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## SITE WORK GENERAL NOTES

1. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS SO AS NOT TO INTERFERE WITH PUBLIC OR PRIVATE UTILITY AUTHORITIES INSTALLING SERVICES ON OR NEAR SITE. THE CONTRACTOR IS RESPONSIBLE FOR HAVING ALL UTILITIES LOCATED PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. TRENCHES ON SITE, IN PUBLIC ROADS, RIGHT-OF-WAYS, AND ON PRIVATE PROPERTY SHALL BE EXCAVATED IN SUCH A MANNER THAT DAMAGE DOES NOT OCCUR TO AN EXISTING UTILITY. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH DAMAGING EXISTING UTILITIES, INCLUDING BUT NOT LIMITED TO FINES AND REPAIR COSTS. OPEN TRENCHES WILL BE BARRICADED PER OSHA REQUIREMENTS.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY OWNER/CONTRACTOR AND OR UTILITIES.
3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND IN THE PROJECT SPECIFICATIONS.
4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
5. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
6. THE CONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE, IF APPLICABLE.
7. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE EQUIPMENT SHELTER OR EQUIPMENT LOCATION AND TOWER AREAS.
8. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
9. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
10. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE PROJECT SPECIFICATIONS.
11. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

## CODES & STANDARDS

CONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

BUILDING CODE:  
INTERNATIONAL BUILDING CODE: IBC 2015

ELECTRICAL CODE:  
NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 70 – 2014 NATIONAL ELECTRICAL CODE

LIGHTNING PROTECTION CODE:  
NFPA 780 – LIGHTNING PROTECTION CODE, 2014

CONTRACTORS WORK SHALL COMPLY 1MTH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

1. AMERICAN CONCRETE INSTITUTE (ACI) 318-19
2. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC). MANUAL OF STEEL CONSTRUCTION
3. TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA/EIA-222-H) LATEST EDITION, STRUCTURAL STANDARD FOR ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES
4. INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81. GUIDE FOR MEASURING EARTH RESISTIVITY, GROUND IMPEDANCE AND EARTH SURFACE POTENTIALS OF A GROUNDING SYSTEM IEEE 1000 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING ELECTRONIC EQUIPMENT
5. IEEE C62.41, RECOMMENDED PRACTICES ON SURGE VOLTAGES N LOW VOLTAGE AC POWER CIRCUITS FOR LOCATION CATEGORY C3 AND HIGH SYSTEM EXPOSURE
6. TEA 607 COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
7. TELCORDIA GR-63 NETWORK EQUIPMENT-BUIDING SYSTEM (NESS): PHYSICAL PROTECTION
8. TELCORDIA GR347 CENTRAL OFFICE POWER WRING
9. TELCORDIA GR-1275 GENERAL INSTALLATION REQUIREMENT
10. TELCORDIA GR-1503 COAXIAL CABLE CONNECTIONS
11. FABRICATED STEEL MATERIALS SHALL BE RATED AND HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM SPECIFICATIONS 123. LATEST ISSUE (20Z. PER SQ. R. OF SURFACE)

CONCRETE AND ALL CONCRETE REINFORCEMENT STEEL SHALL CONFORM TO APPROPRIATE SPECIFICATIONS OF THE AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM). C39/C39M-05E1. A615/81SM-08A OR BETTER, A185/A185M-07 OR BETTER.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL. METHODS OF CONSTRUCTION. OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

## CONSTRUCTION NOTES

1. FIELD VERIFICATION: CONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK. NEW ANTENNA PLATFORM LOCATION, IF APPLICABLE, AND ANTENNAS TO BE INSTALLED.
2. COORDINATION OF WORK: CONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH OWNER.
3. ICE BRIDGE: CONTRACTOR SHALL USE EXISTING ICE BRIDGE HANGER ASSEMBLIES AND EXISTING BUILDING ENTRY PORTS, AS REQUIRED, TO SUPPORT CABLES TO INTERCONNECT TO THE NEW ICE BRIDGE AND NEW TOWER.
4. GRAVEL SURFACE IN AREAS OF COMPOUND FENCING AND EXISTING GROUND RING CONNECTIONS, THAT ARE DISTURBED DURING CONSTRUCTION SHALL BE REPLACED TO ORIGINAL CONDITION BY CONTRACTOR. ANY CUTS IN MURAFI FABRIC SHALL HAVE A NEW MURAFI STRAP INSTALLED OVER CUT WITH AN OVERLAP OF AT LEAST ONE FOOT ON EACH SIDE.
5. ALL WORK TO BE PERFORMED BY THE CONTRACTOR UNLESS OTHERWISE NOTED.
6. CONTRACTOR TO REPAINT ANY DAMAGED AREAS OF THE STRUCTURE WITH COLD GALVANIZED PAINT OR EPOXY PAINT, TO MATCH EXISTING PAINT OR AS APPROVED BY THE STRUCTURE OWNER.

## SITE NOTES

1. THE MINIMUM LOWEST ELEVATION SHALL NOT BE LESS THAN 4" ABOVE CROWN OF THE FEDERAL AND/OR 100 YEAR FLOOD ELEVATION, WHICHEVER IS HIGHER. CONTRACTOR SHALL SUBMIT AN ELEVATION SURVEY PRIOR TO PLACING EQUIPMENT PLATFORM AND A FINAL SURVEY UPON COMPLETION OF PROJECT. IF REQUIRED BY LOCAL OR STATE STATUTES.
2. WORK OUTSIDE OF THE PROPERTY LINE INCLUDED IN THIS SET OF DRAWINGS SHALL BE, BUT NOT BE LIMITED TO, THE SITE DRIVEWAY AND UTILITY CONNECTIONS.
3. CONTRACTOR AND SUB-CONTRACTORS SHALL VERIFY ALL UTILITY SERVICE CONNECTION LOCATIONS PRIOR TO SUBMITTAL OF PRICE. IT IS RECOMMENDED THAT THE CONTRACTOR VISIT THE SITE AND VERIFY ALL DIMENSIONS AND NOTES BEFORE SUBMITTING PRICE AND PROCEEDING WITH WORK.
4. WHEN AVAILABLE REFERENCE THE GEOTECHNICAL REPORT FOR RECOMMENDED EXCAVATION AND/OR EARTH FILL PROCEDURES (IF NO REPORT IS AVAILABLE USE STANDARD SOIL CONDITIONS).
5. CONTRACTOR IS RESPONSIBLE FOR ALL SAFETY COMPLIANCE'S AND SAFETY OF PERSONNEL & SUBCONTRACTORS.

