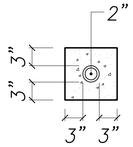
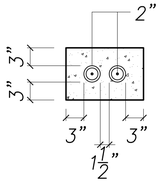


SECTION 111



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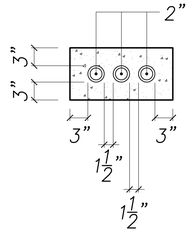

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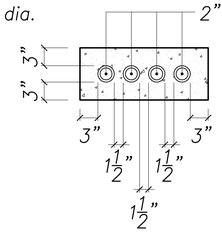

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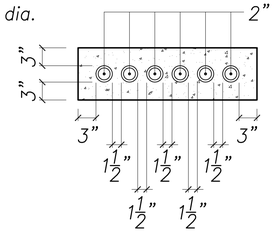

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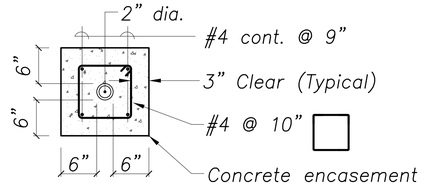

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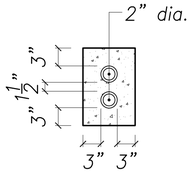

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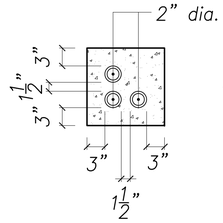

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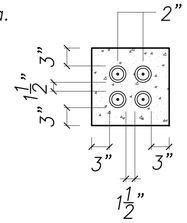

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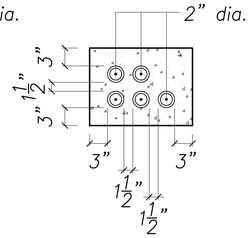

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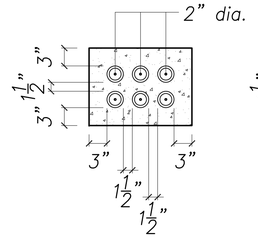

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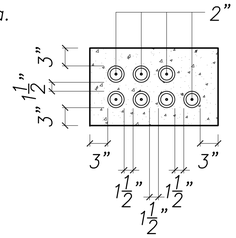
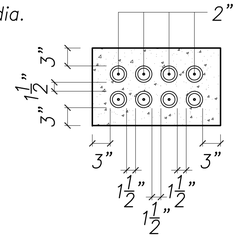


SECTION 724



SECTION 824

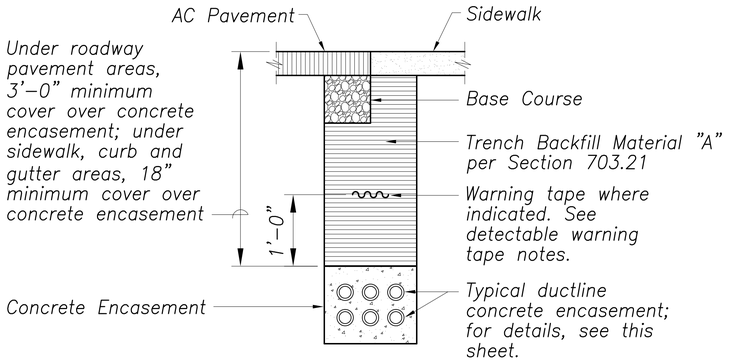
TRAFFIC SIGNAL DUCT SECTIONS

No Scale

Legend

TRENCH BACKFILL MATERIAL "A"
When tested according to AASHTO T 176, the Sand Equivalent value shall be 20 or greater.

CONCRETE ENCASEMENT
3" encasement 3000 psi compressive strength at 28 Days.



TYPICAL TRENCH RESTORATION DETAILS

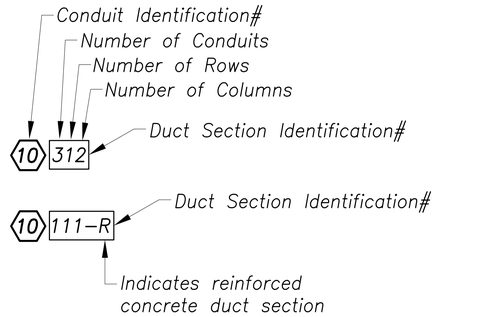
No Scale

Trench Restoration Notes:

1. If trench is located an unpaved area, the Contractor shall replace A.C. base course and A.C. pavement with Type "A" backfill material.
2. The metal detectable red plastic warning tape shall be a minimum five (5) mils thick and 4 inches wide with a continuous metallic backing and corrosion resistant one (1) mil thick foil core. For the State DOT traffic signal and highway lighting ducts, the message on the tape shall read: "CAUTION – STATE TRAFFIC SIGNAL AND/OR HWY. LIGHTING BURIED BELOW." The warning tape message lettering shall be 1.5–inch tall Series "C" block lettering. The message shall be repeated with a 4.25–inch spacing between end of message and start of next repeat. The tape shall be incidental to the duct line cost.
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, except as indicated on plans.
5. 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 foundation. The duct seal material shall be approved by the traffic signal inspector/Engineer and shall not be paid for separately but considered incidental to the concrete encased conduits.
6. For concrete sidewalk, curb & gutter, P.C.C. pavement, and asphalt pavement restoration over trench excavation, see details on sheets 78, 79, and 80.

Legend:

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP–0300(163)	2020	202	284



Approved By:

Chief, Traffic Signals & Technology, DTS Date

CONRAD S. HIGASHIONNA LICENSED PROFESSIONAL ENGINEER No. 6763–C HAWAII, U.S.A.

