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AT&T SITE NUMBER: 870081
FA#: 10152021
LAKE CITY SOUTH
1826 SW STATE ROAD 47
LAKE CITY, FL 32025
GENERATOR PROJECT

APPLICABLE CODES

ALL WORK SHALL COMPLY WITH THE FOLLOWING APPLICABLE CODES:

2020 BUILDING CODE OF FLORIDA
2020 ENERGY CODE
2020 ELECTRICAL CODE
2020 MECHANICAL CODE

IN THE EVENT OF CONFLICT, THE MOST RESTRICTIVE CODE SHALL PREVAIL

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
HANDICAPPED ACCESS REQUIREMENTS ARE NOT REQUIRED
IN ACCORDANCE WITH THE 2020 FLORIDA BUILDING CODE, A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

SITE INFORMATION

APPLICANT:	**AT&T WIRELESS** 402 FRANKLIN RD. BRENTWOOD, TN 37027
TOWER OWNER:	**CROWN CASTLE** 4511 HIMES AVENUE SUITE 210 TAMPA, FL 33614
STRUCTURE TYPE:	GUYED TOWER
ASSESSORS PARCEL NUMBER:	18-4S-17-08461-000
LATITUDE:	30° 08' 43.7 "N 30.1454720 °
LONGITUDE:	82° 39' 10.9 "W -82.6530280°
LAT/LONG TYPE:	NAD-83
EXISTING ZONING:	-
PROPOSED PROJECT AREA:	0' S.F.
TYPE OF CONSTRUCTION:	TYPE V-B
OCCUPANCY GROUP:	U
JURISDICTION:	COLUMBIA COUNTY, FL

PROJECT TEAM

CLIENT REPRESENTATIVE (NATIONAL):
MASTEC NETWORK SOLUTIONS
3443 AIRPORT RD
SACRAMENTO, CA 95834
CONTACT: CLEON MITCHELL
EMAIL: Cleon.Mitchell@mastec.com

SCOPING ENGINEER (NATIONAL):
MASTEC NETWORK SOLUTIONS
2189 PARKWAY LAKE DR.
HOOVER, AL 35244
CONTACT: DAVID ROGERS
EMAIL: David.Rogers@MASTEC.COM

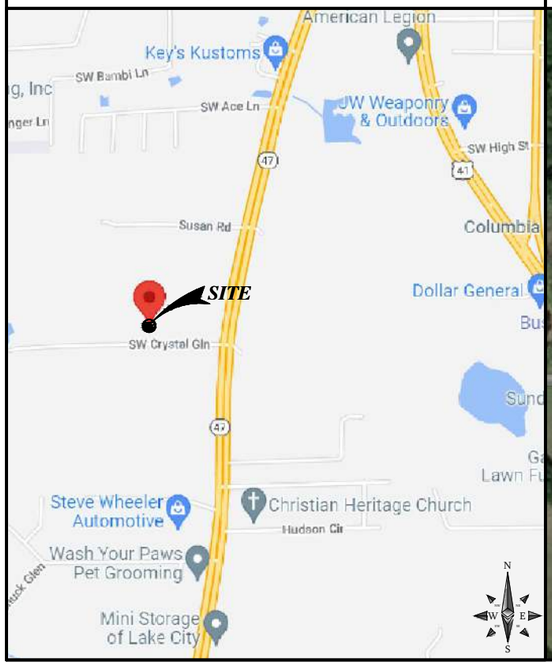
ENGINEERING (NATIONAL):
MASTEC NETWORK SOLUTIONS
507 AIRPORT BLVD., STE. 111
MORRISVILLE, NC 27560
CONTACT: RAPHAEL MOHAMED
PH: (919) 674-5895
EMAIL: Raphael.Mohamed@mastec.com

CONSTRUCTION:
MASTEC NETWORK SOLUTIONS
1025 GREENWOOD BLVD., STE. 470
LAKE MARY, FL 32746
CONTACT: GREG HOLSEN
EMAIL: Greg.Holsen@mastec.com

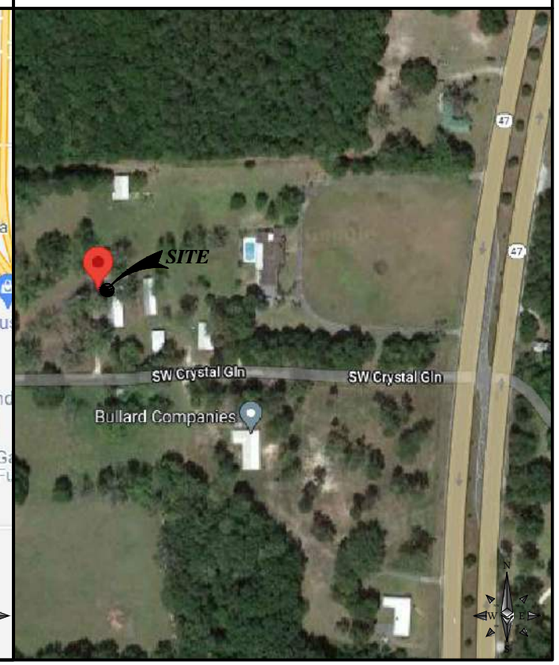
SITE ACQUISITION (NATIONAL):
MASTEC NETWORK SOLUTIONS
2189 PARKWAY LAKE DR.
HOOVER, AL 35244
CONTACT: CLEON MITCHELL
EMAIL: Cleon.Mitchell@mastec.com

LOCATION MAP

VICINITY MAP



LOCAL MAP



DRIVING DIRECTIONS

DIRECTIONS FROM: 402 FRANKLIN RD.
BRENTWOOD, TN 37027

1. GET ON I-24 E IN NASHVILLE FROM OLD HICKORY BLVD AND BELL RD.
2. FOLLOW I-24 E AND I-75 S TO FL-47 N IN COLUMBIA COUNTY. TAKE EXITR 423 FROM I-75 S
3. FOLLOW FL-47 N TO SW CRYSTAL GLN

PROJECT DESCRIPTION

AT&T MOBILITY PROPOSES TO MODIFY AN EXISTING UNMANNED WIRELESS COMMUNICATIONS FACILITY. THIS MODIFICATION WILL CONSIST OF THE FOLLOWING:

TOWER SCOPE OF WORK
- NO TOWER WORK

GROUND SCOPE OF WORK
- INSTALL (1) 30kW KOHLER STANDBY DIESEL GENERATOR (KOHLER 30REOZK) WITH BASE FUEL TANK ON A (E) CONCRETE
- INSTALL (1) 200A ATS/CAM LOC (#GM90908)
- INSTALL ATS ALARM RELAY
- INSTALL (N) E-STOP
- REMOVE (E) ATS/CAM LOC

DRAWING INDEX

SHEET NO:	SHEET TITLE
T-1	TITLE SHEET
GN-1	GENERAL NOTES
A-0.1	OVERALL SITE PLAN
A-0.2	OVERALL SITE PLAN
E-1	ELECTRICAL PLAN
E-2	EQUIPMENT & CONDUIT DETAILS
E-3	ALARM DETAILS & ONE LINE DIAGRAM
G-1	GROUNDING DETAILS

APPROVALS

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS & AUTHORIZE THE SUBCONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT & MAY IMPOSE CHANGES OR MODIFICATIONS.

AT&T _____ DATE: _____

SITE ACQUISITION _____ DATE: _____

CONSTRUCTION MANAGER _____ DATE: _____

SCALE

THE DRAWING SCALES SHOWN IN THIS SET REPRESENT THE CORRECT SCALE ONLY WHEN THESE DRAWINGS ARE PRINTED IN A 11"X17" OR 24"X36" FORMAT.

811 Know what's below. Call before you dig.

at&t

MasTec Network Solutions

507 AIRPORT BLVD., STE. 111
MORRISVILLE, NC 27560

FA CODE:	FA # **10152021**
DRAWN BY:	JG
JOB #:	MRIND056522

REV	DATE	DESCRIPTION
3	12/5/22	FOR PERMITTING
2	08/24/22	FOR PERMITTING
1	06/21/22	FOR PERMITTING
0	06/13/22	FOR PERMITTING

RAPHAEL MOHAMED
LICENSE
No. 82846
STATE OF FLORIDA
PROFESSIONAL ENGINEER

08/24/22

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

870081
LAKE CITY SOUTH
1826 SW STATE ROAD 47
LAKE CITY, FL 32025
FA NUMBER
10152021

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

GENERAL NOTES:

1. ALL SUB-CONTRACTORS ARE TO SIGN INTO THE LL AND AT&T NOC'S ALONG WITH BEFORE THE START OF WORK AND END OF WORK EACH DAY. THE AT&T LOGBOOK MUST ALSO BE SIGNED EACH DAY ON SITE.
2. ALL ORIGINAL PERMITS MUST BE POSTED ON SITE BEFORE WORK CAN COMMENCE. ALL PERMITS ARE REQUIRED TO BE IN A NOTICEABLE LOCATION FOR REVIEW BY THE PERMITTING JURISDICTION.
3. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR: GENERAL CONTRACTOR RESPONSIBLE FOR CONSTRUCTION
   CARRIER: AT&T
   TOWER OWNER: CROWN CASTLE
4. THESE DRAWINGS HAVE BEEN PREPARED USING STANDARDS OF PROFESSIONAL CARE AND COMPLETENESS NORMALLY EXERCISED UNDER SIMILAR CIRCUMSTANCES BY REPUTABLE ENGINEERS IN THIS OR SIMILAR LOCALITIES. IT IS ASSUMED THAT THE WORK DEPICTED WILL BE PERFORMED BY AN EXPERIENCED CONTRACTOR AND/OR WORKPEOPLE WHO HAVE A WORKING KNOWLEDGE OF THE APPLICABLE CODE STANDARDS AND REQUIREMENTS AND OF INDUSTRY ACCEPTED STANDARD GOOD PRACTICE. AS NOT EVERY CONDITION OR ELEMENT IS (OR CAN BE) EXPLICITLY SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL USE INDUSTRY ACCEPTED STANDARD GOOD PRACTICE FOR MISCELLANEOUS WORK NOT EXPLICITLY SHOWN.
5. THESE DRAWINGS REPRESENT THE FINISHED STRUCTURE. THEY DO NOT INDICATE THE MEANS OR METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY FOR PROTECTION OF LIFE AND PROPERTY DURING CONSTRUCTION. SUCH MEASURES SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, FORMWORK, SHORING, ETC. SITE VISITS BY THE ENGINEER OR HIS REPRESENTATIVE WILL NOT INCLUDE INSPECTION OF THESE ITEMS AND IS FOR STRUCTURAL OBSERVATION OF THE FINISHED STRUCTURE ONLY.
6. NOTES AND DETAILS IN THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS. WHERE NO DETAILS ARE SHOWN, CONSTRUCTION SHALL CONFORM TO SIMILAR WORK ON THE PROJECT, AND/OR AS PROVIDED FOR IN THE CONTRACT DOCUMENTS. WHERE DISCREPANCIES OCCUR BETWEEN PLANS, DETAILS, GENERAL NOTES, AND SPECIFICATIONS, THE GREATER, MORE STRICT REQUIREMENTS, SHALL GOVERN. IF FURTHER CLARIFICATION IS REQUIRED CONTACT THE ENGINEER OF RECORD.
7. SUBSTANTIAL EFFORT HAS BEEN MADE TO PROVIDE ACCURATE DIMENSIONS AND MEASUREMENTS ON THE DRAWINGS TO ASSIST IN THE FABRICATION AND/OR PLACEMENT OF CONSTRUCTION ELEMENTS BUT IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY THE DIMENSIONS, MEASUREMENTS, AND/OR CLEARANCES SHOWN IN THE CONSTRUCTION DRAWINGS PRIOR TO FABRICATION OR CUTTING OF ANY NEW OR EXISTING CONSTRUCTION ELEMENTS. IF IT IS DETERMINED THAT THERE ARE DISCREPANCIES AND/OR CONFLICTS WITH THE CONSTRUCTION DRAWINGS THE ENGINEER OF RECORD IS TO BE NOTIFIED AS SOON AS POSSIBLE.
8. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING CONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF MASTEC NETWORK SOLUTIONS.
9. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
10. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
11. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
12. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CARRIER AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
13. CONTRACTOR IS TO PERFORM A SITE INVESTIGATION AND IS TO DETERMINE THE BEST ROUTING OF ALL CONDUITS FOR POWER, AND TELCO AND FOR GROUNDING CABLES AS SHOWN IN THE POWER, TELCO, AND GROUNDING PLAN DRAWINGS.
14. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF AMERICAN TOWER COMPANY.
15. CONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
16. CONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

CONCRETE, FOUNDATIONS, AND REINFORCING STEEL (FOR CAST IN PLACE OPTION):

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. UNLESS NOTED OTHERWISE, SOIL BEARING PRESSURE USED FOR DESIGN OF SLABS AND FOUNDATIONS IS ASSUMED TO BE 1000 psf.
3. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH ($f'c$) OF 3000 psi AT 28 DAYS, UNLESS NOTED OTHERWISE. NO MORE THAN 90 MINUTES SHALL ELAPSE FROM BATCH TIME TO TIME OF PLACEMENT UNLESS APPROVED BY THE ENGINEER OF RECORD. TEMPERATURE OF CONCRETE SHALL NOT EXCEED 90°f AT TIME OF PLACEMENT.
4. CONCRETE EXPOSED TO FREEZE-THAW CYCLES SHALL CONTAIN AIR ENTRAINING ADMIXTURES. AMOUNT OF AIR ENTRAINMENT TO BE BASED ON SIZE OF AGGREGATE AND F3 CLASS EXPOSURE (VERY SEVERE). CEMENT USED TO BE TYPE II PORTLAND CEMENT WITH A MAXIMUM WATER-TO-CEMENT RATIO (W/C) OF 0.45.
5. ALL STEEL REINFORCING SHALL CONFORM TO ASTM A615. ALL WELDED WIRE FABRIC (WWF) SHALL CONFORM TO ASTM A185. ALL SPLICES SHALL BE CLASS "B" TENSION SPLICES, UNLESS NOTED OTHERWISE. ALL HOOKS SHALL BE STANDARD 90 DEGREE HOOKS, UNLESS NOTED OTHERWISE. YIELD STRENGTH (Fy) OF STANDARD DEFORMED BARS ARE AS FOLLOWS:
   #4 BARS AND SMALLER 40 ksi
   #5 BARS AND LARGER 60 ksi
6. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH.....3"
   CONCRETE EXPOSED TO EARTH OR WEATHER:
      #6 BARS AND LARGER.....2"
      #5 BARS AND SMALLER.....1-1/2"
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
      SLAB AND WALLS.....3/4"
      BEAMS AND COLUMNS.....1-1/2"
7. A TOOLED EDGE OR A 3/4" CHAMFER SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE CONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE CONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, #6 STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 BARE SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (i.e. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 ft OF MAIN GROUND RING WITH (1) #2 BARE SOLID TINNED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED FOR THE FACILITY GROUNDING AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (i.e., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 BARE SOLID TINNED COPPER IN 1/2" NON-METALLIC, FLEXIBLE CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).
21. BUILDINGS WHERE THE MAIN GROUNDING CONDUCTORS ARE REQUIRED TO BE ROUTED TO GRADE, THE CONTRACTOR SHALL ROUTE TWO GROUNDING CONDUCTORS FROM THE ROOFTOP, TOWERS, AND WATER TOWERS GROUNDING RING, TO THE EXISTING GROUNDING SYSTEM, THE GROUNDING CONDUCTORS SHALL NOT BE SMALLER THAN 2/0 COPPER. ROOFTOP GROUNDING RING SHALL BE BONDED TO THE EXISTING GROUNDING SYSTEM, THE BUILDING STEEL COLUMNS, LIGHTNING PROTECTION SYSTEM, AND BUILDING MAIN WATER LINE (FERROUS OR NONFERROUS METAL PIPING ONLY).

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. CONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
   4.1. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABORATORIES LABEL OF APPROVAL, AND SHALL CONFORM TO REQUIREMENT OF THE NATIONAL ELECTRICAL CODE.
   4.2. ALL OVERCURRENT DEVICES SHALL HAVE AN INTERRUPTING CURRENT RATING THAT SHALL BE GREATER THAN THE SHORT CIRCUIT CURRENT TO WHICH THEY ARE SUBJECTED. VERYIFY AVAILABLE SHORT CIRCUIT CURRENT DOES NOT EXCEED THE RATING OF ELECTRICAL EQUIPMENT IN ACCORDANCE WITH ARTICLE 110.24 NEC OR THE MOST CURRENT ADOPTED CODE PRE THE GOVERNING JURISDICTION.
5. EACH END OF EVERY POWER PHASE CONDUCTOR, GROUNDING CONDUCTOR, AND TELCO CONDUCTOR OR CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
6. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH LAMICOID TAGS SHOWING THEIR RATED VOLTAGE, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (i.e. PANEL BOARD AND CIRCUIT ID'S).
7. PANEL BOARDS (ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
8. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
9. ALL POWER AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE COPPER CONDUCTOR (#14 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
10. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE COPPER CONDUCTOR (#6 OR LARGER) WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
11. POWER AND CONTROL WIRING IN FLEXIBLE CORD SHALL BE MULTI-CONDUCTOR, TYPE SOOW CORD (#14 OR LARGER) UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING FOR USE IN CABLE TRAY SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 OR LARGER), WITH TYPE THHW, THWN, THWN-2, XHHW, XHHW-2, THW, THW-2, RHW, OR RHW-2 INSULATION UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION NOT LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT), INTERMEDIATE METAL CONDUIT (IMC), OR RIGID METAL CONDUIT (RMC) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT) OR METAL-CLAD CABLE (MC) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND THE NEC.
21. WIREWAYS SHALL BE METAL WITH AN ENAMEL FINISH AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS (WIREMOLD SPECMATE WIREWAY).
22. SLOTTED WIRING DUCT SHALL BE PVC AND INCLUDE COVER (PANDUIT TYPE E OR EQUAL).
23. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES (i.e. POWDER-ACTUATED) FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
24. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL. SHALL MEET OR EXCEED UL 50 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND NEMA 3R (OR BETTER) FOR EXTERIOR LOCATIONS.
25. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1 AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
26. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2 (NEWEST REVISION) AND BE RATED NEMA 1 (OR BETTER) FOR INTERIOR LOCATIONS AND WEATHER PROTECTED (WP OR BETTER) FOR EXTERIOR LOCATIONS.
27. THE CONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CARRIER AND/OR CROWN CASTLE USA INC. BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
28. THE CONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
29. INSTALL LAMICOID LABEL ON THE METER CENTER TO SHOW "AT&T".
30. ALL EMPTY/SPARE CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

at&t

MasTec Network Solutions
507 AIRPORT BLVD., STE. 111
MORRISVILLE, NC 27560

FA CODE:	FA # **10152021**
DRAWN BY:	JG
JOB #:	MRIND056522

REV	DATE	DESCRIPTION
3	12/5/22	FOR PERMITTING
2	08/24/22	FOR PERMITTING
1	06/21/22	FOR PERMITTING
0	06/13/22	FOR PERMITTING

