SECTION 265600

EXTERIOR LIGHTING

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**NOTE TO SPECIFIER**

*Use this Specification Section for Mail Processing Facilities.*

***This is a Type 3 Specification with primarily required text; therefore, most of the text cannot be edited, but there is editable text which is noted within the Section with a “Note to Specifier.” Do not revise the required paragraphs without an approved Deviation from USPS Headquarters, Facilities Program Management, through the USPS Project Manager.***

*For Design/Build projects, do not delete the Notes to Specifier in this Section so that they may be available to Design/Build entity when preparing the Construction Documents.*

*For the Design/Build entity, this specification is intended as a guide for the Architect/Engineer preparing the Construction Documents.*

*The MPF specifications may also be used for Design/Bid/Build projects. In either case, it is the responsibility of the design professional to edit the Specifications Sections as appropriate for the project.*

*Text shown in brackets must be modified as needed for project specific requirements.* *See the “Using the USPS Guide Specifications” document in Folder C for more information.*

*The last date that USPS revised this standard specification section occurs in two places, at the end of this section and in the Table of Contents. If the date in this section matches the date in the Table of Contents, then you are using the latest version. Do not delete or revise the “last revised” date at the end of the section during the development of the Project Manual.*

*The footer in this section should be edited to replace the text, “USPS MPF SPECIFICATION” with the project name, and the blank date in the center should be replaced with the submission date, for interim design reviews, or the issue date of the completed Project Manual.*

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1. GENERAL
	1. SUMMARY
		1. Section Includes:
			1. Exterior luminaires and accessories.
			2. Poles.
			3. Ballast/Drivers.
		2. Substitutions:
			1. Section 016000 – Product Requirements: Product substitutions permitted by manufacturers listed in Paragraph 2.1A.
		3. Related Documents: The Contract Documents, as defined in Section 011000 - Summary of Work, apply to the work of this section. Additional requirements and information necessary to complete the work of this section may be found in other documents.
		4. Related Sections
			1. Section 033000 - Cast-in-Place Concrete: Concrete for pole foundation.
			2. Section 260500 - Common Work Results for Electrical: Basic electrical methods.
			3. Section 260623 - Lighting Control Devices.
	2. REFERENCES
		1. As referenced in Section 260500 – Common Work Results for Electrical.
		2. Illuminating Engineering Society North America (IESNA):
			1. IESNA RP-8 - Recommended Practice for Roadway Lighting.
			2. IESNA RP-20 – Recommended Practice for Lighting for Parking Facilities.
			3. IESNA RP-33 - Recommended Practice for Lighting for Exterior Environments.
		3. Federal Communications Commission Parts 18.305, 18.307 (EMI RFI).
		4. American Society of Heating, Refrigerating and Air Conditioning, Inc.
			1. ANSI/ ASHRAE/ IES Standard 90.1.
	3. SUBMITTALS
		1. As specified in Section 260500 – Common Work Results for Electrical.
			1. Product Data:
				1. Luminaire dimensions, ratings, and performance data.
				2. Complete computer data printout of illumination levels based on a 5 by 5 foot grid pattern.
			2. Shop Drawings:
				1. Indicate dimensions and components for each luminaire which is not a standard Product of the manufacturer.
				2. Indicate illumination levels in accordance with layout and scheduled luminaires indicated on Drawings.
	4. QUALITY ASSURANCE
		1. As specified in Section 260500 – Common Work Results for Electrical.
	5. DELIVERY, STORAGE, AND HANDLING
		1. As specified in Section 260500 – Common Work Results for Electrical.
	6. MAINTENANCE
		1. Section 017704 – Closeout Procedures and Training: Procedures for closeout submittals.
		2. Extra Products: At completion of installation, deliver to the USPS Project Manager.
			1. Each component type: Provide quantity for each unique ballast/driver, [surge protector] and LED array equal to 2 percent of luminaire total, but not less than two of each type.
2. PRODUCTS
	1. LUMINAIRE MANUFACTURERS
		1. Subject to compliance with project requirements, manufacturers offering Products which may be incorporated in the Work include the following:
			1. Alphabet Lighting, Tustin, CA (714) 259-9959.
			2. Architectural Landscape Lighting, Santa Ana, CA 92704 (714) 668-1107.
			3. Barron Lighting Group (Trace-Lite), Phoenix, AZ 85027 (888) 533-3948.
			4. Bronzelite Commercial Landscape Lighting, (800) 273-1569.
			5. CGF Design Inc., Morton Grove, IL (847) 815-5079.
			6. Cooper Lighting (Invue, Lumark, Lumiere, Portfolio, McGraw-Edison, Portfolio), Peachtree City, GA (770)486-4800.
			7. Deco Lighting, Commerce, CA (800) 613-3326.
			8. Gardco/Philips Lighting, San Leandro, CA (800) 227-0758.
			9. GE Lighting Systems, Charlotte, NC (803) 462-2016.
			10. Gotham Lighting, Conyers, GA (800) 315-4982.
			11. Hadco Lighting, Littlestown, PA (717) 359-7131.
			12. H.E. Williams, Carthage, MO (417) 358-4065.
			13. Holophane, Newark, OH (740) 345-9631.
			14. Hydrel Architectural and Landscape Products, Sylmar, CA 91342 (818) 362-9465.
			15. Hubbell Lighting, Inc., (KIM, Spaulding,) Spartanburg, SC (864) 599-6000.
			16. Intense Lighting, Anaheim, CA (800) 961-5322.
			17. Kenall Manufacturing, Gurnee, IL (847) 360-8200.
			18. Kim Lighting, City of Industry, CA (626) 968-5666.
			19. Kirlin Lighting, Detroit, MI (313) 259-6400.
			20. Ligman Lighting USA, Hillsboro, OR (503) 645-0500.
			21. Lithonia Lighting, Conyers, GA (770) 922-9000.
			22. LSI Industries, Cincinnati, OH 513) 793-3200.
			23. McPhilben Lighting, San Leandro, CA (510) 357-6900.
			24. Pathway Lighting, Old Saybrook, CT (800) 342-0592.
			25. Quality Lighting, Franklin Park, IL (847) 451-0090.
			26. Visionaire Lighting, Rancho Dominguez, CA (310) 512-6480.
			27. Wide-Lite, San Marcos, TX (512) 392-5821.

