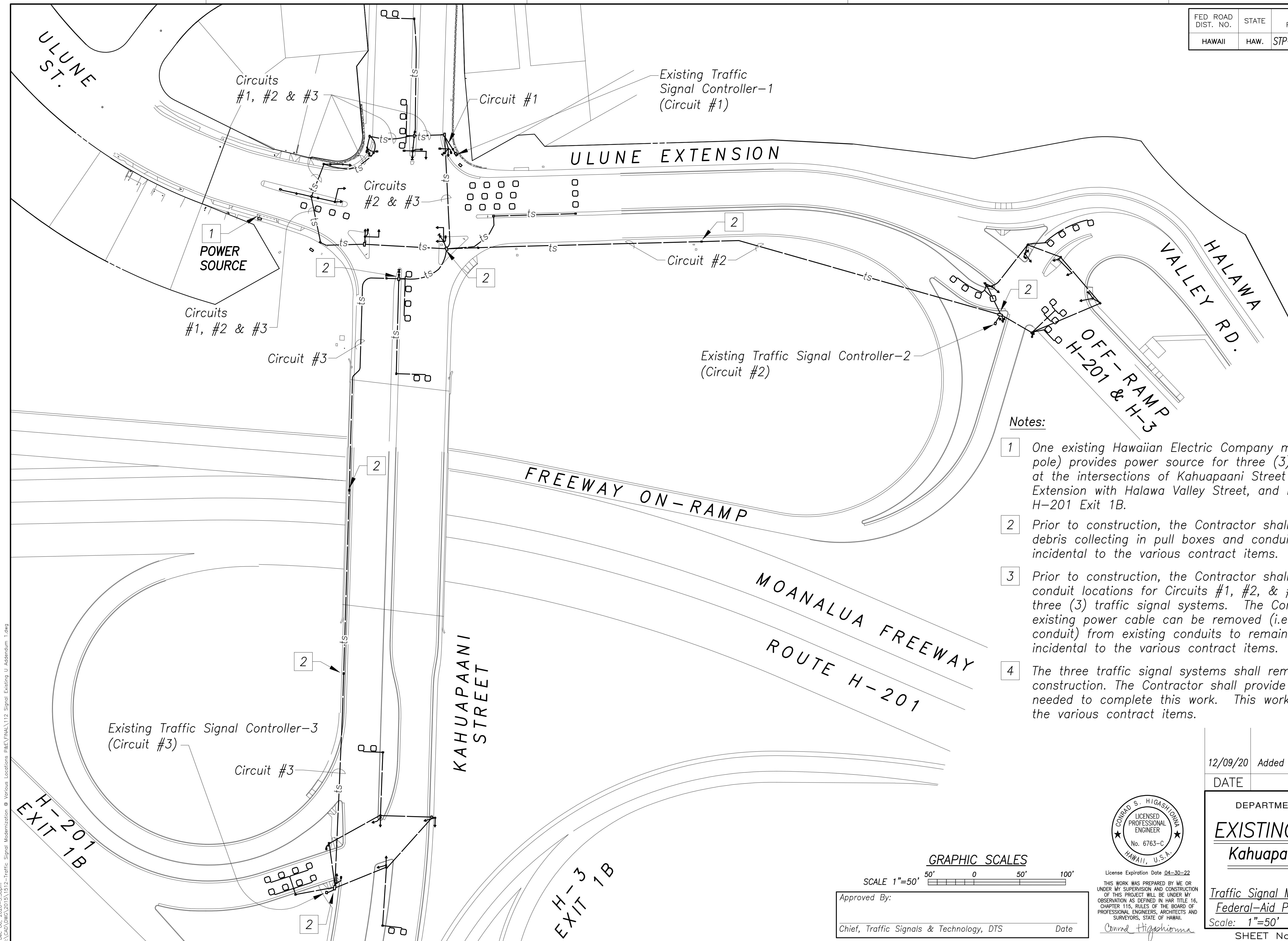


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	ADD.112	291

True North
Scale: 1"=50'
TMK: 9-9-055,
057, 072 & 074



Notes:

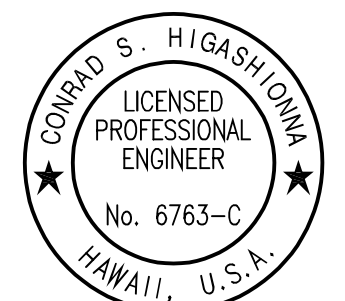
- 1 One existing Hawaiian Electric Company meter (mounted to wood pole) provides power source for three (3) traffic signal systems at the intersections of Kahupaani Street with Ulune Street, Ulune Extension with Halawa Valley Street, and Kahupaani Street with H-201 Exit 1B.
- 2 Prior to construction, the Contractor shall remove sediment and debris collecting in pull boxes and conduits. This work shall be incidental to the various contract items.
- 3 Prior to construction, the Contractor shall verify pull box and conduit locations for Circuits #1, #2, & #3 providing power to the three (3) traffic signal systems. The Contractor shall verify existing power cable can be removed (i.e., is not stuck in conduit) from existing conduits to remain. This work shall be incidental to the various contract items.
- 4 The three traffic signal systems shall remain operational during construction. The Contractor shall provide temporary power as needed to complete this work. This work shall be incidental to the various contract items.

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

Dec 06, 2020-1:58pm
N:\CAO\DWG\2015\1512-Traffic Signal Modernization @ Various Locations P&E\FINAL\112 Signal Existing U Addendum 1.dwg

GRAPHIC SCALES
SCALE 1"=50'
50' 0 50' 100'

Approved By:
Chief, Traffic Signals & Technology, DTS
Date



License Expiration Date 04-30-22
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Conrad Higashimura

12/09/20	Added Note 4.
DATE	REVISION

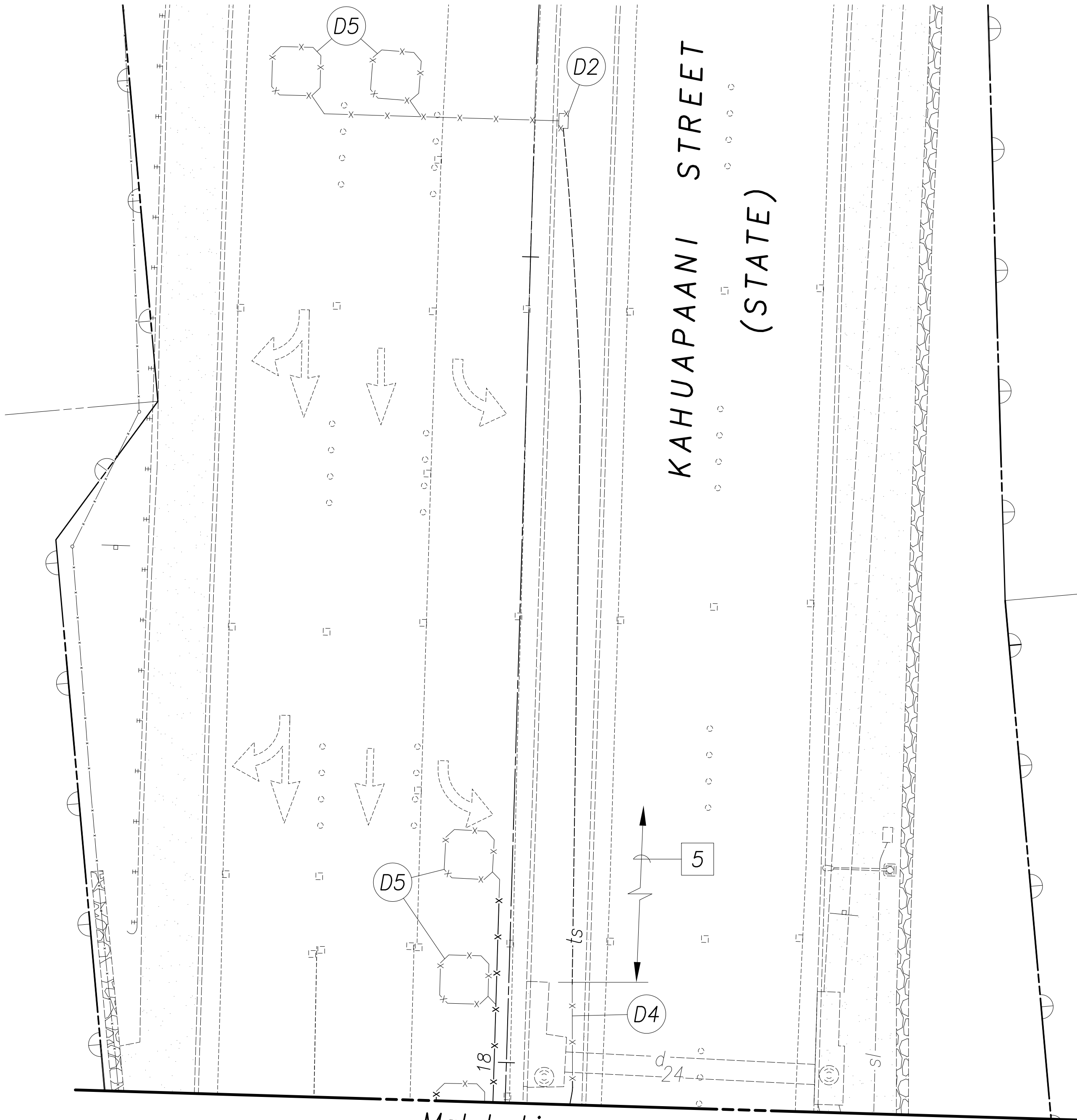
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

EXISTING SIGNAL PLAN
Kahupaani St & Ulune St

BASE BID
Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)R
Scale: 1"=50' Date: Oct. 2020
SHEET No. TS-10 OF 113 SHEETS

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

New 18, 2020-21.dwg
N:\CAO\DWG\2015\1512-Traffic Signal Modernization @ Various Locations P&E\FINAL\113 Signal Demolition U 1.dwg



True North

Scale: 1"=10'
TMK: 9-9-055,
057, 072 & 074

Notes:

- 1 The traffic signal system shall remain operational at all times during construction. Existing poles, traffic signal lights, and pedestrian signal heads may be removed only after new equipment is operational.
- 2 Deliver salvaged equipment to C&C of Honolulu, Dept. of Transportation Services, Traffic Signal & Technology baseyard at 999 Makolu Street (ph: 768-5323).
- 3 Existing pullbox to remain.
- 4 Existing traffic signal standard to remain.
- 5 Existing traffic signal duct line to remain.

Demolition Callouts:

- D1 Remove and salvage traffic signal controller and cabinet. Demolish and dispose of concrete base one foot below finish grade.
- D2 Demolish and dispose of traffic signal pullbox.
- D3 Remove traffic signal cables. Abandon ducts in place. Fill ducts with lean concrete.
- D4 Remove traffic signal cables. Remove entire duct line and concrete encasement within State right-of-way.
- D5 Abandon vehicle loop detectors in place.
- D6 Remove and salvage existing traffic signal standard. Demolish and dispose of concrete foundation two feet below finish grade. Remove and salvage traffic signal heads and pedestrian signal heads.
- D7 Remove and salvage pedestrian push button. Demolish and dispose of concrete foundation.

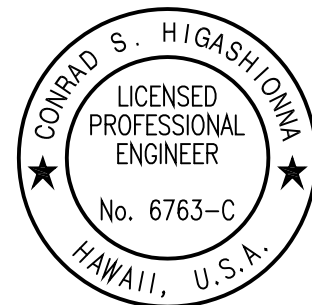
GRAPHIC SCALES

SCALE 1"=10' 10' 5' 0 10' 20'

Approved By:

Chief, Traffic Signals & Technology, DTS

Date



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Conrad Higashimura

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNAL DEMOLITION
Kahuapaani St & Ulune St

BASE BID

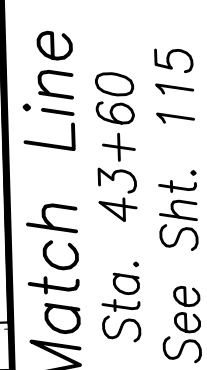
Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)R

Scale: Date: Oct. 2020

SHEET No. TS-11 OF 113 SHEETS

True North

Scale: 1"=10',
TMK: 9-9-055,
057, 072 & 074



Nov 18, 2020-5:14am
 N:\CAD\DWG\2015\1512-Traffic Signal Modernization @ Various Locations P&E\FINAL\114 Signal Demolition U 2.dwg

Match Line
Sta. 18+85
See Sht. 115



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Conrad Higashionna

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNAL DEMOLITION

Kahuapaani St & Ulune St

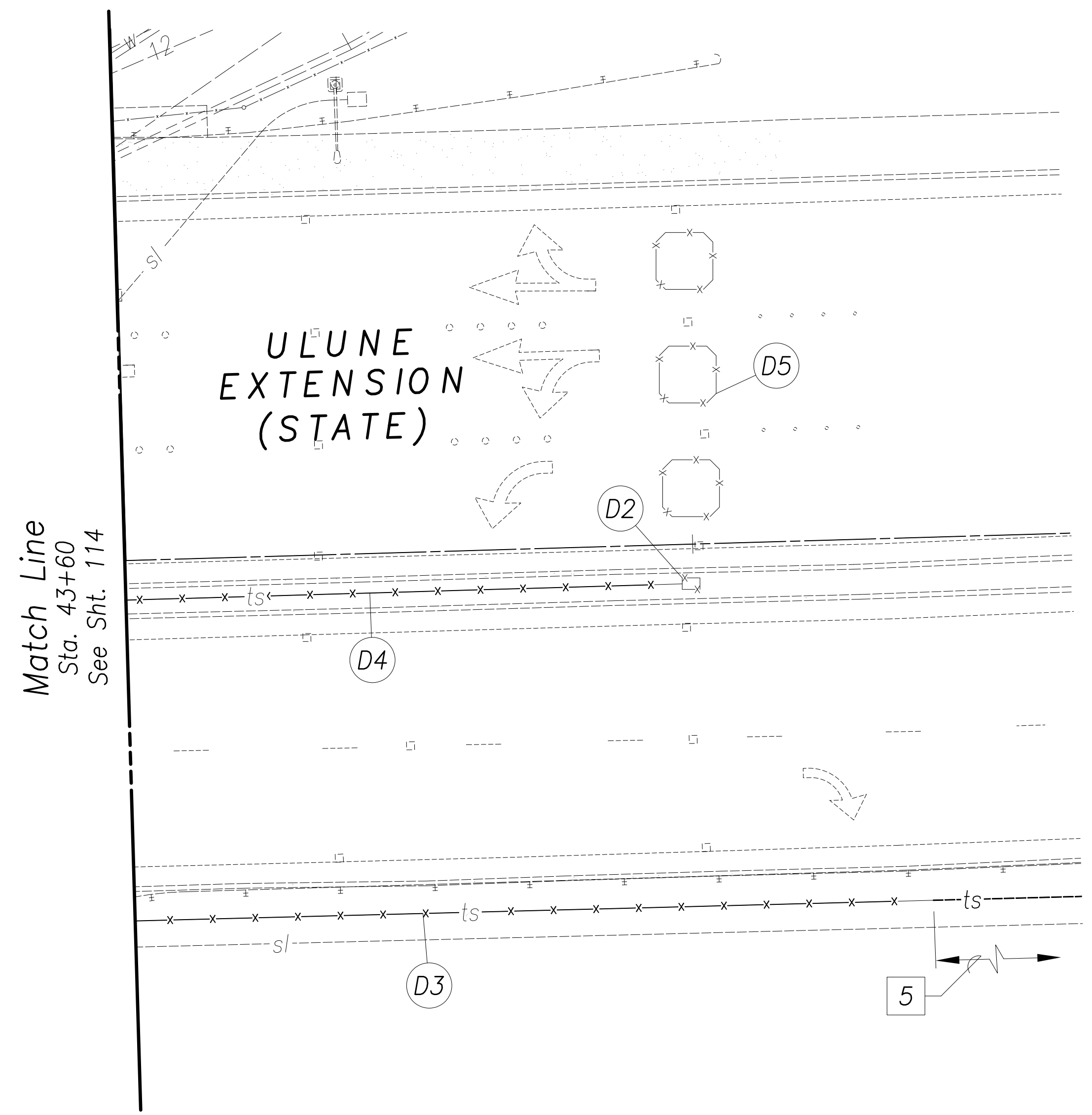
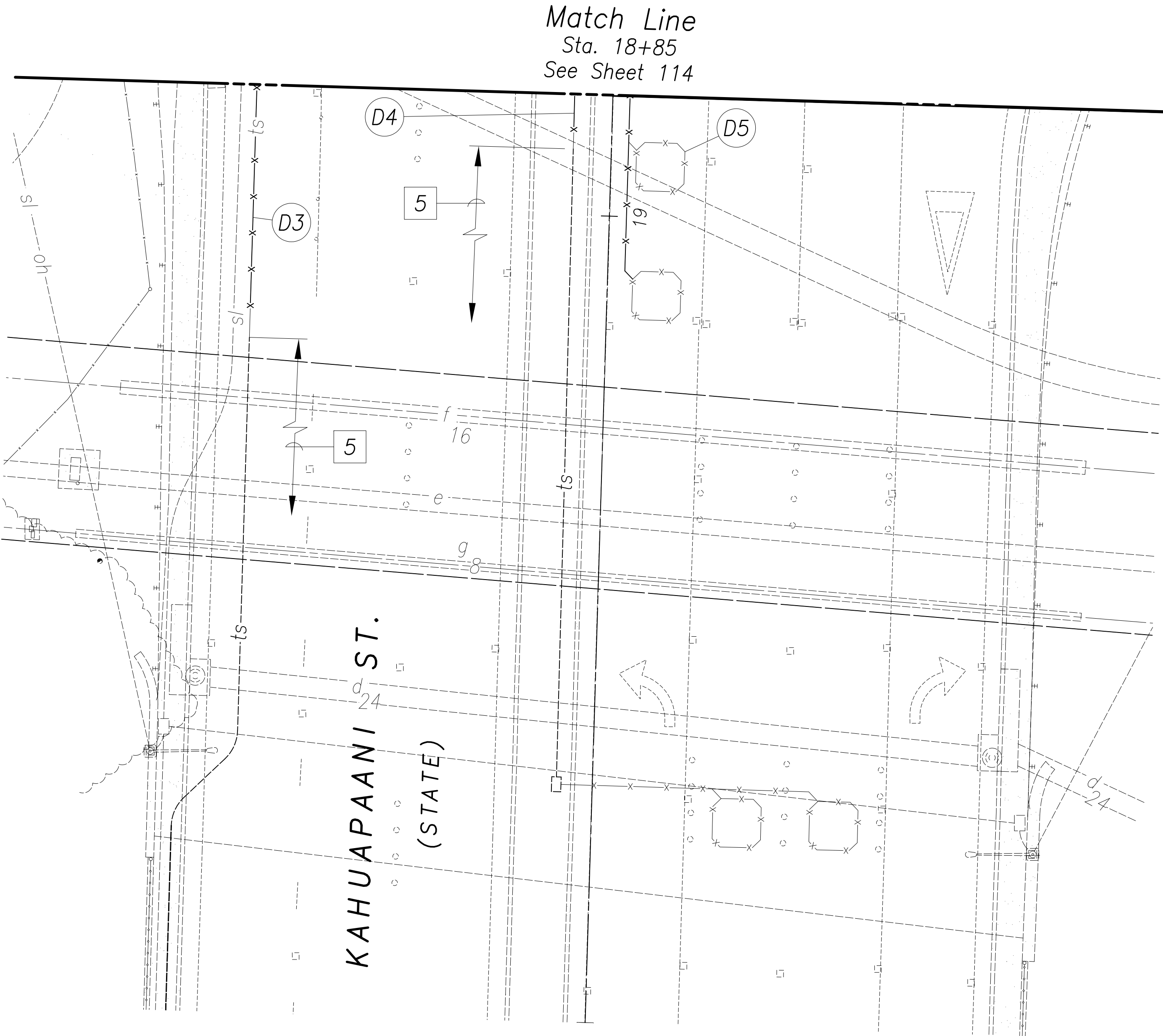
BASE BID

