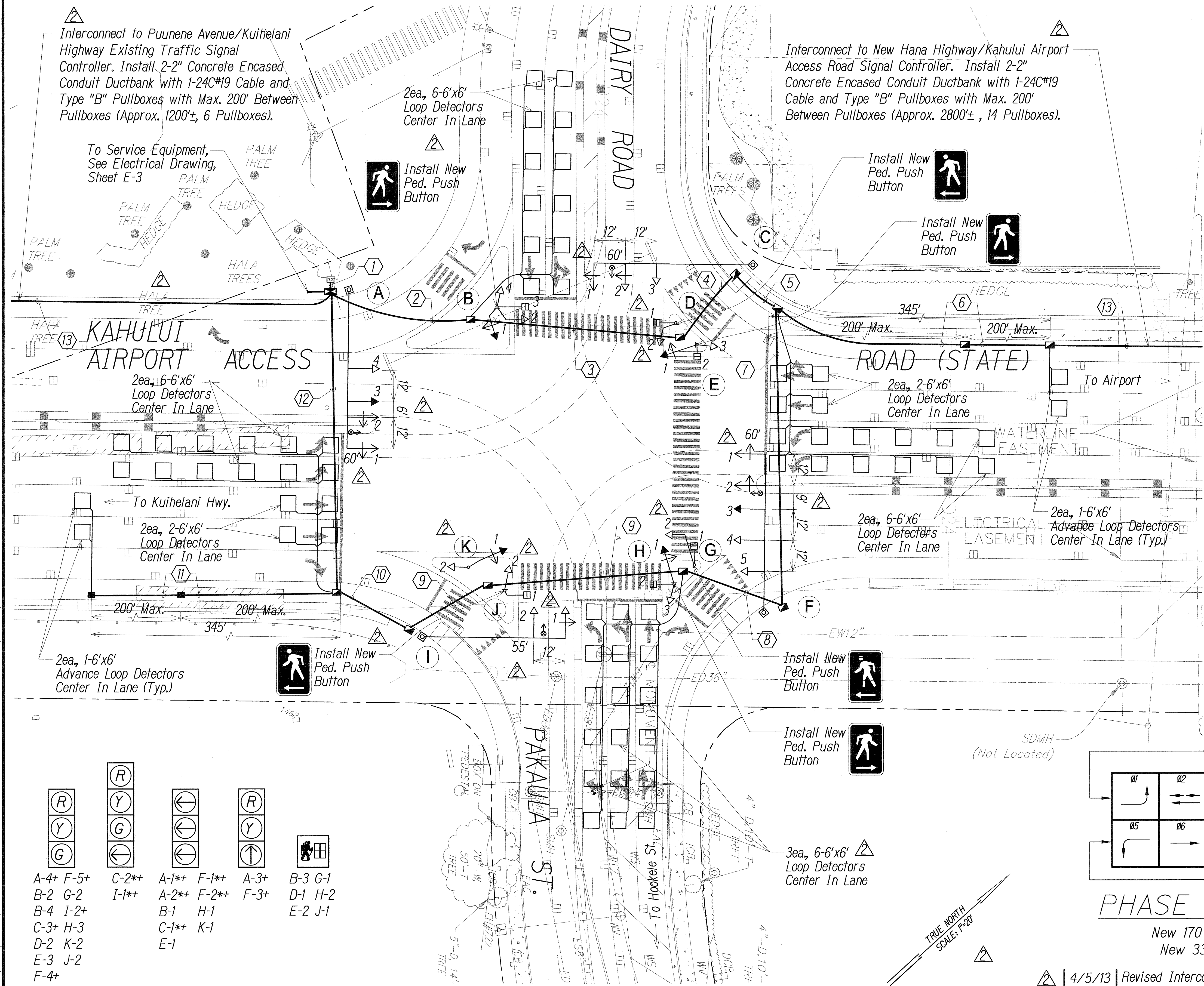




FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	ADD.163	166

CONDUIT AND CABLE SCHEDULE					
Symbol	Cond.	Description	Symbol	Cond.	Description
①	3" Conc.	2-26C#14	⑥	2" Conc.	1-2C#14
	3" Conc.	11-2C#14		2" Conc.	1-24C#19
	2" Conc.	2-24C#19	⑦	2" Conc.	1-26C#14
	2" Conc.	1-3C#6		2" Conc.	1-26C#14
	2" Conc.	4-evp		2" Conc.	1-2C#14
	2" Conc.	Spare		2" Conc.	1-evp
	2" Conc.	Spare		2" Conc.	Spare
②	2" Conc.	1-26C#14	⑧	2" Conc.	1-26C#14
	2" Conc.	1-26C#14		2" Conc.	1-26C#14
	2" Conc.	6-2C#14		2" Conc.	1-2C#14
	2" Conc.	1-24C#19		2" Conc.	1-2C#14
	2" Conc.	2-evp		2" Conc.	Spare
	2" Conc.	Spare	⑨	2" Conc.	1-26C#14
③	2" Conc.	1-26C#14		2" Conc.	1-26C#14
	2" Conc.	1-26C#14		2" Conc.	2-2C#14
	2" Conc.	5-2C#14		2" Conc.	2-2C#14
	2" Conc.	1-24C#19		2" Conc.	Spare
	2" Conc.	2-evp	⑩	2" Conc.	1-26C#14
	2" Conc.	Spare		2" Conc.	1-26C#14
④	2" Conc.	1-26C#14		2" Conc.	2-2C#14
	2" Conc.	1-26C#14		2" Conc.	1-evp
	2" Conc.	4-2C#14		2" Conc.	Spare
	2" Conc.	1-24C#19	⑪	2" Conc.	1-2C#14
	2" Conc.	2-evp		2" Conc.	1-2C#14
	2" Conc.	Spare	⑫	2" Conc.	1-26C#14
⑤	2" Conc.	1-26C#14		2" Conc.	1-26C#14
	2" Conc.	1-26C#14		2" Conc.	5-2C#14
	2" Conc.	4-2C#14		2" Conc.	1-evp
	2" Conc.	1-24C#19		2" Conc.	Spare
	2" Conc.	1-evp	⑬	2" Conc.	1-24C#19
	2" Conc.	Spare		2" Conc.	Spare



(R)	(R)	(R)	(R)	(R)	(R)
(Y)	(Y)	(Y)	(Y)	(Y)	(Y)
(G)	(G)	(G)	(G)	(G)	(G)
A-4+ F-5+	C-2**	A-1** F-1**	A-3+	B-3 G-1	
B-2 G-2	I-1**	A-2** F-2**	F-3+	D-1 H-2	
B-4 I-2+		B-1 H-1		E-2 J-1	
C-3+ H-3		C-1** K-1			
D-2 K-2		E-1			
E-3 J-2					
F-4+					

### SIGNAL INDICATIONS

- \* Indicates Programmable Visibility Head
- + Indicates Back Plate w/ Retro Reflective Border

### TRAFFIC SIGNAL PLAN

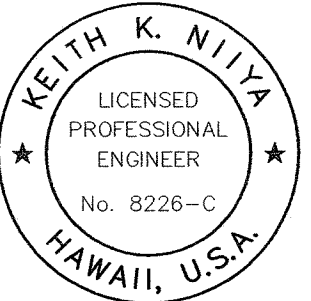
Scale: 1"=20'

### PHASE DIAGRAM

New 170 Controller  
New 332 Cabinet

4/5/13 Revised Interconnect, Phase Diagram, Mast Arm Lengths, Conduits, Cables, Loop Detectors, Various Signal Heads, EVP, and Pullboxes.

