

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37C-02-23	2024	48	115

Material List				
X No.	Base Type	Standard Type	Mounting Type	Mast Arm Length
A	*	Type II	(1) Type VI	30'
			(2) Type VI	
			(3) Type V	
			(4) Type V	
			(5) Type IV (Ped Head)	
B	*	Type II	(1) Type VI	30'
			(2X3) Type V	
C	*	Type II	(1) Type VI	25'
			(2) Type VI	
			(3X4) Type V	
D	*	Type II	(1) Type VI	25'
			(2X3) Type V	
			(4) Type IV (Ped Head)	

* For Traffic Signal Pole Foundation See Structural Plans

Cable and Conduit Schedule							
△# No.	Conduit Size	Type 1 Signal Control 26C#14	Type 2 PPB/Loops 2C#14	Type 6 Power 3C#6	Type 7 Opticom 3C#20	Type 8 Camera Cables Type TC, 3# 2XHHW	Other GND Wire
1	2"	1					
	2"	1					
	2"		4				
	2"		3				
	2"				4		
	2"					4	
	2"						1
	2"	Spare					
	2"	Spare					
2	2"	1					
	2"		2				
	2"				1		
	2"					1	
	2"	Spare					
	2"	Spare					
3	2"	1					
	2"				1		
	2"					1	
	2"	Spare					
	2"	Spare					
4	2"	1					
	2"				1		
	2"					1	
	2"	Spare					
	2"	Spare					
5	2"	1					
	2"				1		
	2"					1	
	2"	Spare					
	2"	Spare					
6	2"	1					
	2"		2				
	2"				1		
	2"					1	

Cable and Conduit Schedule							
△# No.	Conduit Size	Type 1 Signal Control 26C#14	Type 2 PPB/Loops 2C#14	Type 6 Power 3C#6	Type 7 Opticom 3C#20	Type 8 Camera Cables Type TC, 3# 2XHHW	Other GND Wire
7	2"		2				
	2"	Spare					
8	2"		1				
9	2"		3				
	2"	Spare					
10	2"		1				
11	2"		2				
	2"	Spare					
12	2"		1				
13	2"		1				
14	2"		3				
15	2"	Spare					
	2"	Spare For Power					

SURVEY PLATTED BY	DATE
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TRACED BY	
CHECKED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	



STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

MATERIAL LIST AND

CABLE AND CONDUIT SCHEDULE

KULA HIGHWAY,

INTERSECTION IMPROVEMENTS

AT OMAOPIO ROAD

Project No. 37C-02-23

Scale: Not To Scale

Date: April 2024

GERALD D. ANDRADE

LICENSED PROFESSIONAL ENGINEER

No. 10377-C

HAWAII, U.S.A.

