

T-Mobile

SITE NUMBER: DN06123A
SITE NAME: DN63XC091
SITE TYPE: SELF SUPPORT
TOWER HEIGHT: 69'-7"

BUSINESS UNIT #: 877092
SITE ADDRESS: 125 NORTH GATE RD
 COLORADO SPRINGS, CO 80921
COUNTY: EL PASO

T-Mobile
 2323 DELGANY STREET
 DENVER, CO 80216

CROWN CASTLE
 200 SPECTRUM CENTER DRIVE,
 SUITE 1700 & 1800
 IRVINE, CA 92618

TOWER ENGINEERING PROFESSIONALS
 4710 E ELWOOD ST, STE 9
 PHOENIX, AZ 85040
 OFFICE: (480) 285-0036
 www.tepgroup.net

T-MOBILE PROJECT: SPRINT RETAIN

SITE INFORMATION

CROWN CASTLE USA INC. F3/FILL-IN/COLORADO SPGS/CSP18
 SITE NAME:
 SITE ADDRESS: 125 NORTH GATE RD
 COLORADO SPRINGS, CO 80921
 COUNTY: EL PASO
 MAP/PARCEL #: 6207200017
 AREA OF CONSTRUCTION: EXISTING
 LATITUDE: 39° 01' 30.72"
 LONGITUDE: -104° 49' 38.65"
 LAT/LONG TYPE: NAD83
 GROUND ELEVATION: 6,788 FT
 CURRENT ZONING: RR-5
 JURISDICTION: EL PASO COUNTY
 OCCUPANCY CLASSIFICATION: U
 TYPE OF CONSTRUCTION: IIB
 A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
 PROPERTY OWNER: WESTERN MUSEUM OF MINING INDUSTRY
 125 NORTH GATE RD
 COLORADO SPRINGS CO, 80921
 TOWER OWNER: GLOBAL SIGNAL ACQUISITIONS II LLC
 2000 CORPORATE DRIVE
 CANONSBURG, PA 15317
 CARRIER/APPLICANT: T-MOBILE
 2323 DELGANY STREET
 DENVER, CO 80216
 ELECTRIC PROVIDER: MOUNTAIN VIEW ELECTRIC
 TELCO PROVIDER: CENTURYLINK

DRAWING INDEX

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E-1	ELECTRICAL DETAILS
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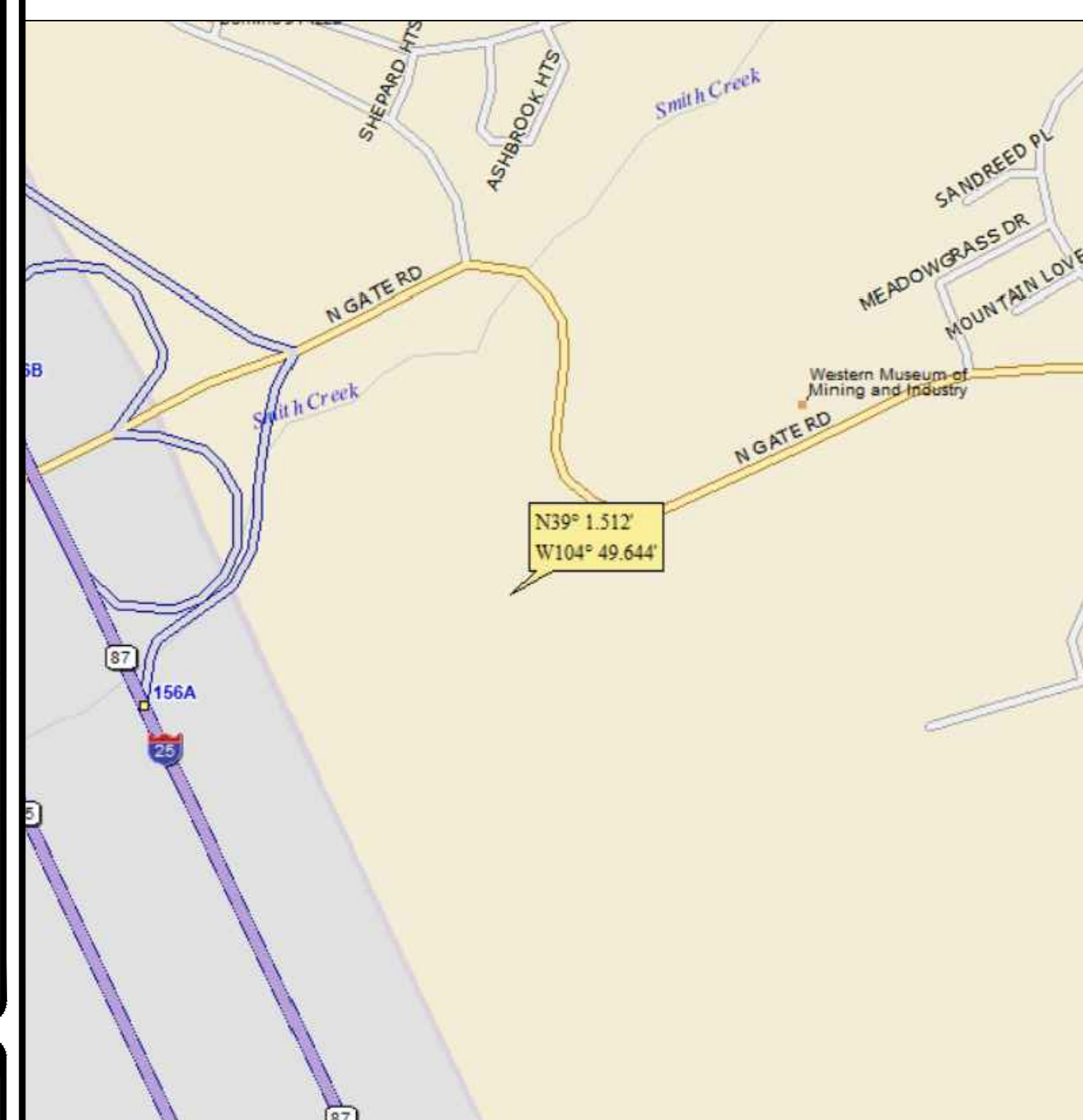
ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.



CALL COLORADO ONE CALL
 (800) 922-1987
 CALL 3 WORKING DAYS
 BEFORE YOU DIG!



LOCATION MAP



SITE PHOTO



T-MOBILE
 SITE NUMBER: DN06123A
 (SPRINT RETAIN)

BU #: 877092
 F3/FILL-IN/COLORADO
 SPGS/CSP18

255 NORTH GATE BLVD
 COLORADO SPRINGS, CO
 80921

EXISTING 69'-7"
 SELF SUPPORT

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	05/05/21	VBP	CONSTRUCTION	JFJ
1	05/24/21	JLB	CONSTRUCTION	JFJ
2	06/21/21	AOW	CONSTRUCTION	JFJ
3	09/16/21	GVM	CONSTRUCTION	JFJ
4	04/14/22	PSS	CONSTRUCTION	JFJ

PROJECT TEAM

A&E FIRM: TOWER ENGINEERING PROFESSIONALS
 4710 E ELWOOD ST, STE 9
 PHOENIX, AZ 85040
 OFFICE: (480) 285-0036
 CROWN CASTLE USA INC. 200 SPECTRUM CENTER DRIVE, SUITE 1700 & 1800
 DISTRICT CONTACTS: IRVINE, CA 92618
 BRYCE NORTHCUTT - PROJECT MANAGER
 BRYCENORTHCUTT@CROWNCastle.COM
 JONATHAN BAIN - CONSTRUCTION MANAGER
 JONATHANBAIN@CROWNCastle.COM

PROJECT DESCRIPTION

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

- TOWER SCOPE OF WORK:
- REMOVE UNUSED EQUIPMENT
 - REMOVE EXISTING CONCEALMENT
 - ADD (3) FFVV-65C-R3-V1 ANTENNAS, (1) PER SECTOR
 - ADD (3) AEHC ANTENNAS, (1) PER SECTOR
 - ADD (3) RADIO AHLOA, (1) PER SECTOR
 - ADD (3) RADIO AHFIG, (1) PER SECTOR
 - ADD (2) HCS 2.0 PART 1 PENDANTS
 - ADD (2) HCS 2.0 HYBRID CABLES
 - ADD (3) PV-SFA10-B-R1 SECTOR MOUNT
 - ADD (9) SITE PRO 1 R5-LL (8) MOUNT PIPES

- GROUND SCOPE OF WORK:
- REMOVE UNUSED EQUIPMENT
 - ADD (2) ASIBs
 - ADD (2) ASIKs
 - ADD (1) FSMF
 - ADD (3) ABILAs
 - ADD (6) ABILs
 - ADD (3) ABICs
 - ADD (2) AMLAs
 - ADD (1) GENERIC 600A CABINET
 - ADD (1) GENERIC BATTERY CABINET FOR 600A SSC
 - ADD (1) VOLTAGE BOOSTER
 - ADD (1) EXTRA BOOSTER AMPLIFIER
 - ADD (2) HCS 2.0 JUNCTION BOXES

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	2018 IBC
MECHANICAL	2018 IMC
ELECTRICAL	2017 NEC

Please include:
 -legal description of property (found on assessor site)
 -lot/parcel size
 -signature block for PCD staff 1-2 inches

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS: B+T GROUP
 DATED: 04/06/2022
 MOUNT ANALYSIS: INFINGY
 DATED: 03/21/2022
 RFDS REVISION: 1
 DATED: 01/25/2021
 ORDER ID: 608670
 REVISION: 0

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



04/14/22

Andrew R. Berglund, P.E.
 Professional Engineer License: #58272

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER:

T-1

REVISION:

4

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.
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.
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...

GENERAL NOTES:

- 1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY: CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION CARRIER: T-MOBILE 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.
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.
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.
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.
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...

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.
4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185.
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
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.
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).
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/IEEC 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 SNEW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEC AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREFOLD SPCIMATE 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.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL.
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 "T-MOBILE".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

Table with columns: SYSTEM, CONDUCTOR, COLOR. Rows include 120/240V, 10; 120/208V, 30; 277/480V, 30; DC VOLTAGE. Includes color codes for A, B, C phases and ground.

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
RETS: 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-OFF-POTENTIAL 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 ANTI-OXIDANT 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.
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.
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/O 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).

T-Mobile logo and address: 2323 DELGANY STREET DENVER, CO 80216

CROWN CASTLE logo and address: 200 SPECTRUM CENTER DRIVE, SUITE 1700 & 1800 IRVINE, CA 92618

TOWER ENGINEERING PROFESSIONALS logo and address: 4710 E ELWOOD ST, STE 9 PHOENIX, AZ 85040

T-MOBILE SITE NUMBER: DN06123A (SPRINT RETAIN) BU #: 877092 F3/FILL-IN/COLORADO SPGS/CSP18 255 NORTH GATE BLVD COLORADO SPRINGS, CO 80921 EXISTING 69'-7" SELF SUPPORT

ISSUED FOR: Table with columns: REV, DATE, DRWN, DESCRIPTION, DES./QA. Rows include construction issues from 05/05/21 to 04/14/22.

Professional Engineer seal for Andrew R. Berglund, P.E. License #58272. Date: 04/14/22. Statement: IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-2 REVISION: 4

SITE PLAN DISCLAIMER:
 PROPERTY LINES AND STRUCTURES HAVE BEEN DIGITIZED FROM PREVIOUS PLAN SETS. TOWER ENGINEERING PROFESSIONALS HAS NOT COMPLETED A SITE SURVEY AND THEREFORE MAKES NO CLAIMS AS TO THE ACCURACY OF INFORMATION DEPICTED ON THIS SHEET.



1 OVERALL SITE PLAN
 SCALE: 1" = 50'-0" (FULL SIZE)
 1" = 100'-0" (11x17)

T-Mobile
 2323 DELGANY STREET
 DENVER, CO 80216

CROWN CASTLE
 200 SPECTRUM CENTER DRIVE,
 SUITE 1700 & 1800
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 255 NORTH GATE BLVD
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 EXISTING 69'-7"
 SELF SUPPORT

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04/14/22
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 Professional Engineer License: #58272
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SHEET NUMBER:
C-1.1
REVISION:
4

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	05/05/21	VBP	CONSTRUCTION	JFJ
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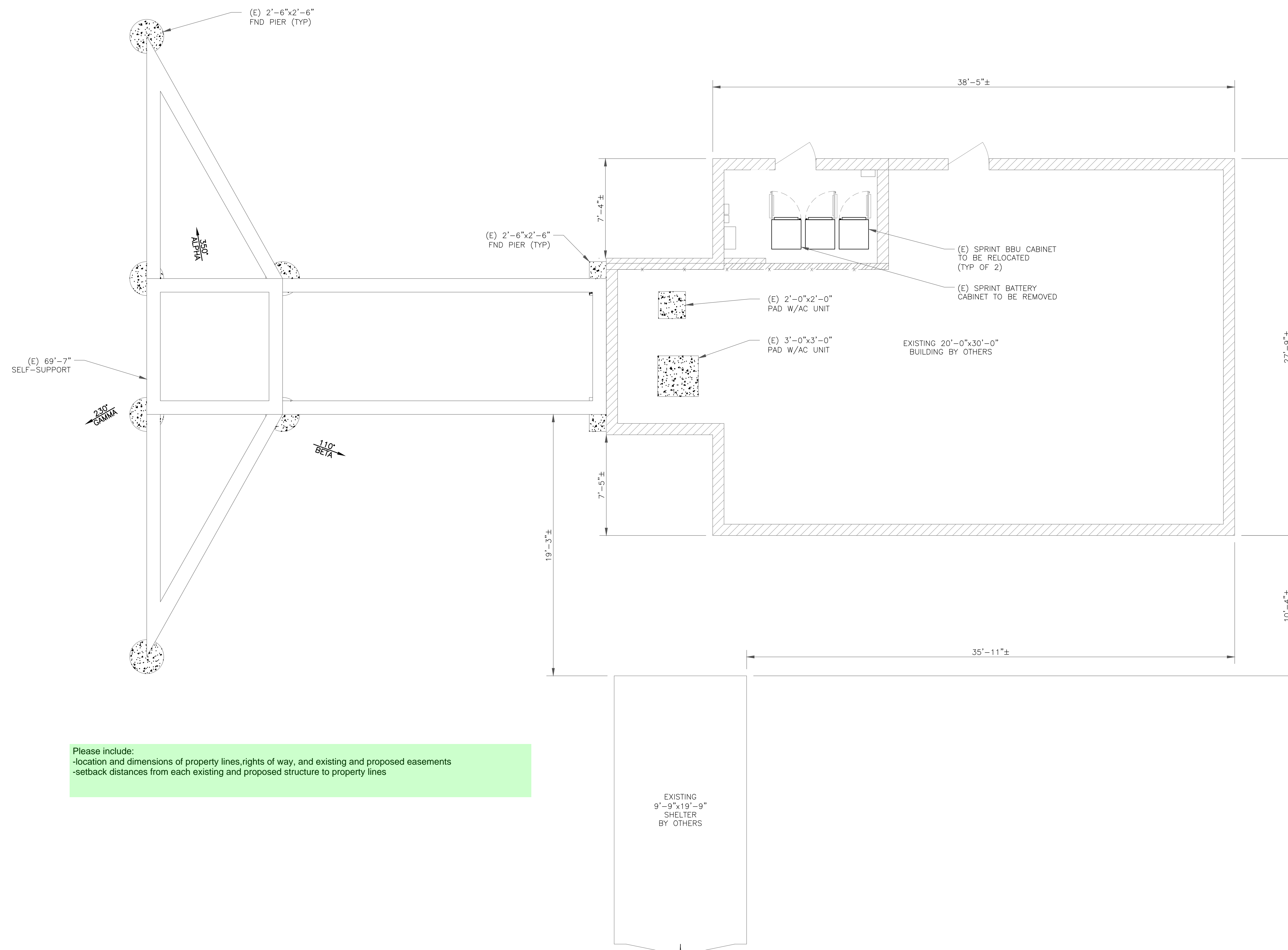


04/14/22

Andrew R. Berglund, P.E.
Professional Engineer License: #58272

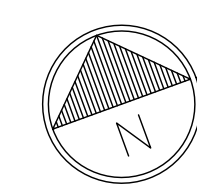
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SHEET NUMBER: **C-1.2** REVISION: **4**



Please include:
-location and dimensions of property lines, rights of way, and existing and proposed easements
-setback distances from each existing and proposed structure to property lines

1 EXISTING EQUIPMENT LAYOUT
SCALE: 1/4"=1'-0" (FULL SIZE)
1/8"=1'-0" (11x17)



T-MOBILE
SITE NUMBER: DN06123A
(SPRINT RETAIN)

BU #: 877092
F3/FILL-IN/COLORADO
SPGS/CSP18

255 NORTH GATE BLVD
COLORADO SPRINGS, CO
80921

EXISTING 69'-7"
SELF SUPPORT

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	05/05/21	VBP	CONSTRUCTION	JFJ
1	05/24/21	JLB	CONSTRUCTION	JFJ
2	06/21/21	AOW	CONSTRUCTION	JFJ
3	09/16/21	GVM	CONSTRUCTION	JFJ
4	04/14/22	PSS	CONSTRUCTION	JFJ

