# ELECTRICAL NOTES AND SPECIFICATIONS

## GENERAL REQUIREMENTS FOR ELECTRICAL WORK

1. GENERAL CONDITIONS

(a) The General Requirements of the Contract Documents, and the Supplementary Requirements for Electrical Work, shall form an integral part of this Specification.

(b) The Electrical Contractor (herein referred to as "Contractor") shall review the project drawings (all disciplines) and plans prior to any construction, and shall report in writing potential conflicts that will obstruct or impede the construction to the Engineer of Record. Wherein indicated to "provide", contractor shall "furnish and install".

2. SCOPE OF WORK

(a) Conform to the applicable provisions of the General conditions of the Contract.

(b) This General Specification shall apply to and form a part of each of the sections covering Mechanical and Electrical trades work.

3. EXAMINATION OF SITE AND INFORMATION

(a) Before tendering, Contractor shall examine the site, the Architectural, Structural, Mechanical, Electrical and any other relevant documents, and fully familiarize himself with the designer's intent, so that the tender price will include everything necessary for the proper completion of the work in accordance with the intent of the documents. Obtain the approval of the Engineer, Architect and Project Manager before any alterations to the work indicated.

(b) It is the Contractor's responsibility to review the work site noting all existing conditions that may affect construction.

(c) Contractor to ensure that all products and materials necessary for the execution of the contract can be brought into the spaces where they are to be located, either through specified openings or partially assembled equipment. Failure to verify space limitations will not absolve the Contractor from the responsibility to provide any additional cutting and restoration work as required.

4. RELATIONSHIP TO OTHER TRADES

(a) Contractor shall confer with other trades working in the area, to ensure that his installation will be the result of co-operation between all parties. All devices must be accessible for service. The recommendations of the equipment suppliers shall govern.

(b) Ensure that all work will be installed within the prescribed limits of the building, such as ceiling heights, and notify the General trade of any requirements for inserts, sleeves, openings, curbs and bases in sufficient time to have the items completed in the normal course of construction.

(c) Confirm with the Mechanical trade, shop drawings and nameplate data that the intended electrical supply will match the required electrical equipment characteristics (i.e. Volts, overcurrent protection, phase, etc.) before finalizing orders. No compensation will be allowed to change any device due to the Contractor's failure to verify the supply with the characteristics.

(d) Any cutting or patching required, for whatever reason, shall be done by qualified trades people in the required trade.

(e) Structural members shall not be cut without the written consent of the structural engineers on the project.

(f) All newly installed conduit, lighting, or wiring devices must have a minimum clearance of 3" from underside of roof decking.

5. ADDITIONAL REQUIREMENTS

(a) Prior to the procurement of any new electrical equipment, the Contractor shall retain an independent Professional Engineer (P. Eng.) to complete a Fault Current and Coordination Study of all electrical equipment based on trip settings and cable lengths. Cable lengths shall be provided by the electrical contractor to the independent Engineer.

(b) Contractor to provide a copy of the Fault Current and Coordination Study to the Engineer for review.

(c) All new equipment provided by the contractor shall be fault-current rated higher than the minimum withstand ratings indicated on the drawings or as indicated by the Fault Current and Coordination Study whichever is greater.

6. SUBMITTAL / SHOP DRAWINGS AND ALTERNATIVE EQUIPMENT

(a) This review is for general conformity only and does not relieve the supplier and/or subcontractor from providing the necessary product(s) to meet the design intent.

(b) Provide to the Engineer electronic copies of submittals / shop drawings for each piece of equipment to used in the construction for review. Verify that the submittals / shop drawings correctly identify the equipment that will be supplied, that the equipment will fit the space allotted, and perform the service intended.

(c) Before submission, all submittals / shop drawings must be checked for accuracy and the inclusion of all necessary details such as: project identification, item labels (tags), clear indication of which item is being submitted (e.g. Model) and all associated accessories or features associated with the submission. Submittals / shop drawings without this information or that are confusing, unclear, or ambiguous will be rejected and returned as not approved.

(d) Equipment described either generically or by brand name is to establish the minimum standard required for the installation. Alternative equipment may be suggested by the bidder, but the equivalence shall be determined by the Engineer. Bidders must tender on the basis of the specified equipment. If alternatives are proposed, they will be considered on their own merits, after the close of tenders. Any lowering of the price based on alternative suppliers will be permitted with the savings being passed to the Owner.

(e) All Contractor supplied materials and equipment shall be approved and labeled specifically for use in Canada.

(f) Review of submittal / shop drawings by the Engineer is not intended to be the final review. Contractor is still required thereafter to verify that the intended product is correct and that it satisfies the design intent.

7. REQUIREMENTS OF INSPECTIONS

(a) All work shall comply with the governing codes and local requirements. Contractor to provide any items required to accomplish this, whether explicitly noted or not on the drawings.

(b) Where the Inspecting person requests items not deemed to be included, the matter shall be immediately referred to the Engineer for a ruling. No extra will be considered if the work done by the Contractor to satisfy such a request, could have been avoided by discussion between the Inspector and the Engineer.

(c) Provide notice to Inspectors as required for the progress of the project, and ensure that such inspections are carried out, before work is concealed.

(d) Any changes or alterations required by inspectors shall be rectified at the Contractor's cost.

8. CERTIFICATES, PERMITS AND FEES

(a) Obtain and pay all required permits and all inspections fees, except where specifically noted to the contrary.

(b) Furnish to the Owner any certificates that may be necessary as evidence that the work as installed conforms to all the laws and regulations of those authorities having jurisdiction. Prior to issuing any final certificates, Contractor shall make all alterations required by the authority having jurisdiction, by the Engineer as a law, or by any regulation that should have been followed by the Contractor.

9. GUARANTEE

(a) The Contractor shall provide a written 1-year guarantee covering all work from defects of workmanship and materials from the date of project substantial completion.

(b) Any repairs within the warranty period, the Contractor will repair and replace in a timely manner (within 30 days after notice) without cost to the owner. The cost of repair of damage to any work, caused by the failure of either material or workmanship within the period covered by the guarantee noted in (a) shall be included in this warranty.

(c) Where equipment is put into operation prior to completion of the work the period of guarantee covering such equipment shall still commence as noted in item (a) above. The putting into operation of any equipment prior to completion of the work shall only be with written approval of the Engineer and Owner. No equipment shall be started up without first ascertaining that all systems and services associated with its operation are functioning and that responsibilities for equipment maintenance have been arranged.

(d) At the completion of the project and prior to final acceptance, the Contractor shall provide to the Engineer the results of the following electrical tests: (1) Electrical Wiring Continuity Testing, (2) Electrical Insulation Resistance Testing for feeders and service conductors, (3) Electrical Earth Continuity Path Testing for all feeders, (4) Electrical Performance Testing of newly installed equipment as per the manufacturer's instructions.

10. DRAWINGS

(a) The drawings produced by the Engineer are generally schematic and diagrammatic in nature and are issued for the express purpose of obtaining tenders for the work and for the erection of the systems described in the scope of work to be done. Unless specifically shown, the responsibility for the installation and workability of the system(s) rests with the Contractor.

(b) The design contained in the drawings is based on the 2021 Ontario Electrical Safety Code, 28th edition, and its associated bulletins.

(c) Where necessary, the Contractor shall prepare interference drawings to ensure that the installation will be coordinated with all services to be installed in the area. The Engineer of Record or other Professionals may be required to approve these proposals.

(d) The Contractor shall refer to the architectural edge of slab drawings for the exact location of equipment, fixtures and penetrations. Engineering drawings provide the general design intent and are therefore not dimensioned. Refer to architectural drawings for dimensions.

(e) These drawings are not intended to describe every detail which may be necessary to complete the installation. Anything currently existing but not shown on the plans but is within the specified scope of work shall be removed and demolished.

(f) Contractor shall be responsible to maintain a set of record drawings by using red lines on the construction drawings where any deviation from the drawings has occurred. The Contractor shall convert the record drawings to electronic AutoCAD (latest version) drawing format and provide electronic copies to the Engineer and Owner.

11. RESPONSIBILITY AND LIABILITY

(a) This Contractor is responsible for the laying-out his work, and it shall be done in cooperation with all other trades working in the area. Prior to any electrical work performed by the Contractor, the work of other trades shall be protected from any possible damage and restitution made for any damage caused by the Contractor's work.

(b) Notify the Engineer of any discrepancies or inconsistencies and abide by the decision of the Engineer. Contractor is responsible to provide a fully working system whether or not details are explicitly on drawings.

(c) The Contractor shall correct any deficiencies noted by the Owner or the Engineer of Record at the Contractor's cost.

12. CLEAN-UP AND PROTECTION

(a) Maintain a clean working area to minimize danger to others on site, and protect all work in progress from damage due to construction work, weather, or from dirt entry.

(b) The Contractor shall complete all work in a neat and tidy manner and shall maintain a well-kept site for the duration of construction.

(c) Recyclables and waste shall legally be disposed of off-site at the Contractor's cost.

13. OPERATOR TRAINING AND INSTRUCTIONS

(a) Contractor to provide complete operating and Maintenance instructions for all equipment supplied, complete with parts lists and the names of the suppliers to Owner.

(b) Touch up or repaint as necessary, all scratches or other finish defects, that have occurred on any devices supplied under this contract.

14. FIRE SEPARATIONS AND FIRE STOPPING

(a) Adjacent devices in fire separations shall not be closer than 300mm.

(b) Fire stop shall be of a type to suit the use and purpose.

(c) Fire stop all sleeves passing through fire separations with an approved fire stopping material, and make waterproof. Provide escutcheons for all exposed penetrations through walls, and floors as directed.

(d) All components of the electrical system shall be installed to maintain fire separations and fire ratings. For fire ratings and fire separations refer to architectural drawings. All electrical devices require coordination and consideration, include but are not limited to, device boxes, junction boxes, switches, receptacles, luminaires, etc.

15. WORKMANSHIP

(a) Only first class workmanship will be accepted, not only with regards to safety, efficiency, durability, etc., but also with regards to the neatness of detail. All conduit work shall be lined up parallel, or at right angles to the building walls where possible. Equipment must be accurately set, plumb and level, and all hangers must be in true vertical alignment. In general, the entire work shall be first class and workman like and present a neat and clean appearance upon completion.

(b) Contractor shall complete all cutting and patching as required to complete the electrical installation. See 4 (e).

## GENERAL ELECTRICAL AND POWER

1. INSTALLATION

(a) All electrical equipment shall be installed in accordance with any specific manufacturer's instructions in addition to the minimum Code requirements. OESC Rule 2-034

(b) Provisions for Temporary Power during construction shall be the responsibility of the electrical contractor, including the associated application process.

(c) Supply and install all electrical heaters. Refer to Mechanical Drawings for locations.

(d) The contractor shall confirm the physical dimensions of all equipment prior to their release, including all clearances and work required for a complete installation, to ensure they can be physically accommodated within the space.

2. EQUIPMENT PROTECTION

(a) Contractor shall protect existing equipment during construction.

(b) Existing equipment to be reused shall be checked by the Contractor for proper operation.

(c) All new electrical equipment shall be delivered to the site and shall be completely protected with a plastic covering. Additional on-site protection must be provided to keep the equipment protected from the elements and other trades. If there is any indication of rusting or corrosion or significant physical abuse on the equipment, the affected parts shall be replaced at no cost to the owner.

(d) The Contractor shall ensure all products and equipment to be used is safely stored prior to installation. The Contractor shall be responsible for any theft of equipment prior to installation.

(e) Floor mounted electrical equipment (switchgear, transformers, etc) shall be mounted on housekeeping pad (minimum 4") supplied by the Contractor. It is the responsibility of the Contractor to provide structural drawings.

(f) Roof sleeves shall be complete with roof flashing and rain shields.

3. EQUIPMENT IDENTIFICATION GENERAL

(a) Provide all nameplates for electrical equipment (such as but not limited to panels, disconnect switches, transformers, etc.) nameplates must indicate equipment name and electrical characteristics (ampacity, voltage, phases, number of conductors), i.e.: 'Panel A', 200A, 120/208V, 3-Phase, 4-Wire.

(b) Nameplates must be white with black lettering lamacoid 1.5mm thick minimum. Nameplate engraving shall be as follows:
- -Electrical Equipment Name: 0.5" (13mm) in height.
- -Electrical Equipment Characteristics: 0.25" (6mm) in height.

(c) Provide typed directory cards in all new and revised distribution panels. Hand written directory cards are not acceptable.

(d) All empty or spare conduit shall be identified with black permanent marker clearly indicating the source and the destination.

(e) All junction boxes shall be identified with black permanent marker indicating the source panel, circuit number and system (i.e., lighting, receptacles, fire alarm, etc.).

