This Specification is used for planning, designing and construction of electrical street light facilities and systems.

Specification for Street Lighting Systems

City of Anaheim
Public Utilities Dept.
Electrical Engineering Division
201 South Anaheim Blvd.
Suite 701
Anaheim Ca. 92805

Revised: July 2017
ELECTRICAL SPECIFICATIONS FOR STREET LIGHTING SYSTEMS

This specification has been prepared and is made available for use in the planning, designing, and construction of electrical street light facilities and systems. It applies equally to new construction within established areas as well as new developments that are provided electrical service by the City of Anaheim’s Public Utilities Department.

These requirements are subject to updates; therefore, contractors and other interested parties contemplating any action or construction governed by these specifications should ensure they are using the most recent revision.

In addition to this specification, all applicable industry standards and rules and regulations of federal, state, and local governmental agencies are in effect. In no instance shall it be directly or indirectly implied that these specifications change or modify the scope or intent of any other applicable documents issued by any governmental agency with jurisdiction in the areas served by this Utility. Any and all questions regarding “areas of conflict” shall be decided in favor of the more stringent of the various rules and regulations in conflict.

All modifications and/or deviation from this specification must be approved by Anaheim Public Utilities Department’s T&D Manager or his designated representative. No work may proceed which deviates from the requirements of this document without written authorization from the T&D Manager’s Office.

Information concerning any aspect of Anaheim’s street light system requirements may be obtained by contacting:

Electrical Engineering Division
Public Utilities Department
201 South Anaheim Boulevard, Suite 701
Anaheim, CA 92805
Telephone: (714) 765-5156
Fax: (714) 765-5221

Fred Barvarz
Transmission & Distribution Manager

Dave Algarme
Electric Operations & Customer Support Manager
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Specification for Street Lighting Systems City of Anaheim Public Utilities Department.

1.00 DEFINITIONS

Apparatus:
Materials, equipment, and/or machinery associated with the electrical operation of the utility system.

CATV:
Cable Television System with Related Facilities.

City:
Whenever the word “City” is used in these Specifications, it shall mean the City of Anaheim, Orange County, CA

Contractor:
The party responsible for the installation and completion of a particular development and street light system whether it be the owner, leasee, developer, builder, subdivider, or prime contractor.

Cover:
Any protective covering placed over a structure that provides access to utility facilities.

Electrical Engineering Division:
The Transmission & Distribution Engineering Division of the Utilities Department of the City of Anaheim.

Electrical Utilities Inspector:
The Utility representative inspecting installations on the utility side of the meter (not associated with the Building Department of the City).

Encased:
To encase is to completely surround or cover a conduit with concrete.

Facilities:
Materials, equipment, apparatus, cables, ducts, vaults, pull boxes, manholes, and all items required to be constructed or installed to permit the operation and provide service by the Electrical Utility.

Grout:
Uniform and “Finished” smooth concrete over the street light base bolts to the street light body

Job:
A specific section or the entire section of a street light system under construction.

Joint Job:
A “job” where two (2) or more contractors have joined forces, by agreement, to provide specific portions of the job.
**Joint Trench:**
A trench which will be used by two (2) or more parties such as power, telephone, and CATV.

**Structure:**
A collection of inter-related components; such as; foundation, pull box, street light pole or conduit system.

**Subcontractor:**
A contractor, construction crew, or supplier who reports to and is responsible to the contractor.

**Substructure:**
A structure, including conduits, pull box or vaults, which is partially or completely below grade level for the purpose of containing, pulling, installing, splicing, and terminating electrical cables, or installing equipment and apparatus. Also, other underground facilities; such as; water, gas, sewer, etc.

**Utility:**
The Public Utilities Department of the City of Anaheim.

**Working Drawings:**
Those drawings which indicate locations, quantity and type of apparatus. In these Specifications, working drawings shall always mean approved drawings which have been signed or initialed by the engineer of record.
2.00 GENERAL INFORMATION

2.01. Contractors shall contact the Public Utilities T&D Division office at the earliest possible time for the purpose of obtaining specifications, working drawings, and to establish communications regarding proposed developments.

Anaheim West Tower,
201 S. Anaheim Blvd., 7th Floor
Anaheim CA 92805

Phone (714) 765-5156
FAX (714) 765-5221

2.02. The Electrical Utilities Inspector is the coordinator of utility field construction activity and shall be contacted by telephone or fax at:

Utility Service Center, 909 E. Vermont Street, Anaheim CA 92805

Phone (714) 765-6846
FAX (714) 765-6996 or (714) 765-6851

2.02.01 The Electrical Utilities Inspector will require the following information at least ten (10) normal working days prior to the proposed start of any job.

(a) Contractor's name, address, and telephone number.
(b) Name of contractor's field superintendent or foreman.
(c) All field office locations, telephone and fax numbers.
(d) Name, address, telephone and fax numbers of all applicable subcontractors.

2.02.02 The Electrical Utilities Inspector must be advised at least two (2) normal working days prior to any excavation and backfilling operation.

2.02.03 The Electrical Utilities Inspector must be advised at least two (2) normal working days prior to any conduit rodding or mandrel pulling.
2.03. The Electrical Utilities Inspector will enforce these Specifications and other rules and regulations which are applicable to the job. He will cooperate with, and coordinate actions of other City personnel with jurisdiction relating to the job. The Electrical Utilities Inspector is not responsible for the enforcement of rules and regulations of other agencies or City departments.

2.04. Final approval by the Electrical Utilities Inspector of each job segment, as well as final approval of the total installation, must be obtained before an installation will be considered completed and released for electrical service. A Street Light Card (Form EL -18) shall be completed for each standard and luminaire. A sample of Form EL - 18 can be found in the Appendix.

2.05. Each segment of the job, each structure, all apparatus and accessories, and all contractor/subcontractor work shall meet or exceed the requirements of the Utility, the City, and other applicable codes, rules and regulations, including CAL/OSHA.

2.06. All construction and apparatus shall be as shown on working drawings.

   2.06.01 Each working drawing shall indicate the structures, apparatus and facilities to be installed by type and quantity.

   2.06.02 Each working drawing shall indicate the location of all structures, apparatus, and facilities.

   2.06.03 Minor deviations to the indicated location of structures, apparatus, and facilities may be allowed when approved by the Electrical Utilities Inspector.

   2.06.04 Major deviations to specified location of structures, apparatus, and facilities must be approved by the Electrical Engineering Manager or his authorized representative.

   2.06.05 When the working drawings and these specifications are in conflict, the working drawings shall prevail, when approved by the Electrical Utilities Inspector.

   2.06.06 When the working drawings are not specific, these specifications, as interpreted by the Electrical Utilities Inspector, shall prevail.

   2.06.07 Any deviations to working drawings shall be noted in red on the Electrical Utilities Inspector's copy of the drawings and initialed by the authorizing T&D Division employee. Upon completion of the installation, these marked copies shall be
termed "recorded drawings" and shall be forwarded to the
designer or engineer of record.

2.06.08 Working drawings prepared by the contractor and submitted
to the Utility for approval may include facilities and apparatus for other than street lighting systems. Utility
approval of these drawings does not imply approval of
anything other than T&D Division portions of the drawings.
All questions regarding facilities other than T&D Division
installations shall be referred to the parties concerned.

2.07 Each structure, facility, or piece of apparatus installed shall conform to
details as indicated on the appropriate Electrical Division construction
standards.

2.07.01 Contractor requests submitted in writing for deviations from
these specifications will be considered and acted upon by the
Utility. All deviations to these specifications must be
approved in writing by the T&D Manager or designated
representative prior to any performance of work involving
the deviation.

2.07.02 Requests for deviation from this specification which may
cause the Utility to incur additional expense may not be
considered unless an accounting of costs and a negotiated
settlement has been approved by the T&D Manager or their
authorized representative.

2.08 The T & D Designer will provide routing and location of all new and
existing street light circuits. Contractor shall contact Dig-Alert USA (1-800-
277-2600) to have all existing utilities located and marked in the
construction path at least 48 hours prior to starting work.

2.9 Existing street lights designated for replacement shall be maintained
operable by the contractor until new the street light system is installed and
energized.

3.00 THE CONTRACTOR

The Contractor shall:

3.01 Assume full responsibility and liability for the job.

3.02 Take care to prevent damage to existing properties and improvements,
both public and private.
3.03 Be responsible for repair, replacement, restitution, relocation and/or corrections to the City facilities when damaged due to failure on his part to provide supervision and control of construction equipment and personnel, provided the Contractor is qualified to make repairs as determined by the City. The repair will be under the direction of a representative of the City. If the Contractor is not qualified to make repairs, the City will repair the damage and the Contractor will be billed for the City's expense.

3.04 Be solely responsible for the determination of all obstructions which will affect his ability to complete the job as scheduled. This requirement includes all obstructions, known or unknown, by the Utility, and whether or not they are included on Utility-furnished drawings.

3.05 Possess appropriate, valid State of California Contractor License.

3.06 Possess appropriate, valid City of Anaheim Business License.

3.07 Obtain all applicable permits and pay required fees.

3.08 Observe all applicable codes, rules, regulations, and ordinances, including CAL/OSHA.

3.09 Provide, install, set, maintain, and remove all safety equipment as required (Example: Barricades, lanterns, shoring).

3.10 Provide adequate supervised help and equipment for each task of the job.

3.11 Erect temporary protective barricades around electrical system substructures at the time the substructure is installed. These barricades shall be maintained during the construction process and removed when the job is completed.

3.12 Keep good records relating to deviations of the working drawings and these specifications.

3.13 Provide supervision over and coordinate activities of the various subcontractors on the job.

3.14 Remove all street markings upon completion of construction.

4.00 COORDINATION AND COOPERATION

4.01 The Contractor shall work with Utility personnel to coordinate activities, to determine locations of various apparatus and to alleviate conflict on the job.
4.02 The Electrical Utilities Inspector is responsible for coordinating all Utility field activities with the activities of Contractor crews. It is mandatory that the Contractor and the Electrical Utilities Inspector establish and maintain good communication.

4.03 The Contractor may be charged for time, equipment costs, and material expenses or utility crews which are expended due to avoidable delays and lack of a coordinated, cooperative effort on the part of the Contractor.

4.04 Inspection of completed trenches and associated excavations is required prior to the installation of facilities and equipment.

4.05 The Contractor shall contact Underground Service Alert of Southern California at: 1-800-227-2600, at least 48 hours before any excavation.

5.00 CONSTRUCTION AND INSTALLATION REQUIREMENTS

5.01 Unless otherwise specified on working drawings or by Master Agreement, the Contractor shall, at no cost to the City, furnish and provide the following items as specified:

5.01.01 Permits - All applicable/required permits must be obtained prior to the start of any job.

5.01.02 Fees - All applicable/required fees must be paid or otherwise accounted for prior to the start of any job which requires them.

(a) Inspection - Reference Anaheim Municipal Code Section 17.08

(b) Compaction - The payment of independent laboratory testing expenses as may be required in Paragraph 5.02.07(c) (page 18) and shall be paid by the Contractor.

(c) Miscellaneous - As maybe required.

5.01.03 Easements:

(a) Provide easement drawings as necessary for filing and recording the easement with the County Clerk.

5.01.04 Surveys and Staking:

(a) Surveys of area improvements such as property lines, corners, finish grade, etc. necessary for determining
the proper location of electrical facilities shall have been completed and the area adequately marked prior to the start of any work.

(b) Destroyed or otherwise obliterated markings, which, in the opinion of the Electrical Utilities Inspector, do not adequately define location and/or grade, at the time of street light facility installation, shall be reworked prior to the start of the job under consideration.

(c) Erroneous or faulty markings which do not indicate true location or final grade, especially in sloped or terraced areas, that are detected after street lighting facilities have been installed may result in a rejection, by the Electrical Utilities Inspector, of the entire job. If this should happen, the Contractor shall rework the affected areas so that it will agree with working drawings.

5.01.05 Grading:

(a) All areas where street lighting facilities are to be installed shall, prior to the start of a job, be rough graded, at all points, to within plus four (+4) and minus zero (-0) inches of final grade.

5.01.06 Walkways-Roadways:

(a) Adequate walkways and/or roadways around or over excavations, when required to facilitate public traffic, and to allow entrance into adjacent properties.

5.01.07 Facilities:

(a) All necessary facilities associated with a street lighting job.

5.02 When required, the following items shall be furnished or performed by the Contractor in accordance with the specification and working drawings:

5.02.01 Excavations:
(a) Excavations shall be fully protected against hazard to workers and the general public. The Utility reserves the right to specify protective measures, when in the opinion of the Electrical Utilities Inspector inadequate protective measures are being taken by the Contractor. The Contractor shall immediately comply with all safety measures reported by the Electrical Utilities Inspector.

(b) All excavations shall be true to the layout as indicated on approved working drawings.

(c) Trench and other excavation bottoms shall be stable, brought to a uniform grade at the proper depth with a soil compaction which meets the standards and has the approval of the Electrical Utilities Inspector.

(d) Trench bottoms shall not have soft spots, unnecessary depressions, or abrupt changes in grade which, in time, could cause damage to conduit and/or cable. Areas where moisture could possibly accumulate within conduit shall be avoided where possible.

(e) Where localized conditions dictate, rocks and other conduit or cable damaging material shall be removed to a depth of six (6) inches below the specified trench depth. (Examples are: sharp, jagged rocks; broken concrete; and landfill material.) When this condition exists, the "sub-base" shall consist of crushed rock or select backfill material as approved by the Electrical Utilities Inspector.

(f) Trenches shall be located with center lines as shown on the working drawings and/or construction standards.

(g) Widths - Unless otherwise specified, trenches for conduit shall have a minimum width of six (6) inches. Minimum widths for all excavations shall extended from grade level to the bottom of the excavation including subbase requirements.
(h) Depth - The minimum depth of all excavations shall be determined by adding all individual minimum depths, in a line, as shown on working drawings and/or construction standards and/or as required by this specification. Minimum depths must include areas for shading and drainage materials. All depth measurements shall be measured from finish grade level. Normal depth of trench for City street lighting conductors is 24 inches from finish grade to top of conduit.

(i) All excavations, once opened, shall be adequately protected from damage and shall be maintained free of debris until closed.

(j) All excavations for equipment substructures, which are open at the bottom or have drainage or weep holes in them, shall have a sub-base of clean crushed rock to facilitate drainage. This sub-base of clean, crushed rock shall have a minimum thickness of six (6) inches. The clean, crushed rock sub-base shall extend from edge to edge of the total excavation, and shall be in place prior to the installation of precast substructures.

(k) Cushioning of conduit. A three (3) inch layer of approved loose soil, select back fill material or sand shall be placed on the bottom and sides and six (6) inches over direct buried conduit in a trench for the purpose of protecting and cushioning the conduit during backfill and compaction operations.

(l) When crossing under a street dedicated to the City of Anaheim, all supply ducts including street light shall be either PVC schedule 80 concrete-encased, or galvanized steel.

(m) When encasement is required, conduit shall be restrained to prevent floatation and to maintain separation.

(n) Encasement materials shall consist of concrete mixes approved by the Electrical Utilities Inspector (concrete shall be Class A, five sack mix - minimum). A copy of the concrete delivery receipt
showing the mix formula shall be provided to the Inspector.

5.02.02 Spoil Soil:

All spoil soil from excavations of less than five (5) feet depth shall be placed at least 12 inches from the nearest edge of the excavation. (Refer to the California Department of Industrial Relations Construction Safety Orders, Article #6, Section 1540-F).

5.02.03 Conduit and Fittings:

(a) Conduit shall be installed:

1. Where indicated on working drawings.

2. Where the repair and replacement of cable would be extremely difficult without the conduit.

3. Under concrete sections exceeding four (4) feet in the direction of crossing.

4. Horizontal riser conduit shall run a minimum of ten (10) feet from the vertical riser section.

5. On all street crossings.

6. Where localized conditions indicate a need for the protection of the cable.

(b) Acceptable conduit shall meet or exceed the following minimum standards:

1. Conduits installed for street lights shall be minimum 2” PVC schedule 80. Exception: For installation under any vehicular traffic area, such as street crossing, drive way, or traffic lanes use hot deep galvanized steel or concrete encased PVC.

2. Gray PVC (Schedule 80) conduit has the minimum specifications acceptable as conduit for riser bends and for the first eight (8) feet of a riser above grade.
3. Gray PVC (Schedule 40) conduit is acceptable for use as a riser above the eight (8) foot elevation.

4. Use of all other types and sizes of conduits are subject to approval by Utility Inspector/Designer.

5. **METHOD OF INSTALLATION**

Open trenching and directional boring are both acceptable methods for installation of street light conduits. Upon approval by utility inspector/designer, the street light conduit can be installed via the directional boring or open trenching based on site condition. The CONTRACTOR shall be responsible for coordinating with residents / businesses and determining possible field obstructions prior to proceeding with the appropriate conduit installation method. The conduit installation shall conform to depths and alignments as specified in the Electrical Specifications, Construction Standards and job drawings regardless of what conduit installation method is utilized.

(c) All conduit is subject to utility approval. The Electrical Utilities Inspector may select random samples, of an appropriate length (up to five (5) feet), for testing and evaluation. Conduit which is found to be defective in any way or which is determined inadequate for the job shall be rejected by the Electrical Utilities Inspector and replaced by the Contractor.

(d) All conduit shall be "new" (unused) when installed.

(e) No material labeled as "pipe" shall be used as conduit.

(f) All conduit shall be sized per the working drawings.
(g) All conduit shall be carefully aligned (restrained when necessary) to assure proper separation and grade.

(h) Some "snaking" of the conduit will be allowed as determined acceptable by the Electrical Utilities Inspector.

(i) Conduit runs of greater than 40 foot length, which do no have conductors installed, shall have pull ropes installed.

(j) Conduit runs with major sweeps and bends which are greater than 20 feet, total length and do not have conductors installed, shall have pull ropes installed.

(k) All bends and major sweeps shall be accomplished with appropriate fittings. No conduit shall be bent or stressed beyond the manufacturer's ratings.

(l) PVC conduit shall be supplied by manufacturers approved by the T&D Manager or his authorized representative.

(m) Contractor-proposed conduit for use on utility systems which is not PVC or steel, shall meet standards which are issued with the Utility's approval of the proposed conduit.

(n) Minimum cover over all conduit shall be 24 inches.

(o) All conduit runs which have less than 24 inches of cover shall be approved by the engineer of record, and may require encasement or other method of protection.

(p) All conduit runs shall terminate within suitable substructures. Conduit termination's shall be grouted into the substructure wall. Suitable, approved end bells shall be installed on the ends of each conduit run.

(q) All conduit accessory items such as end bells, couplings and expansion joints shall be manufactured of the same material composition as the conduit, or shall be as recommended by the
manufacturer of the conduit and approved by the T&D Manager or his designated representative.

(r) Standard procedures for installation of conduit shall be as follows:

1. Conduit shall not be left exposed in an open trench longer than absolutely necessary.

2. In transporting long lengths of conduit, provisions shall be made to support its full length.

3. Backfilling operations shall always begin near the mid-point of each conduit run and work both ways toward each end or as agreed to by the Electrical Utilities Inspector.

4. Conduit shall not be cut to length at the terminal points until backfilling operations are completed and contraction or expansion of the conduit run has stabilized.

(s) The following procedures apply to non-metallic conduit:

1. Conduit to be stored in excess of two (2) weeks shall be protected from the harmful effects of the sun.

2. Conduit shall not be stacked higher than 42 inches for storage.

3. All fittings to be joined shall be exposed to the same temperatures for an appropriate period of time.

4. When plastic conduit and fittings are to be joined, make certain all foreign matter has been wiped from both parts at the joint. Apply a liberal and uniform coat of cement to the male mating zones. Slip conduit into the fitting with a slight twist until it bottoms. Hold the joint from 15 to 60 seconds,
according to temperature, so that the conduit does not push out of the fitting.

5. Do not twist or drive the conduit after the initial thrust, cure joined members for at least five (5) minutes before handling. Wipe off excessive solvent that is left on the outer shell of the conduit. Use only solvents and/or cements furnished or recommended by the manufacturer of the conduit. Always cut straight and deburr ends which are ragged. In cases where a joint is made under stress due to misalignment, bends, or other factors, the joint must be securely held so as to relieve stresses during the necessary curing time and/or until backfilled or encased.

5.02.04 Cable and Wiring:

(a) Cable:

1. No. 6 CU type THHN-THHW Building Wire may be used for 120V or 240V underground circuits in conduit, unless other cable is called for on the working drawing.

(b) All street lighting conductors, excepting neutrals, shall be black in color.

(c) Excavations and trenching shall be constructed as shown on the working drawings and/or construction standards.

(d) Cable installed in conduit shall not have splices other than at approved splice or termination points. All splices must be inspected and approved by the Electrical Utilities Inspector.

(e) Locator stakes shall be placed at each location where conductors have been "stubbed out". Locator stakes shall extend at least two (2) feet above finish grade and shall be permanently marked "Street Light Conductor".

