

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	36BC-02-17M	2017	20	42

ELECTRONIC VEHICLE COUNTING (EVC) SYSTEM NOTES

1. The location of new sensor loops and piezo sensors 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 sensor loops and piezo sensors.
3. Pull in in-bound lanes sensor loop cable and piezo sensor lead cables into conduit, where indicated. Cables shall be tested for acceptance before and after installation into conduit.
4. Piezo lead cables shall be continuous with no splices.
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 it is shown on the plans.
7. The Contractor shall assume that existing underground utilities not shown on the plans may exists. The Contractor shall be responsible for contacting 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 damaged 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 approved by the Engineer in writing.
10. All cables are to be terminated within the EVC cabinet and shall have a minimum 12" additional slack.
11. Highway crossing conduit shall be provided with 36" cover.
12. Vacuum, pressure wash and air dry by air compressor and clean sawcut thoroughly before installing sensors and/or cables and filling with epoxy loop sealant or PU200 Piezo Installation Resin.
13. All Saw-cutting Slurry shall be Wet Vacuumed, either simultaneous with or immediately after the Saw-cutting operations. The collected Slurry shall be 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).
14. Dry saw-cutting shall not be permitted.

SENSOR LOOP LAYOUT NOTES

1. Detector loop shall consist of four turns of 1C #14 cable meeting IMSA Spec 51-3 or equivalent embedded in a 3/8" wide by 4" deep sawcut, except as noted. Detector loop shall be provided a minimum 2" cover.
2. Sensor loop and lead cable shall be one continuous wire. Lead wires from the same loop shall be twisted in pairs, five twists per foot from the edge of paved shoulder to the pullbox. Do not twist one loop pair with another loop pair.
3. Continuity of sensor loops and lead-in wires shall be tested and warranted for one year from the date of acceptance by the Contractor.
4. Sensor loop lead cables shall be spliced only at the final pullbox to the EVC cabinet. Splice point of cables must be suspended near the top of the pullbox with a j-hook.
5. Splices shall be made by use of a splice kit.
6. All sensor loop lead cables shall be crimped with open end lugs that will fit into the terminal board slots snugly.
7. Stagger sensor loops on roadways with lanes that are less than 12 feet in width.
8. The Contractor shall connect the sensor loop wires on each terminal slot, as shown on plans.
9. The left lane in the direction of traffic flow is designated as lane 1, and the next lane to its right as lane 2 and so on as indicated on plans.
10. All sensor loop lead wires in the EVC cabinet and the pullboxes shall be identified and labeled by direction of traffic flow and lane number as shown on plans.
11. Only one sensor loop shall be placed per saw cut.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	10/16
	TRACED BY	
	NOTED BY	
NOTE BOOK	QUANTITIES BY	
	CHECKED BY	
N=		

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

EVC TRAFFIC COUNTING SYSTEM NOTES

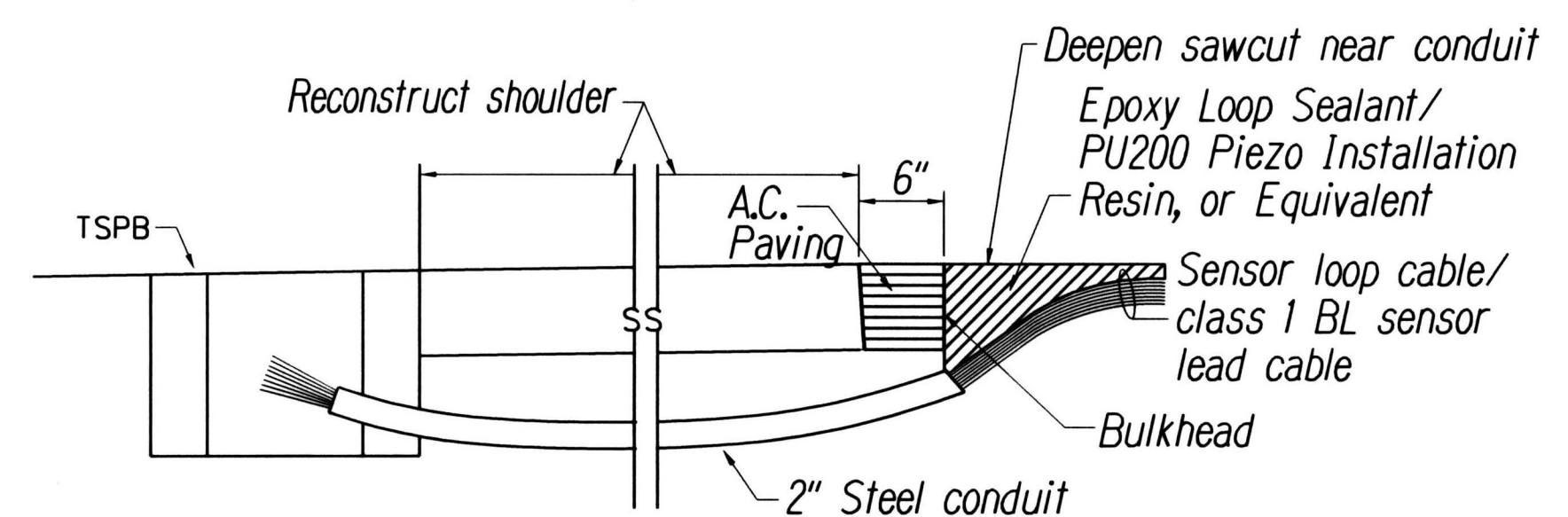
HANA HIGHWAY RESURFACING  
Hookipa Park to Kaupakalua Road  
Project No. 36BC-02-17M

