

SIXTH AMENDMENT TO REVENUE GENERATING CONTRACT

THIS SIXTH AMENDMENT TO REVENUE GENERATING CONTRACT ("Amendment") is made and entered into on May 5, 2021 ("Effective Date"), by and between Washtenaw County ("Landlord"), and T-Mobile Central LLC, a Delaware limited liability company ("Tenant").

Recitals

The parties hereto recite, declare and agree as follows:

A. Landlord and Tenant entered into a Revenue Generating Contract (the "Lease"), dated April 11, 2000, which was subsequently amended with the First Amendment to Revenue Generating Contract on December 19, 2007, which was subsequently amended with the Second Amendment to the Revenue Generating Contract on October 17, 2012, which was subsequently amended with the Third Amendment to Revenue Generating Contract on May 22, 2015, and again with the Fourth Amendment to Revenue Generating Contract dated March 31, 2016, and again with the Fifth Amendment to Revenue Generating Contract dated July 6, 2017(collectively, the "Lease")located at 532 Automall Dr., Ann Arbor, MI (the "Premises").

B. Landlord and Tenant desire to enter into this Amendment in order to modify and amend certain provisions of the Lease.

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Landlord and Tenant covenant and agree as follows:

1. Landlord Consent. Landlord hereby grants Tenant the right and consents to Tenant's expansion of the Premises and the installation of Anchor Construction Drawings as described and depicted on Exhibit "B-3", which is attached hereto and by this reference incorporated herein, which equipment shall be considered part of the "Antenna Facilities" under the Lease. The installation, as depicted in the Construction Drawings on Exhibit "B-3" constitutes the entire Premises under the Lease. B-3 shall be incorporated to modify the original Exhibit A.

2. Rent and Costs. The Rent that Tenant pays Landlord will be increased by Three Hundred Dollars (\$300) per month as of thirty (30) days from the date of commencement of construction for the modification of the additional equipment. Thereafter, Rent, inclusive of the Three Hundred Dollars (\$300) per month increase, shall be payable in accordance with the terms of the Lease. The parties hereby agree that, as of the date of this Amendment, there are no payment obligations of Tenant under the Lease, including but not limited to the payment of Rent, or other costs or fees, that are overdue; and that any future charges payable under the Lease by Tenant shall be billed by Landlord to Tenant within twelve (12) months from the date the charges were incurred or due; otherwise the charges shall be deemed time-barred, waived and released by Landlord.

2. Tenant's Notice Address. Tenant's notice addresses in the Lease are deleted in their entirety and replaced with the following:

If to Tenant: T-Mobile USA, Inc.  
12920 S.E. 38th Street  
Bellevue, WA 98006  
Attn.: Lease Compliance  
Site No. DE05610F

3. Terms; Conflicts. The terms and conditions of the Lease are incorporated herein by this reference, and capitalized terms used in this Amendment shall have the same meanings such terms are given in the Lease. Except as specifically set forth herein, this Amendment shall in no way modify, alter or amend the remaining terms of the Lease, all of which are ratified by the parties and shall remain in full force and effect. To the extent there is any

T-Mobile Site No: DE05610F  
T-Mobile Site Name: Washtenaw County  
Market: Detroit

conflict between the terms and conditions of the Lease and this Amendment, the terms and conditions of this Amendment will govern and control.

4. Approvals. Landlord represents and warrants to Tenant that the consent or approval of no third party, including, without limitation, a lender, is required with respect to the execution of this Amendment, or if any such third party consent or approval is required, Landlord has obtained any and all such consents or approvals.

5. Authorization. The persons who have executed this Amendment represent and warrant that they are duly authorized to execute this Amendment in their individual or representative capacity as indicated.

IN WITNESS WHEREOF, the parties have executed this Amendment on the day and year first written above.

**ATTESTED TO:**

*Lawrence Kestenbaum*  
By: Signed by Deputy E Golembiewski for L. Lawrence Kestenbaum 05/17/2021  
Lawrence Kestenbaum (DATE)  
County Clerk/Register

**WASHTENAW COUNTY**

*Gregory Dill* 05/13/2021  
By: Gregory Dill (DATE)  
County Administrator

**APPROVED AS TO CONTENT:**

*David R. Haltman 5/15/21*  
By: David R. Haltman (DATE)  
Director, Emergency Services Division

**T-Mobile Central LLC, a limited liability company**

*Michael Lord* 4/12/2021  
By: Michael Lord (DATE)  
(Authorized signator) Director Engineering and Operations

**APPROVED AS TO FORM BY**

BY: Michelle K. Billard (DATE)  
Office of Corporation Counsel

TMO Legal  
2021.04.02  
10:10:39  
-04'00'



T-Mobile Site No: DE05610F  
T-Mobile Site Name: Washtenaw County  
Market: Detroit

EXHIBIT B-3

T-Mobile Site No: DE05610F  
T-Mobile Site Name: Washtenaw County  
Market: Detroit



**PROJECT DESCRIPTION:**  
 - MOBILITY TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY

**EQUIPMENT TO BE REMOVED:**

- (1) EQUIPMENT CABINET (HCS)
- (1) TRUNK CABLE (HCS)
- (1) TRUNK-8507-A2M (HSA)
- (3) CBC19231-43-2X DIPLEXERS AT ANTENNAS
- (2) LARGE COMP JUNCTION BOX
- (1) FRF RRUS
- (1) FRF RRUS
- (1) FXFB RRU
- (1) FXFB RRU
- (1) 225' NSN HIGH CAP HCS CABLE

**EQUIPMENT TO BE INSTALLED:**

- (1) 1500W POWER CABINET
- (1) PURCELL HPLJ LARGE BATTERY CABINET
- (2) AMA
- (1) FEW-55C-RS-VI (CCTO)
- (1) AHIQA (ACTIVE ANTENNA-MASSIVE MIMO)
- (1) AHFG
- (2) NOKIA HCS 2.0 TRUNK CABLES
- (2) NOKIA HCS 2.0 TOWER JUNCTION BOX

**SITE NAME:**  
 WASHTEENAW COUNTY CO-LO

**SITE NUMBER:**  
 DE05610F

**SITE ADDRESS:**  
 532C AUTO MALL DRIVE  
 ANN ARBOR, MI 48103

**SITE COORDINATES AND ELEVATION:**  
 LOCATION: N 83° 48' 36.4" E  
 GRID ELEV: +/- 925' AMSL

**SITE INFORMATION**

**CLIENT:**  
 PYRAMID NETWORK SERVICES, INC  
 28505 SCHOOLCRAFT ROAD, BLDG #6  
 LIVONIA, MI 48150  
 PHONE: (734) 367-7200

**PROJECT CONSULTANT:**  
 ERIC ENGINEERING SERVICES, LLC  
 6615 TOWPATH ROAD, SUITE 200  
 ANN ARBOR, MI 48106  
 PHONE: (734) 882-2234  
 EMAIL: ERIC@ERESVCS.COM

**ARCHITECTURE AND ENGINEERING:**  
 MISSION 1 COMMUNICATIONS  
 SCOTT HARTMAN  
 10000 WASHINGTON DRIVE, SUITE C  
 FORT WAYNE, IN 46804  
 PHONE: (260) 436-3922  
 EMAIL: SHARTMAN@MISSION1.COM

**LANDLORD:**  
 WASHTEENAW COUNTY BUILDING AUTHORITY

**PARCEL:**  
 08-25-000-024

**CONSULTANT TEAM**

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

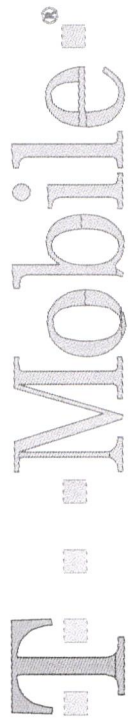
RECEIVED AND ACCEPTED

**PROJECT:**  
 ANCHOR

**SITE NUMBER:**  
 DE05610F

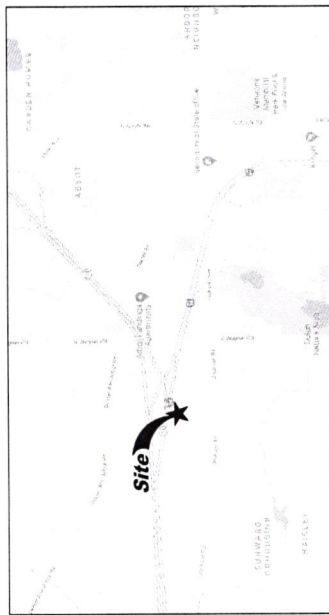
**SITE NAME:**  
 WASHTEENAW COUNTY CO-LO

