DESIGN STANDARDS
AND
GUIDELINES

CITY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

BUREAU OF STREET LIGHTING
600 SOUTH SPRING STREET
LOS ANGELES, CALIFORNIA 90014

Version: May 2007

Bureau of Street Lighting
Design Standards and Guidelines

TABLE OF CONTENTS

INTRODUCTION

The purpose of the BSL Standards and Guidelines package is to establish guidelines and practices to be followed by engineers in designing street lighting systems.

Benefits of this package include providing engineers with direction resulting in increased productivity by streamlining the design process, and increased efficiency by establishing a centralized source of up-to-date reference for current standards and procedures.

The overall quality in street lighting designs will be enhanced by requiring engineers to adhere to the Bureau's current design and construction policies.

Senior Engineering Managers, Division Managers and/or Street Lighting Engineering Associate III's will be empowered by the Director to approve design recommendations and/or final street lighting construction plans upon full implementation of the BSL Standards and Guidelines package.

BUREAU OF STREET LIGHTING DIRECTIVE NO. 390

DESIGN STANDARDS AND GUIDELINES

The Design Standards and Guidelines manual was initiated in June of 1997 to establish uniform guidelines and practices to be followed by engineers in designing street lighting systems. The purpose of the manual is to provide designers with direction, set standards and policy.

The goal of this manual is to provide street lighting engineers with clear direction in order to increase productivity by streamlining design procedures, and increase efficiency by establishing a centralized source of up-to-date reference for current standards and procedures. In addition, this package will enhance the quality of design and empower the Street Lighting Engineering Associate III's, Division and Senior Engineering Managers.

The manual contains the following:

- Guidelines for levels of approval of street lighting design recommendations and final plans.
- Illumination standards for various areas and roadways (including pedestrian ways).
- Equipment Selection Standards
- Bureau policy in relation to various design requirements.
- Approved Planning Routes and areas.
- Design Recommendation checklist and final plan checklist.

This manual and directive will be updated on a semi-annual basis by the Senior Manager in charge of the design divisions.

_____

Director
Bureau of Street Lighting

Revised Date: 05/09/2007
Attachments: Design Standards and Guidelines Manual
Distribution: All Engineering Division

GUIDELINES FOR LEVELS OF APPROVAL OF STREET LIGHTING DESIGN RECOMMENDATIONS & FINAL PLANS

The following are the requirements that a plan must meet in order for the supervisor or manager to sign the Design Recommendation and/or final plan.

DESIGN RECOMMENDATION APPROVALS

STREET LIGHTING ASSOCIATE III

.

- Projects with less than 20 poles of the following selection: 40' Davit, CD-953, CD-929, Gardco Semi-Spherical, CD-851 and CD-808Z.
- The design must fall within the parameters of the Equipment Selection Guidelines (pg. 12)
- Pedestrian Tunnel Closure Projects.

DIVISION ENGINEER APPROVAL

- Projects 21 to 75 poles of the following selection: 40' Davit, CD-953, CD-929, Gardco Semi-Spherical, CD-851 and CD-808Z.
- The design must fall within the parameters of the Equipment Selection Guidelines (pg. 12)
- Upgrade Projects (E&C and STM) with NO Proposition 218 impact.

SENIOR ENGINEERING MANAGER APPROVAL

- Projects greater than 75 poles on streets where we are matching an existing system.

DIRECTOR APPROVAL

- All Design Recommendations of politically sensitive/high profile projects.
- Any Project that the Division Manager or Senior Engineering Manager considers pertinent for the Director's review and approval.
- All projects that do not fall within the above categories.
- All projects with ornamental pole installations.

FINAL PLAN APPROVALS

STREET LIGHTING ASSOCIATE III

- Street Lighting relocation projects (normally referred to as “A” or “X” permit projects)
- Encroachment permits
- Sewer and Storm repair plans requiring BSL approval.
- Projects with less than 20 poles of the following selection: 40’ Davit, CD-953, CD-929, Gardco Semi-Spherical, CD-851 and CD-808Z, and that fall within the parameters of the Equipment Selection Guidelines.
- Pedestrian Tunnel Closure Projects.

DIVISION ENGINEER APPROVAL

- Projects 21 to 75 poles of the following selection: 40’ Davit, CD-953, CD-929, Gardco Semi-Spherical, CD-851 and CD-808Z, and that fall within the parameters of the Equipment Selection Guidelines.
- Upgrade projects (E& C and STM) with NO Proposition 218 impact.

SENIOR ENGINEERING MANAGER APPROVAL

- All BSL advertised projects.
- Projects greater than 75 poles on streets where design is matching an existing system.

DIRECTOR APPROVAL

- All politically sensitive/high profile projects.
- Any Project that the Division Engineer or Senior Engineering Manager considers pertinent for the Director’s review and approval.
- All projects that do not fall within the above categories.
- All projects with ornamental pole installations.

ILLUMINATION STANDARDS

ILLUMINATION STANDARDS RP-8-2000

A. RECOMMENDATIONS FOR LIGHTING LEVELS FOR ROADWAYS AND SIDEWALKS IN LUX (FC)

The illumination standards for roadway lighting will be adhered to by all engineers.

Illuminance Method – Recommended Values

Road and Pedestrian Conflict Are		Pavement Classification (Minimum maintained Average Values)			Uniformity Ratio E_{av} /E_{min}	Veiling Luminanc Ratio L_{vma} /L_{av}
Road	Pedestrian Conflict	R1 lux/fc	R2 & lux/fc	R4 lux/fc		
Freeway Class A		6.0/0.6	9.0/0.9	8.0/0.8	3.0	0.3
Freeway Class		4.0/0.4	6.0/0.6	5.0/0.5	3.0	0.3
Expressway	High	10.0/1.0	14.0/1.4	13.0/1.3	3.0	0.3
	Medium	8.0/0.8	12.0/1.2	10.0/1.0	3.0	0.3
	Low	6.0/0.6	9.0/0.9	8.0/0.8	3.0	0.3
Majo	High	12.0/1.2	17.0/1.7	15.0/1.5	3.0	0.3
	Medium	9.0/0.9	13.0/1.3	11.0/1.1	3.0	0.3
	Low	6.0/0.6	9.0/0.9	8.0/0.8	3.0	0.3
Collector	High	8.0/0.8	12.0/1.2	10.0/1.0	4.0	0.4
	Medium	6.0/0.6	9.0/0.9	8.0/0.8	4.0	0.4
	Low	4.0/0.4	6.0/0.6	5.0/0.5	4.0	0.4
Local	High	6.0/0.6	9.0/0.9	8.0/0.8	6.0	0.4
	Medium	5.0/0.5	7.0/0.7	6.0/0.6	6.0	0.4
	Low	3.0/0.3	4.0/0.4	4.0/0.4	6.0	0.4

Recommended Illuminance for the Intersection of Continuously Lighted Urban Streets (Based on the values in Table 2 for R2 and R3 pavement classifications)

Illuminance for intersections				
Functional Classification	Average Maintained Illumination at Pavement by Pedestrian Area Classification lux/fc			E_{avg} /E_{min}
	High	Medium	Low	
Major/Major	34.0/3.4	26.0/2.6	18.0/1.8	3.0
Major/Collector	29.0/2.9	22.0/2.2	15.0/1.5	3.0
Major/Local	26.0/2.6	20.0/2.0	13.0/1.3	3.0
Collector/Collector	24.0/2.4	18.0/1.8	12.0/1.2	4.0
Collector/Local	21.0/2.1	16.0/1.6	10.0/1.0	4.0
Local/Local	18.01/1.8	14.0/1.4	8.0/0.8	6.0

Vertical Illuminance (walkways, bikeways, stairways)

Vertical illuminance may be utilized where it appears necessary to provide a sense of security in order to recognize if another person is likely to be friendly, indifferent or aggressive. It is recommended that in these areas the design for vertical illuminance shall adhere to the specifications set forth for semi cylindrical illuminance in IES "Recommended lighting for walkways and Class 1 bikeways" DG-5-94.

B. RECOMMENDED ILLUMINATION LEVELS FOR MISCELLANEOUS SYSTEMS

The following is a summary of the lighting levels for special situations, as recommended by IES Standard Practice for Roadway Lighting, RP-8, 2000.

Stairways

Minimum average illumination level for stairways with low Pedestrian Conflict Areas and on a medium Density Residential are 4 Lux (0.4 fc) with uniformity ratio of 4:1. Also refer to DG-5-94 for additional criteria.

Bikeways

Minimum average horizontal illumination Bikeways (Class 1) with High Pedestrian Conflict Areas are 10 Lux (1.0 fc) with uniformity ratio of 4:1. Also refer to DG-5-94 for additional criteria.

Mid-Block Crosswalks

Crosswalks traversing roadways in the middle of blocks without signalization should be provided with additional illumination. The average illumination level in the crosswalk area should at least be equal to that provided at the intersection of two major streets; i.e., about 34 lux (3.4Fc). The uniformity ratio should be no more than 3:1.

Railroad Crossings

Illumination level over track area, starting 100 feet (30 meters) before the crossing and ending 100 feet (30 meters) beyond the crossing, should be in accordance with Table D1 and table D2 on RP-8-2000, but never less than 9 Lux (0.9FC). The uniformity ratio should be no more than 4:1. Refer to DIRECTIVE #397.

Around Public Facilities (i.e. schools, parks, recreation centers, etc.)

Illumination levels for the surrounding roadways should be considered as Medium Pedestrian Conflict area and follows the IES guidelines. The uniformity ratio should be no more than 3:1.

Parking Lots

Illumination levels for parking lots should have an average illumination level of 22 Lux (2.0 fc) for LADOT open parking lots and uniformity ratio of 3:1. Also refer to RP-20-98 for additional criteria.

Tunnels

The main objective in tunnel lighting design is to provide a lighting system for a given tunnel meets the visibility requirements for day and night conditions. The following issues need to be addressed when designing tunnel lighting for both daytime and nighttime values: threshold zone, transition zone, and tunnel interior zone. Many factors determine luminance values for tunnel lighting design. Refer to IESNA RP-22, 1996 for classification of your tunnel and appropriate lighting levels.

