

ELECTRICAL SPECIFICATIONS (CONT'D)

LIGHTING FIXTURES

LIGHTING FIXTURES SHALL BE PROVIDED COMPLETE WITH LAMPS, MOUNTING HARDWARE AND ACCESSORIES.

LAMPS SHALL BE OPERATED AT VOLTAGE LEVEL 120 VOLTS. VOLTS. LAMPS SHALL BE RATED IN WATTS WITH MINIMUM INITIAL LUMENS INDICATED. LOW MERCURY LAMPS SHALL HAVE PASSED THE EPA TOXICITY CHARACTERISTIC BEACHHEAD PROCEDURE FOR MERCURY BY USING THE LAMP SAMPLE PREPARATION PROCEDURE DESCRIBED IN NEMA UL1.

ELECTRONIC BALLAST SHALL BE DESIGNED FOR THE WATTAGE OF THE LAMPS USED IN THE INDICATED APPLICATION. DESIGNED TO OPERATE ON THE VOLTAGE SYSTEM TO WHICH THEY ARE CONNECTED. BALLAST SHALL BE INSTANT START, UNLESS OTHERWISE INDICATED, AND SHALL HAVE A CLASS A SOUND RATING.

IN FLUORESCENT FIXTURES ON THE EXTERIOR OF THE BUILDING AND IN UNHEATED SPACES SHALL BE PROVIDED WITH ZERO DEGREE LOW TEMPERATURE BALLASTS.

WHERE RECESSED LIGHTING FIXTURES ARE INDICATED, THIS CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE TYPE FIXTURES WITH THE ACTUAL CEILING BEING INSTALLED. THIS SHALL INCLUDE CHANGES RESULTING FROM ALTERNATE BID ITEMS, CHANGE ORDERS, ETC.

INSULATION SHALL NOT BE PLACED ON TOP OF RECESSED LIGHTING FIXTURES.

TELEPHONE CONDUIT SYSTEM

TELEPHONE SYSTEM SHALL BE AN EMPTY CONDUIT SYSTEM COMPLETE AS INDICATED ON THE DRAWINGS.

CONDUIT SHALL CONTAIN AS AWG SIZE 14 GALVANIZED STEEL PULLWIRE.

PROVIDE PULLBOXES WITH BLANK COVER PLATE MINIMUM EVERY 100 FEET.

CUTTING AND PATCHING

CUTTING, DRILLING, AND CHANNELING REQUIRED FOR THIS WORK SHALL BE DONE UNDER THIS SECTION BY SKILLED MECHANICS OF TRADE INVOLVED.

EQUIPMENT MARKING AND PAINTING

SAFETY SWITCHES, PANELBOARDS, INDIVIDUAL COMPONENTS OF SWITCHBOARDS, CABINETS, ETC., SHALL BE PROVIDED WITH PERMANENTLY ATTACHED (ADHESIVES NOT ACCEPTABLE) ENGRAVED BAKELITE DESIGNATION PLATES TO INDICATE EQUIPMENT OR CIRCUIT CONTROLLED.

EXPOSED CONDUIT, SUPPORTS, HANGERS, AND UNFINISHED EQUIPMENT SHALL RECEIVE A MINIMUM OF TWO COATS OF PAINT SUITABLE FOR SERVICE INTENDED. COLORS SHALL BE AS SELECTED OR APPROVED BY THE ARCHITECT.

SUBSTANTIAL COMPLETION

UPON COMPLETION OF THE ENTIRE WORK, THE CONTRACTOR SHALL PERFORM SUCH TEST AS REQUIRED BY THE ARCHITECT. THE ARCHITECT SHALL BE GIVEN 48 HOURS NOTICE BEFORE TESTS ARE MADE. THE CONTRACTOR SHALL FURNISH THE ARCHITECT A CERTIFICATE OF APPROVAL FROM THE LOCAL INSPECTION AUTHORITY HAVING JURISDICTION.