## GENERAL NOTES

1. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
2. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATION.
3. DRAWINGS PROVIDED HERE ARE NOT SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
4. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
5. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
6. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE OWNER.
7. THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES FOR KEEPING THE PREMISES, INCLUDING ACCESS ROADS, FREE FROM EXCESS WASTE MATERIALS AND TRASH. UPON COMPLETION OF THE SITE WORK, AND PRIOR TO FINAL ACCEPTANCE BY THE OWNER, THE CONTRACTOR SHALL REMOVE ALL SUCH MATERIALS AND TRASH TO A PROPER LANDFILL SITE AS DESIGNATED BY THE LOCAL JURISDICTION. SPARE HARDWARE REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
8. CONSTRUCTION SHALL COMPLY WITH OWNER SPECIFICATIONS FOR CONSTRUCTION OF SITES.
9. CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWING MUST BE VERIFIED. CONTRACTOR SHALL NOTIFY THE OWNER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
10. ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE TO BE WORN TO ALERT WORKERS OF ANY DANGEROUS EXPOSURE LEVELS.
11. EQUIPMENT CALIBRATION : ALL MEASURING DEVICES SUCH AS TRANSITS, METERS AND RF TEST EQUIPMENT SHALL BE IN PROPER CALIBRATION. WRITTEN CONFIRMATION FROM A CERTIFIED LABORATORY THAT SUCH INSTRUMENTS HAVE BEEN CALIBRATED WITHIN THE PRIOR 6 MONTH PERIOD BEFORE ERECTION IS TO COMMENCE MAY BE REQUIRED BY THE OWNER. AT LEAST ONE TRANSIT SHALL BE PRESENT AND UTILIZED THROUGHOUT THE ERECTION PROCESS.
12. THE CONTRACTOR SHALL ENSURE THAT STATE AND LOCAL REGULATIONS ARE COMPLIED WITH IN REGARD TO NOISE LEVELS PRODUCED BY HIS OR HIS SUB-CONTRACTOR'S EQUIPMENT OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL ALSO ENSURE THAT HIS WORK HOURS COMPLY WITH ANY LOCAL "QUIET" ORDINANCES AND THAT HIS CONSTRUCTION SCHEDULE TAKES INTO ACCOUNT ANY IMPACT THESE QUIET ORDINANCES WILL HAVE.
13. IT IS THE CONTRACTORS RESPONSIBILITY TO REVIEW AND UNDERSTAND ALL ITEMS WITHIN THESE DRAWINGS AND CONTRACT SPECIFICATIONS.



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### REVISIONS

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**ENGINEER CERTIFICATION & SEAL:**  
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WATER MNT.  
NMU-002  
500 JACKSON ST  
MARQUETTE, MI 49855  
CO: MARQUETTE

SHEET TITLE

**GENERAL NOTES**

SHEET NUMBER

**N1**

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### SAFETY NOTES

CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. DAILY TOOLBOX TALKS WILL BE CONDUCTED COVERING TOPICS SUCH AS A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, D) TRENCHING AND EXCAVATING, E) HOIST SAFETY, F) CRANE SAFETY.

OSHA/NATE PARTNERSHIP:

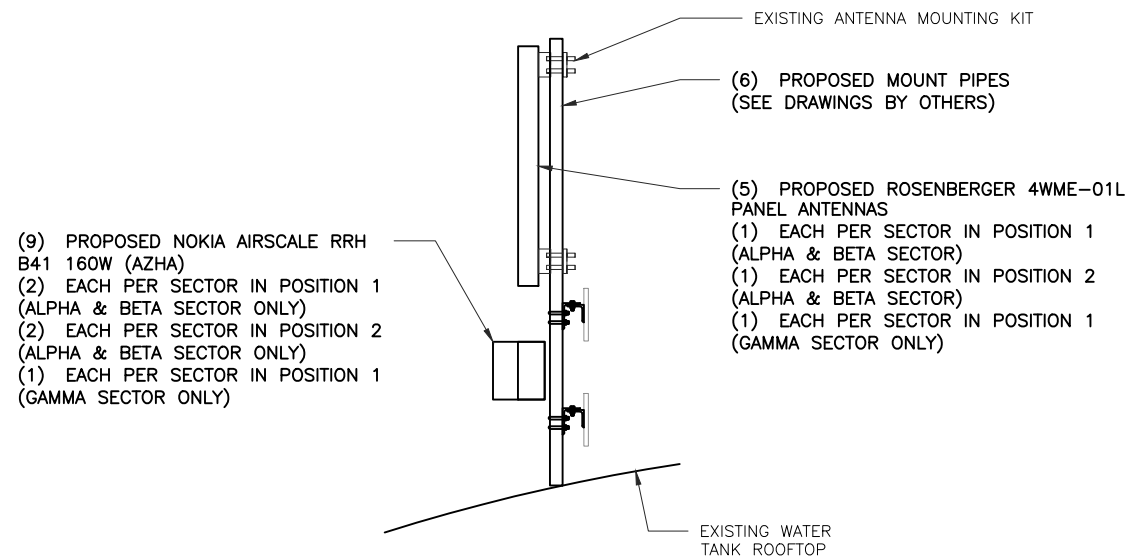
PREPLANNING AND JOB HAZARD ANALYSIS REQUIREMENTS:

- An effective safety and health program shall be implemented on the job site
- A competent person, responsible for safety and health activities shall be designated for on site activities
- Training for 100% fall protection over 6' shall be completed for all exposed employees prior to construction and written certification shall be maintained:
- Each individual having received training shall be personally identified
- The completion date for the training shall be documented on each training record
- All employees' training records shall be readily accessible for inspection purposes
- Inspections of the following equipment shall be performed every time it is placed into use:
- All personal protective equipment
- Fall protection systems including fall restraint, arrest and positioning device systems
- All hand tools and electrical equipment
- Rigging equipment
- Tag lines

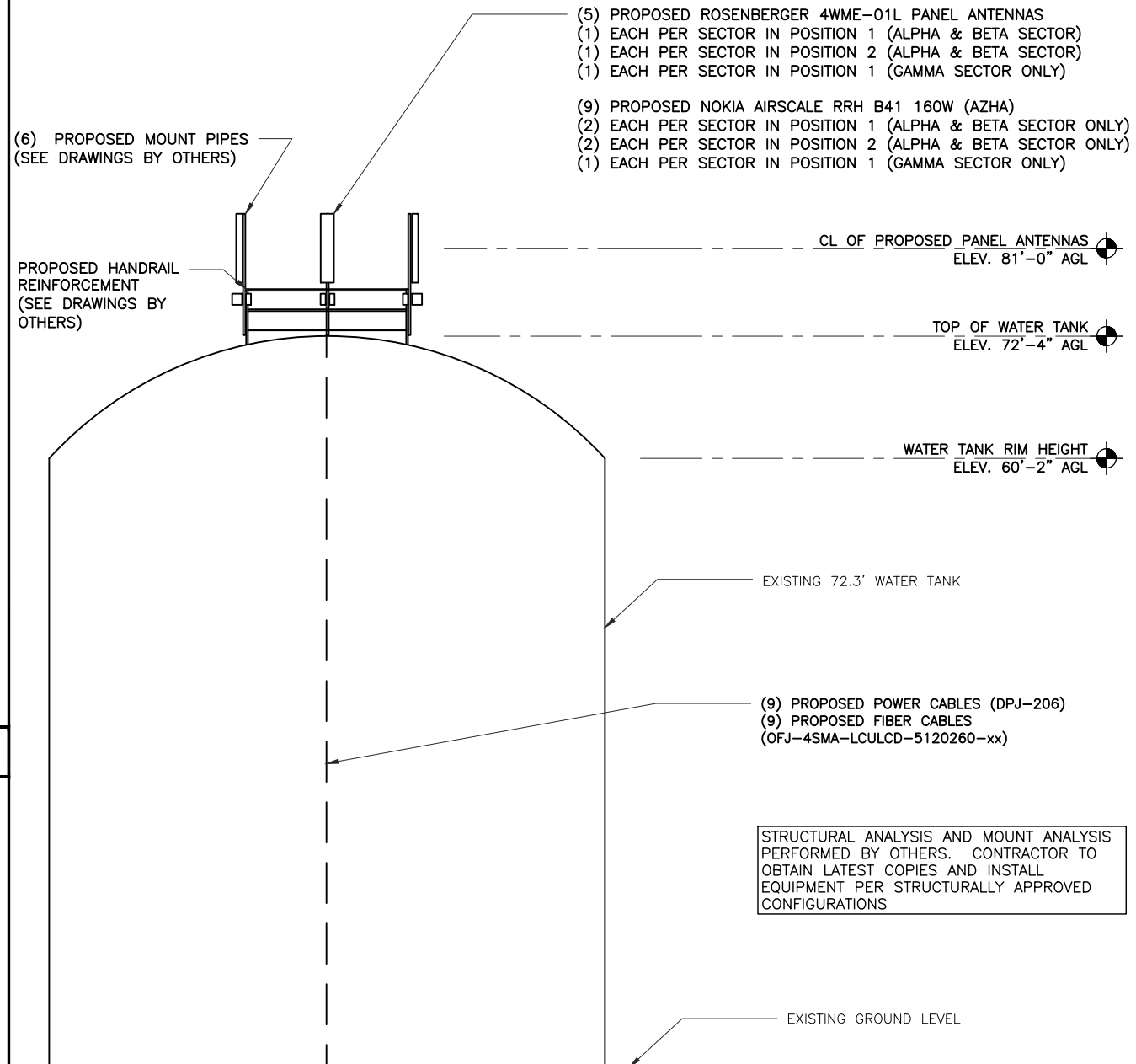
NOTE: It is required that a written validation of inspection shall be maintained at the job site and that a tagging system is implemented for equipment taken out-of-service.