License Expiration Date 04–30–22

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Conrad Higashionna

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLANEOUS DETAILS

Traffic Signal Modernization,
Oahu, Phase 1
Federal–Aid Project No. STP–0300(163)

Scale: Date: July 2020

SHEET No. TS–107 OF 113 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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	QUANTITIES BY	
No.	CHECKED BY	

Aug 28, 2020–6:38am
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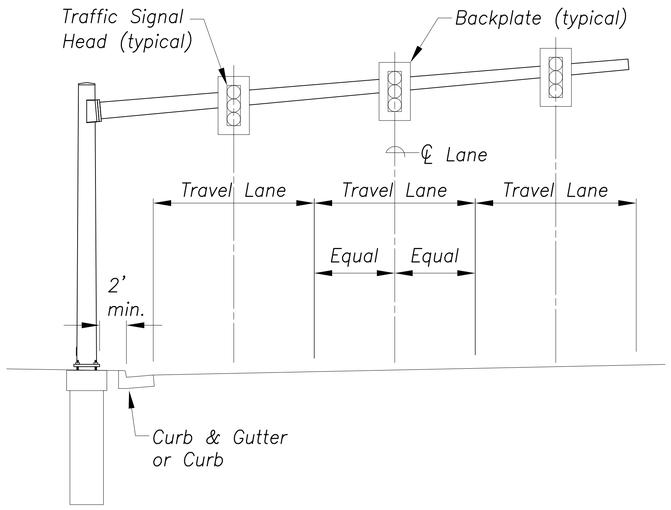
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	203	284

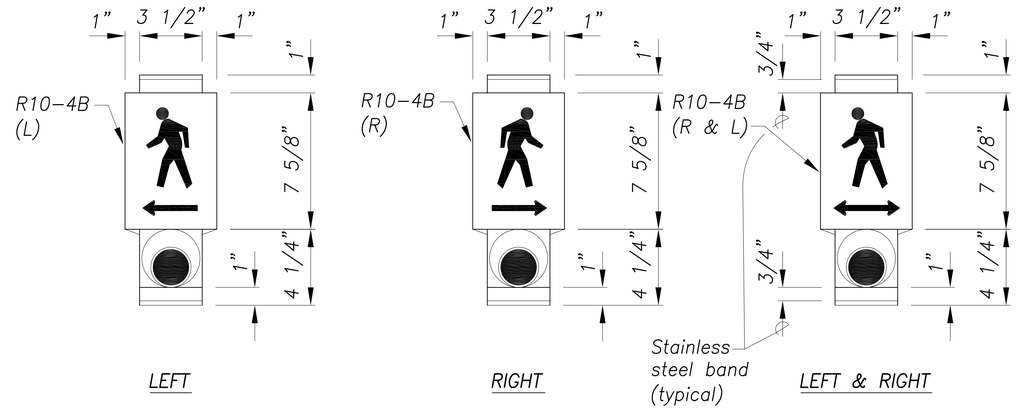


Notes:

1. The Contractor shall install traffic signal heads over center of travel lanes.
2. The Contractor shall submit shop drawings for Type I and II traffic signal standards for review and approval.

TYPE II TRAFFIC SIGNAL STANDARD

No Scale

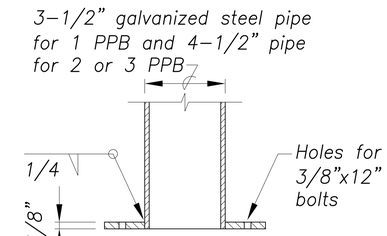


Notes:

1. The pedestrian push button unit shall consist of a one piece assembly with raised walking man, arrow indication, and push button.
2. The push button activator shall be of the mushroom plunger type, ADA acceptable, 2-inches in diameter that requires less than 5 pounds of pressure to activate.
3. The raised man and arrows shall be directional and match the directional indication as shown on the plans.
4. The push button shall be tamper proof, weatherproof, and constructed so that electrical shocks are impossible.
5. The color scheme shall be:
   White – Man, Arrow, and Push Button
   Black – Background

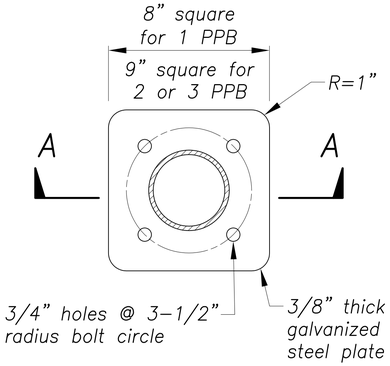
PEDESTRIAN PUSH BUTTON DETAILS

Scale: 3"=1'-0"



