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8550 BRYN MAWR AVENUE, SUITE 100
CHICAGO, ILLINOIS 60631

SITE NUMBER: ML63039H

JURISDICTION: CITY OF WAUKESHA

SITE NAME: FITZPATRICK TRUST

CITY: WAUKESHA

SITE TYPE: 140' MONOPOLE

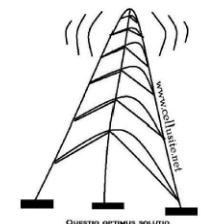
COUNTY: WAUKESHA COUNTY

PLANS PREPARED FOR:

Parallel
INFRASTRUCTURE

PLANS PREPARED BY:

CelluSite, LLC



ENGINEERING LICENSE:

DATE:	DESCRIPTION:	BY:	REV:
05/24/15	REVIEW CD	BMW	A
05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:

ML63039H

FITZPATRICK TRUST

WI-Waukesha

1436 E RACINE AVE.
Waukesha, WI 53189
Waukesha COUNTY

SHEET TITLE:

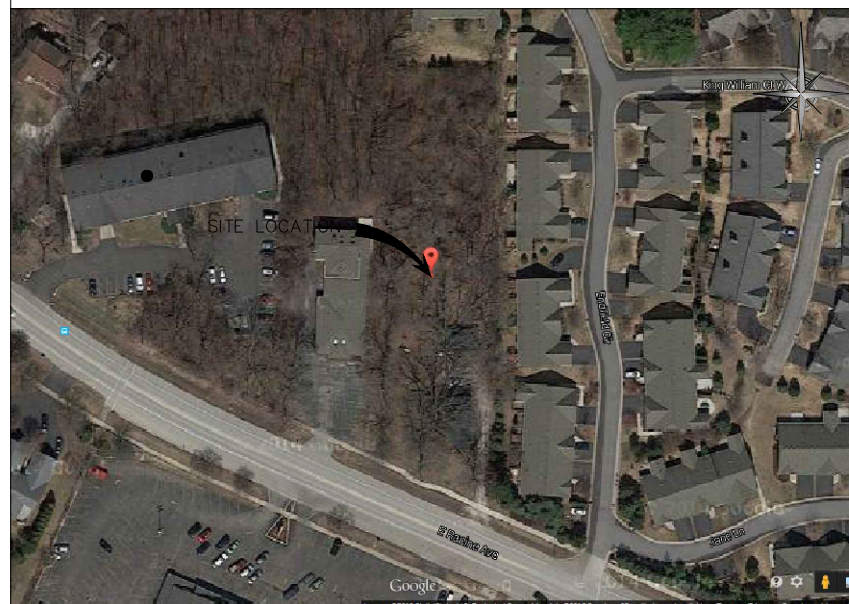
TITLE SHEET

SHEET NUMBER:

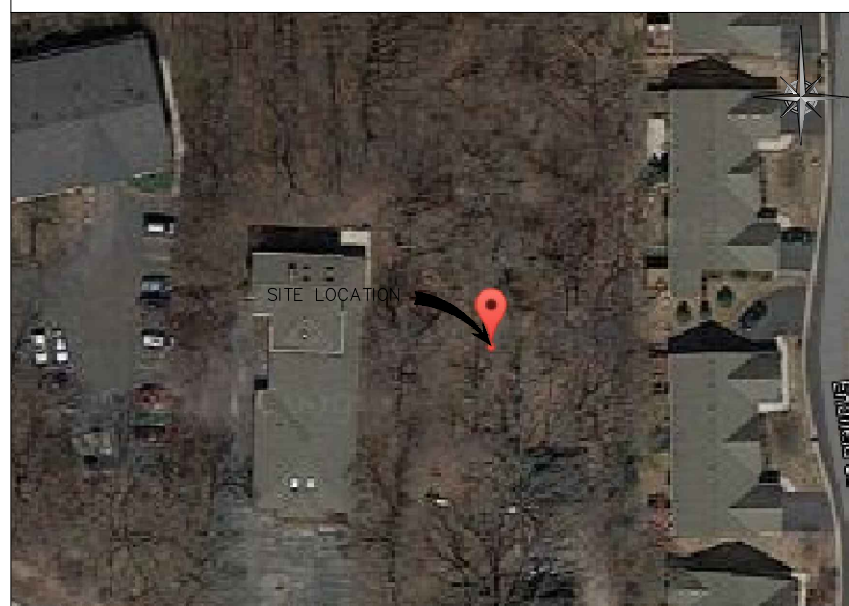
T-1

PLOT SCALE: 1:1 @ 11"x17"

LOCATION MAP



AERIAL MAP



PROJECT DESCRIPTION

INSTALL T-MOBILE EQUIPMENT CABINET ON NEW EQUIPMENT PLATFORM. NO NEW WATER OR SEWER IS REQUIRED AS FACILITY IS UNMANNED. INSTALL NEW MONOPOLE TOWER.

INITIAL BUILD OUT:

6 NEW ANTENNAS, 1 HCS, 2 COVP'S, 1 CABINET, 5 TOWER MODULES, 2 GROUND MODULES

PROJECT LOCATION

COORDINATES (NAD83):

LAT: 42.998360
LONG: -88.208151
AMSL: 907'

SITE ADDRESS:

1436 E RACINE AVE.
WAUKESHA, WI 53189
WAUKESHA COUNTY

PROPERTY SUMMARY

PROPERTY ADDRESS:

1436 E RACINE AVE.
WAUKESHA, WI 53189

ZONING:

WAUKESHA COUNTY, IL

ASSESSOR'S PARCEL NUMBER (APN):

TBD

APPLICABLE CODES

BUILDING CODE: INTERNATIONAL BUILDING CODE 2012 WITH AMENDMENTS
ELECTRICAL CODE: NATIONAL ELECTRICAL CODE 2011

DRIVING DIRECTIONS

DIRECTIONS FROM O'HARE INTERNATIONAL AIRPORT:

DEPART ON I-190 WEST. TURN RIGHT ONTO RAMP, THEN RIGHT (SOUTH) ONTO BESSIE COLEMAN DR. TAKE RAMP ONTO I-190 *TOLL ROAD* AT EXIT 1C. TURN RIGHT ONTO RAMP. TAKE RAMP (LEFT) ONTP I-294, MERGE ONTO I-94. ENTERING WISCONSIN, AT EXIT 316, TAKE RAMP (LEFT) ONTO I-43. AT EXIT 54 TURN RIGHT ONTO RAMP. KEEP RIGHT TO STAY ON RAMP. BEAR RIGHT (NORTH) ONTO CR-Y. BEAR LEFT ONTO CR-Y. TURN RIGHT (NORTH) ONTO LOCAL ROAD.

ISSUED FOR PERMIT

CONTACTS

APPLICANT

T-MOBILE USA
8550 BRYN MAWR AVE., SUITE 100
CHICAGO, ILLINOIS 60631
TEL: (773) 444-5400
CONTACT: TBD

PROPERTY OWNER CONTACT:

PROPERTY OWNER: FITZPATRICK TRUST
CONTACT: PATRICK J FITZPATRICK
W 220 S 3734 HIDDEN CT.
WAUKESHA WI 53189
TEL: (262) 544-4565
ALTERNATE:

UTILITIES

ELECTRIC:

WE ENERGY
TEL: 414-221-2345
CONTACT: NN/AA

TELEPHONE:

AT&T
TEL: 855-327-0860
CONTACT: N/A

PROJECT TEAM

LEAD ENGINEER

JACOB CORALSKI, P.E.
IRISH TOWER, LLC
4603 BERMUDA DR.
SUGAR LAND, TX 77479

LEAD SITE ACQ.

CELLUSTE, LLC
103 WILSHIRE COURT,
NOBLESVILLE, IN 46062
TEL: (317) 507-4541
FAX: N/A

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REVIEW

PENDING APPROVAL OF THE JURISDICTION, THE FOLLOWING PARTIES HAVE REVIEWED THE DESIGN WITHIN THEIR FUNCTIONAL RESPONSIBILITIES AND HAVE APPROVED THIS PROJECT FOR CONSTRUCTION. CONTRACTORS MAY NOT START CONSTRUCTION WITHOUT A NOTICE TO PROCEED (NTP) FROM T-MOBILE.

	PRINT NAME	SIGNATURE	DATE
LANDLORD	_____	_____	_____
PRECON. MGR	_____	_____	_____
DEVELOP. MGR	_____	_____	_____
CONST. INSP.	_____	_____	_____
A&E MGR	_____	_____	_____
RF ENGINEER	_____	_____	_____
OPERATIONS	_____	_____	_____
ZONING REP	_____	_____	_____
UTILITIES	_____	_____	_____

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. THESE SHALL INCLUDE BUT NOT BE LIMITED TO THE LATEST VERSION OF THE COOK COUNTY BUILDING CODE.

- 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.

TOWER & ANTENNA INSTALLATION:

- 1.1 WORK INCLUDED**
- IF REQUIRED, ERECT FURNISHED TOWER.
 - GROUND TOWER TEMPORARILY DURING ERECTION. GROUNDING SHALL INCLUDE BASE(S) AND ANCHORS.
 - IF REQUIRED, INSTALL THREE (3) SIDE ARMS, CONSISTING OF THREE (3) 6'-0" AS INDICATED ON DRAWINGS - CONFIRM WITH OWNER REPRESENTATIVE.
 - INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND OWNER SPECIFICATIONS.
 - INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.
 - INSTALL FURNISHED GALVANIZED STEEL WAVEGUIDE LADDER.
 - INSTALL WAVEGUIDE BRIDGE AS INDICATED ON DRAWING.
 - SUPPLY AND INSTALL ONE INSULATED GROUND BAR AT EQUIPMENT CABINET.
 - SUPPLY AND INSTALL GROUNDING STRAP KITS WITH LONG BARREL COMPRESSION LUGS (SIM. TO ANDREW-223700TBO OR APPROVED EQUAL) ATOP TOWER BASE BEFORE ENTERING THE EQUIPMENT. GROUNDING STRAPS TO BE CONNECTED TO INSULATED GROUND BAR.
 - ASSIST OWNER TECHNICIANS IN PERFORMING SWEEP TEST OF INSTALLED COAX.
 - CONCRETE PIERS FOR FOUNDATIONS SHALL BE DRILLED AND POURED ON THE SAME DAY.

- 1.2 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.
- HEIGHTS SHALL BE VERIFIED WITH OWNER PRIOR TO INSTALLATION.
- THESE PLANS ARE DIAGRAMMATIC ONLY, FOLLOW AS CLOSELY AS POSSIBLE.
- ELECTRICAL SERVICE 120 / 208 VAC 3-PHASE 4-WIRE 100 AMP SERVICE 120 / 240 VAC SINGLE PHASE 3-WIRE 200 AMP SERVICE
- 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.
- METER SOCKET AMPERES, VOLTAGE, NUMBER OF PHASES SHALL BE AS NOTED ON THE DRAWINGS, MANUFACTURED BY "SQUARE D COMPANY", OR APPROVED EQUAL.
- 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 IN CEILINGS OR WALLS 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.
- CONTRACTOR TO PROVIDE DAILY UPDATES TO PM UNTIL FINAL ELECTRICAL SERVICE IS EFFECTED.
- 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.
- CONTRACTOR TO COORDINATE WITH UTILITY COMPANY FOR CONNECTION OF TEMPORARY AND PERMANENT POWER TO THE SITE. THE TEMPORARY POWER AND ALL HOOKUP COSTS TO BE PAID BY CONTRACTOR.

GROUNDING STANDARDS:

- 1.0 DEFINITIONS**
- AGB: ANTENNA GROUND BAR
- AWG: AMERICAN WIRE GAUGE
- CADWELDING: AN EXOTHERMIC WELDING PROCESS WHICH CREATES POSITIVE CONTACT OF POSITIVE CONTACT OF GROUNDING CONDUCTORS
- EMT: ELECTRICAL METAL TUBING (LIGHT GAUGE METALLIC CONDUIT)
- MGB: MASTER GROUND BAR
- PVC: POLYVINYL CHLORIDE CONDUIT
- RFI: RADIO FREQUENCY INTERFERENCE
- TGB: TOWER GROUND BAR
- THWN: LETTER TYPE DESIGNATION FOR CONDUCTOR INSULATION THAT IS A MOISTURE AND HEAT RESISTANT THERMOPLASTIC WITH A MAXIMUM OPERATING TEMPERATURE OF 75 DEGREES CELSIUS OR 167 DEGREES FAHRENHEIT
- T/I: TENANT IMPROVEMENT

- 2.0 BACKGROUND**
- 2.1 AREAS OF CONCERN:** WHEN DESIGNING A GROUNDING SYSTEM FOR A MOBILE RADIO FACILITY THERE ARE FOUR INTERRELATED AREAS OF CONCERN. THE BASIC OBJECTIVE FOR EACH IS:
- LIGHTNING PROTECTION -TO MAINTAIN ALL EQUIPMENT AT THE SAME POTENTIAL DURING A LIGHTNING IMPULSE.
 - RFI FOR NOISE INDUCTION CONTROL -TO ESTABLISH THE LOWEST POSSIBLE IMPEDANCE AMONG ALL EQUIPMENT.
 - ELECTROSTATIC CONTROL -TO REDUCE ELECTROSTATIC DISCHARGE PROBLEMS.
 - PERSONNEL SAFETY -TO MAINTAIN A MINIMUM VOLTAGE DIFFERENCE BETWEEN ANY TWO METALLIC OBJECTS WHICH PERSONNEL MIGHT CONTACT SIMULTANEOUSLY.
- 2.2 A/C GROUNDING:** IN THIS GROUNDING SYSTEM THE A/C SERVICE GROUND SHALL BE KEPT ISOLATED FROM THE EQUIPMENT FRAME WORK AND LIGHTNING PROTECTION GROUND SYSTEMS EXCEPT FOR ONE SPECIFIC POINT. THIS POINT IS THE MAIN GROUNDING POINT OF THE SYSTEM. THIS WOULD TYPICALLY BE CONNECTING THE A/C SERVICE GROUND AT THE COMMERCIAL POWER RISER POLE DISCONNECT/METER BASE TO THE EXTERNAL GROUND RING. ALL GROUNDING CONNECTIONS INSIDE OF CABINETS SHALL BE SCRAPED TO BARE METAL AND COATED WITH NOALOX.

- 2.3 LIGHTNING CONSIDERATIONS:** LIGHTNING DAMAGE OCCURS FROM EITHER INDUCTION OR FROM AN ACTUAL DIRECT STRIKE TO THE BUILDING, USUALLY TAKEN THROUGH THE TOWER AND/OR ANTENNAS. STRIKES TO OTHER NEARBY OBJECTS INDUCE HIGH ENERGY INTO POWER OR TELEPHONE CABLES ENTERING THE BUILDING. THIS TYPE OF EFFECT HISTORICALLY CAUSES MOST OF THE DAMAGE TO THE BUILDING AND ITS CONTENTS.

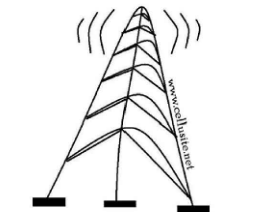
- 3.0 STATION GROUNDING SYSTEM**
- 3.1 MATERIALS:**
- #2 AWG, BARE SOLID TINNED COPPER WIRE, FOR ALL EXTERIOR CONDUCTORS AND TOWER GROUND BAR CONDUCTORS OR AS OTHERWISE SPECIFIED. GROUNDS TO THE LNAS SHALL BE NO. 6 STANDARD GREEN INSULATED JUMPERS. THE GROUND WIRE TO THE MGB SHALL BE GREEN JACKETED STRANDED #2 TINNED WIRE BURNDY CONNECTED TO THE BUSS BAR AND CONNECTED TO THE GROUND RING ON A GROUND ROD.
 - #2 AWG, INSULATED STRANDED COPPER CABLE IS ACCEPTABLE FOR INTERIOR GROUND BAR CONDUCTORS ON TENANT IMPROVEMENT SITES.
 - 5/8" X 10" GROUND RODS OF SOLID COPPER, STAINLESS STEEL OR COPPER CLAD HIGH STRENGTH STEEL.
 - ABOVE GRADE CONNECTIONS SHALL BE BURNDY HYGROUND COMPRESSION. BELOW GRADE CONNECTIONS SHALL BE CAD WELD OR OTHER APPROVED EXOTHERMIC WELDING SYSTEM FOR BONDING AS SPECIFIED.
 - XIT OR ADVANCED GROUNDING ELECTRODE (AGE), ALL CHEMICAL GROUND RODS SHALL BE UL APPROVED.
 - SOLID COPPER PLATES OF MINIMUM 3'X3'X1/4" SIZE AS SPECIFIED.
 - NOALOX OR APPROVED EQUAL CONDUCTIVE MEDIUM MATERIAL SHALL BE USED IN ALL MECHANICAL CONNECTIONS.
 - #2 AWG STRANDED INSULATED (GREEN) FOR ALL INTERNAL EQUIPMENT GROUNDING.
 - MECHANICAL FASTENERS (I.E., DOUBLE LUGS, SPLIT BOLTS PARALLEL CONNECTORS) SHALL BE BRONZE, BRASS, COPPER OR STAINLESS STEEL AND HAVE NOALOX BETWEEN CONDUCTOR AND CONNECTION.
 - BOLTS, NUTS AND SCREWS USED TO FASTEN MECHANICAL CONNECTORS SHALL BE STAINLESS STEEL WITH STAR TYPE STAINLESS STEEL LOCK WASHERS.
 - ALL LUG TUBE FASTENERS SHALL PROVIDE TWO HOLES TO ALLOW A DOUBLE BOLT CONNECTION.

- 3.2 MASTER GROUND BAR (MGB):** THE PURPOSE OF THE MASTER GROUND BAR IS TO GROUND THE BTS AND ANY OTHER METALLIC OBJECTS AROUND THE BTS. IF AN MGB IS NOT PROVIDED WITH THE BTS, THE MGB SHALL BE AS FOLLOWS: THE MGB IS A COPPER BAR MEASURING 4"W X 24"L X 1/4" LOCATED AS CLOSE TO THE BTS AS POSSIBLE. THE MGB SHALL HAVE A MINIMUM NUMBER OF (28) 3/8" HOLES. GROUND BAR SHALL BE SUPPORTED BY MOUNTING BRACKETS WITH INSULATOR STANDOFFS. (2) #2 TINNED SHALL BE MECHANICALLY ATTACHED (2-HOLE COMPRESSION LUG 3/8" HOLES, 1" CENTER TO CENTER SPACING) TO THE MGB AND DOWN LEADS THEN TAKEN THROUGH CONDUIT TO THE GROUND RING. THIS CONDUCTOR SHALL BE KEPT SEPARATE AND ISOLATED UNTIL TERMINATING AT THE MAIN GROUNDING POINT, (I.E. EXTERIOR GROUND RING OR BUILDING STEEL).

- 3.3 ANTENNA GROUND BAR (AGB):** THE PURPOSE OF THE ANTENNA GROUND BAR IS PRIMARILY FOR LIGHTNING PROTECTION. COAXIAL CABLE IS USUALLY THE ONLY ITEM GROUNDED TO THIS BAR. HOWEVER IT IS ACCEPTABLE TO BOND EXTERIOR; CABLE TRAY, WAVE GUIDE PORTS AND CANTILEVERED WAVE GUIDE BRIDGES TO THE AGB. THE AGB IS A COPPER BAR MEASURING 4"W X 24"L X 1/4". THERE SHALL BE TWO AGBS, ONE LOCATED AT THE TOP OF THE TOWER AT THE START OF THE VERTICAL RUN OF COAX, THE OTHER AT THE BOTTOM OF THE VERTICAL RUN OF COAX BEFORE IT MAKES ITS BEND. (IF THE TOWER IS OVER 200' THERE SHALL BE A THIRD AGB LOCATED AT THE MIDDLE OF THE TOWER). THE AGB SHALL HAVE A MINIMUM OF (28) 3/8" HOLES. GROUND BARS SHALL BE SUPPORTED BY MOUNTING BRACKETS WITH INSULATOR STANDOFFS. USE #2 AWG SOLID TINNED WIRE W/ 2-HOLE SHORT BARREL COMPRESSION LUGS 3/8" HOLES, 1" CENTER TO CENTER SPACING). THIS CONDUCTOR SHALL BE KEPT SEPARATE AND ISOLATED UNTIL TERMINATING AT THE MAIN GROUNDING POINT (I.E. EXTERIOR GROUND RING, OR BUILDING STEEL.)

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CHICAGO, ILLINOIS 60631

PLANS PREPARED FOR:
Parallel
INFRASTRUCTURE

PLANS PREPARED BY:
CelluSite, LLC


ENGINEERING LICENSE:

DATE:	DESCRIPTION:	BY:	REV:
05/24/15	REVIEW CD	BMW	A
05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:
ML63039H
FITZPATRICK TRUST
WI-Waukesha
1436 E RACINE AVE.
Waukesha, WI 53189
Waukesha COUNTY

SHEET TITLE:
GENERAL NOTES & SPECIFICATIONS

SHEET NUMBER:
T-2

GROUNDING STANDARDS (CONT.):

3.4 SURGE ARRESTOR GROUND BAR: THE PURPOSE OF THE SURGE ARRESTOR GROUND BAR IS FOR LIGHTING PROTECTION. THE SURGE ARRESTOR GROUND BAR IS A BENT (3" X 3") X 1/4" X 24" COPPER BAR. IT IS LOCATED ON THE WAVEGUIDE BRIDGE SUPPORT CLOSEST TO THE EQUIPMENT. ONE FACE OF THE BAR SHALL HAVE A MINIMUM OF (28) 3/8" DIA. HOLES. HOLES SHALL BE IN PAIRS THAT ARE 1" CENTER TO CENTER. THE OTHER FACE SHALL HAVE 3/8" DIA. HOLES AS REQUIRED TO ATTACH AND GROUND COAXIAL SURGE ARRESTORS. THE GROUND BAR SHALL BE SUPPORTED BY MOUNTING BRACKETS WITH INSULATOR STANDOFFS.

3.5 GROUND ROD AND GROUND RING PLACEMENT: THE OUTSIDE GROUND RING SHALL BE PLACED AROUND THE BTS AT A DISTANCE OF TWO (2) FEET FROM THE BTS AT A DEPTH OF 2'-6" OR 6" BELOW THE FROST LINE, WHICHEVER IS DEEPER. RODS SHALL BE DRIVEN TO A DEPTH SUCH THAT THE TOP OF THE RODS IS AT THE LEVEL OF THE GROUND RING CONDUCTOR. THE RODS SHALL BE PLACED MINIMALLY ALONG THE RING AT THE FOLLOWING LOCATIONS:

- A. BELOW THE AREA OF THE INTERNAL MASTER GROUND BAR FOR CONNECTION TO THE MGB.
- B. BELOW THE UTILITY RACK FOR CONNECTION TO THE MAIN BUILDING COMMERCIAL POWER DISCONNECT.
- C. BELOW THE CORNERS OF THE BTS.
- D. AS REQUIRED TO ACHIEVE A RECOMMENDED SPACING OF TWENTY (20) FEET BETWEEN GROUND RODS ALONG THE RING PERIMETER.
- E. AS REQUIRED ALONG THE RING PERIMETER TO ACHIEVE 5 OHMS OR LESS RESISTANCE WHEN TESTED.
- F. TWO RODS LOCATED ON OPPOSITE SIDES AT EACH TOWER LEG OR MONOPOLE.
- G. ONE ROD LOCATED BENEATH EACH END OF THE WAVE GUIDE BRIDGE OR CABLE TRAY.
- H. ONE ROD LOCATED ADJACENT TO THE STANDBY GENERATOR, AND IF SEPARATED BY MORE THAN TEN (10) FEET, ONE LOCATED ADJACENT TO THE FUEL TANK.
- I. ONE ROD LOCATED AT THE BASE OF THE TOWER FOR THE TGB.

3.6 TOWER GROUNDING: ALL MONOPOLES SHALL HAVE TWO GROUND RODS (MINIMUM). ALL OTHER TOWERS SHALL HAVE TWO GROUND RODS PLACED AT THE BASE OF EACH TOWER LEG. EACH MONOPOLE OR TOWER LEG SHALL BE BONDED TO THE SYSTEM VIA TWO #2 BARE TINNED SOLID COPPER CONDUCTORS. BURNDY CONNECT THE CONDUCTORS TO ONLY STRUCTURAL BASE PLATES OR LUGS OR EARS AS MAY BE PROVIDED. NO BURNDY CONNECTIONS SHALL BE MADE TO THE VERTICAL WALLS OF THE STRUCTURE. NEVER GROUND TO HOLLOW LEG MEMBERS.

3.7 ANTENNA GROUNDING: EACH ANTENNA COAXIAL CABLE SHALL TYPICALLY BE GROUNDING AT THREE POINTS USING A HARD-SHELL COAXIAL CABLE KIT FROM THE MANUFACTURER OF THE ANTENNA CABLE. A TYPICAL INSTALLATION SHALL BE AS FOLLOWS:

- A. THE FIRST GROUND CONNECTION SHALL OCCUR AS CLOSE TO THE ANTENNA AS POSSIBLE, BELOW THE FIRST POINT THE COAX CABLE BEGINS TO RUN VERTICAL DOWN THE TOWER. THIS GROUND SHALL TERMINATE DIRECT TO THE TOP AGB. ON A T/I, GROUND TO THE AGB AT THE ANTENNA MOUNTS.
- B. THE SECOND GROUND SHALL BE MADE AT THE BOTTOM OF THE VERTICAL RUN OF THE COAXIAL CABLE AS IT TURNS OUT AWAY FROM THE TOWER TOWARDS THE BTS. THIS GROUND SHALL BE TERMINATED AT THE TGB. THE TGB SHALL HAVE TWO (2) LEADS OF #2 AWG BARE TINNED SOLID COPPER WIRE, AND SHALL TERMINATE AT THE TOWER GROUND RING. THESE SHALL BE ENCASED IN PVC PIPE.
- C. THE THIRD GROUND SHALL BE ON THE SURGE ARRESTOR. GROUND TO BE ATTACHED TO THE CABLE ON STRAIGHT RUNS (NOT WITHIN BENDS) AND BE WEATHERPROOFED PER THE MANUFACTURER'S SPECIFICATIONS. THE SURGE ARRESTORS SHALL BE GROUNDING TO THE GROUND BAR. THE SAGB SHALL HAVE TWO (2) LEADS OF #2 AWG BARE TINNED SOLID COPPER WIRE, AND SHALL TERMINATE AT THE TOWER GROUND RING. THESE SHALL BE ENCASED IN PVC PIPE.

3.8 PERIMETER FENCE GROUNDING:

- A. ALL FENCE CORNER AND END POSTS (MINIMUM OF TWO) SHALL HAVE ONE #2 SOLID TINNED COPPER GROUND WIRE CONNECTED TO A 5/8" X 10" SOLID COPPER GLAD GROUND ROD NEXT TO THE POST. THESE POSTS SHALL BE CONNECTED TO THE GROUND RING WITH A #2 SOLID TINNED COPPER GROUND WIRE AND INTERMEDIATE GROUND RODS IF THE DISTANCE FROM THE POST TO THE GROUND RING EXCEEDS 10 FEET. IN NO CASE SHALL ANY PORTION OF THE SAME FENCE REMAIN DISCONNECTED FROM THE GROUND RING.
- B. GATE POSTS SHALL BE GROUNDING TO EACH OTHER TO ENSURE THE ENTIRE FENCE HAS ELECTRICAL CONTINUITY. CONNECTIONS SHALL BE DRILL AND TAP WITH BURNDY TYPE KC22 TO THE POST WITH A #2 AWG BARE SOLID TINNED COPPER WIRE.
- C. GATES SHALL BE BONDED TO GATE POSTS WITH A 18" BRAIDED STRAP TYPE B018G92. THE CONNECTIONS SHALL BE BURNDY 2-HOLE LUGS (3/8" HOLES, 1" CENTER TO CENTER) BOLTED THROUGH EACH POST.
- D. ALL DOWN LEADS TO EARTH WILL BE ENCASED IN 3/4 INCH PVC NON-METALLIC AND SEALED WITH SILICONE.

