



VICINITY MAP



AMERICAN TOWER®

ATC SITE NAME: BLACK FOREST
 ATC SITE NUMBER: 302460
 VERIZON SITE NAME: BLACK FOREST
 VERIZON SITE NUMBER: 5000265154
 VERIZON FUZE PID: 16583882
 SITE ADDRESS: 4584 HODGEN ROAD
 COLORADO SPRINGS, CO 80908



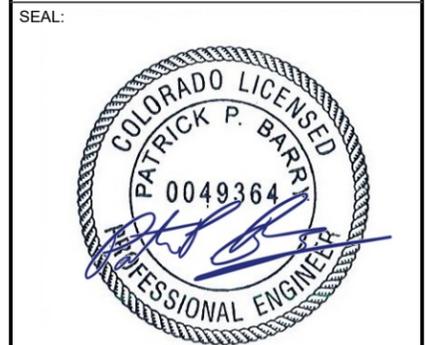
LOCATION MAP

AMERICAN TOWER®
ATC TOWER SERVICES LLC
 1 FENTON MAIN
 SUITE 300
 CARY, NC 27511
 PHONE: (919) 468-0112

THE USE AND PUBLICATION OF THESE DRAWINGS SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH THEY ARE PREPARED. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO AMERICAN TOWER OR THE SPECIFIED CARRIER IS STRICTLY PROHIBITED. NEITHER THE ARCHITECT NOR THE ENGINEER WILL BE PROVIDING ON-SITE CONSTRUCTION REVIEW OF THIS PROJECT. CONTRACTOR(S) MUST VERIFY ALL DIMENSIONS AND ADVISE AMERICAN TOWER OR THE SPECIFIED CARRIER OF ANY DISCREPANCIES. ANY PRIOR ISSUANCE OF THIS DRAWING IS SUPERSEDED BY THE LATEST VERSION.

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	AM	12/20/24
1	COMPLIANCE CODES	AM	01/06/25

ATC SITE NUMBER:
302460
 ATC SITE NAME:
BLACK FOREST
 VERIZON SITE NAME:
BLACK FOREST
 SITE ADDRESS:
 4584 HODGEN ROAD
 COLORADO SPRINGS, CO 80908



VERIZON AMENDMENT DRAWINGS

COMPLIANCE CODE	PROJECT SUMMARY	PROJECT DESCRIPTION	SHEET INDEX				
ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNMENT AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES. 2021 IBC NATIONAL ELECTRICAL CODE (NFPA 70, NEC 2023)	<u>SITE ADDRESS:</u> 4584 HODGEN ROAD COLORADO SPRINGS, CO 80908 COUNTY: EL PASO <u>REGISTERED COORDINATES:</u> LATITUDE: 39.07115277 39° 4' 16.15" N LONGITUDE: -104.7431 104° 44' 35.16" W GROUND ELEVATION: 7679' AMSL	THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW: REMOVE (12) ANTENNA(s), (9) RRH(s), (6) DIPLEXER(s), (2) OVP(s), AND (12) 1-5/8" COAX & (1) 1-1/4" FIBER CABLE(s) INSTALL MOUNT MODIFICATIONS, (3) SBS MOUNT(s), (9) ANTENNA(s), (3) BACK-TO-BACK BRACKET(s), (6) RRH(s), (2) OVP(s), AND (1) 1-5/8" 6X12 HYBRID CABLE(s) EXISTING (1) 1-5/8" 6X12 HYBRID CABLE(s) TO REMAIN GROUND SOW: REMOVE EXISTING CDMA EQUIPMENT X2 AND FILTER RACK X1 REPLACE (2) 6X12 OVPS WITH (2) NEW 12X24 OVPS EQUIPMENT ROOM REPLACE PDF WITH NEW 48V DC PDF WITH 4 RECTIFIERS REPLACE EXISTING BATTERIES WITH 2 STRINGS SAFT TLX-180'S LOCATED ON NEW SHELVES UNDER NEW PDF INSTALL 1 NEW 6651 BBU	SHEET NO: G-001 G-002 C-101 C-201 C-401 C-501 E-501	DESCRIPTION: TITLE SHEET GENERAL NOTES DETAILED SITE PLAN TOWER ELEVATION ANTENNA INFORMATION & SCHEDULE CONSTRUCTION DETAILS GROUNDING DETAILS SUPPLEMENTAL SHEETS (6 PAGES)	REV: 1 0 0 0 0 0	DATE: 01/06/25 12/20/24 12/20/24 12/20/24 12/20/24 12/20/24	BY: AM AM AM AM AM AM
	<u>PROJECT TEAM</u> <u>TOWER OWNER:</u> AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801 <u>ENGINEER:</u> ATC TOWER SERVICES LLC 1 FENTON MAIN, STE 300 CARY, NC 27511 <u>PROPERTY OWNER:</u> 4584 HODGEN ROAD COLORADO SPRINGS, CO 80908-3006	<u>APPLICANT:</u> CHAD WEBER VERIZON WIRELESS CONSTRUCTION ENGINEER 10000 PARK MEADOWS DR. LONE TREE, CO 80124 303-345-8242	<u>PROJECT NOTES</u> 1. THE FACILITY IS UNMANNED. 2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE. 3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE. 4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED. 5. HANDICAP ACCESS IS NOT REQUIRED. 6. THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).	<u>CONTRACTOR PMI REQUIREMENTS</u> PMI ACCESSED AT: HTTPS://PMI.VZWSMART.COM SMART TOOL VENDOR PROJECT NUMBER: 10243675 VZW LOCATION CODE (PSLC): 5000265154 ***PMI AND REQUIREMENTS ALSO EMBEDDED IN MOUNT ANALYSIS REPORT MOUNT MODIFICATION REQUIRED: YES VZW APPROVED SMART KIT VENDORS: REFER TO MOUNT MODIFICATION DRAWINGS PAGES FOR VZW SMART KIT APPROVED VENDORS			
<u>UTILITY COMPANIES</u> POWER COMPANY: MOUNTAIN VIEW ELECTRIC PHONE: (800) 388-9881 TELEPHONE COMPANY: CENTURY LINK PHONE: (800) 784-3414		<u>PROJECT LOCATION DIRECTIONS</u> I-25 EXIT 161, GO EAST ON HWY 105, SOUTH ON HWY 83, EAST ON HODGEN ROAD TO SITE.					

verizon
 ATC JOB NO: 14885770_GO
 CUSTOMER ID: BLACK FOREST
 CUSTOMER #: 5000265154

TITLE SHEET

SHEET NUMBER: **G-001**
 REVISION: **1**



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GENERAL CONSTRUCTION NOTES:

1. OWNER FURNISHED MATERIALS, VERIZON "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL
 - A. BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
 - B. AC/TELCO INTERFACE BOX (PPC)
 - C. ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
 - D. TOWERS, MONOPOLES
 - E. TOWER LIGHTING
 - F. GENERATORS & LIQUID PROPANE TANK
 - G. ANTENNA STANDARD BRACKETS, FRAMES AND PIPES FOR MOUNTING
 - H. ANTENNAS (INSTALLED BY OTHERS)
 - I. TRANSMISSION LINE
 - J. TRANSMISSION LINE JUMPERS
 - K. TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
 - L. TRANSMISSION LINE GROUND KITS
 - M. HANGERS
 - N. HOISTING GRIPS
 - O. BTS EQUIPMENT
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS. IT IS THE POSITION OF VERIZON TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.
3. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSIEIA/NTIA-222, AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS.
4. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
6. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
7. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
8. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
9. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
11. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
12. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE VERIZON REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE VERIZON REP PRIOR TO PROCEEDING.
13. EACH CONTRACTOR SHALL COOPERATE WITH THE VERIZON REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
14. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE VERIZON CONSTRUCTION MANAGER.
15. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
16. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE VERIZON REP AND ENGINEER OF RECORD IMMEDIATELY.
17. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
18. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
19. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH AMERICAN TOWER CORPORATION (ATC) AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
20. CONTRACTOR SHALL FURNISH VERIZON AND AMERICAN TOWER CORPORATION (ATC) WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
21. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH VERIZON REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.

22. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH VERIZON REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY VERIZON MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
23. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH VERIZON SPECIFICATIONS AND REQUIREMENTS.
24. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO VERIZON FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
25. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO VERIZON SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
26. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
27. CONTRACTOR SHALL NOTIFY VERIZON REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
28. WHEN THE PROJECT SCOPE REQUIRES THE USE OF THE SAFETY CLIMB, THE GENERAL CONTRACTOR SHALL ENSURE THE SAFETY CLIMB IS FREE OF OBSTRUCTIONS, NOT RUBBING ON OR TRAPPED BY ANY INSTALLED CUSTOMER EQUIPMENT, IS VISUALLY TAUT, MEETS MANUFACTURER INSTALLATION SPECIFICATIONS, AND IS FIRMLY SECURED AT ALL CABLE GUIDE LOCATIONS UPON PROJECT COMPLETION.
29. COMPLETION OF PROJECT SHALL NOT OBSTRUCT, TRAP, LOOSEN, OR OTHERWISE CAUSE FAILURE TO MEET MANUFACTURER INSTALLATION REQUIREMENTS FOR THE SAFETY CLIMB.
30. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
31. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
32. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE VERIZON REP. ANY WORK FOUND BY THE VERIZON REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
33. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.
34. VERIZON FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE VERIZON WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATE, PROTECTED AND INSTALLED BY THE CONTRACTOR WITH ALL APPURTENANCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING IT UP.
35. VERIZON OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OWN OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO VERIZON OR THEIR ARCHITECT/ENGINEER.

