VERIZON SITE NUMBER: 137514
VERIZON SITE NAME: ASHLAND_MA
SITE TYPE: MONOPOLE
TOWER HEIGHT: 99'-0"

BUSINESS UNIT #: 806042
SITE ADDRESS: ALBERT RAY DRIVE FOUNTAIN AND GREEN STREETS, ASHLAND, MA 01721
COUNTY: MIDDLESEX
JURISDICTION: TOWN OF ASHLAND

VERIZON 5G L-SUB6 - CARRIER ADD 16243982

SITE INFORMATION

CROWN CASTLE USA INC. SITE NAME:	BOS ASHLAND 959026
SITE ADDRESS:	ALBERT RAY DRIVE FOUNTAIN AND GREEN STREETS, ASHLAND, MA 01721
COUNTY:	MIDDLESEX
MAP/PARCEL #:	09-173-00-000
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	42° 16' 25.3" N
LONGITUDE:	71° 27' 5.6" W
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	331'-0"
CURRENT ZONING:	RA
JURISDICTION:	TOWN OF ASHLAND
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	IIB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	CROWN ATLANTIC COMPANY LLC 4017 WASHINGTON RD MCMURRAY PA 15317
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	VERIZON WIRELESS 1515 E. WOODFIELD ROAD SCHAUMBURG, IL 60173
ELECTRIC PROVIDER:	NSTAR (919) 553-8412
TELCO PROVIDER:	COMCAST (800) 934-6489

PROJECT TEAM

A&E FIRM:	B+T GROUP 1717 S. BOULDER AVE. TULSA, OK 74119 BRAYDEN SHIELDS BRAYDEN.SHIELDS@BTGRP.COM
CROWN CASTLE USA INC. DISTRICT CONTACTS:	12 GILL STREET, SUITE 5800 WOBURN, MA 01801 WILLIAM GATES - PROJECT MANAGER WILLIAM.GATES@CROWNCASTLE.COM FRED JOYCE - CONSTRUCTION MANAGER FRED.JOYCE@CROWNCASTLE.COM
VERIZON CONTACT:	ANDREW LEONE ALEONE@STRUCTURECONSULTING.NET

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
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C-6	PLUMBING DIAGRAM
G-1	GROUNDING DETAILS
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ATTACHED	ELECTROMAGNETIC ENERGY REPORT

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

APPROVALS

SIGNATURE	DATE

CONTRACTOR PMI REQUIREMENTS

PMI ACCESSED AT	https://pmi.vxwsmart.com
SMART TOOL VENDOR PROJECT NUMBER	10050647
VzW LOCATION CODE (PSLC)	137514

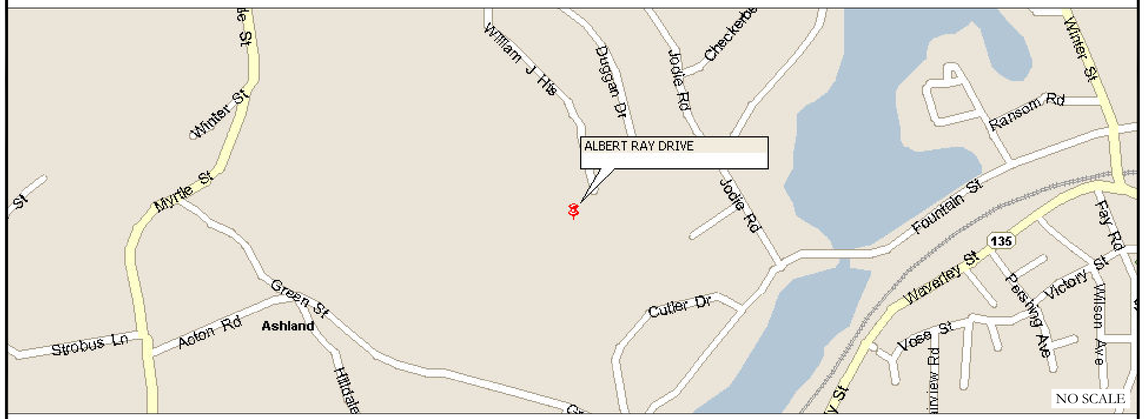
*** PMI AND REQUIREMENTS ALSO EMBEDDED IN MOUNT ANALYSIS REPORT

MOUNT MODIFICATION REQUIRED	**N**

VzW APPROVED SMART KIT VENDORS

REFER TO MOUNT MODIFICATION DRAWINGS PAGE FOR VzW SMART KIT APPROVED VENDORS

LOCATION MAP



DRIVING DIRECTIONS FROM VERIZON LOCAL OFFICE (180 WASHINGTON VALLEY RD)
HEAD NORTHEAST ON MA-16 E TOWARD LOCUST ST, TURN LEFT ONTO LOCUST ST, TAKE ASHLAND ST AND PROSPECT ST TO CHESTNUT ST IN ASHLAND, SLIGHT RIGHT ONTO CHESTNUT ST, TURN RIGHT ONTO MA-135 E, CONTINUE ON FOUNTAIN ST. DRIVE ARRIVED AT BOS ASHLAND 959026.

APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS 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 THESE CODES:

CODE TYPE	CODE
BUILDING	2021 IBC/10TH EDITION (780 CMR)
MECHANICAL	2021 IMC/10TH EDITION (780 CMR)
ELECTRICAL	2023 NEC/MA ELECTRICAL CODE (527 CME 12.00)

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS:	CROWN CASTLE
DATED:	1/13/25
MOUNT ANALYSIS:	MASER CONSULTING
DATED:	9/15/21
RFDS REVISION:	3
DATED:	10/4/24
ORDER ID:	683828
REVISION:	0

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PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO ENHANCE BROADBAND CONNECTIVITY AND CAPACITY TO THE EXISTING ELIGIBLE WIRELESS FACILITY.

TOWER SCOPE OF WORK:
- INSTALL (3) NEW ANTENNA MOUNT PIPES
- INSTALL (3) ANTENNAS
- INSTALL (1) HYBRID CABLE

NOTE:
PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER

verizon
180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

VERIZON SITE NUMBER:
137514

BU #: **806042**
BOS ASHLAND 959026

ALBERT RAY DRIVE
FOUNTAIN AND GREEN
STREETS
ASHLAND, MA 01721

EXISTING 99'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/2/21	JJR	CONSTRUCTION	JJR
1	4/11/22	JHW	CONSTRUCTION	LR
2	7/21/22	JTS	CONSTRUCTION	LR
3	3/20/25	YX	CONSTRUCTION	TDG
4	4/11/25	AB	CONSTRUCTION	TDG
5	7/7/25	AB	CONSTRUCTION	LR

COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No.56245
REGISTERED PROFESSIONAL ENGINEER
7/7/25

B&T ENGINEERING, INC.

SHEET NUMBER: T-1

REVISION: 5

CROWN CASTLE USA INC. SITE ACTIVITY REQUIREMENTS:

1. NOTICE TO PROCEED– NO WORK SHALL COMMENCE PRIOR TO CROWN CASTLE USA INC. WRITTEN NOTICE TO PROCEED (NTP) AND THE ISSUANCE OF A PURCHASE ORDER. PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN CASTLE USA INC. NOC AT 800–788–7011 & THE CROWN CASTLE USA INC. CONSTRUCTION MANAGER.
2. "LOOK UP" – CROWN CASTLE USA INC. SAFETY CLIMB REQUIREMENT:
   THE INTEGRITY OF THE SAFETY CLIMB AND ALL COMPONENTS OF THE CLIMBING FACILITY SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION, AND INSPECTION. TOWER MODIFICATION, MOUNT REINFORCEMENTS, AND/OR EQUIPMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF THE SAFETY CLIMB OR ANY COMPONENTS OF THE CLIMBING FACILITY ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO: PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, IMPACT TO THE ANCHORAGE POINTS IN ANY WAY, OR TO IMPEDE/BLOCK ITS INTENDED USE. ANY COMPROMISED SAFETY CLIMB, INCLUDING EXISTING CONDITIONS MUST BE TAGGED OUT AND REPORTED TO YOUR CROWN CASTLE USA INC. POC OR CALL THE NOC TO GENERATE A SAFETY CLIMB MAINTENANCE AND CONTRACTOR NOTICE TICKET.
3. PRIOR TO THE START OF CONSTRUCTION, ALL REQUIRED JURISDICTIONAL PERMITS SHALL BE OBTAINED. THIS INCLUDES, BUT IS NOT LIMITED TO, BUILDING, ELECTRICAL, MECHANICAL, FIRE, FLOOD ZONE, ENVIRONMENTAL, AND ZONING. AFTER ONSITE ACTIVITIES AND CONSTRUCTION ARE COMPLETED, ALL REQUIRED PERMITS SHALL BE SATISFIED AND CLOSED OUT ACCORDING TO LOCAL JURISDICTIONAL REQUIREMENTS.
4. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN, AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN CASTLE USA INC. STANDARD CED–STD–10253, INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION, TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH ANSI/TIA–322 (LATEST EDITION).
5. ALL SITE WORK TO COMPLY WITH QAS–STD–10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE USA INC. TOWER SITE," CED–STD–10294 "STANDARD FOR INSTALLATION OF MOUNTS AND APPURTENANCES," AND LATEST VERSION OF ANSI/TIA–1019–A–2012 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
6. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY CROWN CASTLE USA INC. PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
10. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION E) CONSTRUCTION SAFETY PROCEDURES.
11. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS, LATEST APPROVED REVISION.
12. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH AT THE COMPLETION OF THE WORK. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
13. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, TOWER OWNER, CROWN CASTLE USA INC., AND/OR LOCAL UTILITIES.
14. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE REQUIRED BY LOCAL JURISDICTION AND SIGNAGE REQUIRED ON INDIVIDUAL PIECES OF EQUIPMENT, ROOMS, AND SHELTERS.
15. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE CARRIER'S EQUIPMENT AND TOWER AREAS.
16. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
17. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE CONSTRUCTION DRAWINGS AND/OR PROJECT SPECIFICATIONS.
18. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
19. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
20. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
21. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.
22. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: VERIZON
   TOWER OWNER: CROWN CASTLE USA INC.
2. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
3. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
4. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
5. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
6. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CROWN CASTLE.
7. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
8. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
9. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
10. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
11. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
12. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF CROWN CASTLE USA INC.
13. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
14. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH (f'c) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE–THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER–TO–CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
   #4 BARS AND SMALLER........40 ksi
   #5 BARS AND LARGER........60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH........3"
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 BARS AND LARGER........2"
   #5 BARS AND SMALLER........1–1/2"
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
   SLAB AND WALLS........3/4"
   BEAMS AND COLUMNS........1–1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED, 22,000 AIC MINIMUM. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI–CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN–2, XHHW, XHHW–2, THW, THW–2, RHW, OR RHW–2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL–CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON–PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER–ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "VERIZON".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

CONDUCTOR COLOR CODE		
SYSTEM	CONDUCTOR	COLOR
120/240V, 1Ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3Ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
277/480V, 3Ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**

* SEE NEC 210.5(C)(1) AND (2)
** POLARITY MARKED AT TERMINATION

APWA UNIFORM COLOR CODE:

WHITE	PROPOSED EXCAVATION
PINK	TEMPORARY SURVEY MARKINGS
RED	ELECTRIC POWER LINES, CABLES, CONDUIT, AND LIGHTING CABLES
YELLOW	GAS, OIL, STEAM, PETROLEUM, OR GASEOUS MATERIALS
ORANGE	COMMUNICATION, ALARM OR SIGNAL LINES, CABLES, OR CONDUIT AND TRAFFIC LOOPS
BLUE	POTABLE WATER
PURPLE	RECLAIMED WATER, IRRIGATION, AND SLURRY LINES
GREEN	SEWERS AND DRAIN LINES

