

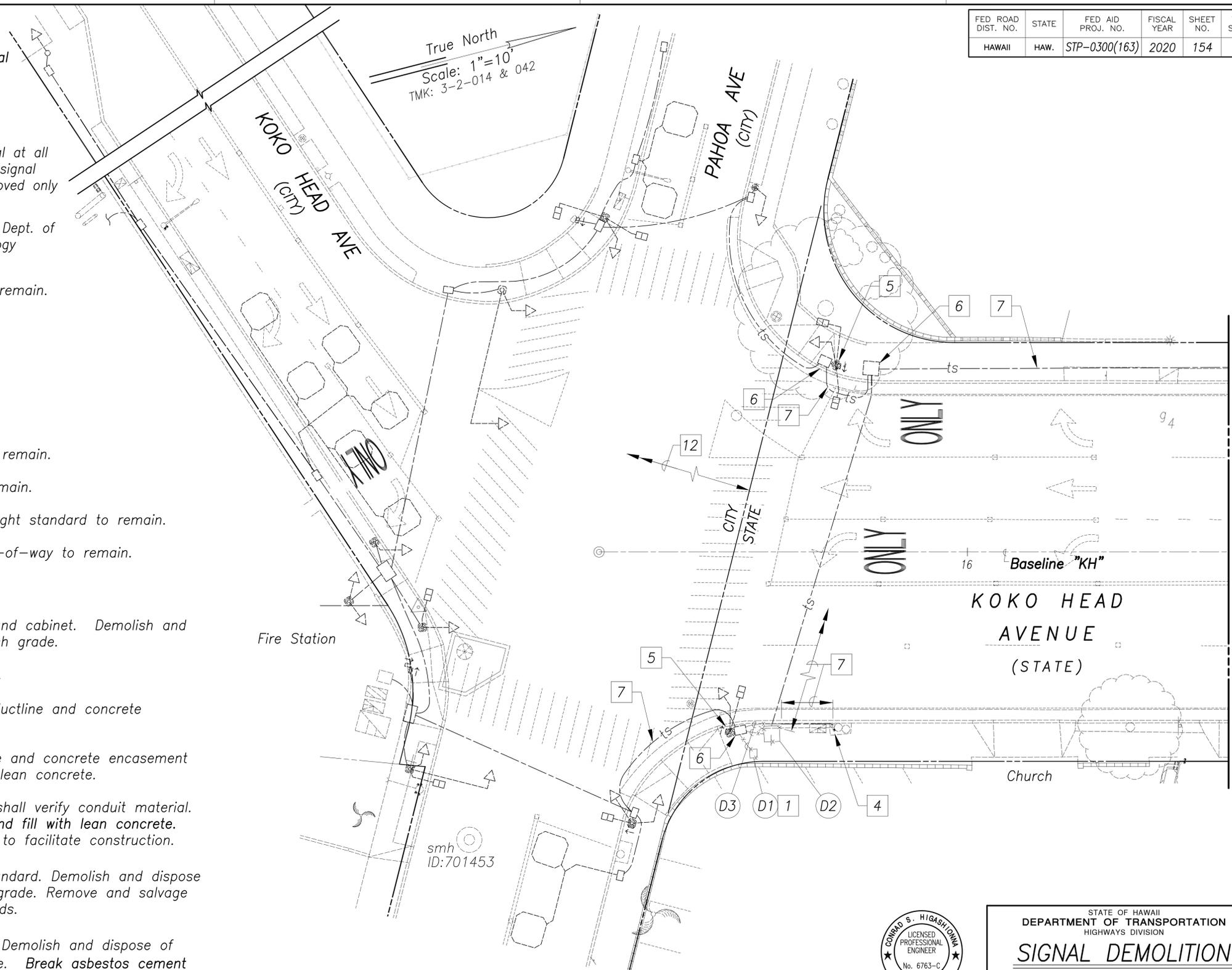
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	154	284

Notes:

- 1 One traffic signal controller operates the signal systems at the intersections of:
 - Koko Head Avenue with Pahoa Avenue
 - Koko Head Avenue with H-1 Exit 26A
- 2 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.
- 3 Deliver salvaged equipment to C&C of Honolulu, Dept. of Transportation Services, Traffic Signal & Technology baseyard at 999 Makolu Street (ph: 768-5323).
- 4 Existing HECO meter, signal power source to remain.
- 5 Existing traffic signal standard to remain.
- 6 Existing pullbox to remain.
- 7 Existing traffic signal duct to remain.
- 8 Existing loop detector to remain.
- 9 Existing cabinet for traffic camera system to remain.
- 10 Existing duct for traffic camera system to remain.
- 11 Existing traffic camera mounted on highway light standard to remain.
- 12 Existing traffic signal system within City right-of-way 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. Remove entire ductline and concrete encasement within State right-of-way.
- D4 Remove traffic signal cables. Abandon ductline and concrete encasement within State right-of-way. Fill conduits with lean concrete.
- D5 Remove traffic signal cables. The Contractor shall verify conduit material. Abandon asbestos-cement conduits in place and fill with lean concrete. Steel ducts may be demolished and removed to facilitate construction.
- 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 traffic signal standard. Demolish and dispose of concrete foundation 4" below with finish grade. Break asbestos cement ducts 4" below with finish grade and plug with lean concrete.
- D8 Remove and salvage cabinet. Demolish and dispose of concrete foundation.
- D9 Abandon vehicle detectors in place.



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

Aug 28, 2020-14:30am
 N:\CAO\DWG\2015\1512-Traffic Signal Modernization @ Various Locations P&E\FINAL\154 Signal Demolition H 1.dwg

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



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 Conrad Higashimura

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

SIGNAL DEMOLITION
H-1 Exit 26A & Koko Head Ave

Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=10' Date: July 2020
 SHEET No. TS-59 OF 113 SHEETS

Match Line Sta. 15+50 See Sheet 155

Notes and New Signal Work Callouts for Intersection of Pahoa Ave & Koko Head Ave ONLY:

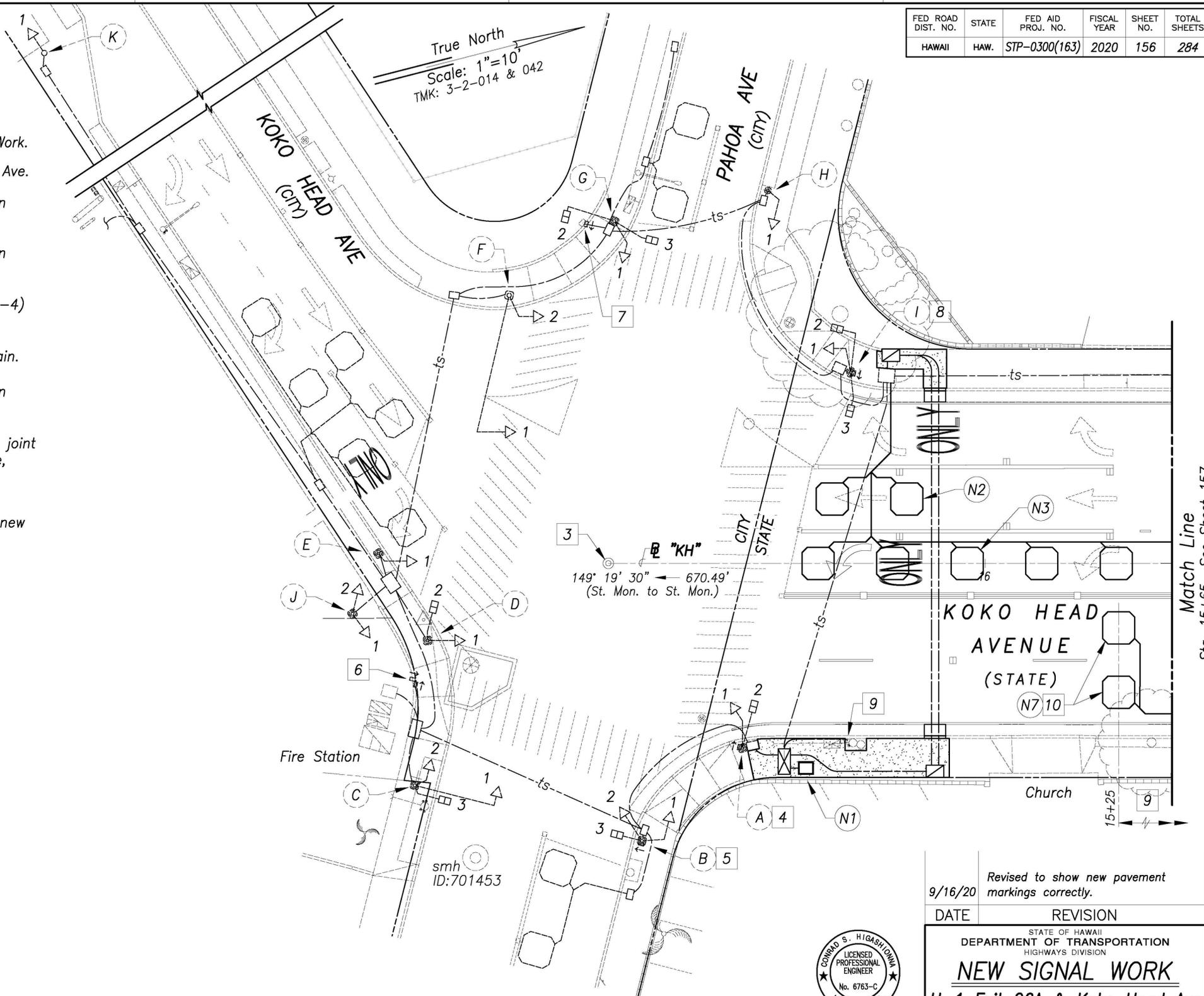
Notes:

- 1 Tie-down of traffic signal controller and standards is to center of cabinet and vertical pole, respectively.
- 2 For location of traffic signal pullboxes, see New Duct Line Work.
- 3 Street Monument 16+70.49 @ "KH" = 42+50.91 Pahoa Ave.
- 4 Existing traffic signal standard and pedestrian push button (ppb-1) to remain.
- 5 Existing traffic signal standard and pedestrian push button (ppb-2) to remain.
- 6 Existing pedestrian push button pedestal (ppb-3 and ppb-4) to remain.
- 7 Existing pedestrian push button pedestal (ppb-5) to remain.
- 8 Existing traffic signal standard and pedestrian push button (ppb-8) to remain.
- 9 Existing power source. Existing HECO meter mounted on joint pole. The Contractor shall brace poles near new ductline, pullbox or controller during construction operations.
- 10 New loop detectors for intersection of Exit 26A and Koko Head Ave. Loops located 75' from new stop line. See new signal work callout on sheet 157.
- 11 See sheet 162 for new signal work schedules.

New Signal Work Callouts:

- N1 Install Controller Assembly with Software 16+34 @ "KH" (38.13' Rt.)
- N2 Install Loop Detector Sensing Unit (6 Ft. x 6 Ft.) 2 Loops centered in lane
- N3 Install Loop Detector Sensing Unit (6 Ft. x 6 Ft.) 6 Loops centered in lane

FED ROAD DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	156	284



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

Sep 17, 2020 - 3:30pm
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Approved By: _____ Date _____
 Chief, Traffic Signals & Technology, DTS



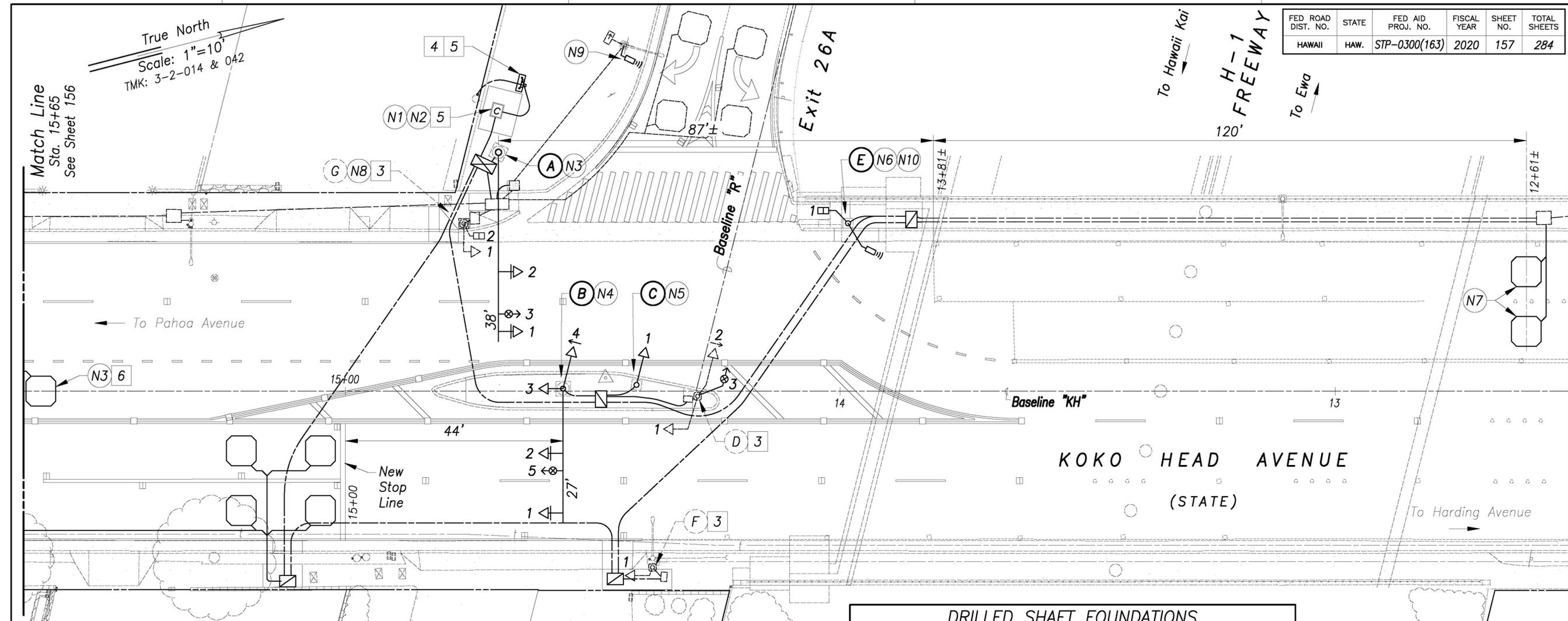
License Expiration Date 04-30-22
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 Conrad Higashimura

Revised to show new pavement markings correctly.
 9/16/20
 DATE REVISION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
NEW SIGNAL WORK
H-1 Exit 26A & Koko Head Ave
 Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=10' Date: July 2020
 SHEET No. TS-61 OF 113 SHEETS

Match Line
 Sta. 15+65 See Sheet 157

FED ROAD DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	157	284



Notes and New Duct Line Work Callouts for Intersection of Pahoa Ave & Koko Head Ave ONLY:

- New Signal Work Callouts:**
- (N1) Install Controller Assembly with Software 14+69.35 @ "KH" (56.40' Rt.)
 - (N2) Install concrete pad for controller. See sheet 156 for details.
 - (N3) Install Type II Traffic Signal Standard with 38-foot mast arm and drilled shaft foundation. 14+69.05 @ "KH" (48' Rt.)
 - (N4) Install Type II Traffic Signal Standard with 27-foot mast arm and drilled shaft foundation. 14+56 @ "KH" (0.50' Rt.)
 - (N5) Install Type I Traffic Signal Standard, 10-foot height, with foundation. 14+41.18 @ "KH" (1.25' Rt.)
 - (N6) Install Type I Traffic Signal Standard, 8-foot height, with foundation and pedestrian push button (PPB-2). 13+98.43 @ "KH" (33.73' Rt.)
 - (N7) Install Loop Detector Sensing Unit (6 Ft. x 6 Ft.) 1 Loops centered in lane

- (N8) Install pedestrian push button PPB-1, ADA compliant, mounted on existing traffic signal standard.
- (N9) Install temporary Approach-Only Microwave Vehicle Detector on existing traffic signal standard.
- (N10) Install permanent Approach-Only Microwave Vehicle Detector on existing traffic signal standard.