DATE REVISION



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

APRIL 30, 2014  
AUSTIN, TSUTSUMI & ASSOC. INC. LIC. EXP. DATE

### KAHULUI AIRPORT ACCESS RD. / DAIRY RD. / PAKAULA ST. TRAFFIC SIGNAL PLAN

KAHULUI AIRPORT  
ACCESS ROAD, PHASE I  
Federal Aid Project No. NH-0380(10)  
Scale: As Shown Date: February 2013

SHEET No. TS-2 OF 5 SHEETS

ADD. 163

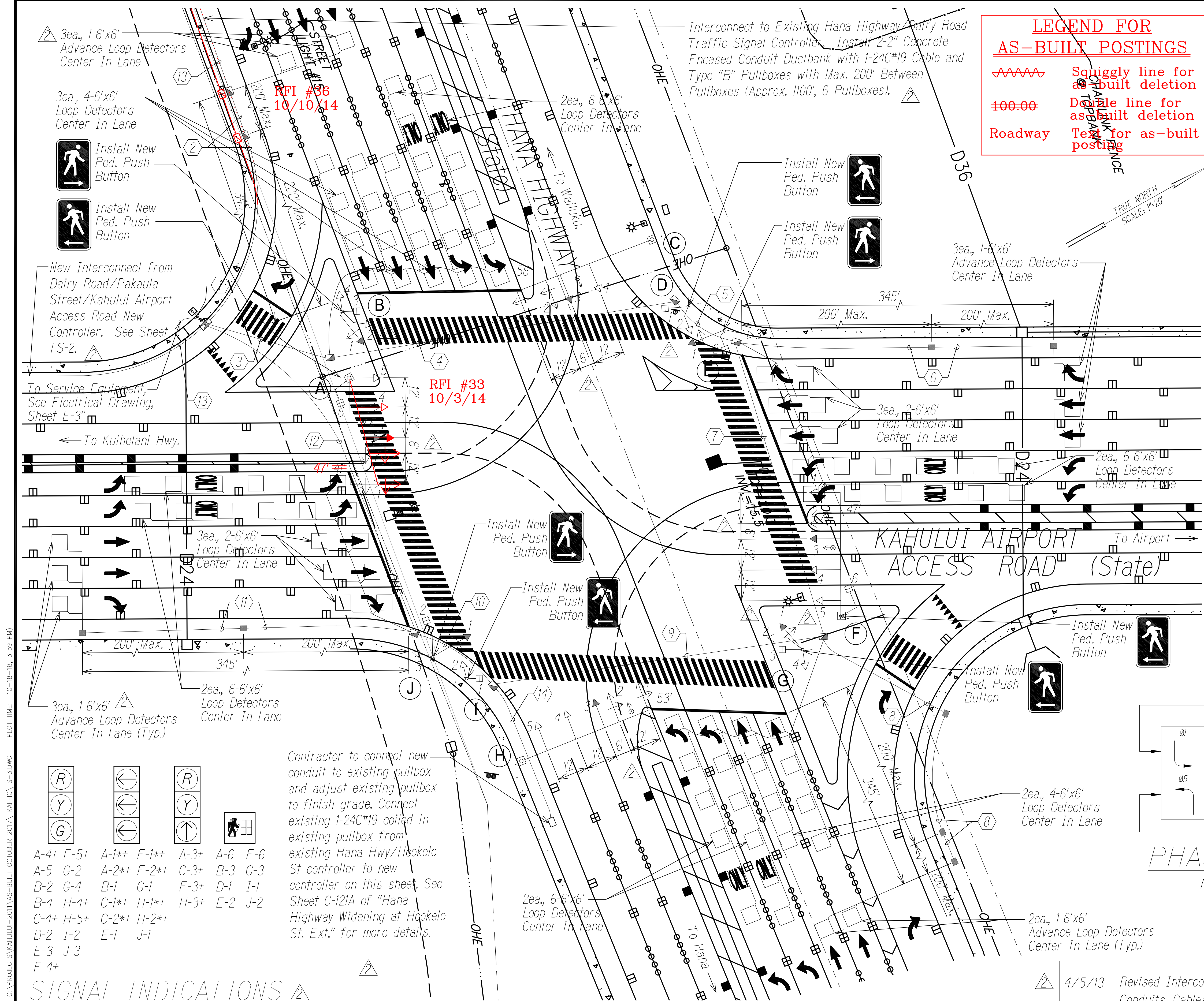
**LEGEND FOR AS-BUILT POSTINGS**

~~~~~~~~~ Squiggly line for as-built deletion

~~-----~~ Double line for as-built deletion

Roadway Text for as-built posting

| CONDUIT AND CABLE SCHEDULE |          |                |        |          |                |
|----------------------------|----------|----------------|--------|----------|----------------|
| Symbol                     | Cond.    | Description    | Symbol | Cond.    | Description    |
| ①                          | 3" Conc. | 2-26C#14       | ⑦      | 2" Conc. | 1-26C#14       |
|                            | 3" Conc. | 2-24C#19       |        | 2" Conc. | 1-26C#14       |
|                            |          | Exist 1-24C#19 |        | 2" Conc. | 1-2C#14        |
|                            | 3" Conc. | 8-2C#14        |        | 2" Conc. | 1-evp          |
| ②                          | 3" Conc. | 8-2C#14        | ⑧      | 2" Conc. | 1-2C#14        |
|                            | 2" Conc. | 1-3C#6         |        |          |                |