ABBREVIATIONS:

ANT	ANTENNA
(E)	EXISTING
FIF	FACILITY INTERFACE FRAME
GEN	GENERATOR
GPS	GLOBAL POSITIONING SYSTEM
GSM	GLOBAL SYSTEM FOR MOBILE
LTE	LONG TERM EVOLUTION
MGB	MASTER GROUND BAR
MW	MICROWAVE
(N)	NEW
NEC	NATIONAL ELECTRIC CODE
(P)	PROPOSED
PP	POWER PLANT
QTY	QUANTITY
RECT	RECTIFIER
RBS	RADIO BASE STATION
RET	REMOTE ELECTRIC TILT
RFDS	RADIO FREQUENCY DATA SHEET
RRH	REMOTE RADIO HEAD
RRU	REMOTE RADIO UNIT
SIAD	SMART INTEGRATED DEVICE
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UMTS	UNIVERSAL MOBILE TELECOMMUNICATIONS SYSTEM
W.P.	WORK POINT

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL–OF–POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. 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 BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON–ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON–METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 3/4" NON–METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD–WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

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B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

VERIZON SITE NUMBER:
137514

BU #: **806042**
BOS ASHLAND 959026

ALBERT RAY DRIVE
FOUNTAIN AND GREEN STREETS
ASHLAND, MA 01721

EXISTING 99'-0" MONOPOLE

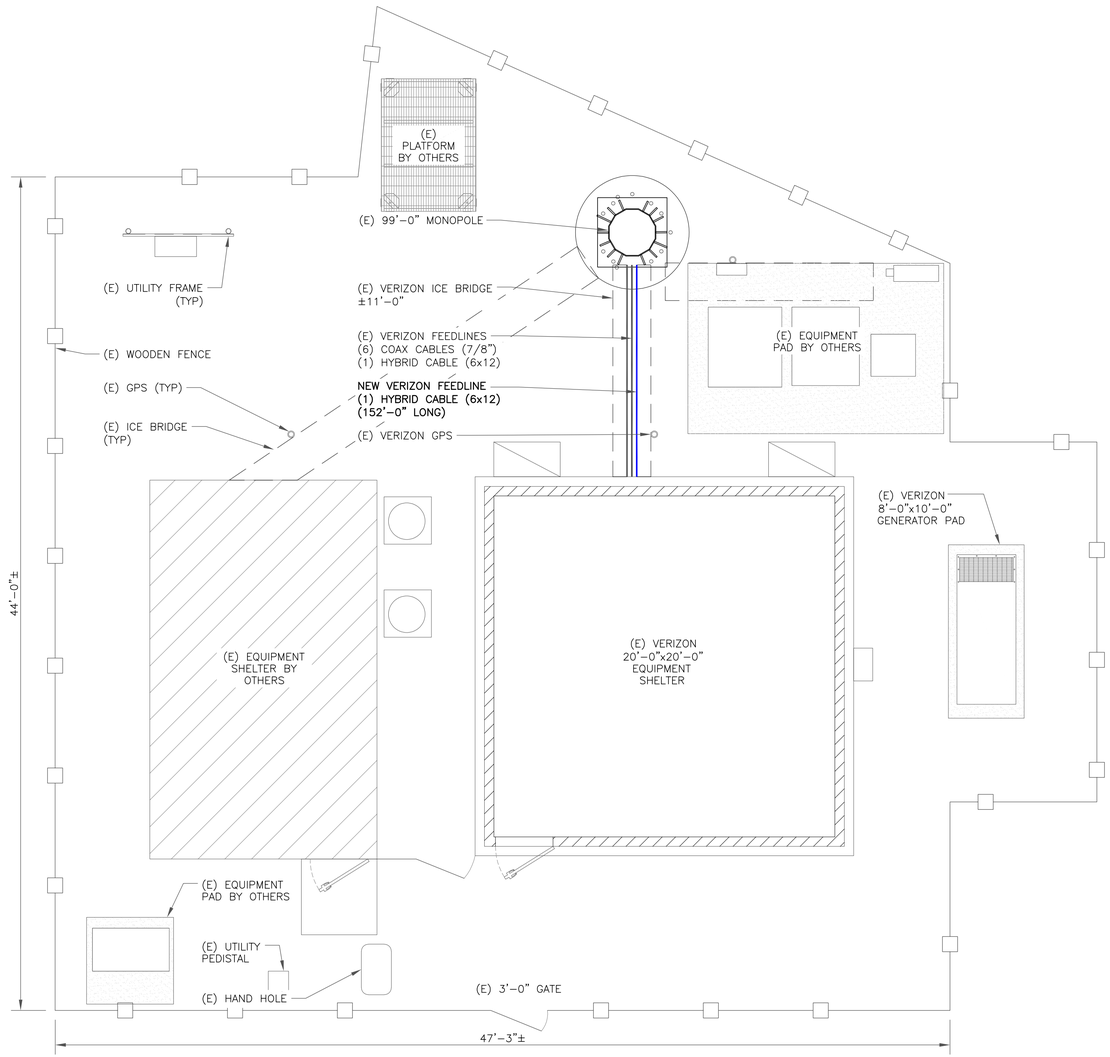
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/2/21	JJR	CONSTRUCTION	JJR
1	4/11/22	JHW	CONSTRUCTION	LR
2	7/21/22	JTS	CONSTRUCTION	LR
3	3/20/25	YX	CONSTRUCTION	TDG
4	4/11/25	AB	CONSTRUCTION	TDG
5	7/7/25	AB	CONSTRUCTION	LR

COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No.56245
REGISTERED PROFESSIONAL ENGINEER
7/7/25

B&T ENGINEERING, INC.

SHEET NUMBER: **T-2**
REVISION: **5**



1 SITE PLAN
SCALE: 4' 3' 2' 1' 0 4'
1/4"=1'-0" (FULL SIZE)
1/8"=1'-0" (11x17)

N

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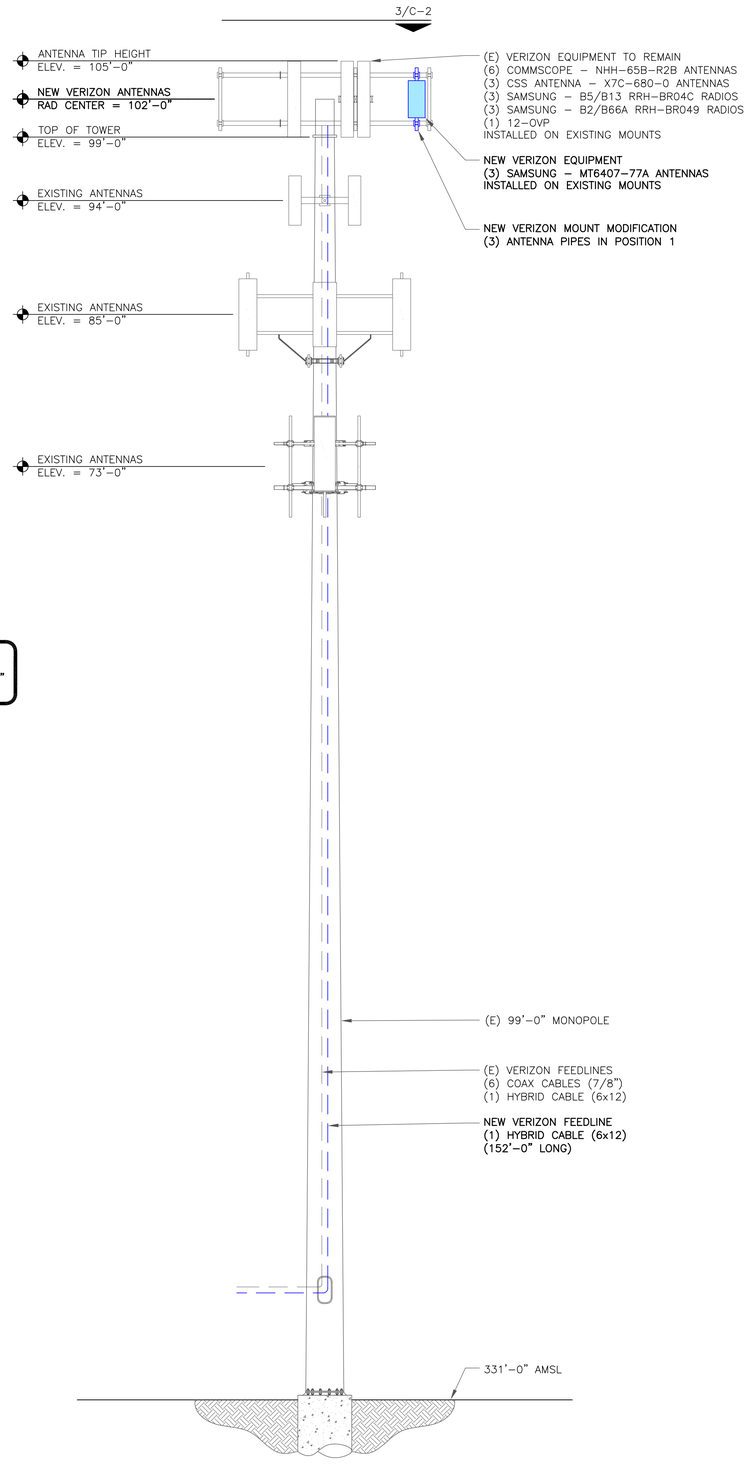
COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No.56245
REGISTERED PROFESSIONAL ENGINEER
7/7/25

B&T ENGINEERING, INC.

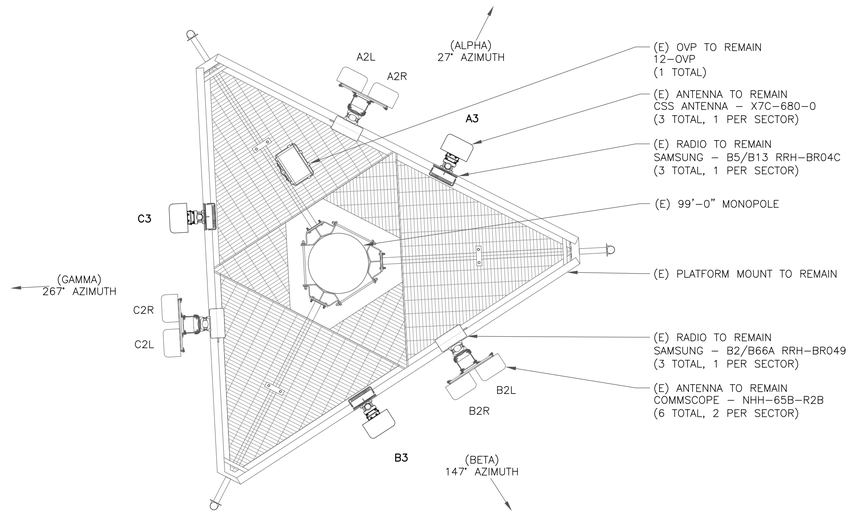
SHEET NUMBER: C-1
REVISION: 5



VERIZON EQUIPMENT

ANTENNA CL: 102'-0"
MOUNT CL: 102'-0"

1 TOWER ELEVATION
SCALE: NOT TO SCALE

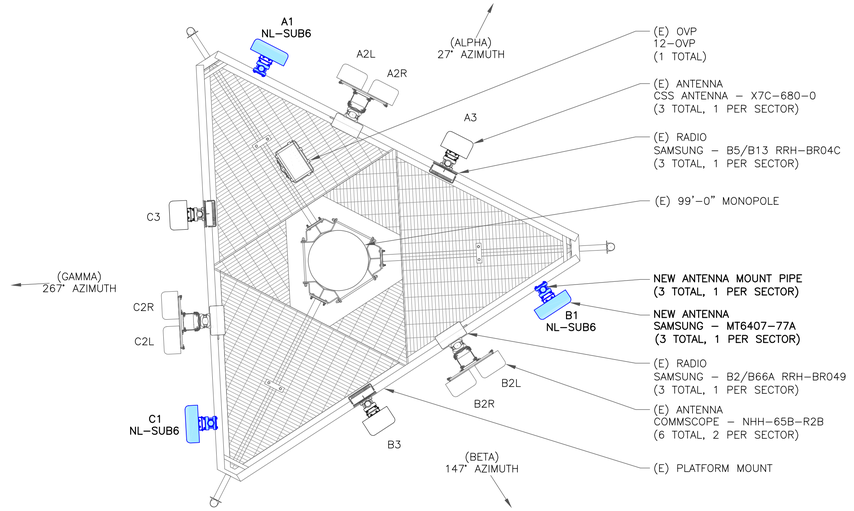


2 EXISTING ANTENNA PLAN
SCALE: NOT TO SCALE

N

NOTE:

TOWER EQUIPMENT PLACED PER MOUNT ANALYSIS



3 NEW ANTENNA PLAN
SCALE: NOT TO SCALE

N

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5	7/7/25	AB	CONSTRUCTION	LR

B&T ENGINEERING, INC.