**SITE LOCATION:**  
 532C AUTO MALL DRIVE  
 ANN ARBOR, MI 48103



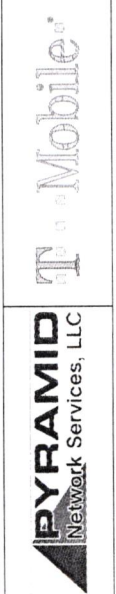
**DRAWING INDEX**

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PROJECT INFORMATION, LOCATION MAPS AND DRAWING INDEX

T-1	WASHTEENAW COUNTY CO-LO 532C AUTO MALL DRIVE ANN ARBOR, MI 48103
DE05610F	



REVISIONS

NO.	DATE	BY	CHK	APP'D
0	02-19-21	AMI	SAH	
A	01-08-21	AMI	SAH	

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## GENERAL NOTES

- THE PROPOSED INSTALLATION WILL BE UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SEWER SERVICE.
- THE PROPOSED INSTALLATION IS UNMANNED AND IS NOT FOR HUMAN HABITATION (NO HANDICAP ACCESS IS REQUIRED).
- OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION, APPROXIMATELY 2 TIMES PER MONTH, BY T-MOBILE TECHNICIANS.
- NO NOISE, SMOKE, DUST OR ODOR WILL RESULT FROM THIS PROPOSAL.
- OUTDOOR STORAGE AND SOLID WASTE CONTAINERS ARE NOT PROPOSED.
- ALL REFERENCES TO SPECIFIC STANDARDS FOR THIS PROPOSAL ARE UNDERSTOOD TO BE THE LATEST VERSION.
- THE GENERAL CONTRACTOR MUST UNDERGO A SITE VISIT TO CAREFULLY EXAMINE AND UNDERSTAND THE SCOPE OF THE WORK REQUIRED BEFORE BID SUBMISSION. NO COMPENSATION IN ANY FORM WILL BE PAID FOR EXPENSES RESULTING FROM FAILURE TO DO SO.
- IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONSTRUCTION MANAGER.
- CONTRACTOR IS RESPONSIBLE FOR FIELD MEASUREMENTS TO CONFIRM LENGTHS OF CABLE TRAYS, ELECTRICAL LINES, AND ANTENNA CABLES.
- ROUTING OF ALL CONDUITS, CABLES, CABLE TRAYS, ETC. IS INDICATED AT PROPOSED LOCATIONS ONLY. CONFIRM THE EXACT ROUTING WITH THE ON-SITE CONSTRUCTION MANAGER PRIOR TO THE START OF WORK.
- ALL DAMAGE OR OPENING UP OF THE EXISTING STRUCTURE MUST BE MADE GOOD TO THE PRE-CONSTRUCTION CONDITION OR BETTER.
- INSPECTION OF COMPLETED WORK IS REQUIRED BEFORE COVERING UP. PROVIDE A MINIMUM OF 72 HOURS NOTICE TO CONSULTANT.
- REMOVE AND CLEAN UP ANY DEBRIS OR MATERIAL FROM THE SITE THROUGHOUT THE DURATION OF THE CONTRACT ON A DAILY BASIS AND UPON COMPLETION OF THE WORK AS DIRECTED BY THE CONSTRUCTION MANAGER.
- OBTAIN AND PAY FOR ALL ELECTRICAL PERMITS AND INSPECTIONS REQUIRED FOR COMPLETION OF WORK AND ACCEPTANCE. PROVIDED CERTIFICATED TO THE CONSTRUCTION MANAGER VERIFYING THAT THE WORK CONFORMS TO THE REQUIREMENTS OF ALL CODES AND AUTHORITIES HAVING JURISDICTION.
- PROVIDE T-MOBILE WITH A WRITTEN WARRANTY, EFFECTIVE FOR ONE YEAR AFTER DATE OF ACCEPTANCE, FOR THE COMPLETE INSTALLATION REPAIR OR REPLACE ANY DEFECT ARISING DURING THIS PERIOD AT NO EXTRA COST TO T-MOBILE.
- NO DEVIATIONS FROM DESIGN SHOWN ON THESE DRAWINGS IS ALLOWED WITHOUT WRITTEN APPROVAL FROM THE CONSULTANT. FAILURE TO OBSERVE THIS RULE MAY RESULT IN CONTRACTOR CORRECTING THE INSTALLATION AT THEIR EXPENSE.
- THE CONTRACTOR SHALL COMPLY WITH ALL LOCAL AND NATIONAL CODES, REGULATIONS AND SAFETY REGULATIONS, ALL OSHA REGULATIONS, ALL PUBLIC AND MUNICIPAL AUTHORITIES, AND ANY UTILITY COMPANIES' REGULATIONS AND DIRECTIVES.
- THE DRAWINGS AND SPECIFICATIONS ARE A GENERAL DIRECTIVE FOR THE SCOPE OR WORK. EXACT DIMENSIONS AND LOCATIONS MAY CHANGE IN THE FIELD. THE CONTRACTOR IS TO VERIFY THE DIMENSIONS AND LOCATIONS AND REPORT ANY AND ALL DISCREPANCIES TO REPRESENTATIVE. ANY MINOR ERRORS AND OMISSIONS IN THE DRAWINGS AND SPECIFICATIONS DO NOT EXCUSE THE CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
- VERIFICATION THAT EXISTING SUPPORT STRUCTURES CAN SUPPORT THE PROPOSED ANTENNA, COAX AND ADDITIONAL EQUIPMENT LOADING IS TO BE DONE BY OTHERS.
- ANTENNA AZIMUTHS SHOWN ON THESE DRAWINGS ARE BASED ON TRUE NORTH. ALL AZIMUTHS MUST BE VERIFIED WITH THE CORRECT SMR PRIOR TO CONSTRUCTION.

## ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR	JT	JOINT
AFC	ABOVE FINISHED GRADE	LAM	LAMINATED
AFS	ABOVE FINISHED SLAB	LF	LINEAL FOOT
ALUM	ALUMINUM	MANUF	MANUFACTURER
AB	ANCHOR BOLT	MAX	MAXIMUM
Z	ANGLE	MECH	MECHANICAL
ARCH	ARCHITECTURAL	MH	MANHOLE
BTS	BASE TRANSMISSION SYSTEM	MM	MILLIMETER
BLDG	BUILDING	MIN	MINIMUM
BM	BEAM	MISC	MISCELLANEOUS
BOT	BOTTOM	MPH	MILES PER HOUR
B.O.	BOTTOM OF	MTL	METAL
BOC	BOTTOM OF CONCRETE	NIC	NOT IN CONTRACT
BOS	BOTTOM OF STEEL	NOM	NOMINAL
CJ	CONTROL JOINT	NTS	NOT TO SCALE
CL	CENTER LINE	OC	ON CENTER
CLG	CEILING	OD	OUTSIDE DIAMETER
CLR	CLEAR	OH	OVERHEAD
CMU	CONCRETE MASONRY UNIT	OPNG	OPENING
COL	COLUMN	OPP	OPPOSITE
CONC	CONCRETE	PCS	PERSONAL COMMUNICATION SYSTEM
CONST	CONSTRUCTION	P	PLATE
CONT	CONTINUOUS	PR	PAIR
CTR	CENTER	PSI	POUNDS PER SQUARE INCH
DIA / Ø	DIAMETER	PSF	POUNDS PER SQUARE FOOT
DTL	DETAIL	PT	PRESSURE TREATED
(E)	EXISTING	RAD	RADIUS
EA	EACH	RD	ROOF DRAIN
EJ	EXPANSION JOINT	REINF	REINFORCED/REINFORCING
ELEC	ELECTRIC/ELECTRICAL	REQ'D	REQUIRED
EL	ELEVATION	RM	ROOM
EQ	EQUAL	R/W	RIGHT OF WAY
EW	EACH WAY	SCHED	SCHEDULE
EXP	EXPANSION	SECT	SECTION
EXT	EXTERIOR	SF	SQUARE FOOT
FD	FLOOR DRAIN	SM	SMILAR
FHFB	FLEXI RRH 4-PIPE 1500	SO FT	SQUARE FOOT
FIN	FINISH	SS	STAINLESS STEEL
FIN FLR	FINISH FLOOR	STD	STANDARD
FLR	FLOOR	STL	STEEL
FSMF	FLEXI MULTIRADIO SYSTEM MODULE	STRUC	STRUCTURAL
FTG	FOOTING	TEMP	TEMPORARY
GA	GAUGE	THK	THICK
GALV	GALVANIZED	TMA	TOWER MOUNTED ANTENNA
GYP	GYPSPUM	T.O.	TOP OF
GB	GYPSPUM BOARD	TOS	TOP OF STEEL
HM	HOLLOW METAL	TOC	TOP OF CONCRETE
HOR	HORIZONTAL	TYP	TYPICAL
HR	HOUR	UNO	UNLESS NOTED OTHERWISE
HT	HEIGHT	VERT	VERTICAL
HVAC	HEATING VENTILATION AIR CONDITIONING	W/	WITH
INSUL	INSULATION	W/M	WELDED WIRE MESH
INT	INTERIOR		