- Location(s) where high-voltage lines and other electrical hazards have been identified and marked
- Electrical service provider has been notified prior to the start of work (if needed)
- Site specific briefing notifying employees of identified hazards and means of control/ elimination has been performed
- Emergency procedures have been determined and implemented prior to the start of work
- Personnel trained in first aid and CPR have been identified
- Site specific emergency rescue procedures have been developed and documented
- All applicable warning and danger signs have been posted and maintained on the job site
- All crew members are provided maps or address to nearest hospital
- All personnel are prohibited from 'Riding the equipment lift' - NO EXCEPTIONS

### MOUNTING DETAILS (SIDE VIEW FINAL)



### TOWER CENTERLINES



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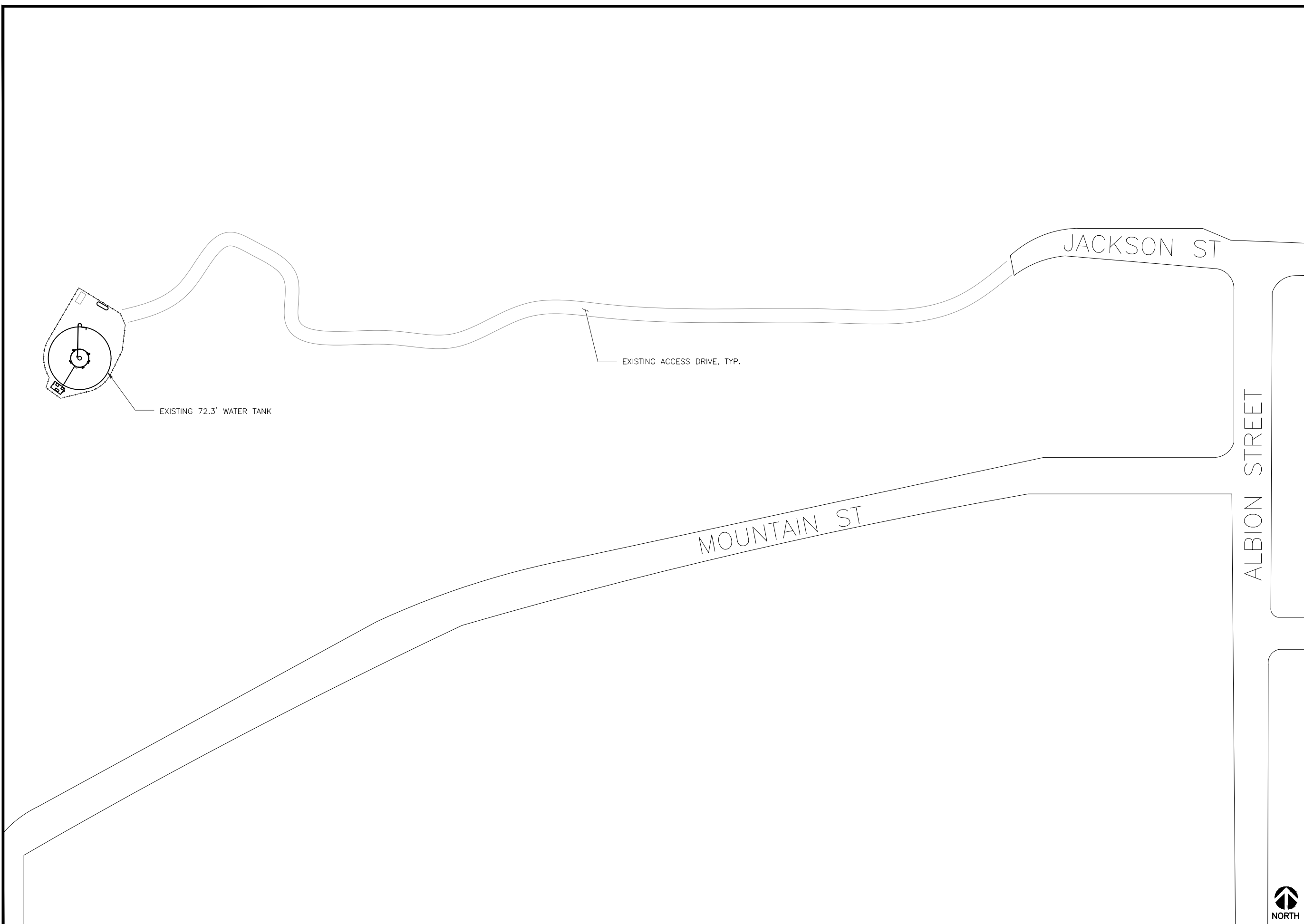
Signature: *Michael L. Pinske* Date: 1/19/2024

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SHEET TITLE  
**NOTES & TOWER  
LOADING**

SHEET NUMBER  
**N2**

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**MICHAEL L. PINSKE**  
ENGINEER  
No. 6201056754