RAPHAEL MOHAMED
LICENSE
No. 82846
STATE OF FLORIDA
PROFESSIONAL ENGINEER

08/24/22

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870081
LAKE CITY SOUTH
1826 SW STATE ROAD 47
LAKE CITY, FL 32025

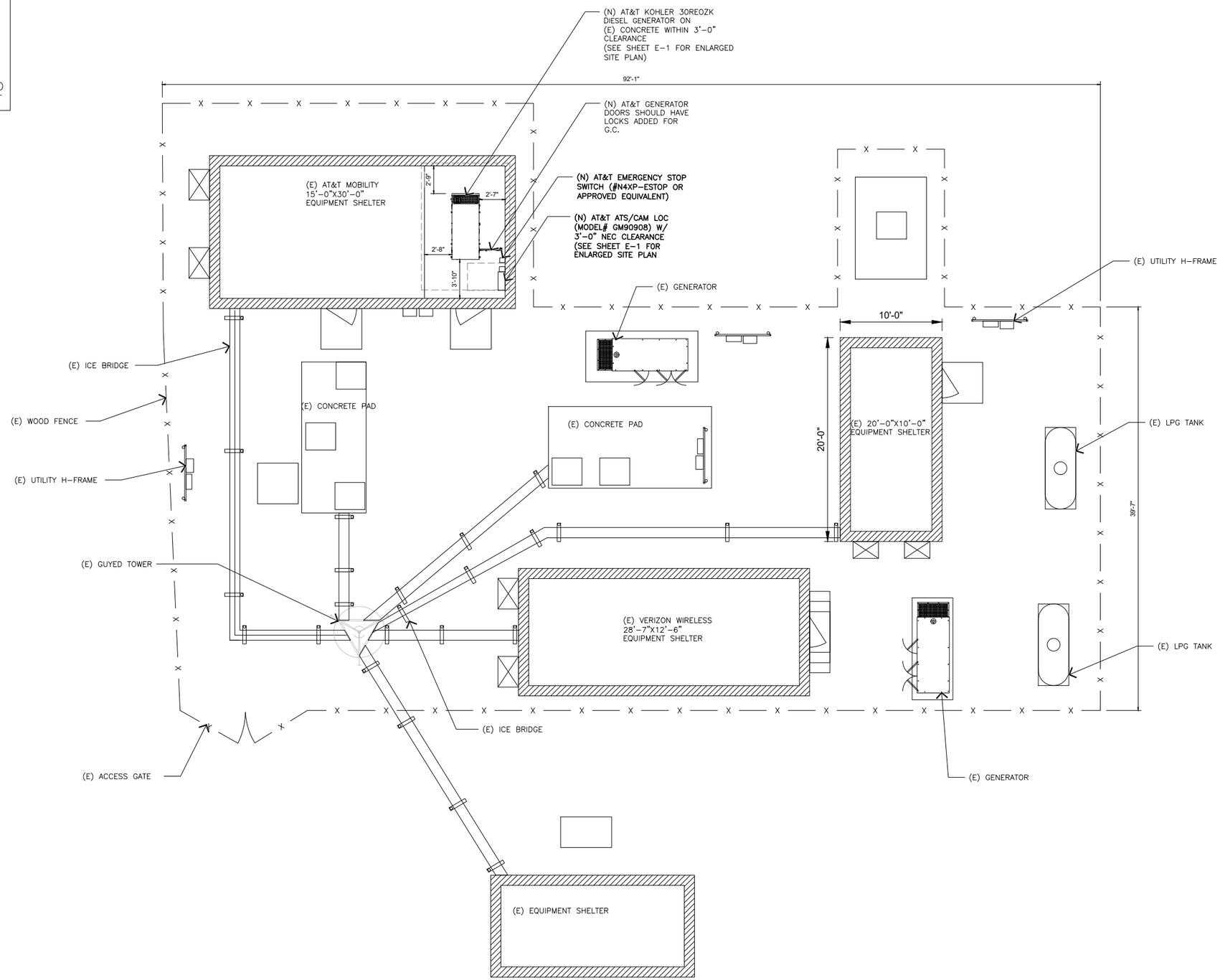
FA NUMBER
10152021

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-1

NOTE:

G.C. TO INSTALL (10) 5/8" DIA. X 3-1/2" EMBED HILTU KWIK BOLT TZ STAINLESS STEEL EXPANSION ANCHOR (OR APPROVED EQUAL) FOR (N) GENERATOR. BOLT IS TO BE 6" MIN FROM CL TO EDGE OF CONCRETE PAD REFERENCE ICC-ES ESR-197 REPORT



NOTE
THESE DRAWINGS WERE PRODUCED WITHOUT THE BENEFIT OF A CURRENT LAND SURVEY. ALL PROPERTY LINES, EASEMENTS, SETBACKS, AND EXISTING CONDITIONS ARE APPROXIMATE AND SHALL BE VERIFIED PRIOR TO START OF CONSTRUCTION.

OVERALL SITE PLAN

11x17 SCALE: 3/32"=1'-0"
24x36 SCALE: 3/16"=1'-0"
0 3' 6' 12'

1

at&t

MasTec Network Solutions
507 AIRPORT BLVD., STE. 111
MORRISVILLE, NC 27560

FA CODE:	FA # **10152021**
DRAWN BY:	JG
JOB #:	MRIND056522

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LAKE CITY, FL 32025

FA NUMBER
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SHEET TITLE
OVERALL SITE PLAN

SHEET NUMBER
A-0.1

NOTE:

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OVERALL SITE PLAN

11x17 SCALE: 3/32"=1'-0"
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0 3' 6' 12'

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1826 SW STATE ROAD 47
LAKE CITY, FL 32025
FA NUMBER
10152021