## LEGEND AND SYMBOLS

CHAIN LINK FENCE	
CEDAR FENCE	
POWER	
UNDERGROUND POWER	
TELCO	
UNDERGROUND TELCO	
OVERHEAD POWER	
BOUNDARY	
CENTERLINE	
REVISION BUG	
ELEVATION	
DETAIL NUMBER	
SHEET NUMBER	
SECTION CUT	
SECTION NUMBER	
SHEET NUMBER	

EXP 10/31/2021



*G. J. Suhr*  
02-19-21

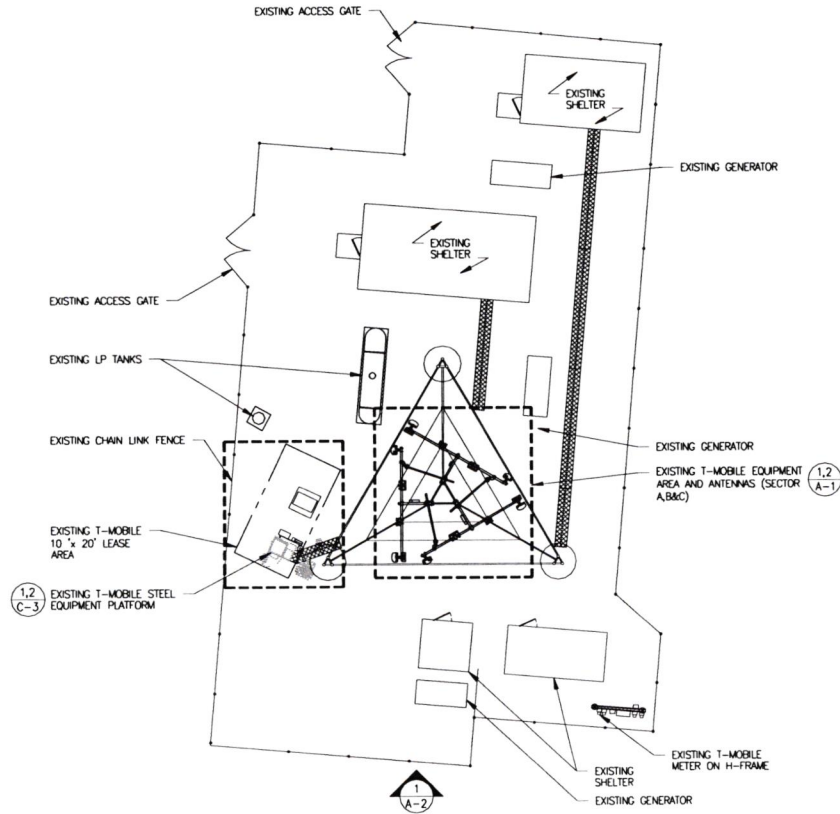
NO.	DATE	REVISIONS	BY	CHK	APP'D
0	02-19-21	FINAL CONSTRUCTION DRAWINGS	AML	SAH	
A	01-08-21	PRELIMINARY CDS	AML	SAH	



GENERAL NOTES		GN-1
WASHTENAW COUNTY CO-LO 532C AUTO MALL DRIVE ANN ARBOR, MI 48103		DE05610F

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### Existing Site Location Plan

SCALE: N.T.S.



EXP 10/31/2021



*G. J. Suhr*  
02-19-21

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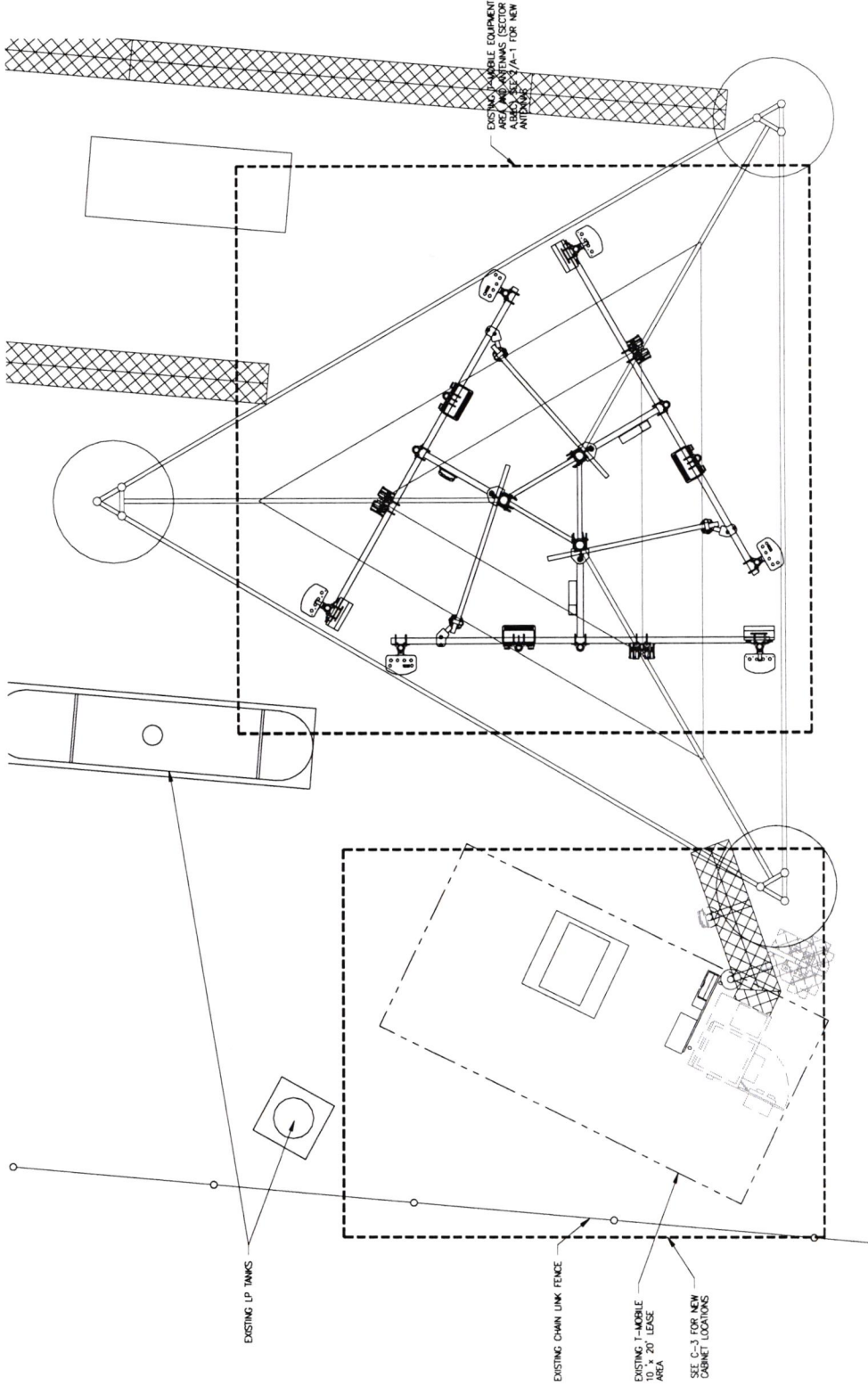
EXISTING SITE LOCATION PLAN  
WASHTENAW COUNTY CO-LO  
532C AUTO MALL DRIVE  
ANN ARBOR, MI 48103

C-1

DE05610F

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Existing Enlarged Site Plan  
SCALE: 3/16" = 1'-0"

EXP 10/31/2021  
STATE OF MICHIGAN  
GREGORY J. SUHR  
ENGINEER  
No. 82010658665  
LICENSED PROFESSIONAL ENGINEER  
7/9 July  
02-19-21



