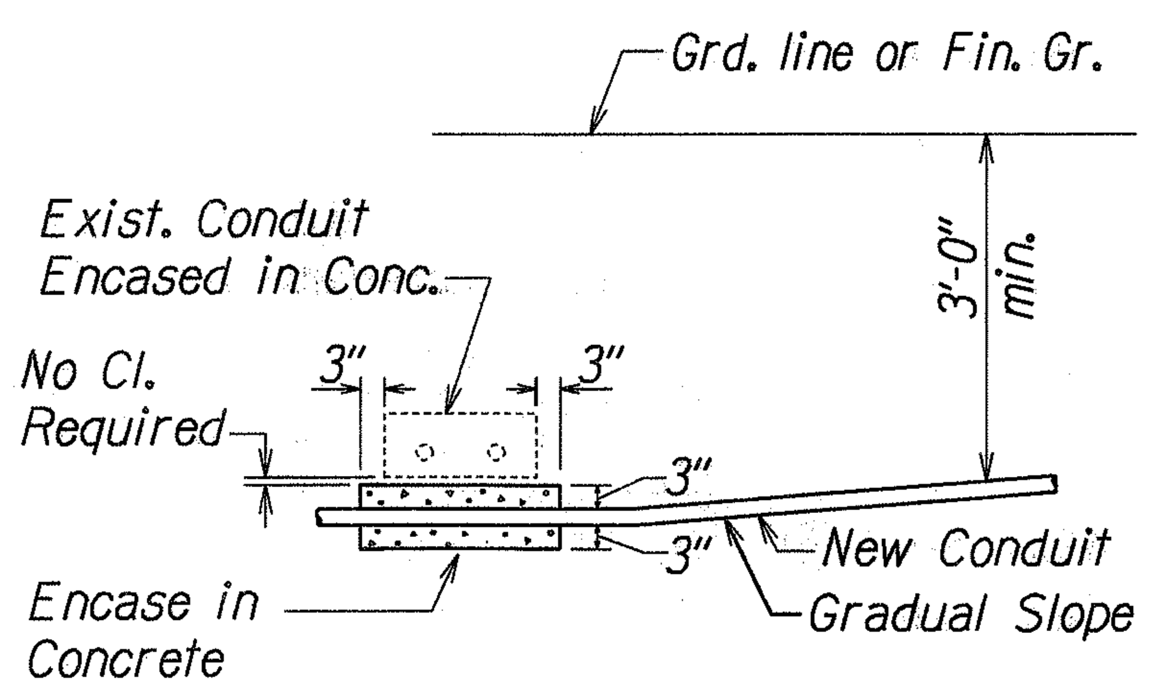
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(39)	1996	51	70

TRAFFIC SIGNAL LEGEND

- Existing Traffic Signal Controller
- New Traffic Signal Controller
- New Traffic Signal Conduits & Cables
- New 12" RYG Traffic Signal Head
- New 12" RY↑ Traffic Signal Head
- New 12" RY← Traffic Signal Head
- New Type III Traffic Signal Standard (Mast Arm Length, Highway Lighting Bracket Arm Length, Signal Heads with Spacing as specified.)
- New Type I Traffic Signal Standard (Height-10') Signal Heads as specified
- New Pedestrain Signal Head
- New Type B Pullbox
- New Type C Pullbox (C&C Type) (For Details, See Sht. No. T10)
- New Type D Pullbox (C&C Type) (For Details, See Sht. No. T10)
- New Loop Detectors
- New Opticom Receiver
- New Pipe Guard
- Existing Lighting Standard
- lspb Existing Lighting Standard Pullbox
- tspb Existing Traffic Signal Pullbox to Remain
- tsp Existing Traffic Signal Standard
- vd Existing Vehicle Detector



