

## SECTION 4

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### LIGHTING

#### 4.1 GENERAL

Street lighting shall be installed to conform to these Improvement Standards by the Developer or City Contractor holding an appropriate license for such work under the provisions of the State of California Business and Professions Code. The Design Engineer shall also consult and coordinate design drawings for lighting with the Turlock Irrigation District.

Electrical equipment shall conform to the requirements of the National Electrical Manufacturers Association and material and work shall conform to the requirements of the National Electrical Code, the Electrical Safety Orders of the Division of Industrial Safety, Department of Industrial Relations of the State of California. Public Utilities Commission, the Improvement Standards of the American Society for Testing Materials and the American Improvement Standards Association.

#### 4.2 DESIGN

The lighting system shall be designed to best serve the area and to minimize the length of service reins from the points of connection to the street lights.

All street lights to be installed shall be shown on the improvement plans. The location of the power source and all conduit runs shall be shown on the improvement plans.

The minimum spacing and location for electroliers shall be as shown on Drawings No. L.3 and L.4.

#### 4.3 CONDUIT

Conductor shall be run in conduit except when run inside poles. Conduit and fittings shall be rigid metal, intermediate or schedule 40 pvc conduit in locations where approved by National Electric Code. Conduit shall be 1-inch minimum diameter.

Conduits shall be bound together in pull boxes and pole bases as shown in Drawing No. L.1, with not less than No. 8 A.W.G. copper wire.

Where factory bends are not used, conduit shall be bent without crimping or flattening using the longest radius practicable. In no case shall the bend radius be less than six times the inside diameter of the conduit.

#### 4.4 CONDUCTORS

Conductors shall be No. 10 copper or larger, TRW single conductor, Underwriters Laboratory approved.

No conductors shall be drawn into the conduit until the conduit run is complete and the conduit is free of debris. If the conduit is installed in a pole foundation, the conductors shall not be drawn into the conduit for at least 3 days after placement of the foundation concrete.

Conductors shall not be spliced except in pole bases (or in pull boxes when approved by the City). The splices shall be made as shown and specified on drawing number ES-B of Department of Transportation Standard Plans and in Section 86-2.04D of the Standard Specifications.

#### 4.5 PULL BOXES.

Pull boxes shall be size Christy N-16 concrete or approved equal, and shall be furnished by the developer or City Contractor. The pull box shall be installed as shown in Drawing No. 4-L.6

Traffic lids shall be used when boxes are placed in areas traveled by vehicles. The traffic lids shall be 1/4-inch galvanized steel plate with 1/2-inch diameter lift hole and bolt holes to match standard stud bolts.

#### 4.6 FOUNDATIONS

Foundations for poles shall be constructed of concrete and shall be located as shown on Drawing No. 4-L.2 and 4-L.6 depending upon the type of light fixture.

Foundations shall be placed monolithically to within 4-inches of sidewalk grade. After pole is installed, a 36-inch square cap shall be placed to bring the foundation to sidewalk grade.

#### 4.7 ANCHOR BOLTS

Anchor bolts shall be as shown on the respective standard drawings.

#### 4.8 POLES

Poles shall be 30 foot poles hot-dip galvanized steel with 15 foot arms and shall be Ameron Catalog No. N-3015-2, Pacific Union Metal Manufacturing Company Catalog No. FS 1130 P15 or an approved equal, or 25 foot poles with 12 foot arms shall be Ameron Catalog No. N-2512-2, Pacific Union Metal Manufacturing Company No.

71041-Y3-12 or an approved equal, as required per 4-L.1 and 4-L.2. Poles shall not be installed until the foundation has set at least 5 days. Poles shall be plumbed by adjusting the leveling nuts; leveling shims shall not be used. The poles shall be grounded to conform to the provisions of the National Electrical Code. Subdivision poles shall be as required by 4-L.5 and 4-L.6.

Poles shall have hand-holes near their bases facing the street.