(f) Unless otherwise specified on approved working drawings, light standards shall be wired with black,
THHN, THHW, insulated #14 AWG, stranded (#10 AWG maximum) wire.

5.02.05 Substructures:

(a) Precast cable boxes, splice boxes, vaults, or manholes are acceptable for use on electric utility jobs within the City of Anaheim.

(b) Pull boxes shall be installed as indicated on the working drawings and shall be installed with covers at curb and/or sidewalk grade level.

(c) Concrete pull boxes shall be approved by the Utility. All covers shall be marked "Street Lights".

(d) Pull boxes shall be per Anaheim Construction Standards and job drawings. Other type of pull boxes are not acceptable unless otherwise approved by Anaheim Electrical Utilities Inspector or Electrical Engineering.

(e) Each cable box, splice box, vault or manhole shall include accessories and facilities in conformance with requirements set forth on the working drawings.

5.02.06 Backfill:

(a) Backfill operations shall not be started without prior notice and approval of the Electrical Utilities Inspector.

(b) Backfill operations must be inspected by the Electrical Utilities Inspector.

(c) Backfill shall be placed in excavations per the applicable Electrical Utility's construction standard.

(d) Backfilling operations shall be completed within 24 hours of the placement of cable and/or conduit in the trench.

(e) Select backfill material shall consist of earth, sand, or a mixture thereof which is capable of passing through a one-eighth (1/8) inch screen and which is
capable of being compacted to the requirements of applicable Electrical Utility construction standard.

(f) Cushioning material shall consist of select back-fill material which does not easily compact, but which will act as a protective barrier around direct-buried cables.

(g) All backfill material must be approved by the Electrical Utilities Inspector prior to being placed in an excavation.

(h) Standard backfill material shall contain no rocks which have a cross section in any plane larger than three (3) inches.

(i) Select backfill material shall be hand placed adjacent to all conduit surfaces.

(j) Trenches shall be free of debris prior to and during all backfilling operations.

(k) Contractors shall provide adequate supervised help during all phases of the backfilling operations.

5.02.07 Compaction:

(a) Trench bottoms and substructure footings shall be compacted in accordance with applicable Electrical Utility construction standards and shall meet or exceed the requirements set forth by the City of Anaheim Public Works Department.

(b) Trench compaction shall be performed in a manner such that it will not damage cable, conduit or other subsurface structures.

(c) When, in the opinion of the Electrical Utilities Inspector, compaction appears to be unacceptable, compaction tests shall be made by a soils testing laboratory which has been approved by the Electrical Engineering Manager or their authorized representative. This compaction testing shall be paid for by the contractor.

5.02.08 Conduit Cleaning and Mandreling:
(Before the Contractor installs conductors in the conduit)

(a) After backfilling and compaction of a trench containing conduit, the Contractor shall clean the conduit runs by rodding or by pulling a brush, approved by the Electrical Utilities Inspector, through the conduit. Conduit runs must be clear of excess dirt, debris, burrs or other obstructions which could hinder or damage the cable when pulling.

(b) After cleaning the conduit, the Contractor shall pull an approved mandrel through each conduit run to show its capability to accept the proposed cable.

1. The mandrel shall be approved by the Electrical Utilities Inspector.

2. The mandrel shall have an outside diameter (OD) which is one-fourth (1/4) of an inch less than the inside diameter (ID) of the conduit.

3. The mandrel shall be of a type and have a length which is adequate to simulate the proposed cable for the installation.

(c) All cleaning and mandreling operations shall not be performed without prior approval by the Electrical Utilities Inspector.

(d) Obstructions in duct runs which cannot be removed to the satisfaction of the Electrical Utilities Inspector or which will not allow the specified mandrel to readily pass through the conduit, shall require that the Contractor replace that portion of the conduit run before final approval and acceptance of the job.

(e) Immediately after mandreling and Electrical Utilities Inspector's approval, the Contractor shall install pull ropes and seal all conduit openings.

5.02.09 Pull Ropes:

(a) Shall be manufactured from either polypropylene, polyethylene or other material approved by the Utility.
(b) May be either braided or twisted.

(c) Must consist of a minimum of three (3) strands.

(d) Shall have a minimum diameter of three-sixteenths (3/16) of an inch.

(e) Shall have a minimum tensile strength of 700 pounds.

(f) Shall be "new" when installed.

(g) Shall be continuous for each run and shall extend three (3) feet beyond each end of each conduit run.

(h) Extensions shall be looped back into the conduit and secured in place for easy retrieval at a later date.

5.02.10 Terminal Plugs and Seals for Conduits:

After mandreling operations and installation of pull ropes have been completed, all conduit termination's shall be sealed against the entrance of foreign matter and rodents as shown on Construction Standard CU 1600-96H.

5.02.11 Vaults, Rooms, Enclosures:

Some street light work may require installation of conduit/cable to vaults or similar facilities.

(a) All vaults, or similar type of enclosures used to house electrical equipment, whether above or below ground, shall be as indicated on approved working drawings.

(b) All details of construction, material, safety, equipment, and ventilation shall comply with all applicable City, state, and federal regulations, code and requirements; especially those which are stated in the California Occupational Safety and Health Act (CAL/OSHA), National Electrical Code.

(c) In system installations involving vaults, rooms, or enclosures, all Contractors shall review the proposed installation with the City's T&D Division prior to starting any construction.
5.02.12 Barriers-Walls:

(a) All electrical equipment and substructures shall be temporarily protected during the construction period by the installation of temporary barriers similar to the one shown on Construction Standard CU 1600-4C. Barriers shall be removed at the end of a project by Contractor.

(b) Wherever vehicular traffic is possible in close proximity to electrical equipment, special protective posts shall be installed in accordance with Construction Standard CU 1600-9 and details shown on the working drawings.

5.02.13 Grounding:

Grounding is required at each light standard per CO 782.

(a) Grounds rods shall be 5/8" x 8' copper-weld rod and driven into the soil.

1. Ground rods shall not extend above the bottom of the light standard access door opening.

2. Ground rods shall have an electrical bond to the base of the light standard (#6 AWG CU. minimum) or as specified on approved light pole standards.

(b) Where ground rods are impractical and approval has been granted by the Electrical Utilities Inspector a ten (10) foot minimum coil of bare copper wire buried at least three (3) inches beneath the concrete foundation may be substituted for the grounding rod providing the following minimum specifications are met:

1. #4 AWG solid bare copper wire minimum (cover with soil before concrete is poured).

2. Fifteen (15) feet minimum overall length.
3. Proper bond to the light standard base (minimum #6 copper).

4. Installed in a prescribed and acceptable manner - not a part of foundation, and minimum cover of three (3) inches of soil between foundation and copper coil.

5.02.14 Foundations

(a) Size-shape

1. Foundations shall conform to the T&D Division Construction Standards (see attached drawings L-116 through L-131).

2. When construction conditions dictate and approval has been obtained from the Electrical Utilities Inspector, "odd" shaped foundations may be allowed provided they will support the lighting standard adequately. Round foundations shall have the following minimum dimensions:
   Diameter - 30 inches,
   Depth - 54 inches

(b) Material

1. Foundations shall be constructed per Section 201 and 307 of Standard Specifications for Public Works Construction (green book), American Public Works Association and Associated General Contractors of California. Concrete shall be Class 560-C-3250.

(c) Foundations shall "cure" for at least three (3) full days (72 hours) prior to erection of light standards.

(d) Anchor Bolts

1. Anchor bolts are normally supplied by the light standard manufacturer; however, in all instances they must be included and conform to Electrical Utility's Construction Standards (see attached drawings).
2. Anchor bolts shall be held in place during construction of the foundation by a template with hole spacing equivalent to the hole arrangement of the light standard base. Templates shall be in good condition and made of a substantial quality material (3/4" plywood or equivalent) which will not bend, warp, or give to an extent that hole alignment could be affected.

(e) Grouting

After the light standard has been placed on the foundation, it shall be leveled / plumbed to specification (by use of leveling nuts).

After the light standard is in place per specification, the light standard base shall be "grouted" to the foundation. Grouting shall be as follows:

1. Uniform and "finished" smooth concrete.

2. Conform to the slope and grade of adjacent curbs and sidewalks (2% slope normal).

3. Unless otherwise specified on drawings, grout forms shall be 24" x 38", extending to the curb; or, behind sidewalk, 24" x 24", extending to sidewalk.

5.02.15 LUMINAires - the following are City of Anaheim approved luminaires, unless indicated in the job drawings otherwise:

(a) DOWNTOWN REDEVELOPMENT AREA
(Design No. 740)
Rectilinear luminaire - aluminum housing with approved City of Anaheim gray paint finish, sharp cut-off lighting distribution, with photoelectric receptacle and reactor (NPF) ballast.
For luminaires manufacturer catalog number(s) check with Electrical Systems Designers, Anaheim stock code numbers: E474045M and E474050M.

(b) ANAHEIM ARENA (The Pond)
(Design No. 740)
Katella Avenue in the vicinity of Douglas Street. Rectilinear luminaire - aluminum housing with approved City of Anaheim gray paint finish, sharp cut-off lighting distribution, with photoelectric receptacle and reactor (NPF) ballast.

(c) **ANAHEIM COLONY HISTORIC DISTRICT**
(Design No. 742, 742A & 743)
Residential streets within area bordered by North Street, East Street, South Street and West Street. Flame design luminaire.
For luminaires manufacturer catalog number(s) check with Electrical Systems Designers, Anaheim stock code numbers: E474195M and E474200M.

(d) **ANAHEIM RESORT AREA**
(Design No. 744, 746, 747, 749 & 750)
Resort Area - Harbor Blvd. from Orangewood Ave. to Ball Road. Green Cobra Head luminaire mounted on a green steel decorative pole.
For luminaires manufacturer catalog number(s) check with Electrical Systems Designers, Anaheim stock code numbers: E474240M, E474245M and E474275M.

(e) **ANAHEIM HILLS/SANTA ANA CANYON AREAS**
(Design Nos 738 & 739)
Traditionaire luminaire, cast aluminum with solid state photoelectric control, and reactor (NPF) ballast.
For luminaires manufacturer catalog number(s) check with Electrical Systems Designers, Anaheim stock code numbers: E474015M and E474040M.

(f) **ANAHEIM DISNEY AREA**
(Design No. 748)
Special luminaire, cast aluminum with globe, “Mickey Mouse” Decoration final around Disneyland for luminaire manufacturer catalog number(s) check with Electrical System Designers, Anaheim Stock Number: E474255M

(g) **ANAHEIM PLATINUM TRIANGLE AREA**
(Design No. 760)
Special flat top luminaire to reduce glare with galvanized steel pole. For luminaire manufacturer catalogue number check with Electric System Designers, Anaheim Stock Code Number: E474285M

(h) CLEMENTINE STREET
(Design No. 761)
Special design for Clementine Street to match the look of retired luminaire. For luminaire manufacturer catalogue number check with Electric System Designers, Anaheim Stock Code Number: E474280M

(i) All Other City Areas
(Design Nos 733 & 736)
Cobra head luminaire assembly with type of ballast as shown, high pressure sodium, 90 degree cut-off with photoelectric receptacle. For luminaires manufacturer catalog number(s) check with Electrical Systems Designers for Anaheim stock code numbers: E474215M and E474220M.

5.02.16 LAMPS -
High pressure sodium, mogul base, shall be furnished and installed accordingly in each luminaire as follows:

<table>
<thead>
<tr>
<th>Wattage</th>
<th>Initial Lumens</th>
<th>ANSI Code No.</th>
<th>Finish</th>
<th>Rated Life</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>9,500</td>
<td>S54</td>
<td>clear</td>
<td>24,000</td>
</tr>
<tr>
<td>200</td>
<td>22,000</td>
<td>S66</td>
<td>clear</td>
<td>24,000</td>
</tr>
<tr>
<td>250</td>
<td>30,000</td>
<td>S50</td>
<td>clear</td>
<td>24,000</td>
</tr>
</tbody>
</table>

5.02.17 PHOTO CONTROL -
The following units are approved by the City of Anaheim:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Voltage</th>
<th>Model No.</th>
<th>Type</th>
<th>City Stock Code Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark to Light</td>
<td>120</td>
<td>D120-1.5-ST</td>
<td>twist lock</td>
<td>E468125</td>
</tr>
<tr>
<td>Dark to Light</td>
<td>240</td>
<td>D240-1.5-ST</td>
<td>twist lock</td>
<td>E468130</td>
</tr>
<tr>
<td>Dark to Light</td>
<td>120</td>
<td>DB120-1.5-ST</td>
<td>button</td>
<td>E468005</td>
</tr>
<tr>
<td>Dark to Light</td>
<td>240</td>
<td>DB240-1.5-ST</td>
<td>button</td>
<td>E468010</td>
</tr>
</tbody>
</table>

5.02.18 LIGHT STANDARDS -
Light standards shall be as specified on approved working drawings and shall conform to Electrical Division
Construction Standards (see attached Street Light Drawings).

5.02.19 MAST ARMS (for mounting on wood poles)
All mast arms shall be eight (8) foot up sweep. Inwesco Drawing #50A70 or approved equal as determined by the T&D Manager.

5.02.20 FUSES -
The Contractor shall not install, but shall supply to the City, fuses of the specified type and quantity. Each underground-served multiple street light standard shall be installed with fusing. Fuse holders shall be installed by the Contractor and shall be:

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Fuse Holder</th>
<th>Boot</th>
<th>Fuse Size</th>
<th>Operation</th>
<th>City Stock Code Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bussman “TRON”</td>
<td>HEB-AB</td>
<td>1A0512 (2ea.)</td>
<td>13/32”x1-1/2”</td>
<td>120 volts</td>
<td>E556535</td>
</tr>
<tr>
<td>Bussman “TRON”</td>
<td>HEX-AB</td>
<td>1A0512 (4ea.)</td>
<td>13/32”x1-1/2”</td>
<td>240 volts</td>
<td>E556540</td>
</tr>
</tbody>
</table>

(a) Individual Unit Fusing for 120 volt operation shall be provided for the following 120 volt, multiple connected, high pressure sodium luminaires:

<table>
<thead>
<tr>
<th>Lumens</th>
<th>Luminaire Wattage</th>
<th>Luminaire Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,800</td>
<td>70</td>
<td>10</td>
</tr>
<tr>
<td>9,500</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>22,000</td>
<td>200</td>
<td>15</td>
</tr>
<tr>
<td>30,000</td>
<td>250</td>
<td>20</td>
</tr>
</tbody>
</table>

(b) Individual Unit Fusing for 240 volt operation, one fuse per leg shall be provided for the following 240 volt, multiple connected, high pressure sodium luminaires.

<table>
<thead>
<tr>
<th>Lumens</th>
<th>Luminaire Wattage</th>
<th>Luminaire Amps</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,800</td>
<td>70</td>
<td>10</td>
</tr>
<tr>
<td>9,500</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>22,000</td>
<td>200</td>
<td>10</td>
</tr>
<tr>
<td>30,000</td>
<td>250</td>
<td>15</td>
</tr>
</tbody>
</table>

6.00 INSPECTIONS

6.01 All street lighting installations are to be inspected by the Electrical Utilities Inspector. Requests for inspections shall be made at least 24 hours in advance of the time actual work is to be performed. The Contractor shall be responsible for notifying the Electrical Systems Division when such work
is ready for inspection. Should work be covered without inspection and approval, it shall, if so ordered, be uncovered at the Contractor's expense.

6.01.01 Inspection Requests -

The street lighting installations shall be inspected by the Electrical Utilities Inspector at the following specified times:

(a) When foundations are excavated, grounds are installed and templates with rods and anchors assembled.

(b) When luminaire, photo control and standard have been assembled, but prior to erection.

(c) When standards are plumbed and bonded, but prior to grouting.

6.01.02 Equipment and Material Requirements -

All equipment and material that the Contractor proposes to install shall conform to the specifications and the street lighting plan as provided by the T&D Division. A list of substitute equipment and materials that the contractor proposes to install shall be submitted in writing to the T&D Division for approval prior to installation. It is the Contractor's responsibility to obtain written approval of such substitute equipment and materials and to provide the Inspector with a copy prior to inspection. In all cases, the judgment of the Electrical Engineering Manager or his authorized representative shall be final as to whether all materials furnished conform to these specifications.

6.01.03 Base Plates and Hand Holes -

Final inspection upon completion of job. All base plates or hand holes are to be left loose or open after connections are made for final inspections.

6.01.04 Excavations -

Excavations (Paragraph 5.02.01)

6.01.05 Inspection Sign Off -
Each inspection shall be signed by the Electrical Utilities Inspector when all requirements have been met.

6.01.06 Final Approval -

Final approval will be made if all inspections have been signed. The inspections shall not relieve the Contractor of any of his obligations to fulfill his work in accordance with the plans and specifications.

6.01.07 Defective and Omitted Work -

All details, defective work, omitted work and unsuitable construction materials shall be corrected immediately so final approval can be granted.

6.01.08 Number Tags –

Electrical Utilities Inspector shall install number tags, in accordance with Construction Standard L128, on all approved new street light standards, including traffic signal standards equipped with luminaires.
OVERHEAD SERVICE

SFAN (OF POWER CIRCUIT)

<table>
<thead>
<tr>
<th></th>
<th>0-150 FT.</th>
<th>151-200 FT.</th>
<th>201-250 FT.</th>
<th>251-300 FT.</th>
<th>OVER 300 FT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4'-10&quot;</td>
<td>5'-8&quot;</td>
<td>6'-0&quot;</td>
<td>7'-4&quot;</td>
<td>8'-0&quot;</td>
</tr>
<tr>
<td>B</td>
<td>6'-7&quot;</td>
<td>7'-5&quot;</td>
<td>7'-9&quot;</td>
<td>8'-1&quot;</td>
<td>9'-6&quot;</td>
</tr>
</tbody>
</table>

NOTES 2 & 3
750-7500V

NOTE 3
22 1/2"

NOTE 4
7.5-20kV

"A"
0-7500V

"B"
750-7500V

CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
ELECTRICAL DIVISION
T&D CONSTRUCTION STANDARDS

MINIMUM CLEARANCE BETWEEN
CONDUCTORS AND STREET LIGHT POLES

LE 101

REVISION NO. 2
ISSUE DATE: 01-08
SHEET 1 OF 2
CONSTRUCTION STANDARD: L 101

FILENAME: L101 REV2
MINIMUM CLEARANCE BETWEEN CONDUCTORS AND STREET LIGHT POLES

UNDERGROUND SERVICE

<table>
<thead>
<tr>
<th>SPAN</th>
<th>0-150 FT.</th>
<th>151-200 FT.</th>
<th>201-250 FT.</th>
<th>251-300 FT.</th>
<th>OVER 300 FT.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>3'-0&quot;</td>
<td>3'-8&quot;</td>
<td>4'-0&quot;</td>
<td>5'-6&quot;</td>
<td>6'-0&quot;</td>
</tr>
</tbody>
</table>

NOTES:
1. NO SPECIFIED CLEARANCE IS REQUIRED IF THE STREET LIGHTING POLE IS NON-CLIMBABLE AND THE CABLE IS SUITABLY INSULATED AND MECHANICALLY PROTECTED.
2. MAY BE REDUCED TO 4' IF TELEPHONE POLE IS OVER 6' (42") FROM ST. LT. CONDUCTOR.
3. THIS ALSO APPLIES TO THE CLEARANCE OF A TELEPHONE CABLE FROM THE CENTER LINE OF THE ELECTRICIAN. IT MAY BE REDUCED TO 15" WHERE THE TWO POLES ARE LESS THAN 10" APART.
4. IF STREET LIGHT POLE IS LOCATED WITHIN 10' OF POWER POLE DIMENSION "A" CAN BE 4'-2" AND "B" 6'-0" REGARDLESS OF SPAN.
5. IF STREET LIGHT POLE IS LOCATED WITHIN 10' OF POWER POLE, DIMENSION "A" CAN BE 3 FT. REGARDLESS OF SPAN.
SCOPE: This standard shows minimum clearance between conductors and conductors per G0.95 Table 2

Overhead Service

Minimum clearance between conductors and conductors per G0.95 Table 2 above 20kV.

750 - 20kV

0 - 750V

4' radially

0 - 7500V

750 - 7500V

2'

4'

8'

Minimum vertical and radial separation at all locations.

Non-climable - unattached conductor to conductor.