Cultural Historical Structures

All designers shall be aware of the Historical Cultural Monuments listing as published by the Cultural Affairs Department. Bureau district maps should refer to this document for all Historical Cultural monuments. In accordance with the State Historical Building Code these structures ma be restricted in modifications to electroliers such as different spacing or height. In these cases the Bureau shall try to achieve the highest level possible not to exceed IES standards.

Bus Stop Facilities

Illumination levels over a Bus Stop area should have an average illumination level of 25 lux (2.5 FC).The uniformity ratio is at 3:1 .Lighting levels should be in addition to the level provided by the regular street lighting system. Typically these facilities are 80' in length and are provided with three lighting fixtures attached at 15' height. Also refer to RP-33-99 and G-1-03 for additional criteria.

Architectural Lighting Design Considerations

The purpose of an architectural lighting system is to highlight, enhance, and accentuate the outstanding architectural features of a bridge. Architectural lighting projects are subjective to artistic impressions or interpretations.

There are no current City adopted lighting standard or IES requirements for illumination levels for the bridge's handrails, arches, columns, approach gates, and piers. Considerations for exterior lighting (as suggested by IES Lighting Handbook, 8TH Edition, Chapter 22) design include:

- COMMUNITY THEMES (in architecture and in lighting)
- LIGHTING ORDINANCES (light Pollution and light trespass)
- SURROUNDING BRIGHTNESS (bright downtown industrial)

Engineers may consider utilizing the following equipment:

1. Floodlight luminaires* with narrow vertical beam type distributions (for example, 35 degree vertical spread to minimize light spillage , projecting 50 feet) may be utilized for approach columns, pier columns, and arches.

2. Floodlight luminaires* with wide vertical beam type distributions may be utilized for spans.

3. High wattage metal halide lamp (typical for architectural applications).

4. Weatherproof fixture.

*Recommend using luminaires with filters giving BSL the option (flexibility) to change light color. Recommend setting field angles of luminaires at nighttime evaluation.

Ease of installation and maintenance of fixture also need to be examined by engineers. Moreover, conduit exposure must be minimized and / or eliminated especially for historical bridges.

C. MISCELLANEOUS

Streetscape Facilities

Illumination levels for streetscape projects that provide full pedestrian lighting on sidewalks should have a minimum average illumination level of 10 Lux (1.0 FC). The uniformity ratio should be designed for 3:1. This lighting level should be in addition to the level provided by the regular street lighting system. Also refer to RP-33-99, DG-5-94 and G-1-03 for additional criteria.

Approved Planning Areas and Planning Routes

Every design engineer shall be aware of the list of approved Planning Areas and Routes. These areas and routes have been designated for a certain type of pole and are approved by the Cultural Affairs Commission. A complete list of all approved segments is kept on file at the records counter.

BSL Lighting Analysis Software

Two software programs (Lumen Micro and Simply Roadway from Lighting Technologies) are available in BSL to run lighting analysis. Help files and User's guide are available in the BSL network system. Lighting calculation report requirements and format are determined at each division and/or section.

BSL Database-Projects

The BSL network system has a direct link to the BSL-Projects in Microsoft Access. This is a Database that contains specific design Bid/Award, Construction, financial and other information about the BSL projects. To view the database just clicks ok at the opening window. To edit projects in the database, get the User ID from your supervisor. Section Heads are responsible for updating this database on regular basis when changes occurred.

BSL-SL Explorer

This is another BSL network system tool that provides extensive existing system information on your desktop; pole type, circuit information, DWP O/H maps, Aerial Photo, Assessments, As Build, etc. can be found with this tool.

Series Circuit Conversions

It is the intention of this Bureau to convert all series circuits to multiple circuits by 2007. All projects should make an effort to do this type of conversions ; in addition a special box should be added on the plan's front sheet indicating the series circuit number and the number of poles that were converted.

DESIGN CONSIDERATIONS

A. BSL DIRECTIVE NO. 246

Cutoff luminaires shall be installed in accordance with BSL Directive No. 246 ($DIRECTV/0246).

B. EQUIPMENT UNIFORMITY

Engineers will give consideration to match existing / adjacent equipment for uniformity for areas absent of an established planning route.

C. SPECIAL CIRCUMSTANCES

Engineers will discuss all special circumstances with Division Managers. Resolutions will be reflected in the final street lighting construction plan.

D. GENERAL ORDER NO. 95

The overhead electric line construction rules will be adhered to by all engineers. Refer to Rules For OVERHEAD ELECTRIC LINE CONSTRUCTION; General Order No. 95 – State of California Public Utilities Commission. Engineer should be familiar with Table 1 and Rule 58.2-A.

E. SUBSTRUCTURES

Engineers will verify substructures with City records to modify street lighting design and eliminate underground construction conflicts. Substructures in proximity to BSL installations are required to be included in the street lighting plans.

F. LIGHT TRESPASS

Engineers will make every effort to minimize light trespass onto state highways, private property and non public right-of way.

G. RAILROADS

Engineers will make every effort to install an additional luminaire oriented perpendicular to the railroad (never closer than 10 meter (or 33 feet) see RP—8-00 p.42, D2 part b) on the closest electrolier to the railroad without violating encroachment.

H. SALVAGE LIST

Engineers will contact the Field Operations Division and adhere to the procedures for salvaging equipment in accordance to GED Bulletin NO. 106 ($BULLETIN/GED0106).

I. CHECKLIST

The Division Engineer shall thoroughly review all items listed in the checklist (Appendix A) with the project engineer and assure compliance.

J. VARIANCE LIST

Engineers shall examine all factors affecting design and specify any deviation with the design guidelines described herein. Such deviations shall be included in the Variance List which must accompany plans when submitted for final approval.

K. GENERAL NOTE NO. 1

All work detailed on street lighting construction plans shall be constructed in accordance to the latest edition of the Standard Specifications For Public Works Construction and the latest edition of the Bureau of Street Lighting Special Specifications, and Special Provisions.

L. ADA REQUIREMENTS

The 1990 Americans with Disabilities Act will be adhered to by all engineers. ($DIRECTV/0343). 48” is the minimum clearance taking the set-back of pole into consideration. In some very special situations, a 36” clearance can be specified.

M. CUL-DE-SAC DESIGNS

Engineers will use pole locations under Case I or Case II for standard cul-de-sacs whenever possible in accordance with GED Bulletin No. 66. Engineers will be responsible for assuring compliance with this practice. ($BULLETIN/SID0026).

N. TRAFFIC CONFLICT AREAS

The traffic conflict area requirements per GED Bulletin No. 114 will be adhered to by all engineers ($BULLETIN/GED0114).

The engineer will determine the length of the left turn pocket to be used for TCA calculations based on field conditions and acceptable engineering practices and policies.

The illumination level within a TCA shall be at least that which is recommended in RP-8-00. Refer to table on this manual on page 9.

Engineers shall review BSL Directive No.392 regarding BSL/DOT Agreements for Procedure and responsibilities at intersections.

O. ENCROACHMENT PERMIT-CALTRANS

Engineers proposing improvements within 100 feet of a State Highway need to verify with CALTRANS if an Encroachment Permit is necessary.

P. GENERAL ORDER NO. 128

The underground construction rules will be adhered to by all engineers.

Q. TEMPORARY LIGHTING

Alternate roadway lighting shall be provided during construction in accordance to General Note No.5. The temporary street lighting system must be in operation prior to removing the existing street lighting system. If a project is constructed in phases the designer may need to complete a temporary lighting plan. This must meet the current existing lighting standards on the project area.

Temporary lighting systems are required for all public right-of-ways (roadways, sidewalks, walkways, underpasses, overpasses, detour roads, etc.) where existing street lighting systems are being replaced or new street lighting systems are being constructed. The second condition refers to areas with no existing lighting before construction begins – Utilitarian lighting is not considered a lighting system.

- The temporary street lighting system shall be in operation prior to removing the existing street lighting system or constructing the new street lighting system.
- The temporary street lighting system shall provide an average illumination and uniformity ratio (ave./min.) to meet current City adopted illumination levels.
- The Contractor shall make arrangements with power utility company for service or shall provide an alternate power supply.
- The temporary street lighting system must be in operation from dusk to dawn.
- The contractor is responsible for restoring streetlights out of service within 24 hours.
- The contractor shall be responsible (including all related costs) for the installation, operation, maintenance, removal, and liability of the temporary street lighting system (equipment).
- Streetlights installed on temporary traffic signal poles shall be in accordance with the latest LADOT specifications.

For specific and complete information on Temporary Street Lighting requirements refer to Section 02790 - street lighting on MTA contracts, Street Lighting Specifications; and the BSL Special Specifications for the Construction Of Street Lighting Systems.

R. DOWNTOWN RAIL TRANSIT (Construction Management Committee permit)

For work to be done in the "downtown" area, a note requiring the contractor to obtain a permit from the "Downtown Construction Management Committee" must be placed on the plan. The note must instruct the bidder to take this permitting requirement, and any working hour restrictions or any lane restrictions imposed, into account when submitting his bid.

S. TWINKLE LIGHTS (Receptacles) attached to Electroliers

This Bureau has a policy in regards to connecting twinkle lights to existing or new street lighting systems. Refer to "Twinkle lights (Receptacles) attached to Electroliers Report included here as Appendix C.

T. LAMPS – HPS/IGNITRON

The standard lamp type for the City of Los Angeles is HPS/Ignitron. Any design deviations need to be approved by the Senior Engineering Manager. Refer to Directive No. 404.

U. GENERAL BENEFIT - STREETLIGHTS AT INTERSECTIONS

Refer to Directive No. 405.

V. EXECUTIVE DIRECTIVE NO. CP.AV-1

This Executive Directive prohibits any construction on major streets during rush hour - 6 am to 9 am and 3:30 pm to 7:00 pm.

W. STREET LIGHTING OUTAGES DURING CONSTRUCTION

Refer to Directive No. 409.

X. Intentionally Blank.

Y. Intentionally Blank.

Z. REAL-TIME WIRELESS REPORTING SYSTEM - TELEMICS

All new Multiple, Cobrahead type installations should specify the use of Telemics Access Point and Telemics Check Point. Attention should be given to the location of Access Points as some installations might not need it.