(f) Where applicable, Contractor to comply with but not limited to the following:
- At each distribution point, circuit breakers, fuses and switches shall be marked, adjacent thereto, in a conspicuous and legible manner to indicate clearly which installation or portion of installation they protect or control and the maximum rating of overcurrent device that is permitted. Rule 2-100 3)
- A warning sign shall be located beside the switches controlling circuits electrically protected by Class A ground fault circuit interrupters, advising that the circuits have this protection and that the equipment shall be tested regularly. Rule 68-068 5)
- Permanent, legible signs shall be installed at the point of connection of the electric vehicle supply equipment to the branch circuit wiring, warning against operation of the equipment without sufficient ventilation as recommended by the manufacturer#s installation instructions. Rule 86-200
- All equipment must be labeled and approved by an accredited Certification Body, or accepted through field evaluation, or accepted by an Inspector under the provisions of Rule 2-024 of the current Ontario Electrical Safety Code. Rule 2-022, Rule 2-024, Bulletin 2-7-*

4. CONDUIT WIRE & CABLE

(a) All wiring and cables below grade and outside of building envelope must be installed in PVC Schedule 40 unless otherwise noted. All wiring and cables above grade or within building envelope must be installed in EMT conduit unless otherwise noted on drawings. Armored flexible cable may be used where not visible (within walls and ceiling spaces that are not return air plenums).

(b) All empty conduit and raceway systems shall be installed complete with nylon pull string which shall be securely fastened at each end of the conduit.

(c) All conduits installed in accessible spaces (e.g. above dropped T-bar ceilings) or where exposed shall be run in straight lines parallel to building structure. Diagonal runs are not permitted.

(d) Conduit wire & cable shall not be run near the top of transformer enclosures due to higher ambient temperatures.

(e) No more than (3) 90° bends in a conduit run are allowed between pull boxes.

(f) If the conduit lengths/bends exceed that listed below, a pull box shall be installed.
- 65' (20m) maximum - three 90° bends.
- 100' (30m) maximum - two 90° bends.
- 150' (45m) maximum - one 90° bend.
- 200' (60m) maximum - no bends.

5. ELECTRICAL HEATERS

(a) Supply and install all heaters as listed, in coordination with the Mechanical trade, at the rated size and voltage indicated on the drawings.

(b) Supply and install all controls and wiring as necessary to provide a complete and operating heating system.

(c) Supply and install all conduit for thermostat of unit heaters as required by Mechanical trade.

6. DISTRIBUTION EQUIPMENT

(a) All distribution equipment must be rated for use within the space. All electrical equipment must be complete with drip shields at a minimum or otherwise listed as suitable for use if in a sprinklered environment.

7. PANELBOARDS

(a) Provide surface or recessed panels as indicated adhering to type, voltage, ampere capacity, number of poles/branch circuits, withstand fault current, etc. Breakers shall be bolt-on type (slash rated breakers are not acceptable).

(b) Provide electrical panels with a steel door, flush mounted locks, and concealed hinges.

(c) The Contractor must balance all panels to give as near as possible equal current on all phases under typical operating conditions (adjust to be within 15%).

8. DISCONNECT SWITCHES

(a) The main service switch must meet the requirements of the local utility, including lockable, visible window type, etc.

(b) All disconnects must be lockable in off position by one lock. The switch must be mechanically interlocked with switch door, containing defeat to prevent opening when switch is in the closed position.

9. FUSES & BREAKERS

(a) Fuses within the main service switch shall be Class J (600A and under). Fuse rating shall be as noted or as required for proper protection. fuses shall be rated for 200kAIC.

(b) Fuses serving as over current protection on the primary side of a transformer feeding a panel board shall be RK5 (time delay).

(c) Circuit breakers shall be rated for the voltage of the system to which they are connected.

10. WIRING DEVICES

(a) Devices must be white colour unless otherwise noted.

(b) Devices for general purpose shall be of heavy duty specification grade.

(c) All receptacle devices shall be Tamper-Resistant type as per OESC C22.1-18 rule 26-720.

(d) Install switches with handle in the "up" position when the switch is in the "on" or closed position.

(e) Remove plastic protective film on stainless steel plates only after painting and other work has been completed in that area.

(f) Do not use cover plates designed for flush outlet boxes on surface mounted boxes.

(g) Do not use outlet boxes designed for recessed mounting in surface mount applications.

(h) All devices shall have permanent labels affixed clearly indicating the source circuit number and panel name. Text on the label shall be 1/4" (6mm) in height.

(i) Contactors shall be of the voltage, ampacity and number of poles as indicated on the drawings. Contacts shall have mixed load ratings (lighting and motor) and a withstand rating of 100kA. Contacts shall be electrically held unless otherwise noted.

(j) Where applicable, Contractor to comply with but not limited to the following:
- Each 125V, single-phase receptacle installed in pits, hoistways, elevator and enclosed vertical platform lift car tops, and escalator or moving walk walliways shall be of the Class A ground fault circuit interrupter type. Rule 38-085 1)
- Where exposed to the weather, receptacles of configurations 5-15R, 5-20R, 5-20RA, 6-15R, 6-20R and 6-20RA shall be provided wit cover plates suitable for wet locations whether or not a plug is inserted into the receptacle, and marked "Extra Duty". Rule 26-708 2)
- Each branch circuit in a dwelling unit supplying 125V receptacles rated 20 amps or less shall be protected by a combination-type arc-fault circuit interrupter, except for receptacles installed in accordance with OESC Rule 26-656 1) a) and b). Bulletin 26-18-*
- A separate disconnecting means shall be provided for electric vehicle supply equipment. Rule 86-304 1)
- Electric vehicle supply equipment shall be mechanically protected from damage either by location or other means. Rule 2-200
- Where applicable and whether or not indicated on drawings, single dwellings of the detached, semi-detached, and row housing types shall have at least one outdoor receptacle at both front and rear of the house controlled by interior switch per Rule 26-726 a)
- Where applicable and whether or not indicated on drawings, dwelling units with garage or carport shall have at least one receptacle and an additional receptacle within 1m of garage door opener apparatus. Rule 26-726

11. DEVICE MOUNTING HEIGHTS AND INSTALLATION

(a) Mounting heights to center of device above finished floor (AFF), unless otherwise noted.

(b) Contractor shall coordinate device mounting heights with other disciplines prior to installation.

(c) The Contractor shall refer to the architectural for the exact location of devices and penetrations.

(d) The following mounting heights shall be adhered to unless otherwise noted:

(i) Light Switches: To be mounted not less than 35.4" (900mm) and not more than 43.3" (1100mm) AFF.

(ii) Receptacle Heights: To be mounted 16" (400mm) AFF. When above a countertop, to be mounted 4" (100mm) above countertop (max 1200mm AFF). When provided for mechanical equipment, coordinate with final mechanical equipment location.

(iii)Roof Receptacles: Provide dedicated branch circuit to each roof receptacle required per OESC 26-710. Roof receptacles shall be 5-20R GFCI (Class A type) within 25' (7.5 m) of all rooftop equipment.

(iv)Kitchen Receptacles: Where residential dwellings are included in these plans Contractor shall ensure that the requirements of OESC 26-724 d) are met. Whether or not shown explicitly on these drawings, provide additional receptacles as needed so that no location along any kitchen counter space is more than 900mm from a kitchen counter receptacle. Counters longer than 300mm must have no less than one receptacle. Island counters or peninsulas larger than 600mm long and 300mm wide must have no less than one receptacle. No receptacles may be mounted in the back splash area of a sink.

(v) Receptacles in Dwelling Areas: Where residential dwellings are included in these plans Contractor shall ensure that the requirements of OESC 26-724 a) b) c) are met. Whether or not shown explicitly on these drawings, provide duplex receptacles in all finished walls (greater than 900mm) of every room or area (including balcony or porch but not including washrooms, hallways, laundry rooms, utility rooms, or closets) so that no point along the floor line of any usable wall space is more than 1.8 m horizontally from a receptacle in that or an adjoining space.

(vi)Hallway Receptacles: Where residential dwellings are included in these plans Contractor shall ensure that the requirements of OESC 26-724 f) and 26-720 m) are met. Whether or not shown explicitly on these drawings, provide duplex receptacles in hallways of public corridors of residential occupancies such that at least one duplex receptacle is located in each 10 m of wall length or fraction thereof. Additionally within dwelling units, provide duplex receptacles in hallways along the floor line of any usable wall space such that there is no point along the wall that is further than 4.5 m from the nearest duplex receptacle within that hallway.

(e) Where a conflict of device mounting occurs, the Contractor shall contact the Engineer for clarification.

(b) Receptacles installed in a dwelling unit shall be tamper resistant as required in the OESC section 26, with exception of receptacles dedicated for stationary appliances such that the receptacle is rendered inaccessible.

(c) Branch circuits in dwellings rated for 125V and 20A or less shall be protected by a combination type arc-fault circuit interrupter, in accordance with OESC 26-656.

(d) Where receptacles are exposed to weather, provide in suitable receptacle housing designed for wet locations whether or not a plug is inserted into the receptacle, in accordance with OESC 26-708.

13. TRANSFORMERS

(a) Unless otherwise noted on drawings, transformers shall be dry-type, 115 deg c temp rise, less than 4.5% regulation at unity power factor, less than 5% total losses at full load, 3.5% minimum impedance, aluminum or copper wound. the transformer must be of the voltage and kVA as shown on the drawings.

(b) Transformers specified must not be replaced with an alternative T-wound or auto-transformer unless directly reviewed and approved by the Engineer.

(c) Dry-type transformers shall have internal vibration absorbing pads and optional external molded neoprene and steel vibration isolators.

(d) When wye-wound step-up/down transformers are used, a wye winding shall not face a wye service winding.

(e) Transformers shall have four (4) 2.5% full capacity taps. Connections on HV and LV sides shall be flexible conduit or equivalent.

(f) Where transformers are mounted on combustible floors or above pedestrian traffic, Contractor shall provide protection plates, such that in the event of a failure there is no hazard of molten metal.

14. GROUNDING & BONDING

(a) The Contractor shall include in his tender grounding and bonding as required by Electrical Safety Authority inspection department. Where applicable, Contractor to comply with but not limited to the following:
- The grounded conductor of a solidly grounded separately derived ac system shall be connected to the equipment bonding terminal by a system bonding jumper, sized per Table 16, at the source, at the first switch controlling the system, or by the system bonding jumper that is connected to the bonding conductor included in the primary supply. Rule 10-212, Rule 10-614
- Any metal (i.e. metal fences, bollards, protective barrier, etc) located within 2.4 m of the outdoor pad mounted equipment enclosure shall be bonded to the station ground electrode with No. 2/0 AWG copper conductors. Rule 36-308 and Bulletin 36-10-*
- Bonding conductors for pools shall be not smaller than No. 6 AWG for permanently installed pools and for all in-ground pools, or as required by Table 16 for all other pools. Rule 68-058 4)
- Where conductors are installed in parallel in separate cables, raceways, or bus, a full size bonding conductor shall be installed with each individual run of parallel conductors as per Rule 10-602. This also applies to primary and the secondary conductors of main service feeders.

## ELEVATORS

1. COORDINATION & POWER REQUIREMENTS

(a) Main power feeds and associated disconnects shall be provided by the electrical contractor as noted in the elevator shop drawings and the power single line diagram. All power shall be provided to the elevator as indicated on the elevator shop drawings. Provide feeder with equipment grounding conductors sized according to OESC requirements.

(b) When a fire alarm system is not provided within the building, all devices required by CSA B44 shall be wired to an appropriately labelled "Dedicated Fire Function Panel" that will initiate elevator recall. When a fire alarm system is provided within the building, all devices required by CSA B44 shall be wired to the fire alarm system. Provide dual contact devices where required to allow for the elevator controller to initiate elevator recall.

(c) When the building has a CACF room (Central Alarm and Control Facilities) the electrical contractor shall provide wiring and conduit between the CACF room and each elevator machine room as required by the elevator shop drawings.

(d) When emergency power is available within the building, the elevator car lighting, pit lighting and machine room lighting shall be on a dedicated emergency power circuit.

(e) When emergency power is available within the building, one or more elevators may be on the emergency power system, coordination with all professionals, contractors and equipment providers is required

2. PIT

(a) Whether or not explicitly indicated on drawings, elevator pit lighting shall be provided to achieve 200lux within the pit at the floor level. Provide control from light switch within the machine room.

(b) Whether or not explicitly indicated on drawings, provide a GFCI-type receptacle on a dedicated 20A, 120VAC circuit within the elevator pit at 18" AFF when required (refer to elevator shop drawings elevator machine room layout).

3. ANCILLARY CONTROL DEVICES

(a) Provide devices in elevator lobbies to initiate elevator recall via the elevator controller (unless the elevating device is exempt from this requirement by design).

(b) Provide a GFCI-type receptacle on a dedicated 20A, 120VAC circuit next to each control cabinet (refer to elevator shop drawings machine room layout).

4. MACHINE ROOM

(a) Provide lighting in elevator machine room to achieve 200lux within the machine room at the floor level, provided control via light switch within the machine room (the switch shall also control the elevator pit lighting).

(b) Provide a general purpose GFCI-type receptacle on a dedicated 20A, 120VAC circuit within the elevator machine room (may also be required at the top of the hoistway, consult the elevator shop drawings).

## LIGHTING

1. INSTALLATION

(a) Supply and install lighting fixtures with all accessories and lamps as shown in lighting fixture schedule, and as noted on drawings. This Contractor shall also obtain a copy of the latest Architectural and Interior Design plans for exact type and quantity of lighting fixtures. Any discrepancies between the plans are to be reported to Engineer at once.

(b) The Contractor must endeavour to provide a mounting solution that is visually appealing to the Owner when not directly specified in this drawing package, at no additional cost to the Owner.

(c) Alternative lighting fixtures may be suggested by the bidder; however, this contractor must provide photometric calculations/simulation to confirm adequate substitution.

