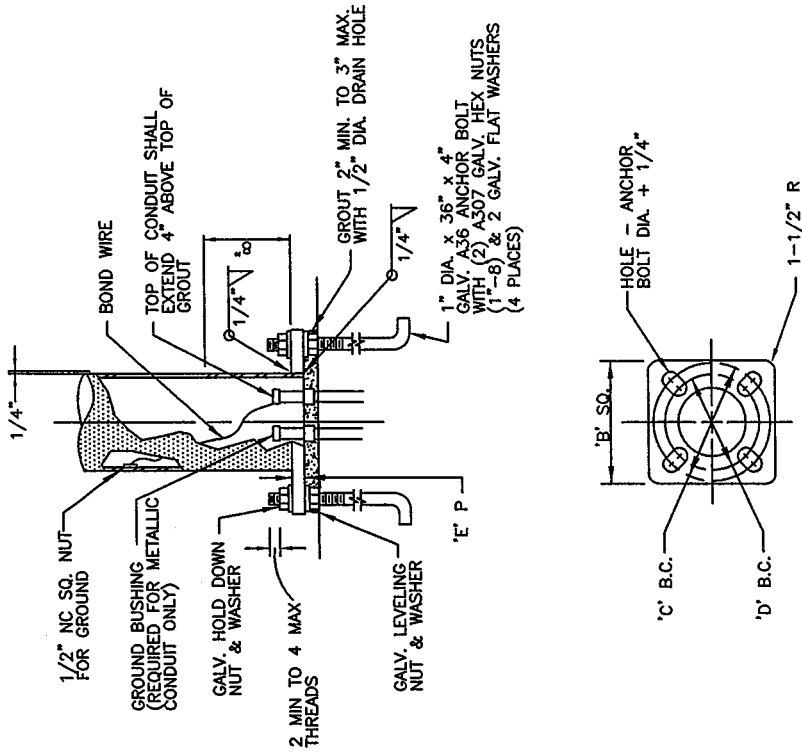


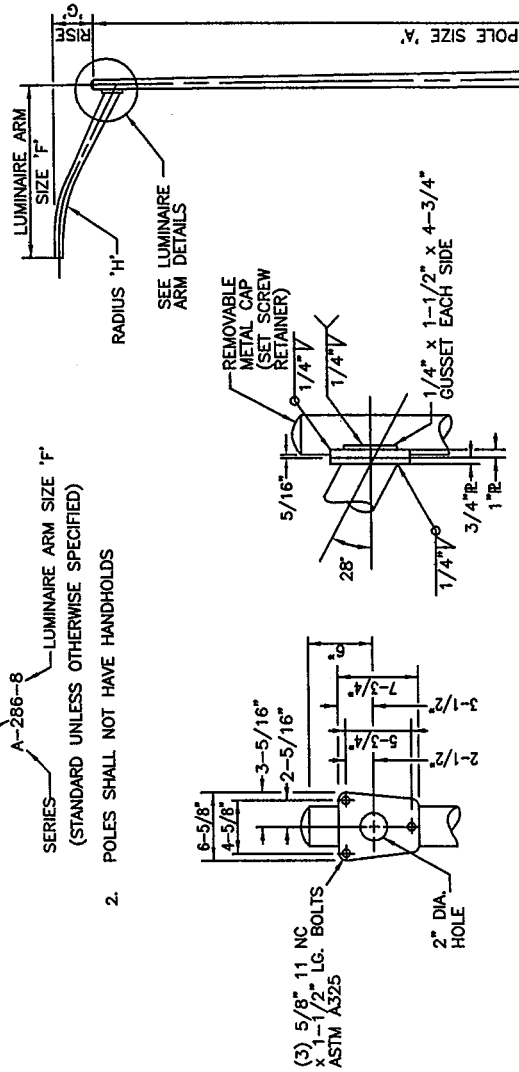
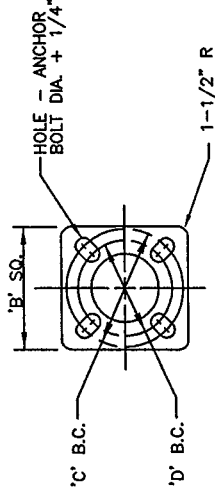
DRAWING NUMBER	TITLE
5-3	SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS TYPE 'A' STREET LIGHT STANDARD
5-8	SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS BASE LOCATION FOR STREET LIGHTS
5-12	SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS DIRECT SERVICE INSTALLATION TO STREET LIGHTING STANDARD
5-13	STREET LIGHT PULL BOX
5-16	SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS TYPE 'B' STREET LIGHT STANDARD
5-20B	SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS TRAFFIC RATED PULL BOX WITH STEEL TRAFFIC COVER
5-24	INDUCTION DETECTORS
5-25	TYPE "B" DETECTOR HANDHOLE DETAIL
5-30	SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS - UNMETERED SERVICE ENCLOSURE (CAN) (120/208V, 120/240V, 277/480V)
5-31	SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS - UNMETERED SERVICE ENCLOSURE (CAN) WITH STEP-DOWN TRANSFORMER (277/480V to 120/240V)
5-32	SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS METERED SERVICE ENCLOSURE (CAN) (120/208V, 120/240V)
5-33	SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS METERED SERVICE ENCLOSURE (CAN) WITH STEP-DOWN TRANSFORMER (277/480V to 120/240V)
5-34	SIGNALS, LIGHTING AND ELECTRICAL SYSTEMS PULL BOX
5-40	TRAFFIC SIGNAL CONTROLLER CABINET & SERVICE CAN WITH BATTERY BACKUP FOUNDATIONS
5-41	METERED SERVICE ENCLOSURE WITH BATTERY BACKUP
5-44	DETECTOR LOOP LOCATION DETAILS

NOTES:

1. 'A' SERIES NUMBERING PROCEDURE
 POLE SIZE 'A' — LUMINAIRE ARM SIZE 'F'
 (STANDARD UNLESS OTHERWISE SPECIFIED)
2. POLES SHALL NOT HAVE HANDHOLDS



BASE DETAILS



LUMINAIRE ARM DETAILS

LUMINAIRE ARM DATA			
'F'	END OD	BASE OD	'H'
6'-0"	2-3/8"	3-3/8"	10 1'-6" 7'-5"
8'-0"	2-3/8"	3-7/8"	10 2'-3" 7'-5"
10'-0"	2-3/8"	3-7/8"	10 2'-6" 13'-3"
12'-0"	2-3/8"	4-5/16"	10 3'-9" 13'-3"
15'-0"	2-3/8"	4-3/4"	10 4'-3" 13'-3"
18'-0"	2-3/8"	4-3/4"	10 5'-3" 13'-3"

FOUNDATION DIMENSIONS		
	SQUARE	ROUND
'A' SERIES	2'6" x 2'6" x 5'	30" x 6'6"

'A' SERIES

IDENTIFICATION NUMBER	POLE DATA			BASE PLATE DATA			ANCHOR BOLTS
	'A'	TOP OD	BASE OD	'B'	'C'	'D','E'	
A-250-F	25'-0"	3-7/8"	7-5/16"	11 12"	11-1/2"	11"	1" x 36" x 4"
A-266-F	26'-6"	3-7/8"	7-1/2"	11 12"	11-1/2"	11"	1" x 36" x 4"
A-286-F	28'-6"	3-7/8"	7-3/4"	11 12"	11-1/2"	11"	1" x 36" x 4"
A-300-F	30'-0"	3-7/8"	8"	11 12"	11-1/2"	11"	1" x 36" x 4"

* UTILIZE STANDARD POLES SHOWN ON 5-1 UNLESS UTILITY CONFLICTS

'A' SERIES

SEE BASE DETAILS

[Signature]
 CHIEF, DEPT. OF TRANSPORTATION

COUNTY OF SACRAMENTO
 MUNICIPAL SERVICES AGENCY

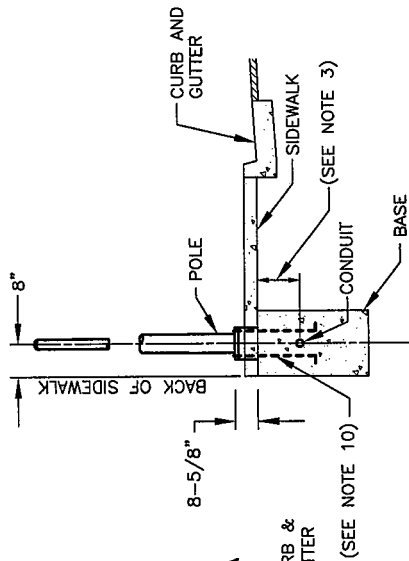
SIGNAL, LIGHTING AND ELECTRICAL SYSTEMS
 TYPE 'A' STREET LIGHT STANDARD

SCALE: NONE
 DATE: 05/08/14
 DRAWN BY: KK

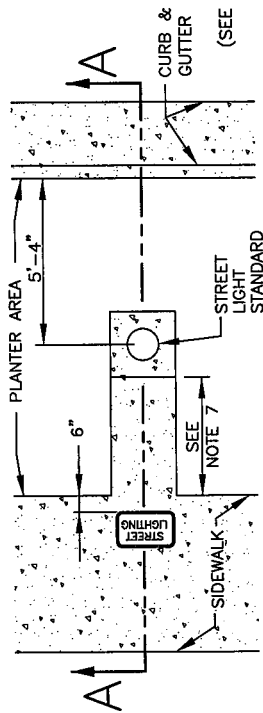
5-3

NOTES:

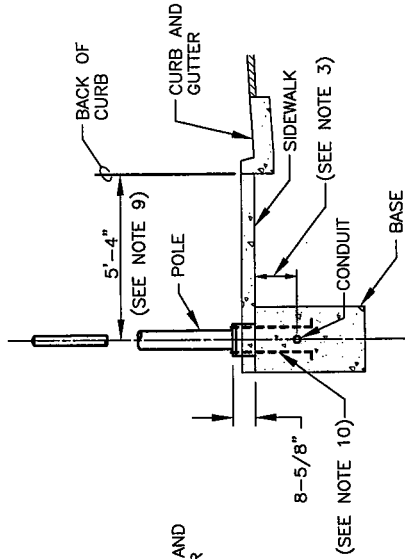
1. CONDUIT TRENCH BACKFILL SHALL BE COMPACTED TO 90% RELATIVE COMPACTION.
2. LANDSCAPING IN THE AREA OF THE STREET LIGHT STANDARD WILL MATCH BASE ELEVATION AND HAVE A MINIMUM OF 12" OF CLEARANCE FROM THE BASE.
3. CONDUITS LOCATED BENEATH THE SIDEWALK MAY BE PLACED AT 9" DEPTH. CONDUITS IN LANDSCAPE STRIP SHALL BE PLACED AT 18" DEPTH AND 6" FROM THE FACE OF THE SIDEWALK.
4. IF THE PLANTER AREA IS LESS THAN SIX FEET WIDE THEN PLACE STREET LIGHT STANDARD SO THAT THE BASE PLATE ALIGNS WITH THE EDGE OF SIDEWALK TOP OF FOUNDATION TO MATCH SIDEWALK GRADE.
5. NO PULL BOXES ARE TO BE PLACED IN THE PLANTER AREA.
6. PULL BOXES LOCATED IN A DRIVEWAY OR WITHIN 5-FEET OF A DRIVEWAY SHALL BE TRAFFIC RATED (SEE STATE STANDARD PLANS FOR TRAFFIC RATED PULL BOXES).
7. IF DIMENSION IS LESS THAN 2-FEET, PLACE 3-1/2" THICK, 2-FOOT WIDE CONCRETE PAD BETWEEN SIDEWALK AND STREET LIGHT FOUNDATION.
8. PULL BOXES SHALL BE INSTALLED AT EACH STREET LIGHT AND SERVICE CAN.
9. FOR DECORATIVE STREET LIGHTS, LOCATE BASE CLEAR OF BACK OF SIDEWALK.
10. EXTEND ANCHOR BOLTS BY 10" MINIMUM EITHER BY USE OF LONGER ANCHOR BOLTS OR BY LAP SPliced 3/4" RE-BAR EXTENDED 10" BELOW "J" HOOK WITH LAP LENGTH OF 2'.