3.9 GENERATOR FUEL TANK GROUNDING: THE GENERATOR FUEL TANK, IF REQUIRED, SHALL BE CONNECTED IN AT LEAST ONE PLACE TO THE MAIN EXTERIOR GROUND RING. #2 AWG BARE SOLID TINNED COPPER WIRE SHALL BE BURNDY CONNECTED TO ONE SUPPORT LEG OF THE FUEL TANK AND CAD WELD TO THE NEAREST EXTERIOR GROUND RING/GROUND ROD.

3.10 EQUIPMENT ROOM GROUNDING: THE MASTER GROUND BAR (MGB) SERVES AS THE COLLECTION POINT FOR THE BTS AS WELL AS ALL INTERIOR NON-ELECTRICAL GROUNDING METAL MATERIALS (HVAC GRILLS, DOOR FRAMES/DOORS, TELCO BOARD, UNISTRUTS, CABLE TRAYS, ALARM JUNCTION BOX, ETC.) SHALL BE GROUNDING WITH #6 AWG STRANDED (GREEN) GROUND WIRES WITH INDIVIDUAL RUNS BACK TO THE MGB. (THE CABLE TRAY, DOOR/FRAME AND UNISTRUT MAY BE JUMPERED TOGETHER AND HAVE A SINGLE GROUND WIRE CONNECTION TO THE MGB.)

3.11 WALL PENETRATIONS SLEEVES: INSTALL PER CONSTRUCTION DRAWINGS.

3.12 A/C COMMERCIAL POWER GROUNDING CONNECTIONS: AT THE ON-SITE RISER POLE LOCATION OR UNDERGROUND SERVICE ENTRANCE LOCATION, THE A/C SERVICE SHALL BE MECHANICALLY BONDED TO THE A/C SERVICE ENTRANCE GROUND AS SPECIFIED BY THE NATIONAL ELECTRIC CODE, ARTICLE 250, AND/OR APPROPRIATE LOCAL CODES. A SEPARATE GROUND ROD SHALL BE PROVIDED AT THIS POINT, AND SHALL BE CONNECTED TO THE EXTERIOR GROUND RING. A SEPARATE A/C SERVICE GROUND AND NEUTRAL SHALL THEN BE ROUTED TO AND CONNECTED TO THE MAIN DISCONNECT INSIDE THE BUILDING OR AS REQUIRED BY LOCAL AUTHORITY.

3.13 GENERATOR RECEPTACLE GROUNDING: THE GENERATOR RECEPTACLE (HUBBLE PLUG) SHALL BE GROUNDING TO THE EGR.

3.14 COAX BRIDGE / CABLE TRAY GROUNDING : BOND THE COAX BRIDGE OR CABLE TRAY TO THE AGB WITH #2 SOLID TINNED GROUND WIRE. THESE CONNECTIONS SHALL BE DOUBLE LUG BOLTED / SCREWED MECHANICAL CONNECTIONS WITH STAR LOCK WASHERS AND NOALOX. ALL BRIDGE SPLICES SHALL HAVE JUMPER OF #2 SOLID WITH COMPRESSION LUGS.

3.15 CAD WELD & BURNDY CONNECTION:

CAD WELDS (EXOTHERMIC WELDS) AND BURNDY CONNECTIONS SHALL BOND ALL UNDERGROUND AND DAMP LOCATION CONNECTIONS, SHELTER SKID GROUNDS, TOWER OR MONOPOLE GROUNDS, FENCING CORNER AND GATE POSTS, ANTENNA GROUND BARS, (AGB) SURGE ARRESTER GROUND BAR, AND THE MASTER GROUND BAR (MGB). MECHANICAL CONNECTIONS SHALL BE TYPICALLY USED TO BOND ALL INTERIOR EQUIPMENT, COAX CABLE BRIDGES AND COAXIAL CABLE GROUND KITS. ALL LUG TYPE MECHANICAL CONNECTORS TO THE MGB OR AGB SHALL BE TWO HOLE TYPE CONNECTED WITH STAINLESS STEEL BOLTS AND NUTS WITH STAINLESS STEEL LOCK WASHERS AND NOALOX ON EITHER SIDE OF THE BUSS BAR.

3.16 CHEMICAL GROUND RODS: CHEMICAL GROUND RODS SHALL NOT BE INSTALLED ON GROUND RING INSTALLATIONS WITH NORMAL SOIL. CHEMICAL GROUND RODS SHALL BE INSTALLED ONLY FOR SPECIAL DESIGN APPLICATIONS THAT REQUIRE SINGLE POINT GROUNDING DUE TO SPECIFIC SITE CONDITIONS.

3.17 TENANT IMPROVEMENT SITE GROUNDING: FOR ROOF TOP ANTENNA INSTALLATIONS ADDITIONAL ANTENNA GROUND BARS MAY HAVE TO BE INSTALLED AT EACH ANTENNA MOUNT LOCATION. ALL ANTENNA MOUNTS SHALL BE GROUNDING WITH A #2 AWG CONDUCTOR CONNECTED TO THE NEAREST BUILDING STEEL OR THE AGB INSTALLED AT THE MOUNT. ALL BUSS BARS, BOTH MGB AND AGB(S), SHALL BE INDEPENDENTLY TIED TO THE NEAREST BUILDING STEEL OR DESIGNATED GROUNDING SYSTEM. AGB(S) MAY BE HOME RUN BACK TO THE MGB WHERE NO BUILDING STEEL IS AVAILABLE.

3.18 LIMITS OF BEND RADIUS: IT IS IMPORTANT THAT THE GROUNDING CONDUCTOR CONNECTING THE INSIDE AND OUTSIDE GROUND SYSTEMS BE AS STRAIGHT AS POSSIBLE, WITH NO TURN OR BEND SHORTER THAN ONE FOOT RADIUS WITH A THREE FOOT RADIUS PREFERRED. NO RIGHT ANGLE OR SHARP BENDS SHALL BE ALLOWED.

3.19 BONDING PREPARATION & FINISH: ALL SURFACES REQUIRE PREPARATION PRIOR TO BONDING OF EITHER CAD WELD OR BURNDY FASTENERS. GALVANIZED SURFACES SHALL BE GROUND OR SANDED TO THE POINT OF EXPOSING THE STEEL SURFACE BELOW, PRIOR TO BONDING THE GROUND CONDUCTOR. FOR OTHER SURFACES INCLUDING COPPER BUSS BARS ALL PAINT, RUST TARNISH AND GREASE SHALL BE REMOVED PRIOR TO BONDING THE GROUND CONDUCTOR. CAD WELD TYPE BONDS SHALL BE FINISHED WITH THE APPLICATION OF COLD GALVANIZATION AND WHEN APPLICABLE, FINISH PAINTED WITH AN APPROPRIATE COLOR AS REQUIRED. MECHANICAL TYPE BONDS ON BUSS BARS SHALL BE FINISHED WITH THE APPLICATION OF NOALOX OR OTHER APPROVED CONDUCTIVE MEDIUM MATERIAL BETWEEN CONNECTOR AND BUSS BAR. MECHANICAL TYPE BONDS ON ALL OTHER SURFACES SHALL BE FINISHED WITH THE APPLICATION OF COLD GALVANIZATION AND/OR THE APPROPRIATE PAINT TO MATCH AS REQUIRED.

3.20 TESTING: THE OUTSIDE GROUND RING SHALL BE TESTED AFTER INSTALLATION BUT PRIOR TO BACKFILLING THE GROUND RING TRENCH. THE GROUND FIELD RESISTANCE SHALL MEASURE 5 OHMS OR LESS TO GROUND. ANY DIFFICULTY IN ACHIEVING THIS LEVEL OF RESISTANCE MUST BE BROUGHT TO THE ATTENTION OF THE PROJECT MANAGER. THE RESISTANCE TO GROUND SHALL BE MEASURED USING THE FALL OF POTENTIAL METHOD. TESTING SHALL BE PERFORMED BY AN OWNER PROVIDED INDEPENDENT TESTING LABORATORY FROM WHICH A WRITTEN REPORT SHALL BE PRODUCED FOR REVIEW BY THE PROJECT MANAGER.

3.21 SPECIAL CONDITIONS: WHEN SOIL CONDITIONS EXIST (I.E., NON-COMPACTABLE ROCK, GRAVEL, SHALE, ETC.) THAT PREVENTS THE INSTALLATION OF THE STANDARD GROUNDING SYSTEM AND PROCEDURES, THEN VERBAL PROCEDURES SHALL BE REQUESTED BY THE PM.

3.22 EXTERNAL GROUND RING: THE EXTERNAL GROUND RING SHALL EXTEND TO THE MAXIMUM ALLOWABLE DEPTH IN 95% COMPACTED SOIL.

3.23 GROUND RODS (REPLACEMENT): WHEN GROUND RODS CANNOT BE DRIVEN INTO THE SOIL VERTICALLY TO A DEPTH DESCRIBED IN PARAGRAPH 3.5, AND REMAIN IN 95% COMPACTED SOIL, THEN THE FOLLOWING METHODS OF SUBSTITUTION MAY BE USED. THESE ARE SUGGESTED METHODS ONLY, AND EACH CASE SHOULD BE REVIEWED BY THE T-MOBILE PROJECT MANAGER. THE PURPOSE IS TO ACHIEVE THE LOWEST IMPEDANCE TO GROUND, IN ANY CASE, EQUAL TO OR LESS THAN 5 OHMS.

3.24 ROCK WITH SOME OR NO SOIL COVER: FOR SITES WHICH HAVE SOIL CONDITIONS WHICH CONSIST OF SOLID OR SEMI SOLID ROCK BELOW ABOUT THREE FEET OF COMPATIBLE SOIL, A COMBINATION OF METHODS MAY BE USED:

- A. A COMBINATION OF SHORT GROUND RODS MAY BE USED WITH 3" BSQUARE 1/4" COPPER PLATES. A MINIMUM OF TWO PLATES SHOULD BE USED AND SHOULD REPLACE GROUND RODS ON AN EQUIVALENCY OF TWO GROUND ROD LENGTHS PER COPPER PLATE. THE COPPER PLATE SHOULD BE PLACED IN A MINIMUM 3" BENTONITE BASE AND COVERED WITH 3" OF BENTONITE FILL PRIOR TO BACKFILL.
- B. AN ACTIVE TYPE CHEMICAL ROD SYSTEM MAY BE USED. THIS IS AN ENGINEERING JUDGMENT AND SHOULD BE USED ONLY WHERE NECESSARY, DUE TO EXPENSE. IN ALL CASES, THE STANDARD PRACTICES OUTLINED IN THIS DOCUMENT SHOULD BE FOLLOWED TO THE EXTENT THAT IS APPLICABLE, AND SHOULD BE MODIFIED AS TO THE QUANTITY OF GROUND RODS AND CONDUCTOR SIZE ONLY AS RECOMMENDED BY THE MANUFACTURER OF THE GROUND ROD SYSTEM.
- C. A SYSTEM UTILIZING CORED SHAFTS, STANDARD GROUND RODS ON A TYPICAL LAYOUT, WITH A BENTONITE (CLAY) BACKFILL. IN THIS CASE EACH GROUND ROD SHOULD BE TESTED INDIVIDUALLY, AND EACH ROD SHOULD HAVE AN ACCESS BOX PLACED FOR FUTURE TESTING.

3.24 HIGH RISE BUILDING:

- A. HIGH RISE BUILDINGS PRESENT A UNIQUE PROBLEM IN GROUNDING. A FACILITY INVESTIGATION SHOULD BE MADE INTO THE STRUCTURE OF THE BUILDING, AND AS TO THE POSSIBLE PRESENCE OF AN EXISTING LIGHTNING PROTECTION SYSTEM. IF ONE IS IN PLACE AND APPEARS ADEQUATE IN DESIGN, IT MAY BE NECESSARY TO CONNECT THE ANTENNA SYSTEM TO THE EXISTING SYSTEM, WITH A TEST TO THE SYSTEM AFTER INSTALLATION TO ENSURE THAT IT HAS NOT CAUSED THE SYSTEM TO EXCEED 5 OHMS.
- B. STRUCTURAL STEEL BUILDINGS: IF THE BUILDING IS BUILT OF STRUCTURAL STEEL, IT MAY BE POSSIBLE TO GROUND THE ANTENNAS TO THE BUILDING SITE. IT IS PREFERABLE TO GROUND THE ANTENNAS AND THE SITE TO A DIRECT EARTH CONNECTION, BY USE OF SEPARATE DOWN LEADS OF CONSIDERABLE SIZE (250 MCM OR LARGER) COMING FROM GROUND BUSS BARS TO COLLECT THE GROUND INPUT, AND RUN DOWN A VERTICAL SHAFT OR STAIRWELL TO A PATTERN OF NO LESS THAN FOUR GROUND RODS. WHERE PRACTICAL, THE BUILDING STEEL SHOULD BE BONDED TO THE GROUND RING WITH A SEPARATE LEAD TO THE GROUND ROD FIELD.
- C. A SYSTEM STRUCTURAL CONCRETE BUILDINGS ARE MORE DIFFICULT TO GROUND PROPERLY. THE ANTENNAS SHOULD BE GROUNDING TO A SEPARATE BUSS BAR AND DOWN LEAD WHERE THE COAXIAL CABLES ENTER THE BUILDING. THE DOWN LEAD SHOULD BE RUN IN A SIMILAR FASHION AS IN THE STRUCTURAL STEEL EQUIPMENT ROOM. THE DOWN LEADS SHOULD BE PROTECTED IN CONDUIT AND SHOULD BE INSTALLED AS FAR APART AS IS PRACTICAL FROM EACH OTHER. THE SEPARATE DOWN LEADS SHOULD NOT CONTACT EACH OTHER UNTIL CONNECTION WITH THE FIRST GROUND ROD



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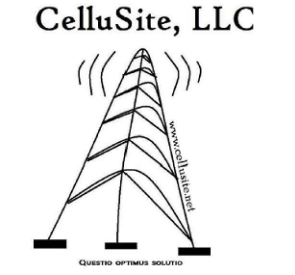


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PLANS PREPARED FOR:



PLANS PREPARED BY:



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DATE:	DESCRIPTION:	BY:	REV:
05/24/15	REVIEW CD	BMW	A
05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:

ML63039H

FITZPATRICK TRUST

WI-Waukesha

1436 E RACINE AVE.
Waukesha, WI 53189
Waukesha COUNTY

SHEET TITLE:

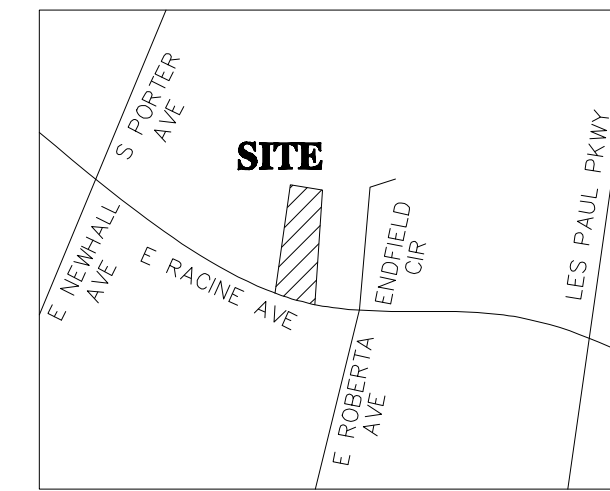
GENERAL NOTES & SPECIFICATIONS

SHEET NUMBER:

T-3

SURVEY PLAT

OWNER: TRUSTEE OF THE PATRICK J FITZPATRICK TRUST
 ADDRESS: 1436 E. RACINE AVENUE, WAUKESHA, WISCONSIN 53151
 WAUKESHA COUNTY



VICINITY MAP
NOT TO SCALE

UTILITY CONTACT INFORMATION

POWER CONTACT: TBD
 TELEPHONE CONTACT: TBD

TITLE REPORT INFORMATION

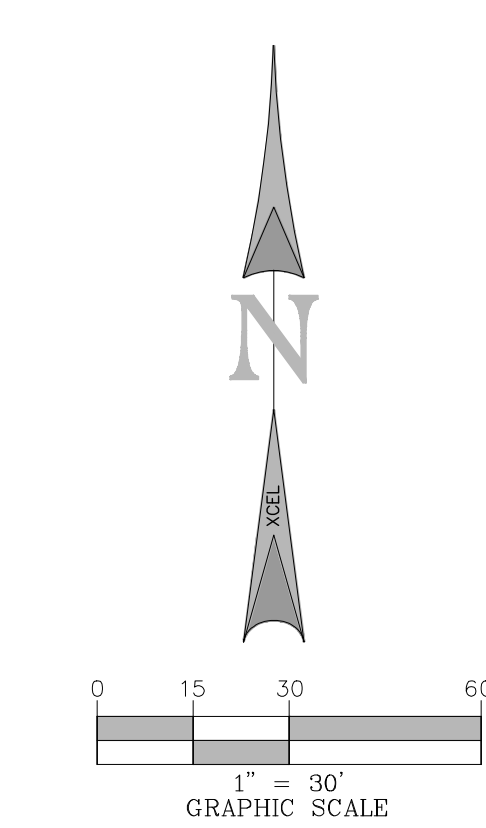
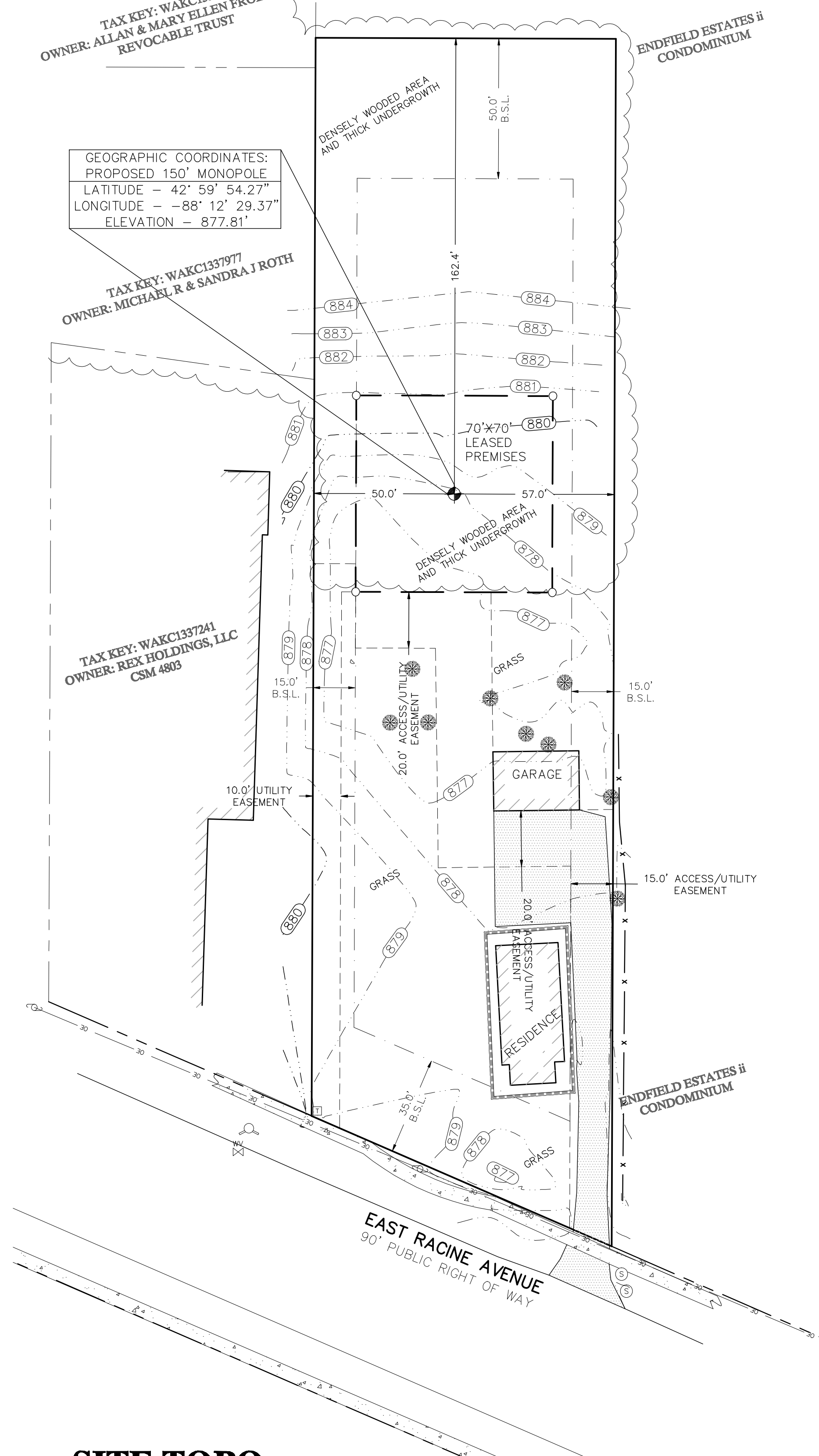
- DEFECTS, LIENS, ENCUMBRANCES, ADVERSE CLAIMS OR OTHER MATTERS, IF ANY, CREATED, FIRST APPEARING IN THE PUBLIC RECORDS OR ATTACHING SUBSEQUENT TO THE EFFECTIVE DATE BUT PRIOR TO THE DATE THE PROPOSED INSURED ACQUIRES FOR VALUE OF RECORD THE ESTATE OR INTEREST OR MORTGAGE THEREON COVERED BY THIS COMMITMENT. NOTE: EXCEPTION 1 WILL BE REMOVED ONLY IF NO INTERVENING MATTERS APPEAR OF RECORD BETWEEN THE EFFECTIVE DATE OF THIS COMMITMENT AND THE RECORDING OF THE INSTRUMENTS CALLED FOR AT ITEM (C) OF SCHEDULE B-1, OR IF A GAP ENDORSEMENT IS ISSUED IN CONJUNCTION WITH THIS COMMITMENT AND THE REQUIREMENTS FOR THE ISSUANCE OF "GAP" COVERAGE AS DESCRIBED IN THE ENDORSEMENT ARE MET, INCLUDING THE PAYMENT OF THE PREMIUM. **(NOT A SURVEY MATTER)**
- SPECIAL TAXES OR ASSESSMENTS, IF ANY, PAYABLE WITH THE TAXES LEVIED OR TO BE LEVIED FOR THE CURRENT AND SUBSEQUENT YEARS. NOTE: EXCEPTION 2 WILL BE REMOVED ONLY IF THE COMPANY RECEIVES WRITTEN EVIDENCE FROM THE MUNICIPALITY THAT THERE ARE NO SPECIAL ASSESSMENTS AGAINST THE LAND, OR THAT ALL SUCH ITEMS HAVE BEEN PAID IN FULL. **(NOT A SURVEY MATTER)**
- LIENS, HOOD-UP CHARGES OR FEES, DEFERRED CHARGES, RESERVE CAPACITY ASSESSMENTS, IMPACT FEES, OR OTHER CHARGES OR FEES DUE AND PAYABLE ON THE DEVELOPMENT OR IMPROVEMENT OF THE LAND, WHETHER ASSESSED OR CHARGED BEFORE OR AFTER THE DATE OF POLICY. THE COMPANY ASSURES THE PRIORITY OF THE LIEN OF THE INSURED MORTGAGE OVER ANY SUCH LIEN, CHARGE OR FEE. NOTE: EXCEPTION 3 WILL BE REMOVED ONLY IF THE COMPANY RECEIVES (1) WRITTEN EVIDENCE FROM THE MUNICIPALITY THAT THERE ARE NO DEFERRED CHARGES, HOODUP FEES, OR OTHER FEES OR CHARGES ATTACHING TO THE PROPERTY; (2) EVIDENCE THAT THE LAND CONTAINS A COMPLETED BUILDING; AND (3) A STATEMENT SHOWING THAT THE LAND HAS A WATER AND SEWER USE ACCOUNT. IF THE LAND IS VACANT, THIS EXCEPTION WILL NOT BE REMOVED. **(NOT A SURVEY MATTER)**
- ANY LIEN, OR RIGHT TO A LIEN, FOR SERVICES, LABOR, OR MATERIAL HERETOFORE OR HEREAFTER FURNISHED, IMPOSED BY LAW AND NOT SHOWN BY THE PUBLIC RECORDS. NOTE: CONTACT THE COMPANY FOR INFORMATION ON THE DELETION OF THIS EXCEPTION. **(NOT A SURVEY MATTER)**
- RIGHTS OR CLAIMS OF PARTIES IN POSSESSION NOT SHOWN BY THE PUBLIC RECORDS. NOTE: EXCEPTION 5 WILL BE REMOVED ONLY IF THE COMPANY RECEIVES THE CONSTRUCTION WORK AND TENANTS AFFIDAVIT ON THE FORM FURNISHED BY THE COMPANY, IF THE AFFIDAVIT SHOWS THAT THERE ARE TENANTS, EXCEPTION 5 WILL BE REPLACED BY AN EXCEPTION FOR THE RIGHTS OF THE TENANTS DISCLOSED BY THE AFFIDAVIT. **(GENERAL STATEMENT)**
- ANY ENCROACHMENT, ENCUMBRANCE, VIOLATION, VARIATION, OR ADVERSE CIRCUMSTANCE AFFECTING THE TITLE THAT WOULD BE DISCLOSED BY AN ACCURATE AND COMPLETE LAND SURVEY OF THE LAND. **(GENERAL STATEMENT)**
- EASEMENTS OR CLAIMS OF EASEMENTS NOT SHOWN BY THE PUBLIC RECORDS. **(GENERAL STATEMENT)**
- ANY CLAIM OF ADVERSE POSSESSION OR PRESCRIPTIVE EASEMENT. NOTE: EXCEPTIONS 6, 7 AND 8 WILL BE REMOVED ONLY IF THE COMPANY RECEIVES AN ORIGINAL SURVEY WHICH (1) HAS A CURRENT DATE, (2) IS SATISFACTORY TO THE COMPANY, AND (3) COMPLIES WITH CURRENT ALTA/ACSM MINIMUM SURVEY STANDARDS OR WISCONSIN ADMINISTRATIVE CODE AE-7 TOGETHER WITH THE CERTIFICATION AGREED ON BETWEEN THE WISCONSIN LAND TITLE ASSOCIATION AND THE WISCONSIN SOCIETY OF LAND SURVEYORS ON APRIL 1, 1974. IF THE SURVEY SHOWS MATTERS WHICH AFFECT THE TITLE TO THE PROPERTY, EXCEPTIONS 6, 7 AND 8 WILL BE REPLACED BY EXCEPTIONS DESCRIBING THOSE MATTERS. **(GENERAL STATEMENT)**
- GENERAL TAXES FOR THE YEAR 2015, NOT YET DUE AND PAYABLE. **(NOT A SURVEY MATTER)**
- PUBLIC OR PRIVATE RIGHTS, IF ANY, IN SUCH PORTION OF THE SUBJECT PREMISES AS MAY BE PRESENTLY USED, LAID OUT OR DEDICATED IN ANY MANNER WHATSOEVER, FOR ROAD, STREET, HIGHWAY AND/OR ALLEY PURPOSES. **(GENERAL STATEMENT)**
- RIGHT TO A LIEN FOR UNPAID COMMISSIONS, IF ANY, IN FAVOR OF ANY REAL ESTATE BROKER FOR THE PROPERTY, PURSUANT TO WISCONSIN STATUTES. THIS EXCEPTION WILL BE REMOVED ON RECEIPT BY THE COMPANY OF SATISFACTORY AFFIDAVITS OF THE PRESENT OWNER AND PURCHASER THAT NO SUCH COMMISSIONS ARE OWED, OR THAT ALL COMMISSIONS WILL BE PAID AT CLOSING. NO BROKER LIEN OR NOTICE OF INTENT TO FILE LIEN HAS BEEN RECORDED AS OF THE EFFECTIVE DATE OF THIS COMMITMENT TO INSURE. **(NOT A SURVEY MATTER)**
- RIGHTS OF TENANTS IN POSSESSION INCLUDING ANY RIGHTS TO TENANTS FIXTURES OWNED BY SUCH TENANTS LOCATED ON THE DEMISED PREMISES AND ANY LIENS ON SUCH TENANTS FIXTURES, AND ALL PARTIES HAVING A LIEN ON OR CLAIMING BY, THROUGH OR UNDER THE LESSEE, WHICH PARTIES AND LIENS ARE NOT SEPARATELY SHOWN HEREIN. **(NOT A SURVEY MATTER)**