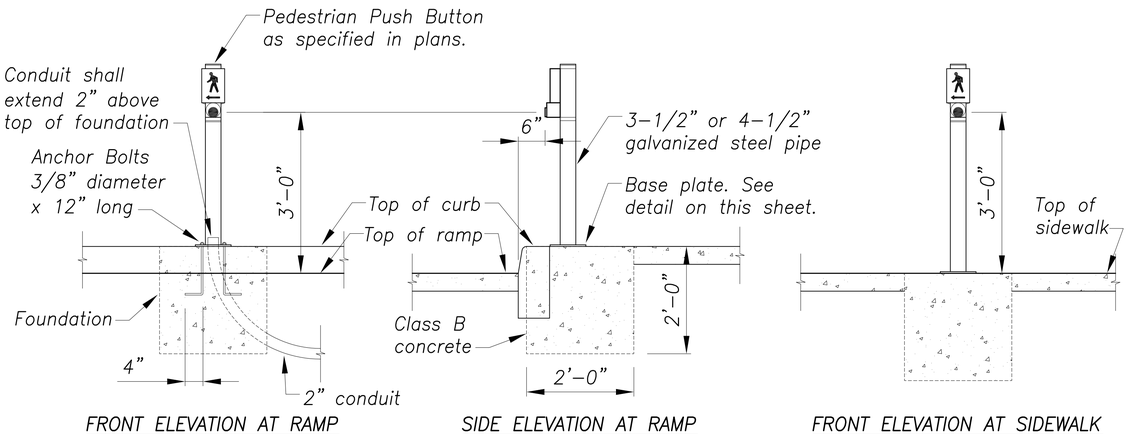
SECTION A-A

Scale: 3"=1'-0"



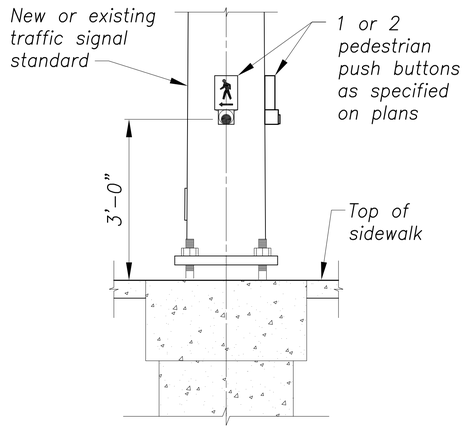
BASE PLATE DETAIL

Scale: 3"=1'-0"



PEDESTRIAN PUSH BUTTON ON PEDESTAL DETAILS

Scale: 3/4"=1'-0"



PEDESTRIAN PUSH BUTTON ON TRAFFIC SIGNAL STANDARD

Scale: 3/4"=1'-0"

Approved By:

Chief, Traffic Signals & Technology, DTS Date

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CONRAD S. HIGASHIONNA
LICENSED PROFESSIONAL ENGINEER
No. 6763-C
HAWAII, U.S.A.

License Expiration Date 04-30-22

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Conrad Higashionna

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

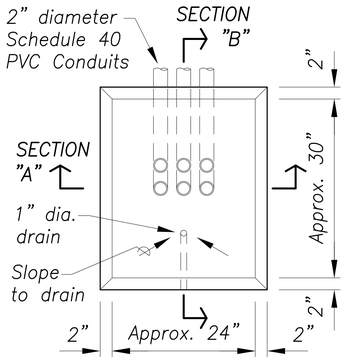
MISCELLANEOUS DETAILS

Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)

Scale: Date: July 2020

SHEET No. TS-108 OF 113 SHEETS

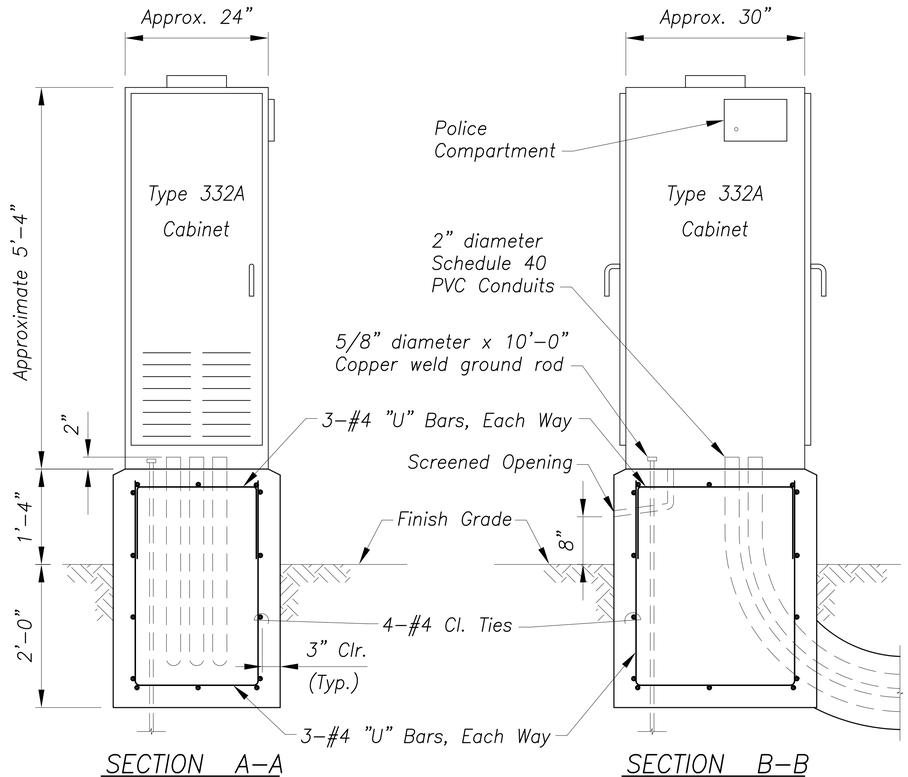
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	204	284



PLAN

Notes:

1. Concrete shall be Class "B".
2. Dimensions shall be altered to suit controller cabinet actually furnished.
3. Conduits, bends, and drain are incidental to concrete base.
4. Refer to cabinet manufacturer's specifications for details of anchor bolts and base settings.
5. All exposed surfaces of concrete base shall be given a Class 2, rubbed finish.
6. All conduits shall be PVC.
7. The Contractor shall provide a switch/jack and 15-foot switch cord assembly for each Police Compartment. The cost shall not be paid for separately, but shall be considered incidental to the controller.



