

T-MOBILE SITE NUMBER: DN06266A
T-MOBILE SITE NAME: CO46077-A
T-MOBILE PROJECT: SPRINT RETAIN

SBA SITE ID: CO46077-A
SITE ADDRESS: 20359 INDUSTRY AVE. FOUNTAIN, CO 81008
JURISDICTION: EL PASO COUNTY

12920 SE 38TH STREET
 BELLEVUE, WA 98006



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

SITE INFORMATION

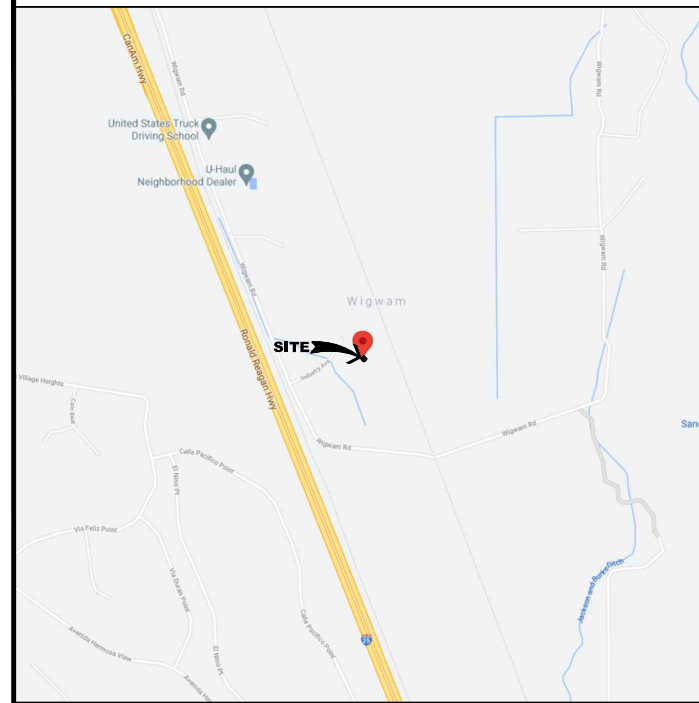
SBA SITE NAME: PIKES PEAK RACEWAY
SITE ADDRESS: 20359 INDUSTRY AVE. FOUNTAIN, CO 81008
COUNTY: EL PASO
AREA OF CONSTRUCTION: EXISTING
LATITUDE: 38.537655° N
LONGITUDE: 104.636119° W
LAT/LONG TYPE: NAD83
JURISDICTION: EL PASO COUNTY
OCCUPANCY CLASSIFICATION: U
TYPE OF CONSTRUCTION: IIB
A.D.A. COMPLIANCE: 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
PROPERTY TAX SCHEDULE: 5726000019
PARCEL NUMBER:
LEGAL DESCRIPTION: TRACT IN SEC 26-17-65 L/4 MR AS FOLS, COM AT NW COR OF SD SEC, TH S 52°11'57" E 2183.64 FT, S 19°47'14" E 2821.30 FT, S 74°49'17" W 148.39 FT FOR POB, TH S 19°42'20" E 483.53 FT, S 69°13'47" W 321.86 FT, N 20°46'13" W 713.07 FT, ON A CUR TO L WITH C/A OF 9°31'12" AND RAD OF 665.0 FT AN ARC DIST OF 110.49 FT, TH S 60°44'26" E 419.08 FT TO POB

AERIAL MAP



NO SCALE

AREA MAP



NO SCALE

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
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G-1	GROUNDING DIAGRAM
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PLANS PREPARED BY:



421 FAYETTEVILLE ST, SUITE 600
 RALEIGH, NC 27601

REV: DATE: DESCRIPTION: BY:

REV	DATE	DESCRIPTION	BY
2	08/30/21	REVISED PER COUNTY	LMS
1	08/30/21	REVISED PER CLIENT	DLF
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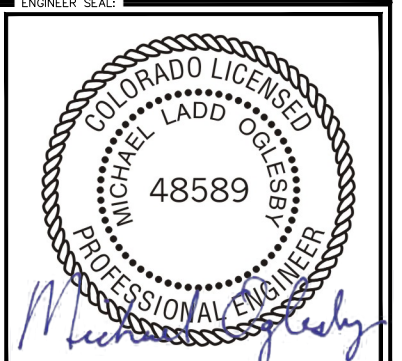
DRAWN BY: CHECKED BY:

SGO DLF

KHA PROJECT NUMBER:

KHCL- 7486

ENGINEER SEAL:



PROJECT INFORMATION:

DN06266A
 CO46077-A
 SBA #: CO46077-A
 20359 INDUSTRY AVE.
 FOUNTAIN, CO 81008

SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

T-1

PROJECT TEAM

A&E FIRM: KIMLEY-HORN & ASSOCIATES, INC. 3875 EMBASSY PKWY, SUITE 280 AKRON, OH 44333 KEVIN.CLEMENTS@KIMLEY-HORN.COM
SBA CONTACT: 470 DAVIDSON ROAD PITTSBURGH, PA 15239
 WILL SPICE - PROJECT MANAGER
 WSPICE@SBASITE.COM

Approved

By: Craig Dossey, Executive Director

Date: 02/08/2022



El Paso County Planning & Community Development

GROUND SCOPE OF WORK

1. INSTALL NEW BATTERY CABINET
2. INSTALL NEW 600A SSC CABINET
3. INSTALL (1) FSMF
4. INSTALL (2) ASIK
5. INSTALL (2) ASIB
6. INSTALL (3) ABIA
7. INSTALL (6) ABIL
8. INSTALL (3) ABIC
9. INSTALL (2) AMIA
10. INSTALL (1) CSR 1XRe V2
11. INSTALL (2) JUNCTION BOXES

TOWER SCOPE OF WORK

1. REMOVE EXISTING PLATFORM MOUNT
2. REMOVE (3) ANTENNAS
3. REMOVE (12) RRHS
4. REMOVE (1) HYBRID CABLE
5. REMOVE (4) UNLICENSED CABLES
6. INSTALL NEW COMMSCOPE PLATFORM MOUNT
7. INSTALL NEW COMMSCOPE HANDRAIL KIT
8. INSTALL (6) ANTENNAS
9. INSTALL (6) RRHS
10. INSTALL (2) BREAKOUT PENDANTS
11. 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	DATE
BUILDING	2017 PPRBC (2015 IBC)	01/17/22
MECHANICAL	2015 IMC	Exp. 10/31/23
ELECTRICAL	2014 NEC	

REFERENCE DOCUMENTS:

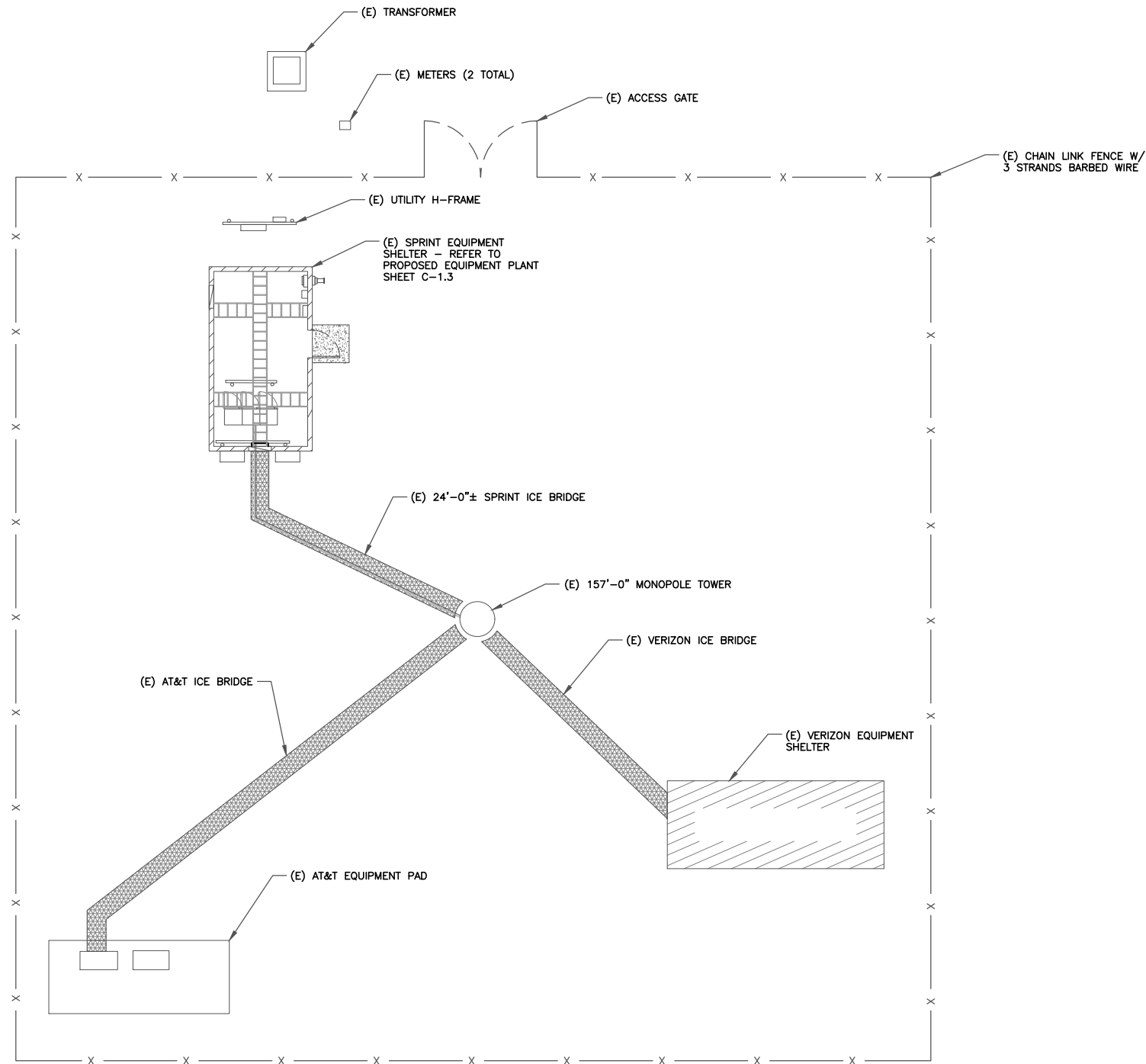
- STRUCTURAL ANALYSIS: TOWER ENGINEERING SOLUTIONS (PROJECT #: 110631)
 DATED: 07/14/21
- MOUNT ANALYSIS: BY OTHERS
 DATED:
- RFDS REVISION: 1
 DATED: 04/22/21

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



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.