Signature

4/30/26

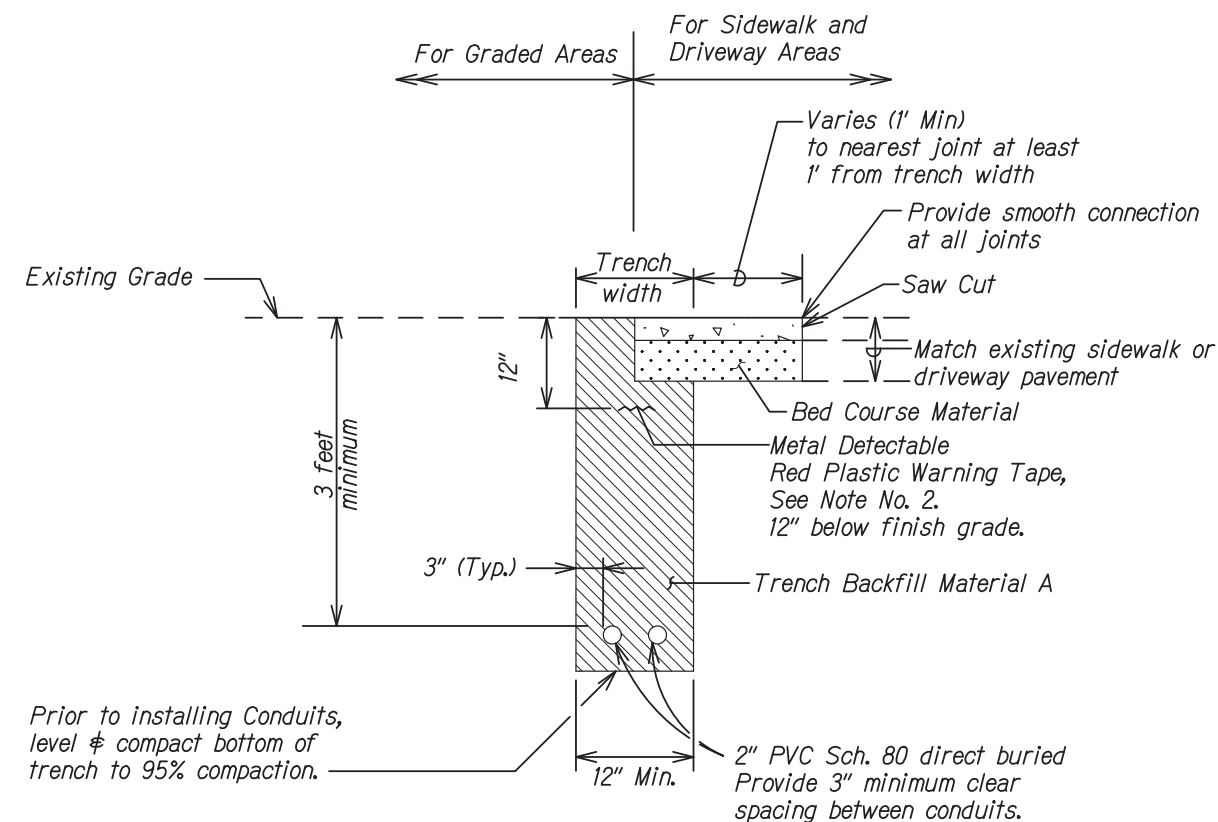
EXPIRATION DATE OF THE LICENSE

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SHEET No. TS-3 OF 10 SHEETS

48

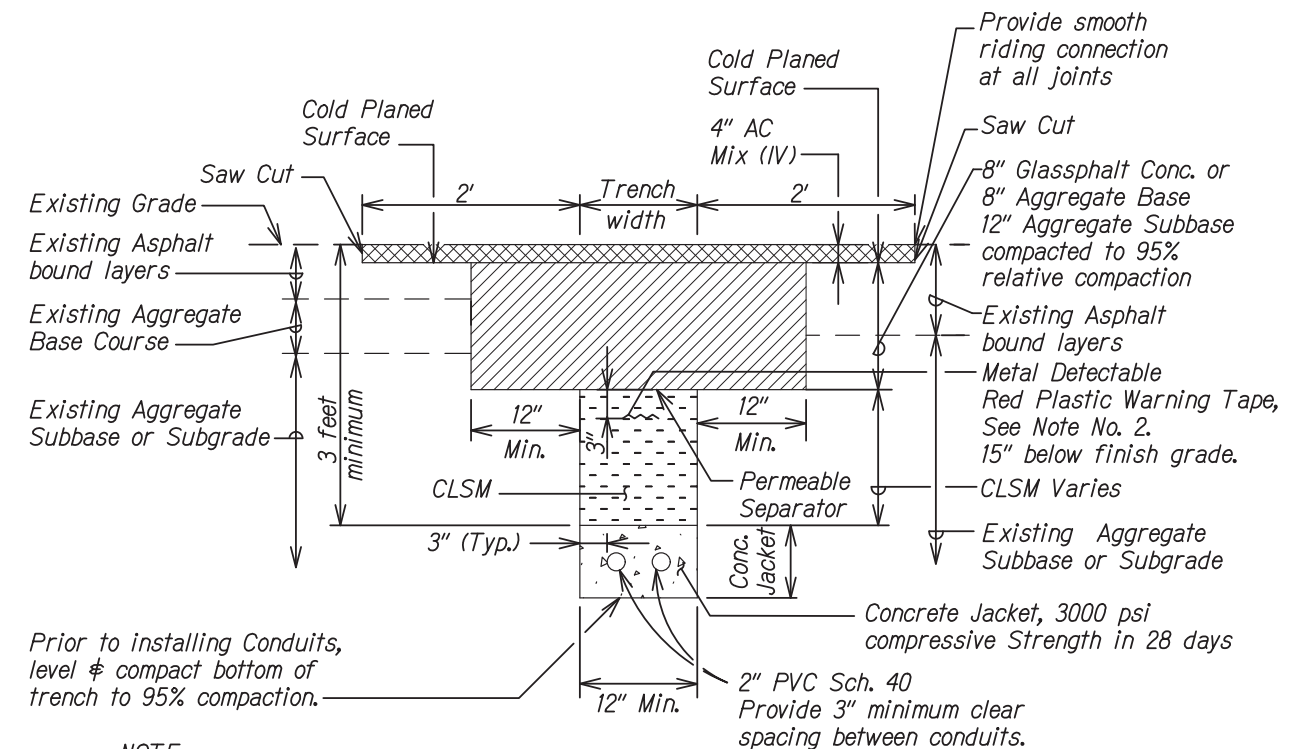
DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37C-02-23	2024	49	115



RESTORATION OF NON-ROADWAY AREAS
DUE TO TRENCH EXCAVATION
Not to Scale

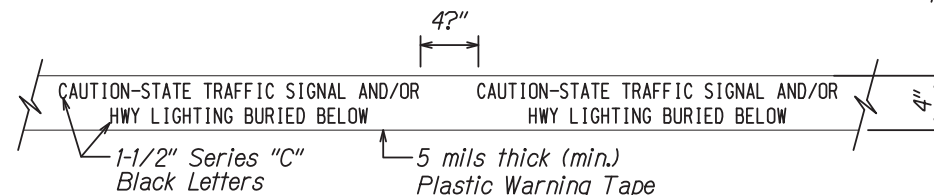
GENERAL NOTES

1. If trench is located on unpaved area, the Contractor shall replace 10" A.C. Base Course and 4" A.C. Pavement with Type "A" backfill material.
2. The Metal Detectable Red Plastic Warning Tape shall be a minimum 5 mils thick and 4" wide with a continuous metallic backing and corrosion resistant 1± mil thick foil core. The message on the tape shall read, "CAUTION - STATE TRAFFIC SIGNAL AND/OR HWY. LIGHTING BURIED BELOW," utilizing 1-1/2 inches series "C" black lettering. The message will be repeated with a 4-1/4" spacing between top line of message and start of next repeat.
3. The Contractor may begin backfilling the conduit trench when the concrete reaches 3000 psi compressive strength after 3 days.
4. Maximum four (4) conduits per row for multiple conduit duct section.
5. For direct buried duct sections, the concrete jacket required at the conduit by-pass for various utilities shall not be paid for separately but considered incidental to the direct buried conduits.
6. 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 Engineer and shall not be paid for separately but considered incidental to the direct buried and/or concrete encased conduits.