CONDUIT BY-PASS DETAIL

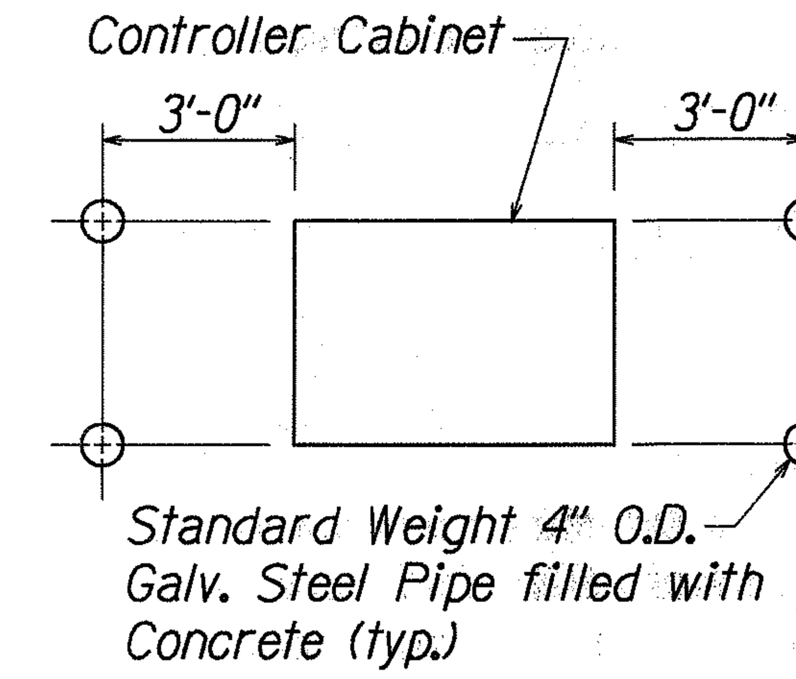
Not to Scale

*To be determined by County Electrical Inspector/Engineer

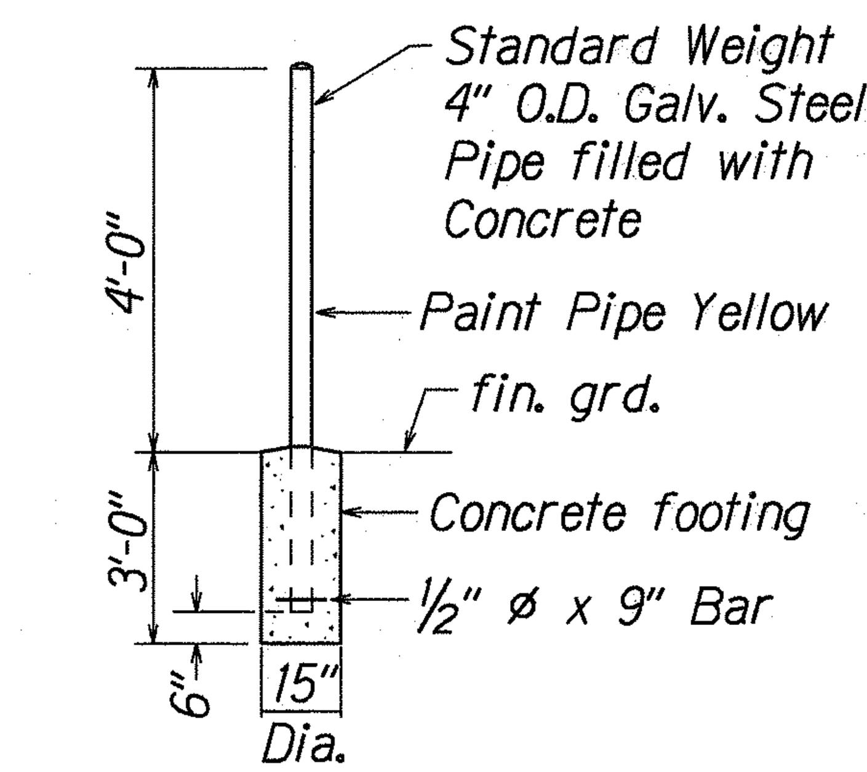
TRAFFIC SIGNAL NOTES

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 notified¼ 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. The Contractor shall notify the Traffic Signal Branch, Department of Transportation Services, City & County of Honolulu, (phone no. 527-5007) two weeks prior to commencing any work on the traffic signal system.
11. 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 Maintenance Services Division, Department of Transportation Services, three (3) working days prior to commencing work on the traffic signal system (phone no. 527-5007).
12. Installation of the Opticom Receiver shall conform in accordance with the Standard Details of the Department of Transportation Services, City & County of Honolulu, Electrical and Maintenance Services Division, and all subsequent amendments and additions.
13. The concrete jacket for the Conduit By-Pass Details shown on this sheet, shall not be paid for separately but considered incidental to the various contract items. The Engineer shall determine if a concrete jacket is required.
14. The Contractor shall remove and dispose of all existing traffic signal controller , traffic signal pullboxes, traffic signal standards, foundations and other existing traffic signal equipment not incorporated in the final traffic signal plan or as directed by the Engineers. The cost for removing & disposing shall not be paid for separately but considered incidental to the various contract items.
15. The Contractor shall keep the existing traffic signal system operational until the new system becomes operational.

NOTE:
Cost of the conc. filled galvanized pipe guard shall be incidental to other items of work.



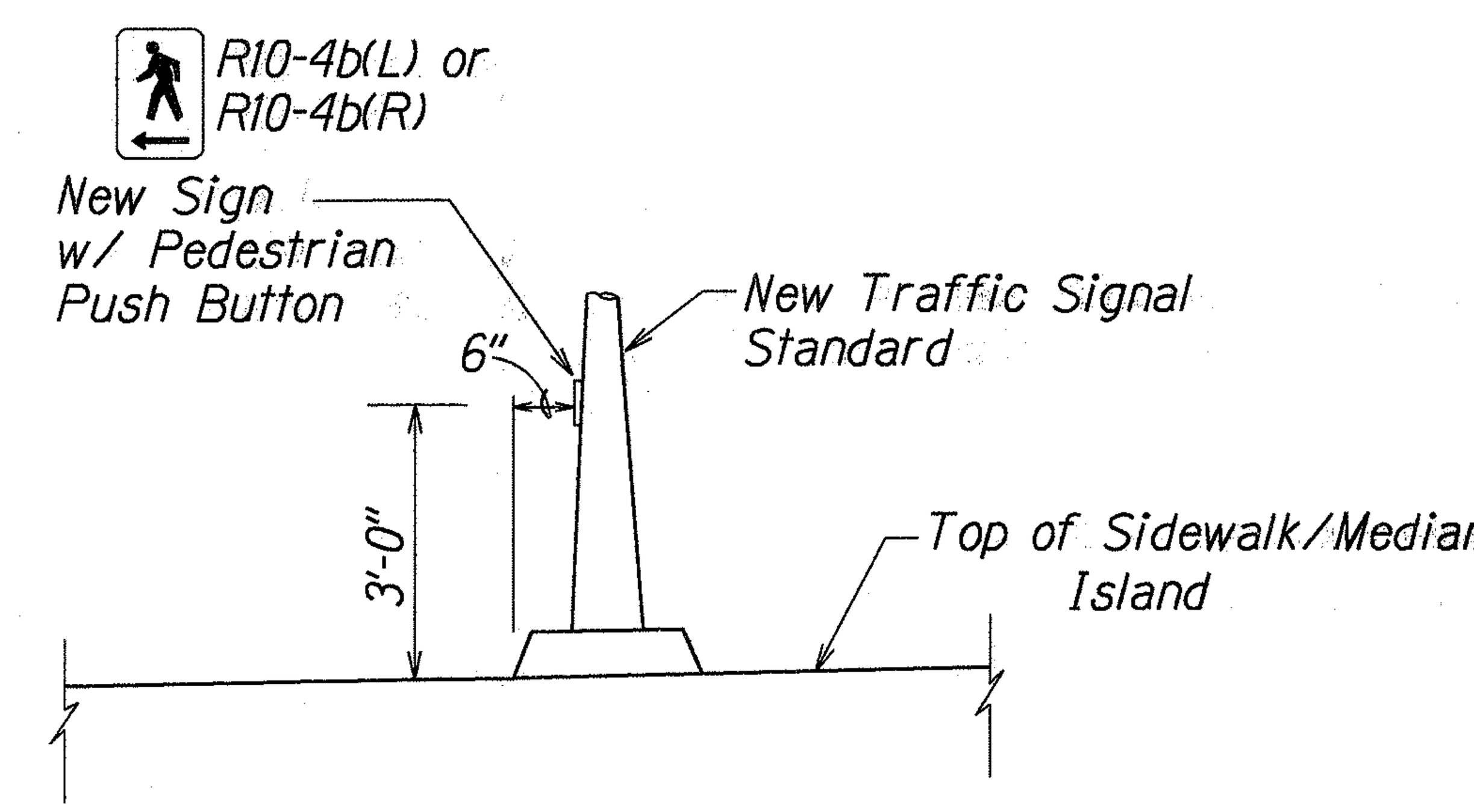
PLAN



TYP. ELEVATION

PIPE GUARD DETAIL

Not to Scale



TYPICAL SIGN W/PEDESTRIAN PUSH BUTTON

Not to Scale

ORIGINAL PLAN | SURVEY | PLOTTED BY | DRAWN BY M. Takafuji | TRACED BY | DESIGNED BY G. Abe | QUANTITIES BY | CHECKED BY | NOTE BOOK | DATE 2/8/96

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL LEGEND, DETAILS & NOTES

ULUNE STREET IMPROVEMENTS
Halawa Hts. Rd. to Halawa Valley Rd. &
HALAWA VALLEY RD. IMPROVEMENTS
Ulune Street to Iwaiwa Street
F.A. Project No. STP-0300(39)

Not to Scale — Date: Apr., 1996

SHEET No. T8 OF 19 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(39)	1996	C.O. 52	70