#### 4.9 ELECTROLIERS

The electroliers shall be located according to size as shown on Drawings No. L.3 and L.4. The luminaries shall be as follows or an approved equal:

200 watt	I.E.S. Type III	G.E. C798N806 (100 volt lamp) Landmark 25-62J3
150 watt	I.E.S. Type III II 11-4	C760N510 (55 volt lamp) Landmark CD56262-00C
100 watt	I.E.S. Type II	G.E.C760N526 (55 volt lamp) Landmark CD5621.2-00C
70 watt		For subdivisions see 4-L.5

Luminaries shall have high pressure sodium vapor lamps, glass refractors, built-in receptacles for photoelectric cells, and regulator or auto-regulator type ballasts with a power factor of not less than 92%. House side shields shall be installed in all residential areas to prevent light from illuminating residential properties.

#### 4.10 PHOTOELECTRIC CELLS

Photoelectric cells shall be adjustable, compatible with related equipment and adequate for the load. They shall be General Electric C402G400 or an approved equal.

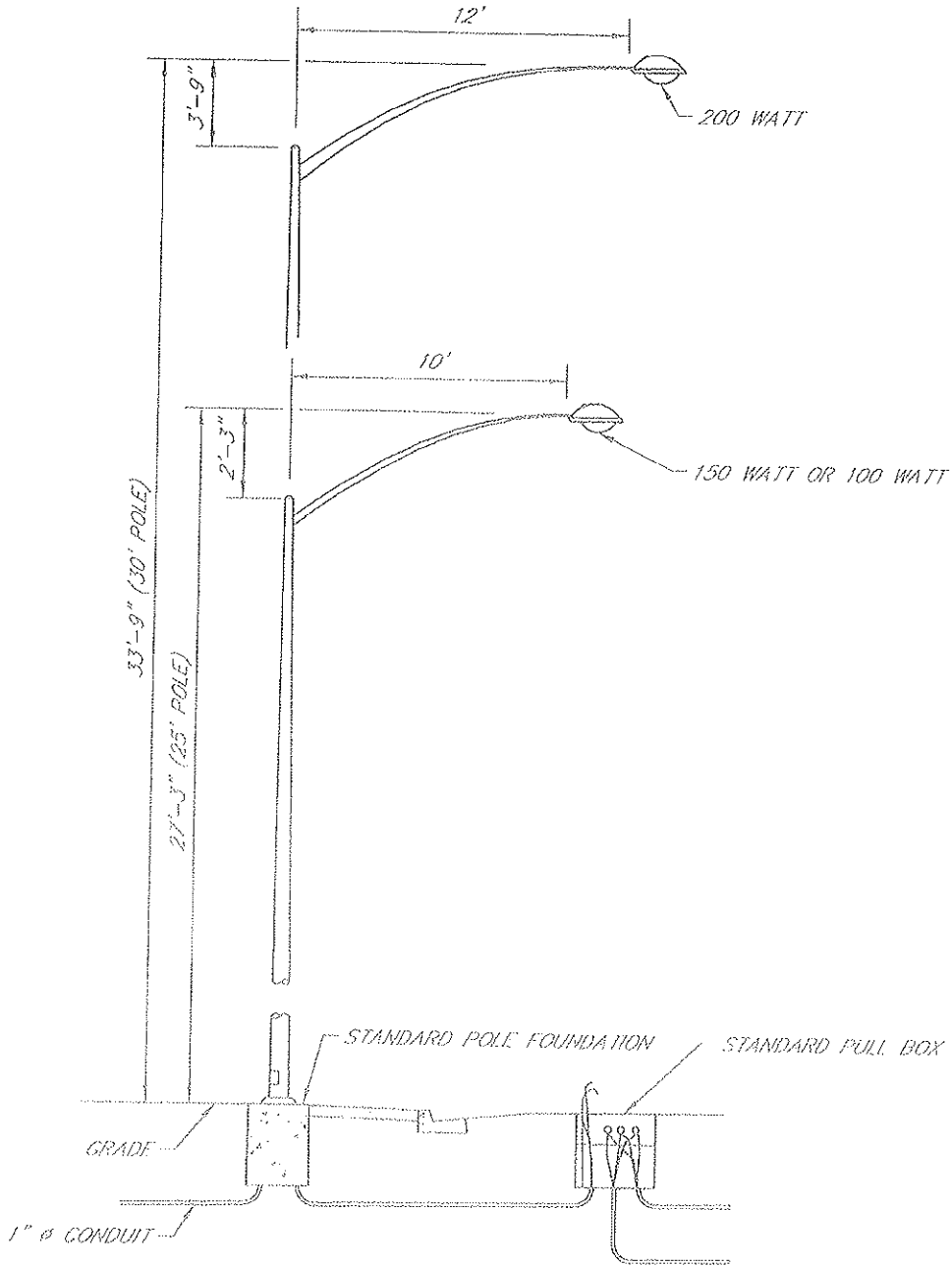
#### 4.11 TESTING

The street lights on City Contract projects shall be tested a minimum of 48 hours before acceptance by the City.

