

# T-Mobile

## DN04234A SPRINT\_BLACK\_FOREST 2746 RUSTIC GROVE COLORADO SPRINGS, CO 80921 SBA SITE ID: CO046107-A CONFIGURATION 56791EZ\_SR\_U21

Prepared By:  
**INFINIGY**  
FROM ZERO TO INFINIGY  
the solutions are endless  
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Project Manager:



SBA SITE ID: CO46107-A

Engineer Stamp:



Signed: \_\_\_\_\_ Date: \_\_\_\_\_

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Rev.	Submittal / Revision	App'd	Date
3	REVISED PER ELECTRICAL COMMENTS	CES	09/21/21
2	REVISED PER ELECTRICAL COMMENTS	CES	09/02/21
1	REVISED PER ELECTRICAL COMMENTS	EDR	06/04/21
0	ISSUED FOR CONSTRUCTION	CAP	01/06/21
B	REVISED PER RFDS	CAP	12/23/20
A	ISSUED FOR REVIEW	CAP	10/30/20

Designed: CAP Date: 09/21/21  
Approved: EDR Date: 09/21/21

Project Number: 656-002

Project Title:  
**DN04234A  
SPRINT\_BLACK\_FOREST**  
2746 RUSTIC GROVE  
COLORADO SPRINGS, CO 80921

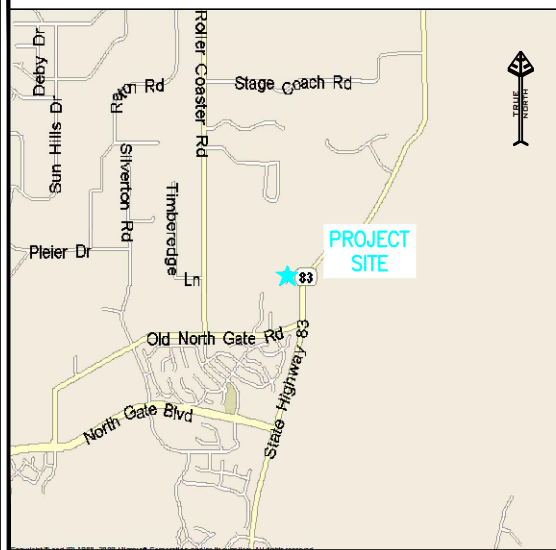
Prepared For:  
**T-Mobile**  
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Drawing Scale: AS NOTED Date: 09/21/21 **CD**

Drawing Title:  
**TITLE SHEET**

Drawing Number: **T-1**

### VICINITY MAP



### DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

**811** TO OBTAIN LOCATION OF PARTICIPANTS UNDERGROUND FACILITIES BEFORE YOU DIG IN COLORADO, CALL COLORADO 811  
TOLL FREE: 1-800-922-1987 OR www.co811.org  
COLORADO STATUTE REQUIRES MIN OF 2 WORKING DAYS NOTICE BEFORE YOU EXCAVATE

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

### GENERAL NOTES

- THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES.
- THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONSTRUCT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
- THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE T-MOBILE REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF THE CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES, THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXPENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
- THE SCOPE OF WORK SHALL INCLUDE FURNISHING OF ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
- THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
- THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUM OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
- THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ANY PERMITS AND INSPECTIONS WHICH ARE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY, OR LOCAL GOVERNMENT AUTHORITY.
- THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC., DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
- THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
- THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS, AS WELL AS THE LATEST EDITIONS OF ANY PERTINENT STATE SAFETY REGULATIONS.
- THE CONTRACTOR SHALL NOTIFY THE T-MOBILE REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE T-MOBILE REPRESENTATIVE.
- THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC., ON THE JOB.
- THE CONTRACTOR SHALL RETURN ALL DISTURBED AREAS TO THEIR ORIGINAL CONDITION AT THE COMPLETION OF WORK.

### PROJECT SUMMARY

PROJECT TYPE:	EXISTING EQUIPMENT UPGRADE	TOWER OWNER:	SBA COMMUNICATIONS, CORP.
SITE ADDRESS:	2746 RUSTIC GROVE COLORADO SPRINGS, CO 80921	WIRELESS CARRIER:	T-MOBILE LLC 2323 DELGANY ST. DENVER, CO. 80213
LATITUDE:	39.038042	ARCHITECT/ENGINEER:	INFINIGY ENGINEERING 2500 HIGGINS ROAD, SUITE 500 HOFFMAN ESTATES, IL 60169 INFINIGY.COM
LONGITUDE:	-104.776961		
JURISDICTION:	EL PASO COUNTY		
POWER COMPANY:	EXISTING		
TELEPHONE COMPANY:	EXISTING		

### PROJECT DESCRIPTION RFDS DATED: 10/27/2020

T-MOBILE PROPOSES THE MODIFICATION OF AN UNMANNED WIRELESS BROADBAND FACILITY:

**EQUIPMENT LEVEL**

- (2) EXISTING EQUIPMENT CABINETS TO BE REMOVED
- (3) EXISTING RRU'S TO BE REMOVED
- (6) EXISTING DIPLEXERS TO BE REMOVED
- (3) EXISTING MODULES TO BE REMOVED
- (3) EXISTING SUB-MODULES TO BE REMOVED
- (1) EXISTING COVP TO BE RELOCATED
- (1) 600A HPL3 SSC CABINET TO BE INSTALLED
- (1) LB3 BATTERY CABINET TO BE INSTALLED
- (4) PROPOSED MODULES TO BE INSTALLED
- (10) PROPOSED SUB-MODULES TO BE INSTALLED
- (1) PROPOSED HCS 2.0 FIBER JUNCTION BOX TO BE INSTALLED
- (2) PROPOSED AMIA TO BE INSTALLED

**ANTENNA LEVEL**

- (6) EXISTING ANTENNAS TO BE REMOVED
- (6) EXISTING RRU'S TO BE REMOVED
- (3) EXISTING TMAS TO BE REMOVED
- (6) PROPOSED ANTENNAS TO BE INSTALLED
- (6) PROPOSED RRU'S TO BE INSTALLED
- (2) EXISTING 7/8" COAX CABLES TO BE REMOVED
- (1) PROPOSED HCS 2.0 CABLE TO BE INSTALLED

### SHEET INDEX

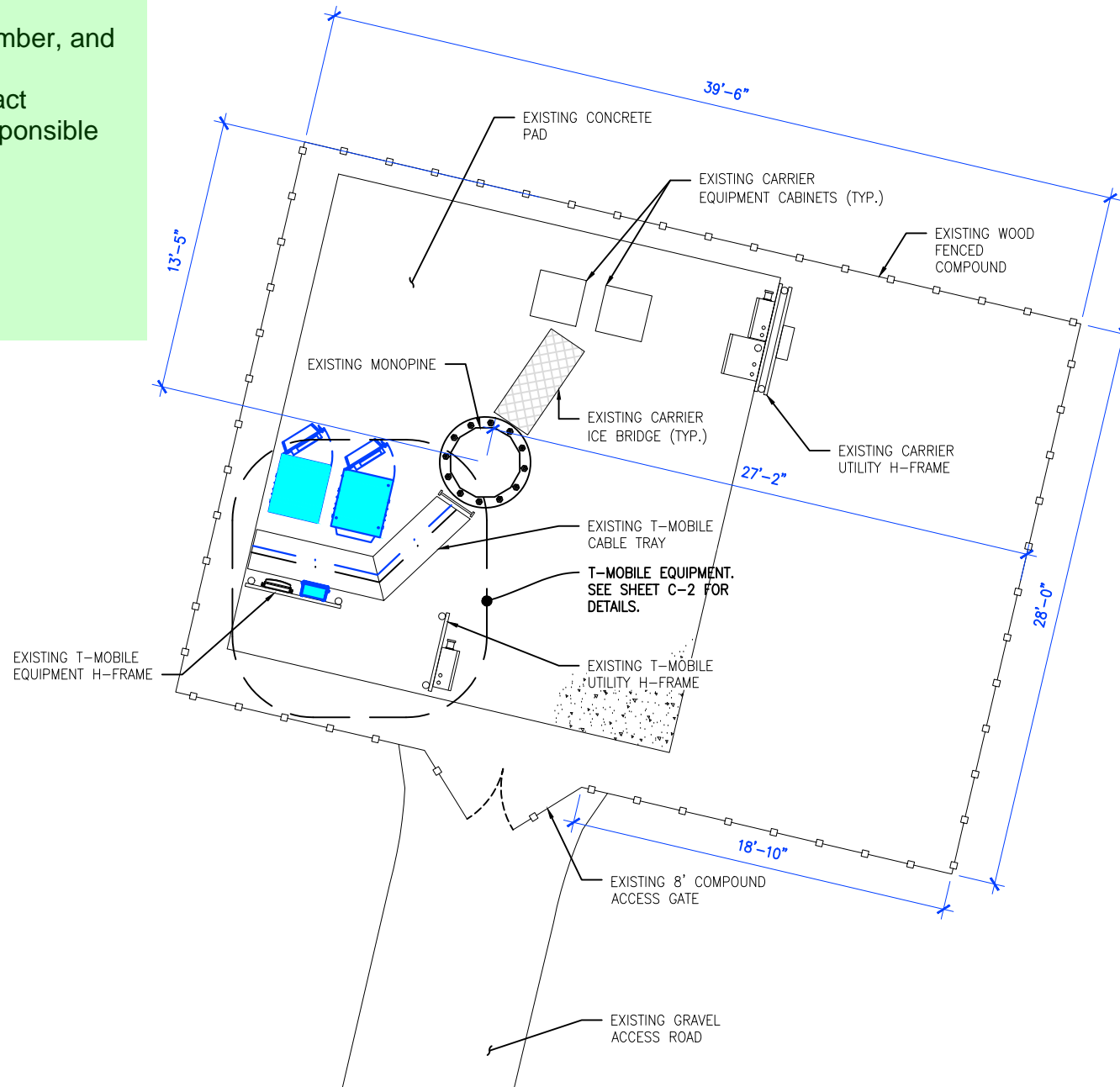
SHEET	DESCRIPTION
T-1	TITLE SHEET
C-1	ENLARGED COMPOUND PLAN
C-2	EXISTING & PROPOSED EQUIPMENT PLANS
C-3	PROPOSED ELEVATION & ANTENNA PLANS
C-4	ANTENNA SYSTEM DIAGRAM & RF SCHEDULE
C-5	DETAILS
C-6	DETAILS
C-6.1	DELTA HPL3 SSC DETAIL
C-6.2	DELTA HPL3 SSC DIAGRAM
C-6.3	DELTA HPL3 SSC DIAGRAM
C-6.4	DELTA LB3 BATTERY CABINET DETAIL
C-6.5	DELTA LB3 BATTERY CABINET LAYOUT
C-7	DETAILS
E-1	ELECTRICAL PLAN
G-1	GROUNDING DETAILS

### APPROVALS

DEPARTMENT	NAME/SIGNATURE	DATE
DEVELOPMENT MANAGER		
PROPERTY/TOWER OWNER		
SITE ACQUISITION MANAGER		
CONSTRUCTION MANAGER		
RF ENGINEER		
OPERATIONS MANAGER		

please add the following to the site plan:

- Owner name, contact telephone number, and email for responsible party
- Applicant name (if not owner), contact telephone number, and email for responsible party
- Property tax schedule number
- Legal description
- Lot size
- Current zoning of the property



NOTE:

1. GENERAL CONTRACTOR WILL NOT START CONSTRUCTION UNTIL AFTER THEY HAVE RECEIVED THE PRE-CON PACKAGE AND HAVE A PRE-CON WALK WITH THE PROJECT MANAGER.
2. GENERAL CONTRACTOR TO HIRE PUBLIC (811) AND PRIVATE LOCATING SERVICE IN ORDER TO LOCATE AND PROTECT ALL SURFACE UTILITIES. DO NOT SCALE OFF THESE PLANS FOR ANY BELOW GRADE UTILITIES.
3. CONTRACTOR SHALL VERIFY ALL EXISTING BURIED AND OVERHEAD UTILITIES PRIOR TO EXCAVATION. CONTRACTOR SHALL REPAIR ALL DAMAGED UTILITIES AT HIS OWN COST AND COORDINATE ANY REPAIRS WITH RESPECTIVE UTILITY COMPANY.
4. CONTRACTOR TO VERIFY ALL HEIGHTS AND AZIMUTHS IN FIELD PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY T-MOBILE AND ENGINEERING FIRM OF ANY DISCREPANCIES BEFORE PROCEEDING.
5. CONTRACTOR SHALL RESTORE AND REPAIR ANY DAMAGED AREAS CAUSED BY CONSTRUCTION.
6. NO UPDATED SURVEY HAS BEEN PERFORMED PROPERTY IMPROVEMENT DEPICTIONS ARE APPROXIMATE LOCATIONS



CALLED NORTH

1  
C-1

ENLARGED COMPOUND PLAN

0 2' 4' 8' SCALE: 1/8"=1'-0" (24x36)  
(OR) 1/16"=1'-0" (11x17)

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656-002

Project Title:

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SPRINT\_BLACK\_FOREST

2746 RUSTIC GROVE  
COLORADO SPRINGS, CO 80921

Prepared For:



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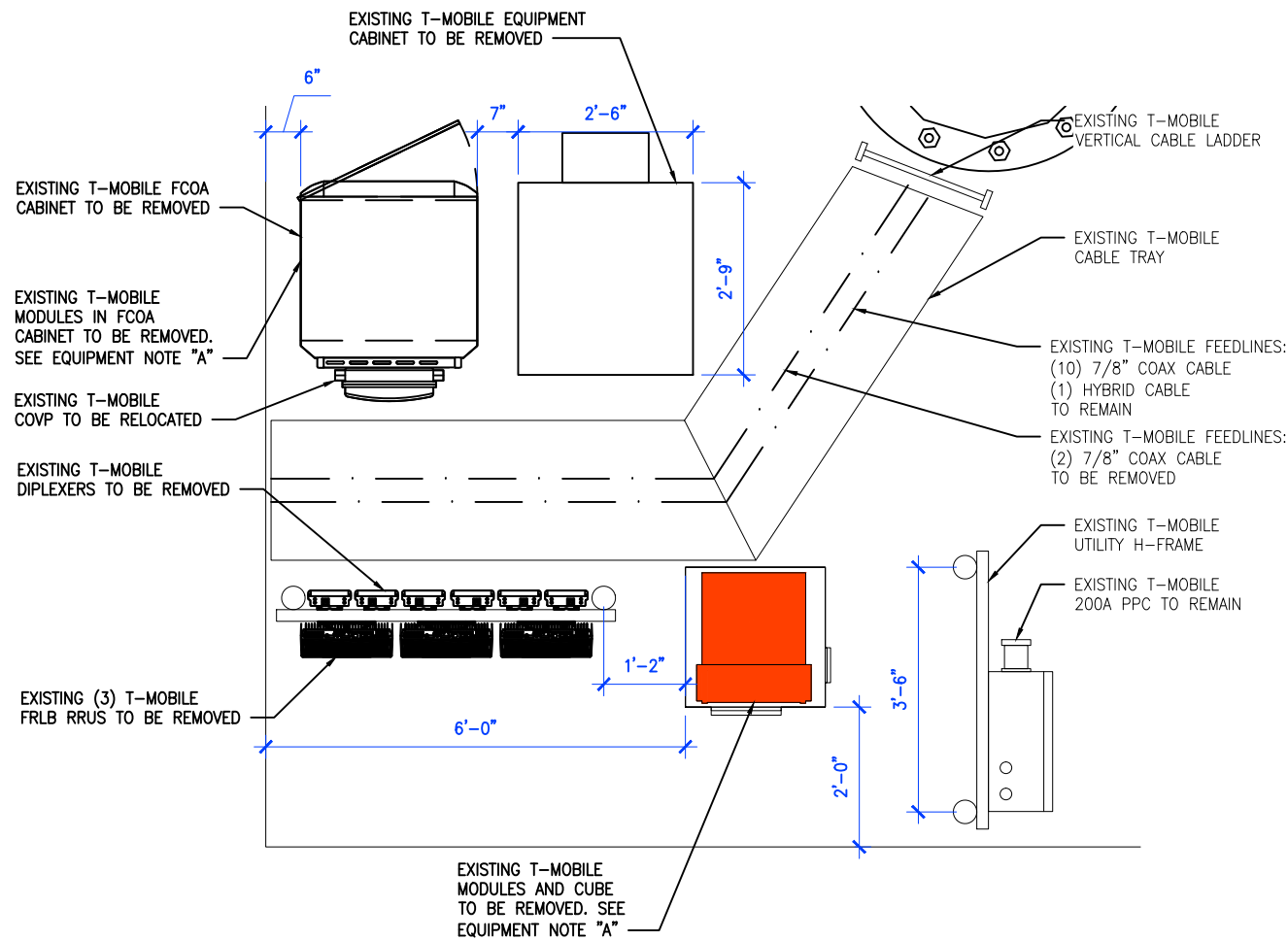
Drawing Title:

ENLARGED  
COMPOUND PLAN

Drawing Number: C-1



EQUIPMENT PHOTOS

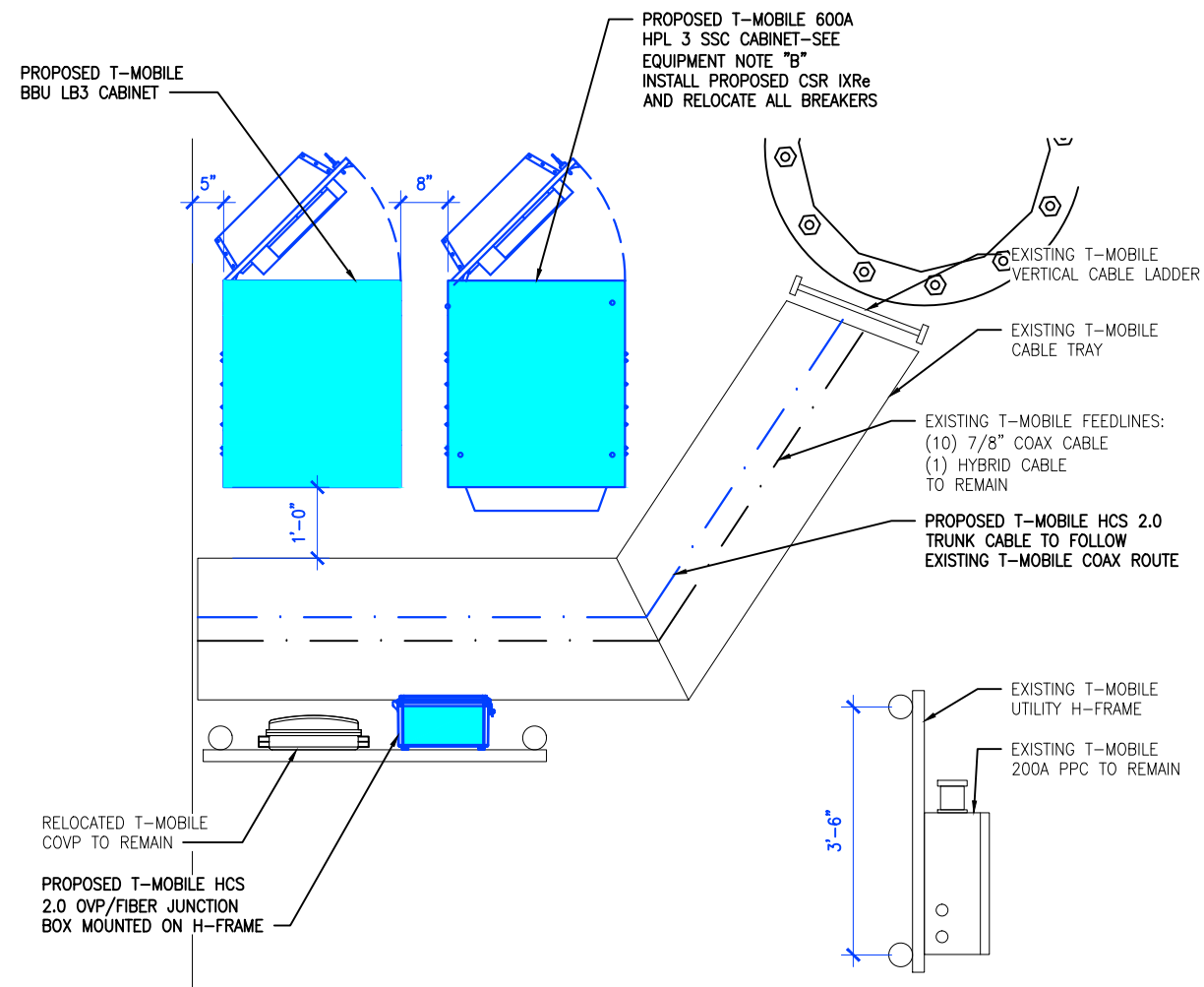


- EQUIPMENT NOTE A:**
- (1) EXISTING FSMF - LTE 700 + LTE 2100 TO BE REMOVED
  - (1) EXISTING ESMB - G1900 TO BE REMOVED
  - (1) EXISTING FSME - U2100 TO BE REMOVED
  - (1) EXISTING FBBC - LTE 1900 TO BE REMOVED
  - (1) EXISTING FBBC - LTE 2100 TO BE REMOVED
  - (1) EXISTING FBBC - LTE 700 TO BE REMOVED
  - (3) EXISTING FRIA - U2100 TO BE REMOVED
  - (1) EXISTING FXFB - G1900 TO BE REMOVED
  - (1) EXISTING FSMF - LTE 1900 TO BE RELOCATED

**NOTES:**

- ALL ROUTING SHOWN FOR GRAPHICAL PURPOSES & MAY VARY FROM THAT SHOWN BASED ON FIELD CONDITIONS.

- NOTES:**
1. GENERAL CONTRACTOR TO INSTALL (4) 50 AMP DC BREAKERS FOR INSTALLATION OF PROPOSED AMOBS INSIDE LARGE SITE SUPPORT CABINET.
  2. GENERAL CONTRACTOR TO INSTALL PROPOSED CSR-SAS INSIDE PROPOSED LARGE SITE SUPPORT CABINET.
  3. OBTAIN CURRENT RFDS WITHIN 48 HOURS PRIOR TO CONSTRUCTION
  4. FOLLOW PORT MATRIX PER RF CONFIGURATION
  5. FOLLOW CURRENT T-MOBILE STANDARDS AND OPERATING PROCEDURES
  6. RETURN ALL UNUSED & OLD EQUIPMENT/MATERIALS TO CTDI IN THE SAME CONDITIONS WHEN IT WAS REMOVED FROM SITE
  7. PROVIDE CLOSE OUT DOCUMENT WITHIN 72 HRS AFTER SITE COMPLETION
  8. INSTALL PROPOSED RF JUMPERS FOR PROPOSED/RELOCATED RRUS/TMAS



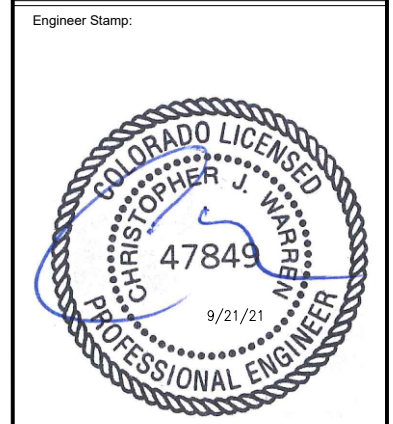
- EQUIPMENT NOTE B:**
- (2) PROPOSED ABIA - L2100 + L1900
  - (1) PROPOSED ABIA - L700 + L600
  - (1) PROPOSED ASIK - N600 (DARK)
  - (1) PROPOSED ASIK - N2500 (DARK)
  - (3) PROPOSED ABIL - N2500 (DARK)
  - (1) PROPOSED ABIL - N600 (DARK)
  - (3) PROPOSED ABIC - L2500
  - (1) PROPOSED ASIB - L2500
  - (1) PROPOSED ASIB - L700+L600
  - +L2100+L1900 TO BE INSTALLED
  - (2) PROPOSED AMIA - TO BE INSTALLED
  - (1) RELOCATED FSMF - G1900+U2100 TO REMAIN

**NOTE:**

AMIAS TO BE INSTALLED INTERNALLY IN THE 600A SSC CABINET. CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING APPROPRIATE LOCATION WITHIN T-MOBILE LEASE AREA FOR AMOB MOUNTING AND PROVIDE TO CONSTRUCTION MANAGER. AMOB LOCATIONS MUST BE APPROVED BY CONSTRUCTION MANAGER, PRIOR TO INSTALLATION.



SBA SITE ID: CO46107-A



Signed: \_\_\_\_\_ Date: \_\_\_\_\_

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Drawing Scale: AS NOTED Date: 09/21/21 **CD**

Drawing Title:  
**EXISTING & PROPOSED EQUIPMENT PLANS**

Drawing Number: **C-2**



2 EXISTING EQUIPMENT PLAN  
 SCALE: 3/4"=1'-0" (24x36)  
 (OR) 3/8"=1'-0" (11x17)



1 PROPOSED EQUIPMENT PLAN  
 SCALE: 3/4"=1'-0" (24x36)  
 (OR) 3/8"=1'-0" (11x17)

NOTE:  
THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY T-MOBILE IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY T-MOBILE. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. PLEASE REFER TO STRUCTURAL ANALYSIS REPORT PREPARED BY TOWER ENGINEERING SOLUTION DATED 12/22/20 AND ANTENNA MOUNT ANALYSIS REPORT PREPARED BY TOWER ENGINEERING SOLUTION DATED 12/18/20 PRIOR TO ANY CONSTRUCTION.

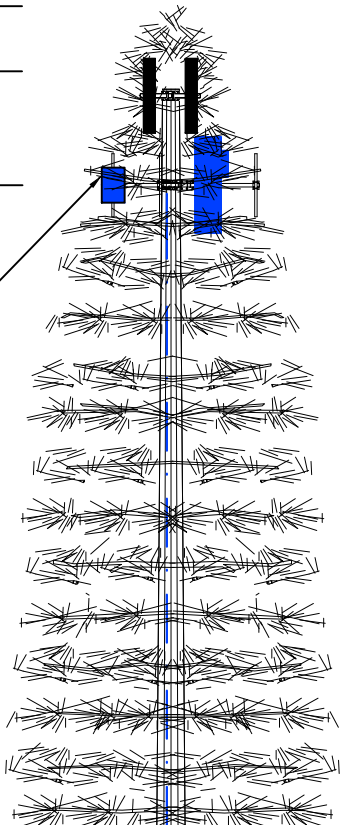
NOTE:  
PROPOSED TOWER MOUNTED EQUIPMENT AND MOUNT TO BE PAINTED TO MATCH FOLIAGE.

TOP OF TOWER BRANCHES  
+/- 96.7'

TOP OF TOWER  
+/- 89'-0"

CENTERLINE OF PROPOSED T-MOBILE ANTENNAS  
+/- 80'-0"

PROPOSED T-MOBILE ANTENNAS (TYP. 2 PER SECTOR) (GENERAL CONTRACTOR TO REMOVE EXISTING AND RE-INSTALL STEALTH BRANCHES AS NEEDED AND INSTALL ANTENNA SOCKS AS NEEDED)



- (10) 7/8" COAX CABLE TO REMAIN
- (1) HYBRID CABLE TO REMAIN
- (2) EXISTING COAX CABLE TO BE REMOVED
- (1) PROPOSED HCS 2.0 CABLE TO BE INSTALLED FROM EQUIPMENT TO ANTENNA LOCATION

GRADE LEVEL  
+/- 0'-0"

3 PROPOSED ELEVATION

C-3

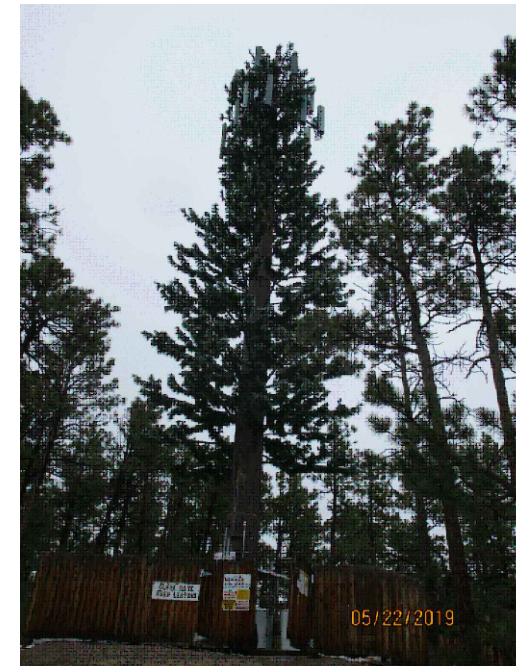
SCALE  
N.T.S.

EXISTING LEGEND

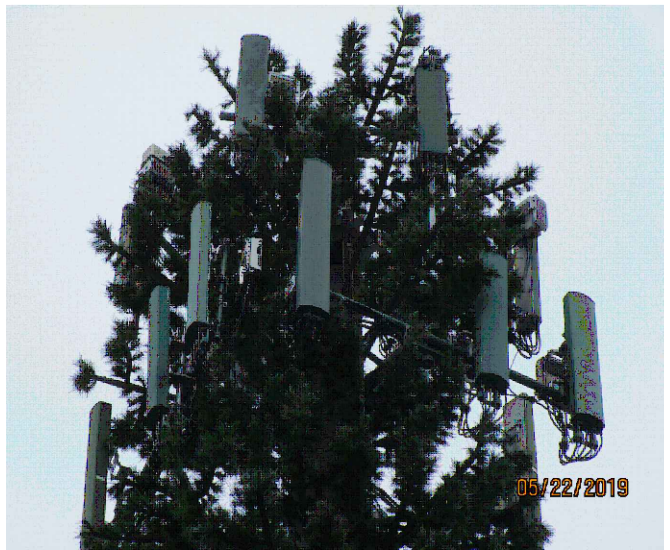
- ANTENNA TO BE REMOVED AND REPLACED
- RRU TO BE REMOVED AND REPLACED
- RRU TO BE REMOVED AND REPLACED
- COVP TO BE RELOCATED