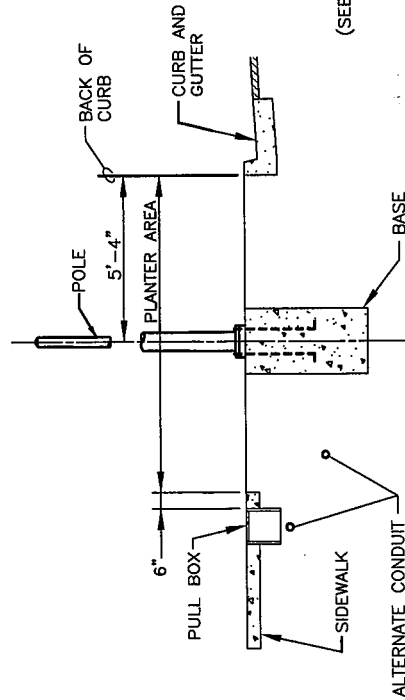
OVER 6' SIDEWALK



SIDEWALK WITH PLANTER AREA



5' to 6' SIDEWALK



SECTION A-A

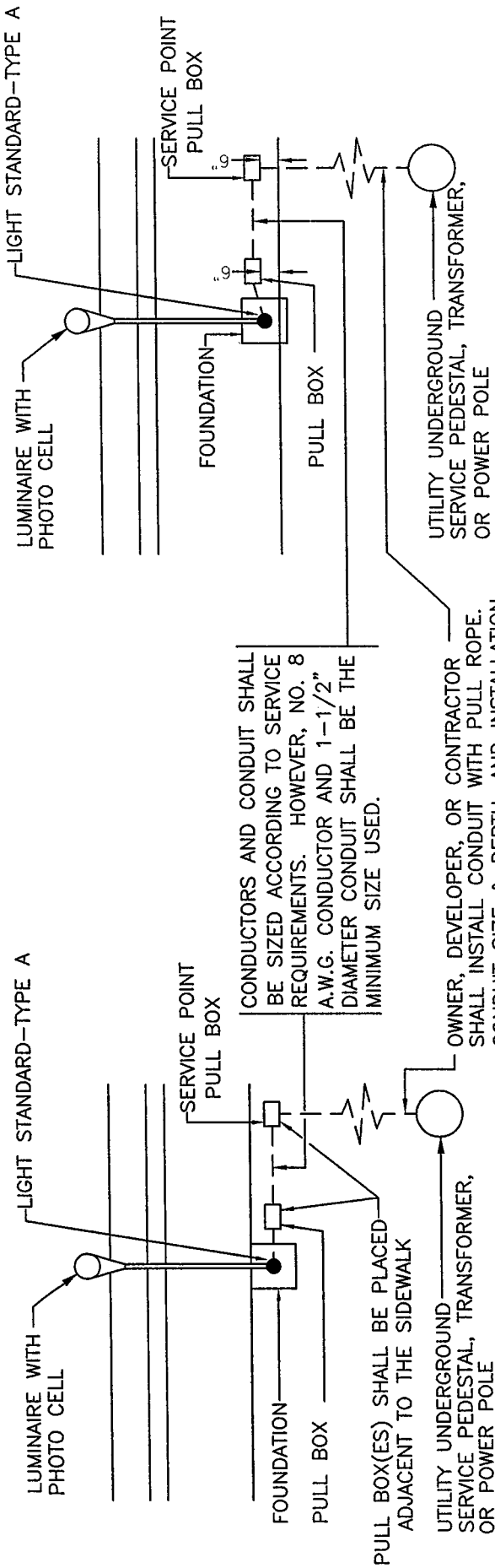
[Signature]

CHIEF, DEPT. OF TRANSPORTATION

**COUNTY OF SACRAMENTO
MUNICIPAL SERVICES AGENCY**

**SIGNAL, LIGHTING AND
ELECTRICAL SYSTEMS
BASE LOCATION FOR
STREET LIGHTS**

SCALE: NONE
DATE: 10/15/14 - BR
DRAWN BY: KK



RESIDENTIAL SERVICE

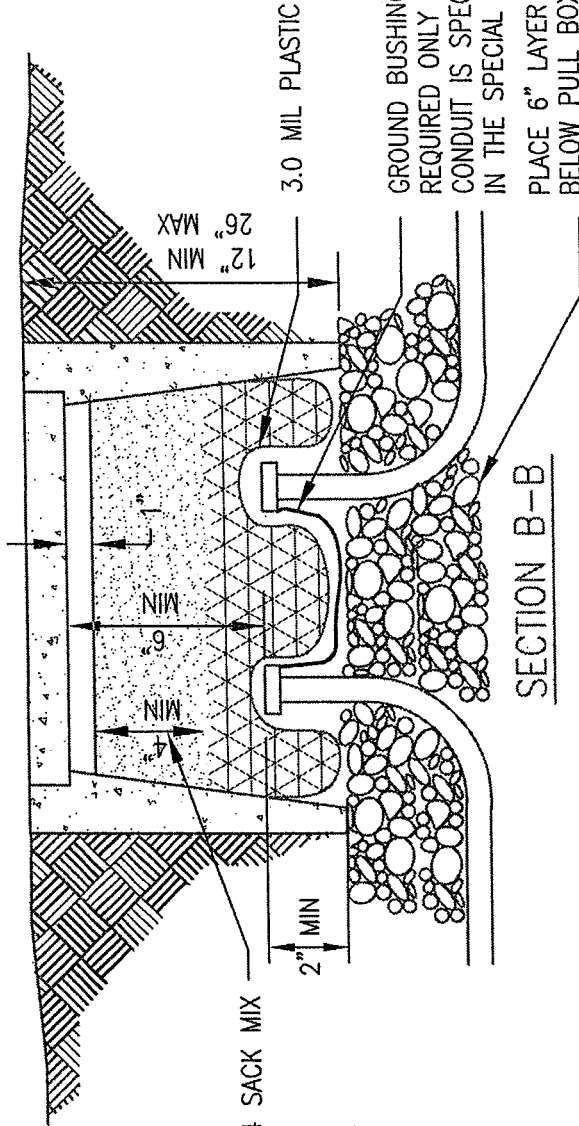
COMMERCIAL SERVICE

NOTES:

1. ALL COUNTY OWNED FACILITIES SHALL BE WITHIN RIGHT-OF-WAY OR EASEMENT FOR PUBLIC UTILITIES AND PUBLIC FACILITIES.
2. SEE STANDARD DRAWING 5-13 FOR SERVICE POINT PULL BOX DETAILS AND WIRING DIAGRAM.
3. SEE STANDARD DRAWING 5-34 FOR PULL BOX DETAILS.
4. SEE STANDARD DRAWINGS 5-3 FOR STREET LIGHT DETAILS.
5. THE SERVING UTILITY WILL INSTALL AND MAINTAIN CONDUCTORS FROM THEIR UNDERGROUND SERVICE PEDESTAL, TRANSFORMER, OR POWER POLE TO THE SERVICE POINT PULL BOX.

COUNTY OF SACRAMENTO MUNICIPAL SERVICES AGENCY	
SIGNAL LIGHTING AND ELECTRICAL SYSTEMS DIRECT SERVICE INSTALLATION TO STREET LIGHTING STANDARD	
SCALE: NONE DATE: 05/08/14 DRAWN BY: KK	5-12

[Signature]
CHIEF, DEPT. OF TRANSPORTATION



4" MIN P.C.C., 4 SACK MIX

2" MIN

4" MIN

6" MIN

12" MIN
26" MAX

3.0 MIL PLASTIC

SECTION B-B

GROUND BUSHINGS AND BONDING JUMPER. REQUIRED ONLY WHEN USE OF METALLIC CONDUIT IS SPECIFIED ON THE PLANS OR IN THE SPECIAL PROVISIONS.

PLACE 6" LAYER OF CLEAN CRUSHED ROCK BELOW PULL BOX BEFORE INSTALLATION OF CONDUCTORS.

NOTES:

1. THIS DETAIL IS NOT TO BE USED FOR TRAFFIC SIGNAL PULL BOXES.
2. INSTALL GROUND ROD IN PULL BOX OR POLE BASE CLOSEST TO SERVICE CAN.
3. ORGANIZE AND COMPRESS THE WIRES AT THE BOTTOM OF THE PULL BOX.
4. COVER WIRES AND CONDUIT OPENINGS WITH 3.0 MIL PLASTIC TO PROTECT CONDUIT OPENINGS FROM SAND INTRUSION.
5. FILL WITH SAND AS SHOWN.
6. POUR CONCRETE IN THE PULL BOX OVER SAND TO LEVEL 1" BELOW PULL BOX LID.
7. ALL PULL BOXES SHALL HAVE PROVISIONS FOR LOCKING.
8. PULL BOXES LOCATED IN A DRIVEWAY OR WITHIN 5- FEET OF A DRIVEWAY OR ON THE ROADWAY SHALL BE TRAFFIC RATED.

LEGEND:



ELECTRICAL WIRING -- FILL WITH SAND AFTER PLASTIC AND WIRES ARE IN PLACE.



CONCRETED AREA -- 4 SACK CONCRETE MINIMUM 4" THICK.

**COUNTY OF SACRAMENTO
MUNICIPAL SERVICES AGENCY**

STREET LIGHT PULL BOX

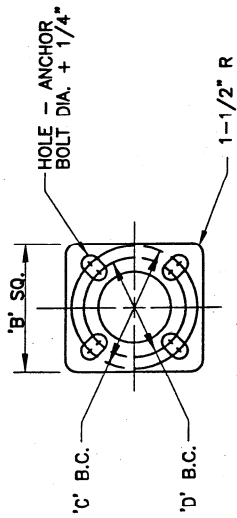
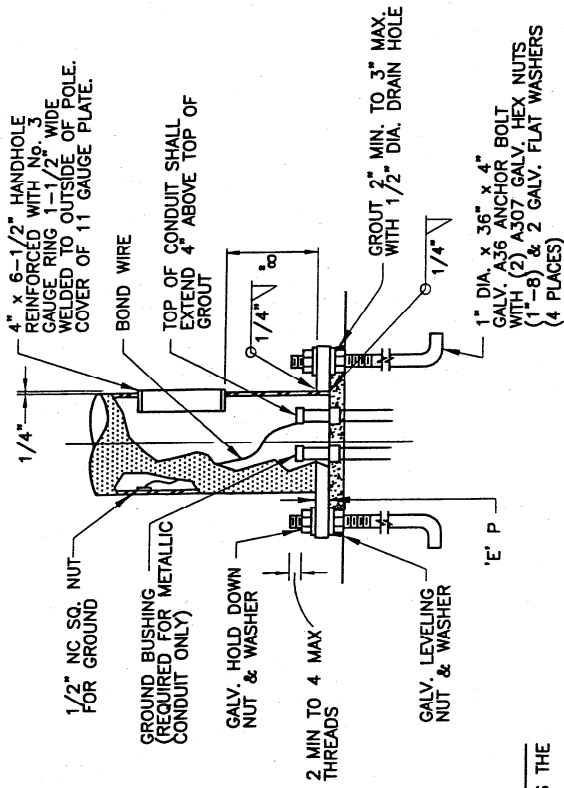
SCALE: NONE

DATE: 05/08/14

DRAWN BY: KK

5-13

CHIEF, DEPT. OF TRANSPORTATION

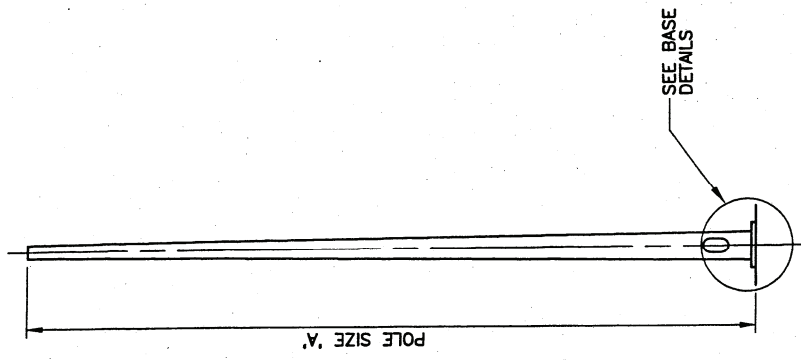


BASE DETAILS

FOUNDATION DIMENSIONS	
SQUARE	30" x 3'-6"
ROUND	

NOTES:

- STANDARD SHALL BE INSTALLED SO HANDHOLE FACES THE STREET.