SHEET TITLE
OVERALL SITE PLAN

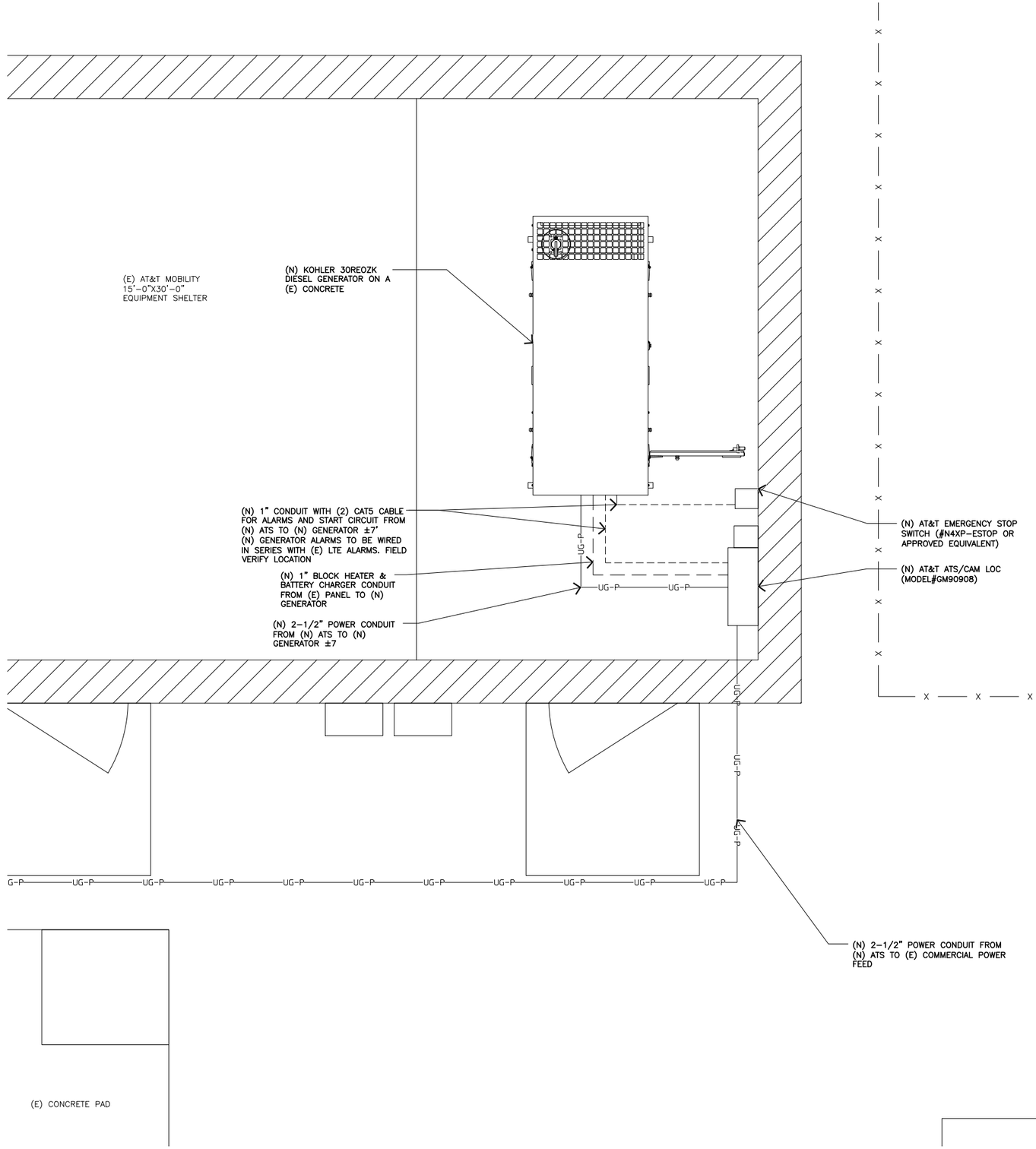
SHEET NUMBER
A-0.2

NOTES AND SPECIFICATIONS

1. ALL ELECTRICAL WORK SHALL COMPLY WITH NEC, STATE, AND LOCAL CODES.
2. CONTRACTOR SHALL OBTAIN OWNER/TENANT SPECIFICATIONS AND REVIEW FOR ADDITIONAL DETAILS AND REQUIREMENTS THAT MAY NOT BE SHOWN IN THESE DRAWINGS. CONTRACTOR SHALL COMPLY WITH ANY ADDITIONAL OWNER/TENANT SPECIFICATIONS AND REQUIREMENTS.
3. CONTRACTOR SHALL COORDINATE WITH THE ELECTRIC UTILITY FOR THE EXACT TRANSFORMER LOCATION, METERING REQUIREMENTS, AND SERVICE ROUTING. CONTRACTOR SHALL COORDINATE WITH THE TELEPHONE UTILITY FOR THE EXACT TELEPHONE REQUIREMENTS AND SERVICE ROUTING.
4. PRIOR TO PURCHASING EQUIPMENT, THE CONTRACTOR SHALL CONTACT THE ELECTRIC COMPANY AND OBTAIN IN WRITING THE MAXIMUM AVAILABLE FAULT CURRENT AT THE UTILITY SERVICE POINT. THE CONTRACTOR SHALL ENSURE ALL ELECTRICAL EQUIPMENT, CIRCUIT BREAKERS, DISCONNECTS, FUSES, AND PANELBOARDS HAVE A FAULT CURRENT INTERRUPTING RATING GREATER THAN THE AVAILABLE FAULT CURRENT. IN NO CASE SHALL THE FAULT CURRENT INTERRUPTING RATING BE LESS THAN 10,000 AMPS.
5. CONTRACTOR TO PROVIDE 2–200 LB TEST POLYETHYLENE PULL CORDS SECURELY FASTENED AT EACH END OF POWER AND TELCO CONDUIT. PROVIDE CAPS ON END OF UNUSED CONDUIT.
6. CONTRACTOR TO PROVIDE A REBAR MARKER WITH AT LEAST 2 FEET EXPOSED ABOVE GRADE AND PAINTED BRIGHT ORANGE TO INDICATE LOCATION OF CONDUIT CAPPED BELOW GRADE.
7. PRIOR TO TRENCHING CONTRACTOR SHALL LOCATE ALL EXISTING UNDERGROUND UTILITIES. CONTRACTOR SHALL REPAIR AT CONTRACTOR'S EXPENSE ANY DAMAGE TO EXISTING UTILITIES.
8. CONTRACTOR TO VERIFY EXACT ROUTING OF POWER AND TELCO CONDUIT WITH LOCAL UTILITIES AND OWNER/TENANT. ENSURE ALL CONDUIT STUB–UPS ACCOMMODATE EQUIPMENT REQUIREMENTS.
9. UNDERGROUND CONDUITS SHALL BE SCHEDULE 40 PVC UNLESS NOTED OTHERWISE. USE SCHEDULE 80 PVC UNDER ROADS.
10. CONDUIT RUNS SHALL HAVE A CONTINUOUS SLOPE DOWNWARDS AND AWAY FROM THE EQUIPMENT TO ALLOW WATER TO FLOW AWAY FROM THE EQUIPMENT AND SHELTER. EXCAVATE TRENCHES ALONG STRAIGHT LINES PRIOR TO INSTALLING CONDUIT TO ACCOMMODATE ADJUSTING THE ELEVATION, AS NEEDED.
11. CONDUIT ENTERING EQUIPMENT SHALL BE SEALED WITH A SEALANT THAT IS IDENTIFIED FOR USE WITH THE CABLE/CONDUCTOR INSULATION, SHIELDING, ETC.
12. THE OWNER SHALL FURNISH AND THE CONTRACTOR SHALL INSTALL ADDITIONAL SIGNAGE TO BE LOCATED AT THE COMPOUND FENCE. CONTRACTOR SHALL COORDINATE WITH OWNER/TENANT CONSTRUCTION MANAGER FOR PLACEMENT OF SIGNAGE.
13. UPON COMPLETION OF CONSTRUCTION, CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGE CAUSED BY CONSTRUCTION ACTIVITIES TO THE LANDSCAPING AREA.
14. CONTRACTOR TO ENSURE A MIN. 3' CLEARANCE IN FRONT OF ELECTRICAL PANELS PER NEC.
15. ALL ELECTRICAL MATERIALS, DEVICES, APPLIANCES AND EQUIPMENT SHALL BE LABEL TESTED BY AN APPROVED THIRD PARTY TESTING AGENCY.

CONDUCTOR COLOR CODE		
SYSTEM	CONDUCTOR	COLOR
120/240V, 1ø	A PHASE	BLACK
	B PHASE	RED
	NEUTRAL	WHITE
	GROUND	GREEN
120/208V, 3ø	A PHASE	BLACK
	B PHASE	RED
	C PHASE	BLUE
	NEUTRAL	WHITE
	GROUND	GREEN
277/480V, 3ø	A PHASE	BROWN
	B PHASE	ORANGE OR PURPLE
	C PHASE	YELLOW
	NEUTRAL	GREY
	GROUND	GREEN
DC VOLTAGE	POS (+)	RED**
	NEG (–)	BLACK**
	* SEE NEC 210.5(C)(1) AND (2) ** POLARITY MARKED AT TERMINATION	

PROPOSED SITE PLAN



NOTE:

AT&T PORTABLE GEN INTERFACE TO BE REMOVED ONLY IF NECESSARY

11x17 SCALE: 3/8"=1'–0"
24x36 SCALE: 3/4"=1'–0"
0 .5' 1' 2' 3'

1

at&t

MasTec Network Solutions

507 AIRPORT BLVD., STE. 111
MORRISVILLE, NC 27560

FA CODE:	FA # **10152021**
DRAWN BY:	JG
JOB #:	MRIND056522

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870081
LAKE CITY SOUTH
1826 SW STATE ROAD 47
LAKE CITY, FL 32025

FA NUMBER
10152021

SHEET TITLE
ELECTRICAL & LTE SCHEMATIC DIAGRAM

SHEET NUMBER
E-1

NOT USED

SCALE: NONE

7

U.L. SYSTEM NO. C-AJ-1150
CONDUIT THROUGH BEARING WALL SIMILAR TO U.L. DESIGN NO. U902
F RATING = 3 HR
T RATING = 0 HR

A. FLOOR OR WALL ASSEMBLY : MINIMUM 4-1/2" THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAX DIAMETER OF OPENING IS 4". (SEE CONCRETE BLOCKS CATZ) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

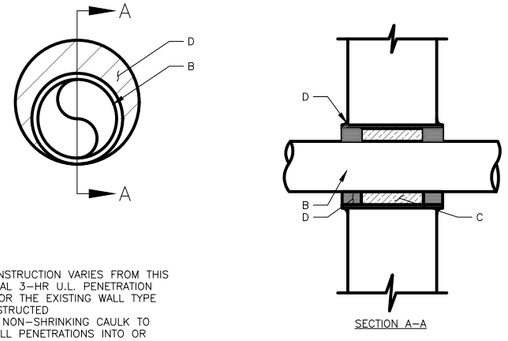
B. THROUGH PENETRATIONS : ONE METALLIC PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE ANNULAR SPACE SHALL BE MINIMUM 0". (POINT CONTACT) TO MAXIMUM 1-3/8". THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR CONDUITS MAY BE USED:
   a. STEEL PIPE-NOMINAL 6" DIAMETER (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL PIPE
   b. IRON PIPE-NOMINAL 6" DIAMETER (OR SMALLER) CAST OR DUCTILE IRON PIPE.
   c. CONDUIT - NOMINAL 4" DIAMETER (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR NOMINAL 3-1/2" DIAMETER (OR SMALLER) STEEL CONDUIT.

C. PACKING MATERIAL: MINIMUM 6" THICKNESS OF MIN 4.0 PCF MINERAL WOOL BATTING INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.

D. FILL, VOID, OR CAVITY MATERIAL*: SEALANT: MINIMUM 1/4" THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR AND WITH BOTH SURFACES OF WALL. AT THE POINT CONTACT LOCATION BETWEEN PIPE AND CONCRETE, A MINIMUM 1/2" DIAMETER BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE CONCRETE/PIPE INTERFACE ON THE TOP SURFACE OF FLOOR AND ON BOTH SURFACES OF WALL. W-RATING APPLIES ONLY WHEN CP601S OR CP604 SEALANT IS USED.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. : CP601S, CP604, CP606, OR FS-ONE SEALANT.

