



ATC ASSET #: 280216

SITE NAME: WOLF CREEK RELO

SITE NUMBER: SL03051A

FILE NAME: SL03051A_WOLF CREEK RELO_FCD_092517

LOCATION: 4909 N WILLOW BROOK LN, EDEN, UT 84310

100' MONOPOLE CO-LOCATION

SITE INFORMATION

TOWER OWNER: AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801
SITE ADDRESS: 4909 N WILLOW BROOK LN EDEN, UT 84310
COUNTY: WEBER
LATITUDE: 41.31935° LONGITUDE: -111.82952°
GROUND ELEVATION: 5069' AMSL
OCCUPANCY TYPE: UNMANNED
ZONING JURISDICTION: WEBER COUNTY ZONING CODE: CV-2 PARCEL NUMBER: 223000001
POWER PROVIDER: ROCKY MOUNTAIN POWER TELCO PROVIDER: CENTURYLINK

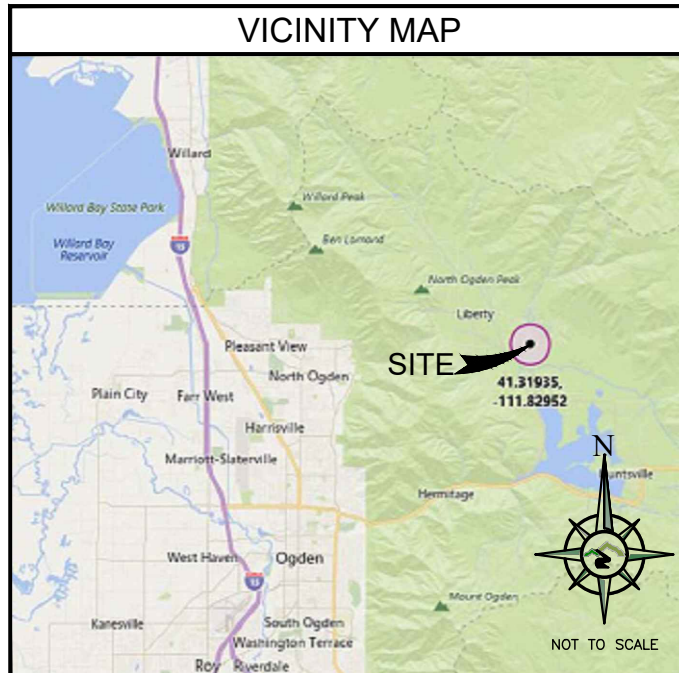
CONTACT INFORMATION

A&E SERVICES: POWDER RIVER ENGINEERING SERVICES, LLC. 219 S. WOODDALE AVE. EAGLE, ID 83616 CONTACT: TODD ROTGE PHONE: 541.647.2777 EMAIL: todd.rotge@powderriverdev.com

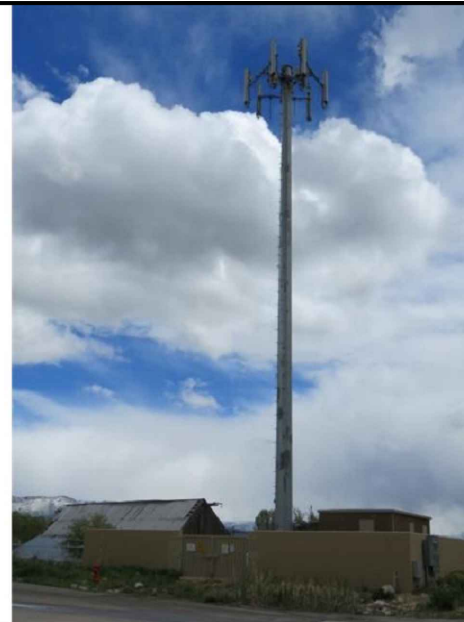
ENGINEERING: POWDER RIVER ENGINEERING SERVICES, LLC. 219 S. WOODDALE AVE. EAGLE, ID 83616 CONTACT: DONALD W. GEORGE, PE, SE, MLSE PHONE: 208.938.8844 EMAIL: don.george@powderriverdev.com

APPLICANT: T-MOBILE WEST LLC 8960 NE ALDERWOOD RD. PORTLAND, OR 97220 CONTACT: PHONE: EMAIL:

APPLICANT: AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801 CONTACT: BRANDI SAVAGE PHONE: 425.306.6965 EMAIL: brandi.savage@americantower.com



SITE PHOTO



DRIVING DIRECTIONS

DIRECTIONS FROM SALT LAKE CITY INTERNATIONAL AIRPORT:

DEPART SALT LAKE CITY AIRPORT TERMINAL DRIVE, 1.5 MI. TAKE RAMP LEFT FOR I-80 EAST TOWARD PROVO / SALT LAKE CITY / OGDEN, 1.6 MI. AT EXIT 117, TAKE RAMP RIGHT FOR I-215 NORTH TOWARD OGDEN, 6.7 MI. TAKE RAMP FOR I-15 NORTH, 10.8 MI. AT EXIT 324, TAKE RAMP RIGHT FOR US-89 NORTH TOWARD SO. OGDEN, 10.7 MI. TAKE RAMP RIGHT FOR I-84 EAST TOWARD EVANSTON / MORGAN, 4.4 MI. AT EXIT 92, TAKE RAMP RIGHT TOWARD MTN GREEN / HUNTSVILLE, 0.2 MI. TURN LEFT ONTO UT-167 / NORTH HIGHWAY 167, 361 FT. TURN RIGHT TO STAY ON UT-167 / WEST OLD HIGHWAY ROAD, 1.5 MI. TURN LEFT TO STAY ON UT-167 / NORTH TRAPPERS LOOP ROAD, 9.5 MI. TURN LEFT ONTO UT-39 / EAST 900 SOUTH, 3.7 MI. TURN RIGHT ONTO UT-158, 1.3 MI. KEEP RIGHT TO STAY ON UT-158 / NORTH UT-158, 4.3 MI. TURN LEFT ONTO WILLOWBROOK LANE, 108 FT. TURN LEFT INTO STORAGE UNITS TO LOCATION.

DO NOT SCALE DRAWINGS

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

DRAWING INDEX

Table with 3 columns: SHEET NO., DESCRIPTION, REV. Lists drawing sheets T-1 through E-4.

SCOPE OF WORK

INSTALL (3) SECTOR MOUNTS, (6) ANTENNAS, (9) RRUS AND (2) HYBRID CABLE AT ANTENNA LEVEL. INSTALL (1) EQUIPMENT SHELTER IN EXISTING COMPOUND.

APPLICABLE CODES

BUILDING CODE 2015 IBC ELECTRICAL CODE 2014 OESC



LICENSE #: C-3065

REVISIONS table with columns: REV, DATE, DESCRIPTION, INT. Shows revision history for sheets A, B, and O.



THESE PLANS AND SPECIFICATIONS, AS INSTRUMENTS OF SERVICE, ARE AND SHALL REMAIN THE PROPERTY OF POWDER RIVER DEVELOPMENT SERVICES, LLC...

SITE INFORMATION

T-MOBILE #: SL03051A

ATC #: 280216

4909 N WILLOW BROOK LN EDEN, UT 84310

SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

T-1

PROJECT SPECIFICATION 16000 (ELECTRICAL)

PART 1: GENERAL
 1.1 SCOPE THIS SPECIFICATION DESCRIBES THE MINIMUM REQUIREMENT FOR INSTALLATION OF ALL ELECTRICAL SYSTEMS.
 1.2 REFERENCES: THE PUBLICATIONS LISTED BELOW FORM PART OF THIS SPECIFICATION. EACH PUBLICATION SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT ON THE DATE THIS SPECIFICATION IS ISSUED FOR CONSTRUCTION, UNLESS NOTED OTHERWISE, EXCEPT AS MODIFIED BY THE REQUIREMENTS SPECIFIED HEREIN, OR THE DETAILS OF THE DRAWINGS, WORK INCLUDED IN THIS SPECIFICATION SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THESE PUBLICATIONS.
 A. ANSI (AMERICAN NATIONAL STANDARDS INSTITUTE)
 B. NESC (NATIONAL ELECTRICAL SAFETY CODE), LATEST EDITION
 C. NEC (NATIONAL ELECTRICAL CODE), LATEST EDITION
 D. NFPA 70 (NATIONAL FIRE PROTECTION ASSOCIATION)
 E. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION), INCLUDING ALL APPLICABLE AMENDMENTS
 F. U.L. (UNDERWRITERS LABORATORIES)
 1.3 SYSTEM DESCRIPTION
 A. DESIGN REQUIREMENTS: THE CONTRACTOR SHALL INSTALL UNDERGROUND ELECTRICAL AND TELEPHONE CONDUITS AND CABLE AS SPECIFIED HEREIN AND AS SHOWN ON THE DRAWINGS.
 B. PERFORMANCE REQUIREMENTS: WHEN FINISHED, WORK SHALL BE IN A COMPLETE AND UNDAMAGED STATE, AS REQUIRED IN THE CONTRACT DOCUMENTS.
 PART II: PRODUCTS
 2.1 GENERAL
 A. ITEMS SHALL BE NEW AND SHALL BE INSTALLED ONLY IF IN FIRST-CLASS CONDITION.
 B. SUBSTITUTIONS FOR MATERIAL WILL BE PERMITTED ONLY BY WRITTEN APPROVAL OF THE T-MOBILE CONSTRUCTION SUPERVISOR.
 2.2 MATERIALS: THE CONTRACTOR SHALL PROVIDE ALL MATERIAL EXCEPT AS SPECIFIED IN THE CONTRACT DOCUMENTS. ALL MATERIAL SHALL BE APPROVED AND LISTED BY OR BEAR THE U.L. LABEL, AND WILL COMPLY WITH ANSI, IEEE AND NEMA STANDARDS WHERE APPLICABLE.
 A. CONDUITS:
 1. ALL UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC, SIZED AS SHOWN ON THE CONSTRUCTION DRAWINGS.
 2. ALL EXTERIOR ABOVEGROUND CONDUIT SHALL BE PER LOCAL CODE REQUIREMENTS.
 3. ALL INTERIOR CONDUIT SHALL BE EMT WITH COMPRESSION-TYPE FITTINGS.
 4. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR OUTDOOR LOCATIONS WHERE FLEXIBLE CONNECTION IS REQUIRED.
 B. CABLES CONDUCTORS FOR GENERAL WIRING SHALL BE NEC STANDARD ANNEALED COPPER WIRE WITH NEC 600 VOLT INSULATION.
 1. #8 AND LARGER-STRANDED TYPE, THHN OR THWN
 2. #10 AND SMALLER-SOLID TYPE THHN OR THWN
 3. CONDUCTORS IN CONDUIT IN OR ADJACENT TO HIGH HEAT SOURCE SHALL BE TYPE XHHW
 4. CONDUCTORS IN CONDUITS ABOVE ROOF, ON TOP OF ROOF OR INSIDE BUILT-UP ROOFING MATERIAL SHALL BE TYPE XHHW
 C. CONVENIENCE OUTLET, UNLESS NOTED OTHERWISE, SURFACE-MOUNTED OUTLETS FOR EXTERIOR LOCATIONS SHALL BE FERALOY, CAD/ZINC ELECTROPLATED WITH THREADED HUBS OR CONDUIT ENTRANCES DRILLED AND TAPPED. ALL COVERS SHALL BE SELF-CLOSING AND GASKETED. SURFACE MOUNTED OUTLETS FOR INTERIOR LOCATIONS SHALL BE GALVANIZED, PRESSED STEEL WITH COVER PLATE, SIERRA PLASTIC STYLE, IVORY COLOR.
 D. COAXIAL CABLE SUPPORTS 1. ALL WAVE GUIDE SUPPORTS SHALL BE MANUFACTURED TO MEET ALL COAX MINIMUM BENDING REQUIREMENTS WAVE GUIDES, AND B1587 FOR 6 WAVE GUIDES. SUPPORTS SHALL BE PROVIDED 3'-0" ON CENTERS.
 PART III: EXECUTION
 3.1 PREPARATION
 A. BEFORE LAYING OUT WORK, EXERCISE PROPER PRECAUTION TO VERIFY EACH MEASUREMENT.
 B. USE EXTREME CAUTION BEFORE EXCAVATING IN EXISTING AREAS TO LOCATE EXISTING UNDERGROUND SERVICES.
 3.2 INSPECTION
 A. A VISUAL CHECK OF ELECTRICAL AND TELEPHONE CABLES, CONDUITS AND OTHER ITEMS SHALL BE MADE BY A T-MOBILE CONSTRUCTION SUPERVISOR BEFORE THESE ITEMS ARE PERMANENTLY INSTALLED.
 B. THE CONTRACTOR SHALL NOTIFY THE T-MOBILE CONSTRUCTION SUPERVISOR 24 HOURS PRIOR TO TRENCH BACK FILL
 3.3 INSTALLATION
 A. TRENCHING, BACK FILLING, BEDDING AND COMPACTING SHALL COMPLY WITH SITE WORK SPECIFICATIONS.
 B. DIG TRENCHES TO THE REQUIRED DEPTH AS SHOWN ON THE DRAWINGS WITHOUT POCKETS OR DIPS. REMOVE LARGE STONES FROM THE BOTTOM OF THE TRENCH AND FIRMLY TAMP LOOSE FILL IN THE BOTTOM BEFORE CONDUIT IS LAID.
 C. INSTALL UNDERGROUND CONDUIT WITH A MINIMUM 3-INCH TO 100-FOOT SLOPE OR TO A SLOPE SHOWN ON THE DRAWINGS.
 D. UNLESS SHOWN OTHERWISE ON THE DRAWINGS, TERMINATE AND CAP ALL STUB-UPS 12 INCHES ABOVE FINISHED GRADE ELEVATION.
 E. WHEREVER CONDUITS CROSS UNDER ROADWAYS, USE GALVANIZED RIGID STEEL CONDUITS IN ALL CASES, EXTENDING 5 FEET BEYOND THE EDGE OF THE ROAD BED. MINIMUM DEPTH FOR CONDUIT SHALL BE 4 FEET BELOW ROADWAY GRADE.
 F. MARK UNDERGROUND CONDUITS WITH A 6-INCH WIDE RED POLYETHYLENE TAPE BURIED 6 INCHES UNDER THE SURFACE DIRECTLY OVER THE CONDUITS. MARK THE TAPE THUS: CAUTION-BURIED ELECTRICAL CABLE.
 G. FOR SEALING CONDUITS, USE ONLY NON-THERMOPLASTIC COMPOUNDS SUCH AS J.M. DUXSEAL, OR AN APPROVED SUBSTITUTE. THE COMPOUND SHALL HAVE NO EFFECT ON RUBBER OR RUBBER-LIKE INSULATIONS, LEAD, ALUMINUM OR FERROUS ALLOYS; IT SHALL BE INSOLUBLE IN WATER AND WITHSTAND MAXIMUM TEMPERATURE RANGES OF THE LOCALITY.
 H. COAXIAL - REFER TO NOKIA ANTENNA AND COAXIAL CABLE INSULATION PROCEDURES.
 I. ANTENNA - REFER TO NOKIA ANTENNA AND COAXIAL CABLE INSULATION PROCEDURES.
 J. LNA/MHA - REFER TO NOKIA ANTENNA AND COAXIAL CABLE INSULATION PROCEDURES.
 END OF ELECTRICAL SPECIFICATIONS