TAX KEY: WAKC1337985
 OWNER: ALLAN & MARY ELLEN FROELICH
 REVOCABLE TRUST

TAX KEY: WAKC1337977
 OWNER: MICHAEL R & SANDRA J ROTH

TAX KEY: WAKC1337241
 OWNER: REK HOLDINGS, LLC
 CSM 4803

GEOGRAPHIC COORDINATES:
 PROPOSED 150' MONOPOLE
 LATITUDE - 42° 59' 54.27"
 LONGITUDE - -88° 12' 29.37"
 ELEVATION - 877.81'



LEGEND

	BENCHMARK		MANHOLE (SEWER, WATER, FUEL, STORM, TRAFFIC, MISC)
	RIGHT OF WAY MARKER		FIRE HYDRANT
	SET 5/8" IRON ROD (UNLESS NOTED)		VALVE (GAS OR WATER)
	FND MONUMENT		DRAIN INLETS
	PROPERTY LINE		STREET LIGHT
	ADJACENT PROPERTY LINE		METER (GAS OR ELECTRIC)
	BUILDING SETBACK LINE		UTILITY POLE
	CENTERLINE		GUY WIRE
	EASEMENT LINE		DECIDUOUS TREE
	RIGHT OF WAY LINE		P.O.B. POINT OF BEGINNING
	SURVEY TIE LINE		P.O.C. POINT OF COMMENCEMENT
	OVERHEAD ELECTRIC LINE		P.O.T. POINT OF TERMINATION
	FENCE		R.O.W. RIGHT OF WAY
	BUILDING		(M&R) RECORD & MEASURED
	WALL		BLDG BUILDING
	CURB LINE		FND FOUND
	TREE LINE		B.S.L. BUILDING SET BACK LINE
	CONCRETE SURFACE		S.F. SQUARE FEET
	GRAVEL SURFACE		I.R. IRON ROD
			I.P. IRON PIN

SITE TOPO

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 CHICAGO, ILLINOIS 60631

PLANS PREPARED FOR:
Parallel
 INFRASTRUCTURE

PLANS COORDINATED BY:
CelluSite, LLC

 CREATING OPTIMAL SOLUTIONS

PLANS PREPARED BY:
 BRIAN HOLLAND
 (E) BHOLLAND@XCELCONSULTANTSINC.COM
 8300 42ND STREET WEST
 ROCK ISLAND, IL 61201
 (O) 309-787-9988
 (F) 309-756-5540
XCEL
 Consultants
 Civil Engineering & Professional Land Surveying
 JOB # 150566

DATE	DESCRIPTION	BY	REV

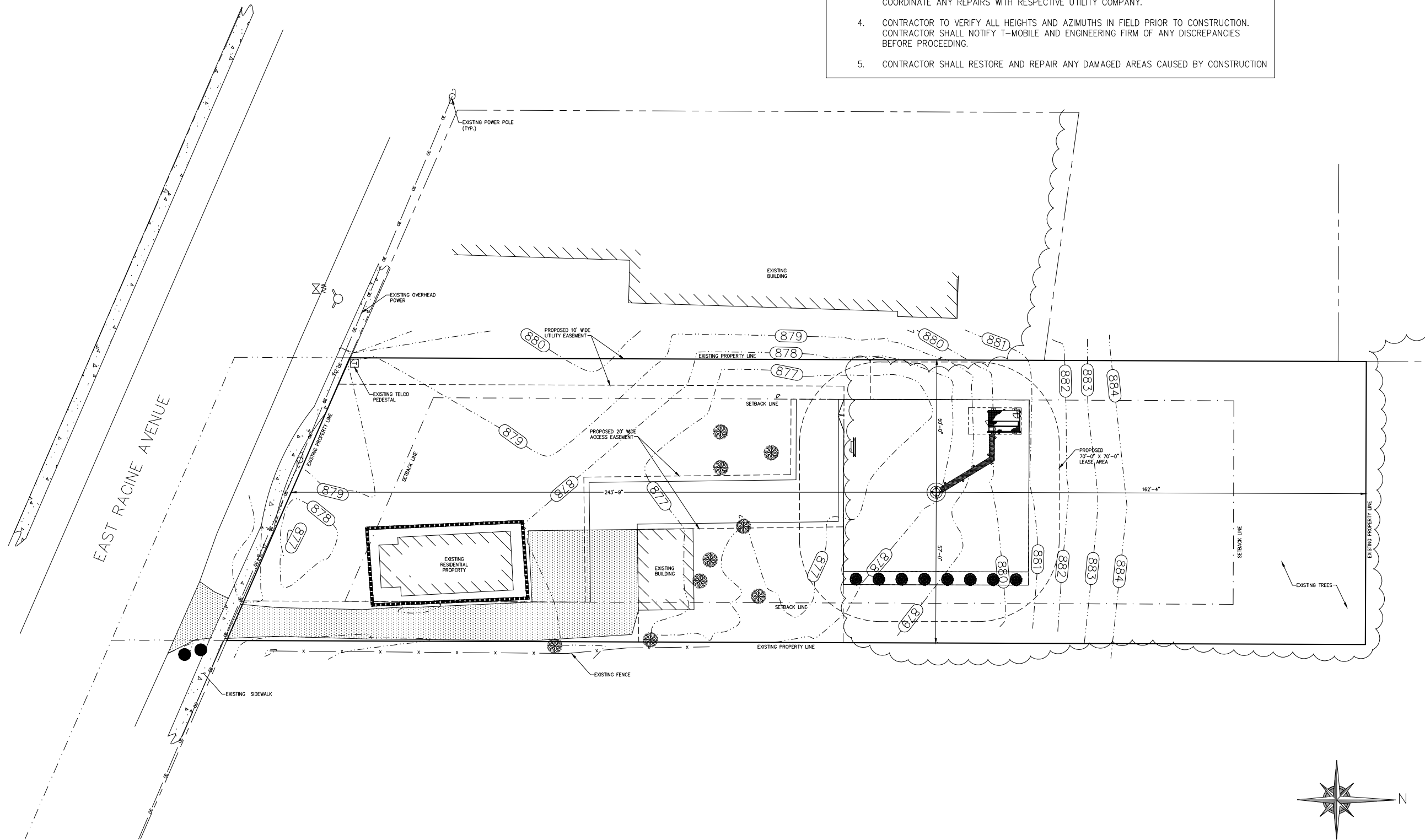
SITE INFORMATION:
ML6309
FITZPATRICK TRUST
 TRUSTEE OF THE PATRICK J
 FITZPATRICK TRUST
 1436 E. RACINE AVENUE
 WAUKESHA, WISCONSIN 53151
 WAUKESHA COUNTY

SHEET TITLE:
SURVEY PLAT

SHEET NUMBER:
1 OF 2

IMPORTANT SITE NOTES:

1. GENERAL 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. GENERAL 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



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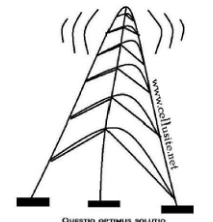
8550 BRYN MAWR AVENUE, SUITE 100
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PLANS PREPARED BY:

CelluSite, LLC



ENGINEERING LICENSE:

DATE:	DESCRIPTION:	BY:	REV:
05/24/15	REVIEW CD	BMW	A
05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:

ML63039H

FITZPATRICK TRUST

WI-Waukesha

1436 E RACINE AVE.
Waukesha, WI 53189
Waukesha COUNTY

SHEET TITLE:

OVERALL
SITE PLAN

SHEET NUMBER:

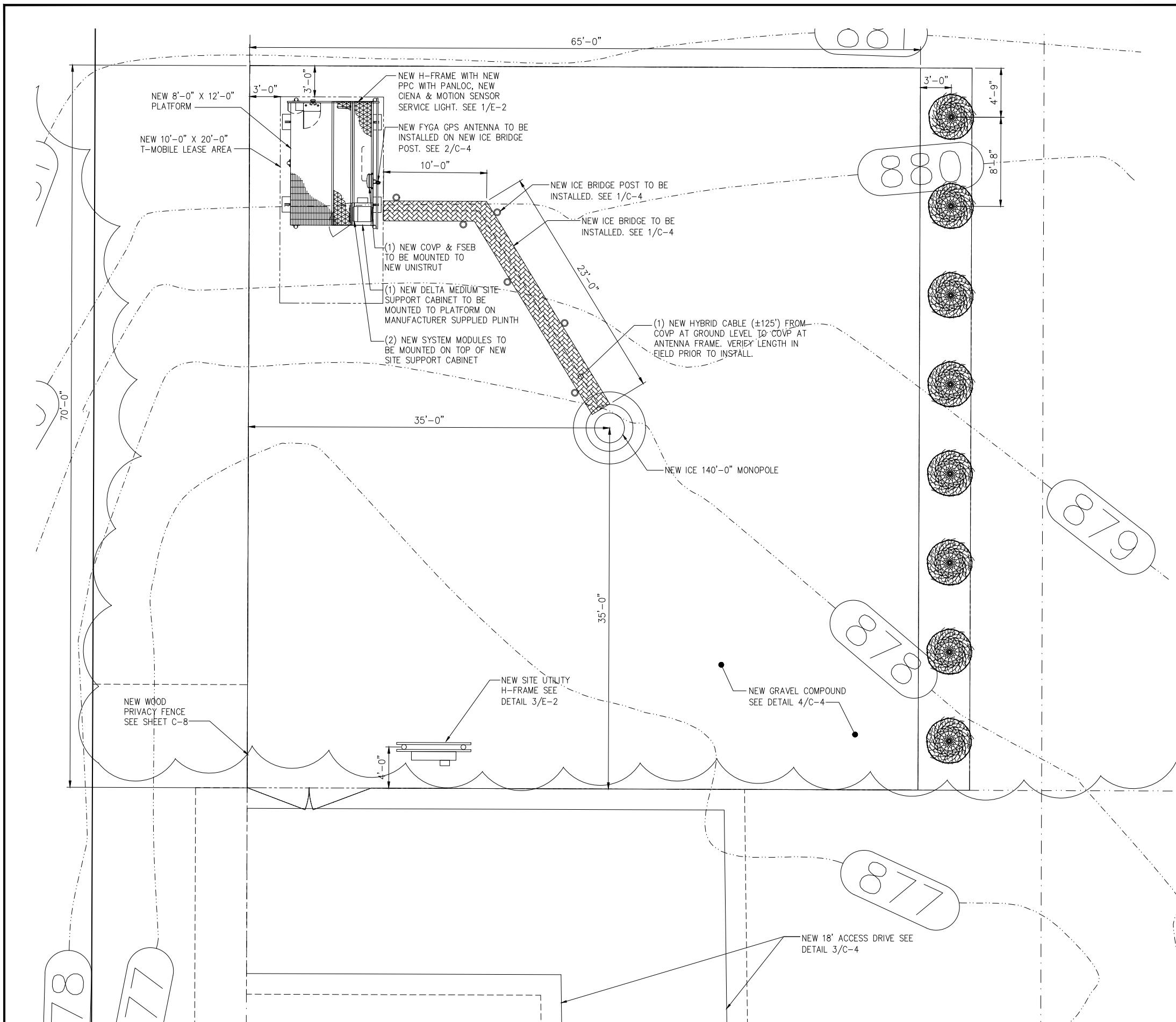
C-1

OVERALL SITE PLAN

SCALE: 1"=20'-0"

1

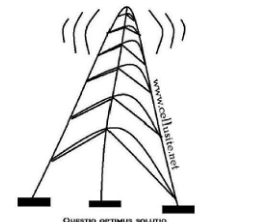
PLOT SCALE: 1:1 © 11"x17"



NOTE:
 ALL UNISTRUT, FASTENERS, HARDWARE, ETC. ARE TO BE EITHER HOT-DIPPED GALVANIZED OR STAINLESS STEEL. GENERAL CONTRACTOR IS NOT TO USE ZINC-PLATED OR PRE-GALVANIZED.

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ENGINEERING LICENSE:

DATE	DESCRIPTION	BY	REV
05/24/15	REVIEW CD	BMW	A
05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

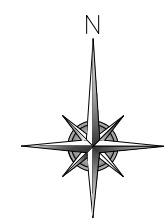
SITE INFORMATION:
ML63039H
FITZPATRICK TRUST
WI-Waukesha
 1436 E RACINE AVE.
 Waukesha, WI 53189
 Waukesha COUNTY

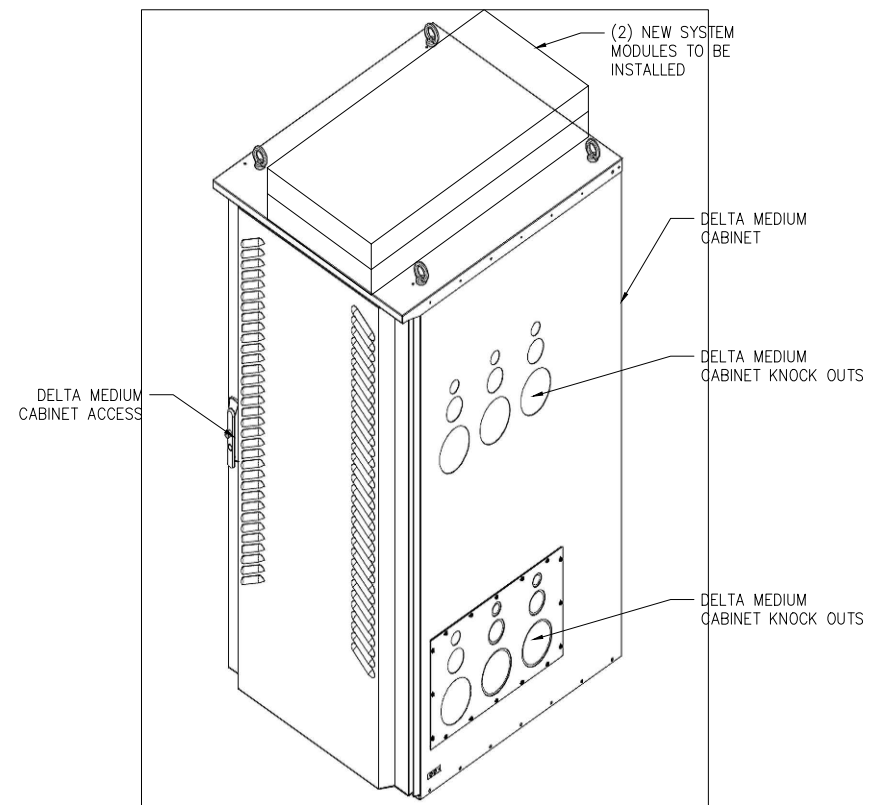
SHEET TITLE:
 ENLARGED SITE PLAN

SHEET NUMBER:
 C-2

PLOT SCALE: 1:1 @ 11"x17"

ENLARGED SITE PLAN 1
 SCALE: 1"=5'-0"

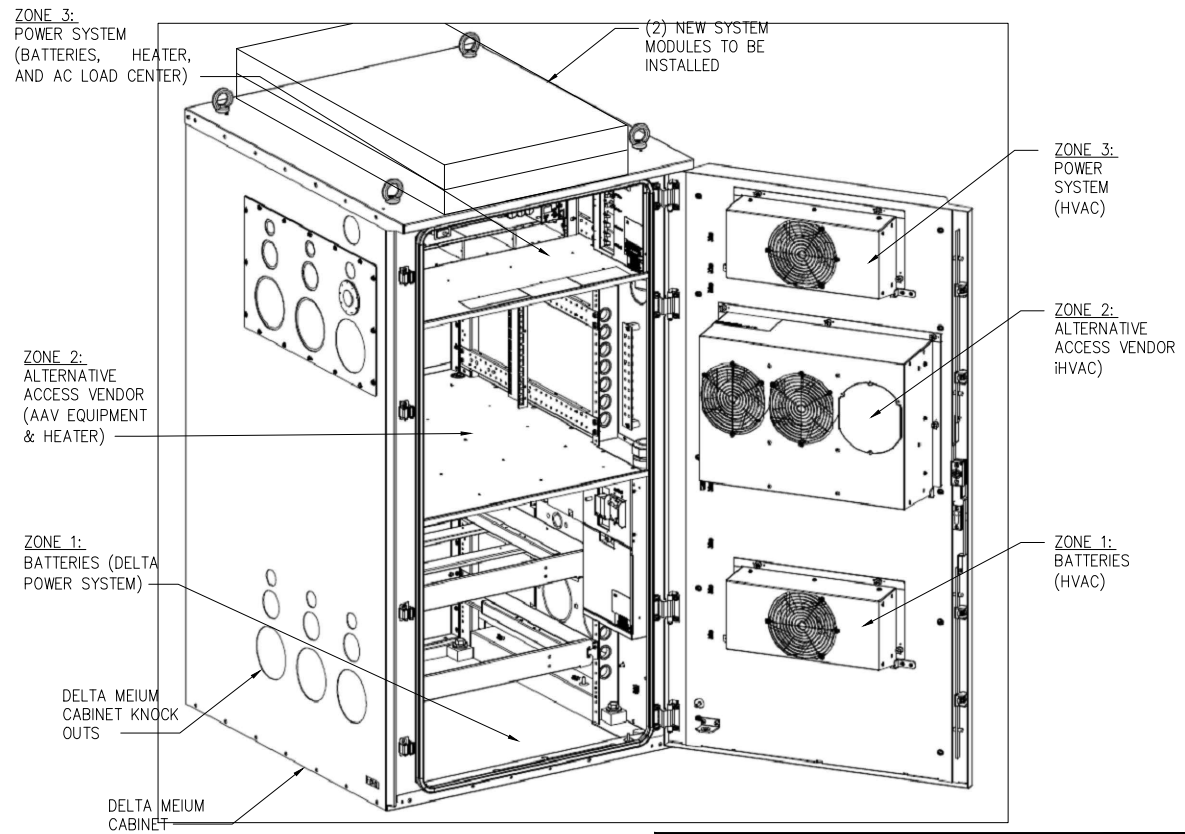




ISOMETRIC EQUIPMENT VIEW

SCALE: NOT TO SCALE

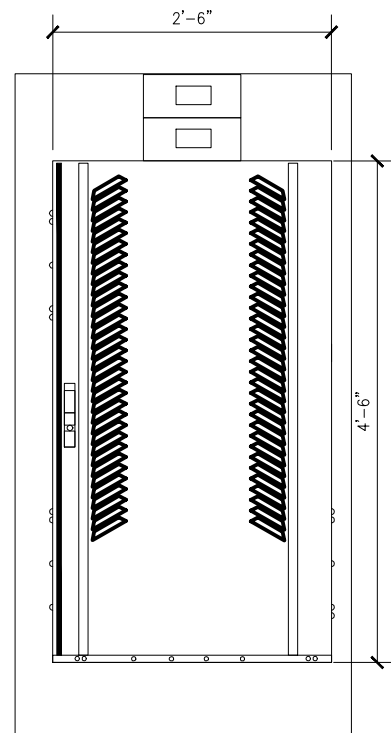
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ISOMETRIC EQUIPMENT VIEW

SCALE: NOT TO SCALE

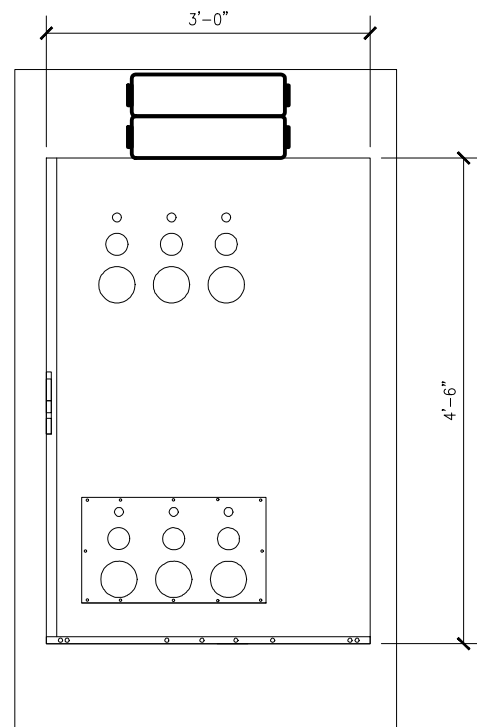
2



FRONT EQUIPMENT VIEW

SCALE: NOT TO SCALE

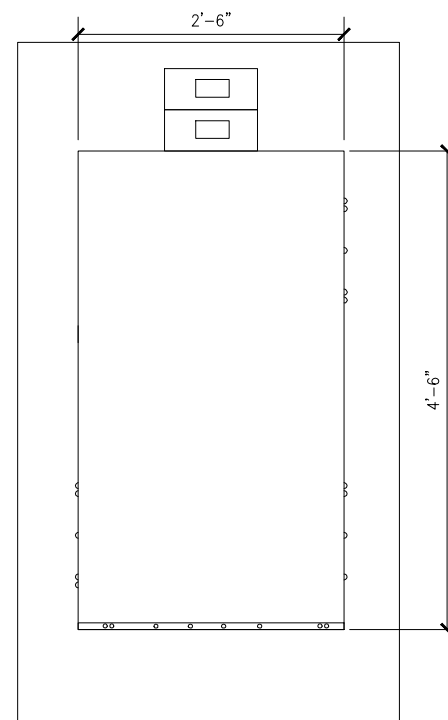
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RIGHT EQUIPMENT VIEW

SCALE: NOT TO SCALE

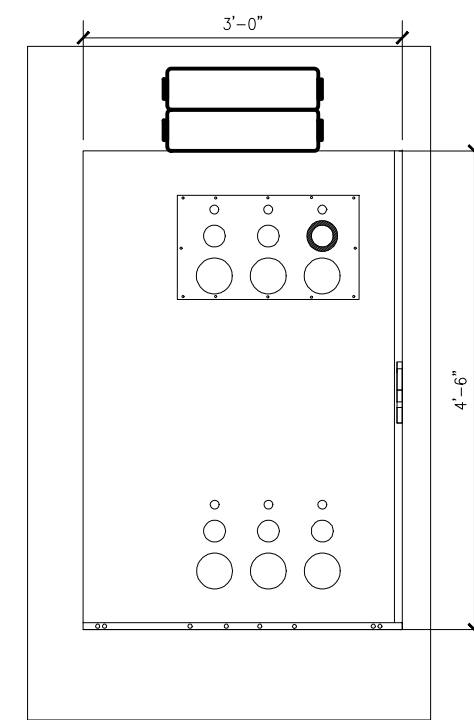
4



BACK EQUIPMENT VIEW

SCALE: NOT TO SCALE

5



LEFT EQUIPMENT VIEW

SCALE: NOT TO SCALE

6

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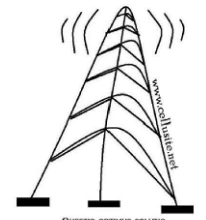
8550 BRYN MAWR AVENUE, SUITE 100
CHICAGO, ILLINOIS 60631

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INFRASTRUCTURE

PLANS PREPARED BY:

CelluSite, LLC



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DATE	DESCRIPTION	BY	REV
05/24/15	REVIEW CD	BMW	A
05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:

ML63039H

**FITZPATRICK
TRUST**

WI-Waukesha

1436 E RACINE AVE.
Waukesha, WI 53189
Waukesha COUNTY

SHEET TITLE:

**EQUIPMENT
ELEVATION**

SHEET NUMBER:

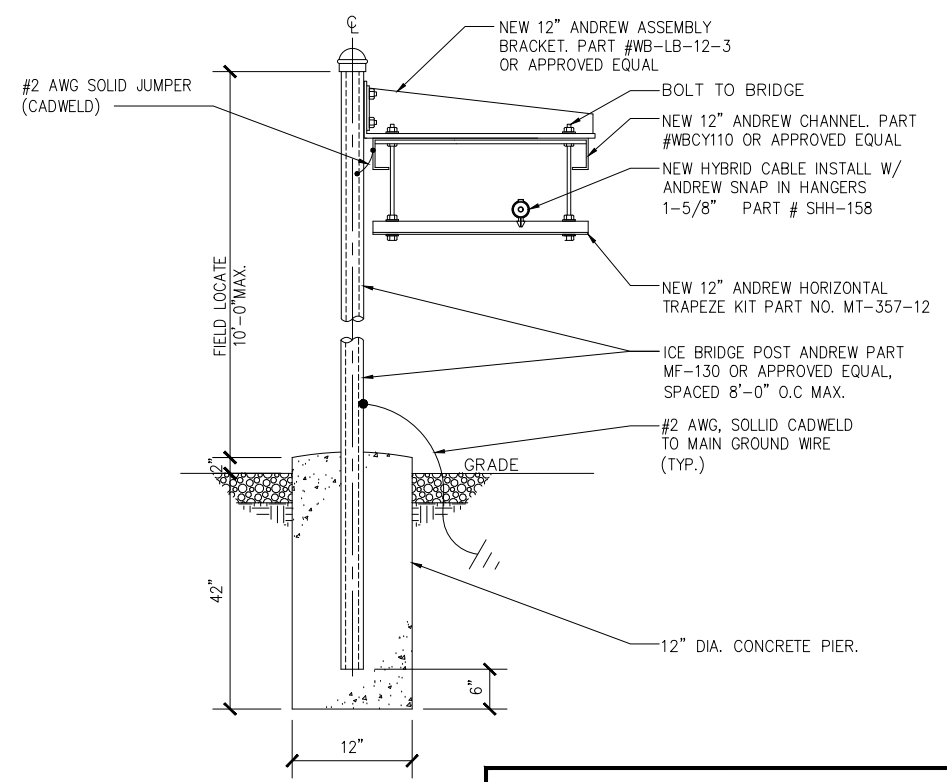
C-3

PLOT SCALE: 1:1 @ 11"x17"

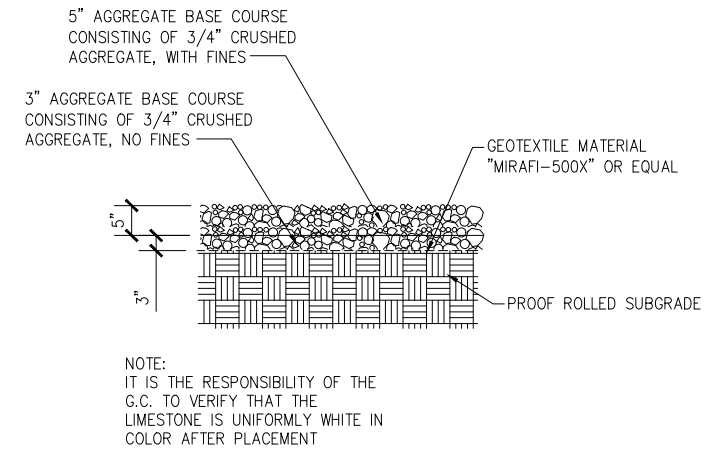
DATE	DESCRIPTION	BY	REV
05/24/15	REVIEW CD	BMW	A
05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:
ML63039H
FITZPATRICK TRUST
WI-Waukesha
1436 E RACINE AVE.
Waukesha, WI 53189
Waukesha COUNTY