TRAFFIC SIGNAL HEAD SCHEDULE

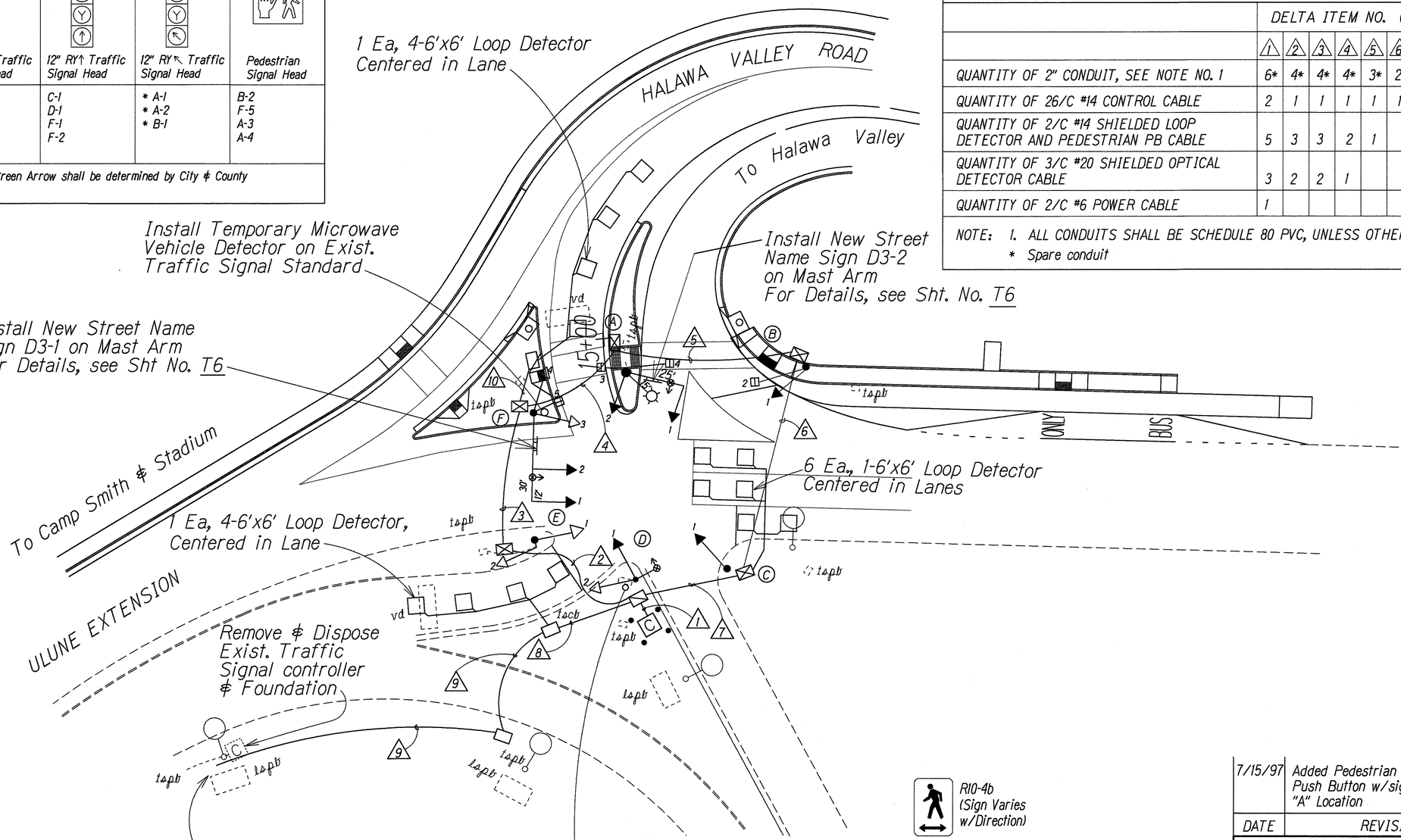
Traffic Signal Head Type and Description	12" RYG Traffic Signal Head	12" RY↑ Traffic Signal Head	12" RY↖ Traffic Signal Head	Pedestrian Signal Head
Pole Letter Signal Head Number	D-2 E-1 E-2 F-3 F-4	C-1 D-1 F-1 F-2	* A-1 * A-2 * B-1	B-2 F-5 A-3 A-4

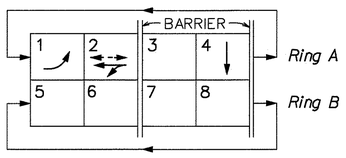
* Correct Orientation of Green Arrow shall be determined by City & County engineer/inspector.

TRAFFIC SIGNAL SYSTEM CONDUIT AND CABLE SCHEDULE

	DELTA ITEM NO. (△)									
	△1	△2	△3	△4	△5	△6	△7	△8	△9	△10
QUANTITY OF 2" CONDUIT, SEE NOTE NO. 1	6*	4*	4*	4*	3*	2*	3*	3*	2*	1
QUANTITY OF 26/C #14 CONTROL CABLE	2	1	1	1	1	1	1			
QUANTITY OF 2/C #14 SHIELDED LOOP DETECTOR AND PEDESTRIAN PB CABLE	5	3	3	2	1		1	1		1
QUANTITY OF 3/C #20 SHIELDED OPTICAL DETECTOR CABLE	3	2	2	1						
QUANTITY OF 2/C #6 POWER CABLE	1							1	1	

NOTE: 1. ALL CONDUITS SHALL BE SCHEDULE 80 PVC, UNLESS OTHERWISE NOTED.
* Spare conduit





PHASE DIAGRAM

R10-4b (Sign Varies w/Direction)

(B) (←) R10-4b(L)
(F) (←) R10-4b(L)
(A) (↔) R10-4b(L&R)

PEDESTRIAN PUSH BUTTON W/SIGN (NEW)

DATE	REVISION
7/15/97	Added Pedestrian Signal Heads and Push Button w/sign at Signal Post "A" Location

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PLAN

ULUNE STREET IMPROVEMENTS
Halawa Hts. Rd. to Halawa Valley Rd. &
HALAWA VALLEY RD. IMPROVEMENTS
Ulune Street to Iwaiwa Street
F.A. Project No. STP-0300(39)