WARRANTY

CONTRACTOR SHALL FURNISH WRITTEN WARRANTY, COUNTERSIGNED, AND GUARANTEED BY THE GENERAL CONTRACTOR, STATING THAT THE WORK EXECUTED UNDER THIS DIVISION OF THE SPECIFICATIONS SHALL BE FREE FROM DEFECTS OF MATERIALS AND WORKMANSHIP FOR A PERIOD OF 12 MONTHS FROM DATE OF FINAL ACCEPTANCE. DEFECTS DEVELOPING DURING THAT PERIOD SHALL BE CORRECTED WITHOUT COST TO THE OWNER.

FIRE ALARM SPECIFICATION

PROVIDE A FULLY OPERATIONAL, INSTALLED ADDRESSABLE DIGITAL FIRE ALARM SYSTEM TO MEET ALL APPLICABLE STATE AND LOCAL CODES. THE FIRE ALARM SYSTEM OPERATION SHALL BE SUCH THAT ACTUATION OF ANY MANUAL FIRE ALARM STATION OR ANY OTHER INITIATION DEVICE SHALL CAUSE AUDIBLE/VISIBLE SIGNAL DEVICES THROUGHOUT THE FACILITY TO OPERATE. SHALL CAUSE THE MAIN ANNUNCIATOR TO DISPLAY THE "ADDRESS" OF THE INITIATING DEVICE UNTIL THE DEVICE IS RESTORED TO ITS NORMAL POSITION AND CONTROL PANEL IS RESET AND SHALL CAUSE AN ALARM SIGNAL TO BE TRANSMITTED TO A CENTRAL STATION. FIRE ALARM SYSTEM SHALL BE PYROTRONICS "Mx-IQ" SYSTEM OR EQUAL. ALL INITIATING DEVICES SHALL BE FULLY COMPATIBLE WITH SYSTEM PROVIDED AND SHALL BE PER MANUFACTURER'S RECOMMENDATIONS. ALL COMPONENTS SHALL BE ADDRESSABLE OR BE PROVIDED WITH ADDRESSABLE ZONE INTERFACE MODULES.

INSTALL SYSTEM IN ACCORDANCE WITH NFPA72, NATIONAL ELECTRICAL CODE AND COMPLY WITH THE AMERICAN WITH DISABILITIES ACT (ADA).

PROVIDE THE BELOW LISTED FIRE ALARM SYSTEM COMPONENTS.

- FIRE ALARM CONTROL PANEL
- AUTO DIALER
- MANUAL PULL STATIONS
- SIGNAL POWER BOOSTER
- SPRINKLER AND TAMPER MONITOR
- DUCT SMOKE DETECTOR
- AHU SHUT DOWN DETECTOR
- AREA SMOKE DETECTOR
- AUDIO VISUAL UNIT
- VISUALS

(PROVIDE WITH SURFACE MOUNT BASE/PLATE AS NECESSARY FOR EACH).

PRIOR TO INSTALLATION THE SYSTEM SHALL BE REVIEWED AND CERTIFIED BY A NICET LEVEL IV FIRE ALARM SYSTEM TECHNICIAN FOR PROPER PLACEMENT OF DEVICES. ADDITIONAL DEVICES REQUIRED WILL BE THE RESPONSIBILITY OF THE FIRE ALARM SYSTEM INSTALLER.

FIRE ALARM SYSTEM INSTALLATION SHALL PROCURE A FIRE ALARM SYSTEM PERMIT. SYSTEM SHALL BE FULLY TESTED PRIOR TO FINAL ACCEPTANCE BY THE INSPECTOR AND PRIOR TO OCCUPANCY.

DUCT SMOKE DETECTORS SHALL BE INSTALLED BY THE MECHANICAL CONTRACTOR AND WIRED BY THE FIRE ALARM SYSTEM INSTALLER.

WATERFLOW SWITCHES AND TAMPERS SHALL BE INSTALLED BY THE SPRINKLER CONTRACTOR AND WIRED BY THE FIRE ALARM SYSTEM INSTALLER.

OWNER IS RESPONSIBLE FOR MONITORING ACCOUNT AND MONITORING FEES.

ENGINE GENERATORS

CONFORM TO REQUIREMENTS OF NFPA 70.