Signature: *Michael L. Pinske* Date: 1/19/2024

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SHEET TITLE  
**SITE PLAN**

SHEET NUMBER  
**A1**

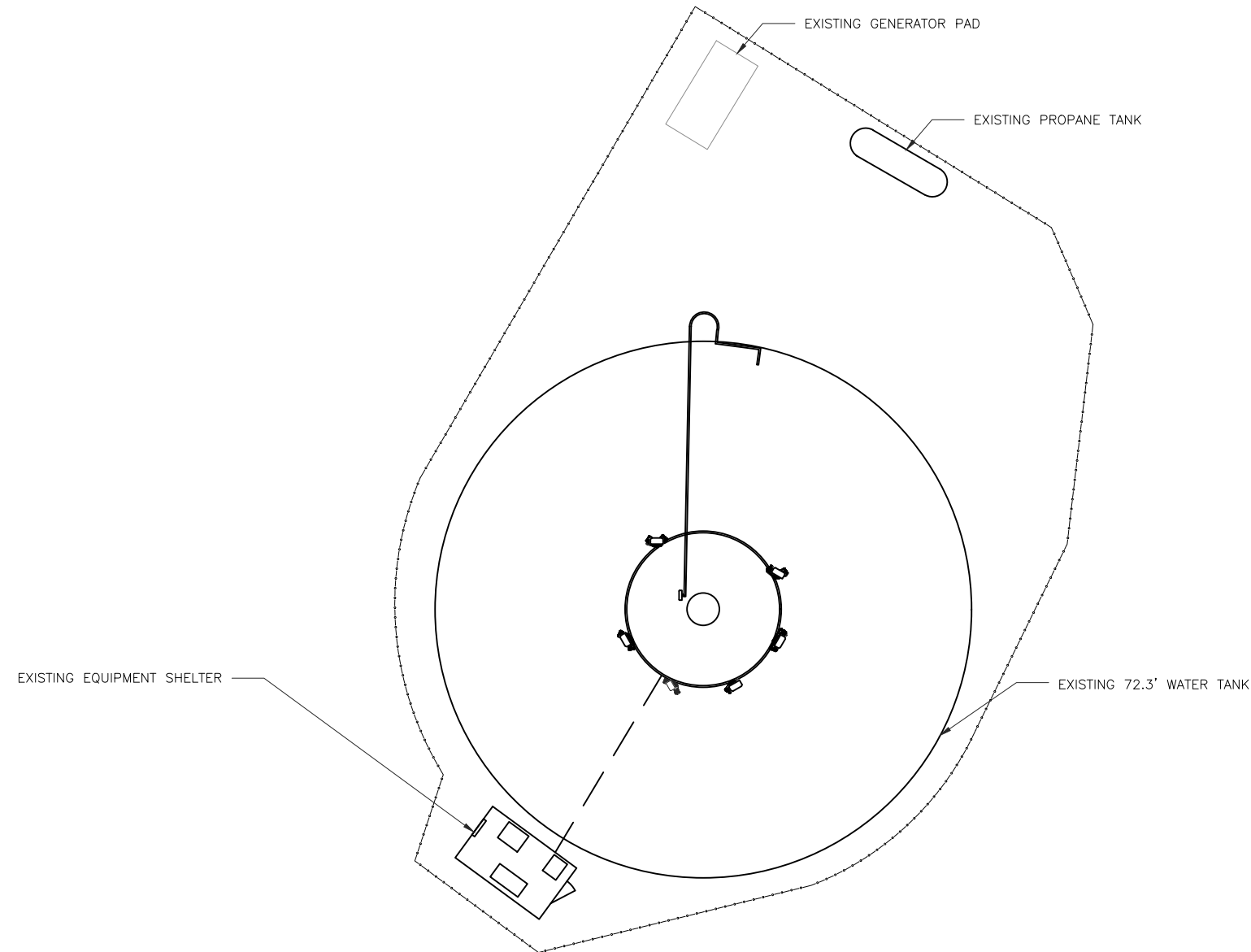
SITE PLAN

SCALE: 1" = 80'-0" (24x36)  
(OR) 1/2" = 80'-0" (11x17)



1

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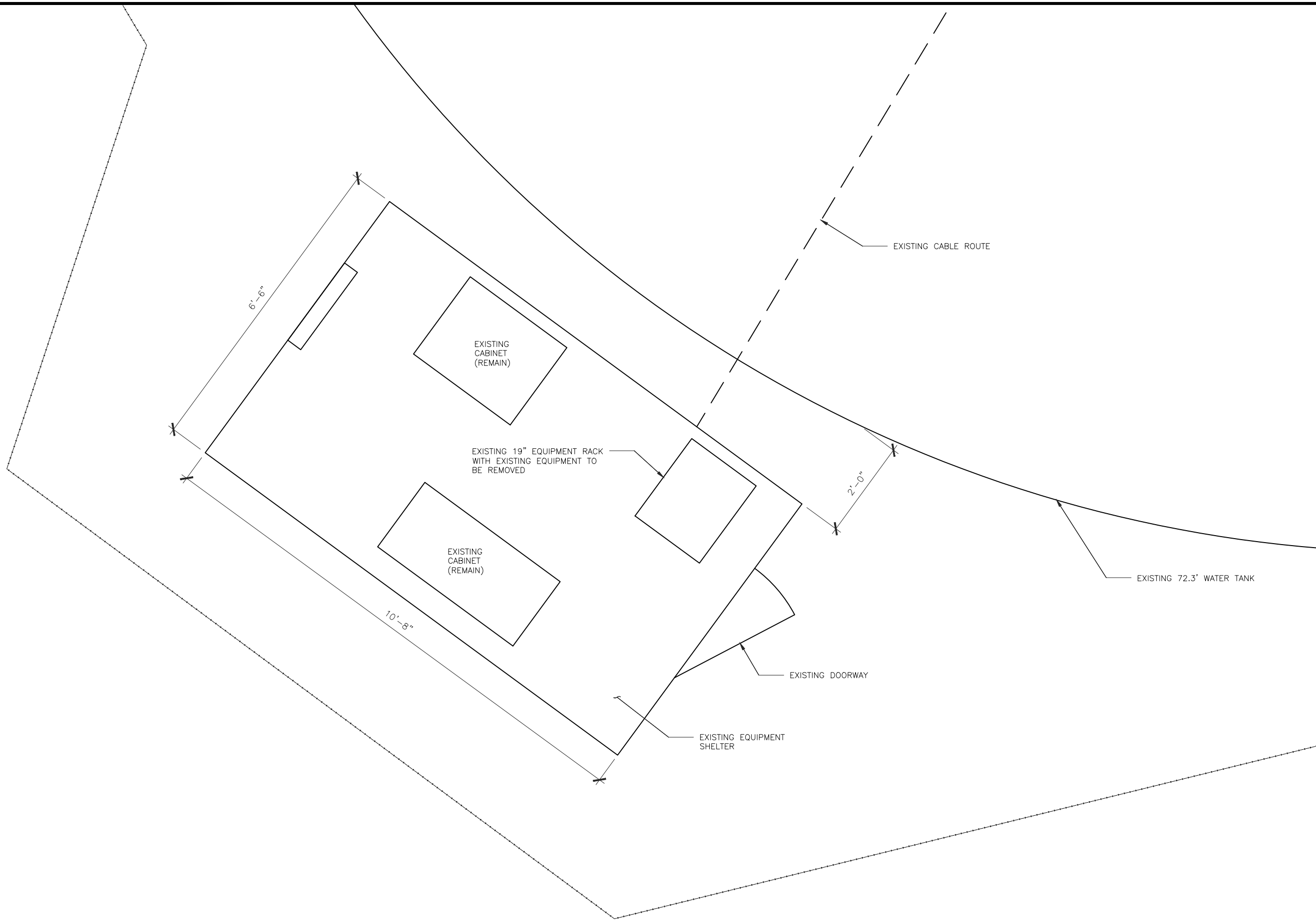
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SHEET TITLE  
**OVERALL  
COMPOUND  
PLAN**

