



APPROVAL SIGNATURE BLOCK

The following parties have reviewed these documents:

Site Aquisition Specialist: APPROVED <i>By Roshaughnessy at 9:51 am, Dec 16, 2020</i>	Approved: <input type="checkbox"/> Rejected: <input type="checkbox"/>	Date:
RF Engineer: APPROVED <i>By Shawn Kohout at 10:27 am, Dec 21, 2020</i>	Approved: <input type="checkbox"/> Rejected: <input type="checkbox"/>	Date:
Construction Manager: APPROVED <i>By Trevor Duevel at 3:54 pm, Dec 18, 2020</i>	Approved: <input type="checkbox"/> Rejected: <input type="checkbox"/>	Date:
Operations: APPROVED <i>By Shaun Burgess at 1:19 pm, Dec 18, 2020</i>	Approved: <input type="checkbox"/> Rejected: <input type="checkbox"/>	Date:
Project Manager: APPROVED <i>By Jeannette Davis at 10:44 am, Dec 21, 2020</i>	Approved: <input type="checkbox"/> Rejected: <input type="checkbox"/>	Date:

DRAWINGS ARE NO LONGER TO BE "APPROVED WITH COMMENTS" - IF YOU HAVE ANY REDLINES TO THESE DRAWINGS THEN YOU MUST SELECT REJECTED



SITE NAME: SPRMN-MS14XC851
 SITE NUMBER: A100091A
 SITE ADDRESS: 8249 ARTHUR ST NE
 SPRING LAKE PARK, MN 55432
 SITE TYPE: WATER TOWER



8000 WEST 78TH
 STE 400
 EDINA, MN 55439



1100 E. WOODFIELD ROAD, SUITE 500
 SCHAUMBURG, ILLINOIS 60173
 TEL: 847-908-8400
 www.FullertonEngineering.com

PROJECT INFORMATION	SCOPE OF WORK	APPLICABLE BUILDING CODES AND STANDARDS																																			
<p>SITE NAME: SPRMN-MS14XC851</p> <p>SITE NUMBER: A100091A</p> <p>SITE ADDRESS: 8249 ARTHUR ST NE SPRING LAKE PARK, MN 55432</p> <p>SITE TYPE: WATER TOWER</p> <p>JURISDICTION: CITY OF SPRING LAKE PARK</p> <p>APPLICANT: T-MOBILE ADDRESS: 8000 WEST 78TH, STE 400 EDINA, MN 55439</p> <p>SITE COORDINATES: FROM RFDS LATITUDE: 45.11757 LONGITUDE: -93.2324 GROUND ELEV. (A.M.S.L.): 913'</p> <p>PROPERTY OWNER: CITY OF SPRING LAKE PARK ADDRESS: 1301 81ST AVENUE SPRING LAKE PARK, MN 55432</p> <p>CONTACT: PHONE: EMAIL:</p> <p><small>NOTE: DRAWING SCALES ARE FOR 11"x17" SHEETS UNLESS OTHERWISE NOTED</small></p>	<p>THE SCOPE OF WORK CONSISTS OF: EXISTING EQUIPMENT TO BE REMOVED (6) ANTENNAS (6) RRUS (1) PPC (9) ANTENNA MOUNTS NEW EQUIPMENT TO BE INSTALLED (1) SITE SUPPORT CABINET AND (1) NEW BATTERY CABINET NEW EQUIPMENT INSIDE NEW SITE SUPPORT CABINET (1) PPC (2) RAYCAPS, (2) BREAKOUT BOXES (6) ANTENNAS, (6) RRUS (2) HYBRID TRUNK CABLES (9) ANTENNA MOUNTS • CONTRACTOR SHALL FURNISH ALL MATERIAL WITH THE EXCEPTION OF T-MOBILE SUPPLIED MATERIAL. • ALL MATERIAL SHALL BE INSTALLED BY THE CONTRACTOR, UNLESS STATED OTHERWISE.</p>	<p>ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.</p> <p>BUILDING CODE: 2020 MINNESOTA BUILDING CODE (2018 INTERNATIONAL BUILDING CODE)</p> <p>ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE</p> <ul style="list-style-type: none"> FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. ADA ACCESS REQUIREMENTS ARE NOT REQUIRED. THIS FACILITY DOES NOT REQUIRE POTABLE WATER AND WILL NOT PRODUCE ANY SEWAGE 	<table border="1"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>DESCRIPTION</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>12/01/20</td> <td>90% REVIEW</td> <td>MK</td> </tr> <tr> <td>0</td> <td>05/25/21</td> <td>FINAL</td> <td>RO</td> </tr> </tbody> </table>	REV	DATE	DESCRIPTION	BY	A	12/01/20	90% REVIEW	MK	0	05/25/21	FINAL	RO																						
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<p>PROJECT CONSULTANTS</p>	<p>SITE LOCATION MAP</p>	<p>DRAWING INDEX</p>																																			
<p>PROJECT MANAGER: T-MOBILE ADDRESS: 8000 WEST 78TH, STE 400 EDINA, MN 55439 CONTACT: TREVOR DUEVEL PHONE: (320) 281-0162 EMAIL: trevor.duevel@sprint.com</p> <p>ENGINEER: FULLERTON ENGINEERING CONSULTANTS, P.C. ADDRESS: 1100 E. WOODFIELD ROAD, SUITE 500 SCHAUMBURG, ILLINOIS 60173 CONTACT: CHUCK BECK, SR. PROJECT MANAGER PHONE: (847) 908-8400 EMAIL: cbeck@fullertonengineering.com</p>	<p>NO SCALE</p>	<table border="1"> <tbody> <tr><td>T-1</td><td>TITLE SHEET</td></tr> <tr><td>N-1</td><td>GENERAL NOTES</td></tr> <tr><td>C-1</td><td>SITE PLAN</td></tr> <tr><td>C-2</td><td>EQUIPMENT PLAN</td></tr> <tr><td>C-3</td><td>SITE ELEVATION</td></tr> <tr><td>C-4</td><td>ANTENNA LAYOUT</td></tr> <tr><td>C-4A</td><td>ANTENNAS, COLOR CODING AND RFDS</td></tr> <tr><td>C-5</td><td>EQUIPMENT DETAILS</td></tr> <tr><td>C-5A</td><td>EQUIPMENT DETAILS</td></tr> <tr><td>E-1</td><td>UTILITY PLAN AND DETAILS</td></tr> <tr><td>E-2</td><td>ELECTRICAL DETAILS</td></tr> <tr><td>E-3</td><td>ONE-LINE DIAGRAM AND PANEL SCHEDULE</td></tr> <tr><td>G-1</td><td>GROUNDING DIAGRAM</td></tr> <tr><td>G-2</td><td>GROUNDING DETAILS</td></tr> <tr><td>S-1</td><td>STRUCTURAL NOTES</td></tr> <tr><td>S-2</td><td>STRUCTURAL DETAILS</td></tr> <tr><td>S-3</td><td>STRUCTURAL DETAILS</td></tr> </tbody> </table>	T-1	TITLE SHEET	N-1	GENERAL NOTES	C-1	SITE PLAN	C-2	EQUIPMENT PLAN	C-3	SITE ELEVATION	C-4	ANTENNA LAYOUT	C-4A	ANTENNAS, COLOR CODING AND RFDS	C-5	EQUIPMENT DETAILS	C-5A	EQUIPMENT DETAILS	E-1	UTILITY PLAN AND DETAILS	E-2	ELECTRICAL DETAILS	E-3	ONE-LINE DIAGRAM AND PANEL SCHEDULE	G-1	GROUNDING DIAGRAM	G-2	GROUNDING DETAILS	S-1	STRUCTURAL NOTES	S-2	STRUCTURAL DETAILS	S-3	STRUCTURAL DETAILS	<p>SITE NAME</p> <p>SPRMN-MS14XC851</p> <p>SITE NUMBER:</p> <p>A100091A</p> <p>SITE ADDRESS</p> <p>8249 ARTHUR ST NE SPRING LAKE PARK, MN 55432</p>
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1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL LAWS, REGULATIONS, AND RULES SET FORTH BY FEDERAL, STATE, AND LOCAL AUTHORITIES WITH JURISDICTION OVER THE PROJECT. THIS RESPONSIBILITY IS IN EFFECT REGARDLESS OF WHETHER THE LAW, ORDINANCE, REGULATION, OR RULE IS MENTIONED IN THESE SPECIFICATIONS.
2. ALL WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS, PROJECT SPECIFICATIONS, AND THE CONSTRUCTION CONTRACT DOCUMENTS.
3. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND STATE LAW AS DEFINED IN THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
5. THE CONTRACTOR SHALL HAVE AND MAINTAIN A VALID CONTRACTOR'S LICENSE FOR THE LOCATION IN WHICH THE WORK IS TO BE PERFORMED. FOR JURISDICTIONS THAT LICENSE INDIVIDUAL TRADES, THE TRADESMAN OR SUBCONTRACTOR PERFORMING THOSE TRADES SHALL BE LICENSED.
6. THE CONTRACTOR SHALL PROVIDE THE NECESSARY CERTIFICATIONS OF ALL WORKERS ON THE TOWER TO THE OWNER OR THE PROJECT MANAGER UPON REQUEST.
7. THE CONTRACTOR SHALL BE EXPERIENCED IN THE PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY AND THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED.
8. PRIOR TO THE SUBMISSION OF THE BID, THE CONTRACTOR SHALL VISIT THE JOB SITE, VERIFY ALL DIMENSIONS, POTENTIAL SAFETY HAZARDS, AND BECOME FAMILIAR WITH THE FIELD CONDITIONS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER AND STRUCTURAL ENGINEERING.
9. DO NOT SCALE DRAWINGS. USE DIMENSIONS.
10. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE NOTED.
11. ALL MATERIALS SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE DRAWINGS. ANY AND ALL SUBSTITUTIONS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL BY THE PROJECT MANAGER AND THE ENGINEER OF RECORD PRIOR TO PROCUREMENT.
12. ALL MEANS AND METHODS OF CONSTRUCTION DEALING WITH TOWER CONSTRUCTION AND SAFETY, STEEL ERECTION, EXCAVATIONS, SCAFFOLDING, FORMWORK, AND WORK IN CONFINED SPACES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
13. THE CONTRACTOR SHALL PROVIDE SUFFICIENT TEMPORARY BRACING AND/OR SHORING OF ALL STRUCTURAL AND NON-STRUCTURAL ELEMENTS DURING CONSTRUCTION UNTIL ALL STRUCTURAL ELEMENTS HAVE BEEN PROPERLY INSTALLED.
14. THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT MANAGER IF ANY WIRELESS CARRIER DOWNTIME WILL BE REQUIRED FOR THE PROJECT. DO NOT PERFORM ANY WORK ON THE TOWER UNTIL ALL NECESSARY DOWNTIME HAS BEEN APPROVED.
15. WORK IS TO BE CONTAINED TO THE SITE COMPOUND AREA ONLY. ANY OUTSIDE OR ADJACENT PROPERTY NEEDED FOR ACCESS OR TO COMPLETE THE WORK SHALL BE COORDINATED WITH THE PROJECT MANAGER PRIOR TO CONSTRUCTION.
16. THE CONTRACTOR SHALL COORDINATE SITE ACCESS AND SECURITY WITH THE PROPERTY OWNER AND THE PROJECT MANAGER PRIOR TO CONSTRUCTION.
17. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SITE CONDITIONS AND UPON COMPLETION OF WORK REPAIR BACK TO ORIGINAL CONDITIONS ANY DAMAGE THAT OCCURRED DURING CONSTRUCTION.
18. THE CONTRACTOR SHALL KEEP THE CONSTRUCTION SITE CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. LEAVE PREMISES IN CLEAN CONDITION, SUBJECT TO APPROVAL BY THE PROPERTY OWNER AND THE PROJECT MANAGER.
19. THE CONTRACTOR SHALL PROVIDE ON-SITE TRASH RECEPTACLES FOR COLLECTION OF NON-TOXIC DEBRIS. ALL TRASH SHALL BE COLLECTED ON A DAILY BASIS.
20. ALL TOXIC AND ENVIRONMENTALLY HAZARDOUS SUBSTANCES SHALL BE USED AND DISPOSED OF IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS. UNDER NO CIRCUMSTANCES SHALL RINSING OR DUMPING OF THESE SUBSTANCES OCCUR ON-SITE.
21. UNLESS NOTED OTHERWISE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS NECESSARY FOR CONSTRUCTION.
22. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS SHALL BE REPORTED TO THE PROJECT MANAGER AND ENGINEER, AND SHALL REQUIRE APPROVAL PRIOR TO PERFORMING ANY REMEDIAL OR CORRECTIVE ACTION.
23. THE PROJECT MANAGER MAY RETAIN THE SERVICES OF A TESTING LABORATORY TO PERFORM QUALITY ASSURANCE TESTING ON VARIOUS PORTIONS OF THE CONTRACTOR'S WORK. WHEN REQUESTED, THE CONTRACTOR SHALL INFORM THE TESTING LABORATORY AND ASSIST THEM IN COMPLETING THE TESTS.
24. THE CONTRACTOR SHALL MAINTAIN AND SUPPLY THE PROJECT MANAGER WITH AS-BUILT PLANS UPON COMPLETION OF THE PROJECT.