* BEARING THE UL CLASSIFICATION MARK



SECTION A-A

INSTALLER NOTES:

1. IF EXISTING CONSTRUCTION VARIES FROM THIS DETAIL, AN EQUAL 3-HR U.L. PENETRATION APPROPRIATE FOR THE EXISTING WALL TYPE SHALL BE CONSTRUCTED
2. GC SHALL USE NON-SHRINKING CAULK TO WEATHERSEAL ALL PENETRATIONS INTO OR THRU SHELTER WALL.

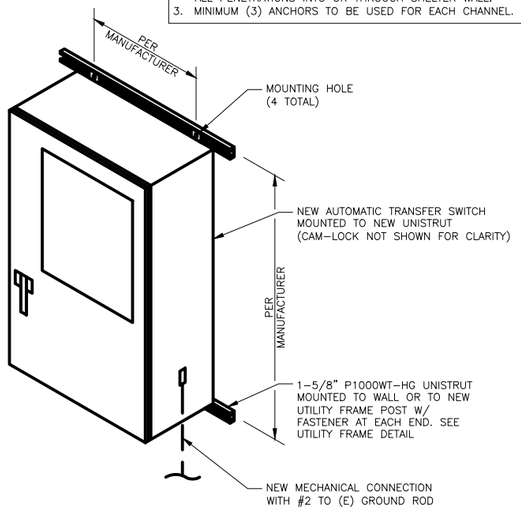
OUTER WALL PENETRATION DETAIL

SCALE: NONE

6

UNISTRUT WALL ATTACHMENT:		
WALL CONSTRUCTION TYPE	FASTENER	ANCHOR SPACING
WOOD STUD	3/8" DIA. LAG SCREW	16"
CONCRETE BLOCK (HOLLOW)	-	8"
CONCRETE BLOCK (SOLID)	3/8"ø SIMPSON TITEN HD ANCHOR MINIMUM EMBEDMENT 2-3/4"	24"

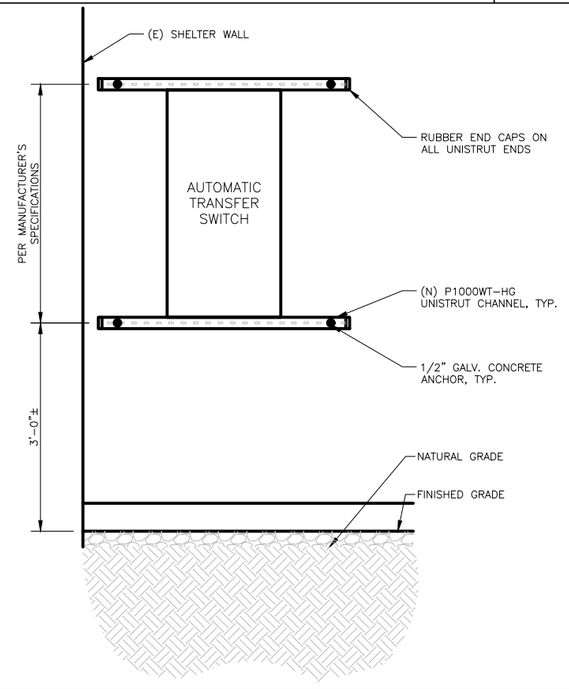
NOTES:
1. USE GALVANIZED OR STAINLESS STEEL HARDWARE FOR WALL MOUNT AND CONNECTION OF CHANNELS.
2. GC SHALL USE NON-SHRINKING CAULK TO WEATHER SEAL ALL PENETRATIONS INTO OR THROUGH SHELTER WALL.
3. MINIMUM (3) ANCHORS TO BE USED FOR EACH CHANNEL.



ATS MOUNTING DETAIL

SCALE: NONE

5



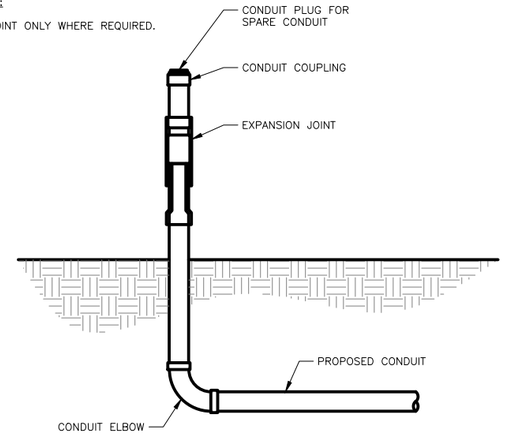
UTILITY FRAME ELEVATION

SCALE: NONE

4

INSTALLER NOTE:

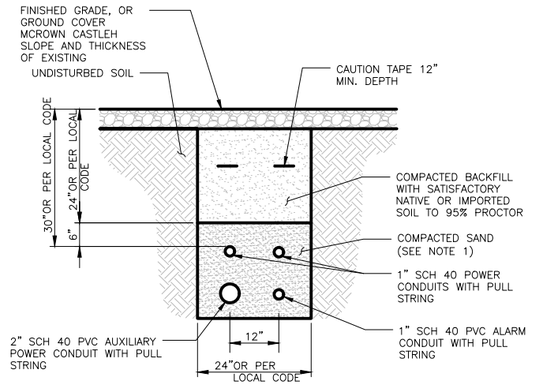
INSTALL SLIP JOINT ONLY WHERE REQUIRED.



SLIP JOINT DETAIL

SCALE: NONE

3

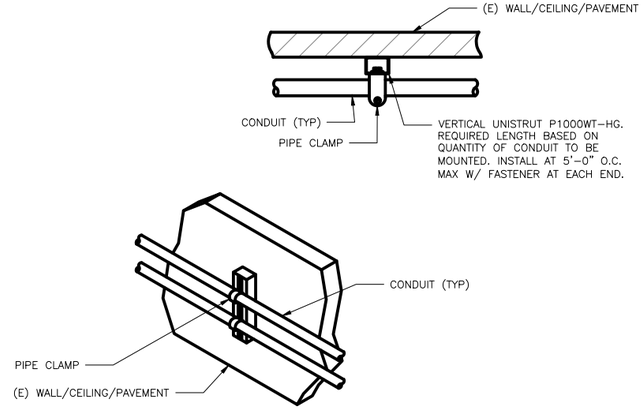


NOTE: CONTRACTOR TO VERIFY CONDUIT DEPTH REQUIRED DURING FIELD PER LOCAL CODE

TRENCH DETAIL

SCALE: NONE

2



CONDUIT WALL MOUNT DETAIL

SCALE: NONE

1

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RAPHAEL MOHAMED LICENSE No. 82848 STATE OF FLORIDA PROFESSIONAL ENGINEER

08/24/22

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870081
LAKE CITY SOUTH
1826 SW STATE ROAD 47
LAKE CITY, FL 32025
FA NUMBER
10152021

SHEET TITLE
EQUIPMENT & CONDUIT DETAILS

SHEET NUMBER
E-2

-48V PRIMARY VOLTAGE DC PLANT SPECIFIED				
+24VDC EQUIPMENT LOAD:	1214 WATTS	=	45 AMPS	at +24V
-48VDC EQUIPMENT LOAD:	10919 WATTS	=	203 AMPS	at -48V
30 AMPS (1580 Watts) AT PRIMARY 48V REQUIRED TO SUPPORT 24V DC CONVERTER SYSTEM				
TOTAL PRIMARY 48V LOAD:	12499 WATTS	=	232 AMPS	at -48V

(DC PLANT CONFIGURATION CAN BE REVIEWED ON DC PLANT WORKSHEET)		
DC PLANT: Emerson STD -48VDC Outdoor NetSure 512 System 525A NEQ.15917		
-48V RECTIFIERS REQUIRED (N+1):	9	
-48V RECTIFIER SLOTS:	14	
CONV. TYPE: UNIVERSAL SLOTS - RIGHT 3 RECT SLOTS/SHELF CAN BE USED FOR CONV		
+24V CONVERTERS REQUIRED:	2	
+24V CONVERTER SLOTS:	9	
ESTIMATED BATTERY RESERVE TIME		
2 180 AH 48V STRINGS =	2.25	HOURS (ON-SITE GENERATOR - 2 HOUR MINIMUM)

ESTIMATED SITE MAX. AC LOAD (AMPS):	86.38 AMPS	
ESTIMATE 200A SERVICE SUFFICIENT		
SITE GENERATOR CAPACITY REQUIRED:	13	KW
ON SITE GENERATOR CAPACITY:	30	KW
ESTIMATE GENSET CAPACITY SUFFICIENT		
RECOMMENDED ENVIRO SYSTEM:	3-TONS COOLING	
SPECIFIED ENVIROMENTAL SYSTEM:	0-TONS	
ESTIMATE EXISTING HVAC NOT SUFFICIENT		

LOAD CALCULATIONS

SCALE: NONE — 1

GENERATOR ALARM IDENTIFICATION CHART	
NAME	DESCRIPTION
CF	CRITICAL FAILURE
FL	FUEL LEAK OVERFILL
GR	GENERATOR RUNNING
FL	LOW FUEL
MAF	MAJOR FAULT
MF	MINOR FAULT
LA FL	GEN FUEL LEAK TANK WHT/SLATE
NOTE: CONTRACTOR TO LABEL WIRES W/ P-TOUCH OR SIMILAR BELS ONLY. ABSOLUTELY NO HANDWRITTEN LABELS.	