01/17/22
Exp. 10/31/23

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



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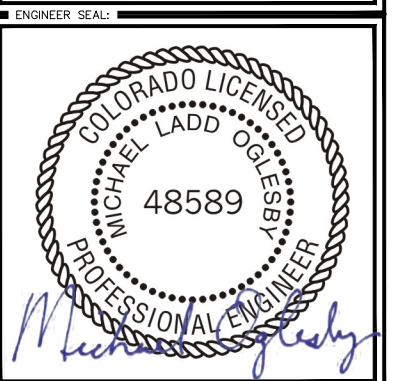
Kimley»Horn

421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

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DRAWN BY: SGO CHECKED BY: DLF

KHA PROJECT NUMBER: KHCL- 7486



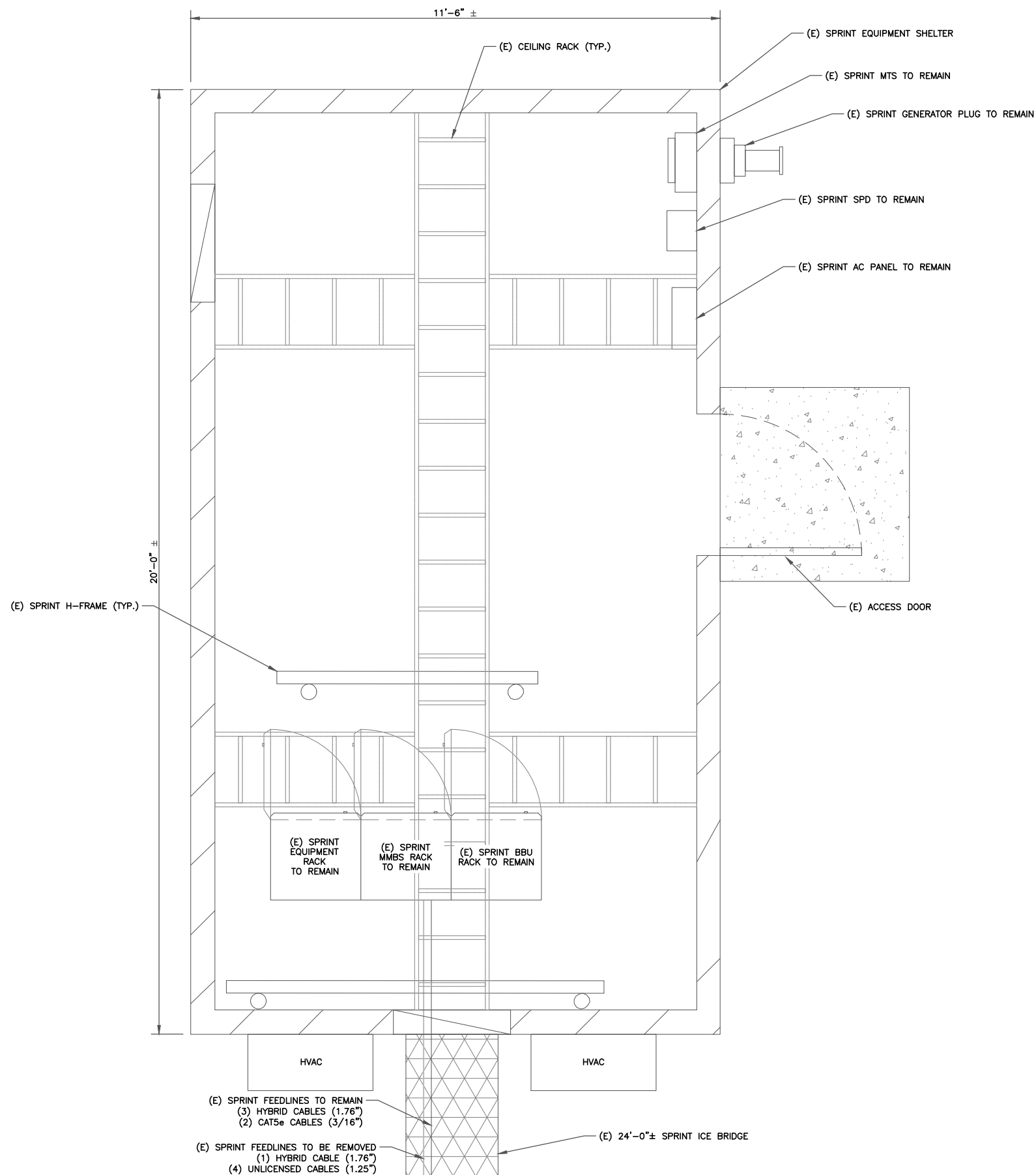
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20359 INDUSTRY AVE.
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SHEET TITLE:
OVERALL SITE PLAN

SHEET NUMBER:
C-1.1

PCD FILE # PPR-2174



INSTALLER NOTE:

1. 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.
2. ALL IN SHELTER EQUIPMENT LOCATIONS WERE ASSUMED. IN THE EVENT OF FIT/SPACING ISSUES CONTRACTOR SHALL CONTACT OWNER AND ENGINEER.



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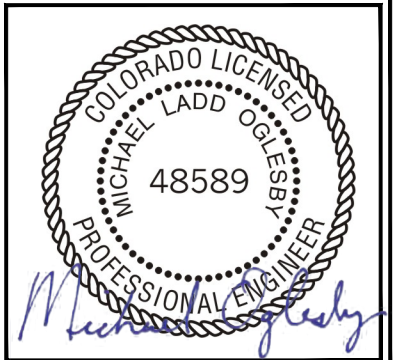
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KHA PROJECT NUMBER:

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ENGINEER SEAL:



01/17/22

Exp. 10/31/23

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SHEET TITLE:

EXISTING
EQUIPMENT PLAN

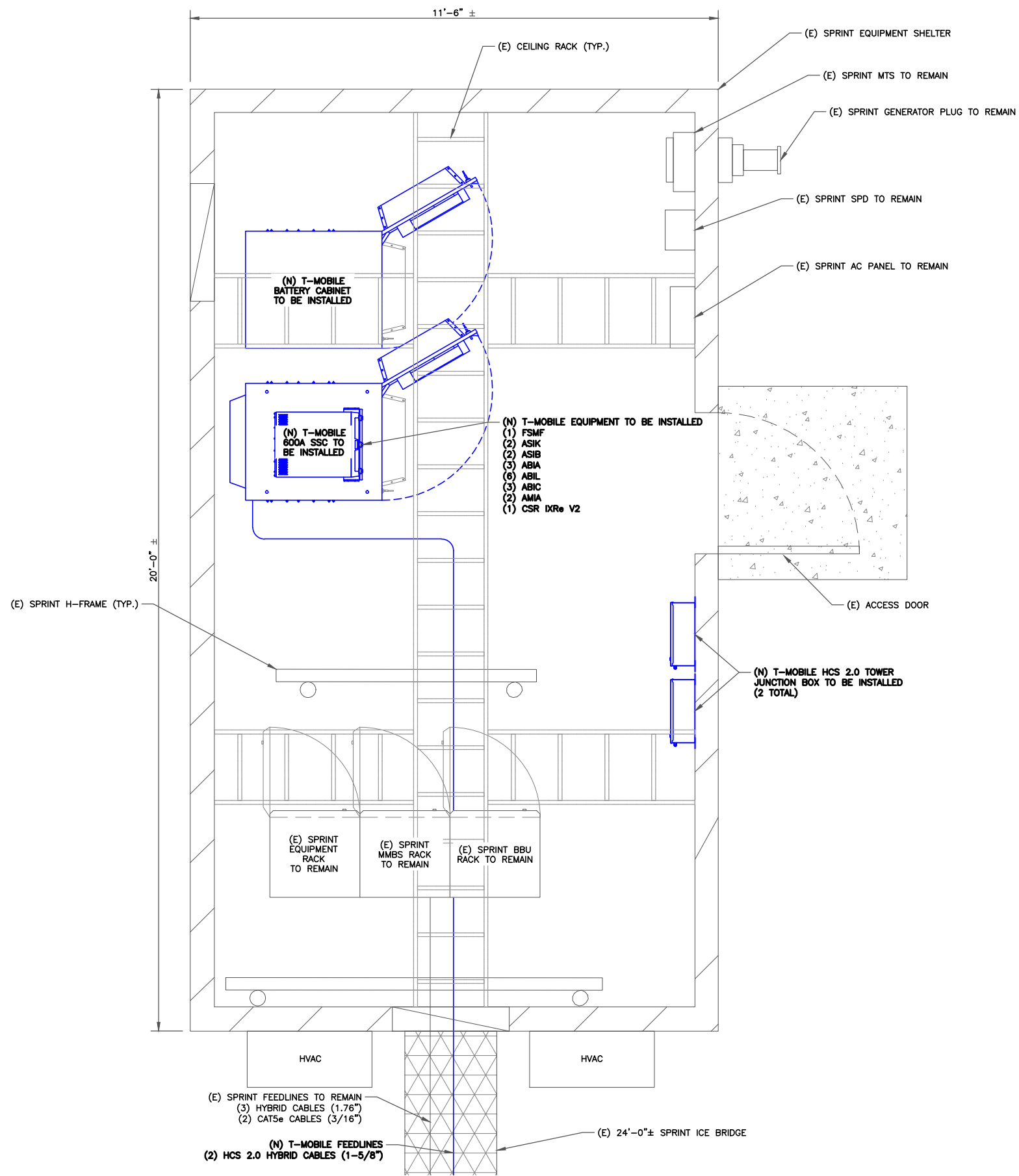
SHEET NUMBER:

C-1.2

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



PCD FILE # PRR-2174



INSTALLER NOTE:

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ENGINEER SEAL:



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SHEET TITLE:

FINAL
EQUIPMENT PLAN

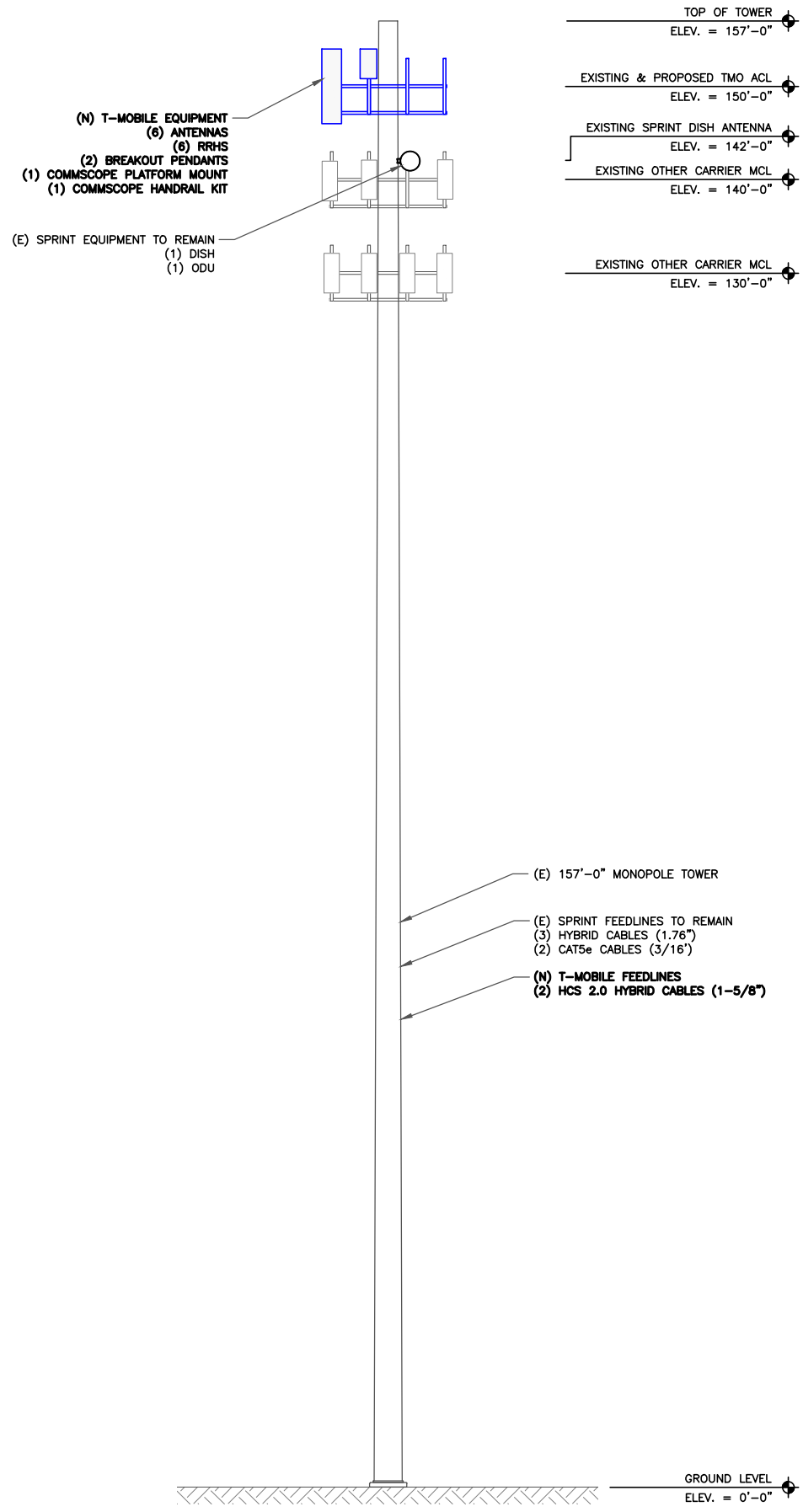
SHEET NUMBER:

C-1.3

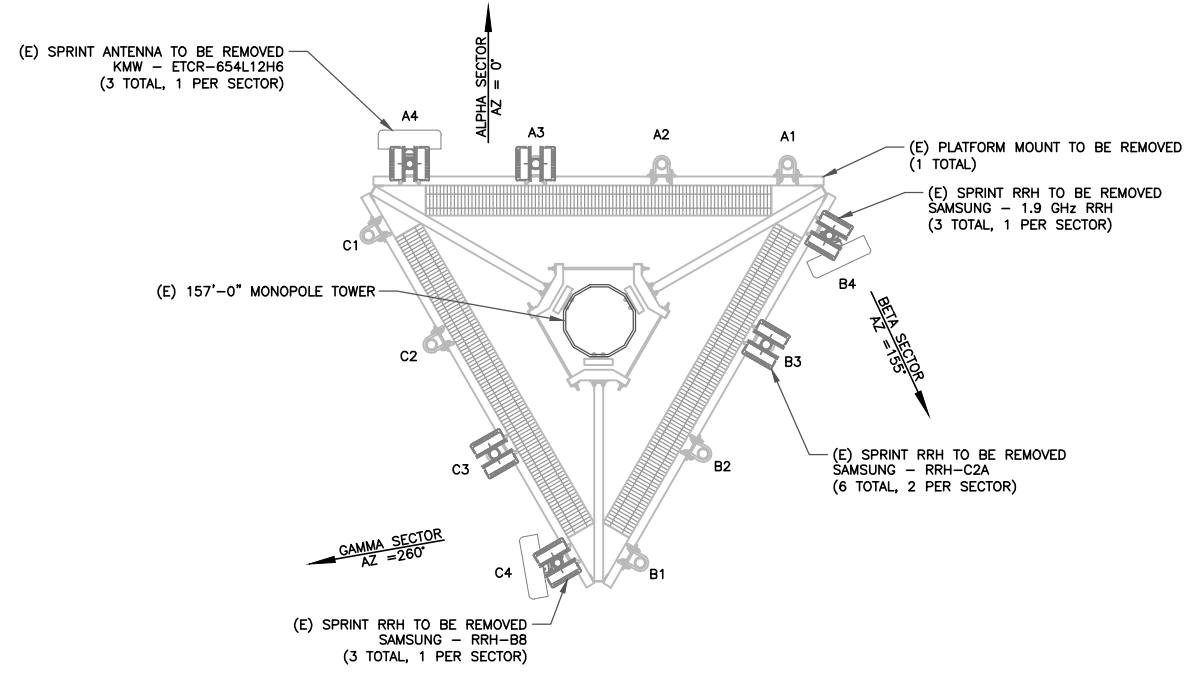
1 FINAL EQUIPMENT PLAN
SCALE: 3/4"=1'-0" (FULL SIZE)
3/8"=1'-0" (11x17)



