

STANDBY GENERATOR
1 INDUSTRIEL STREET

ELECTRICAL SPECIFICATIONS

- CONDITIONS OF CONTRACT
- 1.1. THE OWNERS INSTRUCTIONS TO BIDDER'S AND THE GENERAL CONDITIONS OF THE DESIGNERS DRAWINGS AND SPECIFICATIONS ARE AN INTEGRAL PART OF THIS CONTRACT AND SHALL BE READ IN CONJUNCTION HEREWITH. THESE INSTRUCTIONS TO SUBIDERS AND GENERAL CONDITIONS SHALL BE FULLY BINDING ON THE GENERAL CONTRACTOR AND HIS SUB-CONTRACTORS TO THE FULL SATISFACTION OF THE DESIGNER, ENGINEER AND OWNER.
- 1.2. THE RESPONSIBILITY AND SCOPE OF EACH SUB-TRADE RESTS SOLELY WITH THE CONTRACTOR. EXTRAS WILL NOT BE CONSIDERED BASED ON THE GROUNDS OF DIFFERENCE IN INTERPRETATION OF SPECIFICATIONS AND DRAWINGS AS TO WHICH TRADE INVOLVED SHALL PROVIDE CERTAIN SPECIALITIES OR MATERIALS.
- 1.3. IT IS A CONDITION OF THIS CONTRACT, THAT THE CONTRACTOR WILL, IN THE PERFORMANCE OF THE SERVICES FOR THE OWNER AS DESCRIBED IN THIS CONTRACT, PERFORM WORK IN ACCORDANCE WITH ONTARIO BUILDING CODE LATEST EDITION, THE ONTARIO ELECTRICAL SAFETY CODE, WORKPLACE SAFETY AND HEALTH MATERIALS INFORMATION SYSTEM (WHMIS), AND ANY OTHER CODE OF PROVINCIAL OR LOCAL APPLICATION, INCLUDING HOURS OF WORK, RATES OF PAY, JOB SAFETY AND ALL OTHER MATTERS IN WHICH THE MUNICIPAL OR FEDERAL AUTHORITIES HAVE JURISDICTION, PROVIDED THAT IN ANY CASE OF CONFLICT OR DISCREPANCY, THE MORE STRINGENT REQUIREMENTS SHALL APPLY.
- 1.4. COMPLY WITH STANDARD FOR BUILDING CONSTRUCTION OPERATIONS, ISSUED BY THE ONTARIO FIRE MARSHALL'S OFFICE AND ALL APPLICABLE FIRE SAFETY CODES, LAWS, AND REGULATIONS.
- 1.5. IT IS INCUMBENT UPON THE CONTRACTOR TO INFORM ITSELF OF ANY SUCH LEGISLATION AND THE CONTRACTOR AGREES THAT IN THE EVENT OF NON-COMPLIANCE WITH THIS LEGISLATION, IT WILL INDEMNIFY AND HOLD HARMLESS THE OWNER FROM ANY COSTS AND DAMAGES RESULTING FROM SUCH NON-COMPLIANCE.
- 1.6. ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH STANDARDS OF GOOD PRACTICE AND MEET OR EXCEED REQUIREMENTS OF CONTRACT DOCUMENTS, SPECIFIED STANDARDS, CODES AND REFERENCED DOCUMENTS DESCRIBED IN THESE INSTRUCTIONS.
2. EXAMINATION OF WORK
- 2.1. THIS PROJECT INVOLVES CHANGES TO AN EXISTING BUILDING, WHICH IS PRESENTLY OCCUPIED. THEREFORE, EXAMINE THE SITE AND LOCAL CONDITIONS TO DETERMINE THE DIFFICULTIES IN CARRYING OUT THE WORK INDICATED AND SPECIFIED PRIOR TO SUBMITTING A FINAL PRICE.
3. INTENT
- 3.1. IT IS THE INTENT OF THIS SPECIFICATION AND DRAWINGS TO PROVIDE FOR A COMPLETE AND FULLY OPERATIONAL SYSTEM IN COMPLETE ACCORD WITH ALL APPLICABLE CODES. THESE DOCUMENTS MAY NOT SHOW OR DESCRIBE EACH AND EVERY ITEM REQUIRED FOR THE COMPLETE INSTALLATION-THEREFORE, THE CONTRACTOR SHALL MAKE PROVISIONS FOR ALL LABOUR, MATERIAL AND EQUIPMENT DEEMED NECESSARY TO COMPLETE THE WORK INDICATED OR REASONABLY IMPLIED ON ALL DRAWINGS.
4. LIABILITY
- 4.1. THIS CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR LAYING OUT HIS WORK AND FOR ANY DAMAGE OR EXTRA COSTS CAUSED TO THE OWNER OR OTHER CONTRACTORS BY IMPROPER LOCATION OR COMPLETION OUT OF HIS WORK. HE WILL CARRY ALL NECESSARY INSURANCE COVERAGE.
5. PERMITS, CERTIFICATES, FEES, ETC.
- 5.1. GIVE ALL NOTICES, OBTAIN ALL PERMITS AND PAY ALL FEES SO THAT THE WORK SPECIFIED HEREIN MAY BE CARRIED OUT, EXCEPT FOR OCCUPANCY PERMIT WHICH WILL BE OBTAINED BY THE OWNER.
- 5.2. THE ENGINEER'S WORK SHALL FURNISH ANY CERTIFICATES AS EVIDENCE THAT THE WORK INSTALLED CONFORMS WITH THE LAWS AND REGULATIONS OF ALL AUTHORITIES HAVING JURISDICTION.
6. GUARANTEE
- 6.1. THE CONTRACTOR, AS A CONDITION PRECEDENT TO FINAL PAYMENT AFTER COMPLETION OF THIS WORK, SHALL GUARANTEE THE WORK FOR A PERIOD OF ONE YEAR FROM THE DATE OF SUBSTANTIAL PERFORMANCE OF HIS WORK AS ESTABLISHED BY THE PROJECT MANAGER AND ENGINEER.
7. DOCUMENTS REQUIRED
- 7.1. MAINTAIN AT JOB SITE ONE COPY OF EACH OF THE FOLLOWING DOCUMENTS:
- 7.1.1. DRAWINGS
- 7.1.2. SPECIFICATIONS
- 7.1.3. ADDENDA
- 7.1.4. CHANGE ORDERS
- 7.1.5. OTHER MODIFICATIONS TO THE CONTRACT
- 7.1.6. FIELD TEST REPORTS
- 7.1.7. MANUFACTURERS' INSTALLATION AND APPLICATION INSTRUCTIONS
8. PROGRESS BILLING
- 8.1. THE CONTRACTOR SHALL SUBMIT ITEMIZED BREAKDOWN FOR THE PROJECT BASED ON THE CONTRACT PRICE AGREED TO FOR THIS PROJECT. ANTICIPATED CHANGE NOTICES AUTHORIZED BY THE OWNER WILL BE ADDED TO THE MONTHLY PROGRESS CLAIM.
- 8.2. CLAIMS FOR PAYMENT SHALL BE SUBMITTED FOR REVIEW PRIOR TO THE END OF THE PAY PERIOD TO ALLOW FOR A TIMELY REVIEW BY THE ENGINEER.
- 8.3. CONTRACTOR SHALL SUBMIT PROGRESS CLAIMS FOR REVIEW AND PAYMENT AUTHORIZATION IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE CONTRACT.
9. AS-BUILT AND RECORD DRAWINGS
- 9.1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE RECORD DRAWINGS AND ACCURATE AS-BUILT DRAWINGS.
- 9.2. ONE SET SHALL BE KEPT ON SITE TO RECORD THE INFORMATION REFLECTING CHANGES AND INSTALLATION ON A DAILY BASIS DURING CONSTRUCTION. AT THE END OF THE PROJECT ALL RECORD DRAWINGS SHALL BE FORWARDED TO THE PROJECT MANAGER. ONE SET SHALL BE TRANSFERRED TO THE CLEAN SET AND SENT TO THE ENGINEER FOR THE FINAL REVIEW.
- 9.3. FAILURE TO KEEP UP TO DATE AS-BUILT DRAWING MAY JEOPARDIZE MONTHLY PROGRESS PAYMENTS. AS-BUILT DRAWING WILL BE REVIEWED AT THE SAME TIME AS MONTHLY PROGRESS PAYMENT INSPECTIONS ARE CONDUCTED.
10. SHOP DRAWINGS
- 10.1. BEFORE CONTRACTOR OR DELIVERY OF ANY MATERIALS OR EQUIPMENT, SUBMIT ELECTRONIC COPIES OF SHOP DRAWINGS AND DATA SHEETS COVERING ALL ITEMS OF EQUIPMENT FURNISHED AND INTENDED FOR INSTALLATION UNDER THIS CONTRACT FOR APPROVAL BY THE ENGINEER.
11. TEMPORARY OR TRIAL USAGE
- 11.1. TEMPORARY OR TRIAL USAGE BY THE OWNER OF ANY MACHINERY, APPARATUS, EQUIPMENT OR ANY OTHER WORK OR MATERIALS SUPPLIED UNDER THE CONTRACT BEFORE FINAL WRITTEN ACCEPTANCE BY THE ENGINEER IS NOT TO BE CONSTRUED AS EVIDENCE OF THE ACCEPTANCE OF SAME BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF SUCH TEMPORARY AND TRIAL USAGE AS SOON AS THE CONTRACTOR CLAIMS THAT SAID WORK OR MATERIAL IS COMPLETED. ANY DAMAGE CAUSED BY DEFECTIVE MATERIAL OR WEAR AND TEAR OF TEMPORARY OR TRIAL USAGE BY THE OWNER SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR.
- 11.2. ANY PERMANENT EQUIPMENT USED TEMPORARILY FOR TEMPORARY HEAT OR OTHERWISE WILL BE COMPLETELY REPAIRED, REPLACED, AND CLEANED TO THE FULL SATISFACTION OF THE OWNER.
12. EXPLOSIVES ACTUATED FASTENING DEVICES
- 12.1. DO NOT EMPLOY POWER GUNS USING EXPLOSIVES, UNLESS EXPRESSLY PERMITTED BY THE PROJECT MANAGER, COMPLY WITH REQUIREMENTS OF CSA 2-166 (SAFETY CODE FOR EXPLOSIVE ACTUATED TOOLS).
13. STORAGE
- 13.1. THE SECURITY OF THE CONTRACTOR'S EQUIPMENT AND MATERIALS SHALL BE HIS RESPONSIBILITY. CONTRACTOR SHALL LIAISE WITH THE BUILDING OPERATOR AS NECESSARY.
14. SIGNS
- 14.1. PROVIDE WARNING SIGNS IN LOCATIONS WHERE RENOVATIONS AND ALTERATION WORK IS ADJACENT TO NORMALS AFFECTING THE PUBLIC.
15. EQUIPMENT AND SITE CLEANLINESS
- 15.1. EQUIPMENT SHALL BE THOROUGHLY CLEANED OF DIRT, CUTTINGS AND OTHER FOREIGN SUBSTANCES. DISCONNECT, CLEAN AND RECONNECT WHENEVER NECESSARY FOR THE PURPOSE OF LOADING AND REMOVING OBSTRUCTIONS FROM THE WORK AREA IN THE COURSE OF REMOVING OBSTRUCTIONS.
- 15.2. THE CONTRACTOR SHALL AT ALL TIMES KEEP THE PREMISES FREE FROM THE ACCUMULATION OF WASTE MATERIAL TO THE SATISFACTION OF THE PROJECT MANAGER. PLACE DUST PROTECTION IN THE FORM OF COVER SHEETS OVER EQUIPMENT AND FURNITURE TO ENSURE NO DUST INFILTRATION. CLEANINGS TO BE COMPLETED AT THE END OF EACH SHIFT TO THE SATISFACTION OF THE PROJECT MANAGER.
16. MATERIALS

