



COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
900 South Fremont
Alhambra, CA 91803-1331

PROCEDURES FOR THE
PREPARATION OF STREET LIGHT LAYOUTS
BY
PRIVATE DEVELOPER

GAIL FARBER
Director of Public Works ;

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INTRODUCTION

In October 1964, the Los Angeles County Subdivision Ordinance, which requires a street lighting system in each division of land in the unincorporated territory. (The regional Planning Commission may eliminate this requirement if street lights are not be in kept within the neighborhood pattern, or if all lots within the land division contains no less than 40,000 square feet.) Since that time, the County Street Lighting Section has been preparing detailed layouts showing the size and location of the street lights required for each subdivision in the unincorporated territory and in 27 cities for whom the County administers lighting districts. The installations of street lights may also be required for parcel maps, deeded streets, conditional use permits, road improvement permits, and developments on existing lots.

The Southern California Edison Company (SCE) designs the electrical circuits necessary to provide power to the lights and they install the lights and wiring. The developer and/or applicant is responsible for all the installation costs. The developer is also responsible for the operation and maintenance costs for the lights from the time the lights are energized until the Edison Company is authorized by the Street Lighting Section to add this costs to a County lighting district account, usually a period ranging from 1 to 3 years. In addition to preparing the detailed layouts used by the developer and the Edison Company for the installation of the lights, the Street Lighting Section has prepared preliminary layouts and cost estimates for recordation bounding purposes, free of charge.

In order to achieve maximum efficiency and cost effectiveness for all concerned, the following procedures and design criteria shall be used for the preparation of street lighting layouts that will be submitted to the Street Lighting Section for review and approval.

For Street Lighting plan checking fees, please refer to Page 23 of this Guideline.

LAYOUT SUBMITTAL

Preliminary layouts prepared for bond estimates shall be submitted to Building & Safety/Land Development (B&S/LD) Division located at 900 South Fremont Avenue, Alhambra, California 91803-1331. B&S/LD Division will forward the preliminary layout to the Street Lighting Section for their review and bond estimate preparation.

Detailed layouts prepared for use by SCE shall be submitted to Street Lighting Section located at 1000 South Fremont Avenue, Alhambra, California 91803, building A9-East, 4th Floor, telephone (626) 300-4726.

The layout shall be accompanied by the following items:

1. A written request for the review and approval which shall include the date of the request, the name, address and phone number of the person making the request.
2. A copy of the Regional Planning Commission's conditions of approval, B&S/LD Division's conditional use permit (when applicable), a copy of the local municipality's conditions of approval indicating the street lighting requirements for the subdivision or development to be constructed.
3. Two copies of the street lighting plans.
4. A copy of the Tract/Parcel Map or Plan showing the area being developed.
5. A copy of the street improvement plans showing the existing/proposed driveway locations, and/or any other items which may interfere with the location of the proposed street lights.
6. A copy of existing/proposed traffic signal plans (when applicable).
7. A check for plan check fees' made payable to Los Angeles County Department of Public Works.
8. **Street Lighting Layout Map including project boundaries on floppy disk in either Microstation or Auto-Cadd formats; also include Assessor's Parcel Numbers.**

The Street Lighting Section's files and maps are available for research and review Monday through Thursday from 6:45 a.m. to 5:30 p.m. Street Lighting personnel are available to answer questions regarding procedures and design criteria during those hours. Upon written approval by the Street Lighting Section, the developer shall be responsible for forwarding the layout and approval letter to Southern California Edison (SCE) Company which specifies the conditions which must be satisfied for assumption of the operation and maintenance charges by a County lighting district to the SCE Company for design of the electrical circuits and scheduling of the street lighting installations. All lights shown on the layout must be energized prior to the acceptance of the lighting system by a County lighting district.

LAYOUT FORMAT

1. Layouts shall be prepared on mylar or vellum from which copies can be readily produced on commercially available equipment.
2. The maximum sheet size shall be 2 feet by 3 feet.
3. The layout shall be drawn to an engineering scale not to exceed 60 feet per inch, and the scale be clearly indicated on each sheet.
4. Each sheet shall include a clear indication of true north.
5. Each sheet shall be clearly numbered 1 of 3, 2 of 3, 3 of 3, etc.
6. The first sheet of the layout shall include:
 - A. A legend defining the symbols used to designate the lamp sizes and pole types to be installed.
 - B. The design criteria for each street classification including the footcandles to be provided, the lamp size, the mounting height and luminaire light distribution classifications.
 - C. Signature blocks: Layouts shall be prepared by, or prepared under the supervision of a professional civil or engineer with a valid California registration. Also, the layouts shall bear the seal or stamp of the registrant and the expiration date of the certificate or authority. Layouts shall include two signature blocks. One signature block shall include the private engineer's name, registration number, phone number, and address. The other signature block shall provide for approval by the Department of Public Works.
 - D. General notes as specified by the Street Lighting Section.

A sample legend, design criteria, signature block for Public Works' approval, and general notes are shown on Pages 5, 6, and 7.
7. The layout shall show the street centerlines, the street right-of-way lines and right-of-way dimensions, curb-to-curb widths, street names, lot lines, lot numbers, and development boundaries.
8. Existing and proposed driveways, catch basins, culverts, parkway drains, wheelchair access ramps, and any other items which may interfere with the installation of proposed street lights should be either shown on the layout or such information should be shown on a plot plan or street improvement plan and submitted with the layout for checking.

9. The layout shall include the Thomas Brothers map page number and coordinates of the development.
10. The layout shall include the dimensioned locations of any existing street lights which may affect the locations of the new street lights to be installed. The locations of existing street lights adjacent to and within 250 feet of the boundaries of the proposed development shall be determined by field measurements by the developer for detailed layouts.
11. The layout shall include the sizes of the existing street lights and the types of poles the existing lights are mounted on such as wood, steel, concrete, or traffic signal standards and pole numbers.
12. The layout shall include the dimensioned locations and sizes of any street lights approved for adjacent or nearby developments which have not yet been but may affect the locations of the new street lights to be installed. The development for which the street lights were approved shall be clearly indicated on the layout.
13. Errors in the locations of existing street lights or street lights approved but not yet installed may result in delays in the final review and approval of the layout or **relocation of the new street lights at the developer's expense.**

LEGEND

- ⁵ PROPOSED 5,800 LUMEN (70 WATT) H.P.S.V. LAMPS ON CONCRETE POLES
- ⁹ PROPOSED 9,500 LUMEN (100 WATT) H.P.S.V. LAMPS ON CONCRETE POLES
- ¹⁶ PROPOSED 16,000 LUMEN (150 WATT) H.P.S.V. LAMPS ON CONCRETE POLES
- ²² PROPOSED 22,000 LUMEN (200 WATT) H.P.S.V. LAMPS ON CONCRETE POLES
- ²⁷ PROPOSED 27,500 LUMEN (250 WATT) H.P.S.V. LAMPS ON CONCRETE POLES
- ⁵ PROPOSED 5,800 LUMEN (70 WATT) H.P.S.V. LAMPS ON NEW WOOD POLES
- [#] PROPOSED _____ LUMEN (___ WATT) H.P.S.V. LAMPS ON NEW WOOD POLES
- ^{E #} PROPOSED _____ LUMEN (___ WATT) H.P.S.V. LAMPS ON EXISTING WOOD POLES
- EXISTING STREET LIGHT. TYPE OF POLE, SIZE OF LAMP AND POLE NUMBER AS INDICATED.
- ⊗ STREET LIGHT APPROVED PER ADJACENT DEVELOPMENT. INDICATE TRACT NUMBER, PARCEL MAP NUMBER, LAYOUT NUMBER, ETC.
- (S) PROPOSED STREET LIGHT SHOWN ON A DIFFERENT SHEET
- ⊗ PROPOSED HIGHWAY SAFETY LIGHT (HSL) - LIGHTS ON SIGNAL STANDARDS
- ⊗ EXISTING HIGHWAY SAFETY LIGHT (HSL) - LIGHTS ON SIGNAL STANDARDS
- (C) EXISTING CALTRANS LIGHT
- C.S. OR W (R)[#] EXISTING _____ LUMEN LIGHT ON _____ POLE TO BE REMOVED
- C OR W (RL)[#] EXISTING _____ LUMEN LIGHT ON _____ POLE TO BE RELOCATED
- C OR W (N)[#] NEW LOCATION OF RELOCATED LIGHT
- C.S OR W (U)¹⁶ EXISTING 9,500 LUMEN LIGHT ON _____ POLE TO BE UPGRADED TO 16,000 LUMEN LIGHT
- C.S OR W (D)⁹ EXISTING 16,000 LUMEN LIGHT ON _____ POLE TO BE DOWNGRADED TO 9,500 LIGHT

C = CONCRETE

W = WOOD

S = STEEL

= LUMENS

Design Guidelines

FOR 9,500 LUMEN LAMPS, THE POLE SPACING IS BASED ON 0.4 FOOTCANDLES, FOR "LOCAL RESIDENTIAL" STREETS. THE LUMINAIRE SHALL HAVE A 25 FOOT MOUNTING HEIGHT, SHALL BE (A.N.S.I.-I.E.S.) MEDIUM FULL-CUTOFF (FLAT GLASS), TYPE III, AND EQUIPPED WITH A 100 WATT HIGH PRESSURE SODIUM VAPOR LAMP.

FOR 16,000 LUMEN LAMPS, THE POLE SPACING IS BASED ON 0.9 FOOTCANDLES, FOR "COLLECTOR INTERMEDIATE" STREETS. THE LUMINAIRE SHALL HAVE A 30 FOOT MOUNTING HEIGHT, SHALL BE (A.N.S.I.-I.E.S.) MEDIUM FULL-CUTOFF (FLAT GLASS), TYPE III, AND EQUIPPED WITH A 150 WATT HIGH PRESSURE SODIUM VAPOR LAMP.

FOR 22,000 LUMEN LAMPS, THE POLE SPACING IS BASED ON 1.4 FOOTCANDLES, FOR "MAJOR INTERMEDIATE" STREETS. THE LUMINAIRE SHALL HAVE A 30 FOOT MOUNTING HEIGHT, SHALL BE (A.N.S.I.-I.E.S.) MEDIUM FULL-CUTOFF (FLAT GLASS), TYPE III, AND EQUIPPED WITH A 200 WATT HIGH PRESSURE SODIUM VAPOR LAMP.

FOR 27,500 LUMEN LAMPS, THE POLE SPACING IS BASED ON 1.4 FOOTCANDLES, FOR "HIGHWAY/COLLECTOR INTERMEDIATE" STREETS. THE LUMINAIRE SHALL HAVE A 30 FOOT MOUNTING HEIGHT, SHALL BE (A.N.S.I.-I.E.S.) MEDIUM FULL-CUTOFF (FLAT GLASS), TYPE III, AND EQUIPPED WITH A 250 WATT HIGH PRESSURE SODIUM VAPOR LAMP.

FOR _____ LUMEN LAMPS, THE POLE SPACING IS BASED ON _____ FOOTCANDLES, FOR _____ STREETS. THE LUMINAIRE SHALL HAVE A _____ FOOT MOUNTING HEIGHT. THE LUMINAIRE SHALL BE (A.N.S.I.-I.E.S.) MEDIUM FULL-CUTOFF (FLAT GLASS), TYPE III, AND EQUIPPED WITH _____ WATT HIGH PRESSURE SODIUM VAPOR LAMP.

LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS		
APPROVAL FOR INSTALLATION BY THE SOUTHERN CALIFORNIA EDISON COMPANY		
BY	R.C.E. NO.	DATE
_____	_____	_____
_____	_____	_____

GENERAL NOTES FOR STREET LIGHTING LAYOUT

1. THIS STREET LIGHTING LAYOUT EXPIRES TWO YEARS AFTER THE LATEST DATE OF APPROVAL.
2. THE LOCATION OF A STREET LIGHT MAY ONLY BE ADJUSTED UP TO 10 FEET, ONLY TO AVOID AN OBSTRUCTION SUCH AS A CATCH BASIN, DRIVEWAY, ETC. ANY DEVIATION EXCEEDING 10 FEET MUST HAVE THE APPROVAL OF THE COUNTY OF LOS ANGELES DEPARTMENT OF PUBLIC WORKS, STREET LIGHTING SECTION. IF SUCH APPROVAL IS NOT OBTAINED, THE LIGHTS PROPOSED BY THIS PLAN WILL NOT BE ACCEPTED BY COUNTY LIGHTING MAINTANCE DISTRICT.
3. A REVISED STREET LIGHTING LAYOUT SHALL BE SUBMITTED FOR ANY CHANGES IN THE MAP, SUCH AS STREET ALIGNMENT, LOT OR PARCEL SIZES, BOUNDARIES, ETC.
4. THE STREET LIGHT POLES SHALL BE AMERON TYPE 1-C1 SERIES OR AGENCY APPROVED EQUAL.
5. ALL STREET LIGHT WIRING SHALL BE UNDERGROUND.
6. ON STREETS WHERE THE SIDEWALK AND CURB ARE GREATER THAN 5 1/2 FEET IN WIDTH, THE MAST ARMS AND BRACKETS SHALL BE PERPENDICULAR TO THE CURB FACE. THE STREET LIGHTING ELECTROLIER STANDARDS SHALL BE PLACED 24" FROM THE CURB FACE. USE A 4-FOOT LONG MAST ARM FOR 100 WATT LAMPS AND 6-FOOT LONG MAST ARM FOR OTHER WATTAGE, UNLESS OTHERWISE SPECIFIED.
7. ON STREETS WHERE THE SIDEWALK AND CURB ARE LESS THAN OR EQUAL TO 5 1/2 FEET IN WIDTH, THE STREET LIGHTING ELECTROLIER STANDARDS AND PULL BOXES SHALL BE PLACED OUTSIDE OF THE SIDEWALK AREA UNLESS OTHERWISE SPECIFIED. USE AN 8-FOOT LONG MAST ARM FOR ALL WATTAGE, UNLESS OTHERWISE SPECIFIED.
8. ALL LIGHTS SHOWN ON THIS LAYOUT SHALL BE ENERGIZED PRIOR TO ACCEPTANCE OF THE LIGHTING SYSTEM TO A COUNTY LIGHTING DISTRICT.
9. EXISTING STREET LIGHTING SYSTEMS SHALL REMAIN IN OPERATION DURING ANY MODIFICATION. ANY PROPOSED TEMPORARY STREET LIGHTING SYSTEM MUST BE APPROVED BY THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS.
10. FIVE-FOOT CLEARANCE TO BE MAINTAINED FROM FIRE HYDRANT.
11. FOUR-FOOT CLEARANCE TO BE MAINTAINED FROM TOP OF SLOPE AT COMMERCIAL DRIVEWAY, AND 2 FOOT CLEARANCE FROM RESIDENTIAL DRIVEWAY.

LAYOUT RESEARCH

Information regarding pending adjacent or nearby developments may be available in one or more of the following:

- A. Building & Safety/Land Development Division wall maps or files.
- B. Street Lighting Section overlay books or files.
- C. City records when applicable.

The sizes and approximate locations of existing street lights may be obtained from the Street Lighting Section maps. These maps are primarily for inventory purposes and the exact locations shall be determined by field measurements by the developer for detailed layouts.

DESIGN CRITERIA

In August 1963, the Board of Supervisors of the County of Los Angeles adopted a resolution requiring the levels of illumination recommended by the Illuminating Engineering Society (I.E.S.) to be adopted as guidelines for the design of street lighting systems.

These guidelines may be summarized for the streets most commonly encountered as follows:

<u>I.E.S. Street Classification</u>	<u>Right-of-Way Width</u>	<u>Curb-to-Curb Width</u>	<u>Minimum Average Footcandles</u>	<u>Maximum Uniformity Ratio</u>
1. Major Intermediate	100'	84'	1.4	3
2. Collector Intermediate	80'	64'	0.9	3
3. Local Residential	64' or less	40' or less	0.4	6

Illumination levels and uniformity ratios (ratio of average illumination level to minimum illumination level) required for streets with right-of-ways, or curb-to-curb widths other than those shown above should be obtained from the Street Lighting Section prior to the preparation of the layout.

STREET LIGHT SPACINGS AND SIZES

The following is a tabulation of the light sizes and spacings that will achieve the I.E.S. guidelines with the equipment normally installed by the SCE Company. Layouts proposing the use of non-standard equipment shall be submitted with detailed calculations and photometric data showing that the illumination and uniformity requirements are satisfied.

<u>Curb-to-Curb Width</u>	<u>Lamp Size</u>	<u>Spacing</u>	<u>Configuration</u>
84'	200 Watt (22,000 Lumen)	70' max 60' min	Staggered
64'	150 Watt (16,000 Lumen)	70' max 60' min	Staggered
40', 36' and 34'	100 Watt (9,500 Lumen)	170' max ⁽¹⁾ 130' min (on Tangents or on curves with R >700')	Staggered
		140' max ⁽²⁾ 110' min (on Tangents or on curves with R>700')	One Side
		120' max ⁽³⁾ 95' min (Curves with R<700')	One side

1. This spacing to be used on tangents, and curves with a radius greater than 700 feet.
2. This spacing to be used on tangents, and curves with a radius greater than 700 feet.
3. This spacing to be used on curves with a radius less than or equal to 700 feet.

The maximum spacings as indicated will provide the I.E.S recommended minimum illumination levels. In actual practice, these spacings are usually reduced to fit block lengths and to provide clearances from driveways, catch basins, and other obstructions. Spacings greater than those shown above will only be permitted under special circumstances and should be discussed with the Street Lighting Section prior to submittal of the layout for review.

The preceding spacings will provide the recommended illumination levels and uniformity ratios along the mid-block portions of a street. However, I.E.S recommends higher levels of illumination in areas of potential traffic conflict and other special situations such as intersections, knuckles, and cul-de-sacs. Satisfying the criteria at these locations may require adjustment of the mid-block spacings. The mid-block spacings should be adjusted to provide nearly equal distances between lights within the same block. The minimum spacings between lights shall be less than 25% variation from the maximum spacings allowed. For example, on local streets when using the stagger system, the maximum and minimum spacings will be 170' and 130', respectively. The lights should also be placed on or near lot lines when possible to do so without a substantial increase in the number of lights or significant deviations in spacings.

• The following drawings show the preferred, alternate, or required locations and sizes of street lights for the situations most frequently encountered. The preferred locations should be used whenever possible. The alternate locations should be used whenever possible. The alternate locations should be used only when the preferred location falls outside the development boundaries or when use of the preferred location is impractical because of driveways, catch basins, or other obstructions.

RECOMMENDATION

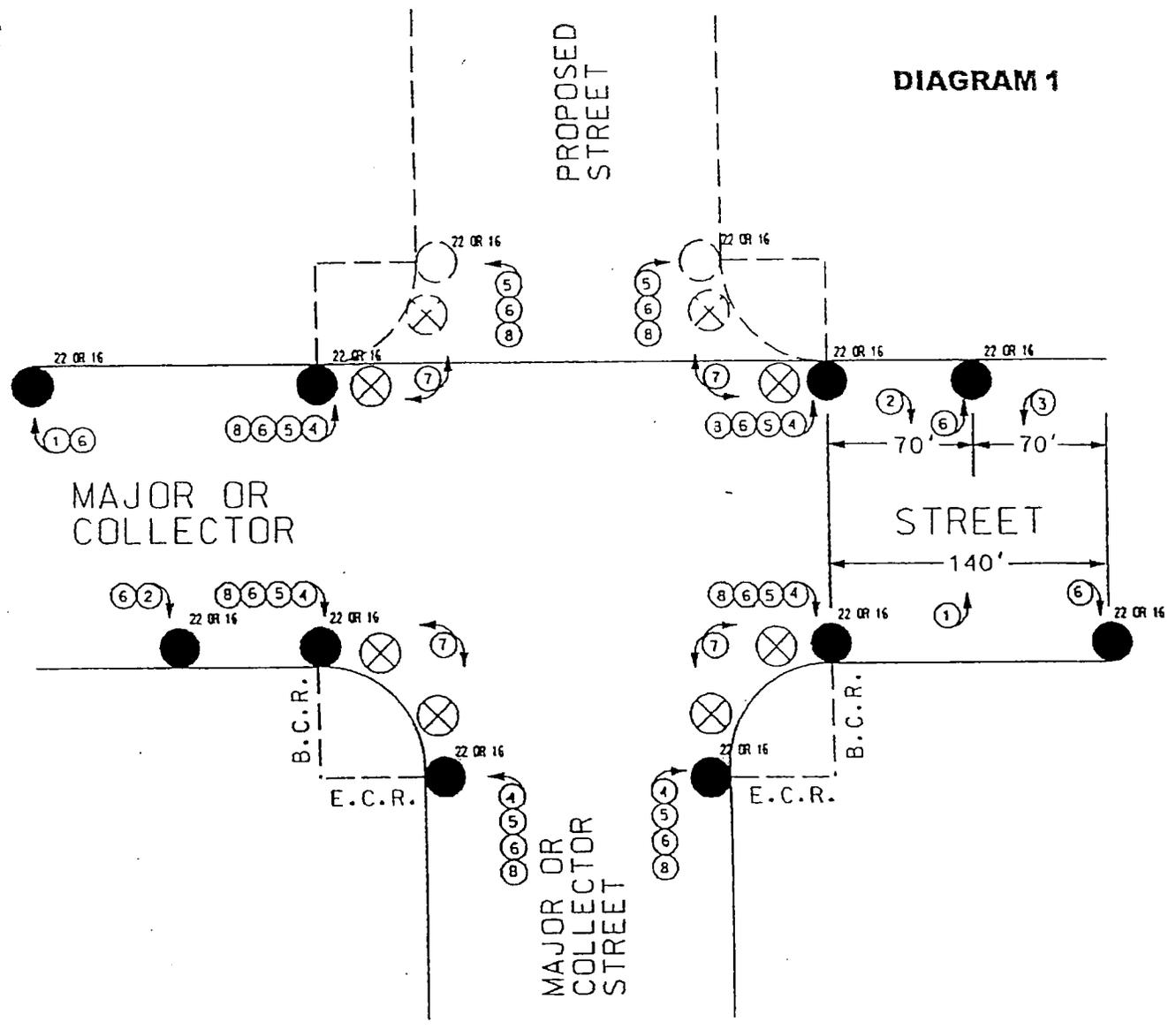
It is suggested that whenever possible, a combination of stagger system and one side system or one side system only be used if the lot frontages are such that a light can be located at every other lot/parcel line and the layout still meets the design criteria.

