TABLE OF CONTENTS

SECTION 14

STREET LIGHTING AND TRAFFIC SIGNAL DESIGN STANDARDS

14.1 GENERAL – STREET LIGHTING

This section describes typical design practices for new or modified street lighting systems within the City of Sacramento. This includes street lights proposed for infilling existing residential and commercial areas where required or requested.

Street lighting plans shall indicate, at a minimum, but not limited to, edge of pavement, back of sidewalk, back of curb, existing topography such as fences, street lights, signal poles, planters, pullboxes, fire alarm pedestals, service pedestals, controller cabinets, power poles, median islands and other geometric features and obstructions that may affect the proposed street lighting design. Refer to Appendix B-Drawing Standards.

14.2 DESIGN CRITERA

Street lighting shall be designed in conformance with these standards, the current edition of the City of Sacramento "Standard Specifications", the City of Sacramento "Special Provisions", and the "American National Standard Practice for Roadway Lighting" of the American Standards Institute, except that the minimum horizontal maintained foot-candles for the various street classifications shall be as shown in Appendix A to this section. Data and calculations supporting the requirements shall be submitted for review, or the predetermined design standard included herein shall apply.

14.3 STREET LIGHTS REQUIRED

Street lights shall be required for all lots and parcels being developed or constructed upon unless exempted by Section 14-4. For new or infill subdivision projects, all new street lights shall be the decorative ornamental style unless otherwise approved by the Engineering Services Division. In addition, street lights may be required for lots and parcels containing existing structures which are being improved or altered, depending on the nature and extent of the work. If new curb, gutter and sidewalk is installed, street lights are required. Illustrations of City approved Standard Street lights of Type A, Type B, and the Decorative Ornamental Style I and Style II are shown on Plate 14-1 and thru 14-4 in Appendix A to this section.

14.4 STREET LIGHT EXCEPTIONS

Street lights are not required for a single residence. Streetlights are required for commercial apartment complexes unless otherwise determined by the City Engineer.

14.5 DEVELOPER'S RESPONSIBILITY

Existing street lights which must be relocated or repositioned as a result of the construction of new streets or driveways into a residence or development shall be the responsibility of the homeowner or developer.

14.6 UTILITY COMPANY APPROVAL

A written notice from the serving utility company, stating that line clearances and service has been checked and are adequate, shall be submitted to the Engineer for all developments.

14.7 STREET LIGHT DESIGN DETAILS

14.7.1 Intersections

Intersections shall have at least one street light.

14.7.2 Cul-de-sacs

All cul-de-sacs shall have a street light within the bulb. The location of the street light within the bulb shall conform to Plate 14-5 in Appendix A to this section.

14.7.3 Downtown Areas

The number of streets lights designed within the downtown areas shall be the following:

- Residential areas shall have a total of three (3) ornamental street lights per side, per block
- Commercial areas shall have a total of four (4) ornamental street lights per side per block

14.7.4 Spacing Guidelines

Maximum street lighting spacing, measured along the street centerline, shall conform to the recommended design guideline in Appendix A to this section.

The proposed location of the street light poles shall conform to Plate 14-6 thru Plate 14-26 in Appendix A to this section.

The City's engineer may approve special designs if the character of the surrounding neighborhood warrants such a layout. The Design engineer shall provide lighting calculations supporting compliance with the required minimum foot-candle level as indicated on the tables shown on Plates 14-6 through Plate 14-26.

14.7.5 Street Light Poles

All Type A and B Street light poles shall be of galvanized steel. All Decorative Ornamental street light poles shall be aluminum. All pole construction and materials shall conform to the standards outlined in the "Standard Specifications", the latest adopted version of the "Special Provisions" and as shown on Plates 14-1 thru 14-4, in Appendix A to this section. Where a conflict occurs between the "Standard Specification" and the "Special Provisions", the "Special Provisions" shall take precedence.

14.7.6 Luminaries

The type of street light and the appropriate lamp wattage shall be specified on the plans. The luminaire type shall be high-pressure sodium (HPS) with internal ballasts:

- 100W HPS coated lamp for Decorative Ornamental
- 100W HPS lamp for Type B, Post Top
- 200W HPS lamp for Type A, Mast Arm

The circuit number and the lighting distribution pattern, ie, Type I or Type II, for each luminaire shall be specified on the plans. Typically, a Type III distribution is used. Type V distribution is typically applied at corners or in cul-de sac. Refer to Section 14.7.2 and Plate 14-5.

14.7.7 Service/Luminaire Schedule

All street lighting systems shall have underground service provided to an unmetered service pedestal for street lights only (metered services for traffic signal – refer to section 14.15). Service points shall be provided within a utility easement immediately adjacent to or within the right-of-way and shall be open and easily accessible to the street frontage.

All services shown shall have a designated service number issued by the City of Sacramento Department of Transportation - Electrical Section. In addition, all services will indicate the circuit numbers and the quantity of lights served for each circuit number, and the location of the service.

14.7.8 Pullboxes

All pullboxes shall be shown and identified on the plans. Pullboxes shall be installed at locations where more than two conduit runs intersect, at critical angle points where shown on the plans, conduit runs more than 200 feet long for power and/or lighting and 400 feet long for fiber and/or communications, and at such locations as directed by the Engineer. A No. 5 pullbox shall be the standard unless otherwise noted on the plans.

Pullboxes shall not be located within driveways or commercial entrances. It shall be the developer's responsibility to relocate, repair, and/or replace existing pullboxes and wiring to the City's satisfaction, should a conflict arise.

14.7.9 Conductors

All conductors shall be identified on the plans indicating the quantity and the size. Unless otherwise specified, all conductors shall be, single conductor rated for 600V with THW insulation, stranded copper, sized in accordance with these standards and the latest adopted version of the National Electric Code.

The conductor size from the Utility Company's designated service point to the City's service pedestal shall be No. 1 A.W.G. with a No. 6 A.W.G. ground conductor in 2" conduit. Conduit material for service runs shall be schedule 40 PVC for underground runs and rigid galvanized steel (RGS) for above ground applications.

All conductors used for street lighting shall be No. 6 A.W.G. with No. 10 A.W.G. ground conductors.

14.7.10 Voltage Drop

The allowable voltage drop along each circuit shall not exceed the percentages shown below, based on a nominal service voltage of 120 volts:

- 5% for 100W luminaries
- 7% for 200W luminaries

If the circuit has a mixture of 100W and 200W luminaries on one circuit, then the voltage drop shall be limited to 5% for that circuit. Calculations shall be submitted, in table form, to verify compliance with the design criteria for every circuit. The calculations shall include the total load, in amperes, of each circuit at the service pedestal and the associated

voltage drop for that circuit. Refer to Plate 14-27, in Appendix A of this section.

14.7.11 Photo Cell

A photocell is required for each service for the lighting system, it shall be connected to the service can with three No. 12 A.W.G. A single twist-lock receptacle suitable for SMUD photocell or a "button" photocell for Ornamentals shall be provided on the luminaire nearest to the service point for each service. As an alternate for Ornamentals, the photocell can be mounted inside the service pedestal.

14.7.12 Conduit

All conduit runs, including the size, shall be shown and identified on the plans. The conduit size and fill shall be determined according to the latest adopted version of the National Electrical Code, with the minimum conduit size of one and one half inch (1 ½") diameter. Main runs shall be 2" conduits, whereas, laterals shall be 1½" conduits. Larger size conduits may be required at the discretion of the City.

14.7.13 Electrical System

Control and switching equipment and fusing of all circuits shall meet the requirements of the National Electrical Code, the Basic Electrical Regulations, Title 24, Part 3, of the California Administrative Code, the rules of the National Board of Fire Underwriters, and the City of Sacramento.

14.8 MASTER PLANNING

Master planning is the process of laying out street light locations between control points. Control points are defined as the proposed street light locations at the street intersections in accordance with Section 14.7 and existing street lights. The purpose for master planning is to end up with an overall uniform street light system meeting the design requirements. The procedure for master planning is outlined as follows:

1. Determine the nearest intersections each way from the street light locations required. Determine the location of the street lights at these intersections in conformance with these design standards.

2. Determine the existence of any City owned and maintained street lights situated between the adjacent intersections above for inclusion into the overall design.

3. Determine the distance between the adjacent designed intersection street lights above and/or adjacent existing street lights, whichever are nearest to the street light locations being determined.

4. Divide the distance into the most possible equal spaces between lights that can be obtained in conformance with the spacing requirements herein.

5. Compare the light locations to intersecting property line, driveways, pedestrian lanes and utility obstructions as follows:

   a. If the location falls close to a property line and the street light location can be adjusted to the property line while staying within the maximum spacing allowed, then the adjustment should be made.

   b. Generally, street lights should be situated at intersecting property lines for residential lots with minimal frontage (75 feet or less). The light spacing may have to be unbalanced, with additional lights being added to attain this and still comply with the maximum spacing allowed.

   c. Street light locations shall be adjusted to miss driveways and existing utility obstructions by five feet, measured from the base of the pole.

14.9 GENERAL - TRAFFIC SIGNAL DESIGN

This section describes typical standards practices for new or modified traffic control systems within the City of Sacramento. It covers typical scenarios encountered in design and serves as a guideline. The material contained herein is a supplement to the City of Sacramento's "Standard Specifications", "Special Provisions", and CalTrans Traffic Manual, latest adopted CalTrans "Standard Plans" and "Standard Specifications", and other current design policies.

Traffic Signal plans shall indicate, at a minimum, but not be limited to, edge of pavement, back of sidewalk, back of curb, existing topography such as fences, street lights, signal poles, planters, pullboxes, fire alarm pedestals, service pedestals, controller cabinets, power poles, median islands and other geometric features and obstructions that may affect the proposed traffic signal design. In addition, new or replaced curb ramps shall indicate the slope and the flow lines. Refer to Appendix B-Drawing Standards.

14.9.1 Developer Conditioned Traffic Signals

Developers who are required to install traffic signals as part of the off site improvements, shall design the signal in conformance to the standards in section 14.10, and the latest adopted version of the City's "Special Provisions".

All traffic signal plans designed by the Developer's consultant shall be submitted for review and approval. The submittal shall include pertinent sections of the "Special Provisions" specific to the traffic signal equipment to be installed. The submitted plans shall conform to Appendix B-Drawing Standards. In addition, signal timing for the intersection shall be submitted in a format approved by the City's Traffic Engineering section.

14.10 DESIGN STANDARDS

Standard guidelines for traffic signal design are obtained from the following reference books:

1. Federal Highway Administration, "Traffic Control Devices Handbook."
2. Manual on Uniform Traffic Control Devices (MUTCD).
3. Department of Transportation (CalTrans) – California Supplement to MUTCD
4. National Electrical Manufacturer's Association (NEMA) – "Traffic Control Devices."

5. Department of Transportation (CalTrans) – "Standard Specifications", "Standard Plans" – latest adopted version.

6. National Electrical Code (NEC) Book.

7. City of Sacramento "Standard Specifications" – latest adopted version.

14.11 CONDUIT

Installation of conduit shall conform to the requirement of the City "Standard Specifications". The types of conduit to be used unless the Engineer approves an alternate material are:

1. Rigid Steel Conduit – hot dipped galvanized
2. Rigid Non-Metallic Conduit – Schedule 40 PVC

The choice of conduit size for traffic signal projects shall conform to the following criteria:

14.11.1 Conduit Size

Unless otherwise approved, 1-1/2" conduit is the minimum size used for traffic signal and street lighting conduits for a traffic signal system. The size of conduits used for various applications shall be as follows:

1. Signal Wires – 2" minimum
2. Street Crossing – 3"
3. Signal Pole to Pullbox – 2"
4. Detector Cables – 1-1/2" minimum
5. Controller Cabinet to Pullbox – (2) 4"
6. Interconnect Cable (6 or 12 pair # 19) – 2"
7. Fiber Optic Cable – 2"

14.11.2 Conduit Fill

The National Electric Code limits the portion of the conduit's cross section that can be occupied by conductors to the following:

One Conductor	53%
Two Conductors	31%
Three or More conductors	40%

Conduit fills over the limits indicated herein must be approved by the Engineer.

14.11.3 Conduit Layout

Conduit layout for a new signalized intersection shall be per the layout guide shown on Plate 14-28.

14.12 CONTROLLER UNIT AND CABINET

The controller unit shall be as specified in the "Special Provisions" for intersections within the City. In general, the cabinet used for the City's controllers at new or modified installations shall be the Type R cabinet. Intersections on State Routes or selected intersections involved with light rail shall have a State and light rail approved controller unit in conformance with CalTrans specifications. The cabinet used for the State approved controller shall be the Type 332 cabinet in conformance with CalTrans Specifications. Contact the City's DOT – Electrical Section for the complete "Special Provisions".

14.13 PULLBOXES

Pullboxes shall be No. 5 minimum for traffic signal projects unless otherwise specified. In general, a No. 6 pullbox should be used when:

1. Four or more conduits enter the pull box.
2. At conduit junction points located at major street corners.

Pullboxes shall not be placed:

1. Within the ramp and landing areas of a handicapped ramp;
2. On driveways; or
3. In planter areas unless approved by the Engineer.

Pullboxes with steel covers, conforming to CalTrans Standard Plans and Specifications, shall be used when pull boxes have to be placed in shoulders or in areas where there is no sidewalk. Pull boxes with steel covers shall be designated on the Plans with the symbol (T) next to the pull box according to CalTrans Standard Plans and Specifications.

Traffic signal controller pull box shall be N44 or an approved equal.

14.14 EXISTING EQUIPMENT

Where existing systems are to be modified, any existing equipment to be removed and not used shall be salvaged. The Plans or "Special Provisions" shall indicate that the Contractor is to deliver the salvaged equipment to Corporate Center South, 5230-24th Street, Sacramento, California. Conductors removed from existing equipment shall not be salvaged.

14.15 SERVICE

Service equipment enclosures and meter shall meet the requirements of the serving utility. Service wiring diagrams differing, or not shown on the traffic signal Standard Plan Sheets shall be shown on the electrical plans and shall meet the requirements of the servicing utility. It is required to field review the proposed service point locations with the appropriate utility representation. Arrangement shall be made with the servicing utility to establish or provide a service point for the installation during the design stage or when the preliminary plans are completed.

14.16 VEHICLE SIGNAL FACES

All vehicle signal faces shall have louvered backplates. All signal head mounts (vehicular and pedestrian) shall have terminal compartments without terminal strips. Left turn signal faces shall consist of conventional 12" red arrow, yellow arrow and green arrow sections. Signing shall be revamped when an existing left turn signal face with green arrow, circular yellow and red lenses is to be replaced with an all arrow signal face. Left turn signal faces shall be located as close as practicable to the following:

1. One head in line with the center of a one lane left turn approach.

2. One head in line with the stripe between the two lanes of a 2-lane left turn approach.

Mastarm signal heads for through lanes should be located as close as practicable to the following:

1. One signal head shall be placed in line with the lane stripe between the two through lanes for a 2-lane approach.

2. One head in line with the lane stripe between the No. 1 and No. 2 through lanes for a 3-lane approach with protected left turn phase and a separate left turn lane.

3. One face in line with the center of the No. 2 through lane for a 3-lane approach without protected left turn. If a protected left turn is anticipated for the future, one head should be placed three feet into the left turn lane between the No. 2 through lane and the left turn lane. Also, a side tenon should be placed in line with the lane stripe between the No. 1 and No. 2 through lanes for a future face. In anticipation of future conditions, the proper standard that will support the future mast arm length shall be installed with a shorter arm.

4. Two heads, one in line with the lane stripe between lanes No. 1 and No. 2, the second in line with the lane stripe between lanes No. 3 and No. 4 for a 4-lane approach.

All signal head displays for new and/or modified traffic signals shall be 12" LED modules and shall have a full ball appearance.

A minimum of three (3) signal heads should be provided on each approach for each signal phase. The proposed design should comply with MUTCD, at a minimum, unless otherwise directed by the City's Traffic Engineer.

14.17 PEDESTRIAN SIGNAL HEADS

Pedestrian signal heads shall be filled LED, international, hand/walk figure-type in conformance with "State Standard Plans and Specifications"; LED outlines of hand/walk are prohibited. Pedestrian signal heads at crosswalks that are 60 feet or greater shall be the countdown type, and as directed by the City's Traffic Engineering Section.

For modification projects, all existing pedestrian signal heads shall be examined to see if they should be replaced. In general, for modification projects, any existing neon or incandescent pedestrian signal heads should be replaced with the LED type. Pedestrian signal heads shall be placed on the pole nearest the crosswalk. Pedestrian signal heads should be located where there is minimum visibility interference from vehicles stopped at the crosswalk or limit line.

14.18 VIDEO DETECTION SYSTEM

Video detection shall be specified in lieu of inductive loops where feasible for new and/or modified traffic signal installations or for loop maintenance replacement. Use of this system shall be for the front and middle vehicle detection; advance (rear) detection of vehicles will be by radar, or as directed by the City's traffic engineer.

14.19 MODULATED LIGHT SIGNAL DETECTION SYSTEM

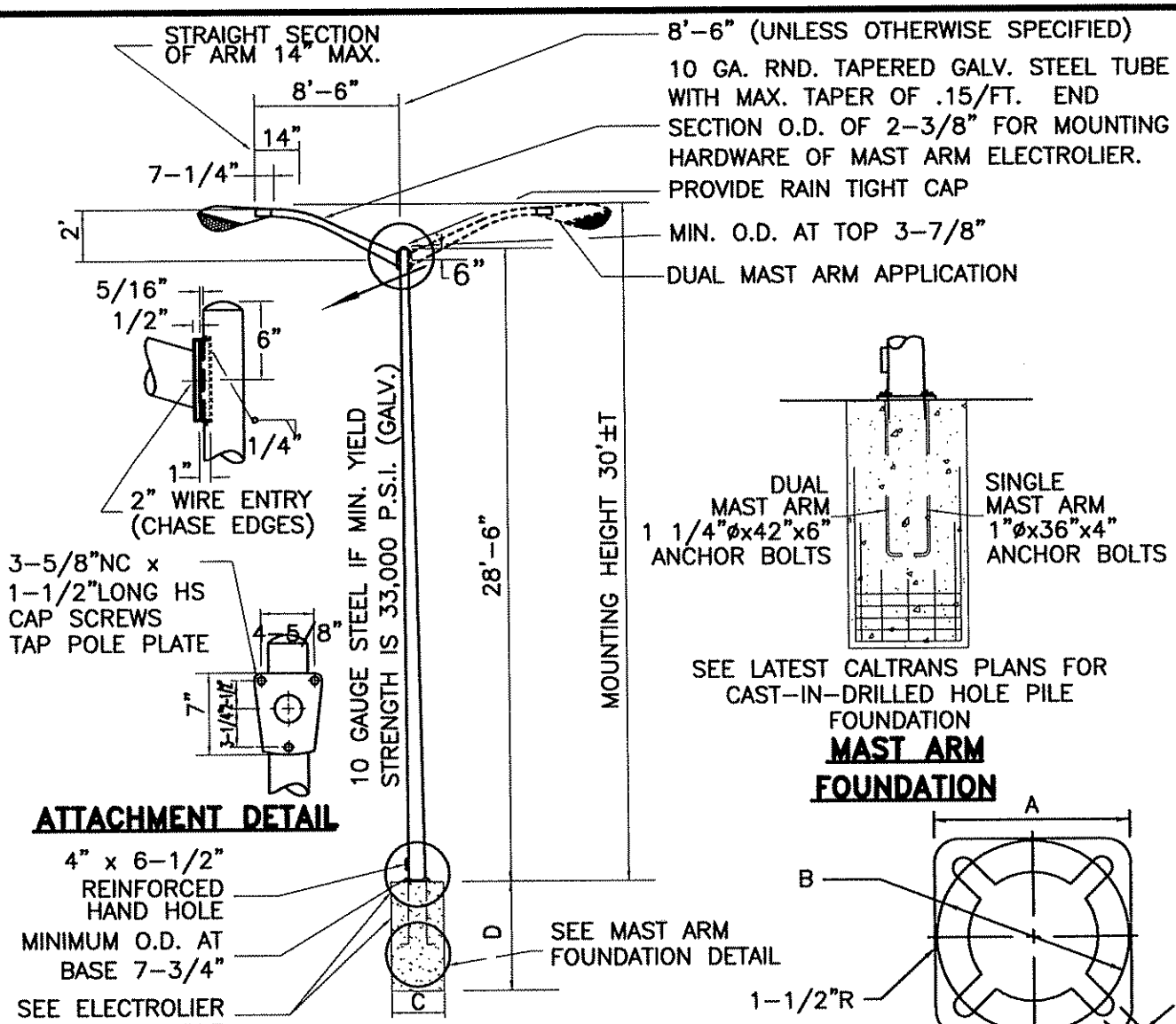
All new and modified traffic signal installations shall have a modulated light pre-emption device installed. Typically, all four directions will have the modulated light detection device installed on the signal mast arm. These devices shall be located in line with the number one lane. The pre-emption convention is as follows: (Refer to Plate 14-29)

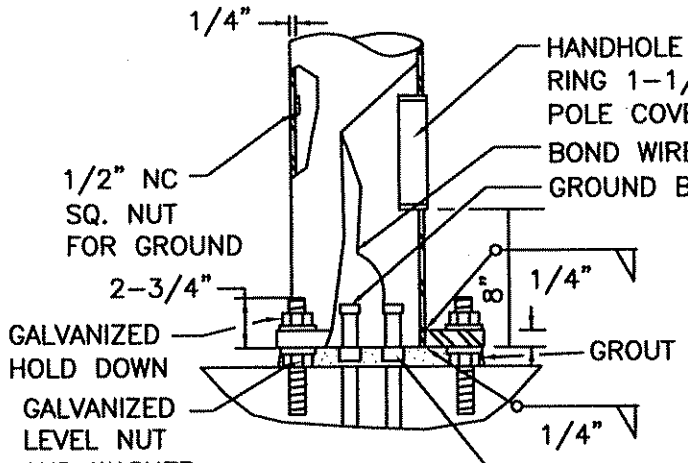
- EVA = Phases 1, 6 (eastbound direction)
- EVB = Phases 2, 5 (westbound direction)
- EVC = Phases 3, 8 (northbound direction)
- EVD = Phases 4,7 (southbound direction)

APPENDIX A TO SECTION 14

APPENDIX A TO SECTION 14

Appendix A





BASE DETAIL

TYPE OF ELECTROLIER	BASE PLATE			BASE PLATE	
	A	B	T	C	D
MAST ARM	11-1/2"	11"	1"	30"	5'
DUAL MAST ARM	12"	12"	1"	30"	7.2'

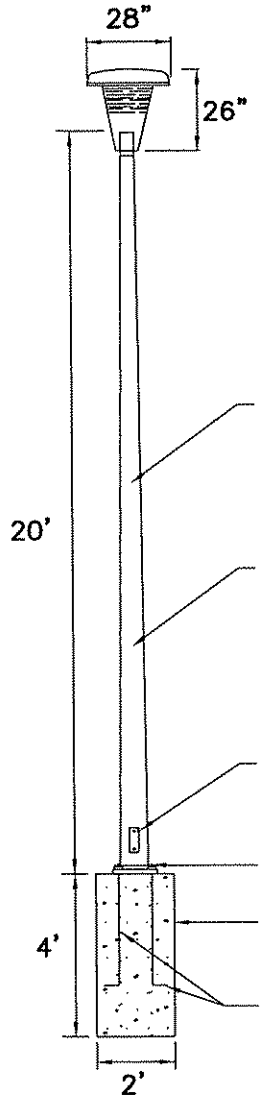
REV.	DATE	DESCRIPTION

Department of TRANSPORTATION City of Sacramento

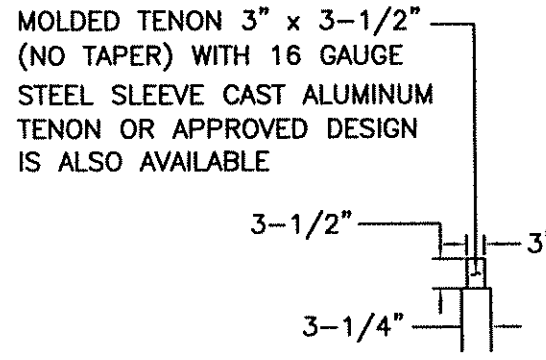
TYPE A MAST ARM LUMINAIRE AND DETAILS

APPROVED BY: [signature] SCALE: NONE

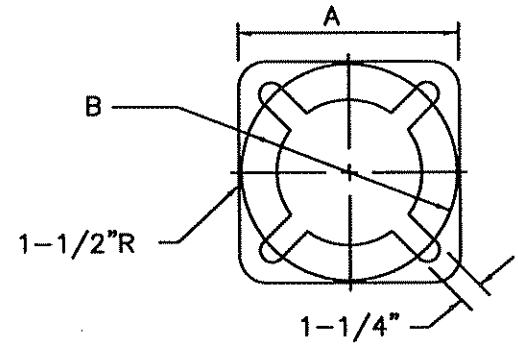
DATE: 12/19/06 PLATE: 14-1



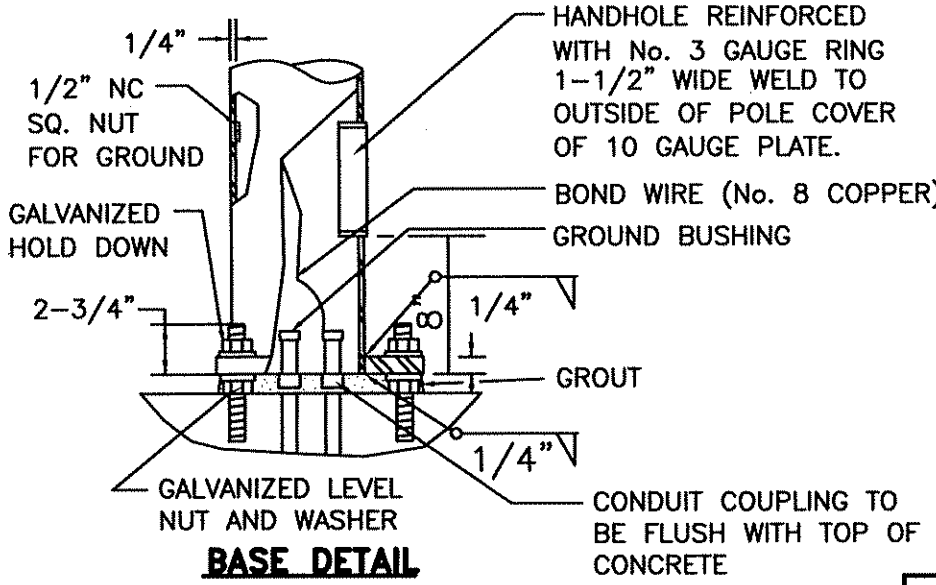
TYPE OF ELECTROLIER	BASE PLATE	
	A	B
POST TOP STEEL	10"	9-1/2"



TENON DETAIL



BASE PLATE



BASE DETAIL

REV.	DATE	DESCRIPTION

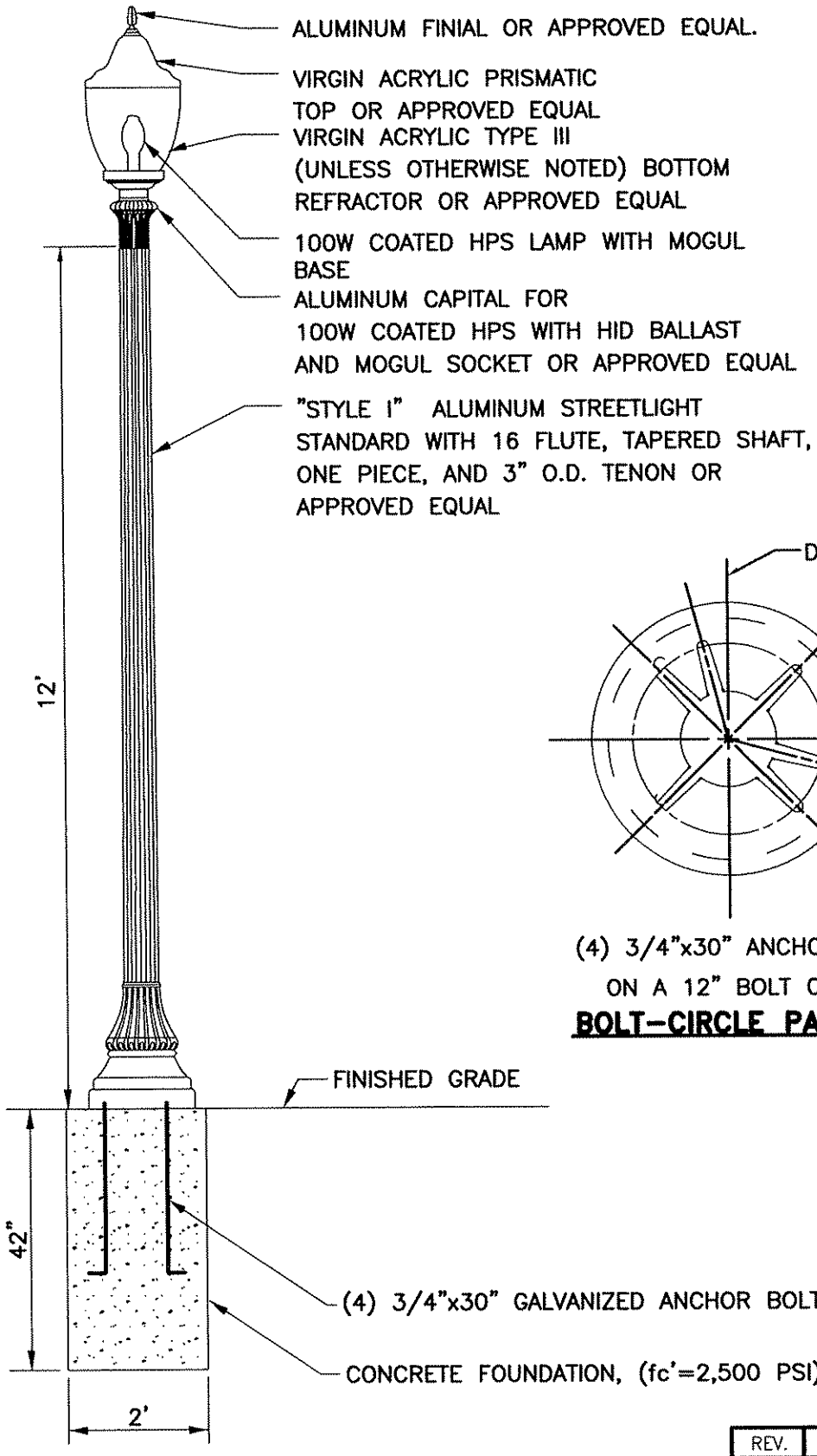
Department of TRANSPORTATION City of Sacramento

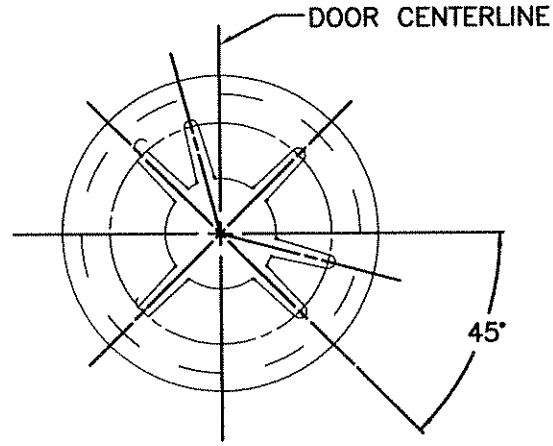
TYPE B POST TOP LUMINAIRE AND DETAILS

APPROVED BY: [signature] DATE: 12/18/06

SCALE: NONE

PLATE: 14-2





(4) 3/4"x30" ANCHOR BOLTS
ON A 12" BOLT CIRCLE

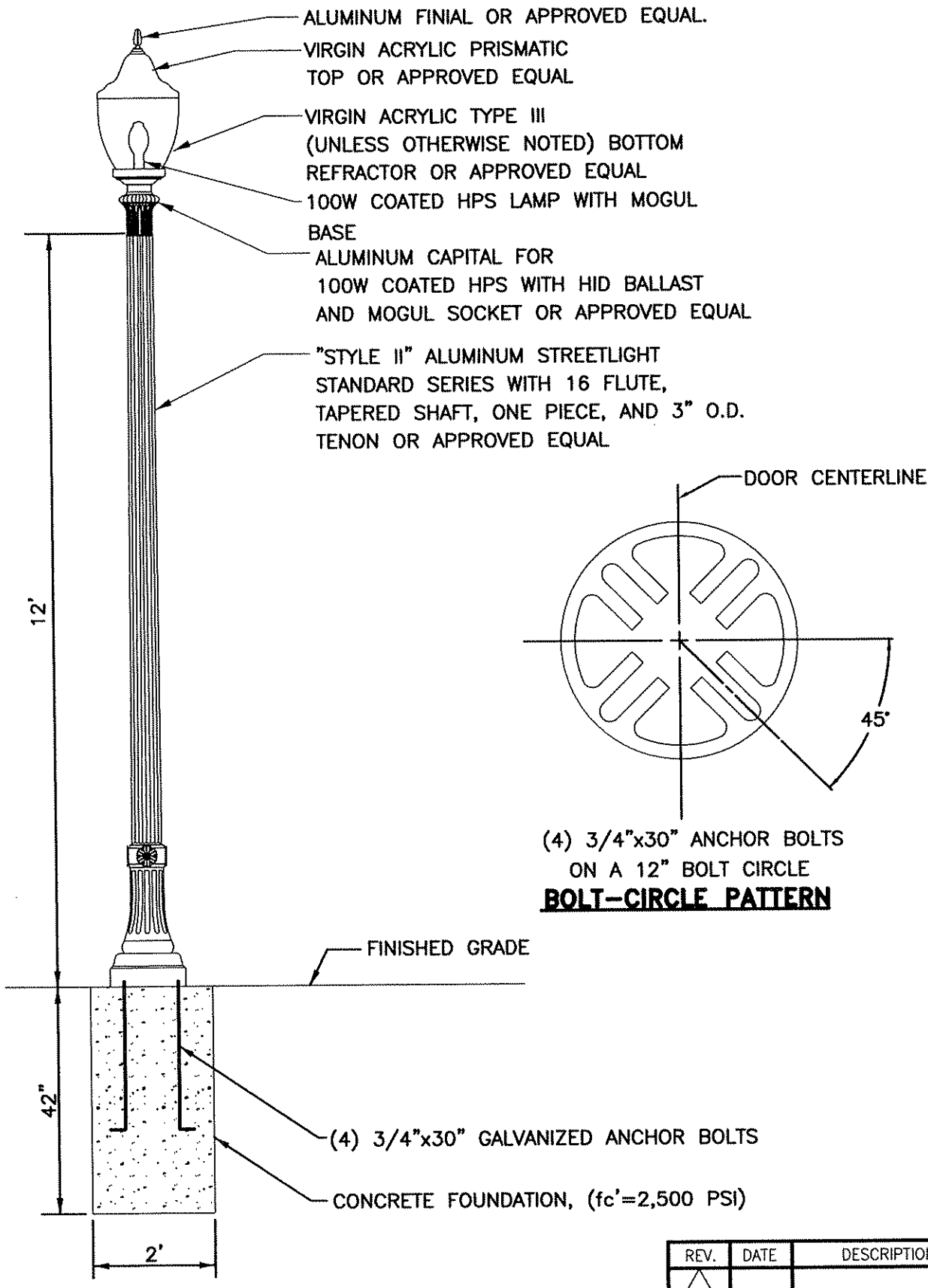
BOLT-CIRCLE PATTERN

REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

ORNAMENTAL STREETLIGHT STYLE I

APPROVED BY: [signature] SCALE: NONE
DATE: 12/18/06 PLATE: 14-3



BOLT-CIRCLE PATTERN

REV.	DATE	DESCRIPTION
△		
△		
△		

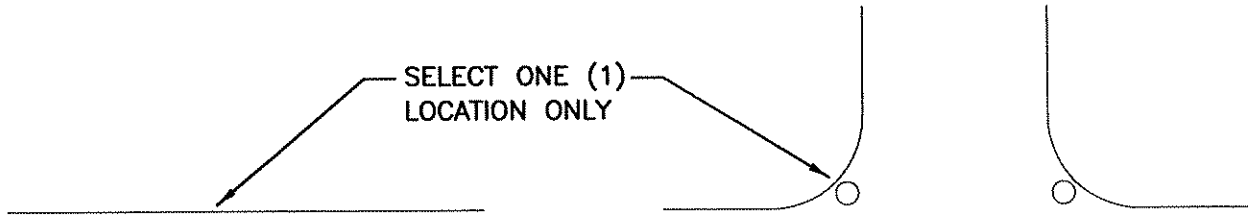
Department of TRANSPORTATION City of Sacramento