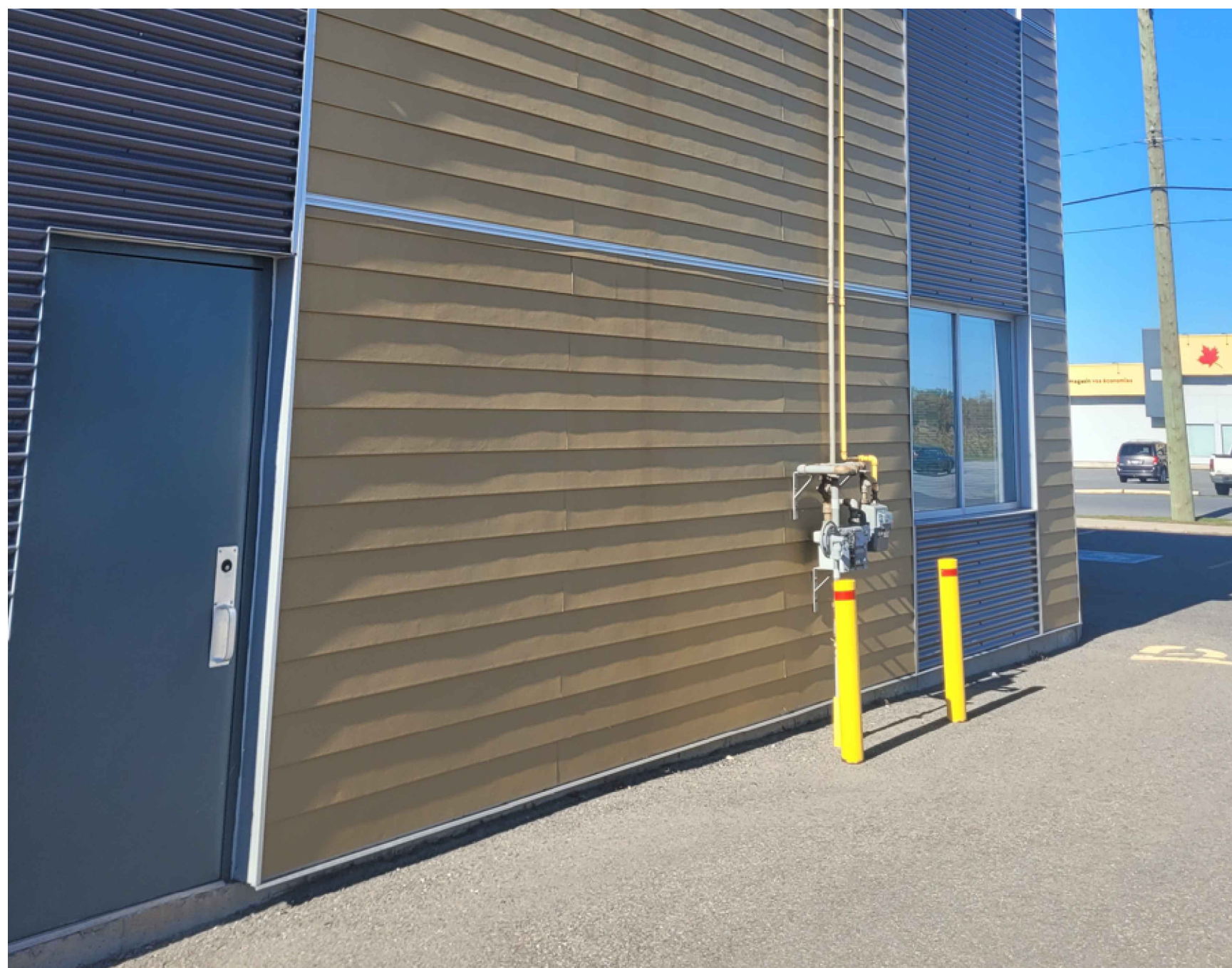
- 16.1. MATERIALS AND EQUIPMENT INSTALLED SHALL BE NEW, FULL WEIGHT AND OF BEST QUALITY SPECIFIED. USE SAME BRAND OF MANUFACTURER FOR EACH SPECIFIC APPLICATION. STATICALLY AND DYNAMICALLY BALANCE ROTATING EQUIPMENT FOR MINIMUM VIBRATION AND LOW OPERATING NOISE LEVEL. REPLACE MATERIAL OR WORKMANSHIP BELOW SPECIFIED QUALITY AND RELOCATE WORK WRONGLY PLACED TO THE SATISFACTION OF THE ENGINEER.
17. APPROVALS
- 17.1. PRICE SUBMITTED FOR THIS CONTRACT SHALL BE BASED ON THE USE OF MATERIALS AND EQUIPMENT AS SPECIFIED. IF THIS CONTRACTOR WISHES TO QUOTE ON EQUIVALENT MATERIALS AND EQUIPMENT, HE MUST QUOTE ON PRODUCTS APPROVED BY THE ENGINEER. IN WRITING, AS AN ADDITION TO THE PROPOSAL SPECIFIED. THIS CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR ANY ADDITIONAL WORK OR MATERIALS REQUIRED BY ALL OTHER CONTRACTORS TO ACCOMMODATE APPROVED EQUIVALENT MATERIALS OR EQUIPMENT. EXTRAS WILL NOT BE APPROVED TO COVER SUCH WORK.
18. CUTTING AND PATCHING
- 18.1. THE CONTRACTOR IS RESPONSIBLE FOR THIS WORK AND SHALL CO-ORDINATE LOCATIONS FOR ALL HOLES FOR PIPES, DUCTS THROUGH FLOORS AND ROOF, ETC., AND PROVIDE SLEEVES REQUIRED TO PROTECT THE INSTALLATION. X-RAY FLOORS AND STRUCTURAL WALLS BEFORE CUTTING TO LOCATE EXISTING REBAR AND CONDUITS, AND MUST OBTAIN PROJECT MANAGER'S APPROVAL FOR PROPOSED CUTTING BEFORE PROCEEDING. PROVIDE UL APPROVED FIRE STOPPING SYSTEM FOR ALL PENETRATIONS THROUGH RATED ASSEMBLIES.
19. SHUTDOWNS
- 19.1. ANY SHUTDOWN THAT MAY BE REQUIRED OF EXISTING EQUIPMENT MUST HAVE PRIOR APPROVAL FROM THE PROJECT MANAGER AND ENGINEER. PROVIDE A MINIMUM OF 96 HOURS NOTICE.
20. MATERIALS REMOVED
- 20.1. ALL MATERIALS REMOVED DURING DEMOLITION SHALL BECOME THE PROPERTY OF THE OWNER AND SHALL BE STORED BY THE CONTRACTOR. MATERIAL REJECTED BY THE OWNER SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR.
21. MINIMUM STANDARDS
- 21.1. ELECTRICAL INSTALLATION: TO CSA C22.1-LATEST EDITION
- 21.2. LIGHTING FIXTURES: TO CSA C22.2 NO. 3-LATEST EDITION
- 21.3. FUTURE BALLAST: TO CSA C22.2 NO. 74-LATEST EDITION
- 21.4. THERMO: TO CSA CODE-LATEST EDITION
- 21.5. ONTARIO ELECTRICAL SAFETY CODE-LATEST EDITION
22. MOUNTING HEIGHTS
- 22.1. INSTALL ELECTRICAL EQUIPMENT AT FOLLOWING HEIGHTS UNLESS INDICATED OTHERWISE:
- 22.1.1. LOCAL SWITCHES: 1100MM
- 22.1.2. WALL RECEPTACLES: 400MM
- 22.1.2.1. GENERAL: 400MM
- 22.1.2.2. ABOVE COUNTERS: 175MM
- 22.1.3. PANELBOARDS: 1800MM FROM TOP
- 22.1.4. TELECOMMUNICATION OUTLETS: 400MM
23. DEMOLITION
- 23.1. CONTRACTOR TO CO-ORDINATE WITH OTHER TRADES TO ENSURE THAT ELECTRICAL EQUIPMENT AND MATERIAL ASSOCIATED WITH MECHANICAL EQUIPMENT AND/OR IS LOCATED IN WALLS BEING DEMOLISHED IS ALSO BEING REMOVED.
- 23.2. EXISTING EQUIPMENT SHOWN AS RELOCATED TO BE CLEANED AND MADE OPERATIONAL BY THIS CONTRACTOR PRIOR TO ITS RELOCATION.
- 23.3. CONTRACTOR TO REPLACE BROKEN AND DISCOLOURED LIGHT FIXTURE ACRYLIC LENSES AS INDICATED BY THE ENGINEER.
24. EQUIPMENT SHUTDOWN
- 24.1. ANY SHUTDOWN THAT MAY BE REQUIRED OF EXISTING EQUIPMENT, MUST HAVE PRIOR APPROVAL FROM THE ENGINEER.
25. IDENTIFICATION
- 25.1. IDENTIFY WITH LAMACOID NAMEPLATES ALL ELECTRICAL EQUIPMENT SHOWN ON THE DRAWINGS AND/OR MENTIONED IN THE SPECIFICATION SUCH AS MOTORS, SWITCHES, STARTERS, PANEL BOARDS, TRANSFORMERS, COILS, AND SPECIAL RECEPTACLES, REGARDLESS OF WHETHER OR NOT THE ELECTRICAL EQUIPMENT WAS FURNISHED UNDER THIS SECTION OF THE SPECIFICATION. IDENTIFICATION REVIEWED BY ENGINEER.