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

SPECIAL CONSTRUCTION

ANTENNA INSTALLATION NOTES:

1. WORK INCLUDED:
 - A. ANTENNA AND COAXIAL/HYBRID CABLES ARE FURNISHED BY VERIZON UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL.
 - B. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND VERIZON SPECIFICATIONS.
 - C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
 - D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE.
 - E. INSTALL COAXIAL/HYBRID CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTIONS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL/HYBRID CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.
2. ANTENNA AND COAXIAL/HYBRID CABLE GROUNDING:
 - A. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTORS/SPLICE WEATHERPROOFING KIT #221213 OR EQUAL.

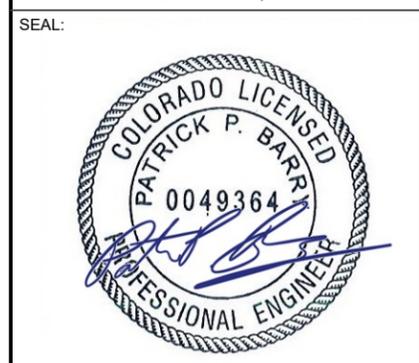
ALL DISCREPANCIES FROM WHAT IS SHOWN ON THESE CONSTRUCTION DRAWINGS SHALL BE COMMUNICATED TO ATC ENGINEERING IMMEDIATELY FOR CORRECTION OR RE-DESIGN. FAILURE TO COMMUNICATE DIRECTLY WITH ATC ENGINEERING OR ANY CHANGES FROM THE DESIGN CONDUCTED WITHOUT PRIOR APPROVAL FROM ATC ENGINEERING SHALL BE THE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



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ATC SITE NAME:
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VERIZON SITE NAME:
BLACK FOREST
SITE ADDRESS:
4584 HODGEN ROAD
COLORADO SPRINGS, CO 80908



Digitally Signed: 2025-01-06

verizon	
ATC JOB NO:	14885770_G0
CUSTOMER ID:	BLACK FOREST
CUSTOMER #:	5000265154

GENERAL NOTES	
SHEET NUMBER: G-002	REVISION: 0

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SITE PLAN NOTES:

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

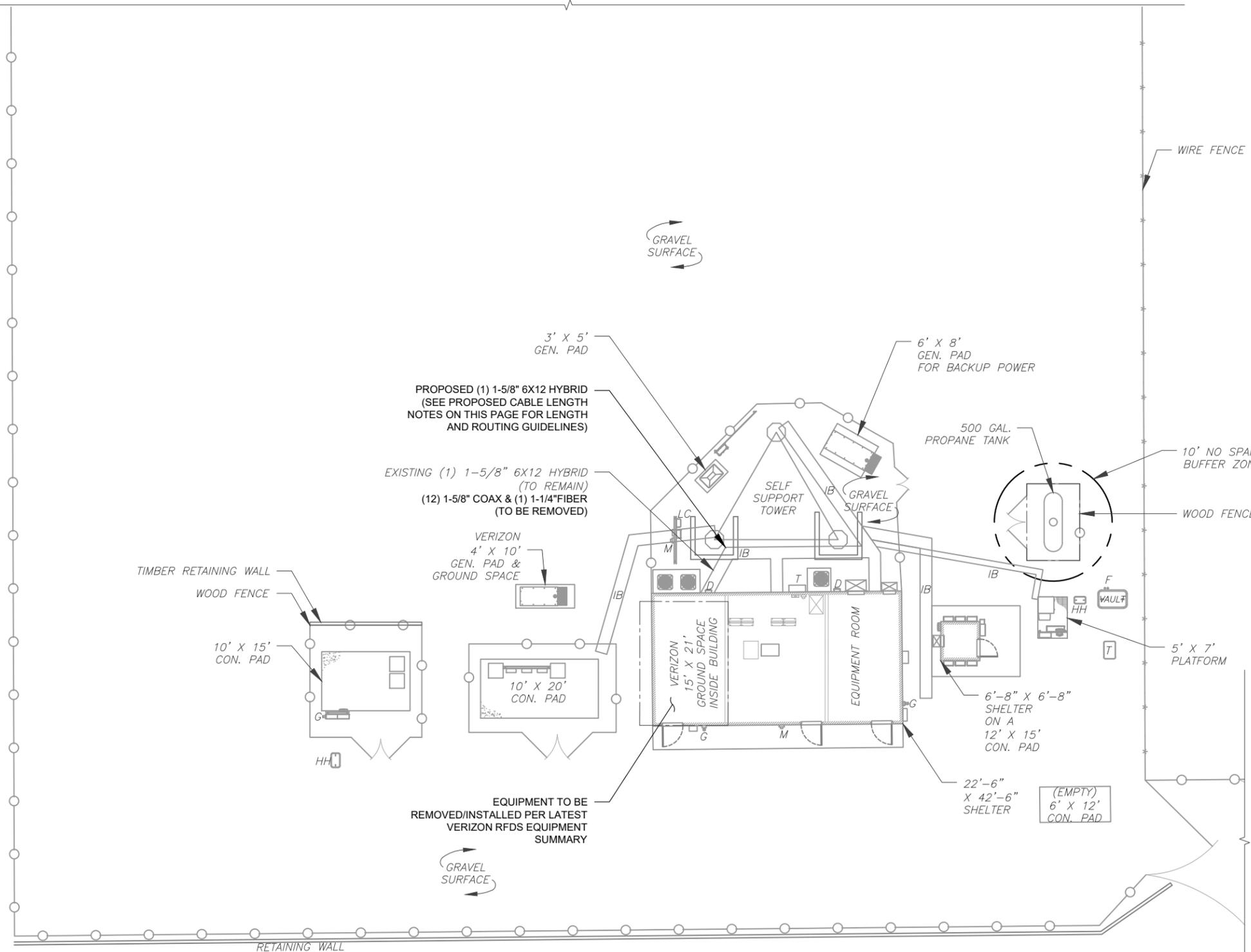
- REPLACE (2) 6X12 OVPS WITH (2) NEW 12X24 OVPS EQUIPMENT ROOM
- REMOVE EXISTING CDMA EQUIPMENT X2 AND FILTER RACK X1
- REPLACE PDF WITH NEW 48V DC PDF WITH 4 RECTIFIERS
- REPLACE EXISTING BATTERIES WITH 2 STRINGS SAFT TLX-180'S LOCATED ON NEW SHELVES UNDER NEW PDF
- INSTALL 1 NEW 6651 BBU

LEGEND

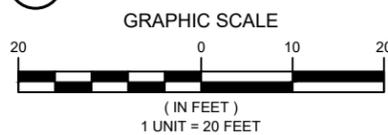
⊗	GROUNDING TEST WELL
ATS	AUTOMATIC TRANSFER SWITCH
B	BOLLARD
CSC	CELL SITE CABINET
D	DISCONNECT
E	ELECTRICAL
F	FIBER
GEN	GENERATOR
G	GENERATOR RECEPTACLE
HH, V	HAND HOLE, VAULT
IB	ICE BRIDGE
K	KENTROX BOX
LC	LIGHTING CONTROL
M	METER
PB	PULL BOX
PP	POWER POLE
T	TELCO
TRN	TRANSFORMER
—	CHAINLINK FENCE

PROPOSED CABLE NOTES:

- ESTIMATED LENGTH OF PROPOSED CABLE IS **221'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES). CDS DEFER TO GREATEST CABLE LENGTH.
- ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. WHERE POSSIBLE UTILIZE EXISTING CABLE SUPPORT STRUCTURES AS PROVIDED FOR CARRIER TO ADEQUATELY SECURE CABLES, USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER. OTHERWISE, ATTACH CABLES TO HORIZONTAL OR DIAGONAL TOWER MEMBERS USING PROPOSED STAINLESS STEEL ADAPTERS (DO NOT ATTACH TO TOWER LEG).



1 DETAILED SITE PLAN



AMERICAN TOWER®
ATC TOWER SERVICES LLC
 1 FENTON MAIN
 SUITE 300
 CARY, NC 27511
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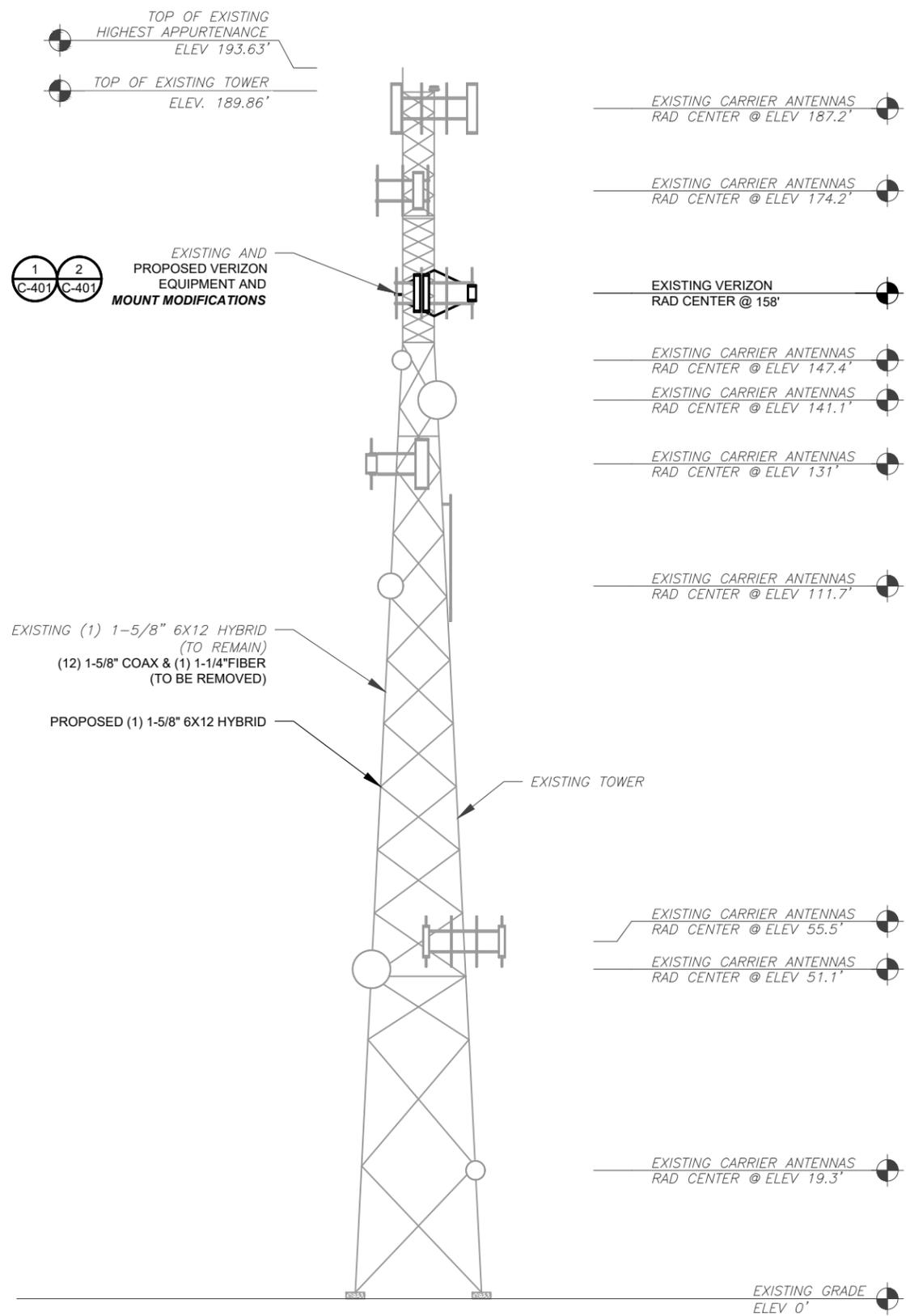
ATC JOB NO:	14885770_GO
CUSTOMER ID:	BLACK FOREST
CUSTOMER #:	5000265154

