FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7241(002)	2012	71	81

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.
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 Control 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.

ORIGINAL PLAN — SURVEY PLOTTED BY — DRAWN BY — TRACED BY — DESIGNED BY — QUANTITIES BY — CHECKED BY — DATE — NOTE BOOK — N. Zahlseg

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

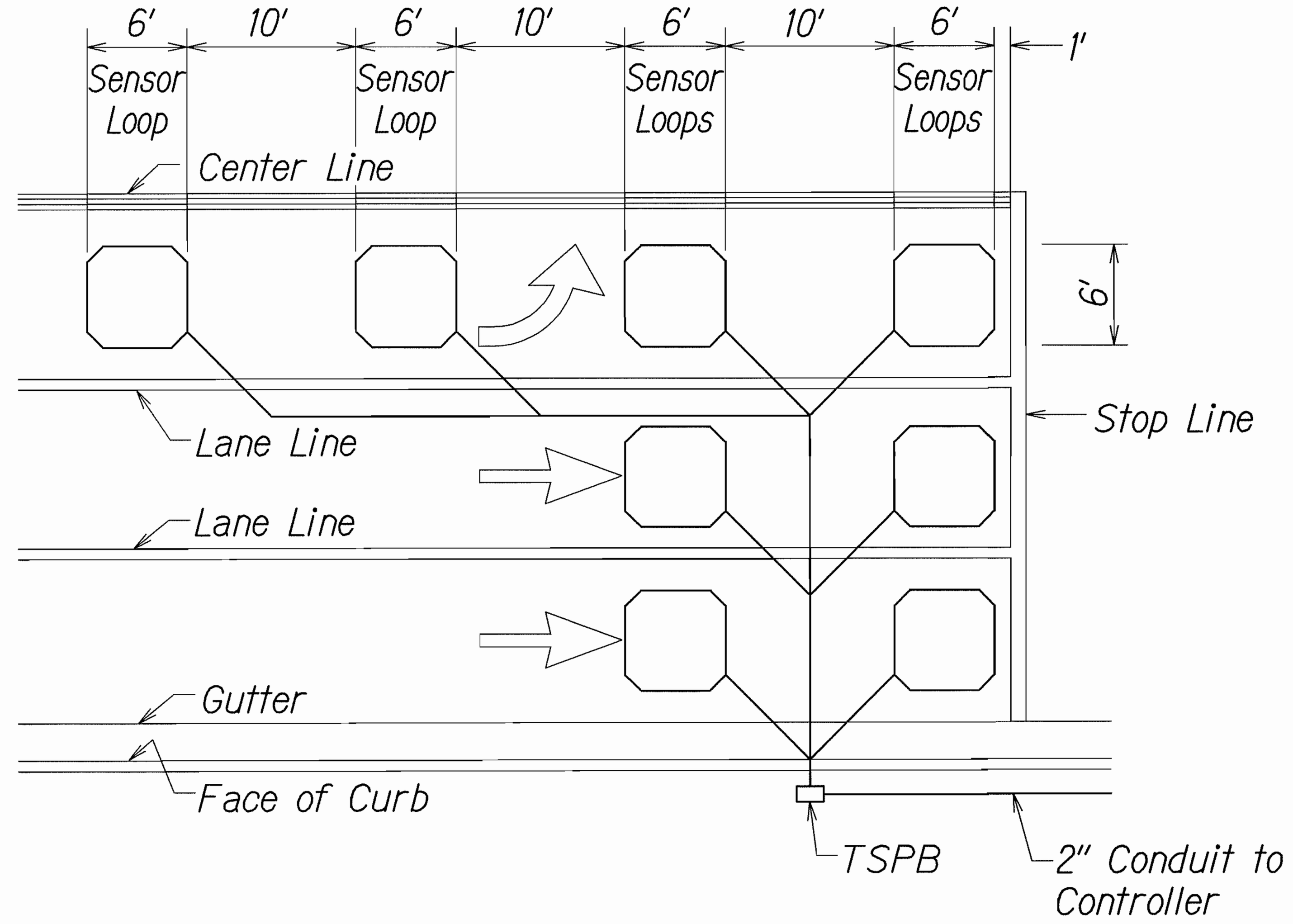
TRAFFIC SIGNAL LEGEND AND NOTES

KAHUAPAANI STREET RESURFACING
Moanalua Freeway to Salt Lake Blvd.
Federal Aid Project No. STP-7241(002)