SHEET NUMBER  
**A2**



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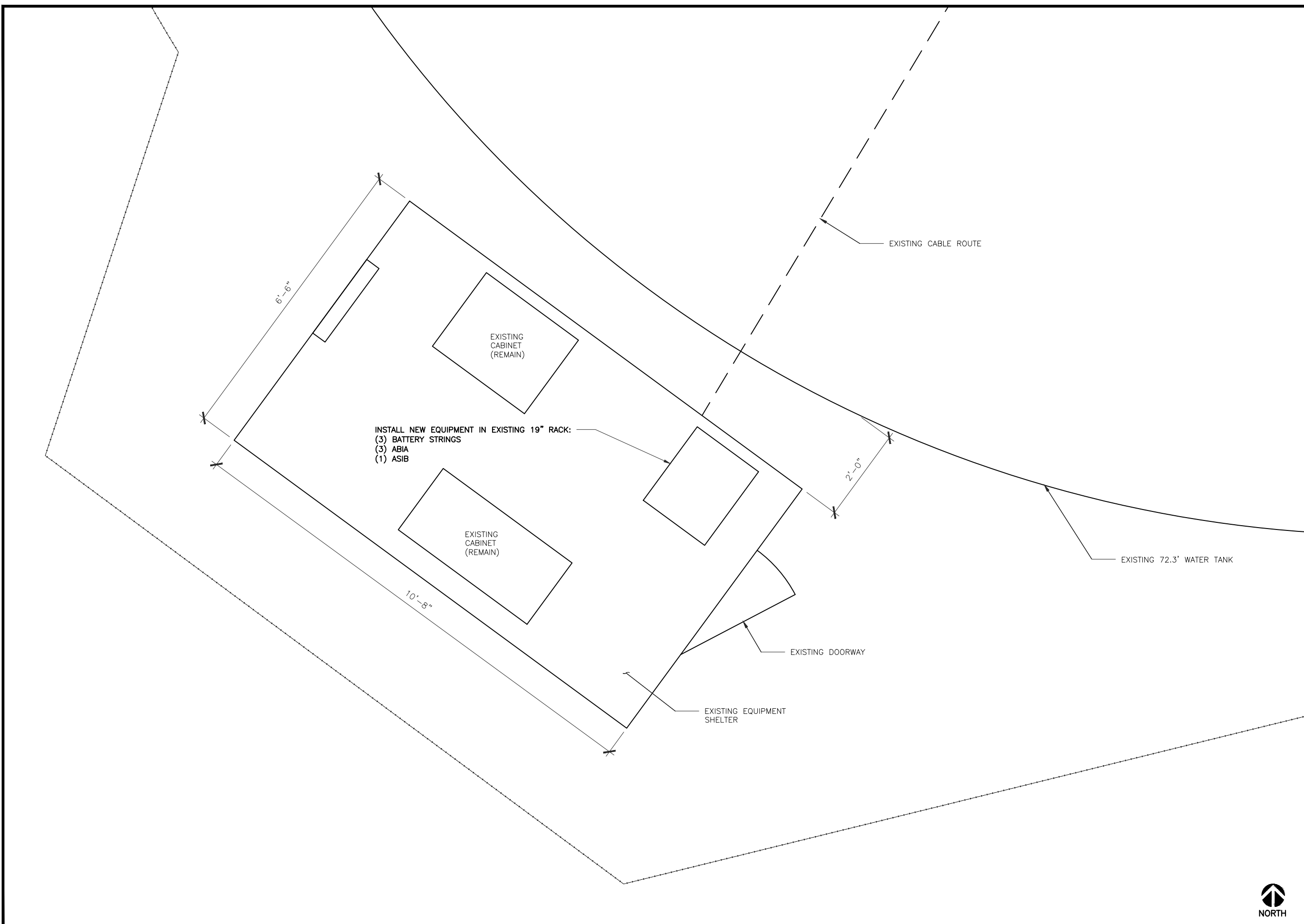
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SHEET TITLE  
**EXISTING EQUIPMENT PLAN**

SHEET NUMBER  
**A2.1**



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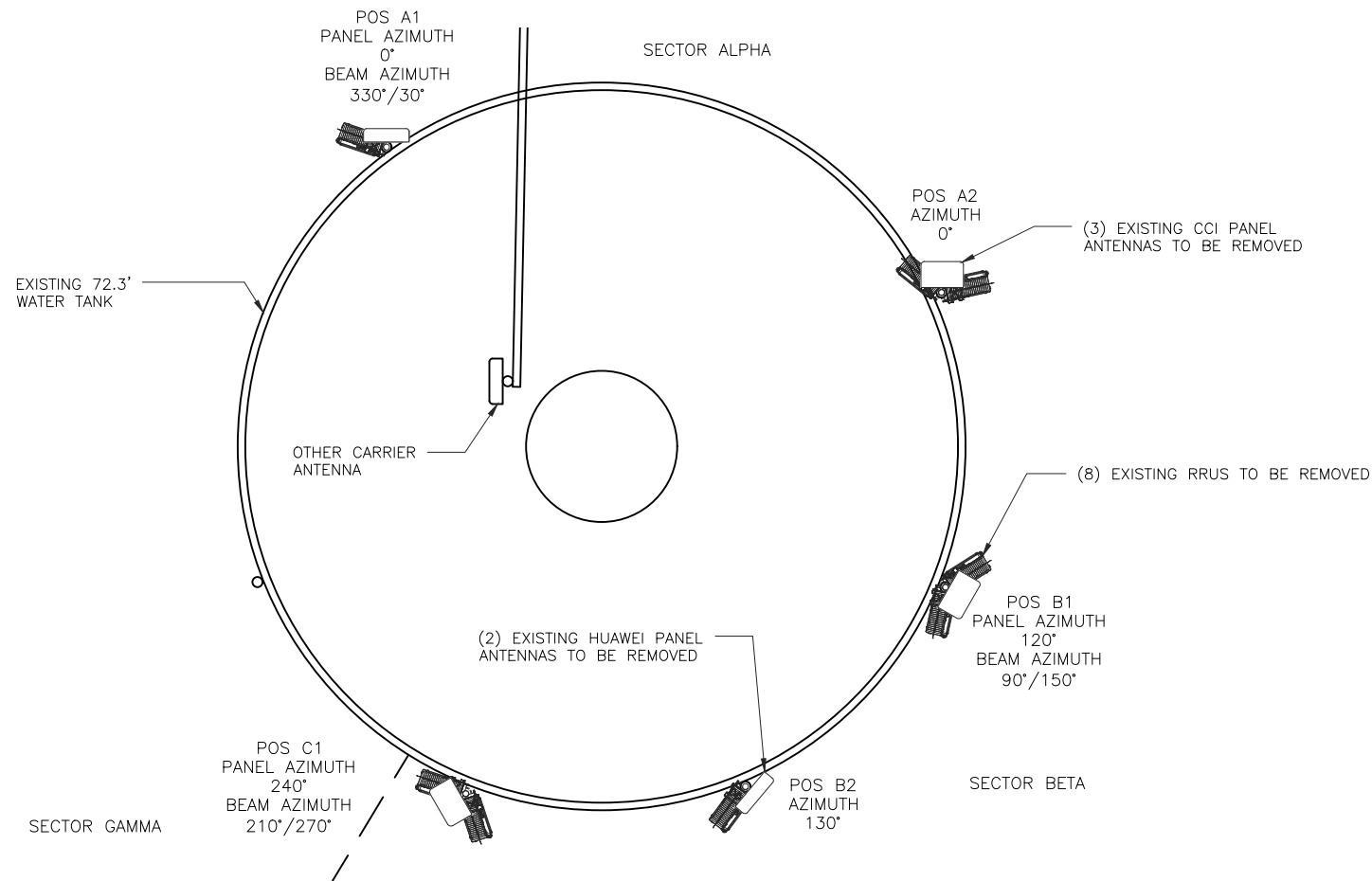
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SHEET TITLE  
**PROPOSED EQUIPMENT PLAN**

