

**SECTION 26 56 00.01
EXTERIOR SITE LIGHTING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Requirements for removal or relocation of lamp posts
- B. New floodlights, new post lights and new cobrahead lights
- C. Poles and accessories.
- D. Cables and conduits
- E. Luminaire accessories.

1.02 REFERENCE STANDARDS

- A. IEEE C62.41.2 - IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits; 2002 (Corrigendum 2012).
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- C. NECA/IESNA 501 - Standard for Installing Exterior Lighting Systems; 2000 (Reaffirmed 2006).
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.01 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

1.02 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

1.03 LIGHTING - NEW/RELOCATED YARDLIGHTS (INCLUDING FLOODLIGHTS)

A. GENERAL

- 1. All work performed under this Section shall be done by one who possesses a Master Electrician's License issued by the City of New York pursuant to title B of Chapter 30 of the Administrative Code.
- 2. All material and labor required to install, complete and ready for operation the electrical system indicated on the Drawings and as specified herein, shall be in complete accordance with and approved by the New York City Bureau of Electrical Control.
- 3. All equipment and all wiring shall be installed in strict accordance with all laws and with the rules and regulations of the municipal and other public agencies having jurisdiction and with those of the National Board of Fire Underwriters.
 - a. Any items or requirements herein which conflict with such rules, regulations and requirements shall be referred to the Authority for decision.
- 4. Any discrepancies between the specifications and Contract Drawings shall be discussed with the Authority before bidding.
- 5. The Contractor shall notify the Development Superintendent at least 72 hours prior to the intended commencement of work.
- 6. Drawings are generally diagrammatic and indicate the work to be installed. The Contractor shall harmonize the work of the several trades so that all work may be installed in the most direct and workmanlike manner and so that interferences between piping; ducts, plumbing system, architectural, landscape and structural features will be avoided. In case

interferences develop, the Inspector will decide which work is to be relocated regardless of which was first installed.

7. Where Drawings and Specifications conflict with the Law or codes, the Law shall be followed, but where Drawings and Specifications are over and above the requirements of the Law, the Drawings and Specifications shall be followed.
 8. Unless otherwise specified, all equipment and materials furnished and installed under this Contract shall be new and of the latest model or design.
 9. All equipment requiring insulation in order to obviate danger to life or property, shall be thoroughly insulated by the Contractor at his expense. Lamps, wires, conductors and other movable equipment shall be placed in such locations and in such a manner as will prevent unauthorized persons from handling or tampering with them. Ladders, guards, etc., shall not be left unattended in the work area.
 10. The Contractor shall carefully investigate the structural and finish conditions affecting all his work and arrange all his work accordingly to furnish such fittings, panel boards, etc. as may be required to meet such conditions.
 11. All items shall include everything necessary for a complete and functioning installation.
 12. Contractors are to sign the contractor's log upon arrival at the development, notify the development supervisors of the scope and location of work planned for the day, and before leaving, advise them of any condition which might adversely affect the tenants.
- B. LAMP POST REMOVAL
1. Removal shall include the complete removal of the lamp post and lighting fixtures. The contractor shall remove the foundation completely. Holes caused by the partial removal of the existing concrete foundation shall be filled and compacted with clean fill. Patching/restoration of adjacent material shall be required.
 2. For conduit and conductors not required to supply power to the remaining lamp posts, the Contractor shall remove a portion of each of these conduit runs from the conduit run. Existing unused conductors shall be removed back to the first splice box within the building from which the conduit emerged.
 3. For conduit and conductors required to supply power to remaining lamp posts, the contractor shall remove a portion of each conduit run from the location of the existing foundation, back to first coupling encountered along that conduit run.
 4. New replacement conduit shall be connected to the remaining conduit so that a continuous conduit run is achieved. The resulting hole shall be filled and compacted with clean fill. Coupling of new and existing conduits shall be mechanically and electrically sound.

PART 2 PRODUCTS

2.01 LAMP POSTS (NEW)

- A. The Contractor shall furnish and install where indicated on Contract Drawings, all aluminum lamp pole(s). All electrical components supplied under this contract shall be new, of the latest model and design, UL listed and approved for use in New York City by the Bureau of Electrical Control.
- B. The shaft shall be round, tapered, seamless tube. The materials shall be wrought aluminum alloy #6063-T4, as specified by the Aluminum Association or equal after fabrication, the shaft shall be heat treated to produce a T6 temper. The shaft shall be rotary sand finished and wrapped with protection paper for shipping.
- C. Fixture Shaft Height Wall
 1. Type (Nominal) Taper Thickness
 2. Floodlight 20'-0" 7"-4" 0.188NOTE: Unless otherwise shown on the drawings. See Site Plans for locations & quantities.
- D. All new poles shall be with handhole.