#### 4.12 CONFLICT WITH UTILITIES

Developer or City Contractor shall be responsible for contacting Utility Companies to determine that locations for foundations and conduit runs are clear.

Where conflicts exist, the locations may be altered with approval of the City.



1. LUMINAIRE TO BE 120 VOLT AND SHALL HAVE HIGH PRESSURE SODIUM VAPOR LAMPS, BUILT-IN PHOTOELECTRIC CONTROL.
2. METAL POLE TO BE HOT DIP GALVANIZED.



**ELECTROLIER  
25' AND 30' POLES**

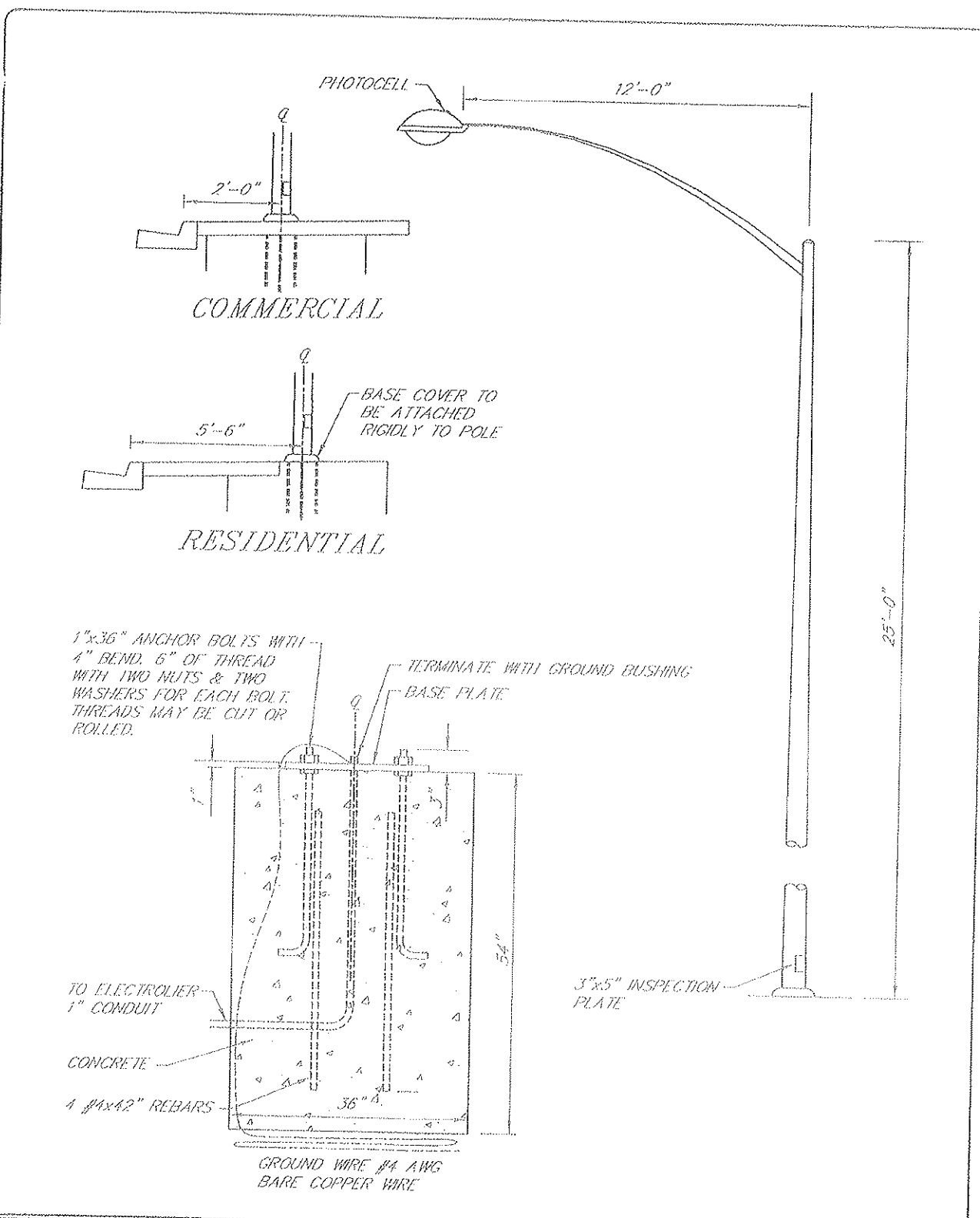
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 CHECKED BY: R.I.H.  
 SCALE: NONE  
 DATE: 1/04

