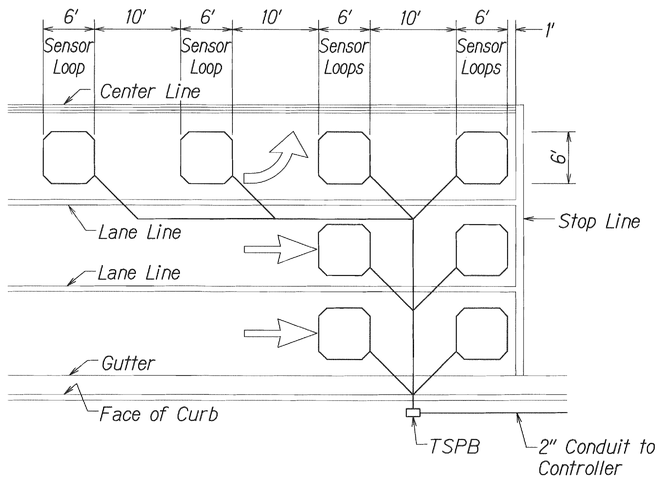
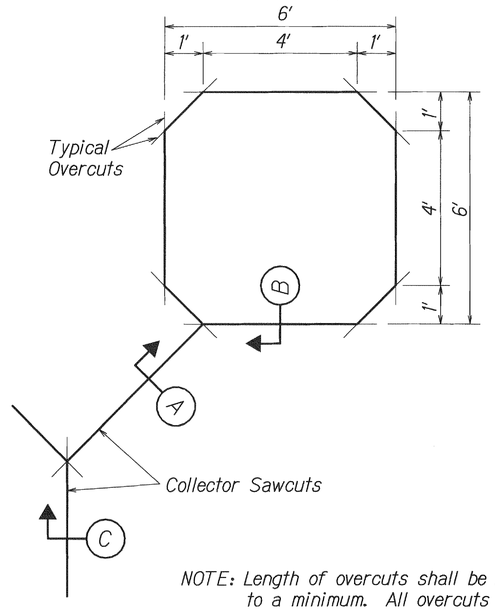
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-098-1(011)	2012	34	64



NOTES:

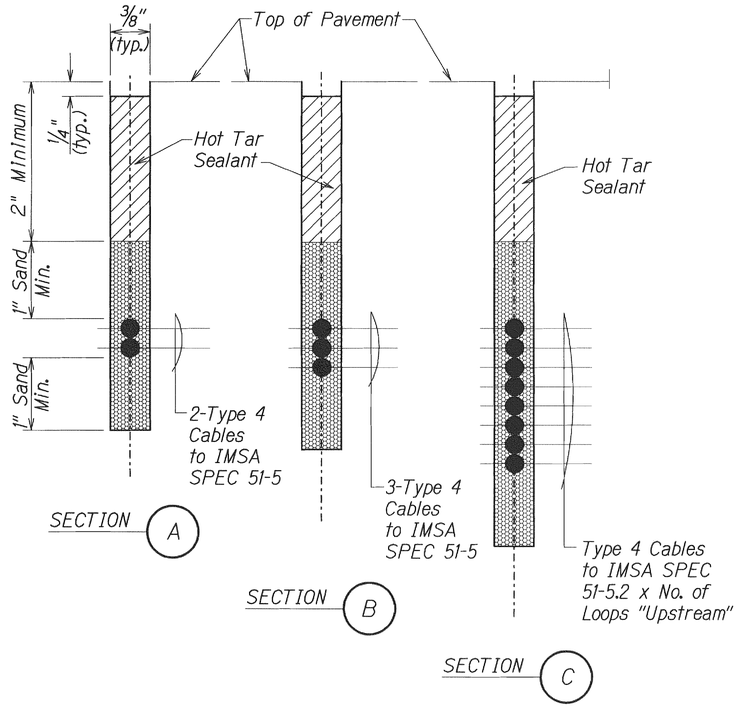
1. Center sensor loops in lanes.
2. Collector cables shall be twisted 2 turns per foot.
3. Number of loops and locations vary. See project plans.
4. Number and locations of collector sawcuts may be varied in the field to suit.