ELECTRICAL STREET LIGHTING DESIGN

As a part of the design of street lighting systems, it is essential that the project engineer make all calculation and determinations with respect to the following criteria.

VOLTAGE DROP (MULTIPLE CIRCUITS)

Voltage drop is an essential design criterion to ensure proper operation of the system, the voltage provided by DWP is normally a 120/240 or 240/480 volt system. The voltage at the end of a circuit shall not be less than 5% of the voltage at the beginning of the circuit. A voltage drop in excess of 5% may cause the luminaries at the end of a circuit run to either not operate or provide reduced lumen output.

A computer program (BSL-Voltage Drop calculator) is also available on your desktop .This tool is in compliance with LA DWP requirements and has a help file which describes how to use it.

Please refer to the "Street Lighting Guide to Electrical Requirements" for proper voltage drop analysis. Supervisors should have a copy of this document.

For Series Circuits, DWP is responsible for calculations, your coordination and communication with DWP is required.

WIRE SIZE (MULTIPLE CIRCUITS)

The wire size is dependent on the ampacity required by the proposed circuit load and any anticipated future loads as well as the voltage drop calculations. The wire shall be sized according to the NEC section310-15.When sizing the wire for ampacity, using NEC Table 310-16, the wire size is assumed to have a 75degree Celsius rating unless otherwise specified on the plan for a higher temperature. Wire size may be increased to alleviate a voltage drop problem. The smartest wire size allowed for street lighting design is #6 AWG for the street lighting system. A #10 AWG solid (wire) is required in the electroliers. For Series Circuits, wire size #8 AWG Solid Copper for 5000V operation is typically specified.

CONDUIT SIZE

The minimum size conduit used shall be 1 ½ "rigid galvanized steel. Conduit shall be sized according to NEC table 3B. Suggestion: minimum 2" for all street crossings.
Exception shall be permitted near the beach area where PVC may be used in order to prevent rusting problems from the salty water condition.

Conduit shall be sized so that it is only filled (by wires) to 40% of the allowed according to NEC table 3B in order to prevent maintenance problems. The minimum size conduit used shall be 11/2" rigid galvanized steel.

Under very special economic circumstances and after addressing technical and maintenance concerns 1" conduit might be allowed – approval by the Senior Engineering Manager is required.

SYSTEM PROTECTION

All street lighting systems shall be protected by an overcurrent device. This is in the form of a fuse or circuit breaker. The fuse or circuit breaker shall be sized in accordance with NEC Section 240-3.the minimum size fuse and circuit breaker used for a service point shall be 30 amps (Slow blow).The minimum size fuse for electroliers is 10 Amps (Slow Blow).

When circuit breakers are to be utilized, the following note shall be placed on the plans: "The neutral wire shall only be grounded at the service point and an additional ground wire shall be added to ground all steel components of the system."

PULLBOXES

All new electrolier locations should be specified to have a Type 2 pullbox. Minimum size shall be Type 3 for all service point locations. Consideration needs to be given to intersections and special locations where a minimum size type 3 shall be specified. In addition, some locations required special metal frame pullboxes to protect them from heavy traffic.

METERED SERVICES

Bikeway and Architectural Lighting for Historic Bridge Projects are the only type of projects that are typically been required to have metered services (Check with Sr. Engineers for changes in this Policy). To provide this type of service, engineers will be required to work with service equipment enclosures, power meters, panel boards, relays, etc. Design engineers should discuss all design requirements, specifications and equipment with their Section Supervisors and Division Engineer; all information needs to be specified on construction plans and approved by DWP.

EQUIPMENT SELECTION STANDARDS

The equipment selection standards for roadway lighting will be adhered to by all engineers. When designing a street lighting system the selection of a pole is the basis for the entire design process including Design Recommendation to plan preparation. These guidelines are not absolute and many factors need to be taken into account when designing a system. Traffic poles (CD954, Cal type, Camera pole, etc) for common approval are not subject to this selection process. Some factors include the existing system, community/ Council Office sensitivity, and overhead or underground conflicts just to name a few.

MAJOR & SECONDARY HWYS.

40' DAVITS (40'metal pole) - Downtown & Heavy Commercial
CD 959C (31'metal pole) - Light Commercial, Intermediate and Residential Areas

Major and Secondary highways, as defined by the Community plans, have roadway widths of 24m (80') and 22.2m (74') respectively. Sidewalks range from 3m (10') to 3.6m (12') either with complete concrete sidewalk or parkway and sidewalk.

ALTERNATIVES: CD 953C, CD 814E, CD 929C - These three poles may be considered when it is important to match the existing system.

COLLECTOR STREETS

CD 855 (30'9" concrete pole)

Collector streets, as defined by the Community plans, are 13.2m (44') in roadway width.

Sidewalks ranging from 2.4m (8') to 3m (10'). Many collector streets are not at there full roadway width. If this is the case then before changing your design to CD 851 consider that at some time in the future BOE will widen the street. It may be a good idea to investigate future street improvements.

ALTERNATIVES: CD 953C, CD 814 -These two poles may be considered when it is important to match the existing system.

LOCAL STREETS

CD 851 (26' concrete pole)

Local streets as defined by the Community plans are 12m (40') in width. Sidewalks ranging from 2.1m (7') to 3m (10'). There are many different types of poles on local streets such as CD 808Z, CD 813, to ornamental style. If your project is in an area with predominantly a different style then you may want to consider that type of pole if the lighting requirements are met.

ALTERNATIVE: CD 808Z-this pole may be considered when it is important to match the existing system.

PEDESTRIAN LIGHTING SYSTEMS and SECURITY LIGHTING SYSTEMS

Several designs are acceptable to the Bureau for these types of projects. The Bureau's publication LET US LIGHT YOUR WAY shows 6 different design options, including the Shepards Crook, the Modern Semi-Hemisphere and the Fluted Tapered Pole with "S" Arm. Refer to that publication for additional design options.

EXCEPTIONS TO EQUIPMENT SELECTION GUIDELINES

1. Planning routes/areas and streetscape plans adopted by the Cultural Affairs Commission.

2. Streetscape plan designs adopted by the Cultural Affairs Commission.

3. Historical restoration / preservation and dedication projects (e.g. Times Mirror Square). Historical monuments identified by the State Historical Building code (e.g. Historical Bridges).

4. Scenic highways (Mulholland Drive) and community sensitive areas (Westwood, Century City, Hancock Park).

5. Special interest locations (schools, parks, churches).

6. Business Improvement Districts.

7. Environmental Impact Reports.

Alternatives may be considered when it is **important** to match the existing system. An existing system is defined as a complete system with more than 10 poles in staggered , one sided or opposite system. To qualify for the alternative the proposed project must be directly adjacent to or within the existing system.

EQUIPMENT APPROVAL PROCESS

All equipment specified on the plans must be either on the approved equipment list or approved through the Testing and Equipment Evaluation Section of the Bureau.(Refer to the Bureau of Street Lighting – Special Specifications for Construction of Street Lighting Systems.)

Equipment on the Approved Equipment list

This equipment may be specified on the plans as approved by the responsible party signing the final plan document.

Equipment NOT on the Approved Equipment List

If non-standard equipment (equipment not listed under the Approved Equipment List of the "Blue book") is selected for a project, an evaluation request shall be submitted to the TEE Section immediately after design recommendation is approved. The designer is responsible for specifying complete catalog numbers for verification of equipment availability. The TEE section shall be given 60 days to complete the evaluation.

Spare Equipment

If non-standard equipment is specified and approved by TEE the designer shall , upon confirmation with FOD , add a 10% increase in material of that equipment to be delivered in accordance with General Note No. 10. An E mail or letter stating the project title, equipment to be delivered, and quantity shall be forwarded to FOD for their reference.

General BSL Equipment Requirements:

- Finish- Only the Painting Method is approved, and shall be accomplished using a two-part Epox polyurethane system. Power Coating is not an acceptable method to finish equipment.

- Molded Globes- Globes, lens and prismatic refractors must be made of glass. Polycarbonate material is not acceptable.

AutoCAD and Plan Drafting Standards

- All plans should be prepared using the standard BSL Block sheets available in AutoCAD. Use the latest AutoCAD version in BSL.
- All plans should be prepared using the Standard AutoCAD BSL Directory and Drafting Templates.
- Quantity Take Off (QTO) of all plans should be prepared using the above AutoCAD tools.

PROPOSITION 218 DUE PROCESS

All projects that will increase existing assessments or add new assessment charges (new Construction or Maintenance and Operation) must go through Proposition 218 Due Process. This Process is regulated by Proposition 218 Law, as well as the Los Angeles Municipal Code.

Engineers will adhere to the following procedure for Due Process for authorized and non-authorized street lighting projects.

a. At the initiation of the design of a street lighting project the engineering group shall take into account the effect of Proposition 218. The Proposition 218 Section shall be consulted if the effect is unclear.

b. Once a design has been decided upon and proposed electrolier locations are known a copy of the plans shall be forwarded to the Proposition 218 with a project timeline to determine the urgency and timing of the ballot process. The time required for a regular Prop. 218 process is between 5 and 6 months. Special approved requests to "expedite" the process might take between 4 and 5 months.

c. The design section will be responsible to notify the Council Office and all affected agencies when deemed appropriate that an Assessment Ballot Process is required per Proposition 218.

d. In the event that plans must be completed and signed off prior to the completion of the Proposition 218 ballot process, the Engineers will add special notes on the street lighting (front sheet) construction plan.

NOTICE TO CONTRACTOR

STREET LIGHTING CONSTRUCTION SPECIFIED HEREON SHALL NOT BEGIN UNTIL WRITTEN NOTIFICATION IS RECEIVED FROM THE BUREAU OF STREET LIGHTING THAT THE LEGAL REQUIREMENTS OF PROPOSITION 218 HAVE BEEN SATISFIED.

e. Proposition 218 Section should create a schedule for all the proposition 218 activities. This schedule showing the critical dates of the process should be given to the design section. Internal BSL design Section should be informed by the Proposition 218 Section of the following critical information: Prop. 218 St. Lighting Maintenance Assessment Notification, Mailing Date and Election Results.

