

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	119	170

Electrical Symbols

Symbol		Description
Existing	New	
		Highway Light Standard
		Highway Light Standard
		Highway Light Standard
		Junction Box, 4 11/16" Sq. Min. X 1 1/2" Depth Min. Unless Noted Otherwise; Wall/Ceiling Surface Mtd. Respectively
		Meter Pedestal, See Detail A/E-30
		Xfmr Equipment & Support, See Detail A/E-29
		Underground Ductline
		Breakline to Being and End Duct Section Type
		Surface Mounted Conduit, See Detail C/E-31
		Electrical/Signal Ductline with Designator, Indicates Type "A" Duct Section with "2-4E" Ducts. See Sheet E-28 for Typical Duct Sections and Conduit Schedule
		Electrical Ductline
		Traffic Signal Ductline
		Street Light Ductline
		Traffic Signal & Street Light Ductline
		Overhead Lines
		CCTV or Splice Cabinet, See Sheet E-31
		VMS Controller Cabinet
		24" x 36" Traffic Signal Pullbox. See Detail A/E-32.
		Traffic Rated Type "A" Metric Traffic Signal Pullbox
		HECo. Handhole
		Pullbox
		HTCo. 2' x 4' Handhole

Symbol Notes:

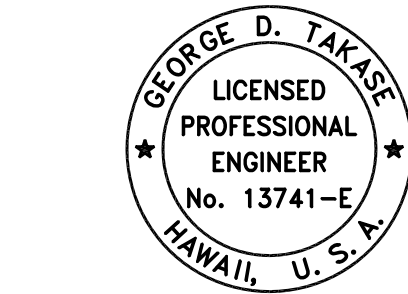
1. "X" Through Symbol Indicates Item to be Removed.

General Electrical Notes:

1. Electrical Work shall be New Unless Indicated Otherwise.
2. Existing Electrical Equipment shall Remain Unless Indicated Otherwise.
3. The Location of Existing Underground Utilities Shown On Plans are from Existing Records and are Approximations Only. Contractor shall Exercise Caution when Construction Crosses or is in Close Proximity to Existing Underground Utilities. Damages to Utility Companies' Existing Facilities shall be Repaired by the Respective Utility Company and Repair Costs shall be Paid by the Contractor at No Additional Cost to the State.
4. Concrete Dust from Drilling of Anchoring System onto the Viaduct/Overpass shall be Contained and Disposed of Properly.

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

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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

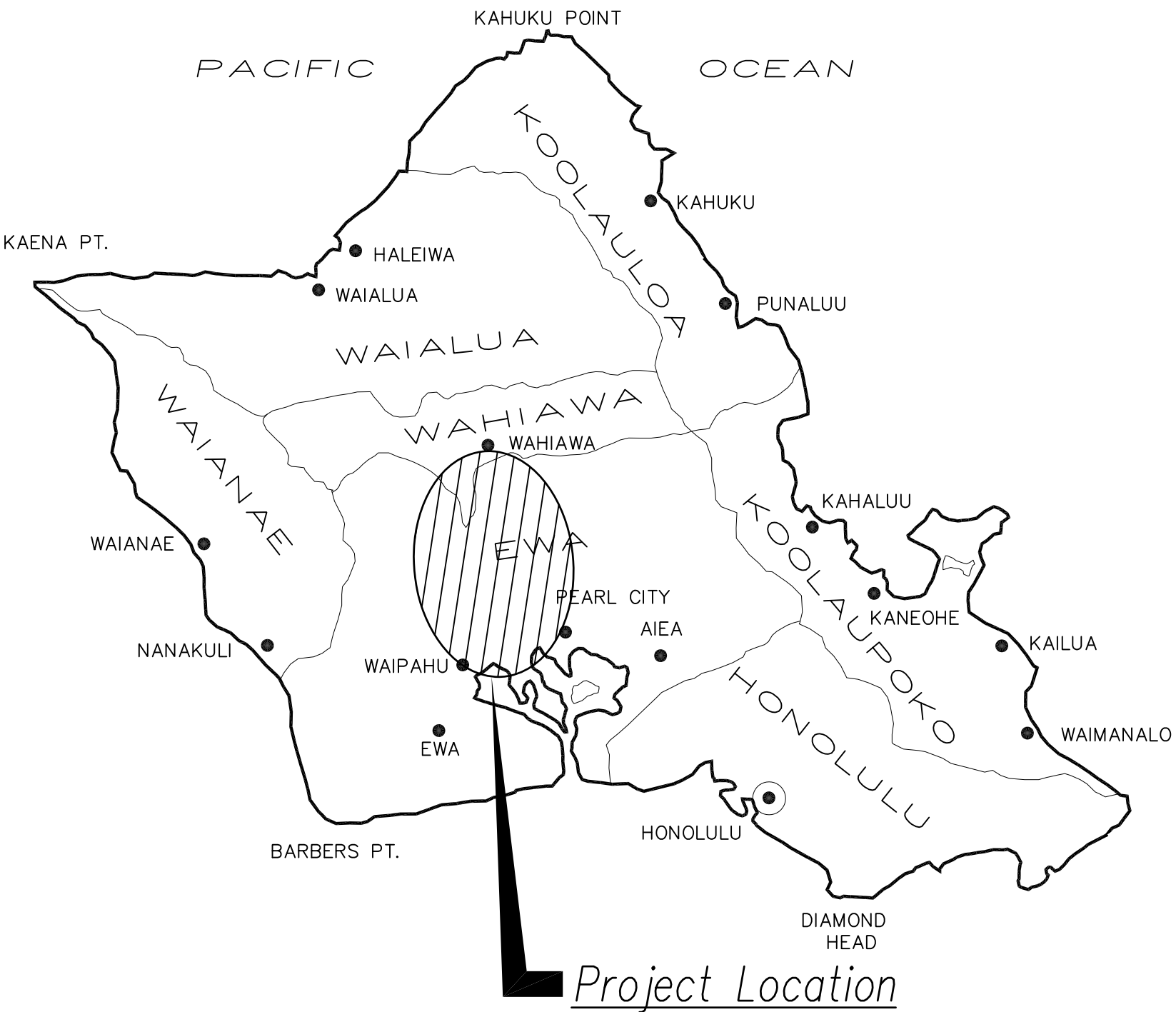
APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
SYMBOL LIST

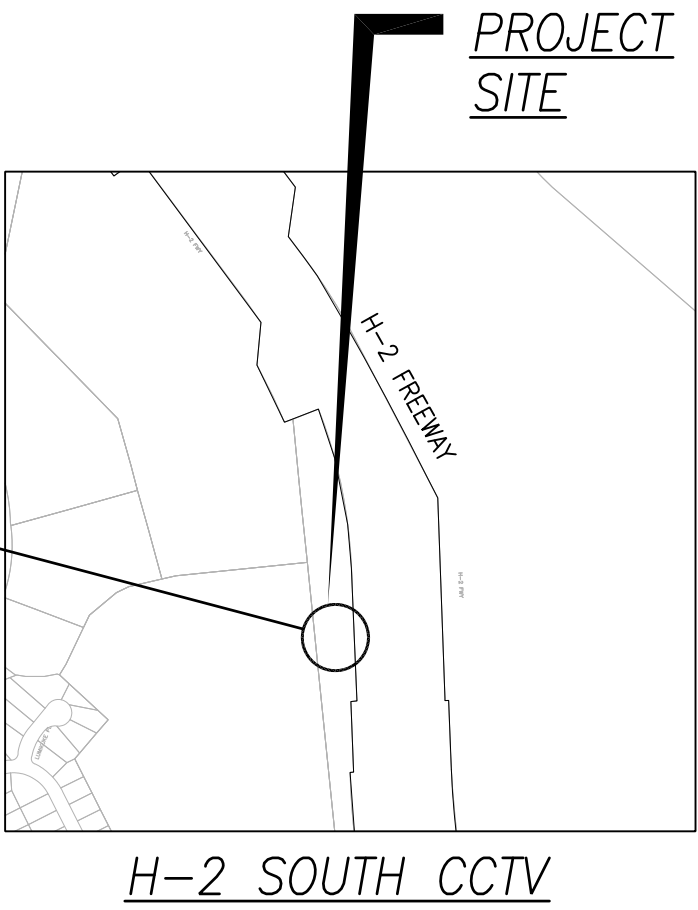
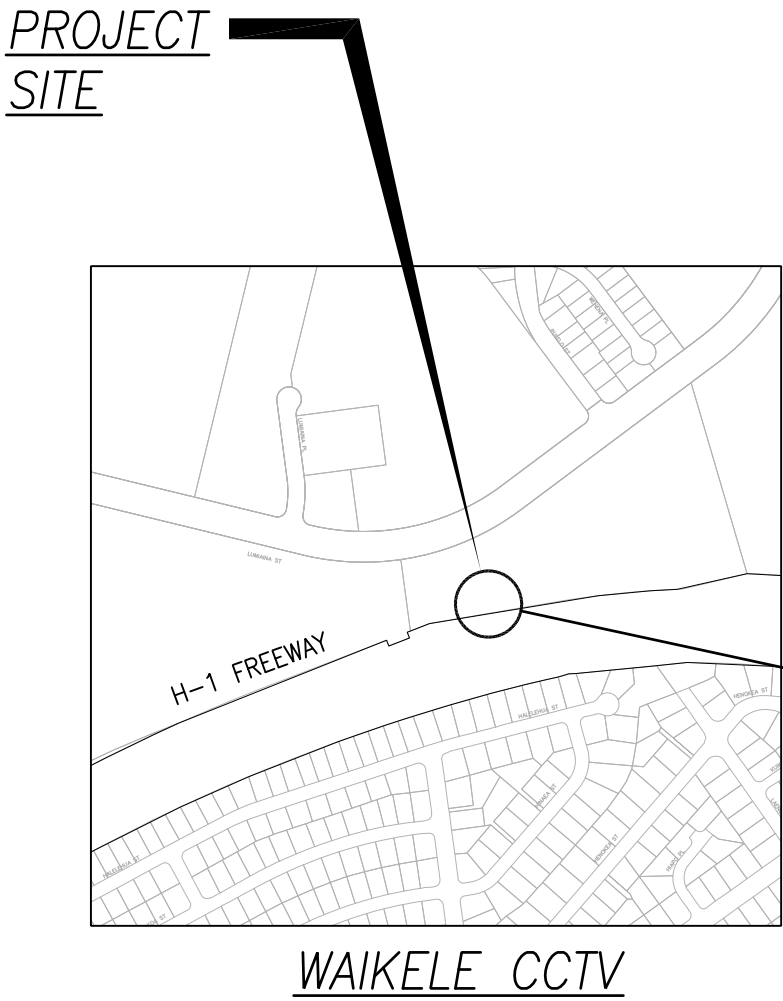
Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)

Scale: As Noted Date: June 25, 2021

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	120	170



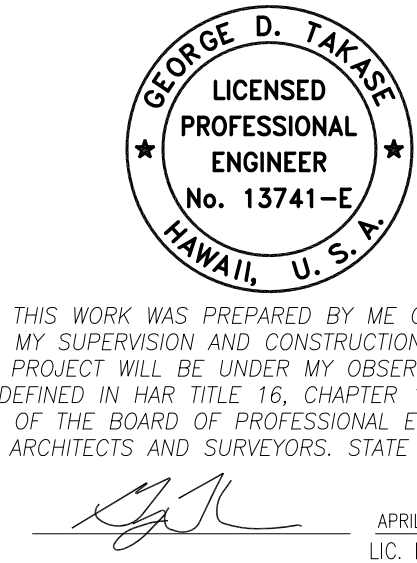
NORTH
Oahu Island Map



NORTH
FMS CCTV Locations

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

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
FMS CCTV LOCATIONS

Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)

Scale: As Noted Date: June 25, 2021

SHEET No. **E-2** OF **32** SHEETS

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	121	170

WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF UNDERGROUND LINES. HAWAIIAN ELECTRIC'S EXISTING ELECTRICAL CABLES ARE ENERGIZED AND WILL REMAIN ENERGIZED DURING CONSTRUCTION. ONLY HAWAIIAN ELECTRIC PERSONNEL ARE TO BREAK INTO EXISTING HAWAIIAN ELECTRIC FACILITIES, HANDLE THESE CABLES, AND ERECT TEMPORARY GUARDS TO PROTECT THESE CABLES FROM DAMAGE. THE COST OF HAWAIIAN ELECTRIC'S ASSISTANCE IN PROVIDING PROPER SUPPORT AND PROTECTION OF ITS UNDERGROUND LINES WILL BE CHARGED TO THE CONTRACTOR. FOR ASSISTANCE/COORDINATION IN PROVIDING PROPER SUPPORT AND PROTECTION OF THESE LINES, THE CONTRACTOR SHALL CALL HAWAIIAN ELECTRIC'S CUSTOMER INSTALLATIONS DEPARTMENT AT 543-7846 A MINIMUM OF TEN (10) WORKING DAYS IN ADVANCE.

SPECIAL PRECAUTIONS ARE REQUIRED WHEN EXCAVATING NEAR HAWAIIAN ELECTRIC'S 138KV OR 46KV UNDERGROUND LINES (SEE HAWAIIAN ELECTRIC INSTRUCTIONS TO CONSULTANTS/CONTRACTORS ON "EXCAVATION NEAR HAWAIIAN ELECTRIC'S UNDERGROUND 138KV AND/OR 46KV LINES" FOR DETAILED REQUIREMENTS).

FOR VERIFICATION OF UNDERGROUND LINES, THE CONTRACTOR SHALL CALL THE HAWAII ONE CALL CENTER AT 866-423-7287 MINIMUM OF FIVE (5) WORKING DAYS IN ADVANCE.

UNDERGROUND FUEL PIPELINES
THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION
WHENEVER CONSTRUCTION CROSSES OR IS IN CLOSE
PROXIMITY OF HAWAIIAN ELECTRIC'S UNDERGROUND
FUEL OIL PIPELINES. SPECIAL PRECAUTIONS ARE
REQUIRED WHEN EXCAVATING NEAR HAWAIIAN
ELECTRIC'S UNDERGROUND FUEL OIL PIPELINES (SEE
HAWAIIAN ELECTRIC'S SPECIFIC FUEL PIPELINE
"GUIDELINES" TO CONSULTANTS/CONTRACTORS ON
EXCAVATION NEAR HAWAIIAN ELECTRIC'S UNDERGROUND
FUEL PIPELINES FOR DETAILED REQUIREMENTS).

THAT, IF FEASIBLE, THE NECESSARY PROTECTIONS (E.G. RELOCATE OR DE-ENERGIZE HAWAIIAN ELECTRIC LINES) CAN BE INVESTIGATED. HAWAIIAN ELECTRIC MAY ALSO BE ABLE TO BLANKET ITS DISTRIBUTION (12KV AND BELOW) LINES TO PROVIDE A VISUAL AID IN PREVENTING ACCIDENTAL CONTACT. HAWAIIAN ELECTRIC'S COST OF SAFEGUARDING OR IDENTIFYING ITS LINES WILL BE CHARGED TO THE CONTRACTOR.

CONTACT HAWAIIAN ELECTRIC'S CUSTOMER
INSTALLATIONS DEPARTMENT AT 543-7846 FOR
ASSISTANCE IN IDENTIFYING AND SAFEGUARDING
OVERHEAD POWER LINES.

POLE BRACING
CONTRACTOR SHALL NOT EXCAVATE WITHIN 10 FEET FROM HAWAIIAN ELECTRIC'S UTILITY POLES OR ANY ANCHOR SYSTEM SUPPORTING THE UTILITY POLE. IF CONTRACTOR MUST EXCAVATE CLOSER THAN 10 FEET FROM A UTILITY POLE OR ITS ANCHOR SYSTEM, CONTRACTOR WILL BE RESPONSIBLE FOR PROTECTING, SUPPORTING, SECURING AND TAKING ALL PRECAUTIONS TO PREVENT DAMAGE TO OR LEANING OF EXISTING POLES. BEFORE COMMENCING SUCH EXCAVATION, CONTRACTOR MUST SUBMIT ITS BRACING CALCULATIONS AND DRAWINGS, PREPARED AND STAMPED BY A LICENSED STRUCTURAL ENGINEER, TO HAWAIIAN ELECTRIC'S CUSTOMER INSTALLATIONS DEPARTMENT (543-7846) FOR REVIEW. HAWAIIAN ELECTRIC REQUIRES A MINIMUM OF TEN (10) WORKING DAYS TO CONDUCT THE REVIEW OF CONTRACTOR'S SUBMITTAL. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN, INSTALLATION, AND REMOVAL OF THE TEMPORARY POLE BRACING SYSTEM, AS WELL AS ALL COSTS INCURRED BY HAWAIIAN ELECTRIC TO REVIEW CONTRACTOR'S DRAWINGS AND TO REPAIR OR STRAIGHTEN POLES IMPACTED BY CONTRACTOR'S ACTIVITIES, INCLUDING RESPONSE AND RESTORATION COSTS INCURRED BY HAWAIIAN ELECTRIC ARISING OUT OF OR RELATED TO OUTAGES CAUSED BY CONTRACTOR'S FAILURE TO MEET THE FOREGOING REQUIREMENTS. HAWAIIAN ELECTRIC'S REVIEW AND APPROVAL OF ANY CONTRACTOR SUBMITTALS INCLUDING ITS WORK PROCEDURE SHALL NOT RELIEVE CONTRACTOR FROM ANY LIABILITY RESULTING FROM CONTRACTOR'S EXCAVATION NEAR OR AROUND HAWAIIAN ELECTRIC'S UTILITY POLES.

UNDERGROUND LINES
THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION

HECO NOTES:

7. LOCATION OF HAWAIIAN ELECTRIC FACILITIES
THE LOCATION OF HAWAIIAN ELECTRIC'S OVERHEAD AND UNDERGROUND FACILITIES SHOWN ON THE PLANS ARE FROM EXISTING RECORDS WITH VARYING DEGREES OF ACCURACY AND ARE NOT GUARANTEED AS SHOWN. THE CONTRACTOR SHALL VERIFY IN THE FIELD THE LOCATIONS OF THE FACILITIES AND SHALL EXERCISE PROPER CARE IN EXCAVATING AND WORKING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES AND UTILITY CROSSINGS ARE SHOWN, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS AND CROSSINGS TO VERIFY THE DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO HAWAIIAN ELECTRIC'S FACILITIES WHETHER SHOWN OR NOT SHOWN ON THE PLANS.

2. COMPLIANCE WITH HAWAII OCCUPATIONAL SAFETY AND HEALTH LAWS
THE CONTRACTOR SHALL COMPLY WITH THE STATE OF HAWAII'S OCCUPATIONAL SAFETY AND HEALTH LAWS AND REGULATIONS, INCLUDING WITHOUT LIMITATION, THOSE RELATED TO WORKING ON OR NEAR EXPOSED OR ENERGIZED ELECTRICAL LINES AND EQUIPMENT.

3. EXCAVATION CLEARANCE
THE CONTRACTOR SHALL OBTAIN AN EXCAVATION CLEARANCE FROM HAWAIIAN ELECTRIC'S PLANNING AND DESIGN SECTION OF THE CUSTOMER INSTALLATIONS DEPARTMENT (543-5654) LOCATED AT 820 WARD AVENUE, 4TH FLOOR, A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO STARTING CONSTRUCTION.

4. CAUTION!!!! ELECTRICAL HAZARD!!!!
EXISTING HAWAIIAN ELECTRIC OVERHEAD AND UNDERGROUND LINES ARE ENERGIZED AND WILL REMAIN ENERGIZED DURING CONSTRUCTION UNLESS PRIOR SPECIAL ARRANGEMENTS HAVE BEEN MADE WITH HAWAIIAN ELECTRIC. ONLY HAWAIIAN ELECTRIC PERSONNEL ARE TO HANDLE THESE ENERGIZED LINES AND ERECT TEMPORARY GUARDS TO PROTECT THESE LINES FROM DAMAGE. THE CONTRACTOR SHALL WORK CAUTIOUSLY AT ALL TIMES TO AVOID ACCIDENTS AND DAMAGE TO EXISTING HAWAIIAN ELECTRIC FACILITIES, WHICH CAN RESULT IN ELECTROCUTION.

5. OVERHEAD LINES
STATE LAW (OSHA) REQUIRES THAT A WORKER AND THE LONGEST OBJECT HE OR SHE MAY CONTACT CANNOT COME CLOSER THAN A SPECIFIED MINIMUM RADIAL CLEARANCE WHEN WORKING CLOSE TO OR UNDER ANY OVERHEAD LINES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE INFORMED OF AND COMPLY WITH THE LAW.

AT ANY TIME SHOULD THE CONTRACTOR ANTICIPATE THAT HIS WORK WILL RESULT IN THE NEED TO ENCROACH WITHIN THE MINIMUM REQUIRED CLEARANCE AS STATED IN THE LAW, THE CONTRACTOR SHALL NOTIFY HAWAIIAN ELECTRIC AT LEAST THREE (3) MONTHS PRIOR TO THE PLANNED ENCROACHMENT SO

GUIDELINES FOR MINIMUM HORIZONTAL (PARALLEL) CLEARANCES BETWEEN HAWAIIAN ELECTRIC AND OTHER UNDERGROUND UTILITIES				
UNDERGROUND UTILITY	HAWAIIAN ELECTRIC DIRECT BURIED CABLE	HAWAIIAN ELECTRIC DIRECT BURIED IN CONDUIT (NO CONCRETE ENCASEMENT)	HAWAIIAN ELECTRIC 3" (MINIMUM) CONCRETE ENCASEMENT	APPLICABLE NOTES:
HAWAIIAN ELECTRIC DB CONDUITS	12"	3"	0"	
HAWAIIAN ELECTRIC 3" ENCASEMENT	0"	0"	0"	
TELEPHONE/CATV DB	12"	12"	6"	
TELEPHONE/CATV DB DUCTS	12"	12"	6"	
TELEPHONE/CATV 3" ENCASEMENT	0"	0"	0"	5
TRAFFIC SIGNAL	12"	12"	12"	
WATER DB (BWS OWNED)	36"	36"	36"	1, 4
CUSTOMER OWNED WATER SERVICE LATERALS	12"	12"	12"	
WATER (CONCRETE JACKETED) (BWS OWNED)	36"	36"	36"	1, 4
GAS DB	12"	12"	12"	1
GAS (CONCRETE JACKETED)	12"	12"	12"	1
SEWER DB	36"	36"	36"	1, 2
SEWER (CONCRETE JACKETED)	36"	36"	36"	1, 2
DRAIN	12"	12"	12"	1
FUEL PIPELINES				3

NOTES:

1. WHERE SPACE IS AVAILABLE, PARALLEL CLEARANCE TO OTHER UTILITIES, OR FOREIGN STRUCTURES OTHER THAN COMMUNICATION OR TRAFFIC SIGNAL SHALL BE 36"
2. IF 36" CLEARANCE CANNOT BE MET:
 - IF CLEARANCE IS LESS THAN 12", JACKET SEWER LINE WITH REINFORCED CONCRETE (PER HECO'S STD. 30-1030) FOR A DISTANCE OF 5' PLUS PIPE DIAMETER.
 - IF CLEARANCE IS BETWEEN 12" AND 36", JACKET SEWER LINE WITH PLAIN CONCRETE.
3. ALL FUEL PIPELINE CROSSINGS SHALL BE REVIEWED AND APPROVED BY THE COMPANY THAT OWNS AND MAINTAINS IT.
4. 5 FEET CLEAR TO WATER MAINS 16" OR LARGER.
5. FOR SITUATIONS WITH 0" MINIMUM SEPARATION, A 6" SEPARATION IS RECOMMENDED.
6. CLEARANCES MEASURED FROM OUTER EDGES OR DIAMETERS OF UTILITIES. WHENEVER CONCRETE JACKETS ARE INVOLVED, CLEARANCES SHALL BE TOTAL CLEAR DISTANCE BETWEEN THE CONCRETE JACKET AND UTILITY CONCERNED.