APPROVED BY: *[Signature]*  
 DATE APPROVED: 1/5/04

CITY OF HUGHSON

STANDARD DETAIL

4-L.1



1" x 3/8" ANCHOR BOLTS WITH  
 4" BEND, 6" OF THREAD  
 WITH TWO NUTS & TWO  
 WASHERS FOR EACH BOLT.  
 THREADS MAY BE CUT OR  
 ROLLED.

TERMINATE WITH GROUND BRUSHING  
 BASE PLATE

TO ELECTROLIER  
 1" CONDUIT

CONCRETE

4 #4x42" REBARS

36"

GROUND WIRE #4 AWG  
 BARE COPPER WIRE

3" x 5" INSPECTION  
 PLATE

25'-0"



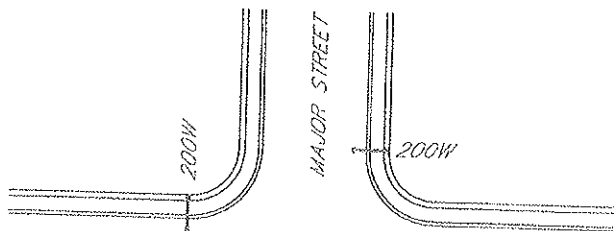
ELECTROLIER  
 FOOTING DETAIL

DRAWN BY: A.D.R.  
 CHECKED BY: R.H.H.  
 SCALE: NONE  
 DATE: 1/04

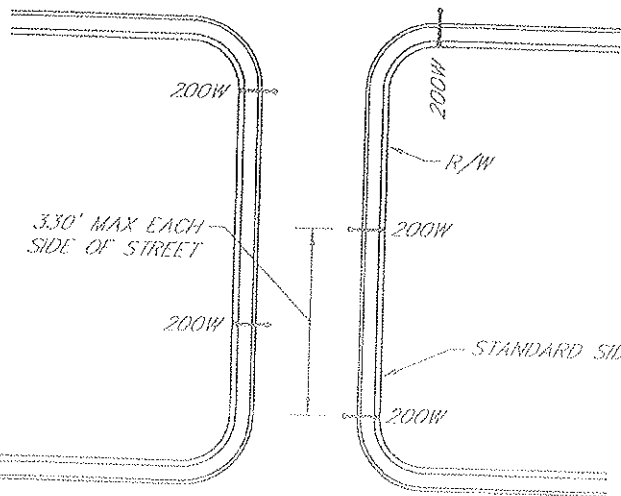
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CITY OF HUGHSON

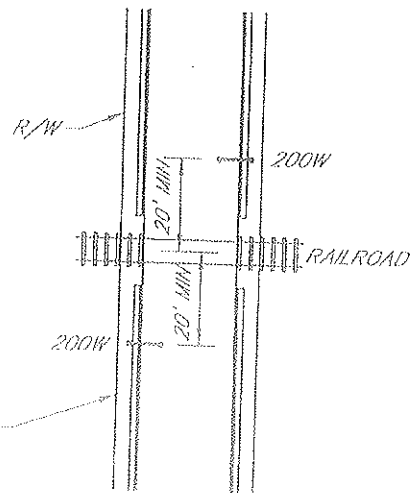
STANDARD DETAIL  
 4-L.2



MAJOR STREET



COLLECTOR STREET



NOTE:  
WHEN POLE LOCATION CONFLICTS WITH DRY WELL,  
FIRE HYDRANT, DRIVEWAY OR OTHER EXISTING OR  
PROPOSED FACILITY, PLACE POLE AS DIRECTED  
BY THE CITY.



