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8401 Laguna Palms Way
Elk Grove, California 95758



Modification or Addition to Improvement Standards and Details

Modification Number: **2016-01**

Effective Date: **August 15, 2016**

Modification:

The following Sections of the City Improvement Standards, Construction Specifications, and Standard Drawings are revised to read in their entirety as reflected in the attached.

- Section 5-7 Street Light Type
- Section 5-8 Street Light Design Details
- Section 49-6.01 Lighting – Light Emitting Diodes Luminaires
- Section 49-6.02 Lighting – Lamps and Ballasts
- Standard Drawings – SL Drawings revised to replace HPS with LED and add an Approved Equipment List

This modification shall only apply to projects in which improvement and landscape plans have not been accepted by the City as of the Effective Date unless otherwise deemed necessary by the Public Works Director, but may be applied to any project if the Applicant so elects.

Effect of Modification:

1. This modification requires all new development to install LED type lighting as part of any new or expanded street lighting system.
2. Requires that all development projects installing decorative type lights provide at least one spare streetlight assembly (electrolier, luminaire, glassware, etc.) to the City for future street light replacement.
3. Requires identification numbering to be placed on all street light poles.
4. Allows for variable conductor sizes based upon supporting data and calculations provided as part of a proposed street light design and approved by the City.


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Request for Modification Initiated By:


Development Engineering Manager

8/11/16
Date

Modification Reviewed for Conformity and
Consistency to Standards:


Public Works Engineering Services Manager

8/18/16
Date

Modification to Improvement Standards Approved:


Public Works Director

8/18/16
Date

5-7 STREET LIGHT TYPE

A. Lighting Type Areas - Street light poles and fixtures shall conform to the designated type depending on the location within Elk Grove.

1. Laguna West (LW) – Selected areas west of the Union Pacific Railroad alignment (approximately 300 feet west of Franklin Road); north of and including Elk Grove Blvd; south of and including Laguna Blvd; and east of Harbour Point Drive.
2. Old Town (OT) – Elk Grove Boulevard between Elk Grove-Florin Road and Waterman Road
3. Zone 2 – Area south of Elk Grove Boulevard; east of Bruceville Road; north of Kammerer and west of Route 99; excluding the Auto Mall area bounded by Laguna Grove Drive and Elk Grove Boulevard.
4. Common [non-decorative] (CT) – All other areas within Elk Grove.

Street lighting designs shall reference the type of light shown in the Standard Drawings and the City's Approved Equipment List for the project location.

B. Decorative Street Lights

1. Decorative streetlights must be approved during the planning process in the City General Plan or specific plan.
2. When decorative type streetlights are designated by type in these standards or in an approved City plan not yet incorporated into these standards, the developer shall supply additional complete streetlight assemblies (electrolier, luminaire, glassware, etc.) to the City for future street light replacement. The minimum number of replacement street lights (spares), by series and type, to be supplied to the City shall be 2% of the lights being installed with any fractional percent rounded up to the next whole number. Developments with less than 10 streetlights in total shall provide 1 spare. A note shall be included on the street light plan sheet indicating the requirement for spares as detailed above.
3. The developer shall be required to submit design calculations for the foundation, and pole spacing, including photometric calculations and plots from an appropriate computer program, if not already provided in these standards.

C. Equipment Type

Materials and equipment shall be purchased as required to meet these standards:

1. Specified Manufacturer(s): Where specific manufacturers are specified in these standards for streetlights in a particular zone, the City has determined that for ensuring aesthetics and durability, minimizing inventory costs, and expediting repairs, standardization is in its' best interest.

2. Substitutions: Substitutions will not be considered for a particular project. If a distributor or manufacturer has a streetlight product with the exact same visual appearance specified for a zone; it may submit the item to the City for evaluation. The City may take up to 90 days typically to consider a new streetlight manufacturer. The streetlight assembly will be evaluated against the criteria established by the City Engineer. If the streetlight meets all the criteria and is evaluated essentially the same in appearance, quality, and ease of servicing requirements, it may be added to these specifications at the City Engineer's discretion.

5-8 STREET LIGHT DESIGN DETAILS

Design details for street lights are as follows:

- A. Intersections – Intersections shall have at least one street light. Intersection street light locations and the number required shall conform to Standard Drawings.
- B. Cul-de-sacs – All cul-de-sacs exceeding 130 feet in length, measured from the street light location at the intersection to the right-of-way line at the end of the cul-de-sac, shall have a street light within the bulb. The location of the street light within the bulb shall conform to the Standard Drawings.
- C. Pedestrian Lanes – Street lights shall be placed at both ends of pedestrian lanes.
- D. Spacing – Maximum street light spacing, measured along the street centerline, shall conform to the Standard Drawings, except on arterial and thoroughfare streets with a 1,000-foot or smaller radius horizontal curve, in which case the maximum spacing is 170 feet. Note that light spacing for 84-foot, 108-foot, and 130-foot streets, the spacing dimension is based on one-side of the street and two lights are placed at each longitudinal location (either with poles on opposite sides of the street or tandem poles in the median). Spacing on all other streets is based on a staggered arrangement, and is measured between poles on alternating sides of the street. Maximum spacing may be adjusted as long as illumination criteria are met with approval of the Engineer.
- E. Street Light Poles – All street light poles shall be of galvanized steel except as provided for by Item F below. All pole construction and materials shall conform to the standards outlined in the Standard Construction Specifications, Section 49-2.0, “Standards, Steel Pedestals and Posts”, and the Standard Drawings referenced therein. Pole materials shall be identified on the plans or in the special provisions.

The position of the street light poles shall conform to Standard Drawings. The location and identification number of each pole shall be noted on the plans. Identification numbers are assigned by the City at acceptance of improvement plans.

Identification number of each pole shall be labeled on the pole prior to acceptance by the City. Labels shall be 2” letters and numbers and shall be applied vertically

on the pole top to bottom. The bottom of the lowest letter or number in the ID number shall be ten feet (10') from the ground surface. Pole ID shall face 45 degrees to oncoming motor vehicle traffic.

F. Street Lights on Existing Utility-Owned Poles – Where there are permanent existing (or necessary planned) utility-owned poles adjacent to the roadway, the street lights may be installed upon the utility pole in lieu of the poles required on an exception basis if approved by the Director. Should the utility pole option be requested and authorized, the following shall apply:

1. In the Sacramento Municipal Utility District (SMUD) service area, the developer shall arrange to install City-owned/utility-maintained street lights on existing utility poles in accordance with SMUD Rate SL CODM.
2. Spacing of light shall be varied to meet locations of existing utility poles, but shall not exceed the maximum spacing specified by the Standard Drawings. Street light mounting heights shall be as shown on the Standard Drawings. All luminaires shall have wattages relating to the street classification requirements shown on the Standard Drawings.

G. Luminaires

- a. All street lighting luminaires shall be light emitting diodes (LED) unless otherwise directed by the City. The type of street light and the appropriate wattage shall be specified on the plans. All luminaires shall conform to the standards outlined in the Standard Construction Specifications, Section 49-6.01, "Light Emitting Diode (LED) Luminaires". Light distribution shall be American National Standards Institute (ANSI) Type III, unless otherwise specified by the City, and luminaires shall be cut off-type unless specified otherwise by the Director.

H. Service – All street light systems shall have underground service provided. Service voltage shall be shown on the plans. Service voltage shall be 120 volts, except service voltage may be 277 volts when 120 volt service is not available. A step-down transformer shall be provided when service voltage is not 120 volts. Service points shall be provided within a Public Utility Easement immediately adjacent to the right-of-way, or within the right-of-way, and at a point which is as reasonably near as possible to the serving utility power source. The service point shall be a pull box which is easily accessible to the street frontage. Types of service are as follows:

- a. The Director may approve overhead service in unusual areas when adequate justification is provided for why service cannot be provided underground.
- b. A direct underground service consists of one light being served from a single service point. New lights on developments adjacent to existing development shall connect to the existing service point. The service point shall be a pullbox installed by the developer. See the Standard Drawings for commercial and residential requirements, installation details.

- c. Multiple service is two or more lights being served from a single service point installed by the developer. The service point shall be a pullbox. Multiple systems shall have a service enclosure (can) which is normally located adjacent to the service point, between the service point and the light system. The service enclosure shall conform to the Standard Drawings.
- I. Pullboxes – All pullboxes, including the size, shall be shown and identified on the plans. Pullboxes shall be installed at all locations where more than two conduit runs intersect, where conduit runs are more than 250 feet long, where shown on City Standard Drawings, at critical angle points, at property lines at the end of the required conduit run to the property line (see Section 5-8 L, “Conduit”), behind each light when No. 4 A.W. G. conductors are used, and at such locations ordered by the Director. Normally a No. 3-1/2 pullbox will be allowed when three or fewer conduits of 1-1/4” or smaller size are involved or at the end of the required conduit run to the property line (See Section 5-8 L, “Conduit”).
- J. Conductors – All conductors, including quantity and size, shall be identified on the plans. Unless otherwise specified, conductors shall be single conductor, solid or stranded copper, sized in accordance with these standards and the National Electrical Code.
 - a. On a direct underground service, the minimum conductor shall be No. 8 A.W.G. Smaller conductor sizes may be considered if supporting data and calculations are submitted for review and approved by the Director. In general, no conductor shall be larger than No. 4 A.W.G.
 - b. On multiple service, the minimum conductor size from the service point to the service enclosure shall be No. 8 A.W.G. The size of each conductor from the service enclosure to the luminaries shall be such that the voltage drop along each circuit will not exceed 7% for 2-wire and 6% for 3-wire systems of the service voltage to the farthest luminaire. The service voltage to be used is 120 volts. Calculations shall be submitted substantiating the design criteria for every circuit. Calculations shall also be submitted showing the total load in amperes of each circuit at the service enclosure. See Standard Drawings SL-13 or SL-14 for typical voltage drop calculations.