PROJECT SPECIFICATION 16670 (GROUNDING)

PART 1: GENERAL
 1.1 SCOPE
 A. THIS SPECIFICATION PRESCRIBES THE REQUIREMENTS FOR FURNISHING, INSTALLATION AND TESTING OF THE GROUNDING CABLE, CONNECTORS AND ASSOCIATED COMPONENTS AS INDICATED ON THE DRAWINGS.
 B. APPLICATIONS OF ELECTRICAL GROUNDING AND BONDING WORK SPECIFIED IN THIS SPECIFICATION INCLUDE THE FOLLOWING:
 1. FENCE AND GATE POSTS
 2. ELECTRICAL POWER SYSTEMS
 3. GROUNDING ELECTRODES
 4. GROUND BUS BAR
 5. SERVICE EQUIPMENT
 6. ENCLOSURES
 7. MONOPOLE/LATTICE TOWER
 B. ICE BRIDGE
 1.2 REFERENCES: THE PUBLICATIONS LISTED BELOW FORM PART OF THIS SPECIFICATION. EACH PUBLICATION SHALL BE THE LATEST REVISION AND ADDENDUM IN EFFECT ON THE DATE THIS SPECIFICATION IS ISSUED FOR CONSTRUCTION, UNLESS NOTED OTHERWISE, EXCEPT AS MODIFIED BY THE REQUIREMENTS SPECIFIED HEREIN, OR THE DETAILS OF THE DRAWINGS, WORK INCLUDED IN THIS SPECIFICATION SHALL CONFORM TO THE APPLICABLE PROVISIONS OF THESE PUBLICATIONS.
 A. ANSI (AMERICAN NATIONAL STANDARDS INSTITUTE)
 B. IEEE (INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS)
 C. NEC (NATIONAL ELECTRICAL CODE), LATEST EDITION
 D. NEMA (NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION)
 E. NESC (NATIONAL ELECTRICAL SAFETY CODE), LATEST EDITION
 F. OSHA (OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION)
 G. U.L. (UNDERWRITERS LABORATORIES)
 H. APPLICABLE LOCAL CODES AND ORDINANCES
 PART II PRODUCTS
 2.1 MATERIALS EXCEPT AS OTHERWISE INDICATED, PROVIDE ELECTRICAL GROUNDING AND BONDING SYSTEMS INDICATED; WITH ASSEMBLY OF MATERIAL, INCLUDING, BUT NOT LIMITED TO, GROUNDING ELECTRODES, BONDING JUMPER AND ADDITIONAL ACCESSORIES NEEDED FOR A COMPLETE INSTALLATION. WHERE MORE THAN ONE TYPE COMPONENT PRODUCT MEETS INDICATED REQUIREMENTS, SELECTION IS INSTALLER'S OPTION. WHERE MATERIALS OR COMPONENTS ARE NOT INDICATED, PROVIDE PRODUCTS WHICH COMPLY WITH NEC, U.L. AND IEEE REQUIREMENTS AND WITH ESTABLISHED INDUSTRY STANDARDS FOR THOSE APPLICATIONS INDICATED.
 A. GROUNDING
 1. THE EQUIPMENT SHALL BE GROUNDED AS FOLLOWS, AS SHOWN ON THE DRAWINGS AND IN COMPLIANCE WITH NEC ARTICLE 250 AND STATE AND LOCAL CODES.
 2. GROUND RODS AND QUANTITY SHOWN ON THE DRAWINGS ARE DIAGRAMMATIC. THE CONTRACTOR SHALL PERFORM A GROUND-RESISTANCE-TO-EARTH TEST. SHOULD THE INSTALLATION HAVE A RESISTANCE OF 5 OHMS OR MORE, CONTRACTOR SHALL INSTALL MORE GROUND RODS AS NECESSARY SO THAT THE OVERALL GROUND-TO-EARTH RESISTANCE IS LESS THAN 5 OHMS.
 3. INSTALL ELECTRICAL GROUNDING AND BONDING SYSTEMS AS INDICATED, IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, NEC'S "STANDARD OF INSTALLATION," AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PRODUCTS COMPLY WITH REQUIREMENTS.
 4. COORDINATE WITH OTHER ELECTRICAL WORK AS NECESSARY TO INTERFACE INSTALLATION OF ELECTRICAL GROUNDING AND BONDING SYSTEMS.
 5. INSTALL GROUND CONDUCTORS A MINIMUM OF 36 INCHES BELOW FINISHED GRADE WHICH ENCIRCLES THE TOWER AND EQUIPMENT AND ARE CONNECTED TO EACH DRIVEN GROUND ROD. GROUND TRENCH SHALL BE AT LEAST 24 INCHES AWAY FROM FOUNDATIONS.
 6. TIGHTEN GROUNDING AND BONDING CONNECTORS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUE FOR CONNECTORS AND BOLTS. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT INDICATED, TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUE VALUE SPECIFIED IN U.L. 486A TO ASSURE PERMANENT AND EFFECTIVE GROUNDING.
 7. APPLY CORROSION-RESISTANT FINISH (NO-OX) TO FIELD-CONNECTIONS, AT COPPER GROUND BARS AND PLACES WHERE FACTORY APPLIED PROTECTIVE COATING HAVE BEEN DESTROYED, WHICH ARE SUBJECT TO CORROSION AND/OR OXIDATION PROCESS.
 8. ON EXISTING LATTICE TOWERS, WATER TOWERS AND ROOF TOPS WHEN A NEW GROUNDING SYSTEM IS INSTALLED, THE CONTRACTOR SHALL TIE THE NEW GROUND SYSTEM TO THE EXISTING WATER TOWER, LATTICE TOWER STRUCTURAL STEEL OR BUILDING STRUCTURAL STEEL AS THE CASE MAY BE AT LEAST AT ONE LOCATION SO THAT THEY ARE AT THE SAME POTENTIAL.
 B. GROUND RODS
 1. GROUND RODS SHALL BE 5/8" DIAMETER 8'-0" LONG, COPPER CLAD DRIVEN ROD(S).
 2. GROUND ROD(S) SHALL BE LOCATED AT THE PERIMETER OF EQUIPMENT AS TO CREATE A GROUND RING AS SHOWN ON THE DRAWINGS.
 3. GROUND ROD(S) SHALL BE SPACED AT A MINIMUM SPACING OF 8'-0" AND A MAXIMUM SPACING OF 10'-0".
 4. GROUND RODS SHALL BE BURIED BELOW THE FROSTLINE. AT NO TIME SHALL THIS DEPTH BE LESS THAN 18" BELOW FINISHED GRADE.
 5. GROUND RODS WHICH CANNOT BE DRIVEN STRAIGHT DOWN THE ENTIRE (10) FEET, SHALL BE DRIVEN AT AN ANGLE NOT GRATER THAN 45 DEGREES (NEC 250-83 AND 250-84).
 6. GROUND ROD LOCATIONS SHALL BE NOTED ON THE AS-BUILT DRAWING COMPLETE WITH DIMENSIONS.
 7. PROVIDE GROUND TEST WELLS AS SHOWN ON THE CONSTRUCTION DRAWINGS.
 C. GROUND CONDUCTOR
 1. ALL DIRECT BURIED GROUND CONDUCTORS SHALL BE TINNED SOLID (#2 AWG) WIRE. BURIED GROUND CONDUCTOR SHALL BE INSTALLED AT MINIMUM DEPTH OF 36" BELOW GRADE.
 2. ALL SUB GRADE GROUND CONNECTIONS SHALL BE MADE THROUGH THE USE OF EXOTHERMIC WELD PROCESS. CONNECTIONS SHALL INCLUDE ALL CABLE TO CABLE SPLICES, TEES AND ALL GROUND ROD CONNECTIONS. MOLD, WELD KITS, ETC., SHALL BE MANUFACTURED BY CADWELD AND SHALL BE INSTALLED AS PER THE MANUFACTURER'S INSTRUCTIONS.
 3. GROUND CONDUCTORS SHALL BE ROUTED IN THE SHORTEST AND STRAIGHTEST DISTANCES POSSIBLE TO MINIMIZE TRANSIENT VOLTAGE RISES. CONDUCTORS SHALL BE INSTALLED AS FOLLOWS:
 A. ALL GROUND CONDUCTORS SHALL FOLLOW A CONTINUOUS DOWNWARD PATTERN TO THE GROUND SOURCE. (NEVER RUN GROUND CONDUCTOR IN AN UPWARD DIRECTION.)
 B. CONDUCTORS SHALL BE INSTALLED WITH A MINIMUM OF 12 INCH MINIMUM BENDING RADIUS.
 C. WHEN THE MINIMUM BENDING RADIUS CANNOT BE ACHIEVED, GROUND CABLES SHALL BE ROUTED AT 90 DEGREE BENDS WITH THE USE OF EXOTHERMIC CONNECTIONS AT 90 DEGREES. THE INTENT IS TO ELIMINATE THE CABLE BEND RADIUS AND REPLACE THE RADIUS WITH AN EXOTHERMIC CONNECTION.
 PART III: EXECUTION
 3.1 PREPARATION
 A. ALL SURFACES TO WHICH GROUND CONNECTIONS WILL BE MADE SHALL BE FREE OF PAINT, GALVANIZING DIRECT CORROSION ETC ..
 B. ALL METAL SURFACES EXPOSED ON GROUNDING SHALL BE EITHER COLD GALVANIZE, OR PAINTED TO MATCH ORIGINAL SURFACE.

3.2 EXAMINATION.
 A. EXAMINE AREAS AND CONDITIONS UNDER WHICH ELECTRICAL GROUNDING AND BONDING CONNECTIONS ARE TO BE MADE AND NOTIFY T-MOBILE CONSTRUCTION SUPERVISOR IN WRITING OF CONDITIONS DETRIMENTAL TO PROPER COMPLETION OF WORK. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE
 B. THE CONTRACTOR SHALL NOTIFY THE T-MOBILE CONSTRUCTION SUPERVISOR 24 HOURS PRIOR TO TRENCH BACK FILL ALL WORK DONE BELOW FINISHED GRADE SHALL BE INSPECTED BY THE AERIAL CONSTRUCTION SUPERVISOR DURING THAT PERIOD OR THE CONTRACTOR SHALL PROCEED.
 3.3 GROUND TESTING
 A. THE CONTRACTOR SHALL TEST THE GROUND ELECTRODE ROD RESISTANCE IN ACCORDANCE WITH THE METHODS OF MEASUREMENT SHOWN IN THE FALL OF POTENTIAL METHOD.
 B. TEST INSTRUMENTS SHALL OPERATE AT A FREQUENCY OTHER THAN 60 HERTZ AND SHALL CONTAIN STRAY CURRENT AND DC FILTERS, FAULT CURRENT PROTECTION AND HAVE SENSITIVITY TO OPERATE A LOW SIGNAL STRENGTH.
 C. PRIOR TO TESTING, THE CONTRACTOR SHALL DE-ENERGIZE ALL POWER SOURCES, DISCONNECT THE ELECTRODE CONDUCTOR FROM THE GROUND ROD, WEAR HIGH VOLTAGE RUBBER SAFETY GLOVES AND WILL NOT HANDLE TEST INSTRUMENTS IF AT ALL POSSIBLE.
 D. GROUND TESTS ARE TO BE PERFORMED BY QUALIFIED PERSONS FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THE EQUIPMENT AND THE HAZARDS INVOLVED.
 E. AN INDEPENDENT, APPROVED OUTSIDE FIRM SHALL PERFORM THE GROUND TEST AS OUTLINED. ALL TEST RESULTS SHALL BE FORWARDED TO THE T-MOBILE CONSTRUCTION SUPERVISOR FOR APPROVAL.
 END OF GROUNDING SPECIFICATIONS
 CLOSE OUT DOCUMENTATION
 CLOSEOUT BOOK CONTAINING THE FOLLOWING'
 1. AS BUILT DESIGN DRAWINGS
 2. SWEEP TEST RESULTS
 3. RESISTIVELY TEST
 4. PHOTO DOCUMENTATION OF'
 - UNDERGROUND CONDUITS AND GROUND RING
 - ANTENNA, COAX\L, JUMPER ATTACHMENTS AND GROUND KIT ATTACHMENTS
 - ANTENNA DOWN TILT MEASUREMENT USING AN INCLINOMETER ON THE BACK PLANE OF THE ANTENNA
 - GROUND BAR ATTACHMENTS
 5. SIGNED OFF PERMIT CARDS
 6. CERTIFICATE OF OCCUPANCY
 7. RETURN OF KEYS AND/OR ACCESS AUTHORIZATION
 B. ORIGINAL BUILDING PERMIT

GENERAL NOTES

SCALE:	1
NTS	



LICENSE #: C-3065

REVISIONS			
REV	DATE	DESCRIPTION	INT
1	09/25/17	REVISIONS	JHT
0	08/16/17	100% CONSTRUCTION	JHT
B	08/11/17	ISSUED FOR REVIEW 90%	LDL
A	06/20/17	ISSUED FOR REVIEW 90%	LDL



THESE PLANS AND SPECIFICATIONS, AS INSTRUMENTS OF SERVICE, ARE AND SHALL REMAIN THE PROPERTY OF POWDER RIVER DEVELOPMENT SERVICES, LLC WHETHER THE PROJECTS FOR WHICH THEY ARE MADE ARE EXECUTED OR NOT. THESE DRAWINGS AND SPECIFICATIONS SHALL NOT BE USED BY ANY PERSON OR ENTITY ON OTHER PROJECTS WITHOUT PRIOR WRITTEN CONSENT OF THE ENGINEER.