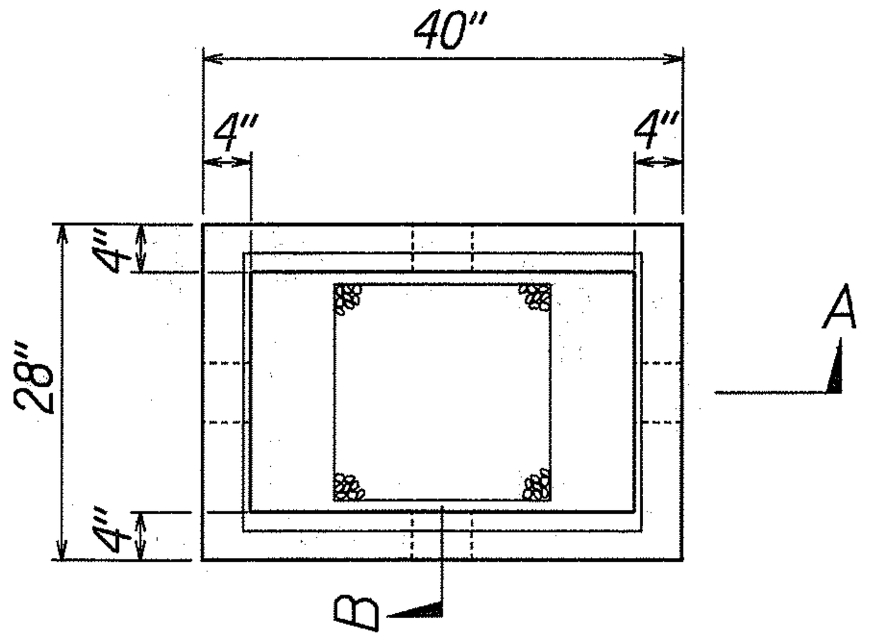
Scale: 1"=20' Date: Apr., 1996

SHEET No. T9 OF 19 SHEETS

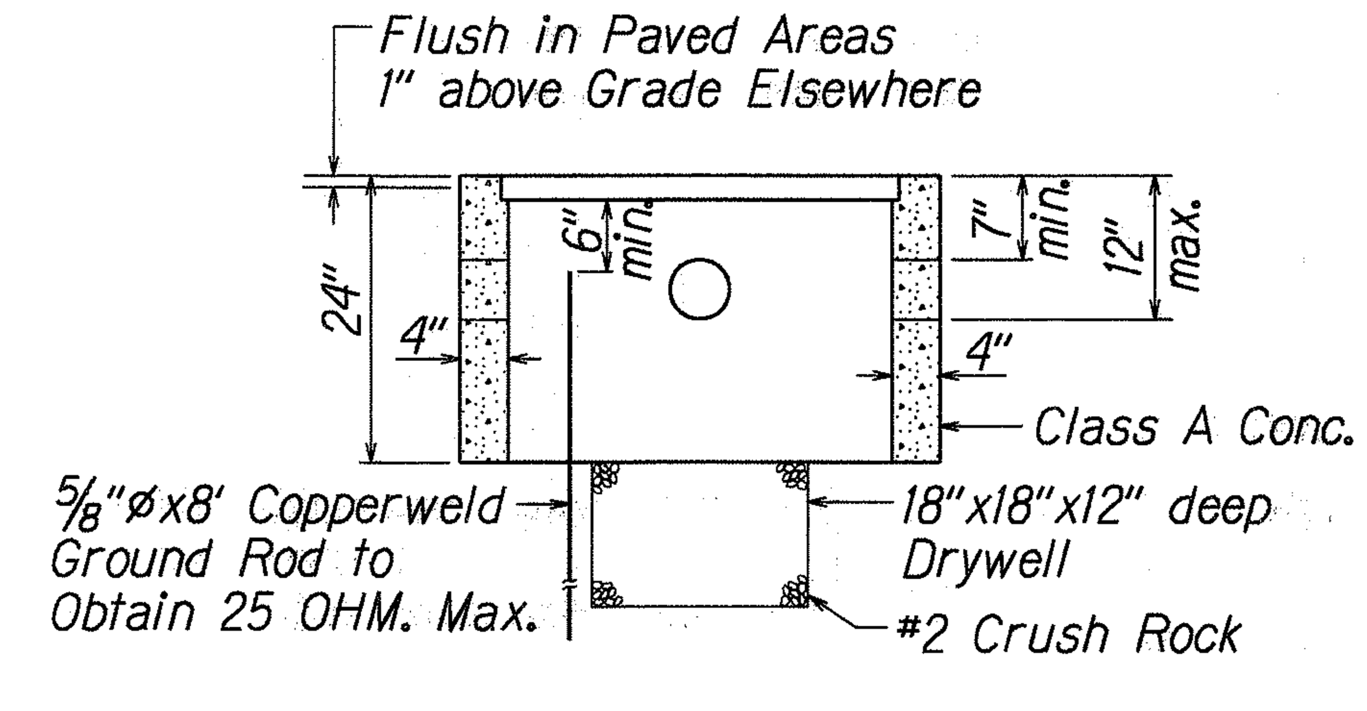
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 2/9/96
	DRAWN BY M. Takahiji	
NOTE BOOK td2.mdy	TRACED BY C. Abe	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

C.O. 52

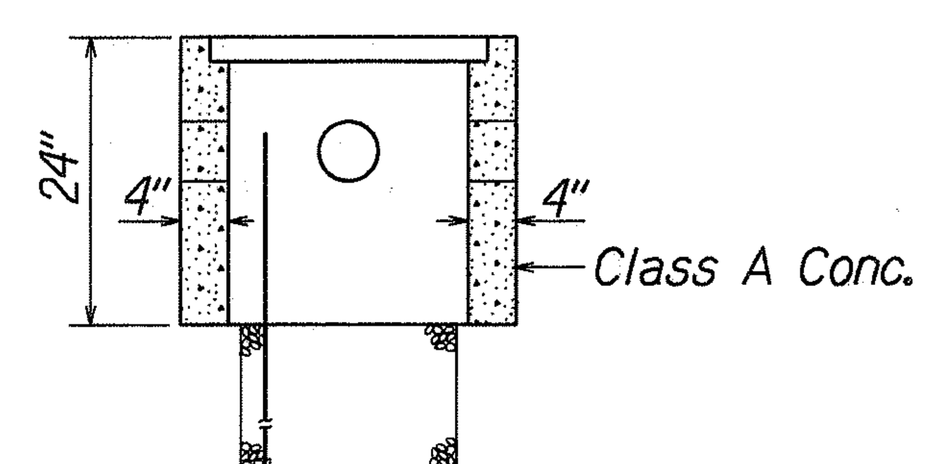
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(39)	1996	53	70