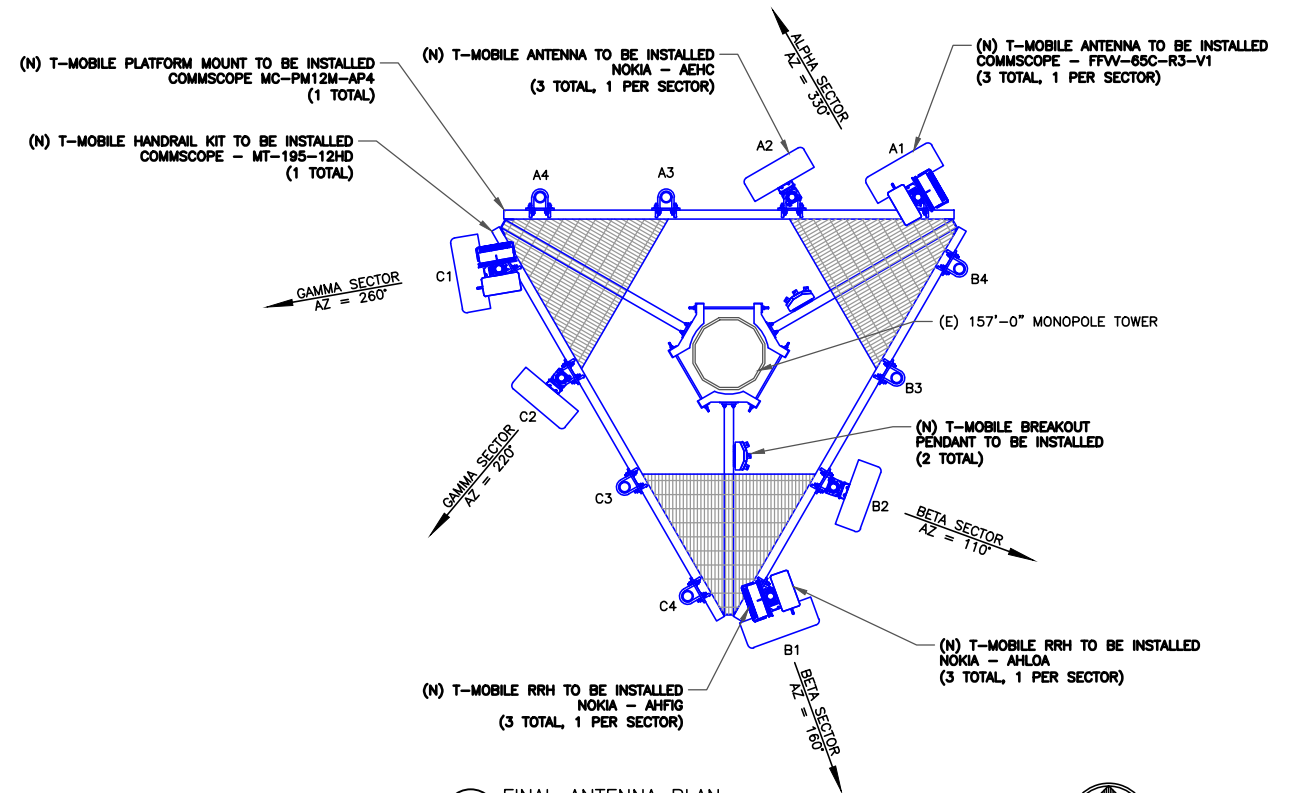
01/17/22
Exp. 10/31/23



1 FINAL ELEVATION
SCALE: NOT TO SCALE



2 EXISTING ANTENNA PLAN
SCALE: NOT TO SCALE



3 FINAL ANTENNA PLAN
SCALE: NOT TO SCALE

01/17/22
Exp. 10/31/23

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ENGINEER SEAL:

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Exp. 10/31/23

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SBA #: CO46077-A
20359 INDUSTRY AVE.
FOUNTAIN, CO 81008

SHEET TITLE:
TOWER ELEVATION & ANTENNA PLAN

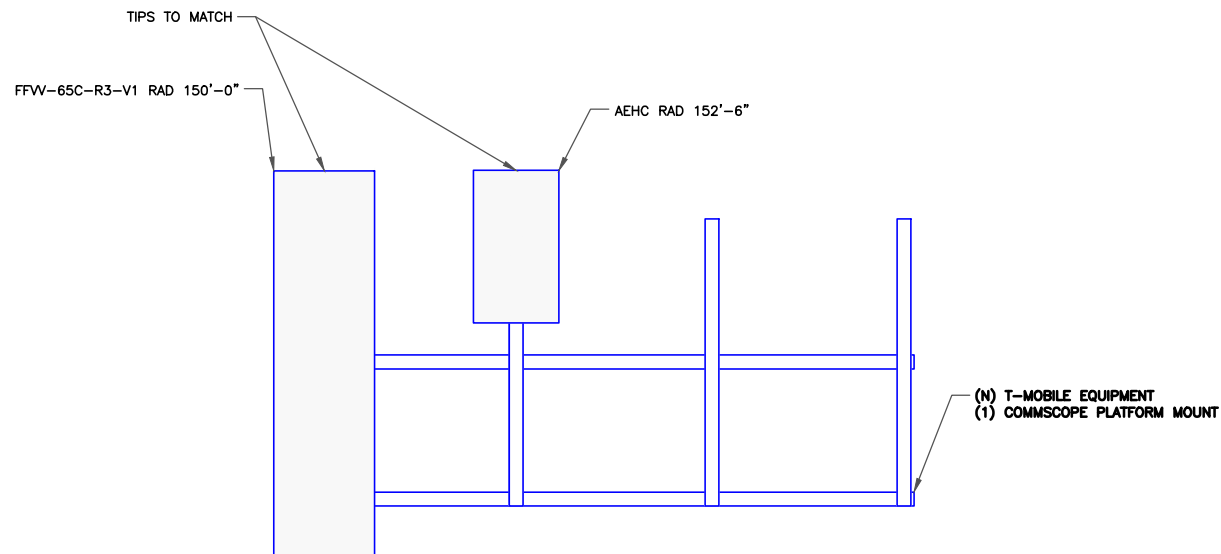
SHEET NUMBER:
C-2

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	A4	-	-	-	-	-	-	-	-	(2) NEW BREAKOUT PENDANTS	(3) EXISTING 1.76" HYBRID CABLES, (2) EXISTING 3/16" CAT5e CABLES, (2) NEW 1-5/8" HYBRID CABLES	EXISTING	EXISTING	-								
	A3	-	-	-	-	-	-	-	-					-								
	A2	330°	152'-6"	0°	L2500, N2500	NOKIA - AEHC	NEW	-	-					<15'-0"								
	A1	330°	150'-0"	0°	L700, L600, N600, L2100, G1900, L1900, N1900, N2100	COMMSCOPE - FFV-65C-R3-V1	NEW	(1) NEW AHLOA, (1) NEW AHFIG	-					<15'-0"								
BETA	B4	-	-	-	-	-	-	-	-					(2) NEW BREAKOUT PENDANTS	(3) EXISTING 1.76" HYBRID CABLES, (2) EXISTING 3/16" CAT5e CABLES, (2) NEW 1-5/8" HYBRID CABLES	EXISTING	EXISTING	-				
	B3	-	-	-	-	-	-	-	-									-				
	B2	110°	152'-6"	0°	L2500, N2500	NOKIA - AEHC	NEW	-	-									<15'-0"				
	B1	160°	150'-0"	0°	L700, L600, N600, L2100, G1900, L1900, N1900, N2100	COMMSCOPE - FFV-65C-R3-V1	NEW	(1) NEW AHLOA, (1) NEW AHFIG	-									<15'-0"				
GAMMA	C4	-	-	-	-	-	-	-	-									(2) NEW BREAKOUT PENDANTS	(3) EXISTING 1.76" HYBRID CABLES, (2) EXISTING 3/16" CAT5e CABLES, (2) NEW 1-5/8" HYBRID CABLES	EXISTING	EXISTING	-
	C3	-	-	-	-	-	-	-	-													-
	C2	220°	152'-6"	0°	L2500, N2500	NOKIA - AEHC	NEW	-	-													<15'-0"
	C1	260°	150'-0"	0°	L700, L600, N600, L2100, G1900, L1900, N1900, N2100	COMMSCOPE - FFV-65C-R3-V1	NEW	(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



1 ANTENNA ELEVATION
SCALE: N/A

2 NOT USED
SCALE: N/A

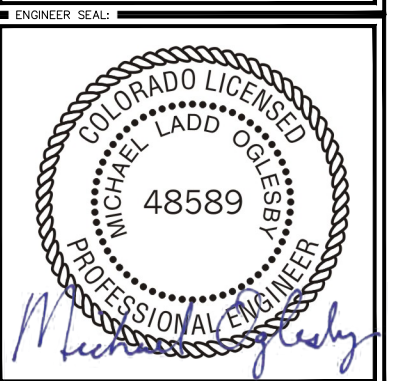
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DRAWN BY: SGO CHECKED BY: DLF