ORNAMENTAL STREETLIGHT STYLE II

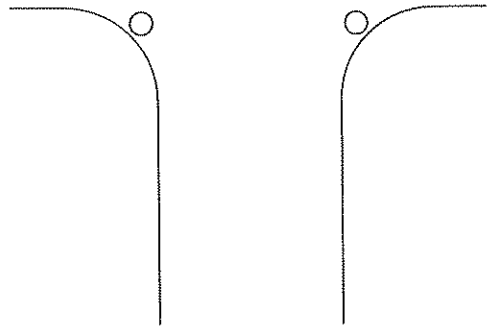
APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-4

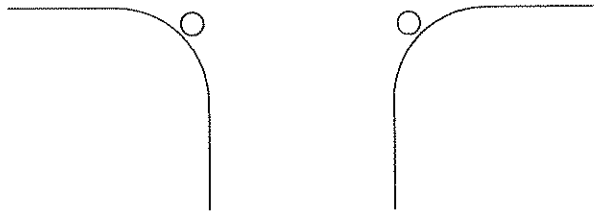
STREET LIGHT PLACEMENT
ON
COLLECTOR & RESIDENTIAL STREETS

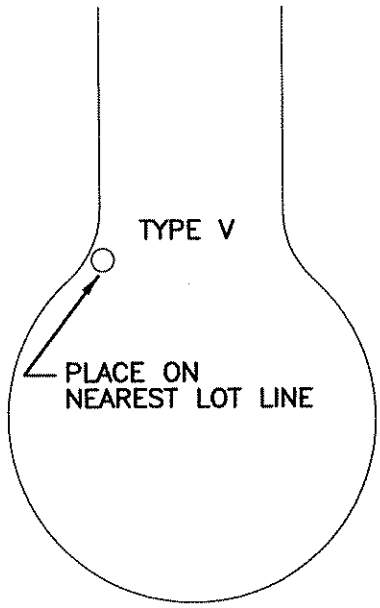


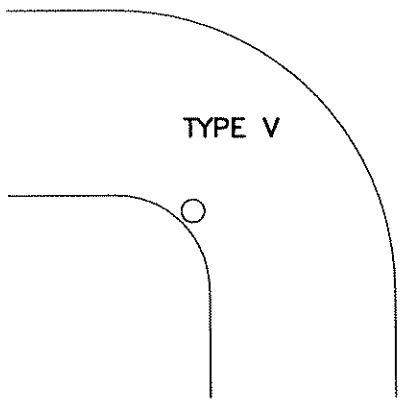
TYPE V



TYPE V







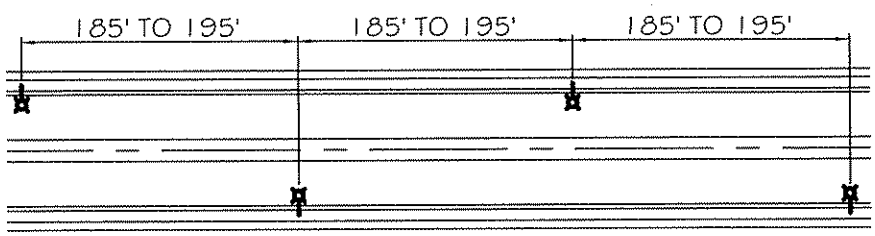
REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

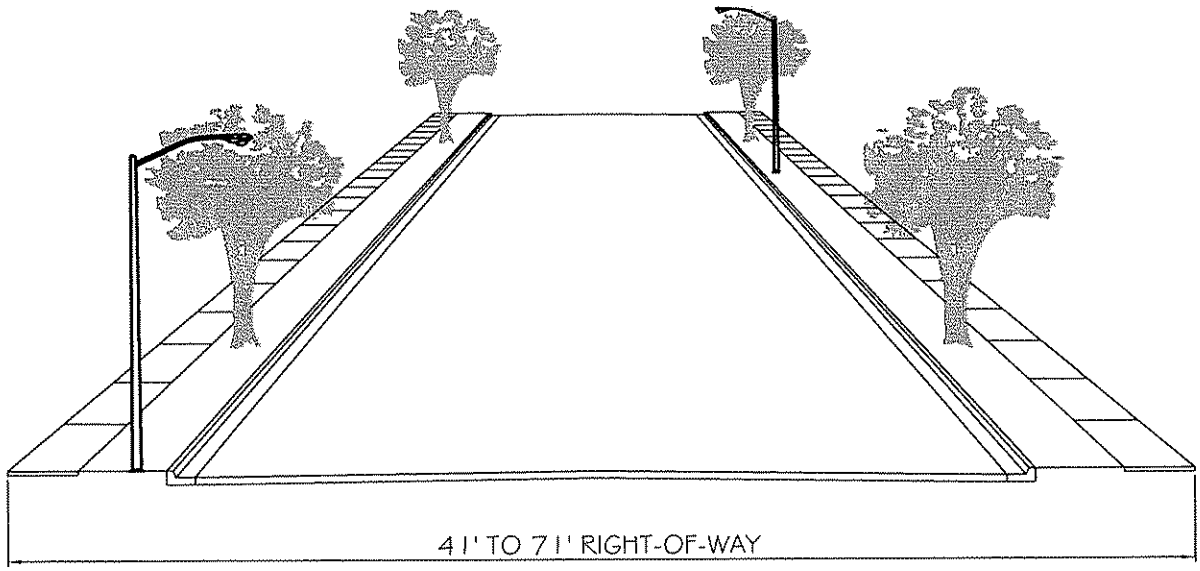
TYPICAL STREET LIGHT LOCATIONS—COLLECTOR AND RESIDENTIAL

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-5



RECOMMENDED DESIGN CRITERIA	
TYPE	MAST ARM (8')
LAMP	HIGH PRESSURE SODIUM
WATTAGE	200 WATT
POLE HEIGHT	28'-6"
COLOR	NON-PAINTED GALVANIZED
GLOBE	MEDIUM SEMI-CUTOFF
SPACING	185' TO 195'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.2 FOOTCANDLES (MIN.)



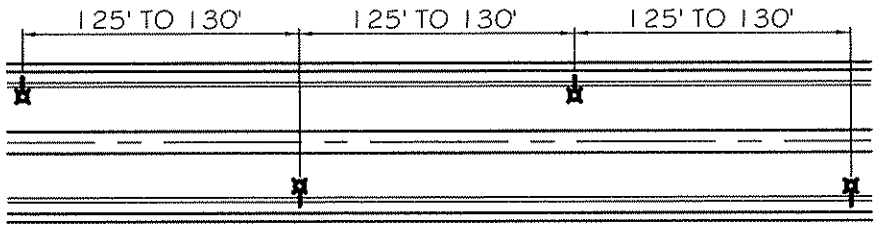
REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

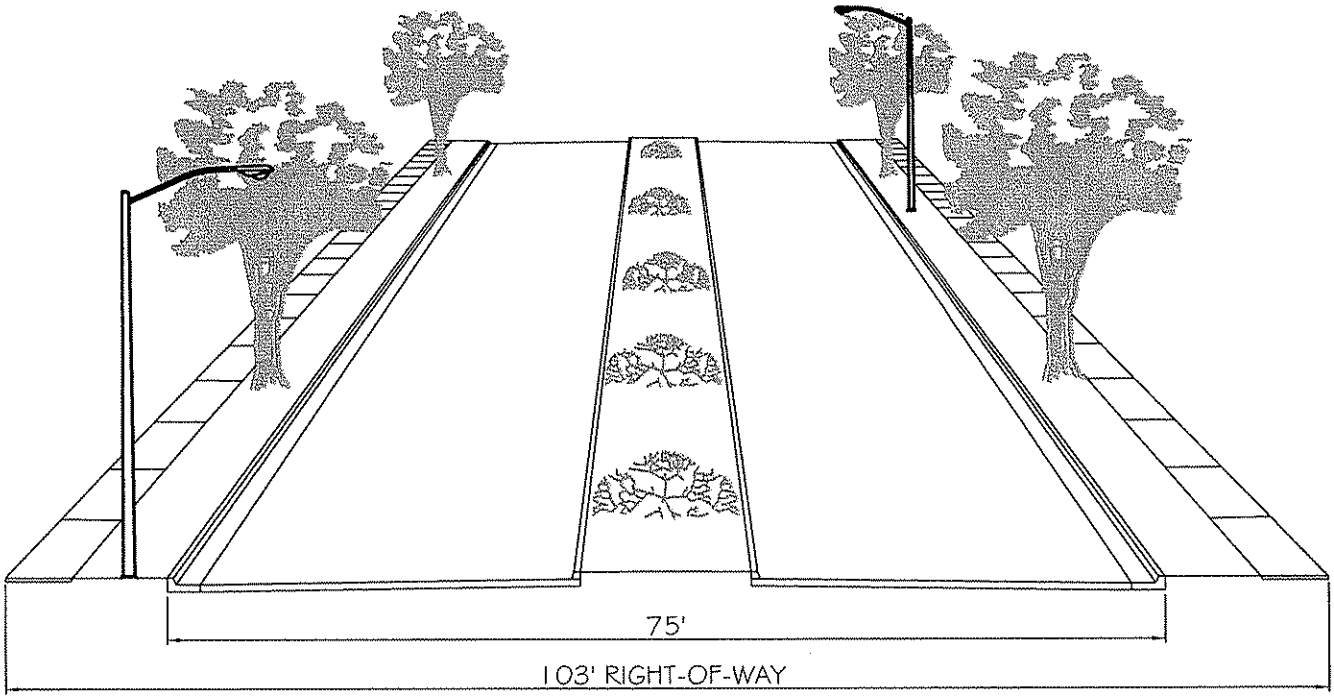
NON-RESIDENTIAL STREET WITH TYPE A 41' TO 71' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-6



RECOMMENDED DESIGN CRITERIA	
TYPE	MAST ARM (10')
LAMP	HIGH PRESSURE SODIUM
WATTAGE	200 WATT
POLE HEIGHT	28'-6"
COLOR	NON-PAINTED GALVANIZED
GLOBE	MEDIUM SEMI-CUTOFF
SPACING	125' TO 130'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.2 FOOT CANDLES (MIN.)



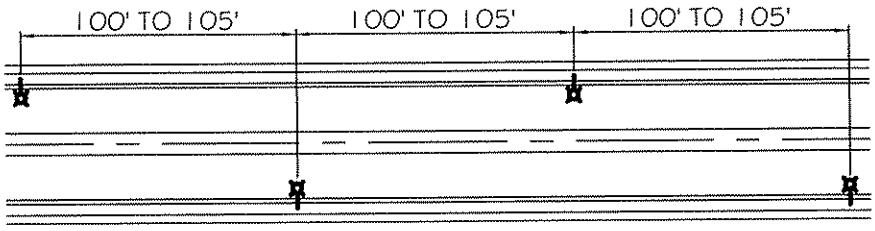
REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

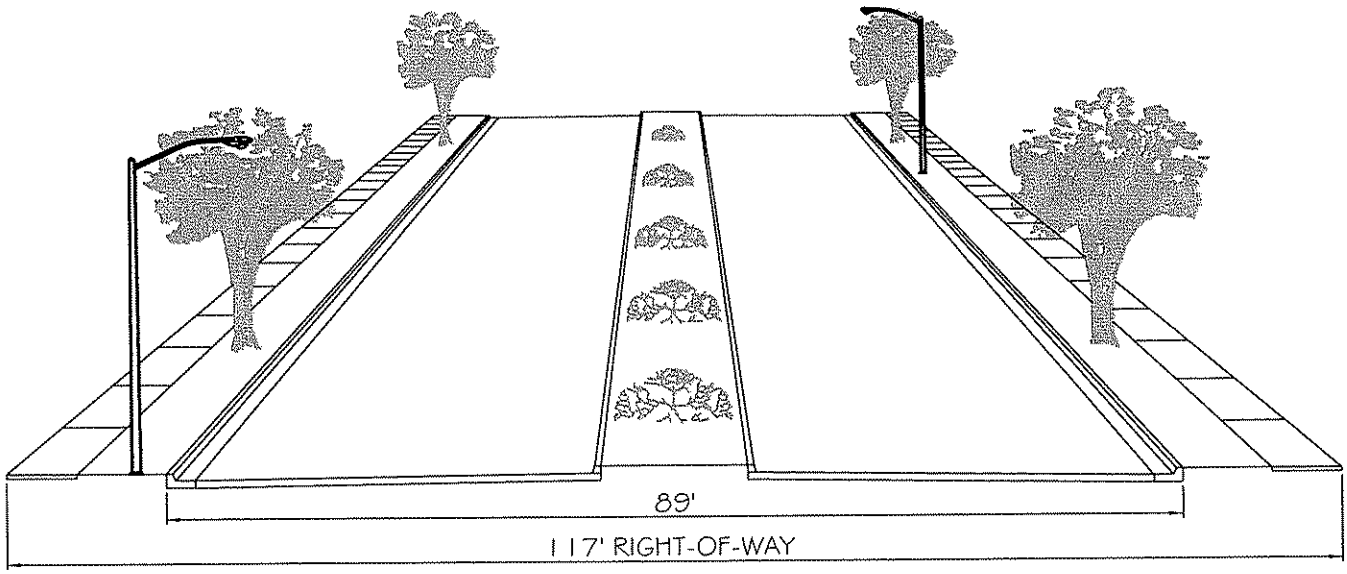
ARTERIAL STREET 103' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-7



RECOMMENDED DESIGN CRITERIA	
	MAST ARM (15')
LAMP	HIGH PRESSURE SODIUM
WATTAGE	200 WATT
POLE HEIGHT	28'-6"
COLOR	NON-PAINTED GALVANIZED
GLOBE	MEDIUM SEMI-CUTOFF
SPACING	100' TO 105'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.2 FOOTCANDLES (MIN.)

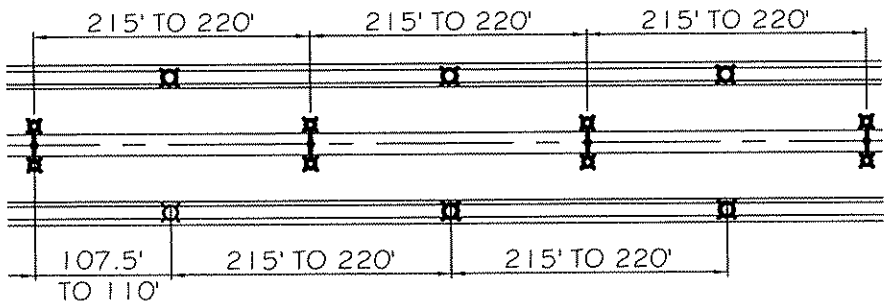


REV.	DATE	DESCRIPTION
△		
△		
△		

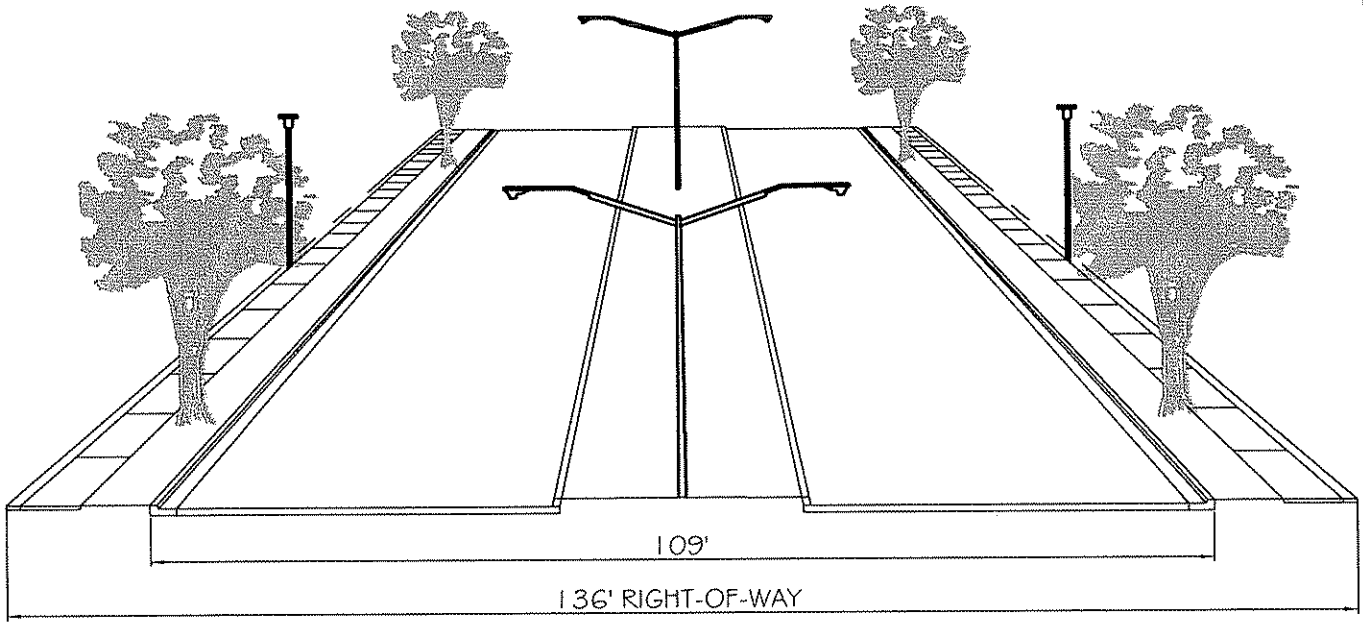
Department of TRANSPORTATION City of Sacramento

ARTERIAL STREET
117' ROW

APPROVED BY: [signature] SCALE: NONE
DATE: 12/18/06 PLATE: 14-8



RECOMMENDED DESIGN CRITERIA		
TYPE	DUAL MAST ARM (15')	POST TOP
LAMP	HIGH PRESSURE SODIUM	HIGH PRESSURE SODIUM
WATTAGE	200 WATT	100 WATT
POLE HEIGHT	28'-6"	20'
COLOR	NON-PAINTED GALVANIZED	NON-PAINTED GALVANIZED
GLOBE	MEDIUM SEMI-CUTOFF	STANDARD PRISMATIC
SPACING	215' TO 220'	215' TO 220'
SPACING PATTERN	CENTERED IN ISLAND	OPPOSITE
DESIGN GUIDELINE	0.2 FOOT CANDLES (MIN.)	



NOTE: THIS DESIGN LAYOUT TO BE USED IF REQUIRED BY THE CITY.

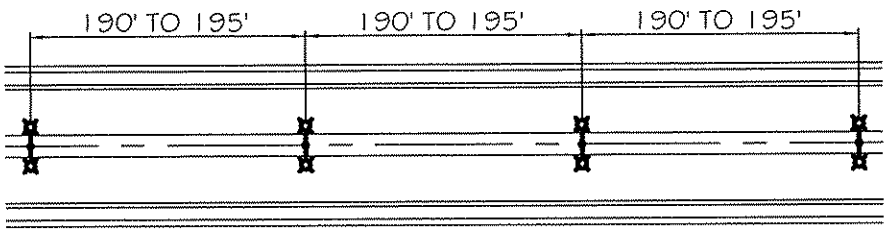
REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

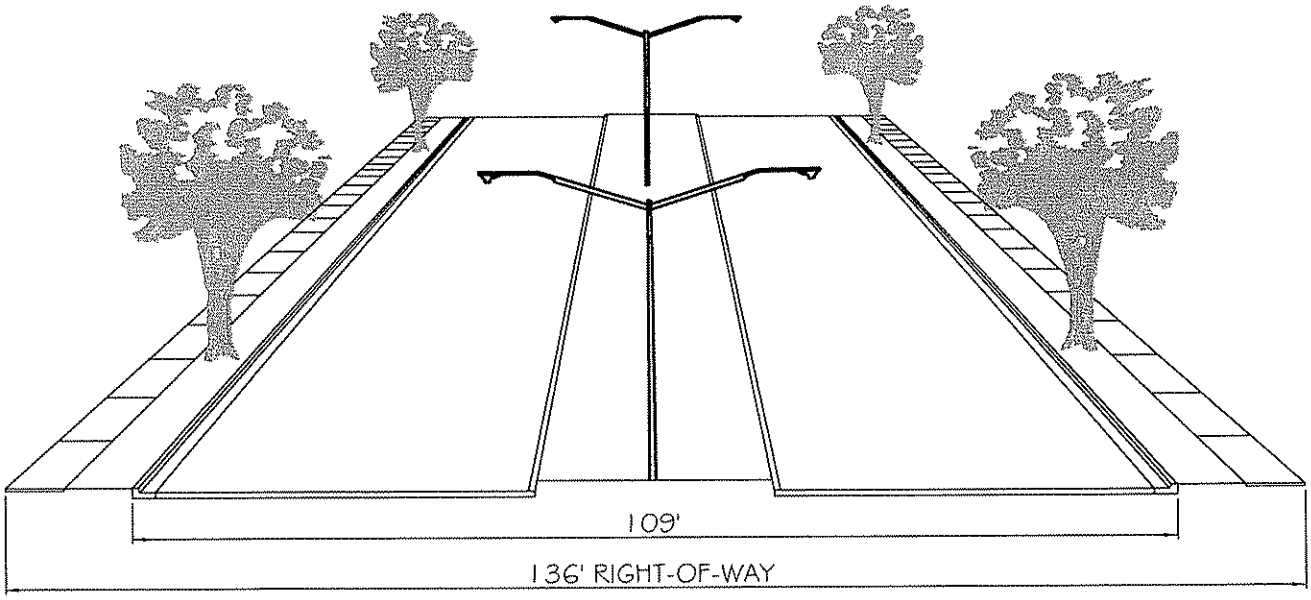
ARTERIAL STREET WITH TYPE A AND TYPE B 136' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-9



RECOMMENDED DESIGN CRITERIA	
TYPE	DUAL MAST ARM (15')
LAMP	HIGH PRESSURE SODIUM
WATTAGE	200 WATT
POLE HEIGHT	28'-6"
COLOR	NON-PAINTED GALVANIZED
GLOBE	MEDIUM SEMI-CUTOFF
SPACING	190' TO 195'
SPACING PATTERN	CENTERED IN MEDIAN
DESIGN GUIDELINE	0.2 FOOTCANDLES (MIN.)



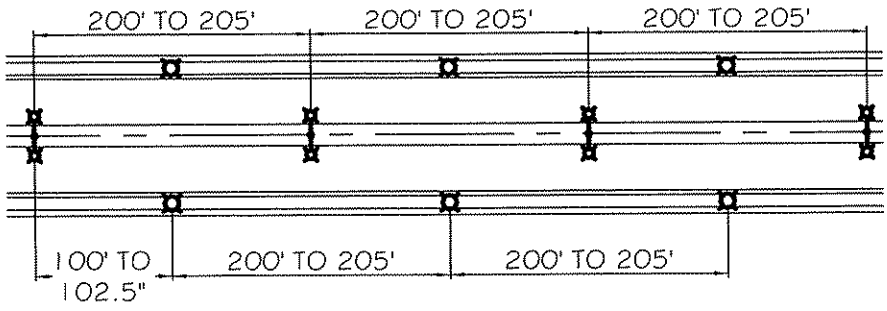
REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

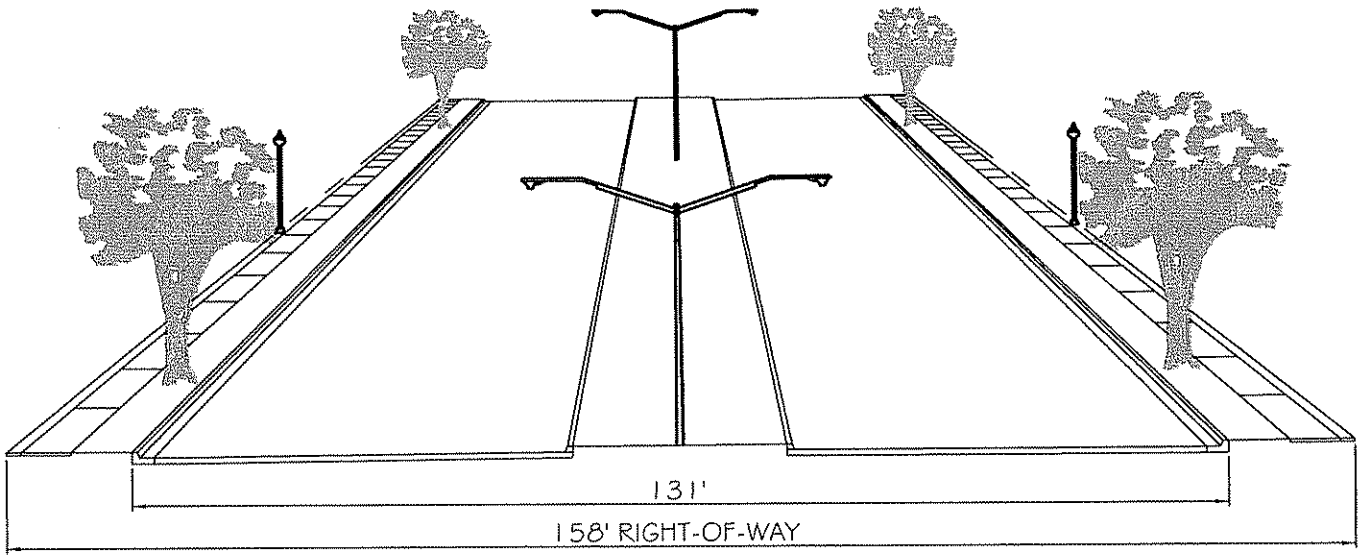
ARTERIAL STREET WITH DUAL TYPE A 136' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/02 PLATE: 14–10



RECOMMENDED DESIGN CRITERIA		
TYPE	DUAL MAST ARM (15')	ORNAMENTAL DECORATIVE
LAMP	HIGH PRESSURE SODIUM	HIGH PRESSURE SODIUM
WATTAGE	200 WATT	100 WATT
POLE HEIGHT	28'-6"	12'
COLOR	NON-PAINTED GALVANIZED	SEMI-GLOSS BLACK OR ELECTROLIER GREEN
GLOBE	MEDIUM SEMI-CUTOFF	'ACORN' (PRISMATIC)
SPACING	200' TO 205'	200' TO 205'
SPACING PATTERN	CENTERED IN ISLAND	OPPOSITE
DESIGN GUIDELINE	0.2 FOOT CANDLES (MIN.)	



NOTE: THIS DESIGN LAYOUT TO BE USED IF REQUIRED BY THE CITY.

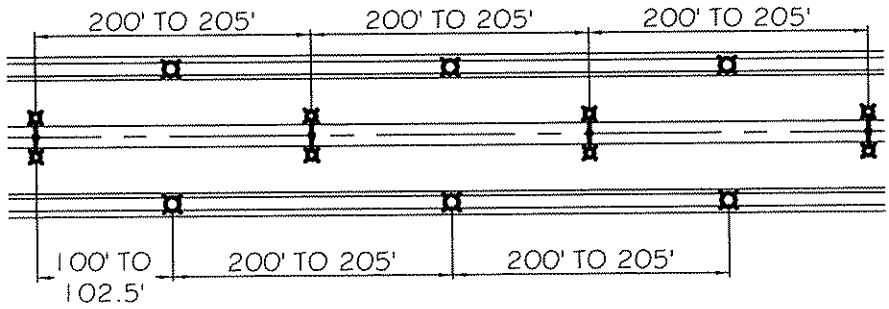
REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

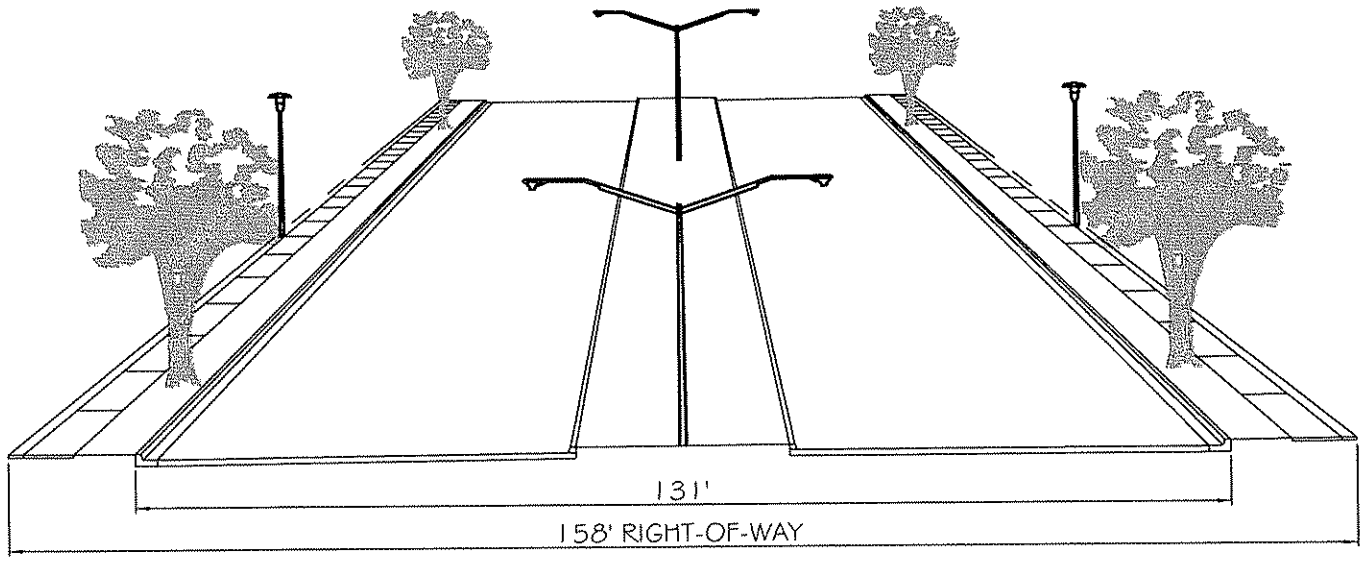
ARTERIAL STREET WITH DUAL TYPE A AND ORNAMENTAL 158' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/19/06 PLATE: 14-11



RECOMMENDED DESIGN CRITERIA		
TYPE	DUAL MAST ARM (15')	POST TOP
LAMP	HIGH PRESSURE SODIUM	HIGH PRESSURE SODIUM
WATTAGE	200 WATT	100 WATT
POLE HEIGHT	28'-6"	20'
COLOR	NON-PAINTED GALVANIZED	NON-PAINTED GALVANIZED
GLOBE	MEDIUM SEMI-CUTOFF	STANDARD PRISMATIC
SPACING	200' TO 205'	200' TO 205'
SPACING PATTERN	CENTERED IN ISLAND	OPPOSITE
DESIGN GUIDELINE	0.2 FOOT CANDLES (MIN.)	



NOTE: THIS DESIGN LAYOUT TO BE USED IF REQUIRED BY THE CITY.