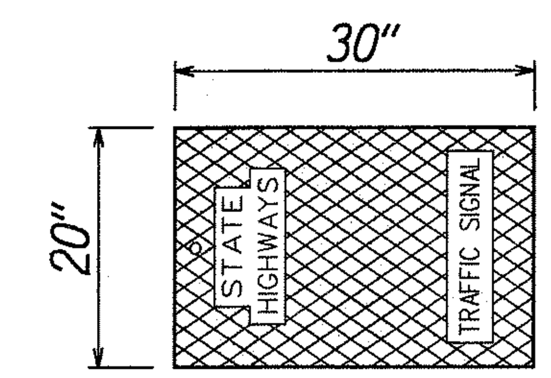
PLAN OF PULLBOX



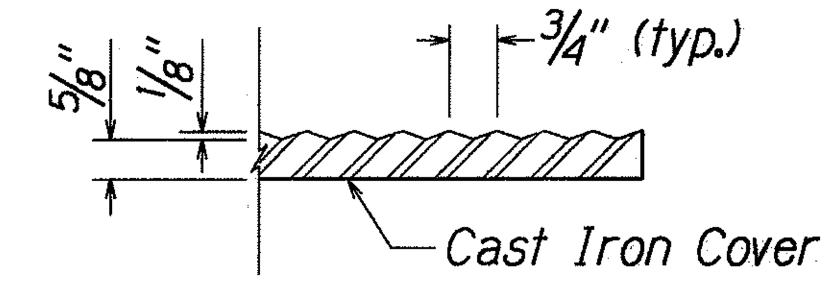
SECTION A-A



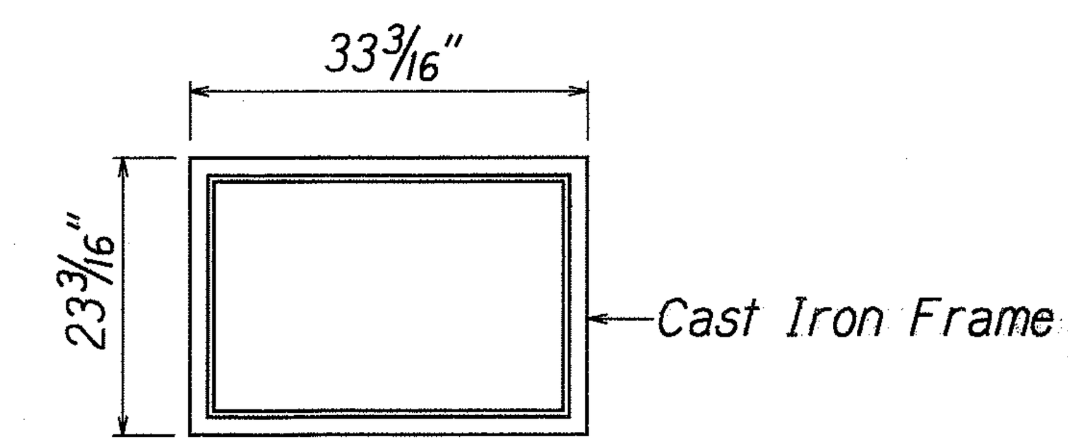
SECTION B-B



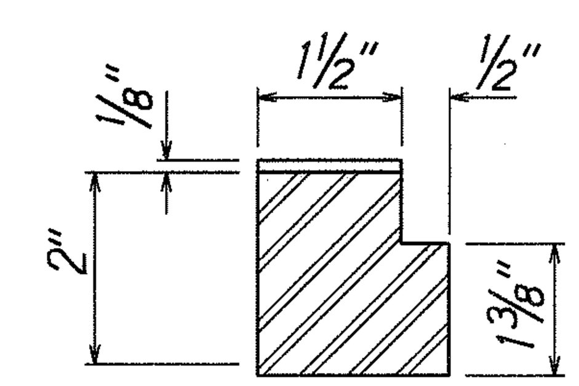
PLAN OF COVER



SECTION THROUGH COVER



PLAN OF FRAME

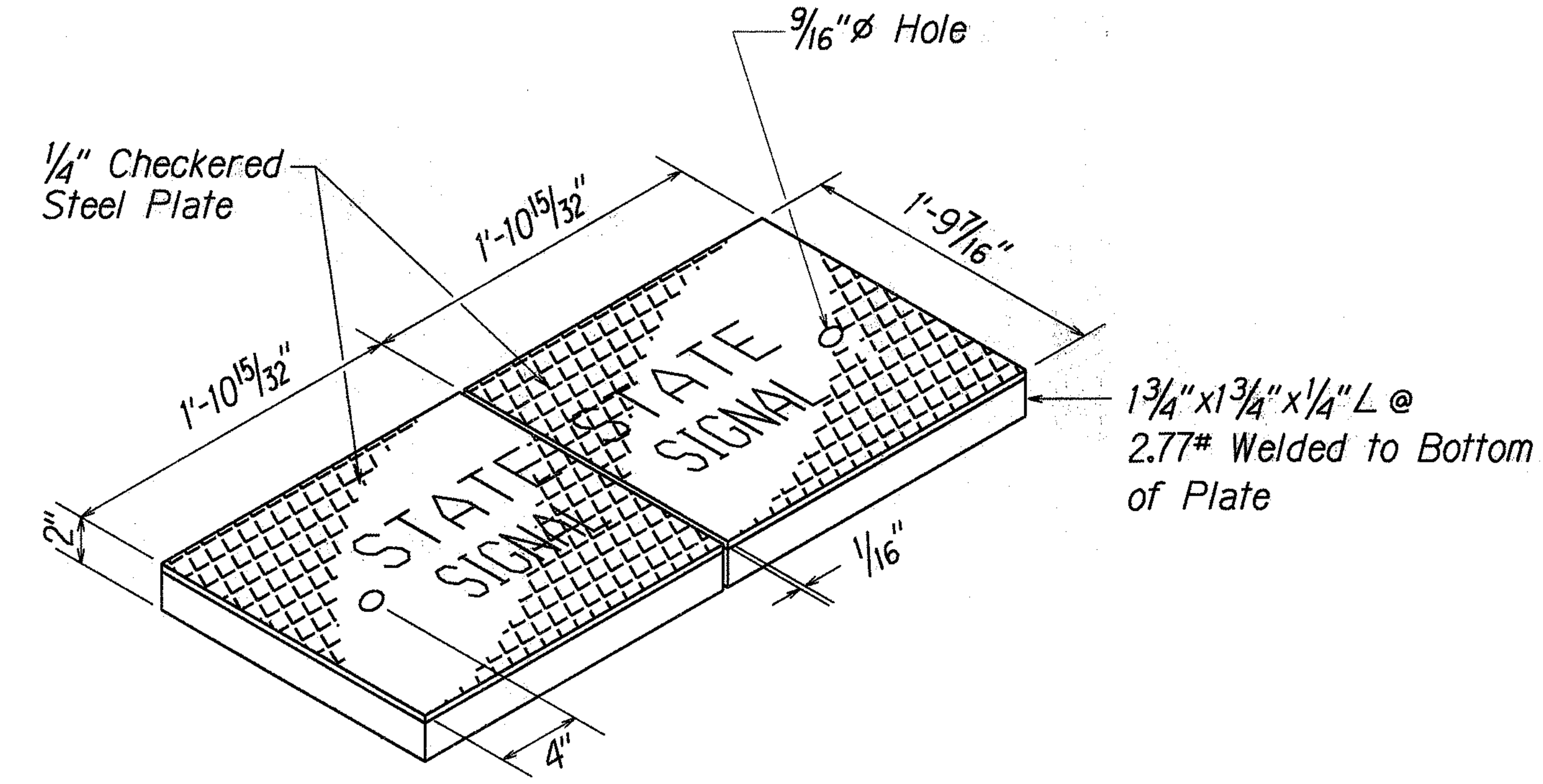


SECTION THROUGH FRAME

Note: Provide Ground Rod in all Pullboxes adjacent to Standards, Pedestals, Controllers, and other locations specified by the Engineer.

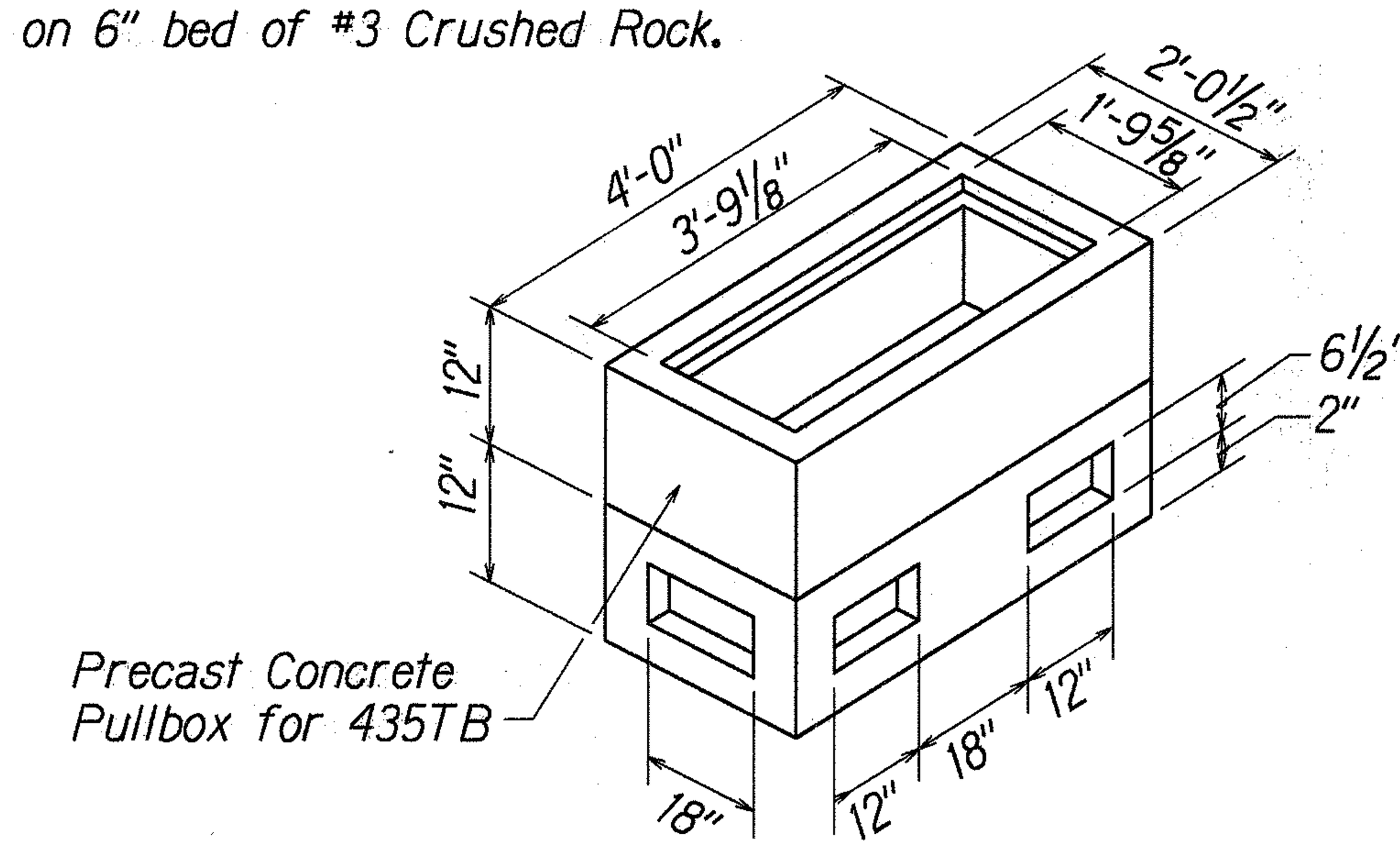
TYPE "C" PULLBOX (Traffic Sginal)

