

Approved

By: Craig Dossey, Executive Director

Date: 02/28/2022

El Paso County Planning & Community Development



12920 SE 38TH STREET  
BELLEVUE, WA 98006

**T-MOBILE SITE NUMBER:** DN06163A  
**T-MOBILE SITE NAME:** SPRINT RETAIN SITE DN14XC247  
**T-MOBILE PROJECT:** SPRINT RETAIN

**SBA SITE ID:** CO46103-A  
**SITE ADDRESS:** 7353 WEST HIGHWAY 24  
 MANITOU SPRINGS, CO 80829  
**JURISDICTION:** EL PASO COUNTY

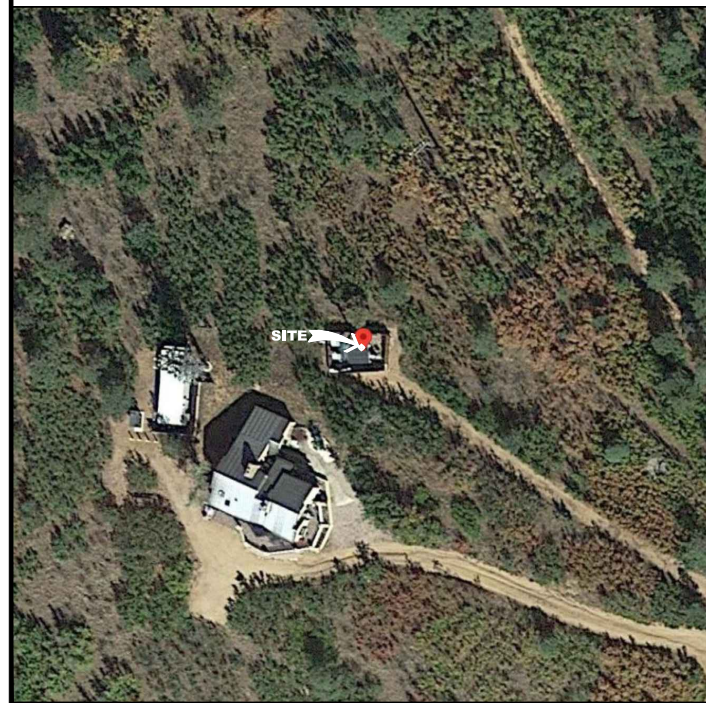


470 DAVIDSON ROAD  
PITTSBURGH, PA 15239  
TEL: (740) 260-9710

### SITE INFORMATION

SBA SITE NAME: USS MANITOU WATER  
 SITE ADDRESS: 7353 WEST HIGHWAY 24  
 MANITOU SPRINGS, CO 80829  
 COUNTY: EL PASO  
 AREA OF CONSTRUCTION: EXISTING  
 PARCEL SIZE: 16 AC  
 LOT AREA COVERAGE: 0.00074841264921875%  
 ZONING: R-T  
 LATITUDE: 38.886841° N  
 LONGITUDE: 104.958417° W  
 LAT/LONG TYPE: NAD83  
 JURISDICTION: EL PASO COUNTY  
 OCCUPANCY CLASSIFICATION: U  
 TYPE OF CONSTRUCTION: IIB  
 A.D.A. COMPLIANCE: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION  
 TOWER OWNER: SBA COMMUNICATIONS  
 470 DAVIDSON ROAD  
 PITTSBURGH, PA 15239  
 CARRIER/APPLICANT: T-MOBILE  
 12920 SE 38TH STREET  
 BELLEVUE, WA 98006  
 PARCEL NO.: 83264-00-018  
 LEGAL DESCRIPTION: A TR OF LAND IN SEC 26-13-68 DESC AS FOLS: BEG AT PT ON S LN OF NE4SE4 SEC 26, A DIST OF 437.0 FT E OF SW4, TH N 88°31' W 50.0 FT, N 00°26' E 314.46 FT, N 22°00' W 81.50 FT, TH N 18°02' E 498.67 FT TO SLY R/W OF HWY 24, TH S 50°04' E 233.20 FT, S 02°00' W 722.18 FT, TH N 88°31' W 230.0 FT TO POB, TOG WITH TR IN NE4SE4 SEC 26-13-68 AS FOLS: BEG AT A PT ON S LN OF SD NE4SE4 387.0 FT E OF SW COR THEREOF, N 00°26' E 314.46 FT, N 22°00' W 81.50 FT, N 18°02' E 498.67 FT TO SLY R/W LN OF HWY 24, SELY ON SD R/W LN TO INTSEC ELY LN OF SD NE4SE4, S ON E LN TO SE COR OF SD NE4SE4, TH W ON S LN OF SD NE4SE4 882.0 FT TO POB

### AERIAL MAP



NO SCALE

### AREA MAP



NO SCALE

### DRAWING INDEX

| SHEET # | SHEET DESCRIPTION                 |
|---------|-----------------------------------|
| T-1     | TITLE SHEET                       |
| T-2     | GENERAL NOTES                     |
| C-1.1   | OVERALL SITE PLAN                 |
| C-1.2   | EXISTING EQUIPMENT PLAN           |
| C-1.3   | FINAL EQUIPMENT PLAN              |
| C-2     | TOWER ELEVATION & ANTENNA PLANS   |
| C-3     | ANTENNA SCHEDULE                  |
| C-4     | PLUMBING DIAGRAM                  |
| C-5     | EQUIPMENT SPECIFICATIONS          |
| C-6     | EQUIPMENT SPECIFICATIONS          |
| C-7     | EQUIPMENT SPECIFICATIONS          |
| C-8     | MOUNTING DETAIL                   |
| C-9     | ICE BRIDGE DETAILS                |
| E-1     | ELECTRICAL ROUTING                |
| E-2     | PANEL SCHEDULE & ONE-LINE DIAGRAM |
| G-1     | GROUNDING DIAGRAM                 |
| G-2     | GROUNDING DETAILS                 |

PLANS PREPARED BY:



421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

REV: DATE: DESCRIPTION: BY:

| REV | DATE     | DESCRIPTION             | BY  |
|-----|----------|-------------------------|-----|
| 3   | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2   | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1   | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0   | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A   | 05/07/21 | ISSUED FOR REVIEW       | AMG |

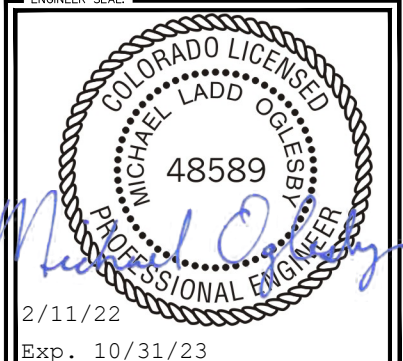
DRAWN BY: CHECKED BY:

AMG DLF

KHA PROJECT NUMBER:

KHCL- 11797

ENGINEER SEAL:



Exp. 10/31/23

PROJECT INFORMATION:

DN06163A  
 SPRINT RETAIN SITE  
 DN14XC247  
 SBA #: CO46103-A  
 7353 WEST HIGHWAY 24  
 MANITOU SPRINGS, CO 80829

SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

T-1

### GROUND SCOPE OF WORK

1. INSTALL NEW 600A SSC CABINET
2. INSTALL NEW BATTERY CABINET
3. INSTALL NEW ICE BRIDGE
4. INSTALL NEW PPC
5. INSTALL NEW DISCONNECT
6. INSTALL (1) FSMF
7. INSTALL (2) ASIK
8. INSTALL (2) ASIB
9. INSTALL (3) ABIA
10. INSTALL (4) ABIL
11. INSTALL (3) ABIC
12. INSTALL (2) AMIA
13. INSTALL (1) CSR IXRe V1
14. INSTALL (2) JUNCTION BOXES

### TOWER SCOPE OF WORK

1. REMOVE (2) ANTENNAS
2. REMOVE (2) POWER CYLINDERS
3. REMOVE (2) OPTICAL JUNCTION BOXES
4. REMOVE (2) DIPLEXERS
5. REMOVE (6) RRHs
6. INSTALL (6) CROSSOVER CHANNEL BRACKETS
7. INSTALL (6) CROSSOVER PLATES
8. INSTALL (3) SUPPORT RAIL PIPES
9. INSTALL (2) SUPPORT RAIL END CONNECTION KITS
10. INSTALL (4) ANTENNAS
11. INSTALL (6) RRHs
12. INSTALL (2) BREAKOUT PENDANTS
13. INSTALL (2) HYBRID CABLES

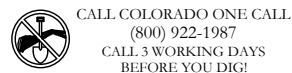
### APPLICABLE CODES/REFERENCE DOCS

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   | 2017 PPRBC (2015 IBC) |
| MECHANICAL | 2015 IMC              |
| ELECTRICAL | 2014 NEC              |

#### REFERENCE DOCUMENTS:

- STRUCTURAL ANALYSIS: TOWER ENGINEERING SOLUTIONS (PROJECT #: 104224)  
 DATED: 04/27/2021  
 MOUNT ANALYSIS: TOWER ENGINEERING SOLUTIONS (PROJECT #: 103105)  
 DATED: 03/11/2021  
 RFDS REVISION: 1  
 DATED: 11/09/2020





HIGHWAY 24

HIGHWAY 24

HIGHWAY 24

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

APN: 8326400007  
 ZONING: R-T

APN: 8326400013  
 ZONING: R-T

APN: 8326400018  
 ZONING: R-T

APN: 830000026  
 ZONING: R-T

**1** OVERALL SITE PLAN  
 SCALE: 1" = 60'-0" (FULL SIZE)  
 1" = 120'-0" (11x17)



**T-Mobile**

12920 SE 38TH STREET  
 BELLEVUE, WA 98006



470 DAVIDSON ROAD  
 PITTSBURGH, PA 15239  
 TEL: (740) 260-9710

PLANS PREPARED BY:

**Kimley»Horn**

421 FAYETTEVILLE ST, SUITE 600  
 RALEIGH, NC 27601

REV: DATE: DESCRIPTION: BY:

| REV | DATE     | DESCRIPTION             | BY  |
|-----|----------|-------------------------|-----|
| 3   | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2   | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1   | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0   | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A   | 05/07/21 | ISSUED FOR REVIEW       | AMG |

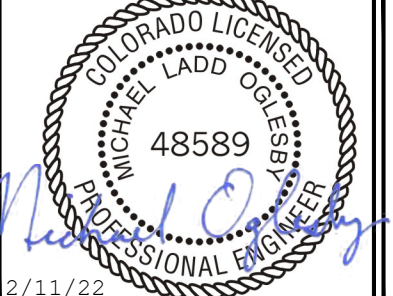
DRAWN BY: CHECKED BY:

AMG DLF

KHA PROJECT NUMBER:

KHCL- 11797

ENGINEER SEAL:



2/11/22

Exp. 10/31/23

PROJECT INFORMATION:

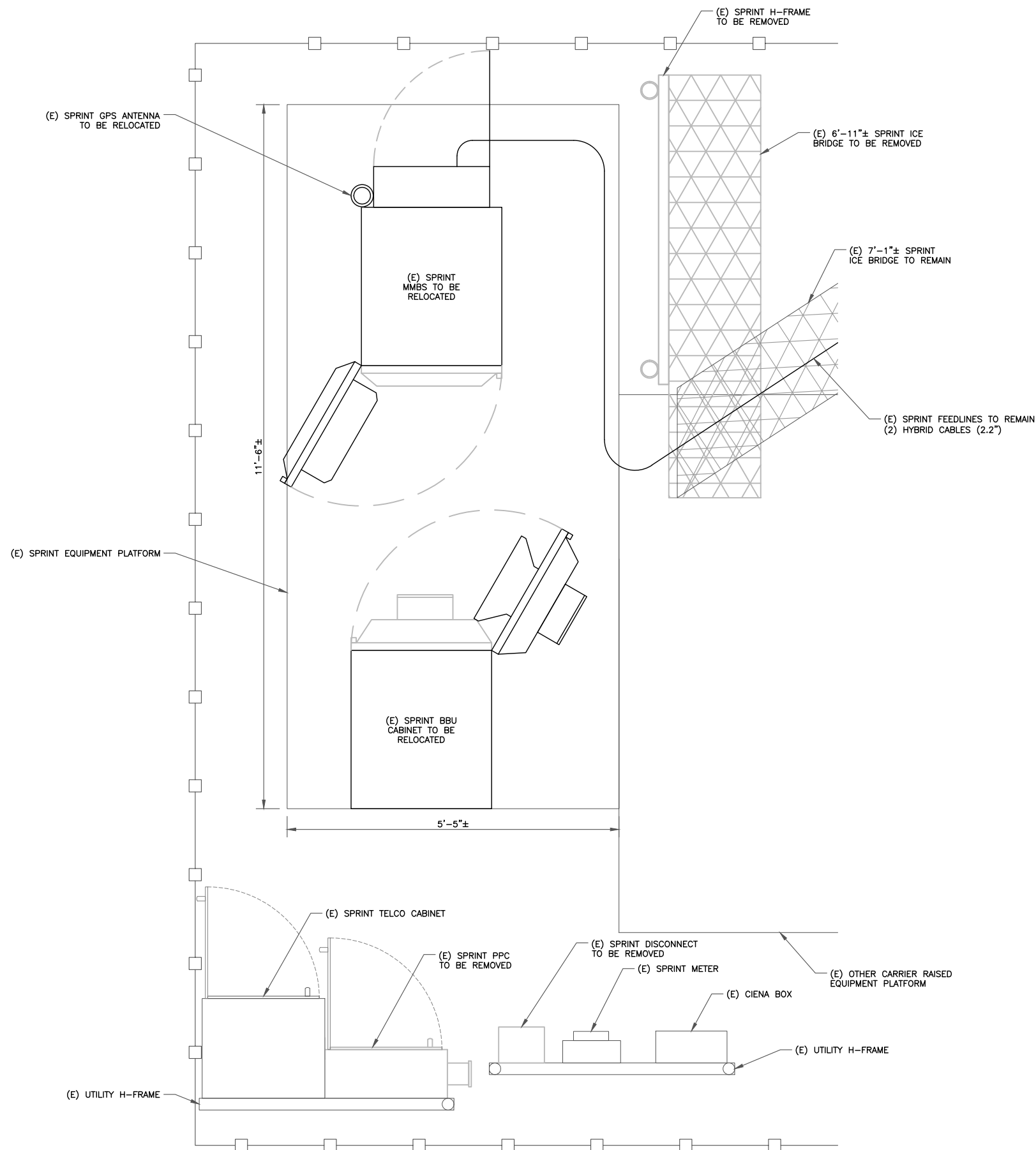
DN06163A  
 SPRINT RETAIN SITE  
 DN14XC247  
 SBA #: CO46103-A  
 7353 WEST HIGHWAY 24  
 MANITOU SPRINGS, CO 80829

SHEET TITLE:

OVERALL SITE PLAN

SHEET NUMBER:

C-1.1



**INSTALLER NOTE:**

AMIAS ARE TO BE INSTALLED INTERNALLY IN THE 600A SSC CABINET. IF NO 600A SSC CABINET IS ON SITE, AMIAS ARE TO BE SUBSTITUTED WITH AMOBs. 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.