CONTROLLER CABINET & FOUNDATION DETAIL

No Scale

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	QUANTITIES BY	
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Approved By:

Chief, Traffic Signals & Technology, DTS Date

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HAWAII, U.S.A.

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Conrad Higashionna

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

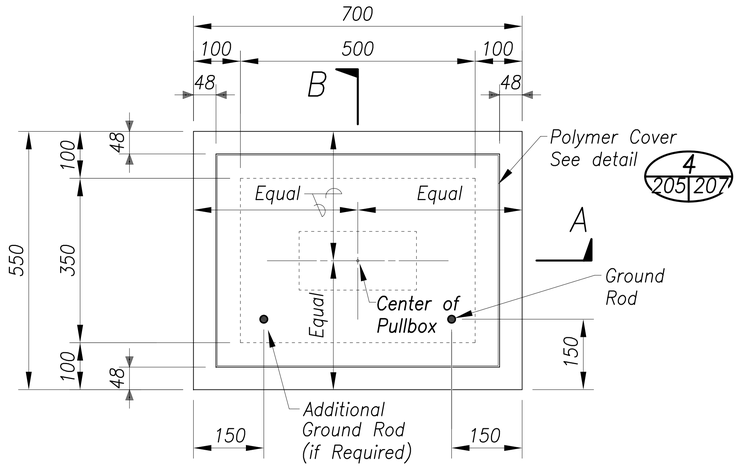
MISCELLANEOUS DETAILS

Traffic Signal Modernization,
Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)

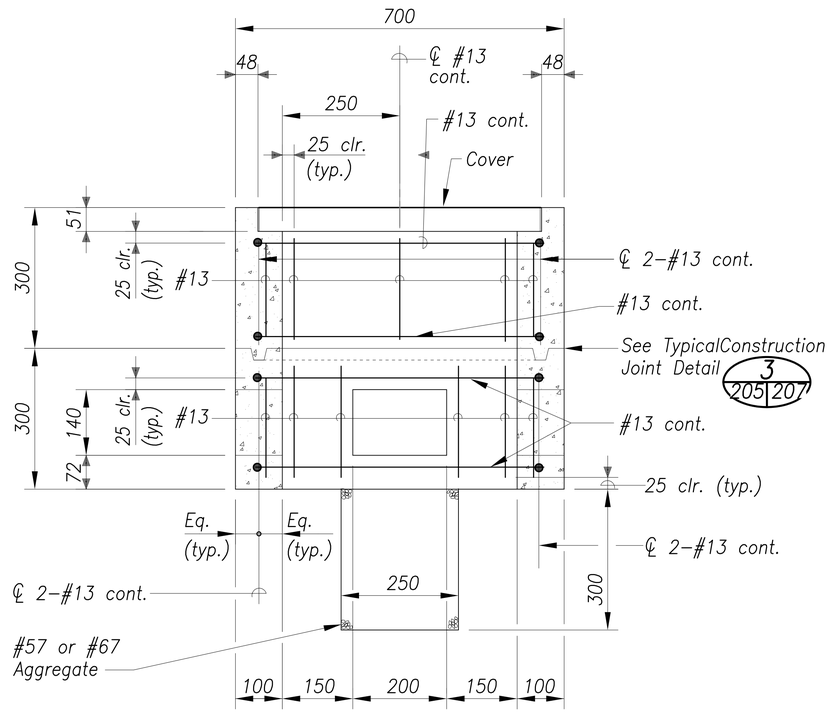
Scale: Date: July 2020

SHEET No. TS-109 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	205	284



PLAN

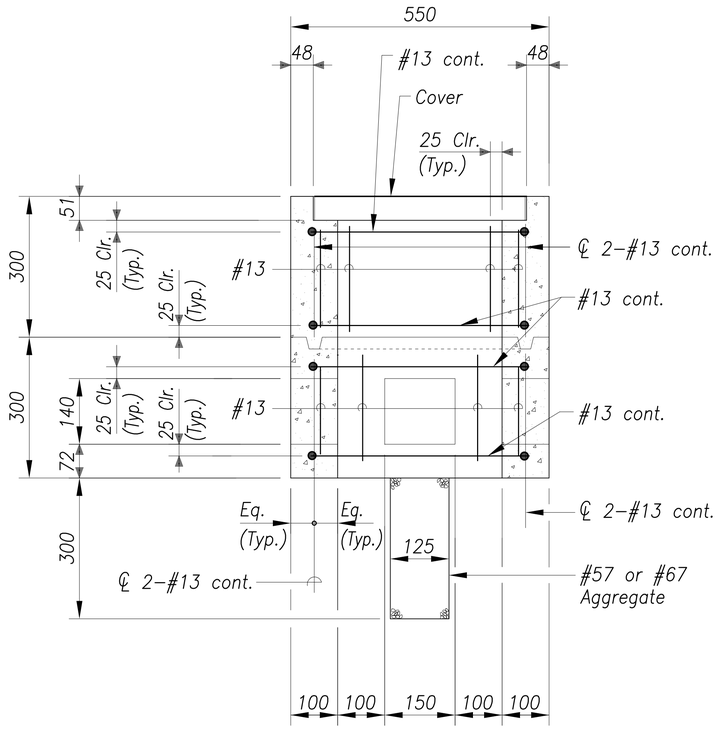


SECTION A-A

A
205 205

TYPE "A" PULLBOX (OLD TYPE "B")