- Notes:**
- 1 Tie-down of traffic signal controller and standards is to center of cabinet and vertical pole, respectively.
 - 2 For location of traffic signal pullboxes, see New Duct Line Work.
 - 3 Existing traffic signal standard to remain.
 - 4 New power source. HECO meter, see drawings E-16 thru E-19.
 - 5 The Contractor shall restore existing landscaping and irrigation system affected by construction work to equal or better condition. The restoration work shall be incidental to the various contract items.

DRILLED SHAFT FOUNDATIONS for Type II Traffic Signal Standards					
SOIL TYPE	GRADE	MAST ARM LENGTH (feet)	DRILLED SHAFT DIAMETER (inches)	DRILLED SHAFT LENGTH (feet)	
(A) Stiff Clays	Level	38	30	11	
(B) Stiff Clays	Level	27	30	7	

Drilled shaft foundations shall be constructed per 2008 Standard Plans TE-33A.1 & TE-33A.2 – above ground water table.

No boring for soils data conducted for this site.

- 6 New loop detectors for intersection of Pahoa Ave and Koko Head Ave. See new signal work callout on sheet 156.
- 7 See sheet 163 for new signal work schedules.

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



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 Conrad Higashimura

Revised to show new pavement markings correctly.
 9/16/20

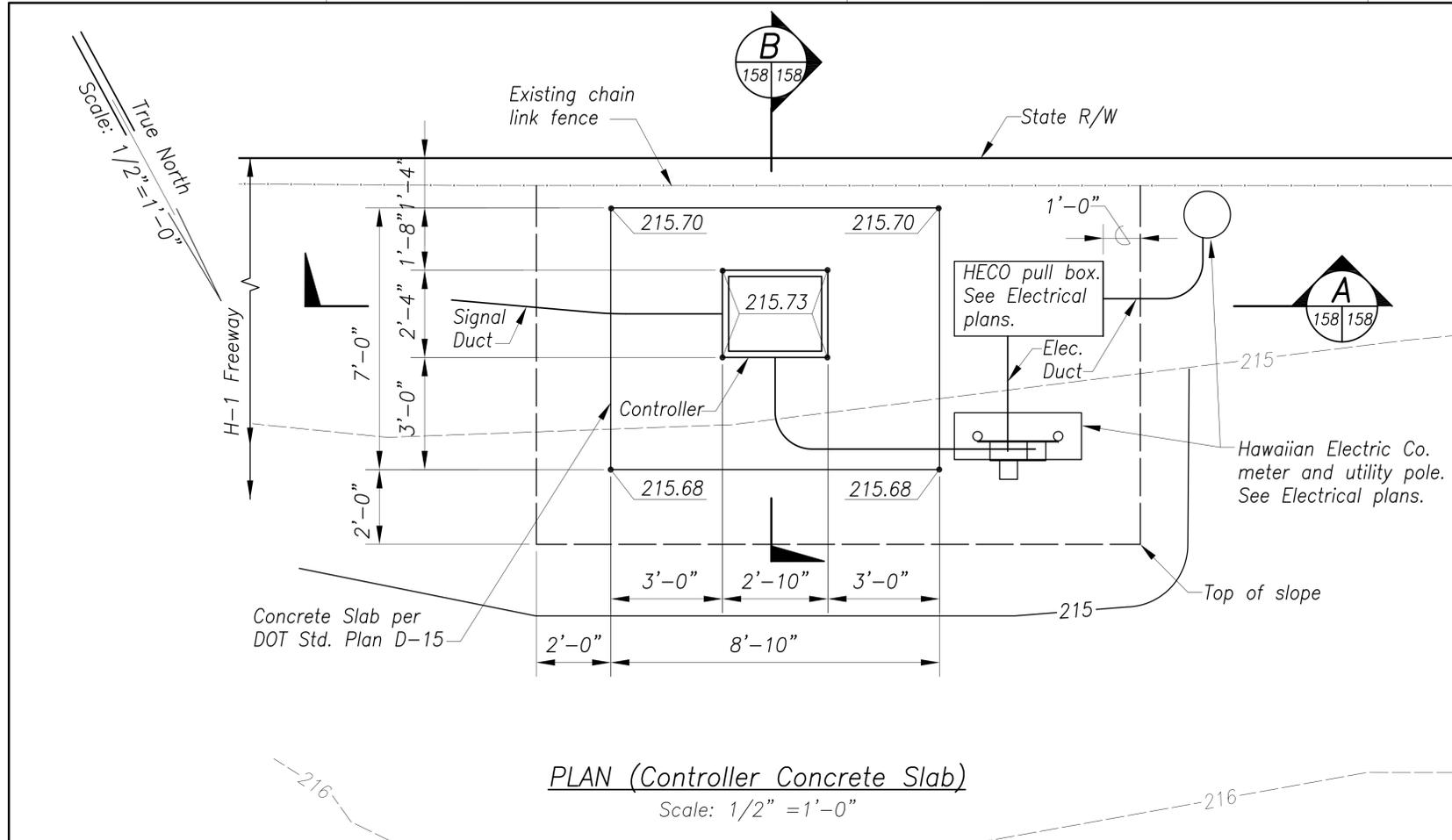
DATE	REVISION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
NEW SIGNAL WORK
H-1 Exit 26A & Koko Head Ave
 Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=10' Date: July 2020
 SHEET No. TS-62 OF 113 SHEETS

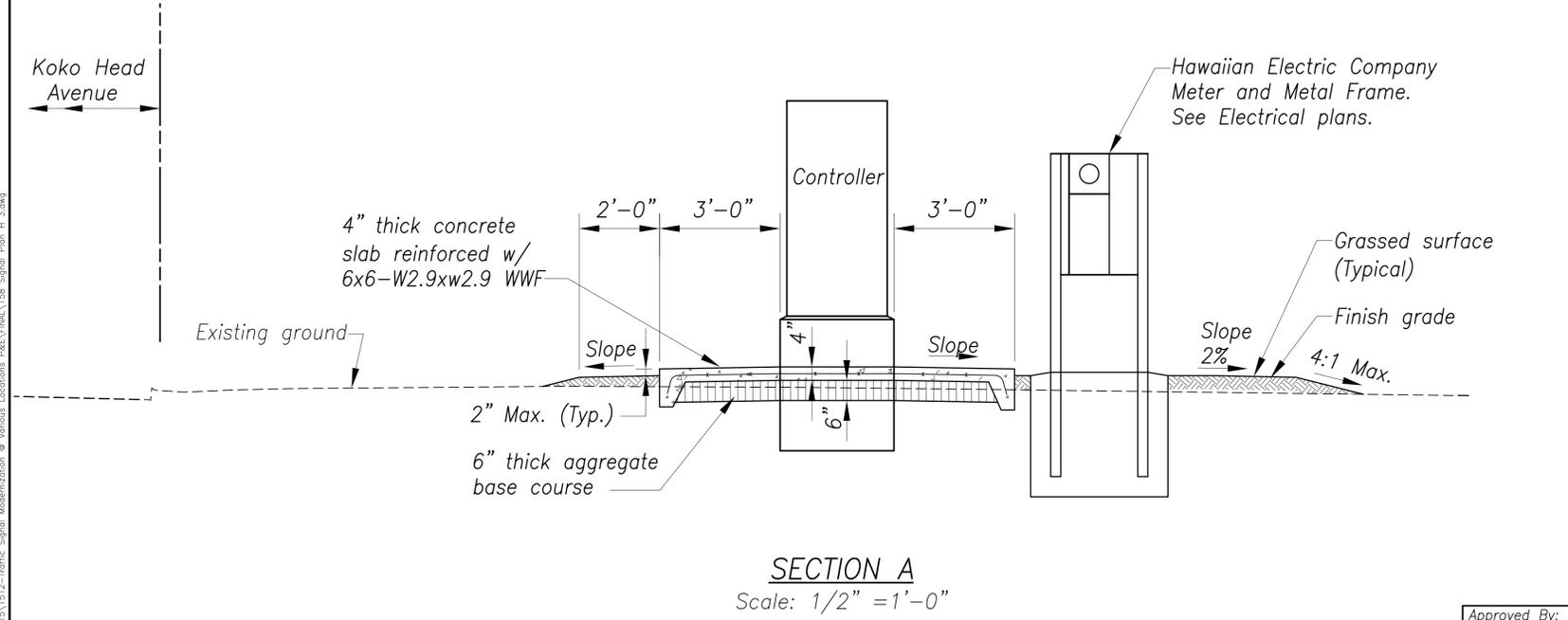
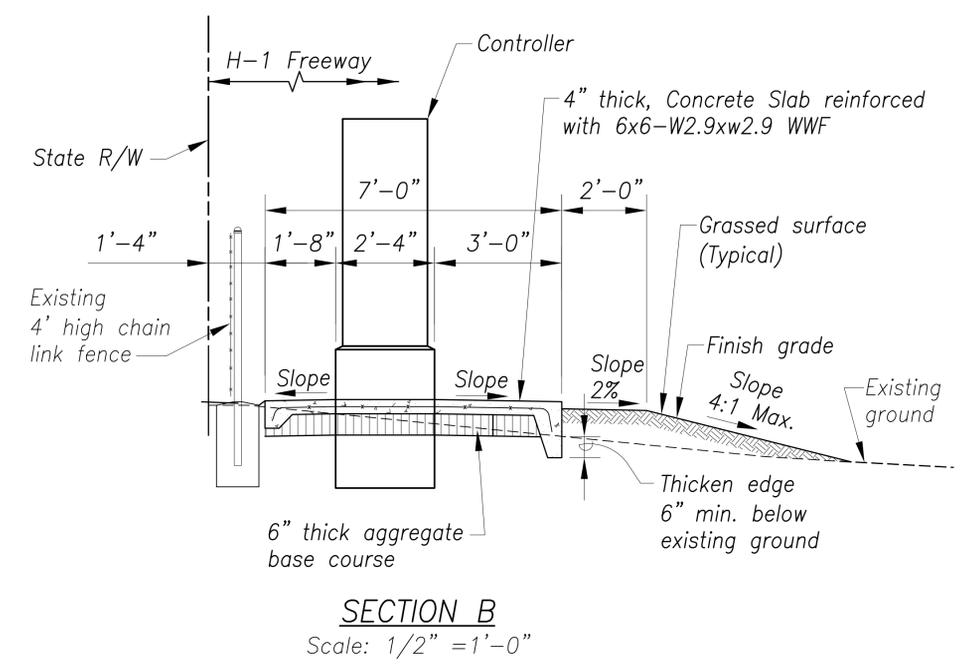
SURVEY PLANNED BY	DATE
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
No.	

Sep 17, 2020 - 1:45pm
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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	158	284



- Legend**
- 215.70 Finish Elevation
 - 215— Finish Contour Elevation
 - 215-- Existing Contour Elevation



DATE	_____
SURVEY PLOTTED BY	_____
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DESIGNED BY	_____
QUANTITIES BY	_____
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No.	_____

Aug 28, 2020-14:30m
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 Chief, Traffic Signals & Technology, DTS Date _____



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 Conrad Higashimura

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
SIGNAL PLAN
H-1 Exit 26A & Koko Head Ave
 Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1/2"=1'-0" Date: July 2020
 SHEET No. TS-63 OF 113 SHEETS

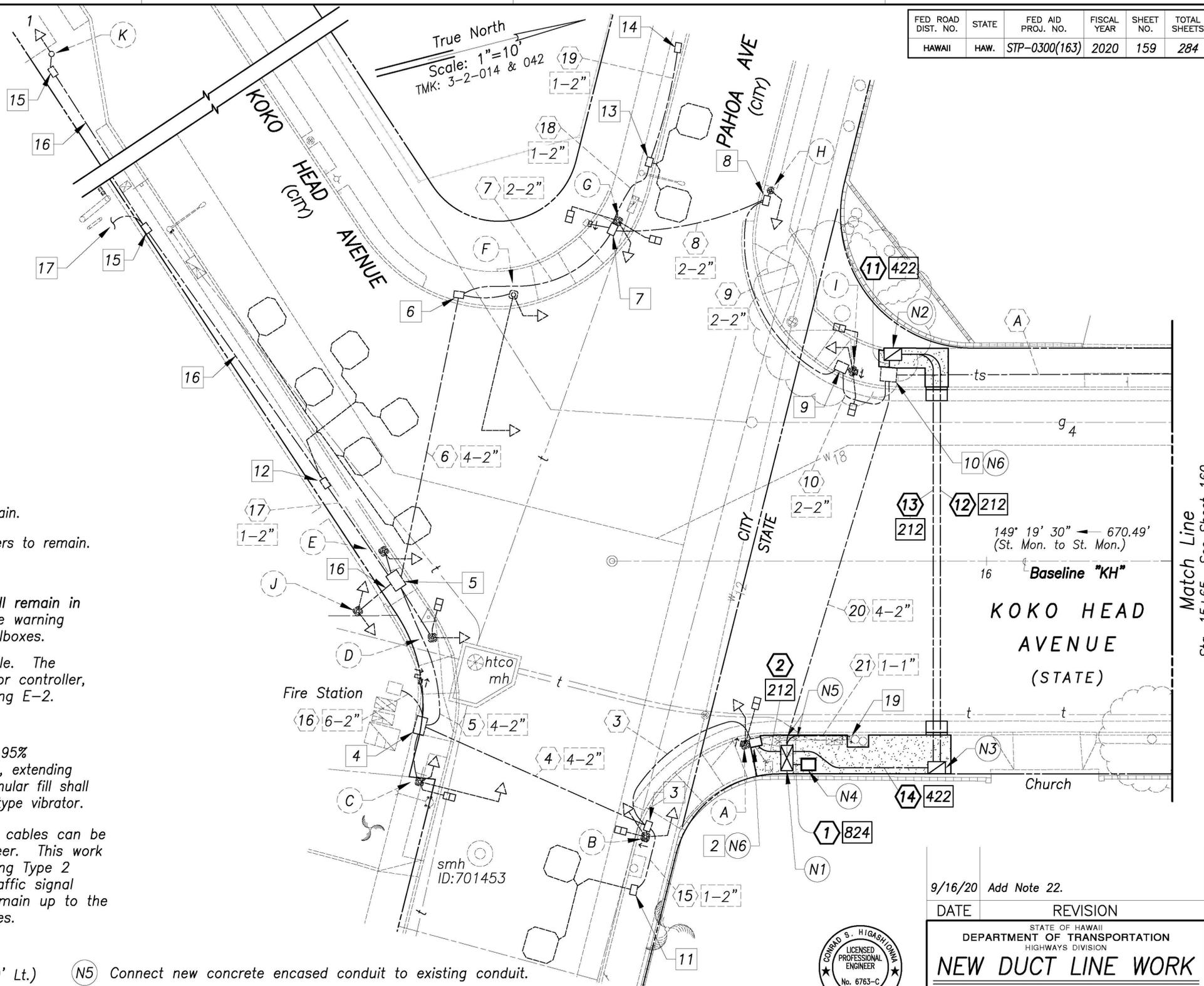
Notes and New Duct Line Work Callouts for Intersection of Pahoa Ave & Koko Head Ave ONLY:

Notes:

- 1 Tie-down of pullboxes is to center of box.
- 2 Existing pullbox PB-2 to remain.
- 3 Existing pullbox PB-3 to remain.
- 4 Existing pullbox PB-4 to remain.
- 5 Existing pullbox PB-5 to remain.
- 6 Existing pullbox PB-6 to remain.
- 7 Existing pullbox PB-7 to remain.
- 8 Existing pullbox PB-8 to remain.
- 9 Existing pullbox PB-9 to remain.
- 10 Existing pullbox PB-10 to remain.
- 11 Existing pullbox PB-13 to remain.
- 12 Existing pullbox PB-14 to remain.
- 13 Existing pullbox PB-15 to remain.
- 14 Existing pullbox PB-16 to remain.
- 15 Existing pullbox for Fire Department warning flasher to remain.
- 16 Existing duct and cables for Fire Department warning flashers to remain.
- 17 Existing stub-out to fire station.
- 18 The existing Fire Department warning flasher system shall remain in operation at all times. The Contractor shall not damage warning system conduits and cables resident in traffic signal pullboxes.
- 19 Existing power source, HECO meter mounted on joint pole. The Contractor shall brace poles near new ductline, pullbox or controller, as required. See HECO Note 6 - Pole Bracing on drawing E-2.
- 20 See sheet 162 for new duct line work schedules.
- 21 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.
- 22 Prior to construction, the Contractor shall verify existing cables can be removed from conduits to remain and inform the Engineer. This work shall be incidental to the various contract items. Existing Type 2 detector cables and Type 5 signal-drop cables within traffic signal standards and pedestrian push button pedestals shall remain up to the pull boxes. Splice existing cables to new within pullboxes.

New Duct Line Work Callouts:

- | | |
|--|---|
| N1 Install Type C Pullbox PB-1. 16+37.59 @ "KH" (36.90' Lt.) | N5 Connect new concrete encased conduit to existing conduit. |
| N2 Install Type B Pullbox PB-11. 16+17.62 @ "KH" (38.77' Rt.) | N6 Connect new conduits to existing pullboxes. The Contractor shall drill thru existing pull box wall and patch hole with non-shrink grout. Cut abandoned ducts at inside face of pullbox. Remove unneeded traffic signal cables. |
| N3 Install Type B Pullbox PB-12. 16+09.36 @ "KH" (38.74' Lt.) | |
| N4 New traffic signal controller. 16+34.03 @ "KH" (38.13' Lt.) | |



FED ROAD DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	159	284

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QUANTITIES BY	
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No.	

Sep 17, 2020 - 4:28pm
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Approved By: _____ Date _____
 Chief, Traffic Signals & Technology, DTS

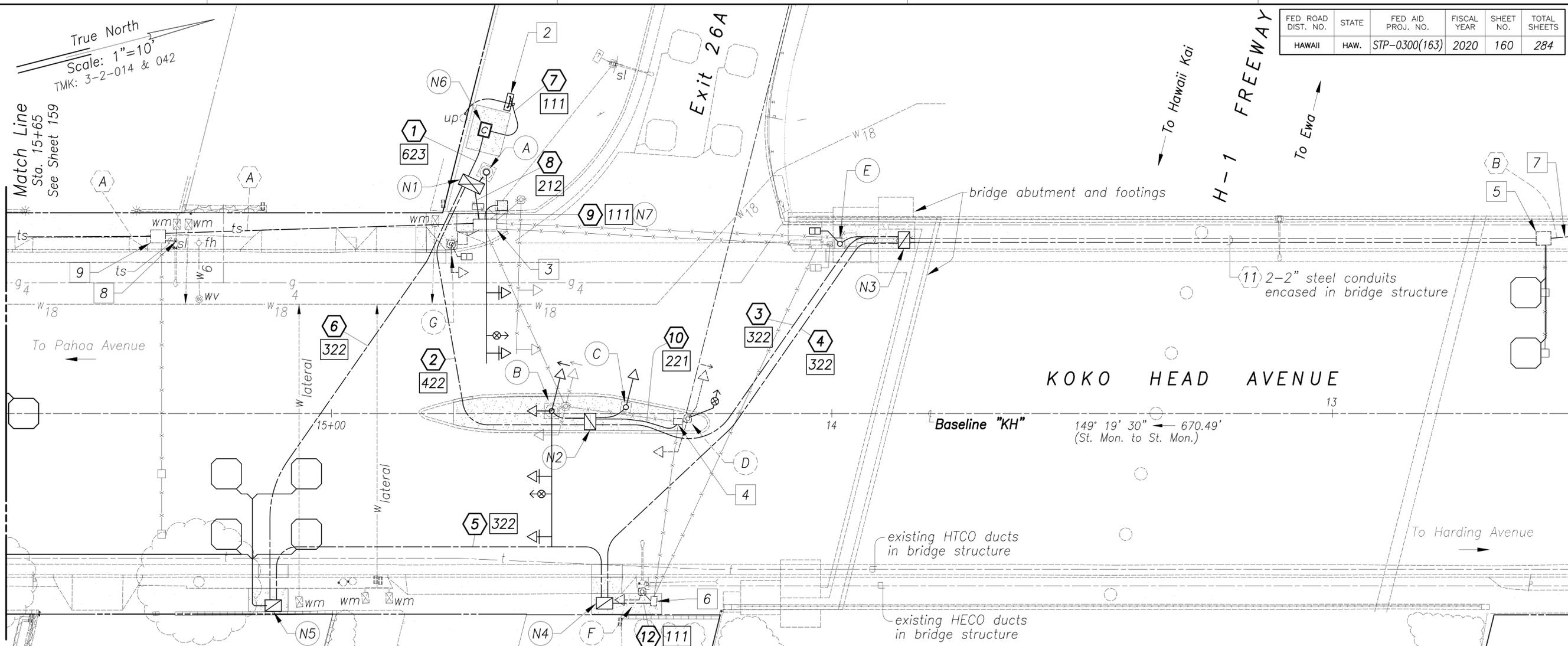


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 Conrad Higashimura

9/16/20	Add Note 22.
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
NEW DUCT LINE WORK	
H-1 Exit 26A & Koko Head Ave	
Traffic Signal Modernization, Oahu, Phase 1	
Federal-Aid Project No. STP-0300(163)	
Scale: 1"=10'	Date: July 2020
SHEET No. TS-64 OF 113 SHEETS	

Match Line Sta. 15+65 See Sheet 160

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	160	284



Notes and New Duct Line Work Callouts for Intersection of Pahoehoe Ave & Koko Head Ave ONLY:

Notes:

- 1 Tie-down of pullboxes is to center of box.
- 2 New HECO meter. For details, see drawings E-16 thru E-19.
- 3 Existing pullbox PB-6 to remain.
- 4 Existing pullbox PB-7 to remain.
- 5 Existing pullbox PB-8 to remain.
- 6 Existing pullbox PB-9 to remain.
- 7 See Inter-Connect Plan on sheet 161 for continuation.
- 8 Existing HECO meter to remain.
- 9 Existing traffic signal pullbox to remain.
- 10 See sheet 163 for new duct line work schedules.
- 11 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. 14+72.02 @ "KH" (45.60' Rt.)
- (N2) Install Type B Pullbox PB-2. 14+48.34 @ "KH" (1.59' Lt.)
- (N3) Install Type B Pullbox PB-3. 13+85.62 @ "KH" (34.50' Rt.)
- (N4) Install Type B Pullbox PB-4. 14+45.54 @ "KH" (37.80' Rt.)
- (N5) Install Type B Pullbox PB-5. 15+11.65 @ "KH" (38.19' Rt.)
- (N6) New traffic signal controller. 14+69.35 @ "KH" (56.40' Rt.)
- (N7) Drill and patch concrete foundation for traffic camera cabinet. Install 2-inch PVC Schedule 40 conduit between existing pullbox PB-6 and cabinet. Coordinate work with City Dept. of Transportation Services. The Contractor shall adjust duct alignment as needed and shall not damage existing conduits or cables to cabinet.

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



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 Conrad Higashimura

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

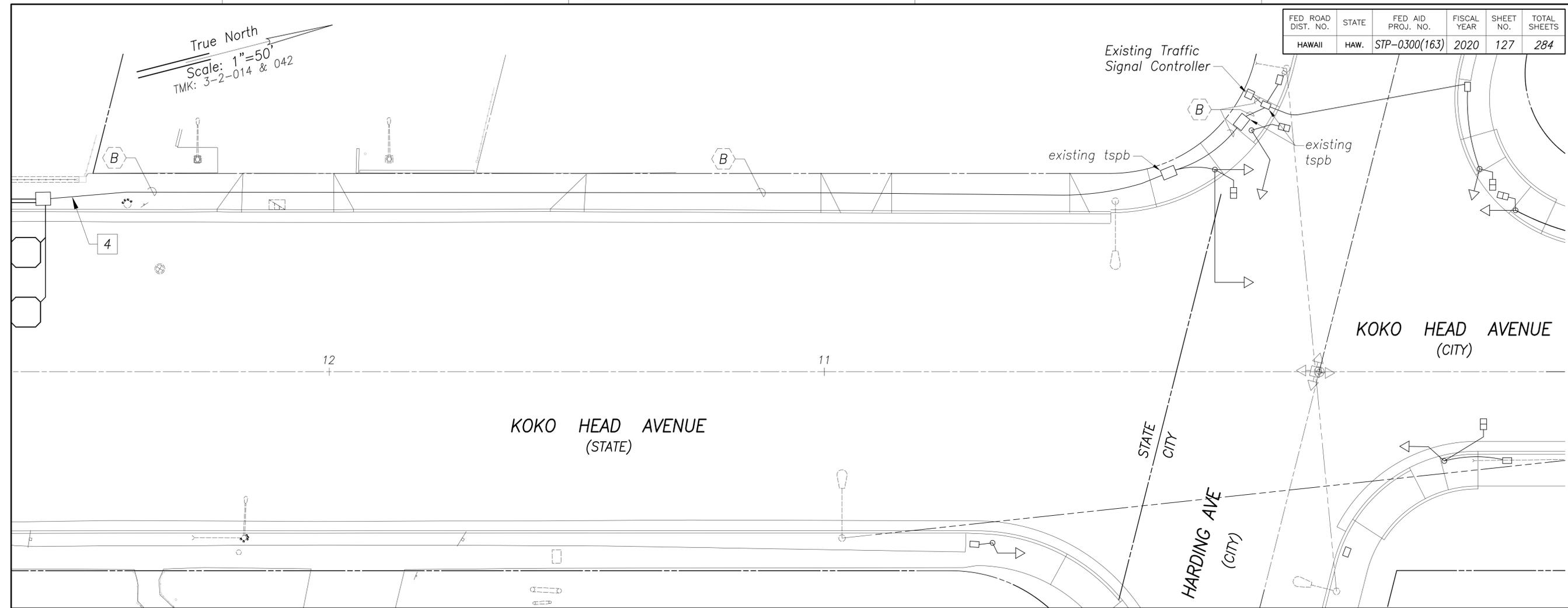
NEW DUCT LINE WORK
H-1 Exit 26A & Koko Head Ave

Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=10' Date: July 2020
 SHEET No. TS-65 OF 113 SHEETS

DATE
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Aug 28, 2020 - 10:30am
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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	127	284



Notes:

- 1 Prior to construction, the Contractor shall verify the existing inter-connect cable can be removed from existing conduits between the two controllers at the intersections of Koko Head Avenue with Pahoa Avenue and Koko Head Avenue with Harding Avenue. 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.
- 4 See New Duct Line Work on sheet 160 for continuation.