12920 SE 38TH STREET  
BELLEVUE, WA 98006



470 DAVIDSON ROAD  
PITTSBURGH, PA 15239  
TEL: (740) 260-9710

PLANS PREPARED BY:



421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

REV: DATE: DESCRIPTION: BY:

| REV | DATE     | DESCRIPTION             | BY  |
|-----|----------|-------------------------|-----|
| 3   | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2   | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1   | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0   | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A   | 05/07/21 | ISSUED FOR REVIEW       | AMG |

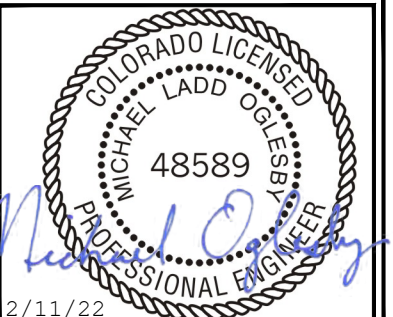
DRAWN BY: CHECKED BY:

AMG DLF

KHA PROJECT NUMBER:

KHCL- 11797

ENGINEER SEAL:



Exp. 10/31/23

PROJECT INFORMATION:

DN06163A  
SPRINT RETAIN SITE  
DN14XC247  
SBA #: CO46103-A  
7353 WEST HIGHWAY 24  
MANITOU SPRINGS, CO 80829

SHEET TITLE:

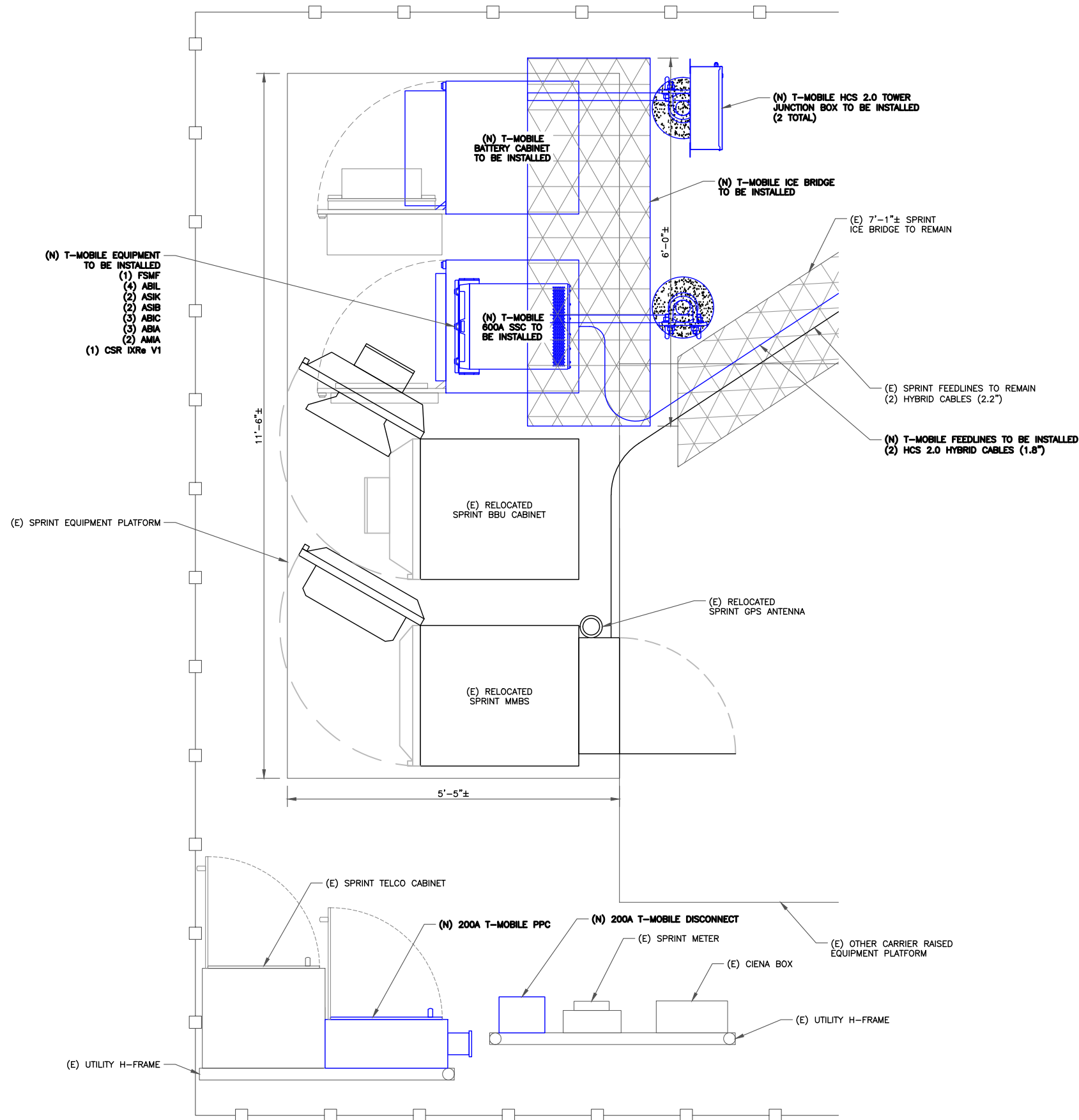
EXISTING  
EQUIPMENT PLAN

SHEET NUMBER:

C-1.2

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





**INSTALLER NOTE:**  
 AMIAs ARE TO BE INSTALLED INTERNALLY IN THE 600A SSC CABINET. IF NO 600A SSC CABINET IS ON SITE, AMIAs ARE TO BE SUBSTITUTED WITH AMOBs. 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.

- (N) T-MOBILE EQUIPMENT TO BE INSTALLED
- (1) FSMF
  - (4) ABIL
  - (2) ASIK
  - (2) ASIB
  - (3) ABIC
  - (3) ABIA
  - (2) AMIA
  - (1) CSR IXR v1



12920 SE 38TH STREET  
 BELLEVUE, WA 98006



470 DAVIDSON ROAD  
 PITTSBURGH, PA 15239  
 TEL: (740) 260-9710

PLANS PREPARED BY:

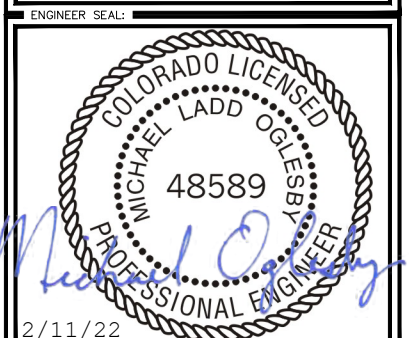


421 FAYETTEVILLE ST, SUITE 600  
 RALEIGH, NC 27601

| REV. | DATE     | DESCRIPTION             | BY  |
|------|----------|-------------------------|-----|
| 3    | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2    | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1    | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0    | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A    | 05/07/21 | ISSUED FOR REVIEW       | AMG |

DRAWN BY: AMG CHECKED BY: DLF

KHA PROJECT NUMBER: KHCL-11797



Exp. 10/31/23

PROJECT INFORMATION:  
 DN06163A  
 SPRINT RETAIN SITE  
 DN14XC247  
 SBA #: CO46103-A  
 7353 WEST HIGHWAY 24  
 MANITOU SPRINGS, CO 80829

SHEET TITLE:  
**FINAL EQUIPMENT PLAN**

SHEET NUMBER:  
**C-1.3**

1 FINAL EQUIPMENT PLAN  
 SCALE: 1"=1'-0" (FULL SIZE)  
 1/2"=1'-0" (11x17)



(N) COPPER CLAD LIGHTNING ROD TO BE INSTALLED PER TES STRUCTURAL ANALYSIS (PROJECT #: 104224, DATED 04/27/21)

(N) MONOPOLE EXTENSION TO BE INSTALLED PER TES STRUCTURAL ANALYSIS (PROJECT #: 104224, DATED 04/27/21)

(E) SPRINT EQUIPMENT (3) DOUBLE SUPPORT ARMS

(N) T-MOBILE EQUIPMENT TO BE INSTALLED (4) ANTENNAS (4) RRHs (2) BREAKOUT PENDANT (6) METROSITE CROSSOVER CHANNEL BRACKETS (6) CROSSOVER PLATES (3) SUPPORT RAIL PIPES (2) METROSITE SUPPORT RAIL END CONNECTION KITS

(N) FLANGE PLATE TO BE INSTALLED PER TES STRUCTURAL ANALYSIS (PROJECT #: 104224, DATED 04/27/21)

(N) FLAT BAR REINFORCEMENTS TO BE INSTALLED PER TES STRUCTURAL ANALYSIS (PROJECT #: 104224, DATED 04/27/21)

(N) ANCHOR ROD REINFORCEMENTS TO BE INSTALLED PER TES STRUCTURAL ANALYSIS (PROJECT #: 104224, DATED 04/27/21)

NEW LIGHTNING ROD TIP ELEV. = 84'-0"

TOP OF NEW MONOPOLE EXTENSION ELEV. = 80'-0"

TOP OF EXISTING TOWER ELEV. = 60'-0"

EXISTING & PROPOSED TMO ACL ELEV. = 58'-0"

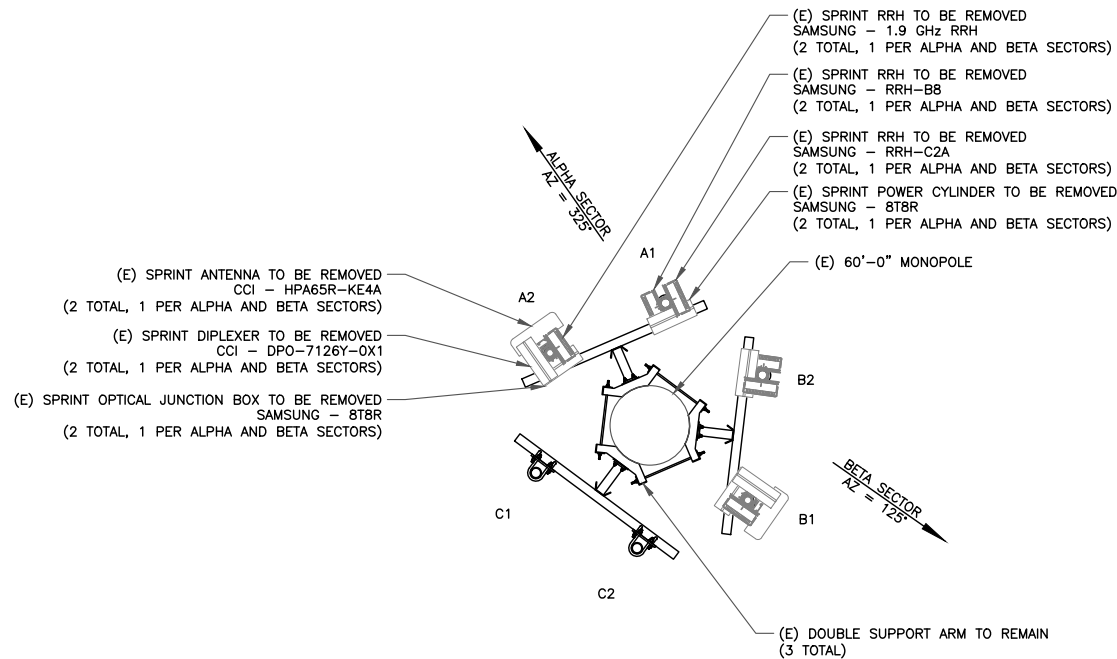
(E) 60'-0" MONOPOLE

(E) SPRINT FEEDLINES TO REMAIN (2) HYBRID CABLES (2.2")