* Identified distance is from the lowest point of main conductor over structure to the highest point on structure or structure cable.
MINIMUM CLEARANCE BETWEEN CONDUCTORS AND STREET LIGHT STRUCTURES

NOTES:

1. MAY BE REQUIRED FOR GROUND CONDUCTOR

* IDENTIFIED DISTANCE IS FROM THE LOWEST POINT OF MAIN CONDUCTOR OVER STRUCTURE TO THE HIGHEST POINT ON STRUCTURE OR STRUCTURE CABLE.
CLEARANCES REQUIRED BY G. O. 95 RULE 58.2B3 A & B

NOTES:
1. STREET LIGHT HARDWARE OR LEAD WIRES SHALL BE 12” MIN. RADially FROM OPEN TELEPHONE WIRES OR 24” BELOW CABLES. AS UNGUARDED CABLES ARE PLACED 24” BELOW OPEN TELEPHONE WIRES, STREET LIGHT BRACKETS SHOULD BE PLACED 36” MIN. ABOVE THESE CABLES TO ALLOW ROOM FOR LATER ADDITION OF ANY OPEN WIRES OR GUARDED CABLE.

2. STREET LIGHT LEAD WIRES SHALL BE 12” MINIMUM RADially FROM STREET LIGHT HARDWARE EXCEPT IN THE SHADED AREA.
SCOPE: THIS STANDARD SHOWS REQUIREMENTS FOR UNDERGROUND STREET LIGHT CABLE LOCATION.

TYPICAL STREET

SECTION A-A

NOTE:
INSTALL CABLE ON NORTH OR WEST SIDE OF MEDIAN

SECTION B-B

NOTES:
*STREET LIGHT CONDUIT SHALL BE A MINIMUM OF 2 IN. SCHEDULE 40 PVC. STREET AND DRIVEWAY CROSSINGS SHALL BE HOT DIPPED GALVANIZED STEEL. SWEEPS SHALL BE SCHEDULE 80 PVC. CONDUIT FROM PULLBOX TO STANDARD SHALL BE 1" SCH 80. INSTALL AT ALL STREETLIGHTS.
SCOPES: THIS STANDARD SHOWS DETAILS FOR REQUIRED INSTALLATION OF CONNECTIONS AND FUSE HOLDERS WITHIN PULL BOX FOR 120/240 VOLT UNDERGROUND STREET LIGHT SYSTEMS

2" CONDUIT MIN. WITH 3-#6 CU THHN-THWN or 3-#4 AL THHN-THWN FOR ST. LIGHT SYSTEM (TYP.) SEE NOTE J

1" CONDUIT WITH 2-#14 CU XLPE TO ST. LIGHT POLE

SEE NOTE H

2 #14 CU XLPE TO LUMINAIRE

ST. LIGHT POLE

120V CONNECTION

240V CONNECTION

1" CONDUIT WITH 2-#14 CU XLPE WIRES TO ST. LIGHT

SEE NOTE K (TYP.)

SUPERSEDES L104, REV.0, DTD 01-70
**MATERIAL LIST**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>ANAHEIM PART NO.</th>
<th>COMPATIBLE UNIT</th>
</tr>
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<tbody>
<tr>
<td>1</td>
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<td>PULL BOX, 13&quot; x 24&quot; CONCRETE W/COVER</td>
<td>SEE L 103B</td>
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<tr>
<td>2</td>
<td>3</td>
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<td>CNUH3(350)</td>
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<td>FUSHOLDSL-120</td>
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<td>FUSE HOLDER, DOUBLE, 240V W/4 BOOTS</td>
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<td>W96CU-1C</td>
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<td>1</td>
<td>CONN. SPLIT BOLT, # 6 - # 14 BURNDY KS17</td>
<td>552015</td>
<td>CNSB6-8AP</td>
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<td>AS REQ'D.</td>
<td>TAGS PER CO 170</td>
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**FUSE CHART**

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<tr>
<th>LUMINAIRE</th>
<th>FUSE SIZE, AMPS</th>
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<tr>
<td>LUMENS</td>
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<td>9,500</td>
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<td>22,000</td>
<td>200</td>
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<tr>
<td>30,000</td>
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</tbody>
</table>

**NOTES:**

A. INSTALL PULL BOX FLUSH WITH FINISHED HARD SURFACE OR 1" MIN. ABOVE FINISH GRADE.

B. LOCATE ALL CONDUITS WITHIN 3" OF ONE END OF PULL BOX, AS SHOWN.

C. ALL CONNECTORS SHALL BE HOMAC TYPE UH, ONE WAY, "FLOOD SEAL", TWIN SCREW SUBMERSIBLE CONNECTOR, OR TYCO GELPORT, DOUBLE SCREW TYPE GPRT.

D. ALL FUSE HOLDERS SHALL BE COOPER BUSSMAN "TRON", RATED 30A AT 600V, WATERTIGHT, IN-LINE, SINGLE TYPE HEB-AB FOR 120V, OR DOUBLE TYPE HEX-AB FOR 240V, FOR 13/32" x 1.5" FUSE, OR APPROVED EQUAL. INCLUDE INSULATING BOOTS.

E. EXEMPT MATERIAL

F. ALL FUSES SHALL BE 13/32" DIAMETER x 1.5" LONG, NON-GLASS, NON-TIME DELAY, FERRULE TYPE. SEE CHART ABOVE FOR APPLICATIONS.

G. ALLOW SUFFICIENT WIRE TO MAKE-UP ALL CONNECTIONS. THEN NEATLY LAY OVER WIRE AND CONNECTIONS WITHIN PULL BOX IN A STACKED ARRANGEMENT.

H. CONNECTIONS MADE IN THE HANDHOLE SHOULD BE WATERPROOF.

J. PHASE WIRE INSULATION COLOR SHALL BE BLACK OR RED. NEUTRAL WIRE INSULATION COLOR SHALL BE WHITE OR IDENTIFIED WITH WHITE TAPE.

K. LABEL IDENTIFICATION TAGS AS "TO P.B. #__", "TO S/L#__", ETC. TAGS ARE U.G PRODUCTS CO. #3000W (1" WIDE X 2 1/2" LONG WHITE PLASTIC) SECURED WITH 6" BLACK CABLE TIE.
SCOPE:  
THIS STANDARD SHOWS CITY OF ANAHEIM STREET LIGHT DESIGN #733 - SINGLE ARM CONSTRUCTION AND DETAILS.

MOUNTING HEIGHT 26'-6"
UPSWEEP ARM 2 3/8" DIA. ALUM. PIPE
LUMINAIRE (SEE TABLE)
REMOVABLE TOP CAP ALUM.
POLE LENGTH 23'-3"
GRADE

BASE DETAIL
CONCRETE FDN. 30" SQ. X 42" DEEP
4-1" X 36" X 4" GALV. ANCHOR RODS WITH 2 WASHERS & 2 NUTS PER ROD
2 1/4" X 4" CONDUITS (TO EXTEND 4" ABOVE CONDUITS)
5/8" X 6' GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)
2 1/4" X 1/2" MIN. HANDHOLE OPENING WITH COVER
1" PVC SCH 80 CONDUIT(S) (OR AS SHOWN ON W.O. DWG.) STUB-UP INTO BASE OF STREET LIGHT. CONDUIT(S) TO EXIT ON C OF FOUNDATION, PARALLEL TO CURB, OR AS SHOWN ON W.O. DWG. CAP ALL UNUSED CONDUITS
6/6 B.C. GROUND WIRE. (LOOP UNDER WASHER)
FINISH GRADE 3"
4" GROUT
24" 3"
30" OR 69" PER L103
CURB FACE

CITY OF ANAHEIM STREET LIGHT DESIGN #733 - SINGLE ARM
CITY OF ANAHEIM PUBLIC UTILITIES DEPARTMENT ELECTRICAL DIVISION T&D CONSTRUCTION STANDARDS

REVISION NO. 6
ISSUE DATE: 01-15
SHEET 1 OF 2
CONSTRUCTION STANDARD: L 116

NEW SHEET:  
NEW SHEET:  
REVISION KEYS:  
ADDED / REVISED TEXT:  
ADDED / REVISED MATERIAL:  
PREP BY: L. G. B. M. S. M. M. M. M. M. M.
APPROVALS:  
SUB. MAINT:  
37
NOTES:

1. POLE CONCRETE SHALL BE 6000 PSI COMPRESSION MINIMUM IN 28 DAYS, MANUFACTURED TO ASTM C 1089-88.
2. THE POLE SHALL BE BLACK AND WHITE AND ENTIRELY COATED WITH AMERISHIELD ANTI-GRAFFITTI SEALER.
3. BASE PLATE ASTM A-36 FULLY PRESTRESSED WITH (8) 5/16" DIAMETER, A-416 WIRES MINIMUM.
4. FOR COMPLETE POLE UNIT WITHOUT THE LUMINAIRE, POLE ARMS, ORDER "AMERON" PART NUMBER 1C1-23CF-8D OR "UNION METAL" 860-OOA-233-B-QB-D8N.
5. FOR 8' ARM WITH THE TOP CAP ORDER "AMERON" PART NUMBER CF-8 OR "UNION METAL" D8N.
6. FOR COMPLETE LUMINAIRE UNIT WITH SET SCREW TO BE ATTACHED TO THE ARM, ORDER "GENERAL ELECTRIC" PART NUMBER M2RC WITH CUTT OFF OPTICS, HPS, MULTI-VOLTAGE, AUTOREG BALLAST WITH PE RECEPTACLE, GLASS REFRACTOR TYPE LENS WITH MC3 IEC DISTRIBUTION TYPE LUMINAIRE. ALL OTHER EQUIVALENT LUMINAIRE SHALL BE APPROVED BY THE CITY OF ANAHEIM T&D ELECTRICAL ENGINEERING DIVISION.
7. WIRING SHALL BE # 14 COPPER MINIMUM WIRES WITH XHHW-2 INSULATION (BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).
8. COMPATIBLE UNIT FOR ITEM 1 OF BILL OF MATERIAL TABLE, INCLUDES, POLE, ANCHOR BOLTS AND ARM.
9. THE SUGGESTED POLE MANUFACTURERS ARE "AMERON", AND "UNION METAL"; VENDORS TO ORDER THE UNIT ARE SOUTH COAST LIGHTING, WESCO LIGHTING, PACIFIC LIGHT CORPORATION, AND ONE SOURCE.
 SCOPE: THIS STANDARD SHOWS CITY OF ANAHEIM STREET LIGHT DESIGN #736 - SINGLE AND DOUBLE ARM CONSTRUCTION AND DETAILS.

**SINGLE ARM**

CONCRETE FDN. 30" SQ. X 42" DEEP
5/8" X 8" GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)

2 1/4" X 8 1/2" MIN. HANDHOLE OPENING WITH COVER

#6 B.C. GROUND WIRE (LOOP UNDER WASHER)

1" PVC SCH 80 CONDUIT(S) (OR AS SHOWN ON W.O. DWG.) STUB-UP INTO BASE OF STREET LIGHT. CONDUIT(S) TO EXIT ON C OF FOUNDATION, PARALLEL TO CURB, OR AS SHOWN ON W.O. DWG. CAP ALL UNUSED CONDUITS

4-1" X 36" X 4" GALV. ANCHOR RODS WITH 2 WASHERS & 2 NUTS PER ROD

MOUNTING HEIGHT 31'-6"
POL LENGTH 28'-3"
LUMINAIRE (SEE TABLE)

30" OR 69"
PER L103

BASE PLATE

BOLT CIRCLE 11 1/2" TO 12 1/2"

HANDHOLE & WIRE ENTRY

FILENAME: L119 REV 9
REVISION KEYS:  ---  ---  ADD/REV TEXT  ADD/REV MATERIAL
NEW SHEET  NEW SHEET

REVISION NO.  9
ISSUE DATE:  01-16
SHEET  1  OF  3
CONSTRUCTION STANDARD: L 119
CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
ELECTRICAL DIVISION
T&D CONSTRUCTION STANDARDS

CITY OF ANAHEIM
STREET LIGHT
DESIGN #736 - SINGLE AND DOUBLE ARM

LUMINAIRE
(SEE TABLE)

UPS Bour URM
2 3/8" DIA.
ALUM. PIPE
BOTH SIDES

REMOVABLE
TOP CAP
ALUM.

Pole
LENGTH
28'-3"

MOUNTING
HEIGHT
31'-6"

GRADE

OCTAGON MARBELITE POLE

4-1" X 36" X 4"
GALV. ANCHOR RODS
WITH 2 WASHERS &
2 NUTS PER ROD

2 1/4" X 8 1/2" MIN.
HANDHOLE OPENING
WITH COVER

#6 B.C. GROUND WIRE
LOOP UNDER WASHER

2'-0" GROUT

FIRE GRADE

5/8" X 8' GROUND ROD
(TO EXTEND 4" ABOVE
CONDUITS)

1" PVC SCH 80 CONDUIT(S)
(OR AS SHOWN ON W.O.
DWG.) STUB-UP INTO BASE
OF STREET LIGHT.
CONDUIT(S) TO EXIT ON C
OF FOUNDATION, PARALLEL
TO CURB, OR AS SHOWN
ON W.O. DWG. CAP ALL
UNUSED CONDUITS

BOLT CIRCLE
11 1/2" TO 12 1/2"

GALV. ANCHOR RODS
WITH 2 WASHERS &
2 NUTS PER ROD

CONCRETE FDN.
30" SQ. X 42" DEEP

30" OR 69"
PER L103
CURB FACE

30" OR 69"
P. HANDHOLE &
WIRE ENTRY

BASE PLATE

CONCRETE FDN.
30" SQ. X 42" DEEP

30" OR 69"
P. HANDHOLE &
WIRE ENTRY

BASE PLATE

BASE DETAIL

DOUBLE ARM

FILENAMES: L119 RRX
NOTES:

1. POLE CONCRETE SHALL BE 6000 PSI COMPRESSION MINIMUM IN 28 DAYS, MANUFACTURED TO ASTM C 1089-88.

2. THE POLE SHALL BE BLACK AND WHITE AND ENTIRELY COATED WITH AMERISHIELD GRAFFITI SEALER.

3. BASE PLATE ASTM A-36 FULLY PRESTRESSED WITH (8) 5/16” DIAMETER, A-416 WIRES MINIMUM.

4. FOR COMPLETE POLE UNIT WITHOUT THE LUMINAIRE AND ARMS, ORDER "AMERON" PART NUMBER 1C1-28MIX37. VENDORS TO ORDER THE UNIT ARE HD-SUPPLY, WESCO LIGHTING, PACIFIC LIGHT CORPORATION, AND ONE SOURCE.

5. FOR COMPLETE LUMINAIRE UNIT WITH SET SCREWS TO ATTACH TO THE ARM, ORDER STOCK CODES LISTED BELOW.

6. WIRING SHALL BE #14 COPPER WIRES WITH XHHW-2 INSULATION (BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).

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<th>ITEM</th>
<th>QTY</th>
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<th>IDENTIFICATION OR CAT. NO.</th>
<th>ANAHEIM STOCK CODE</th>
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<td>SLDES 736</td>
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</table>
SCOPE: THIS STANDARD SHOWS CITY OF ANAHEIM STREET LIGHT DESIGN #738 CONSTRUCTION AND DETAILS.

CITY OF ANAHEIM STREET LIGHT DESIGN #738
ANAHEIM HILLS AREA

CONCRETE FDN. 30" SQ. X 42" DEEP
4-1/2" X 36" X 4" GALV. ANCHOR RODS WITH 2 WASHERS & 2 NUTS PER ROD
5/8" X 8' GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)

BASE DETAIL

1" PVC SCH 80 CONDUIT(S) (OR AS SHOWN ON W.O. DWG.) STUB-UP INTO BASE OF STREET LIGHT. CONDUIT(S) TO EXIT ON CURB, OR AS SHOWN ON W.O. DWG. CAP ALL UNUSED CONDUITS

BOLT CIRCLE AMERON UNION MTL 15 1/4" ± 1/2"

HANDHOLE & WIRE ENTRY

30" OR 69" CURB FACE

5/8" X 8' GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)

2-1/4" X 8 1/2" MIN. HANDHOLE OPENING WITH COVER 
#6 B.C. GROUND WIRE (LOOP UNDER WASHER)

FINISH GRADE 3"
4" GROUT
24"

CONCRETE FDN.
30" SQ. X 42" DEEP

5/8" X 8" GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)

BASE DETAIL

2.1/4" X 8 1/2" MIN. HANDHOLE OPENING WITH COVER

#6 B.C. GROUND WIRE (LOOP UNDER WASHER)

FINISH GRADE

30" OR 69" CURB FACE

BOLT CIRCLE AMERON UNION MTL 15 1/4" ± 1/2"

HANDHOLE & WIRE ENTRY

5/8" X 8' GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)

CONCRETE FDN.
30" SQ. X 42" DEEP

5/8" X 8" GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)

BASE DETAIL

2.1/4" X 8 1/2" MIN. HANDHOLE OPENING WITH COVER

#6 B.C. GROUND WIRE (LOOP UNDER WASHER)

FINISH GRADE

30" OR 69" CURB FACE

BOLT CIRCLE AMERON UNION MTL 15 1/4" ± 1/2"

HANDHOLE & WIRE ENTRY

5/8" X 8' GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)

CONCRETE FDN.
30" SQ. X 42" DEEP

5/8" X 8" GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)

BASE DETAIL

2.1/4" X 8 1/2" MIN. HANDHOLE OPENING WITH COVER

#6 B.C. GROUND WIRE (LOOP UNDER WASHER)

FINISH GRADE

30" OR 69" CURB FACE

BOLT CIRCLE AMERON UNION MTL 15 1/4" ± 1/2"

HANDHOLE & WIRE ENTRY

5/8" X 8' GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)

CONCRETE FDN.
30" SQ. X 42" DEEP

5/8" X 8" GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)
NOTES:

1. POLE CONCRETE SHALL BE 6000 PSI COMPRESSION MINIMUM IN 28 DAYS, MANUFACTURED TO ASTM C 1089-8.8
2. BASE PLATE ASTM A-36 FULLY PRESTRESSED WITH (8) 5/16" DIAMETER, A-416 WIRES MINIMUM.
3. COMPATIBLE UNIT FOR ITEM 1 OF BILL OF MATERIAL TABLE, INCLUDES, POLE, AND MAST ARM.
4. FOR COMPLETE POLE ORDER "AMERON" PART NUMBER 1C3-28P WITH LONE PINE YELLOW MIX #21 FINISH OR "UNION METAL" 160-COA-280-C-YB WITH SIERRA GOLD FINISH. ENTIRE POLE SHALL BE COATED WITH AMERISHIELD ANTI-GRAFFITI SEALER.
5. FOR MAST ARM ORDER "COUNTY METAL" CMS 500-6L OR "SIERRA LIGHTING" STREET LIGHT SPEC 6.
6. WIRING SHALL BE # 14 COPPER WIRES WITH XHHW-2 INSULATION (BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).
7. THE POLE SUGGESTED MANUFACTURERS ARE "AMERON" AND "UNION METAL", AND VENDORS TO ORDER THE UNIT ARE SOUTHCOAST LIGHTING, WESCO LIGHTING, PACIFIC LIGHT CORPORATION, AND ONE SOURCE.

<table>
<thead>
<tr>
<th>ITEM</th>
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<th>DESCRIPTION</th>
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<td>1</td>
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<td>POLE, WITH ANCHOR BOLTS, AND ARM</td>
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<td>SLDES738</td>
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<td>MAST ARM- SINGLE</td>
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<td>LUMINAIRE</td>
<td>SEE CONSTRUCTION STANDARD L123</td>
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</table>
SCOPE: This standard shows City of Anaheim Street Light Design #739- Double Arm Construction and Details.

CONSTRUCTION STANDARD:

mast arm, scrolls & top final shall be dark brown acrylic

wire entry both sides of pole

POLE LENGTH 28'-0"

ROUND MARBLE POLE

MAST ARM, SCROLLS & TOP FINAL SHALL BE DARK BROWN ACRYLIC

WIRE ENTRY BOTH SIDES OF POLE

POLE LENGTH 28'-0"

ROUND MARBLE POLE

LUMINAIRE

BASE DETAIL

4-1" × 36" × 4" GALV. ANCHOR RODS WITH 2 WASHERS & 2 NUTS PER ROD

2 1/4" × 8 1/2" MIN. HANDHOLE OPENING WITH COVER

#6 B.C. GROUND WIRE (LOOP UNDER WASHER)

FINISH GRADE

CONCRETE FDN. 30" SQ. X 42" DEEP

1/8" X 8" GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)

2 1/4" × 8 1/2" MIN. HANDHOLE OPENING WITH COVER

#6 B.C. GROUND WIRE (LOOP UNDER WASHER)

FINISH GRADE

CONCRETE FDN. 30" SQ. X 42" DEEP

1/8" X 8" GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)

1" PVC SCH 80 CONDUIT(S) (OR AS SHOWN ON W.O. DWG.) STUB-UP INTO BASE OF STREET LIGHT. CONDUIT(S) TO EXIT ON Q OF FOUNDATION. PARALLEL TO CURB, OR AS SHOWN ON W.O. DWG. CAP ALL UNUSED CONDUITS

5/8" X 8' GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)

CURB FACE

BOLT CIRCLE AMERON UNION MTL 15 1/2"± 1/2" 15 1/4"

CITY OF ANAHEIM STREET LIGHT DESIGN #739 ANAHEIM HILLS AREA
NOTES:

1. POLE CONCRETE SHALL BE 6000 PSI COMPRESSION MINIMUM IN 28 DAYS, MANUFACTURED TO ASTM C 1089-88.

2. BASE PLATE ASTM A-36 FULLY PRESTRESSED WITH (8) 5/16” DIAMETER, A-416 WIRES MINIMUM.

3. COMPATIBLE UNIT FOR ITEM 1 OF BILL OF MATERIAL TABLE, INCLUDES, POLE, AND MAST ARM.

4. FOR COMPLETE POLE ORDER “AMERON” PART NUMBER 1C3-28P WITH LONE PINE YELLOW MIX #21 FINISH OR “UNION METAL” 160-COA-280-C-QB WITH SIERRA GOLD FINISH. ENTIRE POLE SHALL BE COATED WITH AMERISHIELD ANTI-GRAFFITI SEALER.