.

Appendix A

Design Recommendation and Plan Review Checklist

DESIGNER'S CHECKLIST

PROJECT TITLE: **W.O.**
PROJECT TYPE:

CHECKPOINTS	DESIGNE	
FEATURES:	**INITIALS**	**DAT**
Roadway Classification		
Roadway Width/Parkway		
Council		
Area		
Area		
APC/NSA District		
Neighborhood		
Pedestrian Conflict Area		

EXISTING SYSTEM:	INITIALS	DAT
Historical		
Wattage		
Circuitr		
Age of the system		
Illumination Levels/ Uniformity Standards		

OTHER CONSIDERATIONS	INITIALS	DAT
Maintenance Aggreements		
Overhead		
TCA		
Tree		
Hillsid		
Railroad		
Narrow sidewalk and curbs		
Special pavement,pattern, or surface		
Curve		
Public Facilities		
Hidg crime		
City		
Impact of Prop 218		

RECOMMENDATION:	INITIALS	DAT
Pole Type		
System Configurations		
Lamp Wattage		
Availability of Equipment		
Illumination Level/ Uniformity		
Planning Areas / Routes		

ALTERNATIVES:	INITIALS	DAT
Types of pole		
No. of		
Construction cost		
Construction with adjacent system		
Consistent with approved master plan/ plan route		
Illuminatio		

JUSTIFICATIONS:	INITIALS	DAT
No. Of poles / Economics		
Illumination Standards		
Compatibility with area		
Other		

COORDINATION WITH:	INITIALS	DAT
FO		
Council		
Bureau of		
LADO		
CALTRAN		
Rec. & Parks		
Other		
DWP		
MT		

ATTACHMENTS:	INITIALS	DAT
Executive Summary		
Photo		
Correspondenc		
Equipment		
Map		

PLAN REVIEW CHECKLIST

PROJECT TITLE: _____ **W.O**_____

INITIAL **DESIGNER NAME:**_____
(PLEASE PRINT)

_____ 1. Is the plan scope appropriate (compare to authority)?
a) Boundaries and streets to be included (regarding street improvements or City Boundary).
b) Type of work (also consider financing-adequate and properly used).

_____ 2. Have all existing and proposed reference plans (s/l installation, E&C/STM conversion, and other street improvement) been considered, and plotted on plan as necessary and properly coordinated; and proposed plans reviewed for status and probability of construction, after the final plan is drafted, as well as in the preliminary design.

_____ 3. Are the design recommendation and plan consistent, and are the design decisions still appropriate? Revisions needed? IES standards appropriately applied?

_____ 4. Have all other agencies (Council Office, Recreation and Parks, Engineering, DOT, other City Departments, Cal-Trans, other Cities, etc.) been coordinated with? Have City boundary situations been resolved?

_____ 5. Does the plan specification for pole types and illumination levels coordinate well with adjacent pole types and illumination levels?

_____ 6. Have special field conditions been allowed for in the design?
a) Trees (Contact Tree-Trimming Section)
b) Hillside, signals, freeways, etc. cutoff luminaires
c) Narrow sidewalks and curbs
d) Curves
e) Existing luminaires within the project boundaries which could be converted if financing rules allow.
f) Railroad Crossings
g) Substructures
h) DWP Clearances (overhead, pole locations, vaults, etc…)

_____ 7. Have we considered modifications to nearby luminaires (cutoff, HPS) to create a uniform lighting condition in this area?

_____ 8. Are electrical service arrangements, loads, overhead clearances, and data complete, consistent with BSL practices, and economically reasonable?

_____ 9. Have we considered conversion of existing series lights to multiple?

_____ 10. Is the spacing on each street adequate not only to meet our standards, but also to satisfy the residences and business? Are special locations such as alleys, cul-de-sacs, and street intersections adequately lighted by nearby streetlights?

_____ 11. Has the Field Operations Division been consulted, given input regarding equipment reusability and items to salvage or discard, and is this information accurately shown on the plan?

_____ 12. Have existing and potential maintenance agreement locations been identified, and have they been properly identified on the plan, and has notification been made to the Project Management Division?

_____ 13. Are non-street lighting sheets of the plan available, complete, and consistent with the design? (Traffic signals, substructures, sewers and street plan, etc.).

_____ 14. Have all unusual items or problems been discussed and resolved at appropriate levels?

PLAN REVIEW CHECKLIST

PROJECT TITLE: _____ **W.O**_____

INITIAL **DESIGNER NAME:**_____
(PLEASE PRINT)

_____ 15. Have we included TCA calculations in the Final Package?

_____ 16. Has this plan been circulated for in-house plan review (Directive 359)?

_____ 17. Have we checked if this project is in agreement with the Planning Route?

_____ 18. Have we included the updated project schedule with the Final Package?

_____ 19. Does this project qualify for Prop. 218 election? If yes, verify final results of election.

_____ 21. Do all conversions of existing luminaries adhere to BSL policies (Bulletin 36 and Directive 246)

_____ 22. Has the front sheet been completed and checked for accuracy?
- Project title, work order number, signature block, reference map & plan block, sheet number, number of units, drawing scale
- Key map, project limits with appropriate street classifications, index to sheets
- General notes, delta notes, supplemental notes

_____ 23. Has the street lighting sheets been completed and checked for accuracy?
- Circuit diagram
- Existing plan and post references
- Roadway and sidewalk dimensions, proposed electrolier spacing
- Locations of traffic poles consistant with traffic sheets, if any
- S/L details properly scaled and referenced

_____ 24. Do the substructure sheets list critical substructure sizes, and are they readable and complete.

_____ 25. Has the equipment been submitted to the TEE Section for preliminary evaluation? Has the TEE Section signed off on it?

_____ 26. Does the equipment description match the catalog number? Is the catalog number complete? Has the equipment been properly described?

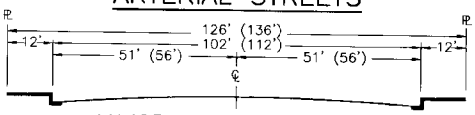
_____ 25. Has spare equipment to be delivered to the yard been included on the material list?

REVIEWED BY: _____ DATE: _____

Appendix B

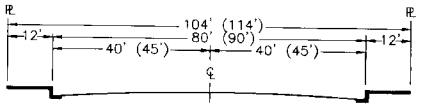
INFORMATION AND NOTES

ARTERIAL STREETS



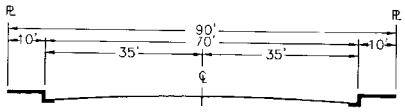
MAJOR HIGHWAY—CLASS I

At intersections with other Major Highways, the larger widths shown in parentheses should be provided, as determined by LADOT, utilizing a Standard Flare Section.



MAJOR HIGHWAY—CLASS II

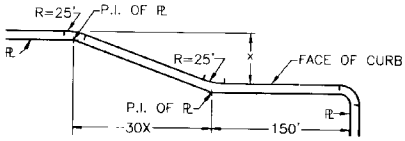
At intersections where LADOT has determined that dual left turn lanes are required, the larger widths shown in parentheses shall be provided, utilizing a Standard Flare Section.



SECONDARY HIGHWAY

TRANSITIONAL EXTENSIONS

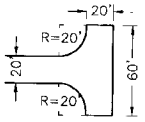
Where a designated Major Highway (Class I or II) or a Secondary Highway crosses another designated arterial street and then changes in designation to a street of lesser standard width, the street of lesser standard width shall be widened on both sides from the intersection to the width of the higher designation and tapered in a Standard Flare Section, as shown below, to provide an orderly transition.



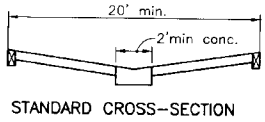
Dimensions shall be measured angle point to angle point.

STANDARD FLARE SECTION
(Plan View)

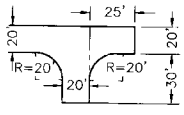
ALLEYS



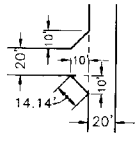
STANDARD TURNING AREA
(Plan View)



STANDARD CROSS-SECTION



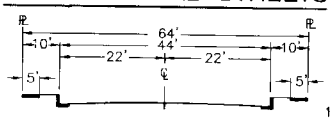
MINIMUM TURNING AREA
(Plan View)



STANDARD CUT-CORNERS
FOR 90° INTERSECTION
(Plan View)

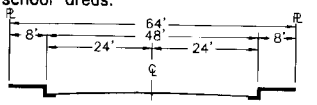
NOTE: Dimensions shown hereon are not to scale.

NON-ARTERIAL STREETS



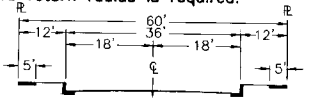
COLLECTOR STREET

For use in quarter mile streets and school areas.



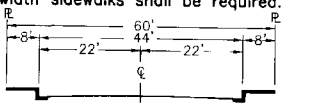
INDUSTRIAL COLLECTOR STREET

For use in industrial areas to assist the flow of local truck traffic within those areas to adjacent arterial streets. A 35' curb return radius is required.



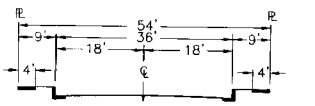
LOCAL STREET

In commercial and multiple residential areas, a 40-foot roadway with 10-foot parkways, and full-width sidewalks shall be required.



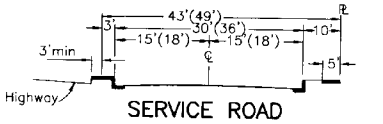
INDUSTRIAL LOCAL STREET

For use in industrial areas. A 35' curb return radius is required.



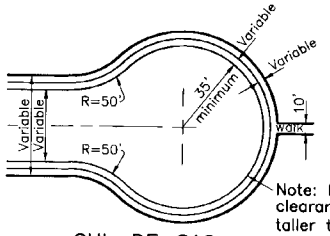
NONCONTINUOUS LOCAL STREET

May include cul-de-sac, loop streets and short connector streets. Where an approved internal pedestrian system is provided the parkway on one side may be reduced to 3-feet.