Date: February, 2017

SHEET No. 1 OF 3 SHEETS

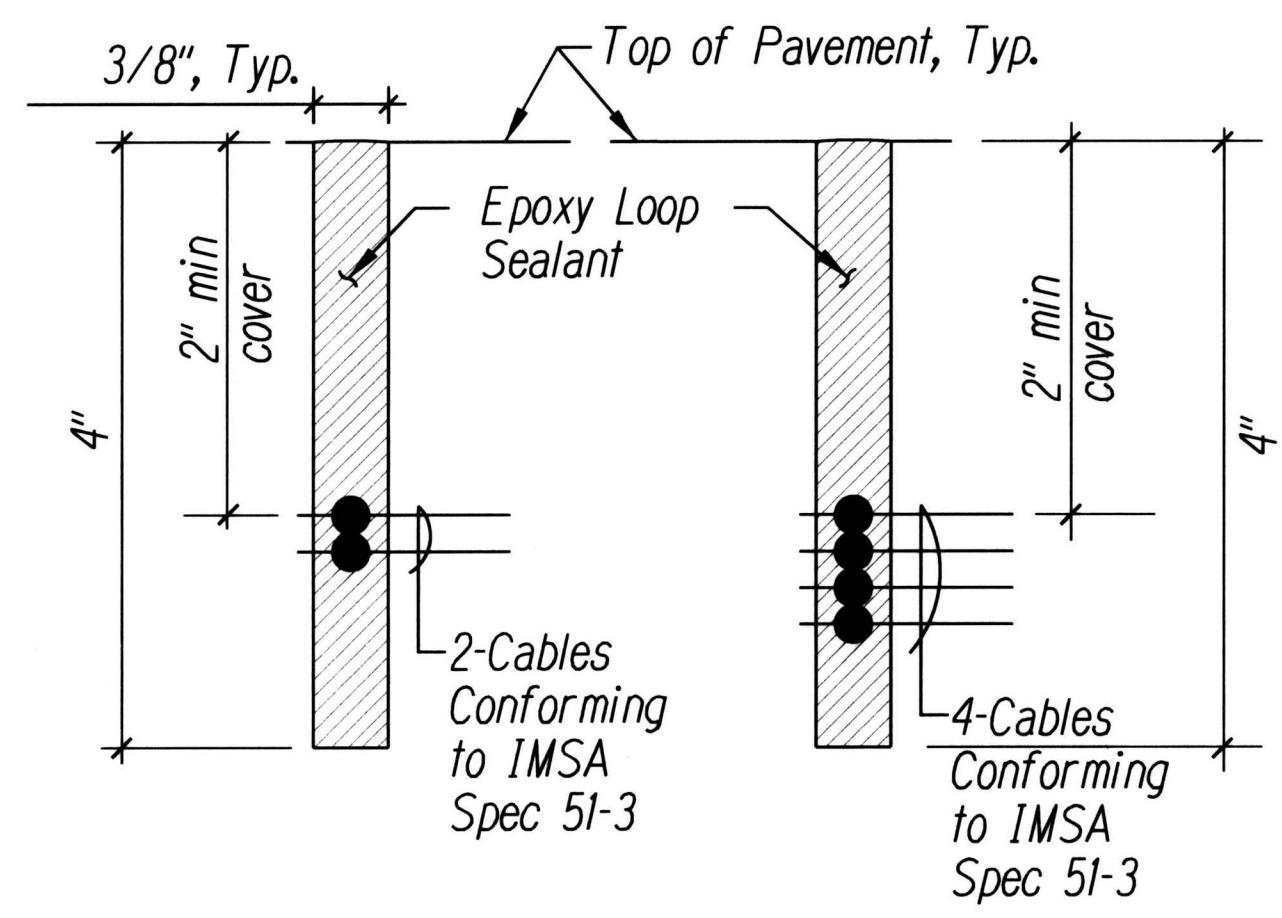


FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	36BC-02-17M	2017	21	42



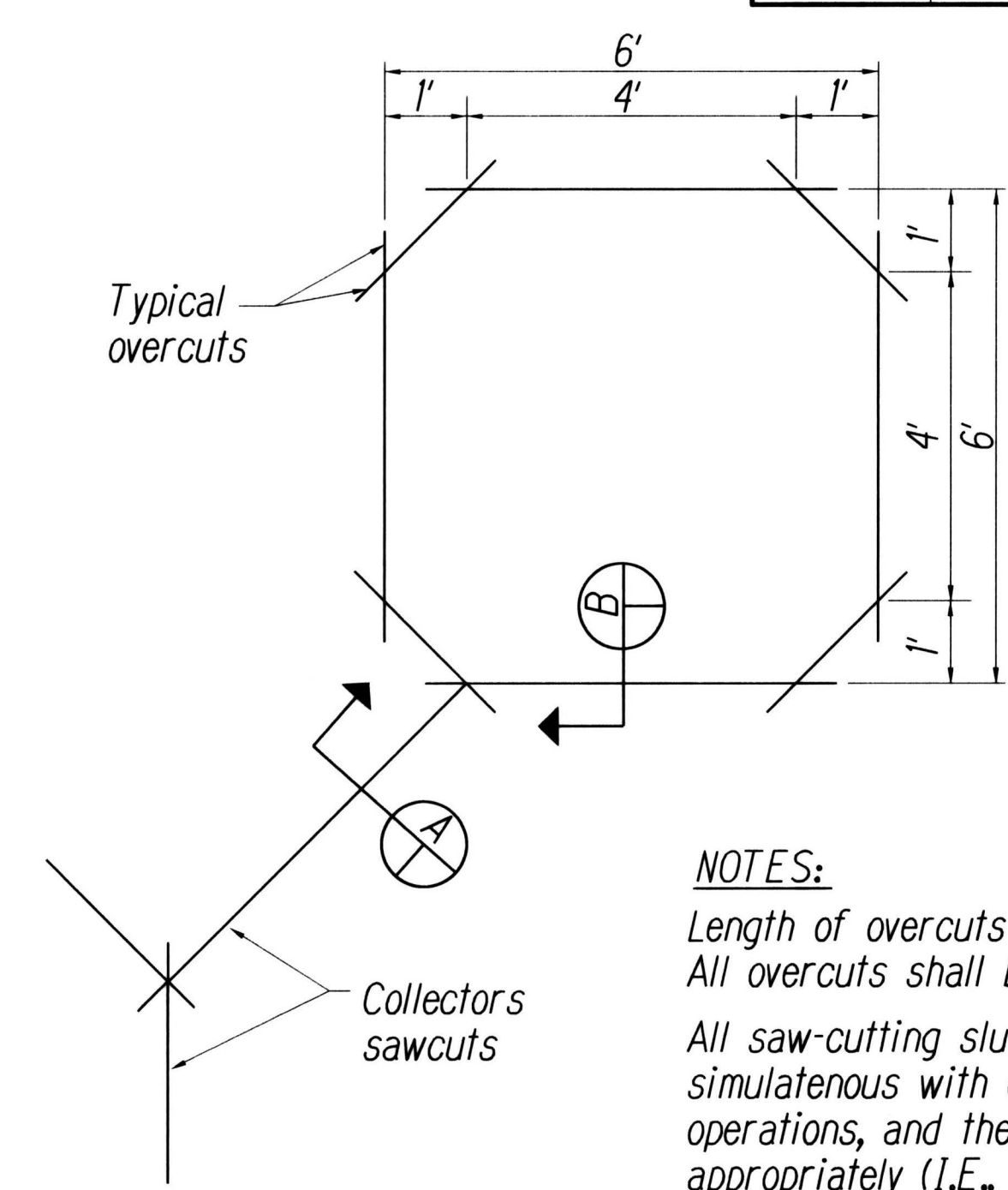
- NOTES ON CONSTRUCTION AT END OF SAWCUT
1. Seal roadway end of conduit after installation of conductors
  2. Install bulkhead across conduit trench.
  3. Place Epoxy Loop Sealant or PU200 Piezo Installation Resin or Equivalent in sawcut
  4. Backfill over conduit with new AC.
  5. Reconstruct curb and gutter as required.