'B' SERIES

		'B' SERIES			
		BASE PLATE DATA			
'A'	POLE DATA	BASE OD		ANCHOR BOLTS	
		TOP OD	GAUGE	'B' 'C' 'D' 'E'	
20'-0"	2-7/8"	5.61"	5.85"	10" 9-1/2" 9"	1" 1" x 36" x 4"

[Signature]
 CHIEF, DEPT. OF TRANSPORTATION

**COUNTY OF SACRAMENTO
 MUNICIPAL SERVICES AGENCY**

**SIGNALS, LIGHTING AND
 ELECTRICAL SYSTEMS
 TYPE 'B' STREET LIGHT STANDARD**

SCALE: NONE
 DATE: 10/03
 DRAWN BY:

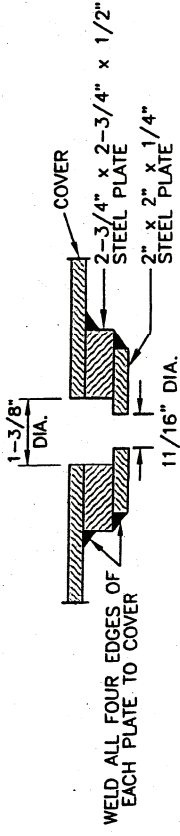
NOTES:

1. STEEL COVER SHALL HAVE EMBOSSED NON-SKID PATTERN.
2. STEEL REINFORCING SHALL BE AS REGULARLY USED IN THE STANDARD PRODUCTS OF THE RESPECTIVE MANUFACTURER.
3. PULL BOX COVERS SHALL BE MARKED AS DESCRIBED IN NOTE 6 ON STANDARD DRAWING 5-20A. MARKING SHALL BE APPLIED TO EACH COVER PRIOR TO GALVANIZING BY BEAD WELDING THE LETTERS ON THE COVERS. THE LETTERS SHALL BE RAISED AT LEAST 3/32 INCH.
4. BONDING JUMPER FOR COVER SHALL BE A MIN. OF 36" LONG. WHEN NON-METALLIC CONDUIT IS USED, THE BONDING JUMPER FOR THE COVER SHALL BE SPLICED TO THE BOND WIRE IN THE CONDUITS. WHEN THE USE OF METALLIC CONDUIT IS SPECIFIED ON THE PLANS OR IN THE SPECIAL PROVISIONS, THE BONDING JUMPER FOR THE COVER SHALL BE CONNECTED TO THE CONDUIT GROUND BUSHING, AND THE CONDUITS SHALL BE BONDED TOGETHER WITH GROUND BUSHINGS AND A BONDING JUMPER.
5. CONDUITS SHALL ENTER AT BOTTOM OF PULL BOX AS SHOWN IN THE DRAWING.

REINFORCED CONCRETE BOX

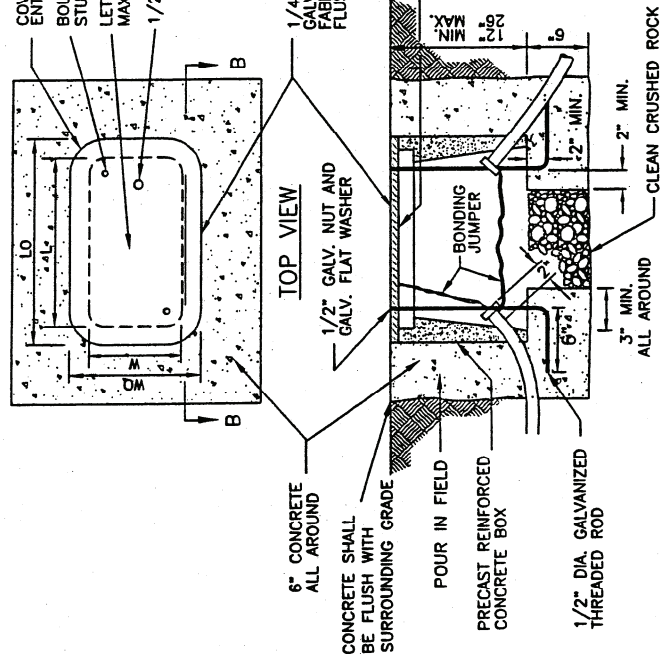
PULL BOX No.	MIN.** THICKNESS	MIN. DEPTH BOX AND EXTENSION	LO	WO	L	W
3-1/2	1"	NO EXTENSION	20"	14"	15-1/2" ±	10" ±
5	1"	22"	28"	18"	23" ±	13-1/2" ±
5A	1"	22"	25-1/4"	15-3/4"	21" ±	10-1/2" ±

** EXCLUDING CONDUIT WEB



BOLT HOLE DETAIL

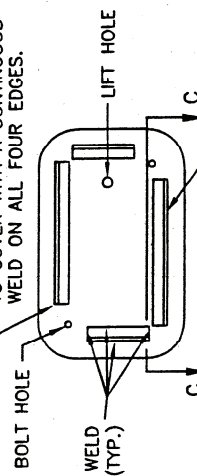
COVER SHALL COVER ENTIRE TOP OF BOX
 BOLT HOLES SHALL MATCH STANDARD STUD BOLTS. SEE BOLT HOLE DETAIL.
 LETTERS TO BE 1" MIN. TO 3" MAX. HIGH. SEE NOTE 3
 1/2" DIA. LIFT HOLE



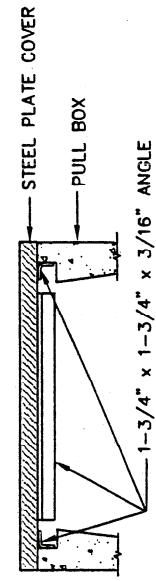
SECTION B-B

[Signature]
 DIRECTOR

1-3/4" x 1-3/4" x 3/16" ANGLE WELDED ALONG ENTIRE PERIMETER OF COVER EXCEPT AT RADIUS CORNERS AND BOLT HOLES. 1-3/4" FLAT SURFACE SHALL BE WELDED TO COVER WITH A CONTINUOUS WELD ON ALL FOUR EDGES.



PLAN VIEW (BOTTOM OF COVER)



SECTION C-C

COVER DETAIL

**COUNTY OF SACRAMENTO
 MUNICIPAL SERVICES AGENCY**

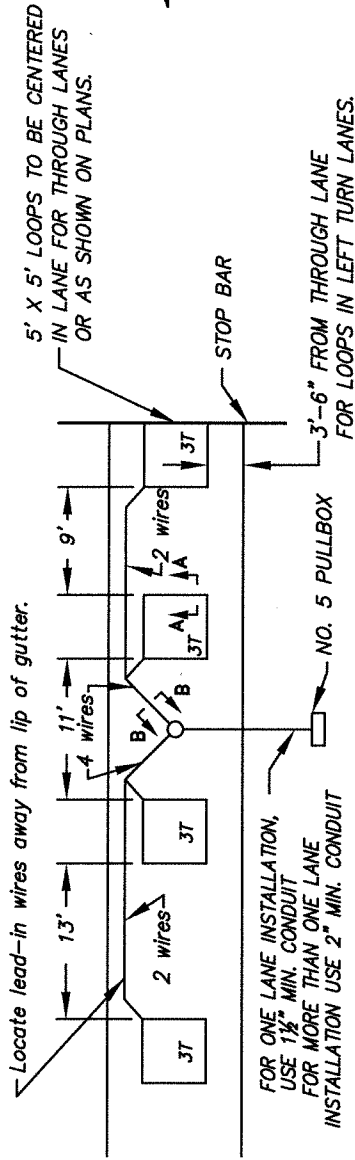
**SIGNALS, LIGHTING AND
 ELECTRICAL SYSTEMS
 TRAFFIC RATED PULL BOX
 WITH STEEL TRAFFIC COVER**

SCALE: NONE
 DATE: 1/01
 DRAWN BY:

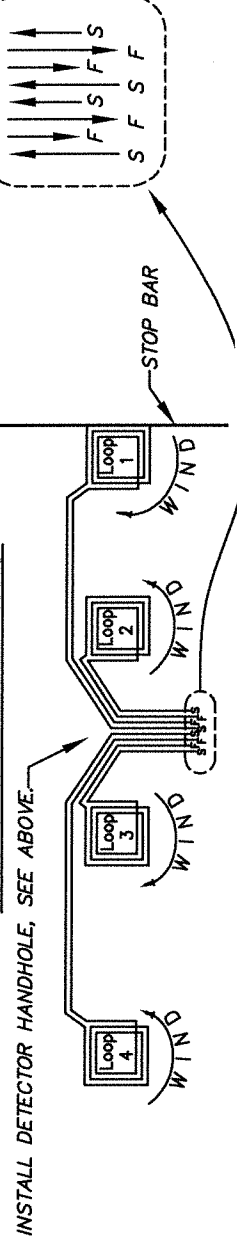
5-20B

LOOP INSTALLATION PROCEDURE

1. Test each loop circuit at controller cabinet (or, if these are not installed, test at termination pull box) before filling slots. Perform a resistance test between each circuit and ground. Insulation resistance shall not be less than 100 mega ohms. Test each loop circuit for continuity. Loop circuit resistance shall not exceed 0.5 ohms plus 0.35 ohms per 100 feet of lead-in cable.
2. Distance between side of loop and lead-in saw cut shall be 1'-0" minimum.
3. Width of saw cuts shall be 1/8" to 3/16" wider than thickness of the conductor.
4. Depth of saw cuts shall be such that the minimum sealant cover shall be 1/2" with an additional 1/8" to 1/4" gap between top of sealant and surface of pavement.
5. Loops and lead-in cuts shall be located a minimum of 2 feet from the nearest edge of manhole cover and valve boxes.
6. Loop installation 250' or more from stop bar shall have 4 turns.
7. See State Standard drawing ES - 5A for additional details.
8. See Drawing 5-44 for direction as to number of turns for loops 1 and 2, and location relative to stop bar.

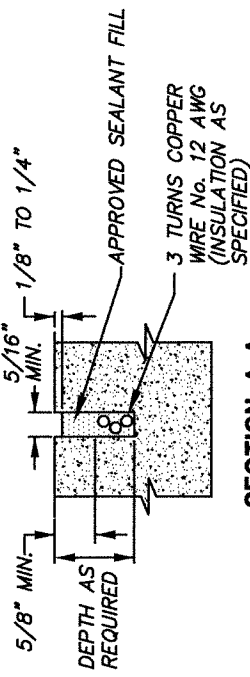


TYPICAL LOOP INSTALLATION

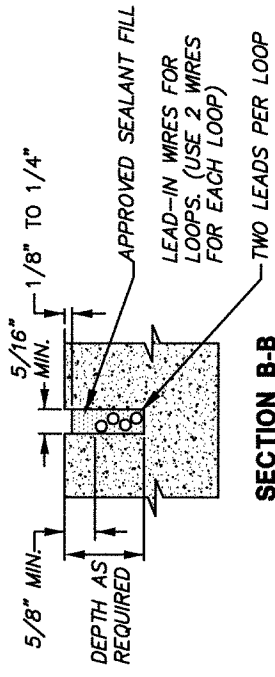


LOOP WINDING PATTERNS (SEE NOTE 8)

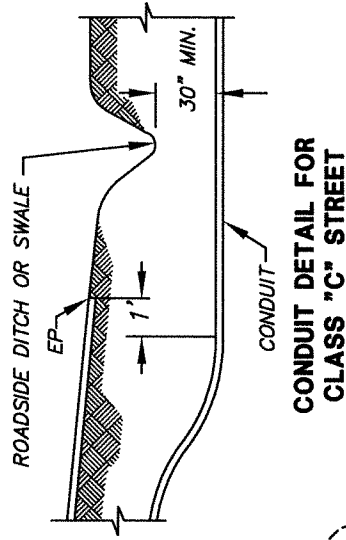
Conductor identification shall include the following:
 1. Sensor number and phase 2. Loop number 3. Start (S) or finish (F)



