

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
2500 WEST HIGGINS ROAD, SUITE 500
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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 |
|------|---------------------------------|-------|----------|
| 4 | REVISED PER ELECTRICAL COMMENTS | LMG | 11/10/21 |
| 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

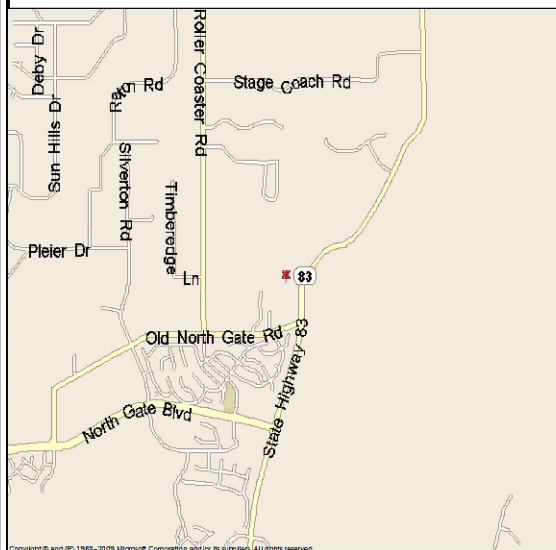
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Drawing Scale: AS NOTED Date: 09/21/21 **CD**

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

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. 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.
10. 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.
11. 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.
12. 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.
13. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS, AS WELL AS THE LATEST EDITIONS OF ANY PERTINENT STATE SAFETY REGULATIONS.
14. 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.
15. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC., ON THE JOB.
16. 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 | | |
| LONGITUDE: | -104.776961 | | |
| JURISDICTION: | EL PASO COUNTY | ARCHITECT/ENGINEER: | INFINIGY ENGINEERING 2500 HIGGINS ROAD, SUITE 500 HOFFMAN ESTATES, IL 60169 INFINIGY.COM |
| 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 | | |

PARCEL A - TOWER EASEMENT AREA:

A telecommunications lease parcel within a portion of the North 341.4 feet of the East one-half of the Southeast Quarter of the Northeast Quarter of Section 4, Township 12 South, Range 66 West of the 6th P.M., excepting therefrom the parcel conveyed to the Department of Highways, State of Colorado, by deed recorded October 26, 1964 in BOOK 2041 AT PAGE 250, County of El Paso County, Colorado, described by metes and bounds as follows:
 COMMENCING at the Northeast corner of said North 341.4 feet of the East one-half of the Southeast Quarter of the Northeast Quarter of Section 4; thence S83°52'19"W (Bearings are based on Geodetic North according to WGS 84 projection. Bearings are referenced by the North line of the Parent Tract, and bears S89°50'13"W), a distance of 233.80 feet to the POINT OF BEGINNING; thence S15°46'58"W, 30.00 feet; thence N74°13'02"W, 40.00 feet; thence N15°46'58"E, 30.00 feet; thence S74°13'02"E, 40.00 feet to the POINT OF BEGINNING.

PARCEL B - ACCESS EASEMENT:

A twelve foot wide strip of land over and across a portion of the North 341.4 feet of the East one-half of the Southeast Quarter of the Northeast Quarter of Section 4, Township 12 South, Range 66 West of the 6th P.M., excepting therefrom the parcel conveyed to the Department of Highways, State of Colorado, by deed recorded October 26, 1964 in BOOK 2041 AT PAGE 250, County of El Paso County, Colorado, centerline of said strip is described as follows:
 COMMENCING at the Northeast corner of said North 341.4 feet of the East one-half of the Southeast Quarter of the Northeast Quarter of Section 4; thence S00°09'47"E along the east line of said tract (Bearings are based on Geodetic North according to WGS 84 projection. Bearings are referenced by the North line of the Parent Tract, and bears S89°50'13"W), a distance of 50.19 feet to the POINT OF BEGINNING; thence along the arc of a curve to the left having a central angle of 54°31'38", a radius of 26.29 feet, a chord bearing of N71°28'55"W, a chord length of 24.08 feet and an arc length of 25.02 feet; thence along the arc of a curve to the left having a central angle of 30°31'48", a radius of 226.43 feet, a chord bearing of S60°29'43"W, a chord length of 119.23 feet, and an arc length of 120.65 feet; thence S44°33'12"W, 110.47 feet; thence along the arc of a curve to the right having a central angle of 93°22'35", a radius of 42.54 feet, a chord bearing of S89°05'14"W, a chord length of 61.91 feet, and an arc length of 69.33 feet; thence N48°36'20"W, 41.07 feet; thence N31°00'09"E, 32.96 feet; thence along the arc of a curve to the left having a central angle of 22°26'30", a radius of 34.60 feet, a chord bearing of N21°52'05"E, a chord length of 13.47, and an arc length of 13.55 feet; thence N10°38'50"E, 66.53 feet to the POINT OF TERMINUS.

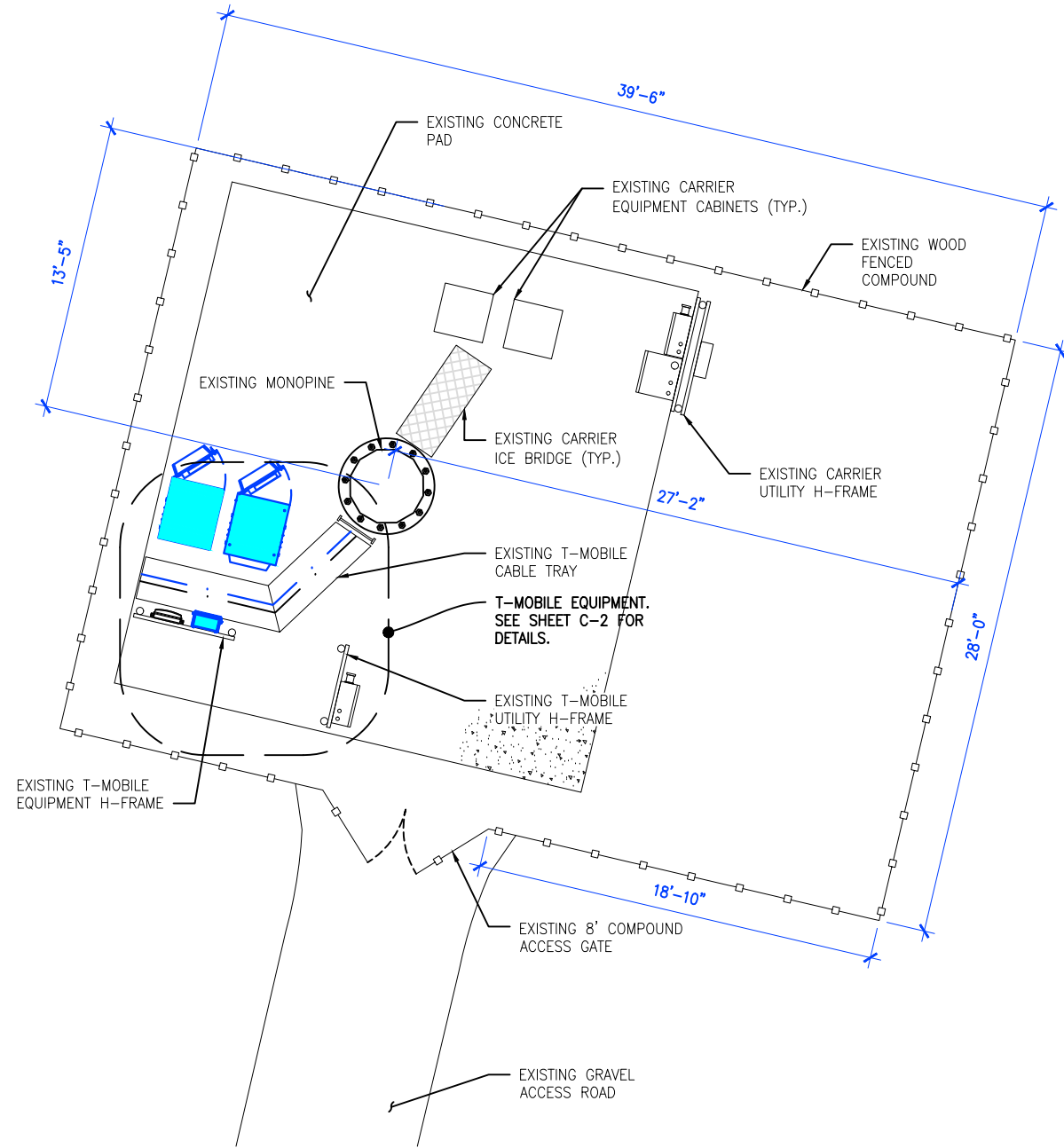
PARCEL C - UTILITY EASEMENT

A ten foot wide strip of land over and across a portion of the North 341.4 feet of the East one-half of the Southeast Quarter of the Northeast Quarter of Section 4, Township 12 South, Range 66 West of the 6th

P.M., excepting therefrom the parcel conveyed to the Department of Highways, State of Colorado, by deed recorded October 26, 1964 in BOOK 2041 AT PAGE 250, County of El Paso County, Colorado, centerline of said strip is described as follows:
 COMMENCING at the Northeast corner of said North 341.4 feet of the East one-half of the Southeast Quarter of the Northeast Quarter of Section 4; thence S23°11'46"W (Bearings are based on Geodetic North according to WGS 84 projection. Bearings are referenced by the North line of the Parent Tract, and bears S89°50'13"W), a distance of 104.17 feet to the POINT OF BEGINNING; thence N71°14'58"W, 203.74 feet to the POINT OF TERMINUS.

FOR INFORMATION ONLY-

PARENT PARCEL:
 The North 341.4 feet of the East one-half of the Southeast Quarter of the Northeast Quarter of Section 4, Township 12 South, Range 66 West of the 6th P.M., excepting therefrom the parcel conveyed to the Department of Highways, State of Colorado, by deed recorded October 26, 1964 in BOOK 2041 AT PAGE 250, County of El Paso County, Colorado.



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.
 7. SITE LEGAL DESCRIPTION PROVIDED BY SBA TOWERS; INFINIGY DOES NOT CERTIFY OR CONFIRM LEGAL DESCRIPTION ACCURACY.



CALLED NORTH


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

| | |
|--------------------------|--|
| PROPERTY OWNER: | ANTHONY W. PETERSON 2725 RUSTIC OAK GROVE COLORADO SPRINGS, CO 80921 719-337-6266 |
| TOWER OWNER & APPLICANT: | KRISTEN RUGGLES 561-445-0193 KRUGGLES@SBASITE.COM |
| TAX SCHEDULE #: | 6204000017 |
| LOT SIZE: | 4.8 ACRES |
| LEGAL DESCRIPTION: | N 341.40 FT OF E2SE4NE4 EX HWY SEC 4-12-66 |
| CURRENT ZONING: | RR-5 |

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Project Manager:

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Engineer Stamp:


Signed: _____ Date: _____


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| 4 | REVISED PER ELECTRICAL COMMENTS | LMG | 11/10/21 |
| 3 | REVISED PER ELECTRICAL COMMENTS | CES | 09/21/21 |
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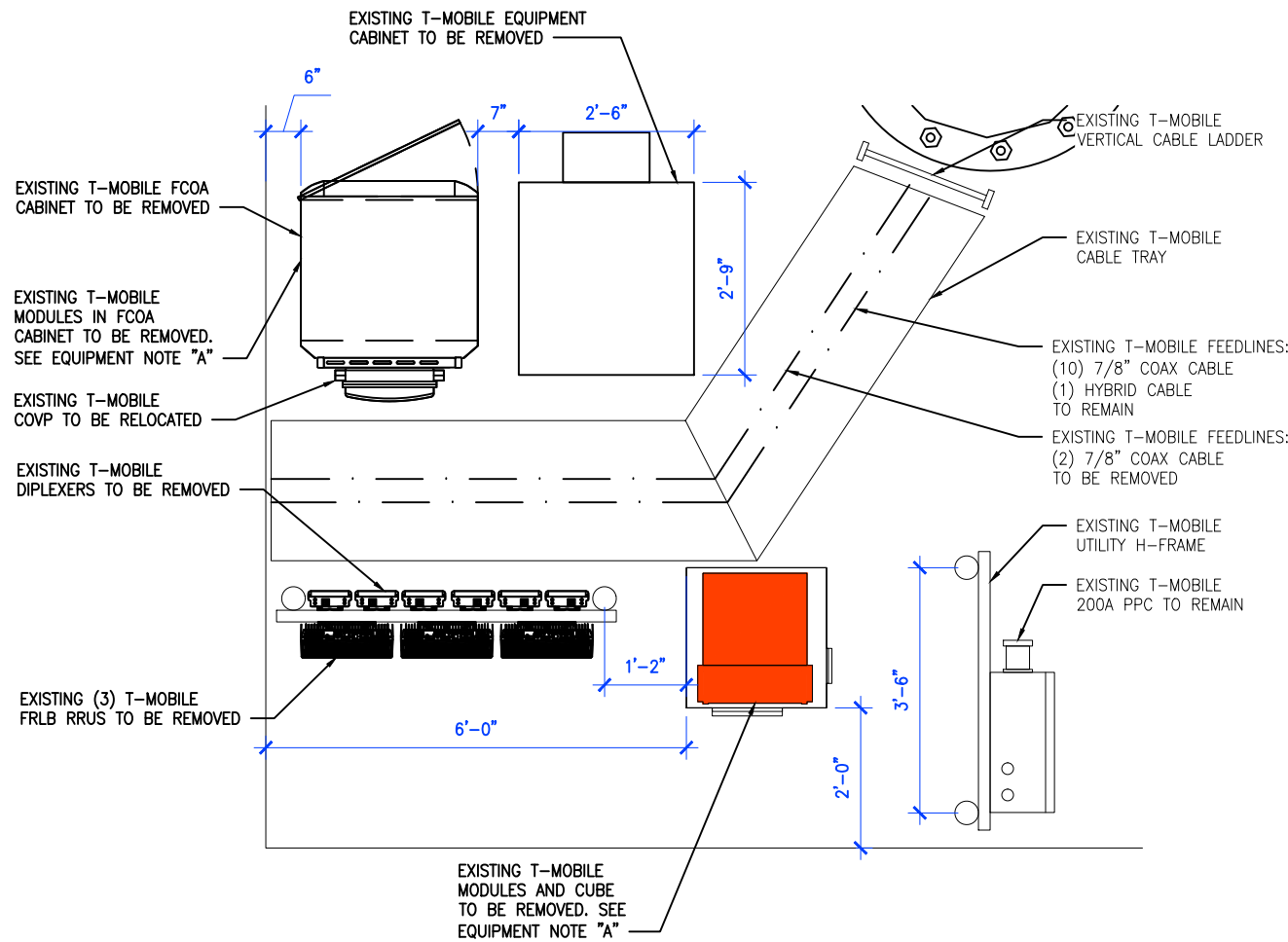
Drawing Scale: AS NOTED Date: 09/21/21

 Drawing Title:
ENLARGED COMPOUND PLAN
 Drawing Number: **C-1**



EQUIPMENT PHOTOS

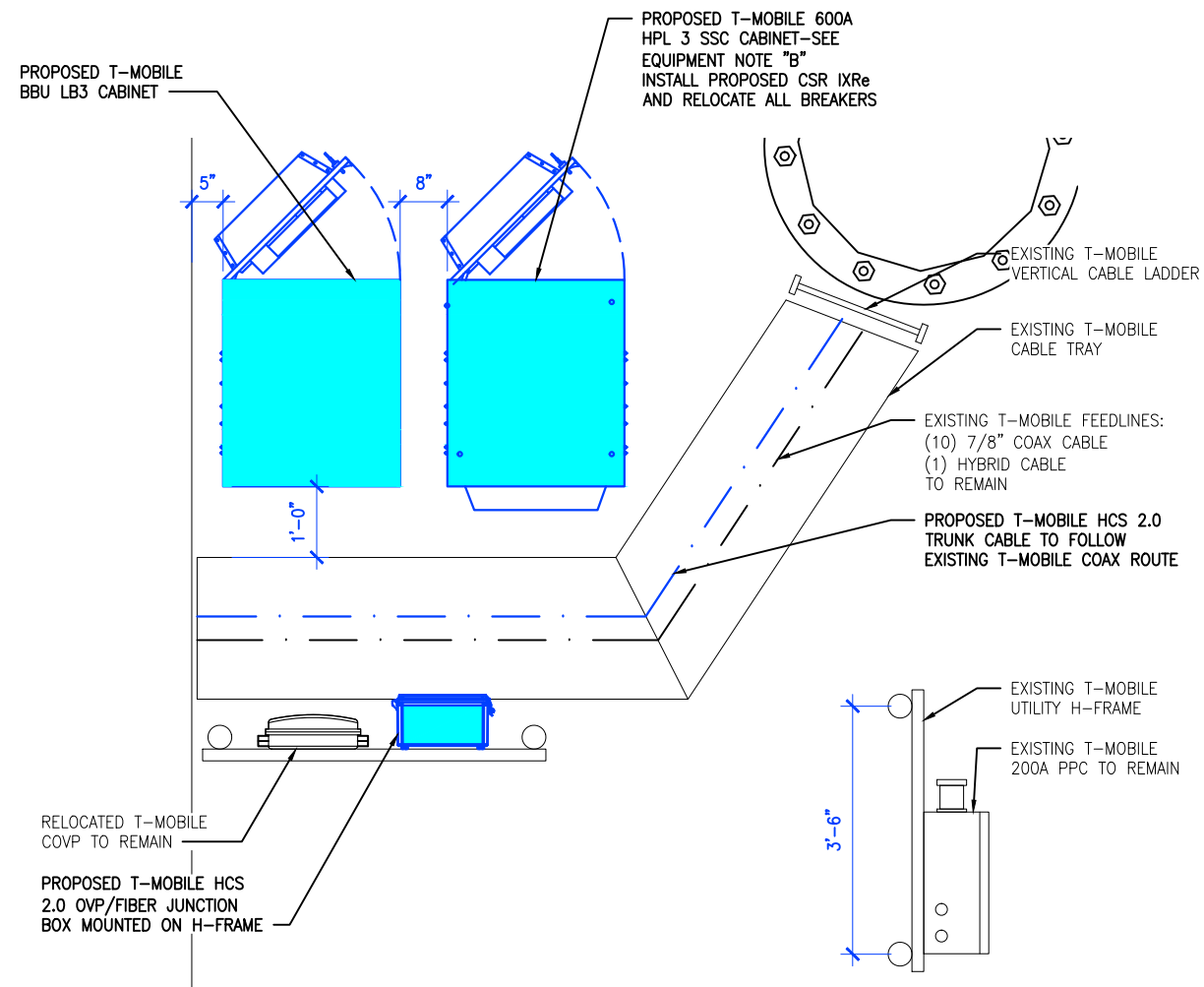
NOTES:

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 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.



- 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
 - (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.

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Project Manager:
SBA
SBA SITE ID: CO46107-A

Engineer Stamp:
GOLDADO LICENSED
CHRISTOPHER J. WARREN
47849
11-10-21
PROFESSIONAL ENGINEER

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

| Rev. | Submittal / Revision | App'd | Date |
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Drawing Scale: AS NOTED Date: 09/21/21
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)

CALLLED NORTH

CALLLED NORTH

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.

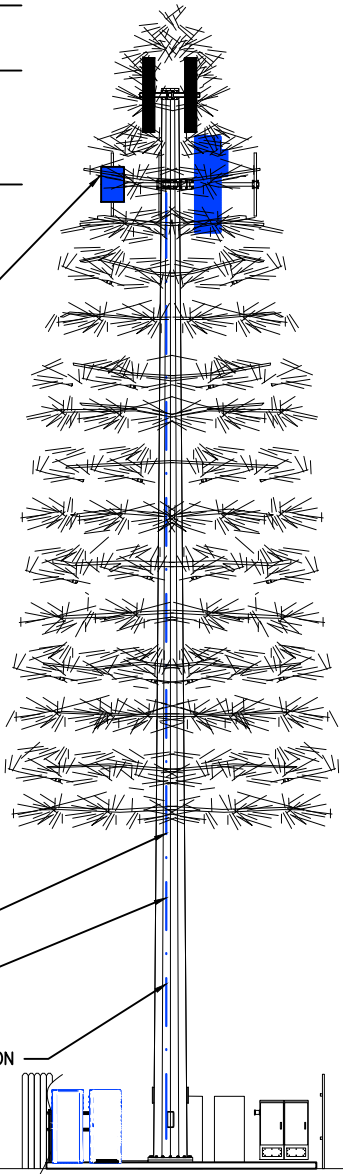
NOTE:
PROPOSED TOWER MOUNTED EQUIPMENT AND MOUNT TO BE PAINTED TO MATCH FOLIAGE.

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
(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

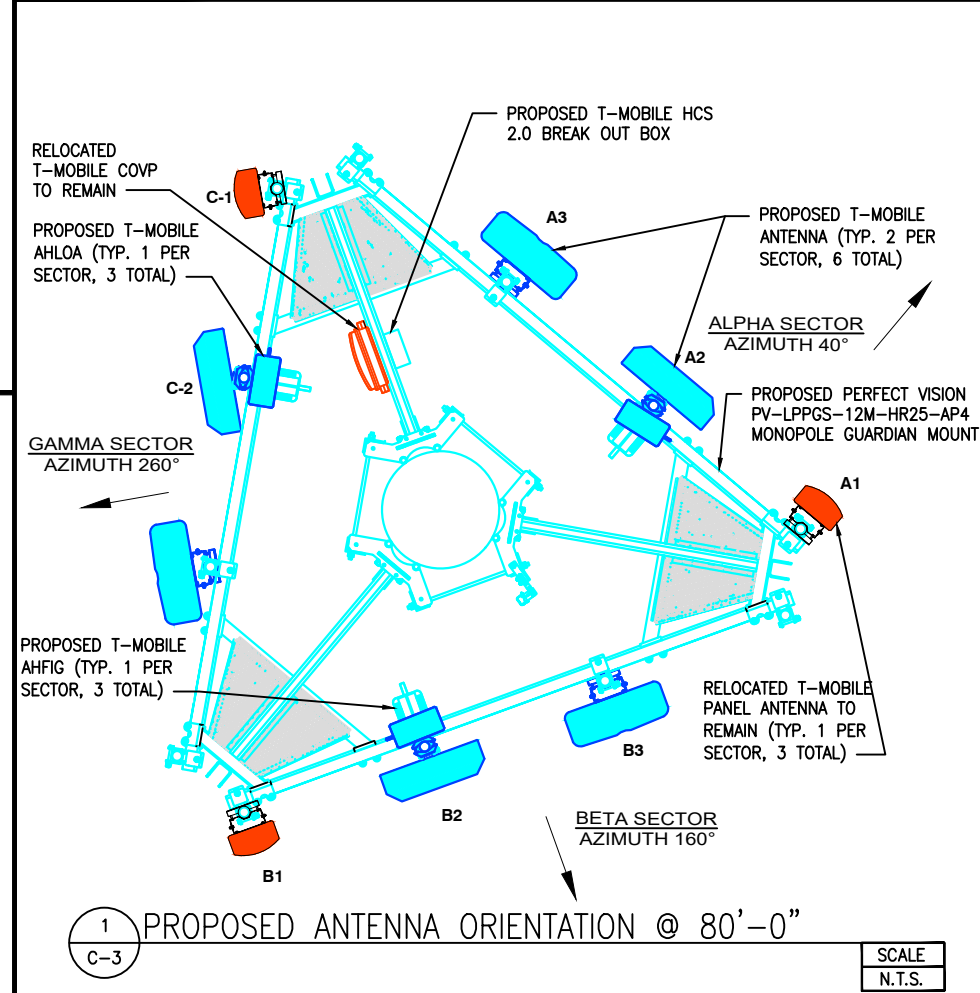
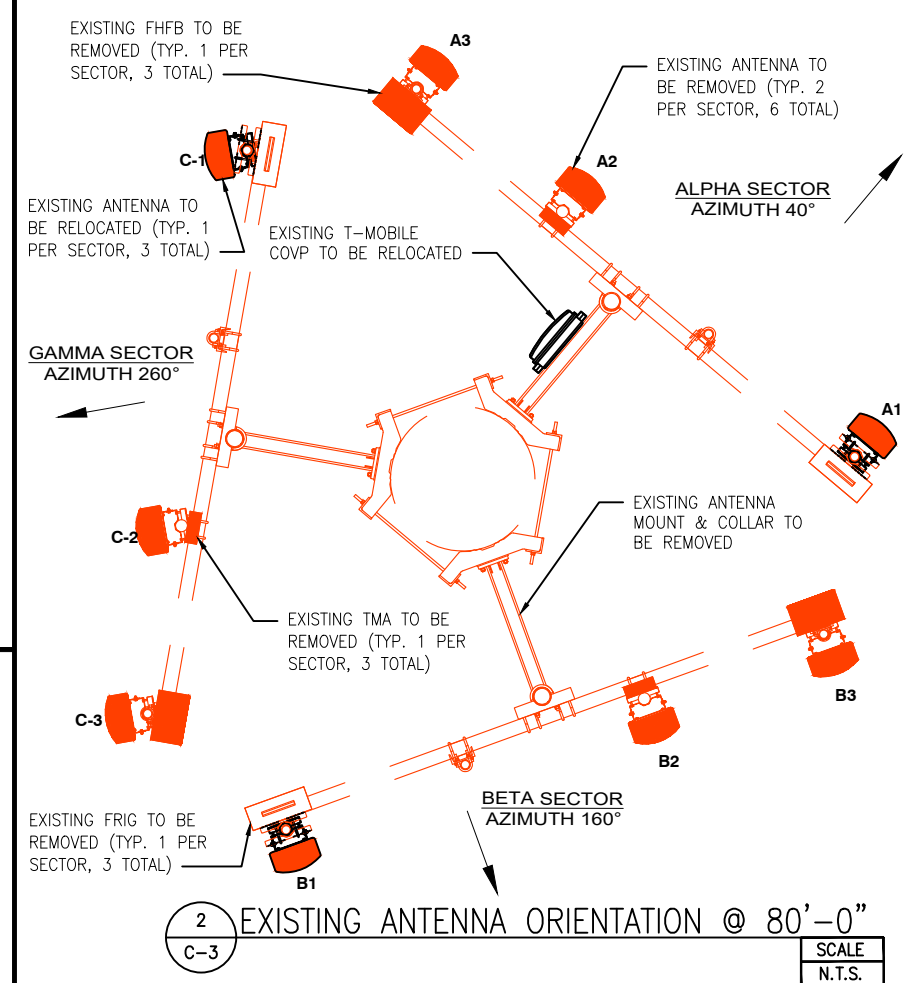
- PROPOSED FFHH-65C-R3 ANTENNA
- PROPOSED AHLOA
- PROPOSED AHFIG
- PROPOSED AEHC ANTENNA