In a multiple service system, the photo cell shall be connected to the service enclosure with three No. 14 A.W.G. (minimum diameter) conductors.
- K. Photo Cell – A single photo cell receptacle shall be provided on the nearest suitable luminaire to the service enclosure for multiple service systems.
- L. Conduit – All conduit runs, including the size, shall be shown and identified on the plans. The conduit size shall be determined using Standard Drawings SL-15 as a guideline, with the minimum size being 1-1/2” diameter conduit.

The design may include more than two circuits in a conduit if the conductors for each circuit (2-wire) or set of circuits (3-wire) are identified by conductor insulation

which is a solid color or a basic color with a permanent colored strip. The identification strip shall be continuous over the entire length of the conductor.

New development shall install 2” minimum diameter conduit, or larger as required, with one No. 10 A.W.G. stranded pullwire from the last light on each end of the system to the adjacent property line, where the adjacent property has no existing street lighting system.

- M. Electrical Equipment and Work – Control and switching equipment and fusing of all circuits shall meet the requirements of the National Electrical Code, the Basic Electrical Regulations, Title 24, Part 3, of the California Administrative Code, the rules of the National Board of Fire Underwriters, and the City of Elk Grove.



Development Services Department
8401 Laguna Palms Way
Elk Grove, CA 95758

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Approved Equipment List

The following items are approved for use in the City of Elk Grove:

Item No.	LED Street Light Luminaires	City Standard Drawing (Luminaire Type)
1	"AEL" "ATBS-B-MVOLT-R3-NL-P7-SH-RFD174182"	SL-20 (Common Type Electrolier Series A, "Cobrahead")
2	"AEL" "ATBS-F-MVOLT-R3-NL-P7-SH-RFD174181"	
3	"AEL" "ATB0-30BLEDE10-MVOLT-R3-NL-SH-P7-RFD174184"	
4	"AEL" "ATB0-30BLEDE85-MVOLT-R3-NL-SH-P7-RFD174183"	
5	"AEL" "ATB0-30BLEDE13-MVOLT-R3-NL-SH-P7-RFD174187"	
6	"AEL" "245L-10LEDE10-MVOLT-4K-R3-RNA-SH-NL-DM-SPEC RFD174189"	SL-22 (Common Type Electrolier Series B, "Post-top")
7	"HOLOPHANE" "ESLT-150-4K-AS-B-4-P-PSC-DM-R-SPEC RFD174190"	SL-30, SL-31 (Zone 2 Electrolier Dual Arm and Series A, "Pendant Mount")
8	"HOLOPHANE" "ESLT-110-4K-AS-B-4-P-PSC-DM-R-SPEC RFD174851"	SL-31 (Zone 2 Electrolier Series A "Pendant Mount")
9	"HOLOPHANE" "GVD-40-4K-AS-M-B-3-N-N-U-DM-H-PSC-RFD174194"	SL-34 (Zone 2 Electrolier Series B, "Acorn")
10	"HOLOPHANE" "AWDE-60-4K-AS-M-B-3-N-C-U-H-DM-PSC-SPEC RFD175987"	SL-40, SL-42, SL-43 (Laguna West Electrolier Series B and Dual Arm) (Black)
11	"HOLOPHANE" "AWDE-60-4K-AS-M-CMC-3-N-C-U-H-DM-PSC-SPEC RFD175988"	SL-40, SL-42, SL-43 (Laguna West Electrolier Series B and Dual Arm)(Aqua)
12	"HOLOPHANE" "AWDE-60-4K-AS-M-B-3-F-C-B-H-DM-PSC-SPEC RFD175992"	SL-46 (Old Town Electrolier Series B)
	Street Light Poles	
13	"HOLOPHANE" "28' EIGHT SIDED - TAMPER PROOF - AB - TLP52/2-CS/BK (TWO SCROLLS) - FINIAL - TAMPER PROOF HARD WARE HH - (2)WLLF/200-SCA/BK - ESU20AHPMCB4 R"	SL-30 (Zone 2 Electrolier Dual Arm, "Pendant Mount")
14	"HALOPHANE" "28' EIGHT SIDED - TAMPER PROOF - AB - TLP52/1-CS/BK (TWO SCROLLS) - FINIAL - TAMPER PROOF - HARD WARE HH - (2) WLLF/200-SCA/BK - ESU20AHPMCB4 R"	SL-31 (Zone 2 Electrolier Series A, "Pendant Mount")
15	"HALOPHANE" "CH144S4/12-CABK - GVU100HPMTB7NNU H"	SL-34 (Zone 2 Electrolier Series B, "Acorn")

49-6 LIGHTING

Lighting shall conform to Section 86-6, “Lighting”, of the State Specifications, and these Specifications.

49-6.01 Light Emitting Diodes (LED) Luminaires

Light emitting diode (LED) luminaires shall conform to the Specifications noted herein. Isofootcandle diagrams are not required to be shown on the Plans.

A. General

1. Luminaires for street lighting shall be Type III cutoff distribution, unless otherwise specified in these Standards.
2. LED luminaires shall be of the same style and color of existing luminaire types in conformance to the Standard Drawings and Approved Equipment List. Where conflicts exist between Standard Drawings and these specifications, these specifications shall govern.
3. Common Type, Series A (Cobrahead) LED luminaires shall have a slim, low profile design that minimizes wind load requirements ($EPA \leq 1$ SF). Fixture housing shall be constructed from rugged aluminum components. LED drivers shall be mounted in the housing which shall be suitable for wet listed operation (per UL 1508 requirements). A high performance heat-sink shall be specifically designed for LED ‘Street Light’ applications.
4. Finish color shall include an E-coat epoxy primer with an ultra-durable powder topcoat providing excellent resistance to corrosion and ultraviolet degradation and abrasion, exceeding a rating of six per ASTM D1654 after 1,000 hours of testing per ASTM B117. “Laguna West Luminaires” (Standard Drawing SL-43) shall be Aqua Marine, federal standard color #14516.
5. All luminaires and luminaire components, including, but not limited to, lamps, fuses, and housings, shall be new, unused, and of the manufacturer’s latest design and model available at the time the Plans are approved, unless otherwise specified by the City.
6. Luminaires shall have an external label per ANSI C136.15 (Luminaire Field Identification). If applicable, luminaires shall have an internal label per ANSI C136.22 (Internal Labeling of Luminaires).
7. Luminaires and all components shall be UL and/or CSA listed.
8. All wiring shall be neat, bundled, and kept away from excess heat.
9. On some streetlight luminaires, one or more third-party devices may be wired to the photocontrol receptacle or to the same power feed as the luminaire. For example, third-party devices include WiFi equipment and traffic cameras. Manufacturer’s luminaire warranty must allow for such attachments.

B. Mechanical Specifications

1. Luminaire housing components shall be low-copper aluminum, with high performance heat sink(s) designed specifically for LED luminaires. No active cooling features (fans, etc.) are permitted.
2. Luminaire configuration shall allow for modular upgradability and/or field repair of all electrical components (i.e. LED modules, Driver(s), etc.).
3. Luminaire shall have phenolic terminal block for power input suitable for #6 - #14 AWG wire.
4. Luminaire shall have lens gasket designed to prevent entrance of foreign material into the sealed optical system.
5. Luminaire shall allow for:
 - a. Tool-less access to LED Driver compartment
 - b. Unit shall provide tool-free access to all electrical components.
6. For cobrahead luminaires, the Effective Projected Area (EPA) of luminaires shall not exceed 1.0 square feet, and shall withstand 100 mph wind gusts when mounted on a standard 8' aluminum mounting bracket arm without additional reinforcement.
7. Gasket seals shall be designed to prevent intrusion by birds, insects, moisture, and environmental contaminants.
8. Mounting and housing bolts shall be of non-corrosive material.
9. Luminaires shall be weatherproofed and meet the Minimum National Electrical Manufacturers Association (NEMA) Ingress Protection (IP) rating of 55 for the lamp cavity and 24 for the gear cavity.
10. Mechanical design of protruding external surfaces (heat sink fins) shall facilitate hose-down cleaning and discourage debris accumulation.
11. For cobrahead luminaires, refractors or lenses shall be made from UV inhibited high impact optical grade material that is resistant to scratching.
12. The luminaire shall incorporate a heavy duty latching system to keep luminaire closed (no wire latches). Latching system shall be of non-corrosive material.
13. For cobrahead luminaires, total luminaire weight shall be less than 30 pounds.
14. House shield option shall be available for field-installable house-side light control for all luminaires.

C. Electrical Specifications

1. Drivers shall be Class 1. Driver requirements include:
 - a. Electronic
 - b. Input Voltage range 120-277 \pm 10%
 - c. Output Current 0.35A dc – 1.0A dc (+/- 5%)
 - d. Input Frequency 50/60 Hz
 - e. Power Factor >90% at full load
 - f. THD <20% at full load
 - g. Load regulation: +/- 1% from no load to full load
 - h. Output ripple <10%
 - i. Output should be isolated
 - j. Case temperature: rated for -40°C through +80°C
 - k. Overheat protection, self-limited short circuit protection and overload protected
 - l. Primary fused
 - m. Driver Life Rating - less than 0.5% failure rate at 100,000 operating hours (at full rated power and operating ambient temperature of 25°C)
 - n. Rated case temperature suitable for operation in a luminaire operating in the ambient temperatures indicated above.
 - o. Same rated life as the luminaire. If the driver's lifetime is less than that quoted for the luminaire, the driver's lifetime must be used instead.
 - p. Thermally separated from the LED chips.
 - q. Upon receiving a 0-10V signal, LEDs shall dim down to at least 10% power. Driver must include leads to accept a 0–10 V signal.
2. Units to be provided with integral 10 kV surge suppression protection standard, as tested in accordance with ANSI/IEEE C62.41.2 and ANSI standard C136.37.
3. Electromagnetic interference meets the requirements of 47 CFR part 15/18, class A.
4. LED circuitry shall prevent visible flicker to the unaided eye over typical voltage fluctuations.
5. Individual LEDs shall be constructed such that a catastrophic loss or failure of one LED will not result in the loss of the entire luminaire.
6. Units shall have quick disconnect harness to be provided on power feed to driver for ease of maintenance.
7. Luminaire Operating Ambient Range: -40°C to +40°C
8. Active Thermal Monitoring: Both driver and optical unit shall have thermal sensors to detect over-temperature conditions.
9. Off-state power consumption shall be < 0.5 watts, excluding lighting controls.