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 Chief, Traffic Signals & Technology, DTS Date _____



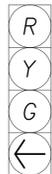
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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
INTER-CONNECT PLAN
H-1 Exit 26A & Koko Head Ave
Traffic Signal Modernization,
Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=10' Date: July 2020
 SHEET No. TS-66 OF 113 SHEETS

CONDUIT-CABLE SCHEDULE
at Intersection of Pahoia Ave with Koko Head Ave

FROM	TO	CONDUIT	CABLE	FROM	TO	CONDUIT	CABLE
CONTR.	PB-1	New 8-2" Sch. 40 Concrete Encased	1-Type 1, Ground Wire 1-Type 1, Ground Wire 4-Type 2 1-Type 3 1-Type 6 3-Spare	13	PB-11 PB-12	New 2-2" Sch. 40 Concrete Encased	2-Spare
				14	PB-12 PB-1	New 4-2" Sch. 40 Concrete Encased	1-Type 1, Ground Wire 3-Type 2 2-Spare
				15	exist. PB-3 exist. PB-13	existing 1-2"	1-Type 2
PB-1	exist. PB-2	New 2-2" Sch. 40 Concrete Encased	1-Type 1, Ground Wire 4-Type 2	16	exist. PB-4 exist. contr. pad	existing 6-2"	6-Spare
				17	exist. PB-5 exist. PB-14	existing 1-2"	1-Type 2
exist. PB-2	exist. PB-3	existing 2-2"	1-Type 1, Ground Wire 4-Type 2	18	exist. PB-7 exist. PB-15	existing 1-2"	1-Type 2
				19	exist. PB-15 exist. PB-16	existing 1-2"	1-Spare
exist. PB-3	exist. PB-4	existing 4-2"	1-Type 1, Ground Wire 3-Type 2 2-Spare	20	exist. PB-10 PB-1	existing 2-2"	1-Type 3 1-Spare
				21	exist. HECO meter PB-1	existing 1-1"	1-Type 6
exist. PB-4	exist. PB-5	existing 4-2"	1-Type 1, Ground Wire 2-Type 2 2-Spare	A	exist. PB-10 ***	existing 2-2"	1-Type 3 1-Spare
				*** To the new controller at the intersection of H-1 Exit 26A and Koko Head Avenue.			
exist. PB-5	exist. PB-6	existing 4-2"	1-Type 1, Ground Wire 1-Type 2 2-Spare				
exist. PB-6	exist. PB-7	existing 2-2"	1-Type 1, Ground Wire 1-Type 2				
exist. PB-7	exist. PB-8	existing 2-2"	1-Type 1, Ground Wire 1-Type 2				
exist. PB-8	exist. PB-9	existing 2-2"	1-Type 1, Ground Wire 1-Type 2				
exist. PB-9	exist. PB-10	existing 2-2"	1-Type 1, Ground Wire 2-Type 2				
exist. PB-10	PB-11	New 4-2" Sch. 40 Concrete Encased	1-Type 1, Ground Wire 3-Type 2 2-Spare				
PB-11	PB-12	New 2-2" Sch. 40 Concrete Encased	1-Type 1, Ground Wire 3-Type 2				

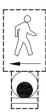
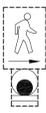
SIGNAL HEAD SCHEDULE
at Intersection of
Pahoia Ave with Koko Head Ave

Head Type	Pole Letter - Signal Head Number
 Green Arrow	D-1* E-1*
	A-1* F-1* B-1* F-2* B-2* G-1* C-1* H-1* C-2* I-1*
	A-2* G-2* B-3* G-3* C-3* I-2* D-2* I-3*
 Flasher	J-1* J-2* K-1*

* Existing signal head to remain

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	162	284

PEDESTRIAN PUSH BUTTON SCHEDULE

Description	Pole or Pedestal PPB-#
	(A) existing PPB-1 existing pedestal PPB-3 existing pedestal PPB-5
	(B) existing PPB-2 existing pedestal PPB-4 (I) existing PPB-6

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

Aug 28, 2020 - 10:30am
 N:\CAO\DWG\2015\1512-Traffic Signal Modernization @ Various Locations P&E\FINAL\162 Conduit Cable Table H 1.dwg

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



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 Conrad Higashimura

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
NEW WORK SCHEDULES
H-1 Exit 26A & Koko Head Ave
 Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: _____ Date: July 2020
 SHEET No. TS-67 OF 113 SHEETS

CONDUIT-CABLE SCHEDULE at Intersection of H1 Exit 26A with Koko Head Ave				
FROM	TO	CONDUIT	CABLE	
1	CONTR. PB-1	New 6-2" Sch. 40 Concrete Encased	1-Type 1, Ground Wire 1-Type 1, Ground Wire 4-Type 2 2-Type 3 3-Type 7 Spare	
2	PB-1 PB-2	New 4-2" Sch. 40 Concrete Encased	1-Type 1, Ground Wire 1-Type 3 2-Type 7 Spare	
3	PB-2 PB-3	New 3-2" Sch. 40 Concrete Encased	1-Type 1, Ground Wire 1-Type 3 Spare	
4	PB-3 PB-4	New 3-2" Sch. 40 Concrete Encased	1-Type 1, Ground Wire 2-Type 2 Spare	
5	PB-4 PB-5	New 3-2" Sch. 40 Concrete Encased	1-Type 1, Ground Wire 2-Type 2 Spare	
6	PB-5 PB-1	New 3-2" Sch. 40 Concrete Encased	1-Type 1, Ground Wire 3-Type 2 Spare	
7	CONTR. HECO Meter	New 1-2" Sch. 40 Concrete Encased	1-Type 6	
8	PB-1 exist. PB-6	New 2-2" Sch. 40 Concrete Encased	1-Type 2 1-Type 3	
9	exist. PB-6 exist. cabinet	New 1-2" Sch. 40 Concrete Encased	Spare	
10	PB-2 exist. PB-7	New 2-2" Sch. 40 Concrete Encased	1-Type 2 1-Type 7	
11	PB-3 exist. PB-8	existing 2-2"	1-Type 2 1-Type 3	
B	exist. PB-8 ***	existing 1-2"	1-Type 3	

SIGNAL HEAD SCHEDULE	
Head Type and Description	Pole Letter - Signal Head Number
Red Ball Yellow Ball Green Ball Green Arrow (Right) 12" RYG → Traffic Signal Head	B-4
Red Ball Yellow Ball Green Ball Green Arrow (Left) 12" RYG ← Traffic Signal Head	D-2*
Red Ball Yellow Ball Green Ball 12" RYG Traffic Signal Head	A-1** B-3 A-2** C-1 B-1** D-1* B-2** F-1* G-1*
Countdown Pedestrian Signal Head	E-1 G-2*
* Existing signal head to remain ** Install Backplate with Retroreflective Borders *** To the existing controller at the intersection of Harding Ave and Koko Head Ave	

OPTICOM SCHEDULE	
Mounting Type	Pole Letter - Opticom Number
Mast Arm, One-Way	A-3 B-5
Slipfitter, One-Way	D-3

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

PEDESTRIAN PUSH BUTTON SCHEDULE		
Description	New Signal Work Callout	Pole or Pedestal PPB-#
	N8	G PPB-1
	N6	E PPB-2

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

Aug 28, 2020-14:35pm
 N:\CAO\DWG\2015\1512-Traffic Signal Modernization @ Various Locations P&E\FINAL\163 Conduit Cable Table H 2.dwg

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



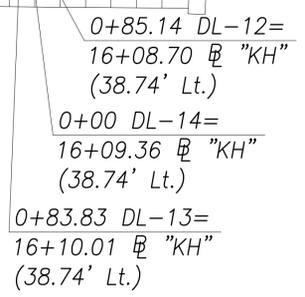
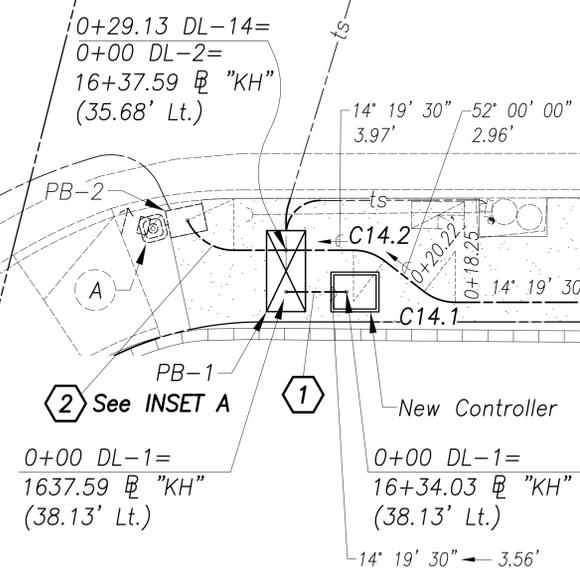
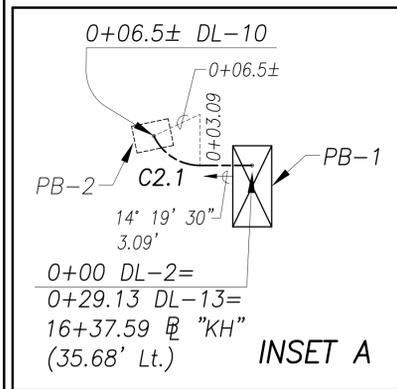
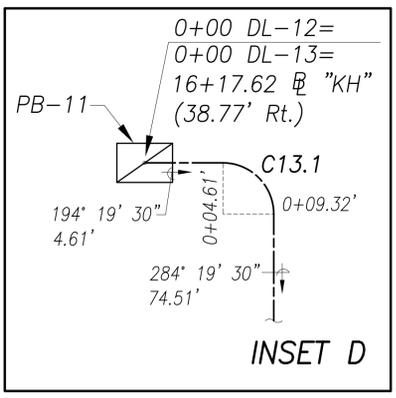
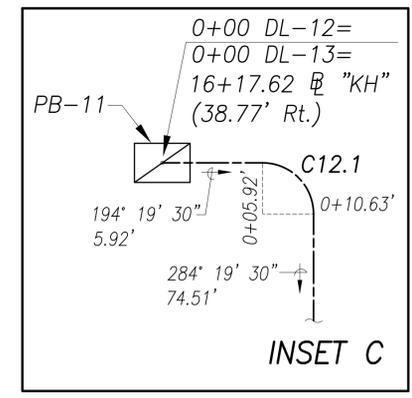
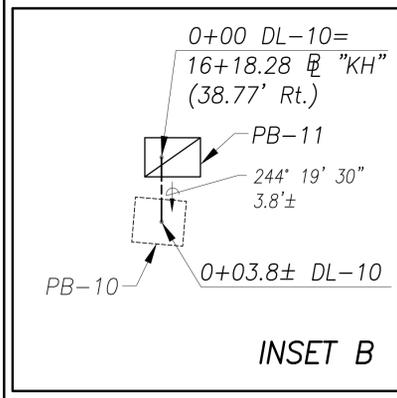
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 Conrad Higashimura

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
NEW WORK SCHEDULES
H-1 Exit 26A & Koko Head Ave
 Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: _____ Date: July 2020
 SHEET No. TS-68 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	164	284

True North
 Scale: 1"=5'
 TMK: 3-2-014 & 042

PAHOA AVENUE
 (CITY)



149° 19' 30" ← 670.49' (St. Mon. to St. Mon.)
 Baseline "KH"

KOKO HEAD AVENUE
 (STATE)

Duct Line Curve Data		
	C2.1	C12.1
Δ	65° 00' 00"	90° 00' 00"
Δ/2	32° 30' 00"	45° 00' 00"
R	3.00'	3.00'
T	1.91'	3.00'
Ch	3.22'	4.24'
Lc	3.40'	4.71'
	C13.1	C14.1
Δ	90° 00' 00"	37° 40' 30"
Δ/2	45° 00' 00"	18° 50' 45"
R	3.00'	3.00'
T	3.00'	1.02'
Ch	4.24'	1.94'
Lc	4.71'	1.97'
	C14.2	
Δ	37° 40' 30"	
Δ/2	18° 50' 45"	
R	3.00'	
T	1.02'	
Ch	1.94'	
Lc	1.97'	

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

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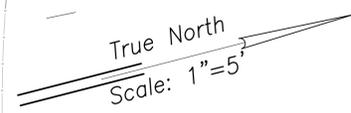


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Approved By: _____ Date _____
 Chief, Traffic Signals & Technology, DTS

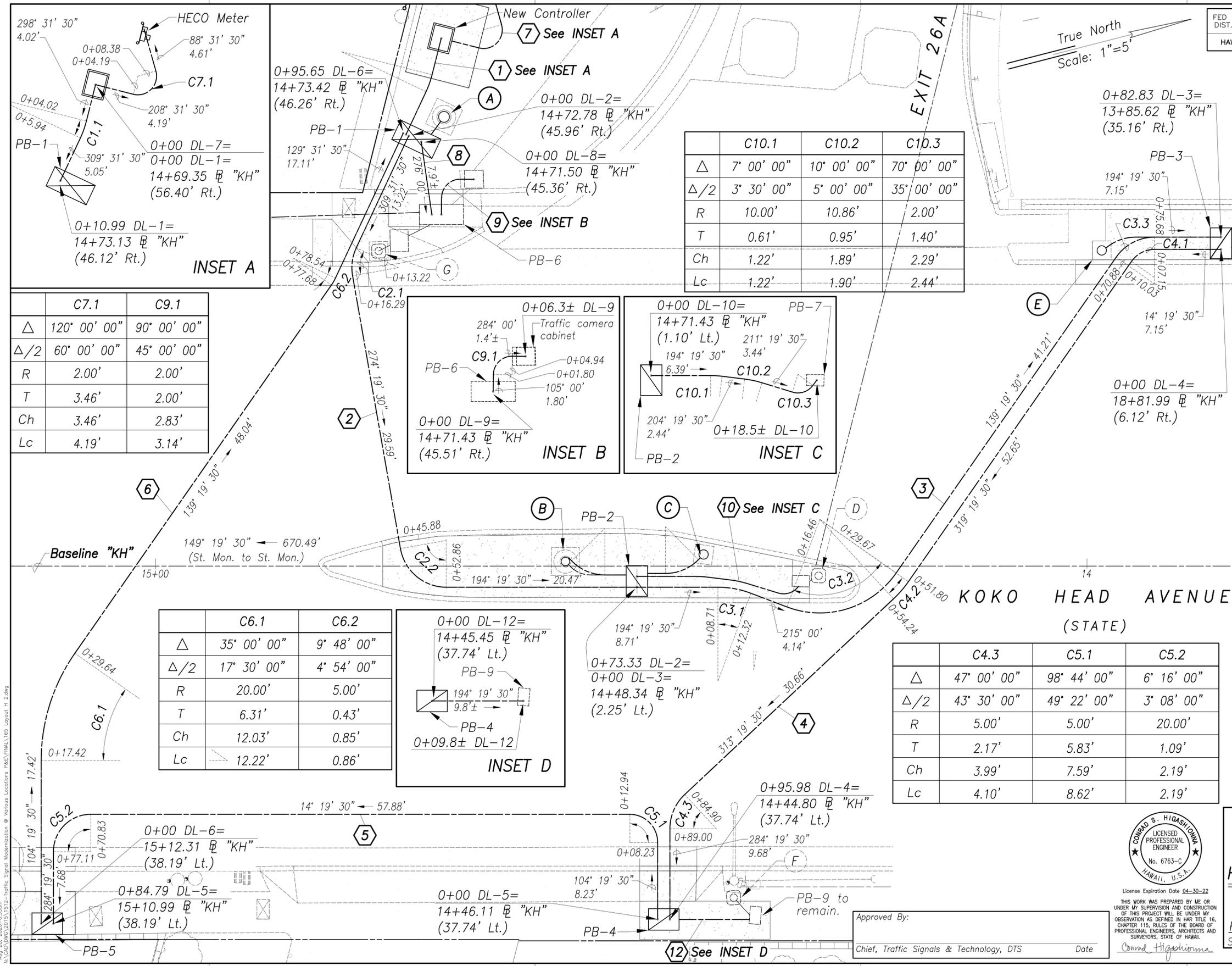
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
DUCT LAYOUT PLAN
H-1 Exit 26A & Koko Head Ave
 Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=5' Date: July 2020
 SHEET No. TS-69 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	165	284