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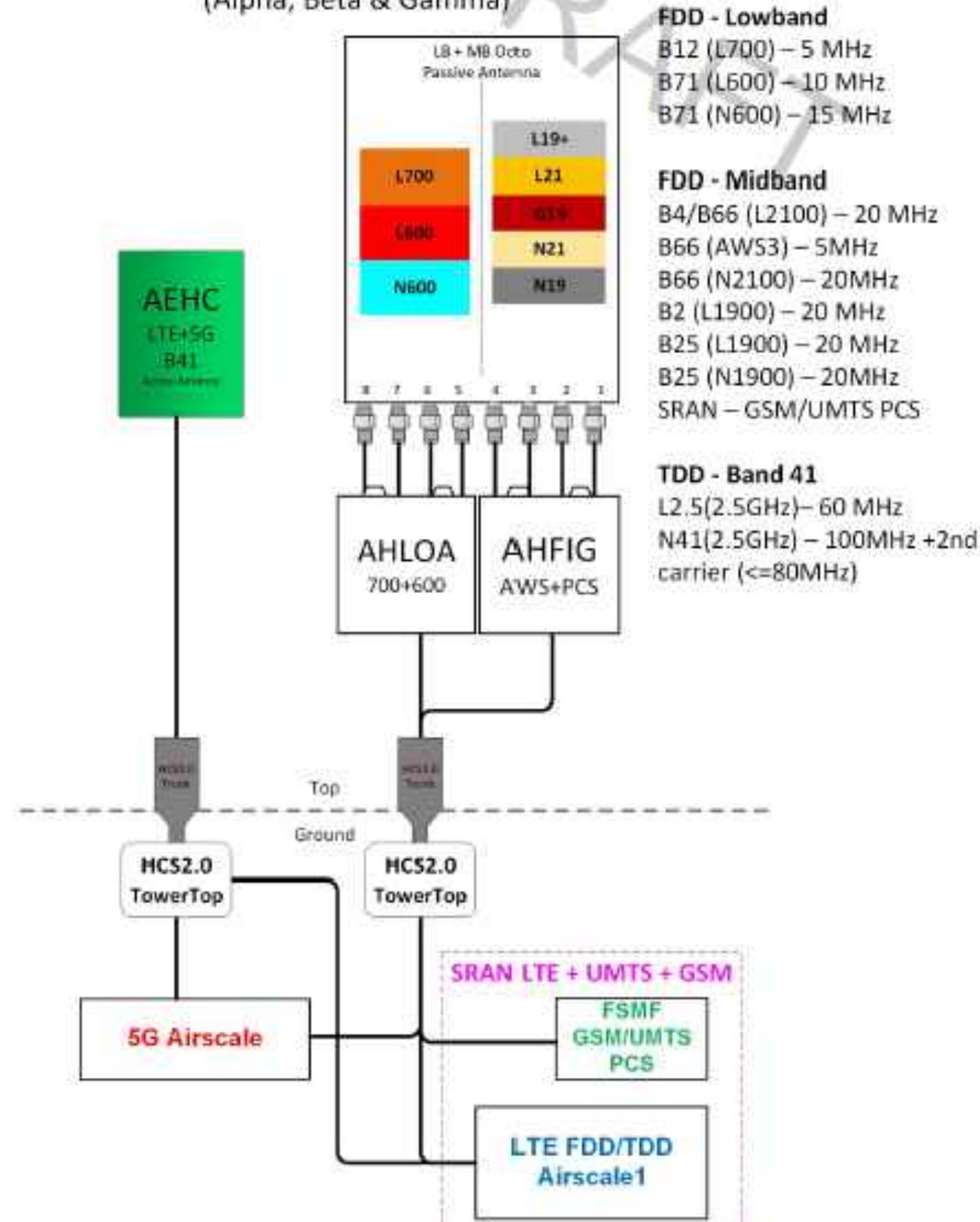
SHEET TITLE:
ANTENNA SCHEDULE

SHEET NUMBER:
C-3

56791EZ_SR_N21_N19.jpg

Configuration 56791EZ_SR

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



FDD - Lowband
 B12 (L700) – 5 MHz
 B71 (L600) – 10 MHz
 B71 (N600) – 15 MHz

FDD - Midband
 B4/B66 (L2100) – 20 MHz
 B66 (AWS3) – 5MHz
 B66 (N2100) – 20MHz
 B2 (L1900) – 20 MHz
 B25 (L1900) – 20 MHz
 B25 (N1900) – 20MHz
 SRAN – GSM/UMTS PCS

TDD - Band 41
 L2.5(2.5GHz) – 60 MHz
 N41(2.5GHz) – 100MHz +2nd carrier (<=80MHz)



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SHEET TITLE:
PLUMBING DIAGRAM

SHEET NUMBER:
C-4

1 RFDS
 SCALE: N/A

FFVV-65C-R3-V1



General Specifications

Antenna Type	Sector
Band	Multiband
Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Performance Note	Outdoor usage
Radome Material	Fiberglass, UV resistant
Radiator Material	Low loss circuit board
Reflector Material	Aluminum
RF Connector Interface	4.3-10 Female
RF Connector Location	Bottom
RF Connector Quantity, high band	4
RF Connector Quantity, low band	4
RF Connector Quantity, total	8

Remote Electrical Tilt (RET) Information

RET Interface	8-pin DIN Female 9-pin DIN Male
RET Interface, quantity	1 female 1 male
Input Voltage	10-30 Vdc
Internal RET	High band (2) Low band (1)
Power Consumption, idle state, maximum	1 W
Power Consumption, normal conditions, maximum	10 W
Protocol	3GPP/AISG 2.0 (Single RET)

Dimensions

Width	640 mm 25.197 in
Depth	235 mm 9.252 in
Length	2437 mm 95.945 in
Net Weight, without mounting kit	56.5 kg 124.561 lb

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) 1300 W max (75% DL duty cycle, 100% RF load)



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

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2 ANTENNA SPECIFICATIONS
SCALE: NOT TO SCALE

T-Mobile

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SHEET TITLE:

EQUIPMENT
SPECIFICATIONS

SHEET NUMBER:

C-5

AirScale Dual RRH 4T4R B12/71 240W AHLOA



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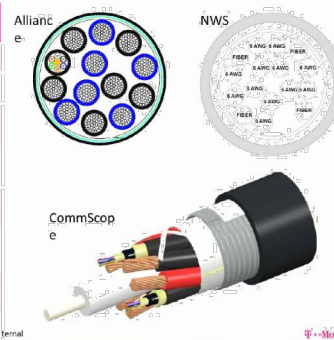
Product Code:	474331A
Supported Frequency bands	3GPP Band 12/71
Frequencies	Band 12 adjusted: UL 698 - 716 MHz, DL 728 - 746 MHz Band 71: UL 663 MHz - 698 MHz, DL 617 MHz - 652 MHz
Number of TX/RX paths/pipes	4 pipes; 2T2R, 2T4R, 4T4R for both bands
Instantaneous Bandwidth IBW	17 MHz for B12 and 35MHz for B71 1 MHz below B12 NB IoT future use
Occupied Bandwidth OBW	UL 53MHz contiguous 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] 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 IDC on ANT1 & ANT3
Other Interfaces	External Alarm MDR-26 (4 inputs, 1 Output) DC Circular Power Connector
Physical	560 mm x 308 mm x 189 mm 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

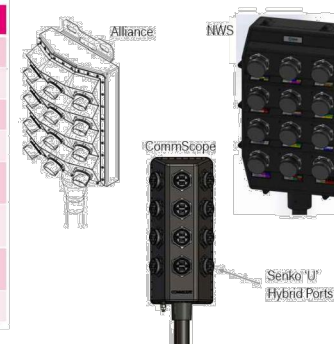
Trunk Cable General Specifications

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

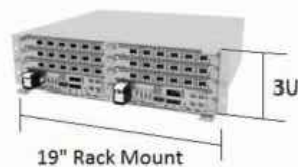
AirScale System Module Installation Guidelines - AMIA

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

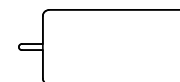
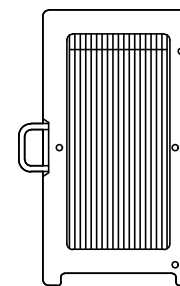
AMIA Mounting Options	3U space*	4U Space
Item Description		
19 to 23 inch adaptor bracket, 3U w/slot	x	
19 to 23 inch adaptor bracket, 4U w/slot		x
ASSY, SHELF		x

*Bottom support is available



T-Mobile

3 AMIA SPECIFICATIONS
SCALE: NOT TO SCALE



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

4 NOKIA - AHFIG
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

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DRAWN BY: CHECKED BY:

SGO DLF

KHA PROJECT NUMBER:

KHCL- 7486

ENGINEER SEAL:

FOR
REFERENCE
PURPOSES
ONLY

PROJECT INFORMATION:

DN06266A
CO46077-A
SBA #: CO46077-A
20359 INDUSTRY AVE.
FOUNTAIN, CO 81008

SHEET TITLE:

EQUIPMENT
SPECIFICATIONS

SHEET NUMBER:

C-6

PCD FILE # PRR-2174



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.

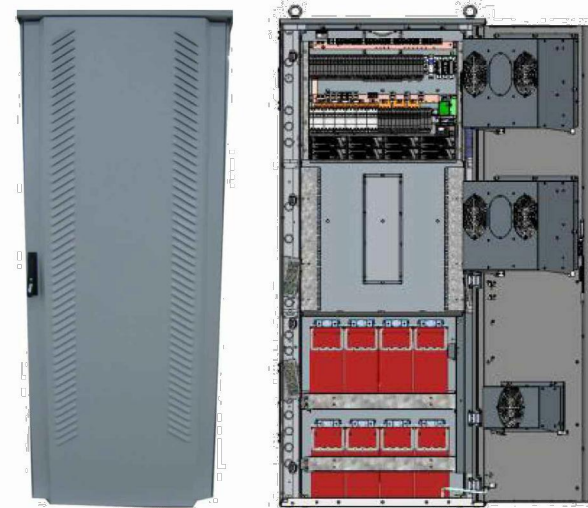
*Products: Small SSC, LP Small SSC, Medium SSC, Large SSC, HP Large SSC, Battery Enclosure
Advantage 1kW, Advantage 2kW & Advantage 6U*



Basic Overview 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 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:



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SBA #: CO46077-A
20359 INDUSTRY AVE.
FOUNTAIN, CO 81008

SHEET TITLE:

EQUIPMENT
SPECIFICATIONS

SHEET NUMBER:

C-7

T-Mobile

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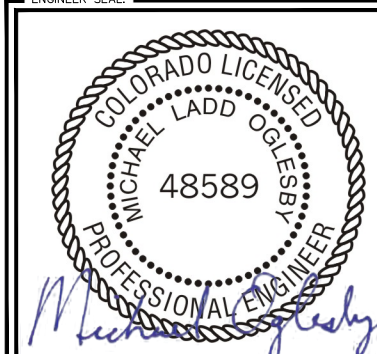
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SGO DLF

KHA PROJECT NUMBER:

KHCL- 7486

ENGINEER SEAL:



PROJECT INFORMATION:

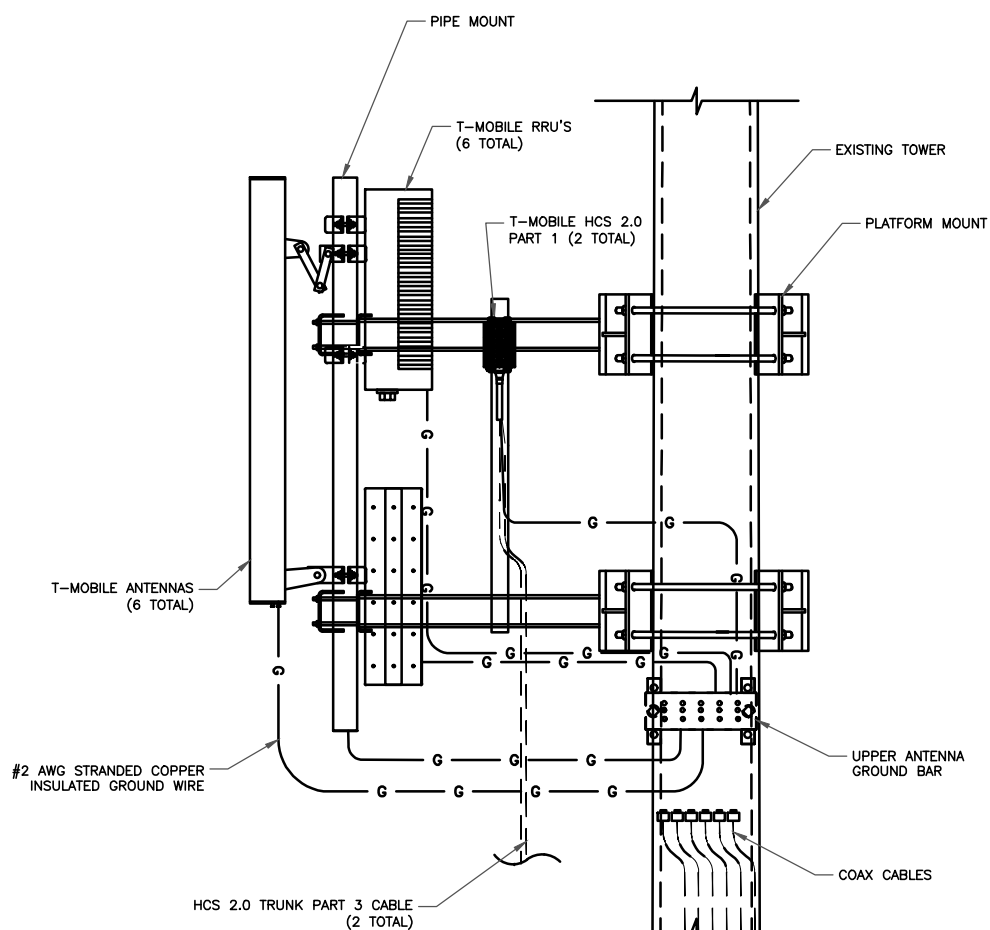
DN06266A
CO46077-A
SBA #: CO46077-A
20359 INDUSTRY AVE.
FOUNTAIN, CO 81008

SHEET TITLE:

MOUNTING DETAIL

SHEET NUMBER:

C-8



01/17/22

Exp. 10/31/23

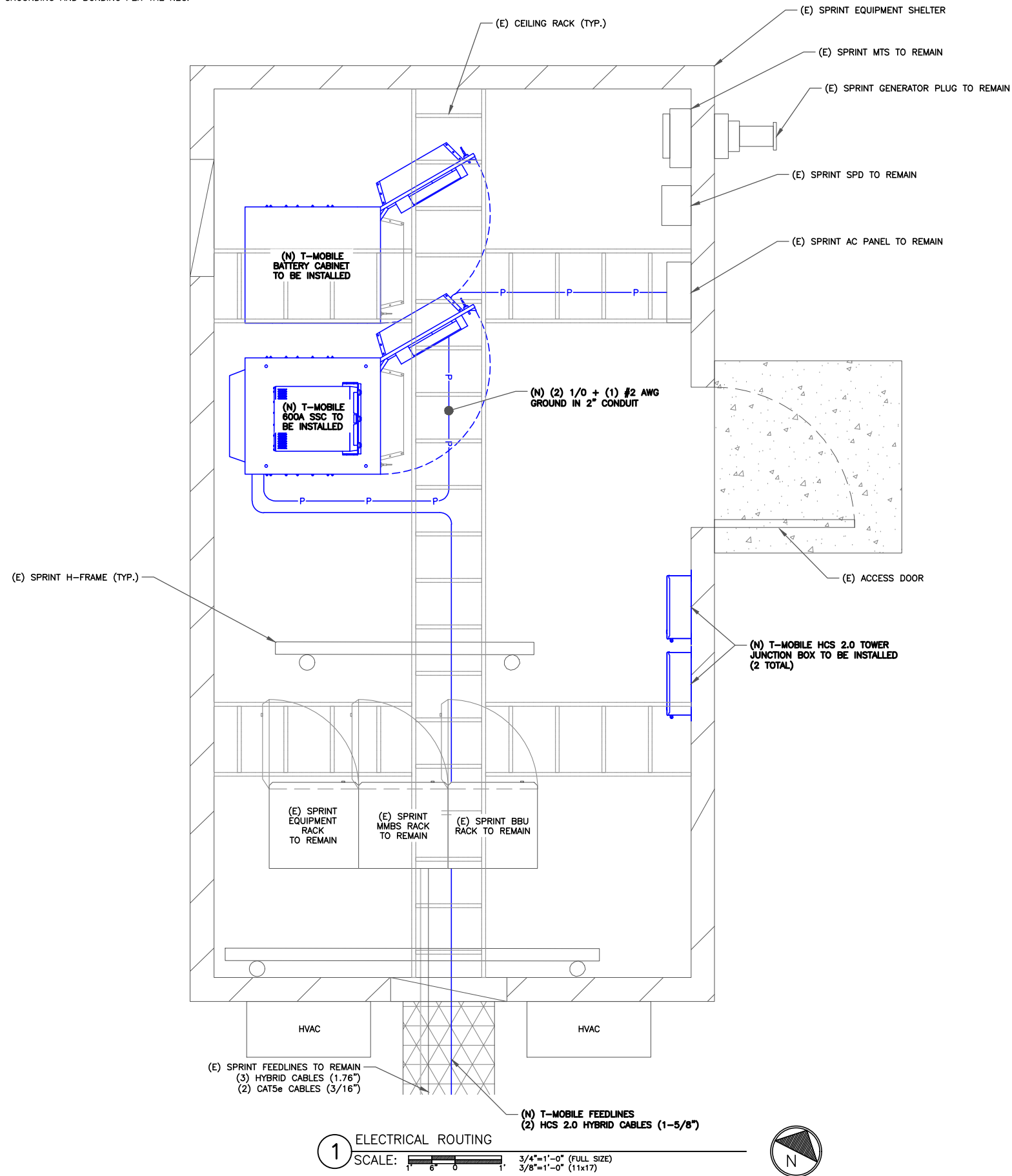
1 NOT USED
SCALE: NOT TO SCALE

2 ANTENNA/RRU MOUNT DIAGRAM
SCALE: NOT TO SCALE

PCD FILE # PPR-2174

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



2 NOT USED
SCALE: NOT TO SCALE

01/17/22
Exp. 10/31/23

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KHA PROJECT NUMBER:

KHCL- 7486

ENGINEER SEAL:



PROJECT INFORMATION:

DN06266A
CO46077-A
SBA #: CO46077-A
20359 INDUSTRY AVE.
FOUNTAIN, CO 81008

SHEET TITLE:

**ELECTRICAL
ROUTING**

SHEET NUMBER:

E-1

PCD FILE # PRR-2174

VOLTAGE	120/240V	AIC RATING	22,000 AMPS
MAIN BREAKER	200 AMP	BUSS RATING	200 AMPS
MOUNT	SURFACE	NEUTRAL BAR	YES
ENCLOSURE TYPE	NEMA 3R	GROUND BAR	YES
PANEL STATUS	EXISTING	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	GENERATOR MAIN	200	2	OFF	0	1.25	0		1.25	0	OFF	1	-	TVSS	2
3		200	2	OFF	0	1.25		0	1.25	0	OFF	1	-		4
5	SPACE	-	1	N/A	0	1.25	0		1.25	0	N/A	1	-	SPACE	6
7	SPACE	-	1	N/A	0	1.25		625	1.25	500	ON	1	20	LIGHT	8
9	SUB PANEL	100	2	ON	9,150	1.25	11687.5		1.25	200	ON	1	10	FAN	10
11		100	2	ON	9,150	1.25		11617.5	1.00	180	ON	1	20	TELCO GFI	12
13	NEW SSC CABINET	150*	2	ON	9,600	1.25	12000		1.25	0	N/A	1	-	SPACE	14
15		150*	2	ON	9,600	1.25		12000	1.25	0	N/A	1	-	SPACE	16
17	SPACE	-	1	N/A	0	1.25	0		1.25	0	N/A	1	-	SPACE	18
19	SPACE	-	1	N/A	0	1.25		0	1.25	0	N/A	1	-	SPACE	20
21	SPACE	-	1	N/A	0	1.25	0		1.25	0	N/A	1	-	SPACE	22
23	SPACE	-	1	N/A	0	1.25		0	1.25	0	N/A	1	-	SPACE	24
							23687.5	24243							