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**NOTE TO SPECIFIER**

**REQUIRED: Only include the luminaires types below required for the specific project scope. Do not modify the luminaire types, only delete those types not needed for the project.**

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* 1. Luminaire Types
		1. Type MH3 (exterior): Lithonia #MRWLED-XX-40K-SRX-MVOLT.
			1. Description: 18 inch diameter half cylinder wall mounted full cut-off, solid state, LED luminaire. Lens door is fully gasketed with one-piece solid silicone and UL listed for wet locations.
			2. Lens: Precision molded acrylic.
			3. Housing: Die-cast single piece aluminum housing. Finish by the USPS Project Manager.
			4. Ballast/Driver: 20W at 2200 Lumen, 29W at 3000 Lumen, 40W at 4500 Lumen or 61W at 6000 Lumen. Wattage based on lumen package selected.
			5. Mounting: Surface wall.
			6. Voltage: [277] [120].
			7. Lamp: 2200 Lumen, 3000 Lumen, 4500 Lumen or 6000 Lumen LED array; 4000K, 60,000 hours @ LLC = 0.9.
			8. Label: UL listed for wet locations; IP65 rated.
			9. Warranty: Full five (5) year factory replacement warranty (internal components).
			10. Alternate Manufacturers:
				1. Gardco/Philips #104L-XXL-XXX-NW-G1-X.
				2. Hubbell #QSP2-XXL-XX-4K7-UNV-DBT.
				3. Lithonia #WSRLED-XX-40K-SRX.
				4. McGraw Edison #ISS-AF-XXX-LED-E1-XXX.
				5. Barron Trace-Lite #TLED111P-XX-VS.
				6. Deco Lighting #D440-LED-XX-40-UNV-D-XX.
				7. Substitution permitted: As listed in Paragraph 2.1A.