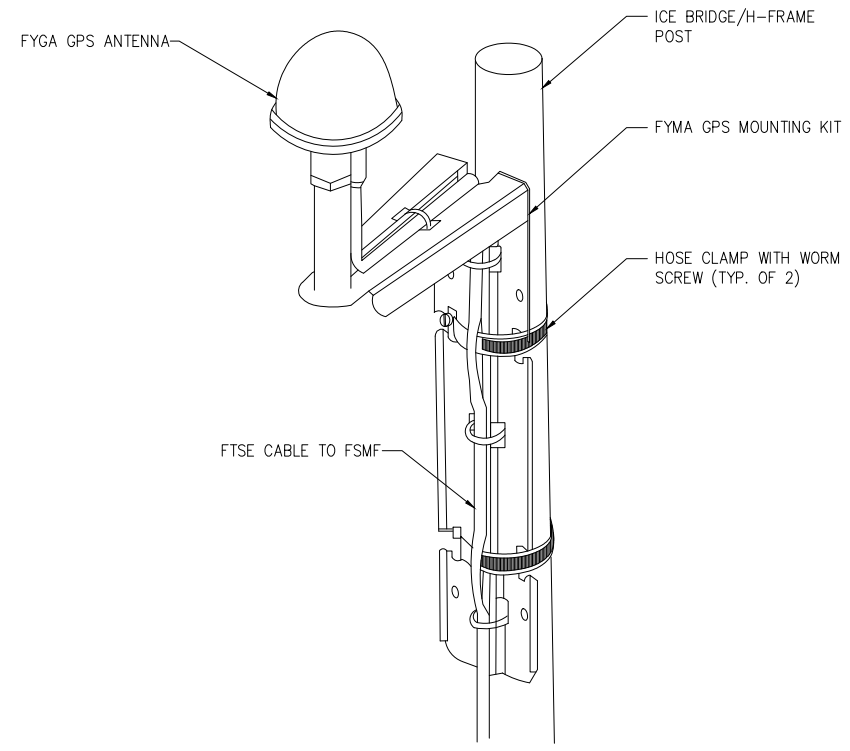
SHEET TITLE:
ICE BRIDGE, GPS AND HYBRID CABLE DETAILS
SHEET NUMBER:
C-4



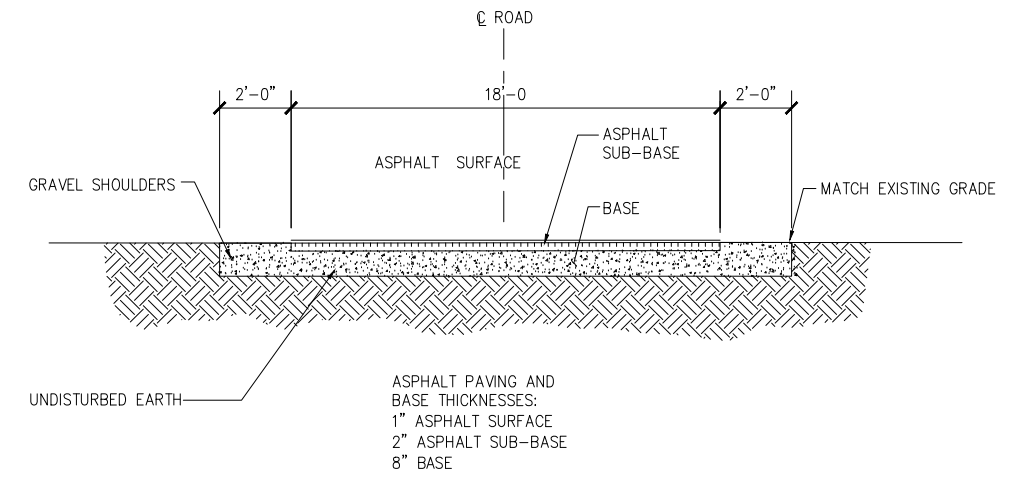
ICE BRIDGE DETAIL
SCALE: NONE
1



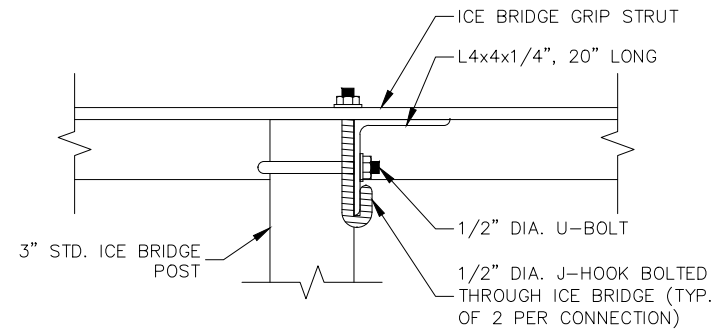
SITE SURFACING DETAIL
SCALE: NONE
4



FYGA GPS ANTENNA DETAIL
SCALE: NONE
2



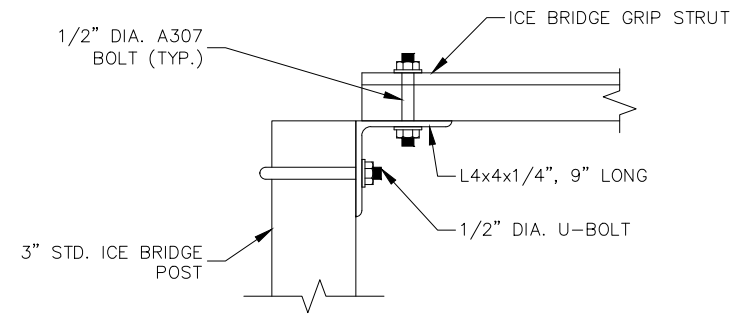
ACCESS DRIVE DETAIL
SCALE: NONE
3



CONNECTION DETAIL

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

2



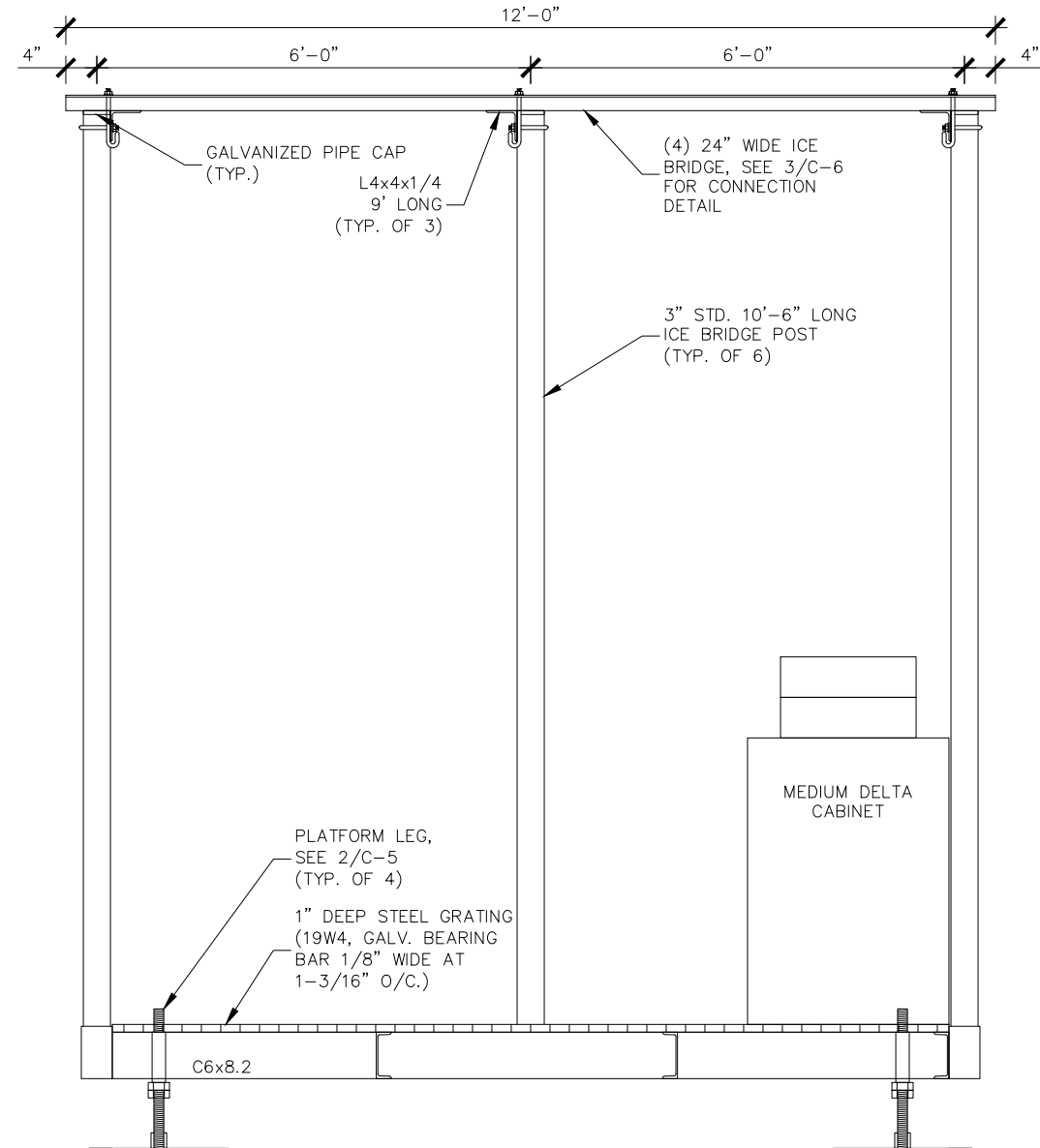
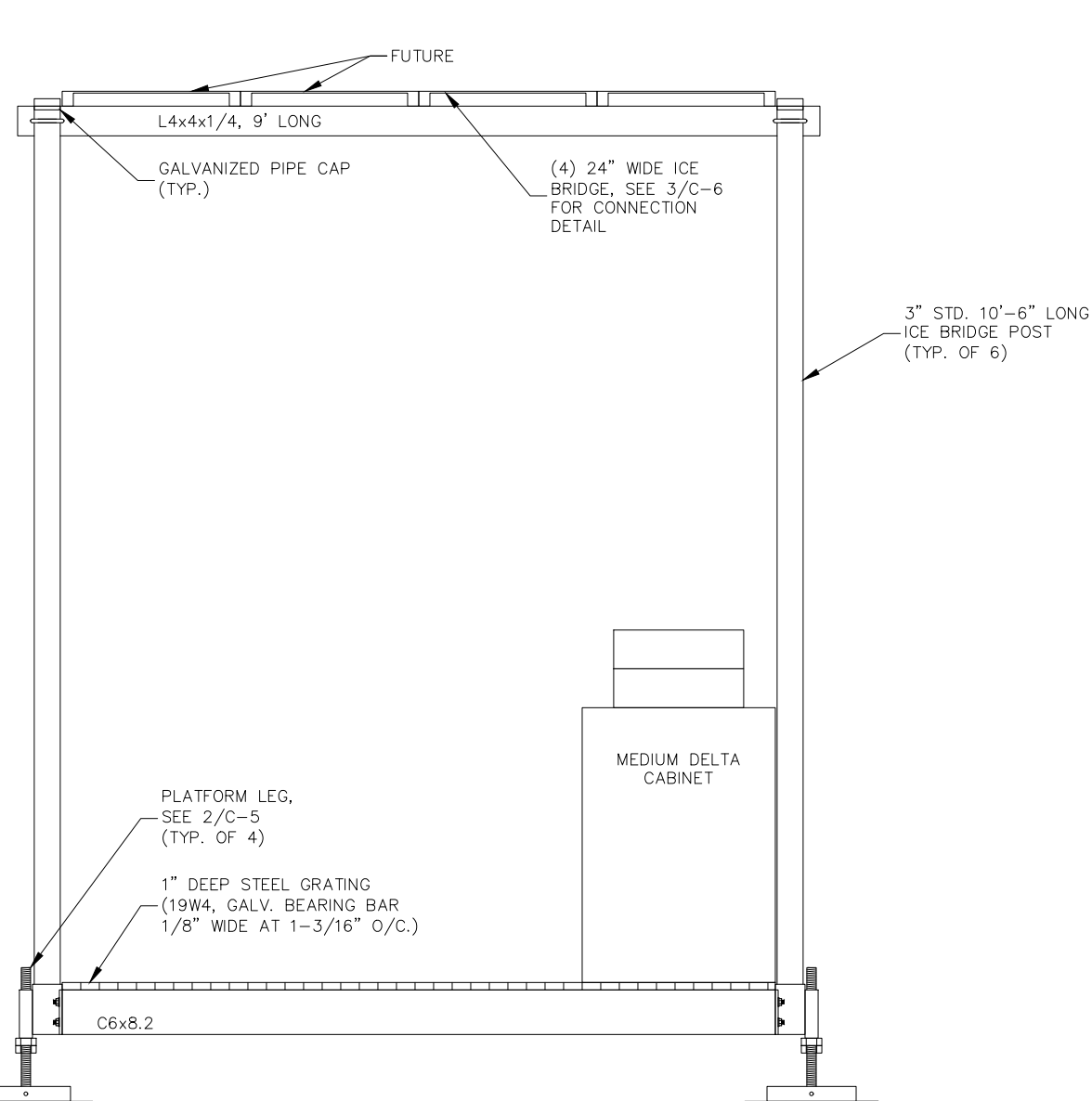
CONNECTION DETAIL

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

3

NOTES:

1. EXISTING CONDITIONS SHALL BE CHECKED AND VERIFIED IN FIELD BY THE CONTRACTOR PRIOR TO FABRICATION AND INSTALLATION. IF SIGNIFICANT DEVIATIONS OR DETERIORATION ARE ENCOUNTERED AT THE TIME OF CONSTRUCTION, A REPAIR PERMIT SHALL BE OBTAINED AND CONTRACTOR SHALL NOTIFY STRUCTURAL ENGINEER IMMEDIATELY.
2. FOUNDATIONS ARE DESIGNED FOR AN ASSUMED MINIMUM NET ALLOWABLE SOIL BEARING CAPACITY OF 2000 PSF. IT IS RECOMMENDED THAT A GEOTECHNICAL INVESTIGATION BE COMPLETED PRIOR TO CONSTRUCTION. IF SOIL BEARING CAPACITY IS LESS THAN WHAT IS SPECIFIED HERE, CONTACT ARCHITECT/ENGINEER FOR A REDESIGN.
3. DO NOT SCALE DRAWINGS.



GRADE
739'-0" AMSL

COMPACTED SAND BENEATH
PLATFORM LEGS (TYP)

12'-0" x 8'-0" PLATFORM ELEVATIONS

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

1

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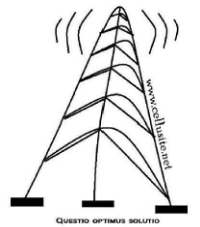
8550 BRYN MAWR AVENUE, SUITE 100
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PLANS PREPARED FOR:

Parallel
INFRASTRUCTURE

PLANS PREPARED BY:

CelluSite, LLC



ENGINEERING LICENSE:

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05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:

ML63039H

**FITZPATRICK
TRUST**

WI-Waukesha

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Waukesha, WI 53189
Waukesha COUNTY

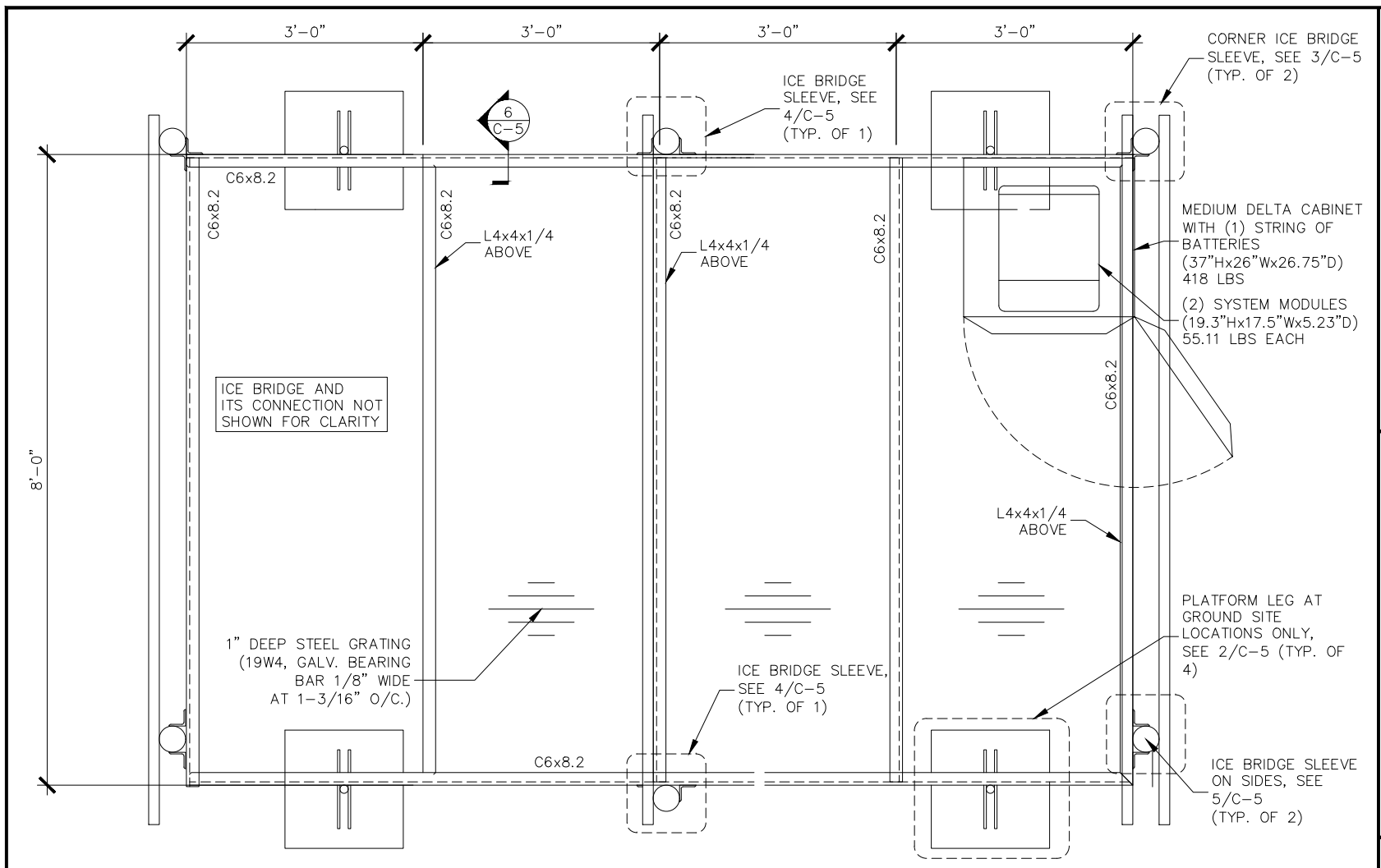
SHEET TITLE:

PLATFORM
ELEVATIONS

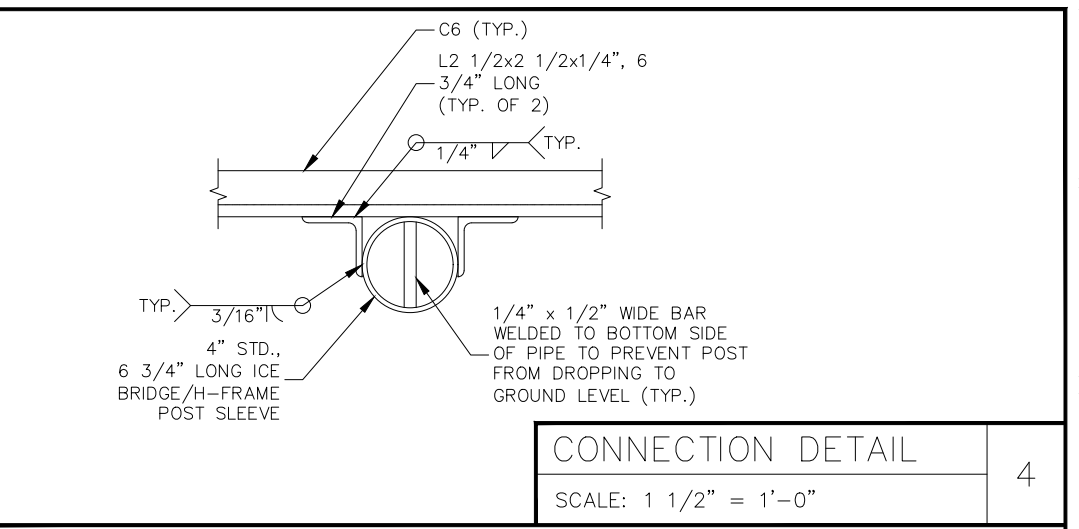
SHEET NUMBER:

C-5

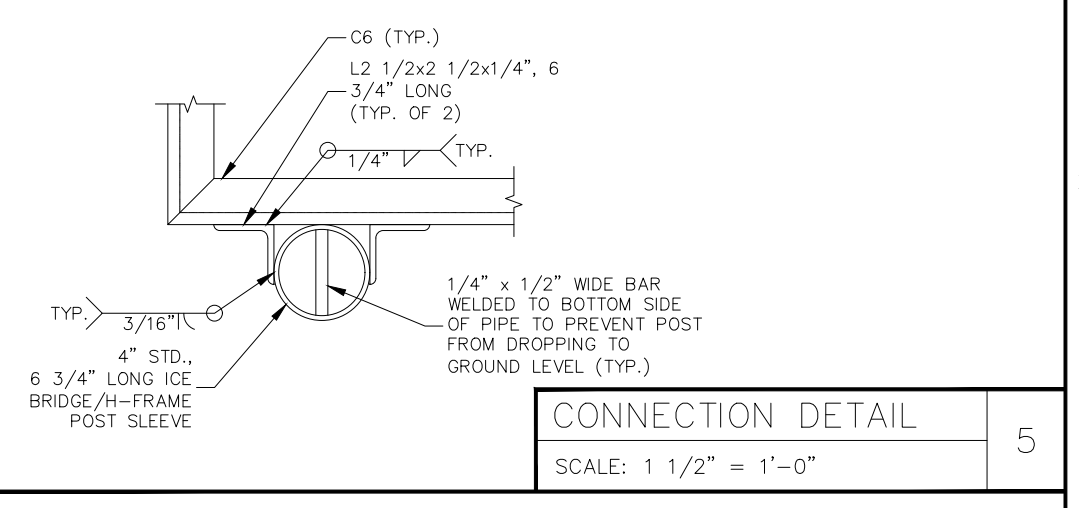
PLOT SCALE: 1:1 @ 11"x17"



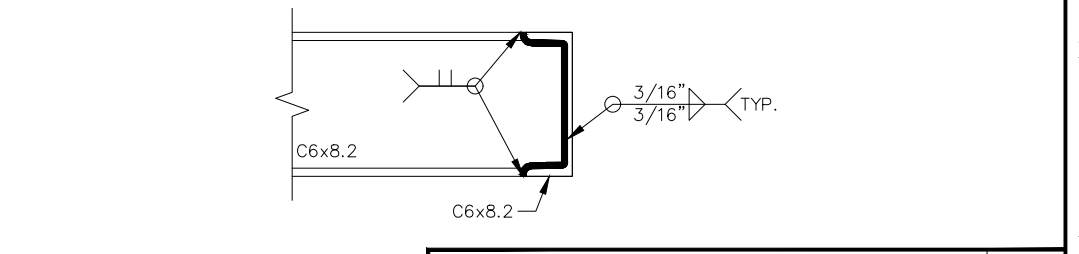
12'-0" x 8'-0" PLATFORM PLAN
SCALE: 1/2" = 1'-0"



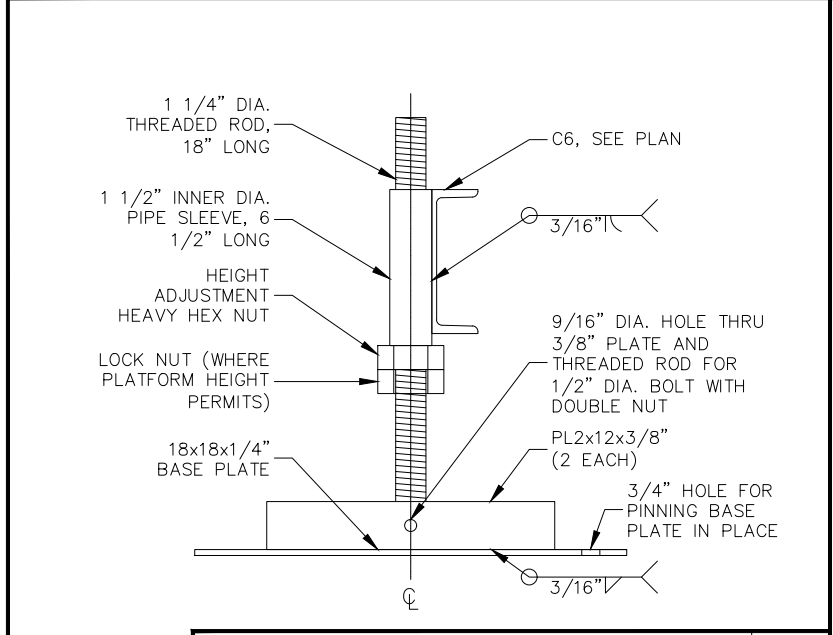
CONNECTION DETAIL 4
SCALE: 1 1/2" = 1'-0"



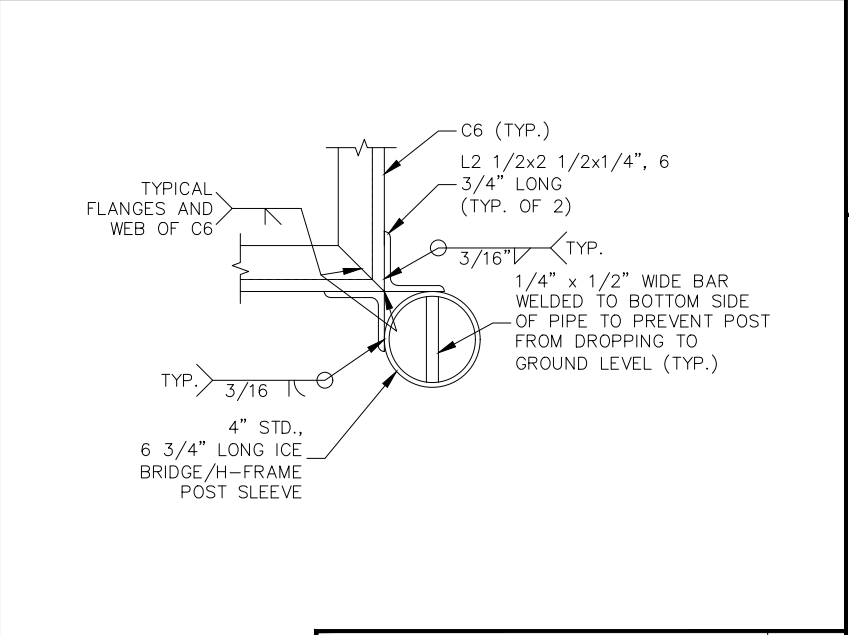
CONNECTION DETAIL 5
SCALE: 1 1/2" = 1'-0"



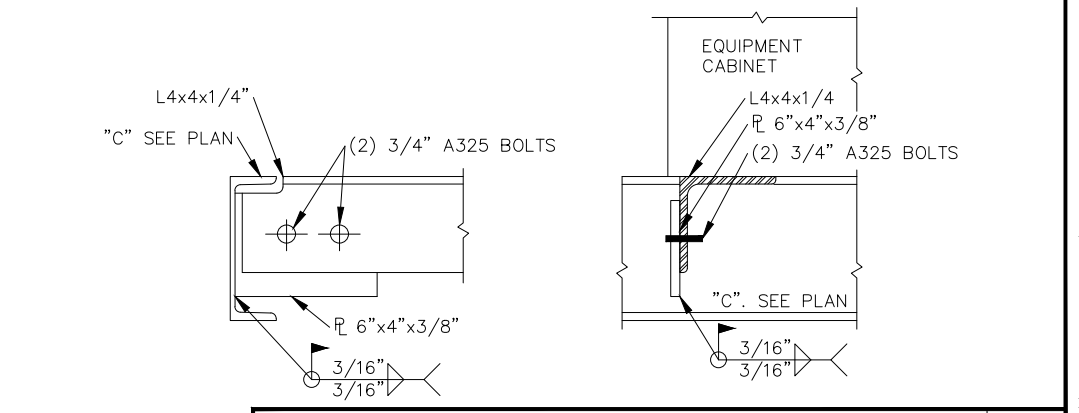
CONNECTION DETAIL 6
SCALE: 1 1/2" = 1'-0"



PLATFORM LEG DETAIL
SCALE: 1 1/2" = 1'-0"



CONNECTION DETAIL 3
SCALE: 1 1/2" = 1'-0"



CABINET SUPPORT CONNECTION DETAIL 7
SCALE: 1 1/2" = 1'-0"

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PLANS PREPARED BY:
CelluSite, LLC

QUESTO OPTIMUS SOLUTIO

ENGINEERING LICENSE:

DATE	DESCRIPTION	BY	REV
05/24/15	REVIEW CD	BMW	A
05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:
ML63039H
FITZPATRICK TRUST
WI-Waukesha
1436 E RACINE AVE.
Waukesha, WI 53189
Waukesha COUNTY

SHEET TITLE:
PLATFORM DETAILS

SHEET NUMBER:
C-6

PLOT SCALE: 1:1 @ 11"x17"

GENERAL STRUCTURAL NOTES

1.0 GENERAL CONDITIONS

1.1 DESIGN AND CONSTRUCTION OF WORK SHALL CONFORM TO 2012 INTERNATIONAL BUILDING CODE, ACI 318-11, AISC/ASD 14TH EDITION, ASCE 7-10, TIA/EIA-222-G. IN CASE OF CONFLICT BETWEEN THE CODES, STANDARDS, REGULATIONS, SPECIFICATIONS, GENERAL NOTES AND/OR MANUFACTURER'S REQUIREMENTS USE THE MOST STRINGENT PROVISION.