SERVICE ROAD

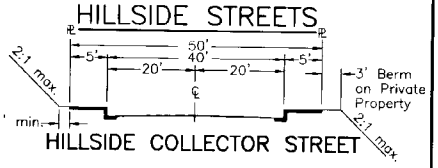
For use on adjoining major or secondary highways, except that the larger widths shown in parentheses shall be provided in multiple residential zones.



CUL-DE-SAC
(Plan View)
MAY BE UNSYMMETRICAL

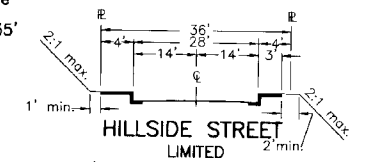
Note: For fire truck clearance, no obstruction taller than 6" shall be permitted within 3 ft. of the curb. On-street parking shall be prohibited.

HILLSIDE STREETS

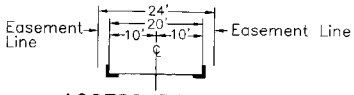


HILLSIDE COLLECTOR STREET

HILLSIDE STREET
LOCAL



HILLSIDE STREET
LIMITED
(Parking on one side only)



ACCESS ROADWAY
CONDITIONAL

(Limited to 4 dwelling units, and a maximum length of 300 feet. Private Street only)

STANDARD WALKWAY
CROSS - SECTION

PREPARED IN COOPERATION WITH THE DEPARTMENTS OF TRANSPORTATION AND CITY PLANNING

BUREAU OF ENGINEERING — DEPARTMENT OF PUBLIC WORKS — CITY OF LOS ANGELES

STANDARD STREET DIMENSIONS

STANDARD PLAN S-470-0

SUBMITTED March 25, 1999
Clark W. Robins
ENGINEER OF DESIGN
Rodney Hasan
DEPUTY ENGINEER

APPROVED March 31, 1999
Thomas Conner
CITY ENGINEER

DESIGNED BY	DRAWN BY	CHECKED BY
M.F.D., D.L.F., J.E.F., A.D.R.	R. TANABE	L. GANAJA

REGISTERED PROFESSIONAL ENGINEER — THOMAS K. CONNER — NO. 23788 — EXP. 12/31/2001 — CIVIL — STATE OF CALIFORNIA

APPROVED Frances Beaujon 4-6-99
GENERAL MANAGER, DEPT. OF TRANSPORTATION — DATE

Courtlowe 4/6/99
DIRECTOR OF PLANNING — DATE

ADOPTED MAY 13, 1999
CITY PLANNING COMISSION — DATE

SUPERSEDES	REFERENCES
D-22549	

VAULT INDEX NUMBER
B-4428

SHEET 1 OF 2 SHEETS

THIS STANDARD PLAN BECOMES EFFECTIVE ON NOVEMBER 10, 1999

STANDARD STREET CONDITIONS

1. City Council may, by ordinance, adopt specific standards for individual streets which differ from these official standard street dimensions. Community Plans should be reviewed for designation of Pedestrian Priority Street Segments of arterial streets which would require wider sidewalks than those indicated on this Standard Plan.

2. Sidewalk widths for non-arterial streets shall be the minimum shown hereon. Greater widths, up to full width between curb and property line, with tree wells, shall be required where commercial and multiple residential frontage, schools, areas of heavy pedestrian traffic or other special circumstances indicate the need.

3. Except for special conditions or as otherwise provided, sidewalk shall be placed as close to the property line as possible.

4. Where sidewalk is constructed adjacent to the curb it shall have a minimum width of 10 feet inclusive of curb thickness except for hillside streets, noncontinuous local streets and industrial streets.

5. Where sidewalk is constructed on the fill or low side of a hillside street, a berm may be required on private property.

6. Easements may be required in addition to the widths shown hereon, where necessary for the installation of public utilities or for widened sidewalks (minimum 15-foot width) adjacent to transit stations.

7. Fifty-foot curb radii (instead of the standard 35' curb radii) shall be provided for cul-de-sacs in industrial areas.

8. Private street development should conform to the standard public street dimensions shown on this sheet, where appropriate. Variations may be approved on a case-by-case basis.

9. For intersections of streets the following dedications shall apply:
   a. Intersections of arterial streets with any other street: 15'x15' cut corner OR 20' curved corner radius.
   b. Intersections of non-arterial and/or hillside streets: 10'x10' cut corner OR 15' curved corner radius.

10. Hillside Collector Streets. In hillside areas where topography or other environmental considerations, documented to the satisfaction of the City Engineer, would render full street improvements infeasible, the roadway width of the hillside collector street may be reduced to no less than 32 feet, provided that parking is limited to one side only.

BUREAU OF ENGINEERING
CITY OF LOS ANGELES
FOUNDED 1781
OFFICIAL RECORD

STANDARD PLAN NO. S-470-0	VAULT INDEX NUMBER B-4428	SHEET 2 OF 2 SHEETS

Approved Planning Areas and Planning Routes
By the Cultural Affairs Commission (CAC)
*Includes project that initiated planning area/route
Prepared by: PDD
27-Jan-99

Ref. No.	Area	Approval Date	Approved Pole Type
1	96th St. & Bellanca Ave. between Belford Ave. & Century Blvd.	12/15/94	40' M.H. Baseless Oct. Concrete
*	96th St. at Bellanca Ave., Southerly Corner CPC 87-0137 BC 400026		
2	Amalfi Dr. between Sunset Blvd. & Channel Rd.	06/15/95	CD808X
*	Amalfi Dr. (395) SE'ly side SLY/O Upper Mesa Rd. BD401151		
3	Local streets w/in res. area bnded by Burbank Blvd. (N), Magnolia Blvd. (S), Lankershim Blvd. (E), & Laurel Canyon Blvd.(W)	08/03/95	CD851A
*	Burbank Blvd. & Beck Ave. SW Corner Tract 48088 BD 202113		
4	La Tuna Canyon Rd. bet. Sunland Blvd. & Tujunga Canyon Blvd., Del Arroyo Dr. from La Tuna Canyon Rd. to its N'ly end	02/02/95	40' Davit & CD808X
*	Del Arroyo Dr. N/O La Tuna Canyon Rd PMLA 6238 BD 200607		
5	Local Streets within the residential area bounded by Wicks St., San Fernando Rd., Tuxford St., and Laurel Canyon Blvd.	11/03/94	CD808Z
6	Alma St. between 17th St. & Paseo Del Mar	07/06/95	CD814E
*	Gaffey St. & Alma St. S/O 30th St. (General Improvement) BD 600246		
7	North Broadway from Daly St. to North Mission Rd.	11/17/94	40' M.H. Octag. Concrete
*	North Broadway, Gates St., Maniton Ave. & Thomas St. BD 000863		
8	Local streets with roadwidth of 30' or less in area Bounded By Ventura Blvd., Havenhurst Ave., Mulholland Dr., & Alonzo Ave.	03/16/95	CD813
*	Oak View Dr. 1423' to 1289' E/O Louise Ave. PMLA 6961 BC 202460		
9	Olympic Blvd. from San Diego Fwy to Santa Monica City Boundary	12/01/94	40' Davit
*	Olympic Blvd. (11727), NW/S from Barrington Ave. to Stoner Ave. BD 401112		
10	Topham St. between Victory Blvd. & Corbin Ave.	08/03/95	CD855A
*	Penfield Ave. (Pvt. Street) Topham St. to Calvert St. BD 202529		
11	Balboa Pl. between Roscoe Blvd. & Strathern St.	07/06/95	30' Davit
*	Roscoe Blvd. & Balboa Pl. SE Corner CPC 86-0788 BD 202419		
12	San Fernando Rd. between: Glendale Fwy to Verdugo Rd. ,	12/15/94	40' M.H. Davit Dbl arm
	Verdugo Rd. to Ave. 26	12/15/94	40' M.H. Davit Single arm
*	San Fernando Rd. (SW/S 515' SE/O to 179' NW/O Edward Ave. ZA 93-0686 (CUB) BD 001098		
13	San Fernando Rd. - From City Boundary between City of L.A. and City of San Fernando to I-5 near Tuxford St.	11/03/94	40' M.H. CD953 Steel Pole
14	Havenhurst Ave. - Vanowen St. to Sherman Way	09/19/96	40' Davit
*	Vanowen St. & De Celis Pl SE Corner BD 202586		
15	Vanowen St. - 405 Freeway to Corbin Ave.	09/19/96	40' Davit
*	Vanowen St. & De Celis Place SE Corner BD 202586		
16	Local Streets within the Residential Area bounded by Sunset Blvd., Palisades Dr. and Topanga State Park	09/19/96	CD851A
*	Sunset Blvd. (16019) & Muskingum Ave. NE Corner BC 401222		
17	Local Streets bounded by Roscoe Blvd., Tampa Ave., Saticoy St., and Reseda Blvd.	09/05/96	CD851A