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

Scale: 1"=10' Date: Oct. 2020

SHEET NO. TS-12 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	115	291



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	DESIGNED BY	
	CHECKED BY	

New 18, 2020-5110m
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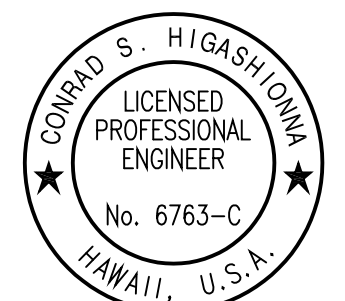
GRAPHIC SCALES

SCALE 1"=10'

10' 5' 0 10' 20'

Approved By: _____

Chief, Traffic Signals & Technology, DTS _____ Date _____



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Conrad Higashimura

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNAL DEMOLITION

Kahuapaani St & Ulune St

BASE BID

Traffic Signal Modernization, Oahu, Phase 1

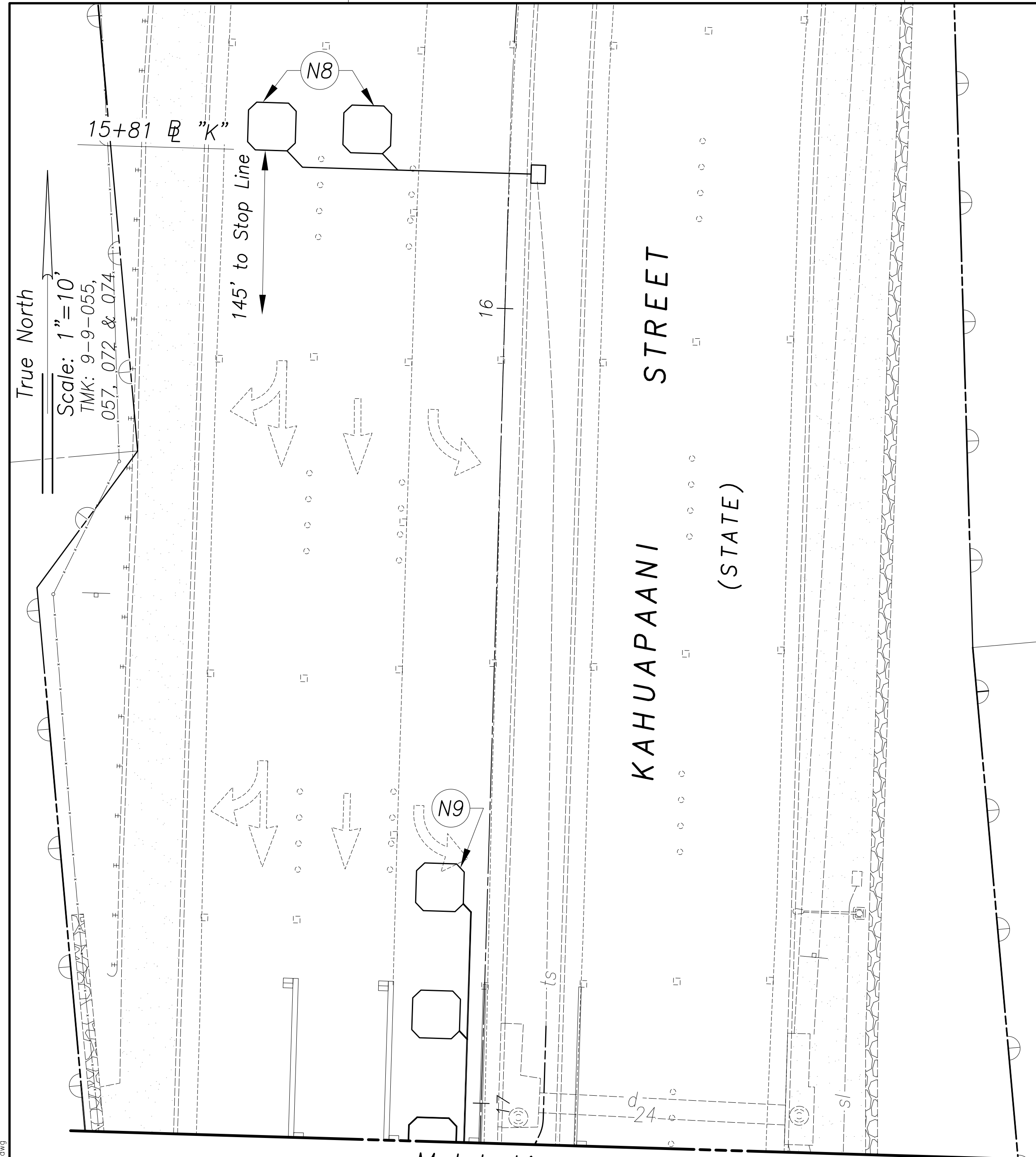
Federal-Aid Project No. STP-0300(163)R

Scale: _____ Date: Oct. 2020

SHEET No. TS-13 OF 113 SHEETS

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

New 18, 2020-51.dwg
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Match Line
Sta. 17+05
See Sht. 117

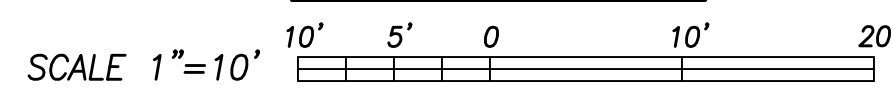
Notes:

- 1 Tie-down of traffic signal standards is to center of vertical pole. Tie-down of pullboxes is to center of box.
- 2 For location of traffic signal pullboxes, see New Duct Line Work.
- 3 Type I Traffic Signal Standard to remain.
- 4 See sheet 123 for new signal work schedules.

New Signal Work Callouts:

- N1 Install Controller Assembly with Software 17+27.51 @ "K" (45.07' Lt.)
- N2 Install Type II Traffic Signal Standard with 30-foot mast arm and drilled shaft foundation. 17+39.33 @ "K" (46.34' Lt.)
- N3 Install Type II Traffic Signal Standard with 17-foot mast arm and drilled shaft foundation. 18+21.52 @ "K" (54.67' Lt.)
- N4 Install Type II Traffic Signal Standard with 25-foot mast arm and drilled shaft foundation. 18+26 @ "K" (40.75' Rt.)
- N5 Install Type II Traffic Signal Standard with 50-foot mast arm and drilled shaft foundation. 17+47.44 @ "K" (63.33' Rt.)
- N6 Install Type I Traffic Signal Standard, 10-feet height, with foundation. 17+37.43 @ "K" (49.71' Rt.)
- N7 Install Type I Traffic Signal Standard, 10-feet height, with foundation. 17+15 @ "K" (5.3' Lt.)
- N8 Install Loop Detector Sensing Unit (6 Ft. x 6 Ft.) 1 Loops centered in lane
- N9 Install Loop Detector Sensing Unit (6 Ft. x 6 Ft.) 4 Loops centered in lane
- N10 Install pedestrian push button PPB-1, ADA compliant, on a pedestal with foundation.
- N11 Install pedestrian push button PPB-2, ADA compliant, on a pedestal with foundation.
- N12 Install pedestrian push button PPB-3, ADA compliant, on a pedestal with foundation.
- N13 Install pedestrian push button PPB-4, ADA compliant, on a pedestal with foundation.
- N14 Install pedestrian push button PPB-5, ADA compliant, on a pedestal with foundation.
- N15 Install pedestrian push button PPB-6, ADA compliant, on Type I traffic signal standard.
- N16 Install pedestrian push button PPB-7, ADA compliant, on Type I traffic signal standard.
- N17 Install temporary Approach-Only Microwave Vehicle Detector on new sign post or new traffic signal standard.

GRAPHIC SCALES



Approved By:

Chief, Traffic Signals & Technology, DTS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	116	291

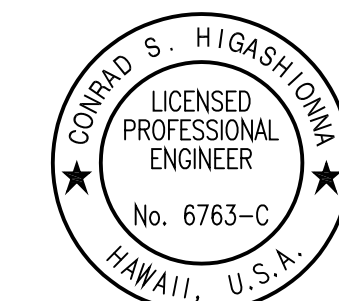
DRILLED SHAFT FOUNDATIONS
for Type II Traffic Signal Standards

I.D. LABEL	SOIL TYPE	GRADE	MAST ARM LENGTH (feet)	DRILLED SHAFT DIAMETER (inches)	DRILLED SHAFT LENGTH (feet)
(A)*	Stiff Clays	Level	30	30	7
(B)*	Stiff Clays	Level	17	24	6
(D)*	Stiff Clays	Level	25	30	6
(E)**	Stiff Clays	Level	50	42	18

* For drilled shaft foundation details, see 2008 Standard Plans TE-33A.1 & TE-33A.2.

** For drilled shaft foundation details, see structural drawings S-1 thru S-3 for drilled shaft foundation.

Log of Boring 1	Approximate Ground Surface Elevation (feet MSL): 116 Water Level: Not encountered
DESCRIPTION	
6-inch CONCRETE	
5	Reddish brown GRAVELLY SAND (BASALTIC) with a little clay and silt, medium dense, moist (fill)
	Brown w/ multi-colored mottling SILTY CLAY with some sand, stiff moist (fill)
10	Brownish red with multi-colored mottling SILTY CLAY with traces of gravel, stiff, moist (residual soil)
	grades to purplish brown, hard
15	Reddish brown SILTY SAND with some gravel, very dense, moist (saprolite)
20	
25	Gray vesicular BASALT, severely to moderately fractured, moderately to highly weathered, medium hard to hard (basalt formation)
	Boring terminated at 28 feet



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Conrad Higashimura

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NEW SIGNAL WORK

Kahupaani St & Ulune St

BASE BID

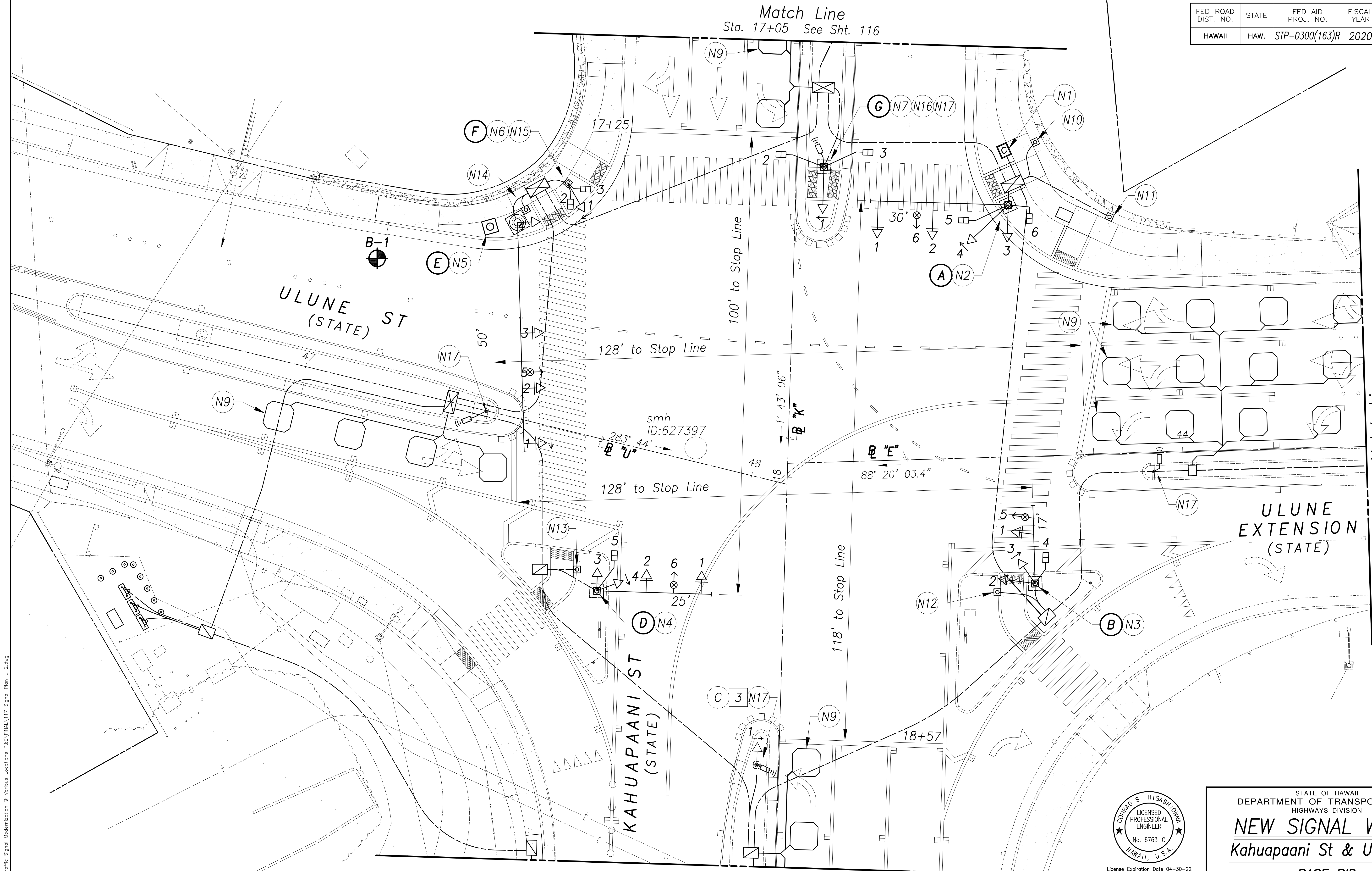
Traffic Signal Modernization, Oahu, Phase 1