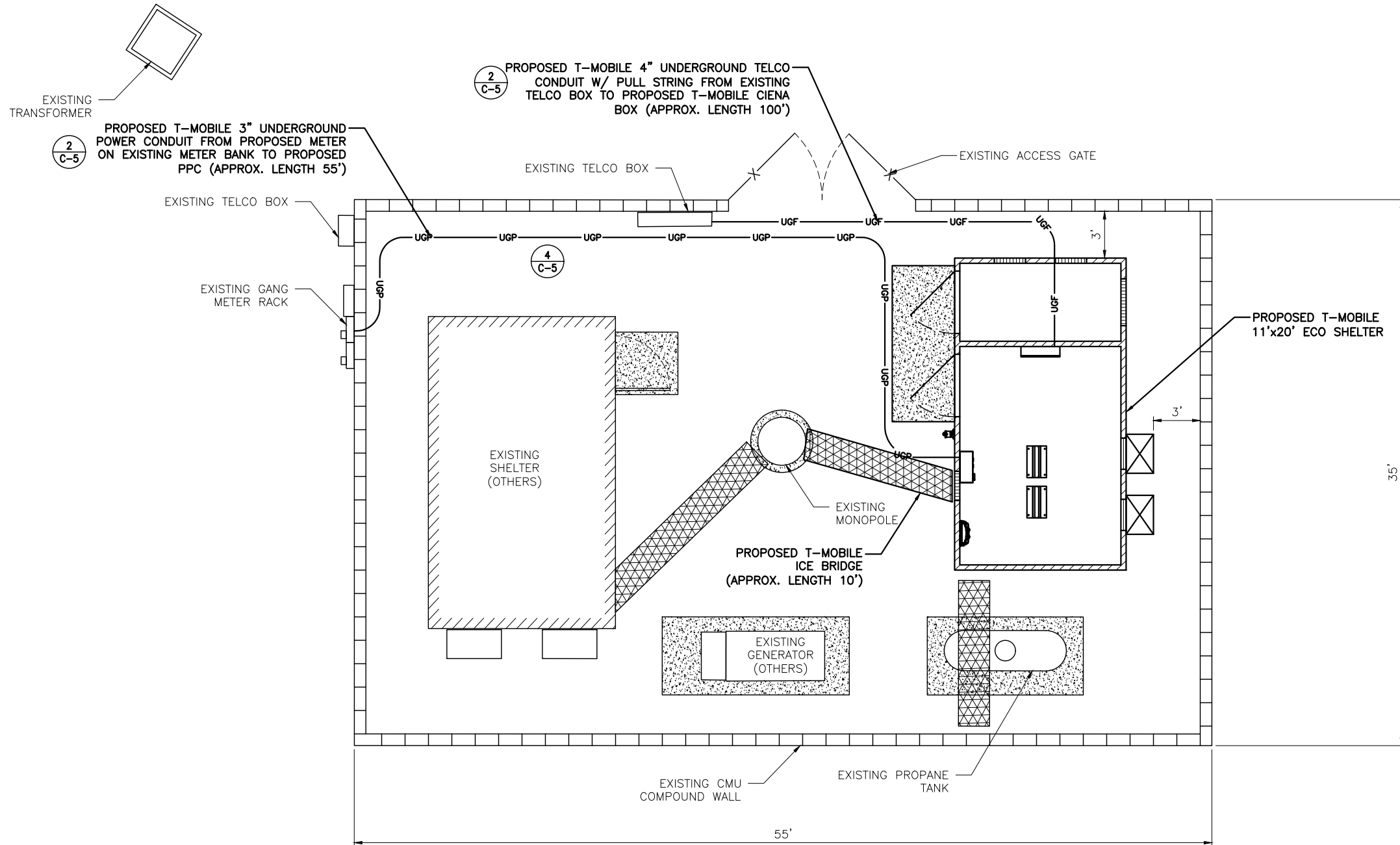
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T-MOBILE #: SL03051A
ATC #: 280216
**4909 N WILLOW BROOK LN
 EDEN, UT
 84310**

SHEET TITLE:
**GENERAL
 NOTES**

SHEET NUMBER:
GN-2

DISCLAIMER:

THESE DRAWINGS WERE PRODUCED WITHOUT THE BENEFIT OF A CURRENT LAND SURVEY. ALL PROPERTY LINES, EASEMENTS, SETBACKS, AND DIMENSIONS SHOWN SHALL BE VERIFIED PRIOR TO START OF CONSTRUCTION. POWDER RIVER DEVELOPMENT SERVICES, LLC. DOES NOT GUARANTEE THE ACCURACY OF SAID PROPERTY LINES, EASEMENTS, SETBACKS, AND DIMENSIONS SHOWN.



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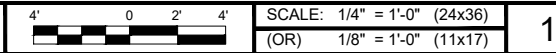
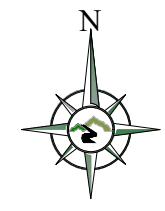
SITE INFORMATION

T-MOBILE #: SL03051A
ATC #: 280216
4909 N WILLOW BROOK LN
EDEN, UT
84310

SHEET TITLE:
ENLARGED
SITE PLAN

SHEET NUMBER:
C-1

THE UTILITIES AS SHOWN ON THIS SET OF DRAWINGS WERE DEVELOPED FROM THE INFORMATION AVAILABLE. THE INFORMATION PROVIDED IS NOT IMPLIED NOR INTENDED TO BE A COMPLETE INVENTORY OF THE UTILITIES IN THIS AREA. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATION OF ALL UTILITIES (WHETHER SHOWN OR NOT) AND PROTECT SAID UTILITIES FROM ANY DAMAGE CAUSED BY CONTRACTOR'S ACTIVITIES.



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SITE INFORMATION

T-MOBILE #: SL03051A

ATC #: 280216

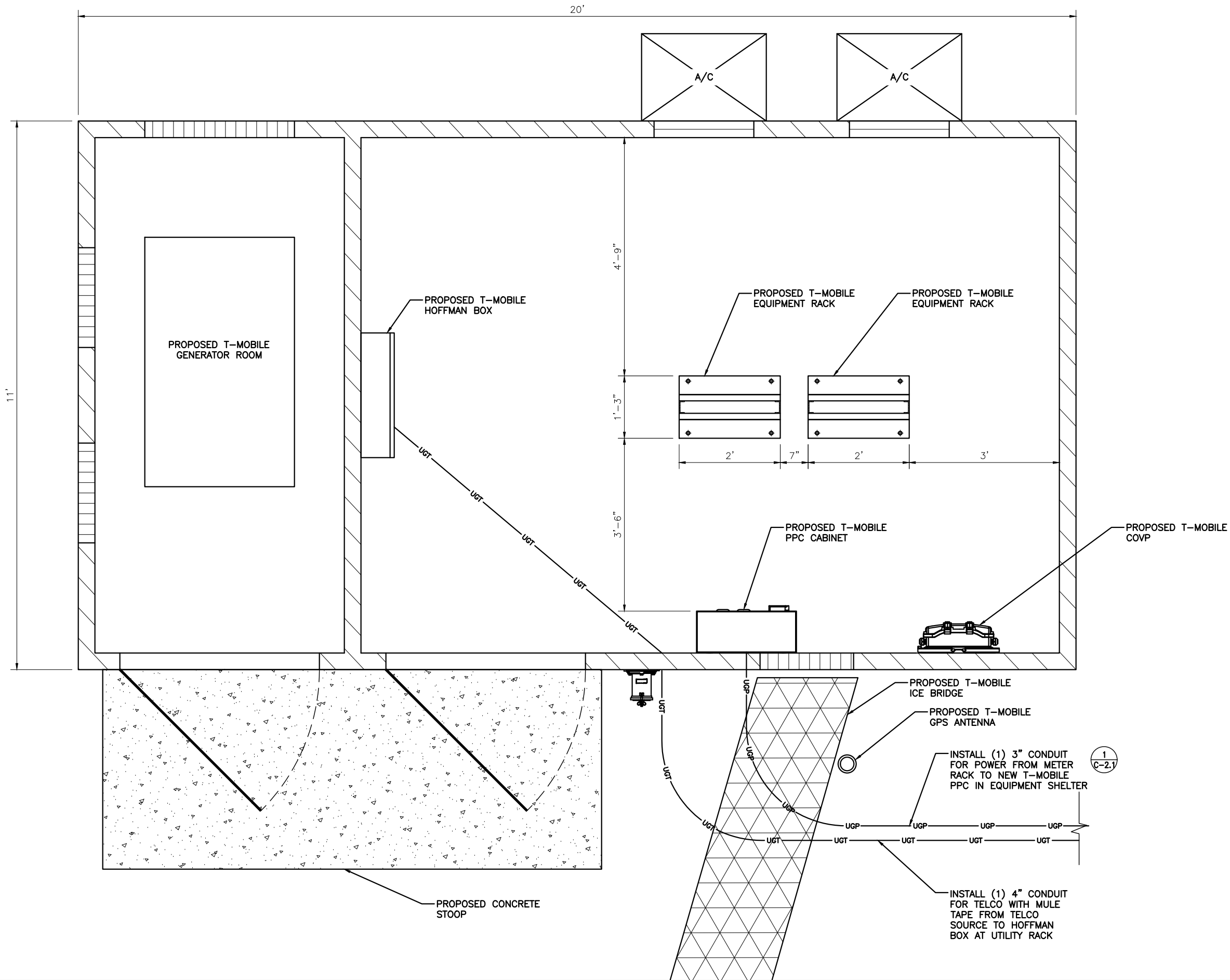
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SHEET TITLE:

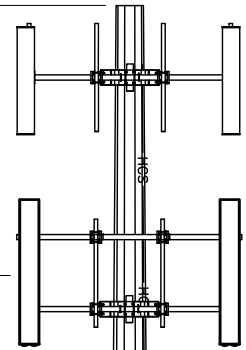
PROPOSED
EQUIPMENT PLAN

SHEET NUMBER:

C-2



- T.O. EXISTING MONOPOLE
EL. 100'-0" (AGL)
- EXISTING ANTENNAS (OTHERS)
EL. 96'-0" (AGL)
- PROPOSED T-MOBILE ANTENNA
EL. 85'-0" (AGL)

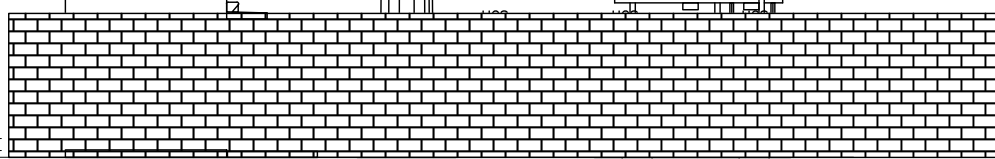


PROPOSED T-MOBILE HYBRID CABLE ROUTED ACCORDING TO ATC STRUCTURAL ANALYSIS

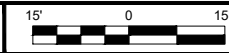
EXISTING EQUIPMENT SHELTER (OTHERS)

PROPOSED T-MOBILE EQUIPMENT AREA

GRADE
EL. 0'-0"



TOWER ELEVATION (PROPOSED)



SCALE: 1" = 15' (24x36)
(OR) 1" = 30' (11x17)

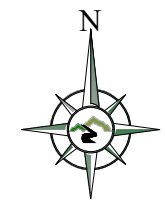
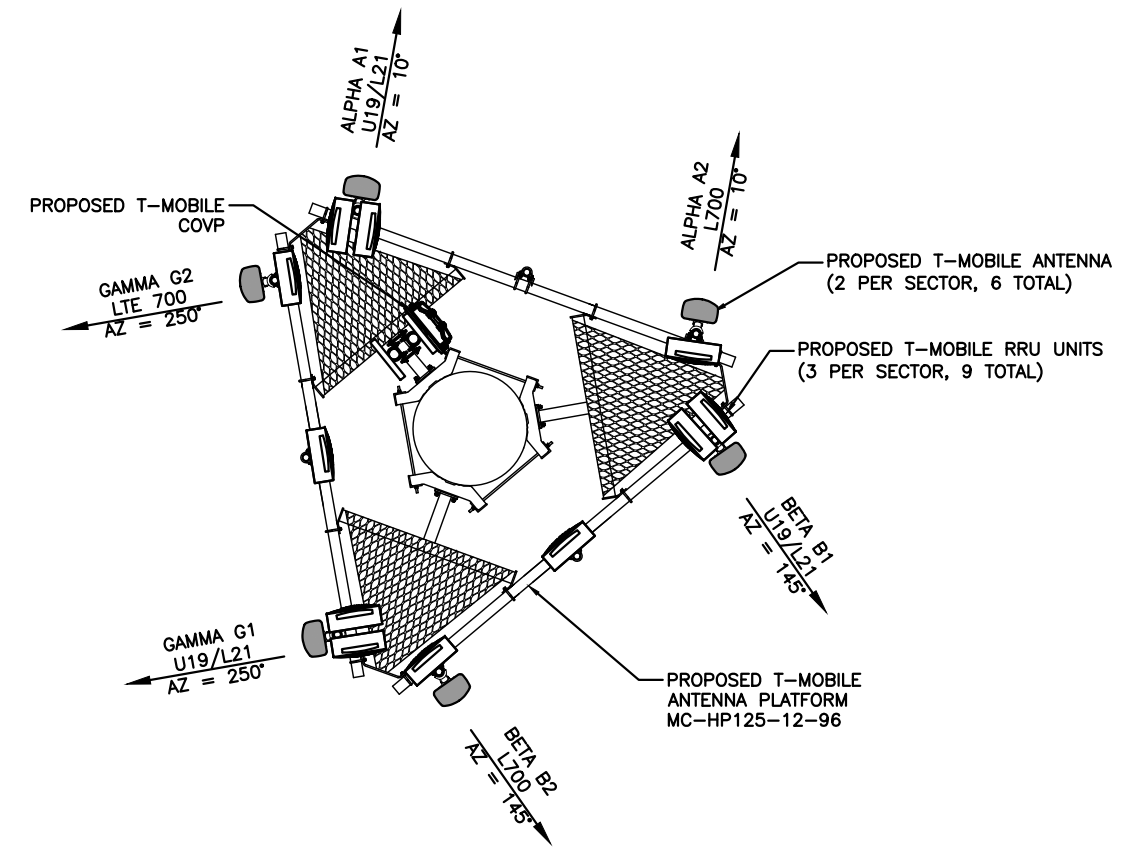
2

ANTENNA PLAN (PROPOSED)

NOTE:

STRUCTURAL ANALYSIS MUST BE PERFORMED ON ALL ROOFTOPS, FLAGPOLES, LIGHT POLES, AND TOWER SITES BEFORE INSTALLATION OF NEW ANTENNAS, RADIO UNITS, ETC.