SHEET NUMBER: C-2

REVISION: 5

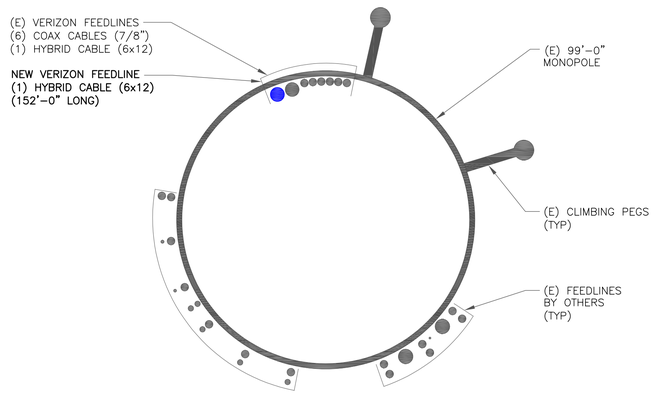
ANTENNA/RRH SCHEDULE

SECTOR	STATUS	ANTENNA MANUFACTURER	ANTENNA MODEL	ANTENNA CENTERLINE	AZIMUTH	MECHANICAL DOWNTILTS	ELECTRICAL DOWNTILTS	TOWER EQUIPMENT MANUFACTURER	TOWER EQUIPMENT QTY/MODEL
A1	NEW	SAMSUNG	MT6407-77A	102'-0"	27°	0°	1°	SAMSUNG	(1) B2/B66A RRH-BR049
A2L	EXISTING	COMMSCOPE	NHH-65B-R2B	102'-0"	27°	0°	0°/0°/0°/0°/0°	SAMSUNG	(1) B5/B13 RRH-BR04C
A2L	EXISTING	COMMSCOPE	NHH-65B-R2B	102'-0"	27°	0°	0°/0°/0°/0°/0°	–	–
A3	EXISTING	CSS	X7C-680-0	102'-0"	27°	3°	0°	RAYCAP	(1) RVZDC-6627-PF-48
B1	NEW	SAMSUNG	MT6407-77A	102'-0"	147°	0°	1°	SAMSUNG	(1) B5/B13 RRH-BR04C
B2L	EXISTING	COMMSCOPE	NHH-65B-R2B	102'-0"	147°	0°	0°/0°/0°/0°/0°	SAMSUNG	(1) B2/B66A RRH-BR049
B2R	EXISTING	COMMSCOPE	NHH-65B-R2B	102'-0"	147°	0°	0°/0°/0°/0°/0°	–	–
B3	EXISTING	CSS	X7C-680-0	102'-0"	147°	4°	0°	–	–
C1	NEW	SAMSUNG	MT6407-77A	102'-0"	267°	0°	1°	SAMSUNG	(1) B5/B13 RRH-BR04C
C2L	EXISTING	COMMSCOPE	NHH-65B-R2B	102'-0"	267°	0°	0°/0°/0°/0°/0°	SAMSUNG	(1) B2/B66A RRH-BR049
C2R	EXISTING	COMMSCOPE	NHH-65B-R2B	102'-0"	267°	0°	0°/0°/0°/0°/0°	–	–
C3	EXISTING	CSS	X7C-680-0	102'-0"	267°	2°	0°	–	–

1 VERIZON TOWER EQUIPMENT SCHEDULE
SCALE: NOT TO SCALE

CABLE SCHEDULE

STATUS	CABLE TYPE	SIZE	LENGTH	QTY
EXISTING	COAX	7/8"	152'-0"±	6
EXISTING	HYBRID	6x12	152'-0"±	1
NEW	HYBRID	6x12	152'-0"±	1
TOTAL CABLE QTY:				8



2 BASE LEVEL DETAIL
SCALE: NOT TO SCALE

N

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COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No.56245
REGISTERED PROFESSIONAL ENGINEER
7/7/25

B&T ENGINEERING, INC.

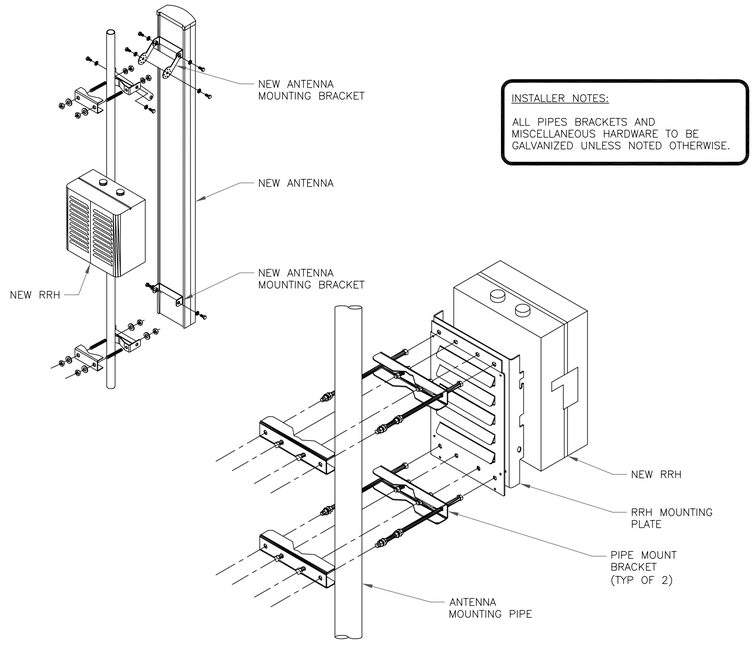
SHEET NUMBER: C-3

REVISION: 5

1 NOT USED
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE



4 ANTENNA & RRH MOUNTING DETAIL
SCALE: NOT TO SCALE

INSTALLER NOTES:

ALL PIPES BRACKETS AND MISCELLANEOUS HARDWARE TO BE GALVANIZED UNLESS NOTED OTHERWISE.

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5	7/7/25	AB	CONSTRUCTION	LR

COMMONWEALTH OF MASSACHUSETTS
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7/7/25

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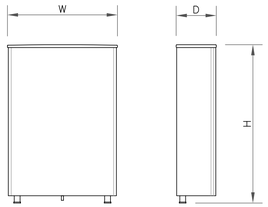
SHEET NUMBER: C-4

REVISION: 5



ANTENNA SPECS	
MANUFACTURER	SAMSUNG
MODEL #	MT6407-77A
WIDTH	16.06"
DEPTH	5.51"
HEIGHT	35.06"
WEIGHT	81.57 LBS

1 ANTENNA SPECS
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE

4 NOT USED
SCALE: NOT TO SCALE

5 NOT USED
SCALE: NOT TO SCALE

6 NOT USED
SCALE: NOT TO SCALE

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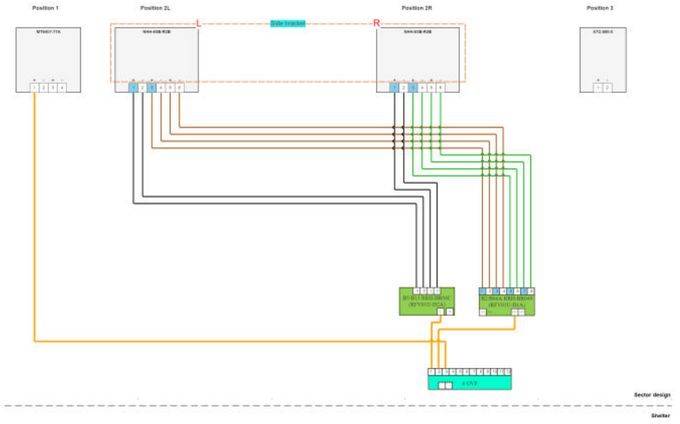
SHEET NUMBER: C-5

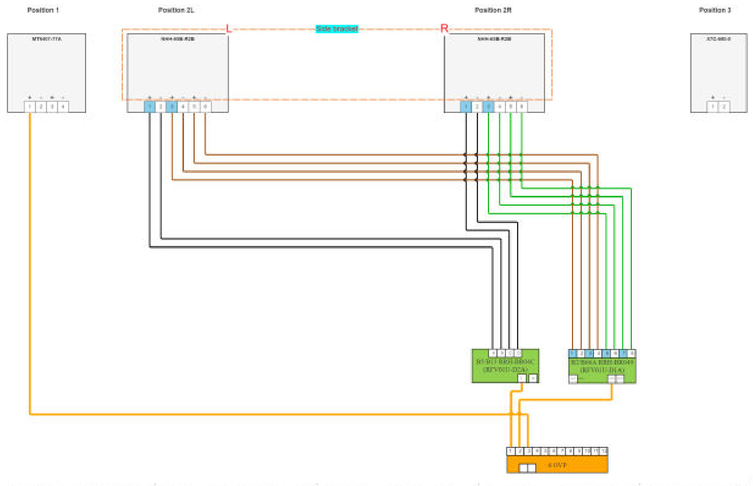
REVISION: 5



Alpha
(Proposed)

Legends
RET dc signal capable port
700/850(LB)
700(LT)
850(CB)
AWS(AW)
PCS(PC)
AWS/PCS(HB)
28GHz(U28)
39GHz(U39)
L-Sub6(S6)
CBRS(RS)
LAA(LA)
Fiber
AISG
DC
Coax
Coax Jumper
Sectors Shared Equipments

Notes:
-Antenna view is from the back of the antennas
-Colors of connections are just for clarification
-Size of objects in drawing doesn't reflect equipment true dimensions



Gamma
(Proposed)

Legends
RET dc signal capable port
700/850(LB)
700(LT)
850(CB)
AWS(AW)
PCS(PC)
AWS/PCS(HB)
28GHz(U28)
39GHz(U39)
L-Sub6(S6)
CBRS(RS)
LAA(LA)
Fiber
AISG
DC
Coax
Coax Jumper
Sectors Shared Equipments