SECTION A-A



SECTION B-B



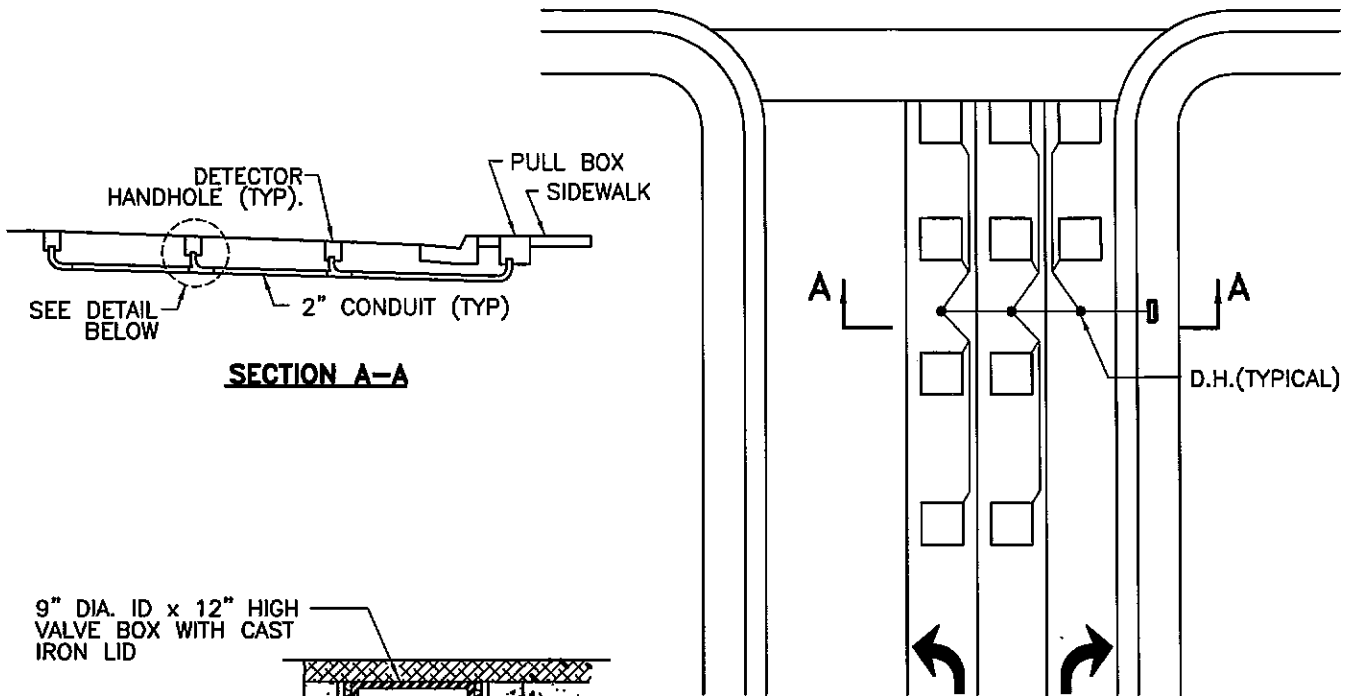
CONDUIT DETAIL FOR CLASS "C" STREET

COUNTY OF SACRAMENTO
MUNICIPAL SERVICES AGENCY

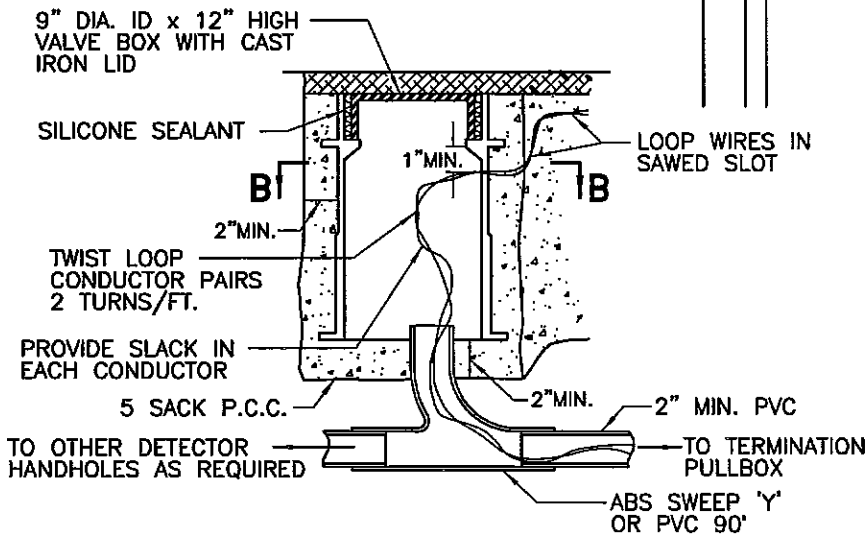
INDUCTION DETECTORS

SCALE: NONE
DATE: 12/2015
DRAWN BY: KRG

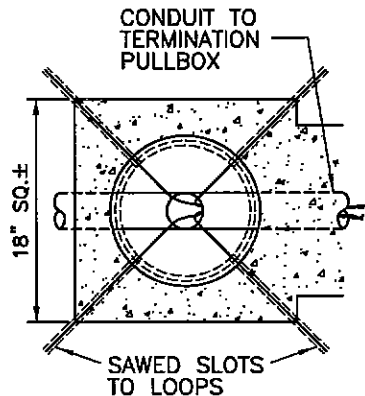
CHIEF, DEPT. OF TRANSPORTATION



SECTION A-A



SECTION B-B



INSTALLATION REQUIREMENTS:

1. 18" SQ± P.C.C. ENCASEMENT OUTLINE 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 LOCATION SHALL BE AS SHOWN ON THE PLANS.
4. THE EXCAVATION AROUND THE HANDHOLE SHALL BE BACKFILLED WITH 5 SACK P.C.C.
5. THE HANDHOLE SHALL BE PROTECTED WITH COLD PATCH OR OTHER SUITABLE PROTECTION UNTIL PERMANENT AC BACKFILL IS PLACED.
6. THE CEMENT USED TO JOIN THE ABS SWEEP "Y" TO THE PVC CONDUIT SHALL BE CAPABLE OF PROVIDING A SOLVENT TYPE WELD BETWEEN THE TWO MATERIALS.

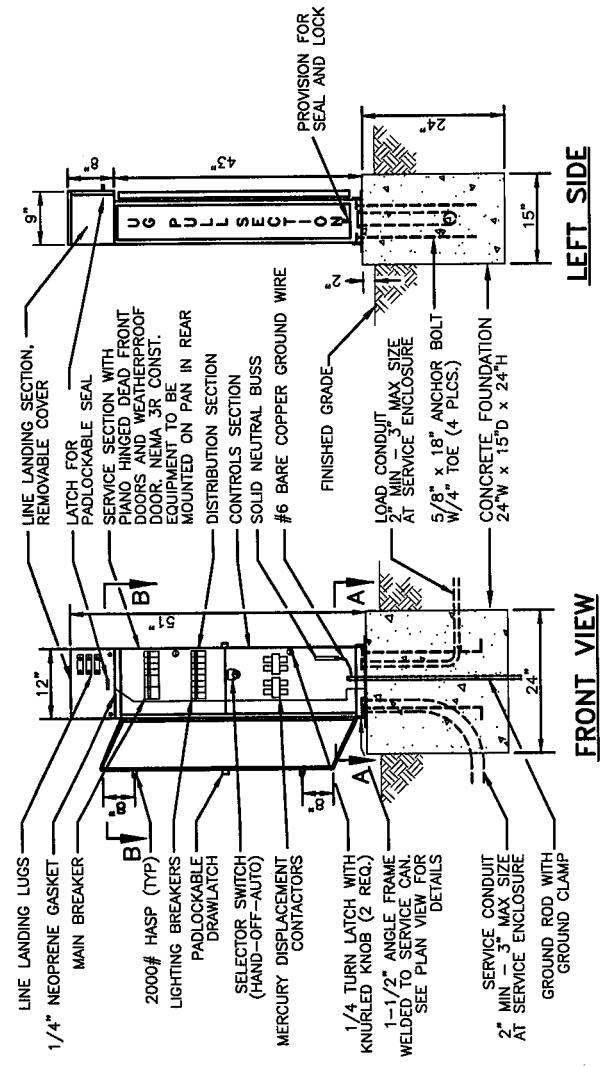
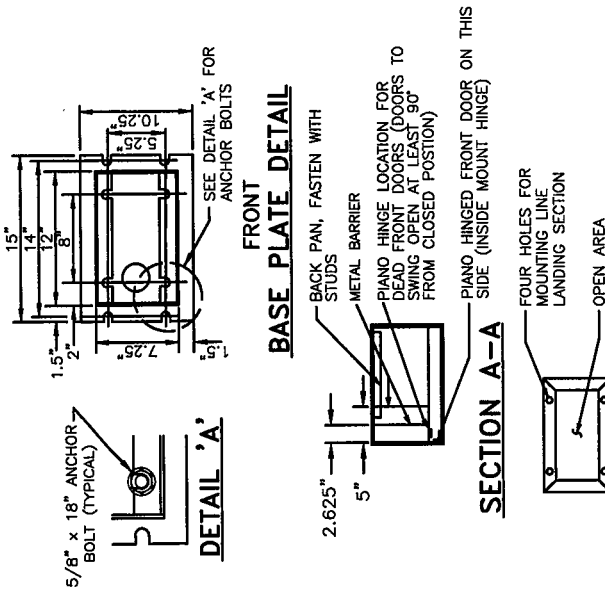

 CHIEF, DEPT. OF TRANSPORTATION

**COUNTY OF SACRAMENTO
MUNICIPAL SERVICES AGENCY**

**TYPE "B" DETECTOR
HANDHOLE DETAIL**

SCALE: NONE
DATE: 12/2007
DRAWN BY: COUNTY D.O.T.

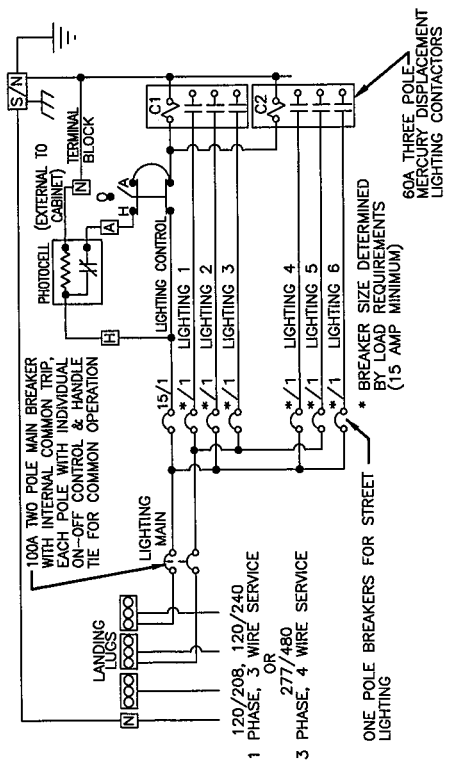
5-25



LEFT SIDE

FRONT VIEW

1. EXTERIOR SHALL BE 14 GAUGE #304D STAINLESS STEEL. INTERIOR DEAD FRONT PANEL AND BACK PAN SHALL BE 14 GAUGE STEEL, PAINTED WHITE. ENCLOSURE SHALL BE ELECTRICALLY WELDED AND REINFORCED WHERE REQUIRED.
2. CONSTRUCTION SHALL BE NEMA 3R AND 12, RAIN-TIGHT AND DUST-TIGHT.
3. ALL NUTS, BOLTS, SCREWS AND HINGES SHALL BE STAINLESS STEEL.
4. NUTS, BOLTS AND SCREWS SHALL NOT BE USED ON THE OUTSIDE OF THE SERVICE ENCLOSURE.
5. PHENOLIC NAMEPLATES SHALL BE USED TO IDENTIFY ALL OPERATOR CONTROLS.
6. CONTROL WIRING SHALL BE MARKED AT BOTH ENDS BY PERMANENT WIRE MARKERS.
7. A PLASTIC COVERED WIRING DIAGRAM SHALL BE ATTACHED TO THE INSIDE OF THE FRONT DOOR.
8. SERVICE ENCLOSURE SHALL BE FACTORY WIRED AND CONFORM TO REQUIRED NEMA STANDARDS.
9. SERVICE ENCLOSURE SHALL BE U.L. LISTED AS INDUSTRIAL CONTROL PANELS U.L. 508 FILE NO. E62062
10. WIRING BETWEEN CIRCUIT BREAKER AND CONTACTOR SHALL BE #6 THWN OR THHN MINIMUM.
11. SERVICE ENCLOSURE SHALL BE OF TWO-PIECE CONSTRUCTION.
12. THE WIRING SCHEMATIC DIAGRAM AS SHOWN IS FOR A 2-WIRE STREET LIGHTING SYSTEM. IF THE SERVICE ENCLOSURE WILL BE USED FOR A 3-WIRE STREET LIGHTING SYSTEM, THEN THE LIGHTING BREAKERS SHALL CONSIST OF 2-POLE BREAKERS WITH INTERNAL COMMON TRIP. EACH POLE WITH INDIVIDUAL ON-OFF CONTROL AND HANDLE TO BE FOR COMMON OPERATION. FOR EACH 2-POLE BREAKER THE CIRCUIT LOAD SHALL BE EQUALLY DIVIDED ACROSS THE LIGHTING MAIN.
13. SEE STANDARD SPECIFICATIONS FOR ADDITIONAL DETAILS.