SHEET NUMBER  
**A2.2**



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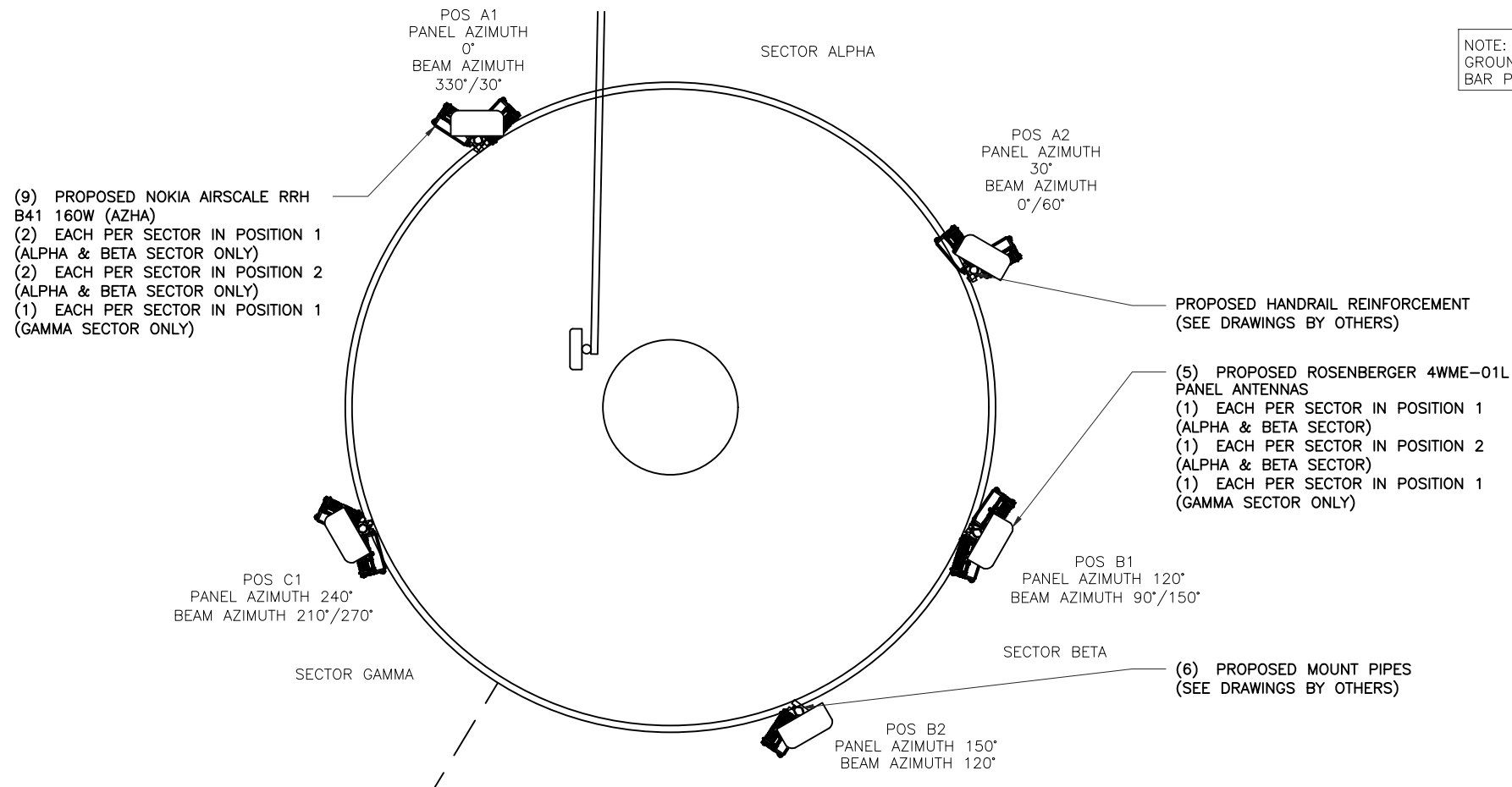


EXISTING ANTENNA PLAN

0 6" 1' 2' SCALE: 1/2" = 1'-0" (24x36)  
(OR) 1/4" = 1'-0" (11x17)



2



PROPOSED ANTENNA PLAN

0 6" 1' 2' SCALE: 1/2" = 1'-0" (24x36)  
(OR) 1/4" = 1'-0" (11x17)



1



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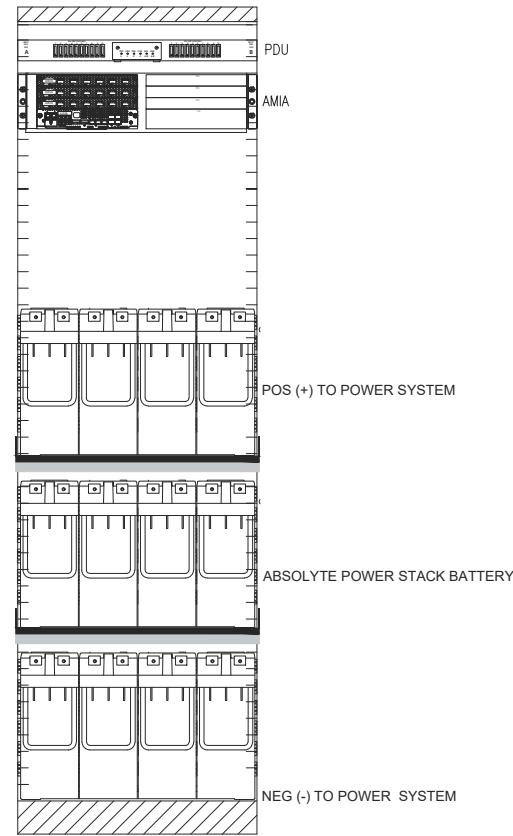
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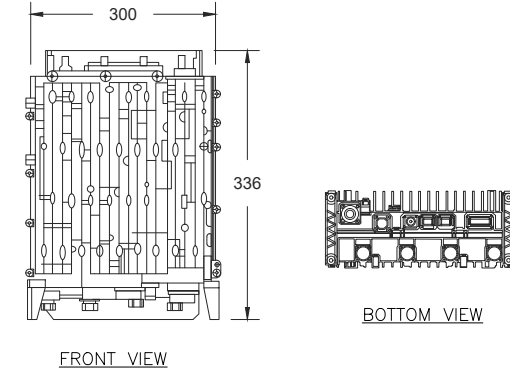
SHEET TITLE  
**ANTENNA MOUNT DETAIL**

SHEET NUMBER  
**A3**

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AirScale RRH 4T4R B41 160 W (AZHA)  
 DIMENSIONS, HxWxD: 336 X 300 X 155 (MM) (CORE)  
 13.2" X 11.8" X 6.1" (CORE)  
 WEIGHT (CORE ONLY): 28.7.8 LBS (13.00 KG)



NOTE: USE THE MANUFACTURES MOUNTING BRACKET FOR INSTALL



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EQUIPMENT RACK WITH (3) ABIA (1) ASIB & (12) BATTERIES