ELECTROLIER LOCATIONS  
MAJOR STREET & RAIL CROSSING

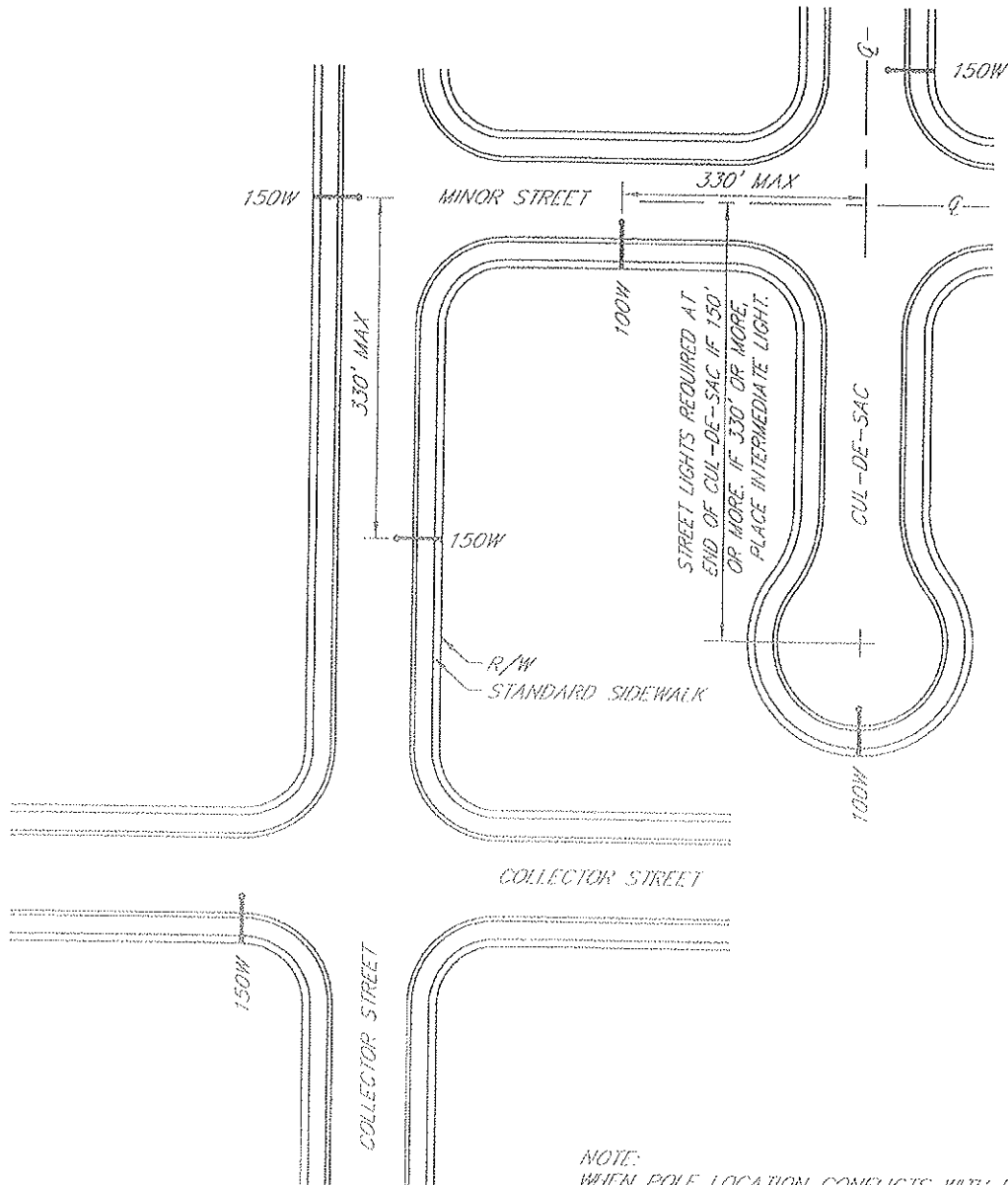
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SCALE: NONE  
DATE: 1/04

APPROVED BY: *[Signature]*  
DATE APPROVED: 5/1/04

CITY OF HUGHSON

STANDARD DETAIL

4-L.3



NOTE:  
 WHEN POLE LOCATION CONFLICTS WITH DRY WELL,  
 FIRE HYDRANT, DRIVEWAY OR OTHER EXISTING OR  
 PROPOSED FACILITY, PLACE POLE AS DIRECTED  
 BY THE CITY.



