FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-01-04	2004	54	61

TRAFFIC SIGNAL NOTES

1. The locations of the Traffic Signal Standards, Traffic Signal Standards w/Mast Arms, Pedestrian Push Buttons, Traffic Controller, Pullboxes, Conduits and Loop Detectors shall be staked out in the field by the Contractor and approval of the locations shall be obtained from the Engineer prior to construction and installation.
2. All splicing shall be done in the pullboxes.
3. Furnishing and installing the conduit stubouts (pullboxes to edge of pavement) will not be paid for separately but shall be considered incidental to the various contract items.
4. A solid #8 bare copper wire shall be pulled with the traffic signal control cable for equipment ground. Cost shall be incidental to the installation of the control cable.
5. All Traffic signal controller equipment shall be completely wired in the cabinet and shall control the traffic signals as called for in the plans.
6. The loop amplifier units furnished for this project shall be capable of operating the loop detector configurations shown on the plans. Cost for the loop amplifier shall be incidental to the installation of the loop detector.
7. Should any defect be encountered during the warranty period, the manufacturer will be notified and he shall promptly correct such defect. Service call (by factory qualified representative) during the warranty period for repairs or other maintenance shall be answered within 24 hours and shall be done at no expense to the State. All repairs shall be done as soon as possible.
8. All traffic signal work shall conform to the requirements of the "Manual On Uniform Traffic Control Devices For Streets And Highways", Federal Highway Administration (1988) and Amendments.
9. Locations of traffic markings and markers (lane lines, Stop lines, crosswalk, etc.) shown on the plans shall be verified with the Engineer prior to the installation of the traffic signal system.
10. All Conduits between pullboxes and Traffic Signal/Highway Lighting Standards shall not be paid for separately but shall be considered incidental to the various contract items.
11. All Signal-Drop Cables (Type 5 Cables) from the various Types of Traffic Signal Head on the traffic signal standards and mast arms to the pullboxes shall not be paid for separately but considered incidental to the Traffic Signal Head.
12. After installing all the traffic signal cables, the Contractor shall duct seal all conduits in the pullboxes, traffic signal standards and traffic signal controller cabinet concrete base. The duct seal material shall be approved by the Traffic Signal Inspector/Engineer and shall not be paid for separately but considered incidental to the direct buried and/or concrete encased conduits.
13. After installing the Traffic Signal System, the Contractor shall apply grease to all parts of the Traffic Signal System (i.e. fittings, brackets, nipples, elbows, screws, signal head assemblies, bolts, hinges, etc.) as directed by the Traffic Signal Inspector, to prevent rust and corrosion. The grease material shall be approved by the Signal Inspector, and shall not be paid for separately but considered incidental to the various Traffic Signal items.
14. Connecting into existing traffic signal system and making all necessary adjustments shall not be paid for separately, but considered incidental to the various traffic signal contract items.
15. The Contractor shall notify the Traffic Signal Branch, Department of Transportation Services, City & County of Honolulu, (phone no. 523-4589) two weeks prior to commencing any work on the traffic signal system.
16. The Department of Transportation Services, City & County of Honolulu, will assist the Engineer in construction inspection for the traffic signal system. The Contractor shall notify the Electrical and Maintenence Services Division, Department of Transportation Services, three (3) working days prior to commencing work on the traffic signal system (phone no. 523-4589).
17. The concrete jacket for the Conduit By-Pass Details shown on Sheet X, shall not be paid for separately but considered incidental to the various contract items. The Engineer shall determine if a concrete jacket is required.

TRAFFIC SIGNAL LEGEND

NEW	EXISTING	
		Traffic Signal Conduit
1 2 3	1 2 3	Conduit Run Numbers
A B C	A B C	Equipment description, installation or item no.
M	M	Traffic Signal Master Controller Door Indicates Front of Cabinet
C	C	Traffic Signal Controller Door Indicates Front of Cabinet
		Meter Pedestal
		12" RYG Traffic Signal Head
		12" RY↑ Traffic Signal Head
		12" RY← Traffic Signal Head
		12" RY← Traffic Signal Head (Programmed Visibility)
		12" RYG ←G/Y Fiber Optic Traffic Signal Head
		Type I Standard and Attached Signals
24' 12'		Type II Standard with Signal Mast Arm and Attached Signals (Nos. indicates mast arm length & distance between signal heads as specified on plans)
8' 24' 12'		Type III Standard with Luminaire and Signal Mast Arm and Attached Signals (Nos. indicates mast arm lengths & distance between signal heads as specified on plans)
Y	Y	Flashing Beacon, One Signal Section, "Y" indicates 12" Yellow Lens
		Opticom Receiver (Arrow indicates direction detector faces)
		Pipe Guard
		Pedestrain Signal Head
	tspb	Type A Pullbox
	tspb	Type B Pullbox
	tspb	Type C Pullbox
		Loop Detectors

HIGHWAY LIGHTING LEGEND

NEW	EXISTING	
HL	hl	Highway Lighting Conduit
	hl	Type A Pullbox (Hwy. Ltg.)
		Highway Lighting Standard

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 10/30/03
	DRAWN BY LH	
	TRACED BY	
NOTE BOOK tdlyme ss.stumfoleg	DESIGNED BY E. Chan/L. Kuo	
	QUANTITIES BY	
	CHECKED BY	

R4-1-97

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL LEGEND AND NOTES

KUNIA ROAD IMPROVEMENTS
Vicinity of South Kupuna Loop to
Vicinity of Honowai Street
Project No. HWY-0-01-04

Scale: As Shown Date: March 2003

SHEET No. TSI OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-01-04	2004	ADD.54S-1	61

NEW DESIGN REQUIREMENTS FOR LUMINAIRES, POLE STANDARDS AND TRAFFIC SIGNAL STANDARDS

1. Highway Lighting Pole Standards, Bracket Arms, Traffic Signal Standards and Mast Arms to be furnished for this project shall conform to the 2001 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals", 4th Edition, and the 2002 Interim Revisions, published by the American Association of State Highway and Transportation Officials.

2. In addition, the following modifications for the 2001 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals" shall be used in the design and manufacture of structural supports for highway luminaires and traffic signals.

3. Basic Wind Speed [Article 3.8.2] to determine the design wind pressure shall be 105 mph. For unusual or differing exposure conditions, the Basic Wind Speed should be increased using rational procedures and sound engineering judgement. Alternatively, the design wind pressure may be increased by using a higher Wind Importance Factor [Table 3-2] corresponding to a recurrence interval of at least one level greater than recommended.

4. Wind Importance Factor [Article 3.8.3] noted in Table 3-2 used to determine the design wind pressure for overhead cantilevered sign support structures over:

   a. freeways shall be based on a recurrence interval of 100 years.

   b. ramps and other highways with "high" ADT shall be based on a recurrence interval of 100 years unless otherwise directed.

5. Height and Exposure Factor [Article 3.8.4]. For sign and luminaire support structures on bridges, the Height and Exposure Factor shall be determined based on the maximum height they are above the surrounding ground. For severe exposure conditions such as along the coastline, the factor shall be increased based on the latest ASCE Standard No. 7, Minimum Design Loads for Buildings and Other Structures.

