FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	30A-01-10M	2011	26	40

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 inductance loops and peizo sensors.
3. Continuity of inductance loops, piezo sensorsand 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 detector's cable and class 1 BI 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 of 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, therefore, he shall 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 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 shall not be permitted, unless otherwise authorized by the Engineer upon written justification and request for approval by the Contractor.
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 ⅜" 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-pair.
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 [illegible] an 12 foot lane width.
5. The Contractor shall connect the inductance [illegible] on each terminal slot.
6. The left lane in the direction of traffic flow is designa[illegible] lane 1, and the lane next to its right as lane 2 and so on as indicated on plans.
7. Vaccuum and clean sawcut thoroughly before installing sensors and/or c[illegible]nd 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 cables and wires terminated within an enclosure shall have a minimum 12" additional slack.

LEGEND FOR AS-BUILT POSTINGS	
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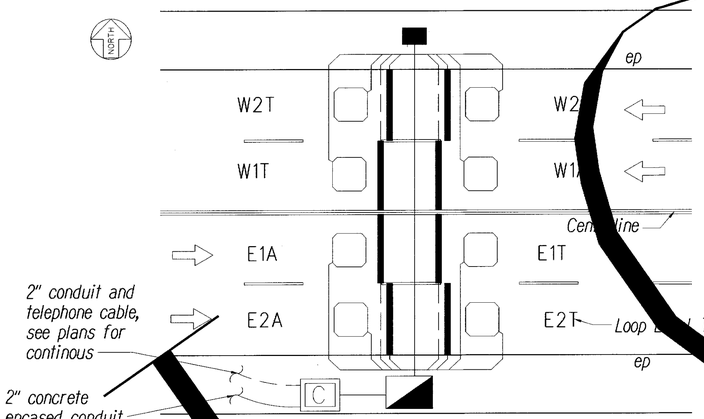
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

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

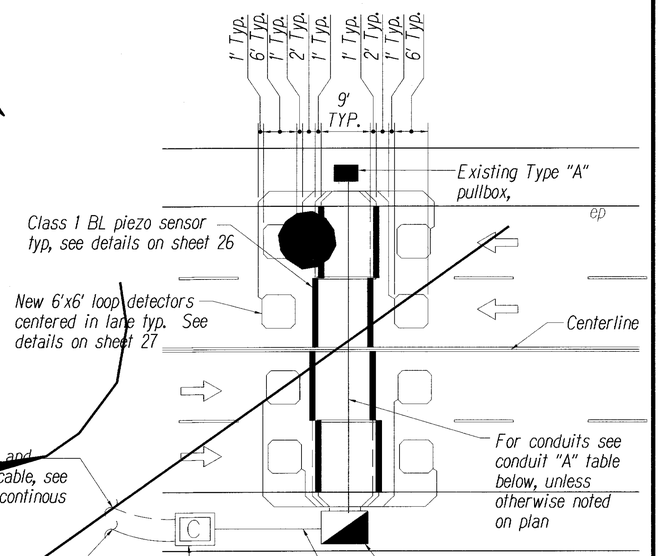
LOOP LABEL LEGEND:
E = East
W = West
N = North
S = South
A = Approaching
T = Trailing

E2T
- Indicates approaching or trailing loop
- Indicates lane number
- Indicates direction*



*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
Not to Scale



Conduit "A" Table:

Number of lanes	Conduit* #-size	Class 1 BL sensor lead cables	2c #14 Loop detector cables
2	1-4"	2	2
4	1-4", 1-2"	4	4

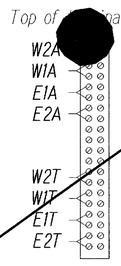
*Conduits shall be concrete encased

Conduit "B" Table:

Number of lanes	Conduit* #-size	Class 1 BL sensor lead cables	2c #14 Loop detector cables
2	1-4", 1-2"	4	4
4	3-4"	8	8

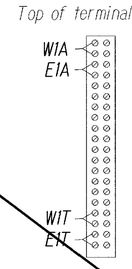
NOTES:
1. All dimensions and callouts are typical unless otherwise noted on plan.
2. 332A cabinets shall not be placed next to exist. Sprinkler heads.

TYPICAL TRAFFIC COUNTING STATION LAYOUT DETAIL
Not to Scale



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

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



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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC COUNTING STATION DETAILS

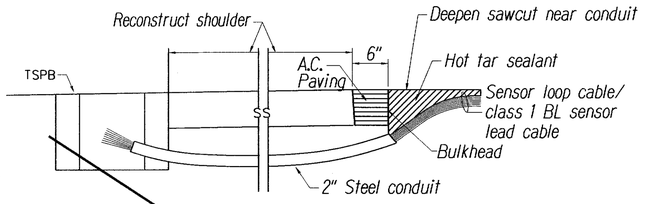
HONOAPIILANI HIGHWAY RESURFACING
Vicinity of Hoohui Road to Plantation Estates Golf Course
Project No. 30A-01-10M

Scale: As Shown Date: August, 2009

SHEET No. 1 OF 3 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	30A-01-10M	2011	27	40

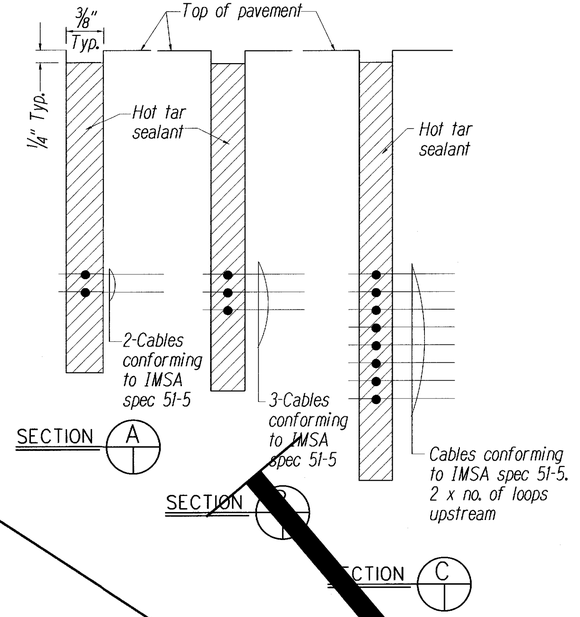


NOTES ON CONSTRUCTION AT END OF SAWCUT

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/ CLASS 1 BL SENSOR AT EDGE OF ROADWAY