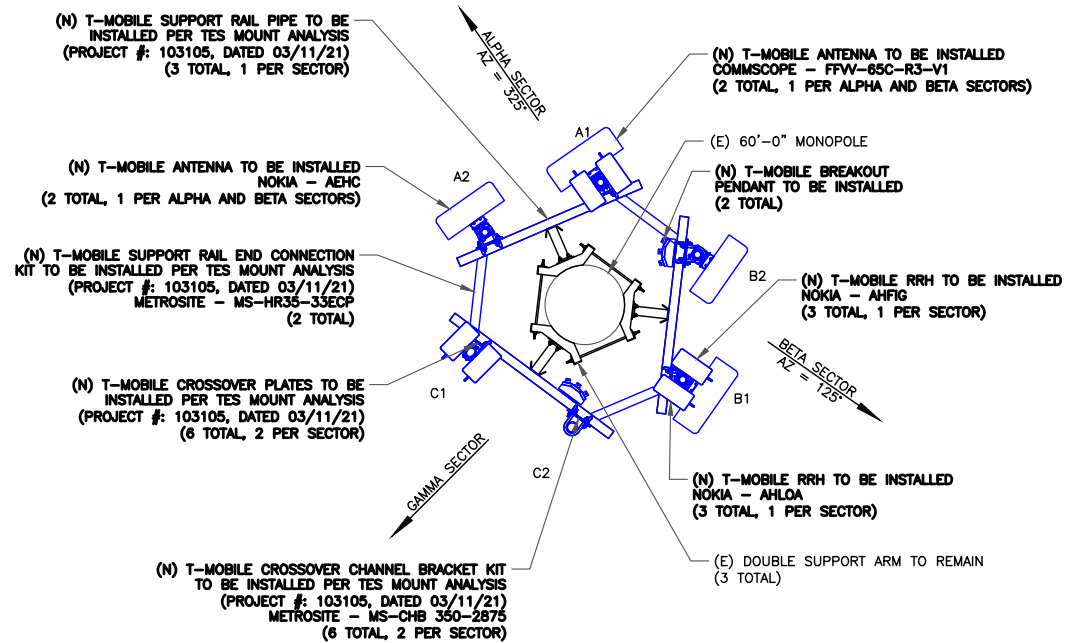
(N) T-MOBILE FEEDLINES TO BE INSTALLED (2) HCS 2.0 HYBRID CABLES (1.8")

GROUND LEVEL ELEV. = 0'-0"

1 FINAL ELEVATION SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN SCALE: NOT TO SCALE



3 FINAL ANTENNA PLAN SCALE: NOT TO SCALE

T-Mobile

12920 SE 38TH STREET  
BELLEVUE, WA 98006



470 DAVIDSON ROAD  
PITTSBURGH, PA 15239  
TEL: (740) 260-9710

PLANS PREPARED BY:

Kimley»Horn

421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

REV: DATE: DESCRIPTION: BY:

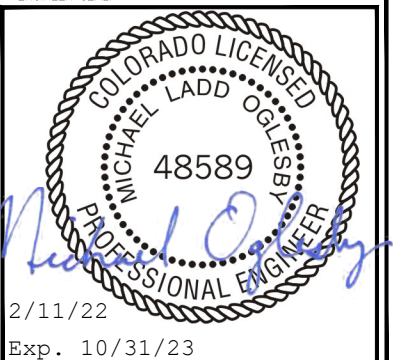
|   |          |                         |     |
|---|----------|-------------------------|-----|
| 3 | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2 | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1 | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0 | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A | 05/07/21 | ISSUED FOR REVIEW       | AMG |

DRAWN BY: CHECKED BY:

AMG DLF

KHA PROJECT NUMBER: KHCLE-11797

ENGINEER SEAL:



PROJECT INFORMATION:

DN06163A  
SPRINT RETAIN SITE  
DN14XC247  
SBA #: CO46103-A  
7353 WEST HIGHWAY 24  
MANITOU SPRINGS, CO 80829

SHEET TITLE:

TOWER ELEVATION & ANTENNA PLAN

SHEET NUMBER:

C-2

NEW AND EXISTING ANTENNA AND CABLE SCHEDULE

| SECTOR | POS. | AZIMUTH | RAD CENTER | M. TILT | TECHNOLOGY                            | ANTENNA                   | STATUS | RRU TYPE                     | DIPLEXER/TMA | COVP                      | CABLE STATUS  | COAX CABLE LENGTH | HCS FACTORY LENGTH | JUMPER LENGTH |
|--------|------|---------|------------|---------|---------------------------------------|---------------------------|--------|------------------------------|--------------|---------------------------|---|-------------------|--------------------|---------------|
| ALPHA  | A2   | 325°    | 58'-0"     | 0°      | L2500, N2500                          | NOKIA - AEHC              | NEW    | -                            | -            | (2) NEW BREAKOUT PENDANTS | (2) EXISTING 2.2" HYBRID CABLES, (2) NEW 1.8" HYBRID CABLES | EXISTING          | EXISTING           | <15'-0"       |
|        | A1   | 325°    | 58'-0"     | 0°      | L600, N600, L700, L1900, G1900, L2100 | COMMSCOPE - FFV-65C-R3-V1 | NEW    | (1) NEW AHLOA, (1) NEW AHFIG | -            |                           |   |                   |                    | <15'-0"       |
| BETA   | B2   | 125°    | 58'-0"     | 0°      | L2500, N2500                          | NOKIA - AEHC              | NEW    | -                            | -            |                           |   |                   |                    | <15'-0"       |
|        | B1   | 125°    | 58'-0"     | 0°      | L600, N600, L700, L1900, G1900, L2100 | COMMSCOPE - FFV-65C-R3-V1 | NEW    | (1) NEW AHLOA, (1) NEW AHFIG | -            |                           |   |                   |                    | <15'-0"       |
| GAMMA  | C2   | -       | -          | -       | -                                     | -                         | -      | -                            | -            | -                         | -   | -                 | -                  | -             |
|        | C1   | -       | 58'-0"     | -       | -                                     | -                         | -      | (1) NEW AHLOA, (1) NEW AHFIG | -            | <15'-0"                   |   |                   |                    |               |

(\* ) SHARED WITH ALL SECTORS

IMPORTANT NOTE: PLEASE REFER TO LATEST RFDS SHEET FOR NSN CONFIGURATION. GC TO CAP ALL UNUSED PORTS



470 DAVIDSON ROAD  
PITTSBURGH, PA 15239  
TEL: (740) 260-9710

PLANS PREPARED BY:



421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

REV: DATE: DESCRIPTION: BY:

|   |          |                         |     |
|---|----------|-------------------------|-----|
| 3 | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2 | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1 | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0 | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A | 05/07/21 | ISSUED FOR REVIEW       | AMG |

DRAWN BY: CHECKED BY:

AMG DLF

KHA PROJECT NUMBER: KHCL- 11797

ENGINEER SEAL:

2/11/22  
Exp. 10/31/23

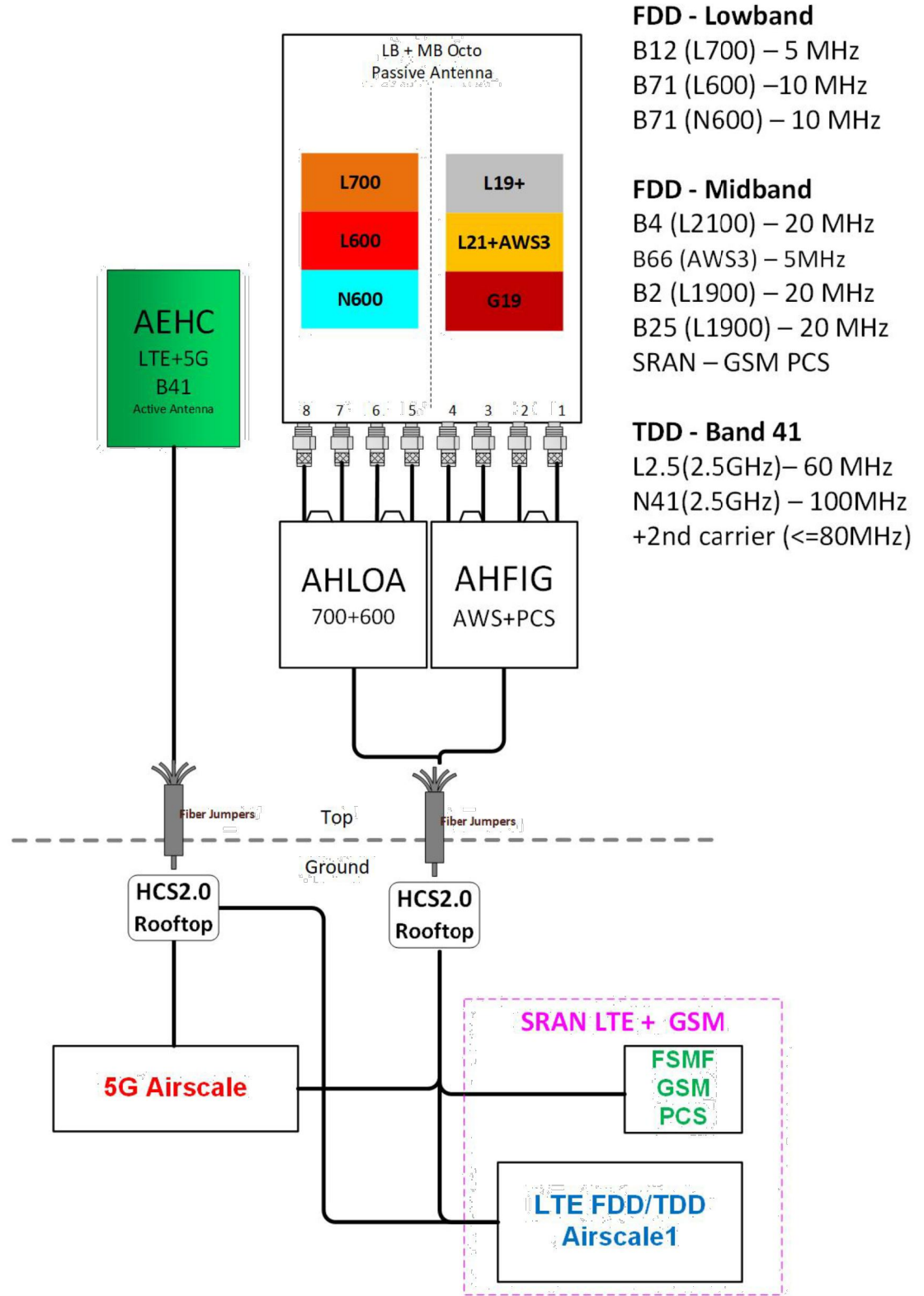
PROJECT INFORMATION:  
DN06163A  
SPRINT RETAIN SITE  
DN14XC247  
SBA #: CO46103-A  
7353 WEST HIGHWAY 24  
MANITOU SPRINGS, CO 80829

SHEET TITLE:  
**ANTENNA SCHEDULE**

SHEET NUMBER:  
**C-3**

# Configuration 56790EZ\_SR\_R

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



Notes:

1 RFDS  
SCALE: N/A



12920 SE 38TH STREET  
BELLEVUE, WA 98006



470 DAVIDSON ROAD  
PITTSBURGH, PA 15239  
TEL: (740) 260-9710

PLANS PREPARED BY:



421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

REV: DATE: DESCRIPTION: BY:

|   |          |                         |     |
|---|----------|-------------------------|-----|
| 3 | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2 | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1 | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0 | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A | 05/07/21 | ISSUED FOR REVIEW       | AMG |

DRAWN BY: CHECKED BY:

AMG DLF

KHA PROJECT NUMBER:

KHCL- 11797

ENGINEER SEAL:

FOR  
REFERENCE  
PURPOSES  
ONLY

PROJECT INFORMATION:

DN06163A  
SPRINT RETAIN SITE  
DN14XC247  
SBA #: CO46103-A  
7353 WEST HIGHWAY 24  
MANITOU SPRINGS, CO 80829

SHEET TITLE:

PLUMBING DIAGRAM

SHEET NUMBER:

C-4



FFVW-65C-R3-V1



8-port sector antenna, 4x 617-894 and 4x 1695-2690 MHz, 65° HPBW, 3x RET

General Specifications

|  |  |
|--|--|
| <b>Antenna Type</b>                                      | Sector   |
| <b>Band</b>  | Multiband  |
| <b>Color</b>   | Light gray   |
| <b>Effective Projective Area (EPA), frontal</b>          | 0.99 m²   10.656 ft²   |
| <b>Effective Projective Area (EPA), lateral</b>          | 0.33 m²   3.552 ft²  |
| <b>Grounding Type</b>                                    | RF connector inner conductor and body grounded to reflector and mounting bracket |
| <b>Performance Note</b>                                  | Outdoor usage  |
| <b>Radome Material</b>                                   | Fiberglass, UV resistant   |
| <b>Radiator Material</b>                                 | Low loss circuit board   |
| <b>Reflector Material</b>                                | Aluminum   |
| <b>RF Connector Interface</b>                            | 4.3-10 Female  |
| <b>RF Connector Location</b>                             | Bottom   |
| <b>RF Connector Quantity, high band</b>                  | 4  |
| <b>RF Connector Quantity, low band</b>                   | 4  |
| <b>RF Connector Quantity, total</b>                      | 8  |
| <b>Remote Electrical Tilt (RET) Information, General</b> |  |
| <b>RET Interface</b>                                     | 8-pin DIN Female   8-pin DIN Male  |
| <b>RET Interface, quantity</b>                           | 1 female   1 male  |
| <b>Dimensions</b>  |  |
| <b>Width</b>   | 640 mm   25.197 in   |
| <b>Length</b>  | 2437 mm   95.945 in  |