DETAILED SITE PLAN

SHEET NUMBER:	REVISION:
C-101	0

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FAA REGISTERED HEIGHT: 196' AGL



PER MOUNT ANALYSIS COMPLETED BY COLLIERS ENGINEERING & DESIGN, DATED 07/23/2024, THE EXISTING MOUNT MUST BE MODIFIED TO ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION DETAILED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.



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 4584 HODGEN ROAD
 COLORADO SPRINGS, CO 80908

SEAL:



Digitally Signed: 2025-01-06



ATC JOB NO: 14885770_GO
 CUSTOMER ID: BLACK FOREST
 CUSTOMER #: 5000265154

TOWER ELEVATION	
SHEET NUMBER: C-201	REVISION: 0

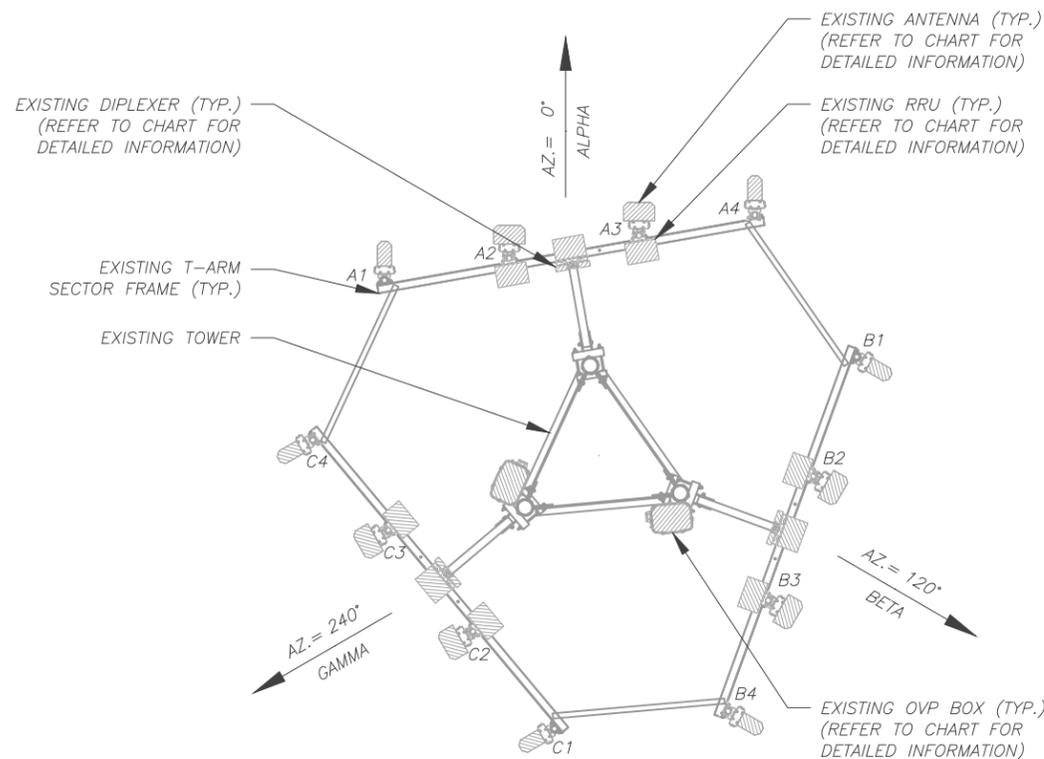
ALL ELEVATIONS REFLECT ABOVE GROUND LEVEL (A.G.L.)

TOWER NOTE:

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

1 TOWER ELEVATION
 SCALE: N.T.S.

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1 EXISTING ANTENNA PLAN

SCALE: N.T.S.



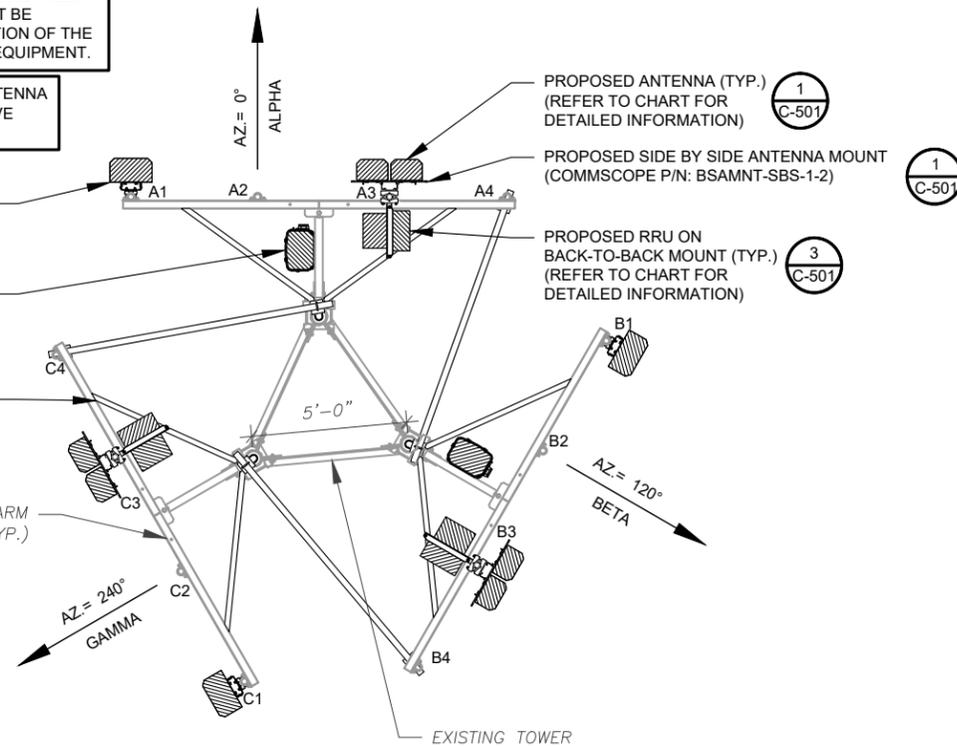
PER MOUNT ANALYSIS COMPLETED BY COLLIERS ENGINEERING & DESIGN, DATED 07/23/2024, THE EXISTING MOUNT **MUST BE MODIFIED** TO ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT MODIFICATION DETAILED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.

CONTRACTOR SHALL RE-ORIENT ANTENNA MOUNT(S) AS NECESSARY TO ACHIEVE PROPOSED ANTENNA AZIMUTHS

- 2 PROPOSED 5G ANTENNA (TYP.) (REFER TO CHART FOR DETAILED INFORMATION)
- 4 PROPOSED OVP BOX (REFER TO CHART FOR DETAILED INFORMATION)

PROPOSED MOUNT MODIFICATIONS (REFER TO SHEETS AT THE END OF THIS PLAN SET)

EXISTING T-ARM SECTOR FRAME (TYP.)



2 FINAL ANTENNA PLAN

SCALE: N.T.S.