ALARM REQUIREMENTS
AT&T REQUIRES FOUR ALARMS CONFIRMED WORKING: NORMALLY CLOSED VOLT-FREE CONTACT FOR:
1. GENERATOR RUN
2. GENERATOR FAIL
3. LOW FUEL
4. FUEL LEAK
5. RBS GENERATOR MJ

COLOR CODE
GENERATOR:
A. CABLE - (2) CAT5
B. COLOR CODE
1. GENERATOR RUN - ALARM PORT #14 (ORANGE & WHITE)
2. GENERATOR FAIL - ALARM PORT #15 (BLUE & WHITE)
3. LOW FUEL - ALARM (PORT P32) ON I/O BOARD (GREEN & WHITE)
4. FUEL LEAK - P32 ON I/O BOARD) (BROWN & WHITE)

AUTOMATIC TRANSFER SWITCH (IF APPLICABLE)
A. CABLE - cat5e
B. COLOR CODE
1. COMMERCIAL POWER FAIL IF REQUIRED (BLUE WHITE)
2. TRANSFER SWITCH POSITION (BROWN WHITE)

CAM LOCK ALARM
A. CABLE - cat5e
B. COLOR CODE
1. PORTABLE GENERATOR RUNNING (ORANGE WHITE) (IF REQUIRED)

ALARM DETAILS

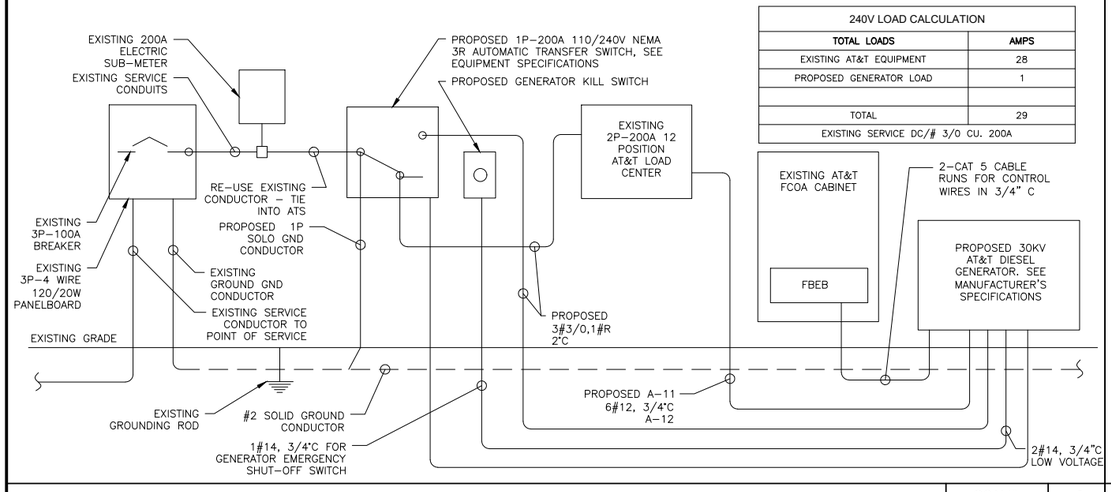
SCALE: NONE — 2

PROPOSED (1) 1P-15A BREAKERS IN POSITION 10 AND 12

PANELBOARD DIRECTORY - 120/240 V - 200 AMP					
1	RECTIFIER R-1	2	HVAC 1	31	RECTIFIER R-8	32	
3		4		33	RECTIFIER R-9	34	
5	RECTIFIER R-2	6	HVAC 2	35		36	
7		8		37		38	
9	RECTIFIER R-3	10	SPARE	39		40	
11		12		41		42	
13	RECTIFIER R-4	14	INTERIOR RECEPTACLE				
15		16	INTERIOR LIGHT				
17	RECTIFIER R-5	18	EXTERIOR LIGHT				
19		20	HEATER CHARGER				
21	RECTIFIER R-6	22	VENT SYTEM				
23		24	VENT FAN				
25	RECTIFIER R-7	26					
27		28					
29	RECTIFIER R-8						

EXISTING PANELBOARD

SCALE: NONE — 3



240V LOAD CALCULATION	
TOTAL LOADS	AMPS
EXISTING AT&T EQUIPMENT	28
PROPOSED GENERATOR LOAD	1
TOTAL	29
EXISTING SERVICE DC/# 3/0 CU. 200A	

ALARM DETAILS

SCALE: NONE — 1

NOTES:

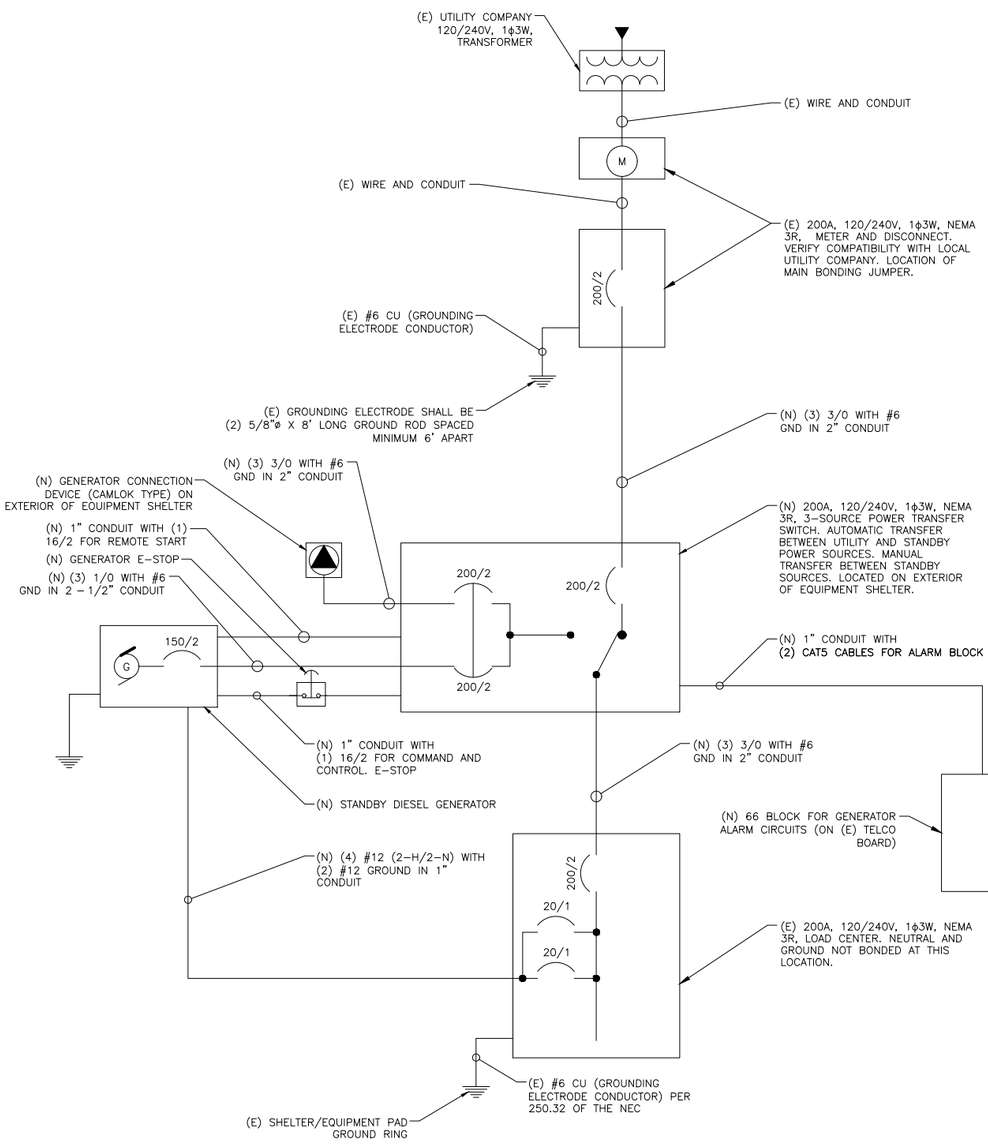
1. ALL NEW CONDUCTORS TO BE INSTALLED SHALL BE COPPER. ALL CONDUCTORS SHALL BE THHW, THWN, THWN-2, XHHW, OR XHHW-2 UNLESS NOTED OTHERWISE.
2. CONTRACTOR IS TO FIELD VERIFY ALL EXISTING ITEMS SHOWN ON THE ELECTRICAL ONE-LINE DIAGRAM AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES.
3. ALL GROUNDING AND BONDING PER THE NEC.
4. INSTALL ATS ALARM RELAY

INSTALLER NOTE:

CONTRACTOR TO VERIFY EXISTING LOAD PANEL AND INSTALL NEW 20A BREAKER FOR BLOCK HEATER AND NEW 20A BREAKER FOR BATTERY CHARGER (IF REQUIRED).

INSTALLER NOTES:

1. THE GENERATOR SIZE HAS BEEN DETERMINED BY AT&T BASED ON AN INTERNAL LOAD ANALYSIS OF THEIR EQUIPMENT. THE GENERATOR SIZE WAS PROVIDED AS PART OF THE SCOPING ANALYSIS. AT&T SHALL BE RESPONSIBLE FOR ENSURING THAT THEIR SYSTEM CONFIGURATION DOES NOT EXCEED THE MANUFACTURER POWER RATING OF THE SPECIFIED GENERATOR.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING A SPOT READING OF THE PANEL AT PEAK OPERATING HOURS TO VERIFY THE AT&T PANEL SCHEDULE CALCULATIONS ARE NOT EXCEEDED. IN THE EVENT THE READING EXCEEDS THE CALCULATED PANEL SCHEDULE LOADS, RECORD THE READING AND CONSULT AT&T ENGINEERING MANAGER PRIOR TO PROCEEDING WITH GENERATOR INSTALLATION.