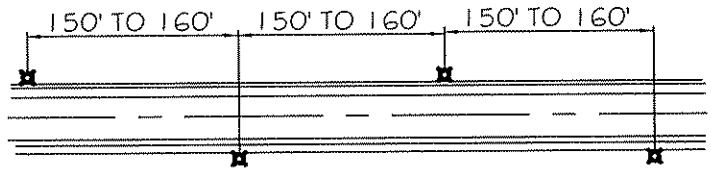
REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

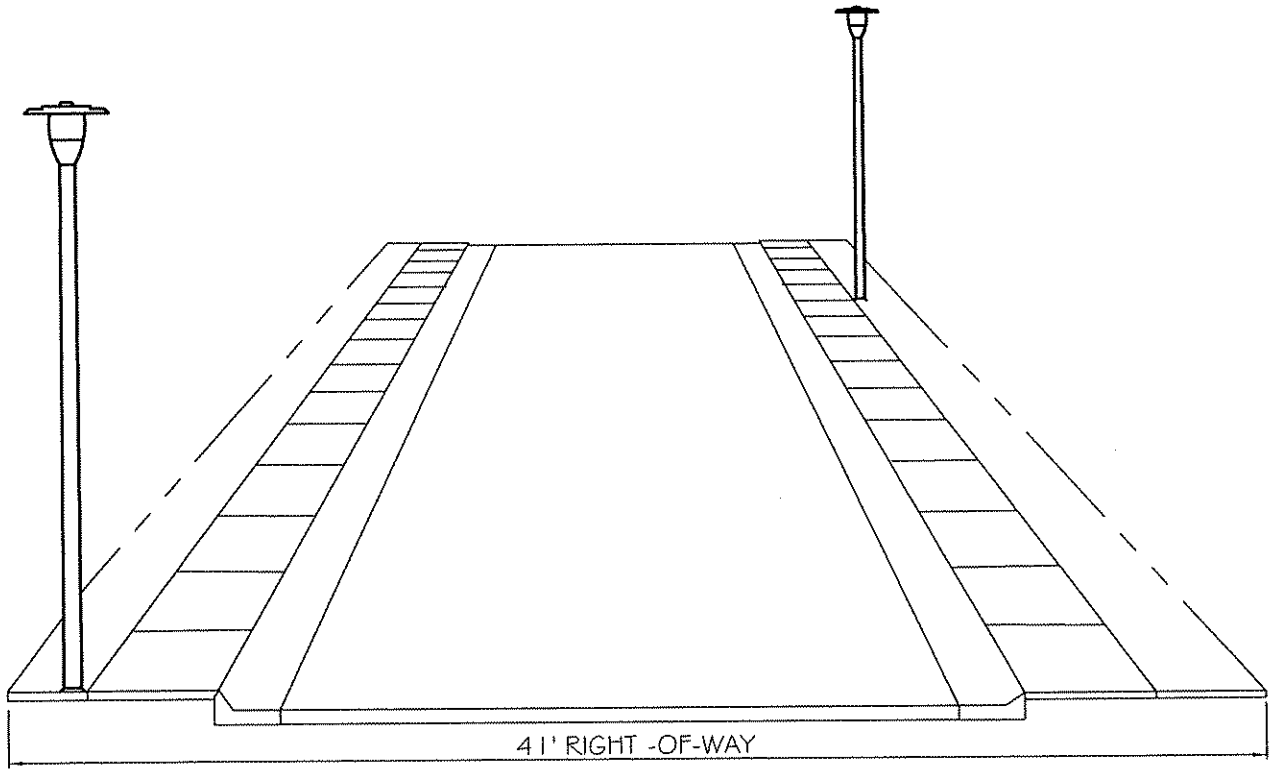
ARTERIAL STREET WITH DUAL TYPE A AND TYPE B 158' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/02 PLATE: 14–12



RECOMMENDED DESIGN GUIDELINE	
TYPE	POST TOP
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	20'
COLOR	NON GALVANIZED
GLOBE	STANDARD PRISMATIC
SPACING	150' TO 160'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOT CANDLES (MIN.)



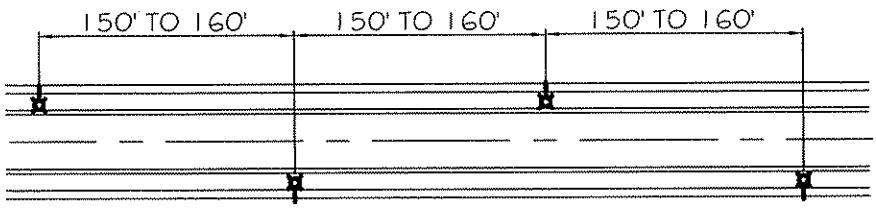
REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

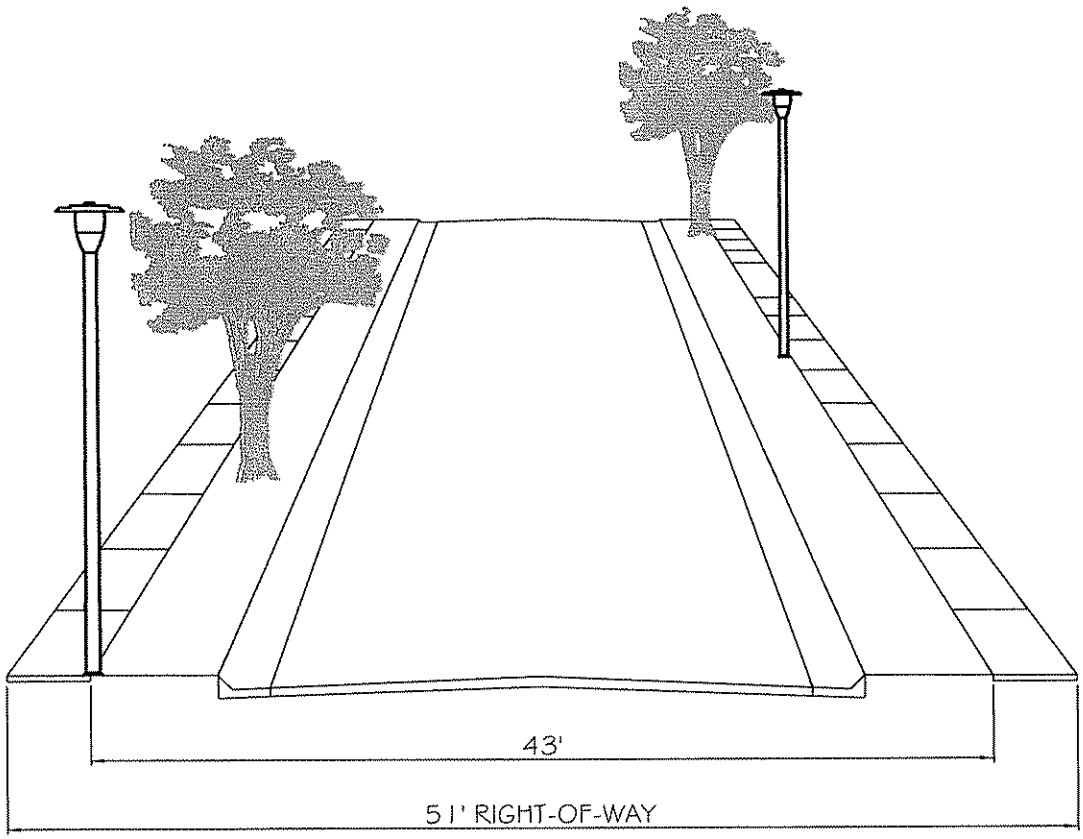
LOCAL RESIDENTIAL STREET TYPE B 41' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-13



RECOMMENDED DESIGN CRITERIA	
TYPE	POST TOP
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	20'
COLOR	NON-PAINTED GALVANIZED
GLOBE	STANDARD PRISMATIC
SPACING	150' TO 160'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOT CANDLES (MIN.)



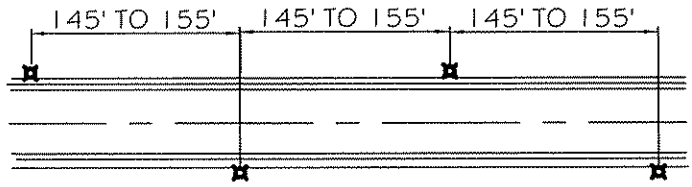
REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

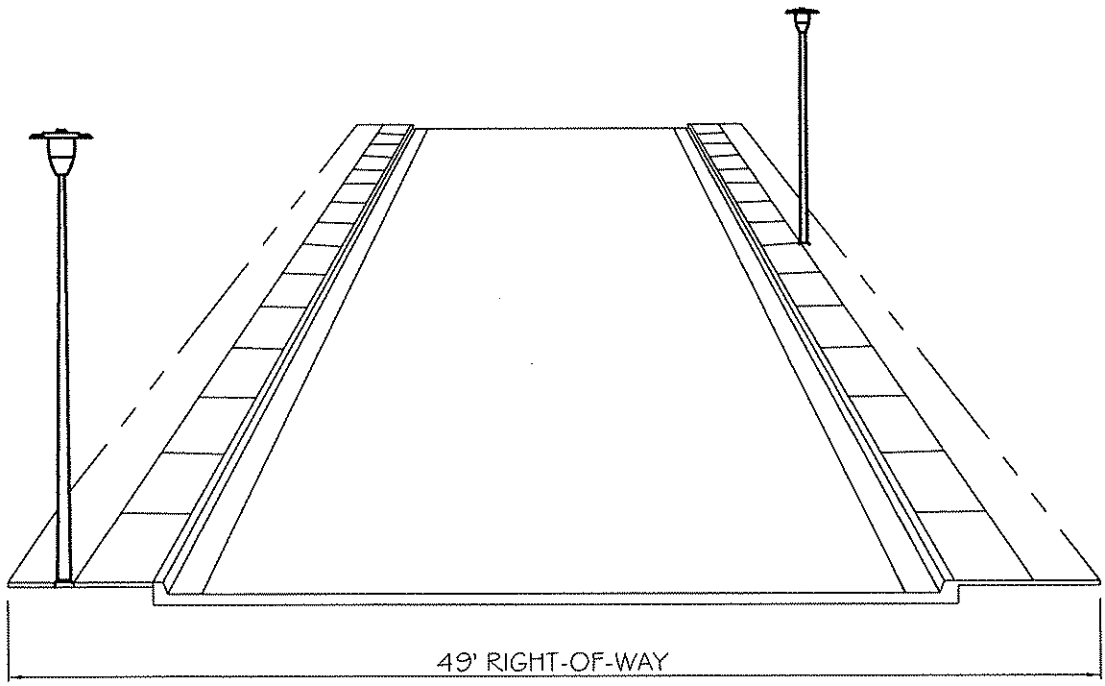
LOCAL RESIDENTIAL STREET TYPE B 51' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-14



RECOMMENDED DESIGN GUIDELINE	
TYPE	POST TOP
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	20'
COLOR	NON GALVANIZED
GLOBE	STANDARD PRISMATIC
SPACING	145' TO 155'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOT-CANDLES (MIN.)



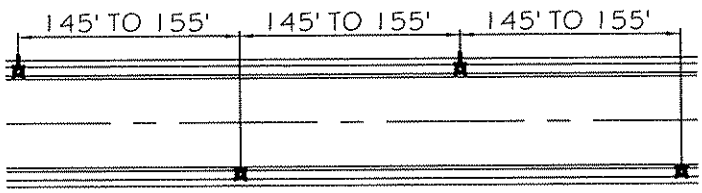
REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

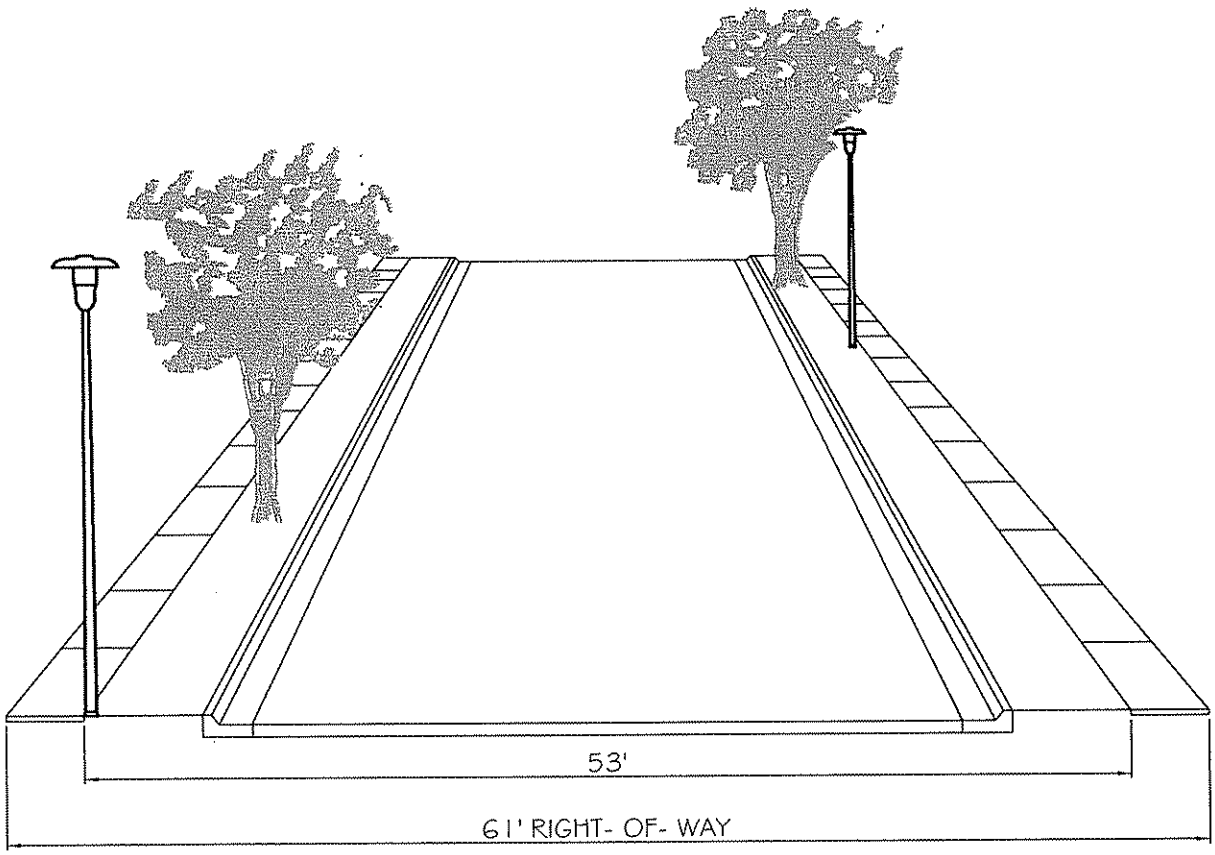
LOCAL NON – RESIDENTIAL STREET TYPE B 49' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14–15



RECOMMENDED DESIGN GUIDELINE	
TYPE	POST TOP
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	20'
COLOR	NON-PAINTED GALVANIZED
GLOBE	STANDARD PRISMATIC
SPACING	145' TO 155'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOTCANDLES (MIN.)



REV.	DATE	DESCRIPTION
△		
△		
△		

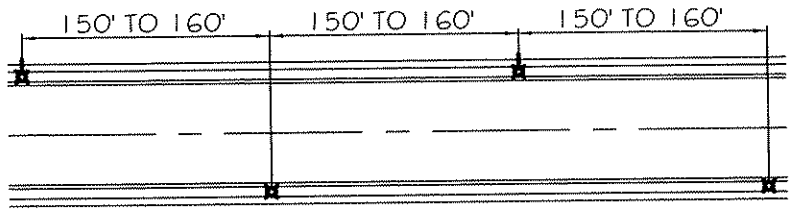
Department of TRANSPORTATION City of Sacramento

LOCAL NON – RESIDENTIAL STREET
61' ROW

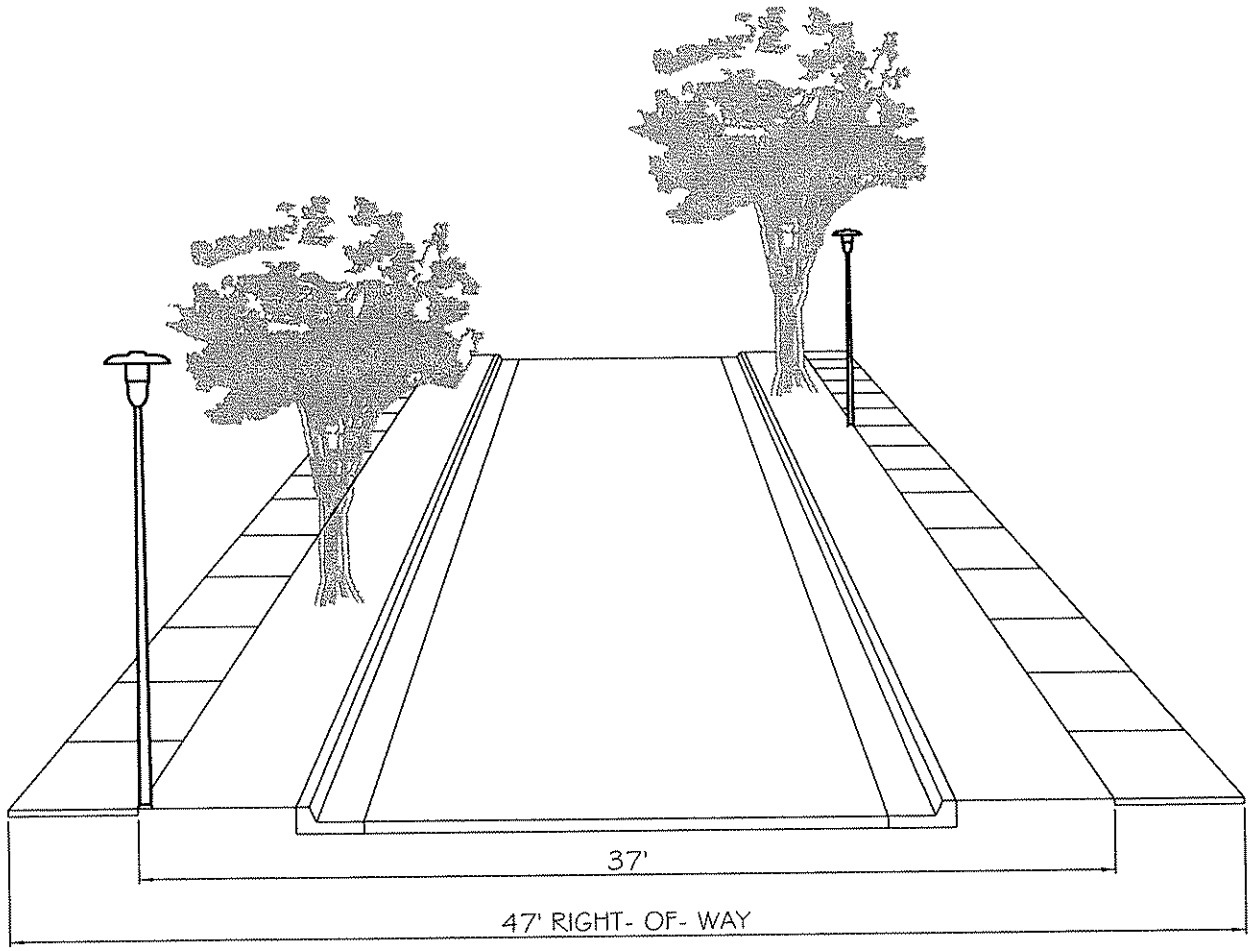
APPROVED BY: [signature] DATE: 12/18/06

SCALE: NONE

DWG. NO. 14–16



RECOMMENDED DESIGN GUIDELINE	
TYPE	POST TOP
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	20'
COLOR	NON-PAINTED GALVANIZED
GLOBE	STANDARD PRISMATIC
SPACING	150' TO 160'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOTCANDLES (MIN.)



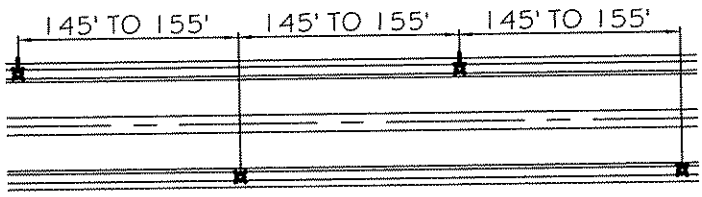
REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

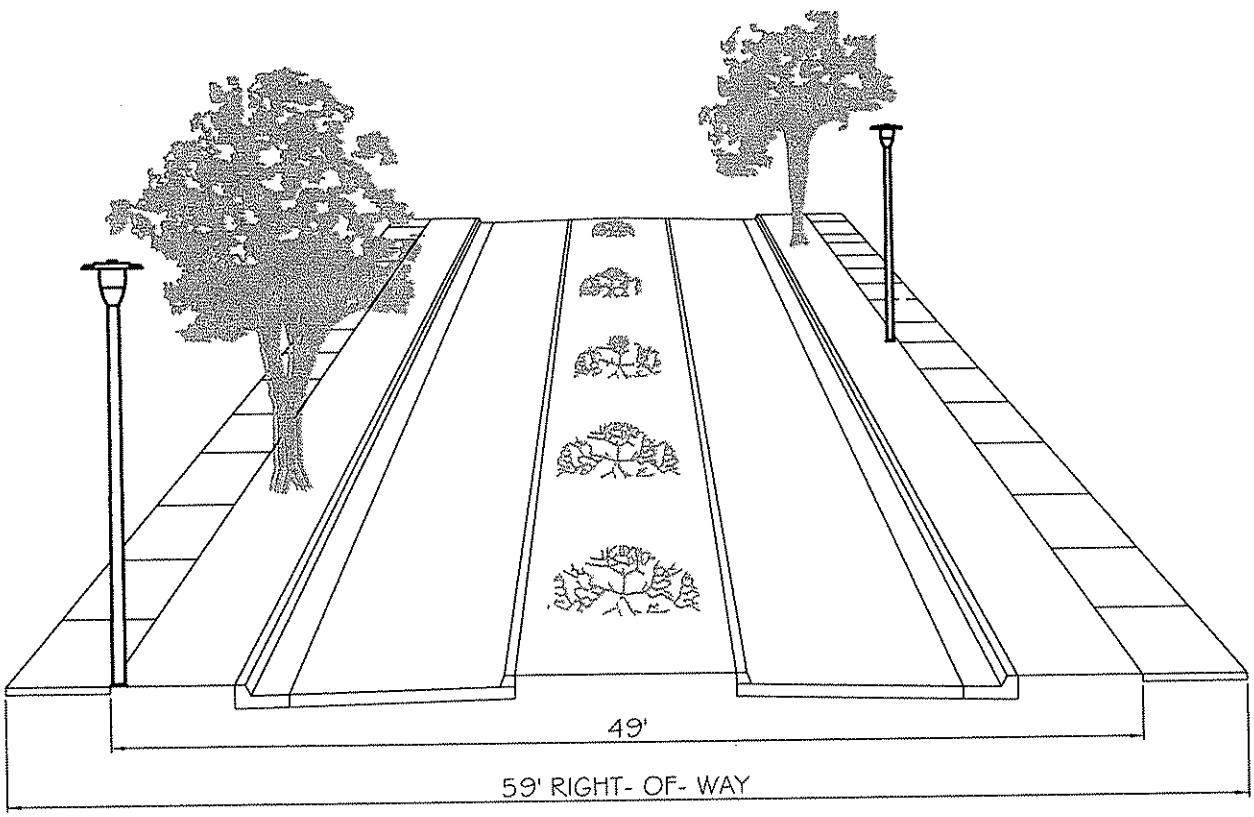
COLLECTOR STREET TYPE B 47' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-17



RECOMMENDED DESIGN GUIDELINE	
TYPE	POST TOP
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	20'
COLOR	NON-PAINTED GALVANIZED
GLOBE	STANDAARD PRISMATIC
SPACING	145' TO 155'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOTCANDLES (MIN.)

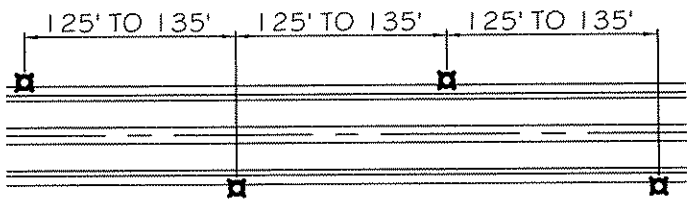


REV.	DATE	DESCRIPTION

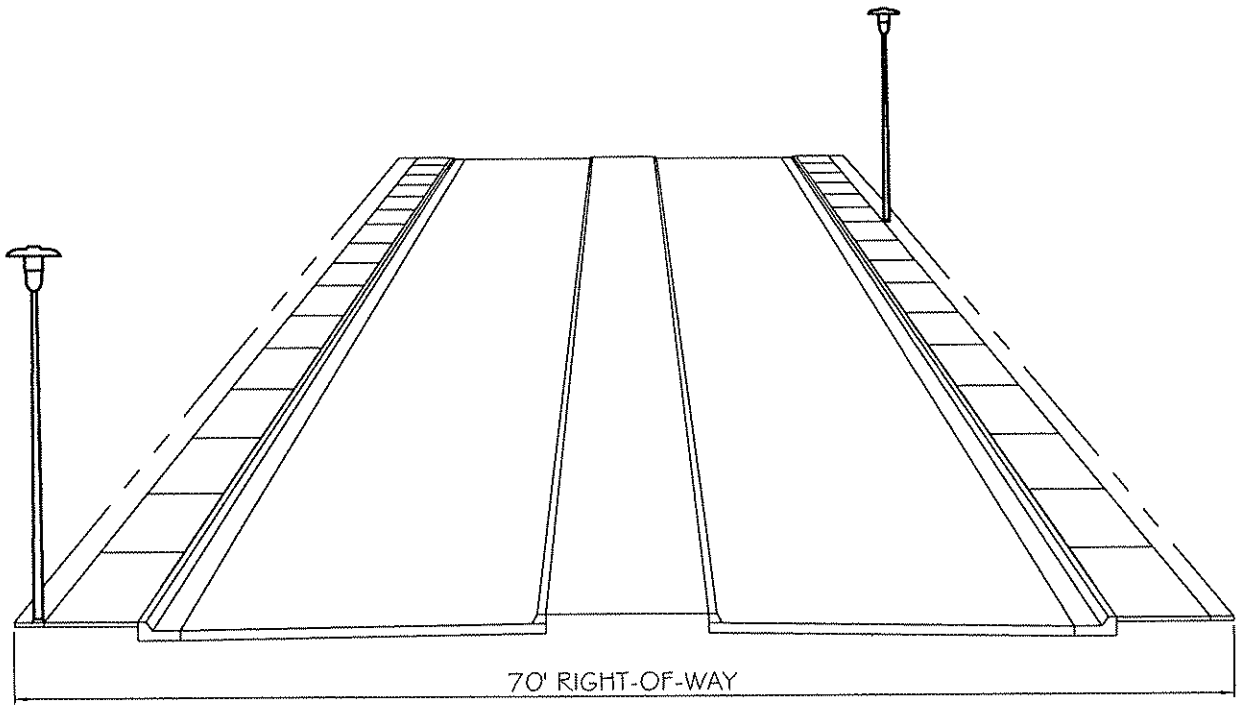
Department of TRANSPORTATION City of Sacramento

COLLECTOR STREET TYPE B 59' ROW

APPROVED BY: [signature] SCALE: NONE
DATE: 12/18/06 PLATE: 14-18



RECOMMENDED DESIGN GUIDELINE	
TYPE	POST TOP
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	20'
COLOR	NON-PAINTED GALVANIZED
GLOBE	STANDARD PRISMATIC
SPACING	125' TO 135'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOTCANDLES (MIN.)



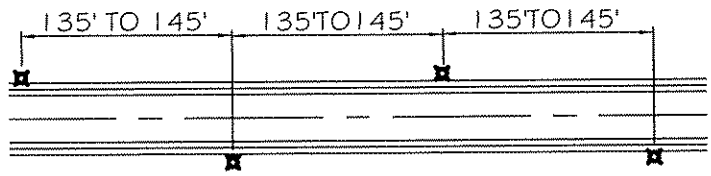
REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

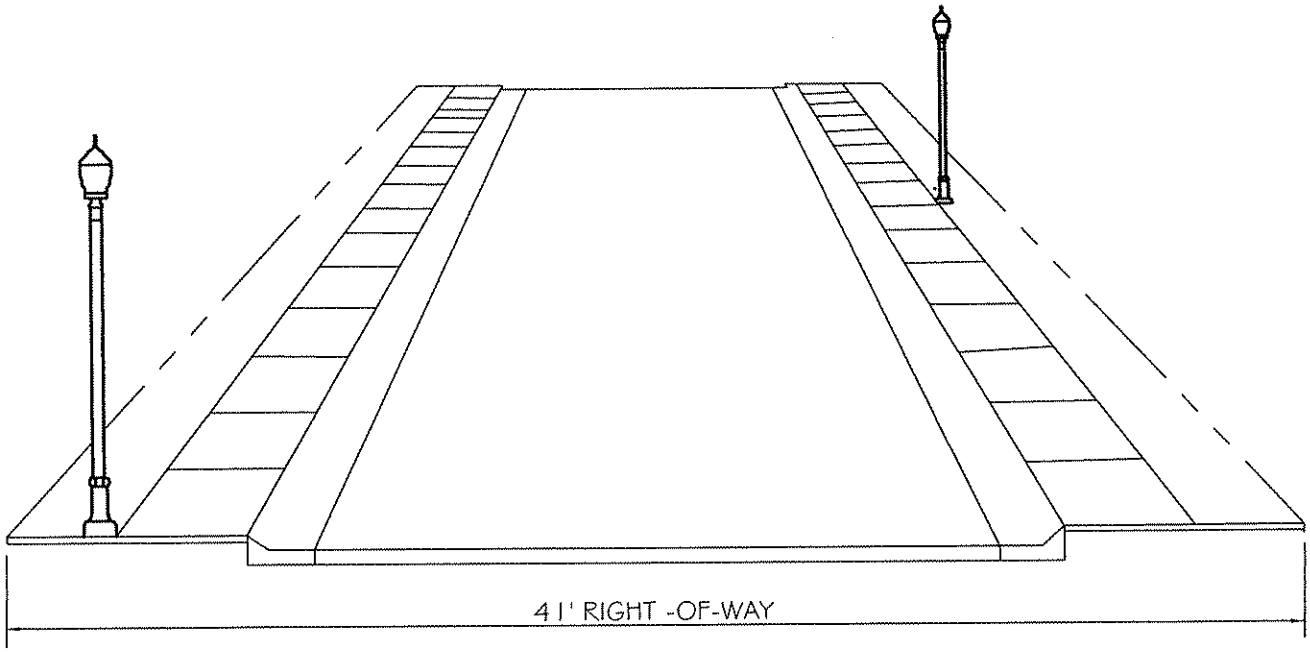
MINOR COLLECTOR STREET TYPE B 70' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14–19



RECOMMENDED DESIGN GUIDELINE	
TYPE	ORNAMENTAL DECORATIVE
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	12'
COLOR	SEMI GLOSS BLACK OR ELECTROLIER GREEN
GLOBE	'ACORN' (PRISMATIC)
SPACING	135' TO 145'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOTCANDLES(MIN)



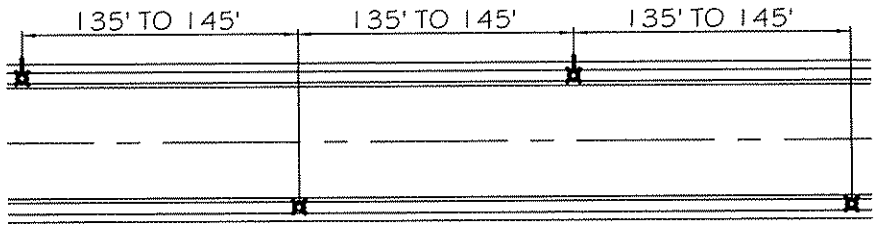
REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

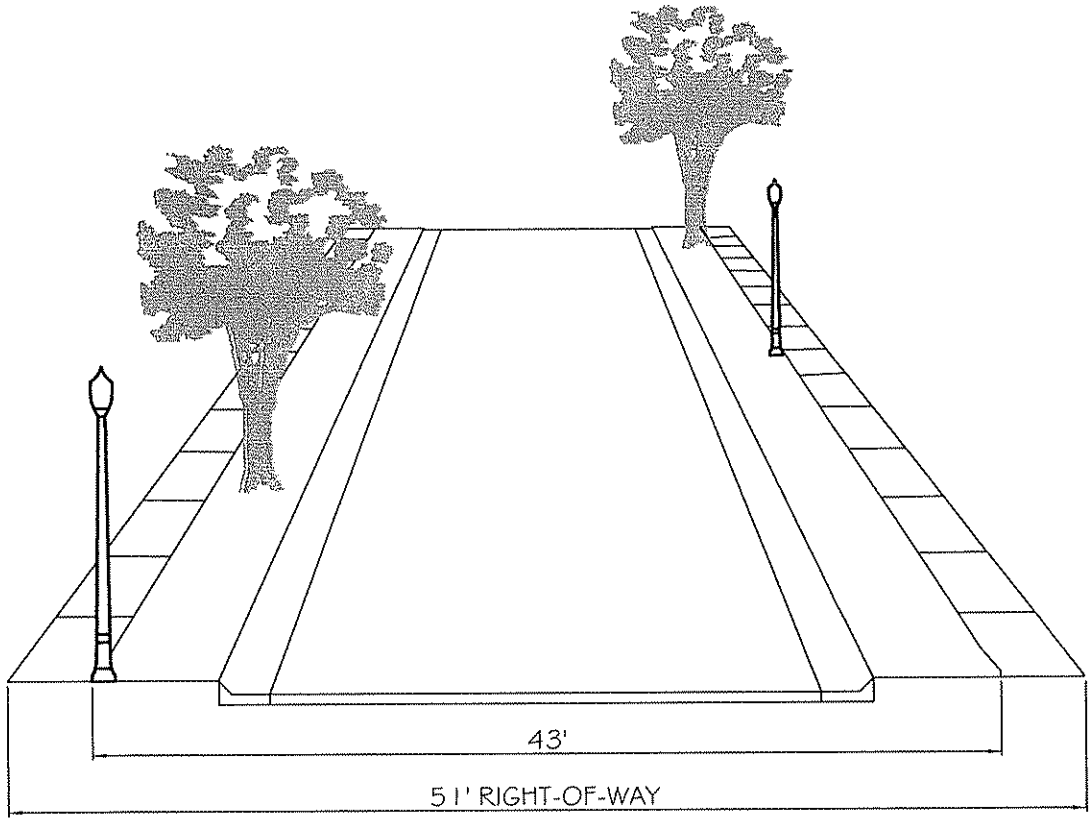
LOCAL RESIDENTIAL STREET ORNAMENTAL 41' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/86 PLATE: 14-20



RECOMMENDED DESIGN GUIDELINE	
TYPE	ORNAMENTAL DECORATIVE
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	12'
COLOR	SEMI-GLOSS BLACK OR ELECTROLIER GREEN
GLOBE	'ACORN' (PRISMATIC)
SPACING	135' TO 145'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOT CANDLES (MIN.)