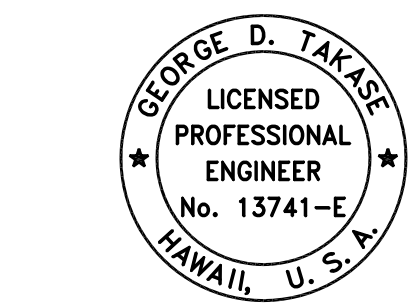
GUIDELINES FOR MINIMUM VERTICAL (CROSSING) CLEARANCES HAWAIIAN ELECTRIC AND OTHER UNDERGROUND UTILITIES				
UNDERGROUND UTILITY	HAWAIIAN ELECTRIC DIRECT BURIED CABLE	HAWAIIAN ELECTRIC DIRECT BURIED IN CONDUIT (NO CONCRETE ENCASEMENT)	HAWAIIAN ELECTRIC 3" (MINIMUM) CONCRETE ENCASEMENT	APPLICABLE NOTES:
HAWAIIAN ELECTRIC DB CONDUITS	6"	3"	0"	
HAWAIIAN ELECTRIC 3" ENCASEMENT	0"	0"	0"	
TELEPHONE/CATV DB	12"	12"	6"	
TELEPHONE/CATV DB DUCTS	12"	12"	6"	
TELEPHONE/CATV 3" ENCASEMENT	0"	0"	0"	3
TRAFFIC SIGNAL	12"	12"	6"	
WATER DB (BWS OWNED)	12"	12"	12"	5
CUSTOMER OWNED WATER SERVICE LATERALS	6"	6"	6"	
WATER (CONCRETE JACKETED) (BWS OWNED)	12"	12"	12"	5
GAS DB	12"	12"	12"	
GAS (CONCRETE JACKETED)	12"	12"	12"	
SEWER DB	24"	24"	24"	1
SEWER (CONCRETE JACKETED)	24"	24"	24"	1
DRAIN	12"	12"	6"	
FUEL PIPELINES				2

NOTES:

1. IF 36" CLEARANCE CANNOT BE MET:
 - IF CLEARANCE IS LESS THAN 12", JACKET SEWER LINE WITH REINFORCED CONCRETE (PER HECO'S STD. 30-1030) FOR A DISTANCE OF 5' PLUS PIPE DIAMETER.
 - IF CLEARANCE IS BETWEEN 12" AND 36", JACKET SEWER LINE WITH PLAIN CONCRETE.
2. ALL FUEL PIPELINE CROSSINGS SHALL BE REVIEWED AND APPROVED BY THE COMPANY THAT OWNS AND MAINTAINS IT.
3. FOR SITUATIONS WITH 0" MINIMUM SEPARATION, A 6" SEPARATION IS RECOMMENDED.
4. CLEARANCES MEASURED FROM OUTER EDGES OR DIAMETERS OF UTILITIES. WHENEVER CONCRETE JACKETS ARE INVOLVED, CLEARANCES SHALL BE TOTAL CLEAR DISTANCE BETWEEN THE CONCRETE JACKET AND UTILITY CONCERNED.
5. 36" CLEARANCE IS REQUIRED FOR TRENCHLESS INSTALLATION WORK.

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

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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

APRIL 30, 2022
JC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HECO NOTES 1

Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)

Scale: As Noted Date: June 25, 2021

HECO NOTES: (CONTINUED)

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	122	170

9. EXCAVATIONS
WHEN TRENCH EXCAVATION IS ADJACENT TO OR BENEATH HAWAIIAN ELECTRIC'S EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR IS RESPONSIBLE FOR:
- ARRANGING FOR HAWAIIAN ELECTRIC STANDBY PERSONNEL TO OBSERVE WORK AT CONTRACTOR'S COST.
 - SHEETING, BRACING, OR OTHERWISE SUPPORTING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE AND TO PREVENT POSSIBLE SLIDES, CAVE-INS, AND SETTLEMENTS.
 - PROPERLY SUPPORTING EXISTING STRUCTURES OR FACILITIES WITH BEAMS, STRUTS, UNDER-PINNINGS, OR OTHER NECESSARY METHODS TO FULLY PROTECT IT FROM DAMAGE.
 - BACKFILLING WITH PROPER BACKFILL MATERIAL INCLUDING SPECIAL THERMAL BACKFILL WHERE EXISTING (REFER TO ENGINEERING DEPARTMENT FOR THERMAL BACKFILL SPECIFICATIONS).

10. RELOCATION OF HAWAIIAN ELECTRIC FACILITIES
ANY WORK REQUIRED TO RELOCATE OR MODIFY HAWAIIAN ELECTRIC FACILITIES SHALL BE DONE BY HAWAIIAN ELECTRIC, OR BY THE CONTRACTOR UNDER HAWAIIAN ELECTRIC'S SUPERVISION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION, AND SHALL PROVIDE NECESSARY SUPPORT FOR HAWAIIAN ELECTRIC'S WORK, WHICH MAY INCLUDE, BUT NOT BE LIMITED TO, STAKING OF POLE/ANCHOR LOCATIONS, IDENTIFYING RIGHT OF WAY AND PROPERTY LINES, EXCAVATION AND BACKFILL, PERMITS AND TRAFFIC CONTROL, BARRICADING, AND RESTORATION OF PAVEMENT, SIDEWALKS, AND OTHER FACILITIES.

ALL COSTS ASSOCIATED WITH ANY RELOCATION OR MODIFICATION (EITHER TEMPORARY OR PERMANENT) FOR THE CONVENIENCE OF THE CONTRACTOR, OR TO ENABLE THE CONTRACTOR TO PERFORM HIS WORK IN A SAFE AND EXPEDITIOUS MANNER IN FULFILLING HIS CONTRACT OBLIGATIONS SHALL BE BORNE BY THE CONTRACTOR.

11. CONFLICTS
ANY REDESIGN OR RELOCATION OF HAWAIIAN ELECTRIC'S FACILITIES NOT SHOWN ON THE PLANS MAY BE CAUSE FOR LENGTHY DELAYS. THE CONTRACTOR ACKNOWLEDGES THAT HAWAIIAN ELECTRIC IS NOT RESPONSIBLE FOR ANY DELAY OR DAMAGE THAT MAY ARISE AS A RESULT OF ANY CONFLICTS DISCOVERED OR IDENTIFIED WITH RESPECT TO THE LOCATION OR CONSTRUCTION OF HAWAIIAN ELECTRIC'S ELECTRICAL FACILITIES IN THE FIELD, REGARDLESS OF WHETHER THE CONTRACTOR HAS MET THE REQUESTED MINIMUM ADVANCE NOTICES. IN ORDER TO MINIMIZE ANY DELAY OR IMPACT ARISING FROM SUCH CONFLICTS, HAWAIIAN ELECTRIC SHOULD BE NOTIFIED IMMEDIATELY UPON DISCOVERY OR IDENTIFICATION OF SUCH CONFLICT.

12. DAMAGE TO HAWAIIAN ELECTRIC FACILITIES
THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL HAWAIIAN ELECTRIC SURFACE AND

SUBSURFACE UTILITIES AND SHALL BE RESPONSIBLE FOR ANY DAMAGES TO HAWAIIAN ELECTRIC'S FACILITIES AS A RESULT OF HIS OPERATIONS. THE CONTRACTOR SHALL IMMEDIATELY REPORT SUCH DAMAGES OR ANY HAZARDOUS CONDITIONS RELATED TO HAWAIIAN ELECTRIC'S LINES TO HAWAIIAN ELECTRIC'S TROUBLE DISPATCHER AT 548-7961. REPAIR WORK SHALL BE DONE BY HAWAIIAN ELECTRIC OR BY THE CONTRACTOR UNDER HAWAIIAN ELECTRIC'S SUPERVISION. COSTS FOR DAMAGES TO HAWAIIAN ELECTRIC'S FACILITIES SHALL BE BORNE BY THE CONTRACTOR.

IN CASE OF DAMAGE OR SUSPECTED DAMAGE TO HAWAIIAN ELECTRIC'S FUEL PIPELINE, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY HAWAIIAN ELECTRIC'S SECURITY COMMAND CENTER AT 543-7685 (A 24-HOUR NUMBER) SO HAWAIIAN ELECTRIC PERSONNEL CAN SECURE THE DAMAGED SECTION AND REPORT ANY OIL SPILLS TO THE PROPER AUTHORITIES. ALL COSTS ASSOCIATED WITH THE DAMAGE, REPAIR, AND OIL SPILL CLEANUP SHALL BE BORNE BY THE CONTRACTOR.

13. HAWAIIAN ELECTRIC STAND-BY PERSONNEL
THE CONTRACTOR MAY REQUEST HAWAIIAN ELECTRIC TO PROVIDE AN INSPECTOR TO STAND-BY DURING CONSTRUCTION NEAR HAWAIIAN ELECTRIC'S FACILITIES. THE COST OF SUCH INSPECTION WILL BE CHARGED TO THE CONTRACTOR.

THE CONTRACTOR SHALL CALL HAWAIIAN ELECTRIC'S CUSTOMER INSTALLATIONS DEPARTMENT AT 543-7846 A MINIMUM OF TWO (2) MONTHS IN ADVANCE TO ARRANGE FOR HAWAIIAN ELECTRIC STAND-BY PERSONNEL.

14. CLEARANCES
THE FOLLOWING CLEARANCES SHALL BE MAINTAINED BETWEEN HAWAIIAN ELECTRIC'S DUCTLINE AND ALL ADJACENT STRUCTURES (CHARTED AND UNCHARTED) IN THE TRENCH:

[REFER TO TABLES]

THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER & HAWAIIAN ELECTRIC OF ANY HEAT SOURCES (POWER CABLE DUCT BANK, STEAMLINE, ETC.) ENCOUNTERED THAT ARE NOT PROPERLY IDENTIFIED ON THE DRAWING.

15. INDEMNITY
THE CONTRACTOR SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS HAWAIIAN ELECTRIC FROM AND AGAINST ALL LOSSES, DAMAGES, CLAIMS, AND ACTIONS, INCLUDING BUT NOT LIMITED TO REASONABLE ATTORNEY'S FEES AND COSTS BASED UPON OR ARISING OUT OF DAMAGE TO PROPERTY OR INJURIES TO PERSONS, OR OTHER TORTIOUS ACTS CAUSED OR CONTRIBUTED TO BY CONTRACTOR OR ANYONE ACTING UNDER ITS DIRECTION OR CONTROL OR ON ITS BEHALF; PROVIDED CONTRACTOR'S INDEMNITY SHALL NOT BE APPLICABLE TO ANY LIABILITY BASED UPON THE SOLE NEGLIGENCE

OF HAWAIIAN ELECTRIC.

ADDITIONAL NOTES WHEN WORK INVOLVES CONSTRUCTION OF HAWAIIAN ELECTRIC FACILITIES

16. SCHEDULE
CONTRACTOR SHALL FURNISH HIS CONSTRUCTION SCHEDULE SIX (6) MONTHS PRIOR TO STARTING WORK ON HAWAIIAN ELECTRIC FACILITIES. CONTRACTOR SHALL GIVE HAWAIIAN ELECTRIC, IN WRITING, THREE (3) MONTHS NOTICE TO PROCEED WITH HAWAIIAN ELECTRIC'S PORTION OF WORK.

17. AUTHORITY
ALL CONSTRUCTION, RESTORATION WORK, AND INSPECTION SHALL BE SUBJECT TO WHICHEVER GOVERNMENTAL AGENCY HAS AUTHORITY OVER THE WORK.

18. SPECIFICATIONS
CONSTRUCTION OF HAWAIIAN ELECTRIC'S UNDERGROUND FACILITIES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST REVISIONS OF HAWAIIAN ELECTRIC SPECIFICATIONS CS7001, CS7003, CS7202, CS9301, AND CS9401 AND APPLICABLE HAWAIIAN ELECTRIC STANDARDS.

19. CONSTRUCTION
CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT, AND SERVICES TO PROPERLY PERFORM AND FULLY COMPLETE ALL WORK SHOWN ON THE CONTRACT, DRAWINGS, AND SPECIFICATIONS. ALL MATERIALS SHALL BE NEW AND MANUFACTURED IN THE UNITED STATES OF AMERICA. ALL MANHOLE, HANDHOLE, AND DUCTLINE INSTALLATIONS SHALL BE INSPECTED AND APPROVED BY HAWAIIAN ELECTRIC PRIOR TO EXCAVATION AND PRIOR TO PLACING CONCRETE. CONTRACTOR SHALL NOTIFY HAWAIIAN ELECTRIC'S INSPECTION DIVISION AT 543-4329 AT LEAST FIVE (5) WORKING DAYS PRIOR TO INSTALLING FACILITIES OR PLACING CONCRETE.

CONTRACTOR TO COORDINATE WORK TO BREAK INTO HAWAIIAN ELECTRIC'S EXISTING ELECTRICAL FACILITIES WITH HAWAIIAN ELECTRIC'S INSPECTION DIVISION AT 543-4329 AT LEAST TEN (10) WORKING DAYS IN ADVANCE.

20. STAKEOUT
THE CONTRACTOR SHALL ARRANGE FOR TONEOUTS OF ALL UNDERGROUND FACILITIES AND SHALL STAKEOUT ALL PROPOSED HAWAIIAN ELECTRIC FACILITIES WITHIN THE PROJECT AREA SO AS TO NOT CONFLICT WITH ANY UTILITY (EXISTING OR PROPOSED) AND ANY PROPOSED CONSTRUCTION OR IMPROVEMENT WORK FOR VERIFICATION BY HAWAIIAN ELECTRIC BEFORE PROCEEDING WITH HAWAIIAN ELECTRIC WORK.

21. DUCTLINES
ALL DUCTLINE INSTALLATIONS SHALL BE PVC SCHEDULE 40 ENCASED IN CONCRETE, UNLESS OTHERWISE NOTED. ALL COMPLETED DUCTLINES SHALL BE MANDREL TESTED

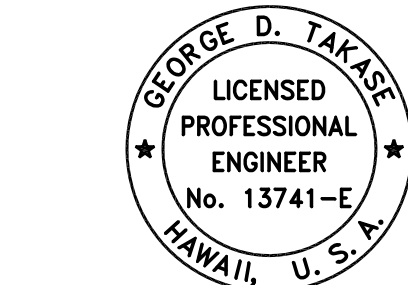
BY THE CONTRACTOR IN THE PRESENCE OF HAWAIIAN ELECTRIC'S INSPECTOR USING HAWAIIAN ELECTRIC'S STANDARD PRACTICE. THE CONTRACTOR SHALL INSTALL 1800# TENSILE STRENGTH MULETAPE PULL LINE IN ALL COMPLETED DUCTLINES AFTER MANDREL TESTING IS COMPLETE.

22. JOINT POLE REMOVAL
THE LAST JOINT POLE OCCUPANT OFF THE POLES SHALL REMOVE THE POLES.

23. AS-BUILT PLANS
THE CONTRACTOR SHALL PROVIDE HAWAIIAN ELECTRIC WITH A SET OF ELECTRONIC AND HARD COPY PLANS OF EACH SHEET SHOWING THE OFFSETS, STATIONING, AND VERTICAL ELEVATION OF THE DUCT LINE(S) CONSTRUCTED.

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

PROJECT: VAOA PROJECTS/2803A/UNIT 1, E004_2803A-HECO NOTES.DWG, JUL 19, 2021-7:56 AM



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APRIL 30, 2022
LIC. EXP. DATE

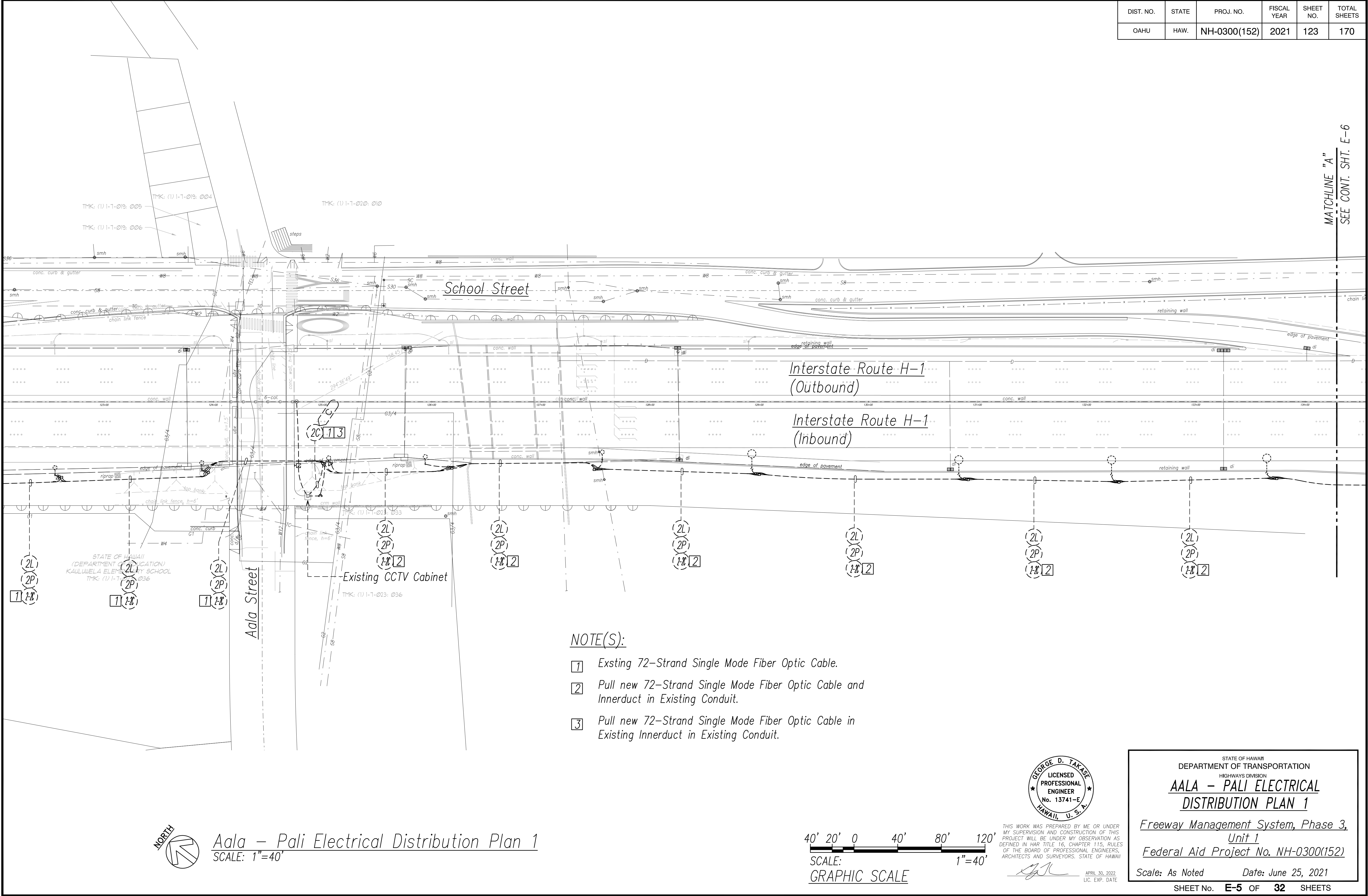
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HECO NOTES 2

Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)

Scale: As Noted Date: June 25, 2021

SHEET NO. **E-4** OF **32** SHEETS

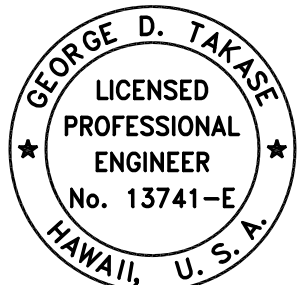
DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	123	170



MATCHLINE "A"
SEE CONT. SHT. E-6

NOTE(S):

- 1 Existing 72-Strand Single Mode Fiber Optic Cable.
- 2 Pull new 72-Strand Single Mode Fiber Optic Cable and Innerduct in Existing Conduit.
- 3 Pull new 72-Strand Single Mode Fiber Optic Cable in Existing Innerduct in Existing Conduit.