6. Fatigue Importance Factors [Article 11.6] noted in Table 11-1 for Overhead Cantilevered Sign, Traffic Signal and Luminaire Support Structures shall be based on the following:

   a. Fatigue Category I - for all structures where failure would result in the structure falling onto the travel way.

   b. Fatigue Category II - for all others.

7. Galloping [Article 11.7.1]. Overhead cantilevered sign and traffic signal support structures shall be designed for Galloping-induced cyclic loads unless approved vibration mitigation devices are installed.

8. Vortex Shedding [Article 11.7.2]. Nontapered lighting structures shall be designed to resist Vortex Shedding-induced loads including cantilevered mast arms and lighting structures that have tapers less than 0.14 in/ft.

9. Natural Wind Gust [Article 11.7.3]. Overhead cantilevered sign, traffic signal and high-level lighting support structures shall be designed to resist an equivalent static Natural Wind Gust pressure. For unusual or differing exposure conditions, the equivalent static Natural Wind Gust pressure should be increased using references noted in the specifications.

10. Truck-Induced Gust [Article 11.7.4]. Overhead cantilevered sign and traffic signal support structures shall be designed to resist an equivalent static Truck Gust pressure range based on a truck speed of 65 mph. At the option of the State of Hawaii, Department of Transportation, a lower truck speed may be used in areas with design speeds not exceeding 45 mph.

11. The Contractor shall submit shop drawings accompanied by complete and detailed engineering computations from the equipment manufacturer to the Engineer for approval.

ORIGINAL PLAN
SURVEY PLOTTED BY ____ DATE 10/30/03
DRAWN BY LH
TRACED BY ____
DESIGNED BY P. Chan/L. Kia
NOTE BOOK ____ QUANTITIES BY ____
No. Volume ____ CHECKED BY ____
S:\contracts_ADD\Sign

DATE	REVISION
2/10/04	Additional sheet to contract plans.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL LEGEND AND NOTES

KUNIA ROAD IMPROVEMENTS
Vicinity of South Kupuna Loop to
Vicinity of Honowai Street
Project No. HWY-0-01-04

Scale: As Shown Date: March 2003

SHEET No. TSIA OF 8 SHEETS

ADD. 54S-1

TD1 - Traffic Design Section

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-01-04	2004	C.O.55	61

Construct Median Foundation & Anchors for Traffic Signal Standards. For Details, See Struc. Drawing.

CONDUIT	CABLE
2"**	1-26C#14
2"**	1-EVP CABLE
2"**	SPARE

CONDUIT	CABLE
2"**	2-2C#14

CONDUIT	CABLE
2"**	1-26C#14
2"**	SPARE

R/W

TRUE NORTH
SCALE : 1" = 20'

To Ewa

FORT WEAVER ROAD

70+00

65+00

A

B

1

3 Ea. 1-6'x6' Loop Detector, Center in Lane

6 Ea. 1-6'x6' Loop Detector, Center in Lane

250' From Stop Bar

CONDUIT	CABLE
2"	1-2C#14

CONDUIT	CABLE
2"**	1-3C#6

To Honolulu

concrete sidewalk

R/W

cmu wall

CONDUIT	CABLE
2"**	HECO CABLE

Install Electric Meter with Pedestal for underground service with concrete base.

Install Controller Assembly (Type 170) and Auxiliary Equipment in Model 332A Cabinet, base mounted with concrete base.

CONDUIT	CABLE
2"	4-2C#14
2"	1-26C#14
2"	2-EVP CABLE
2"	SPARE

CONDUIT	CABLE
2"**	4-2C#14
2"**	1-26C#14
2"**	2-EVP CABLE
2"**	SPARE

concrete sidewalk

concrete sidewalk

HONOWAI STREET (CITY)

1 Ea. 4-6'x6' Loop Detector, Center in Lane

KIPOU STREET (CITY)

** Concrete Encased

NOTES:

1. All Conduits shall be Schedule 80, unless otherwise noted.
2. Traffic Signal Standard A shall be Type II with 36' mast arm (not in Contract).
3. Traffic Signal Standard B shall be Type I, H=7 Ft. (not in Contract).
4. Install all Traffic Signal System components, except traffic signal standards (Type I, II), traffic signal heads, pedestrian signal, pedestrian push button, opticom receivers, and mast arm mounted street name sign.
5. Install traffic signal conduits and cables as indicated. Tape cable ends and coil slacks in pullbox.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 1/04/05
	DRAWN BY mt, LH	
	TRACED BY	
NOTE BOOK tdyma N:\Survey\...\	DESIGNED BY P. Chan/L. Kuo	
	QUANTITIES BY	
	CHECKED BY	

DATE	REVISION
1/10/05	Deleted traffic signal standards, traffic/ped. signals and ped. push buttons.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PLAN

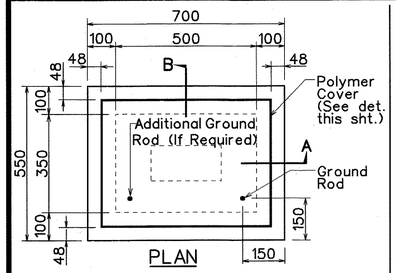
KUNIA ROAD IMPROVEMENTS
Vicinity of South Kupuna Loop to
Vicinity of Honowai Street
Project No. HWY-0-01-04

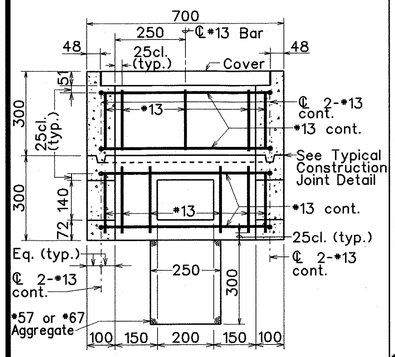
Scale: 1"=20' Date: Oct. 2003

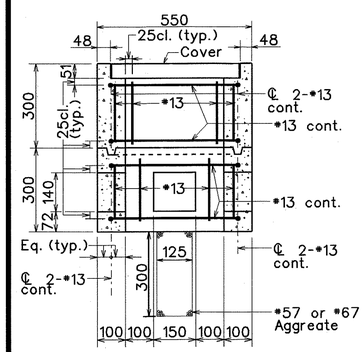
SHEET No. TS2 OF 8 SHEETS

C.O. 55

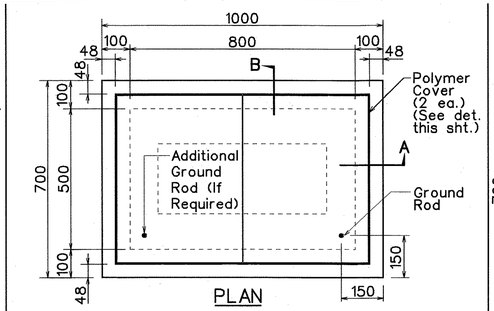
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-01-04	2004	56	61