TOWER PHOTO



ANTENNA PHOTO



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Project Manager:
SBA

SBA SITE ID: CO46107-A

Engineer Stamp:
GOLDADO LICENSED
CHRISTOPHER J. WARREN
47849
11-10-21
PROFESSIONAL ENGINEER

Signed: _____ Date: _____

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| | | | |
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| 4 | REVISED PER ELECTRICAL COMMENTS | LMG | 11/10/21 |
| 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 |
| Rev. | Submital / 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

Prepared For:
T-Mobile
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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'.

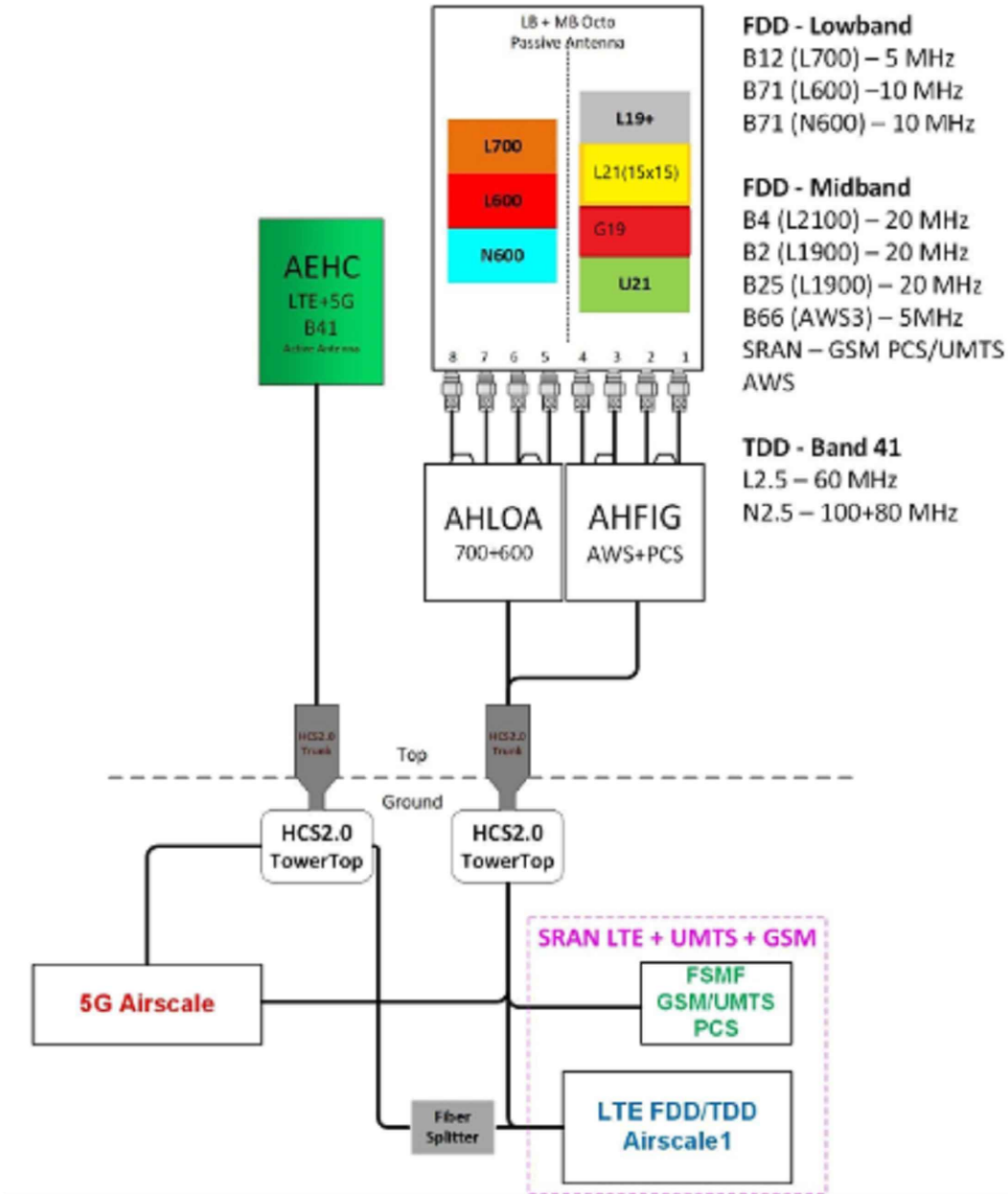
| CONFIGURATION 56772V_SR - TOWER TOP EQUIPMENT SCHEDULE | | | | | | | | | |
|--|--------------|-------------------------|-----------------|-----------------|------------|---------|--------------------------------|---|--|
| ANTENNA SECTOR | ANTENNA MARK | ANTENNA MODEL # | ELECTRICAL TILT | MECHANICAL 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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COLORADO SPRINGS, CO 80921

Prepared For:

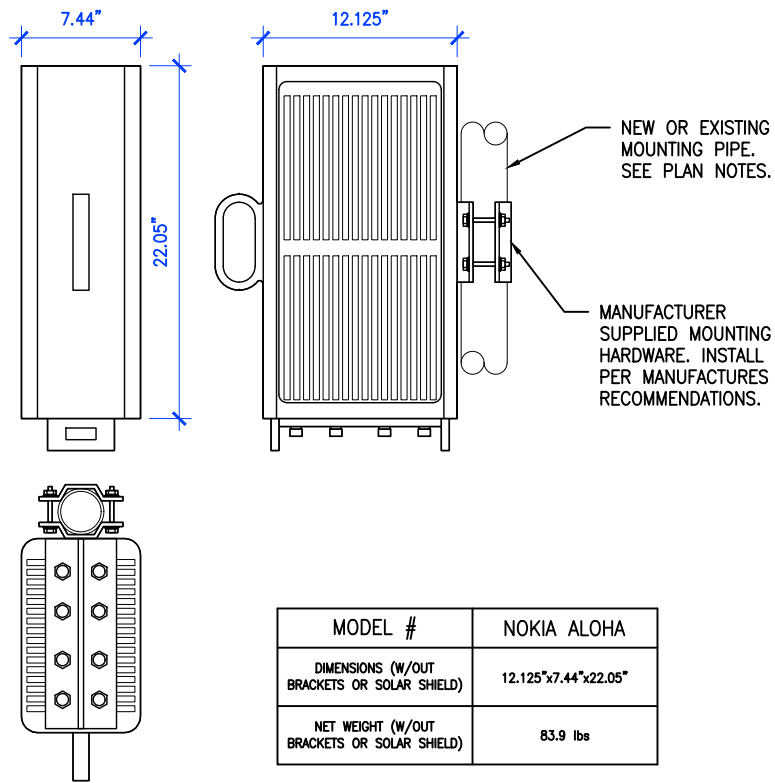
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Drawing Scale: AS NOTED Date: 09/21/21

CD

Drawing Title:
ANTENNA SYSTEM DIAGRAM
AND RF SCHEDULE

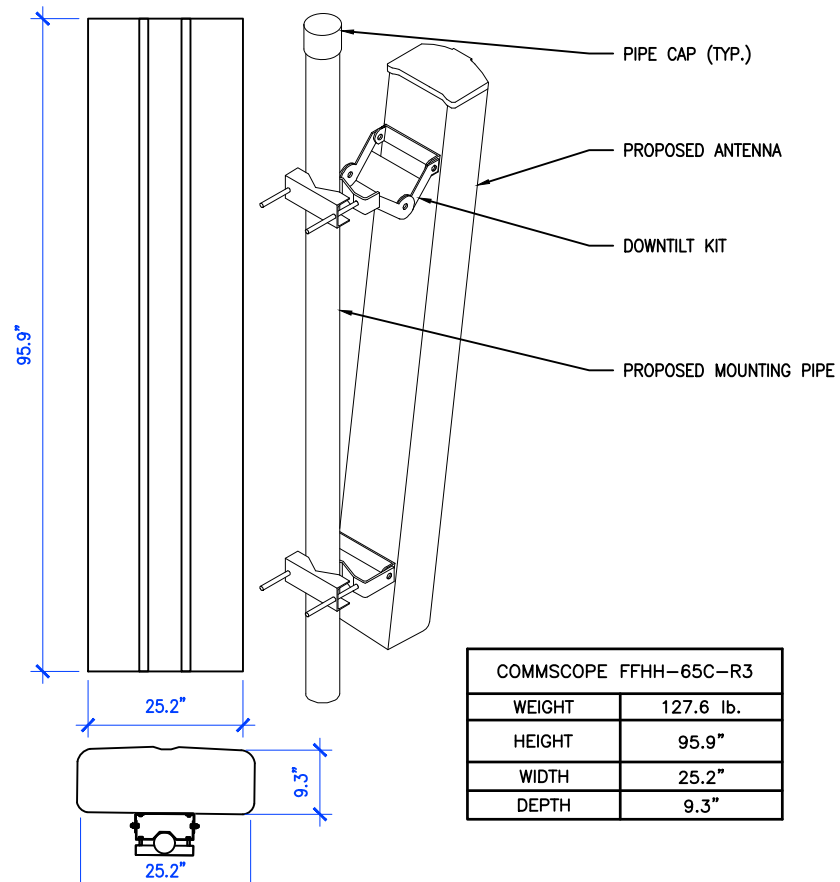
Drawing Number:
C-4



4 NOKIA AHLOA RRU

C-5

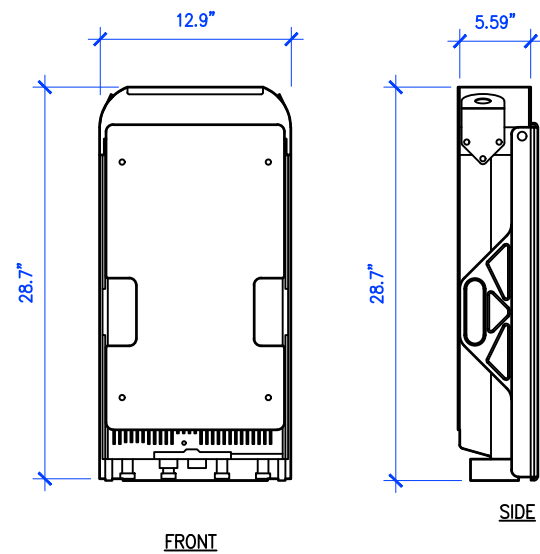
SCALE
N.T.S.