Federal-Aid Project No. STP-0300(163)R

Scale: 1"=10' Date: Oct. 2020

SHEET No. TS-14 OF 113 SHEETS

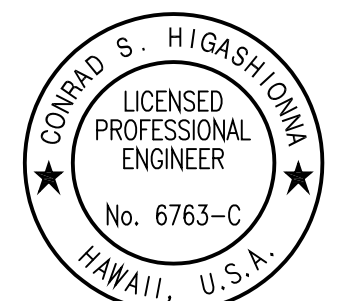
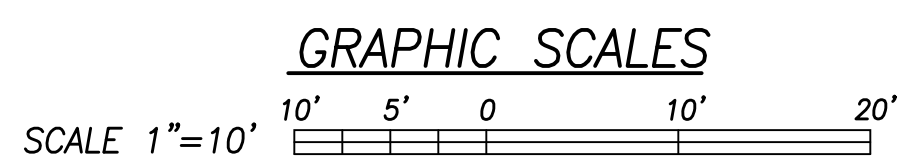
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	117	291



True North
Scale: 1"=10'
TMK: 9-9-055,
057, 072 & 074

Match Line
Sta. 43+60
See Sht. 118

Match Line
Sta. 18+85
See Sht. 118



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Conrad Higashimura

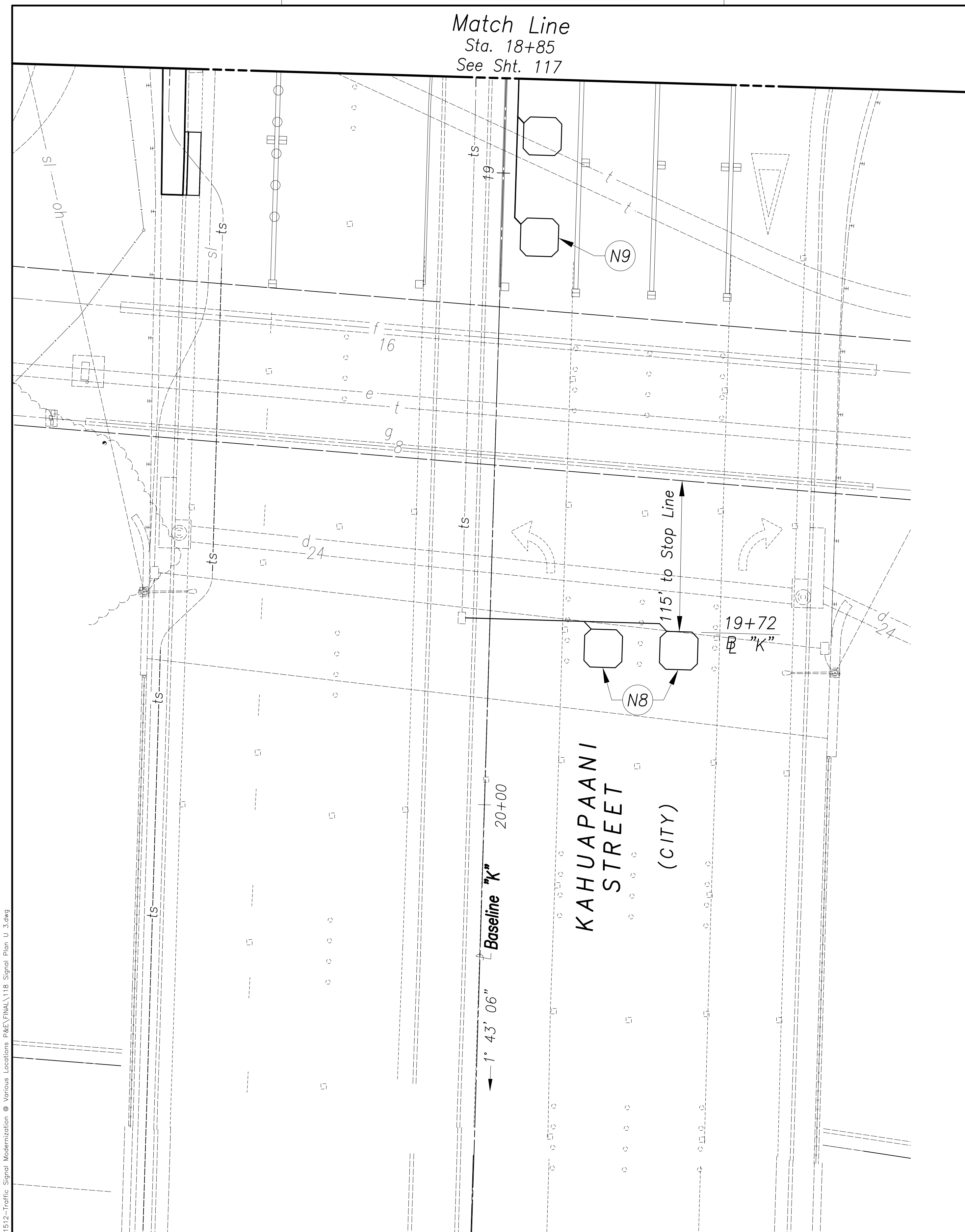
Approved By: _____
Chief, Traffic Signals & Technology, DTS
Date _____

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
NEW SIGNAL WORK
Kahuapaani St & Ulune St
BASE BID
Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)R
Scale: 1"=10' Date: Oct. 2020
SHEET No. TS-15 OF 113 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
QUANTITIES BY	DESIGNED BY	
CHECKED BY		

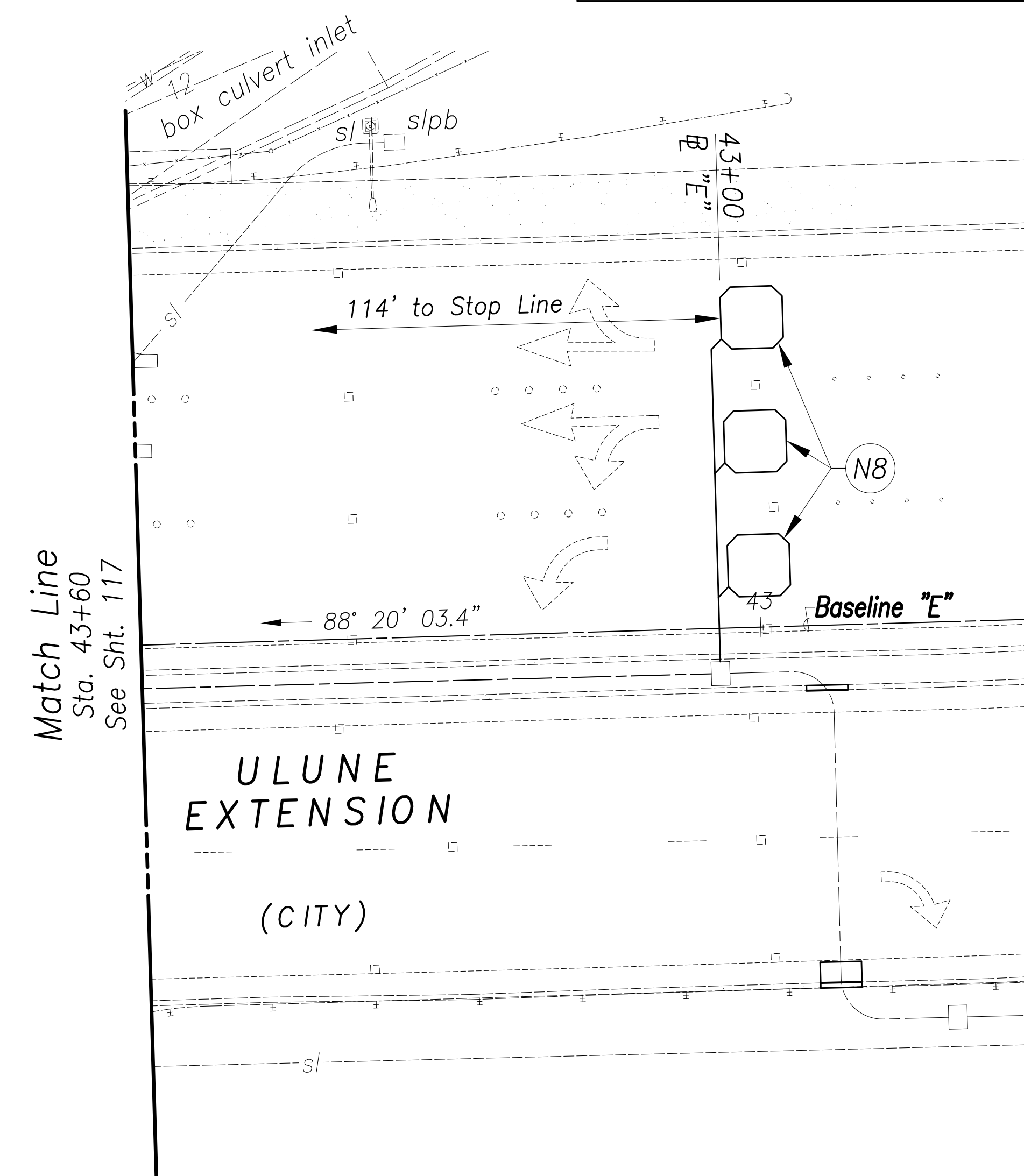
New 18, 2020-5110m
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FED ROAD DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	118	291



True North

Scale: 1"=10'
TMK: 9-9-055,
057, 072 & 074

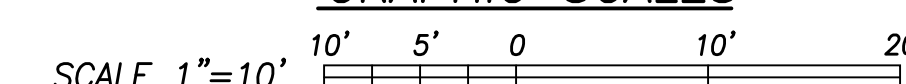


Match Line
Sta. 43+60
See Sht. 117

ULUNE EXTENSION

(CITY)

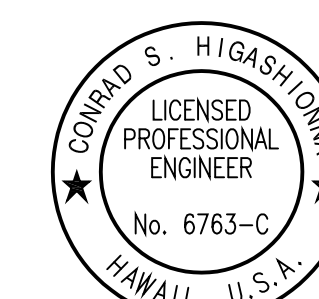
GRAPHIC SCALES



Approved By:

Chief, Traffic Signals & Technology, DTS

Date _____



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CONRAD HIGASHIYAMA

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NEW SIGNAL WORK

Kahuapaani St & Ulune St

BASE BID

Traffic Signal Modernization, Oahu, Phase 1

Federal-Aid Project No. STP-0300(163)R

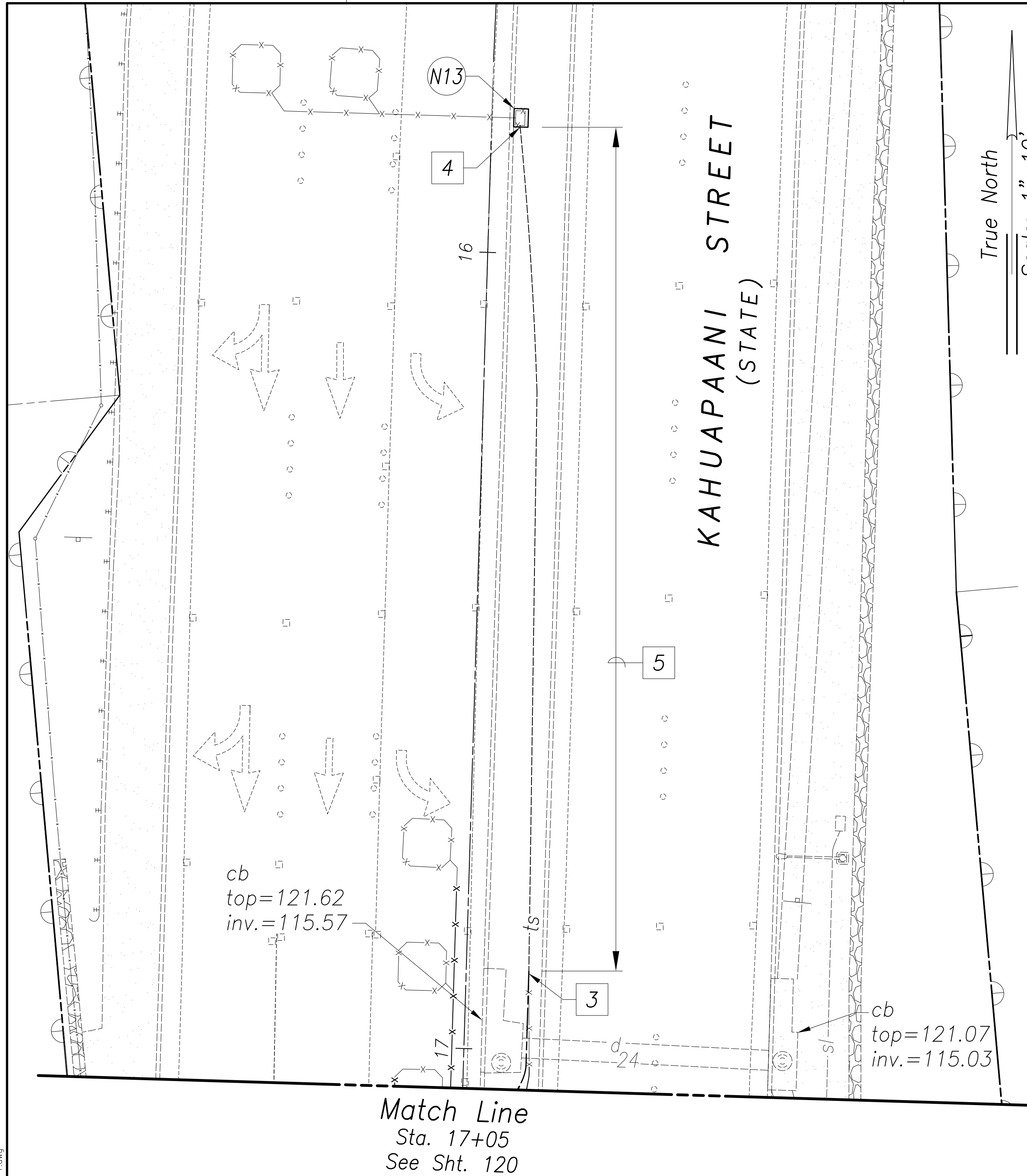
Scale: 1"=10'

Date: Oct. 2020

SHEET No. *TS-16* OF *113* SHEETS

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

New 18, 2020-11-10m
N:\CAO\DWG\2015\1512-Traffic Signal Modernization @ Various Locations P&E\FINAL\119 Duct Plan U 1.dwg



Notes:

- Existing power source. See drawings E-11 thru E-15.
- New power source for three traffic signals. See drawings E-11 thru E-15.
- Intercept existing 2-inch traffic signal duct and connect to new ducts.
- Intercept existing 2-inch traffic signal duct and connect to new pullbox.
- Existing traffic signal duct line to remain.
- Existing traffic signal pull box to remain.
- Existing street light pull box to remain.
- See sheet 123 for new duct line work schedules.
- See Duct Layout Plans for horizontal alignment tie-down and Duct Profiles for vertical alignment.
- 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.

New Duct Line Work Callouts:

- N1 Install Type C Pullbox PB-1. 17+34.73 @ "K" (47.21' Lt.)
- N2 Install Type B Pullbox PB-2. 18+28.70 @ "K" (57.44' Lt.)
- N3 Install Type B Pullbox PB-3. 18+82 @ "K" (5.5' Lt.)
- N4 Install Type B Pullbox PB-4. 18+21.72 @ "K" (53.26' Rt.)
- N5 Install Type C Pullbox PB-5. 17+85.87 @ "K" (73.72' Rt.)
- N6 Install Type C Pullbox PB-6. 17+38.67 @ "K" (56.21' Rt.)
- N7 Install Type C Pullbox PB-7. 17+15 @ "K" (5.30' Rt.)
- N8 Install Type A Pullbox PB-8. 43+98 @ "E" (4.10' Lt.)
- N9 Install Type A Pullbox PB-9. 43+04 @ "E" (4.4'± Lt.)
- N10 Install Type A Pullbox PB-10. 42+82 @ "E" (38'± Lt.)
- N11 Install Type B Pullbox PB-11. 46+78.20 @ "U" (57.45' Rt.)
- N12 Install Type B Pullbox PB-12. 18+82.25 @ "K" (53.09' Rt.)
- N13 Install Type A Pullbox PB-13. 15+83± @ "K" (3.7'± Lt.)
- N14 New traffic signal controller. 17+27.51 @ "K" (45.07' Lt.)
- N15 Remove existing street light pull box and install new Type B pullbox flush with finish grade. Maintain existing circuits and conduits.