DIAGRAM BREAKDOWN

The next few pages have diagrams and explanations and they are as follows:

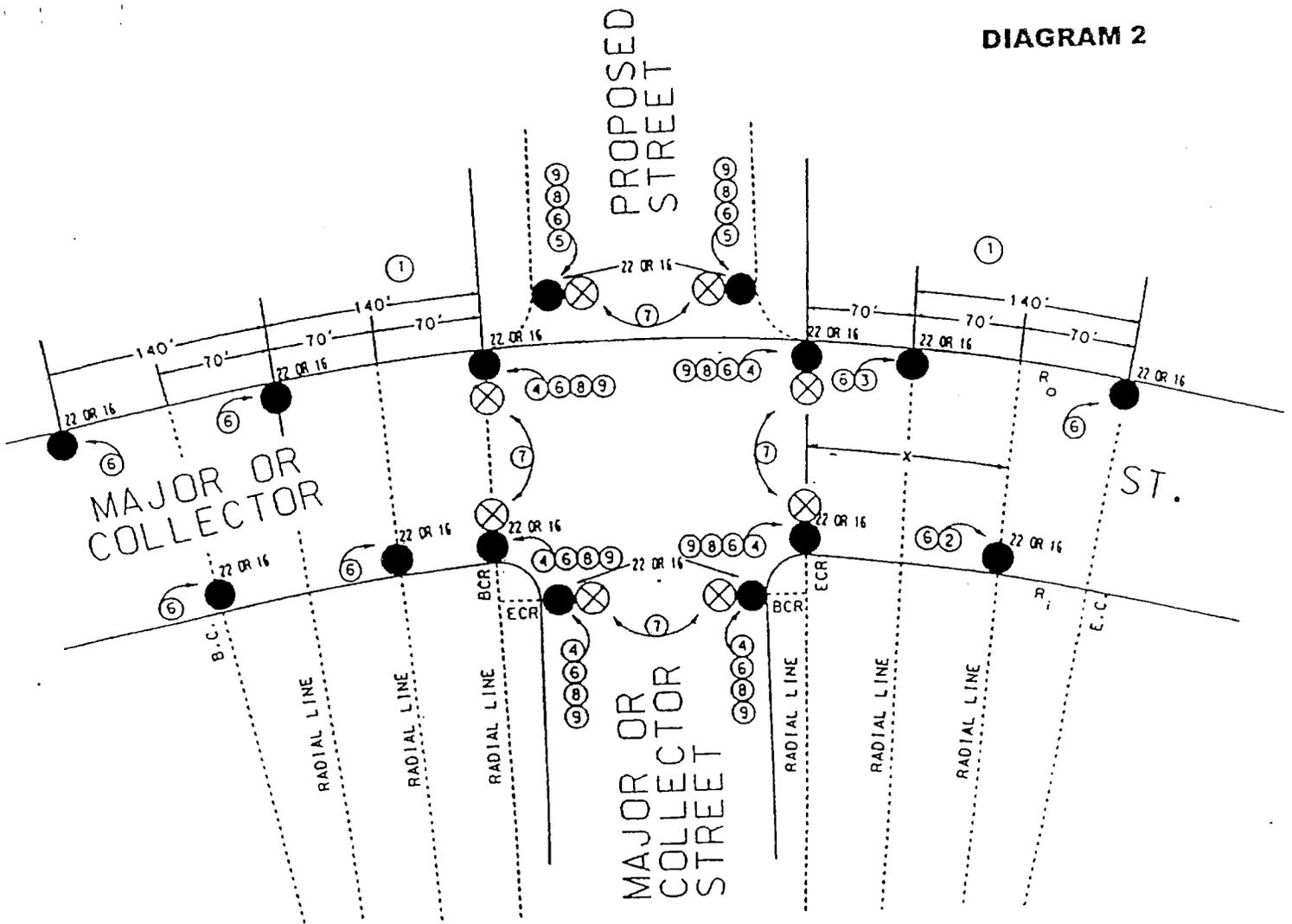
- Diagram 1 - Major or Collector Highway Intersection with Major or Collector Highway
- Diagram 2 - Major or Collector Highway Intersection with Major or Collector Highway when curves are involved
- Diagram 3 - Major or Collector Highway Intersection with Local Street
- Diagram 4 - Major or Collector Highway Intersection with Local Street when curves are involved
- Diagram 5 - Local Street Intersection with Local Street, 4 - Way
- Diagram 6 - Local Street Intersection with Local Street, 3 - Way ("T")
- Diagram 7 - Local Street Knuckle Type Intersection
- Diagram 8 - Local Street Cul-De-Sac
- Diagram 9 - Local Street Curve, $R < 700'$
- Diagram 10 - Mid-block Projects

DIAGRAM 1



- 1 140' SPACING FROM INTERSECTION LIGHT TO FIRST MID-BLOCK LIGHT ON EXIT SIDE, TYPICAL.
- 2 70' SPACING FROM INTERSECTION LIGHT TO FIRST MID-BLOCK LIGHT ON APPROACH SIDE, TYPICAL.
- 3 70' STAGGERED SPACING FOR MID-BLOCK LIGHTS, TYPICAL.
- 4 REQUIRED LOCATIONS AT B.C.R. FOR T-INTERSECTION.
- 5 REQUIRED LOCATIONS AT B.C.R. FOR 4-WAY INTERSECTION.
- 6 200 WATT-22,000 LUMEN, SHOWN AS ●²² ON MAJOR (84' CURB TO CURB) OR 150 WATT-16,000 LUMEN, SHOWN AS ●¹⁶ ON COLLECTOR (64' CURB TO CURB), TYPICAL.
- 7 PROPOSED HIGHWAY SAFETY LIGHTS (LIGHTS ON SIGNAL STANDARDS). LIGHT LOCATIONS PER PROPOSED SIGNAL PLAN.
- 8 INTERSECTION LIGHTS ARE NOT REQUIRED WHEN HIGHWAY SAFETY LIGHTS ARE PROPOSED. THE FIRST MID-BLOCK LIGHTS SHALL BE MEASURED FROM THE B.C.R.

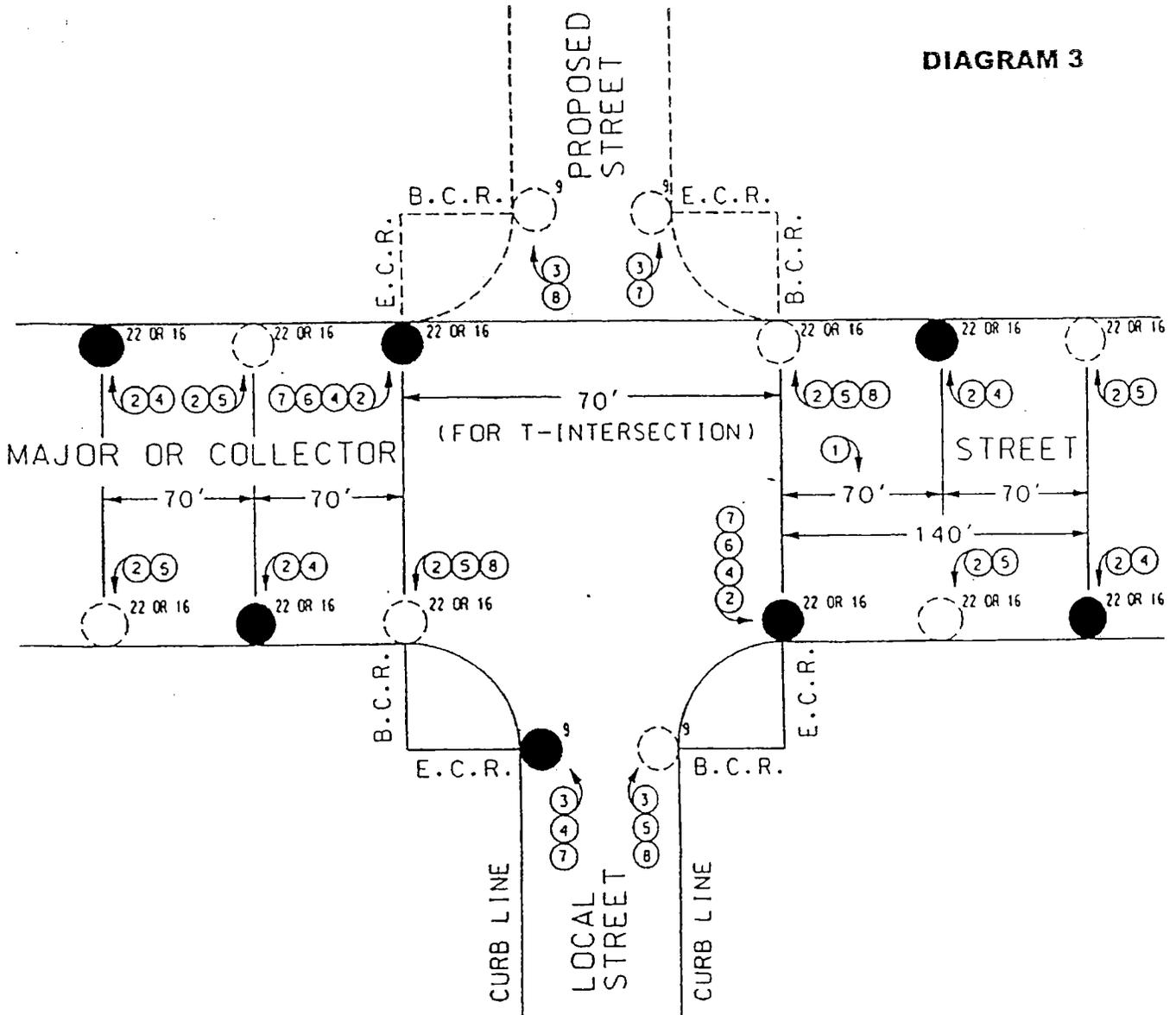
DIAGRAM 2



R_o = OUTSIDE RADIUS, R_i = INSIDE RADIUS, R_c = CENTERLINE RADIUS

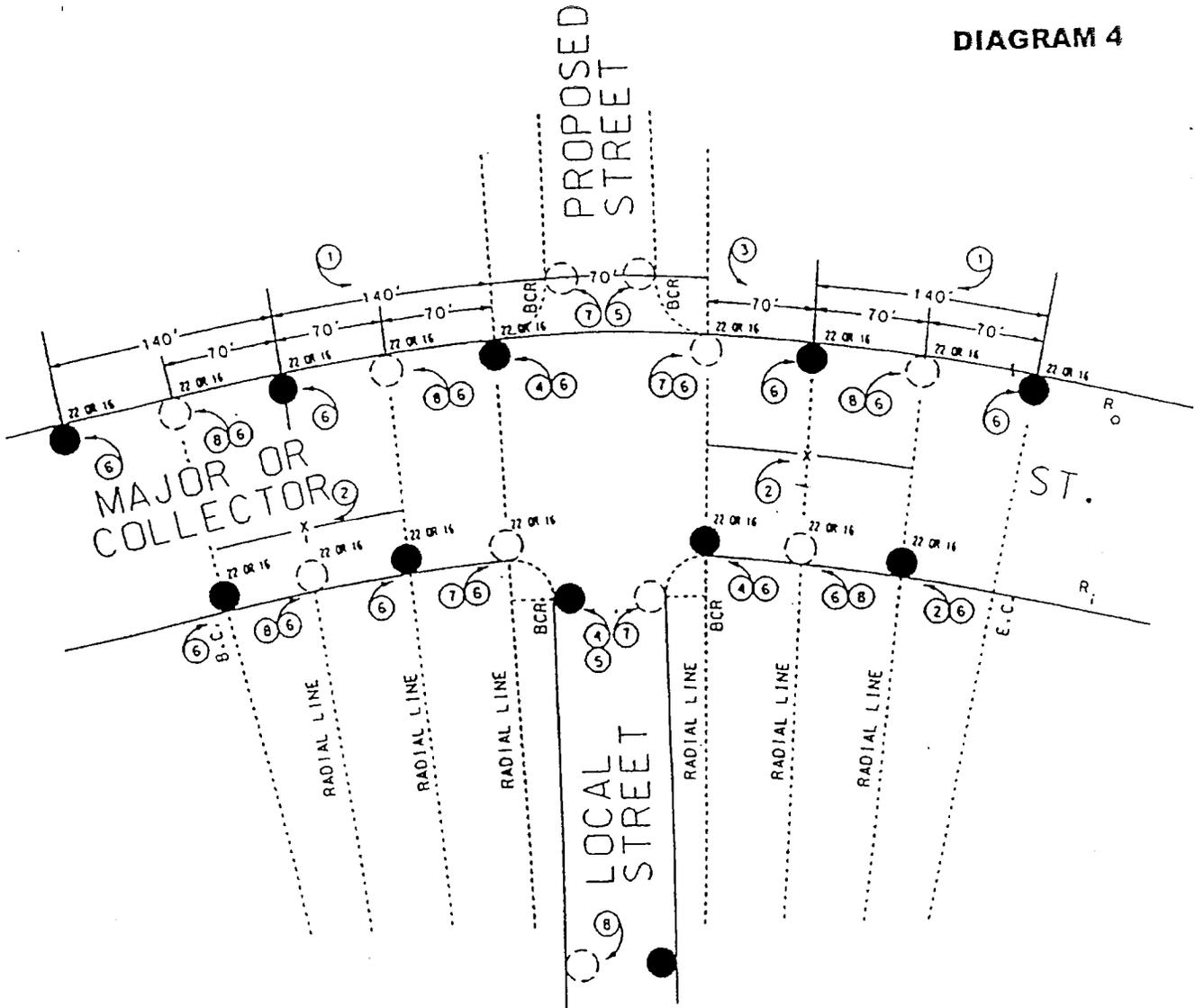
- 1 WHEN CURVES ARE INVOLVED, SPACING BETWEEN LIGHTS ON OUTSIDE CURVE CONTROLS.
- 2 $X = R_i / R_o (140')$ ON INSIDE CURVE SPACING FROM INTERSECTION LIGHT TO FIRST MID-BLOCK LIGHT ON EXIT SIDE, TYPICAL.
- 3 70' SPACING FROM INTERSECTION LIGHT TO FIRST MID-BLOCK LIGHT ON APPROACH SIDE, TYPICAL.
- 4 REQUIRED LOCATIONS AT B.C.R. FOR T-INTERSECTION.
- 5 REQUIRED LOCATIONS AT B.C.R. FOR 4-WAY INTERSECTION.
- 6 200 WATT-22,000 LUMEN, SHOWN AS ●²² ON MAJOR (84' CURB TO CURB) OR 150 WATT-16,000 LUMEN, SHOWN AS ●¹⁶ ON COLLECTOR (64' CURB TO CURB), TYPICAL.
- 7 PROPOSED HIGHWAY SAFETY LIGHTS (HSL - LIGHTS ON SIGNAL STANDARDS) LIGHT LOCATIONS PER PROPOSED SIGNAL PLAN.
- 8 INTERSECTION LIGHTS ARE NOT REQUIRED WHEN HIGHWAY SAFETY LIGHTS ARE PROPOSED. THE FIRST MID-BLOCK LIGHT SHALL BE MEASURED FROM THE B.C.R.
- 9 LIGHTS AT INTERSECTION TO BE PLACED AT B.C.R. EXCEPT OTHERWISE NOTED.