Scale: As Noted — Date: April 2010

SHEET No. T10 OF 15 SHEETS

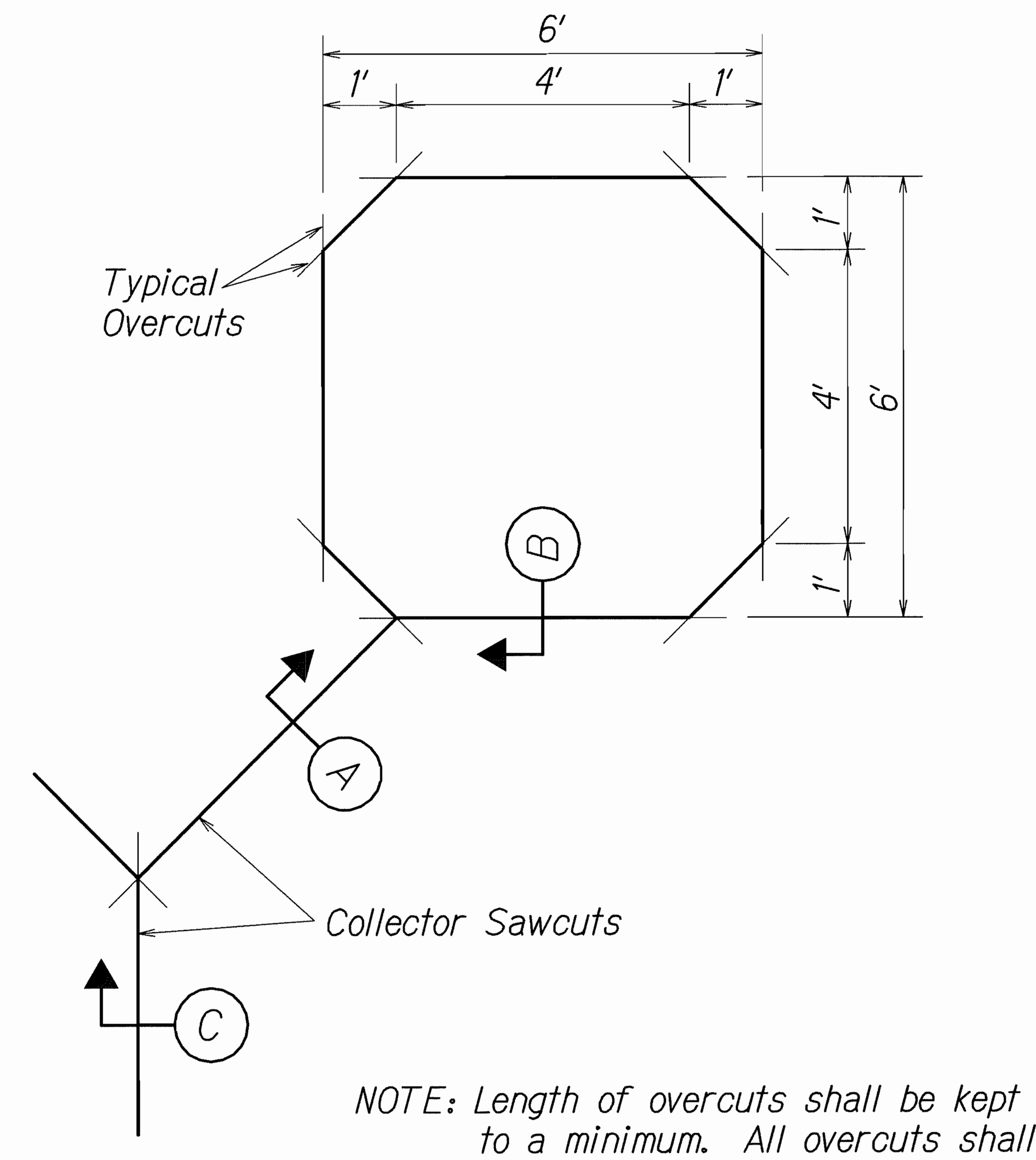
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7241(002)	2012	72	81



NOTES:

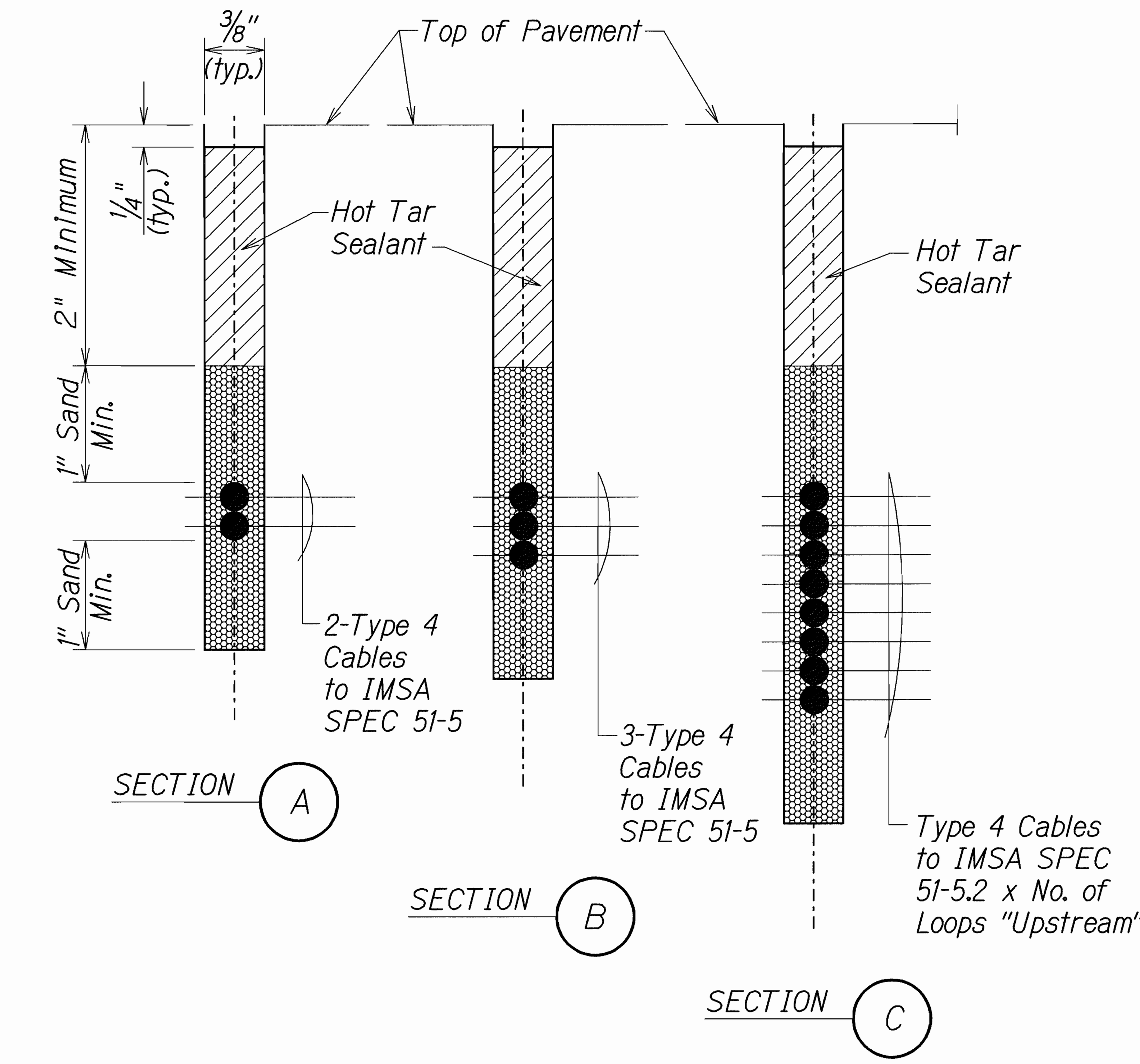
1. Center sensor loops in lanes.
2. Collector cables shall be twisted 2 turns per foot.
3. Number of loops and locations vary. See project plans.
4. Number and locations of collector sawcuts may be varied in the field to suit.