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REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	AM	12/20/24

ATC SITE NUMBER:
 302460
 ATC SITE NAME:
BLACK FOREST
 VERIZON SITE NAME:
BLACK FOREST
 SITE ADDRESS:
 4584 HODGEN ROAD
 COLORADO SPRINGS, CO 80908

SEAL:



Digitally Signed: 2025-01-06



ATC JOB NO: 14885770_G0
 CUSTOMER ID: BLACK FOREST
 CUSTOMER #: 5000265154

ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:
C-401
 REVISION:
0

EXISTING ANTENNA SCHEDULE									
LOCATION			ANTENNA SUMMARY				NON ANTENNA SUMMARY		
SECTOR	RAD	AZ	POS	ANTENNA	BAND	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS	
ALPHA		0°	A1	LPA-80090/4CF	850 LTE	RMV	-	-	
			A2	HEX656CW0000X	700/1900/AWS/AWS3 LTE	RMV	B25 RRH4x30 B13 RRH4X30-4R 700U B66A RRH 4x45 (2) CCDP-565-1W	RMV RMV	
			A3	HEX656CW0000X	-	RMV	-	-	
			A4	LPA-80090/4CF	-	RMV	-	-	
BETA	158'	120°	B1	LPA-80090/4CF	850 LTE	RMV	-	-	
			B2	HEX656CW0000X	700/1900/AWS/AWS3 LTE	RMV	B25 RRH4x30 B13 RRH4X30-4R 700U B66A RRH 4x45 (2) CCDP-565-1W	RMV RMV	
			B3	HEX656CW0000X	-	RMV	-	-	
			B4	LPA-80090/4CF	-	RMV	-	-	
GAMMA		240°	C1	LPA-80090/4CF	850 LTE	RMV	-	-	
			C2	HEX656CW0000X	700/1900/AWS/AWS3 LTE	RMV	B25 RRH4x30 B13 RRH4X30-4R 700U B66A RRH 4x45 (2) CCDP-565-1W	RMV RMV	
			C3	HEX656CW0000X	-	RMV	-	-	
			C4	LPA-80090/4CF	-	RMV	-	-	

- NOTES**
- GC TO VERIFY THE FINAL RFDS MATCHES THE FINAL CONSTRUCTION DRAWINGS. GC TO NOTIFY ATC PM OF ANY DISCREPANCY PRIOR TO INSTALLING THE EQUIPMENT.
 - GC TO CAP ALL UNUSED PORTS.
 - GC TO CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.
- STATUS ABBREVIATIONS**
- RMV: TO BE REMOVED
 RMN: TO REMAIN
 REL: TO BE RELOCATED
 ADD: TO BE ADDED
- CABLE LENGTHS FOR JUMPERS**
- JUNCTION BOX TO RRU: 15'
 RRU TO ANTENNA: 10'

FINAL ANTENNA SCHEDULE									
LOCATION			ANTENNA SUMMARY				NON ANTENNA SUMMARY		
SECTOR	RAD	AZ	POS	ANTENNA	BAND	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS	
ALPHA		0°	A1	AIR 6419 B77D	L-SUB6 5G	ADD	-	-	
			A2	-	-	-	-	-	
			A3	(2) NHH-65B-R2B	700/850/1900/AWS/AWS3 LTE	ADD	RADIO 4890HP 48B2 48B66 S RADIO 4449 - B13&B5	ADD ADD	
			A4	-	-	-	-	-	
BETA	158'	120°	B1	AIR 6419 B77D	L-SUB6 5G	ADD	-	-	
			B2	-	-	-	-	-	
			B3	(2) NHH-65B-R2B	700/850/1900/AWS/AWS3 LTE	ADD	RADIO 4890HP 48B2 48B66 S RADIO 4449 - B13&B5	ADD ADD	
			B4	-	-	-	-	-	
GAMMA		240°	C1	AIR 6419 B77D	L-SUB6 5G	ADD	-	-	
			C2	-	-	-	-	-	
			C3	(2) NHH-65B-R2B	700/850/1900/AWS/AWS3 LTE	ADD	RADIO 4890HP 48B2 48B66 S RADIO 4449 - B13&B5	ADD ADD	
			C4	-	-	-	-	-	

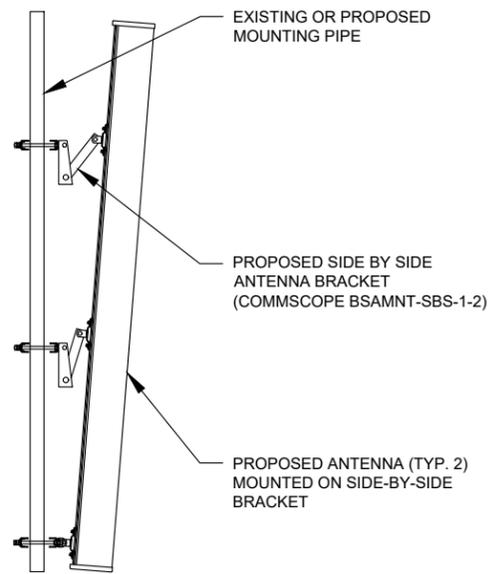
EXISTING FIBER DISTRIBUTION / OVP BOX		EXISTING CABLING SUMMARY	
MODEL NUMBER	STATUS	CABLE QTY, SIZE, TYPE	STATUS
-	-	(1) 1-5/8" 6X12 HYBRID	RMN
(2) DB-T1-6Z-12AB-0Z	RMV	(12) 1-5/8" COAX & (1) 1-1/4" FIBER	RMV

3 EQUIPMENT SCHEDULES

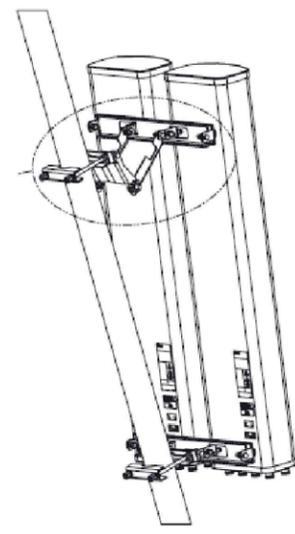
FINAL FIBER DISTRIBUTION / OVP BOX		FINAL CABLING SUMMARY	
MODEL NUMBER	STATUS	CABLE QTY, SIZE, TYPE	STATUS
-	-	(1) 1-5/8" 6X12 HYBRID	RMN
(2) RCMD-6627-PF-48 (OVP12)	ADD	(1) 1-5/8" 6X12 HYBRID	ADD

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EXISTING/PROPOSED MOUNTS AND/OR MOUNT MODIFICATIONS NOT SHOWN FOR CLARITY. REFER TO ANTENNA PLANS, MOUNT ANALYSES AND/OR MOUNT MODIFICATION DOCUMENTS FOR ADDITIONAL DETAIL.

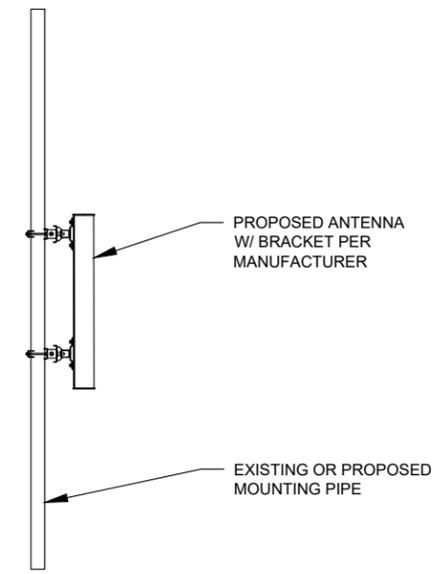


PROFILE VIEW

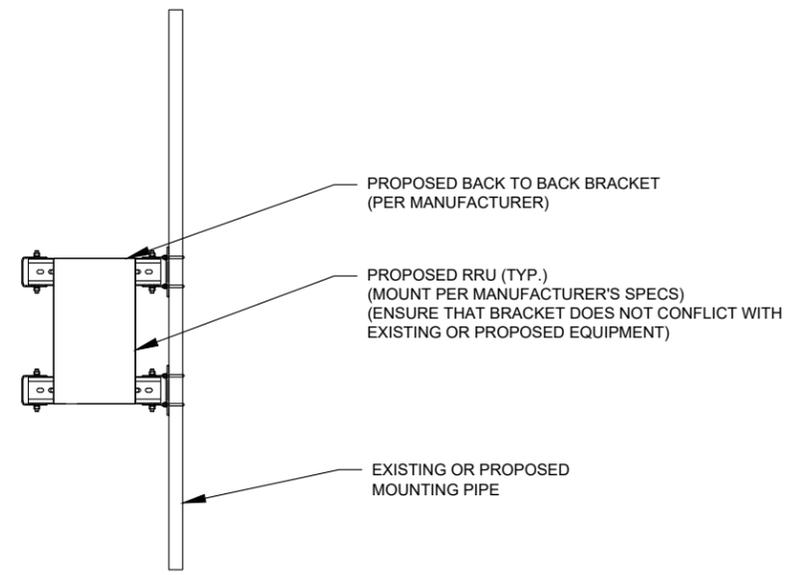


ISOMETRIC VIEW (BY MANUFACTURER)

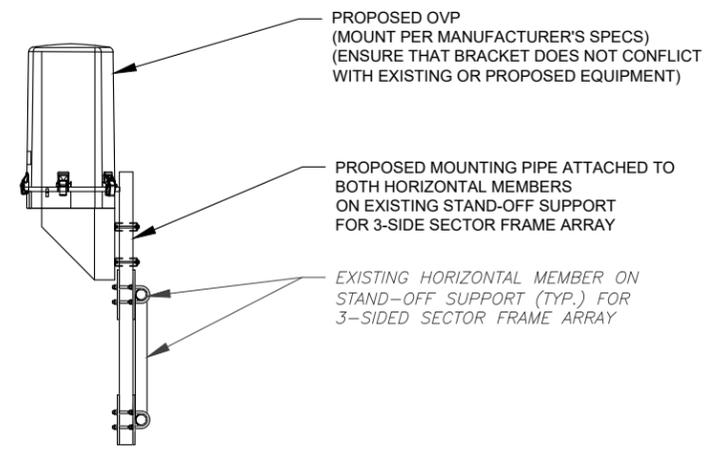
1 PROPOSED ANTENNA MOUNTING DETAIL - TYPICAL
SCALE: N.T.S.