- 25.2. UNLESS OTHERWISE SPECIFIED, NAMEPLATES SHALL BE RIGID LAMACOID, MINIMUM 1.5mm THICK WITH 25.4mm HIGH LETTERING, ENAMEL OR WHITE BACKGROUND. NAMEPLATES TO BE NEATLY PLACED, AND SQUARE TO SURROUNDING BUILDING OR EQUIPMENT LINES, AND FASTENED IN PLACE WITH MECHANICAL FASTENERS (SCREWS OR POI RIVETS) AS REVIEWED BY ENGINEER.
- 25.3. PROVIDE NEATLY TYPED UPDATED CIRCUIT DIRECTORIES IN A PLASTIC HOLDER ON THE INSIDE DOOR OF NEW PANEL BOARDS, WITH COPY IN MANUAL.
- 25.4. IDENTIFY ALL PULL AND JUNCTION BOXES, WITH P-TOUCH LABEL IDENTIFICATION, INDICATING SOURCE PANEL AND CIRCUIT NUMBERS.
- 25.5. IDENTIFY ALL RECEPTACLES AND SWITCHES WITH P-TOUCH LABELS, BLACK LETTERING ON TRANSPARENT TAPE, INDICATING SOURCE PANEL AND CIRCUIT NUMBER. LABELS TO BE LOCATED ON FRONT OF COVERPLATE.
26. WIRING
- 26.1. ALL WIRING TO BE COPPER, R90 XLPE, STRANDED WITH "BRADY LABEL" MARKING SLEEVES AT EACH END UNLESS OTHERWISE SPECIFIED. WIRING TO BE IDENTIFIED BY COLOUR CODED AS PER CODE. MINIMUM WIRE SIZE TO BE NO.12 AWG FOR POWER AND LIGHTING.
- 26.2. LEAVE ADEQUATE LENGTHS OF WIRE IN JUNCTION BOXES FOR CONNECTIONS TO EQUIPMENT.
- 26.3. "BX" WIRING IN WALLS ONLY.
- 26.4. RUN A GREEN INSULATED GROUND WIRE SIZED AS PER CODE IN ALL CONDUIT RUNS. DO NOT RELY ON CONDUIT AS GROUND.
- 26.5. EACH LENGTH OF CONDUIT TO BE NEW AND BEAR CSA STAMP OF APPROVAL.
- 26.6. ALL CONDUITS RUN ABOVE THE SUSPENDED CEILING TO BE "EMT".
- 26.7. PROVIDE NYLON PULPULPES IN ALL EMPT CONDUIT RUNS.
- 26.8. MODULAR TO MATCH EXISTING: NOCOM MODULAR WIRING CABLES SYSTEM FOR CONNECTION OF FLUORESCENT TRIGGER LIGHT FIXTURES, CONSISTENT WITH BASE BUILDING.
- 26.9. SMART-CONNET CABLES: START, JOINER, DROP, SWITCH DROP CABLES AS REQUIRED.
- 26.6. CONNECTORS: MOULDED PVC RECEPTABLES AND ADAPTERS.
- 26.7. REMOVE AND RECONNECT AS REQUIRED TO OBTAIN LIGHTING CIRCUITS INDICATED AND ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- 26.8. OUTPUT VOLTAGE CONTROL:
- 26.8.1. VOLTAGE REGULATION: VOLTAGE NOT TO CHANGE BY MORE THAN 2% AS LOAD INCREASES GRADUALLY FROM ZERO TO 100%, OR FOR SPECIFIED DURATION OF FULL LOAD AFTER MAINS FAILURE.
- 26.8.2. TRANSIENT VOLTAGE CHANGE NOT TO EXCEED +/-5% OF RATED VOLTAGE UPON 50% SUDDEN LOAD CHANGE, LOSS OR RETURN OF AC INPUT VOLTAGE TO SYSTEM WHEN FULLY LOADED OR TRANSFER FROM LOAD FROM INVERTER TO BYPASS AND VICE VERSA, AND RETURN TO NORMAL WITHIN 3 HZ.
- 26.9. HARMONICS OVER ENTIRE LOAD RANGE:
- 26.9.1. TOTAL RMS VALUE NOT TO EXCEED 5% RMS VALUE OF TOTAL OUTPUT VOLTAGE.
- 26.9.2. SINGLE HARMONIC NOT TO EXCEED 3% OF TOTAL OUTPUT VOLTAGE.
- 26.9.3. PHASE RELATION MAINTAINED WITHIN 4 ELECTRICAL DEGREES AT UP TO 20% LOAD UNBALANCE.
- 26.10.EFFICIENCY: OVERALL SYSTEM EFFICIENCY AT RATED LOAD WITH BATTERY FULLY CHARGED NOT LESS THAN 80%.
27. TESTING
- 27.1. PRIOR TO ENERGIZING THE VARIOUS PORTIONS OF THE ELECTRICAL SYSTEMS, PERFORM MEASURE TESTS ON ALL FEEDERS AND BRANCH CIRCUITS. ALSO PERFORM RESISTANCE-TO-GROUND OHM TESTS FOR PROPER CONDUCTOR AND INSULATION RESISTANCE. RESULTS OF THIS TESTING SHALL BE SUBMITTED IN WRITING TO THE PROJECT MANAGER. RESULTS SHALL COMPLY WITH THE REQUIREMENTS OF THE ONTARIO ELECTRICAL SAFETY CODE (2009) AND THE LOCAL INSPECTION AUTHORITY. SUBMIT RESULTS TO THE PROJECT MANAGER.
- 27.2. UPON COMPLETION OF THE PROJECT AND IMMEDIATELY PRIOR TO FINAL INSPECTION, CHECK THE LOAD BALANCE OF ALL AFFECTED PANELS AND ETC. THESE TESTS SHALL BE CARRIED OUT BY TURNING ON ALL POSSIBLE LOADS DERIVED FROM PANEL(S) AND CHECKING LOAD CURRENT BALANCE. IF LOAD