1 ANTENNA SPECIFICATIONS  
SCALE: NOT TO SCALE

AEHC AirScale MAA 64T64R 192AE n41 240W  
Preliminary Technical datasheet

|                                 |  |
|---------------------------------|--|
| Specification                   | 3GPP/FCC compliant, TDD  |
| Frequency range                 | 2496 - 2690 MHz  |
| Max. supported modulation       | 256 QAM  |
| Number of TX/RX paths           | 64T / 64R  |
| MIMO streams                    | 16   |
| Instantaneous bandwidth IBW     | 194 MHz  |
| Occupied bandwidth OBW          | 194 MHz  |
| Total average EIRP              | 79.3 dBm   |
| Max. output power per TRX       | 3.75 W / TRX (240 W total)   |
| Antenna configuration           | 12 rows, 8 columns, 2 (±45° X-polarized)   |
| Max. Antenna gain               | 25.5dBi  |
| Horizontal beamwidth            | 15° (boresight)  |
| Vertical beamwidth              | 6° (boresight)   |
| Horizontal coverage angle       | ±45° (3 dB), ±60° (5 dB)   |
| Vertical steering angle         | ±6°  |
| Dimensions                      | TBD: 900 mm (H) x 580 mm (W) x 210 mm (D)  |
| Volume / Windward area          | TBD: <110 L / <0.6m²   |
| Weight                          | <45kg (without mounting brackets)  |
| Supply voltage / Connector type | DC -40.5 V ... -57 V / 2 pole connector  |
| Power consumption               | 900 W typical (75% DL duty cycle, 30% RF load)<br>1300 W max (75% DL duty cycle, 100% RF load) |



|  |   |
|--|---|
| <b>Optical ports</b>                     | 4 x SFP28, 10/25GE eCPRI (with R2CT)  |
| <b>Other interfaces / Connector type</b> | Control AISG<br>RF monitor port / SMA Female<br>External Alarms / MDR26<br>status LED |
| <b>Operational temperature range</b>     | -40 °C ... +55 °C   |
| <b>Cooling</b>                           | Natural convection cooling  |
| <b>Ingress protection class</b>          | IP65  |
| <b>Installation options</b>              | Pole / Wall, ± 5° vertical adjustment   |
| <b>Surge protection</b>                  | Class II 20 kA  |

Confidential © Nokia 2018



2 ANTENNA SPECIFICATIONS  
SCALE: NOT TO SCALE

T-Mobile

12920 SE 38TH STREET  
BELLEVUE, WA 98006



470 DAVIDSON ROAD  
PITTSBURGH, PA 15239  
TEL: (740) 260-9710

PLANS PREPARED BY:

Kimley»Horn

421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

REV: DATE: DESCRIPTION: BY:

|   |          |                         |     |
|---|----------|-------------------------|-----|
| 3 | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2 | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1 | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0 | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A | 05/07/21 | ISSUED FOR REVIEW       | AMG |

DRAWN BY: CHECKED BY:

AMG DLF

KHA PROJECT NUMBER:

KHCL- 11797

ENGINEER SEAL:

FOR  
REFERENCE  
PURPOSES  
ONLY

PROJECT INFORMATION:

DN06163A  
SPRINT RETAIN SITE  
DN14XC247  
SBA #: CO46103-A  
7353 WEST HIGHWAY 24  
MANITOU SPRINGS, CO 80829

SHEET TITLE:

EQUIPMENT  
SPECIFICATIONS

SHEET NUMBER:

C-5

AirScale Dual RRH 4T4R B12/71 240W AHLOA



1 © Nokia 2017  
Confidential

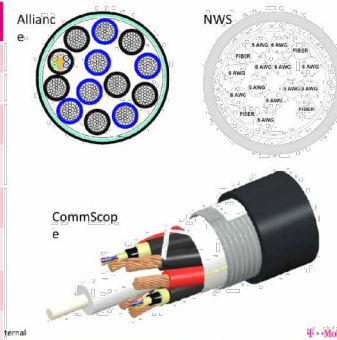
|                             |   |
|-----------------------------|---|
| Product Code:               | 474331A   |
| Supported Frequency bands   | 3GPP Band 12/71   |
| Frequencies                 | Band 12 adjusted: UL 698 - 716 MHz, DL 728 - 746 MHz<br>Band 71: UL 663 MHz - 698 MHz, DL 617 MHz - 652 MHz |
| Number of TX/RX paths/pipes | 4 pipes; 2T2R, 2T4R, 4T4R for both bands  |
| Instantaneous Bandwidth IBW | 17 MHz for B12 and 35MHz for B71<br>1 MHz below B12 NB IoT future use                                       |
| Occupied Bandwidth OBW      | UL 53MHz contiguous<br>DL B12 17MHz + 1 MHz NB IoT future use, B71 35MHz                                    |
| Output Power                | 60W per TX shared between bands   |
| Supply Voltage / Range      | DC-48 V / -36 V to -60 V  |
| Typical Power Consumption   | 640W [ETSI Busy Hour Load at 4TX@60W]<br>450W [ETSI Busy Hour Load at 4TX@20W]                              |
| Antenna Ports               | 4 ports, 4.3-10+  |
| Optical Ports               | 2 x CPRI 9.8 Gbps   |
| ALD Control Interfaces      | AISG3.0 and RET (DC on ANT1 & ANT3)   |
| Other Interfaces            | External Alarm MDR-26 (4 inputs, 1 Output)<br>DC Circular Power Connector                                   |
| Physical                    | 560 mm x 308 mm x 189 mm<br>Approximately 38kg with no covers or brackets                                   |
| Operating Temperature Range | -40°C to 55°C (with no solar load)  |
| Surge Protection            | Class II 5A   |
| Installation Options        | Pole, Wall, Book Mount  |

NOKIA

1 NOKIA - AHLOA  
SCALE: NOT TO SCALE

Trunk Cable General Specifications

| Characteristics       | Alliance      | CommScope     | NWS          |
|-----------------------|---------------|---------------|--------------|
| Outer Diam.           | 1.46"         | 1.55"         | 1.48"        |
| Weight                | 1.61 lb/ft    | 1.71 lb/ft    | 1.61 lb/ft   |
| Min. Bend Rad         | 14.6"         | 18.6"         | 21.5"        |
| DC Conductors         | 12 x 6AWG     | 12 x 6AWG     | 12 x 6AWG    |
| Armor                 | Corrugated Cu | Corrugated Al | Cu tape, PVC |
| Conductor Termination | None          | None          | None         |
| Single-Mode Fibers    | 48            | 48            | 48           |
| Fiber Termination     | LC pair       | LC pair       | LC pair      |



Breakout Feature General Specifications

| Characteristics       | Alliance     | CommScope    | NWS           |
|-----------------------|--------------|--------------|---------------|
| Dimensions, in.       | 9.3x14.9x5.8 | 6.7x16.9x4.7 | 10.2x16.0x3.2 |
| Weight                | 1.61 lb/ft   | 0.970 lb/ft  | 1.61 lb/ft    |
| Port Interface        | Senko U      | Senko U      | Senko U       |
| Hybrid Ports          | 12           | 12           | 12            |
| Conductor Termination | None         | None         | None          |
| Single Mode Fibers    | 48           | 48           | 48            |
| Fiber Termination     | LC pair      | LC pair      | LC pair       |
| Max RRU               | 12           | 12           | 12            |



Note: Permanently attached to trunk cable, not field removable/replaceable.  
Note: No internal OVP.

2 HYBRID CABLE & BREAKOUT  
SCALE: NOT TO SCALE

AirScale System Module Installation Guidelines - AMIA

AMIA is primary for indoor sites (environmentally controlled) or site support cabinets

- For a 19" rack installation 3U of space is needed (adapters/support required for 23" rack)
- For Medium/Large HP/ Large Delta SSC - Fan/filter kit required (SKU# 32168) to support medium config
- For Medium Purcell SSC - Nothing required to support minimal config (single LTE layer)
- For Medium Purcell SSC - Door upgrade kit required (SKU# 33401) to support full config

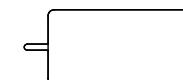
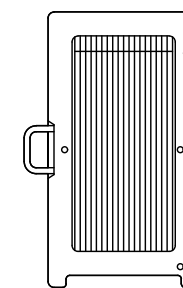
| AMIA Mounting Options                    | 3U space* | 4U Space |
|--|-----------|----------|
| Item Description                         |           |          |
| 19 to 23 inch adaptor bracket, 3U w/slot | x         |          |
| 19 to 23 inch adaptor bracket, 4U w/slot |           | x        |
| ASSY, SHELF                              |           | x        |

\*Bottom support is available



T-Mobile

3 AMIA SPECIFICATIONS  
SCALE: NOT TO SCALE



NOKIA - AHFG  
WEIGHT (FULLY EQUIPPED): 79.4 LBS  
SIZE (HxWxD): 27.6x13.4x5.6 IN.  
CONNECTOR TYPE: 4.3-1 FEMALE

4 NOKIA - AHFG  
SCALE: NOT TO SCALE

T-Mobile

12920 SE 38TH STREET  
BELLEVUE, WA 98006



470 DAVIDSON ROAD  
PITTSBURGH, PA 15239  
TEL: (740) 260-9710

PLANS PREPARED BY:

Kimley»Horn

421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

REV: DATE: DESCRIPTION: BY:

| REV | DATE     | DESCRIPTION             | BY  |
|-----|----------|-------------------------|-----|
| 3   | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2   | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1   | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0   | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A   | 05/07/21 | ISSUED FOR REVIEW       | AMG |

DRAWN BY: CHECKED BY:

AMG DLF

KHA PROJECT NUMBER:

KHCL- 11797

ENGINEER SEAL:

FOR  
REFERENCE  
PURPOSES  
ONLY

PROJECT INFORMATION:

DN06163A  
SPRINT RETAIN SITE  
DN14XC247  
SBA #: CO46103-A  
7353 WEST HIGHWAY 24  
MANITOU SPRINGS, CO 80829

SHEET TITLE:

EQUIPMENT  
SPECIFICATIONS

SHEET NUMBER:

C-6



### Outdoor Power & Battery Enclosures for AAV Equipment

The following products are described in this section. Please refer to Shelf power section for rectifiers, controllers and circuit breakers.

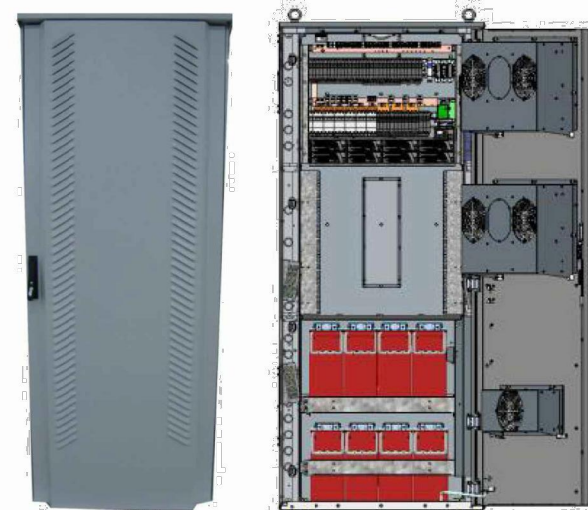
**Products:** Small SSC, LP Small SSC, Medium SSC, Large SSC, HP Large SSC, Battery Enclosure  
**Advantage 1kW, Advantage 2kW & Advantage 6U**



| Basic Overview<br>Pad Mount Power Cabinets |              |           |                        |           |              |
|--|--------------|-----------|------------------------|-----------|--------------|
| Parameter                                  | LP Small SSC | Small SSC | Medium SSC             | Large SSC | HP Large SSC |
| Max Output (@-54V)                         | 150          | 200       | 200                    | 200       | 400          |
| Height                                     | 37"          | 37"       | 54"                    | 72"       | 72"          |
| Width                                      | 26"          | 26"       | 30"                    | 30"       | 30"          |
| Depth                                      | 27"          | 27"       | 35"                    | 35"       | 35"          |
| Weight (w/ Rectifiers)                     | 196          | 198       | 320                    | 419       | 470          |
| Open Rack Space                            | 7RU          | 6RU       | 10RU                   | 10RU      | 12RU         |
| Max Eqmt Depth                             | 15"          | 15"       | 20"                    | 20"       | 20"          |
| No. Battery Strings                        | 1 x 100Ah    | 1 x 100Ah | 1 x 100Ah<br>1 x 185Ah | 3 x 185Ah | 2 x 185Ah    |
| Load Circuit Positions                     | 17           | 17        | 17                     | 17        | 52           |



### HP Large Site Support Cabinet



#### HP Large SSC

- Corrosion Resistant Aluminum Construction
- Direct Air Cooling with optional Gore filter upgrade
- Compact design for power, battery, and equipment
- 72"H x 30"W x 36"D
- 400A/48V Power System
- Supports 2 Battery strings of 185 Ahr each
- 12RU/19" or 23" rack for Equipment

| T-Mobile SAP Number | Delta Part Number | Product Description  |
|---------------------|-------------------|--|
| 33112               | ESOA400-CCU01     | HP Large SS Cabinet w/ (3) 2900W rectifiers                        |
| 33113               | 3799442800-S      | Optional Mounting Plinth, 6"                                       |
| 30068               | ESR-48/40C F-A    | DPR2000 Rectifier Module, -48V, 2000W, 96% efficiency              |
| 31910               | ESR-48/56C F-A    | DPR2900 Rectifier Module, -48V, 2900W, 96% efficiency              |
| See Page 27         | See Page 27       | Load Circuit Breakers, DIN rail type                               |
| 14502               | 0999142300        | -48V String (4 batteries) of PVL12V185FT with intercell connectors |
| 32186               | 3799252800-S      | Gore filter upgrade kit w/ fan                                     |
|                     | CU-19C A13        | CSU502 Controller (FRU)  |

HP Large SS SAP number includes: enclosure with thermal management (fans & heaters), AC load center with surge protection, 23" 10.5RU power system with CSU502 controller, power system equipped with (1) 200A 4-pole breaker for battery string, (1) 150A 3-pole breaker for load, (3) 10A 1-pole breakers for load, (2) thermal probes for battery strings. In addition, HP Large SS ships with (3) 50A rectifiers.