PROPOSED LEGEND

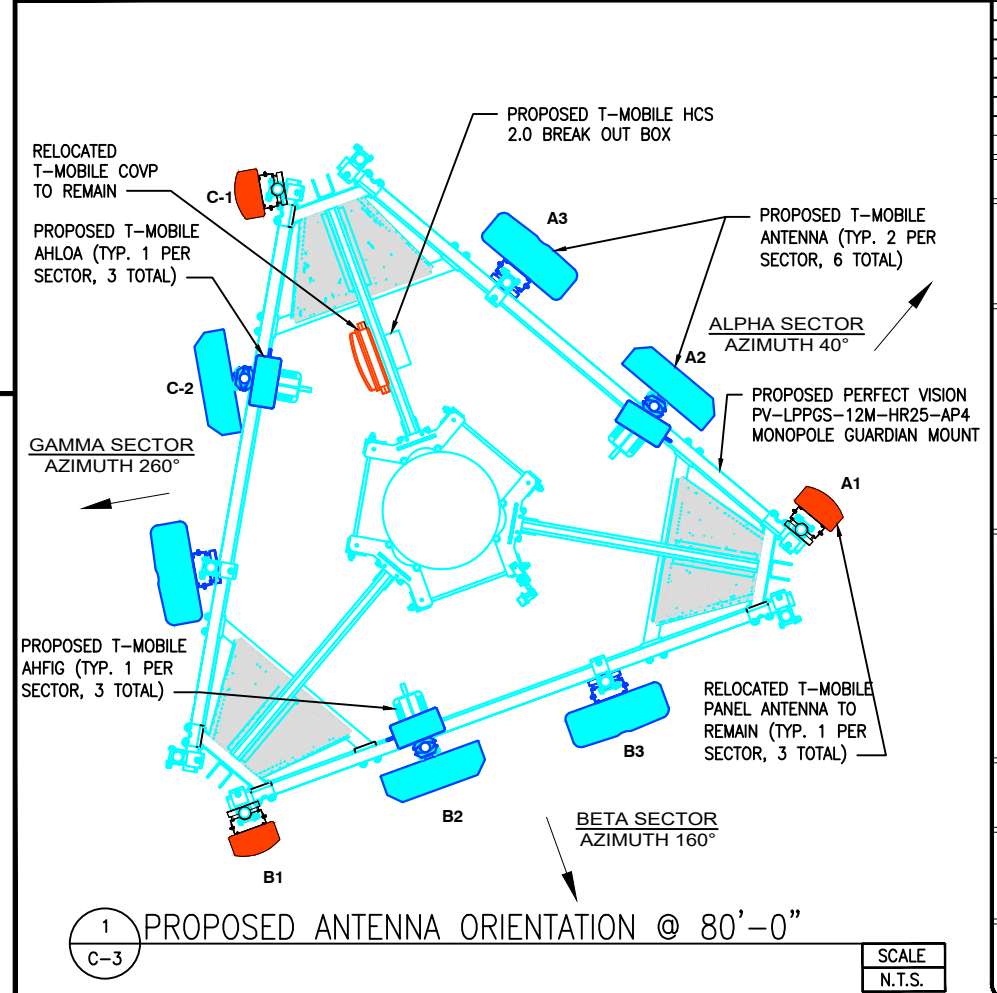
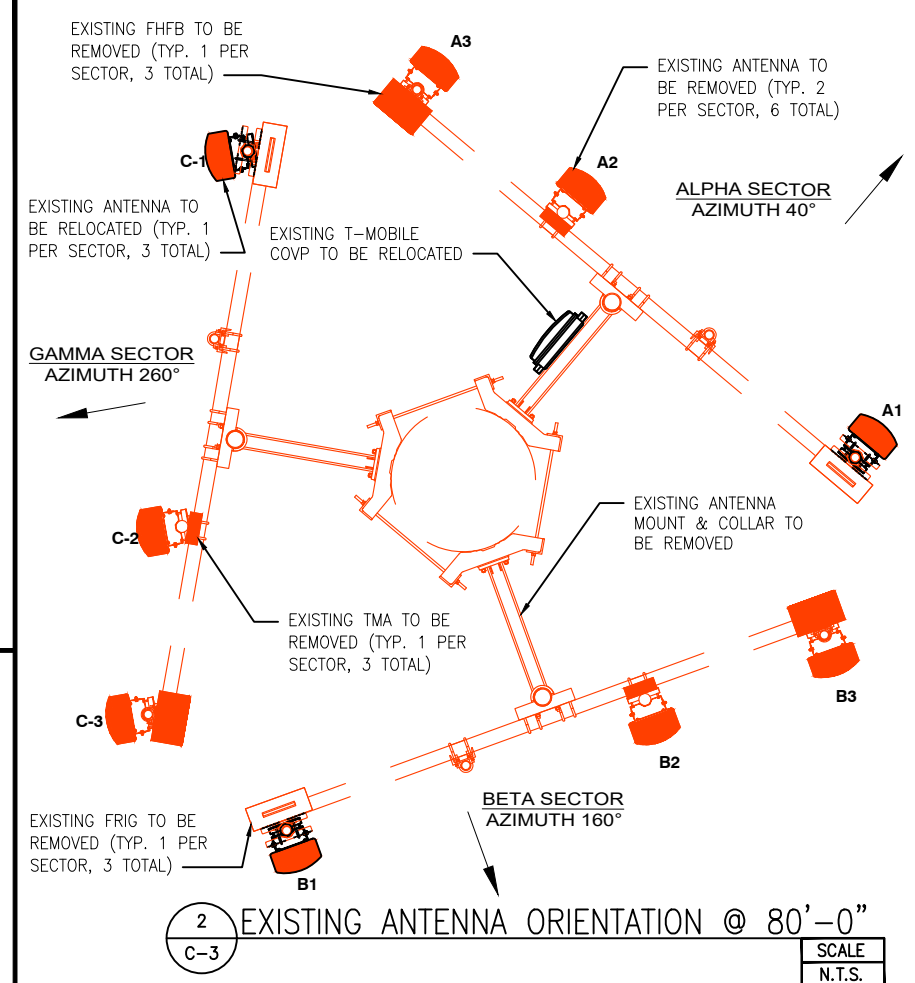
- PROPOSED FFHH-65C-R3 ANTENNA
- PROPOSED AHLOA
- PROPOSED AHFIG
- PROPOSED AEHC ANTENNA



TOWER PHOTO



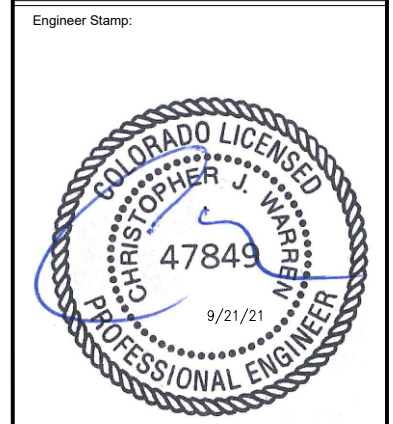
ANTENNA PHOTO



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Drawing Scale: AS NOTED Date: 09/21/21 **CD**

Drawing Title: PROPOSED ELEVATION & ANTENNA PLANS

Drawing Number: C-3

**EQUIPMENT NOTES:**

1. THE CONTRACTOR SHALL CONFIRM THE TOWER TOP EQUIPMENT LIST WITH THE FINAL T-MOBILE RFDS PRIOR TO INSTALLATION.
2. REFER TO NOKIA SIEMENS NETWORKS EQUIPMENT INSTALLATION STANDARDS FOR ADDITIONAL INFORMATION
3. REFER TO EQUIPMENT MANUFACTURER'S SPECIFICATION SHEETS FOR ADDITIONAL INFORMATION NOT LISTED ABOVE.
4. COAX JUMPER LENGTH FROM RRU TO ANTENNA SHALL NOT EXCEED 15'.

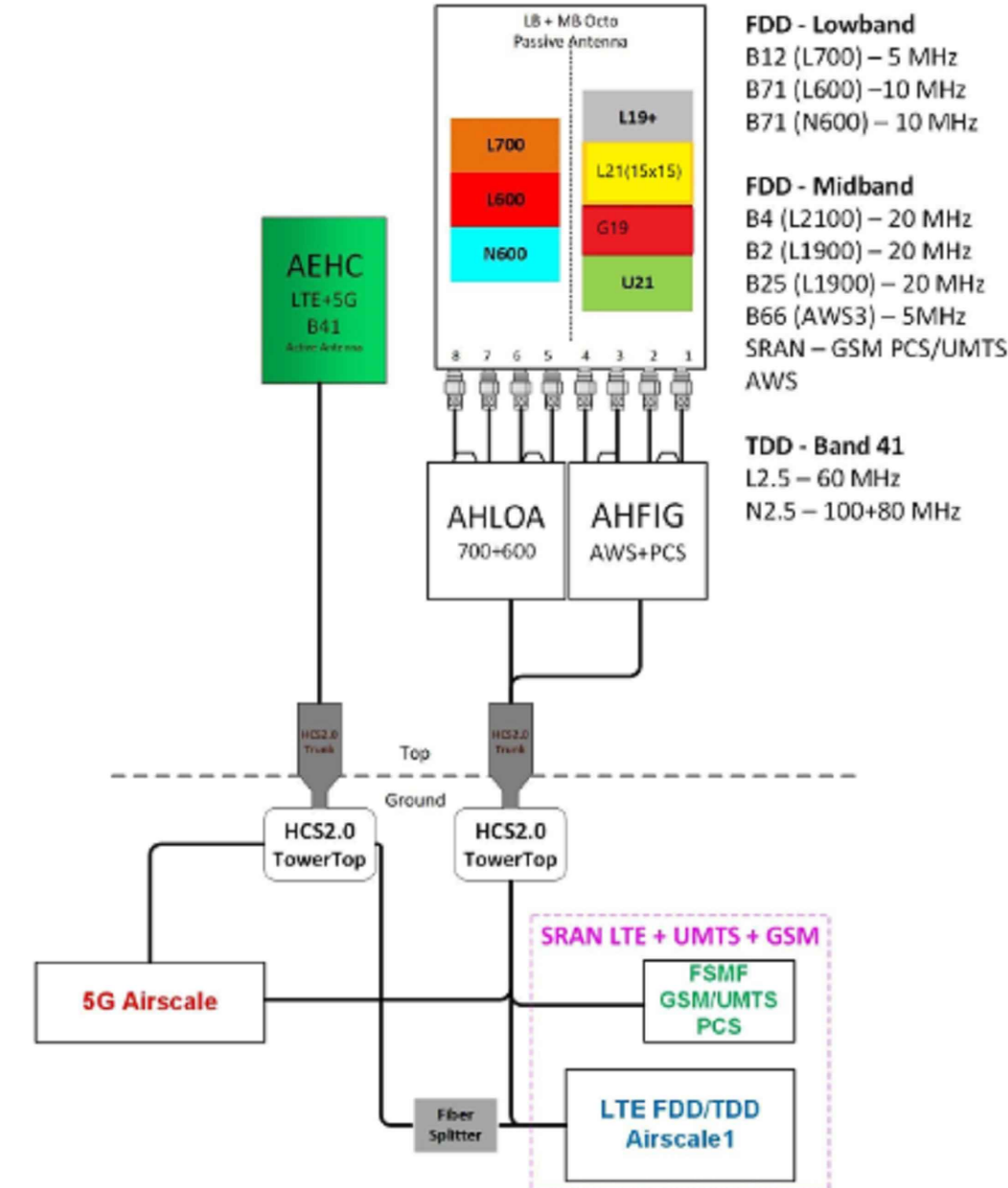
CONFIGURATION 56772V_SR - TOWER TOP EQUIPMENT SCHEDULE									
ANTENNA SECTOR	ANTENNA MARK	ANTENNA MODEL #	ELECTRICAL TILT	MECHANICAL TILT	RAD CENTER	AZIMUTH	RRU MODEL	TOWER TOP COVP MODEL	ANTENNA CABLE DESCRIPTION
ALPHA	A1	TMBXX-6517-A2M (E)	0°/0°	0°	80'-0"	40°	--	(1) COVP (E) (1) HCS 2.0 PENDANT (P)	(10) 7/8" COAX CABLES (E) (1) NSN HIGH CAP HCS (E) (1) HCS 2.0 TRUNK (P)
	A2	FFHH-65C-R3 (P)	0°/0°/0°/0°	0°	80'-0"	40°	(1) AHFIG (P) (1) AHLOA (P)		
	A3	AEHC - MASSIVE MIMO (P)	0°	0°	80'-0"	40°	--		
BETA	B1	TMBXX-6517-A2M (E)	2°/2°	0°	80'-0"	160°	--		
	B2	FFHH-65C-R3 (P)	4°/4°/3°/3°	0°	80'-0"	160°	(1) AHFIG (P) (1) AHLOA (P)		
	B3	AEHC - MASSIVE MIMO (P)	3°	0°	80'-0"	160°	--		
GAMMA	C1	TMBXX-6517-A2M (E)	0°/0°	0°	80'-0"	260°	--		
	C2	FFHH-65C-R3 (P)	4°/4°/3°/3°	0°	80'-0"	260°	(1) AHFIG (P) (1) AHLOA (P)		
	C3	AEHC - MASSIVE MIMO (P)	3°	0°	80'-0"	270°	--		

2 RF SCHEDULES  
C-4 SCALE: N.T.S.

56791EZ\_no AWS3\_with L21\_15x15\_GSM.jpg

**Configuration 56791EZ\_SR\_U21**

\* For 5G and LTE Airscale BB dimensioning refer to Fiber Port matrices.  
(Alpha, Beta & Gamma)



Notes:

1 ANTENNA SYSTEM DIAGRAM  
C-4 SCALE: N.T.S.

Project Manager:



SBA SITE ID: CO46107-A

Engineer Stamp:



Signed: \_\_\_\_\_ Date: \_\_\_\_\_

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Rev.	Submittal / Revision	App'd	Date

Designed: CAP Date: 09/21/21  
Approved: EDR Date: 09/21/21

Project Number:  
656-002

Project Title:  
**DN04234A**  
**SPRINT\_BLACK\_FOREST**  
2746 RUSTIC GROVE  
COLORADO SPRINGS, CO 80921

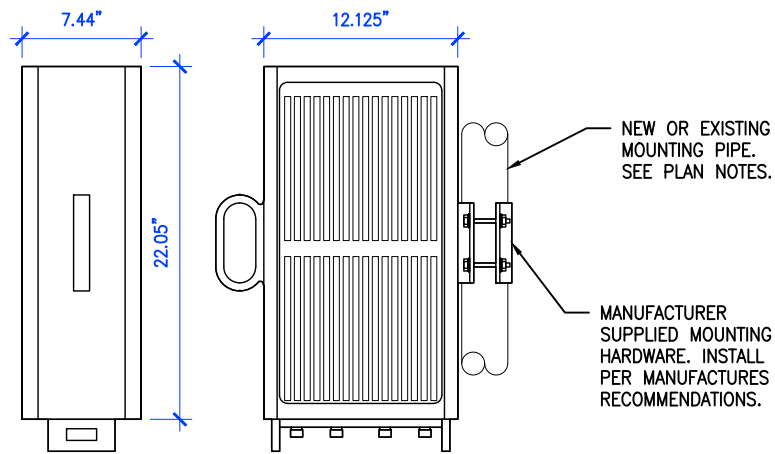
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Drawing Scale: AS NOTED Date: 09/21/21

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Drawing Title:  
**ANTENNA SYSTEM DIAGRAM AND RF SCHEDULE**

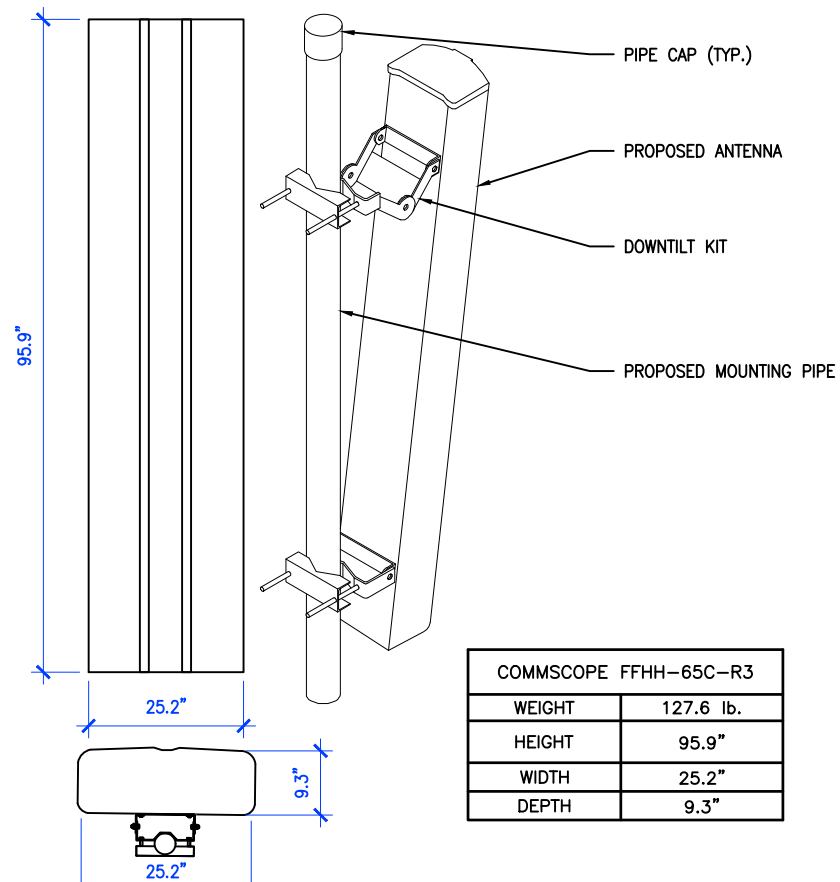
Drawing Number:  
**C-4**



MODEL #	NOKIA ALOHA
DIMENSIONS (W/OUT BRACKETS OR SOLAR SHIELD)	12.125"x7.44"x22.05"
NET WEIGHT (W/OUT BRACKETS OR SOLAR SHIELD)	83.9 lbs

4 NOKIA AHLOA RRU

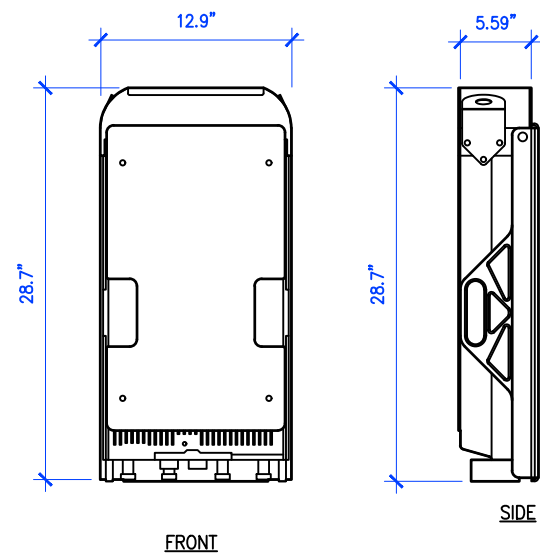
SCALE  
N.T.S.



