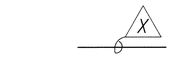
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(9)	2000	224	380

GENERAL TRAFFIC SIGNAL NOTES:

1. All Traffic Signal work shall conform to the requirements of the Manual on Uniform Traffic Control Devices for Streets and Highways, U.S. Department of Transportation, Federal Highways Administration, Latest Edition, and Amendments.
2. The locations of the traffic signal standards, traffic signal standards with mast arm, pedestrian push buttons, traffic controller, transformer, pullboxes, conduits, & loop detectors shall be staked out in the field by the Contractor and locations accepted by the Engineer prior to construction and installation. Locations shown on plans shall be adjusted as necessary to prevent conflict with existing or new facilities.
3. All direct-buried conduits shall be PVC Schedule 80.
4. Loop detectors shall be installed according to Loop Detector Details shown on the Plans.
5. Lead-in wires in pullbox near loops shall be tagged with Loop Number(s).
6. Existing pavement shall be restored according to Restoration of Existing Pavement due to Trench Excavation detail shown on the Plans.
7. Steel plates for covering trenches shall have skid resistant surface.
8. All structures, pavements, utilities, landscaping, and other topographical features shown on the Plans are existing and shall remain unless noted or indicated otherwise. All grassed areas damaged by construction activities shall be top soiled and grassed.
9. A solid #8 bare copper wire shall be pulled in all conduits with the traffic control cable for equipment ground.
10. All splicing shall be done in the pullboxes.
11. All traffic signal controller equipment shall be completely wired in the cabinet and shall control the traffic signal as called for in the Plans.
12. The loop amplifier units furnished for this project shall be capable of operating the loop detector configurations shown on the Plans.
13. A 3'x5' level area shall be provided along side pedestrian push button assemblies at a distance not to exceed 10'-0".
14. The Contractor shall verify with the respective utility companies and government agencies, the locations of all electric, telephone, traffic signal, street light, cable television, fire alarm, gas, water, sewer, drain and other lines crossing the excavation path or in excavation areas.
15. All work and materials for the traffic signal system shall conform to Section 623 - Traffic Signal System, except as otherwise provided on the Plans.
16. Provide ground rod in all pullboxes, pullboxes adjacent to signal standards, pedestals, controller cabinets, and other locations ordered by the Engineer. Ground rod connectors shall be copper welded and shall meet ground to earth resistance as specified by the National Electric Code or local inspecting agency.
17. Underground pipes, cables, or ductlines known to exist are indicated on the Plans. The Contractor shall verify the locations and depths of the facilities and exercise proper care in excavating in the area. Wherever connections of new utilities to existing utilities are shown on the Plans, the Contractor shall expose the existing lines at the proposed connections to verify their locations and depths prior to excavation for the new lines.
18. During working hours, the Contractor shall provide two lanes for through traffic. On streets too narrow to make this practicable, the Contractor may work in one half of the roadway keeping one lane open to traffic and alternating the flow of traffic. During non-working hours, all trenches shall be covered with a safe, non-skid, traffic-bearing bridging material and all lanes shall be open to traffic.
19. Where pedestrian walkways exist, they shall be maintained in passable condition or other facilities for pedestrians shall be provided. Passage between walkways at intersections shall likewise be provided.
20. Driveways shall be kept open unless the owners of the property using these rights-of-way are otherwise provided for satisfactorily.
21. No material and/or equipment shall be stockpiled or otherwise stored within street rights-of-way except at locations designated in writing and accepted by the Engineer.
22. Traffic Signal Supports shall meet the requirements of "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 1994, with Subsequent Revisions." Wind speed shall be 105 mph.

TRAFFIC SIGNAL LEGEND:



Conduits and Cables, Conduit Run X

12" R-Y-G Standard Traffic Signal Head

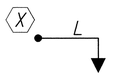
12" R-Y-G Traffic Signal Head

12" R-Y-↑ Traffic Signal Head

Pedestrian Signal Head

Pedestrian Push Button Assembly

Emergency Vehicle Preempt Receiver (Opticom Receiver)



Signal Standard with Mast Arm Type II, L=Length of Mastarm, Pole X, Footing Type C

Signal Standard Type I, Pole X, H=7' or 10', Footing Type A

Loop Detectors

Pullbox Type A (Old Type "B")

Pullbox Type B (Old Type "C")

Pullbox Type C (Old Type "D")

C — Traffic Controller Model 170E and 332A Cabinet with Type D Concrete Base for Controller Cabinet

Street Sign Mounted to Mast Arm

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

S:/KUIHELANI/TRAFFIC/TF-NOTES.dgn

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THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL NOTES & LEGEND

KUIHELANI HIGHWAY WIDENING
HONOAPIILANI HIGHWAY TO PUUNENE AVENUE
FEDERAL-AID PROJECT NO. NH-0380(9)

Scale: None Date: Sept. 14, 2001

SHEET No. TS1 OF 11 SHEETS

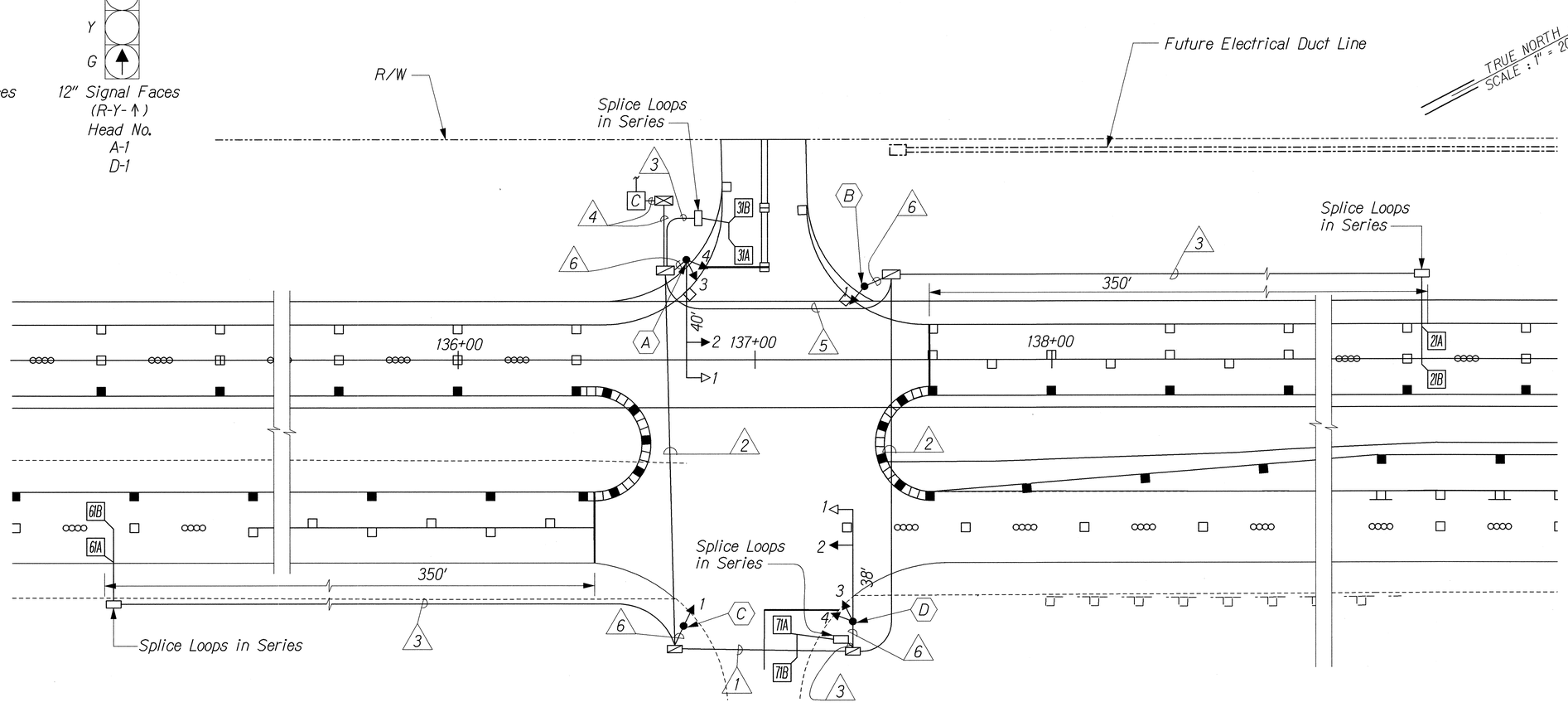
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(9)	2000	225	380