DIAGRAM 3



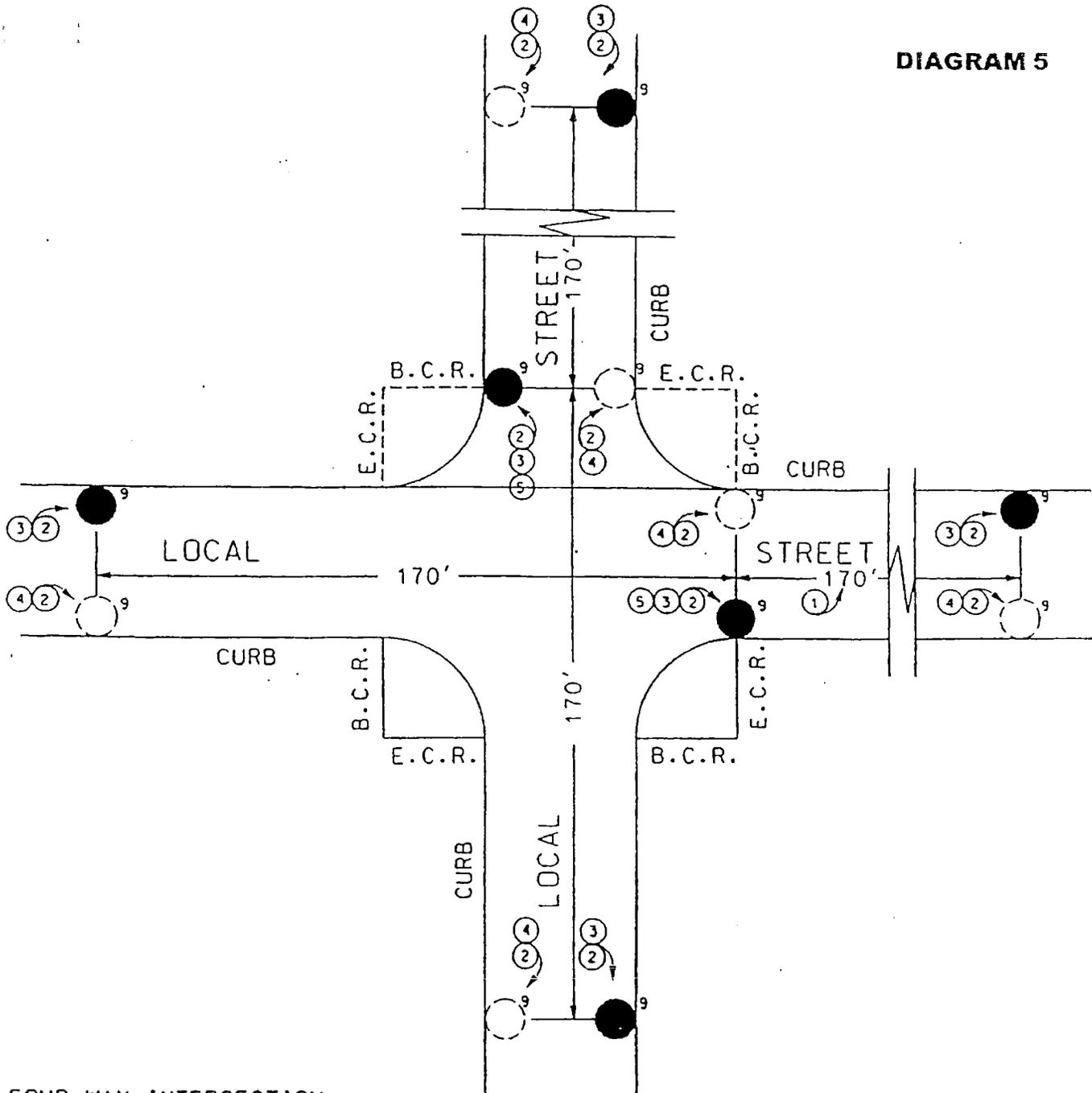
- 1 70' STAGGERED ON MAJOR (84' CURB TO CURB) OR COLLECTOR (64' CURB TO CURB), TYPICAL
- 2 200 WATT- 22,000 LUMEN, SHOWN AS ●²² ON MAJOR (84' CURB TO CURB) OR 150 WATT- 16,000 LUMEN, SHOWN AS ●¹⁶ ON COLLECTOR (64' CURB TO CURB), TYPICAL.
- 3 100 WATT- 9,500 LUMEN, SHOWN AS ●⁹ ON LOCAL (34', 36', OR 40' CURB TO CURB), TYPICAL.
- 4 PREFERRED LOCATION FOR T-INTERSECTION.
- 5 ALTERNATE LOCATION FOR T-INTERSECTION.
- 6 LIGHTS ON BOTH SIDES OF STREET WHEN STREET IS ENTIRELY IN DEVELOPMENT. OTHERWISE INSTALL LIGHTS ON ONE SIDE (HALF SYSTEM).
- 7 PREFERRED LOCATION FOR 4-WAY INTERSECTION.
- 8 ALTERNATE LOCATION FOR 4-WAY INTERSECTION. USE EITHER ALL PREFERRED LOCATIONS OR ALL ALTERNATE LOCATIONS.

DIAGRAM 4



- R_o = OUTSIDE RADIUS. R_i = INSIDE RADIUS. R_c = CENTERLINE RADIUS
- 1 WHEN CURVES ARE INVOLVED, SPACING BETWEEN LIGHTS ON OUTSIDE CURVE CONTROLS.
 - 2 $X = R_i / R_o (140')$ ON INSIDE CURVE SPACING FROM INTERSECTION LIGHT TO FIRST MID-BLOCK LIGHT ON EXIT SIDE. TYPICAL.
 - 3 70' SPACING FROM INTERSECTION LIGHT TO FIRST MID-BLOCK LIGHT ON APPROACH SIDE. TYPICAL.
 - 4 PREFERRED LOCATIONS FOR T-INTERSECTION.
 - 5 PREFERRED LOCATIONS AT B.C.R. FOR 4-WAY INTERSECTION.
 - 6 200 WATT- 22,000 LUMEN, SHOWN AS ●²² ON MAJOR (84' CURB TO CURB) OR 150 WATT- 16,000 LUMEN, SHOWN AS ●¹⁶ ON COLLECTOR (64' CURB TO CURB). TYPICAL.
 - 7 ALTERNATE LOCATIONS FOR INTERSECTION
 - 8 ALTERNATE LOCATIONS
 - 9 LIGHTS AT INTERSECTION TO BE PLACED AT B.C.R. EXCEPT OTHERWISE NOTED.