Not to Scale



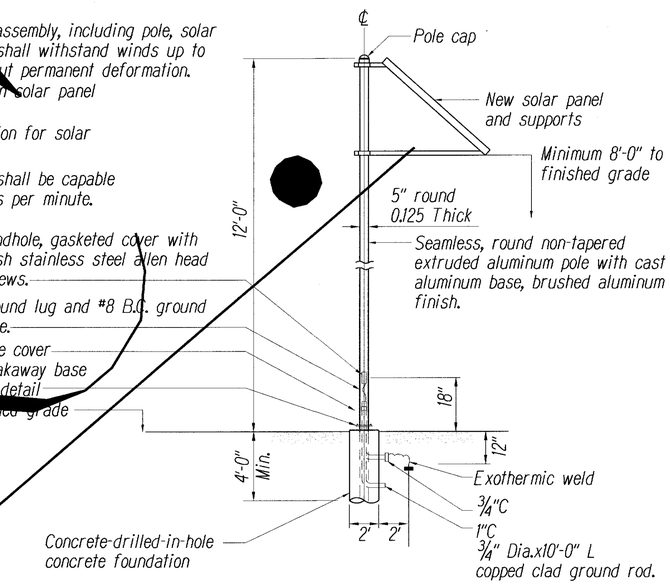
TYPICAL SECTION THROUGH SENSOR LOOP

Not to Scale

NOTES:

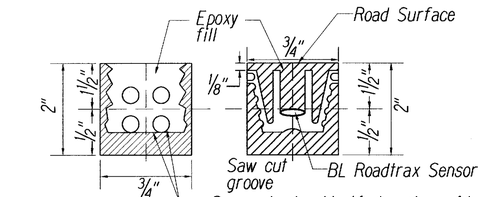
1. Pole and solar panel assembly, including pole, solar panel and foundation shall withstand winds up to 108 mph gusting without permanent deformation.
2. Provide wiring between solar panel assembly and cabinet.
3. Provide surge protection for solar power system.

Solar panel assembly shall be capable of providing 200 watts per minute.



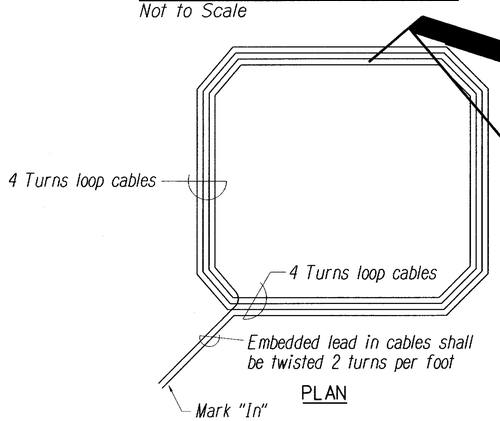
POLE AND SOLAR PANEL ASSEMBLY (EXISTING)

Not to Scale



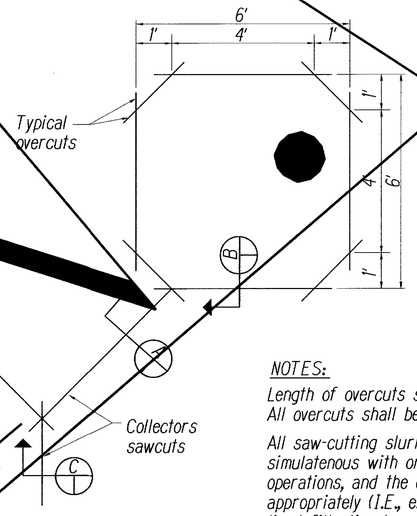
CLASS 1 BL SENSOR AND LEAD INSTALLATION DETAIL

Not to Scale



TYPICAL SENSOR LOOP WIRING DIAGRAM

Not to Scale



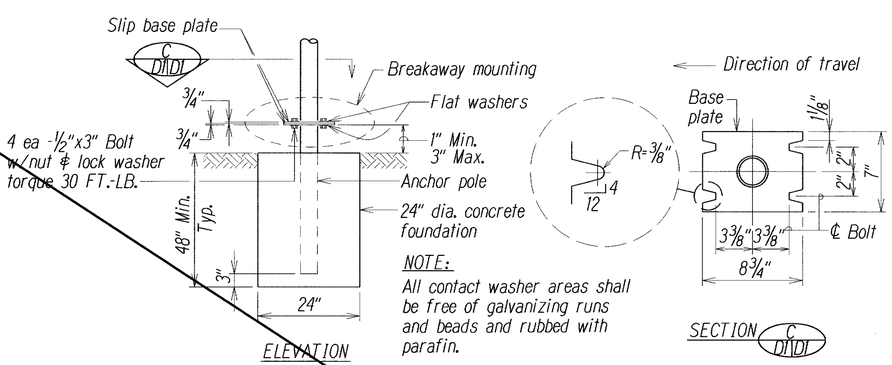
NOTES:

Length of overcuts shall be kept to a minimum. All overcuts shall be backfilled with hot tar.

All saw-cutting slurry shall be wet vaccumed, either simulatenous 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



CIDH CONC. FOUNDATION W/ BREAKAWAY MOUNTING (EXISTING)

Not to Scale

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

LEGEND FOR AS-BUILT POSTINGS

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Roadway	Text for as-built posting

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC COUNTING STATION DETAILS

HONOAPIILANI HIGHWAY RESURFACING

Vicinity of Hoohui Road to Plantation Estates Golf Course

Project No. 30A-01-10M

Scale: As Shown Date: August, 2009

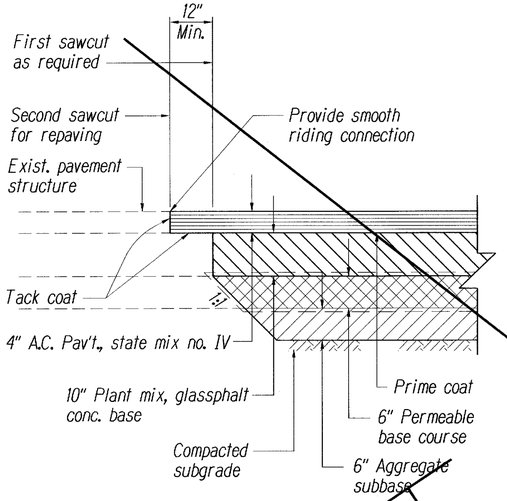
SHEET No. 2 OF 3 SHEETS

"AS-BUILT"