UNMETERED SERVICE WIRING SCHEMATIC DIAGRAM

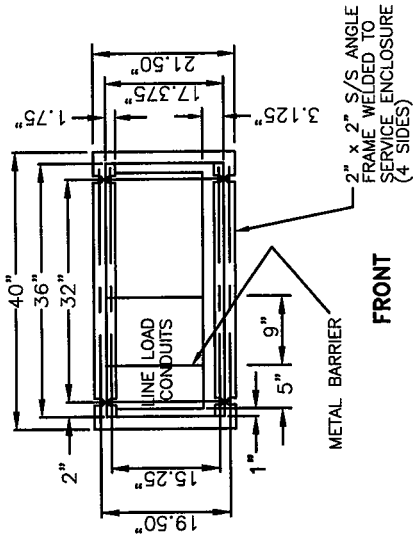
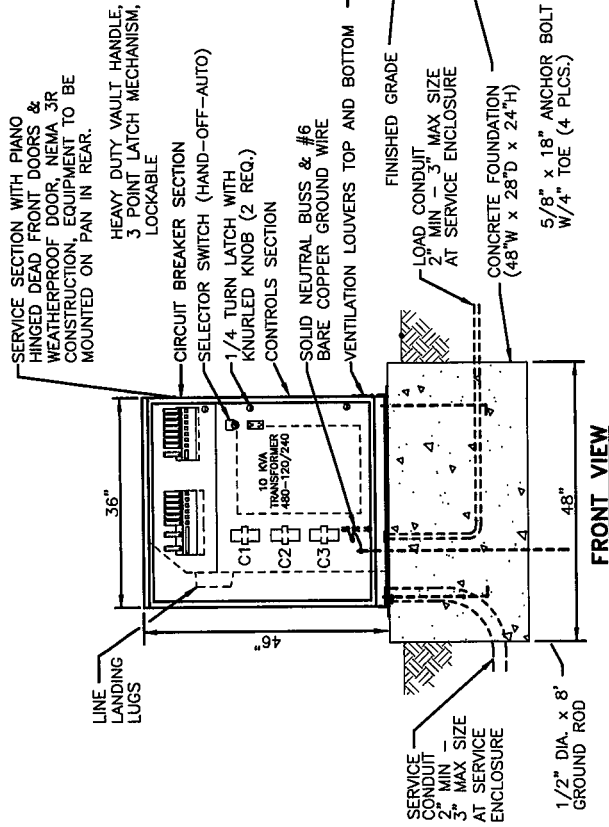
**COUNTY OF SACRAMENTO
MUNICIPAL SERVICES AGENCY**

SIGNAL, LIGHTING AND ELECTRICAL SYSTEMS UNMETERED SERVICE ENCLOSURE CAN

(120/280V, 120/240V, 277/480V)

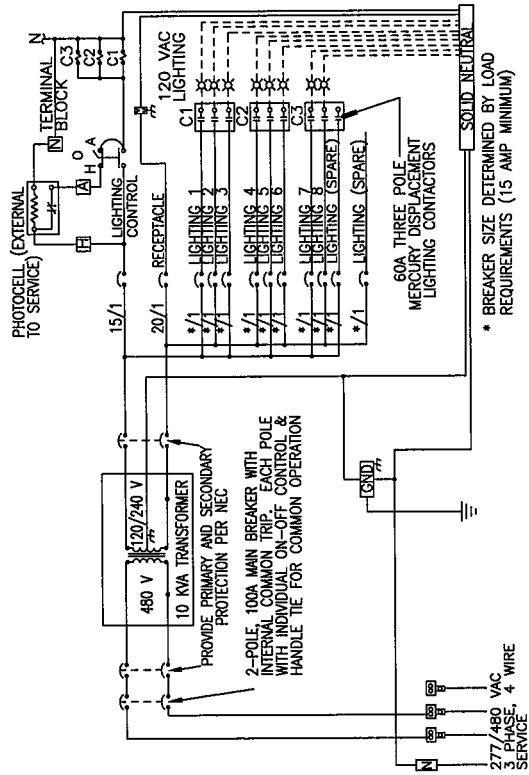
SCALE: NONE
DATE: 10/07/14 - BR
DRAWN BY: JAS

[Signature]
CHIEF, DEPT. OF TRANSPORTATION



BASE PLATE DETAIL

- EXTERIOR SHALL BE 14 GAUGE #304D STAINLESS STEEL. INTERIOR DEAD FRONT PANEL AND BACK PAN SHALL BE 14 GAUGE STEEL, PAINTED WHITE. ENCLOSURE SHALL BE ELECTRICALLY WELDED AND REINFORCED WHERE REQUIRED.
- CONSTRUCTION SHALL BE NEMA 3R AND 12, RAIN TIGHT AND DUST TIGHT.
- ALL NUTS, BOLTS, SCREWS AND HINGES SHALL BE STAINLESS STEEL.
- NUTS, BOLTS AND SCREWS SHALL NOT BE USED ON THE OUTSIDE OF THE SERVICE ENCLOSURE.
- PHENOLIC NAMEPLATES SHALL BE USED TO IDENTIFY ALL OPERATOR CONTROLS.
- CONTROL WIRING SHALL BE MARKED AT BOTH ENDS BY PERMANENT WIRE MARKERS.
- A PLASTIC COVERED WIRING DIAGRAM SHALL BE ATTACHED TO THE INSIDE OF THE FRONT DOOR.
- SERVICE ENCLOSURE SHALL BE FACTORY WIRED AND CONFORM TO REQUIRED NEMA STANDARDS.
- SERVICE ENCLOSURE SHALL BE U.L. LISTED AS INDUSTRIAL CONTROL PANELS U.L. 508 FILE NO. E62062
- WIRING BETWEEN CIRCUIT BREAKER AND CONTACTOR SHALL BE #6 THWN OR THHN MINIMUM.
- SIZE OF TRANSFORMER SHALL BE 10 KVA. PROVIDE PRIMARY AND SECONDARY PROTECTION PER NEC.
- WHEN CHANGING VOLTAGE ON A RETROFIT PROJECT WHERE A NEW SERVICE ENCLOSURE WITH A STEP-DOWN TRANSFORMER IS REQUIRED, THE NEW SERVICE ENCLOSURE SHALL BE PLACED BETWEEN THE SERVICE POINT AND THE OLD SERVICE ENCLOSURE LOCATED WITHIN THE COUNTY R/W. VOLTAGE OUTPUT FROM THE NEW SERVICE ENCLOSURE MAY BE CONNECTED INTO THE EXISTING CONDUIT SYSTEM.
- THE WIRING SCHEMATIC DIAGRAM AS SHOWN IS FOR A 2-WIRE STREET LIGHTING SYSTEM. IF THE SERVICE ENCLOSURE WILL BE USED FOR A 3-WIRE STREET LIGHTING SYSTEM, THEN THE LIGHTING BREAKERS SHALL CONSIST OF 2-POLE BREAKERS WITH INTERNAL COMMON TRIP. EACH POLE WITH INDIVIDUAL ON-OFF CONTROL AND HANDLE TIE FOR COMMON OPERATION. FOR EACH 2-POLE BREAKER, THE ACROSS THE LIGHTING MAIN.
- SEE STANDARD SPECIFICATIONS FOR ADDITIONAL DETAILS.



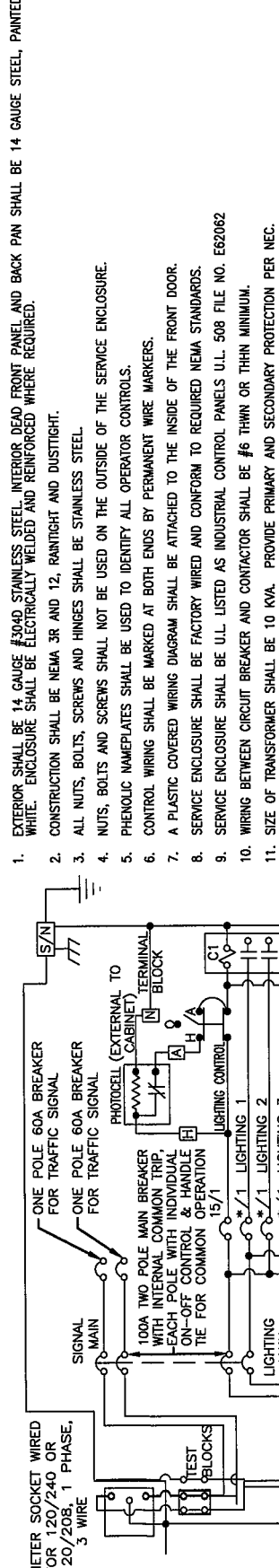
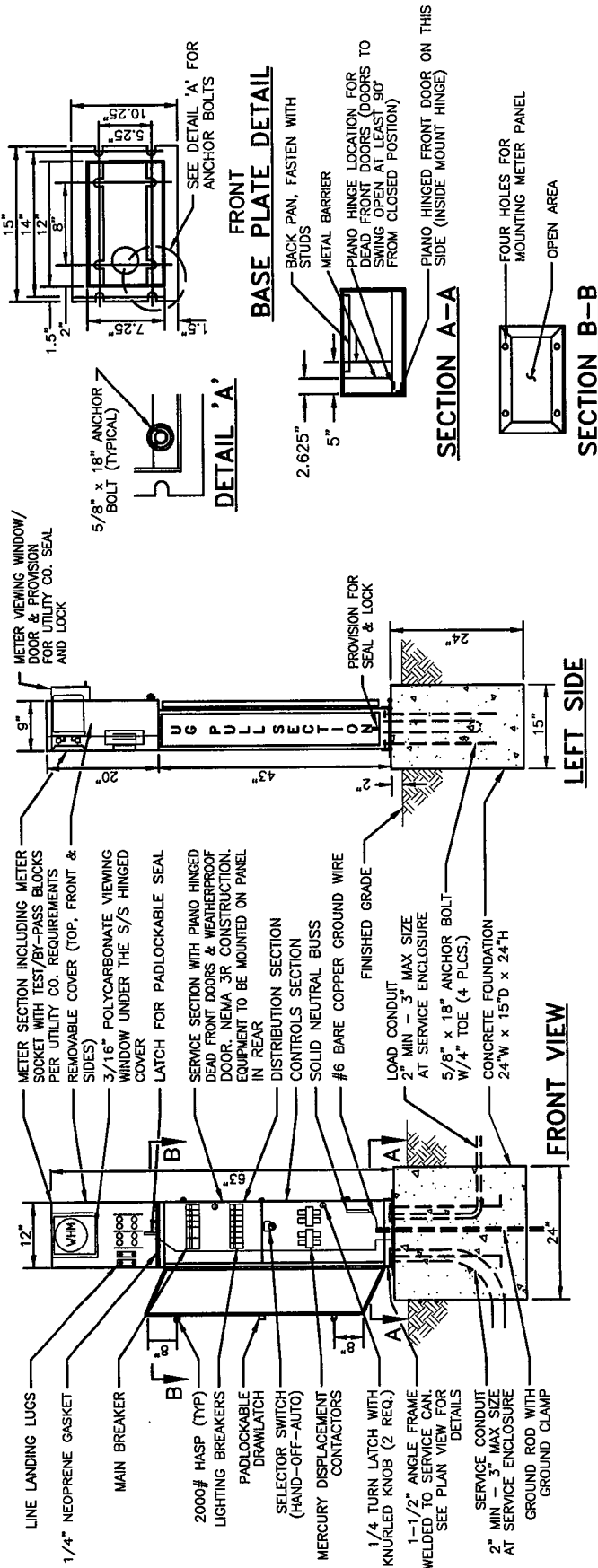
UNMETERED SERVICE WIRING SCHEMATIC DIAGRAM

**COUNTY OF SACRAMENTO
MUNICIPAL SERVICES AGENCY**

**SIGNAL, LIGHTING AND ELECTRICAL SYSTEMS
UNMETERED SERVICE ENCLOSURE CAN
WITH STEP-DOWN TRANSFORMER
(277/480V TO 120/240V)**

SCALE: NONE
DATE: 10/08/14 - BR
DRAWN BY: JAS

CHIEF, DEPT. OF TRANSPORTATION



**COUNTY OF SACRAMENTO
MUNICIPAL SERVICES AGENCY**

**SIGNAL, LIGHTING AND
ELECTRICAL SYSTEMS
METERED SERVICE, ENCLOSURE CAN
(120/280V, 120/240V)**

SCALE: NONE
DATE: 10/08/14 - BR
DRAWN BY: JAS

5-32

1. EXTERIOR SHALL BE 14 GAUGE #304D STAINLESS STEEL. INTERIOR DEAD FRONT PANEL AND BACK PAN SHALL BE 14 GAUGE STEEL, PAINTED WHITE. ENCLOSURE SHALL BE ELECTRICALLY WELDED AND REINFORCED WHERE REQUIRED.

2. CONSTRUCTION SHALL BE NEMA 3R AND 12, RAIN TIGHT AND DUST TIGHT.

3. ALL NUTS, BOLTS, SCREWS AND HINGES SHALL BE STAINLESS STEEL.

4. NUTS, BOLTS AND SCREWS SHALL NOT BE USED ON THE OUTSIDE OF THE SERVICE ENCLOSURE.

5. PHENOLIC NAMEPLATES SHALL BE USED TO IDENTIFY ALL OPERATOR CONTROLS.

6. CONTROL WIRING SHALL BE MARKED AT BOTH ENDS BY PERMANENT WIRE MARKERS.

7. A PLASTIC COVERED WIRING DIAGRAM SHALL BE ATTACHED TO THE INSIDE OF THE FRONT DOOR.

8. SERVICE ENCLOSURE SHALL BE FACTORY WIRING AND CONFORM TO REQUIRED NEMA STANDARDS.

9. SERVICE ENCLOSURE SHALL BE U.L. LISTED AS INDUSTRIAL CONTROL PANELS U.L. 508 FILE NO. E62062

10. WIRING BETWEEN CIRCUIT BREAKER AND CONTACTOR SHALL BE #6 THIN OR THIN MINIMUM.

11. SIZE OF TRANSFORMER SHALL BE 10 KVA. PROVIDE PRIMARY AND SECONDARY PROTECTION PER NEC.

12. THE WIRING SCHEMATIC DIAGRAM AS SHOWN IS FOR A 2-WIRE STREET LIGHTING SYSTEM. IF THE SERVICE ENCLOSURE WILL BE USED FOR A 3-WIRE STREET LIGHTING SYSTEM, THEN THE LIGHTING BREAKERS SHALL CONSIST OF 2-POLE BREAKERS WITH INTERNAL COMMON TRIP. EACH POLE WITH INDIVIDUAL ON-OFF CONTROL AND HANDLE TIE FOR COMMON OPERATION. FOR EACH 2-POLE BREAKER, THE ACROSS THE LIGHTING MAIN.