10. Average rated life of the luminaire and all electrical components shall be greater than or equal to 100,000 hrs.

D. Standards and Tests

1. Luminaire shall meet the requirements of the following standards and tests:
 - a. UL 1598, UL 1598C for retrofit conversion kits, and UL 8750 safety standards.
 - b. IEC60598, IEC62031 and IEC60950 safety standards.
 - c. ASTM B117 500-hour Salt Fog
 - d. ASTM G53 UVB313 1000-hour UV
 - e. IEC60068-2 Thermal Shock
 - f. IEC60068-14 High Temperature / High Humidity
 - g. ANSI C136.31 Vibration
 - h. IEC61000, EN55015 and CISPR15 for radiated emissions and electrical noise.
 - i. FCC Title 47, Part 15
 - j. International Dark-Skies Association BUG ratings
 - k. European Directive on Reduction of Hazardous Substances (RoHS).
 - l. IEEE C62.41.2 Category C-Medium Surge Protection
 - m. NEMA SSL 3-2010, high power white LED binning for general illumination

E. Photometric Performance

1. Minimum average maintained illuminance measured between the project limits on a given roadway shall be in conformance with Standard Drawing SL-2
2. Minimum average maintained illuminance for intersections shall be as follows:
 - a. In urban areas, 1.6 horizontal lux (0.16 fc) on the area normally bounded by the crosswalks, and 6.5 horizontal lux (0.65 fc) at the intersection of centerlines of the entering streets.
 - b. In rural areas, 1.1 horizontal lux on the area normally bounded by the crosswalks, and 3.2 horizontal lux at the intersection of centerlines of the entering streets.
3. Light pattern (distribution) shall be type III, except that “Old Town” decorative luminaires (OTB) shall be type V, or as approved by City.
4. Maximum backlight, uplight, and glare (BUG) ratings per IES TM-15-11 (Luminaire Classification System for Outdoor Luminaires) for the various luminaires shall be as follows:

Luminaire Type	Backlight Rating	Uplight Rating	Glare Rating
Common Type, Series A (Cobrahead)	B2	U0	G2
Common Type, Series B (Post-top mounted)	B1	U3	G1
All Decorative Types	B3	U3	G3

5. Zonal Lumen Density: 100%: 0–90°, ≤10%: 80–90° (DLC qualification)
6. Correlated Color Temperature (CCT) and Color Rendering Index (CRI):
 - a. CCT = 4000K ±300
 - b. CRI ≥ 70 for cobraheads, CRI ≥ 65 for all other luminaire types
7. L70 Lumen Maintenance: 100,000 hrs; using IES LM-80
8. Minimum initial delivered lumens per watt requirements 70 lm/W (DLC qualification; using IES LM-79)

F. Photoelectric Control Devices

1. A 7 pin photocontrol receptacle in full compliance with ANSI C136.41-2013 shall be accessible, installed, and prewired in each luminaire. For cobrahead and Common Type, Series B, post top mounted luminaires, photocontrol receptacles shall be mounted on the top of the fixture.
2. A photocontrol receptacle shorting cap shall be included with each LED luminaire.
3. Photo cell receptacles shall be “long life” with a minimum twenty-year design life. Photoelectric controls shall meet the applicable requirements of the following industry standard: ANSI C136.10-2006 - American National Standard for Roadway and Area Lighting Equipment—Locking-type Photocontrol Devices and Mating Receptacles—Physical and Electrical Interchangeability and Testing.
4. Requirements:
 - a. Assembled photoelectric controls and each of their individual components shall be designed and constructed to have a nominal life of 10 years.
 - b. Each photoelectric control shall be provided with a means to conveniently and permanently record date of installation and date of removal.
 - c. Each photoelectric control shall be provided with an internal, 160 joule minimum, metaloxide varistor (MOV) type surge arrester.
 - d. Photoelectric controls shall be provided with a means of sealing according to the requirements of ANSI C136.10, Section 4.3.
 - e. Photoelectric control base gasket shall be fabricated from a neoprene blend.
 - f. Photoelectric control circuit boards shall be constructed of glass epoxy material.

- g. Circuit board components shall be protected from the environment with a thin, transparent coating that does not promote heat buildup.

Color code	Black
Plug Type	Locking type, three-pole, three-wire
Photosensor Type	Silicon
Operating voltage range, volts, ac	105 to 305
Load rating, LED, minimum, watts	1,000
Load rating, incandescent lamp, minimum, watts	1,000
Load rating, high-intensity discharge (HID), minimum, VA	1,800
Operating temperature range, ambient, degrees C	-40 to +70
Turn on response time range, seconds	0.5 to 5.0
Turn off response time range, seconds	0.5 to 5.0
Turn on light level, fc	2.8 +/- 0.6
Turn off light level, maximum, fc	5.1
Turn-off/turn-on ratio, nominal	1.5
Failure mode, nominal	Fail-off

5. Testing

- a. Photoelectric controls shall be tested according to the requirements of ANSI C136.10. Test results shall be provided upon request.

6. Marking

- a. Each individual photoelectric control device shall be marked with the following information:
- Manufacturer’s name
 - Model number
 - Voltage rating
 - Load rating
 - North orientation
 - Rotation of installation and removal

7. Approved Manufacturers

- a. Photoelectric control devices shall be one of the following types, or approved equal.

Manufactures	Catalog Numbers
Ripley Lighting Controls	6390LL-BK-FO
Dark to Light	DLL 127-F-1.5-BK
Sun-Tech (Sunrise Technologies, Inc.)	TRS-2-FO

8. Warranty

- b. All photoelectric control components shall be warranted by its manufacturer for a minimum of ten (10) years.

G. Warranty

All electrical components including, but not limited to, light emitting diodes (LED) and drivers shall be warranted by the luminaire’s manufacturer for a minimum of ten (10) years from the date of acceptance by the City. All manufacturer supplied components of the luminaire shall have an included minimum 10 year full warranty. Each LED streetlight luminaire shall have a unique serial/tracking number sufficient for use by Manufacturer and the City to track warranty start and end dates. If the warranty is not a full 10 year warranty on all luminaire components in the finished luminaire assembly, the luminaire will be determined to not meet City specifications and will be rejected.

The Developer shall, as part of the guarantee, replace with the Developer's forces at the Developer's expense any and all LED luminaires that fail within a one-year period following final job acceptance. If the Developer fails to respond within two (2) Working Days after notification, the City reserves the right to replace the luminaire and the Developer shall pay the City for the cost of each lamp replaced for such failure.

If any LED fails within a given luminaire upon initial installation, the luminaire shall be considered failed and eligible for replacement under the warranty. Post initial installation, if 10% or more of the LEDs within a given luminaire cease to be operational or demonstrate negligible light output within the warranty period, the luminaire shall be considered failed and eligible for replacement under the warranty.

Luminaire finish shall also be warranted by the luminaire’s manufacturer for a minimum of ten (10) years from the date of acceptance.

Luminaire’s manufacturer shall be responsible to City for full replacement of LED streetlight luminaries that fail during the warranty period as determined by the City. All replacement LED streetlight luminaries shall be warranted for an additional ten (10) year period from the date of acceptance.

Delivery location for replacement luminaires shall be as specified by City at the time of shipment. Prior to shipping replacement luminaires Manufacturer shall confirm the delivery location with City.

Any additional warranties provided by law, including, but not limited to, the warranty of merchantability and warranty of fitness for a particular purpose shall remain in full force and effect and inure to the benefit of City. City reserves all rights and remedies provided by law for breach of any applicable warranty.

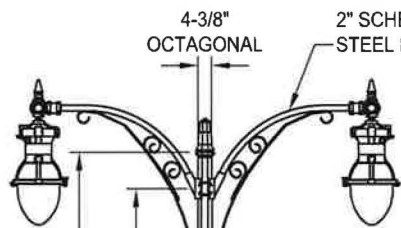
49-6.02 Reserved

STREET CLASSIFICATION	RIGHT - OF - WAY WIDTH	STREET LIGHT SUB-TYPE (SERIES)	STANDARD MOUNTING HEIGHT	MAXIMUM SPACING** (ONE SIDE ONLY)
SPECIAL THOROUGHFARE	130'	A	30' - 9"	180'
THOROUGHFARE	108'	A	30' - 9"	220'
ARTERIAL	84'	A	30' - 9"	220'
				MAXIMUM SPACING** (TWO-SIDES)
MAJOR COLLECTOR	74'	A*	30' - 9"	220'
	70'	A*	30' - 9"	220'
COLLECTOR	60'	A*	30' - 9"	220'
	56'	B	21'	180'
RESIDENTIAL	50'	B	21'	200'
	40'	B	21'	240'

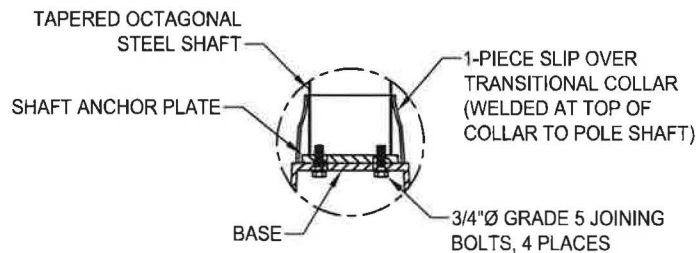
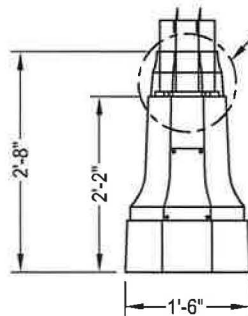
NOTES:

1. WATTAGE AND MODEL NUMBER FOR LIGHT EMITTING DIODE (LED) LAMP SHALL BE SPECIFIED ON THE PLANS. EQUIPMENT SHALL CONFORM TO CITY OF ELK GROVE APPROVED EQUIPMENT LIST.
2. ILLUMINATION SHALL CONFORM TO STANDARD DRAWING SL-2.
3. SEE SECTION 5-7D, "SPACING," FOR DEFINITIONS OF ONE-SIDE AND TWO-SIDE SPACING.
- *4. SINGLE FAMILY AND DUPLEX FAMILY ZONING SHALL USE SERIES 'B' STREET LIGHT, 21' MOUNTING HEIGHT,, AND 180' SPACING.
- **5. MAXIMUM SPACING MAY BE ADJUSTED AS LONG AS ILLUMINATION CRITERIA ARE MET WITH APPROVAL OF THE ENGINEER.