Not to Scale



NOTES:

1. After fabrication of covers, Galvanize or apply 2 coats of ZRC (Zinc Rich Coating) to both sides.
2. Install on 6" bed of #3 Crushed Rock.



TYPE "D" PULLBOX (Traffic Signal)

Not to Scale

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY M. Takafuji	
	TRACED BY	
	DESIGNED BY C. Abe	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PULLBOX DETAILS

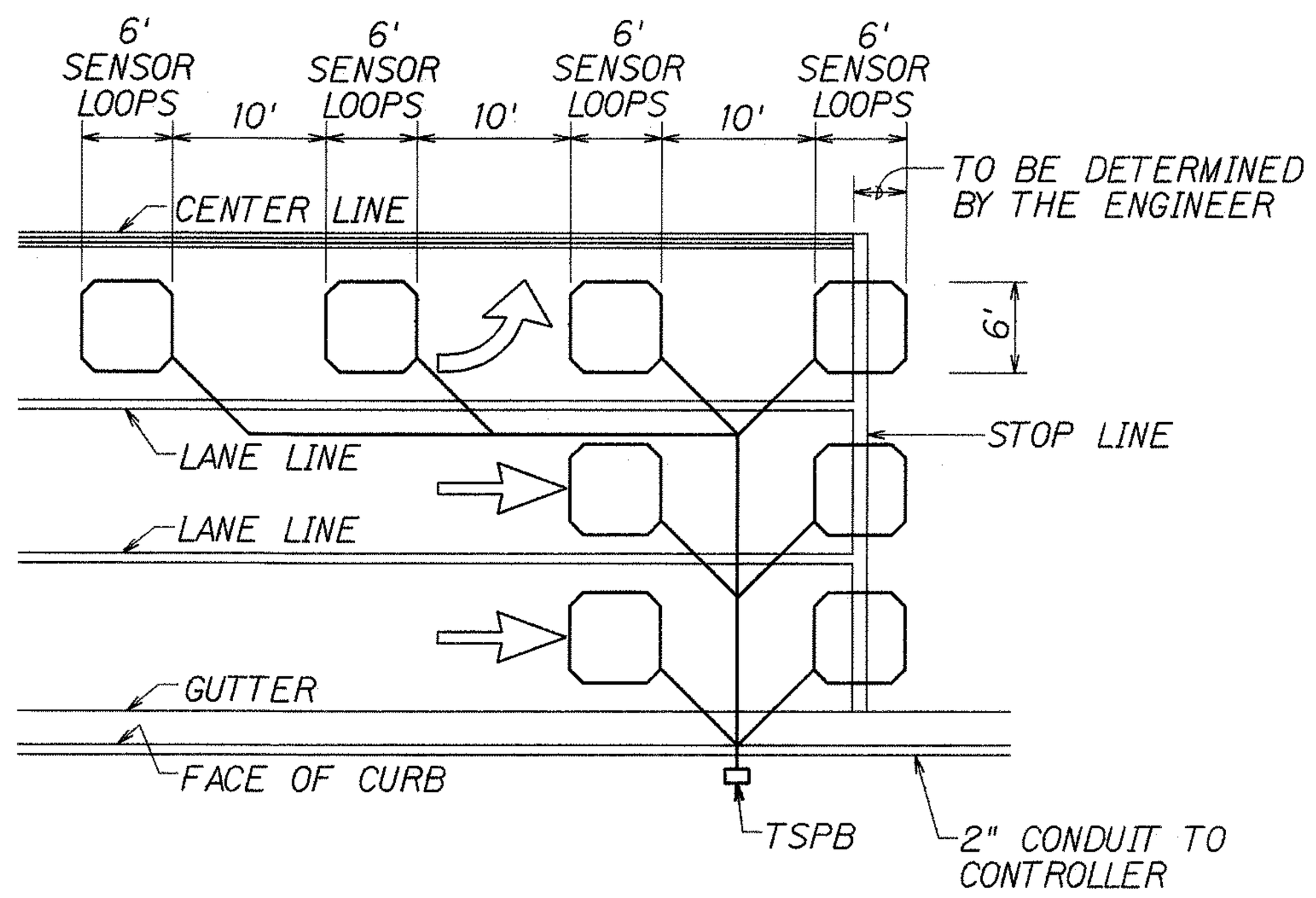
ULUNE STREET IMPROVEMENTS
Halawa Hts. Rd. to Halawa Valley Rd. ⊄
HALAWA VALLEY RD. IMPROVEMENTS
Ulune Street to Iwaiwa Street
F.A. Project No. STP-0300(39)
Not to Scale — Date: Apr., 1996

SHEET No. T10 OF 19 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(39)	1996	54	70