R
Y
G

12" Signal Faces
12 (R-Y-G)
Head No.
A-2
A-3
A-4
B-1
C-1
D-2
D-3
D-4

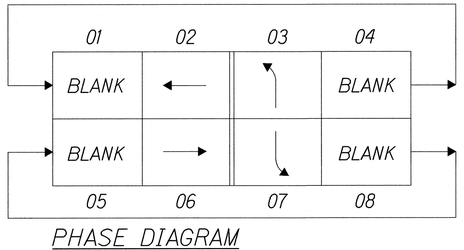
R
Y
G

12" Signal Faces
(R-Y-↑)
Head No.
A-1
D-1



Private Access Road Intersection at Sta. 137+00±			
Material List			
Pole ⬡	Base Type	Standard Type	Mounting Type
A	C	II-40	(1)MA-1W(E) (2)MA-1W(I) (3)(4)B-2W
B	A	I-10	(1)TP-1W
C	A	I-10	(1)TP-1W
D	C	II-38	(1)MA-1W(E) (2)MA-1W(I) (3)(4)B-2W

Private Access Road Intersection at Sta. 137+00±							
Cable and Conduit Schedule							
Run △	Conduit Size	Signal Control 26C#14	Loops 2C#14	PPB 2C#14	EVP (shielded) 3C#20	Power 3C#6	Other
1	2"	1					
	2"	Spare					
2	2"	1					
	2"		1				
	2"	Spare					
3	2"		1				
4	2-2"	2					
	2"		4				
	2-2"	Spare					
5	2"	1					
	2"		2				
	2"	Spare					
6	2-2"	Install Cables to Pole and Signal Devices as Needed					



PHASE DIAGRAM
Model 170E Controller with Master Controller
Model 332A Cabinet
→ Vehicle Movement

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
ORIGINAL PLAN
NOTE BOOK
No.

s:/KUIHELANI/TRAFFIC/TF-01.dgn

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL

PRIVATE ACCESS ROAD (STA. 137+00±)

KUIHELANI HIGHWAY WIDENING
HONOAPIILANI HIGHWAY TO PUUNENE AVENUE
FEDERAL-AID PROJECT NO. NH-0380(9)

Scale: 1"=20' Date: Sept. 14, 2001

SHEET No. TS2 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(9)	2000	226	380

Waiko Road Intersection

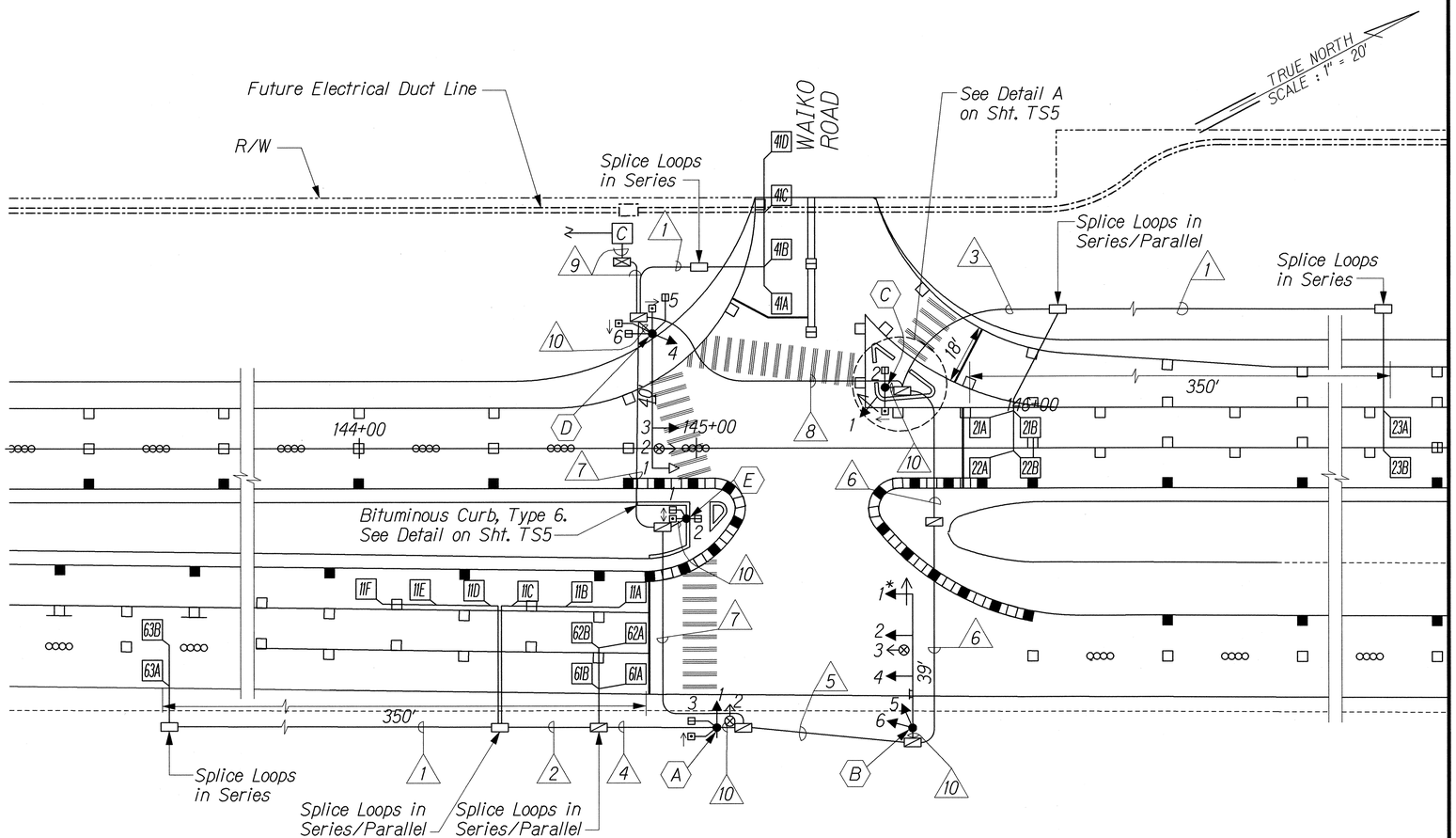
Material List

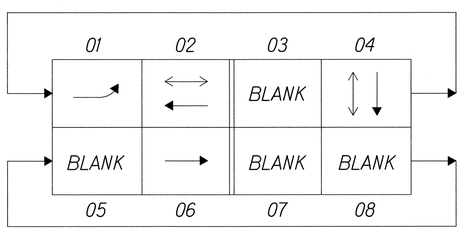
Pole ⬡	Base Type	Standard Type	Mounting Type	PPB Assembly
A	A	I-10	(1)TP-1W (2)EVP Mounting (Vertical) (3)C-1W	1
B	C	II-39	(1)MA-1W(E) (2)(4)MA-1W(I) (3)EVP Mounting-2W(Horizontal) (5)(6)B-2W	
C	A	I-10	(1)TP-1W (2)C-1W	1
D	C	II-40	(1)MA-1W(E) (2)EVP Mounting (Horizontal) (3)MA-1W(I) (4)B-1W (5)(6)B-2W	2
E	A	I-7	(1)(2)TP-2W	1

Waiko Road Intersection

Cable and Conduit Schedule

Run △	Conduit Size	Signal Control 26C#14	Loops 2C#14	PPB 2C#14	EVP (shielded) 3C#20	Power 3C#6	Other
1	2"		1				
2	2"		2				
3	2"		3				
	2"	Spare					
4	2"		4				
5	2"	1					
	2"	Spare					
6	2"	1					
	2"				1		
	2"	Spare					
7	2"	1					
	2"		4	1			
	2"				1		
	2"	Spare					
8	2"	1					
	2"		3	1			
	2"				1		
	2"	Spare					
9	2-2"	2					
	2-2"		8	2			
	2-2"				3		
	2-2"	Spare					
10	2-2"	Install Cables to Pole and Signal Devices as Needed					