TYPICAL SENSOR LOOP LAYOUT

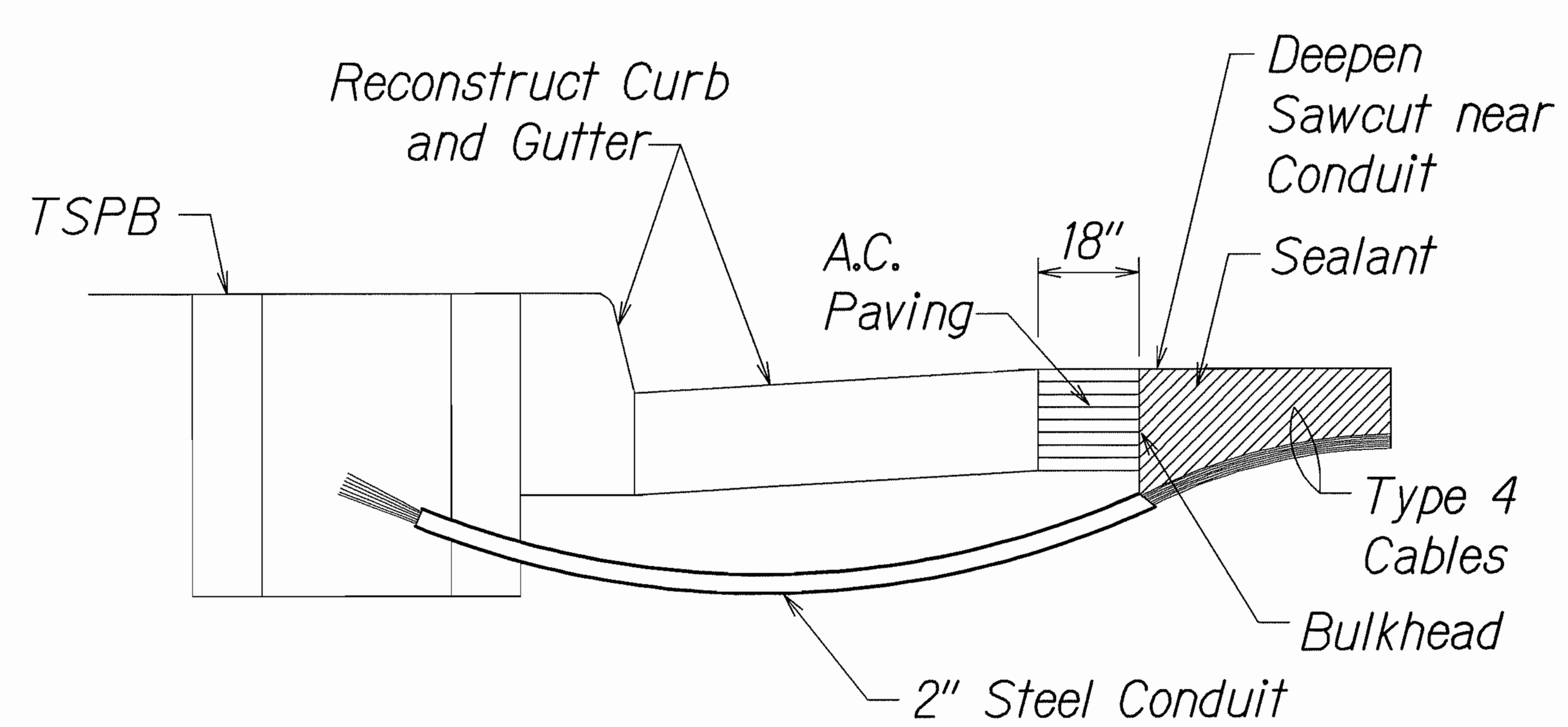


NOTE: Length of overcuts shall be kept to a minimum. All overcuts shall be back filled with hot tar.