	* Tampa Ave. & Keswick St. NE Corner BD 202640		
18	Local Streets bounded by Lankershim Blvd., Tuxford St., San Fernando Rd., and Strathern St.	09/05/96	CD851A
	* Troost Ave. W/S 124' s/o to 214' s/o Cantara St. BD 202642		
19	Local Streets bounded by, but not included, Woodley Ave., Saticoy St., Haskell Ave. and Sherman Way	09/05/96	CD851A
	* Wyandotte St. 515' to 415' E/O Gloria Ave. BD 202408		
20	Local Streets bounded by Simi Valley Fwy (North), Golden State Fwy (East), Osborne St. (South), and Woodman Ave. (West)	08/15/96	CD851A
	* Van Nuys Blvd. NW/S Lev Ave. to 230' SW/O Lev Ave. BD 202621		
21	Pacific Ave. between Washington Street and Culver Blvd.	07/18/96	CD855A
	* Voyage St. & Pacific Ave. SW Corner PMLA 5544 BCXX8075		
22	Hazeltine Ave. between Sherman Way and Ventura Blvd,	07/02/96	40' Davit
	* Riverside Dr. & Hazeltine Ave. SE Corner CPC 94-0287		
23	Sunset Blvd. between City boundary of West Hollywood/ City of L.A. and Hollywood Blvd.	07/02/96	40' Davit
	* Sunset Blvd., St. Andrews Pl., De Longpre Ave., Wilton Place & Hollywood Blvd. BD 001192		
24	Local streets w/in the residential area bounded by Barrington Ave., Wilshire Bl., Montana Ave., San Vicente Bl. & Bundy Dr.	06/20/96	CD851A
	* Darlington Ave. (11706) S/S, W/O Barrington Ave. BD 401220		
25	Vermont Ave. between 10 Fwy and Los Feliz Blvd.	05/16/96	40' Davit
	* Vermont Ave. (E/S) Olympic Blvd. S/S, and Menlo Ave. (W/S) BC 001207		
26	Vista Del Mar from Culver Blvd. to Waterview Ave.	04/18/96	CD855A
	* Vista del Mar (W/S) Alley E/O Surf St. to Waterview St. BC XX8878		
27	Local Streets within area generally bounded by De Soto Ave., Sherman Way, Mason Ave. and Vanowen St.	04/18/96	CD851A
	* Gazette Ave. W/S - 40' N/O to 161' S/O Gavit St. BC 202581		
28	Local Streets bounded by Vanowen St., Lankershim Blvd., Victory Blvd., and Laurel Canyon Blvd.	11/07/96	CD851A
	* Vanowen St. & Morella Ave. SE Corner ZA 96-0326;BD 202655		
29	Local Streets bounded by the Golden State (5) Freeway, Roxford St., San Fernando Rd., and Hubbard St.	11/07/96	CD851A
	* Encinitas Ave. & Larkspur St. NW Corner ZA 94-0947; BC 202656		
30	Collector & Local Streets bounded by Ventura Blvd. (North), Reseda Blvd. (East), Wells Dr. (South), and Serrania Ave. (West)	04/04/96	CD851A & CD855A
	* Serrania Ave. E/S 1343' to 1841' S/O Ventura Blvd. T 50969 BD 202239		
31	Marco Place between Walgrove Ave. and Frances Ave.	03/21/96	CD851A
	* Beethoven St. (3604) & Marco Pl. SE Corner BD 401170		
32	Oxford Ave. between Marr St. and Oxnard Ave.	03/21/96	CD851A
	* Oxford Ave. SW/S SE/O Washington Blvd. BD 401188		
33	Wellesley Ave. between Wilshire Blvd. and Santa Monica Blvd.	03/21/96	CD851A
	* Wellesley Ave. SW/O (1337-39) from 145' to 155' NW/O Rochester Ave. BD 401195		
34	Local streets within the residential area bounded by Saticoy St. (N), Sherman Way (S), Kester Ave. (E), & Sepulveda Bl. (W)	03/02/95	CD851A
	* Lighting for Laurelgrove Ave. & Ped. Bridge W.O. E6000396		
35	Colorado Blvd. between Glendale Fwy and Monte Bonito Dr.	12/12/96	40' Davit
	* Colorado Blvd. N/S b/w 534' w/o & 72' w/o Patrician Way PMLA 3580; BC XX3712		
36	Local Streets within Residential Area bounded by Moorpark St., Laurel Canyon Blvd., Ventura Blvd. & Whitsett Ave.	12/12/96	CD808Z
	* Moorpark St. & St. Clair Ave., SE Corner Tract 47249; BD 202031		
37	Local Streets bounded by Santa Monica Blvd., San Diego Fwy (405), Olympic Blvd. & Bundy Dr.	12/12/96	CD855A
	* Colby Ave. & Federal Ave. S/O La Grange Ave. BD 401229		

38 Local Streets bounded by Lankershim Blvd., Vanowen St., City of Burbank Boundary, & Camarillo St.	12/12/96	CD851A
* Huston St. & Vineland Ave. SW Corner ZA 89-1076 BC 202683		
39 Vermont Ave. between 6th St. and the Santa Monica (10) Freeway	01/09/97	40' Davit
* Vermont Ave. from Wilshire to 205' N/O Wilshire and Alley N/O Wilshire BD 001288		
40 Local Streets bounded by Strathern St., Clybourne Ave., Sherman Way, Lankershim Blvd., Runnymede St., and Laurel Cyn Bl.	01/09/97	CD851A
* Cohasset St. S/S 465' to 550' W/O Vineland Ave. BD 202664		
41 Western Ave. between Manchester Ave. & Century Blvd.	01/23/97	40' Davit
* Western Ave. (W/S) between 88th and 89th Streets. ZA96-0454 BD001313		
42 Local streets within the residential area bounded by Ventura Blvd., Cahuenga Ave., 134 Fwy & 101 Fwy	04/18/96	CD851A
* Landale St. - 621' to 740' w/o Lankershim Blvd. BD-202333		
43 Voyage St. between Pacific Ave. & Ocean Front Walk	07/18/96	8" Rnd Kim Bollard
* Voyage St. & Pacific Ave. SW Corner PMLA 5544 BC-XX8075		
44 Local Streets bounded by Centinela Ave., San Diego Fwy (405), La Tijera Blvd., & La Cienega Blvd.	03/06/97	CD808Z
* Knowlton Place (6920-6932) (E/S), S/O Knowlton St. BD-401254		
45 Local streets bounded by Lindley Ave., Parthenia St., Balboa Blvd. and Roscoe Blvd.	11/21/96	CD851A
* Shoenborn St. & Zelzah Ave. Lighting District, A-11 Act W.O. L970037		
46 Local streets bounded by Washington St., Lincoln Ave. and Los Angeles City Limit	01/21/96	CD851A
* Howard St. & Thatcher Ave. Lighting District W.O. L9670040		
47 San Fernando Road - Sepulveda Blvd. to City/County of LA	06/05/97	40' Davit
* San Fernando Road S/S 1650' to 2340' NW/O Balboa Blvd. BC-202618		
48 Foothill Blvd. - Foothill Frwy (210) to Roxford St.	06/19/97	40' Davit
* Foothill Blvd. (S/S) 1270' to 480' E/O Olden St. BD-202496		
49 Maxella Ave. between Lincoln Blvd. and Alla Rd.	07/24/97	CD 855A
* Maxella Ave. (13355) and Glencoe Ave. NE Corner BD-401265		
50 Redwood Ave. between Washington Blvd. and Mindanao Way	07/24/97	CD 855
* Maxella Ave. and Redwood Ave. NE Corner BD-401281		
51 Wicks St. between San Fernando Rd. and Arleta Ave.	07/24/97	CD 855A
* Wicks St. and Telfair Ave. SE Corner BD-202686		
52 Telfair Ave. between Truesdale St. and Lankershim Blvd.	07/24/97	CD855A
* Wicks St. and Telfair Ave. SE Corner BD-202686		
53 San Fernando Rd. - Golden St. Frwy (I-5) to City of Burbank	07/24/97	40' Steel High Rise
* San Fernando Rd. - Olinda St. to Strathern St. Sun Valley Phase II - LANI Project.		
54 Winnetka Ave. from Plummer St. to Nordoff St.	08/07/97	40' Davit
* Winnetka Ave. and Prairie St. SW Corner BC-202708		
55 Local streets bounded by Normandie Ave., Martin Luther King Jr. Blvd., Harbor (110) Freeway and Manchester Ave.	08/21/97	CD851A
* Vermont Ave. E/S at 58th Street S/S BD-001327		
56 Local streets bounded by San Fernando Rd., Forest Lawn Memorial Park, Roderick Pl., Roderick Rd., and Fletcher Dr.	08/21/97	CD851A
* Weldon Ave. and Southerly Corner T-51718 BD-001137		
57 Local streets within the residential area bounded by Woodman Ave., Roscoe Blvd., Ventura Canyon Ave.,Wentworth St., Arleta Ave., Hollywood Fwy., & Sherman Way (Excluding the area with existing CD813 electroliers)	09/04/97	CD851
* Roscoe Blvd., S/S 440' E/O to 50' W/O Nagle Ave. BD-202701		