1.2 IT IS THE EXPRESS INTENT OF THE PARTIES INVOLVED IN THIS PROJECT THAT THE CONTRACTOR OR SUBCONTRACTOR OR INDEPENDENT CONTRACTOR OR THEIR RESPECTIVE EMPLOYEES SHALL EXCULPATE THE ARCHITECT, THE ENGINEER, THE CONSTRUCTION MANAGER, THE OWNER, AND THEIR AGENTS, FROM ANY LIABILITY WHATSOEVER AND HOLD THEM HARMLESS AGAINST LOSS, DAMAGES, LIABILITY OR ANY EXPENSE ARISING IN ANY MATTER FROM THE WRONGFUL OR NEGLIGENT ACT, OR FAILURE TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, OR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OR FAILURE TO CONFORM TO THE STATE SCAFFOLDING ACT IN CONNECTION WITH THE WORK.

1.3 DO NOT SCALE DRAWINGS.

1.4 VERIFY ALL EQUIPMENT MOUNTING DIMENSIONS PER MANUFACTURER DRAWINGS.

1.5 SUBMIT ONE COPY OF ALL STRUCTURAL SHOP DRAWINGS FOR REVIEW.

1.6 DESIGN LOADS ARE:

A. EQUIPMENT LOAD

- (1) PROPOSED MEDIUM DELTA CABINET (54"Hx30"Wx36"D).....200 LBS
 *(MEDIUM CABINET WEIGHS 200 LBS. WITHOUT EQUIPMENT OR BATTERIES**
- (2) PROPOSED SYSTEM MODULE (19.3"Hx17.5"Wx5.23"D).....55.11 LBS
- (1) PROPOSED FCOA CABINET (61"Hx30.3"Wx30.3"D).....789 LBS
- (2) FUTURE FCOA CABINET (61"Hx30.3"Wx30.3"D).....789 LBS

B. PLATFORM LOADS

- LIVE LOAD: 100 PSF
- PLATFORM DEAD LOAD: 15 PSF

2.0 EXISTING CONDITIONS

2.1 CONTRACTOR SHALL FIELD VERIFY THAT THE EXISTING CONSTRUCTION ADJACENT TO THIS CONSTRUCTION, OR TO WHICH THIS CONSTRUCTION SHALL BE CONNECTED, IS AS INDICATED ON THIS DRAWING.

2.2 EXISTING CONDITIONS WILL BE CHECKED AND VERIFIED IN FIELD. IF SIGNIFICANT DEVIATIONS OR DETERIORATION ARE ENCOUNTERED AT THE TIME OF CONSTRUCTION A REPAIR PERMIT WILL BE OBTAINED AND CONTRACTOR SHALL NOTIFY STRUCTURAL ENGINEER IMMEDIATELY.

3.0 STEEL NOTES

3.1 MEET OR EXCEED THE FOLLOWING CODES & STANDARDS EXCEPT AS NOTED:

- A. STRUCTURAL STEEL..... AISC SPECIFICATION ALLOWABLE STRESS DESIGN, 14TH EDITION
 - W SHAPES & CHANNELS.....ASTM A992 - 50KSI
 - SHAPES AND PLATES.....ASTM A36
 - PLATES BENT OR COLD FORMED.....ASTM A 283, GRADE C
 - PIPES.....ASTM A 500, GRADE B - 42 KSI
 - TUBES.....ASTM A 500, Fy= 46 KSI
 - STRUCTURAL SHEETS, HOT ROLLED.....ASTM A 570
 - COLD-FORMED STEEL TUBING.....ASTM A 500, GRADE B
 - BOLTS, NUTS & WASHERS FOR FRAMING
- MEMBERS AND BRACINGS.....ASTM A 325-X
 - BOLTS, NUTS & WASHERS FOR ANCHOR
- BOLTS AND SECONDARY CONNECTIONS.....ASTM A 307
- B. WELDS.....AWS E 70XX

EXCEPTION IS TAKEN TO AISC CODE OF STANDARD PRACTICE PARAGRAPH

3.2.1 REGARDING OWNERS AND FABRICATOR'S RESPONSIBILITY FOR CONNECTION DESIGN AND ADEQUACY OF SHOP DRAWINGS. COMPLIANCE WITH THE REQUIREMENTS SHOWN ON DRAWINGS AND/OR SPECIFICATIONS, CONNECTION DESIGN AND DETAILING IS THE CONTRACTOR'S RESPONSIBILITY. ENGINEER'S REVIEW OF SHOP DRAWINGS IS FOR GENERAL CONSIDERATIONS ONLY AND DOES NOT CONSTITUTE AN ACCEPTANCE OF THESE RESPONSIBILITY BY THE OWNER AND/OR ENGINEER.

3.2.2 ALL UNISTRUT, FASTENERS, HARDWARE, ETC. SHALL BE HOT DIPPED GALVANIZED OR SHALL BE STAINLESS STEEL. ZINC PLATED MATERIAL SHALL NOT BE USED

3.2.3 ALL STRUCTURAL STEEL, SHAPES, PLATES, SHALL BE GALVANIZED PER ASTM 123

4.0 GEOTECHNICAL NOTES

4.1 ALL FOOTINGS SHALL BE CONSTRUCTED UPON UNDISTURBED, NATURAL SUBGRADE OR COMPACTED GRANULAR FILL WITH A MINIMUM NET ALLOWABLE BEARING CAPACITY OF 2000 PSF.

4.2 THE SOIL SUBGRADE FOR ALL FOOTINGS AND SLABS SHALL BE INSPECTED AND APPROVED BY THE OWNER'S TESTING AGENCY IMMEDIATELY PRIOR TO PLACING FOUNDATION CONCRETE OR CONCRETE MUD SLABS.

4.3 ALL ORGANIC AND / OR OTHER UNSUITABLE MATERIAL SHALL BE REMOVED FROM FOUNDATION AND SLAB SUBGRADE AND BACKFILL AREAS, AND THEN BACKFILLED WITH ACCEPTABLE GRANULAR FILL COMPACTED TO 95 PERCENT OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT (ASTM D1557).

4.4 NO FOOTINGS OR STRUCTURAL SLABS SHALL BE PLACED INTO OR AGAINST SUBGRADES CONTAINING FREE WATER, FROST OR ICE. SHOULD WATER OR FROST ENTER A FOOTING/MUD SLAB/STRUCTURAL SLAB EXCAVATION AFTER SUBGRADE APPROVAL, THE SUBGRADE SHALL BE REINSPECTED BY THE OWNER'S SOIL TESTING LABORATORY AFTER REMOVAL OF WATER, FROST, OR ICE.

4.5 THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MEASURES TO PREVENT ANY WATER, FROST, OR ICE FROM PENETRATING ANY FOOTING OR STRUCTURAL/ MUD SLAB SUBGRADE BEFORE AND AFTER PLACING OF CONCRETE, AND UNTIL SUCH SUBGRADES ARE FULLY PROTECTED BY THE PERMANENT BUILDING STRUCTURE.

4.6 ALL FOOTING MUD SLABS SHALL BE THOROUGHLY CLEANED IMMEDIATELY PRIOR TO CONCRETE PLACEMENT.



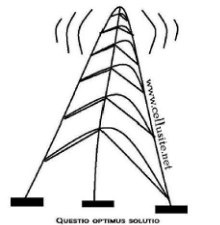
8550 BRYN MAWR AVENUE, SUITE 100
CHICAGO, ILLINOIS 60631

PLANS PREPARED FOR:



PLANS PREPARED BY:

CelluSite, LLC



ENGINEERING LICENSE:

DATE	DESCRIPTION	BY	REV
05/24/15	REVIEW CD	BMW	A
05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:

ML63039H

FITZPATRICK TRUST

WI-Waukesha

1436 E RACINE AVE.
Waukesha, WI 53189
Waukesha COUNTY

SHEET TITLE:

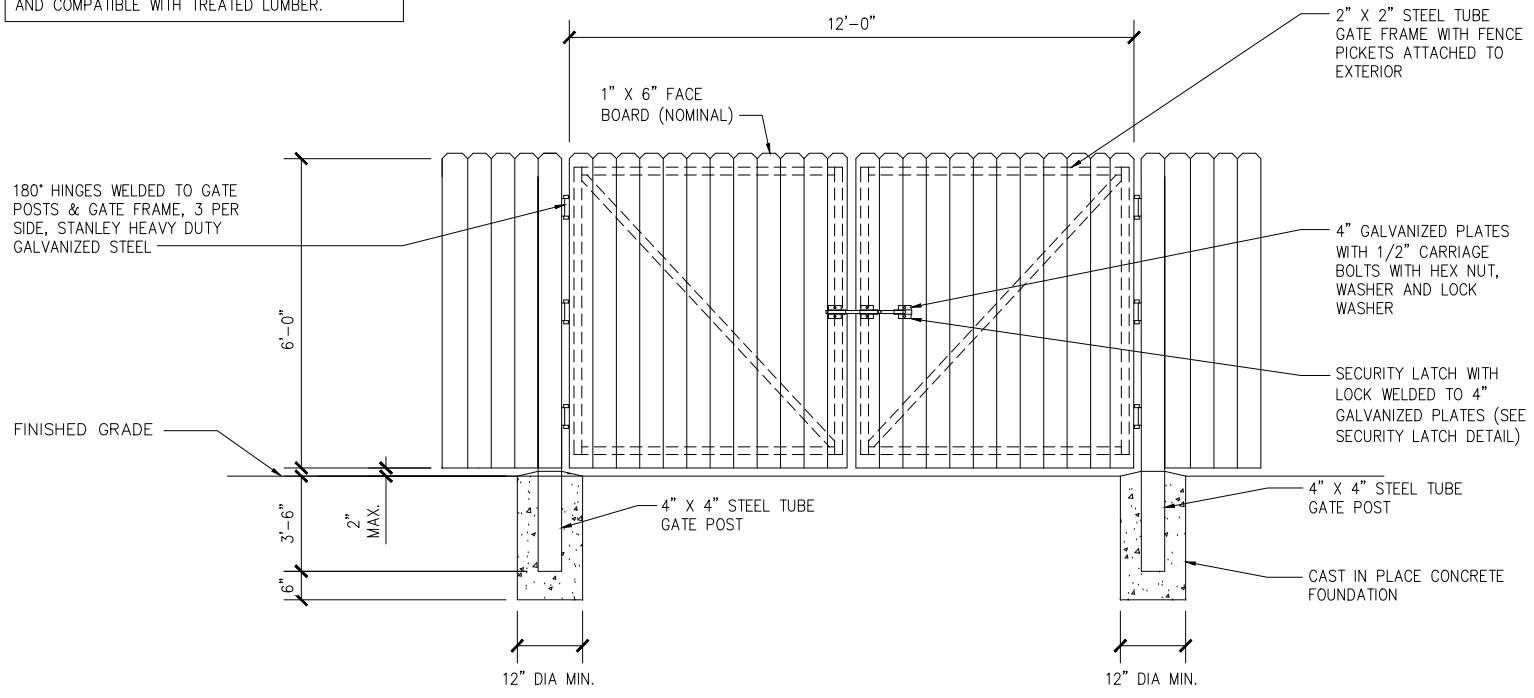
PLATFORM NOTES

SHEET NUMBER:

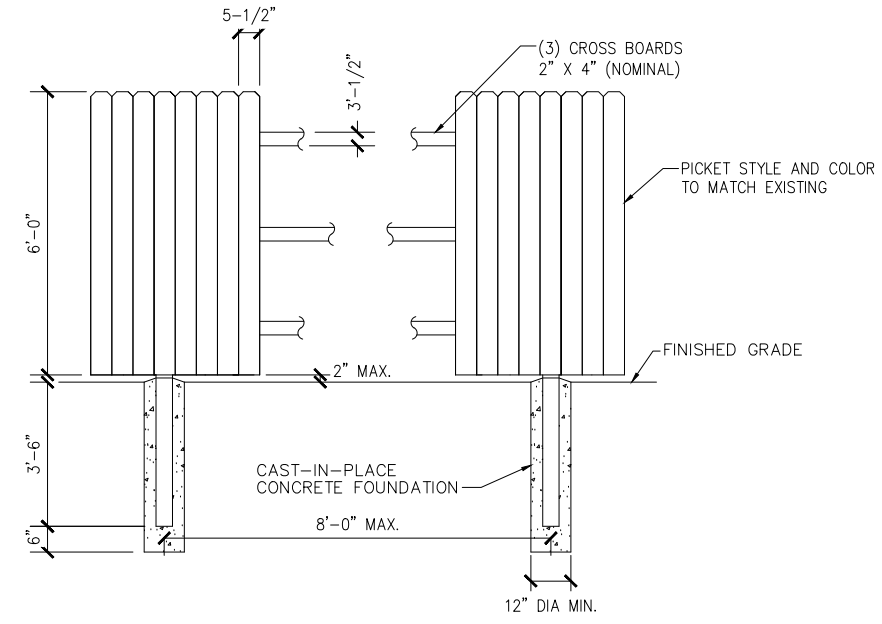
C-7

PLOT SCALE: 1:1 @ 11"x17"

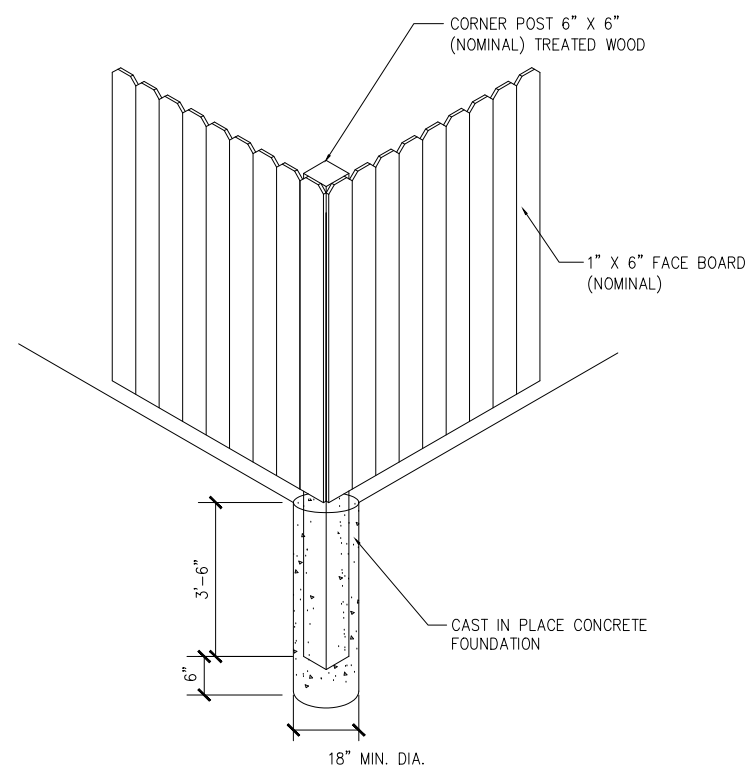
NOTE:
ALL WOOD COMPONENTS TO BE PRESSURE TREATED UNLESS NOTED OTHERWISE AND ALL METAL COMPONENTS TO BE CORROSION RESISTANT AND COMPATIBLE WITH TREATED LUMBER.



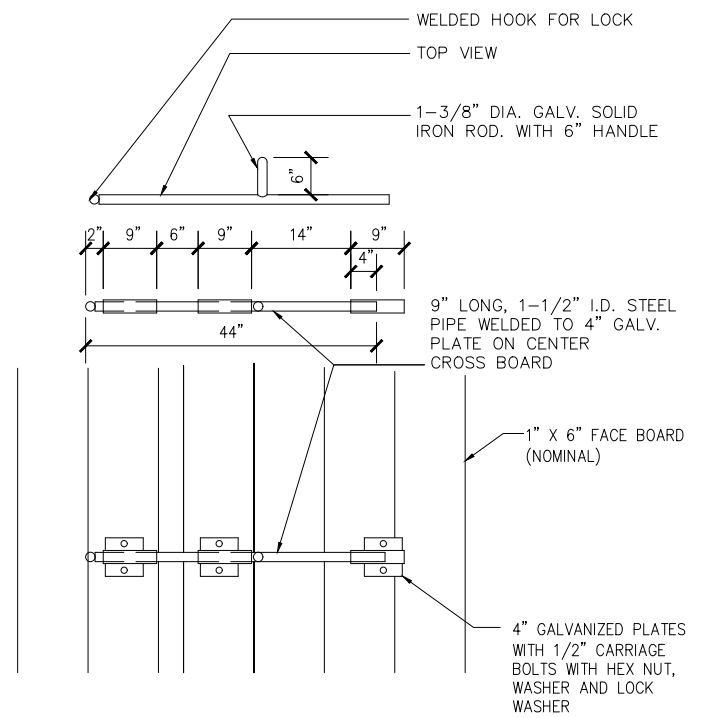
GATE & FENCE ELEVATION
SCALE: NOT TO SCALE



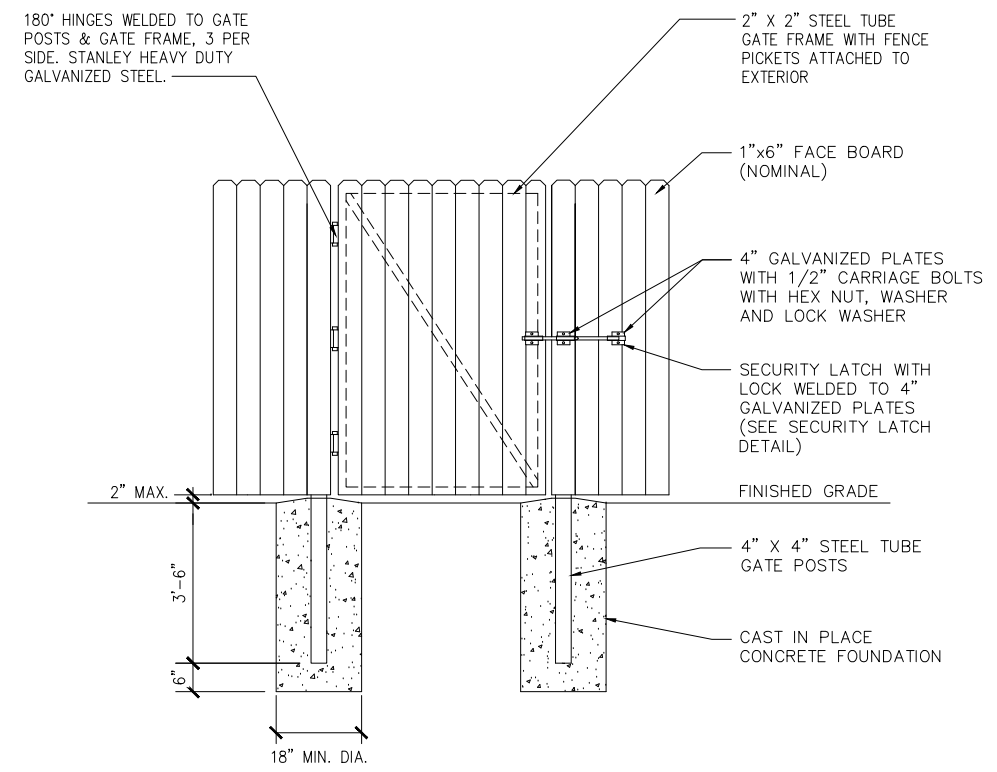
FENCE DETAIL SECTION
SCALE: NOT TO SCALE



FENCE CORNER DETAIL
SCALE: NOT TO SCALE



SECURITY LATCH DETAIL
SCALE: NOT TO SCALE



GATE DETAIL
SCALE: NOT TO SCALE

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Parallel
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QUESTO OPTIMIZES SOLUTIONS

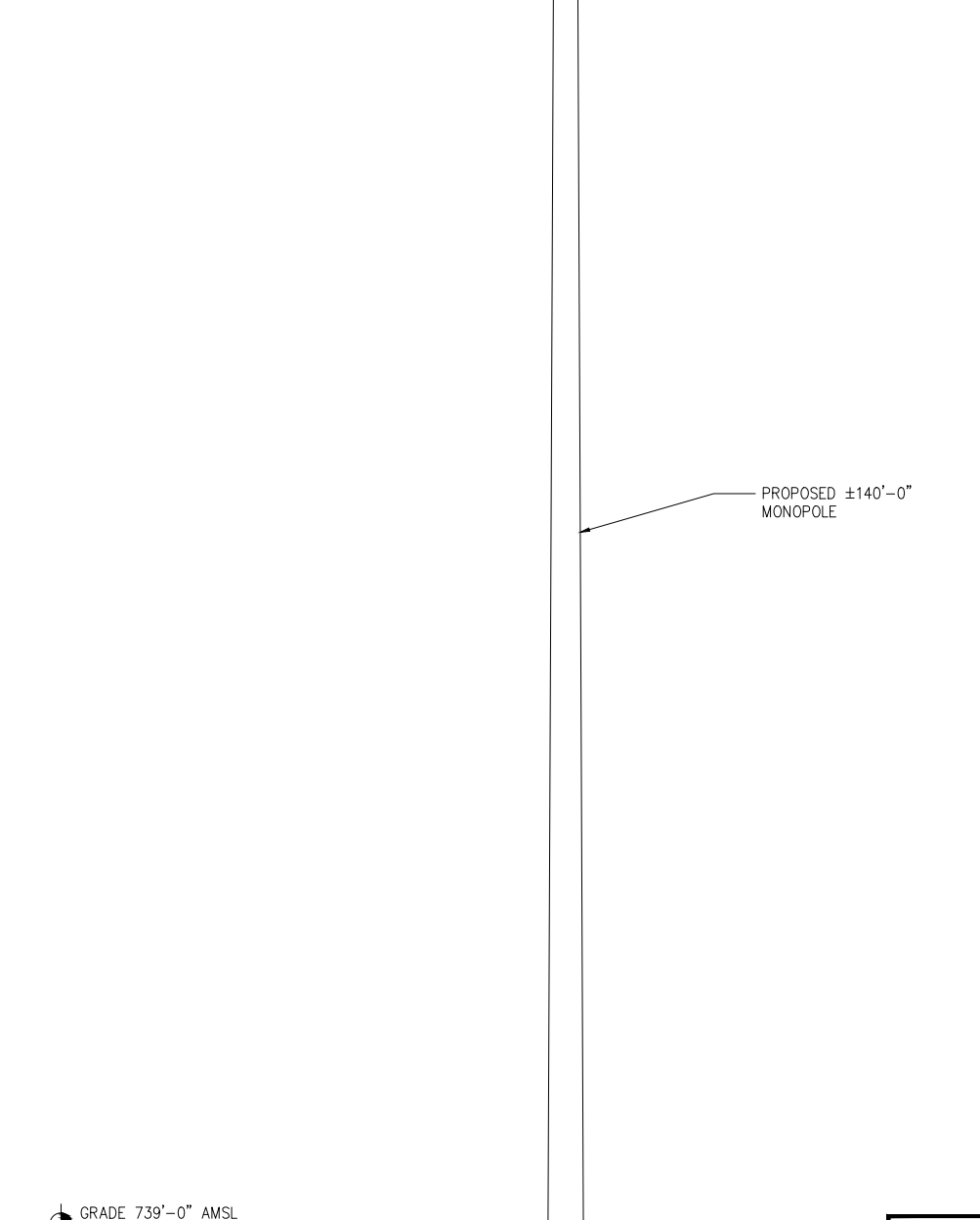
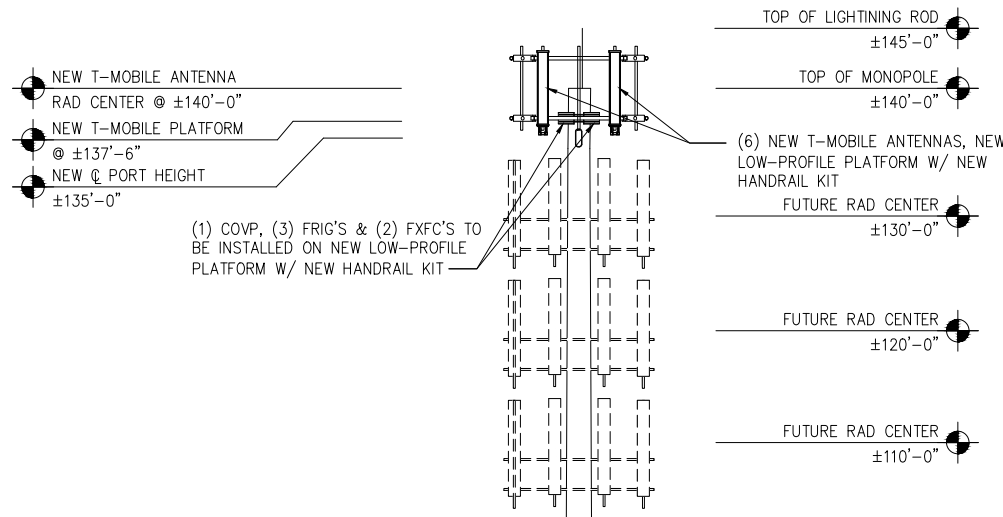
ENGINEERING LICENSE:

DATE	DESCRIPTION	BY	REV
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05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:
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Waukesha, WI 53189
Waukesha COUNTY

SHEET TITLE:
FENCE DETAILS

SHEET NUMBER:
C-8



GRADE 739'-0" AMSL

NOTE:
CELLUSITE'S SCOPE OF WORK DOES NOT INCLUDE A STRUCTURAL EVALUATION OF THIS TOWER OR STRUCTURE. NEW ANTENNAS AND EQUIPMENT SHOWN ON THIS PLAN HAVE NOT BEEN EVALUATED TO VERIFY THE TOWER OR STRUCTURE HAS THE CAPACITY TO ADEQUATELY SUPPORT THESE ANTENNAS. PRIOR TO ANY ANTENNA OR EQUIPMENT INSTALLATION, A STRUCTURAL EVALUATION OF THE TOWER OR STRUCTURE, INCLUDING ALL ANTENNA MOUNTING SYSTEMS & HARDWARE SHOULD BE PERFORMED.

NOTE:
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.