|                            | 2" Conc. | 4-evp          |        |          |                |
|                            | 2" Conc. | Spare          |        |          |                |
| ③                          | 2" Conc. | 1-2C#14        | ⑨      | 2" Conc. | 1-26C#14       |
|                            | 2" Conc. | 1-24C#19       |        | 2" Conc. | 1-26C#14       |
|                            |          |                |        | 2" Conc. | 4-2C#14        |
|                            |          |                |        | 2" Conc. | Spare          |
| ④                          | 2" Conc. | 1-26C#14       | ⑩      | 2" Conc. | 1-26C#14       |
|                            | 2" Conc. | 1-26C#14       |        | 2" Conc. | 1-26C#14       |
|                            | 2" Conc. | 4-2C#14        |        | 2" Conc. | Exist 1-24C#19 |
|                            | 2" Conc. | 3-2C#14        |        | 2" Conc. | 4-2C#14        |
| ⑤                          | 2" Conc. | 3-evp          | ⑪      | 2" Conc. | 1-2C#14        |
|                            | 2" Conc. | Spare          |        |          |                |
|                            |          |                |        |          |                |
|                            |          |                |        |          |                |
| ⑥                          | 2" Conc. | 1-26C#14       | ⑫      | 2" Conc. | 1-26C#14       |
|                            | 2" Conc. | 1-26C#14       |        | 2" Conc. | 1-26C#14       |
|                            | 2" Conc. | 5-2C#14        |        | 2" Conc. | Exist 1-24C#19 |
|                            | 2" Conc. | 2-evp          |        | 2" Conc. | 6-2C#14        |
| ⑦                          | 2" Conc. | 1-26C#14       | ⑬      | 2" Conc. | 1-24C#19       |
|                            | 2" Conc. | 1-26C#14       |        | 2" Conc. | Spare          |
|                            | 2" Conc. | 4-2C#14        |        |          |                |
|                            | 2" Conc. | 1-evp          |        |          |                |
| ⑧                          | 2" Conc. | Spare          | ⑭      | 2" Conc. | Exist 1-24C#19 |
|                            |          |                |        | 2" Conc. | Spare          |
|                            |          |                |        |          |                |
|                            |          |                |        |          |                |



|     |     |     |
|-----|-----|-----|
| (R) | (Y) | (G) |
| (R) | (Y) | (G) |
| (R) | (Y) | (G) |

A-4+ F-5+ A-1\*\* F-1\*\* A-3+ A-6 F-6  
A-5 G-2 A-2\*\* F-2\*\* C-3+ B-3 G-3  
B-2 G-4 B-1 G-1 F-3+ D-1 I-1  
B-4 H-4+ C-1\*\* H-1\*\* H-3+ E-2 J-2  
C-4+ H-5+ C-2\*\* H-2\*\*  
D-2 I-2 E-1 J-1  