COMMSCOPE FFHH-65C-R3	
WEIGHT	127.6 lb.
HEIGHT	95.9"
WIDTH	25.2"
DEPTH	9.3"

2 COMMSCOPE FFHH-65C-R3 ANTENNA

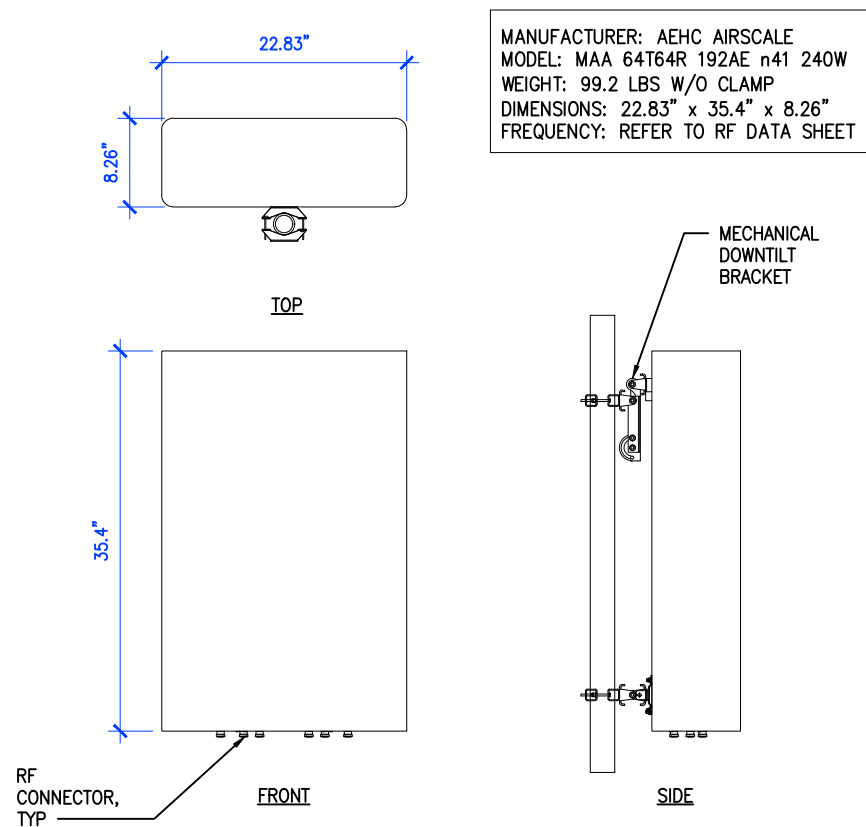
SCALE  
N.T.S.



MODEL #	NOKIA AHFIG
DIMENSIONS (W/OUT BRACKETS OR SOLAR SHIELD)	28.7"x5.6"x12.9"
NET WEIGHT (W/OUT BRACKETS OR SOLAR SHIELD)	70.6 lbs

5 NOKIA AHFIG DETAIL

SCALE  
N.T.S.



3 NOKIA MIMO ANTENNA DETAIL

SCALE  
N.T.S.

1 NOT USED

SCALE  
N.T.S.

Project Manager:



SBA SITE ID: CO46107-A

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Signed: \_\_\_\_\_ Date: \_\_\_\_\_

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Prepared For:



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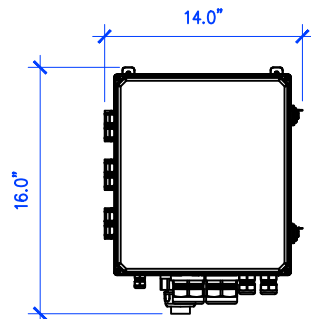
Drawing Title:  
DETAILS

Drawing Number:  
**C-5**

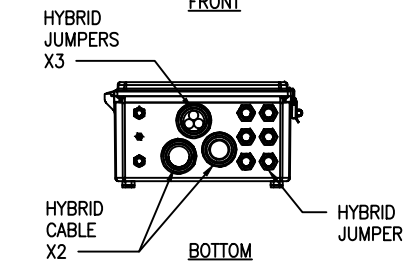
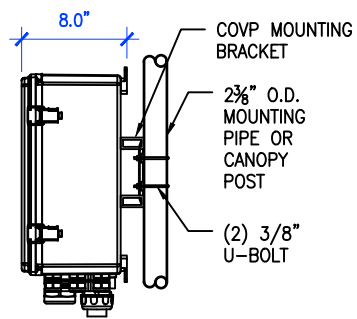
MANUFACTURER: RAYCAP  
 MODEL: RTMDC-5634-PF-48  
 WEIGHT: 21.85 LBS  
 DIMENSIONS: 14.0" x 16.0" x 8.0"  
 FREQUENCY: REFER TO RF DATA SHEET

**NOTES:**

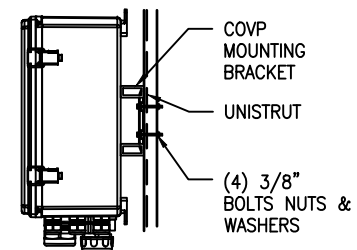
1. ALL EXPOSED ELECTRICAL CONDUIT MUST BE GALVANIZED STEEL RIGID CONDUIT.
2. THREADLESS CONNECTORS ARE NOT ALLOWED.
3. EMT CONDUIT CAN ONLY BE USED INSIDE.
4. USE ONLY COMPRESSION TYPE FITTINGS ON EMT CONDUIT.
5. USE ONLY STRANDED CONDUCTORS FOR ALL ELECTRICAL WIRING. (EXCEPT TELCO AND THERMOSTAT)
6. USE SCHEDULE 80 CONDUIT UNDER DRIVEWAYS AND/OR ANY VEHICLE CROSSING AREA.



FRONT



BOTTOM



6 HCS 2.0 JUNCTION BOX DETAIL

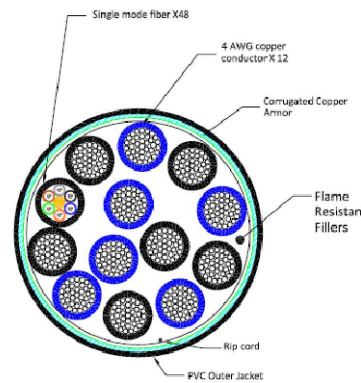
C-6

SCALE  
N.T.S.

MECHANICAL	JACKET COLOR	BLACK
	OUTER DIAMETER (IN)	1.8
	MIN BENDING RADIUS(IN), MULTIPLE BENDS, LOADED	36
	MIN BENDING RADIUS(IN), MULTIPLE BENDS, UNLOADED	18
	MIN BENDING RADIUS(IN), SINGLE BEND, UNLOADED	12.6
	MIN BENDING RADIUS(IN), FURCATION	3.2
	ARMOR	CORRUGATED COPPER
	WEIGHT(LB/100')	2480
	COMPRESSION(LB/IN)	250
	TENSILE LOAD, LONG TERM(LB)	180
	TENSILE LOAD, SHORT TERM(LB)	600
ELECTRICAL	CONDUCTOR MATERIAL	COPPER
	CONDUCTOR CONSTRUCTION	STRAND
	CONDUCTOR COLOR	BLUE/BLACK
	RESISTIVITY(MCM @ 20°C)	16.78 mcm-M
	CONDUCTORS, QTY	12
	CONDUCTOR SIZE(AWG)	4
	EMI SHIELD	YES
	UL RATING	UL TC-OF-ER
OPTICAL	FIBER TYPE	SINGLE MODE (G.657.A2)
	FIBERS, QTY	48
	ATTENUATION(DB/KM), MAX, 1550/1285-1330 nm	0.5
	DISPERSION, MAX, 1550/1285-1330 nm	18 ps/3.5 ps
	RETURN LOSS(DB)	>50
	INSERTION LOSS(DB), POST ENVIRONMENTAL	REDUCTION < 0.05
	RETURN LOSS(DB), POST ENVIRONMENTAL	REDUCTION < 5
	CUTOFF WAVELENGTH(nm)	1260
	PIGTAIL TERMINATION	LC PAIR, STRAIGHT
ENVIRON	OPERATING TEMP(°F)	-40 TO +167
	STORAGE TEMP(°F)	-40 TO +167
	UV	IEC 60068-2-5
	THERMAL CYCLE	IEC 60068-2-14
	VIBRATION	IEC 60068-2-64
	IMPACT(ITR 1b)	4.4 NM PER IEC 60696

**NOTES:**

1. ALL EXPOSED ELECTRICAL CONDUIT MUST BE GALVANIZED STEEL RIGID CONDUIT.
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6. USE SCHEDULE 80 CONDUIT UNDER DRIVEWAYS AND/OR ANY VEHICLE CROSSING AREA.



4 HCS 2.0 HYBRID CABLE DETAIL

C-6

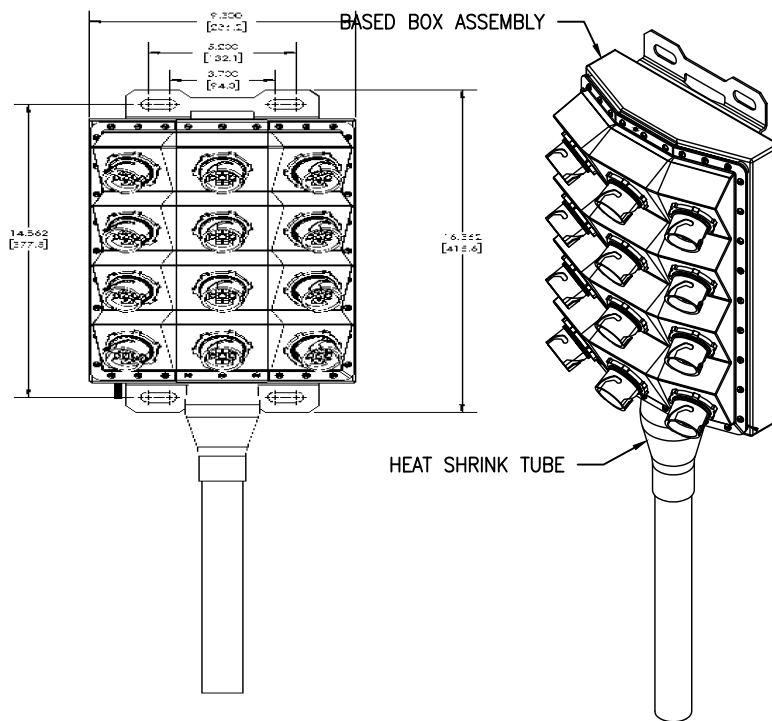
SCALE  
N.T.S.

NOTE: CABLE CROSS-SECTION NOT DRAWN TO SCALE

2 NOT USED

C-6

SCALE  
N.T.S.



3 HICAP HYBRID BREAKOUT CRS BOX

C-6

SCALE  
N.T.S.

1 NOT USED

C-6

SCALE  
N.T.S.

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**SPRINT\_BLACK\_FOREST**  
 2746 RUSTIC GROVE  
 COLORADO SPRINGS, CO 80921

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Drawing Title:  
DETAILS

Drawing Number:  
**C-6**

5 NOT USED

C-6

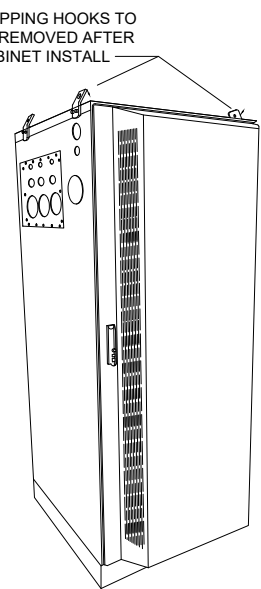
SCALE  
N.T.S.

MANUFACTURER: DELTA  
 MODEL: HPL3 SITE SUPPORT CABINET  
 WEIGHT: 551 LBS (WITHOUT EQUIPMENT)  
 DIMENSIONS: 30.0"x35.0"x72.0"

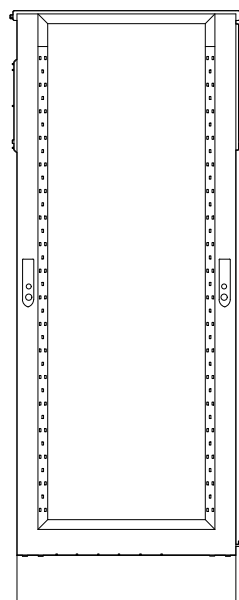
- NOTE:
- CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL KNOCKOUTS THROUGH
  - CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND/OR CABLING

RACK ASSIGNMENT		
RU SLOT	DESCRIPTION	DESCRIPTION
27		CSR - SAR/SAS
26		
25	AIRSCALE	
24	FIBER MUX	
23		
22	AIRSCALE	
21	FIBER MUX	
20		
19	AIRSCALE	
18	FIBER MUX	
17		
16	AIRSCALE	
15	FIBER MUX	
14		
13	AIRSCALE	
12	FIBER MUX	
11		
10	AIRSCALE	
9	FIBER MUX	
8	LEGACY BASEBAND	
7		
6	LEGACY BASEBAND	
5		
4	LEGACY BASEBAND	
3		
2	LEGACY BASEBAND	
1		

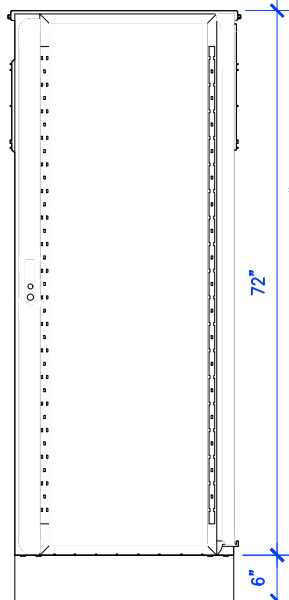
SHIPPING HOOKS TO BE REMOVED AFTER CABINET INSTALL



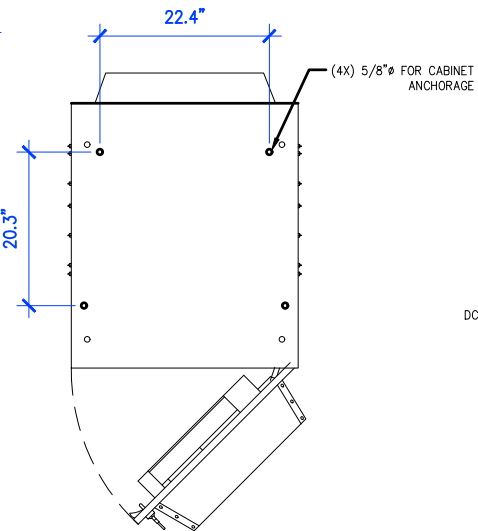
ISO VIEW N.T.S.