2 COMMSCOPE FFHH-65C-R3 ANTENNA

C-5

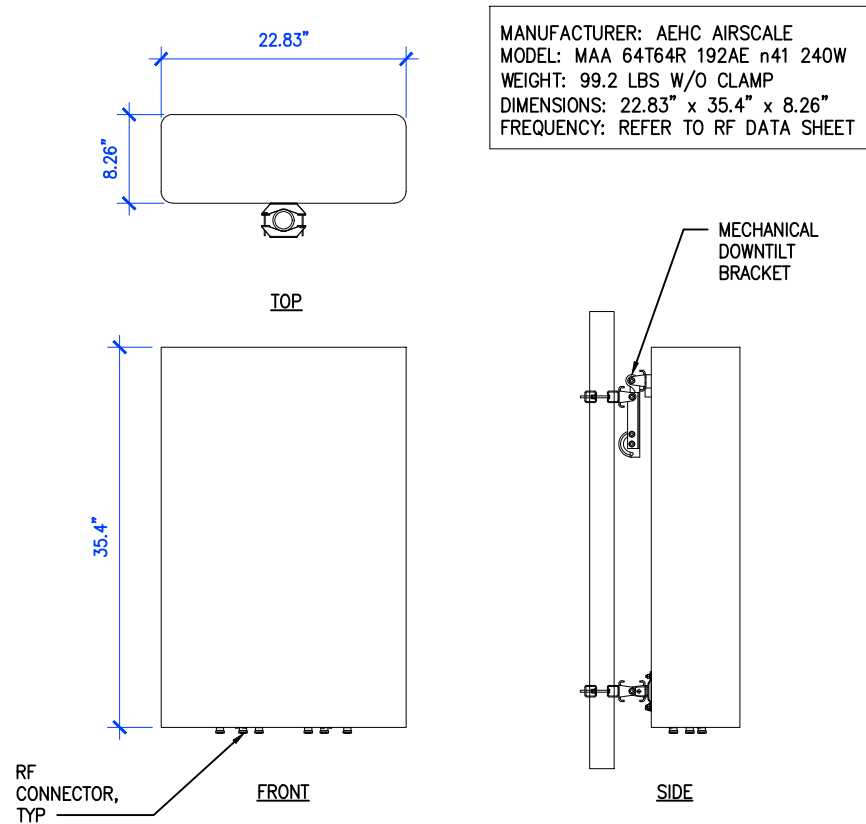
SCALE
N.T.S.



5 NOKIA AHFIG DETAIL

C-5

SCALE
N.T.S.



3 NOKIA MIMO ANTENNA DETAIL

C-5

SCALE
N.T.S.

1 NOT USED

C-5

SCALE
N.T.S.

Project Manager:



SBA SITE ID: CO46107-A

Engineer Stamp:



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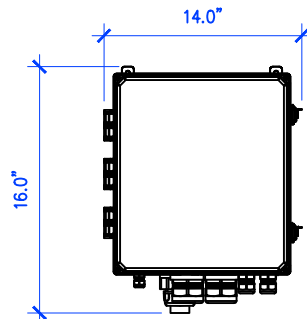
Drawing Title:
DETAILS

Drawing Number:
C-5

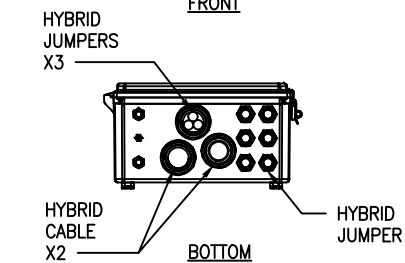
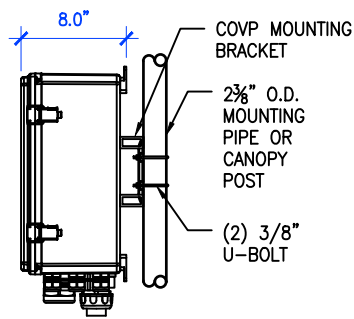
MANUFACTURER: RAYCAP
 MODEL: RTMDC-5634-PF-48
 WEIGHT: 21.85 LBS
 DIMENSIONS: 14.0" x 16.0" x 8.0"
 FREQUENCY: REFER TO RF DATA SHEET

NOTES:

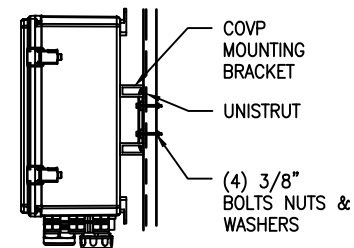
1. ALL EXPOSED ELECTRICAL CONDUIT MUST BE GALVANIZED STEEL RIGID CONDUIT.
2. THREADLESS CONNECTORS ARE NOT ALLOWED.
3. EMT CONDUIT CAN ONLY BE USED INSIDE.
4. USE ONLY COMPRESSION TYPE FITTINGS ON EMT CONDUIT.
5. USE ONLY STRANDED CONDUCTORS FOR ALL ELECTRICAL WIRING. (EXCEPT TELCO AND THERMOSTAT)
6.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



FRONT



BOTTOM



6 HCS 2.0 JUNCTION BOX DETAIL

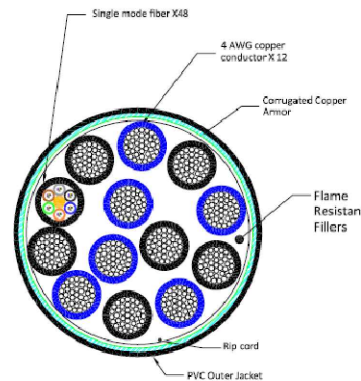
C-6

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 | 1.2 |
| | ARMOR | CORRUGATED COPPER |
| | WEIGHT(LB/100') | 249.0 |
| | 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(ohm-cm @ 20°C) | 16.78 ncm-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) | >90 |
| | 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 lb) | 4.4 NM PER IEC 60068 |

NOTES:

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4 HCS 2.0 HYBRID CABLE DETAIL

C-6

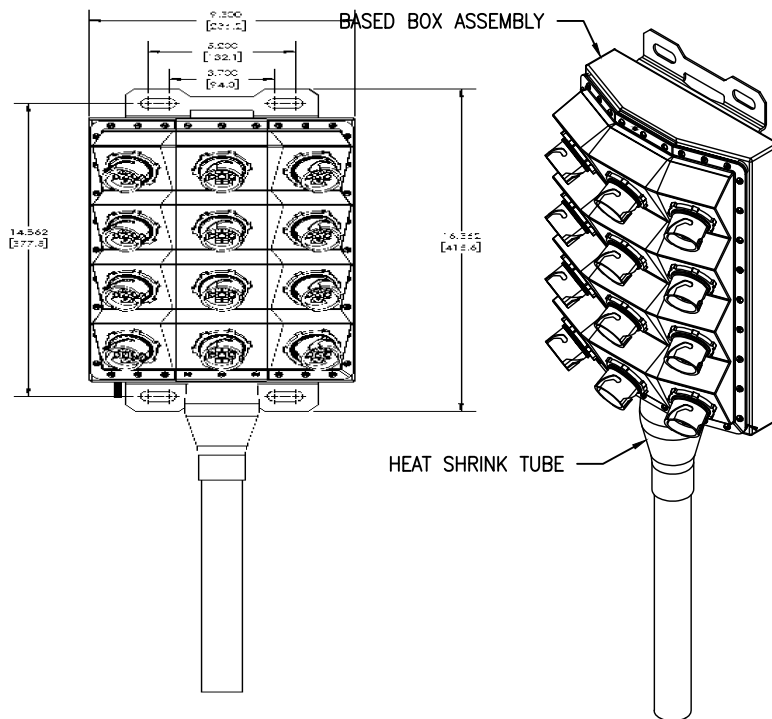
SCALE
N.T.S.

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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2746 RUSTIC GROVE
 COLORADO SPRINGS, CO 80921

Prepared For:



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CD

Drawing Title:
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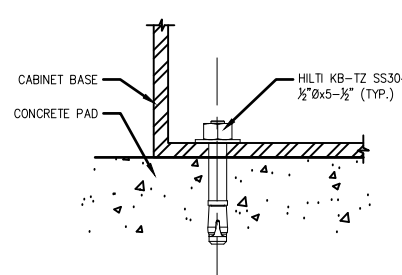
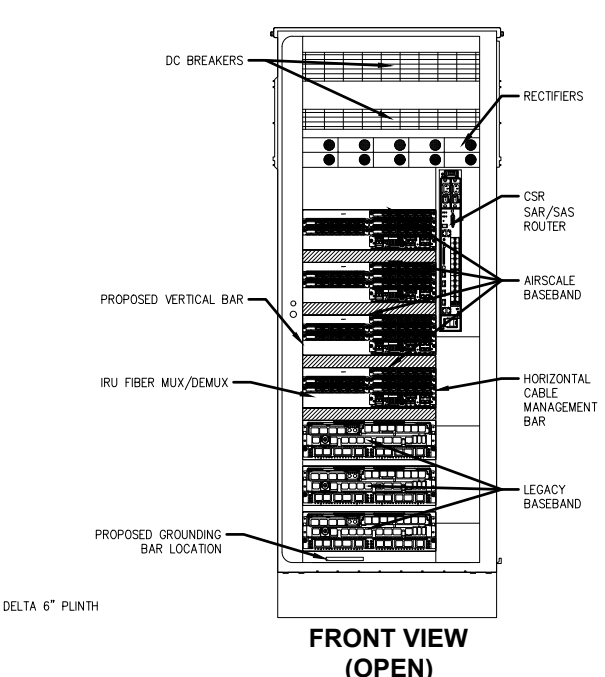
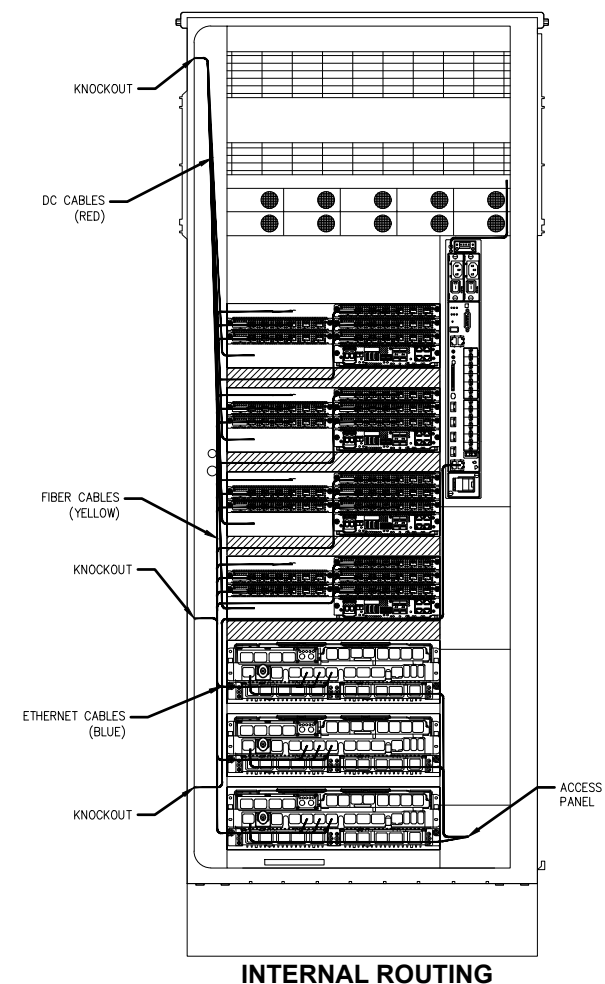
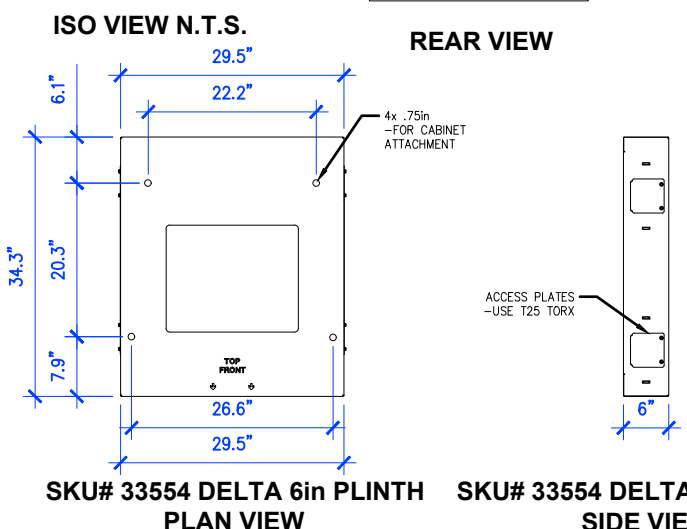
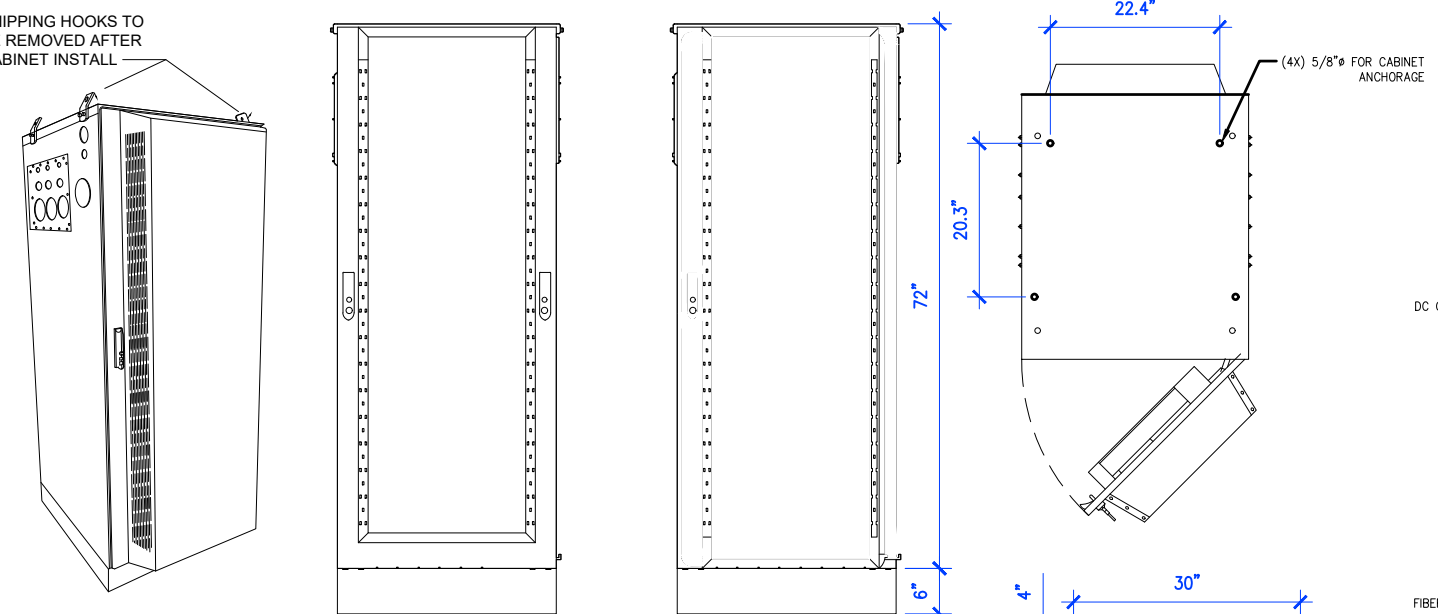
Drawing Number: C-6