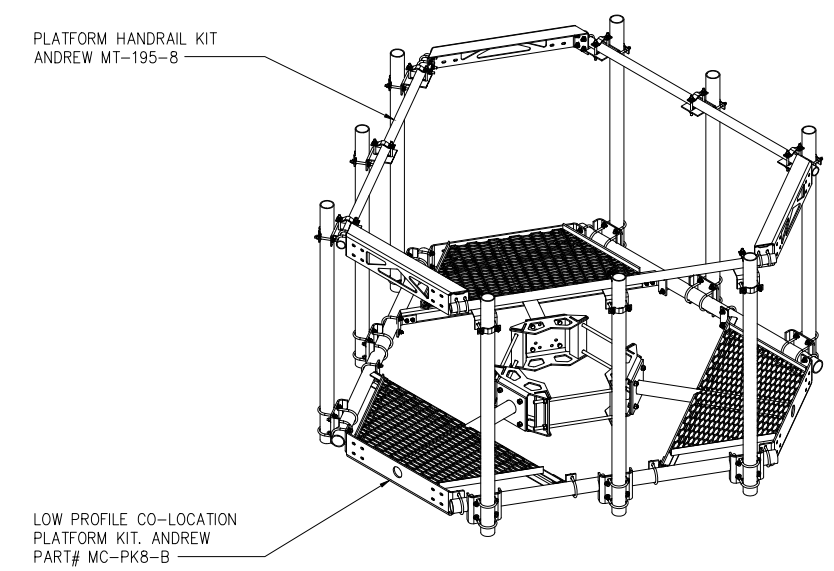
NOTE:
CONTRACTOR TO USE PROPER TORQUE WRENCH WHEN INSTALLING AND TIGHTENING CONNECTORS TO INSURE PROPER FIT.

NOTE:
CONTRACTOR TO ARRANGE NEW MODULES/EQUIPMENT TO AVOID INTERFERING WITH SAFETY CLIMB.

NOTE:
CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING FINAL RF CONFIGURATION AND NOTIFY T-MOBILE AND ENGINEERING FIRM WITH ANY DISCREPANCIES.

NOTE:
CONTRACTOR SHALL VERIFY ALL FINAL CONNECTION LOCATIONS WITH T-MOBILE ENGINEER, RF ENGINEER, AND NET-OPS PRIOR TO INSTALLATION.

TOWER ELEVATION
SCALE: 3/16 = 1'-0" 1



ANTENNA PLATFORM W/ HANDRAIL KIT
SCALE: NOT TO SCALE 2

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QUESTO OPTIMUS SOLUTIO

ENGINEERING LICENSE:

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05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

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Waukesha, WI 53189
Waukesha COUNTY

SHEET TITLE:
TOWER ELEVATION

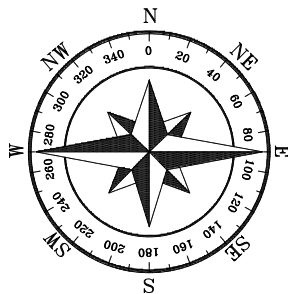
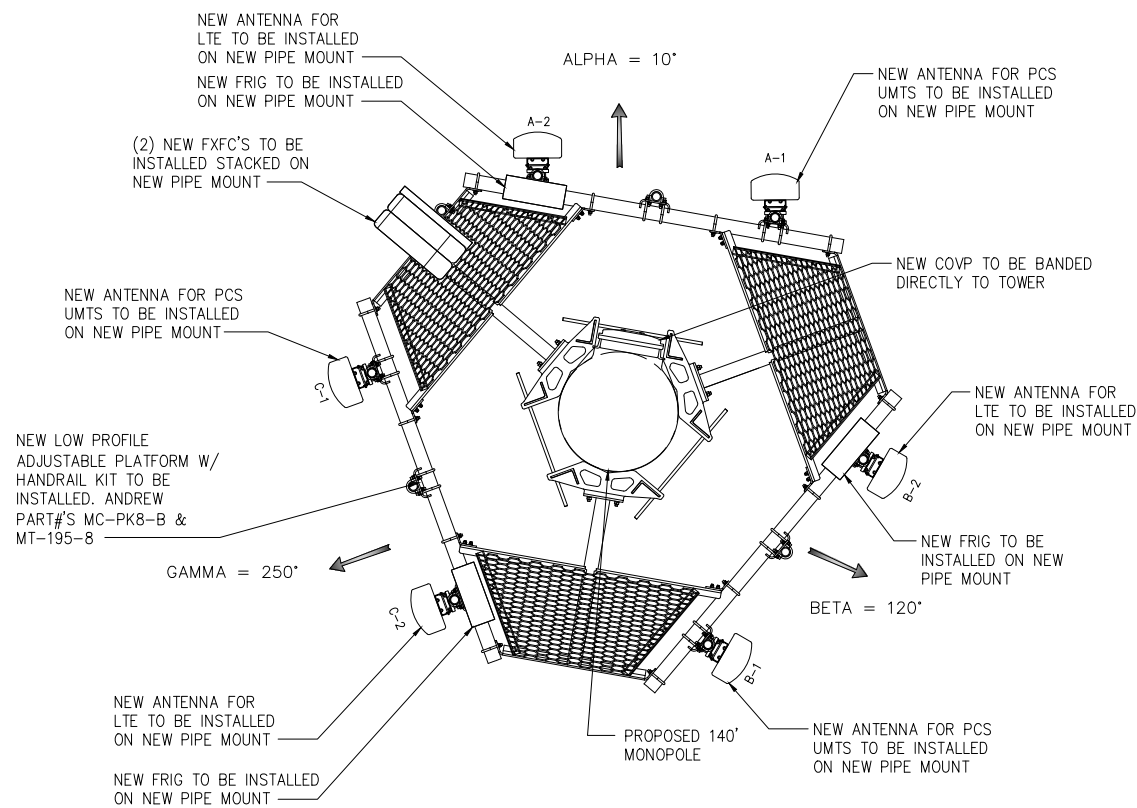
SHEET NUMBER:
A-1

PLOT SCALE: 1:1 @ 11"x17"

ANTENNA & CABLE SCHEDULE							
SECTOR	ALPHA		BETA		GAMMA		DELTA
LOCATION	A-2	A-1	B-2	B-1	C-2	C-1	
TECHNOLOGY	LTE	UMTS	LTE	UMTS	LTE	UMTS	
AZIMUTH	10°		120°		250°		
RAD CENTER	±140'-0"		±140'-0"		±140'-0"		
COLOR CODING	RED (5-8)	RED (1-4)	GREEN (5-8)	GREEN (1-4)	BLUE (5-8)	BLUE (1-4)	
MODEL #	ANDREW TMBXX-6516-A2M	ANDREW TMBXX-6516-A2M	ANDREW TMBXX-6516-A2M	ANDREW TMBXX-6516-A2M	ANDREW TMBXX-6516-A2M	ANDREW TMBXX-6516-A2M	
MECHANICAL DOWNTILT	0	0	2	2	0	0	
ELECTRICAL DOWNTILT	2	2	2	2	2	2	
RRU TYPE	FRIG	(2) FXFC'S	FRIG	SHARED FXFC	FRIG	SHARED FXFC	
HCS DIA. & TYPE	1.584" HIGH CAPACITY	-	-	-	-	-	
HCS ACTUAL LENGTH	±155'-0"	-	-	-	-	-	
HCS FACTORY LENGTH	175'-0"	-	-	-	-	-	
FIBER JUMPER LENGTH	15'-0"	15'-0"	15'-0"	-	15'-0"	-	
RF JUMPER LENGTH	6'-0"	12'-0"	6'-0"	20'-0"	6'-0"	6'-0"	

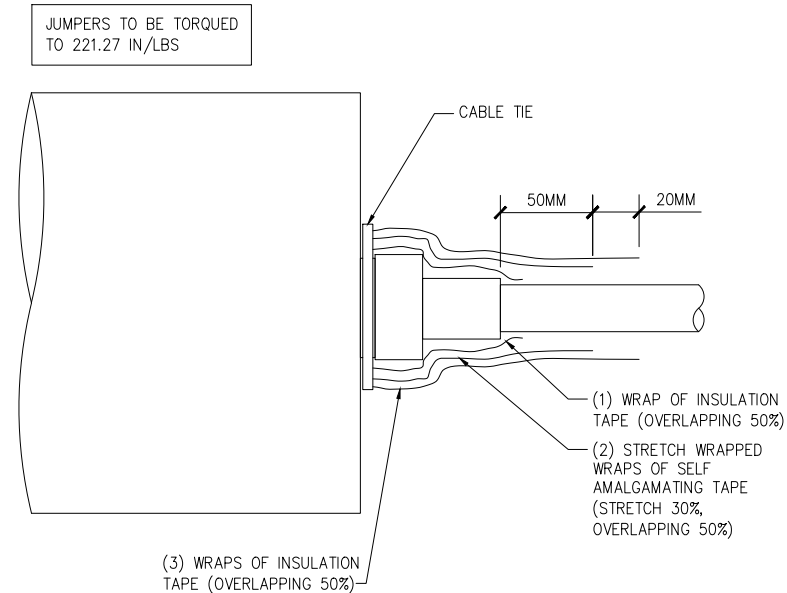
NOTE:
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NOTE:
ANTENNA INFORMATION OBTAINED FROM T-MOBILE RF DATA CONFIGURATION SHEET DATED 11/20/14



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

1



RF JUMPER CONNECTION DETAIL
SCALE: NOT TO SCALE

2

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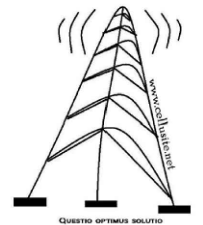
8550 BRYN MAWR AVENUE, SUITE 100
CHICAGO, ILLINOIS 60631

PLANS PREPARED FOR:

Parallel
INFRASTRUCTURE

PLANS PREPARED BY:

CelluSite, LLC



ENGINEERING LICENSE:

DATE	DESCRIPTION	BY	REV
05/24/15	REVIEW CD	BMW	A
05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:

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Waukesha COUNTY

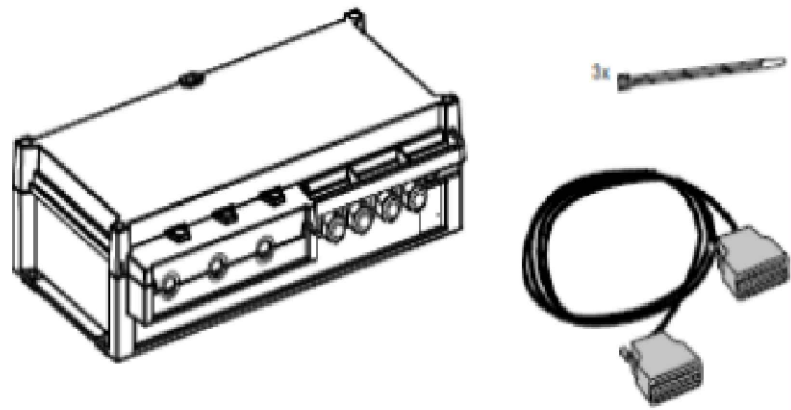
SHEET TITLE:

ANTENNA PLAN

SHEET NUMBER:

A-2

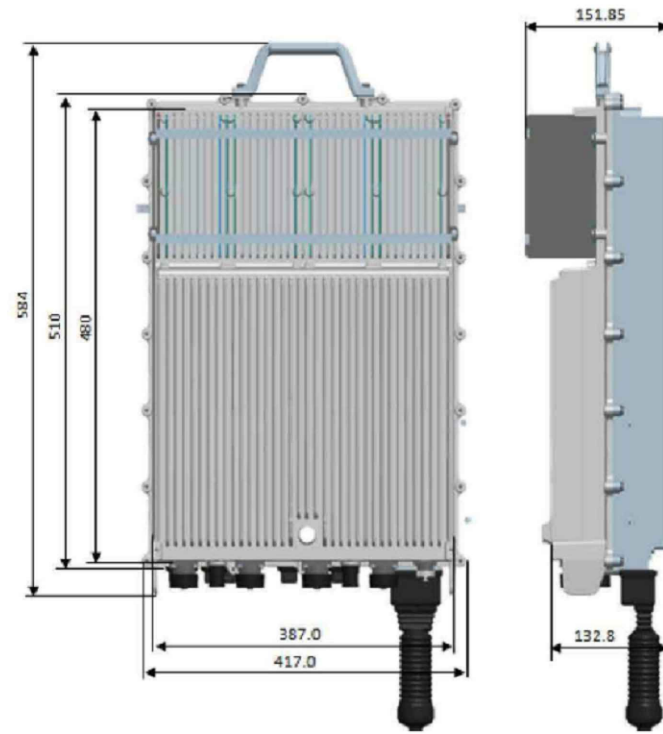
PLOT SCALE: 1:1 @ 11"x17"



FSEB

SCALE: NOT TO SCALE

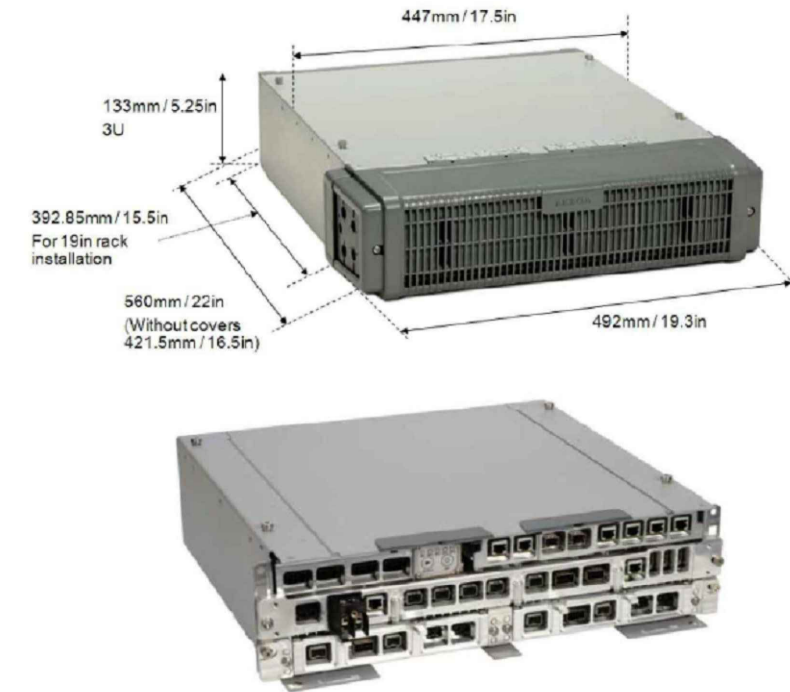
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FRIG

SCALE: NOT TO SCALE

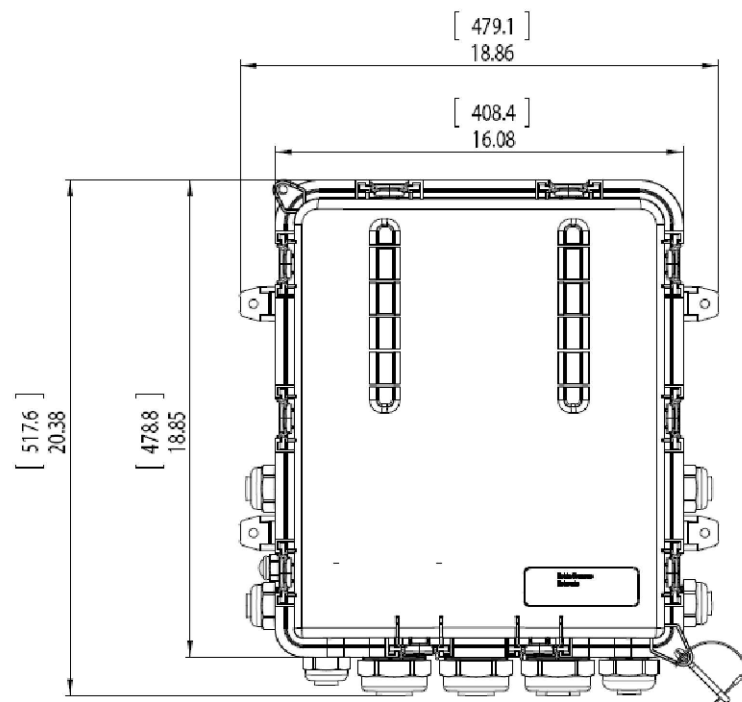
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FSMF

SCALE: NOT TO SCALE

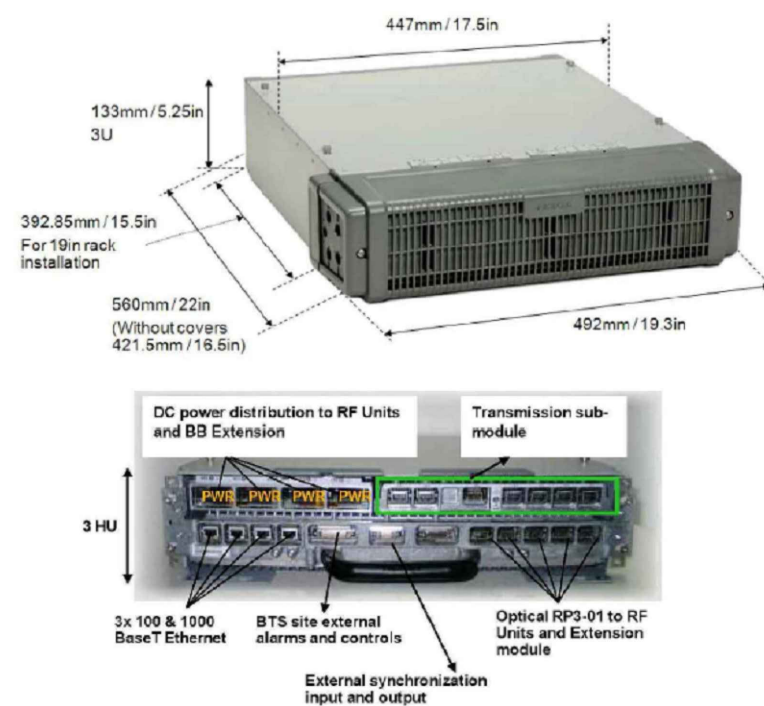
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COVP

SCALE: NOT TO SCALE

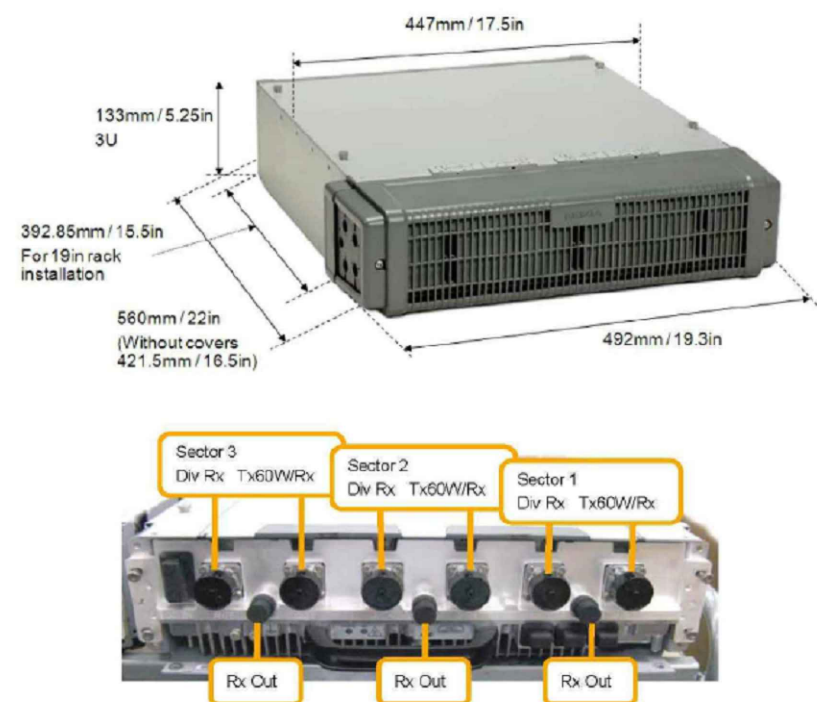
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FSME

SCALE: NOT TO SCALE

5



FXFC

SCALE: NOT TO SCALE

6

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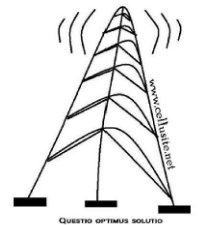
8550 BRYN MAWR AVENUE, SUITE 100
CHICAGO, ILLINOIS 60631

PLANS PREPARED FOR:

Parallel
INFRASTRUCTURE

PLANS PREPARED BY:

CelluSite, LLC



ENGINEERING LICENSE:

DATE	DESCRIPTION	BY	REV
05/24/15	REVIEW CD	BMW	A
05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:

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Waukesha, WI 53189
Waukesha COUNTY

SHEET TITLE:

EQUIPMENT SPECIFICATIONS

SHEET NUMBER:

A-3

PLOT SCALE: 1:1 @ 11"x17"



[Back to RFDS Search](#)

Modernization RFDS Data Configuration Sheet

Date: 5/27/2015

[Print RFDS](#)

Site Information:

Market:	ML	Radio Vendor:	NSN	Plan Year:		NLP Desc:	
Site Id:	ML63039H	Site Name:	Fitzpatrick Trust	Structural Owner:			
Type/Class:	Structure (Non-Building) / Monopole						
Address:	1436 E. Racine Ave	City:	Waukesha	State:	WI	Zip:	53186
Latitude:	42.99836	Longitude:	-88.208151	Created Date:	Apr 7 2015		
RF Manager:	Alex Lefter	RF Engineer:	Suhaib Najeeb	Last Save Date:	May 27 2015 2:40PM	Last Modified By:	SNAJEEB1

Project Type: NSD RFDS Upgraded? Template? Standard

Cell Site Configuration

Configuration Type:	Configuration 1G				
Final Configuration (Antenna/Line/TMA/RRU):	6/0/0/5	Solution Type:	Tower Top	RFDS Status:	Preliminary
Final Sector Count:	3	Design Type:	Final	Drawing Type:	Default

Sector Information

PCS UMTS Design	A	B	C	D	E	F
Antenna RAD Center:	140	140	140			
Antenna Azimuth:	10	120	250			
Mechanical Tilt:	0	2	0			
Electrical Tilt:	2	2	2			
L2100 Design	A	B	C	D	E	F
Antenna RAD Center:	140	140	140			
Antenna Azimuth:	10	120	250			
Mechanical Tilt:	0	2	0			
Electrical Tilt:	2	2	2			

Antenna Configuration (Site Level)	Antenna ReUse Existing?/Qty	Antenna Model	Antenna Qty	Antenna and (or) Ports Shared
PCS UMTS	/	Andrew - TMBXX-6516-A2M	3	No
L2100	/	Andrew - TMBXX-6516-A2M	3	No

TMA Configuration (Site Level)	TMA(ReUse existing TMA/New/Not Needed)	TMA Model	TMA Qty	TMA Location
PCS UMTS			0	
L2100			0	

Diplexer/Combiner Configuration	A	B	C	D	E	F
Diplexer Model (1):						
Diplexer Qty (1):						
Diplexer Model (2):						
Diplexer Qty (2):						
Combiner/Duplexer Model:						
Combiner/Duplexer Qty:						

Antenna Fiber/ Coax Solution (Site Level)	
Use HCS (Yes/No)?	Yes
Use NSN Fiber & OVP for Rooftop (Yes/No)?	No
Use Coax Cable (Yes/No)?	No

Hybrid Cable Configuration (Site Level)

Hybrid Cable Type:	High Capacity HCS - 1.584
Hybrid Cable Length:	175
Hybrid Cable Qty:	1

Hybrid Cable Config(Sector Level)	A	B	C	D	E	F
HCS run between Sectors (e.g. Rooftop/ Watertank etc.):						
Hybrid Cable Length (ft):						

COVP Configuration (Site Level)

COVP Type (1):	Large COVP	COVP Qty (1):	2
COVP Type (2):		COVP Qty (2):	

Coax Configuration	A	B	C	D	E	F
Existing Coax Qty:						
Existing Coax Size:						
Re-use existing coax for TDOA (Yes/No)?						
Qty. of excess coax lines to remove?						
New Coax Type:						
New Coax Length/Line:						
New Coax Qty:						
RET Home-Run Cable:						
RET Home-Run Cable Length(ft):						

System Modules (Site Level)	System Module Type(1)	System Module Qty(1)	System Module Type(2)	System Module Qty(2)	System Sub Module Type	System Sub Module Qty
PCS UMTS						
LTE	FSMF	1				
RF Modules (Site Level)	RF Module Type(1)	RF Module Qty(1)	RF Module Type(2)	RF Module Qty(2)		
PCS UMTS	FXFC	2				
L2100	FRIG	3				
Sector/BTS/Node-B (Site Level)	Sector Count:	BTS/Node-B Count:				
PCS UMTS	3	1				
L2100	3	1				

Comments

RF Comments:
Rotate Frame 10 degrees clockwise, Antenna skew angle are 0-10-0 degrees.