13. SEE STANDARD SPECIFICATIONS FOR ADDITIONAL DETAILS.

LINE LANDING LUGS
1/4" NEOPRENE GASKET
MAIN BREAKER
2000# HASP (TYP)
LIGHTING BREAKERS
PADLOCKABLE DRAWLATCH
SELECTOR SWITCH (HAND-OFF-AUTO)
MERCURY DISPLACEMENT CONTACTORS
1/4 TURN LATCH WITH KNURLED KNOB (2 REQ.)
1-1/2" ANGLE FRAME WELDED TO SERVICE CAN. SEE PLAN VIEW FOR DETAILS
SERVICE CONDUIT 2" MIN - 3" MAX SIZE AT SERVICE ENCLOSURE GROUND ROD WITH GROUND CLAMP

METER VIEWING WINDOW/ DOOR & PROVISION FOR UTILITY CO. SEAL AND LOCK
5/8" x 18" ANCHOR BOLT (TYPICAL)
DETAIL 'A'

FRONT VIEW
LEFT SIDE
SECTION A-A
SECTION B-B

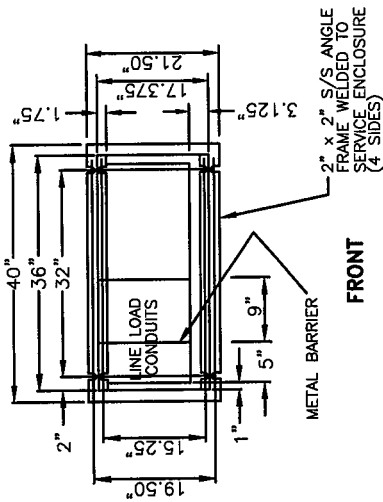
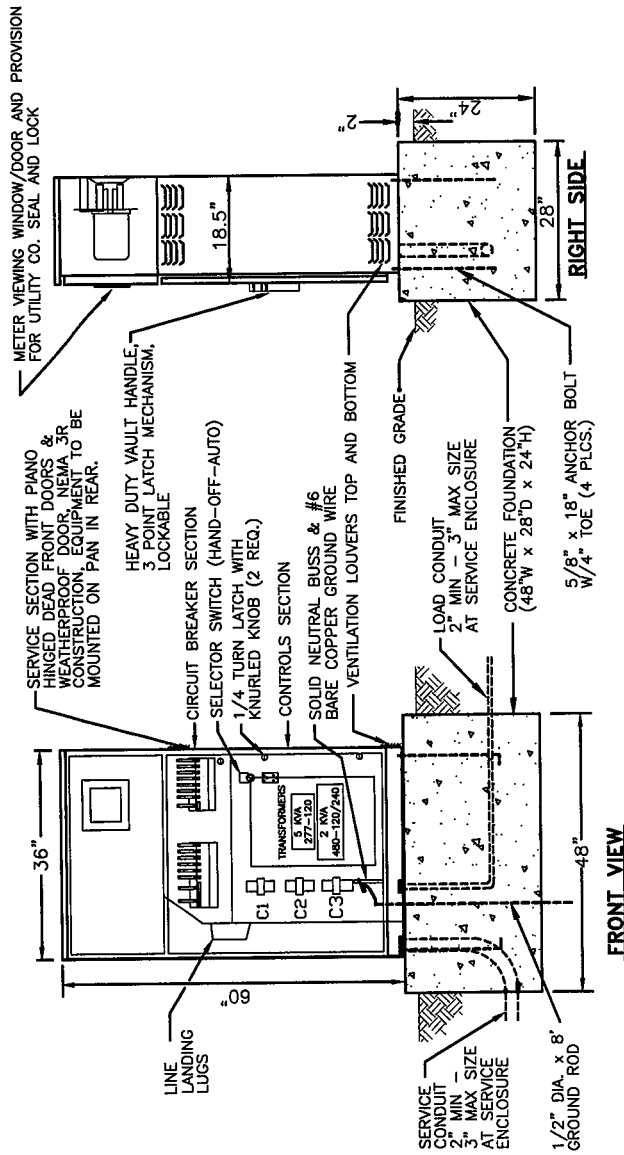
BASE PLATE DETAIL
BACK PAN, FASTEN WITH STUDS
METAL BARRIER
PIANO HINGE LOCATION FOR DEAD FRONT DOORS (DOORS TO SWING OPEN AT LEAST 90° FROM CLOSED POSITION)
PIANO HINGED FRONT DOOR ON THIS SIDE (INSIDE MOUNT HINGE)
FOUR HOLES FOR MOUNTING METER PANEL
OPEN AREA

METER SECTION INCLUDING METER SOCKET WITH TEST-BY-PASS BLOCKS PER UTILITY CO. REQUIREMENTS
REMOVABLE COVER (TOP, FRONT & SIDES)
3/16" POLYCARBONATE VIEWING WINDOW UNDER THE S/S HINGED COVER
LATCH FOR PADLOCKABLE SEAL
SERVICE SECTION WITH PIANO HINGED DEAD FRONT DOORS & WEATHERPROOF DOOR. NEMA 3R CONSTRUCTION. EQUIPMENT TO BE MOUNTED ON PANEL IN REAR
DISTRIBUTION SECTION
CONTROLS SECTION
SOLID NEUTRAL BUSS
#6 BARE COPPER GROUND WIRE
FINISHED GRADE
LOAD CONDUIT 2" MIN - 3" MAX SIZE AT SERVICE ENCLOSURE
5/8" x 18" ANCHOR BOLT W/4" TOE (4 PLCS.)
CONCRETE FOUNDATION 24"W x 15"D x 24"H

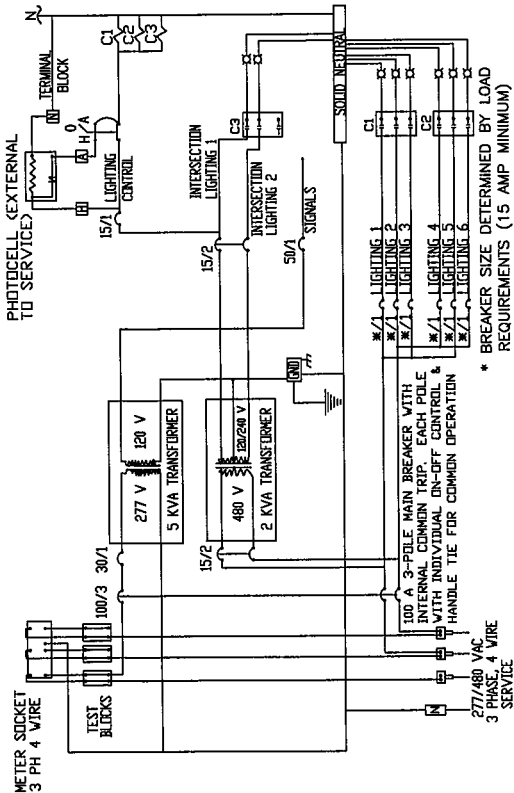
ONE POLE 60A BREAKER FOR TRAFFIC SIGNAL
ONE POLE 60A BREAKER FOR TRAFFIC SIGNAL
PHOTOCELL (EXTERNAL TO TERMINAL BLOCK)
100A TWO-POLE MAIN BREAKER WITH INTERNAL COMMON TRIP, EACH POLE WITH INDIVIDUAL ON-OFF CONTROL & HANDLE TIE FOR COMMON OPERATION
LIGHTING CONTROL
15/1
*1 LIGHTING 1
*1 LIGHTING 2
*1 LIGHTING 3
*1 LIGHTING 4
*1 LIGHTING 5
*1 LIGHTING 6
ONE POLE BREAKERS FOR STREET LIGHTING
SIGNAL MAIN
LIGHTING MAIN
TEST RELOCKS
LANDING LUGS
60A THREE-POLE MERCURY DISPLACEMENT LIGHTING CONTACTORS
* BREAKER SIZE DETERMINED BY LOAD REQUIREMENTS (15 AMP MINIMUM)

METERED SERVICE WIRING SCHEMATIC DIAGRAM

CHIEF, DEPT. OF TRANSPORTATION



BASE PLATE DETAIL



METERED SERVICE WIRING SCHEMATIC DIAGRAM

- EXTERIOR SHALL BE 14 GAUGE FLAT STAINLESS STEEL. INTERIOR DEAD FRONT PANEL AND BACK PAN SHALL BE 14 GAUGE STEEL, PAINTED WHITE. ENCLOSURE SHALL BE ELECTRICALLY WELDED AND REINFORCED WHERE REQUIRED.
- CONSTRUCTION SHALL BE NEMA 3R AND 12, RAIN-TIGHT AND DUST-TIGHT.
- ALL NUTS, BOLTS, SCREWS AND HINGES SHALL BE STAINLESS STEEL.
- NUTS, BOLTS AND SCREWS SHALL NOT BE USED ON THE OUTSIDE OF THE SERVICE ENCLOSURE.
- PHENOLIC NAMEPLATES SHALL BE USED TO IDENTIFY ALL OPERATOR CONTROLS.
- CONTROL WIRING SHALL BE MARKED AT BOTH ENDS BY PERMANENT WIRE MARKERS.
- A PLASTIC COVERED WIRING DIAGRAM SHALL BE ATTACHED TO THE INSIDE OF THE FRONT DOOR.
- SERVICE ENCLOSURE SHALL BE FACTORY WIRING AND CONFORM TO REQUIRED NEMA STANDARDS.
- SERVICE ENCLOSURE SHALL BE U.L. LISTED AS INDUSTRIAL CONTROL PANELS U.L. 508 FILE NO. E62062
- WIRING BETWEEN CIRCUIT BREAKER AND CONTACTOR SHALL BE #6 THIN OR THIN MINIMUM.
- SIZE OF TRANSFORMER SHALL BE 5 KVA. SIZE OF TRANSFORMER FOR 120 V INTERSECTION LIGHTING SHALL BE 2 KVA.
- WHEN CHANGING VOLTAGE ON A RETROFIT PROJECT WHERE A NEW SERVICE ENCLOSURE WITH A STEP-DOWN TRANSFORMER IS REQUIRED, THE NEW SERVICE ENCLOSURE SHALL BE PLACED BETWEEN THE SERVICE POINT AND THE OLD SERVICE ENCLOSURE LOCATED WITHIN THE COUNTY R/W. VOLTAGE OUTPUT FROM THE NEW SERVICE ENCLOSURE MAY BE CONNECTED INTO THE EXISTING CONDUIT SYSTEM.
- THE WIRING SCHEMATIC DIAGRAM AS SHOWN IS FOR A 2-WIRE STREET LIGHTING SYSTEM. IF THE SERVICE ENCLOSURE WILL BE USED FOR A 3-WIRE STREET LIGHTING SYSTEM, THEN THE LIGHTING BREAKERS SHALL CONSIST OF 2-POLE BREAKERS WITH INTERNAL COMMON TRIP, EACH POLE WITH INDIVIDUAL ON-OFF CONTROL AND HANDLE TIE FOR COMMON OPERATION. FOR EACH 2-POLE BREAKER, THE CIRCUIT LOAD SHALL BE EQUALLY DIVIDED ACROSS THE LIGHTING MAIN.
- SEE STANDARD SPECIFICATIONS FOR ADDITIONAL DETAILS.

**COUNTY OF SACRAMENTO
MUNICIPAL SERVICES AGENCY**

**SIGNAL, LIGHTING AND ELECTRICAL SYSTEMS
METERED SERVICE ENCLOSURE CAN WITH STEP-DOWN TRANSFORMER (277/480V TO 120/240V)**

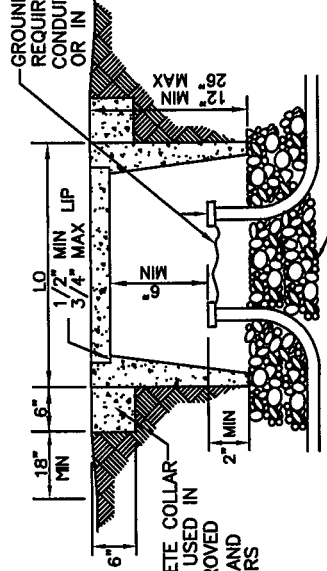
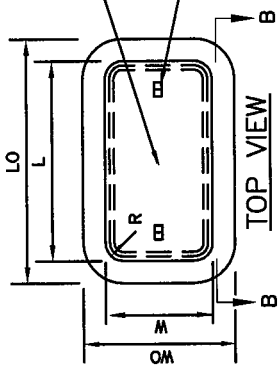
SCALE: NONE
DATE: 10/09/14 - BR
DRAWN BY: JAS/DJTM

5-33

[Signature]
CHIEF, DEPT. OF TRANSPORTATION

PULL BOX No.	REINFORCED CONCRETE BOX		COMPOSITE BOX		REINFORCED CONC. OR COMPOSITE COVER					
	MIN.** THICKNESS	MIN. DEPTH BOX AND EXTENSION	LO	WO	MIN.** THICKNESS AND EXTENSION	L***	W***	R	EDGE THICKNESS	EDGE TAPER
3-1/2	1"	NO EXTENSION	20"	14"	5/16"	NO EXTENSION	10-1/8"	1-1/8"	1-3/4"	1/8"
5	1"	22"	28"	18"	5/16"	20"	13-3/4"	1-1/4"	2"	1/8"
5A	1"	22"	25-1/4"	15-3/4"	5/16"	20"	20-5/8"	1-1/4"	2"	1/8"
6	1-1/2"	24"	36"	23"	3/8"	20"	30-5/8"	17-5/8"	2"	1/8"

** EXCLUDING CONDUIT WEB *** TOP DIMENSION



PLACE 6" LAYER OF CLEAN CRUSHED ROCK BELOW PULL BOX BEFORE INSTALLATION OF CONDUCTORS.