- E. A grounding lug shall be provided in all lamp posts. This lug shall be made of 1/4" thick aluminum with a 3/8" diameter of 5/16-18 NC hole, lug to be welded to inside of shaft, near bottom.
- F. The top of all aluminum poles shall be blanked with a removable rain tight cap. Cap to be fastened with a minimum of three (3) 1/4" stainless steel machine screws.
- G. Bracket arms, four (4') feet in length, shall be provided on all Cobra Head poles. Twin brackets (90 degree) shall be provided as indicated in Drawings, on all 20' Flood Light poles. Arms to be constructed from seamless tubular wrought aluminum alloy #6063 or #6061, as specified by the Aluminum Association, or equal. Before fabrication, tubing outside dimension shall be a minimum of 3-1/2" and wall thickness shall be a minimum of 0.125". The tubing shall be tapered and then ellipticized, major axis or ellipse to be parallel to the axis of the shaft. After fabrication, arms shall, be heat- treated to a T6 temper. The arm shall be fastened to shaft by means of either wrought aluminum alloy #3003-H14 pole plates welded to the arm, or an adaptor fitting of cast aluminum alloy #356-T6 welded to arm. Pole plates or adaptor fittings shall be fastened to shaft by means of two (2) 1/2"-13" stainless steel threaded studs; two (2) 1/2" s.s. flat washers; two (2) 1/2" s.s. lock washers and two (2) 1/2" s.s. hex head nuts.
- H. Arms to have a rise of 24" from center line at point of attachment on pole to center line of slipfitters at end of arm. End of arm to be formed to accept luminaire with 1-1/2" pipe size slip fitter 6" long.
- I. All hardware necessary for the complete assembly shall be furnished including bolts, nuts, washers, etc., and shall be of stainless steel. Anchorage hardware shall consist of four (4) hot-rolled steel rods with a minimum yield strength of 50,000 PSI, with a 4" right angle leg, threaded end to be hot-dipped galvanized for a minimum length of 12" nuts and washers to be galvanized four (4) aluminum leveling shims, two (2) 1-16" and two (2) 1/8" shall be provided for each standard.
- J. The lamp post shall be capable of withstanding winds of 100 M.P.H. in the most severe direction, and the shaft shall be capable of withstanding a 500 lb. transverse force applied with 18" of the shaft top, all without resulting infraction or permanent deformation. The bracket arms shall be capable of supporting a 250 lb. vertical force and a 50 lb. side force applied at luminaire and without failure or permanent deformation.
- K. The lamp post shall be properly assembled before being placed in upright position. The lamp post shall be set on an approved foundation at the curb line in a plumb vertical position, secured and plumbed by use of aforementioned shims and nuts
- L. The Luminaire shall be installed at the same time at the lamp post, and the Contractor shall furnish and install the required number of electrical conductors through the shaft and bracket, to the luminaires.
- M. Contractor shall also furnish and install the necessary electrical conductor and accessories for properly grounding the lamp post, as specified elsewhere herein.
- N. The Contractor shall furnish and install where indicated on contract drawings, all aluminum lamp posts.

2.02 LUMINAIRES - FLOODLIGHTS

- A. Floodlight specifications shall be as follows:
 1. INPUT WATTAGE: Shall be a maximum of 200W at 120V.
 2. DELIVERED LUMENS: Shall deliver 18000 to 25000 lumens +/- 50 lumens at 3500KCCT.
 3. LED ARRAY: Shall have a metal core printed circuit board. Lumen maintenance factor no less than .80 at 100,000 hours at 25C.
 4. LED CCT: evaluation samples shall be provided in 3000K.
 5. LED CRI: Shall be 70+.
 6. NEMA Distribution: Shall be 6x6.