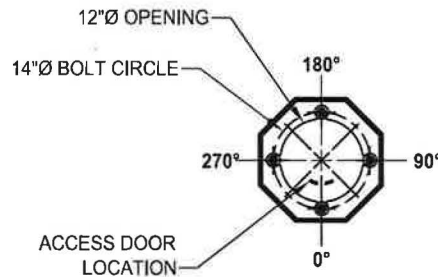
DATE: 09/04/2007		NOT TO SCALE		CITY OF ELK GROVE - PUBLIC WORKS		APPROVED BY: 	
REVISION	BY	APPROVED	DATE	COMMON TYPE STREET LIGHT POLE SPACING GUIDE (SERIES 'A' / SERIES 'B')		CITY ENGINEER	
1						DRAWING NUMBER	
						 SL - 24	



SEE DETAIL A FOR SHAFT MOUNTING



DETAIL A



ANCHORAGE DETAIL
(TOP SECTION VIEW)

POST BASE IS FURNISHED WITH (4) 1"Ø X 36" HOT-DIP GALVANIZED L-TYPE ANCHOR BOLTS WITH 5" MINIMUM PROJECTION EACH.

SEE DRAWING NUMBER SL-3 FOR FOUNDATION DETAIL

DATE: 12/07/2007		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1	DC	FB	12/07/2007
2	DC	FB	03/12/2008
3			

CITY OF ELK GROVE - PUBLIC WORKS

ZONE 2 ELECTROLIER
(DUAL ARM)

APPROVED BY:



CITY ENGINEER



DRAWING NUMBER

SL - 30

APPLICATION

WIDE MEDIANS ON ARTERIALS AND THOROUGHFARES

SPECIFICATIONS

POST BASE

THE BASE SHALL BE CAST IRON CONSTRUCTION WITH A TAPERED AND STEPPED OCTAGONAL PATTERN. A 1-PIECE SLIP OVER TRANSITION COLLAR COVERS THE BASE OF THE SHAFT. A DOOR IS LOCATED IN THE BASE FOR ANCHORAGE AND WIRING ACCESS. A GROUND SCREW (5/8") SHALL BE PROVIDED INSIDE THE BASE, OPPOSITE THE ACCESS DOOR.

POST SHAFT

THE POST SHAFT SHALL BE 11-GAUGE STEEL WITH A STEEL PLATE FOR MOUNTING TO THE BASE. THE OCTAGONAL SHAFT TAPERS FROM 8" (FLAT TO FLAT) AT THE BOTTOM TO 4-3/8" AT THE TOP, WITH A DECORATIVE OCTAGONAL FINIAL.

CROSSARM

THE CLAMP ON CROSSARM SHALL BE STEEL PIPE CONSTRUCTION WITH FLAT BAR SCROLLS AND 1-1/2" X 1/2" FLAT BAR CLAMP-ON BRACE. A SLEEVE GASKET SHALL BE INSTALLED TO PREVENT ARM MOVEMENT. ARMS SHALL HAVE A 2" PIPE SLEEVE FOR LUMINAIRE MOUNTING. THE CROSSARM MEASURES 52" FROM POST TO LUMINAIRE CENTERS. A LUMINAIRE LEVELING FITTER SHALL BE MOUNTED TO THE END OF THE PIPE ARM FOR LUMINAIRE MOUNTING.

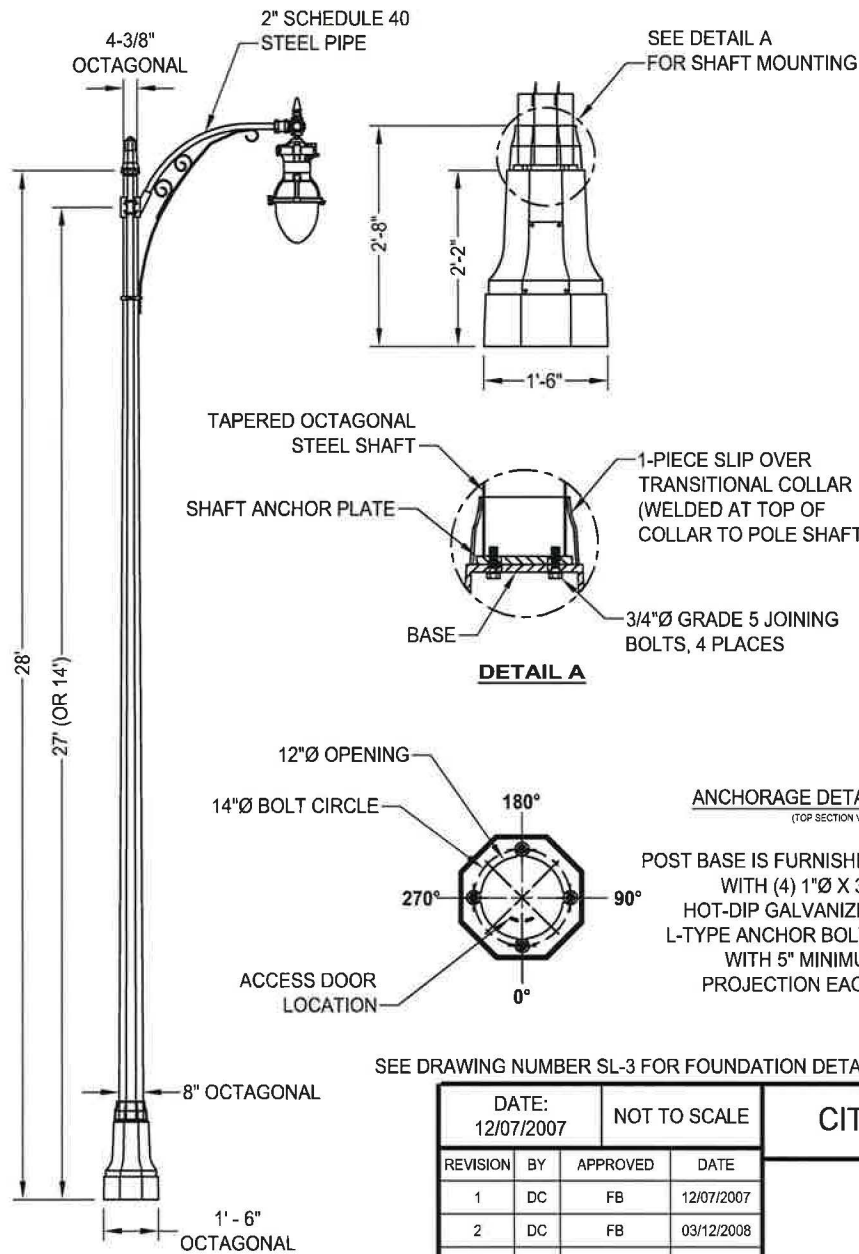
FINISH

THE POST SHALL BE SHIPPED FINISHED WITH A STANDARD BLACK POWDER COAT FINISH.

NOTE

ALL HARDWARE STAINLESS STEEL. ALL EXTERIOR HARDWARE TAMPER RESISTANT. BASE AND SHAFT TO BE SHIPPED AS A ONE-PIECE UNIT.

POLES AND LIGHTING EQUIPMENT SHALL CONFORM TO CITY OF ELK GROVE APPROVED EQUIPMENT LIST



APPLICATION

ARTERIAL (REDUCED MEDIAN) AND COLLECTOR STREETS

SPECIFICATIONS

POST BASE

THE BASE SHALL BE CAST IRON CONSTRUCTION WITH A TAPERED AND STEPPED OCTAGONAL PATTERN. A 1-PIECE SLIP OVER TRANSITION COLLAR COVERS THE BASE OF THE SHAFT. A DOOR IS LOCATED IN THE BASE FOR ANCHORAGE AND WIRING ACCESS. A GROUND SCREW (5/8") SHALL BE PROVIDED INSIDE THE BASE, OPPOSITE THE ACCESS DOOR.

POST SHAFT

THE POST SHAFT SHALL BE 11-GAUGE STEEL WITH A STEEL PLATE FOR MOUNTING TO THE BASE. THE OCTAGONAL SHAFT TAPERS FROM 8" (FLAT TO FLAT) AT THE BOTTOM TO 4-3/8" AT THE TOP, WITH A DECORATIVE OCTAGONAL FINIAL.

CROSSARM

THE CLAMP ON CROSSARM SHALL BE STEEL PIPE CONSTRUCTION WITH FLAT BAR SCROLLS AND 1-1/2" X 1/2" FLAT BAR CLAMP-ON BRACE. A SLEEVE GASKET SHALL BE INSTALLED TO PREVENT ARM MOVEMENT. ARMS SHALL HAVE A 2" PIPE SLEEVE FOR LUMINAIRE MOUNTING. THE CROSSARM MEASURES 52" FROM POST TO LUMINAIRE CENTERS. A LUMINAIRE LEVELING FITTER SHALL BE MOUNTED TO THE END OF THE PIPE ARM FOR LUMINAIRE MOUNTING.