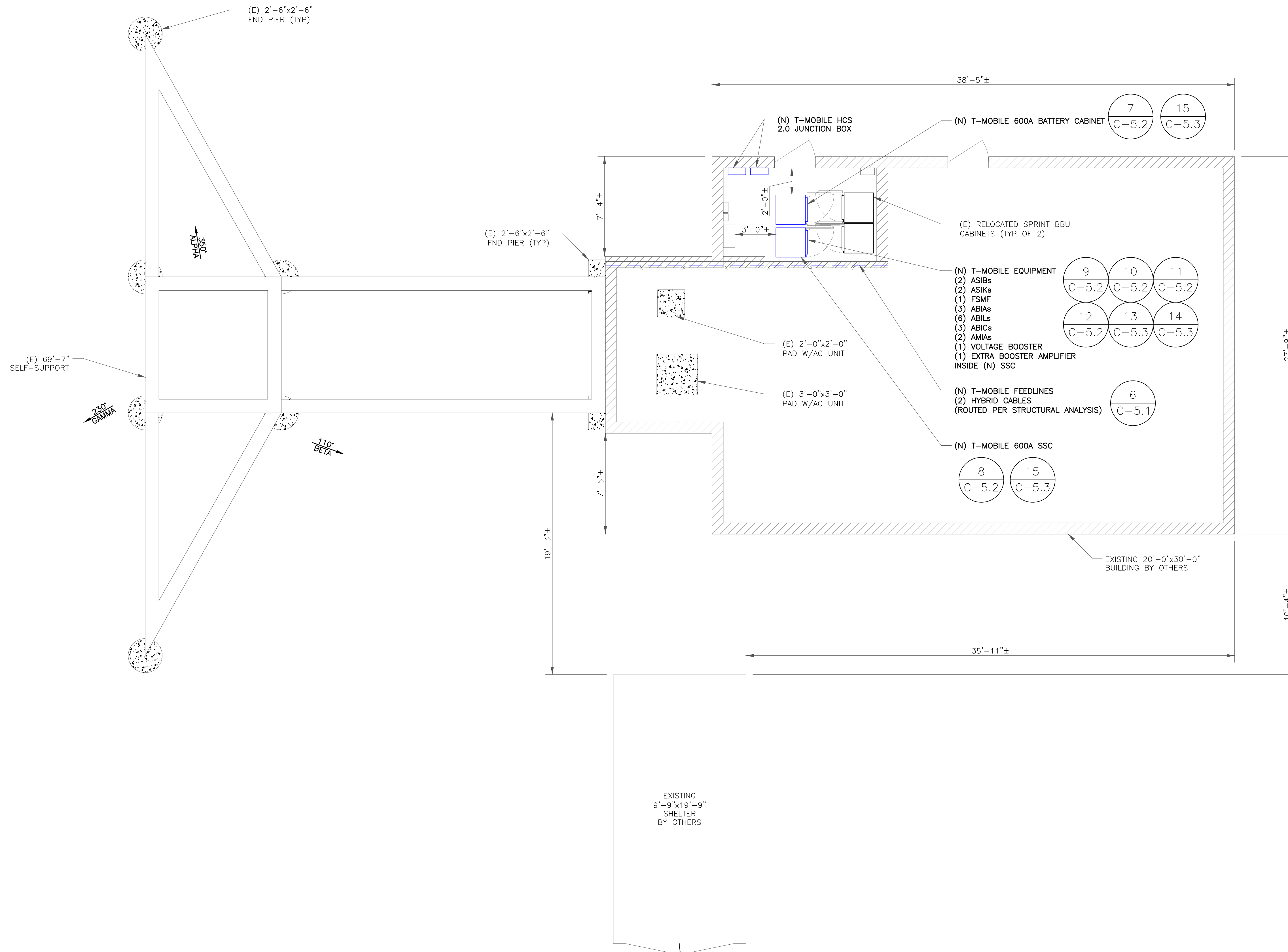
Andrew R. Berglund

04/14/22

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Professional Engineer License: #58272

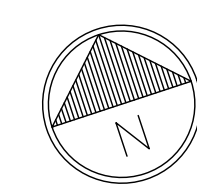
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SHEET NUMBER: **C-1.3** REVISION: **4**



1 NEW EQUIPMENT LAYOUT

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



T-MOBILE
SITE NUMBER: **DN06123A**
(SPRINT RETAIN)

BU #: **877092**
F3/FILL-IN/COLORADO
SPGS/CSP18

255 NORTH GATE BLVD
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80921

EXISTING 69'-7"
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3	09/16/21	GVM	CONSTRUCTION	JFJ
4	04/14/22	PSS	CONSTRUCTION	JFJ



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SHEET NUMBER:

C-2

REVISION:

4

(E) SPRINT EQUIPMENT (ALPHA SECTOR)
TO BE REMOVED
(6) ANTENNAS
(9) RRHs
MOUNTED TO EXISTING MOUNTS

(E) EQUIPMENT TOP CONCEALMENT
TO BE REMOVED

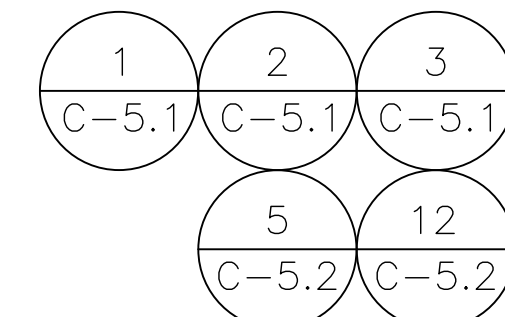
- STRUCTURE W/ APPURTENANCE
ELEV. = 69'-7"
- HEIGHT OF STRUCTURE
ELEV. = 69'-7"
- EXISTING SPRINT ACL
ELEV. = 65'-0"
- EXISTING SPRINT MCL
ELEV. = 65'-0"
- EXISTING MCL
ELEV. = 60'-0"
- EXISTING MCL
ELEV. = 49'-0"
- EXISTING MCL
ELEV. = 44'-0"

MOUNT ANALYSIS NOTES:

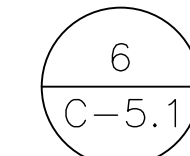
1. THE DESIGN DEPICTED IN THESE DRAWINGS IS VALID WHEN ACCOMPANIED BY A CORRESPONDING PASSING MOUNT ANALYSIS.
2. CONSTRUCTION MANAGER / GENERAL CONTRACTOR SHALL REVIEW THE MOUNT ANALYSIS FOR ANY CONDITIONS PRIOR TO INSTALLATION.
3. ANY REQUIRED MOUNT MODIFICATION DESIGN OR MOUNT REPLACEMENT SHALL BE APPROVED BY EOR.

- STRUCTURE W/ APPURTENANCE
ELEV. = 74'-0"
- NEW T-MOBILE ACL
ELEV. = 70'-0"
- HEIGHT OF STRUCTURE
ELEV. = 69'-7"
- NEW T-MOBILE MCL
ELEV. = 69'-0"
- EXISTING MCL
ELEV. = 60'-0"
- EXISTING MCL
ELEV. = 49'-0"
- EXISTING MCL
ELEV. = 44'-0"

- (N) T-MOBILE EQUIPMENT
- (3) COMMSCOPE - FFVW-65C-R3-V1
- (3) NOKIA - AEHC
- (3) AHLOA
- (3) AHFIG
- (2) HCS 2.0 PENDANT
- (3) SECTOR MOUNTS
- (9) 8' LING ANTENNA PIPE
MOUNTED TO NEW MOUNTS



- (N) T-MOBILE FEEDLINES
- (2) HYBRID CABLES
(ROUTED PER STRUCTURAL ANALYSIS)

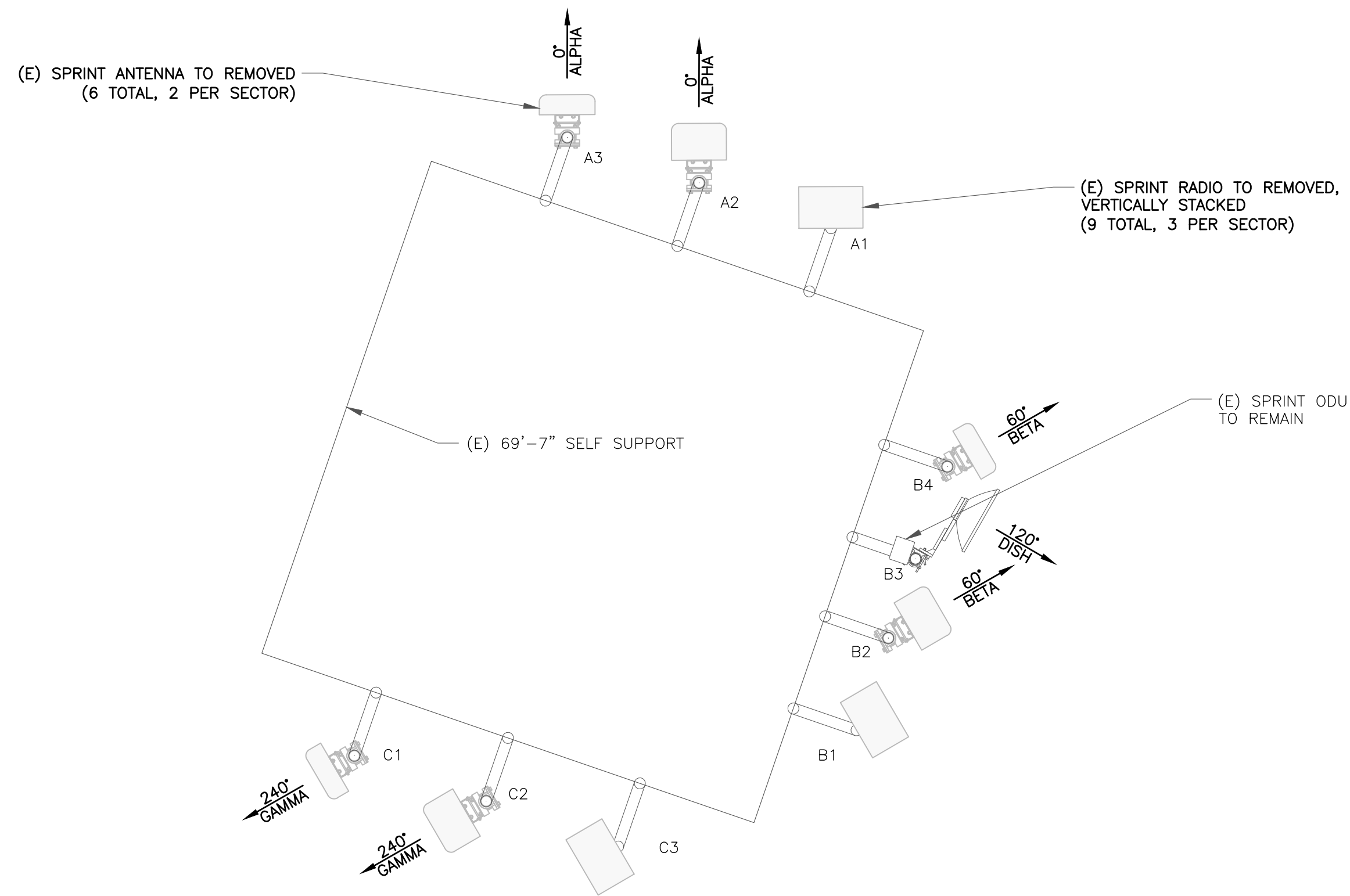


1 EXISTING NORTH ELEVATION

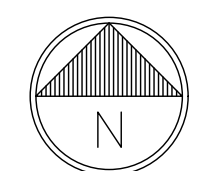
SCALE: 1/8"=1'-0" (FULL SIZE)
1/16"=1'-0" (11x17)

2 NEW NORTH ELEVATION

SCALE: 1/8"=1'-0" (FULL SIZE)
1/16"=1'-0" (11x17)



1 EXISTING ANTENNA PLAN
SCALE: 1/2"=1'-0" (FULL SIZE)
1/4"=1'-0" (11x17)



NOTES:

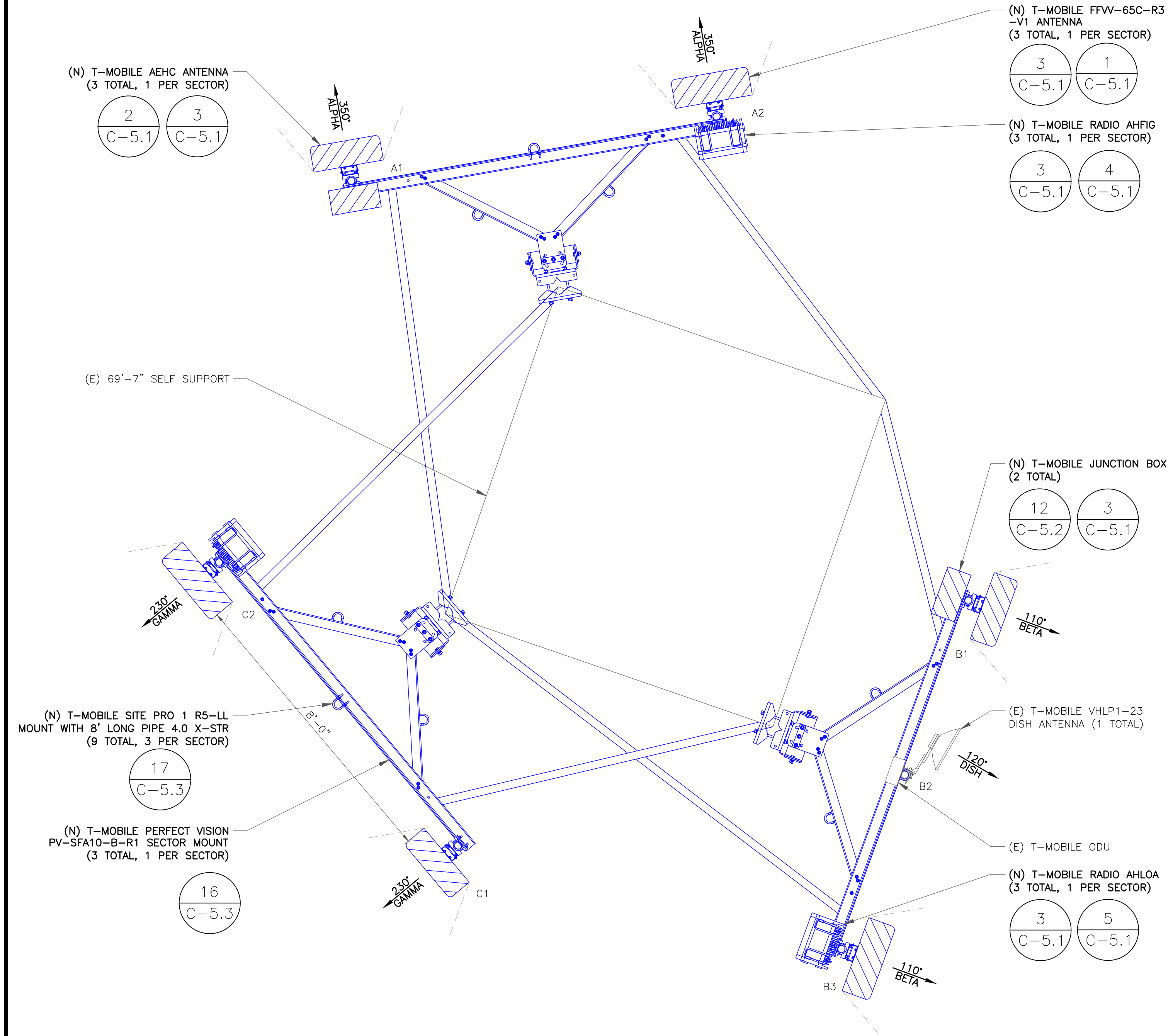
1. REFERENCE C-4 FOR FINAL EQUIPMENT SCHEDULE.
2. REFERENCE C-5.1, C-5.2 AND C-5.3 FOR NEW EQUIPMENT SPECIFICATIONS.
3. CONTRACTOR TO VERIFY ALL ANTENNA TIP HEIGHTS DO NOT EXCEED BEACON BASE HEIGHT.
4. NEW EQUIPMENT TO BE PAINTED WITH RF TRANSPARENT, UV RESISTANT, OUTDOOR RATED PAINT TO MATCH EXISTING.

MOUNT ANALYSIS NOTES:

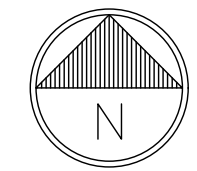
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3. ANY REQUIRED MOUNT MODIFICATION DESIGN OR MOUNT REPLACEMENT SHALL BE APPROVED BY EOR.

"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.



