

ANCHOR

Site Plan Review
08-30-2022
City of Kalamazoo



SBA MI46938-A-02
KZ06353C
 4401 SIESTA STREET
 KALAMAZOO, MI 49009



EXPIRES: 11/02/23 SIGNED: 08/25/22

REV.	ISSUED FOR	DATE	BY
0	FINAL	08/12/22	ATK
1	REVISION	08/25/22	ATK

AQUATIC \ DESIGN & PROGRAM MANAGEMENT
 CIVIL \ TELECOMMUNICATION \ MECHANICAL
 PLUMBING \ ELECTRICAL \ LAND SURVEYING
 ACCESSIBILITY CONSULTING \ STRUCTURAL

CHECK: JKR
 DRAWN: ATK
 JOB: T2200972

T-1
TITLE SHEET

SITE NUMBER:
KZ06353C

SITE NAME:
SBA MI46938-A-02

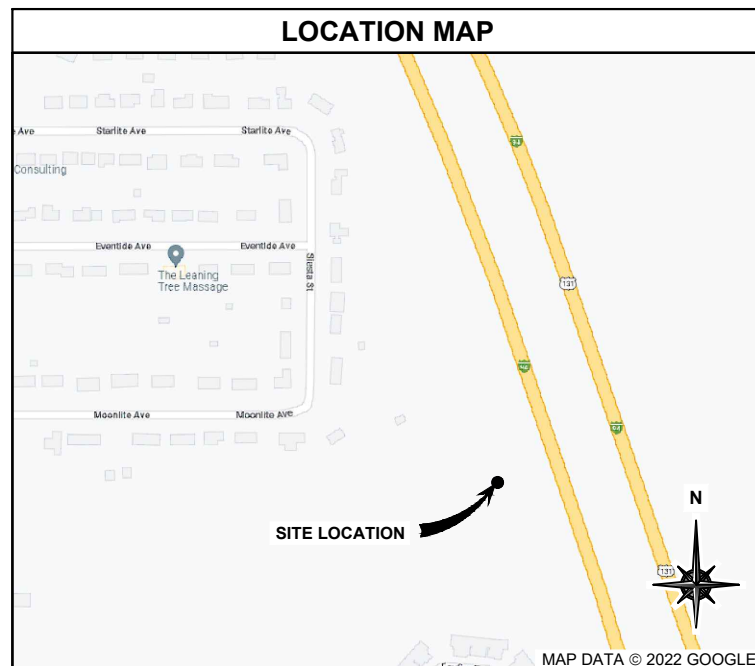
SBA SITE NUMBER:
MI46938-A-02

SBA SITE NAME:
OAKWOOD 4, MI

JURISDICTION:
KALAMAZOO COUNTY

SITE TYPE:
MONOPOLE

SITE ADDRESS:
4401 SIESTA STREET
KALAMAZOO, MI 49009
KALAMAZOO COUNTY



PROJECT DESCRIPTION

NO NEW WATER OR SEWER IS REQUIRED AS FACILITY IS UNMANNED.

EXISTING T-MOBILE BUILD OUT:
 (9) ANTENNAS, (3) TMA'S, (6) RRU'S, (3) TRIPLEXER'S, (12) COAX, (2) COVPS, (1) HCS, (3) SYSTEM MODULES, (4) RF MODULE, (1) CHAIR MOUNT, (4) U2100 MODULES & (1) SSC AT GRADE

FINAL T-MOBILE BUILD OUT:
 (6) ANTENNAS, (6) RRU'S, (2) OVP'S, (2) HCS 2.0 TRUNKS, (2) BREAKOUT BOXES, (1) SITE SUPPORT CABINET, (1) BBU CABINET & (1) AMIA IN SSC

SCOPE OF WORK:

- REMOVE (12) EXISTING COAX
- REMOVE (2) EXISTING COVPS (1 AT GRADE & 1 AT ANTENNAS)
- REMOVE (1) EXISTING HIGH CAP HCS
- REMOVE (3) EXISTING TMA'S
- REMOVE (9) EXISTING ANTENNAS
- REMOVE (3) EXISTING FHFB'S
- REMOVE (3) EXISTING FRIG'S
- REMOVE (3) EXISTING TRIPLEXER'S
- REMOVE (1) EXISTING GSM-PCS ESMB
- REMOVE (1) EXISTING GSM-PCS FXFB
- REMOVE (1) EXISTING LTE-AWS/700 FSMF
- REMOVE (1) EXISTING LTE-PCS FSMF
- REMOVE (3) EXISTING LTE-700 FRBG'S
- REMOVE (3) EXISTING FBBC SUBMODULES
- RELOCATE EXISTING FSEB TO NEW SSC
- RELOCATE EXISTING FYGA GPS ANTENNA
- REMOVE (1) EXISTING SITE SUPPORT CABINET
- REMOVE (4) EXISTING U2100 MODULES AND POST MOUNT
- REMOVE EXISTING CHAIR MOUNT
- REMOVE (1) EXISTING PPC
- INSTALL (3) NEW ANTENNAS
- INSTALL (3) NEW ANTENNAS W/ INTEGRATED RADIOS (1 PER SECTOR)
- INSTALL (3) NEW AHLOA'S (1 PER SECTOR)
- INSTALL (3) NEW AHFIG'S (1 PER SECTOR)
- INSTALL (1) NEW PPC
- INSTALL NEW ICE BRIDGE SECTION
- INSTALL (2) NEW BREAKOUT BOXES
- INSTALL (2) NEW OVP'S AND WIRE TROUGH
- INSTALL (2) NEW HCS 2.0 TRUNKS
- INSTALL (1) NEW SITE SUPPORT CABINET
- INSTALL (1) NEW BBU CABINET
- INSTALL (1) NEW AMIA W/ (2) ASIL CORE MODULES, (1) ABIA CAPACITY MODULE AND (4) ABIO CAPACITY MODULES IN SSC
- REMOVE EXISTING CSR 7705 SAR A
- INSTALL NEW CSR IXRe V2

PROJECT TEAM

A&E: WT GROUP, LLC. 2675 PRATUM AVENUE HOFFMAN ESTATES, IL 60192 CONTACT: TIM KUEN TEL: (224) 293-6333 FAX: (224) 293-6444	SITE ACQUISITION: SBA COMMUNICATION CORPORATION 8051 CONGRESS AVENUE BOCA RATON, FL 33487-1307 TEL: (800) 487-SITE (7483)
STRUCTURAL: TOWER ENGINEERING SOLUTIONS 8445 FREEPORT PARKWAY, SUITE 375 IRVING, TX 75063 TEL: (972) 483-0607 FAX: (972) 975-9615	

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CONTACTS

APPLICANT: T-MOBILE 1400 OPUS PLACE DOWNERS GROVE, IL 60515 TEL: (773) 444-5400 CONTACT: TBD	TOWER OWNER: SBA COMMUNICATION CORPORATION 8051 CONGRESS AVENUE BOCA RATON, FL 33487-1307 TEL: (800) 487-SITE (7483)
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SITE INFORMATION

SITE ADDRESS
4401 SIESTA STREET
KALAMAZOO, MI 49009

TOWER INFORMATION
 STRUCTURE HEIGHT: 195'-0" MONOPOLE
 - HIGHEST TOWER APPURTENANCE: T.B.D.
 - T-MOBILE ANTENNA RAD CENTER: 187'-0"
 - T-MOBILE ANTENNA TIP HEIGHT: ±191'-0"

COORDINATES (NAD 1983)
 LATITUDE: 42.24719444° N
 LONGITUDE: -85.64361110° W

GROUND ELEVATION
898.00' (PER GOOGLE EARTH)

UTILITIES

ELECTRIC:
N/A
CONTACT: N/A
TEL: N/A

FIBER:
N/A
CONTACT: N/A
TEL: N/A

Know what's below.
Call before you dig.

CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE FOLLOWING CODES:

BUILDING CODE: 2015 MICHIGAN BUILDING CODE (2015 IBC)	ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE (2017 NEC)
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REFERENCED MATERIALS

A SITE WALK WAS NOT PERFORMED FOR THIS SITE PER SCOPE OF WORK. COMPOUND, ELEVATION, EQUIPMENT LAYOUT AND ANTENNA PLANS SHOWN WITHIN THIS SET WERE TAKEN FROM AVAILABLE DOCUMENTS/DRAWINGS PROVIDED BY OTHERS.

GENERAL REQUIREMENTS:

1.1 INTENT

- THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
- THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH.
- THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
- THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.
- MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A CHANGE ORDER.

1.2 CONFLICTS

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
- THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY MATTER OR THING CONCERNING WHICH SUCH BIDDER MIGHT HAVE FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING.
- NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED OR OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS GOVERNING THE WORK.

1.3 CONTRACTS AND WARRANTIES

- CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES AND BONDS.

1.4 STORAGE

- ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.
- THE BTS MUST BE STORED INSIDE UNTIL THERE IS POWER ON SITE.

1.5 CLEAN UP

- THE CONTRACTORS SHALL AT ALL TIMES KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK, THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY FOR USE.
- EXTERIOR: VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
 - REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
 - IF NECESSARY TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
- INTERIOR: VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS/FLOOR/CEILING.
 - REMOVE ALL TRACES OF SPLASHED MATERIAL FROM ADJACENT SURFACES.
 - REMOVE PAINT DROPPINGS, SPOTS, STAINS AND DIRT FROM FINISHED SURFACES.

1.6 CHANGE ORDER PROCEDURE

- CHANGE ORDERS MAY BE INITIATED BY THE OWNER AND/OR THE CONTRACTOR INVOLVED. THE CONTRACTOR, UPON VERBAL REQUEST FROM THE OWNER SHALL PREPARE A WRITTEN PROPOSAL DESCRIBING THE CHANGE IN WORK OR MATERIALS AND ANY CHANGES IN THE CONTRACT AMOUNT AND PRESENT TO THE OWNER WITHIN 72 HRS FOR APPROVAL. SUBMIT REQUESTS FOR SUBSTITUTIONS IN THE FORM AND IN ACCORDANCE WITH PROCEDURES REQUIRED FOR CHANGE ORDER PROPOSALS. ANY CHANGES IN SCOPE OF WORK OR MATERIALS WHICH ARE PERFORMED BY THE CONTRACTOR WITHOUT A WRITTEN CHANGE ORDER AS DESCRIBED AND APPROVED BY THE OWNER SHALL PLACE FULL RESPONSIBILITY OF THESE ACTIONS ON THE CONTRACTOR.

1.7 RELATED DOCUMENTS AND COORDINATION

- GENERAL CARPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED. IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

1.8 SHOP DRAWINGS

- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR APPROVAL.
- ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE OWNER.

1.9 PRODUCTS AND SUBSTITUTIONS

- SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN EACH REQUEST IDENTIFY THE PRODUCT OR FABRICATION OR INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION. INCLUDE RELATED SPECIFICATION SECTION AND DRAWING NUMBERS AND COMPLETE DOCUMENTATION SHOWING COMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS.
- SUBMIT ALL NECESSARY PRODUCT DATA AND CUT SHEETS WHICH PROPERLY INDICATE AND DESCRIBE THE ITEMS, PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR SHALL, IF DEEMED NECESSARY BY THE OWNER SUBMIT ACTUAL SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT SHEETS.

1.10 QUALITY ASSURANCE

- ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS.

1.11 ADMINISTRATION

- BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.
- SUBMIT A BAR TYPE PROGRESS CHART NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED FOR SUBSTANTIAL COMPLETION OF THE WORK.
- PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE (THOUGH NOT LIMITED TO) THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
- CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER, NOR WILL WIRELESS SERVICE BE ARRANGED.
- DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL SAFETY REQUIREMENTS IN THEIR AGREEMENT.
- PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE OWNER.
- COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.
- NOTIFY THE OWNER / PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

1.12 INSURANCE AND BONDS

- CONTRACTOR SHALL AT THEIR OWN EXPENSE CARRY AND MAINTAIN FOR THE DURATION OF THE PROJECT ALL INSURANCE AS REQUIRED AND LISTED AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.
- THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES.
- CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.

ANTENNA INSTALLATION:

1.1 REQUIREMENTS OF REGULATOR AGENCIES

- FURNISH U.L. LISTED EQUIPMENT WHERE SUCH LABEL IS AVAILABLE. INSTALL IN CONFORMANCE WITH U.L. STANDARDS WHERE APPLICABLE.
- INSTALL ANTENNA, ANTENNA CABLES, GROUNDING SYSTEM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATION IN EFFECT AT PROJECT LOCATION AND RECOMMENDATIONS OF STATE AND LOCAL BUILDING CODES, SPECIAL CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF WORK. THIS INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:
 - TIA - TELECOMMUNICATIONS INDUSTRY ASSOCIATION TIA-222-G. STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.
 - FAA - FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7460-IH, OBSTRUCTION MARKING AND LIGHTING.
 - FCC - FEDERAL COMMUNICATIONS COMMISSION RULES AND REGULATIONS FORM 715, OBSTRUCTION MARKING AND LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES AND FORM 715A, HIGH INTENSITY OBSTRUCTION LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES.
 - AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS.
 - NEC - NATIONAL ELECTRICAL CODE - ON TOWER LIGHTING KITS.
 - UL - UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.
 - IN ALL CASES, PART 77 OR THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.
 - 2012 LIFE SAFETY CODE NFPA -101.

GENERAL ELECTRIC PROVISION:

- SUBMITTAL OF BID INDICATES CONTRACTOR IS COGNIZANT OF ALL JOB SITE CONDITIONS AND WORK TO BE PERFORMED UNDER THIS CONTRACT.
- CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATIONS TEST, AND EXAMINATION WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND THE ACTUAL CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE ARCHITECT LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
- EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANEL BOARD, PULL BOX, J-BOX, SWITCH BOX, ETC., IN COMPLIANCE WITH OCCUPATIONAL SAFETY AND HEALTH ACT (O.S.H.A.).
- CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS, TRANSPORTATION, ETC., FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS, AS SPECIFIED HEREIN AND/OR AS OTHERWISE REQUIRED.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW AND IN PERFECT CONDITION WHEN INSTALLED AND SHALL BE OF THE BEST GRADE AND OF THE SAME MANUFACTURER THROUGHOUT FOR EACH CLASS OR GROUP OF EQUIPMENT. MATERIALS SHALL BE LISTED "J" WHERE SUBJECT TO SUCH APPROVAL. MATERIALS SHALL MEET WITH APPROVAL OF THE DIVISION OF INDUSTRIAL SAFETY AND ALL GOVERNING BODIES HAVING JURISDICTION. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, NEMA AND NBFU.
- ALL CONDUIT INSTALLED SHALL BE SURFACE MOUNTED OR DIRECT BURIAL UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL CARRY OUT THEIR WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND O.S.H.A.
- CONTRACTOR TO OBTAIN ALL PERMITS, PAY PERMIT FEES, AND BE RESPONSIBLE FOR SCHEDULING INSPECTIONS.
- COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF JOB ACCEPTANCE BY OWNER. ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY DURING THAT PERIOD SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
- ALL CONDUIT SHALL HAVE A PULL WIRE OR ROPE.