TYPICAL SENSOR LOOP SAWCUT DETAIL



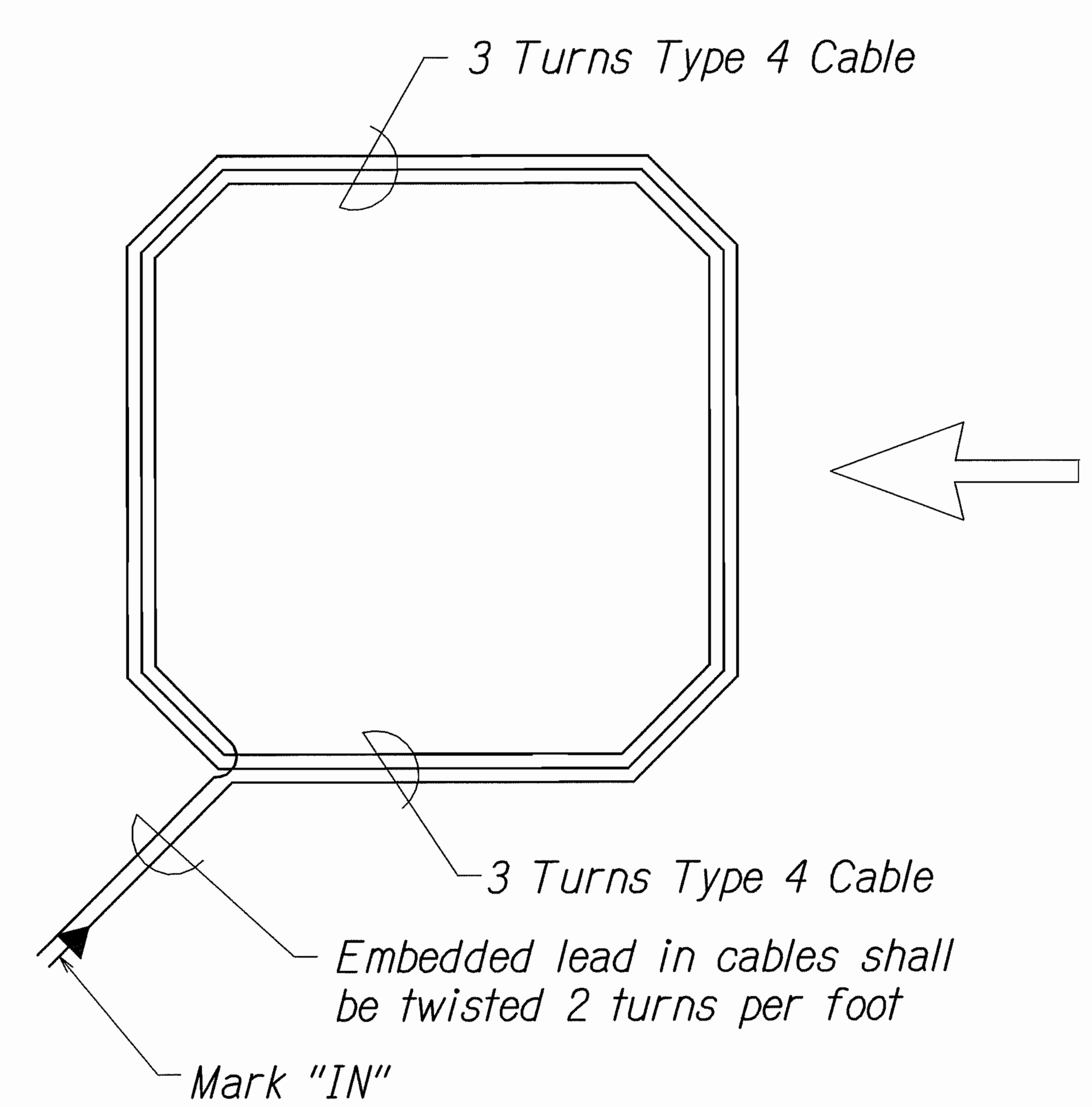
TYPICAL SECTION THROUGH SENSOR LOOP



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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR DETAILS

KAHUAPAANI STREET RESURFACING
Moanalua Freeway to Salt Lake Blvd.
Federal Aid Project No. STP-7241(002)