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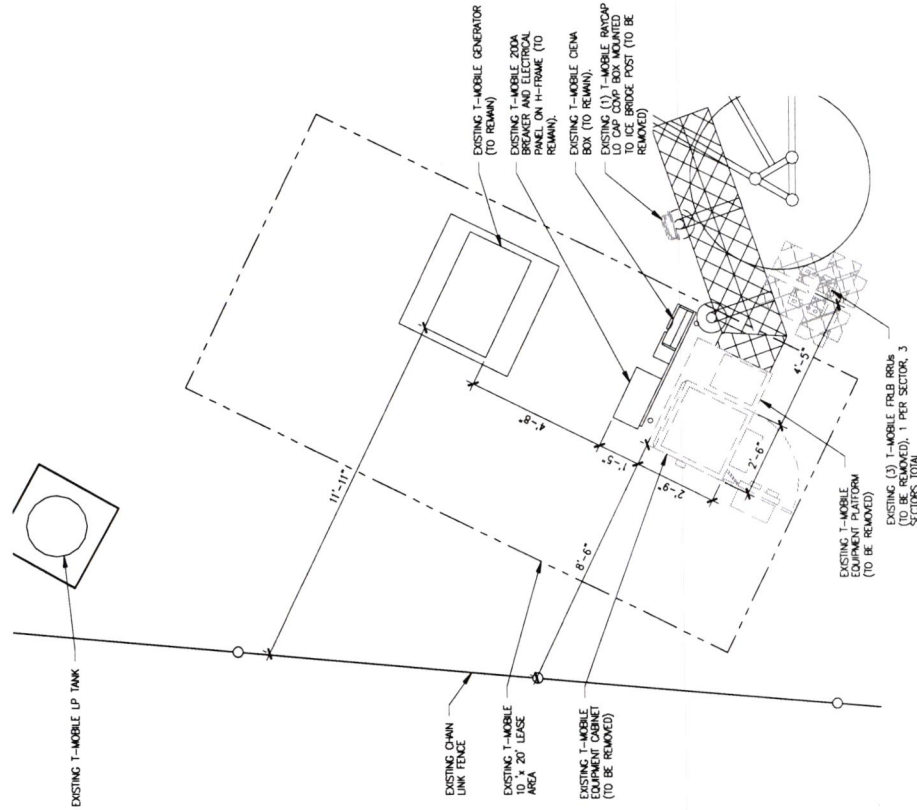
EXISTING ENLARGED SITE PLAN  
C-2  
WASHTENAW COUNTY CO-LO  
532C AUTO MALL DRIVE  
ANN ARBOR, MI 48103  
DE05610F

**PYRAMID** Network Services, LLC  
**T-Mobile**

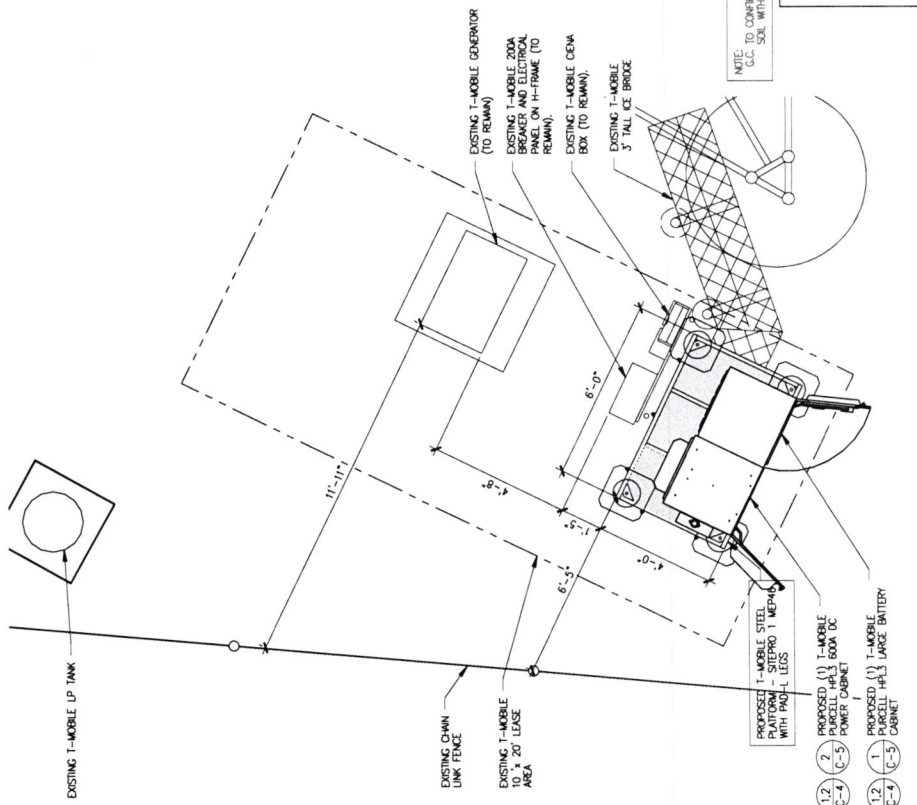


NO.	DATE	BY	CHK	APP'D	REVISIONS
0	02-19-21	JML	SAH		FINAL CONSTRUCTION DRAWINGS
1	01-08-21	JML	SAH		PRELIMINARY CDS





**1** Existing Enlarged Equipment Plan  
SCALE: 1/4" = 1'-0"



**2** Proposed Enlarged Equipment Plan  
SCALE: 1/4" = 1'-0"

NOTE: TO CONFIRM PLATFORM IS PLACED ON COMPACTED S.C. SOIL WITH PROPER BEARING PRESSURE.

EXP 10/31/2021

STATE OF MICHIGAN

GREGORY J. SUHR  
ENGINEER  
No. 6201053965

LICENSED PROFESSIONAL ENGINEER

02-19-21

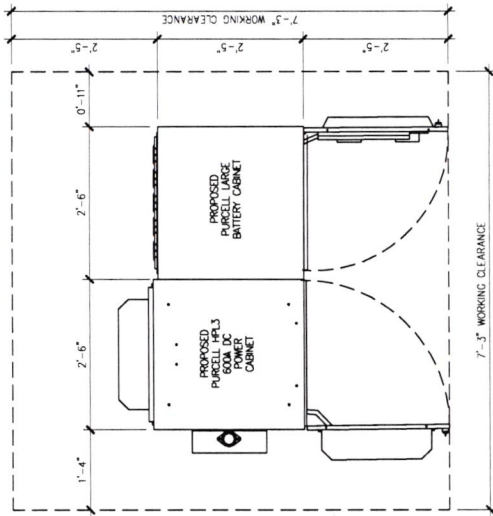
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ENLARGED EQUIPMENT PLAN	C-3
WASHTENAW COUNTY CO-LO 532C AUTO MALL DRIVE ANN ARBOR, MI 48103	DE05610F

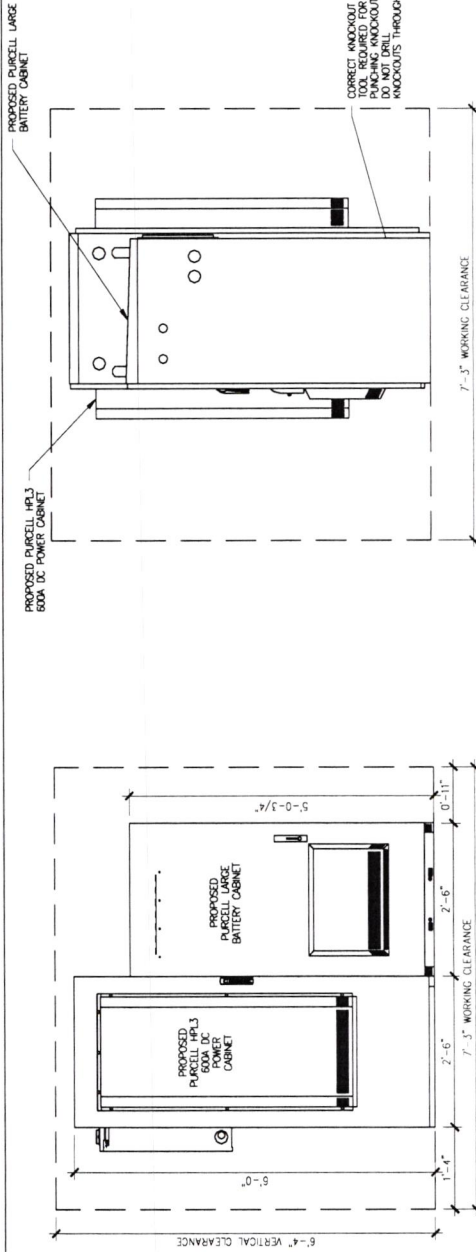


NO.	DATE	REVISIONS
0	02-19-21	FINAL CONSTRUCTION DRAWINGS
A	01-08-21	PRELIMINARY CDS
		BY: [Signature]
		APP'D: [Signature]



TYPICAL EQUIPMENT LAYOUT.  
SEE 2/0-3 FOR ACTUAL  
SITE EQUIPMENT LAYOUT

1 Equipment Plan Layout  
SCALE: 1/2" = 1'-0"



2 Equipment Elevation Layout  
SCALE: 1/2" = 1'-0"

EXP 10/31/2021  
STATE OF MICHIGAN  
GREGORY J. SUHR  
ENGINEER  
No. 6201063865  
LICENSED PROFESSIONAL ENGINEER  
MJS  
02-19-21

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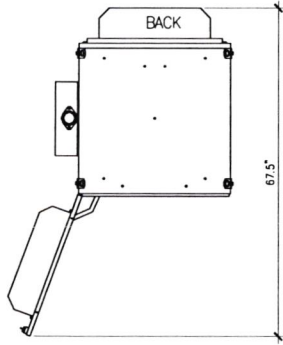
SITE CABINET CONFIGURATION	C-4
WASHTENAW COUNTY CO-LO 532C AUTO MALL DRIVE ANN ARBOR, MI 48103	DE05610F