2 PROPOSED 5G ANTENNA MOUNTING DETAIL - TYPICAL
SCALE: N.T.S.



3 PROPOSED RRU MOUNTING DETAIL - TYPICAL
SCALE: N.T.S.



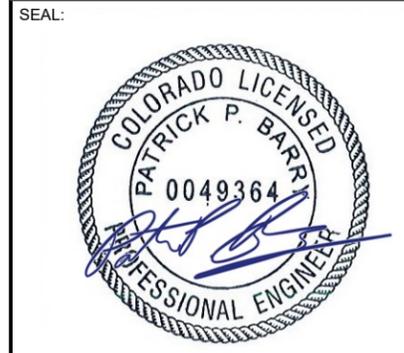
4 PROPOSED OVP MOUNTING DETAIL - TYPICAL
SCALE: N.T.S.

AMERICAN TOWER®
ATC TOWER SERVICES LLC
 1 FENTON MAIN
 SUITE 300
 CARY, NC 27511
 PHONE: (919) 468-0112

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REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	AM	12/20/24

ATC SITE NUMBER:
302460
 ATC SITE NAME:
BLACK FOREST
 VERIZON SITE NAME:
BLACK FOREST
 SITE ADDRESS:
 4584 HODGEN ROAD
 COLORADO SPRINGS, CO 80908



Digitally Signed: 2025-01-06

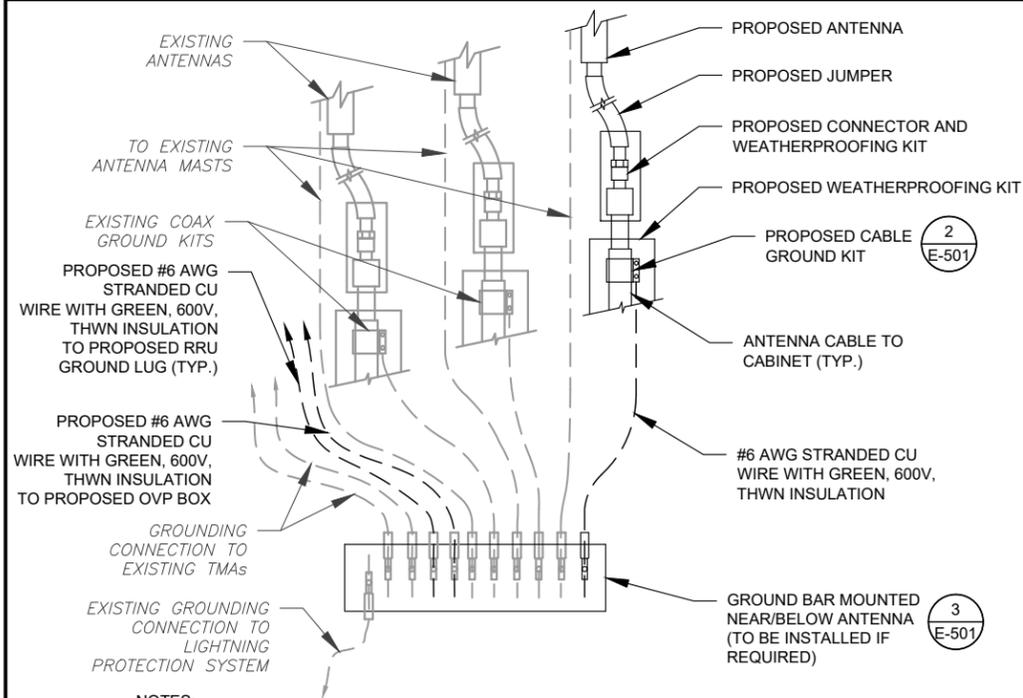


ATC JOB NO:	14885770_G0
CUSTOMER ID:	BLACK FOREST
CUSTOMER #:	5000265154

CONSTRUCTION DETAILS

SHEET NUMBER: C-501	REVISION: 0
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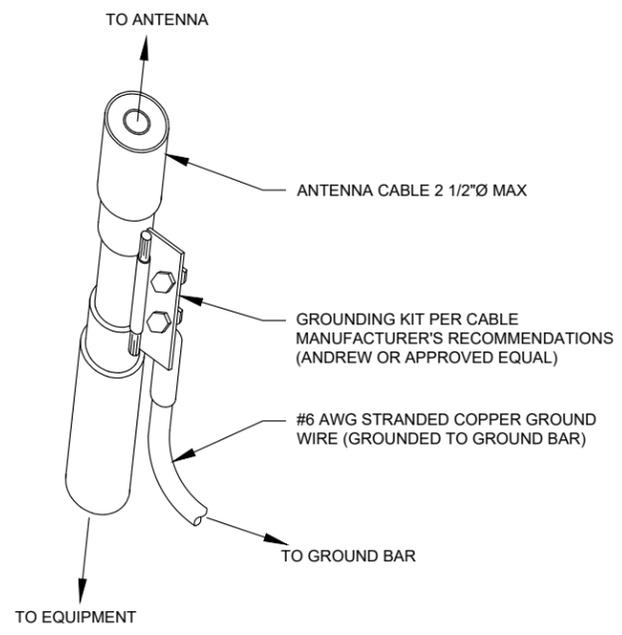
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NOTES:

1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH VERIZON GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH VERIZON GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

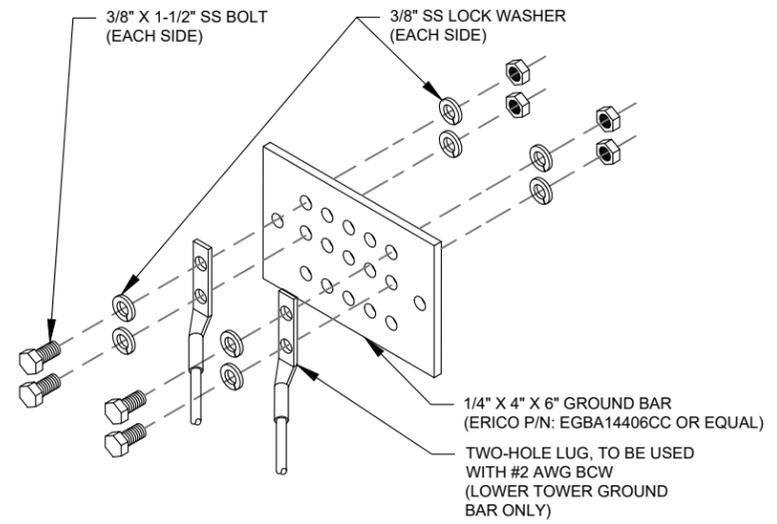
1 TYPICAL ANTENNA GROUNDING DIAGRAM
SCALE: N.T.S.



GROUND KIT NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

2 CABLE GROUND KIT CONNECTION DETAIL
SCALE: N.T.S.



GROUND BAR NOTES:

1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

3 TOWER GROUND BAR DETAIL
SCALE: N.T.S.

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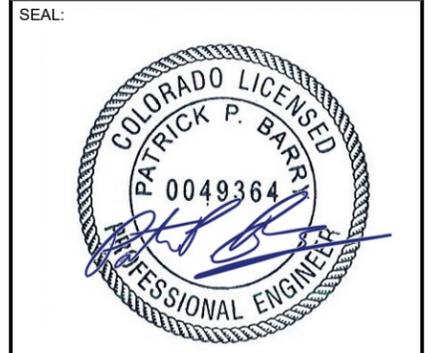
REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	AM	12/20/24

ATC SITE NUMBER:
302460

ATC SITE NAME:
BLACK FOREST

VERIZON SITE NAME:
BLACK FOREST

SITE ADDRESS:
4584 HODGEN ROAD
COLORADO SPRINGS, CO 80908



Digitally Signed: 2025-01-06



ATC JOB NO: 14885770_G0
CUSTOMER ID: BLACK FOREST
CUSTOMER #: 5000265154

GROUNDING DETAILS

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

Product Specifications



NHH65BR2B
 Multi-band Antenna, 698-806 and 2x 1905-2360 MHz, 65° horizontal beamwidth, internal RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package
- Internal 5BT on low and high band allow remote RET control from the radio over the RF jumper cable
- Separate RS-485 RET input/output for low and high band
- One RET for low band and one RET for both high bands to ensure same tilt level for 4x Rx or 4x MIMO

Electrical Specifications

Frequency Band, MHz	698-806	806-896	1695-1880	1850-1990	1920-2200	2300-2360
Gain, dBi	14.9	15.0	17.7	17.9	18.4	18.7
Beamwidth, Horizontal, degrees	65	60	71	69	64	57
Beamwidth, Vertical, degrees	12.4	11.2	5.7	5.2	4.9	4.6
Beam Tilt, degrees	0-14	0-14	0-7	0-7	0-7	0-7
USLS (First Lobe), dB	13	14	18	18	19	18
Front-to-Back Ratio at 180°, dB	30	29	31	30	29	31
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR Return Loss, dB	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0	1.5 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	350
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm					

Electrical Specifications, BASTA*

Frequency Band, MHz	698-806	806-896	1695-1880	1850-1990	1920-2200	2300-2360
Gain by all Beam Tilts, average, dBi	14.5	14.5	17.3	17.7	18.1	18.5
Gain by all Beam Tilts Tolerance, dBi	±0.6	±1.1	±0.4	±0.4	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0° 14.4	0° 14.7	0° 17.2	0° 17.6	0° 18.0	0° 18.3
	7° 14.6	7° 14.7	4° 17.3	4° 17.7	4° 18.2	4° 18.5
	14° 14.3	14° 14.1	7° 17.3	7° 17.7	7° 18.1	7° 18.6
Beamwidth, Horizontal Tolerance, degrees	±2	±2.1	±3	±4.1	±6.5	±2.9
Beamwidth, Vertical Tolerance, degrees	±0.7	±0.7	±0.3	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	13	14	16	16	17	15
Front-to-Back Total Power at 180° ± 30°, dB	23	22	27	27	25	25
CPR at Beamwidth, dB	22	21	23	23	22	19
CPR at Sector, dB	10	7	16	13	11	4

* Commscope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper [Time to Raise the Bar on B5G](#).