PLANS PREPARED BY:



REV: DATE: DESCRIPTION: BY:

| REV | DATE     | DESCRIPTION             | BY  |
|-----|----------|-------------------------|-----|
| 3   | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2   | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1   | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0   | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A   | 05/07/21 | ISSUED FOR REVIEW       | AMG |

DRAWN BY: CHECKED BY:

AMG DLF

KHA PROJECT NUMBER:

KHCL- 11797

ENGINEER SEAL:

FOR REFERENCE PURPOSES ONLY

PROJECT INFORMATION:

DN06163A  
SPRINT RETAIN SITE  
DN14XC247  
SBA #: CO46103-A  
7353 WEST HIGHWAY 24  
MANITOU SPRINGS, CO 80829

SHEET TITLE:

EQUIPMENT SPECIFICATIONS

SHEET NUMBER:

C-7

T-Mobile

12920 SE 38TH STREET  
BELLEVUE, WA 98006



470 DAVIDSON ROAD  
PITTSBURGH, PA 15239  
TEL: (740) 260-9710

PLANS PREPARED BY:

Kimley»Horn

421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

REV. DATE DESCRIPTION BY

| REV. | DATE     | DESCRIPTION             | BY  |
|------|----------|-------------------------|-----|
| 3    | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2    | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1    | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0    | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A    | 05/07/21 | ISSUED FOR REVIEW       | AMG |

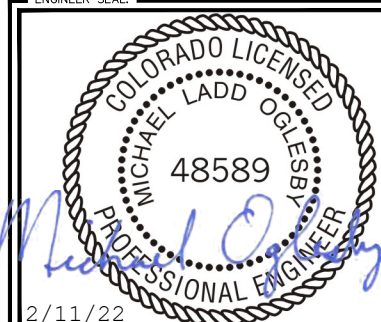
DRAWN BY: CHECKED BY:

AMG DLF

KHA PROJECT NUMBER:

KHCLC- 11797

ENGINEER SEAL:



2/11/22

Exp. 10/31/23

PROJECT INFORMATION:

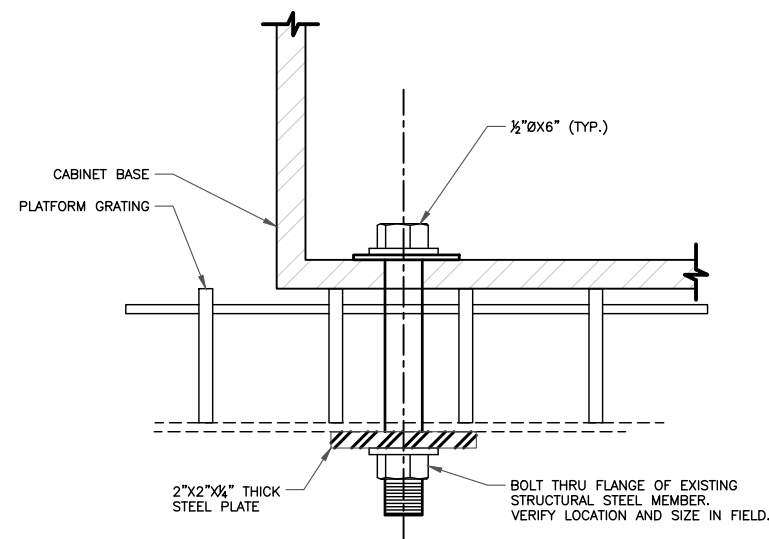
DN06163A  
SPRINT RETAIN SITE  
DN14XC247  
SBA #: CO46103-A  
7353 WEST HIGHWAY 24  
MANITOU SPRINGS, CO 80829

SHEET TITLE:

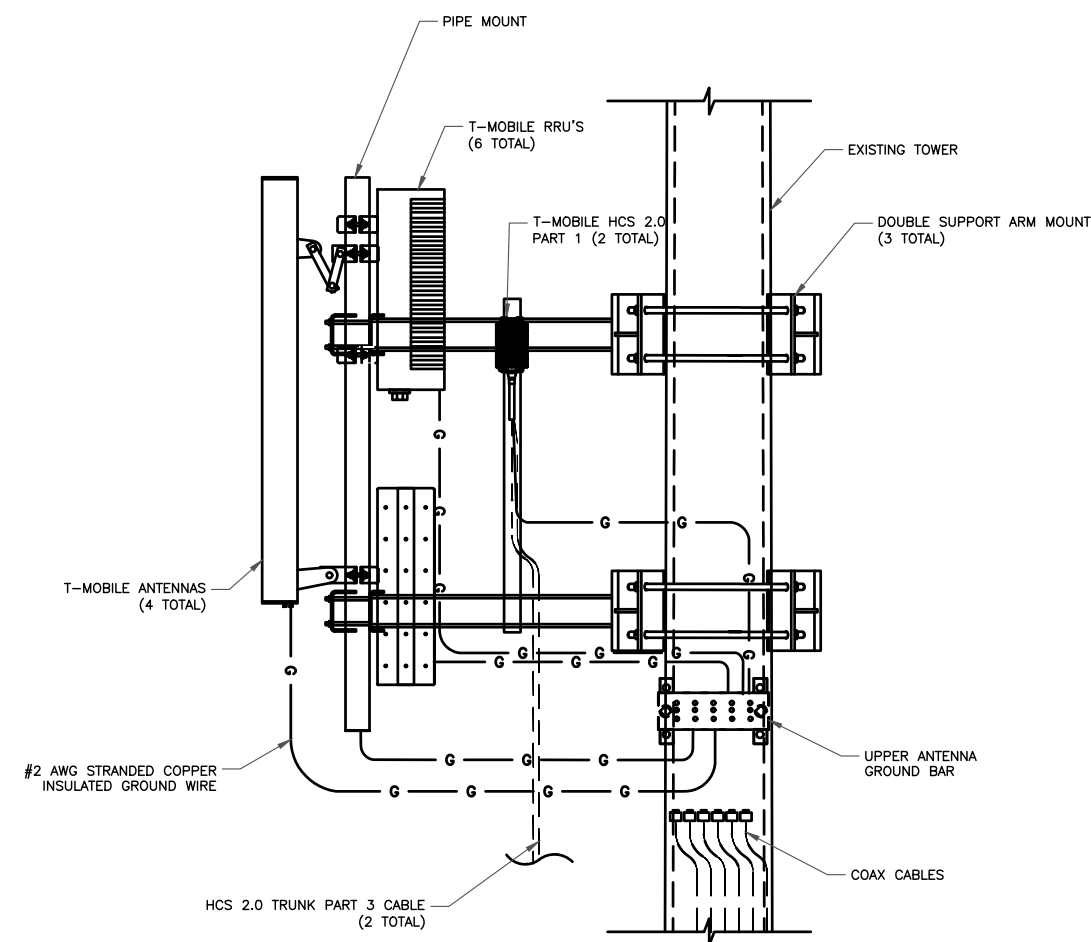
MOUNTING DETAIL

SHEET NUMBER:

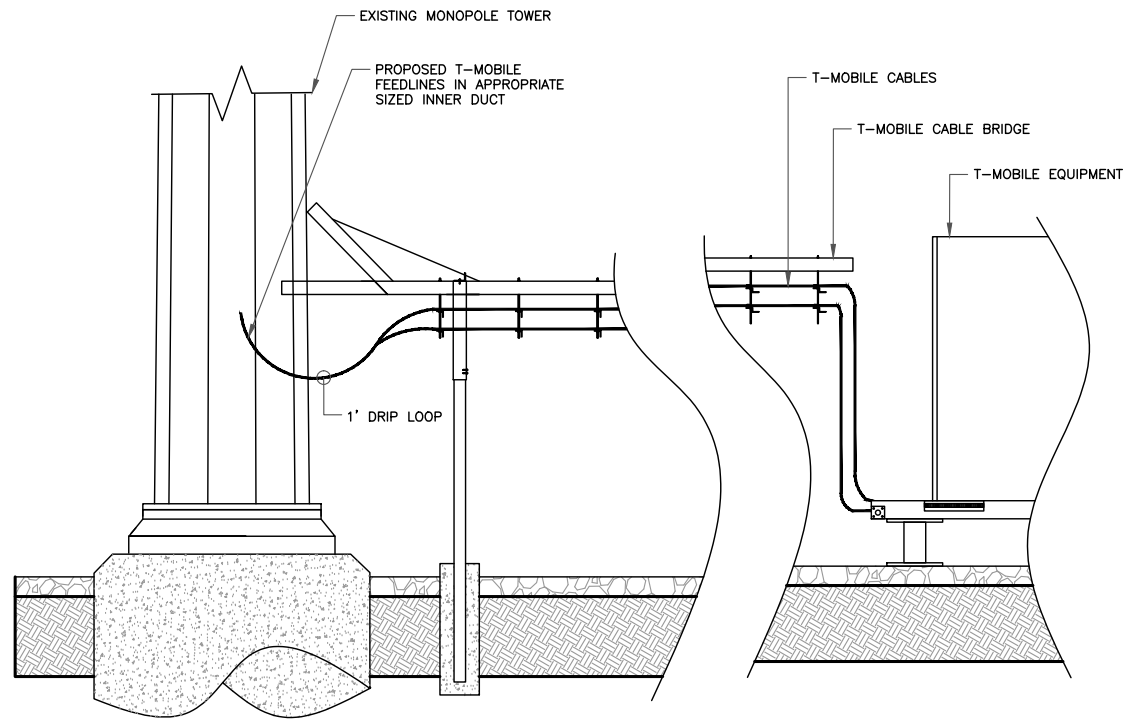
C-8



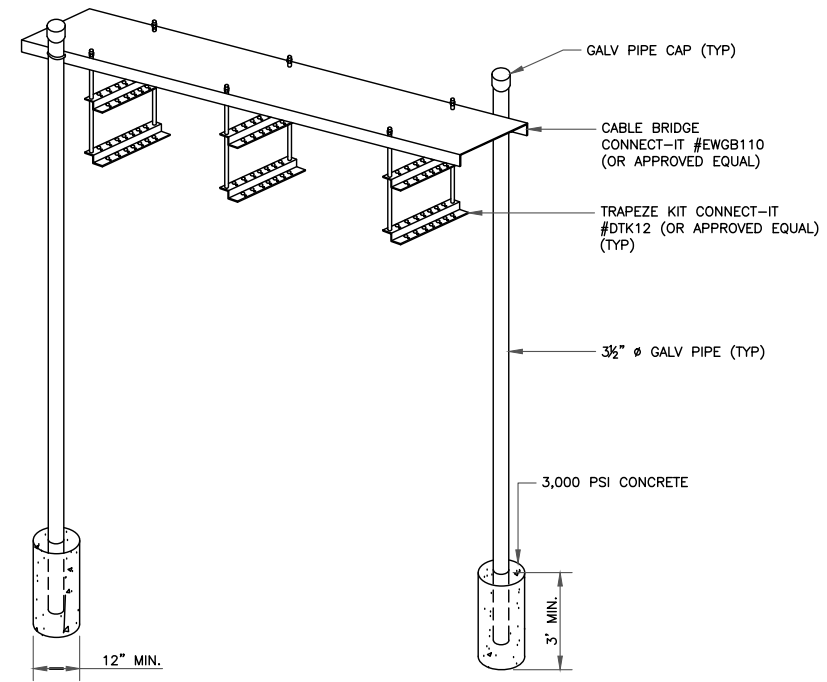
1 CABINET BOLT DOWN DETAIL  
SCALE: NOT TO SCALE



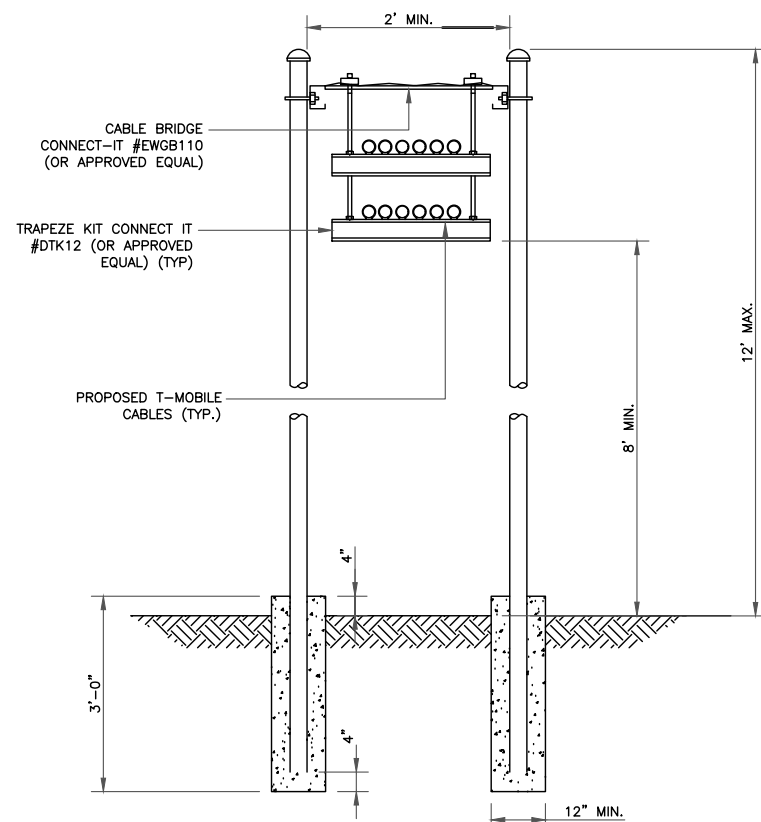
2 ANTENNA/RRU MOUNT DIAGRAM  
SCALE: NOT TO SCALE