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

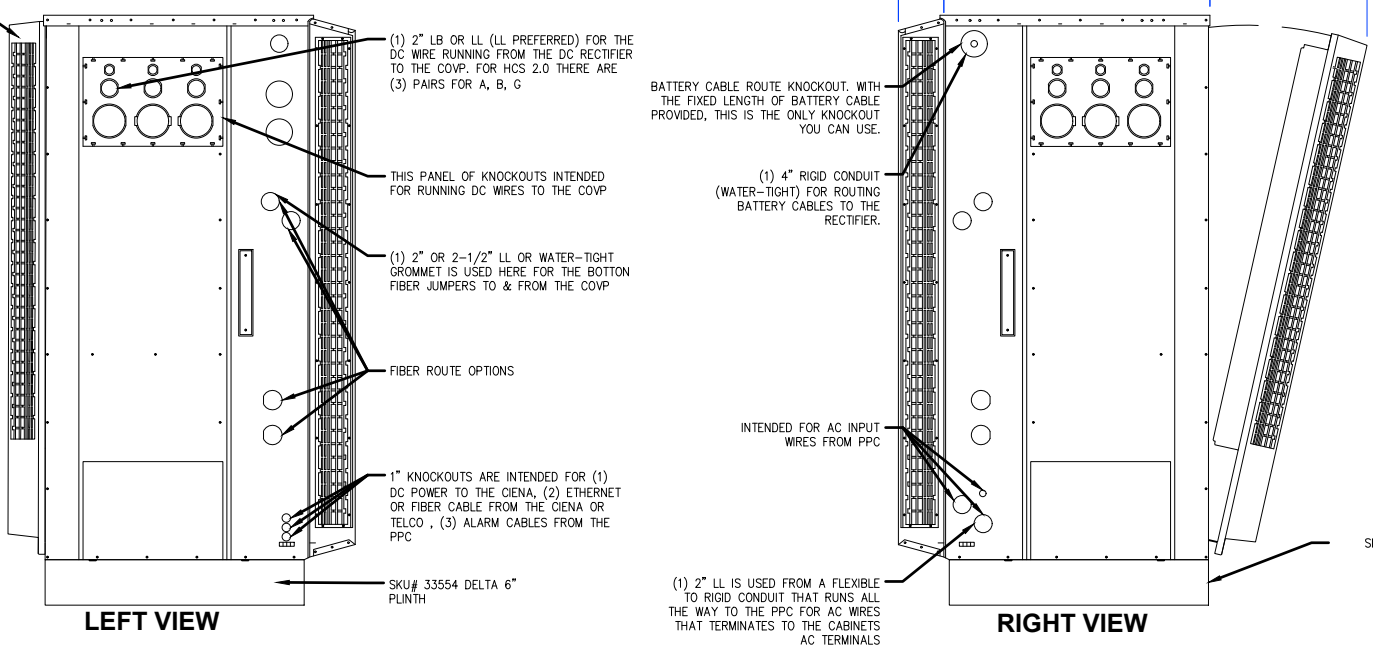
- NOTE:
- CORRECT KNOCKOUT TOOL REQUIRED FOR PUNCHING KNOCKOUTS. DO NOT DRILL KNOCKOUTS THROUGH
 - CONDUIT MUST BE PROPERLY SECURED TO PREVENT DAMAGE TO CABINETS AND/OR CABLING

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

SHIPPING HOOKS TO BE REMOVED AFTER CABINET INSTALL



2 CABINET BOLT DOWN DETAIL
 SCALE N.T.S.



1 DELTA HPL3 SITE SUPPORT CABINET DETAIL
 SCALE N.T.S.

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SBA
 SBA SITE ID: CO46107-A

Engineer Stamp:
 GOLDADO LICENSED
 CHRISTOPHER J. WARREN
 47849
 11-10-21
 PROFESSIONAL ENGINEER

Signed: _____ Date: _____

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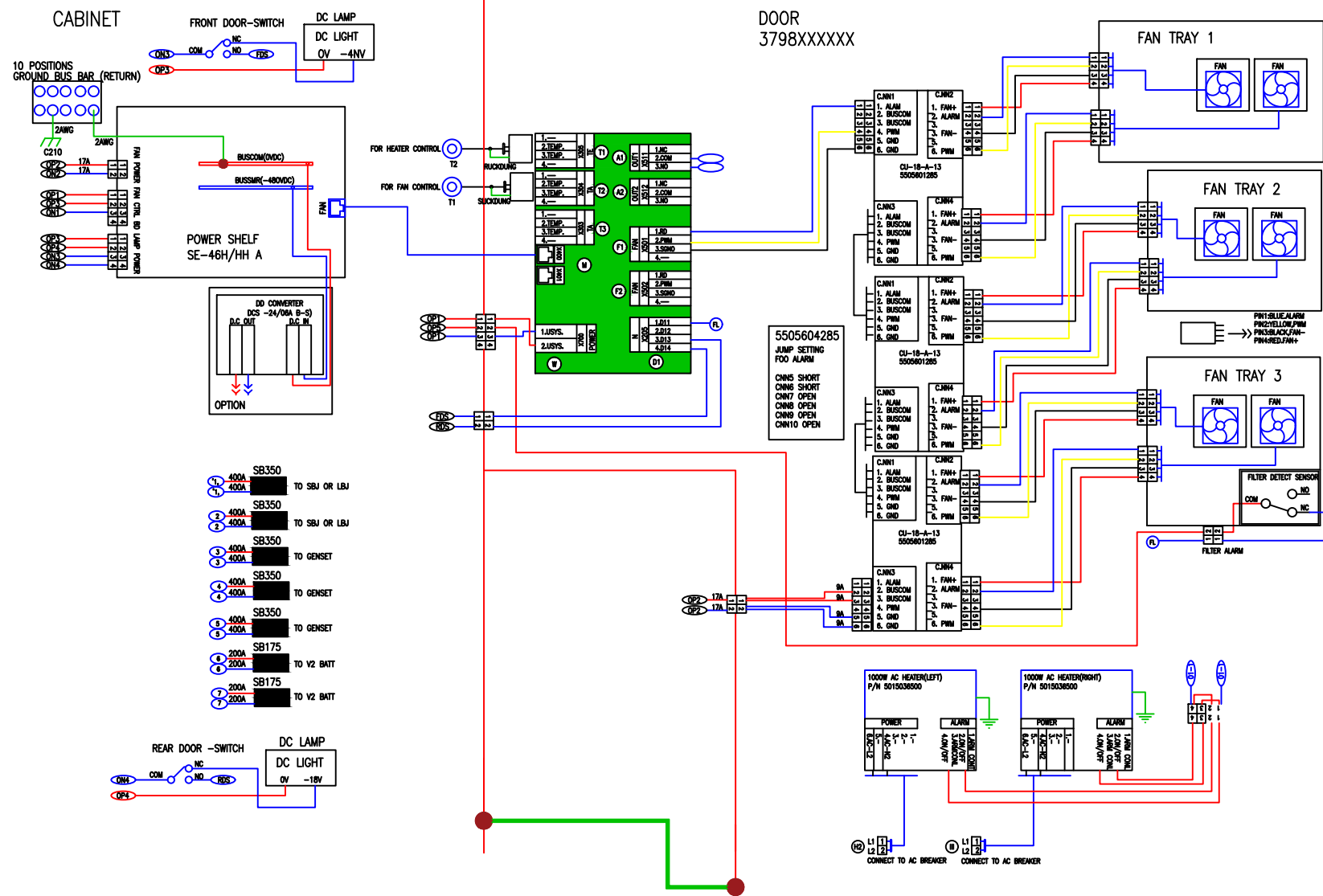
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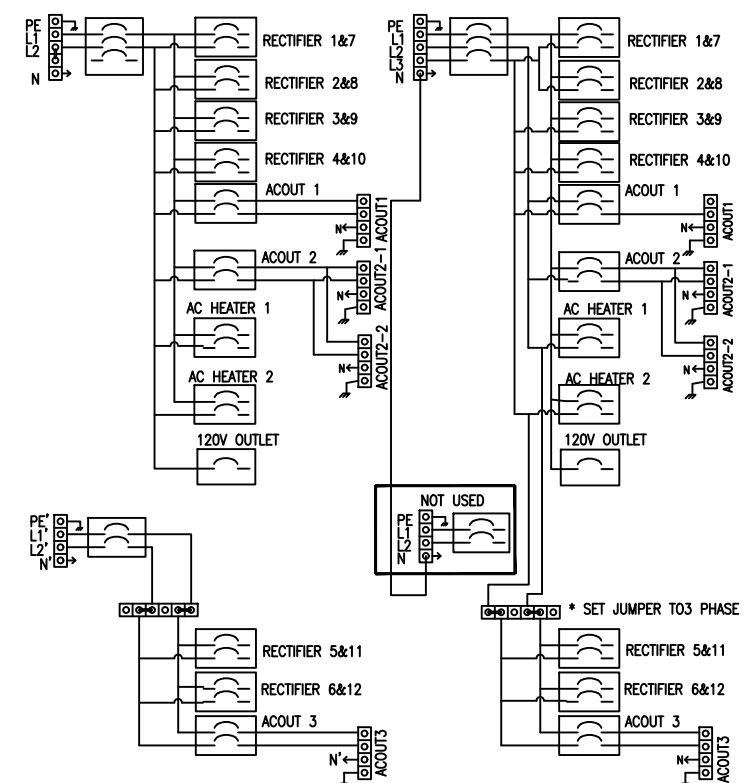
Drawing Scale: AS NOTED Date: 09/21/21
CD
 Drawing Title: DELTA HPL3 SSC DETAIL

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.