5. FOR MAST ARM ORDER "COUNTY METAL" CMS 600-6L OR "SIERRA LIGHTING" STREET LIGHT SPEC 6.

6. WIRING SHALL BE # 14 COPPER WIRES WITH XHHW-2 INSULATION (BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).

7. THE POLE SUGGESTED MANUFACTURERS ARE "AMERON" AND "UNION METAL", AND VENDORS TO ORDER THE UNIT ARE SOUTHCOAST LIGHTING, WESCO LIGHTING, PACIFIC LIGHT CORPORATION, AND ONE SOURCE.

<table>
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<th>COMPATIBLE UNIT</th>
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<td>MAST ARM- DOUBLE</td>
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<tr>
<td>3</td>
<td>2</td>
<td>LUMINAIRE</td>
<td>SEE CONSTRUCTION STANDARD L123</td>
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</table>
SCOPE: THIS STANDARD SHOWS TRADITIONAIRE LUMINAIRE DETAILS.

LUMINAIRE ATTACHMENT

NOTES:
1. PHOTOCELL TO BE MOUNTED ON SIDE OF TOP ASSEMBLY, AWAY FROM TRAFFIC FLOW.
2. INSTALL TRANSLUCENT PANEL ON HOUSE SIDE OF LUMINAIRE.

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<th>ITEM</th>
<th>MANUFACTURER &amp; CATALOG NO.</th>
<th>ANAHEIM PART NO.</th>
<th>COMPATIBLE UNIT</th>
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<td>MGRAW EDISON 10-100HPS-120V</td>
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<td>LUMINAIRE 100W, 240V, COMPLETE</td>
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<td>L100H240TRDNR</td>
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<td>COLOR</td>
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<tr>
<td>PANEL CLEAR</td>
<td>YES</td>
<td>-</td>
<td>470095</td>
</tr>
<tr>
<td>PANEL WHITE</td>
<td>YES</td>
<td>-</td>
<td>470105</td>
</tr>
<tr>
<td>PANEL CLEAR</td>
<td>-</td>
<td>YES</td>
<td>470090</td>
</tr>
<tr>
<td>PANEL WHITE</td>
<td>-</td>
<td>YES</td>
<td>470100</td>
</tr>
</tbody>
</table>
SCOPE: THIS STANDARD SHOWS LUMINAIRE RECTILINEAR, H.P.S. DETAILS FOR DOWNTOWN REDEVELOPMENT AREA.

IES OR ANSI TYPE II OR III MEDIUM CUTOFF LUMINAIRES

see note 2

TRAFFIC SIGNAL LUMINAIRE

ATTACHMENT TO ARM

TRAFFIC SIGNAL LUMINAIRE
FACTORY INSTALLED MAST ARM FITTER WITH (8) 1/4" x 1 1/4" STAINLESS STEEL HEX. HD. SCREWS FOR HORIZONTAL MAST ARM PER ANAHEIM TRAFFIC DEPT. STANDARDS.

DESIGN 740 LUMINAIRE
FACTORY INSTALLED 12" LONG, 2" STD. PIPE INTERNAL SLIFFITER WITH (8) 1/4" x 3/8" SOCKET HEAD STAINLESS STEEL SCREWS. PER CONST. STD. L 127.

<table>
<thead>
<tr>
<th>HPS LAMP (ANSI CODE)</th>
<th>S66</th>
<th>S54</th>
<th>S66</th>
</tr>
</thead>
<tbody>
<tr>
<td>INITIAL LUMENS</td>
<td>22000</td>
<td>9500</td>
<td>22000</td>
</tr>
<tr>
<td>ALLOWABLE LINE VOLTAGE VARIATION</td>
<td>±5%</td>
<td>±5%</td>
<td>±5%</td>
</tr>
<tr>
<td>MAXIMUM LINE WATTS</td>
<td>230</td>
<td>125</td>
<td>230</td>
</tr>
<tr>
<td>STARTING AMPS</td>
<td>3.2</td>
<td>2.0</td>
<td>3.2</td>
</tr>
</tbody>
</table>

NOTES:

1. REACTOR OUTPUT BALLAST SHALL BE 240 VOLTS UNLESS OTHERWISE SPECIFIED ON WORKING DRAWINGS.

2. FINISH: STATE SPEC (CALTRANS) 1000 HR SALT SPRAY GRAY ENAMEL TO MATCH POLE L127 (TYP).
SCOPE: This standard shows City of Anaheim Street Light Design #740 construction and details for Downtown Redevelopment Area.

BASE DETAIL

#7 SCH 80 CONDUIT(S) (OR AS SHOWN ON W.O. DWG.) STUB-UP INTO BASE OF STREET LIGHT. CONDUIT(S) TO EXIT ON C OF FOUNDATION, PARALLEL TO CURB, OR AS SHOWN ON W.O. DWG. CAP ALL UNUSED CONDUITS

1" PVC SCH 80 CONDUIT(S) (OR AS SHOWN ON W.O. DWG.) STUB-UP INTO BASE OF STREET LIGHT. CONDUIT(S) TO EXIT ON C OF FOUNDATION, PARALLEL TO CURB, OR AS SHOWN ON W.O. DWG. CAP ALL UNUSED CONDUITS

CONCRETE FDN. 30" SQ. X 42" DEEP

5/8" X 8" GROUND ROD (TO EXTEND 4" ABOVE CONDUITS)

1/2" X 1 1/2" STN. STL. EARTHQUAKE STUDS 1 REQD. P/N 566330

1/2" X 1 1/2" STN. STL. EARTHQUAKE STUDS 1 REQD. P/N 566330

BASE DETAIL
NOTES:

1. POLE CONCRETE SHALL BE 6000 PSI COMPRESSION MINIMUM IN 28 DAYS, MANUFACTURED TO ASTM C1089-88.

2. THE POLE SHALL BE GRAY AND ENTIRELY COATED WITH AMERISHIELD ANTI-GRAFFITI SEALER.

3. BASE PLATE ASTM A-36 FULLY PRESTRESSED WITH (8) 5/16" DIAMETER, A-416 WIRES MINIMUM.

4. FOR COMPLETE POLE UNIT WITHOUT THE LUMINAIRE, POLES ARMS, ORDER “AMERON” PART NUMBER 1C5-30CP-MOD31-6.

5. FOR COMPLETE LUMINAIRE UNIT WITH SET SCREW TO BE ATTACHED TO THE ARM, ORDER “ARCHITECTURAL LANDSCAPE LIGHTING”, MODEL NUMBER: AL01-ESF-200HPS-240-SXIII-GRY-PCCT-SJR400 OR AL01-ESF-200HPS-120-SXIII-GRY-PCCT-SJR400.

6. WIRING SHALL BE # 14 COPPER WIRES WITH XHHW-2 INSULATION (BLACK- PHASE, WHITE-NEUTRAL, GREEN-GROUND).

7. COMPATIBLE UNIT FOR ITEM 1 OF BILL OF MATERIAL TABLE, INCLUDES, POLE, AND LUMINAIRE.

8. THE POLE SUGGESTED MANUFACTURER IS “AMERON”, AND VENDORS TO ORDER THE UNIT ARE SOUTHCOAST LIGHTING, WESCO LIGHTING, PACIFIC LIGHT CORPORATION, AND ONE SOURCE.

9. FOR LUMINAIRE DETAIL DRAWING SEE CONSTRUCTION STANDARD L126.

10. FOR GALVANIZED STEEL ROD ARM, ORDER "AMERON" MODEL NO. CS8 FOR THE 1C4 SHAFT.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>ANAHEIM PART NO.</th>
<th>COMPATIBLE UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>POLE, WITH ARMS AND ANCHOR BOLTS</td>
<td>-</td>
<td>SLDES740</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>POLE, WITH ANCHOR BOLTS</td>
<td>476045</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>LUMINAIRE 200 WATTS, 120 VOLTS</td>
<td>474045</td>
<td>L200H120RECT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LUMINAIRE 200 WATTS, 240 VOLTS</td>
<td>474050</td>
<td>L200H240RECT</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>MAST ARM- 8 FOOT</td>
<td>464025</td>
<td></td>
</tr>
</tbody>
</table>
**SCOPE:** This standard shows the approved method of identifying Marbelite and metal street light poles.

**MATERIAL LIST**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>ANAHEIM PART NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>TAG, STREET LIGHT NUMBER</td>
<td>566320</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>AS REQD ADHESIVE, CLEAR SILICONE, EXTERIOR</td>
<td>983400</td>
</tr>
</tbody>
</table>

**NOTES:**

A. Aluminum street light number tags are sequentially numbered from 50000D and above for identification of city owned Marbelite and metal street light standards (including traffic signal standards with luminaries).

B. Affix tag to street side of standard using item 2.

C. Utility electrical inspector to install tags on all new street light standard installations and complete electrical equipment removal/installation form (PUD-155).

Exempt material.
**SCOPE:**
This standard shows City of Anaheim Street Light Design #742 & 742A construction and details for Anaheim Colony Historic District.

### Construction Standard

<table>
<thead>
<tr>
<th>CITY OF ANAHEIM STREET LIGHT DESIGN #742 &amp; 742A</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANAHEIM COLONY HISTORIC DISTRICT</td>
</tr>
</tbody>
</table>

### Details

#### Base Detail
- **Base Location:**
  - **Handhole Opening:** 7" x 8 1/8" with concrete cover to match pole & tamperproof screws
- **Handhole:** 21 1/2" to 22 1/2" B.C.
- **Galvanized Steel Base Plate:** 3/4" square
- **Concrete Foundation:** 30" sq x 42" deep or as specified on W.O. DWG.
- **Ground Rod:** 3/8" x 8" (to extend 4" above conduits)
- **1" PVC SCH 80 conduits (or as shown on W.O. DWG.) stub-up into base of street light. Conduits to exit on C of foundation, parallel to curb.**
- **Cap all unused conduits**

#### Pole Length (see Table)

<table>
<thead>
<tr>
<th>Pole Design</th>
<th>Pole Height (Nom.)</th>
<th>Mounting Height (Nom.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>742</td>
<td>15'-0&quot;</td>
<td>14'-10&quot;</td>
</tr>
<tr>
<td>742A</td>
<td>12'-9&quot;</td>
<td>12'-7&quot;</td>
</tr>
</tbody>
</table>

#### Pole Top and Tenon Detail
- **Pole Top and Tenon Detail:**
  - **1 1/4" Dia:**
  - **(4) 3/8" O.D., 45°:**
  - **Pole Length:**
  - **(4) 1/2"-13 Inserts on 4 1/2" B.C.:**
  - **Attach tenon to pole with (4) 1/2" x 1 1/2" long flat head mach. screws STN. STL.

#### Elevation
- **4.5" X 36" X 4" Galv. Anchor Rods with 2 Washers & 2 Nuts per Rod**
- **Ameron Union Metal:** 2 1/2" 2" 24"
- **15 Fluted WAINT-Graffiti Coating**
- **(4) 1/4" DIA. Holes on 4 1/2" BOLT CIRCLE, C'SINK TOP**
- **7" X 8 1/8" Handhole with Alum. Cover, Speckle Painted to Match Pole Secure with 1/4-20 Tamperproof Screws**
- **Concrete Fdn. 30" sq x 42" deep or as specified on W.O. DWG.**
- **Handhole Opening 7" X 8 1/8" with concrete cover to match pole & tamperproof screws**
NOTES:

1. POLE CONCRETE SHALL BE 6000 PSI COMPRESSION MINIMUM IN 28 DAYS, MANUFACTURED TO ASTM C 1099-88.

2. THE POLE SHALL BE BLACK AND WHITE AND ENTIRELY COATED WITH AMERISHIELD ANTI-GRAFFITTI SEALER.

3. BASE PLATE ASTM A-36 FULLY PRESTRESSED WITH (8) 5/16” DIAMETER, A-416 WIRES MINIMUM.

4. FOR DESIGN 742 COMPLETE POLE UNIT WITHOUT THE LUMINAIRE, ORDER “AMERON” PART NUMBER 20CT15 FOR DESIGN 742A ORDER “AMERON” PART NUMBER 20C12.

5. MOUNTING HEIGHT FOR DESIGN 742 IS 14'-10" AND FOR DESIGN 742A IS 12'-7".

6. WIRING SHALL BE # 14 COPPER WIRES WITH XHHW-2 INSULATION (BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).

7. THE SUGGESTED POLE MANUFACTURER IS "AMERON", VENDORS TO ORDER THE UNIT ARE PACIFIC LIGHT CORPORATION, ONE SOURCE, WESCO, HD-SUPPLY.

8. FOR LUMINAIRE DETAIL SEE CONSTRUCTION STANDARD L129-3.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>POLE DESIGN</th>
<th>ANAHEIM PART NO.</th>
<th>COMPATIBLE UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>POLE WITH TENONS AND ANCHOR BOLTS</td>
<td>DESIGN 742 15' NOMINAL</td>
<td>476220</td>
<td>SLDES74215</td>
</tr>
<tr>
<td></td>
<td></td>
<td>POLE WITH TENONS AND ANCHOR BOLTS</td>
<td>DESIGN 742A 12'-9&quot; NOMINAL</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>TENON, SPACER</td>
<td>DESIGN 742 &amp; 742A</td>
<td>476225</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>LUMINAIRE 100 WATT, 120 VOLTS</td>
<td>DESIGN 742 &amp; 742A</td>
<td>474195</td>
<td>L742/743FLM120V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LUMINAIRE 200 WATT, 240 VOLTS</td>
<td>DESIGN 742 &amp; 742A</td>
<td>474200</td>
<td>L742/743FLM240V</td>
</tr>
</tbody>
</table>
SCOPE: THIS STANDARD SHOWS DETAILS OF ORNAMENTAL LUMINAIRE FOR ANAHEIM COLONY HISTORIC DISTRICT.

NOTES:

A. LUMINAIRE BASE SHALL REST ON POLE TENON MOUNTING PLATE. SEE CONSTRUCTION STANDARD L129 AND L130 (DESIGN 742, 742A, AND 743) FOR TENON DETAILS.

B. COLOR "AS SPECIFIED" BY ELECTRICAL ENGINEERING.

C. LUMINAIRE TO INCLUDE SNAP-ON STYLE HOUSE SIDE SHIELD.

D. LUMINAIRE TO INCLUDE MOGUL LAMP BASE SOCKET.

E. FOR STOCK CODE SEE L-129.
SCOPE: THIS STANDARD SHOWS CITY OF ANAHEIM STREET LIGHT DESIGN #743 CONSTRUCTION AND DETAILS.

ELEVATION

ANAHEIM'S "A" SYMBOL
FACES CURB
ACCESS PANEL FACES CURB
FINISH GRADE
20 1/2" OCTAGON
8" 5 3/4"
11½"
46"
12"
37"
30 1/2"
26"

BASE DETAIL

24" BOLT CIRCLE
12" X 15 3/4" ACCESS PANEL
ARM & ACCESS PANEL
CURB FACE

SECTION

5/8" X 8' GROUND ROD EXTENDING 4" ABOVE CONDUIT
1" PVC SCHEDULE 80 90° SWEEP. FOR CONDUIT SIZE, SEE PROJECT DRAWING. FOR UNDERGROUND APPLICATION INSTALL CONDUIT PARALLEL TO CURBSIDE
8" MIN.
3" 18" MIN.
4" GROUT
30"

CONCRETE FDN. 36' SQ. X 30' DEEP UPDATED INFO

4 3/4" X 2 1/2" X 3'
GALV ANCHOR BOLTS
W/ [2] GALV. HEX. NUTS.
ANCHOR BOLTS MUST PROJECT 3" ABOVE FOUNDATION LEVEL.

#5 SOLID B.C.BOND LOOP BENEATH WASHER.
1/2" MIN.
CAPS (TYP.)

CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
ELECTRICAL DIVISION
T&D CONSTRUCTION STANDARDS

REVISION NO.
ISSUE DATE:
SHEET:
CONSTRUCTION STANDARDS:

CITY OF ANAHEIM
STREET LIGHT DESIGN #743
ANAHEIM COLONY HISTORIC DISTRICT
L 130
NOTES:
1. **THE POLE SHALL BE GREEN COLOR (ANAHEIM SPEC) CAST ALUMINUM, HEAVY DUTY, CORROSION RESISTANT WITH FOUR (4) 3/4" x 24" x 3" HOT DIPPED GALVANIZED ANCHOR BOLTS WITH DOUBLE NUTS AND WASHERS.**
2. **WIRING SHALL BE #14 COPPER WIRES WITH XHHW-2 INSULATION (BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).**
3. **THE POLE MANUFACTURERS ARE *ECHO LIGHTING*; VENDORS TO ORDER THE UNIT ARE: ECHO LIGHTING; SOUTHCOST LIGHTING, WESCO LIGHTING, PACIFIC LIGHT CORPORATION, AND ONE SOURCE.**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>ANAHEIM PART NO.</th>
<th>COMPATIBLE UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>POLE, WITH ANCHOR BOLTS AND TWIN ARM</td>
<td>476046</td>
<td>SLDES743</td>
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<tr>
<td>2</td>
<td>1</td>
<td>TWIN ARM</td>
<td>464016</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>ACCESS PANEL</td>
<td>466230</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>LUMINAIRE 100 WATT, 120 VOLTS</td>
<td>474195</td>
<td>L742/743FLM120V</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>LUMINAIRE 100 WATT, 240 VOLTS</td>
<td>474200</td>
<td>L742/743FLM240V</td>
</tr>
</tbody>
</table>
SCOPE: THIS STANDARD SHOWS CONSTRUCTION AND DETAILS OF CITY OF ANAHEIM STREET LIGHT SPECIAL DESIGN #744 FOR ANAHEIM RECREATIONAL AREA.

CITY OF ANAHEIM
STREET LIGHT DESIGN #744
ANAHEIM RESORT AREA

CONSTRUCTION STANDARD:
ADDED / REVISED MATERIAL
SHEET
OF
REVISION NO.
ISSUE DATE:
APPROVALS
CITY OF ANAHEIM ELECTRICAL DIVISION T&D CONSTRUCTION STANDARDS
PREP BY
AD MGR
STYLE MGR
SPS MGR
SUR/MENG

FILENAME: L131.REV5

BASE PLATE DETAIL

FLUTED POLE
ACCESS DOOR
IN CAST BASE
CAST BASE
2 PIECE
FINISHED GRADE
#6 B.C. GROUND WIRE.
(LOOP UNDER WASHER)
5/8" X 8" GROUND ROD
(SEE SH. 2 FOR DETAILS)
CONCRETE FDN.
CAP ALL UNUSED
CONDUITS
BASE PLATE DETAIL

1" PVC SCH 80 CONDUIT(S)
(OR AS SHOWN ON W.O.
DWG.) STUB-UP INTO BASE
OF STREET LIGHT.
CONDUIT(S) TO EXIT ON C
OF FOUNDATION, PARALLEL TO CURB, OR
AS SHOWN ON W.O. DWG.
4-1" X 36" X 4"
GALV. ANCHOR BOLTS
WITH 2 WASHERS &
2 NUTS PER BOLT
BOLT PROJECTION
4" X 6" HANDHOLE
IN POLE
12" BOLT CIRCLE
MAST ARM,
ACCESS DOOR
& HANDHOLE
1" TRUCK

13'-8"
13'-3 1/2"
12'-0"
8'-0"
48" (TYP.)
32" ON BALL RD.

FILENAME: L131.REV5
REVISION KEYS: ADDED / REVISED TEXT
CONSTRUCTION STANDARD:
ADDED / REVISED MATERIAL
SHEET
OF
REVISION NO.
ISSUE DATE:
APPROVALS
CITY OF ANAHEIM ELECTRICAL DIVISION T&D CONSTRUCTION STANDARDS
PREP BY
AD MGR
STYLE MGR
SPS MGR
SUR/MENG

56
4" O.D. x 0.318" WALL (3.5" SCHEDULE 80 STANDARD PIPE); 30,000 P.S.I. MINIMUM YIELD STRENGTH

SEE DETAIL 1 - TENON DETAIL

SEE DETAIL 2 - BANNER ARM COUPLING DETAIL; (4) COUPLINGS PER POLE

SEE DETAIL 3 - BASE PLATE DETAIL

NOTES:
1. ALL WELDING TO BE DONE PER A.W.S. D1.1
2. POLE SHAFT AND ALL STEEL COMPONENTS GALVANIZED TO ASTM-A123 PRIOR TO FINISHING PROCEDURE

12 FLAT FLUTE CROSS SECTION

POLE FLUTES END 6" ABOVE TOP OF BASE PLATE

PAGE OF REVISION NO.