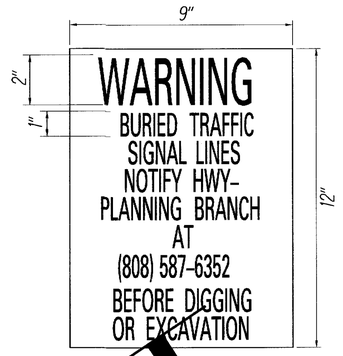
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	30A-01-10M	2011	28	40

NOTE:

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



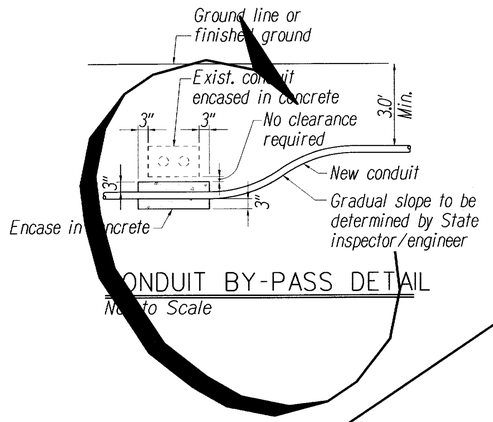
EXIST. A.C. PAVEMENT RESTORATION DETAIL
Not to Scale



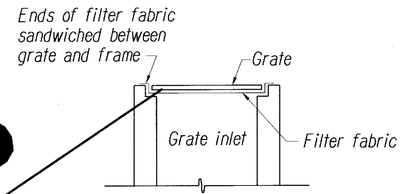
NOTES:

1. For sign post detail, see standard plans TE-01 thru TE-04.
2. Two (2) warning signs shall be placed on each sign post "Back-to-Back".
3. Text on sign shall be centered both ways.

WARNING SIGN DETAIL
Not to Scale



CONDUIT BY-PASS DETAIL
Not to Scale



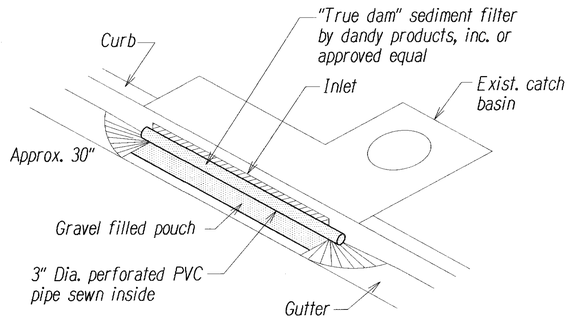
NOTES:

1. Contractor shall install sediment barrier at drain inlets located downstream of construction site.
2. Filter fabric shall be 15 mil (min.) "envirofence #10800" by nicolon corp. or approval equal.
3. Contractor shall check the condition of the filter at the beginning and ending of each work day and repair/clean as necessary.

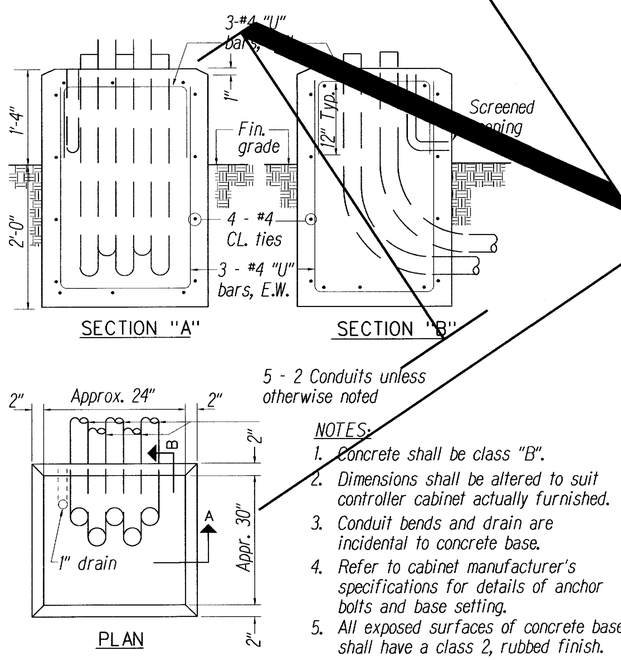
TEMPORARY SEDIMENT BARRIER AT DRAIN INLET
Not to Scale

NOTES:

1. Contractors shall install sediment control filter at catch basins located downstream of construction site.
2. During an above normal rainfall event, contractor shall remove sediment filters from curb opening and replace once the event has passed. Contractor shall check the condition of filter after each storm and clean/repair as necessary.



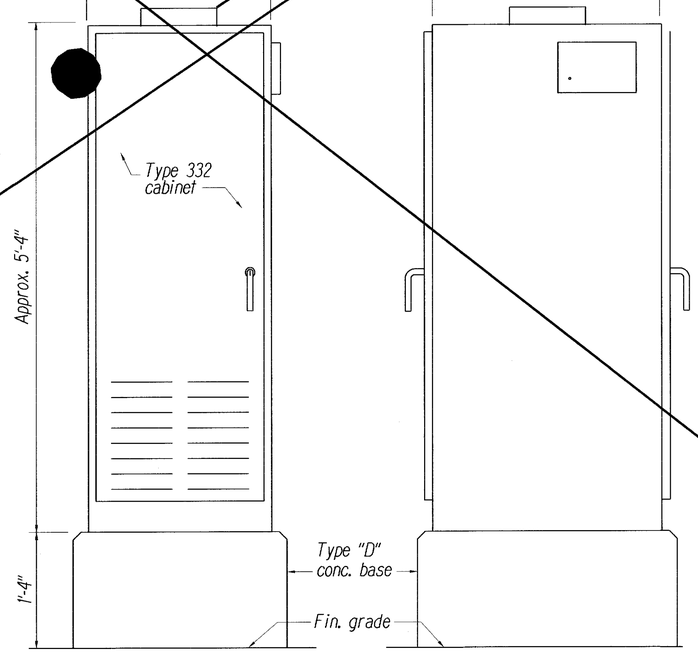
SEDIMENT CONTROL FILTER AT CATCH BASIN
Not to Scale