2 NEW ANTENNA PLAN
SCALE: 1/2"=1'-0" (FULL SIZE)
1/4"=1'-0" (11x17)



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www.tepgroup.net

T-MOBILE
SITE NUMBER: DN06123A
(SPRINT RETAIN)


BU #: 877092
F3/FILL-IN/COLORADO
SPGS/CSP18

255 NORTH GATE BLVD
COLORADO SPRINGS, CO
80921

EXISTING 69'-7"
SELF SUPPORT

ISSUED FOR:

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3	09/16/21	GVM	CONSTRUCTION	JFJ
4	04/14/22	PSS	CONSTRUCTION	JFJ



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T-MOBILE
SITE NUMBER: **DN06123A**
(SPRINT RETAIN)

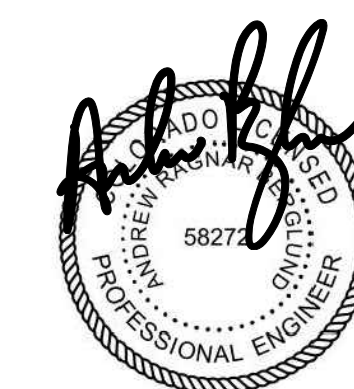
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3	09/16/21	GVM	CONSTRUCTION	JFJ
4	04/14/22	PSS	CONSTRUCTION	JFJ



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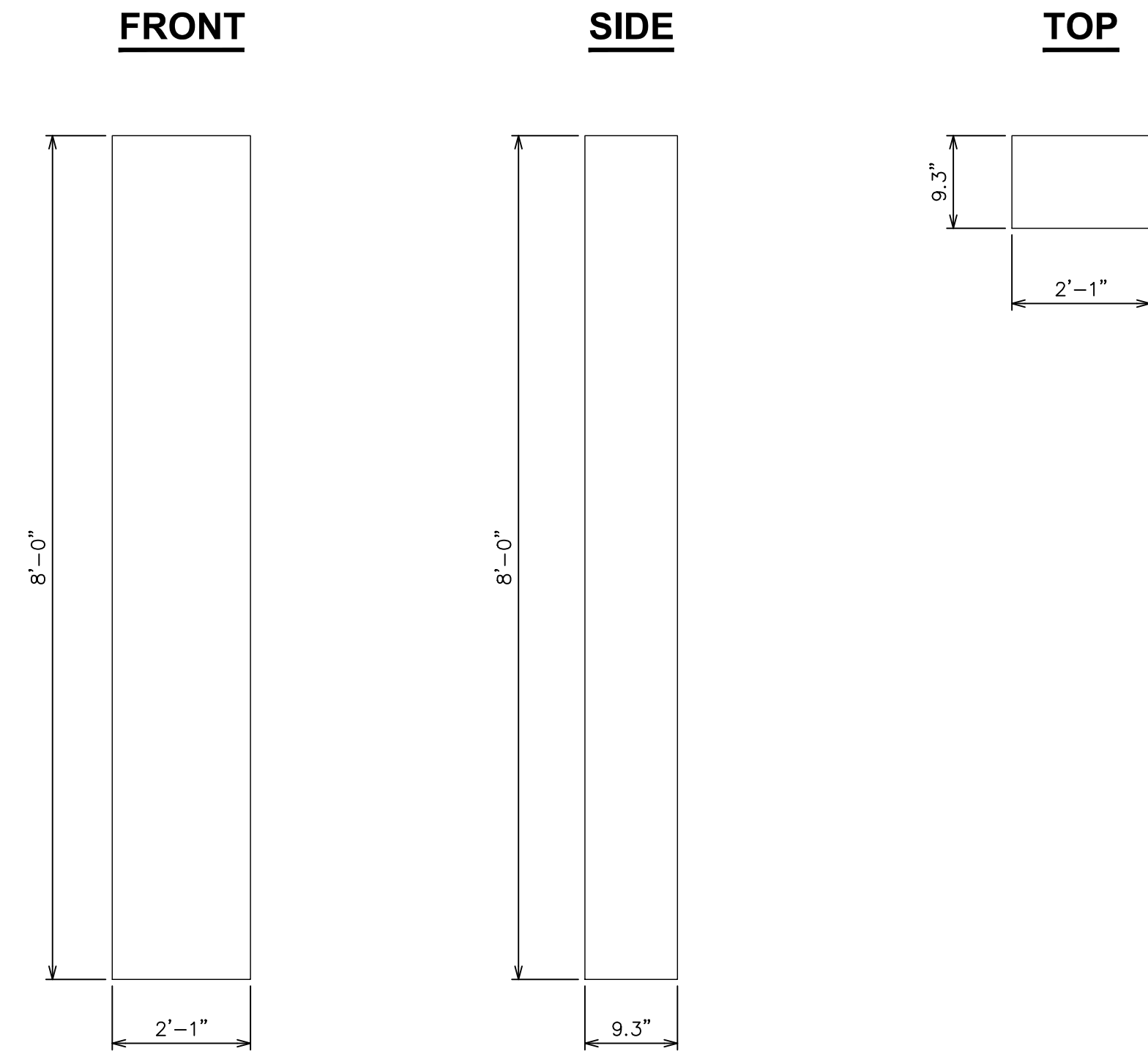
FINAL EQUIPMENT SCHEDULE
(VERIFY WITH CURRENT RFDS)

ALPHA																		
POSITION	ANTENNA				RADIO			DIPLEXER			TMA		SURGE PROTECTION		CABLES			
	TECH.	STATUS/MANUFACTURER MODEL	AZIMUTH	RAD CENTER	QTY.	STATUS/MODEL	LOCATION	QTY.	STATUS	LOCATION	QTY.	STATUS	QTY.	STATUS/MODEL	QTY.	STATUS/TYPE	SIZE	LENGTH
A1	L700 N600 N600 L2100 L1900 G1900 N2100 N1900	(N) NOKIA AEHC	350°	70'-0"	-	-	-	-	-	-	-	-	-	-	-	-	-	-
A2	L2500 N2500	(N) COMMSCOPE FFW-65C-R3-V1_	350°	70'-0"	1 1	(N) NOKIA AHFIG (N) NOKIA AHL0A	TOWER TOWER	-	-	-	-	-	1	(N) HCS 2.0 PART 1	1	(N) HYBRID	1-1/2"	115'-0"
BETA																		
B1	L700 N600 N600 L2100 L1900 G1900 N2100 N1900	(N) NOKIA AEHC	110°	70'-0"	-	-	-	-	-	-	-	-	-	-	-	-	-	-
B2	-	(E) ANDREW VHLP1-23	120°	70'-0"	1	(E) DRAGONWAVE HORIZON COMPACT PLUS	TOWER	-	-	-	-	-	-	-	1	(E) COAX	1/2"	115'-0"
B3	L2500 N2500	(N) COMMSCOPE FFW-65C-R3-V1_	110°	70'-0"	1 1	(N) NOKIA AHFIG (N) NOKIA AHL0A	TOWER TOWER	-	-	-	-	-	1	(N) HCS 2.0 PART 1	1	(N) HYBRID	1-1/2"	115'-0"
GAMMA																		
C1	L700 N600 N600 L2100 L1900 G1900 N2100 N1900	(N) NOKIA AEHC	230°	70'-0"	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C2	L2500 N2500	(N) COMMSCOPE FFW-65C-R3-V1_	230°	70'-0"	1 1	(N) NOKIA AHFIG (N) NOKIA AHL0A	TOWER TOWER	-	-	-	-	-	-	-	-	-	-	-
													0	(E) UNUSED				

NOTE:
(E) - EXISTING
(N) - NEW

COMMSCOPE - FFVV-65C-R3- V1

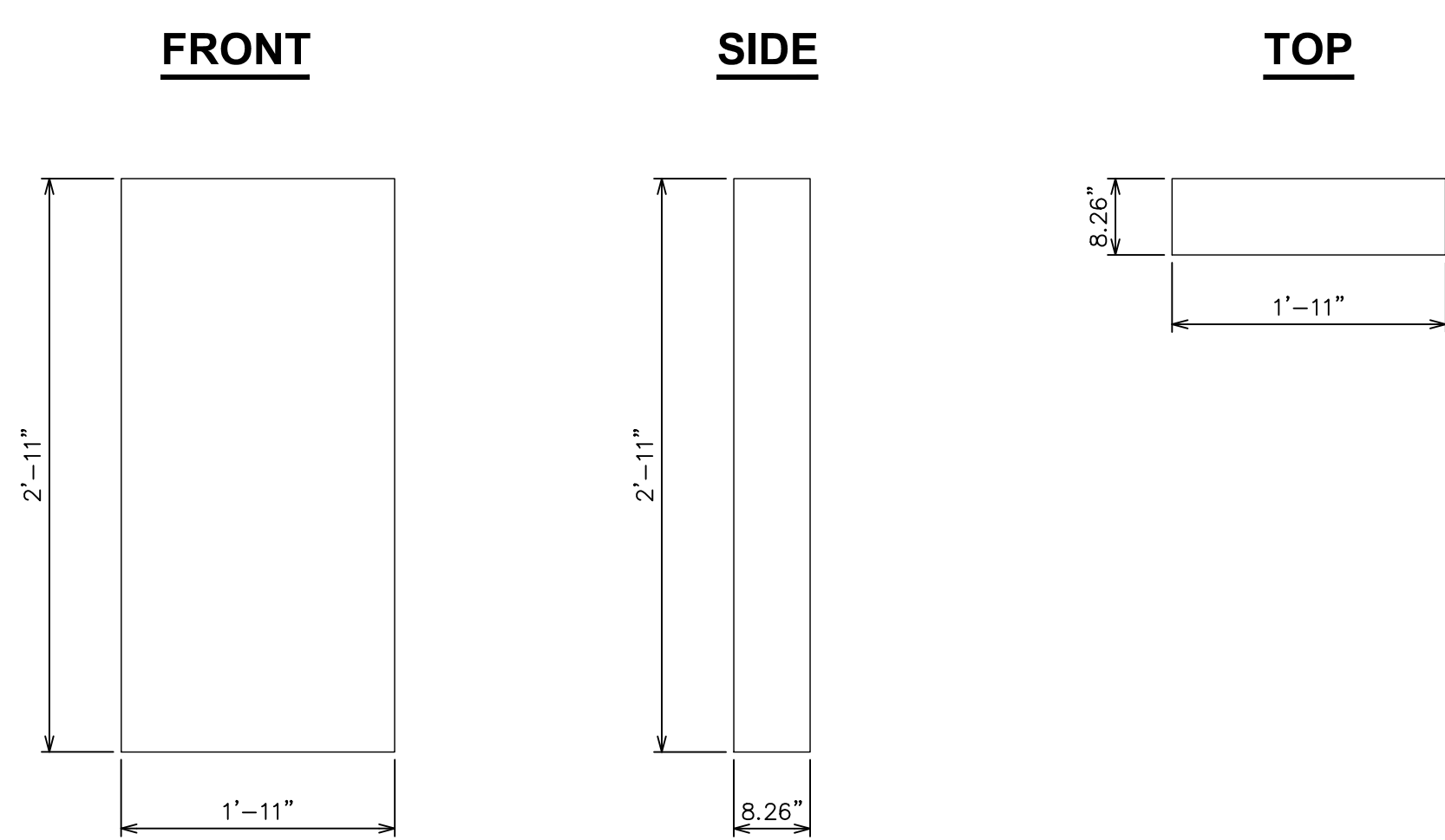
ANTENNA MAKE: COMMSCOPE
 ANTENNA MODEL: FFVV-65C-R3-V1
 DIMENSIONS, HxWxD: 95.90"x25.20"x9.30"
 WEIGHT: 124.60 lbs



1 PROPOSED COMMSCOPE ANTENNA DETAIL
 SCALE: NOT TO SCALE

NOKIA / AEHC

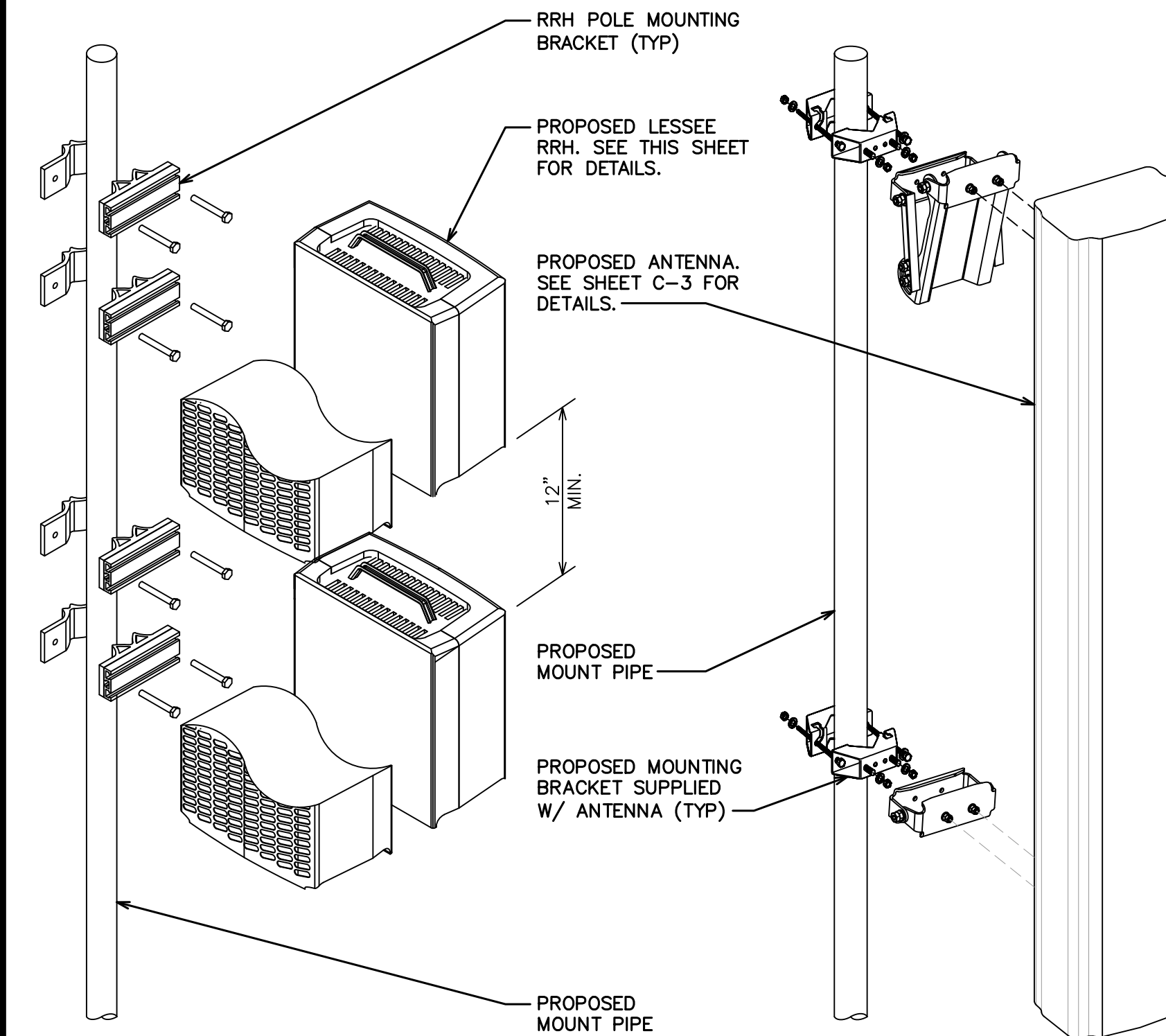
ANTENNA MAKE: NOKIA
 ANTENNA MODEL: AEHC
 DIMENSIONS, HxWxD: 35.43"x22.83"x8.26"
 WEIGHT: 99.20 lbs



2 PROPOSED NOKIA ANTENNA DETAIL
 SCALE: NOT TO SCALE

RRH

ANTENNA

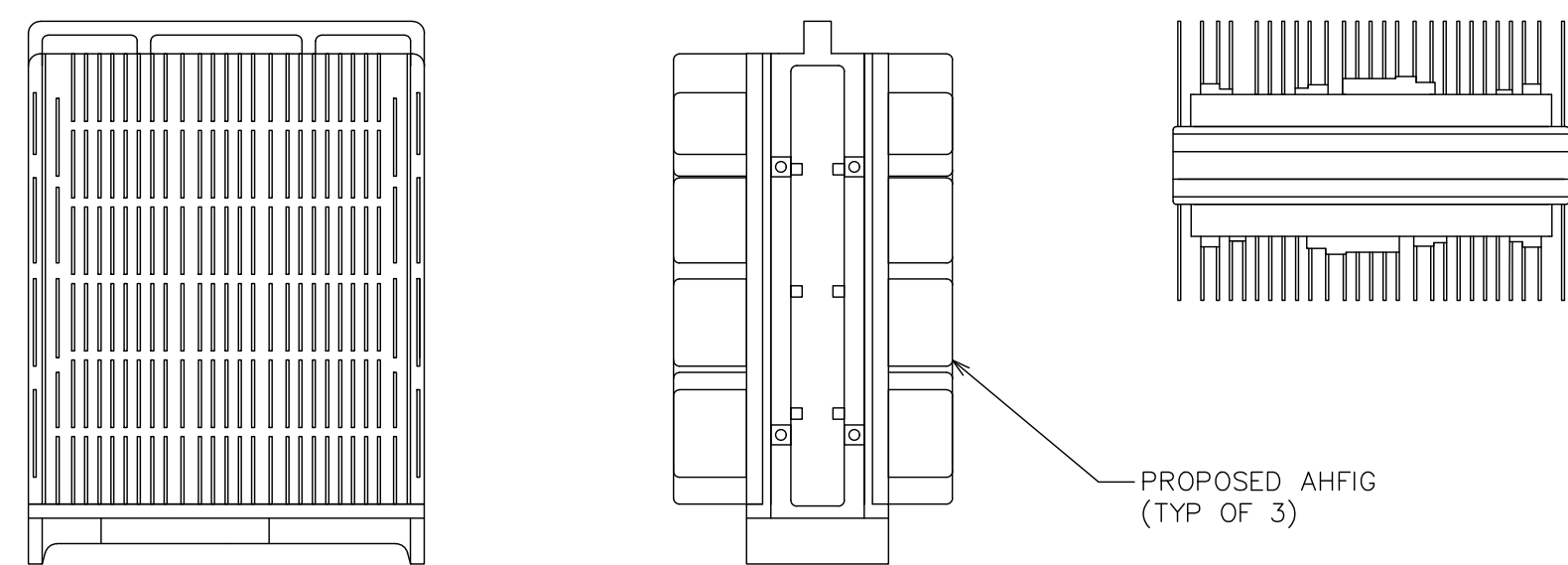


3 EQUIPMENT MOUNTING DETAIL
 SCALE: NOT TO SCALE

FRONT

SIDE

TOP



NOKIA AHFIG

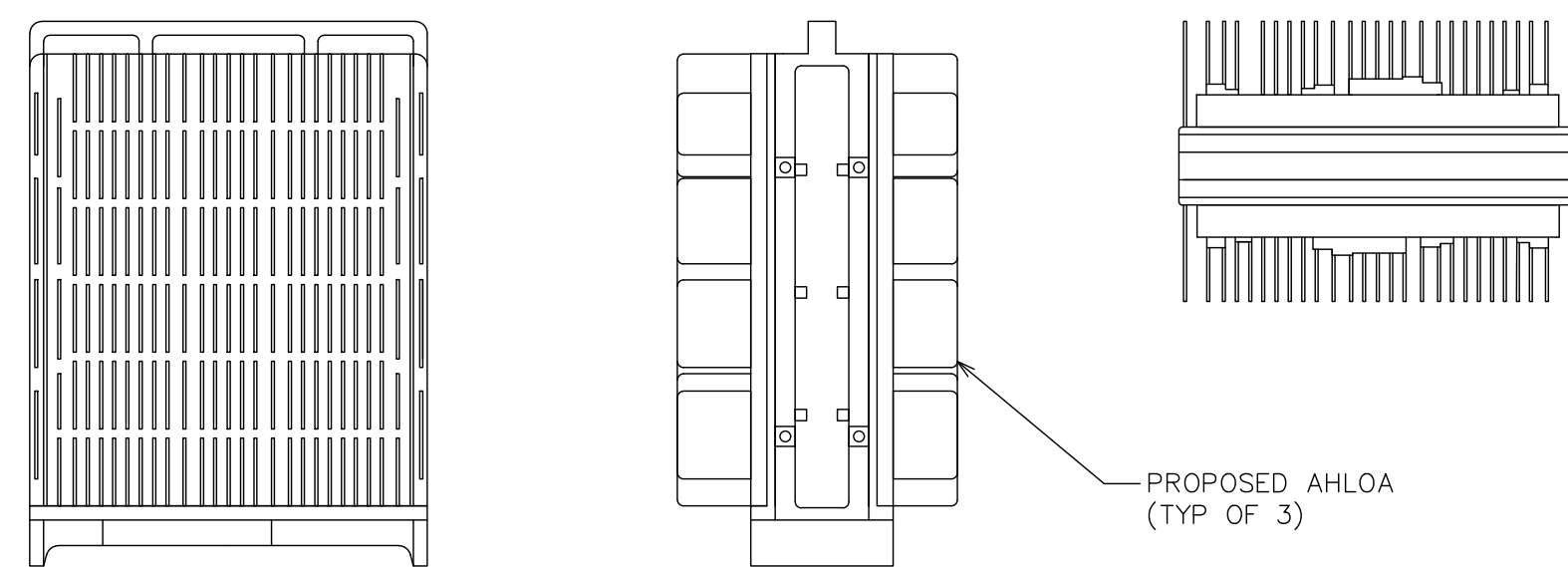
NOKIA: RADIO AHFIG
 DIMENSIONS, HxWxD: 27.60"x13.40"x5.60"
 WEIGHT: 79.40 LBS