E-3 J-3  
F-4+

**SIGNAL INDICATIONS**

- \* Indicates Programmable Visibility Head
- + Indicates Back Plate w/ Retro Reflective Border

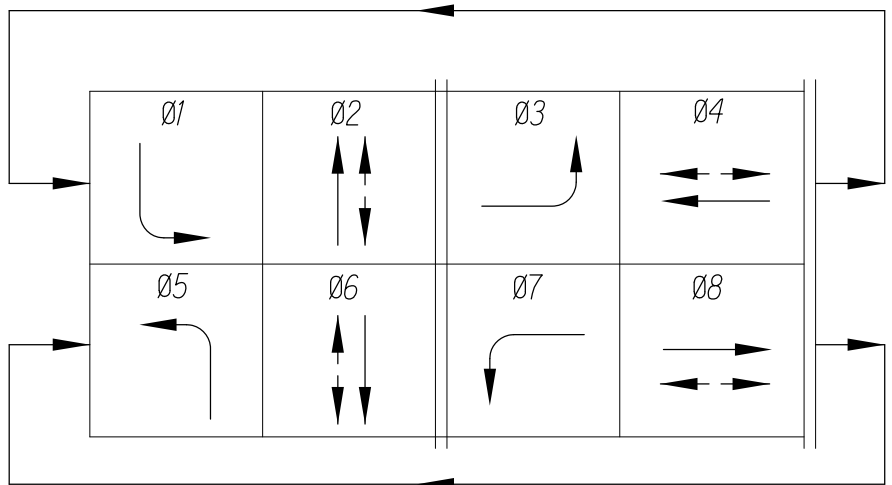
Contractor to connect new conduit to existing pullbox and adjust existing pullbox to finish grade. Connect existing 1-24C#19 coiled in existing pullbox from existing Hana Hwy/Hookele St controller to new controller on this sheet. See Sheet C-121A of "Hana Highway Widening at Hookele St. Ext." for more details.

**TRAFFIC SIGNAL PLAN**

Scale: 1"=20'

**PHASE DIAGRAM**

New 170 Controller  
New 332 Cabinet



4/5/13 Revised Interconnect, Phase Diagram, Conduits, Cables, Loop Detectors, and Various Signal Heads.

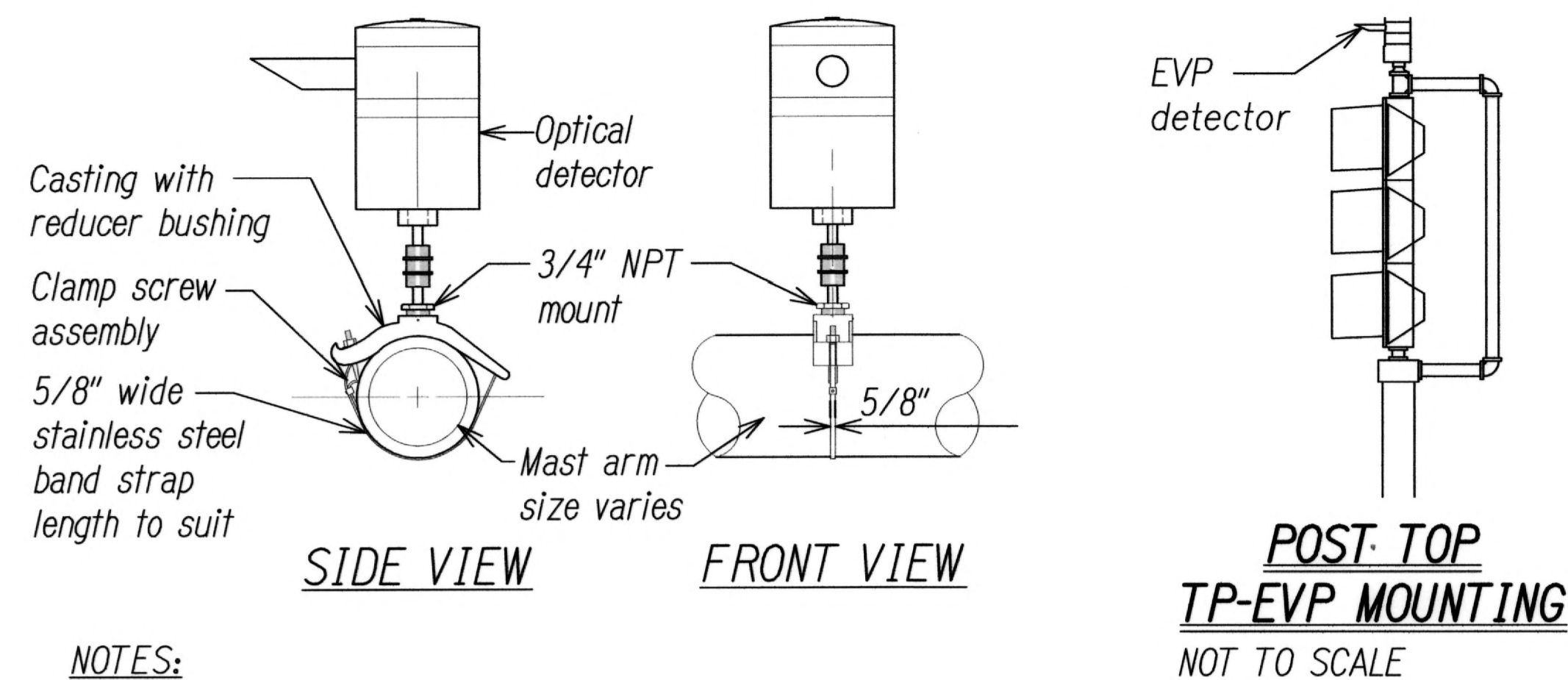
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**KAHULUI AIRPORT ACCESS RD. / HANA HIGHWAY TRAFFIC SIGNAL PLAN**

KAHULUI AIRPORT  
ACCESS ROAD, PHASE 1  
Federal Aid Project No. NH-0380(10)  
Scale: As Shown Date: February 2013

SHEET No. TS-3 OF 5 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | NH-0380(10)        | 2013        | 165       | 166          |



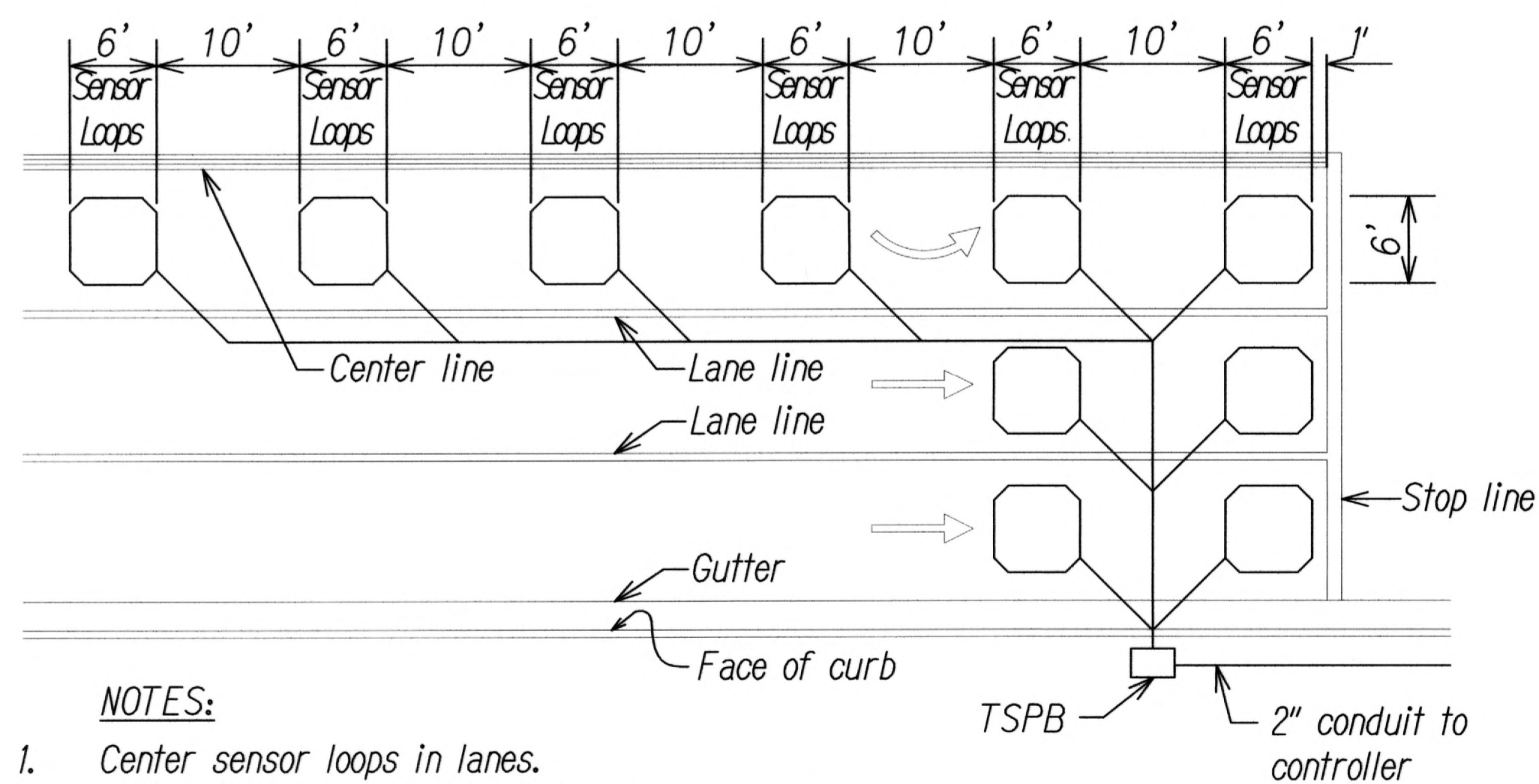
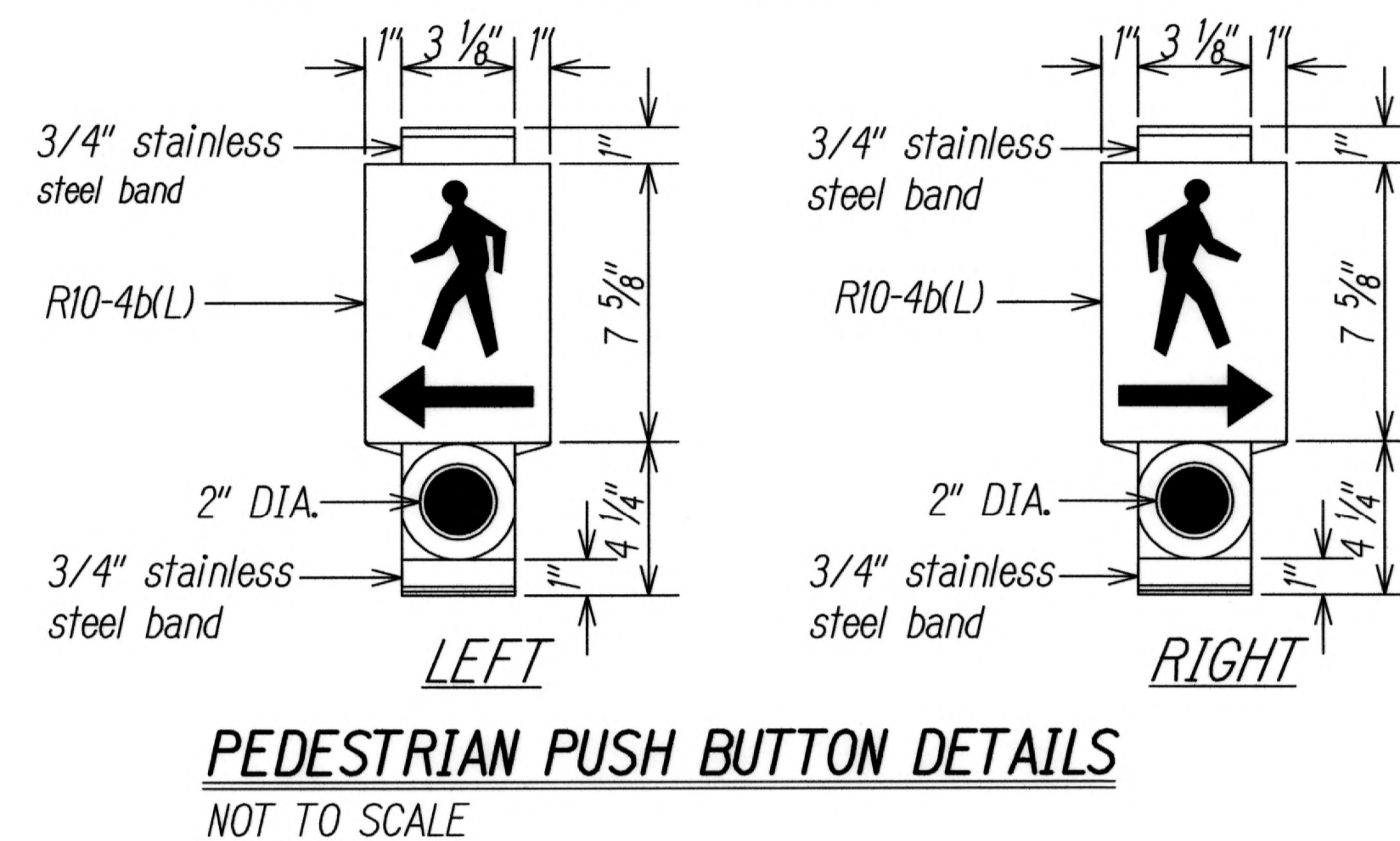
- NOTES:**
- Optical detector shall be "Model 711 preemption detector", or approved equal, unless noted otherwise in the special provisions.
  - Support saddle assembly shall be "ASTRO MINI-BRAC, AB-0132-29", or approved equal, unless noted otherwise in the special provisions.