NOTE:
Tack Coat faces of Existing Asphalt Bound Materials prior to filling excavation with New Asphalt bound materials.

RESTORATION OF EXISTING PAVEMENT
DUE TO TRENCH EXCAVATION
Not to Scale



For additional information,
see Note No. 2.

METAL DETECTABLE RED PLASTIC
WARNING TAPE
Not to Scale

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**TRENCHING AND
MISCELLANEOUS DETAILS**
KULA HIGHWAY,
INTERSECTION IMPROVEMENTS
AT OMAPIO ROAD
Project No. 37C-02-23

Scale: NONE Date: April 2024

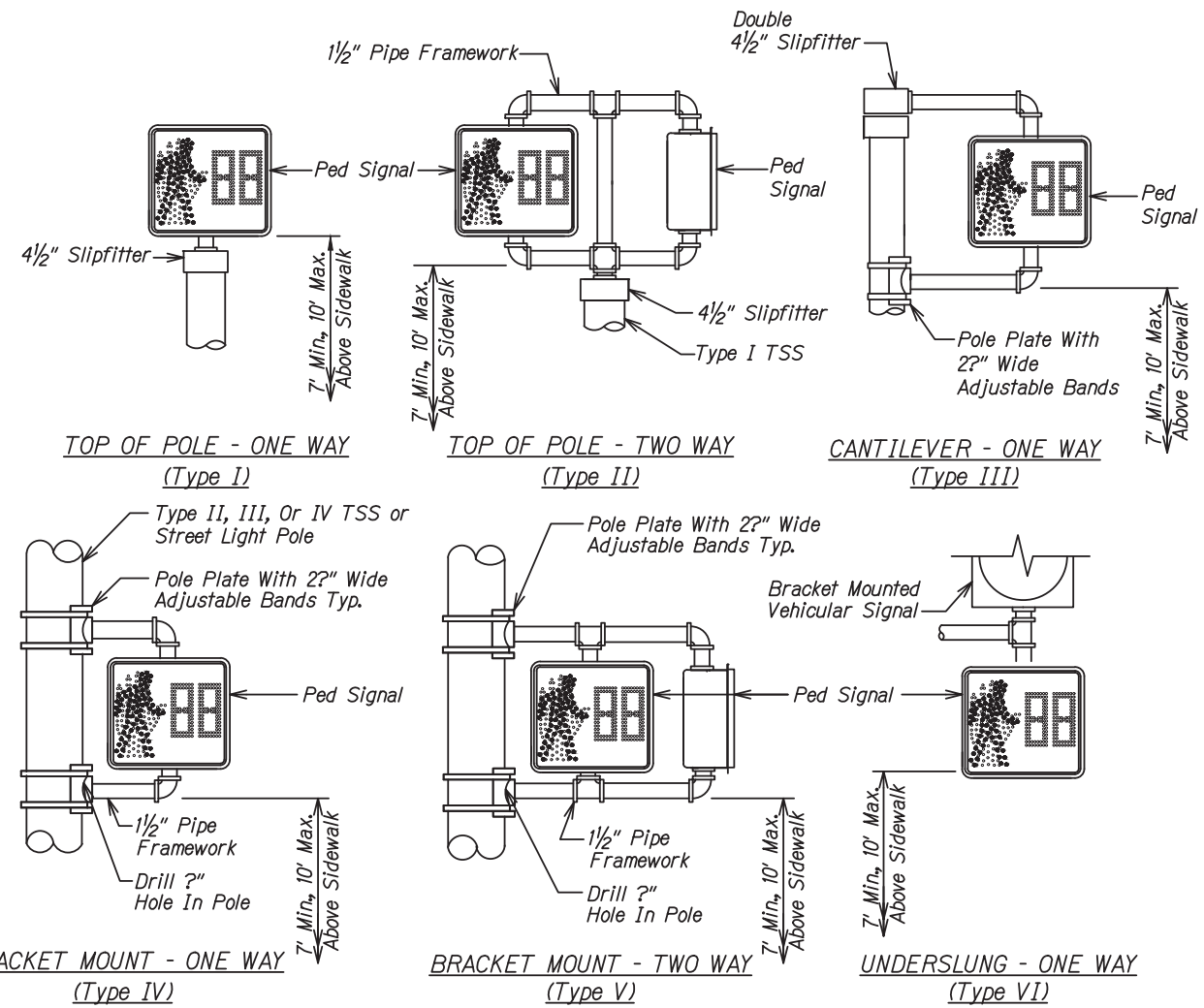
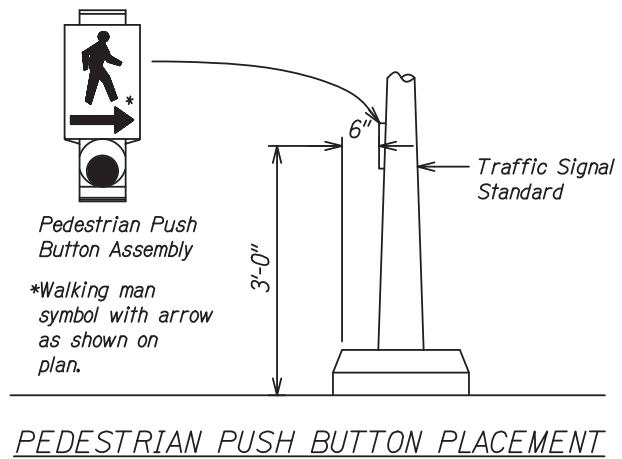
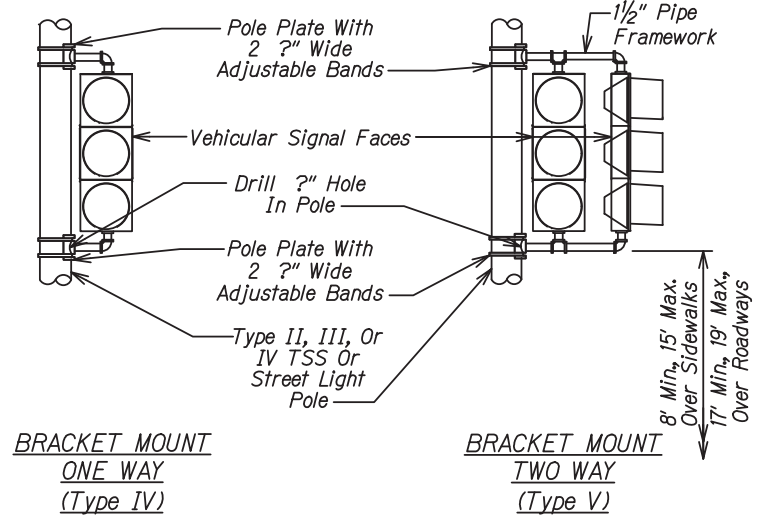
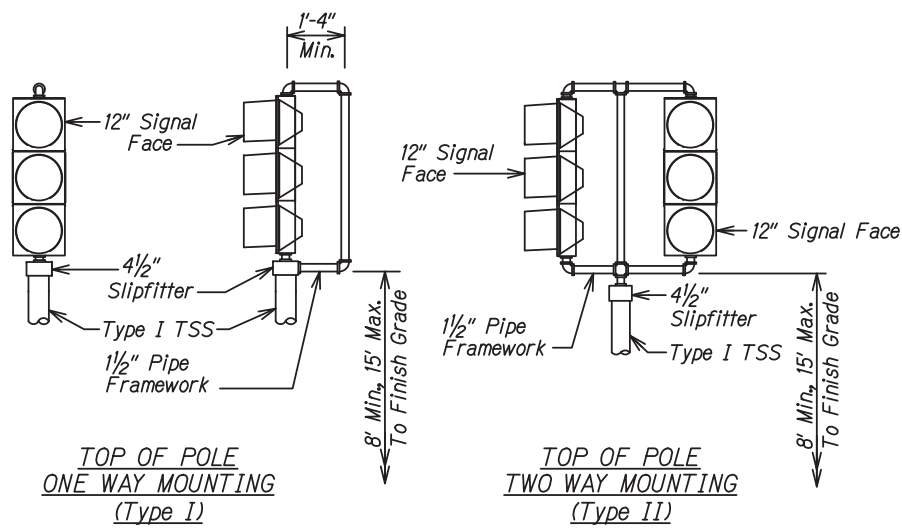
GERALD D. ANDRADE
LICENSED PROFESSIONAL ENGINEER
No. 10377-C
HAWAII, U.S.A.