NOT TO SCALE

6

DETAIL NOT USED

NOT TO SCALE

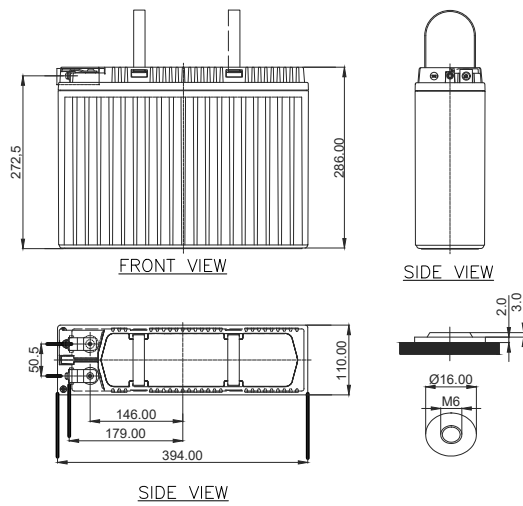
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NOKIA AirScaleRRH 4T4R B41 160 W (AZHA)

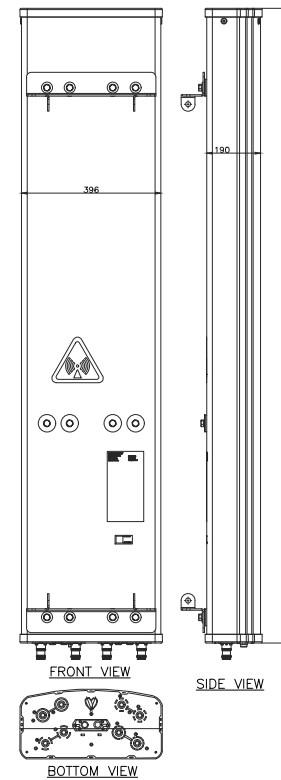
NOT TO SCALE

2

LEOCH LPF12-100(12V100Ah) BATTERY  
 DIMENSIONS, HxWxD: 286 X 394 X 110 (MM) (CORE)  
 11.3" X 15.5" X 4.33" (CORE)  
 WEIGHT (CORE ONLY): 69.4 LBS (31.5 KG)



ROSENBERGER ANTENNA 4WME-01L  
 DIMENSIONS, HxWxD: 2076x396x190mm  
 (81.7"x15.6"x7.5")  
 WEIGHT 30.0 kg (66.1 lbs)  
 CONNECTOR: 8 X 4.3-10 FEMALE  
 CONNECTOR POSITION: BOTTOM



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SHEET TITLE

EQUIPMENT DETAILS

SHEET NUMBER

C1

LPF12-100(12V100Ah) BATTERY

NOT TO SCALE

5

ROSENBERGER 4WME-01L ANTENNA

NOT TO SCALE

3

DETAIL NOT USED

NOT TO SCALE

1

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0	01/19/24	FOR CONSTRUCTION	MP

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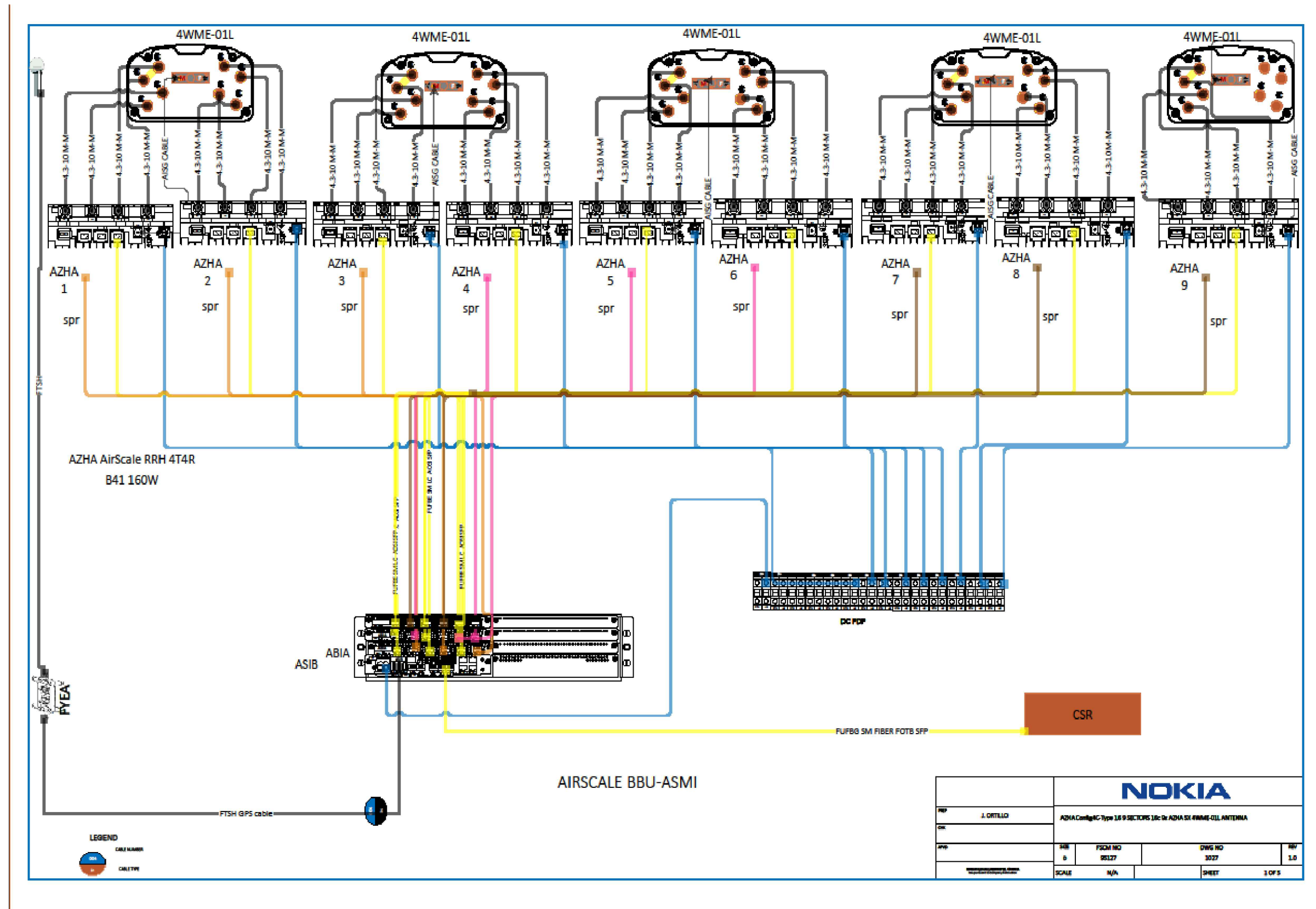
ENGINEER CERTIFICATION & SEAL:  
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Michigan.