FINISH

THE POST SHALL BE SHIPPED FINISHED WITH A STANDARD BLACK POWDER COAT FINISH.

NOTE

ALL HARDWARE STAINLESS STEEL. ALL EXTERIOR HARDWARE TAMPER RESISTANT. BASE AND SHAFT TO BE SHIPPED AS A ONE-PIECE UNIT.

POLES AND LIGHTING EQUIPMENT SHALL CONFORM TO CITY OF ELK GROVE APPROVED EQUIPMENT LIST.

ANCHORAGE DETAIL
(TOP SECTION VIEW)

POST BASE IS FURNISHED WITH (4) 1"Ø X 36" HOT-DIP GALVANIZED L-TYPE ANCHOR BOLTS WITH 5" MINIMUM PROJECTION EACH.

SEE DRAWING NUMBER SL-3 FOR FOUNDATION DETAIL

DATE: 12/07/2007		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1	DC	FB	12/07/2007
2	DC	FB	03/12/2008
3			

CITY OF ELK GROVE - PUBLIC WORKS

ZONE 2 ELECTROLIER
(SERIES 'A')

APPROVED BY:

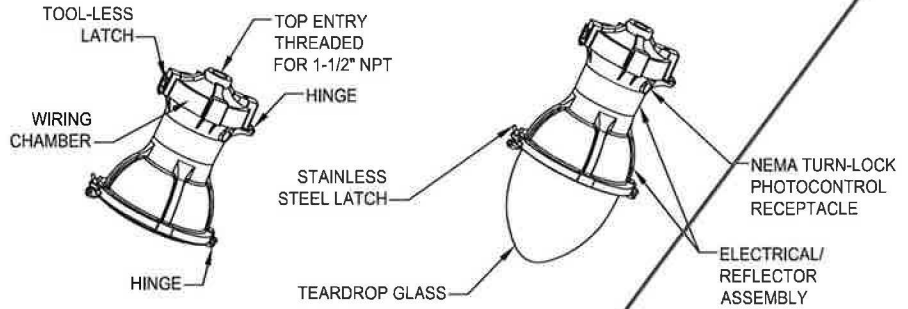
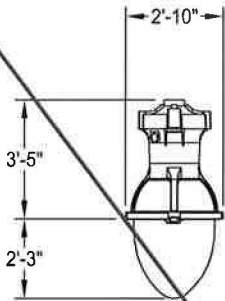
[Signature]
CITY ENGINEER



DRAWING NUMBER

SL - 31

MAXIMUM EFFECTIVE PROJECTED AREA - 2.37 FT²
MAXIMUM WEIGHT - 66 LBS



COVER TYPE
ESU =
ESPLANADE
UTILITY

BALLAST TYPE
(MOGUL BASE)
 100HP = 100W HPS
 15AHP = 150W 55V HPS
 250HP = 250 W HPS

VOLTAGE
12 = 120 VOLT

HOUSING
COLOR
BLACK

OPTICS
 4 = TEARDROP ASYMMETRIC

OPTIONS
 DS = DEEP SKIRT
 SS = SHALLOW SKIRT
 PS = PROTECTED STARTER (HPS ONLY)
 R = TURN-LOCK PHOTOCONTROL RECEPTACLE (REQUIRED)

SPECIFICATIONS

DESCRIPTION

THE ESPLANADE LUMINAIRE IS STYLED TO REPLICATE THE "TEARDROP" LUMINAIRES THAT LIGHTED BOULEVARDS IN THE FIRST HALF OF THIS CENTURY. DESIGNED FOR LIGHT CONTROL AND EASE OF INSTALLATION AND MAINTENANCE, THE ESPLANADE HAS A PRECISION OPTICAL SYSTEM FOR TRUE STREET LIGHTING PERFORMANCE.

WIRING CHAMBER

THE WIRING CHAMBER HAS A 1-1/2 INCH, GASKETED, NPT THREADED ENTRY FOR PENDANT MOUNTING. A STAINLESS STEEL SET SCREW LOCKS THE UNIT IN POSITION. A THREE STATION TERMINAL BLOCK WILL ACCEPT #14 THROUGH #2 WIRES AND IS PREWIRED TO ONE HALF OF THE PLUG ASSEMBLY THAT CONNECTS TO THE REMOVABLE ELECTRICAL MODULE.

ELECTRICAL / REFLECTOR ASSEMBLY

THE ELECTRICAL / REFLECTOR ASSEMBLY HINGES DOWN FROM THE WIRING CHAMBER FOR EASE IN WIRING AND TO FACILITATE THE REMOVAL OF THE ELECTRICAL MODULE. THE ASSEMBLY IS SECURED IN PLACE BY A STAINLESS STEEL LATCH. THE UNITIZED ELECTRICAL MODULE CONSISTS OF THE BALLAST MOUNTED TO AN ALUMINUM PLATE THAT IS EASILY REMOVED BY LOOSENING TWO SCREWS IN KEYHOLE SLOTS. THE DISCONNECT PLUG CONNECTS THE BALLAST TO THE TERMINAL BLOCK IN THE WIRING CHAMBER. THE SOCKET IS STREET LIGHTING GRADE WITH NICKEL PLATED LAMP GRIP SHELL, CENTER CONTACT BACKED BY A COILED SPRING AND GLAZED PORCELAIN BODY. THE ANODIZED AND BRIGHTENED REFLECTOR IS FORMED WITH FLUTES TO CONTROL VOLTAGE RISE IN THE LAMP AND TO WORK IN CONJUNCTION WITH THE REFRACTOR TO PROVIDE THE DESIRED DISTRIBUTION OF LIGHT.

REFRACTOR / DOOR ASSEMBLY

THE CAST ALUMINUM DOOR CRADLES A TEARDROP OR SAG SHAPED, THERMAL RESISTANT BOROSILICATE GLASS REFRACTOR THAT CONTROLS THE LIGHT TO PROVIDE AN I.E.S. SYMMETRIC OR ASYMMETRIC CUT OFF DISTRIBUTION. THE COMBINATION OF REFLECTOR, REFRACTOR AND VERTICAL BURNING LAMP MAXIMIZE EFFICIENCY AND UNIFORMITY OF ILLUMINATION WHILE CONTROLLING LUMINAIRE BRIGHTNESS. THE REFRACTOR ASSEMBLY AND DECORATIVE SKIRT (WHEN APPLICABLE) ASSEMBLY HINGES FROM THE ELECTRICAL / REFLECTOR ASSEMBLY AND IS LATCHED BY A STAINLESS STEEL, CAPTIVE, WING NUT ASSEMBLY.

BALLAST

(REFER TO BALLAST DATA SHEET FOR SPECIFIC OPERATING CHARACTERISTICS)
 150 WATT AND BELOW 120 VOLT HIGH PRESSURE SODIUM (HPS) BALLASTS ARE HIGH POWER FACTOR REACTOR TYPE. ALL OTHER 150 WATT AND BELOW ARE HIGH POWER FACTOR AUTOTRANSFORMER TYPE. 250 AND 400 WATT HPS BALLASTS ARE LEAD TYPE.
 ALL METAL HALIDE (MH) BALLASTS ARE PEAK LEAD AUTOTRANSFORMER TYPE.

FINISH / MATERIAL

THE LUMINAIRE IS FINISHED WITH POLYESTER POWDER PAINT APPLIED AFTER A SEVEN STAGE PRETREATMENT PROCESS TO INSURE MAXIMUM DURABILITY. ALL CASTINGS UTILIZE ALLOY #356 ALUMINUM FOR MAXIMUM CORROSION RESISTANCE AND ALL EXPOSED HARDWARE IS STAINLESS STEEL.

CUL/U.L. LISTING

CUL/U.L. LISTING SUITABLE FOR WET LOCATIONS AT 40 DEGREES C.

DELETE

DATE:
09/04/2007

NOT TO SCALE

CITY OF ELK GROVE - PUBLIC WORKS

APPROVED BY:

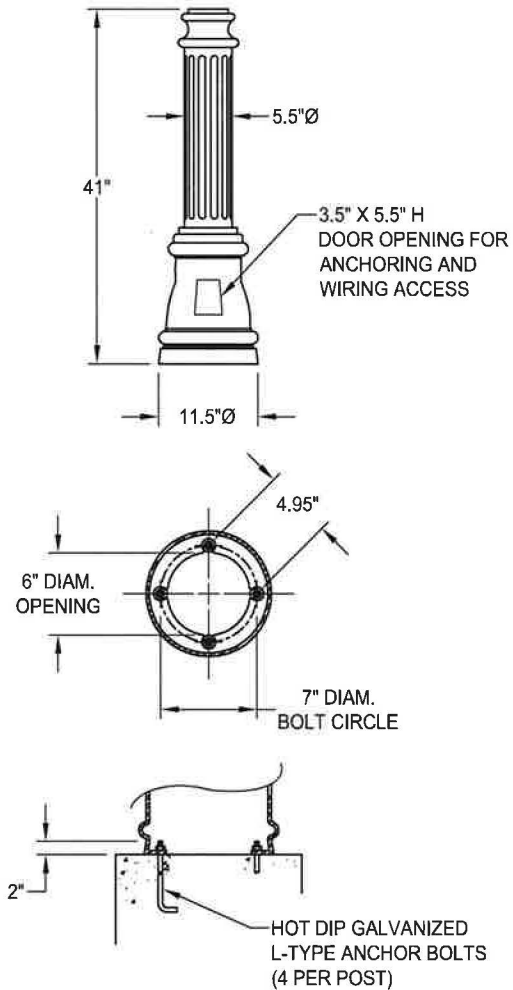
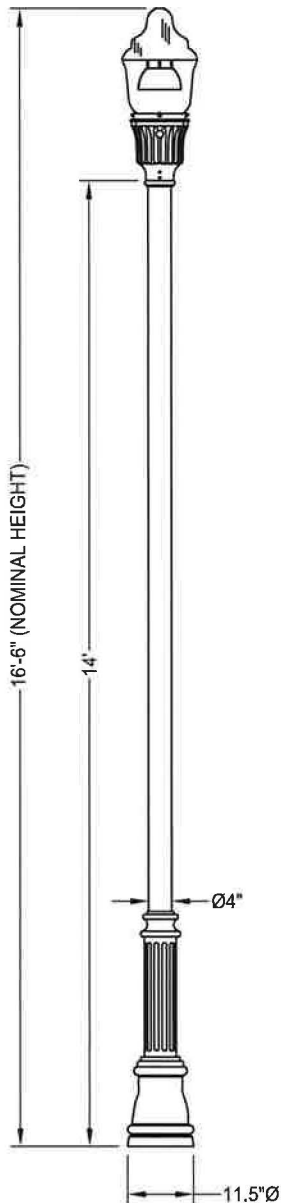
CITY ENGINEER