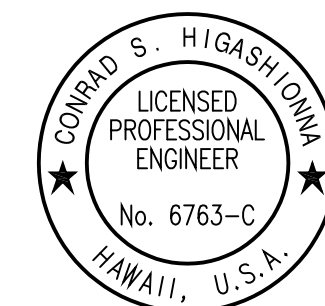
GRAPHIC SCALES

SCALE 1"=10'

Approved By:

Chief, Traffic Signals & Technology, DTS

Date



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Conrad Higashimura

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	119	291

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NEW DUCT LINE WORK

Kahuapaani St & Ulune St

BASE BID

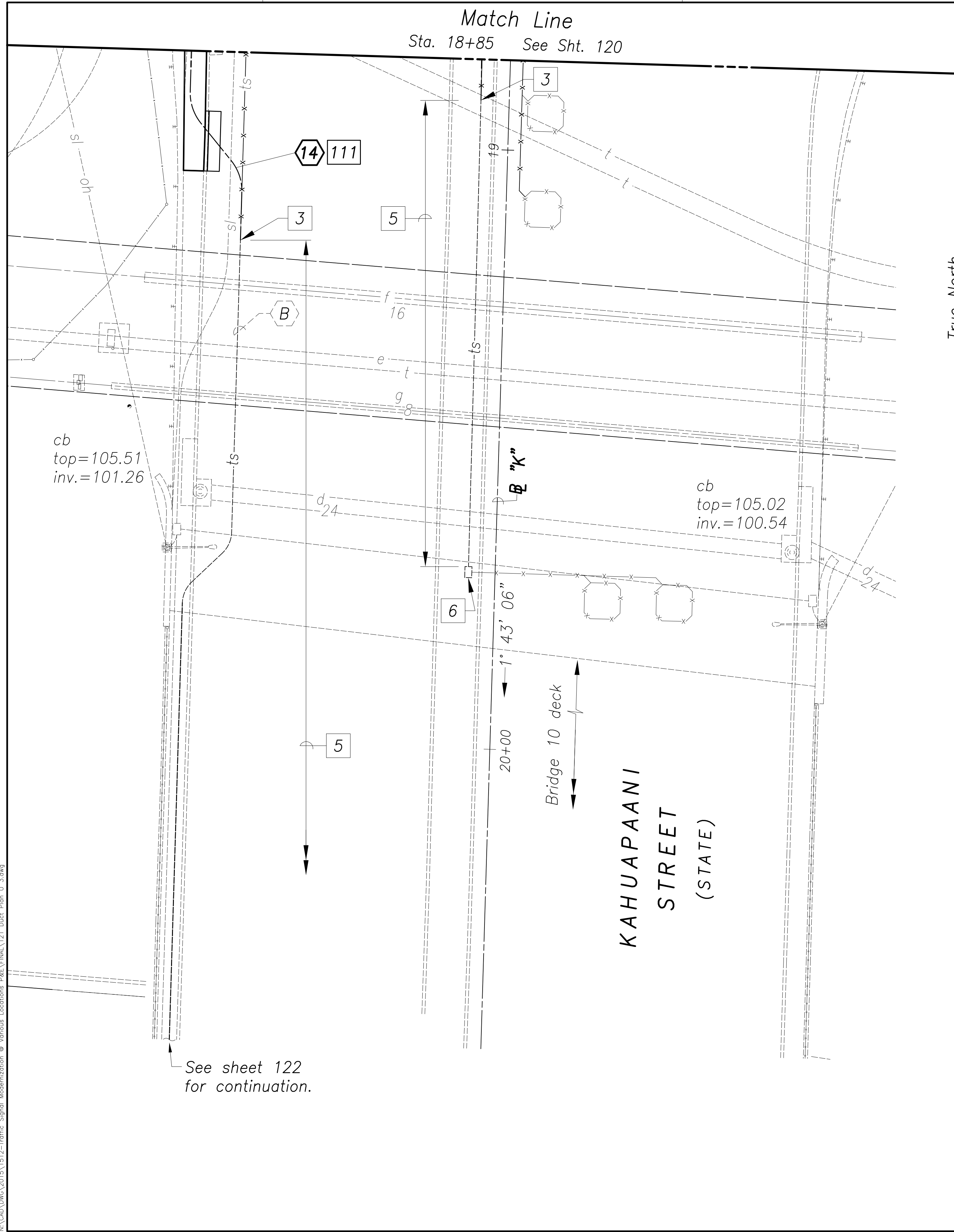
Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)R

Scale: Date: Oct. 2020

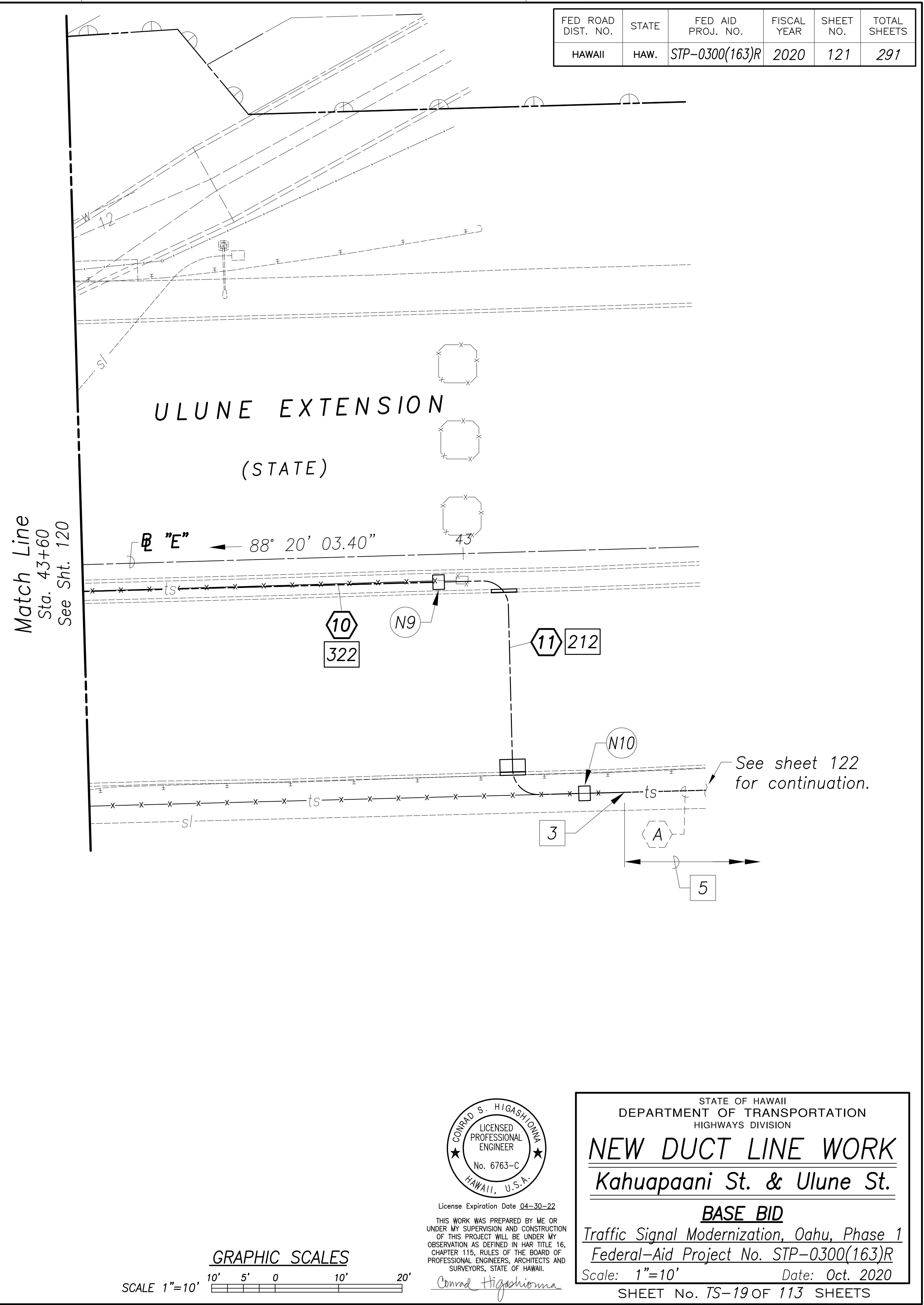
SHEET No. TS-17 OF 113 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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New 18, 2020-8130m
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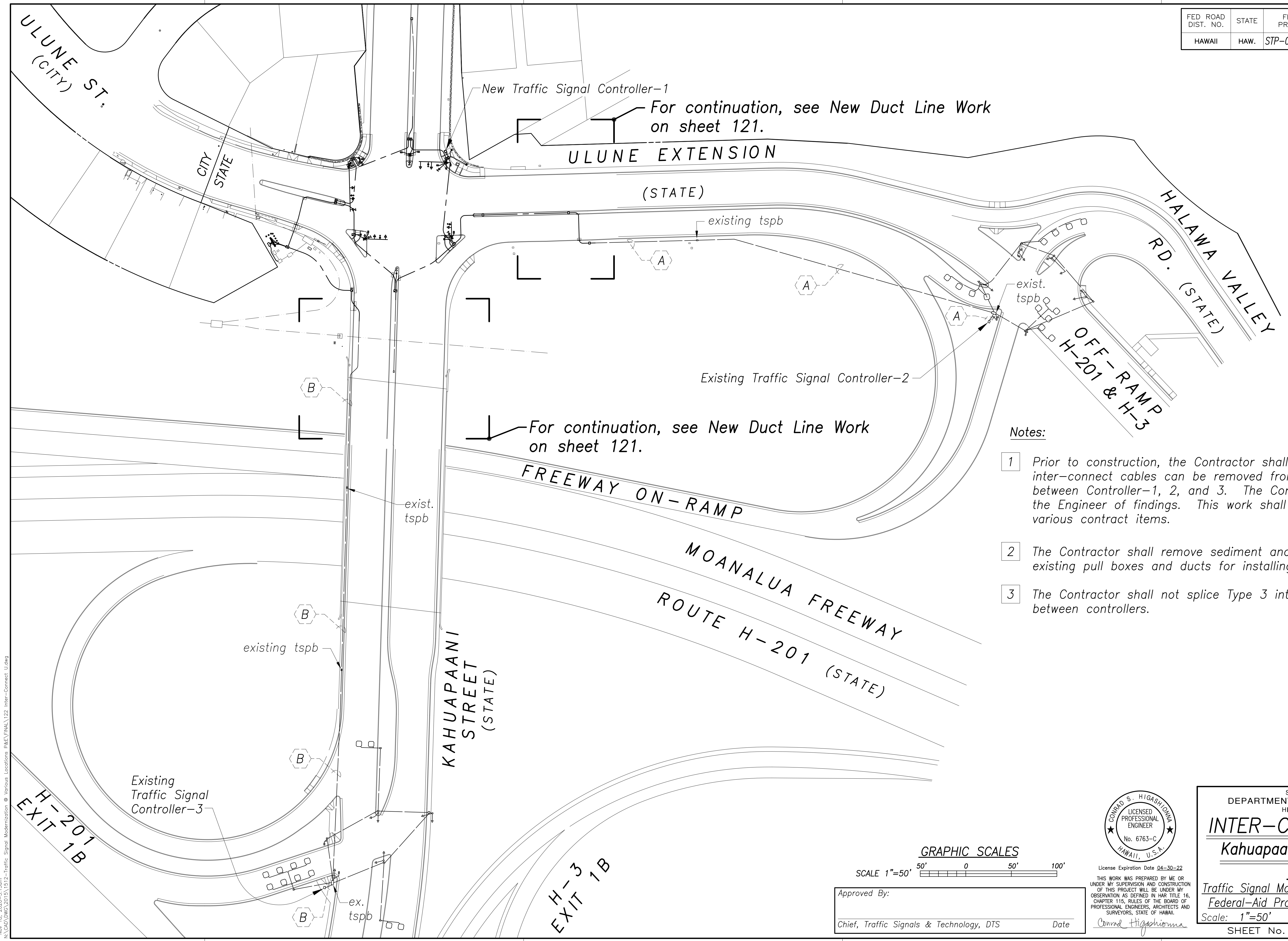
True North
Scale: 1"=10'
TMK: 9-9-055,
057, 072 & 074



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	121	291

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	122	291

True North
Scale: 1"=50'
TMK: 9-9-055,
057, 072 & 074



Notes:

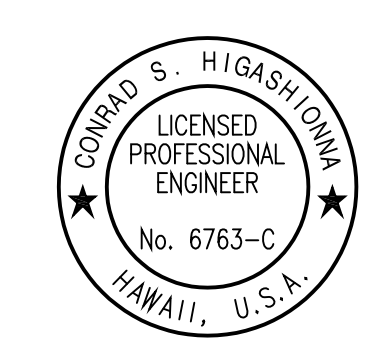
- 1 Prior to construction, the Contractor shall verify the existing inter-connect cables can be removed from existing ducts between Controller-1, 2, and 3. The Contractor shall notify the Engineer of findings. This work shall be incidental to the various contract items.
- 2 The Contractor shall remove sediment and debris collecting in existing pull boxes and ducts for installing inter-connect cable.
- 3 The Contractor shall not splice Type 3 inter-connect cables between controllers.

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
No.	

New 18, 2020-01-10m
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GRAPHIC SCALES
SCALE 1"=50' 50' 0 50' 100'

Approved By: _____
Chief, Traffic Signals & Technology, DTS Date _____



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Conrad Higashimura

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
INTER-CONNECT PLAN
Kahuapaani St & Ulune St
BASE BID
Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)R
Scale: 1"=50' Date: Oct. 2020
SHEET No. TS-20 OF 113 SHEETS

SURVEY PLOTTED BY

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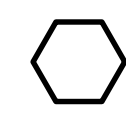
DATE

ORIGINAL PLAN

NOTE BOOK

No.

New 18, 2020-8:15am
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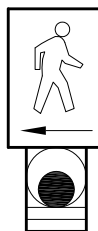
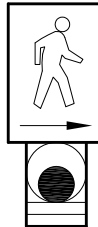
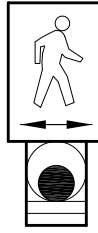
CONDUIT—CABLE SCHEDULE													
	FROM	TO	CONDUIT	CABLE		FROM	TO	CONDUIT	CABLE				
	Control.	PB—1	New 8—2” Sch. 40 Concrete Encased	1—Type 1, Ground Wire 1—Type 1, Ground Wire 5—Type 2 5—Type 2 2—Type 3 1—Type 6 4—Type 7 Spare		PB—6	PB—7	New 6—2” Sch. 40 Concrete Encased	1—Type 1, Ground Wire 3—Type 2 1—Type 3 1—Type 6 2—Type 7 Spare				
										PB—7	PB—1	New 6—2” Sch. 40 Concrete Encased	1—Type 1, Ground Wire 5—Type 2 1—Type 3 1—Type 6 2—Type 7 Spare
	PB—1	PB—2	New 5—2” Sch. 40 Concrete Encased	1—Type 1, Ground Wire 5—Type 2 1—Type 3 1—Type 7 Spare		PB—2	PB—8	New 3—2” Sch. 40 Concrete Encased	2—Type 2 1—Type 3 1—Type 6				
	PB—2	PB—3	New 4—2” Sch. 40 Concrete Encased	1—Type 1, Ground Wire 2—Type 2 1—Type 6 Spare		PB—8	PB—9	New 3—2” Sch. 80	1—Type 2 1—Type 3 1—Type 6				
	PB—3	PB—4	New 3—2” Sch. 40 Concrete Encased	1—Type 1, Ground Wire 1—Type 6 Spare		PB—9	PB—10	New 2—2” Sch. 40 Concrete Encased	1—Type 3 1—Type 6				
	PB—4	PB—5	New 5—2” Sch. 40 Concrete Encased	1—Type 1, Ground Wire 1—Type 2 1—Type 6 1—Type 7 Spare		PB—5	PB—11	New 3—2” Sch. 40 Concrete Encased	1—Type 3 1—Type 6 1—Type 6				
	PB—5	PB—6	New 6—2” Sch. 40 Concrete Encased	1—Type 1, Ground Wire 2—Type 2 1—Type 3 1—Type 6 1—Type 7 Spare		PB—11	PB—12	New 2—2” Sch. 40 Concrete Encased	1—Type 3 1—Type 6				
						PB—12	Conn. to exist. conduits	New 2—2” Sch. 40 Concrete Encased	1—Type 3 1—Type 6				
						PB—11	New 3 Each HECO Meters	New 3—2” Sch. 40 Concrete Encased	1—Type 6 1—Type 6 1—Type 6				
						PB—10	To existing Control.	Existing 1—2”	1—Type 3 1—Type 6				
						PB—12	To existing Control.	Existing 1—2”	1—Type 3 1—Type 6				