- PROVIDE PROJECT MANAGER WITH ONE SET OF COMPLETE ELECTRICAL "AS INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS AND CIRCUITS.
- ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC., SHALL BE TURNED OVER TO THE OWNER AT JOB COMPLETION.
- USE T-TAP CONNECTIONS ON ALL MULTI-CIRCUITS WITH COMMON NEUTRAL CONDUCTOR FOR LIGHTING FIXTURES.
- ALL CONDUCTORS SHALL BE COPPER.
- ALL CIRCUIT BREAKERS, FUSES AND ELECTRICAL EQUIPMENT SHALL HAVE AN INTERRUPTING SHORT CIRCUIT CURRENT TO WHICH THEY MAY BE SUBJECTED, AND A MINIMUM OF 10,000 A.I.C.
- THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
- PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
- PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED IN ACCORDANCE WITH APPLICABLE LOCAL BUILDING CODES.
- WIRE AND CABLE CONDUCTORS SHALL BE COPPER #12 AWG MINIMUM UNLESS SPECIFICALLY NOTED OTHERWISE ON DRAWINGS.
- GROUNDING CONDUCTORS SHALL BE SOLID TINNED COPPER UNLESS OTHERWISE NOTED.
- ALL MATERIALS SHALL BE U.L. LISTED.
- CONDUIT
 - RIGID CONDUIT SHALL BE U.L. LABEL GALVANIZED ZINC COATED WITH ZINC INTERIOR AND SHALL BE USED WHEN INSTALLED IN OR UNDER CONCRETE SLABS IN CONTACT WITH THE EARTH, UNDER PUBLIC ROADWAYS, IN MASONRY WALLS OR EXPOSED ON BUILDING EXTERIOR. RIGID CONDUIT IN CONTACT WITH EARTH SHALL BE 1/2 LAPPED WRAPPED WITH HUNTS WRAP PROCESS NO. 3
 - ELECTRICAL METALLIC TUBING SHALL HAVE U.L. LABEL, FITTING SHALL BE GLAND RING COMPRESSION TYPE. EMT SHALL BE USED ONLY FOR INTERIOR RUNS.
 - FLEXIBLE METALLIC CONDUIT SHALL HAVE U.L. LISTED LABEL AND MAY BE USED WHERE PERMITTED BY CODE. FITTINGS SHALL BE "JAKE" OR "SQUEEZE" TYPE, SEAL TIGHT FLEXIBLE CONDUIT. ALL CONDUIT SHALL HAVE FULL SIZE EQUIPMENT GROUND WIRE.
 - CONDUIT RUNS SHALL BE SURFACE MOUNTED UNLESS INDICATED OTHERWISE. CONDUIT INDICATED SHALL RUN PARALLEL OR AT RIGHT ANGLES TO CEILING, FLOOR OR BEAMS. VERIFY EXACT ROUTING OF ALL EXPOSED CONDUIT WITH THE OWNER PRIOR TO INSTALLING. NO HORIZONTAL CONDUITS SHALL BE BELOW 7'-6" A.F.F. NO BX OR ROMEX CABLE IS PERMITTED.
 - PARALLEL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 (UNLESS NOTED OTHERWISE) AT A MINIMUM DEPTH OF 30" BELOW GRADE - STACKED UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 (UNLESS NOTED OTHERWISE) AT A MINIMUM DEPTH OF 24" BELOW GRADE.
 - ABOVE GROUND CONDUIT SHALL BE P.V.C. SCHEDULE 80 (UNLESS NOTED OTHERWISE).
- ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS.
- UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUND TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO PROJECT MANAGER. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.



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GN-1

GENERAL NOTES

GENERAL SITE NOTES:

1. CONTRACTOR WILL NOT START CONSTRUCTION UNTIL AFTER THEY HAVE RECEIVED THE PRE-CON PACKAGE AND HAVE A PRE-CON WALK WITH THE PROJECT MANAGER.
2. CONTRACTOR TO HIRE PUBLIC (811) AND PRIVATE LOCATING SERVICE IN ORDER TO LOCATE AND PROTECT ALL SURFACE UTILITIES. DO NOT SCALE OFF THESE PLANS FOR ANY BELOW GRADE UTILITIES
3. CONTRACTOR SHALL VERIFY ALL EXISTING BURIED AND OVERHEAD UTILITIES PRIOR TO EXCAVATION. CONTRACTOR SHALL REPAIR ALL DAMAGED UTILITIES AT HIS OWN COST AND COORDINATE ANY REPAIRS WITH RESPECTIVE UTILITY COMPANY.
4. CONTRACTOR TO VERIFY ALL HEIGHTS AND AZIMUTHS IN FIELD PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY T-MOBILE AND ENGINEERING FIRM OF ANY DISCREPANCIES BEFORE PROCEEDING.
5. CONTRACTOR SHALL RESTORE AND REPAIR ANY DAMAGED AREAS CAUSED BY CONSTRUCTION.



OVERALL SITE PLAN

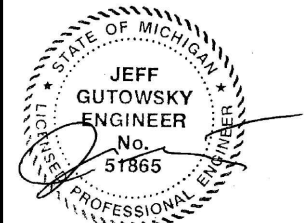
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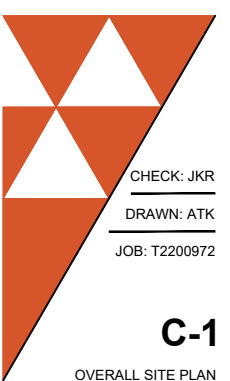
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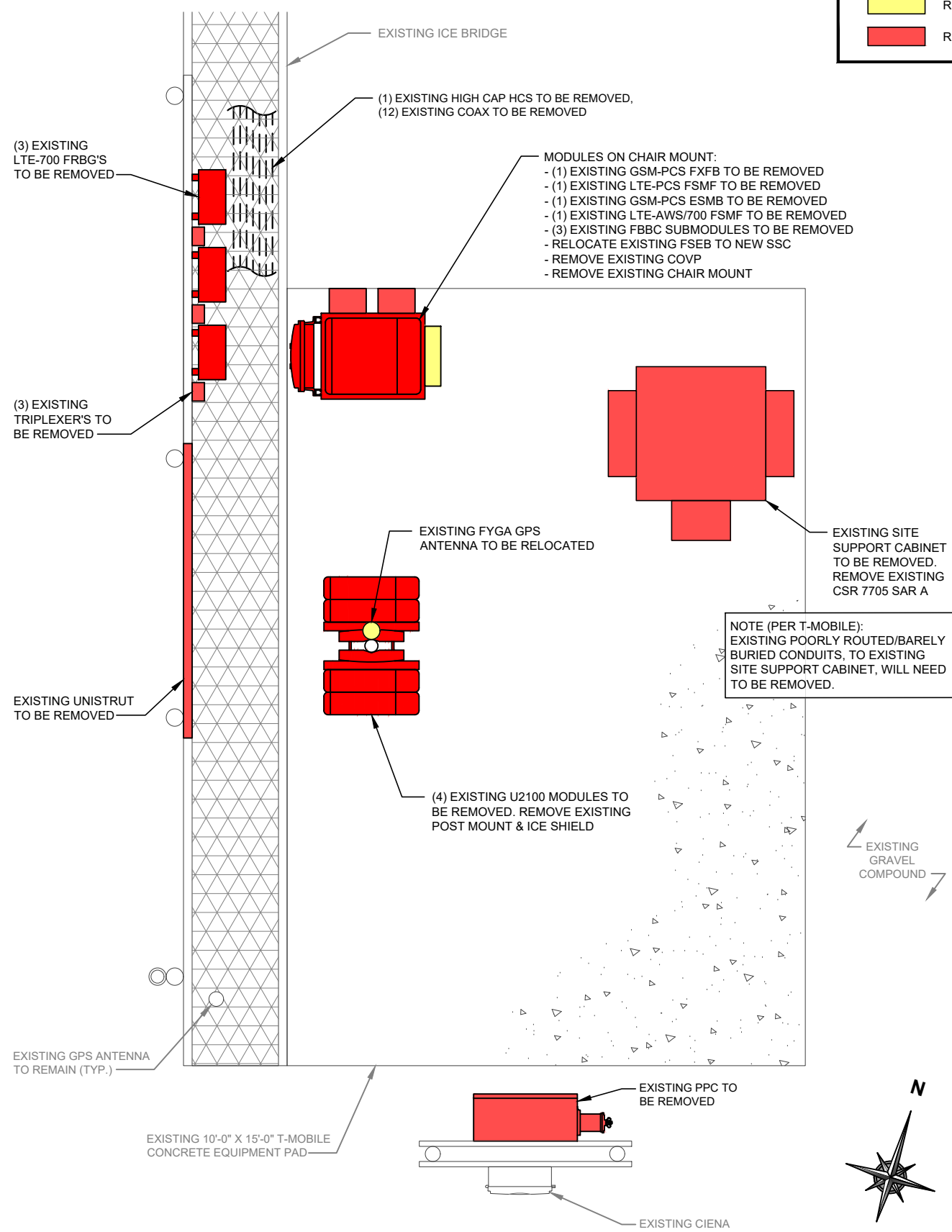
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LEGEND

- EXISTING EQUIPMENT
- NEW EQUIPMENT
- RELOCATED EQUIPMENT
- REMOVED EQUIPMENT

NOTE:
CONTRACTOR TO DECOMMISSION ALL EXISTING EQUIPMENT ON SLAB/H-FRAMES, REMOVE ALL COAX & EXISTING HCS CABLE.

NOTE:
CONTRACTOR TO VERIFY LOCATION OF ALL EXISTING EQUIPMENT PRIOR TO CONSTRUCTION.



EXISTING EQUIPMENT PLAN

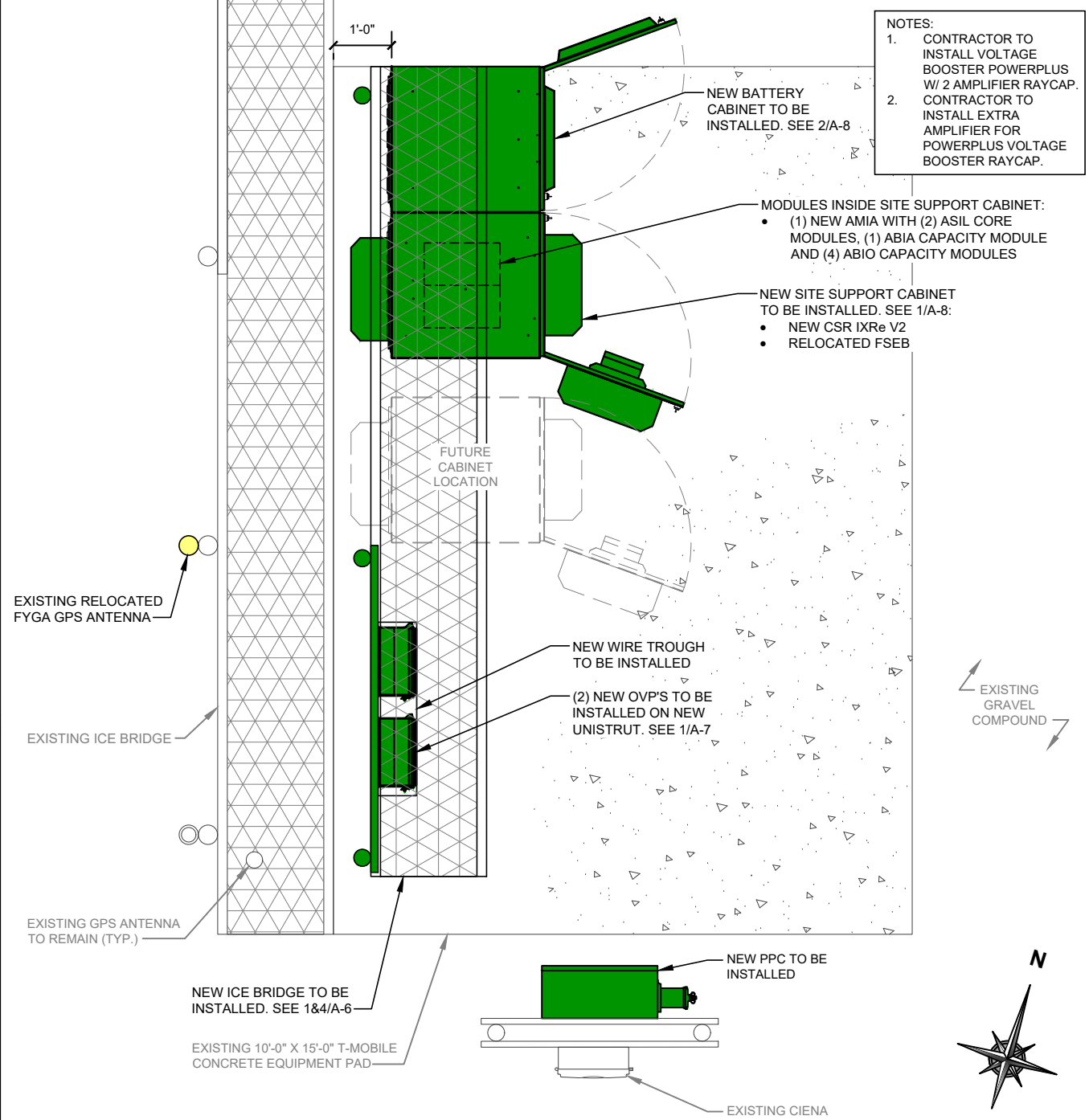
SCALE: 3/8" = 1'-0"

1

NOTES:

- GC TO MAKE SURE THE FANS ARE FLIPPED ON THE FLEXI MODULES PRIOR TO INSTALLING IN THE HPL3 TO ALLOW PROPER COOLING OF THE MODULE.
- FSEB TO BE RELOCATED INTO THE HPL3 CABINET.
- GC TO VERIFY THERE IS A 8" GAP BETWEEN THE HPL3 AND LG BBU TO ALLOW PROPER ACCESS TO THE CABINET.
- GC TO ENSURE THERE IS A 24" MINIMUM CLEARANCE FROM THE BACK OF THE HPL3 TO ALLOW FOR FUTURE SERVICING OF THE FILTERS IN THE BACK OF THE CABINET.
- GPS CABLE TO BE REROUTED THROUGH THE WIRE TROUGH INTO CONDUIT FOR THE HPL3 CABINET TO NOT HAVE ANOTHER HOLE IN THE CABINET.
- GC TO REFERENCE THE HPL3 INSTALLATION GUIDELINES AND INSTALLATION MANUAL WHEN INSTALLING THE HPL3 & THE LB3 CABINETS.
- GC TO VERIFY THAT THE OVP IS PROPERLY WIRED WITH THE CORRECT GAUGE WIRE AND BREAKER FROM THE HPL3 TO THE OVP.
- * IF IT IS HCS 1.0 THE GC WILL NEED TO PULL (4) #6 BLUE & (4) #6 WIRES GOING FROM THE 200A DC BREAKER IN THE SSC TO THE OVP.
- * IF IT IS THE HCS 2.0 THE GC WILL NEED TO PULL (3) #2 BLUE WIRES & (3) #2 BLACK WIRES GOING FROM THE SSC TO THE OVP. THERE SHOULD BE A PAIR OF BLUE & BLACK WIRES GOING TO A 100A DC BREAKER PER SECTOR INSTALLING A TOTAL OF (3) 100A BREAKERS.
- GC TO ENSURE ALL CONDUITS NO LONGER BEING USED ARE DECOMMISSIONED AND HOLES ARE PROPERLY SEALED AND WEATHERPROOFED.
- GC TO INSTALL NEW AIRSCALE MODULES IN AMIA'S WITHIN THE HPL3 - FSMF TO GO INTO THE HPL3 AS WELL.
- GC TO REFER TO LATEST SA, RFDS AND PORT MATRIX TO ENSURE ACCURATE EQUIPMENT CALL OUTS AND PLUMBING.
- 100 AMP AC DUAL POLE BREAKER FOR EXISTING SSC TO BE SWAPPED FOR A QUAD POLE 200 AMP AC BREAKER IN PPC.
- OLD BREAKERS RELATED TO DECOMMISSIONED EQUIPMENT TO BE REMOVED AND PLUGGED TO BE WITHIN CODE.
- EXERCISE CAUTION IF ANY FIBER RUNS THROUGH THE PLINTH - GC TO PIPE IN THE ANY FIBER IF THAT BE THE CASE.
- GC TO ENSURE NEW CABINETS SIT OVER A MINIMUM OF 2 STRUCTURAL STEEL ELEMENTS (I-BEAMS OR ANGLE IRON) AND ARE ANCHORED/SECURED TO THAT STRUCTURAL STEEL.