Signature

4/30/26
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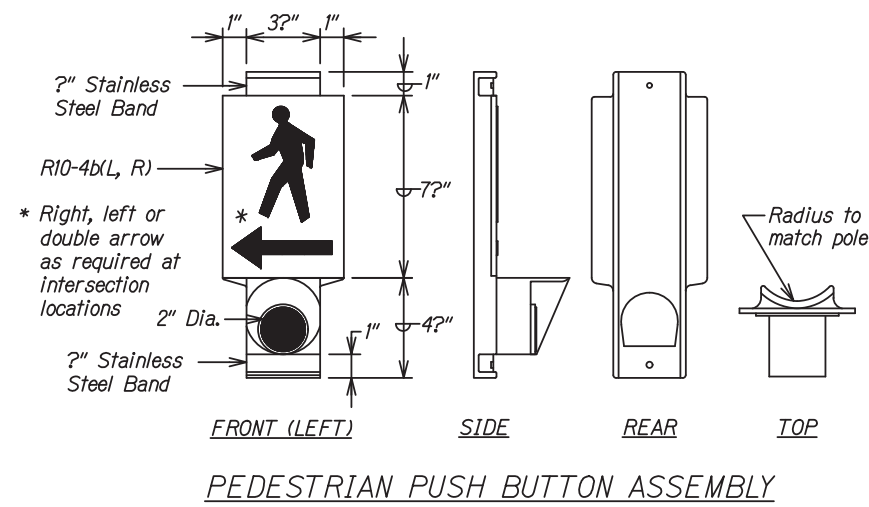
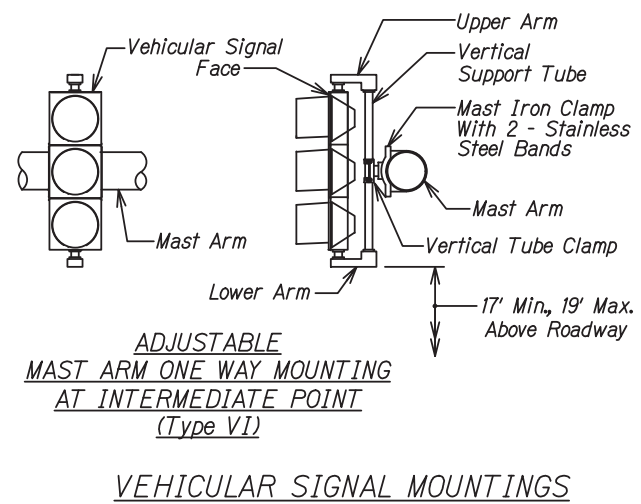
DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37C-02-23	2024	51	115



PEDESTRIAN SIGNAL MOUNTINGS

NOTES:

1. Stainless Steel Bands shall be 1/2" Wide X .050" thick, minimum. Tensile strength shall be 100,000 PSI minimum.
2. Upper Arm, Lower Arm And Vertical Support Tube shall be of 356 Cast Aluminum.
3. All Wiring Shall Be Concealed.
4. Vertical Tube Clamp shall be of Malleable Iron, Grade 32510.
5. All Aluminum Parts shall have an Alodine 1200 finish.