DETAIL OF SENSOR LOOP/  
CLASS 1 BL SENSOR  
AT EDGE OF ROADWAY  
Not to Scale



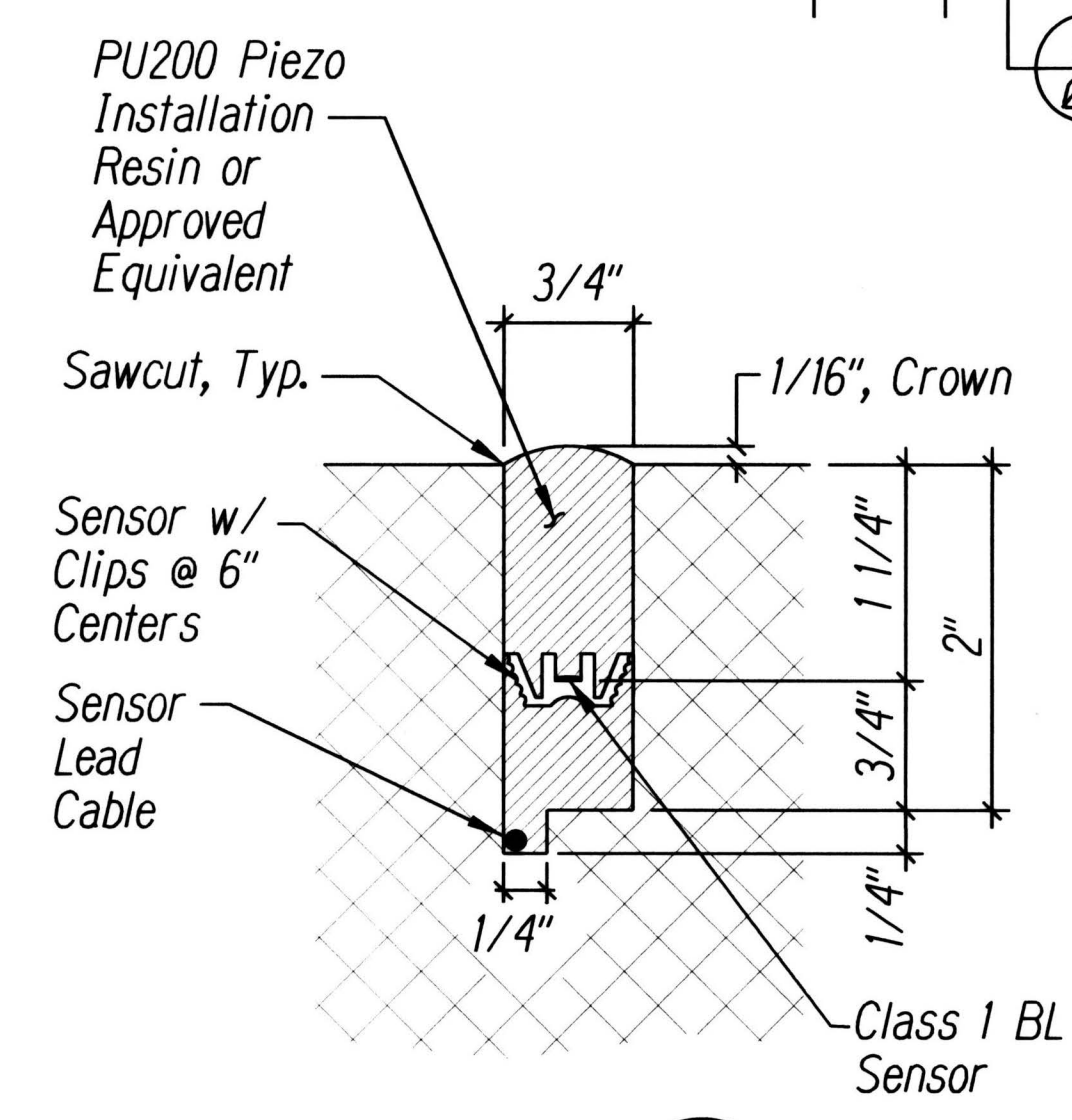
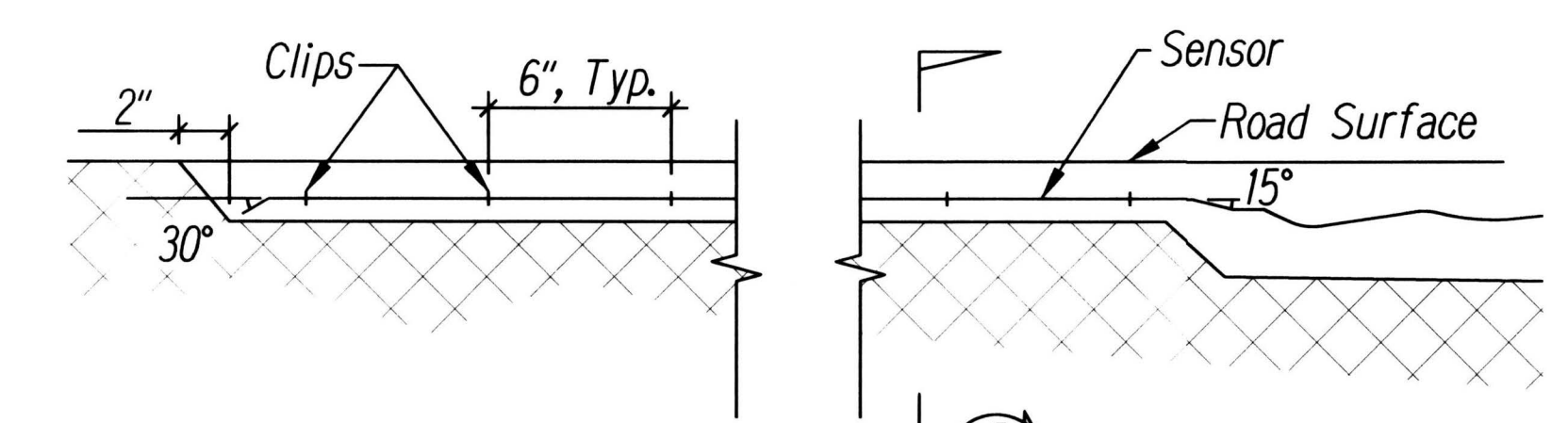
SECTION A Not to Scale  
SECTION B Not to Scale