ELECTROLIER LOCATIONS  
 COLLECTOR AND MINOR STREETS

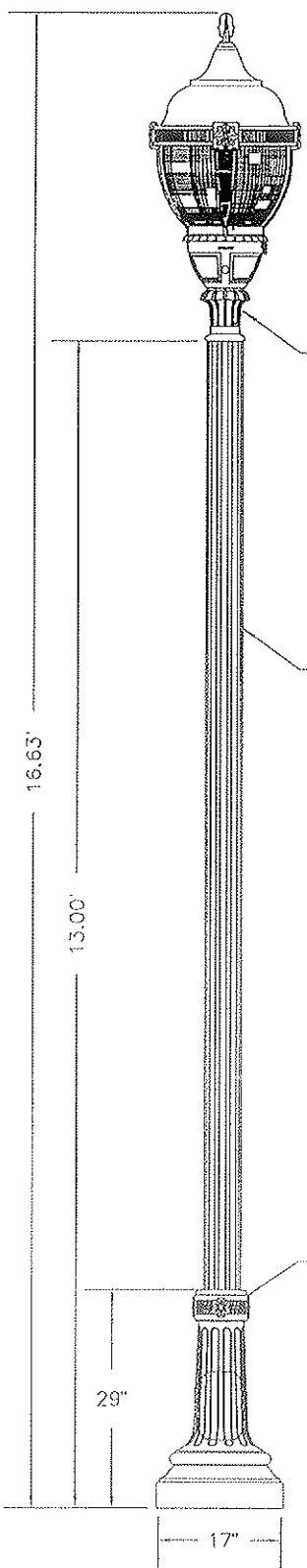
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 DATE APPROVED: 1/10/04

CITY OF HUGHSON

STANDARD DETAIL

4-L.4



STAINLESS STEEL ALLEN FASTNERS

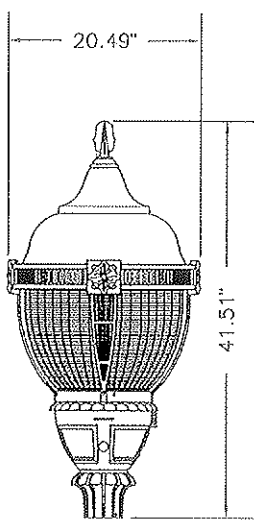
POLE: 5" STRAIGHT FLAT FLUTED W/ 3" TENON .188" WALL THICKNESS 6005-T5 ALUMINUM ALLOY WITH GREEN POWDER COATING

HADCO--ORDERING GUIDE:  
C2349: LUMINAIRE  
CP2349: POLE  
[www.Hadcolighting.com](http://www.Hadcolighting.com)