(d) The Contractor shall submit shop drawings containing a minimum of the following information:
- fixture manufacturer (include address and telephone number)
- image of the fixture
- fixture model number
- fixture colour
- mounting details
- photometric data
- highlighted selectable options

2. EXTERIOR LIGHTING TIME CONTROLS & SIGN CONTROL

(a) The Contractor must provide an electronic programmable timer with the minimum requirements of 7 day, 2 circuit, 1 to 70 on/off operations/week, 120V, 30A rated contacts.

(b) The Contractor must program time clock for independent control of two exterior lighting zones on a seven day schedule as noted by the Owner and Engineer. Schedules and instruction sheets shall be provided to the Owner.

(c) Lighting should be controlled by automatic switching devices such as timers or photocells. The outdoor lighting shall be reduced by 75% after normal hours of operation until dawn.

## LIFE SAFETY

1. EXITS

(a) All new exit fixtures must be internally illuminated or a photoluminescence type as specified on drawings. Contractor to confirm type with client prior to purchase.

(b) New exit signs shall be the green running man type.

(c) Exit fixtures must be wall or ceiling mounted. Final exit fixture location and mounting arrangements must be coordinated on-site. Each exit fixture must be visible from the exit approach.

(d) Wall mounted exits shall be mounted at 96" (2430mm) above finished floor or 12" (300mm) above doors.

(e) Exit fixtures may be ceiling mounted if the ceiling height does not exceed 144" (3658mm).

2. EMERGENCY LIGHTING (BATTERY SYSTEM)

(a) The emergency lighting must activate upon loss of power to the lighting circuit servicing the space. The battery must automatically recharge after normal power is restored.

(b) The Contractor must supply and install an emergency lighting system consisting of 24VDC battery unit(s), lighting heads, conduit, wiring, etc.

(c) The Contractor shall test the emergency lighting system and repair any non-conforming fixtures or deficiencies to ensure that minimum lighting levels are maintained.

(d) Dedicated battery units must be wall mounted at 84" (2250mm). power feed for battery packs shall be mounted at 96" (2450mm) where possible.

(e) Wall mounted remote heads shall be mounted at 96" (2450mm) AFF. Contractor to verify locations on site as required.

(f) The Contractor shall confirm that the wire size and length of each emergency lighting circuit will allow at the most a voltage drop limit of five percent to the most remote fixtures.

(g) All emergency lighting wiring shall be in dedicated conduits and not mixed with other wiring.

## COMMUNICATION AND DATA

1. CONDUITS

(a) The Contractor shall supply and install all empty conduits and conduit components to allow for installation of data and phone cables as shown in the drawings.

(b) All conduit for the purpose of communications within ceiling spaces, rooms or closets must stub into the space a minimum of 3" (75mm) without a bend.

2. CABLES

(a) Supply and install Cat6 Cables, RJ45 Connectors required for Data and VOIP, RJ11 Connectors required for Phone.

## CIVIL WORKS

1. GENERAL

(a) The Contractor shall coordinate all civil works with the General Contractor including but not limited to the excavation, backfill, compaction, restoration, etc.

(b) The Contractor shall be responsible for obtaining all locates to ensure that the new installation will not interfere with existing services.

(c) The Contractor shall be responsible for the restoration of grass area, sidewalks, roadways, landscaped areas, etc. to the original condition. Grass areas shall be re-sodded, not seeded.

(d) The Contractor shall coordinate inspection of all underground installations by the local utility and Electrical Safety Authority prior to pouring concrete or backfilling.

CONDUIT/FEEDER SCHEDULE (BASED ON 30 DEG C AMBIENT, IN RACEWAY PER OESC TABLE 2)

| DESCRIPTION | | CONDUIT | | | | CABLES IN EA | | | BOND | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ID | AMPS | CNT | INCH | mm | TYPE | CNT | SIZE | TYPE | CNT | SIZE | |
| 60S | 60 | 1 | 1" | 27 | EMT | 3 | #6 | RW90 | 1 | #10 | SINGLE PHASE |
| 60 | 60 | 1 | 1" | 27 | EMT | 4 | #6 | RW90 | 1 | #10 | |
| 70 | 70 | 1 | 1.25" | 35 | EMT | 4 | #4 | RW90 | 1 | #8 | |
| 90 | 90 | 1 | 1.5" | 41 | EMT | 4 | #2 | RW90 | 1 | #8 | |
| 100S | 100 | 1 | 1.25" | 35 | EMT | 4 | #2 | RW90 | 1 | #8 | SINGLE PHASE |
| 100 | 100 | 1 | 1.5" | 41 | EMT | 4 | #2 | RW90 | 1 | #8 | |
| 125S | 125 | 1 | 1.25" | 35 | EMT | 3 | #1 | RW90 | 1 | #6 | SINGLE PHASE |
| 125 | 125 | 1 | 1.5" | 41 | EMT | 4 | #1 | RW90 | 1 | #6 | |
| 150S | 150 | 1 | 1.5" | 41 | EMT | 4 | 1/0 | RW90 | 1 | #6 | SINGLE PHASE |
| 150 | 150 | 1 | 2" | 53 | EMT | 4 | 1/0 | RW90 | 1 | #6 | |
| 200S | 200 | 1 | 2" | 53 | EMT | 3 | 3/0 | RW90 | 1 | #6 | SINGLE PHASE |
| 200 | 200 | 1 | 2" | 53 | EMT | 4 | 3/0 | RW90 | 1 | #6 | |
| 225 | 225 | 1 | 2.5" | 63 | EMT | 4 | 4/0 | RW90 | 1 | #4 | |
| 300 | 300 | 1 | 3" | 75 | EMT | 4 | 350KCMIL | RWU90 | 1 | #4 | |
| 400 | 400 | 1 | 0'-4" | 75 | EMT | 4 | 600KCMIL | RWU90 | 1 | #3 | |
| 600 | 600 | 2 | 2.5" | 63 | EMT | 4 | 350KCMIL | RWU90 | 1 | #1 | EQUIPMENT BOND IN EACH |
| 800 | 800 | 2 | 0'-4" | 75 | EMT | 4 | 600KCMIL | RWU90 | 1 | 1/0 | EQUIPMENT BOND IN EACH |
| 1200 | 1200 | 4 | 3" | 75 | PVC | 4 | 350KCMIL | RWU90 | 1 | 3/0 | EQUIPMENT BOND IN EACH |
| 1600 | 1600 | 5 | 3" | 75 | PVC | 4 | 600KCMIL | RWU90 | 1 | 4/0 | EQUIPMENT BOND IN EACH |

ALL CONDUCTORS TO BE COPPER (CU) UNLESS OTHERWISE NOTED.

## DRAWING INDEX



| DATE | NO. | DESCRIPTION | BY |
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REVISIONS



EME ENGINEERING
ELECTRICAL MECHANICAL ENERGY

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PROJECT:
31 CLARK ST.
TOWN OF BLUE MOUNTAINS, ON
N0H 1J0

DRAWING TITLE:
ELECTRICAL SPECIFICATIONS

| DRAWN BY: | CHECKED BY: | SCALE: |
|---|---|---|
| AN | CL | NONE |
| DATE: | PROJECT NUMBER: | DRAWING NUMBER: |
| DEC/2022 | 22-6281 | E-001 |

# ELECTRICAL SYMBOLS

## POWER

| SYMBOL | DESCRIPTION |
|---|---|
| | 125V-15A,1Ø-3W GROUNDED DUPLEX RECEPTACLE, WALL MOUNTED UNLESS NOTED |
| GFI | 125V-15A,1Ø-3W GFCI GROUNDED DUPLEX RECEPTACLE, WALL MOUNTED UNLESS NOTED |
| USB | 125V-15A,1Ø-3W GROUNDED DUPLEX RECEPTACLE C/W 2 USB CONNECTION, WALL MOUNTED UNLESS NOTED |
| WP | 125V-15A,1Ø-3W WEATHER PROOF GROUNDED DUPLEX RECEPTACLE, WALL MOUNTED UNLESS NOTED |
| | 125V-15A,1Ø-3W GROUNDED DUPLEX RECEPTACLE, CEILING MOUNTED UNLESS NOTED |
| | 125V-15A,1Ø-3W GROUNDED DUPLEX RECEPTACLE ON DED. CCT. WALL MOUNTED UNLESS NOTED |
| | 125V-15A,1Ø-3W GROUNDED DUPLEX RECEPTACLE. MOUNTED ABOVE COUNTER FOR GENERAL POWER CONNECTION. |
| | 125V-15A,2P-3W GROUNDED SPLIT WIRED RECEPTACLE, WALL MOUNTED UNLESS NOTED |
| | 125V-15A,1Ø-3W GROUNDED QUAD RECEPTACLE IN COMMON BOX, WALL MOUNTED UNLESS NOTED |
| | 125V-15,2P-3W DOUBLE DUPLEX SPLIT WIRE GROUNDED QUAD RECEPTACLE IN COMMON BOX, WALL MOUNTED UNLESS NOTED |
| | 125V-15A 1Ø-3W GROUNDED DUPLEX RECEPTACLE MOUNTED IN FLUSH FLOOR BOX UNLESS NOTED |
| | 120V-15A 1Ø-3W GROUNDED QUAD RECEPTACLE MOUNTED IN FLUSH FLOOR BOX UNLESS NOTED |
| | 250V-20A 2P-3W GROUNDED RECEPTACLE, WALL MOUNTED UNLESS NOTED |
| | 250V-30A 2P-3W GROUNDED RECEPTACLE, WALL MOUNTED UNLESS NOTED (RANGE OR DRYER RCPT IN RESIDENTIAL APPLICATIONS) |
| | 250V-40A 2P-3W GROUNDED RECEPTACLE, WALL MOUNTED UNLESS NOTED |
| | 125V-15A 1Ø-3W GROUNDED DUPLEX RECEPTACLE C/W DATA/PHONE COMBO MOUNTED IN FLUSH FLOOR BOX UON |
| | DATA OUTLET C/W 3/4"C HOME RUN TO ACCESSIBLE CEILING SPACE |
| | TELEPHONE WALL OUTLET C/W 3/4"C HOME RUN TO ACCESSIBLE CEILING SPACE |
| | COMBINATION DATA & TELEPHONE OUTLET - WALL MOUNTED C/W 3/4"C HOME RUN TO ACCESSIBLE CEILING SPACE. MAXIMUM 4 DROPS PER WALLBOX. IF MORE THAN 4, CONTRACTOR TO PROVIDE MULTI-GANG BOX AND CORRESPONDING FACEPLATE TO ACCOMMODATE AS REQUIRED |
| | HARDWIRED CONNECTION |
| | TV DATA OUTLET |
| | PUSH BUTTON |
| | CALL FOR HELP INDICATOR LIGHT |
| SM | CONTROL SWITCH, MOTOR RATED |
| SMOA | CONTROL SWITCH, MANUAL-OFF-AUTO |
| | POWER PANEL, FLUSH MOUNTED |
| | TELECOM PANEL, FLUSH MOUNTED |
| | POWER PANEL SURFACE MOUNTED |
| | DISTRIBUTION BOARD |
| | DISCONNECT, NON-FUSED |
| | DISCONNECT, FUSED |
| | SWITCH, NON-FUSED |
| | SWITCH, FUSED |
| | CIRCUIT BREAKER |
| KVA | TRANSFORMER |
| M | POWER METER |
| HP | MOTOR WITH HORSEPOWER INDICATED |
| J | JUNCTION BOX |
| | CONDUIT RUN TO PANEL |
| | GROUNDING |
| | HEAT TRACE WITH GROUND FAULT PROTECTION APPLIED TO PIPING, VALVES, ETC |
| | CONDUIT RUN CONCEILED OR EXPOSED |
| | CONDUIT RUN UNDERGROUND OR UNDERFLOOR |
| | J-HOOKS INSTALLED AT 3' REGULAR INTERVALS (UON) ABOVE ACCESSIBLE CEILING SPACE ON WALL OR CEILING |

## FIRE ALARM

| SYMBOL | DESCRIPTION |
|---|---|
| | MANUAL PULL STATION |
| | HEAT DETECTOR |
| | SMOKE DETECTOR |
| | SMOKE ALARM |
| | SMOKE / CO COMBINATION DETECTOR |
| | CARBON MONOXIDE DETECTOR |
| m | DUCT - TYPE SMOKE DETECTOR |
| | REMOTE SAMPLING - TYPE SMOKE DETECTOR |
| F | HORN & STROBE COMBINATION DEVICE - WALL MOUNTED |
| S | STROBE ONLY DEVICE - WALL MOUNTED |
| F | HORN & STROBE COMBINATION DEVICE - CEILING MOUNTED |
| S | STROBE ONLY DEVICE - CEILING MOUNTED |
| H | HORN ONLY DEVICE |
| FACP | FIRE ALARM CONTROL PANEL |
| ANN | FIRE ALARM ANNUNCIATOR PANEL C/W GRAPHIC |
| | CARD READER |
| | SIGNAL SILENCE |
| ISO | FAULT ISOLATION MODULE |
| EOL | END OF LINE DEVICE |
| S | STAIRWELL SPEAKER |
| S | SPEAKER |
| | FIREMAN'S PHONE |
| R | FIRE ALARM RELAY |
| AM | ADDRESSABLE MODULE |
| MM | ADDRESSABLE MONITOR MODULE |
| CM | ADDRESSABLE CONTROL MODULE |
| CR | CONTROL RELAY |
| FS | WATER-FLOW SWITCH |
| PS | SPRINKLER PRESSURE SWITCH |
| SV | SUPERVISED VALVE |
| | EXHAUST DAMPER |
| ATS | AUTOMATIC TRANSFER SWITCH |
| J | JUNCTION BOX |
| DCLC | DATA COMMUNICATION LINK STYLE C |
| | BEAM SMOKE DETECTOR |
| | BELL |