Not to Scale   Date: April 2010

SHEET No. T11 OF 15 SHEETS

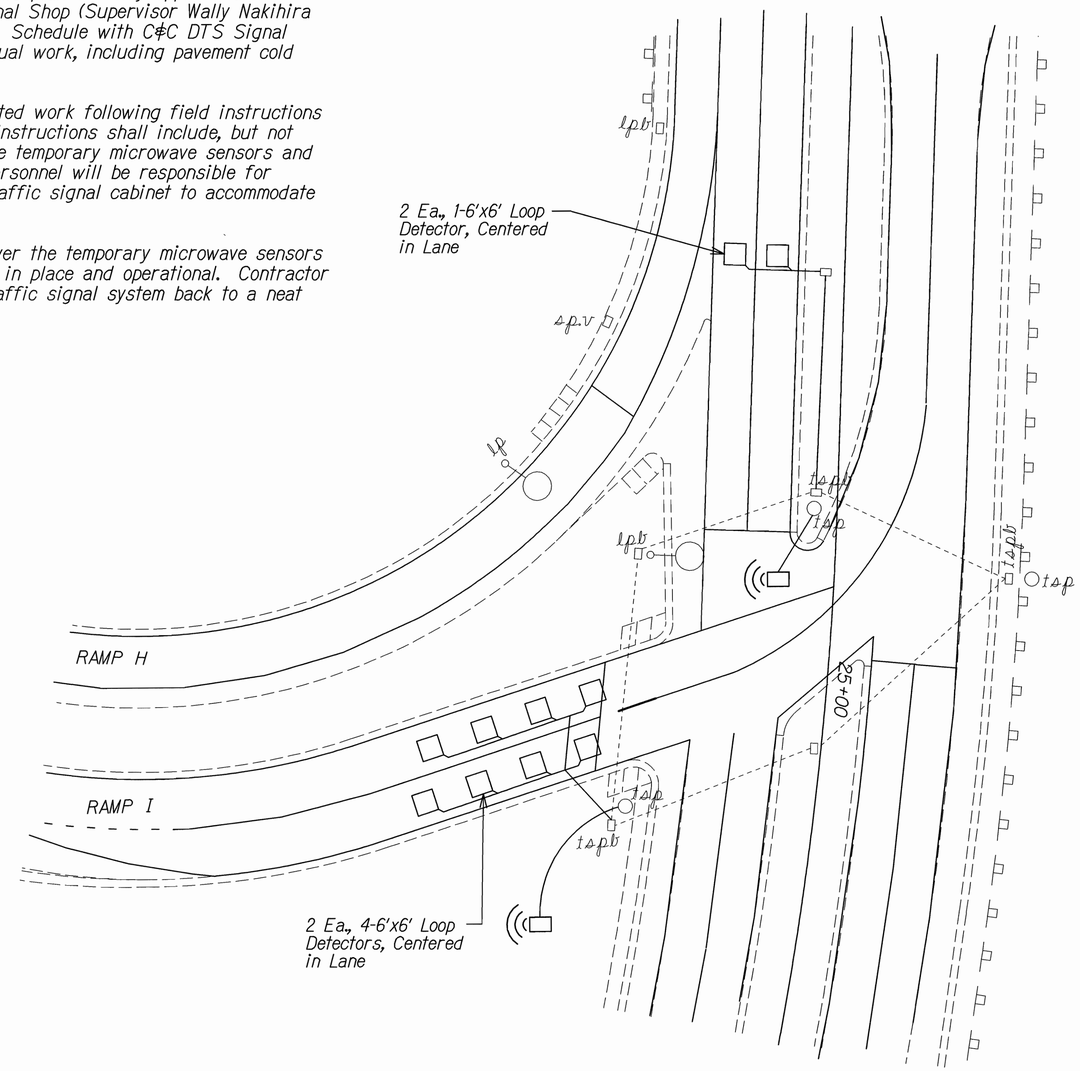
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7241(002)	2012	73	81

NOTES:

1. Loop detector location and quantity shown on this plan are only approximate. Contractor shall coordinate with C&C DTS Signal Shop (Supervisor Wally Nakihira @ 564-6101) for all traffic signal-related work. Schedule with C&C DTS Signal Shop at least two weeks in advance of the actual work, including pavement cold planing removing the existing loop detector.

2. Contractor shall perform all traffic signal-related work following field instructions from DTS Signal Shop personnel. Such field instructions shall include, but not limited to, the final location and quantity of the temporary microwave sensors and permanent detector loops. DTS Signal Shop personnel will be responsible for traffic signal controller programming at the traffic signal cabinet to accommodate the temporary and permanent operations.

3. Contractor shall promptly take down and turnover the temporary microwave sensors to DTS when the permanent detector loops are in place and operational. Contractor shall perform all necessary work to restore traffic signal system back to a neat appearance of the electrical trade.



TRAFFIC SIGNAL LEGEND:

- tsp — Existing Traffic Signal Pole
- Temporary Microwave Detector
- New Loop Detectors

ORIGINAL PLAN	SURVEY PLOTTED BY
	DRAWN BY
	TRACED BY
NOTE BOOK	DESIGNED BY
	QUANTITIES BY
	CHECKED BY
	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR PLAN

KAHUAPAANI STREET RESURFACING
Moanalua Freeway to Salt Lake Blvd.
Federal Aid Project No. STP-7241(002)