ACCEPT UNIT ON SITE ON SKIDS. INSPECT FOR DAMAGE.

PROTECT EQUIPMENT FROM DIRT AND MOISTURE BY SECURELY WRAPPING IN HEAVY PLASTIC.

FURNISH SERVICE AND MAINTENANCE OF ENGINE GENERATOR FOR ONE YEAR FROM DATE OF SUBSTANTIAL COMPLETION.

FURNISH ONE SET OF TOOLS REQUIRED FOR PREVENTATIVE MAINTENANCE OF THE ENGINE GENERATOR SYSTEM. PACKAGE TOOLS IN ADEQUATELY SIZED METAL TOOL BOX.

MANUFACTURERS: CATERPILLAR INC.: WWW.CATERPILLAR.COM, CUMMINS ENGINE COMPANY: WWW.CUMMINS.COM, DETROIT DIESEL CORPORATION: WWW.DETROITDIESEL.COM

ENGINE

TYPE: WATER-COOLED INLINE OR V-TYPE, FOUR STROKE CYCLE, COMPRESSION IGNITION DIESEL, INTERNAL COMBUSTION ENGINE.

FUEL SYSTEM: NATURAL GAS.

ENGINE SPEED: 1200 RPM.

SAFETY DEVICES: ENGINE SHUTDOWN ON HIGH WATER TEMPERATURE, LOW OIL PRESSURE, OVERSPEED, AND ENGINE OVERCRAWK. LIMITS AS SELECTED BY MANUFACTURER.

ENGINE STARTING: DC STARTING SYSTEM WITH POSITIVE ENGAGEMENT, NUMBER AND VOLTAGE OF STARTER MOTORS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INCLUDE REMOTE STARTING CONTROL CIRCUIT, WITH MANUAL-OFF-REMOTE SELECTOR SWITCH ON ENGINE-GENERATOR CONTROL PANEL.

ENGINE JACKET HEATER: THERMAL CIRCULATION TYPE WATER HEATER WITH INTEGRAL THERMOSTATIC CONTROL, SIZED TO MAINTAIN ENGINE JACKET WATER AT 90 DEGREES F. AND SUITABLE FOR OPERATION ON 120 VOLTS AC.

ENGINE ACCESSORIES: FUEL FILTER, LUBE OIL FILTER, INJECT AIR FILTER, LUBE OIL COOLER, FUEL TRANSFER PUMP, FUEL PRIMING PUMP, GEAR-DRIVEN WATER PUMP. INCLUDE FUEL PRESSURE GAGE, WATER TEMPERATURE GAGE, AND LUBE OIL PRESSURE GAGE ON ENGINE/GENERATOR CONTROL PANEL.

MOUNTING: PROVIDE UNIT WITH SUITABLE SPRING-TYPE VIBRATION ISOLATORS AND MOUNT ON STRUCTURAL STEEL BASE.

GENERATOR

GENERATOR: NEMA MG 1, THREE PHASE, FOUR POLE, RECONNECTABLE BRUSHLESS SYNCHRONOUS GENERATOR WITH BRUSHLESS EXCITER.

ENCLOSURE: NEMA MG 1, OPEN DRIP PROOF.

VOLTAGE REGULATION: INCLUDE GENERATOR-MOUNTED VOLTS PER HERTZ EXCITER-REGULATOR TO MATCH ENGINE AND GENERATOR CHARACTERISTICS, WITH VOLTAGE REGULATION PLUS OR MINUS 1 PERCENT FROM NO LOAD TO FULL LOAD. INCLUDE MANUAL CONTROLS TO ADJUST VOLTAGE DROOP, VOLTAGE LEVEL (PLUS OR MINUS 5 PERCENT) AND VOLTAGE GAIN.

ACCESSORIES

EXHAUST SILENCER: RESIDENTIAL TYPE SILENCER, WITH MUFFLER COMPANION FLANGES AND FLEXIBLE STAINLESS STEEL EXHAUST FITTING, SIZED IN ACCORDANCE WITH ENGINE MANUFACTURER'S INSTRUCTIONS.