NOTES:

1. IN UNIMPROVED AREAS AND PLANTERS, THE TOP OF PULL BOXES SHALL BE PLACED 0.10 FOOT ABOVE THE SURROUNDING GRADE OR, WHEN ADJACENT TO A CURB, FLUSH WITH THE TOP OF THE CURB. THE SURROUNDING GRADE SHALL BE RAMPED UP TO MATCH THE TOP OF THE CONCRETE COLLAR. UNLESS OTHERWISE NOTED, AND WHERE PRACTICAL, PULL BOXES SHOWN IN THE VICINITY OF CURBS SHALL BE PLACED ADJACENT TO THE BACK OF CURB, AND PULL BOXES SHOWN ADJACENT TO SIDEWALKS SHALL BE PLACED ON THE SIDE OF THE FOUNDATION FACING AWAY FROM TRAFFIC.
2. IN SIDEWALK AREAS, THE TOP OF PULL BOXES SHALL BE PLACED FLUSH WITH THE SIDEWALK GRADE.
3. PLACEMENT OF PULL BOXES IN AREAS SUBJECT TO VEHICULAR TRAFFIC LOADS (INCLUDES TRAFFIC LANES, BIKE LANES, SHOULDERS, AND DRIVEWAYS) SHALL BE AVOIDED WHENEVER POSSIBLE. IF UNAVOIDABLE, THEN A TRAFFIC RATED PULL BOX WITH STEEL TRAFFIC COVER SHALL BE USED. SEE STATE STANDARD PLANS.
4. PULL BOXES SHALL NOT BE PLACED WITHIN THE BOUNDARIES OF SIDEWALK RAMPS.
5. PULL BOXES SHOULD NOT BE PLACED WITHIN PLANTER AREAS WHENEVER POSSIBLE.
6. PULL BOX COVERS SHALL BE MARKED AS FOLLOWS:
 - 1) "TRAFFIC SIGNAL" TRAFFIC SIGNAL CIRCUITS WITH OR WITHOUT STREET LIGHTING CIRCUITS.
 - 2) "STREET LIGHTING" STREET LIGHTING CIRCUITS WHERE NO STREET LIGHTING IS ABOVE 600V.
 - 3) "STREET LIGHTING-HIGH VOLTAGE" STREET LIGHTING CIRCUITS WHERE VOLTAGE IS ABOVE 600V.
 - 4) "SERVICE" SERVICE CIRCUITS BETWEEN SERVICE POINT AND SERVICE DISCONNECT.
 - 5) "SPRINKLER CONTROL" SPRINKLER CONTROL CIRCUITS, 50 VOLTS OR LESS.
 - 6) "RAMP METERS" RAMP METER CIRCUITS.
 - 7) "COUNT STATION" COUNT AND/OR SPEED MONITOR CIRCUITS.
 - 8) "COMMUNICATION" COMMUNICATION CIRCUITS.
 - 9) "TELEPHONE" TELEPHONE SERVICE.
 - 10) "TOS COMMUNICATIONS" TOS COMMUNICATIONS TRUNK LINE.
 - 11) "TOS POWER" TOS POWER.
 - 12) "TDC POWER" TELEPHONE DEMARCATION CABINET POWER.
7. COVERS SHALL FIT FLUSH WITH THE TOP OF PULL BOXES. THERE SHALL BE 1/8" MAXIMUM CLEARANCE ALL AROUND BETWEEN COVERS AND PULL BOX OPENINGS.
8. ALL COVERS AND BOXES SHALL BE INTERCHANGEABLE WITH CALIFORNIA STANDARD MALE AND FEMALE GAUGES. WHEN INTERCHANGED WITH A STANDARD MALE OR FEMALE GAUGE, THE TOP SURFACES SHALL BE FLUSH WITHIN 1/8 INCH.
9. THE TOP EDGES OF ALL CONCRETE COVERS AND PULL BOXES SHALL HAVE A 1/4" MIN. RADIUS.
10. STACKING OF PULL BOXES IS PERMITTED (TWO PULL BOXES MAXIMUM).
11. STEEL REINFORCING SHALL BE AS REGULARLY USED IN THE STANDARD PRODUCTS OF THE RESPECTIVE MANUFACTURER.
12. REFER TO STATE STANDARD PLANS AND SPECIFICATIONS FOR USE OF ELECTRICAL VAULTS AND TRAFFIC RATED PULL BOXES.
13. REFER TO STANDARD DRAWING 5-13 FOR STREET LIGHT PULL BOXES.
14. WHEN INSTALLING INTERCONNECT CONDUCTORS, THE CONDUCTORS SHALL BE SEALED USING THE PROCEDURE SPECIFIED ON STANDARD DRAWING 5-13.
15. IF ELECTRICAL VAULT IS REQUIRED FOR INSTALLATION, IT SHALL BE A CHRISTY CONCRETE P48 BOX OR EQUIVALENT.

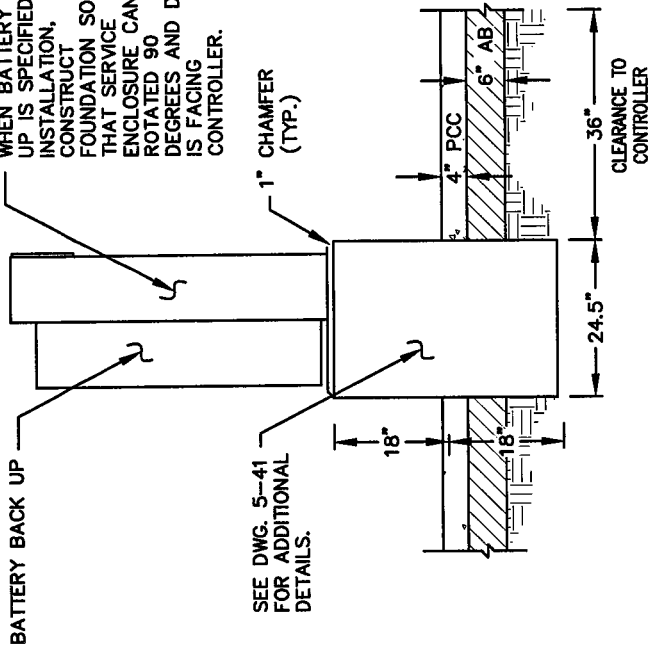
**COUNTY OF SACRAMENTO
MUNICIPAL SERVICES AGENCY**

**SIGNAL, LIGHTING AND
ELECTRICAL SYSTEMS
PULL BOX**

SCALE: NONE
DATE: 10/29/14 -- BR
DRAWN BY: KK

CHIEF, DEPT. OF TRANSPORTATION

WHEN BATTERY BACK UP IS SPECIFIED FOR INSTALLATION, FOUNDATION SO THAT SERVICE ENCLOSURE CAN BE ROTATED 90 DEGREES AND DOOR IS FACING CONTROLLER.

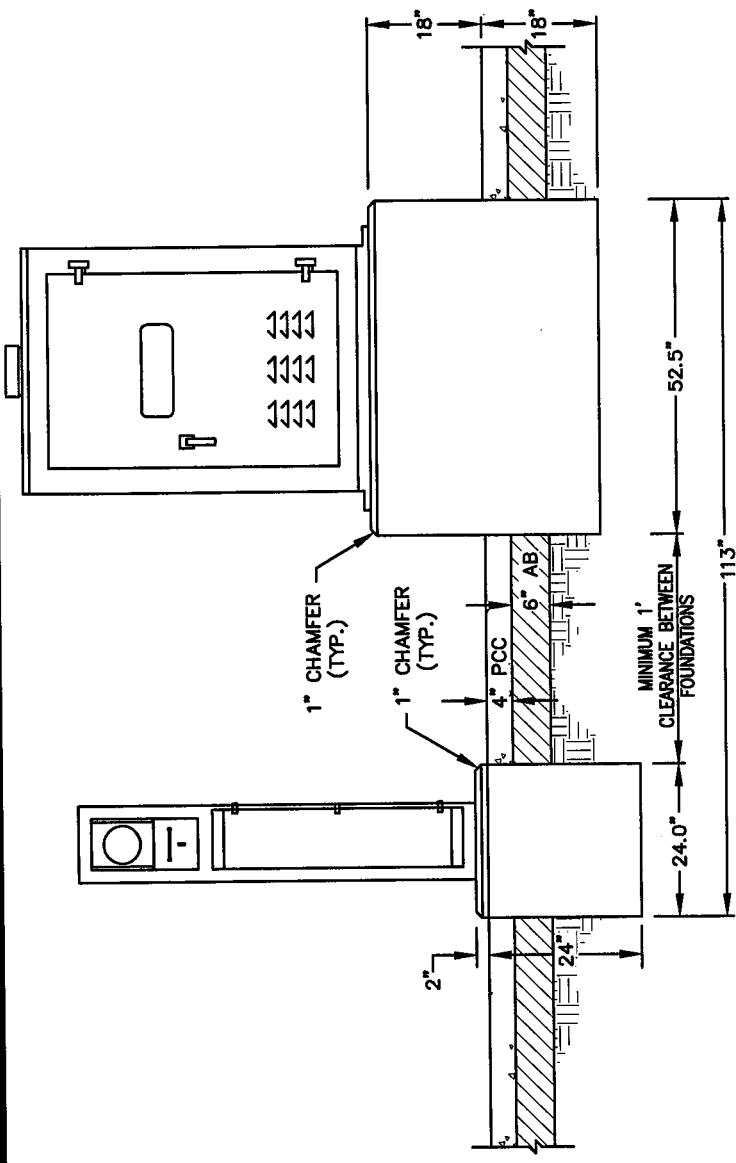


WITH BATTERY BACK UP
SEE NOTE 2

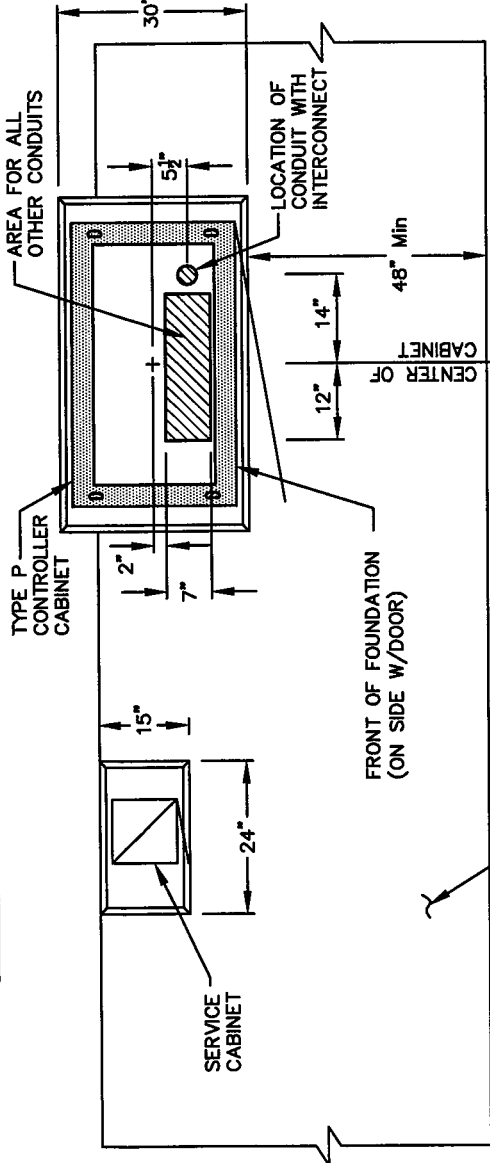
[Signature]
CHIEF, DEPT. OF TRANSPORTATION

COUNTY OF SACRAMENTO
MUNICIPAL SERVICES AGENCY
TRAFFIC SIGNAL CONTROLLER CABINET
AND SERVICE CAN WITH BATTERY
BACKUP FOUNDATIONS