PROPOSED ANTENNA SCHEDULE						
SECTOR	ALPHA (RED)		BETA (GREEN)		GAMMA (BLUE)	
ANTENNA POSITION	A-1	A-2	A-1	A-2	A-1	A-2
ANTENNA TYPE	U19/L21	L700	U19/L21	L700	U19/L21	L700
AZIMUTH	10°	10°	145°	145°	250°	250°
RAD CENTER (AGL)	85'-0"	85'-0"	85'-0"	85'-0"	85'-0"	85'-0"
MODEL	CELLMAX CMA-BDHH/6521/E0-6	COMMSCOPE FHH-65C-R3	CELLMAX CMA-BDHH/6521/E0-6	COMMSCOPE FHH-65C-R3	CELLMAX CMA-BDHH/6521/E0-6	COMMSCOPE FHH-65C-R3
CABLE LENGTH	±100'-0"					



LICENSE #: C-3065

REVISIONS			
REV	DATE	DESCRIPTION	INT
1	09/25/17	REVISIONS	JHT
0	08/16/17	100% CONSTRUCTION	JHT
B	08/11/17	ISSUED FOR REVIEW 90%	LDL
A	06/20/17	ISSUED FOR REVIEW 90%	LDL



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SITE INFORMATION

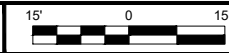
T-MOBILE #: SL03051A
 ATC #: 280216
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 EDEN, UT
 84310

SHEET TITLE:
ELEVATION & ANTENNA PLAN

SHEET NUMBER:

C-3

TOWER ELEVATION (PROPOSED)



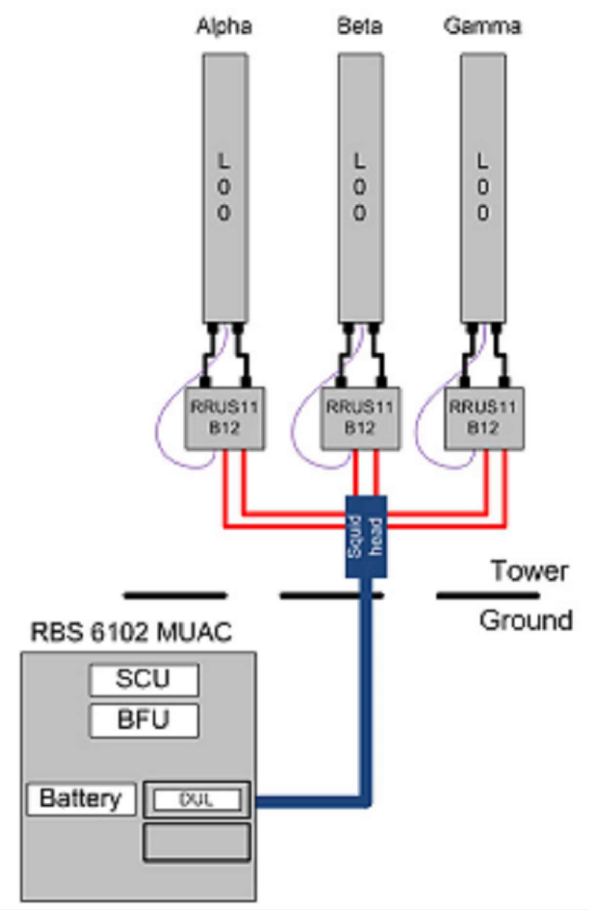
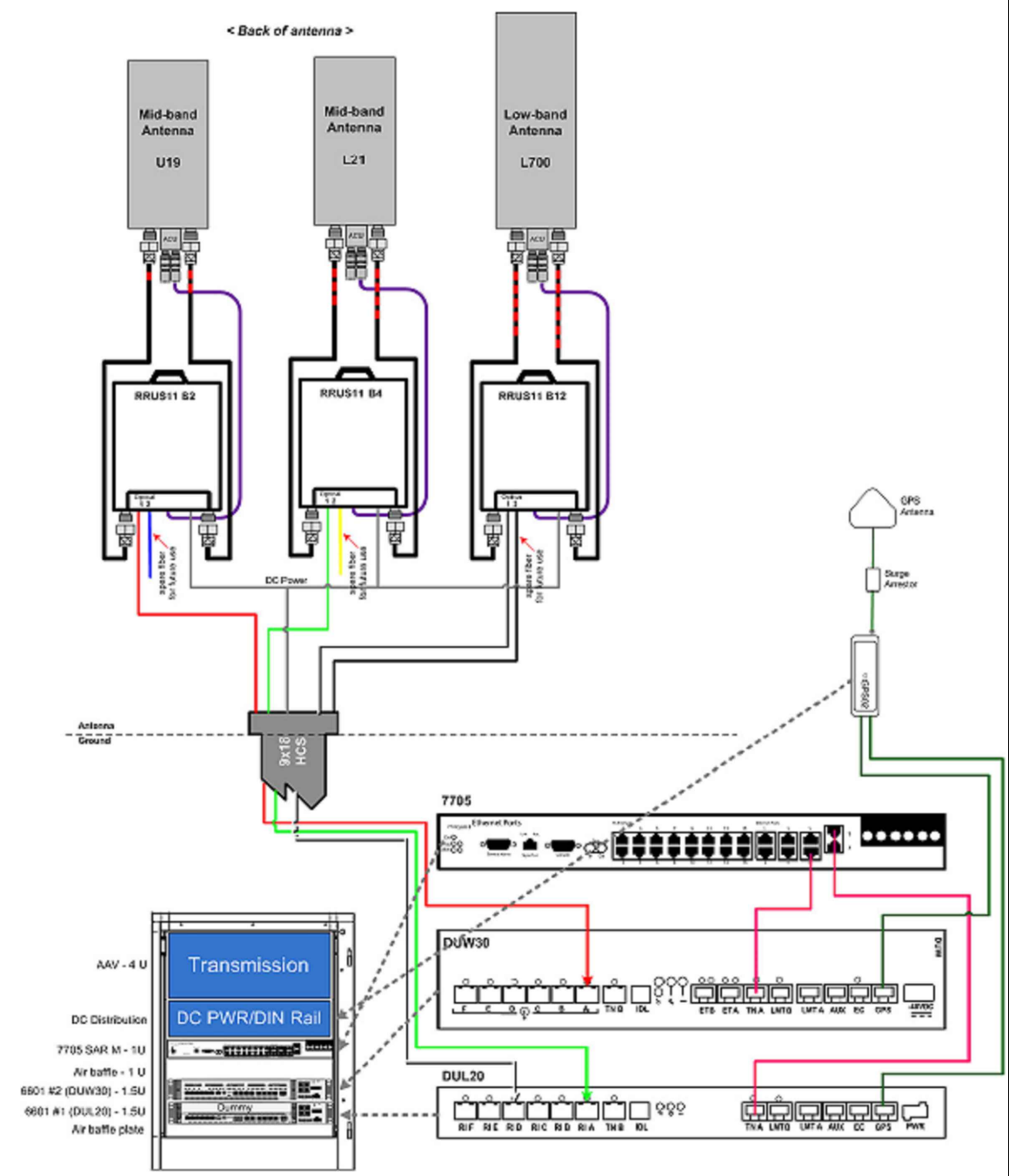
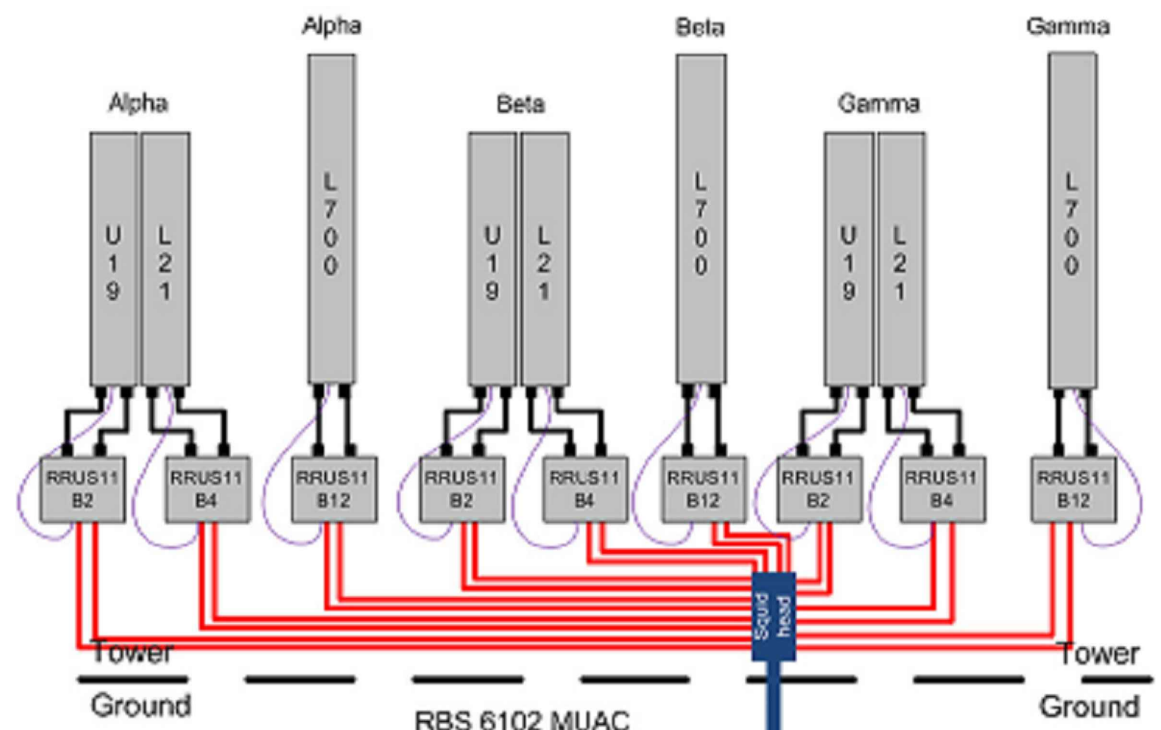
SCALE: 1" = 15' (24x36)
(OR) 1" = 30' (11x17)

2

ANTENNA PLAN (PROPOSED)

SCALE:
NTS

1



T-Mobile



LICENSE #: C-3065

REVISIONS			
REV	DATE	DESCRIPTION	INT
1	09/25/17	REVISIONS	JHT
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B	08/11/17	ISSUED FOR REVIEW 90%	LDL
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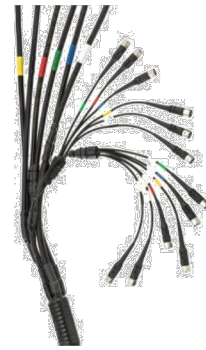
T-MOBILE #: SL03051A
 ATC #: 280216
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 EDEN, UT
 84310

SHEET TITLE:
 RFDS SPECIFICATIONS

SHEET NUMBER:
 C-3.1



HYBRIFLEX® RRH Hybrid Feeder Cabling Solution
9x18, 10 AWG, 1-1/4", Single-Mode Fiber, 30m



6x12 HYBRIFLEX Pictured

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments. It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

FEATURES / BENEFITS

- ➔ Aluminum corrugated armor with outstanding bending characteristics → Minimizes installation time and enables mechanical protection and shielding
- ➔ Same accessories as 1-1/4" coaxial cable
- ➔ Outer conductor grounding → Eliminates typical grounding requirements and saves on installation costs
- ➔ Lightweight solution and compact design → Decreases tower loading
- ➔ Robust cabling → Eliminates need for expensive cable trays and ducts
- ➔ Installation of tight bundled fiber optic cable pairs directly to the RRH → Reduces CAPEX and wind load by eliminating need for interconnection
- ➔ Optical fiber and power cables housed in single corrugated cable → Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- ➔ Outdoor, black PE jacket → Ensures long-lasting cable protection

Technical Features

STRUCTURE

Cable Type		HYBRIFLEX®
Size		1-1/4"
Length	m (ft)	30 (98)

MECHANICAL SPECIFICATIONS

Outer Diameter Nominal	mm (in)	39 (1.54)
Cable Weight	kg/m (lb/ft)	1.341 (0.9)
Minimum Bending Radius, Single Bend	mm (in)	152 (6)
Minimum Bending Radius, Multi Bends	mm (in)	254 (10)
Recommended / Maximum Clamp Spacing	m (ft)	1 / 1.2 (3.25 / 4)

DC POWER CABLE SPECIFICATIONS

Number of DC Pairs		9
Maximum DC-Resistance Power Cable	Ω/km (Ω/kft)	3.41 (1.04)
Cross Section of Power Cable	mm² (AWG)	5.3 (10)
DC Wire Jacket Material		PVC
DC Cable Diameter	mm (in)	4 (0.16)
DC Cable Jacket		PVC
DC Standards (Meets or Exceeds)		For use in UL 2822, PVC Nylon, RoHS/REACH Compliant
Break-out length (Top)	mm(in)	4000 (157)
Break-out length (Bottom)	mm(in)	150 (6)
DC Cable sealing method		Semi-rigid flame-retarded polyolefin, with hot melt adhesive

CABLE JACKET

UV-Protection Individual and External Jacket		Yes
--	--	-----

ARMOR SPECIFICATIONS

Armor Type		Corrugated Aluminum
Maximum DC-Resistance of Armor	Ω/km (Ω/kft)	0.9 (0.27)
Diameter Corrugated Armor	mm (in)	36 (1.42)

F/O CABLE SPECIFICATIONS

F/O Cable Type		Single-mode
Number of F/O Pairs		18
Core/Clad	μm	9 / 125
Single Bending Radius	mm (in)	137 (5.4)
F/O Standards (Meets or Exceeds)		UL Listed Type OFNR (UL1666), RoHS Compliant
Optical Loss	dB/Km	0.5 @ 1310 nm 0.5 @ 1550 nm
Fiber Termination End 1		ODC plug
Fiber Termination End 2		LC plug
FO Break-out length (Top)	mm(in)	500 (20)
FO Break-out length (Bottom)	mm(in)	1350 (53)
Cable sealing method		Semi-rigid flame-retarded polyolefin, with hot melt adhesive

TESTING AND ENVIRONMENTAL

Storage Temperature	°C (°F)	-40 to 70 (-40 to 158)
Operation Temperature	°C (°F)	-40 to 65 (-40 to 149)
Installation Temperature	°C (°F)	-20 to 65 (-4 to 149)

ASSEMBLY LOSS

Optical Insertion Loss, Assembly or Jumper		0.4 dB (typ)/0.95dB (max) @1310/1550
--	--	--------------------------------------

SYSTEM LOSS

Optical Insertion Loss, Total Path		0.8dB (typ)/1.9dB (max) @1310/1550
------------------------------------	--	------------------------------------

External Document Links

- Installation Instructions
- Pre-packed HYBRIFLEX Kits and Accessories

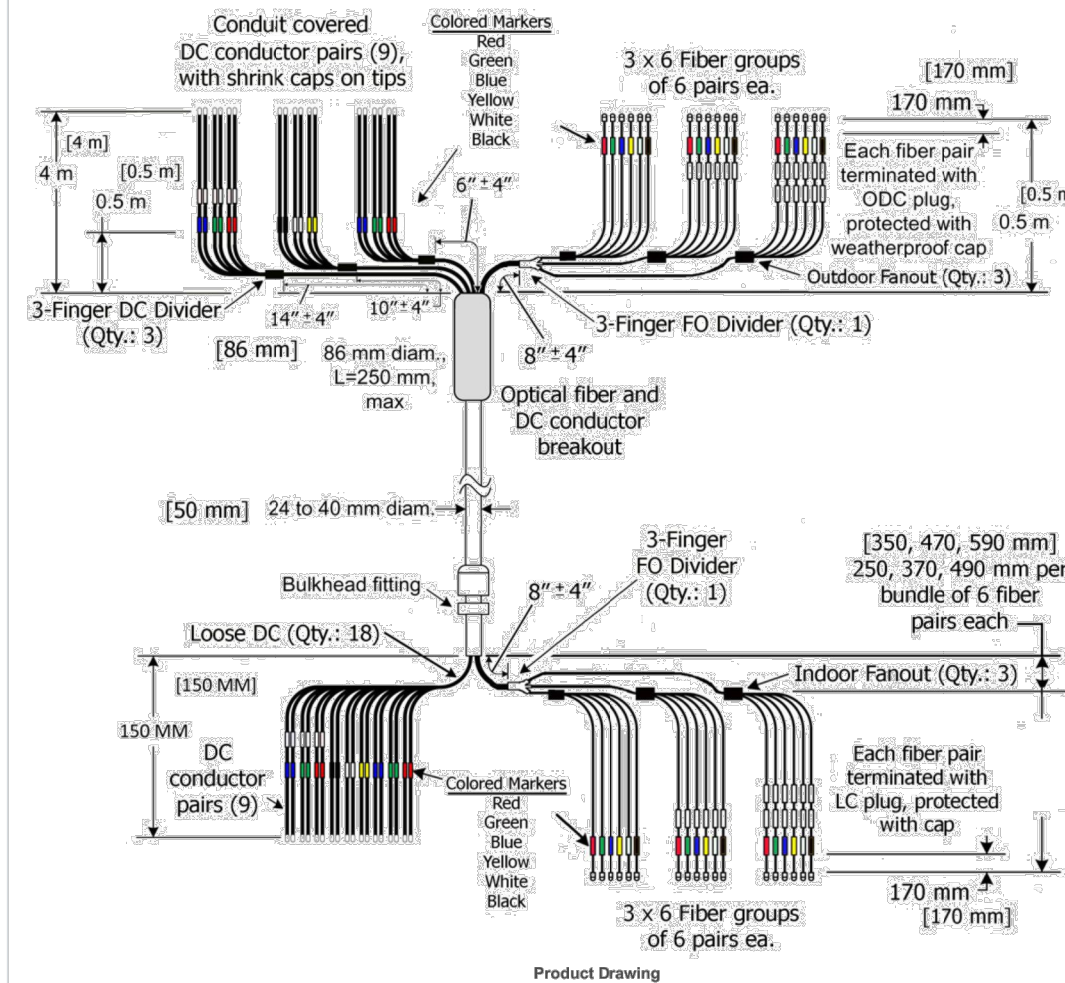
Notes



HYBRIFLEX® RRH Hybrid Feeder Cabling Solution
9x18, 10 AWG, 1-1/4", Single-Mode Fiber, 30m