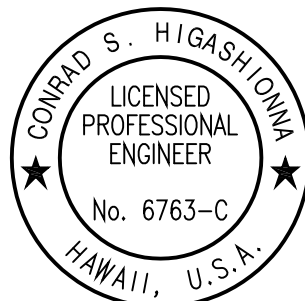
SIGNAL HEAD SCHEDULE	
Head Type and Description	Pole Letter - Signal Head Number
Red Ball Yellow Ball Green Arrow (Thru) 12" RY↑ Traffic Signal Head	A-1** A-2** A-3 D-1** D-2**
Red Ball Yellow Arrow (Left) Green Arrow (Left) 12" R←← Traffic Signal Head	A-4 E-1** B-3 F-1 C-1* G-1 D-4
Red Ball Yellow Ball Green Ball 12" RYG Traffic Signal Head	B-1** E-2** B-2 E-3** D-3 E-4
Countdown Pedestrian Signal Head	A-5 F-2 A-6 F-3 B-4 G-2 D-5 G-3
* Existing signal head to remain	
** Install Backplate with Retroreflective Borders	
OPTICOM SCHEDULE	
Mounting Type	Pole Letter - Opticom Number
Mast Arm, One-Way	A-6 D-6 B-5 E-5

Approved By:

Chief, Traffic Signals & Technology, DTS

Date

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	123	291
PEDESTRIAN PUSH BUTTON SCHEDULE					
Description	New Signal Work Callout	Pole or Pedestal PPB-#			
	N10	Pedestal PPB-1			
	N13	Pedestal PPB-4			
	N15	F PPB-6			
	N11	Pedestal PPB-2			
	N12	Pedestal PPB-3			
	N14	Pedestal PPB-5			
	N16	G PPB-7			



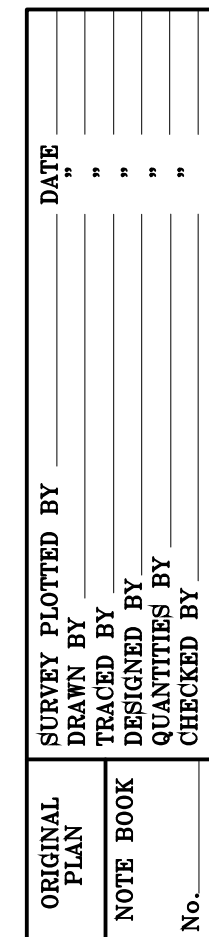
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Conrad Higashimura

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NEW WORK SCHEDULES
Kahuapaani St & Ulune St
BASE BID
Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)R
Scale: Date: Oct. 2020
SHEET No. TS-21 OF 113 SHEETS

Nov 18, 2020-5:15am
 C:\CAD\DWG\2015\1512-Traffic Signal Modernization @ Various Locations P&E\FINAL\124 Dwt Layout U 1.dwg



GRAPHIC SCALES

SCALE 1"=5'

5' 0 5' 10'



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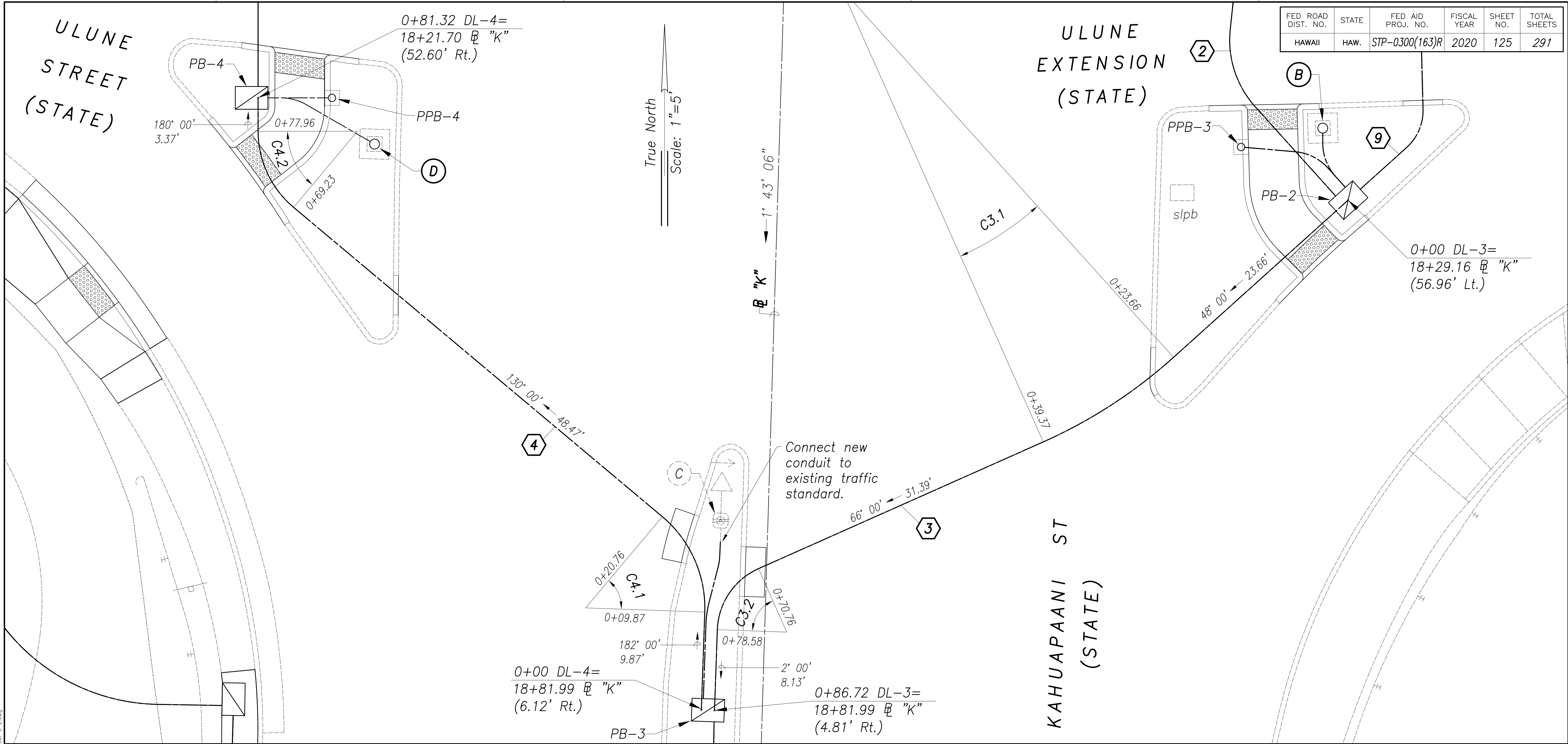
Conrad Higashionna

124

New 18, 2020-11-10m
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ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	DESIGNED BY	
	CHECKED BY	
NOTE BOOK	QUANTITIES BY	
No.		

Duct Line Curve Data				
	C3.1	C3.2	C4.1	C4.2
Δ	30° 00' 00"	48° 00' 00"	52° 00' 00"	50° 00' 00"
$\Delta/2$	15° 00' 00"	24° 00' 00"	26° 00' 00"	25° 00' 00"
R	5.00'	10.00'	12.00'	10.00'
T	1.34'	4.45'	5.85'	4.66'
Ch	2.59'	8.13'	10.52'	8.45'
Lc	2.62'	8.38'	10.89'	8.73'



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	125	291

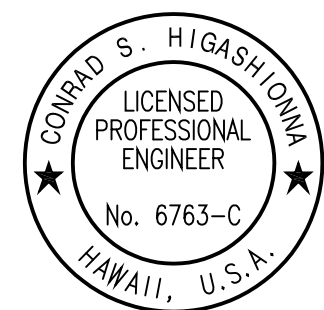
GRAPHIC SCALES

SCALE 1"=5'

5' 0 5' 10'

Approved By: _____

Chief, Traffic Signals & Technology, DTS Date _____



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Conrad Higashimura

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DUCT LAYOUT PLAN

Kahupaani St & Ulune St

BASE BID

Traffic Signal Modernization, Oahu, Phase 1

Federal-Aid Project No. STP-0300(163)R

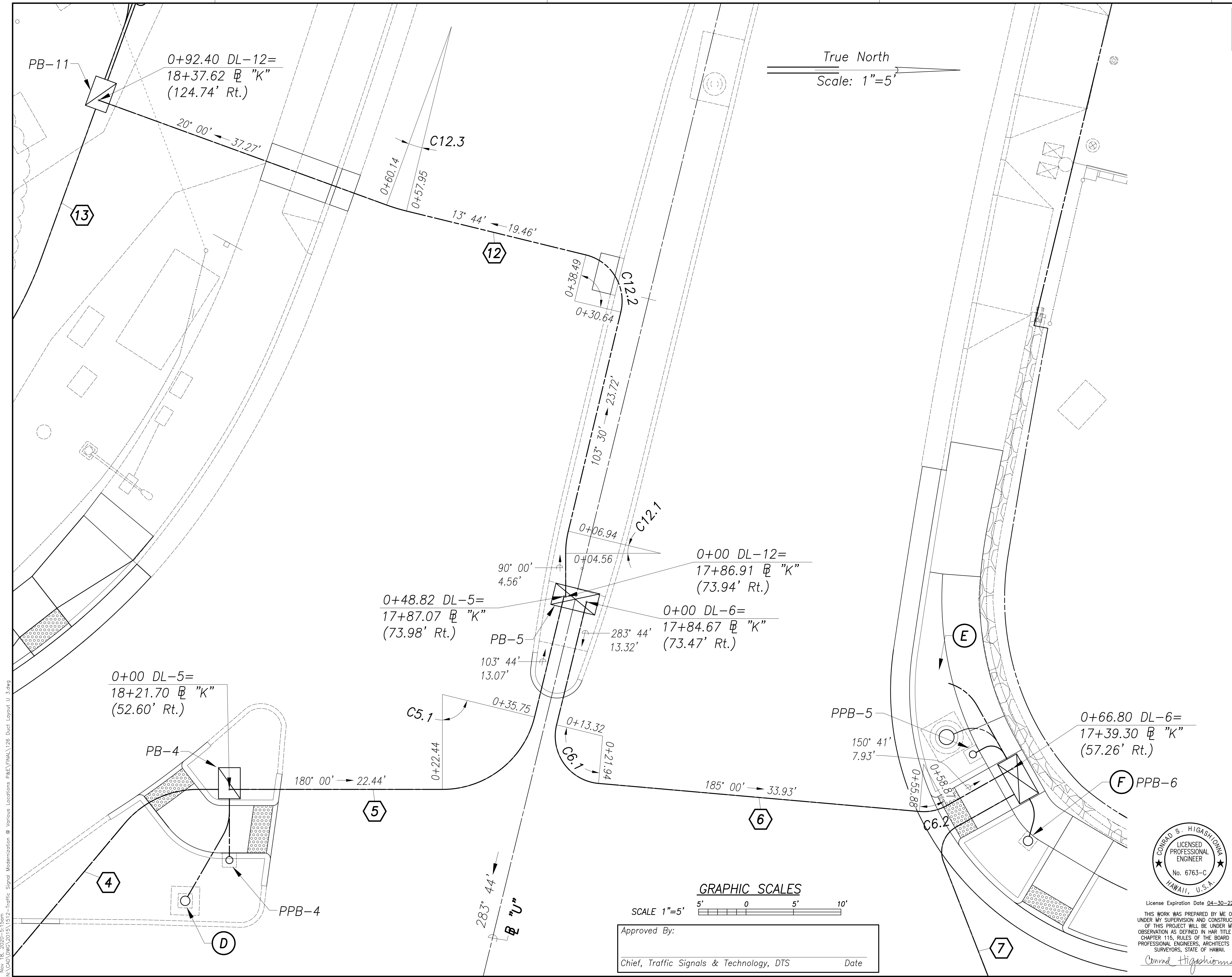
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SHEET No. TS-23 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	126	291

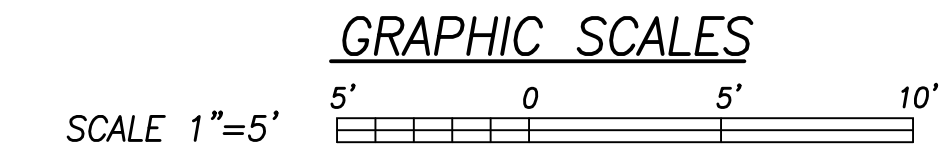
☑ Duct Line Curve Data

	C5.1	C6.1
Δ	76° 16' 00"	98° 44' 00"
Δ/2	38° 08' 00"	49° 22' 00"
R	10.00'	5.00'
T	7.85'	5.83'
Ch	12.35'	7.59'
Lc	13.31'	8.62'
	C6.2	C12.1
Δ	34° 19' 00"	13° 30' 00"
Δ/2	17° 09' 30"	6° 45' 00"
R	5.00'	10.00'
T	1.54'	1.18'
Ch	2.95'	2.35'
Lc	2.99'	2.36'
	C12.2	C12.3
Δ	89° 46' 00"	6° 16' 00"
Δ/2	44° 53' 00"	3° 08' 00"
R	5.00'	20.00'
T	4.98'	1.09'
Ch	7.07'	2.19'
Lc	7.85'	2.19'



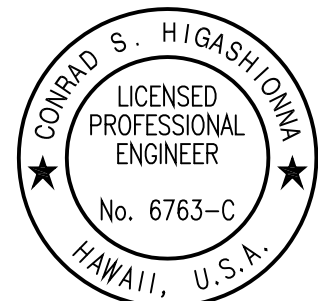
SURVEY PLOTTED BY	DATE
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NOTE BOOK	
No.	

New 18, 2020-11-10am
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Conrad Higashimura

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

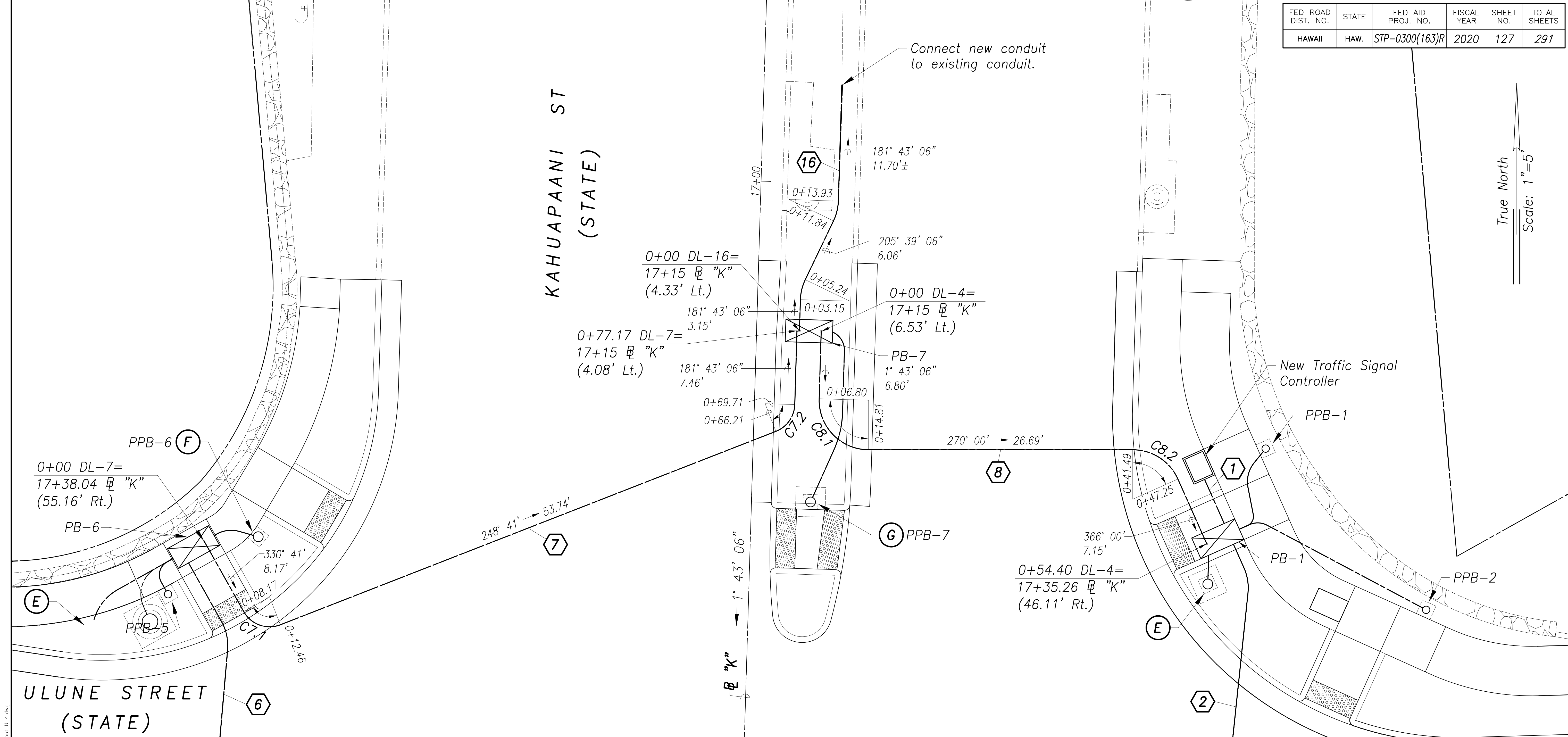
DUCT LAYOUT PLAN
Kahuapaani St & Ulune St