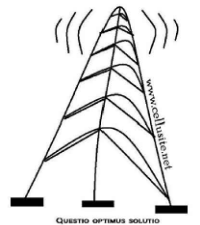
8550 BRYN MAWR AVENUE, SUITE 100
CHICAGO, ILLINOIS 60631

PLANS PREPARED FOR:



PLANS PREPARED BY:

CelluSite, LLC



ENGINEERING LICENSE:

DATE:	DESCRIPTION:	BY:	REV:
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05/31/15	REVIEW CD	BMW	B
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SITE INFORMATION:

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Waukesha COUNTY

SHEET TITLE:

RF DATA SHEET

SHEET NUMBER:

A-4

PLOT SCALE: 1:1 @ 11"x17"

RF DATA SHEET PAGE 1

SCALE: NOT TO SCALE

1

RF DATA SHEET PAGE 2

SCALE: NOT TO SCALE

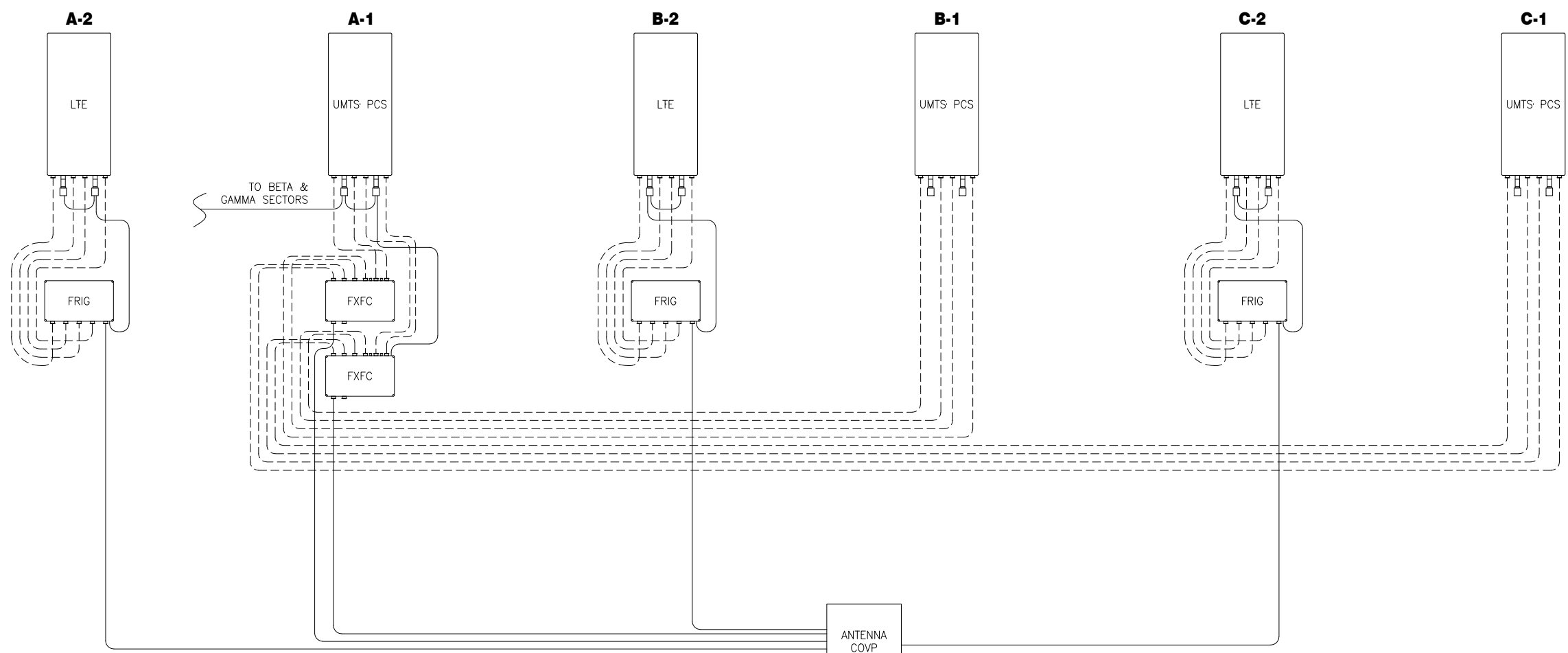
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DATE	DESCRIPTION	BY	REV
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05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:
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Waukesha COUNTY

SHEET TITLE:
RISER DIAGRAM

SHEET NUMBER:
A-5



ANTENNA LOCATION
EQUIPMENT LOCATION

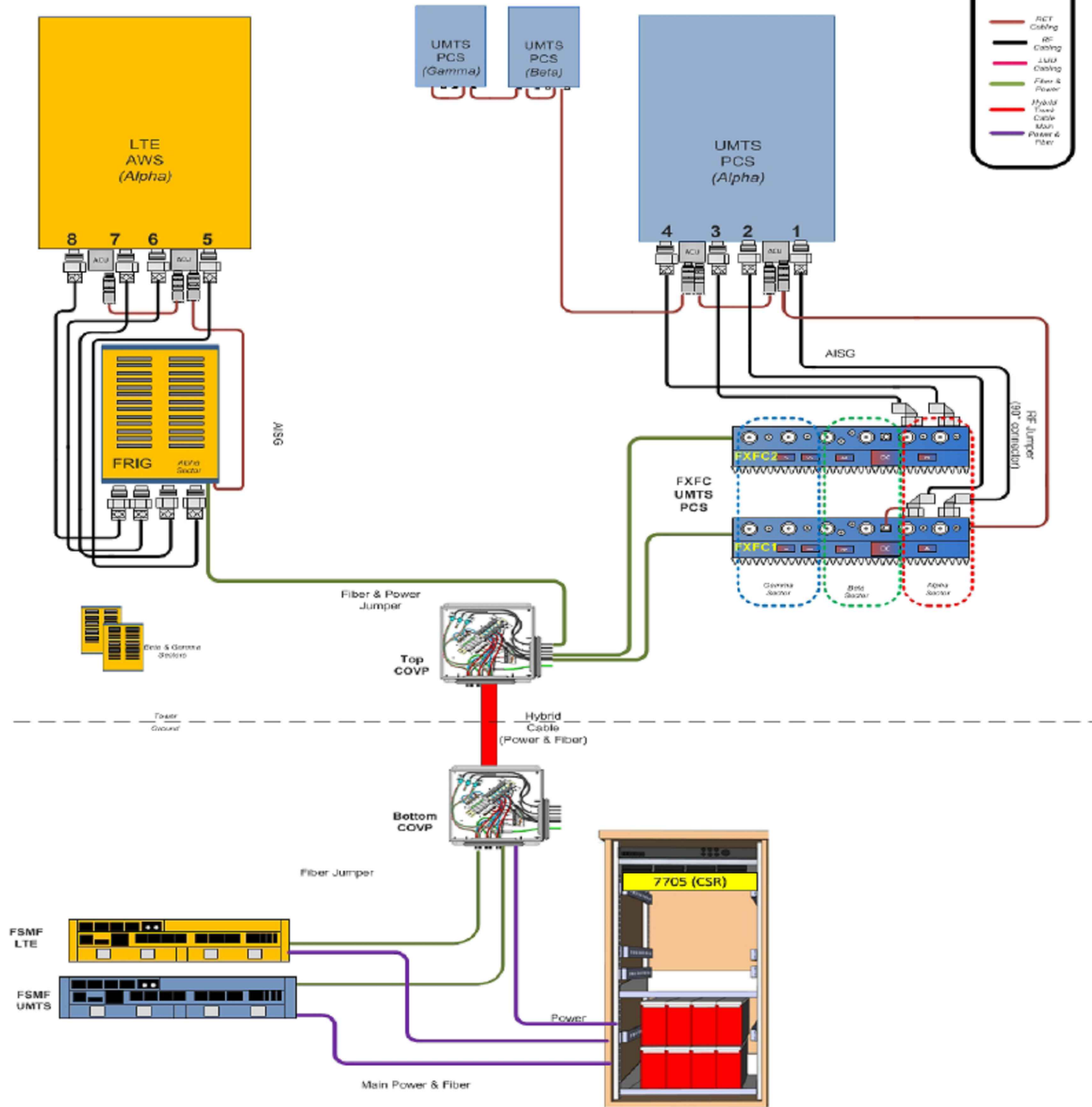
LEGEND

--- --- --- ---	RF CABLE
-----	RF JUMPER
-----	MAIN POWER & FIBER
-----	POWER & FIBER JUMPER
-----	AISG RET CABLE
-----	HYBRID CABLE
-----	COAX CABLE
-----	POWER

RISER DIAGRAM
SCALE: NOT TO SCALE

Configuration 1G for greenfield sites with UMTS1900 and LTE AWS

Drawing Date: 6/12/2014



Legend

- LTE
- PCS
- UMTS

- RF Cabling
- RF Cabling
- LMR Cabling
- Fiber & Power
- Hybrid
- Main
- Power & Fiber

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CelluSite, LLC

QUESTO OPTIMUS SOLUTO

ENGINEERING LICENSE:

DATE	DESCRIPTION	BY	REV
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SHEET TITLE:
ANTENNA CONFIGURATION SHEET

SHEET NUMBER:
A-6

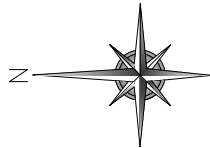
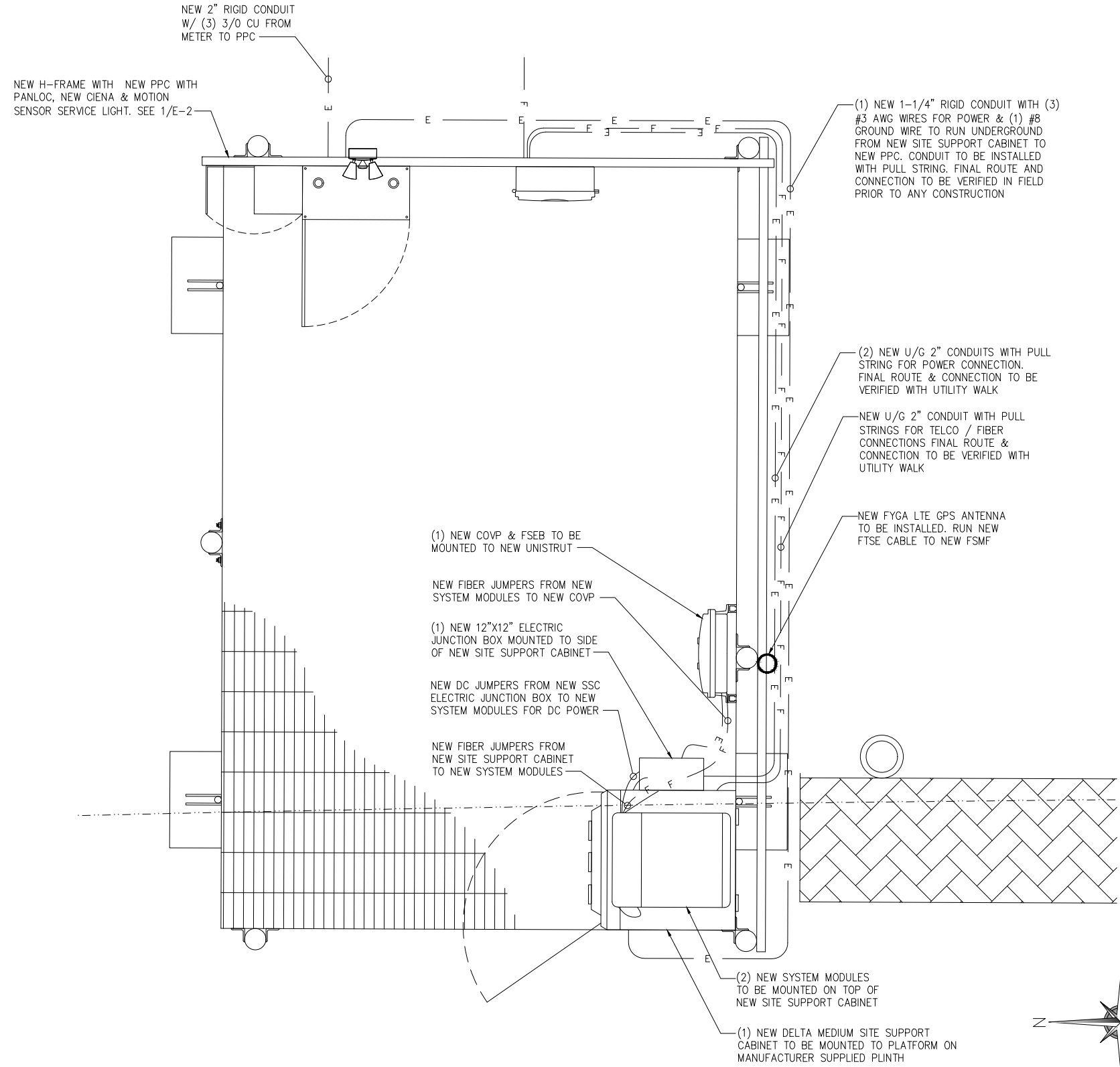
ANTENNA CONFIGURATION SHEET
SCALE: NOT TO SCALE

LEGEND

FIBER LINE — F —
ELECTRIC LINE — E —

NOTE:
ALL UNISTRUT, FASTENERS, HARDWARE,
ETC. ARE TO BE EITHER HOT-DIPPED
GALVANIZED OR STAINLESS STEEL.
GENERAL CONTRACTOR IS NOT TO USE
ZINC-PLATED OR PRE-GALVANIZED.

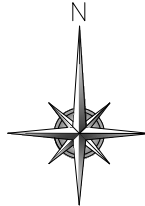
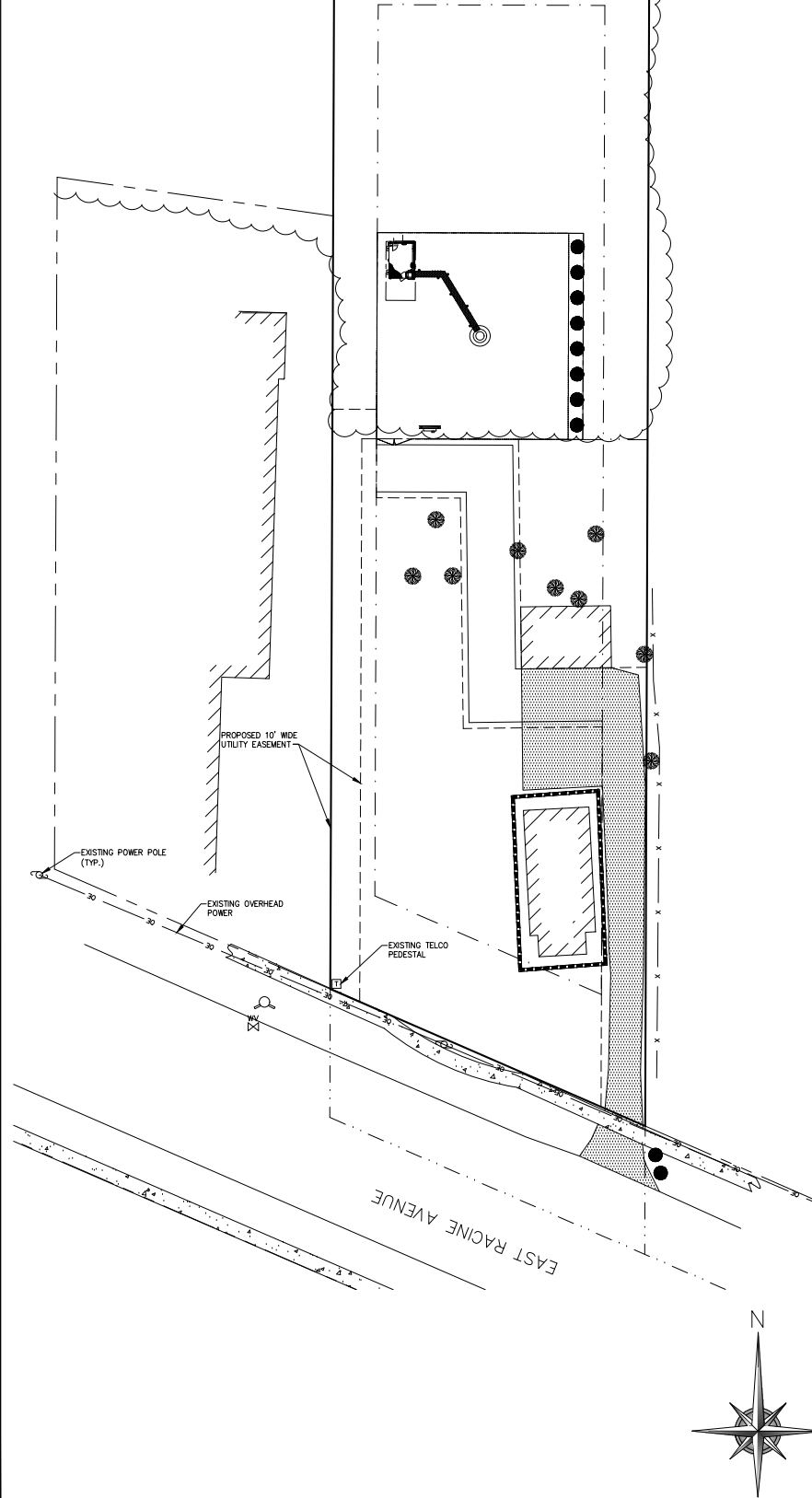
NOTE:
CONTRACTOR TO COORDINATE WITH
LOCAL UTILITY PROVIDERS TO
DETERMINE ROUTE FOR BOTH POWER
AND FIBER/TELCO FINAL DESIGN



ENLARGED UTILITY PLAN

SCALE: NTS

1



OVERALL UTILITY PLAN

SCALE: 1"=80'-0"

2

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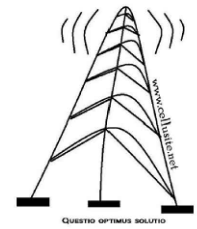
8550 BRYN MAWR AVENUE, SUITE 100
CHICAGO, ILLINOIS 60631

PLANS PREPARED FOR:

Parallel
INFRASTRUCTURE

PLANS PREPARED BY:

CelluSite, LLC



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05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:

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UTILITY PLANS

PLOT SCALE: 1:1 @ 11"x17"

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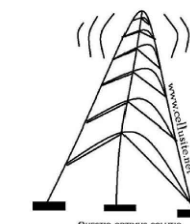
8550 BRYN MAWR AVENUE, SUITE 100
CHICAGO, ILLINOIS 60631

PLANS PREPARED FOR:

Parallel
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05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

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Waukesha COUNTY

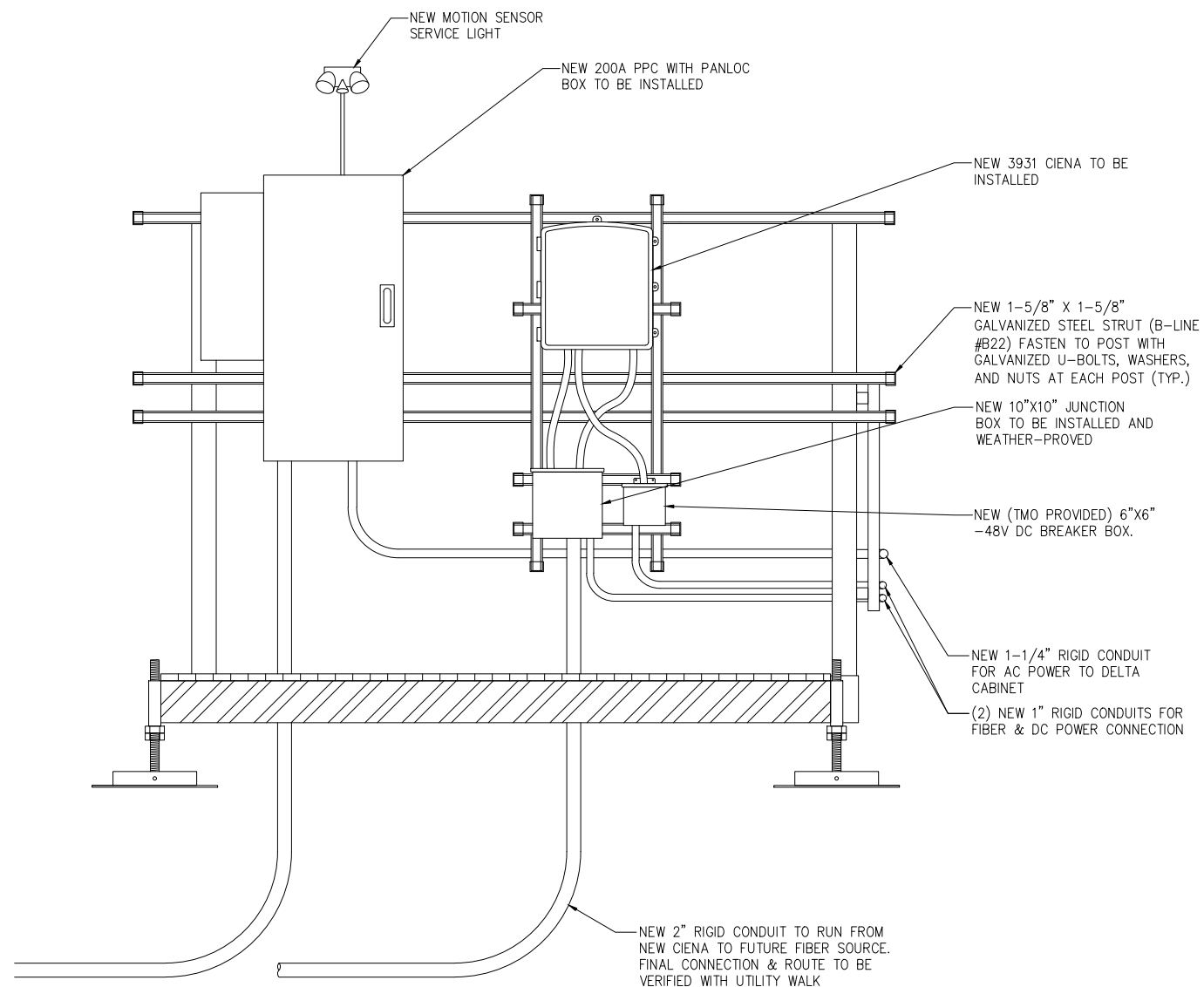
SHEET TITLE:

H-FRAME &
UTILITY DETAILS

SHEET NUMBER:

E-2

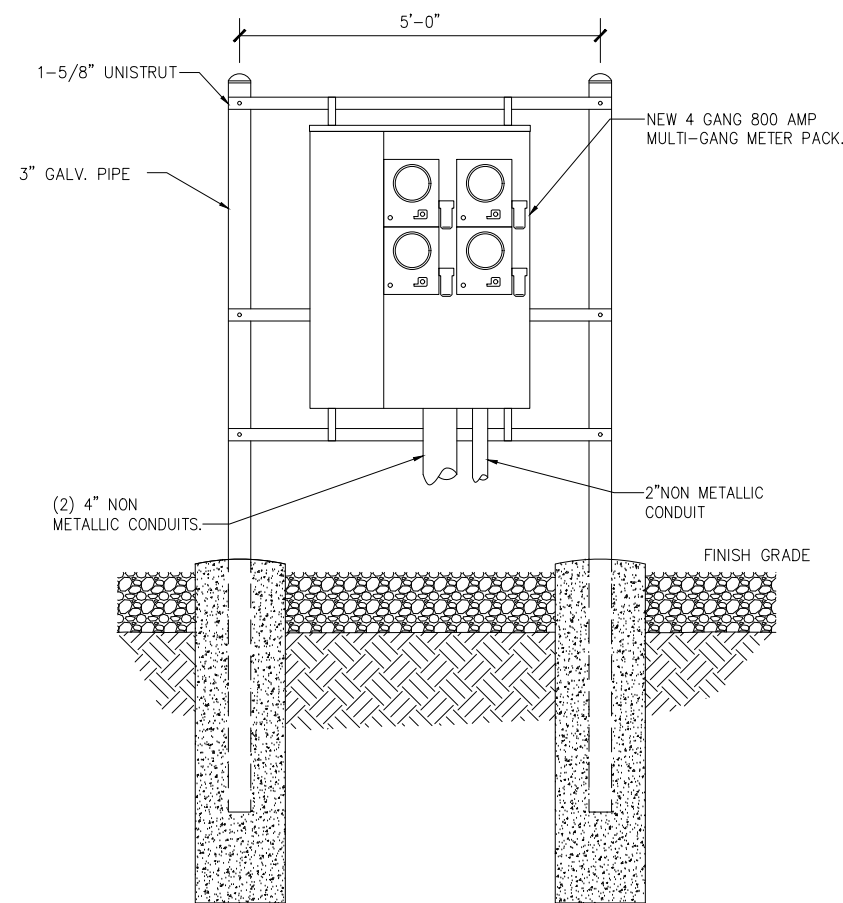
PLOT SCALE: 1:1 @ 11"x17"



H-FRAME DETAIL

SCALE: NOT TO SCALE

1



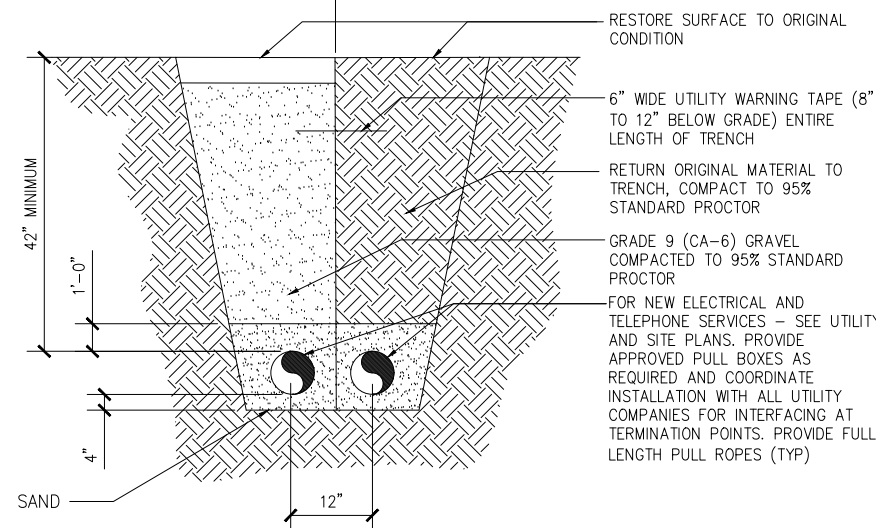
UTILITY H-FRAME DETAIL

SCALE: NOT TO SCALE

3

USE THIS SECTION UNDER PAVEMENT OR VEHICLE TRAFFIC AREA

USE THIS SECTION UNDER GRASS OR LAWN AREA



BURIED CONDUIT DETAIL

SCALE: NOT TO SCALE

2

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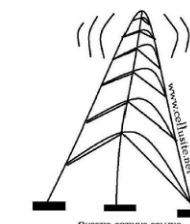
8550 BRYN MAWR AVENUE, SUITE 100
CHICAGO, ILLINOIS 60631

PLANS PREPARED FOR:

Parallel
INFRASTRUCTURE

PLANS PREPARED BY:

CelluSite, LLC



ENGINEERING LICENSE:

DATE	DESCRIPTION	BY	REV
05/24/15	REVIEW CD	BMW	A
05/31/15	REVIEW CD	BMW	B
08/25/15	REVIEW CD	BMW	C

SITE INFORMATION:

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WI-Waukesha

1436 E RACINE AVE.
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Waukesha COUNTY

SHEET TITLE:

UTILITY RISER
DIAGRAM & PANEL
SCHEDULE

SHEET NUMBER:

E-3

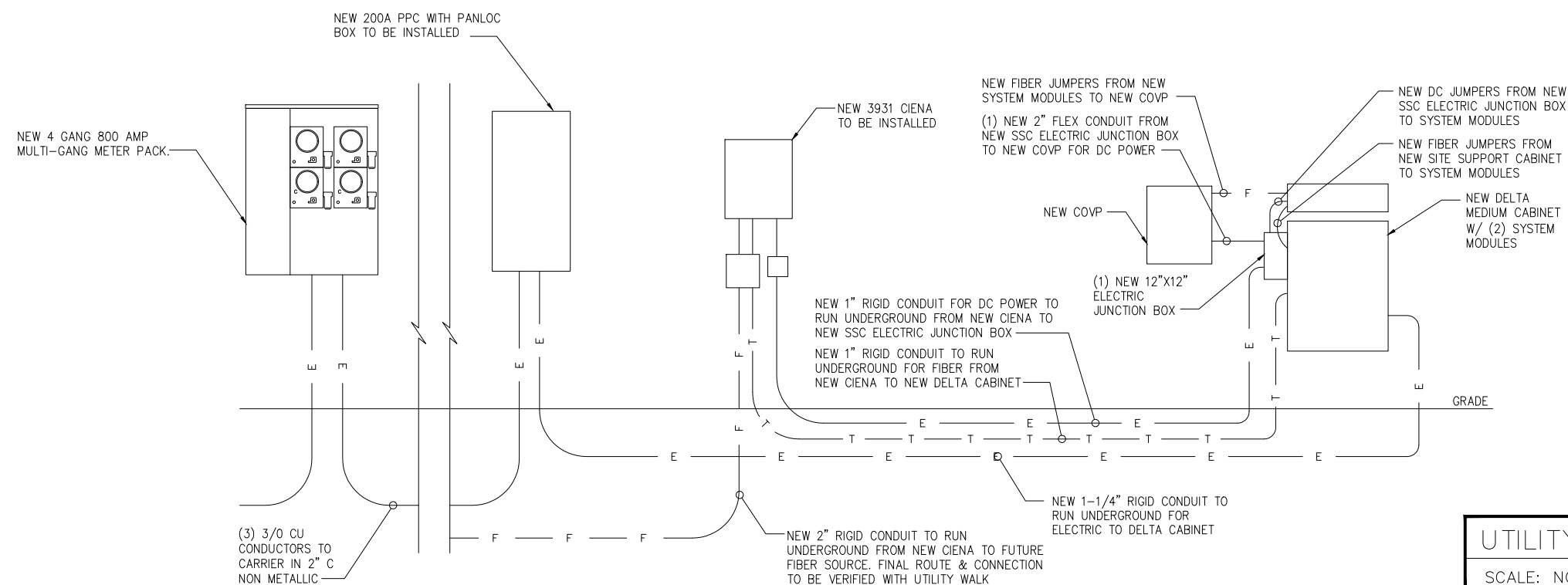
PLOT SCALE: 1:1 @ 11"x17"

CKT	LOAD DESCRIPTION	BREAKER AMPS	BREAKER POLES	BREAKER STATUS	SERVICE LOAD VA	USAGE FACTOR	PHASE A VA	PHASE B VA	USAGE FACTOR	SERVICE LOAD VA	BREAKER STATUS	BREAKER POLES	BREAKER AMPS	LOAD DESCRIPTION	CKT
1	SITE SUPPORT CABINET	100	2	ON	4200	1.25	5250		0.00	0	N/A	---	---	---	2
3	---	---	---	ON	4200	1.25		5250	0.00	0	N/A	---	---	---	4
5	SERVICE LIGHT	20	1	ON	500	1.00	500		0.00	0	N/A	---	---	---	6
7	---	---	---	N/A	0	0.00		0	0.00	0	N/A	---	---	---	8
9	---	---	---	N/A	0	0.00	0		0.00	0	N/A	---	---	---	10
11	---	---	---	N/A	0	0.00		0	0.00	0	N/A	---	---	---	12
13	---	---	---	N/A	0	0.00	0		0.00	0	N/A	---	---	---	14
15	---	---	---	N/A	0	0.00		0	0.00	0	N/A	---	---	---	16
17	---	---	---	N/A	0	0.00	0		0.00	0	N/A	---	---	---	18
19	---	---	---	N/A	0	0.00		0	0.00	0	N/A	---	---	---	20
21	---	---	---	N/A	0	0.00	0		0.00	0	N/A	---	---	---	22
23	GFCI OUTLET	20	1	ON	180	1.00		180	0.00	0	N/A	---	---	---	24
							5750	5430	VA			TOTAL KVA	11.18		
												AMPS	46.58		