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
Not to Scale



332 CABINET (EXISTING)
Not to Scale

LEGEND FOR AS-BUILT POSTINGS

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Roadway	Text for as-built posting

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC COUNTING STATION DETAILS

HONOAPIILANI HIGHWAY RESURFACING
Vicinity of Hoohui Road to Plantation Estates Golf Course
Project No. 30A-01-10M

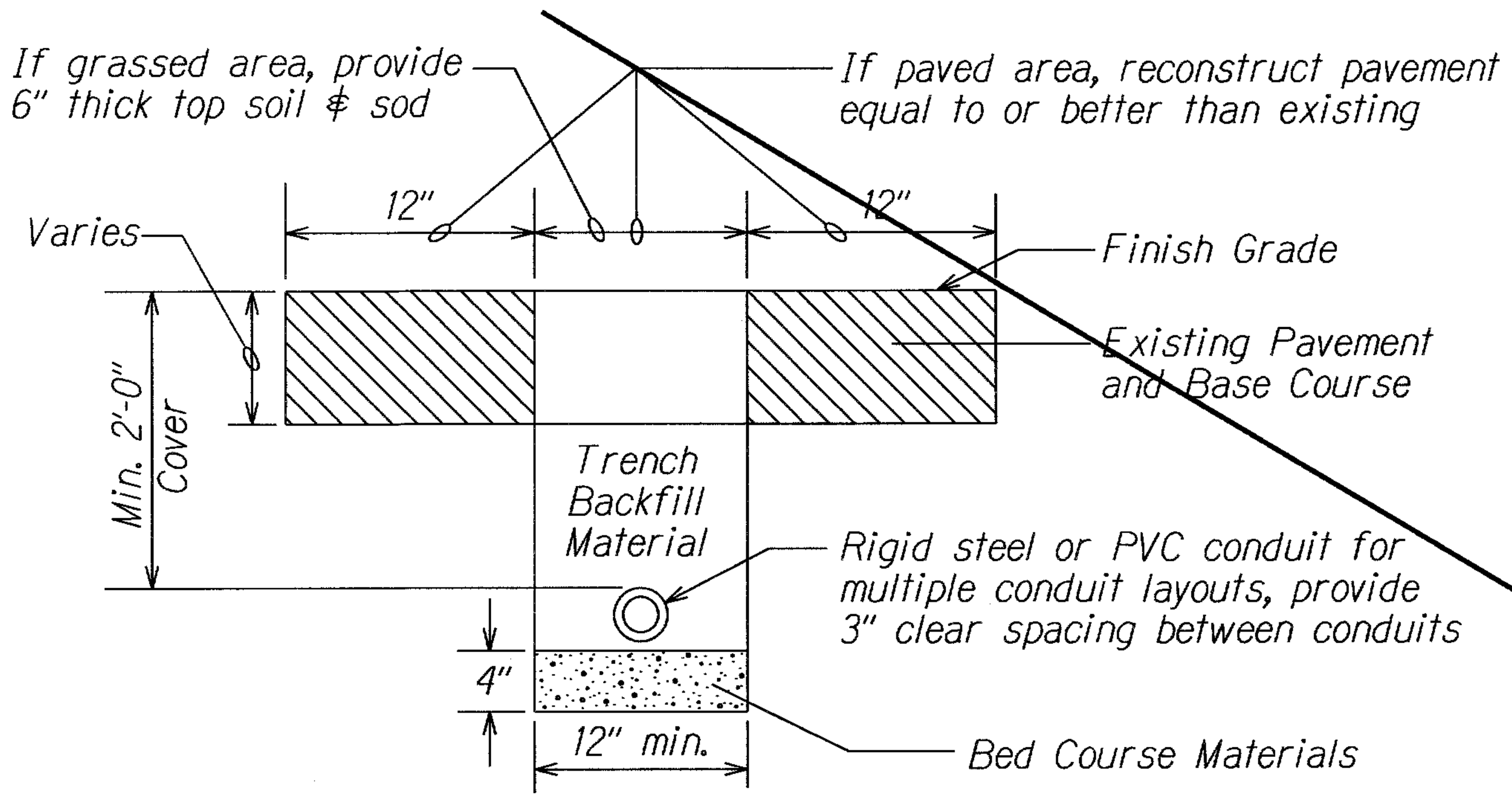
Scale: As Shown Date: August, 2009

SHEET No. 3 OF 3 SHEETS

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

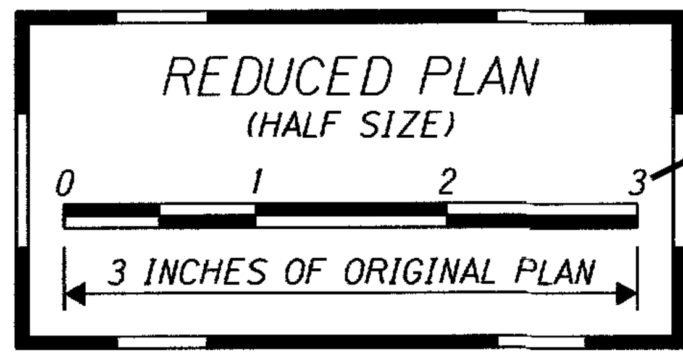
"AS-BUILT"