4 NOKIA AHFIG
 SCALE: NOT TO SCALE

FRONT

SIDE

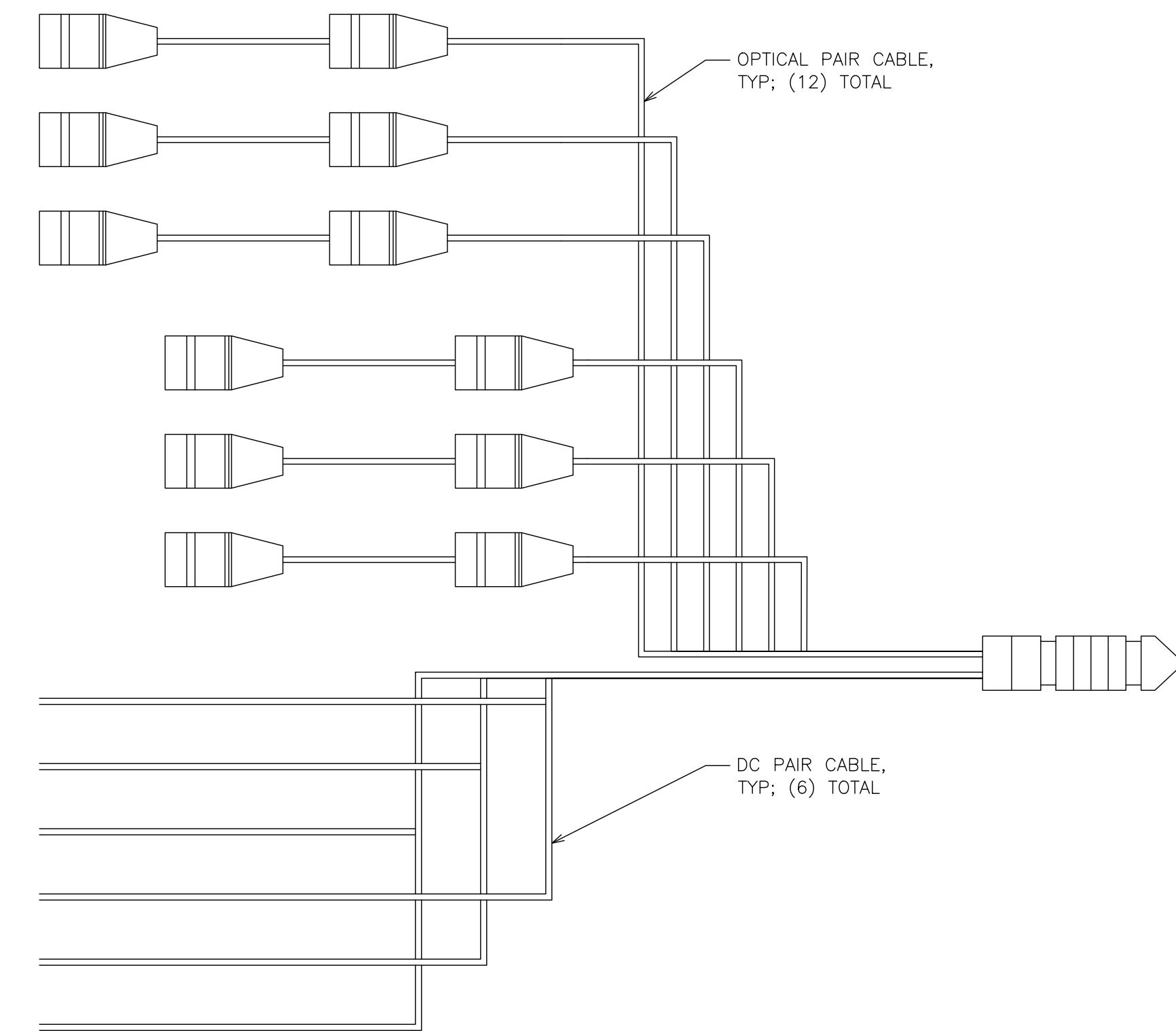
TOP



NOKIA AHLOA

NOKIA: RADIO AHLOA
 DIMENSIONS, HxWxD: 26.60"x12.90"x8.10"
 WEIGHT: 83.80 LBS

5 NOKIA AHLOA
 SCALE: NOT TO SCALE



6 HCS DETAIL
 SCALE: NOT TO SCALE



2323 DELGANY STREET
 DENVER, CO 80216



200 SPECTRUM CENTER DRIVE,
 SUITE 1700 & 1800
 IRVINE, CA 92618



T-MOBILE
 SITE NUMBER: DN06123A
 (SPRINT RETAIN)

BU #: 877092
 F3/FILL-IN/COLORADO
 SPGS/CSP18

255 NORTH GATE BLVD
 COLORADO SPRINGS, CO
 80921

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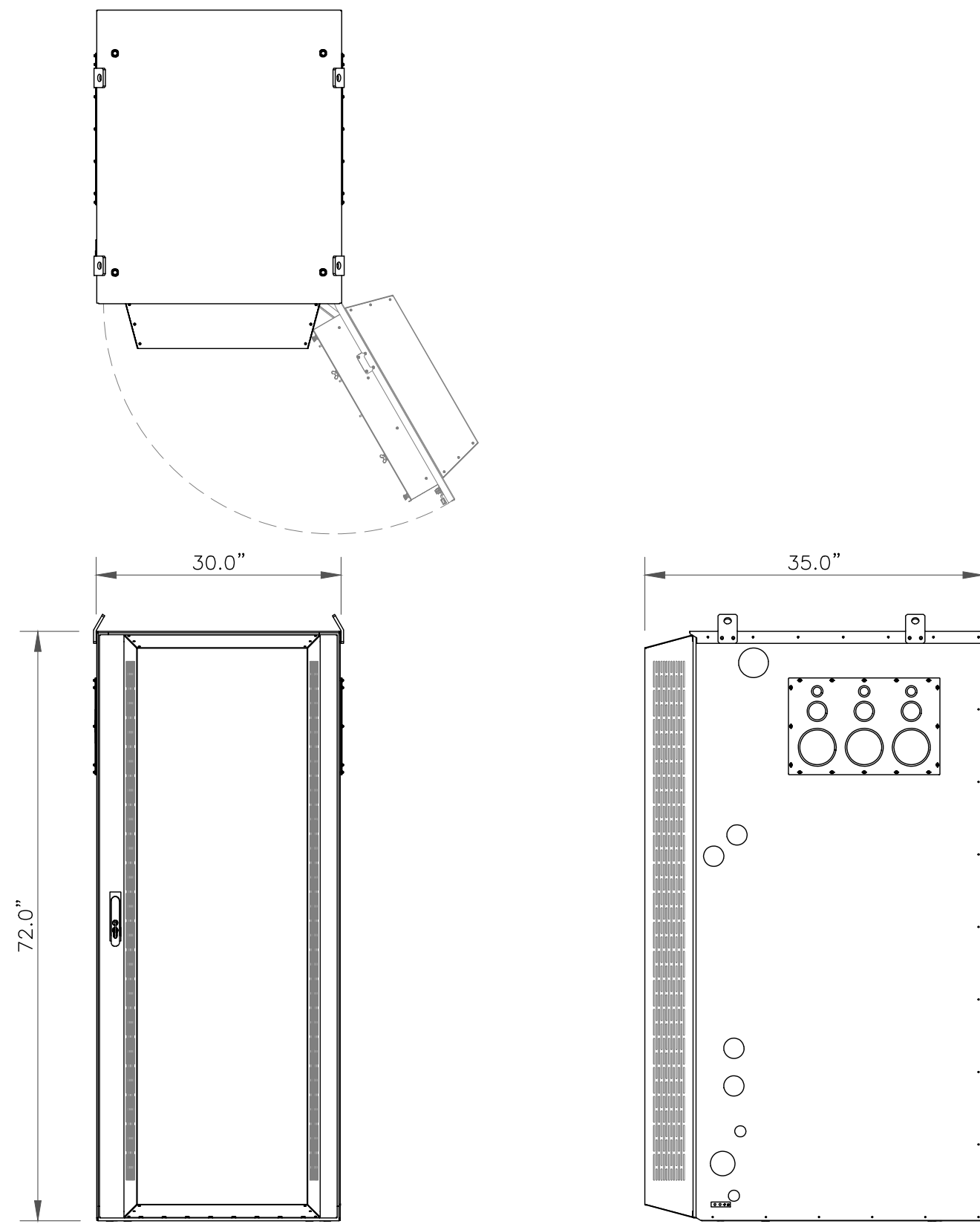


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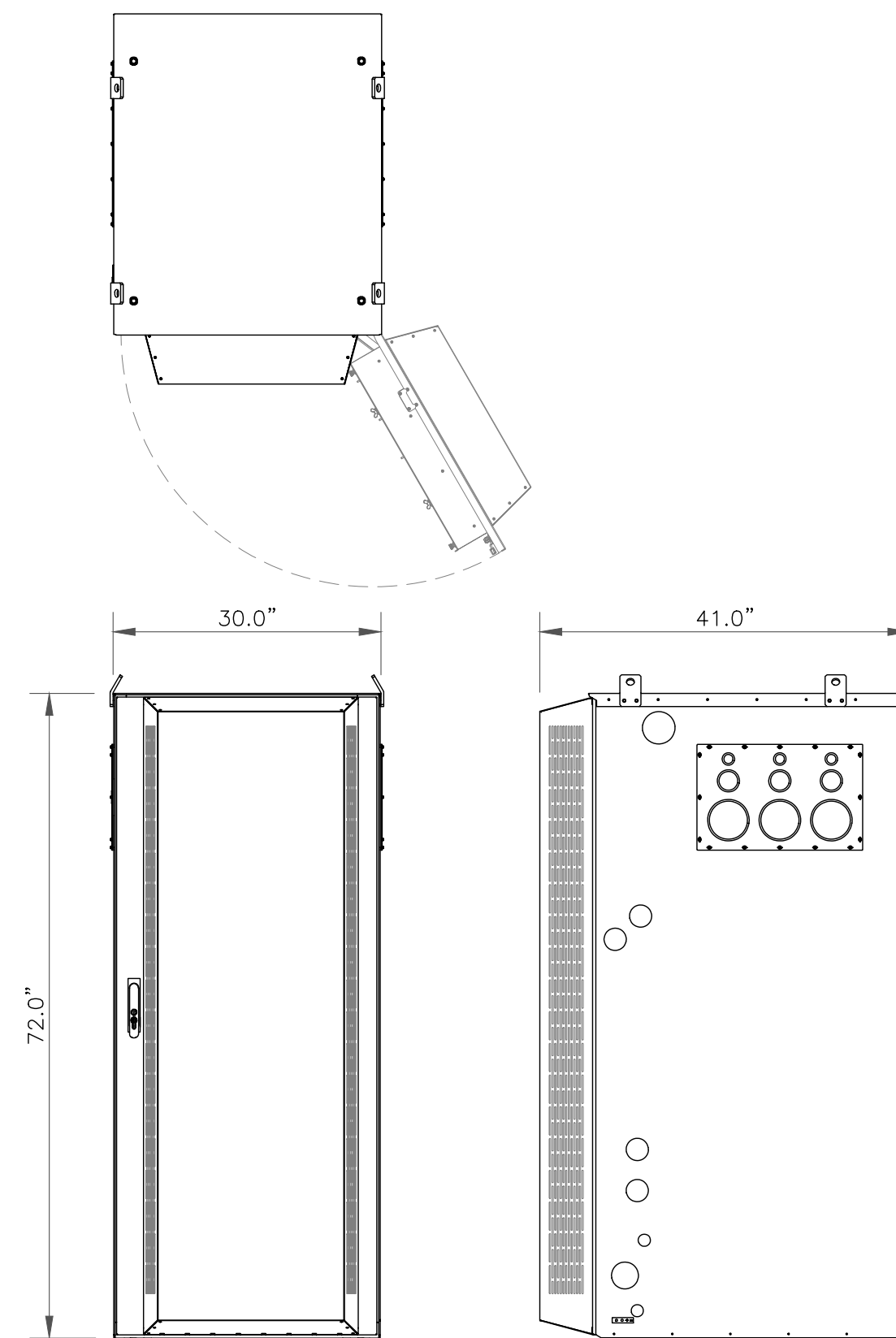
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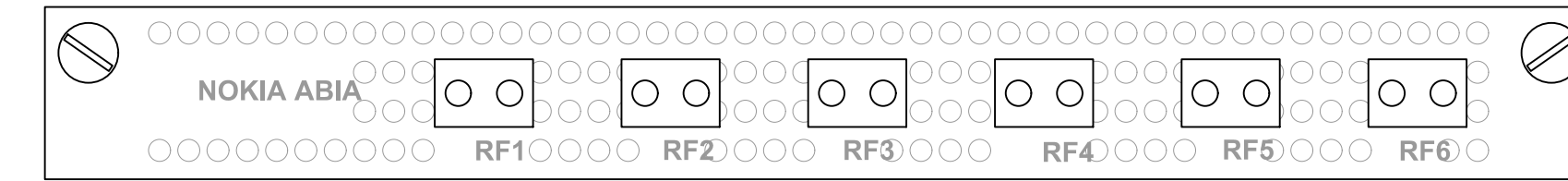
SHEET NUMBER: **C-5.1** REVISION: **4**



7 DELTA – HP LARGE 3 POWER CABINET
SCALE: NOT TO SCALE



8 DELTA – LB3 BATTERY CABINET
SCALE: NOT TO SCALE



9 ABIA DETAIL
SCALE: NOT TO SCALE

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3	09/16/21	GVM	CONSTRUCTION	JFJ
4	04/14/22	PSS	CONSTRUCTION	JFJ

SIGNAL INTERFACES	#OF	CONNECTOR	DESCRIPTION
DC IN	1	DC TERMINAL	4BY DC INPUT
EAC	1	HDMI	EXTERNAL ALARM & CONTROL, 6 ALARMS, 4 ALARMS/STATUS
SN	1	HDMI	SYNCHRONIZATION INPUT, GNSS INTERFACE
SOUT	1	HDMI	SYNCHRONIZATION OUTPUT
LMP	1	RJ45	LOCAL MANAGEMENT PORT, 1G ETHERNET
EF	2	SFP28	BACKHAUL/HIGHER LAYER FRONTHAUL INTERFACE, UP TO 25GE PER PORT, SUPPORT FOR SYNCIE IEEE1588
SEI	1	QSFP+	SYSTEM EXTENSION INTERFACE, 4 X 10GE
RESET	1		PLUG-IN RESET
SERVICE	1		SERVICE BUTTON, RECOVERY RESET
LEDS	7		VISUAL INDICATION OF STATUS

Figure: AMIA AirScale Subrack (factory default)

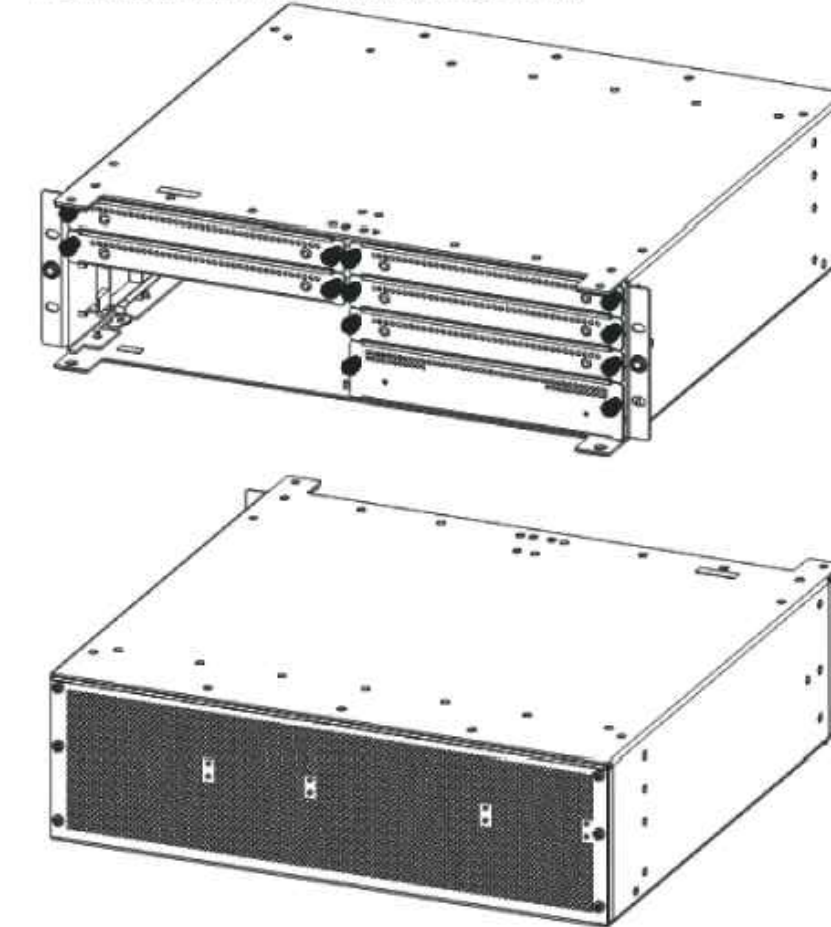


Table: AMIA dimensions and weight

Property	Value	Dimensions orientation
Height	128.5 mm (5.1 in.)	
Depth	400 mm (15.7 in.)	
Width	447 mm (17.6 in.)	