Notes:
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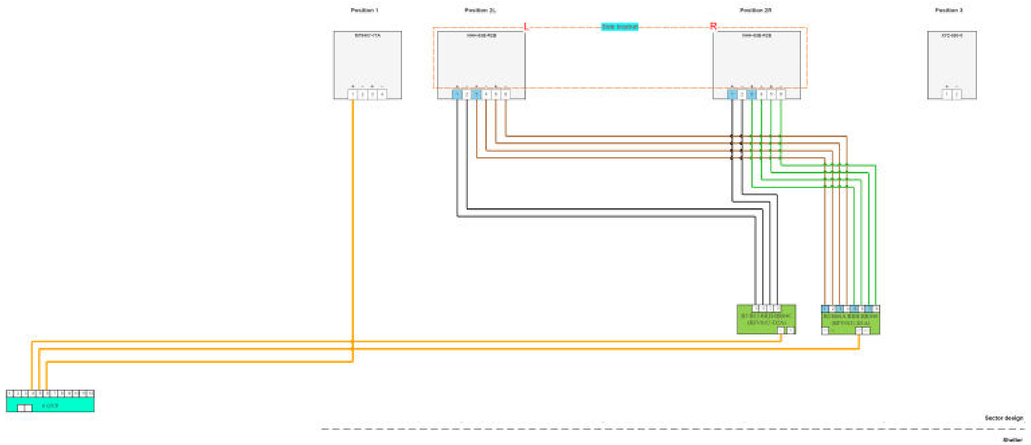


Beta
(Proposed)

Legends
RET dc signal capable port
700/850(LB)
700(LT)
850(CB)
AWS(AW)
PCS(PC)
AWS/PCS(HB)
28GHz(U28)
39GHz(U39)
L-Sub6(S6)
CBRS(RS)
LAA(LA)
Fiber
AISG
DC
Coax
Coax Jumper
Sectors Shared Equipments

Notes:
-Antenna view is from the back of the antennas
-Colors of connections are just for clarification
-Size of objects in drawing doesn't reflect equipment true dimensions

1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

verizon
180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

B+T GRP
1717 S. BOULDER
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

VERIZON SITE NUMBER:
137514

BU #: **806042**
BOS ASHLAND 959026

ALBERT RAY DRIVE
FOUNTAIN AND GREEN
STREETS
ASHLAND, MA 01721

EXISTING 99'-0" MONOPOLE

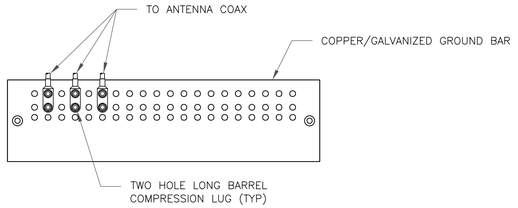
ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/2/21	JJR	CONSTRUCTION	JJR
1	4/11/22	JHW	CONSTRUCTION	LR
2	7/21/22	JTS	CONSTRUCTION	LR
3	3/20/25	YX	CONSTRUCTION	TDG
4	4/11/25	AB	CONSTRUCTION	TDG
5	7/7/25	AB	CONSTRUCTION	LR

COMMONWEALTH OF MASSACHUSETTS
PETER D. SMITH
No. 56245
REGISTERED PROFESSIONAL ENGINEER
7/7/25

B&T ENGINEERING, INC.

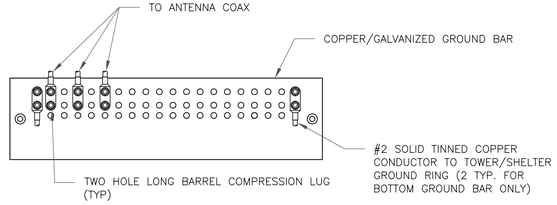
SHEET NUMBER: C-6
REVISION: 5



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO ANTENNA MOUNT STEEL.

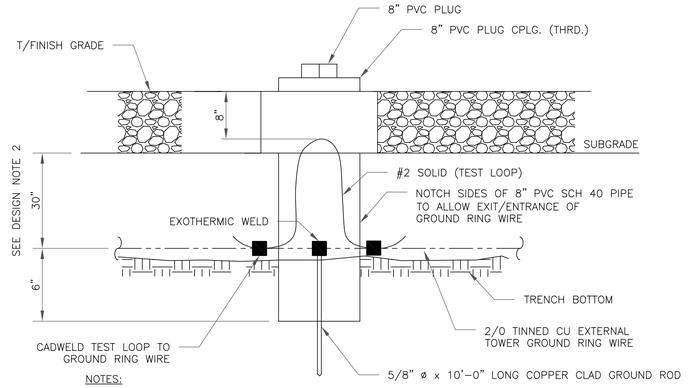
1 ANTENNA SECTOR GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

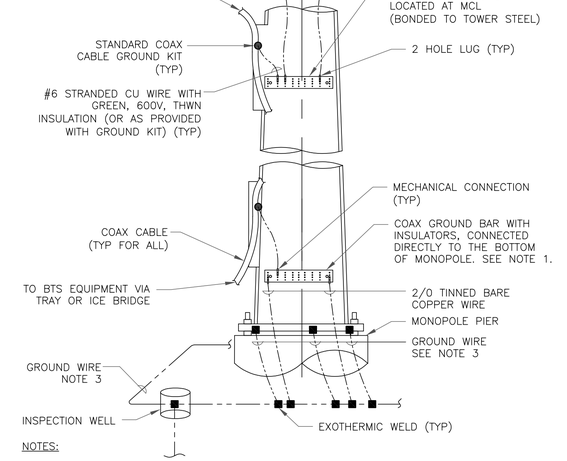
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

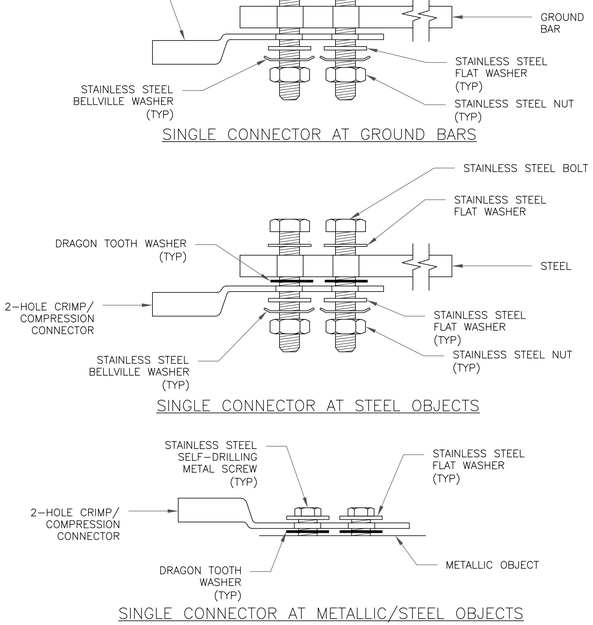
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE USA INC. TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE

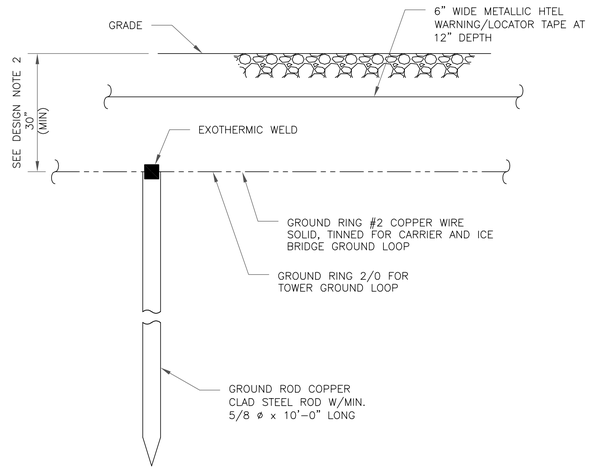


SINGLE CONNECTOR AT GROUND BARS

SINGLE CONNECTOR AT STEEL OBJECTS

SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

verizon
180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921

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ALBERT RAY DRIVE
FOUNTAIN AND GREEN STREETS
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EXISTING 99'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	11/2/21	JJR	CONSTRUCTION	JJR
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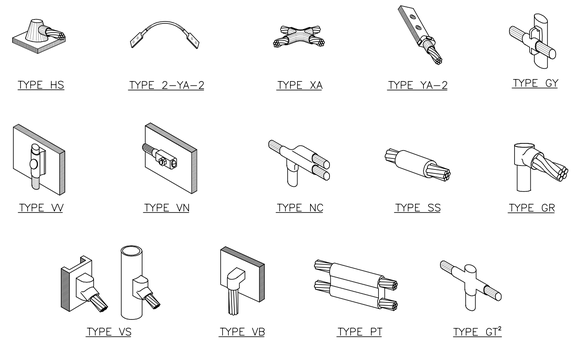
4	4/11/25	AB	CONSTRUCTION	TDG
5	7/7/25	AB	CONSTRUCTION	LR

B&T ENGINEERING, INC.

SHEET NUMBER: G-1
REVISION: 5

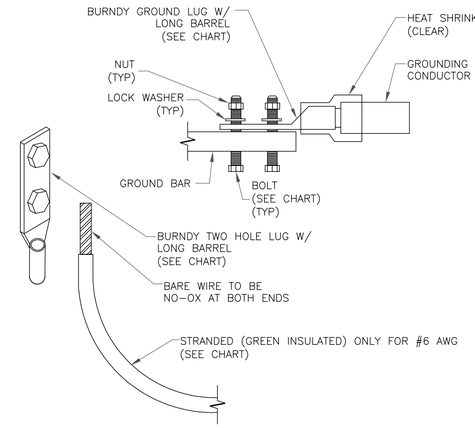


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

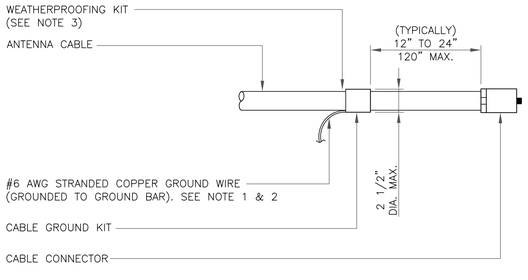
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER,GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

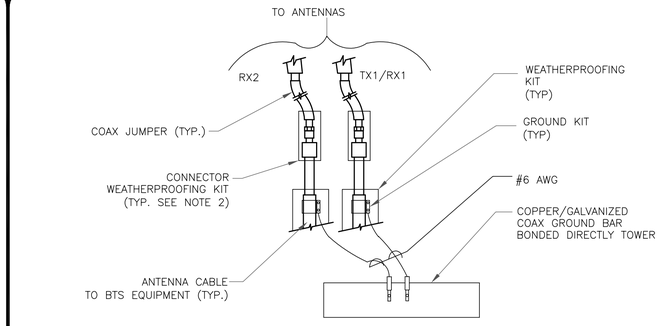
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

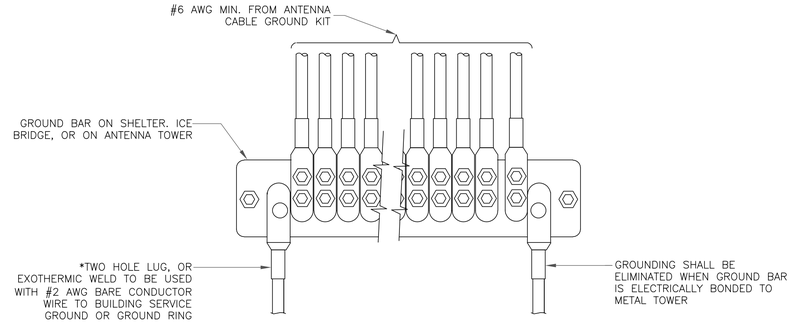
3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