LEGEND FOR AS-BUILT POSTINGS

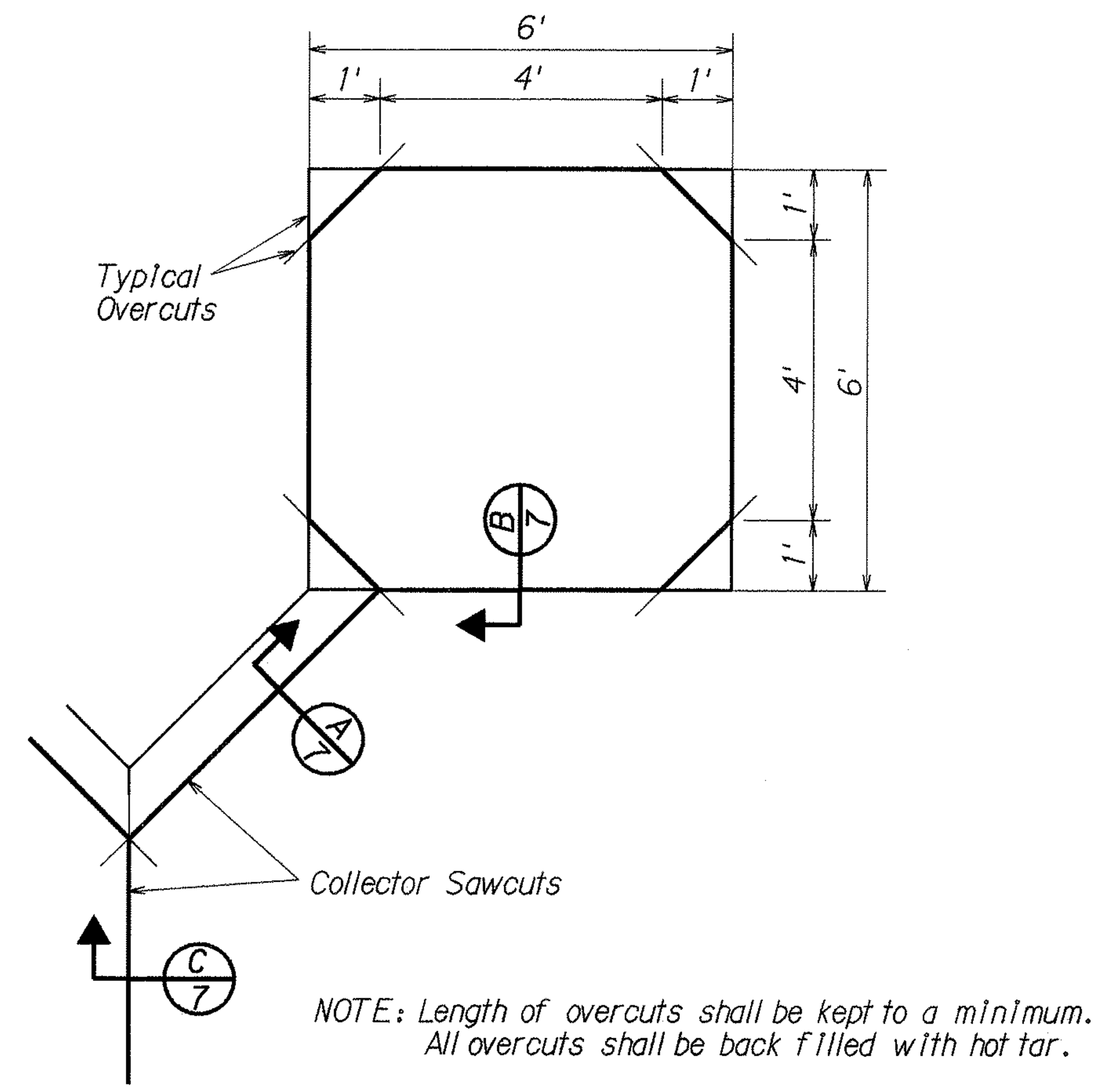
~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting



NOTES:

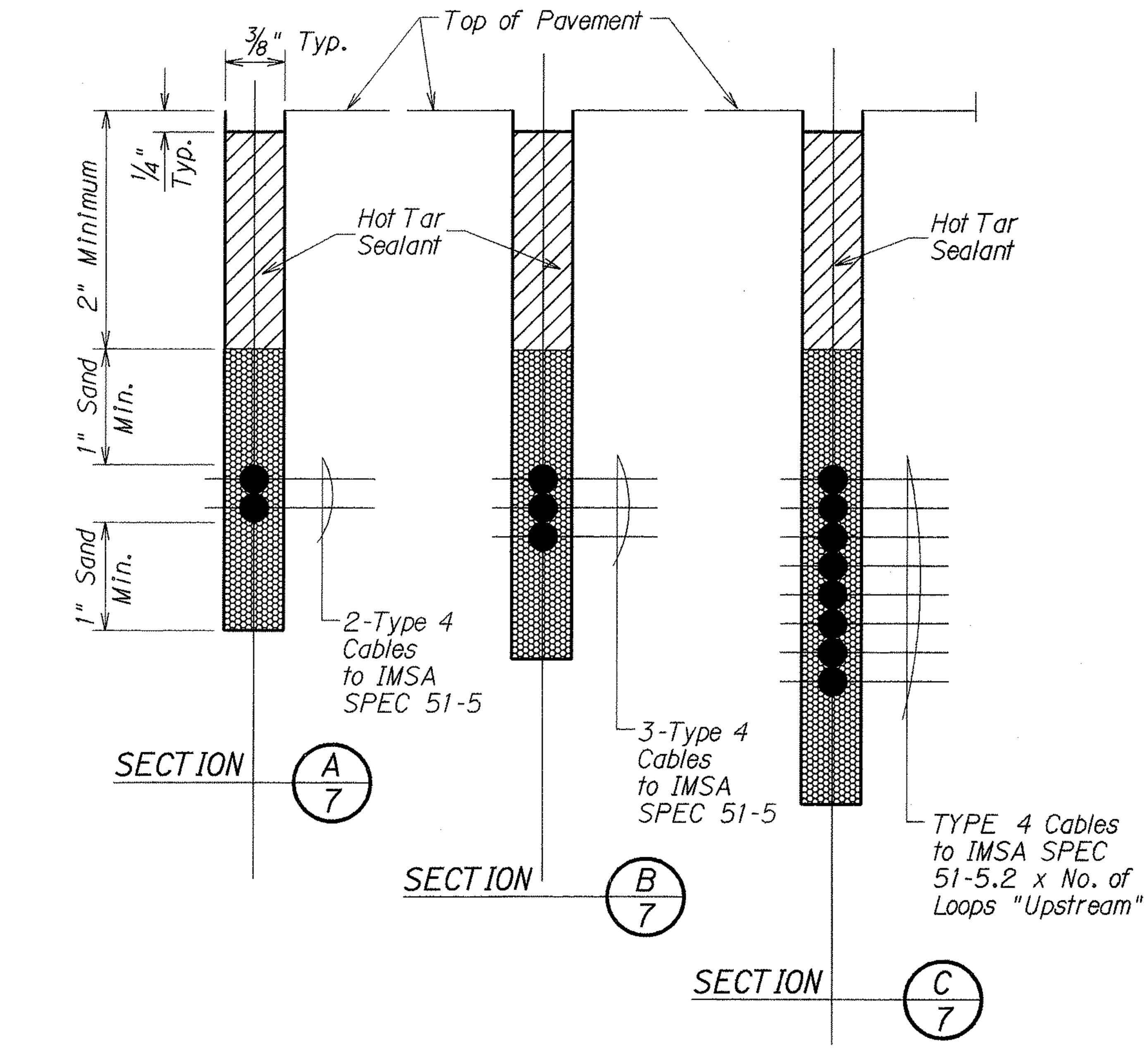
1. Center sensor loops in lanes.
2. Collector cables shall be twisted 2 turns per foot.
3. Number of loops and locations vary. See project plans.
4. Number and locations of collector sawcuts may be varied in the field to suit.