General Specifications

Antenna Type	Sector with internal RET and bias tee
Band	Multi-band
Brand	DualPol®
Operating Frequency Band	1695 - 2360 MHz 698 - 896 MHz
Performance Note	Outdoor usage

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Product Specifications



NHH65BR2B

Mechanical Specifications

Color	Light gray
Lightning Protection	dc Ground inner/outer conductor, non bias tee ports
Radiator Material	Low loss circuit board
Reflector Material	Fiberglass, UV resistant
RF Connector Interface	Aluminum
RF Connector Location	7-16 DIN Female
RF Connector Quantity, total	Bottom
Wind Loading, frontal	6 610.0 N @ 150 km/h 137.1 lbf @ 150 km/h
Wind Loading, lateral	195.0 N @ 150 km/h 43.8 lbf @ 150 km/h
Wind Loading, rear	217.0 N @ 150 km/h 48.8 lbf @ 150 km/h
Wind Speed, maximum	161.2 km/h 100 mph 241 km/h 150 mph

Dimensions

Depth	180.0 mm 7.1 in
Length	1828.0 mm 72.0 in
Width	301.0 mm 11.9 in
Net Weight, without mounting kit	19.8 kg 43.7 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10-30 Vdc
Internal Bias Tee	Port 1 Port 3
Internal RET	High band (1) Low band (1)
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/AISG 2.0 (Single RET)
RET Interface	8-pin DIN Female 8-pin DIN Male
RET Interface quantity	2 female 2 male

Packed Dimensions

Depth	299.0 mm 11.8 in
Length	1932.0 mm 76.9 in
Width	409.0 mm 16.1 in
Shipping Weight	32.3 kg 71.2 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

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AIR 6419 B77D/ C-Band

- Advanced Antenna System (AAS)
- 64TX/64RX with 192 AE, (3x1)x(4x8) x-pol
- Up to 320W, PSD 4W/MHz
- EIRP up to 79 dBm
- Up to 200 MHz BW
- Max total carrier BW: 200MHz for NR
- Support number of layers: DL/UL 16/8

AIR 6419 B77D/ C-Band	Height	Width	Depth	Weight
w/o protruding items	28.3 in (717 mm)	18.1 in (468 mm)	7.25 in (184 mm)	64 lbs (28.6 Kg)
w protruding items	31.3 in (793 mm)	18.1 in (468 mm)	9.1 in (230 mm)	

The weight is given with 40% occupancy.

- 3 x 25 Gbps eCPRI
- -48 VDC (3-wire or 2-wire), Fuse Minimum 40 A, maximum 50 A
- Power consumption with 100% Load @ 25C is 1200W
- -40 to +55°C

Pending Commercial Agreements



max measurements/ will not exceed

BSAMNT-SBS-1-2

Side-By-Side Mounting Kit to mount two antennas on a pipe with 2.375 - 4.5 inch (60 - 115 mm) diameter

- Supports SBNHH and NHH 65° and 85° antennas

Product Classification

Product Type: Mounting kit

General Specifications

Application: Outdoor
 Color: Silver

Dimensions

Compatible Diameter, maximum: 114.3 mm | 4.5 in
 Compatible Diameter, minimum: 61 mm | 2.402 in
 Weight, net: 11.6 kg | 25.574 lb

Material Specifications

Material Type: Galvanized steel

Packaging and Weights

Included: Brackets | Hardware
 Packaging quantity: 1
 Weight, gross: 12.3 kg | 27.117 lb

Regulatory Compliance/Certifications

Agency	Classification
CHINA-RoHS	Below maximum concentration value
ISO 9001:2015	Designed, manufactured and/or distributed under this quality management system
REACH-SVHC	Compliant as per SVHC revision on www.commscope.com/ProductCompliance
RoHS	Compliant



Page 1 of 2

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1

EQUIPMENT SPECIFICATIONS

SCALE: N.T.S.

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:

R-601

REVISION:

0

Radio 4890HP 48B2 48B66 S

- 8 RF ports, 4T8R per band (S for TX)
- B2: 4x60W
- B66: 4x60W
- Up to 480W in total RF power
- L, NR, NB-IoT
- 2x 2.5/4.9/9.8/10.1/24.3 Gbps CPRI/eCPRI

Radio 4890HP 48B2 48B66 S	Height	Width	Depth	Weight
wo protruding items	17.5 In (444 mm)	15.2 In (384 mm)	7.0 In (176 mm)	~69.5 lbs (~31.5 Kg)
w protruding items	20.6 In (522 mm)	15.7 In (397 mm)	7.2 In (182 mm)	

- 48 VDC 2-wire (single DC-connector),
- AISG v3.0 TMA & RET support via RS-485 or RF connectors
- Type 4.3-10 RF + connectors
- 2 external alarm
- Convectional cooling
 - Optional fan for increased site flexibility
- IP 65, -40 to +55°C

Pending Commercial Agreements



B2/B25 TX: 4 ports
B66 TX: 4 ports
B2/B25 & B66 RX: 8 ports



Same order as Radio 8843

Now confirmed max measurements/ will not exceed

DATA SHEET

DC Surge Protection for RRH/Integrated Antenna Radio Head
RCMDC-6627-PF-48
Tower / Base / Rooftop

Raycap's flexible Tower, Base Stations and Rooftop protection and Distribution products provide protection for up to 12 Remote Radio Heads/Integrated Antennas. The solutions mitigate the risk of damage due to lightning and provide high levels of availability and reliability to radio equipment.



- Features**
- Designed for distribution to 12 RRH circuits, DC power and fiber optics.
 - Alarms for moisture detection and intrusion
 - Digital Voltmeter with twelve (12) position switch to monitor each DC circuit
 - Power alarms for wiring anomalies and power disruptions
 - Employs the Strikesorb® 30-V1-2CHV Surge Protective Device (SPD) specifically designed for the Remote Radio Head (RRH) installation environment and certified for use in DC applications and at low DC operating voltages (48V)
 - The Strikesorb® 30-V1-2CHV is a Class I SPD certified by VDE per the IEC 61643-11 standard as suitable for installation in areas where direct lightning exposure is expected. Strikesorb® 30-V1-2CHV is able to withstand direct lightning currents of up to 5kA (10/350) and induced surge currents of up to 60kA (8/20)
 - Provides very low let through / clamping voltage - unique for a Class I product - as it does not employ spark gaps or other switching elements. Strikesorb offers unique protection levels to the RRH equipment as well as the Base Band Units
 - RS-485 communication link uses two (2) twisted pair (ground) wires per hybrid cable, and communicates all voltage, boost system and alarm data.
 - Patent pending design

- Benefit**
- Distributes DC up to 12 Remote Radio Heads and connects up to 24 LC fiber pairs
 - Utilizes an IP 67 rated enclosure, also rated to NEBS and UL, allowing for indoor or outdoor installation on a roof or tower top
 - Six total cable ports for cable access with custom configurable UL rated glands that accommodate varying diameters of hybrid (combined power and fiber optic) or standard cables with diameters up to 2" (will fit most standard 1 1/2" coax class cables), depending upon port configuration
 - Lightweight aerodynamic design provides maximum flexibility for tower top installation



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020-01-136 170508

Raycap www.raycap.com

Radio 4449 – B13 + B5

- 4 antenna ports, 4TX/4RX for 2 bands with common RF ports
- Up to 320W RF Power shared between 2 bands
 - Examples:
 - 4x40W on each band or
 - 2x60W each band on two high-power RF ports
- Carrier Capacity:
 - Up to 24 carrier and up to 10+25 MHz OBW for LTE
- 2x 10Gbps CPRI
- Size and Weight:

Confirmed max measurements/ will not exceed

RADIO 4449

Radio 4449 - B13& B5	Height	Width	Depth	Weight
wo protruding items	15 In (380 mm)	13.2 In (335 mm)	9.3 In (235 mm)	70 lbs (31.7 Kg)
w protruding items	18 In (455 mm)	13.2 In (335 mm)	9.4 In (240 mm)	

- 48 VDC
- 2x20A fuse (2 power connectors, 2 or 3 wire)
- AISG TMA & RET support (2 Bias-T, 1 ALD port)
- Type 4.3-10 RF connectors
- 2 external alarms
- IP 65, -40 to +55°C

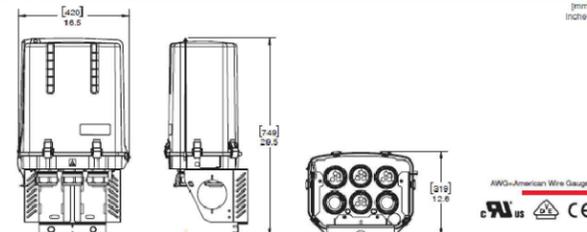
Commercial in confidence | Anders OTTO | 2017-07-13 | Page 1

SPECIFICATIONS

DC Surge Protection for RRH/Integrated Antenna Radio Head
RCMDC-6627-PF-48
Tower / Base / Rooftop

Model Numbers	RCMDC-6627-PF-48
Nominal Operating Voltage	48 VDC
Nominal Discharge Current [I _n]	20kA 8/20 µs
Maximum Surge Current [I _{max}]	60kA 8/20 µs
Maximum impulse (Lightning) Current per IEC 61643-11	5 kA 10/350 µs
Maximum Continuous Operating Voltage [U _c]	75 VDC
Voltage Protection Rating (VPR) per UL 1449 4th Edition	420V
Protection Class as per IEC 61643-11	Class I
Power Alarm	cross polarity, short circuit, or power outage
Intrusion Sensor	microswitch
Moisture Sensor	infrared moisture detector
Strikesorb Module Type	30-V1-2CHV Strikesorb modules installed to protect 12 Remote Radio Heads
Power Boost Ready	RC486 twisted pair connection available
Mechanical	
Suppression Connection Method	Compression Lug #14-#2 AWG (2 mm ² - 33 mm ²)
Fiber Connection Method	LC-LC Single mode
Pressure Equalizing Vent	Gore™ Vent
Environmental Rating	IP 67
Operating Temperature	-40° C to +60° C
UV Resistant	Yes
Dimensions (L x W x H)	12.6" x 16.6" x 29.6" (319mm x 420mm x 748mm)
Weight	System: 32 lbs (14.5 kg)
Combined Wind Loading	160mph (sustained): 166 lbs (820 N)