7. LED DRIVER: 1050Ma Class 1 electronic driver, >90% power factor, THD <20%, and expected life of 100,000 hours, with 0-10 volt dimming capability.
 8. EFFICACY: Shall have ability to produce 89+ lumens per watt.
 9. BUG Rating: Shall not exceed 1.
 10. SURGE PROTECTION: Shall meet ANSI/IEEE C62.41.2 surge protection and be field replaceable.
 11. OPTICAL: Shall be acrylic molded.
 12. INGRESS RATING: IP66.
 13. LUMINAIRE CONSTRUCTION: Shall be square in design, Low copper content die cast aluminum A360 alloy castings for corrosion resistance and long life.
 14. FINISH: Super durable TGIC thermoset powder coat over standard pretreat yields a finish that achieves a scribe creep age of 9 after 2,500 hours exposure to salt fog chamber.
 15. Type FA: Two (1) Flood lights/ pole, Type FB: Four (2) Floodlights/ pole.
 16. LISTINGS: CSA or UL. 2G rated.
 17. INSTALLATION and MAINTAINENCE: Luminaire shall have ease of access electrical components.
 18. POLE HEIGHT: 20 feet.
 19. WARRANTY: 5 years on mechanical and electrical components.
- B. The following Floodlight products/manufacturers are acceptable, subject to meeting the requirements of these specifications: fixtures shall be from the manufacturers and the models shown below:
1. EcoForm Gen-2, model number: ECF-S-32L-1A-WW-G2-SF3-UNV-WIAP-MGY / HIS-32-H/ ECF-BD-G2 / IRT9015, as manufactured by Gardco by Signify.
Sales Rep: Michael Steinberg email: ???MichaelS@ses95.com???, phone: (917) 971 1721
 2. A17, manufactured by RAB Limited, model number A17-3T-100-BLANK-3000-BLANK-120V/MVS. www.rablighting.com/, email: sales@rablighting.com, phone: 888.722.1000
 3. Express LED manufactured by MagniFlood, Kenny Greene, 7200 New Horizons Blvd, North Amityville, N.Y. 11701. Tel# 631.226.1000, Fax# 631.226.4444.
www.magniflood.com, sales@magniflood.com.
 4. Clearscape Medium, CSFM-48L-700-NW-G1-SF-RM-UNV-BK : as manufactured by Gardco by Signify. Sales Rep: Thomas Dresdner, GoodMart, LLC, 232 Madison Ave, 3rd Floor, New York, NY, 10016, office: 212.792.0210 x1003, Mobile: 973.920.0831, email: thomas@goodmart.com. www.signify.com/en-us/brands/lumec , www.goodmart.com
Or approved equal.

2.03 LUMINAIRES – LIGHTING CONTROLS

- A. Provide Lighting Controls that are fully compatible with new exterior site lighting.
- B. All floodlight luminaire fixtures shall be integrated with a lighting control system, with the following capabilities:
 1. Photocell activated daily at dusk for an adjustable interval of 0-6 hours.
 2. Occupancy sensor switch activated for an adjustable 0-10 minute interval when motion is detected.
 3. Light switch for manual override on/off capabilities.
- C. Contractor shall coordinate lighting control system with development property management staff and architect / engineer, including but not limited to:
 1. Lighting control system shop drawing for approval by architect / engineer
 2. Submittals of all lighting control system components.

2.04 LED BALLASTS

- A. Integral ballasts for all lighting fixtures shall be as originally designed and supplied with luminaire. It shall be factory pre-wired and suitable for operation in temperatures as low as -20 Degrees Fahrenheit.

2.05 CONCRETE FOUNDATIONS FOR LAMP POSTS

- A. The Contractor shall furnish and install concrete foundations in accordance with detail on the drawing for the lamp posts to be installed. They shall be complete with anchor bolts. Foundations shall bear on undisturbed subgrade.
- B. The concrete shall be in accordance with the Concrete Section of these Specifications.