GENERAL NOTES 1

NOT USED 2

ABBREVIATIONS	
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AGL	ABOVE GROUND LEVEL
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATE
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
BBU	BASE BAND UNIT
CL	CENTERLINE
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CND	CONDUIT
CRAN	CENTRALIZED RAN
C-RAN	CLOUD RAN
DWG	DRAWING
FT	FOOT(FEET)
EGB	EQUIPMENT GROUND BAR
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ELEV	ELEVATION
EQUIP	EQUIPMENT
(E)	EXISTING
EXT	EXTERIOR
FND	FOUNDATION
F	FIBER
GA	GAUGE
GALV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
GSM	GLOBAL SYSTEM FOR MOBILE COMMUNICATION
LTE	LONG TERM EVOLUTION
MAX	MAXIMUM
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MIMO	MULTIPLE IN MULTIPLE OUT
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
PPC	POWER PROTECTION CABINET
PL	PROPERTY LINE
RAN	RADIO ACCESS NETWORK
RBS	RADIO BASED STATION
RRH	REMOTE RADIO HEAD
RGS	RIGID GALVANIZED STEEL
IN	INCH(ES)
INT	INTERIOR
LB(S), #	POUND(S)
SF	SQUARE FOOT
STL	STEEL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
UMTS	UNIVERSAL MOBILE TELE-COMMUNICATION SYSTEM
VIF	VERIFY IN FIELD
W/	WITH
XFMR	TRANSFORMER

LEGEND 2

SYMBOLS	
	REVISION
	WORK POINT
	UTILITY POLE
	BRICK
	COMPRESSED STONE
	CONCRETE
	EARTH
	GRAVEL
	MASONRY
	STEEL
	CENTERLINE
	PROPERTY LINE
	LEASE LINE
	EASEMENT LINE
	FENCE CHAINLINK WOOD WROUGHT IRON
	ELECTRIC OVERHEAD UNDERGROUND
	FIBER OVERHEAD UNDERGROUND
	TELEPHONE OVERHEAD UNDERGROUND
	DCPOWER
	SECTION REFERENCE

3



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REV	DATE	DESCRIPTION	BY
A	12/01/20	90% REVIEW	MK
0	05/25/21	FINAL	RO

SITE NAME

SPRMN-MS14XC851

SITE NUMBER:

A1O0091A

SITE ADDRESS

8249 ARTHUR ST NE
SPRING LAKE PARK, MN 55432

SHEET NAME

GENERAL NOTES

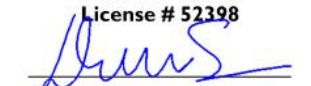
SHEET NUMBER

N-1

REV	DATE	DESCRIPTION	BY
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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 Minnesota

Daniel W Smith
License # 52398



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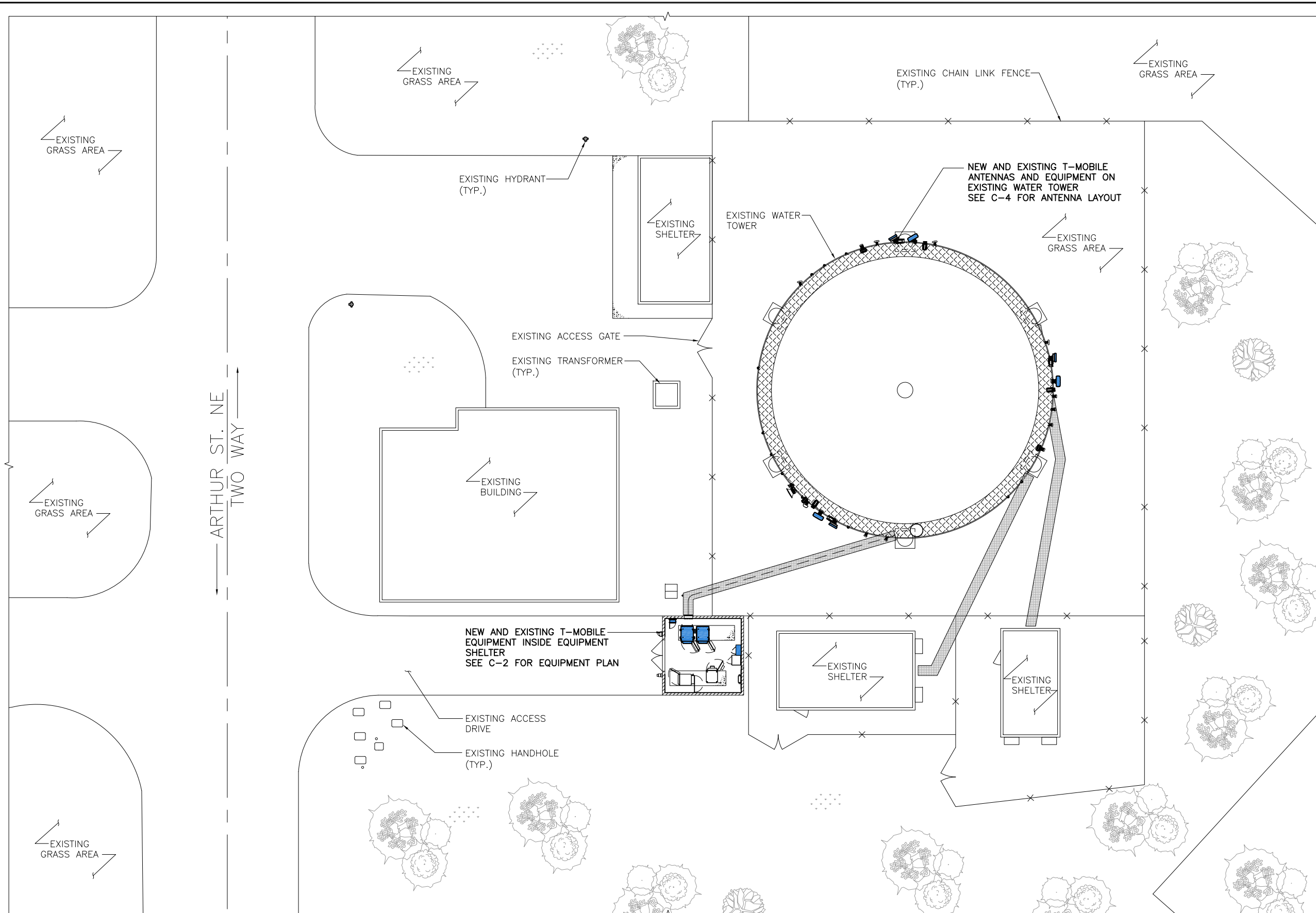
8249 ARTHUR ST NE
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SHEET NAME

SITE PLAN

SHEET NUMBER

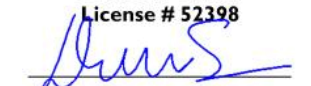
C-1



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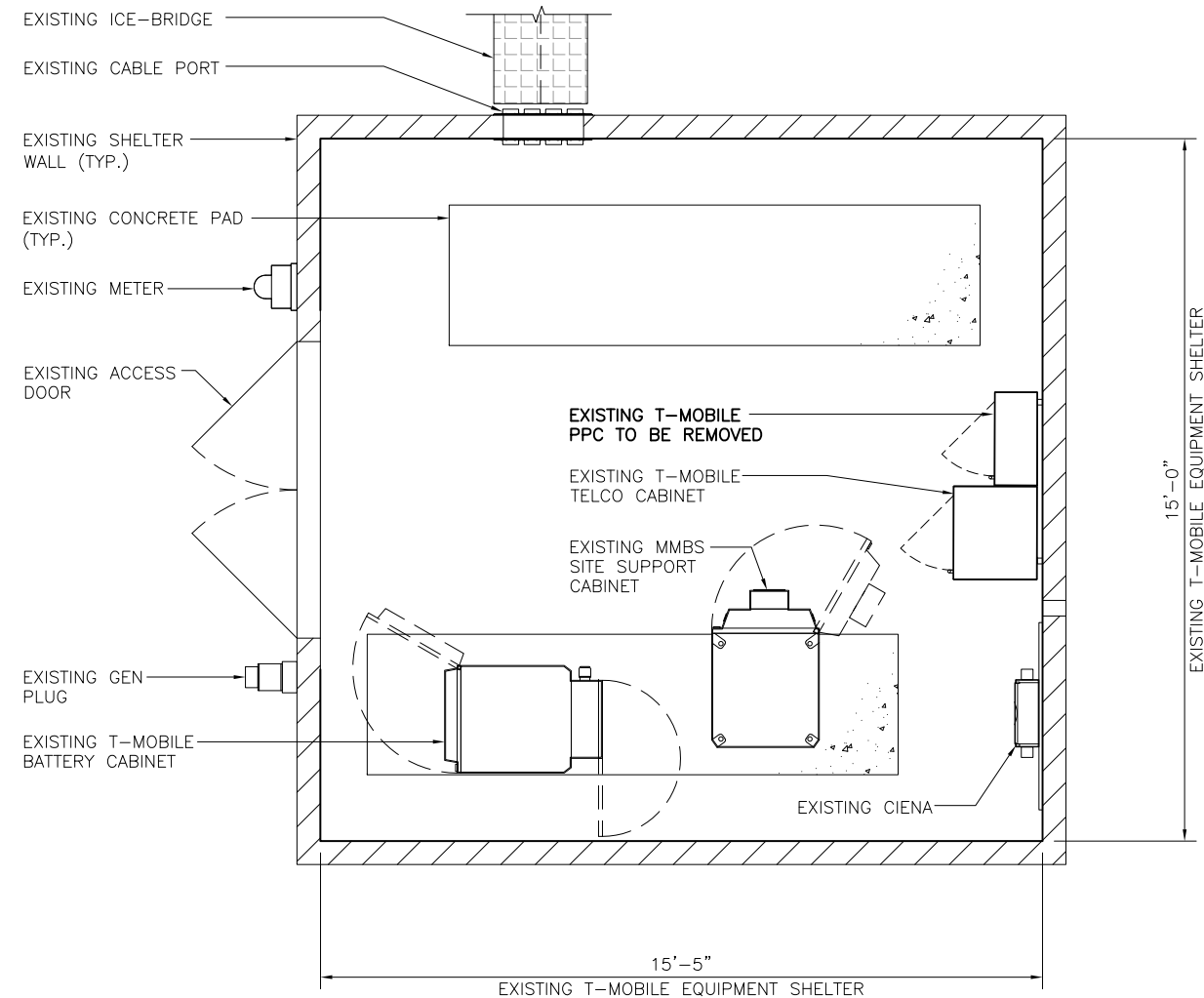
SHEET NAME

EQUIPMENT PLAN

SHEET NUMBER

C-2

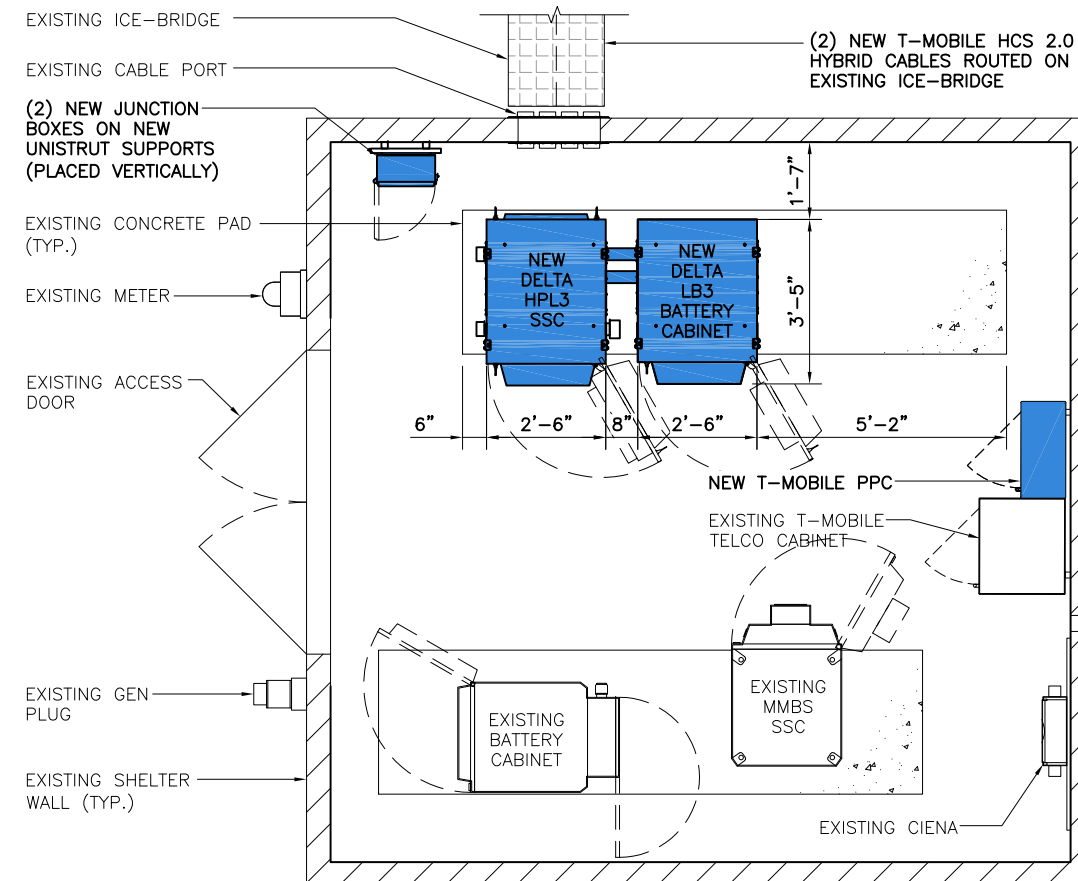
NOTE:
CONTRACTOR SHALL REMOVE ALL UNUSED CABLES



EXISTING EQUIPMENT LAYOUT

SCALE: 1/4" = 1'-0"

1



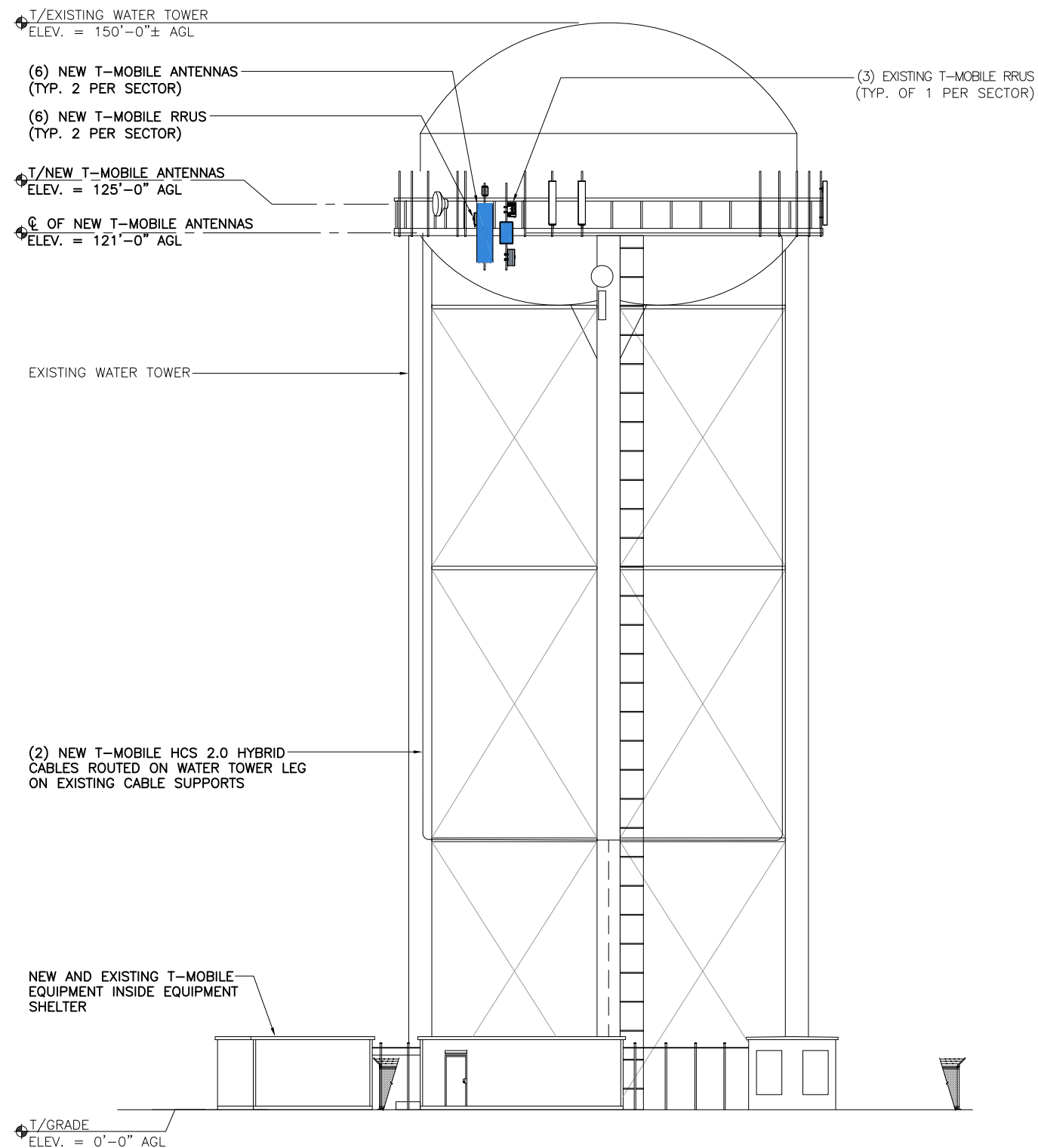
FINAL EQUIPMENT LAYOUT

SCALE: 1/4" = 1'-0"

2

NOTES:

1. CALCULATIONS FOR THE STRUCTURE AND ANTENNA MOUNTS WERE PREPARED BY FULLERTON AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE STRUCTURE TO SUPPORT THE NEW EQUIPMENT
2. CABLES NOT SHOWN FOR CLARITY
3. CONTRACTOR SHALL REMOVE ALL UNUSED CABLES



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SHEET NAME

SITE ELEVATION

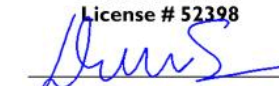
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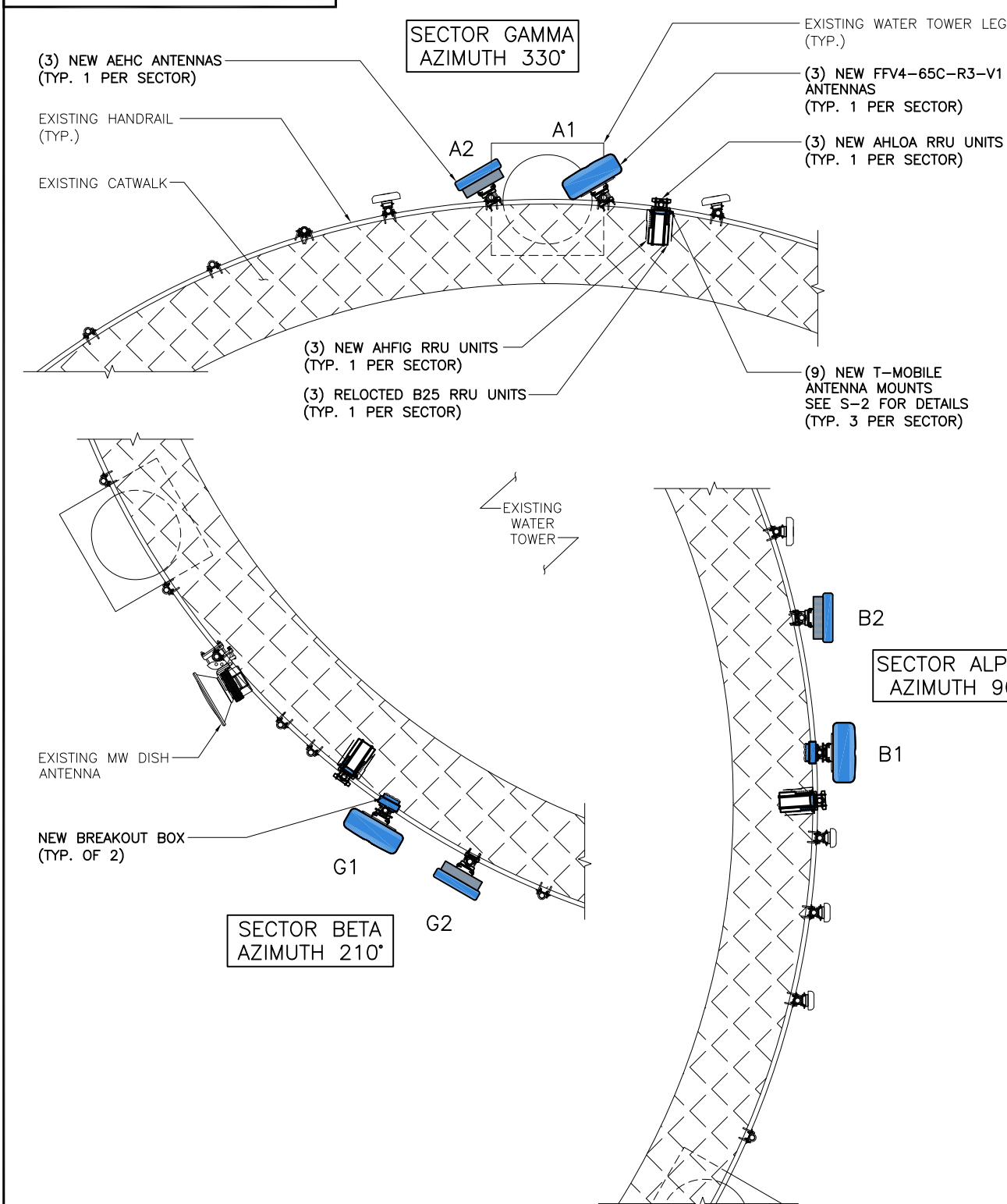
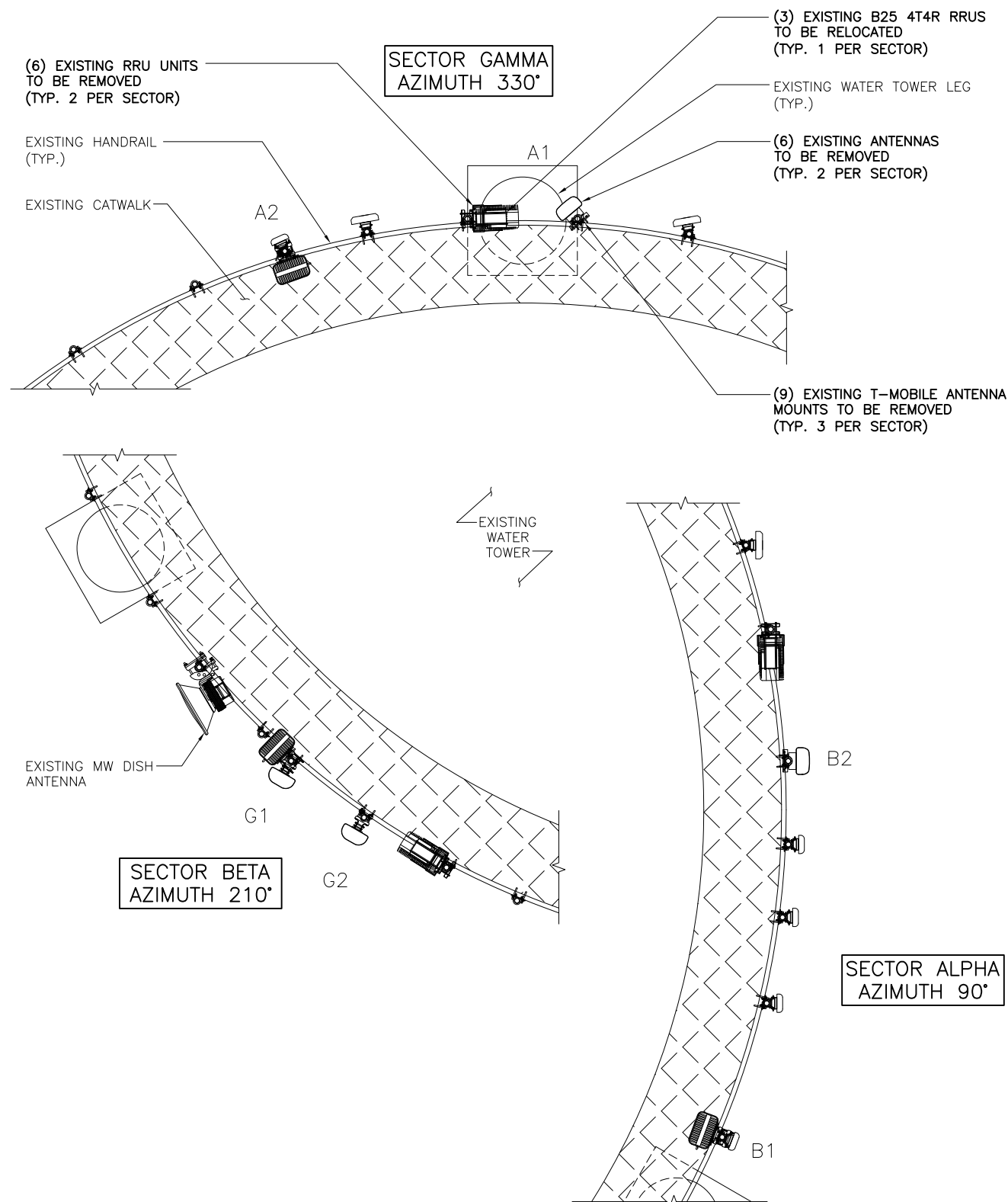
ANTENNA LAYOUT

SHEET NUMBER

C-4

NOTES:

1. CONTRACTOR SHALL REPLACE EXISTING JUMPER CABLES AS REQUIRED
2. CONTRACTOR SHALL REMOVE ALL UNUSED CABLES
3. NEW HYBRID CABLES AND JUMPERS SHALL BE ROUTED ON THE OUTSIDE OF THE HANDRAIL



ANTENNA SCHEDULE

SECTOR	ALPHA		BETA		GAMMA	
ANTENNA POSITION	A-1	A-2	B-1	B-2	G-1	G-2
ANTENNA TYPE	L700/L600/N600/L1900/C1900/L2100/G1900	L2500/N2500	L700/L600/N600/L1900/C1900/L2100/G1900	L2500/N2500	L700/L600/N600/L1900/C1900/L2100/G1900	L2500/N2500
AZIMUTH	90°	90°	210°	210°	330°	330°
RAD CENTER (AGL)	121'	121'	121'	121'	121'	121'
MODEL	COMMSCOPE – FFV4-65C-R3-VI	NOKIA – AEHC BAND 41	COMMSCOPE – FFV4-65C-R3-VI	NOKIA – AEHC BAND 41	COMMSCOPE – FFV4-65C-R3-VI	NOKIA – AEHC BAND 41
SHARED LENGTH	200' SHARED HYBRID CABLE					
JUMPER LENGTH	±15'-0"	±15'-0"	±15'-0"	±15'-0"	±15'-0"	±15'-0"

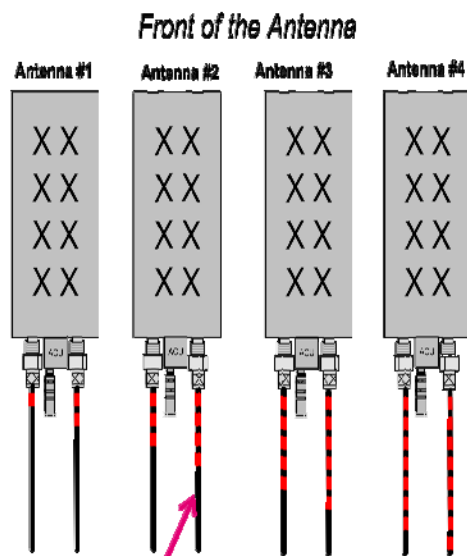
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ANTENNA TABLE	1
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Coax Color Coding

- 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

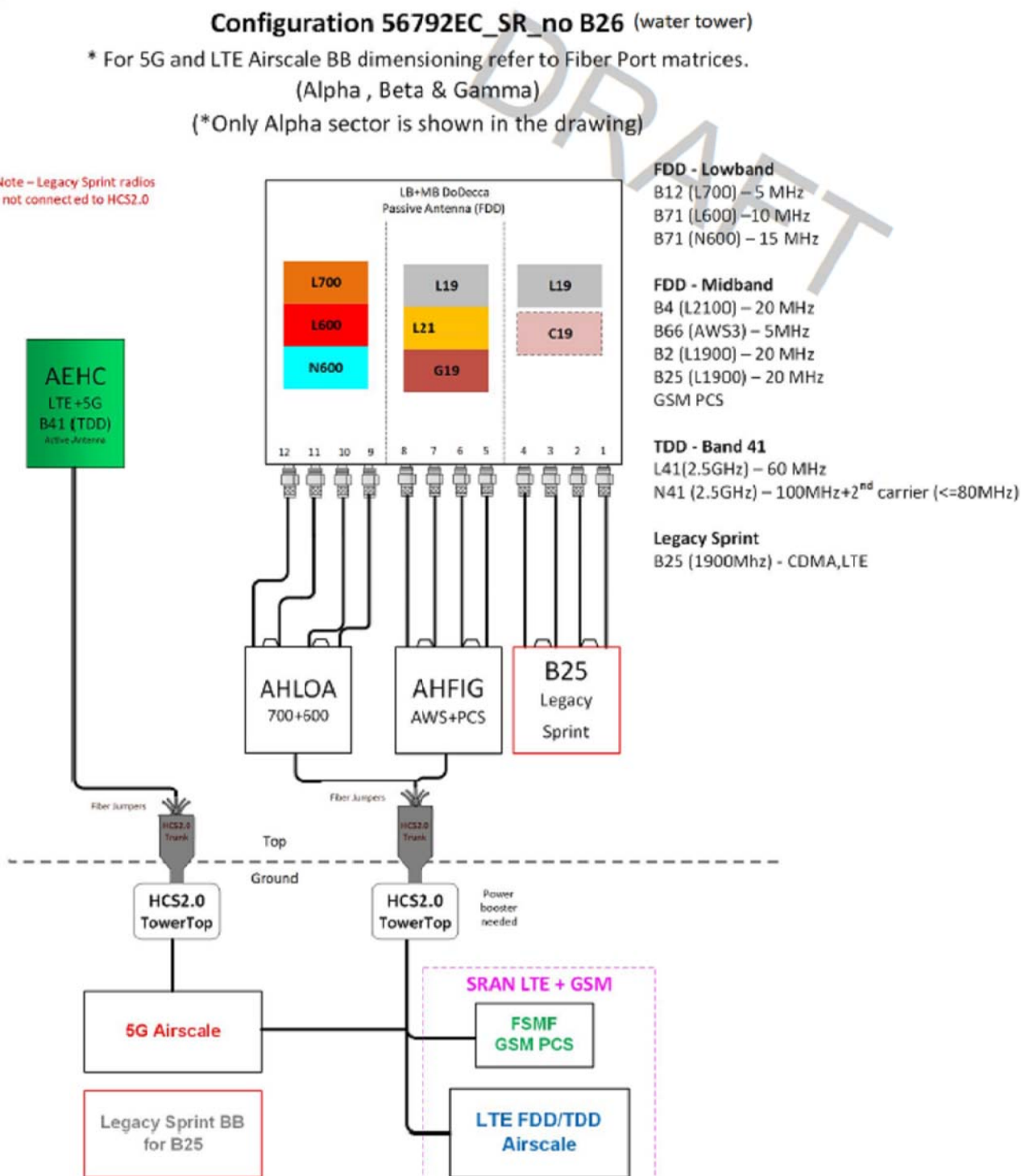
Sector A	Red
Sector B	Green
Sector C	Blue
Sector D	Yellow
Sector E	White
Sector F	Purple
LMU	Brown + Sector Color Bands (1,2)
Fiber ID	Grey
Unused Coax	Pink
Microwave	Orange
PWE T-1's + GPS Downlink cable	ID w/Label Maker



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

NEW COLOR CODING	2
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Note – Legacy Sprint radios not connected to HCS2.0