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**NOTE TO SPECIFIER**

Utilize luminaire PL1 for illumination under dock, platform, carrier, and fuel pump service island canopies. Luminaire shall be mounted a minimum of 12 feet above floor level within Class 1 locations (NEC 511.7).

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* + 1. Type PL1 (exterior): Lithonia #DSXCSLED-XXC-XXXX-40K-T5M-MVOLT-SRM.
			1. Description: Low profile, square, full cut-off canopy light U.L. listed for wet locations.
			2. Housing/Lens: Die-cast aluminum housing with tempered, flat glass lens and pressure stabilizing vent. Finish by USPS Project Manager.
			3. Ballast/Driver: 26W at 2700 Lumen thru 107W at 11,000 Lumen. Wattage based on lumen package selected.
			4. Mounting: [Surface mounted with recessed outlet box.][Surface mounted with surface box.]
			5. Lamp: 2700 Lumen thru 11,000 Lumen LED array; 4000K, 60,000 hours; LLD=0.85.
			6. Voltage: [277] [120].
			7. Label: U.L. listed for wet locations; IP66 rated with 5-year factory warranty.
			8. Alternate manufacturers:
				1. Philips/Gardco #SFCX-DD-5W-48L-XXX-NW-G2.
				2. Deco Lighting #D533-PRO-XXX-XX-40-U-5-SU.
				3. Deco Lighting #533R-PRO-XX-40-U-5 (recessed only).
				4. McGraw-Edison #CNC-XXX-LED-E1-XX.
				5. McGraw-Edison #LRC-B-XX-X-LED-E1-XXX (recessed only).
				6. Substitution permitted: As listed in Paragraph 2.1A.
		2. Type PL2 (exterior): Lumark #XTORXB-W-XX.
			1. Description: Slim, low profile, wall mounted, full cut-off LED luminaire. U.L. listed for wet locations.
			2. Housing/Lens: Die-cast aluminum housing with flat glass bottom lens.
			3. Ballast/Driver: 12W at 1400 Lumen, 18W at 2100 Lumen, 26W at 2700 Lumen or 38W at 4200 Lumen. Wattage based on lumen package selected.
			4. Mounting: Surface, wall mounted with recessed outlet box - 4 inch profile.
			5. Lamp: 1400 Lumen, 2100 Lumen, 2700 Lumen or 4200 Lumen LED array; 4000K, 72,000 hours; LLD=0.90.
			6. Voltage: [277] [120].
			7. Label: U.L. listed for wet locations; 5 year factory warranty.
			8. Alternate manufacturers:
				1. Hubbell #SG1-XX-4K7-FT-UNV Series.
				2. Substitution permitted: As listed in Paragraph 2.1A.
		3. Type PL3 (exterior): Gotham #EVO6-40/XXX-WR-MD-MVOLT-EZ1.
			1. Description: Recessed 6 inch diameter aperture LED downlight.
			2. Reflector: Low brightness white painted, self-flanged reflector.
			3. Ballast/Driver: 10W at 1000 Lumen thru 176W at 17,500 Lumen. Wattage based on lumen package selected.
			4. Mounting Frame: Frame to be 18 gauge galvanized steel ring. Mounting ring shall be secured to ceiling hangers (supplied with luminaire). NOTE: Luminaire frame to be supported from the structure by at least two opposing corners.
			5. Junction Box: Junction box to be code approved for through wiring. Junction box to be secured to the mounting ring and accessible from two sides. Junction box to be pre-wired and accessible per code through the ceiling trim opening.