Duct Line Curve Data		
	C1.1	C2.1
Δ	11° 00' 00"	35° 12' 00"
Δ/2	5° 30' 00"	17° 36' 00"
R	10.00'	5.00'
T	0.96'	1.59'
Ch	1.92'	3.02'
Lc	1.92'	3.07'
C2.2 C3.1		
Δ	80° 00' 00"	20° 40' 30"
Δ/2	40° 00' 00"	10° 20' 15"
R	5.00'	10.00'
T	4.20'	1.82'
Ch	6.43'	3.59'
Lc	6.98'	3.61'
C3.2 C3.3		
Δ	75° 40' 20"	55° 00' 00"
Δ/2	37° 50' 10"	27° 30' 00"
R	10.00'	5.00'
T	7.77'	2.60'
Ch	12.27'	4.62'
Lc	13.21'	4.80'
C4.1 C4.2		
Δ	55° 00' 00"	12° 00' 00"
Δ/2	27° 30' 00"	6° 00' 00"
R	3.00'	11.61'
T	1.56'	1.22'
Ch	2.77'	2.43'
Lc	2.88'	2.43'

	C10.1	C10.2	C10.3
Δ	7° 00' 00"	10° 00' 00"	70° 00' 00"
Δ/2	3° 30' 00"	5° 00' 00"	35° 00' 00"
R	10.00'	10.86'	2.00'
T	0.61'	0.95'	1.40'
Ch	1.22'	1.89'	2.29'
Lc	1.22'	1.90'	2.44'



	C7.1	C9.1
Δ	120° 00' 00"	90° 00' 00"
Δ/2	60° 00' 00"	45° 00' 00"
R	2.00'	2.00'
T	3.46'	2.00'
Ch	3.46'	2.83'
Lc	4.19'	3.14'

	C6.1	C6.2
Δ	35° 00' 00"	9° 48' 00"
Δ/2	17° 30' 00"	4° 54' 00"
R	20.00'	5.00'
T	6.31'	0.43'
Ch	12.03'	0.85'
Lc	12.22'	0.86'

	C4.3	C5.1	C5.2
Δ	47° 00' 00"	98° 44' 00"	6° 16' 00"
Δ/2	43° 30' 00"	49° 22' 00"	3° 08' 00"
R	5.00'	5.00'	20.00'
T	2.17'	5.83'	1.09'
Ch	3.99'	7.59'	2.19'
Lc	4.10'	8.62'	2.19'

SURVEY PLOTTED BY: DATE: _____
 DRAWN BY: _____
 DESIGNED BY: _____
 QUANTITIES BY: _____
 CHECKED BY: _____
 No. _____
 ORIGINAL PLAN _____
 NOTE BOOK _____
 No. _____
 Aug 28, 2020 - 10:30am
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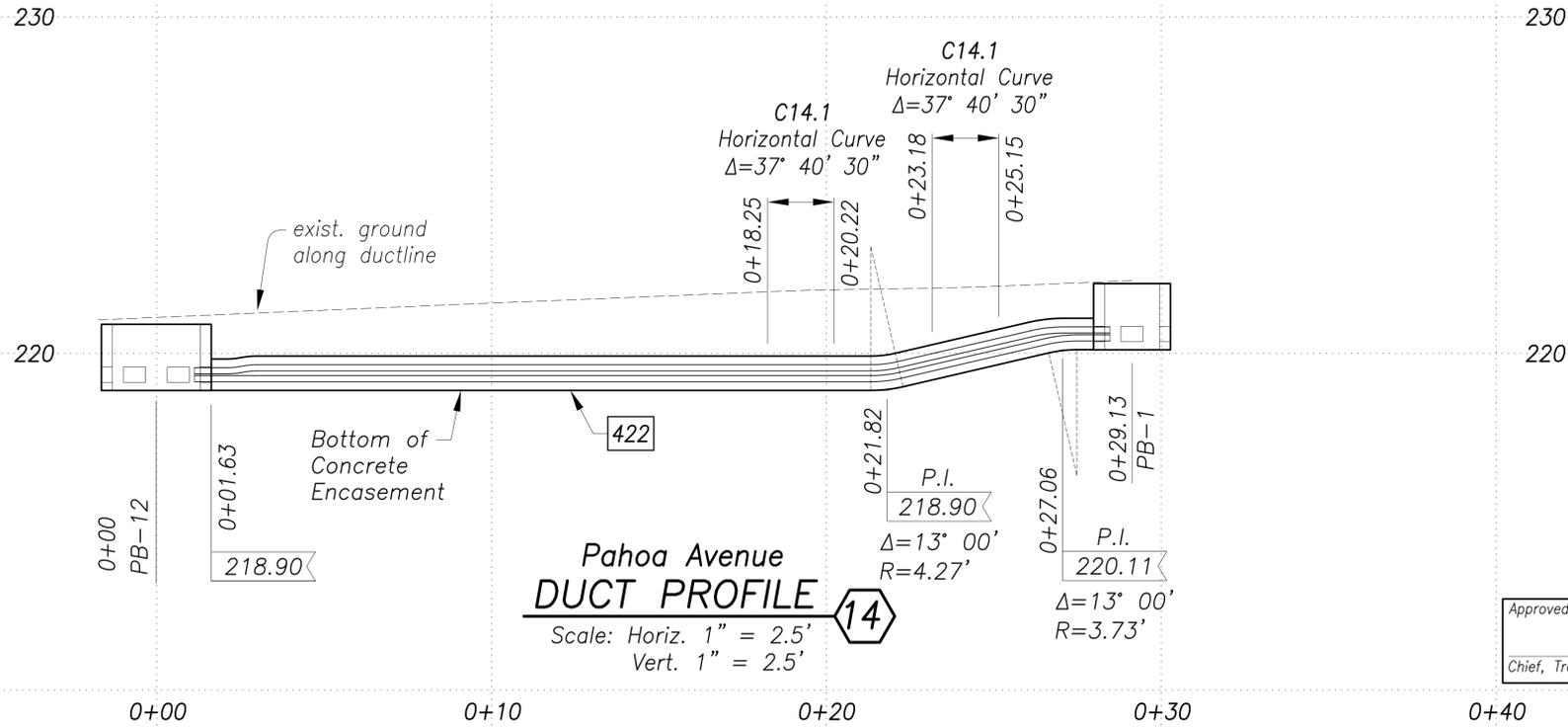
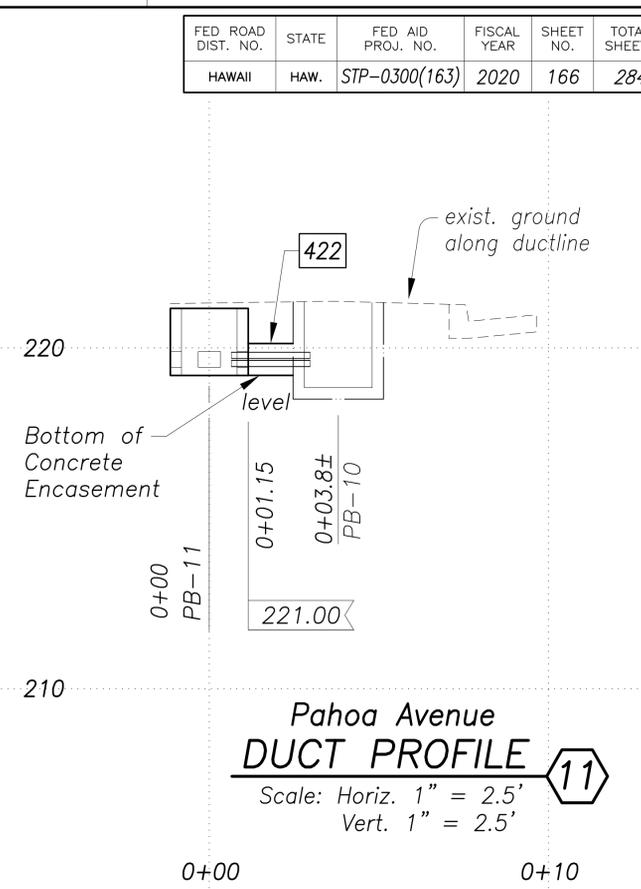
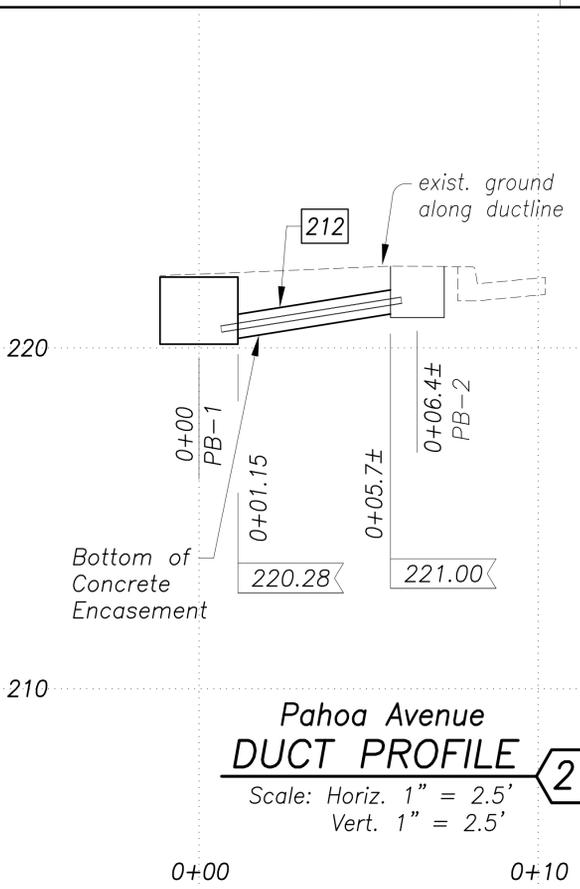
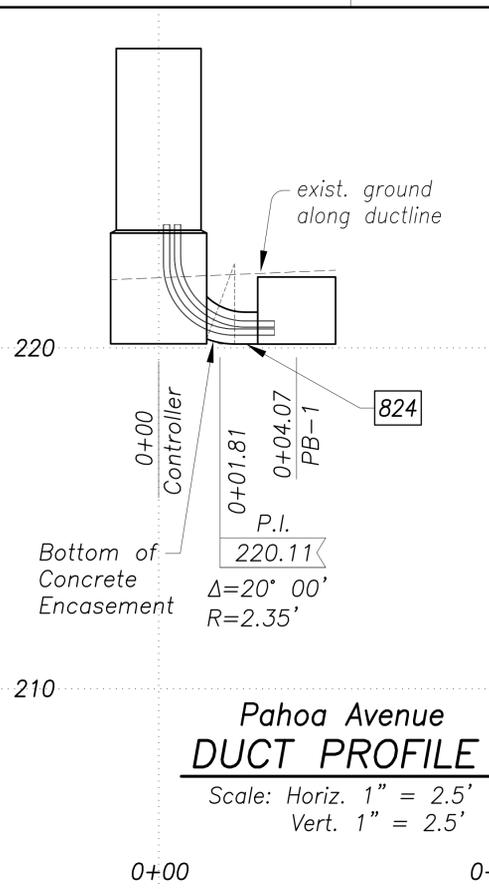
APPROVED BY: _____
 Chief, Traffic Signals & Technology, DTS
 Date: _____



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 Conrad Higashimura

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
DUCT LAYOUT PLAN
H-1 Exit 26A & Koko Head Ave
 Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=5' Date: July 2020
 SHEET No. TS-70 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	166	284



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



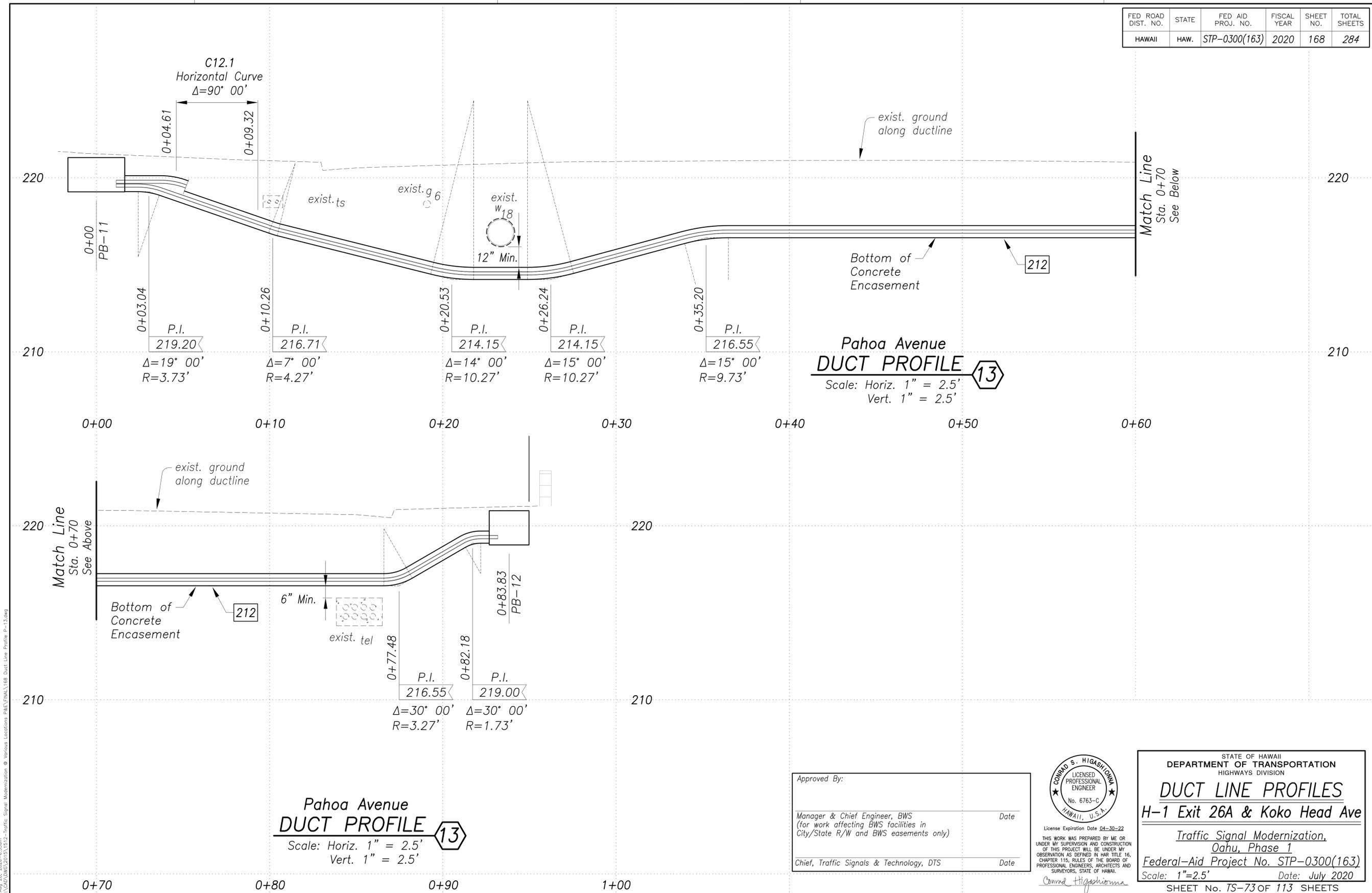
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 Conrad Higashimura