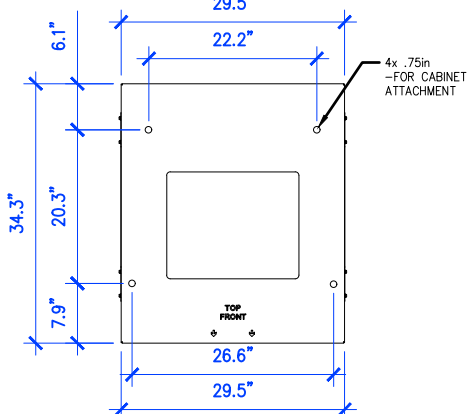
REAR VIEW



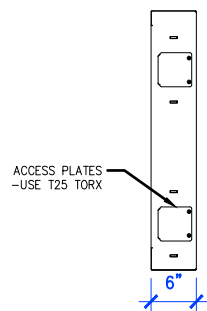
FRONT VIEW



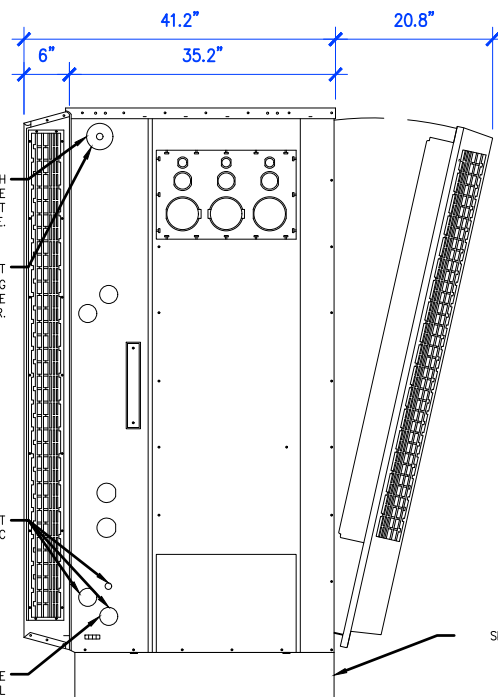
PLAN VIEW



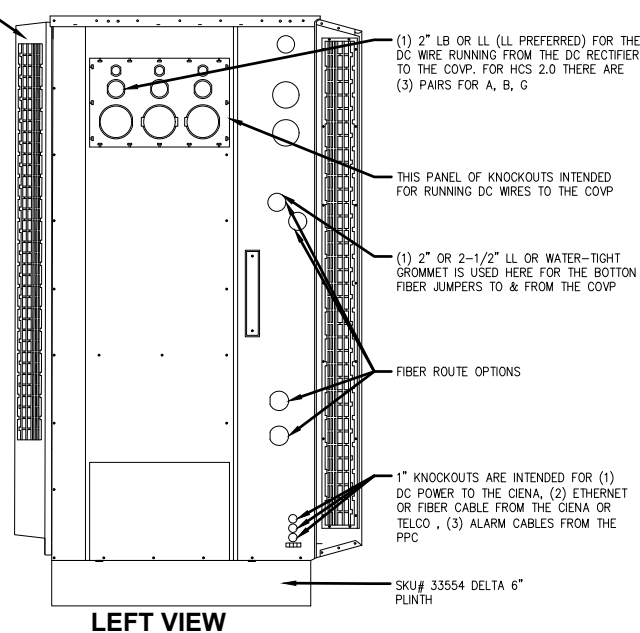
SKU# 33554 DELTA 6in PLINTH PLAN VIEW



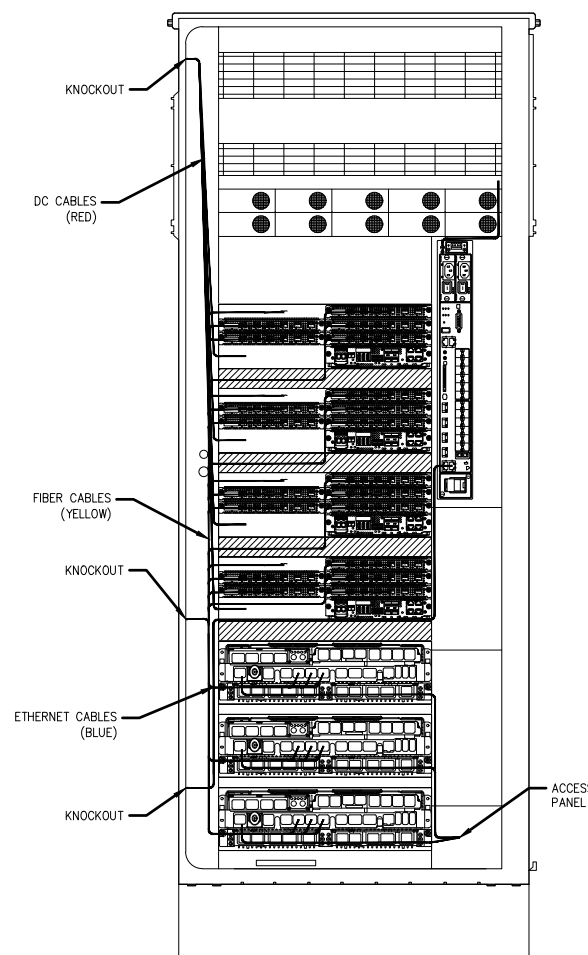
SKU# 33554 DELTA 6in PLINTH SIDE VIEW



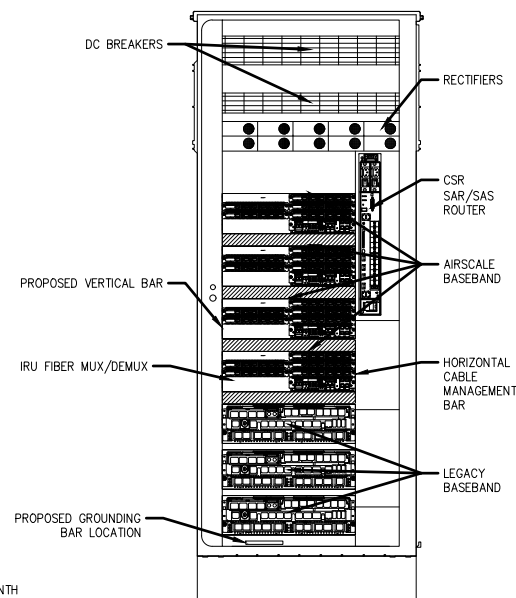
RIGHT VIEW



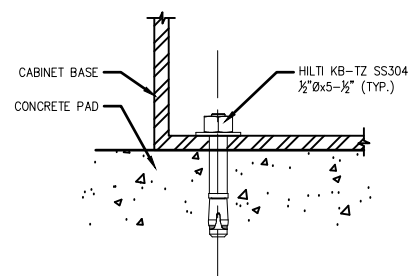
LEFT VIEW



INTERNAL ROUTING



FRONT VIEW (OPEN)



2 CABINET BOLT DOWN DETAIL

SCALE N.T.S.

1 DELTA HPL3 SITE SUPPORT CABINET DETAIL

SCALE N.T.S.

SCALE N.T.S.

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SBA SITE ID: CO46107-A

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Project Number: 656-002

Project Title: DN04234A  
 SPRINT\_BLACK\_FOREST  
 2746 RUSTIC GROVE  
 COLORADO SPRINGS, CO 80921

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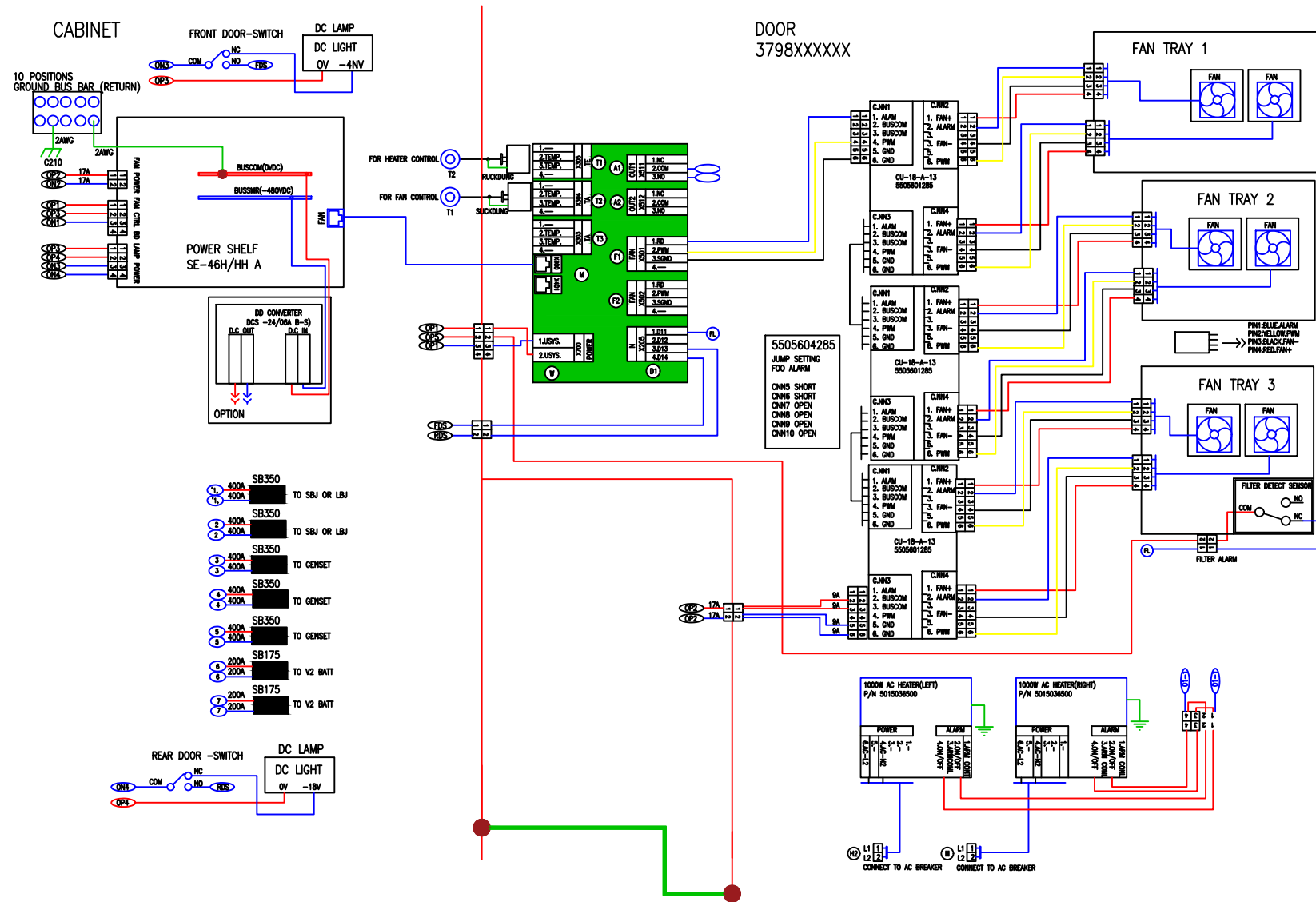
Drawing Scale: AS NOTED Date: 09/21/21

CD

Drawing Title: DELTA HPL3 SSC DETAIL

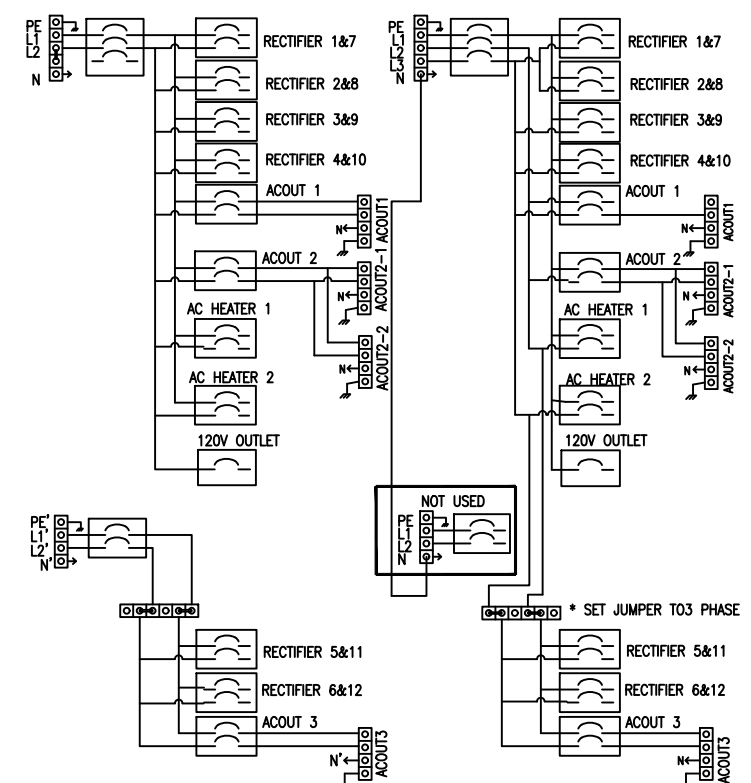
Drawing Number: C-6.1





1 DELTA HPL3 SSC INTERNAL CABINET DIAGRAM  
C-6.2

SCALE  
N.T.S.



2 DELTA HPL3 SSC RECTIFIER DIAGRAM  
C-6.2

SCALE  
N.T.S.

Project Manager:  
**SBA**  
SBA SITE ID: CO46107-A

Engineer Stamp:  
**GOLDADO LICENSED**  
**CHRISTOPHER J. WARREN**  
47849  
9/21/21  
**PROFESSIONAL ENGINEER**

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

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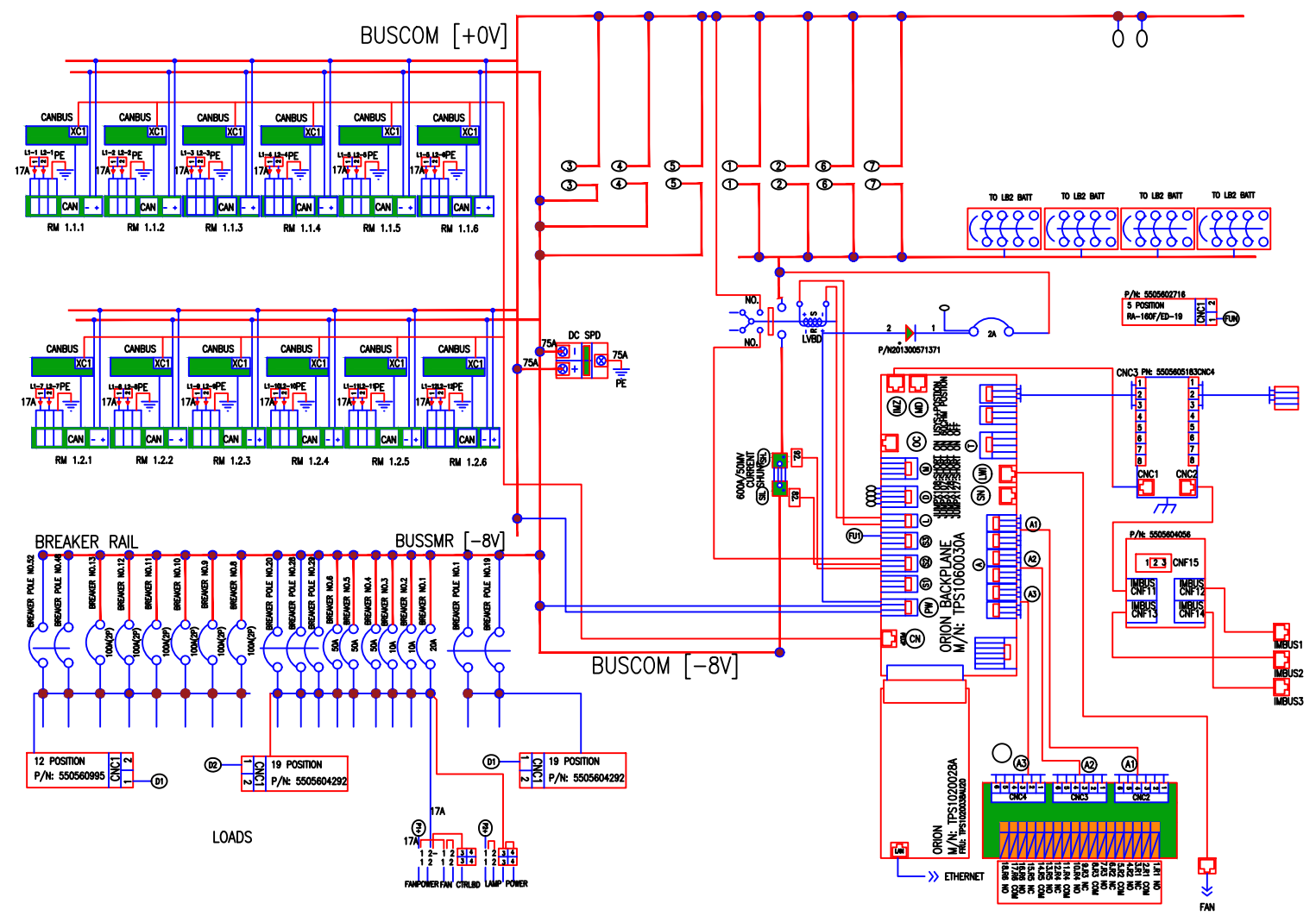
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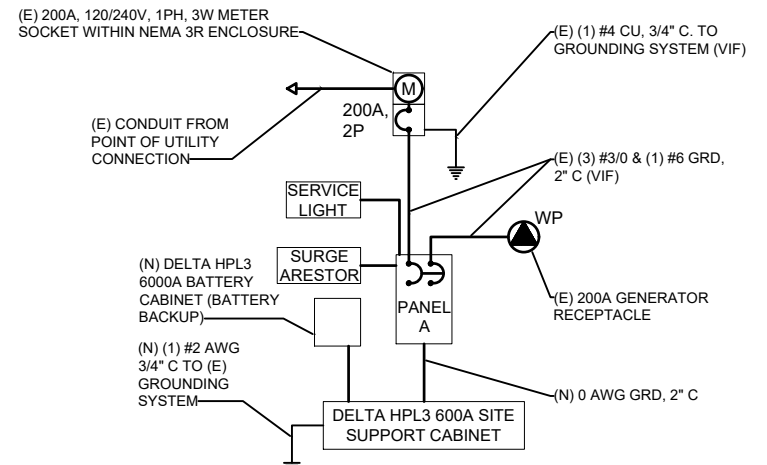
Drawing Scale: AS NOTED Date: 09/21/21  
Drawing Title: DELTA HPL3 SSC DIAGRAM