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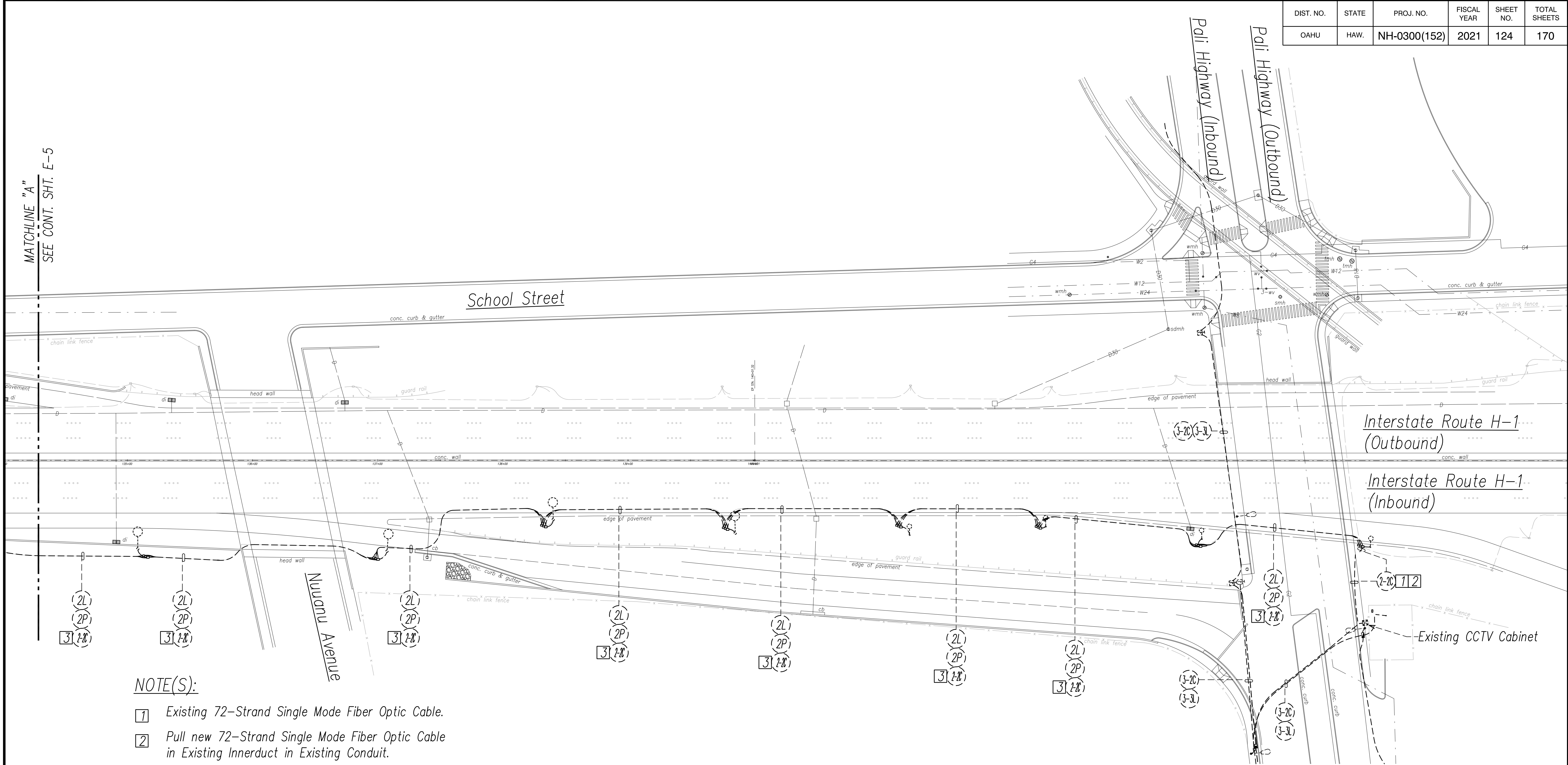
APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**AALA - PALI ELECTRICAL
DISTRIBUTION PLAN 1**
*Freeway Management System, Phase 3,
Unit 1*
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. **E-5** OF **32** SHEETS

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

PN2\VC40\PROJECTS\21803A\UNIT 1\E005_21803A_AALA TO PALI.DWG Jul 19, 2021-8:00 AM

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	124	170



MATCHLINE "A"
SEE CONT. SHT. E-5

NOTE(S):

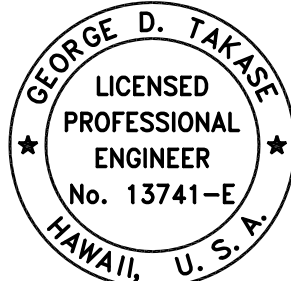
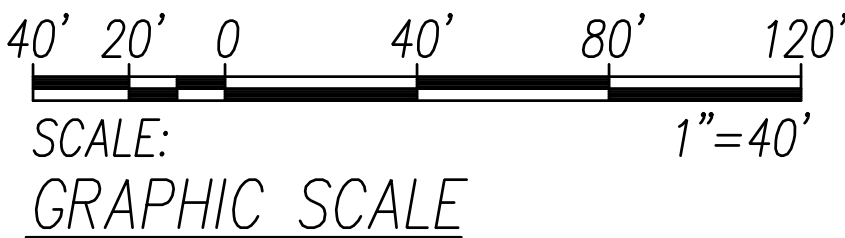
- 1 Existing 72-Strand Single Mode Fiber Optic Cable.
- 2 Pull new 72-Strand Single Mode Fiber Optic Cable in Existing Innerduct in Existing Conduit.
- 3 Pull new 72-Strand Single Mode Fiber Optic Cable and Innerduct in Existing Conduit.

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

PN2\A40\PROJECTS\2803A\UNIT 1\E008_2803A_ALA TO PALI DIST PLAN 02.DWG Jul 19, 2021-8:01 AM



Aala - Pali Electrical Distribution Plan 2
SCALE: 1"=40'

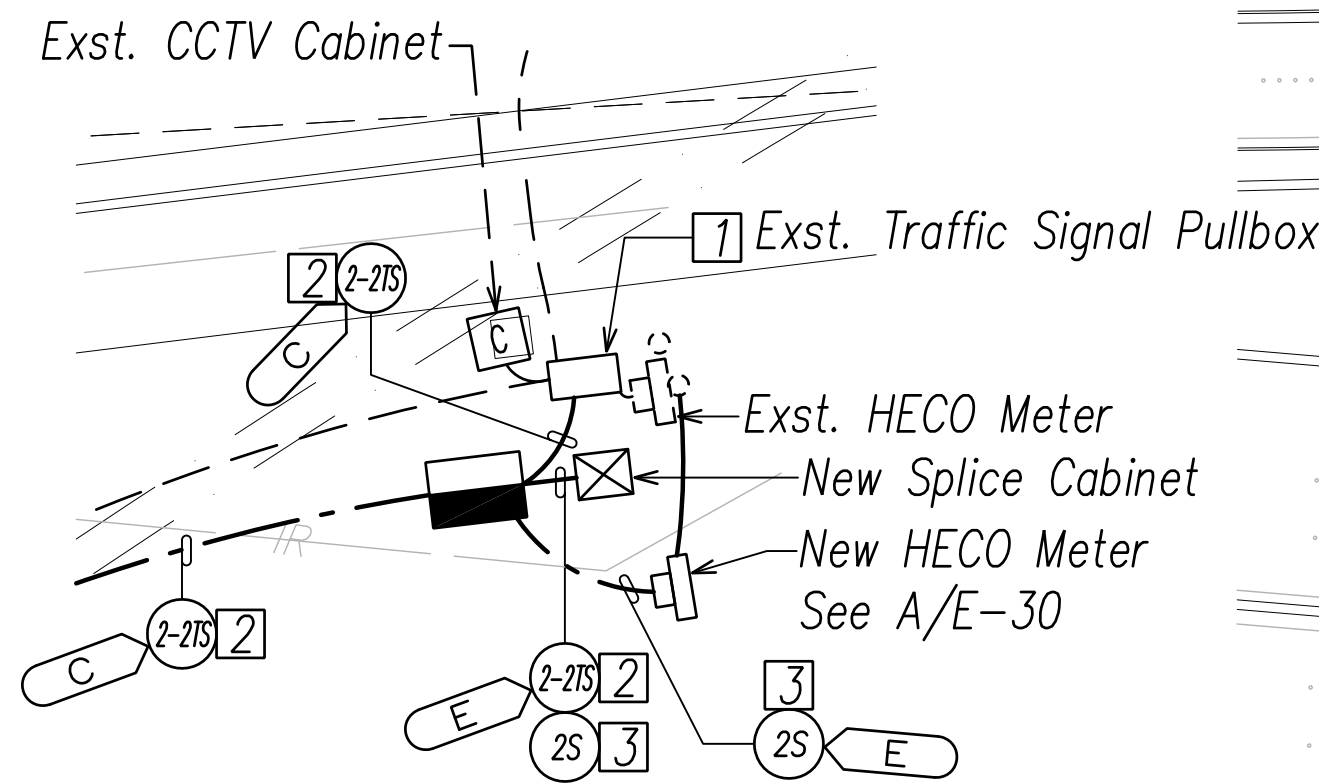


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APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
AALA - PALI ELECTRICAL
DISTRIBUTION PLAN 2
Freeway Management System, Phase 3, Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. **E-6** OF **32** SHEETS

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	125	170

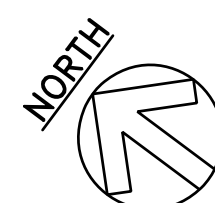


Enlarged Plan
SCALE: 1"=10'

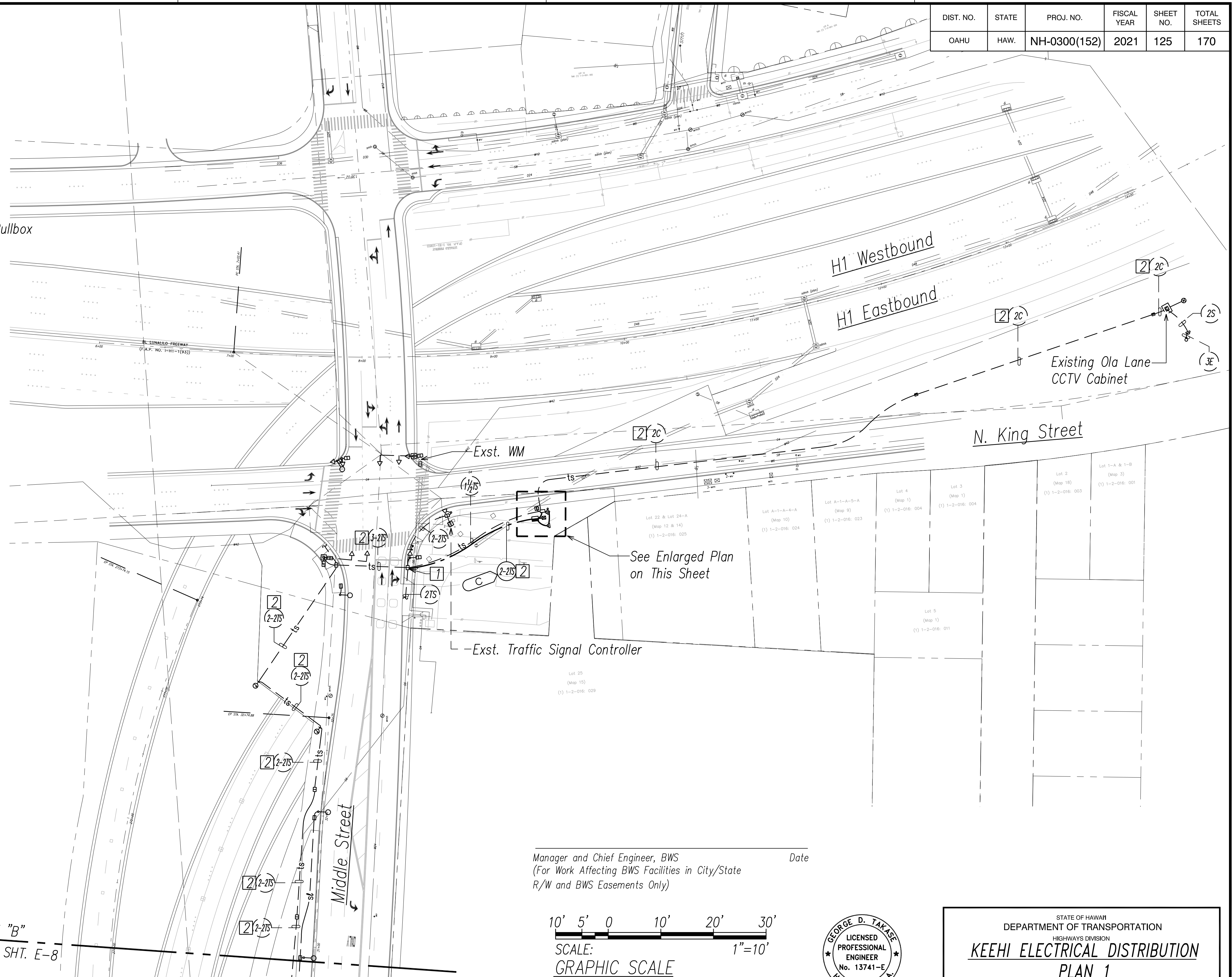
NOTE(S):

- 1 Penetrate Existing Pullbox to Accommodate Conduit Installation.
- 2 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
- 3 Pull 2#8 #10 Gnd in New Conduit.

MATCHLINE "B"
SEE CONT. SHT. E-8



Keehi Electrical Distribution Plan 1
SCALE: 1"=40'

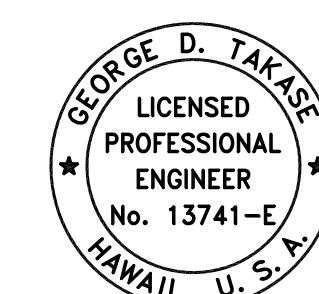


Manager and Chief Engineer, BWS
(For Work Affecting BWS Facilities in City/State
R/W and BWS Easements Only)

Date

10' 5' 0 10' 20' 30'
SCALE: 1"=10'
GRAPHIC SCALE

40' 20' 0 40' 80' 120'
SCALE: 1"=40'
GRAPHIC SCALE



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APRIL 30, 2022
LIC. EXP. DATE

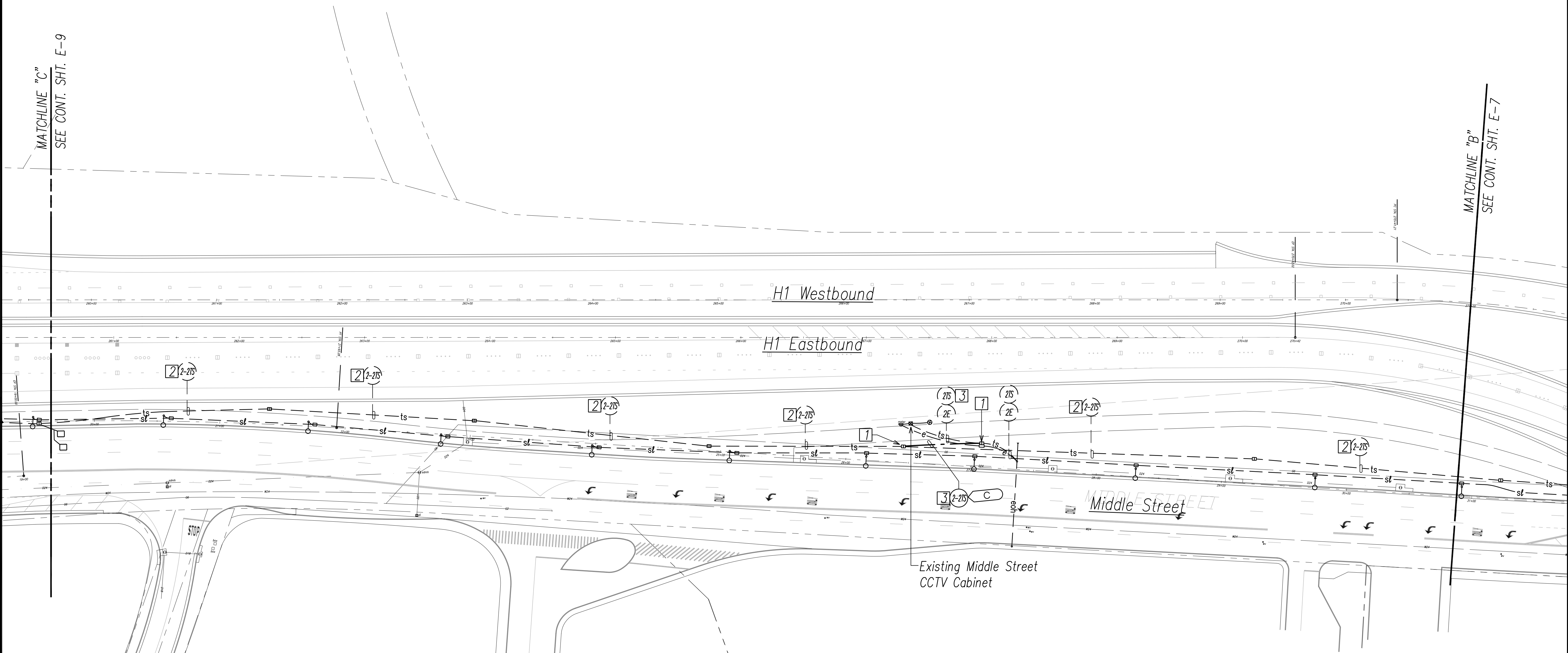
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**KEEHI ELECTRICAL DISTRIBUTION
PLAN 1**

Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)

Scale: As Noted Date: June 25, 2021

SHEET NO. E-7 OF 32 SHEETS

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	126	170

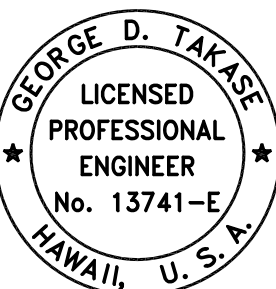
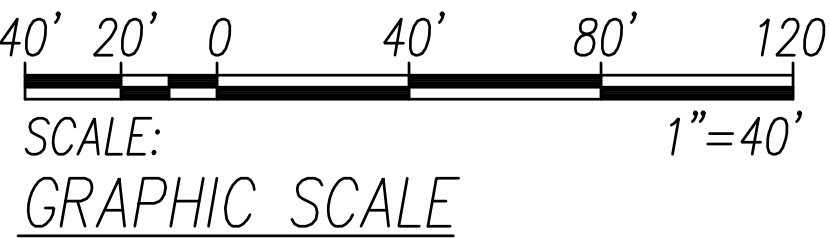


NOTE(S):

- 1 Penetrate Existing Pullbox to Accommodate Conduit Installation.
- 2 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
- 3 Pull New Two 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.



Keahi Electrical Distribution Plan 2
SCALE: 1"=40'



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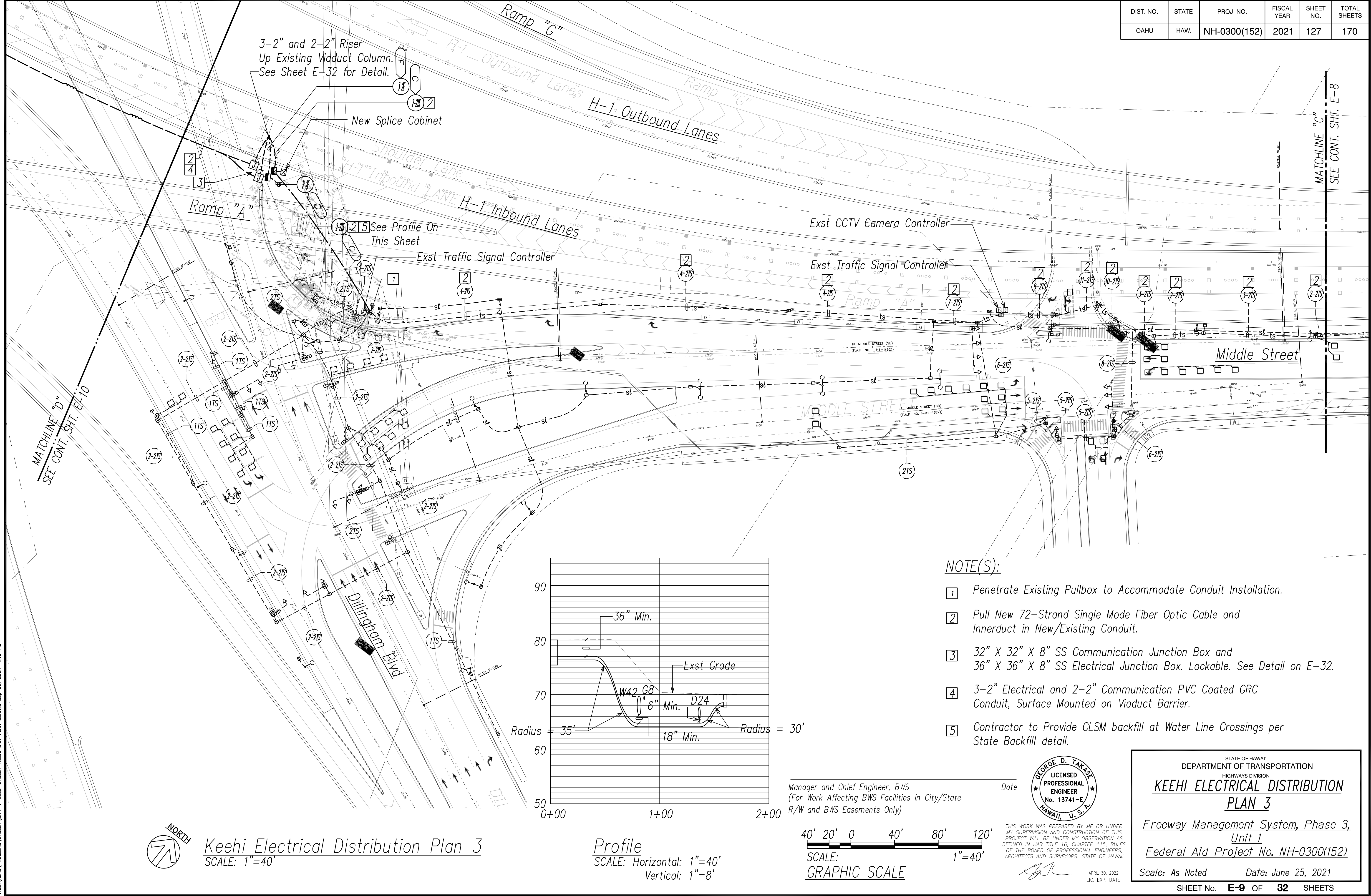
APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KEEHI ELECTRICAL DISTRIBUTION
PLAN 2
Freeway Management System, Phase 3, Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. **E-8** OF **32** SHEETS

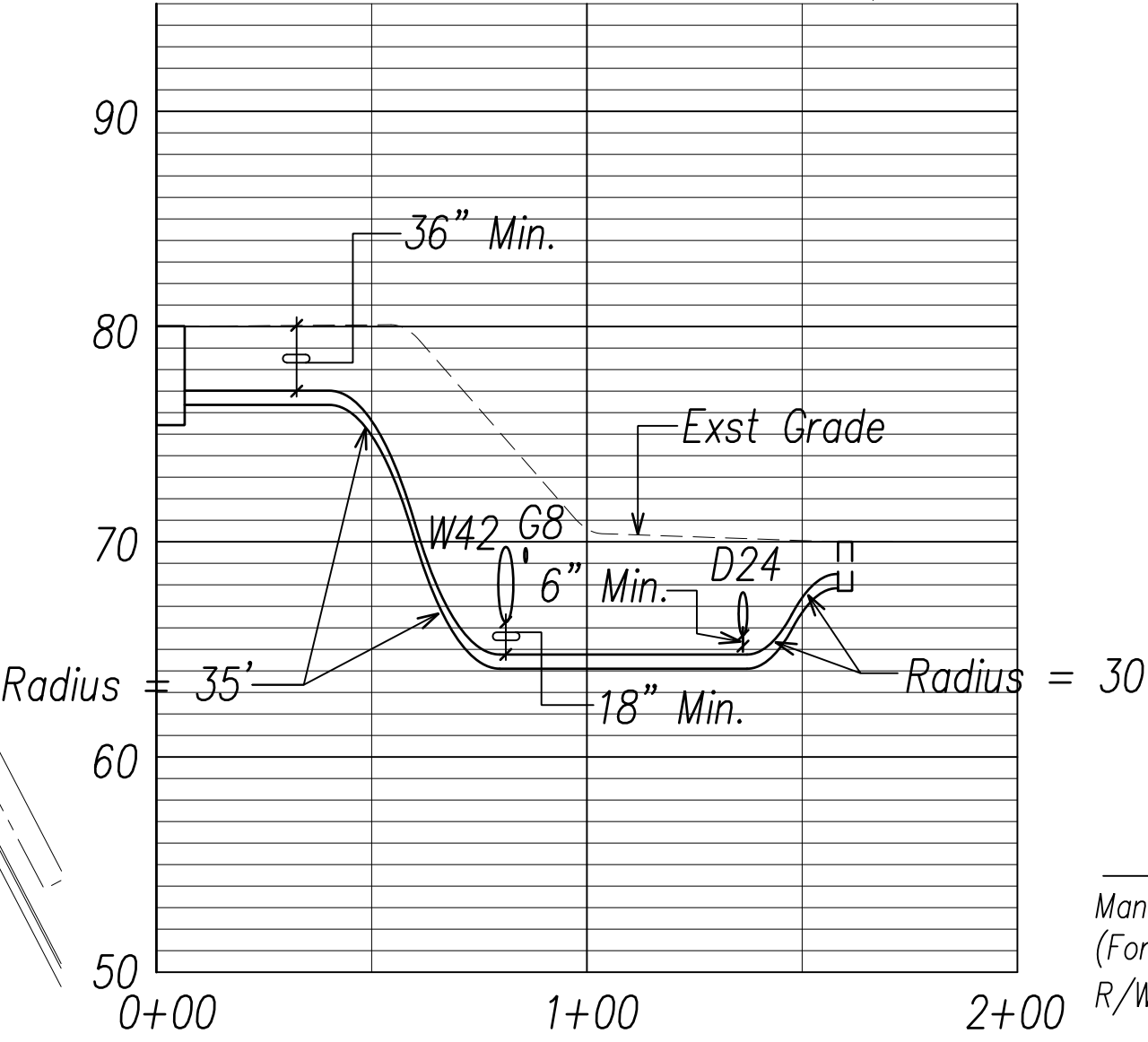
SURVEY PLOTTED BY	DATE
DRAWN BY	"
TRACED BY	"
DESIGNED BY	"
QUANTITIES BY	"
CHECKED BY	"
No.	