			6. Mounting: 28 inch ‘C’ channel mounting bars and flange kit for drywall ceilings.
			7. Voltage: [277] [120].
			8. Lamp: 1000 Lumen thru 17,500 Lumen LED array; 4000K, 60,000 hours at LLD = 0.7.
			9. Label: U.L. listed for damp locations; 5-year factory warranty.
			10. Alternate Manufacturers:
				1. Portfolio #LD6BXXD010-EU6B Series.
				2. Prescolite #LTR-6RD-H-XX-XXL-DM1 LTR-6RD-T-XX-40K-8-MD-WC.
				3. Substitution permitted: As listed in Paragraph 2.1A.
		4. Type PL4 (exterior): Kenall MR13XL-PP-XX-XXL40K-DV.
			1. Description: 13 inch diameter, low profile, round, wall mounted, full cut-off LED luminaire.
			2. Reflector: High efficiency, semi-specular aluminum.
			3. Lens: Pearlescent, U.V. stabilized, high impact resistant, virgin injection molded polycarbonate.
			4. Finish: Finish by the USPS Project Manager.
			5. Recessed Housing: 18 gauge, cold rolled steel.
			6. Ballast/Driver: 13W at 1100 Lumen or 24W at 2200 Lumen. Wattage based on lumen package selected.
			7. Mounting: Semi-recessed, wall mounted; A.D.A. compliant.
			8. Voltage: [277] [120].
			9. Lamp: 1100 Lumen or 2200 Lumen LED array; 4000K, 60,000 hours at LLD = 0.7.
			10. Label: U.L. listed for damp locations; 5-year factory warranty.
			11. Alternate manufacturers:
				1. Cooper/Fail-Safe #TRX-15-LD4-XXW-40-OPL-XX-UNV-ED-C1.
				2. KIM #WF31X-X-XXL4KUV Series.
				3. CGF Design #GB-4-LEDXX-CT4-UNV-XX-FRO-0-10D Series.
				4. Substitution permitted: As listed in Paragraph 2.1A.
		5. TYPE PL5: Lithonia #LDN6CYL-40/XX-L06-WR-MVOLT-EZ.
			1. Description: Pendant 6 inch diameter, aperture LED downlight.
			2. Reflector: Low brightness, matte-diffused, clear specular alzak finish.
			3. Housing: Heavy gauge aluminum cylinder, finished white. Pendant hung on a 24 inch stem with a swivel canopy.
			4. Ballast/Driver: 6W at 530 Lumen thru 58W at 5000 Lumen. Wattage based on lumen package selected.
			5. Mounting: Pendant or surface mounted.
			6. Voltage: [277] [120].
			7. Lamp: 530 Lumen thru 5000 Lumen LED array; 4000K, 60,000 hours at LLD = 0.7.
			8. Label: U.L. listed for wet locations; 5-year factory warranty.
			9. Alternate manufacturers:
				1. Prescolite #LTC-6RD-X-XXL-40K-8-MD-DM1-SS-XX.
				2. Pathway #C68XLB79V-XX-4K Series.
				3. Kirlin #LSR-12484-XXXL-XXX-D1-41K Series.
				4. Portfolio #LER6B Series.
				5. Substitution permitted: As listed in Paragraph 2.1A.
		6. Type SB1: Kim #VRB1-LED-20L-4K-UV-XX.
			1. Description: 6 inches x 42 inches high aluminum domed top round LED bollard with flared cone.
			2. Reflector: Anodized aluminum upper reflector with spun anodized aluminum flared cone
			3. Housing: extruded, one piece aluminum, 0.156 inch wall thickness. Top cover is a weldment of 0.125 inch wall extrusion and 0.25 inch top plate. Finish by the USPS Project Manager.
			4. Ballast/Driver: 13W at 1000 Lumen, LED light engine.