## SECURITY

| SYMBOL | DESCRIPTION |
|---|---|
| ES | ELECTRONIC STRIKE |
| CR | CARD READER |
| DC | DOOR CONTACT |
| OH | OVERHEAD DOOR CONTACT |
| KP | SECURITY KEYPAD |
| EB | EXIT/ENTRANCE BUTTON (COMBO PUSH/WAVE TO INTIATE) |
| ML | MAGNETIC LOCK |
| | DUAL TECHNOLOGY MOTION DETECTOR |
| | SECURITY CAMERA |
| | INTERCOM |

## LIGHTING

| SYMBOL | DESCRIPTION |
|---|---|
| | SINGLE POLE, SINGLE THROW TOGGLE SWITCH ('3' DENOTES 3-WAY, '4' DENOTES 4-WAY, 'PL' DENOTES PILOT LIGHT, 'LV' DENOTES LOW VOLTAGE, 'K' DENOTES KEY OPERATED) 120 OR 347V AS APPLICABLE. |
| | GANGED SWITCHES |
| O | TOGGLE SWITCH WITH OCCUPANCY SENSOR, WALL MOUNTED |
| D | TOGGLE SWITCH WITH DIMMING |
| T | TOGGLE SWITCH TIMER |
| OS | OCCUPANCY SENSOR CEILING MTD |
| | RECESSED ROUND FIXTURE |
| | WALL MOUNTED FIXTURE / WALLPACK |
| | LOW-BAY FIXTURE |
| | PENDANT CYLINDER FIXTURE |
| | SHOWER FIXTURE |
| | CORRIDOR SURFACE FIXTURE |
| | LINEAR SURFACE WALL FIXTURE |
| | 1' x 4' RECESSED CEILING FIXTURE |
| | 2' x 2' RECESSED CEILING FIXTURE |
| | 2' x 4' RECESSED CEILING FIXTURE |
| | 4' SURFACE LINEAR STRIP FIXTURE |
| | 1' x 4' HIGH-BAY FIXTURE |
| | LINEAR TRACK LIGHTING FIXTURE |
| | SINGLE HEAD LIGHTING STANDARD |
| | DOUBLE HEAD LIGHTING STANDARD |

NOTES:
1. SHADED FIXTURES ARE CONNECTED TO EMERGENCY CIRCUIT
2. REFER TO LIGHTING FIXTURES SCHEDULE & SPECIFICATIONS
3. SHADED FIXTURES WITH THE SUFFIX 'N' INDICATE FIXTURES CONNECTED TO UN-SWITCHED EMERGENCY CIRCUIT (NIGHT LIGHTS)
4. ~~HALF SHADING INDICATES NL OR EM~~

## LIFE SAFETY

| SYMBOL | DESCRIPTION |
|---|---|
| | EMERGENCY LIGHTING BATTERY UNIT C/W UNIT MOUNTED QUARTZ HEADS |
| | EMERGENCY SURFACE MOUNTED DOUBLE HEAD LED REMOTE HEAD |
| | EMERGENCY SURFACE MOUNTED SINGLE HEAD LED REMOTE HEAD |
| | PICTOGRAM EXIT SIGN C/W TWO EMERGENCY BATTERY HEADS AND BATTERY UNIT |
| | SUSPENDED CEILING MOUNTED PICTOGRAM GREEN RUNNING MAN EXIT LIGHT, ARROW(S) INDICATE DIRECTION C/W BATTERY UNIT. PROVIDE REQUIRED CONDUIT LENGTH TO SUIT SITE CONDITIONS . |
| | WALL MOUNTED PICTOGRAM GREEN RUNNING MAN EXIT LIGHT, ARROW(S) INDICATE DIRECTION C/W BATTERY UNIT. PROVIDE REQUIRED CONDUIT LENGTH TO SUIT SITE CONDITIONS |

# ABBREVIATIONS

| SYMBOL | DESCRIPTION |
|---|---|
| A | AMPERE |
| AAF | ABOVE ACCESS FLOOR |
| AF | AMPS FUSED |
| AS | AMPS SWITCH |
| AFF | ABOVE FINISHED FLOOR |
| AFG | ABOVE FINISHED GRADE |
| AIC | AMP INTERRUPTING CAPACITY |
| ALT | ALTERNATE |
| AT | AMPERE TRIP |
| ATS | AUTOMATIC TRANSFER SWITCH |
| AWG | AMERICAN WIRE GAUGE |
| BAT | BATTERY |
| BD | BOARD |
| BFG | BELOW FINISHED GRADE |
| BR | BRANCH |
| BRKR | BREAKER |
| C/C | CENTER TO CENETER |
| CAB | CABINET |
| CAP | CAPACITY |
| CB | CIRCUIT BREAKER |
| CCTV | CLOSED CIRCUIT TELEVISION |
| CF | CUBIC FEET |
| CKT | CIRCUIT |
| CLG | CEILING |
| CP | CONTROL PANEL |
| CT | CURRENT TRANSFORMER |
| CU | COPPER |
| CU FT | CUBIC FOOT |
| DB | DOOR BELL |
| DC | DIRECT CURRENT |
| DDC | DIRECT DIGITAL CONTROL |
| DISC | DISCONNECT |
| DP | DUSTPROOF |
| DPDT | DOUBLE POLE, DOUBLE THROW |
| DPST | DOUBLE POLE, SINGLE THROW |
| DX | DIRECT EXPANSION |
| EBBR | ELECTRIC BASEBOARD RADIATION |
| EC | EMPTY CONDUIT |
| ED | EXISTING TO BE DEMOLISHED |
| EGC | EQUIPMENT GROUNDING CONDUCTOR |
| EIFS | EXTERIOR INSULATION FINISH SYSTEM |
| ELEV | ELEVATOR |
| EM | EMERGENCY |
| EMS | ENERGY MANAGEMENT SYSTEM |
| EMT | ELECTRICAL METALLIC TUBING |
| ENCL | ENCLOSURE |
| EOR | ENGINEER ON RECORD |
| EPRF | EXPLOSION PROOF |
| EQUIP | EQUIPMENT |
| ER | EXISTING TO REMAIN |
| ES | ENERGY SAVER |
| ESA | ELECTRICAL SAFETY AUTHORITY |
| EST | ESTIMATED |
| EP | ELECTRIC PANEL |
| EPO | EMERGENCY POWER OFF |
| EWC | ELECTRIC WATER COOLER |
| EWH | ELECTRIC WATER HEATER |
| EXP | EXPOSED |
| EXR | EXISTING TO REMAIN |
| EXRL | EXISTING TO BE RELOCATED |
| EXT | EXTERIOR |
| EX | EXISTING |
| FA | FIRE ALARM |
| F | FLOOR MOUNTED |
| FAAP | FIRE ALARM ANNUNCIATOR PANEL |
| FACP | FIRE ALARM CONTROL PANEL |
| FD | FUSED DISCONNECT |
| FDR | FEEDER |
| FIXT | FIXTURE |
| FLA | FULL LOAD AMPS |
| FLUOR | FLUORESCENT |
| FM | FREQUENCY MODULATION |
| FPM | FEET PER MINUTE |
| FR | FIRE RATING |
| FVNR | FULL VOLTAGE NON-REVERSING |
| GA | GAUGE |
| GAL | GALLON |
| GEN | GENERATOR |
| GFCI | GROUND FAULT CIRCUIT INTERRUPTER |
| GFI | GROUND FAULT INTERRUPTER |
| GFP | GROUND FAULT PROTECTOR |
| G | GROUND |
| HSKPG | HOUSEKEEPING |
| HIC | HIGH INTERRUPTING CAPACITY |
| HOA | HAND-OFF-AUTOMATIC |
| HT | HEAT TRACE |
| HV | HIGH VOLTAGE |
| HZ | HERTZ |
| IAF | IN ACCESS FLOOR |
| IC | INTERRUPTING CAPACITY |
| IG | ISOLATED GROUND |
| J | JOULE |
| JB | JUNCTION BOX |
| KCMIL | THOUSAND CIRCULAR MILS |
| KHZ | KILOHERTZ |
| KP | KEYPAD |
| KV | KILOVOLT |
| KVA | KILOVOLT AMPERE |
| KVAR | KILOVOLT AMPERE REACTIVE |
| KW | KILOWATT |
| KWH | KILOWATT-HOUR |
| LED | LIGHT EMITTING DIODE |
| LF | LINEAR FOOT |
| LLD | LAMP LUMEN DEPRECIATION |
| LM | LUMEN |
| LO | LOCKOUT |
| LP | LIGHTING PANEL |
| LT | LIQUID TIGHT |
| LV | LOW VOLTAGE |
| MA | MILLIAMPERE |
| MAG STR | MAGNETIC STARTER |
| MCA | MINIMUM CIRCUIT AMPS |
| MCB | MAIN CIRCUIT BREAKER |
| MCC | MOTOR CONTROL CENTER |
| MCCB | MOLDED CASE CIRCUIT BREAKER |
| MCM | THOUSAND CIRCULAR MILS |
| MCP | MOTOR CIRCUIT PROTECTOR |
| MCS | MOTOR CIRCUIT SWITCH |
| MDF | MAIN DISTRIBUTION FRAME |
| MDP | MAIN DISTRIBUTION PANELBOARD |
| MH | MOUNTING HEIGHT |
| MHZ | MEGAHERTZ |
| MOCP | MAXIMUM OVERCURRENT PROTECTION |
| MTD | MOUNTED |
| MTS | MANUAL TRANSFER SWITCH |
| MVA | MEGAVOLT AMPERES |
| MVAR | MEGAVOLT AMPERES REACTIVE |
| MW | MEGAWATT |
| N/A | NOT APPLICABLE |
| NA | NON-AUTOMATIC |
| NC | NORMALLY CLOSED |
| NEC | NATIONAL ELECTRICAL CODE |
| NEMA | NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION |
| NFSD | NON-FUSED |
| NFD | NON-FUSED DISCONNECT |
| NIC | NOT IN CONTRACT |
| NL | UNSWITCHED LIGHT (NIGHT LIGHT) |
| NM | NON-METALLIC SHEATHED CABLE |
| NO | NORMALLY OPEN |
| NTS | NOT TO SCALE |
| OESC | ONTARIO ELECTRICAL SAFETY CODE |
| OC | OVERCURRENT |
| OCPD | OVERCURRENT PROTECTION DEVICE |
| OD | OUTSIDE DIAMETER |
| ODS | OVERHEAD DISTRIBUTION SYSTEM |
| OH | OVERHEAD |
| OHD | OVERHEAD DOOR |
| OL | OVERLOAD |
| P | POLE |
| PB | PUSH BUTTON |
| PC | PHOTOCELL |
| PD | PROTECTIVE DEVICE |
| PDO | POWER DOOR OPERATOR |
| PH / Ø | PHASE |
| PIV | POST INDICATOR VALVE |
| PKG | PACKAGE |
| PL | PILOT LIGHT |
| PM | PEDESTAL MOUNTED |
| PNL | PANEL |
| PSI | POUNDS PER SQUARE INCH |
| PT | POTENTIAL TRANSFORMER |
| PWR | POWER |
| PVC | POLYVINYL CHLORIDE |
| QC | QUALITY CONTROL |
| QTY | QUANTITY |
| R | RESISTANCE |
| RCPT | RECEPTACLE |
| RCS | RELAY CONTROL STATION |
| RECIRC | RECIRCULATING |
| REQ'D | REQUIRED |
| RE | EXISTING IN RELOCATED |
| RLA | RUNNING LOAD AMPS |
| RP | RAINPROOF |
| RPM | REVOLUTIONS PER MINUTE |
| RPVC | RIGID PVC |
| RR | RESTROOM |
| R&P | REMOVE & REPLACE |
| RT | RAINTIGHT |
| SCHED | SCHEDULE |
| SCR | SHORT CIRCUIT RATING |
| SD | SERVICE DROP |
| SE | SERVICE ENTERANCE |
| SP | SINGLE POLE |
| SPD | SURGE PROTECTIVE DEVICE |
| SPDT | SINGLE POLE, DOUBLE THROW |
| SPKR | SPEAKER |
| SPST | SINGLE POLE, SINGLE THROW |
| SQ FT | SQUARE FOOT |
| SQ IN | SQUARE INCH |
| SR | SURFACE RACEWAY |
| STR | STARTER |
| SV | SOLENOID VALVE |
| SW | SWITCH |
| SWBRD | SWITCHBOARD |
| SYN | SYNTHETIC |
| T | TRANSFORMER |
| TB | TERMINCAL BLOCK |
| TC | TIME CLOCK |
| TCC | TEMPERATURE CONTROL CONTACTOR |
| TD | TIME DELAY |
| TFF | TOP OF FINISHED FLOOR |
| THD | TOTAL HARMONIC DISTORTION |
| TL | TWIST LOCK |
| TR | TAMPER RESISTANT |
| TS | TRIGGER START |
| TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSOR |
| TYP | TYPICAL |
| UC | UNDER COUNTER |
| UHF | ULTRA HIGH FREQUENCY |
| UNFIN | UNFINISHED |
| UTIL | UTILITY |
| UTP | UNSHEILDED TWISTED PAIR |
| UVR | UNDERVOLTAGE RELAY (RELEASE) |
| UON | UNLESS OTHERWISE NOTED |
| V | VOLT |
| VA | VOLT AMPERES |
| VAR | VOLT-AMPERES REACTIVE |
| VAV | VARIABLE AIR VOLUME |
| VFD | VARIABLE FREQUENCY DRIVE |
| VHF | VERU HIGH FREQUENCY |
| VHO | VERY HIGH OUTPUT |
| VP | VAPOUR PROOF |
| VT | VAPOURTIGHT |
| W | WATT |
| WAP | WIRELESS ACCESS POINT |
| WG | WIRE GUARD |
| WM | "WIRE MOLD" (SURFACE RACEWAY) |
| WO | WELDER OUTLET |
| WP | WEATHERPROOF |
| WT | WEATHER TIGHT |
| XHD | EXTRA HEAVY DUTY |
| XFER | TRANSFER |