Drawing Number: **C-6.2**

NOTE:  
DIAGRAMS PROVIDED ARE PER  
MANUFACTURER INSTALLATION GUIDE



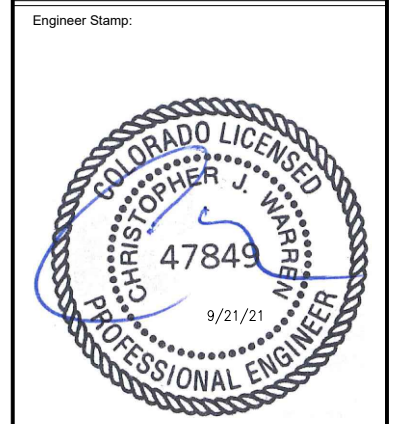
2 DELTA HPL3 SSC BREAKER WIRING DIAGRAM  
SCALE N.T.S.



1 DELTA HPL3 SSC TYP. ONE-LINE DIAGRAM  
SCALE N.T.S.



SBA SITE ID: CO46107-A



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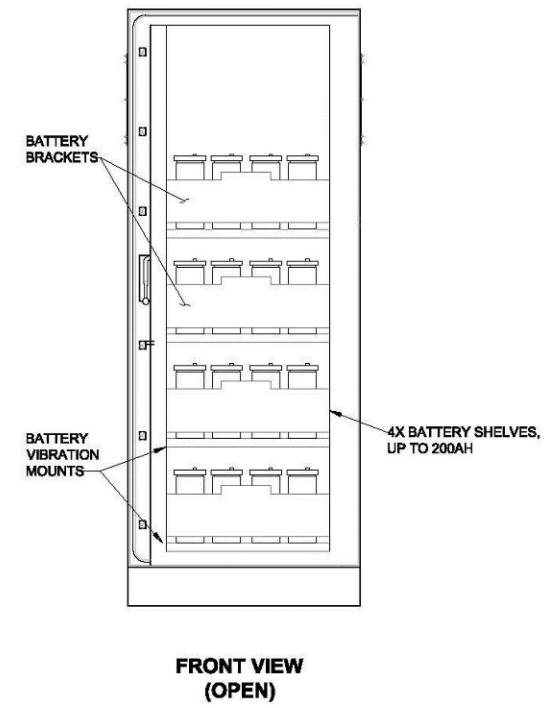
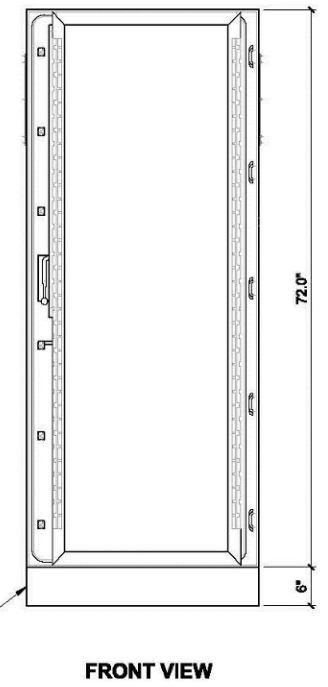
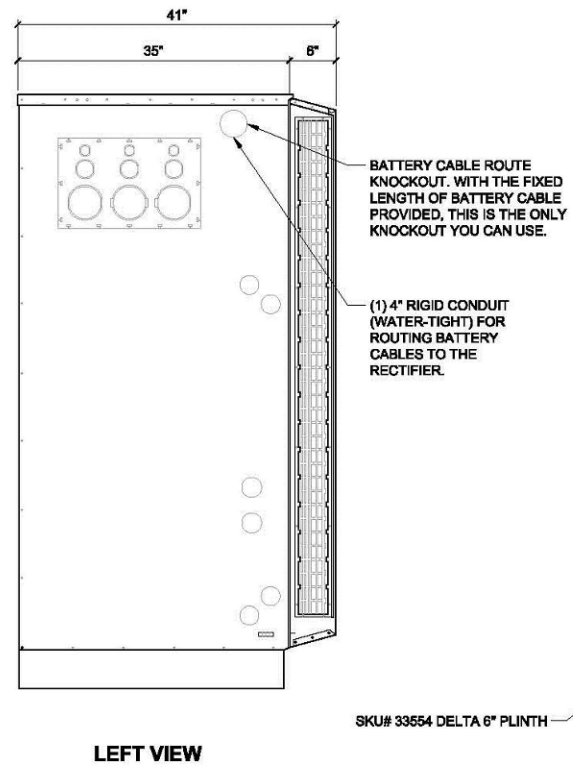
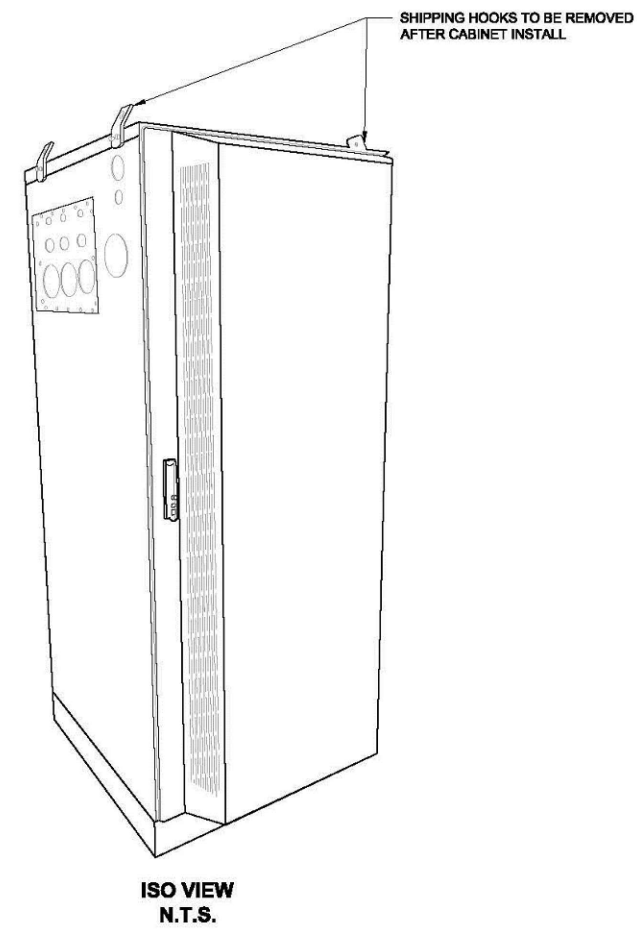
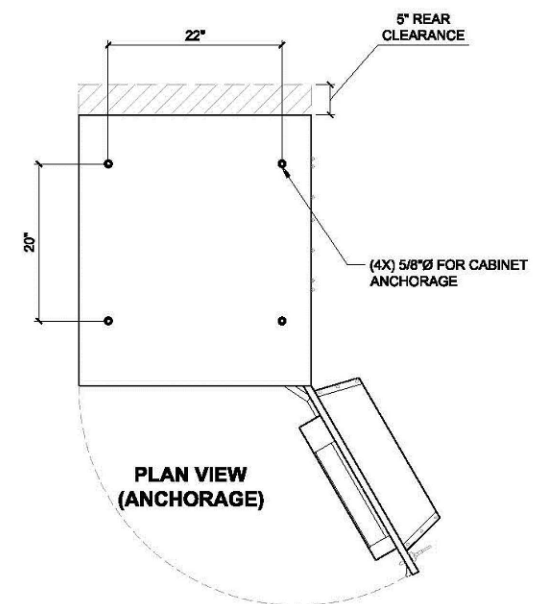
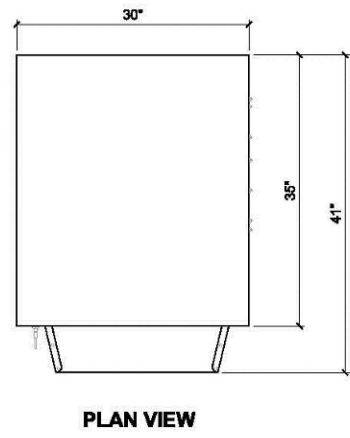
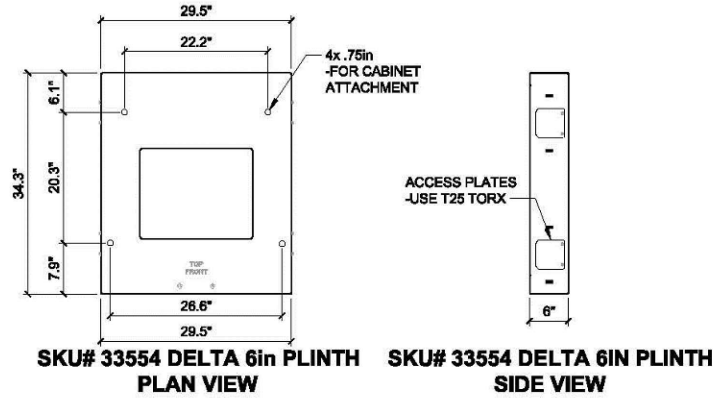
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Drawing Scale: AS NOTED Date: 09/21/21  
Drawing Title: DELTA HPL3 SSC DIAGRAM  
Drawing Number: C-6.3



MANUFACTURER: DELTA  
 MODEL: LB3 BATTERY SUPPORT CABINET  
 WEIGHT: 509 LBS (WITHOUT EQUIPMENT)  
 DIMENSIONS: 30.0"x35.0"x72.0"

- NOTE:
- CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL KNOCKOUTS THROUGH
  - CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND/OR CABLING



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Project Manager:  
**SBA**  
 SBA SITE ID: CO46107-A

Engineer Stamp:  
  
 CHRISTOPHER J. WARREN  
 47849  
 9/21/21  
 PROFESSIONAL ENGINEER

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

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2	REVISED PER ELECTRICAL COMMENTS	CES	09/02/21
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0	ISSUED FOR CONSTRUCTION	CAP	01/06/21
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A	ISSUED FOR REVIEW	CAP	10/30/20

Designed: CAP Date: 09/21/21  
 Approved: EDR Date: 09/21/21

Project Number: 656-002

Project Title:  
**DN04234A**  
**SPRINT\_BLACK\_FOREST**  
 2746 RUSTIC GROVE  
 COLORADO SPRINGS, CO 80921

Prepared For:  
**T-Mobile**  
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Drawing Scale: AS NOTED Date: 09/21/21 **CD**

Drawing Title:  
**DELTA LB3 BATTERY CABINET DETAIL**

Drawing Number: **C-6.4**

1 DELTA LB3 BATTERY CABINET DETAIL  
 C-6.4 SCALE N.T.S.

Project Manager:



SBA SITE ID: CO46107-A

Engineer Stamp:



Signed: \_\_\_\_\_ Date: \_\_\_\_\_

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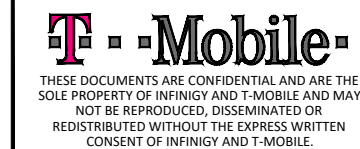
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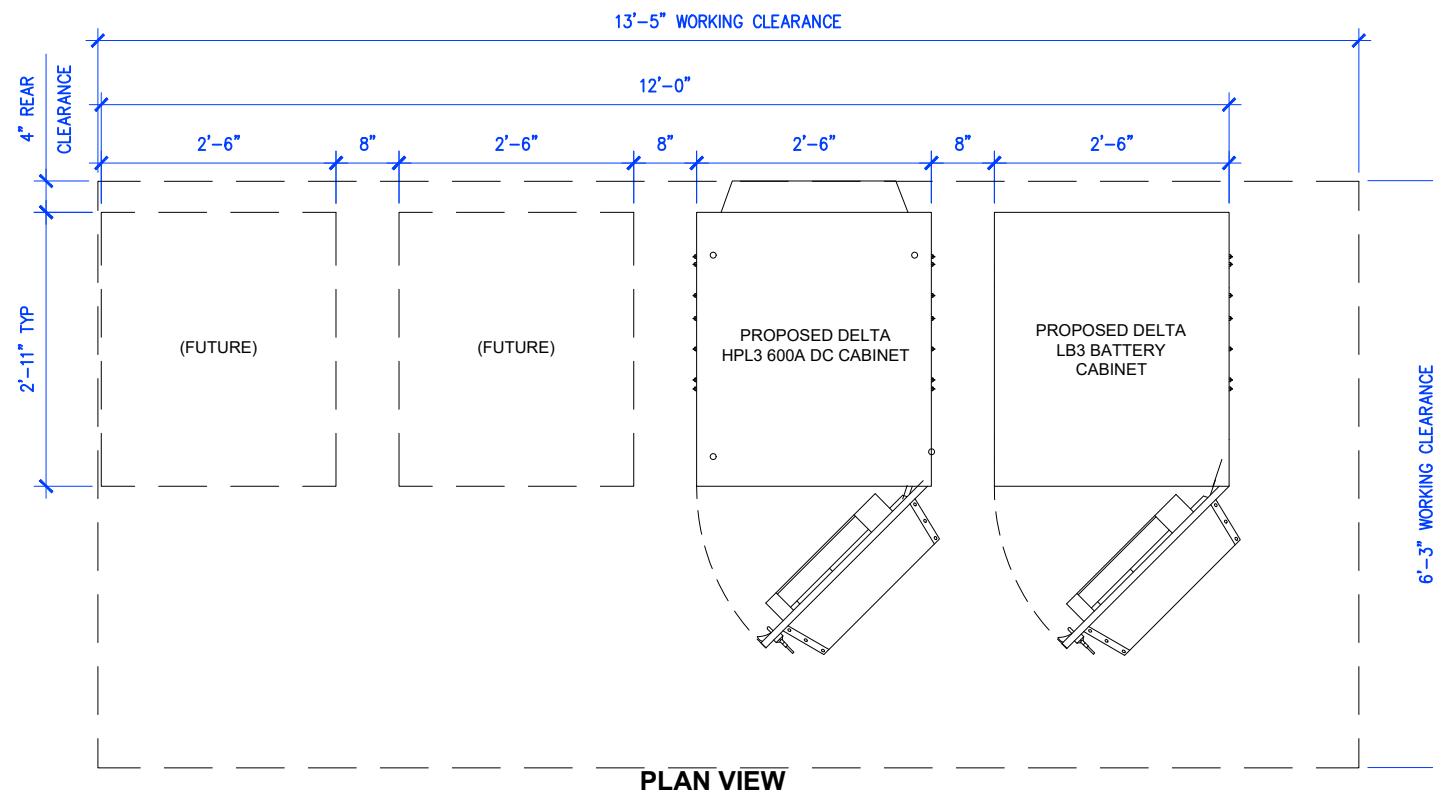