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

Scale: 1"=5' Date: Oct. 2020

SHEET No. TS-24 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	127	291



Duct Line Curve Data						
	C7.1	C7.2	C8.1	C8.2	C16.1	C16.2
Δ	82° 00' 00"	66° 57' 54"	91° 43' 06"	66° 00' 00"	23° 56' 00"	23° 56' 00"
$\Delta/2$	41° 00' 00"	33° 28' 57"	45° 51' 33"	33° 00' 00"	11° 58' 00"	11° 58' 00"
R	3.00'	3.00'	5.00'	5.00'	5.00'	5.00'
T	2.61'	1.98'	5.15'	3.25'	1.06'	1.06'
Ch	3.94'	3.31'	7.18'	5.44'	2.07'	2.07'
Lc	4.29'	3.51'	8.00'	5.76'	2.09'	2.09'

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	
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New 18, 2020-518mm
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GRAPHIC SCALES

SCALE 1"=5'

5' 0 5' 10'

Approved By: _____

Chief, Traffic Signals & Technology, DTS

Date _____

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

License Expiration Date 04-30-22

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Conrad Higashiorama

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

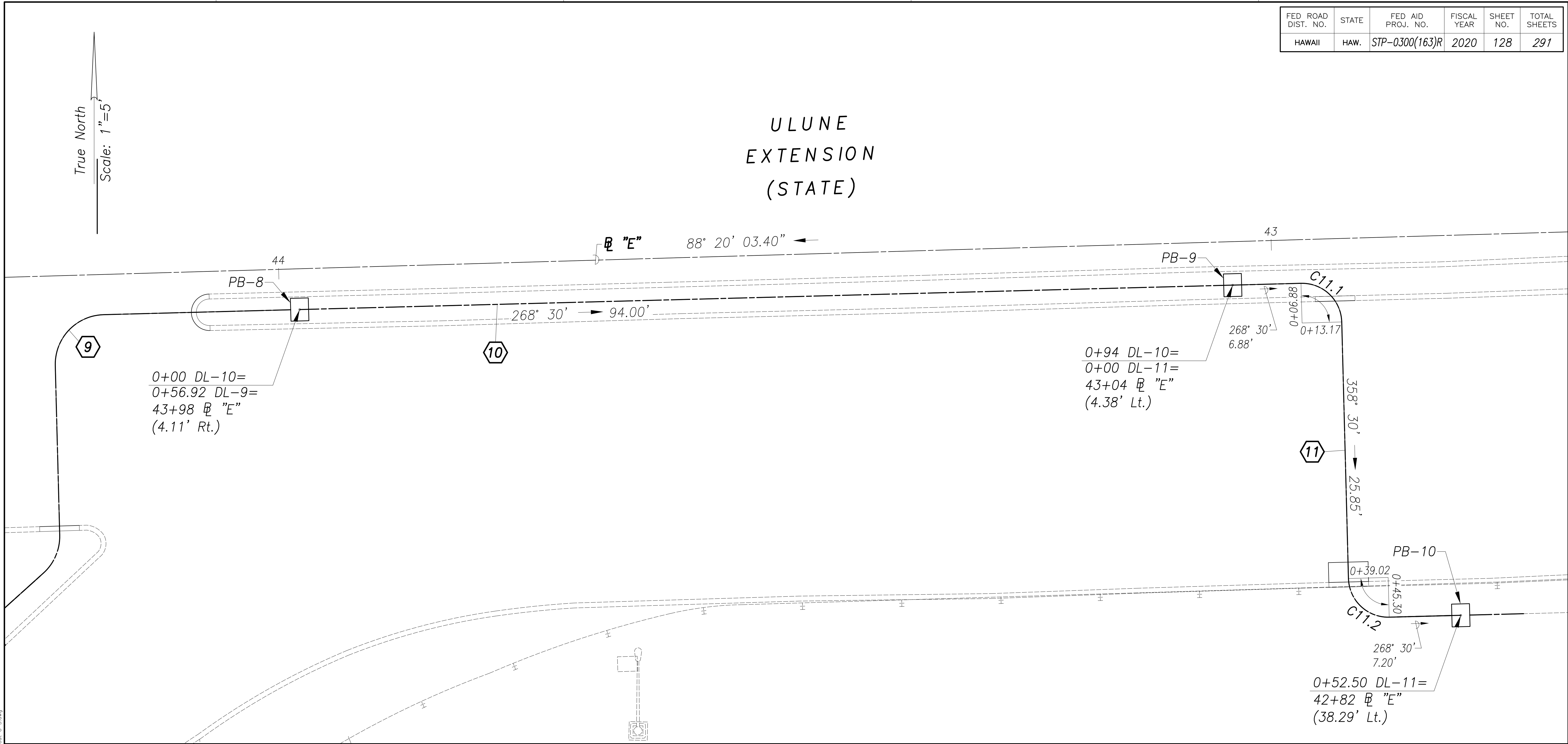
DUCT LAYOUT PLAN
Kahupaani St & Ulune St

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

Scale: 1"=5' Date: Oct. 2020

SHEET No. TS-25 OF 113 SHEETS

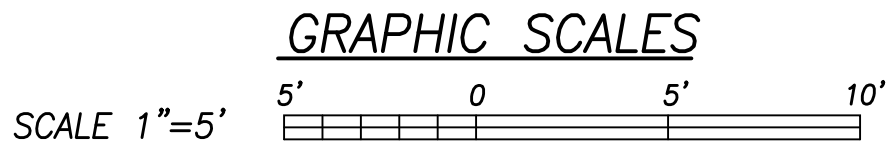
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	128	291



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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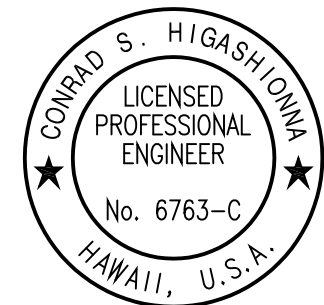
New 18, 2020-818mm
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Duct Line Curve Data		
	C11.1	C11.2
Δ	90° 00' 00"	90° 00' 00"
$\Delta/2$	45° 00' 00"	45° 00' 00"
R	4.00'	4.00'
T	4.00'	4.00'
Ch	5.66'	5.66'
Lc	6.28'	6.28'



Approved By: _____
Chief, Traffic Signals & Technology, DTS

Date: _____



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

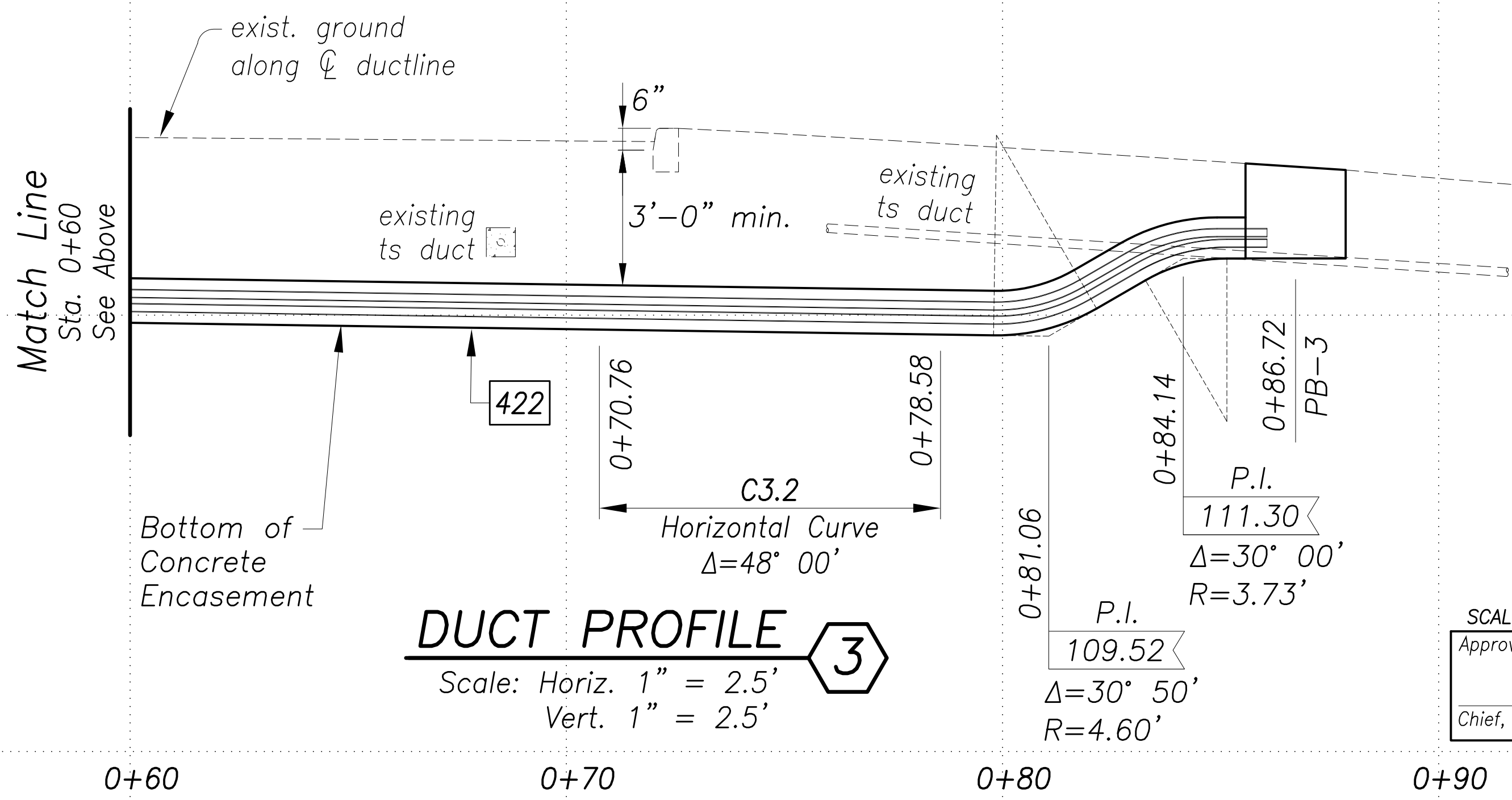
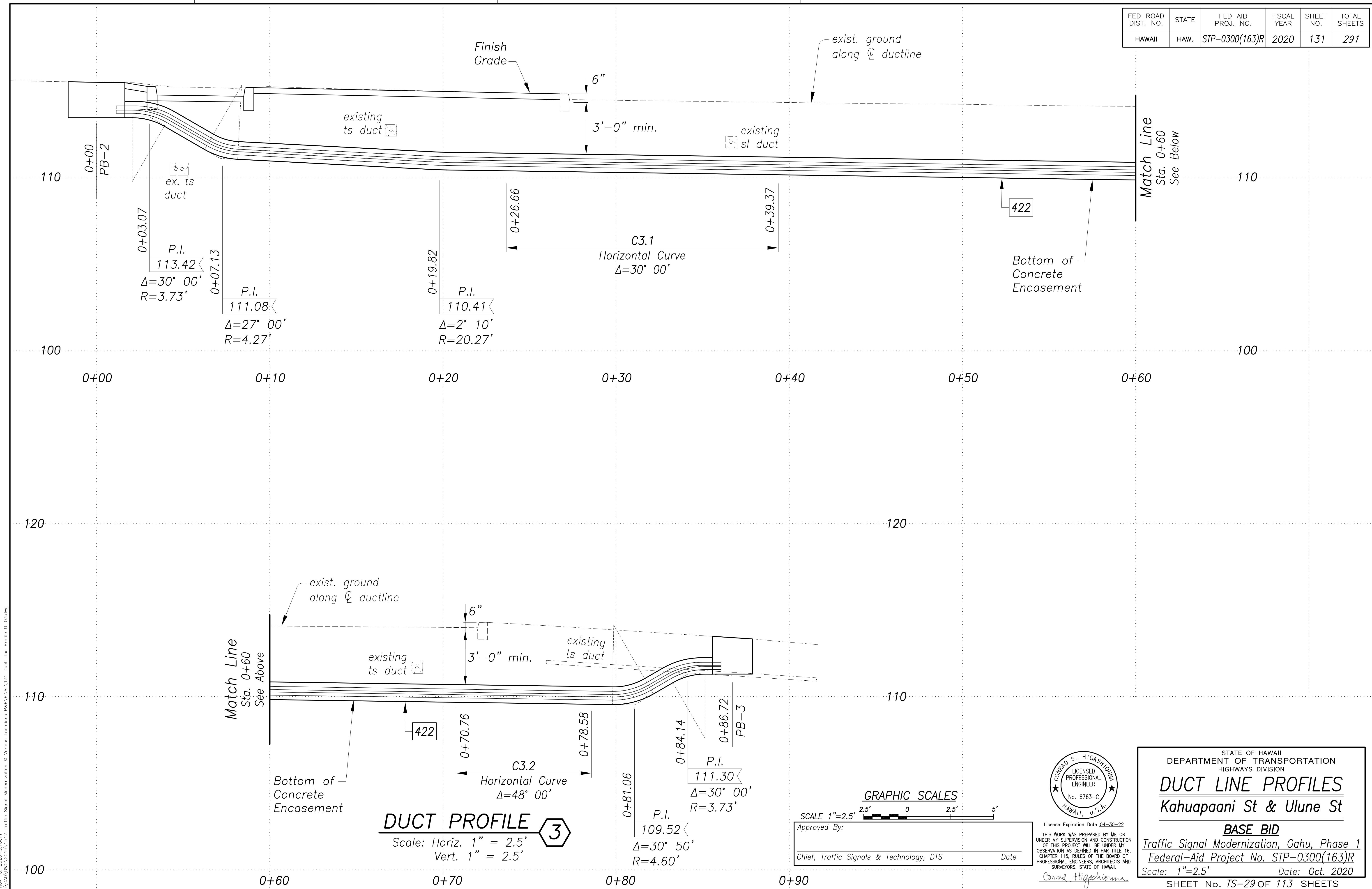
DUCT LAYOUT PLAN
Kahuapaani St & Ulune St

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

Scale: 1"=5' Date: Oct. 2020

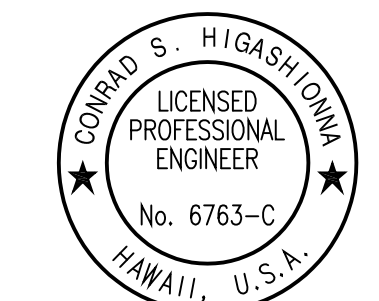
SHEET No. TS-26 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	131	291



DUCT PROFILE 3
Scale: Horiz. 1" = 2.5'
Vert. 1" = 2.5'

GRAPHIC SCALES
SCALE 1"=2.5'
Approved By: _____ Date: _____
Chief, Traffic Signals & Technology, DTS

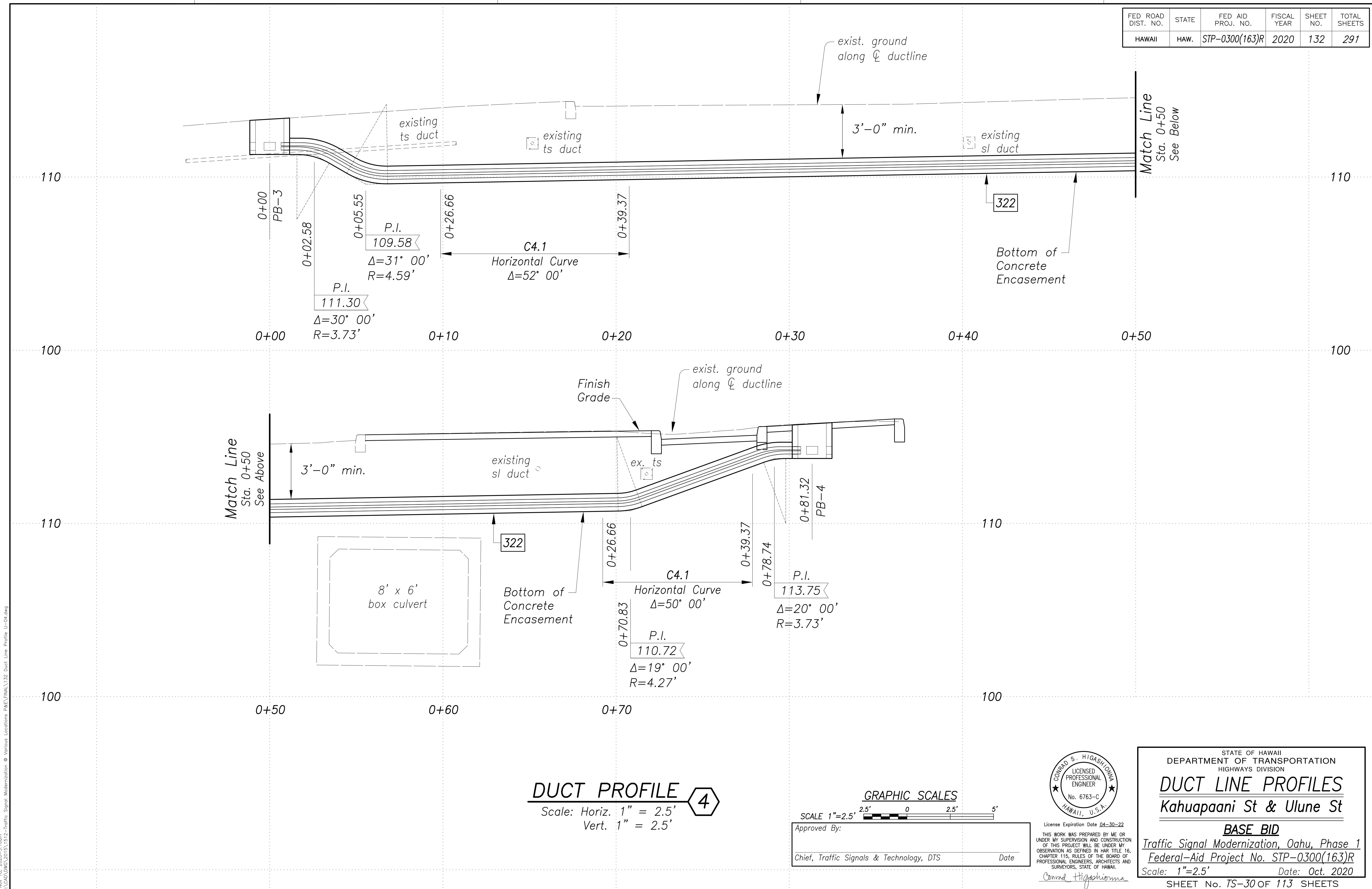


STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DUCT LINE PROFILES
Kahuapaani St & Ulune St
BASE BID
Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)R
Scale: 1"=2.5' Date: Oct. 2020
SHEET No. TS-29 OF 113 SHEETS