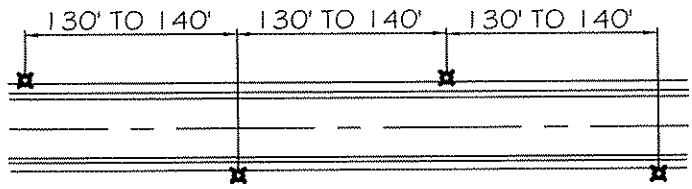
REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

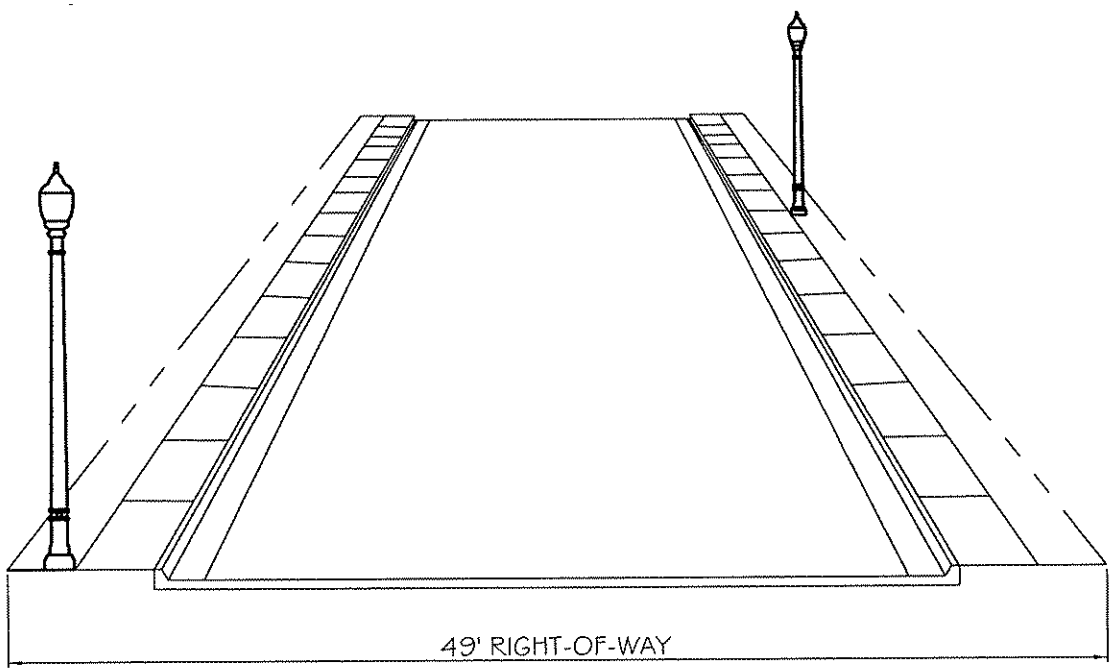
LOCAL RESIDENTIAL STREET ORNAMENTAL 51' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-21



RECOMMENDED DESIGN GUIDELINE	
TYPE	ORNAMENTAL DECORATIVE
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	12'
COLOR	SEMI-GLOSS BLACK OR ELECTROLIER GREEN
GLOBE	"ACRON" (PRISMATIC)
SPACING	130' TO 140'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOT CANDLES (MIN.)



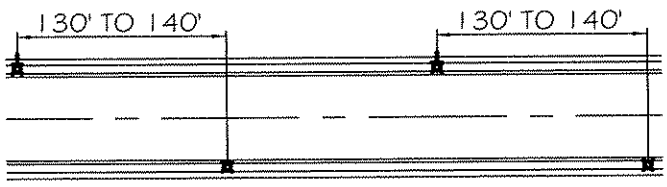
REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

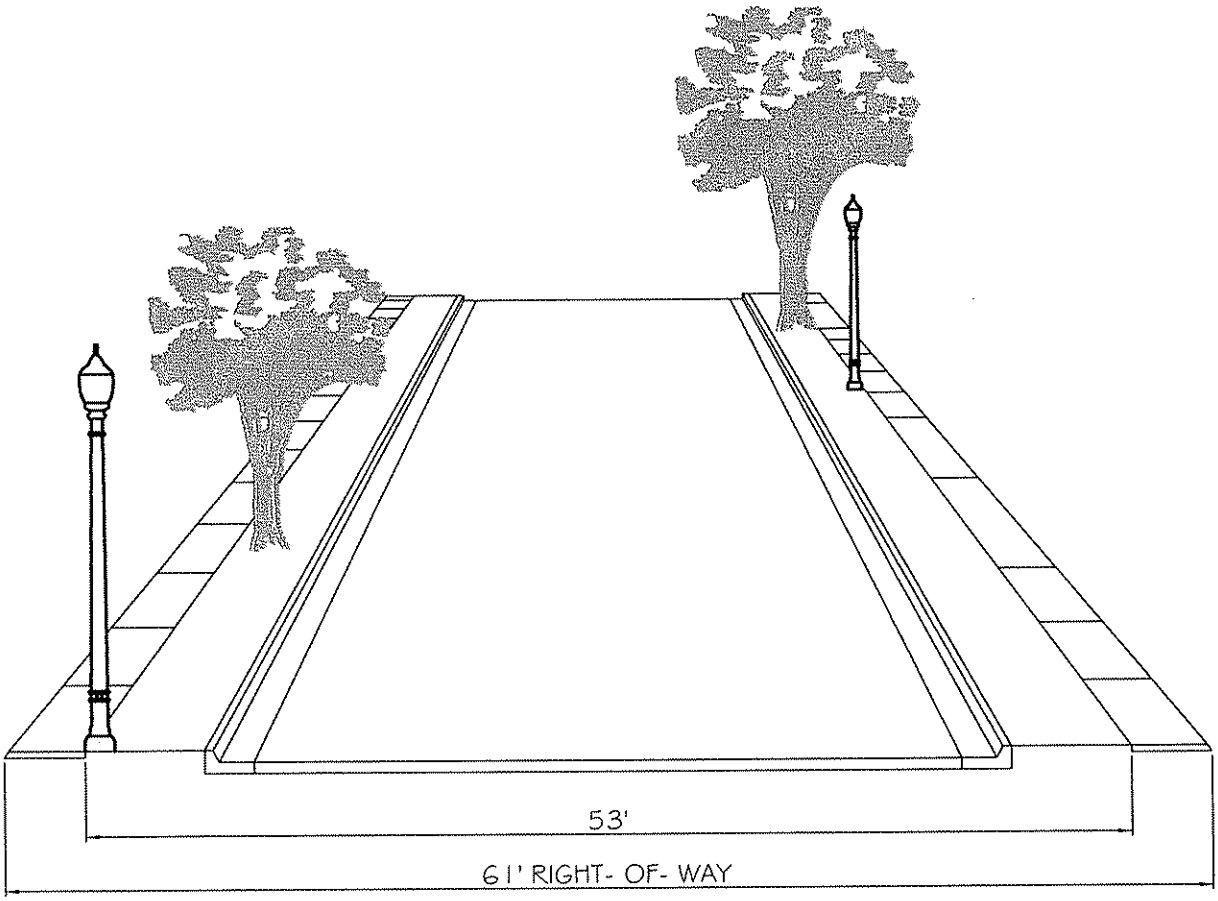
LOCAL NON RESIDENTIAL STREET ORNAMENTAL 49' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-22



RECOMMENDED DESIGN GUIDELINE	
TYPE	ORNAMENTAL DECORATIVE
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	12'
COLOR	SEMI-GLOSS BLACK OR ELECTROLIER GREEN
GLOBE	"ACORN" (PRISMATIC)
SPACING	130' TO 140'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOTCANDLES (MIN.)



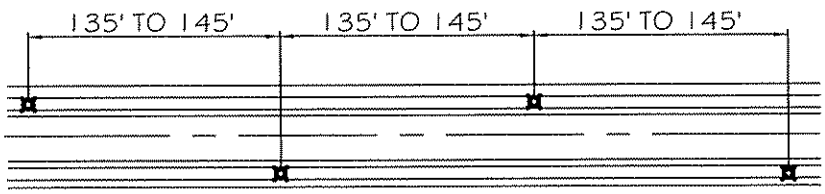
REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

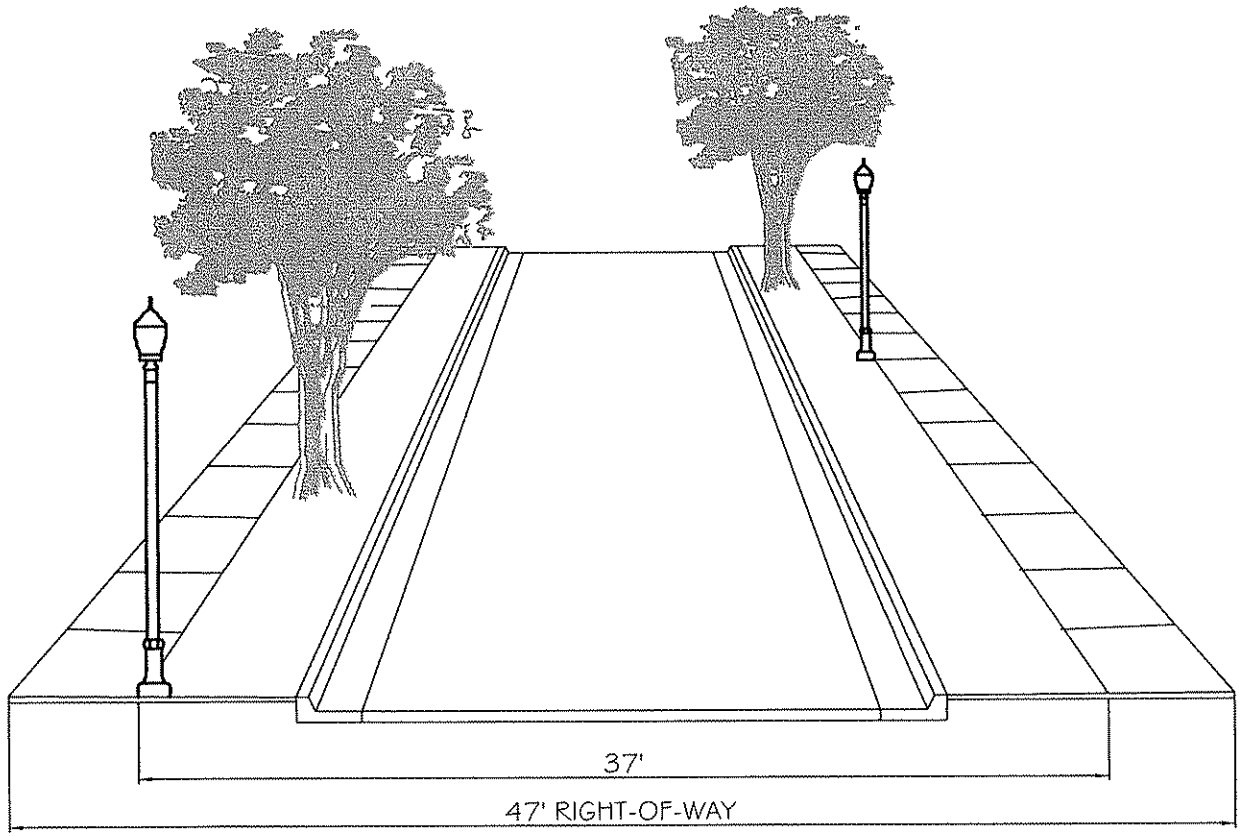
LOCAL NON – RESIDENTIAL STREET ORNAMENTAL 61' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14–23



RECOMMENDED DESIGN GUIDELINE	
TYPE	ORNAMENTAL DECORATIVE
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	12'
COLOR	SEMI-GLOSS BLACK OR ELECT GREEN
GLOBE	'ACORN' (PRISMATIC)
SPACING	135' TO 145'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOT-CANDLES (MIN.)



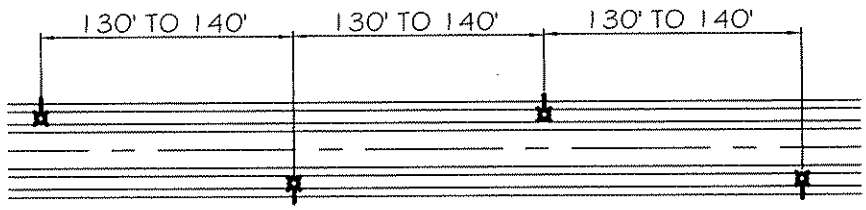
REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

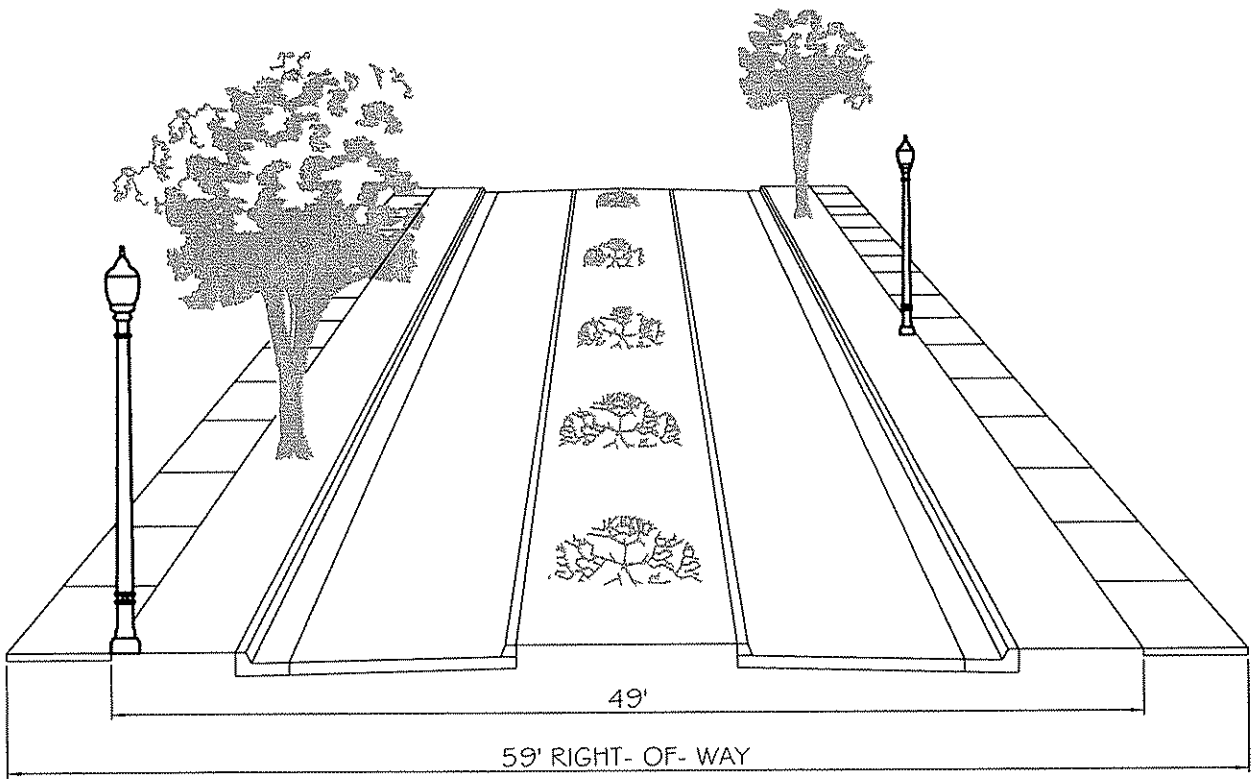
COLLECTOR STREET ORNAMENTAL 47' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-24



RECOMMENDED DESIGN GUIDELINE	
TYPE	ORNAMENTAL DECORATIVE
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	12'
COLOR	SEMI-GLOSS BLACK OR ELECTROLIER GREEN
GLOBE	'ACORN' (PRISMATIC)
SPACING	130' TO 140'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOT CANDLES (MIN.)



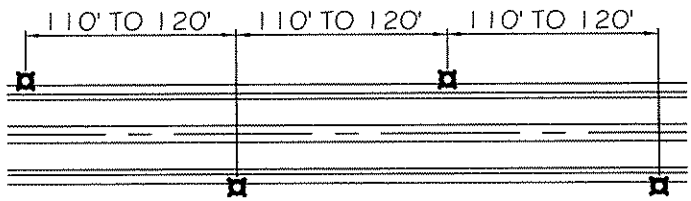
REV.	DATE	DESCRIPTION

Department of TRANSPORTATION City of Sacramento

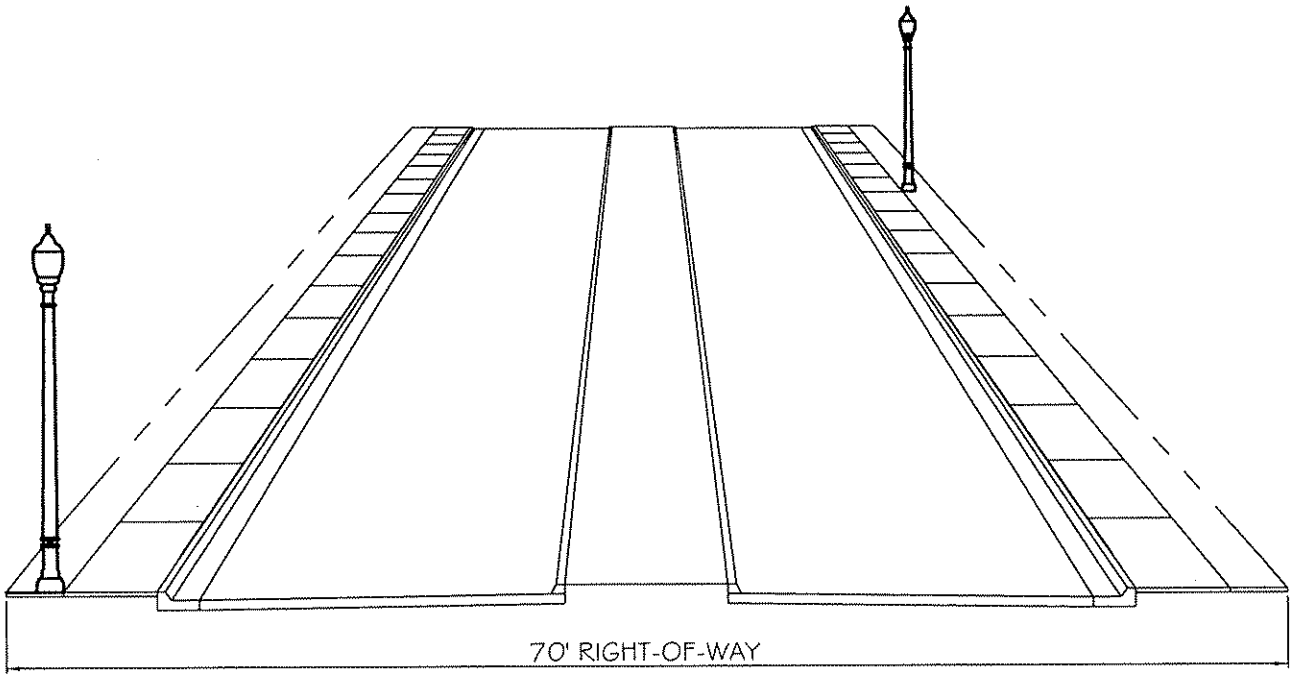
COLLECTOR STREET ORNAMENTAL 59' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-25



RECOMMENDED DESIGN GUIDELINE	
TYPE	ORNAMENTAL DECORATIVE
LAMP	HIGH PRESSURE SODIUM
WATTAGE	100 WATT
POLE HEIGHT	12'
COLOR	SEMI-GLOSS BLACK OR ELECTROLIER GREEN
GLOBE	"ACORN" (PRISMATIC)
SPACING	110' TO 120'
SPACING PATTERN	STAGGERED
DESIGN GUIDELINE	0.1 FOOTCANDLES (MIN.)



REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

MINOR COLLECTOR STREET ORNAMENTAL 70' ROW

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-26

VOLTAGE DROP CALCULATION FOR A THREE WIRE SYSTEM

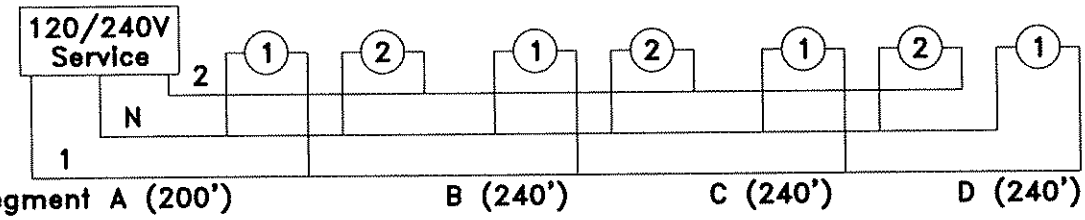
VOLTAGE DROP (IN VOLTS, V) = I x R x D x N
Where; V is the voltage drop along a segment of wire, I is the current through the same length of wire, R is the resistance of the length of wire, D is the distance, and N is the number of poles (fixtures) per segment.

I for any segment of wire is calculated by adding the currents for each luminaire the particular segment of wire feeds (i.e. all the luminaires downstream of the wire),
R for the particular segment of wire is calculated by multiplying the length of the wire (in thousands of feet) in that segment by the resistance per 1000 foot of wire for that particular size and material of wire,
D is the distance from the service to the first luminaire, and between the poles for a particular circuit, except for the neutral,
N is the number of fixtures in the circuit beyond the section.
The total voltage drop to the farthest luminaire is calculated by adding the voltage drops for each segment of wire from the service cabinet to the luminaire for each cicuit.

Table 1: AC Resistance for 600V Cables, in Ohms per 1000 Feet						
Conductor Material	Conductor Size (AWG)					
	14	12	10	8	6	1
Copper	3.14	1.98	1.24	0.778	0.491	0.154

Table 2: Current in Amps for High Pressure Sodium Luminaires		
Luminaire Voltage	Lamp Wattage	
	100	200
120	1.05	2.22

Example:
Calculate the voltage drop for the furthest luminaire, with 100W HPS luminaire, using a #6 AWG single conductor wires in a conduit system. This is a 120/240V lighting system. There are 7 lights total on the lighting branch circuit, with the lights wired to alternate phase wires.
Four lights are wired to circuit 1, and three lights are wired to circuit 2.
poles are set at 120 feet apart, with the first pole being 200 feet away from the service.



Wire Segment	Distance (ft)	Resistance (Ohms)	No. of Fixtures	Current (Amps)	Drop (Volts)
A	200	0.0982	4	4.2	0.41244
B	240	0.11784	3	3.15	0.371196
C	240	0.11784	2	2.1	0.247464
D	240	0.11784	1	1.05	0.123732
Neutral Wire	920	0.45172	1	1.05	0.474306
Total					1.63 V

Maximum permissible = .05 x 120 = 6.00 V

Notes:
1. Maximum voltage drop is 5% from service to the furthest luminaire.
2. The voltage drop must be calculated for the phase and neutral, with the neutral conductor carrying the imbalance between circuits 1 and 2. These voltages must be added together to arrive at the total voltage drop.

REV.	DATE	DESCRIPTION
△		
△		
△		

FILENAME

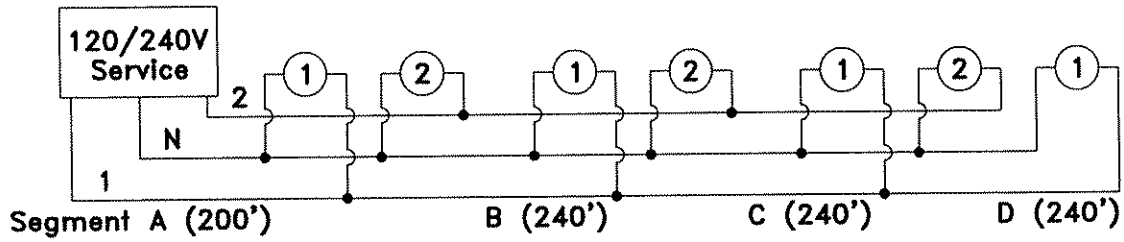
CITY OF SACRAMENTO
DEPARTMENT OF TRANSPORTATION

VOLTAGE DROP CALCULATON FOR A THREE WIRE SYSTEM

APPROVED BY: [signature] SCALE: NONE
DATE: DATE 12/18/06 DWG. NO. 14-27

SAMPLE VOLTAGE DROP CALCULATION FOR A THREE WIRE SYSTEM

Calculate the voltage drop to the furthest luminaire, with 100W HPS luminaire, using #6 AWG conductor wires in the conduit system. This is a 120/240V lighting system. There are 7 lights total in the lighting system, with the lights wired to alternate phase wires. The furthest luminaire is on circuit 1, four lights are wired to this circuit. The poles are set at 120 feet apart staggered spacing, with the first pole being 200 feet away from the service.



Wire Segment	Distance (ft)	Resistance (Ohms)	No. of Fixtures	Current (Amps)	Drop (Volts)
A	200	0.0982	4	4.2	0.41244
B	240	0.11784	3	3.15	0.371196
C	240	0.11784	2	2.1	0.247464
D	240	0.11784	1	1.05	0.123732
Neutral Wire	920	0.45172	1	1.05	0.474306
Total					1.63 V

Maximum permissible = .05 x 120V = 6.00 V

REV.	DATE	DESCRIPTION
△		
△		
△		

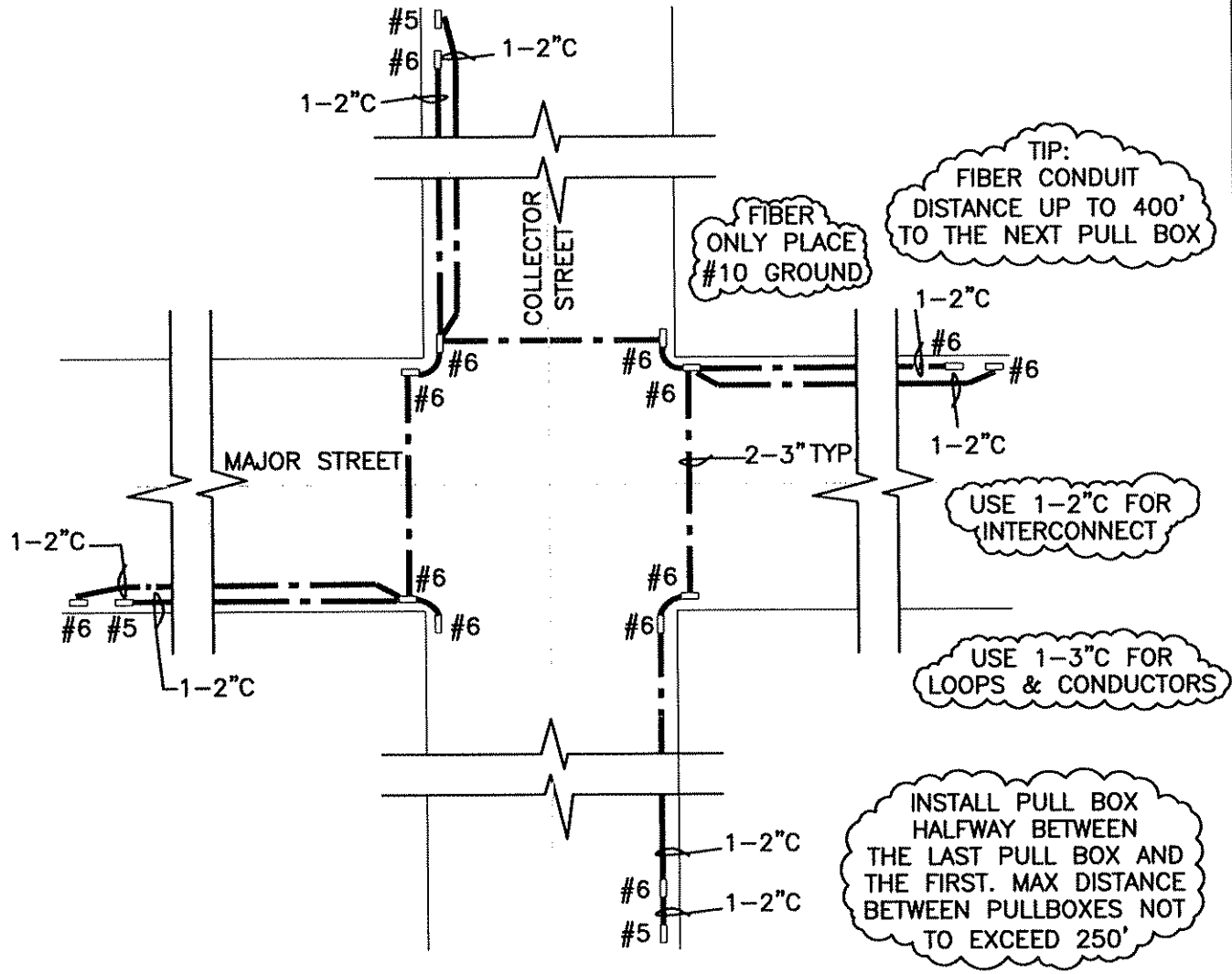
Department of TRANSPORTATION City of Sacramento

VOLTAGE DROP CALCULATON FOR A THREE WIRE SYSTEM

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-27A

PROPOSED CONDUIT LAYOUT FOR TRAFFIC SIGNAL



-GENERIC INTERSECTION-

FOOTNOTE:

THIS LAYOUT IS TO BE USED AS A GUIDE. ACTUAL CONDUIT ROUTING WILL BE DEPENDANT ON CONTROLLER LOCATION, AND EXISTING FIELD CONDITIONS.

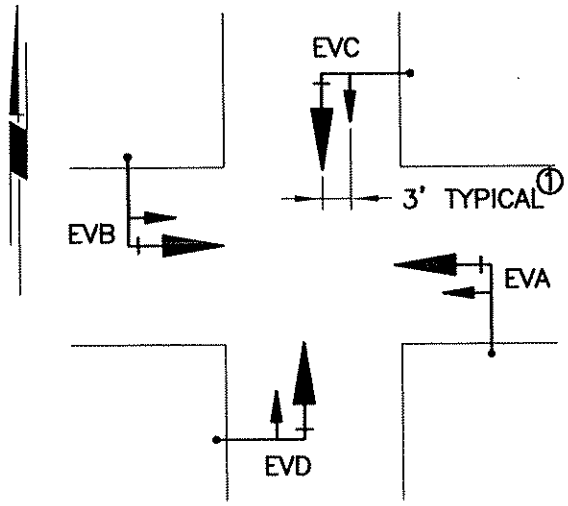
REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

CONDUIT LAYOUT GUIDE FOR TRAFFIC SIGNALS

APPROVED BY: [signature] SCALE: NONE

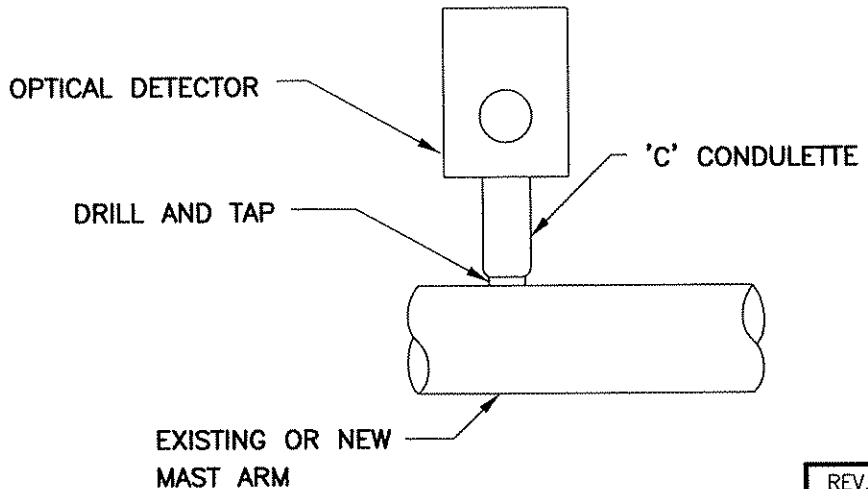
DATE: 12/18/06 PLATE: 14-28



TYPICAL OPTICAL DETECTOR LAYOUT

① Actual location of detector head may vary based on the intersection. Refer to 14.18 for placement.