## PANEL AND CIRCUIT ABBREVIATION DESIGNATION

TYPICAL PANEL NOMENCLATURE DESCRIPTION ARE AS FOLLOWS:

EP 1 A - 1,2,3

- 1,2,3 — CIRCUIT NUMBER(S) WHERE APPLICABLE
- A — SEQUENTIAL DESIGNATION OF MULTIPLE PANELS ON SAME LEVEL (E.G. A,B,C...)
- 1 — LOCATION / FLOOR NUMBER (E.G. P1,B,1,2,3,...)
- EP — PANEL DESIGNATOR
  - 'P' DENOTES POWER PANEL
  - 'L' DENOTES PANEL OF LOWER VOLTAGE
  - 'H' DENOTES PANEL OF HIGHER VOLTAGE
  - 'DP' DENOTES DISTRIBUTION PANELBOARD
  - 'SB' DENOTES SWITCHBOARD
  - 'MCC' DENOTES MOTOR CONTROL CENTRE
  - 'MS' DENOTES MAIN SWITCHBOARD
  - 'TX' DENOTES TRANSFORMER
  - 'E' PREFIX E REPRESENTS EMERGENCY

FLOOR MOUNTED ELECTRICAL EQUIPMENT COMPLETE WITH 103MM HIGH HOUSEKEEPING PAD.

**NOTE**

SOME SYMBOLS AND ABBREVIATIONS SHOWN ON THIS SHEET MAY NOT BE APPLICABLE TO THIS PROJECT

## DRAWING INDEX



| DATE | NO. | DESCRIPTION | BY |
|---|---|---|---|
| JULY 05/24 | - | RE-ISSUED FOR REVISED SITE PLAN & CITY COMMENTS | AN |
| JAN 02/24 | - | RE-ISSUED FOR SPA | AN |
| JAN 02/24 | - | RE-ISSUED FOR REVISED SITE/LANDSCAPE PLAN | AN |
| DEC 05/23 | - | RE-ISSUED FOR SPA | AN |
| DEC 14/22 | - | RE-ISSUED FOR SPA | AN |
| AUG 08/22 | - | ISSUED FOR SPA | SA |

MARK VOID ALL PRINTS DATED PREVIOUS TO FINAL DATE ABOVE

REVISIONS



EME ENGINEERING — ELECTRICAL MECHANICAL ENERGY

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PROJECT:

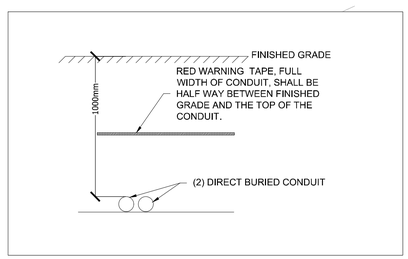
31 CLARK ST.
TOWN OF BLUE MOUNTAINS, ON
N0H 1J0

DRAWING TITLE:

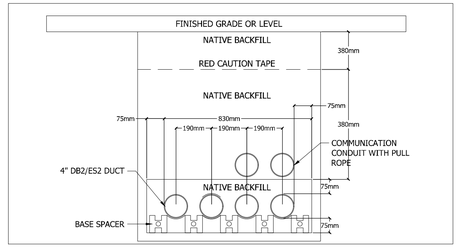
SYMBOLS & ABBREVIATIONS

| DRAWN BY: | CHECKED BY: | SCALE: |
|---|---|---|
| AN | CL | NONE |
| DATE: | PROJECT NUMBER: | DRAWING NUMBER: |
| DEC/2022 | 22-6281 | E-002 |


1 SITE — POWER
SCALE: 1:500




2 UNDERGROUNG LOW VOLTAGE DUCTBANK DETAIL
Scale: N.T.S.




3 UNDERGROUNG SECONDARY DUCTBANK DETAIL
Scale: N.T.S.

## DRAWING KEYNOTES & SPECIFICATIONS

| | |
|---|---|
| 1 | NEW ELECTRICAL SERVICE POINT OF CONNECTION TO HYDRO ONE UTILIIES. COORDINATE WITH UTILITY TO CONFIRM DETAILS AND EXACT LOCATION FOR NEW INCOMING DISTRIBUTION & DUCT ROUTING. |
| 2 | NEW PRIMARY UNDERGROUND DUCTBANK. CONDUCTOR SIZE, CONDUIT SIZE, CONDUIT CONFIGURATION TO BE COORDINATED WITH HYDRO ONE UTILITIES. CONDUIT TO BE BURIED A MINIMUM 1000mm BELOW FINISHED GRADE. ALL CROSSING OF SERVICES TO BE MINIMUM 300mm CLEAR FROM CONDUIT. CONFIRM ALL CROSSINGS WITH UTILITY. |
| 3 | PROPOSED LOCATION OF NEW 500KVA, 3Ø, 4W, 347/600V PAD MOUNTED SERVICE TRANSFORMER C/W BOLLARDS AND GROUND GRID. EXACT SITE SERVICE REQUIREMENTS TO BE CONFIRMED PRIOR TO ANY WORK COMMENCING. |
| 4 | NEW SECONDARY UNDERGROUND DUCTBANK. SEE DETAIL 3/E-101. |
| 5 | TENTATIVE LOCATION OF BUILDING 'A' MAIN ELECTRICAL ROOM. VERIFY WITH OWNER EXACT LOCATION PRIOR TO ANY WORK COMMENCING. |
| 6 | PROVIDE 2 NEW UNDERGROUND CONDUIT RUNS EACH FOR LOW VOLTAGE POWER AND TELECOM TO FEED BUILDINGS 'B-F'. ROUTING IS TENTATIVE UNTIL EXACT ELECTRICAL ROOM LOCATIONS ARE DETERMINED. CONDUCTOR SIZING TO BE COORDINATED. |
| 7 | TENTATIVE LOCATION OF BUILDINGS 'A-F' ELECTRICAL ROOMS. VERIFY WITH OWNER EXACT LOCATIONS PRIOR TO ANY WORK COMMENCING. |
| 8 | PROVIDE UNDERGROUND LOW VOLTAGE CONDUIT RUN FOR POLE LIGHTING STANDARDS FROM BUILDING 'H'. |
| 9 | TENTATIVE LOCATION OF NATURAL GAS METERING. NATURAL GAS LINE SIZED AS PER UTILITY. EXACT ROUTING TO BE COORDINATED. |

| DATE | NO. | DESCRIPTION | BY |
|---|---|---|---|
| JULY 05/24 | - | RE-ISSUED FOR REVISED SITE PLAN & CITY COMMENTS | AN |
| JAN 02/24 | - | RE-ISSUED FOR SPA | AN |
| JAN 02/24 | - | RE-ISSUED FOR REVISED SITE/LANDSCAPE PLAN | AN |
| DEC 05/23 | - | RE-ISSUED FOR SPA | AN |
| DEC 14/22 | - | RE-ISSUED FOR SPA | AN |
| AUG 08/22 | - | ISSUED FOR SPA | SA |

MARK VOID ALL PRINTS DATED PREVIOUS TO FINAL DATE ABOVE

REVISIONS



EME ENGINEERING
ELECTRICAL MECHANICAL ENERGY

LICENSED PROFESSIONAL ENGINEER
C. J. LANGFORD
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2024/07/12
PROVINCE OF ONTARIO

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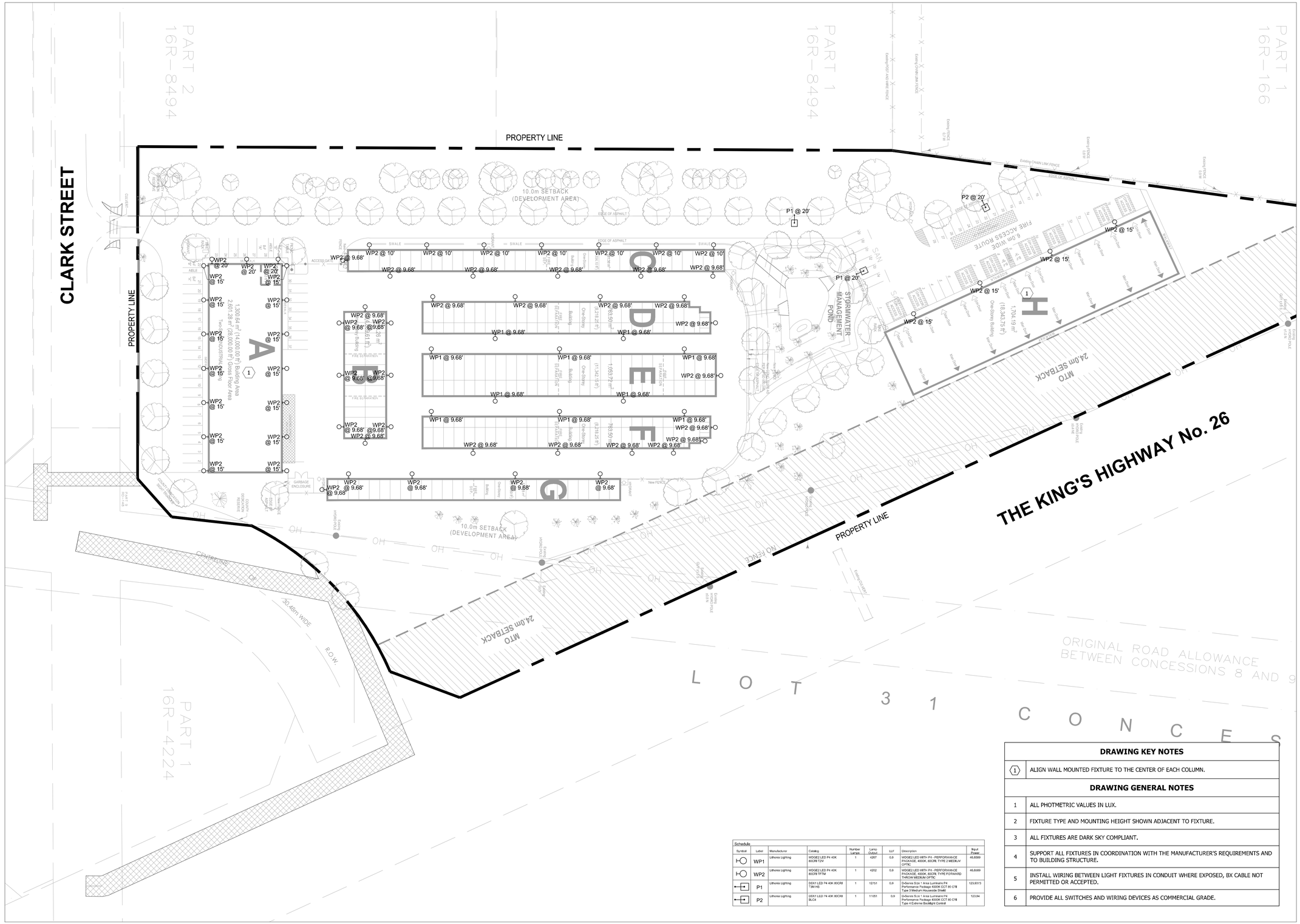
info@EMEeng.com

PROJECT:
31 CLARK ST.
TOWN OF BLUE MOUNTAINS, ON
N0H 1J0

DRAWING TITLE:
SITE POWER/COMPOSITE

| DRAWN BY: | CHECKED BY: | SCALE: |
|---|---|---|
| AN | CL | 1:500 |
| DATE: | PROJECT NUMBER: | DRAWING NUMBER: |
| DEC/2022 | 22-6281 | E-101 |