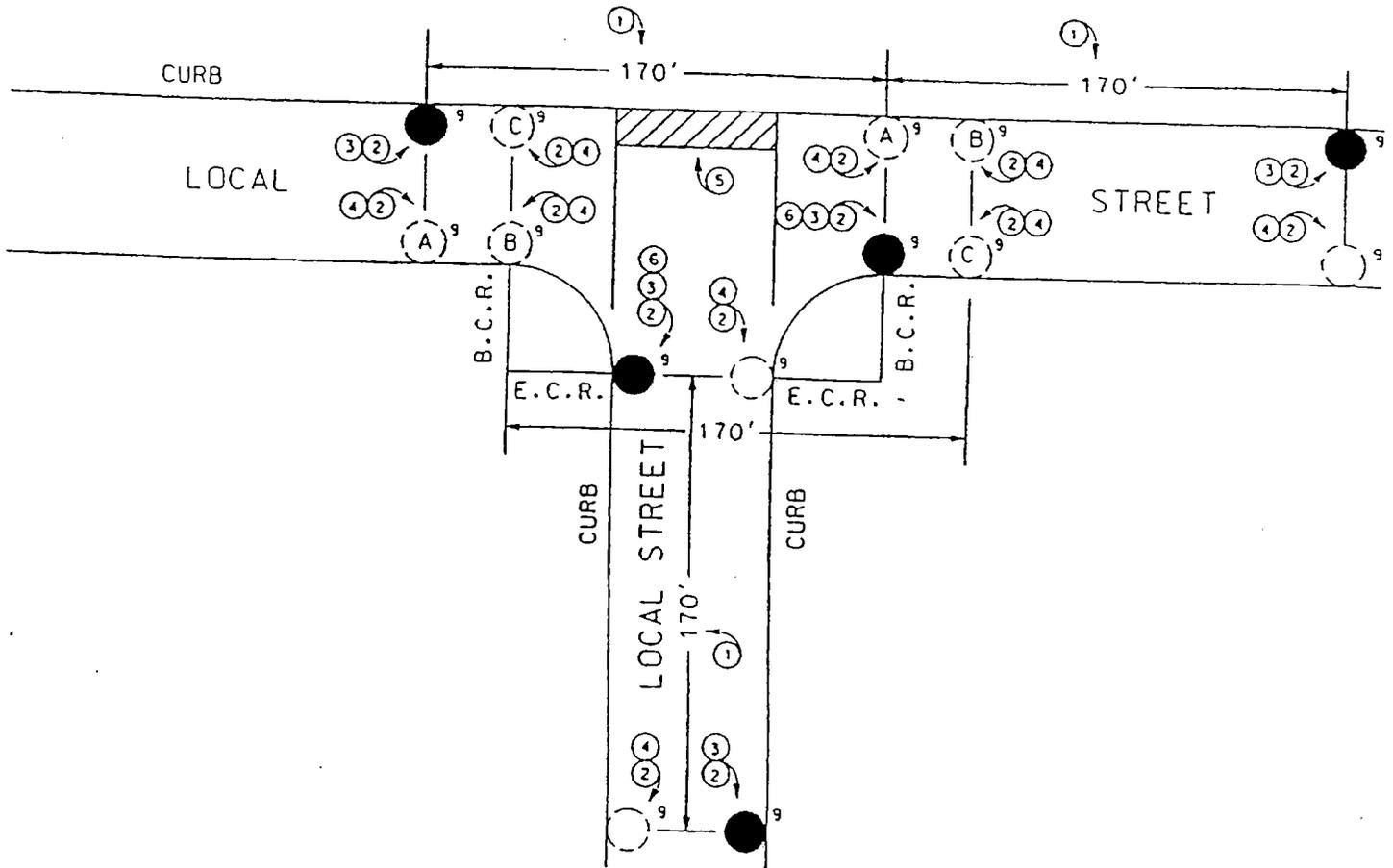
DIAGRAM 5



FOUR-WAY INTERSECTION

- 1 170' MAXIMUM STAGGERED SPACING ON LOCAL STREET (34', 36', OR 40' CURB TO CURB). PREFERRED. USE 140' MAXIMUM ONE-SIDE FOR HALF-STREET IMPROVEMENT.
- 2 100 WATT- 9,500 LUMEN. SHOWN AS ●. TYPICAL.
- 3 PREFERRED LOCATION (ONE INTERSECTION LIGHT MAY BE PLACED UP TO 20' FROM B.C.R. OR E.C.R.).
- 4 ALTERNATE LOCATIONS. USE ALL PREFERRED OR ALL ALTERNATE LOCATIONS ON EACH STREET.
- 5 ONE LIGHT ON EACH STREET AT INTERSECTION TO PROVIDE TWICE MID-BLOCK ILLUMINATION AS RECOMMENDED BY I.E.S.

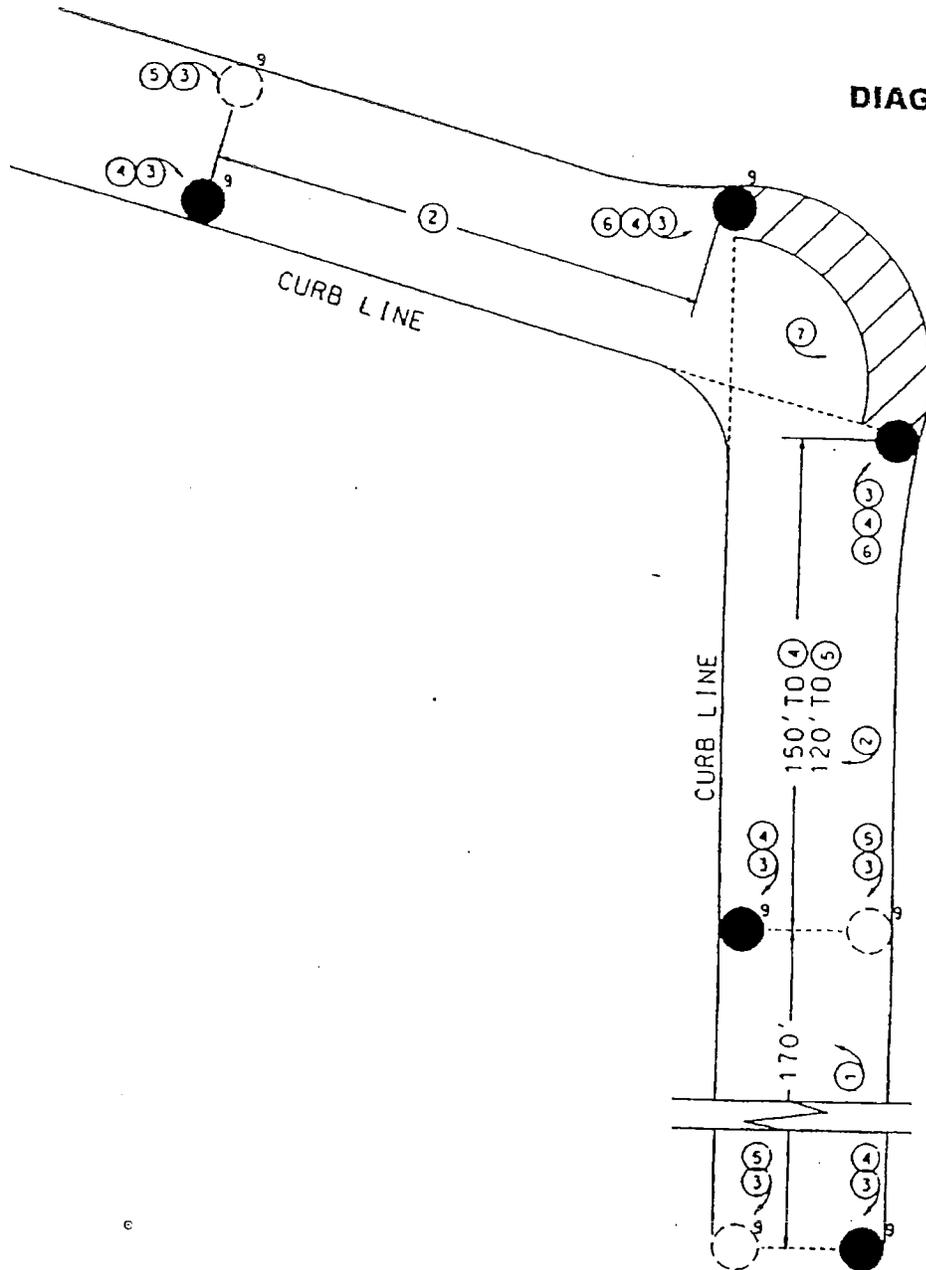
DIAGRAM 6



T-INTERSECTION

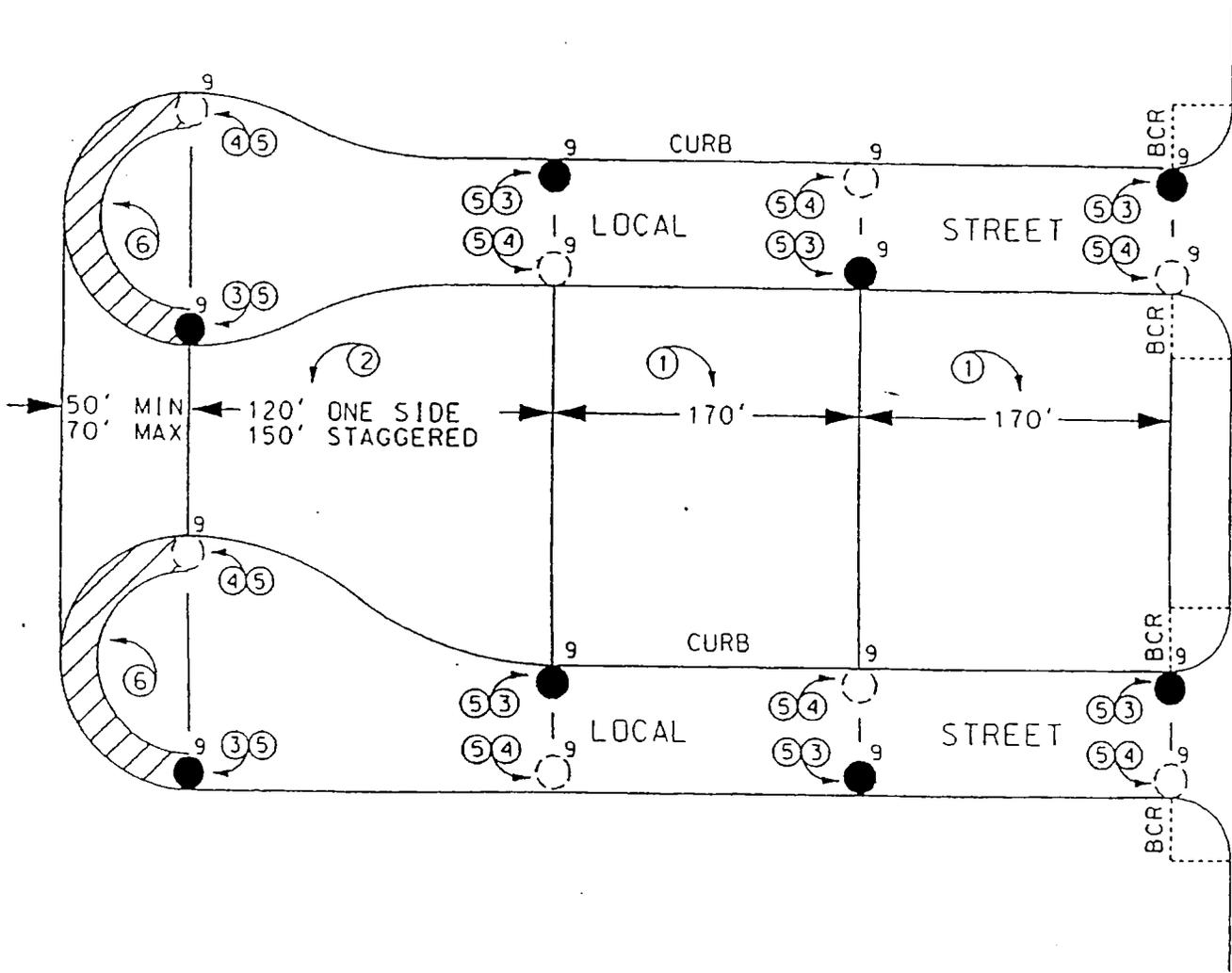
- 1 170' MAXIMUM STAGGERED SPACING ON LOCAL STREET (34', 36', OR 40' CURB TO CURB). PREFERRED. USE 140' MAXIMUM ONE-SIDE FOR HALF-STREET IMPROVEMENT.
- 2 100 WATT - 9,500 LUMEN. SHOWN AS ●, TYPICAL.
- 3 PREFERRED LOCATIONS (ONE INTERSECTION LIGHT MAY BE PLACED UP TO 20' FROM B.C.R. OR E.C.R.).
- 4 ALTERNATE LOCATION
- 5 AVOID PLACING LIGHTS IN THIS AREA. CONSULT OUR STREET LIGHTING SECTION PRIOR TO PLACING LIGHT WITHIN THIS AREA.
- 6 ONE LIGHT ON EACH STREET AT INTERSECTION TO PROVIDE TWICE MID-BLOCK ILLUMINATION AS RECOMMENDED BY I.E.S.