RFDS	3
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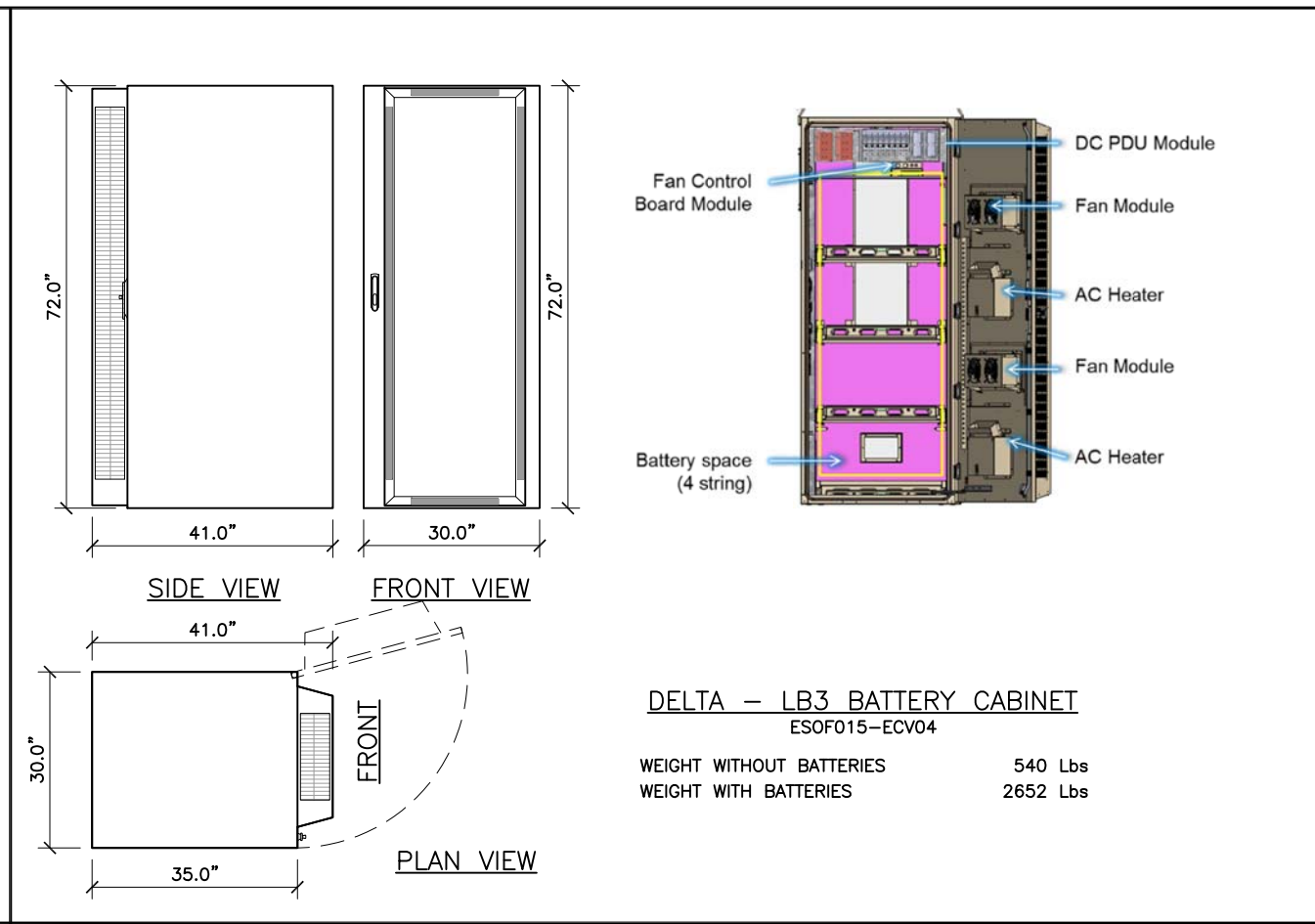
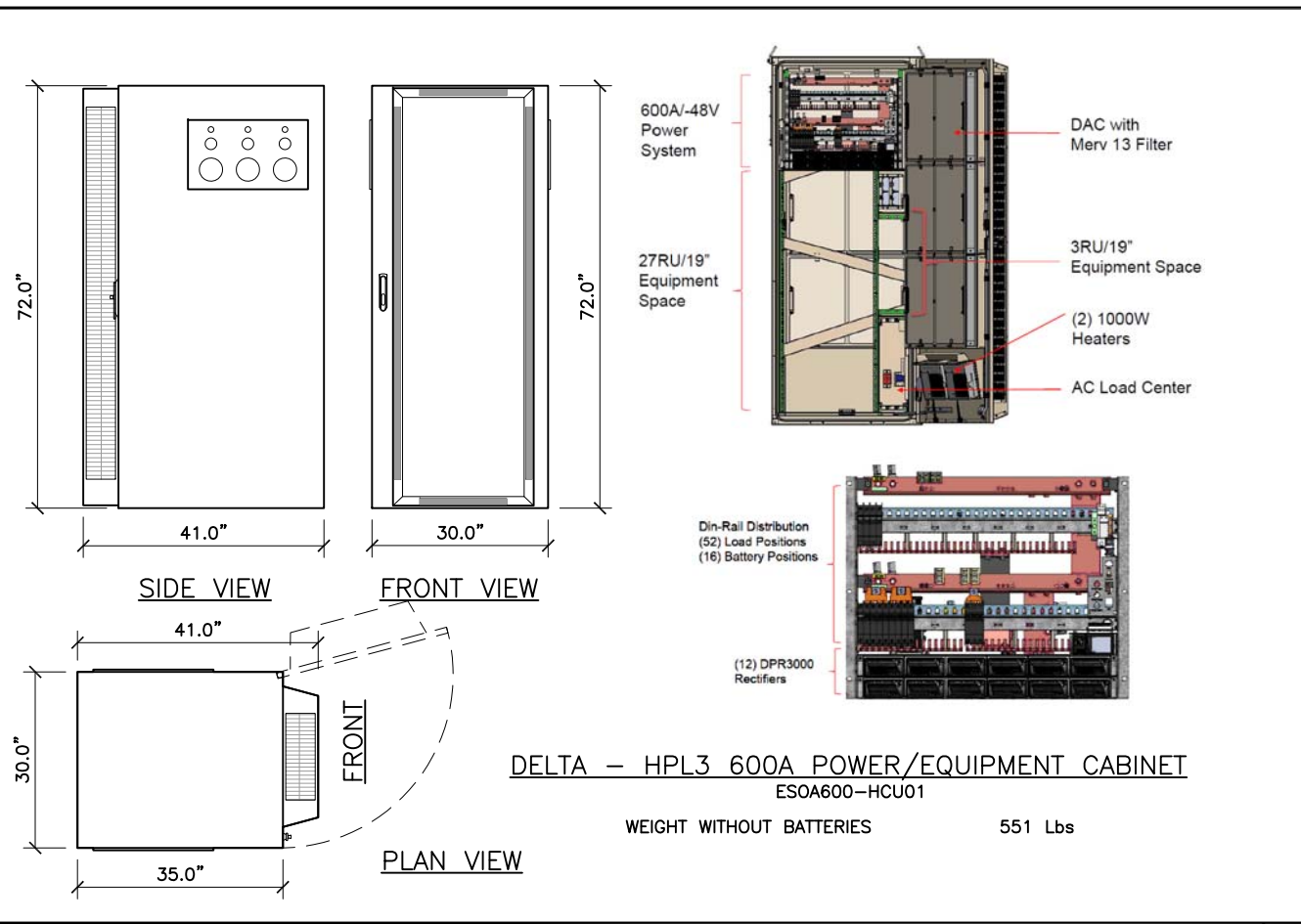
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SHEET NAME

**ANTENNA DETAILS,
 COLOR CODING AND
 RFDS**

SHEET NUMBER

C-4A



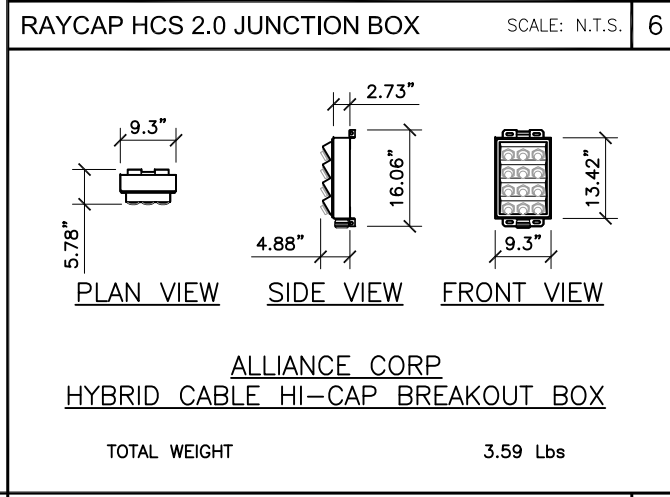
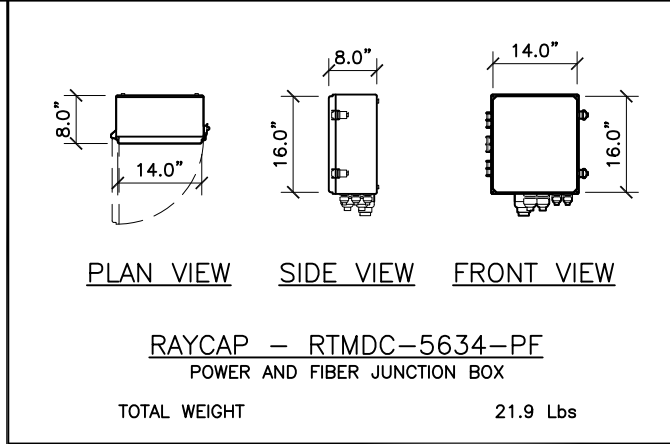
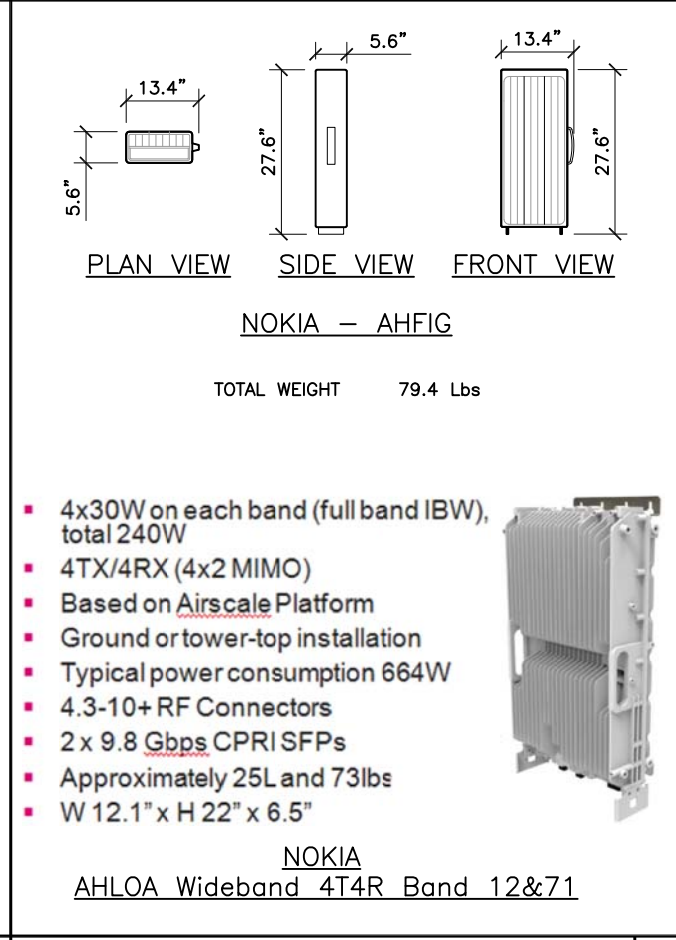
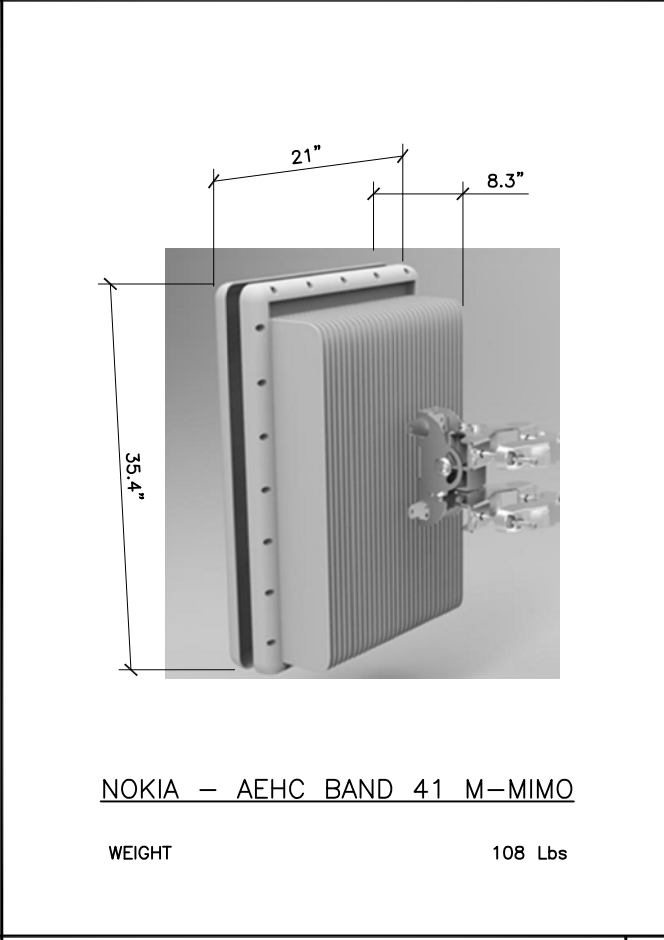
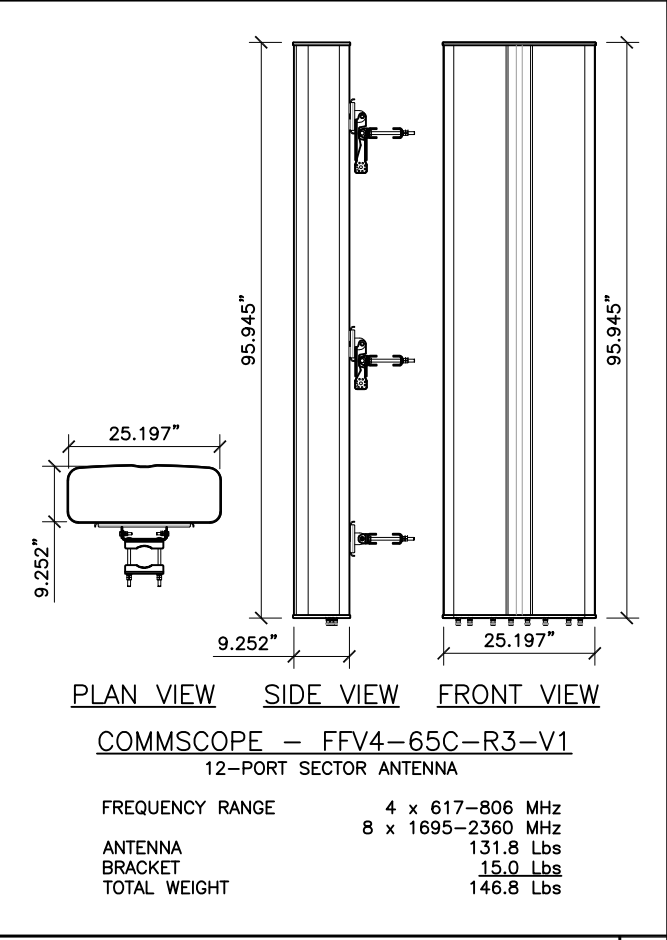
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HPL3 SITE SUPPORT CABINET SCALE: N.T.S. 1

HPL3 BATTERY CABINET SCALE: N.T.S. 2

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Daniel W Smith
License # 52398