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ORIGINAL PLAN	No.
NOTE BOOK	

New 18, 2020-11-10m
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	132	291

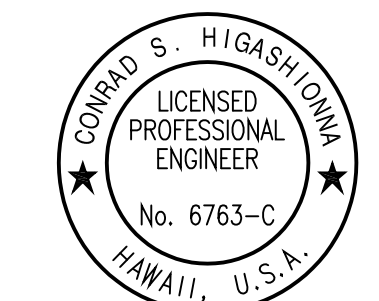


Match Line
Sta. 0+50
See Above

Match Line
Sta. 0+50
See Below

DUCT PROFILE
Scale: Horiz. 1" = 2.5'
Vert. 1" = 2.5'

GRAPHIC SCALES
SCALE 1"=2.5'
2.5' 0 2.5' 5'
Approved By: _____
Chief, Traffic Signals & Technology, DTS Date _____

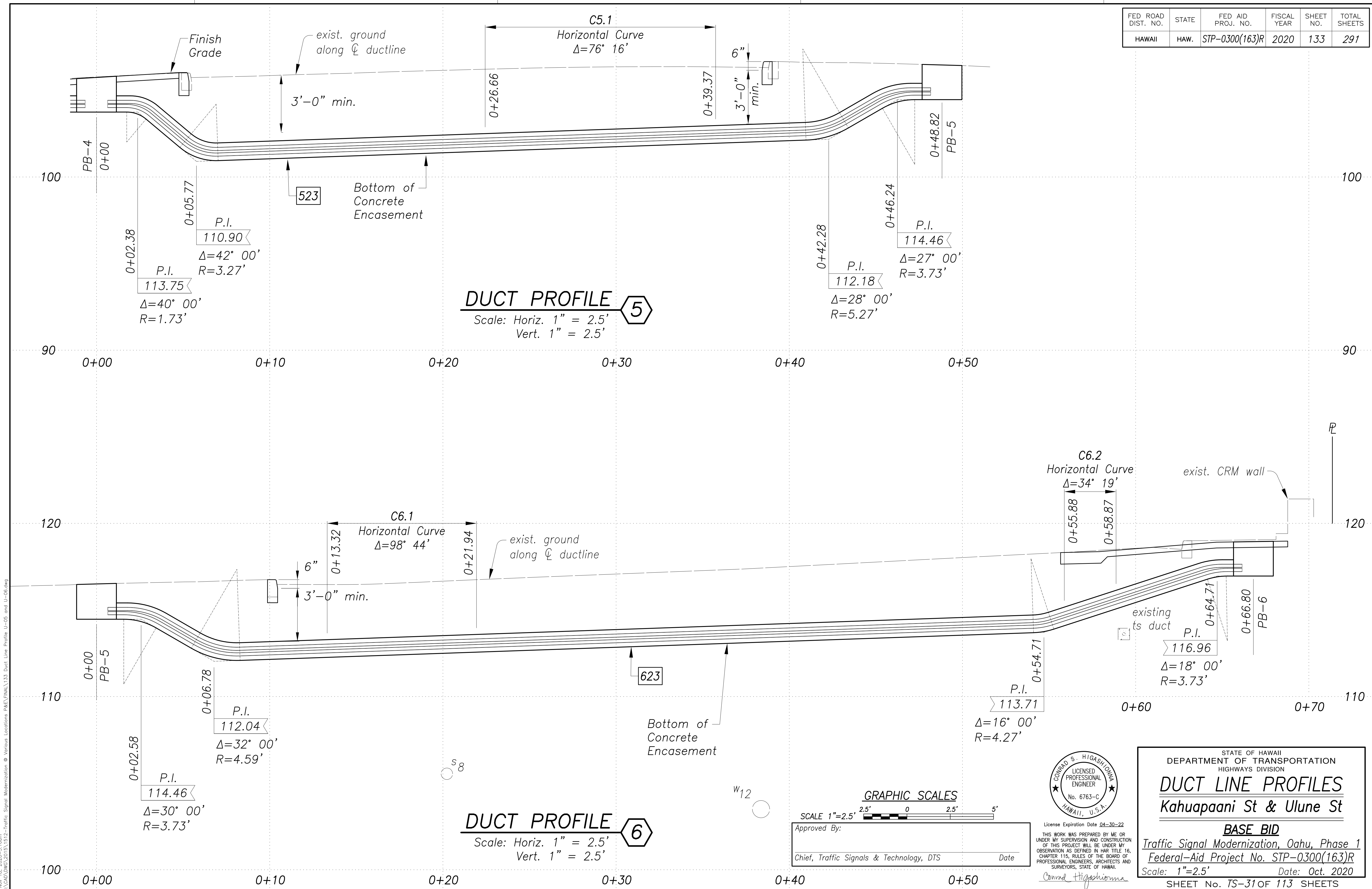


STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DUCT LINE PROFILES
Kahuapaani St & Ulune St
BASE BID
Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)R
Scale: 1"=2.5' Date: Oct. 2020
SHEET No. TS-30 OF 113 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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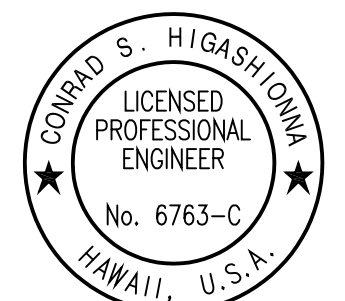
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	133	291



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QUANTITIES BY	
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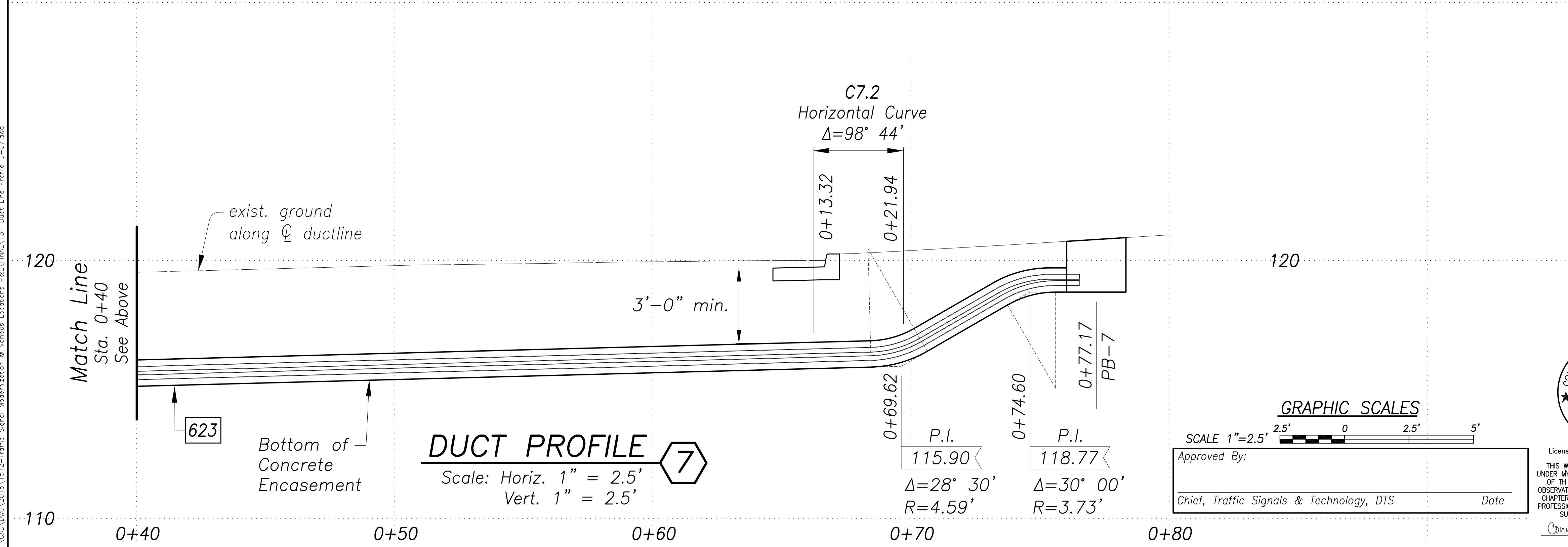
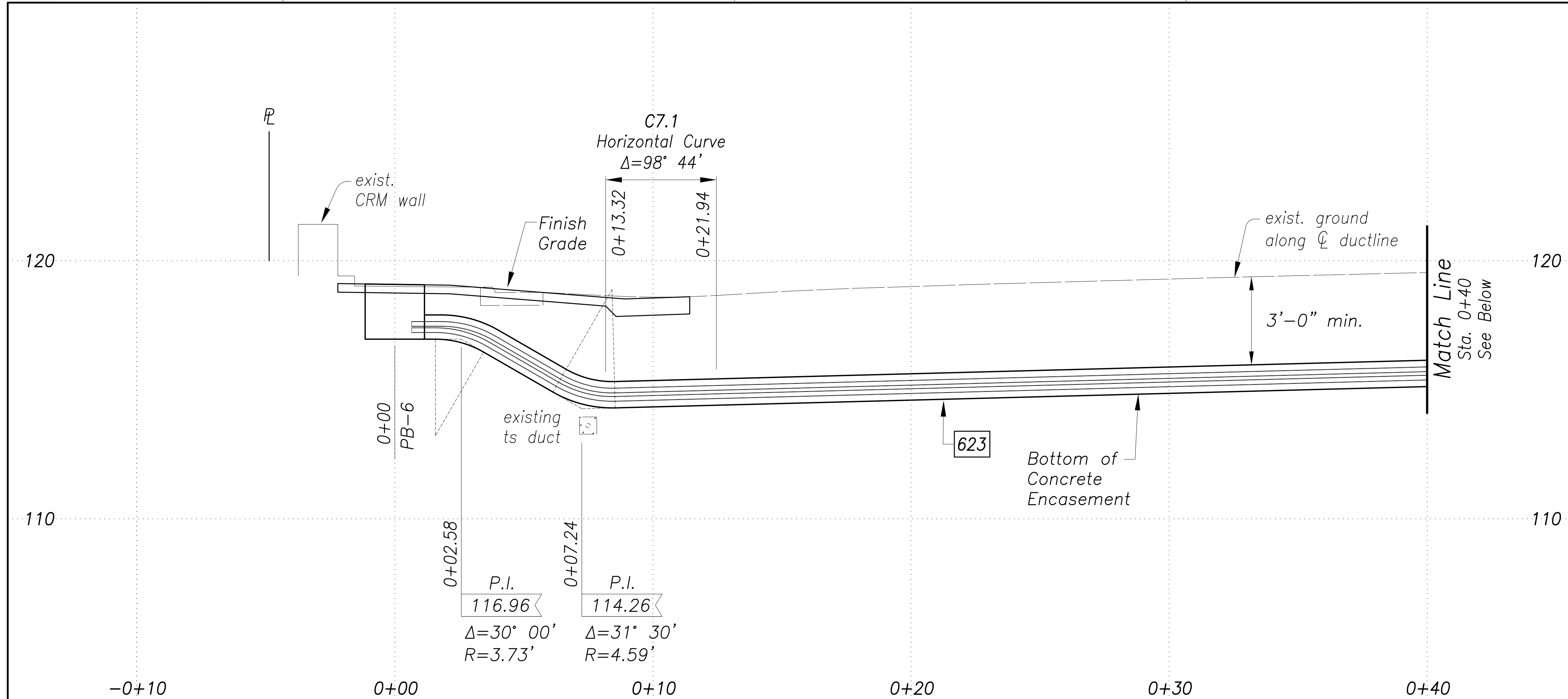
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GRAPHIC SCALES
SCALE 1"=2.5'
2.5' 0 2.5' 5'
Approved By: _____ Date: _____
Chief, Traffic Signals & Technology, DTS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DUCT LINE PROFILES
Kahuapaani St & Ulune St
BASE BID
Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)R
Scale: 1"=2.5' Date: Oct. 2020
SHEET No. TS-31 OF 113 SHEETS

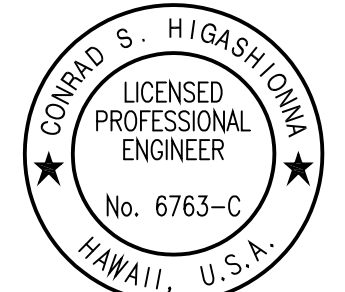
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	134	291



DUCT PROFILE
Scale: Horiz. 1" = 2.5'
Vert. 1" = 2.5'

GRAPHIC SCALES
SCALE 1"=2.5'

Approved By: _____
Chief, Traffic Signals & Technology, DTS Date: _____



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

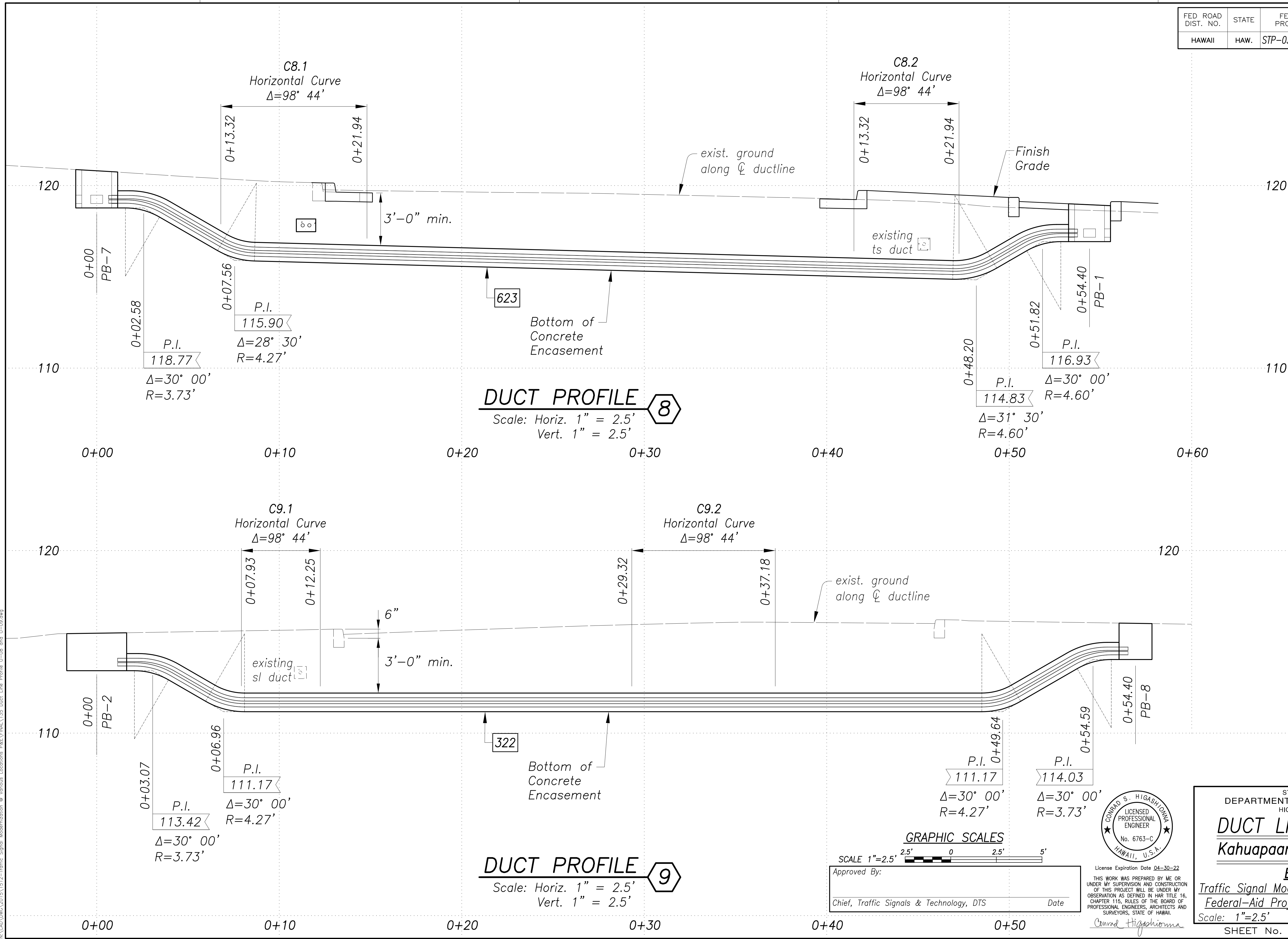
DUCT LINE PROFILES
Kahuapaani St & Ulune St