No Scale



SECTION B-B

NOTES FOR PULLBOX DETAILS (Type "A", "B", and "C"):

1. Provide a minimum of one 16ø 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 level the bottom of the trench and achieve a minimum 95% relative compaction of the bottom of the trench.
8. All concrete shall be Class A (25MPA, minimum).
9. Rebars shall be Grade 300 and all lapped splices shall be 360 mm minimum.
10. The #57 or #67 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),
12. Ties (pull box location) is to center of pull box.
13. Precast pull boxes shall be set on six (6) inches of level, 95% compacted crushed rock fill, 3/4 inch to one (1) inch size, extending twelve (12) inches beyond the pull box on each side. Granular fill shall be compacted by a minimum of four passes with a plate type vibrator.

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All dimensions on this sheets are in millimeters unless otherwise noted.

CONRAD S. HIGASHIONNA
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No. 6763-C
HAWAII, U.S.A.

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Conrad Higashionna

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

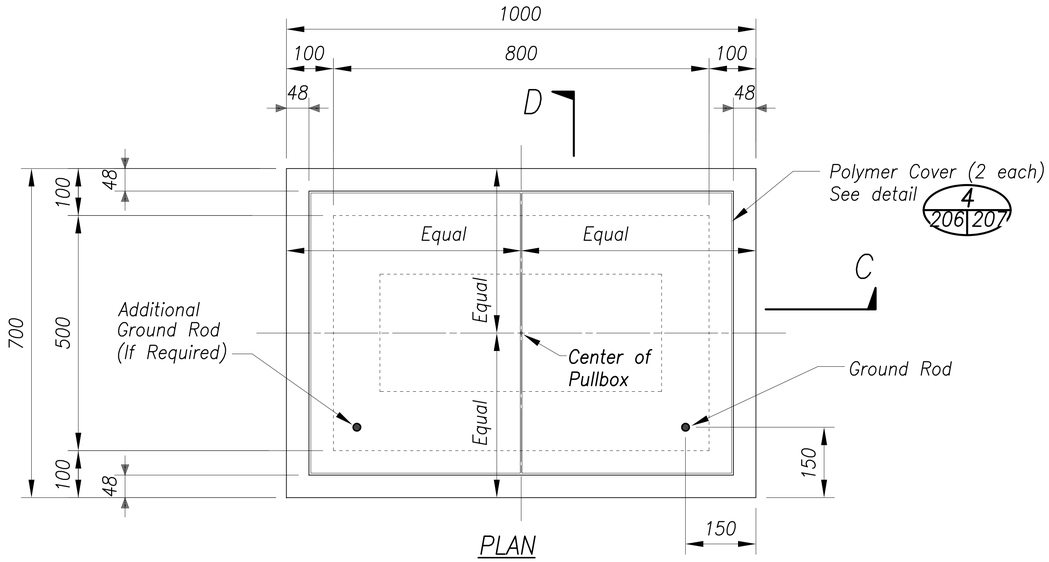
MISCELLANEOUS DETAILS

Traffic Signal Modernization,
Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)