P:\2\4040\PROJECTS\28034\UNIT 1\E008_28034_KEEHI DIST PLAN 02.DWG Jul 19, 2021-8:03 AM

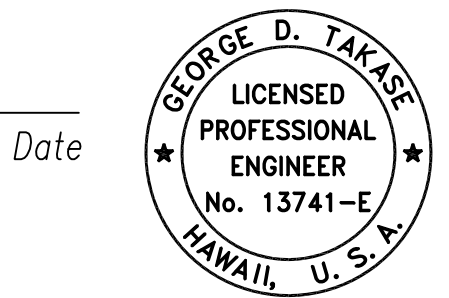
DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	127	170



- NOTE(S):
- 1 Penetrate Existing Pullbox to Accommodate Conduit Installation.
 - 2 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
 - 3 32" X 32" X 8" SS Communication Junction Box and 36" X 36" X 8" SS Electrical Junction Box. Lockable. See Detail on E-32.
 - 4 3-2" Electrical and 2-2" Communication PVC Coated GRC Conduit, Surface Mounted on Viaduct Barrier.
 - 5 Contractor to Provide CLSM backfill at Water Line Crossings per State Backfill detail.



Manager and Chief Engineer, BWS
(For Work Affecting BWS Facilities in City/State
R/W and BWS Easements Only)



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APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KEEHI ELECTRICAL DISTRIBUTION
PLAN 3
Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. **E-9** OF **32** SHEETS

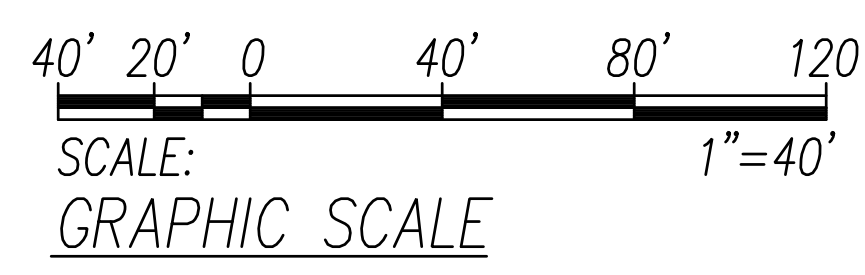
SURVEY PLOTTED BY	DATE
DRAWN BY	" "
TRACED BY	" "
DESIGNED BY	" "
QUANTITIES BY	" "
CHECKED BY	" "
No.	

PR2\ACAD\PROJECTS\218034\UNIT 1\E09-218034-KEEHI DIST PLAN 03.DWG Sep 02, 2021-4:46 PM

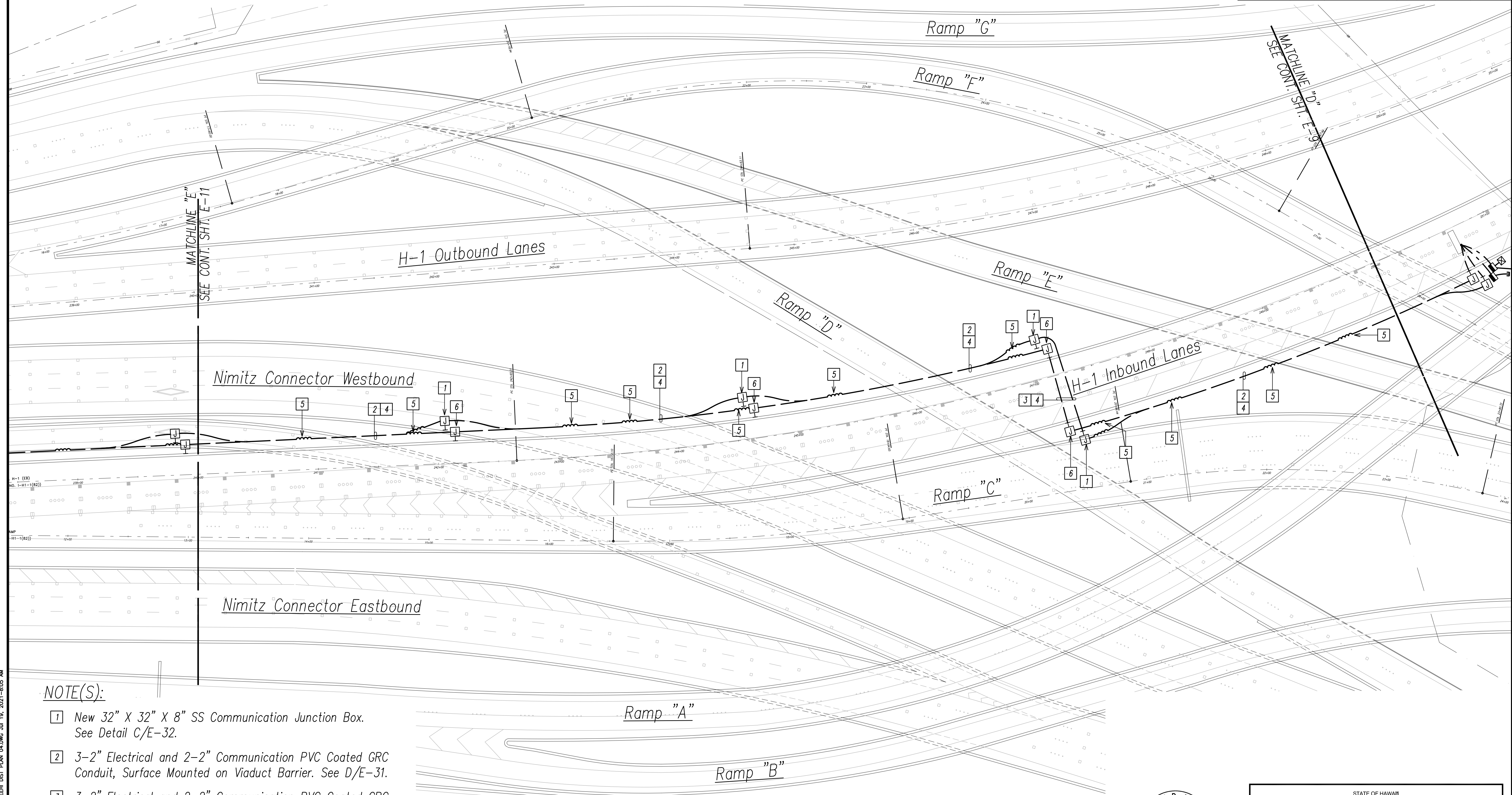


Keahi Electrical Distribution Plan 3
SCALE: 1"=40'

Profile
SCALE: Horizontal: 1"=40'
Vertical: 1"=8'



DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	128	170

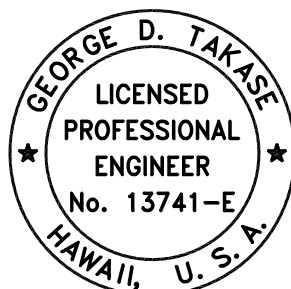
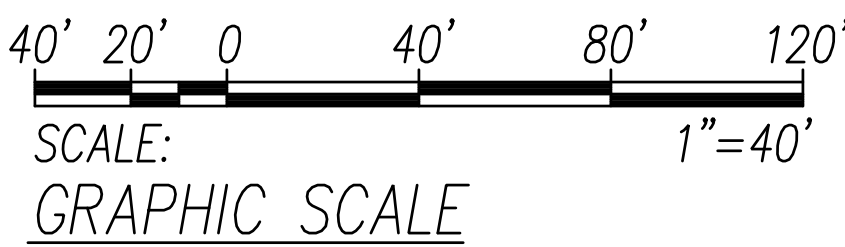


NOTE(S):

- 1 New 32" X 32" X 8" SS Communication Junction Box. See Detail C/E-32.
- 2 3-2" Electrical and 2-2" Communication PVC Coated GRC Conduit, Surface Mounted on Viaduct Barrier. See D/E-31.
- 3 3-2" Electrical and 2-2" Communication PVC Coated GRC Conduit, Mounted to Concrete Pier Below. Do Not Mount to Prestressed Concrete Beams.
- 4 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
- 5 Provide Flex Conduit at Viaduct Construction Joint.
- 6 New 36" X 36" X 8" SS Electrical Junction Box. See Detail C/E-32.



Keehi Electrical Distribution Plan 4
SCALE: 1"=40'



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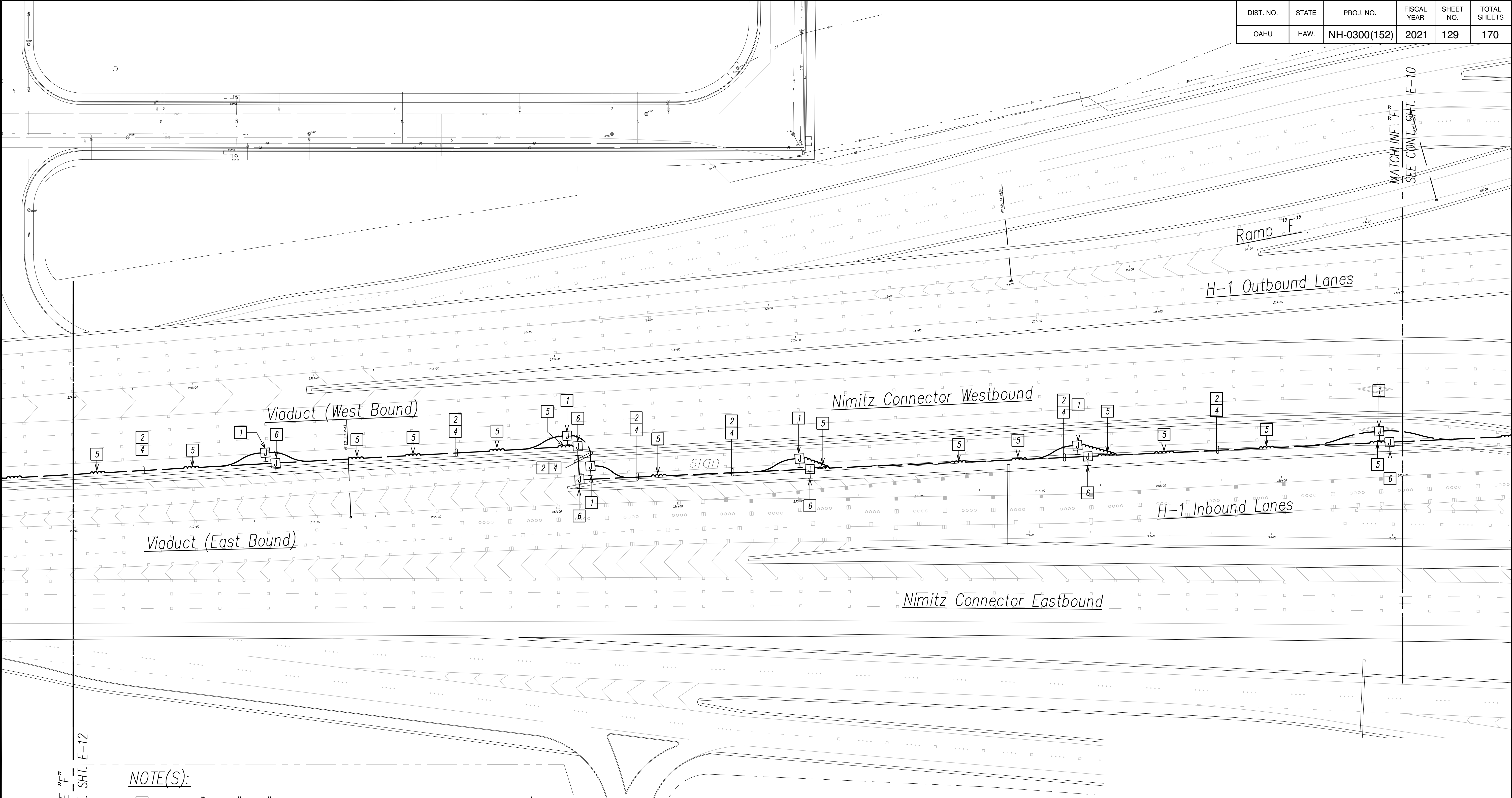
APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KEEHI ELECTRICAL DISTRIBUTION
PLAN 4
Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET No. **E-10** OF **32** SHEETS

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

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DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	129	170



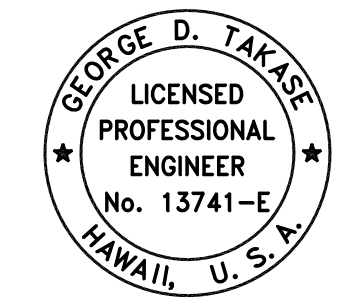
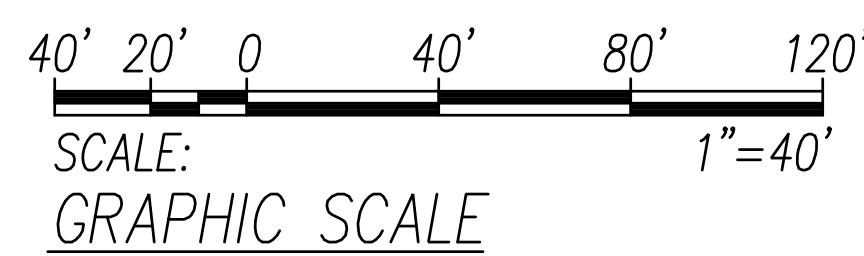
MATCHLINE "F"
SEE CONT. SHT. E-12

NOTE(S):

- 1 New 32" X 32" X 8" SS Communication Junction Box. See Detail C/E-32.
- 2 3-2" Electrical and 2-2" Communication PVC Coated GRC Conduit, Surface Mounted on Viaduct Barrier.
- 3 3-2" Electrical PVC Coated GRC Conduit, Mounted to Concrete Pier Below. Do Not Mount to Prestressed Concrete Beams.
- 4 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
- 5 Provide Flex Conduit at Viaduct Construction Joint.
- 6 New 36" X 36" X 8" SS Electrical Junction Box. See Detail C/E-32.



Keahi Electrical Distribution Plan 5
SCALE: 1"=40'



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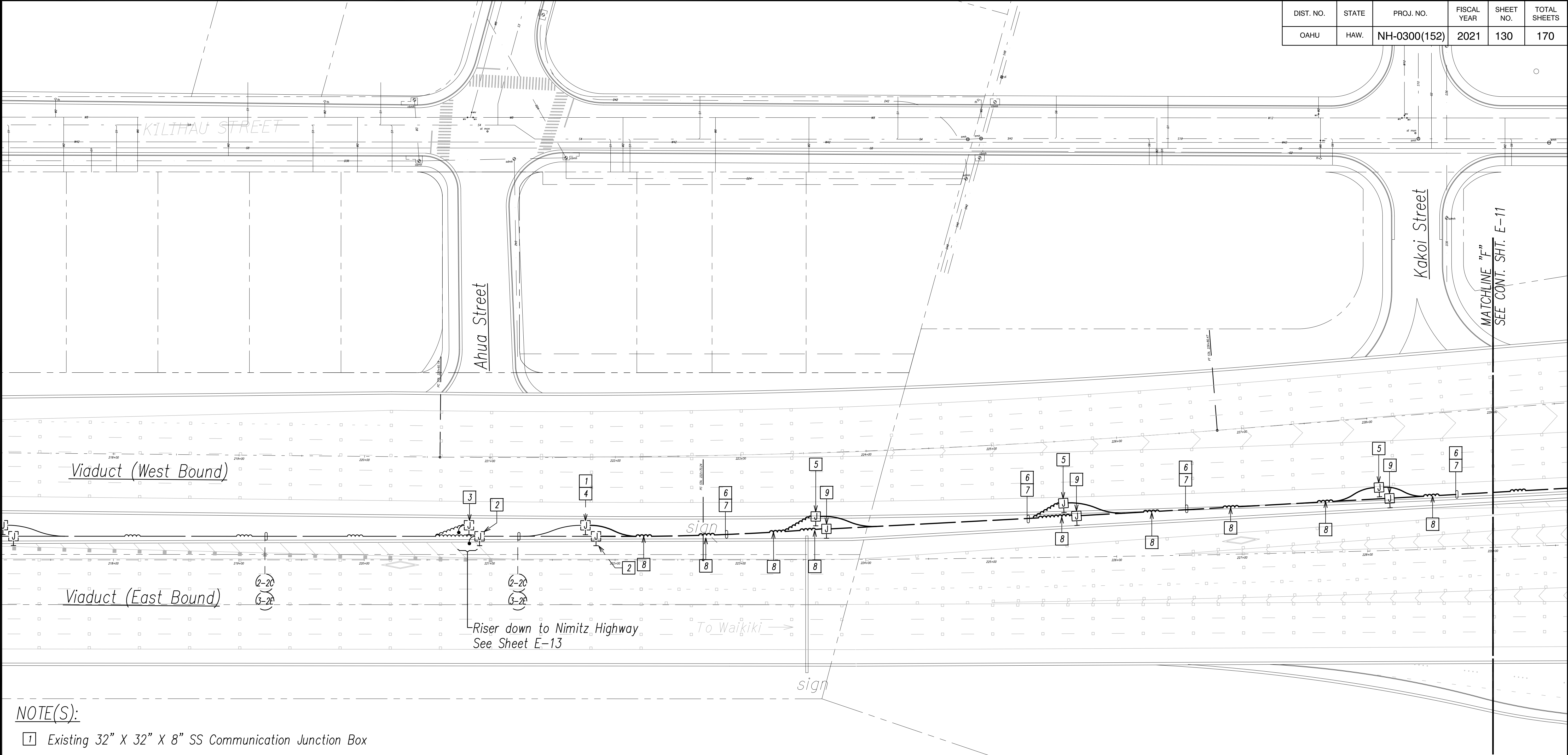
APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KEEHI ELECTRICAL DISTRIBUTION
PLAN 5
Freeway Management System, Phase 3, Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. **E-11** OF **32** SHEETS

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

PN2\VC40\PROJECTS\218034\UNIT 1\ED1.1_218034_KEEHI DIST PLAN 05.DWG Jul 19, 2021-8:05 AM

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	130	170

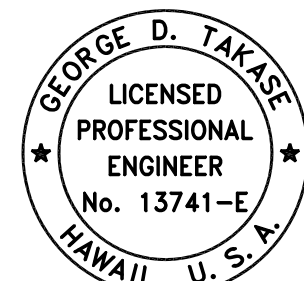
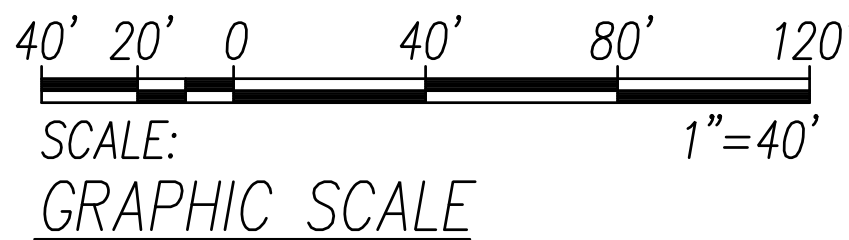


NOTE(S):

- Existing 32" X 32" X 8" SS Communication Junction Box
- Existing 36" X 36" X 8" SS Electrical Junction Box
- Existing 32" X 32" X 12" SS Communication Junction Box
- Penetrate Existing Junction Box for Conduit Installation.
- New 32" X 32" X 8" SS Communication Junction Box.
See Detail C/E-32.
- 3-2" Electrical and 2-2" Communication PVC Coated GRC Conduit, Surface Mounted on Viaduct Barrier.
- Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
- Provide Flex Conduit at Viaduct Construction Joint.
- New 36" X 36" X 8" SS Electrical Junction Box
See Detail C/E-32.