DIAGRAM 7



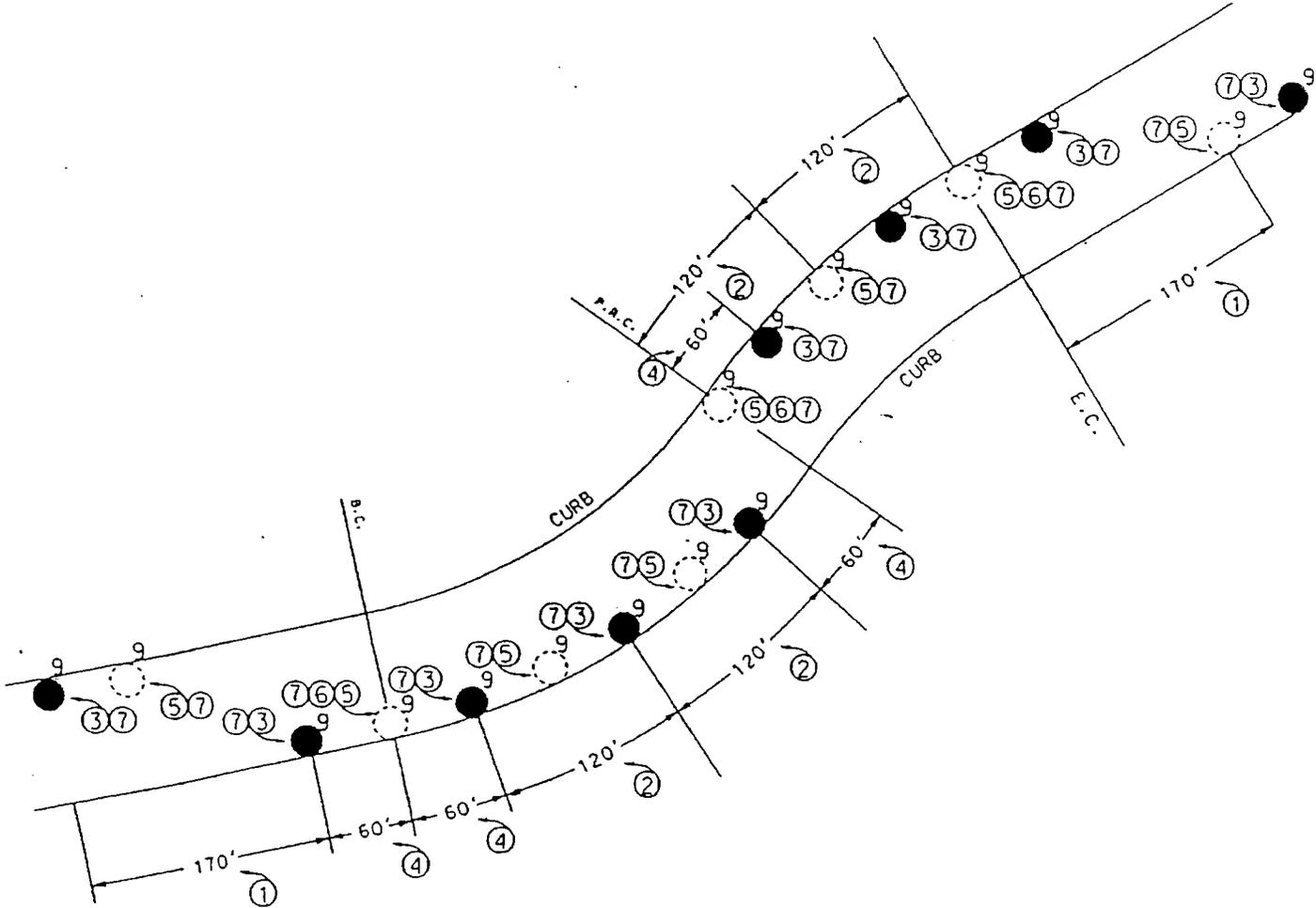
- 1 170' MAXIMUM STAGGERED SPACING ON LOCAL STREET (34', 36', OR 40' CURB TO CURB), PREFERRED. USE 140' MAXIMUM ONE-SIDE FOR HALF-STREET IMPROVEMENT.
- 2 REDUCED SPACING FROM INTERSECTION LIGHT TO FIRST MID-BLOCK DUE TO CURVATURE OF ROADWAY AS RECOMMENDED BY I.E.S.
- 3 100 WATT - 9,500 LUMEN, SHOWN AS ●, TYPICAL.
- 4 PREFERRED LOCATION (ONE INTERSECTION LIGHT MAY BE PLACED UP TO 20' OUTSIDE OF CURB PROLONGATIONS.).
- 5 ALTERNATE LOCATION. USE BOTH PREFERRED OR BOTH ALTERNATE LOCATIONS ON EACH STREET.
- 6 ONE LIGHT ON EACH STREET AT INTERSECTION TO PROVIDE TWICE MID-BLOCK ILLUMINATION AS RECOMMENDED BY I.E.S.
- 7 AVOID PLACING LIGHT IN THIS AREA. CONSULT OUR STREET LIGHTING SECTION PRIOR TO PLACING LIGHT WITHIN THIS AREA.

DIAGRAM 8



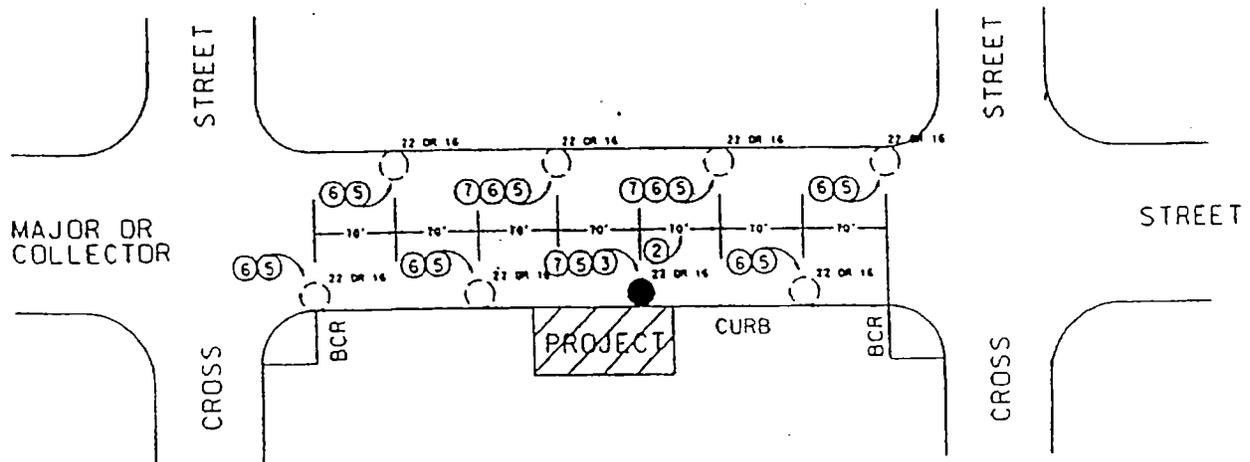
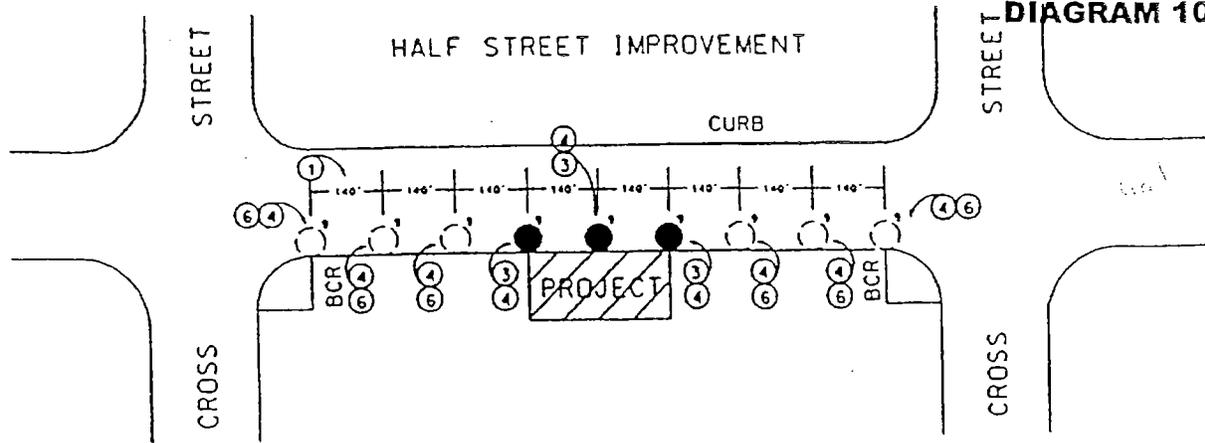
- 1 170' MAXIMUM STAGGERED SPACING ON LOCAL STREET (34', 36', OR 40' CURB TO CURB). PREFERRED. USE 140' MAXIMUM ONE-SIDE FOR HALF-STREET IMPROVEMENT.
- 2 REDUCED SPACING FROM CUL-DE-SAC LIGHT TO FIRST MID-BLOCK LIGHT DUE TO CURVATURE OF ROADWAY AS RECOMMENDED BY I.E.S.
- 3 PREFERRED LOCATION.
- 4 ALTERNATE LOCATION. USE ALL ALTERNATE LOCATIONS OR ALL PREFERRED LOCATIONS.
- 5 100 WATT- 9,500 LUMEN. SHOWN AS ⁹●. TYPICAL.
- 6 AVOID PLACING LIGHTS IN THIS AREA.

DIAGRAM 9



- 1 170' MAXIMUM STAGGERED SPACING ON TANGENTS ON LOCAL STREET (34', 36', OR 40' CURB TO CURB). PREFERRED. USE 140' MAXIMUM FOR ONE-SIDE IMPROVEMENT.
- 2 120' MAXIMUM SPACING ON OUTSIDE OF CURVE WHERE $R \leq 700'$. TYPICAL.
- 3 PREFERRED LOCATION.
- 4 PREFERRED LOCATIONS SYMMETRICAL ABOUT BC, PRC. AND EC. CURVE SPACING EXTENDS TO FIRST LIGHT ON TANGENT.
- 5 ALTERNATE LOCATION. USE ALL PREFERRED LOCATIONS OR ALL ALTERNATE LOCATIONS.
- 6 PLACE LIGHTS ON BC, PRC. AND EC.
- 7 100 WATT- 9,500 LUMEN . SHOWN AS ●⁹ . TYPICAL.

DIAGRAM 10



- 1 140' MAXIMUM ONE-SIDE SPACING ON LOCAL STREET (34', 36', OR 40' CURB TO CURB), TYPICAL.
- 2 140' MAXIMUM SPACING ONE-SIDE HALF SYSTEM (70' MAXIMUM STAGGERED SPACING) ON MAJOR (84' CURB TO CURB) OR COLLECTOR (64' CURB TO CURB), TYPICAL.
- 3 PROPOSED LIGHT(S).
- 4 100 WATT - 9,500 LUMEN, SHOWN AS ●, TYPICAL.
- 5 200 WATT - 22,000 LUMEN, SHOWN AS ● ON MAJOR (84' CURB TO CURB) OR 150 WATT-16,000 LUMEN, SHOWN AS ● ON COLLECTOR (64' CURB TO CURB), TYPICAL.
- 6 FUTURE (DO NOT SHOW ON LAYOUT) OR EXISTING (SHOW ON LAYOUT) LIGHTS FROM PROJECT BOUNDARY TO ADJACENT CROSS STREETS TO VERIFY THAT PROPOSED LIGHTS WILL FIT CONTINUOUS SYSTEM. IF DISTANCES ARE TOO LONG TO BE SHOWN TO SCALE, LAYOUT SHALL INCLUDE "NO SCALE" MAP (OR HARD-COPY) INDICATING DISTANCES TO CROSS STREETS AND LOCATIONS OF FUTURE AND EXISTING LIGHTS.
- 7 PLACE PROPOSED LIGHTS MIDWAY BETWEEN EXISTING LIGHTS ON STEEL OR CONCRETE POLES TO MAINTAIN STAGGERED SYSTEM (CONSULT STREET LIGHTING SECTION IF STAGGERED SPACING EXCEEDS 70'. PROPOSED LIGHT LOCATIONS SHALL BE INDEPENDENT OF EXISTING LIGHTS ON WOOD POLES.)

PREFERRED STREET LIGHT LOCATIONS

It should be emphasized that the street light placements and spacings depicted on Figures 2 through 11 reflect the maximum calculated spacings that will provide the minimum recommended illumination levels. These spacings will frequently need to be reduced due to block lengths, driveways, catch basins and other constraints. When the locations of the proposed lights have been determined, they shall be dimensioned from the nearest B.C.R., E.C.R., or lot line. On these streets, which will be abutted by rear walls or fences such as major and secondary highways, the distances between adjacent lights shall also be dimensioned. An acceptable alternative method of locating proposed lights is the use of stationing.