SITE NAME
SPRMN-MS14XC851

SITE NUMBER:
A1O0091A

SITE ADDRESS
8249 ARTHUR ST NE
SPRING LAKE PARK, MN 55432

SHEET NAME
EQUIPMENT DETAILS

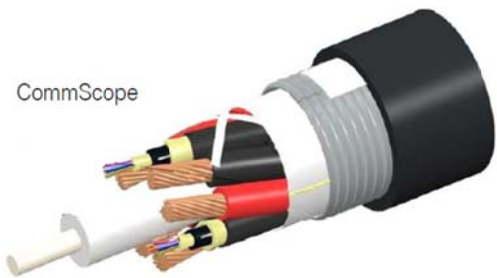
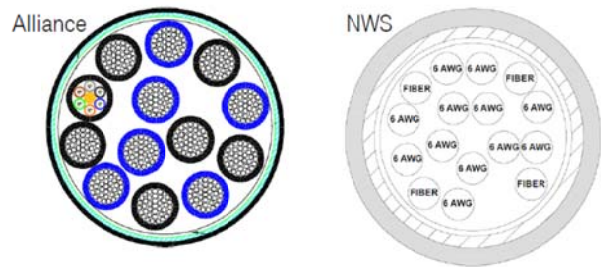
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C-5

COMMSCOPE FFV4-65C-R3-V1 DETAIL SCALE: N.T.S. 3

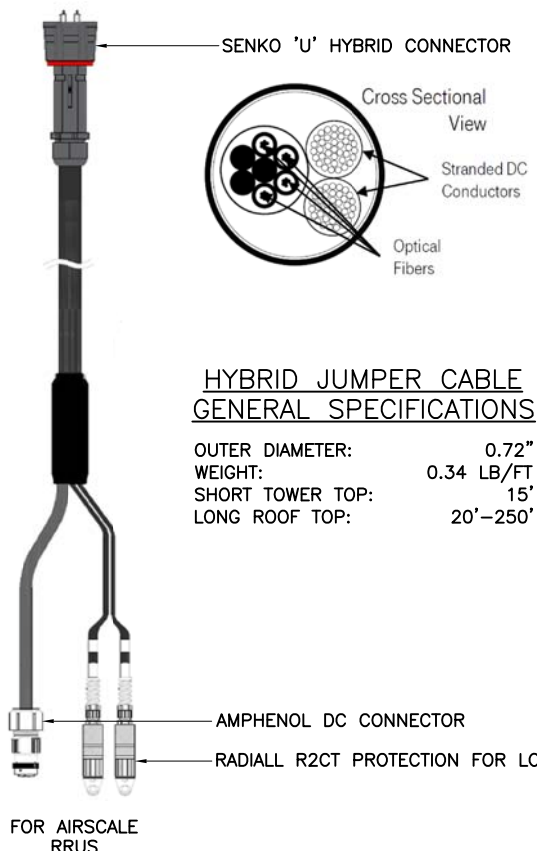
NOKIA AEHC DETAIL SCALE: N.T.S. 4

RRU DETAILS SCALE: N.T.S. 5

BREAKOUT BOX SCALE: N.T.S. 7



CHARACTERISTICS	ALLIANCE	COMMSCOPE	NWS
OUTER DIAM	1.46"	1.55"	1.48"
WEIGHT	1.61 LB/FT	1.71 LB/FT	1.61 LB/FT
MIN. BEND RAD	14.6"	18.6"	21.5"
DC CONDUCTORS	12x6 AWG	12x6 AWG	12x6 AWG
ARMOR	CORRUGATED CU	CORRUGATED AL	CU TAPE, PVC
CONDUCTOR TERM.	NONE	NONE	NONE
SINGLE-MODE FIBERS	48	48	48
FIBER TERMINATION	LC PAIR	LC PAIR	LC PAIR

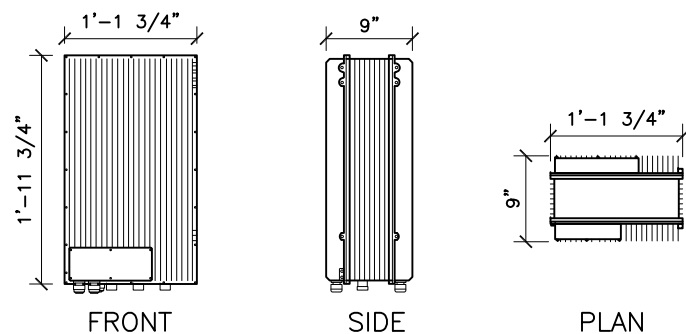


HYBRID HCS 2.0 CABLE DETAIL SCALE: N.T.S. 1

HYBRID JUMPER CABLE DETIAL SCALE: N.T.S. 2

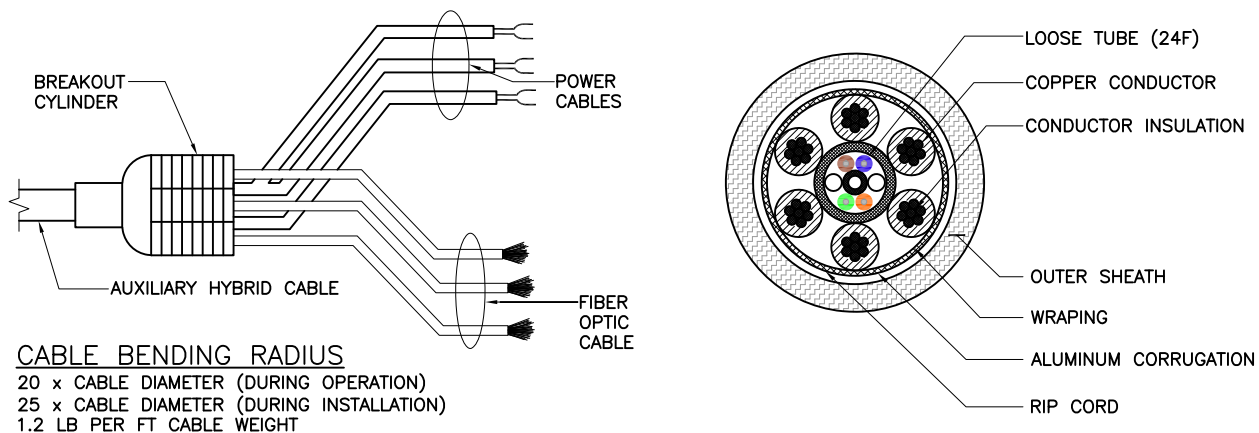
NOT USED SCALE: N.T.S. 3

NOT USED SCALE: N.T.S. 4



SAMSUNG RRU 1900	DIMENSIONS (WxDxH): 1'-1 3/4" x 9" x 1'-11 3/4"
	WEIGHT: 62.83 LBS
	MODEL: RRH-P4

EXISTING RRU 1900 SCALE: N.T.S. 5



EXISTING CABLE DETAIL SCALE: N.T.S. 6

TABLE 20-5
HYBRID CABLE ID COLOR CODE

SECTOR	CABLE	FIRST RING	SECOND RING	THIRD RING
1 ALPHA	1	GREEN	NO TAPE	NO TAPE
1	2	BLUE	NO TAPE	NO TAPE
1	3	BROWN	NO TAPE	NO TAPE
1	4	WHITE	NO TAPE	NO TAPE
1	5	RED	NO TAPE	NO TAPE
1	6	GREY	NO TAPE	NO TAPE
1	7	PURPLE	NO TAPE	NO TAPE
1	8	ORANGE	NO TAPE	NO TAPE
2 BETA	1	GREEN	GREEN	NO TAPE
2	2	BLUE	BLUE	NO TAPE
2	3	BROWN	BROWN	NO TAPE
2	4	WHITE	WHITE	NO TAPE
2	5	RED	RED	NO TAPE
2	6	GREY	GREY	NO TAPE
2	7	PURPLE	PURPLE	NO TAPE
2	8	ORANGE	ORANGE	NO TAPE
3 GAMMA	1	GREEN	GREEN	GREEN
3	2	BLUE	BLUE	BLUE
3	3	BROWN	BROWN	BROWN
3	4	WHITE	WHITE	WHITE
3	5	RED	RED	RED
3	6	GREY	GREY	GREY
3	7	PURPLE	PURPLE	PURPLE
3	8	ORANGE	ORANGE	ORANGE

TABLE 20-6
HYBRID FREQUENCY COLOR CODE

FREQUENCY	INDICATOR (1ST RING)	ID (SECOND RING)
800-1	YEL	GRN
800-1	YEL	ORG
1900-1	YEL	RED
1900-2	YEL	BRN
1900-3	YEL	BLU
1900-4	YEL	GREY
2500-1	YEL	WHT
2500-2	YEL	PPL

TABLE 20-7
HYBRID FIBER/DC COUNT CODE

HYBRID	COLOR
1	GRN
2	BLU
3	BRN
4	WHT
5	RED
6	GREY
7	PPL
8	ORG

INFORMATION TAKEN FROM SPRINT'S TECHNICAL SPECIFICATIONS "ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS, TS-0200, ISSUE 6, SEPTEMBER 2015, COPYRIGHT© 2015 SPRINT CORPORATION

EXISTING COLOR CODING SCALE: N.T.S. 7

NOTES:

- HYBRID CABLE WILL BE MARKED IN A SIMILAR MANNER AS COAX CABLE DESCRIBED IN NOTES 2-9. THE MAIN TRUNK OF THE HYBRID CABLE WILL NOT BE MARKED WITH THE FREQUENCY CODE AS THE HYBRID CABLE CAN CONTAIN ALL FREQUENCIES. THE MAIN TRUNK OF THE HYBRID CABLE WILL BE MARKED TO INDICATE THE SECTOR IT SERVES. THE INDIVIDUAL POWER PAIRS AND FIBER CABLE PAIRS WILL BE LABELED WITH DISTINCT COLOR BAND SECTIONS: THE CABLE ID BANDS (DETERMINED BY TERMINATING RADIO), THE FREQUENCY/RADIO ID BANDS (ALSO DETERMINED BY TERMINATING RADIO) AND FIBER/DC COUNT BANDS (SEE FIGURES 20-3, 20-4 AND 20-5). TO ACCOMMODATE THE INCREASED NUMBER OF COLOR BANDS, BAND WIDTH AND SPACING CAN BE PROPORTIONALLY REDUCED FROM THE STANDARDS DESCRIBED IN NOTE 2-9 AS SHOWN IN FIGURE 20-3.
- ALL CABLES SHALL BE MARKED AT THE TOP AND BOTTOM WITH COLORED TAPE, OR COLORED HEAT SHRINK TUBING
- COLORED TAPE (2, 1, 3/4 AND 1/2 IN) MAY BE OBTAINED FROM GRAYBAR ELECTRONIC. UV STABILIZED TAPE OR HEAT SHRINK ARE PREFERRED.
- THE FIRST COLOR BAND SHALL BE 2 IN FROM THE WEATHERPROOFING AT THE END OF THE CABLE, AND THERE SHALL BE 1 IN SPACES BETWEEN EACH COLOR BAND FOR FEEDERS AND 1/2 IN SPACES FOR JUMPERS.
- THE CABLE COLOR CODE SHALL BE APPLIED IN ACCORDANCE TO TABLE 20-5. (TABLE 20-5 ONLY SHOWS 3 SECTORS, BUT ADDITIONAL SECTORS ARE EASILY SUPPORTED BY ADDING THE APPROPRIATE NUMBER OF COLORED BANDS TO THE CABLE COLOR CODE.)
- AFTER THE CABLE COLOR CODE IS APPLIED, THE FREQUENCY BAND/RADIO COLOR CODE, TABLE 20-6, MUST BE APPLIED FOR THE SPECIFIC FREQUENCY BAND/RADIO IN USE ON A GIVEN LINE.
- A 2 IN GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THIS GAP SHALL BE 1 IN ON JUMPERS.
- THE 2' COLOR BANDS FOR THE FREQUENCY/RADIO CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES. THE COLOR BANDS SHALL BE 1 IN FOR JUMPERS. WRAP COLORED TAPE A MINIMUM OF 3 TIMES AROUND THE CABLE AND KEEP THE TAPE IN THE SAME AREA AS MUCH AS POSSIBLE. THIS WILL ALLOW REMOVAL OF TAPE THAT FADES OR DISCOLORS DUE TO WEATHER.



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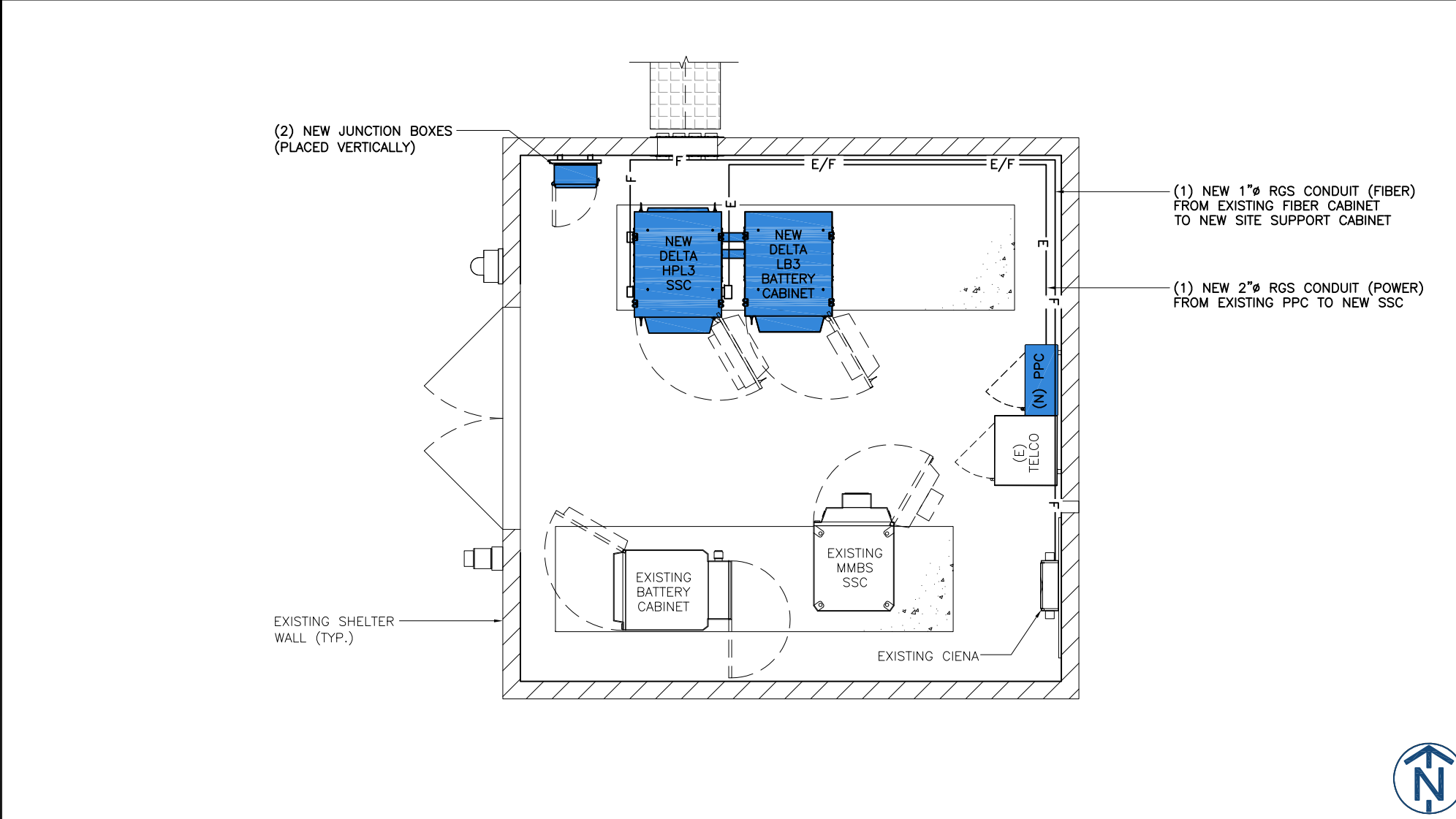
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EQUIPMENT
 DETAILS