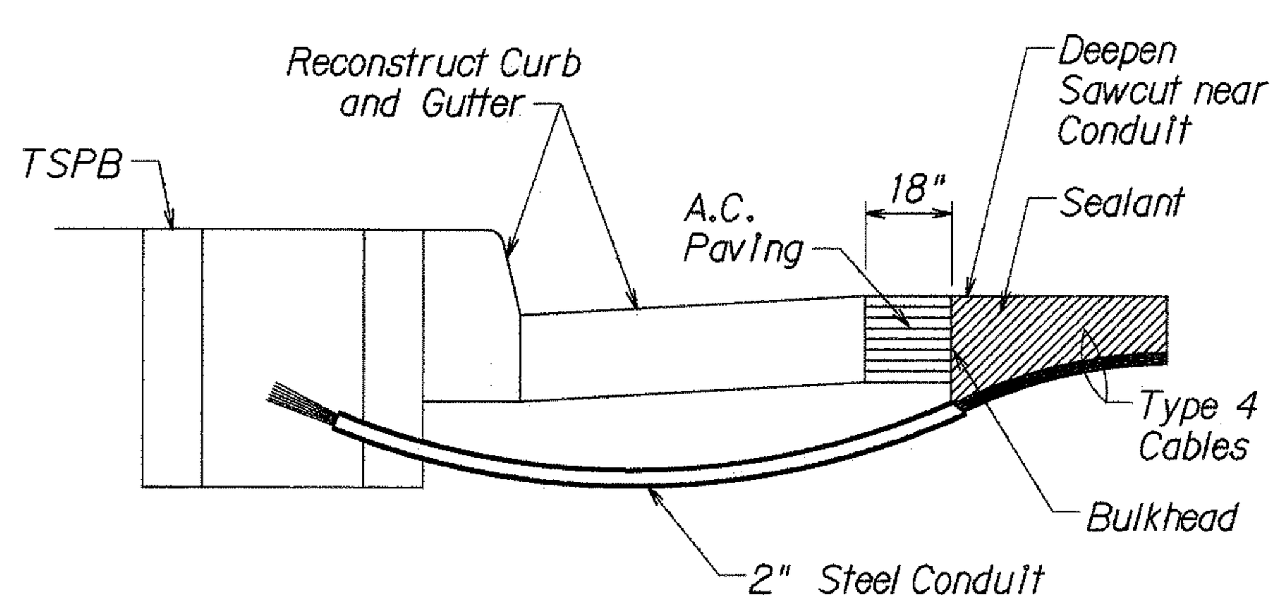
TYPICAL SENSOR LOOP LAYOUT



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

TYPICAL SENSOR LOOP SAWCUT DETAIL

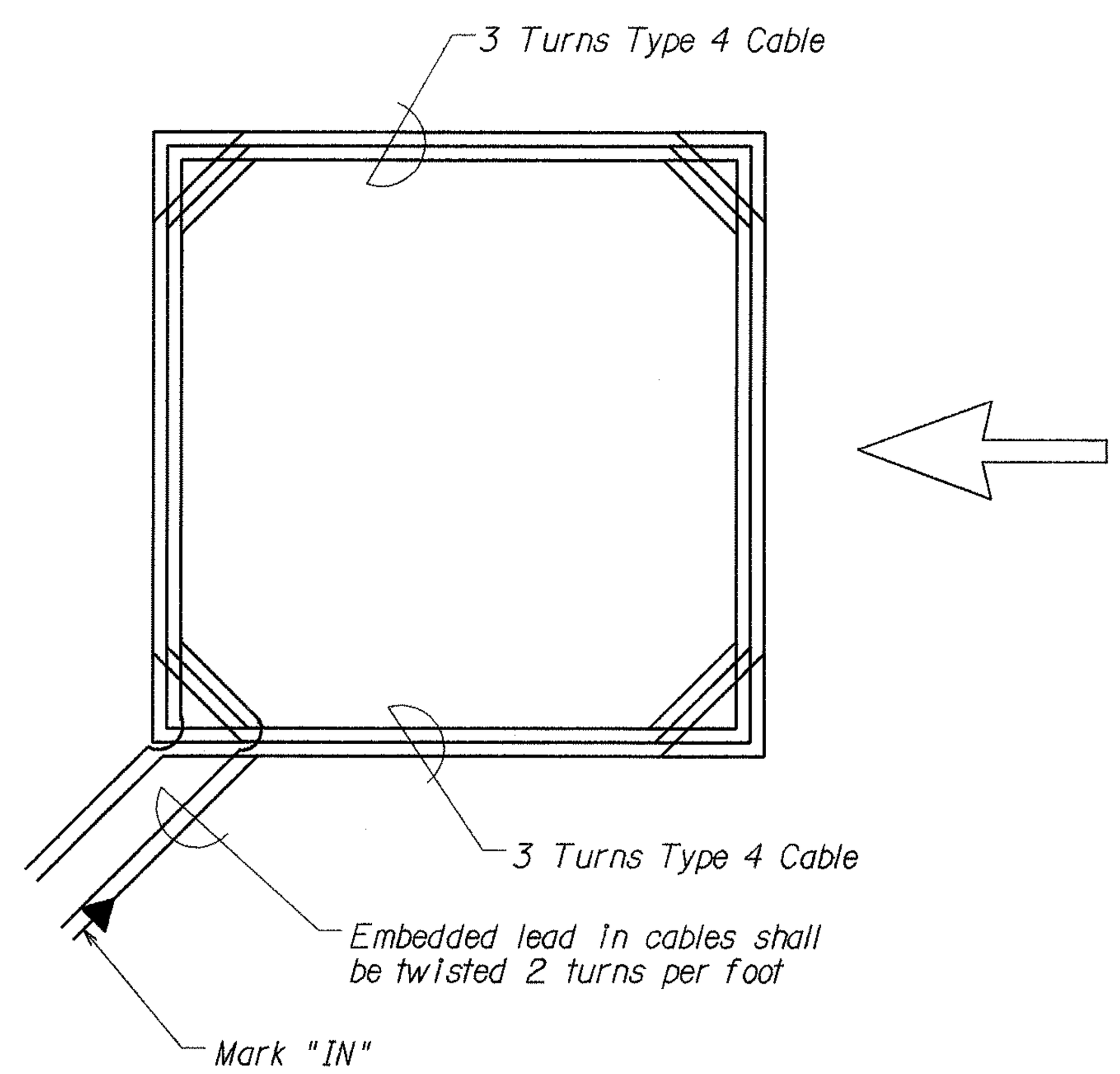




NOTES ON CONSTRUCTION AT END OF SAWCUT

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

NOTE:

REFER TO TE-40 OF THE STATE HIGHWAYS STANDARD PLANS FOR TYPICAL TRENCH SECTION FOR CONDUIT DETAIL.

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, 2 Conductors
TYPE 3	Interconnect Cable: Solid No. 20, 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, Single Conductor
TYPE 6	Service Cable: Solid, No. 6, 3 Conductors

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR DETAILS

ULUNE STREET IMPROVEMENTS
Halawa Hts. Rd. to Halawa Valley Rd. ¢

HALAWA VALLEY RD. IMPROVEMENTS
Ulune Street to Iwaiwa Street

F.A. Project No. STP-0300(39)

Not to Scale — Date: Apr., 1996

SHEET No. T11 OF 19 SHEETS

ORIGINAL PLAN / SURVEY PLOTTED BY / DRAWN BY M. Tawata / TRACED BY / DESIGNED BY C. Abe / QUANTITIES BY / CHECKED BY / DATE 2/8/96 / NOTE BOOK 182.may / ltcrtlp.dgn

AS-BUILT 54