UNBALANCE EXCEEDS 15%, RECONNECT CIRCUITS TO BALANCE THE LOAD. SUBMIT FINAL READINGS TO PROJECT MANAGER.

- 28.1. COLOUR CODED.
- 28.2. ALL EQUIPMENT AND COMPONENTS, FIELD WELDED OR FACTORY ASSEMBLED, SHALL BE IDENTIFIED.
- 28.3. ALL EQUIPMENT SHALL BE IDENTIFIABLE BY COLOURED INSULATION AND MARKERS AT EVERY TERMINAL AND ACCESSIBLE POINT THROUGHOUT ITS ENTIRE RUN, AS FOLLOWS:
 - 28.3.1. 20/240 VOLT, 1 PHASE, 3 WIRE - RED, BLACK AND BLUE
 - 28.3.2. NEUTRAL CONDUCTOR - WHITE
 - 28.3.3. GROUND CONDUCTOR - GREEN.
29. SEISMIC RESTRAINT SYSTEM (SRS)
- 29.1. PROVIDE DESIGN, SUPPLY AND INSTALLATION OF COMPLETE SRS FOR ALL SYSTEMS, EQUIPMENT SPECIFIED FOR INSTALLATION ON THIS PROJECT AS PER ANTO BUILDING CODE LATEST EDITION. THE INCLUDES ELECTRICAL LIGHT FIXTURES, TRANSFORMERS, MCC'S, UPS DIESEL GENERATORS, FIRE PUMP, CONDENSER CONDENSATOR, ELECTRICAL EQUIPMENT AND SYSTEMS, BOTH VIBRATION ISOLATED AND STATICALLY SUPPORTED.
- 29.2. DESIGN TO BE BY PROFESSIONAL ENGINEER SPECIALIZING IN DESIGN OF SRS AND REGISTERED IN THE PROVINCE OF ONTARIO, ELECTRICAL CONTRACTOR TO INCLUDE COSTS ASSOCIATED WITH THIS WORK AS IT RELATES TO ELECTRICAL CONTRACTOR INSTALLATIONS. SUBMIT DESIGN SKETCHES/DRAWINGS PRIOR TO START OF INSTALLATIONS, C/W INSTALLATION REQUIREMENTS.
- 29.3. PROVIDE LETTER FROM SEISMIC ENGINEER STATING ALL ELECTRICAL INSTALLATIONS HAVE BEEN INSTALLED IN CONFORMANCE WITH SEISMIC RESTRAINT REQUIREMENTS AS PER ANTO BUILDING CODE.
30. EQUIPMENT
- 30.1. EQUIPMENT SUPPLIED SHALL BE EXACTLY AS SPECIFIED HEREIN. SUBSTITUTIONS OR ALTERNATIVES TO WHAT IS SPECIFIED WILL NOT BE ACCEPTED AFTER THE CLOSING OF TENDERS. SUBSTITUTION OR ALTERNATIVES MUST BE SUBMITTED ONE WEEK PRIOR TO TENDER CLOSING AND MUST BE APPROVED BY ANTO.
- 30.2. ALL EQUIVALENCY DECISIONS MADE BY THE ENGINEER WILL BE FINAL. THE BURDEN OF PROOF OF EQUIVALENT PRODUCTS BOTH IN TERMS OF PERFORMANCE AND QUALITY SHALL BE ON THE ENGINEER. PROVIDE PROOF OF EQUIVALENCY TO THE ENGINEER. EQUIVALENCY TESTS AND ANALYTICAL RESULTS ARE TO BE PRESENTED ON A DRAWING OF THE SAME SIZE AND SCALE AS THE ORIGINAL.