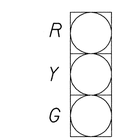




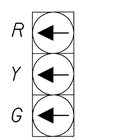
PHASE DIAGRAM

Model 170E Controller with Master Controller
Model 332A Cabinet

→ Vehicle Movement
⟷ Pedestrian Movement

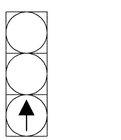


12" Signal Faces
12 (R-Y-G)
Head No.
A-1
B-4
B-5
B-6
D-3
D-4



12" Signal Faces
(R-Y-←)
Head No.
B-1*
C-1

* Programmed Visibility



12" Signal Faces
(R-Y-↑)
Head No.
B-2
D-1

Head No.
A-3
C-2
D-5
D-6
E-1
E-2

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

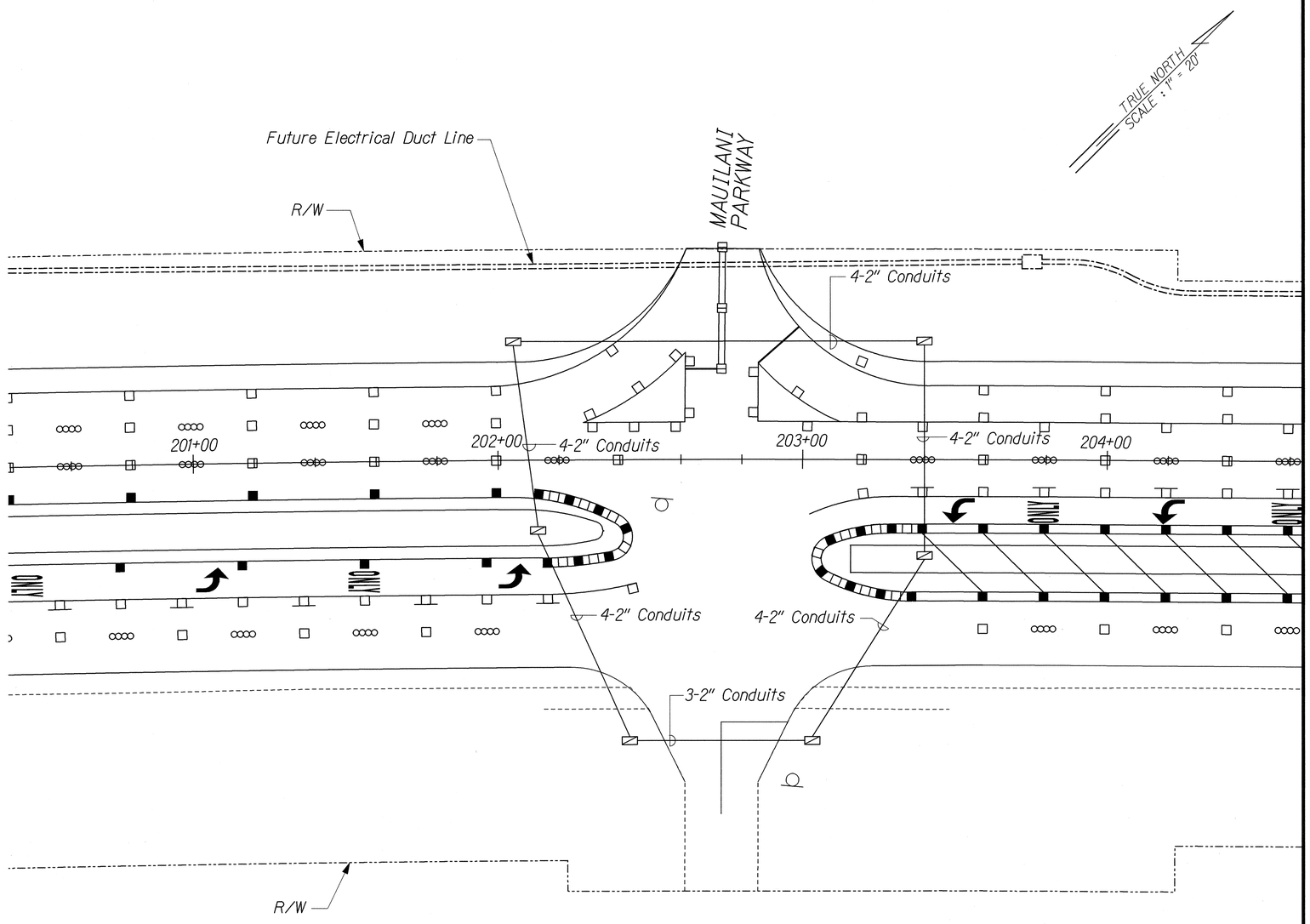
TRAFFIC SIGNAL
WAIKO ROAD

KUIHELANI HIGHWAY WIDENING
HONOAPIILANI HIGHWAY TO PUUNENE AVENUE
FEDERAL-AID PROJECT NO. NH-0380(9)

Scale: 1"=20' Date: Sept. 14, 2001

SHEET No. TS3 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(9)	2000	227	380



ORIGINAL PLAN
NOTE BOOK
No.
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL
MAUILANI PARKWAY

KUIHELANI HIGHWAY WIDENING
HONOAPIILANI HIGHWAY TO PUUNENE AVENUE
FEDERAL-AID PROJECT NO. NH-0380(9)

Scale: 1"=20' Date: Sept. 14, 2001

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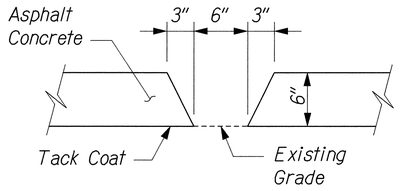
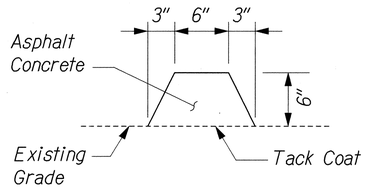
SHEET No. TS4 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(9)	2000	228	380



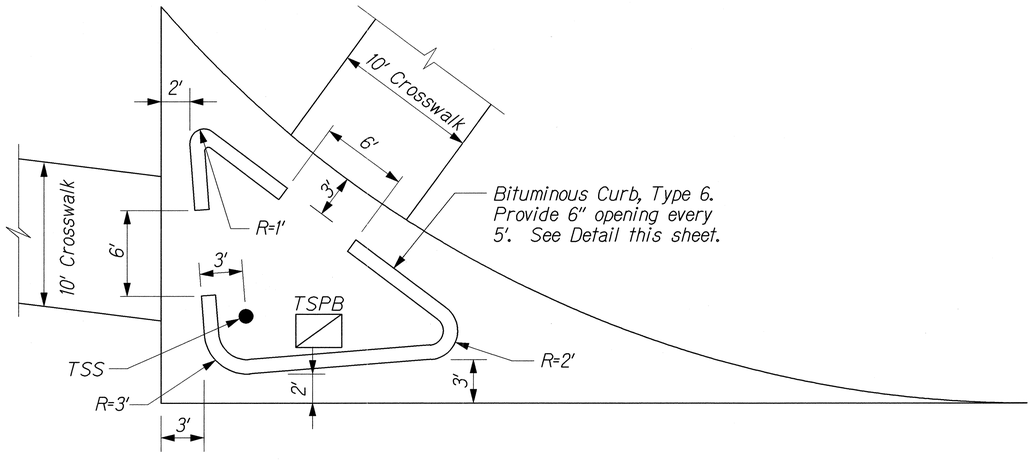
DETAIL OF OPENING



BITUMINOUS CURB, TYPE 6

BITUMINOUS CURB DETAIL

Not to Scale



DETAIL A

Scale: 1" = 5'

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

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9/14/01

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

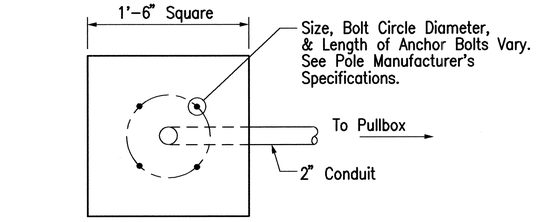
TRAFFIC SIGNAL CURB DETAILS

KUIHELANI HIGHWAY WIDENING
HONOAPIILANI HIGHWAY TO PUUNENE AVENUE
FEDERAL-AID PROJECT NO. NH-0380(9)

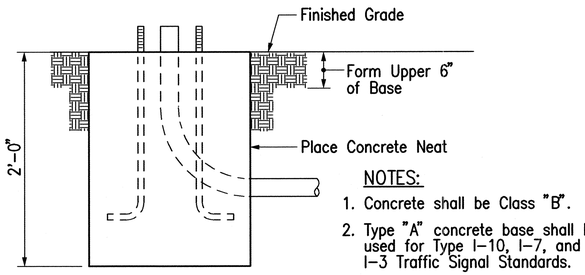
Scale: AS SHOWN Date: Sept. 14, 2001

SHEET No. TS5 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(9)	2000	229	380



PLAN-SECTION



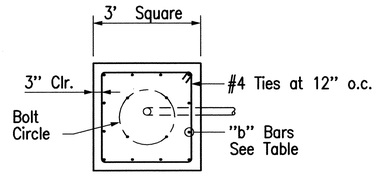
VERTICAL SECTION

NOTES:

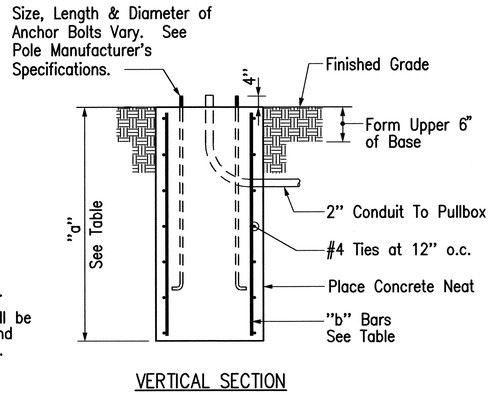
1. Concrete shall be Class "B".
2. Type "A" concrete base shall be used for Type I-10, I-7, and I-3 Traffic Signal Standards.
3. Conduit bend is incidental to concrete base.