58	Sawtelle Blvd. between Santa Monica Blvd. and Exposition Blvd.	09/04/97	40' Davit
	* Olympic Blvd. and Sawtelle Blvd. N/E Corner BD-401283		
59	Central Ave. - Santa Monica Fwy to Slauson Ave.	09/04/97	CD814D
	* Central Ave. - 22nd St. to 41st. St. (Replacement Lighting District)		
60	Residential area bounded by Wilshire Blvd., Bundy Dr., Barrington Ave., and Santa Monica Blvd.	09/18/97	CD851A
	* Texas Ave. (12016) S/S, E/O Bundy Dr. (Private Develpment) BD-401285		
61	Main St., Spring St., Temple St. and First St.	09/18/97	40' Davits w/ (2) UM1906 in b/w
	* Main St., Spring St. and Temple St. (City Hall Seismic Rehabilitation) BD-001101		
62	Local & Collector streets bndd by Melrose Ave., Fairfax Ave., Beverly Blvd., La Cienega Blvd., and the City of W. Hollywood	09/30/97	CD851 & CD855A
	* Sweetzer Ave. E/S S/O Melrose Ave. T-52268 BD-401295		
63	Wilshire Blvd. from City of Beverly Hills to Malcolm Ave.	09/30/97	40' Davit poles
	* Wilshire Blvd. (10400) S/S from Beverly Glen Blvd. to Holmby Ave.		
64	Local & Collector Streets bndd by the Los Angeles River, N. Broadway, College St., North Main St., Vignes St., and Cesar Chavez A	09/30/97	CD851 & CD855
	* North Spring St., N. Main St., Sotello St., Mesnager St.		
65	North Main St. between Daly St. and Alameda St. (with the exception of Bridge Lighting	09/30/97	40' High Rise
	* North Spring St., N. Main St., Sotello St., Mesnager St.		
66	Local and collector streets bndd by the Hollywood (170) Frwy., the Ventura (101) Frwy., Whitsett Ave., and Magnolia Blvd.	11/06/97	CD851 & CD855
	* Riverside Dr. and Morella Ave., SW Corner Tract 49638 BD-202745		
67	Riverside Dr. between the Hollywood (170) Frwy. and Whitssett Ave.	11/06/97	40' Davits
	* Riverside Dr. and Morella Ave., SW Corner Tract 49638 BD-202745		
68	Local and collector streets bndd by Roscoe Blvd. Canoga Ave., Saticoy St. and Topanga Canyon Blvd.	11/06/97	CD851 & CD855
	* Owensmouth Ave. and Saticoy St. NE Corner BC-202759		
69	Strathern St. (Secondary Hwy) between Laurel Canyon Ave. and Coldwater Canyon Ave.	11/20/97	40'Davits w/ 310W HPS lamps
	* Strathern St. from Whitsett Ave. to Bellaire Ave. WO. E6000410		
70	Local and Collector Streets bounded by Roxford St. (East), San Fernando Rd. (South), Foothill Frwy (North)	11/20/97	CD851B
71	Major & Collector Sts. bndd by Washington Blvd. (N), Santa Fe Ave. (W), 25th St. (S), Soto St. (E)	11/20/97	CD953C & 40' Davits
	* Alameda Corridor-Washington Blvd. and Santa Fe Ave. Grade Separation Improvements		
72	Local & Collector Sts. bndd by Pacific Ave., 26th St., Hamilton Ave., Alma Ave. & 19th St.	12/04/97	CD851A, CD855A
	* Pacific Ave. and Hamilton Ave. SW Corner BC-600280		
73	Local & Collector Sts. bndd by the San Diego(405) Fwy, Saticoy St., Roscoe Blvd. & the Van Nuys Airport.	12/18/97	CD851A & CD953C
	* Strathern St. N/S 418' E/O to 660' W/O Gloria Ave. BD-202785		CD855A
	* Sunburst St. & Oso St. SE Corner BC-202788		
75	Local & Collector Streets bounded by Lomita Blvd., Harbor (110) Frwy, Pacific Coast Hwy, and Normandie Ave.	02/05/98	
	* Vermont Ave. and Pacific Coast Hwy, NW Corner BD-600267		CD855
76	Broadway between Aliso St. & Pico Blvd.	02/19/98	40'Davit (Intxn) &
	* Broadway between Fifth St. & Olympic Blvd. E60000515	efurb. CD	913 @ Midblock
77	Erwin St. from Laurel Canyon Blvd. to Vineland Ave.	03/05/98	CD855A
	* Lankershim Blvd. & Erwin St. NE Corner BD-202498		
78	Local & Collector Sts. bounded by Chatsworth St., Canoga Ave., Lassen St. & De Soto Ave.	03/05/98	CD855A
	* Variel Ave. & Devonshire St., NW Corner ZA97-0487 BC-202816		
79	Staples Center Arena----Figueroa St. between 11th St. & Pico Blvd., 11th Street between Figueroa St. & Sentous St.	04/16/98	CD953-2 (Hockey

* Staples Center/LA Sports Arena BD-001382		Pucks)
80 Winnetka Ave. between Simi Valley (118) FWY. & Sesnon Blvd.	04/16/98	40' Davits
* Winnetka Ave. & Rinaldi St. NE Corner BD-202657	04/16/98	40' Davits
81 Local & Collector Streets bounded by Woodman Ave., Plummer St., Nordhoff St. & Sepulveda Blvd.	05/07/98	CD 851A &
* Tupper St. & Tobias Ave., SW Corner BD-202744	05/07/98	CD 855A
82 190th Street from Western Ave. to Figueroa St.	05/21/98	40' Davits
* 190th St. @ Normandie Ave., SW Corner BD 600278		
83 Abbot Kinney between S. Venice Blvd. & Washington Blvd.	05/21/98	40' Davits
* Oxford Avenue SW/S N/O Washington Blvd. BD 401288		
84 Local & Collector Streets bounded by Van Nuys Blvd., Glenoaks Blvd., 118 Frw., & Foothill Blvd.	06/18/98	CD851A & CD855
* Mercer Street 660' SW/O Borden Ave. to Genoaks Blvd. BD-202772		
85 Local & Collector Streets bounded by Victory Blvd., White Oak Ave., Topham St., & Lindley Ave.	06/18/98	CD851A & CD855
* Topham St. N/S 263' E/O Lindley Ave. to Lindley Ave. BD-202742		
86 Local & Collector Streets bounded by Van Nuys Blvd., Terra Bella St. and Foothill Freeway	06/18/98	CD851A & CD855
* Pierce St. & Hunnewell Ave. SE Corner BC-202859		
87 Local & Collector Streets bounded by Sunset Blvd., La Brea Ave., Hollywood Blvd., & Crescent Heights Blvd.	06/18/98	CD851A & CD855
* Sunset Blvd. N/S between Crescent Heights Blvd. & Laurel Cyn. Blvd. BD-401337		
88 Local & Collector Streets bounded by Washington Blvd., Washington St., Lincoln Blvd. & Admiralty Way	11/05/98	CD851A & CD855
* Princeton Drive & Thatcher Ave., SE Corner BC-401354		
89 Local & Collector Streets Bounded by Olympic Blvd., Bundy Dr., the 10 Frw & the 405 Frw.	11/05/98	CD851A & CD855
* Pico Blvd. & Barrington Ave., NE Corner BD-401333		
90 Calabasas Road from Mulholland Drive to Parkway Calabasas	11/05/98	40' Davits
* Mulholland Drive (NLY/S) & Calabasas Road to Valmar Road BC-200672		
91 Washington Blvd. from Overland Ave. to Hughes Ave.	01/21/99	40' Davits
* Dunn Dr. & Washington Blvd. NW Corner BD-401291		
92 Magnolia Blvd. from Hollywood Frw (170) to Whitsett Ave.	02/04/99	CD 953C & CD954
* Magnolia Blvd. fr. Hollywood Frw. (170) to Colfax Ave. EXX81127		

Appendix C

TWINKLE LIGHTS (RECEPTACLES) POLICY

Twinkle Lights(Receptacles) attached to Electroliers

REPORT

March 25, 2002

This report summarizes the issue of installing twinkle lighting (receptacles) on electroliers.

BACKGROUND

The communities and Council Offices have requested that in certain areas of the City receptacles be installed on street lighting poles to accommodate seasonal twinkle lighting. Currently there are five locations (number of streetlights unknown) in the City that twinkle lighting exists as a permanent receptacle. At these locations the receptacles are connected to the street lighting circuit.

DWP and BSL have been discussing this issue to attempt to arrive at a permanent solution and process to handle these requests. The following report identifies concerns, and a recommended solution.

DISCUSSION

Based on discussion from weekly meetings between DWP and BSL a system configuration has been proposed.

Several concerns were addressed including safety, mapping, maintenance, system expansion, system reliability, and billing. The desired system would have the street lighting circuit and receptacle circuit on separate services and separate meters. This would eliminate the need to use TAPA installations or have the receptacles attached to the street lighting circuits.

RECOMMENDATION

The following outlines the proposed configuration of a system with receptacles mounted on streetlight poles. (see the attached diagram)

SYSTEM CONFIGURATION

1. The systems would have separate conduits and separate pullboxes.

2. The receptacle wiring would be in a separate raceway within the pole up to the receptacle.

3. BSL would maintain the receptacle circuit. (no third party would be involved)

4. *The services will be obtained through the DWP Service Planning Group. The system will be serviced from a meter pedestal. The meter pedestal will have a revenue meter for the receptacle circuit and a TDK meter for the street lighting circuit. BSL or the third party will pay for the*

meter pedestal. BSL will pay for the cost of installing the TDK meter (material and labor) and the third party will pay for the cost of installing the revenue meter (material and labor). The two disconnects will be equipped with a "handle ties" or "master handle" such that both systems will be either, on at the same time or off at the same time.

5. The street lighting system would have a LS-2 rate and the receptacle will be at a A1B rate.

6. BSL will submit final plans to DWP Street Lighting Design Group before the circuits are energized. Billing will be based on the final plans. BSL will submit the as-built plans to DWP Street Light Design. Group for records purposes and to adjust billing if the as-built plans differ from the final plans.

7. DWP will resume normal maintenance on the electroliers.

8. The metered energy consumption for the receptacles will be billed to the third party who applied for service. If no third party applied for service or if BSL applied for service on behalf of a third party, the energy consumption will be billed to BSL. The streetlights will be billed to BSL through the street light billing system (LS-2 rate).

The proposed configuration (attachment A) and procedures are recommended by:

Norma Marrero

Norma Marrero, St. Ltg Eng.
Bureau of Street Lighting

John J. Vail

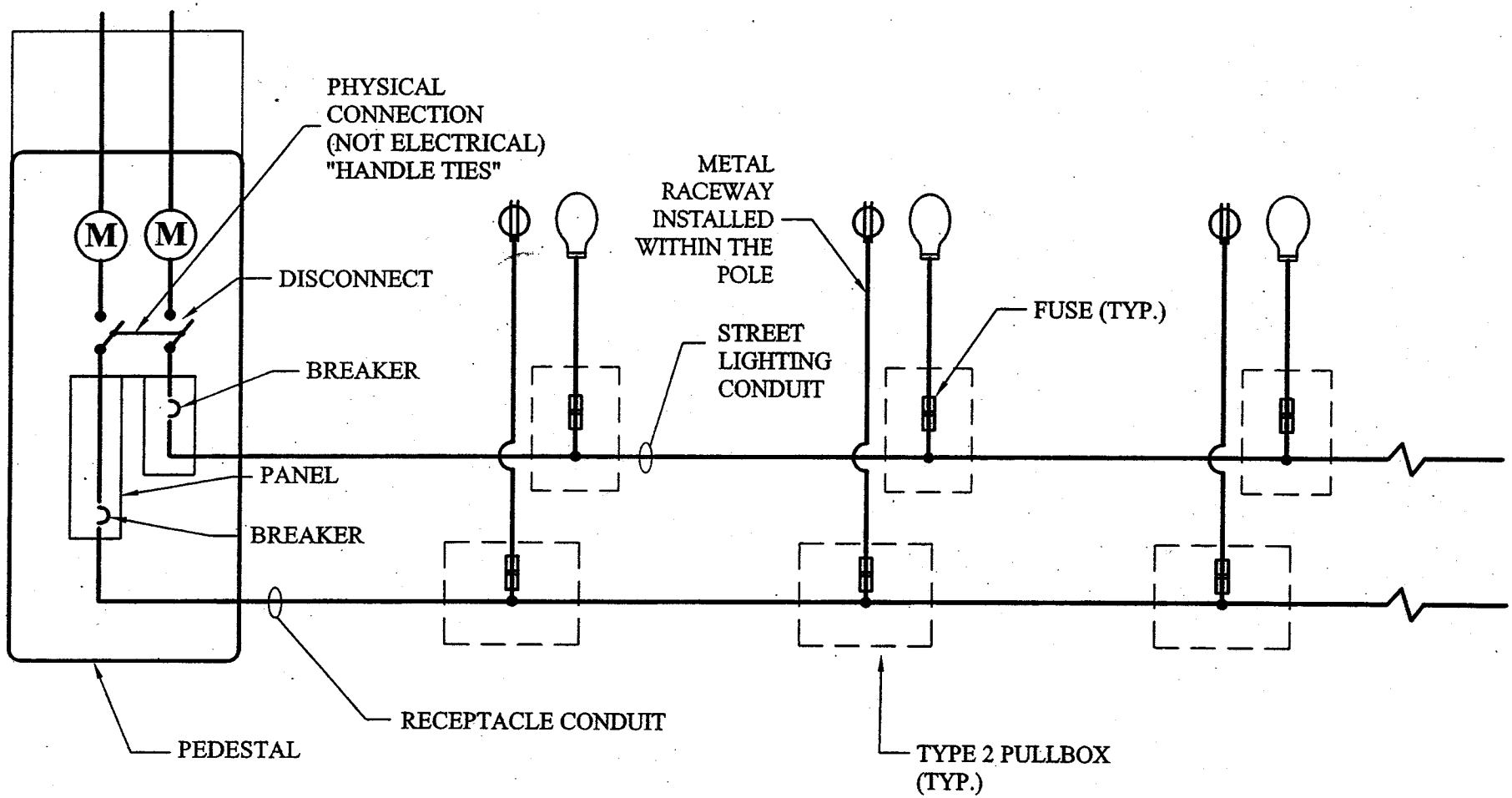
Joe Vail, Transmission &
Distribuation Dist. Supervisor
Department of Water and Power

Jerry Dulay

Jerry Dulay, El. Eng. Assoc. III
Department of Water and Power

Norma Marrero for

Frank Sandoval, St. Ltg. El. Sup. III
Bureau of Street Lighting



TWINKLE LIGHTING AND STREET LIGHTING SINGLE LINE DIAGRAM

EXHIBIT A

BUREAU OF STREET LIGHTING DIRECTIVE NO. 397 (REVISION)

STANDARDS FOR DESIGN OF ELECTROLIER LIGHTING SYSTEMS FOR RP-8

On February 5, 2001, the Board of Public Works adopted the 2000 Edition of the American National Standard Practice for Roadway Lighting RP-8 as the standard for design of electrolier street lighting systems in the City of Los Angeles. The adoption of these standards results in some changes to the Bureau's present street lighting practices which conform to the 1977 RP-8.

The changes in the new standard do not significantly raise lighting levels but better define the science of lighting to reduce glare and more accurately reflect pedestrian activity for the purpose of street lighting design. Some of the more significant changes include illumination level changes, incorporation of veiling luminance, and definitions of pedestrian activity levels.

The issuance of this directive instructs all divisions to apply the design standards outlined in the 2000 Edition of RP-8 as follows:

- As of June 1, 2001, all design projects that have not identified a typical design spacing to achieve a lighting standard shall conform to the revised criteria of the 2000 Edition.
- The Private Development Division shall ensure that preliminary plans submitted after June 15, 2001 will adhere to the revised criteria of the 2000 Edition.
- The Bureau will be adhering to the illuminance method for all designs.

Attached is a summary of some of these significant changes to the street lighting design criteria in RP-8-00. This summary in no way addresses the entire document and each Division Manager is responsible for reviewing and applying the 2000 Edition of the American National Standard Practice for Roadway Lighting RP-8 to all design projects as outlined in this Directive and attachments.

Ed Ebrahimian, Director
Bureau of Street Lighting

Attachment: Summary of changes to design criteria in RP8-00

SB:rm (L:$DIRECTV/0397 revision)
Date: November, 2011
Distribution: All Engineering Staff

SUMMARY OF CHANGES AND BSL MODIFICATIONS TO DESIGN CRITERIA PER RP-8-00

(pg) – refers to the Roadway Lighting RP-8-00

The RP-8 2000 is modified for Bureau of Street Lighting design as follows:

Pg 42, Annex D2 – 4a
Lighting on roadway of track crossing area, starting 30 meters before the crossing and ending 30 meters beyond the crossing, should be 1.5 times the roadway illuminance value for a continuous lit roadway, but never less than illuminance of .9 footcandles. This requirement shall extend to full length of roadways and sidewalks along non-separated/unguarded railroad tracks. Uniformity and veiling luminance criteria shall be in accordance with Table D1.

Pg 13, Section 3.6.4
…Traffic conflict areas other than those of continuously lighted streets should be lit to illuminance values 50% higher than required for the street. This refers to a situation where only one street has a continuous lighting system. …

Pg 12, Table 5
The line for Mixed Vehicle and Pedestrian *** values shall be omitted.

Pg 5, Table 1
For the purpose of BSL design, R4, “Road Surface Classification”, shall not be used.

The following is a summary of the significant changes in the RP-8-2000

1. Change in the levels of illumination and uniformity ratio. See Table 1, page 3 of this document. The illumination levels for the most have been changed downward for roadways. Uniformity ratios are altered for collector and local. (pg.8)

2. The IES refers to pedestrian use areas in lieu of the land use. See the definition of these areas in Table 1, page 3 of this document. The designer shall make a determination of which area criteria to use based on his/her familiarity with the projects nighttime activity.

3. Change in the levels of illuminance and uniformity ratio for walkways/pedestrian areas (sidewalk) in the roadway’s right-of-way. These values have been increased for all categories and specifically high pedestrian use areas. (pg. 8)

4. Addition of Veiling Luminance Ratio for design of roadway lighting. This is a measure of disability glare. This glare alters the apparent brightness of any object within the visual field and the background against which it is viewed. This calculation is the Roadway Veiling Luminance (max) divided by the average luminance. (pg. 8)

5. Mid block crosswalks are no longer 1.5 times the footcandle of the roadway. The level is placed at 3.4 footcandles, equivalent to two major streets. (pg. 10-11)

6. TCA calculations – The uniformity ratio has now been specified for all roadways. In addition, they are only recommended for intersections of continuously lighted streets. They are not all at 3:1 uniformity ratio. (Table 9 – pg 15)

7. Addition of a recommended values for isolated traffic conflict areas which is an intersection of two (2) streets with a non-continuous lighting system, .9FC/4:1 uniformity ratio (.3 Lvmax/Lavg). This refers to a situation where both streets do not have a continuous lighting system. (pg. 41)

8. Pedestrian walkways (including sidewalks) – Criteria for vertical illuminance requirements are now specified and required. (pg. 11, 12)

9. Criteria for pedestrian tunnels and the pedestrian portion of Pedestrian Vehicular underpasses. (Table 8 – pg. 13)

10. Specific reference to driveways serving high volume activities (ex. Home Depot) should be illuminated to major/major (3.4 fc). (pg. 12)

*This summary in no way addresses the entire document of the RP-8-00.
*Page numbers refer to the RP-8-00 document.

Date: November, 2011
SB:rm (L:$directive#0397 revision)

TABLE 1

Road and Pedestrian Conflict Area		ROADWAY					SIDEWALK			
		OLD RP-8-77 ILLUMINANCE VALUES		NEW RP-8-00 ILLUMINANCE VALUES (Table 2 – pg. 8)			OLD RP-8-00 ILLUMINANCE VALUES		NEW RP-8-00 ILLUMINANCE VALUES	
Road	Pedestrian Conflict Area	Roadway illuminance (fc)	Uniformity Ratio	Roadway Luminance (fc)	Uniformity ratio	Veiling Luminance ratio	Sidewalk Illuminance (fc)	Uniformity ratio	Sidewalk Illuminance (fc)	Uniformity ratio
Major	High	2	3	1.7	3	0.3	0.9	4	1	4
	Medium	1.4	3	1.3	3	0.3	0.6	4	0.5	4
	Low	1	3	0.9	3	0.3	0.2	4	0.4	4
Collector	High	1.2	3	1.2	4	0.4	0.9	4	1	4
	Medium	0.9	3	0.9	4	0.4	0.6	4	0.5	4
	Low	0.6	3	0.6	4	0.4	0.2	10	0.3	6
Local	High	0.9	6	0.9	6	0.4	0.6	4	1	4
	Medium	0.6	6	0.7	6	0.4	0.4	4	0.5	4
	Low	0.4	6	0.4	6	0.4	0.2	10	0.3	6

Pedestrian Areas Sidewalk

High Pedestrian Conflict Areas (Pedestrian activity between 6 PM to 7 PM – over 100) – Areas with significant numbers of pedestrians expected to be on the sidewalks or crossing the streets during darkness. Examples are downtown retail areas, near theaters, concert halls, stadiums, and transit terminals.

Medium Pedestrian Conflict Areas (Pedestrian activity between 6 PM to 7 PM – 11 to 100) – Areas where lesser numbers of pedestrians utilize the streets at night. Typical are downtown office areas, block with libraries, apartments, neighborhood shopping, industrial, older city areas, and street with transit lines.

Low Pedestrian Conflict Areas (Pedestrian activity between 6 PM to & PM – 10 or fewer) – Areas with very low volumes of night pedestrian usage. These can occur in any of the cited roadway classifications but may be typified by suburban single family streets, very low density residential developments, and rural or semi-rural areas.

Rural areas are set at .2fc for sidewalks

SB:rm (L:\$DIRECTIVE/0397B)