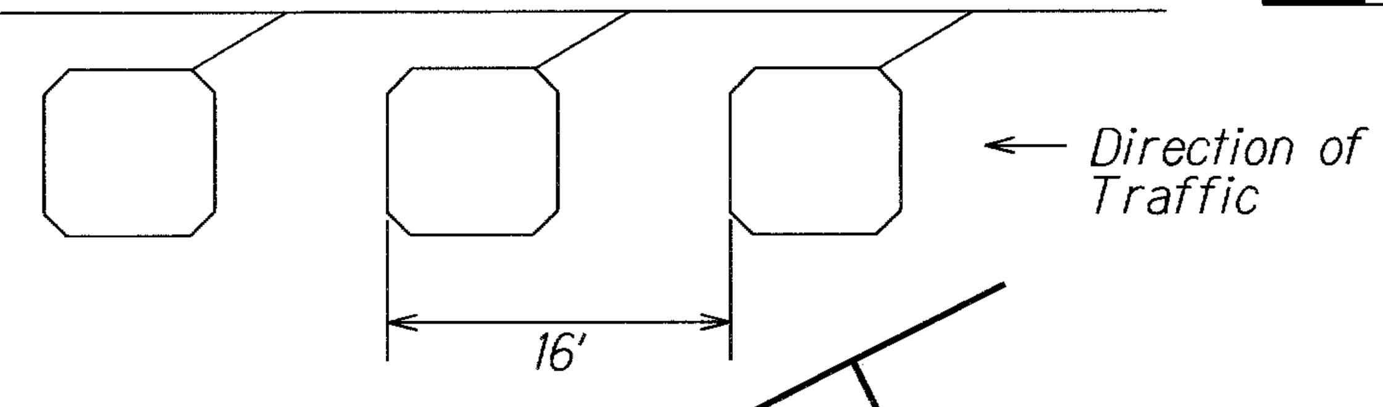
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	30A-01-10M	2011	ADD.28S-1	40