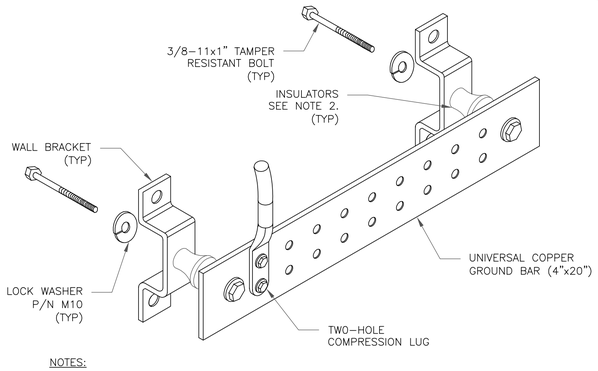
NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE



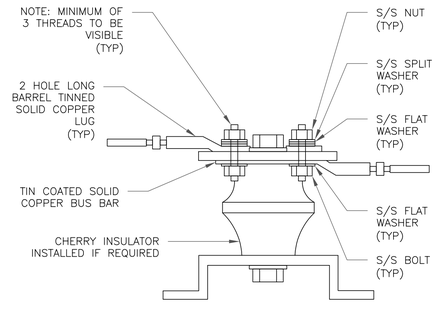
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



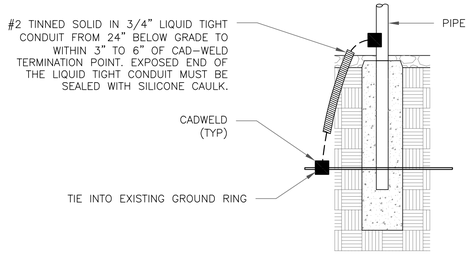
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE USA INC. TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

verizon
180 WASHINGTON VALLEY ROAD
BEDMINSTER, NJ 07921

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

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VERIZON SITE NUMBER:
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4	4/11/25	AB	CONSTRUCTION	TDG
5	7/7/25	AB	CONSTRUCTION	LR

B&T ENGINEERING, INC.

SHEET NUMBER: G-2
REVISION: 5

Radio Frequency – Electromagnetic Energy (RF-EME)
Site Compliance Report

Site Number: 674349
Ashland_MA
Albert Ray Drive
Ashland, MA 01721
42° 16' 25.34" N, 071° 27' 05.22" W

Prepared For:
verizon

verizon

Radio Frequency Exposure
FCC Compliance Assessment

☒ Pre-Activation ☐ Post-Activation

SITE-SPECIFIC-INFORMATION			
Site Name	Ashland_MA	**Multi-Licensee Facility**	☒ YES ☐ NO
Street Address	Albert Ray Drive	**Is Verizon a Significant Contributor To Co-Locator Areas Requiring Mitigation?**	☐ YES ☒ NO ☐ N/A
City, State, Zip	Ashland, MA, 01721		
Verizon's Max % MPE (Measured - Occupational)	N/A	**Verizon's Max % MPE (Predictive - Occupational)**	1.40% Occupational Predictive
Structure Type	Lattice Tower	**Assessment Date**	7/18/2022
Broadcast (AM/FM/TV) Co-Locators	☐ YES ☒ NO	**Assessment Purpose**	MODIFICATION
Total Access Points	1	**Total Report Revisions**	N/A
Original Report Date	7/18/2022	**Report Revision Date**	No Revisions
Compliance Status	☒ **COMPLIANT AS DESIGNED** ☐ **COMPLIANT PER RF SAFETY PLAN SUBMISSION** ☐ **MITIGATION IS REQUIRED**		

VERIZON'S WORST-CASE RF EMISSIONS IN ACCESSIBLE AREAS AT THIS FACILITY	
☒	BELOW the General Population MPE limit
☐	ABOVE the General Population MPE limit and BELOW the Occupational MPE limit
☐	ABOVE the Occupational MPE limit and BELOW 10x the Occupational MPE limit
☐	ABOVE 10x the Occupational MPE limit

Final Compliant Configuration							
	GUIDELINES	**NOTICE**	**CAUTION**	**WARNING**	**NOC INFO**	**BARRIER/MARKER**	
Access Point(s)	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions
Alpha	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions
Beta	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions
Gamma	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions

NOTE: The table above represents EVERY compliance item that MUST be implemented at this location; Also in Sec. 4 (B)

Additional Compliance Requirement(s):			
N/A			
Consultant Legal Name	Centerline Communications, LLC	**Phone/Fax**	(781) 713-4725
Address	750 W Center St, West Bridgewater, MA 02379		

Contents

1. Introduction

Verizon Wireless has contracted with Centerline Communications, LLC, an independent Radio Frequency consulting firm, to conduct a **Radio Frequency Exposure (RFE) FCC Compliance Assessment** of the Ashland_MA cell site. The following report contains a detailed summary of the Radio Frequency environment as it relates to Federal Communications Commission (FCC) and Occupational Safety & Health Administration (OSHA) Rules and Regulations for all individuals.

The **Verizon Wireless antenna data** was provided by:

Name	Candace Vivenzio
Title	RF Engineer
Date	07/01/2022
Sub-Market	NE

This compliance assessment and report has been **prepared** and **reviewed** by:

	Preparer	**Reviewer**
Name	Matt Schulzinger	Yasir Alqadhili
Title	RF EME Technical Writer	RF EME Technical Writer
Date	7/18/2022	7/18/2022

This report utilizes the following **for predictive modeling of the ambient RF environment**:
MPE Modeling Program: RoofMaster™ 2020 Version 35.5.23.2022
Required Modeling Assumptions: 100% Duty Cycle and Maximum Total Power Output.

Additional Modeling Assumptions:

Centerline Communications, LLC has performed theoretical modeling using Waterford Consultants' RoofMaster™ 2020 Version 35.5.23.2022 which uses a cylindrical model for conservative power density predictions within the near field of the antenna where the antenna pattern has not truly formed yet. Within this area power density values tend to decrease based upon an inverse distance function. At the point where it is appropriate for modeling to change from near-field calculations to far-field calculations the power decreases inversely with the square of the distance. This modeling technique is accurate with low antenna centerlines, such as rooftops, where persons can get close to the antennas and pass through fields in close proximity.

2. Existing Site Characteristics

a. Structure

Physical Description	This site is located on a 99' monopole.
Single-Family Home	☐ **YES** ☒ **NO**
Latitude (NAD 83)	42° 16' 25.34" N
Longitude (NAD 83)	071° 27' 05.22" W
Total Analyzed Elevations	**Ground Level 0.00 ft.** **Ground Level 0.00 ft.** **Antenna Level 99.00 ft.** **Residential Buildings 55.00 ft.** **Residential Buildings 55.00 ft.** **Elevation View**

b. Accessibility

Did the property owner or agent of the property owner (e.g. a security guard) grant you access to the rooftop?	☐ YES ☐ NO
If not - were you required to be escorted by Verizon personnel in order to gain access?	☐ YES ☐ NO
Were you required to provide any proof of identity to gain access?	☐ YES ☐ NO
What specific documents were required in order to gain access?	N/A
All access points locked at time of assessment?	☐ YES ☐ NO
All access points alarmed at time of assessment?	☐ YES ☐ NO
Were there any broken locks or inoperable alarms on any of the access points to the rooftop?	☐ YES ☐ NO
Were there any access issues caused by either the property owner or agent of the property owner?	☐ YES ☐ NO
Additional Notes: N/A	

c. Existing Verizon Observations

Existing Observations							
	GUIDELINES	**NOTICE**	**CAUTION**	**WARNING**	**NOC INFO**	**BARRIER/MARKER**	
Access Point(s)	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions
Alpha	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions
Beta	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions
Gamma	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions

NOTE: The table above represents EXISTING compliance items implemented at this location.

Are Verizon signs visible from all areas of approach?	☐ YES ☐ NO
Are there any broken, damaged or illegible Verizon signs?	☐ YES ☐ NO
Are there any broken or damaged Verizon physical barriers?	☐ YES ☐ NO
Are there any Verizon indicative markers in need of repair or replacement?	☐ YES ☐ NO

d. Antenna Inventory

Z-height represents the distance from the ground to the Centerline of the antenna.	☐ **Bottom** ☒ **Centerline** ☐ **Top**
NON-Verizon Co-locator Data	☒ **Estimates** ☐ **Actual Data**