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

DUCT LINE PROFILES
H-1 Exit 26A & Koko Head Ave

Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=2.5' Date: July 2020
 SHEET No. TS-71 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	168	284



**Pahoa Avenue
DUCT PROFILE** 13
 Scale: Horiz. 1" = 2.5'
 Vert. 1" = 2.5'

**Pahoa Avenue
DUCT PROFILE** 13
 Scale: Horiz. 1" = 2.5'
 Vert. 1" = 2.5'

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



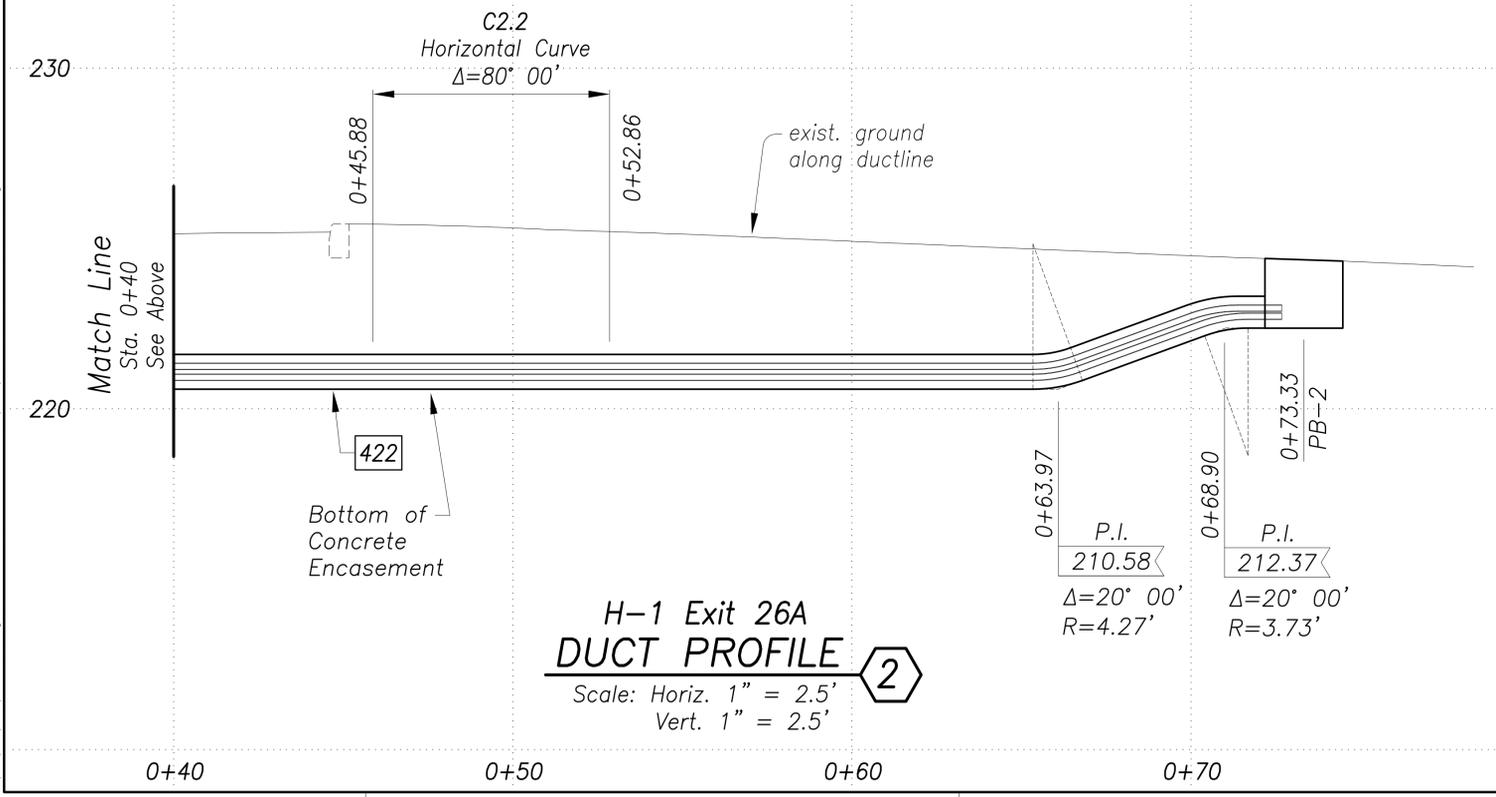
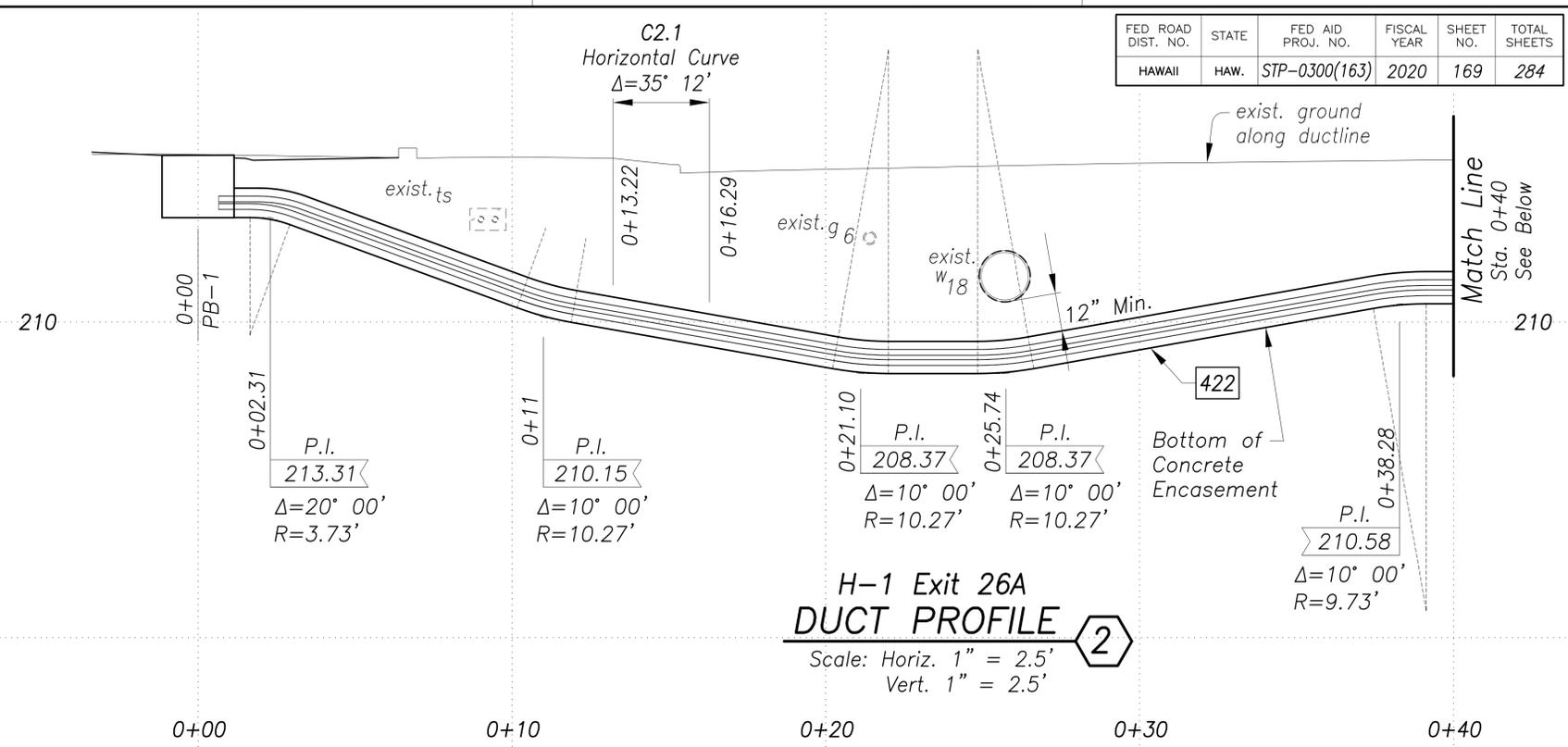
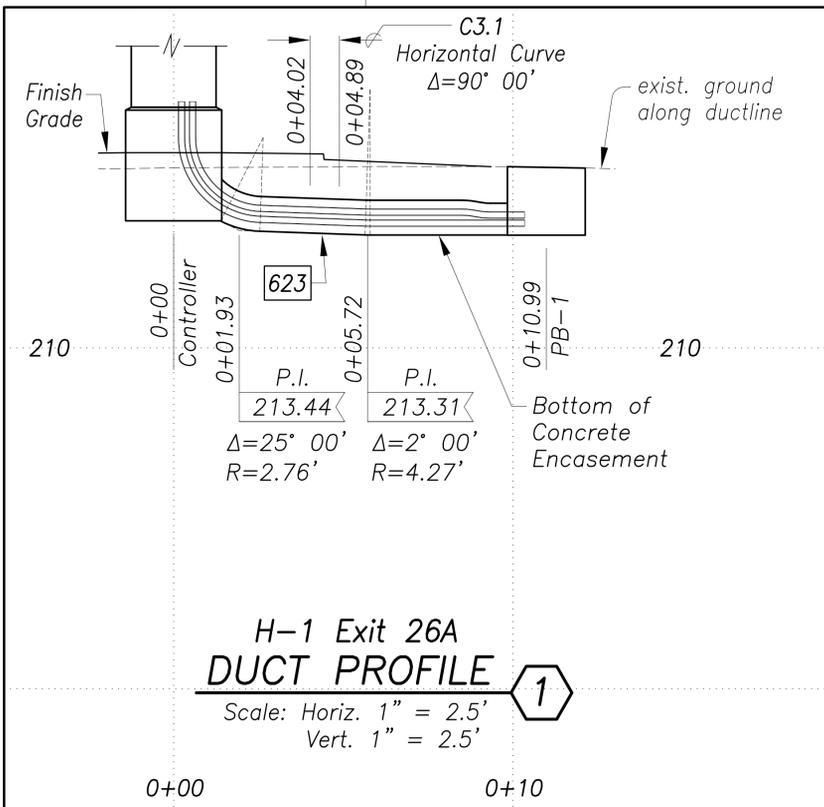
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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
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DUCT LINE PROFILES
H-1 Exit 26A & Koko Head Ave

Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=2.5' Date: July 2020
 SHEET No. TS-73 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	169	284



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Chief, Traffic Signals & Technology, DTS _____ Date _____



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HIGHWAYS DIVISION

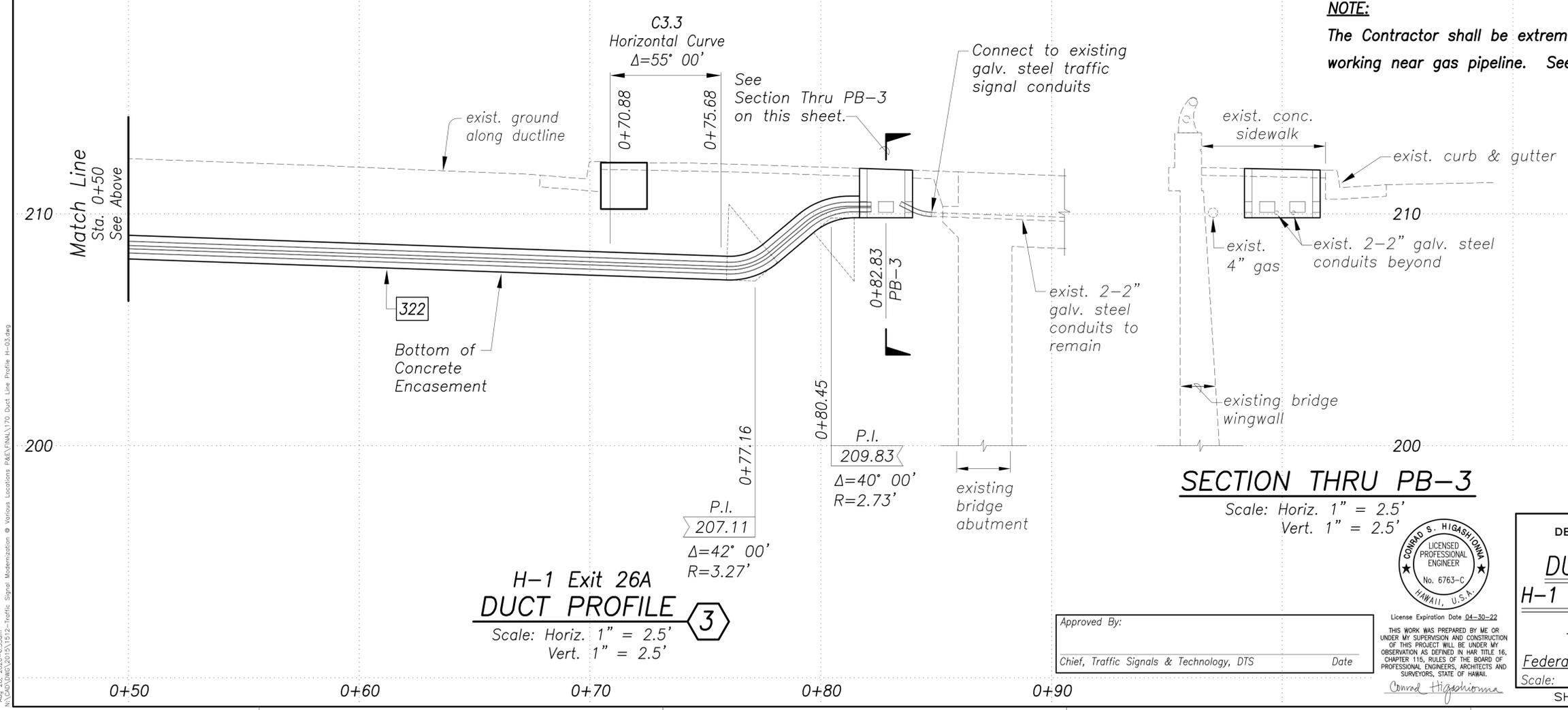
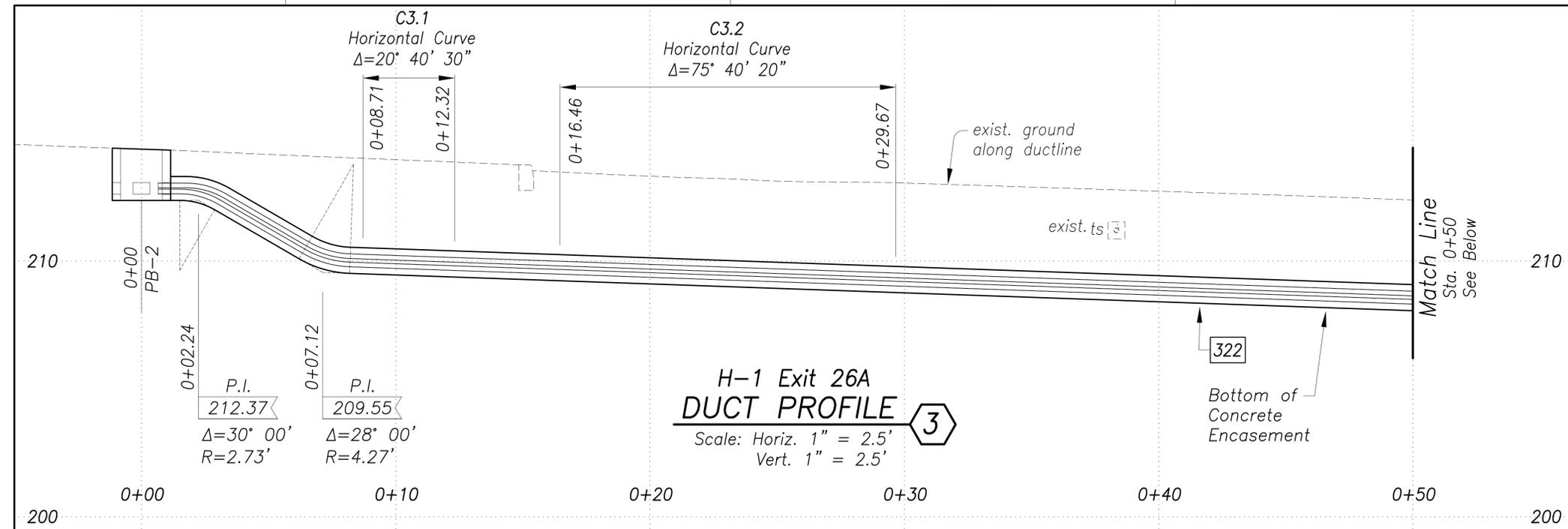
DUCT LINE PROFILES
H-1 Exit 26A & Koko Head Ave

