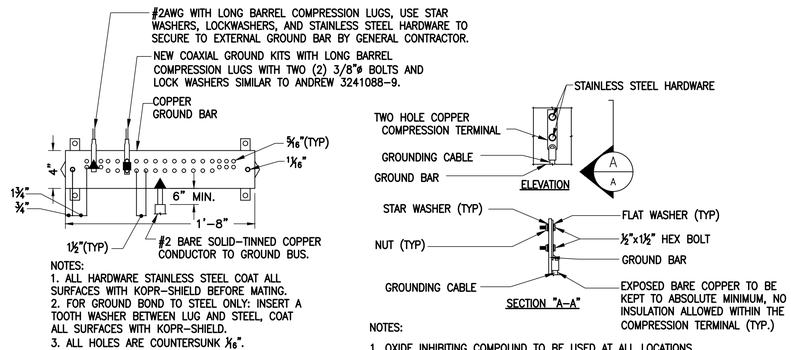
E-1



1 G-1 ANTENNA GROUNDING DETAIL
NTS



2 G-1 CADWELD GROUNDING CONNECTION DETAILS
NTS



3 G-1 GROUNDING BAR CONNECTIONS
NTS

GROUNDING LEGEND

■	MECHANICAL FITTING CONNECTION
▲	CADWELD CONNECTION
●	EXOTHERMIC WELD CONNECTION
———	PROPOSED GROUND WIRING
- - - - - - - - - -	EXISTING GROUND WIRING

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T-Mobile

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SHEET TITLE

GROUNDING DETAILS

SHEET NUMBER

G-1