Ant Num	Carrier	Freq (MHz)	Tx (#)	Power (TPO)	ERP	Mfg	Model	Tech	(ft) Z	Gain in dbd	Azimuth	Horizontal BW	MDT	Length (ft.)
1	Verizon	850	7	20	2891.53	JMA	X7C-680-VR0-0	CDMA	102.00	13.15	27.00	78.00	3.00	6.00
2	Verizon	700	2	40	1355.47	COMMSCOPE	NHH-65B-R2B	LTE	102.00	12.29	27.00	65.00	0.00	6.00
2	Verizon	850	1	40	744.83	COMMSCOPE	NHH-65B-R2B	LTE	102.00	12.70	27.00	60.00	0.00	6.00
2	Verizon	850	1	40	744.83	COMMSCOPE	NHH-65B-R2B	NR	102.00	12.70	27.00	60.00	0.00	6.00
2	Verizon	2100	4	40	6700.70	COMMSCOPE	NHH-65B-R2B	AWS	102.00	16.22	27.00	64.00	0.00	6.00
3	Verizon	700	2	40	1355.47	COMMSCOPE	NHH-65B-R2B	LTE	102.00	12.29	27.00	65.00	0.00	6.00
3	Verizon	850	1	40	744.83	COMMSCOPE	NHH-65B-R2B	LTE	102.00	12.70	27.00	60.00	0.00	6.00
3	Verizon	850	1	40	744.83	COMMSCOPE	NHH-65B-R2B	NR	102.00	12.70	27.00	60.00	0.00	6.00
3	Verizon	1900	4	40	5876.52	COMMSCOPE	NHH-65B-R2B	LTE	102.00	15.65	27.00	69.00	0.00	6.00
4	Verizon	3700	4	50	43254.37	SAMSUNG	MT6407	C-Band	102.00	23.35	27.00	12.00	0.00	2.92
5	Verizon	850	7	20	2891.53	JMA	X7C-680-VR0-0	CDMA	102.00	13.15	147.00	78.00	4.00	6.00
6	Verizon	700	2	40	1355.47	COMMSCOPE	NHH-65B-R2B	LTE	102.00	12.29	147.00	65.00	0.00	6.00
6	Verizon	850	1	40	744.83	COMMSCOPE	NHH-65B-R2B	LTE	102.00	12.70	147.00	60.00	0.00	6.00
6	Verizon	850	1	40	744.83	COMMSCOPE	NHH-65B-R2B	NR	102.00	12.70	147.00	60.00	0.00	6.00
6	Verizon	2100	4	40	6700.70	COMMSCOPE	NHH-65B-R2B	AWS	102.00	16.22	147.00	64.00	0.00	6.00
7	Verizon	700	2	40	1355.47	COMMSCOPE	NHH-65B-R2B	LTE	102.00	12.29	147.00	65.00	0.00	6.00
7	Verizon	850	1	40	744.83	COMMSCOPE	NHH-65B-R2B	LTE	102.00	12.70	147.00	60.00	0.00	6.00
7	Verizon	850	1	40	744.83	COMMSCOPE	NHH-65B-R2B	NR	102.00	12.70	147.00	60.00	0.00	6.00
7	Verizon	1900	4	40	5876.52	COMMSCOPE	NHH-65B-R2B	LTE	102.00	15.65	147.00	69.00	0.00	6.00
8	Verizon	3700	4	50	43254.37	SAMSUNG	MT6407	C-Band	102.00	23.35	147.00	12.00	0.00	2.92
9	Verizon	850	7	20	2891.53	JMA	X7C-680-VR0-0	CDMA	102.00	13.15	267.00	78.00	2.00	6.00
10	Verizon	700	2	40	1355.47	COMMSCOPE	NHH-65B-R2B	LTE	102.00	12.29	267.00	65.00	0.00	6.00
10	Verizon	850	1	40	744.83	COMMSCOPE	NHH-65B-R2B	LTE	102.00	12.70	267.00	60.00	0.00	6.00
10	Verizon	850	1	40	744.83	COMMSCOPE	NHH-65B-R2B	NR	102.00	12.70	267.00	60.00	0.00	6.00
10	Verizon	2100	4	40	6700.70	COMMSCOPE	NHH-65B-R2B	AWS	102.00	16.22	267.00	64.00	0.00	6.00
11	Verizon	700	2	40	1355.47	COMMSCOPE	NHH-65B-R2B	LTE	102.00	12.29	267.00	65.00	0.00	6.00
11	Verizon	850	1	40	744.83	COMMSCOPE	NHH-65B-R2B	LTE	102.00	12.70	267.00	60.00	0.00	6.00
11	Verizon	850	1	40	744.83	COMMSCOPE	NHH-65B-R2B	NR	102.00	12.70	267.00	60.00	0.00	6.00
11	Verizon	1900	4	40	5876.52	COMMSCOPE	NHH-65B-R2B	LTE	102.00	15.65	267.00	69.00	0.00	6.00
12	Verizon	3700	4	50	43254.37	SAMSUNG	MT6407	C-Band	102.00	23.35	267.00	12.00	0.00	2.92
13	AT&T	3840	1	67.78	12476.75	GENERIC	GENERIC C-BAND	C-Band	94.00	22.65	27.00	14.00	0.00	2.46
14	AT&T	700	4	40	2736.02	GENERIC	PANEL 6FT	LTE	94.00	12.33	27.00	68.00	0.00	6.00
14	AT&T	850	4	40	2924.96	GENERIC	PANEL 6FT	LTE	94.00	12.62	27.00	66.00	0.00	6.00
14	AT&T	1900	4	40	6139.32	GENERIC	PANEL 6FT	LTE	94.00	15.84	27.00	66.00	0.00	6.00
14	AT&T	2100	4	40	6968.19	GENERIC	PANEL 6FT	LTE	94.00	16.39	27.00	63.00	0.00	6.00
15	AT&T	3840	1	67.78	12476.75	GENERIC	GENERIC C-BAND	C-Band	94.00	22.65	147.00	14.00	0.00	2.46
16	AT&T	700	4	40	2736.02	GENERIC	PANEL 6FT	LTE	94.00	12.33	147.00	68.00	0.00	6.00
16	AT&T	850	4	40	2924.96	GENERIC	PANEL 6FT	LTE	94.00	12.62	147.00	66.00	0.00	6.00
16	AT&T	1900	4	40	6139.32	GENERIC	PANEL 6FT	LTE	94.00	15.84	147.00	66.00	0.00	6.00
16	AT&T	2100	4	40	6968.19	GENERIC	PANEL 6FT	LTE	94.00	16.39	147.00	63.00	0.00	6.00
17	AT&T	3840	1	67.78	12476.75	GENERIC	GENERIC C-BAND	C-Band	94.00	22.65	267.00	14.00	0.00	2.46
18	AT&T	700	4	40	2736.02	GENERIC	PANEL 6FT	LTE	94.00	12.33	267.00	68.00	0.00	6.00
18	AT&T	850	4	40	2924.96	GENERIC	PANEL 6FT	LTE	94.00	12.62	267.00	66.00	0.00	6.00
18	AT&T	1900	4	40	6139.32	GENERIC	PANEL 6FT	LTE	94.00	15.84	267.00	66.00	0.00	6.00
18	AT&T	2100	4	40	6968.19	GENERIC	PANEL 6FT	LTE	94.00	16.39	267.00	63.00	0.00	6.00
19	T-Mobile	2500	1	60	3222.19	GENERIC	GENERIC C-BAND	C-Band	85.00	17.30	27.00	65.00	0.00	2.76
19	T-Mobile	2500	1	90	15461.18	GENERIC	GENERIC C-BAND	C-Band	85.00	22.35	27.00	13.00	0.00	2.76
19	T-Mobile	2500	1	90	15461.18	GENERIC	GENERIC C-BAND	C-Band	85.00	22.35	27.00	13.00	0.00	2.76
20	T-Mobile	1900	2	60	4604.49	GENERIC	PANEL 6FT	LTE	85.00	15.84	27.00	66.00	0.00	6.00
20	T-Mobile	2100	2	60	5226.14	GENERIC	PANEL 6FT	LTE	85.00	16.39	27.00	63.00	0.00	6.00
21	T-Mobile	600	2	60	120.00	GENERIC	PANEL 6FT	LTE	85.00	0.00	27.00	68.00	0.00	6.00
21	T-Mobile	700	2	60	2052.02	GENERIC	PANEL 6FT	LTE	85.00	12.33	27.00	68.00	0.00	6.00
22	T-Mobile	2500	1	60	3222.19	GENERIC	GENERIC C-BAND	C-Band	85.00	17.30	147.00	65.00	0.00	2.76
22	T-Mobile	2500	1	90	15461.18	GENERIC	GENERIC C-BAND	C-Band	85.00	22.35	147.00	13.00	0.00	2.76
22	T-Mobile	2500	1	90	15461.18	GENERIC	GENERIC C-BAND	C-Band	85.00	22.35	147.00	13.00	0.00	2.76
23	T-Mobile	1900	2	60	4604.49	GENERIC	PANEL 6FT	LTE	85.00	15.84	147.00	66.00	0.00	6.00
23	T-Mobile	2100	2	60	5226.14	GENERIC	PANEL 6FT	LTE	85.00	16.39	147.00	63.00	0.00	6.00
24	T-Mobile	600	2	60	120.00	GENERIC	PANEL 6FT	LTE	85.00	0.00	147.00	68.00	0.00	6.00
24	T-Mobile	700	2	60	2052.02	GENERIC	PANEL 6FT	LTE	85.00	12.33	147.00	68.00	0.00	6.00
25	T-Mobile	2500	1	60	3222.19	GENERIC	GENERIC C-BAND	C-Band	85.00	17.30	267.00	65.00	0.00	2.76
25	T-Mobile	2500	1	90	15461.18	GENERIC	GENERIC C-BAND	C-Band	85.00	22.35	267.00	13.00	0.00	2.76
25	T-Mobile	2500	1	90	15461.18	GENERIC	GENERIC C-BAND	C-Band	85.00	22.35	267.00	13.00	0.00	2.76
26	T-Mobile	1900	2	60	4604.49	GENERIC	PANEL 6FT	LTE	85.00	15.84	267.00	66.00	0.00	6.00
26	T-Mobile	2100	2	60	5226.14	GENERIC	PANEL 6FT	LTE	85.00	16.39	267.00	63.00	0.00	6.00
27	T-Mobile	600	2	60	120.00	GENERIC	PANEL 6FT	LTE	85.00	0.00	267.00	68.00	0.00	6.00
27	T-Mobile	700	2	60	2052.02	GENERIC	PANEL 6FT	LTE	85.00	12.33	267.00	68.00	0.00	6.00

3. Analysis

a. Overview Diagrams

Is the area being modeled completely INACCESSIBLE to members of the general population (including untrained maintenance workers)?	☒ YES ☐ NO

Predictive Model: All Transmitters

Reference Plane: Ground Level 0.00 ft.

100' grid size

Plot includes MPE levels spatially averaged between the referenced plane and 6ft above.

Carrier Color Code

- Verizon
- AT&T Mobility
- Clearwire
- Cricket
- T-Mobile
- Sprint
- US Cellular
- Metro PCS
- Unknown

Existing Marker
Existing Barrier
Proposed Marker
Proposed Barrier

Percent MPE Legend — Public Limits

- 0% - 5%
- 5% - 100%
- 100% - 500%
- 500% - 5000%
- 5000% +

Percent MPE Legend — Occupational Limits

- 0% - 1%
- 1% - 20%
- 20% - 100%
- 100% - 1000%
- 1000% +

Predictive Model: Verizon Transmitters

Reference Plane: Ground Level 0.00 ft.

100' grid size

Plot includes MPE levels spatially averaged between the referenced plane and 6ft above.

Carrier Color Code

- Verizon
- AT&T Mobility
- Clearwire
- Cricket
- T-Mobile
- Sprint
- US Cellular
- Metro PCS
- Unknown

Existing Marker
Existing Barrier
Proposed Marker
Proposed Barrier

Percent MPE Legend — Public Limits

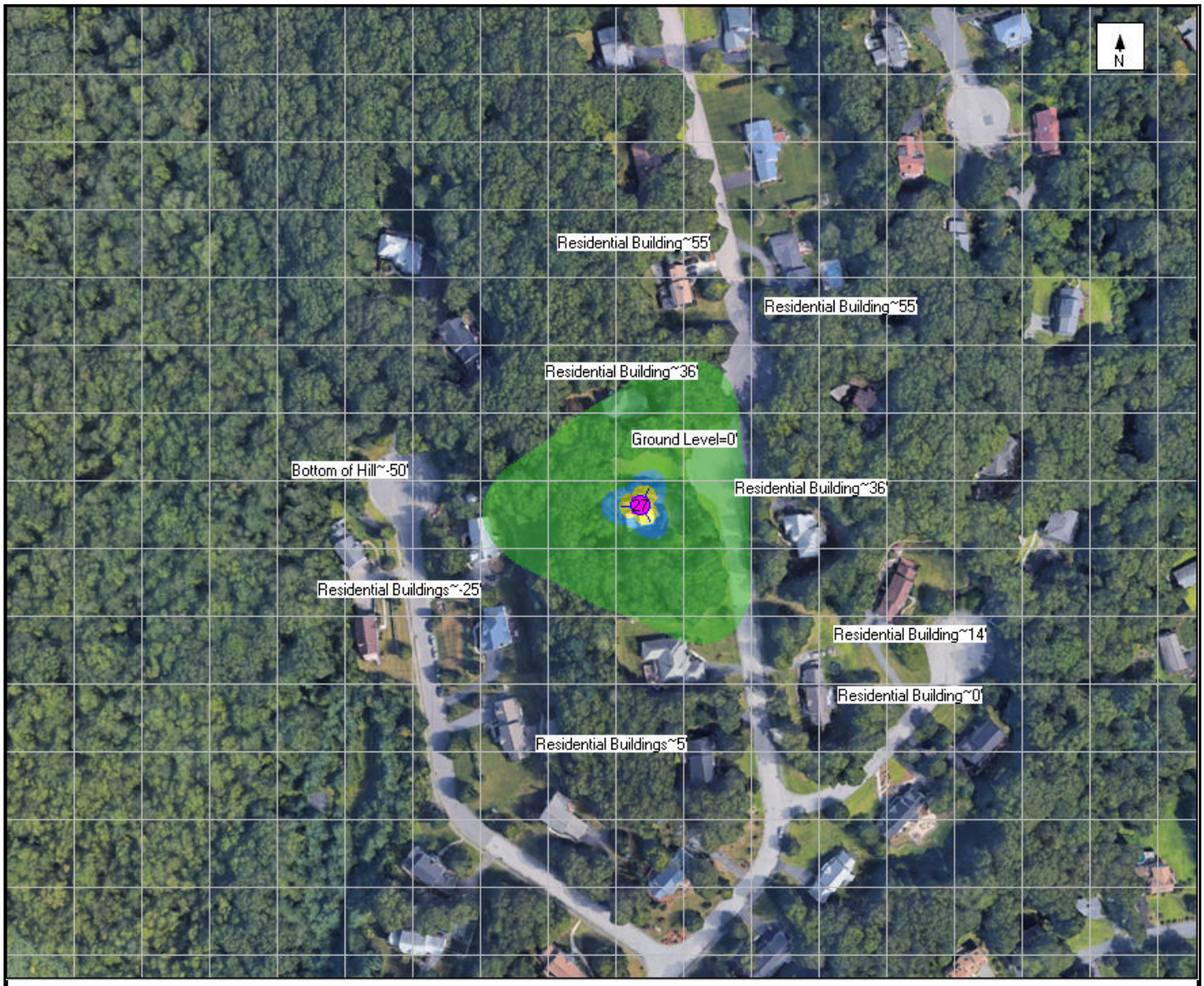
- 0% - 5%
- 5% - 100%
- 100% - 500%
- 500% - 5000%
- 5000% +

Percent MPE Legend — Occupational Limits

- 0% - 1%
- 1% - 20%
- 20% - 100%
- 100% - 1000%
- 1000% +

Predictive Model: All Transmitters

Reference Plane: Antenna Level 99.00 ft.