(2) NEW HCS 2.0 TRUNKS TO BE INSTALLED



NOTES:

1. CONTRACTOR TO INSTALL VOLTAGE BOOSTER POWERPLUS W/ 2 AMPLIFIER RAYCAP.
2. CONTRACTOR TO INSTALL EXTRA AMPLIFIER FOR POWERPLUS VOLTAGE BOOSTER RAYCAP.

NOTE:
IF 200 AMP IS NOT PRESENT, SERVICE WILL NEED TO BE UPGRADED DURING ANTENNA INSTALL.

NEW EQUIPMENT PLAN

SCALE: 3/8" = 1'-0"

2

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JEFF GUTOWSKY
 ENGINEER
 No. 51865
 PROFESSIONAL ENGINEER

EXPIRES: 11/02/23 SIGNED: 08/25/22

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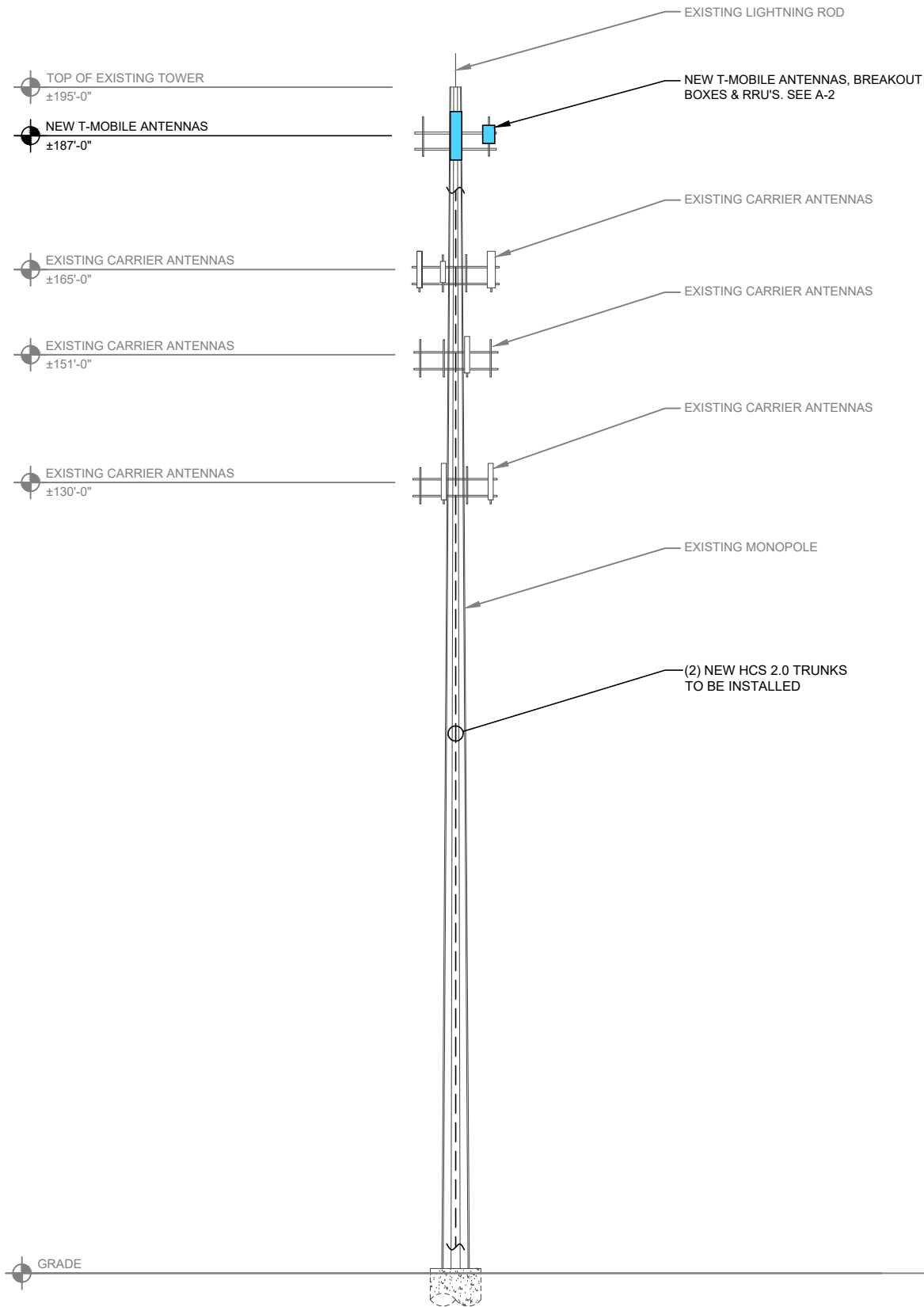
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 JOB: T2200972

C-2
 EXISTING &
 NEW SITE PLANS

LEGEND

- EXISTING EQUIPMENT
- NEW EQUIPMENT
- REMOVED EQUIPMENT
- RELOCATED EQUIPMENT



NOTE:
A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNT HAS BEEN COMPLETED BY TOWER ENGINEERING SOLUTIONS ON JULY 12, 2022. THE LOCATION AND MOUNTING SHOWN IN THE MOUNT ANALYSIS SHALL SUPERSEDE THESE DRAWINGS.

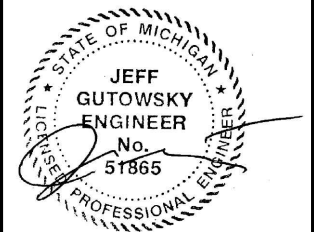
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NOTE:
ANTENNA CENTERLINE'S VERTICAL OFFSET FROM PLATFORM DECK OR HORIZONTAL CENTER OF SECTOR FRAME SHALL NOT EXCEED 6".



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A-1

TOWER ELEVATION

TOWER ELEVATION	1
SCALE: 1" = 25'-0"	

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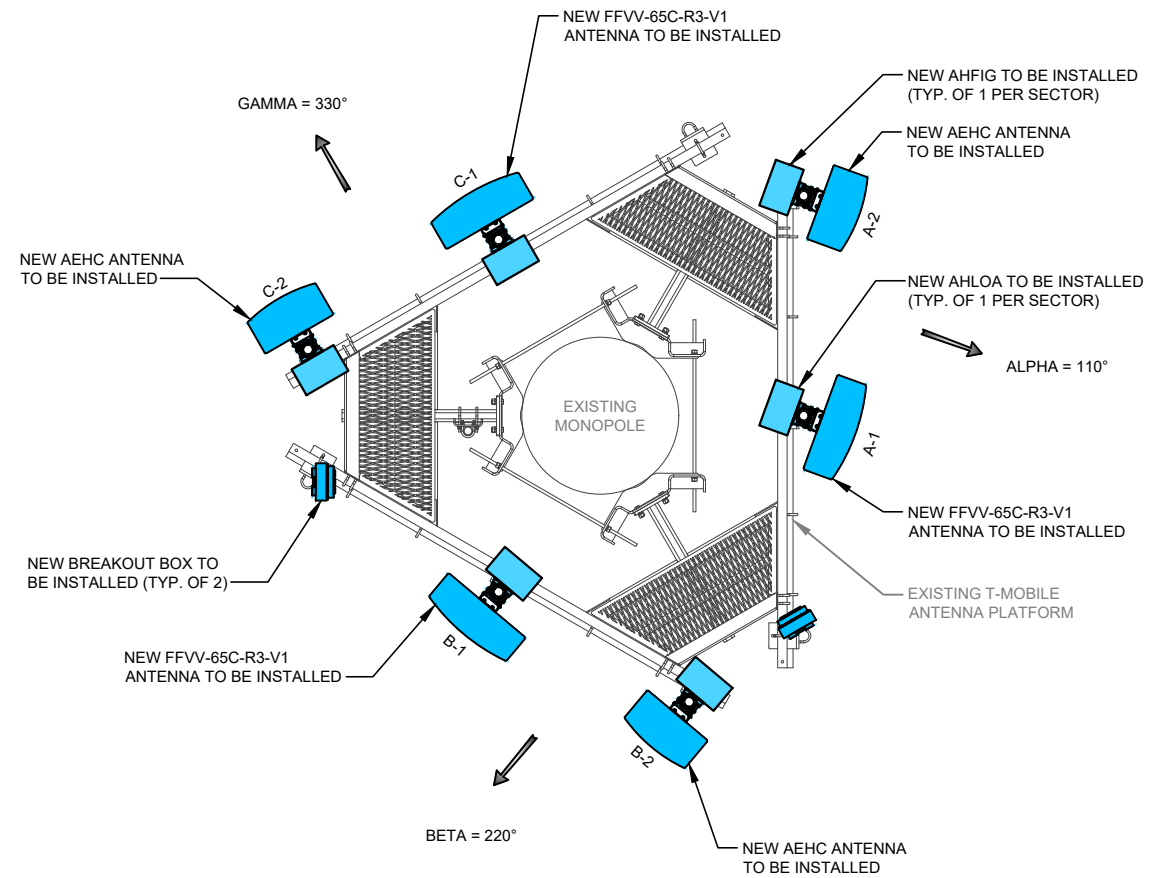
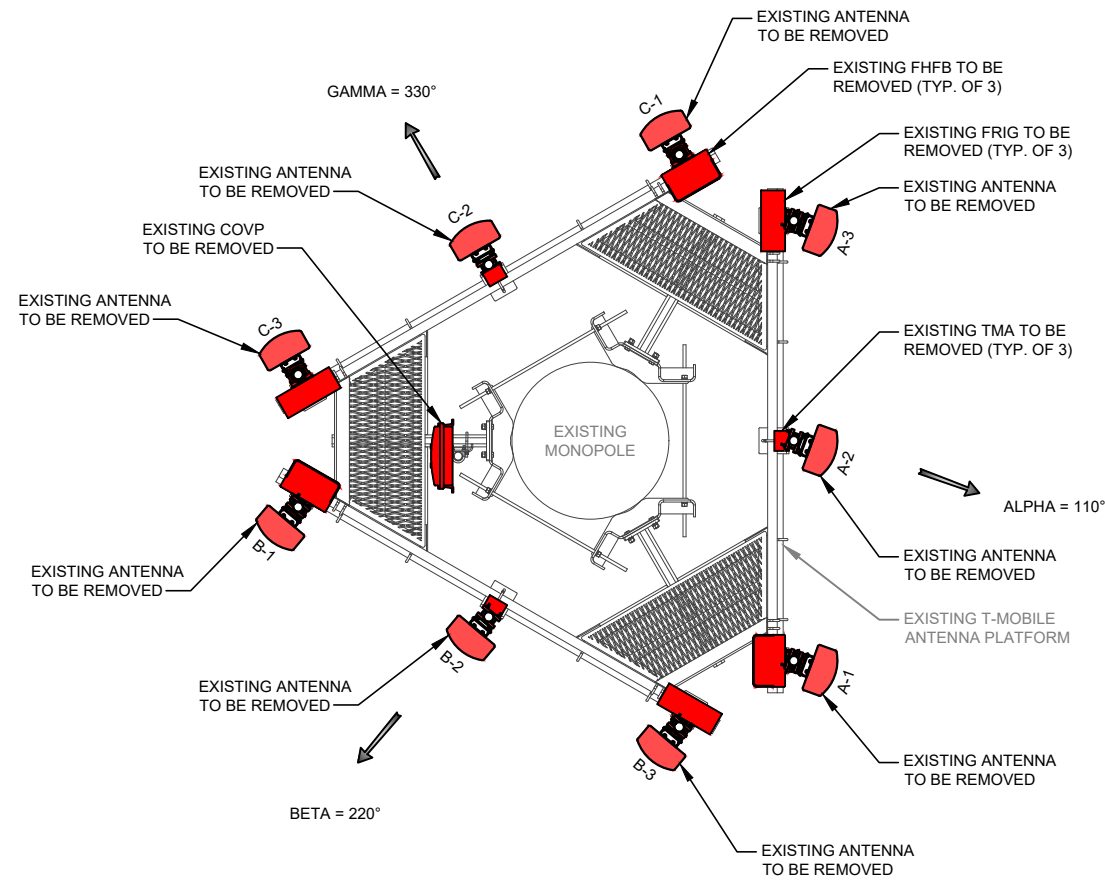
LEGEND

- EXISTING EQUIPMENT
- NEW EQUIPMENT
- REMOVED EQUIPMENT
- RELOCATED EQUIPMENT

NOTE:
A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNT HAS BEEN COMPLETED BY TOWER ENGINEERING SOLUTIONS ON JULY 12, 2022. THE LOCATION AND MOUNTING SHOWN IN THE MOUNT ANALYSIS SHALL SUPERSEDE THESE DRAWINGS.