EV	PHASE	DIRECTION
A	1, 6	EASTBOUND
B	2, 5	WESTBOUND
C	3, 8	NORTHBOUND
D	4, 7	SOUTHBOUND

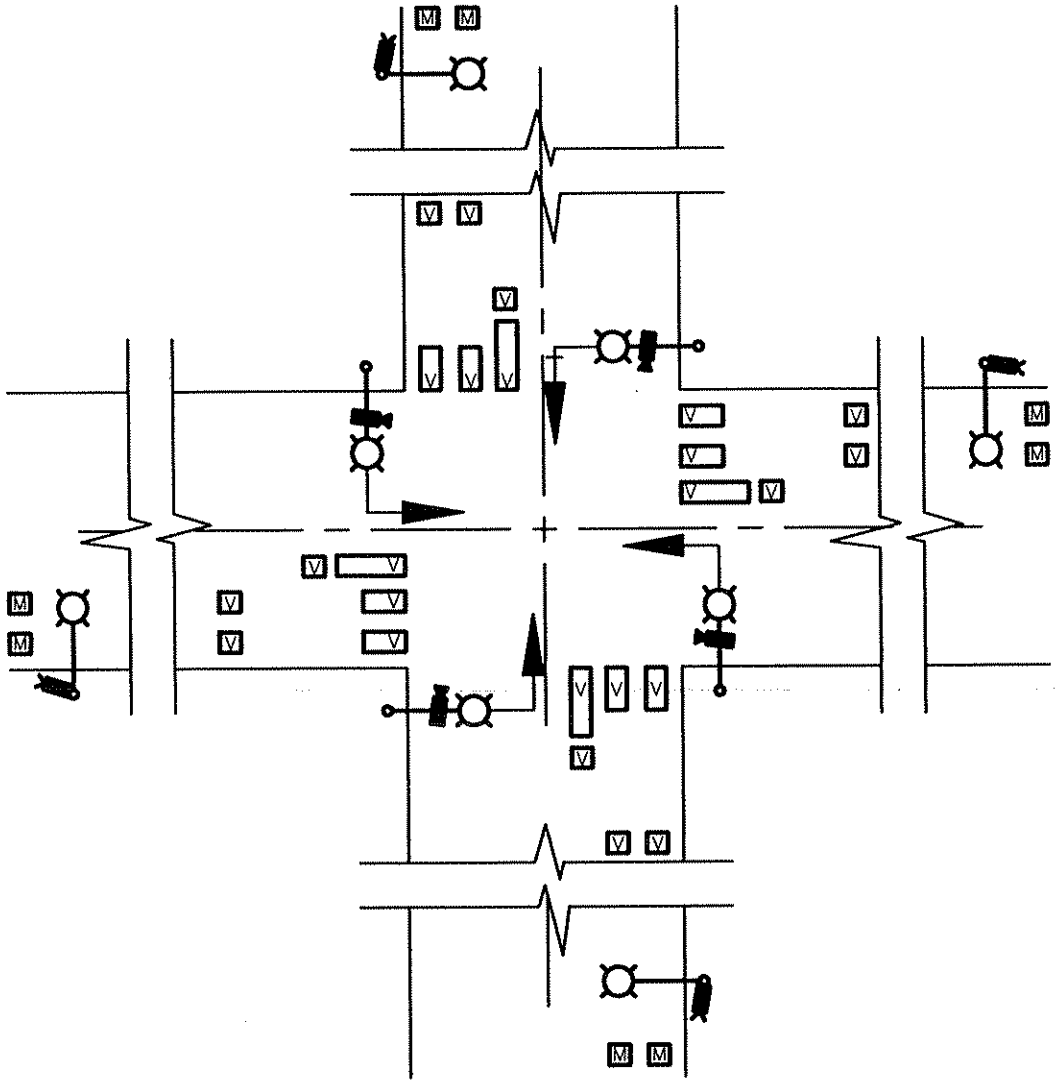


REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

OPTICAL DETECTOR LAYOUT

APPROVED BY: [signature] SCALE: NONE
DATE: 12/18/06 PLATE: 14-29



NOTE:

1. SEE TYPICAL DETECTION LOOP LAYOUT FOR LOOP DISTANCES FROM STOP BAR.
2. EXTENSION POLE FOR VIDEO DETECTION CAMERA MAY BE NECESSARY FOR MIDDLE LOOPS.

SYMBOLS:

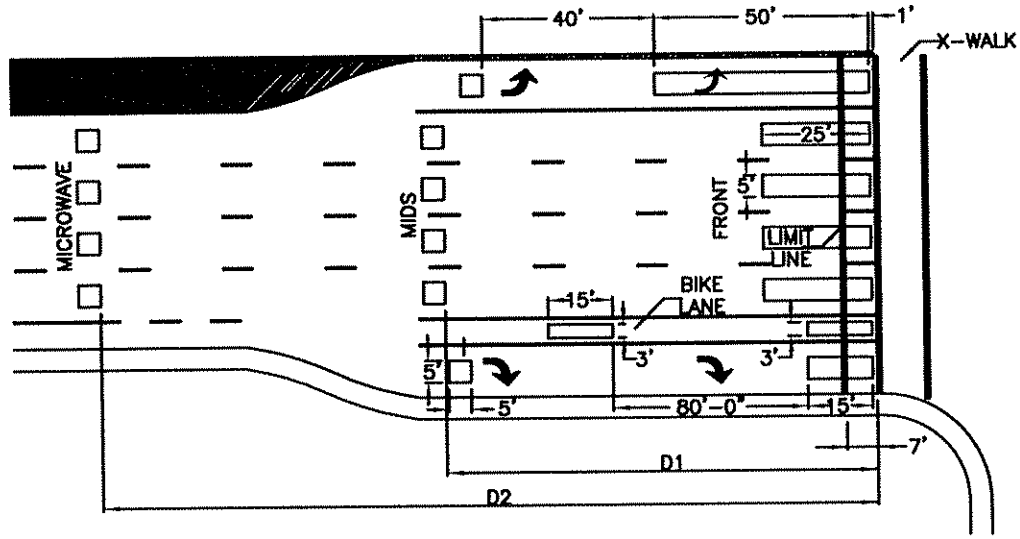
- VDCS – VIDEO DETECTION CAMERA SYSTEM
- MVDS – MICROWAVE VEHICLE DETECTION SYSTEM
- [V] – VIDEO DETECTION ZONE
- [M] – MICROWAVE DETECTION ZONE

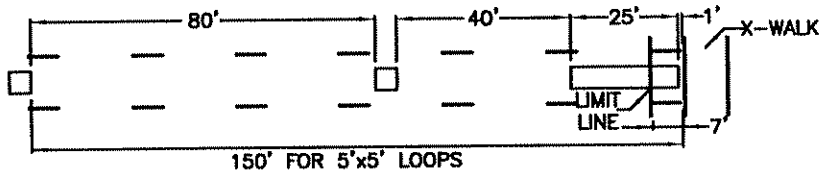
REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

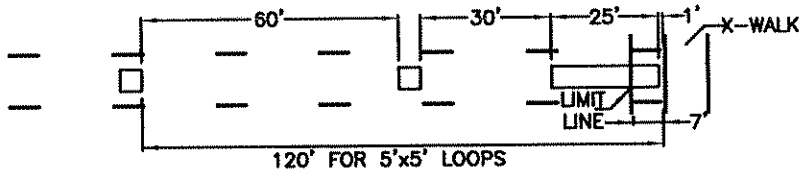
VEHICLE DETECTION LAYOUT

APPROVED BY: [signature] SCALE: NONE
DATE: 12/18/06 PLATE: 14–30





30 MPH



25 MPH

5 SECOND RULE LOOP DISTANCE		
MPH	D1	D2
*25	95'	185'
*30	110'	220'
35	130'	260'
40	150'	300'
45	165'	330'
50	185'	370'
55	200'	405'
60	220'	440'

'*' INDICATES DISTANCES TO BE USED IF 25 AND 30 MPH STREETS ARE MAIN STREETS. IF NOT MAIN STREETS, SEE MINOR STREET LOOP DISTANCE DETAIL ON THIS SHEET.

MINOR STREET LOOP DISTANCES

NOTE:

1. NOMINAL VIDEO LOOP SIZE TO BE 5'x5'.
2. DRIVEWAYS WITH LOWER APPROACH SPEEDS MAY USE LESS DISTANCE TO BACK MOST DETECTION.
3. BIKE DETECTORS SHALL BE PLACE NORMALLY 80 FEET APART.

REV.	DATE	DESCRIPTION
1		
2		
3		

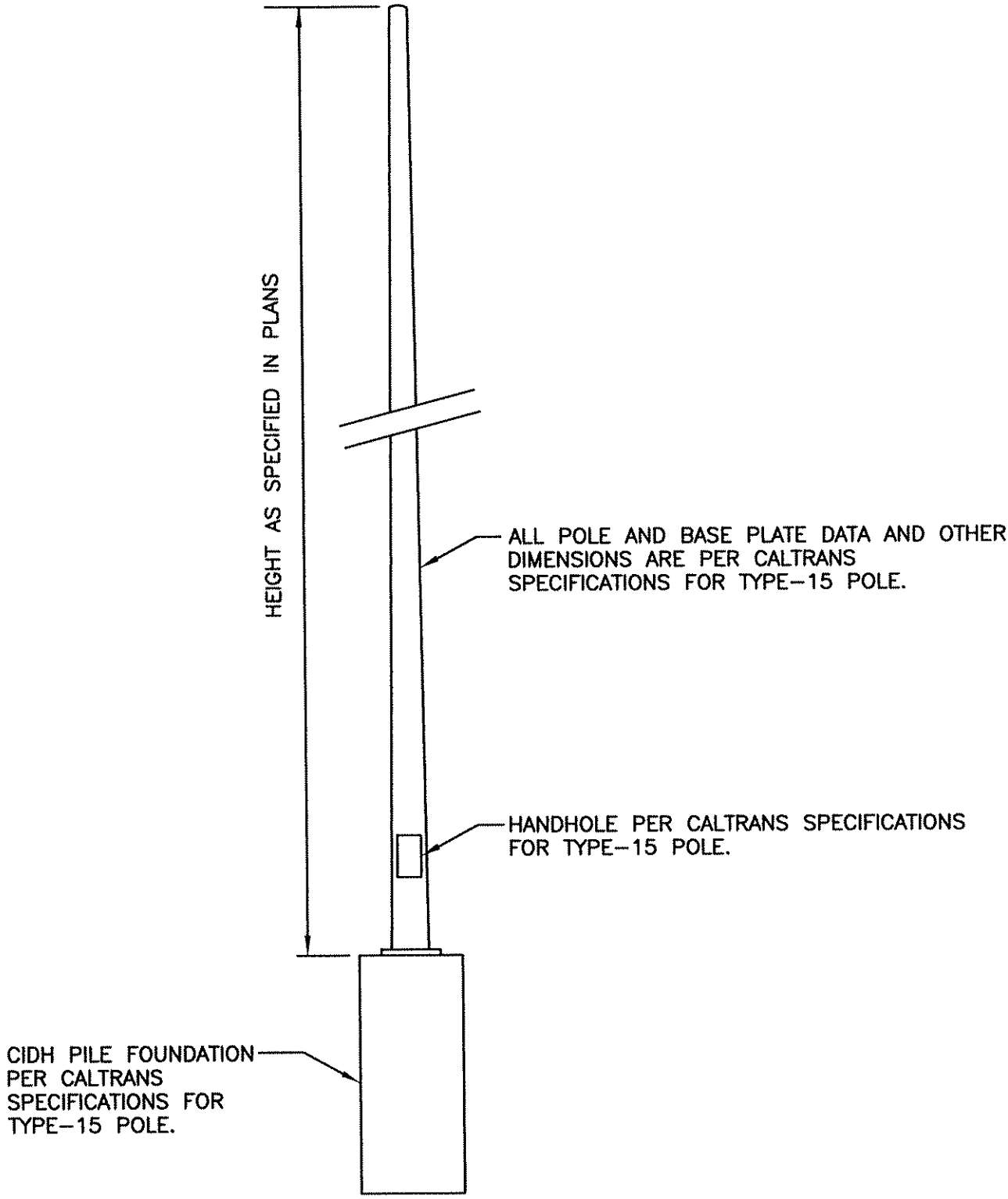
Department of TRANSPORTATION City of Sacramento

TYPICAL DETECTION ZONE LAYOUT

APPROVED BY: [signature] DATE: 12/18/06

SCALE: NONE

PLATE: 14-31



REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

MODIFIED TYPE-15 POLE

APPROVED BY: [signature] SCALE: NONE

DATE: 12/18/06 PLATE: 14-32

Appendix B

Drawing Standards

CITY OF SACRAMENTO
DEPARTMENT OF TRANSPORTATION

STREETLIGHT, TRAFFIC SIGNAL, AND SIGNING AND STRIPING DRAWING STANDARDS

FOR DRAWING STANDARDS NOT ADDRESSED IN THIS PAMPHLET, SEE CURRENT CALTRANS STANDARD PLANS.

REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

DRAWING STANDARDS

DATE:

APPROVED BY: _____

FILENAME: P:\YECHELEC\STANDARDS PAMPHLET FOR CONSULTANTS\STANDARD_LINES_SYMBOLS.DWG

TABLE OF CONTENTS

THE FOLLOWING FILES SHOULD ACCOMPANY THIS PAMPHLET:

ELECTRICALplot–SLTS.CTB
PlotConfigACAD2002.PC2
PROTO–ELECTRICAL.DWG
ROMAND.SHX
ROMANS.SHX
ARLRDBD.TTF
HELVBOLD.SHX
STREET LIGHTING – COVER.PDF
STREET LIGHTING – E2.PDF
STREET LIGHTING – E3.PDF
STREET LIGHTING – RELOCATE.PDF
TRSFFIC SIGNAL – COVER.PDF
TRAFFIC SIGNAL – E2.PDF
TRAFFIC SIGNAL – E3.PDF
INTERCONNECT.PDF
STANDARD DETAIL 1.PDF
STANDARD DETAIL 2.PDF
SIGNING & STRIPING.PDF
STRIPING_LEGEND.DWG
THESTSNS.DWG
STRIPING_EXAMPLE.DWG

REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

TABLE OF CONTENTS

DATE:

APPROVED BY: _____

SYMBOL INDEX

STREETLIGHTS AND TRAFFIC SIGNALS

PROPOSED ELECTRICAL

SYMBOLS	BLOCK NAME	DESCRIPTION
	MA	PROPOSED MAST ARM W/ CIRCUIT NUMBER **
	PB	PROPOSED PULL BOX
	* CIRCLE, DIA=6'	PROPOSED ORNAMENTAL W/ CIRCUIT NUMBER **
	PT	PROPOSED POST TOP W/ CIRCUIT NUMBER **
	FIREAL	RELOCATED FIRE ALARM
	SERV	PROPOSED SERVICE
	CONTRL	PROPOSED TRAFFIC SIGNAL CONTROLLER
	* POLYLINE	PROPOSED CONDUIT, POLYLINE WIDTH = 0.4' AT SCALE OF 1" = 10'
	SMUDPOLE	RELOCATED SMUD WOOD POLE
0	SMUDPB	SMUD PULL BOX
	* 5'X5' OR 6'X6'	PROPOSED LOOP
	FLASHER	FLASHER
	EV	EMERGENCY VEHICLE SENSOR

* NO BLOCK NAME
** SEE TEXT INSTRUCTIONS P. 9
THESE SYMBOLS ARE EMBEDDED IN PROTO-ELECTRICAL.DWG

REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

SYMBOL INDEX

DATE:

APPROVED BY: _____

SYMBOL INDEX

TRAFFIC SIGNALS

PROPOSED ELECTRICAL

SYMBOLS	BLOCK NAME	DESCRIPTION
	20A	PROPOSED SIGNAL HEAD W/ BACK PLATE
	20AT	PROPOSED LEFT TURN SIGNAL HEAD
	20AT–UTURN	PROPOSED U TURN SIGNAL HEAD
	20AT–RIGHT	PROPOSED RIGHT TURN SIGNAL HEAD
	PEDSIG	PROPOSED PEDESTRIAN SIGNAL HEAD X: A = AUDIBLE C = COUNTDOWN
	* CIRCLE, DIA=0.5'	PROPOSED 1–B POLE OR HAND HOLE

* NO BLOCK NAME
** SEE TEXT INSTRUCTIONS P. 9
THESE SYMBOLS ARE EMBEDDED IN PROTO–ELECTRICAL.DWG

REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

SYMBOL INDEX

DATE:

APPROVED BY: _____

SYMBOL INDEX

STREETLIGHTS AND TRAFFIC SIGNALS

EXISTING ELECTRICAL

SYMBOLS	BLOCK NAME	DESCRIPTION
	E–PT	EXISTING POST TOP, CIRCUIT NUMBER **
	E–FLASHER	EXISTING FLASHER
	E–MA	EXISTING MAST ARM, CIRCUIT NUMBER **
	E–PB	EXISTING PULL BOX
	* CIRCLE DIA=6'	EXISTING ORNAMENTAL, CIRCUIT NUMBER **
	E–FIREAL	EXISTING FIRE ALARM
	E–SERV	EXISTING SERVICE
	E–CONTRL	EXISTING TRAFFIC SIGNAL CONTROLLER
	SMUDPOLE	EXISTING SMUD WOOD POLE
	SMUDPB	EXISTING SMUD PULL BOX
	E–PEDSIG	EXISTING PEDESTRIAN SIGNAL HEAD
	E–EV	EXISTING EMERGENCY VEHICLE SENSOR
	E–20A	EXISTING SIGNAL HEAD W/ BACK PLATE
	E–20AT	EXISTING LEFT TURN SIGNAL HEAD
	* CIRCLE DIA=0.5'	EXISTING 1–B POLE OR HAND HOLE
	* 5'X5' OR 6'X6'	EXISTING LOOP
	* POLYLINE	EXISTING CONDUIT, POLYLINE WIDTH = 0

* NO BLOCK NAME
** SEE TEXT INSTRUCTIONS P. 9
THESE SYMBOLS ARE EMBEDDED IN PROTO–ELECTRICAL.DWG

REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

SYMBOL INDEX

DATE:

APPROVED BY: _____

SYMBOL INDEX

CIVIL IMPROVEMENTS

(NOTE: BOTH PROPOSED AND EXISTING CIVIL SYMBOLS WILL APPEAR AS EXISTING ON ELECTRICAL SHEETS)

SYMBOLS	BLOCK NAME	DESCRIPTION
	TREE	EXISTING TREE
	EXRV	EXISTING AIR RELEASE VALVE
	EXDROP	EXISTING DROP INLET
	EXFH	EXISTING FIRE HYDRANT
	EXGV	EXISTING GAS VALVE
	GWIRE	EXISTING GUY WIRE
	M-BOX	MAILBOX
	*CIRCLE, DIA=2'	EXISTING MAN HOLE
		PROPOSED AND EXISTING BACK OF WALK, FACE OF CURB, PLANTERS AND WALKWAYS AND OTHER CONCRETE FEATURES
SLOPE INDICATORS	CURBRAMP	CURB RAMP WITH SLOPE INDICATORS

*NO BLOCK NAME

REV.	DATE	DESCRIPTION
1		
2		
3		

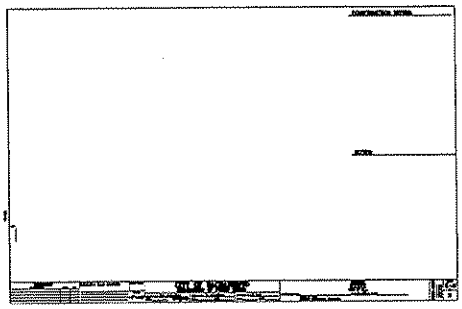
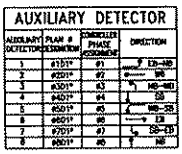
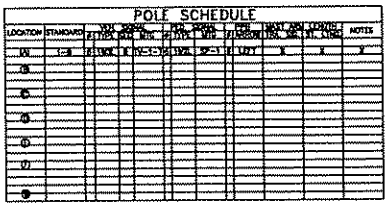
Department of TRANSPORTATION City of Sacramento

SYMBOL INDEX (CIVIL IMPROVEMENTS)

DATE:

APPROVED BY: _____

SCHEDULES, DIAGRAMS, AND NOTES
STREETLIGHTS AND TRAFFIC SIGNALS

SYMBOLS	BLOCK NAME	DESCRIPTION
	THETITLE	PLAN SHEET BORDER FOR "D" SIZE, 22" X 34" NUMBER SHEETS AS E–1 OF X (WHERE X=TOTAL ELECTRICAL SHEETS), E–2 OF X, ETC.
☐	SQ	SQUARE FOR CONSTRUCTION NOTES. (USE DTEXT AND JUSTIFY MIDDLE CENTER THE NOTE NUMBER) EXAMPLE: ☐ ☐ ☐ 8 CIRCUIT NUMBERS SHALL BE 4/5 THE SIZE OF REGLUAR TEXT. CENTER JUSTIFY CIRCUIT NUMBERS.
	AUXDET	AUXILIARY DETECTOR SCHEDULE
	SCHPOLE	POLE SCHEDULE

** TEXT INSTRUCTONS: USE DTEXT AND JUSTIFY CENTER THE NOTE.

THESE SYMBOLS ARE EMBEDDED IN PROTO–ELECTRICAL.DWG

REV.	DATE	DESCRIPTION
△		
△		
△		

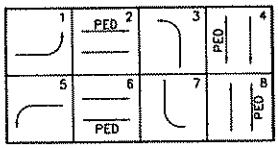
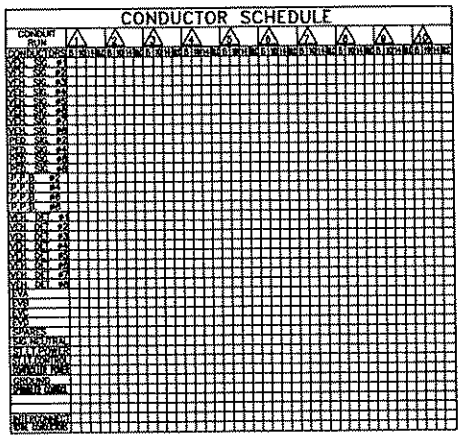
Department of TRANSPORTATION City of Sacramento

SCHEDULES, DIAGRAMS, AND NOTES

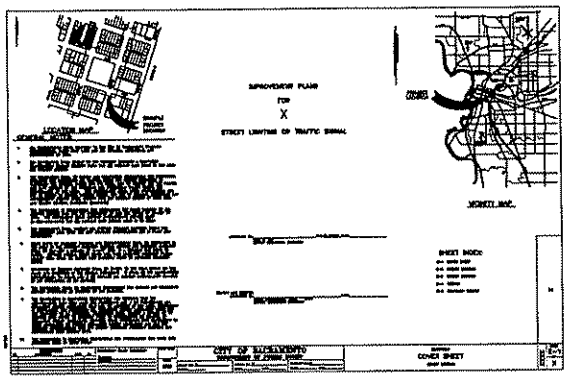
DATE:

APPROVED BY: _____

SCHEDULES, DIAGRAMS, AND NOTES
STREETLIGHTS AND TRAFFIC SIGNALS

SYMBOLS	BLOCK NAME	DESCRIPTION
 PHASE DIAGRAM	PHASDIAG	PHASE DIAGRAM
	SCHCOND	CONDUCTOR SCHEDULE
△	TRI	CONDUCTOR SCHEDULE NOTE
	N–ARROW	NORTH ARROW
LUMINAIRE SCHEDULE: NEW SERVICE No. 0000 IS LOCATED ON THE NORTHWEST CORNER OF 0000000 STREET AND 0000000 STREET X NEW SERVICE IS 120/208 VOLT, 1Ø, 3 WIRE. CONNECT NEW LUMINAIRES TO 120 VOLT CIRCUITS.	SCHLUM	LUMINAIRE SCHEDULE

CIRCUIT NUMBER	EXIST. 200W HPS MAST ARM	NEW 200W HPS MAST ARM
1	0	0
2	0	0
3	0	0
4	0	0
TOTAL NEW:	0	0



COV–SHEET — PROJECT COVER SHEET

THESE SYMBOLS ARE EMBEDDED IN PROTO–ELECTRICAL.DWG

REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

SCHEDULES, DIAGRAMS, AND NOTES

DATE:

APPROVED BY: _____

TEXT STYLES

STREETLIGHTS AND TRAFFIC SIGNALS

TEXT STYLE	EXAMPLE	DESCRIPTION
RS	ABC123	CONSTRUCTION NOTES, GENERAL NOTES, EXISTING LUMINAIRES (FADED TEXT). HEIGHT EQUAL TO 0.125" ON PAPER. EXAMPLE: SCALE 1"=20', MODEL SPACE TEXT WOULD BE 2.50 CREATED FROM TEXT SHX FILE ROMAN S.
RS	ABC123	CIRCUIT NUMBER. JUSTIFY AND CENTER CIRCUIT NUMBER. CIRCUIT NUMBER SHALL BE EQUAL TO 0.10" ON PAPER. EXAMPLE: SCALE 1"=10', MODEL SPACE TEXT WOULD BE 1.00.
RD	ABC123	DETAIL HEADER, CONSTRUCTION NOTES HEADER, GENERAL NOTES HEADER, TITLE AND SHEET NUMBERS. 0.25" ON PAPER. CREATED FROM TEXT SHX FILE ROMAN D.
BOLD	**BOLD**	PLAN TITLE ON COVER SHEET. 0.3" ON PAPER. CREATED FROM TRUE TYPE FONT FILE ARLRDBD.TTF OR TEXT FILE HELVBOLD.SHX

MOST OF THESE TEXT STYLES ARE EMBEDDED IN PROTO-ELECTRICAL.DWG, SOME WILL NEED TO COPIED TO AUTODESK'S DIRECTORY ON YOUR HARD DRIVE

REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

TEXT STYLES

DATE:

APPROVED BY: _____

LAYER STANDARDS

STREETLIGHTS, TRAFFIC SIGNALS, SIGNING AND STRIPING

(PEN #) COLOR	LAYER NAME (PROTO–ELECTRICAL.DWG)	USE
(1) RED	RW or ROW	RIGHT OF WAY
(2) YELLOW	ICOND	TITLE BLOCK, PROP. EQUIP, INTERCONNECT CONDUIT
(3) GREEN	PEQUIP and PCOND	PROPOSED EQUIPMENT and PROPOSED CONDUIT
(4) CYAN	EEQUIP and CL	EXISTING EQUIPMENT and CENTERLINE
(5) BLUE		TITLE BLOCK and MISC. THICK LINES
(6) MAGENTA	ECOND	EXISTING CONDUIT
(7) WHITE	TEXT	TEXT (HEIGHT OF 1/8") and CIRCUIT No. (1/10" TALL)
(8) DARK GRAY	XCGS	CONCRETE (CGS)
PENS 9 – 249	XTELE, XWTR, XSS, XSD, XTREE, XGAS, XSMUD, XCTV, XFIBER, XTRACKS, XFENCE, ETC.	UNDERGROUND UTILITIES, OVERHEAD WIRES, ETC.

WIDTH FOR STRIPES 1=1

THESE LAYERS ARE EMBEDDED IN PROTO–ELECTRICAL.DWG

REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

LAYER STANDARDS

DATE:

APPROVED BY: _____

LINE WIDTHS AND APPEARANCE
STREETLIGHTS AND TRAFFIC SIGNALS

THE FOLLOWING LINE WIDTHS ARE FOR ALL CITY OF SACRAMENTO DEPTARTMENT OF TRANSPORTATION STREET LIGHT AND TRAFFIC SIGNAL PROJECTS PLOTTED ON D SIZE SHEETS, AND ARE EQUIVALENT TO AUTOCAD 2000 PLOTTER SETTINGS. THESE LINE WIDTHS ARE EMBEDDED IN ELECTRICAL-SLTS.CTB (PLOT FILE). PLEASE CONVERT AS REQUIRED FOR SOFTWARE OTHER THAN AUTODESK.

(PEN #) COLOR	LINETYPE	PEN WIDTH (mm) /PLOT COLOR	USE
(1) RED	PHANTOM	0.068/7	RIGHT OF WAY
(2) YELLOW	SOLID or CENTER	0.43/7	TITLE BLOCK or PROPOSED INTERCONNECT CONDUIT
(3) GREEN	SOLID and CENTER	0.43/7	PROPOSED EQUIPMENT & PROPOSED CONDUIT
(4) CYAN	TINYDASH and CENTERLINE	0.20/7	EXISTING EQUIPMENT & CENTERLINE
(5) BLUE	CONTINUOUS	0.63/7	TITLE BLOCK and MISC. THICK LINES
(6) MAGENTA	CENTER2	0.43/7	EXISTING CONDUIT
(7) WHITE	CONTINUOUS	0.38/7	TEXT
(8) DARK GRAY	CONTINUOUS	0.33/8	CONCRETE (CGS)
PENS 9 – 12	UTILITIES (LINETYPE VARIES)	0.25/251	UNDERGROUND UTILITIES, OVERHEAD WIRES

REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

LINE WIDTHS AND APPEARANCE

DATE:

APPROVED BY: _____

SYMBOLS

SIGNING AND STRIPING

SYMBOLS	DESCRIPTION
✳	INSTALL ROADSIDE SIGN
♦	REMOVE ROADSIDE SIGN
⬢	EXISTING ROADSIDE SIGN TO REMAIN
▲	RELOCATE ROADSIDE SIGN
⧗	REPLACE ROADSIDE SIGN
	EXISTING ROADSIDE SIGN LOCATION (ONE POST)
	EXISTING ROADSIDE SIGN LOCATION (TWO POST)
	NEW ROADSIDE SIGN LOCATION
GSP	GALVANIZED STEEL POST
SSBM	STRAP AND SADDLE BRACKET METHOD
MAS	MAST ARM MOUNTED SIGN
B/B	BACK TO BACK (DOUBLE SIDED SIGN, SIDE MOUNT)
SNS	STREET NAME SIGN
BUS	BUS STOP SIGN
	REMOVE EXISTING STRIPING OR MARKING

THESE SYMBOLS ARE EMBEDDED IN
STRIPING_LEGEND.DWG

REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

SYMBOLS
SIGNING AND STRIPING

DATE:

APPROVED BY: _____

SYMBOLS

SIGNING AND STRIPING

SYMBOLS	BLOCK NAME	DESCRIPTION
	AAHEAD	PAINTED "AHEAD" TRAFFIC MARKER
	AARRO-10	PAINTED DIRECTION INDICATOR MARKING
	AARRO-7L	PAINTED DIRECTION INDICATOR MARKING
	ABIKELAN	BIKE LANE MARKING
	AL-TURN	LEFT TURN ARROW
	AONLY	"ONLY" MARKING
	ARR-CR	RAILROAD CROSSING MARKING
	AR-TURN	RIGHT TURN TRAFFIC MARKING
	ASIGNAL	"SIGNAL" TRAFFIC MARKING
	ASTOP	"STOP" TRAFFIC SIGNAL MARKING
	AYIELD	"YIELD" TRAFFIC SIGNAL MARKING

THESE SYMBOLS ARE EMBEDDED IN STRIPING_LEGEND.DWG

REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

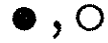
SYMBOLS SIGNING AND STRIPING

DATE:

APPROVED BY: _____

SYMBOLS

SIGNING AND STRIPING

SYMBOLS	DESCRIPTION
	PAVEMENT MARKING DETAIL NO.
	CHANNELIZERS/DELINEATORS/MARKERS
	CHANGE IN PAVEMENT DELINEATION DETAIL
	BEG. AND END OF PAVEMENT DELINEATION TRANSITION
	TYPE IV PAVEMENT ARROW
	TYPE VI PAVEMENT ARROW
	TYPE VII PAVEMENT ARROW
	TYPE 1 (10) PAVEMENT ARROW
	NEW SIGNAL POLE (OPEN – EXISTING)
	NEW MAST ARM POLE (OPEN – EXISTING)
	NEW STREET LIGHT
	EXISTING STREET LIGHT
	BIKE LANE MARKINGS (SEE DETAIL)
	CALTRANS DETAIL NUMBER

THESE SYMBOLS ARE EMBEDDED IN
STRIPING_LEGEND.DWG

REV.	DATE	DESCRIPTION
△		
△		
△		

Department of TRANSPORTATION City of Sacramento

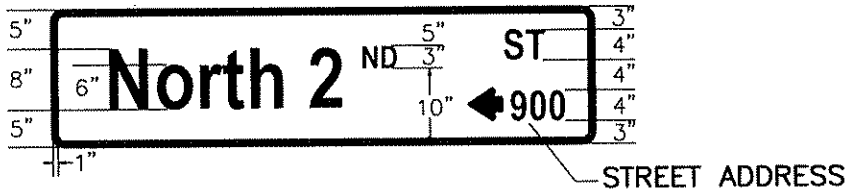
SYMBOLS
SIGNING AND STRIPING

DATE:

APPROVED BY: _____

STREET NAME SIGN SPECIFICATIONS

STANDARD DIMENSIONS



NOTE:
CONTRACTOR SHALL VERIFY EXACT STREET ADDRESS FOR PLACEMENT ON STREET NAME SIGNS.

LETTERED STREETS

30" X 18"

NUMBERED STREETS

36" X 18"

TWO TO THREE LETTERS IN STREET NAME

36" X 18"

FOUR TO SIX LETTERS IN STREET NAME

48" X 18"

AT LEAST ONE STREET IS MORE THAN SIX LETTERS LONG

72" X 30" (2 Streets)

MORE THAN SIX LETTERS IN STREET NAME

72" X 18"

REV.	DATE	DESCRIPTION
△		
△		
△		

THESE DRAWINGS ARE EMBEDDED IN theSTSIGNS.DWG

Department of TRANSPORTATION City of Sacramento

STREET NAME SIGN SPECIFICATIONS

DATE:

APPROVED BY: _____

STANDARD DRAWING EXAMPLES

STANDARD DRAWING SAMPLES

STREET LIGHTING

SCALE TO BE 1"=40' FOR CITY CAPITAL IMPROVEMENT PROJECTS AND 1"=100' FOR DEVELOPER'S SUBDIVISONS, CONSULT CITY OF SACRAMENTO DESIGN PROCEDURES MANUAL OR CONTACT THE CITY OF SACRAMENTO STAFF AT (916) 808–8300 FOR STREETLIGHT SPACING AND DESIGN CRITERIA. EXISTING STREETLIGHTS AND SERVICE CANS SHALL BE LABELED WITH THE CITY IDENTIFYING NUMBER ON PLAN SHEETS.

STREETLIGHT RELOCATIONS

SCALE TO BE 1"=20' UNLESS PROJECT WILL NOT FIT ON ONE SHEET, THEN 1"=40' OR LARGER OKAY. OBTAIN THE STREETLIGHT NUMBER FROM CITY STAFF AND PLACE ON SHEET. STREET AND NEAREST CROSS STREET SHALL BE SHOWN.

TRAFFIC SIGNALS

TRAFFIC SIGNALS SHALL HAVE A COVER SHEET, A 1"=20' SCALE DRAWING, AND A 1"=40' SCALE DRAWING. INTERCONNECT SHALL BE SHOWN AT A MINIMUM OF 1"=100'.

SIGNING AND STRIPING

SIGNING AND STRIPING SHALL BE A MINIMUM SCALE OF 1"=40'. FOR QUESTIONS REGARDING SIGNING AND STRIPING CALL CITY STAFF AT (916) 808–5307.

NOTE:
SCALES OTHER THAN THOSE SPECIFIED HEREIN SHALL BE REVIEWED AND APPROVED BY THE ELECTRICAL SECTION PRIOR TO THE FIRST SUBMITTAL.