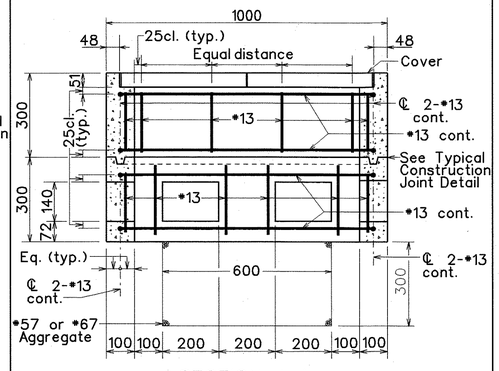


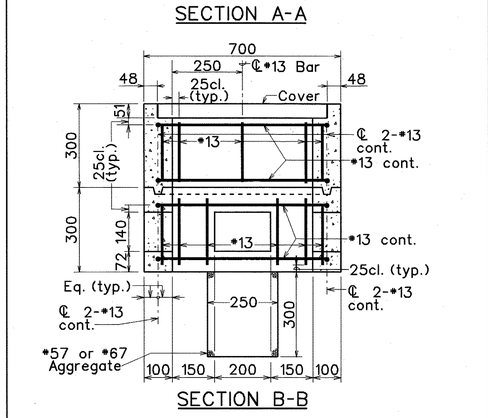




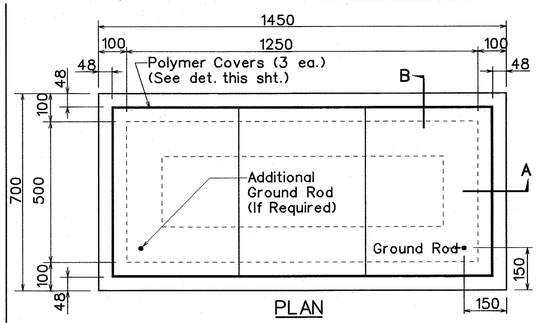
TYPE "A" PULLBOX
(Old Type "B")

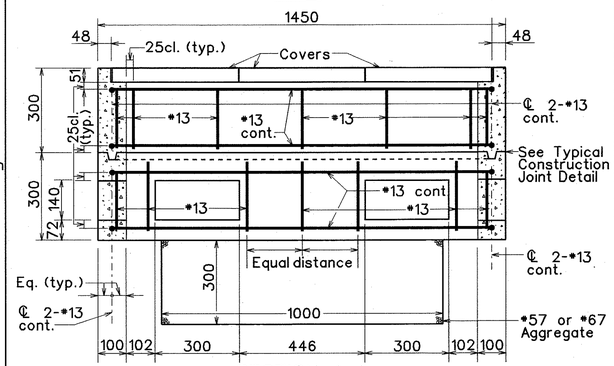


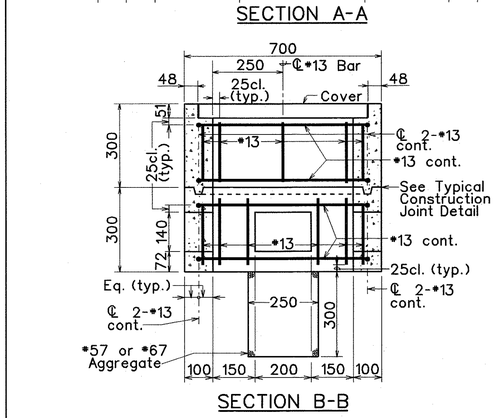




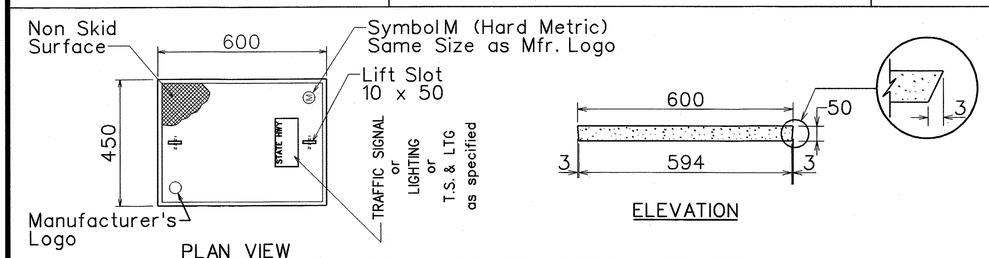
TYPE "B" PULLBOX (Old Type "C")



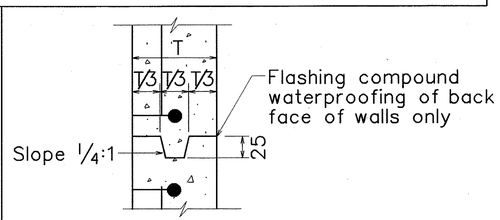




TYPE "C" PULLBOX (Old Type "D")



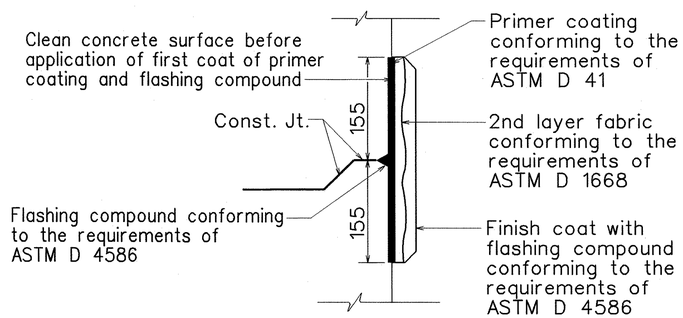
POLYMER CONCRETE COVER



TYPICAL CONSTRUCTION JOINT DETAIL

GENERAL NOTES

1. Provide a minimum of one 16 ø x 2.5m Copperweld Ground Rod in each pullbox. When directed by the Traffic Signal Inspector/Engineer, install additional Ground Rods. Cost of Ground Rods shall be incidental to the pullboxes.
2. All pre-cast concrete pullboxes shall be manufactured in two pieces.
3. The pullbox with cover shall be capable of supporting an MS 18 Loading.
4. The maximum weight of the pullbox cover shall not exceed 27 kilograms.
5. The openings for the conduits on all pullboxes shall be pre-cast concrete knockouts.
6. After installing the conduits in the openings of the pullboxes, the Contractor shall fill the excess opening in the pre-cast knockouts with concrete mortar.
7. Prior to installing the pullboxes, the Contractor shall level the bottom of the trench and achieve a minimum of 95% relative compaction of the bottom of the trench.
8. All concrete shall be Class A (21 MPa (3,000 psi), min.)
9. Rebars shall be Grade 300 and all lapped splices shall be 360mm minimum.
10. The *57 or *67 size aggregate shall conform to latest version of AASHTO M43 (ASTM D 448).
11. Type "C" Pullbox shall be installed in a location protected from vehicular traffic (i.e. raised sidewalk, behind A.C. curbs, traffic signal standard or pipe guards).