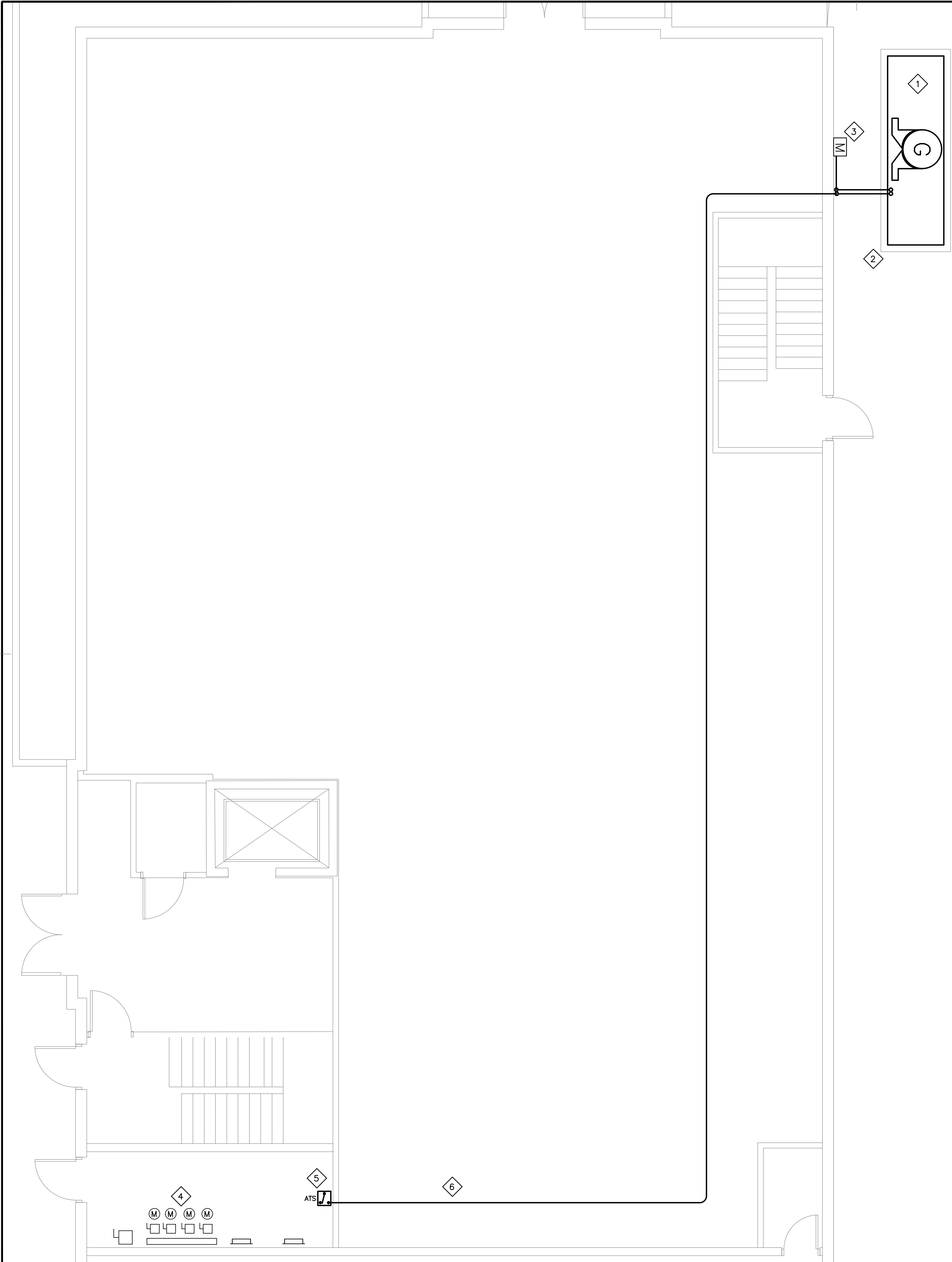
1 INDUSTRIEL STREET



EXISTING
SCALE: NTS

EXISTING GAS METER AND LOCATION OF GENERATOR
SCALE: NTS

E-2025-01-28 ISSUED FOR REVIEW.DWG



DRAWING NOTES:

- 1

PROVIDE GENERAC SG150 150KW 347/600V 3-PHASE GENERATOR C/W DIGITAL H CONTROLLER. OPTIONAL ACCESSORIES TO INCLUDE: GENERATOR READY-STATUS INDICATOR, COLD WEATHER OPERATION AND ADDITIONAL LEVEL 1 SOUND REDUCTION. INSTALL PER MANUFACTURER REQUIREMENTS. EXACT INSTALLATION LOCATION TO BE CONFIRMED BY CLIENT.
- 2

PROVIDE 6" CONCRETE SLAB ON GRADE. SLAB TO EXTEND 8" BEYOND GENERATOR BASE RAIL. EXCAVATE TO 24" AND FILL WITH GRANULAR A COMPACTED TO 95 SPD. CONTRACTOR TO PERFORM LOCATES PRIOR TO EXCAVATION.
- 3

EXISTING NATURAL GAS METER. PROVIDE 1-1/2"ø NATURAL GAS PIPING CONNECTION TO NEW GENERATOR, REFER TO DETAILS ON DRAWING M&E-3 FOR REQUIRED GAS PIPING MODIFICATIONS. NATURAL GAS PIPING TO GENERATOR TO BE BURIED..
- 4

EXISTING ELECTRICAL DISTRIBUTION IN ELECTRICAL ROOM, REFER TO DETAILS ON DRAWING M&E-3 FOR REQUIRED DEMOLITION.
- 5

PROVIDE GENERAC AUTOMATIC TRANSFER SWITCH (ATS) RXSW200A3 347/600V 200A 3-PHASE C/W ALL CONDUIT AND WIRING. REFER TO SINGLE LINE DIAGRAM ON DRAWING M&E-3 FOR INSTALLATION DETAILS.
- 6

PROVIDE ALL CONDUIT AND WIRING BETWEEN ATS AND NEW GENERATOR FOR BOTH MAIN ELECTRICAL FEED AND SHORE POWER. ELECTRICAL TO BE INSTALLED IN CEILING SPACE OF GROUND FLOOR. CONTRACTOR WILL BE REQUIRED TO REMOVE AND RE-INSTATE CEILING TILES. EXACT LOCATION TO BE CONFIRMED ON-SITE. REFER TO INSTALLATION DETAILS ON DRAWING M&E-3.



Contractor to verify all dimensions & conditions on site and immediately notify PRDS of all discrepancies.

0	ISSUED FOR REVIEW	25/01/29
revisions	description	date

A

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A detail no.
no. du detail
B location drawing
sur dessin no.
C drawing no.
dessin no.

A

B

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project

projet

STANDBY GENERATOR

1 INDUSTRIEL STEET
CASSELMAN ON KOA 1MO

drawing

dessin

GENERATOR
INSTALLATION

Designed By	M.M.K.	Concu par
Date	2025/01/03 (yyyy/mm/dd)	
Drawn By	L.M.K.	Dessine par
Date	2025/01/03 (yyyy/mm/dd)	
Reviewed By	PRDS	Examine par
Date	2025/01/29 (yyyy/mm/dd)	
Approved By	PRDS	Approuve par
Date	2025/01/29 (yyyy/mm/dd)	
Tender	MÉLODIE SORRELL	Soumission
Project Manager	Administrateur de projets	
Project no.	80-2411	No. du projet

Drawing no.

M&E-2

No. du dessin

Standby Power Rating

150 kW, 188 kVA, 60 Hz



*Assembled in the USA using domestic and foreign parts

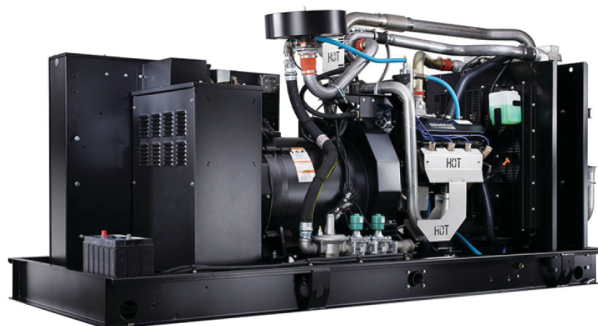


Image used for illustration purposes only

Codes and Standards

Generac products are designed to the following standards:



UL2200, UL508, UL489



CSA C22.2



BS5514 and DIN 6271



SAE J1349



NFPA 37, 70, 99, 110



NEC700, 701, 702, 708



NEMA ICS10, MG1, 250, ICS6, AB1



ANSI C62.41



IBC 2009, CBC 2010, IBC 2012,
ASCE 7-05, ASCE 7-10, ICC-ES
AC-156 (2012)

Powering Ahead

Generac provides superior quality by designing and manufacturing most of its generator components, such as alternators, enclosures, control systems and communications software. Generac also makes its own spark-ignited engines, and you'll find them on every Generac gaseous-fueled generator. We engineer and manufacture them from the block up — all at our facilities throughout Wisconsin. Applying natural gas and LP-fueled engines to generators requires advanced engineering expertise for reliability, durability and necessary performance. By designing specifically for these dry, hotter-burning fuels, the engines last longer and require less maintenance. Building our own engines also means we control every step of the supply chain and delivery process, so you benefit from single-source responsibility.

Plus, Generac Industrial Power's distribution network provides all parts and service so you don't have to deal with third-party suppliers. It all leads to a positive owner experience and higher confidence level. Generac spark-ignited engines give you more options in commercial and industrial generator applications as well as extended run time from utility-supplied natural gas.