NOTE:
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NOTE:
ANTENNA INFORMATION OBTAINED FROM T-MOBILE RF DATA CONFIGURATION SHEET DATED 04/04/22.



EXISTING ANTENNA PLAN

SCALE: NONE

1

NEW ANTENNA PLAN

SCALE: NONE

2

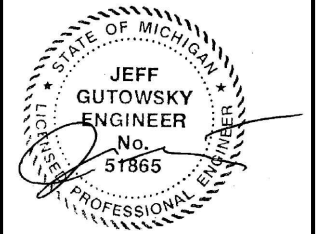


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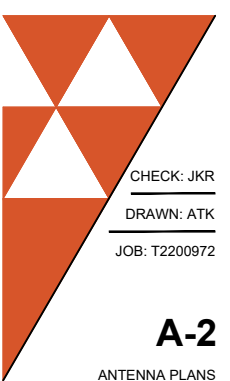
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A-2
ANTENNA PLANS

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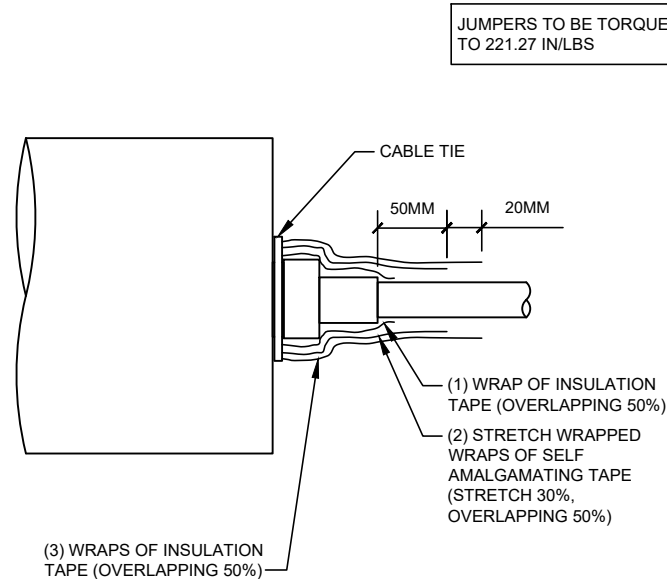
ANTENNA & CABLE SCHEDULE						
SECTOR	ALPHA		BETA		GAMMA	
LOCATION	A-2	A-1	B-2	B-1	C-2	C-1
TECHNOLOGY	L2500, N2500	LTE 600, LTE 700, N600, LTE PCS, GSM PCS, UMTS AWS, LTE AWS, N1900, N2100	L2500, N2500	LTE 600, LTE 700, N600, LTE PCS, GSM PCS, UMTS AWS, LTE AWS, N1900, N2100	L2500, N2500	LTE 600, LTE 700, N600, LTE PCS, GSM PCS, UMTS AWS, LTE AWS, N1900, N2100
AZIMUTH	110°		220°		330°	
RAD CENTER	187'-0"		187'-0"		187'-0"	
COLOR CODING	RED	RED (1-8)	GREEN	GREEN (1-8)	BLUE	BLUE (1-8)
MODEL #	AEHC (ACTIVE ANTENNA-MASSIVE MIMO)	COMMSCOPE FFVV-65C-R3-V1 (OCTO)	AEHC (ACTIVE ANTENNA-MASSIVE MIMO)	COMMSCOPE FFVV-65C-R3-V1 (OCTO)	AEHC (ACTIVE ANTENNA-MASSIVE MIMO)	COMMSCOPE FFVV-65C-R3-V1 (OCTO)
MECHANICAL DOWNTILT	0	0	0	0	0	0
ELECTRICAL DOWNTILT	4	4,4,4,4	4	4,4,4,4	4	4,4,4,4
RRU TYPE	AEHC (INTEGRATED)	AHFIG / AHLOA	AEHC (INTEGRATED)	AHFIG / AHLOA	AEHC (INTEGRATED)	AHFIG / AHLOA
HCS DIA. & TYPE	SHARED HCS 2.0 TRUNK	HCS 2.0 TRUNK	HCS 2.0 TRUNK	SHARED HCS 2.0 TRUNK	SHARED HCS 2.0 TRUNK	SHARED HCS 2.0 TRUNK
HCS FACTORY LENGTH	-	±225'-0"	±225'-0"	-	-	-
JUMPER TYPE FROM BREAKOUT BOXES TO RRU'S/ANTENNAS	HYBRID JUMPER	HYBRID JUMPER	HYBRID JUMPER	HYBRID JUMPER	HYBRID JUMPER	HYBRID JUMPER
JUMPER LENGTH	15'-0"	15'-0" / 15'-0"	15'-0"	15'-0" / 15'-0"	15'-0"	15'-0" / 15'-0"
JUMPER TYPE FROM RRU TO ANTENNA	RF JUMPERS	RF JUMPERS	RF JUMPERS	RF JUMPERS	RF JUMPERS	RF JUMPERS
JUMPER LENGTH	-	6'-0" / 6'-0"	-	6'-0" / 6'-0"	-	6'-0" / 6'-0"

NOTE:
A STRUCTURAL ANALYSIS OF THE ANTENNA MOUNT HAS BEEN COMPLETED BY TOWER ENGINEERING SOLUTIONS ON JULY 12, 2022. THE LOCATION AND MOUNTING SHOWN IN THE MOUNT ANALYSIS SHALL SUPERSEDE THESE DRAWINGS.

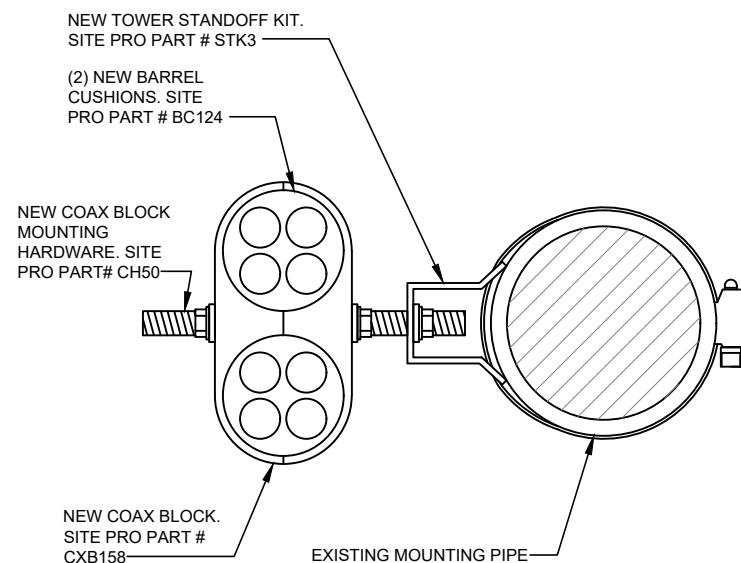
NOTE:
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NOTE:
ANTENNA INFORMATION OBTAINED FROM T-MOBILE RF DATA CONFIGURATION SHEET DATED 04/04/22.

ANTENNA & CABLE SCHEDULE	1
SCALE: NONE	



RF JUMPER CONNECTION DETAIL	2
SCALE: NONE	

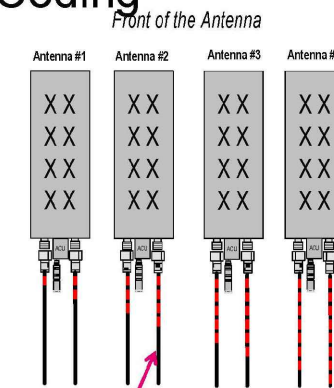


RF JUMPER MOUNTING DETAIL	3
SCALE: NONE	

Coax Color Coding

- Antennas will be labeled (back of antenna view) Right to left 1 - X ports
- Coax/Jumper lines will be identified by sector color and by number of bands around the coax/jumper

Sector A	Red
Sector B	Green
Sector C	Blue
Sector D	Yellow
Sector E	White
Sector F	Purple
LMU	Brown + Sector Color Bands (1,2)
Fiber ID	Gray
Unused Coax	Pink
Microwave	Orange
PWE T-1's + GPS	ID w/Label Maker
Downlink cable	



Example - Coax with *four bands of RED* tape will represent *Alpha sector* and the *4th port of antenna*.

- NOTE:
- ALL ANTENNAS SHALL BE FURNISHED WITH DOWNTILT BRACKETS. CONTRACTOR SHALL COORDINATE REQUIRED MECHANICAL DOWNTILT FOR EACH ANTENNA WITH RF ENGINEER. ANTENNA DOWNTILT SHALL BE SET AND VERIFIED BY A SMART LEVEL.
 - CONTRACTOR SHALL INSTALL COLOR CODE RINGS ON EACH OF THE HYBRID CABLES AND JUMPER CABLES WITH UV RESISTANT TAPE. ALL CABLE SHALL BE MARKED AT TOP AND BOTTOM WITH 2" COLOR TAPE OR STENCIL TAG. COLOR TAPE MAY BE OBTAINED FROM GRAYBAR ELECTRONICS.

TAGGING COLOR AND NOTES	4
SCALE: NONE	



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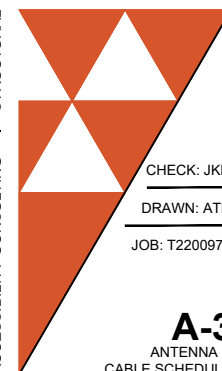
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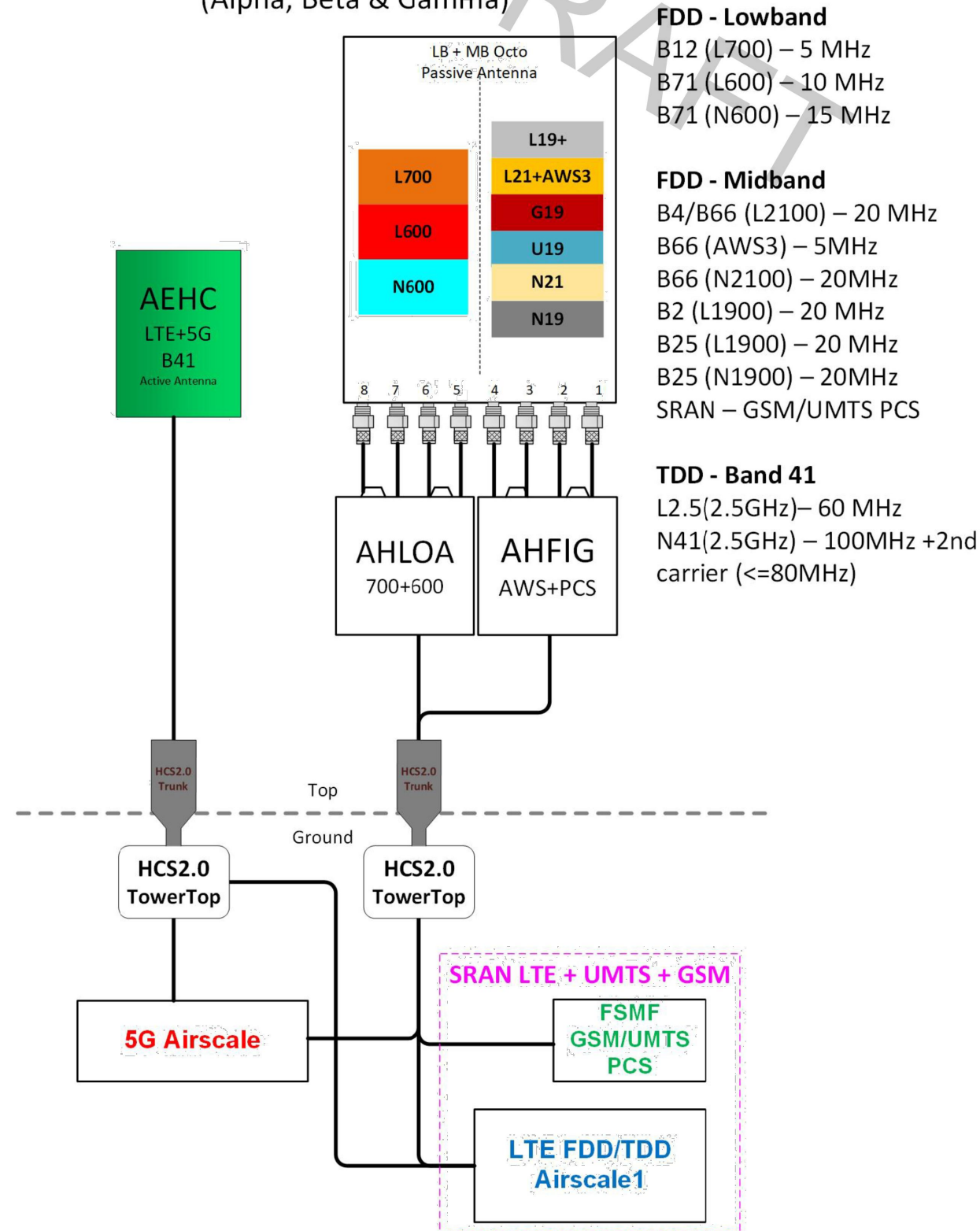


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A-3
ANTENNA & CABLE SCHEDULE

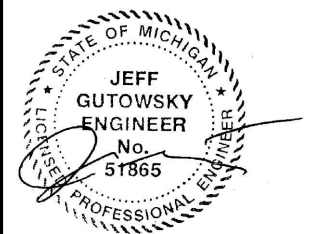
Configuration 56791EZ_SR

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



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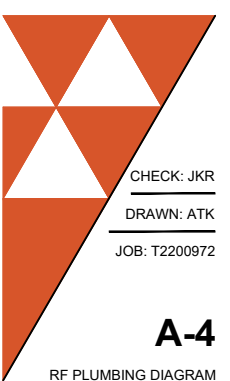
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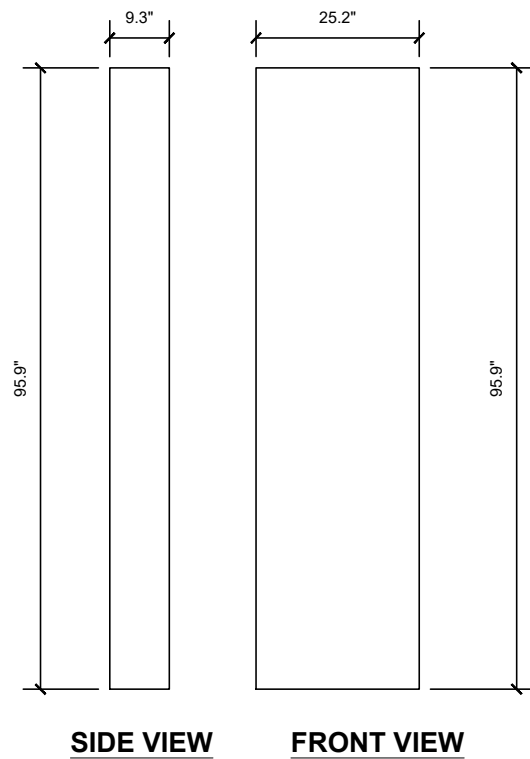
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COMMSCOPE ANTENNA FFVV-65C-R3-V1