REV.	DATE	DESCRIPTION
1		
2		
3		

Department of TRANSPORTATION City of Sacramento

STANDARD DRAWING SAMPLES

DATE:

APPROVED BY: _____

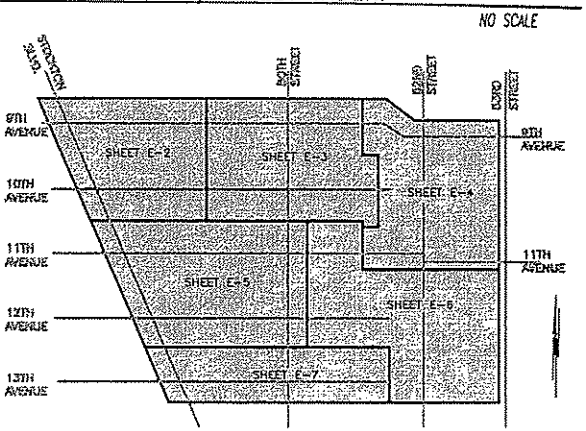
FILENAME: P:\TECHELEC\STANDARDS PAMPHLET FOR CONSULTANTS\STANDARD_LINES_SYMBOLS.DWG

STREET LIGHTING EXAMPLES

EXAMPLE–2 THROUGH EXAMPLE–5

LOCATION MAP / SHEET INDEX:

NO SCALE

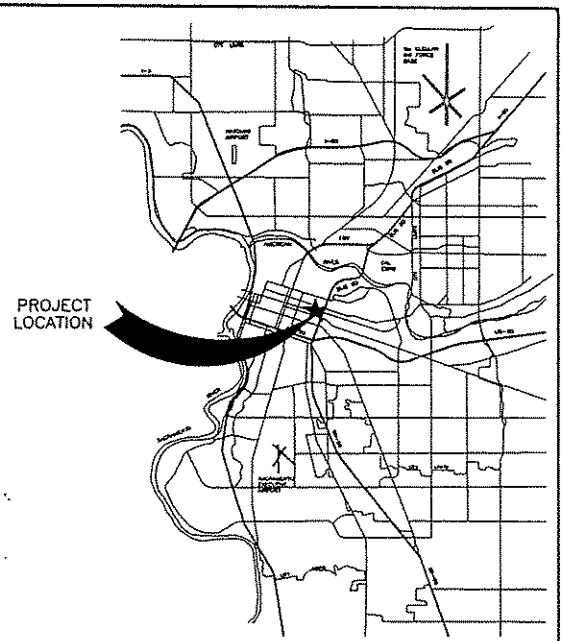


IMPROVEMENT PLANS

FOR

TAHOE PARK WEST

STREET LIGHTING



VICINITY MAP

NO SCALE

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF SACRAMENTO STANDARD SPECIFICATIONS, DATED JUNE 1989 AND ALL UPDATES, ADDENDUMS AND MEMORANDUMS TO THEM.
2. THE CONTRACTOR SHALL SUBMIT TO THE RESIDENT ENGINEER A COMPLETED CONSTRUCTION STAKING REQUEST FORM TWO (2) WORKING DAYS PRIOR TO THE NEED FOR PROJECT STAKING.
3. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR FURNISHING, INSTALLING AND MAINTAINING ALL WARNING SIGNS AND DEVICES NECESSARY TO SAFEGUARD THE GENERAL PUBLIC AND THE WORK, AND TO PROVIDE FOR THE PROPER AND SAFE ROUTING OF THE VEHICULAR AND PEDESTRIAN TRAFFIC DURING THE PERFORMANCE OF THE WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE USE OF FLAG MAN, BARRICADES AND CONSTRUCTION SIGNING SHALL COMPLY WITH THE CURRENT EDITION OF WORK AREA AND TRAFFIC CONTROL HANDBOOK (W.A.T.C.H.).
4. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL EXISTING UTILITIES AND FOR THE PROTECTION OF AND THE REPAIR OF DAMAGE TO THEM. THE CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT (1-800-642-2444) TWO (2) WORKING DATES BEFORE WORK IS TO BEGIN.
5. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING DRAINAGE FACILITIES WITHIN THE CONSTRUCTION AREA UNTIL THE NEW DRAINAGE IMPROVEMENTS ARE IN PLACE AND FUNCTIONING.
6. EXACT LIMITS OF PAVEMENT REMOVAL AND RECONSTRUCTION SHALL BE DETERMINED IN THE FIELD BY THE RESIDENT ENGINEER. EXISTING ASPHALT AND CONCRETE PAVEMENT SHALL BE SAW-CUT A MINIMUM OF 2-1/2" DEEP IN A STRAIGHT LINE PRIOR TO PAVING. EXPOSED VERTICAL EDGES WHICH WILL HAVE ASPHALTIC CONCRETE PLACED AGAINST THEM SHALL BE TACKED WITH EMULSION PRIOR TO ASPHALTIC CONCRETE PAVING.
7. DEMOLITION OF EXISTING FEATURES SHALL BE LIMITED TO THE ITEMS SHOWN ON THE PLANS AND DESCRIBED IN THE SPECIAL PROVISIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND / OR REPLACE ALL EXISTING IMPROVEMENTS DAMAGED BY HIS OPERATIONS, AT HIS EXPENSE.
8. THE CONTRACTOR SHALL BE COMPLETELY RESPONSIBLE FOR CAPPING AND RELOCATING EXISTING SPRINKLERS AS DIRECTED BY THE ENGINEER.
9. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR VERIFYING THAT THE ARRANGEMENTS HAVE BEEN MADE FOR PRESERVING AND / OR PERPETUATING ALL PERMANENT SURVEY MONUMENTS THAT WILL BE AFFECTED BY THE WORK. CONTRACTOR IS RESPONSIBLE FOR PRESERVING ALL PERMANENT SURVEY MONUMENTS WHICH ARE NOT PROPOSED TO BE DISTURBED. CONTRACTOR SHALL PROVIDE A MINIMUM OF 10 WORKING DAYS NOTICE TO ENGINEER PRIOR TO DISTURBANCE OR REMOVAL OF PERMANENT SURVEY MONUMENTS. ENGINEER SHALL COORDINATE WITH CONTRACTOR TO RESET MONUMENTS OR PROVIDE PERMANENT WITNESS MONUMENTS AND FILE THE REQUIRED DOCUMENTATION WITH THE COUNTY SURVEYOR PURSUANT BUSINESS AND PROFESSIONS CODE SECTION 8771.
10. THE CONTRACTOR IS COMPLETELY RESPONSIBLE FOR COORDINATING CIVIL WORK WITH ELECTRICAL WORK IN THESE PLANS.

APPROVED BY: _____ P.E.: E-15261 DATE: _____
ERIC S. YAP
SENIOR ELECTRICAL ENGINEER

SHEET INDEX:

TAHOE PARK WEST

REVISIONS NO.	DESCRIPTION	DATE	BY

RESEARCH PLAN NUMBERS: E-2314, E-2315, E-2316, E-2317, E-2318, E-3041

FIELD BOOK

SCALE: NTS

CITY OF SACRAMENTO
DEPARTMENT OF PUBLIC WORKS

DRAWN BY: A. DEL CARMEN DATE MAY 2004
DESIGN BY: K. HAILE R.C.E. _____ DATE _____
CHECKED BY: E. YAP R.C.E. _____ DATE _____

ELECTRICAL
COVER SHEET
STREET LIGHTING

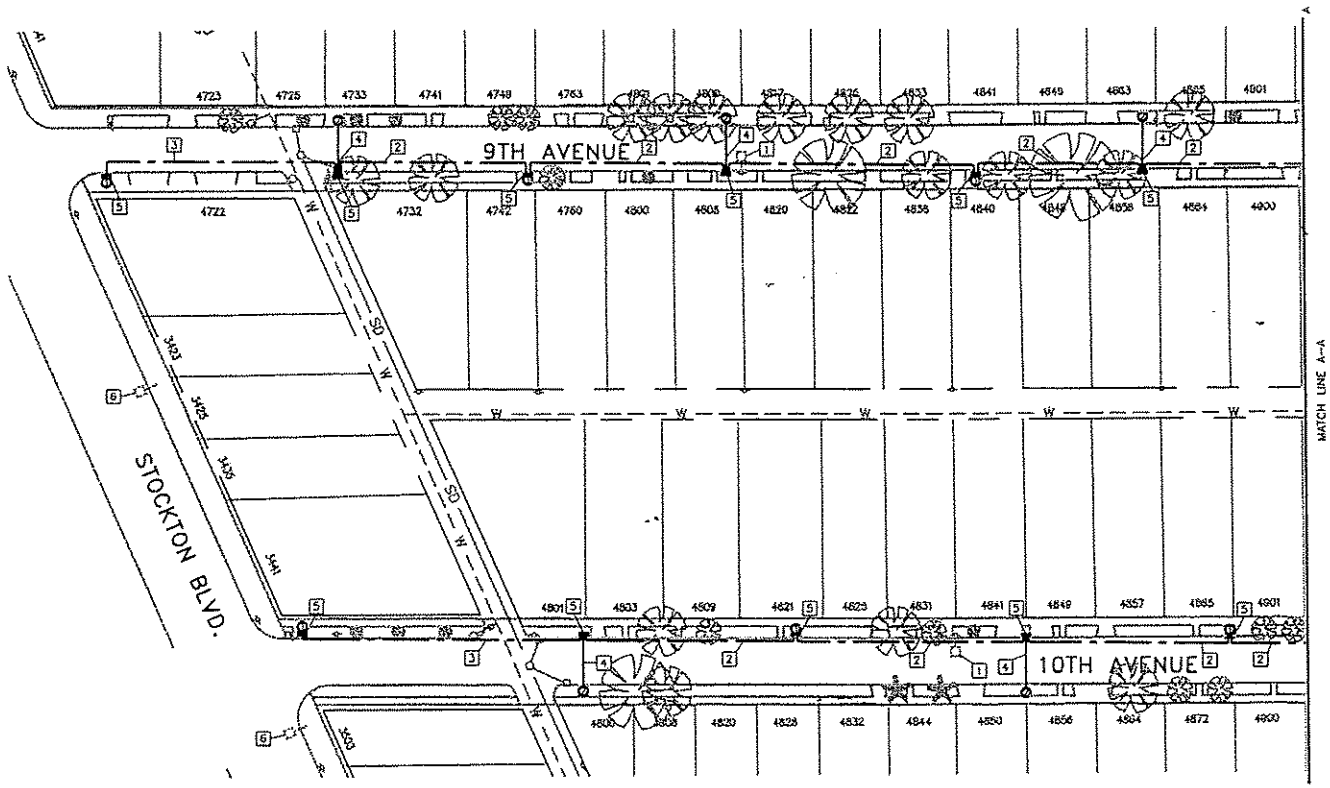
SM69

SHEET E-1 OF 9

EXAMPLE-2 STREET LIGHTING - COVER

CONSTRUCTION NOTES:

1. EXISTING SMUD SAFETY LIGHT. TO BE REMOVED BY SMUD AFTER THE NEW STREET LIGHTS ARE OPERATIONAL.
2. PLACE 2"C-3#6 THW AND 1#10 THW GROUND.
3. PLACE 2"C-2#6 THW AND 1#10 THW GROUND.
4. PLACE 1 1/2"C-2#6 THW AND 1#10 THW GROUND.
5. PLACE NEW #5 PULL BOX
6. EXISTING TO REMAIN.



NOTES:

1. SEE SHEETS E-8 AND E-9 FOR STREET LIGHTING DETAILS AND LEGEND.
2. PLACE ELECTROLIERS AT FACE OF SIDEWALK UNLESS OTHERWISE NOTED. PROVIDE 6" COLLAR AROUND PULL BOX WHEN PLACED IN A PLANTER. SEE DETAILS ON SHEET E-8.
3. ALL THE LUMINAIRES TO BE INSTALLED SHALL BE INSPECTED BY THE ENGINEER PRIOR TO INSTALLATION.
4. ALL NEW PULL BOXES LOCATED AT STREET CORNERS SHALL BE PLACED IN THE SIDEWALK AREA THREE FEET AWAY FROM THE END OF THE RADIUS, (OUTSIDE OF THE CURB RAMP AREA) UNLESS OTHERWISE NOTED.
5. THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.
6. ALL CONDUITS SHALL BE SCHEDULE 40 PVC UNLESS OTHERWISE SPECIFIED. FOR LOCATIONS WHERE NEW CONDUIT IS TO BE SPLICED TO EXISTING CONDUIT, THE CONDUIT SHALL BE OF THE SAME TYPE AND SIZE AS THE EXISTING TYPE.
7. ALL LUMINAIRES AND PULL BOXES SHALL BE PLACED NO LESS THAN 5' FROM DRIVEWAYS.

REGISTERED PROFESSIONAL ENGINEER — ERIC S. YAP — No. E-15261 Exp. 6/30/04 — ELECTRICAL — STATE OF CALIFORNIA

EXAMPLE-3

STREET LIGHTING - E2

REVISIONS NO.	DESCRIPTION	DATE	BY

RESEARCH PLAN NUMBERS: E-2315

FIELD BOOK:

SCALE: 1"=40'

CITY OF SACRAMENTO
DEPARTMENT OF PUBLIC WORKS

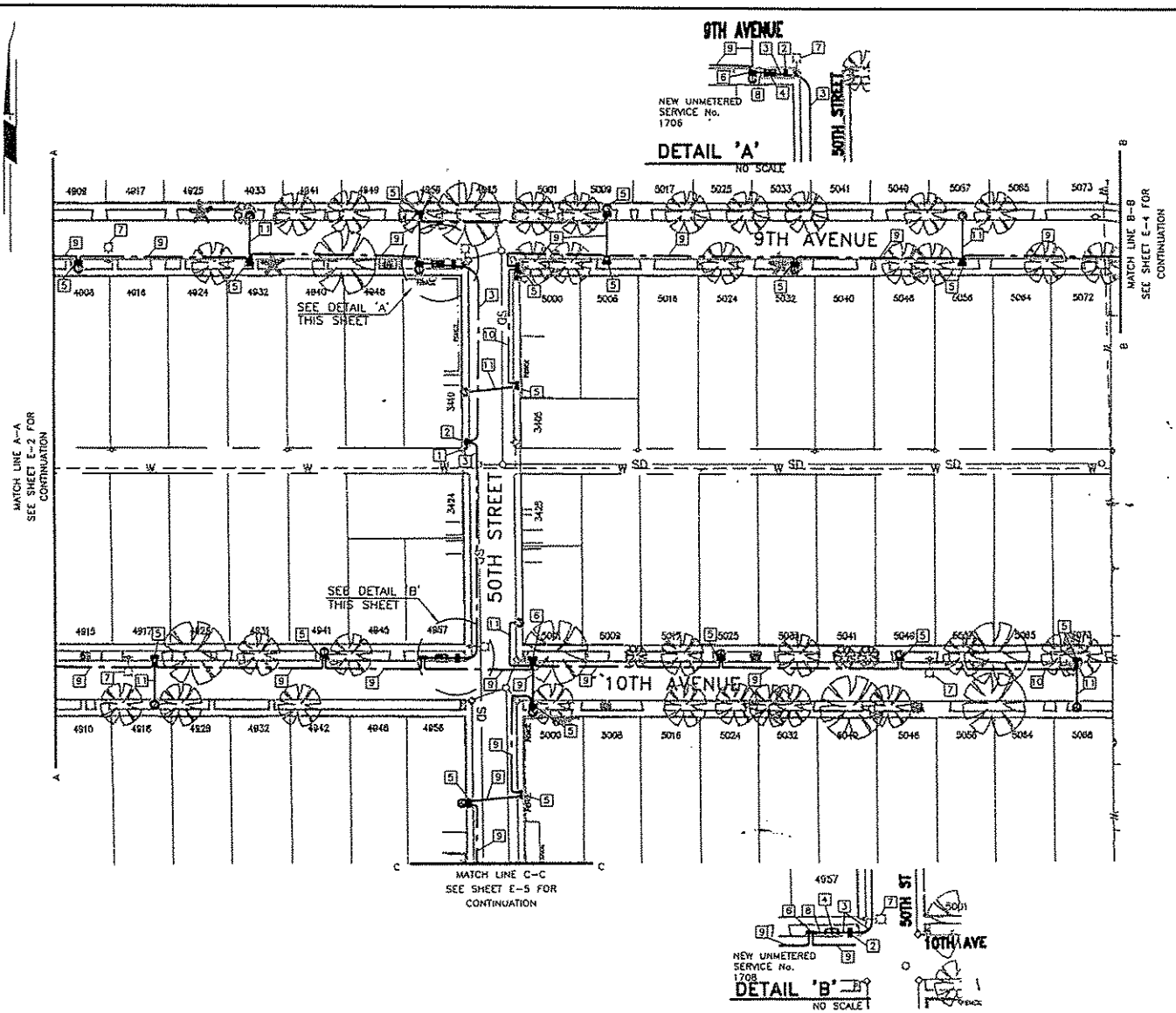
DRAWN BY: A. DEL CARMEN — DATE MAY 2004
DESIGN BY: K. HAILE — R.C.E. _____ DATE _____
CHECKED BY: E. YAP — R.C.E. _____ DATE _____

ELECTRICAL
TAHOE PARK WEST
STREET LIGHTING

APPROVED BY: _____ P.E.: E-15261 DATE: _____
ERIC S. YAP
SENIOR ELECTRICAL ENGINEER

SM69

SHEET E-2 OF 9



CONSTRUCTION NOTES:

1. PLACE 2" RIGID HOT DIPPED GALVANIZED STEEL CONDUIT RISER AND EXTEND UP WOODEN POLE 10 FEET. PLACE A PULL ROPE IN THE CONDUIT AND RISER PER SMUD'S REQUIREMENTS. CALL ROD TURNER OF SMUD AT (916) 732-5707 TO DETERMINE WHICH POLE QUADRANT TO USE.
2. SMUD SERVICE POINT. PLACE A NEW NO. 6 PULL BOX INSCRIBED "SMUD" ON THE LID.
3. PLACE 2"C-3#1 THW AND 1#6 THW GROUND.
4. PLACE NEW UNMETERED SERVICE PEDESTAL WITH FOUNDATION AS SHOWN. DOOR SHALL OPEN TO THE SIDEWALK. PROVIDE AND MOUNT SMUD APPROVED PHOTOCELL IN SERVICE PEDESTAL. WIRE IT USING 3#14 THW AND 1#10 THW GROUND.
5. PLACE NEW #5 PULLBOX.
6. PLACE NEW #6 PULLBOX.
7. EXISTING SMUD SAFETY LIGHT. TO BE REMOVED BY SMUD AFTER THE NEW STREET LIGHTS ARE OPERATIONAL.
8. PLACE 2"C-5#6 THW AND 1#10 THW GROUND.
9. PLACE 2"C-3#6 THW AND 1#10 THW GROUND.
10. PLACE 2"C-2#6 THW AND 1#10 THW GROUND.
11. PLACE 1 1/2"C-2#6 THW AND 1#10 THW GROUND.

NOTES:

1. THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.
2. SEE SHEET E-2 FOR GENERAL NOTES.

LUMINAIRE SCHEDULE:

NEW SERVICE No. 1706 IS LOCATED ON THE SOUTH SIDE OF 9TH AVENUE, 20' WEST OF THE CENTERLINE OF 50TH STREET

CIRCUIT NUMBER	NEW 100W HPS ORNAMENTAL
1	5
2	4
3	4
4	3
5	-
6	-

TOTAL NEW: 16

NEW SERVICE IS 120/240 VOLT, 1Φ, 3 WIRE. CONNECT NEW LUMINAIRES TO 120 VOLT CIRCUITS.

LUMINAIRE SCHEDULE:

NEW SERVICE No. 1708 IS LOCATED ON THE NORTH SIDE OF 10TH AVENUE, 20' WEST OF THE CENTERLINE OF 50TH STREET

CIRCUIT NUMBER	NEW 100W HPS ORNAMENTAL
1	4
2	3
3	7
4	7
5	-
6	-

TOTAL NEW: 21

NEW SERVICE IS 120/240 VOLT, 1Φ, 3 WIRE. CONNECT NEW LUMINAIRES TO 120 VOLT CIRCUITS.

REGISTERED PROFESSIONAL ENGINEER — FIRST M. LAST — No. E-XXXXX Exp. 6/30/04 — ELECTRICAL — STATE OF CALIFORNIA

REVISIONS NO.	DESCRIPTION	DATE	BY

RESEARCH PLAN NUMBERS: E-2316

FIELD BOOK

SCALE: 1" = 40'

CITY OF SACRAMENTO
DEPARTMENT OF PUBLIC WORKS

DRAWN BY: A. DEL CARMEN DATE MAY 2004
DESIGN BY: K. HAILE R.C.E. _____ DATE _____
CHECKED BY: E. YAP R.C.E. _____ DATE _____

ELECTRICAL
TAHOE PARK WEST
STREET LIGHTING

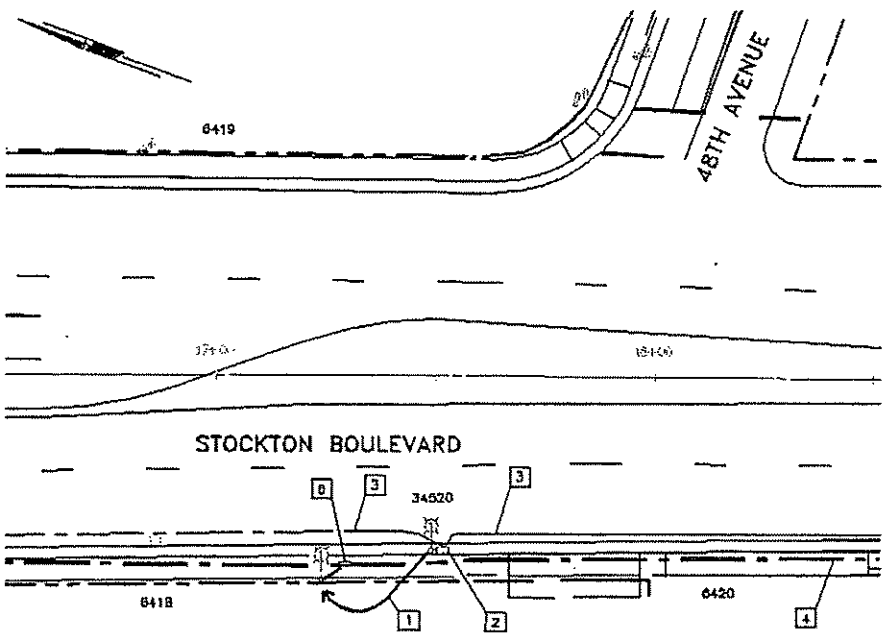
APPROVED BY: _____ P.E.: E-15261 DATE: _____
ERIC S. YAP
SENIOR ELECTRICAL ENGINEER

SM99

SHEET E-3 OF 9

EXAMPLE-4

STREET LIGHTING - E3



CONSTRUCTION NOTES:

1. RELOCATE EXISTING STREETLIGHT AS SHOWN WITH NEW FOUNDATION AND ADJUST STREETLIGHT TO NEW GRADE. ABANDON EXISTING FOUNDATION.
2. REMOVE EXISTING PULL BOX.
3. ABANDON EXISTING CONDUIT AND REMOVE CONDUCTORS.
4. PLACE 2"C – 3#6 THW AND 1#10 THW GROUND.
5. PLACE NEW No. 5 PULL BOX AND ADJUST TO GRADE.

LUMINAIRE SCHEDULE:

EXISTING SERVICE No. 98751 IS LOCATED ON THE WEST SIDE SIDE OF STOCKTON BLVD APPROXIMATELY 500' SOUTH OF 48TH AVENUE.

CIRCUIT NUMBER	EXISTING 200W MAST ARM
1	7
2	5
3	
4	
5	
6	

EXISTING SERVICE IS 120/240 VOLT, 1#, 3 WIRE. CONNECT NEW LUMINAIRES TO 120 VOLT CIRCUITS.

NOTES:

1. THIS SHEET IS ACCURATE FOR ELECTRICAL WORK ONLY.
2. SEE SHEET E-1 FOR GENERAL NOTES.

REVISIONS NO.	DESCRIPTION	DATE	BY

RESEARCH PLAN NUMBERS

FIELD BOOK

SCALE 1"=20'

CITY OF SACRAMENTO
DEPARTMENT OF TRANSPORTATION

DRAWN BY: A. DEL CARMEN
DATE: J. MATOMA
DESIGN BY: J. MATOMA
R.C.E. DATE
CHECKED BY: K. HALE
R.C.E. DATE

ELECTRICAL
STOCKTON BLVD BEAUTIFICATION PHASE III
STREETLIGHT

PN: TY51

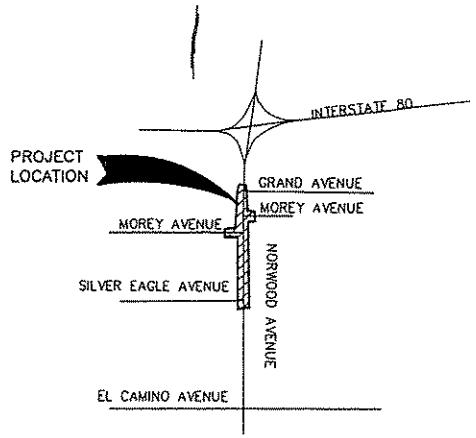
SHEET E-5 of 9

EXAMPLE-5

STREET LIGHTING - RELOCATE E-5

TRAFFIC SIGNAL EXAMPLES

EXAMPLE–6 THROUGH EXAMPLE–11

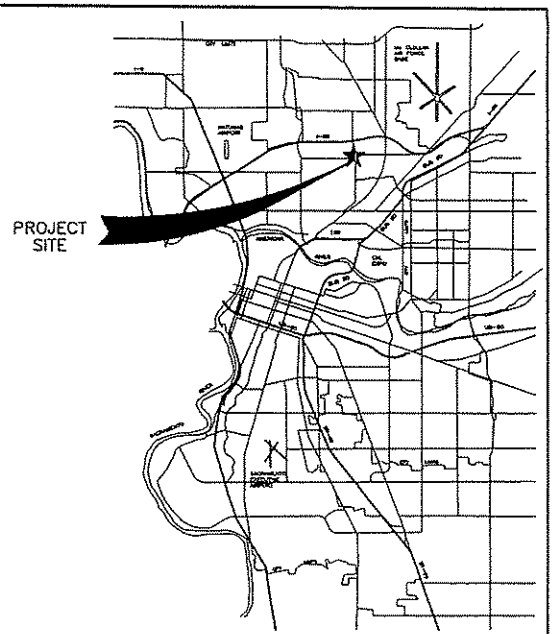


LOCATION MAP
NTS

TRAFFIC SIGNAL PLANS

FOR

NORWOOD AVENUE
AND
MOREY AVENUE



VICINITY MAP
NTS

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE CITY OF SACRAMENTO STANDARD SPECIFICATIONS, DATED JUNE, 1989.
2. THE CONTRACTOR SHALL SUBMIT TO THE RESIDENT ENGINEER A COMPLETED CONSTRUCTION STAKING REQUEST FORM TWO (2) WORKING DAYS PRIOR TO THE NEED FOR PROJECT STAKING.
3. THE CONTRACTOR SHALL BE SOLELY AND COMPLETELY RESPONSIBLE FOR FURNISHING, INSTALLING AND MAINTAINING ALL WARNING SIGNS AND DEVICES NECESSARY TO SAFEGUARD THE GENERAL PUBLIC AND THE WORK, AND TO PROVIDE FOR THE PROPER AND SAFE ROUTING OF THE VEHICULAR AND PEDESTRIAN TRAFFIC DURING THE PERFORMANCE OF THE WORK. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS. THE USE OF FLAGMEN, BARRICADES AND CONSTRUCTION SIGNING SHALL COMPLY WITH THE CURRENT EDITION OF WORK AREA AND TRAFFIC CONTROL HANDBOOK. (W.A.T.C.H.).
4. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL EXISTING UTILITIES AND FOR THE PROTECTION OF AND THE REPAIR OF DAMAGE TO THEM. THE CONTRACTOR SHALL CONTACT UNDERGROUND SERVICE ALERT (1-800-642-2444) TWO (2) WORKING DAYS BEFORE WORK IS TO BEGIN.
5. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING DRAINAGE FACILITIES WITHIN THE CONSTRUCTION AREA UNTIL THE NEW DRAINAGE IMPROVEMENTS ARE IN PLACE AND FUNCTIONING.
6. EXACT LIMITS OF PAVEMENT REMOVAL AND RECONSTRUCTION SHALL BE DETERMINED IN THE FIELD BY THE RESIDENT ENGINEER. EXISTING ASPHALT AND CONCRETE PAVEMENT SHALL BE SAW-CUT A MINIMUM OF 2-1/2" DEEP IN A STRAIGHT LINE PRIOR TO PAVING. EXPOSED VERTICAL EDGES WHICH WILL HAVE ASPHALT CONCRETE PLACED AGAINST THEM SHALL BE TACKED WITH EMULSION PRIOR TO ASPHALT CONCRETE PAVING.
7. DEMOLITION OF EXISTING FEATURES SHALL BE LIMITED TO THE ITEMS SHOWN ON THE PLANS AND DESCRIBED IN THE SPECIAL PROVISIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO REPAIR AND/OR REPLACE ALL EXISTING IMPROVEMENTS DAMAGED BY HIS OPERATIONS, AT HIS EXPENSE.
8. THE CONTRACTOR SHALL BE COMPLETELY RESPONSIBLE FOR CAPPING AND RELOCATING EXISTING SPRINKLERS AS DIRECTED BY THE ENGINEER.

APPROVED BY: _____ DATE: _____
ERIC S. YAP; PE: E-15261
SENIOR ENGINEER

SIGNING AND STRIPING APPROVED BY: _____ DATE: _____
ANGIE LOUIE-FONG, R.T.E. 2153
CITY TRAFFIC ENGINEER

SHEET INDEX:

NORWOOD AVENUE & MOREY AVENUE

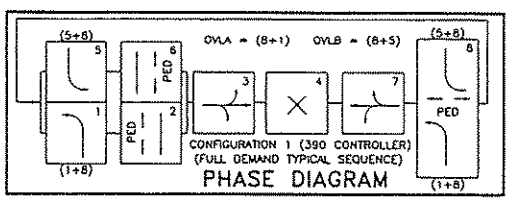
REVISIONS NO.	DESCRIPTION	DATE	BY	BENCH MARK DATUM: _____ DESCRIPTION	FIELD BOOK	CITY OF SACRAMENTO DEPARTMENT OF PUBLIC WORKS	COVER SHEET	SM06	SHEET E-1 1 of 6
					SCALE N.T.S.	DRAWN BY: C.V. ALEXANDER DATE: J. MATOBA; DESIGN BY: J. MATOBA R.C.E. _____ DATE _____; CHECKED BY: E. YAP R.C.E. _____ DATE _____			

EXAMPLE-6 TRAFFIC SIGNAL - COVER

CONDUCTOR SCHEDULE

CONDUIT RUN	1	2	3	4	5	6	7	8	9	10	11	12
CONDUCTORS	8	10	6	10	8	10	6	10	6	10	6	10	6	10	6	10	6	10	6	10	6	10	6	10
VEH. SIG. #1																								
VEH. SIG. #2	3		3		3		3		3								3		3		3			
VEH. SIG. #3									3		3		3						3		3			
VEH. SIG. #4																								
VEH. SIG. #5																								
VEH. SIG. #6			3		3		3												3		3			
VEH. SIG. #7	3		3		3		3		3		3		3				3		3		3			
VEH. SIG. #8																								
OVLA		3		3		3												3		3		3		
OVLB								3		3		3		3						3		3		
PED. SIG. #2		2		2		2		2		2		2		2				2		2		2		
PED. SIG. #6																				2		2		
PED. SIG. #8		2		2		2											2		2			2		
P.P.B. #2		2		2		2		2		2		2		2				2		2		2		
P.P.B. #6																				2		2		
P.P.B. #8		2		2		2											2		2			2		
VEH. DET. #1								2		2										2		2		
VEH. DET. #2		3		3		3												3		3		3		
VEH. DET. #3								4		4		4		4						4		4		
VEH. DET. #4																								
VEH. DET. #5		2		2		2												2		2		2		
VEH. DET. #6								3		3										3		3		
VEH. DET. #7						2														2		2		
VEH. DET. #8																								
EVA				1'		1'														1'		1'		
EVB								1'		1'		1'								1'		1'		
EVC																								
EVD																								
SPARES		3		3		3		3		3		3		3		3		3		3		3		
SIG.NEUTRAL	1		1		1		1		1		1		1		1		1		1		1			
ST.LT.POWER	3		3		4		5		4		3		3		2		3		5		5			
ST.LT.CONTROL						3														3				
CONTROLLER POWER																					2			
GROUND	1		1		1		1		1		1		1		1		1		1		1			
SPANWIR CNDTR																								
INTERCONNECT		2*		2*		2*																2**		2**
TOTAL CONDUCTORS	3	12	8	5	3	12	8	5	2	12	8	7	5	2	12	10	4	5	2	12	10	11	5	6

'*' INDICATES INTERCONNECT CABLE PER SPECIAL PROVISIONS
'**' INDICATES OPTICAL DETECTOR CABLE PER SPECIAL PROVISIONS

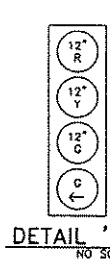


PHASE DIAGRAM

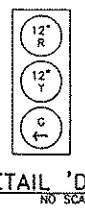
POLE SCHEDULE

LOCATION	STANDARD	VEH. SIGNAL #	VEH. SIGNAL TYPE	VEH. SIGNAL SEC	VEH. SIGNAL MTG	PED. SIGNAL #	PED. SIGNAL TYPE	PED. SIGNAL MTG	PPB #	PPB ARROW	MAST ARM LENGTH TRA. SIG.	MAST ARM LENGTH ST. LTNG	NOTES
Ⓐ	27-4-70	OVLA	1W3L	A	MAS						40'		2
		6	1W3L	12"	SV-1-T								
		8	1W3L	DET'B'									
Ⓑ	TYPE 15	7	1W3L	12"	SV-2-T	6	1W2L	SP-1-T	6	RIGHT		10'	
Ⓒ	1-B * (SPECIAL)	3	1W4L	DET'C'	TV-1-T	6	1W2L	SP-1-T	6	RIGHT			
Ⓓ	TYPE 15	OVLB	1W3L	A	SV-2-T							10'	
		6	1W3L	12"	SV-1-T								
		8	1W3L	12"									
Ⓔ	27-4-70	OVLB	1W3L	A	MAS						40'		2
		2	1W3L	12"	SV-1-T								
		2	1W3L	12"									
Ⓕ	TYPE 15	7	1W3L	DET'D'	SV-2-T	2	1W2L	SP-1-T	2	RIGHT		10'	
		3	1W3L	12"									
Ⓖ	1-B * (SPECIAL)	7	1W4L	DET'C'		8	1W2L	SP-2-T	8	LEFT			
						2	1W2L		2	RIGHT			
Ⓗ	TYPE 15	OVLA	1W3L	A	SV-2-T							10'	
		7	1W3L	12"	SV-1-T								

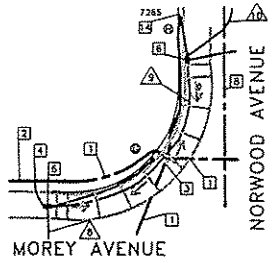
'A' INDICATES ALL 12" ARROW VEHICLE SIGNAL HEAD SECTION.
* SEE SHEET E-4 FOR DETAIL OF SPECIAL 1-B TRAFFIC SIGNAL STANDARD.