Scale: 1"=20' Date: April 2010

SHEET No. T12 OF 15 SHEETS

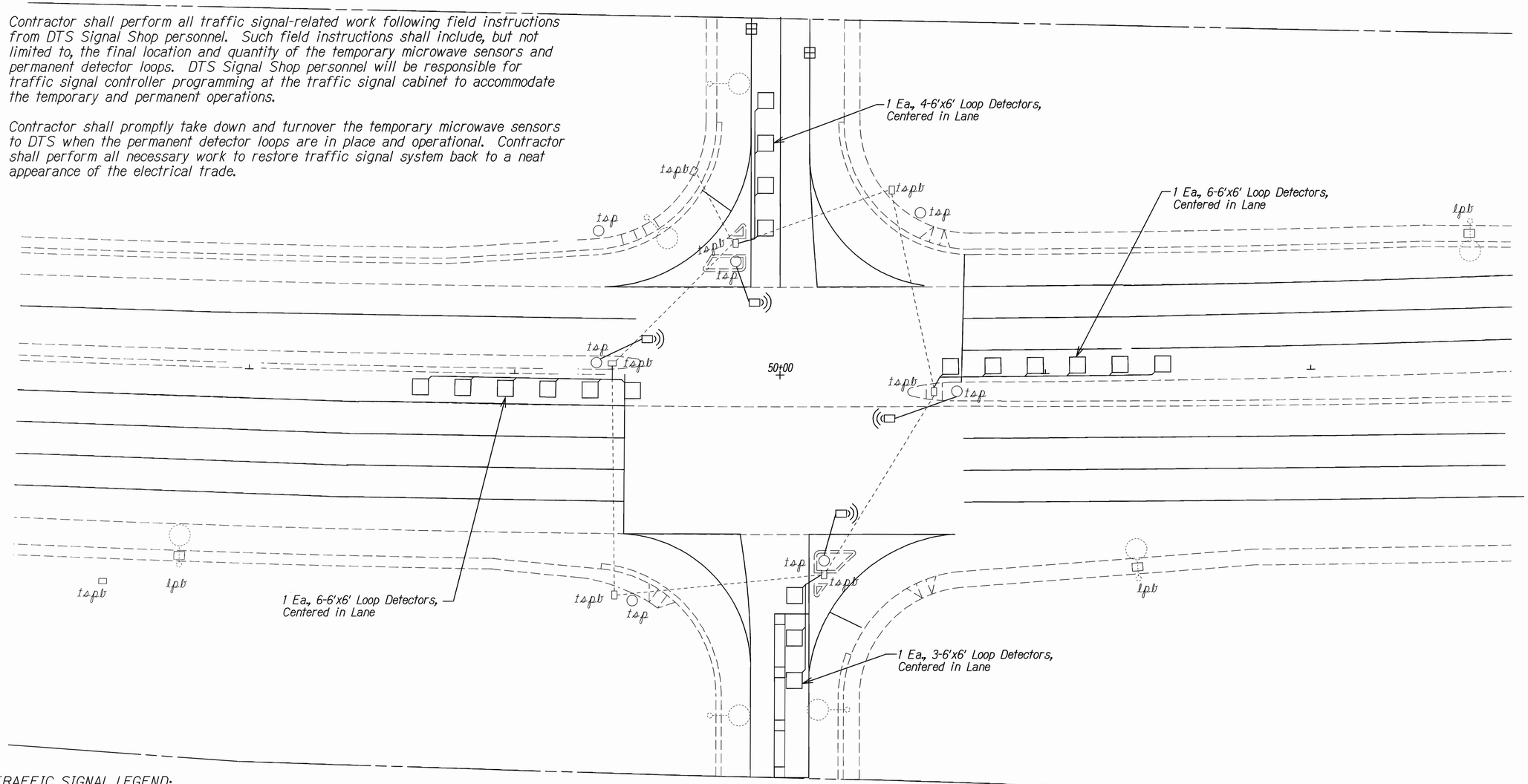
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7241(002)	2012	74	81

NOTES:

1. Loop detector location and quantity shown on this plan are only approximate. Contractor shall coordinate with C&C DTS Signal Shop (Supervisor Wally Nakihira @ 564-6101) for all traffic signal-related work. Schedule with C&C DTS Signal Shop at least two weeks in advance of the actual work, including pavement cold planing removing the existing loop detector.

2. Contractor shall perform all traffic signal-related work following field instructions from DTS Signal Shop personnel. Such field instructions shall include, but not limited to, the final location and quantity of the temporary microwave sensors and permanent detector loops. DTS Signal Shop personnel will be responsible for traffic signal controller programming at the traffic signal cabinet to accommodate the temporary and permanent operations.

3. Contractor shall promptly take down and turnover the temporary microwave sensors to DTS when the permanent detector loops are in place and operational. Contractor shall perform all necessary work to restore traffic signal system back to a neat appearance of the electrical trade.



TRAFFIC SIGNAL LEGEND:

- tsp — Existing Traffic Signal Pole
- Temporary Microwave Detector
- New Loop Detectors

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY J	
NOTE BOOK	TRACED BY	
DATE	DESIGNED BY J	
No. 2kahl0d2	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR PLAN

KAHUAPAANI STREET RESURFACING
Moanalua Freeway to Salt Lake Blvd.
Federal Aid Project No. STP-7241(002)