SHALL BE HADCO OR AN APPROVED EQUAL

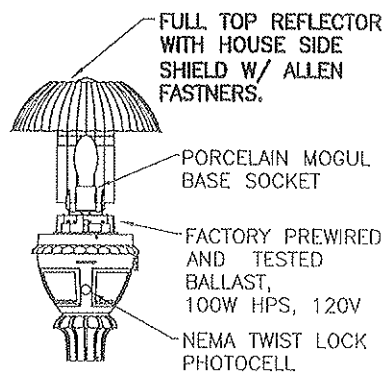
BASE: CAST #356HM ALUMINUM ALLOY, W/ ACCESS DOOR & COVER

BASE DETAIL: REFERENCE TEMPLATE #T01000345

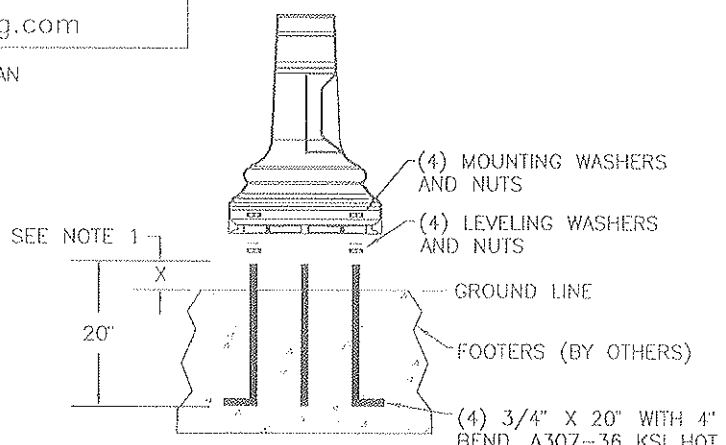


LAMPING & REFLECTOR DETAIL  
N.T.S

ACRYLIC TYPE III REFRACTOR GLOBE



- NOTES:
- 1) HADCO STRONGLY RECOMMENDS USING LEVELING NUTS TO MOUNT THE POST BASE. IF FOUNDATION IS NOT LEVEL INCREASE "X" DIMENSION ACCORDINGLY WHEN USING LEVELING NUTS WITH WASHERS.
  - 2) SHIELDING TO CONTROL NUISANCE LIGHTING MAY BE REQUIRED BY CITY.



BASE DETAIL  
N.T.S



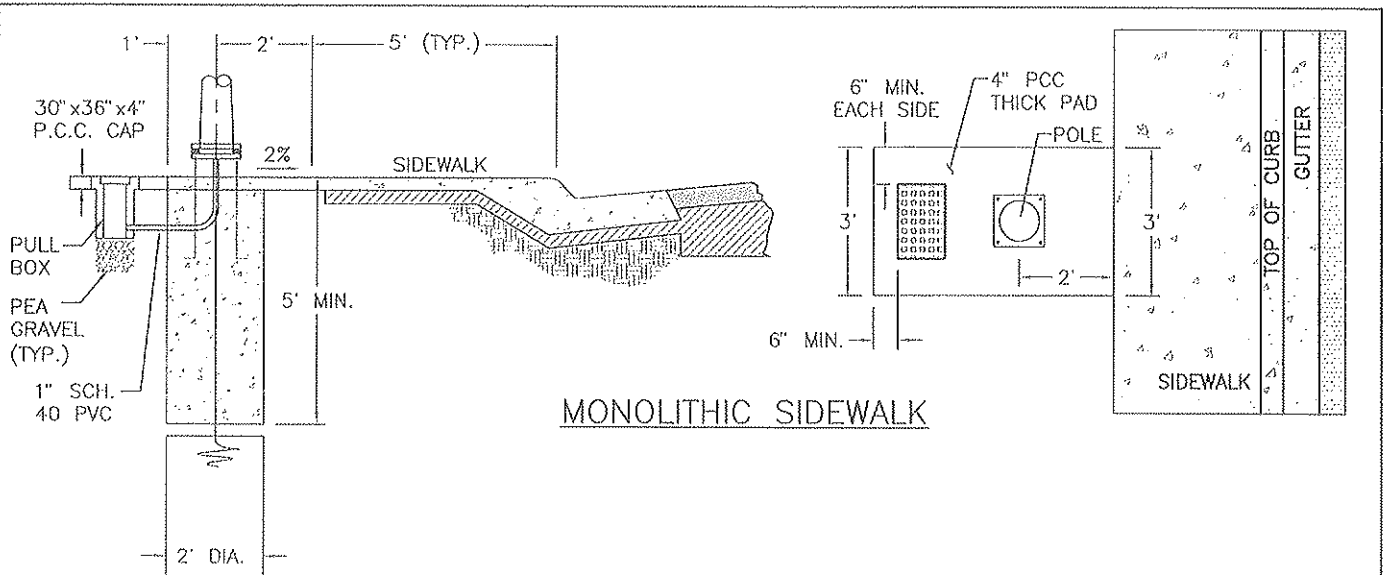
PUBLIC WORKS DEPARTMENT

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SCALE: N.T.S.  
DATE: 13 JUNE 07