**PYRAMID** Network Services, LLC

**T-Mobile**

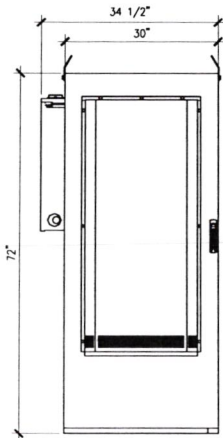


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1	01-08-21	PRELIMINARY CDS	AM	SAH	

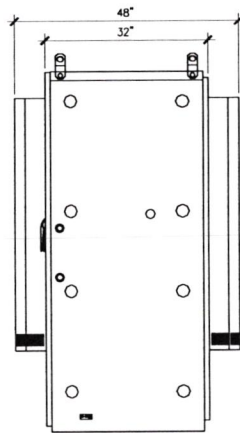


PROPERTY	VALUE	PROPERTY
HEIGHT	72 in (876 mm)	BASIC CABINET: ENCLOSURE, DC POWER PLANT W/OUT LIFTING BRACKETS
WIDTH	30 in (762 mm)	BASIC CABINET: ENCLOSURE, DC POWER PLANT
WIDTH W/AC LOAD CENTER	34-1/2 in (835 mm)	BASIC CABINET: ENCLOSURE, DC POWER PLANT W/AC SIDE MOUNTED LOAD CENTER
DEPTH	32 in (813 mm)	BASIC CABINET: ENCLOSURE, DC POWER PLANT
DEPTH WITH SHROULDS	48 in (1219 mm)	BASIC CABINET: ENCLOSURE, W/ FRONT AND REAR DAC SHROULDS
EST/ WEIGHT	850 lbs	BASIC CABINET WEIGHT WITH TOTAL OF 7 SUBRACKS INCLUDED

PLAN VIEW

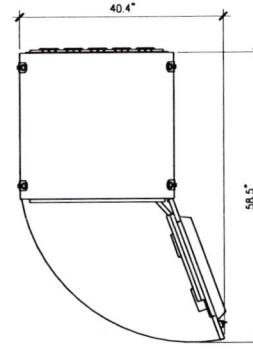


FRONT VIEW

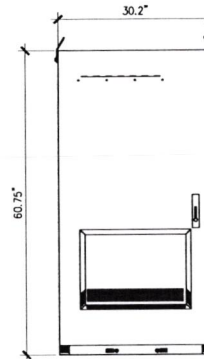


SIDE VIEW

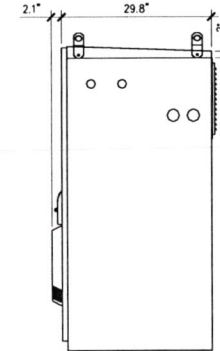
**1** Purcell HPL3 600A DC Power Cabinet  
SCALE: 1/2" = 1'-0"



PROPERTY	VALUE
HEIGHT	60.75 in (1543 mm)
WIDTH	30.2 in (768.17 mm)
WIDTH W/CAD	31.9 in (810.37 mm)
DEPTH	29.8 in (757.54 mm)
DOOR OPENING WIDTH	26.5 in (673.12 mm)
DOOR OPENING HEIGHT	55.6 in (1411.93 mm)
EST. WEIGHT	540 lbs (EMPTY) 2700 lbs (4 BATTERY STRINGS)



FRONT VIEW



SIDE VIEW

**2** Purcell HPL3 Large Battery Cabinet  
SCALE: 1/2" = 1'-0"

EXP 10/31/2021



*G. J. Suhr*  
02-19-21

NO.	DATE	REVISIONS	BY	CHK	APP'D
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CABINET DETAILS	
WASHTENAW COUNTY CO-LO	C-5
532C AUTO MALL DRIVE	
ANN ARBOR, MI 48103	DE05610F

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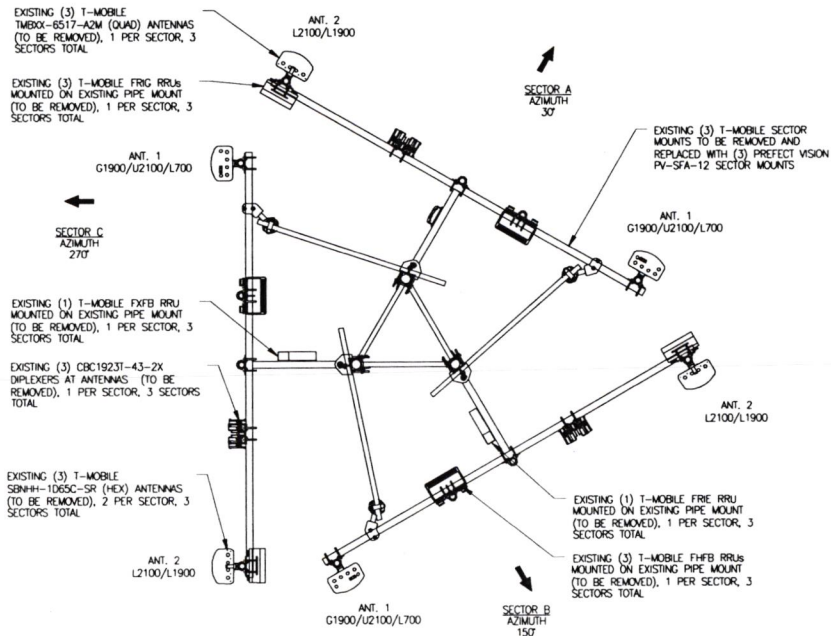
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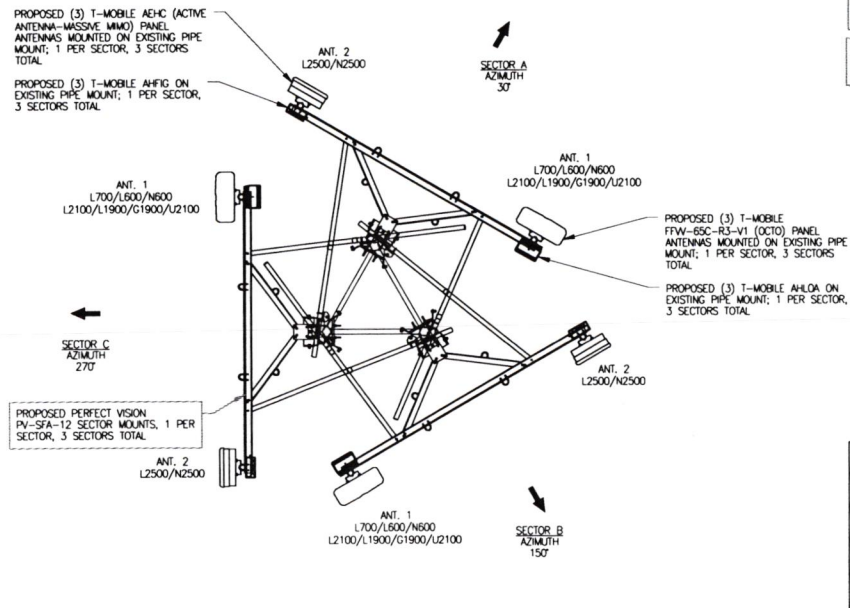
SECTOR	ANTENNA KEY								
	STATUS	ANTENNA MODEL	AZIMUTH	RAD CENTER	TYPE	COAXIAL FEEDER		FIBER/HYBRID CABLE FEEDER	
						SIZE	LENGTH	SIZE	LENGTH
SECTOR A	EXISTING (REMOVED)	SENH-1D65C-SR (HEX)	307	165'	G1900/L2100/L700	-	-	-	-
SECTOR A	EXISTING (REMOVED)	TMEXX-6517-A2M (QUAD)	307	165'	L2100/L1900	-	-	-	-
SECTOR B	EXISTING (REMOVED)	SENH-1D65C-SR (HEX)	1507	165'	G1900/L2100/L700	-	-	-	-
SECTOR B	EXISTING (REMOVED)	TMEXX-6517-A2M (QUAD)	1507	165'	L2100/L1900	-	-	-	-
SECTOR C	EXISTING (REMOVED)	SENH-1D65C-SR (HEX)	2707	165'	G1900/L2100/L700	-	-	-	-
SECTOR C	EXISTING (REMOVED)	TMEXX-6517-A2M (QUAD)	2707	165'	L2100/L1900	-	-	-	-