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SBA SITE ID: CO46107-A

Engineer Stamp:

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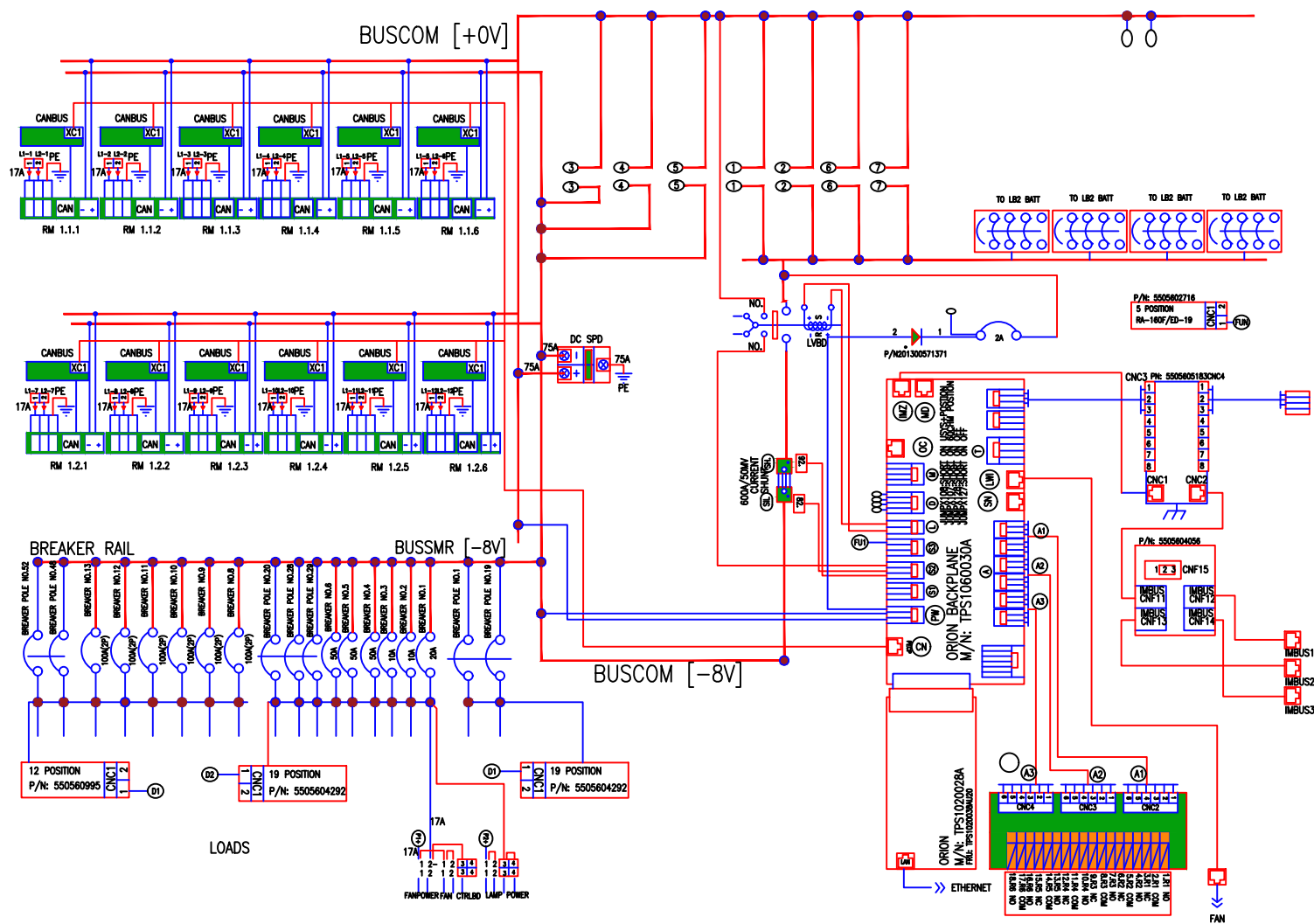
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Drawing Title:
DELTA HPL3 SSC DIAGRAM

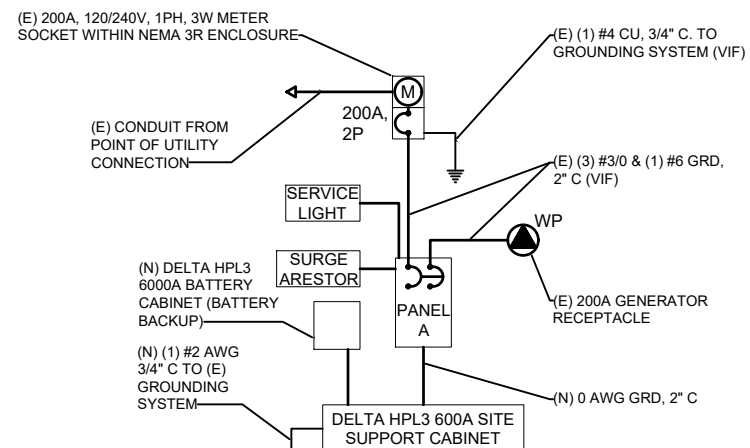
Drawing Number: **C-6.2**

NOTE:
DIAGRAMS PROVIDED ARE PER
MANUFACTURER INSTALLATION GUIDE



2 DELTA HPL3 SSC BREAKER WIRING DIAGRAM
C-6.3

SCALE
N.T.S.

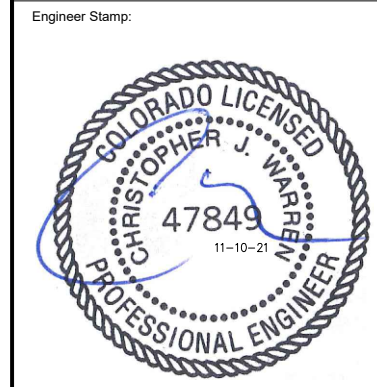


1 DELTA HPL3 SSC TYP. ONE-LINE DIAGRAM
C-6.3

SCALE
N.T.S.



SBA SITE ID: CO46107-A



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Approved: _____ Date: _____

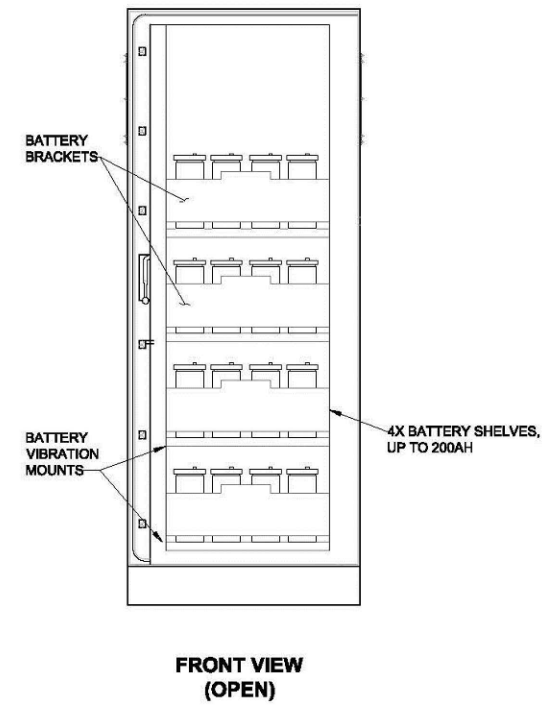
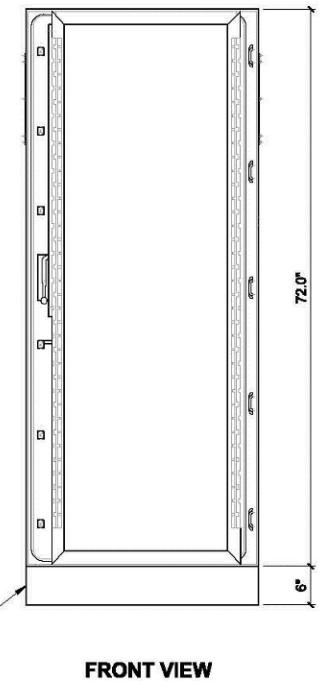
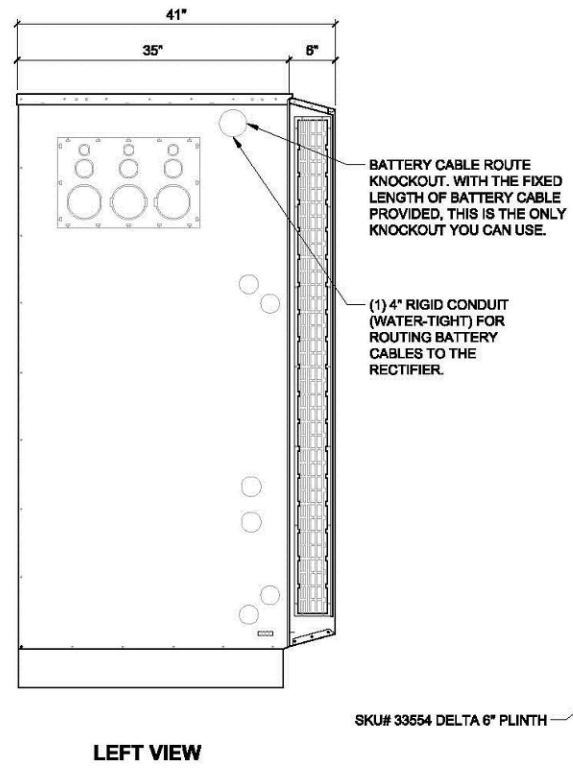
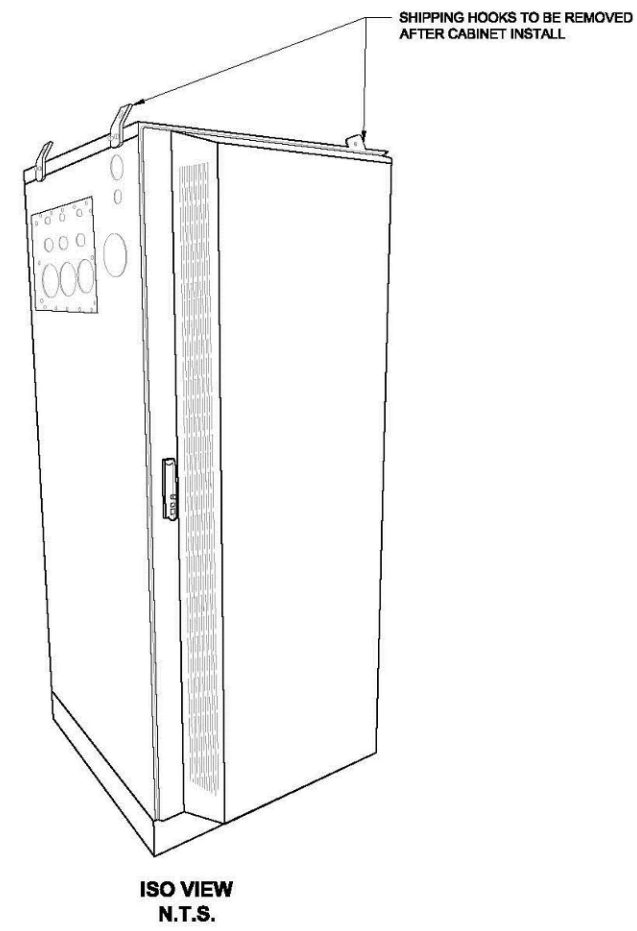
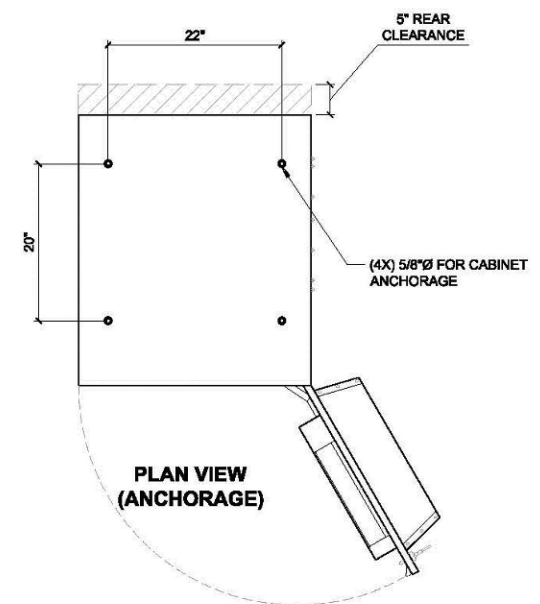
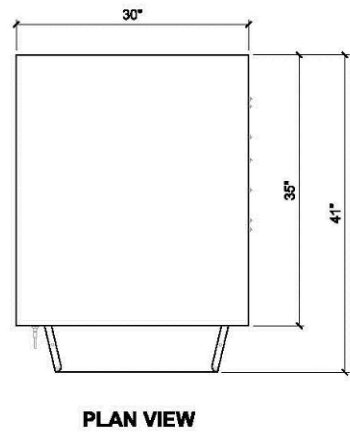
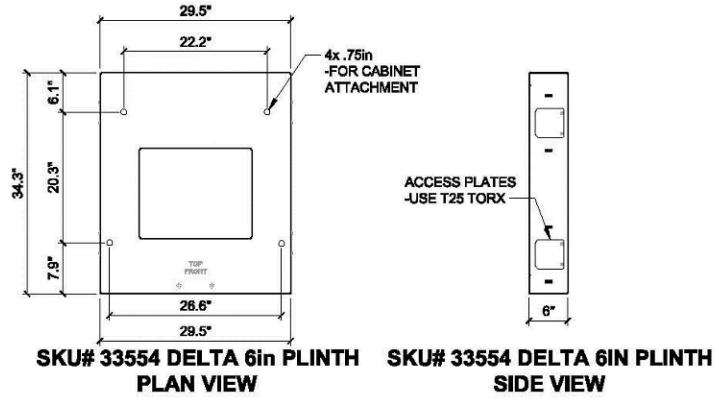
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Project Number: 656-002
Project Title: DN04234A
SPRINT_BLACK_FOREST
2746 RUSTIC GROVE
COLORADO SPRINGS, CO 80921