DRAWING NUMBER

SL - 32

ZONE 2 LUMINAIRE
(SERIES 'A')





SEE DRAWING NUMBER SL-3 FOR FOUNDATION DETAIL

DATE: 09/04/2008		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1	DC	FB	9/4/2008
2			

CITY OF ELK GROVE - PUBLIC WORKS

ZONE 2 ELECTROLIER
(SERIES 'B')

APPROVED BY:
[Signature]
CITY ENGINEER



DRAWING NUMBER

SL - 34

APPLICATION

PEDESTRIAN TRAILS AND RESIDENTIAL STREETS

SPECIFICATIONS

POST DESCRIPTION

THE LIGHTING POST SHALL BE ALL ALUMINUM, ONE-PIECE CONSTRUCTION, WITH A CLASSIC FLUTED BASE DESIGN. THE SHAFT SHALL BE Ø4" SMOOTH. THE POST SHALL BE SHIPPED WITH BLACK POWDER COAT FINISH.

MATERIALS

THE BASE SHALL BE HEAVY WALL, CAST ALUMINUM PRODUCED FROM CERTIFIED ASTM 356.1 INGOT PER ASTM B-179-95A OR ASTM B26-95. THE STRAIGHT SHAFTS SHALL BE EXTRUDED FROM ALUMINUM, ASTM 6061 ALLOY, HEAT TREATED TO A T6 TEMPER. ALL HARDWARE SHALL BE TAMPER RESISTANT STAINLESS STEEL. ANCHOR BOLTS TO BE COMPLETELY HOT DIP GALVANIZED.

CONSTRUCTION

THE SHAFT SHALL BE DOUBLE WELDED TO THE BASE CASTING AND SHIPPED AS ONE PIECE FOR MAXIMUM STRUCTURAL INTEGRITY. THE SHAFT SHALL BE CIRCUMFERENTIALLY WELDED INSIDE THE BASE CASTING AT THE TOP OF THE ACCESS DOOR, AND EXTERNALLY WHERE THE SHAFT EXITS THE BASE. ALL EXPOSED WELDS BELOW 8' SHALL BE GROUND SMOOTH. ALL WELDING SHALL BE PER ANSI/AWS D1.2-90. ALL WELDERS SHALL BE CERTIFIED PER SECTION 5 OF ANSI/AWS D1.2-90.

DIMENSIONS

THE POST SHALL BE 14' IN HEIGHT WITH AN 11-1/2" DIAMETER BASE. THE SHAFT DIAMETER SHALL BE 4". AT THE TOP OF THE POST, AN INTEGRAL 3" O.D. TENON WITH A TRANSITIONAL DONUT SHALL BE PROVIDED FOR LUMINAIRE MOUNTING.

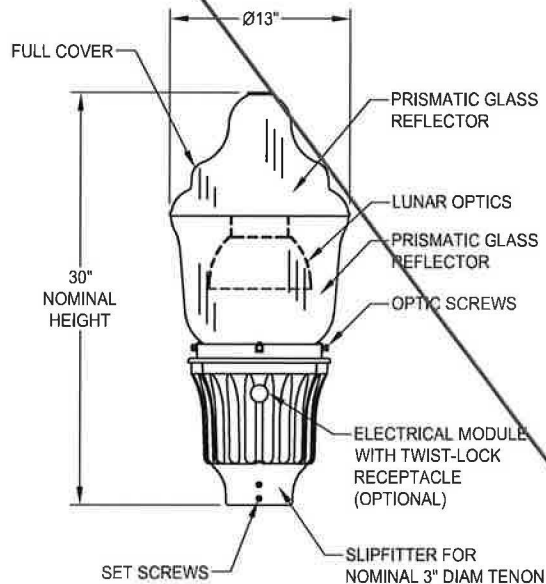
INSTALLATION

THE POST SHALL BE PROVIDED WITH FOUR, HOT DIP GALVANIZED L-TYPE ANCHOR BOLTS TO BE INSTALLED ON AN 7" DIAMETER BOLT CIRCLE. A DOOR SHALL BE PROVIDED IN THE BASE FOR ANCHORAGE AND WIRING ACCESS. A GROUNDING SCREW (5/8") SHALL BE PROVIDED INSIDE THE BASE OPPOSITE THE DOOR.

POLES AND LIGHTING EQUIPMENT SHALL CONFORM TO CITY OF ELK GROVE APPROVED EQUIPMENT LIST.

UTILITY GRANVILLE® SERIES™ LUMINAIRE WITH LUNAR OPTICS

MAXIMUM WEIGHT - 48 LBS.
MAXIMUM EFFECTIVE PROJECTED AREA - 1.38 S.F.



BALLAST TYPE (MOGUL BASE)

100HP = 100W HPS
15AHP = 150W 55V HPS

VOLTAGE

12 = 120 VOLT

HOUSING COLOR

B = BLACK

OPTICAL TYPE

7 = IES TYPE III DIST. WITH
LUNAR OPTICS (IES)
CUTOFF

NO DECORATIVE

FINIAL
N = NONE

TRIM FINISH

B = BLACK

OPTIONS

P = PROTECTED STARTER FOR
HPS UNITS ONLY
H = PHOTOCONTROL
RECEPTACLE (REQUIRED)
T = BOTH NEMA TWIST-LOCK
RECEPTACLE AND
PROTECTED STARTER
TOGETHER (HPS UNITS
ONLY)
FCVRX - FULL DECORATIVE
ALUMINUM TOP COVER
(FOR X INSERT B, Z, N,
G, OR A COLOR)

ACCESSORIES

GV1ASDXX = INTERNAL SHIELD,
XX = 90, 120 OR 180
DEGREES OF HOUSE
SIDE CUT-OFF
(MAINTENANCE USE ONLY)

SPECIFICATIONS

GENERAL DESCRIPTION

THE UTILITY GRANVILLE IS DESIGNED FOR EASE OF MAINTENANCE WITH THE PLUG-IN ELECTRICAL MODULE COMMON TO EACH OF THE LUMINAIRES IN HOLOPHANE'S UTILITY LUMINAIRE SERIES. THE TRADITIONAL ACORN SHAPED LUMINAIRE, WHILE REMINISCENT OF THE 1920'S, CONTAINS A PRECISION OPTICAL SYSTEM THAT MAXIMIZES POST SPACING WHILE MAINTAINING UNIFORM ILLUMINATION.

OPTICAL SYSTEM

THE OPTICAL SYSTEM CONSISTS OF A PRECISELY MOLDED THERMAL RESISTANT BOROSILICATE GLASS REFRACTOR AND TOP REFLECTOR. THE GLASS TOP REFLECTOR REDIRECTS OVER 50% OF THE UPWARD LIGHT INTO THE CONTROLLING REFRACTOR WHILE ALLOWING A SOFT UPLIGHT COMPONENT TO DEFINE THE TRADITIONAL ACORN SHAPE OF THE LUMINAIRE. TWO DECORATIVE ALUMINUM COVERS ARE AVAILABLE. THE LOWER REFRACTOR USES PRECISELY MOLDED PRISMS TO MAXIMIZE POLE SPACING WHILE MAINTAINING UNIFORM ILLUMINANCE. REFRACTOR I.E.S. TYPE III DISTRIBUTION. THE LUNAR OPTICS ASSEMBLY (IES CUTOFF) IS STANDARD. IT CONSISTS OF AN ALUMINUM PLATE AND ANODIZED, HYDROFORMED REFLECTOR DESIGNED TO RESTRICT INTENSITY AT THE CRITICAL ANGLE.

LUMINAIRE HOUSING

THE LUMINAIRE HOUSING, CAST OF ALUMINUM, PROVIDES AN ENCLOSURE FOR THE PLUG-IN ELECTRICAL MODULE. FOUR UNIQUELY DESIGNED STAINLESS STEEL SPRING CLIPS ENCLOSED IN A CLEAR POLYVINYL CHLORIDE SLEEVE AND ADJUSTED BY HEX HEAD 1/4-20 BOLTS SECURELY CRADLE THE PRISMATIC GLASS REFRACTOR. THE NICKEL PLATED LAMP GRIP SOCKET AND THREE STATION INCOMING LINE TERMINAL BLOCK ARE PREWIRED TO A FIVE CONDUCTOR RECEPTACLE FOR EASE IN CONNECTION THE ELECTRICAL MODULE. THE SLIPFITTER WILL ACCEPT 3" BY 2-7/8" TO 3-1/8" O.D. TENON.

LUMINAIRE HOUSING / DOOR

CAST OF ALUMINUM, THE HOUSING / DOOR IS REMOVABLE WITHOUT THE USE OF TOOLS AND IS RETAINED BY A NONCONDUCTIVE LANYARD. FOR UNITS WITH AN E.E.I.-N.E.M.A. TWIST LOCK PHOTOCCELL RECEPTACLE, THE DOOR CONTAINS AN ACRYLIC "WINDOW" TO ALLOW LIGHT TO REACH THE CELL.