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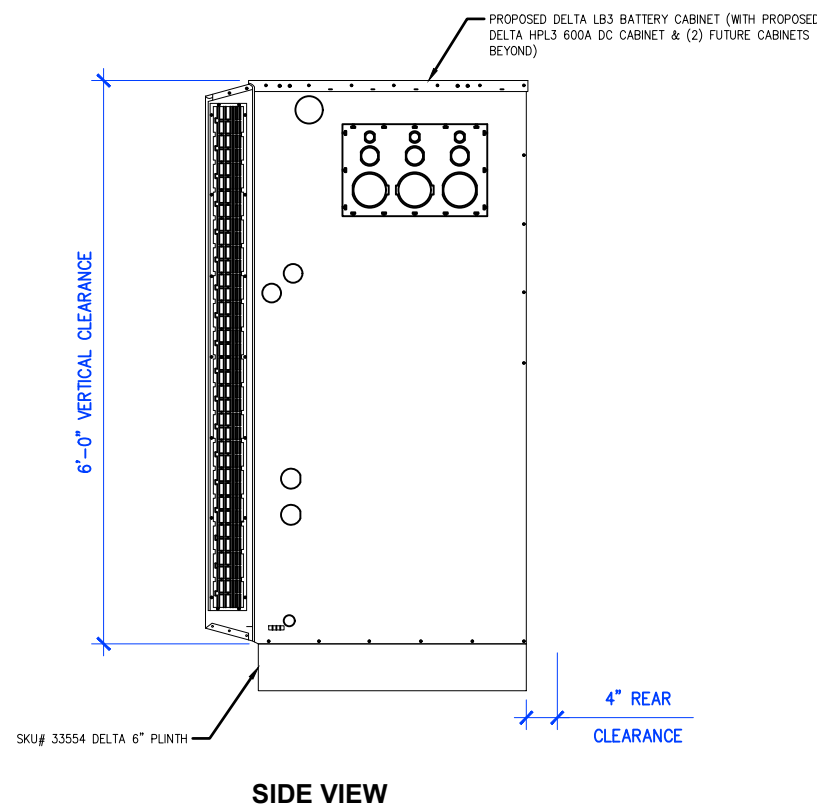
**CD**

Drawing Title:  
**DELTA LB3 BATTERY CABINET LAYOUT**

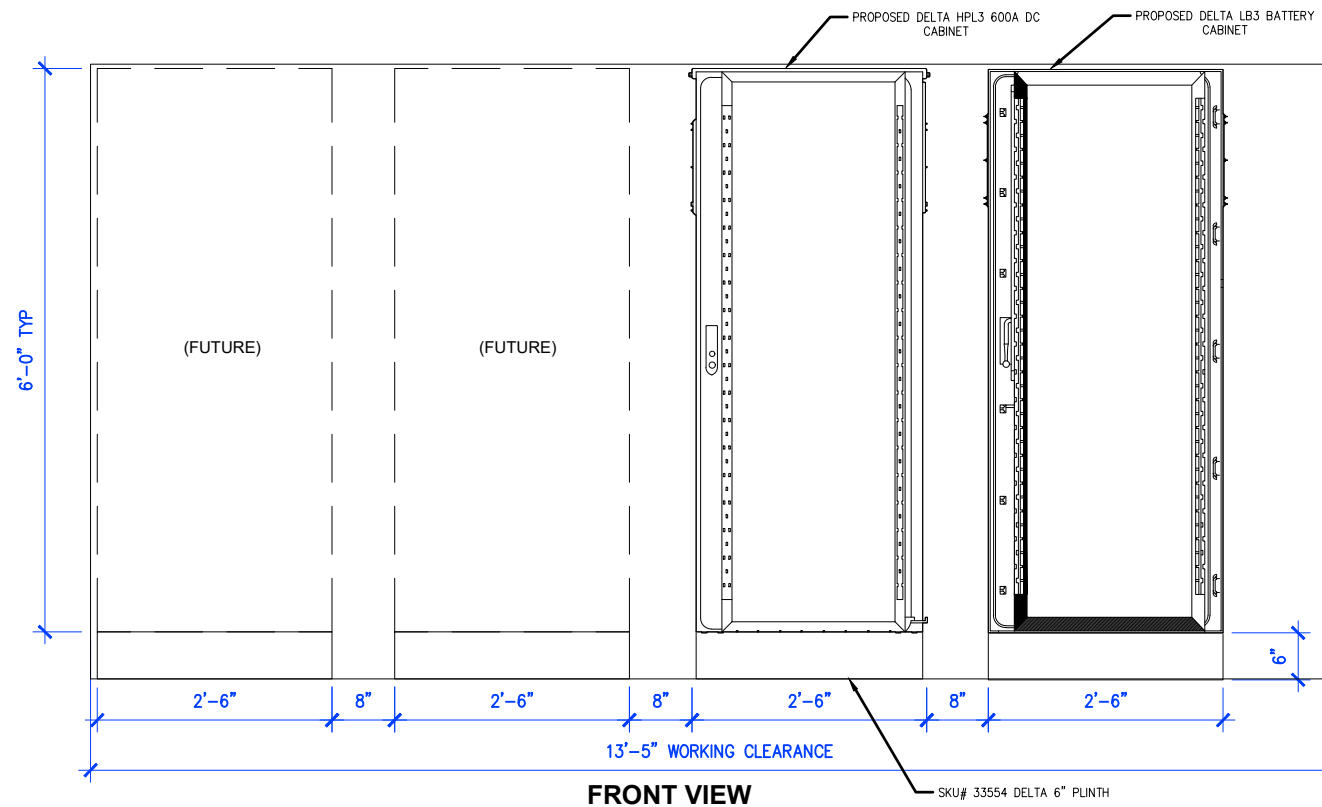
Drawing Number:  
**C-6.5**



**PLAN VIEW**



**SIDE VIEW**



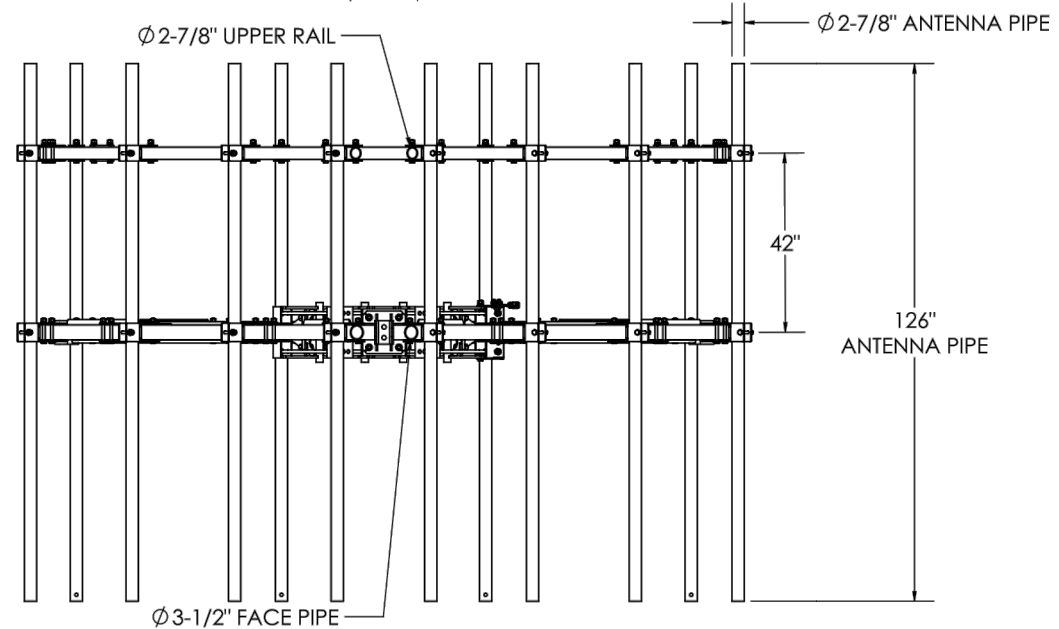
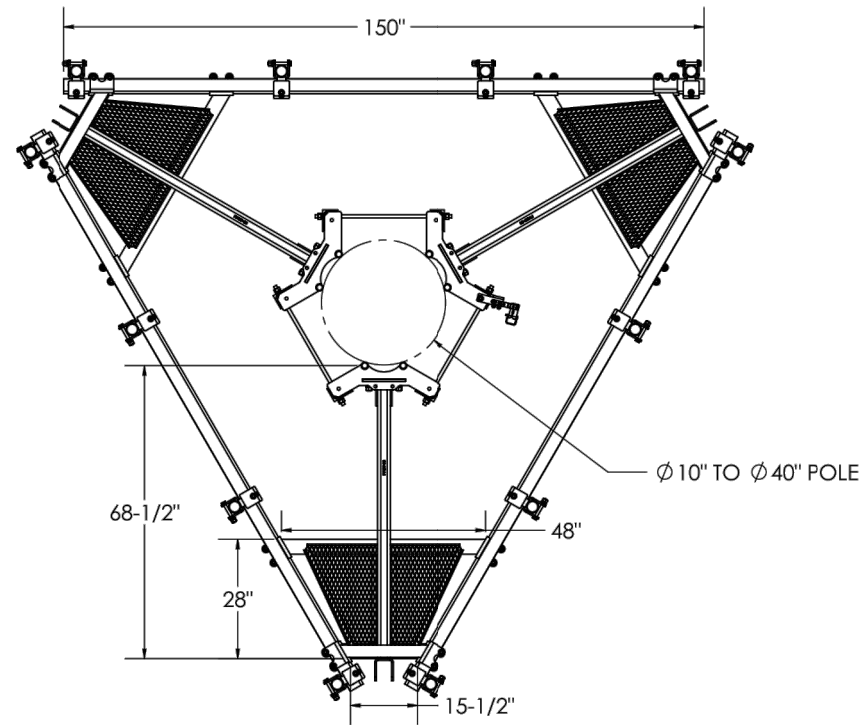
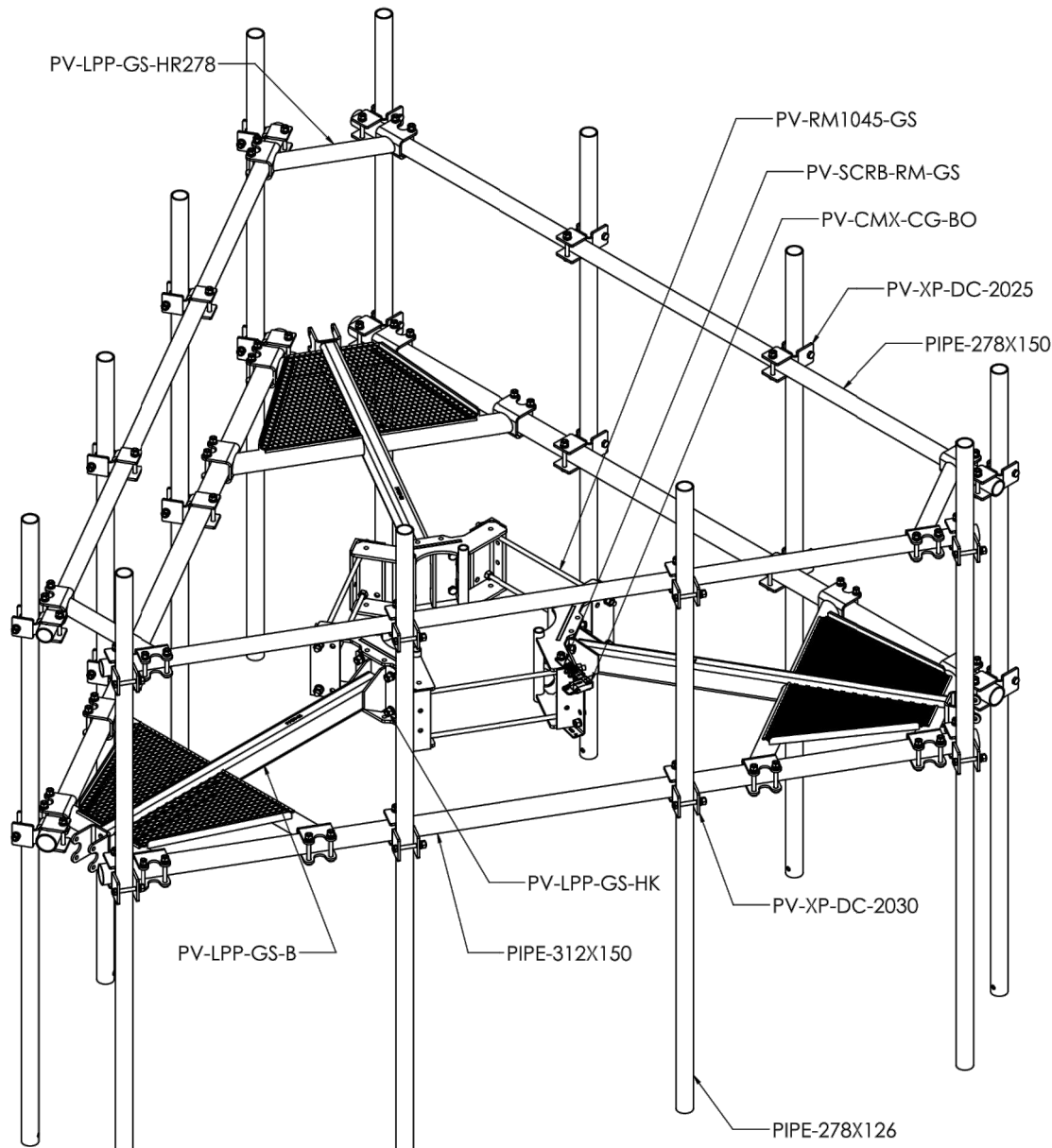
**FRONT VIEW**

**1 DELTA LB3 BATTERY CABINET LAYOUT**

C-6.5

SCALE  
 N.T.S.

**PV-LPPGS-12M-HR25-AP4  
MONOPOLE GUARDIAN MOUNT**



SHEET	THIRD ANGLE PROJECTION	CATEGORY	02_Monopole	4	
1 OF 5		SERIES	01_Triangular	3	
9/4/2020	SCALE 1:36	TYPE	PV-LPPGS_GUARDIAN	2	
DIMENSIONS ARE IN INCHES TOLERANCES U.N.O. HOLES: +1/16", -1/32" ANGULAR: PROFILE ±1/4°, BEND ±2° ALL OTHERS: ±1/16"		BY	DJN	1	
		CHECKED	SJS	0	INITIAL RELEASE 9/4/20
		STATUS	APPROVED	REV	DESCRIPTION DATE
			MONOPOLE GUARDIAN MOUNT		
			DOCUMENT NUMBER		REV
			LPPGS-ENG-03-R0		0

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1 MONOPOLE GUARDIAN MOUNT  
C-7

SCALE  
N.T.S.