SHEET NUMBER

C-5A

1. THE CONTRACTOR SHALL PERFORM WORK IN ACCORDANCE WITH ALL GOVERNING STATE, COUNTY AND LOCAL CODES AND OSHA REQUIREMENTS.
2. THE ENTIRE ELECTRICAL INSTALLATION SHALL BE GROUNDED AS REQUIRED BY ALL APPLICABLE CODES.
3. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS, INSURANCE, EQUIPMENT, INSTALLATION, CONSTRUCTION TOOLS AND TRANSPORTATION FOR A COMPLETE AND PROPERLY OPERATIVE SYSTEM ENERGIZED THROUGHOUT AND AS INDICATED ON DRAWINGS.
4. THE CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY PERMIT AND INSPECTION FEES, AND BE RESPONSIBLE FOR SCHEDULING INSPECTIONS WITH THE AUTHORITY HAVING JURISDICTION.
5. MATERIALS SHALL BE MANUFACTURED IN ACCORDANCE WITH APPLICABLE STANDARDS ESTABLISHED BY ANSI, IEEE, NEMA AND NFPA.
6. ALL MATERIALS SHALL BE U.L. LISTED.
7. 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.
8. MATERIALS SHALL MEET WITH APPROVAL OF THE AUTHORITY HAVING JURISDICTION.
9. THE CONTRACTOR SHALL PERFORM ALL VERIFICATION OBSERVATIONS TEST, AND EXAMINATION WORK PRIOR TO THE ORDERING OF THE ELECTRICAL EQUIPMENT AND STARTING CONSTRUCTION. CONTRACTOR SHALL ISSUE A WRITTEN NOTICE OF ALL FINDINGS TO THE PROJECT MANAGER LISTING ALL MALFUNCTIONS, FAULTY EQUIPMENT AND DISCREPANCIES.
10. THE CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF THE TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.
11. UPON COMPLETION OF WORK, CONDUCT CONTINUITY, SHORT CIRCUIT, AND FALL OF POTENTIAL GROUND TESTS FOR APPROVAL. SUBMIT TEST REPORTS TO THE PROJECT MANAGER.
12. ALL BROCHURES, OPERATING MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE TURNED OVER TO THE PROJECT MANAGER AT JOB COMPLETION.
13. POST-INSTALLATION, ANY WORK, MATERIAL OR EQUIPMENT FOUND TO BE FAULTY SHALL BE CORRECTED AT ONCE, UPON WRITTEN NOTIFICATION, AT THE EXPENSE OF THE CONTRACTOR.
14. PROVIDE THE PROJECT MANAGER WITH ONE SET OF COMPLETE ELECTRICAL "AS-INSTALLED" DRAWINGS AT THE COMPLETION OF THE JOB, SHOWING ACTUAL DIMENSIONS, ROUTINGS AND CIRCUITS.
15. ALL ELECTRICAL EQUIPMENT SHALL BE LABELED WITH PERMANENT ENGRAVED PLASTIC LABELS NOTING USE FUNCTION.
16. EACH CONDUCTOR OF EVERY SYSTEM SHALL BE PERMANENTLY TAGGED IN EACH PANEL BOARD, PULL BOX, J-BOX, SWITCH BOX, ETC.
17. ALL CONDUIT INSTALLED SHALL BE SURFACE MOUNTED OR DIRECT BURIAL UNLESS OTHERWISE NOTED.
18. ALL CONDUIT SHALL HAVE A PULL WIRE OR ROPE.
19. ALL CONDUCTORS SHALL BE COPPER.
20. 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.
21. PATCH, REPAIR AND PAINT ANY AREA THAT HAS BEEN DAMAGED IN THE COURSE OF THE ELECTRICAL WORK.
22. PENETRATIONS IN FIRE RATED WALLS SHALL BE FIRE STOPPED TO MATCH ORIGINAL RATING.
23. BX OR ROMEX CABLE IS NOT PERMITTED.
24. ALL ELECTRICAL/FIBER ENCLOSURES, JUNCTION BOXES, CONDUIT KNOCKOUTS, RACEWAYS, ETC. SHALL BE RODENT-PROOF.
25. CLEAN PREMISES OF ALL DEBRIS RESULTING FROM WORK AND LEAVE WORK IN A COMPLETE AND UNDAMAGED CONDITION.



UTILITY PLAN

SCALE: 1/4" = 1'-0" 2

NOTE:
EXISTING CIRCUITS TO BE REINSTALLED IN NEW PPC,
SEE 2/E-3 FOR NEW PANEL SCHEDULE



NOTES

1 EXISTING PANEL SCALE: N.T.S.

3 NOT USED

4 NOT USED

5



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Daniel W Smith
License # 52398

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SPRMN-MS14XC851

SITE NUMBER:

A100091A

SITE ADDRESS

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SPRING LAKE PARK, MN 55432

SHEET NAME

UTILITY PLAN
AND DETAILS

SHEET NUMBER

E-1

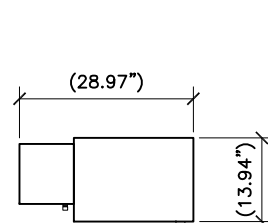


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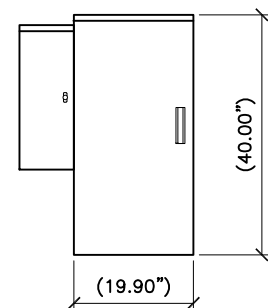
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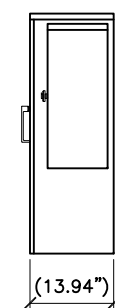
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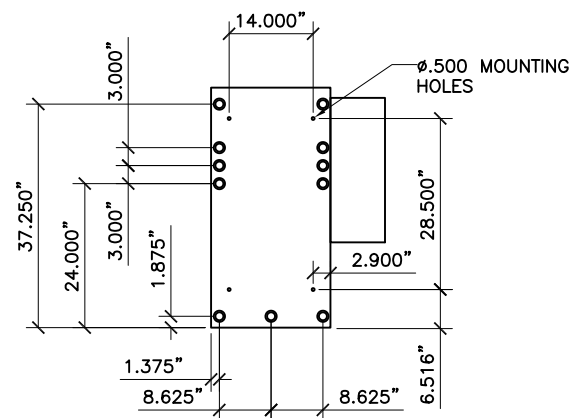
PLAN VIEW



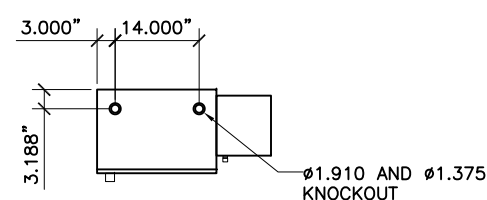
FRONT VIEW



SIDE VIEW



BACK MOUNTING DETAILS



BOTTOM MOUNTING DETAILS

DELTA
2262P1D30D-C00

POWER PROTECTION CABINET

SCALE: N.T.S.

1

NOT USED

SCALE: N.T.S.

2

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SITE NUMBER:

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SITE ADDRESS

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SPRING LAKE PARK, MN 55432

SHEET NAME

ELECTRICAL DETAILS

SHEET NUMBER

E-2

NOT USED

SCALE: N.T.S.

3

NOT USED

SCALE: N.T.S.

4

NOT USED

SCALE: N.T.S.

5

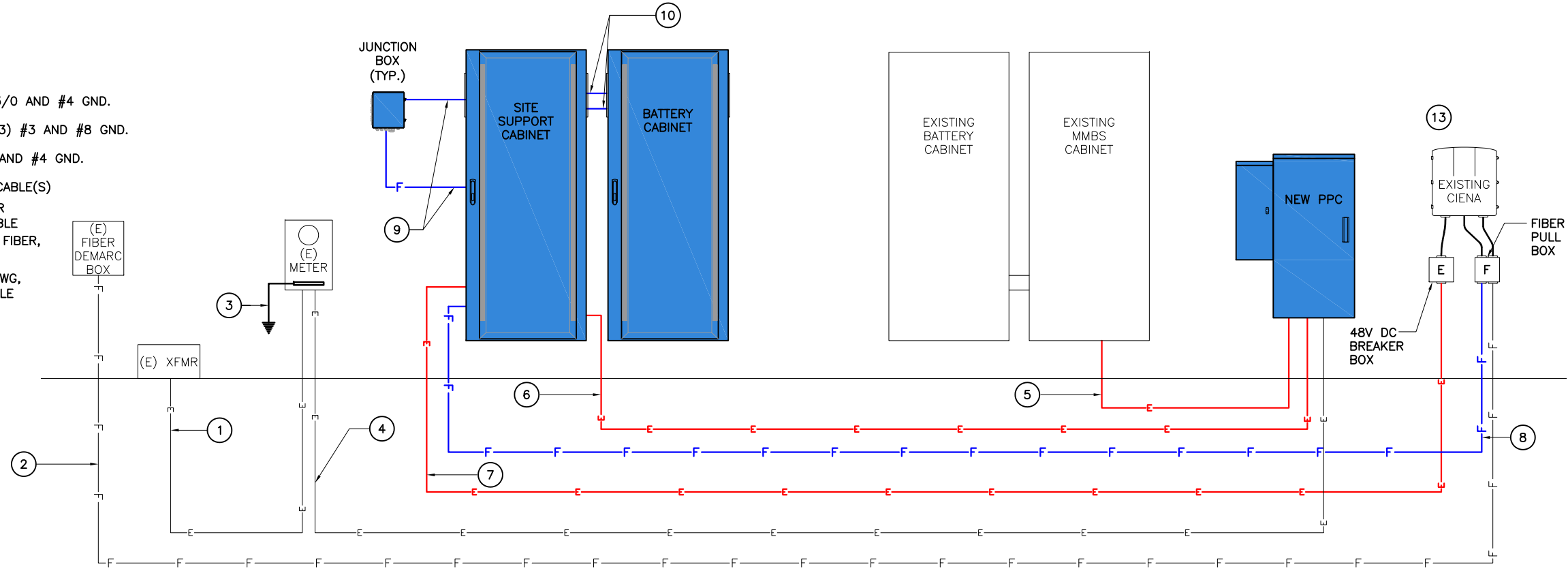
NOT USED

SCALE: N.T.S.

6

SYMBOL LEGEND:

- ① EXISTING ELECTRICAL SERVICE
- ② EXISTING FIBER SERVICE
- ③ EXISTING #4 SERVICE GROUND
- ④ EXISTING 2" CONDUIT W/ (3) #3/0 AND #4 GND.
- ⑤ EXISTING 1-1/2" CONDUIT W/ (3) #3 AND #8 GND.
- ⑥ NEW 2" CONDUIT W/ (3) #3/0 AND #4 GND.
- ⑦ NEW 1" RIGID CONDUIT W/ DC CABLE(S)
- ⑧ NEW 1" RIGID CONDUIT W/ FIBER CABLE(S) AND CAT-6 TELCO CABLE
- ⑨ (2) NEW 2" CONDUITS, (1) FOR FIBER, (1) FOR DC POWER
- ⑩ (2) 4"Ø CONDUITS W (4) 4/0 AWG, (5) 12 AWG AND ETHERNET CABLE



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ONE LINE DIAGRAM

SCALE: N.T.S. 1

SITE: A100091A-MS14XC851
VOLTAGE: 120/240 Vac
PHASE: 1
WIRE: 3W
BUSS RATING : 200
MAIN BREAKER: 200

PANEL NAME: PPC
PANEL STATUS: NEW
ENCLOSURE TYPE: NEMA 3R
MOUNT: SURFACE
AIC: 65kA
PANEL POSITIONS: 24

Total kVA	19.55
Total AMPS	81.46

CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD	USAGE FACTOR	Phase A (VA)	Phase B (VA)	USAGE FACTOR	SERVICE LOAD	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	LOAD DESCRIPTION	CKT				
1	MMBS DU	100	2	ON	5750	0	0	25	1	25	ON	2	60	SURGE ARESSTOR (1PH)	2				
3					5750	0	25	0	1	25					4				
5	HPL3	200	4	ON	4875	1	4875	0	0	200	ON	2	15	MMBS BU	6				
7					4875	1	0	4875	0	200					8				
9					4875	1	4875	0	0	250					ON	2	30	230 V OUTLET	10
11					4875	1	0	4875	0	250									12
13							0	0	0	500	ON	1	20	110 V OUTLETS	14				
15							0	0							16				
17							0	0							18				
19							0	0							20				
21							0	0			OFF	2	100	FUTURE	22				
23							0	0							24				

SITE NAME

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SHEET NAME

ONE-LINE DIAGRAM
AND PANEL
SCHEDULE

SHEET NUMBER

E-3

PANEL SCHEDULE

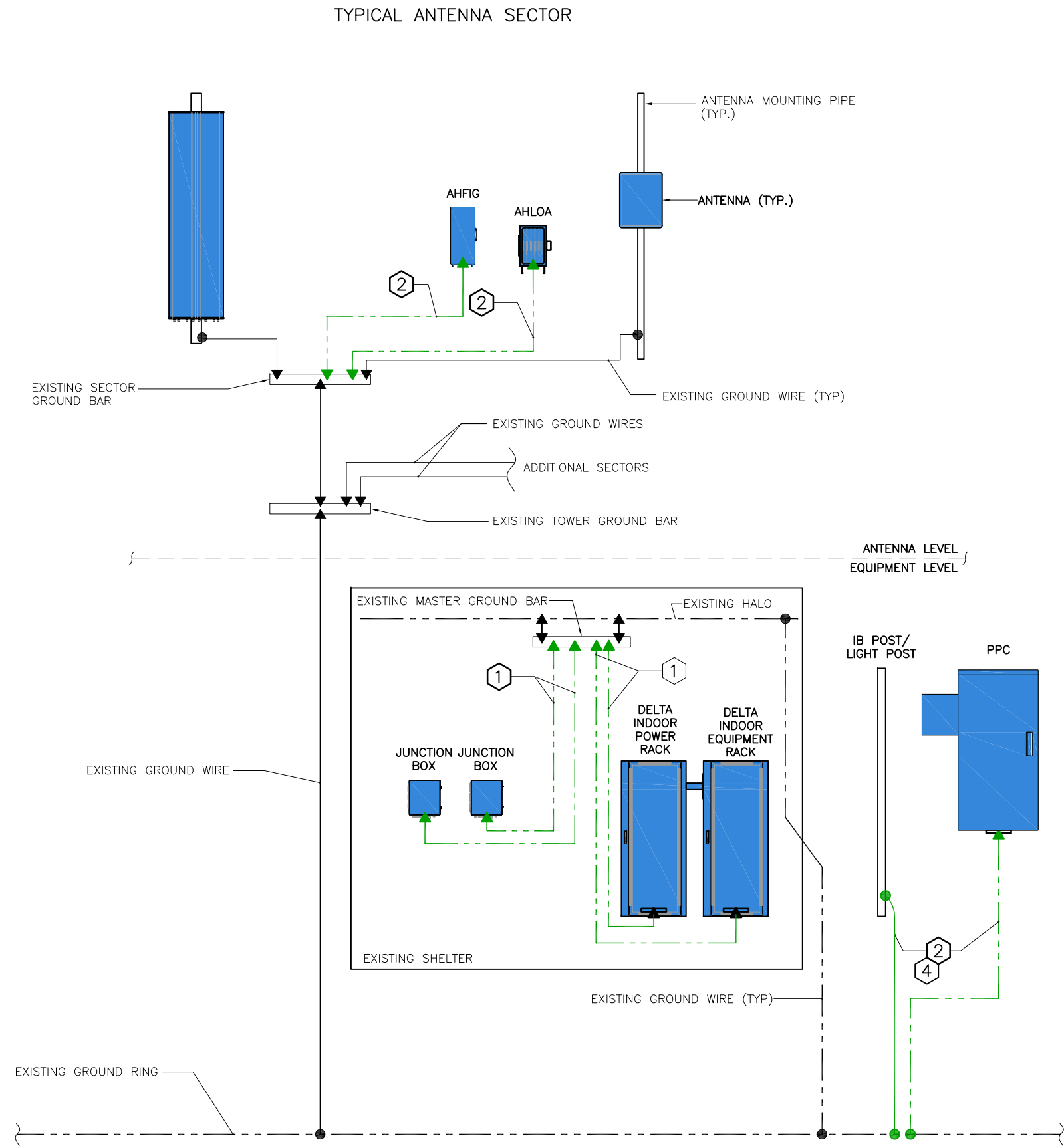
2

GROUNDING NOTES:

1. INSTALL 2 GROUND BARS AT THE BOTTOM OF THE TOWER (EVEN WITH SHORT ICE BRIDGE RUNS). ONE GROUND BAR AT THE TOWER, AND ON AT THE PLATFORM.
2. T-MOBILE IS ELIMINATING THE HOME RUN GROUND WIRE FROM THE TOP BUSS BAR TO THE BOTTOM BUSS BAR ON TOWER SITES. ROOFTOPS ARE STILL REQUIRED TO HAVE SECTORS GROUND AND #2 INSULATED GROUND WIRE. FROM SECTOR GROUNDS TO MAIN BUSS BARS AND BUILDING STEEL.
3. REMOVE INSULATORS (CHERRIES) FROM THE BUSS BARS AND GROUND TO TOWER, TOP AND BOTTOM ON TOWER SITES ONLY.
4. ALL EXPOSED GROUNDS TO BE DRESSED WITH SEAL TIGHT.
5. ALL ICE BRIDGE POST ARE TO BE GROUNDED WITH #2 SOLID AND DRESSED IN SEAL TIGHT.
6. (2) OF THE (4) PLATFORM POST NEED TO BE GROUNDED DIAGONALLY.
7. BOTTOM BUSS BAR TO HAVE TWO #2 GROUND LEADS DRESSED IN WITH SEAL TIGHT.

GROUNDING LEGEND

- EXOTHERMIC CONNECTION
- ▲ MECHANICAL CONNECTION
- ▬ INTERNAL EQUIPMENT GROUND BAR
- ▬ EXTERNAL GROUND BAR
- ① #2 AWG STRANDED INSULATED COPPER GROUND WIRE
- ② #6 AWG STRANDED INSULATED COPPER GROUND WIRE
- ③ #2 SOLID TINNED, BARE COPPER GROUND WIRE
- ④ 1/2" FLEXIBLE SEALTIGHT CONDUIT W/SILICON SEALANT AT EACH END



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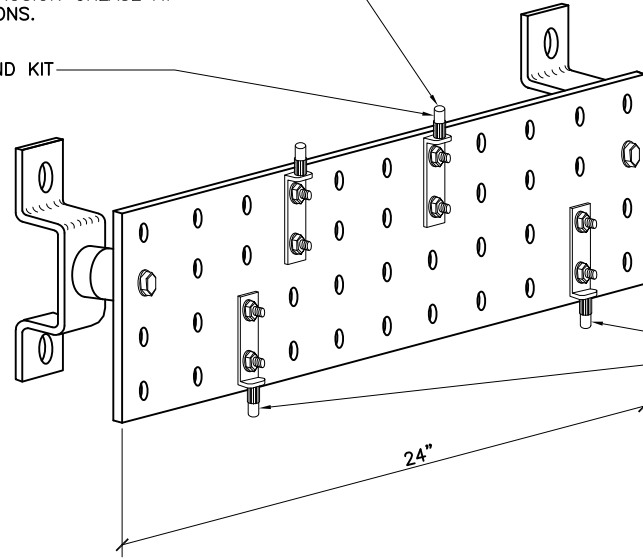
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SHEET NAME
GROUNDING DIAGRAM

SHEET NUMBER
G-1

#2 AWG STRANDED W/LONG BARREL COMPRESSION LUGS
NOTE: CONTRACTOR TO USE ANTI-CORROSION GREASE AT CONNECTIONS.

TO GROUND KIT



NEW 4"x24"x1/4" THICK COPPER GROUND BAR, T-MOBILE CONSTRUCTION MANAGER TO VERIFY EXACT LOCATION AND INSTALLATION IN FIELD

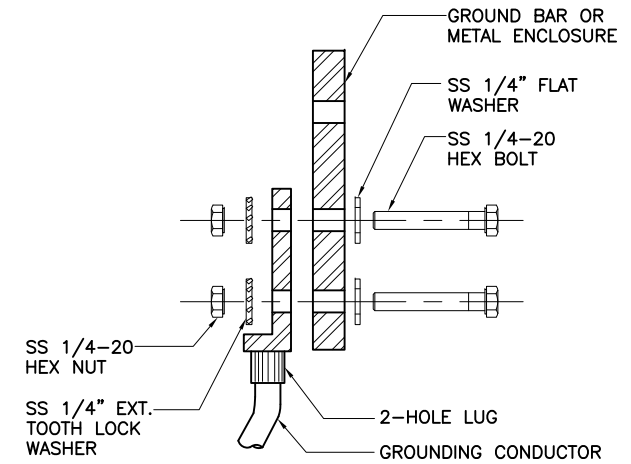
REFER TO GROUND RISER SCHEMATIC FOR CONNECTIONS.

NOTES:

1. CONTRACTOR SHALL UTILIZE LUGGED HOLES PROVIDED. NO DRILLING OF THE BAR WILL BE PERMITTED.
2. ALL HARDWARE SHALL BE 18-8 STAINLESS STEEL INCLUDING BELLEVILLES. COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
3. FOR GROUND BOND TO STEEL ONLY: INSERT A DRAGON TOOTH WASHER BETWEEN LUG AND STEEL. COAT ALL SURFACES WITH KOPR-SHIELD.

TYPICAL GROUNDING BAR DETAIL

SCALE: N.T.S. 1



SS 1/4-20 HEX NUT

SS 1/4" EXT. TOOTH LOCK WASHER

GROUND BAR OR METAL ENCLOSURE

SS 1/4" FLAT WASHER

SS 1/4-20 HEX BOLT

2-HOLE LUG

GROUNDING CONDUCTOR



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NOT USED	3	LUG BOLT CONNECTION	SCALE: N.T.S.	4
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Daniel W Smith
License # 52398

NOT USED	5	NOT USED		6
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SITE NAME

SPRMN-MS14XC851

SITE NUMBER:

A1O0091A

SITE ADDRESS

8249 ARTHUR ST NE
SPRING LAKE PARK, MN 55432

SHEET NAME

**GROUNDING
DETAILS**

SHEET NUMBER

G-2

NOT USED	2	NOT USED	7	NOT USED	8
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STRUCTURAL NOTES:

APPLICABLE CODES:

1. DESIGN & CONSTRUCTION OF ALL WORK SHALL CONFORM TO.

THE FOLLOWING CODES: 2020 MINNESOTA BUILDING CODE
TIA-222-H

DESIGN LOADS:

WIND LOAD:

116 MPH BASIC DESIGN WIND SPEED PER TIA-222-H

SEISMIC LOAD:

SS = 0.048 SDS = 0.05
S1 = 0.028 SD1 = 0.015

SOIL SITE CLASS (ASSUMED) D
SEISMIC DESIGN CATEGORY A

GENERAL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL LAWS, REGULATIONS, AND RULES SET FORTH BY FEDERAL, STATE, AND LOCAL AUTHORITIES WITH JURISDICTION OVER THE PROJECT. THIS RESPONSIBILITY IS IN EFFECT REGARDLESS OF WHETHER THE LAW, ORDINANCE, REGULATION OR RULE IS MENTIONED IN THESE SPECIFICATIONS.
2. ALL WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS, PROJECT SPECIFICATIONS, AND THE CONSTRUCTION CONTRACT DOCUMENTS.
3. THE CONTRACTOR SHALL HAVE AND MAINTAIN A VALID CONTRACTOR'S LICENSE FOR THE LOCATION IN WHICH THE WORK IS TO BE PERFORMED. FOR JURISDICTIONS THAT LICENSE INDIVIDUAL TRADES, THE TRADESMAN OR SUBCONTRACTOR PERFORMING THOSE TRADES SHALL BE LICENSED.
4. FOLLOW ALL APPLICABLE RULES AND REGULATIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND STATE LAW AS DEFINED IN THE FEDERAL OCCUPATIONAL SAFETY AND HEALTH ACT.
5. PRIOR TO THE SUBMISSION OF THE BID, THE CONTRACTOR SHALL VISIT THE JOB SITE, VERIFY ALL DIMENSIONS AND BECOME FAMILIAR WITH THE FIELD CONDITIONS. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER.
6. DRAWING PLANS SHALL NOT BE SCALED.
7. THE CONTRACTOR SHALL NOT PROCEED WITH ANY WORK NOT CLEARLY IDENTIFIED ON THE DRAWINGS WITHOUT THE PRIOR WRITTEN APPROVAL OF THE PROJECT MANAGER.
8. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE NOTED.
9. ALL MEANS AND METHODS OF CONSTRUCTION DEALING WITH TOWER CONSTRUCTION AND SAFETY, STEEL ERECTION, EXCAVATIONS, TRENCHING, SCAFFOLDING, FORMWORK, ELECTRICAL, AND WORK IN CONFINED SPACES ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK.
11. THE CONTRACTOR SHALL BE EXPERIENCED IN THE PERFORMANCE OF WORK SIMILAR TO THAT DESCRIBED HEREIN. BY ACCEPTANCE OF THIS ASSIGNMENT, THE CONTRACTOR IS ATTESTING THAT HE DOES HAVE SUFFICIENT EXPERIENCE AND ABILITY AND THAT HE IS KNOWLEDGEABLE OF THE WORK TO BE PERFORMED.
12. THE CONTRACTOR SHALL PROVIDE SUFFICIENT TEMPORARY BRACING AND/OR SHORING OF ALL STRUCTURAL AND NON-STRUCTURAL ELEMENTS DURING CONSTRUCTION UNTIL ALL STRUCTURAL ELEMENTS HAVE BEEN PROPERLY INSTALLED.
13. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS SHALL BE REPORTED TO THE PROJECT MANAGER AND ENGINEER, AND SHALL REQUIRE APPROVAL PRIOR TO PERFORMING ANY REMEDIAL OR CORRECTIVE ACTION.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL MATERIALS CONFORM TO THE LATEST EDITION OF APPLICABLE STANDARDS AND TO ALL APPLICABLE CODES AND REQUIREMENTS OF LOCAL AUTHORITIES HAVING JURISDICTION, WHICHEVER IS MORE STRINGENT. ALL STRUCTURAL STEEL SHALL BE IN ACCORDANCE WITH THE LATEST APPLICABLE REQUIREMENTS OF AISC, ASTM, ACI, CRSI, AWS AND ALL OTHER APPLICABLE STANDARDS
2. ALL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123 UNLESS NOTED ON THE CONSTRUCTION DRAWINGS.
3. ROLLED STEEL SHAPES, PLATES AND BARS SHALL BE NO LESS THAN 3/16 INCHES IN THICKNESS AND SHALL COMPLY WITH ASTM A-36 AS A MINIMUM.
4. STEEL PIPE SHALL COMPLY WITH ASTM A-501 OR ASTM A-53, TYPE E OR S, GRADE B. A-500 GRADE B STEEL MAY BE SUBSTITUTED.
5. GALVANIZED STEEL GRATING SHALL BE A MINIMUM 1-1/4 INCH X 1/8 INCH AT 3/16 INCHES ON CENTER.
6. COLD FORMED CHANNELS, C'S AND Z'S USED AS GIRTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM STANDARD A607 GRADE 50.
7. CONNECTIONS:
 - A. CONTRACTOR SHALL PROVIDE ALL HARDWARE REQUIRED TO COMPLETE FIELD ERECTION OF STRUCTURE AS INDICATED BY CONTRACT DOCUMENTS OR THESE SPECIFICATIONS.
 - B. HIGH STRENGTH THREADED FASTENERS SHALL BE INSTALLED IN ACCORDANCE WITH AISC SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A-325 BOLTS. USE A-325N BEARING-TYPE CONNECTION BOLTS UNLESS NOTED OTHERWISE.
 - C. GRATING AND PLATES SHALL BE FASTENED WITH SADDLE CLIPS. THE NECESSARY HOLES TO COMPLETE ALL PHASES OF CONSTRUCTION SHALL BE PROVIDED AND CALLED OUT ON THE APPROVED SHOP DRAWINGS. ALL HOLES SHALL BE DRILLED OR PUNCHED PERPENDICULAR TO METAL SURFACES, FLAME CUT OR BURNED HOLES WILL NOT BE PERMITTED.
 - D. ALL UNFINISHED THREADED FASTENERS SHALL COMPLY WITH ASTM A-307, GRADE A, REGULAR LOW-CARBON STEEL BOLTS AND NUTS WITH HEXAGONAL HEADS.
 - E. ALL HIGH STRENGTH THREADED FASTENERS SHALL BE HEAVY HEXAGONAL BOLTS AND NUTS WITH HARDENED WASHERS, ALL FROM QUENCHED AND TEMPERED MEDIUM CARBON STEEL COMPLYING WITH ASTM A-325.

WATER TOWER NOTES:

HEALTH AND SAFETY

1. CONTRACTOR SHALL PROVIDE ALL SAFETY EQUIPMENT AND FALL PROTECTION TO ENSURE THE SAFETY OF ON SITE PERSONNEL DURING CONSTRUCTION.
2. ACCESS TO THE TANK INTERIOR WATER COMPARTMENT SHALL NOT BE PERMITTED WITHOUT THE APPROVAL OF THE WATER DEPARTMENT SUPERVISOR. PRECAUTIONS SHALL BE TAKEN TO PREVENT WATER CONTAMINATION.
3. THE PAINT SYSTEM SHALL BE CHECKED FOR HAZARDOUS METALS. WHERE HAZARDOUS METALS ARE FOUND IN THE PAINT SYSTEM, THE ENVIRONMENT AND WORKERS MUST BE PROTECTED FROM CONTAMINATION.