External Link Reference

- View Factory Test Results On-line <http://myrfs.rfsworld.com/hybriflex/Default.aspx>
- HYBRIFLEX Armor Removal Video <https://www.youtube.com/watch?v=kepUAPg6nCC>



Product Drawing



LICENSE #: C-3065

REVISIONS			
REV	DATE	DESCRIPTION	INT
1	09/25/17	REVISIONS	JHT
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SITE INFORMATION

T-MOBILE #: SL03051A
ATC #: 280216
4909 N WILLOW BROOK LN
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84310

SHEET TITLE:
CABLE SPECIFICATIONS

SHEET NUMBER:

C-3.2

LICENSE #: C-3065

REVISIONS			
REV	DATE	DESCRIPTION	INT
1	09/25/17	REVISIONS	JHT
0	08/16/17	100% CONSTRUCTION	JHT
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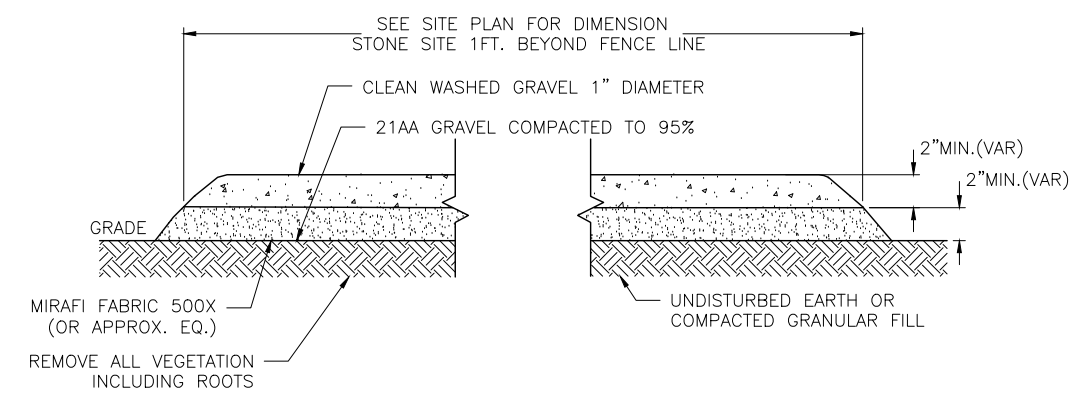
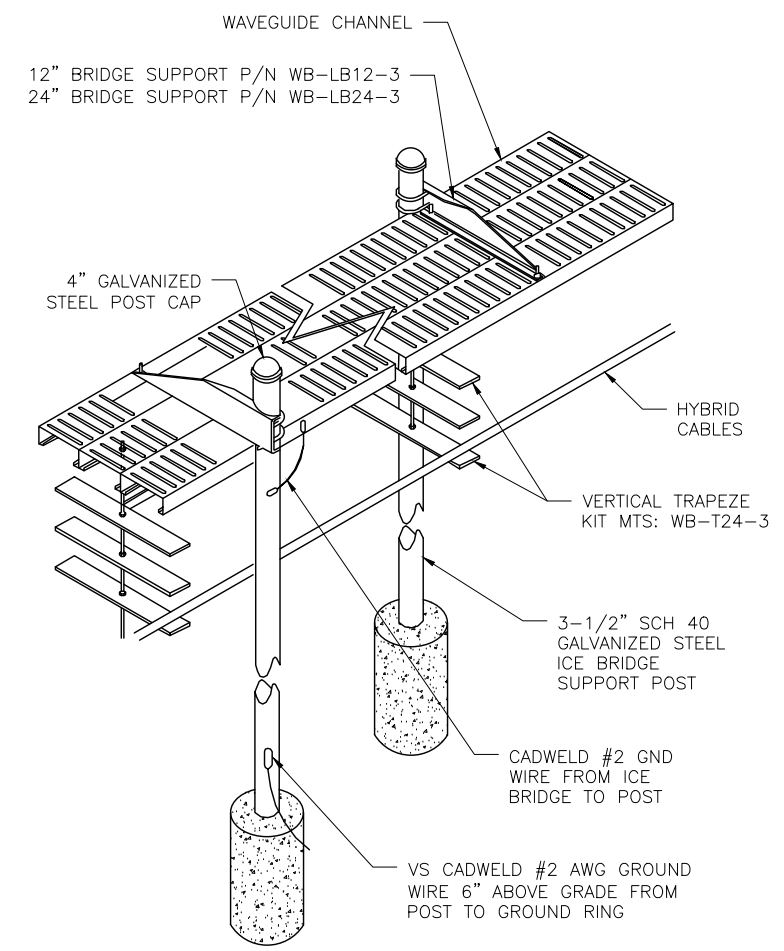
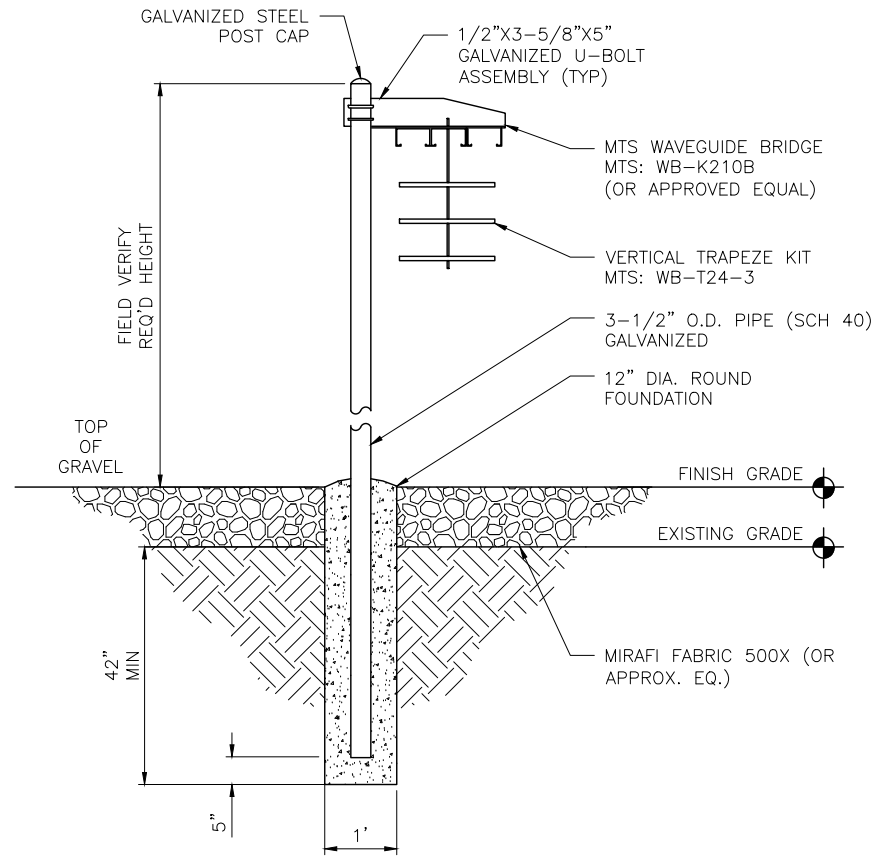


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SITE INFORMATION
T-MOBILE #: SL03051A
ATC #: 280216
4909 N WILLOW BROOK LN
EDEN, UT
84310

SHEET TITLE:
EQUIPMENT
DETAILS

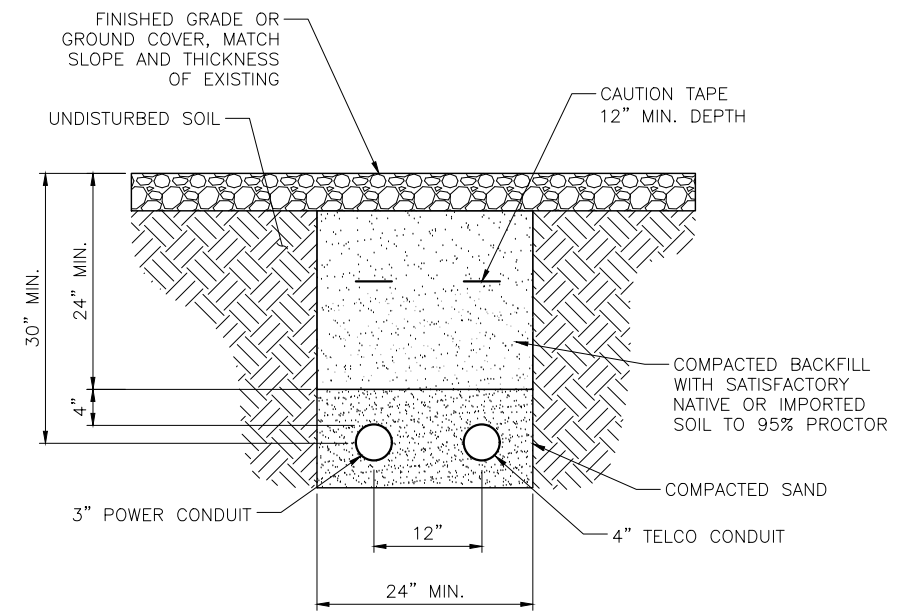
SHEET NUMBER:
C-4



SITE COMPOUND DETAIL

SCALE: 1
 NTS

- NOTES:
- LEAN CONCRETE, RED-COLORED TOP, MAY BE USED IN PLACE OF COMPACTED SAND.
 - IF POWER AND TELCO ARE PLACED IN THE SAME TRENCH, PER NEC CODE, A MINIMUM OF 12" SEPARATION IS REQUIRED BETWEEN THE POWER AND FIBER CONDUIT.



CONDUIT TRENCH DETAIL

SCALE: 2
 NTS

ICE BRIDGE DETAILS

SCALE: 4
 NTS

T-Mobile



LICENSE #: C-3065

Table with 4 columns: REV, DATE, DESCRIPTION, INT. Includes revision history for REVISIONS, 100% CONSTRUCTION, ISSUED FOR REVIEW 90%, and ISSUED FOR REVIEW 90%.

NOT USED

SCALE: NTS 1

CAC Model



Standard Features - CAC Model

- Telex demarcation with optional telex cabinet
NEMA 3R rainproof enclosure
3-point door closure with continuous hinge and heavy duty door gasket
UL891 listed rain/drip hood provides protection against the elements
0.1" thick aluminum
Corrosion resistant powder coat paint
Wall bracket or pad-mountable
Optional N-C bonding jumper
Mechanical interlock prevents simultaneous use of utility and generator power
Brute force metal oxide varistor surge suppression with easy to read LED and remote status indication
Generator receptacle options include: 100A or 200A, 100AUC or 220AUC, 650AUC

Specifications - CAC Model

Table with 3 columns: Enclosure, AC Cabinet, Telex Cabinet. Includes rows for Cabinet Dimensions, Weight, External Material, Mounting, Cabinet Enclosure Type, Weather Protection, Electrical (Operating Voltage, Service, Disconnect, AFC Rating, Load Center), Bonding Jumper, Standby Power Receptacle, TVSS with Indicator Lights, Grounding, Security (audible/alarm), Safety Compliance, and Options.

NOTE: AC cabinet is suitable for use as service equipment.



Ordering Information - CAC Model

A small selection of products is listed below. Please refer to the CAC Model Ordering Matrix for additional configurations.

Table with 3 columns: Emerson Catalog Number, Emerson Part number, Description. Lists various transfer devices and load centers.

Ordering Matrix - CAC Model

Table with 2 columns: AC Power Configuration, AFC Rating, Main Devices (Transfer Device), Generator Inlet, Generator Inlet Accessories, TVSS Options, Cabinet Mounting. Lists various configurations and options.



14 - Custom Option



Telephone Cabinets and Accessories

Contractor Type 1: Telephone Cabinets

T3-Box Telephone Cabinet, Type 3R



Industry Standards

UL 581, 581E Listed, Type 3R, File No. E27507
UL 497 / 1865 Listed, File No. E290874
UL Listed per CSA C22.2 No.94, Type 3R, File No. E27507

Application

Use T3-Box Telephone Cabinets to mount and protect telephone terminations, telecommunications circuit accessories, cross-connect terminal block assemblies, maintenance terminal modules, cable-splitter enclosures, network interface devices, wire-guide assemblies and telephone protectors in outdoor applications.

Features

- Lift-off hinges
4-position grounding bar TH-20
Temper-resistant quarter-turn latch
7-min square drive, use key accessory CLKSM7 or S/16 12-point socket
Fieldlock hinge
Standard knockouts

Specifications

- 36 or 34 gauge galvanized steel
3/4 in.-thick plywood panel

Finish

ANSI G1 gray polyester powder paint inside and outside.

Accessories

- B-3231
B-3305
B-3425
B-3428
Bulletin: 750RS

Standard Product

Table with 7 columns: Catalog Number, Rated In. Size, Door, In. Size, Panel Size (In), In. Size, Grade/Options. Lists various telephone cabinet models and their specifications.