DIMENSIONS, HxWxD: 95.9"x25.2"x9.3"
ANTENNA WEIGHT: 124.6 lbs

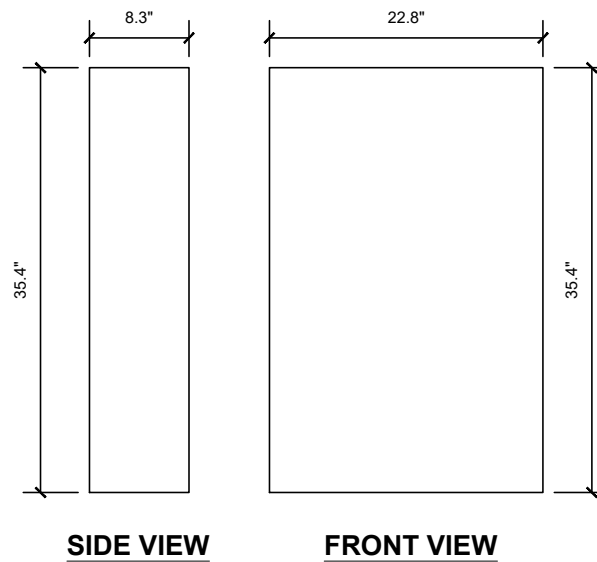


SIDE VIEW **FRONT VIEW**

ANTENNA DETAIL

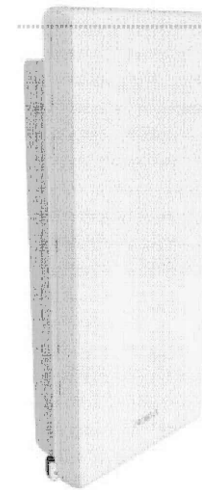
SCALE: NONE

1



NOKIA ANTENNA AEHC AIRSCALE

DIMENSIONS, HxWxD: 35.4"x22.8"x8.3"
ANTENNA WEIGHT: 99.2 lbs



SIDE VIEW **FRONT VIEW**

ANTENNA DETAIL

SCALE: NONE

2

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 (DC 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

* = 22.05" x 12.13" x 7.44"
** = 83.76 lbs

AHLOA DETAIL

SCALE: NONE

3



Property	Value
Height	Core RRH: 695 mm (27.4 in.) With upper and lower mounting brackets: 730 mm (28.7 in.)
Width	Core RRH: 308 mm (12.1 in.) With mounting cover: 327 mm (12.9 in.)
Depth	Core RRH: 131 mm (5.2 in.) With mounting cover: 142 mm (5.6 in.)
Weight	Core RRH: 32 kg (70.5 lb)

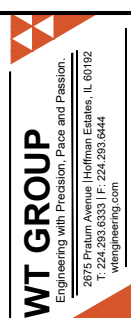
Property	Value
Output Power	B25: 4x80 W B66: 4x40 W
QAM	256 QAM (DL) 64 QAM (UL)
Number of TX/RX	4T4R
SW supported technologies	GSM, WCDMA, LTE
TX frequency range	B25: 1930 MHz – 1995 MHz B66: 2110 MHz – 2200 MHz
RX frequency range	B25: 1850 MHz – 1915 MHz B66: 1710 MHz – 1780 MHz
DL/UL instantaneous bandwidth	B25: 65 MHz B66: 80 MHz
Number of carriers per pipe	Up to 8
Supported bandwidths	1.4, 3, 5, 10, 15, 20 MHz

Configuration	Output Power per carrier (W)	Power consumption (W), ETSI 202706 average load PRRH, static	Power consumption (W), ETSI 202706 busy hour load PBH RRH, static	Power consumption (W), 100% RF power load P100% RRH
Single band 1/1/1 4Tx	4x80	2113	2586	3831
Single band 1/1/1 4Tx	4x40	1720	1967	2553
Single band 1/1/1 2Tx	2x80	1388	1622	2208
Single band 1/1/1 2Tx	2x40	1195	1313	1597
Dual band 1+1 / 1+1 / 1+1 4Tx	4x80 + 4x40	2869	3626	5175
Dual band 1+1 / 1+1 / 1+1 4Tx	4x40	2474	2992	4235
Dual band 1+1 / 1+1 / 1+1 2Tx	2x80 + 2x40	1757	2123	2890
Dual band 1+1 / 1+1 / 1+1 2Tx	2x40	1572	1830	2432

AHFIG DETAIL

SCALE: NONE

4



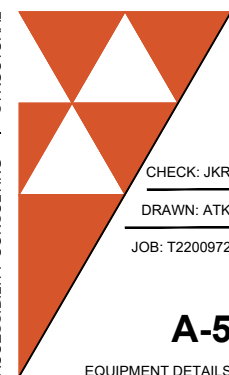
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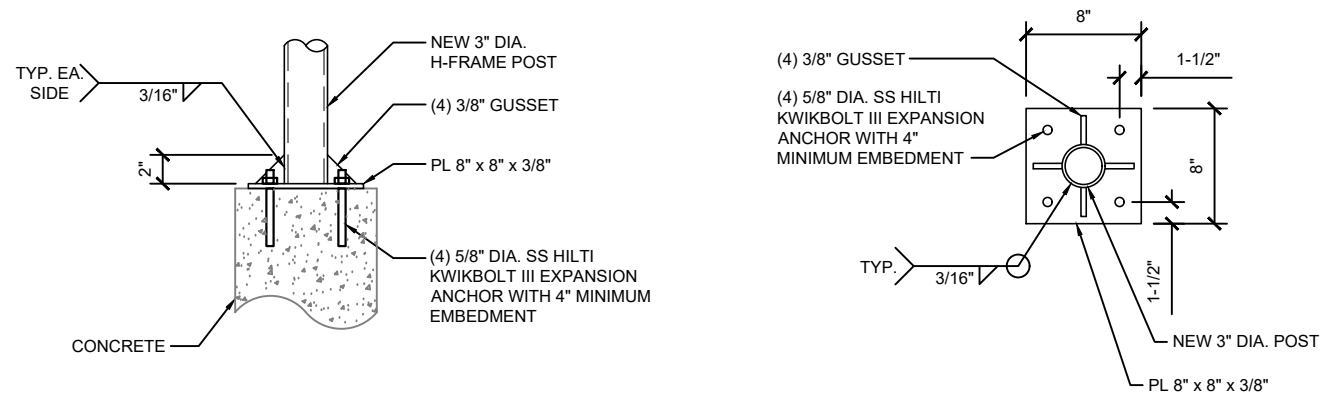


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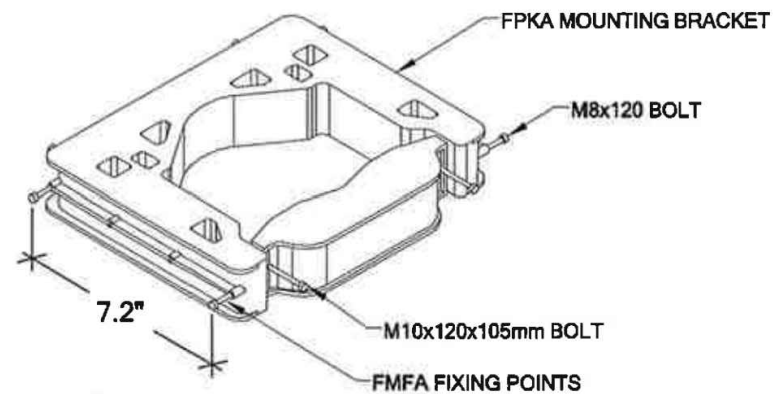


NOTE:
CONTRACTOR MUST SCAN SLABS PRIOR TO CONSTRUCTION. NO CUTTING, DRILLING, OR DAMAGING REINFORCEMENT IS ALLOWED.

BASE PLATE DETAIL

SCALE: NONE

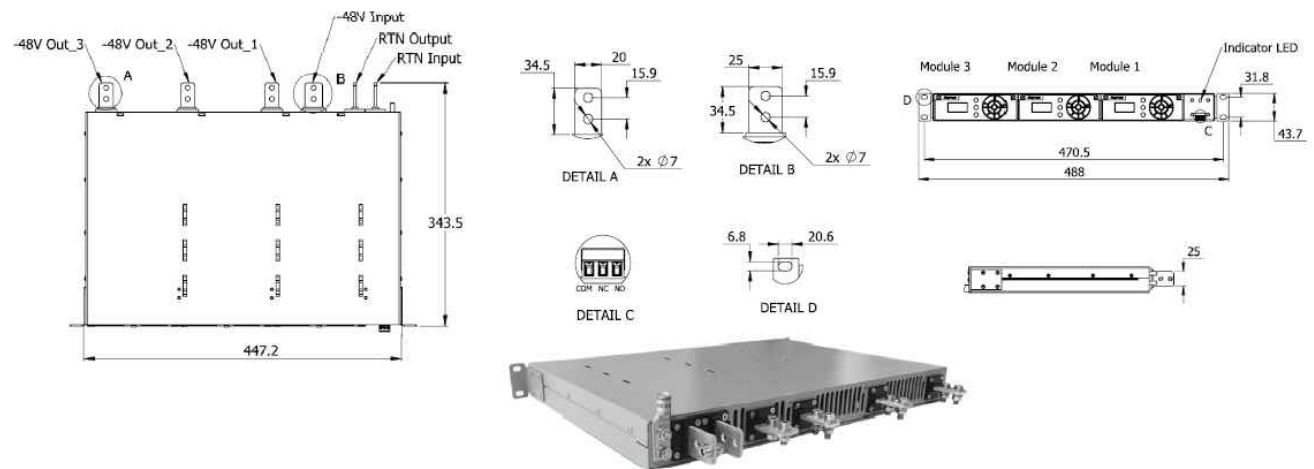
1



FPKA MOUNTING BRACKET

SCALE: NONE

2



Raycap

www.raycap.com

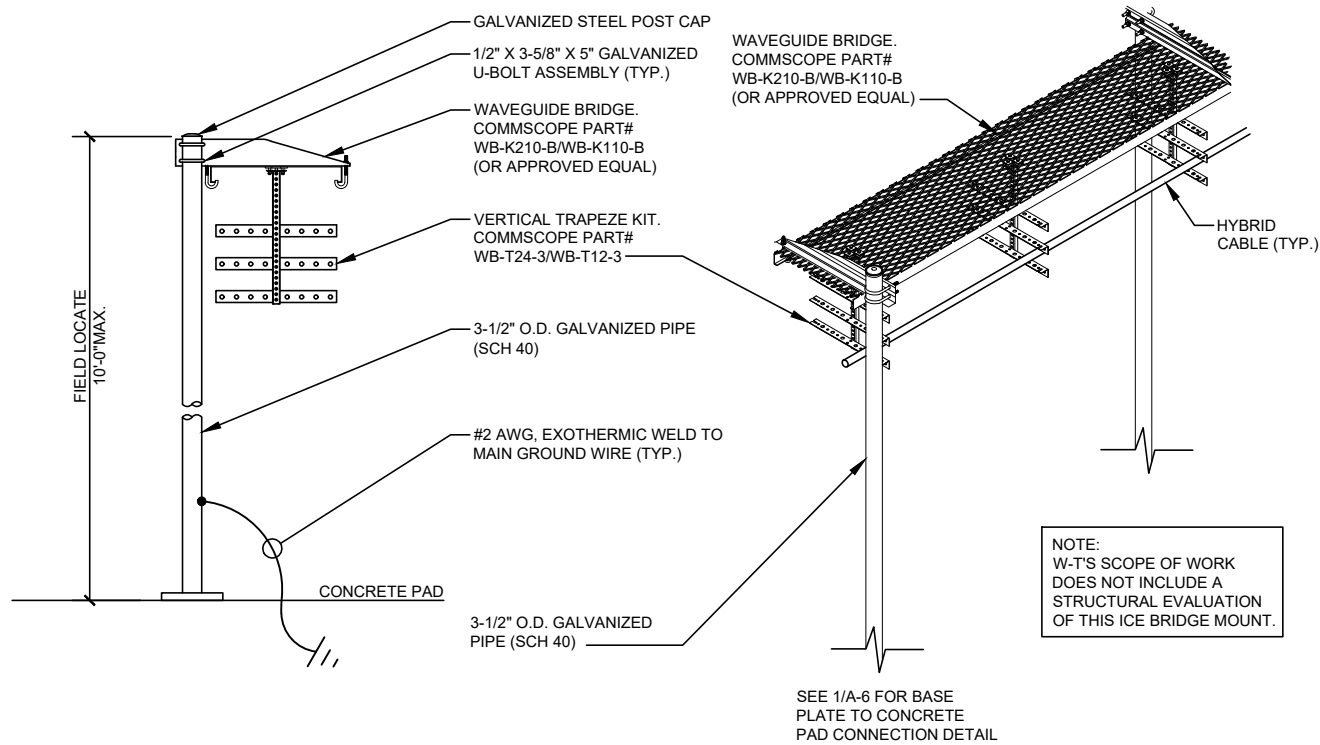
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G02-01-400 190130

POWER BOOSTER DETAIL

SCALE: NONE

3



NOTE:
W-T'S SCOPE OF WORK DOES NOT INCLUDE A STRUCTURAL EVALUATION OF THIS ICE BRIDGE MOUNT.