APPROVALS
PREP BY:
DATE:
REVISION NO.:
5
ISSUE DATE:
01-15
SHEET:
2
CONSTRUCTION STANDARD:
L 131

CITY OF ANAHEIM
STREET LIGHT DESIGN #744
ANAHEIM RESORT AREA

CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
ELECTRICAL DIVISION
T&D CONSTRUCTION STANDARDS

NEW SHEET

FILENAME: L131 REV 5
REVISION KEYS: ADDED / REVISED TEXT
CONSTRUCTION STANDARD: ADDED / REVISED MATERIAL
SHEET OF NEW SHEET

4" O.D. x 0.318" WALL (3.5" SCHEDULE 80 STANDARD PIPE); 30,000 P.S.I. MINIMUM YIELD STRENGTH

45° CHAMFER (INSIDE & OUT)

19 PER 1" AWS D.1.1

.25 PER 1" AWS D.1.1

7.5" POLE BASE DIAMETER

12 BOLT CIRCLE

(4) 1.25" x 2" SLOTTED BOLT HOLES

1" BASE PLATE; ASTM-A36 PLATE, 36,000 K.S.I. YIELD

TUBE THK (INSIDE & OUT)

TUBE THK (INSIDE & OUT)

7.5" O.D. x 0.25" THICK ROUND POLE PLATE - H.R.M.S. - WITH 2" DIAMETER WIRE ENTRANCE HOLE

4.75" O.D. x 0.25" THICK ROUND POLE PLATE - H.R.M.S. - WITH 2" DIAMETER WIRE ENTRANCE HOLE

8.5" BOLT SQUARE

7.5" BOLT BASE DIAMETER

(4) 1.25" x 2" SLOTTED BOLT HOLES

1" BASE PLATE; ASTM-A36 PLATE, 36,000 K.S.I. YIELD

TUBE THK (INSIDE & OUT)

TUBE THK (INSIDE & OUT)
**FOUNDATION DETAIL**

See Sh. 1 for conduit & ground rod placement

- **30" DIA.**
- **1.75" x 1" x 1/8" x 18" Min. Mounting Channel (unless specified by others)**

**POLE SHAFT**

- **4-1" x 36" x 4" Galv. Anchor Bolts on 12" B.C. with 2 washers and 2 nuts each bolt**

- (See Sh. 1)

- **30" Dia. x 72" Deep Concrete Fdn. Reinforce with 12-#7 Vert. Bars and 12-#4 Loops at 6 O.C.**

**BANNER ARM DETAIL**

Banner arms shall be installed on street light poles if addressed in W.O. package

- **33"**
- **9'-O"**

- **1" NPT Male Thread One End**
- **Welded on pole face**

- **Stainless steel safety cable w/crimped ends**

- **Heavy-duty break away swivel (suitable for winds rated up to 70 M.P.H.)**

- **Banner arms mount (4) with 1" NPT female threads**

**SIGN BRACKET**

- **1" Dia.**
- **1" Min. (Typ.)**

**POLE SHAFT**

- **33"**

**STAINLESS STEEL SAFETY CABLE W/CRIMPED ENDS**

- **(3) 1/4" Holes, Evenly Spaced, 3 Sides**

**BANNER ARM MOUNTS (4) WITH 1" NPT FEMALE THREADS WELDED ON POLE FACE**

**1" x 1/8" x 18" MIN. MOUNTING CHANNEL (UNLESS SPECIFIED BY OTHERS)**

**BANNER ARM DETAIL**

- Banner arms shall be installed on street light poles if addressed in W.O. package

- **1" steel pipe, capped one end, and 1" NPT male thread one end**

- **1" Min. (Typ.)**

- **1.75" x 1/8" x 18" MIN. MOUNTING CHANNEL (UNLESS SPECIFIED BY OTHERS)**

- **(3) 1/4" Holes, Evenly Spaced, 3 Sides**

**POLE SHAFT**

- **30" DIA.**
- **72"**

- **4-1" x 36" x 4" Galv. Anchor Bolts on 12" B.C. with 2 washers and 2 nuts each bolt**

- (See Sh. 1)
NOTES:
1. STEEL TO BE HIGH TENSILE STRENGTH. CAST ALUMINUM TO BE 319 ALLOY OR AS SPECIFIED.
2. ALL FASTERNERS TO BE STAINLESS STEEL.
3. WIRING SHALL BE #14 COPPER XHHW-2 MINIMUM WIRES-(BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).
4. COMPATIBLE UNIT FOR ITEM 1 OF BILL OF MATERIAL TABLE, INCLUDES, POLE, MAST ARM AND THE CAST BASES. COMPATIBLE UNIT FOR ITEM 4 OF MATERIAL TABLE INCLUDES LAMP AND PHOTO CONTROL.
5. POLE SHAFT AND ALL STEEL COMPONENTS SHALL BE HOT-DIP GALVANIZED (HDG) TO ASTM A123 PRIOR TO FINISHING PROCEDURE.
6. FINISH FOR ANAHEIM RESORT AREA (ARA):
   a. ALL ITEMS EXCEPT FINIAL SHALL BE GREEN, SEMI-GLOSS ANAHEIM P7-GREEN, "PPG-AMERSHIELD" PANTONE 330C
   b. FINIAL SHALL BE FROM MATTHEWS PAINT CO, AZTEC GOLD- INTESTATE 286-401 G.
7. FINISH FOR GRADE SEPARATION AND BRIDGES (GSB):
   a. ALL ITEMS EXCEPT FINIAL SHALL BE BLACK-GRAY, SEMI-GLASS" PPG-AMERSHIELD RAL 7021.
   b. FINIAL SHALL BE SILVER RAL # 9006.
8. THE PAINTING PROCEDURE OF HDG SURFACES SHOULD BE SUBMITTED TO ANAHEIM STANDARDS GROUP FOR REVIEW AND APPROVAL
9. LUMINAIRE SHALL BE PAINTED SAME AS POLE ORDERED, OR PAINTED BY THE CONTRACTOR TO MATCH POLE COLOR.
10. THE POLE AND MAST ARM MANUFACTURER IS SOUTHCOAST LIGHTING AND COBRA HEAD LUMINAIRE MANUFACTURER IS "GENERAL ELECTRIC". VENDORS TO ORDER THE UNIT ARE SOUTH COAST LIGHTING, ONE-SOURCE, WESCO AND INDEPENDENT ELECTRIC.
11. THE HAND HOLES ON POLE SHOULD LINE UP WITH HAND HOLE ON BASE FOR EASY ACCESS TO CABLES.
12. DRILL AND TAP THE POLE FOR SIGNAGE.
13. TO ATTACH THE MAST ARM TO POLE, TORQUE THE SETSCREWS @ 21 FT-LBS.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>DESCRIPTION</th>
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<td>L400HP120VP7</td>
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CITY OF ANAHEIM
STREET LIGHT DESIGN #744
ANAHEIM RESORT AREA
SCOPE: THIS STANDARD SHOWS CONSTRUCTION AND DETAILS OF CITY OF ANAHEIM STREET LIGHT SPECIAL DESIGN #745 FOR ANAHEIM RECREATIONAL AREA.
4" O.D. x 0.318" WALL (3.5" SCHEDULE 80 STANDARD PIPE); 30,000 P.S.I. MINIMUM YIELD STRENGTH

SEE DETAIL 1 - TENON DETAIL

SEE DETAIL 2 - BANNER ARM COUPLING DETAIL; (4) COUPLINGS PER POLE

SEE DETAIL 3 - BASE PLATE DETAIL

NOTES:
1. ALL WELDING TO BE DONE PER A.W.S. D1.1
2. POLE SHAFT AND ALL STEEL COMPONENTS GALVANIZED TO ASTM-A123 PRIOR TO FINISHING PROCEDURE

TUBE THK.

POLE FLUTES END 6" ABOVE TOP OF BASE PLATE

18" TO CENTER OF HAND HOLE
4-1"x36"x4" GALV. ANCHOR BOLTS ON 12" B.C. WITH 2 WASHERS AND 2 NUTS EACH BOLT (SEE SH. 1)

FINISHED GRADE

30" DIA. x 72" DEEP CONCRETE FDN. REINFORCE WITH 12-#7 VERT. BARS AND 12-#4 LOOPS AT 6 O.C.

BOLT PROJECTION 5" FINISHED GRADE

FOUNDATION DETAIL
SEE SH. 1 FOR CONDUIT & GROUND ROD PLACEMENT

POLE SHAFT

1.75" x 1" x 1/8" x 18" MIN. MOUNTING CHANNEL (UNLESS SPECIFIED BY OTHERS)

1" MIN. (TYP.)

3) 1/4" HOLES, EVENLY SPACED, 3 SIDES

33"

BANNER ARM DETAIL
BANNER ARMS SHALL BE INSTALLED ON STREET LIGHT POLES IF ADDRESSED IN W.O. PACKAGE

POLE SHAFT

33" 9'-0"

BANNER ARM MOUNTS (4) WITH 1" NPT FEMALE THREADS WELDED ON POLE FACE

STAINLESS STEEL SAFETY CABLE W/CRIMPED ENDS

HEAVY-DUTY BREAK AWAY SWIVEL (SUITEABLE FOR WINDS RATED UP TO 70 M.P.H.)

BANNER ARM 1" STEEL PIPE, CAPPED ONE END, AND 1" NPT MALE THREAD ONE END

SIGN BRACKET

MOUNTS (4) WITH 1" NPT FEMALE THREADS WELDED ON POLE FACE

33"
NOTES:

1. STEEL TO BE HIGH TENSILE STRENGTH. CAST ALUMINUM TO BE 319 ALLOY OR AS SPECIFIED.
2. ALL FASTERNERS TO BE STAINLESS STEEL.
3. WIRING SHALL BE #14 COPPER XHHW-2 MINIMUM WIRES-(BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).
4. COMPATIBLE UNIT FOR ITEM 1 OF BILL OF MATERIAL TABLE, INCLUDES, POLE, MAST ARM AND THE CAST BASES.
   COMPATIBLE UNIT FOR ITEM 4 OF MATERIAL TABLE INCLUDES LAMP AND PHOTO CONTROL.
5. POLE SHAFT AND ALL STEEL COMPONENTS SHALL BE HOT- DIP GALVANIZED (HDG) TO ASTM A123 PRIOR TO FINISHING PROCEDURE.
6. FINISH FOR ANAHEIM RECREATION AREA (ARA):
   a. ALL ITEMS Except FINIAL SHALL BE GREEN, SEMI-GLOSS ANAHEIM P7-GREEN, "PPG-AMERSHIELD" "PANTONE 330C"
   b. FINIAL SHALL BE AZTEC GOLD- INTESATE 286-401 G.
7. FINISH FOR GRADE SEPARATION AND BRIDGES (GSB):
   a. ALL ITEMS Except FINIAL SHALL BE BLACK-GRAY, SEMI-GLASS PPG-AMERSHIELD RAL 7021.
   b. FINIAL SHALL BE SILVER RAL # 9006.
8. THE PAINTING PROCEDURE OF HDG SURFACES SHOULD BE SUBMITTED TO ANAHEIM STANDARDS GROUP FOR REVIEW AND APPROVAL
9. LUMINAIRE SHALL BE PAINTED SAME AS POLE ORDERED, OR PAINTED BY THE CONTRACTOR TO MATCH POLE COLOR.
10. THE POLE AND MAST ARM MANUFACTURER IS SOUTHCOST LIGHTING AND COBRA HEAD LUMINAIRE MANUFACTURER IS "GENERAL ELECTRIC". VENDORS TO ORDER THE UNIT ARE SOUTHCOST LIGHTING, ONE SOURCE, WESCO AND INDEPENDENT ELECTRIC.
11. THE HAND HOLES ON POLE SHOULD LINE UP WITH HAND HOLE ON BASE FOR EASY ACCESS TO CABLES.
12. DRILL AND TAP THE POLE FOR SIGNAGE.
13. TO ATTACH THE MASTARM TO POLE, TORQUE THE SETSCREW @ 21 FT-LBS.

<table>
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<tr>
<th>ITEM</th>
<th>QTY</th>
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<th>ANAHEIM PART NO. (ARA)</th>
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SCOPE: This standard shows construction and details of City of Anaheim street light special design #746 for Anaheim resort area.

CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
T&D CONSTRUCTION STANDARDS

BASE PLATE DETAIL

POLE LENGTH 23'-1"

10 GA. 12# Fluted Steel Pole (1/4" Taper)

TOP OF BRIDGE RAIL

LUMINAIRE (SEE TABLE)

BASE DETAIL

4" X 8" Handhole in Pole

4-1/4" X 36" X 4"
Galv. Anchor Rods with 2
Washers & 2
Nuts Per Rod

1" PVC SCH 80 Conduit(s)
(Or as shown on W.O.
DWG.) Stub-Up into Base
Of Street Light.
Conduit(s) to Exit on C
Of Foundation,
Parallel to Curb, or
As shown on W.O. DWG.
Cap All Unused
Conduits

CONCRETE BRIDGE RAIL (BY OTHERS)

FLUTED POLE

BOLT PROJECTION

C L MAST ARM & HANDHOLE

11" Dia. X 3/4"
Thick Base

(4) 1 1/4" Holes On
9 1/4" Bolt Circle

30" Or 48"

7 1/2" Dia.
NOTES:
1. STEEL TO BE HIGH TENSILE STRENGTH. CAST ALUMINUM TO BE 319 ALLOY OR AS SPECIFIED.
2. ALL FASTERNERS TO BE STAINLESS STEEL.
3. WIRING SHALL BE #14 COPPER, XHHW-2 MINIMUM WIRES-(BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).
4. COMPATIBLE UNIT FOR ITEM 1 OF BILL OF MATERIAL TABLE, INCLUDES, POLE, MAST ARM AND THE CAST BASES. COMPATIBLE UNIT FOR ITEM 4 OF MATERIAL TABLE INCLUDES LAMP AND PHOTO CONTROL.
5. POLE SHAFT AND ALL STEEL COMPONENTS SHALL BE HOT-DIP GALVANIZED (HDG) TO ASTM A123 PRIOR TO FINISHING PROCEDURE.
6. FINISH FOR ANAHEIM RESORT AREA (ARA):
   a. ALL ITEMS EXCEPT FINIAL SHALL BE GREEN, SEMI-GLOSS ANAHEIM P7-GREEN, "PPG-AMERSHIELD" [PANTONE 330C]
   b. FINIAL SHALL BE FROM MATTHEWS PAINT CO, AZTEC GOLD- INTESTATE 286-401 G.
7. FINISH FOR GRADE SEPARATION AND BRIDGES (GSB):
   a. ALL ITEMS EXCEPT FINIAL SHALL BE BLACK-GREY, SEMI-GLASS" PPG-AMERSHIELD RAL 7021.
   b. FINIAL SHALL BE SILVER RAL # 9006.
8. THE PAINTING PROCEDURE OF HDG SURFACES SHOULD BE SUBMITTED TO ANAHEIM STANDARDS GROUP FOR REVIEW AND APPROVAL.
9. LUMINAIRE SHALL BE PAINTED SAME AS POLE ORDERED, OR PAINTED BY THE CONTRACTOR TO MATCH POLE COLOR.
10. THE POLE AND MAST ARM MANUFACTURER IS SOUTHCOAST LIGHTING AND COBRA HEAD LUMINAIRE MANUFACTURER IS "GENERAL ELECTRIC". VENDORS TO ORDER THE UNIT ARE SOUTH COAST LIGHTING, ONE-SOURCE, WESCO AND INDEPENDENT ELECTRIC.
11. THE HAND HOLES ON POLE SHOULD LINE UP WITH HAND HOLE ON BASE FOR EASY ACCESS TO CABLES.
12. DRILL AND TAP THE POLE FOR SIGNAGE.
13. TO ATTACH THE MAST ARM TO POLE, TORQUE THE SETSCREWS @ 21 FT-LBS.

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SCOPE: THIS STANDARD SHOWS CONSTRUCTION AND DETAILS OF CITY OF ANAHEIM STREET LIGHT SPECIAL DESIGN #747 FOR ANAHEIM RESORT AREA.

CITY OF ANAHEIM
STREET LIGHT DESIGN #747

CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
ELECTRICAL DIVISION
T&D CONSTRUCTION STANDARDS

REVISION NO. 2
ISSUE DATE: 01-15
NEW SHEET 1 OF 2
CONSTRUCTION STANDARD: L 134

BASE PLATE DETAIL

FLUTED POLE

4" X 6" HANDHOLE IN POLE

4-1" X 36" X 4" GALV. ANCHOR RODS WITH 2 WASHERS & 2 NUTS PER ROD

BOLT PROJECTION

1" PVC SCH 80 CONDUIT(S) (OR AS SHOWN ON W.O. DWG.) STUB-UP INTO BASE OF STREET LIGHT. CONDUIT(S) TO EXIT ON CURB OF FOUNDATION, PARALLEL TO CURB, OR AS SHOWN ON W.O. DWG. CAP ALL UNUSED CONDUITS

CONCRETE BRIDGE RAIL (BY OTHERS)

TOP OF BRIDGE RAIL

SQUARE BASE CAP

CURB FACE

30" OR 48"

(4) 1 1/4" HOLES ON 9 1/4" BOLT CIRCLE

11" DIA. X 3/4" THICK BASE

7 1/2" DIA.

MAST ARM & HANDHOLE

FINIAL

LUMINAIRE (SEE TABLE)

POLE LENGTH 13'-8"

TOP OF BRIDGE RAIL

8'-0"

17'-0"
NOTES:

1. STEEL TO BE HIGH TENSILE STRENGTH. CAST ALUMINUM TO BE 319 ALLOY OR AS SPECIFIED.
2. ALL FASTERNERS TO BE STAINLESS STEEL.
3. WIRING SHALL BE #14 COPPER XHHW-2 MINIMUM WIRES-(BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).
4. COMPATIBLE UNIT FOR ITEM 1 OF BILL OF MATERIAL TABLE, INCLUDES, POLE, MAST ARM AND THE CAST BASES. COMPATIBLE UNIT FOR ITEM 4 OF MATERIAL TABLE INCLUDES LAMP AND PHOTO CONTROL.
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6. FINISH FOR ANAHEIM RESORT AREA (ARA):
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</table>
SCOPE: THIS STANDARD SHOWS VARIOUS STREET LIGHT CONSTRUCTION ON WOOD POLES FOR ROADWAY LIGHTING.

120/240 VOLT SUPPLY ON SECONDARY ARM, SECONDARY RACK OR SINGLE POINT, LOCATED ABOVE STREET LIGHT MAST ARM.

120/240 VOLT SUPPLY ON SECONDARY ARM, SECONDARY RACK OR SINGLE POINT, LOCATED BELOW STREET LIGHT MAST ARM.

WOOD POLE MOUNTED COBRA HEAD LUMINAIRE
## MATERIAL LIST

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## NOTES:

A. 31" MOUNTING HEIGHT MEASURED FROM FINISH SURFACE DIRECTLY BELOW LUMINAIRE.
B. LOCATE MAST ARM MOUNTING BOLT, ITEM 10, 22" BELOW MOUNTING HEIGHT.
C. MAINTAIN RADIAL CLEARANCE FROM NEAREST SUPPLY CONDUCTOR PER L102.
D. MAINTAIN 12" MIN. RADIAL CLEARANCE FROM PHOTO EYE CONTROL TO CROSSING SERVICE CONDUCTOR.
E. EXEMPT MATERIAL.
F. MAINTAIN 12" MIN. CLEARANCE ABOVE COMMUNICATION LEVEL TO CLOSEST STREET LIGHT MATERIAL.
G. PHOTO EYE CONTROL WINDOW TO FACE NORTH.
H. ALL LUMINAIRE COMPATIBLE UNITS INCLUDE PHOTO CONTROL AND LAMP.
**SCOPE:** This standard shows typical spacing for specified streetlight design.