Prepared For:
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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:

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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

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Project Number:

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Project Title:

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Prepared For:



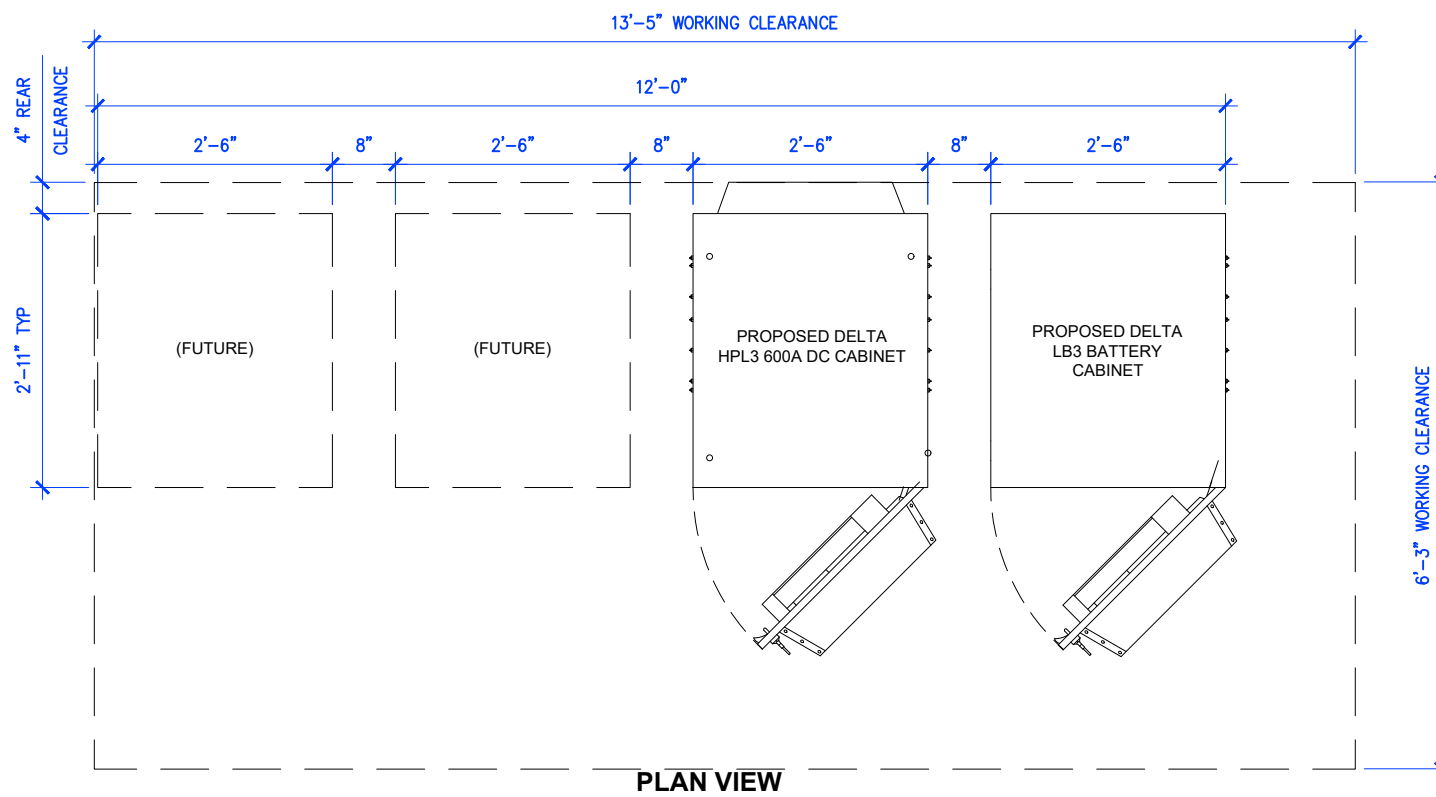
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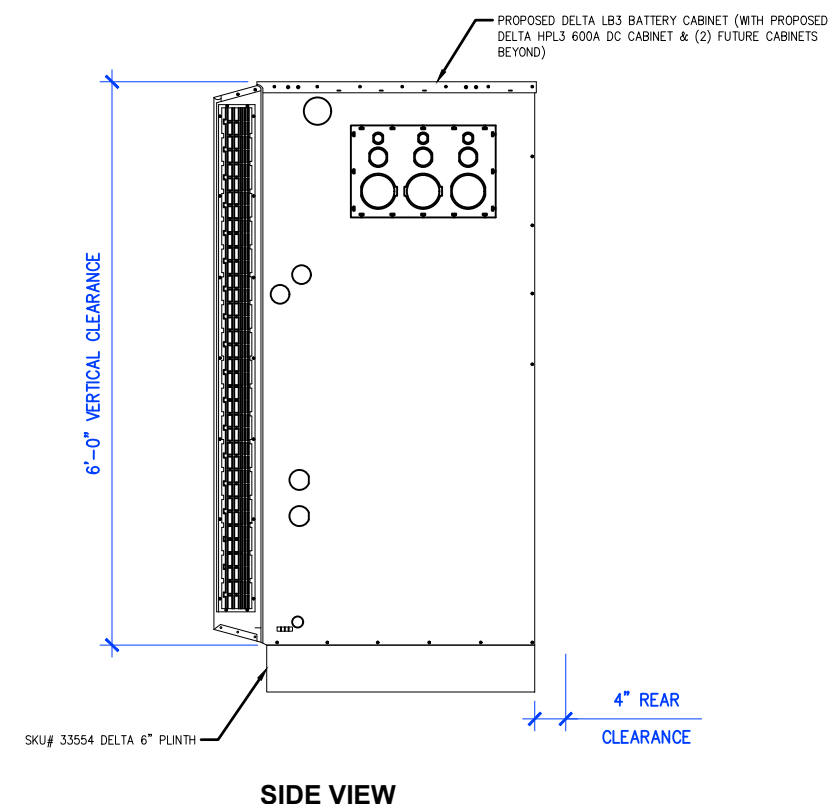
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Drawing Title:
DELTA LB3 BATTERY CABINET LAYOUT

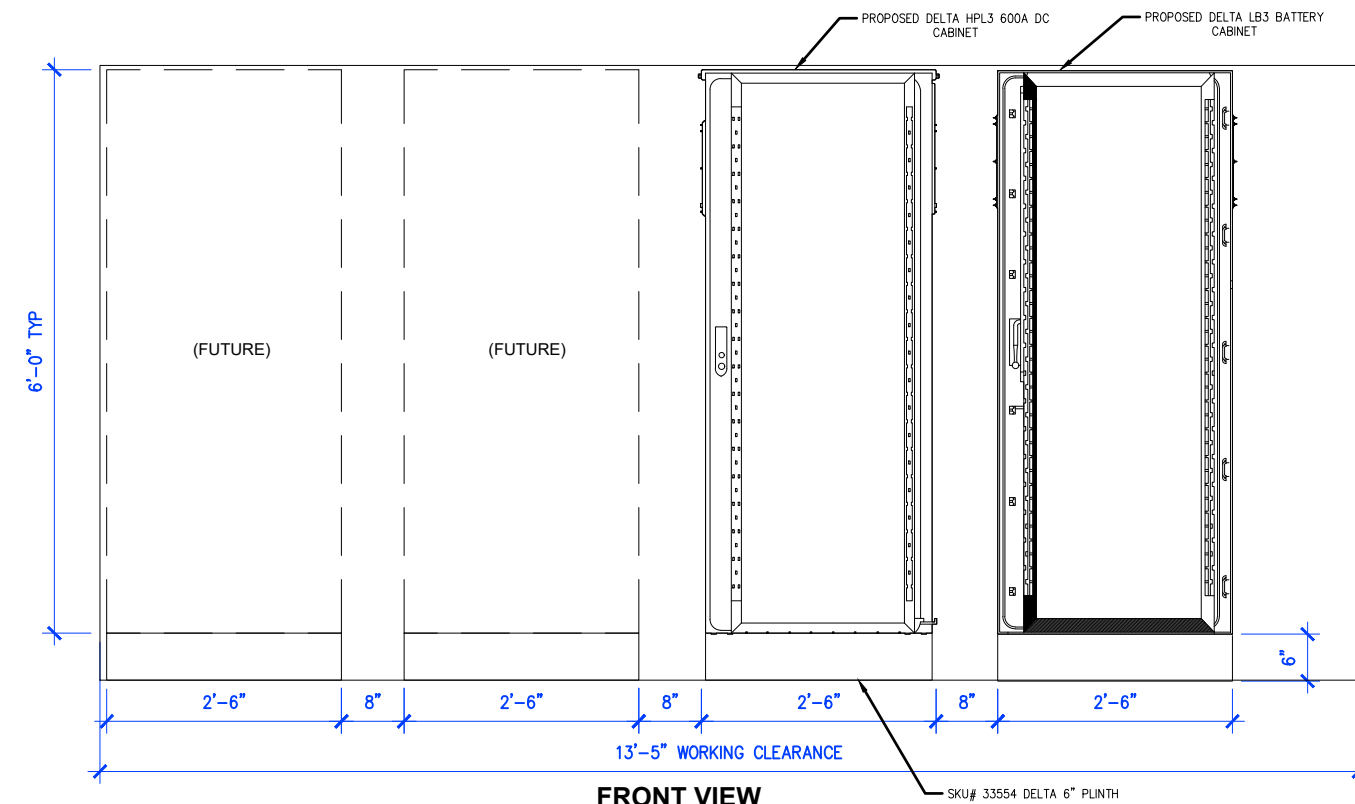
Drawing Number: **C-6.5**



PLAN VIEW



SIDE VIEW



FRONT VIEW

1 DELTA LB3 BATTERY CABINET LAYOUT

C-6.5

SCALE
 N.T.S.