Keehi Electrical Distribution Plan 6
SCALE: 1"=40'

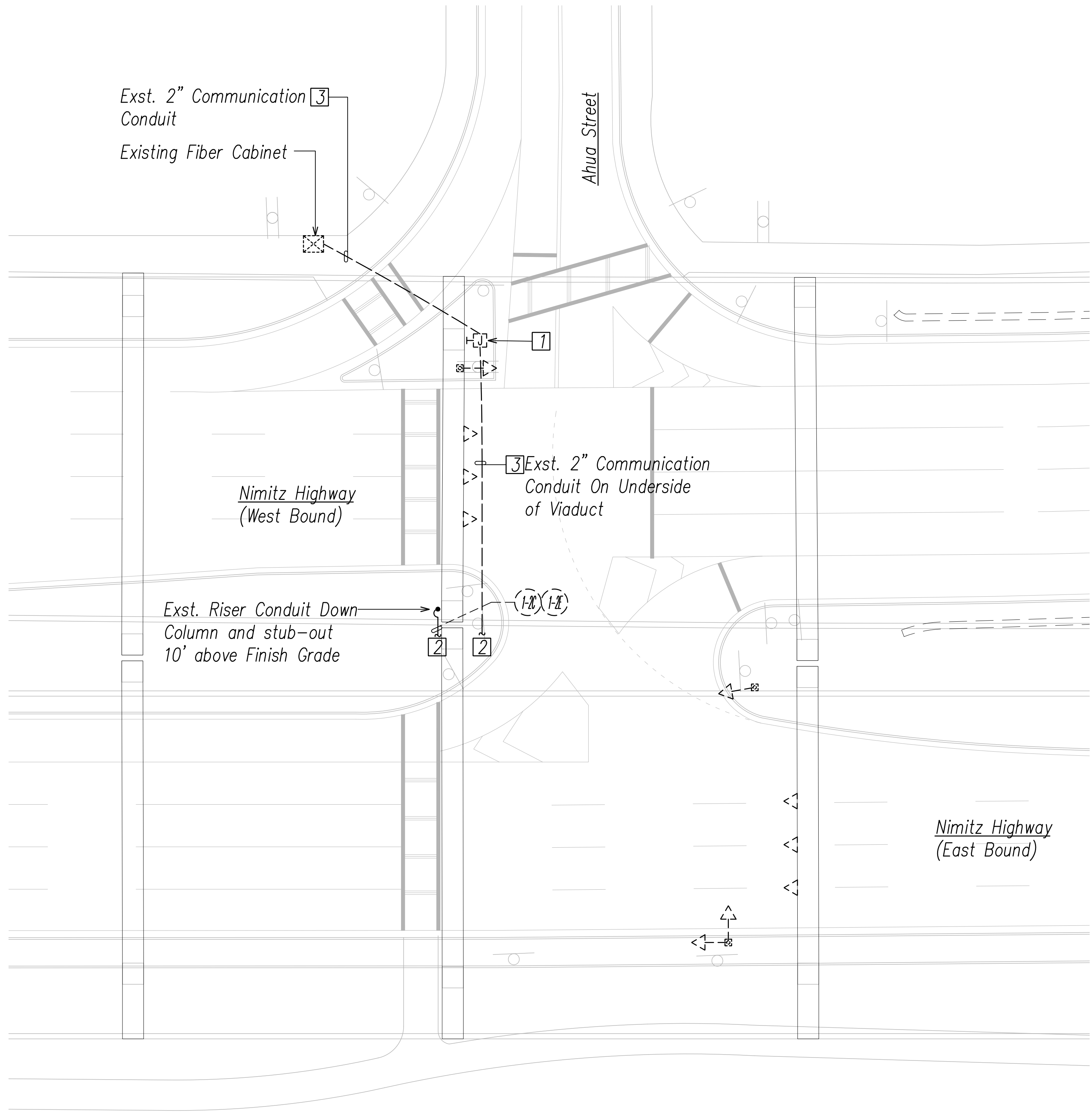


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APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
KEEHI ELECTRICAL DISTRIBUTION
PLAN 6
*Freeway Management System, Phase 3,
Unit 1*
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. **E-12** OF **32** SHEETS

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	131	170



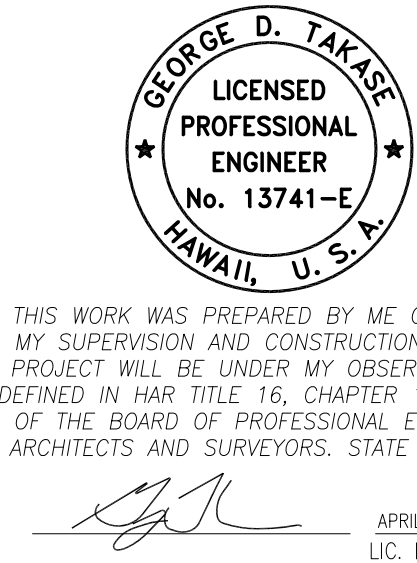
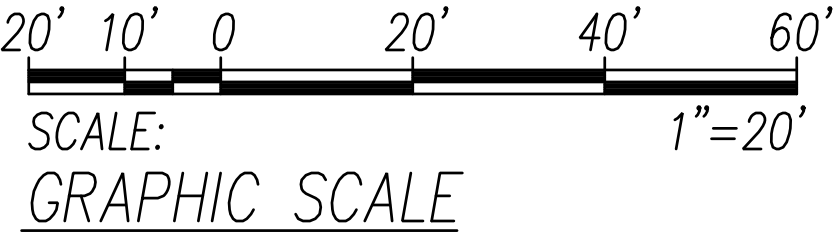
- NOTE(S):
- 1 Existing 24" x 24" SS Junction Box with Homerun to Existing Fiber Cabinet.
 - 2 Continuation from Junction Box on Sheet E-12.
 - 3 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in Existing Conduit.

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

P:\2\4240\PROJECTS\218034\UNIT_1\ED13_218034_AHUA_INTERSECTION.DWG Jul 19, 2021-8:07 AM



Ahua Distribution Plan
SCALE: 1"=20'



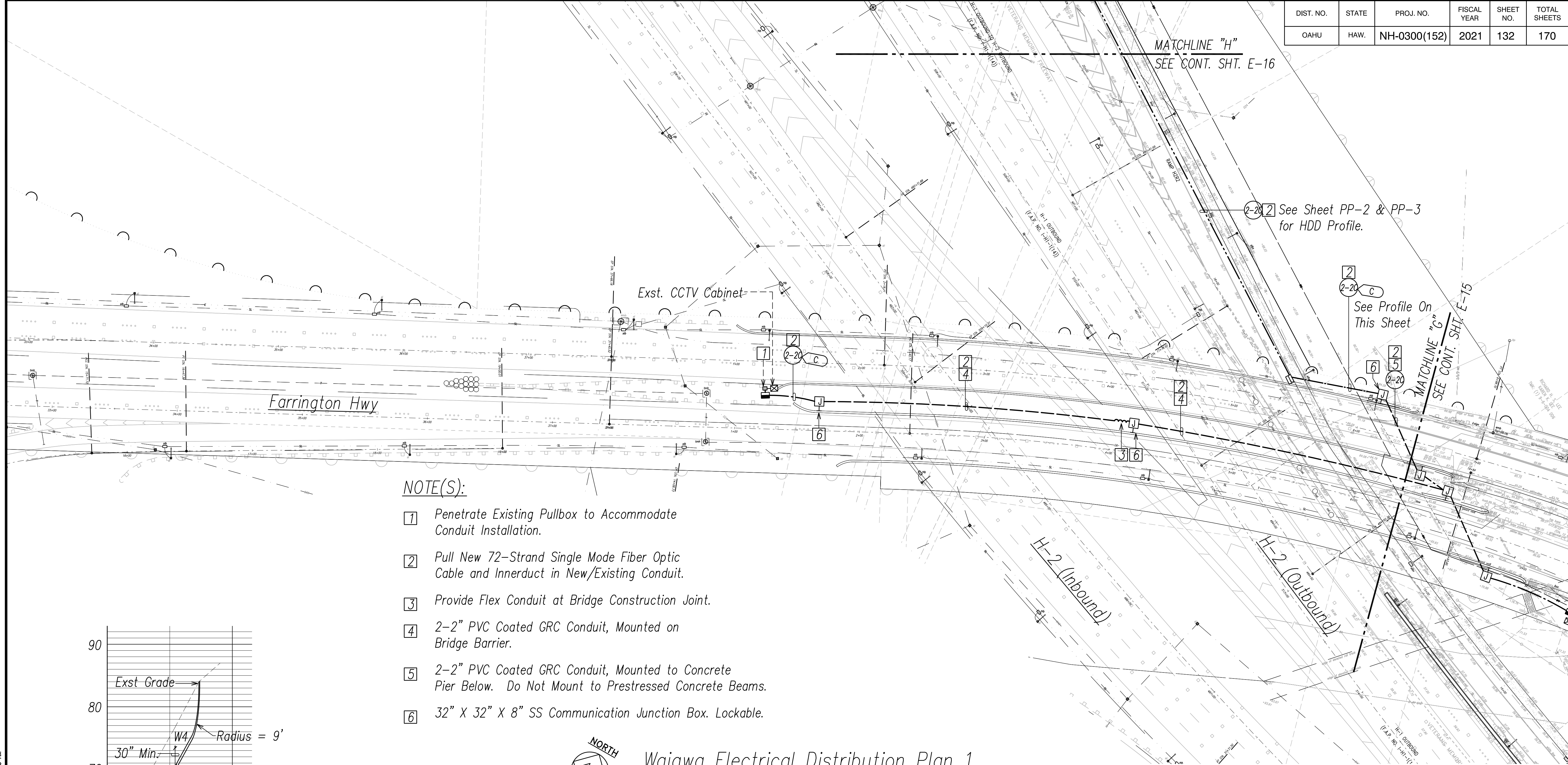
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
AHUA DISTRIBUTION PLAN

Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)

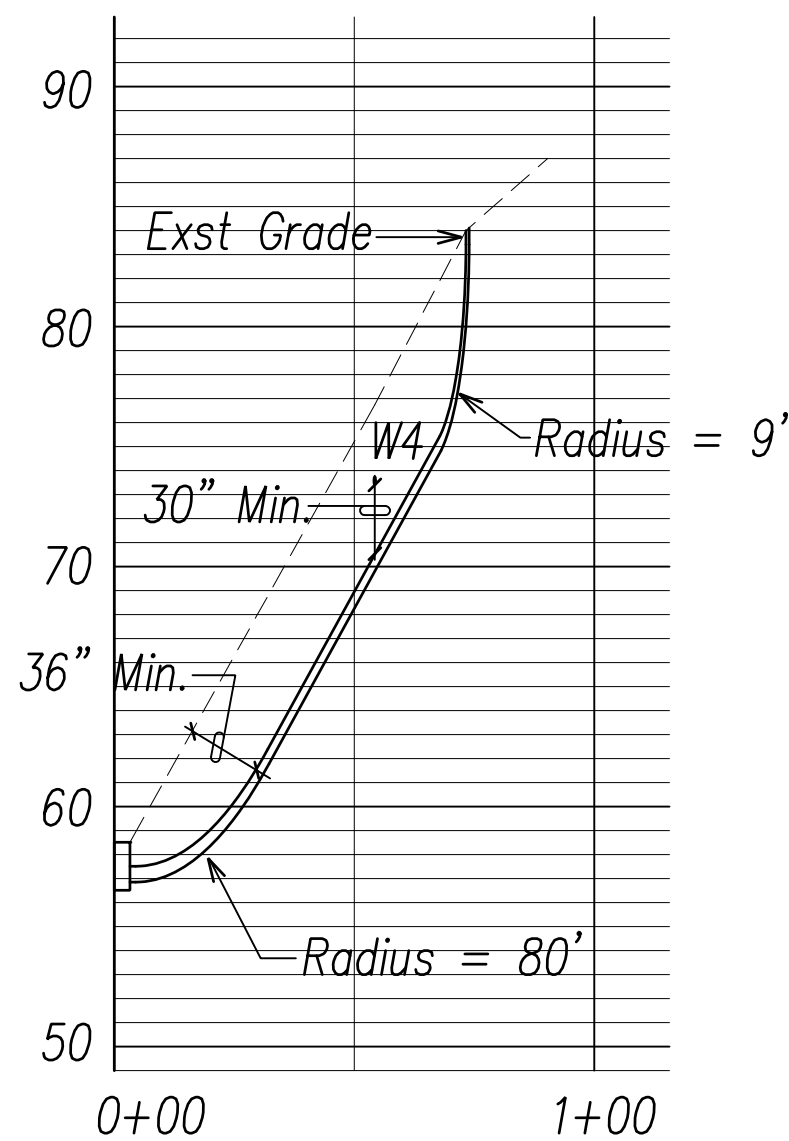
Scale: As Noted Date: June 25, 2021

SHEET No. **E-13** OF **32** SHEETS

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	132	170



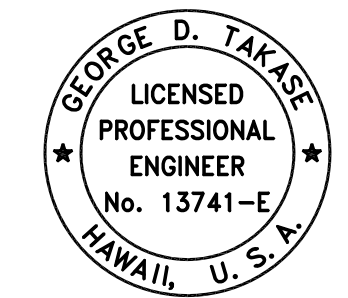
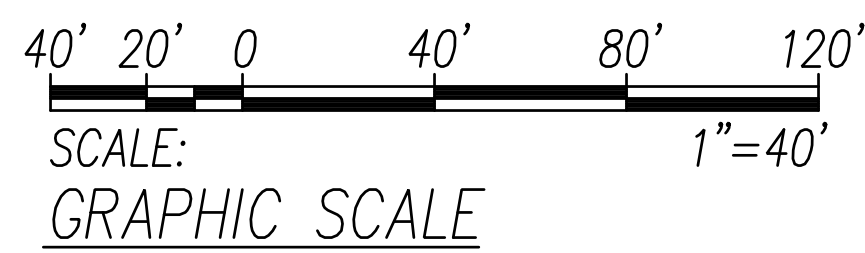
- NOTE(S):
- 1 Penetrate Existing Pullbox to Accommodate Conduit Installation.
 - 2 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
 - 3 Provide Flex Conduit at Bridge Construction Joint.
 - 4 2-2" PVC Coated GRC Conduit, Mounted on Bridge Barrier.
 - 5 2-2" PVC Coated GRC Conduit, Mounted to Concrete Pier Below. Do Not Mount to Prestressed Concrete Beams.
 - 6 32" X 32" X 8" SS Communication Junction Box. Lockable.



Profile
SCALE: Horizontal: 1"=40'
Vertical: 1"=8'



Waiawa Electrical Distribution Plan 1
SCALE: 1"=40'



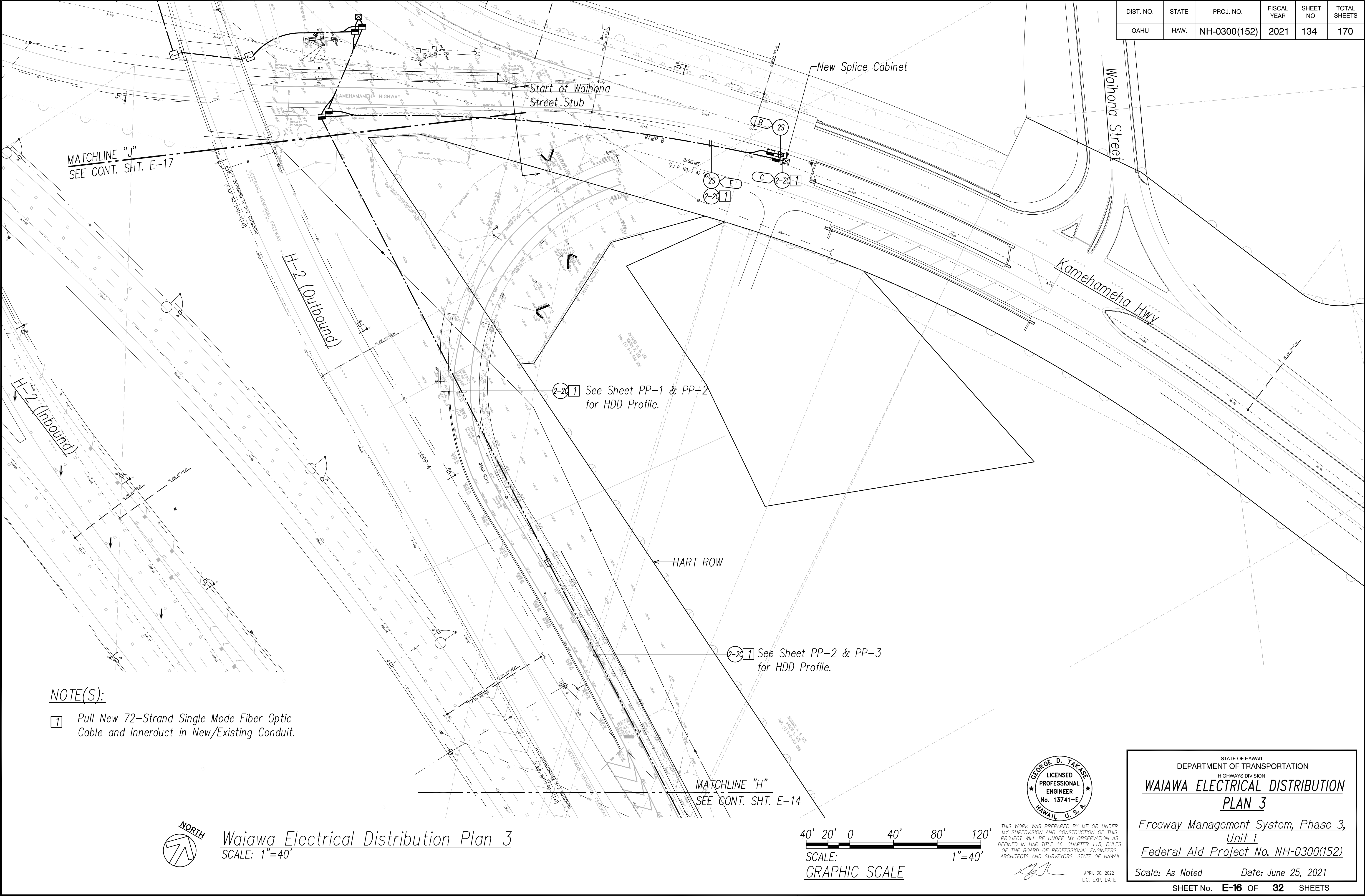
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN H.A.R. TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIAWA ELECTRICAL DISTRIBUTION
PLAN 1
Freeway Management System, Phase 3, Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. **E-14** OF **32** SHEETS

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

PR2\ACAD\PROJECTS\218034\UNIT 1\DWG_218034_WAIAWA_DST 01.DWG Sep 02, 2021-8:10 AM

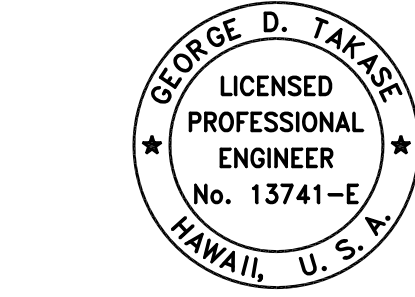
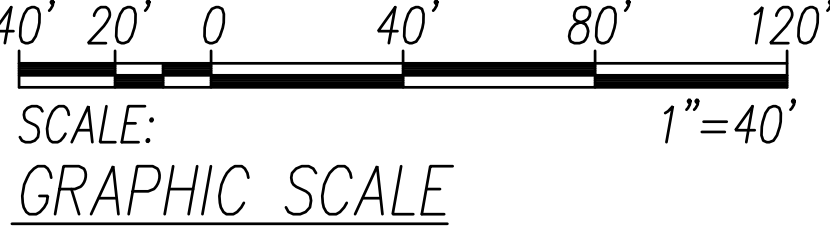
DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	134	170



NOTE(S):
1 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.