SEE 1/A-6 FOR BASE PLATE TO CONCRETE PAD CONNECTION DETAIL

ICE BRIDGE DETAIL

SCALE: NONE

4



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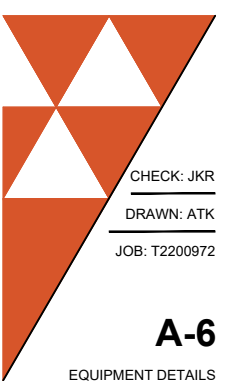
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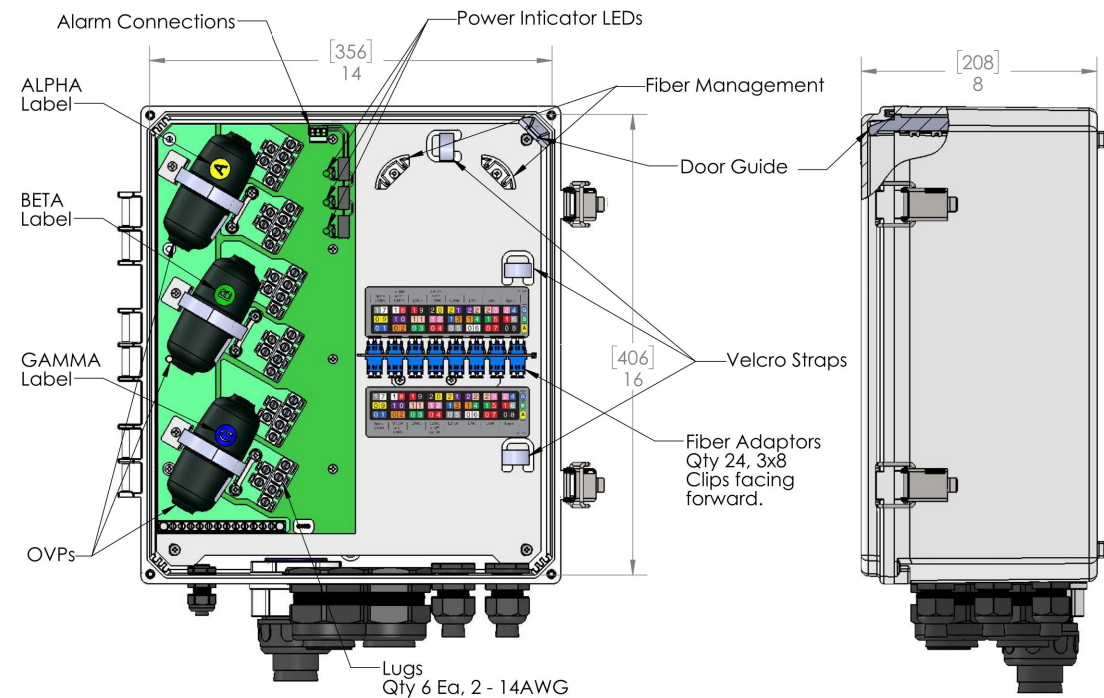


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JOB: T2200972

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EQUIPMENT DETAILS

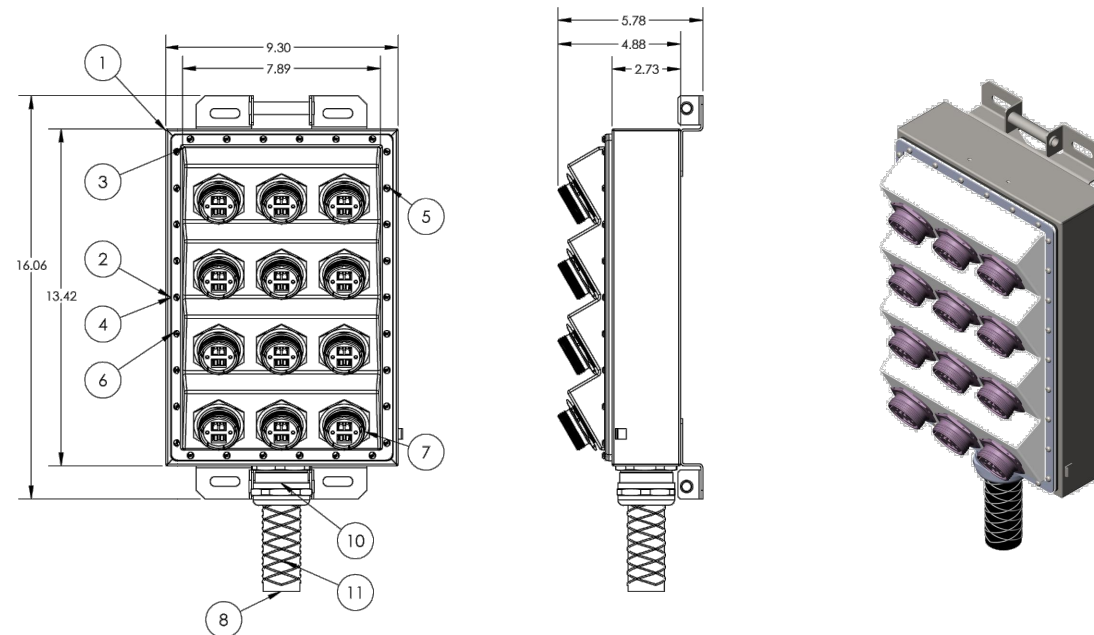
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OVP DETAIL

SCALE: NONE

1

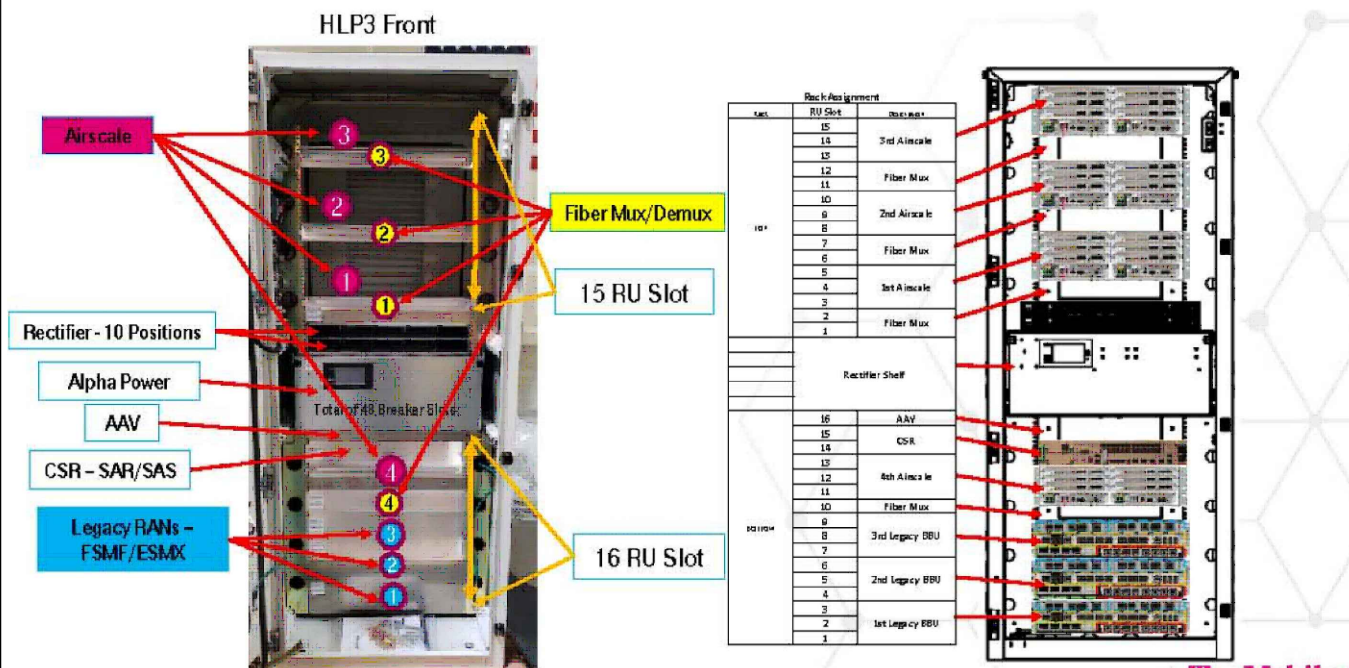


ITEM NO.	PART NUMBER	DESCRIPTION	AC-DIST08-6IP-SHIR/Qty.
1	AC-DIST05-24IP-DC	IP SHEETMETAL BOX	1
2	AC-GKT05-FB-HICAP	GASKET EPDM	1
3	AC-FB-FRONT-4STEP-3CON	HYBRID MODULE INCLINE MOUNT THERMO SHELL	1
4	AC-STR05-HICAP	METAL O-RING	1
5	Regular LW 0.125	WASHER	30
6	3GMRB06058	TAMPERS PROOF #6-32 SCREW	30
7	CF-970850-101-106_W/LC	JAM NUT RECEPTACLE	12
8	ASU9325TYP02	HYBRID CABLE HI-CAP	1
9	6000428	LOCKNUT FOR CABLE GLAND	1
10	4220342	CABLE GLAND	1
11	HOIST GRIP	CABLE HOIST GRIP	1

HI-CAP BREAKOUT BOX DETAIL

SCALE: NONE

2



SITE SUPPORT CABINET LAYOUT

SCALE: NONE

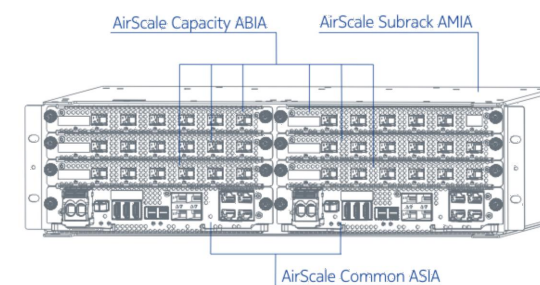
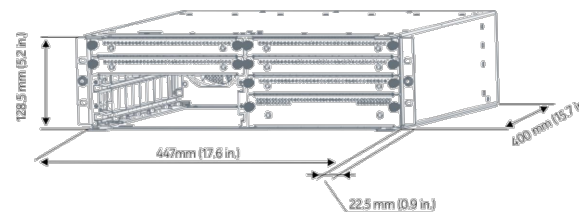
3

Nokia AirScale System Module Indoor consists of the following items:

- One Nokia AirScale Subrack (AMIA), including backplane for high bandwidth connectivity between processing plug-in units
- One or two Nokia AirScale Common (ASIA) plug-in units for transport interfacing and for centralized processing
- Up to six Nokia AirScale Capacity (ABIA) plug-in units for baseband processing and for optical interfaces with radio units

The AirScale Subrack (AMIA) has a 3U height and fits into a standard 19 in. rack. Multiple subracks can be stacked on top of each other. The indoor subrack includes fans, a backplane for internal communication, and the DC-feed. The direction of the cooling air can be changed by rotating fans. The default direction is front-to-back.

Weight	
Empty:	5.1 kg (11.2 lb)
With dummy panels:	6.8 kg (15 lb)
With all units:	23.9 kg (52.7 lb)



AMIA DETAIL

SCALE: NONE

4



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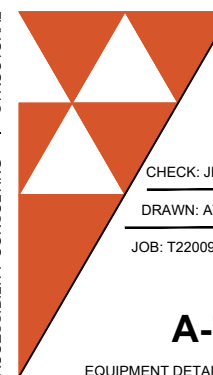
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EQUIPMENT DETAILS

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Purcell HPL3 600A Large Site Support Cabinet

600A E8 Alpha DC Power System
31 Rack Units User Space
6000W User Thermal Capacity

Cabinet Features

- Polyester powder coated aluminum, GR-487 process control, off white, texture
- Weight - 430lbs
- Front door pad lockable with four point latching system; rear hatch
- 23" rails - 39 rack units environmentally controlled space
- Internal VAC distribution, 240V, 3 wire
- Internal LED convenience light
- Left and Right lineup interconnections or remote mounting

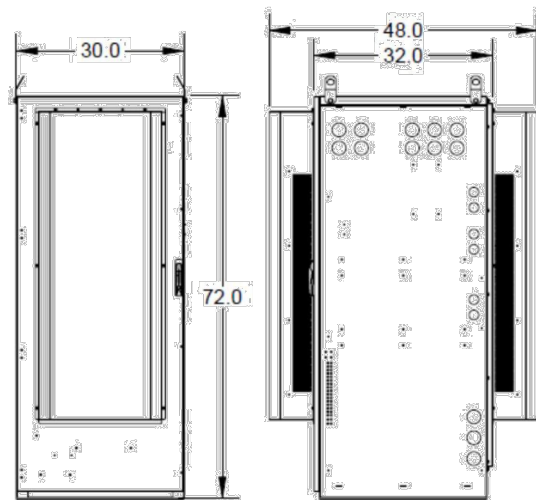
Thermal Management

- Direct Air Cooling (DAC), front-to-back airflow, door mounted, dual fan, MERV13 filtration
- Filter End-Of-Life(dirty) user thermal capacity of 6000W
- MERV 13 (standard) and MERV 16 (coastal) filter options
- 1500W fan driven heater
- Ambient operating temperature -40°C to +50°C (-40°C to +46°C for MERV16 option)

Reserve Power

- Add-on Narrow Battery Cabinet (2) -48V string 190Ahr batteries
- Add-on Large Battery Cabinet (4) -48V string 190Ahr batteries

T-Mobile SAP	Purcell PN	Description
33965	2000005433	HPL3 600A Large SSC



SITE SUPPORT CABINET

SCALE: NONE

1

Purcell HPL3 Large Battery Cabinet

(4) -48V 190Ahr Battery Strings

The Battery Cabinet is designed to house four -48V strings of 190Ahr batteries as part of the HPL3 Site Support Lineup

Cabinet Features

- Polyester powder coated aluminum, GR-487 process control, off white, texture
- Weight: 350 lbs.
- Four battery shelves / four batteries per shelf
- Front door pad lockable with three point latching system
- Left and Right lineup interconnections or remote mounting

Thermal Management

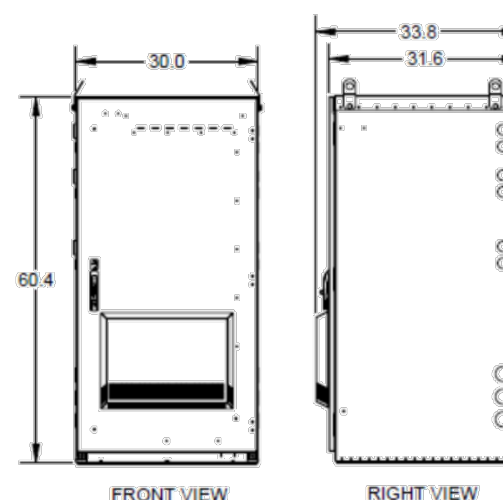
- Direct Air Cooling (DAC) with two fans
- Ambient operating temperature -40°C to +50°C
- Optional battery heater mats – one mat per shelf

Standards

- UL 508A standards
- Designed to standard GR-487, issue 5, hydrogen out gassing, external paint, zone 4 seismic loading, safety, thermal, intrusion and impact

T-Mobile SAP	Purcell PN	Description
33966	2000005434	Battery Cabinet (4 string)

T-Mobile SAP	Purcell PN	Description
33966	2000005434	Battery Cabinet (4 string)



