

Performance Specification For 12-Volt Landscape Lighting System

1. Contractor Requirements:

- 1.1. Contractor shall notify any governing agency having jurisdiction over this work prior to the start of any work.
- 1.2. Contractor shall perform any mark-outs or permitting as may be required. Failure of the contractor to perform such is the responsibility of the contractor.
- 1.3. All 120 volt electrical wiring shall be done by a licensed electrician to local code.
- 1.4. Any questions should be brought to the attention of the designer before bids are submitted and before any work is done.
- 1.5. Contractors bid shall outline fixtures, transformer models, and other major components proposed quantity to be installed and the unit prices for each. The total of all these components will equal the lump sum of the contract. This will act as an add/deduct should material need to be added or removed from the project during construction.
- 1.6. Contractor shall include any maintenance agreement that their company offers for review by client and designer with bid proposal.
- 1.7. Contractor shall provide two references of projects similar to scope and size completed in the last fifteen months at the time of bid proposal.
- 1.8. Contractor shall provide proof of insurance with bid proposal.

2. Bid Specifications:

- 2.1. Contractor shall locate the fixtures where noted on the low voltage lighting design. Contractor shall install the fixtures as detailed in the accompanying detail drawings.
- 2.2. Contractor shall install sealed front glass covered MR 16 lamps in all fixtures where required. No uncovered MR16 lamps shall be allowed. All Par lamps shall be General Electric only. All walkway lights shall use single contact halogen or xenon / halogen bayonet base lamps. Wattages and beam spreads as detailed on the lighting design. Final adjustment of the system is the responsibility of the contractor at the discretion the designer. Final adjustment will be done at no additional expense to the client.
- 2.3. All lamps shall operate in the acceptable range of between 10.8 to 12 volts. Ideal operating voltage is 11.5 volts. Contractor is required to submit in writing all final field operating voltages at the splice locations to architect prior to completion of the project. If required contractor shall demonstrate in the field the operating voltages of the system with the Designer, Client or Owners representative at no additional cost to the owner.
- 2.4. Contractor shall provide optical spread lenses in all 20 watt 36' and 60' degree lamps.
- 2.5. Contractor shall include hex cell louvers on any MR16 lamp where required to prevent glare.
- 2.6. Contractor shall Include on every lighting fixture an "as built fixture record plate" 2" x 3" with stainless key ring secured to the fixture stakes. As built fixture records shall be manufactured of deep

acid etch 304 stainless indicating off grade information, the wire run number, transformer number, lamp installed, and the individual fixture on the wire run and total fixtures on the different wire runs. Markings shall be performed using a spring loaded center punch. The As-Built will insure the long term maintenance of the system is carried out on to the original design of the system. Attach any as built to the spider splice junction for off grade fixture recording. As manufactured by Cast Lighting LLC 1120-A Goffle Road Hawthorne New Jersey 07506 973-423-2303