TYPICAL FLASHING COMPOUND WATERPROOFING DETAILS

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 10/30/03
	DRAWN BY Lee	
	TRACED BY E. Chan/L. Ako	
NOTE BOOK	DESIGNED BY	
16/Jynne	QUANTITIES BY	
No. 5/pp26c	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PULLBOX & COVER DETAILS

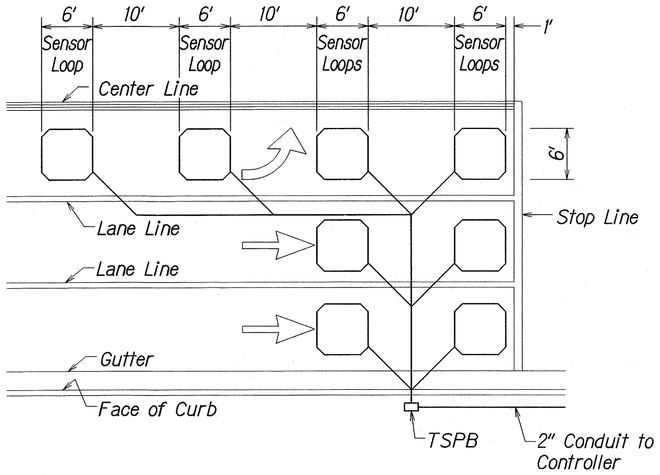
KUNIA ROAD IMPROVEMENTS
Vicinity of South Kupuna Loop to
Vicinity of Honowai Street
Project No. HWY-0-01-04

Scale: As Shown Date: Oct. 2003

SHEET No. TS3 OF 8 SHEETS

TDI - Traffic Design Section

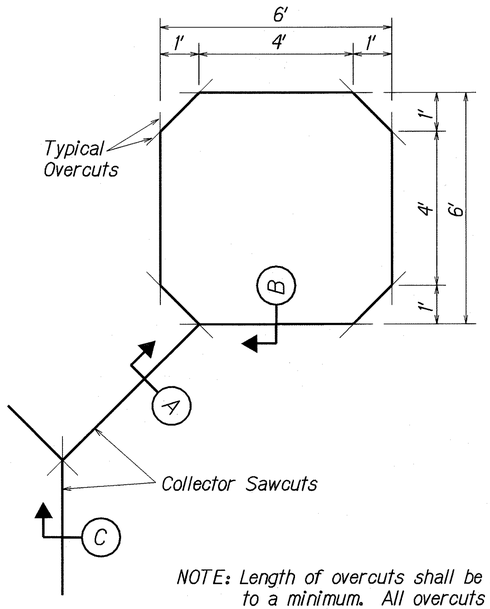
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-01-04	2004	57	61



NOTES:

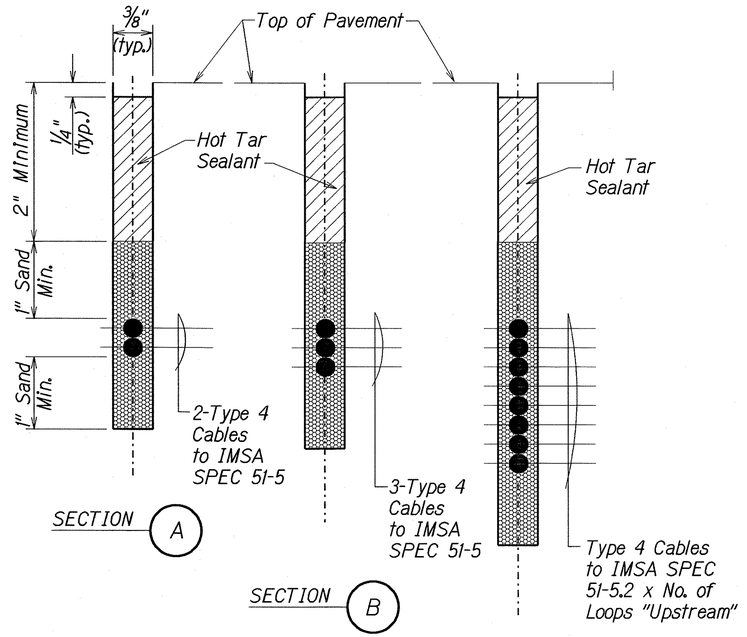
1. Center sensor loops in lanes.
2. Collector cables shall be twisted 2 turns per foot.
3. Number of loops and locations vary. See project plans.
4. Number and locations of collector sawcuts may be varied in the field to suit.

TYPICAL SENSOR LOOP LAYOUT

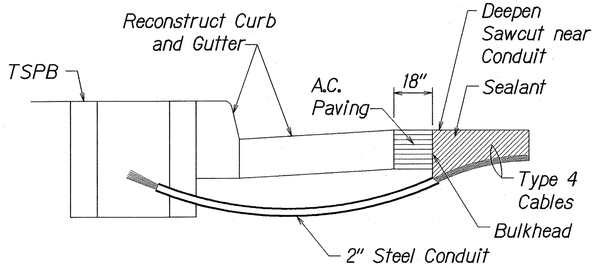


NOTE: Length of overcuts shall be kept to a minimum. All overcuts shall be back filled with hot tar.

TYPICAL SENSOR LOOP SAWCUT DETAIL



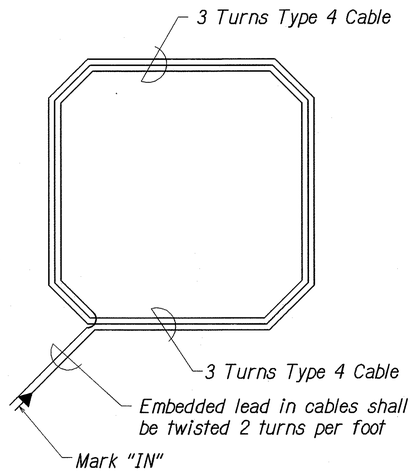
TYPICAL SECTION THROUGH SENSOR LOOP



NOTES ON CONSTRUCTION AT END OF SAWCUT

1. Seal roadway end of conduit after installation of conductors.
2. Install bulkhead across conduit trench.
3. Place hot tar in sawcut.
4. Backfill over conduit with new A.C.
5. Reconstruct curb and gutter as required.

DETAIL OF SENSOR LOOP INSTALLATION AT EDGE OF ROADWAY



TYPICAL SENSOR LOOP WIRING DIAGRAM

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR DETAILS

KUNIA ROAD IMPROVEMENTS
Vicinity of South Kupuna Loop to
Vicinity of Honowai Street
Project No. HWY-0-01-04

Scale: As Shown Date: Oct. 2003

SHEET No. TS4 OF 8 SHEETS

ORIGINAL PLAN

SURVEY PLOTTED BY	DATE 10/30/03
DRAWN BY J.K.	
TRACED BY	
DESIGNED BY P. Chan/A. Ko	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

tdl:/usr2/traffic/std/loopdetr.dgn

TDL - Traffic Design Section

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-01-04	2004	58	61

STATE RIGHT-OF-WAY BACKFILL NOTES

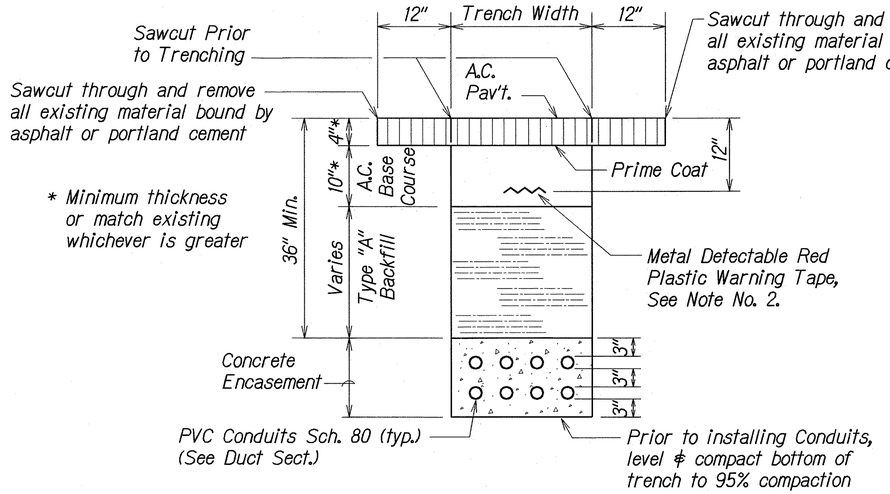
Trench Backfill Material "A" CLSM, Earth, or Earth and Gravel. If Earth and Gravel used, the maximum shall contain not more than 50% by volume of rock particles. Maximum 8" loose fill per lift. Obtain 95% compaction for each lift.