4/30/26

SIGNATURE

EXPIRATION DATE OF THE LICENSE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**TRAFFIC SIGNAL
MOUNTING BRACKET DETAILS**

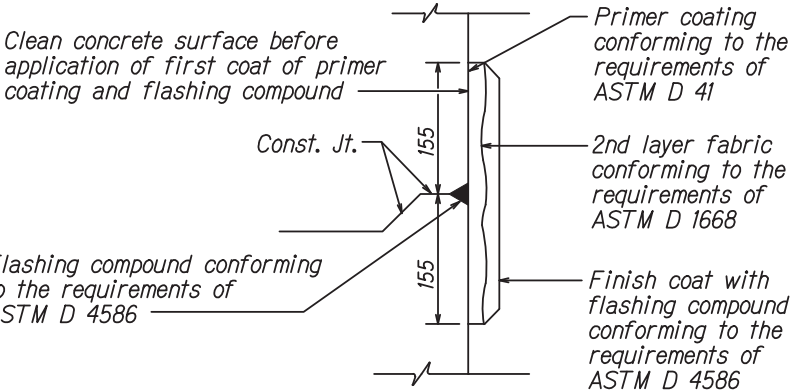
KULA HIGHWAY,
INTERSECTION IMPROVEMENTS
AT OMAOPIO ROAD
Project No. 37C-02-23

Scale: NTS Date: April 2024

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37C-02-23	2024	52	115

GENERAL NOTES

- Provide a minimum of one 16 ϕ 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.
- All pre-cast concrete pullboxes shall be manufactured in two pieces.
- The pullbox with cover shall be capable of supporting an MS 18 Loading.
- The maximum weight of the pullbox cover shall not exceed 27 kilograms.
- The openings for the conduits on all pullboxes shall be pre-cast concrete knockouts.
- 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.
- Prior to installing the pullboxes, the Contractor shall level the bottom of the trench and achieve a minimum of 95% relative compaction of the bottom of the trench.
- All concrete shall be Class A (21 MPa (3,000 psi), min.)
- Rebars shall be Grade 300 and all lapped splices shall be 360mm minimum.
- The #57 or #67 size aggregate shall conform to latest version of AASHTO M43 (ASTM D 448).
- 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

ALL DIMENSIONS ARE IN MILLIMETERS
UNLESS OTHERWISE SHOWN

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

★

GERALD D. ANDRADE

LICENSED PROFESSIONAL ENGINEER

No. 10377-C

HAWAII, U.S.A.

★

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EXPIRATION DATE OF THE LICENSE

PULLBOX AND COVER DETAILS

KULA HIGHWAY,

INTERSECTION IMPROVEMENTS

AT OMAOPIO ROAD

Project No. 37C-02-23

Scale: NTS

Date: April 2024

SHEET No. TS-7 OF 10 SHEETS

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

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

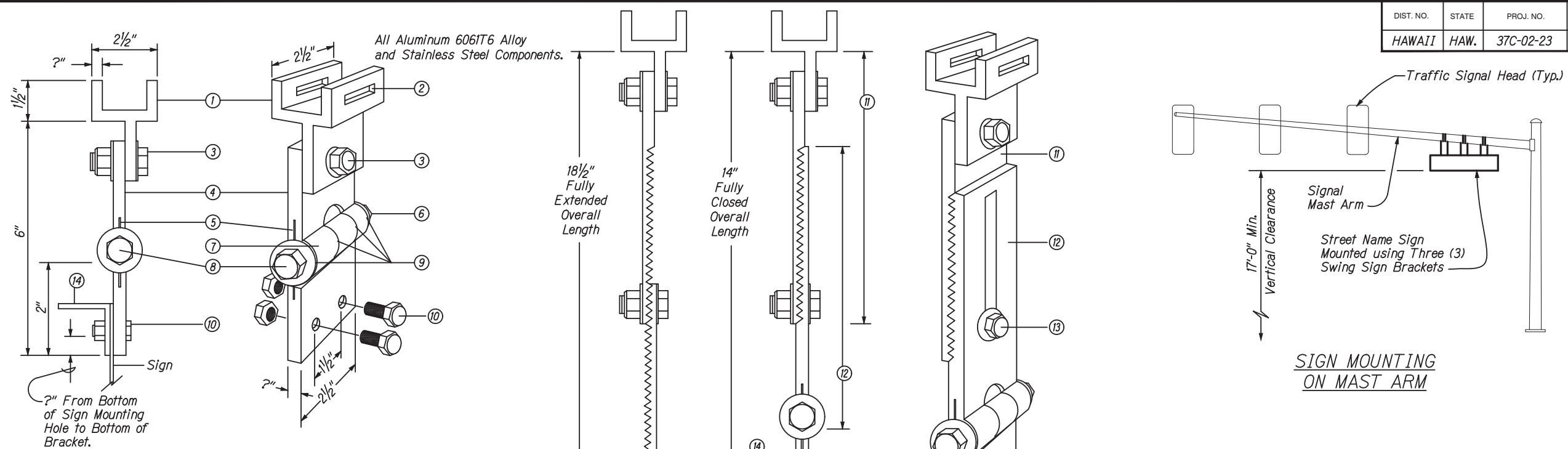
TYPE "C" PULLBOX (Old Type "D")