			5. Mounting: Four 1/2-inch x 11 inches anchor bolts with double nuts and washers, included.
			6. Voltage: [277]. [120].
			7. Lamp: 1000 Lumen LED array; 4000K, 60,000 hours at LLD = 0.7.
			8. Label: U.L. listed for wet locations; 5-year factory warranty.
			9. Alternate Manufacturers:
				1. Gardco/Philips #BRM832-42-XXXL-XXX-NW-G2 Series.
				2. Substitution permitted: As listed in Paragraph 2.1A.
		7. Type SF1: LSI #XIGB-LED-19-350-NW-UE-SP10-SVG-XXX.
			1. Description: Round, direct burial spotlight to illuminate flagpole (3 required).
			2. Reflector: 10 degree beam pattern, specular aluminum spun reflector.
			3. Housing: Single piece, compression-molded, composite housing with integral junction box and brass trim ring.
			4. External Lens: 1/4-inch thick, slip-resistant walk-over, clear high-impact tempered glass lens with cast aluminum directional shield.
			5. Internal Lens and Gasket: Clear, high-impact, tempered glass lens with silicone gasket.
			6. Ballast/Driver: 22W at 2159 Lumen, 350 mA, LED array.
			7. Mounting: Direct burial mounting. Provide [6 inch deep gravel bed] [cast in-place rough-in housing].
			8. Voltage: [480] [277].
			9. Lamp: 2159 Lumen LED array; 4000K, 60,000 hours at LLD = -0.7.
			10. Label: UL listed for wet locations; 5-year factory warranty.
			11. Alternate Manufacturers:
				1. Kim #LTV81FF-SP-36L-4K-UV-SR.
				2. Ligman Lighting #UKI60781-30WLED-N-W40-UNV-A61312.
				3. Hydrel #M9720C-B-LED-XX-40K-MVOLT-NSP-FLCAS.
				4. Substitution permitted: As listed in Paragraph 2.1 A.
		8. Type SP1: Lithonia #DSX0LED-PX-40K-TXX-XVOLT-SPA.
			1. Description: 13 inch W x 26 inch L x 3 inch H, low profile, rectilinear architectural arm-mounted sharp cut-off, solid state, LED luminaire.
			2. Reflector: Anodized segmented reflectors, beam distribution as required.
			3. Housing: Rugged aluminum rectilinear housing with all seams continuously welded for integrity. Corrosion-resistant polyester powder coat. Finish by the USPS Project Manager.
			4. Ballast/Driver: 38W at 4700 Lumen thru 166W at 18,000+ Lumen. Wattage based on lumen package selected.
			5. Mounting: 20 to 25 feet high square, tapered aluminum pole.
			6. Voltage: [480] [277].
			7. Lamp: 4700 Lumen thru 18,000+ Lumen LED array; 4000K, 60,000 hours @ LLD = 0.7.
			8. Quantity of luminaires per pole as shown on the design drawings.
			9. Published Life: 60,000 hours at 70 percent lumen depreciation.
			10. Label: UL listed for wet locations.
			11. Warranty: Full five (5) year factory replacement warranty (internal components).
			12. Alternate Manufacturers:
				1. Hubbell #ASL1-XXXL-XXX-4K7-X-UNV-A-XXX.
				2. McGraw-Edison #GLEON-SAXX-740 Series.
				3. Substitution permitted: As listed in Paragraph 2.1 A.
		9. Type SP2: Lithonia #DSX1LED-PX-40K-TXX-XVOLT-SPA.
			1. Description: 13 inch W x 33 inch L x 3-1/2 inch H, large, low profile, rectilinear architectural arm-mounted full cut-off, solid state, LED luminaire.