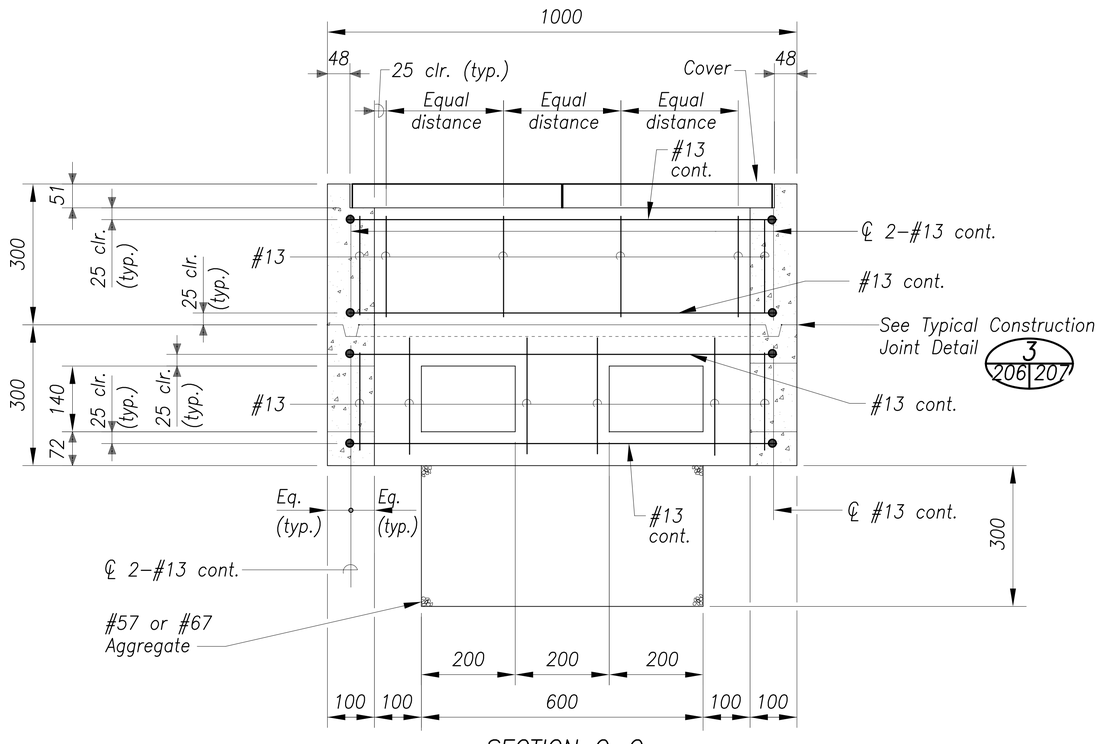
Scale: Date: July 2020

SHEET No. TS-110 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	206	284



PLAN

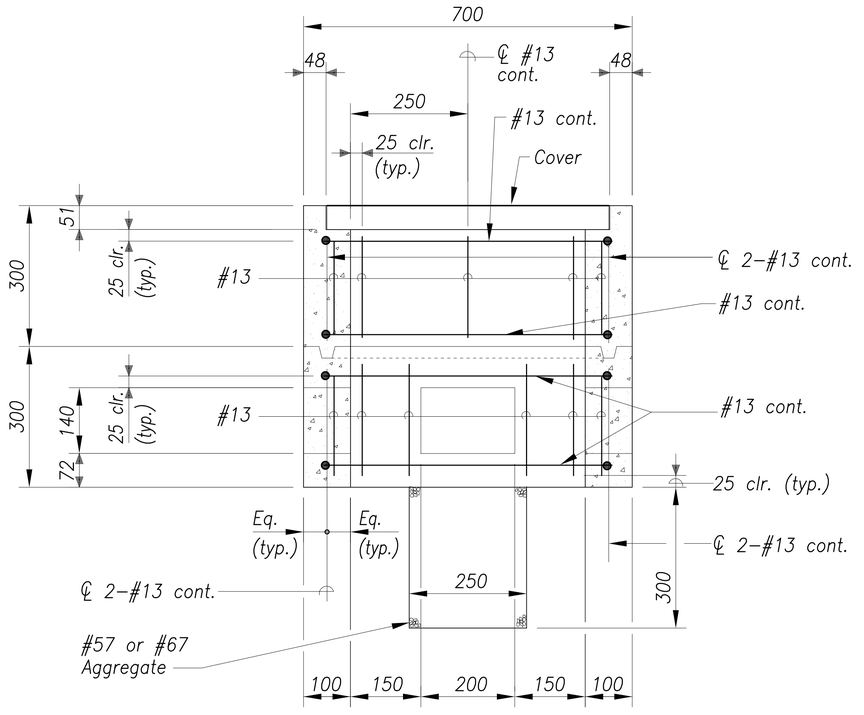


SECTION C–C

B TYPE "B" PULLBOX (OLD TYPE "C")

206 206

No Scale



SECTION D–D

All dimensions on this sheets are in millimeters unless otherwise noted.

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No. 6763-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLANEOUS DETAILS

Traffic Signal Modernization,
Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)

Scale: Date: July 2020

SHEET No. TS-111 OF 113 SHEETS

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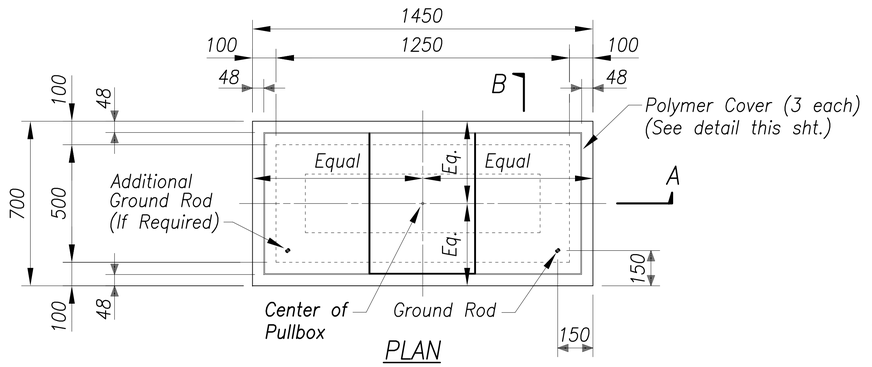
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	207	284



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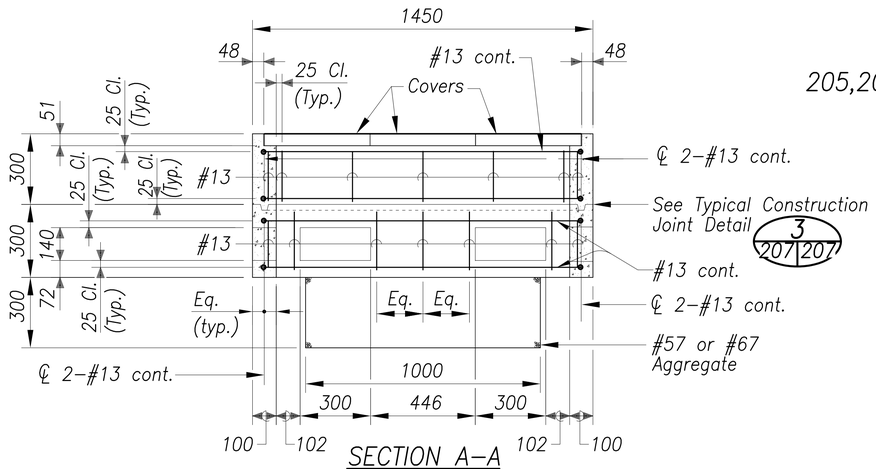
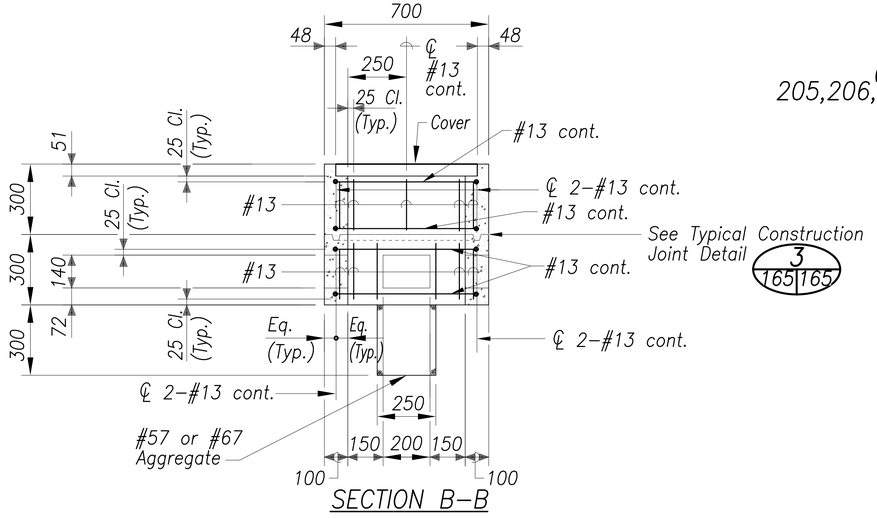