2.06 WIRE AND CABLES

- A. Furnish and install all wire and cable to conform to the latest requirements of the "Electrical Code of the City of New York", "Insulated Power Cable Engineer Association" and "Underwriters Laboratories". All wire and cable shall be copper and conform to the following:
 - 1. All branch circuits and feeders shall be THWN copper.
 - 2. The minimum wire size for all new branch circuits shall be No 12AWG.
 - 3. Underground wire shall be type THWN in conduits, designed for a wet corrosive atmosphere, and sized as indicated on Contract Drawings or in the Specifications.
 - 4. Wherever new conductors or extensions to existing conductors are required (whether inside or outside the building), they shall be furnished and installed by the Contractor.
 - 5. Splices in conductors shall be soldered and taped, or approved solderless connectors shall be used.
 - 6. A minimum of 18" of electrical conductors shall be allowed for slack in all poles.
 - 7. The work shall include the cleaning out of conduits and pull boxes, removal of all dirt, water, etc., making all splices or connections of lamps, posts, cutouts, etc., at which new conductors terminate.
 - 8. Where wire insulation types, as specified, are not available, the Contractor shall furnish other approved types, provided the N.Y.C. Electrical Code allowances for conduit fill are not exceeded. There shall be no additional cost to the Authority for this substitution.
 - 9. Unless otherwise specified, wire #10 A.W.G. and smaller shall be solid.
 - 10. Where ever necessary, a new, suitable timer shall be installed to control the activation of the new lighting unit. This timer shall be installed at a site to be determined by the Development Superintendent.
 - 11. Electrical timer and photocell need to be wired in parallel, not in series.
 - 12. Parallel lamp circuits shall be connected to maintain full light output on surviving lamps if one or more lamps fail.

2.07 CONDUIT

- A. General

The Contractor shall furnish and install conduits as required. If sizes are not indicated or mentioned, conduits shall be sized as per New York City Electrical Code.

- B. Underground Conduit

- 1. All conduits installed underground shall be no less than 1 1/2" nominal size. The work shall include all necessary excavation, foundations, drilling, backfilling and restoration of disturbed areas to their original condition.
- 2. Conduit shall be laid in a uniform manner, properly spaced and graded without traps so that all condensation will drain into the nearest box.
- 3. All conduits for underground installation shall be installed in trenches not less than 24" below final grade.

4. During construction, proper support and protection shall be provided to prevent injury to conduit and all ends shall be closed to prevent water and foreign matter from entering the conduit system.
 5. Conduit end shall extend above lighting standard (lamp post) concrete foundation at least 2" but not more than 8" and be equipped with an approved grounding bushing which shall be bonded to lamp post.
 6. All conduits for installation underground or in concrete shall be 40 MIL (0.404) PVC coated rigid galvanized steel. The conduit shall be joined with screw couplings. The joints shall be made up so that ends butt together. Conduit shall be free from blisters, cracks, or injurious defects and shall be reamed at each end. All bends are to be free from kinks and be of such curvature as to permit the drawing in of cable without injury. Conduit shall have standard pipe taper threads, clean-cut, straight and true. The threads shall be protected during transit and installation and shall be of sufficient length to permit the proper coupling connection. Long running threads will not be permitted on any part of the work. When necessary, the Contractor shall use three piece (Erickson) coupling or equal. PVC coated conduit system is manufactured by Robroy Industries
 7. Plastic Bond, Perma - Cote rigid steel conduit and Ocal 2 rigid steel conduit by Occidental Coating Co. is considered acceptable. Conduit shall comply with Federal Specification WW-C581, latest revision.
 8. Three-piece couplings, when used, shall be covered with four layers of lapped plastic electrical tape which shall extend over the coupling for a distance of one pipe diameter or 2", whichever is less, and each layer including the final one, shall be completely coated with an air dry vinyl chloride touch-up compound.
- C. Conduit for Installation on Building Exterior
1. The Conduit and fittings shall be as specified in the paragraph for "PVC coated rigid galvanized conduit"
 2. Conduit shall be installed on the surface of the masonry ceilings or walls and fastened thereto with one hole, steel straps, expansion shield anchors 10-24 round head machine screws or 3/16" toggle bolts or other means approved by the Authority.
 3. Conduit shall be installed parallel or perpendicular to adjacent walls. Vertical runs shall be plumbed. All bends are to be of equal radius throughout and be free of kinks and flattening. Offsets and saddles shall not exceed 7". Conduit shall be bent to conform to the surface upon which it is fastened. Fastening supports shall not be used to spring conduit to contour of surfaces.
 4. Ninety-degree bends around external corners are not to be used. They shall be made with the use of malleable iron threaded type conduit bodies, type LB or equal.
- D. Conduit for Installation within Building Structure
1. Conduit shall be installed on the surface of the masonry ceilings or walls and fastened thereto with one hole, steel straps, expansion shield anchors 10-24 round head machine screws or 3/16" toggle bolts or other means approved by the Authority.
 2. Conduit shall be installed parallel or perpendicular to adjacent walls. Vertical runs shall be plumbed. All bends are to be of equal radius throughout and be free of kinks and flattening. Offsets and saddles shall not exceed 7". Conduit shall be bent to conform to the surface upon which it is fastened. Fastening supports shall not be used to spring conduit to contour of surfaces.
 3. Offsets shall be used where conduit enters outlet, junction boxes, or distribution panels and shall be fastened thereto with malleable iron lock nuts and bushings.
 4. Ninety-degree bends around external corners are not to be used. They shall be made with the use of malleable iron threaded type conduit bodies, type LB or equal.
 5. Adjustable extension boxes or collars shall be used to extend existing flush mounted junction of outlet boxes.
 6. All above ground conduit shall be Rigid Galvanized Steel (RGS) for permanent installation. No EMT conduit shall be installed for permanent installation. EMT conduit can be install only for temporary installation.