Waiawa Electrical Distribution Plan 3
SCALE: 1"=40'



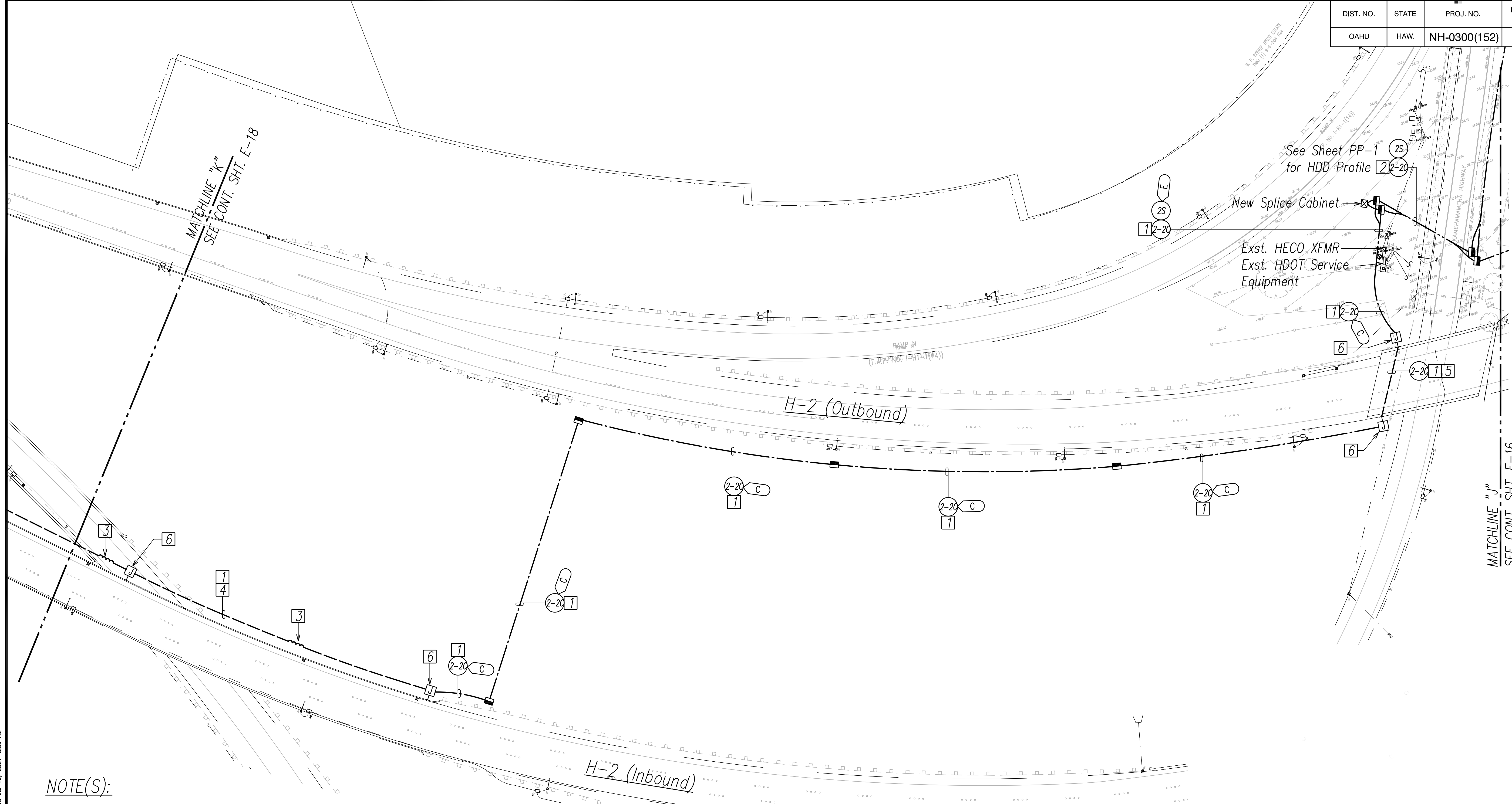
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APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIAWA ELECTRICAL DISTRIBUTION
PLAN 3
Freeway Management System, Phase 3, Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. **E-16** OF **32** SHEETS

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

PN2\ACAD\PROJECTS\218034\UNIT 1\ED16_218034_WAIAWA.DST 03.DWG Sep 02, 2021-8:14 AM

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	135	170



NOTE(S):

- 1

Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
- 2

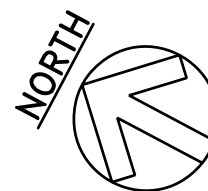
Pull Two New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
- 3

Provide Flex Conduit at Bridge Construction Joint.
- 4

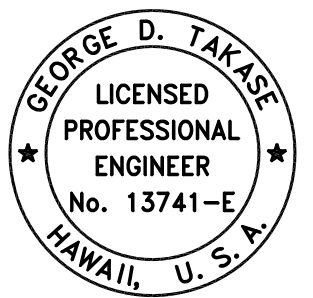
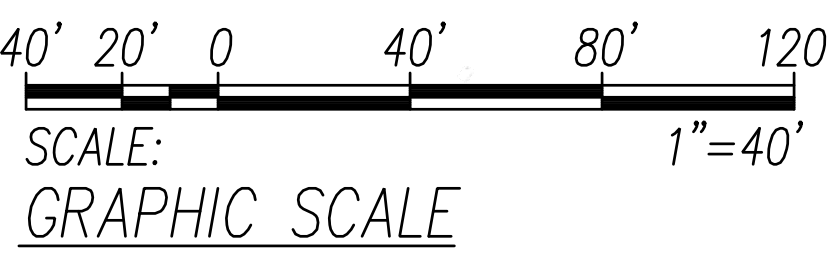
2-2" PVC Coated GRC Conduit, Mounted on Bridge Barrier.
- 5

2-2" PVC Coated GRC Conduit, Mounted to Concrete Pier Below. Do Not Mount to Prestressed Concrete Beams.
- 6

32" X 32" X 8" SS Communication Junction Box. Lockable.



Waiawa Electrical Distribution Plan 4
SCALE: 1"=40'



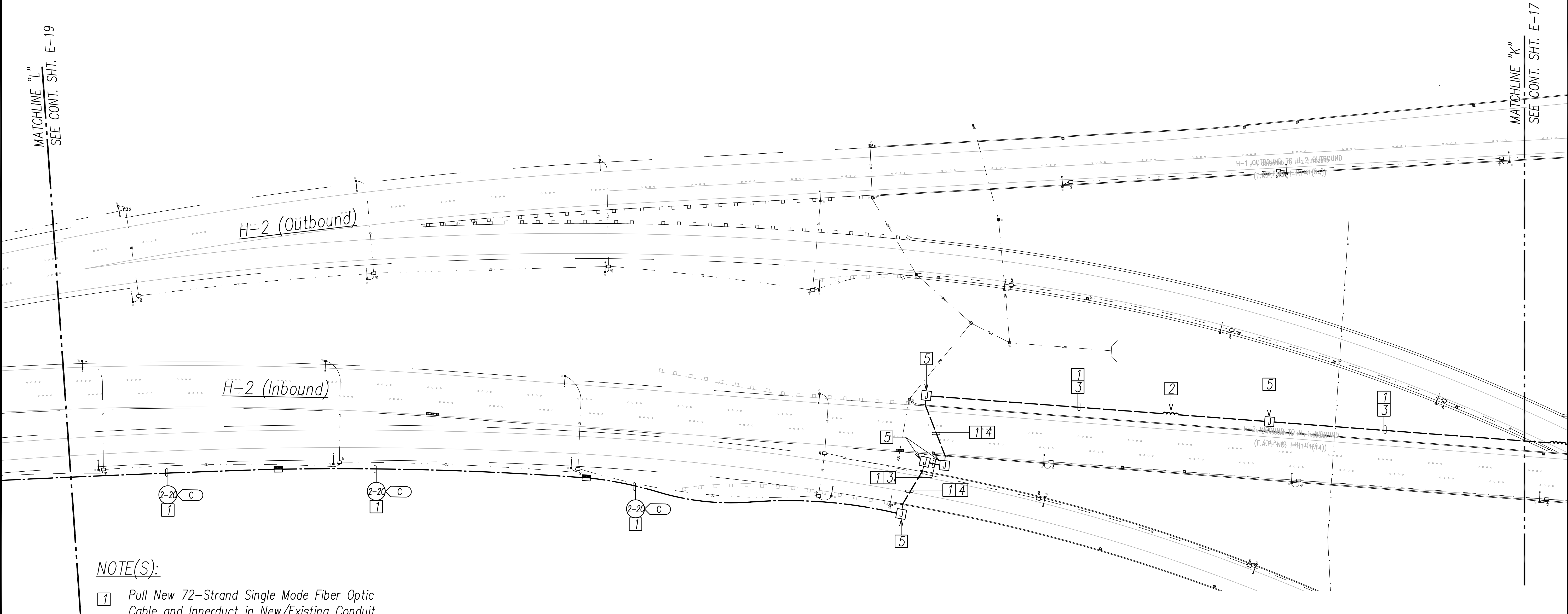
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN H.A.R. TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIAWA ELECTRICAL DISTRIBUTION
PLAN 4
Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. **E-17** OF **32** SHEETS

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

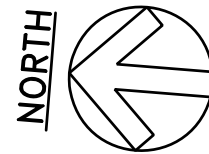
PN2\VCAD\PROJECTS\218034\UNIT 1\ED17_218034_WAIAWA_DST 04 KM SPLICE CAB.DWG Jul 19, 2021-8:09 AM

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	136	170

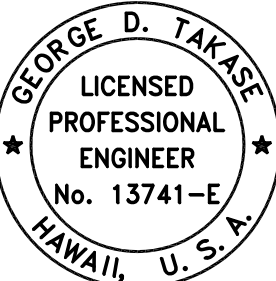
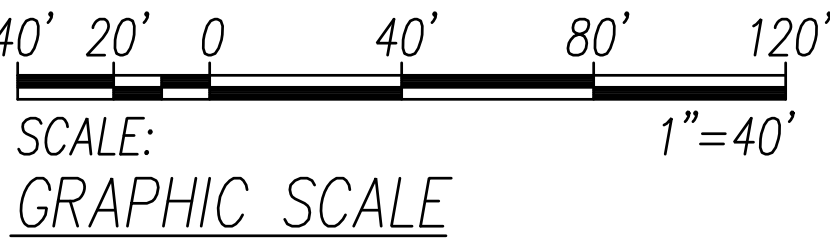


NOTE(S):

- 1 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
- 2 Provide Flex Conduit at Bridge Construction Joint.
- 3 2-2" PVC Coated GRC Conduit, Mounted on Bridge Barrier.
- 4 2-2" PVC Coated GRC Conduit, Mounted to Concrete Pier Below. Do Not Mount to Prestressed Concrete Beams.
- 5 32" X 32" X 8" SS Communication Junction Box.



Waiawa Electrical Distribution Plan 5
SCALE: 1"=40'

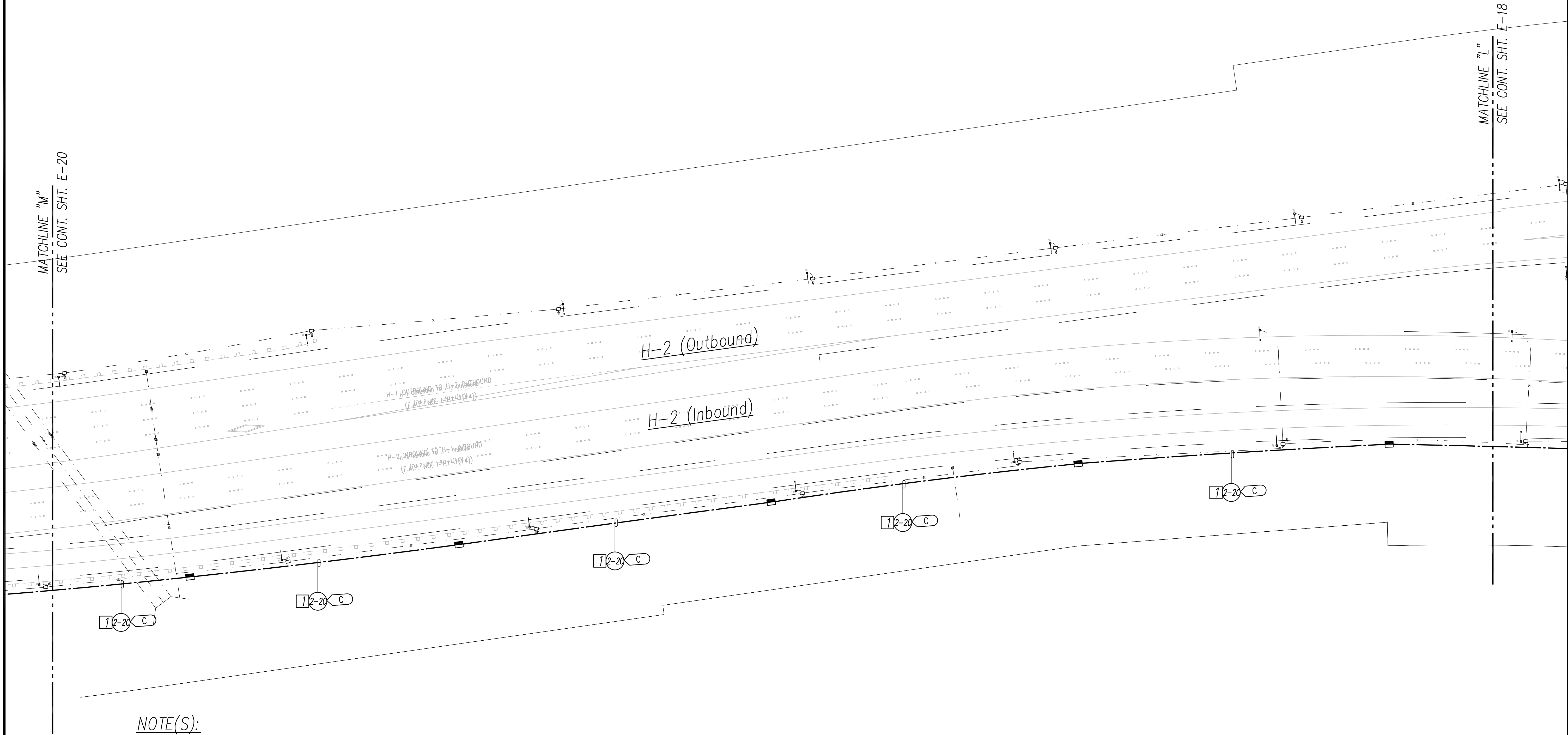


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APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIAWA ELECTRICAL DISTRIBUTION
PLAN 5
Freeway Management System, Phase 3, Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET No. **E-18** OF **32** SHEETS

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	137	170

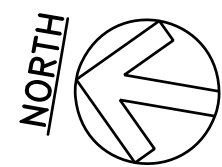


NOTE(S):

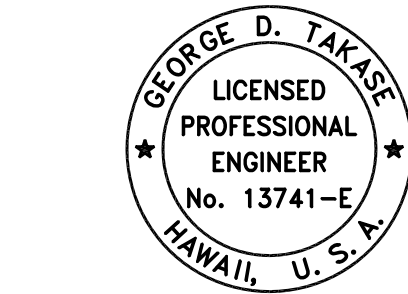
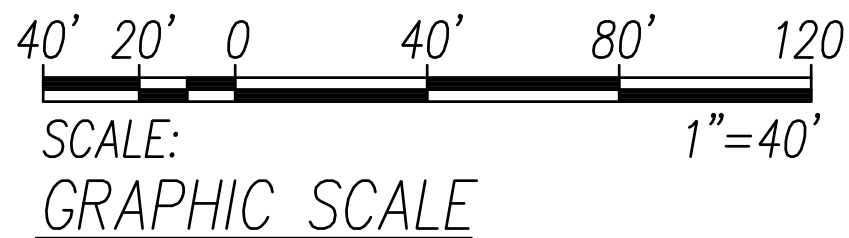
- 1 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.

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

PN2\ACAD\PROJECTS\218034\UNIT_1\ED19_218034_WAIAWA.DWG Jul 19, 2021-8:13 AM



Waiawa Electrical Distribution Plan 6
SCALE: 1"=40'

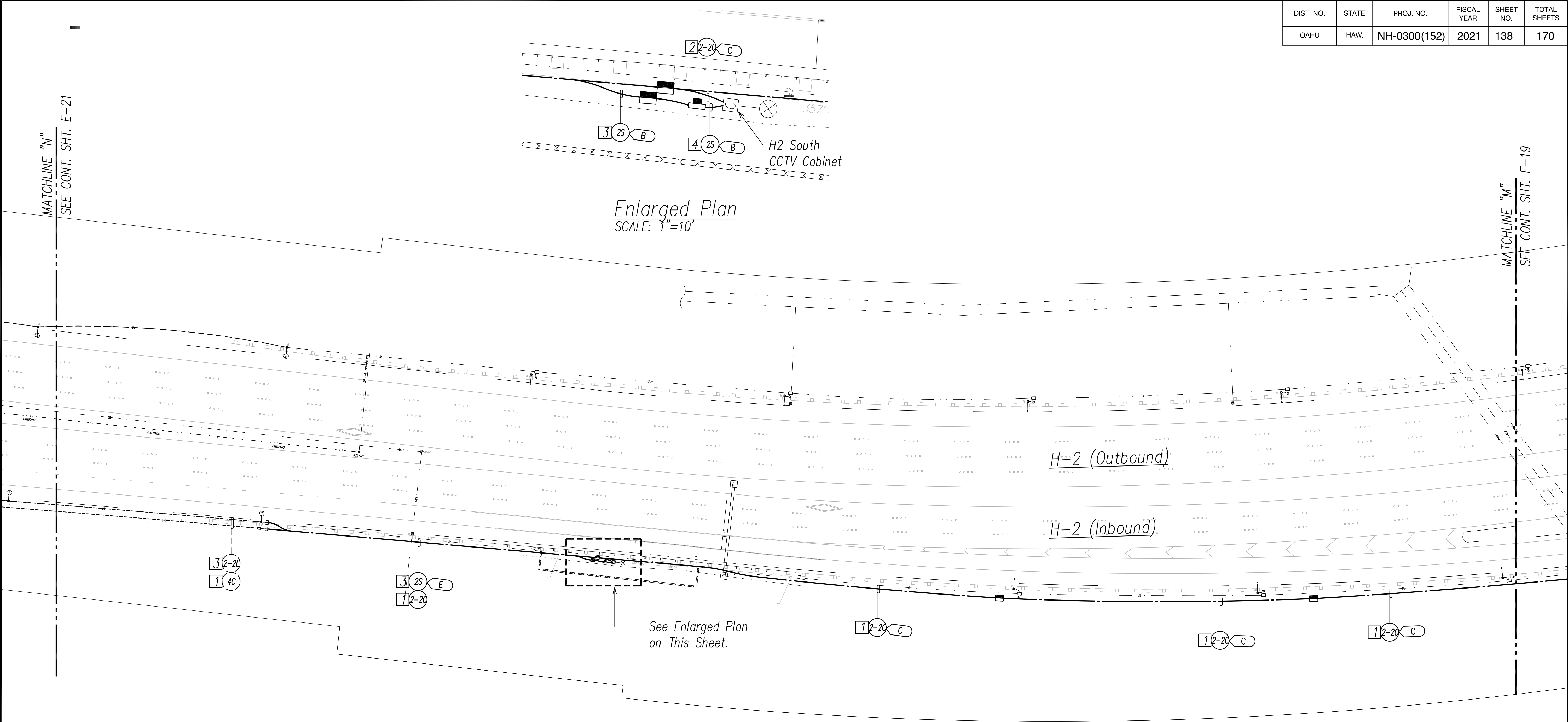


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APRIL 30, 2022
LIC. EXP. DATE

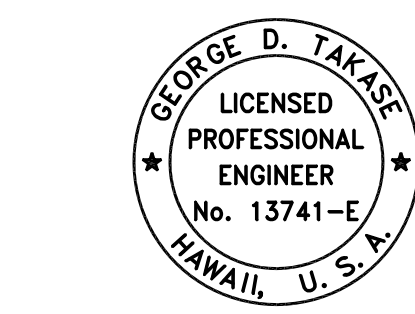
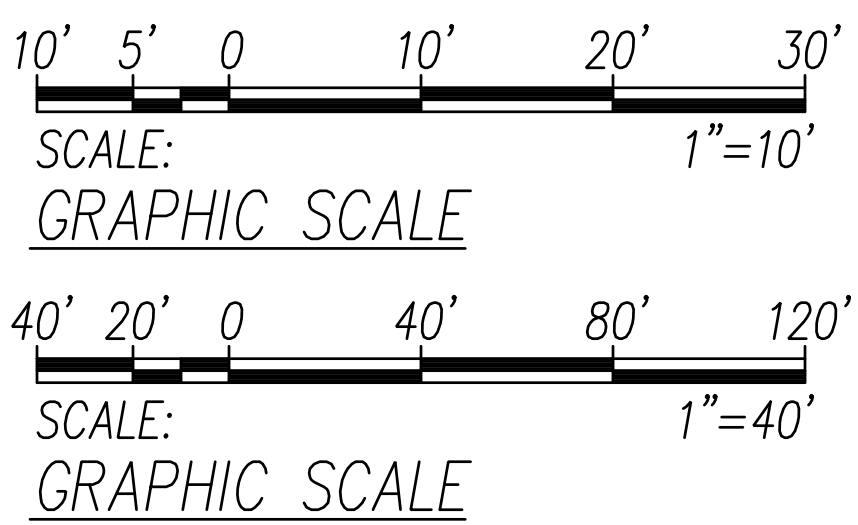
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIAWA ELECTRICAL DISTRIBUTION
PLAN 6
Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET No. **E-19** OF **32** SHEETS

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	138	170




- NOTE(S):
- 1 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
 - 2 Pull Two New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
 - 3 Pull 2#2/0 #2/0 Gnd in New Conduit.
 - 4 Pull 2#10 #10 Gnd in New Conduit.

 **Waiawa Electrical Distribution Plan 7**
SCALE: 1"=40'



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 APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAWA ELECTRICAL DISTRIBUTION
PLAN 7

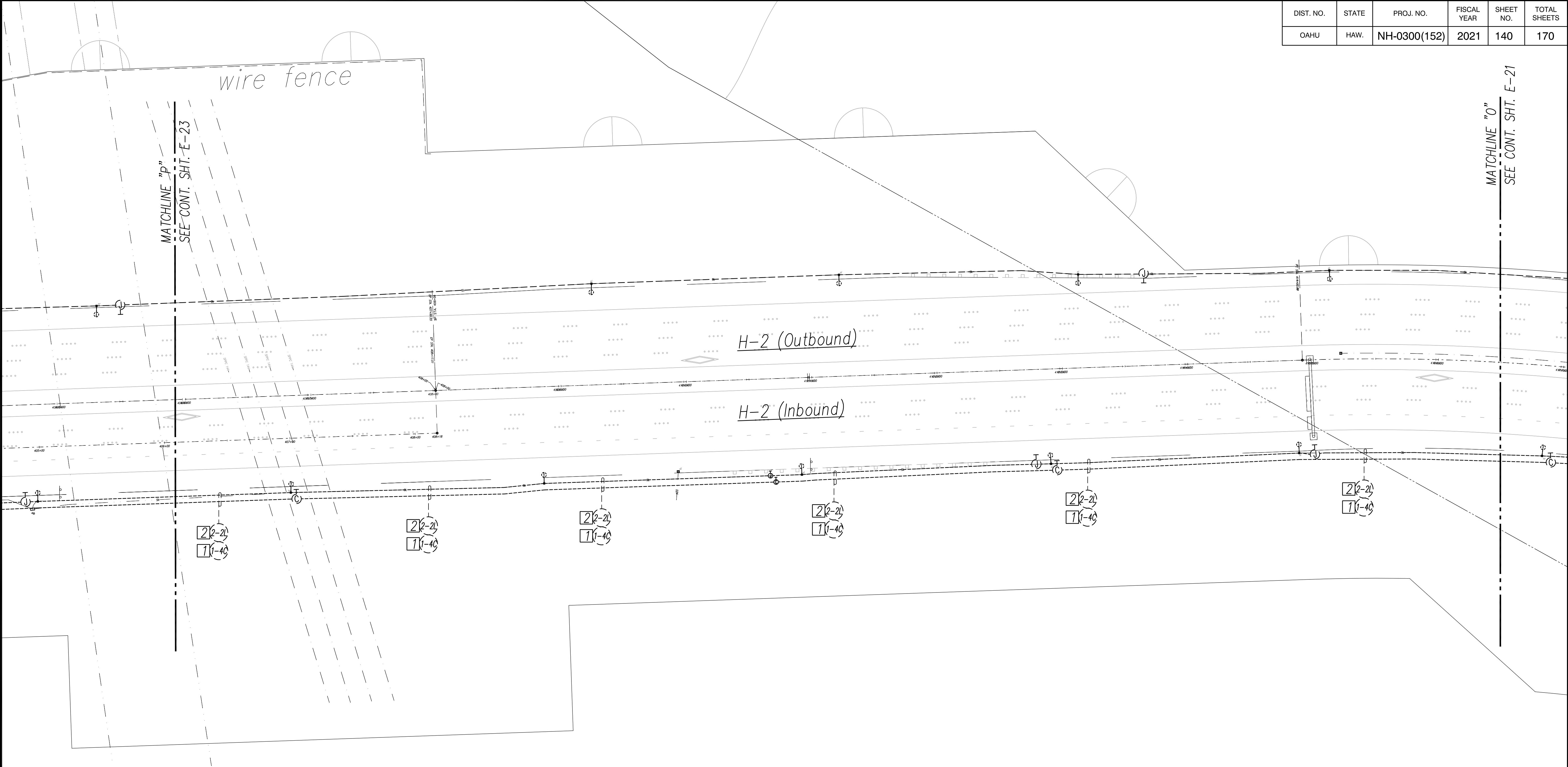
Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)

Scale: As Noted Date: June 25, 2021

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

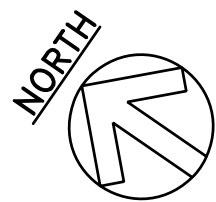
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DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	140	170

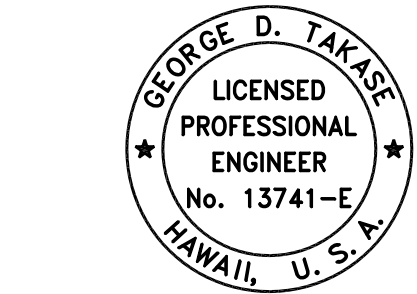
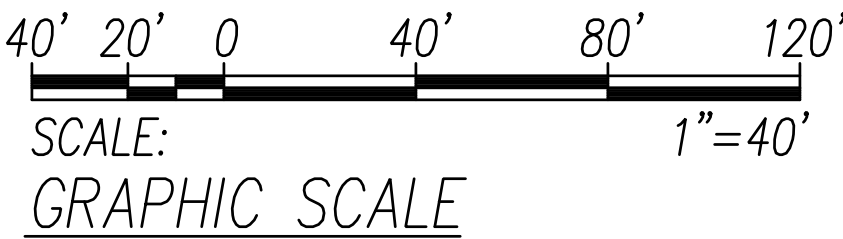


NOTE(S):

- 1 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
- 2 Pull 2#2/0 #2/0 Gnd in New Conduit.