BATTERY CABINET

SCALE: NONE

2



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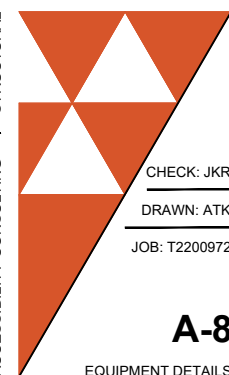
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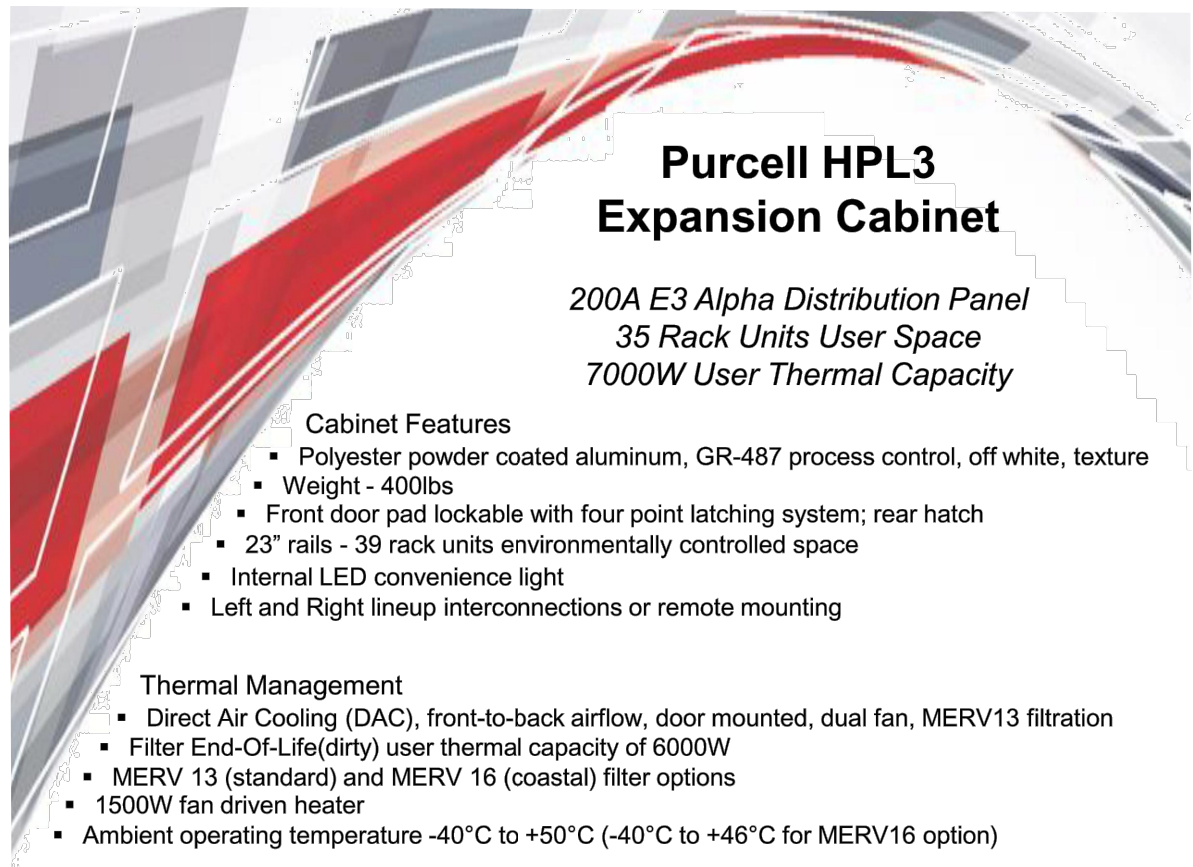
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Purcell HPL3 Expansion Cabinet

200A E3 Alpha Distribution Panel
35 Rack Units User Space
7000W User Thermal Capacity

Cabinet Features

- Polyester powder coated aluminum, GR-487 process control, off white, texture
- Weight - 400lbs
- Front door pad lockable with four point latching system; rear hatch
- 23" rails - 39 rack units environmentally controlled space
- Internal LED convenience light
- Left and Right lineup interconnections or remote mounting

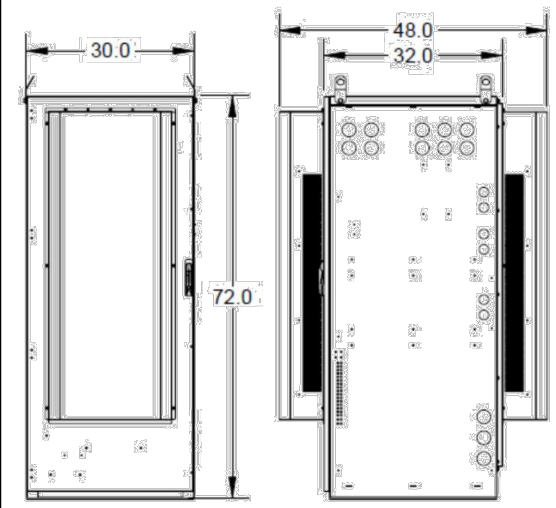
Thermal Management

- Direct Air Cooling (DAC), front-to-back airflow, door mounted, dual fan, MERV13 filtration
- Filter End-Of-Life(dirty) user thermal capacity of 6000W
- MERV 13 (standard) and MERV 16 (coastal) filter options
- 1500W fan driven heater
- Ambient operating temperature -40°C to +50°C (-40°C to +46°C for MERV16 option)

Reserve Power

- No battery allocation, full span rack rail

T-Mobile SAP	Purcell PN	Description
TBD	TBD	HPL3 Expansion Cabinet



EXPANSION CABINET	1
SCALE: NONE	

NOT USED	2
SCALE: NONE	



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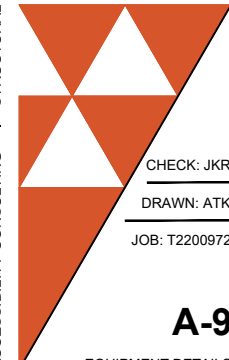


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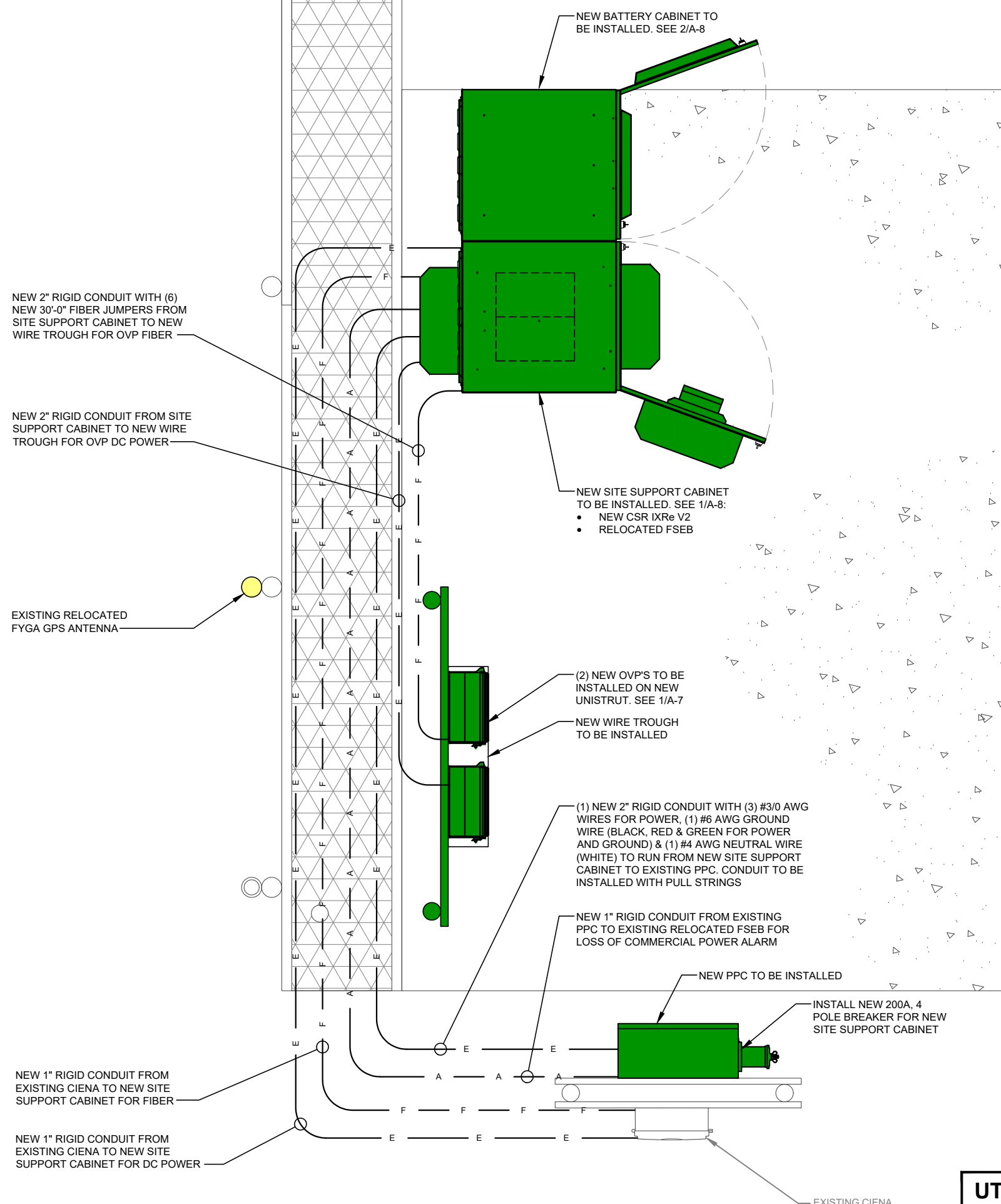


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LEGEND

- F — FIBER LINE
- E — ELECTRIC LINE
- A — ALARM CABLE



PPC NOTES:

- LOW VOLTAGE CONDUIT FROM PPC TO SSC
- (2) RUNS OF BELDEN 27916A 18 AWG 2 CONDUCTOR TYPE TC CABLE, 600V WIRE
- WIRE TO NORMALLY CLOSED RELAY FOR LOOP

NOTE:
IF 200 AMP IS NOT PRESENT, SERVICE WILL NEED TO BE UPGRADED DURING ANTENNA INSTALL.



UTILITY PLAN

SCALE: 1/2" = 1'-0"

1

SBA

T-Mobile

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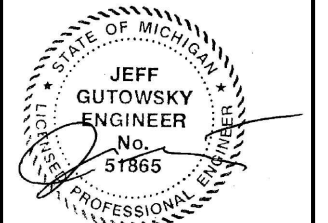
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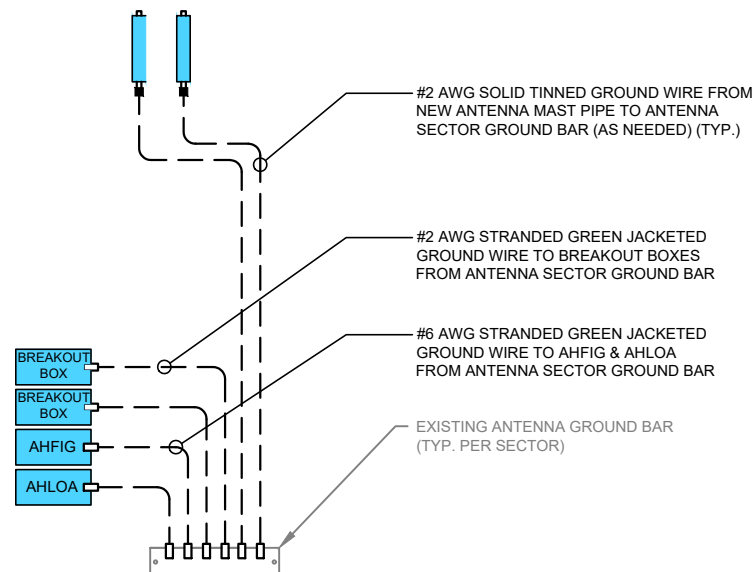
E-1

UTILITY PLAN

NOTES:

- ALL ELECTRICAL WORK SHALL CONFORM TO THE LOCAL ELECTRICAL CODE (EDITION ADOPTED BY LOCAL JURISDICTION) AND APPLICABLE LOCAL CODES.
- GROUNDING SHALL COMPLY WITH THE LOCAL ELECTRICAL CODE.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED.
- WIRES AND CABLES FOR POWER AND LIGHTING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHN INSULATION. SOLID CONDUCTORS FOR #10 AWG AND SMALLER, STRANDED FOR LARGER THAN #10 AWG. MINIMUM SIZE #12 AWG.
- WIRES AND CABLES FOR POWER SHALL BE INSTALLED IN GALVANIZED RIGID STEEL CONDUIT OR FLEXIBLE LIQUID TIGHT CONDUIT AS INDICATED ON DRAWING.
- CONTRACTOR TO OBTAIN ALL PERMITS, PAY PERMIT FEES, AND BE RESPONSIBLE FOR SCHEDULING INSPECTIONS.
- COORDINATE WITH UTILITY COMPANIES SERVICE ENTRANCE REQUIREMENTS.
- PROVIDE ALL LABOR AND MATERIAL DESCRIBED ON THIS DRAWING, AND ALL ITEMS INCIDENTAL TO COMPLETING AND PRESENTING THIS PROJECT AS FULLY OPERATIONAL.
- GROUNDING CONNECTIONS SHALL BE EXOTHERMIC TYPE TO ANTENNA MASTS, AND THE GROUND BARS. REMAINING GROUNDING CONNECTIONS SHALL BE COMPRESSION FITTINGS.
- GROUND COAXIAL CABLE SHIELDS AT BOTH ENDS WITH COAX CABLE GROUNDING KITS & INSTALL WEATHER PROOFING KIT AT EACH CONNECTION.
- ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE, ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY.
- CONTRACTOR TO PROVIDE GROUND RING AS SHOWN ON GROUNDING SITE PLAN AND GROUNDING RISER DIAGRAM. CONTRACTOR SHALL TEST AND VERIFY THAT THE IMPEDANCE DOES NOT EXCEED 5 OHMS TO GROUND BY MEANS OF A BIDDLE-MEGGER TESTER. GROUNDING AND OTHER OPERATIONAL TESTING SHALL BE WITNESSED BY THE OWNER'S REPRESENTATIVE.
- CONTRACTOR TO PROVIDE TELEPHONE CONDUIT AS SHOWN ON PLANS.
- CONTRACTOR TO PROVIDE ELECTRIC CONDUIT AS SHOWN ON PLANS.
- NOTIFY LOCAL UTILITY SERVICE PRIOR TO ANY INSTALLATION.
- ALL EQUIPMENT FURNISHED BY OTHERS SHALL BE PROVIDED WITH PROPER MOTOR STARTERS, DISCONNECTS, CONTROLS, ETC. BY THE ELECTRICAL CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE. THE ELECTRICAL CONTRACTOR SHALL INSTALL AND COMPLETELY WIRE ALL ASSOCIATED EQUIPMENT IN ACCORDANCE WITH MANUFACTURER'S WIRE DIAGRAMS AND AS REQUIRED FOR A COMPLETE OPERATING INSTALLATION. ELECTRICAL CONTRACTOR SHALL VERIFY AND COORDINATE ELECTRICAL CHARACTERISTICS AND REQUIREMENTS OF EQUIPMENT PRIOR TO ROUGH-IN OF CONDUIT AND WIRING TO AVOID CONFLICTS WHERE APPLICABLE.
- GROUNDING CONDUCTORS SHALL BE COPPER OR SOLID TINNED COPPER. ALL CONNECTIONS MADE BELOW GRADE SHALL BE SOLID TINNED COPPER. ALL CONNECTIONS ABOVE GRADE STRANDED IS PERMITTED. BUS BARS TO BE TIN PLATED COPPER
- ALL EXOTHERMIC WELDS ABOVE FINISHED GRADE SHALL BE PAINTED WITH CO-GALVANIZED ZINC ENRICHED PAINT TO MATCH COLOR OBJECT BONDED TO.
- CONNECT COAX GROUND KITS TO MASTER GROUND BAR AT BASE OF TOWER.
- CONNECT COAX GROUND KITS TO GROUND BUS AT TOP OF TOWER.
- CONNECT LNA GROUND TO GROUND BUS AT TOP OF TOWER.
- ALL GROUNDING CONNECTIONS TO BE MADE USING EXOTHERMIC WELD PROCESS UNLESS OTHERWISE APPROVED BY DESIGNER.
- ELECTRICAL CONTRACTOR TO PULL BONDING JUMPER AT CABINET ONLY IF DISCONNECT GROUND IS TIED TO GROUND FIELD INSTEAD OF SEPARATE GROUND ROD.
- PLAN DRAWINGS SHOWN HEREIN DO NOT NECESSARILY DEPICT ELECTRICAL REQUIREMENTS OF INDIVIDUAL EQUIPMENT AND DEVICES SUCH AS THE EQUIPMENT GROUNDING REQUIREMENTS, POWER REQUIREMENTS AND TELCO RACEWAY REQUIREMENTS.
- PLAN DRAWINGS SHOWN HEREIN ARE DIAGRAMMATIC AND DO NOT NECESSARILY DEPICT THE EXACT EQUIPMENT QUANTITIES, LOCATION, LAYOUT AND CONFIGURATION. REFER TO ARCHITECTURAL PLANS FOR EXACT EQUIPMENT LOCATION, LAYOUT AND CONFIGURATION.
- REFER TO ARCHITECTURAL PLANS FOR THE LOCATION OF POWER AND TELCO POINT OF CONNECTIONS, THE DISTANCE OF THE RUN, AND THE SUGGESTED CONDUIT ROUTING. FIELD VERIFY EXISTING CONDITIONS SPECIFICALLY FOR CONDUIT ROUTING PRIOR TO BID.
- NUMBER OF ANTENNAS REPRESENTED IN THIS DETAIL ARE FOR SHOWING CLARITY OF GROUND SYSTEM REQUIREMENTS ONLY. SEE RF INFO FOR ANTENNA QUANTITY.
- CONTRACTOR TO 'NOALOX' ALL CONNECTIONS TO GROUND BARS.
- ALL GROUND WIRES ENTERING GROUND SHALL HAVE PVC SLEEVE.