Subject to change without notice

PH (763) 422-2211 • FX (763) 422-2650 • hoffman@emerson.com

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ATC #: 280216
4909 N WILLOW BROOK LN
EDEN, UT
84310

SHEET TITLE: EQUIPMENT DETAILS
SHEET NUMBER: C-5

SCALE: NTS 3

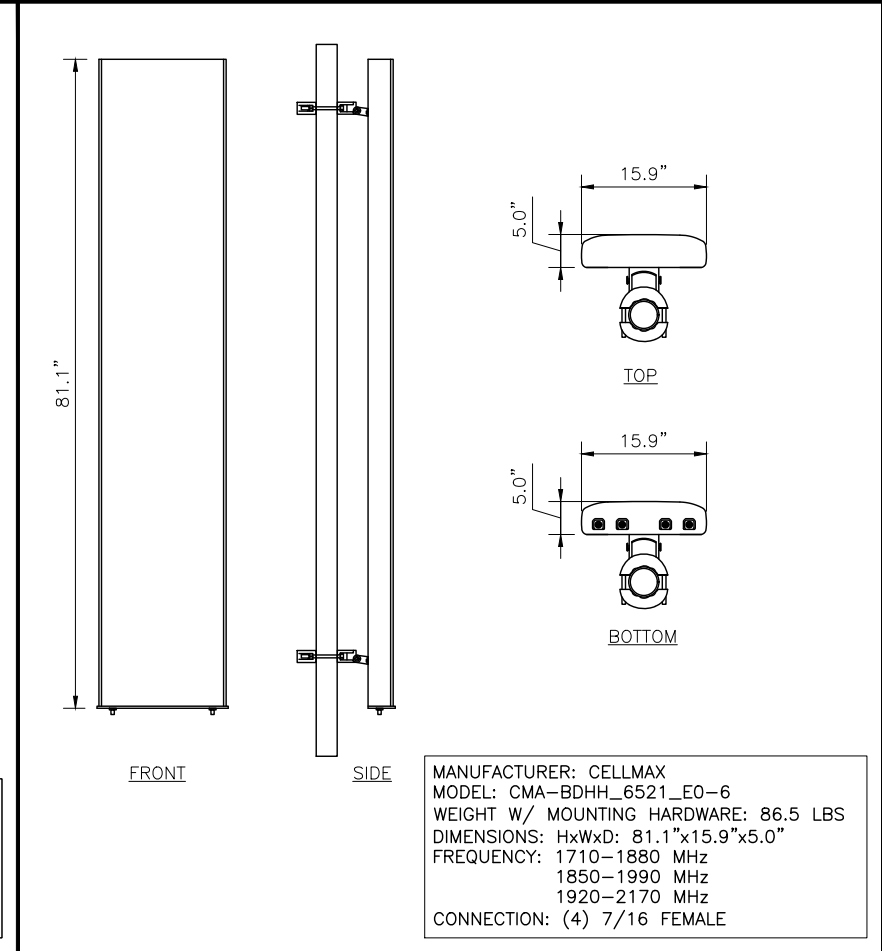
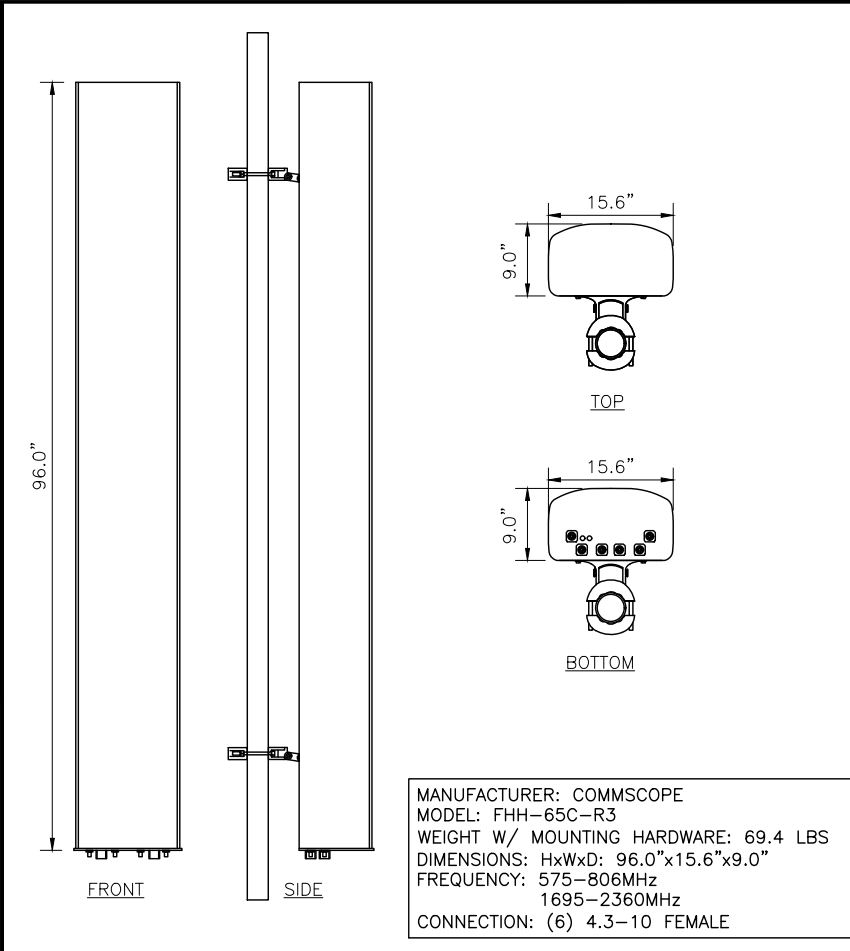
SCALE: NTS 2

T-Mobile



LICENSE #: C-3065

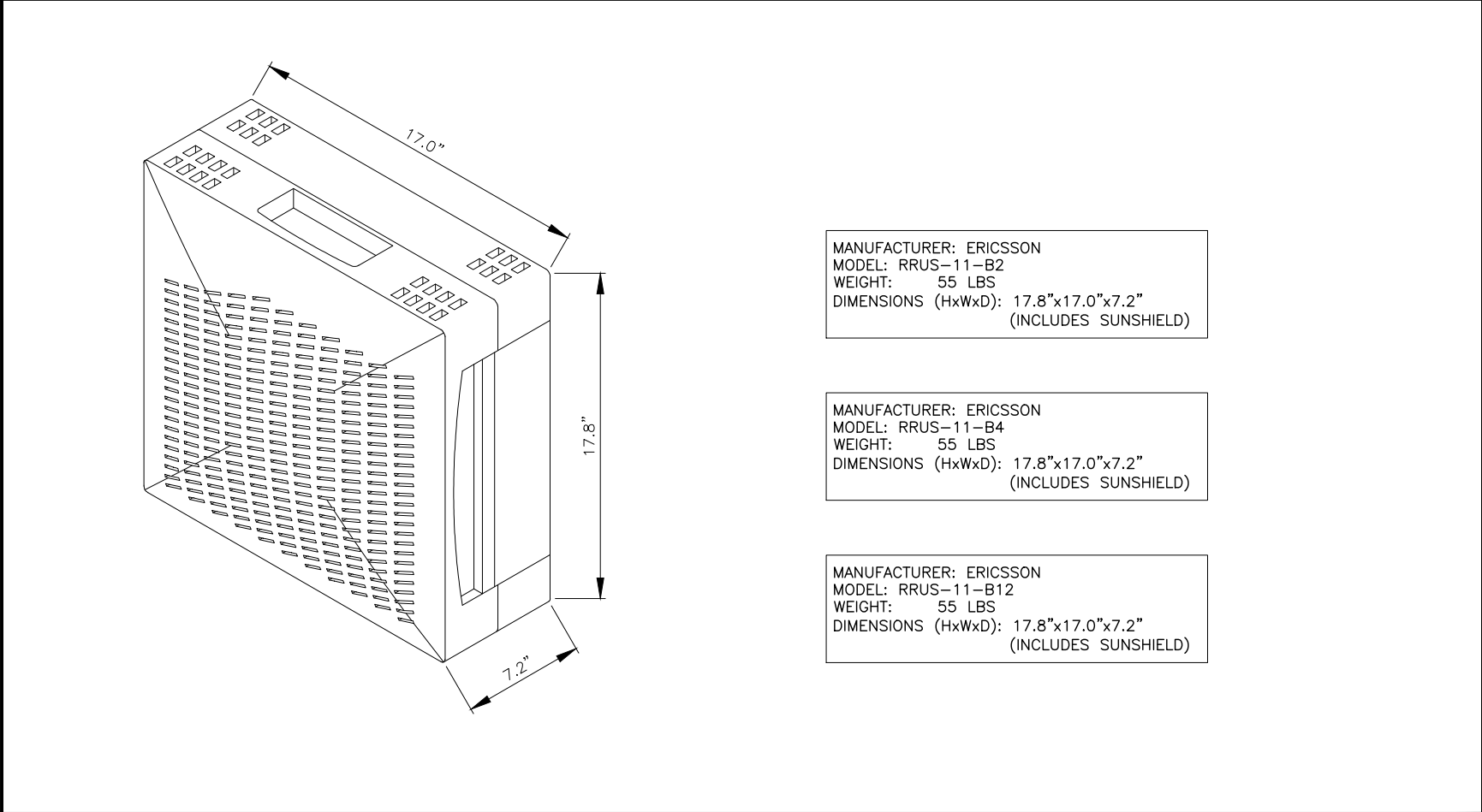
REVISIONS			
REV	DATE	DESCRIPTION	INT
1	09/25/17	REVISIONS	JHT
0	08/16/17	100% CONSTRUCTION	JHT
B	08/11/17	ISSUED FOR REVIEW 90%	LDL
A	06/20/17	ISSUED FOR REVIEW 90%	LDL



NOT USED SCALE: NTS 4

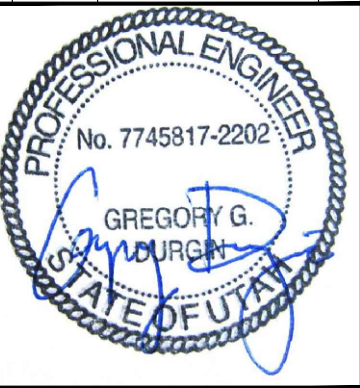
ANTENNA DETAIL SCALE: NTS 3

ANTENNA DETAIL SCALE: NTS 1



NOT USED SCALE: NTS 5

RRH SPECIFICATIONS SCALE: NTS 2



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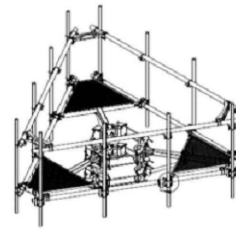
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T-MOBILE #: SL03051A
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84310

SHEET TITLE:
EQUIPMENT
DETAILS

SHEET NUMBER:
C-6

Product Specifications

COMMSCOPE®



MC-HP12S-12-96

3-Sector Monopole Co-location Platform Kit, 10 in to 30 in OD, 12 ft 6 in face, includes twelve 96 in pipes

Dimensions

Face Width	3.8 m 12.5 ft
Mounting Diameter, maximum	762.0 mm 30 in
Mounting Diameter, minimum	254.0 mm 10 in
Pipe Outer Diameter	60.3 mm 2 3/8 in
Height	2438.4 mm 96.0 in
Weight	971.1 kg 2141.0 lb
Width	3810.0 mm 150.0 in

Environmental Specifications

Man Rating	250 lb vertical man load at 15 mph (BWS)
Wind Rating	120 mph (BWS) at 100 ft AGL 140 mph (3-second gust) at 150 ft AGL using Exposure D per FBC
Wind Rating Test Method	TIA/EIA-222

General Specifications

Product Type	Co-location platform
Pipe Length	2438.4 mm 96.0 in
Pipe, quantity	12
Includes	Plain end pipes (12) Platform Rail Ring mount
Material Type	Hot dip galvanized steel
Mounting	Monopole, 254–762 mm (10–30 in) OD
Package Quantity	1
Sectors, quantity	3

* Footnotes

Man Rating	BWS—Base Wind Speed
Wind Rating	BWS—Base Wind Speed; FBC—Florida Building Code

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page 1 of 1
March 30, 2017

T-Mobile



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REVISIONS			
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SITE INFORMATION

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ATC #: 280216

4909 N WILLOW BROOK LN
EDEN, UT
84310

SHEET TITLE:

EQUIPMENT
DETAILS

SHEET NUMBER:

C-7



20A OUTDOOR GFCI/SWITCH COMBO

MANUFACTURER: MIDWEST ELECTRIC PRODUCTS (OR EQUIVALENT)
 MODEL: U010S010GRP
 DIMENSIONS: 5"x7"
 WEIGHT: 4.5 LBS
 AMPS: 20
 VOLTS: 120

EXISTING UTILITY RACK

NOTE: REPLACE THE STANDARD SWITCH SUPPLIED WITH THE ENCLOSURE WITH AN INTERMATIC 20A, SPST, SPRING WOUND TIMER SWITCH WITH A RANGE FROM 0 TO 2 HOURS (INTERMATIC PART NO. FF2H) OR EQUIVALENT. THE SWITCH SHALL NOT HAVE A HOLD FEATURE TO OVERRIDE THE TIMER.

CONTRACTOR IS RESPONSIBLE TO COORDINATE INSTALL OF ELECTRICAL METER WITH UTILITY COMPANY AND VERIFY INSTALLATION WITH T-MOBILE.

ELECTRICAL CONTRACTOR NOTE:

THESE ELECTRICAL DRAWINGS ARE DIAGRAMMATIC ONLY AND SHOW THE GENERAL INTENT OF THE FINAL ARRANGEMENTS OF ELECTRICAL SYSTEMS, EQUIPMENT AND CONNECTIONS. IT IS THE INTENT OF THESE ELECTRICAL DRAWINGS TO REQUIRE APPROPRIATE ELECTRICAL WORK TO COMPLETELY FACILITATE THE ELECTRICAL REQUIREMENTS FOR THE NEW TENANT (T-MOBILE). SOME OF THE ELECTRICAL WORK SHOWN IS EXISTING AND SHALL REMAIN IN PLACE AND NEW WORK ADDED TO ACCOMMODATE T-MOBILE ELECTRICAL REQUIREMENTS. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELECTRICAL EQUIPMENT AND WIRING AND ADD NEW WORK AS REQUIRED TO COMPLETE THE T-MOBILE ELECTRICAL REQUIREMENTS. IT IS NOT INTENDED TO SHOW EXISTING ELECTRICAL WORK EXACTLY AS IS BUT TO SHOW THE INTENT ONLY. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR ADDED LOAD (T-MOBILE). VERIFY ELECTRICAL AND TELCO SERVICE SIZE AND CAPACITY.