TYPICAL SECTION THROUGH SENSOR LOOP  
Not to Scale



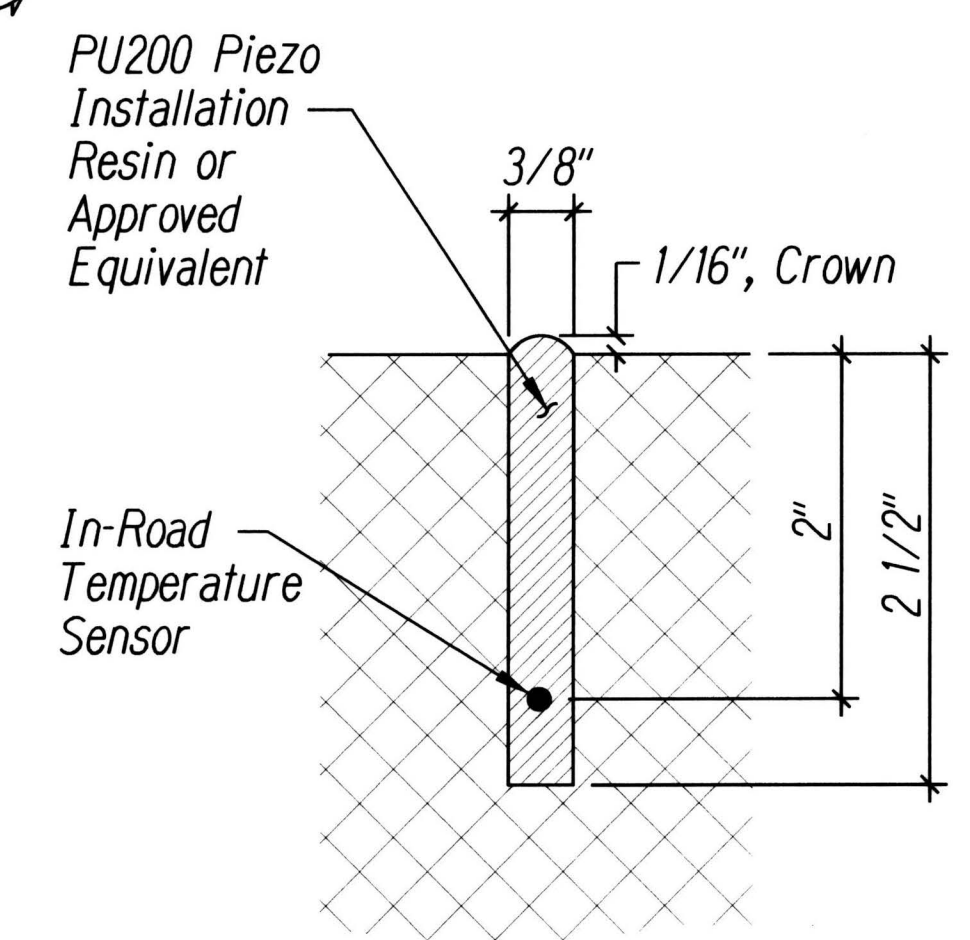
- NOTES:
- Length of overcuts shall be kept to a minimum.
  - All overcuts shall be backfilled with 3M Loop sealant.
  - All saw-cutting slurry shall be wet vacuumed, either simultaneous with or immediately after the saw-cutting operations, and the collected slurry disposed of appropriately (I.E., either, 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).