SECTION A-A



SECTION B-B

1 207|207 TYPE "C" PULLBOX (OLD TYPE "D")

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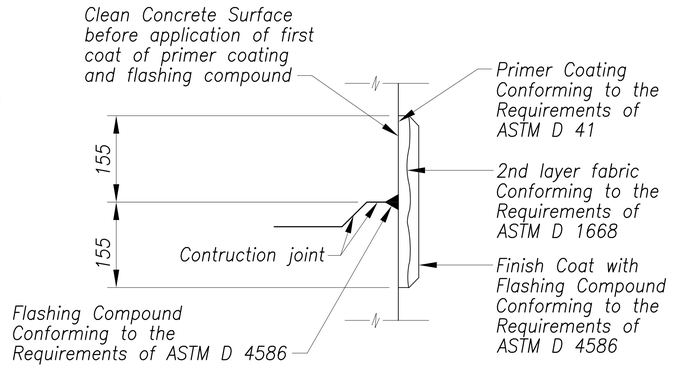

2 205,206,207|207 TYPICAL FLASHING COMPOUND WATERPROOFING DETAILS

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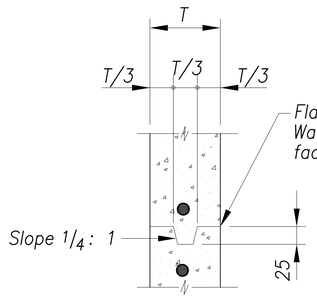

3 205,206,207|207 TYPICAL CONSTRUCTION DETAIL

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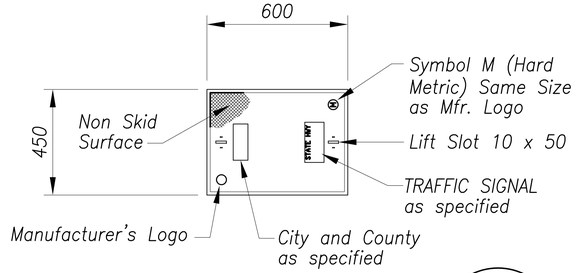
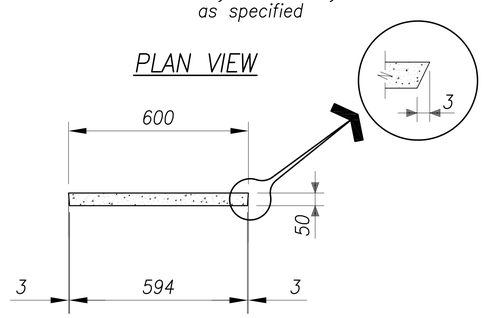


PLAN VIEW



ELEVATION

4 205,206,207|207 POLYMER CONCRETE COVER

No Scale

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

Aug 28, 2020-6:39pm
N:\DOT\DWG\2015\1512-Traffic Signal Modernization @ Various Locations P&E\FINAL\207 Pullbox Details 3.dwg

All dimensions on this sheets are in millimeters unless otherwise noted.

CONRAD S. HIGASHIONNA LICENSED PROFESSIONAL ENGINEER No. 6763-C HAWAII, U.S.A.

License Expiration Date 04-30-22

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN HAR TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII.

Conrad Higashionna

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

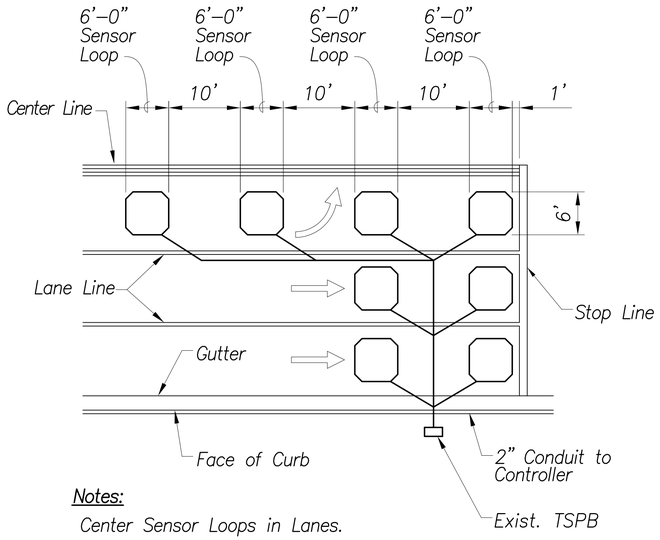
MISCELLANEOUS DETAILS

Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)

Scale: Date: July 2020

SHEET No. TS-112 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	208	284



Notes:

Center Sensor Loops in Lanes.