			2. Reflector: Anodized segmented reflectors. Beam distribution as required.
			3. Housing: Rugged aluminum rectilinear housing with all seams continuously welded for integrity. Corrosion-resistant polyester powder coat. Finish by contracting officer through the USPS Project Manager.
			4. Ballast/Driver: 54W at 7000 Lumen thru 241W at 27,000+ Lumen. Wattage based on lumen package selected.
			5. Mounting: 20 to 25 feet high, square, tapered aluminum pole.
			6. Voltage: [480] [277].
			7. Lamp: 7000 Lumen to 27,000+ Lumen LED array; 4000K, 60,000 hours @ LLD = 0.7.
			8. Quantity of luminaires per pole as shown on the design drawings.
			9. Label: UL listed for wet locations.
			10. Warranty: Full five (5) year factory replacement warranty (internal components).
			11. Alternate Manufacturers:
				1. Hubbell #ASLX-XXXL-XXX-4K7-X-UNV-A-XXX .
				2. McGraw-Edison #GLEON-SAXX-740 Series.
				3. Substitution permitted: As listed in Paragraph 2.1 A.
		10. Type SP5: Lithonia #DSX0LED-PX-40K-TXX-XVOLT-SPA.
			1. Description: 13 inch W x 26 inch L x 3 inch H, low profile, rectilinear architectural arm-mounted full cut-off, solid state, LED luminaire.
			2. Reflector: Anodized segmented reflectors. Beam distribution as required.
			3. Housing: Rugged aluminum rectilinear housing with all seams continuously welded for integrity. Corrosion-resistant polyester powder coat. Finish by contracting officer through the USPS Project Manager.
			4. Ballast/Driver: 38W at 4700 Lumen thru 166W at 18,000+ Lumen, 1000 mA.
			5. Mounting: 12 to 15 feet high, square aluminum pole.
			6. Voltage: [480] [277].
			7. Lamp: 4700 Lumen thru 18,000+ Lumen LED array; 4000K, 60,000 hours @ LLD = 0.7.
			8. Quantity of luminaires per pole as shown on the design drawings.
			9. Label: UL listed for wet locations.
			10. Warranty: Full five (5) year factory replacement warranty (internal components).
			11. Alternate Manufacturers:
				1. Hubbell #ASL1-XXXL-XXX-4K7-X-UNV-A-XXX.
				2. McGraw-Edison #GLEON-SAXX-740 Series.
				3. Substitutions permitted: As listed in Paragraph 2.1 A.
	1. LUMINAIRES
		1. Provide luminaires as indicated in luminaire schedule and details on project plans. Provide luminaires complete with light sources of quantity, type and wattage indicated. Provide all luminaires of the same type by the same manufacturer. Luminaires must be specifically designed for use with the driver or ballast and light source provided.
		2. LED Luminaires:
			1. Install ballast/drivers, LED arrays and specified accessories at the factory.
			2. Luminaires must have a minimum 5 year manufacturer's warranty.
			3. Luminaires must have a minimum L70 lumen maintenance value of 50,000 hours as calculated by IES TM-21, with data obtained per IES LM-80 requirements.
			4. All luminaires shall be fused. Locate fuses within handhole of pole for pole mounted luminaires.
			5. Voltage: [480] [277] [208] [120].