SECTOR	ANTENNA KEY									
	STATUS	ANTENNA NUMBER	ANTENNA MODEL	AZIMUTH	RAD CENTER	TYPE	POWER TILT		FIBER/HYBRID CABLE FEEDER	
							M. TILT	E. TILT	SIZE	LENGTH
SECTOR A	PROPOSED	A-1	FFW-65C-R3-V1 (OCTO)	307	165'	L700/L600/N600	0	2	HCS	-
SECTOR A	PROPOSED	A-2	AEHC (ACTIVE ANTENNA-MASSIVE MIMO)	307	165'	L2500/N2500	0	2	HCS	-
SECTOR B	PROPOSED	B-1	FFW-65C-R3-V1 (OCTO)	1507	165'	L700/L600/N600	0	2	HCS	-
SECTOR B	PROPOSED	B-2	AEHC (ACTIVE ANTENNA-MASSIVE MIMO)	1507	165'	L2500/N2500	0	2	HCS	-
SECTOR C	PROPOSED	C-1	FFW-65C-R3-V1 (OCTO)	2707	165'	L700/L600/N600	0	2	HCS	-
SECTOR C	PROPOSED	C-2	AEHC (ACTIVE ANTENNA-MASSIVE MIMO)	2707	165'	L2500/N2500	0	2	HCS	-

RRU KEY						
RRU SECTOR	RRU VENDOR	EQUIP.	MODEL NO.	EQUIP. CENTER	QTY.	STATUS
1-3	RRU	FRB	RRU6	ANTENNAS	(3)	REMOVED
1-3	RRU	FRE	RRU	ANTENNAS	(1)	REMOVED
1-3	RRU	FRG	RRU6	ANTENNAS	(3)	REMOVED
1-3	RRU	FXFB	RRU	ANTENNAS	(1)	REMOVED
1-3	RRU	FXFB	RRU6	ANTENNAS	(3)	REMOVED
1-3	RRU	AHLOA	ANTENNAS	(3)	PROPOSED	
1-3	RRU	AHFIG	ANTENNAS	(3)	PROPOSED	



**1 Existing Antenna Plan**  
SCALE: 3/16" = 1'-0"  
NORTH



**2 Proposed Antenna Plan**  
SCALE: 3/16" = 1'-0"  
NORTH

NEW MOUNTS TO BE INSTALLED FIBER TO INSTALLATION OF NEW ANTENNAS

SEE MOUNT ANALYSIS REPORT #21-02-13 BY MISSION 1 DATED FEBRUARY 17, 2021

SEE STRUCTURAL ANALYSIS REPORT #21-01-037 BY MISSION 1 DATED JANUARY 31, 2021

EXP 10/31/2021

STATE OF MICHIGAN

GREGORY J. SUHR  
ENGINEER  
No. 6201053665

LIBERATED PROFESSIONAL ENGINEER

*G. J. Suhr*

02-19-21

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ANTENNA LAYOUT PLANS & SCHEDULE

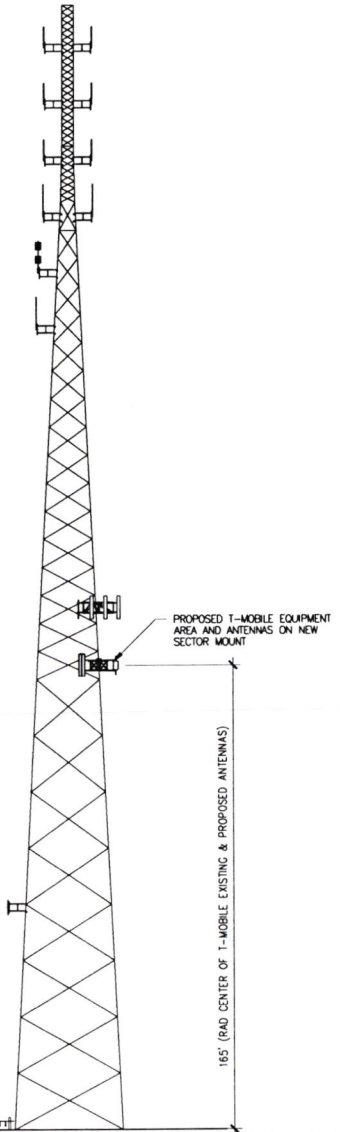
WASHTENAW COUNTY CO-LO  
532C AUTO MALL DRIVE  
ANN ARBOR, MI 48103

A-1

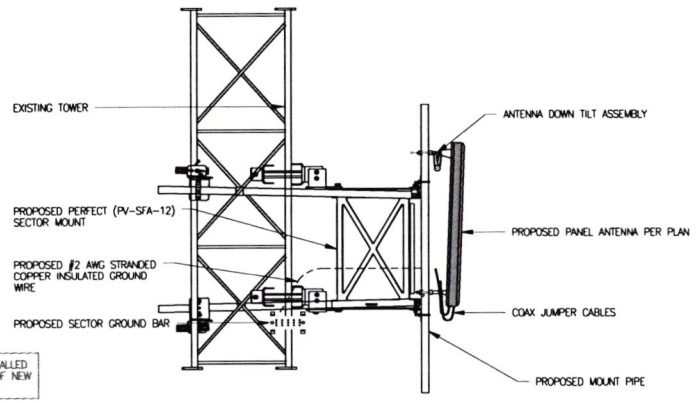
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**1 Proposed Elevation**  
SCALE: N.T.S.



NEW MOUNTS TO BE INSTALLED PRIOR TO INSTALLATION OF NEW ANTENNAS.

SEE MOUNT ANALYSIS REPORT #21-02-13 BY MISSION 1 DATED FEBRUARY 17, 2021

SEE STRUCTURAL ANALYSIS REPORT #21-01-007 BY MISSION 1 DATED JANUARY 31, 2021

**2 Antenna Mount Detail**  
SCALE: NOT TO SCALE

**APPURTENANCE LIST (TOWER EQUIPMENT)**

- EQUIPMENT TO BE REMOVED**
- (3) SBMH-1065C-SR (HEX)
  - (3) TMBXX-6517-A2M (QUAD)
  - (3) CBC19231-43-2X DIPLXERS AT ANTENNAS
  - (2) LARGE COUP JUNCTION BOX
  - (3) FRLB RRU's
  - (1) FRIB RRU
  - (3) FRIG RRU's
  - (1) FXFB RRU
  - (3) FXFB RRU's
  - (1) 225' NSN HIGH CAP HCS CABLE
- EQUIPMENT TO BE INSTALLED**
- (3) FFVV-65C-R3-V1 (OCTO)
  - (3) AEHC (ACTIVE ANTENNA-MASSIVE MIMO)
  - (3) AHLQA
  - (3) AHFC
  - (2) NOKIA HCS 2.0 TRUNK CABLES
  - (2) NOKIA HCS 2.0 TOWER JUNCTION BOX

SECTORIZED COLOR IDENTIFICATION	
SECTOR A	RED
SECTOR B	GREEN
SECTOR C	BLUE
SECTOR D	YELLOW
SECTOR E	WHITE
SECTOR F	PURPLE
LMU	BROWN
FIBER ID	GRAY
UNUSED COAX	PINK
MICROWAVE	ORANGE
PWE T-1's	ID W/LABEL MKKER

**NOTE TO CONTRACTOR:**  
CONTRACTOR IS TO REFER TO T-MOBILE'S MOST CURRENT RADIO FREQUENCY DATA SHEET (RFDS) PRIOR TO CONSTRUCTION.

**3 Appurtenance List**

EXP 10/31/2021

GREGORY J. SUHR  
ENGINEER  
No. 8201053665

*Gregory J. Suhr*  
02-19-21

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A	01-08-21	PRELIMINARY CDS	AML	SAH	

MISSION 1  
CONSULTING ENGINEERS

6002 Constitution Drive, Suite C  
Lafayette, IN 46004

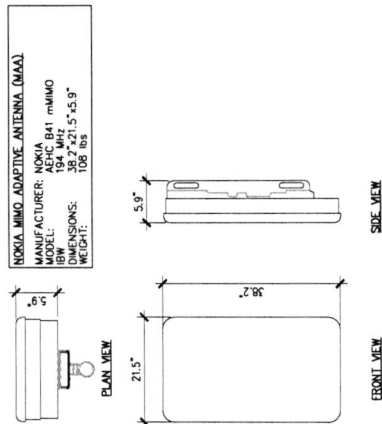
PYRAMID  
Network Services, LLC

T-Mobile

ELEVATION AND ANTENNA DETAIL	A-2
WASHTENAW COUNTY CO-LO 532C AUTO MALL DRIVE ANN ARBOR, MI 48103	DE05610F

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**NOKIA MIMO ADAPTIVE ANTENNA (MAA)**  
 MANUFACTURER: NOKIA  
 MODEL: AHFC-B41 m/m/mo  
 DIMENSIONS: 38.2" x 21.5" x 5.9"  
 WEIGHT: 108 lbs

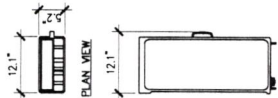
FRONT VIEW

SIDE VIEW

**1 AEHC Antenna Specification**

SCALE: NOT TO SCALE

**NOKIA MIMO ADAPTIVE ANTENNA (MAA)**  
 MANUFACTURER: NOKIA  
 MODEL: AHFC  
 BANDWIDTH: 65 MHz & 80 MHz  
 WEIGHT: 79.3 lbs  
 NO. OF PORTS: 4 x 8 Gbps CPRI  
 RF CONNECTORS: 4, 3, 10+