**OPTICAL DETECTOR FOR MAST ARM MOUNTING**

NOT TO SCALE

The color scheme shall be:  
White - Man, arrow and push button  
Black - Background

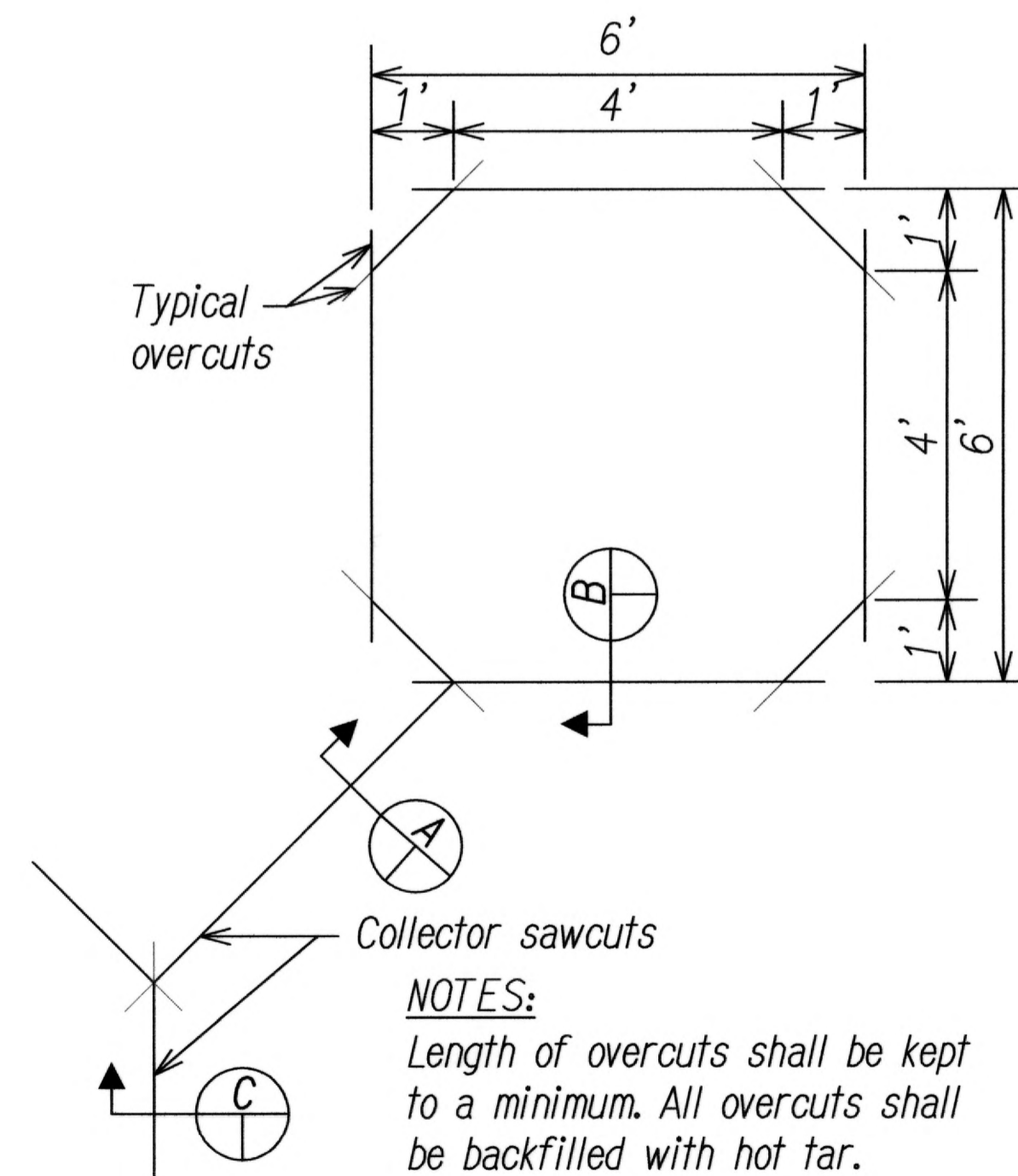
NOTE: On plan sheet, use applicable detail.  
see state STD. DET. for PPB pedestal.



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

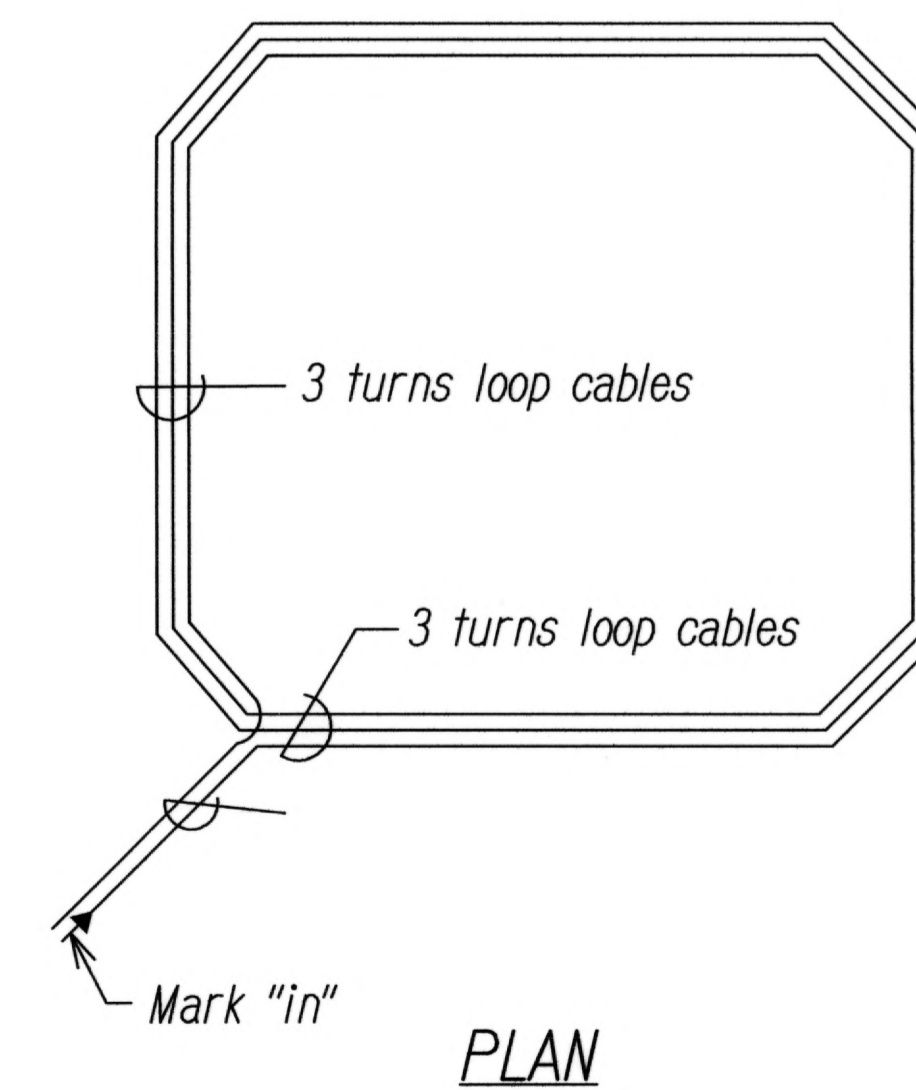
**TYPICAL SENSOR LOOP LAYOUT**

NOT TO SCALE



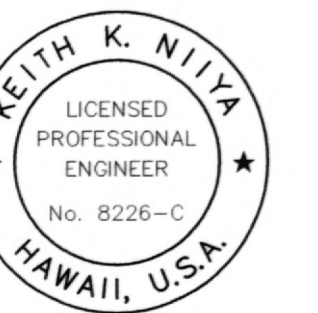
**TYPICAL SENSOR LOOP SAWCUT DETAIL**

NOT TO SCALE



**TYPICAL SENSOR LOOP WIRING DIAGRAM**

NOT TO SCALE



THIS WORK WAS PREPARED BY ME  
OR UNDER MY SUPERVISION.

Keith K. Niya  
APRIL 30, 2014  
AUSTIN, TSUTSUMI & ASSOC. INC. LIC. EXP. DATE

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**TRAFFIC SIGNAL DETAILS**

KAHULUI AIRPORT  
ACCESS ROAD, PHASE I  
Federal Aid Project No. NH-0380(10)  
Scale: None Date: February 2013

SHEET No. TS-4 OF 5 SHEETS

| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | NH-0380(10)        | 2013        | ADD.166   | 166          |

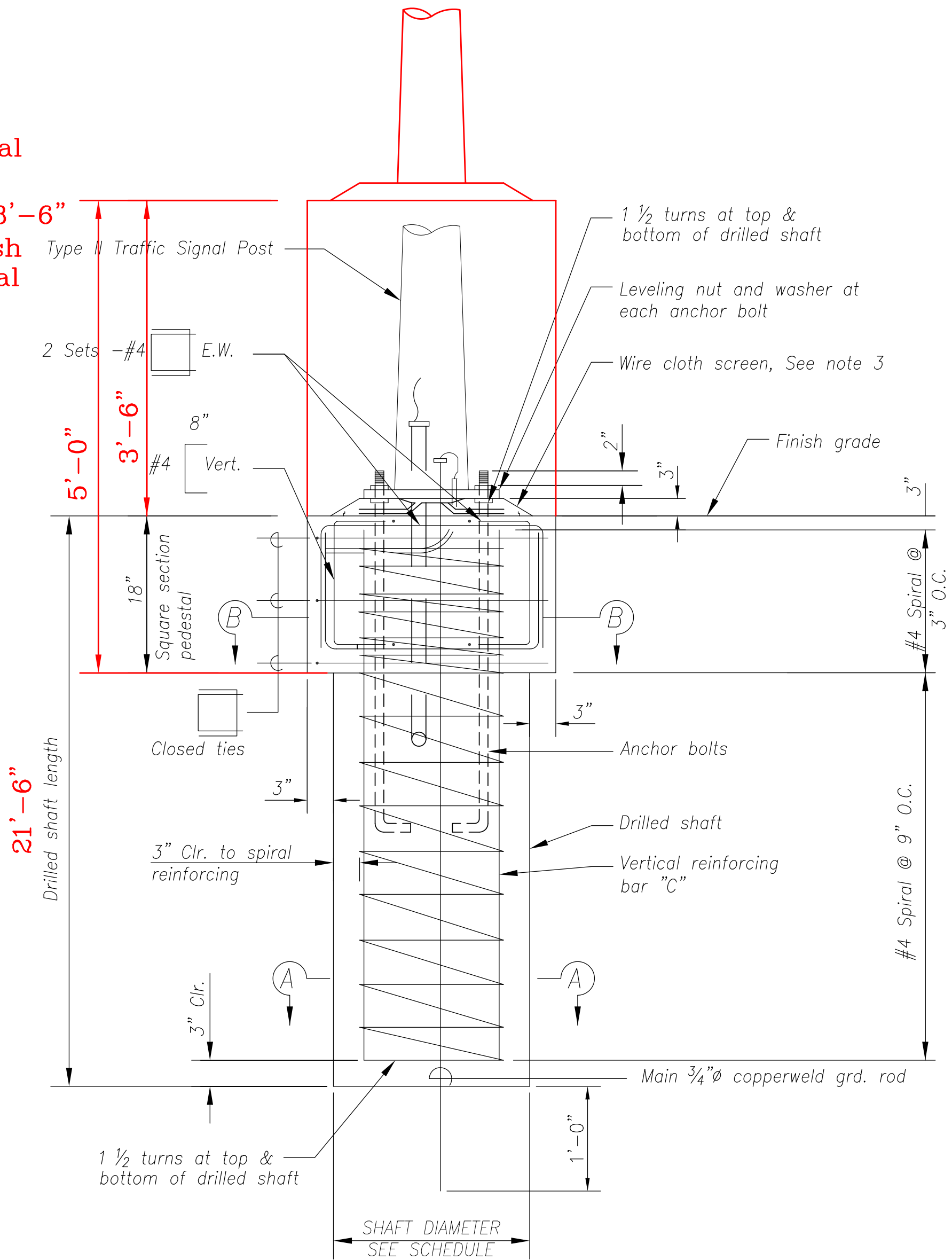
RFI #32  
9/24/14

Note: All As-Built markup revisions shown  
are for Mast Arm "C" on TS-2 (Sheet 163)

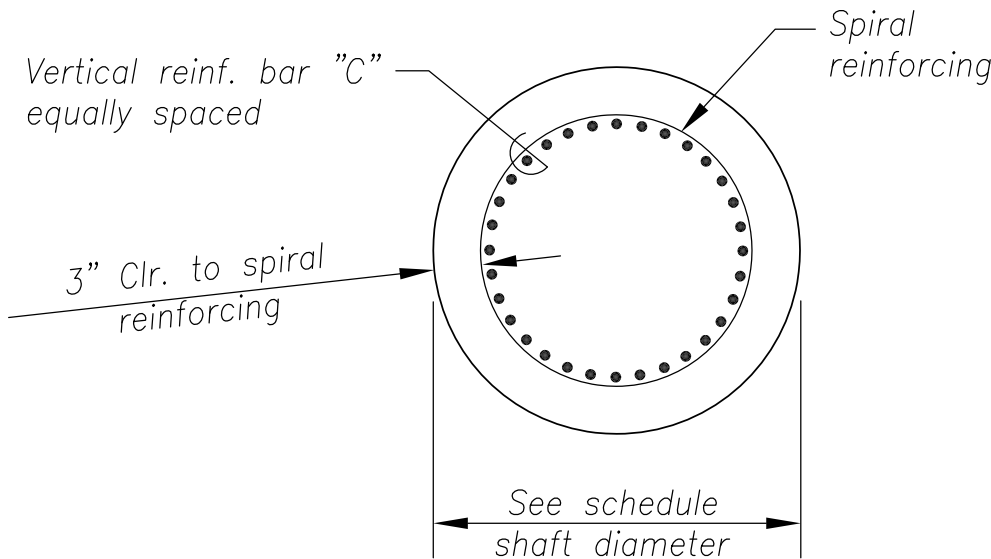
| Level Group Condition - Above Groundwater |                 |                |              |                |          |               |