Scale: 1"=20' Date: April 2010

SHEET No. T13 OF 15 SHEETS

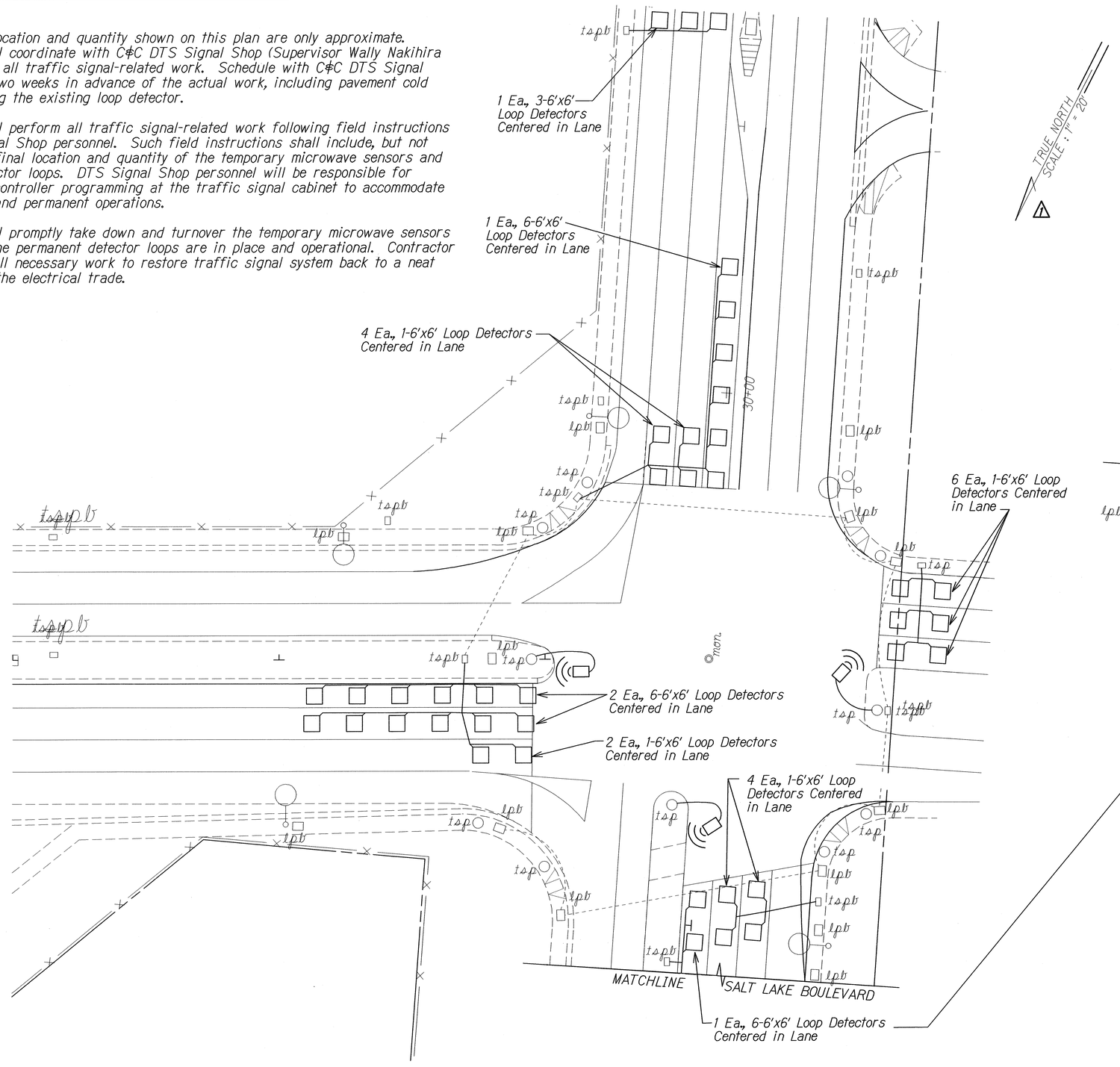
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7241(002)	2012	ADD.75	81

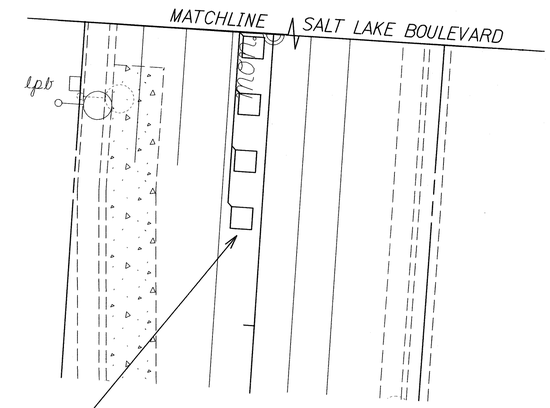
NOTES:

1. Loop detector location and quantity shown on this plan are only approximate. Contractor shall coordinate with C&C DTS Signal Shop (Supervisor Wally Nakihira @ 564-6101) for all traffic signal-related work. Schedule with C&C DTS Signal Shop at least two weeks in advance of the actual work, including pavement cold planing removing the existing loop detector.

2. Contractor shall perform all traffic signal-related work following field instructions from DTS Signal Shop personnel. Such field instructions shall include, but not limited to, the final location and quantity of the temporary microwave sensors and permanent detector loops. DTS Signal Shop personnel will be responsible for traffic signal controller programming at the traffic signal cabinet to accommodate the temporary and permanent operations.

3. Contractor shall promptly take down and turnover the temporary microwave sensors to DTS when the permanent detector loops are in place and operational. Contractor shall perform all necessary work to restore traffic signal system back to a neat appearance of the electrical trade.