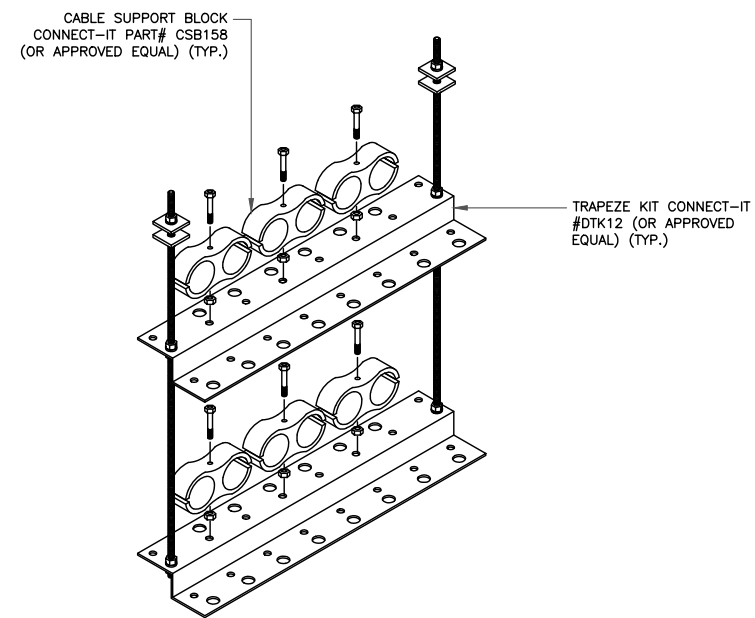
1 CABLE BRIDGE ELEVATION (TYP)  
SCALE: NOT TO SCALE



2 CABLE BRIDGE ANONOMETRIC (TYP)  
SCALE: NOT TO SCALE



3 CABLE BRIDGE CROSS SECTION  
SCALE: NOT TO SCALE



4 TRAPEZE KIT ISOMETRIC  
SCALE: NOT TO SCALE

T-Mobile

12920 SE 38TH STREET  
BELLEVUE, WA 98006



470 DAVIDSON ROAD  
PITTSBURGH, PA 15239  
TEL: (740) 260-9710

PLANS PREPARED BY:



421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

REV. DATE DESCRIPTION BY

|   |          |                         |     |
|---|----------|-------------------------|-----|
| 3 | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2 | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1 | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0 | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A | 05/07/21 | ISSUED FOR REVIEW       | AMG |

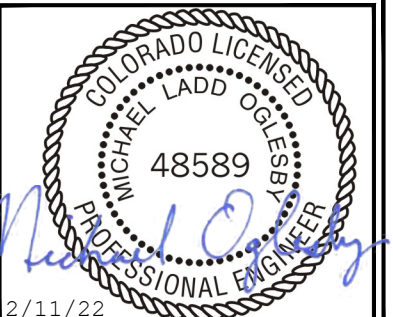
DRAWN BY: CHECKED BY:

AMG DLF

KHA PROJECT NUMBER:

KHCL- 11797

ENGINEER SEAL:



Exp. 10/31/23

PROJECT INFORMATION:

DN06163A  
SPRINT RETAIN SITE  
DN14XC247  
SBA #: CO46103-A  
7353 WEST HIGHWAY 24  
MANITOU SPRINGS, CO 80829

SHEET TITLE:

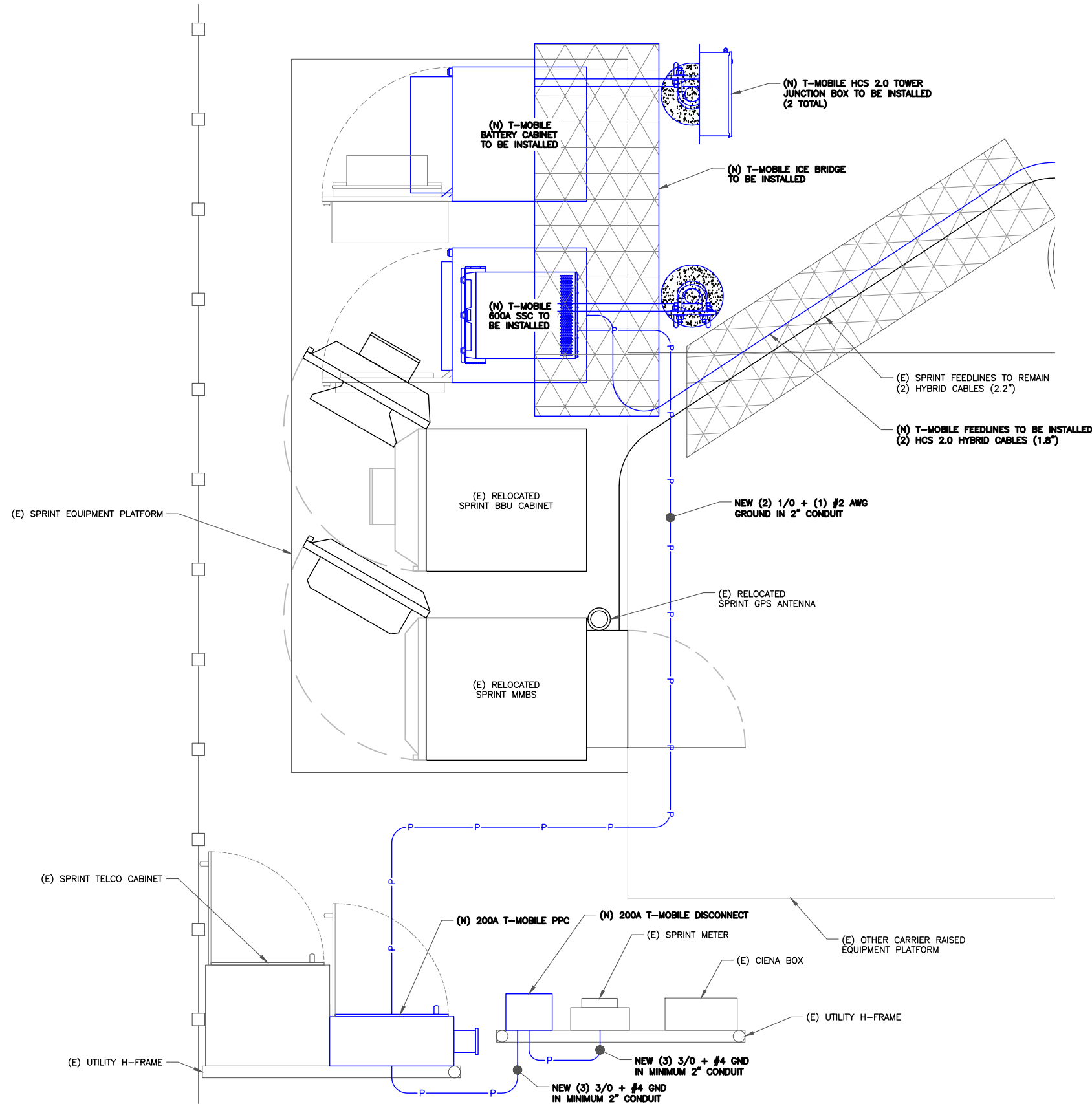
ICE BRIDGE  
DETAILS

SHEET NUMBER:

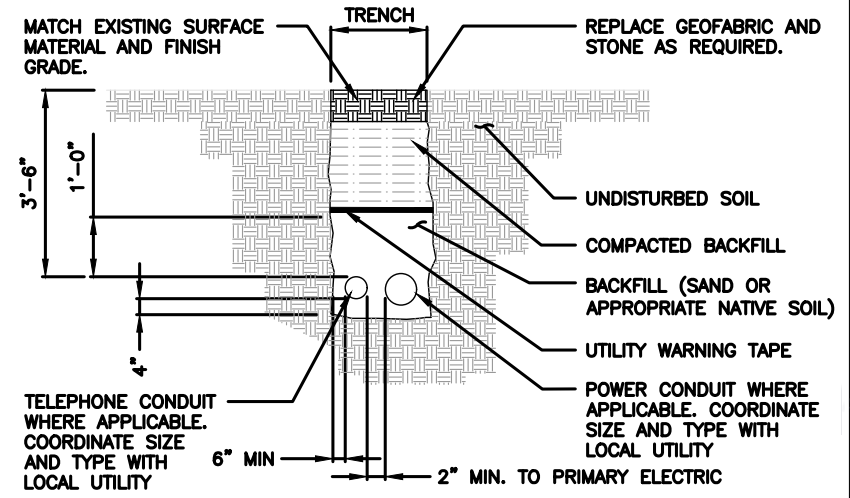
C-9

**NOTES:**

1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE XHHW-2.
2. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.



**1** ELECTRICAL ROUTING  
 SCALE: 1"=1'-0" (FULL SIZE)  
 1/2"=1'-0" (11x17)



- NOTES:**
1. CONTRACTOR TO HAND DIG ALL NEW TRENCHES INSIDE COMPOUND.
  2. SEPARATION DIMENSION TO BE VERIFIED WITH LOCAL UTILITY COMPANY REQUIREMENTS.

**2** TRENCH DETAIL  
 SCALE: NOT TO SCALE

**T-Mobile**  
 12920 SE 38TH STREET  
 BELLEVUE, WA 98006

**SBA**

470 DAVIDSON ROAD  
 PITTSBURGH, PA 15239  
 TEL: (740) 260-9710

PLANS PREPARED BY:

**Kimley»Horn**

421 FAYETTEVILLE ST, SUITE 600  
 RALEIGH, NC 27601

| REV. | DATE     | DESCRIPTION             | BY  |
|------|----------|-------------------------|-----|
| 3    | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2    | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1    | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0    | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A    | 05/07/21 | ISSUED FOR REVIEW       | AMG |

DRAWN BY: AMG CHECKED BY: DLF

KHA PROJECT NUMBER: KHCL-11797

ENGINEER SEAL:  
  
 2/11/22  
 Exp. 10/31/23

PROJECT INFORMATION:  
 DN06163A  
 SPRINT RETAIN SITE  
 DN14XC247  
 SBA #: CO46103-A  
 7353 WEST HIGHWAY 24  
 MANITOU SPRINGS, CO 80829

SHEET TITLE:  
**ELECTRICAL ROUTING**

SHEET NUMBER:  
**E-1**

|                |           |                  |             |
|----------------|-----------|------------------|-------------|
| VOLTAGE        | 120/240V  | AIC RATING       | 10,000 AMPS |
| MAIN BREAKER   | 200 AMP   | BUSS RATING      | 200 AMPS    |
| MOUNT          | SURFACE   | NEUTRAL BAR      | YES         |
| ENCLOSURE TYPE | NEMA 3R   | GROUND BAR       | YES         |
| PANEL STATUS   | NEW       | N TO GROUND BOND | YES         |
| PHASE WIRES    | SINGLE, 3 | INTERNAL TVSS    | TBD         |

| CKT | LOAD DESCRIPTION  | BREAKER AMPS | BREAKER POLES | BREAKER STATUS | SERVICE LOAD VA | USAGE FACTOR | PHASE A VA | PHASE B VA | USAGE FACTOR | SERVICE LOAD VA | BREAKER STATUS | BREAKER POLES | BREAKER AMPS | LOAD DESCRIPTION   | CKT |
|-----|-------------------|--------------|---------------|----------------|-----------------|--------------|------------|------------|--------------|-----------------|----------------|---------------|--------------|--------------------|-----|
| 1   | UNKNOWN           | 60           | 2             | OFF            | 0               | 1.25         | 0          | 0          | 1.25         | 0               | ON             | 2             | 60           | AC SURGE PROTECTOR | 2   |
| 3   |                   | 60           | 2             | OFF            | 0               | 1.25         | 0          | 0          | 1.25         | 0               | ON             | 2             | 60           |                    | 4   |
| 5   | EXISTING MMBS     | 100          | 2             | ON             | 6,000           | 1.25         | 9300       |            | 1.25         | 1,440           | ON             | 2             | 15           | EXISTING BBU       | 6   |
| 7   |                   | 100          | 2             | ON             | 6,000           | 1.25         | 9300       |            | 1.25         | 1,440           | ON             | 2             | 15           |                    | 8   |
| 9   | GENERATOR CHARGER | 20           | 1             | OFF            | 0               | 1.25         | 180        |            | 1.00         | 180             | ON             | 1             | 20           | TELCO GFI          | 10  |
| 11  | FAN               | 10           | 1             | ON             | 360             | 1.25         | 12450      |            | 1.25         | 9,600           | ON             | 2             | 150*         | NEW SSC CABINET    | 12  |
| 13  | SPACE             | -            | 1             | N/A            | 0               | 1.25         | 12000      |            | 1.25         | 9,600           | ON             | 2             | 150*         |                    | 14  |
| 15  | SPACE             | -            | 1             | N/A            | 0               | 1.25         | 0          | 0          | 1.25         | 0               | N/A            | 1             | -            | SPACE              | 16  |
| 17  | SPACE             | -            | 1             | N/A            | 0               | 1.25         | 0          | 0          | 1.25         | 0               | N/A            | 1             | -            | SPACE              | 18  |
| 19  | SPACE             | -            | 1             | N/A            | 0               | 1.25         | 0          | 0          | 1.25         | 0               | N/A            | 1             | -            | SPACE              | 20  |
| 21  | SPACE             | -            | 1             | N/A            | 0               | 1.25         | 0          | 0          | 1.25         | 0               | N/A            | 1             | -            | SPACE              | 22  |
| 23  | SPACE             | -            | 1             | N/A            | 0               | 1.25         | 0          | 0          | 1.25         | 0               | N/A            | 1             | -            | SPACE              | 24  |
|     |                   |              |               |                |                 |              | 21480      | 21750      |              |                 |                |               |              |                    |     |

| OVERALL LOAD SUMMARY   |        |
|------------------------|--------|
| TOTAL SERVICE LOAD KVA | 43.23  |
| AMPS                   | 180.13 |