Schedule

| Symbol | Label | Manufacturer | Catalog | Number Lamps | Lamp Output | LLF | Description | Input Power |
|---|---|---|---|---|---|---|---|---|
| | WP1 | Lithonia Lighting | WDGE2 LED P4 40K 80CRI T2W | 1 | 4267 | 0.9 | WDGE2 LED WITH P4 - PERFORMANCE PACKAGE, 4000K, 80CRI, TYPE 2 MEDIUM OPTIC | 46.6589 |
| | WP2 | Lithonia Lighting | WDGE2 LED P4 40K 80CRI TFTM | 1 | 4202 | 0.9 | WDGE2 LED WITH P4 - PERFORMANCE PACKAGE, 4000K, 80CRI, TYPE FORWARD THROW MEDIUM OPTIC | 46.6589 |
| | P1 | Lithonia Lighting | DSX1 LED P4 40K 80CRI TIM HS | 1 | 12751 | 0.9 | DSeries Size 1 Area Luminaire P4 Performance Package 4000K CCT 80 CRI Type 3 Medium Houseside Shield | 123.9373 |
| | P2 | Lithonia Lighting | DSX1 LED P4 40K 80CRI BLC4 | 1 | 11051 | 0.9 | DSeries Size 1 Area Luminaire P4 Performance Package 4000K CCT 80 CRI Type 4 Extreme Backlight Control | 123.94 |

| DRAWING KEY NOTES | |
|---|---|
| 1 | ALIGN WALL MOUNTED FIXTURE TO THE CENTER OF EACH COLUMN. |

| DRAWING GENERAL NOTES | |
|---|---|
| 1 | ALL PHOTMETRIC VALUES IN LUX. |
| 2 | FIXTURE TYPE AND MOUNTING HEIGHT SHOWN ADJACENT TO FIXTURE. |
| 3 | ALL FIXTURES ARE DARK SKY COMPLIANT. |
| 4 | SUPPORT ALL FIXTURES IN COORDINATION WITH THE MANUFACTURER'S REQUIREMENTS AND TO BUILDING STRUCTURE. |
| 5 | INSTALL WIRING BETWEEN LIGHT FIXTURES IN CONDUIT WHERE EXPOSED, BX CABLE NOT PERMITTED OR ACCEPTED. |
| 6 | PROVIDE ALL SWITCHES AND WIRING DEVICES AS COMMERCIAL GRADE. |

1 SITE — LIGHTING
SCALE: 1:500

ALL LIGHTING DEVICES SHALL BE FULL CUT OFF AND "DARK SKY" COMPLIANT, AND SHALL BE MITIGATED AT THE SOURCE SO THAT NO LIGHT (0 LUX) WILL BE DIRECTLY PROJECTED ONTO ADJACENT PROPERTIES.

| DATE | NO. | DESCRIPTION | BY |
|---|---|---|---|
| JULY 05/24 | - | RE-ISSUED FOR REVISED SITE PLAN & CITY COMMENTS | AN |
| JAN 02/24 | - | RE-ISSUED FOR SPA | AN |
| JAN 02/24 | - | RE-ISSUED FOR REVISED SITE/LANDSCAPE PLAN | AN |
| DEC 05/23 | - | RE-ISSUED FOR SPA | AN |
| DEC 14/22 | - | RE-ISSUED FOR SPA | AN |
| AUG 08/22 | - | ISSUED FOR SPA | SA |

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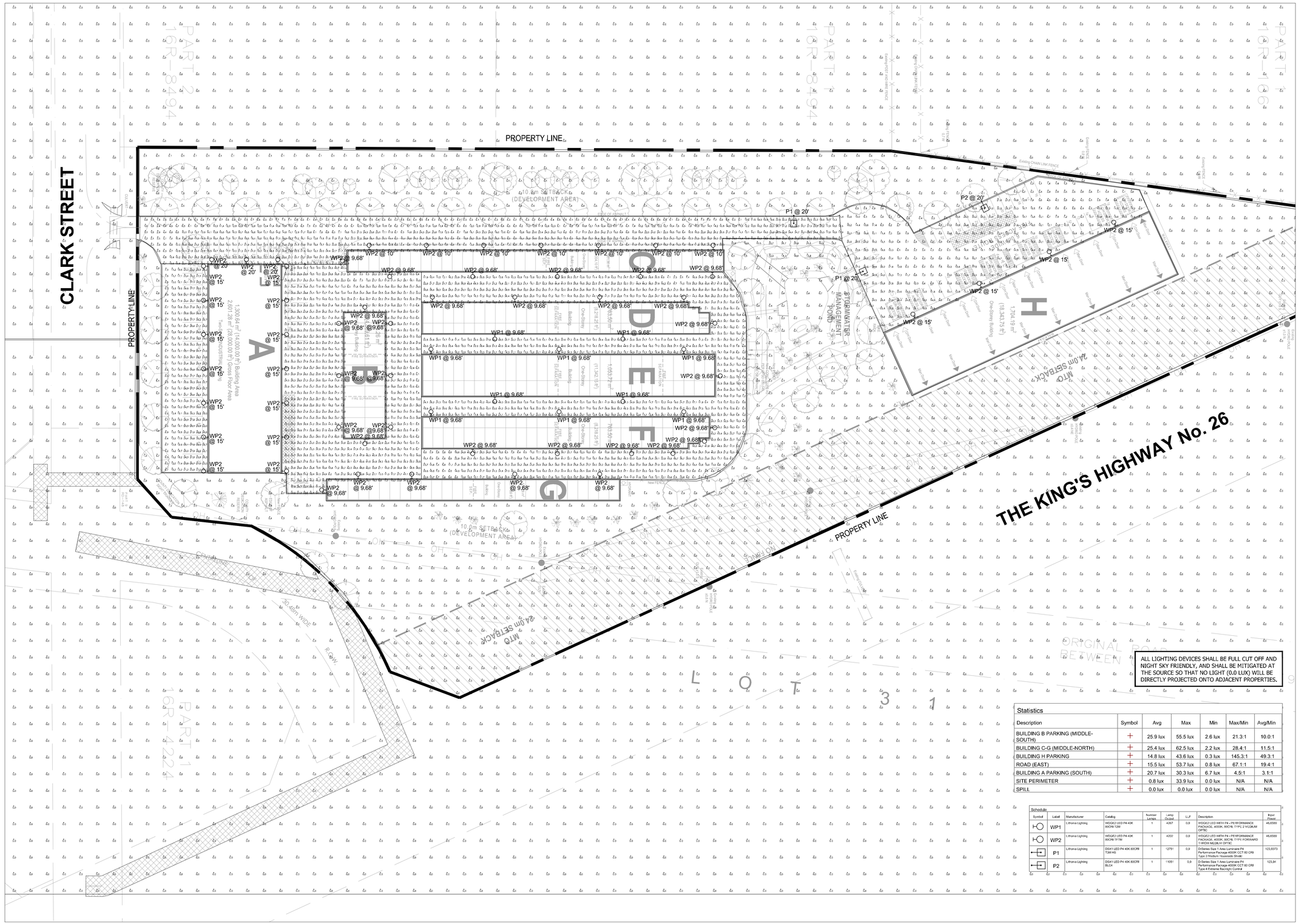
info@EMEeng.com

PROJECT:
31 CLARK ST.
TOWN OF BLUE MOUNTAINS, ON
N0H 1J0

DRAWING TITLE:
SITE LIGHTING

| DRAWN BY: | CHECKED BY: | SCALE: |
|---|---|---|
| AN | CL | 1:500 |
| DATE: | PROJECT NUMBER: | DRAWING NUMBER: |
| DEC/2022 | 22-6281 | E-102 |




1 SITE — LIGHTING PHOTOMETRICS
SCALE: 1:500

ALL LIGHTING DEVICES SHALL BE FULL CUT OFF AND NIGHT SKY FRIENDLY, AND SHALL BE MITIGATED AT THE SOURCE SO THAT NO LIGHT (0.0 LUX) WILL BE DIRECTLY PROJECTED ONTO ADJACENT PROPERTIES.

Statistics

| Description | Symbol | Avg | Max | Min | Max/Min | Avg/Min |
|---|---|---|---|---|---|---|
| BUILDING B PARKING (MIDDLE-SOUTH) | + | 25.9 lux | 55.5 lux | 2.6 lux | 21.3:1 | 10.0:1 |
| BUILDING C-G (MIDDLE-NORTH) | + | 25.4 lux | 62.5 lux | 2.2 lux | 28.4:1 | 11.5:1 |
| BUILDING H PARKING | + | 14.8 lux | 43.6 lux | 0.3 lux | 145.3:1 | 49.3:1 |
| ROAD (EAST) | + | 15.5 lux | 53.7 lux | 0.8 lux | 67.1:1 | 19.4:1 |
| BUILDING A PARKING (SOUTH) | + | 20.7 lux | 30.3 lux | 6.7 lux | 4.5:1 | 3.1:1 |
| SITE PERIMETER | + | 0.8 lux | 33.9 lux | 0.0 lux | N/A | N/A |
| SPILL | + | 0.0 lux | 0.0 lux | 0.0 lux | N/A | N/A |

Schedule

| Symbol | Label | Manufacturer | Catalog | Number Lamps | Lamp Output | LLF | Description | Input Power |
|---|---|---|---|---|---|---|---|---|
| | WP1 | Lithonia Lighting | WDGG2 LED P4 40K 80CRI T2R | 1 | 4267 | 0.9 | WDGG2 LED WITH P4 - PERFORMANCE PACKAGE, 4000K, 80CRI, TYPE 2 VOLUM OPTIC | 46.6589 |
| | WP2 | Lithonia Lighting | WDGG2 LED WITH P4 40K 80CRI T3M HD | 1 | 4202 | 0.9 | WDGG2 LED WITH P4 - PERFORMANCE PACKAGE, 4000K, 80CRI, TYPE FORWARD THROW MEDIUM OPTIC | 46.6589 |
| | P1 | Lithonia Lighting | DSXA1 LED P4 40K 80CRI T3M HD | 1 | 12751 | 0.9 | D-Series Size 1 Area Luminaire P4 Performance Package 4000K CCT 80 CRI Type 3 Medium Rotatable Stake | 123.5573 |
| | P2 | Lithonia Lighting | DSXA1 LED P4 40K 80CRI BLC4 | 1 | 11051 | 0.9 | D-Series Size 1 Area Luminaire P4 Performance Package 4000K CCT 80 CRI Type 4 Extreme Backlight Control | 123.94 |

| DATE | NO. | DESCRIPTION | BY |
|---|---|---|---|
| JULY 05/24 | - | RE-ISSUED FOR REVISED SITE PLAN & CITY COMMENTS | AN |
| JAN 02/24 | - | RE-ISSUED FOR SPA | AN |
| JAN 02/24 | - | RE-ISSUED FOR REVISED SITE/LANDSCAPE PLAN | AN |
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| DEC 14/22 | - | RE-ISSUED FOR SPA | AN |
| AUG 08/22 | - | ISSUED FOR SPA | SA |

MARK VOID ALL PRINTS DATED PREVIOUS TO FINAL DATE ABOVE

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PROJECT:
31 CLARK ST.
TOWN OF BLUE MOUNTAINS, ON
N0H 1J0

DRAWING TITLE:
SITE LIGHTING PHOTOMETRIC

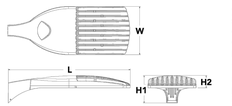
| DRAWN BY: | CHECKED BY: | SCALE: |
|---|---|---|
| AN | CL | 1:500 |
| DATE: | PROJECT NUMBER: | DRAWING NUMBER: |
| DEC/2022 | 22-6281 | E-103 |

# D-Series Size 1
## LED Area Luminaire

Buy American

### Specifications

| | |
|---|---|
| **EPA:** | 1.01 ft² (0.09 m²) |
| **Length:** | 33" (83.8 cm) |
| **Width:** | 13" (33.0 cm) |
| **Height H1:** | 7-1/2" (19.0 cm) |
| **Height H2:** | 3-1/2" |
| **Weight (max):** | 27 lbs (12.2 kg) |




Catalog Number

Notes

Type

Hit the tab key or mouse over the page to see all interactive elements.

### Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 750W metal halide in pedestrian and area lighting applications with typical energy savings of 65% and expected service life of over 100,000 hours.