ANTENNA SECTOR



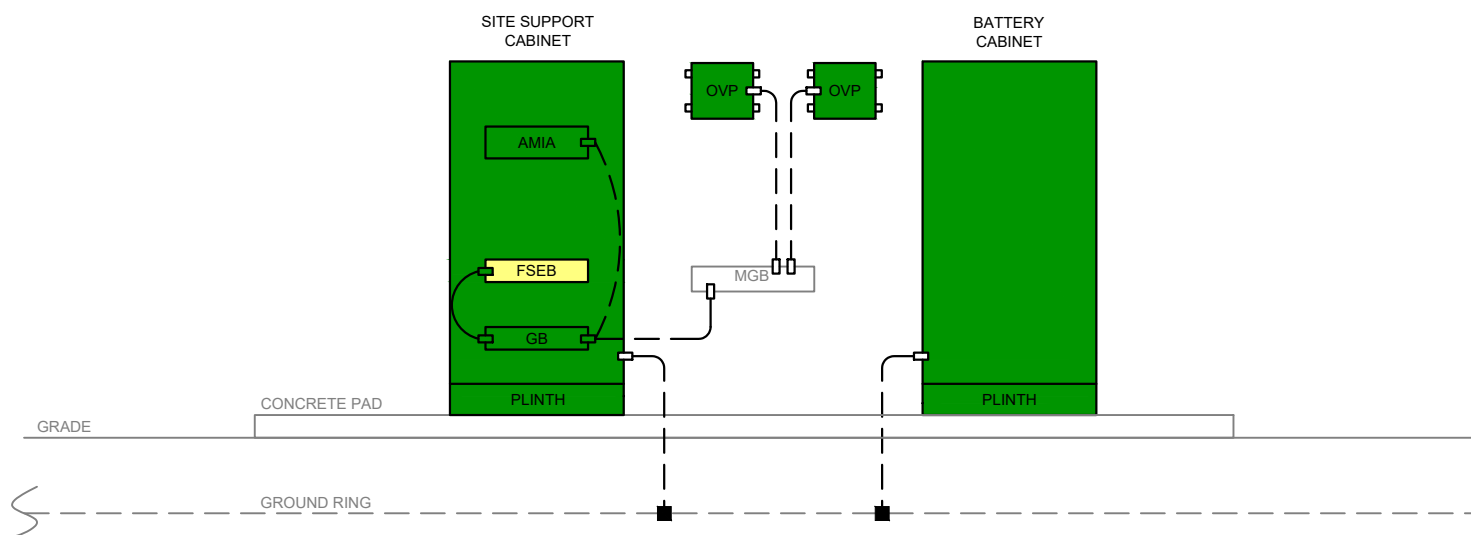
LEGEND

- NEW GROUNDING WIRE
- - - EXISTING GROUNDING WIRE
- EXOTHERMIC WELD
- MECHANICAL CONNECTION
- EXISTING EQUIPMENT
- NEW ANTENNA EQUIPMENT
- NEW GROUND EQUIPMENT
- RELOCATED EQUIPMENT

NOTES:

- AMIA'S TO CABINET GROUND BAR:
#6 AWG STRANDED GREEN JACKETED GROUND WIRE
- FSEB TO CABINET GROUND BAR:
#6 AWG STRANDED GREEN JACKETED GROUND WIRE
- PURCELL CABINETS TO GROUND RING:
#2 AWG SOLID TINNED COPPER GROUND WIRE IN 1/2" NON-METALLIC SEALTIGHT, AND CALKED
- CABINET GROUND BAR TO MASTER GROUND BAR:
#2 AWG STRANDED GREEN JACKETED GROUND WIRE
- OVP TO MASTER GROUND BAR:
#2 AWG STRANDED GREEN JACKETED GROUND WIRE
- UNISTRUT OVP FRAME TO GROUND RING:
#2 AWG SOLID TINNED COPPER GROUND WIRE IN 1/2" NON-METALLIC SEALTIGHT, AND CALKED

NOTE:
CONTRACTOR TO VERIFY FINAL GROUNDING SYSTEM RESISTANCE TO BE UNDER 5 OHMS.



GROUNDING RISER

SCALE: NONE

1



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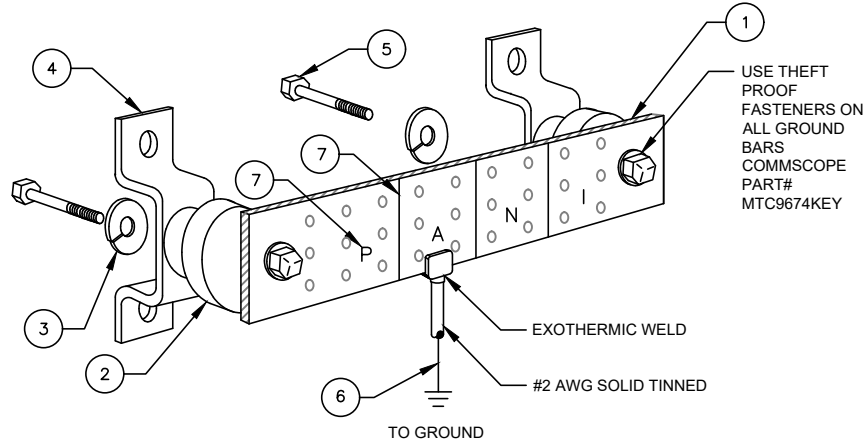
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GR-1
GROUNDING RISER

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KEY NOTES:

1.	1/4" THK ELECTRICAL TINNED GROUND BAR HARGER OR APPROVED EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
2.	INSULATORS (UNLESS NOTED OTHERWISE)
3.	3/8" STAINLESS STEEL LOCKWASHERS
4.	WALL MOUNTING BRACKET
5.	3/8" STAINLESS STEEL BNLF BOLTS
6.	EXOTHERMICALLY WELD #2 AWG BARE TINNED SOLID COPPER CONDUCTOR TO GROUND BAR. ROUTE CONDUCTOR TO BURIED GROUND RING AND PROVIDE PARALLEL EXOTHERMIC WELD
7.	CONTRACTOR SHALL USE PERMANENT MARKER TO DRAW THE LINES BETWEEN EACH SECTION AND LABEL EACH SECTION ("P", "A", "N", "I") WITH 1" HIGH LETTERS



EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION

SECTION "P" - SURGE PRODUCERS

- COLLECTOR GROUND BAR
- GENERATOR FRAMEWORK (IF AVAILABLE)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND
- FIBER GROUND BAR
- EQUIPMENT ROOM COLLECTOR GROUND BAR
- HVAC
- RECTIFIER FRAMES

SECTION "A" - SURGE ABSORBERS

- INTERIOR GROUND RING
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING)
- METALLIC COLD WATER PIPE (IF AVAILABLE)
- BUILDING STEEL (IF AVAILABLE)
- AC POWER

SECTION "N" - NON-ISOLATED GROUND ZONE EQUIPMENT

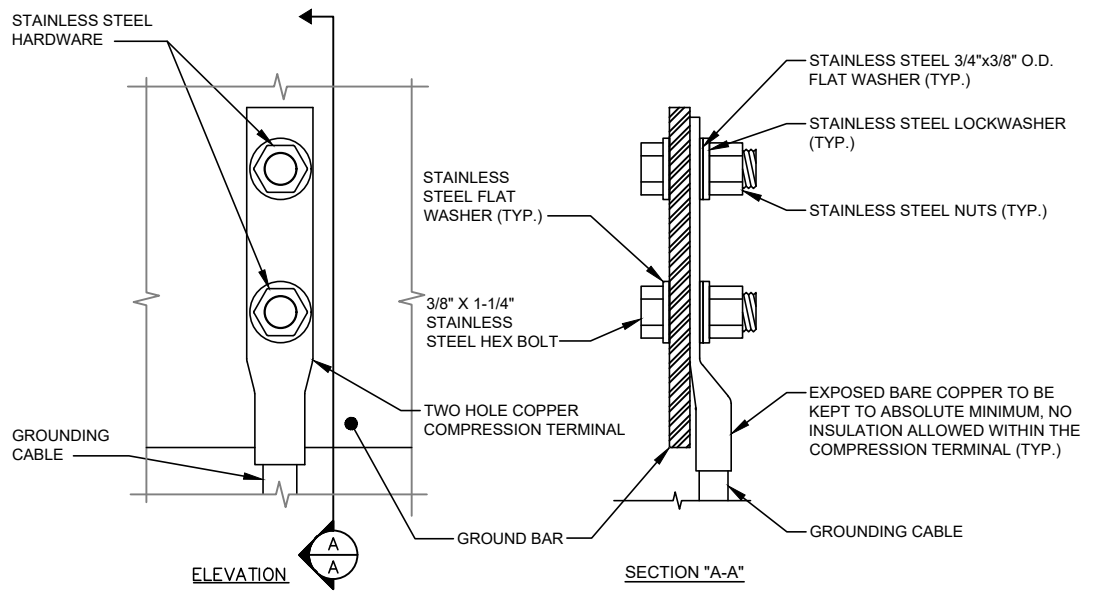
- MISCELLANEOUS NON-ISOLATED GROUND ZONE EQUIPMENT
- CABLE TRAY SYSTEM
- EQUIPMENT FRAMES
- BATTERY RACKS
- DC POWER

SECTION "I" - ISOLATED GROUND ZONE

- ISOLATED EQUIPMENT FRAMES
- ISOLATED GROUND BAR - IGB

NOTES:
 -EXTERIOR GROUND BARS TO BE TIN PLATED
 -HARDWARE SHALL BE STAINLESS STEEL
 -CONTRACTOR SHALL GROUP INCOMING WIRES
 -CONTRACTOR TO APPLY 'KOPR-SHIELD' TO ALL CONNECTIONS

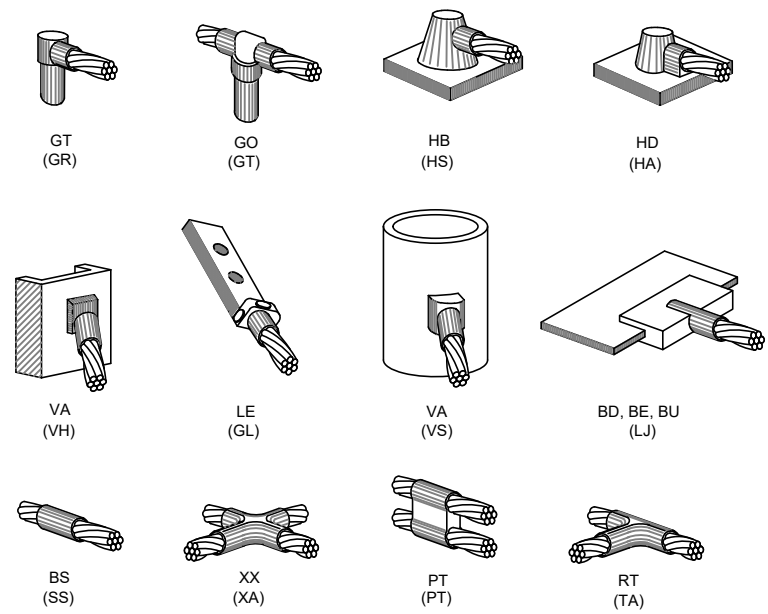
GROUND BAR DETAIL	1
SCALE: NONE	



1. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS
2. NO CRIMPING OF SOLID #2. USE EXOTHERMIC WELD ONLY

GROUND BAR CONNECTION DETAIL	2
SCALE: NONE	

NOTE:
 THE FOLLOWING SYMBOLS SHOWN ARE HARGER ULTRAWELD EXOTHERMIC CONNECTIONS WITH PART NUMBERS BELOW. THESE CONNECTIONS MAY BE CROSS-REFERENCED WITH CADWELD CONNECTIONS WHICH ARE SHOWN IN PARENTHESIS.



EXOTHERMIC WELD TYPES	3
SCALE: NONE	

NOT USED	4
SCALE: NONE	

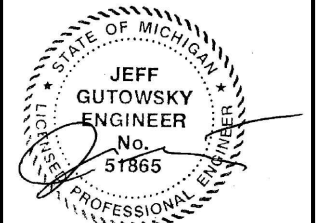


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GR-2
 GROUNDING DETAILS

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