TYPE "A" CONCRETE BASE

Scale: 1½" = 1'-0"



PLAN - SECTION



VERTICAL SECTION

TYPE "C" CONCRETE BASE

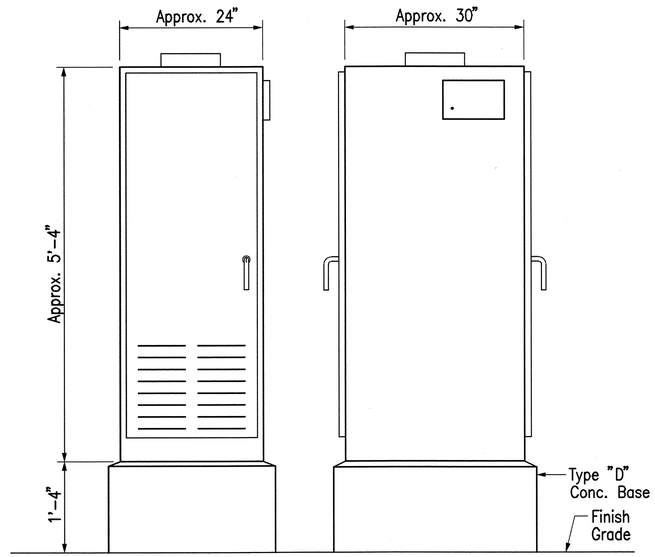
Scale: ½" = 1'-0"

TYPE "C" CONCRETE BASE		
TYPE OF STANDARD	"a"	"b" Bars
II - 18	5'-0"	12-#6
II - 20	5'-6"	12-#6
II - 25	6'-0"	12-#6
II - 30	6'-6"	12-#8
II - 35	6'-6"	12-#8
II - 40	7'-0"	12-#8
III - 18	5'-0"	12-#6
III - 20	5'-6"	12-#6
III - 25	6'-0"	12-#6
III - 30	6'-6"	12-#8
III - 35	6'-6"	12-#8
III - 40	7'-0"	12-#8

Typical Standard Designation: II - 25
Type
Mast Arm Length

NOTES:

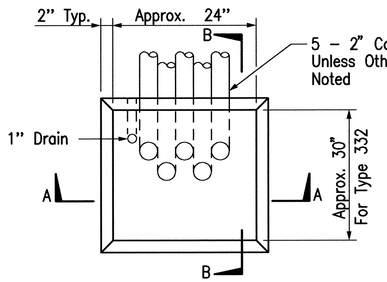
1. Concrete shall be Class "B".
2. Type "C" concrete base shall be used for Types II and III Traffic Signal Standards.
3. Design Lateral Pressure: 1,500 PSF.
4. Conduit bend is incidental to concrete base.



FRONT VIEW SIDE VIEW

TYPE 332A CABINET

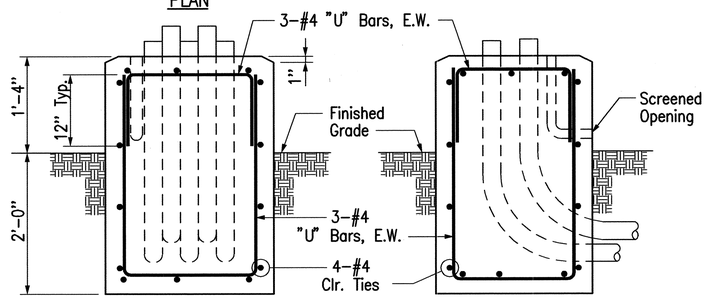
Scale: 1" = 1'-0"



PLAN

NOTES:

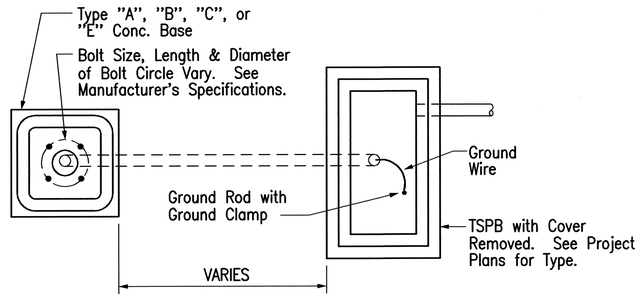
1. Concrete shall be Class "B".
2. Dimensions shall be altered to suit controller cabinet actually furnished.
3. Conduit bends and drain are incidental to concrete base.
4. Refer to cabinet manufacturer's specifications for details of anchor bolts and base setting.
5. All exposed surfaces of concrete base shall be given a Class 2, Rubbed Finish.



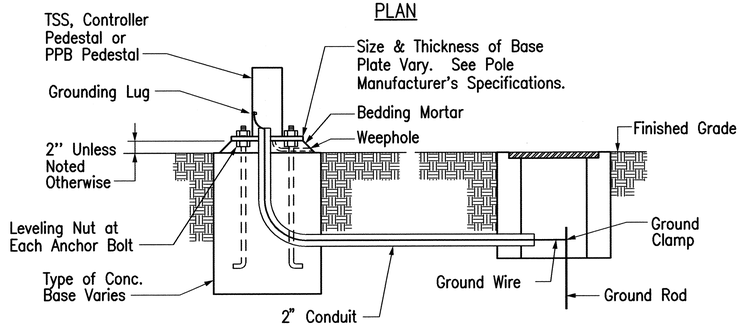
SECTION "A" SECTION "B"

TYPE "D" CONC. BASE FOR CONTROLLER CABINETS

Scale: 1" = 1'-0"



PLAN



SECTION

TYPICAL STANDARD AND PEDESTAL INSTALLATION

Scale: ½" = 1'-0"

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL CABINET & BASE DETAILS

KUIHELANI HIGHWAY WIDENING
HONOAPIILANI HIGHWAY TO PUUNENE AVENUE
FEDERAL-AID PROJECT NO. NH-0380(9)

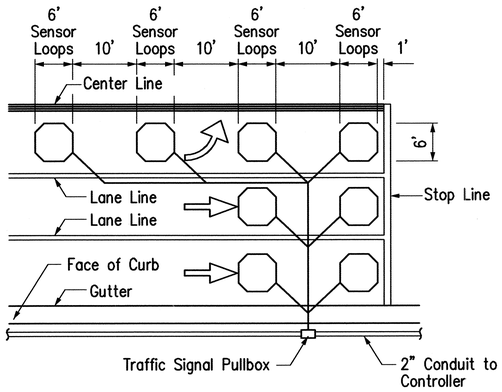
Scale: AS SHOWN Date: Sept. 14, 2001

SHEET No. TS6 OF 11 SHEETS

ORIGINAL PLAN
SURVEY PLOTTED BY ____ DATE
DRAWN BY ____
TRACED BY ____
NOTE BOOK DESIGNED BY ____
QUANTITIES BY ____
No. ____ CHECKED BY ____

J:/Kuihelani/Traffic/Ts-det1.dwg

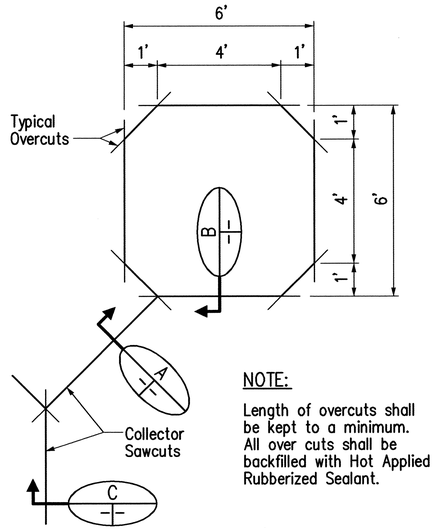
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(9)	2000	230	380



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.