TYPICAL CONSTRUCTION
JOINT DETAIL

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
APPROVED BY	
NOTED BY	
REVISIONS	
1.	
2.	
3.	
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5.	
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52

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37C-02-23	2024	53	115

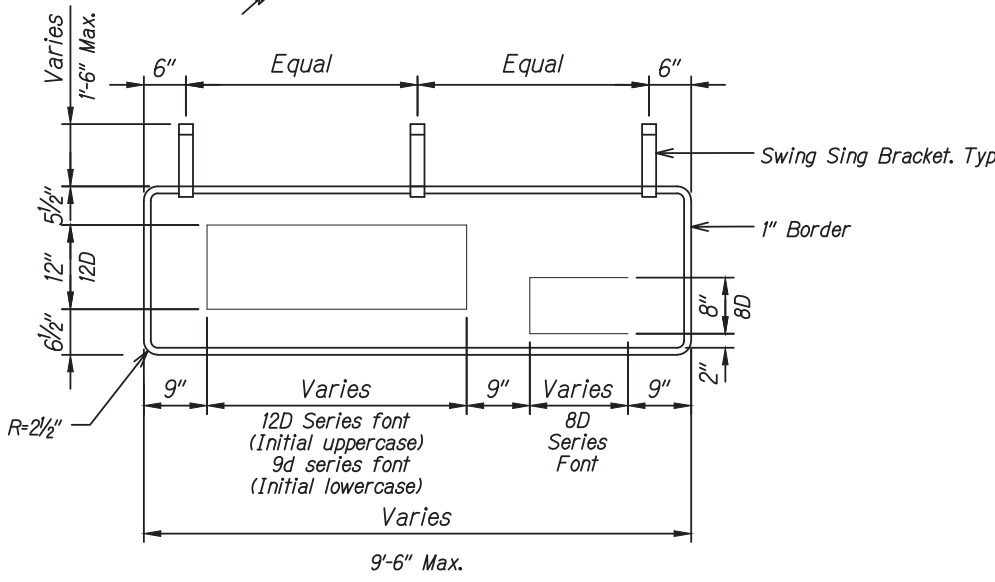


FIXED LENGTH NON-ADJUSTABLE
SWING SIGN BRACKET

ADJUSTABLE LENGTH
SWING SIGN BRACKET

Note: Dimensions may vary slightly

- ① Pivotal Upper Bracket
- ② 1 7/8" X 2" Slot for Double Strapping to Electrolier Mast Arm. (M2G-34S(HD) .030" X 7/8" Heavy Duty Stainless Steel Strap With M2G-34B(HD) Buckle Recommended.)
- ③ 1/2" - 13 X 1 1/2" Stainless Steel Hex Head Bolt with Stainless Steel Hex Lock Nut and 7/8" Stainless Steel Washer (Both Sides). Allows Upper Bracket to Pivot and Align with Electrolier Mast Arm.
- ④ 6" Overall Drop with Fixed Length Sign Bracket
- ⑤ Stainless Steel Damperer Spring (Removable)
- ⑥ Stainless Steel Hex Lock Nut with 7/8" Stainless Steel Washer
- ⑦ 1" O.D. Axle Housing
- ⑧ 1/2" - 13 X 4" Stainless Steel Hex Head Bolt with 7/8" Stainless Steel Washer
- ⑨ Oilite Bushing
- ⑩ Sign Mounting Sets, Consisting of Two Each 7/8" - 18 X 1" Stainless Steel Hex Head Bolt with Stainless Steel Hex Lock Nut. Two Holes on 1 1/2' Centers Provide Positive Lock Sign Mounted to Bracket.
- ⑪ 82" Overall Length Upper Adjustable Sigh Bracket Section
- ⑫ 9" Overall Length Lower Adjustable Sign Bracket Section, Including Axle Housing (8" Overall Length to Top of Axle Housing)
- ⑬ 1/2" - 13 X 1 1/2" Stainless Steel Hex Bolt with Stainless Steel Hex Lock Nut and 7/8" Stainless Steel Washer (Both Sides). Loosen Lock Nut . Adjust Bracket Teeth to Level Sign.
- ⑭ 1 7/8" X 1 7/8" X 2" Aluminum Angle