TYPICAL SENSOR LOOP LAYOUT

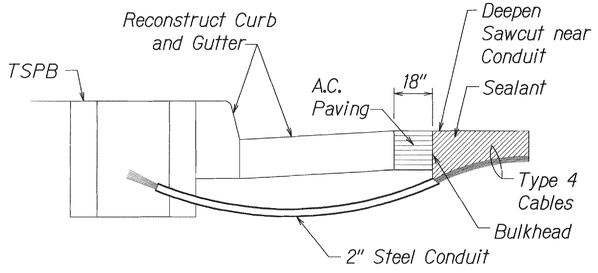


NOTE: Length of overcuts shall be kept to a minimum. All overcuts shall be back filled with hot tar.

TYPICAL SENSOR LOOP SAWCUT DETAIL



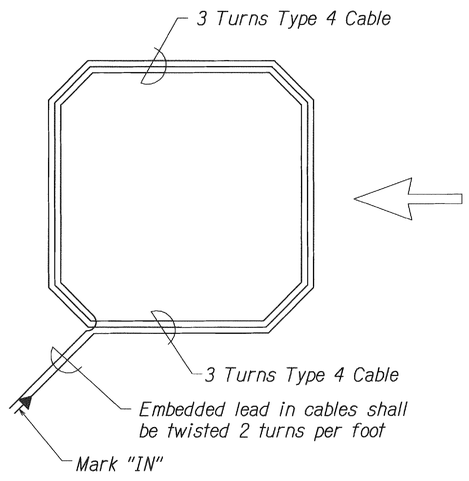
TYPICAL SECTION THROUGH SENSOR LOOP



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 PLAT	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No. 24/100	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

LOOP DETECTOR DETAILS

VINEYARD BOULEVARD RESURFACING
Vicinity of Palama St. to End of H-1 On- and Off-Ramp
Federal Aid Project No. STP-098-1(011)

Scale: As Shown Date: March 2012

SHEET No. T11 OF 20 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-098-1(011)	2012	34S-1	64

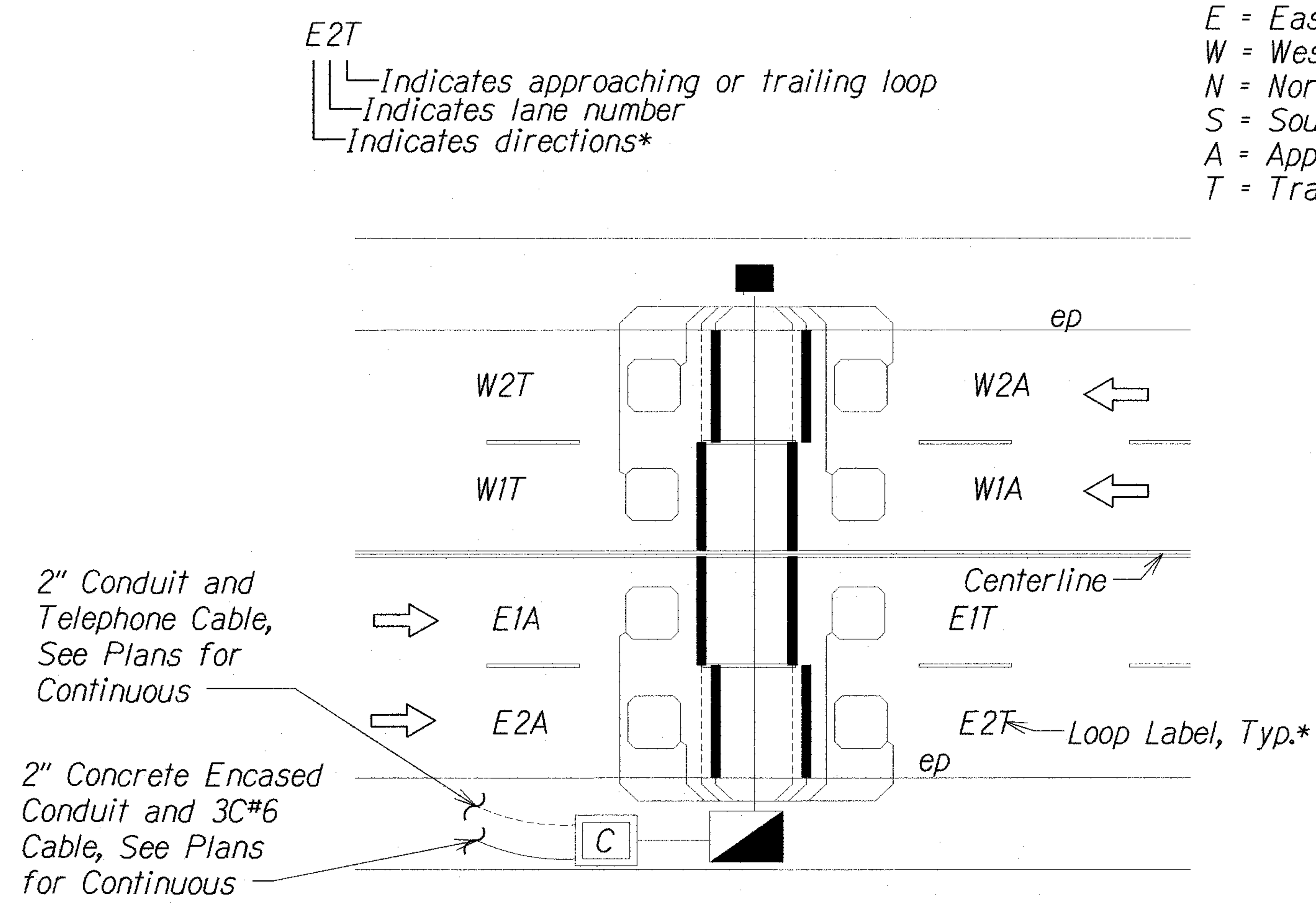
GENERAL NOTES:

1. The location of new inductance loops, pullboxes and cabinets/ junction boxes shall be staked out in the field by the Contractor and approved by the Engineer prior to installation.
2. The Contractor shall inform the Engineer at least three days prior to saw-cutting pavement and installing inductive loops.
3. Continuity of inductance loops and lead-in wires shall be tested and warranted for one year from date of acceptance by the Contractor.
4. Upon completion of sleeve, pull in in-bound lanes loop detectors cable and class 1 BL sensor cables. Cables shall be tested for acceptance before and after installation into sleeve.
5. The Contractor shall restore all affected areas to their original condition. This item of work shall not be paid for separately, but shall be considered incidental to work of other paid items.
6. The Contractor shall verify the location of the existing utilities and underground structures whether or not shown on plans.
7. The Contractor shall assume that existing underground utilities not shown on the plans may exist. Contact the different utility companies for information and toning.
8. The Contractor shall be held liable for any damages incurred to the existing utilities and underground structures as a result of his operations. All damages portions shall be replaced in accordance with the standards and specifications of the affected utility company at no cost to the state.
9. Changes to the contract plans and specifications will not be permitted, unless approval by the Engineer in writing.
10. Highway crossing sleeve shall be provided with 36" cover.

LOOP LAYOUT NOTES:

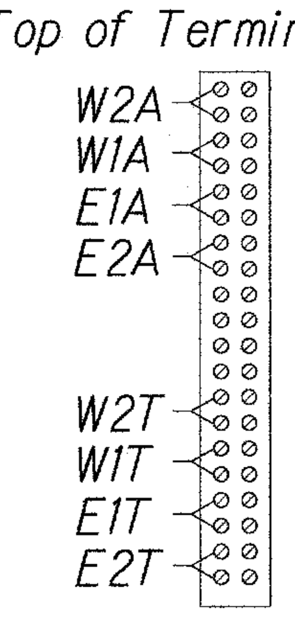
1. Detector loop shall consist of four turns of 1C #12 cable meeting IMSA Spec 51-5 or equivalent embedded in a 3/8" minimum sawcut, except as noted.
2. Loop and lead-in to the first pullbox shall be one continuous wire. Lead-in wires from the same loop shall be twisted in pairs, two turns per foot. Do not twist on loop-pair with another loop pairs.
3. All lead-in wires shall be crimped with open end lugs that will fit into the terminal board slots snugly.
4. Stagger traffic loops on roadway less than 12 foot lane width.
5. The Contractor shall connect the inductance wires on each terminal slot.
6. The left lane in the direction of traffic flow is designated as lane 1, and the lane next to its right as lane 2 and so on as indicated on plans.
7. Vacuum and clean sawcut thoroughly before installing sensors and/or cables and filling with hot tar or epoxy sealant.
8. All loop lead-in wires in all enclosures including pullboxes shall be identified and labeled by direction of traffic flow and lane number as shown on plans.
9. All cable and wires terminated within an enclosure shall have a minimum 12" additional slack.