11 AMIA DETAIL
SCALE: NOT TO SCALE

Characteristics	CommScope	Raycap
Dimensions	14"x16"x8"	14"x16"x8"
Weight	23.5 lb	21.9 lb
OVP, IEC 61643-1	24"	Class I SPD (3)
UL Rating		1449, 4 th Ed.
OVP Monitoring	Dry contact	Dry contact
Fiber Patch Panel	24 LC pairs	24 LC pairs
Environmental Rating	IP67	IP66
Operating Temperature	-40 °C to +75 °C	-40 °C to +80 °C

COMMSCOPE HCS 2.0 PART 1

JUNCTION BOX MAKE: COMMSCOPE
JUNCTION BOX MODEL: HCS 2.0 PART 1
DIMENSIONS, HxWxD: 14.0"x16.0"x8.0"
WEIGHT: 23.50 LBS

12 COMMSCOPE/HCS 2.0 PART 1
SCALE: NOT TO SCALE

10 ABIL DETAIL
SCALE: NOT TO SCALE



04/14/22

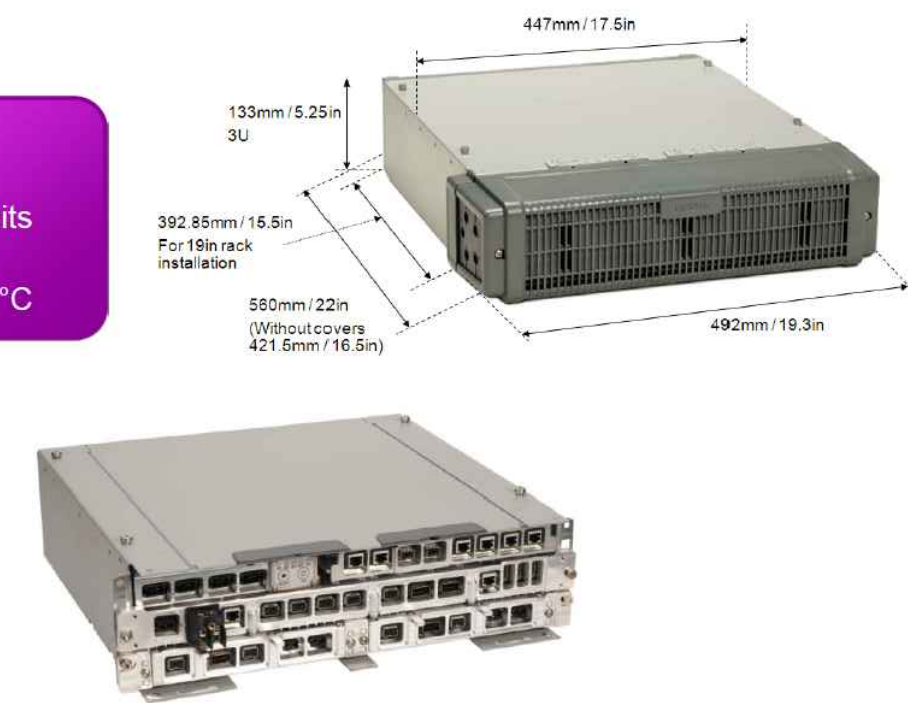
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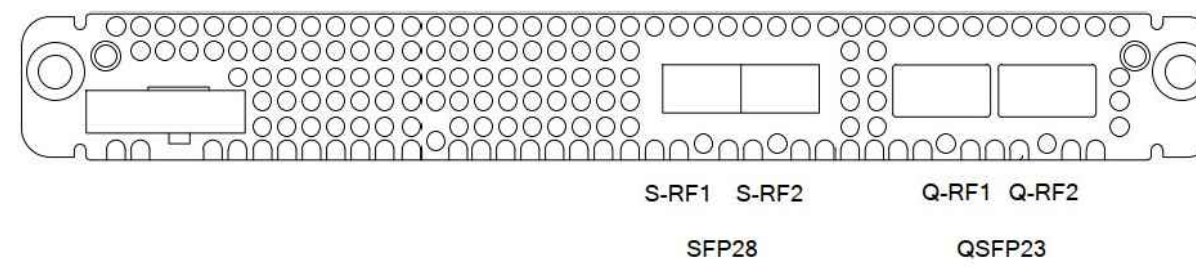
SHEET NUMBER: **C-5.2** REVISION: **4**

Flexi Multiradio BTS System Module FSMF

- < 15 liters
- < 15 kg
- 3 height units
- IP65
- 35 to +55 °C

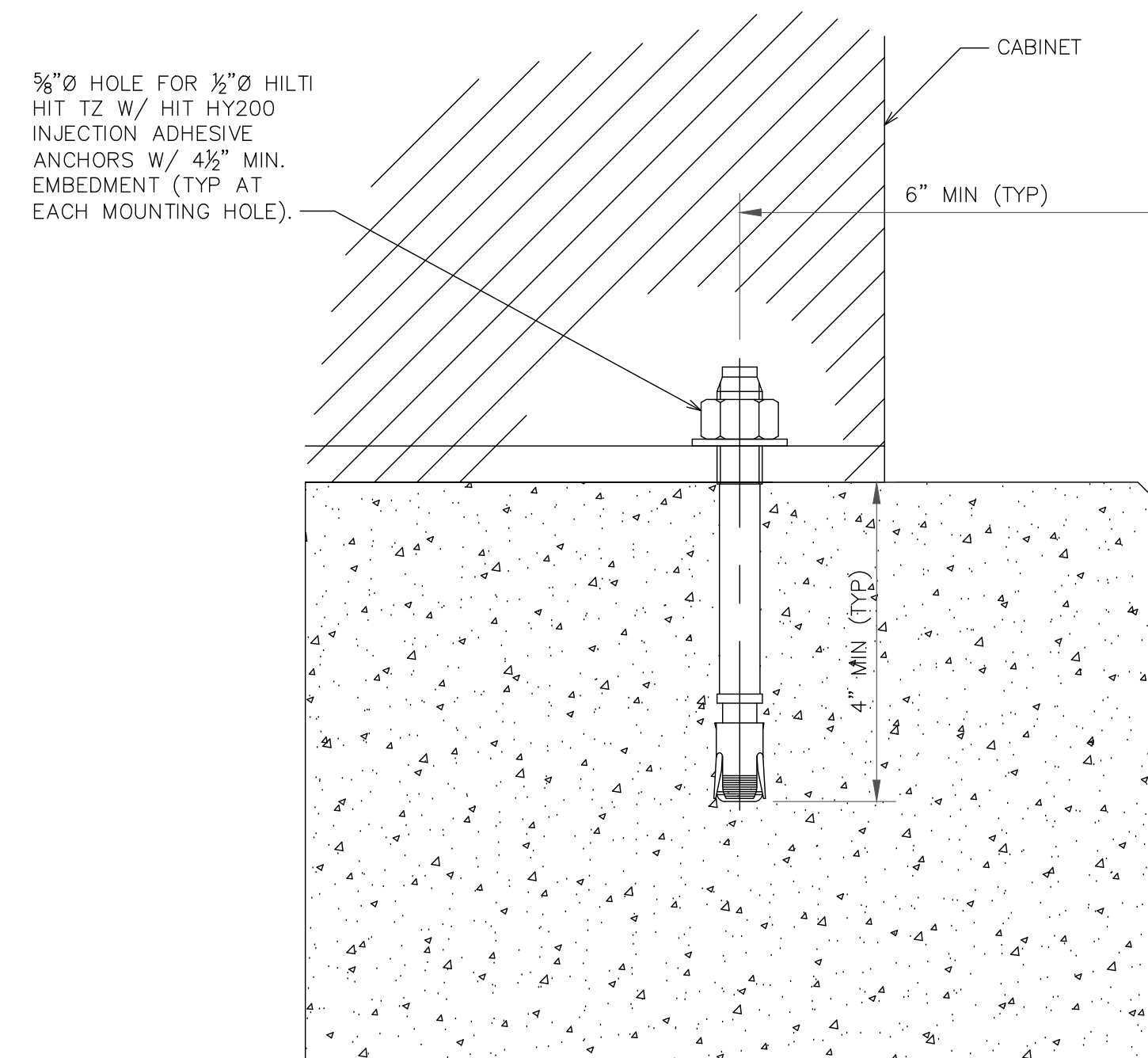


13 FSMF DETAILS
SCALE: NOT TO SCALE



SIGNAL	#OF INTERFACES	CONNECTOR	DESCRIPTION
Q-RFN	2	QSFP28	4 X 25/10 GBPS PER EACH CONNECTOR, SUPPORTS 10GE AND 25 GE ETHERNET PROTOCOLS
S-RFN	2	SFP28	1 X 25/10 GBPS PER EACH CONNECTOR, SUPPORTS 10GE AND 25 GE ETHERNET PROTOCOLS
LEDS	5		VISUAL INDICATION OF STATUS

14 ASIK DETAILS
SCALE: NOT TO SCALE



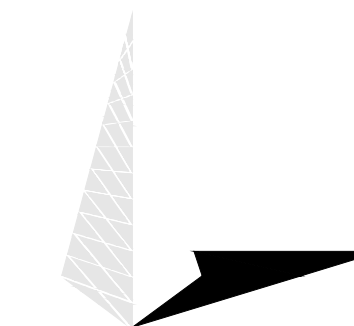
15 CONNECTION DETAIL
SCALE: NOT TO SCALE



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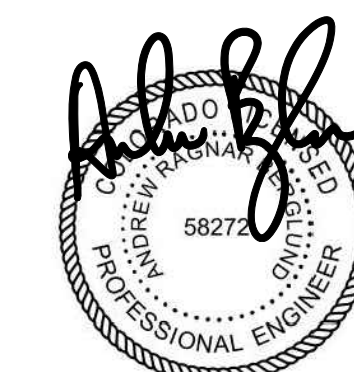
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ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
0	05/05/21	VBP	CONSTRUCTION	JFJ
1	05/24/21	JLB	CONSTRUCTION	JFJ
2	06/21/21	AOW	CONSTRUCTION	JFJ
3	09/16/21	GVM	CONSTRUCTION	JFJ
4	04/14/22	PSS	CONSTRUCTION	JFJ

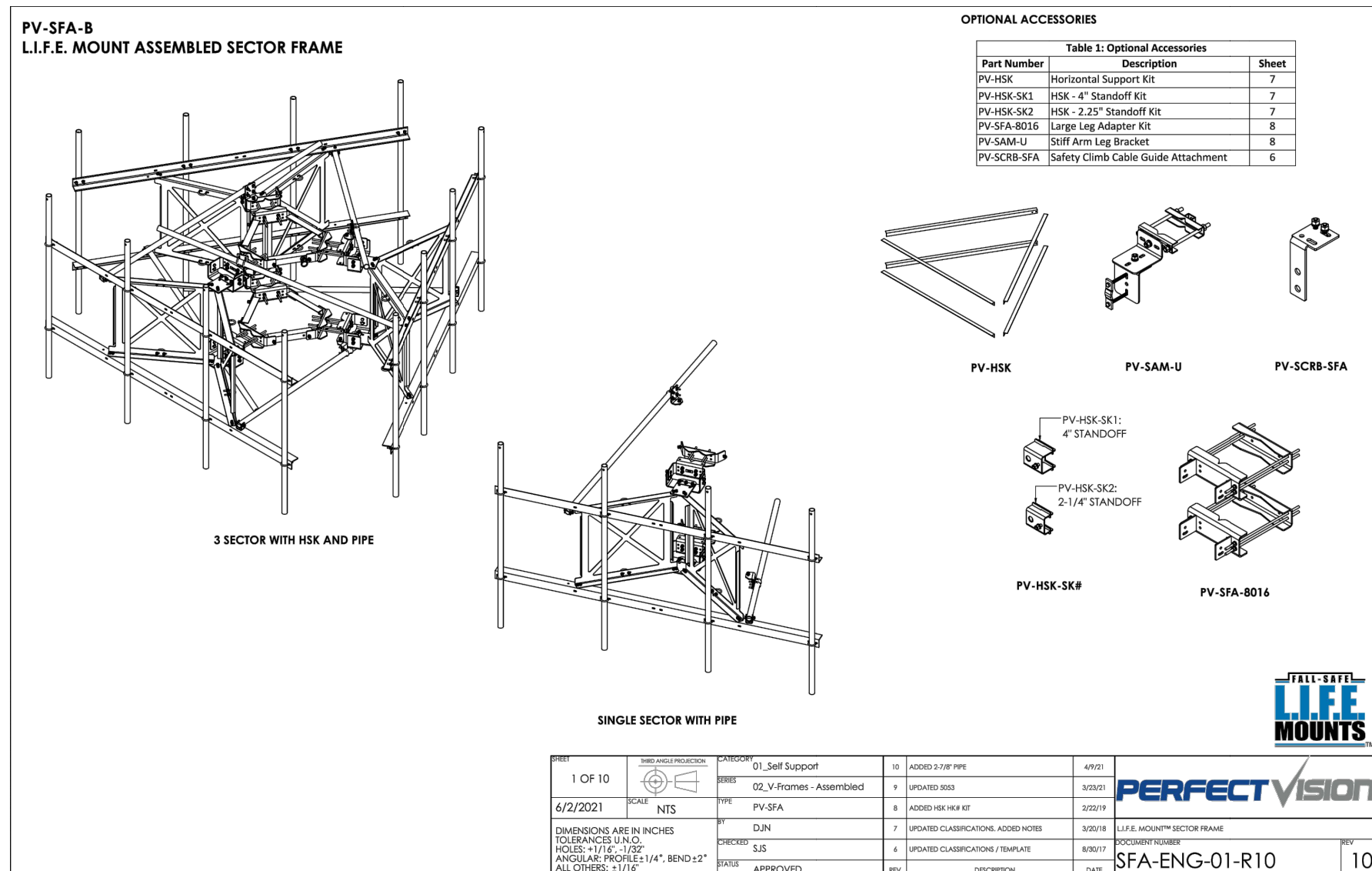


04/14/22

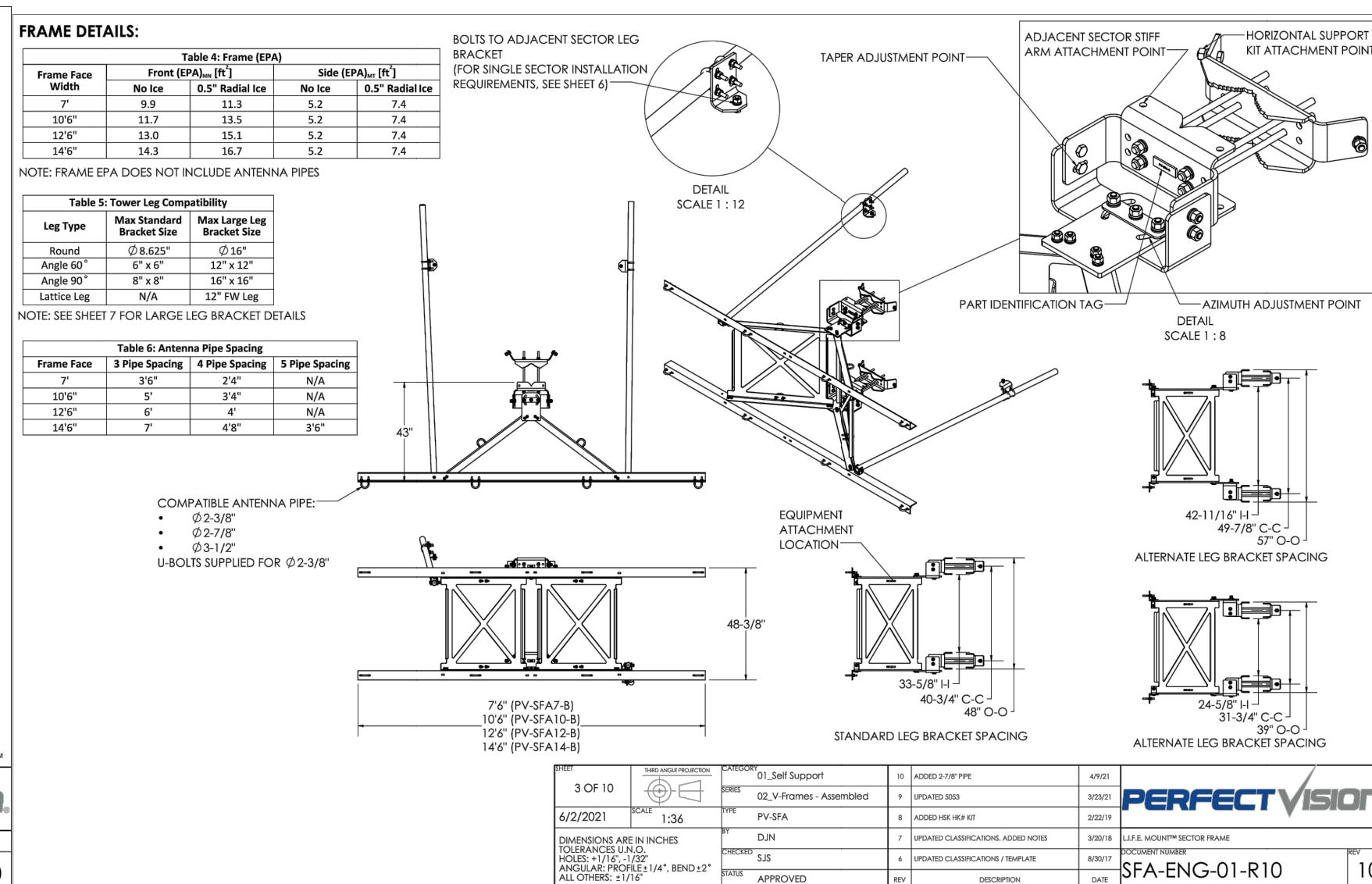
Andrew R. Berglund, P.E.
Professional Engineer License: #58272