PANEL SCHEDULE

SCALE: NOT TO SCALE

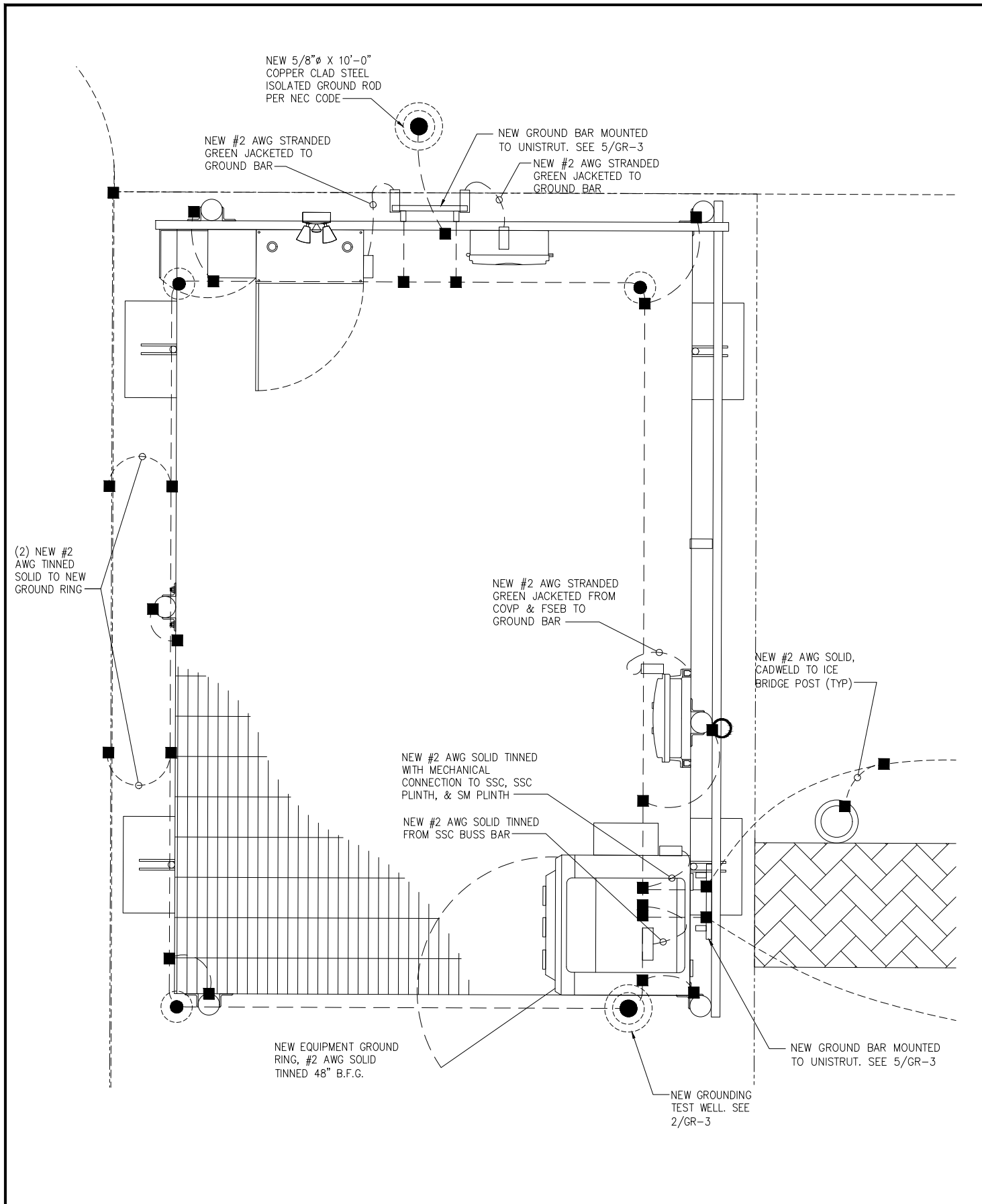
2



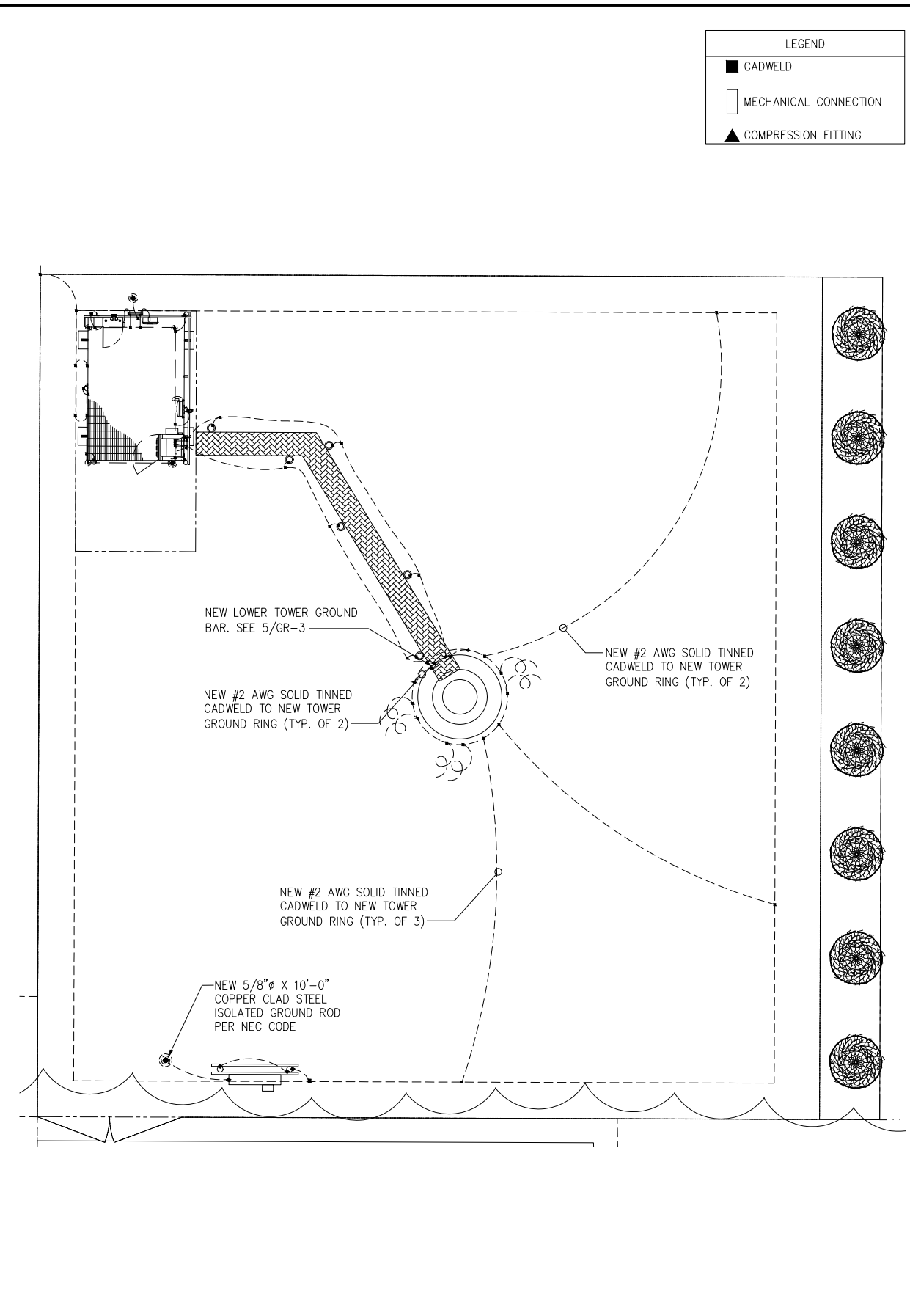
UTILITY RISER DIAGRAM

SCALE: NOT TO SCALE

1



ENLARGED GROUNDING PLAN
SCALE: 1"=1'-0" 1



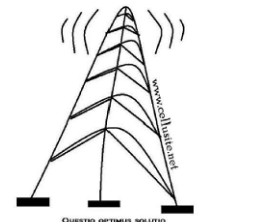
OVERALL GROUNDING PLAN
SCALE: N.T.S. 2

LEGEND

■	CADWELD
□	MECHANICAL CONNECTION
▲	COMPRESSION FITTING

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PLANS PREPARED BY:
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QUESTO OPTIMUS SOLUTIONS

ENGINEERING LICENSE:

DATE:	DESCRIPTION:	BY:	REV:
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05/31/15	REVIEW CD	BMW	B
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WI-Waukesha
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Waukesha, WI 53189
Waukesha COUNTY

SHEET TITLE:
GROUNDING PLAN

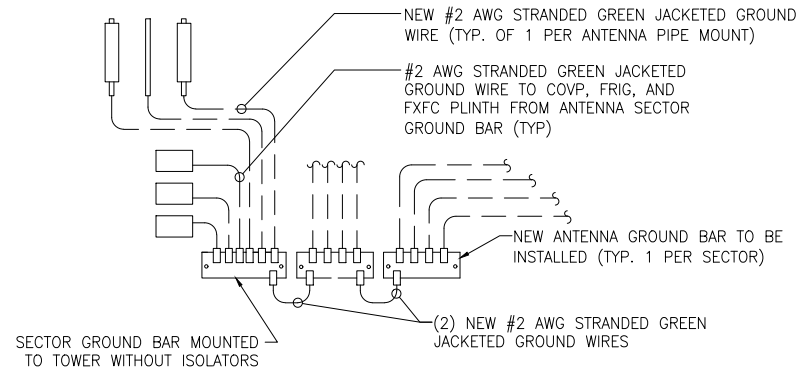
SHEET NUMBER:
GR-1

PLOT SCALE: 1:1 @ 11"x17"

NOTES:

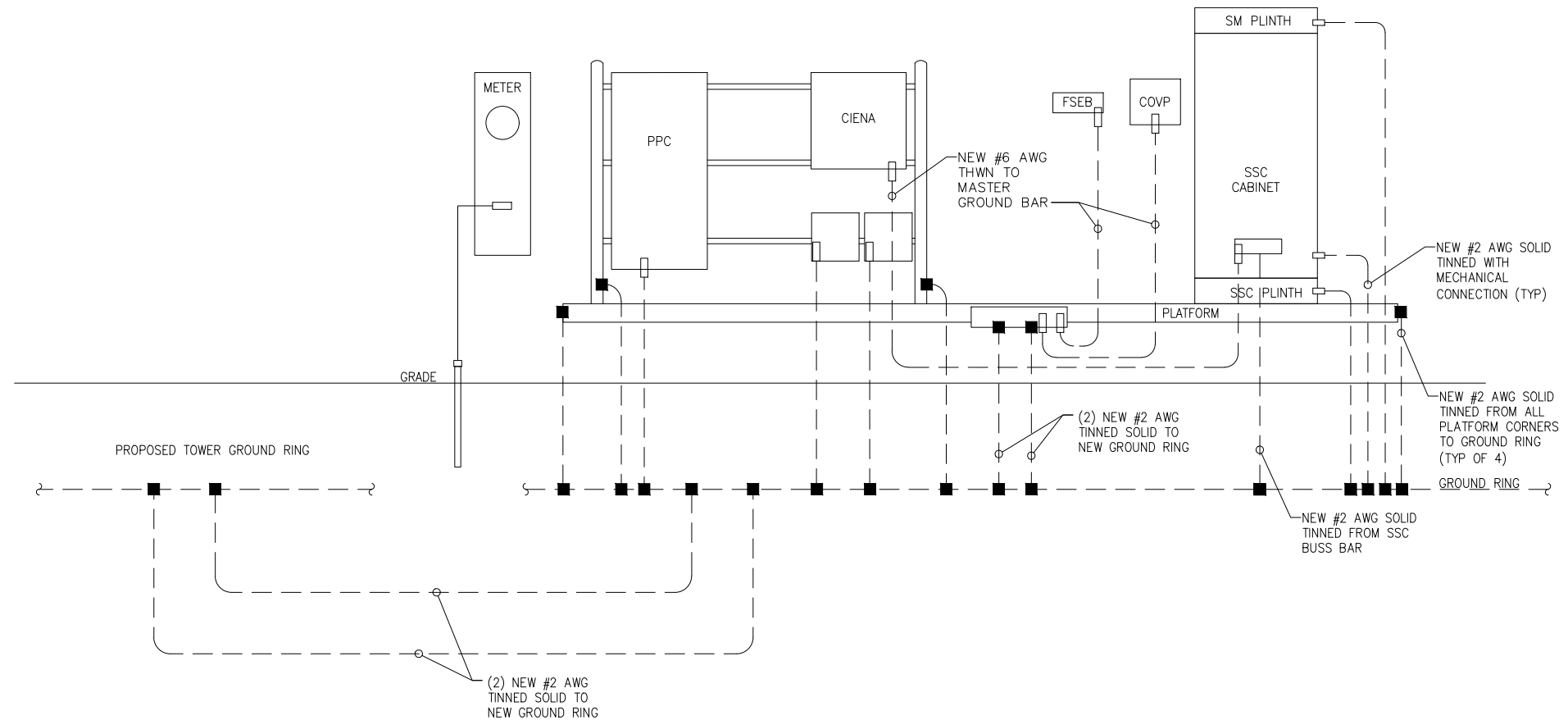
1. ALL ELECTRICAL WORK SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE (EDITION ADOPTED BY LOCAL JURISDICTION) AND APPLICABLE LOCAL CODES.
2. GROUNDING SHALL COMPLY WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.
3. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED.
4. WIRES AND CABLES FOR POWER 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.
5. WIRES AND CABLES FOR POWER SHALL BE INSTALLED IN GALVANIZED RIGID STEEL CONDUIT OR FLEXIBLE LIQUID TIGHT CONDUIT AS INDICATED ON DRAWING.
6. CONTRACTOR TO OBTAIN ALL PERMITS, PAY PERMIT FEES, AND BE RESPONSIBLE FOR SCHEDULING INSPECTIONS.
7. COORDINATE WITH UTILITY COMPANIES SERVICE ENTRANCE REQUIREMENTS.
8. PROVIDE ALL LABOR AND MATERIAL DESCRIBED ON THIS DRAWING, AND ALL ITEMS INCIDENTAL TO COMPLETING AND PRESENTING THIS PROJECT AS FULLY OPERATIONAL.
9. GROUNDING CONNECTIONS SHALL BE EXOTHERMIC TYPE ("CADWELD") TO ANTENNA MASTS, AND THE GROUND BARS. REMAINING GROUNDING CONNECTIONS SHALL BE COMPRESSION FITTINGS.
10. GROUND COAXIAL CABLE SHIELDS AT BOTH ENDS WITH COAX CABLE GROUNDING KITS & INSTALL WEATHER PROOFING KIT AT EACH CONNECTION.
11. 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.
12. 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.
13. CONTRACTOR TO PROVIDE TELEPHONE CONDUIT AS SHOWN ON PLANS.
14. CONTRACTOR TO PROVIDE ELECTRIC CONDUIT AS SHOWN ON PLANS.
15. NOTIFY LOCAL UTILITY SERVICE PRIOR TO ANY INSTALLATION.
16. 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.
17. 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.
18. ALL CADWELDS ABOVE FINISHED GRADE SHALL BE PAINTED WITH CO-GALVANIZED ZINC ENRICHED PAINT TO MATCH COLOR OBJECT BONDED TO.
19. CONNECT COAX GROUND KITS TO MASTER GROUND BAR AT BASE OF TOWER.
20. CONNECT COAX GROUND KITS TO GROUND BUS AT TOP OF TOWER.
21. CONNECT LNA GROUND TO GROUND BUS AT TOP OF TOWER.
22. ALL GROUNDING CONNECTIONS TO BE MADE USING EXOTHERMIC WELD PROCESS UNLESS OTHERWISE APPROVED BY DESIGNER.
23. ELECTRICAL CONTRACTOR TO PULL BONDING JUMPER @ PURCELL ONLY IF DISCONNECT GROUND IS TIED TO GROUND FIELD INSTEAD OF SEPARATE GROUND ROD.
24. 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.
25. 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.
26. 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.
27. NUMBER OF ANTENNAS REPRESENTED IN THIS DETAIL ARE FOR SHOWING CLARITY OF GROUND SYSTEM REQUIREMENTS ONLY. SEE RF INFO FOR ANTENNA QUANTITY.
28. CONTRACTOR TO 'NOALOX' ALL CONNECTIONS TO GROUND BARS.
29. ALL GROUND WIRES ENTERING GROUND SHALL HAVE PVC SLEEVE.

TYPICAL ANTENNA SECTOR



LEGEND

- — — GROUNDING WIRE
- EXOTHERMIC CONNECTION (CADWELD)
- MECHANICAL CONNECTION/DOUBLE HOLE LUG TYPE CONNECTION
- ⚡ BOND TO TOWER



GROUNDING RISER

SCALE: NONE

1

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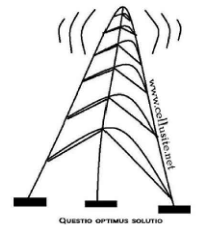
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CHICAGO, ILLINOIS 60631

PLANS PREPARED FOR:

Parallel
INFRASTRUCTURE

PLANS PREPARED BY:

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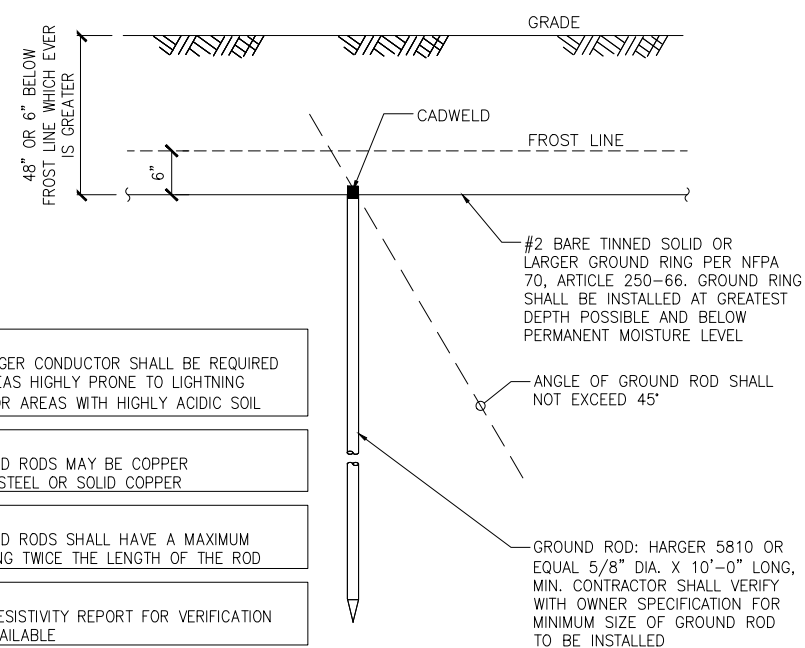
SHEET TITLE:

GROUNDING
RISER

SHEET NUMBER:

GR-2

PLOT SCALE: 1:1 @ 11"x17"

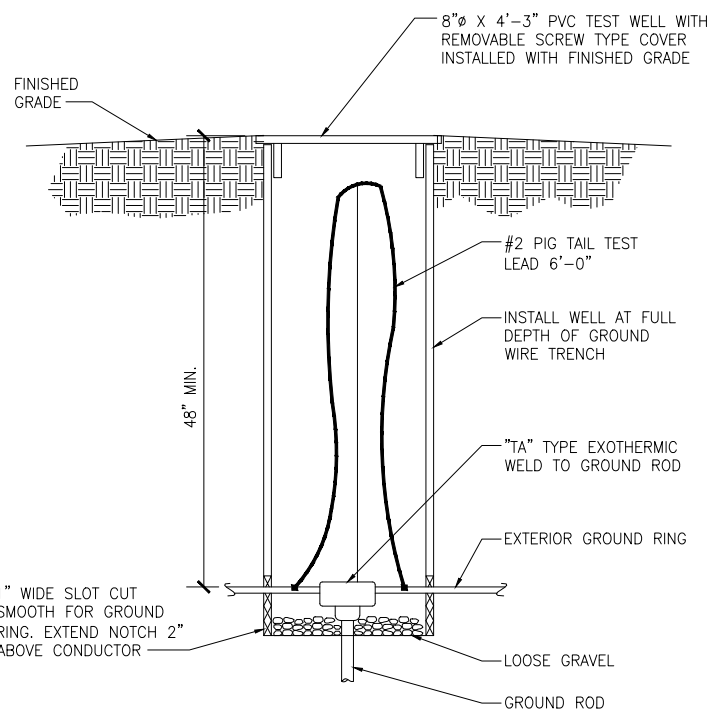


- NOTE:
A LARGER CONDUCTOR SHALL BE REQUIRED IN AREAS HIGHLY PRONE TO LIGHTNING AND/OR AREAS WITH HIGHLY ACIDIC SOIL
- NOTE:
GROUND RODS MAY BE COPPER CLAD STEEL OR SOLID COPPER
- NOTE:
GROUND RODS SHALL HAVE A MAXIMUM SPACING TWICE THE LENGTH OF THE ROD
- NOTE:
SEE RESISTIVITY REPORT FOR VERIFICATION AS AVAILABLE
- NOTE:
GROUND RODS INSTALLED WITHIN CLOSE PROXIMITY TO TOWER OR WHEN SOIL IS AT OR BELOW 2,000 OHM-CM, SHALL BE GALVANIZED TO PREVENT GALVANIC CORROSION OF TOWER, (SEE ANSI/TIA-EIA-222)

GROUND ROD DETAIL

SCALE: NOT TO SCALE

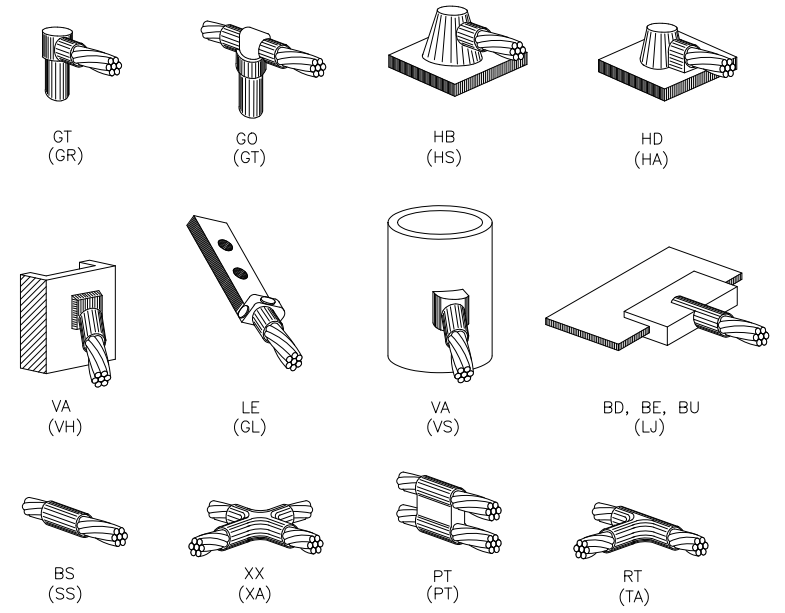
1



TEST WELL DETAIL

SCALE: NOT TO SCALE

2

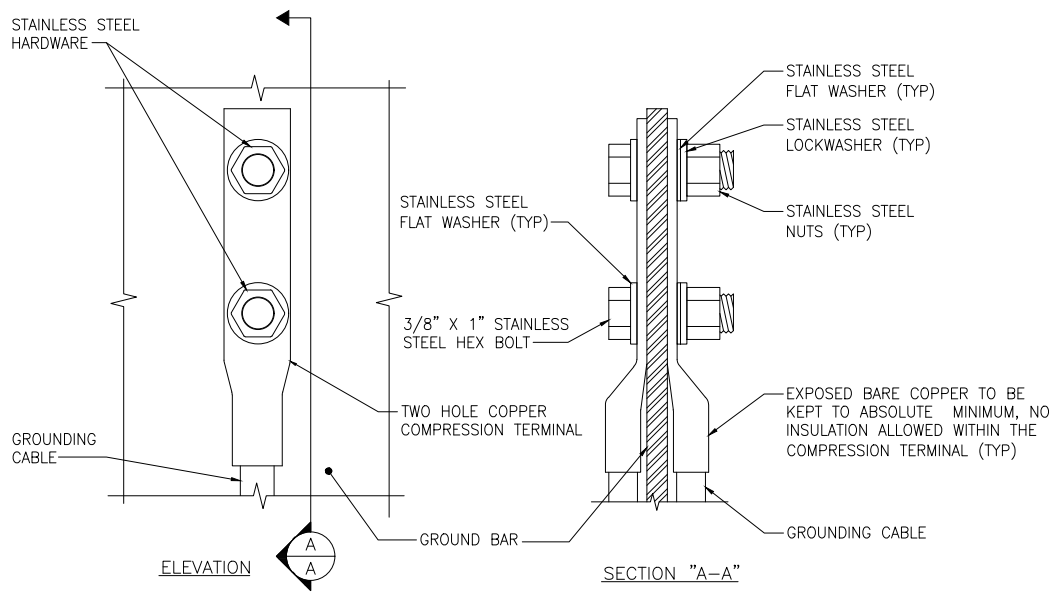


EXOTHERMIC WELD TYPES

SCALE: NOT TO SCALE

3

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.

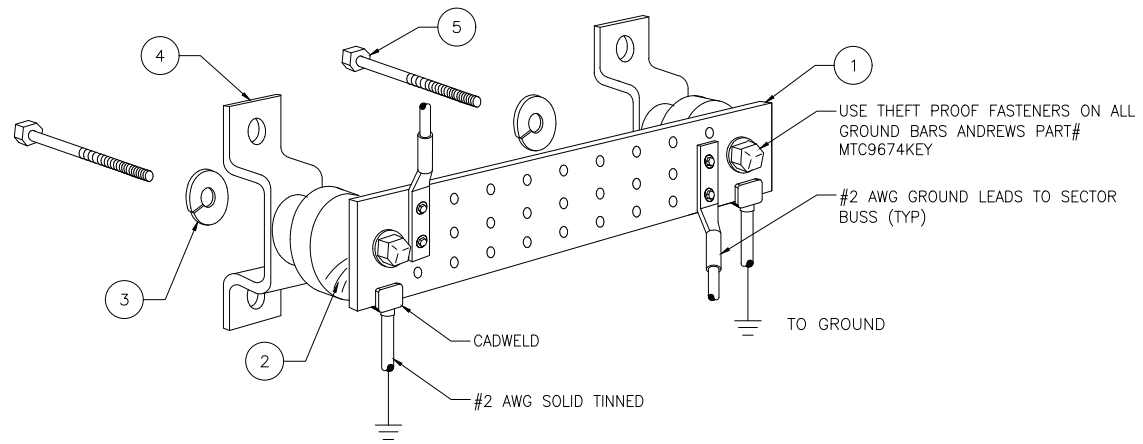


- OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS
- NO CRIMPING OF SOLID #2. USE CADWELD ONLY

GROUND BAR CONNECTION DETAIL

SCALE: NOT TO SCALE

4



KEY NOTES

- 1/4" THK ELECTRICAL TINNED GROUND BAR HARGER OR APPROVED EQUAL HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION
- INSULATORS
- 3/8" STAINLESS STEEL LOCKWASHERS
- WALL MOUNTING BRACKET
- 3/8" STAINLESS STEEL BNLF BOLTS

GROUND BAR DETAIL

SCALE: NOT TO SCALE

5

- NOTE:
HARDWARE SHALL BE STAINLESS STEEL
- NOTE:
CONTRACTOR SHALL GROUP INCOMING WIRES
- NOTE:
CONTRACTOR TO APPLY 'KOPR-SHIELD' TO ALL CONNECTIONS

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SHEET TITLE:
GROUNDING DETAILS

SHEET NUMBER:
GR-3

PLOT SCALE: 1:1 @ 11"x17"