Prepared By:  
**INFINIGY**  
FROM ZERO TO INFINIGY  
the solutions are endless  
2500 WEST HIGGINS ROAD, SUITE 500  
HOFFMAN ESTATES, IL 60169  
Phone: 312-317-9444 | Fax: 518-690-0793  
www.infinigy.com

Project Manager:



SBA SITE ID: CO46107-A

Engineer Stamp:

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Prepared For:

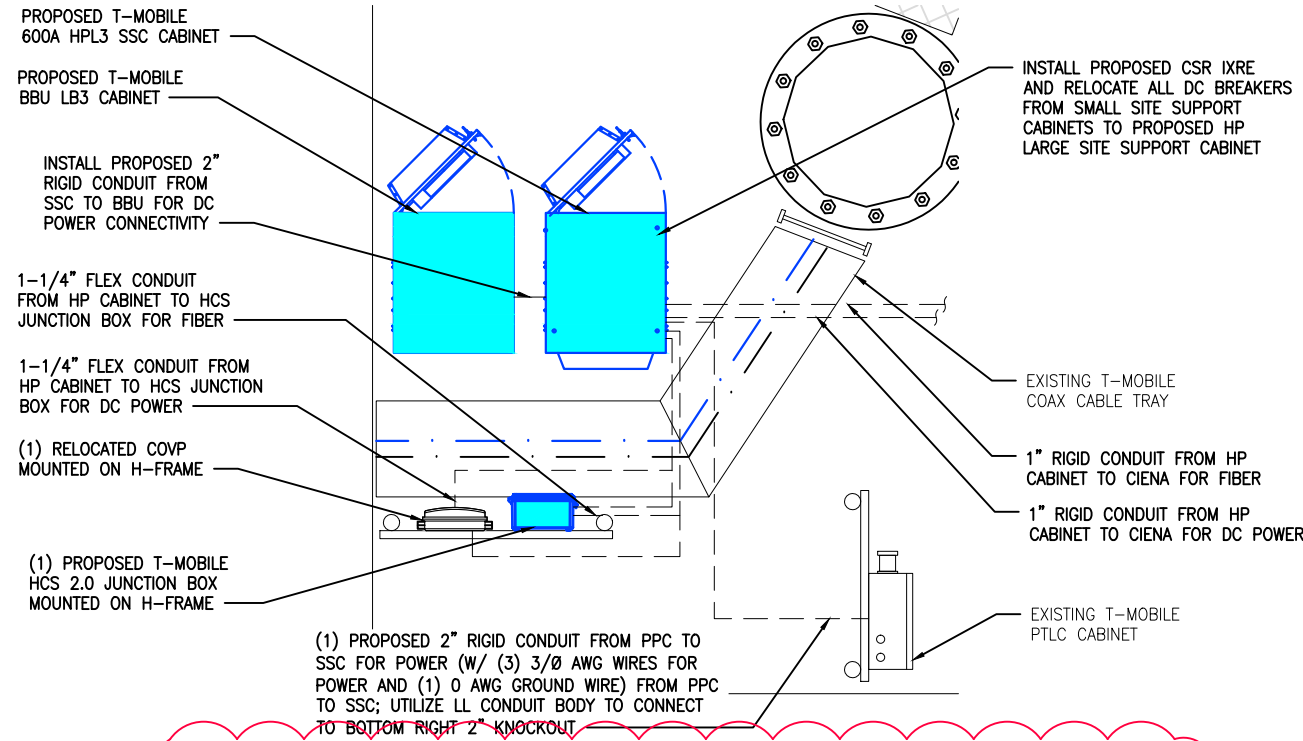
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Drawing Scale: AS NOTED Date: 09/21/21 **CD**

Drawing Title:  
DETAILS

Drawing Number:  
**C-7**

THE LOCATION, SIZE AND TYPE OF MATERIAL OF EXISTING UTILITIES INDICATED ON THE PLANS IS NOT REPRESENTED AS BEING ACCURATE, SUFFICIENT OR COMPLETE. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE ACTUAL LOCATION OF ALL SUCH FACILITIES, INCLUDING THE SERVICE CONNECTIONS TO UNDERGROUND UTILITIES. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES OF HIS OPERATIONAL PLANS AND SHALL OBTAIN FROM THE RESPECTIVE UTILITY COMPANIES DETAILED INFORMATION AND ASSISTANCE RELATIVE TO THE LOCATION OF THEIR FACILITIES AND THE WORKING SCHEDULE OF THE COMPANIES FOR REMOVAL OR ADJUSTMENT WHERE REQUIRED. IN THE EVENT AN UNEXPECTED UTILITY INTERFERENCE IS ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE UTILITY COMPANY OF JURISDICTION. THE ENGINEER SHALL ALSO BE IMMEDIATELY NOTIFIED.



**NOTE:**  
CALCULATED AVAILABLE SHORT-CIRCUIT CURRENT AT SITE IS LESS THAN 10,000A BASED ON EXISTING 25kVA 120/240 TRANSFORMER AT 1.5%Z.

**4 PROPOSED EQUIPMENT PLAN**  
SCALE N.T.S.

CKT NO.	CKT BKR		DESCRIPTION	LOAD (WATTS)					DESCRIPTION	CKT BKR		CKT NO.
	AMPS	POLES		L1	L2	LCL	L2	L1		POLES	AMPS	
1	60	2	SURGE ARRESTOR	0			250		GFCI	1	20	2
3					0							4
5							6000					6
7								6000	NEW DELTA HPL3 SSC CABINET			8
9							6000			2	200	10
11								6000				12
13												14
15												16
17												18
19												20
21												22
23												24
PHASE TOTALS (WATTS)				12,000	12,250	NOTE:						
PHASE BALANCE				49%	51%							
TOTAL CONNECTED (WATTS)				12,000	12,250							
TOTAL AMPS PER PHASE (AMPS)				100	102							
TOTAL LOAD (AMPS)				101								

**3 TYPICAL PANEL SCHEDULE**  
SCALE N.T.S.

**3 SHORT CIRCUIT CALCULATIONS:**

AVAILABLE SHORT CIRCUIT CURRENT - SERVICE TRANSFORMER 25kVA - 7,400A

Isc AT NEW PTLC - 150 FT OF #3/0 CU IN PVC CONDUIT - C = 13,923

Isc = 7,040 / [1+ (7,400 X 150FT X 2 / 13,923 X 240V)] = 4,230A

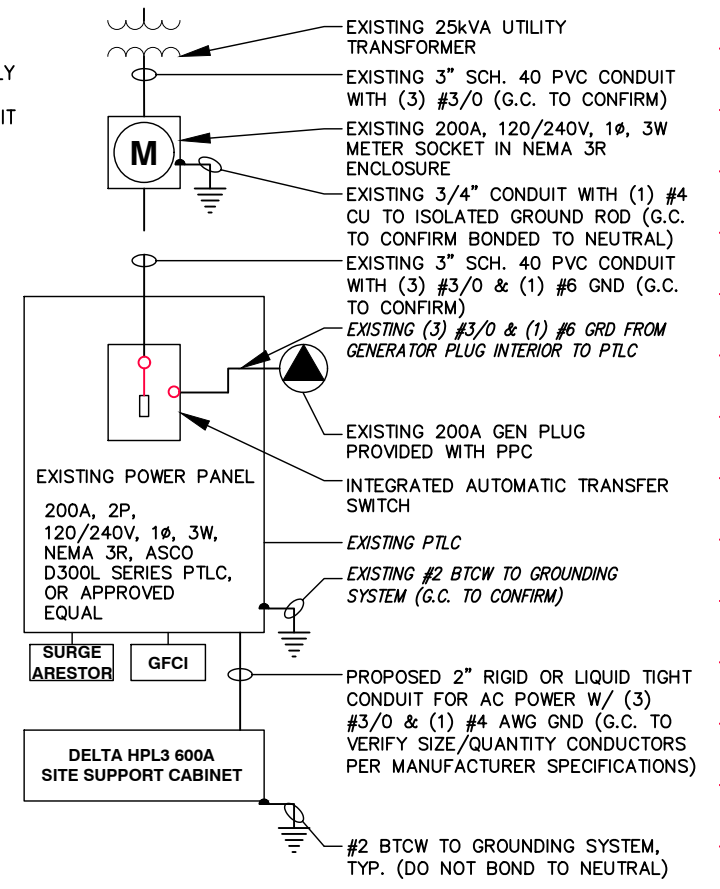
AT DELTA SSC - 20FT OF #3/0 CU THWN IN PVC CONDUIT - C = 13,923

Isc - 4,230 [1+ (4,230 X 20FT X 2 / 13,923 X 240V)] = 4,114A

SC RATING OF PTLC - 22, 000A Sym  
SC RATING OF 600A SITE SUPPORT CABINET - 10,000A Sym

**2 ELECTRICAL NOTES**  
E-1

**NOTE:**  
WITH THE T-MOBILE METER SO FAR AWAY FROM THE EQUIPMENT, WE REALLY DO NOT KNOW WHERE THE NEUTRAL IS BONDED. FOR NOW WE SHALL ASSUME IT IS AT THE METER AS MOST UTILITIES REQUIRE.



**1 ELECTRICAL ONE-LINE DIAGRAM**  
SCALE N.T.S.



Signed: \_\_\_\_\_ Date: \_\_\_\_\_

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Prepared For:  
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**SYMBOLS LEGEND**

- GROUND BAR 
- EXOTHERMIC WELD CONNECTION 
- MECHANICAL BURNDY CONNECTION 
- BOND DIRECTLY TO TOWER 

**KEY NOTES:**

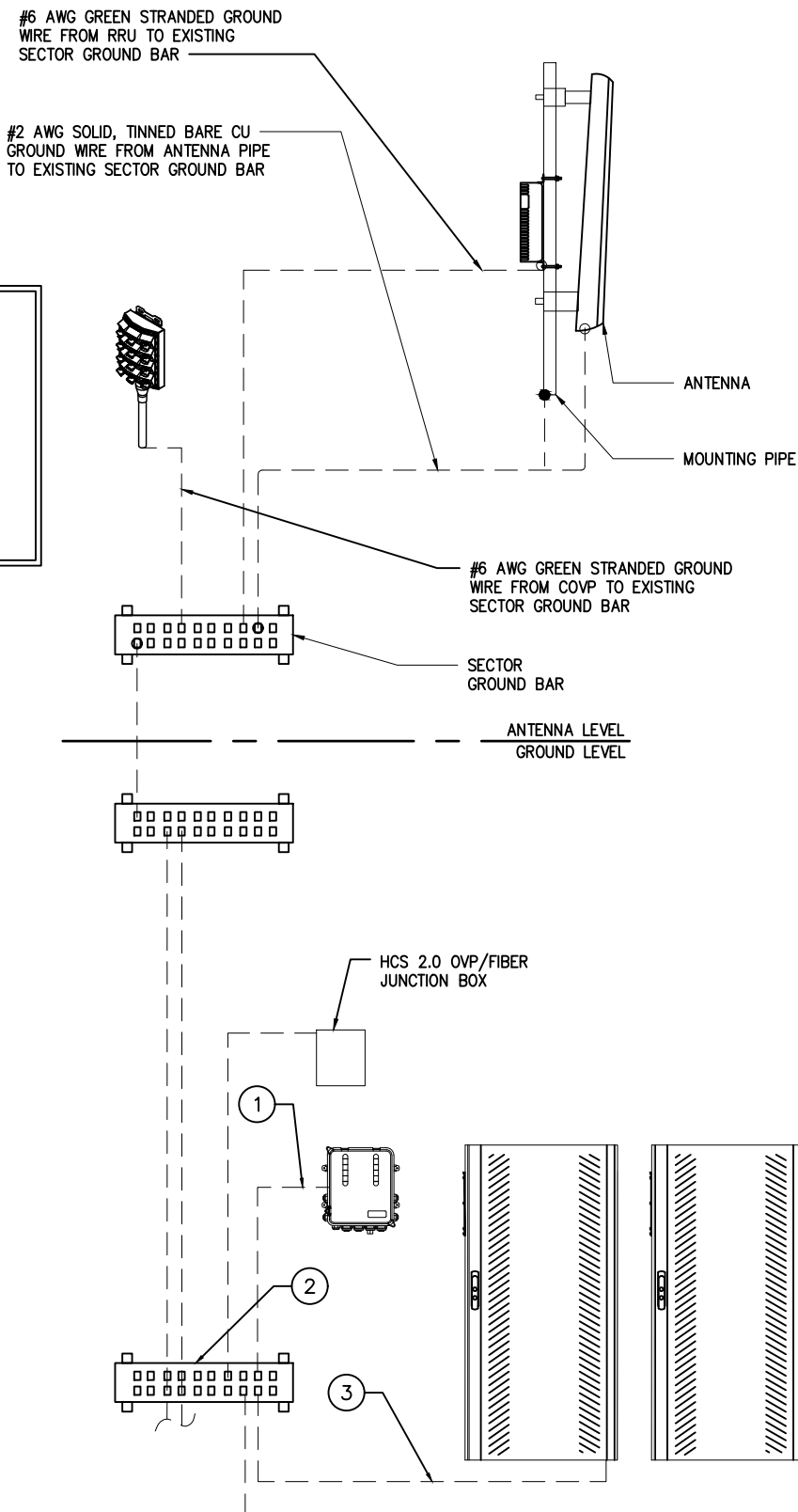
1. #6 AWG GREEN STRANDED GROUND CU WIRE FROM COVP TO EXISTING GROUND BAR
2. EXISTING GROUND BAR
3. #2 AWG SOLID TINNED BARE CU GROUND WIRE FROM SSC TO EXISTING GROUND BAR
3. #2 AWG SOLID TINNED BARE CU GROUND WIRE FROM BBU TO EXISTING GROUND BAR

**NOTE:**

UTILIZE EXISTING GROUND LEAD AND INSTALL PROPOSED LEADS IF NECESSARY

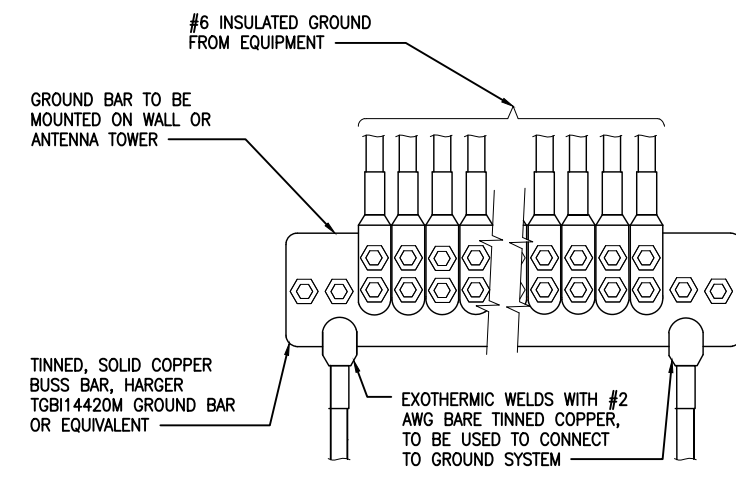
**NOTES:**

1. EXISTING GROUNDING NOT SHOWN IN THIS DIAGRAM. GENERAL CONTRACTOR TO VERIFY EXISTING EQUIPMENT GROUNDING IN FIELD.
2. GENERAL CONTRACTOR TO V.I.F. AND INSTALL ANY MISSING T-MOBILE GROUND BAR ON SITE
3. GENERAL CONTRACTOR TO UTILIZE EXISTING GROUND BAR TO GROUND PROPOSED MODULES. IF NO SPACE IS AVAILABLE THEN GENERAL CONTRACTOR TO FOLLOW THE LATEST CD'S.



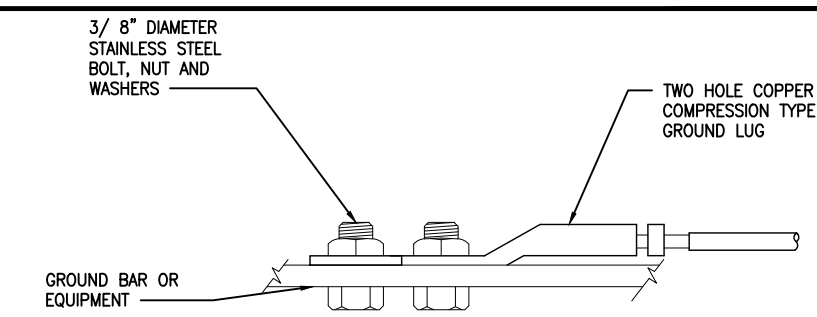
3 TYPICAL GROUNDING DIAGRAM

SCALE  
N.T.S.



**NOTE:**  
CONTRACTOR TO UTILIZE KOPR-SHIELD (THOMAS & BETTS) OR EQUIVALENT ON ALL LUG CONNECTIONS.

2 TWO HOLE LUG CONNECTION DETAIL  
SCALE  
N.T.S.



**NOTE:**  
ALL MECHANICAL EXTERNAL TERMINATION SURFACES SHALL BE TREATED WITH T&B KOPR-SHIELD CP8 ANIT-OXIDATION COMPOUND.

1 ANTENNA GROUND BAR DETAIL  
SCALE  
N.T.S.



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Drawing Scale: AS NOTED Date: 09/21/21 **CD**

Drawing Title: GROUNDING DETAILS

Drawing Number: G-1