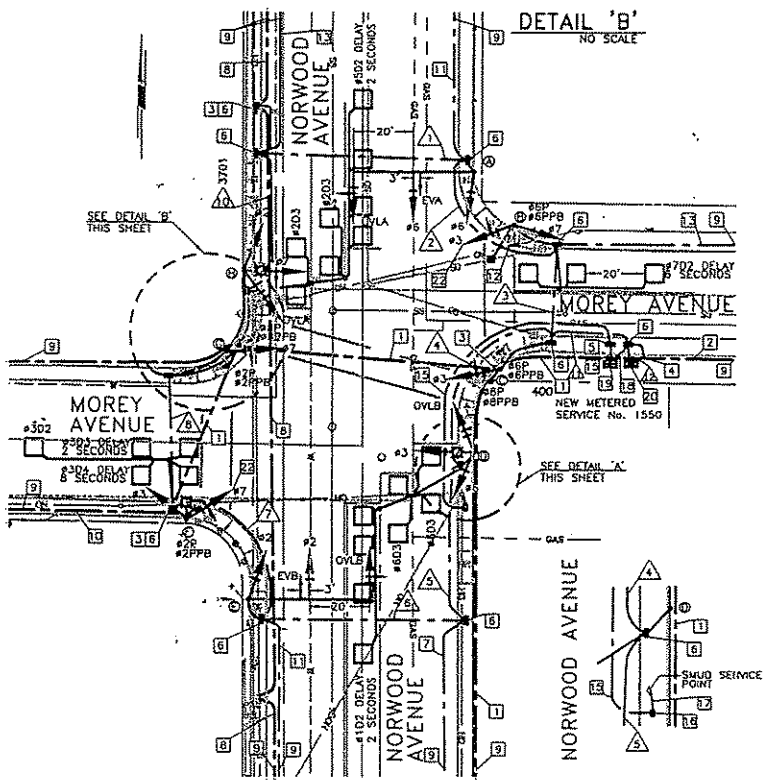


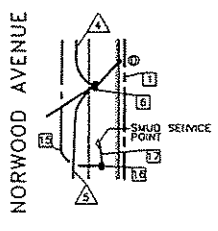
DETAIL 'C'
NO SCALE



DETAIL 'D'
NO SCALE







DETAIL 'A'
NO SCALE

CONSTRUCTION NOTES:

1. REMOVE EXISTING CONDUCTORS AND ABANDON CONDUIT.
2. EXISTING CONDUCTORS AND CONDUIT TO REMAIN.
3. REMOVE EXISTING PULL BOX.
4. INTERCEPT EXISTING CONDUIT AND CONDUCTORS. EXTEND INTO NEW PULL BOX.
5. PLACE NEW No. 5 PULL BOX. ADJUST TO GRADE.
6. PLACE NEW No. 6 PULL BOX. ADJUST TO GRADE.
7. PLACE 2"C - 3 DETECTOR CABLES, 2#6 THW, AND 1#10 THW GROUND.
8. EXISTING 2"C - 1 INTERCONNECT CABLE AND 1#10 THW GROUND. REMOVE EXISTING INTERCONNECT CABLE AND PLACE NEW INTERCONNECT CABLE.
9. SEE SHEET E-3 FOR CONTINUATION.
10. PLACE 1 DETECTOR CABLE INTO EXISTING CONDUIT.
11. PLACE 2"C - 2#6 THW AND 1#10 THW GROUND.
12. PROVIDE SUITABLE TWIST-LOCK RECEPTACLE FOR SMUD APPROVED PHOTOCELL ON THIS LUMINAIRE.
13. PLACE 2"C - 1 DETECTOR CABLE AND 1#10 THW GROUND.
14. REMOVE AND SALVAGE EXISTING STREETLIGHT. ABANDON FOUNDATION. PLACE NEW STANDARD AND FOUNDATION AS SPECIFIED IN THE POLE SCHEDULE.
15. PLACE 2"C - 3#1 THW AND 1#6 THW GROUND.
16. PLACE NEW No. 5 PULL BOX INSCRIBED 'SMUD' ON THE LID.
17. PLACE 2" RIGID HOT DIPPED GALVANIZED STEEL CONDUIT AND RISER. RISE UP POLE 10' AND PLACE A PULL ROPE IN THE CONDUIT AND RISER PER SMUD'S REQUIREMENTS.
18. PLACE 2"C - 5#6 THW STREETLIGHT, 3#14 THW PHOTOCELL, 2#6 THW CONTROLLER POWER, AND 1#10 THW GROUND.
19. PLACE NEW METERED SERVICE PEDESTAL AND FOUNDATION AS SHOWN. DOOR SHALL OPEN TO THE NORTH.
20. CONTRACTOR SHALL CONSTRUCT NEW FOUNDATION FOR TYPE 'R' CONTROLLER CABINET AS SHOWN AND INSTALL CITY FURNISHED CONTROLLER WITH CABINET. DOOR SHALL OPEN TO THE NORTH.
21. PLACE EMERGENCY VEHICLE DETECTOR ON MASTARM.
22. PLACE THREE STRAIGHT RAY LOUVERS ON SIGNAL HEAD.

NOTES:

1. THIS PLAN IS ACCURATE FOR ELECTRICAL WORK ONLY.
2. SEE SHEET E-5 AND E-6 FOR STANDARD DETAILS AND LEGEND.
3. ALL NEW LUMINAIRES SHALL BE 200 WATT HPS, UNLESS OTHERWISE NOTED. ALL NEW LUMINAIRES TO BE INSTALLED SHALL BE INSPECTED BY THE ENGINEER PRIOR TO INSTALLATION.
4. INTERCONNECT CABLE SHALL BE SHIELDED 6 TWISTED PAIR #19 CABLE AS SPECIFIED IN THE SPECIAL PROVISIONS.
5. DETECTOR LOOPS SHALL BE A SHIELDED TWO TWISTED PAIR #18 CANOGA 30003 OR APPROVED EQUAL. DETECTOR LOOPS SHALL BE CENTERED IN THELANE, UNLESS OTHERWISE NOTED. ALL DETECTOR LOOPS SHALL BE 6'x6' LOOPS, UNLESS OTHERWISE NOTED.
6. ALL NEW PULL BOXES LOCATED AT STREET CORNERS SHALL BE PLACED IN THE SIDEWALK AREA 3 FEET AWAY FROM THE END OF THE RADIUS. ALL NEW PULL BOX LIDS SHALL BE SEALED WITH QUICK SET CEMENT AFTER THE STREET LIGHTING SYSTEM IS CHECKED AND APPROVED BY THE ELECTRICAL INSPECTOR.
7. ALL CONDUITS SHALL BE SCHEDULE 40 PVC UNLESS OTHERWISE SPECIFIED. FOR LOCATIONS WHERE NEW CONDUIT IS TO BE SPICED TO EXISTING CONDUIT, THE CONDUIT SHALL BE OF THE SAME TYPE AND SIZE AS THE EXISTING TYPE.

REVISIONS
NO. | DESCRIPTION | DATE | BY

RESEARCH PLAN NUMBERS

FIELD BOOK

SCALE 1" = 20'

CITY OF SACRAMENTO
DEPARTMENT OF PUBLIC WORKS

DRAWN BY: C.V. ALEXANDER
DATE: J. MATOBA
DESIGN BY: J. MATOBA
R.C.E. ____ DATE ____
CHECKED BY: E. YAP
R.C.E. ____ DATE ____

ELECTRICAL
NORWOOD AVENUE & MOREY AVENUE
TRAFFIC SIGNAL

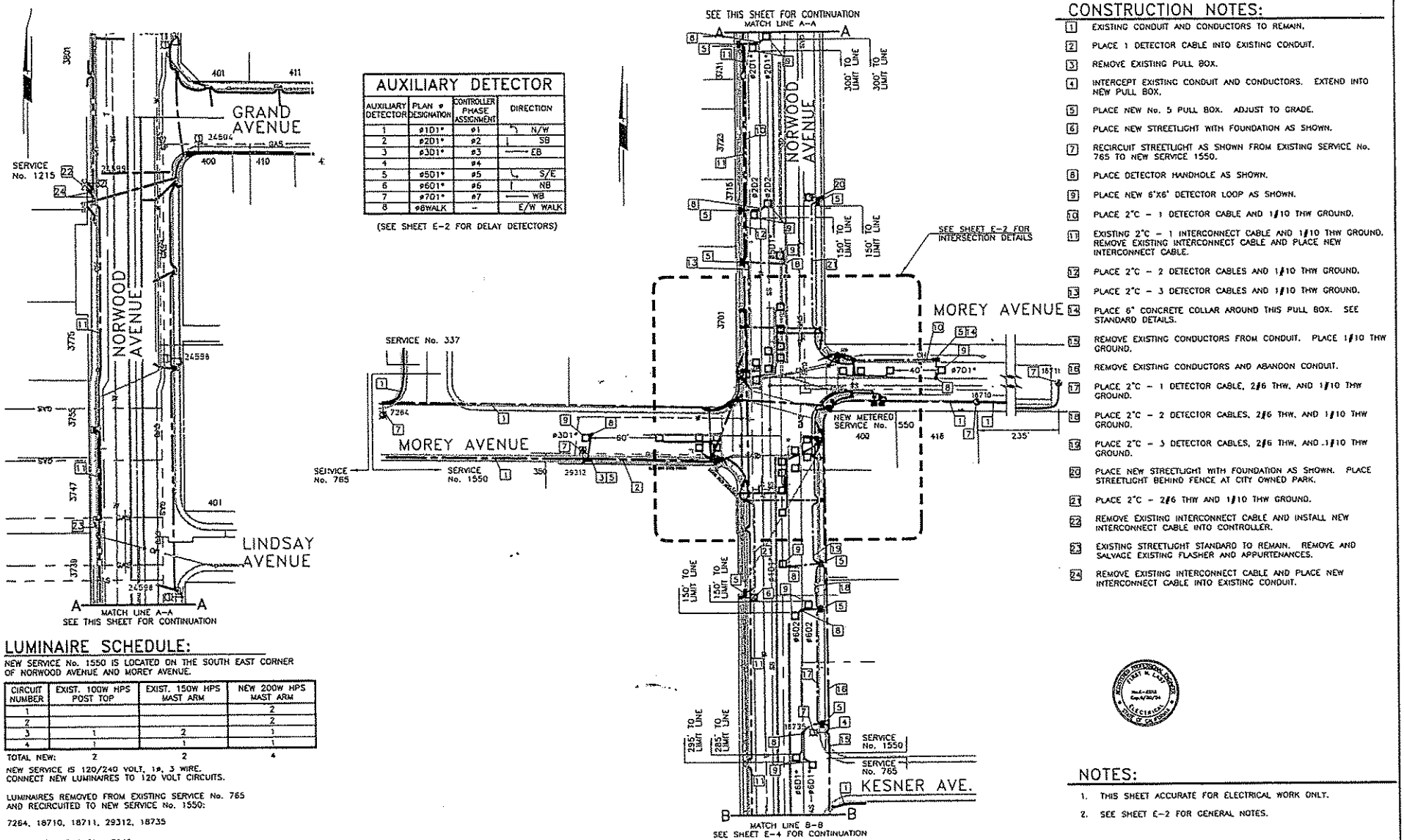
APPROVED BY: ____ P.E.: E-15261 DATE: ____
ERIC S. YAP
SENIOR ELECTRICAL ENGINEER

SM06

SHEET E-2 — OF — 6

EXAMPLE-7

TRAFFIC SIGNAL - E2



AUXILIARY DETECTOR

AUXILIARY DETECTOR	PLAN ø DESIGNATION	CONTROLLER PHASE ASSIGNMENT	DIRECTION
1	ø1D1*	ø1	N/W
2	ø2D1*	ø2	SB
3	ø3D1*	ø3	EB
4		ø4	
5	ø5D1*	ø5	S/E
6	ø6D1*	ø6	NB
7	ø7D1*	ø7	WB
8	ø8WALK	-	E/W WALK

(SEE SHEET E-2 FOR DELAY DETECTORS)

CONSTRUCTION NOTES:

1. EXISTING CONDUIT AND CONDUCTORS TO REMAIN.
2. PLACE 1 DETECTOR CABLE INTO EXISTING CONDUIT.
3. REMOVE EXISTING PULL BOX.
4. INTERCEPT EXISTING CONDUIT AND CONDUCTORS. EXTEND INTO NEW PULL BOX.
5. PLACE NEW No. 5 PULL BOX. ADJUST TO GRADE.
6. PLACE NEW STREETLIGHT WITH FOUNDATION AS SHOWN.
7. RECIRCUIT STREETLIGHT AS SHOWN FROM EXISTING SERVICE No. 765 TO NEW SERVICE 1550.
8. PLACE DETECTOR HANDHOLE AS SHOWN.
9. PLACE NEW 6'X6' DETECTOR LOOP AS SHOWN.
10. PLACE 2"C - 1 DETECTOR CABLE AND 1/10 THW GROUND.
11. EXISTING 2"C - 1 INTERCONNECT CABLE AND 1/10 THW GROUND. REMOVE EXISTING INTERCONNECT CABLE AND PLACE NEW INTERCONNECT CABLE.
12. PLACE 2"C - 2 DETECTOR CABLES AND 1/10 THW GROUND.
13. PLACE 2"C - 3 DETECTOR CABLES AND 1/10 THW GROUND.
14. PLACE 6" CONCRETE COLLAR AROUND THIS PULL BOX. SEE STANDARD DETAILS.
15. REMOVE EXISTING CONDUCTORS FROM CONDUIT. PLACE 1/10 THW GROUND.
16. REMOVE EXISTING CONDUCTORS AND ABANDON CONDUIT.
17. PLACE 2"C - 1 DETECTOR CABLE, 2/6 THW, AND 1/10 THW GROUND.
18. PLACE 2"C - 2 DETECTOR CABLES, 2/6 THW, AND 1/10 THW GROUND.
19. PLACE 2"C - 3 DETECTOR CABLES, 2/6 THW, AND 1/10 THW GROUND.
20. PLACE NEW STREETLIGHT WITH FOUNDATION AS SHOWN. PLACE STREETLIGHT BEHIND FENCE AT CITY OWNED PARK.
21. PLACE 2"C - 2/6 THW AND 1/10 THW GROUND.
22. REMOVE EXISTING INTERCONNECT CABLE AND INSTALL NEW INTERCONNECT CABLE INTO CONTROLLER.
23. EXISTING STREETLIGHT STANDARD TO REMAIN. REMOVE AND SALVAGE EXISTING FLASHER AND APPURTENANCES.
24. REMOVE EXISTING INTERCONNECT CABLE AND PLACE NEW INTERCONNECT CABLE INTO EXISTING CONDUIT.

LUMINAIRE SCHEDULE:

NEW SERVICE No. 1550 IS LOCATED ON THE SOUTH EAST CORNER OF NORWOOD AVENUE AND MOREY AVENUE.

CIRCUIT NUMBER	EXIST. 100W HPS POST TOP	EXIST. 150W HPS MAST ARM	NEW 200W HPS MAST ARM
1			2
2			2
3	1	2	1
4	1	1	1
TOTAL NEW:	2	2	4

NEW SERVICE IS 120/240 VOLT, 1Ø, 3 WIRE. CONNECT NEW LUMINAIRES TO 120 VOLT CIRCUITS.

LUMINAIRES REMOVED FROM EXISTING SERVICE No. 765 AND RECIRCUITED TO NEW SERVICE No. 1550:

7264, 18710, 18711, 29312, 18735

LUMINAIRES REMOVED: 7265

NOTES:

1. THIS SHEET ACCURATE FOR ELECTRICAL WORK ONLY.
2. SEE SHEET E-2 FOR GENERAL NOTES.

REVISIONS

NO.	DESCRIPTION	DATE	BY

RESEARCH PLAN NUMBERS

FIELD BOOK

SCALE 1"=40'

CITY OF SACRAMENTO
DEPARTMENT OF PUBLIC WORKS

DRAWN BY: C.V. ALEXANDER DATE J. MATOBA
DESIGN BY: J. MATOBA R.C.E. DATE
CHECKED BY: E. YAP R.C.E. DATE

ELECTRICAL
NORWOOD AVENUE & MOREY AVENUE
TRAFFIC SIGNAL

APPROVED BY: P.E.: E-15261 DATE:
ERIC S. YAP
SENIOR ELECTRICAL ENGINEER

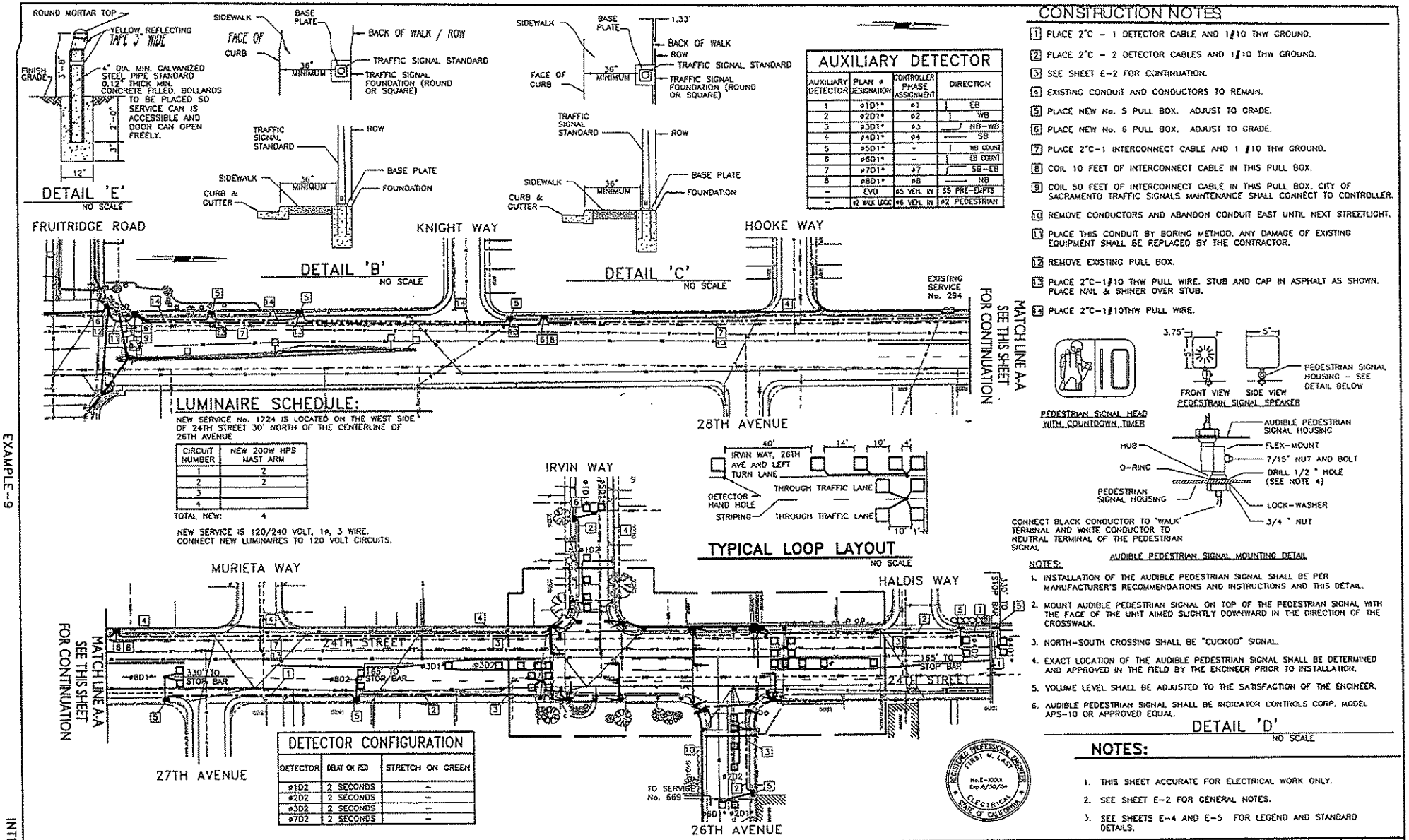
SM06

SHEET E-3 — OF — 6

EXAMPLE-8

TRAFFIC SIGNAL - E3

EXAMPLE-9



AUXILIARY DETECTOR

AUXILIARY DETECTOR	PLAN # DESIGNATION	CONTROLLER PHASE ASSIGNMENT	DIRECTION
1	#1D1*	#1	EB
2	#2D1*	#2	WB
3	#3D1*	#3	NB-WB
4	#4D1*	#4	SB
5	#5D1*	--	NB COUNT
6	#6D1*	--	EB COUNT
7	#7D1*	#7	SB-EB
8	#8D1*	#8	NB
--	EVD	#5 VEH. IN	SB PRE-EMPTS
--	#2 WALK LOGIC	#6 VEH. IN	#2 PEDESTRIAN

CONSTRUCTION NOTES

1. PLACE 2"C - 1 DETECTOR CABLE AND 1#10 THW GROUND.
2. PLACE 2"C - 2 DETECTOR CABLES AND 1#10 THW GROUND.
3. SEE SHEET E-2 FOR CONTINUATION.
4. EXISTING CONDUIT AND CONDUCTORS TO REMAIN.
5. PLACE NEW No. 5 PULL BOX. ADJUST TO GRADE.
6. PLACE NEW No. 6 PULL BOX. ADJUST TO GRADE.
7. PLACE 2"C-1 INTERCONNECT CABLE AND 1 #10 THW GROUND.
8. COIL 10 FEET OF INTERCONNECT CABLE IN THIS PULL BOX.
9. COIL 50 FEET OF INTERCONNECT CABLE IN THIS PULL BOX. CITY OF SACRAMENTO TRAFFIC SIGNALS MAINTENANCE SHALL CONNECT TO CONTROLLER.
10. REMOVE CONDUCTORS AND ABANDON CONDUIT EAST UNTIL NEXT STREETLIGHT.
11. PLACE THIS CONDUIT BY BORING METHOD. ANY DAMAGE OF EXISTING EQUIPMENT SHALL BE REPLACED BY THE CONTRACTOR.
12. REMOVE EXISTING PULL BOX.
13. PLACE 2"C-1#10 THW PULL WIRE. STUB AND CAP IN ASPHALT AS SHOWN. PLACE NAIL & SHINER OVER STUB.
14. PLACE 2"C-1#10THW PULL WIRE.

LUMINAIRE SCHEDULE:

NEW SERVICE No. 1724 IS LOCATED ON THE WEST SIDE OF 24TH STREET 30' NORTH OF THE CENTERLINE OF 26TH AVENUE

CIRCUIT NUMBER	NEW 200W HPS MAST ARM
1	2
2	2
3	
4	
TOTAL NEW:	4

NEW SERVICE IS 120/240 VOLT, 1Φ, 3 WIRE. CONNECT NEW LUMINAIRES TO 120 VOLT CIRCUITS.

DETECTOR CONFIGURATION

DETECTOR	DELAY OR PED	STRETCH ON GREEN
#1D2	2 SECONDS	--
#2D2	2 SECONDS	--
#3D2	2 SECONDS	--
#7D2	2 SECONDS	--

PEDESTRIAN SIGNAL HEAD WITH COUNTDOWN TIMER

CONNECT BLACK CONDUCTOR TO 'WALK' TERMINAL AND WHITE CONDUCTOR TO NEUTRAL TERMINAL OF THE PEDESTRIAN SIGNAL

AUDIBLE PEDESTRIAN SIGNAL MOUNTING DETAIL

NOTES:

1. INSTALLATION OF THE AUDIBLE PEDESTRIAN SIGNAL SHALL BE PER MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS AND THIS DETAIL.
2. MOUNT AUDIBLE PEDESTRIAN SIGNAL ON TOP OF THE PEDESTRIAN SIGNAL WITH THE FACE OF THE UNIT AIMED SLIGHTLY DOWNWARD IN THE DIRECTION OF THE CROSSWALK.
3. NORTH-SOUTH CROSSING SHALL BE "CUCKOO" SIGNAL.
4. EXACT LOCATION OF THE AUDIBLE PEDESTRIAN SIGNAL SHALL BE DETERMINED AND APPROVED IN THE FIELD BY THE ENGINEER PRIOR TO INSTALLATION.
5. VOLUME LEVEL SHALL BE ADJUSTED TO THE SATISFACTION OF THE ENGINEER.
6. AUDIBLE PEDESTRIAN SIGNAL SHALL BE INDICATOR CONTROLS CORP. MODEL APS-10 OR APPROVED EQUAL.

DETAIL 'D'
NO SCALE

NOTES:

1. THIS SHEET ACCURATE FOR ELECTRICAL WORK ONLY.
2. SEE SHEET E-2 FOR GENERAL NOTES.
3. SEE SHEETS E-4 AND E-5 FOR LEGEND AND STANDARD DETAILS.

REGISTERED PROFESSIONAL ENGINEER — ERIC M. YAP — No. E-15261 Exp. 6/30/04 — ELECTRICAL — STATE OF CALIFORNIA

REVISIONS NO.	DESCRIPTION	DATE	BY

RESEARCH PLAN NUMBERS: E-0537, E-0496, E-1227, E-283, E-2722J, E-2975, E-2474

FIELD BOOK

SCALE: 1" = 40'

CITY OF SACRAMENTO
DEPARTMENT OF PUBLIC WORKS

DRAWN BY: B. CAMERON, A. DEL CARMEN, & C.V. ALEXANDER | DESIGN BY: K. HAILE, R.C.E. ____ DATE FEB 2003 | CHECKED BY: E. YAP, R.C.E. ____ DATE MAR 2003

ELECTRICAL
24TH STREET & IRVIN WAY TO 26TH AVENUE
TRAFIC SIGNAL INSTALLATION

APPROVED BY: ____ P.E.: E-15261 DATE: ____
ERIC S. YAP
SENIOR ELECTRICAL ENGINEER

SM10

SHEET E-3 OF 5

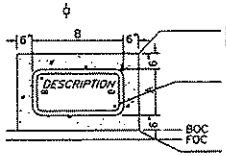
EXAMPLE-9 INTERCONNECT

EXAMPLE-10

STANDARD DETAIL 1

LEGEND

EXISTING	PROPOSED	
		TRAFFIC SIGNAL FACE -3 SECTIONS
		TRAFFIC SIGNAL FACE WITH BACK PLATE
		TRAFFIC SIGNAL FACE WITH 12" ARROW SECTIONS
		TYPE 1 STANDARD AND ATTACHED TRAFFIC SIGNAL FACES
		STANDARD WITH SIGNAL MAST ARM ONLY AND ATTACHED TRAFFIC SIGNAL FACES
		STANDARD WITH SIGNAL AND LUMINAIRE MAST ARMS AND ATTACHED TRAFFIC SIGNAL FACES AND LUMINAIRE
DETECTOR HANDHOLE	DETECTOR HANDHOLE	INDUCTIVE LOOP DETECTOR, WITH DETECTOR HANDHOLE AND LOCATION OF SAWCUTS SHOWN 6' x 6' (ø - INDICATES LOOP PHASE, D1 - INDICATES DETECTOR ELECTRONICS)
		ELECTROLIER, TYPE 15 STANDARD WITH MAST ARM WITH CIRCUIT No. INDICATED.
		PEDESTRIAN SIGNAL FACE, 2 SECTIONS (INTERNATIONAL SYMBOL)
		ELECTROLIER, POST TOP WITH CIRCUIT No. INDICATED.
		CONTROLLER CABINET
		SERVICE PEDESTAL
		CONCRETE PULL BOX No. 5 MINIMUM
PPB	PPB	PEDESTRIAN PUSH BUTTON
		FIRE ALARM BOX
		TRAFFIC SIGNAL CONDUIT
		OVERHEAD CONDUCTOR
		PEDESTRIAN PUSH BUTTON POST
		S.M.U.D. SERVICE BOX
		POWER POLE



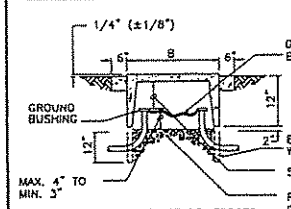
EDGES TO BE SAWED TO A DEPTH OF 1-1/2" OR MORE. TYPICAL FOR ALL PULL BOXES.

COVER SHALL BE BOLTED DOWN. TWO BOLTS REQUIRED. TYPICAL FOR ALL PULL BOXES.

6" THICK CONCRETE COLLAR. TYPICAL FOR ALL PULL BOXES.

PULL BOX DIMENSIONS		
PULL BOX	A	B
3-1/2	13-3/4"	19"
5	17-7/8"	27-3/8"
5A	16"	25"
6	21-3/4"	34-3/4"

DESCRIPTION - "STREETLIGHT", "INTERCONNECT", OR "TRAFFIC SIGNAL".



GROUND BUSHING BOND, WHERE NEEDED.

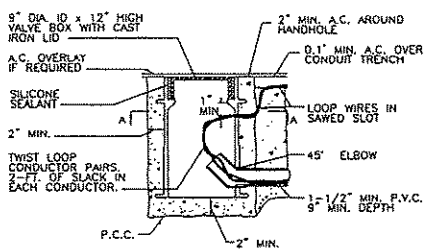
EXTENSION, WHERE NEEDED.

5" TO 7"

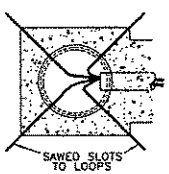
PLACE CRUSHED ROCK BELOW PULL BOX OR EXTENSION BEFORE INSTALLATION OF CONDUCTORS.

PRECAST REINFORCED CONCRETE PULL BOX.

CONCRETE PULL BOX



TYPE 'B' DETECTOR



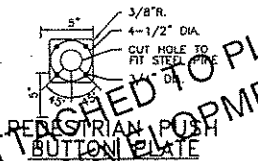
SECTION A-A DETECTOR HANDHOLE

TYPE 'B' DETECTOR HANDHOLE INSTALLATION REQUIREMENTS:

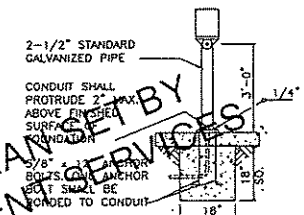
1. OUTLINE OF TRENCH SHALL BE SAW CUT TO A MINIMUM DEPTH OF 3" EXCEPT WHERE AC OVERLAY IS TO BE PLACED.
2. THE PRECAST VALVE BOX WITH CAST IRON LID SHALL BE FABRICATED OF CALCIUM CARBONATE AND POLYESTER RESINS WITH FIBERGLASS REINFORCING AND DESIGNED FOR HEAVY TRAFFIC LOADS.
3. CAST IRON LID SHALL BE MARKED "DETECTOR" AND SHALL BE SECURED IN PLACE BY APPLYING WATERPROOF SILICONE SEALANT. VALVE BOX SHALL BE CENTERED ON LANE LINE, UNLESS OTHERWISE SHOWN ON THE PLANS.
4. THE EXCAVATION AROUND THE HANDHOLE SHALL BE BACKFILLED WITH P.C.C. EXCEPT THE TOP 2" IN AC SURFACED ROADWAYS SHALL BE BACKFILLED WITH AC.
5. THE HANDHOLE SHALL BE PROTECTED WITH COLD PATCH OR OTHER SUITABLE PROTECTION UNTIL PERMANENT AC BACKFILL IS PLACED.

GENERAL NOTES

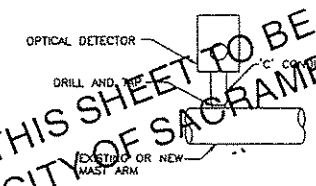
1. ALL WORK TO BE PERFORMED SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AS ADOPTED BY THE COUNCIL OF THE CITY OF SACRAMENTO BY RESOLUTION No. 81-042 DATED : JUNE 1989, AND CALTRANS STANDARD PLANS AND SPECIFICATIONS DATED JULY 1997.
2. FOR SPECIFICATIONS OF A TECHNICAL NATURE NOT COVERED BY THE CITY OF SACRAMENTO STANDARD SPECIFICATIONS, THE STANDARD SPECIFICATIONS AND STANDARD PLANS OF THE STATE OF CALIFORNIA BUSINESS, TRANSPORTATION AGENCY AND HOUSING DEPT. OF TRANSPORTATION AND HOUSING AGENCY, DEPARTMENT OF TRANSPORTATION, DATED JULY 1997, SHALL APPLY.
3. ALL MATERIAL TO BE REMOVED AND SALVAGED, SHALL BE DELIVERED TO THE CITY CORPORATE CENTER SOUTH, 5730 - 24TH STREET SACRAMENTO, CALIFORNIA WITHOUT DAMAGE.
4. ALL TERMINAL COMPARTMENTS LOCATED ON STANDARDS SHALL BE MOUNTED ON THE SIDE FARTHEST FROM VEHICULAR TRAFFIC, UNLESS OTHERWISE SPECIFIED, OR DIRECTED BY THE ENGINEER.
5. PULL BOXES SHALL BE PLACED IN SIDEWALK AREAS AND SHALL NOT BE PLACED IN DRIVEWAYS, IN VEHICULAR TRAFFIC LANES, OR IN SIDEWALK HANDICAPPED RAMP AREAS.
6. CONDUCTORS BETWEEN BASE OF ELECTROLIER AND LUMINAIRE SHALL BE No. 10 THW MINIMUM.
7. THREE FEET OF SLACK SHALL BE PROVIDED IN EACH PULL BOX FOR EACH CONDUCTOR.
8. EXACT LOCATIONS OF ALL STANDARDS, PEDESTALS AND CABINETS WILL BE DETERMINED BY THE ENGINEER PRIOR TO INSTALLATION, AND SHALL BE AT LEAST 3 FEET FROM FACE OF CURB.
9. LUMINAIRE MAST ARMS SHALL BE 8 FEET IN LENGTH UNLESS OTHERWISE SPECIFIED.
10. ALL TRAFFIC SIGNAL HEADS SHALL HAVE A BACK PLATE AND FULL CIRCLE VISORS.
11. ALL EXPOSED RIGID METALLIC CONDUIT STUBS/CAPS AND ALL METAL THREADS AND STANDARD SCREW JOINTS SHALL BE PAINTED EITHER WITH HIGH ZINC DUST CONTENT PAINT CONFORMING TO THE REQUIREMENTS OF MILITARY SPECIFICATION ; MIL-P-21035 OR WITH PRIMER CONFORMING TO THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS DATED JULY 1992 SECTION 91-2.01 "ZINC RICH PRIMER, ORGANIC VEHICLE TYPE" EXCEPT THAT PRIMER SHALL NOT BE THINNED.
12. AT ALL JUNCTIONS SUCH AS PULL BOXES, ELECTROLIER BASES, AND PEDESTALS WHERE PVC CONDUITS ARE INSTALLED, ALL RIGID GALVANIZED CONDUITS AT THESE LOCATIONS SHALL BE PROVIDED WITH GROUNDING BUSHINGS AND CONNECTED TO THE GROUNDING CONDUCTORS.
13. ALL LUMINAIRES SHALL BE SUPPLIED WITHOUT PHOTO CELL RECEPTACLES UNLESS OTHERWISE SPECIFIED.
14. PULL ROPES USED TO PULL CONDUCTORS IN CONDUIT SHALL BE A MINIMUM OF 1/4" IN DIAMETER.
15. SEE SPECIAL PROVISIONS FOR LOOP CONDUCTOR AND LEAD-IN SPECIFICATIONS.
16. LOOP DIMENSIONS SHALL BE 6' x 6' SQUARES OR 6' DIAMETER CIRCULAR LOOPS UNLESS OTHERWISE SHOWN ON THE PLANS.