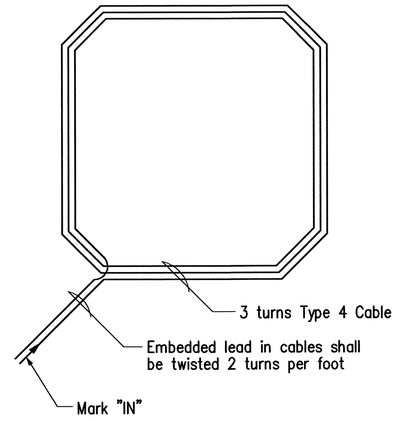
TYPICAL SENSOR LOOP LAYOUT



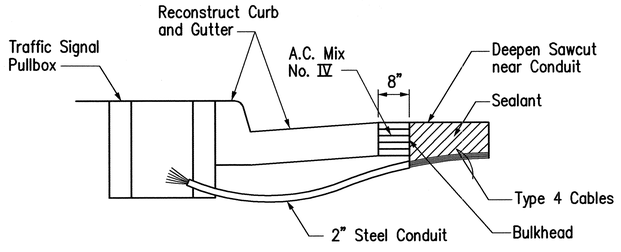
NOTE:

Length of overcuts shall be kept to a minimum. All over cuts shall be backfilled with Hot Applied Rubberized Sealant.

TYPICAL SENSOR LOOP SAWCUT DETAIL



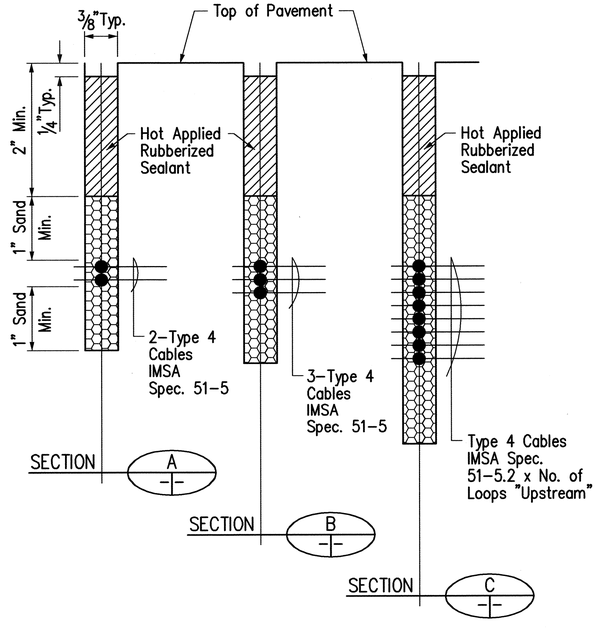
TYPICAL SENSOR LOOP WIRING DIAGRAM



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 PAVEMENT



TYPES OF CABLES

Type 1	Signal Loop Cable: Stranded No. 14, 26 conductors
Type 2	Detector lead in cable and pedestrian push button circuit cable: Stranded, No. 14, two conductors
Type 3	Interconnect Cable: Solid No. 19, 12 pairs
Type 4	Loop Sensor Cable: Solid No. 12, single conductor to IMSA spec. 51-5
Type 5	Cable from signal loop to signal head: Stranded, No. 14, four conductors
Type 6	Service Cable: Solid, No. 6, three conductors
Type 7	Optical Detector Cable: Berktek Type B, Stranded, No. 20, three conductors
Type 8	Drop Cable: Solid, No. 14, four conductors

ORIGINAL PLAN
NOTE BOOK
SURVEY PLOTTED BY ____ DATE ____
DRAWN BY ____
TRACED BY ____
DESIGNED BY ____
QUANTITIES BY ____
CHECKED BY ____
No. ____

J:\Kuihelani\Traffic\Ts-det7.dwg

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THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL LOOP DETECTOR DETAILS

KUIHELANI HIGHWAY WIDENING
HONOAPIILANI HIGHWAY TO PUUNENE AVENUE
FEDERAL-AID PROJECT NO. NH-0380(9)

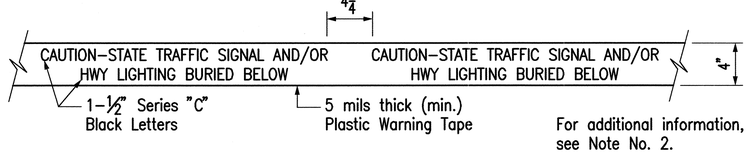
Scale: NONE Date: Sept. 14, 2001

SHEET No. TS7 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(9)	2000	231	380

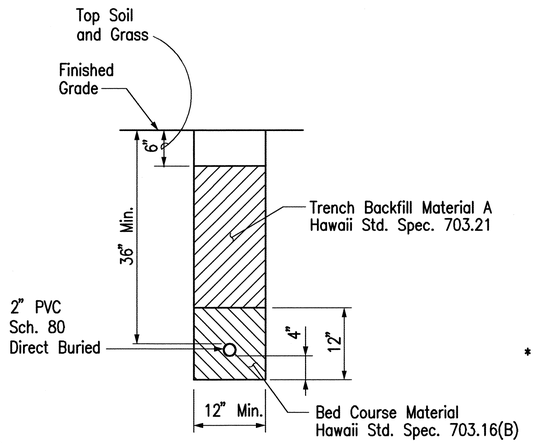
GENERAL NOTES

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 Yellow Plastic Warning Tape shall be a minimum 5 mils thick and 4" wide with a continuos 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 1-1/2 inches series "C" black lettering. The message will be repeated with a 4-1/4" 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 Engineer and shall not be paid for separately but considered incidental to the direct buried and/or concrete encased conduits.