GENERAL NOTES:

- ALL WORK IS TO COMPLY WITH THE LATEST EDITION OF THE NATIONAL ELECTRIC CODE (NEC) AND ANY LOCAL ORDINANCES, CODES AND RELATED FEES.
- ALL EQUIPMENT AND MATERIAL FURNISHED AND INSTALLED UNDER THIS CONTRACT SHALL BE UNDERWRITERS LABORATORIES (UL) LISTED, NEW FREE FROM DEFECTS AND SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE BY OWNER OR HIS REPRESENTATIVE. SHOULD ANY TROUBLE DEVELOP DURING THIS PERIOD DUE TO FAULTY WORKMANSHIP, MATERIAL OR EQUIPMENT, THE CONTRACTOR SHALL FURNISH ALL NECESSARY MATERIALS AND LABOR TO CORRECT THE TROUBLE WITHOUT COST TO THE OWNER.
- ALL WORK SHALL BE EXECUTED IN A WORKMAN-LIKE MANNER AND SHALL PRESENT A NEAT MECHANICAL APPEARANCE WHEN COMPLETED. CONTRACTOR SHOULD AVOID DAMAGE TO EXISTING UTILITIES WHEREVER POSSIBLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING RELATED TO ELECTRICAL WORK, AND SHALL RESTORE ALL EXISTING LANDSCAPING, SPRINKLER SYSTEMS, CONDUITS, WIRING, PIPING, ETC. DAMAGED BY THE ELECTRICAL WORK TO MATCH CONDITIONS.
- ELECTRICAL WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED TO COMPLETE ELECTRICAL POWER AND LIGHTING SYSTEMS, TELEPHONE AND COMMUNICATION SYSTEMS, PANEL BOARDS, CONDUIT, CONTROL WIRING, GROUNDING, ETC. AS INDICATED ON ELECTRICAL DRAWINGS AND/OR AS REQUIRED BY GOVERNING CODES.
- PRIOR TO INSTALLING ANY ELECTRICAL WORK, THE CONTRACTOR SHALL VISIT THE JOB SITE AND VERIFY EXISTING SITE LOCATIONS AND CONDITIONS AND UTILITY SERVICE REQUIREMENTS OF THE JOB, AND BY REFERENCE TO ENGINEERING AND EQUIPMENT SUPPLIERS DRAWINGS. SHOULD THERE BE ANY QUESTION OR PROBLEM CONCERNING THE NECESSARY PROVISIONS TO BE MADE, PROPER DIRECTIONS SHALL BE OBTAINED BEFORE PROCEEDING WITH ANY WORK.
- PROVIDE POWER AND TELEPHONE TO SERVICE POINTS PER UTILITY COMPANY REQUIREMENTS. CONTRACTOR SHALL CONTACT UTILITY SERVICE PLANNERS AND OBTAIN ALL SERVICE REQUIREMENTS AND INCLUDE COSTS OF SUCH IN THEIR BID.
- SERVICE EQUIPMENT SHALL HAVE A SHORT CIRCUIT WITHSTAND RATING EQUAL TO OR EXCEEDING THE MAXIMUM AVAILABLE FAULT CURRENT AT THE SUPPLY TERMINAL ON THE UTILITY TRANSFORMER. SECONDARY, THE INSULATION SHALL BE FREE FROM ANY SHORT CIRCUITS AND GROUNDS.
- WHERE APPLICABLE CONTRACTOR SHALL COORDINATE WITH LOCAL UTILITY COMPANY REGARDING REQUIREMENTS AND INSTALLATION OF A CT CABINET.

ELECTRICAL NOTES:

- ALL WIRES SHALL BE STRANDED COPPER WITH THHN/THWN AND 600 VOLTS INSULATION. ALL GROUND CONDUCTORS TO BE PROPERLY SIZED COPPER. (STRANDED OR SOLID).
- IN THE EVENT OF ANY CONFLICT OR INCONSISTENCY BETWEEN ITEMS SHOWN ON THE PLANS AND/OR SPECIFICATIONS, THE NOTE, SPECIFICATION OR CODE WHICH PRESCRIBES AND ESTABLISHES THE HIGHEST STANDARD OF PERFORMANCE SHALL PREVAIL.
- SERVICE CONDUITS SHALL HAVE NO MORE THAN (4) 90° BENDS IN ANY SINGLE RUN. THE CONTRACTOR SHALL PROVIDE PULL BOXES AS NEEDED WHERE CONDUIT REQUIREMENTS EXCEED THESE CONDITIONS. PULL WIRES AND CAPS SHALL BE PROVIDED AT ALL SPARE CONDUITS FOR FUTURE USE.
- ALL COAX, POWER AND TELEPHONE SYSTEM CONDUITS SHALL HAVE A MINIMUM 24" SCH. 80 PVC RADIUS SWEEPS TO EQUIPMENT, PULL BOXES, MONOPOLES, ETC., UNLESS OTHERWISE NOTED, OR AS REQUIRED BY UTILITY COMPANIES.
- ALL CONDUIT AND NIPPLE ENTRIES TO CABINET AND METER BOXES WILL BE MADE WITH WEATHERPROOF HUBS, CONNECTORS OR LOCKNUTS LISTED FOR THE APPLICATIONS WITH NON-METALLIC BUSHINGS.
- ONLY ONE SERVICE ALLOWED PER LUG. ALL GROUNDING AND BONDING MUST COMPLY WITH NEC 250 REQUIRED.
- UPON COMPLETION OF THE JOB, THE CONTRACTOR SHALL FURNISH AS-BUILT DRAWINGS TO THE OWNER.

PLATFORM UTILITY RACK

SCALE:
NTS

2

ONE-LINE DIAGRAM

SCALE:
NTS

1

P:\Operations\Projects\ATC\T-Mobile\2017 SL03051A Liberty\100 - Existing Data\103-Photos\280216-289-NO_3725-2017_05_19_01_02_14.jpg

PROPOSED T-MOBILE METER

UTILITY COMPANY SERVICE:
120/240V, 1φ3W

EXISTING 120/240V, 1φ3W,
MULTI-METER ELECTRICAL
SERVICE WITH (4) METER
POSITIONS

(3) 3/0 WITH #6 GND
IN 2" CONDUIT

PROPOSED 20A OUTDOOR GFCI
RECEPTACLE AND SWITCH COMBO
(MIDWEST ELECTRIC PART No.
U010S010GRP) OR EQUIVALENT

PROPOSED LED
FLOODLIGHT IN
WEATHERPROOF BOX
(LITHONIA MODEL #
OLFL14XXBZ)

PROPOSED 200A, 120/240V,
1φ3W, POWER PROTECTION
CABINET (PPC) WITH INTEGRATED
LOAD CENTER AND FACTORY
WIRED GENERATOR RECEPTACLE.
MAIN BREAKERS ARE
INTERCONNECTED TO PREVENT
FROM BEING SIMULTANEOUSLY
CLOSED (BREAK-BEFORE-MAKE
INTERLOCK)

NOTES:

- CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
- ALL NEW CONDUCTOR WIRE TO BE INSTALLED SHALL BE COPPER. ALL WIRE LARGER THAN #10 SHALL BE THWN-2, THW-2, RHW-2, OR XHHW-2 WIRE UNLESS NOTED OTHERWISE.
- ALL GROUNDING AND BONDING TO BE PER THE RECOGNIZED EDITION OF THE NATIONAL ELECTRIC CODE (NEC)

PBC 05

T-Mobile



LICENSE #: C-3065

REVISIONS			
REV	DATE	DESCRIPTION	INT
1	09/25/17	REVISIONS	JHT
0	08/16/17	100% CONSTRUCTION	JHT
B	08/11/17	ISSUED FOR REVIEW 90%	LDL
A	06/20/17	ISSUED FOR REVIEW 90%	LDL



THESE PLANS AND SPECIFICATIONS, AS INSTRUMENTS OF SERVICE, ARE AND SHALL REMAIN THE PROPERTY OF POWDER RIVER DEVELOPMENT SERVICES, LLC WHETHER THE PROJECTS FOR WHICH THEY ARE MADE ARE EXECUTED OR NOT. THESE DRAWINGS AND SPECIFICATIONS SHALL NOT BE USED BY ANY PERSON OR ENTITY ON OTHER PROJECTS WITHOUT PRIOR WRITTEN CONSENT OF THE ENGINEER.

SITE INFORMATION

T-MOBILE #: SL03051A

ATC #: 280216

4909 N WILLOW BROOK LN
EDEN, UT
84310

SHEET TITLE:

ELECTRICAL
DETAILS

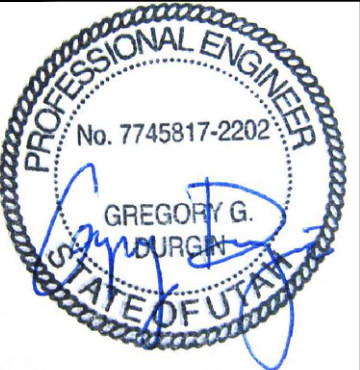
SHEET NUMBER:

E-1



LICENSE #: C-3065

REVISIONS			
REV	DATE	DESCRIPTION	INT
1	09/25/17	REVISIONS	JHT
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SITE INFORMATION

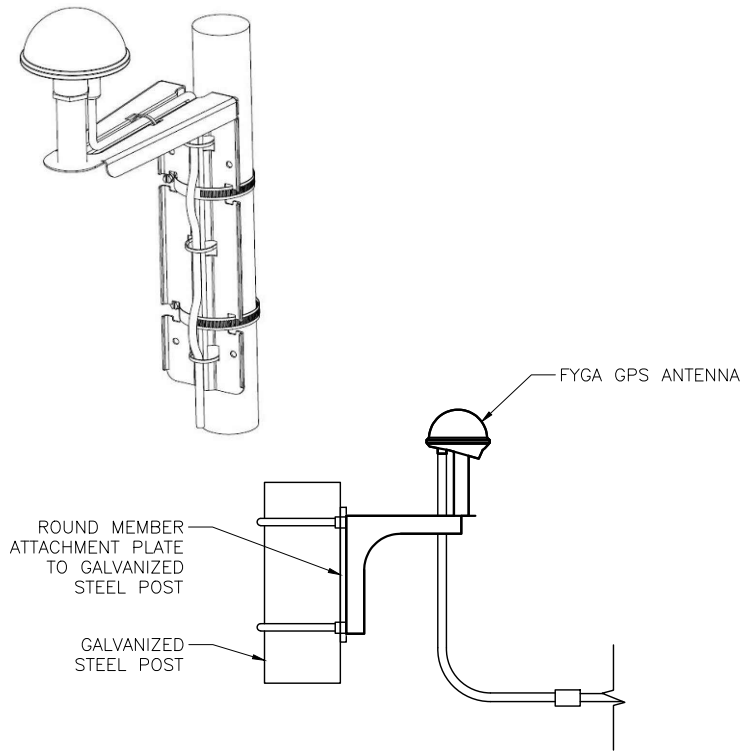
T-MOBILE #: SL03051A
ATC #: 280216
4909 N WILLOW BROOK LN
EDEN, UT
84310

SHEET TITLE:
PANEL SCHEDULE

SHEET NUMBER:
E-2

T-MOBILE PANEL SCHEDULE

MAIN: 200 AMP MAIN BREAKER			VOLTAGE/PHASE: 120/240V, 1-PHASE, 3-WIRE				AIC RATING: 10,000 AMPS				
MOUNTING: INSIDE PPC CABINET			ENCLOSURE: NEMA 3R				SURGE PROTECTION DEVICE: YES				
DESCRIPTION	LOAD (VA)	C or NC	C/B	CIR No.	LOAD (VA)		CIR No.	C/B	C or NC	LOAD (VA)	DESCRIPTION
					A-PHASE	B-PHASE					
PBC 05	6240	C	80	1	6240		2	30	NC	0	SURGE PROTECTION DEVICE
	6240	C		3		6240	4		NC	0	
				5	380		6	20	NC	380	GFCI RECEPTACLE AND LIGHTS
				7		0	8				
				9	0		10				
				11		0	12				
				13	0		14				
				15		0	16				
				17	0		18				
				19		0	20				
				21	0		22				
				23		0	24				
BASE LOAD (VA) =					6620	6240	"C" DESIGNATION IDENTIFIES CONTINUOUS LOADS AND MOTOR LOADS AS REQUIRED BY SECTIONS 230.42 AND 430.24 OF THE NEC				
25% OF CONTINUOUS LOAD (VA) =					1560	1560					
TOTAL LOAD (VA) =					8180	7800					
TOTAL LOAD (A) =					69	65					