DESIGN REFERENCES

1. "American National Standard Practice for Roadway Lighting" (ANSI / IES RP-8, 2000) available from the Illuminating Engineering Society, 120 Wall Street, New York, New York 10005.
1. General Electric Photometric Data No. 35 - 177305 (200 watt - 30' mounting heights).
2. General Electric Photometric Data No. 35 - 177292 (150 watt - 30' mounting height 100 watt - 25' mounting height).

UNDERGROUNDING

The State of California Public Utilities Commission issued directives in November 1969 and May 1970 that provide:

1. That underground wiring "should be standard for all extensions".
2. That "underground should be mandatory for all new residential subdivisions".

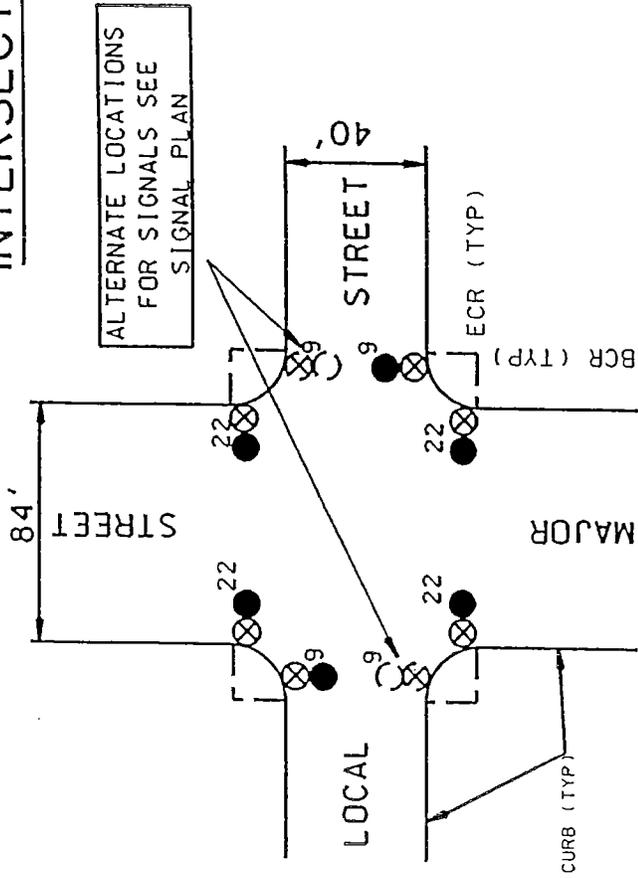
These directives require electrical lines to be placed underground along all new streets. The County requires new street light installations on existing streets in the unincorporated territory to be served with underground wires. It shall be the responsibility of the developer to obtain the requirements of the Edison Company and, where applicable, the requirements of the local municipality, regarding the undergrounding of street lighting wiring on existing streets for a specific project.

Section 4. Section 21.44.075 is added to Title 21 of the Los Angeles County Code to read:

21.44.075 STREET LIGHTING PLAN CHECKING FEES. A. Where plans for a street lighting system are required to be submitted to the Road Commissioner for a parcel or tract map under the provisions of the Subdivision Map Act, the subdivider shall pay a plan checking fee to the Road Commissioner in addition to all other fees required by law. These fees, payable upon submission of plans for checking to the Road Commissioner, shall be based on the number of street lights as follows:

<u>Number of Lights</u>	<u>Fee</u>
<u>1 to 15</u>	<u>\$500.00</u>
<u>16 to 75</u>	<u>\$900.00</u>
<u>76 and over</u>	<u>\$1500.00</u>

INTERSECTION LIGHTING



C- MAJOR - LOCAL STREETS

(84' BETWEEN CURBS FOR MAJOR)
(40' BETWEEN CURBS FOR LOCAL)

USE ALL 4 CORNERS - 200 WATT H.P.S.V. LAMP ON 12' MAST ARM ON MAJOR ST.

USE 2 STAGGERED CORNERS-100 WATT H.P.S.V. LAMP ON 8' MAST ARM ON LOCAL ST.

LEGEND

⊗ TRAFFIC SIGNAL (TS) STANDARD

●²²

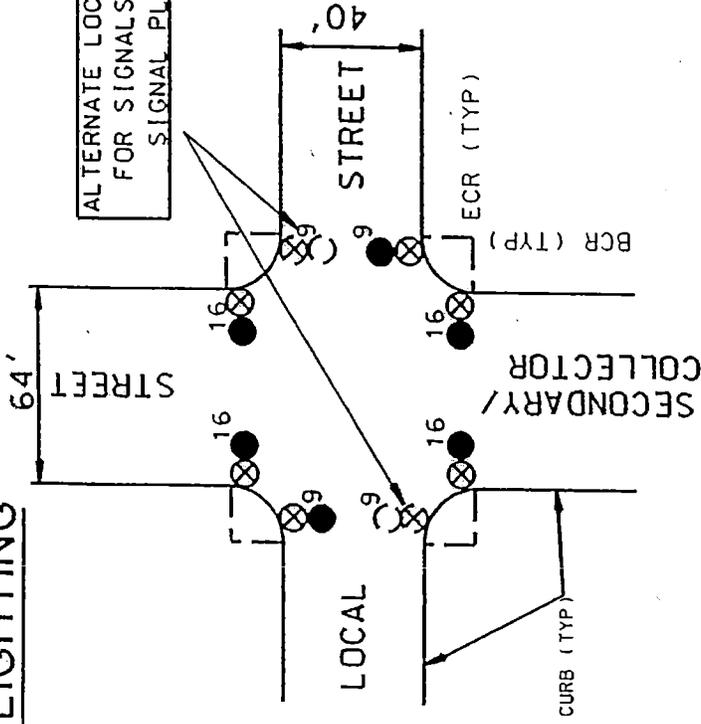
PROPOSED 22,000 LUMEN (200 WATT) H.P.S.V LAMPS ATTACHED TO TS.

●¹⁶

PROPOSED 16,000 LUMEN (150 WATT) H.P.S.V LAMPS ATTACHED TO TS.

●⁹

PROPOSED 9,500 LUMEN (100 WATT) H.P.S.V LAMPS ATTACHED TO TS.



D- SECONDARY/COLLECTOR-LOCAL STREETS

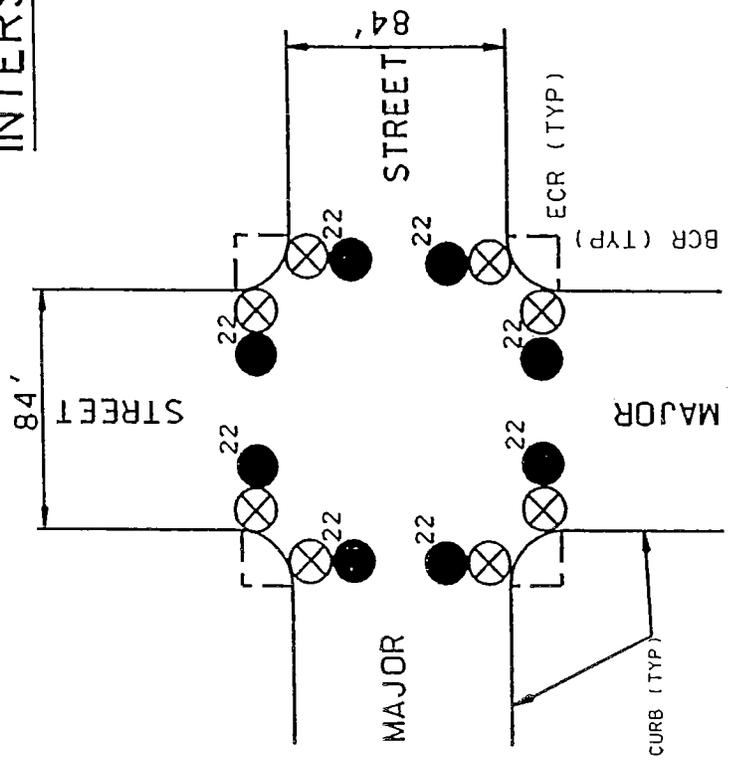
(64' BETWEEN CURBS FOR SECONDARY/COLLECTOR)
(40' BETWEEN CURBS FOR LOCAL)

USE ALL 4 CORNERS-150 WATT H.P.S.V. LAMP ON 12' MAST ARM ON SECONDARY/COLLECTOR ST.

USE 2 STAGGERED CORNERS-100 WATT H.P.S.V. LAMP ON 8' MAST ARM ON LOCAL ST.

DRAWN BY: F. CASTILLO
DESIGN BY: M. PEARSON
DATE: 10/24/06

INTERSECTION LIGHTING

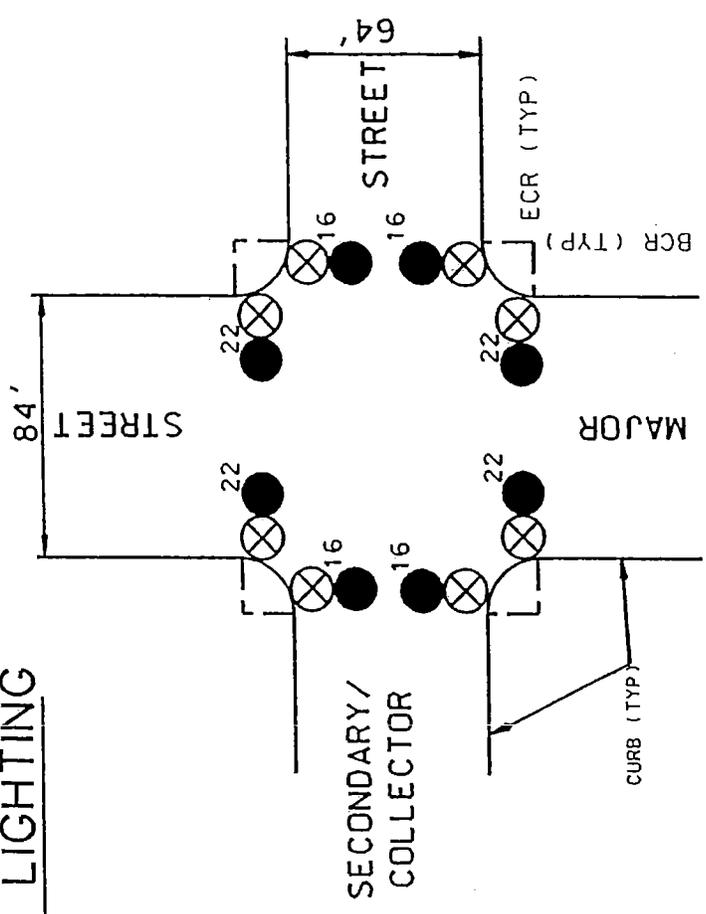


A- MAJOR - MAJOR STREETS

(84' BETWEEN CURBS)
 USE ALL 8 CORNERS - 200 WATT H.P.S.V.
 LAMP ON 12' MAST ARM

LEGEND

- TRAFFIC SIGNAL (TS) STANDARD
- PROPOSED 22,000 LUMEN (200 WATT) H.P.S.V LAMPS ATTACHED TO TS.
- PROPOSED 16,000 LUMEN (150 WATT) H.P.S.V LAMPS ATTACHED TO TS.



B- MAJOR - SECONDARY/COLLECTOR STREETS

(84' BETWEEN CURBS FOR MAJOR)
 (64' BETWEEN CURBS FOR SECONDARY/COLLECTOR)
 USE ALL 4 CORNERS-200 WATT H.P.S.V. LAMP ON 12' MAST
 ARM ON MAJOR ST.
 USE ALL 4 CORNERS-150 WATT H.P.S.V. LAMP ON 12' MAST
 ARM ON SECONDARY /COLLECTOR ST.