Collector Cables shall be Twisted 2 Turns Per Foot.

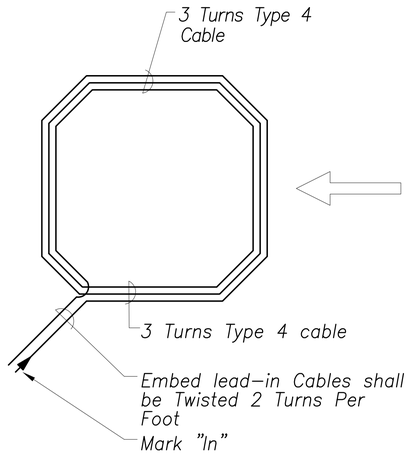
Number of Loops and Location Vary. See Project Plans.

Number and Locations of Collector Sawcuts may be Varied in the Field to Suit.

TYPICAL SENSOR LOOP LAYOUT

No Scale

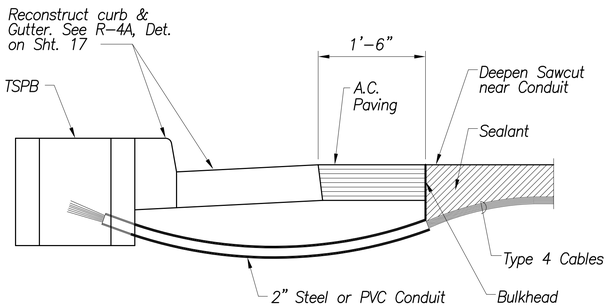
A 208 208



TYPICAL SENSOR LOOP WIRING DIAGRAM

No Scale

A 208 208



Notes on Construction at End of Sawcut

Seal Roadway end of Conduit after installaton of Conductors.

Install Bulkhead Across Conduit Trench.

Place Hot Tar or Approved Sealant in Sawcut.

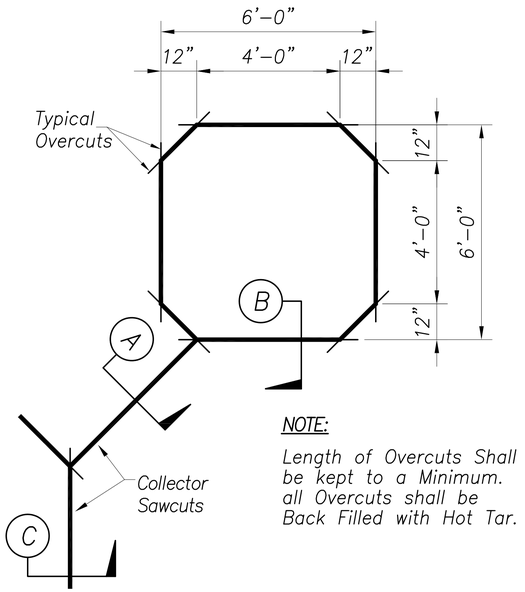
Backfill over Conduit with New A.C.

Reconstruct Curb and Gutter as Required. See R-4A Detail on Sht. 17.

DETAIL OF SENSOR LOOP INSTALLATION AT EDGE OF ROADWAY

No Scale

B 208 208



NOTE:

Length of Overcuts Shall be kept to a Minimum. all Overcuts shall be Back Filled with Hot Tar.

TYPICAL SENSOR LOOP SAWCUT DETAIL

No Scale

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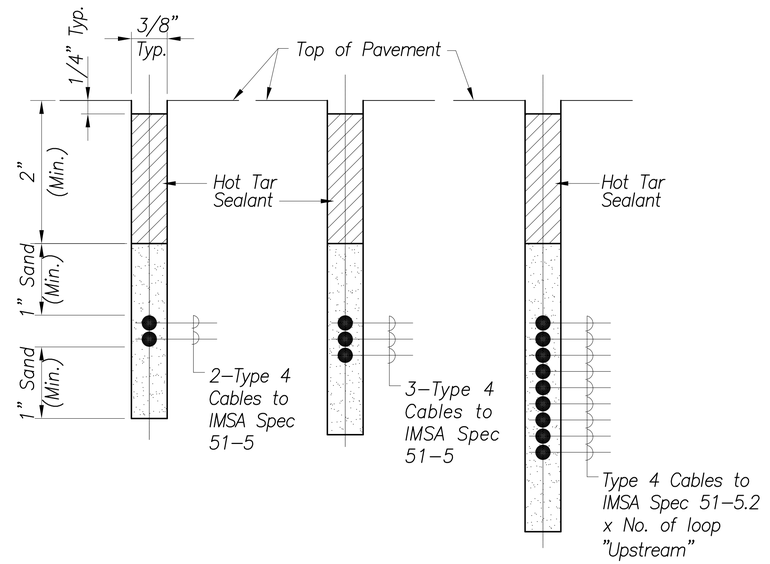

Section A Section B Section C

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

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CONRAD S. HIGASHIONNA
LICENSED PROFESSIONAL ENGINEER
No. 6763-C
HAWAII, U.S.A.

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SHEET No. TS-113 OF 113 SHEETS