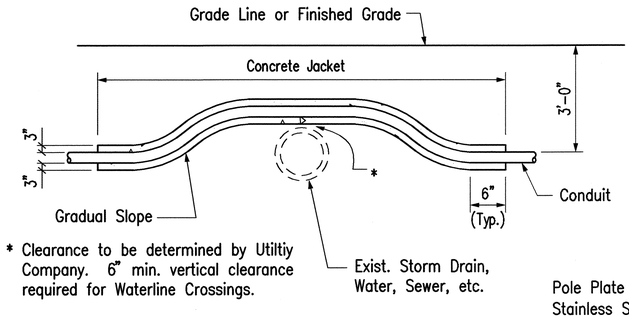


METAL DETECTABLE YELLOW PLASTIC WARNING TAPE

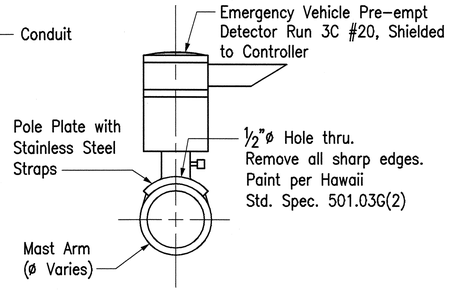
Not to Scale



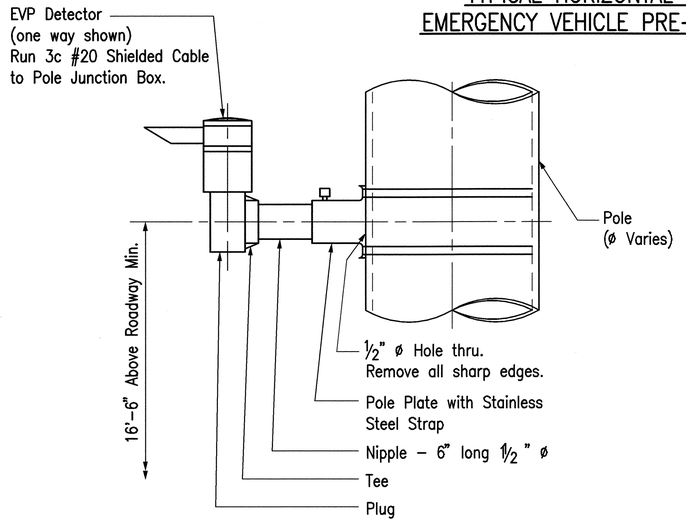
RESTORATION OF EXISTING GROUND DUE TO TRENCH EXCAVATION



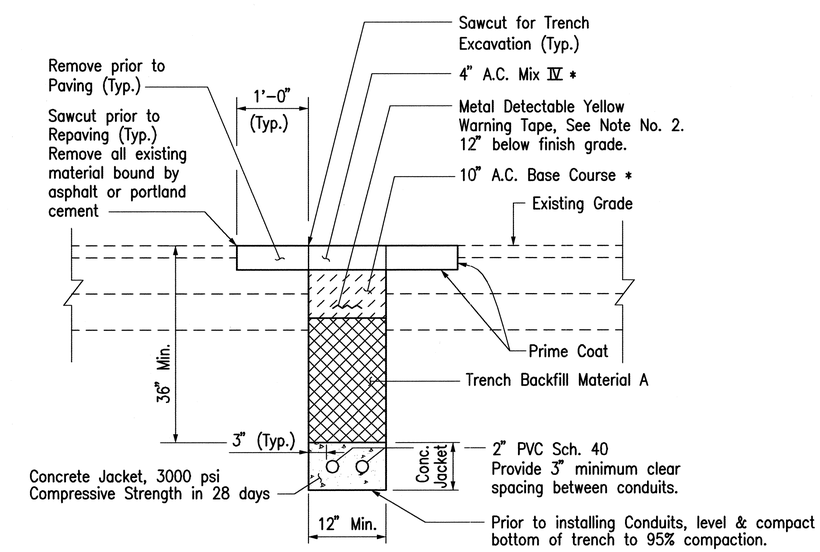
CONDUIT BY-PASS DETAIL



TYPICAL HORIZONTAL MOUNT OF EMERGENCY VEHICLE PRE-EMPT DETECTOR



TYPICAL VERTICAL MOUNT OF EMERGENCY VEHICLE PRE-EMPT DETECTOR



RESTORATION OF EXISTING PAVEMENT DUE TO TRENCH EXCAVATION

Not to Scale

* Minimum thickness or match existing whichever is greater

ORIGINAL PLAN
NOTE BOOK
No.
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

J:/Kuihelani/Traffic/Ts-det3.dwg

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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9/14/01

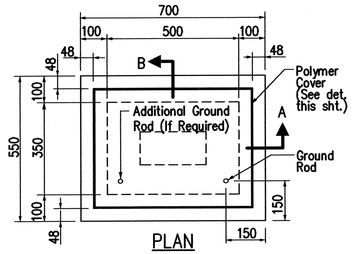
TRAFFIC SIGNAL MISCELLANEOUS DETAILS

KUIHELANI HIGHWAY WIDENING
HONOAPIILANI HIGHWAY TO PUUNENE AVENUE
FEDERAL-AID PROJECT NO. NH-0380(9)

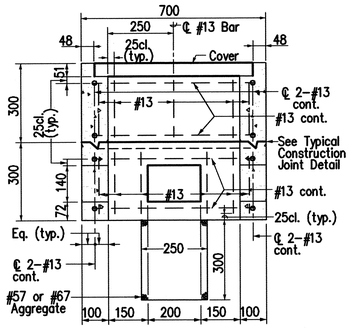
Scale: NONE Date: Sept. 14, 2001

SHEET No. TS8 OF 11 SHEETS

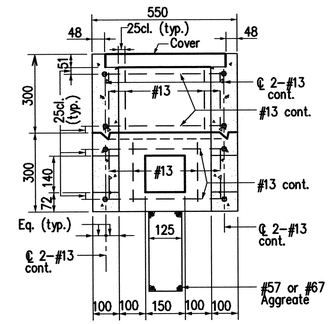
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(9)	2000	232	380



PLAN



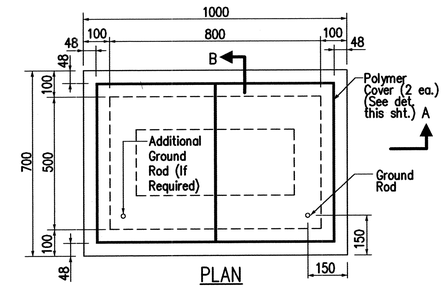
SECTION A-A



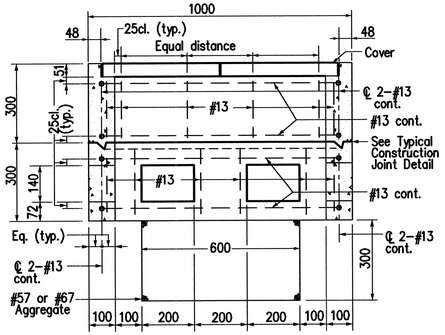
SECTION B-B

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

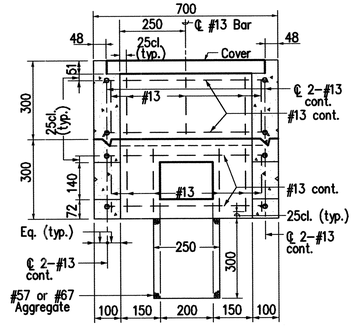
Scale: 1 : 100



PLAN



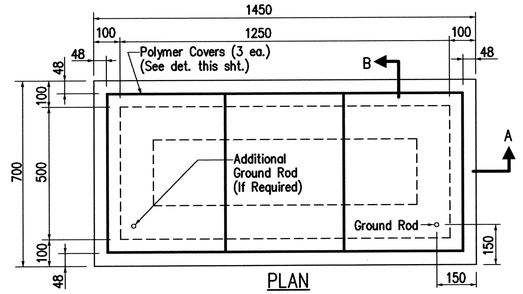
SECTION A-A



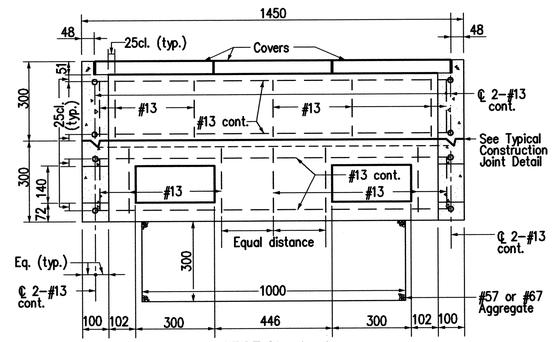
SECTION B-B

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

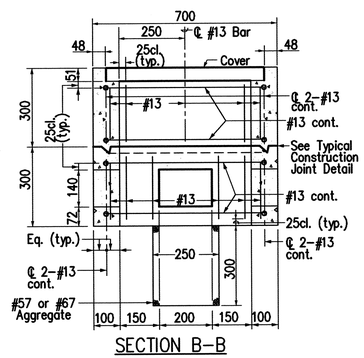
Scale: 1 : 100



PLAN



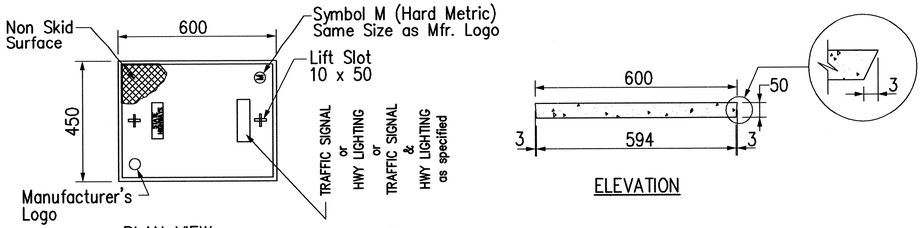
SECTION A-A



SECTION B-B

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

Scale: 1 : 100

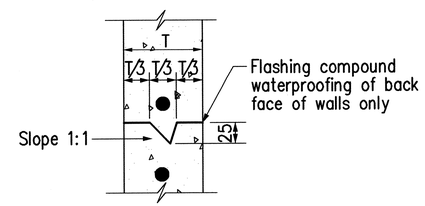


PLAN VIEW

ELEVATION

POLYMER CONCRETE COVER

Not to Scale

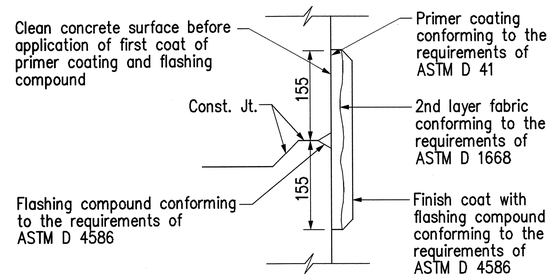


TYPICAL CONSTRUCTION JOINT DETAIL

Not to Scale

GENERAL NOTES:

1. Provide a minimum of one 16ø 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 (25MPa, 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

Not to Scale

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PULLBOX & COVER DETAILS

KUIHELANI HIGHWAY WIDENING
HONOAPIILANI HIGHWAY TO PUUNENE AVENUE
FEDERAL-AID PROJECT NO. NH-0380(9)

Scale: AS SHOWN Date: Sept. 14, 2001

SHEET No. TS9 OF 11 SHEETS

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE | NOTE BOOK | No.