OVERALL LOAD SUMMARY	
TOTAL SERVICE LOAD KVA	47.93
AMPS	199.71

= Loading provided by T-Mobile.
 * = New 150A Breaker

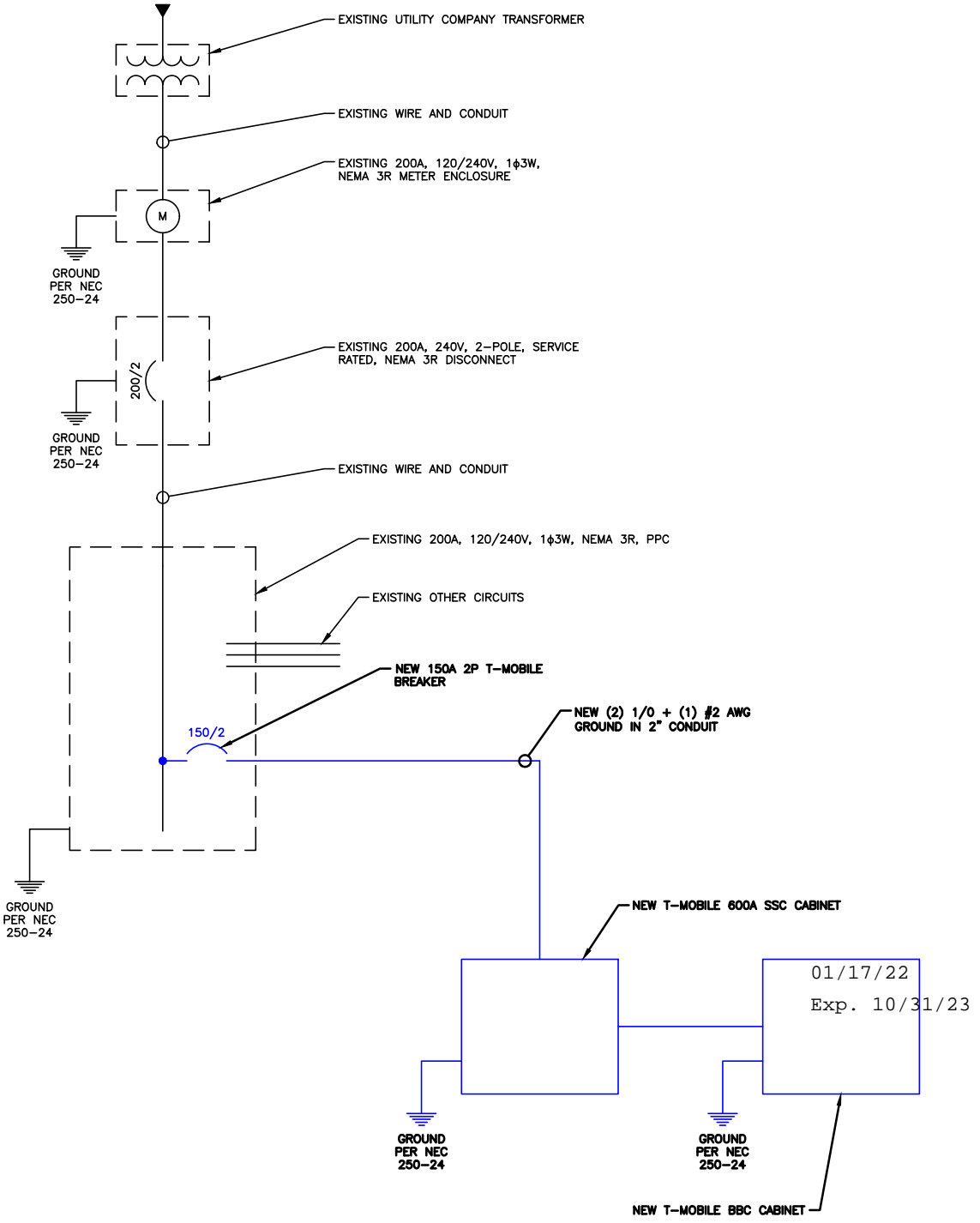
1 ELECTRICAL PANEL SCHEDULE

- CONTRACTOR SHALL INSPECT THE EXISTING CONDITIONS PRIOR TO SUBMITTING BID. ANY QUESTIONS ARISING DURING THE BID PERIOD IN REGARDS OF 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 TYPEWRITTEN 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:



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DRAWN BY: SGO CHECKED BY: DLF

KHA PROJECT NUMBER: KHCL-7486

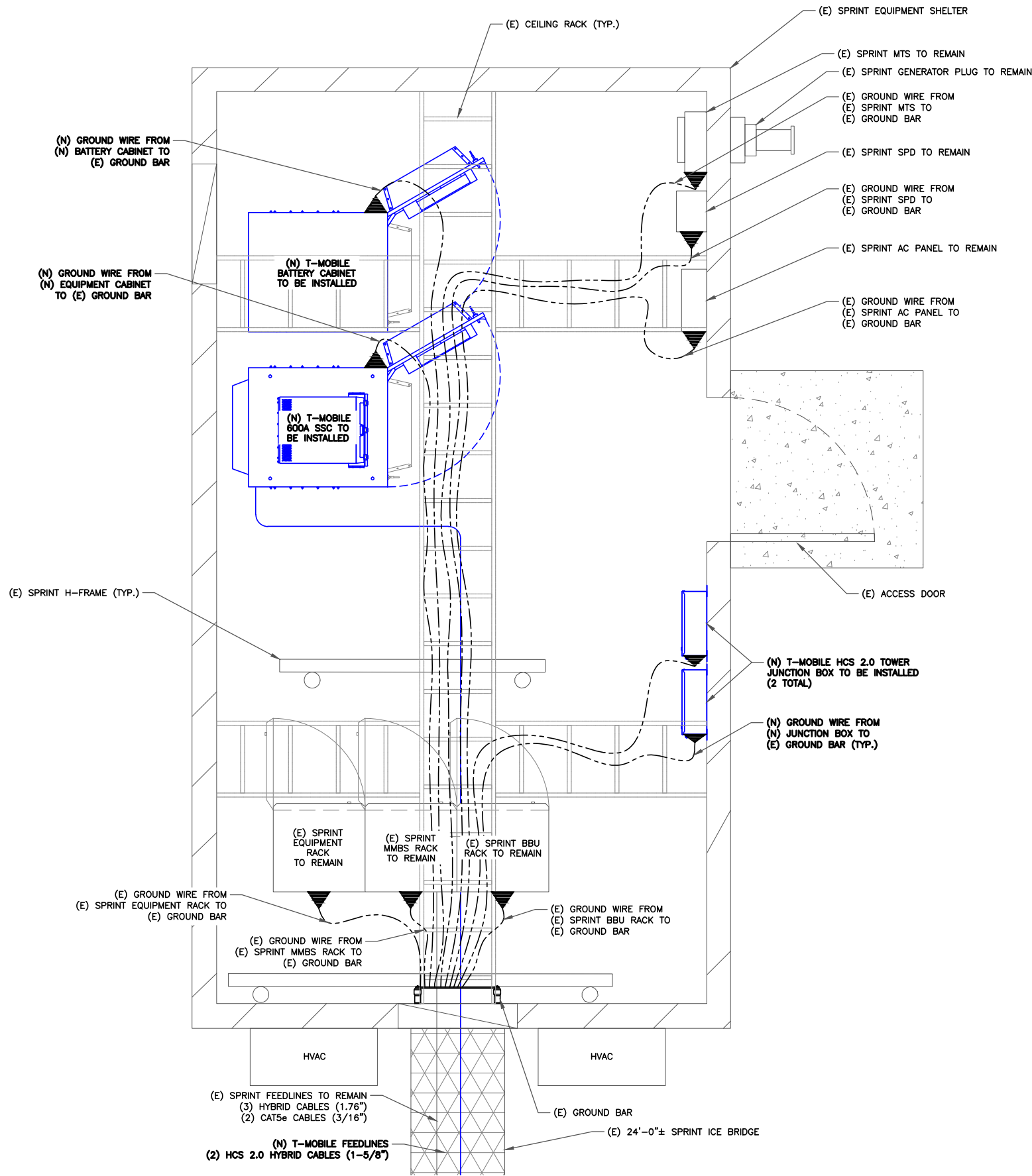
ENGINEER SEAL:

 PROJECT INFORMATION:

DN06266A
 CO46077-A
 SBA #: CO46077-A
 20359 INDUSTRY AVE.
 FOUNTAIN, CO 81008

SHEET TITLE:
PANEL SCHEDULE & ONE-LINE DIAGRAM

SHEET NUMBER:
E-2



INSTALLER NOTE:
ALL TRENCHING REQUIRED WITHIN COMPOUND SHALL BE PERFORMED BY HAND-DIGGING ONLY.