|-------------------------------------------|-----------------|----------------|--------------|----------------|----------|---------------|
| Soil Type                                 | Mast Arm Length | Shaft Diameter | Shaft Length | Pedestal Width | Bars "C" | Bolt Pattern  |
| Clay & Silt Clay                          | 41'             | 42"            | 14'-0"       | 48"            | 32-#6    | 6-Bolt Circle |
| Clay & Silt Clay                          | 45' - 50'       | 42"            | 15'-0"       | 48"            | 32-#6    | 6-Bolt Circle |
| Clay & Silt Clay                          | 53'             | 42"            | 17'-0"       | 48"            | 32-#6    | 6-Bolt Circle |
| Clay & Silt Clay                          | 55' - 60'       | 42"            | 18'-0"       | 48"            | 32-#6    | 6-Bolt Circle |

21'-6"

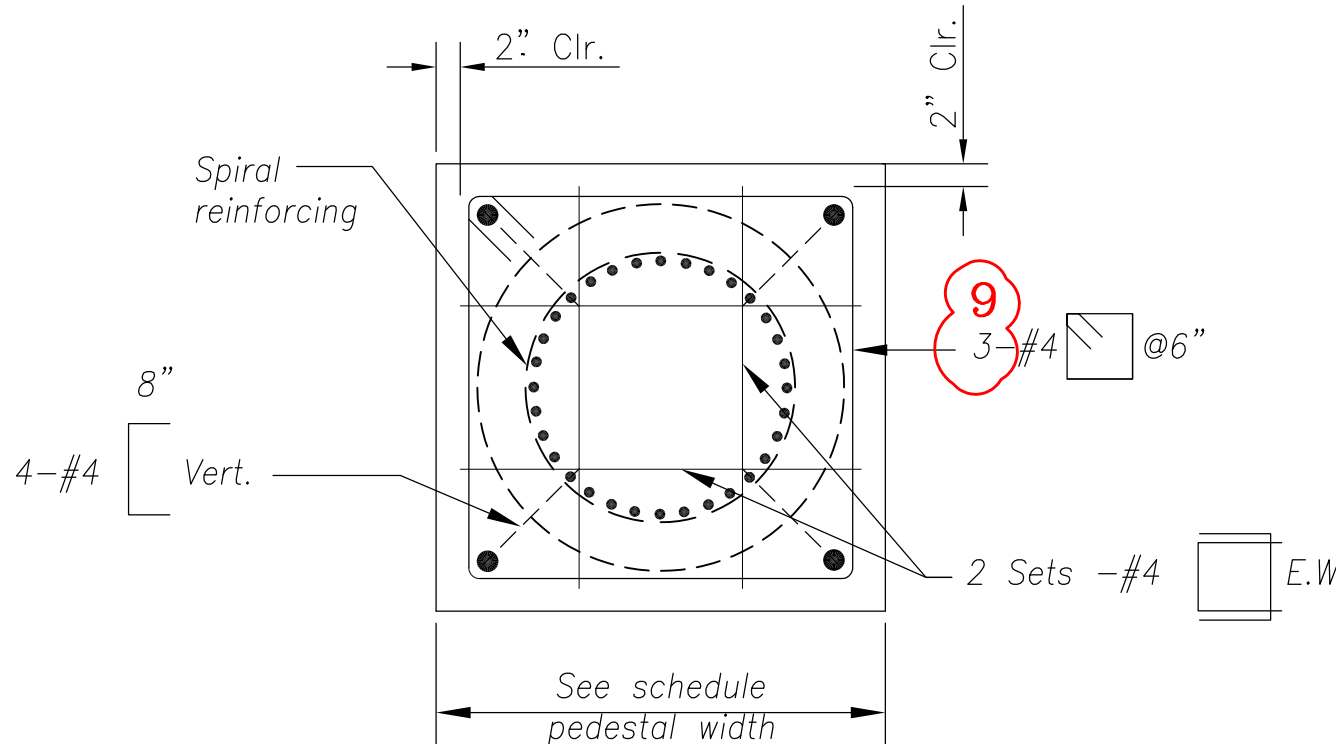
Mast arm  
"C" Pedestal  
on TS-2  
extended 3'-6"  
above finish  
grade. Total  
height of  
pedestal =  
5'-0"



ELEVATION



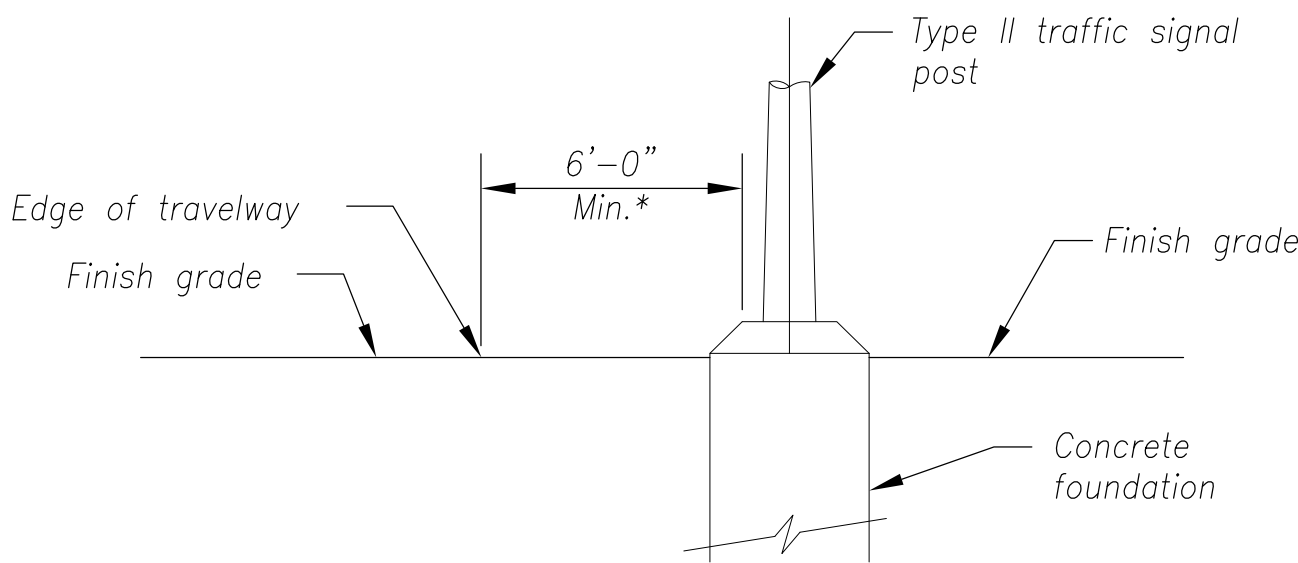
SECTION A-A



SECTION B-B

Notes:

- Traffic signal poles manufacturer's recommendations shall be followed
- See schedules this sheet for additional details.
- Mast arm standards have been designed and shall conform to 4.0 Modifications to AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals as noted in HDOT "Design criteria for Bridges and Structures", April 15, 2008.