LOOP LABEL LEGEND:
E = East
W = West
N = North
S = South
A = Approching
T = Trailing



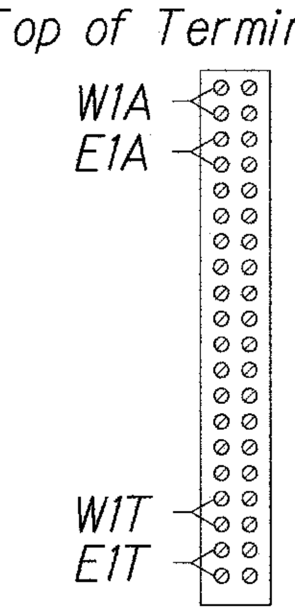
*NOTE:
If roadway runs in the north and south direction the first letter on the loop label should read N for north and S for south. If roadway runs in the east and west direction the first letter on the loop label should read E for east and W for west.

TYPICAL LABELING OF LOOPS
Scale: NTS



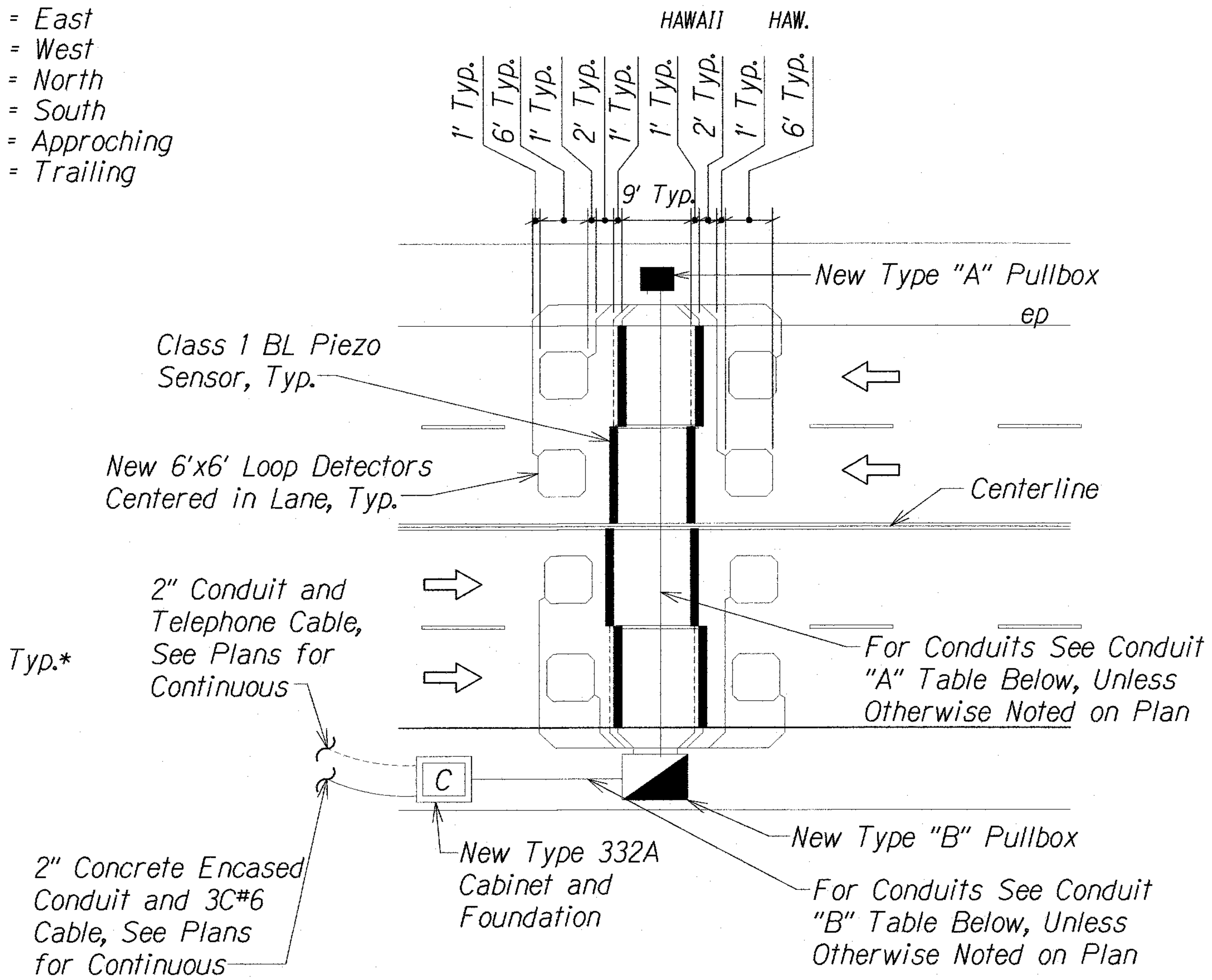
Connecting layout of loop lead-in wires to terminal block inside cabinet