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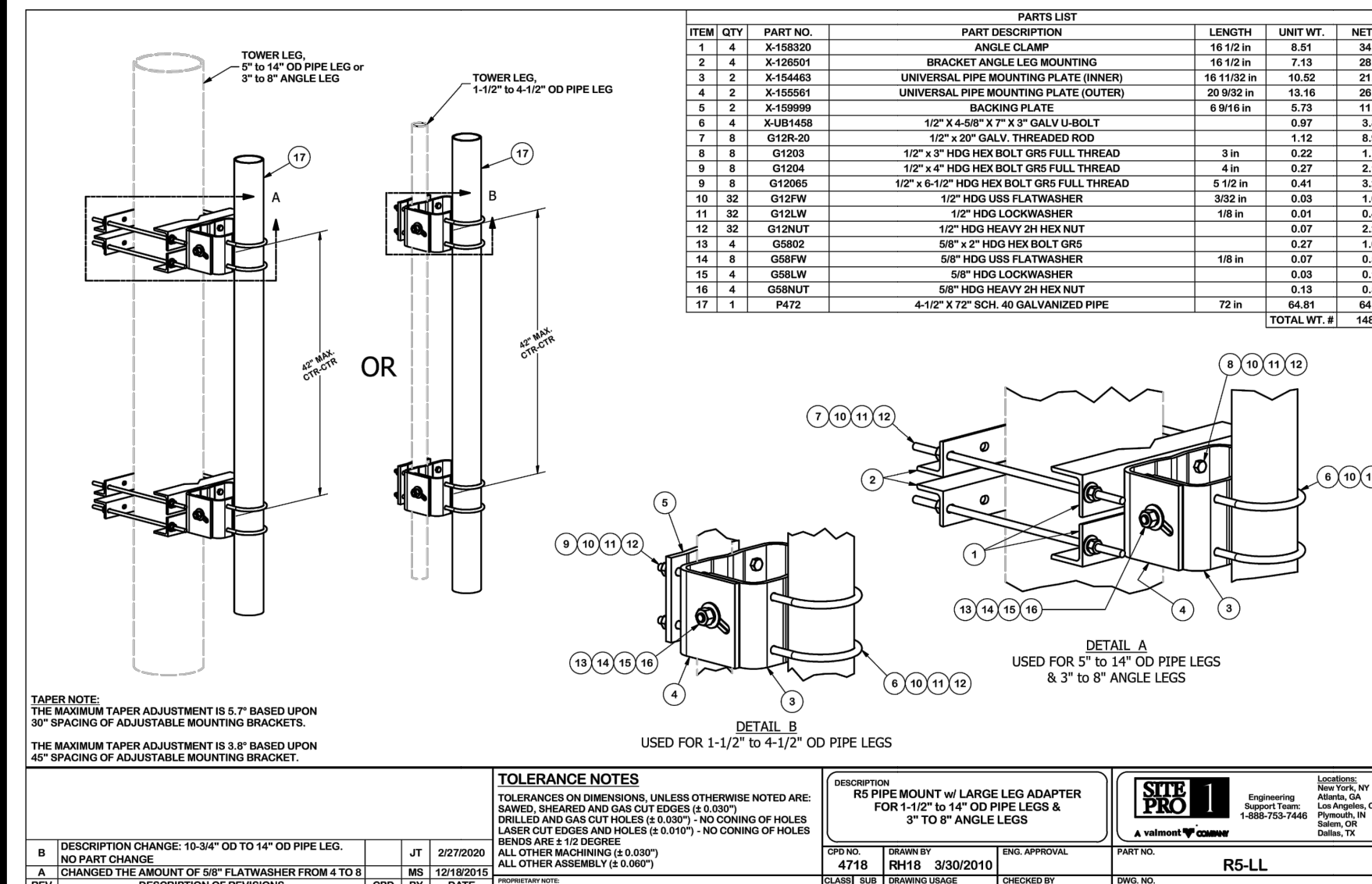
SHEET NUMBER: **C-5.3** REVISION: **4**



REV	DATE	DESCRIPTION	BY	CHKD
1	4/2/2021	01_Self Support	AS	AS
2	4/2/2021	02_VFrame - Assembled	AS	AS
3	4/2/2021	03_PV-SFA	AS	AS
4	4/2/2021	04_ADDITIONAL HSK KIT	AS	AS
5	4/2/2021	05_ADDITIONAL SAM-U KIT	AS	AS
6	4/2/2021	06_ADDITIONAL SK1 KIT	AS	AS
7	4/2/2021	07_ADDITIONAL SK2 KIT	AS	AS
8	4/2/2021	08_ADDITIONAL SK# KIT	AS	AS
9	4/2/2021	09_ADDITIONAL SFA-8016 KIT	AS	AS
10	4/2/2021	10_ADDITIONAL HSK KIT	AS	AS



REV	DATE	DESCRIPTION	BY	CHKD
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7	4/2/2021	07_ADDITIONAL SK2 KIT	AS	AS
8	4/2/2021	08_ADDITIONAL SK# KIT	AS	AS
9	4/2/2021	09_ADDITIONAL SFA-8016 KIT	AS	AS
10	4/2/2021	10_ADDITIONAL HSK KIT	AS	AS



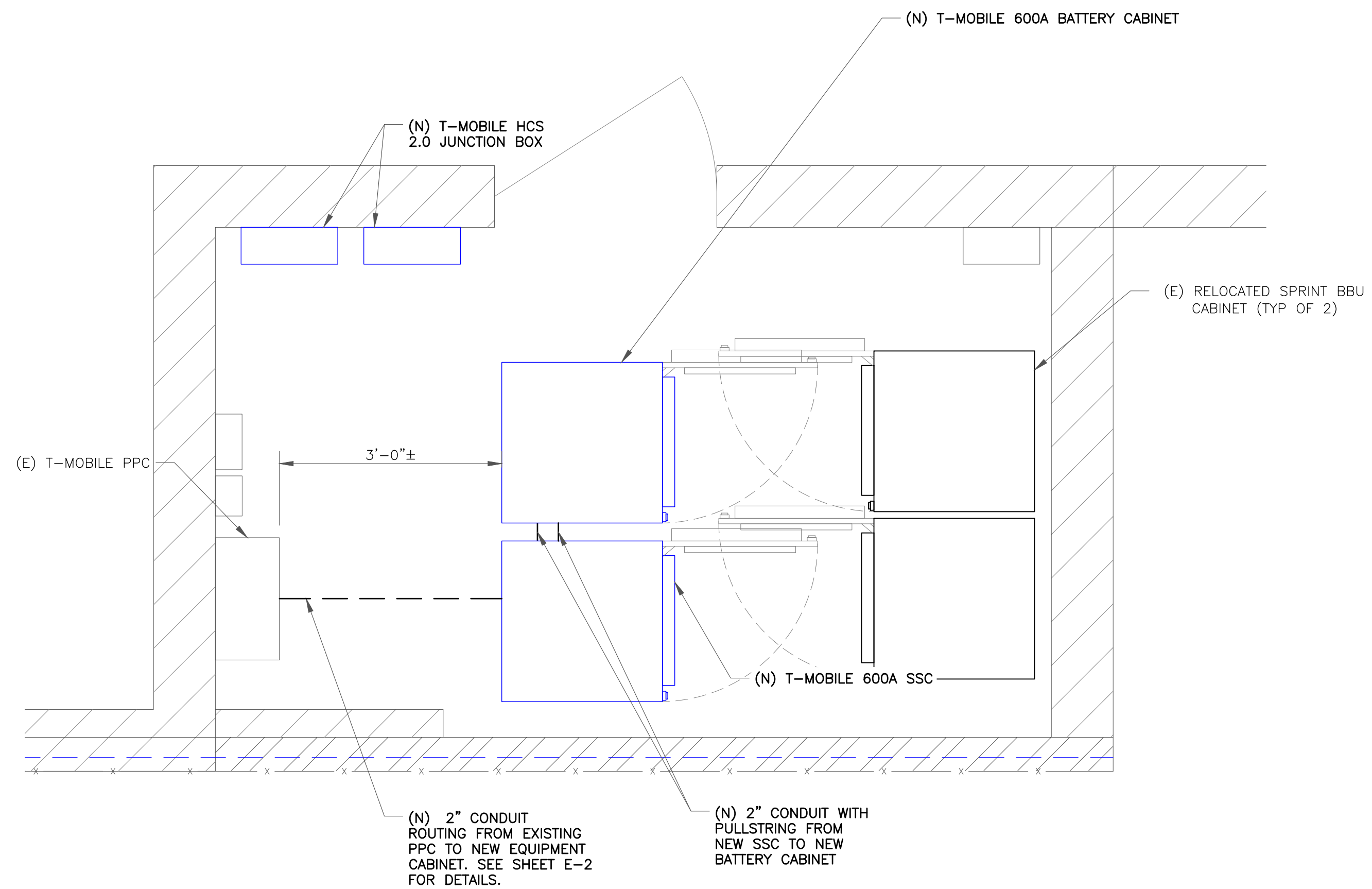
REV	DATE	DESCRIPTION	BY	CHKD
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3	4/2/2021	03_PV-SFA	AS	AS
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8	4/2/2021	08_ADDITIONAL SK# KIT	AS	AS
9	4/2/2021	09_ADDITIONAL SFA-8016 KIT	AS	AS
10	4/2/2021	10_ADDITIONAL HSK KIT	AS	AS

16 MOUNT DETAILS
SCALE: NOT TO SCALE

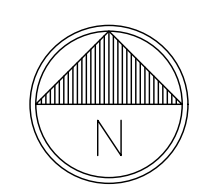
17 ANTENNA PIPE DETAILS
SCALE: NOT TO SCALE

ELECTRICAL DETAILS NOTES:

1. EXISTING EQUIPMENT LAYOUT WAS MADE USING INFORMATION PROVIDED BY CROWN CASTLE. CONTRACTOR TO VERIFY ALL EXISTING INFORMATION IS AS INDICATED ON SITE PLAN. CONTRACTOR IS TO ESTABLISH THE EXISTENCE AND LOCATION OF ALL EXISTING OVERHEAD AND UNDERGROUND UTILITIES. IMMEDIATELY NOTIFY THE CONSTRUCTION MANAGER OF ANY DISCREPANCIES.
2. CONTRACTOR TO ENSURE THAT ALL T-MOBILE EQUIPMENT IS INSTALLED INSIDE T-MOBILE'S LEASE AREA, INCLUDING BUT NOT LIMITED TO, EQUIPMENT CABINETS, UTILITY CABINETS, H-FRAMES, ETC.
3. CONTRACTOR TO VERIFY THAT ALL T-MOBILE EQUIPMENT IS INSTALLED TO MEET THE WORKING CLEARANCE REQUIREMENTS OF NEC 110.26

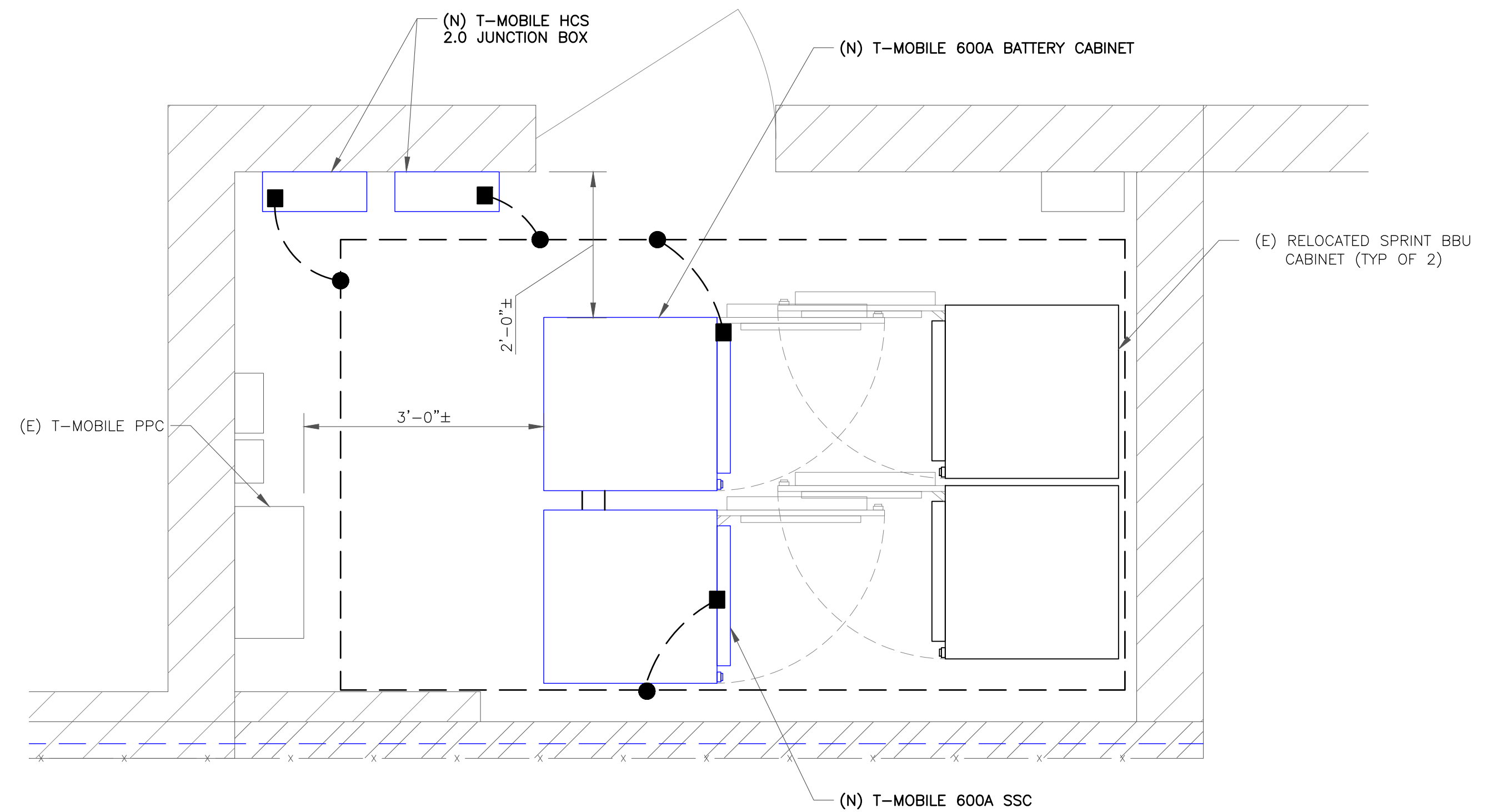


1 ELECTRICAL ROUTING PLAN
SCALE: 3/4"=1'-0" (FULL SIZE)
3/8"=1'-0" (11x17)



ELECTRICAL DETAILS NOTES:

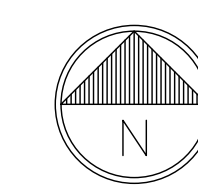
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2. CONTRACTOR TO ENSURE THAT ALL T-MOBILE EQUIPMENT IS INSTALLED INSIDE T-MOBILE'S LEASE AREA, INCLUDING BUT NOT LIMITED TO, EQUIPMENT CABINETS, UTILITY CABINETS, H-FRAMES, ETC.
3. CONTRACTOR TO VERIFY THAT ALL T-MOBILE EQUIPMENT IS INSTALLED TO MEET THE WORKING CLEARANCE REQUIREMENTS OF NEC 110.26
4. CONTRACTOR TO VERIFY CONDITION AND LOCATION OF ALL EXISTING GROUNDING EQUIPMENT PRIOR TO CONSTRUCTION. TEP DID NOT CONFIRM EXISTING SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, GROUND RINGS, GROUND RODS, AND GROUND BARS.
5. CONTRACTOR TO VERIFY WITH LOCAL INSPECTOR THAT EGRESS IS OF SUFFICIENT AREA TO GIVE ACCESS TO AND EGRESS FROM THE EQUIPMENT



LEGEND

■	MECHANICAL CONNECTION
●	EXOTHERMIC CONNECTION
▭	ANTENNA GROUND BAR
▭	MASTER GROUND BAR

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



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PHOENIX, AZ 85040
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T-MOBILE
SITE NUMBER: **DN06123A**
(SPRINT RETAIN)

BU #: **877092**
F3/FILL-IN/COLORADO
SPGS/CSP18

255 NORTH GATE BLVD
COLORADO SPRINGS, CO
80921

EXISTING 69'-7" SELF
SUPPORT

ISSUED FOR:

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1	05/24/21	JLB	CONSTRUCTION	JFJ
2	06/21/21	AOW	CONSTRUCTION	JFJ
3	09/16/21	GVM	CONSTRUCTION	JFJ

09/16/21
Mark S. Quakenbush, P.E.
Professional Engineer License: #51287
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SHEET NUMBER: **E-1** **REVISION:** **3**