Product Diagram



Raycap www.raycap.com



020-01-136 170508

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SUPPLEMENTAL

SHEET NUMBER: R-602 REVISION: 0



Colliers Engineering & Design
2000 Midlantic Drive, Suite 100
Mt. Laurel, NJ 08054
856.797.0412
stephanie.mulhern@collierseng.com

Mount Post-Modification Analysis Report
(3) 12.50-Ft T-Frames

July 22, 2024
Site ID: 5000265154-VZW / BLACK FOREST
Page | 5

Post-Modification Antenna Mount Analysis Report and PMI Requirements

Mount Fix

SMART Tool Project #: 10243675
Colliers Engineering & Design Project #: 24995280

July 22, 2024

Site Information

Site ID: 5000265154-VZW / BLACK FOREST
Site Name: BLACK FOREST
Carrier Name: Verizon Wireless
Address: 4590 Hogden Road,
Colorado Springs, Colorado 80908
El Paso County
Latitude: 39.07115°
Longitude: -104.74310°

Structure Information

Tower Type: Self Support
Mount Type: 12.50-Ft T-Frame

FUZE ID # 16583882

Analysis Results

T-Frame: 86.5% **Pass w/ Modifications***

***Antennas and equipment to be installed in compliance with PMI Requirements of this mount analysis.**

*****Contractor PMI Requirements:**

Included at the end of this MA report
Available & Submitted via portal at <https://pmi.vzsmart.com>
For additional questions and support, please reach out to:
pmisupport@colliersengineering.com



Report Prepared By: Selene Chen

Mount Connection Envelope Reactions:

Connection Description	Elev. AGL (Ft)	Node Label	Envelope Wind Reactions				Envelope Wind + Ice Reactions			
			Axial (Lbs)	Lateral (Lbs)	Moment (K-Ft)	Torsion (K-Ft)	Axial (Lbs)	Lateral (Lbs)	Moment (K-Ft)	Torsion (K-Ft)
Sector A Top Standoff	160	N59	248	483	0.000	0.000	273	152	0.000	0.000
Sector A Bottom Standoff	156	N60	245	353	0.000	0.000	256	121	0.000	0.000
Sector A Top Reinforcement	162	N174	649	1176	0.002	0.001	319	490	0.001	0.000
Sector A Bottom Reinforcement	154	N64	831	1136	0.004	0.001	451	524	0.002	0.001

Notes:

- Axial loads act along the axis of the tower leg
- Lateral reactions act perpendicular to the tower leg
- Moment loads introduce bending moment to the tower leg
- Torsion loads introduce twisting moment to the tower leg
- Batch solutions by individual load cases are included at the end of this document

Mount Steel (EPA)a per ANSI/TIA-222-H Section 2.6.11.2:

Ice Thickness (In)	Mount Pipes Excluded		Mount Pipes Included	
	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)	Front (EPA)a (Sq. Ft.)	Side (EPA)a (Sq. Ft.)
0	19.6	10.0	29.1	19.4
0.5	26.5	14.0	39.8	27.4
1	32.9	17.3	50.2	34.6

Notes:

- (EPA)a values listed above may be used in the absence of more precise information
- (EPA)a values in the table above include 1 sector(s).
- Ka factors included in (EPA)a calculations

Requirements:

The existing mounts will be **SUFFICIENT** for the final loading configuration (attachment 2) **after the modifications detailed in attachment 3 are successfully completed.**

ANSI/ASSP rigging plan review services compliant with the requirements of ANSI/TIA 322 are available for a Construction Class IV site or other, if required. Separate review fees will apply.

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MOUNT MODIFICATION DRAWINGS
EXISTING 12.50' T-FRAME

TOWER OWNER: AMERICAN TOWER CORPORATION
TOWER OWNER SITE NUMBER: CO-302460

CARRIER SITE NAME: BLACK FOREST
CARRIER SITE NUMBER: 5000265154
FUZE ID: 16583882

4590 HOGDEN ROAD
COLORADO SPRINGS, CO 80908
EL PASO COUNTY

LATITUDE: 39.07115° N
LONGITUDE: 104.74310° W

DESIGN CRITERIA table with columns for WIND LOADS, IBC WIND SPEED, and REMARKS.

PROJECT INFORMATION table with columns for APPLICANT/OWNER, CLIENT REPRESENTATIVE, PROJECT MANAGER, and CONTRACTOR PMI REQUIREMENTS.

SHEET INDEX table with columns for SHEET, DESCRIPTION, and TITLE SHEET.

Colliers Engineering & Design logo, Verizon logo, Colorado Licensed Professional Engineer seal, and site name: BLACK FOREST 5000265154.

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BILL OF MATERIALS table with columns for QUANTITY, MANUFACTURER, PART NUMBER, DESCRIPTION, NOTES, UNIT WEIGHT (LBS), and WEIGHT (LBS). Includes sections for VZWSMART KITS, OTHER REQUIRED PARTS, and REQUIRED SAFETY CLIMB PARTS.

NOTES section with 2 numbered items. VZWSMART KITS - APPROVED VENDORS table with columns for COMPANY, CONTACT, PHONE, EMAIL, and WEBSITE.

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GENERAL NOTES section with 15 numbered items detailing construction requirements, safety, and material specifications.

STRUCTURAL STEEL section with 15 numbered items detailing bolt specifications, gages, and connection requirements.

BOLT SCHEDULE (IN.) table, WORKABLE GAGES (IN.) table, and TYP. BOLT ASSEMBLY diagram showing lock washer, nut, and bolt details.

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CLIMBING FACILITY LOCATION diagram showing ALPHA, BETA, and GAMMA sectors. Includes a CLIMBING FACILITY PHOTO and a table of structural notes.

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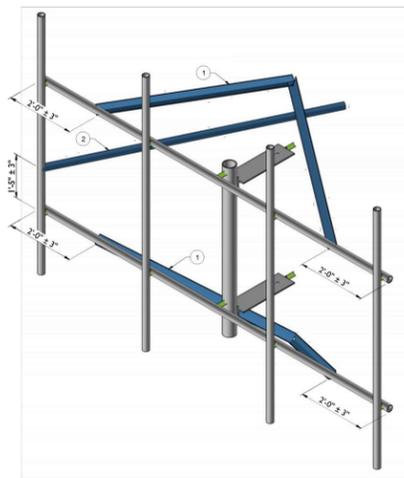
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LEGEND:
 PROPOSED
 RELOCATED
 EXISTING

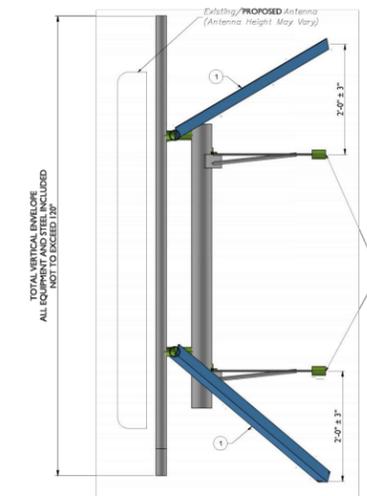
MOUNT MODIFICATION SCHEDULE			
NO.	ELEVATION	QUANTITY	DESCRIPTION
1	158'-0"	6	PROPOSED V-BRACING KIT FOR SMALL LEGS (PART # VZVSMART-SFK3-SL)
2		3	PROPOSED TIEBACK ASSEMBLY (PART # VZVSMART-SFK1)

CONTRACTOR SHALL VERIFY THAT NEW & EXISTING STEEL IS FREE OF CORROSION. VISIBLE WORN CORROSION SHALL BE WIRE BRUSHED CLEAN AND TREATED WITH COLD GALVANIZATION. REPORT ANY SIGNIFICANT CORROSION TO EOR.
 8. THREADED ROD FROM PROPOSED KITS SHALL BE TRIMMED TO EXTEND NO MORE THAN 3" BEYOND THE LOCK NUT. TREAT ALL CUT ENDS WITH (2) COATS OF COLD GALVANIZATION (ZINC KOTE, OR EOR APPROVED EQUAL).
 C. MOUNT NUMBERS NOT SHOWN FOR CLARITY UNDO.

TOTAL VERTICAL ENVELOPE
 CONTRACTOR SHALL VERIFY AND CONFIRM IN FIELD THAT VERIZON'S OVERALL TIP TO TIP VERTICAL SPACE CONFIGURATION (EQUIPMENT AND STEEL COMBINED) DOES NOT EXCEED THE VERTICAL ENVELOPE LISTED IN THESE DRAWINGS. IF THE SITES EXISTING OR PROPOSED CONFIGURATION EXCEEDS THE ALLOWED VERTICAL ENVELOPE LISTED IN THESE DRAWINGS, CONTRACTOR SHALL CONTACT EOR IMMEDIATELY FOR A SOLUTION ON HOW TO CORRECT THE ISSUE PRIOR TO LEAVING THE SITE.