Concrete
3000 psi compressive strength @ 3 days.

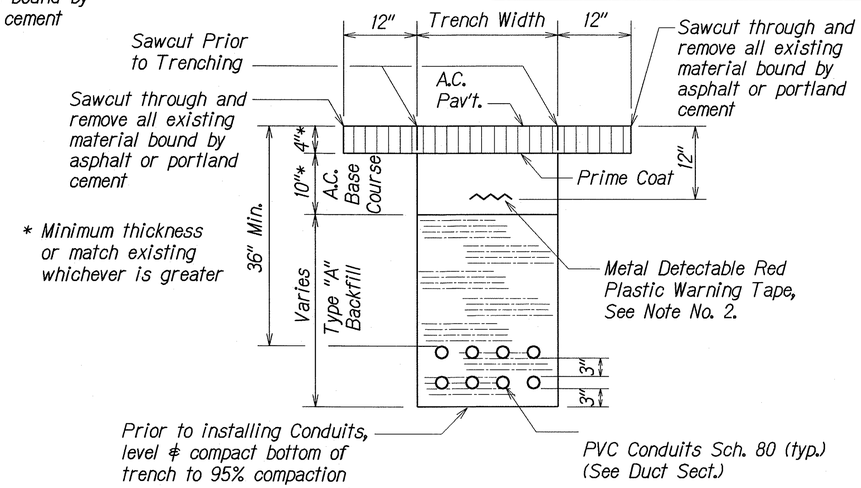
NOTE: Base Course & Sub-Base Course per 1994 State Standard Specifications for Highway Construction.

GENERAL NOTES

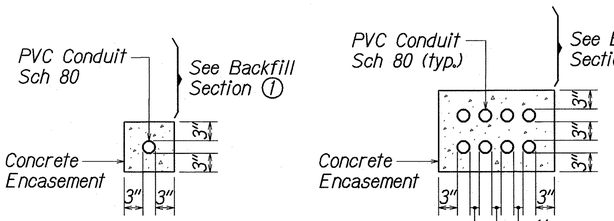
1. If trench is located on unpaved area, the Contractor shall replace 10" A.C. Base Course and 4" A.C. Pavement with Type "A" backfill material.
2. The Metal Detectable Red Plastic Warning Tape shall be a minimum 5 mils thick and 4" wide with a continuous metallic backing and corrosion resistant 1± mil thick foil core. The message on the tape shall read, "CAUTION - STATE TRAFFIC SIGNAL AND/OR HWY LIGHTING BURIED BELOW," utilizing 1½ inches series "C" black lettering. The message will be repeated with a 4¼" spacing between top line of message and start of next repeat.
3. The Contractor may begin backfilling the conduit trench when the concrete reaches 3000 psi compressive strength after 3 days.
4. Maximum four (4) Conduits per row for multiple conduit duct section.
5. For direct buried duct sections, the concrete jacket required at the conduit by-pass for various utilities, shall not be paid for separately but considered incidental to the direct buried conduits.
6. After installing all the traffic signal cables, the Contractor shall duct seal all conduits in the pullboxes, traffic signal standards and traffic signal controller cabinet concrete base. The duct seal material shall be approved by the Traffic Signal Inspector/Engineer and shall not be paid for separately but considered incidental to the direct buried and/or concrete encased conduits.



① TYPICAL BACKFILL SECTION WITH CONCRETE ENCASED DUCTS



② TYPICAL BACKFILL SECTION DIRECT BURIED DUCTS

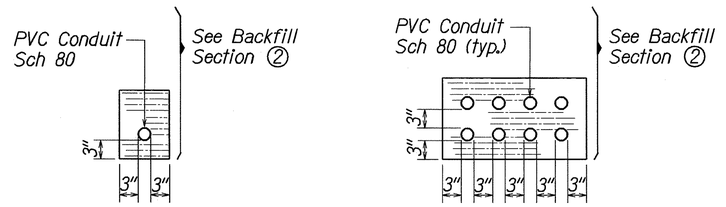


SINGLE CONDUIT — MULTIPLE CONDUIT

DUCT SECTIONS - CONC. ENCASED

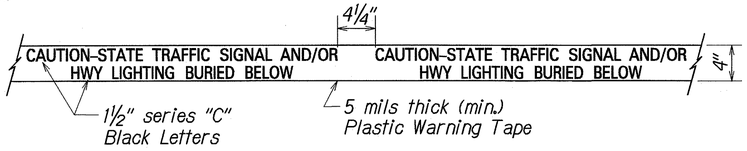
UTILITY	CLEARANCE
Water	See Note**
Sewer	24" Min. or Provide 6" Thick Reinforced Conc. Jacket
Drain	12" Min.
HECO/HTCO/CATV	3" Min.
AT&T	12" Min.

**At the electrical/signal ductline water crossing, install all electrical/signal ductline elevations to maintain 6" vertical clear separation from all waterlines (12" clear for all electrical/signal ductline structures larger than 16") at no cost to the Board of Water Supply.



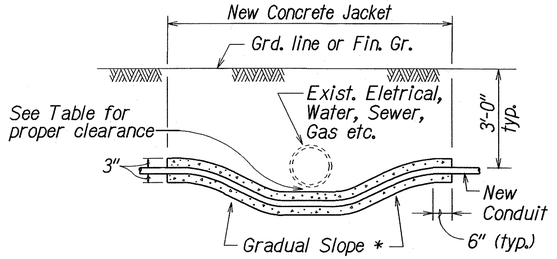
SINGLE CONDUIT — MULTIPLE CONDUIT

DUCT SECTIONS - DIRECT BURIED



For additional information see note no. 2.