TYPICAL SENSOR LOOP SAWCUT DETAIL  
Not to Scale

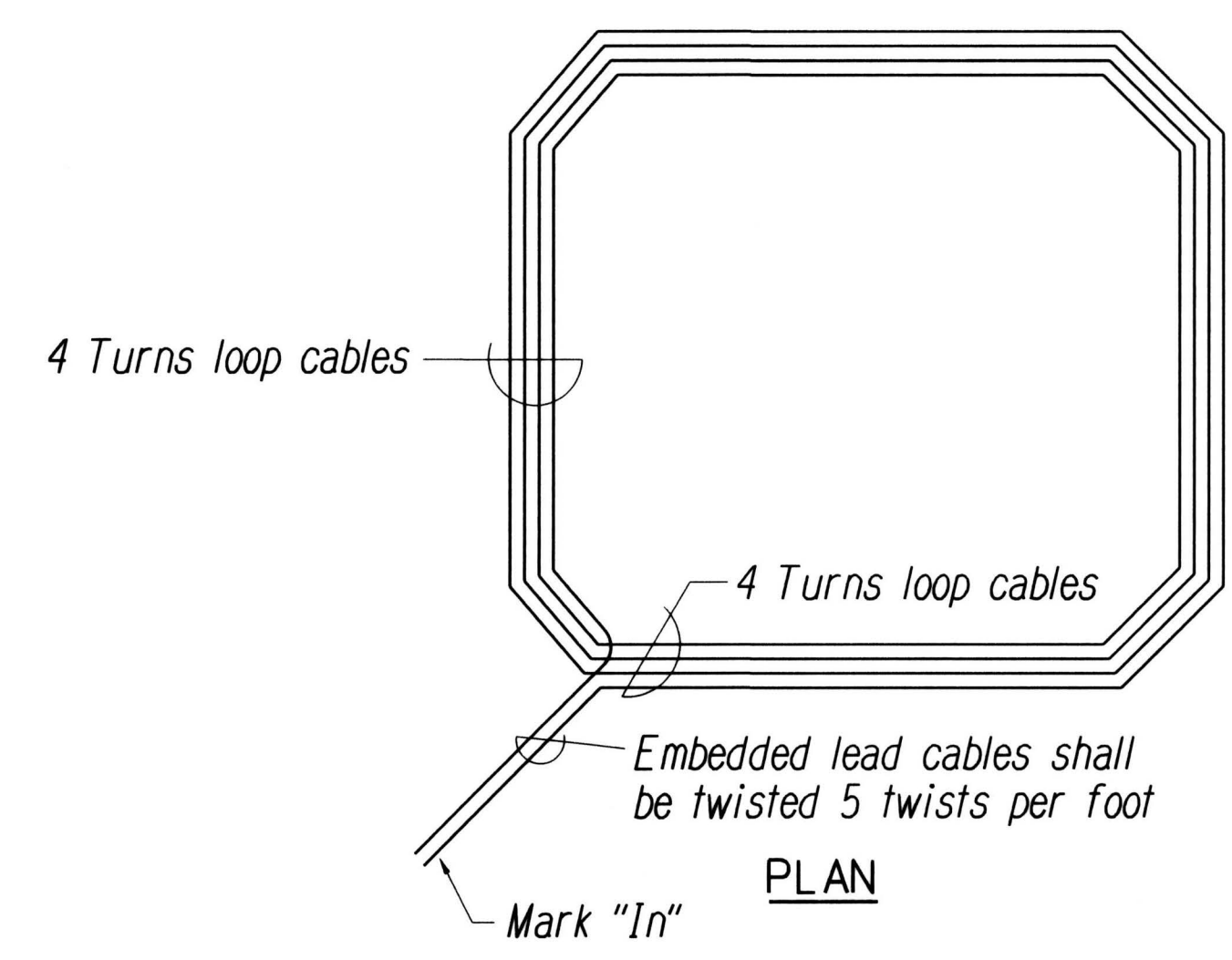


SECTION C Not to Scale

PIEZOELECTRIC SENSOR  
INSTALLATION DETAILS  
Not to Scale



IN-ROAD TEMPERATURE  
SENSOR INSTALLATION DETAIL  
Not to Scale



TYPICAL SENSOR LOOP WIRING DIAGRAM  
Not to Scale

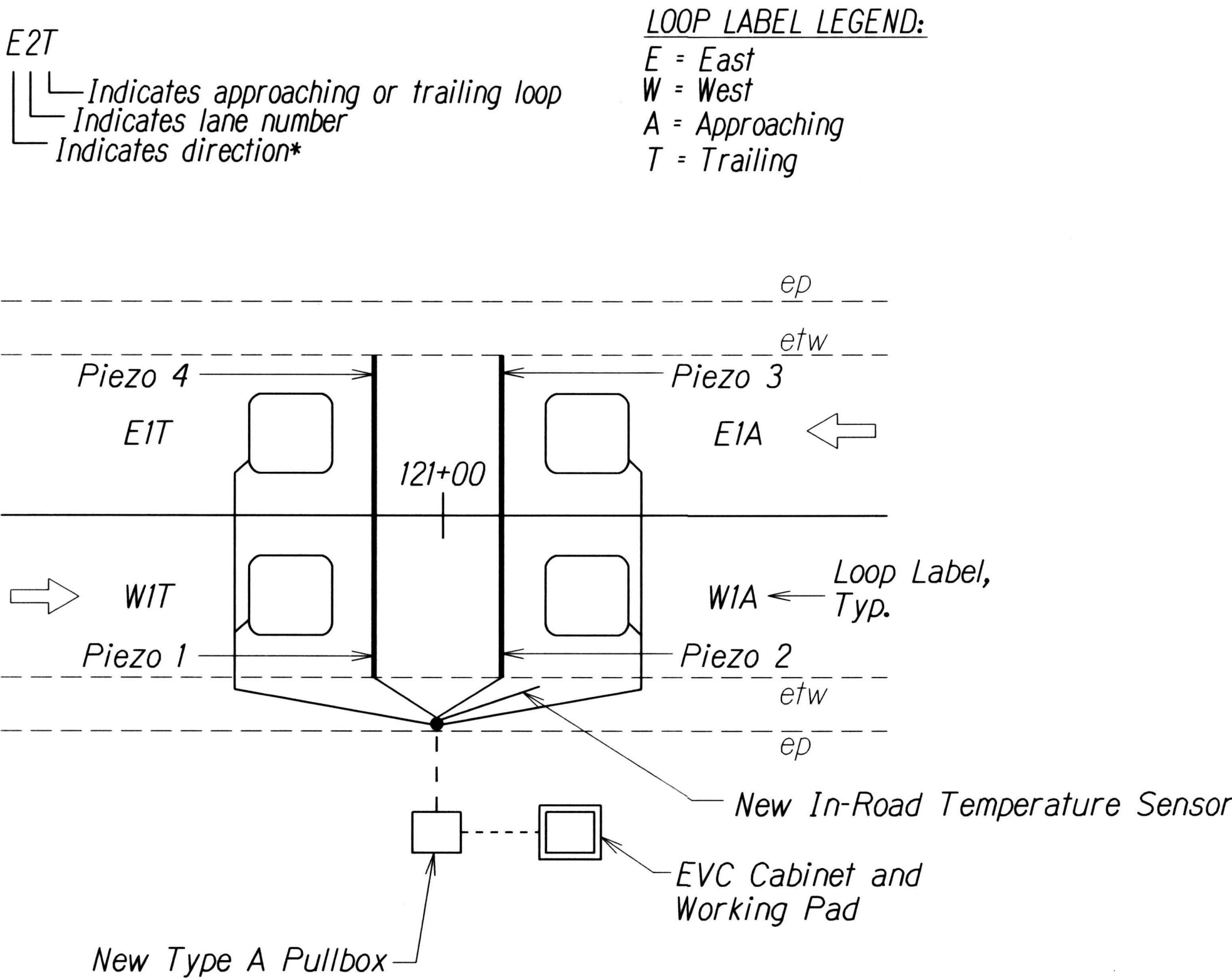
DATE	10/10
SURVEY PLOTTED BY	...
DRAWN BY	...
NOTED BY	...
CHECKED BY	...

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**TRAFFIC COUNTING**  
**STATION DETAILS**  
HANA HIGHWAY RESURFACING  
Hookipa Park to Kaupakalua Road  
Project No. 36BC-02-17M  
Scale: As Shown      Date: February, 2017  
SHEET No. 2 OF 3 SHEETS