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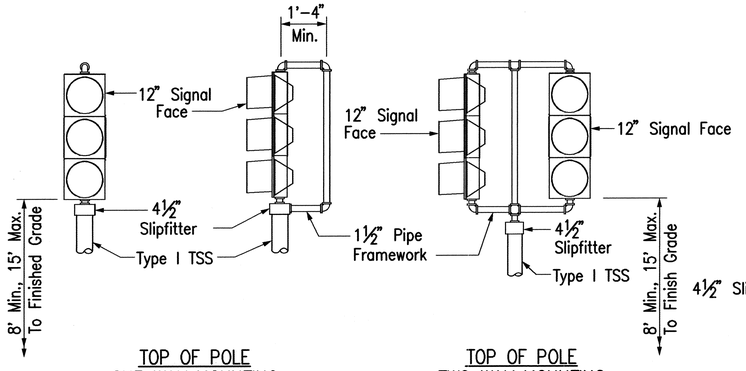
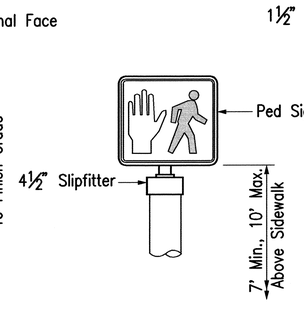
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(9)	2000	233	380

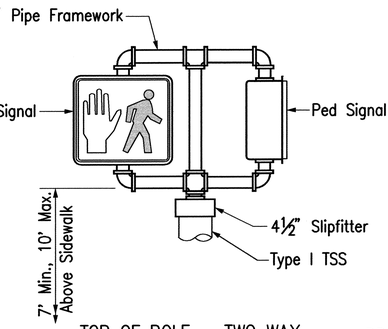


TOP OF POLE
ONE WAY MOUNTING
(TP-1W)

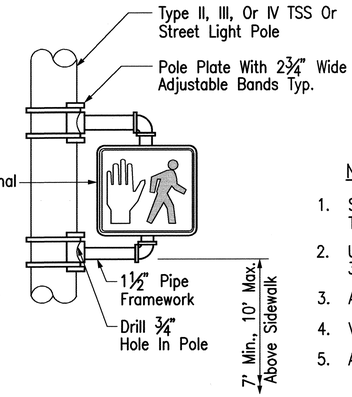
TOP OF POLE
TWO WAY MOUNTING
(TP-2W)



TOP OF POLE – ONE WAY
(TP-1W)



TOP OF POLE – TWO WAY
(TP-2W)

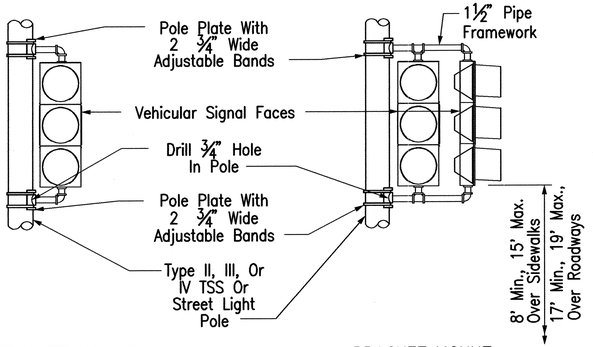


BRACKET MOUNT – ONE WAY
(B-1W)

NOTES:

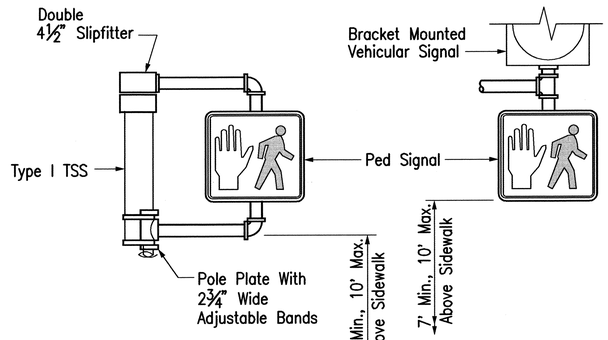
1. Stainless Steel Bands Shall Be ½" Wide X .050" Thick, Minimum. Tensile Strength Shall Be 100,000 PSI Minimum.
2. Upper Arm, Lower Arm And Vertical Support Tube Shall Be Of 356 Cast Aluminum.
3. All Wiring Shall Be Concealed.
4. Vertical Tube Clamp Shall Be Of Malleable Iron, Grade 32510.
5. All Aluminum Parts Shall Have An Alodine 1200 Finish.

PEDESTRIAN SIGNAL MOUNTINGS



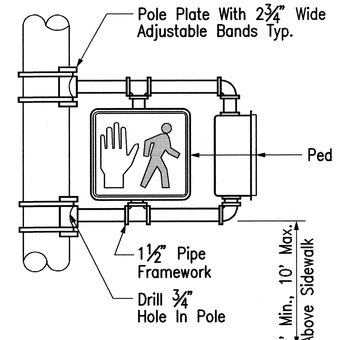
BRACKET MOUNT
ONE WAY
(B-1W)

BRACKET MOUNT
TWO WAY
(B-2W)

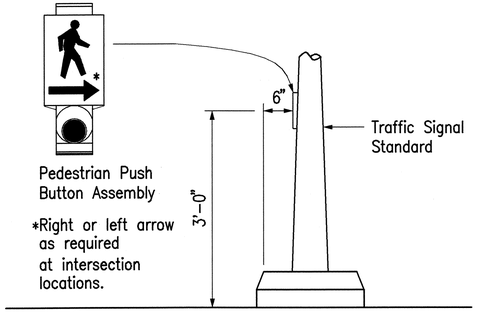


CANTILEVER – ONE WAY
(C-1W)

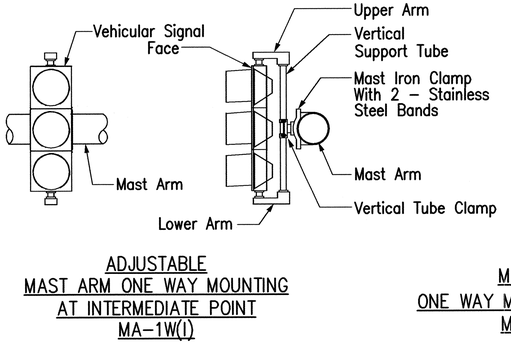
UNDERSLUNG – ONE WAY
(US-1W)



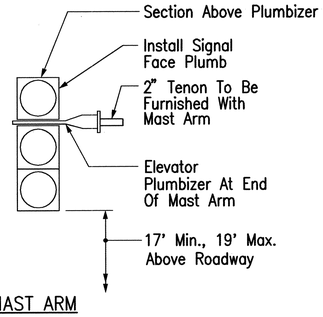
BRACKET MOUNT – TWO WAY
(B-2W)



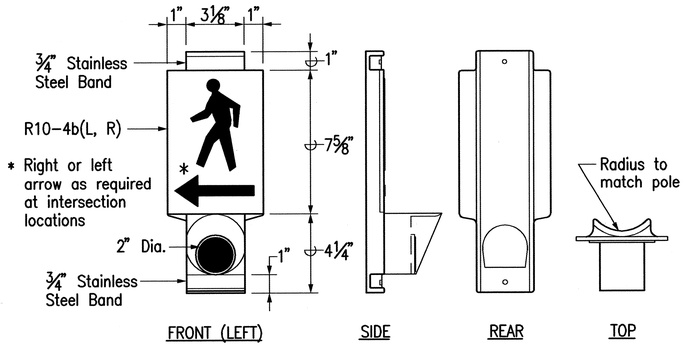
PEDESTRIAN PUSH BUTTON PLACEMENT



ADJUSTABLE
MAST ARM ONE WAY MOUNTING
AT INTERMEDIATE POINT
MA-1W(I)



MAST ARM
ONE WAY MOUNTING AT ENDS
MA-1W(E)