TYPICAL FOUR-LANE ROADWAY TERMINAL BLOCK BLOCK WIRING DETAILS
Scale: NTS



Connecting layout of loop lead-in wires to terminal block inside cabinet

TYPICAL TWO-LANE ROADWAY TERMINAL BLOCK WIRING DETAILS
Scale: NTS



Conduit "A" Table:

Number of Lanes	Conduit* #-Size	Class 1 BL Sensor Lead Cables	2C #14 Loop Detector Cable
2	1-4"	2	2
4	1-4", 1-2"	4	4

*Conduits shall be concrete encased

Conduit "B" Table:

Number of Lanes	Conduit #-Size	Class 1 BL Sensor Lead Cables	2C #14 Loop Detector Cable
2	1-4", 1-2"	4	4
4	3-4"	8	8

NOTES:
1. All dimensions and callouts are typical unless otherwise noted on plan.
2. 332A Cabinets shall not be placed next to exist. sprinkler heads.

TYPICAL TRAFFIC COUNTING STATION LAYOUT DETAIL
Scale: NTS

Note: This tracing prepared during "As-Built" posting.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

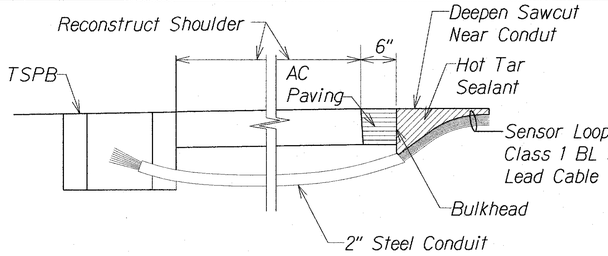
TRAFFIC COUNTING STATION DETAILS

VINEYARD BOULEVARD RESURFACING
Vicinity of Palama St. to End of H-1 On- and Off-Ramp
Federal Aid Project No. STP-098-1(011)
Scale: NTS Date: Feb. 2018
SHEET No. OF SHEETS

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

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-098-1(011)	2012	34S-2	64

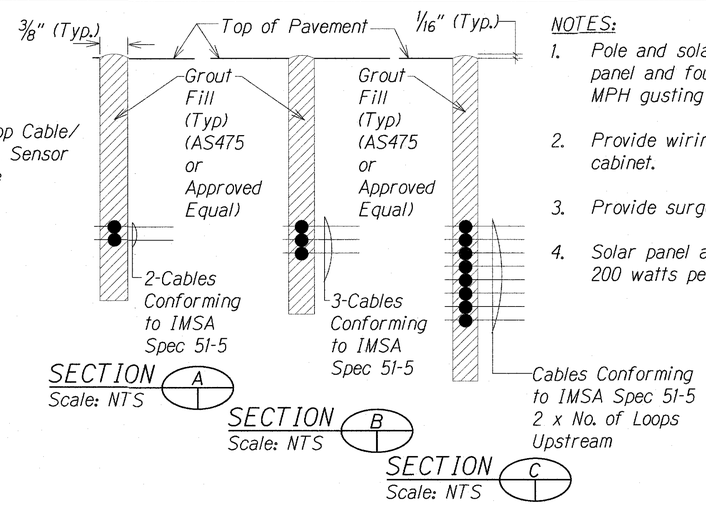


NOTES ON CONSTRUCTION AT END OF SAWCUT:

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 AC.
5. Reconstruct curb and gutter as required.