\* If 6'-0" min. cannot be maintained due to conflict with other utilities, coordinate field adjustments with Engineer.

HIGHWAY LIGHTING DETAIL  
NOT TO SCALE

|                  |                         |            |
|------------------|-------------------------|------------|
| ORIGINAL<br>PLAN | SURVEY PLOTTED BY _____ | DATE _____ |
|                  | DRAWN BY _____          | " _____    |
|                  | TRACED BY _____         | " _____    |
|                  | DESIGNED BY _____       | " _____    |
|                  | QUANTITIES BY _____     | " _____    |
|                  | CHECKED BY _____        | " _____    |
| No. _____        |                         |            |

DRAWING NAME: C:\PROJECTS\KAHULUI-2011\AS-BUILT OCTOBER 2017\TRAFFIC\TS-5.DWG PLOT TIME: 10-18-18, 3:57 PM

DRILLED SHAFT FOUNDATION FOR TYPE II MAST ARM STANDARD  
NOT TO SCALE (FOR MAST ARM GREATER THAN 40' IN LENGTH)

|        |                              |
|--------|------------------------------|
| 4/5/13 | Revised Table, Mast Arm Type |
| DATE   | REVISION                     |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**TRAFFIC SIGNAL  
DETAILS**  
KAHULUI AIRPORT  
ACCESS ROAD, PHASE I  
Federal Aid Project No. NH-0380(10)  
Scale: None Date: February 2013  
SHEET No. TS-5 OF 5 SHEETS

"AS-BUILT"

ADD. 166

AS-BUILT DRAWINGS