TRAFFIC SIGNAL LEGEND:

- tsp — Existing Traffic Signal Pole
- Temporary Microwave Detector
- New Loop Detectors

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY X	
NOTE BOOK	TRACED BY	
	DESIGNED BY X	
	QUANTITIES BY	
	CHECKED BY	

DATE	REVISION
6/14/12	Revised Scale on North Arrow

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR PLAN

KAHUAPAANI STREET RESURFACING
Moanalua Freeway to Salt Lake Blvd.
Federal Aid Project No. STP-7241(002)

Scale: 1"=20' Date: April 2010

SHEET No. T14 OF 15 SHEETS

ADD. 75

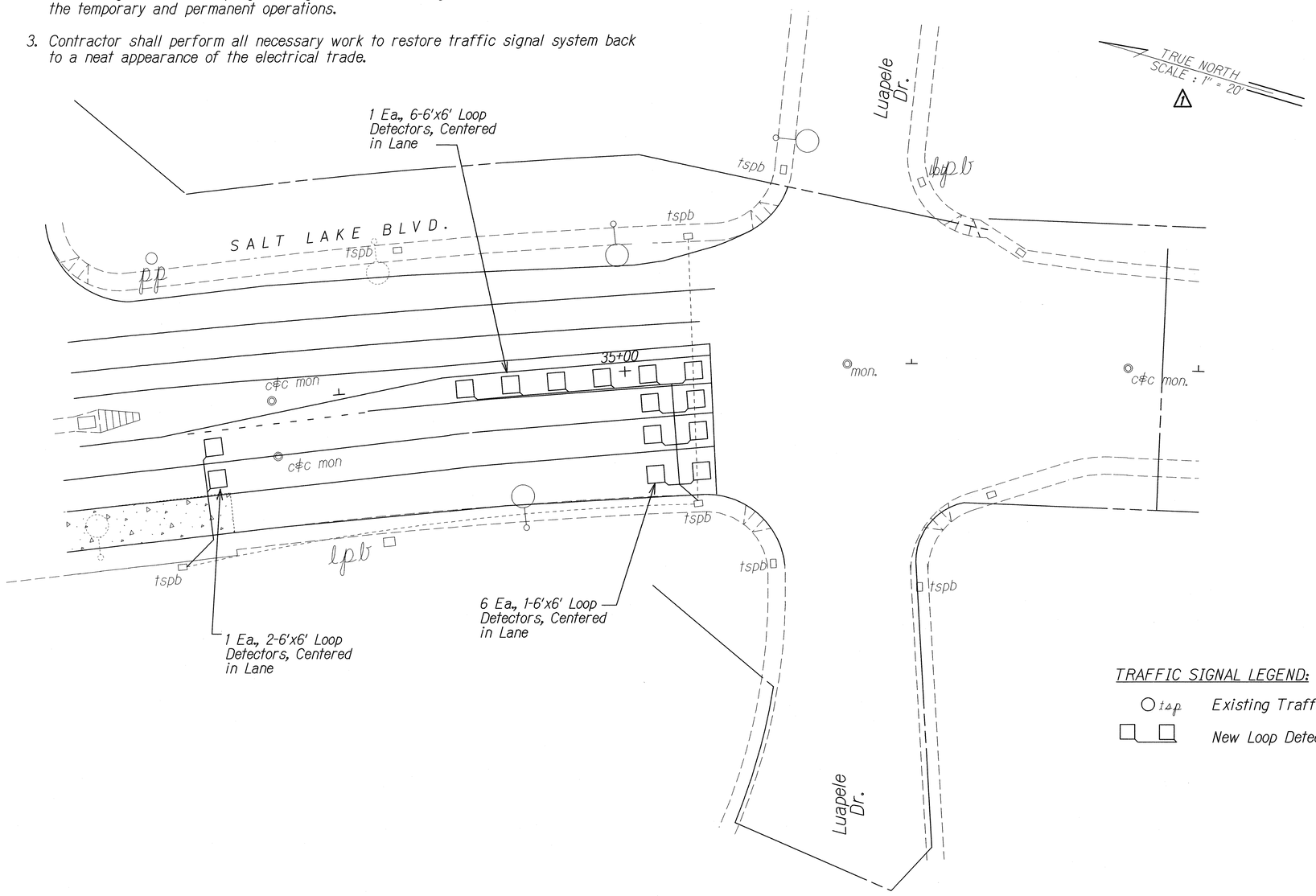
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-7241(002)	2012	ADD.76	81

NOTES:

1. Loop detector location and quantity shown on this plan are only approximate. Contractor shall coordinate with C¢C DTS Signal Shop (Supervisor Wally Nakihira @ 564-6101) for all traffic signal-related work. Schedule with C¢C DTS Signal Shop at least two weeks in advance of the actual work, including pavement cold planing removing the existing loop detector.

2. Contractor shall perform all traffic signal-related work following field instructions from DTS Signal Shop personnel. Such field instructions shall include, but not limited to, the final location and quantity of the temporary microwave sensors and permanent detector loops. DTS Signal Shop personnel will be responsible for traffic signal controller programming at the traffic signal cabinet to accommodate the temporary and permanent operations.

3. Contractor shall perform all necessary work to restore traffic signal system back to a neat appearance of the electrical trade.



TRAFFIC SIGNAL LEGEND:

- tsp — Existing Traffic Signal Pole
- New Loop Detectors

DATE	REVISION
1 6/14/12	Revised Scale on North Arrow

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR PLAN

KAHUAPAANI STREET RESURFACING
Moanalua Freeway to Salt Lake Blvd.
Federal Aid Project No. STP-7241(002)

Scale: 1"=20' Date: April 2010

SHEET No. T15 OF 15 SHEETS

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

ADD. 76