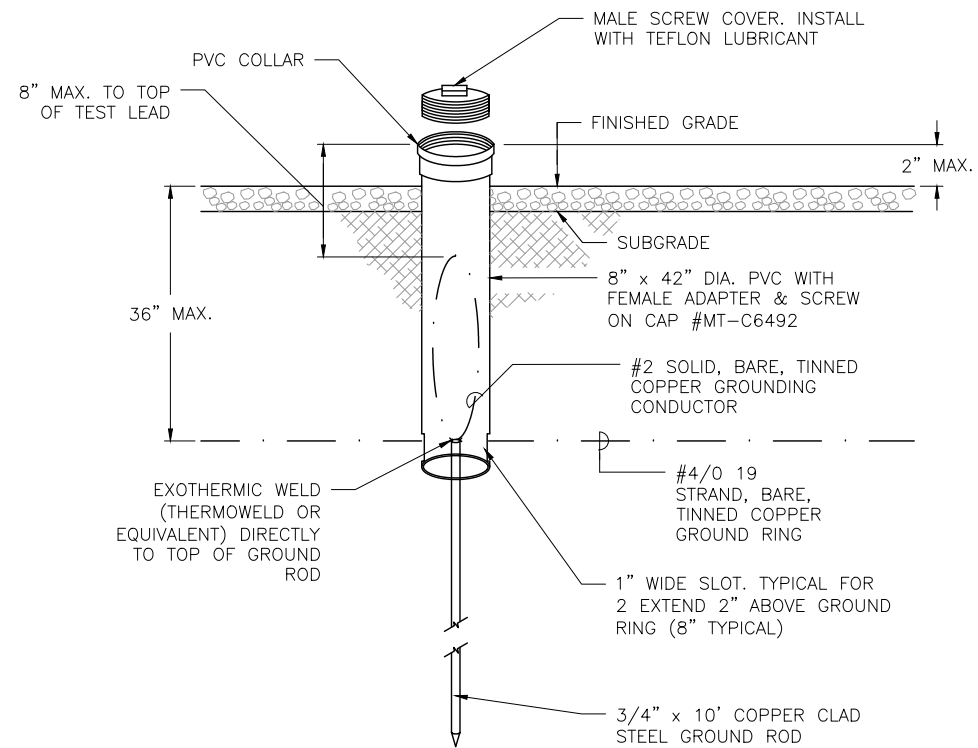


USE NOKIA GPS SYNCHRONIZATION KIT
P/N: GPSSYNCKIT
MATERIAL: 31409

GPS GROUNDING DETAIL

SCALE:
NTS

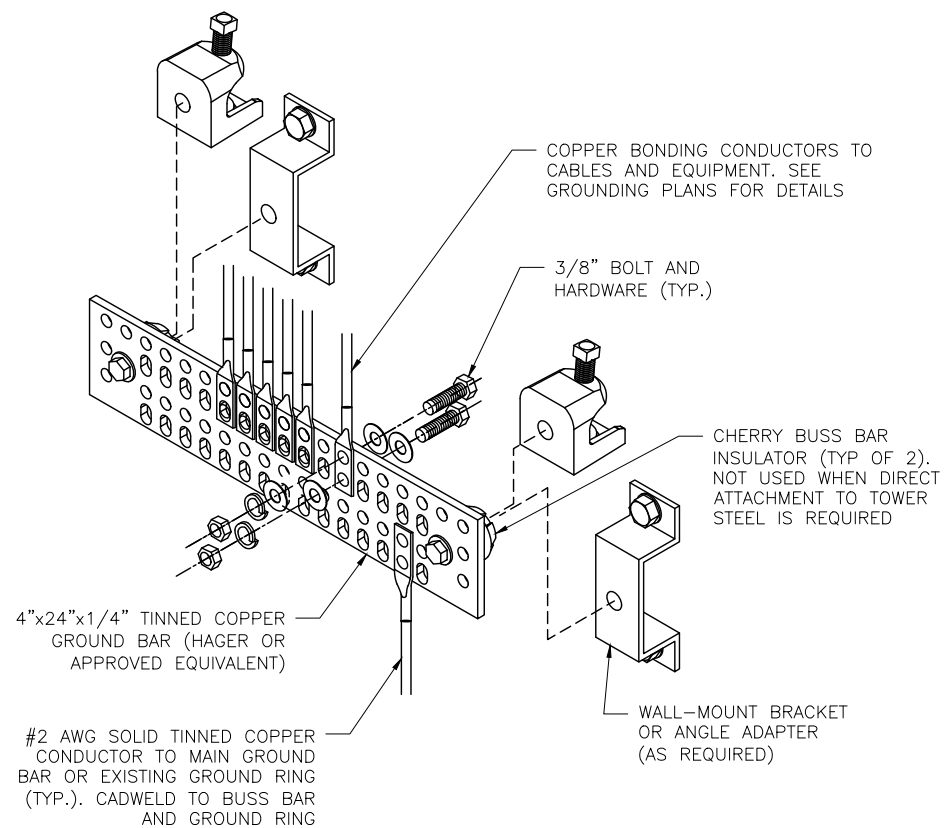
3



TEST WELL DETAIL

SCALE:
NTS

1



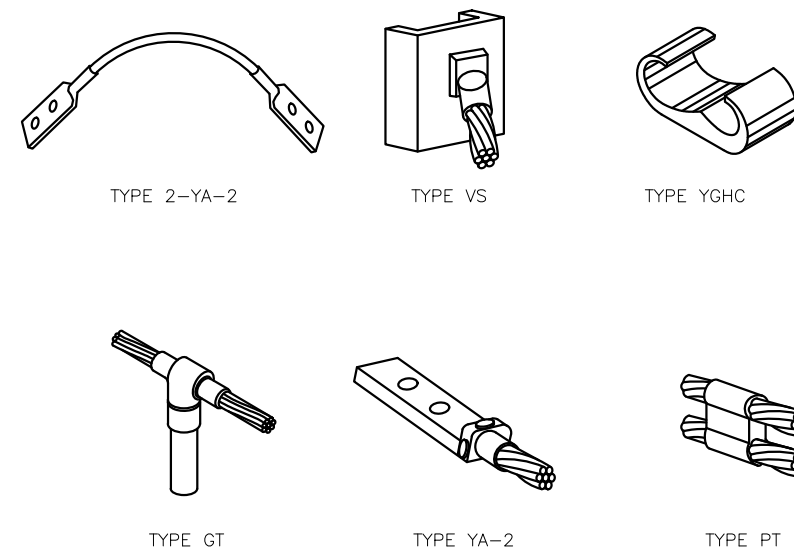
GROUND BAR DETAIL

SCALE:
NTS

4

NOTES:

1. CADWELD "TYPES" SHOWN ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC TYPES OF CADWELDS TO BE USED FOR THIS PROJECT.
2. CADWELDING IS NOT ALLOWED ON CROWN CASTLE TOWERS.



CADWELD CONNECTION TYPES

SCALE:
NTS

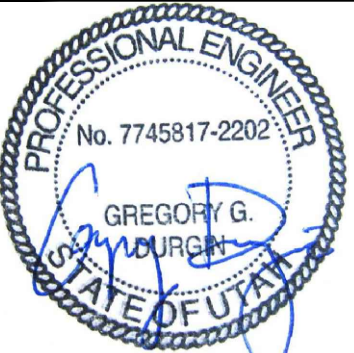
2

T-Mobile



LICENSE #: C-3065

REVISIONS			
REV	DATE	DESCRIPTION	INT
1	09/25/17	REVISIONS	JHT
0	08/16/17	100% CONSTRUCTION	JHT
B	08/11/17	ISSUED FOR REVIEW 90%	LDL
A	06/20/17	ISSUED FOR REVIEW 90%	LDL



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SITE INFORMATION

T-MOBILE #: SL03051A

ATC #: 280216

4909 N WILLOW BROOK LN
EDEN, UT
84310

SHEET TITLE:
GROUNDING
DETAILS

SHEET NUMBER:

E-3

REVISIONS			
REV	DATE	DESCRIPTION	INT
1	09/25/17	REVISIONS	JHT
0	08/16/17	100% CONSTRUCTION	JHT
B	08/11/17	ISSUED FOR REVIEW 90%	LDL
A	06/20/17	ISSUED FOR REVIEW 90%	LDL



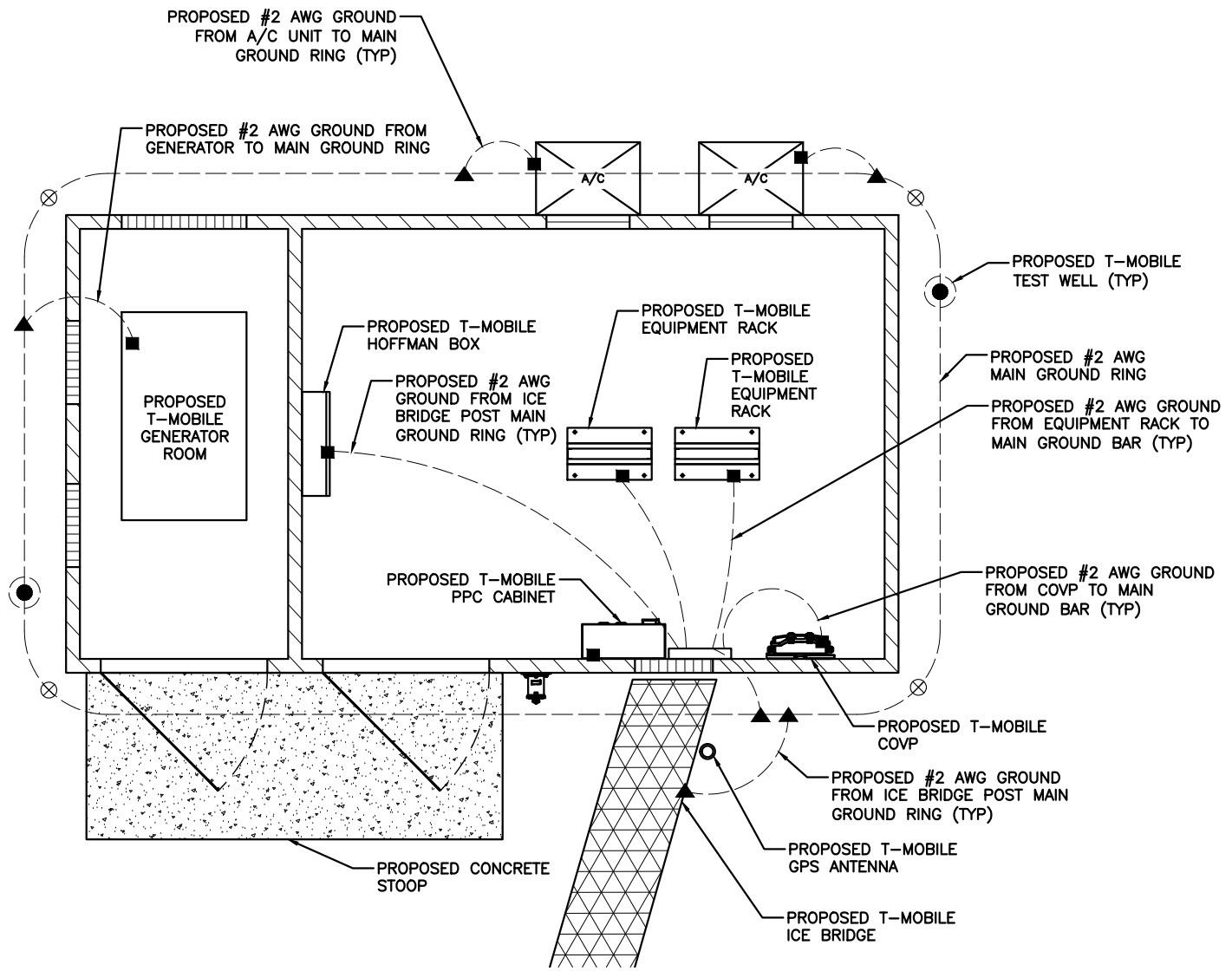
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SITE INFORMATION

T-MOBILE #: SL03051A
ATC #: 280216
4909 N WILLOW BROOK LN
EDEN, UT
84310

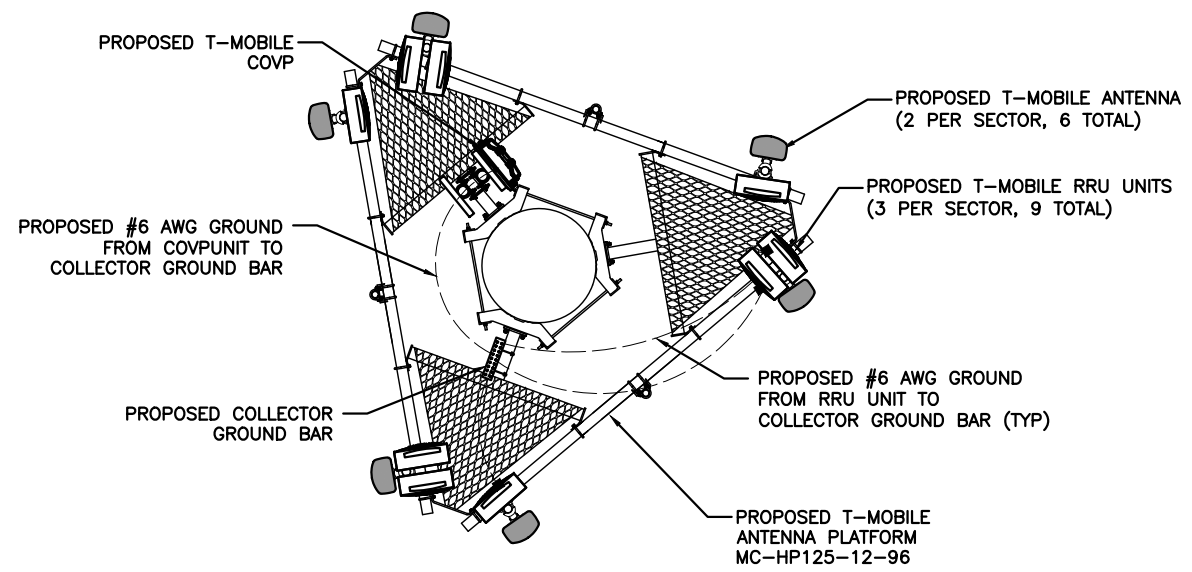
SHEET TITLE:
GROUNDING PLANS

SHEET NUMBER:
E-4



IMPORTANT GROUNDING/CABLE NOTES:

- INSTALL (2) GROUND BARS AT THE BOTTOM OF THE TOWER (EVEN WITH SHORT ICE BRIDGE RUNS), ONE GROUND BAR AT THE TOWER AND ONE AT THE PLATFORM. IF SITE IS A ROOFTOP AND THE EQUIPMENT IS IN THE PENTHOUSE, T-MOBILE REQUIRES ONE GROUND BAR ON THE OUTSIDE OF THE PORT ENTRY AND ONE ON THE INSIDE NEAR THE CABINET. MONOPOLE JOBS WILL REQUIRE SECTORIZED GROUNDING, WHICH WILL REQUIRE (3) TOP BUSS BARS.
- T-MOBILE IS ELIMINATING THE HOME RUN GROUND WIRE FROM TOP BUSS BAR AND THE BOTTOM BUSS BAR ON TOWER SITES. ROOFTOPS ARE STILL REQUIRED TO HAVE SECTORIZED GROUND AND #2 INSULATED GROUND WIRE FROM SECTOR GROUNDS TO MAIN BUSS BARS AND BUILDING STEEL.
- REMOVE INSULATORS (CHERRIES) FROM THE BUSS BARS AND GROUND TO TOWER, TOP AND BOTTOM ON TOWER SITES ONLY.
- ALL EXPOSED GROUNDS TO BE DRESSED WITH SEAL TIGHT.
- ALL ICE BRIDGE POSTS ARE TO BE GROUNDED WITH #2 SOLID AND DRESSED IN WITH SEAL TIGHT.
- TWO OF THE FOUR PLATFORM POSTS NEED TO BE GROUNDED DIAGONALLY.
- BOTTOM BUSS BAR IS TO HAVE TWO #2 GROUND LEADS DRESSED IN WITH SEAL TIGHT.
- THE DISTANCE BETWEEN TRAPEZE HANGERS ON ICE BRIDGE IS 4'-0".
- THE DISTANCE BETWEEN BUTTERFLIES AND CABLE STAND-OFFS IS 4'-0".
- THE DISTANCE BETWEEN CONVENTIONAL AND/OR SNAP-HANGERS ON 1/2" JUMPERS SHALL BE NO MORE THAN 3'-0" AT THE TOP AND 2'-0" FEET ON THE BOTTOM JUMPERS PER MANUFACTURER'S RECOMMENDATION.
- NO HYBRID CABLES SHOULD TOUCH METAL OR STEEL. THE USE OF STANDOFF BRACKETS IS REQUIRED.
- T-MOBILE WOULD LIKE TO SHORTEN THE TOP JUMPER TO 4'-0" SUREFLEX INSTEAD OF 6'-0". JUMPERS SHOULD NOT BE CURLED UP OR COILED TO ELIMINATE SLACK.
- GRAVEL UNDER ALL PLATFORMS IS REQUIRED.
- HYBRID AND JUMPER LINES SHOULD BE DRESSED IN ON THE SIDE OR BOTTOM OF T-BOOMS, NEVER ON TOP WHERE SOMEONE WOULD WALK.



GENERAL GROUNDING NOTES:

- GROUNDING SHALL COMPLY WITH NEC, T-MOBILE AND NSN STANDARDS. CONTRACTOR SHALL VERIFY EXISTING GROUNDING CONDITIONS. CORRECTING ANY DEFICIENCIES TO BE INCLUDED IN ORIGINAL PRICING AND CORRECT DEFICIENCIES DURING NEW CONSTRUCTION. INCLUDING MISSING GROUND BARS, BAD GROUND WELDS, MISSING GROUND LEADS OR BROKEN GROUND LEADS, ETC.
- ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/ GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TIN PLATED COPPER IN 3/4" PROTECTIVE PVC UNLESS OTHERWISE INDICATED.
- APPROVED ANTIOXIDANT COATINGS (NO-OX) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
- ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. IN ALL CASES, BENDS SHALL BE MADE WITH A MINIMUM BEND RADIUS OF 12 INCHES.
- ALL TOWER TOP GROUND WIRES SHALL BE SUPPORTED EVERY TWO FEET.

LEGEND:

- EXISTING GROUND RING
- ▲ CADWELD CONNECTION (EXOTHERMIC WELD)
- MECHANICAL CONNECTION
- ⊗ GROUND ROD
- TEST WELL

NOTES:
1. ONLY ONE (1) T-MOBILE SECTOR SHOWN W/ GROUNDING FOR CLARITY.