1 PROPOSED ISOMETRIC VIEW (TYP. ALL SECTORS)
SCALE: NCTA



2 PROPOSED SIDE ELEVATION VIEW (TYP. ALL SECTORS)
SCALE: NCTA

Collins Engineering & Design
 www.collinsengineering.com
 811
 COLORADO LICENSED PROFESSIONAL ENGINEER
 58502
 SITE NAME:
 BLACK FOREST
 5000265154
 4990 HODDEN ROAD
 COLORADO SPRINGS, CO
 80908
 EL PASO COUNTY
 MODIFICATION DETAILS
 SS-1



MOUNT PHOTO 1



MOUNT PHOTO 2

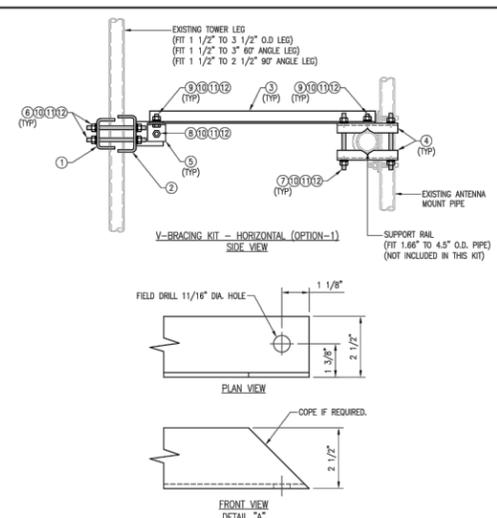
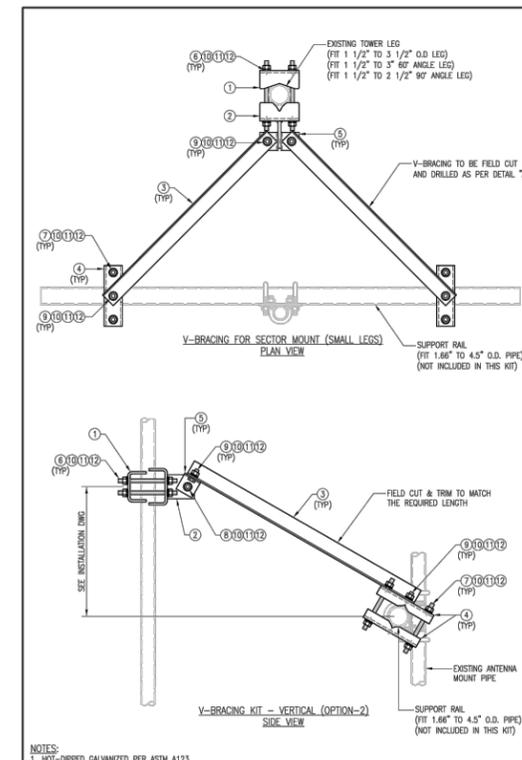


MOUNT PHOTO 3



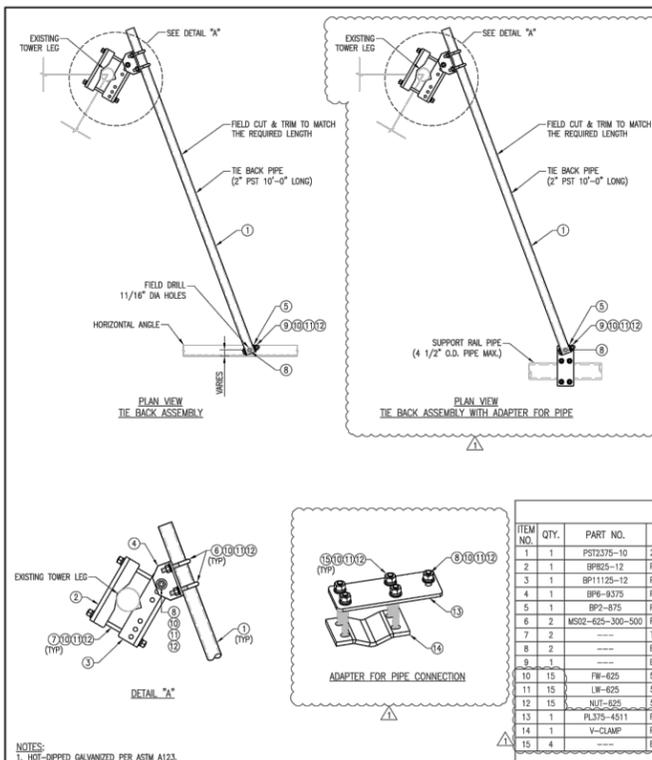
MOUNT PHOTO 4

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 COLORADO LICENSED PROFESSIONAL ENGINEER
 58502
 SITE NAME:
 BLACK FOREST
 5000265154
 4990 HODDEN ROAD
 COLORADO SPRINGS, CO
 80908
 EL PASO COUNTY
 MOUNT PHOTOS
 SS-2



ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	BP9625-65	PL 3/8" X 9 5/8" X 6 1/2" A36 BENT PLATE	VZSM-SL-F1	12
2	1	BR98-VERM-SL	WELDMENT BRACKET	VZSM-SL-F3	11
3	2	L252525-8	L 2 1/2" X 2 1/2" X 1/4" X 8'-0" A36	VZSM-F5	67
4	4	BP6875-10	PL 3/8" X 6 7/8" X 10" A36 BENT PLATE	VZSM-F2	20
5	2	AL-333	L 3" X 3" X 1/4" X 3" A36	VZSM-F2	3
6	4	---	THREADED ROD 5/8" DIA. X 1'-0" F1554-36 HDG	---	---
7	4	---	THREADED ROD 5/8" DIA. X 10" F1554-36 HDG	---	---
8	1	---	BOLT 5/8" X 2 1/4" A325	---	---
9	4	---	BOLT 5/8" X 1 3/4" A325	---	---
10	21	FW-625	5/8" HDG USS FLAT WASHER	---	2
11	21	LW-625	5/8" HDG LOCK WASHER	---	0
12	21	NUT-625	5/8" HDG HEX NUT	---	2

VzW SMART Tool Vendor
 verizon
 FOR REFERENCE ONLY
 DRAWN BY: [] CHECKED BY: []
 DATE: []
 SHEET TITLE:
 VZVSMART-SFK3-SL
 V-BRACING KIT
 FOR SMALL LEGS
 SHEET NUMBER: [] REV #:
 VZVSMART-SFK3-SL 0



ITEM NO.	QTY.	PART NO.	DESCRIPTION	SHEET #	WT
1	1	PST2375-10	2" PST (2.375" O.D. X 0.154" THK) X 10'-0" A53 GR-B 35KSI	SFK1-F1	36
2	1	BP825-12	PL 3/8" X 8 1/4" X 1'-0" A36 BENT PLATE	SFK1-F2	11
3	1	BP11125-12	PL 3/8" X 11 1/8" X 1'-0" A36 BENT PLATE	SFK1-F3	14
4	1	BP4-8375	PL 3/8" X 8" X 9 3/8" A36 BENT PLATE	SFK1-F4	6
5	1	BP2-875	PL 1/4" X 2" X 8 3/4" A36 BENT PLATE	SFK1-F4	1
6	2	MS92-625-300-500	RU-BOLT 5/8" X 3" LL. X 5" LL. A36 (OR EQUIV.)	RBC-1	2
7	2	---	THREADED ROD 5/8" DIA. X 1'-6" F1554-36 HDG	---	0
8	2	---	BOLT 5/8" X 2" A325	---	0
9	1	---	BOLT 5/8" X 4 1/4" A325	---	0
10	15	FW-625	5/8" HDG USS FLAT WASHER	---	1
11	15	LW-625	5/8" HDG LOCK WASHER	---	0
12	15	NUT-625	5/8" HDG HEX NUT	---	2
13	1	PL375-4511	PL 3/8" X 4 1/2" X 11" A36	SFK1-F1	4
14	1	V-CLAMP	PL 1/2" X 4 1/4" X 8 5/8" A36 BEND PLATE	SFK1-F5	5
15	4	---	BOLT 5/8" X 6" FULL THREAD SAE GR 5	---	0

VzW SMART Tool Vendor
 verizon
 FOR REFERENCE ONLY
 DRAWN BY: [] CHECKED BY: []
 DATE: []
 SHEET TITLE:
 VZVSMART-SFK1
 TIE BACK ASSEMBLY
 SHEET NUMBER: [] REV #:
 VZVSMART-SFK1 1

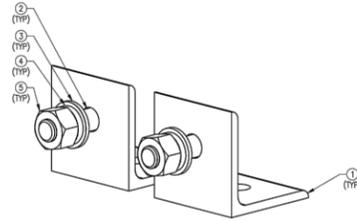
1 MOUNT MODIFICATIONS

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SUPPLEMENTAL

SHEET NUMBER:
R-605
 REVISION:
0

VzW[®]
SMART Tool[®]
 Vendor



CLIP_ANGLE
 ISOMETRIC VIEW

FOR REFERENCE
 ONLY

DESIGN BY: JRM CHECKED BY: ---
 DATE: 10/28/21

VZWSMART-AL333 (CLIP ANGLE)				
ITEM NO.	QTY.	PART NO.	DESCRIPTION	WT
1	2	AL-333	1 3/4" X 3/4" X 1/16" X 3/8"	2.50
2	2	---	BOLT 5/16" X 2" FULL THREAD SAE GR-5	0.77
3	2	FW-625	5/16" HDG USS FLAT WASHER	0
4	2	LW-625	5/16" HDG LOCK WASHER	0
5	2	NUT-625	5/16" HDG HEX NUT	0
				GALVANIZED WT 3.27

SHEET TITLE:
 VZWSMART-AL333
 CLIP ANGLE
 SHEET NUMBER: REV #:
 VZWSMART-AL333 0

NOTES:
 1. HOT-DIPPED GALVANIZED PER ASTM A123.

1 MOUNT MODIFICATIONS

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SUPPLEMENTAL

SHEET NUMBER: R-606
 REVISION: 0