METAL DETECTABLE RED PLASTIC WARNING TAPE



* To be determined by County Electrical Inspector/Engineer

CONDUIT BY-PASS DETAIL AT VARIOUS UTILITIES

Not to Scale

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 10/30/03
	DRAWN BY J.K.	
	TRACED BY	
NOTE BOOK tdlyme	DESIGNED BY E. Chan/J. Kuo	
	QUANTITIES BY	
N. Stanfield	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

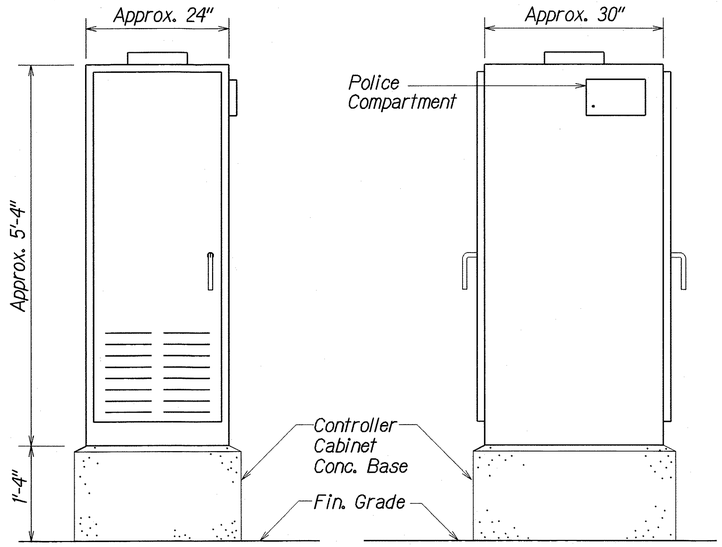
TRAFFIC SIGNAL DETAILS

KUNIA ROAD IMPROVEMENTS
Vicinity of South Kupuna Loop to Vicinity of Honowai Street
Project No. HWY-0-01-04

Scale: As Shown — Date: Oct. 2003

SHEET No. TS5 OF 8 SHEETS

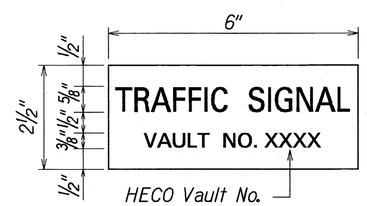
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-01-04	2004	59	61



FRONT VIEW SIDE VIEW

TYPE 332A TRAFFIC SIGNAL CONTROLLER CABINET DETAIL

N.T.S

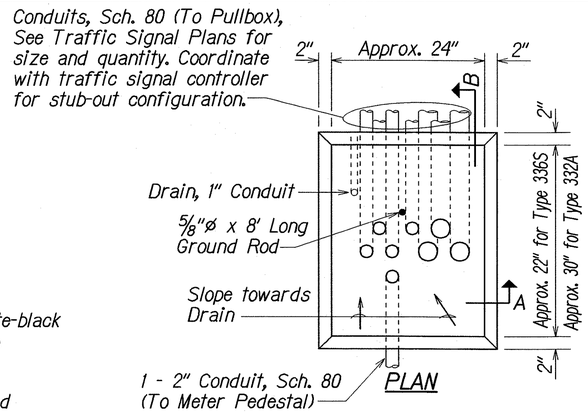


NOTES:

1. Use 3-ply laminated flexible plastic, black-white-black thickness: black cap sheet - 0.010", white base sheet - 0.052", black base sheet - 0.010".
2. Attach to Meter Socket using Scotch 3M Brand very high bond (VHB) double coated acrylic foam tape or equivalent.
3. Letters/Numbers shall be 1/16" stroke, (white in color).
4. Letters/Numbers area inscribed by cutting through "black cap sheet" to expose white letters/numbers.
5. Coordinate actual vault no. "xxxx" with HECO prior to actual fabrication.

METER ID TAG DETAIL

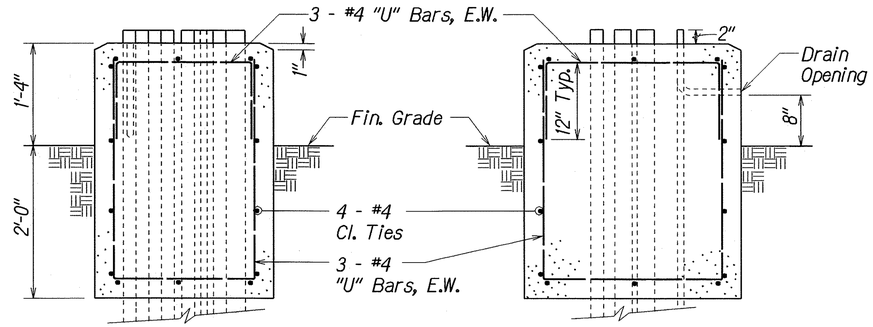
N.T.S



PLAN

NOTES:

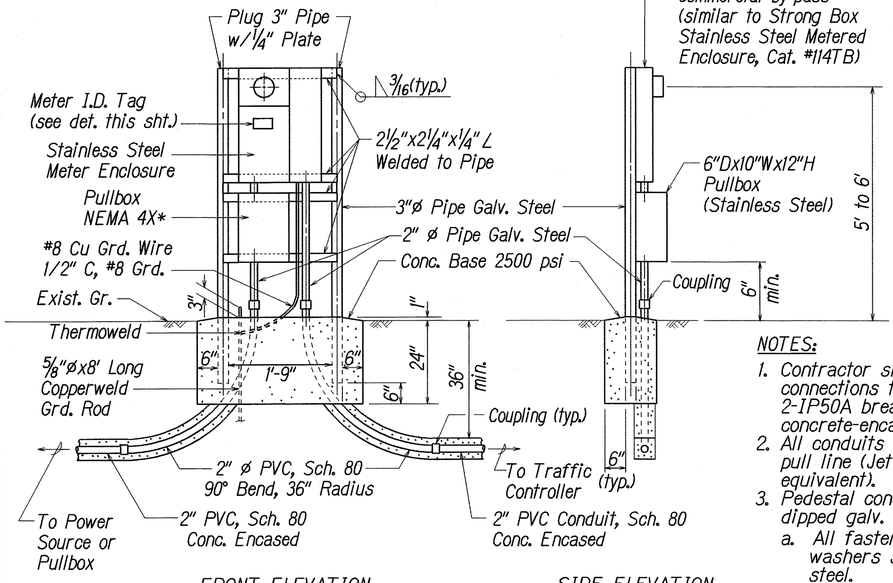
1. Concrete shall be class "B".
2. Dimensions shall be altered to suit controller cabinet actually furnished.
3. Conduits bends and drain are incidental to concrete base
4. Refer to Cabinet Manufacturer's Specifications for details of anchor bolts and base setting.
5. All exposed surfaces of concrete base shall be given a class 2, rubbed finish.



SECTION "A" SECTION "B"

CONTROLLER CABINET CONCRETE BASE

N.T.S



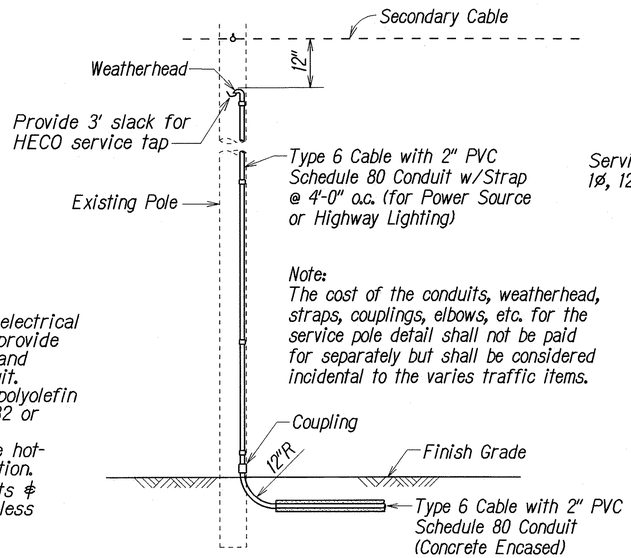
FRONT ELEVATION SIDE ELEVATION

METER PEDESTAL FOR UNDERGROUND SERVICE

N.T.S.