100' grid size

Plot includes MPE levels spatially averaged between the referenced plane and 6ft above.

Carrier Color Code

- Verizon
- AT&T Mobility
- Clearwire
- Cricket
- T-Mobile
- Sprint
- US Cellular
- Metro PCS
- Unknown

Existing Marker
Existing Barrier
Proposed Marker
Proposed Barrier

Percent MPE Legend — Public Limits

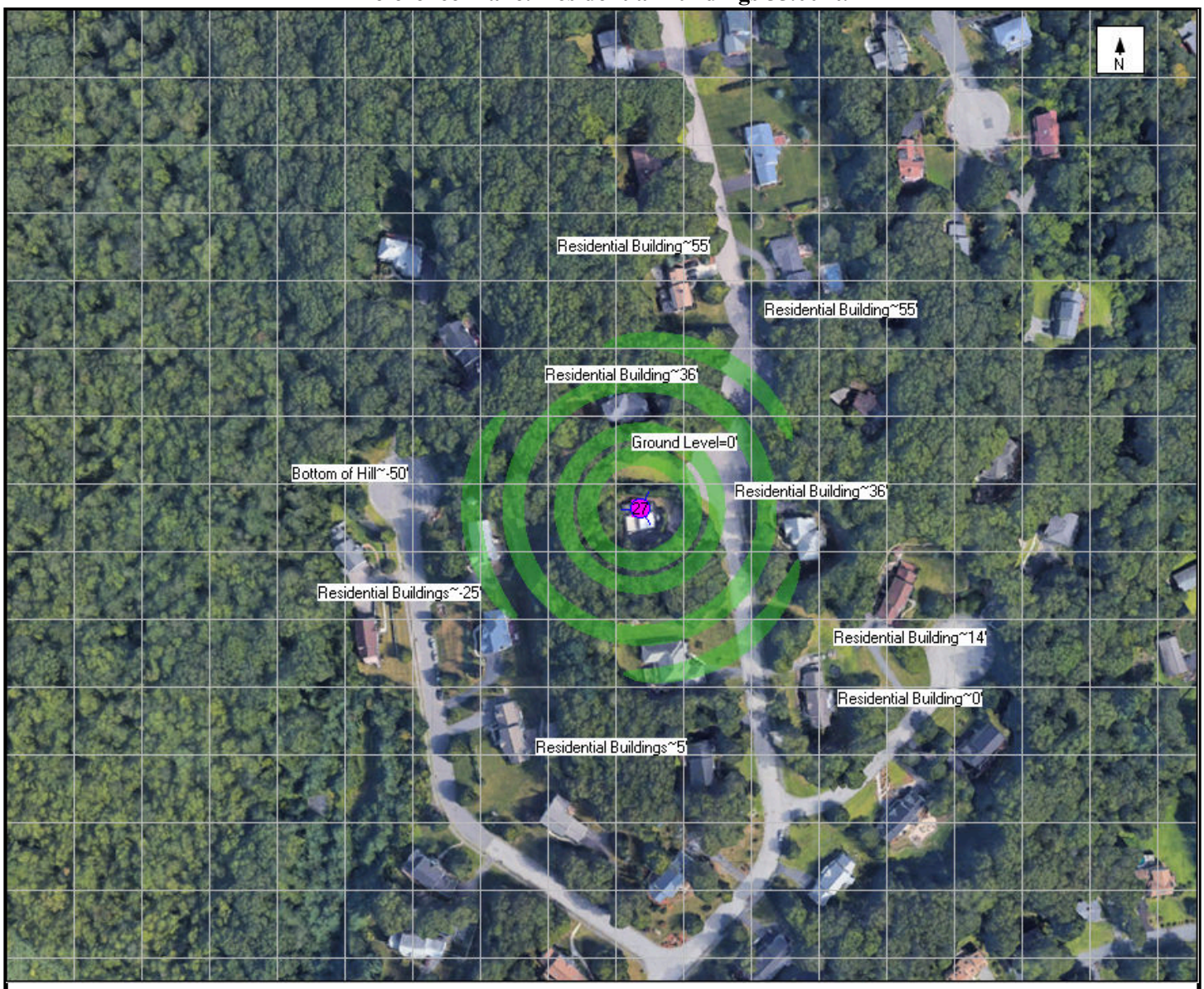
- 0% - 5%
- 5% - 100%
- 100% - 500%
- 500% - 5000%
- 5000% +

Percent MPE Legend — Occupational Limits

- 0% - 1%
- 1% - 20%
- 20% - 100%
- 100% - 1000%
- 1000% +

Predictive Model: All Transmitters

Reference Plane: Residential Buildings 55.00 ft.



100' grid size

Plot includes MPE levels spatially averaged between the referenced plane and 6ft above.

Carrier Color Code

- Verizon
- AT&T Mobility
- Clearwire
- Cricket
- T-Mobile
- Sprint
- US Cellular
- Metro PCS
- Unknown

Existing Marker
Existing Barrier
Proposed Marker
Proposed Barrier

Percent MPE Legend	Public Limits
0% - 5%	
5% - 100%	
100% - 500%	
500% - 5000%	
5000% +	

Percent MPE Legend	Occupational Limits
0% - 1%	
1% - 20%	
20% - 100%	
100% - 1000%	
1000% +	

Predictive Model: Verizon Transmitters

Reference Plane: Residential Buildings 55.00 ft.

100' grid size

Plot includes MPE levels spatially averaged between the referenced plane and 6ft above.

Carrier Color Code

- Verizon
- AT&T Mobility
- Clearwire
- Cricket
- T-Mobile
- Sprint
- US Cellular
- Metro PCS
- Unknown

Existing Marker
Existing Barrier
Proposed Marker
Proposed Barrier

Percent MPE Legend — Public Limits

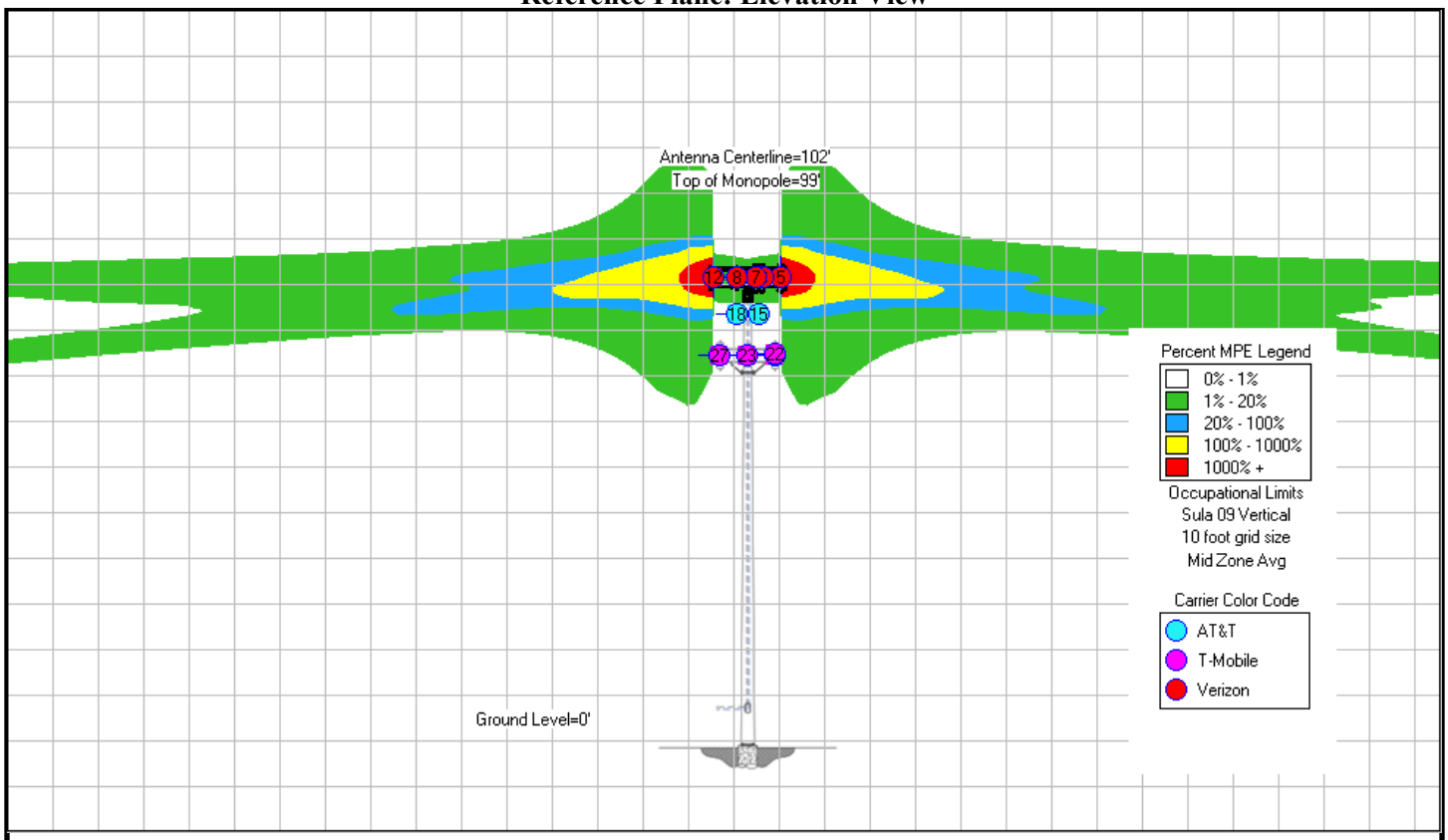
0% - 5%
5% - 100%
100% - 500%
500% - 5000%
5000% +

Percent MPE Legend — Occupational Limits

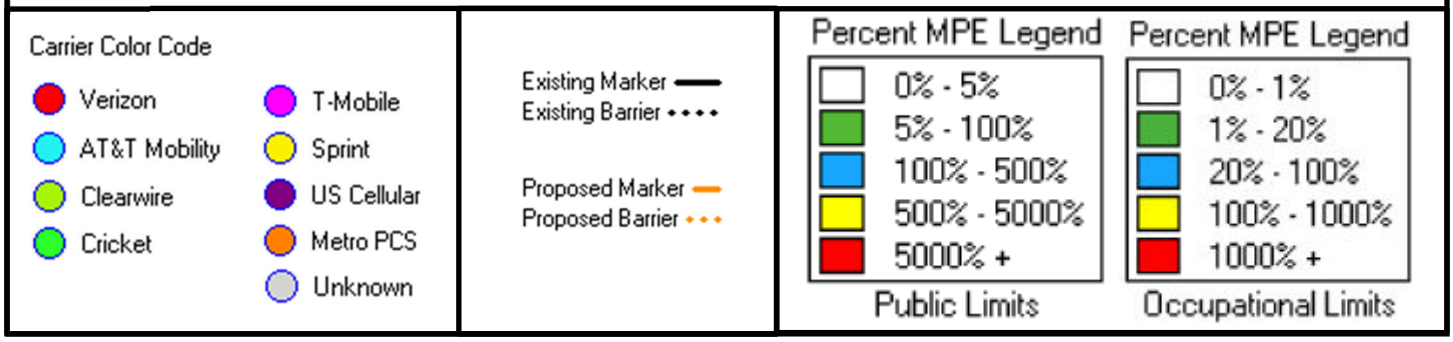
0% - 1%
1% - 20%
20% - 100%
100% - 1000%
1000% +

b. Elevation Diagram
Predictive Model: Verizon Transmitters

Reference Plane: Elevation View



10' grid size



4. Conclusion
a. Conclusion Narrative

Based on data provided for this pre-activation MPE modeling, this site has been determined to be **compliant as designed**.