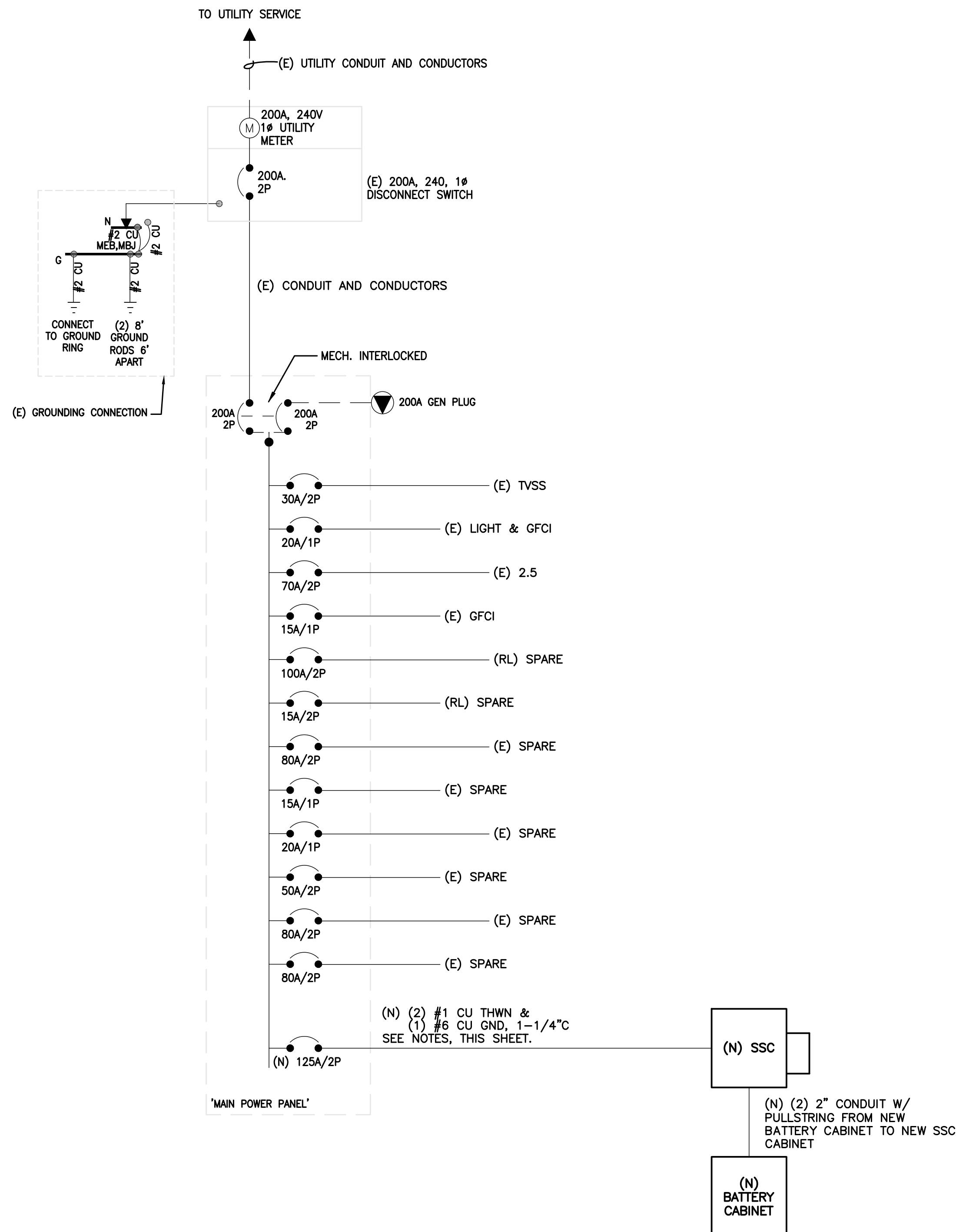
NEW ELECTRICAL PANEL SCHEDULE														
PANEL: PPC														
LOCATION: PPC CABINET														
MOUNTING SURFACE: NEMA RATING: 3R														
VOLTAGE: 240 / 120 V 1ϕ, 3W														
MAINS: 200 A MCB														
BUS: 200 A CU														
LOAD DESCRIPTION	EMT COND	CU GRND	PHASE NEUT	CKT BRKR	CIR NO.	LOAD AMPS PHASE A	PHASE B	CIR NO.	CKT BRKR	PHASE NEUT	CU GRND	EMT COND	LOAD DESCRIPTION	
MISC (E) TVSS	3/4"	10	10	30	1	0.0		2	1		10	1"	LIGHTING & RECEPTACLES (E) LIGHT & GFCI	
MISC Cont.					3	4.0		2	1		70	4	8	1"
MISC (E) GFCI	3/4"	12	12	15	5	1.5		4	2		10	3/4"	MISC (E) 2.5	
MISC (RL) SPARE / OFF	1-1/4"	8	3	100	7	0.0		6	2		15	12	12	3/4"
MISC Cont.					9	0.0		8	1		20	10	10	3/4"
MISC (RL) SPARE / OFF	3/4"	12	12	15	11	0.0		10	1		50	8	10	3/4"
MISC Cont.					13	0.0		12	1		8			
MISC (E) SPARE / OFF	1"	8	4	80	15	0.0		14	2		80	4	8	1"
MISC Cont.					17	0.0		16			4			
MISC (N) #160 SITE SUPPORT CABINET	1-1/4"	6	1	125	19	65.8		18	2		80	4	8	1"
MISC Cont.					21	65.8		20			4			
BUSSED SPACE					23	0.0		22	2		2			
					24	0.0								
AMPS PER PHASE (CODE LOAD)						127.3		121.8	CONTRACTOR TO INSTALL APPROVED HANDLE TIE ON ALL SHARED NEUTRAL CIRCUITS.					
1 PHASE DEMAND (VA)									SYMBOL LIST					
LIGHTING									300					
25% OF LIGHTING									75					
RECEPTACLES									360					
MISCELLANEOUS									29232					
25% OF MISCELLANEOUS									7308					
TOTAL VA									37275					
									37.27 KVA @ 240 V 1ϕ					
									155.31 A @ 240 V 1ϕ					

LEGEND:
 (E) - EXISTING
 (RL) - RELABELED
 (N) - NEW

DC -48V FEEDER CABLING CHART

CALCULATIONS ARE BASE ON WORST CASE FULL LOAD AMPS AT 104A -48VDC, NOT EXCEEDING 3% VOLTAGE DROP. IF FIELD CONDITIONS ARE DIFFERENT THAN INDICATED, CONTACT ENGINEER FOR REVISED CALCULATIONS.

DISTANCE FROM FUEL CELL TO EQUIP. CABINET.	-48V, DC SINGLE CABLE	-48V, DC PARALLEL CABLE	CONDUIT SIZE
1'-70'	1-#1/0 CU. AWG		1-1/4"
71'-90'	1-#2/0 CU. AWG		1-1/2"
91'-110'	1-#3/0 CU. AWG		1-1/2"
111'-140'	1-#4/0 CU. AWG		2"
141'-175'		2-#2/0 CU. AWG	2"



NOTE:
 #6 COPPER WIRE AND GREATER SHALL BE (COPPER) THWN WIRE OR (COPPER) XHHW.

NOTE:
 PRIOR TO RUNNING CONDUIT ROUTE - CONTRACTOR SHALL CONTACT THE T-MOBILE PROJECT MANAGER AND VERIFY THE EQUIPMENT CABINET LAYOUT CONFIGURATION AND ROUTE CONDUITS ACCORDINGLY.

NOTE:
 PRE-CONSTRUCTION MEETING AND ELECTRICAL EASEMENT REQUIRED.

NOTE:
 CONTRACTOR SHALL TAG EACH CIRCUIT CONDUCTOR AT EACH J-BOX, OUTLET, SWITCH, ETC. WITH THE CIRCUITS IDENTIFICATION.

NOTE:
 CONTRACTOR SHALL TAG EACH CIRCUIT CONDUCTOR AT EACH J-BOX, OUTLET, SWITCH, ETC. WITH THE CIRCUITS IDENTIFICATION.

NOTE:
 PROPOSED CONDUCTORS FROM PPC TO SSC CABINET EXCLUDE NEUTRAL CONDUCTOR AT THE DIRECTION OF T-MOBILE.

NOTE:
 ALL EQUIPMENT SHOWN IN THE ONE-LINE DIAGRAM AND PANEL SCHEDULE IN THESE DRAWINGS IS EXISTING UNLESS NOTED OTHERWISE. ONLY NEW CONDUIT AND CONDUCTORS ARE SHOWN ON ONE-LINE DIAGRAM FOR CLARITY.

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BU #: 877092
F3/FILL-IN/COLORADO
SPGS/CSP18

255 NORTH GATE BLVD
 COLORADO SPRINGS, CO
 80921

EXISTING 69'-7" SELF SUPPORT

ISSUED FOR:

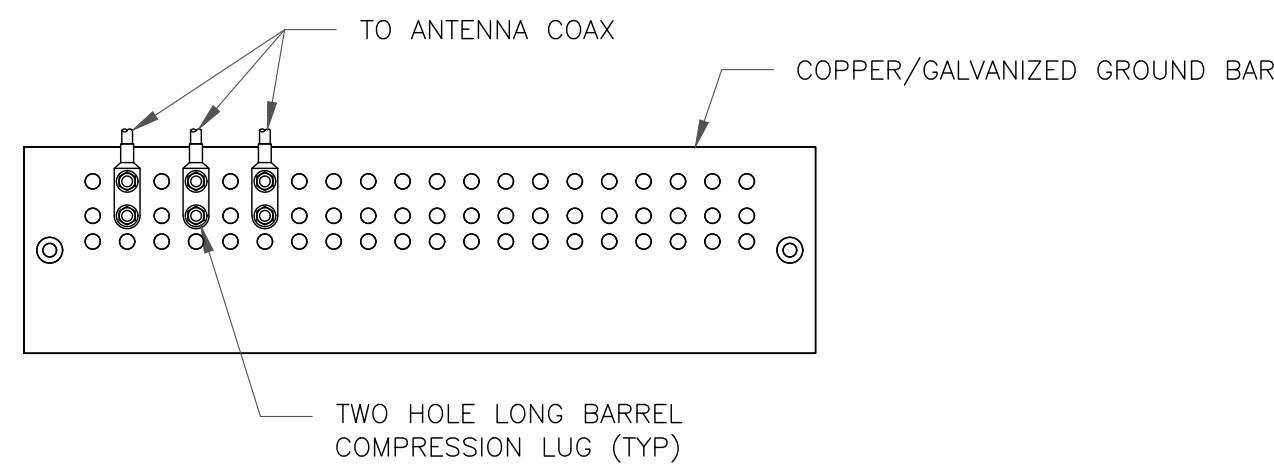
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(Professional Engineer Seal)

09/16/21

Mark S. Quakenbush, P.E.
 Professional Engineer License: #51287

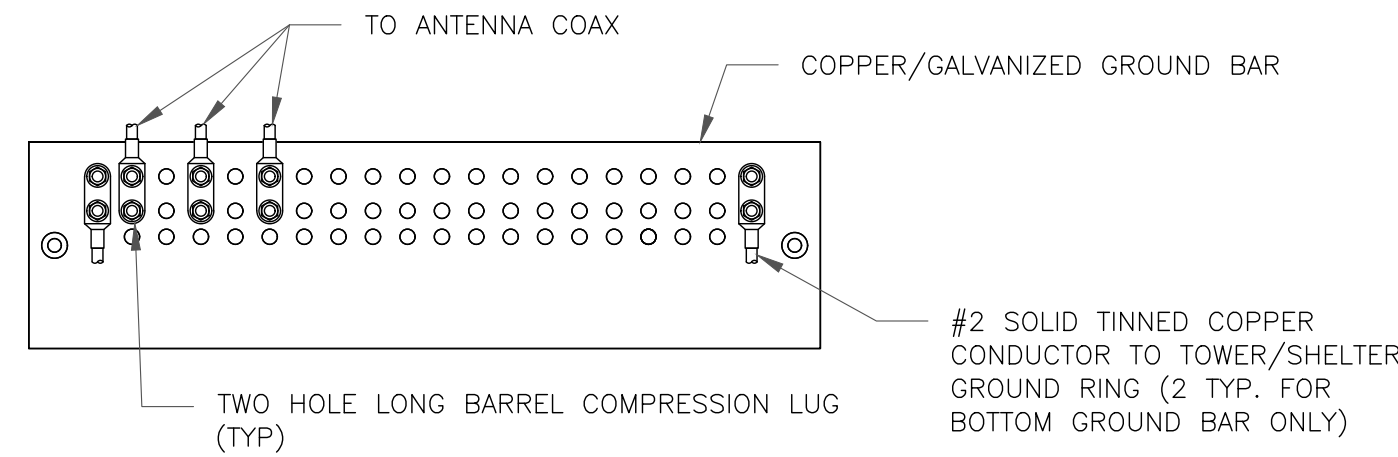
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NOTES:

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 TOWER STEEL.

1 ANTENNA GROUND BAR DETAIL
SCALE: NOT TO SCALE

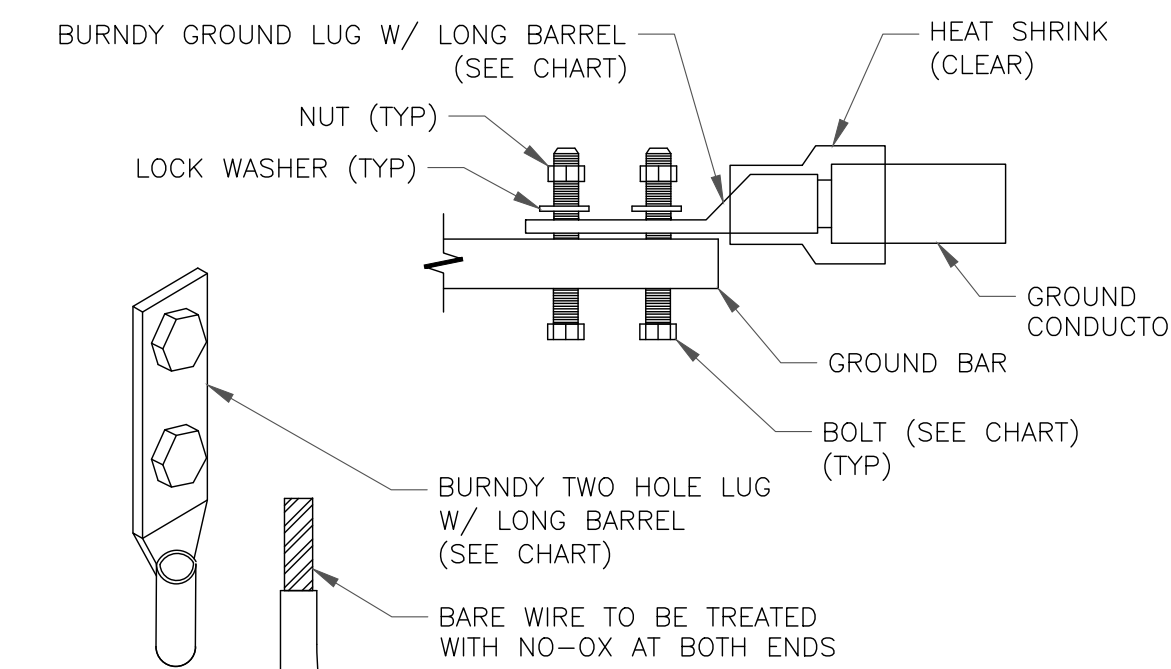


NOTES:

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

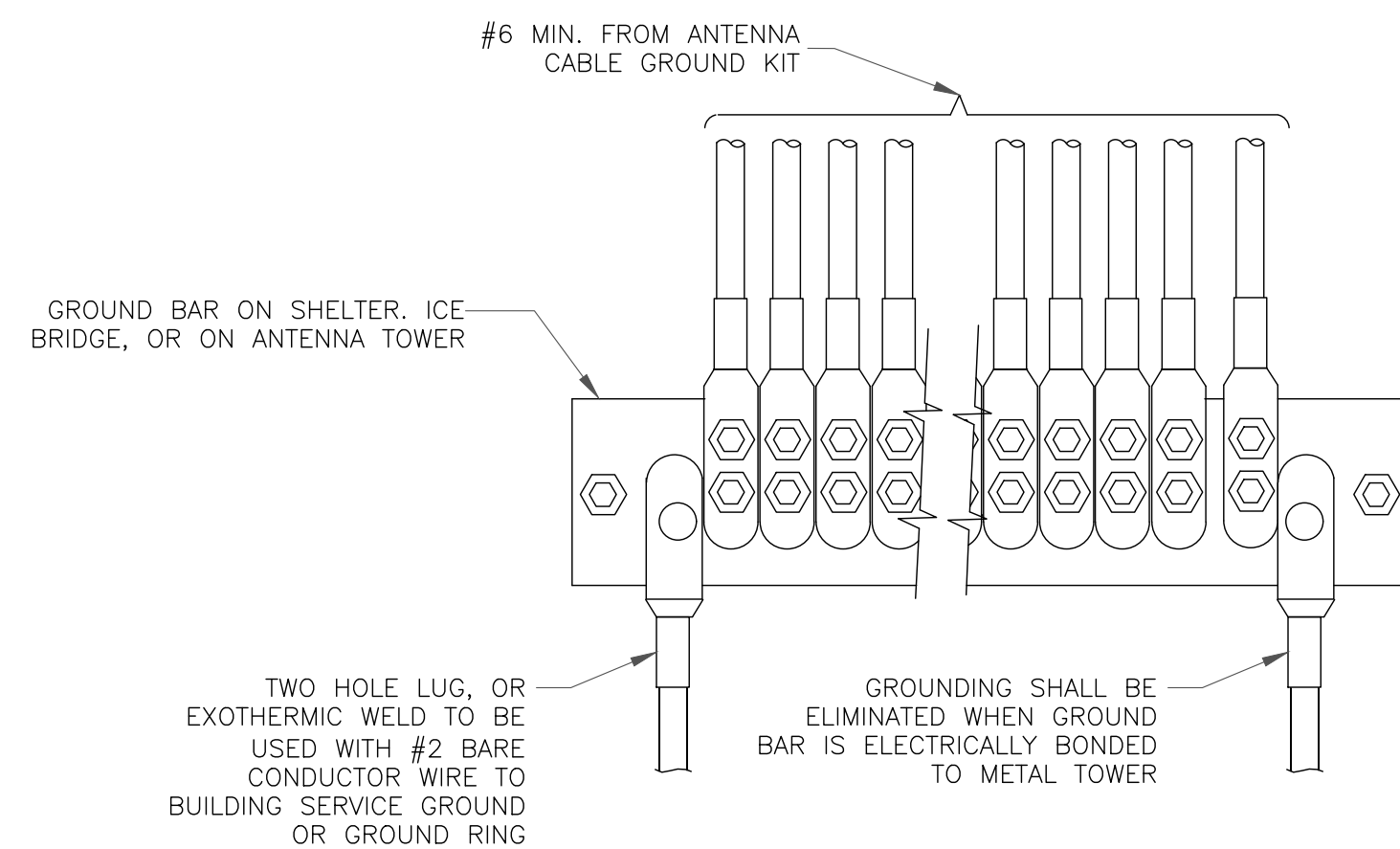
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 SOLID TINNED	YA3C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 STRANDED	YA2C-2TC38	3/8" - 16 NC SS 2 BOLT
#2/0 STRANDED	YA26-2TC38	3/8" - 16 NC SS 2 BOLT
#4/0 STRANDED	YA28-2N	1/2" - 16 NC SS 2 BOLT