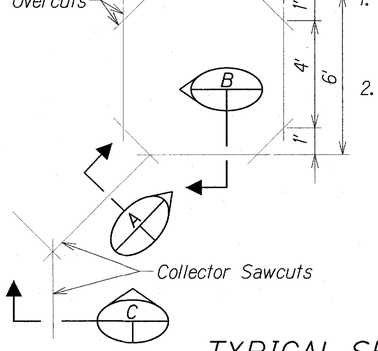
DETAIL OF SENSOR LOOP/ CLASS 1 BL SENSOR AT EDGE OF ROADWAY

Scale: NTS



TYPICAL SECTION THROUGH SENSOR LOOP

Scale: NTS

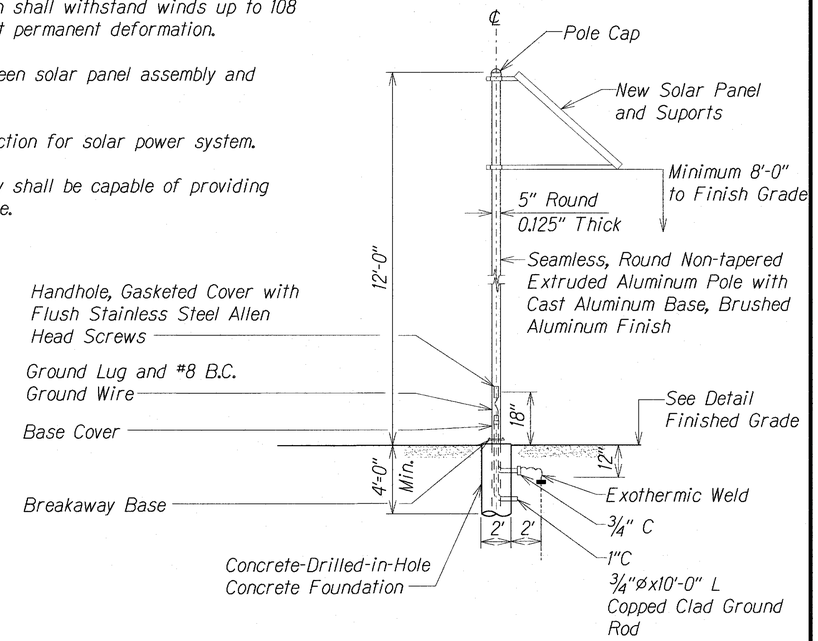


NOTES:

1. Length of overcuts shall be kept to a minimum. All overcuts shall be backfilled with hot tar.
2. All saw-cutting slurry shall be wet vacuumed, either simultaneous with or immediately after the saw-cutting operations, and the collected slurry disposed of appropriately (i.e., either, placed in a filter fabric lined filtration box or in a filter fabric lined dug up retention/percolation basin, and after filtration/percolation, the filter fabric and the retained sediments, disposed of appropriately).

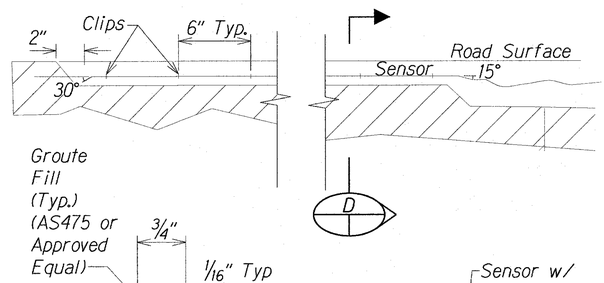
NOTES:

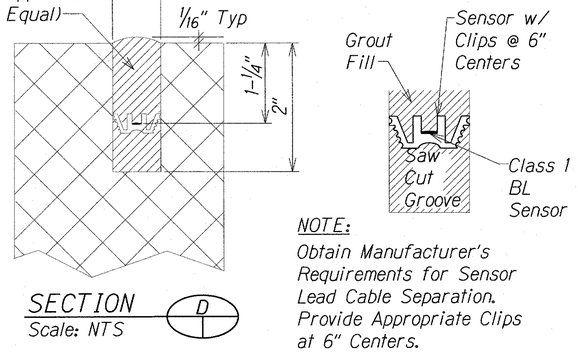
1. Pole and solar panel assembly, including pole, solar panel and foundation shall withstand winds up to 108 MPH gusting without permanent deformation.
2. Provide wiring between solar panel assembly and cabinet.
3. Provide surge protection for solar power system.
4. Solar panel assembly shall be capable of providing 200 watts per minute.



POLE AND SOLAR PANEL ASSEMBLY

Scale: NTS





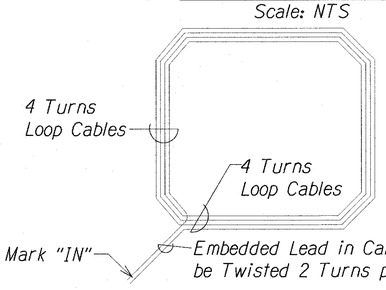
NOTE:
Obtain Manufacturer's Requirements for Sensor Lead Cable Separation. Provide Appropriate Clips at 6" Centers.