TYPICAL TRENCH SECTION FOR CONDUIT

Not to Scale



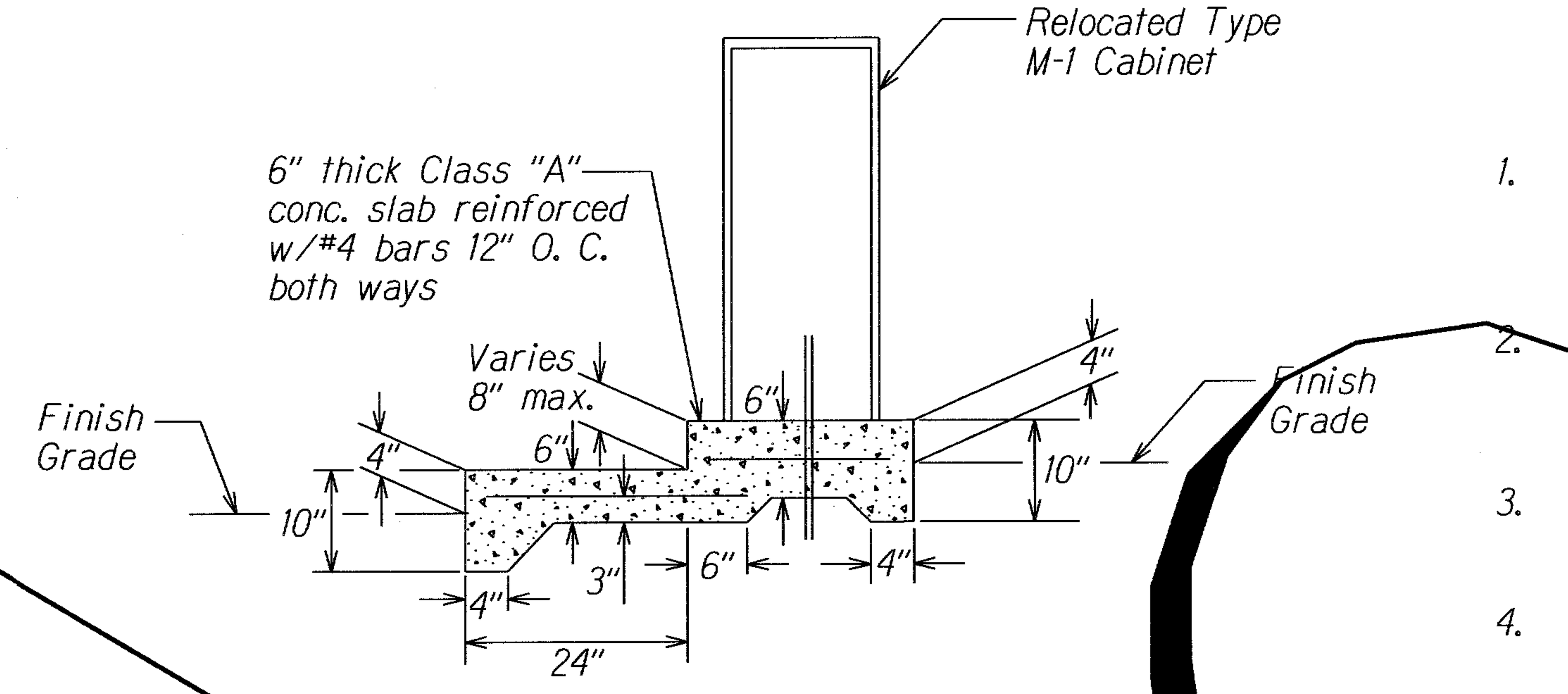


LOOP-PIEZO LAYOUT

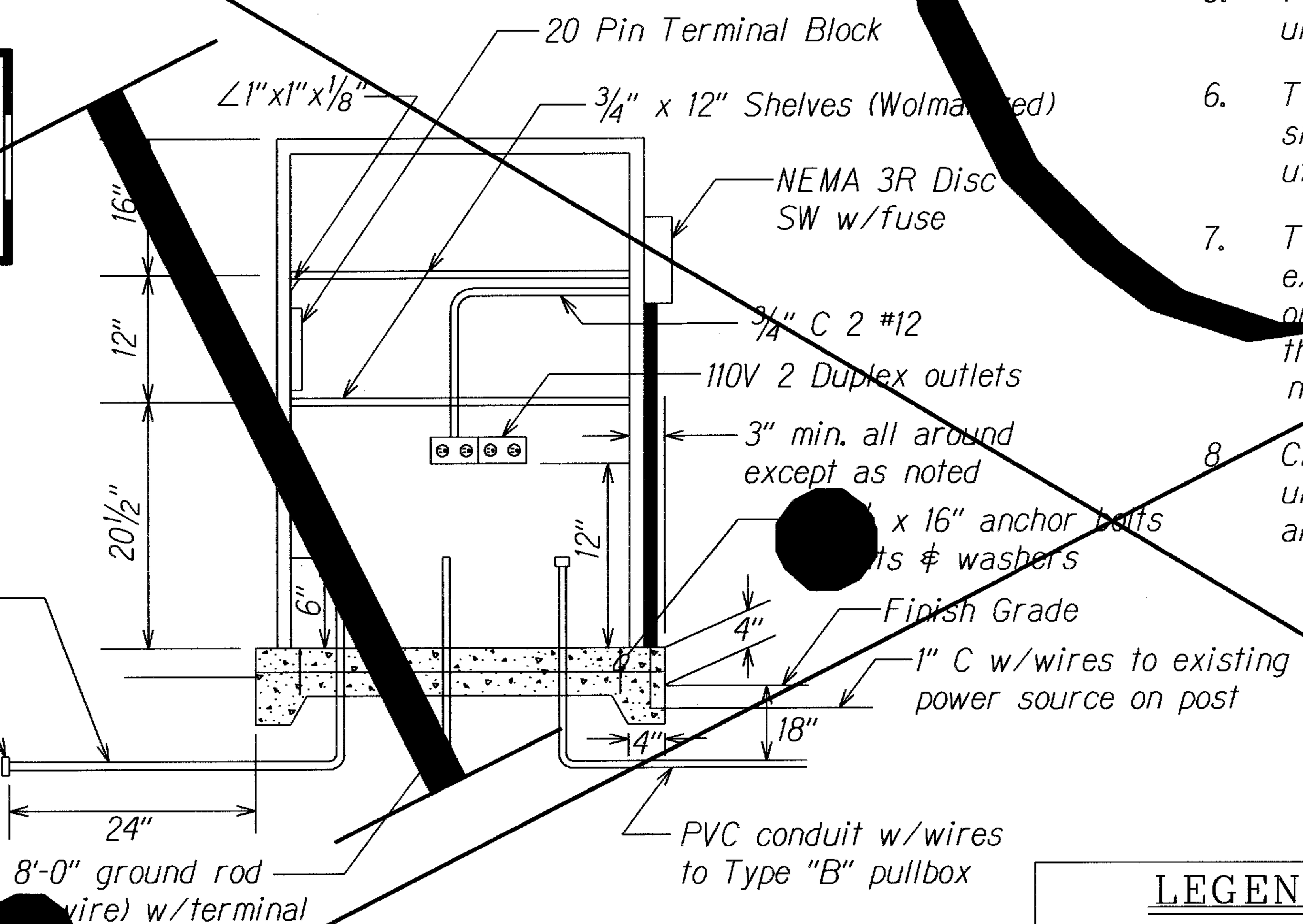
Not to Scale

LOOP LAY[redacted]OTES:

1. Detector loop shal[redacted]ist of three (3) turns of 1/C 14 AWG RHW-USE-XLP wire or [redacted]valent embedded in a 3/8" minimum sawcut, except as noted.
2. Loop and lead-in to the first pullb[redacted]hall be one continuous wire. Lead-in wires from the same loo[redacted]hall be twisted in pairs, two (2) turns per foot. DO NOT tw[redacted]e loop-pairs with another loop-pairs.
3. All lead-in wires shall be crimped with open end lug[redacted]t will fit into the terminal board slots snugly.
4. The Contractor shall connect the inductance wires on each terminal slot.
5. 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.
6. Clean sawcut thoroughly before filling with appropriate sealant.
7. All loop lead-in wires in all enclosures including pullboxes shall be identified and labeled by direction of traffic flow and lane numbers as shown on plans.
8. All cables and wires terminated within an enclosure shall have a minimum 12" additional slack.



SECTION B-B



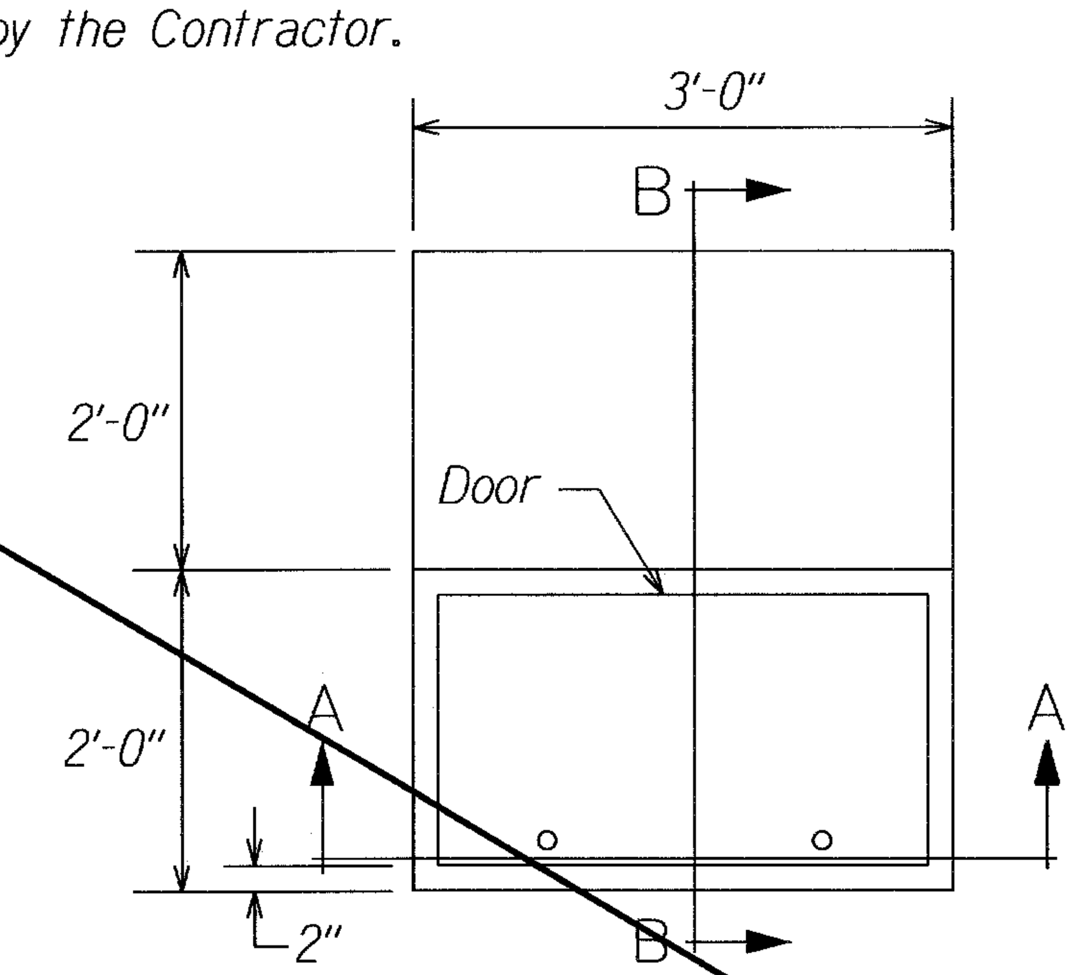
SECTION A-A

CONCRETE PAD AND CABINET

Not to Scale

GENERAL NOTES:

1. The locations 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 one (1) day prior to pouring of the concrete slab/pad, saw-cutting pavement and installing inductance loops.
3. Continuity of inductance loops and lead-in wires shall be tested and warranted for one (1) year from date of acceptance by the Contractor.
4. 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.
5. The Contractor shall verify the locat[redacted]f the existing utilities and underground structures whether or [redacted]own on the plans.
6. The Contractor shall assume that existing underground utilities not shown on the plans may exist, therefore, he shall contact the different utility companies for information and toning.
7. 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.
8. Changes to the contract plans and specifications shall not be permitted, unless otherwise authorized by the Engineer upon written justification and request for approval by the Contractor.



PLAN

LEGEND FOR AS-BUILT POSTINGS

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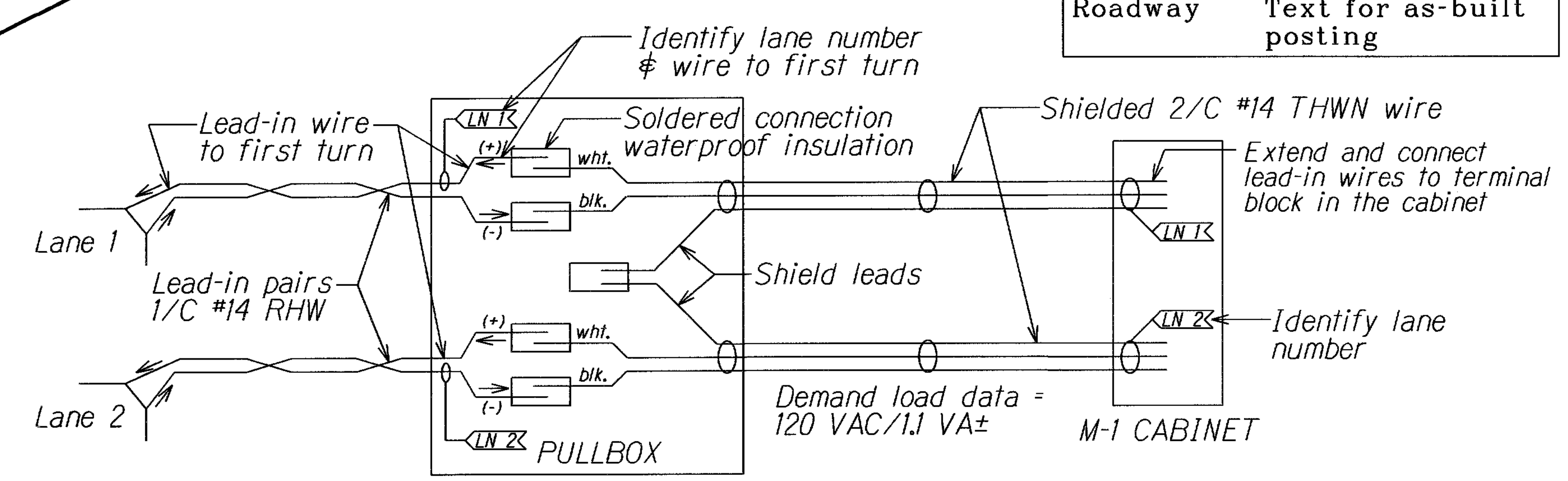
Roadway	Text for as-built posting



DETECTOR LOOP LEAD-IN WIRING & IDENTIFICATION IN PULLBOX & CABINET

Not to Scale

DATE	REVISION
12/3/10	Added sheet

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC COUNTING STATION DETAILS

HONOAPIILANI HIGHWAY RESURFACING
Vicinity of Hoohui Road to Plantation Estates Golf Course
Project No. 30A-01-10M

Not to Scale — Date: Dec., 2010

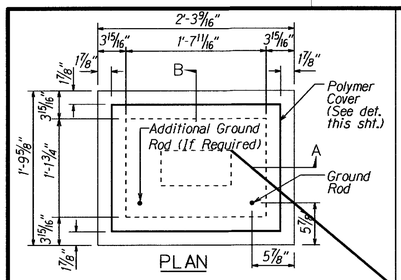
SHEET No. 1 OF 2 SHEETS

ORIGINAL PLAN — NOTE BOOK pe2sherman #18(3)cs3.dgn — SURVEY PLOTTED BY — DRAWN BY S.T. — TRACED BY — DESIGNED BY G.S. — QUANTITIES BY — CHECKED BY — DATE 2/22/05

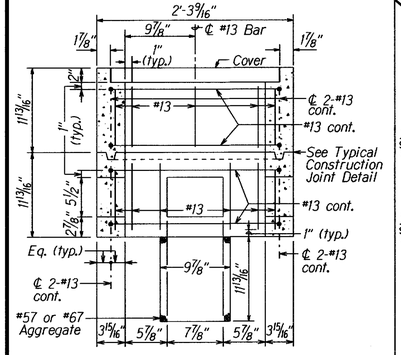
"AS-BUILT"

ADD.28S-1

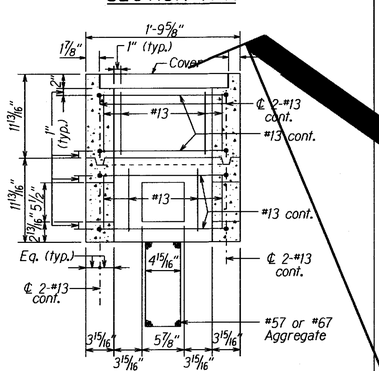
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	30A-01-10M	2011	ADD.28S-2	40