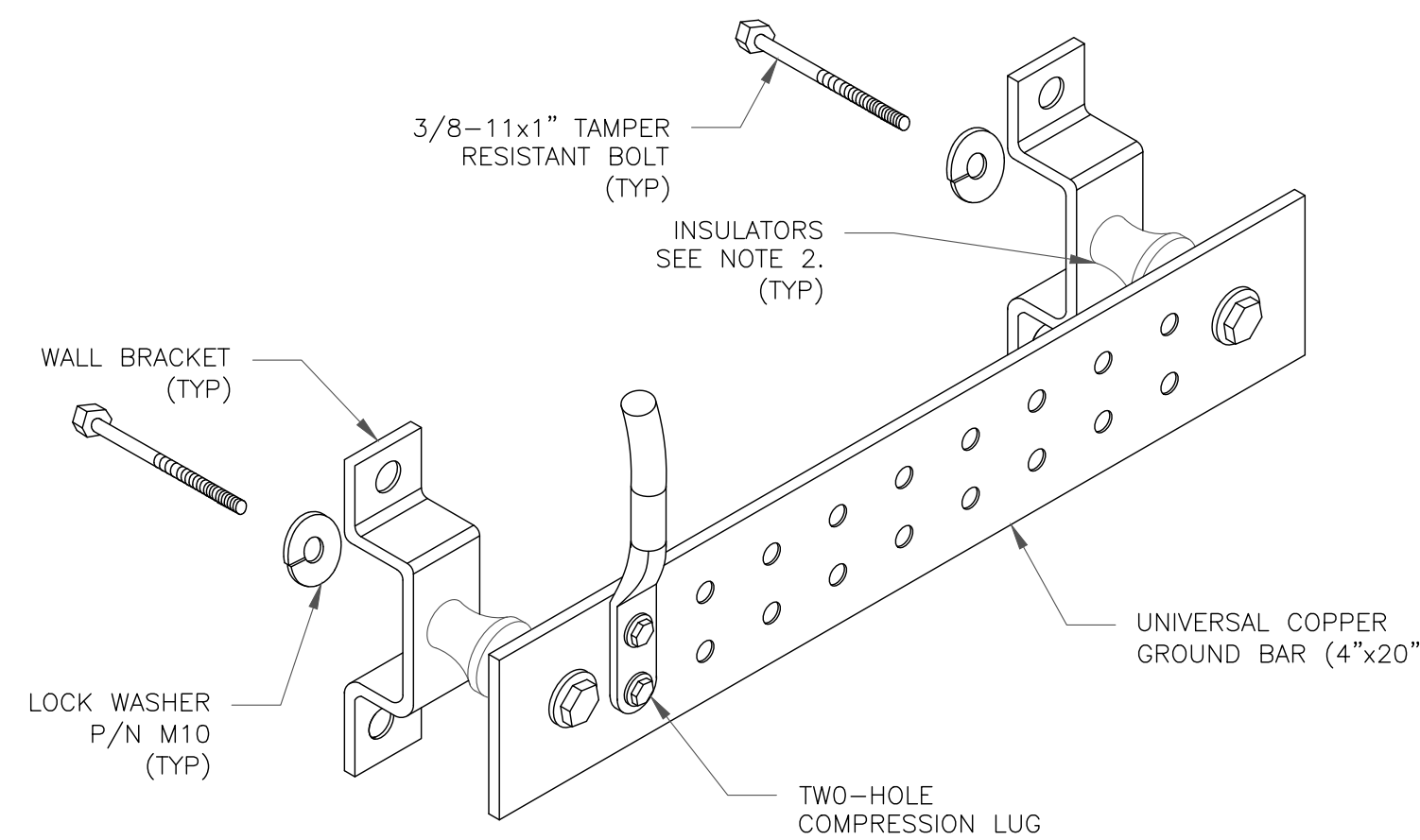
NOTE:

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.

3 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



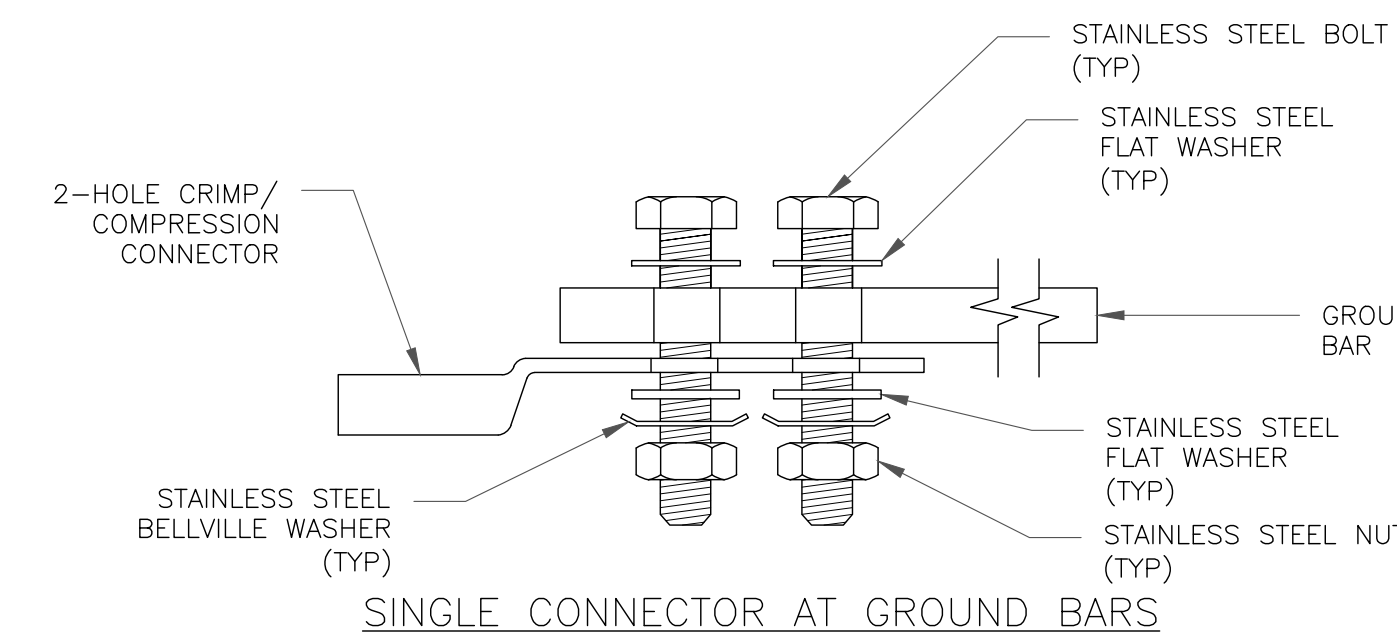
4 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



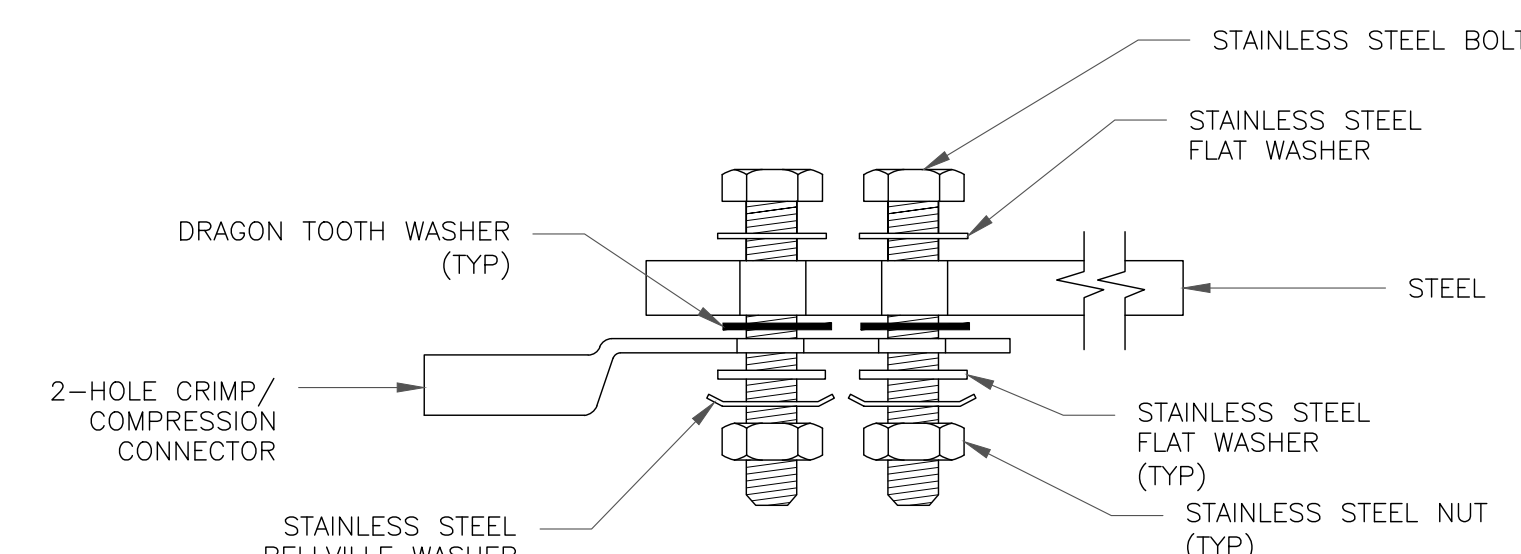
NOTES:

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.

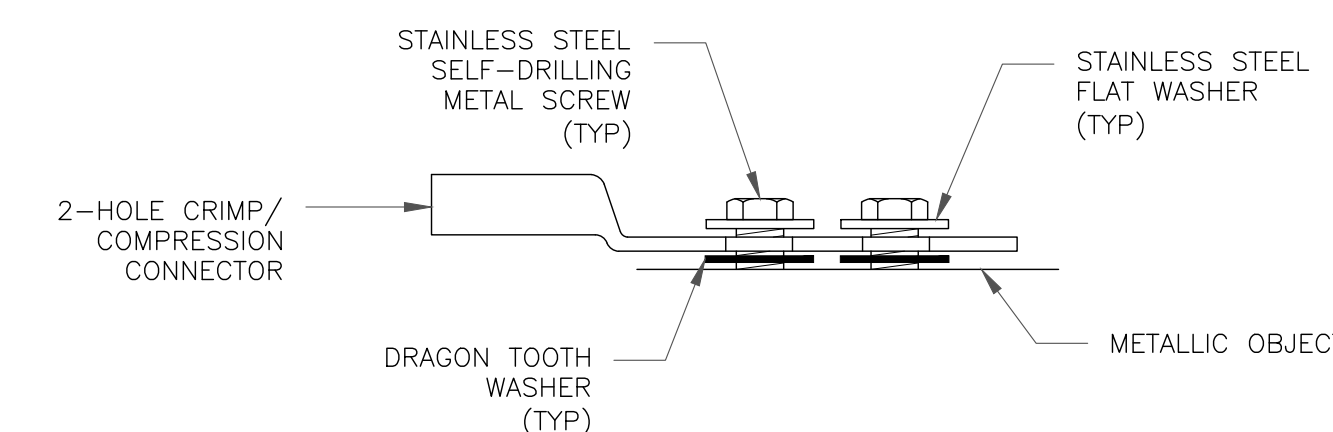
5 GROUND BAR DETAIL
SCALE: NOT TO SCALE



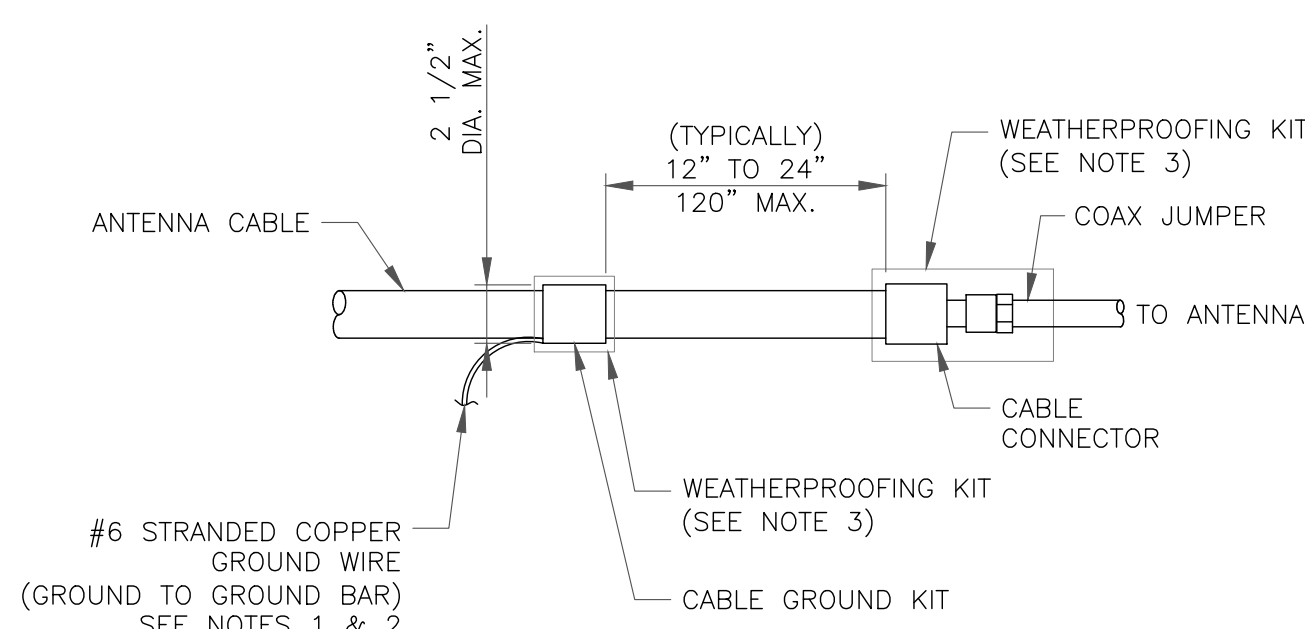
SINGLE CONNECTOR AT GROUND BARS



SINGLE CONNECTOR AT STEEL OBJECTS



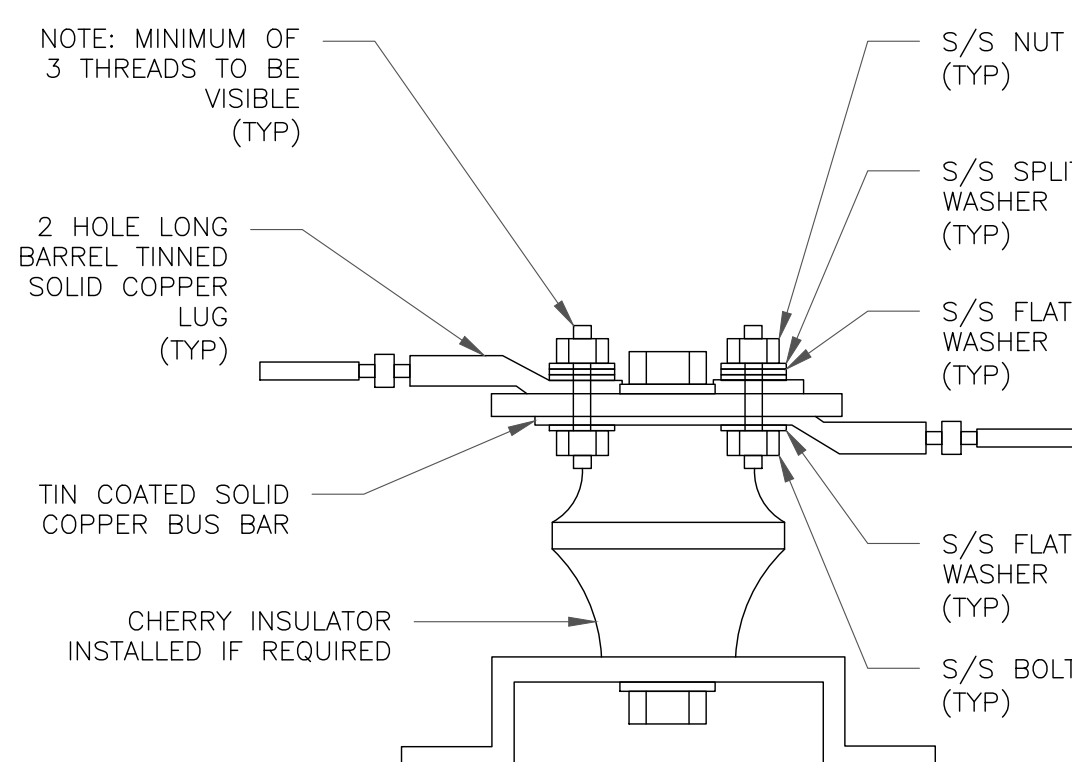
SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS



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.

6 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE

8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE

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Professional Engineer Seal: PE.0051287

09/16/21
Mark S. Quakenbush, P.E.
Professional Engineer License: #51287

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SHEET NUMBER: G-1 REVISION: 3

Section 3 - Proposed Template Images

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