LEGEND:

- ▲ MECHANICAL CONNECTION
- ⊗ GROUND ROD
- ⊠ TEST WELL
- EXOTHERMIC WELD
- GROUND CONDUCTOR

01/17/22
Exp. 10/31/23

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



T-Mobile
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PLANS PREPARED BY:

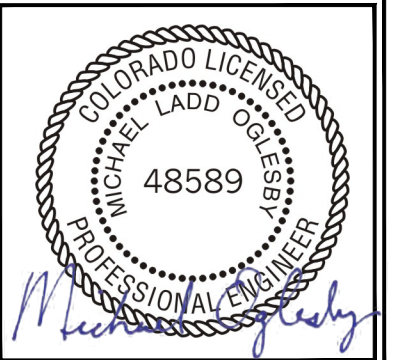
Kimley»Horn

421 FAYETTEVILLE ST, SUITE 600
RALEIGH, NC 27601

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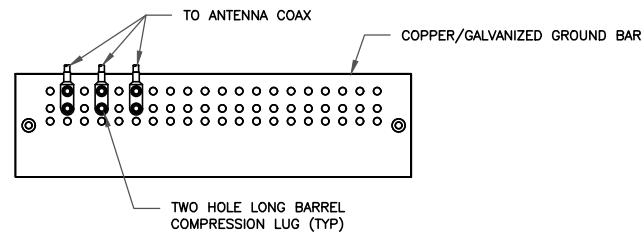


PROJECT INFORMATION:
DN06266A
CO46077-A
SBA #: CO46077-A
20359 INDUSTRY AVE.
FOUNTAIN, CO 81008

SHEET TITLE:
GROUNDING DIAGRAM

SHEET NUMBER:
G-1

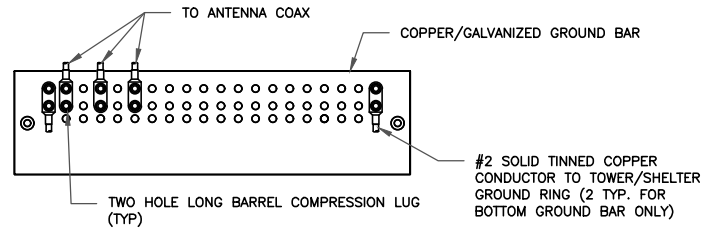
PCD FILE # PRR-2174



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

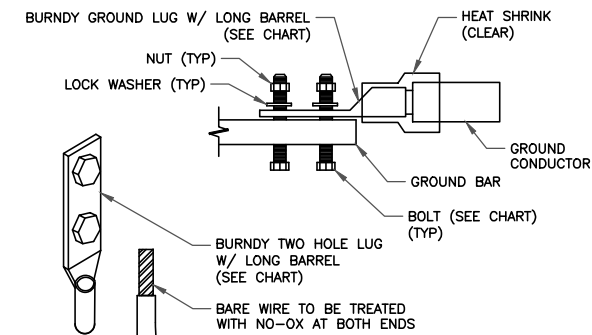


NOTES:

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

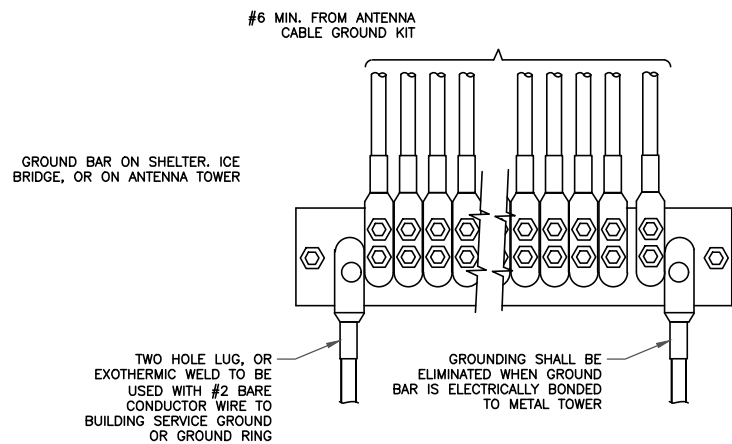
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 SOLID TINNED	YA3C-2TC38	3/8" - 16 NC SS 2 BOLT
#2 STRANDED	YA2C-2TC38	3/8" - 16 NC SS 2 BOLT
#2/0 STRANDED	YA26-2TC38	3/8" - 16 NC SS 2 BOLT
#4/0 STRANDED	YA28-2N	1/2" - 16 NC SS 2 BOLT



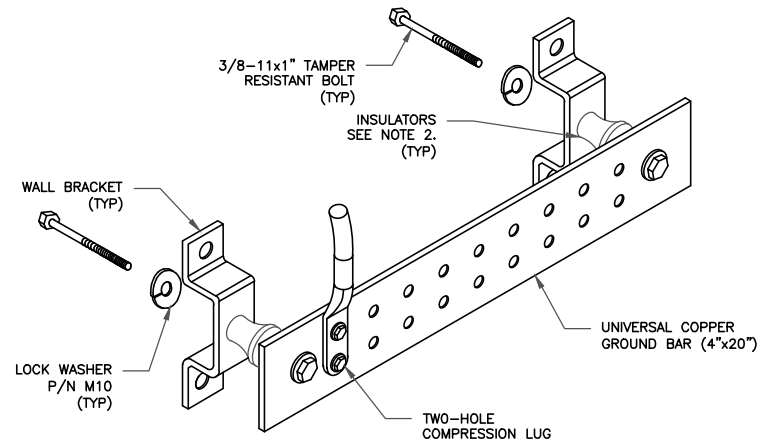
NOTE:

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



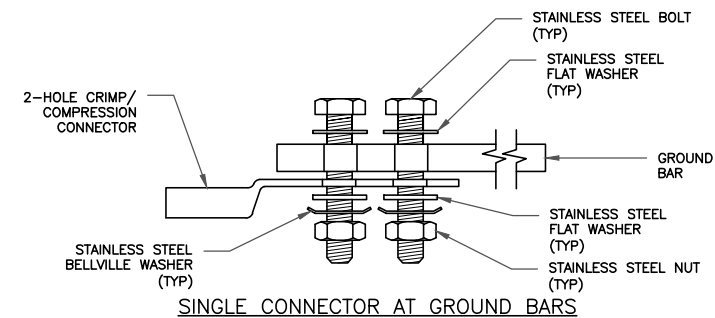
4 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



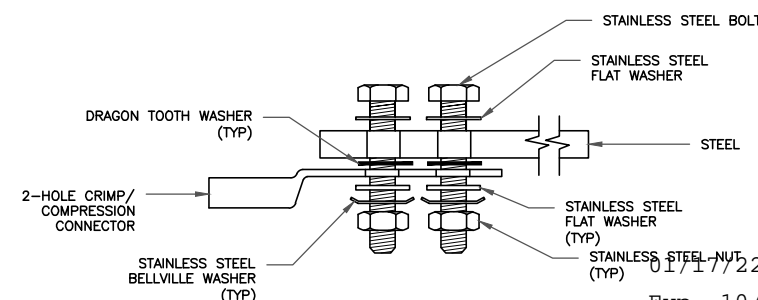
NOTES:

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.

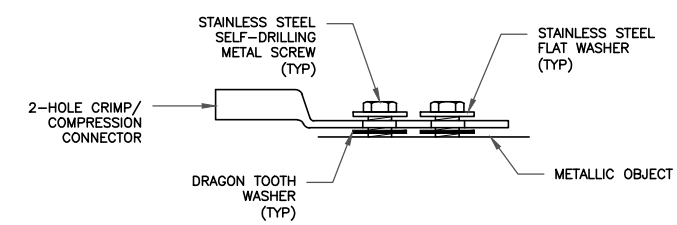
5 GROUND BAR DETAIL
SCALE: NOT TO SCALE



SINGLE CONNECTOR AT GROUND BARS

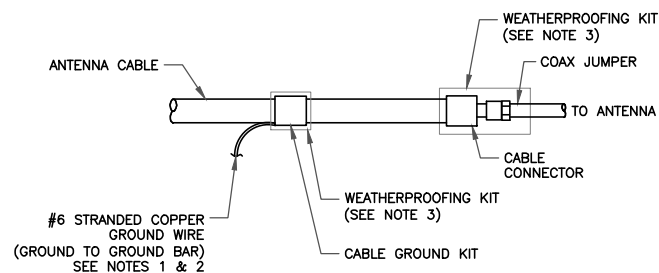


SINGLE CONNECTOR AT STEEL OBJECTS



SINGLE CONNECTOR AT METALLIC/STEEL OBJECTS

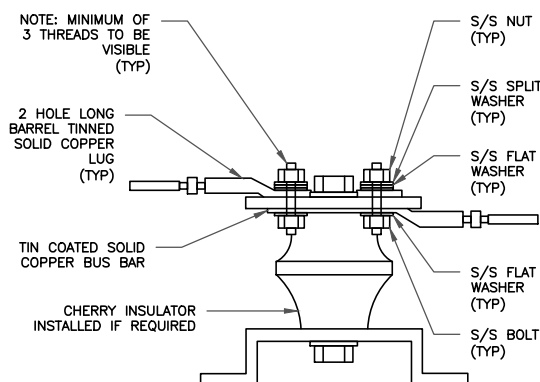
8 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



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

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PLANS PREPARED BY:

Kimley»Horn

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REV: DATE: DESCRIPTION: BY:

REV	DATE	DESCRIPTION	BY
2	08/30/21	REVISED PER COUNTY	LMS
1	08/30/21	REVISED PER CLIENT	DLF
0	07/28/21	ISSUED FOR CONSTRUCTION	SGO
A	07/22/21	ISSUED FOR REVIEW	SGO

DRAWN BY: CHECKED BY:

SGO DLF

KHA PROJECT NUMBER:

KHCLC- 7486

ENGINEER SEAL:



PROJECT INFORMATION:

DN06266A
CO46077-A
SBA #: CO46077-A
20359 INDUSTRY AVE.
FOUNTAIN, CO 81008

SHEET TITLE:

GROUNDING
DETAILS

SHEET NUMBER:

G-2