BATTERIES: HEAVY DUTY, DIESEL STARTING TYPE LEAD-ACID STORAGE BATTERIES, 170 AMPERE-HOURS MINIMUM CAPACITY. MATCH BATTERY VOLTAGE TO STARTING SYSTEM. INCLUDE NECESSARY CABLES AND CLAMPS.

BATTERY TRAY: TREATED FOR ELECTROLYTE RESISTANCE. CONSTRUCTED TO CONTAIN SPILLAGE.

BATTERY CHARGER: CURRENT LIMITING TYPE DESIGNED TO FLOAT AT 2.17 VOLTS PER CELL AND EQUALIZE AT 2.33 VOLTS PER CELL. INCLUDE OVERLOAD PROTECTION, FULL WAVE RECTIFIER, DC VOLT/METER AND AMP/METER, AND 120 VOLTS AC FUSED INPUT. PROVIDE WALL-MOUNTED ENCLOSURE TO MEET NEMA 250, TYPE 1 REQUIREMENTS.

LINE CIRCUIT BREAKER: MOLDED CASE CIRCUIT BREAKER ON GENERATOR OUTPUT WITH INTEGRAL THERMAL AND INSTANTANEOUS MAGNETIC TRIP IN EACH POLE, SIZED IN ACCORDANCE WITH NFPA 70: UL LISTED. INCLUDE BATTERY-VOLTAGE OPERATED SHUNT TRIP, CONNECTED TO OPEN CIRCUIT BREAKER ON ENGINE FAILURE. UNIT MOUNT IN ENCLOSURE TO MEET NEMA 250, TYPE 1 REQUIREMENTS.

ENGINE-GENERATOR CONTROL PANEL: NEMA 250, TYPE 1 GENERATOR MOUNTED CONTROL PANEL ENCLOSURE WITH ENGINE AND GENERATOR CONTROLS AND INDICATORS.

WEATHER-PROTECTIVE ENCLOSURE: REINFORCED STEEL HOUSING ALLOWING ACCESS TO CONTROL PANEL AND SERVICE POINTS, WITH LOCKABLE DOORS AND PANELS. INCLUDE FIXED LOUVERS, BATTERY RACK, AND SILENCER.

INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, IN A NEAT AND WORKMANLIKE MANNER, AS SPECIFIED IN NEC/IECS 404.

PROVIDE FULL LOAD TEST UTILIZING PORTABLE TEST BANK IF REQUIRED. FOR FOUR HOURS MINIMUM. SIMULATE POWER FAILURE INCLUDING OPERATION OF TRANSFER SWITCH, AUTOMATIC STARTING CYCLE, AND AUTOMATIC SHUTDOWN AND RETURN TO NORMAL.

TEST ALARM AND SHUTDOWN CIRCUITS BY SIMULATING CONDITIONS.

PROVIDE THE SERVICES OF MANUFACTURER'S REPRESENTATIVE TO PREPARE AND START SYSTEM.

ADJUST GENERATOR OUTPUT VOLTAGE AND ENGINE SPEED.

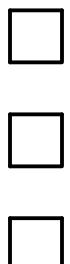
CLEAN ENGINE AND GENERATOR SURFACES. REPLACE OIL AND FUEL FILTERS.

SIMULATE POWER OUTAGE BY INTERRUPTING NORMAL SOURCE, AND DEMONSTRATE THAT SYSTEM OPERATES TO PROVIDE EMERGENCY POWER.



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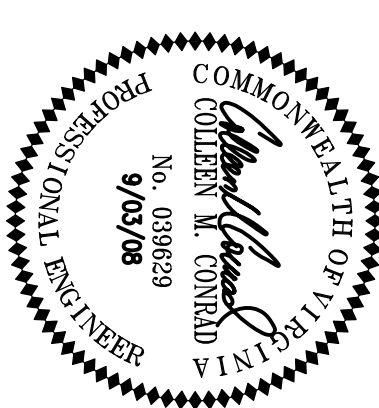
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SPECIFICATIONS

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