PLAN



SECTION A-A

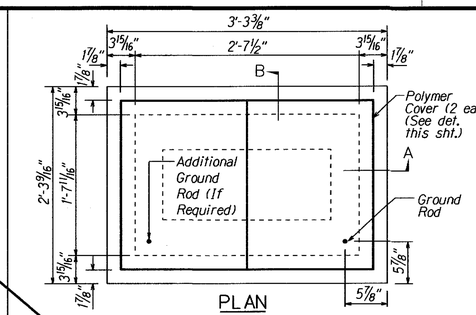


SECTION B-B

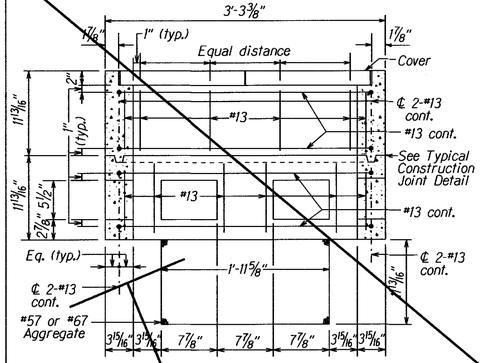
TYPE "A" PULLBOX

(Old Type "B")

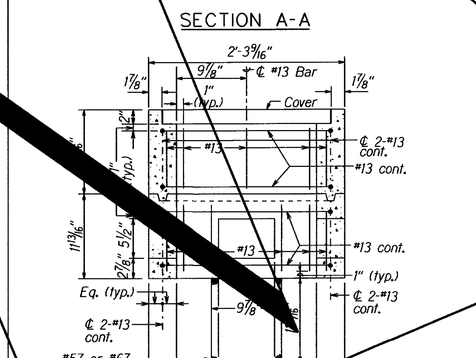
Not to Scale



PLAN



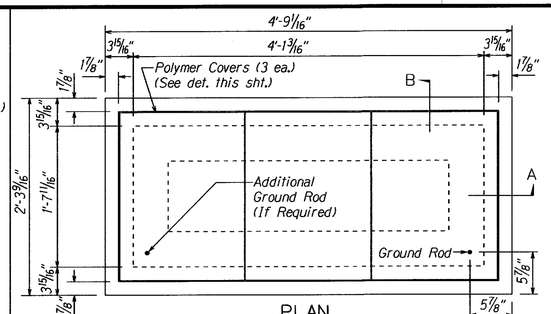
SECTION A-A



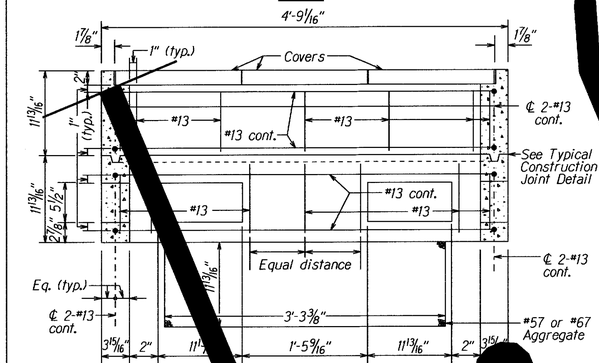
SECTION B-B

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

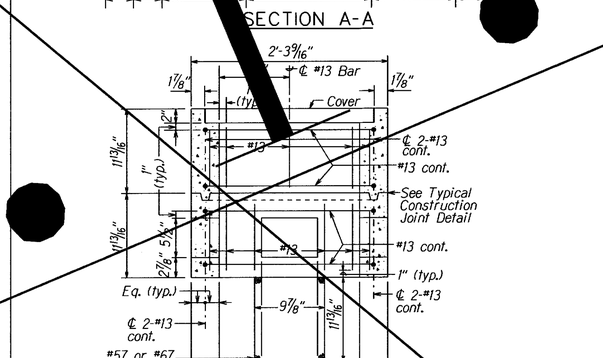
Not to Scale



PLAN



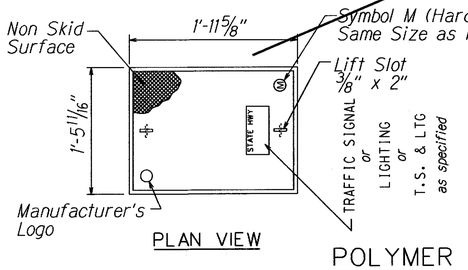
SECTION A-A



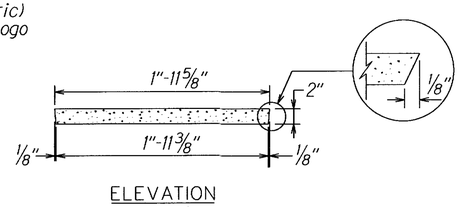
SECTION B-B

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

Not to Scale



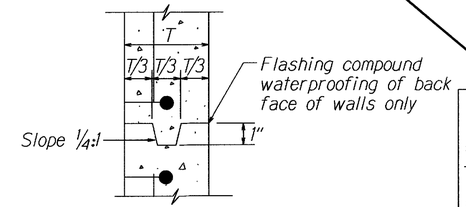
PLAN VIEW



ELEVATION

POLYMER CONCRETE COVER

Not to Scale

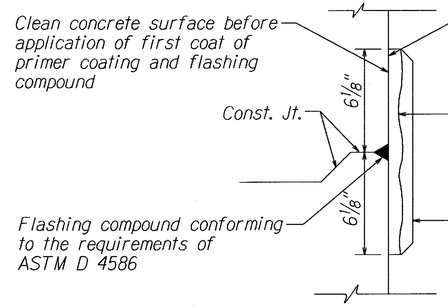


TYPICAL CONSTRUCTION JOINT DETAIL

Not to Scale

GENERAL NOTES:

1. Provide a minimum of one 16 ø 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 [illegible] the bottom of the trench and achieve a minimum of 95% relative compaction of the bottom of the trench.
8. [illegible] concrete shall be Class A (25MPa, min.)
9. Rebar 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

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

DATE	REVISION
12/3/10	Added Sheet

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC COUNTING STATION DETAILS

HONOAPIILANI HIGHWAY RESURFACING
Vicinity of Hoohui Road to Plantation Estates Golf Course
Project No. 30A-01-10M

Not to Scale — Date: Dec., 2010

SHEET No. 2 OF 2 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE 4/2/04
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

"AS-BUILT"

ADD.28S-2