### LOCAL

<table>
<thead>
<tr>
<th>STREET WIDTH</th>
<th>36'</th>
<th>52'</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOUNTING HEIGHT</td>
<td>31'-6&quot;</td>
<td>31'-6&quot;</td>
</tr>
<tr>
<td>SPACING</td>
<td>STAGGERED 100W</td>
<td>190</td>
</tr>
</tbody>
</table>

### COLLECTOR/SECONDARY

<table>
<thead>
<tr>
<th>STREET WIDTH</th>
<th>44'</th>
<th>70'</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOUNTING HEIGHT</td>
<td>31'-6&quot;</td>
<td>31'-6&quot;</td>
</tr>
<tr>
<td>SPACING</td>
<td>STAGGERED 200W</td>
<td>250*</td>
</tr>
</tbody>
</table>

### MAJOR/PRIMARY

<table>
<thead>
<tr>
<th>STREET WIDTH</th>
<th>100'</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOUNTING HEIGHT</td>
<td>31'-6&quot;</td>
</tr>
<tr>
<td>SPACING</td>
<td>STAGGERED 200W</td>
</tr>
</tbody>
</table>

---

**DESIGN 736**

---

**STREET LIGHT SPACING**
SCOPE: This standard shows typical spacing for specified streetlight design.

LOCAL

| STREET WIDTH | 36' | 52' |
| MOUNTING HEIGHT | 31'-6" | 31'-6" |
| SPACING | STAGGERED 100W | 190 | 160 |

COLLECTOR/SECONDARY

| STREET WIDTH | 44' | 70' |
| MOUNTING HEIGHT | 31'-6" | 31'-6" |
| SPACING | STAGGERED 200W | 250* | 205 |

MAJOR/PRIMARY

| STREET WIDTH | 100' |
| MOUNTING HEIGHT | 31'-6" |
| SPACING | STAGGERED 200W | 125 |

DESIGN 736
SCOPE: THIS STANDARD SHOWS TYPICAL SPACING FOR SPECIFIED STREETLIGHT DESIGN.

### LOCAL

<table>
<thead>
<tr>
<th>St. Width</th>
<th>36’</th>
<th>52’</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG. HGT.</td>
<td>24’</td>
<td>24’</td>
</tr>
<tr>
<td>Spacing</td>
<td>STGRD 100W</td>
<td>165</td>
</tr>
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</table>

### COLLECTOR/SECONDARY

<table>
<thead>
<tr>
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<th>44’</th>
<th>70’</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG. HGT.</td>
<td>24’</td>
<td>24’</td>
</tr>
<tr>
<td>Spacing</td>
<td>STGRD 100W</td>
<td>105</td>
</tr>
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</table>

#### DESIGN 738

### LOCAL

<table>
<thead>
<tr>
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<th>52’</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG. HGT.</td>
<td>24’</td>
<td>24’</td>
</tr>
<tr>
<td>Spacing</td>
<td>STGRD 100W</td>
<td>215</td>
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### COLLECTOR/SECONDARY

<table>
<thead>
<tr>
<th>St. Width</th>
<th>44’</th>
<th>70’</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG. HGT.</td>
<td>24’</td>
<td>24’</td>
</tr>
<tr>
<td>Spacing</td>
<td>STGRD 100W</td>
<td>135</td>
</tr>
</tbody>
</table>

#### DESIGN 739

STREET LIGHT SPACING

CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
ELECTRICAL DIVISION
T&D CONSTRUCTION STANDARDS

STREET LIGHT SPACING
SCOPE: THIS STANDARD SHOWS TYPICAL SPACING FOR SPECIFIED STREETLIGHT DESIGN.

### LOCAL

<table>
<thead>
<tr>
<th>ST. WIDTH</th>
<th>36’</th>
<th>52’</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG. HGT.</td>
<td>14’-10”</td>
<td>14’-10”</td>
</tr>
<tr>
<td>SPACING</td>
<td>STGRD 100W</td>
<td>45</td>
</tr>
</tbody>
</table>

### COLLECTOR/SECONDARY

<table>
<thead>
<tr>
<th>ST. WIDTH</th>
<th>44’ NO PARKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG. HGT.</td>
<td>14’-10”</td>
</tr>
<tr>
<td>SPACING</td>
<td>STGRD 100W</td>
</tr>
</tbody>
</table>

#### DESIGN 742

### LOCAL

<table>
<thead>
<tr>
<th>ST. WIDTH</th>
<th>36’</th>
<th>52’</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG. HGT.</td>
<td>15’-4”</td>
<td>15’-4”</td>
</tr>
<tr>
<td>SPACING</td>
<td>STGRD 100W</td>
<td>45</td>
</tr>
</tbody>
</table>

### COLLECTOR/SECONDARY

<table>
<thead>
<tr>
<th>ST. WIDTH</th>
<th>44’</th>
</tr>
</thead>
<tbody>
<tr>
<td>MTG. HGT.</td>
<td>15’-4”</td>
</tr>
<tr>
<td>SPACING</td>
<td>STGRD 100W</td>
</tr>
</tbody>
</table>

#### DESIGN 743

STREET LIGHT SPACING
SCOPE: This standard shows typical spacing for specified streetlight design.

LOCAL

<table>
<thead>
<tr>
<th></th>
<th>36'</th>
<th>52'</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST. WIDTH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTG. HGT.</td>
<td>29'-4&quot;</td>
<td>29'-4&quot;</td>
</tr>
<tr>
<td>SPACING</td>
<td>STGRD 100W</td>
<td>195</td>
</tr>
</tbody>
</table>

COLLECTOR/SECONDARY

<table>
<thead>
<tr>
<th></th>
<th>44'</th>
<th>70'</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST. WIDTH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MTG. HGT.</td>
<td>29'-4&quot;</td>
<td>29'-4&quot;</td>
</tr>
<tr>
<td>SPACING</td>
<td>STGRD 200W</td>
<td>250 *</td>
</tr>
</tbody>
</table>

DESIGN 744, 746, 747, 749, 750
ALL SINGLE ARM

MAJOR /PRIMARY

<table>
<thead>
<tr>
<th></th>
<th>100'</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST. WIDTH</td>
<td></td>
</tr>
<tr>
<td>MTG. HGT.</td>
<td>29'-4&quot;</td>
</tr>
<tr>
<td>SPACING</td>
<td>STRGD 200w</td>
</tr>
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</table>

DESIGN 744 & 745
SINGLE & DOUBLE ARM COMBINATION

* NOT MAX SPACING
**HIGH PRESSURE SODIUM LUMINAIRES**

<table>
<thead>
<tr>
<th>LAMP TYPE</th>
<th>LAMP WATTS</th>
<th>LAMP LUMENS</th>
<th>LINE VOLTAGE</th>
<th>LINE OPER. AMPS</th>
<th>STARTING AMPS</th>
<th>LINE WATTS</th>
<th>TYPE BALLAST &amp; PWR FACTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-64</td>
<td>500</td>
<td>4000</td>
<td>120</td>
<td>1.2</td>
<td>1.5</td>
<td>59</td>
<td>REACTOR (NPF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>240</td>
<td>0.8</td>
<td>1.6</td>
<td>66</td>
<td>REACTOR (NPF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>120</td>
<td>0.5</td>
<td>0.9</td>
<td>58</td>
<td>REACTOR (NPF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>240</td>
<td>0.3</td>
<td>0.6</td>
<td>68</td>
<td>REACTOR (NPF)</td>
</tr>
<tr>
<td>S-62</td>
<td>700</td>
<td>5600</td>
<td>120</td>
<td>1.6</td>
<td>2.2</td>
<td>95</td>
<td>REACTOR (NPF)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>240</td>
<td>1.1</td>
<td>1.3</td>
<td>88</td>
<td>LAG TYPE (NPF)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>120</td>
<td>0.9</td>
<td>0.5</td>
<td>106</td>
<td>REGULATION (NPF)</td>
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<tr>
<td></td>
<td></td>
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<td>240</td>
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<td>0.3</td>
<td>105</td>
<td>REGULATION (NPF)</td>
</tr>
<tr>
<td>S-54</td>
<td>160</td>
<td>9500</td>
<td>120</td>
<td>2.2</td>
<td>2.8</td>
<td>118</td>
<td>REACTOR (NPF)</td>
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<tr>
<td></td>
<td></td>
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<td>1.6</td>
<td>1.9</td>
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<td>LAG TYPE (NPF)</td>
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<tr>
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<td></td>
<td></td>
<td>120</td>
<td>1.2</td>
<td>0.7</td>
<td>144</td>
<td>REGULATION (NPF)</td>
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<td>0.4</td>
<td>144</td>
<td>REGULATION (NPF)</td>
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<tr>
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<td>260</td>
<td>22,000</td>
<td>120</td>
<td>2.1</td>
<td>2.3</td>
<td>232</td>
<td>LAG TYPE (NPF)</td>
</tr>
<tr>
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<td></td>
<td></td>
<td>240</td>
<td>2.2</td>
<td>2.8</td>
<td>230</td>
<td>REACTOR (NPF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>120</td>
<td>2.1</td>
<td>1.2</td>
<td>248</td>
<td>REGULATION (NPF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>240</td>
<td>1.1</td>
<td>0.6</td>
<td>248</td>
<td>REGULATION (NPF)</td>
</tr>
<tr>
<td>S-62</td>
<td>700</td>
<td>5600</td>
<td>120</td>
<td>2.6</td>
<td>2.8</td>
<td>296</td>
<td>LAG TYPE (NPF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>240</td>
<td>3.1</td>
<td>3.8</td>
<td>281</td>
<td>REACTOR (NPF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>120</td>
<td>2.9</td>
<td>2.6</td>
<td>310</td>
<td>AUTO-REG (NPF)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>240</td>
<td>1.4</td>
<td>1.2</td>
<td>310</td>
<td>AUTO-REG (NPF)</td>
</tr>
</tbody>
</table>

**FUSE HOLDER:** COOPER BUSSMAN "TRON" HEB-AB WITH INSULATING BOOTS OR EQUIVALENT FOR 120 VOLT OPERATION. COOPER BUSSMAN "TRON" HEX-AB WITH BOOTS OR EQUIVALENT FOR 240 VOLT OPERATION.

**FUSING FOR 120 VOLT OPERATION SHALL BE:**
- 5800 LUMEN, MULTIPLE, HIGH PRESSURE SODIUM, 70 WATT, 10 AMP.
- 9500 LUMEN, MULTIPLE, HIGH PRESSURE SODIUM, 100 WATT, 10 AMP.
- 2200 LUMEN, MULTIPLE, HIGH PRESSURE SODIUM, 200 WATT, 15 AMP.

**FUSING FOR 240 VOLT OPERATION, THE FUSE PER LEG SHALL BE:**
- 5800 LUMEN, MULTIPLE, HIGH PRESSURE SODIUM, 70 WATT, 10 AMP.
- 9500 LUMEN, MULTIPLE, HIGH PRESSURE SODIUM, 100 WATT, 10 AMP.
- 2200 LUMEN, MULTIPLE, HIGH PRESSURE SODIUM, 200 WATT, 10 AMP.
NOTES:

1. REPLACEMENT FOR EXISTING UNITS TO BE INSTALLED AT WEST STREET AND HARBOR BLVD., DISNEYLAND AREA ONLY.

2. FINISH:
   A. ALL ITEMS SHALL BE GREEN-SEMI GLOSS, TENMAC #F075G1041A(ANAHEIM P7 GREEN)
   B. FINIAL SHALL BE AZTEC GOLD- INTESTATE286-401G.
   C. LUMINAIRE SHALL BE PAINTED SAME AS POLE, ORDERED OR PAINTED ANAHEIM P7 BY THE CONTRACTOR.

3. WIRING SHALL BE #14 COPPER XHHW-2 MINIMUM WIRES- (BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).

4. COMPATIBLE UNIT FOR ITEM 1 OF BILL OF MATERIALS TABLE INCLUDES, POLE, LUMINAIRE, BALLAST KIT AND LAMP.

5. THE POLE MANUFACTURER IS LUMAC INC., AND VENDORS TO ORDER THE UNIT ARE SOUTHCOAST LIGHTING, WESCO LIGHTING AND PACIFIC LIGHT CORPORATION.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>ANAHEIM PART NO.</th>
<th>COMPATIBLE UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>POLE WITH CAST BASE, LUMINAIRE AND ANCHOR BOLTS-ANAHEIM TYPESC</td>
<td>-</td>
<td>SLDES748MIC-P7</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>10' POLE WITH BASE, CAST ALUMINUM, &quot;MICTORIAN&quot;</td>
<td>476300</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>LUMINAIRE 150 WATTS MULTI VOLTAGE, &quot;MICTORIAN&quot;</td>
<td>474255</td>
<td>L400HP120VP7</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>BALLAST KIT, &quot;MICTORIAN&quot;</td>
<td>466085</td>
<td>L200HP120VP7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>LAMP, 150 WATTS, 120 VOLTS</td>
<td>470145</td>
<td>L400HP7</td>
</tr>
</tbody>
</table>
SCOPE: This standard shows construction and details of City of Anaheim street light special design #749 for Anaheim Resort area.

FLAT FACE

BASE PLATE DETAIL

(4) 1 1/4" HOLES ON 9 1/4" BOLT CIRCLE

7 1/2" DIA.

11" DIA. X 1" THICK BASE

30" OR 48"

POLE LENGTH 23'-1"

7 GA. 12 FLUTE GALV. POLE (14" FT. TAPER)

LUMINAIRE (SEE TABLE)

TOP OF BRIDGE RAIL

CONDUCTOR DETAIL

4" X 6" HANDHOLE IN POLE

4-1" X 36" X 4" GALV. ANCHOR RODS WITH 2 WASHERS & 2 NUTS PER ROD

BOLT PROJECTION

1" PVC SCH 80 CONDUIT(S) (OR AS SHOWN ON W.O. DWG.) STUB-UP INTO BASE OF STREET LIGHT. CONDUIT(S) TO EXIT ON BASE OF FOUNDATION, PARALLEL TO CURB, OR AS SHOWN ON W.O. DWG. CAP ALL UNUSED CONDUITS

CAST BASE 2 PIECE

ACCESS DOOR IN CAST BASE

TOP OF BRIDGE RAIL

CONCRETE BRIDGE RAIL (BY OTHERS)

CITY OF ANAHEIM STREET LIGHT DESIGN #749
1. Steel to be high tensile strength. Cast aluminum to be 319 alloy or as specified.
2. All fasteners to be stainless steel.
3. Wiring shall be #14 Copper XHHW-2 minimum wires (black-phase, white-neutral, green-ground).
4. Compatible unit for Item 1 of Bill of Material Table, includes pole, mast arm and the cast bases. Compatible unit for Item 4 of Material Table includes lamp and photo control.
5. Pole shaft and all steel components shall be hot-dip galvanized (HDG) to ASTM A123 prior to finishing procedure.
6. Finish for Anaheim resort area (ARA):
   a. All items except finial shall be green, semi-gloss Anaheim P7-Green, "PPG-Amershield" PANTONE 330C.
   b. Finial shall be from Matthews Paint Co, Aztec Gold Intestate 286-401 G.
7. Finish for Grade Separation and Bridges (GSB):
   a. All items except finial shall be black-gray, semi-glass PPG-Amershield RAL 7021.
   b. Finial shall be silver RAL # 9006.
8. The painting procedure of HDG surfaces should be submitted to Anaheim Standards Group for review and approval.
9. Luminaire shall be painted same as pole ordered, or painted by the contractor to match pole color.
10. The pole and mast arm manufacturer is Southcoast Lighting and Cobra head luminaire manufacturer is "General Electric". Vendors to order the unit are South Coast Lighting, One-Source, Wesco and Independent Electric.
11. The hand holes on pole should line up with hand hole on base for easy access to cables.
12. Drill and tap the pole for signage.
13. To attach the mast arm to pole, torque the setscrews @ 21 ft-lbs.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>ANAHEIM PART NO. (ARA)</th>
<th>ANAHEIM PART NO. (GSB)</th>
<th>COMPATIBLE UNITS (ARA)</th>
<th>COMPATIBLE UNITS (GSB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>POLE WITH MAST ARM, SCROLL WORK, CAST BASE AND ANCHOR BOLTS- ANAHEIM TYPE SA- COMPLETE UNIT</td>
<td>-</td>
<td>-</td>
<td>SLDES749-P7</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>26' POLE, 12 FLUTE WITH CAST RING AND TWO BANNER ARM MOUNTS</td>
<td>476251</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>CAST BASE (2 PIECE) W/ DOOR</td>
<td>476255</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>8' ARM W/ SCROLL &amp; FINIAL</td>
<td>464050</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>LUMINAIRE CLOR: NOTE 9 400W-120/208/240/277</td>
<td>474275</td>
<td>L400HP120VP7</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>250W-120/208/240/277</td>
<td>474245</td>
<td>L200HP120VP7</td>
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<td></td>
<td>'200W-120/208/240/277</td>
<td>474240</td>
<td>L200HP7</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
SCOPE: THIS STANDARD SHOWS CONSTRUCTION AND DETAILS OF CITY OF ANAHEIM STREET LIGHT SPECIAL DESIGN #750 FOR ANAHEIM RECREATIONAL AREA.

LUMINAIRE (SEE TABLE)

POLE LENGTH 13'-0"

MOUNTING HEIGHT 17'-0"

10'-0"

TOP OF BRIDGE POST

BASE PLATE (1" THICK)

12" BOLT CIRCLE

30" OR 48"

CUB FACE

1" PVC SCH 80 CONDUIT(S) (OR AS SHOWN ON W.O. DWG.) STUB-UP INTO BASE OF STREET LIGHT. CONDUIT(S) TO EXIT ON TOP OF FOUNDATION, PARALLEL TO CURB, OR AS SHOWN ON W.O. DWG. CAP ALL UNUSED CONDUITS

4-1" X 36" X 4" GALV. ANCHOR RODS WITH 2 WASHERS & 2 NUTS PER ROD

4" X 6" HANDHOLE IN POLE

BOLT PROJECTION 5"

CONCRETE BRIDGE POST

TOP OF BRIDGE POST

13'-8"

MAST ARM, ACCESS DOOR & HANDHOLE

LUMINAIRE (SEE TABLE)

CONSTRUCTION STANDARD:

ADDED / REVISED TEXT

ADDED / REVISED MATERIAL

NEW SHEET

NEW SHEET

CITY OF ANAHEIM STREET LIGHT DESIGN #750

L 140
NOTES:

1. STEEL TO BE HIGH TENSILE STRENGTH. CAST ALUMINUM TO BE 319 ALLOY OR AS SPECIFIED.

2. ALL FASTERNERS TO BE STAINLESS STEEL.

3. WIRING SHALL BE #14 COPPER XHHW-2 MINIMUM WIRES-(BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).

4. COMPATIBLE UNIT FOR ITEM 1 OF BILL OF MATERIAL TABLE, INCLUDES, POLE, MAST ARM AND THE CAST BASES. COMPATIBLE UNIT FOR ITEM 4 OF MATERIAL TABLE INCLUDES LAMP AND PHOTO CONTROL.

5. POLE SHAFT AND ALL STEEL COMPONENTS SHALL BE HOT-DIP GALVANIZED (HDG) TO ASTM A123 PRIOR TO FINISHING PROCEDURE.

6. FINISH FOR ANAHEIM RESORT AREA (ARA):
   a. ALL ITEMS EXCEPT FINIAL SHALL BE GREEN, SEMI-GLOSS ANAHEIM P7-GREEN, "PPG-AMERSHIELD" "PANTONE 330C"
   b. FINIAL SHALL BE FROM MATTHEWS PAINT CO, AZTEC GOLD- INTESTATE 286-401 G.

7. FINISH FOR GRADE SEPARATION AND BRIDGES (GSB):
   a. ALL ITEMS EXCEPT FINIAL SHALL BE BLACK-GREY, SEMI-GLASS" PPG-AMERSHIELD RAL 7021.
   b. FINIAL SHALL BE SILVER RAL # 9006.

8. THE PAINTING PROCEDURE OF HDG SURFACES SHOULD BE SUBMITTED TO ANAHEIM STANDARDS GROUP FOR REVIEW AND APPROVAL

9. LUMINAIRE SHALL BE PAINTED SAME AS POLE ORDERED, OR PAINTED BY THE CONTRACTOR TO MATCH POLE COLOR.

10. THE POLE AND MAST ARM MANUFACTURER IS SOUTHCOAST LIGHTING AND COBRA HEAD LUMINAIRE MANUFACTURER IS "GENERAL ELECTRIC". VENDORS TO ORDER THE UNIT ARE SOUTH COAST LIGHTING, ONE-SOURCE, WESCO AND INDEPENDENT ELECTRIC.