NOTES:

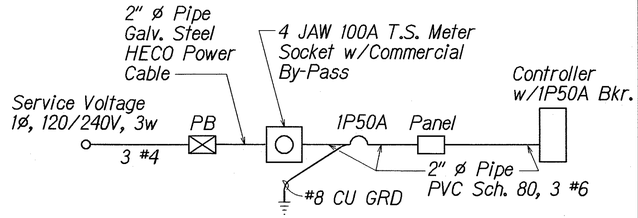
1. Contractor shall make all electrical connections to controller, provide 2-IP50A breaker, ground and concrete-encased 2" conduit.
2. All conduits to contain a polyolefin pull line (Jet Line cat. #232 or equivalent).
3. Pedestal conduits shall be hot-dipped galv. after fabrication.
   a. All fastening bolts, nuts & washers shall be stainless steel.
   b. Provide 4' cl. in front of meter.
   c. *Sealable enclosure 6"xDx10"Wx12"H.



Note:
The cost of the conduits, weatherhead, straps, couplings, elbows, etc. for the service pole detail shall not be paid for separately but shall be considered incidental to the varies traffic items.

SERVICE POLE DETAIL

Not to Scale



ONE LINE DIAGRAM

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 11/30/03
	DRAWN BY Lyk	
	TRACED BY B. Chan/L. Kuo	
NOTE BOOK	DESIGNED BY	
Idiyone N.Kunitoshi	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL SERVICE AND CONTROLLER CABINET DETAILS

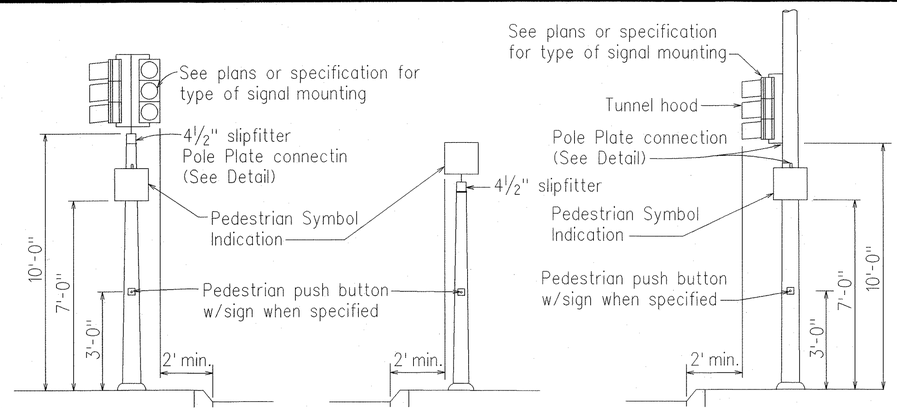
KUNIA ROAD IMPROVEMENTS
Vicinity of South Kupuna Loop to Vicinity of Honowai Street
Project No. HWY-0-01-04

Scale: As Shown Date: Oct. 2003

SHEET No. TS6 OF 8 SHEETS

TD1 - Traffic Design Section

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-01-04	2004	60	61

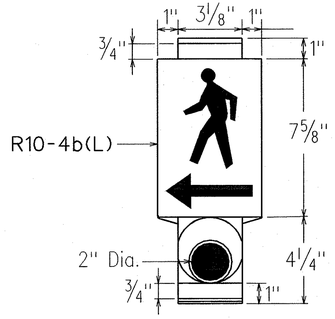


ON 10-FOOT STANDARD

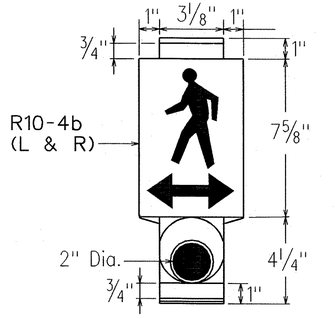
ON 8-FOOT STANDARD WHEN SPECIFIED

ON MAST ARM OR SPAN WIRE STANDARD

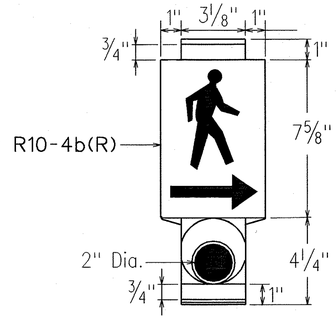
TYPICAL EQUIPMENT MOUNTINGS



Left



Left & Right



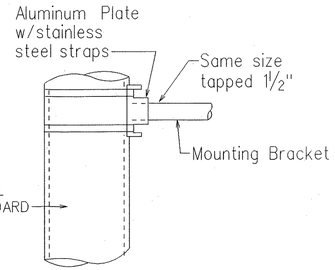
Right

PEDESTRIAN PUSH BUTTON WITH SIGN

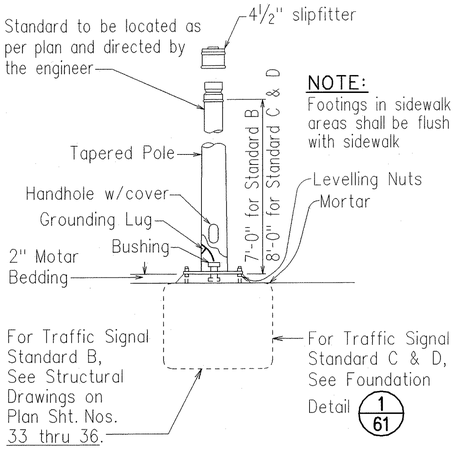
Man, Arrow & Push Button - White
Background - Black

NOTES:

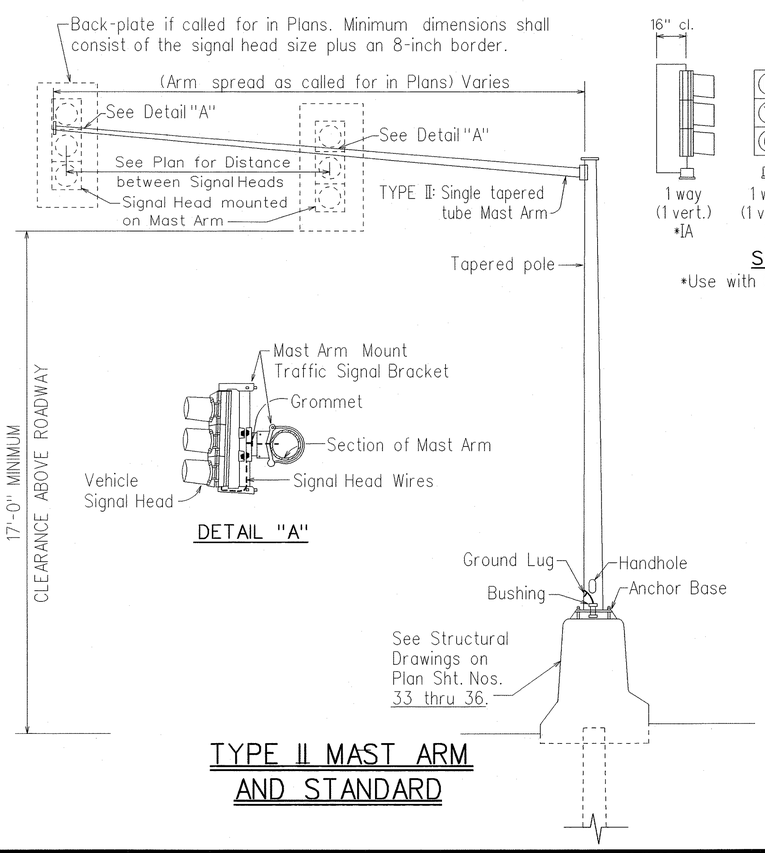
1. Standard shall be designed in accordance with latest edition of "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals", with design revisions noted on Plan Sheet No. ADD.54S-1.
2. Submit shop drawings for approval.