## Ordering Information

**EXAMPLE:** DSX1 LED P7 40K T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

**DSX1 LED**

| Series | LEDs | Color temperature | Distribution | | Voltage | Mounting |
|---|---|---|---|---|---|---|
| DSX1 LED | **Forward optics**<br>P1 P4[1] P7[1]<br>P2 P5[1] P8<br>P3 P6[1] P9[1]<br>**Rotated optics**<br>P10[1] P12[1]<br>P11[1] P13[1,2] | 30K 3000 K<br>40K 4000 K<br>50K 5000 K | T1S Type I short (Automotive)<br>T2S Type II short<br>T2M Type II medium<br>T3S Type III short<br>T3M Type III medium<br>T4M Type IV medium<br>TFTM Forward throw medium | T5VS Type V very short[3]<br>T5S Type V short[3]<br>T5M Type V medium[3]<br>T5W Type V wide[3]<br>BLC Backlight control[4]<br>LCCO Left corner cutoff[4]<br>RCCO Right corner cutoff[4] | MVOLT[5]<br>XVOLT (277V-480V)[6,7,8]<br>120[9]<br>208[9]<br>240[9]<br>277[9]<br>347[9]<br>480[9] | **Shipped included**<br>SPA Square pole mounting<br>RPA Round pole mounting[10]<br>WBA Wall bracket[11]<br>SPUMBA Square pole universal mounting adaptor[12]<br>RPUMBA Round pole universal mounting adaptor[12]<br>**Shipped separately**<br>KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)[13] |

| Control options | | Other options | | Finish (required) | |
|---|---|---|---|---|---|
| **Shipped installed** | | **Shipped installed** | | DDBXD | Dark bronze |
| NLTAIR2 | nLight AIR generation 2 enabled[13] | HS | House-side shield[25] | DBLXD | Black |
| PIRHN | Network, high/low motion/ambient sensor[14] | SF | Single fuse (120, 277, 347V)[9] | DNAXD | Natural aluminum |
| PER | NEMA twist-lock receptacle only (controls ordered separate)[15] | DF | Double fuse (208, 240, 480V)[9] | DWHXD | White |
| PERS | Five-pin receptacle only (controls ordered separate)[15,16] | L90 | Left rotated optics[17] | DDBTXD | Textured dark bronze |
| PERT | Seven-pin receptacle only (controls ordered separate)[15,16] | R90 | Right rotated optics[17] | DBLBXD | Textured black |
| DMG | 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately)[17] | HA | 50°C ambient operations[9] | DNATXD | Textured natural aluminum |
| DS | Dual switching[18,19,20] | BAA | Buy America(n) Act Compliant | DWHGXD | Textured white |
| | | **Shipped separately** | | | |
| PIR | High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc[19,21] | BS | Bird spikes[26] | | |
| PIRH | High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc[19,21] | EGS | External glare shield | | |
| PIR1FC3V | High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc[19,21] | | | | |
| PIRH1FC3V | Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc[19,21] | | | | |
| FAO | Field adjustable output[19,22] | | | | |





## Ordering Information

### Accessories
Ordered and shipped separately.

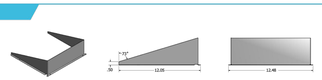
| | |
|---|---|
| DLL127F 1.5 JU | Photocell - SSL twist-lock (120-277V)[19] |
| DLL347F 1.5 CUL JU | Photocell - SSL twist-lock (347V)[19] |
| DLL480F 1.5 CUL JU | Photocell - SSL twist-lock (480V)[19] |
| DSHORT SBK U | Shorting cap[19] |
| DSX1HS 10C U | House-side shield for P1, P2, P3, P4 and P5[25] |
| DSX1HS 40C U | House-side shield for P6 and P7[25] |
| DSX1HS 60C U | House-side shield for P8, P9, P10, P11 and P12[25] |
| PUMBA DDBXD U* | Square and round pole universal mounting bracket (specify finish)[24] |
| KMA8 DDBXD U | Mast arm mounting bracket adaptor (specify finish)[13] |
| DSX1EGS FBRD6X6 U | External glare shield |

For more control options, visit DSX1 and ROAM® online.

NOTES
1. P4, P5 and P6 not available with P4, P5, P7, P9 and P13.
2. P13, P11, P12 or P13 and rotated optics (L90, R90) only available together.
3. Any Type 5 distribution with photocell, is not available with WBA.
4. Not available with HS.
5. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
6. XVOLT only available for use with P3, P5, P6, P7, P9 and P13.
7. XVOLT works with any voltage between 277V and 480V.
8. XVOLT not available with fusing (SF or DF) and not available with PIR, PIRH, PIR1FC3V, PIRH1FC3V.
9. Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V. XVOLT not available with fusing (SF or DF.
10. Square pole mounting standard with SPA. Round pole mounting standard with RPA.
11. Universal mounting bracket intended for retrofit on existing, pre-drilled poles only. 1.5 G vibration load rating per ANSI C136.31. Only available when pole's drill pattern is NOT Lithonia template #8
12. Must order fixture with SPA option. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" diameter mast arm (not included).
13. Must be ordered with PIRHN. Sensor cover available only in dark bronze, black, white and natural aluminum colors.
14. Must be ordered with NLTAIR2. For more information on nLight Air 2 visit this link.
15. Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting cap included.
16. If ROAM® node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Node with integral dimming.
17. DMG not available with PIRHN, PER5, PER7, P8, P9R, P1R1FC3V or P8R1FC3V, FAO.
18. Provides 50/50 fixture operation via (2) independent drivers. Not available with P5R, P5R5, P5R7, P5R or P8RH. Not available P1, P2, P3, P4 or P5.
19. Requires (2) separately switched circuits. Not available with HS.
20. Reference Controls Option Default settings table on page 4.
21. Reference Motion Sensor table on page 4 to see functionality.
22. Not available with other dimming controls options.
23. Not available with BLC, LCCO and RCCO distribution. Also available as a separate accessory; see Accessories information.
24. Must be ordered with fixture for factory pre-drilling.
25. Requires luminaire to be specified with PER, PER5 or PER7 option. See Control Option Table on page 4.
26. For retrofit use only. Only usable when pole's drill pattern is NOT Lithonia template #8.

## Options

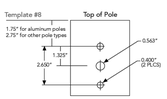
**EGS - External Glare Shield**




## Drilling

**HANDHOLE ORIENTATION**


Template #8




**Tenon Mounting Slipfitter**

| Tenon O.D. | Mounting | Single/Unit | 2 @ 180 | 2 @ 90 | 3 @ 90 | 3 @ 120 | 4 @ 90 |
|---|---|---|---|---|---|---|---|
| 2-3/8" | RPA | AS3-5 190 | AS3-5 280 | AS3-5 290 | AS3-5 390 | AS3-5 320 | AS3-5 490 |
| 2-7/8" | RPA | AS725-190 | AS725-280 | AS725-290 | AS725-390 | AS725-320 | AS725-490 |
| 4" | RPA | AS735-190 | AS735-280 | AS735-290 | AS735-390 | AS735-320 | AS735-490 |

| Mounting Option | Drilling Template | Single | 2 @ 180 | 2 @ 90 | 3 @ 90 | 3 @ 120 | 4 @ 90 |
|---|---|---|---|---|---|---|---|
| Head Location | | Side B & D | Side B & C | Side B, C & D | Round Pole Only | Side A, B, C & D | |
| Drill Nomenclature | #8 | DM19AS | DM28AS | DM29AS | DM39AS | DM32AS | DM49AS |

**DSX1 Area Luminaire - EPA**

*Includes luminaire and integral mounting arm. Other tenons, arms, brackets or other accessories are not included in this EPA data.

| Fixture Quantity & Mounting Configuration | Single #@039 | 2 @ 180 DM28 | 2 @ 90 DM29 | 3 @ 90 @039 | 3 @ 120 @032 | 4 @ 90 DM49 |
|---|---|---|---|---|---|---|
| Mounting Type | | | | | | |
| DSX1 LED | 1.013 | 2.025 | 1.945 | 3.038 | 2.850 | 3.749 |

| | Drilling Template | Minimum Acceptable Outside Pole Dimension | | | | | |
|---|---|---|---|---|---|---|---|
| SPA | #8 | 2-7/8" | 2-7/8" | 3.5" | 3.5" | 3" | 3.5" |
| RPA | #8 | 2-7/8" | 2-7/8" | 3.5" | 3.5" | 3" | 3.5" |
| SPUMBA | #5 | 2-7/8" | 3" | 4" | 4" | 3.5" | 4" |
| RPUMBA | #5 | 2-7/8" | 3.5" | 5" | 5" | 3.5" | 5" |





1 FIXTURE P1
SCALE: NONE

# WDGE2 LED
## Architectural Wall Sconce
## Precision Refractive Optic

Catalog Number

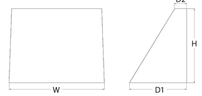
Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

### Specifications

| | |
|---|---|
| **Depth (D1):** | 7" |
| **Depth (D2):** | 1.5" |
| **Height:** | 9" |
| **Width:** | 11.5" |
| **Weight:** (without options) | 13.5 lbs |




### Introduction

The WDGE LED family is designed to meet specifier's every wall-mounted lighting need in a widely accepted shape that blends with any architecture. The clean rectilinear design comes in four sizes with lumen packages ranging from 1,200 to 25,000 lumens, providing a true site-wide solution. Embedded with nLight® AIR wireless controls, the WDGE family provides additional energy savings and code compliance.

WDGE2 with industry leading precision refractive optics provides great uniform distribution and optical control. When combined with multiple integrated emergency battery backup options, including an 18W cold temperature option, the WDGE2 becomes the ideal wall-mounted lighting solution for pedestrian scale applications in any environment.

## WDGE LED Family Overview

| Luminaire | Optics | Standard EM, 0°C | Cold EM, -20°C | Sensor | Approximate Lumens (4000K, 80CRI) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | P0 | P1 | P2 | P3 | P4 | P5 | P6 |
| WDGE1 LED | Visual Comfort | 4W | | -- | 750 | 1,200 | 2,000 | -- | -- | -- | -- |
| WDGE2 LED | Visual Comfort | 10W | 18W | Standalone / nLight | -- | 1,200 | 2,000 | 3,000 | 4,500 | 6,000 | -- |
| WDGE2 LED | Precision Refractive | 10W | 18W | Standalone / nLight | 700 | 1,200 | 2,000 | 3,200 | 4,200 | -- | -- |
| WDGE3 LED | Precision Refractive | 15W | 18W | Standalone / nLight | -- | 7,500 | 8,500 | 10,000 | 12,000 | -- | -- |
| WDGE4 LED | Precision Refractive | | | Standalone / nLight | -- | 12,000 | 16,000 | 18,000 | 20,000 | 22,000 | 25,000 |

## Ordering Information

**EXAMPLE:** WDGE2 LED P3 40K 80CRI VF MVOLT SRM DDBXD

| Series | Package | Color Temperature | CRI | Distribution | Voltage | Mounting | |
|---|---|---|---|---|---|---|---|
| WDGE2 LED | P0[1] | 27K 2700K | 70CRI* | T1S Type I Short | MVOLT | **Shipped included** | **Shipped separately** |
| | P1[1] | 30K 3000K | 80CRI | T2M Type II Medium | 347[2] | SRM Surface mounting bracket | AWS 3/8inch Architectural wall spacer |
| | P2[1] | 40K 4000K | LW* Limited Wavelength | T3M Type III Medium | 480[2] | ICW Indirect Canopy/Ceiling Washer bracket (dry/damp locations only)[3] | PBBW 5 surface-mounted back box (top, left, right conduit entry). Use when there is no junction box available. |
| | P3[1] | 50K 5000K | | T4M Type IV Medium | | | |
| | P4[1] | AMBP Amber | | TFTM Forward Throw Medium | | | |

| Options | | | Finish |
|---|---|---|---|
| E10WH Emergency battery backup, Certified in CA Title 20 MAEDBS (10W, 5°F, min) | **Standalone Sensors/Controls** | | DDBXD Dark bronze |
| E20WC Emergency battery backup, Certified in CA Title 20 MAEDBS (10W, -20°F, min) | PIR Bi-level (100/35%) motion sensor for 8-15' mounting heights. Intended for use on switched circuits with external dusk to dawn switching. | | DBLXD Black |
| PE[4] Photocell, Button Type | PIRH Bi-level (100/35%) motion sensor for 15-30' mounting heights. Intended for use on switched circuits with external dusk to dawn switching | | DNAXD Natural aluminum |
| DMG[4] 0-10V dimming wires pulled outside fixture (for use with an external control, ordered separately) | PIR1FC3V Bi-level (100/35%) motion sensor for 8-15' mounting heights with photocell pre-programmed for dusk to dawn operation. | | DWHXD White |
| BCE Bottom conduit entry for back box (PBBW). Total of 4 entry points. | PIRH1FC3V Bi-level (100/35%) motion sensor for 15-30' mounting heights with photocell pre-programmed for dusk to dawn operation. | | DSSND Sandstone |
| BAA Buy America(n) Act Compliant | **Networked Sensors/Controls** | | DDBTXD Textured dark bronze |
| | NLTAIR2 PIR nLightAIR Wireless enabled bi-level motion/ambient sensor for 8-15' mounting heights. | | DBLBXD Textured black |
| | NLTAIR2 PIRH nLightAIR Wireless enabled bi-level motion/ambient sensor for 15-30' mounting heights. | | DNATXD Textured natural aluminum |
| | See page 4 for out of box functionality | | DWHGXD Textured white |
| | | | DSSTXD Textured sandstone |





### Accessories
Ordered and shipped separately.

| | |
|---|---|
| WDGEAWS DDBXD | WDGE 3.18inch Architectural Wall Spacer (specify finish) |
| WDGE2PBBW DDBXD U | WDGE2 surface-mounted back box (specify finish) |

NOTES
1. P0 option not available with sensors/controls.
2. P1-P4 not available with AMB and UW.
3. AMB and UW always go together.
4. 70CRI only available with T3M and T4M.
5. 347V and 480V not available with E10WH or E20WC.
6. Not qualified for DLC. Not available with emergency battery backup or sensors/controls.
7. PE not available in 480V or with sensors/controls.
8. DMG option not available with sensors/controls.