11. THE HAND HOLES ON POLE SHOULD LINE UP WITH HAND HOLE ON BASE FOR EASY ACCESS TO CABLES.

12. DRILL AND TAP THE POLE FOR SIGNAGE.

13. TO ATTACH THE MAST ARM TO POLE, TORQUE THE SETSCREWS @ 21 FT-LBS.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>ANAHEIM PART NO. (ARA)</th>
<th>ANAHEIM PART NO. (GSB)</th>
<th>COMPATIBLE UNITS (ARA)</th>
<th>COMPATIBLE UNITS (GSB)</th>
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<tr>
<td></td>
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<td>POLE WITH MAST ARM, SCROLL WORK, CAST BASE AND ANCHOR BOLTS- ANAHEIM TYPE SA- COMPLETE UNIT</td>
<td>-</td>
<td>-</td>
<td>SLDES750-P7</td>
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<tr>
<td>1</td>
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<td>13'-8&quot; POLE, 12 FLUTE WITH CAST RING AND TWO BANNER ARM MOUNTS</td>
<td>472890</td>
<td>-</td>
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<tr>
<td>2</td>
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<td>CAST BASE (2 PIECE) W/ DOOR</td>
<td>476255</td>
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<td>3</td>
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<td>8' ARM W/ SCROLL &amp; FINIAL</td>
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<td>LUMINAIRE COLOR: NOTE 9 400W-120/208/240/277</td>
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<td>L400HP120VP7</td>
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<td>250W-120/208/240/277</td>
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<td>474240</td>
<td>-</td>
<td>L200HP7</td>
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</table>
SCOPE: THIS STANDARD SHOWS CITY OF ANAHEIM STREET LIGHT DESIGN #760 - PLATINUM TRIANGLE AREA

POLE DETAIL

DETAIL 'A' WITH BUTTON TYPE PHOTOCELL

5" X 3" HANDHOLE OPENING WITH COVER (FACE AWAY FROM CURB)

TOP OF PAVEMENT TO CURB FACE

10" X 10" X 0.55" BASE PLATE DETAIL

BOLT CIRCLE

CITY OF ANAHEIM
STREET LIGHT DESIGN #760
PLATINUM TRIANGLE AREA
NOTES:
1. POLE AND LUMINAIRE MANUFACTURED BY SE'LUX.SATURN MAGNUM.
2. POLE IS CONSTRUCTED OF GALVANIZED STEEL. FINISHED SILVER: PGV/SV SERIES: ST 6040
3. BULB IS 120V, 100W, HIGH PRESSURE SODIUM.
4. SHIELDING: MR TYPE V MTR. 261 REFRACTOR
5. OPTIONS: QUICK DISCONNECT. SM 699
6. WIRING SHALL BE #14 COPPER WITH XHHW-2 INSULATION. BLACK/PHASE, WHITE / NEUTRAL.
7. INSTALL HAND HALL OPENING AWAY FROM STREET.
8. INSTALL FELT FOR EXPANSION JOINT ON CAP TO SIDEWALK.

<table>
<thead>
<tr>
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<tr>
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<td>STANDARD STREET LIGHT POLE-14'-SILVER SE'LUX</td>
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<td>LUMINAIRE, 100W, SATURN MAGNUM, SE'LUX</td>
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<tr>
<td>3</td>
<td>1</td>
<td>CONTROL, PHOTO EYE , 120V, BUTTON TYPE</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>LAMP, 100W, H.P.S.</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>BALLAST, KIT, MULTI VOLTAGE FOR 100 WAT HPS LIGHT.</td>
</tr>
</tbody>
</table>
SCOPE: THIS STANDARD SHOWS CITY OF ANAHEIM STREET LIGHT DESIGN #761 CONSTRUCTION AND DETAILS FOR CLEMENTINE STREET.

ANAHEIM CLEMENTINE FIXTURE

1" PVC SCHEDULE 80 90° SWEEP. FOR CONDUIT SIZE, SEE PROJECT DRAWING. FOR UNDERGROUND APPLICATION INSTALL CONDUIT PARALLEL TO CURB SIDE.

5/8" X 8" GROUND ROD EXTENDING 4" ABOVE CONDUIT

ANAHEIM "A" SYMBOL PLACED ON CURB SIDE OF STRUCTURE

12" x 15.75" MINIMUM ACCESS PANEL, CURB SIDE

FINISHED GRADE

8" MIN. FINISHED GRADE

18" MIN. FINISHED GRADE

4 3/4" X 2 1/4" X 3" GALV. ANCHOR BOLTS W/ (2) GALV HEX. NUTS. ANCHOR BOLTS MUST PROJECT 3" ABOVE FOUNDATION LEVEL.

4.5" SOLID B.C. BOND. LOOP BENEATH WASHER. 1/2" MIN.

24" BOLT CIRCLE

1" BOLT HOLES

1/2" THICK BASE PLATE

CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
ELECTRICAL DIVISION
TAD CONSTRUCTION STANDARDS

CITY OF ANAHEIM STREET LIGHT DESIGN #761 CLEMENTINE STREET

REV SHEET

CONSTRUCTION STANDARD:

L 142

84
CITY OF ANAHEIM
STREET LIGHT DESIGN #761
CLEMENTINE STREET
NOTES:
1. THE POLE SHALL BE GREEN COLOR (ANAHEIM SPEC) FIXTURE CAGE AND FINIAL SILVER COLOR (ANAHEIM SPEC.), A356 CAST ALUMINUM, POLE SHAFT AND BASE ASSEMBLY HEAVY DUTY, CORROSION RESISTANT WITH FOUR (4)- 3/4" x 24" x 3" HOT DIPPED GALVANIZED ANCHOR BOLTS WITH DOUBLE NUTS AND WASHERS.
2. WIRING SHALL BE #14 COPPER WIRES WITH XHHW-2 INSULATION (BLACK-PHAE, WHITE-NEUTRAL, GREEN-GROUND).
3. THE POLE AND LUMINAIRE MANUFACTURER IS SOUTHCOST LIGHTING.

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<td>E476315M</td>
<td>SLDES761</td>
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<td>ACCESS PANEL</td>
<td>CD761-HH</td>
<td>E476320M</td>
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<td>LUMINAIRE 100 WATT, 120 VOLTS</td>
<td>L142-100W-HPS</td>
<td>E474280M</td>
<td>L761FLM120V</td>
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<td>4</td>
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<td>BALLAST, KIT ASSEMBLY, 100W</td>
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<td>E466075M</td>
<td>L761FLM120V</td>
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<td>LAMP, 100W, HPS, 120V</td>
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<td>E470045M</td>
<td>LAMP100HP</td>
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</tbody>
</table>
SCOPE: THIS STANDARD SHOWS CONSTRUCTION AND DETAILS OF CITY OF ANAHEIM STREET LIGHT DESIGN 762

POLE TOP/STUD DETAIL

1/2-13NC STUDS

45° (TYP)

6' OCT.

12" (NOM.)

12" ± 1/4" STUD EXTENSION

18'-11" POLE LENGTH

18'-11" POLE ABOVE GRADE

19'-2" POLE OVERALL LENGTH

51" ± 1"

14" ± 1"

2" ± 1"

SPECIAL 4" GALVANIZED STEEL
CLAMP STYLE S ARM LMA ASSEMBLY
WITH ATTACHMENT HARDWARE
(SHOWN 270° FOR CLARITY)

6" O.D. (ACROSS FLATS)
POLE TOP WITH
1-7/8"±5/8" I.D.
RACEWAY

HANDHOLE OPENING 3" X 5"-6-1/4" LG.
WITH ALUMINUM COVER 0° COVER IS
TO BE ATTACHED BY AMERON PRIOR
TO SHIPMENT WITH (STD) SCREWS

CAST ALUMINUM FINNED CAP
(INCLUDED WITH POLE)
TOP CAP IS TO BE ATTACHED BY
AMERON PRIOR TO
SHIPMENT

HEX NUTS & WASHERS
(INCLUDED WITH POLE)

(4) 1/2-13NC STUDS GALV STEEL
WITH HEX NUTS & WASHERS ON A
3-1/16" DIA. BOLT CIRCLE X 12" LG.
(STANDARD MOD90 POLE TOP)

(1) 1"X3" SLOTTED WIREWAY EXIT
(270° (DRILLED)
(MOD28)

TOP MOUNT DETAIL

BASE DETAIL

BASE PLATE DETAIL

SPUNCAST PRESTRESSED CONCRETE POLE

(4) 1" X 18" X 3" ANCHOR BOLTS ASTM F1554
GR.36, GALVANIZED (AMERON PN: 75769
OR EQUIVALENT BY OTHERS) DEFAULT
AMERON ANCHOR BOLTS SHOWN:
FOUNDATION DESIGN IS BY OTHERS.
22" SQ. X 24" DEEP FOUNDATION (TYP.)
SPECIFIC FOUNDATION DESIGNS MAY
REQUIRE ALTERNATIVE BOLT REQUIREMENTS.

POLE TOP/STUD DETAIL

POLE ORIENTATION

POLE ORIENTATION

POLE ORIENTATION

POLE ORIENTATION

18'-11" POLE LENGTH

18'-11" POLE ABOVE GRADE

19'-2" POLE OVERALL LENGTH

90°

270°

7-1/2" ± 1/4" I.D.
CONDUIT RACEWAY CLEARANCE

4" X 1-3/4"
SLOTS

8-1/2" X 3/4" PL.
ASTM A36

14" OCT.

16" OCT.

18" OCT.

19'-2" POLE LENGTH

18'-11" POLE ABOVE GRADE

19'-2" POLE OVERALL LENGTH

90°

270°

7-1/2" ± 1/4" I.D.
CONDUIT RACEWAY CLEARANCE

4" X 1-3/4"
SLOTS

8-1/2" X 3/4" PL.
ASTM A36

14" OCT.

16" OCT.

18" OCT.

19'-2" POLE LENGTH

18'-11" POLE ABOVE GRADE

19'-2" POLE OVERALL LENGTH

90°

270°

7-1/2" ± 1/4" I.D.
CONDUIT RACEWAY CLEARANCE

4" X 1-3/4"
SLOTS

8-1/2" X 3/4" PL.
ASTM A36

14" OCT.

16" OCT.

18" OCT.

19'-2" POLE LENGTH

18'-11" POLE ABOVE GRADE

19'-2" POLE OVERALL LENGTH

90°

270°

7-1/2" ± 1/4" I.D.
CONDUIT RACEWAY CLEARANCE

4" X 1-3/4"
SLOTS

8-1/2" X 3/4" PL.
ASTM A36

14" OCT.

16" OCT.

18" OCT.

19'-2" POLE LENGTH

18'-11" POLE ABOVE GRADE

19'-2" POLE OVERALL LENGTH

90°

270°

7-1/2" ± 1/4" I.D.
CONDUIT RACEWAY CLEARANCE

4" X 1-3/4"
SLOTS

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ASTM A36

14" OCT.

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4" X 1-3/4"
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270°

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CONDUIT RACEWAY CLEARANCE

4" X 1-3/4"
SLOTS

8-1/2" X 3/4" PL.
ASTM A36

14" OCT.

16" OCT.

18" OCT.
NOTES:
1. POLE CONCRETE SHALL BE 6000 PSI COMPRESSION MINIMUM IN 28 DAYS, MANUFACTURED TO ASTM C 1089-88.
2. THE POLE SHALL BE BLACK AND WHITE AND ENTIRELY COATED WITH AMERISHIELD ANTI-GRAFFITI SEALER.
3. BASE PLATE ASTM A-36 FULLY PRESTRESSED WITH (8) 5/16" DIAMETER, A-416 WIRES MINIMUM.
4. FOR COMPLETE POLE UNIT ONLY (WITHOUT THE LUMINAIRE AND ARMS), ORDER "AMERON" PART NUMBER 4B1-19MIX52. VENDORS ARE PACIFIC LIGHTING, 1-SOURCE, HD SUPPLY.
5. FOR COMPLETE LUMINAIRE UNIT WITH SET SCREWS TO ATTACH TO THE ARM, SEE TABLE BELOW.
6. WIRING SHALL BE #14 COPPER WIRES WITH XHHW-2 INSULATION (BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).
7. REVISIT LIGHTING CALCULATION FOR EXISTING OR NEW LUMINAIRE.
8. THE SINGLE CLAMPED ON ALUMINUM PIPE LMA ASSEMBLY [NOT TO EXCEED 51" LENGTH, 1.7 SQ.FT. EPA, 20 LBS PER ARM SIDE (PIPE ARM & CLAMP COMBINED)] DEPICTED ON THIS DRAWING IS DESIGNED TO WITHSTAND THE LOADS IMPARTED BY A SINGLE LUMINAIRE (NOT TO EXCEED 2.5 SQ.FT. EPA, 50 LBS. MAX); THE POLE DEPICTED IS DESIGNED TO WITHSTAND THE LOADS IMPARTED BY THE TOP MOUNT LMA & THE LUMINAIRE AS DESIGNED PER THE 2009 AASHTO LTS-5 IN A 90 MPH WIND ZONE (3-SECOND GUSTS). PLEASE ADVISE IF THE INTENDED LOADING EXCEEDS THESE VALUES.

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<th>COMPATIBLE UNIT</th>
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<td>SLDES 762</td>
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</table>
SCOPE: THIS STANDARD SHOWS CONSTRUCTION AND DETAILS OF CITY OF ANAHEIM STREET LIGHT DESIGN #763 FOR INSTALLATION OF CELL SITE ON TOP OF THE STREET LIGHT POLE IN ANAHEIM HILLS AREA

** FOUNDATION DESIGN (BY OTHERS)**

- 4.5 FT SQUARE BY 5 FOOT DEEP FOUNDATION (TYP.)
- SEE PROJECT SPECS FOR REQUIRED BASE SIZE ALONG WITH CONDUIT SIZING AND ORIENTATIONS REQUIRED.
- POLE OD: 11.8"**

FOUNDATION DETAILS

- (1) CLUSTER PLATE (ALIGNMENT)
- (2) CLUSTER PLATE (BEARING)
- CLUSTER PLATE ASSEMBLY INCLUDES ANCHOR BOLTS, (3) CLUSTER PLATES, & (4) ADDITIONAL HEX NUTS & WASHERS PER BOLT.
- 5/8" X # GRD ROD (TO EXTEND 4" ABOVE CONDUIT)

BASE PLATE DETAIL

- ** FOUNDATION DESIGN (BY OTHERS)**
- INSTALL SUFFICIENT NUMBER AND SIZE OF CONDUIT INSIDE FOUNDATION PER WORK ORDER DESIGN REQUIREMENT

POLE SECTIONS

- 1-1/2" PL X 15" SQ. GALV. STEEL PLATE ASTM A-36
- 6-1/2" ± 1/4" ID CONDUIT CLEARANCE
- 1/2" X 2-1/2" LG. THRU SLOTS @ 90° APART EQUALLY SPACED ON A 15" TO 17" DIA. B.C.

POLE ORIENTATION

- POLE I.D. TAG 0°
- 3" X 7" HAND HOLE WITH CAST ALUMINUM FRAME & COVER @ 0° COVER TO BE ATTACHED BY AMERON PRIOR TO SHIPMENT W/STANDARD (STD) DOOR SCREWS

SPUNCAST PRESTRESSED CONCRETE POLE

- POLE I.D. TAG 0°
- 3" X 7" HAND HOLE WITH CAST ALUMINUM FRAME & COVER @ 0° COVER TO BE ATTACHED BY AMERON PRIOR TO SHIPMENT W/STANDARD (STD) DOOR SCREWS

POLE TOP DETAILS

- 25° ± 1°
- ARM TO BE FIELD DRILLED FOR LUMINAIRE ATTACHMENT (BY OTHERS)
- 4" X 6" ALUM. TUBE
- 45° (TYP.)

SPECIAL LUMINAIRE ARM DETAILS

- 3/4" CLEAR COVER (TYP.)
- (12) 9mm PRESTRESSING STEEL WIRES ASTM A-421
- 2-1/2" WALL (TYP.)
- Ø 7" ID

POLE HEAD DETAILS

- 5'-0" (MAX.) POLE HEIGHT ABOVE GRADE
- 29'-3" OVERALL POLE LENGTH
- 29'-6" 24" NOM.

CONSTRUCTION STANDARD:

- CITY OF ANAHEIM STREET LIGHT DESIGN #763
- CELL SITE TOP

FILENAME: L 144 REV1

REVISION KEYS:

- ADDED / REVISED TEXT
- ADDED / REVISED MATERIAL

CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
ELECTRICAL DIVISION
T&D CONSTRUCTION STANDARDS

APPROVALS

PREP BY: E. K. MORSE
PS MGR: V. S. MAYER

REVISION NO.: 1
ISSUE DATE: 01-16
SHEET: 1 OF 2

CONSTRUCTION STANDARD:

- CITY OF ANAHEIM STREET LIGHT DESIGN #763
- CELL SITE TOP

FILENAME: L 144 REV1

REVISION KEYS:

- ADDED / REVISED TEXT
- ADDED / REVISED MATERIAL

CITY OF ANAHEIM
PUBLIC UTILITIES DEPARTMENT
ELECTRICAL DIVISION
T&D CONSTRUCTION STANDARDS

APPROVALS

PREP BY: E. K. MORSE
PS MGR: V. S. MAYER

REVISION NO.: 1
ISSUE DATE: 01-16
SHEET: 1 OF 2

CONSTRUCTION STANDARD:
NOTES:

1. POLE CONCRETE SHALL BE 6000 PSI COMPRESSION MINIMUM IN 28 DAYS, MANUFACTURED TO ASTM C 1089-13.
2. THE POLE SHALL BE BUFF LONEPINE YELLOW AND ENTIRELY COATED WITH AMERISHIELD ANTI-GRAFFITI SEALANT.
3. FINISH TO MATCH ANAHEIM DESIGN 738 FINISH.
4. FOR COMPLETE POLE UNIT ONLY (WITHOUT THE LUMINAIRE AND ARMS), ORDER "AMERON" PART NUMBER BP3300X07.
5. FOR COMPLETE LUMINAIRE UNIT WITH SET SCREWS TO ATTACH TO THE ARM, SEE CONSTRUCTION STANDARD L-123. FOR ARM ORDER ANAHEIM STOCK CODE E464010M [EXCEPT FOR CLAMP, MATCH POLE DIAMETER @ LOCATION].
6. WIRING TO LUMINAIRE SHALL BE #14 COPPER WIRES WITH XHHW-2 INSULATION (BLACK-PHASE, WHITE-NEUTRAL, GREEN-GROUND).
7. THE POLE SUGGESTED MANUFACTURER IS "AMERON", VENDORS TO ORDER THE UNIT ARE HD-SUPPLY, WESCO LIGHTING, PACIFIC LIGHT CORPORATION, AND ONE SOURCE.
8. THE POLE DEPICTED IS DESIGNED TO WITHSTAND THE LOADS IMPARTED BY A CYLINDRICAL 18" DIA. X 60" TALL ANTENNA SHROUD, THE TOP MOUNT LMA AND THE LUMINAIRE PER THE 2010 CALIFORNIA BUILDING CODE, ASCE 7-05 & 2013 AASHTO LTS-6 IN A 90 MPH WIND ZONE (3-SECOND GUSTS). POLE CHECKED AGAINST LOCATION SPECIFIC SEISMIC CRITERIA, PLEASE ADVISE MFR. IF INTENDED LOADING EXCEEDS THESE VALUES.
9. ANTENNA POWER SHUT OFF SWITCH, FURNISHED AND INSTALLED BY WIRELESS COMPANY.
SCOPE: This standard shows details, specifications, and ordering information for approved 13”x24” fiberglass reinforced or plastic (HDPE) pull box for use on City Electric Distribution, street lighting and telecommunications systems. Also, this standard shows pull boxes and covers of various materials now designated for maintenance only.

CAUTION: Fiberglass reinforced pull box with polymer concrete cover suitable for landscape locations or locations that may see occasional non-deliberate traffic.

**Typical Fiberglass Reinforced Box**

**Plan View**

- **Frame (Ring)**
- **Cover**
- **Floating Nut for 3/4” Bolt**
- **Hold Down See Detail “A”**

**Section B-B**

- 23 1/2”
- 18”
- 16 1/2”

**Side View**

- **Typical Polymer Concrete Cover**

**Typical Polymer Concrete Cover**

- **Plan View**
- **End View**
- **Side View**

**Updated Manufacturer Table**

13” x 24” Pull Box and Cover Details
SCOPE:  THIS STANDARD SHOWS THE SIZES AND SEPARATION OF CONDUITS IN JOINT TRENCHES IN A RESIDENTIAL DEVELOPMENT AREA.

SINGLE SERVICE TRENCH

ALTERNATE TELECOMM LOCATION (TYPICAL) SEE NOTE J

PREFERRED TELECOMM LOCATION (TYPICAL) SEE NOTE J

FINISH GRADE

FINISH GRADE

30° MIN
18°
18°
12°
3°
3°
3°
12°

SEE NOTE D

SEE NOTE C

SEE NOTE B

SEE NOTE C

SEE NOTE B

DUAL SERVICE TRENCH

120/240V SERVICE TRENCH, JOINT

LEGEND

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<tr>
<th>ELECTRIC:</th>
<th>FOREIGN UTILITY</th>
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<tbody>
<tr>
<td>SERVICE</td>
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<tr>
<td>2&quot; OR 3&quot;C</td>
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<td>TELECOMM</td>
<td>GAS</td>
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<td>SERVICE</td>
<td>1 1/2°C</td>
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<td>TELEPHONE</td>
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NOTES:

A. MINIMUM SEPARATIONS SHOWN BETWEEN CONCURRENTLY INSTALLED FACILITIES ARE PER G.O. 128, RULES 31.4-B2, 41.4-A2 AND 41.4-B2 AND INFORMAL MUTUAL AGREEMENT WITH UTILITIES INVOLVED AND AS SHOWN ON WORK ORDER DRAWINGS.