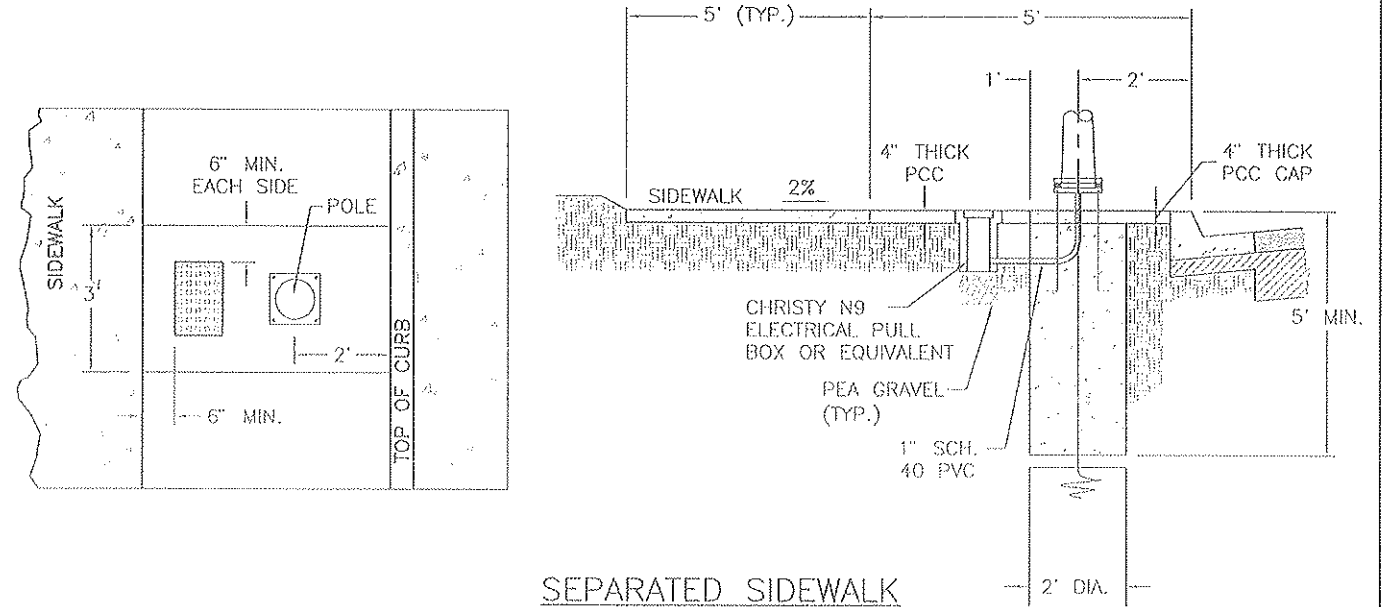
APPROVED BY: *[Signature]*  
DATE APPROVED: 8/13/07

**SUBDIVISON DECORATIVE LIGHT**

STANDARD DETAIL  
**4-L.5**



MONOLITHIC SIDEWALK



SEPARATED SIDEWALK

NOTES:

1. SECURE ELECTROLIER TO GROUNDED STUD.
2. 15' #6 BARE COPPER GROUND WIRE OR 5/8" X 10' COPPER WELD GROUND ROD SHALL BE COVERED WITH 2" OF SOIL PRIOR TO POURING BASE.
3. BASE SHALL BE CLASS 'B' CONCRETE FIELD CAST 4500 P.S.I. MINIMUM.
4. 3/4" X 20" W/ 4" BEND GALV. ANCHOR BOLT (VERIFY BOLT CIRCLE W/POLE MANUFACTURER).
5. INSTALL RODENT SCREEN AT THE BOTTOM OF THE PULL BOX.
6. INSTALL ONE FOOT MIN. THICK LAYER OF PEA GRAVE (BELOW THE RODENT SCREEN).
7. REINFORCED CONCRETE LID, BOLT DOWN.



PUBLIC WORKS DEPARTMENT

DRAWN BY: CV  
 CHECKED BY: PK  
 SCALE: N.T.S.  
 DATE: 13 JUN 07

APPROVED BY: *[Signature]*  
 DATE APPROVED: 8/13/07

SUBDIVISION DECORATIVE  
 LIGHT FOUNDATION

STANDARD DETAIL

4-L.6