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**NOTE TO SPECIFIER**

Include Paragraph 2.3 B.6. below, if the lightning risk assessment calculation deems a building lightning protection system is required.

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* + - 1. Provide individual surge protectors within handhole of each pole mounted luminaire. Branch circuit breakers feeding pole mounted luminaires shall also be equipped with surge protection.
	1. LED DRIVERS
		1. NEMA SSL 1, UL 8750. LED drivers must be electronic, UL Class 1, constant-current type and comply with the following requirements:
			1. Output power (watts)and luminous flux (lumens) as shown in luminaire schedule for each luminaire type to meet minimum luminaire efficacy (LE) value provided.
			2. Power Factor (PF) greater than or equal to 0.9 over the full dimming range when provided.
			3. Current draw Total Harmonic Distortion (THD) of less than 20 percent.
			4. Class A sound rating.
			5. Operable at input voltage of 120-277 volts at 60 hertz.
			6. Minimum 5-year manufacturer's warranty.
			7. RoHS compliant.
			8. Integral thermal protection that reduces or eliminates the output power if case temperature exceeds a value detrimental to the driver.
			9. UL listed for wet locations typical of exterior installations.
			10. LED driver shall tolerate sustained open circuit and short circuit output conditions without damage.
			11. LED driver shall comply with the requirements of the FCC rules and regulations, Title 47 CFR Part 15 Non-Consumer (Class A).
	2. LIGHT SOURCES
		1. NEMA ANSLG C78.377, NEMA SSL 3. Provide type and wattage as indicated in luminaire schedule on project plans.
		2. LED arrays shall have a correlated color temperature (CCT) of 4000K; minimum color rendering index (CRI) value of 70.
		3. High power, white light output utilizing phosphor conversion (PC) process or mixed system of colored LEDs, typically red, green and blue (RGB).
		4. Provide light source color consistency by utilizing a binning tolerance within a 4 step McAdam ellipse.
	3. EQUIPMENT IDENTIFICATION
		1. Each item of equipment must have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.
		2. Provide labeled luminaires in accordance with UL 1598 requirements. All luminaires must be clearly marked for operation of specific light sources and ballasts or drivers. Note the following light source characteristics in the format "Use Only \_\_\_\_\_".
		3. Correlated color temperature (CCT) and color rendering index (CRI) for all luminaires.
		4. All markings related to light source type must be clear and located to be readily visible to service personnel, but unseen from normal viewing angles when light sources are in place. Drivers must have clear markings indicating multi-level outputs and indicate proper terminals for the various outputs.

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**NOTE TO SPECIFIER**

Pole height listed as basis of design. Edit to suit site conditions or comply with jurisdictional requirements. Pole manufacturer to match pole mounted luminaries selected.

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* 1. POLES
		1. Manufacturers:
			1. Section 016000 - Product Requirements: Product substitutions permitted by manufacturers listed in Paragraph 2.1A.
		2. Material and Finish: Aluminum. Finish by the USPS Project Manager.
		3. Section Shape [straight or tapered] [round or square].
		4. Height: [15 feet] [20 feet] [25 feet].
		5. Base: Nonbreakaway.
		6. Accessories:
			1. Handhole.
			2. Anchor bolts.
			3. Base cover.
			4. Bolt covers.
			5. Ground rod and conductor.

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**NOTE TO SPECIFIER**

Edit for Wind Loading.

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* + 1. Approximate Loading Capacity Ratings:
			1. Luminaire Weight: [16 pounds].
			2. Luminaire and Bracket Effective Projected Area: [1 square feet].
			3. Steady Wind: [90] [ \_\_\_ ] miles per hour minimum, with gust factor of [1.3] [ \_\_\_ ].
1. EXECUTION
	1. INSTALLATION
		1. Provide 3000 PSI minimum concrete for lighting poles bases at locations indicated, in accordance with Section 033000 and details shown on drawings.
		2. Install poles plumb. Provide double nuts to adjust plumb. Grout around each base and provide bolt covers.
		3. Bond luminaires, metal accessories and metal poles to branch circuit equipment grounding conductor. Provide supplementary 3/4 inch x 10 foot copper clad rod with #2/AWG/copper grounding electrode conductor at each pole.
	2. FIELD QUALITY CONTROL
		1. Conform to Section 014000: Quality Requirements.
		2. Operate each luminaire after installation and connection. Inspect for improper connections and operation.
		3. Measure illumination levels to verify conformance with layout and performance requirements.
		4. Take measurements during night sky, without moon or with heavy overcast clouds effectively obscuring moon.
	3. ADJUSTING
		1. Aim and adjust luminaires to provide illumination levels and distribution as directed.
	4. CLEANING
		1. Conform to Section 017300 -Execution: Cleaning and protecting installed work.
		2. Clean electrical parts to remove conductive and deleterious materials.
		3. Remove dirt and debris from enclosure, pole, and base.
		4. Clean photometric control surfaces as recommended by manufacturer.
		5. Clean finishes and touch up damage.
	5. protection of finished work
		1. Conform to Section 017300 – Execution: Protecting installed work.

END OF SECTION

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