Description of MPE-Limit Exceeding Areas:

Maximum Predicted MPE Level on Site:	% of MPE Limit:	Location:
Accessible **General Population** MPE Limits:	**7.00%**	**Sector A**
Accessible **Occupational** MPE Limits:	**1.40%**	

Antenna Level Assessment:	Distance from Antenna (ft.)
Antenna Level **General Population** Horizontal Distance:	**72'**
Antenna Level **Occupational** Horizontal Distance:	**36'**

Ground Level Assessment:	% of MPE Limit:
Ground Level **General Population** MPE Limits:	**7.00%**
Ground Level **Occupational** MPE Limits:	**1.40%**

Sector A: Transmitting over Ground Level	% of MPE Limit:	*Distance from Antenna (ft.):
Accessible **General Population** MPE Limits:	**7.00%**	**0'**
Accessible **Occupational** MPE Limits:	**1.40%**	**0'**

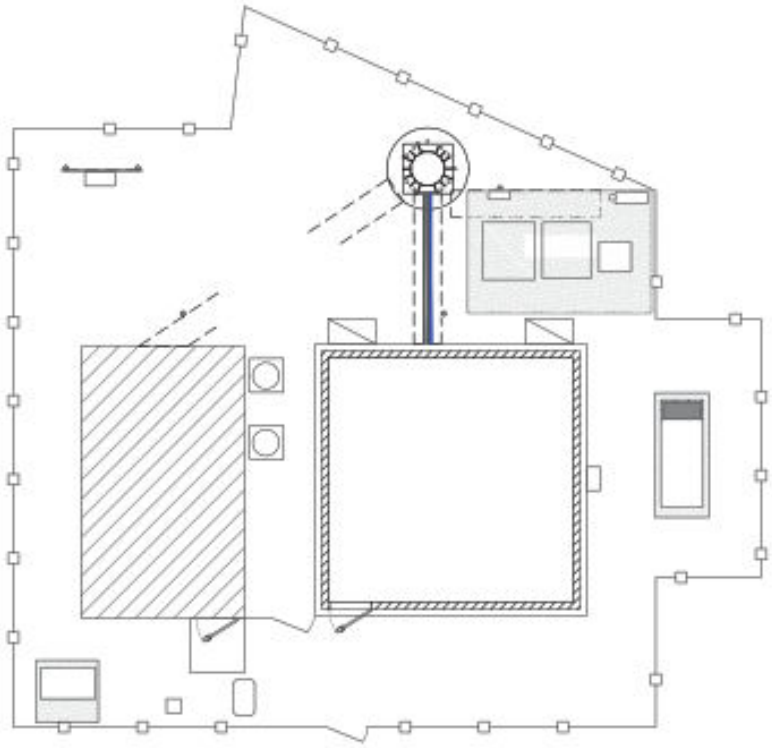
Sector B: Transmitting over Ground Level	% of MPE Limit:	*Distance from Antenna (ft.):
Accessible **General Population** MPE Limits:	**7.00%**	**0'**
Accessible **Occupational** MPE Limits:	**1.40%**	**0'**

Sector G: Transmitting over Ground Level	% of MPE Limit:	*Distance from Antenna (ft.):
Accessible **General Population** MPE Limits:	**7.00%**	**0'**
Accessible **Occupational** MPE Limits:	**1.40%**	**0'**

*Distance from Antenna indicates how far the emissions are predicted to exceed limits from the front of the antennas across a walkable surface.

b. Signage/Barrier Diagram

No action is required; the site is compliant.



10' grid size

Existing Sign

Proposed Sign

Existing Marker

Existing Barrier

Proposed Marker

Proposed Barrier

Carrier Color Code

Verizon | T-Mobile | Clearwire | US Cellular | Unknown

AT&T Mobility | Sprint | Cricket | Metro PCS

Final Compliant Configuration							
	GUIDELINES	**NOTICE**	**CAUTION**	**WARNING**	**NOC INFO**	**BARRIER/MARKER**	
Access Point(s)	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions
Alpha	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions
Beta	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions
Gamma	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions

NOTE: The table above represents EVERY compliance item that MUST be implemented at this location.

c. Signage/Barrier Installation Detail

Mitigation Actions Required												
	GUIDELINES		**NOTICE**		**CAUTION**		**WARNING**		**NOC INFO**		**BARRIER/MARKER**	
Access Point(s)	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions
Alpha	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions
Beta	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions
Gamma	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐[#]	☐	dimensions
	ADD	**REM**	**ADD**	**REM**	**ADD**	**REM**	**ADD**	**REM**	**ADD**	**REM**	**ADD ONLY**	

SPECIAL MITIGATION INSTRUCTIONS	
Items to be Installed	**Site Access Location** No action required. **Verizon Sector A** No action required. **Verizon Sector B** No action required. **Verizon Sector G** No action required.
Items to be Removed	N/A
Items to be Repaired/Replaced	N/A

5. Appendix C: RF Consultant Certifications

a. Preparer Certification

I, Matt Schulzinger, the preparer of this report, am fully aware of and familiar with the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I am also fully aware of and familiar with the Verizon Wireless Signage & Demarcation Policy. I have reviewed this Radio Frequency Exposure Assessment report and believe it to be both true and accurate to the best of my knowledge.

Matt Schulzinger 7/18/2022

b. Reviewer Certification

I, Yasir Alqadhili, the reviewer and approver of this report, am fully aware of and familiar with the Rules and Regulations of both the Federal Communications Commissions (FCC) and the Occupational Safety and Health Administration (OSHA) with regard to Human Exposure to Radio Frequency Radiation. I am also fully aware of and familiar with the Verizon Wireless Signage & Demarcation Policy. I have reviewed this Radio Frequency Exposure Assessment report and believe it to be both true and accurate to the best of my knowledge.

Yasir Alqadhili 7/18/2022

6. Appendix D: Reference Information

a. FCC Rules & Regulations

The Federal Communications Commission (FCC) has established safety guidelines relating to RF exposure from cell sites. The FCC developed those standards, known as Maximum Permissible Exposure (MPE) limits, in consultation with numerous other federal agencies, including the Environmental Protection Agency, the Food and Drug Administration, and the Occupational Safety and Health Administration. The standards were developed by expert scientists and engineers after extensive reviews of the scientific literature related to RF biological effects. The FCC explains that its standards "incorporate prudent margins of safety." The following represents explanations of the most applicable information:

Two Classifications for Exposure Limits

Occupational – Applies to situations in which persons are "exposed as a consequence of their *employment*" and are "*fully aware* of the potential for exposure and can *exercise control* over their exposure".	General Population – Applies to situations in which persons are "exposed as a consequence of their employment *may not be made fully aware* of the potential for exposure or *cannot exercise control* over their exposure". Generally speaking, those without significant and documented RF Safety & Awareness training would be in the General Population classification.

Environment Classification

Controlled – Applies to environments that are restricted or "controlled" in order to prevent access from members of the General Population classification.	Uncontrolled – Applies to environments that are unrestricted or "uncontrolled" that allow access from members of the General Population classification.

Limits for Occupational/Controlled Exposure		
Frequency Range (MHz)	**Power Density (S) (mW/cm^2)**	**Averaging Time $\|E\|^2$, $\|H\|^2$, or S (minutes)**
300-1500	f/300	6
1500-100,000	5	6
Limits for General Population/Uncontrolled Exposure		
Frequency Range (MHz)	**Power Density (S) (mW/cm^2)**	**Averaging Time $\|E\|^2$, $\|H\|^2$, or S (minutes)**
300-1500	f/1500	30
1500-100,000	1	30
f = frequency in MHz		

Significant Contribution to the RF Environment

Any carrier contributing an aggregate MPE percentage of *5* or more (to the applicable RF Environment Classification) is defined as a significant contributor. This means that if any area is determined to be out of compliance with FCC rules, all significant contributors are jointly responsible for correcting any deficiencies.

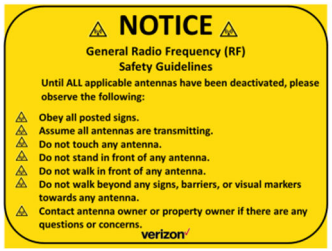
b. Occupational Safety and Health Administration (OSHA) Requirements

A formal adopter of FCC Standards, OSHA stipulates that those in the Occupational classification must complete training in the following: RF Safety, RF Awareness, and Utilization of Personal Protective Equipment. OSHA also provides options for Hazard Prevention and Control:

Hazard Prevention	Control
• Utilization of good equipment • Enact control of hazard areas • Limit exposures • Employ medical surveillance and accident response	• Employ Lockout/Tag out • Utilize personal alarms & protective clothing • Prevent access to hazardous locations • Develop or operate an administrative control program

c. RF Signage

Areas or portions of any transmitter site may be susceptible to high power densities that could cause personnel exposures in excess of the FCC guidelines. These areas must be demarcated by conspicuously posted signage that identifies the potential exposure. Signage MUST be viewable regardless of the viewer's position.

GUIDELINES	NOTICE	CAUTION	WARNING
This sign will inform anyone of the basic precautions to follow when entering an area with transmitting radiofrequency equipment.	This sign indicates that RF emissions may exceed the FCC General Population MPE limit.	This sign indicates that RF emissions may exceed the FCC Occupational MPE limit.	This sign indicates that RF emissions may exceed at least 10x the FCC Occupational MPE limit.
			

NOC INFORMATION	
Information signs are used as a means to provide contact information for any questions or concerns. They will include specific cell site identification information and the Verizon Wireless Network Operations Center phone number.	

d. Physical Barriers

Physical barriers are control measures that require awareness and participation of personnel. Physical barriers are employed as an additional administration control to complement RF signage and physically demarcate an area in which RF exposure levels may exceed the FCC General Population limit. **Example**: chain-connected stanchions

e. Indicative Markers

Indicative markers are visible control measures that require awareness and participation of personnel, as they cannot physically prevent someone from entering an area of potential concern. Indicative markers are employed as an additional administration control to complement RF signage and visually demarcate an area in which RF exposure levels may exceed the FCC General Population limit. **Example**: paint stripes