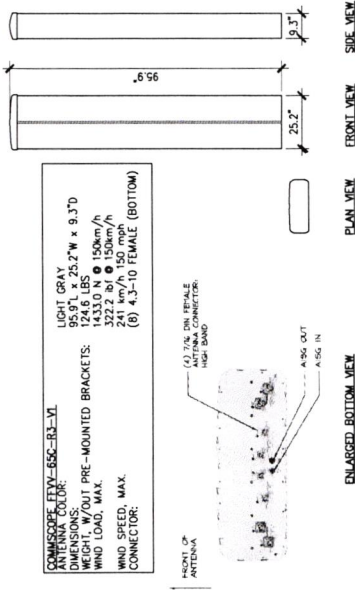
FRONT VIEW

SIDE VIEW

- NOTES:**
- RADIO SHALL BE INSTALLED PER MANUFACTURER SPECIFICATIONS.
  - DO NOT COVER THE WATERPROOF VENT VALVE; WATERPROOF VENT VALVE. THE VALVE MUST NOT BE CLOGGED.
  - THE RRRH CAN BE PAINTED IF THE WATERPROOF VALVE IS NOT CLOGGED AND THE CONNECTIONS ARE NOT PAINTED.
  - MOUNT THE RRRH IN AN UPRIGHT POSITION WITH THE CONNECTORS POINTING DOWNWARDS.

**3 RRRH (Nokia AHFIG)**

SCALE: NOT TO SCALE



**COMMSCOPE FEV-55C-B3-V1**  
 ANTENNA COLOR: LIGHT GRAY  
 DIMENSIONS: 25.2" H x 9.3" W  
 WEIGHT: 124.6 LBS  
 WIND LOAD, MAX: 1433.0 N @ 150km/h  
 WIND SPEED, MAX: 322.2 ft/min  
 CONNECTOR: (A) 4, 3, 10 FEMALE (BOTTOM)

ENLARGED BOTTOM VIEW

PLAN VIEW

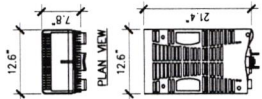
FRONT VIEW

SIDE VIEW

**2 Commscope Antenna Specification**

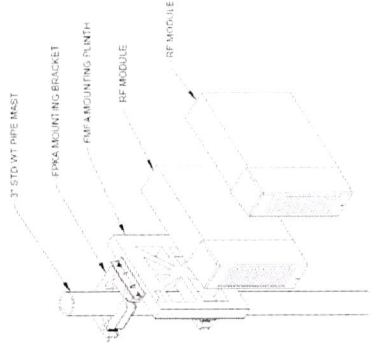
SCALE: NOT TO SCALE

**NOKIA MIMO ADAPTIVE ANTENNA (MAA)**  
 MANUFACTURER: NOKIA  
 BANDWIDTH: 600 MHz  
 DIMENSIONS W/ SOLAR SHIELD: 22.1" x 12.2" x 7.5"  
 WEIGHT W/ BRACKET & SOLAR SHIELD: 83.9 lbs  
 CONNECTORS: (2) OPTICAL (1) DIN FEMALE (DC POWER)



FRONT VIEW

SIDE VIEW



**4 RRRH (Nokia AHLOA)**

SCALE: NOT TO SCALE

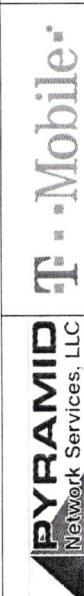
**5 RRRH Mounting**

SCALE: NOT TO SCALE

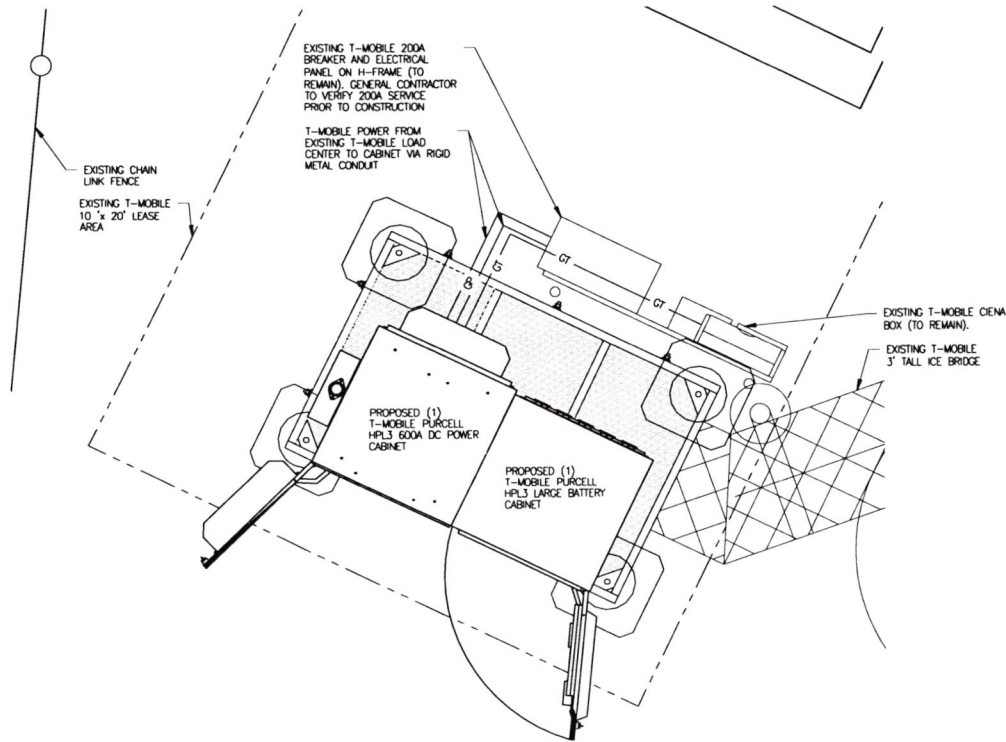
EXP 10/31/2021  
 STATE OF MICHIGAN  
 GREGORY J. SUHR  
 ENGINEER  
 No. 6201063865  
 LICENSED PROFESSIONAL ENGINEER  
 A. J. Suhr  
 02-19-21

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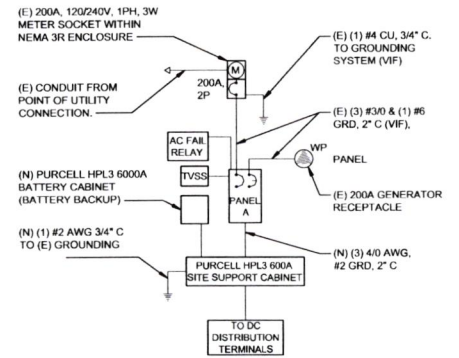
DETAILS		A-3
WASHTENAW COUNTY COLLO 532C AUTO MALL DRIVE ANN ARBOR, MI 48103		DE05610F
NO. DATE	REVISIONS	BY (CHK) (APP)
0 02-19-21	FINAL CONSTRUCTION DRAWINGS	AM SAH
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**1 Electrical Site Plan**  
SCALE: 1/2" = 1'-0"  
NORTH



**2 One-Line Diagram**  
SCALE: NOT TO SCALE

GENERAL NOTES:  
1. THE LOCATION OF UTILITY CONDUIT ROUTING SHOWN ARE APPROXIMATE  
2. COORDINATE EXACT CONDUIT ROUTING AND STUB UP LOCATIONS WITH UTILITIES AND CONSTRUCTION MANAGER PRIOR TO ROUGH-IN

EXP 10/31/2021



*Gregory J. Suhr*  
02-19-21

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ELECTRICAL SITE PLAN  
WASHTENAW COUNTY CO-LO  
532C AUTO MALL DRIVE  
ANN ARBOR, MI 48103