Waiawa Electrical Distribution Plan 9
SCALE: 1"=40'



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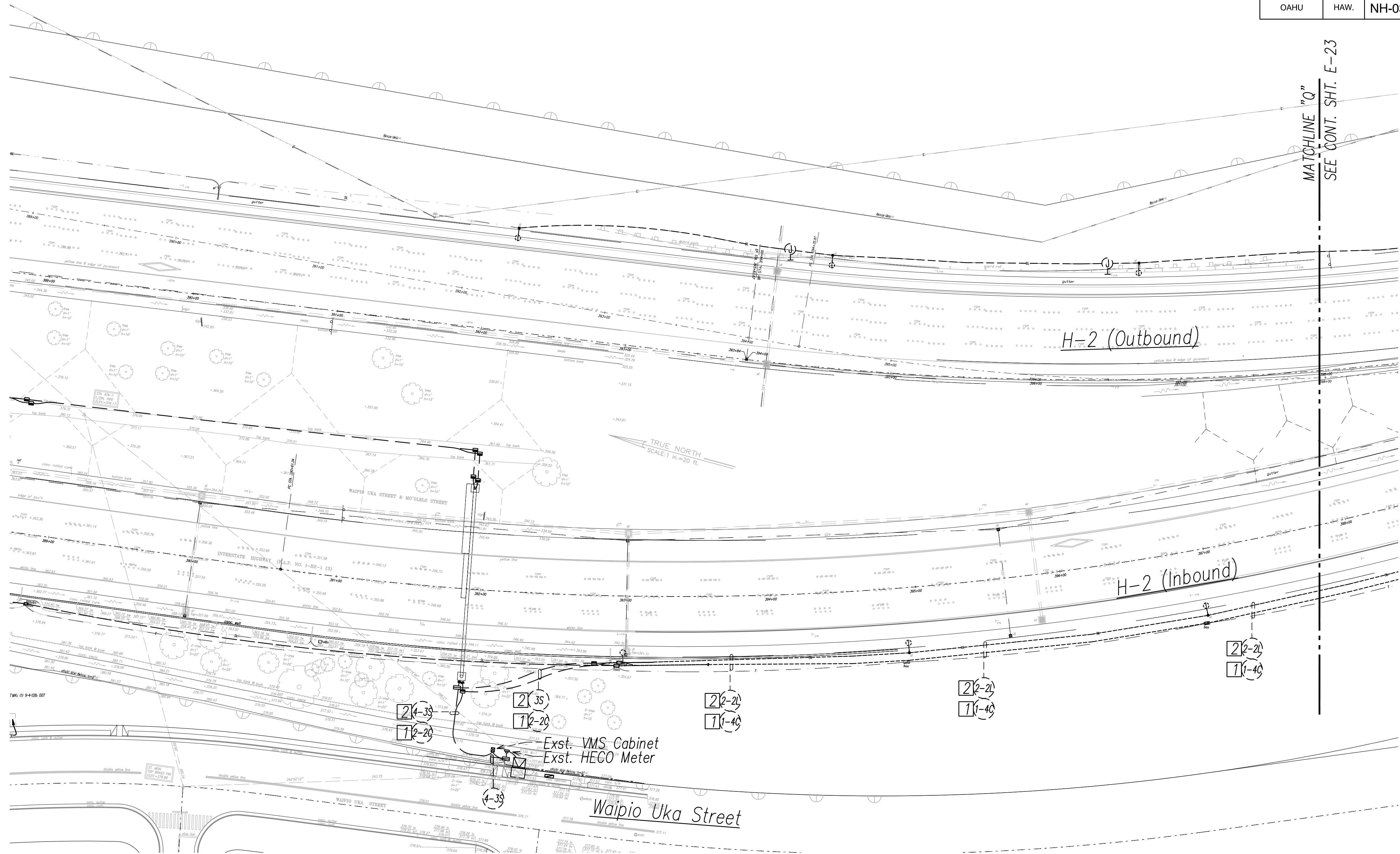
APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIAWA ELECTRICAL DISTRIBUTION
PLAN 9
Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET No. **E-22** OF **32** SHEETS

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

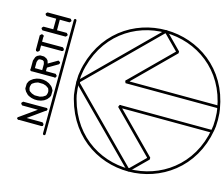
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DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	142	170

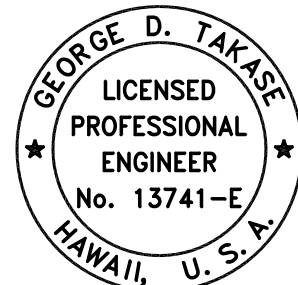
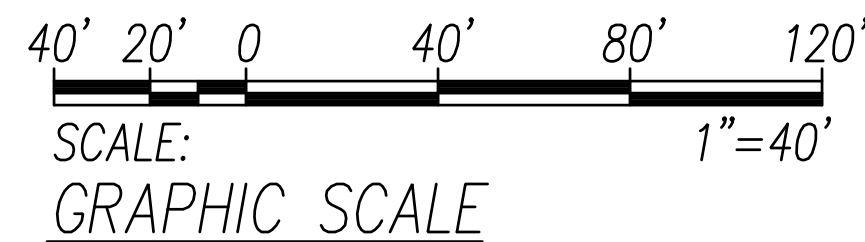


NOTE(S):

- 1 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
- 2 Pull 2#2/0 #2/0 Gnd in New Conduit.



Waiawa Electrical Distribution Plan 11
SCALE: 1"=40'



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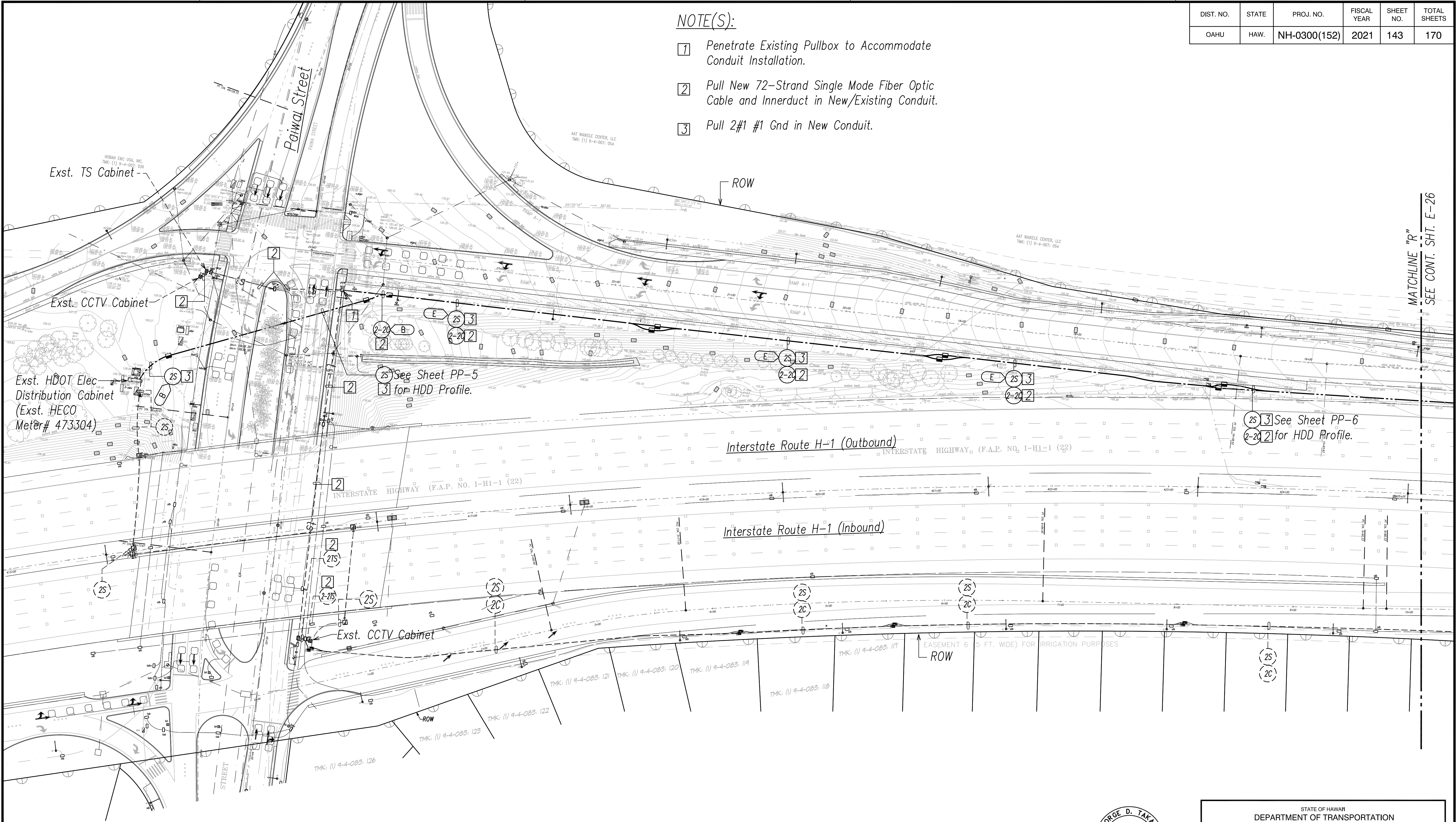
APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIAWA ELECTRICAL DISTRIBUTION
PLAN 11
Freeway Management System, Phase 3, Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. E-24 OF 32 SHEETS

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	143	170

NOTE(S):

- 1 Penetrate Existing Pullbox to Accommodate Conduit Installation.
- 2 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
- 3 Pull 2#1 #1 Gnd in New Conduit.



DATE	10/1/2021
DESIGNED BY	GEORGE D. TAKASE
DRAWN BY	GEORGE D. TAKASE
CHECKED BY	GEORGE D. TAKASE
IN CHARGE	GEORGE D. TAKASE
PROJECT NO.	152-0300(152)
SHEET NO.	143
TITLE	Waikēle Electrical Distribution Plan 1



Waikēle Electrical Distribution Plan 1
SCALE: 1"=40'

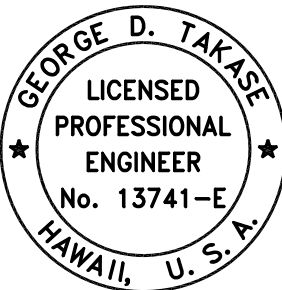
Manager and Chief Engineer, BWS
(For Work Affecting BWS Facilities in City/State
R/W and BWS Easements Only)

Date

40' 20' 0 40' 80' 120'

SCALE:
GRAPHIC SCALE

1"=40'

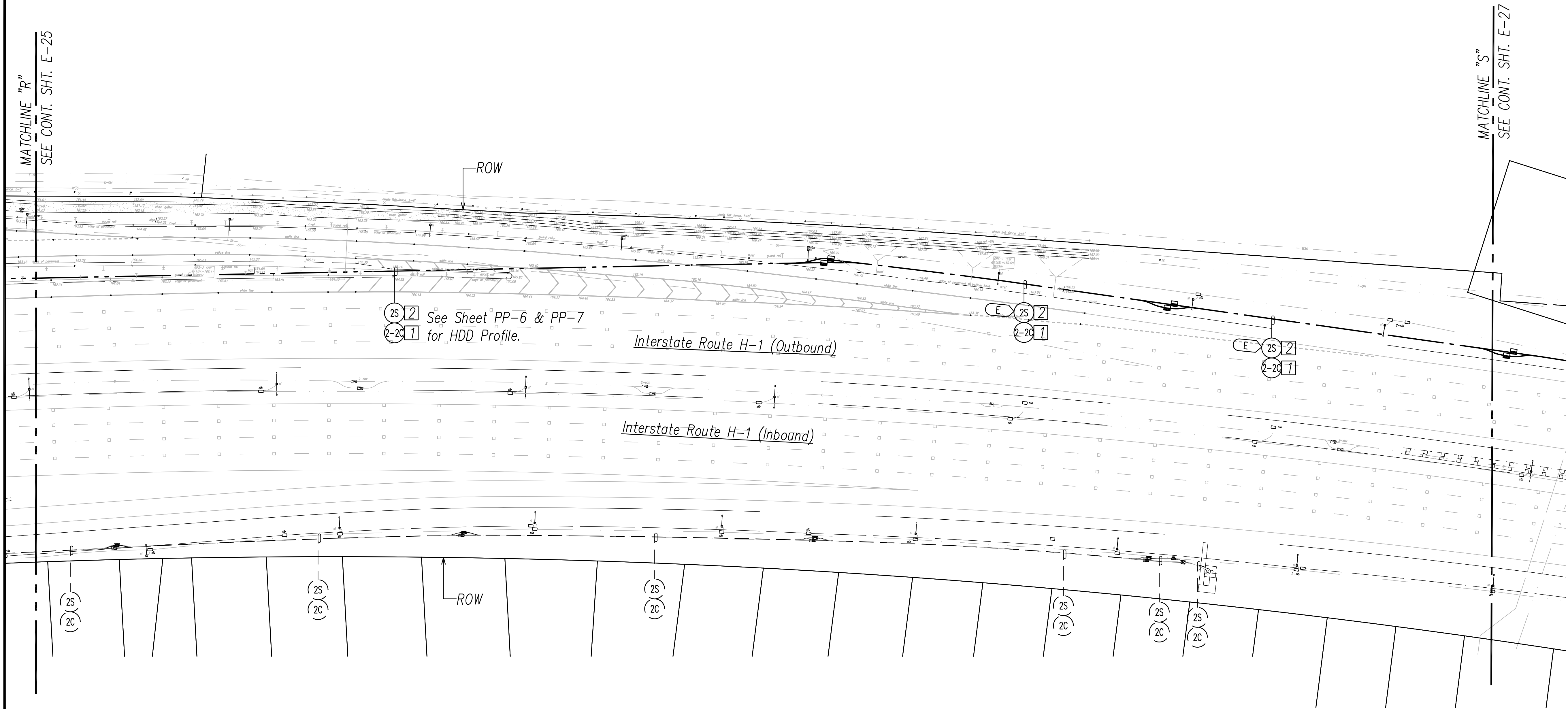


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APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIKĒLE ELECTRICAL DISTRIBUTION
PLAN 1
Freeway Management System, Phase 3, Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. E-25 OF 32 SHEETS

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	144	170

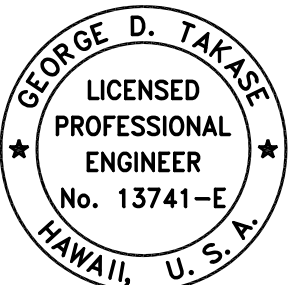
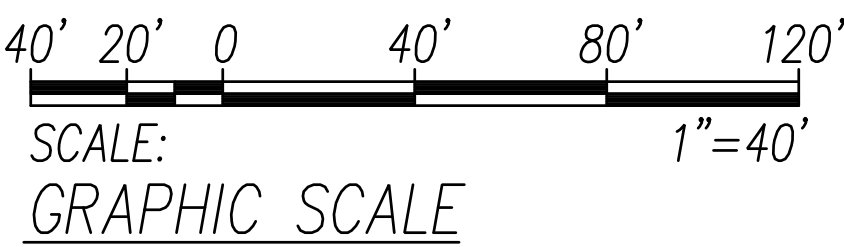


NOTE(S):

- 1 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
- 2 Pull 2#1 #1 Gnd in New Conduit.



Waikele Electrical Distribution Plan 2
SCALE: 1"=40'



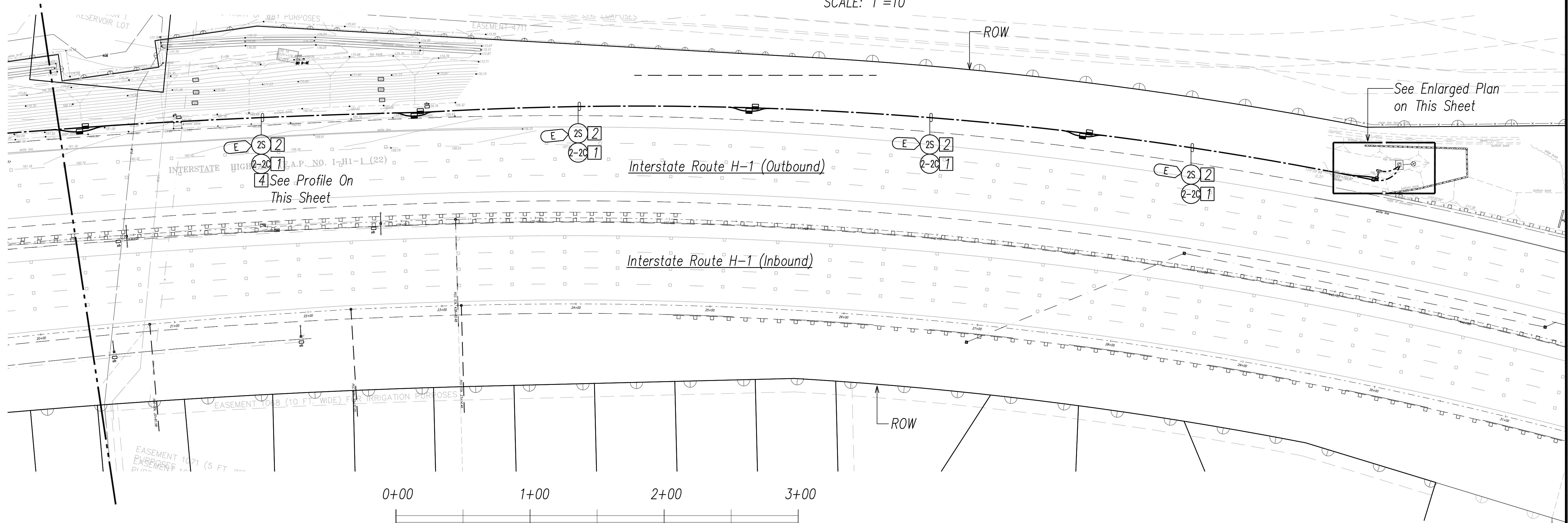
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APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIKELE ELECTRICAL DISTRIBUTION
PLAN 2
Freeway Management System, Phase 3, Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. E-26 OF 32 SHEETS

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	145	170

MATCHLINE "S"
SEE CONT. SHIT. E-26

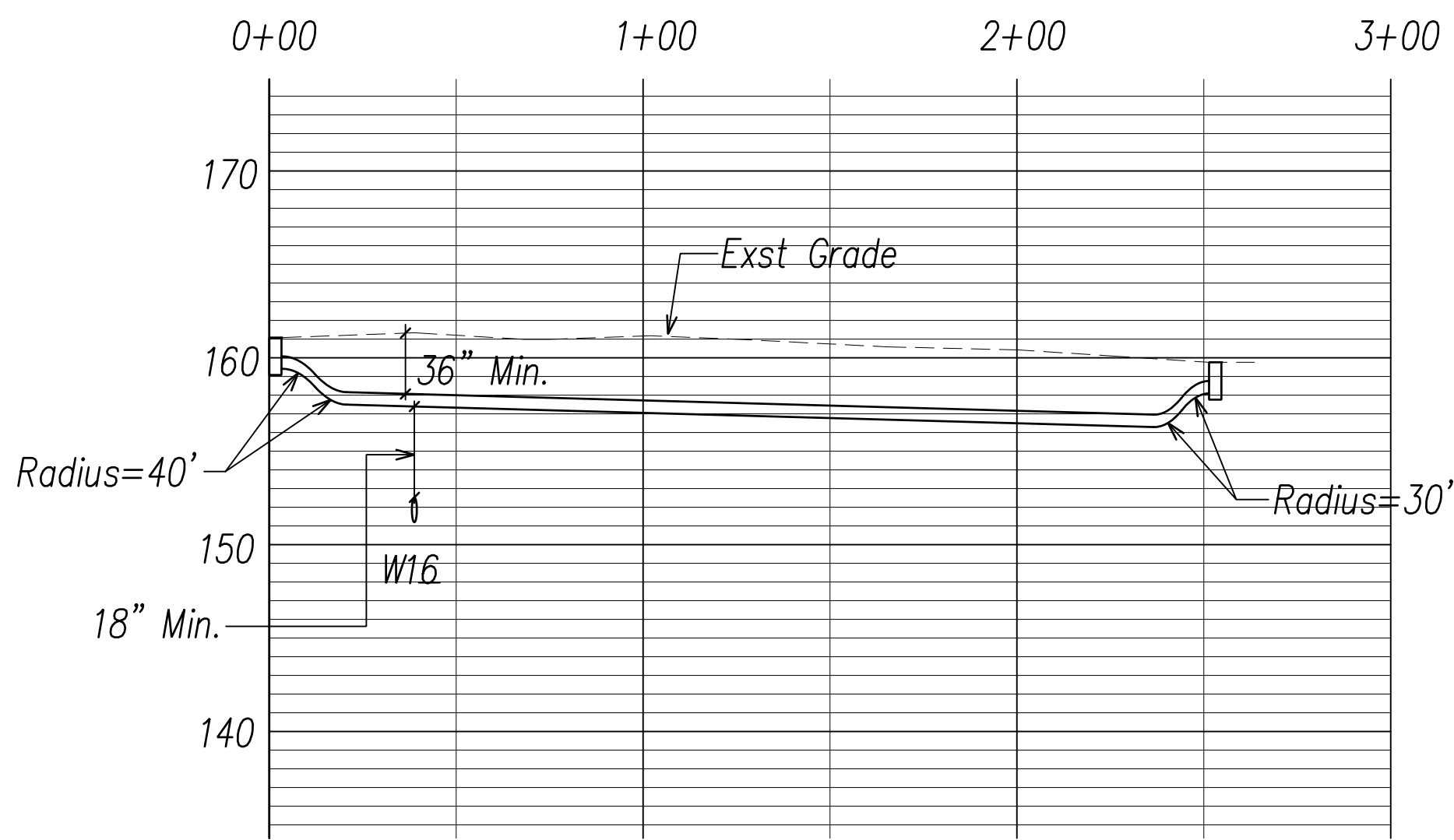


NOTE(S):

- 1 Pull New 72-Strand Single Mode Fiber Optic Cable and Innerduct in New/Existing Conduit.
- 2 Pull 2#1 #1 Gnd in New Conduit.
- 3 Pull 2#10 #10 Gnd in New Conduit.
- 4 Contractor to Provide CLSM backfill at Water Line Crossings per State Backfill detail.