PEDESTRIAN PUSH BUTTON PLATE

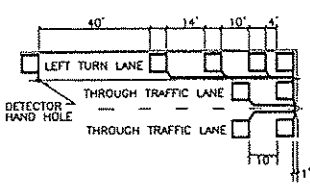


PEDESTRIAN PUSH BUTTON POLE



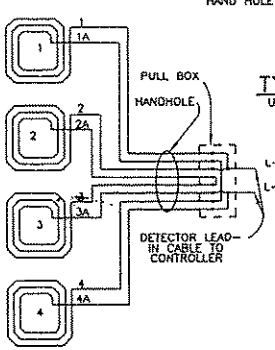
OPTICAL DETECTOR

NO SCALE

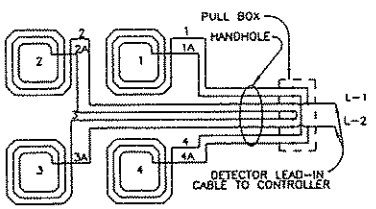


TYPICAL LOOP LAYOUT

UNLESS OTHERWISE SPECIFIED IN PLANS

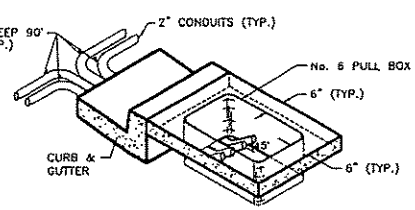


FOUR LOOPS IN TURN LANE

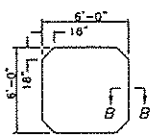


FOUR LOOPS IN THRU LANES

LOOP WINDING PATTERNS



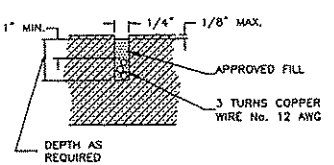
PULL BOX WITH SWEEP 90°



LOOPS SHALL BE 6'X6' FOR LANE WIDTH > 11', UNLESS OTHERWISE SPECIFIED.

LOOPS SHALL BE 5'X5' FOR LANE WIDTH < 10', UNLESS OTHERWISE SPECIFIED.

6'X6' LOOP

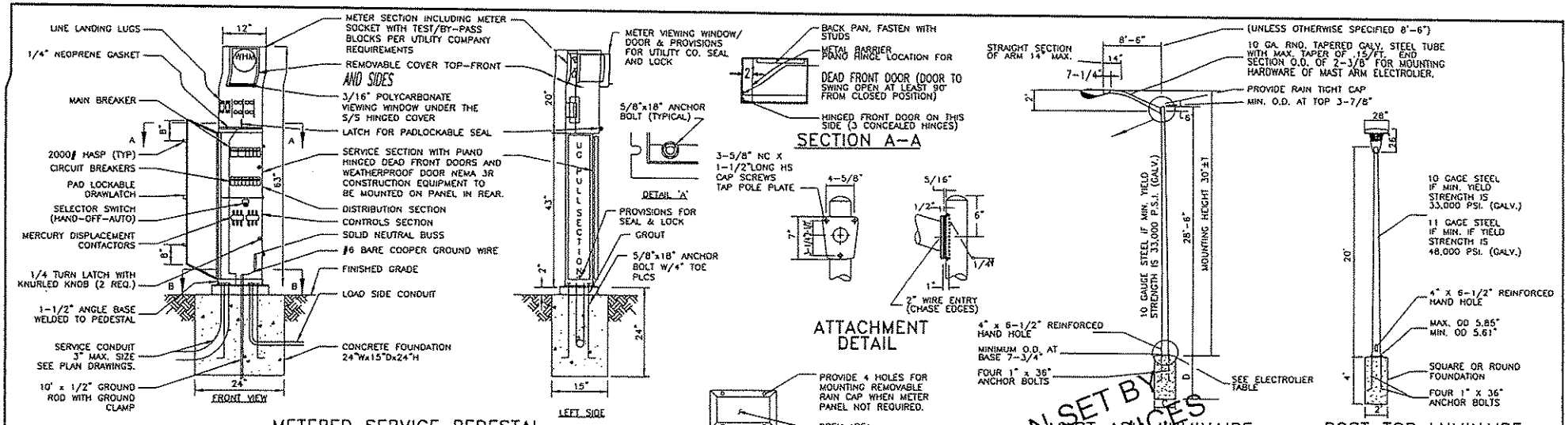


SECTION B-B

LOOP SAW CUTTING DETAIL

REVISIONS				BENCH MARK ELEV.	FIELD BOOK	CITY OF SACRAMENTO DEPARTMENT OF TRANSPORTATION	STANDARD DETAILS No. 1 TRAFFIC SIGNALS/STREET LIGHTING	SHEET
NO.	DESCRIPTION	DATE	BY	DESCRIPTION	SCALE			E-
1	REDRAW & ADD DETECTOR HANDHOLE	2-12-92	RCH		N.T.S.	DRAWN BY: J. MATOBA/STAFF DATE 04-28-04	DESIGN BY: STAFF R.C.E. DATE	CHECKED BY: E. YAP R.C.E. DATE

APPROVED BY : ERIC S. YAP, SENIOR ELECTRICAL ENGINEER P.E. E-15268 DATE :



TYPE OF ELECTROLIER	BASE PLATE A	B	C	D	CONCRETE FOUNDATION A	B
MAST ARM	11-1/2"	11"	1"	36"	5'	
POST TOP STEEL	10"	9-1/2"	1"	24"	4'	

1. EXTERIOR 14 GAUGE #304D STAINLESS STEEL, INTERIOR DEAD FRONT PANEL AND BACK PAN SHALL BE 14 GAUGE STEEL PAINTED WHITE ELECTRICALLY WELDED AND REINFORCED WHERE REQUIRED.
2. CONSTRUCTION IS NEMA 3R AND 12, RAINTIGHT AND DUSTTIGHT.
3. ALL NUTS, BOLTS, SCREWS AND HINGES SHALL BE STAINLESS STEEL.
4. NUTS, BOLTS & SCREWS ARE NOT USED ON THE OUTSIDE OF PEDESTAL.
5. PHENOLIC NAMEPLATES TO IDENTIFY ALL OPERATOR CONTROLS
6. CONTROL WIRING WILL BE MARKED AT BOTH ENDS BY PERMANENT WIRE MARKERS.
7. A PLASTIC COVERED WIRING DIAGRAM WILL BE ATTACHED TO THE INSIDE OF THE FRONT DOOR.
8. PEDESTAL WILL BE FACTORY WIRED AND CONFORM TO REQUIRED NEMA STANDARDS.
9. PEDESTAL(S) WILL BE U.L. LISTED AS INDUSTRIAL CONTROL PANELS U.L. 508 FILE NO. E62062
10. WIRING BETWEEN CIRCUIT BREAKER AND CONTACTOR SHALL BE A #6 THWN OR THHN MINIMUM.
11. SERVICE SHALL BE OF TWO PIECE CONSTRUCTION.
12. SEE STANDARD SPECIFICATIONS FOR ADDITIONAL DETAILS.

EXAMPLE-11

STANDARD DETAIL 2

REVISIONS NO.	DESCRIPTION	DATE	BY

BENCH MARK ELEV. _____ DESCRIPTION _____

FIELD BOOK _____ SCALE N.T.S.

CITY OF SACRAMENTO
DEPARTMENT OF TRANSPORTATION

DRAWN BY: J. MATOBA/STAFF DATE 03-25-03 | DESIGN BY: STAFF R.C.E. _____ DATE _____ | CHECKED BY: E. YAP R.C.E. _____ DATE _____

ELECTRICAL
STANDARD DETAILS No. 2
TRAFFIC SIGNALS/STREET LIGHTING

APPROVED BY : ERIC S. YAP, SENIOR ELECTRICAL ENGINEER P.E. E-15261 DATE :

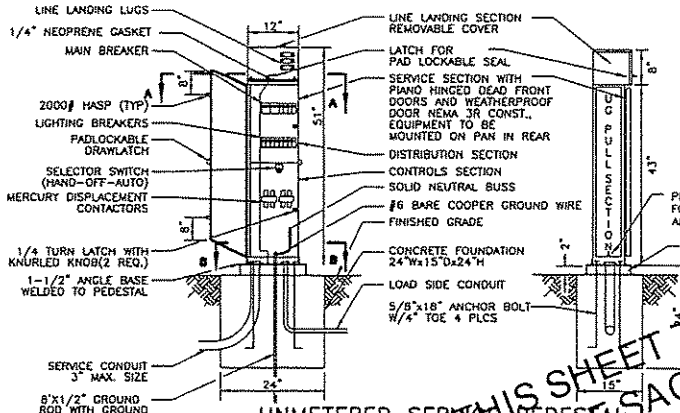
SHEET E- — OF —

EXAMPLE-12

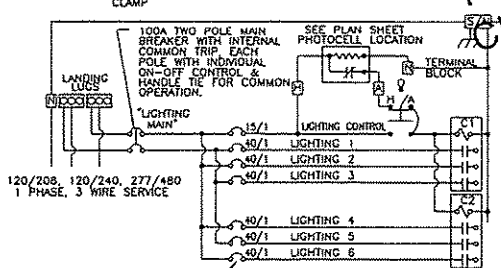
STANDARD DETAIL FOR STREETLIGHTS

EXISTING	NEW	DESCRIPTION
○	⊙ CIRCUIT NO.	ELECTROLIER FOR POST TOP LUMINAIRE
⊠	⊠ CIRCUIT NO.	ELECTROLIER WITH MAST ARM FOR MAST ARM MOUNTED LUMINAIRE
		OVERHEAD CONDUCTOR
		CONDUIT
PB		PULL BOX
ES		SERVICE PEDESTSAL
-SP-		SMUD SERVICE POLE
SP		SMUD SERVICE SIDEWALK BOX

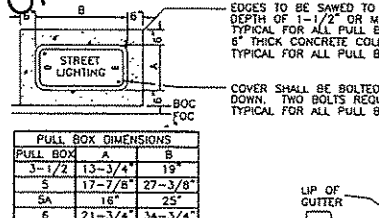
EXISTING	NEW	DESCRIPTION
TYPE III		TYPICAL I.E.S. LIGHT PATTERN OF LUMINAIRE
	[1]	INDICATES CONSTRUCTION NOTE No. 1
		TELEPHONE CABLE (UNDERGROUND)
		GAS LINE (UNDERGROUND)
		SMUD CABLE (UNDERGROUND)



UNMETERED SERVICE PEDESTAL

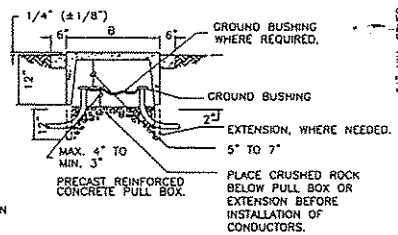


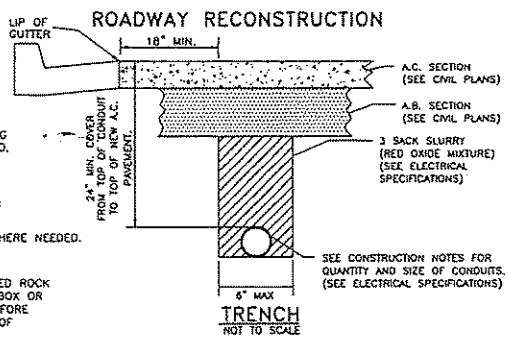
WIRING SCHEMATIC



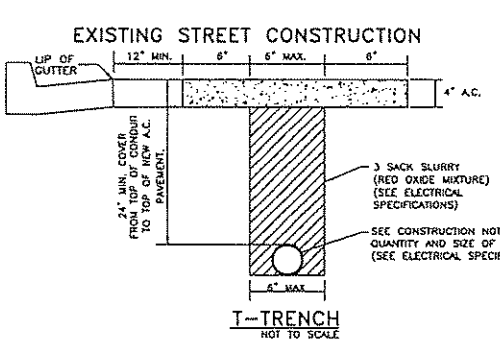
PULL BOX	A	B
3-1/2	13-3/4"	19"
5	17-7/8"	27-3/8"
5A	16"	25"
6	21-3/4"	34-3/4"

CONCRETE PULL BOX



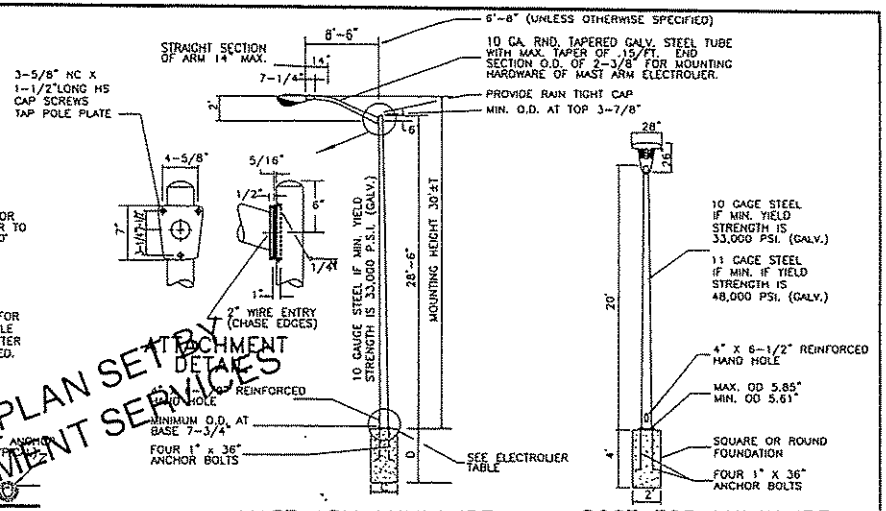


TRENCH
NOT TO SCALE



T-TRENCH
NOT TO SCALE

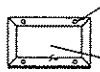
1. EXTERIOR 14 GAUGE #304D STAINLESS STEEL, INTERIOR DEAD FRONT PANEL AND BACK PAN SHALL BE 14 GAUGE STEEL PAINTED WHITE ELECTRICALLY WELDED AND REINFORCED WHERE REQUIRED.
2. CONSTRUCTION IS NEMA 3R AND 12, RAINTIGHT AND DUSTTIGHT.
3. ALL NUTS, BOLTS, SCREWS AND HINGES SHALL BE STAINLESS STEEL.
4. NUTS, BOLTS & SCREWS ARE NOT USED ON THE OUTSIDE OF PEDESTAL.
5. PHENOLIC NAMEPLATES TO IDENTIFY ALL OPERATOR CONTROLS
6. CONTROL WIRING WILL BE MARKED AT BOTH ENDS BY PERMANENT WIRE MARKERS.
7. A PLASTIC COVERED WIRING DIAGRAM WILL BE ATTACHED TO THE INSIDE OF THE FRONT DOOR.
8. PEDESTAL WILL BE FACTORY WIRED AND CONFORM TO REQUIRED NEMA STANDARDS.
9. PEDESTAL(S) WILL BE U.L. LISTED AS INDUSTRIAL CONTROL PANELS U.L. 508 FILE NO. E62062
10. WIRING BETWEEN CIRCUIT BREAKER AND CONTACTOR SHALL BE A #6 THWN OR THHN MINIMUM.
11. SEE STANDARD SPECIFICATIONS FOR ADDITIONAL DETAILS.



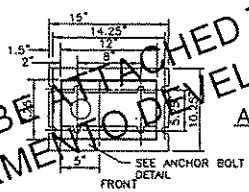
MAST ARM LUMINAIRE
NOT TO SCALE

POST TOP LUMINAIRE
NOT TO SCALE

SECTION A-A

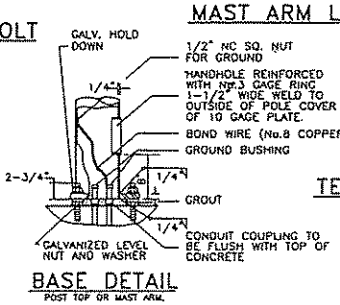


SECTION B-B

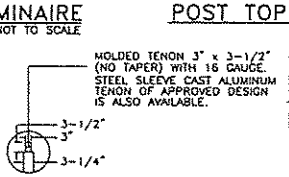


BASE PLATE DETAIL

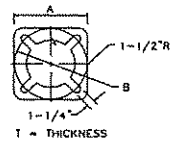
ANCHOR BOLT



BASE DETAIL
POST TOP OR MAST ARM.



TENON DETAIL
POST TOP



BASE PLATE
POST TOP OR MAST ARM.

TYPE OF ELECTROLIER	BASE PLATE A	B	T	CONCRETE FOUNDATION A	B
MAST ARM	11-1/2	11"	1"	30"	5"
POST TOP STEEL	10"	9-1/2"	1"	24"	4"

ELECTROLIER TABLE

ATTACHMENT DETAILS

REVISIONS NO.	DESCRIPTION	DATE	BY

BENCH MARK ELEV. _____ DESCRIPTION _____

FIELD BOOK _____ SCALE N.T.S.

CITY OF SACRAMENTO
DEPARTMENT OF TRANSPORTATION

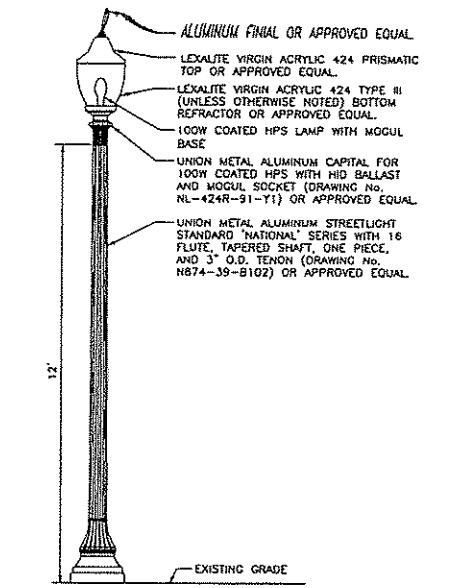
DRAWN BY: J. MATOBA/STAFF DATE 04-28-04
DESIGN BY: STAFF R.C.E. _____ DATE _____
CHECKED BY: E. YAP R.C.E. _____ DATE _____

ELECTRICAL

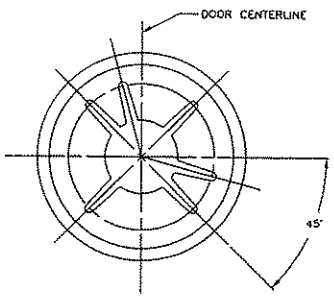
STANDARD DETAIL FOR STREETLIGHTS

APPROVED BY: ERIC S YAP, SENIOR ELECTRICAL ENGINEER P.E. E-15261 DATE: _____

SHEET E- OF

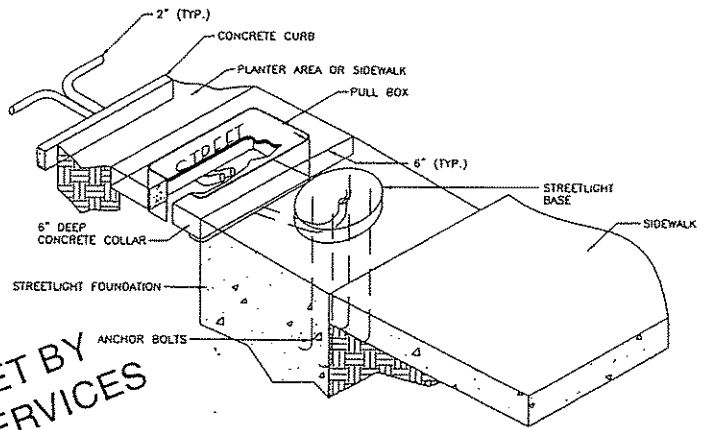


STYLE I – NATIONAL SERIES
ORNAMENTAL STREETLIGHT
NO SCALE

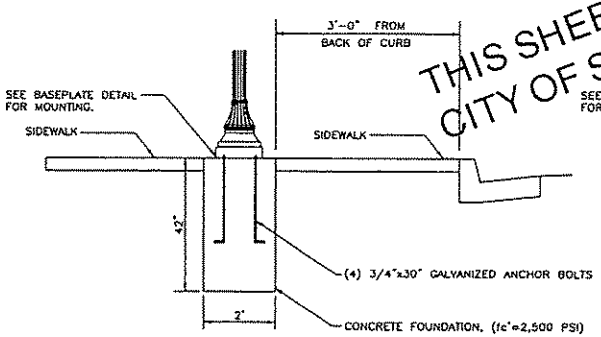


(4) 3/4"x30" ANCHOR BOLTS
ON A 12" BOLT CIRCLE

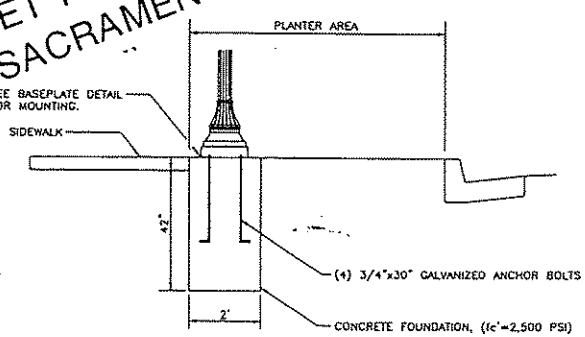
BOLT-CIRCLE PATTERN
NO SCALE



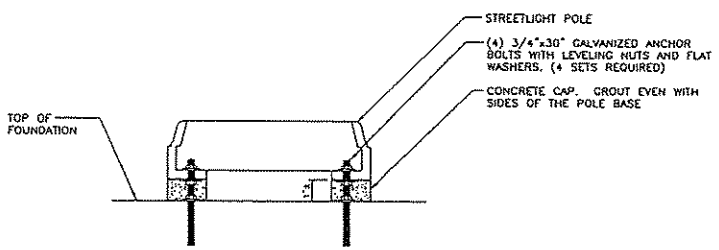
ELECTRICAL EQUIPMENT PLACEMENT
NO SCALE



STREETLIGHT IN SIDEWALK
NO SCALE



STREETLIGHT IN PLANTER
NO SCALE



NOTE:

1. ALL LEVELING NUTS MUST BE LEVEL AND EVEN PRIOR TO INSTALLING THE POLES. CARE MUST BE TAKEN WHEN TIGHTENING BOLTS TO NOT CRACK OR BREAK BASE PLATE.
2. ALL ANCHOR BOLTS SHALL BE ASTM A-307. ALL STRUCTURAL STEEL SHALL BE ASTM A-36.

BASEPLATE
NO SCALE

EXAMPLE-13

STANDARD DETAIL FOR ORNAMENTAL STREETLIGHTS

REVISIONS NO.	DESCRIPTION	DATE	BY	RESEARCH PLAN NUMBERS	FIELD BOOK	CITY OF SACRAMENTO DEPARTMENT OF PUBLIC WORKS	ELECTRICAL STANDARD DETAIL FOR ORNAMENTAL STREETLIGHTS STREET LIGHTING	SHEET E- OF
					SCALE N/A	DRAWN BY: STAFF DATE 10/23/2003 · DESIGN BY: STAFF R.C.E. DATE · CHECKED BY: E. YAP R.C.E. DATE	APPROVED BY: ERIC S. YAP SENIOR ELECTRICAL ENGINEER P.E.: E-15261 DATE:	

SIGNING AND STRIPING EXAMPLES

EXAMPLE—14

STRIPING AND SIGNING NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH: CITY OF SACRAMENTO DESIGN & PROCEDURES MANUAL, DATED JANUARY 2003, CITY STANDARD SPECIFICATIONS, DATED JUNE 1989, CALTRANS STANDARD PLANS, DATED JULY 1992, THE LATEST ENGLISH UNIT EDITION OF THE CALTRANS TRAFFIC MANUAL, AND CALTRANS SIGN SPECIFICATIONS.
2. SEE CALTRANS STANDARD PLANS, SHEET A20A-A24E FOR STRIPING DETAILS. ALL SIGNS SHALL MEET THE REQUIREMENTS OF CALTRANS APPROVED SIGN SPECIFICATIONS. SIGN POLES SHALL BE 2-INCH GALVANIZED STEEL, UNLESS OTHERWISE NOTED.
3. ALL SIGNING, STRIPING, AND MARKINGS TO REMAIN, UNLESS OTHERWISE NOTED. CONFLICTS BETWEEN EXISTING AND PROPOSED SHALL BE RESOLVED BY RESIDENT ENGINEER.
4. EXACT POSITION AND LOCATION OF ALL ROADSIDE SIGNS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER. OVERHEAD STREET NAME SIGNS SHALL BE PLACED ON SIGNAL MAST ARMS.
5. REMOVAL OF EXISTING STRIPING AND PAVEMENT MARKINGS SHALL BE ACCOMPLISHED BY SANDBLASTING OR OTHER APPROVED GRINDING METHOD.
6. ALL STRIPING AND TRAFFIC MARKINGS SHALL BE THERMOPLASTIC.
7. CROSSWALKS SHALL BE 12 FEET WIDE INCLUDING THE 12" SOLID PAVEMENT MARKINGS AND SHALL BE WHITE UNLESS OTHERWISE NOTED.
8. ALL SIGNING AND STRIPING WORK SHALL BE DONE BY THE CONTRACTOR AND SHALL BE COORDINATED WITH THE ELECTRICAL WORK AS DIRECTED BY THE ENGINEER.
9. EXISTING SIGNS NOT SHOWN ON THESE PLANS SHALL BE REMOVED OR RELOCATED AS DIRECTED BY THE ENGINEER.
10. CONTRACTOR SHALL VERIFY WITH THE PROJECT MANAGER OR ENGINEER THE EXACT STREET NAME AND STREET ADDRESS FOR PLACEMENT ON STREET NAME SIGNS PRIOR TO ORDERING SIGNS.
11. MOUNT SIGNS USING BANDING ON SIGNAL AND STREET LIGHT POLES WHERE FEASIBLE. SEE ELECTRICAL PLANS FOR POLE LOCATIONS.
12. TRAFFIC SIGNS SHALL BE INSTALLED BEHIND THE SIDEWALK WHEN THE SIDEWALK IS IMMEDIATELY ADJACENT TO THE CURB. SIGNS SHALL BE INSTALLED BETWEEN THE CURB AND SIDEWALK WHEN THE SIDEWALK IS DETACHED. SIGNS IN PEDESTRIAN AREAS SHALL HAVE A CLEARANCE FROM THE GROUND OF AT LEAST SEVEN FEET. IF THIS CLEARANCE REQUIREMENT IS NOT SATISFIED AFTER THE INSTALLATION OF ADDITIONAL SIGN PANELS, CONTRACTOR SHALL INSTALL A NEW SIGN POST.
13. AT SIGNALIZED LOCATIONS, REMOVE EXISTING STOP SIGNS, STOP LEGENDS AND STANCHIONS AT THE TIME SIGNAL IS TURNED ON.
14. LANE WIDTHS ADJACENT TO CURBS ARE MEASURED TO THE FACE OF CURB.
15. THIS PLAN IS ACCURATE FOR SIGNING AND STRIPING WORK ONLY.
16. ALL SIGNS REGULATING PARKING SHALL BE DOUBLE SIDED AND SIDE MOUNTED.
17. ALL STREET NAME (INCLUDING G7'S) R1, R2, W SERIES, AND SCHOOL ZONE SIGNS SHALL INCLUDE ASTM TYPE IX SHEETING. FOR ALL OTHER SIGNS, USE ASTM TYPE I OR TYPE III SHEETING. SCHOOL ZONE SIGNAGE SHALL BE FLUORESCENT YELLOW-GREEN WHERE YELLOW IS INDICATED IN THE CALTRANS TRAFFIC MANUAL.

G-7 DETAILS:

G7 - A

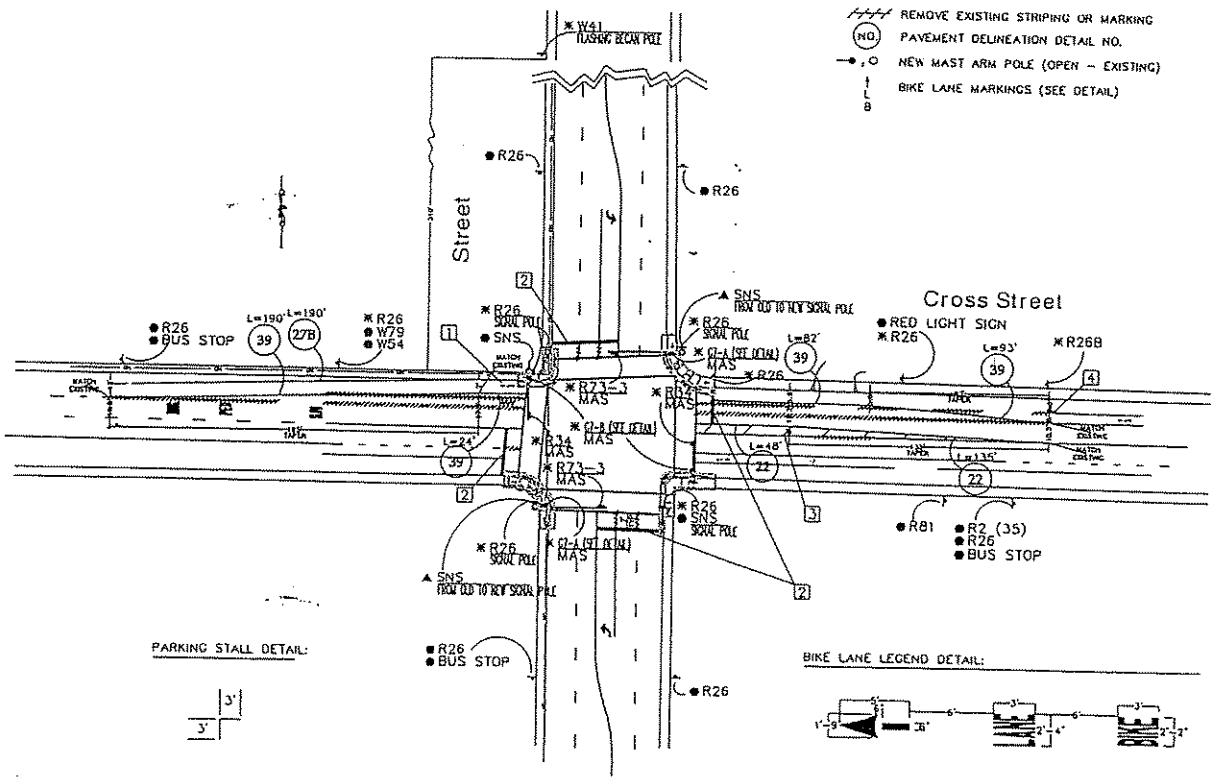
G7 - B

NOTES:

1. INSTALL BIKE LANE LEGEND PER A24D AT 3/4 SCALE (SEE DETAIL)
2. INSTALL 24" WIDE STOP BAR WITH 7' CLEAR SPACE
3. INSTALL 4" YELLOW CROSSHATCH @ 45° WITH 15' SPACING
4. INSTALL 4" WHITE PARKING STALL (SEE DETAIL)

LEGEND:

- INSTALL ROADSIDE SIGN
- REMOVE ROADSIDE SIGN
- EXISTING ROADSIDE SIGN TO REMAIN
- RELOCATE ROADSIDE SIGN
- EXISTING ROADSIDE SIGN LOCATION (ONE POST)
- ROADSIDE SIGN LOCATION
- MAS MAST ARM MOUNTED SIGN
- SNS STREET NAME SIGN
- REMOVE EXISTING STRIPING OR MARKING
- (NO.) PAVEMENT DELINEATION DETAIL NO.
- NEW MAST ARM POLE (OPEN - EXISTING)
- L B BIKE LANE MARKINGS (SEE DETAIL)



PARKING STALL DETAIL:

BIKE LANE LEGEND DETAIL:

REVISIONS NO.	DESCRIPTION	DATE	BY	RESEARCH PLAN NUMBERS	FIELD BOOK	CITY OF SACRAMENTO DEPARTMENT OF PUBLIC WORKS	SIGNING & STRIPING PLANS FOR STREET & CROSS STREET	PROJ#	SHEET
					SCALE 1"=XX'	DRAWN BY: X DATE X; DESIGN BY: X R.C.E. DATE; CHECKED BY: X R.C.E. DATE			S-1 of 1

EXAMPLE-14

SIGNING & STRIPING