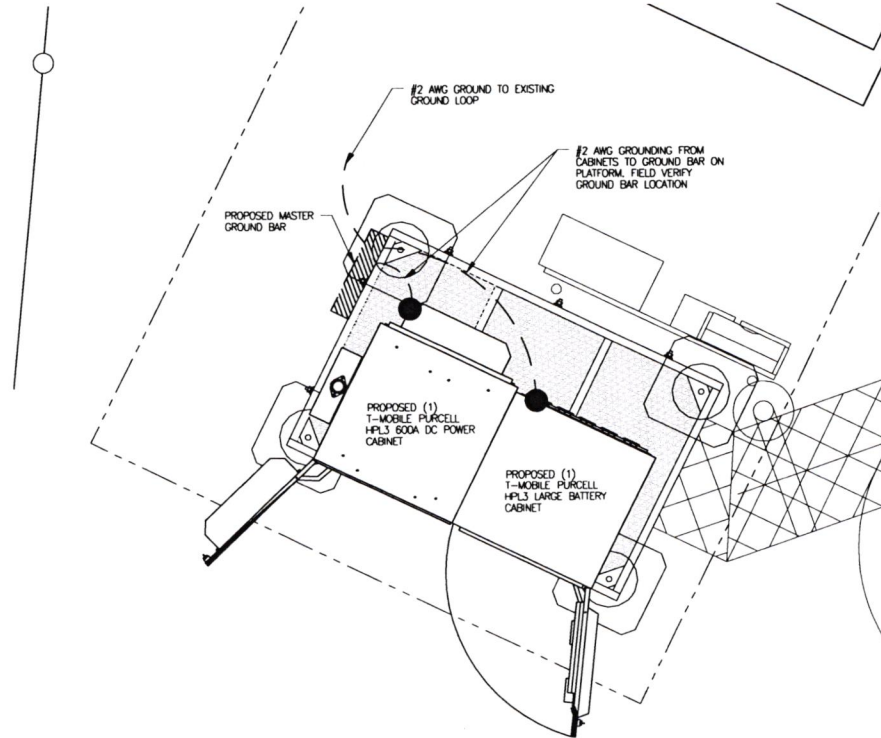
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## GENERAL GROUNDING NOTES

1. ALL DETAILS ARE SHOWN IN GENERAL TERMS. ACTUAL INSTALLATION AND CONSTRUCTION MAY VARY DUE TO SITE SPECIFIC CONDITIONS.
2. ANY METAL OBJECTS WITHIN 6 FEET OF THE EXTERNAL GROUND RING SHALL BE GROUNDED.
3. ALL GROUND CONNECTIONS SHALL BE CADWELDED AND CLEANED THOROUGHLY THEN COVERED WITH TWO (2) COATES OF SHERWIN WILLIAMS GALVANTE PAINT D3500W3 OR EQUAL.
4. ALL WIRES SHALL BE COPPER THHN/THWN. ALL GROUND WIRE SHALL BE GREEN INSULATED WIRE ABOVE GROUND.
5. ALL ELECTRICAL CADWELD AND MECHANICAL CONNECTIONS SHALL HAVE NON-OXIDATION COMPOUND APPLIED TO CONNECTION.
6. ALL MATERIALS AND CADWELD MOLDS, SHOTS, ETC. SHALL BE FURNISHED AND INSTALLED BY CONTRACTOR UNLESS OTHERWISE NOTED.
7. REFER TO DIVISION 16 GENERAL ELECTRIC; GENERAL ELECTRICAL PROVISIONS AND COMPLY WITH ALL REQUIREMENTS OF GROUNDING STANDARDS.
8. NOTIFY CONSTRUCTION MANAGER IF THERE ARE ANY DIFFICULTIES INSTALLING GROUNDING SYSTEM DUE TO SITE SOIL CONDITIONS.
9. USE PANI SCHEME FOR LANDING GROUNDS ON MGB AS DISCUSSED IN NSTD 119.33&36.



**1** Schematic Grounding Plan  
SCALE: 1/2" = 1'-0"  
NORTH

### Legend

- GROUND ROD
- ⊙ GROUND SYSTEM TEST WELL (HAND HOLE)
- CADWELD CONNECTION
- ▬ MASTER GROUND BAR

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SCHEMATIC GROUNDING PLAN		E-2
WASHTENAW COUNTY CO-LO 532C AUTO MALL DRIVE ANN ARBOR, MI 48103	DE05610F	

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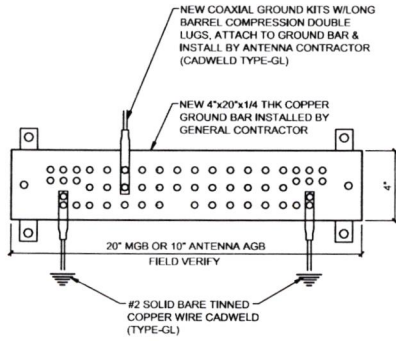
STATE OF MICHIGAN

GREGORY J. SUHR  
ENGINEER  
No. 6201053665  
LICENSED PROFESSIONAL ENGINEER

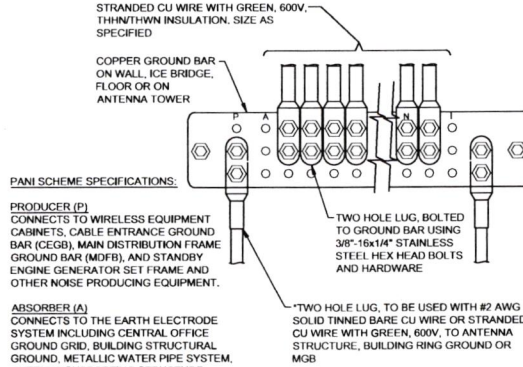
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- NOTES**
1. COAT ALL MECHANICAL CONNECTIONS WITH "NOOX" OR APPROVED EQUAL.
  2. ALL EXISTING & NEW TOWER GROUNDING BARS SHALL BE ATTACHED DIRECTLY TO THE TOWER WITHOUT ISOLATORS. NO WELDING OR DRILLING PERMITTED.
  3. EXISTING HOME RUN GROUND(S) TO BE REMOVED.



**PANEL SCHEME SPECIFICATIONS:**

**PRODUCER (P)**  
CONNECTS TO WIRELESS EQUIPMENT CABINETS, CABLE ENTRANCE GROUND BAR (CEGB), MAIN DISTRIBUTION FRAME GROUND BAR (MDFB), AND STANDBY ENGINE GENERATOR SET FRAME AND OTHER NOISE PRODUCING EQUIPMENT.

**ABSORBER (A)**  
CONNECTS TO THE EARTH ELECTRODE SYSTEM INCLUDING CENTRAL OFFICE GROUND GRID, BUILDING STRUCTURAL GROUND, METALLIC WATER PIPE SYSTEM, ANTENNA SUPPORTING STRUCTURE GROUND SYSTEM, AND ELECTRICAL SERVICE ENTRANCE GROUND.

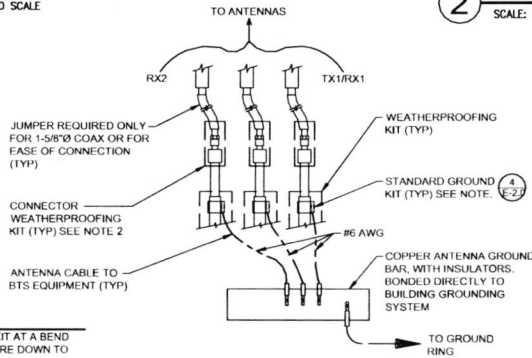
**NON-ISOLATED (N)**  
CONNECTS TO EQUIPMENT NOT IN AN ISOLATED GROUND ZONE (IGZ) SUCH AS CBN EQUIPMENT FRAME GROUNDS AND DC GROUND CONDUCTORS FOR DC POWER SYSTEMS THAT SERVE CBN OR BOTH CBN AND IBN EQUIPMENT

**ISOLATED (I)**  
CONNECTS TO THE SINGLE POINT CONNECTION BAR (SPCB) FOR IBN EQUIPMENT

**NOTE**  
\*GROUND BARS AT BOTTOM OF TOWERS OR MONOPOLES SHALL USE EXOTHERMIC CONNECTION.

TYPE TA	TYPE VV	TYPE GT
TYPE VN	TYPE NC	TYPE SS
TYPE VS	TYPE VB	TYPE PT
TYPE GY	TYPE GR	TYPE GL

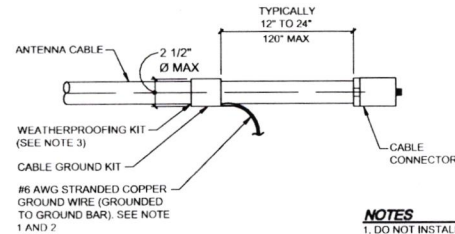
**1 Ground Bar**  
SCALE: NOT TO SCALE



- NOTES**
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
  2. WEATHERPROOFING SHALL BE ANDREWS' (TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.)

**4 Antenna Ground Bar**  
SCALE: NOT TO SCALE

**2 Ground Bar Connection**  
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 ANDREW SUREGROUND TYPE KIT WITH TWO HOLE LUG.
  3. WEATHERPROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

**5 Cable Grounding Detail**  
SCALE: NOT TO SCALE

**3 Typical Caldwell Connection**  
SCALE: NOT TO SCALE

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GROUNDING DETAILS  
WASHTENAW COUNTY CO-LO  
532C AUTO MALL DRIVE  
ANN ARBOR, MI 48103

E-3  
DE05610F

EXP 10/31/2021

GREGORY J. SUHR  
ENGINEER  
No. 6201053865  
LICENSED PROFESSIONAL ENGINEER

19 Suhr  
02-19-21

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