STANDARD FEATURES

ENGINE SYSTEM

- Oil Drain Extension
- Air Cleaner
- Fan Guard
- Stainless Steel Flexible Exhaust Connection
- Factory Filled Oil and Coolant
- Radiator Duct Adapter (Open Set Only)
- Critical Silencer/Catalyst

FUEL SYSTEM

- NPT Fuel Connection on Frame
- Primary and Secondary Fuel Shutoff

COOLING SYSTEM

- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Factory-Installed Radiator
- 50/50 Ethylene Glycol Antifreeze
- Radiator Drain Extension

ELECTRICAL SYSTEM

- Battery Charging Alternator
- Battery Cables
- Battery Tray
- Rubber-Booted Engine Electrical Connections
- Solenoid Activated Starter Motor

ALTERNATOR SYSTEM

- UL2200 GENprotect™
- Class H Insulation Material
- 2/3 Pitch
- Skewed Stator
- Permanent Magnet Excitation
- Sealed Bearings
- Amortisseur Winding
- Full Load Capacity Alternator

GENERATOR SET

- Internal Genset Vibration Isolation
- Separation of Circuits - High/Low Voltage
- Separation of Circuits - Multiple Breakers
- Wrapped Exhaust Piping
- Standard Factory Testing
- 2 Year Limited Warranty (Standby Rated Units)
- Silencer Mounted in the Discharge Hood (Enclosed Only)

ENCLOSURE (If Selected)

- Rust-Proof Fasteners with Nylon Washers to Protect Finish
- High Performance Sound-Absorbing Material (Sound Attenuation Enclosures)
- Gasketed Doors
- Stamped Air-Intake Louvers
- Upward Facing Discharge Hoods (Radiator and Exhaust)
- Stainless Steel Lift Off Door Hinges
- Stainless Steel Lockable Handles
- RhinoCoat™ - Textured Polyester Powder Coat Paint

CONTROL SYSTEM



Digital H Control Panel- Dual 4x20 Display

Program Functions

- Programmable Crank Limiter
- 7-Day Programmable Exerciser
- Special Applications Programmable Logic Controller
- RS-232/485 Communications
- 3 Phase Sensing Digital Voltage Regulator
- 2-Wire Start Capability

- Date/Time Fault History (Event Log)
- Isochronous Governor Control
- Waterproof/Sealed Connectors
- Audible Alarms and Shutdowns
- Not in Auto (Flashing Light)
- Auto Off/Manual Switch
- E-Stop (Red Mushroom-Type)
- NFPA110 Level I and II (Programmable)
- Customizable Alarms, Warnings, and Events
- Modbus® Protocol
- Predictive Maintenance Algorithm
- Sealed Boards
- Password Parameter Adjustment Protection
- Single Point Ground
- 16 Channel Remote Trending
- 0.2 msec High Speed Remote Trending
- Alarm Information Automatically Annunciated on the Display

Full System Status Display

- Power Output (kW)
- Power Factor
- kW Hours, Total, and Last Run

- Real/Reactive/Apparent Power
- All Phase AC Voltage
- All Phase Currents
- Oil Pressure
- Coolant Temperature
- Coolant Level
- Engine Speed
- Battery Voltage
- Frequency

Alarms and Warnings

- Oil Pressure
- Coolant Temperature
- Coolant Level
- Engine Overspeed
- Battery Voltage
- Alarms and Warnings Time and Date Stamped
- Snap Shots of Key Operation Parameters During Alarms and Warnings
- Alarms and Warnings Spelled Out (No Alarm Codes)

PARALLELING CONTROLS

- Auto-Synchronization Process
- Isochronous Load Sharing
- Reverse Power Protection
- Maximum Power Protection
- Electrically Operated, Mechanically Held Paralleling Switch
- Sync Check System
- Independent On-Board Paralleling

- Optional Programmable Logic Full Auto Back-Up Controls (PLS)
- Shunt Trip and Auxiliary Contact

SG150 | 9.0 L | 150 kW

INDUSTRIAL SPARK-IGNITED GENERATOR SET

EPA Certified Stationary Emergency

GENERAC | **INDUSTRIAL**
POWER

CONFIGURABLE OPTIONS

ENGINE SYSTEM

- Engine Block Heater
- Oil Heater
- Air Filter Restriction Indicator
- Radiator Stone Guard (Open Set Only)
- Baseframe Cover/Rodent Guard
- Level 1 Fan and Belt Guards (Enclosed Units Only)
- Shipped Loose Critical Silencer (Open Set Only)

FUEL SYSTEM

- NPT Flexible Fuel Line
- Dual Fuel NG/LPV
- Dual Fuel NG/LPL

ELECTRICAL SYSTEM

- 10A UL Battery Charger
- Battery Warmer

ALTERNATOR SYSTEM

- Alternator Upsizing
- Anti-Condensation Heater
- Tropical Coating

CIRCUIT BREAKER OPTIONS

- Main Line Circuit Breaker
- 2nd main Line Circuit Breaker
- Shunt Trip and Auxiliary Contact
- Electronic Trip Breakers

GENERATOR SET

- Demand Response Rating
- Extended Factory Testing (3 Phase Only)
- IBC Seismic Certification
- 8 Position Load Center

ENCLOSURE

- Weather Protected Enclosure
- Level 1 Sound Attenuated
- Level 2 Sound Attenuated
- Level 2 Sound Attenuated with Motorized Dampers
- Steel Enclosure
- Aluminum Enclosure
- AC/DC Enclosure Lighting Kit
- Enclosure Heater
- Pad Vibration Isolation
- Up to 200 MPH Wind Load Rating (Contact Factory for Availability)
- Door Open Alarm Switch

CONTROL SYSTEM

- NFPA 110 Compliant Level 1 21-Light Remote Annunciator
- Remote Relay Assembly (8 or 16)
- Oil Temperature Indication and Alarm
- Remote E-Stop (Break Glass-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Surface Mount)
- Remote E-Stop (Red Mushroom-Type, Flush Mount)
- 10A Engine Run Relay
- Ground Fault Annunciator
- 100 dB Alarm Horn
- 120V GFCI and 240V Outlets
- Damper Alarm Contacts (Motorized Dampers Only)
- Auxiliary Circuit Breaker Contacts to Controller

WARRANTY (Standby Gensets Only)

- 2 Year Extended Limited Warranty
- 5 Year Extended Limited Warranty
- 7 Year Extended Limited Warranty
- 10 Year Extended Limited Warranty

ENGINEERED OPTIONS

ENGINE SYSTEM

- Coolant Heater Ball Valves
- Fluid Containment Pan

ALTERNATOR SYSTEM

- 3rd Breaker System

CONTROL SYSTEM

- Battery Disconnect Switch

GENERATOR SET

- Special Testing
- Battery Box

APPLICATION AND ENGINEERING DATA

ENGINE SPECIFICATIONS

General

Make	Generac
Cylinder #	8
Type	V
Displacement - in ³ (L)	543 (8.9)
Bore - in (mm)	4.49 (114.3)
Stroke - in (mm)	4.25 (108)
Compression Ratio	G18 - 10.5:1 / G26 - 9.1:1 *
Intake Air Method	Turbocharged/Aftercooled
Number of Main Bearings	5
Connecting Rods	Forged Steel
Cylinder Head	Cast Iron
Cylinder Liners	No
Ignition	High Energy
Piston Type	Aluminum Alloy
Crankshaft Type	Forged Steel
Lifter Type	Hydraulic Roller
Intake Valve Material	Steel Alloy
Exhaust Valve Material	Stainless Steel
Hardened Valve Seats	Yes