## Performance Data

### Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

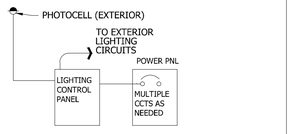
| Performance Package | System Watts | Dist. Type | 27K (2700K, 80 CRI) | | | | 30K (3000K, 80 CRI) | | | | 40K (4000K, 80 CRI) | | | | Amber (Lumited Wavelength) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lumens | LPW | B | U | G | Lumens | LPW | B | U | G | Lumens | LPW | B | U | G | Lumens | LPW | B | U | G |
| P0 | 7W | T1S | 616 | 92 | 0 | 0 | 0 | 666 | 97 | 0 | 0 | 0 | 699 | 101 | 0 | 0 | 1 | 691 | 100 | 0 | 0 | 1 |
| | | T2M | 662 | 96 | 0 | 0 | 0 | 693 | 101 | 0 | 0 | 0 | 728 | 106 | 0 | 0 | 0 | 719 | 104 | 0 | 0 | 0 |
| | | T3M | 662 | 96 | 0 | 0 | 0 | 693 | 101 | 0 | 0 | 0 | 728 | 106 | 0 | 0 | 0 | 719 | 104 | 0 | 0 | 0 |
| | | T4M | 648 | 94 | 0 | 0 | 0 | 679 | 98 | 0 | 0 | 0 | 712 | 103 | 0 | 0 | 0 | 704 | 102 | 0 | 0 | 0 |
| | | TFTM | 652 | 95 | 0 | 0 | 0 | 683 | 99 | 0 | 0 | 0 | 717 | 104 | 0 | 0 | 0 | 708 | 103 | 0 | 0 | 0 |
| P1 | 11W | T1S | 1,105 | 99 | 0 | 0 | 1 | 1,157 | 104 | 0 | 0 | 1 | 1,215 | 109 | 0 | 0 | 1 | 1,200 | 107 | 0 | 0 | 1 |
| | | T2M | 1,150 | 103 | 0 | 0 | 1 | 1,204 | 108 | 0 | 0 | 1 | 1,264 | 113 | 0 | 0 | 1 | 1,249 | 112 | 0 | 0 | 1 |
| | | T3M | 1,150 | 103 | 0 | 0 | 1 | 1,205 | 108 | 0 | 0 | 1 | 1,265 | 113 | 0 | 0 | 1 | 1,250 | 112 | 0 | 0 | 1 |
| | | T4M | 1,126 | 101 | 0 | 0 | 1 | 1,179 | 106 | 0 | 0 | 1 | 1,238 | 111 | 0 | 0 | 1 | 1,223 | 110 | 0 | 0 | 1 |
| | | TFTM | 1,133 | 101 | 0 | 0 | 1 | 1,186 | 106 | 0 | 0 | 1 | 1,245 | 112 | 0 | 0 | 1 | 1,230 | 110 | 0 | 0 | 1 |
| P2 | 19W | T1S | 1,801 | 95 | 1 | 0 | 1 | 1,886 | 99 | 1 | 0 | 1 | 1,981 | 104 | 1 | 0 | 1 | 1,957 | 103 | 1 | 0 | 1 |
| | | T2M | 1,875 | 99 | 1 | 0 | 1 | 1,963 | 103 | 1 | 0 | 1 | 2,061 | 109 | 1 | 0 | 1 | 2,037 | 107 | 1 | 0 | 1 |
| | | T3M | 1,876 | 99 | 1 | 0 | 1 | 1,964 | 103 | 1 | 0 | 1 | 2,062 | 109 | 1 | 0 | 1 | 2,038 | 107 | 1 | 0 | 1 |
| | | T4M | 1,836 | 97 | 1 | 0 | 1 | 1,922 | 101 | 1 | 0 | 1 | 2,018 | 106 | 1 | 0 | 1 | 1,994 | 105 | 1 | 0 | 1 |
| | | TFTM | 1,847 | 97 | 1 | 0 | 1 | 1,934 | 102 | 1 | 0 | 1 | 2,030 | 107 | 1 | 0 | 1 | 2,006 | 106 | 1 | 0 | 1 |
| P3 | 32W | T1S | 2,809 | 87 | 1 | 0 | 1 | 2,942 | 92 | 1 | 0 | 1 | 3,089 | 96 | 1 | 0 | 1 | 3,052 | 95 | 1 | 0 | 1 |
| | | T2M | 2,924 | 91 | 1 | 0 | 1 | 3,062 | 95 | 1 | 0 | 1 | 3,215 | 100 | 1 | 0 | 1 | 3,176 | 99 | 1 | 0 | 1 |
| | | T3M | 2,925 | 91 | 1 | 0 | 1 | 3,063 | 95 | 1 | 0 | 1 | 3,216 | 100 | 1 | 0 | 1 | 3,177 | 99 | 1 | 0 | 1 |
| | | T4M | 2,862 | 89 | 1 | 0 | 1 | 2,997 | 93 | 1 | 0 | 1 | 3,147 | 98 | 1 | 0 | 1 | 3,110 | 97 | 1 | 0 | 1 |
| | | TFTM | 2,880 | 90 | 1 | 0 | 1 | 3,015 | 94 | 1 | 0 | 1 | 3,166 | 99 | 1 | 0 | 1 | 3,128 | 97 | 1 | 0 | 1 |
| P4 | 47W | T1S | 3,729 | 80 | 1 | 0 | 1 | 3,904 | 84 | 1 | 0 | 1 | 4,099 | 88 | 1 | 0 | 1 | 4,051 | 87 | 1 | 0 | 1 |
| | | T2M | 3,881 | 83 | 1 | 0 | 1 | 4,063 | 87 | 1 | 0 | 1 | 4,267 | 91 | 1 | 0 | 1 | 4,216 | 90 | 1 | 0 | 1 |
| | | T3M | 3,882 | 83 | 1 | 0 | 1 | 4,065 | 87 | 1 | 0 | 1 | 4,268 | 91 | 1 | 0 | 1 | 4,217 | 90 | 1 | 0 | 1 |
| | | T4M | 3,799 | 81 | 1 | 0 | 1 | 3,978 | 85 | 1 | 0 | 1 | 4,177 | 90 | 1 | 0 | 1 | 4,127 | 88 | 1 | 0 | 1 |
| | | TFTM | 3,822 | 82 | 1 | 0 | 1 | 4,002 | 86 | 1 | 0 | 1 | 4,202 | 90 | 1 | 0 | 1 | 4,152 | 89 | 1 | 0 | 1 |

| Performance Package | System Watts | Dist. Type | 27K (2700K, 70 CRI) | | | | 30K (3000K, 70 CRI) | | | | 40K (4000K, 70 CRI) | | | | 50K (5000K, 70 CRI) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Lumens | LPW | B | U | G | Lumens | LPW | B | U | G | Lumens | LPW | B | U | G | Lumens | LPW | B | U | G |
| P0 | 7W | T1M | 737 | 107 | 0 | 0 | 0 | 763 | 111 | 0 | 0 | 0 | 822 | 119 | 0 | 0 | 0 | 832 | 121 | 0 | 0 | 1 |
| | | T4M | 721 | 105 | 0 | 0 | 0 | 746 | 108 | 0 | 0 | 0 | 804 | 117 | 0 | 0 | 1 | 814 | 118 | 0 | 0 | 1 |
| P1 | 11W | T1M | 1,280 | 115 | 0 | 0 | 1 | 1,325 | 119 | 0 | 0 | 1 | 1,427 | 128 | 1 | 0 | 1 | 1,445 | 129 | 1 | 0 | 1 |
| | | T4M | 1,253 | 113 | 0 | 0 | 1 | 1,297 | 116 | 0 | 0 | 1 | 1,397 | 125 | 0 | 0 | 1 | 1,415 | 127 | 0 | 0 | 1 |
| P2 | 19W | T1M | 2,087 | 110 | 1 | 0 | 1 | 2,160 | 114 | 1 | 0 | 1 | 2,327 | 123 | 1 | 0 | 1 | 2,357 | 124 | 1 | 0 | 1 |
| | | T4M | 2,042 | 108 | 1 | 0 | 1 | 2,114 | 111 | 1 | 0 | 1 | 2,278 | 120 | 1 | 0 | 1 | 2,306 | 121 | 1 | 0 | 1 |
| P3 | 32W | T1M | 3,254 | 101 | 1 | 0 | 1 | 3,369 | 105 | 1 | 0 | 1 | 3,629 | 113 | 1 | 0 | 1 | 3,673 | 114 | 1 | 0 | 1 |
| | | T4M | 3,185 | 99 | 1 | 0 | 1 | 3,297 | 103 | 1 | 0 | 1 | 3,552 | 111 | 1 | 0 | 1 | 3,597 | 112 | 1 | 0 | 1 |
| P4 | 47W | T1M | 4,319 | 93 | 1 | 0 | 1 | 4,471 | 96 | 1 | 0 | 1 | 4,817 | 103 | 1 | 0 | 2 | 4,878 | 105 | 1 | 0 | 2 |
| | | T4M | 4,227 | 91 | 1 | 0 | 1 | 4,376 | 94 | 1 | 0 | 2 | 4,714 | 101 | 1 | 0 | 2 | 4,774 | 102 | 1 | 0 | 2 |





2 FIXTURE WP1, WP2
SCALE: NONE

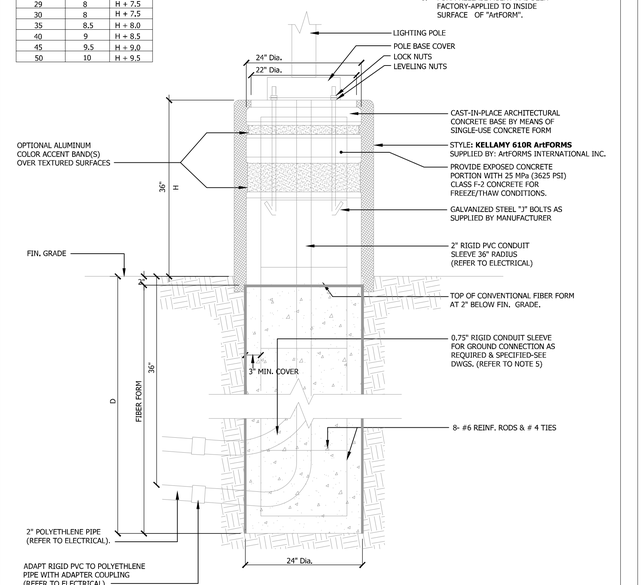



PROVIDE LIGHTING CONTROL PANEL (LCP) WITH CAPACITY OF 16 RELAYS. RELAYS SHALL BE RATED FOR 120V LIGHTING CONTROL. PANEL SHALL BE PROGRAMMABLE FOR ASTROMONICAL DUSK TO DAWN OPERATION AS WELL AS TIMED OPERATION. PROVIDE WITH MANUAL LV SWITCH FOR MAINTENANCE OVERRIDE. PROVIDE PHOTOCELL CONTROL AS REQUIRED FOR INPUT TO SYSTEM. SYSTEM SHALL BE CAPABLE OF RETAINING PROGRAM UPON POWER FAILURE.

3 LIGHTING CONTROL PANEL DETAIL
SCALE: N.T.S.

| POLE LENGTH (ft.) | BASE BURIAL DEPTH (D) (ft.) | REINF. ROD LENGTH (ft.) |
|---|---|---|
| 10 | 5 | H + 4.5 |
| 19 | 7 | H + 6.5 |
| 23 | 7 | H + 6.5 |
| 25 | 7 | H + 6.5 |
| 29 | 8 | H + 7.5 |
| 30 | 8 | H + 7.5 |
| 35 | 8.5 | H + 8.0 |
| 40 | 9 | H + 8.5 |
| 45 | 9.5 | H + 9.0 |
| 50 | 10 | H + 9.5 |

NOTES:
1. ALL DIMENSIONS ARE IN NOMINAL FEET OR INCHES
2. TOP OF FOUNDATION SHALL BE TROWELLED SMOOTH & LEVEL
3. CLASS OF CONCRETE SHALL BE 3000 P.S.I. CONCRETE SHALL BE VIBRATED.
4. MINIMUM OF TWO SLEEVES REQUIRED FOR EACH CONC. FOUNDATION UNLESS OTHERWISE SHOWN.
5. PROVIDE A 0.75" DIA. 10' STEEL COPPER COATED GROUND ROD ADJACENT TO POLES AS SPECIFIED ON PLAN AND CONNECT TO METAL POLE WITH BARE COPPER CONDUCTOR.
6. CONTRACTOR TO VERIFY OPENING SIZE IN POLE BASE PLATE PRIOR TO SETTING CONDUIT SLEEVES.
7. SUBJECT TO SOIL CONDITIONS, REFER TO SOIL REPORT.
8. FORM RELEASE AGENT HAS BEEN FACTORY-APPLIED TO INSIDE SURFACE OF "ArtFORM".




4 POLE BASE DETAIL
SCALE: NONE

| | NO. | DESCRIPTION | BY |
|---|---|---|---|
| JULY 05/24 | - | RE-ISSUED FOR REVISED SITE PLAN & CITY COMMENTS | AN |
| JAN 02/24 | - | RE-ISSUED FOR SPA | AN |
| JAN 02/24 | - | RE-ISSUED FOR REVISED SITE/LANDSCAPE PLAN | AN |
| DEC 05/23 | - | RE-ISSUED FOR SPA | AN |
| DEC 14/22 | - | RE-ISSUED FOR SPA | AN |
| AUG 08/22 | - | ISSUED FOR SPA | SA |

MARK VOID ALL PRINTS DATED PREVIOUS TO FINAL DATE ABOVE

## REVISIONS

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ELECTRICAL MECHANICAL ENERGY

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2024/07/12
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info@EMEeng.com


PROJECT:

31 CLARK ST.
TOWN OF BLUE MOUNTAINS, ON
N0H 1J0

DRAWING TITLE:

SITE LIGHTING DETAILS

| DRAWN BY: | CHECKED BY: | SCALE: |
|---|---|---|
| AN | CL | NONE |
| DATE: | PROJECT NUMBER: | DRAWING NUMBER: |
| DEC/2022 | 22-6281 | E-104 |