ONE LINE DIAGRAM

SCALE: NONE — 2

at&t

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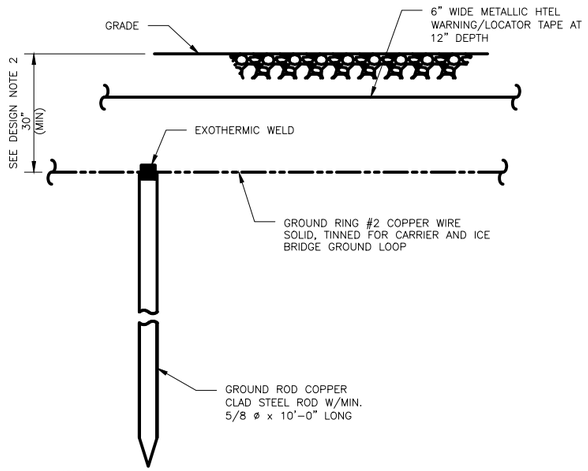
SHEET TITLE
ALARM DETAILS & ONE LINE DIAGRAM

SHEET NUMBER
E-3



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

GROUND ROD DETAIL

SCALE: NONE

3

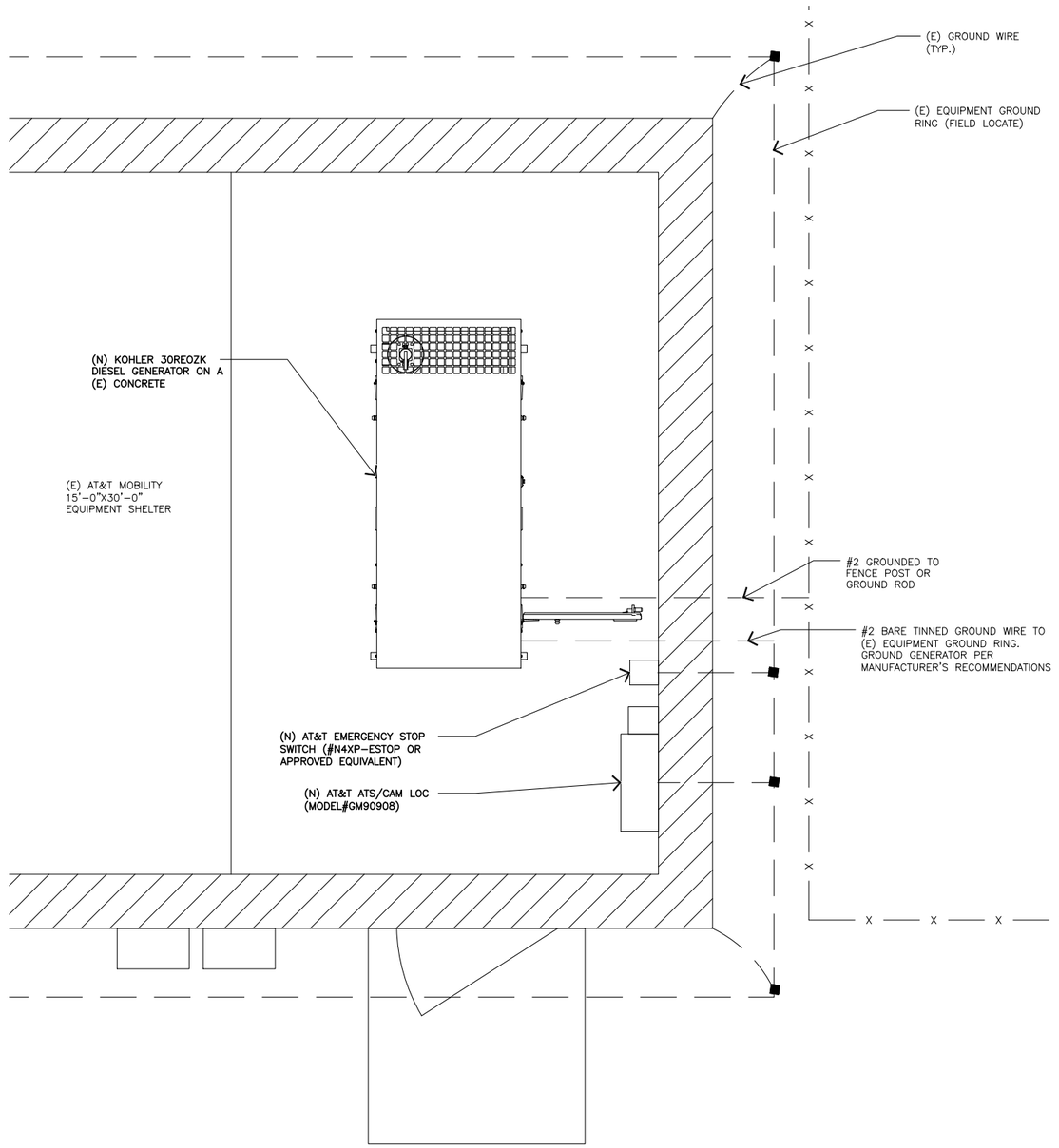
DIMENSIONS AND WEIGHTS

	L x W x H - in (mm)	Weight -lbs (kg)
OPEN UNIT SKID	55.1 (1400) x 32.0 (813) x 40.5 (1024)	1130 (512)
ENCLOSURE UNIT SKID	76.5 (1938) x 32.0 (813) x 47.0 (1174)	

GENERATOR SPECIFICATION DETAIL

SCALE: NONE

2



TYPICAL GROUNDING SCHEMATIC

SCALE: NONE

1

at&t

MasTec Network Solutions

507 AIRPORT BLVD., STE. 111
MORRISVILLE, NC 27560

FA CODE:	FA # **10152021**
DRAWN BY:	JG
JOB #:	MRIND056522

REV	DATE	DESCRIPTION
3	12/5/22	FOR PERMITTING
2	08/24/22	FOR PERMITTING
1	06/21/22	FOR PERMITTING
0	06/13/22	FOR PERMITTING

RAPHAEL MOHAMED
LICENSE
No. 82846
STATE OF FLORIDA
PROFESSIONAL ENGINEER

08/24/22

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

870081
LAKE CITY SOUTH
1826 SW STATE ROAD 47
LAKE CITY, FL 32025

FA NUMBER
10152021

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
G-1

KOHLER

Model: 30REOZK

208- 600 V **Diesel**

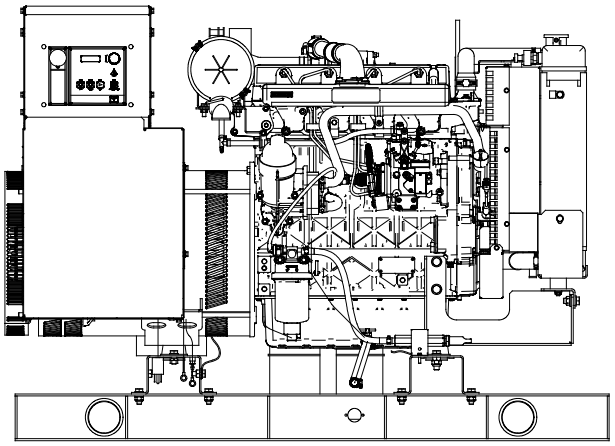
ISO 9001 KOHLER NATIONALLY REGISTERED

EPA-Certified for Stationary Emergency Applications

Ratings Range

		60 Hz
Standby:	**kW**	23- 31
	kVA	23- 39
Prime:	**kW**	21- 28
	kVA	21- 35

APPROVED FOR HVO RENEWABLE FUEL



Generator Set Ratings

				130°C Rise Standby Rating		105°C Rise Prime Rating	
Alternator	**Voltage**	**Ph**	**Hz**	**kW/kVA**	**Amps**	**kW/kVA**	**Amps**
4D5.6	120/208	3	60	29/36	101	26/33	90
	127/220	3	60	29/36	95	26/33	85
	120/240	3	60	29/36	87	26/33	78
	120/240	1	60	23/23	96	21/21	88
	139/240	3	60	29/36	87	26/33	78
	220/380	3	60	27/34	51	25/31	47
	277/480	3	60	29/36	44	26/33	39
	347/600	3	60	29/36	35	26/33	31
4D8.3	120/208	3	60	31/39	108	28/35	97
	127/220	3	60	31/39	102	28/35	92
	120/240	3	60	31/39	93	28/35	84
	120/240	1	60	29/29	121	26/26	108
	139/240	3	60	31/39	93	28/35	84
	220/380	3	60	31/39	59	28/35	53
	277/480	3	60	31/39	47	28/35	42
	347/600	3	60	31/39	37	28/35	34
4E5.6	120/240	1	60	29/29	121	26/26	108
4E8.3	120/240	1	60	31/31	129	27/27	113

Standard Features

- Kohler Co. provides one-source responsibility for the generating system and accessories.
- Approved for use with certified renewable Hydrotreated Vegetable Oil (HVO) / Renewable Diesel (RD) fuels compliant with EN15940 / ASTM D975.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a UL 2200 listing.
- The generator set accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- The generator set engine is certified to meet the Environmental Protection Agency (EPA) emergency stationary emissions requirements.
- A one-year limited warranty covers all generator set systems and components. Two- and five-year extended limited warranties are also available.
- Alternator features:
  - Kohler's wound field excitation system with its unique PowerBoost™ design delivers great voltage response and short-circuit capability.
  - The brushless, rotating-field alternator has broadrange reconnectability.
- Other features:
  - Kohler designed controllers for one-source system integration and remote communication. See Controllers on page 3.
  - The low coolant level shutdown prevents overheating (standard on radiator models only).
  - Integral vibration isolation eliminates the need for under-unit vibration spring isolators.