Engine Governing

Governor	Electronic
Frequency Regulation (Steady State)	±0.25%

Lubrication System

Oil Pump Type	Gear Driven
Oil Filter Type	Full-Flow Spin-On Cartridge
Crankcase Capacity: qt (L)	G18 - 8.5 (8.0) / G26 - 9.5 (10.0) *

Cooling System

Cooling System Type	Pressurized Closed
Fan Type	Pusher
Fan Speed (RPM)	G18 - 2,330 / G26 - 2,386 *
Fan Diameter - in (mm)	22 (559)

Fuel System

Fuel Type	Natural Gas, Propane Vapor/ Liquid
Carburetor	Down Draft
Secondary Fuel Regulator	Standard
Fuel Shut Off Solenoid	Standard
Operating Fuel Pressure - in H ₂ O	7 - 11 (1.7 - 2.7)
Optional Operating Fuel Pressure (LPL) — psi (KPa)	30 - 312 (206 - 2,151)

*When designing the external fuel system, assume a 20% safety factor to the upper and lower limit of the specified fuel pressure range to account for site variation and measurement at the generator test port. Refer to Generac 10000046207, latest rev, for proper gas supply guidelines (Contact Factory for Details).

Engine Electrical System

System Voltage	12 VDC
Battery Charger Alternator	Standard
Battery Size	See Battery Index 0161970SBY
Battery Voltage	12 VDC
Ground Polarity	Negative

* G18 refers to all engines manufactured before August 3rd, 2018. G26 refers to all engines manufactured after August 3rd, 2018.

ALTERNATOR SPECIFICATIONS

Standard Model	K0150124Y26
Poles	4
Field Type	Revolving
Insulation Class - Rotor	H
Insulation Class - Stator	H
Total Harmonic Distortion	<5%
Telephone Interference Factor (TIF)	<50

Standard Excitation	Permanent Magnet
Bearings	Single Sealed Ball
Coupling	Direct Drive
Prototype Short Circuit Test	Yes
Voltage Regulator Type	Full Digital
Number of Sensed Phases	All
Regulation Accuracy (Steady State)	±0.25%

OPERATING DATA

POWER RATINGS

	G18, G26 - Natural Gas *		G18, G26 - Propane/Dual Fuel *	
Three-Phase 120/208 VAC @0.8pf	144 kW	Amps: 600	134 kW	Amps: 558
Three-Phase 120/208 VAC @0.8pf	150 kW	Amps: 521	140 kW	Amps: 486
Three-Phase 120/240 VAC @0.8pf	150 kW	Amps: 452	140 kW	Amps: 422
Three-Phase 277/480 VAC @0.8pf	150 kW	Amps: 226	140 kW	Amps: 211
Three-Phase 346/600 VAC @0.8pf	150 kW	Amps: 181	140 kW	Amps: 169

MOTOR STARTING CAPABILITIES (skVA)

skVA vs. Voltage Dip 480 VAC			
277/480 VAC	30%	208/240 VAC	30%
K0150124Y26	327	K0150124Y26	250
K0200124Y21	478	K0200124Y21	361

FUEL CONSUMPTION RATES*

Natural Gas – scfh (m³/hr)		Propane Vapor – scfh (m³/hr)		Propane Liquid – gal/hr (Lph)	
Percent Load	Standby	Percent Load	Standby	Percent Load	Standby
25%	668 (18.9)	25%	280 (7.9)	25%	6.7 (25.4)
50%	1,127 (31.9)	50%	430 (12.2)	50%	11.4 (43.2)
75%	1,583 (44.8)	75%	573 (16.2)	75%	15.7 (59.4)
100%	2,042 (57.8)	100%	720 (20.4)	100%	20.0 (75.7)

*1.5X maximum site rated fuel consumption should be used for gas supply design practices. Refer to Generac 10000046207, latest rev., for more information or contact factory for details.

COOLING

		Standby
Air Flow (Fan Air Flow Across Radiator)	cfm (m³/hr)	5,598 (158.5)
Coolant Flow	gpm (Lpm)	27.5 (104)
Coolant System Capacity	gal (L)	6.3 (24.0)
Maximum Operating Air Temperature on Radiator	°F (°C)	122 (50)
Maximum Operating Ambient Temperature (Before Derate)	See Bulletin 0199270SSD	
Maximum Radiator Backpressure	in H ₂ O (kPa)	0.5 (0.12)

COMBUSTION AIR REQUIREMENTS

	Standby
Flow at Rated Power cfm — (m³/min)	343 (9.7)

ENGINE

		Standby
Rated Engine Speed	RPM	1,800
Horsepower at Rated kW**	hp	229
Piston Speed	ft/min (m/min)	1,275 (389)
BMEP	psi (kPa)	185 (1,277)

** Refer to "Emissions Data Sheet" for maximum bHP for EPA and SCAQMD permitting purposes.

EXHAUST

		Standby
Exhaust Flow (Rated Output)	cfm (m³/min)	1,206 (34.1)
Maximum Exhaust Backpressure	inHG (kPa)	0.75 (2.54)
Exhaust Temp (Rated Output - Post Silencer)	°F (°C)	1,440 (782)

Deration – Operational characteristics consider maximum ambient conditions. Derate factors may apply under atypical site conditions.

Please contact a Generac Power Systems Industrial Dealer for additional details. All performance ratings in accordance with BS5514 and DIN6271 standards.

Standby - See Bulletin 0187500SSB

DIMENSIONS AND WEIGHTS*



OPEN SET (Includes Exhaust Flex)	
L x W x H - in (mm)	116.5 (2,959) x 49.7 (1,262) x 55.6 (1,412)
Weight - lbs	2,946 (1,336)
WEATHER PROTECTED ENCLOSURE	
L x W x H - in (mm)	143.0 (3,631) x 50.4 (1,280) x 68.2 (1,732)
Weight - lbs	Steel: 3,843 (1,743) Aluminum: 3,384 (1,535)
LEVEL 1 ACOUSTIC ENCLOSURE	
L x W x H - in (mm)	143.0 (3,632) x 50.4 (1,280) x 91.7 (2,329)
Weight - lbs	Steel: 4,321 (1,960) Aluminum: 3,592 (1,629)
LEVEL 2 ACOUSTIC ENCLOSURE	
L x W x H - in (mm)	144.53 (3,671) x 40.46 (1,027.8) x 80.88 (2,054.3)
Weight - lbs	Steel: 3,789 (1,719) Aluminum: 3,207 (1,455)

*All measurements are approximate and for estimation purposes only.

YOUR FACTORY RECOGNIZED GENERAC INDUSTRIAL DEALER

Specification characteristics may change without notice. Dimensions and weights are for preliminary purposes only. Please consult a Generac Power Systems Industrial Dealer for detailed installation drawings.