CLASS 1 BL PIEZOELECTRIC SENSOR INSTALLATION DETAIL

Scale: NTS

TYPICAL SENSOR LOOP SAWCUT DETAIL

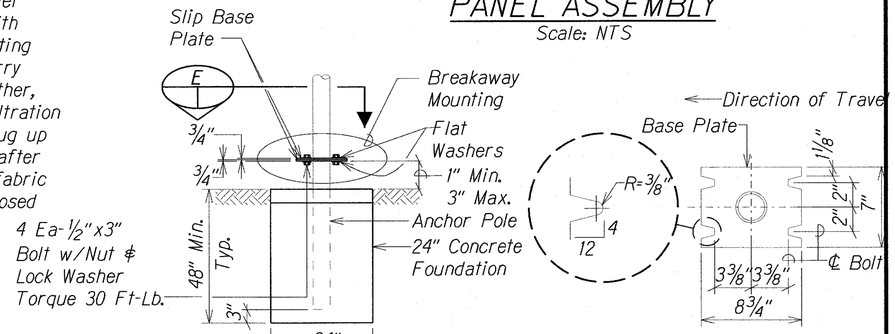
Scale: NTS



PLAN

TYPICAL SENSOR LOOP WIRING DIAGRAM

Scale: NTS



NOTE:
All contact washer areas shall be free of galvanizing runs and beads and rubbed with parafin.

CIDH CONC. FOUNDATION W/ BREAKAWAY MOUNTING

Scale: NTS

Note: This tracing prepared during "As-Built" posting.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC COUNTING STATION DETAILS

VINEYARD BOULEVARD RESURFACING
Vicinity of Palama St. to End of H-1 On- and Off-Ramp
Federal Aid Project No. STP-098-1(011)

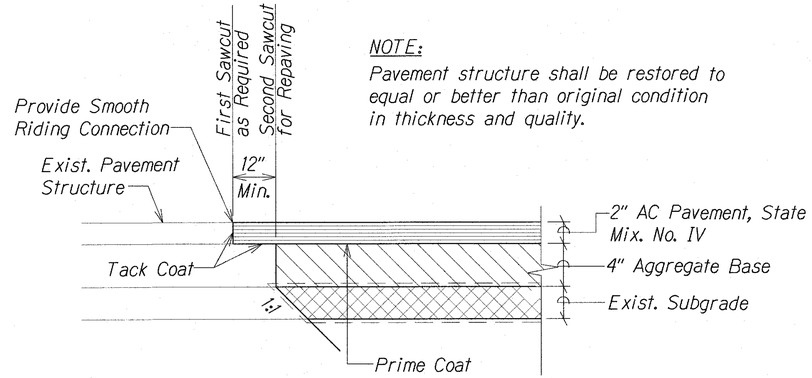
Scale: NTS Date: Feb. 2018

SHEET No. OF SHEETS

"AS-BUILT"

34S-2

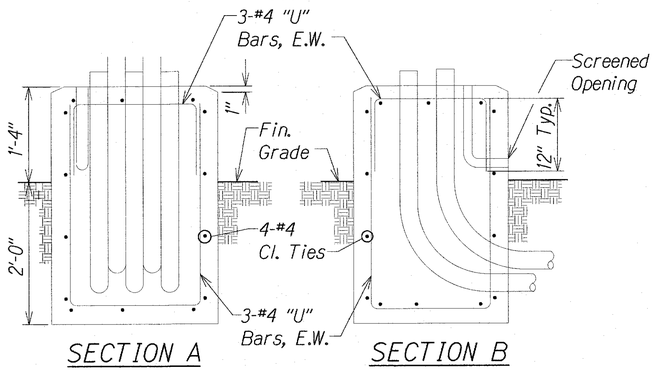
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-098-1(011)	2012	34S-3	64



NOTE:
Pavement structure shall be restored to equal or better than original condition in thickness and quality.

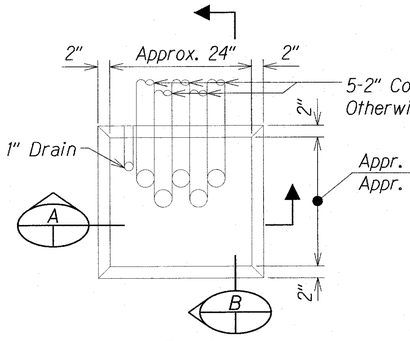
EXIST. AC PAVEMENT RESTORATION DETAIL

Scale: NTS



SECTION A

SECTION B



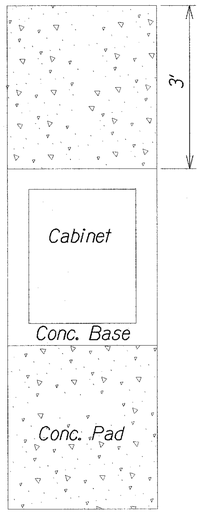
PLAN

NOTES:

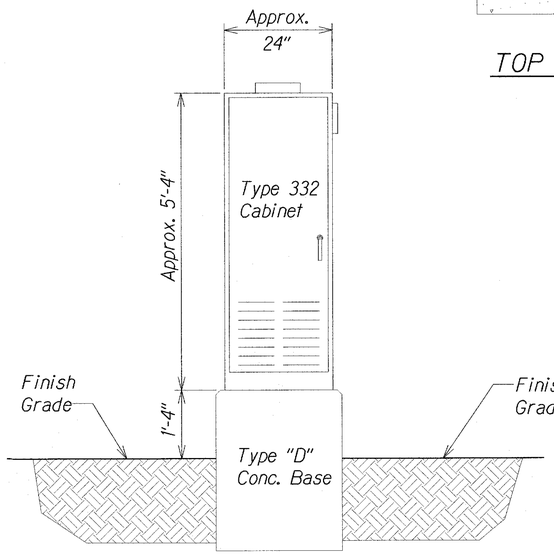
1. Concrete shall be class "B"
2. Dimensions shall be altered to suit controller cabinet actually furnished.
3. Conduit bends and drain are incidental to concrete base.
4. Refer to cabinet manufacturer's specifications for details of anchor bolts and base setting.
5. All exposed surfaces of concrete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

TYPE "D" CONC. BASE FOR CONTROLLER CABINETS

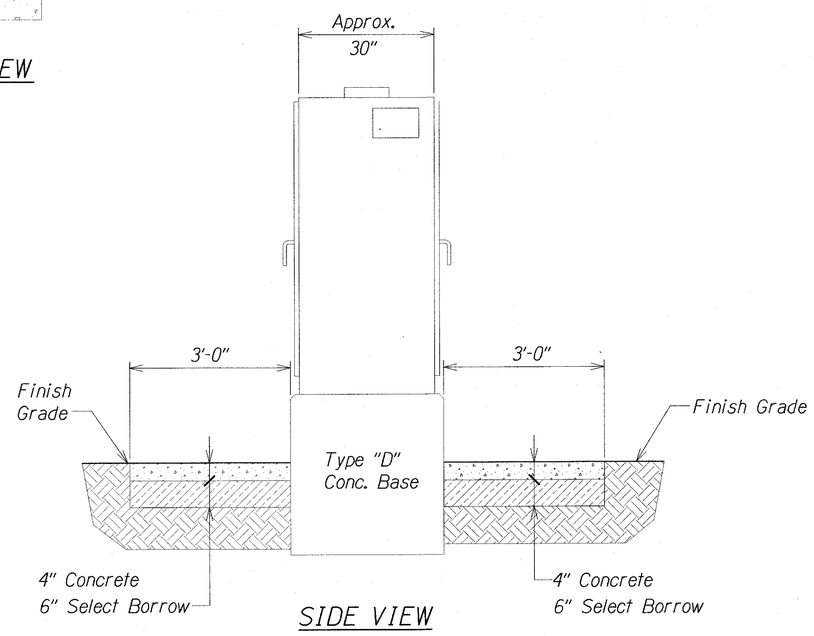
Scale: NTS



TOP VIEW



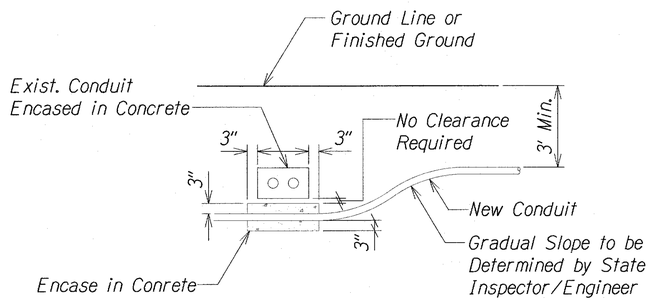
FRONT VIEW



SIDE VIEW

332 CABINET

Scale: NTS



CONDUIT BY-PASS DETAIL

Scale: NTS

Note: This tracing prepared during "As-Built" posting.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CABINET FOUNDATION AND MISC. DETAILS

VINEYARD BOULEVARD RESURFACING
Vicinity of Palama St. to End of H-1 On- and Off-Ramp
Federal Aid Project No. STP-098-1(011)

Scale: NTS Date: Feb. 2018

SHEET No. OF SHEETS

"AS-BUILT"

34S-3