STREET NAME SIGN ON MAST ARM

STD. Plan TE-13, Revised 04/29/16
Not To Scale

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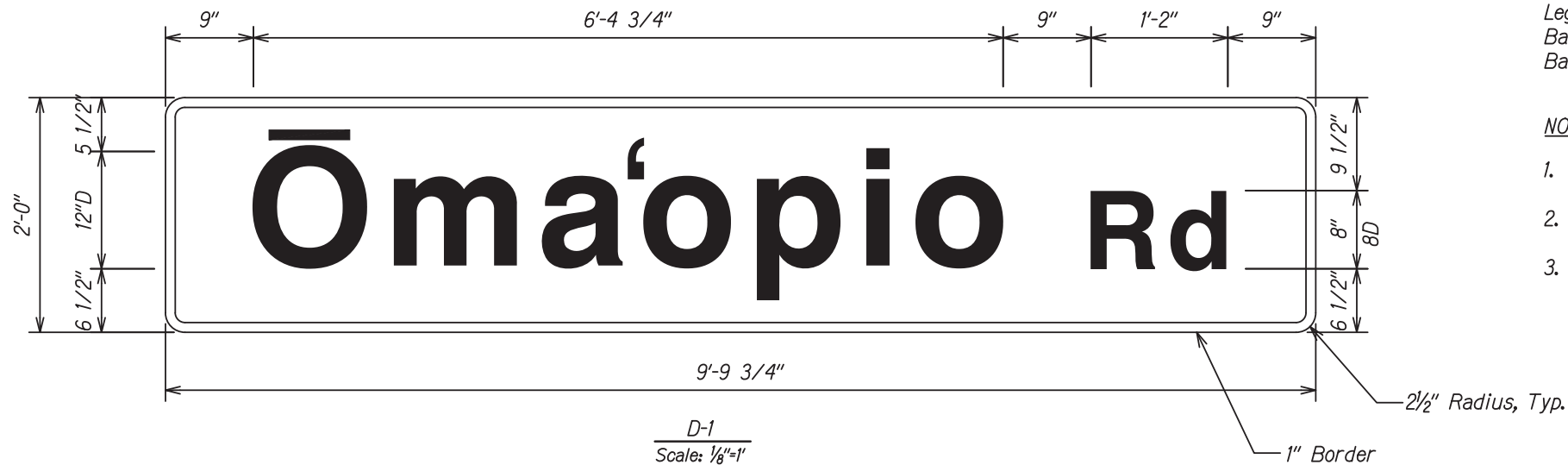
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**TRAFFIC SIGNAL
SIGN BRACKET DETAILS**

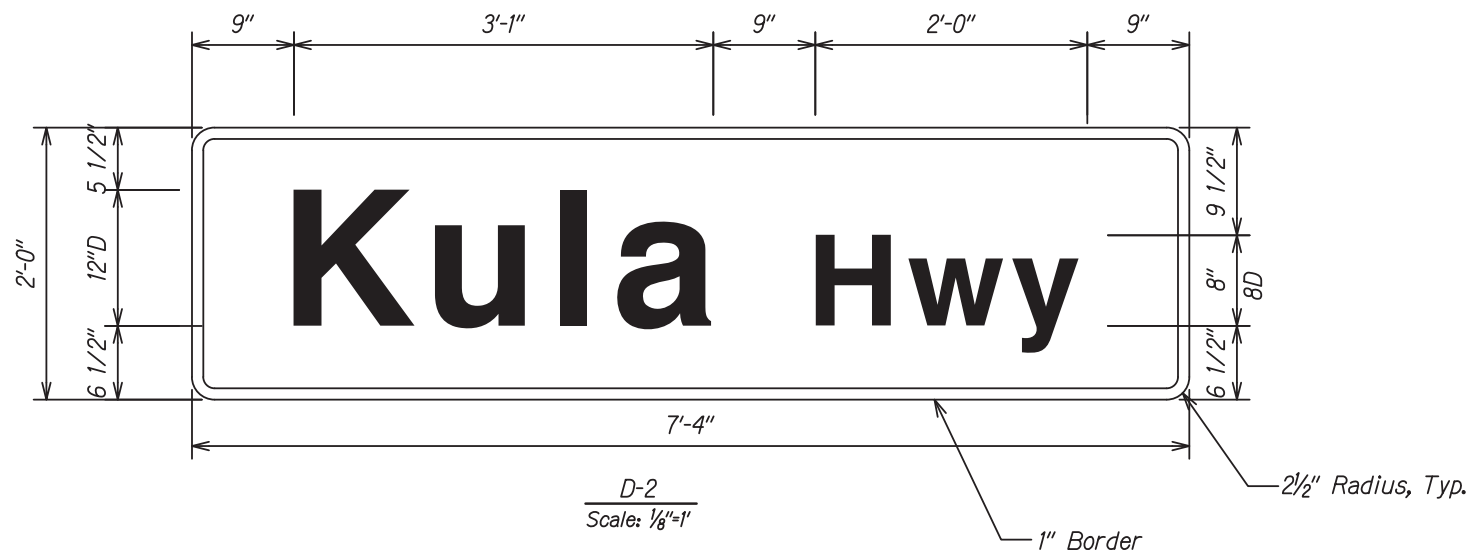
KULA HIGHWAY,
INTERSECTION IMPROVEMENTS
AT OMAOPIO ROAD
Project No. 37C-02-23

Scale: NTS Date: April 2024

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37C-02-23	2024	54	115



- COLOR:
- Legend, Border..... White (retroreflective)
Background..... Green (retroreflective)
Background..... Blue or Brown (retroreflective)
- NOTES:
1. Street name signs shall have white message and border on green background.
 2. All sign faces shall be completely reflectorized with type "b" reflective sheeting.
 3. The sign shall be in conformance with the requirements of section 712.20 of the standard specification.