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

Scale: 1"=2.5' Date: July 2020

SHEET No. TS-74 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	170	284



NOTE:
The Contractor shall be extremely careful when working near gas pipeline. See GAS notes.

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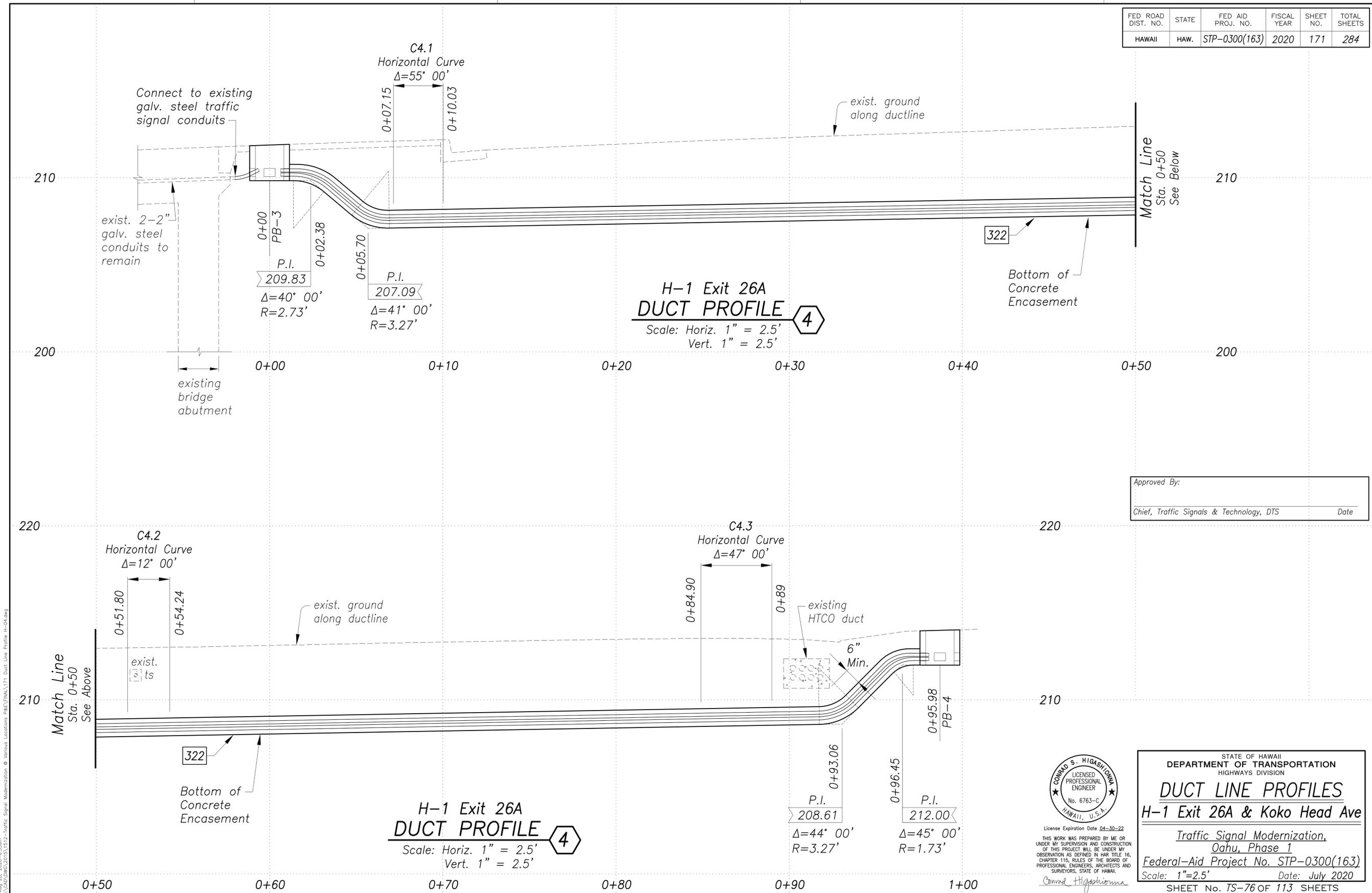
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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

DUCT LINE PROFILES
H-1 Exit 26A & Koko Head Ave

Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=2.5' Date: July 2020
 SHEET No. TS-75 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	171	284



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Chief, Traffic Signals & Technology, DTS Date: _____

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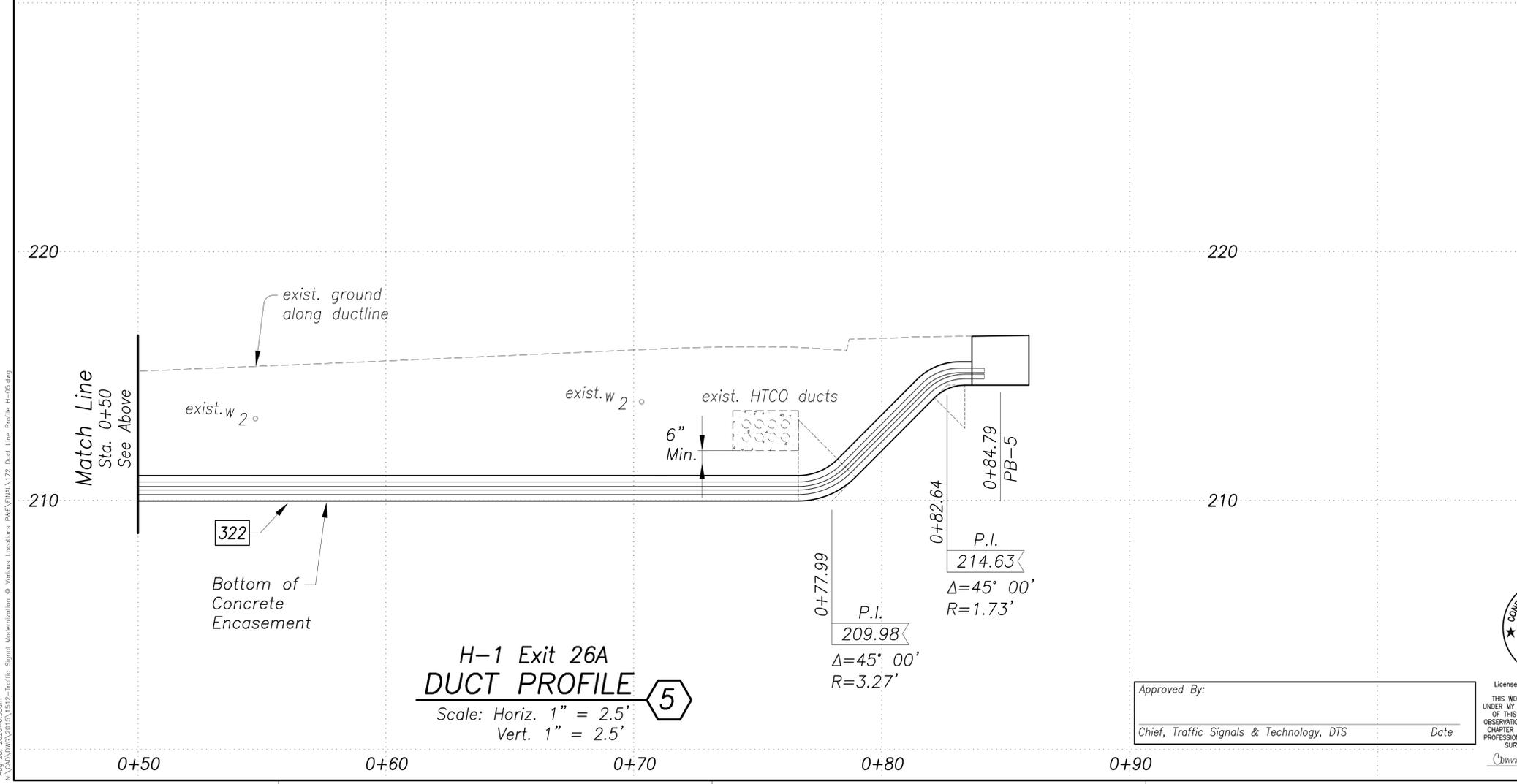
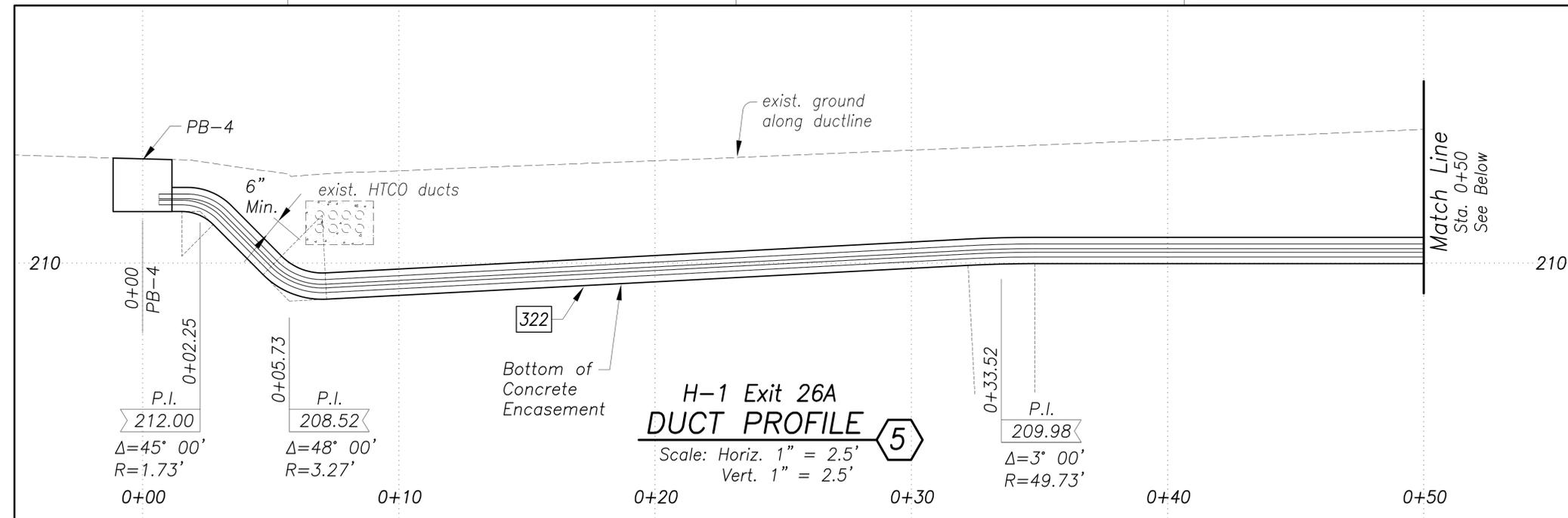
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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
DUCT LINE PROFILES
H-1 Exit 26A & Koko Head Ave
 Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=2.5' Date: July 2020
 SHEET No. TS-76 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	172	284