B. TRENCH BOTTOM SHALL HAVE 90% COMPACTION AND BE OF UNDISTURBED EARTH OR SELECT BACKFILL MATERIAL.

C. CUSHION ELECTRICAL CONDUITS AT TRENCH BOTTOM WITH 3 INCHES OF SELECT BACKFILL MATERIAL.

D. TRENCH BACKFILL TO GAS/TELEPHONE LEVEL SHALL HAVE 90% COMPACTION AND BE OF SELECT BACKFILL MATERIAL.

E. ELECTRICAL CONDUITS SHALL BE PLACED 3" MIN. FROM TRENCH WALLS.

F. DEPTH AND SEPARATION SHALL BE MAINTAINED FOR JOINT TRENCH.

G. 60 INCH MAXIMUM TRENCH DEPTH ALLOWED.

H. SEE CU 1500-2 FOR TRENCH LOCATION AND CONDUIT TYPE & SIZE REQUIREMENTS.

I. FIELD CONDITIONS MAY REQUIRE ALTERNATE TELECOMMUNICATION LOCATION.

J. UNDER TRAFFIC SERVICE CONDUITS FOR ELECTRIC SERVICES SHALL BE: (1) IN CONCRETE ENCASED CONFIGURATION, 3" ENVELOPE MINIMUM, (2) PVC SCHEDULE 80, (3) HOT DIPPED GALVANIZED STEEL.
6.9kV PRIMARY TRENCH, JOINT

SPLICE LEGEND

<table>
<thead>
<tr>
<th>ELECTRIC:</th>
<th>FOREIGN UTILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.9kV PRIMARY</td>
<td>GAS</td>
</tr>
<tr>
<td>TELECOMM.</td>
<td>TELEPHONE</td>
</tr>
<tr>
<td>TELECOMM. SERVICE</td>
<td>CABLE TV</td>
</tr>
<tr>
<td>STREET LIGHT</td>
<td></td>
</tr>
<tr>
<td>SERVICE</td>
<td></td>
</tr>
<tr>
<td>SECONDARY</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:

A. MINIMUM SEPARATIONS SHOWN BETWEEN CONCURRENTLY INSTALLED FACILITIES ARE PER G.O. 128, RULES 31.4-B2, 41.4-A2 AND 41.4-B2, AND INFORMAL MUTUAL AGREEMENT WITH UTILITIES INVOLVED AND AS SHOWN IN WORK ORDER DRAWINGS.

B. GAS INSTALLATION IN JOINT TRENCH SHALL BE ELIMINATED WHERE STACKING OF ELECTRICAL DISTRIBUTION CONDUITS IS REQUIRED AND/OR MINIMUM SEPARATION CANNOT BE MET.

C. GAS CO. REQUIRES 12" MIN. RADIAL SEPARATION WHEN PARALLELING OTHER UTILITIES.

D. TRENCH BOTTOM SHALL HAVE 90% COMPACTION AND BE OF UNDISTURBED EARTH.

E. CONCRETE ENCASEMENT (CLASS A: 5 SACK MIX) OF ELECTRICAL CONDUITS REQUIRED.

F. ELECTRICAL CONDUITS SHALL BE PLACED 3" MIN. FROM TRENCH WALLS.

G. SHADE TOP OF ENCASEMENT WITH 3" OF SELECT BACKFILL MATERIAL.

H. 60 INCH MAXIMUM TRENCH DEPTH ALLOWED.

J. FIELD CONDITIONS MAY REQUIRE ALTERNATE TELECOMMUNICATION LOCATION.
12kV IN-TRACT BACKBONE TRENCH, JOINT

LEGEND

<table>
<thead>
<tr>
<th>ELECTRIC</th>
<th>FOREIGN UTILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>TELECOMM. 4°C</td>
<td>GAS 4°C</td>
</tr>
<tr>
<td>STREET LIGHT 2°C</td>
<td>TELEPHONE 4°C</td>
</tr>
<tr>
<td>SERVICE 2-3°C</td>
<td>CABLE TV 4°C</td>
</tr>
<tr>
<td>SECONDARY 3-4°C</td>
<td></td>
</tr>
<tr>
<td>6.9kV PRIMARY 3-4°C</td>
<td></td>
</tr>
<tr>
<td>12kV PRIMARY 6°C</td>
<td></td>
</tr>
</tbody>
</table>

NOTES:

A. MINIMUM SEPARATIONS SHOWN BETWEEN CONCURRENTLY INSTALLED FACILITIES ARE PER G.O. 128, RULES 31.4-B2, 41.4-A2 AND 41.4-B2, AND INFORMAL MUTUAL AGREEMENT WITH UTILITIES INVOLVED AND AS SHOWN OR WORK ORDER DRAWINGS.

B. GAS INSTALLATION IN JOINT TRENCH SHALL BE ELIMINATED WHERE STACKING OF ELECTRICAL DISTRIBUTION CONDUITS IS REQUIRED AND/OR MINIMUM SEPARATION CANNOT BE MET.

C. GAS CO. REQUIRES 12" MIN. RADIAL SEPARATION WHEN PARALLELING OTHER UTILITIES.

D. TRENCH BOTTOM SHALL HAVE 90% COMPACTION AND BE OF UNDISTURBED EARTH.

E. CONCRETE ENCASEMENT (CLASS A, 5 SACK MIX) OF ELECTRICAL CONDUITS REQUIRED.

F. ELECTRICAL CONDUITS SHALL BE PLACED 3" MIN. FROM TRENCH WALLS.

G. SHADE TOP OF ENCASEMENT WITH 3" OF SELECT BACKFILL MATERIAL.

H. 60 INCH MAXIMUM TRENCH DEPTH ALLOWED.

I. FIELD CONDITIONS MAY REQUIRE ALTERNATE TELECOMMUNICATION LOCATION.
Scope: This standard shows important notes and details on excavation for underground substructures (vaults, manhole, etc.).

Notes:

A. All excavation and shoring shall be performed in accordance with Article 6 of the State of California OSHA.

B. Trenches exceeding more than 5 feet below grade or where unstable soil is present shall be properly shored.

C. Verify required excavation size with substructure manufacture.

D. Provide 95% compaction.

E. Provide clean 3/4" crushed rock for drainage.
SCOPE: This standard shows protective post requirements for above grade mounted equipment exposed to vehicular traffic.

**Form Concrete Cap if Post Will Be Painted**

**Armorcast Post Sleeve (See Note 5)**

4" IPS Galvanized Pipe—Concrete filled

SELF DRILLING SCREW (2X)

Final Grade

**18" Dia. Min. Concrete Footing 5 Sack Mix**

36" MIN. 60" MAX.

36" MIN. 60" MAX. (Typ.)

Typical Equipment Pad and Post Layout (See Note 3 & 4)

EQUIPMENT PAD

EQUIPMENT DOOR

See Note 4

**Typical Pole or Vent and Post Layout**

POLE OR VAULT VENT

36" MIN. 60" MAX.

Reflective Silver Tape (Typ)

**Non-Removable Post Detail**

18" Dia. Min. Concrete Footing 5 Sack Mix

36" MIN. 60" MAX. (Typ.)

Typical Equipment Pad and Post Layout (See Note 3 & 4)

Equipment Pad

Equipment Door

See Note 4

**Removable Post Detail**

18" Dia. Min. Concrete Footing 5 Sack Mix

36" MIN. 60" MAX. (Typ.)

Typical Equipment Pad and Post Layout (See Note 3 & 4)

Equipment Pad

Equipment Door

See Note 4

**Post-Green**

Reflective Silver Tape (Typ)
NOTES:

1. PROTECTIVE POSTS INSTALLATION GUIDELINES:
   A. DO NOT INSTALL PROTECTIVE POSTS IF EXISTING ABOVE GROUND OBJECTS CAN PROTECT THE EQUIPMENT FROM VEHICULAR TRAFFIC
   A. GREEN COLOR POSTS (PAINTED OR SLEEVED) MAY BE UTILIZED WHEN, AND IF THE ABOVE GROUND MOUNTED EQUIPMENT, ARE INSTALLED IN LANDSCAPED AREA WITH LIMITED TRAFFIC ACCESS. POSTS SHALL BE PAINTED YELLOW FOR DESIGNATING CAUTION AND FOR MARKING PHYSICAL HAZARDS, PER OSHA REGULATION 1910.144. REFLECTIVE TAPES ARE REQUIRED PER DETAIL "A" ONLY ON GREEN POSTS.
   
   FINAL DETERMINATION OF QUANTITY, COLOR AND HEIGHT OF THE POSTS SHALL BE MADE BY THE ELECTRICAL DESIGNER AND/OR THE ELECTRICAL UTILITY INSPECTOR
   
2. CAUTION MUST BE TAKEN WHEN INSTALLING POSTS SO THEY DO NOT MAKE CONTACT WITH ANY UNDER GROUND UTILITIES.
   
3. 18" SIDE DIM. SHALL BE INCREASED TO 48" FOR PAD MOUNTED SWITCHES.
   
4. POSTS SHALL BE COVERED WITH APPROPRIATE COLORED PLASTIC SLEEVE AND SECURED WITH SELF DRILLING SCREWS (SEE PART NUMBERS BELOW) OR PAINTED AT THE JOB SITE.
   
5. EQUIPMENT HEIGHT DICTATES THE HEIGHT OF PROTECTIVE POSTS. USE TALLER POSTS FOR SHORTER EQUIPMENT.

ARMOCAST PRODUCTS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>ARMOCAST PART NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLEEVE ONLY</td>
<td>SLEEVE, POLYETHYLENE - YELLOW</td>
<td>P6000560</td>
</tr>
<tr>
<td>SLEEVE ONLY</td>
<td>SLEEVE, POLYETHYLENE - GREEN</td>
<td>P6000560-GRN</td>
</tr>
<tr>
<td>NON-REMOVABLE POST KIT</td>
<td>SLEEVE, POLYETHYLENE - YELLOW POST, 4&quot; IPS X 72&quot; LG PIPE, GALVANIZED</td>
<td>P6000560S</td>
</tr>
<tr>
<td>NON-REMOVABLE POST KIT</td>
<td>SLEEVE, POLYETHYLENE - GREEN POST, 4&quot; IPS X 72&quot; LG PIPE, GALVANIZED</td>
<td>P6000560S-GRN</td>
</tr>
<tr>
<td>REMOVABLE POST KIT</td>
<td>SLEEVE, POLYETHYLENE - YELLOW POST, 4&quot; IPS X 72&quot; LG PIPE, GALVANIZED</td>
<td>P6000560A</td>
</tr>
<tr>
<td>REMOVABLE POST KIT</td>
<td>SLEEVE, POLYETHYLENE - GREEN POST, 4&quot; IPS X 72&quot; LG PIPE, GALVANIZED</td>
<td>P6000560A-GRN</td>
</tr>
<tr>
<td>2&quot; REFLECTIVE TAPE</td>
<td>3M PRODUCT #963-10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ANAHEIM PART NO. E566095M</td>
<td></td>
</tr>
</tbody>
</table>
**SCOPE:**

THIS STANDARD DESCRIBES REQUIREMENTS AND MATERIAL FOR PLUGGING UNOCCUPIED AND OCCUPIED CONDUIT RUNS IN VAULTS AND OTHER SUBSTRUCTURES. THIS WILL PREVENT THE ACCUMULATION OF DIRT, DEBRIS AND FLOW OF WATER OR GASES.

ALL UNOCCUPIED CONDUIT RUNS, EXISTING AND NEWLY INSTALLED, SHALL BE PLUGGED AT BOTH ENDS. INSTALLED PULL ROPE SHALL BE TIED TO THESE PLUGS. SEE DETAIL "A" BELOW AND SHEET 2 FOR MATERIAL.

ALL OCCUPIED CONDUIT RUNS CONTAINING CABLE(S) SHALL BE PLUGGED AT THE END WITH THE HIGHEST ELEVATION. WHERE A KNOWN FLOW OF WATER EXISTS, SEE DETAIL "A" BELOW AND SHEET 2 FOR MATERIAL.

EXCEPTION: WHERE WATER ACCUMULATES IN VAULTS AND ADJACENT SUBSTRUCTURES HAVING NEGLECTIBLE CHANGE IN ELEVATION, OR CONDUIT RUNS HAVING A KNOWN LOW POINT BETWEEN VAULTS AND OR ADJACENT SUBSTRUCTURES, THE CONDUIT RUNS CONTAINING CABLE(S) SHALL BE PLUGGED AT BOTH ENDS.

PLUGGING OF SERVICE CONDUIT(S) (G.O. 128, RULE 31.8), EXITING THE UTILITIES LAST SUBSTRUCTURE, WHICH IS HIGHER IN ELEVATION THAN THE BUILDINGS FIRST FLOOR (EXCLUDING PORTION TO METER PANEL TERMINATION SECTION) IS MANDATORY. SEE DETAIL "C" AND SHEET 2 FOR MATERIAL.

SERVICE CONDUITS WHICH TERMINATE INSIDE A CUSTOMERS METER ROOM OR SERVICE PANEL, WHICH IS BELOW GRADE, MUST BE PLUGGED EXITING THE UTILITIES LAST SUBSTRUCTURE. SEE DETAIL "C" AND SHEET 2 FOR MATERIAL. CUSTOMER MAY ALSO BE REQUIRED TO PROVIDE AN APPROVED SERVICE CONDUIT TERMINATION BOX WITH WEEP HOLES IN THE BOTTOM PANEL. THIS TERMINATION BOX SHALL BE LOCATED ON THE WALL WHERE THE SERVICE CONDUITS ENTER THE BUILDING.
UNOCCUPIED CONDUITS:

NEWLY INSTALLED CONDUITS SHALL BE PLUGGED USING ONE PIECE MOLDED PLASTIC TEMPORARY CONDUIT PLUGS. ATTACH PULL ROPE TO INTEGRAL EYE AND WEDGE PLUG INTO CONDUIT ENDS.

NOTE: THIS PLUG IS NOT STOCKED IN CITY WAREHOUSE.

CONDUITS WITH KNOWN WATER FLOW SHALL BE PLUGGED USING EXPANDABLE BLANK CONDUIT PLUGS SPECIFIED IN TABLE BELOW. THESE PLUGS ARE SIMPLE TO INSTALL: CLEAN INSIDE OF CONDUIT, ATTACH PULL ROPE TO INTEGRAL EYE, SLIP PLUG INTO UNOCCUPIED CONDUIT AND HAND TIGHTEN. PLUGS ARE REUSABLE, RETURN TO STOCK WHEN REMOVED.

<table>
<thead>
<tr>
<th>EXPANDABLE BLANK CONDUIT PLUGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONDUIT SIZE</td>
</tr>
<tr>
<td>---------------</td>
</tr>
<tr>
<td>2&quot;</td>
</tr>
<tr>
<td>3&quot;</td>
</tr>
<tr>
<td>6&quot;</td>
</tr>
</tbody>
</table>

OCCUPIED CONDUITS:

CONDUITS CONTAINING CABLE(S) AND WITH KNOWN WATER FLOW SHALL BE PLUGGED USING CFC FREE, TWO-PART POLYURETHANE FOAM. INSTALL FOAM PER MANUFACTURERS INSTRUCTIONS. SEE TABLE BELOW FOR REQUIRED FOAM KIT BASED ON CONDUIT SIZE.

<table>
<thead>
<tr>
<th>SEALING FOAM KITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONDUIT SIZE</td>
</tr>
<tr>
<td>2&quot; TO 6&quot;</td>
</tr>
</tbody>
</table>

NOTES:

A. ONE KIT REQUIRED FOR EACH CONDUIT TO BE PLUGGED.

SUPERSEDES CU 1600-96J, SH. 1, REV. 0, DTD. 05-93.
## SCOPE

This standard describes approved City of Anaheim corrosion resistant ground rods and ground rod clamps.

### GROUND RODS

<table>
<thead>
<tr>
<th>Diameter</th>
<th>Length</th>
<th>MFGR.</th>
<th>Catalog No.</th>
<th>Anaheim Part No.</th>
<th>Compatible Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8&quot;</td>
<td>8&quot;-9&quot;</td>
<td>ERICO</td>
<td>615100</td>
<td>547005</td>
<td>GRNDRD</td>
</tr>
</tbody>
</table>

Ground rods shall meet requirements of ANSI Spec. C80.9 (UL 467).

### STANDARD GROUND ROD CLAMP (HEAVY DUTY)

<table>
<thead>
<tr>
<th>Ground Rod Dia</th>
<th>Ground Rod Wire Dia</th>
<th>MFGR.</th>
<th>Catalog No.</th>
<th>Anaheim Part No.</th>
<th>Compatible Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8&quot;</td>
<td>6 SOLID-1/0 STR</td>
<td>BLACKBURN</td>
<td>J9069H</td>
<td>569075</td>
<td>GRNDCLMP-RCD</td>
</tr>
<tr>
<td>10 SOLID-1 STR</td>
<td>BURNDY</td>
<td>GR058</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 SOLID-1/0 STR</td>
<td>DODGE</td>
<td>GNE2</td>
<td></td>
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</tr>
</tbody>
</table>

### U-BOLT GROUND ROD CLAMP (WHEN REQUIRED)

<table>
<thead>
<tr>
<th>Ground Rod Dia</th>
<th>Ground Rod Wire Dia</th>
<th>MFGR.</th>
<th>Catalog No.</th>
<th>Anaheim Part No.</th>
<th>Compatible Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/8&quot;</td>
<td>2/0 SOLID-250 KCMIL</td>
<td>BURNDY</td>
<td>GA16429</td>
<td>-</td>
<td>-</td>
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<td></td>
<td></td>
<td>DODGE</td>
<td>GP03525</td>
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</table>

### BRONZE U-BOLT GROUND CLAMP

<table>
<thead>
<tr>
<th>Ground Rod Dia</th>
<th>Ground Rod Wire Dia</th>
<th>MFGR.</th>
<th>Catalog No.</th>
<th>Anaheim Part No.</th>
<th>Compatible Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>300-500 KCMIL</td>
<td>2/0 SOLID-250 KCMIL</td>
<td>BURNDY</td>
<td>G31420</td>
<td>5690050</td>
<td>GRNDCLMP-40-500</td>
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<td>DODGE</td>
<td>G302520</td>
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### TRANSFORMER GROUND CLAMP

<table>
<thead>
<tr>
<th>Ground Wire Dia</th>
<th>Stud Size</th>
<th>MFGR.</th>
<th>Catalog No.</th>
<th>Anaheim Part No.</th>
<th>Compatible Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 SOLID-2 STR</td>
<td>1/2&quot;-13&quot;</td>
<td>PENN UNION</td>
<td>GSE.020-TN</td>
<td>5690055</td>
<td>GRNDCLMPCAGE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BLACKBURN</td>
<td>TFC0P</td>
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</table>

### "C" TYPE COMPRESSION CONNECTOR (WIRE TO WIRE)

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<th>Run</th>
<th>Tap</th>
<th>MFGR.</th>
<th>Catalog No.</th>
<th>Anaheim Part No.</th>
<th>Compatible Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 SOLID-2 STR</td>
<td>6 SOLID-2 STR</td>
<td>BURNDY</td>
<td>YGH23C2</td>
<td>569135</td>
<td>GRNDCCCLAMP</td>
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<td>BLACKBURN</td>
<td>STP22</td>
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</tbody>
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**Grounding Materials**

**Ground Rods and Clamps**

**CO 782**
GROUND WIRE #4 - #2

INSTALL GROUND WIRE IN CLAMP ON SIDE OPPOSITE BOLT

GROUND WIRE (HORIZONTAL) 2/0-250 CU

U-BOLT GROUND CLAMP

GROUND WIRE (VERTICAL) 2/0-250 CU

U-BOLT GROUND CLAMP

GROUND ROD

GROUND ROD CLAMP BOLT MUST TIGHTEN AGAINST GROUND ROD AND NOT AGAINST GROUND WIRE. TORQUE BOLT PER MANUFACTURER'S INSTRUCTIONS.

TORQUE NUTS EACH PER MANUFACTURER'S INSTRUCTIONS

INSTALLATION OF GROUND CLAMPS

NOTES:

1. COPPERCLAD STEEL GROUND RODS SHALL BE 5/8" DIAMETER BY 8 FT. LONG (SEE FIGURE 1). RODS ARE TO BE DRIVEN IN UNDISTURBED EARTH AND SHALL BE A MINIMUM OF 8 FT. IN THE GROUND.

2. ALL BOLTS, NUTS, WASHERS AND "U" BOLTS SUPPLIED W/CLAMPS SHALL BE BRONZE MATERIAL.

GROUNDING MATERIALS
GROUND RODS AND CLAMPS

CO 782