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Drawing Title:
 DETAILS

Drawing Number:
C-7

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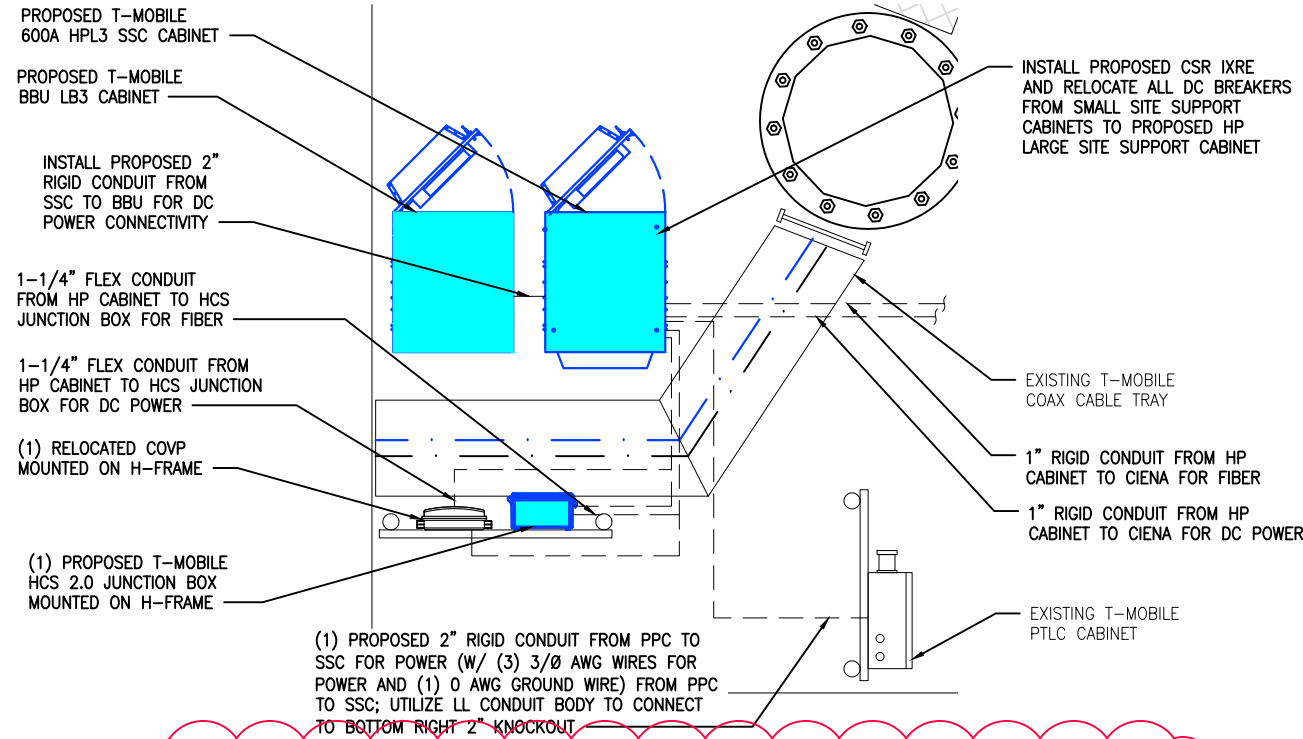
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Sheet: 1

1 MONOPOLE GUARDIAN MOUNT
 C-7

SCALE
 N.T.S.

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.



CALLED NORTH

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 | | | 1 | 20 | 2 |
| 3 | | | | | | | | | | | | | 4 |
| 5 | | | | | | | 6000 | | | | | | 6 |
| 7 | | | | | | | | 6000 | | | | | 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

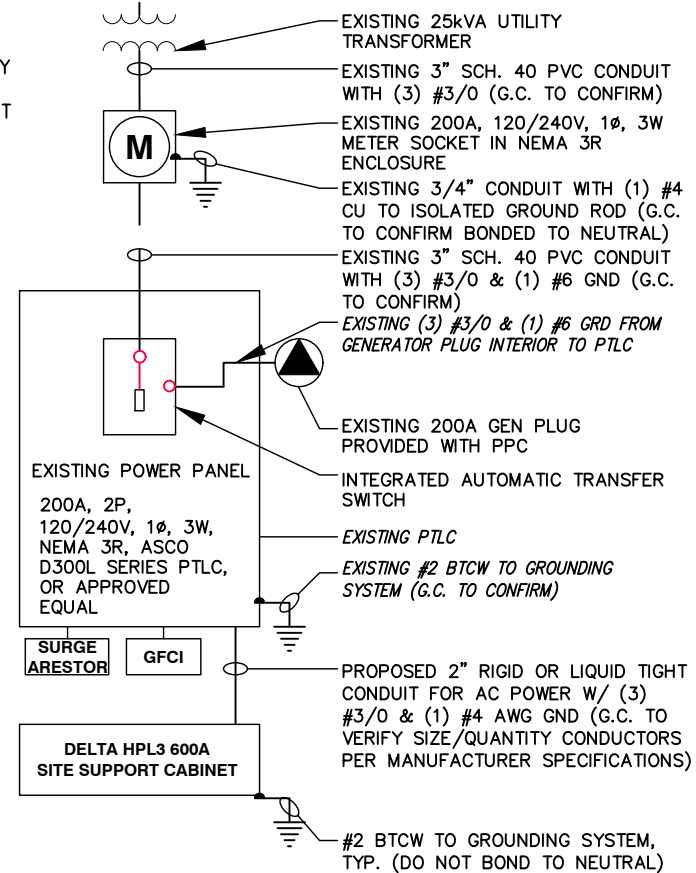
1 ELECTRICAL ONE-LINE DIAGRAM

E-1

SCALE
N.T.S.

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.



2 ELECTRICAL NOTES

E-1

SHORT CIRCUIT CALCULATIONS:

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

$$I_{sc} \text{ AT NEW PTLC} - 150 \text{ FT OF } \#3/0 \text{ CU IN PVC CONDUIT} - C = 13,923$$

$$I_{sc} = 7,040 / [1 + (7,400 \times 150 \text{ FT} \times 2 / 13,923 \times 240 \text{ V})] = 4,230 \text{ A}$$

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

$$I_{sc} - 4,230 [1 + (4,230 \times 20 \text{ FT} \times 2 / 13,923 \times 240 \text{ V})] = 4,114 \text{ A}$$

SC RATING OF PTLC - 22,000A Sym

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

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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:
ELECTRICAL PLAN

Drawing Number: E-1

SYMBOLS LEGEND

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

KEY NOTES:

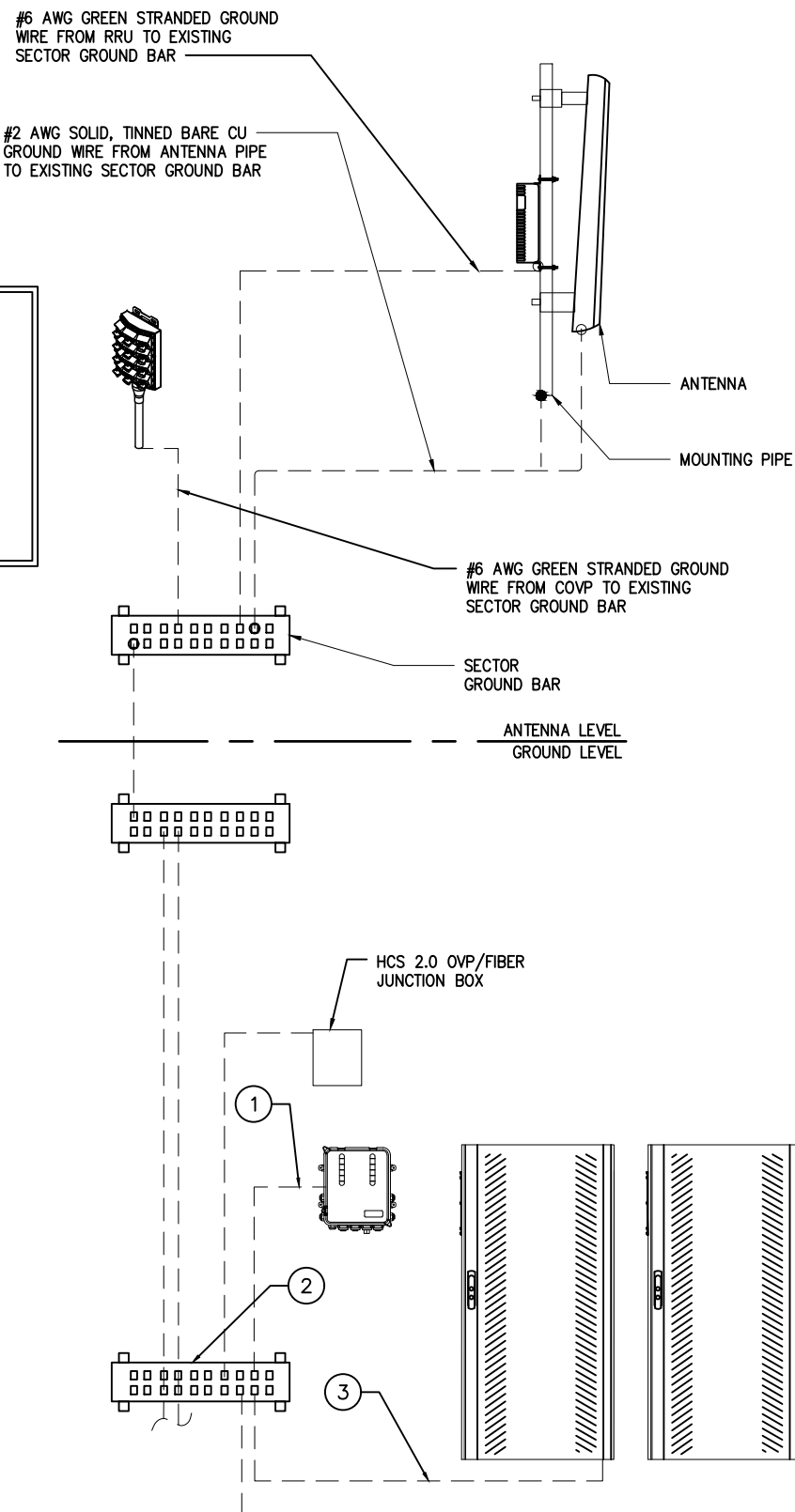
1. #6 AWG GREEN STRANDED GROUND CU WIRE FROM COVP TO EXISTING GROUND BAR
2. EXISTING GROUND BAR
3. #2 AWG SOLID TINNED BARE CU GROUND WIRE FROM SSC TO EXISTING GROUND BAR
3. #2 AWG SOLID TINNED BARE CU GROUND WIRE FROM BBU TO EXISTING GROUND BAR

NOTE:

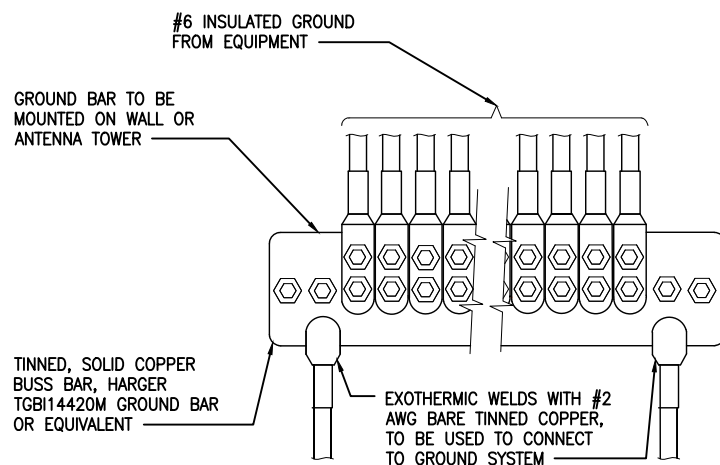
UTILIZE EXISTING GROUND LEAD AND INSTALL PROPOSED LEADS IF NECESSARY

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.

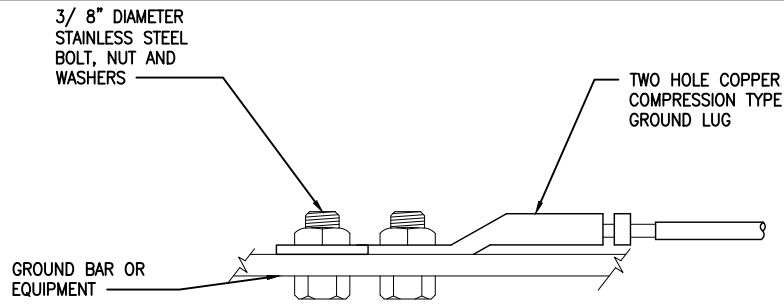


3 TYPICAL GROUNDING DIAGRAM
SCALE N.T.S.



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.

Project Manager:
SBA 
SBA SITE ID: CO46107-A

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

Drawing Title: GROUNDING DETAILS

Drawing Number: G-1