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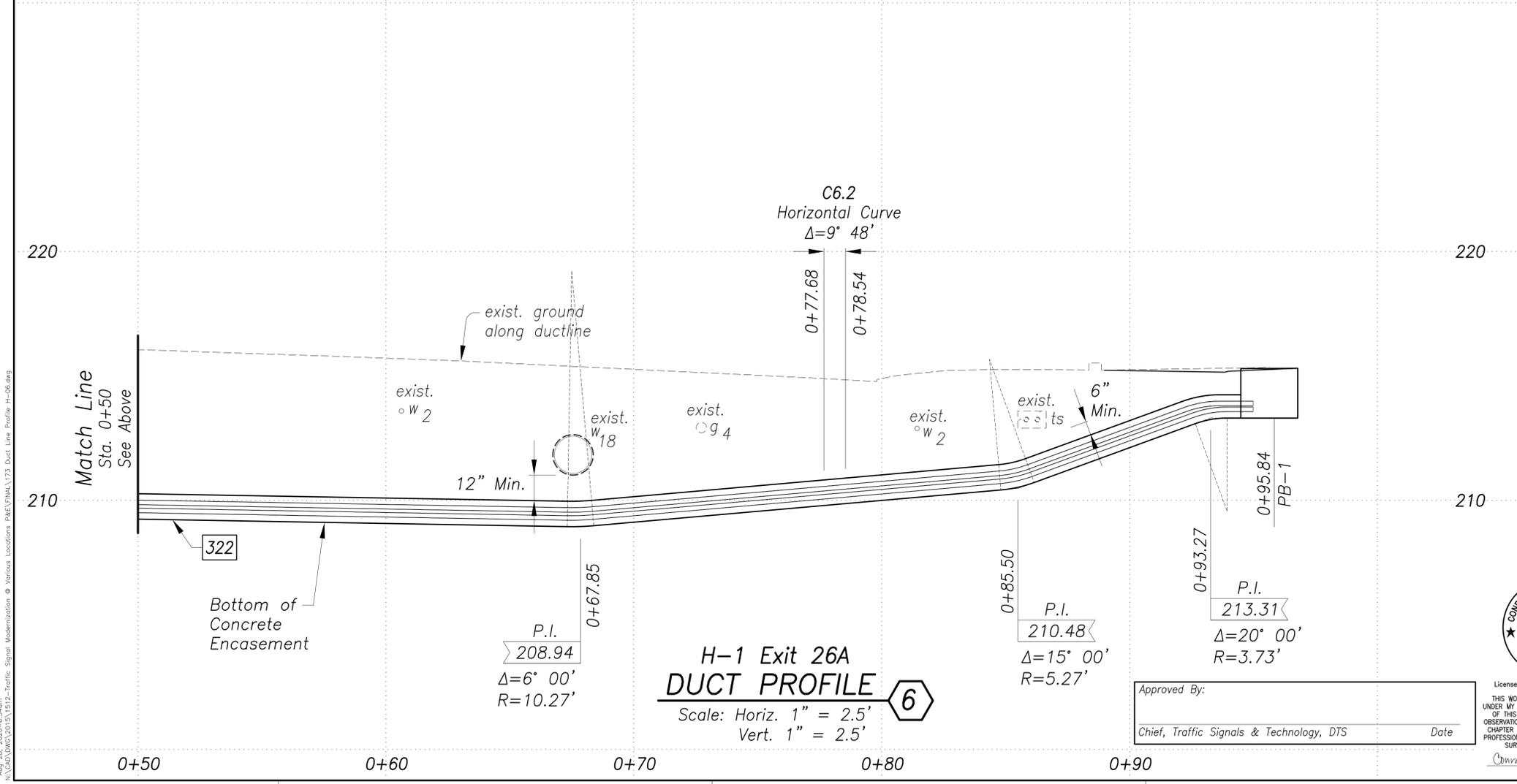
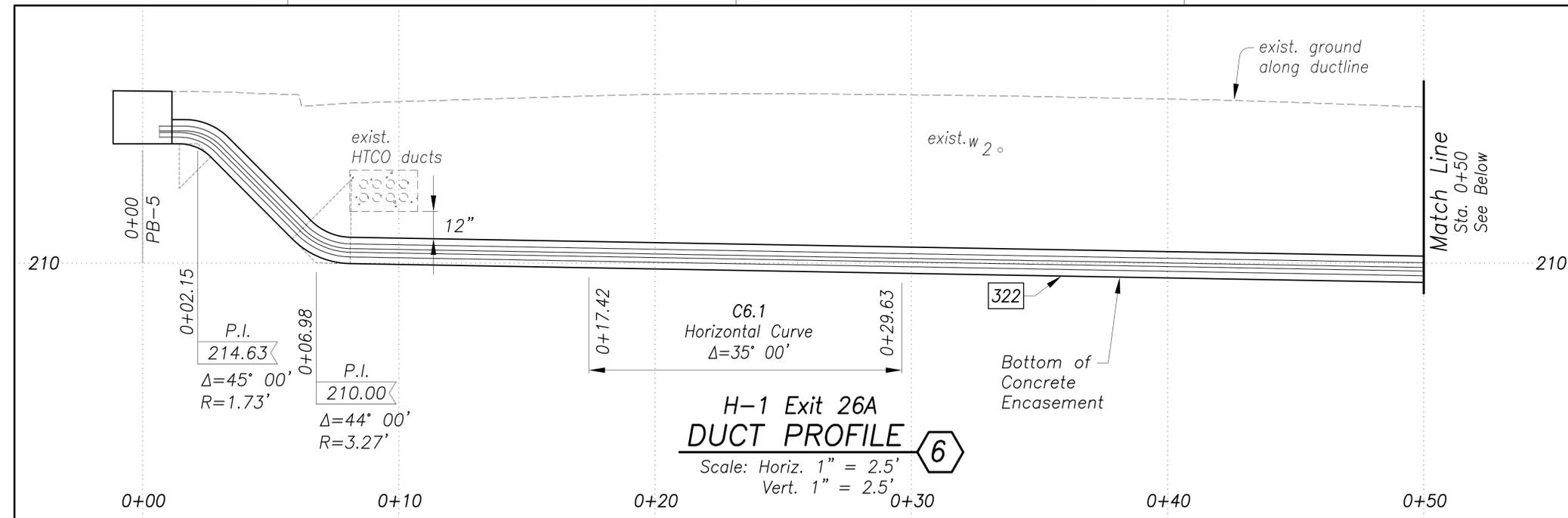
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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
DUCT LINE PROFILES
H-1 Exit 26A & Koko Head Ave
Traffic Signal Modernization,
Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=2.5' Date: July 2020
 SHEET No. TS-77 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	173	284



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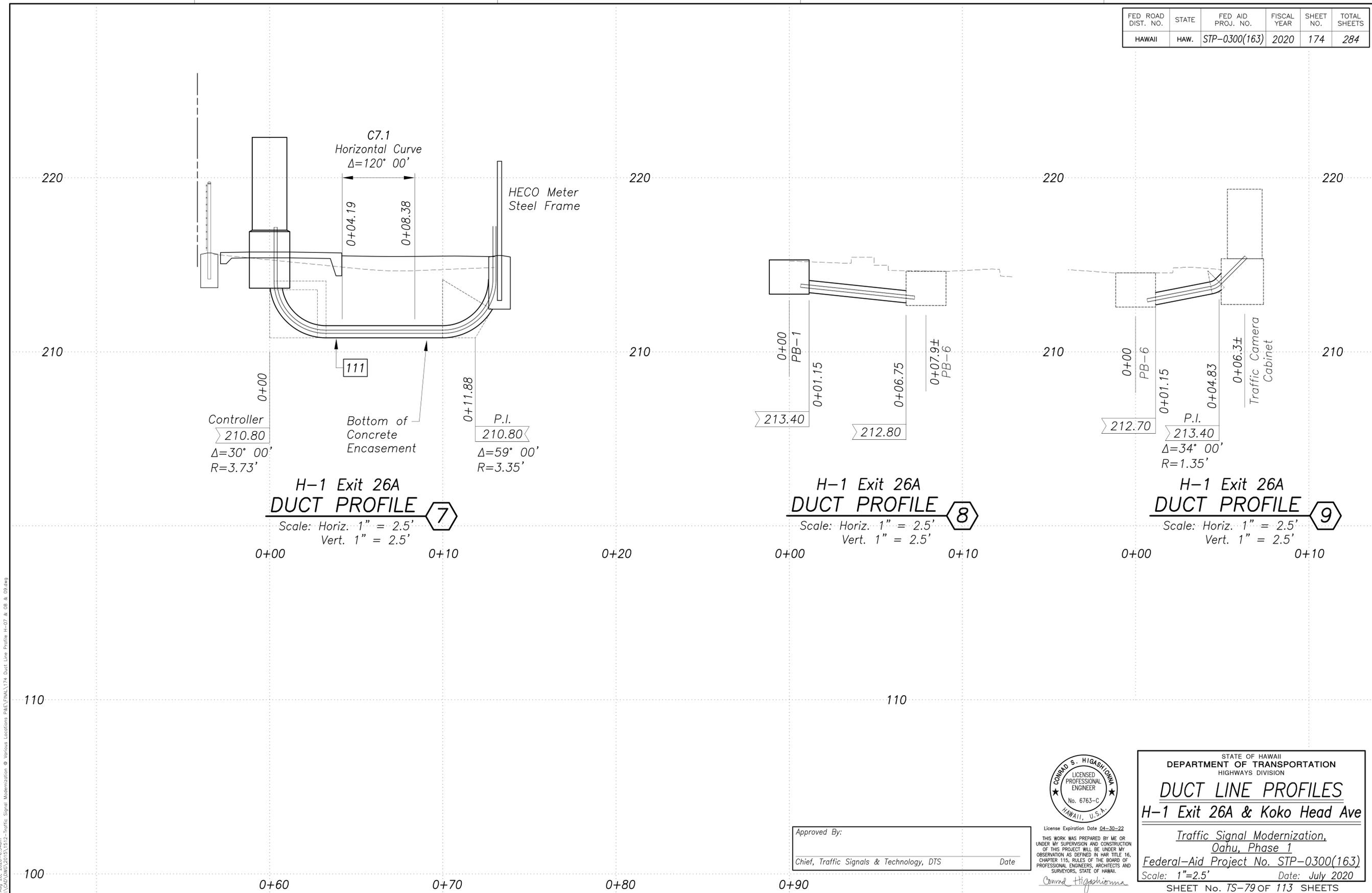
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 Conrad Higashimura

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

DUCT LINE PROFILES
H-1 Exit 26A & Koko Head Ave

Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=2.5' Date: July 2020
 SHEET No. TS-78 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	174	284



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ORIGINAL PLAN No.	

Aug 28, 2020-15:00
 N:\CAO\DWG\2015\1512-Traffic Signal Modernization @ Various Locations P&E\FINAL\174 Duct Line Profile H-07 & 08 & 09.dwg

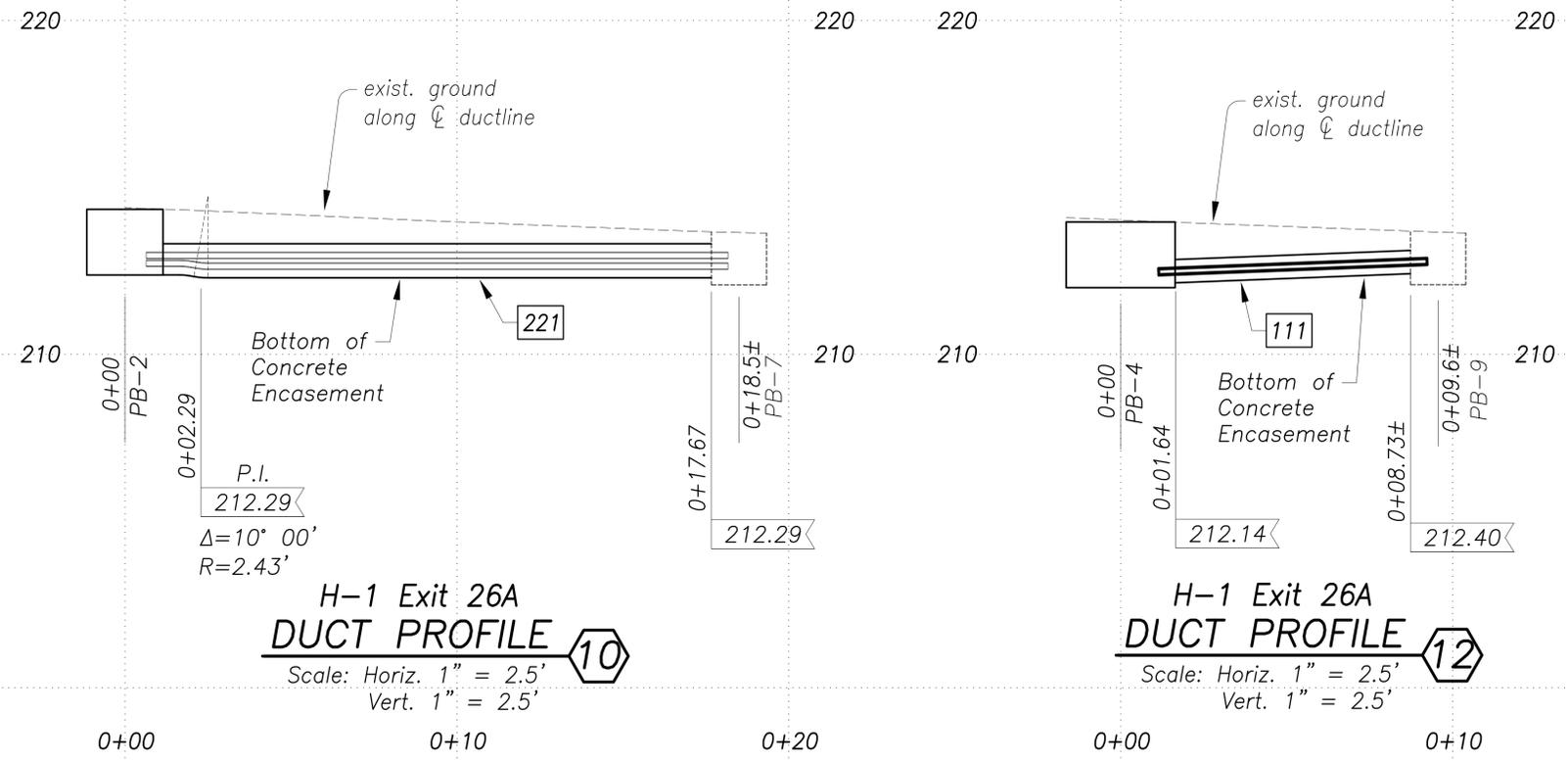
Approved By: _____ Date: _____
 Chief, Traffic Signals & Technology, DTS



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 HAW. TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII.
 Conrad Higashimura

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
DUCT LINE PROFILES
H-1 Exit 26A & Koko Head Ave
 Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=2.5' Date: July 2020
 SHEET No. TS-79 OF 113 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	175	284



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

Aug 28, 2020-11:50am
 N:\CAO\DWG\2015\1512-Traffic Signal Modernization @ Various Locations P&E\FINAL\175 Duct Line Profile H-10 & 12.dwg

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



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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

DUCT LINE PROFILES
H-1 Exit 26A & Koko Head Ave

Traffic Signal Modernization,
 Oahu, Phase 1
 Federal-Aid Project No. STP-0300(163)
 Scale: 1"=2.5' Date: July 2020
 SHEET No. TS-80 OF 113 SHEETS