Signature: *Michael L. Pinske* Date: 1/19/2024

WATER MNT.  
NMU-002  
500 JACKSON ST  
MARQUETTE, MI 49855  
CO: MARQUETTE

SHEET TITLE  
  
RFDS

SHEET NUMBER  
**D1**



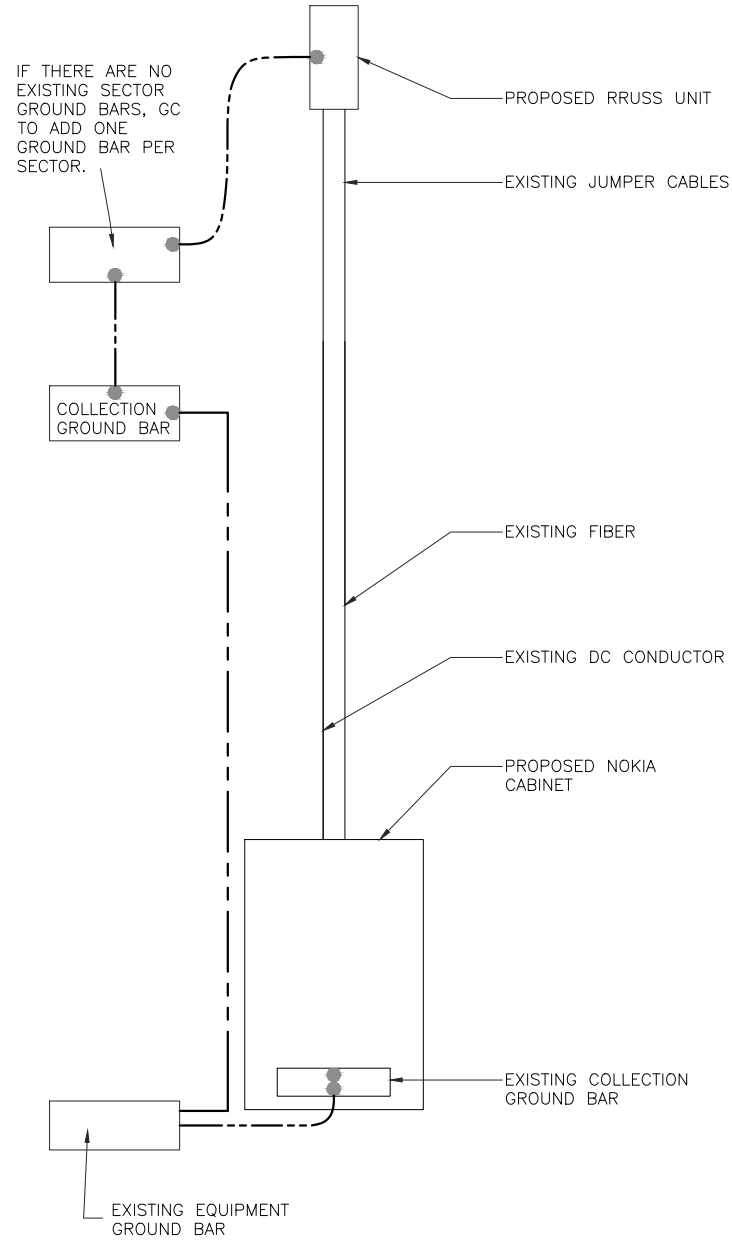
LEGEND

	CABLE NUMBER
	CABLE TYPE

<b>NOKIA</b>			
REP	J. ORTIZ	AZHA Config AC Type 1 & 9 SECTORS 10c Or AZHA SX 4WME-01L ANTENNA	
DR			
APP			
DATE	01/20/23	FWM NO	05127
SCALE	N/A	DWG NO	3027
		SHEET	1 OF 5

RFDS DATE: 01/20/23  
FILE NAME: RFDS 00226103MOUNTAIN TANK WATER Rev 3  
NOTE: CONTRACTOR TO VERIFY AZIMUTHS, DOWNTILTS, AND CENTER LINES BEFORE FINAL INSTALLATION AS THEY MAY CHANGE.

THE INFORMATION CONTAINED IN THIS SET OF CONSTRUCTION DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO CARRIER SERVICES IS STRICTLY PROHIBITED.

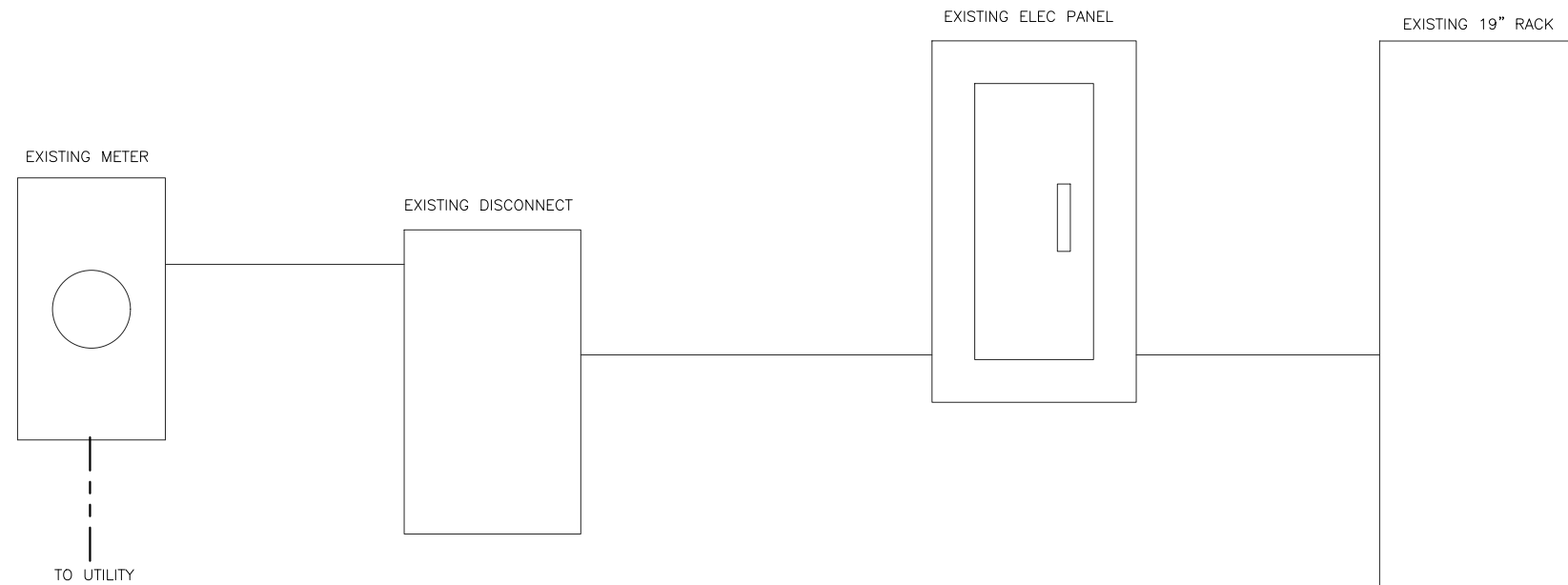


NOTE: IF THERE ARE NO EXISTING SECTOR GROUND BARS, GC TO ADD ONE GROUND BAR PER SECTOR.

Site # & Name	NMU-002	Water Mnt.		MW Radios	Switches	Back Haul	
				0	1	0	
Equipment	Type	MW Link	DC Amps	AC Amps	Relocate from existing Huawei or New	In Base Scope	Additional Scope CR
Switch	Cisco 9300L	N/A	1.9		Relocate	YES	NO
Total Additional Equipment AMPs			1.9	0			

MW SCOPE DETAILS

NOT TO SCALE 3



REVISIONS			
REV.	DATE	DESCRIPTION	INITIALS
0	01/19/24	FOR CONSTRUCTION	MP

NOT FOR CONSTRUCTION UNLESS LABELED AS FOR CONSTRUCTION

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Signature: *Michael L. Pinske* Date: 1/19/2024

WATER MNT.  
NMU-002  
500 JACKSON ST  
MARQUETTE, MI 49855  
CO: MARQUETTE

SHEET TITLE  
**GROUNDING & MW DETAILS**

SHEET NUMBER  
**G1**