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

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Date: 4/30/26
Expiration Date of License

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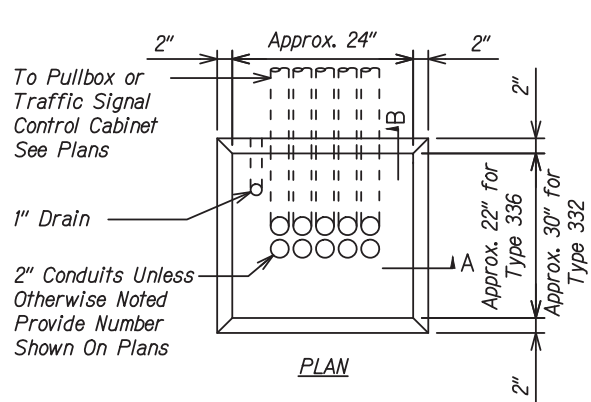
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL
STREET SIGN NAME DETAILS
KULA HIGHWAY,
INTERSECTION IMPROVEMENTS
AT OMAOPIO ROAD
Project No. 37C-02-23
Date: April 2024

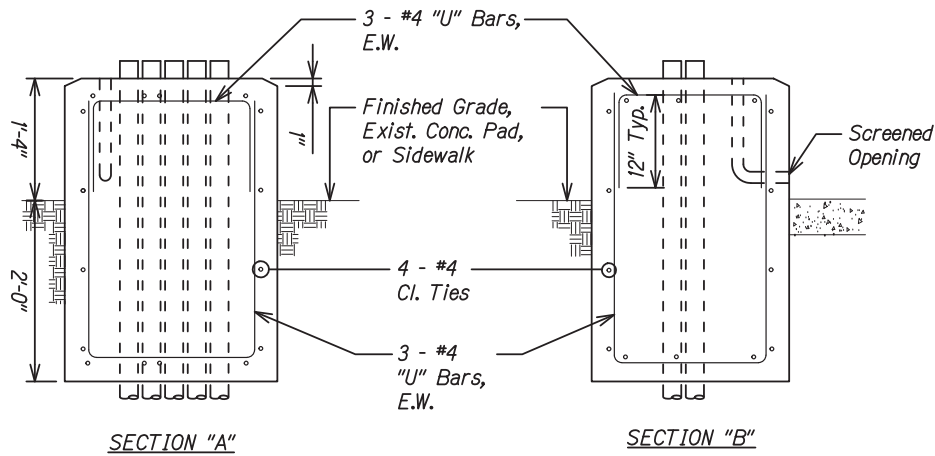
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SHEET No. TS-9 OF 10 SHEETS

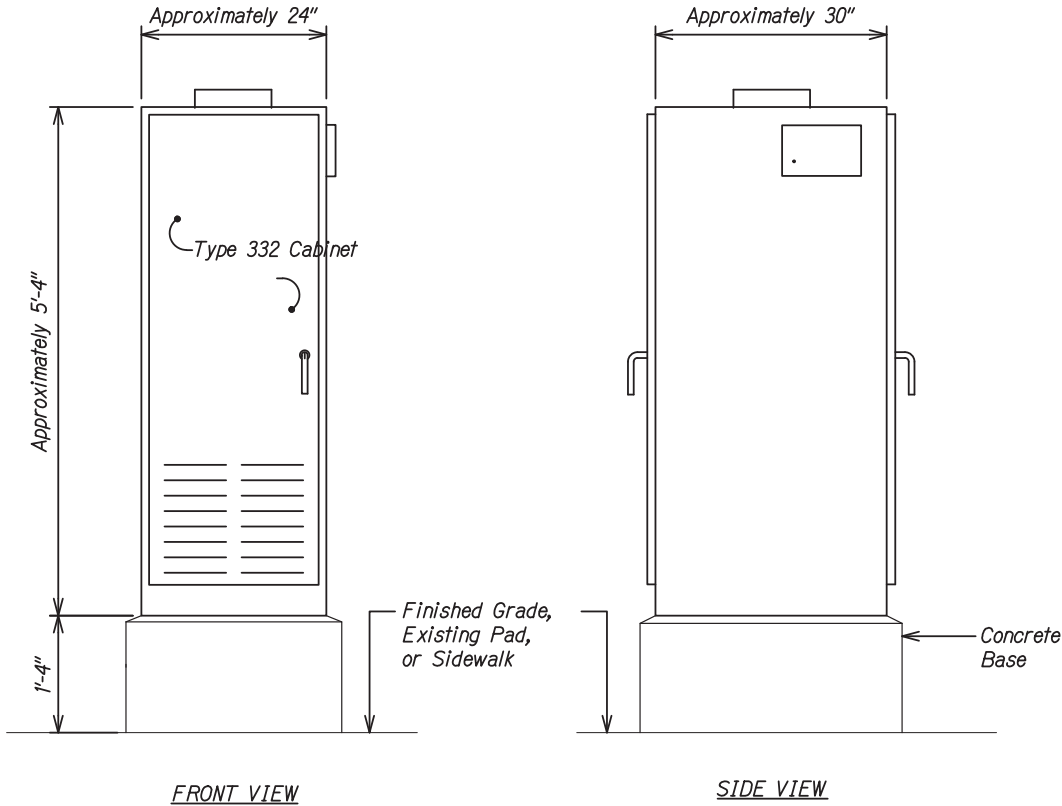
DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	37C-02-23	2024	55	115



- NOTE(S):**
- Concrete shall be Class "B".
 - Dimensions shall be altered to suit controller cabinet actually furnished.
 - Conduit bends and drain are incidental to concrete base.
 - Refer to Cabinet Manufacturer's Specifications for details of anchor bolts and base setting.
 - All exposed surfaces of concrete base shall be given a Class 2, Rubbed Finish.



TYPE "D" CONCRETE BASE FOR CABINET
Not to Scale



TYPE 332L EQUIPMENT CABINET
Not to Scale

DESIGNED BY	DATE
DRAWN BY	
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NOTED BY	
REVISIONS BY	
QUANTITIES BY	
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ORIGINAL PLAN	
NOTE BOOK	
No.	

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CABINET, BASE AND MISCELLANEOUS TRAFFIC SIGNAL DETAILS

KULA HIGHWAY, INTERSECTION IMPROVEMENTS AT OMAOPIO ROAD
Project No. 37C-02-23

Scale: NTS Date: April 2024