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor. *Standby Ratings:* Standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. *Prime Power Ratings:* At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. For limited running time and continuous ratings, consult the factory. Obtain the technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever.

Alternator Specifications

Specifications	Alternator
Manufacturer	Kohler
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Wound Field
Leads: quantity, type	12, Reconnectable 4, 110- 120/220- 240 V
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H
Temperature rise	130°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	Controller Dependent
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Capable of sustained line-to-neutral short-circuit current of up to 300% of the rated current for up to 2 seconds. (IEC 60092-301 short-circuit performance.)
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Windings are vacuum-impregnated with epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.

Specifications		Alternator
Peak motor starting kVA:		(35% dip for voltages below)
480 V	4D5.6 (12 lead)	75
480 V	4D8.3 (12 lead)	120
240 V	4E5.6 (4 lead)	44
240 V	4E8.3 (4 lead)	74

Application Data

Engine

Engine Specifications	
Manufacturer	Kohler Diesel
Engine model	KDI2504TM/G18
Engine type	4-Cycle, Turbocharged
Cylinder arrangement	4 Inline
Displacement, L (cu. in.)	2.5 (158)
Bore and stroke, mm (in.)	88 x 102 (3.46 x 4.02)
Compression ratio	18:1
Piston speed, m/min. (ft./min.)	367 (1206)
Main bearings: quantity, type	5, Sleeve
Rated rpm	1800
Max. power at rated rpm, kWm (BHP)	36.4 (48.8)
Cylinder head material	Cast Iron
Crankshaft material	Cast Iron
Valve material:	
Intake	Stainless Steel
Exhaust	Stainless Steel
Governor: type, make/model	Mechanical (or Electronic *)
Frequency regulation, no-load to full-load	Droop, 5% (or Isochr. *)
Frequency regulation, steady state	±0.5%
Frequency	Fixed
Air cleaner type, all models	Dry

* Requires available electronic governor option

Exhaust

Exhaust System	
Exhaust manifold type	Dry
Exhaust flow at rated kW, m^3/min. (cfm)	7.8 (275)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	543 (1009)
Maximum allowable back pressure, kPa (in. Hg)	8 (2.4)
Exhaust outlet size at engine hookup, mm (in.)	50.8 (2)

Engine Electrical

Engine Electrical System	
Battery charging alternator:	
Ground (negative/positive)	Negative
Volts (DC)	12
Ampere rating	50
Starter motor rated voltage (DC)	12
Battery, recommended cold cranking amps (CCA):	
Quantity, CCA rating	One, 650
Battery voltage (DC)	12

Fuel

Fuel System	
Fuel supply line, min. ID, mm (in.)	8.0 (0.31)
Fuel return line, min. ID, mm (in.)	6.0 (0.25)
Max. lift, electric fuel pump, m (ft.)	3.0 (10.0)
Max. fuel flow, Lph (gph)	46.0 (12.2)
Max. return line restriction, kPa (in. Hg)	20 (5.9)
Fuel filter	
Prefilter	74 Microns
Primary/Water Separator	5 Microns @ 98% Efficiency
Recommended fuel	#2 Ultra Low Sulfur Diesel / HVO / RD

Lubrication

Lubricating System	
Type	Full Pressure
Oil pan capacity, L (qt.) §	10.7 (11.3)
Oil pan capacity with filter, L (qt.) §	11 (11.6)
Oil filter: quantity, type §	1, Cartridge
Oil cooler	—

§ Kohler recommends the use of Kohler Genuine oil and filters.

Application Data

Cooling

Radiator System	
Ambient temperature, °C (°F) *	50 (122)
Engine jacket water capacity, L (gal.)	4.4 (1.6)
Radiator system capacity, including engine, L (gal.)	11.4 (3)
Engine jacket water flow, Lpm (gpm)	59.0 (15.6)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	27.0 (1536)
Water pump type	Centrifugal
Fan diameter, including blades, mm (in.)	406 (16.0)
Fan, kWm (HP)	0.6 (0.8)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H_2O)	0.125 (0.5)

* Enclosure reduces ambient temperature capability by 5°C (9°F).

Operation Requirements

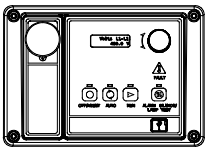
Air Requirements	
Radiator-cooled cooling air, m^3/min. (scfm) †	53.8 (1900)
Combustion air, m^3/min. (cfm)	2.7 (96.9)
Heat rejected to ambient air:	
Engine, kW (Btu/min.)	10.3 (587)
Alternator, kW (Btu/min.)	6.7 (381)
Max. air intake restriction, kPa (in. Hg)	3.0 (0.89)

† Air density = 1.20 kg/m^3 (0.075 lbm/ft^3)

Fuel Consumption**		
Diesel, Lph (gph) at % load	**Standby Rating**	
100%	9.8	(2.6)
75%	7.9	(2.1)
50%	5.7	(1.5)
25%	3.4	(0.9)
Diesel, Lph (gph) at % load	**Prime Rating**	
100%	9.1	(2.4)
75%	7.2	(1.9)
50%	5.3	(1.4)
25%	3.0	(0.8)

** Fuel consumption is up to 4% higher when using HVO/RD than #2 ULSD.

Controller



APM402 Controller

Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or serial configuration
- Controller supports Modbus® protocol
- Integrated hybrid voltage regulator with ±0.5% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-161 for additional controller features and accessories.

Modbus® is a registered trademark of Schneider Electric.

KOHLER

KOHLER CO., Kohler, Wisconsin 53044 USA
Phone 920-457-4441, Fax 920-459-1646
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444
KOHLERPower.com

Additional Standard Features

- Air Cleaner, Heavy Duty with Air Cleaner Restriction Indicator
- Alternator Protection
- Battery Rack and Cables
- Closed Crankcase Ventilation
- Oil Drain and Coolant Drain with Hose Barb
- Oil Drain Extension (with enclosure models only)
- Operation and Installation Literature
- Stainless Steel Fasteners on Enclosure (with enclosure models only)
- Rodent Guards

Available Options

Approvals and Listings

❑ CSA Certified
❑ IBC Seismic Certification
❑ UL2200 Listing

Enclosed Unit

❑ Sound Enclosure (with enclosed critical silencer)
❑ Weather Enclosure (with enclosed critical silencer)
❑ Stainless Steel Latches and Hinges

Open Unit

❑ Exhaust Silencer, Critical (kit: PA-352663)
❑ Flexible Exhaust Connector, Stainless Steel

Fuel System

❑ Flexible Fuel Lines
❑ Fuel Pressure Gauge
❑ Subbase Fuel Tanks

Controller

❑ Two Input/Five Output Module
❑ Manual Speed Adjust (requires Electronic Governor)
❑ Remote Annunciator Panel
❑ Remote Emergency Stop
❑ Run Relay

Cooling System

❑ Block Heater (600 W, 110- 120 V)
Required for ambient temperatures below 0°C (32°F).
❑ Radiator Duct Flange

Electrical System

❑ Alternator Strip Heater
❑ Battery
❑ Battery Charger, Equalize/Float Type
❑ Battery Heater
❑ Electronic Governor
❑ Line Circuit Breaker (NEMA type 1 enclosure)
❑ Line Circuit Breaker with Shunt Trip (NEMA type 1 enclosure)

Miscellaneous

❑ Engine Fluids Added
❑ Rated Power Factor Testing

Literature

❑ General Maintenance
❑ NFPA 110
❑ Overhaul
❑ Production

Warranty

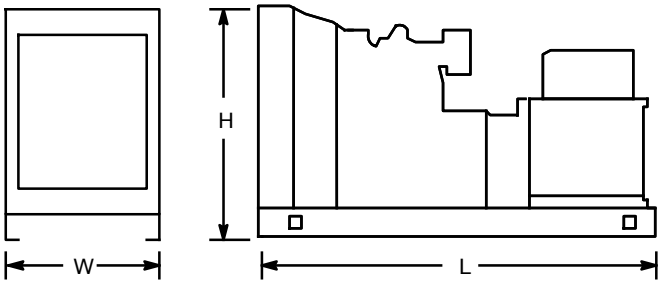
❑ 2-Year Basic Limited Warranty
❑ 5-Year Basic Limited Warranty
❑ 5-Year Comprehensive Limited Warranty

Other Options

❑ _____
❑ _____
❑ _____
❑ _____
❑ _____

Dimensions and Weights

Overall Size, L x W x H, mm (in.):
Open Unit Skid: 1438.2 x 810 x 1024.1 (56.6 x 31.9 x 40.3)
Enclosure Skid: 1969 x 882 x 1327 (77.5 x 34.7 x 52.3)
Weight (radiator model), wet, kg (lb.): 512 (1130)



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local distributor for more detailed information.

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