- = Loading provided by T-Mobile.
- = Assumed Maximum Loading Per Breaker Size
- \* = New 150A Breaker

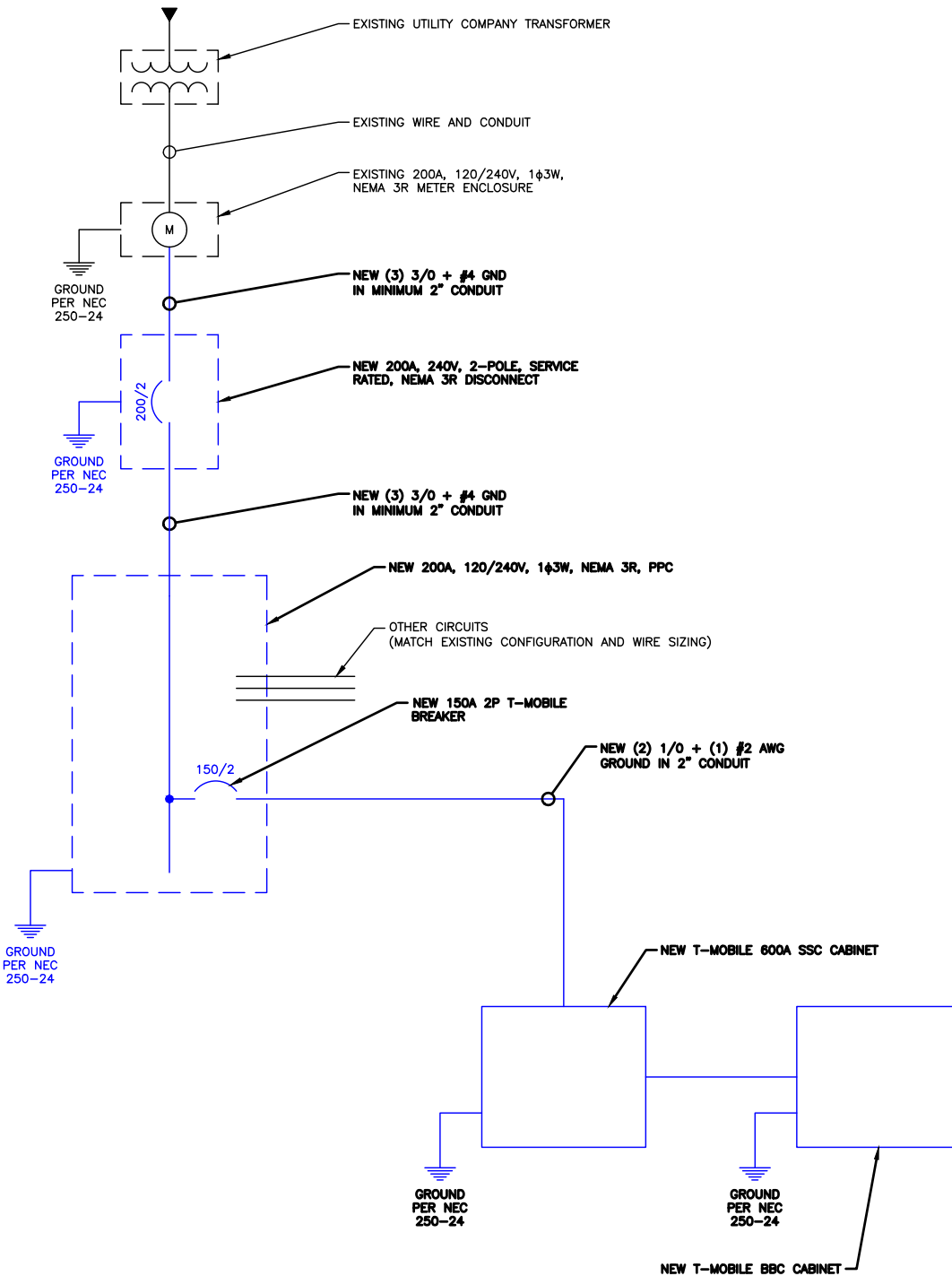
### 1 ELECTRICAL PANEL SCHEDULE

- CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS OT THE CONTRACTORS FUNCTIONS, THE SCOPE OF WORK OR ANY OTHER ISSUE RELATED TO THIS PROJECT SHALL BE BROUGHT UP DURING THE BID PERIOD WITH THE PROJECT MANAGER FOR CLARIFICATION, NOT AFTER THE CONTRACT HAS BEEN AWARDED.
- LOCATION OF EQUIPMENT, CONDUIT AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND SHALL BE COORDINATED WITH FIELD CONDITIONS PRIOR TO ROUGH-IN.
- THE CONDUIT RUNS AS SHOWN ON THE PLANS ARE APPROXIMATE. EXACT LOCATION AND ROUTING SHALL BE PER EXISTING FIELD CONDITIONS.
- PROVIDE PULL BOXES AND JUNCTION BOXES WHERE SHOWN OR REQUIRED BY NEC.
- ALL CONDUITS SHALL BE MET WITH BENDS MADE IN ACCORDANCE WITH NEC TABLE 346-10. NO RIGHT ANGLE DEVICE OTHER THAN STANDARD CONDUIT ELBOWS WITH 12" MINIMUM INSIDE SWEEPS FOR ALL CONDUITS 2" OR LARGER.
- ALL CONDUIT TERMINATION'S SHALL BE PROVIDED WITH PLASTIC THROAT INSULATING GROUNDING BUSHINGS.
- ALL WIRE SHALL BE TYPE THHN/THWN, SOLID ANNEALED COPPER UP TO SIZE #10 (#8 AND LARGER SHALL BE CONCENTRIC STRANDED) 75 DEGREE C (164 DEGREES F), 98% CONDUCTIVITY, MINIMUM #12.
- ALL WIRES SHALL BE TAGGED AT ALL PULL BOXES, J-BOXES, EQUIPMENT BOXES AND CABINETS WITH APPROVED PLASTIC TAGS, ACTION CRAFT, BRADY, OR APPROVED EQUAL.
- ALL NEW MATERIAL SHALL HAVE A U.L. LABEL.
- CONDUIT ROUGH-IN SHALL BE COORDINATED WITH THE MECHANICAL EQUIPMENT TO AVOID LOCATION TO CONFLICTS. VERIFY WITH MECHANICAL CONTRACTOR AND COMPLY AS REQUIRED.
- ALL PANEL DIRECTORIES SHALL BE TYPEDWRITTEN NOT HAND WRITTEN.
- INSTALL AN EQUIPMENT GROUNDING CONDUCTOR IN ALL CONDUITS PER THE SPECIFICATIONS AND NEC. THE EQUIPMENT GROUNDING CONDUCTORS SHALL BE BONDED AT ALL JUNCTION BOXES, PULL BOXES, AND ALL DISCONNECT SWITCHES, STARTERS, AND EQUIPMENT CABINETS.
- THE CONTRACTOR SHALL PREPARE AS-BUILT DRAWINGS, DOCUMENT ANY AND ALL WIRING AND EQUIPMENT CONDITIONS AND CHANGES WHILE COMPLETING THIS CONTRACT. SUBMIT AT SUBSTANTIAL COMPLETION.
- ALL DISCONNECT SWITCHES AND OTHER CONTROLLING DEVICES SHALL BE PROVIDED WITH ENGRAVED LAMICOID NAMEPLATES INDICATING EQUIPMENT CONTROLLED, BRANCH CIRCUITS INSTALLED ON, AND PANEL FIELD LOCATIONS FED FROM (NO EXCEPTIONS).
- ALL ELECTRICAL DEVICES AND INSTALLATIONS OF THE DEVICES SHALL COMPLY WITH (ADA) AMERICANS WITH DISABILITIES ACT AS ADOPTED BY THE APPLICABLE STATE.
- PROVIDE CORE DRILLING AS NECESSARY FOR PENETRATIONS OR RISERS THROUGH BUILDING. DO NOT PENETRATE STRUCTURAL MEMBERS WITHOUT CONSTRUCTIONS MANAGERS APPROVAL. SLEEVES AND/OR PENETRATIONS IN FIRE RATED CONSTRUCTION SHALL BE PACKED WITH FIRE RATED MATERIAL WHICH SHALL MAINTAIN THE FIRE RATING OF THE WALL OR STRUCTURE. FILL FOR FLOOR PENETRATIONS SHALL PREVENT PASSAGE OF WATER, SMOKE, FIRE AND FUMES. ALL MATERIAL SHALL BE UL APPROVED FOR THIS PURPOSE.
- ELECTRICAL CHARACTERISTICS OF ALL EQUIPMENT (NEW AND EXISTING) SHALL BE FIELD VERIFIED WITH THE OWNER'S REPRESENTATIVE AND EQUIPMENT SUPPLIER PRIOR TO ROUGH-IN OF CONDUIT AND WIRE. ALL EQUIPMENT SHALL BE PROPERLY CONNECTED ACCORDING TO THE NAMEPLATE DATA FURNISHED ON THE EQUIPMENT (THE DESIGN OF THESE PLANS ARE BASED UPON BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN AND SOME EQUIPMENT CHARACTERISTICS MAY VARY FROM DESIGN AS SHOWN ON THESE DRAWINGS. LOCATION OF ALL OUTLET, BOXES, ETC., AND THE TYPE OF CONNECTION (PLUG OR DIRECT) SHALL BE CONFIRMED WITH THE OWNER'S REPRESENTATIVE PRIOR TO ROUGH-IN.
- FOR FLEXIBLE LIQUID TIGHT CONDUIT PROVIDE GLAND TYPE COMPRESSION FITTINGS. SET SCREW OR QUICK-CONNECT FITTINGS SHALL NOT BE ACCEPTABLE.
- FLEXIBLE CONDUITS SHALL BE USED FOR CONNECTION OF EQUIPMENT SUBJECT TO VIBRATION, NOISE TRANSMISSION OR MOVEMENT AND ALL MOTORS, RECESSED AND SEMI-RECESSED LIGHT FIXTURES. MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL NOT EXCEED 6- FEET, SUBJECT TO NEC LIMITATIONS. FLEXIBLE CONDUITS SHALL NOT BE USED WHERE SUBJECT TO MECHANICAL DAMAGE.
- CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
- RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL BE USED FOR EXTERIOR LOCATIONS ABOVE GROUND AND IN UNFINISHED INTERIOR LOCATIONS. RIGID CONDUIT SHALL BE STEEL COATED WITH ZINC EXTERIOR AND INTERIOR BY THE HOT DIP GALVANIZED PROCESS. CONDUIT SHALL BE PRODUCED TO ANSI SPECIFICATIONS C80.1, FEDERAL SPECIFICATION WW-C-581 AND SHALL BE LISTED WITH THE UNDERWRITERS' LABORATORIES. EXTERIOR UNDERGROUND CONDUIT AND CONDUIT IN CONCRETE SHALL BE POLYVINYL CHLORIDE (PVC) SCHEDULE 40. JOINTS SHALL BE BELLED, AND FLUSH SOLVENT WELDED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. UNDERGROUND ELBOW SWEEPS, AND TRANSITIONS TO ABOVE GROUND SHALL BE SCHEDULE 80 PVC OR SCHEDULE 40 GALVANIZED.

### 2 ELECTRICAL NOTES

#### NOTES:

- ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, OR XHHW-2 UNLESS NOTED OTHERWISE.
- CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
- ALL GROUNDING AND BONDING PER THE NEC.



### 3 ONE-LINE DIAGRAM SCALE: NOT TO SCALE

T-Mobile

12920 SE 38TH STREET  
BELLEVUE, WA 98006



470 DAVIDSON ROAD  
PITTSBURGH, PA 15239  
TEL: (740) 260-9710

PLANS PREPARED BY:

Kimley»Horn

421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

REV: DATE: DESCRIPTION: BY:

| REV | DATE     | DESCRIPTION             | BY  |
|-----|----------|-------------------------|-----|
| 3   | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2   | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1   | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0   | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A   | 05/07/21 | ISSUED FOR REVIEW       | AMG |

DRAWN BY: CHECKED BY:

AMG DLF

KHA PROJECT NUMBER:

KHCL- 11797

ENGINEER SEAL:



2/11/22

Exp. 10/31/23

PROJECT INFORMATION:

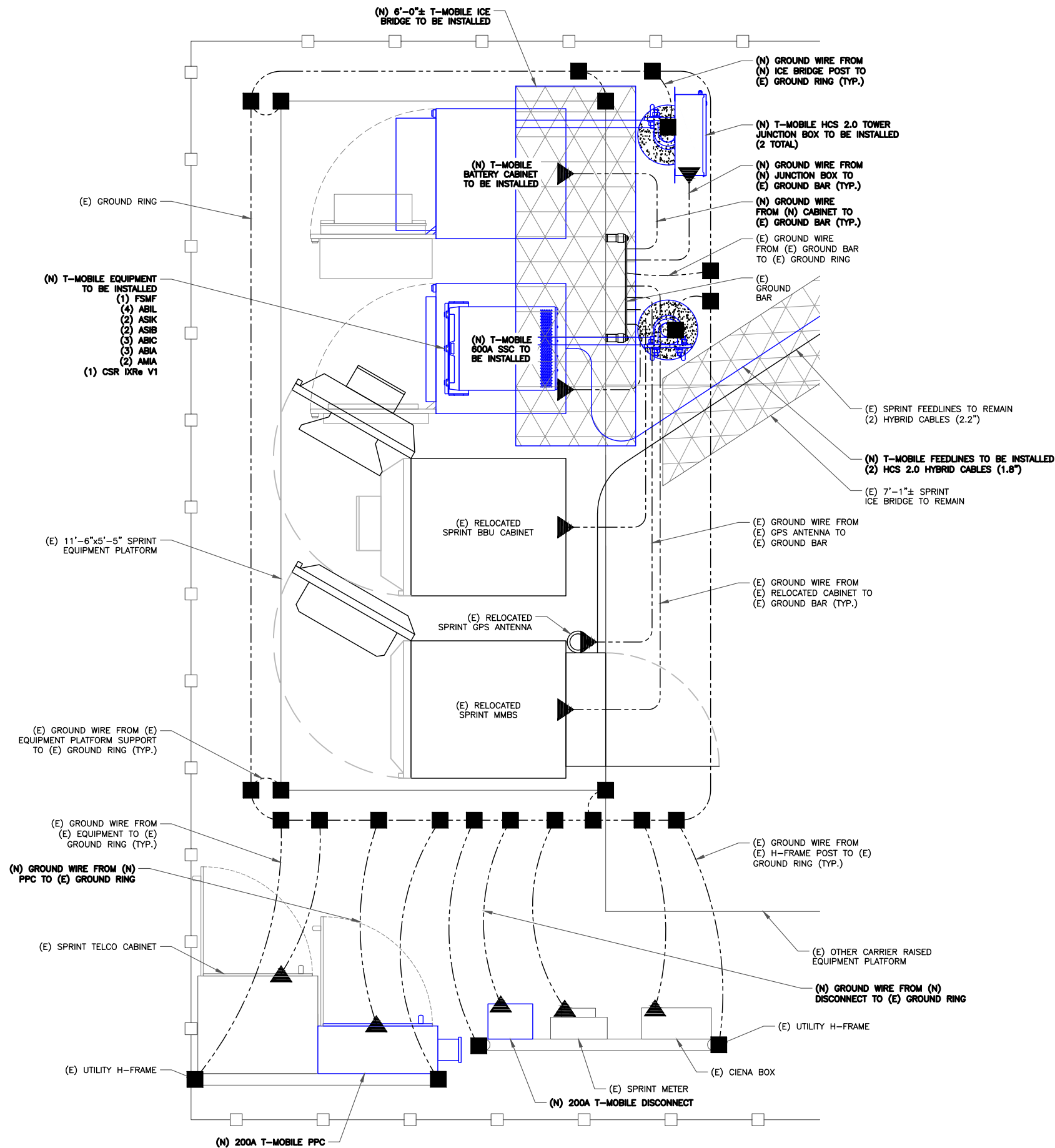
DN06163A  
SPRINT RETAIN SITE  
DN14XC247  
SBA #: CO46103-A  
7353 WEST HIGHWAY 24  
MANITOU SPRINGS, CO 80829

SHEET TITLE:

PANEL SCHEDULE  
& ONE-LINE DIAGRAM

SHEET NUMBER:

E-2



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

**T-Mobile**  
 12920 SE 38TH STREET  
 BELLEVUE, WA 98006



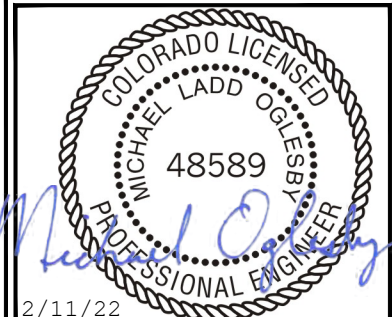
470 DAVIDSON ROAD  
 PITTSBURGH, PA 15239  
 TEL: (740) 260-9710

PLANS PREPARED BY:  
**Kimley»Horn**  
 421 FAYETTEVILLE ST, SUITE 600  
 RALEIGH, NC 27601

| REV. | DATE     | DESCRIPTION             | BY  |
|------|----------|-------------------------|-----|
| 3    | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2    | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1    | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0    | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A    | 05/07/21 | ISSUED FOR REVIEW       | AMG |

DRAWN BY: AMG CHECKED BY: DLF

KHA PROJECT NUMBER: KHCL-11797



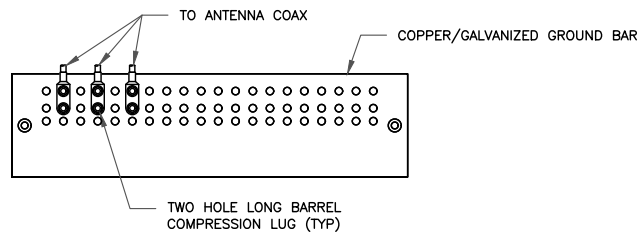
Exp. 10/31/23

PROJECT INFORMATION:  
 DN06163A  
 SPRINT RETAIN SITE  
 DN14XC247  
 SBA #: CO46103-A  
 7353 WEST HIGHWAY 24  
 MANITOU SPRINGS, CO 80829

SHEET TITLE:  
**GROUNDING DIAGRAM**

SHEET NUMBER:  
**G-1**

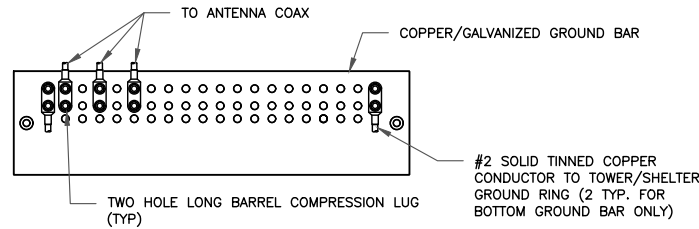




NOTES:

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

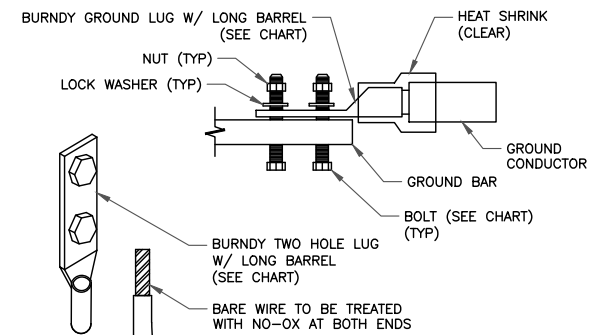


NOTES:

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

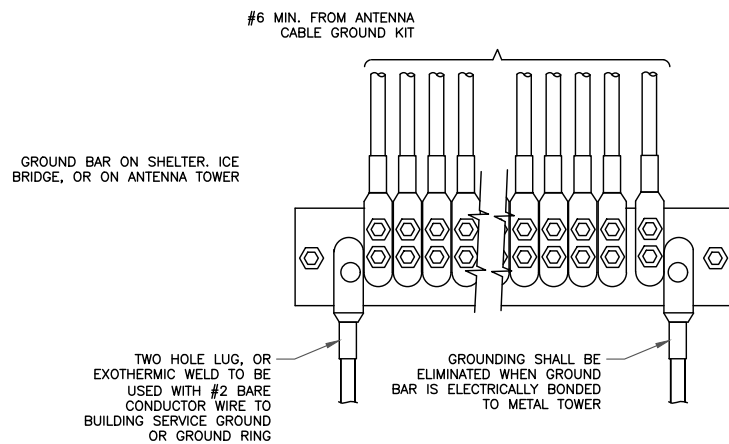
| WIRE SIZE          | BURNDY LUG | BOLT SIZE              |
|--------------------|------------|------------------------|
| #6 GREEN INSULATED | YA6C-2TC38 | 3/8" - 16 NC SS 2 BOLT |
| #2 SOLID TINNED    | YA3C-2TC38 | 3/8" - 16 NC SS 2 BOLT |
| #2 STRANDED        | YA2C-2TC38 | 3/8" - 16 NC SS 2 BOLT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



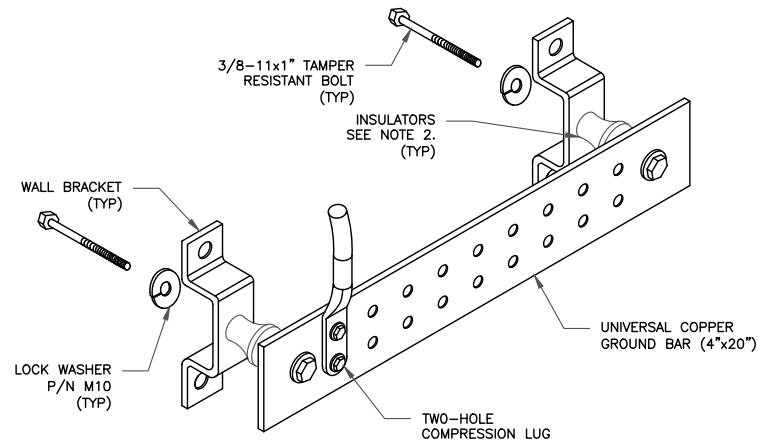
NOTE:

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



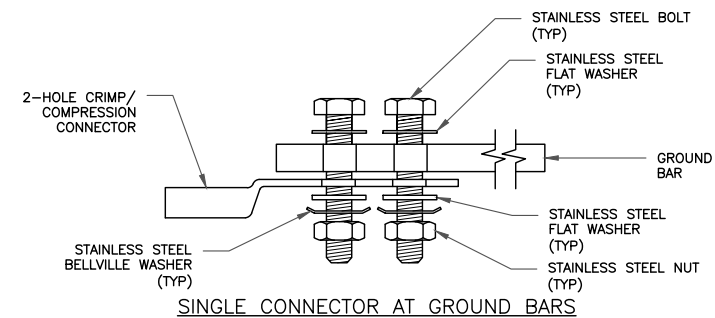
4 GROUNDWIRE INSTALLATION  
SCALE: NOT TO SCALE



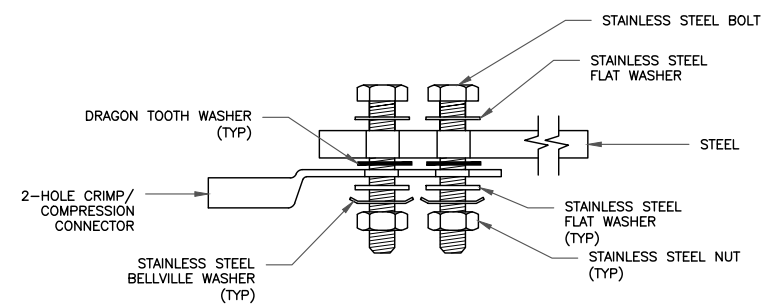
NOTES:

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.

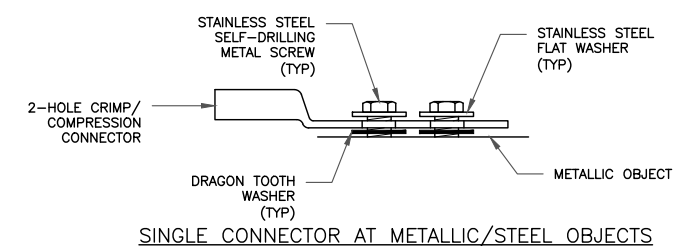
5 GROUND BAR DETAIL  
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

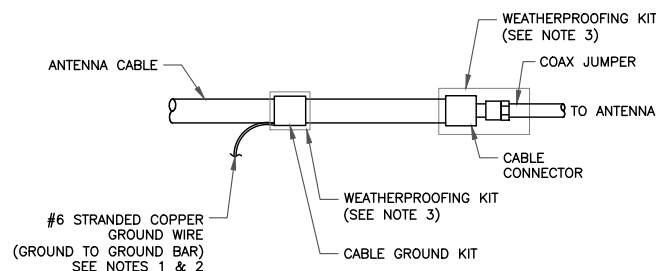


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

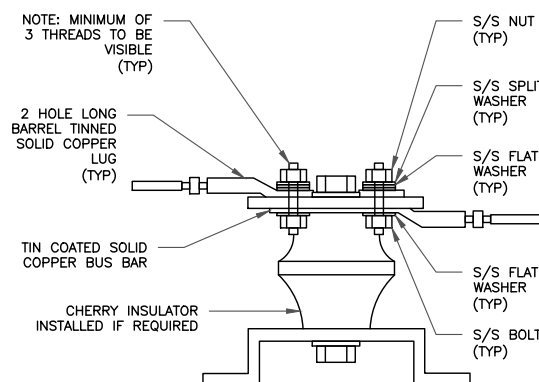
8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS  
SCALE: NOT TO SCALE



NOTES:

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

6 CABLE GROUND KIT CONNECTION  
SCALE: NOT TO SCALE



7 LUG DETAIL  
SCALE: NOT TO SCALE

**T-Mobile**  
12920 SE 38TH STREET  
BELLEVUE, WA 98006

**SBA**

470 DAVIDSON ROAD  
PITTSBURGH, PA 15239  
TEL: (740) 260-9710

PLANS PREPARED BY:

**Kimley»Horn**

421 FAYETTEVILLE ST, SUITE 600  
RALEIGH, NC 27601

REV: DATE: DESCRIPTION: BY:

| REV | DATE     | DESCRIPTION             | BY  |
|-----|----------|-------------------------|-----|
| 3   | 02/11/22 | REVISED PER CLIENT      | WRS |
| 2   | 01/18/22 | REVISED PER CLIENT      | DPL |
| 1   | 08/26/21 | REVISED PER CLIENT      | DPL |
| 0   | 05/12/21 | ISSUED FOR CONSTRUCTION | DLF |
| A   | 05/07/21 | ISSUED FOR REVIEW       | AMG |

DRAWN BY: CHECKED BY:

AMG DLF

KHA PROJECT NUMBER:

KHCL- 11797

ENGINEER SEAL:

2/11/22

Exp. 10/31/23

PROJECT INFORMATION:

DN06163A  
SPRINT RETAIN SITE  
DN14XC247  
SBA #: CO46103-A  
7353 WEST HIGHWAY 24  
MANITOU SPRINGS, CO 80829

SHEET TITLE:

**GROUNDING  
DETAILS**

SHEET NUMBER:

G-2