BASE BID
Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)R
Scale: 1"=2.5' Date: Oct. 2020
SHEET No. TS-32 OF 113 SHEETS

SURVEY PLOTTED BY	DATE
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New 18, 2020-11-10m
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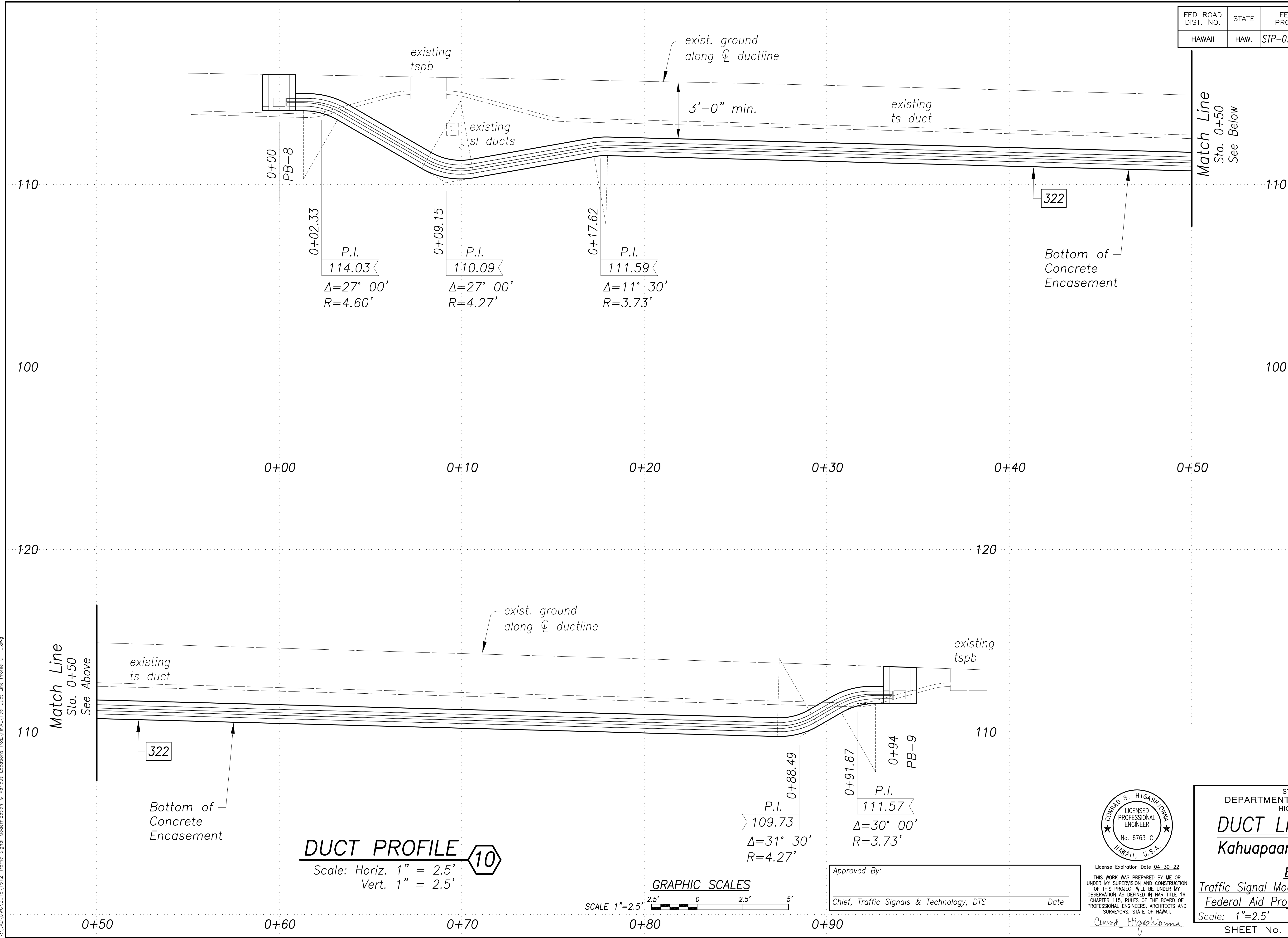
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	135	291



ORIGINAL PLAN	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
No.	

New 18_2020-1110m
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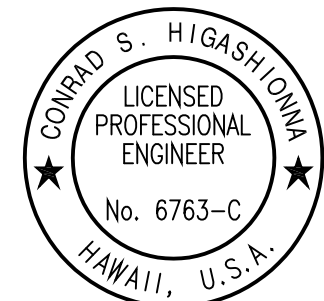
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HAWAII	HAW.	STP-0300(163)R	2020	136	291



SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

ORIGINAL PLAN	No.
NOTE BOOK	
CHECKED BY	

New 18, 2020-11-10m
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Conrad Higashimura

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DUCT LINE PROFILES
Kahuapaani St & Ulune St

BASE BID
Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)R
Scale: 1"=2.5' Date: Oct. 2020
SHEET No. TS-34 OF 113 SHEETS

Nov 18, 2020-5:17am
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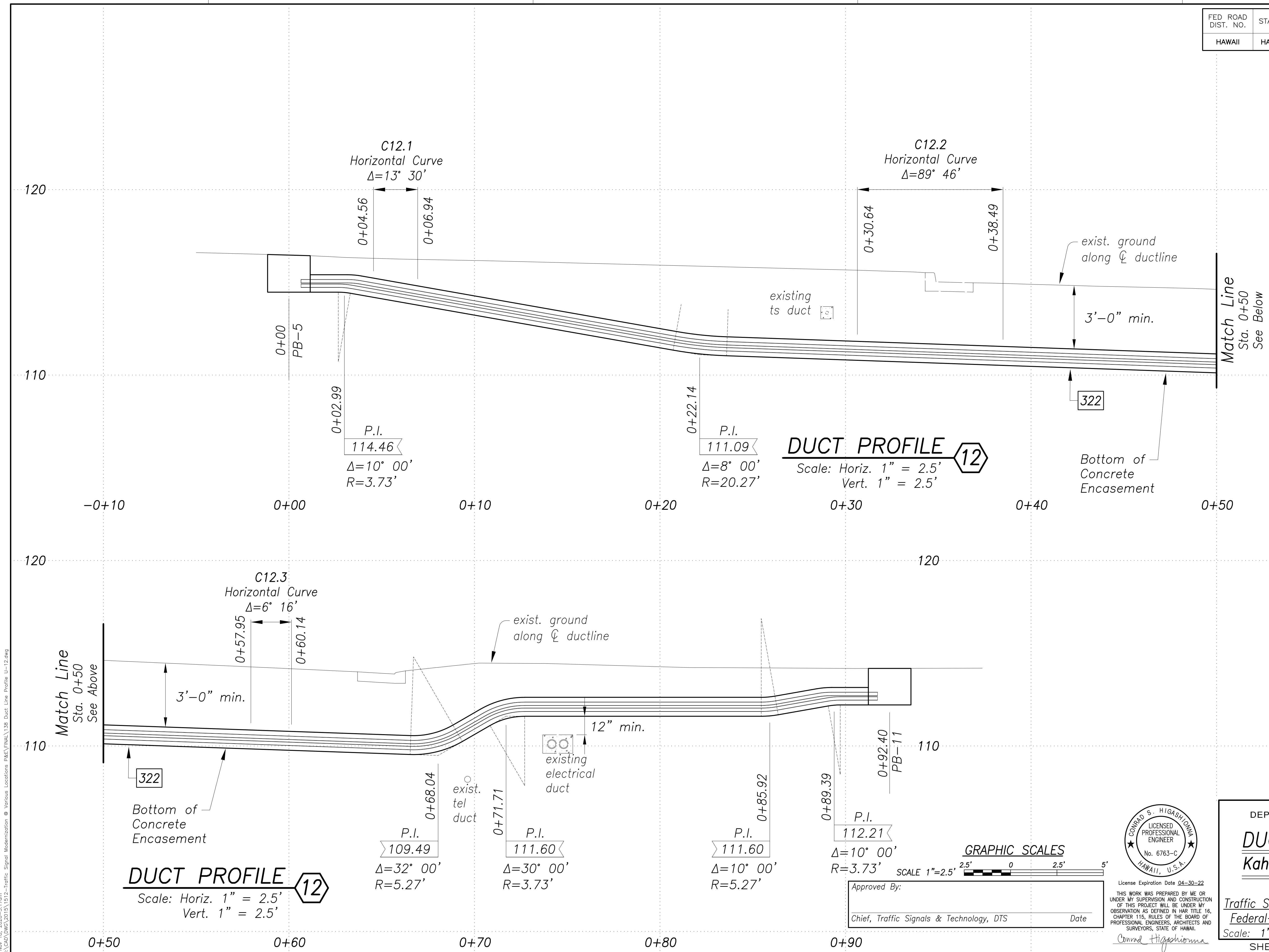
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	138	291



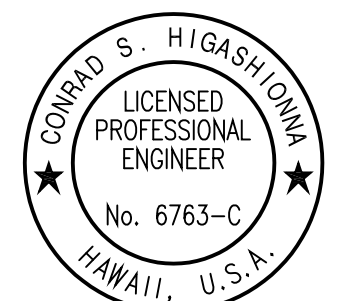
SURVEY PLOTTED BY	DATE
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CHECKED BY	
No.	

New 18, 2020-01-10m
N:\CADD\DWG\2015\1512-Traffic Signal Modernization @ Various Locations P&E\FINAL\138 Duct Line Profile U-12.dwg

DUCT PROFILE 12
Scale: Horiz. 1" = 2.5'
Vert. 1" = 2.5'

DUCT PROFILE 12
Scale: Horiz. 1" = 2.5'
Vert. 1" = 2.5'

GRAPHIC SCALES
SCALE 1"=2.5'
Approved By: _____
Chief, Traffic Signals & Technology, DTS Date: _____



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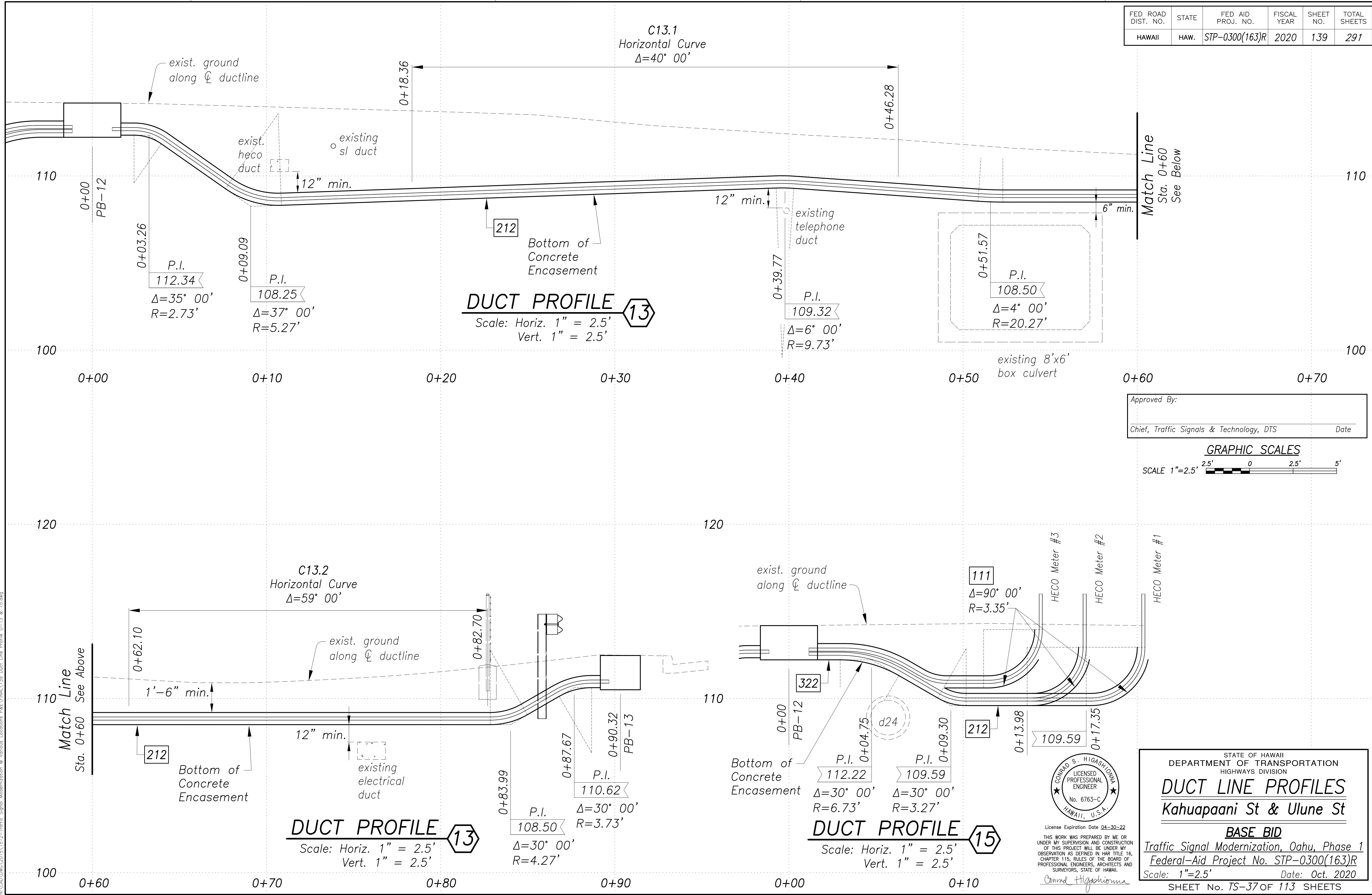
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DUCT LINE PROFILES
Kahuapaani St & Ulune St

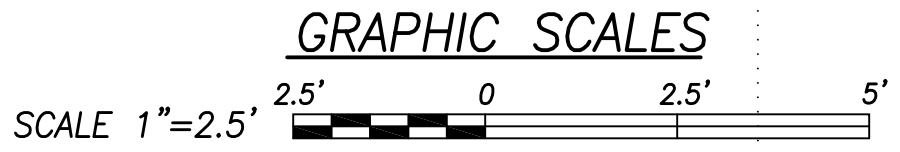
BASE BID
Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)R
Scale: 1"=2.5' Date: Oct. 2020

SHEET No. TS-36 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)R	2020	139	291

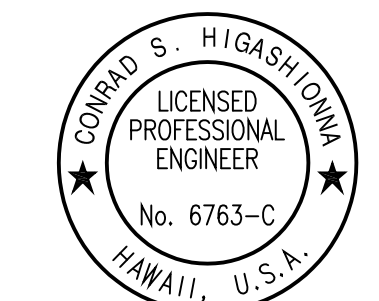


Approved By: _____ Date: _____
Chief, Traffic Signals & Technology, DTS



SURVEY PLOTTED BY	DATE
DRAWN BY	
CHECKED BY	
DESIGNED BY	
QUANTITIES BY	
NOTES BY	
ORIGINAL PLAN	No.

New 18, 2020-01-17
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STATE OF HAWAII
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HIGHWAYS DIVISION

DUCT LINE PROFILES
Kahuapaani St & Ulune St

BASE BID
Traffic Signal Modernization, Oahu, Phase 1
Federal-Aid Project No. STP-0300(163)R
Scale: 1"=2.5' Date: Oct. 2020
SHEET No. TS-37 OF 113 SHEETS