PEDESTRIAN PUSH BUTTON ASSEMBLY

VEHICULAR SIGNAL MOUNTINGS

ORIGINAL PLAN
SURVEY PLOTTED BY ____ DATE
DRAWN BY ____
TRACED BY ____
NOTE BOOK DESIGNED BY ____
QUANTITIES BY ____
No. ____ CHECKED BY ____

J:/Kuihelani/Traffic/Ts-det4.dwg

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THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

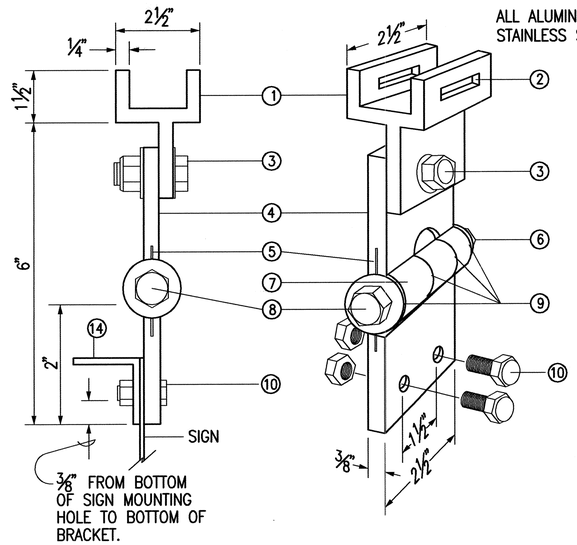
TRAFFIC SIGNAL MOUNTING BRACKET DETAILS

KUIHELANI HIGHWAY WIDENING
HONOAPIILANI HIGHWAY TO PUUNENE AVENUE
FEDERAL-AID PROJECT NO. NH-0380(9)

Scale: AS SHOWN Date: Sept. 14, 2001

SHEET No. TS10 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(9)	2000	234	380



ALL ALUMINUM 6061T6 ALLOY AND STAINLESS STEEL COMPONENTS.

FIXED LENGTH NON-ADJUSTABLE SWING SIGN BRACKET

① PIVOTAL UPPER BRACKET

② 1⅝" X ¼" SLOT FOR DOUBLE STRAPPING TO ELECTROLIER MAST ARM. (M2G-34S(HD) .030" X ¾" HEAVY DUTY STAINLESS STEEL STRAP WITH M2G-34B(HD) BUCKLE RECOMMENDED.)

③ ½" – 13 X 1½" STAINLESS STEEL HEX HEAD BOLT WITH STAINLESS STEEL HEX LOCK NUT AND 1/16" STAINLESS STEEL WASHER (BOTH SIDES). ALLOWS UPPER BRACKET TO PIVOT AND ALIGN WITH ELEC-TROLIER MAST ARM.

④ 6" OVERALL DROP WITH FIXED LENGTH SIGN BRACKET

⑤ STAINLESS STEEL DAMPENER SPRING (REMOVABLE)

⑥ STAINLESS STEEL HEX LOCK NUT WITH 1/16" STAINLESS STEEL WASHER

⑦ 1" O.D. AXLE HOUSING

⑧ ½" – 13 X 4" STAINLESS STEEL HEX HEAD BOLT WITH 1/16" STAINLESS STEEL WASHER

⑨ OILITE BUSHING

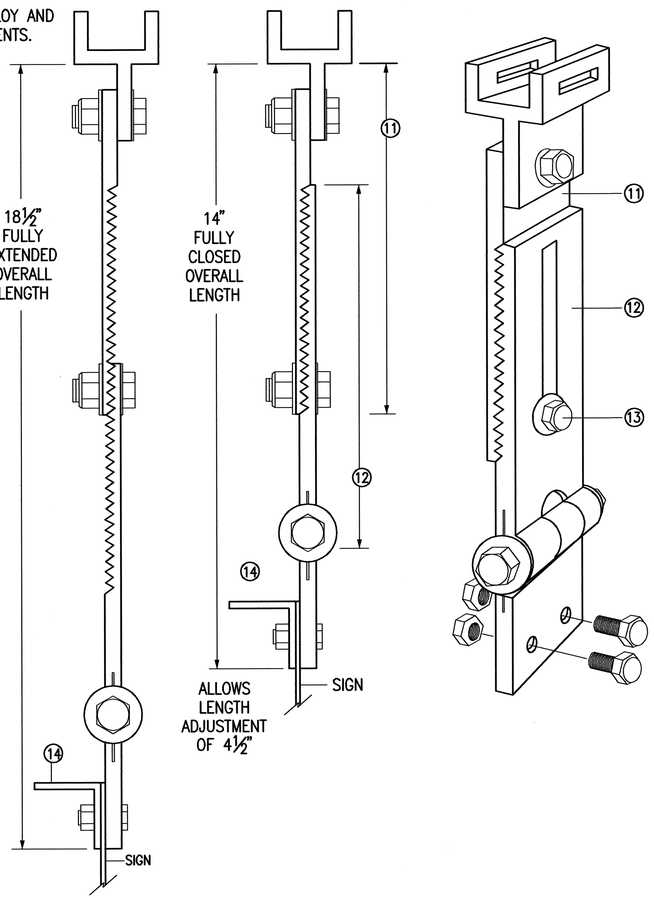
⑩ SIGN MOUNTING SETS, CONSISTING OF TWO EACH 5/16" – 18 X 1" STAINLESS STEEL HEX HEAD BOLT WITH STAINLESS STEEL HEX LOCK NUT. TWO HOLES ON 1½" CENTERS PROVIDE POSITIVE LOCK SIGN MOUNTING TO BRACKET.

⑪ 8¼" OVERALL LENGTH UPPER ADJUSTABLE SIGN BRACKET SECTION

⑫ 9" OVERALL LENGTH LOWER ADJUSTABLE SIGN BRACKET SEC-TION, INCLUDING AXLE HOUSING (8" OVERALL LENGTH TO TOP OF AXLE HOUSING)

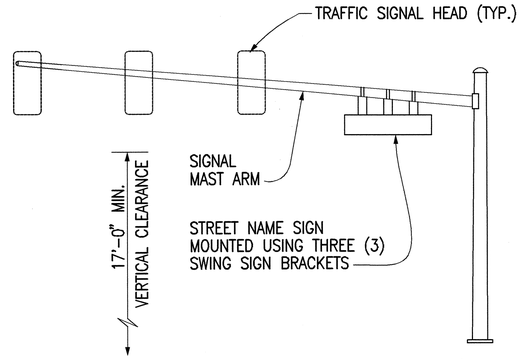
⑬ ½" – 13 X 1½" STAINLESS STEEL HEX BOLT WITH STAIN-LESS STEEL HEX LOCK NUT AND 1/16" STAINLESS STEEL WASHERS (BOTH SIDES). LOOSEN LOCK NUT, ADJUST BRACKET TEETH TO LEVEL SIGN.

⑭ 1¼" X 1¼" X ⅛" ALUMINUM ANGLE

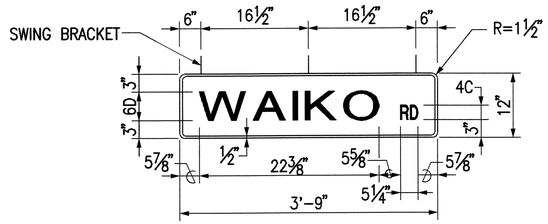


ADJUSTABLE LENGTH SWING SIGN BRACKET

NOTE: DIMENSIONS MAY VARY SLIGHTLY.



SIGN MOUNTING ON MAST ARM



SIGN DETAIL

NTS

NOTES:

1. SIGN DETAILS SHALL CONFORM TO THE LATEST EDITIONS OF THE FOLLOWING FHWA PUBLICATIONS: "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", AND "STANDARD HIGHWAY SIGNS", AND AS AMENDED.

ORIGINAL PLAN | SURVEY PLOTTED BY ____ DATE ____ | DRAWN BY ____ | TRACED BY ____ | DESIGNED BY ____ | NOTE BOOK ____ | QUANTITIES BY ____ | No. ____ | CHECKED BY ____

J:/Kuihelani/Traffic/Ts-det5.dwg

RANDALL M. URASAKI LICENSED PROFESSIONAL ENGINEER No. 7269-C HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

9/1/01

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL SIGN BRACKET DETAILS

KUIHELANI HIGHWAY WIDENING
HONOAPIILANI HIGHWAY TO PUUNENE AVENUE
FEDERAL-AID PROJECT NO. NH-0380(9)

Scale: NONE Date: Sept. 14, 2001

SHEET No. TS11 OF 11 SHEETS