3. Original Field Secondary Circuit Wire Run Operating Wattages and Distance Specifications:

- 3.1. Contractor shall use **#12-2 No-Ox Tin Coated Marine Grade** wire for home run wire runs from transformer to spider splices as follows. **Operating load for # 12-2 is a maximum of 100 watts lamp wattage to all spider splice locations.** #12-2 wire shall be used for wire runs to spider splice from transformer **not to exceed 100'** feet. Contractor shall install the original design to this specification. This allows the client ample room for expansion if required later on in the form of higher wattage lamps or additional fixtures. As manufactured by Cast Lighting LLC 1120-A Goffle Road Hawthorne New Jersey 07506 973-423-2303
- 3.2. Contractor shall use **#10-2 No-Ox Tin Coated Marine Grade** wire for home run wire runs from transformer to spider splices as follows. **Operating load for # 10-2 is a maximum of 140 watts lamp wattage to all spider splice locations.** #10-2 wire shall be used for wire runs to spider splice from transformer in **excess of 100'** feet. Contractor shall install the original design to this specification. This allows the client ample room for expansion if required later on in the form of higher wattage lamps or additional fixtures. As manufactured by Cast Lighting LLC 1120-A Goffle Road Hawthorne New Jersey 07506 973-423-2303
- 3.3. Contractor shall install original field circuit wiring to the specifications outlined in paragraph 3.1 and 3.2. In the event alterations are made during final adjustments, contractor shall under no circumstances exceed the following amperage ratings (paragraph 3.4) of any low voltage wiring. In the event the amperage ratings exceed below ratings, then a new wire shall be run to split up the load on the circuit.
- 3.4. [Wire Gauge: Amp Load] **#18-2: 4 amps, #16-2: 7 amps, #12-2: 14 amps, #10-2: 22 amps, # 8-2: 25 amps**
- 3.5. Contractor shall install Spider Splice wire junction boxes in all splice locations. Spider splice includes a bronze cap together with 2-1/2" x 8" Electrical Grade Grey PVC. Bronze 88-6-3-2 Cap shall be marked with a permanent stamp set indicating the wire run number on all installed fixture wire splice locations. Place splice in planting beds and areas not subject to damage from maintenance equipment. Wire splice shall use only King Teflon filled 20 amperage rated direct burial wire nut wire splice. # 61335 and # 61135. Other acceptable splice techniques include soldering and crimping. All connections must be UL approved for the application. No grease filled direct burial splices are acceptable. As manufactured by Cast Lighting LLC 1120-A Goffle Road Hawthorne New Jersey 07506 973-423-2303
- 3.6. All installed fixtures shall come spider splice ready. This includes a 25 foot #16-2 tin coated No-Ox marine grade lead wire as part of the fixture from the factory.
- 3.7. All field splices shall be made with 20 amperage rated Teflon filled waterproof wire splices. No grease filled direct burial splices are acceptable. Wire splice shall use only King Teflon filled 20 amperage rated direct burial wire nut wire splice. # 61335 and # 61135. Other acceptable splice techniques include soldering and Buchanan crimping. All connections must be UL approved for the application.



- 3.8. Contractor shall take **operating amperage readings on the primary** when done with the installation and record the readings on the inside of transformer cover on the sticker provided with a fine point sharpie marker
- 3.9. Contractor shall take **amperage readings on all secondary field circuit wires** when done with the installation and record the readings on the inside of the transformer cover on the sticker provided with a fine point sharpie marker.
- 3.10. Contractor shall bury all secondary wires 6" depth from surface.
- 3.11. Contractor shall sleeve all wires entering planting beds from turf or under walks with ¾" 100psi poly pipe or heavy wall PVC pipe at a depth of 12" or better. This will prevent damage to the wire from edging equipment.
- 3.12. Contractor shall leave all excess fixture wire at the fixture to allow easy field adjustment of the fixture if required.
- 3.13. Contractor shall install glass lens or bronze grate on all par 36 well light installations to prevent debris from collecting on the par 36 lamp
- 3.14. Transformer shall be mounted following the detail drawing outlining the transformer stand specifications detail drawing. Transformer installation shall include Romex (or equivalent) strain relief connectors on all secondary wiring entering the transformer. Should contractor choose to install hard pipe conduit a valve box shall be placed directly under transformer where hard pipe conduit will terminate. Valve box will allow slack wire collection point to allow future servicing and cleaner installation. Transformer cabinet shall be manufactured of all 304 stainless steel. No galvanized steel, powder coated steel or painted steel metals shall be allowed for transformer cabinet. Transformer shall include quick connect feature to allow the quick installation of a photo cell or 20' remote photo cell if required on the project. Transformer shall include timer, x-10 plug point for transformer on off controls. Transformer shall include 125 Amperage rated terminal block secondary field wiring connection point. No wire nut secondary wiring connections shall be allowed at the transformer. All internal transformer wiring shall be 140c rated high temperature tin coated wire. No internal wiring less than 140c tin coated shall be allowed. Transformer shall be capable of loading 100% of the load of the transformer on any of the secondary field taps 12V thru 18V. Transformers from 300 to 600 watts shall incorporate only secondary magnetic circuit breaker protection. All transformers from 900 to 1500 watts shall incorporate both primary and secondary circuit breaker protection. Transformer shall be fully potted with 180c rated encapsulant to fully protect winding from environmental degradation. No vented and exposed single dipped epoxy coated transformer windings are acceptable. Transformer shall have drop down removable wiring compartment for ease of installation. As manufactured by Cast Lighting LLC. 1120-A Goffle Road Hawthorne, New Jersey 07506 Phone 973-423-2303
- 3.15. Final adjustment is the responsibility of the contractor at no cost to the client. A minimum of three after dark hours per 50 lights installed is required for adjustment of fixtures.
- 3.16. Yearly maintenance contract is recommended for the installation during the first and subsequent years. This shall be billed as an extra charge as negotiated with the client prior to the start of the project.

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