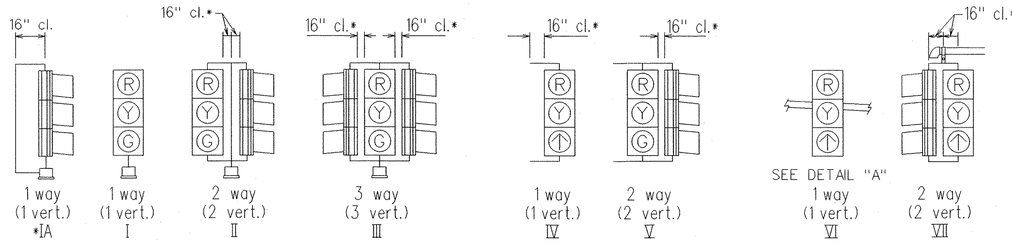
DETAIL OF POLE PLATE CONNECTIONS



TYPE I SIGNAL STANDARD



TYPE II MAST ARM AND STANDARD



SLIPFITTER MOUNTINGS

BRACKET MOUNTINGS

MASTARM MOUNTINGS

*Use with Programmed Visibility Signal

TYPICAL VEHICULAR AND PEDESTRAIN SIGNAL MOUNTINGS

TYPICAL SIGNAL ARRANGEMENTS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 10/30/03
	DRAWN BY J.H.	
	TRACED BY P. Chan/L. Kua	
NOTE BOOK	DESIGNED BY	
No. Idiume	QUANTITIES BY	
Skuntsel_ADD.dgn	CHECKED BY	

DATE	REVISION
2/10/04	Added Notes.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL SYSTEM MISCELLANEOUS DETAILS

KUNIA ROAD IMPROVEMENTS
Vicinity of South Kupuna Loop to
Vicinity of Honowai Street
Project No. HWY-0-01-04

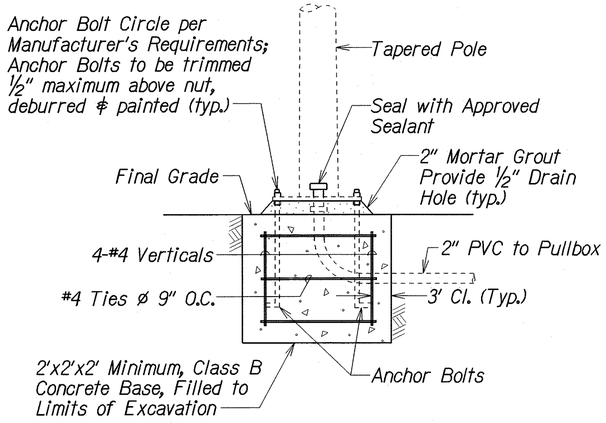
Scale: As Shown Date: Oct. 2003

SHEET No. TS7 OF 8 SHEETS

ADD. 60

TDI - Traffic Design Section

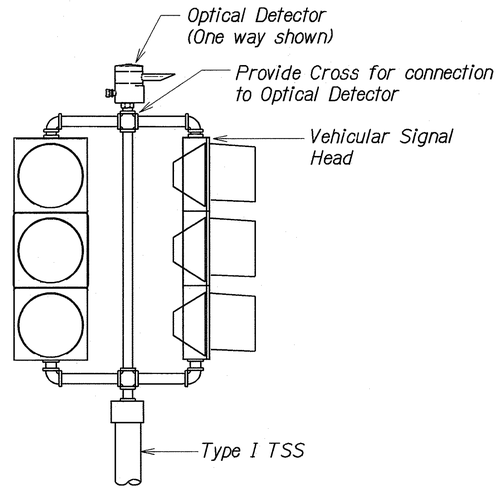
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-01-04	2004	61	61



TYPE I

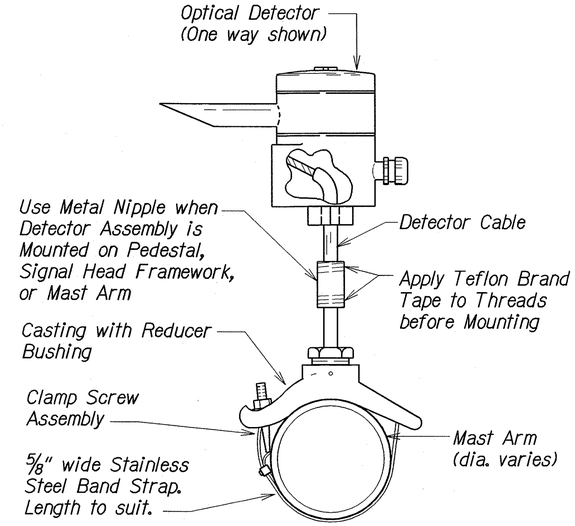
FOUNDATION DETAIL (1/61)

FOOTING FOR TRAFFIC SIGNAL STANDARD



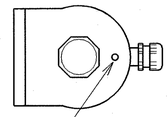
TYPICAL PEDESTAL INSTALLATION

Not to Scale



TYPICAL MAST ARM INSTALLATION

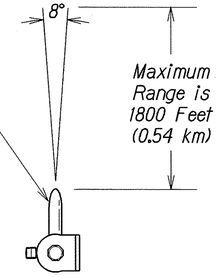
Not to Scale



NOTE:
Knock out Weep Hole before installing

OPTICAL DETECTOR
(Bottom View)

Not to Scale



NOTE:
Detector reception angle varies with distance. It is approximately 8° at 1800 feet (0.54 k.). Due to reflection, reception angle is increased at close range. The Detector must be aligned within 8° of the farthest point where priority vehicle is to be sensed.

DETECTOR ALIGHMENT ANGLE

Not to Scale

OPTICAL DETECTOR DETAILS

Not to Scale

ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY J.K.
TRACED BY
DESIGNED BY P. Chan/ J. Kuo
NOTE BOOK
QUANTITIES BY
CHECKED BY
DATE 10/30/03

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL SYSTEM MISCELLANEOUS DETAILS

KUNIA ROAD IMPROVEMENTS
Vicinity of South Kupuna Loop to
Vicinity of Honowai Street
Project No. HWY-0-01-04

Scale: As Shown Date: Oct. 2003

SHEET No. TS8 OF 8 SHEETS