2.08 FUSES AND GROUNDING

- A. Fuses for the protection of circuit's conductors shall not exceed 20 amperes.
- B. Aluminum poles shall be grounded to the end of conduit runs. Bonding conductor shall be #10 AWG bare copper wire. The connection of bonding conductor to the conduit shall be done by means of a bushing equipped with a ground connection lug.
- C. Provide ¾" x 10'-0" long copper clad grounding rod with an exothermic connection. Refer to details for further information.

2.09 JUNCTION BOX

- A. The box shall be for flush mounting in pavement (able to withstand heavy vehicular traffic) or planted/soil area. The cover shall have non-slip surface with flat neoprene gasket attached. The cover shall be secured with stainless steel hex head cap screws. The junction box shall be sized according to the NYC ELECTRICAL CODE. Provide identification as required.
- B. Junction box shall be APPLETON, W series, heavy duty, cast iron. Maximum size 12" long, 12" wide and 5" deep. Or equal.
- C. Provide Junction Box minimum every 300' (three hundred feet).

2.10 EXCAVATION BACKFILL – RESTORATION

- A. The Contractor shall provide all necessary labor and equipment to excavate as necessary for installation of concrete light pole foundations and trenches for underground conduits. Excavation below required depth shall be refilled with sand or gravel firmly compacted.
- B. Where conduits are laid under the locations of walkways, driveways, hard surface areas or street improvements, backfill shall be thoroughly compacted-tamping in layers not more than 4" in thickness. Conduit under walkways of width 10 feet or less shall be installed by tunneling under and without breaking the walkway concrete surface.
- C. The excavation shall be rough graded to a depth matching adjacent grades. They shall be raked and left in a clean condition. Within 24 hours of back filling of each excavation, the Contractor shall remove any debris, excess earth and materials occasioned by his use of the site.
- D. Sidewalks, walls, and pavement shall be restored with material equal to that of the adjacent sidewalks, walls, or pavement. This work shall be restored as soon as practicable. Should the walkway to be restored be of cement, concrete composition, or other type, made up in flag or slab fashion, the Contractor shall be required to restore said flag or slab in whole.
- E. All plantings in the way of excavations shall be removed and replaced by contractor. The Contractor shall notify the development superintendent one (1) week in advance of excavation work.
- F. Width of all trenches shall not exceed 14". Trenches dug near trees shall be no closer to tree than six (6') feet away plus one (1') foot for every one (1") inch of tree caliper. Caliper measurement shall be made twelve (12") above grade.
- G. Openings in foundation walls shall be grouted and/or filled with concrete to the full depth of the wall. All openings shall be made watertight by parging on the outside with mastic.
- H.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.

- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Install products according to manufacturer's instructions.
- B. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship) and NECA/IESNA 501 (exterior lighting).
- C. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- D. Install accessories furnished with each luminaire.
- E. Bond products and metal accessories to branch circuit equipment grounding conductor.
- F. Install lamps in each luminaire.

3.04 FIELD QUALITY CONTROL

- A. Inspect each product for damage and defects.
- B. Operate each luminaire after installation and connection to verify proper operation.
- C. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.
- D.

3.05 CLEANING

- A. Clean surfaces according to NECA/IESNA 501 and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.06 PROTECTION

- A. Protect installed luminaires from subsequent construction operations.

END OF SECTION 26 56 00.01