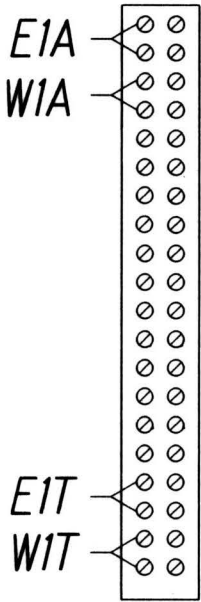


FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	36BC-02-17M	2017	22	42



LABELING OF LOOPS AND PIEZOS  
Not to Scale

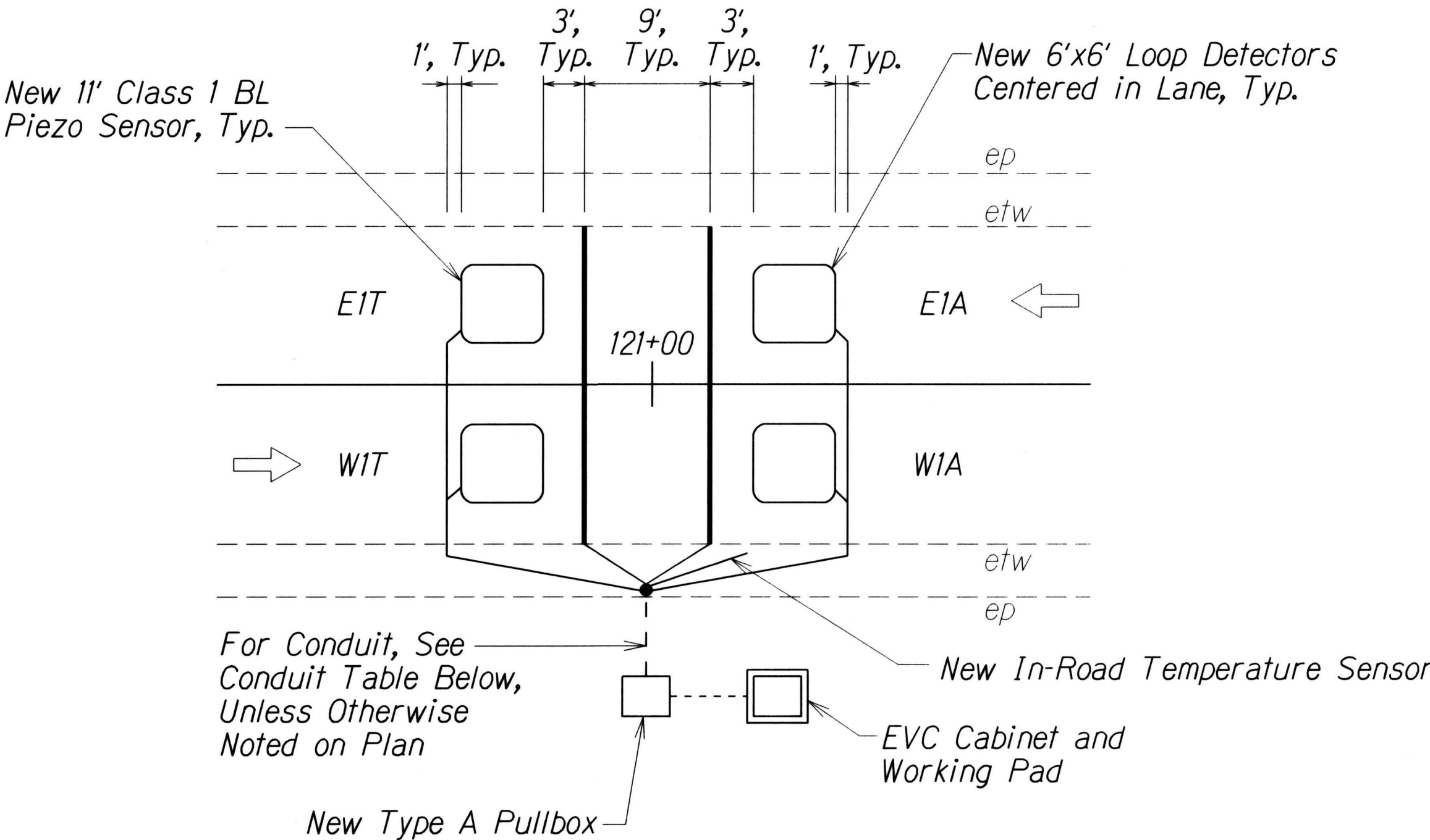
Top of terminal block



Bottom of terminal block

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

TYPICAL TWO-LANE ROADWAY TERMINAL BLOCK WIRING DETAILS  
Not to Scale



Conduit "A" Table:

Conduit* #-Size	Class 1 BL Sensor Lead Cables	2C #18 Loop Detector Cable
Existing	4	4

\*Conduits under pavement and at utility crossings shall be concrete encased.

- \*NOTES:
- All dimensions and callouts are typical unless otherwise noted on plan.
  - Contractor shall coordinate service agreements and connections to electrical and communication service. Contractor shall also contact the appropriate State Dept of Transportation Representative for service agreement. (Highways Planning, Contact, Goro Sulijoadikusumo, P.E., at 587-1839).

EVC COUNTING SYSTEM LAYOUT DETAIL  
Not to Scale

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

TRAFFIC COUNTING

STATION DETAILS

HANA HIGHWAY RESURFACING

Hookipa Park to Kaupakalua Road

Project No. 36BC-02-17M

Scale: As Shown

Date: February, 2017

SHEET No. 3

OF 3

SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	10/16
	TRACED BY	
	QUANTITIES BY	
	CHECKED BY	