ELECTRICAL MODULE

THE BALLAST COMPONENTS ARE MOUNTED ON A STEEL PLATE THAT IS REMOVABLE WITHOUT THE USE OF TOOLS. A MATCHING FIVE CONDUCTOR PLUG CONNECTS TO THE RECEPTACLE IN THE LUMINAIRE HOUSING TO COMPLETE THE WIRING. WHERE A STARTING AID IS REQUIRED, IT IS PROVIDED WITH A SEPARATE PLUG-IN CONNECTOR AND CAN BE REPLACED WITHOUT THE USE OF TOOLS. FOR PHOTOELECTRIC OPERATION, THE ELECTRICAL MODULE IS PROVIDED WITH AN E.E.I.-N.E.M.A. TWIST LOCK PHOTOCCELL RECEPTACLE.

BALLASTS

(REFER TO BALLAST DATA SHEET FOR SPECIFIC OPERATION CHARACTERISTICS)
50 WATT 120 VOLT HIGH PRESSURE SODIUM (HPS) BALLASTS ARE HIGH POWER FACTOR REACTOR TYPE. ALL OTHER HPS BALLAST ARE HIGH POWER FACTOR AUTOTRANSFORMER TYPE.

FINISH

THE LUMINAIRE IS FINISHED WITH POLYESTER POWDER PAINT APPLIED AFTER A SEVEN STAGE PRETREATMENT PROCESS TO INSURE MAXIMUM DURABILITY.

UL LISTING

THE LUMINAIRE IS UL LISTED AS SUITABLE FOR WET LOCATIONS AT A MAXIMUM 40 DEGREES C AMBIENT TEMPERATURE.

DELETE

DATE:
09/04/2007

NOT TO SCALE

CITY OF ELK GROVE - PUBLIC WORKS

APPROVED BY:

REVISION	BY	APPROVED	DATE

ZONE 2 LUMINAIRE
(SERIES 'B')

CITY ENGINEER



DRAWING NUMBER

SL - 35

STREET CLASSIFICATION	NUMBER OF LANE	STREET LIGHT SUB-TYPE (SERIES)	STANDARD POLE HEIGHT	MEDIAN	NO MEDIAN (SERIES 'A') (BOTH SIDES)
				MAXIMUM SPACING ("D") (FEET)	
SPECIAL THOROUGHFARE	8	DUAL ARM	28'	160	160
THOROUGHFARE	6	DUAL ARM	28'	160	160
ARTERIAL	2 - 4	DUAL ARM	28'	180	180
SPACING (BOTH SIDES) (FEET)					
COLLECTOR	2, 3	SERIES 'A'***	28'	180	
	2, 3	SERIES 'B'*	14'	150	
	2	SERIES 'A'***	28'	80	
	2	SERIES 'B'***	14'	80	
LOCAL RESIDENTIAL	2	SERIES 'B'	14'	180	
	2	SERIES 'A'	28'	180	
PASEO, BIKE TRAILS, AND SEPARATED PEDESTRIAN PATHS	-	SERIES 'B'	14'	120	
PEDESTRIAN PATHS ON 4 - 8 LANE STREETS	-	SERIES 'B'	14'	160 - 180***	

1. WATTAGE AND MODEL NUMBER FOR LIGHT EMITTING DIODE (LED) LAMP SHALL BE SPECIFIED ON THE PLANS. EQUIPMENT SHALL CONFORM TO CITY OF ELK GROVE APPROVED EQUIPMENT LIST.
2. ILLUMINATION SHALL CONFORM TO STANDARD DRAWING SL-2.

* BOTH SIDES OF STREET, NO ALTERNATING (2 PER LOCATION). NOT FOR USE ON STREETS LONGER THAN 800 FEET.

** SINGLE SIDE OF STREET, ALTERNATING SPACING.

*** MATCH STREET SPACING. LOCATE HALFWAY BETWEEN STREET LIGHT LOCATIONS.

DATE: 09/04/2007		NOT TO SCALE	
REVISION	BY	APPROVED	DATE
1			

CITY OF ELK GROVE - PUBLIC WORKS

ZONE 2 POLE SPACING GUIDE
(SERIES 'A', / SERIES 'B' / DUAL ARM)

APPROVED BY:



CITY ENGINEER

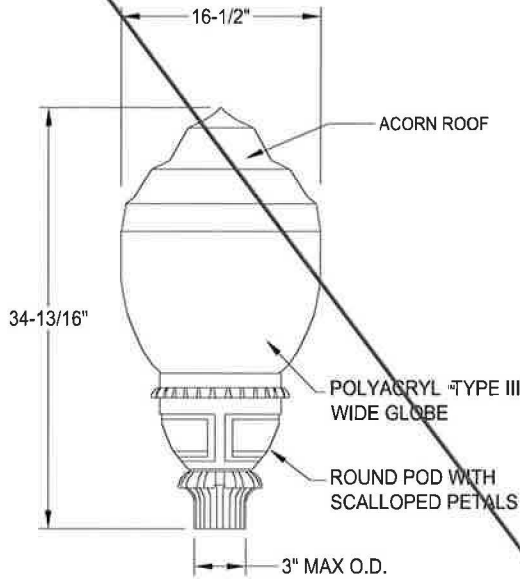


DRAWING NUMBER

SL - 36

HADCO® WIDE REFRACTIVE GLOBE SERIES LUMINAIRE

Maximum weight - 50 lbs
Maximum effective projected area - 2.20 sq. ft.



WATTAGE
150 S = 150 W HPS

VOLTAGE
E = 120 VOLT

FINISH
A = BLACK

FASTENER
1 = HEX HEAD BOLT

REFLECTOR
T = FULL TOP

PHOTOCONTROL
N = NONE

SOCKET
G = MOGUL

FULL PRODUCT NO:
R33BBNN1ATNG150SE

SPECIFICATIONS

GENERAL DESCRIPTION

POD
ROUND FITTER WITH SCALLOPED PETALS IS CONSTRUCTED OF DIE-CAST 360 ALUMINUM ALLOY WITH SIDE-HINGED DOOR PROVIDING 180° ENTRY INTO THE FITTER ASSEMBLY FOR ACCESS TO THE ELECTRICAL COMPONENTS. ACCEPTS STANDARD HADCO TWISTLOCK BALLAST ASSEMBLIES UP TO 310W HPS OR 320W MH. WIRING BLOCK TO ACCEPT THREE #8 SOLID OR STRANDED WIRES. INTERNAL TWIST-LOCK PHOTO EYE RECEPTACLE. ACCESS TO PHOTO EYE THROUGH THE DOOR ON THE POD. HEAVY CAST ALUMINUM POST

SPECIFICATIONS (CONT.)

FITTER UTILIZES FOUR 5/16-18 BLACK CADMIUM STAINLESS STEEL SET SCREWS (HEX HEAD OR ALLEN HEAD AS SPECIFIED) FOR MOUNTING TO 3" O.D. POST TENON. GLOBE HOLDER HAS AN INTERNAL WATER TRAP TO PREVENT WATER FROM ENTERING BALLAST COMPARTMENT. GLOBE IS HELD BY UTILIZING FOUR 5/16-18 BLACK CADMIUM STAINLESS STEEL FASTENERS (HEX HEAD OR ALLEN HEAD AS SPECIFIED). ALL HARDWARE TO BE STAINLESS STEEL AND CAPTIVE. POD HEIGHT IS 12-1/4" AND WIDTH IS 11-1/2". FINISH IS POLYESTER THERMOSET POWDERCOAT.

ROOF

ACORN STYLE ROOF IS CLEAR INJECTION MOLDED U.V. STABILIZED ACRYLIC WITH 74 HORIZONTAL PRISMS FOR A SOFT, EVEN GLOW. 9-1/2" HEIGHT AND 16-3/4" WIDTH. THE ROOF AND BOTTOM GLOBE SECTIONS ARE SECURED IN A SLIP-FIT, 1/2" OVERLAP DESIGN AND USE FOUR #10-24 STAINLESS STEEL PAN HEAD SCREWS WITH FOUR ALUMINUM NUTSERTS PROVIDING A MECHANICAL LOCK AND ENABLING FUTURE REPLACEMENT OF EITHER THE ROOF OR BOTTOM GLOBE SECTION IF REQUIRED.

FASTENERS

HEX HEAD BOLTS: BLACK CADMIUM STAINLESS STEEL.

FINISH

THERMOSET POLYESTER POWDERCOAT IS ELECTROSTATICALLY APPLIED AFTER A FIVE-STAGE CONVERSION CLEANING PROCESS AND BONDED BY HEAT FUSION THERMOSETTING. LABORATORY TESTED FOR SUPERIOR WEATHERABILITY AND FADE RESISTANCE IN ACCORDANCE WITH ASTM B-117-64 AND ANSI/ASTM G53-77 SPECIFICATIONS.

OPTICAL ASSEMBLY

TYPE III WIDE BODY GLOBE IS CONSTRUCTED OF CLEAR INJECTION-MOLDED U.V. STABILIZED ACRYLIC. A TWO-PIECE (GLOBE AND ROOF) SLIP-FIT, 1/2" OVERLAP, DESIGN UTILIZES NUTSERTS AND STAINLESS STEEL FASTENERS, WHICH ELIMINATE A "BUTT-GLUE" SEAM APPEARANCE. THE OPTICAL SECTION OF GLOBE HAS A NECK OPENING OF 7-3/8" AND AN OUTSIDE NECK DIAMETER OF 8". GLOBE (LESS THE ROOF) HAS A 12-7/8" HEIGHT AND 16-3/4" WIDTH AT THE TOP WITH 98 HORIZONTAL PRISMS AT 360 HIGHLY POLISHED VERTICAL PRISMS.

REFLECTOR

TOP REFLECTOR IS 0.04" THICK HYDROFORMED ALUMINUM WITH CLEAR ANODIZED HIGHLY SPECULAR FINISH. DIAMETER IS 14-1/2" AND HEIGHT IS 6-1/4". REFLECTOR RESTS ON TOP INTERNAL PRISM WALL OF THE BOTTOM GLOBE SECTION TO CONTROL UPLIGHT.