DRAWN BY: F. CASTILLO
 DESIGN BY: M. PEARSON
 DATE: 10/24/06

LOS ANGELES DEPARTMENT OF PUBLIC WORKS

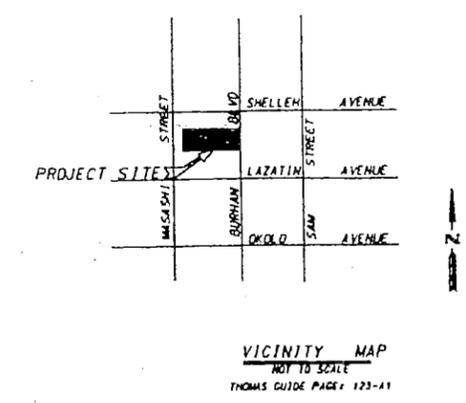
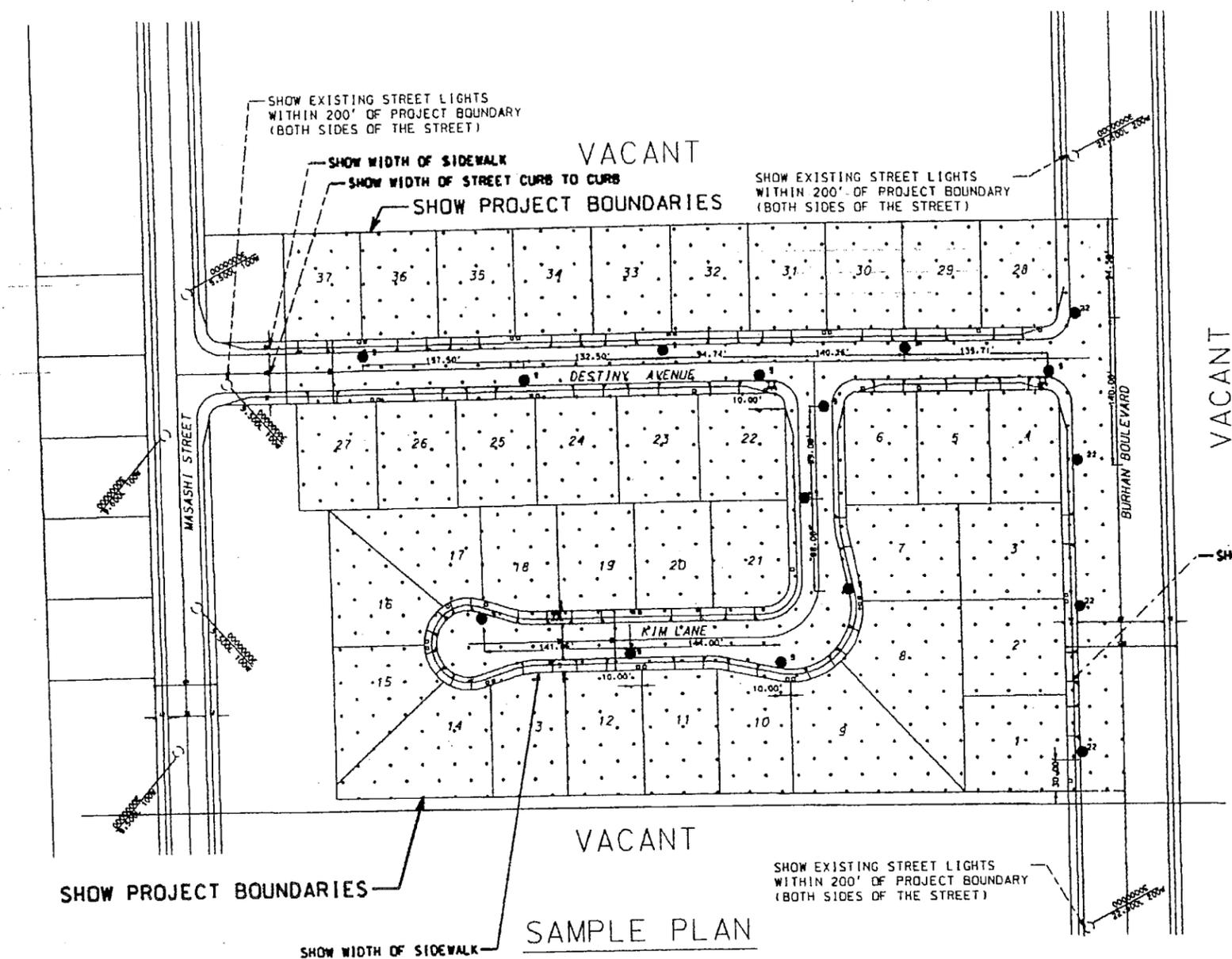
TO: _____ FROM: _____ DATE: _____

SUBJECT: _____

Enclosed are the review print(s) for the project showing changes to be made.
Please submit and/or show information for the following items marked (X).

- (X) 1 **Return the review prints and this checklist.**
- () 2 Engineer's signature / stamp / expiration date on tracing.
- () 3 Original tracing. Tracings that exceed the maximum 2' x 3' size will not be accepted. Tracings shall be either vellum or mylar. No sephia will be accepted.
- () 4 Two sets of prints.
- () 5 Conditions of approval or conditional use permit.
- () 6 A copy of the tract/parcel map, or show the area to be developed on the plan.
- () 7 Show lot or parcel numbers.
- () 8 Show locations of driveways, catch basins, or other obstructions on the plan.
- () 9 Show width of sidewalk and roadway between curbs.
- () 10 Street improvement plans.
- () 11 The scale used is not acceptable.
- () 12 Show the spacing between proposed lights and dimension lights from the nearest reference point of line such as BCR, ECR, Lot Line, etc.
- () 13 Show distances between existing lights and map boundary lines and/or property lines.
- () 14 Show and/or verify existing lights field checked by you.
- () 15 Show general notes, key map, vicinity maps, north arrow and/or design criteria.
- () 16 Show legend and use our standard symbols. See attached sheets.
- () 17 Copy of county/city traffic signal plan(s), both existing and/or proposed.
- () 18 **Submit Street Lighting Layout Map including project boundaries on floppy in either Microstation or Auto-Cadd formats and also include Assesor's Parcel Number(s).**
- () 19 _____
- () 20 _____

If you have any questions regarding plan check, please contact _____
of our Street Lighting Section at (626) 300 - _____



GENERAL NOTES FOR STREET LIGHTING LAYOUT

1. THIS STREET LIGHTING LAYOUT EXPIRES TWO YEARS AFTER THE LATEST DATE OF APPROVAL.
2. THE LOCATION OF A STREET LIGHT MAY BE ADJUSTED UP TO 10 FEET, ONLY TO AVOID AN OBSTRUCTION SUCH AS A CATCH BASIN, DRIVEWAY, ETC. ANY DEVIATION EXCEEDING 10 FEET MUST HAVE THE APPROVAL OF THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS, STREET LIGHTING SECTION.
3. A REVISED STREET LIGHTING LAYOUT SHALL BE SUBMITTED FOR ANY CHANGES IN THE MAP, SUCH AS STREET ALIGNMENT, LOT OR PARCEL SIZES, BOUNDARIES, ETC.
4. THE STREET LIGHT POLES SHALL BE AMERON TYPE 1-C1 SERIES OR AGENCY APPROVED EQUAL.
5. ALL STREET LIGHT WIRING SHALL BE UNDERGROUND.
6. IN ORDER FOR THE COUNTY LIGHTING DISTRICT TO ASSUME THE OPERATION AND MAINTENANCE FOR THE LIGHTING SYSTEM ON ANY PRIVATE AND FUTURE STREET, THE STREET SHALL BE OPEN TO THE GENERAL PUBLIC AT ALL TIMES.
7. ON STREETS WHERE THE SIDEWALK AND CURB ARE GREATER THAN 5 1/2 FEET IN WIDTH, THE MAST ARMS AND BRACKETS SHALL BE PERPENDICULAR TO THE CURB FACE. THE STREET LIGHTING ELECTROLIER STANDARDS SHALL BE PLACED 24" FROM THE CURB FACE. USE A 4-FOOT LONG MAST ARM FOR 100 WATT LAMPS AND 6-FOOT LONG MAST ARM FOR OTHER WATTAGE, UNLESS OTHERWISE SPECIFIED.
8. ON STREETS WHERE THE SIDEWALK AND CURB ARE EQUAL TO OR LESS THAN 5 1/2 FEET IN WIDTH, THE STREET LIGHTING ELECTROLIER STANDARDS AND PULL BOXES SHALL BE PLACED OUTSIDE OF THE SIDEWALK AREA UNLESS OTHERWISE SPECIFIED. USE AN 8-FOOT LONG MAST ARM FOR ALL WATTAGE, UNLESS OTHERWISE SPECIFIED.
9. ALL LIGHTS SHOWN ON THIS LAYOUT SHALL BE ENERGIZED PRIOR TO ACCEPTANCE OF THE LIGHTING SYSTEM TO A COUNTY LIGHTING DISTRICT.
10. EXISTING STREET LIGHTING SYSTEMS SHALL REMAIN IN OPERATION DURING ANY MODIFICATION. ANY PROPOSED TEMPORARY STREET LIGHTING SYSTEM MUST BE APPROVED BY THE LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS.
11. FIVE-FOOT CLEARANCE TO BE MAINTAINED FROM FIRE HYDRANT.
12. FOUR-FOOT CLEARANCE TO BE MAINTAINED FROM TOP OF SLOPE AT COMMERCIAL DRIVEWAY, AND 2 FOOT CLEARANCE FROM RESIDENTIAL DRIVEWAY.

THE FOLLOWING IS BASED ON I.E.S. DESIGN CRITERIA

THE 9,500 LUMEN POLE SPACING IS BASED ON 0.4 FOOTCANDLE FOR LOCAL RESIDENTIAL STREETS. THE LUMINAIRE SHALL HAVE A 26 FOOT MOUNTING HEIGHT, SHALL BE (A.N.S.I. - I.E.S.) MEDIUM FULL-CUTOFF, TYPE III AND EQUIPPED WITH A 100 WATT, HIGH PRESSURE SODIUM VAPOR LAMP.

THE 22,500 LUMEN POLE SPACING IS BASED ON 0.9 FOOTCANDLE FOR COLLECTOR - INTERMEDIATE STREETS. THE LUMINAIRE SHALL HAVE A 30 FOOT MOUNTING HEIGHT, SHALL BE (A.N.S.I. - I.E.S.) MEDIUM FULL-CUTOFF, TYPE III AND EQUIPPED WITH A 150 WATT, HIGH PRESSURE SODIUM VAPOR LAMP.

SPECIAL NOTES:

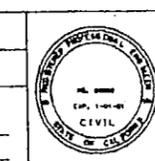
STREET NAME	WIDTH OF SIDEWALK	CURB TO CURB WIDTH
BURHAN BLVD	6'	84'
DESTINY AVENUE	5'	40'
KIM LANE	5'	36'

- LEGEND**
- 12 - ● PROPOSED 9,500 LUMEN (100 WATT) H.P.S.V. LAMPS ON CONCRETE POLES.
 - 4 - ● PROPOSED 22,500 LUMEN (200 WATT) H.P.S.V. LAMPS ON CONCRETE POLES.
 - EXISTING STREET LIGHT. TYPE OF POLE, SIZE OF LAMP AND POLE NUMBER AS INDICATED.
 - ▭ PROJECT BOUNDARY.

NO.	REVISIONS	REVISED BY	APPROVED BY	DATE

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
APPROVAL FOR INSTALLATION BY THE
SOUTHERN CALIFORNIA EDISON COMPANY

BY _____ R.C.E. NO. _____ DATE: _____



Centerline Engineers
Traffic and Lighting

888 South Fremont Avenue
Foothill, CA 91043-1337
(626) 200-1774

ENGINEER NAME _____ DATE _____

STREET LIGHTING PLAN
COUNTY OF LOS ANGELES
TRACT NO. 00000

SCALE: 1" = 60' DATE: 1-01-01 SHEET 1 OF 1