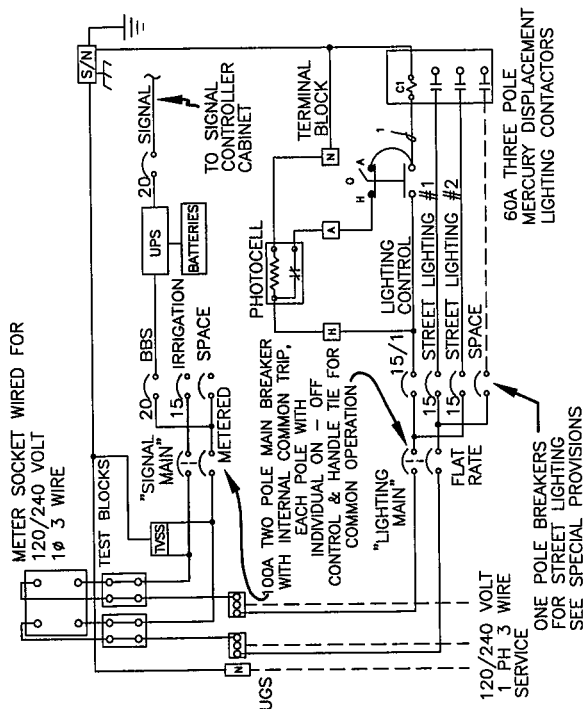
SCALE: NONE
DATE: 10/15/14 -BR
DRAWN BY: JAS 5-40



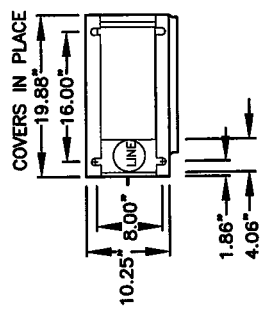
WITHOUT BATTERY BACK UP



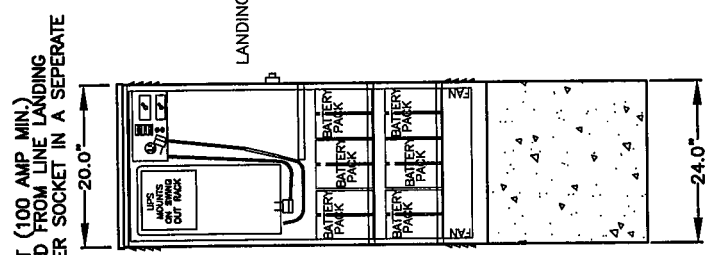
- NOTES:**
1. INSTALLATION OF CABINET FOUNDATION PARTIALLY BEHIND BACK OF WALK MAY REQUIRE ADDITIONAL RIGHT-OF-WAY OR EASEMENT.
 2. USE OF BATTERY BACK UP SHALL ONLY BE USED WHEN SPECIFIED ON PROJECT PLANS.



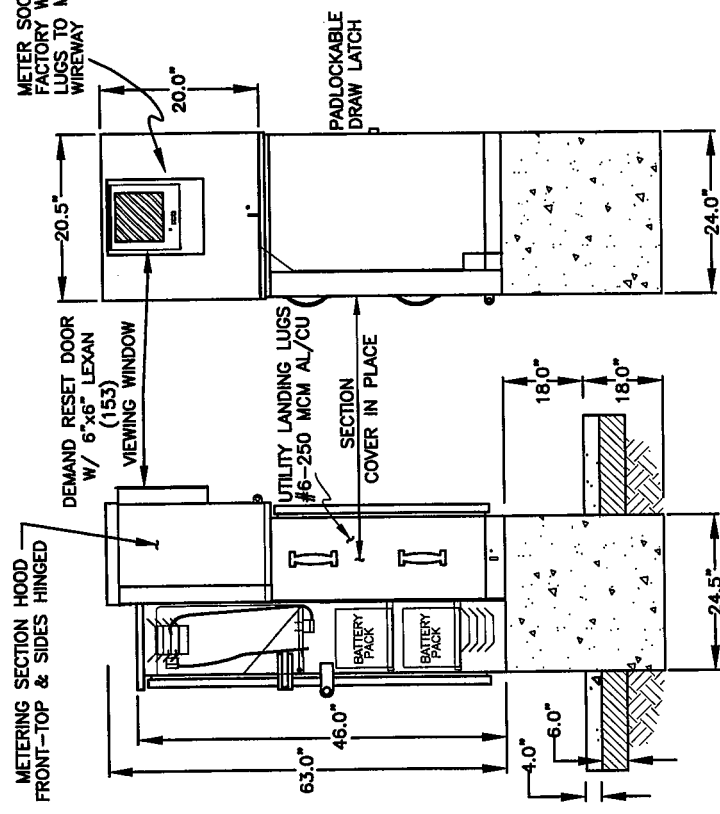
WIRING SCHEMATIC DIAGRAM



BASE PLAN



REAR VIEW



FRONT VIEW

LEFT SIDE

COVERS IN PLACE MOUNTED ON PAD

ENCLOSURE CONSTRUCTION NOTES

1. EXTERIOR, 1/8" ALUMINUM, AND INTERIOR 14 GA COLD ROLLED STEEL ELECTRICALLY WELDED AND REINFORCED WHERE REQUIRED.
2. CONSTRUCTION WILL BE NEMA 3R, RAIN TIGHT.
3. ALL NUTS, BOLTS AND SCREWS WILL BE STAINLESS STEEL.
4. NUTS, BOLTS & SCREWS WILL NOT BE VISIBLE FROM OUTSIDE OF ENCLOSURE.
5. NAMEPLATES WILL BE PROVIDED AS REQUIRED.
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. ENCLOSURE WILL BE FACTORY WIRED AND CONFORM TO REQUIRED NEMA STANDARDS.
9. ANODIZE AFTER FABRICATION.

**COUNTY OF SACRAMENTO
MUNICIPAL SERVICES AGENCY**

**METERED SERVICE
ENCLOSURE WITH BATTERY BACKUP
(120/240V)**

SCALE: NONE
DATE: 10/09/2014 - BR
DRAWN BY: JAS

5-41

[Signature]
CHIEF, DEPT. OF TRANSPORTATION

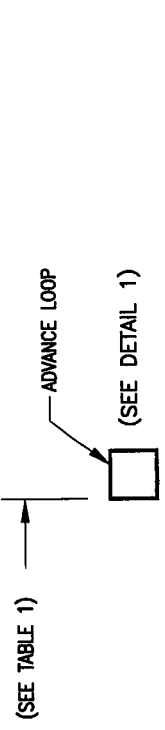
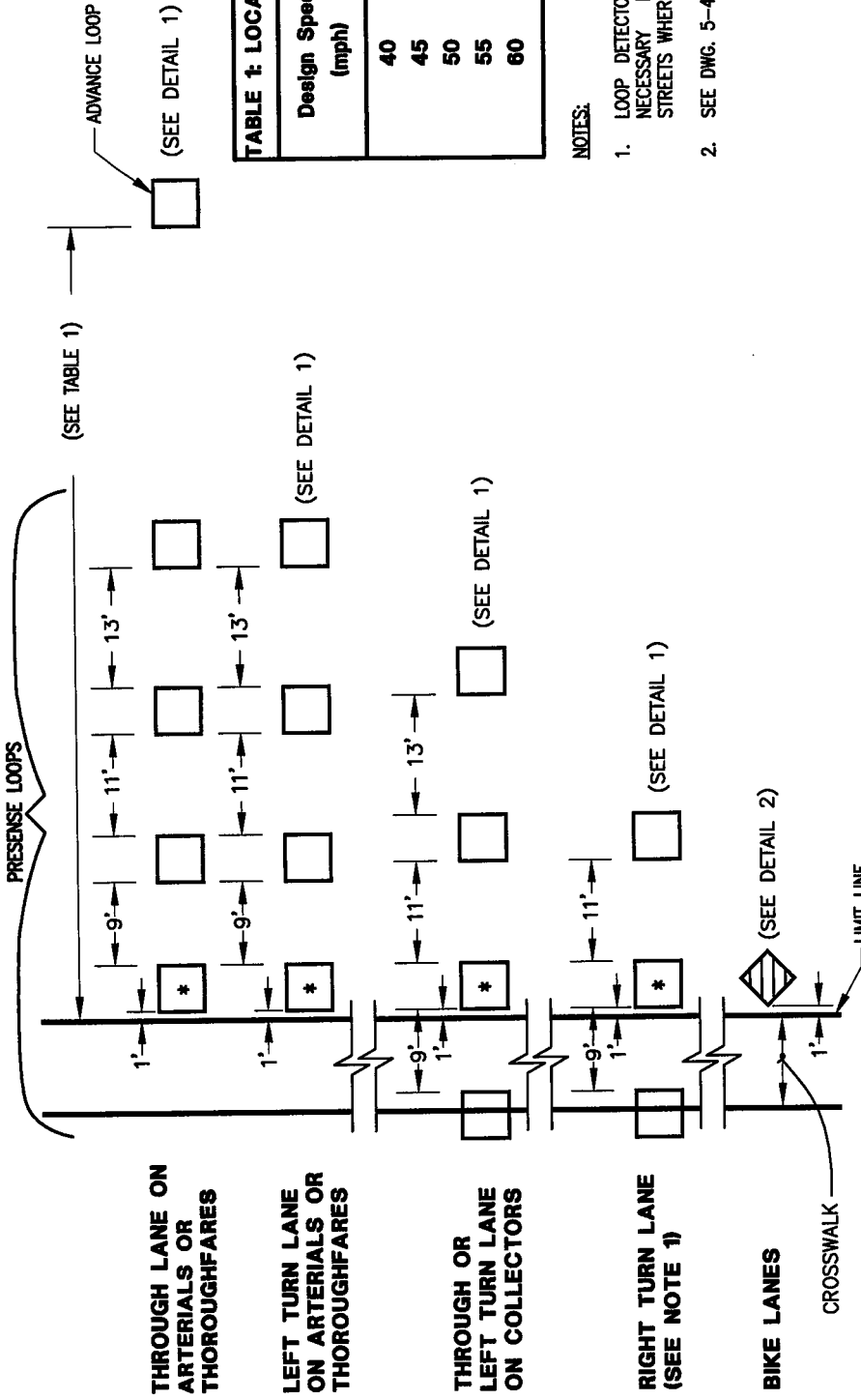
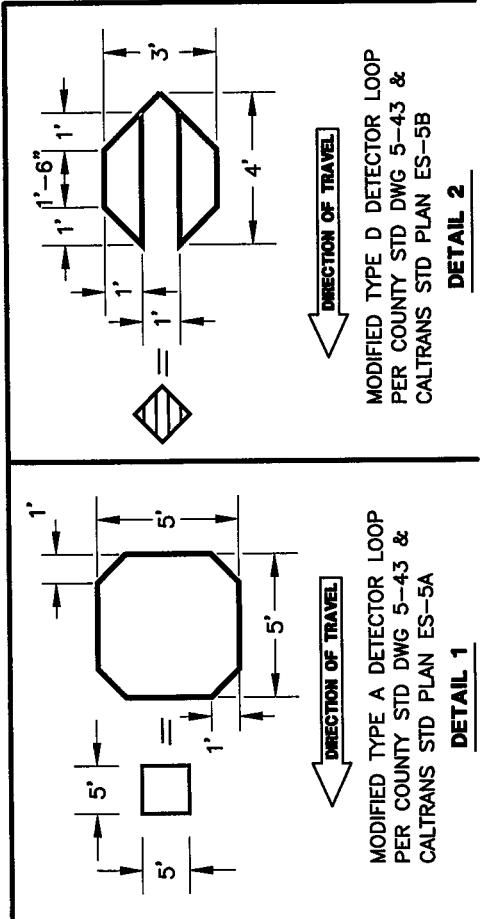


TABLE 1: LOCATION OF ADVANCE LOOP

Design Speed (mph)	Distance from limit line (feet)
40	250
45	300
50	350
55	400
60	450

NOTES:

1. LOOP DETECTORS ON RIGHT TURN LANES ARE NOT NECESSARY FOR ARTERIAL OR THOROUGHFARE STREETS WHERE THE CROSS STREET IS A COLLECTOR.
2. SEE DWG. 5-43 FOR LOOP WINDING REQUIREMENTS.



* LOOP DETECTOR AT STOP BAR TO HAVE 4 TURNS AND SHALL BE CONNECTED TO ITS OWN DETECTOR LEAD-IN CABLE (DLC). ALL OTHER PRESENSE LOOPS IN THE SAME LANE SHALL BE CONNECTED TO ANOTHER DETECTOR LEAD-IN CABLE (DLC).

Signature
 CHIEF, DEPT. OF TRANSPORTATION

COUNTY OF SACRAMENTO
 MUNICIPAL SERVICES AGENCY

**DETECTOR LOOP
 LOCATION
 DETAILS**

SCALE: NONE
 DATE: 5/2014
 DRAWN BY: TRS/SCS