ELECTRICAL ASSEMBLY

TWISTLOCK BALLAST ASSEMBLY WITH QUICK DISCONNECTS FOR EASY MAINTENANCE. BALLASTS ARE HPF CORE AND COIL. 4KV RATED MOGUL BASE PORCELAIN SOCKET. NICKEL-PLATED SCREW SHELL WITH CENTER CONTACT. 4KV RATED MEDIUM BASE PORCELAIN SOCKET. NICKEL-PLATED SCREW SHELL WITH CENTER CONTACT.

BALLAST

ALL HID BALLASTS ARE CORE AND COIL AND REGULATED WITH POWER FACTORS BETTER THAN 90% (HPF). BALLAST PROVIDES +/- 5% LAMP POWER REGULATION WITH +/- 10% INPUT VOLTAGE REGULATION. BALLASTS ARE FACTORY PRE-WIRED AND TESTED. METAL HALIDE BALLASTS ARE CAPABLE OF STARTING AT -20° F OR -30° C AND HPS AT -40° F OR -40° C.

CERTIFICATION

UL LISTED TO U.S. SAFETY STANDARDS FOR WET LOCATIONS. MANUFACTURED TO ISO 9001:2000 STANDARDS

DELETE

DATE:
09/04/2007

NOT TO SCALE

CITY OF ELK GROVE - PUBLIC WORKS

APPROVED BY:

REVISION	BY	APPROVED	DATE

CITY ENGINEER

LAGUNA WEST LUMINAIRE
(DUAL ARM / SERIES 'B')

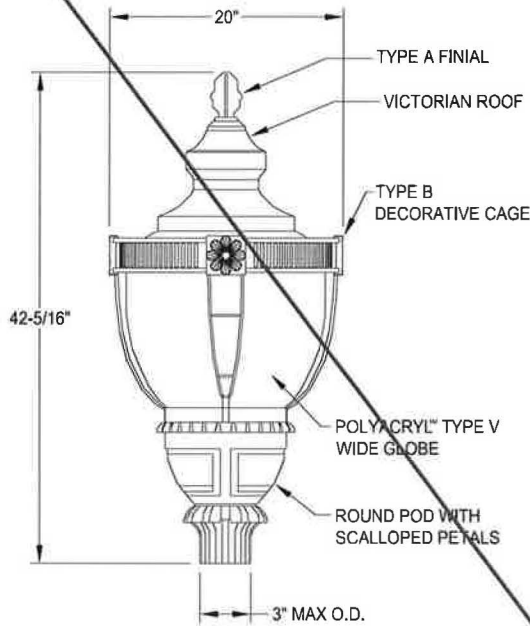


DRAWING NUMBER

SL - 43

HADCO® WIDE REFRACTIVE GLOBE SERIES LUMINAIRE

Maximum weight - 50 lbs
Maximum effective projected area - 2.20 sq. ft.



WATTAGE
100 S = 100 W HPS

VOLTAGE
E = 120 VOLT

FINISH
A = BLACK

FASTENER
1 = HEX HEAD BOLT

REFLECTOR
T = FULL TOP

PHOTOCONTROL
N = NONE

SOCKET
G = MOGUL

FULL PRODUCT NO:
R53BABA1ATNG100SE

SPECIFICATIONS

GENERAL DESCRIPTION

POD
ROUND FITTER WITH SCALLOPED PETALS IS CONSTRUCTED OF DIE-CAST 360 ALUMINUM ALLOY WITH SIDE-HINGED DOOR PROVIDING 180° ENTRY INTO THE FITTER ASSEMBLY FOR ACCESS TO THE ELECTRICAL COMPONENTS. ACCEPTS STANDARD HADCO TWISTLOCK BALLAST ASSEMBLIES UP TO 310W HPS OR 320W MH. WIRING BLOCK TO ACCEPT THREE #8 SOLID OR STRANDED WIRES. INTERNAL TWIST-LOCK PHOTO EYE RECEPTACLE. ACCESS TO PHOTO EYE THROUGH THE DOOR ON THE POD. HEAVY CAST ALUMINUM POST

SPECIFICATIONS (CONT.)

FITTER UTILIZES FOUR 5/16-18 BLACK CADMIUM STAINLESS STEEL SET SCREWS (HEX HEAD OR ALLEN HEAD AS SPECIFIED) FOR MOUNTING TO 3" O.D. POST TENON. GLOBE HOLDER HAS AN INTERNAL WATER TRAP TO PREVENT WATER FROM ENTERING BALLAST COMPARTMENT. GLOBE IS HELD BY UTILIZING FOUR 5/16-18 BLACK CADMIUM STAINLESS STEEL FASTENERS (HEX HEAD OR ALLEN HEAD AS SPECIFIED). ALL HARDWARE TO BE STAINLESS STEEL AND CAPTIVE. POD HEIGHT IS 12-1/4" AND WIDTH IS 11-1/2". FINISH IS POLYESTER THERMOSET POWDERCOAT.

ROOF

VICTORIAN STYLE ROOF IS CLEAR INJECTION MOLDED U.V. STABILIZED ACRYLIC WITH 99 HORIZONTAL PRISMS FOR A SOFT, EVEN GLOW. 13" HEIGHT AND 16-1/2" WIDTH. THE ROOF AND BOTTOM GLOBE SECTIONS ARE SECURED IN A SLIP-FIT, 1/2" OVERLAP DESIGN AND USE FOUR #10-24 STAINLESS STEEL PAN HEAD SCREWS WITH FOUR ALUMINUM NUTSERTS PROVIDING A MECHANICAL LOCK AND ENABLING FUTURE REPLACEMENT OF EITHER THE ROOF OR BOTTOM GLOBE SECTION IF REQUIRED.

CAGE

CAGE FOR WIDE BODY GLOBES (16-1/2" DIAM.) IS CONSTRUCTED OF DIE-CAST 360 ALUMINUM ALLOY. CAGE HAS 4 LEGS EACH WITH SQUARE DECORATIVE FLOWER BLOCK. SOLID RECTANGULAR BAND AROUND TOP OF CAGE. HEIGHT OF CAGE IS 15" AND WIDTH OF CAGE IS 20". FINISH IS POLYESTER THERMOSET POWDERCOAT.

FINIALS

ALL FINIALS ARE CAST ALUMINUM MOUNTED WITH 1/4-20 STAINLESS STEEL THREADED STUDS. STANDARD FINIAL FINISH WILL MATCH FIXTURE FINISH AS SPECIFIED. FINISH IS THERMOSET POWDERCOAT.

FASTENERS

HEX HEAD BOLTS: BLACK CADMIUM STAINLESS STEEL.

FINISH

THERMOSET POLYESTER POWDERCOAT IS ELECTROSTATICALLY APPLIED AFTER A FIVE-STAGE CONVERSION CLEANING PROCESS AND BONDED BY HEAT FUSION THERMOSETTING. LABORATORY TESTED FOR SUPERIOR WEATHERABILITY AND FADE RESISTANCE IN ACCORDANCE WITH ASTM B-117-64 AND ANSI/ASTM G53-77 SPECIFICATIONS.

OPTICAL ASSEMBLY

TYPE V WIDE BODY GLOBE IS CONSTRUCTED OF CLEAR INJECTION-MOL U.V. STABILIZED ACRYLIC. A TWO-PIECE (GLOBE AND ROOF) SLIP-FIT, 1/2" OVERLAP, DESIGN UTILIZES NUTSERTS AND STAINLESS STEEL FASTENERS WHICH ELIMINATES A "BUTT-GLUE" SEAM APPEARANCE. THE OPTICAL SECTION OF THE GLOBE HAS A NECK OPENING OF 7-3/8" AND AN OUTSIDE NECK DIAMETER OF 8". GLOBE (LESS THE ROOF) HAS A 12-7/8" HEIGHT AND 16-3/4" WIDTH AT THE TOP WITH 98 HORIZONTAL PRISMS AND 360 HIGHLY POLISHED VERTICAL PRISMS.

REFLECTOR

TOP REFLECTOR IS 0.04" THICK HYDROFORMED ALUMINUM WITH A CLEAR, ANODIZED HIGHLY SPECULAR FINISH. DIAMETER IS 14-1/4" AND HEIGHT IS 6-1/4". REFLECTOR RESTS ON TOP INTERNAL PRISM WALL OF THE BOTTOM GLOBE SECTION TO CONTROL UPLIGHT.

ELECTRICAL ASSEMBLY

TWISTLOCK BALLAST ASSEMBLY WITH QUICK DISCONNECTS FOR EASY MAINTENANCE. BALLASTS ARE HPF CORE AND COIL. 4KV RATED MOGUL BASE PORCELAIN SOCKET. NICKEL-PLATED SCREW SHELL WITH CENTER CONTACT. 4KV RATED MEDIUM BASE PORCELAIN SOCKET. NICKEL-PLATED SCREW SHELL WITH CENTER CONTACT.

BALLAST

ALL HID BALLASTS ARE CORE AND COIL AND REGULATED WITH POWER FACTORS BETTER THAN 90% (HPF). BALLAST PROVIDES +/- 5% LAMP POWER REGULATION WITH +/- 10% INPUT VOLTAGE REGULATION. BALLASTS ARE FACTORY PRE-WIRED AND TESTED. METAL HALIDE BALLASTS ARE CAPABLE OF STARTING AT -20° F OR -30° C AND HPS AT -40° F OR -40° C.

CERTIFICATION

UL LISTED TO U.S. SAFETY STANDARDS FOR WET LOCATIONS. MANUFACTURED TO ISO 9001:2000 STANDARDS

DELETE

DATE:
02/05/2007

NOT TO SCALE

CITY OF ELK GROVE - PUBLIC WORKS

APPROVED BY:

REVISION BY APPROVED DATE

CITY ENGINEER

OLD TOWN LUMINAIRE
(SERIES 'B')



DRAWING NUMBER

SL - 47