ADDITIONAL WATER TOWER GENERAL NOTES

1. ALL STEEL ANTENNA INSTALLATION COMPONENTS MUST BE PAINTED TO MATCH EXISTING PAINT SYSTEMS ON THE EXTERIOR AND DRY INTERIOR.
2. NO COMPONENTS CAN REMAIN GALVANIZED OR STAINLESS STEEL. THE SPECIFIED PAINT SYSTEMS WILL NOT HAVE GOOD ADHESION ON GALVANIZED OR STAINLESS STEEL SURFACES.
3. CONTACT WATER TOWER PAINT MANUFACTURER TNEC OR EQUAL TO OBTAIN A SUITABLE SURFACE PREPARATION SYSTEM FOR GALVANIZED AND STAINLESS STEEL SURFACES. THE SYSTEM MUST MAKE PREVIOUSLY GALVANIZED AND STAINLESS STEEL SURFACES COMPATIBLE WITH THE SPECIFIED PAINT SYSTEMS THAT WILL BE APPLIED.
4. IF APPLICABLE, PAINT ALL NEW STEEL IN A SHOP SETTING, PRIOR TO DELIVERY TO THE SITE.
5. FOLLOW ALL PAINT MANUFACTURERS' RECOMMENDATIONS WHEN USING THEIR PRODUCTS.
6. CONTRACTOR SHALL REPAIR ALL DAMAGED PAINT AREAS OF TANK DUE TO CUTTING, WELDING AND GRINDING. DUE TO THE GENERATION OF METAL FILINGS WHICH WILL RUST STAIN THE TANK SURFACES IF NOT CLEANED OFF IN A TIMELY MANNER, CONTRACTOR SHALL REMOVE ALL METAL FILINGS IMMEDIATELY. DAMAGED PAINT SURFACES SHOULD BE REPAIRED PER WATER TANK OWNER SPECIFICATIONS. CONTRACTOR SHALL COORDINATE ALL PAINT MATERIALS & METHODS WITH TANK OWNER PRIOR TO WORK BEING DONE.



8000 WEST 78TH
STE 400
EDINA, MN 55439



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SCHAUMBURG, ILLINOIS 60173
TEL: 847-908-8400
www.FullertonEngineering.com

REV	DATE	DESCRIPTION	BY
A	12/01/20	90% REVIEW	MK
0	05/25/21	FINAL	RO

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 Minnesota

Barbara Kotecki
License # 56322
B. Kotecki

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SPRMN-MS14XC851

SITE NUMBER:

A100091A

SITE ADDRESS

8249 ARTHUR ST NE
SPRING LAKE PARK, MN 55432

SHEET NAME

STRUCTURAL
NOTES

SHEET NUMBER

S-1

REV	DATE	DESCRIPTION	BY
A	12/01/20	90% REVIEW	MK
0	05/25/21	FINAL	RO

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Barbara Kotecki
License # 56322

B. Kotecki

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SPRMN-MS14XC851

SITE NUMBER:

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SITE ADDRESS

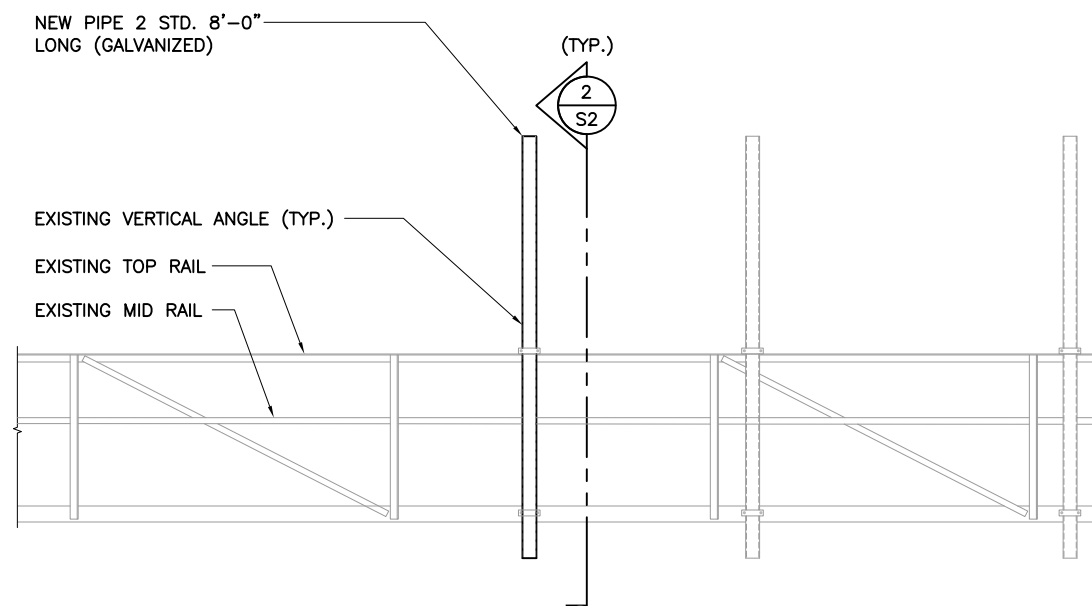
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SPRING LAKE PARK, MN 55432

SHEET NAME

**STRUCTURAL
DETAILS**

SHEET NUMBER

S-2



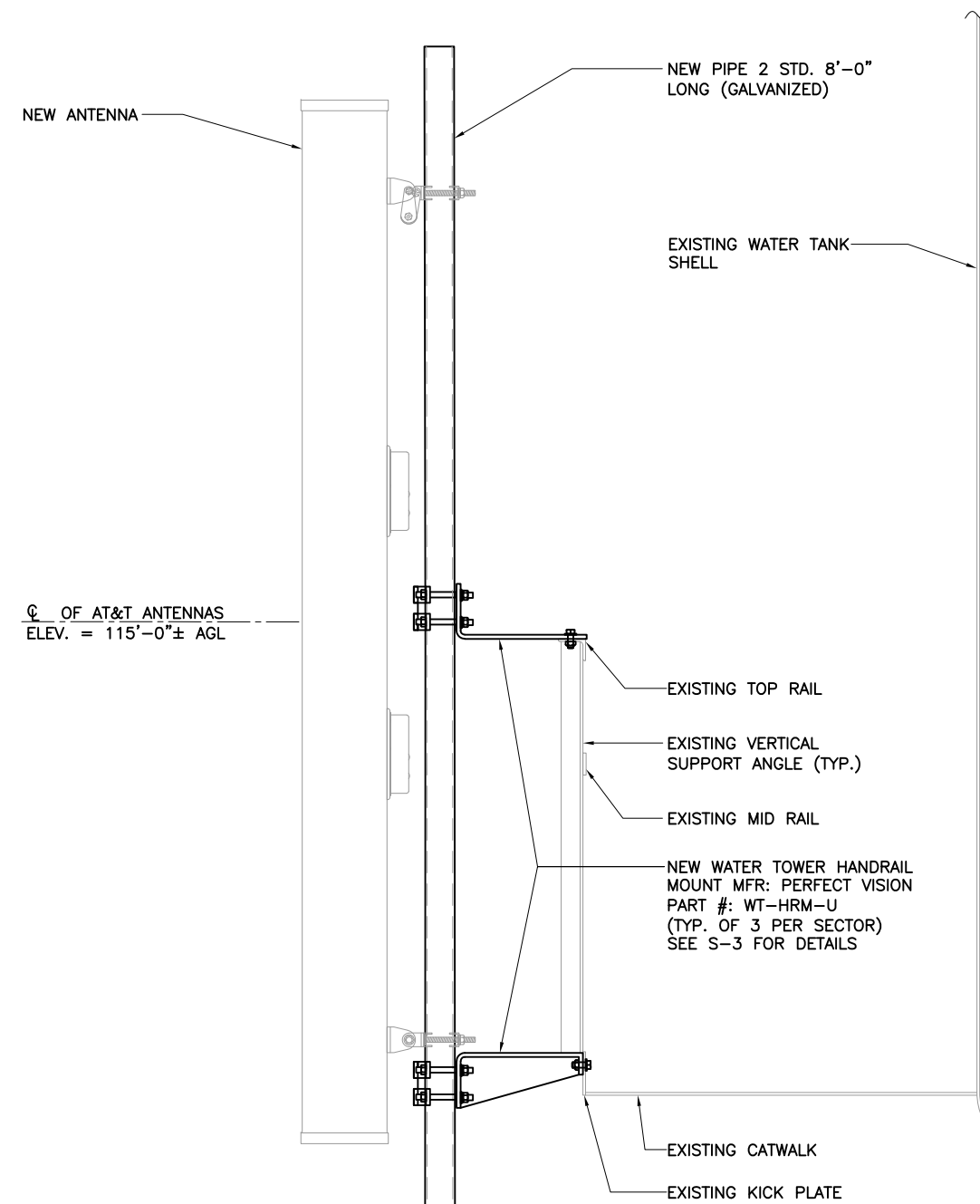
NOTE:
EXISTING/NEW RRUS NOT SHOWN
FOR CLARITY

MOUNTING ELEVATION DETAIL (TYP. ALL SECTORS)

SCALE: N.T.S.

1

MOUNTING DETAIL



SCALE: N.T.S.

2

REV	DATE	DESCRIPTION	BY
A	12/01/20	90% REVIEW	MK
0	05/25/21	FINAL	RO

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Barbara Kotecki
License # 56322

B. Kotecki

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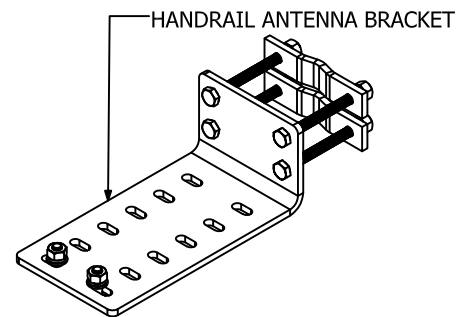
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SPRING LAKE PARK, MN 55432

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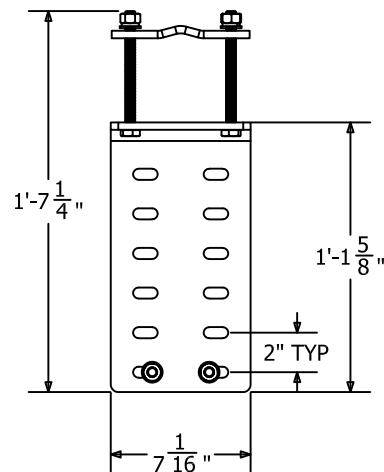
**STRUCTURAL
DETAILS**

SHEET NUMBER

S-3

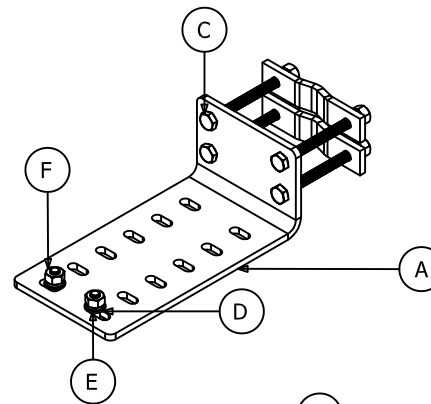


HANDRAIL ANTENNA BRACKET

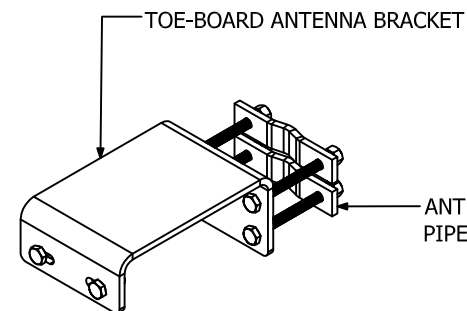


TOP VIEW

CLAMP COMPATIBLE WITH 2 3/8" TO 4 1/2" OD PIPE

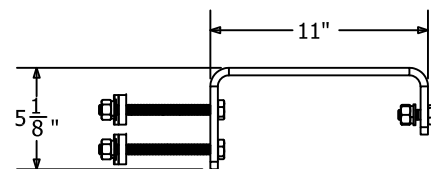
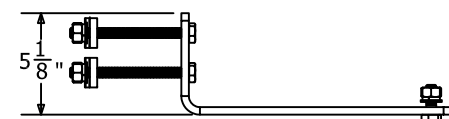


PV-WT-HRM-U



TOE-BOARD ANTENNA BRACKET

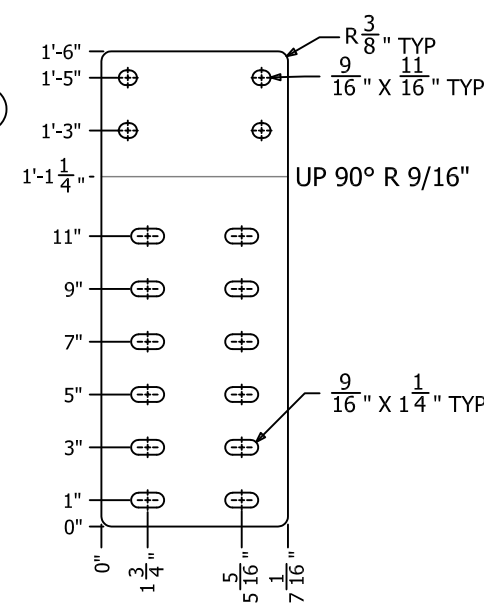
ANTENNA
PIPE CLAMP



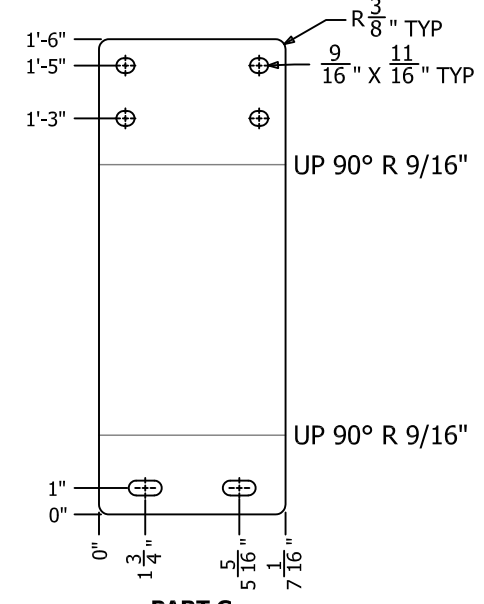
SIDE VIEW
10" STANDOFF

PV-WT-HRM-U
WEIGHT: 34.84 LBS

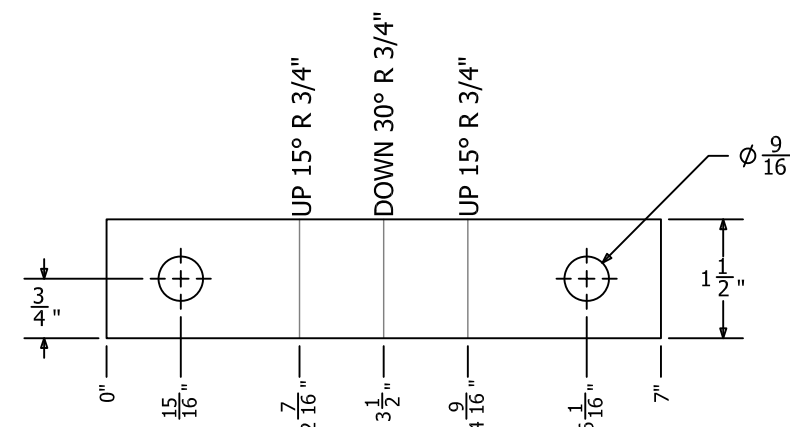
PV-WT-HRM-U
WATER TOWER HANDRAIL ANTENNA MOUNT
NOTE: ANTENNA PIPE NOT INCLUDED



PART A



PART G



PART B

PART	SHAPE	LENGTH	GRADE	NOTES
A	PL 3/8" - 7 1/16"	18"	A36	BENT - BEND RADIUS 9/16"
B	PL 3/8" - 1 1/2"	7"	A36	BENT - BEND RADIUS 3/4"
C	1/2" - 13	6"	SAE GR.5	BOLT
D	1/2" DIA		F436	FLAT WASHER
E	1/2" DIA			LOCK WASHER
F	1/2" - 13		A563DH	NUT
G	PL 3/8" - 7 1/16"	18"	A36	BENT - BEND RADIUS 9/16"
H	1/2" - 13	1 1/2"	A325	BOLT