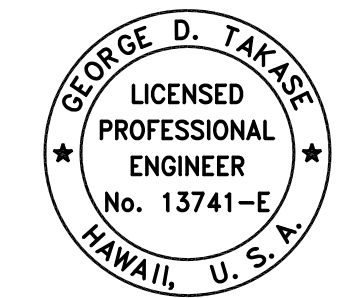
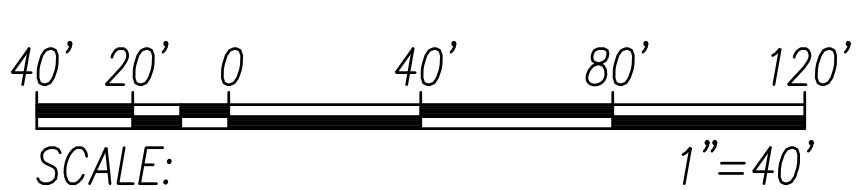
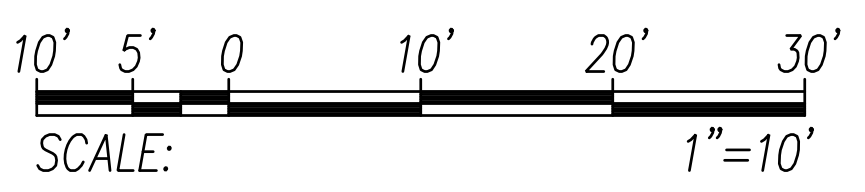


Waikēle Electrical Distribution Plan 3
SCALE: 1"=40'



Profile
SCALE: Horizontal: 1"=40'
Vertical: 1"=8'

Manager and Chief Engineer, BWS
(For Work Affecting BWS Facilities in City/State
R/W and BWS Easements Only)



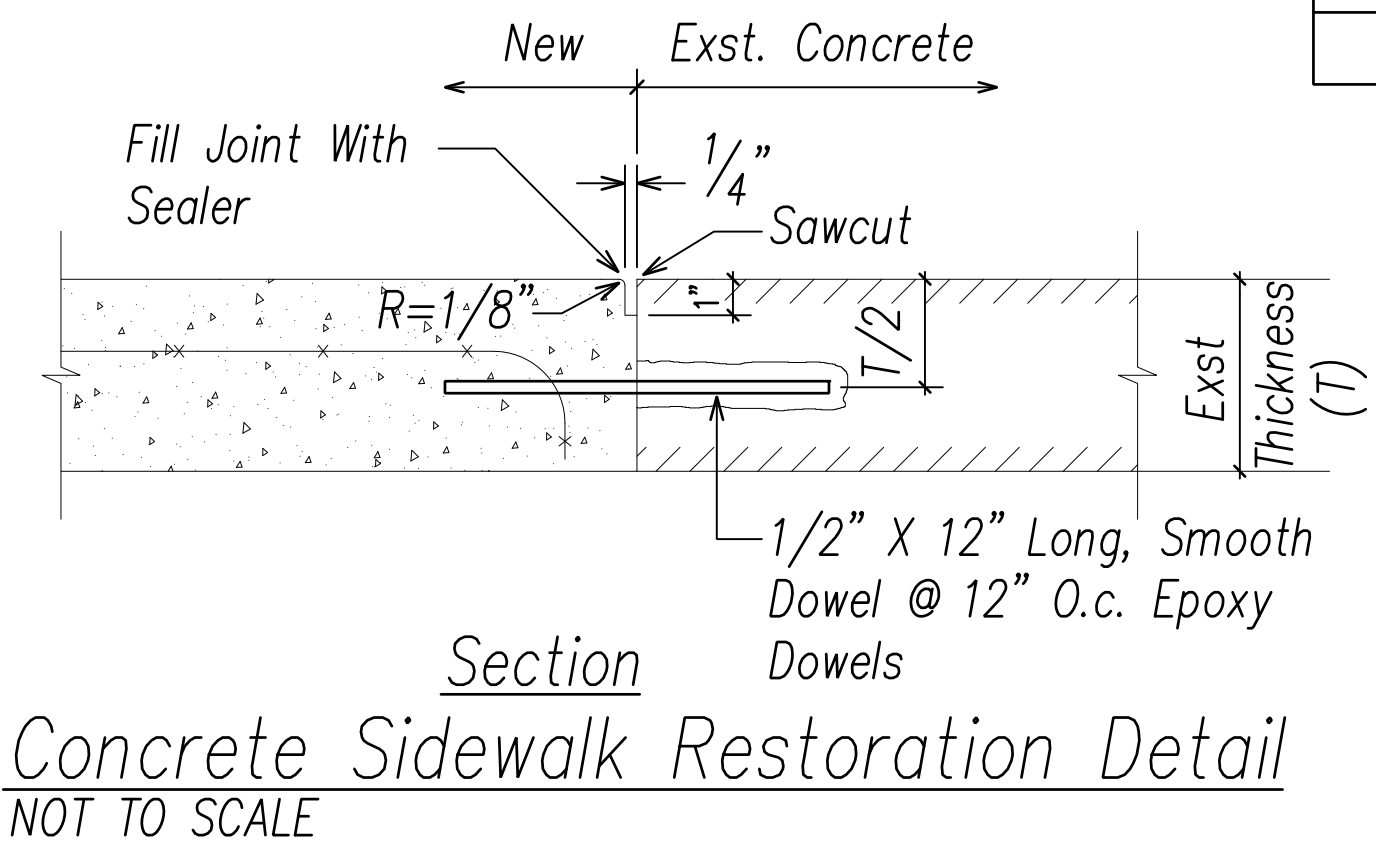
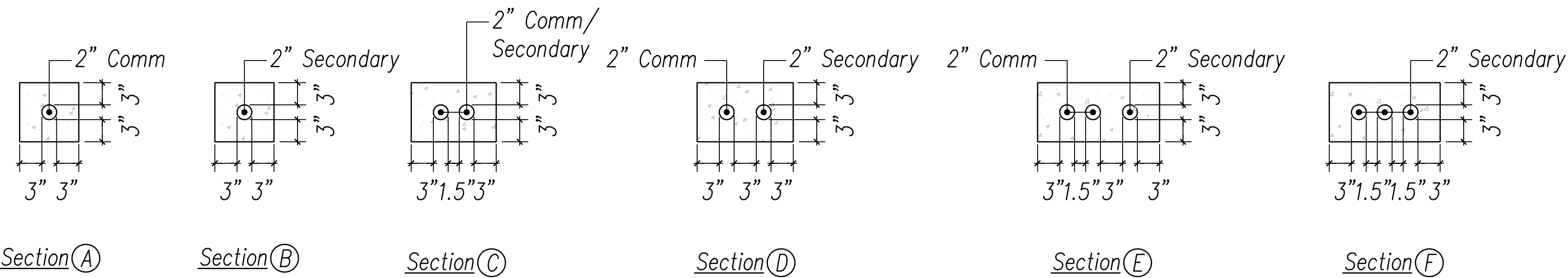
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION AS DEFINED IN H.A.R. TITLE 16, CHAPTER 115, RULES OF THE BOARD OF PROFESSIONAL ENGINEERS, ARCHITECTS AND SURVEYORS, STATE OF HAWAII

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
WAIKELE ELECTRICAL DISTRIBUTION
PLAN 3
Freeway Management System, Phase 3, Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. E-27 OF 32 SHEETS

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

PN2\A040\PROJECTS\218034\UNIT 1\ED27.218034_WAIKELE DIST PLAN 03.DWG Sp. 03, 2021-08-25 AM

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	146	170



Conduit Schedule	
Item	Description
(2C)	Communication 2" Conduit
(2-2C)	Communication 2-2" Conduit
(2TS)	Traffic Signal 2" Conduit
(2L)	Street Light 2" Conduit
(2S)	Secondary Power 2" Conduit
(3S)	Secondary Power 3" Conduit

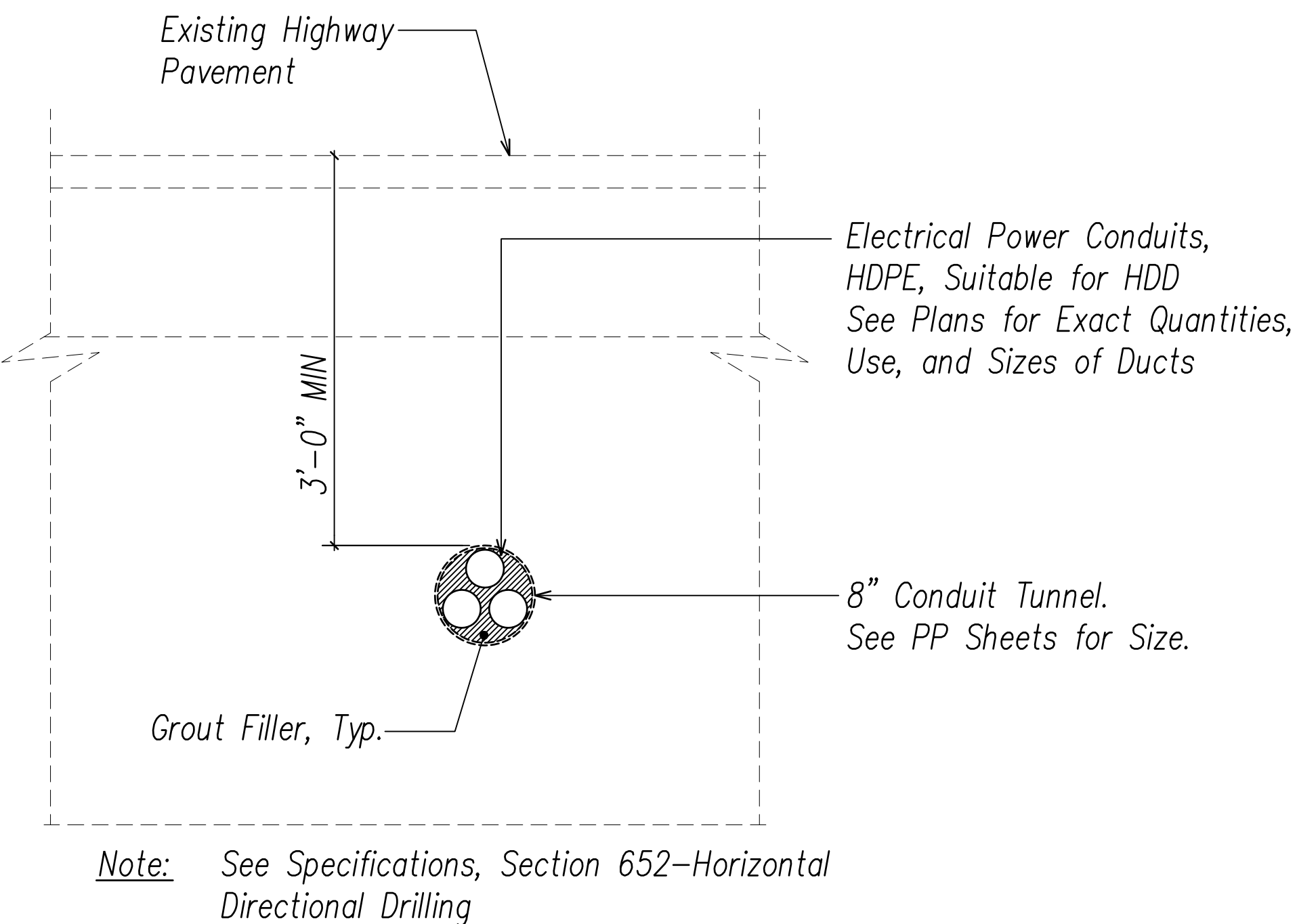
State Right-Of-Way Backfill Notes

- Trench Backfill Material "B"
 - 1. Sand Equivalent ≥ 2
 - 2. 8" Max. Lift Loose
 - 3. 95% Compaction
- Concrete - 3" Encasement, 2500 PSI Compressive Strength @ 28 Days.

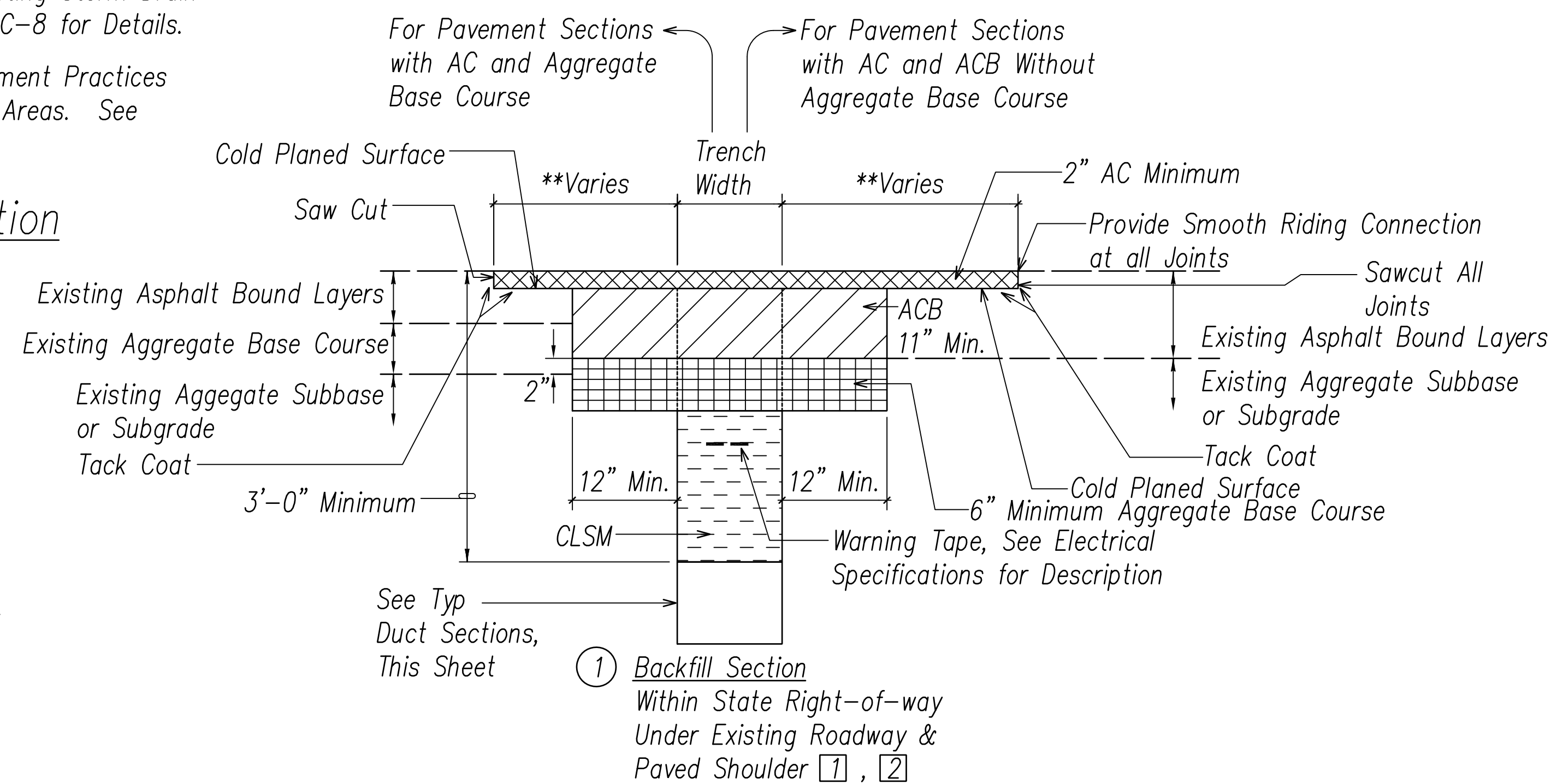
Notes:

- Contractor to Observe Best Management Practices and take Measures Required for Existing Storm Drain Inlets or Catch Basins. See Sheet C-8 for Details.
- Contractor to Observe Best Management Practices for Existing Grassed or Landscaped Areas. See Detail on Sheet C-8.

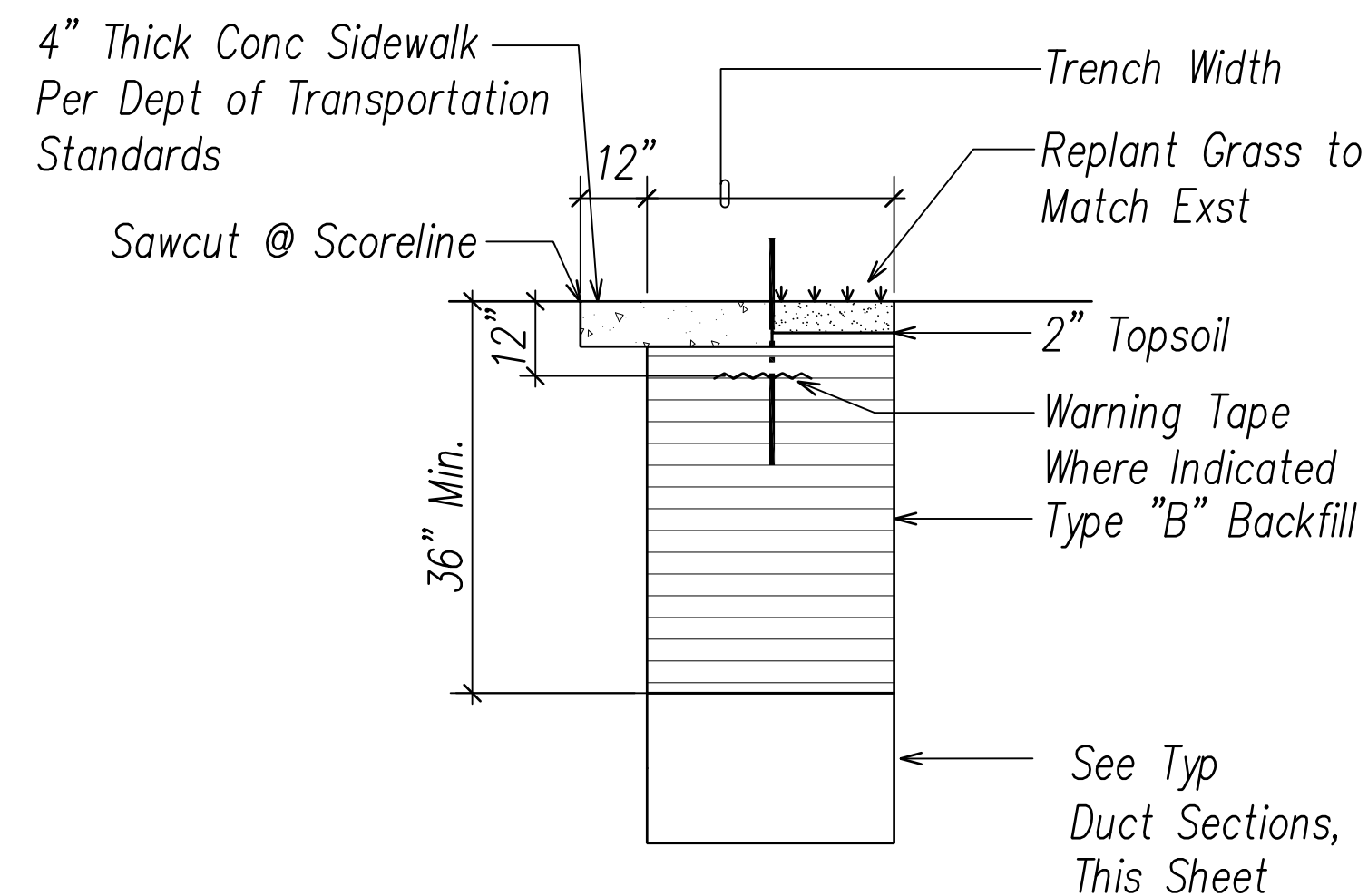
Typical Duct Section NOT TO SCALE



Horizontal Directional Drilling Section NOT TO SCALE



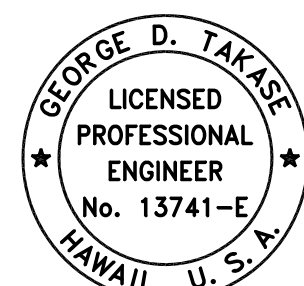
Typical Backfill Section (State) NOT TO SCALE



Typical Backfill Section - Unpaved (State) NOT TO SCALE

** Notes For Backfill Section 1

- If Trench Aligned Transverse to Direction of Travel, Sawcut 1 Foot on Each Side of Trench.
- If Trench Aligned Along Direction of Travel, Sawcut to Edge of Lane in which Edge of Trench is Located.
- Smoothness of Paved Surfaces: The Distance from the Paved Surface to the Testing Edge of a Ten-foot Straight Edge Between Two Points of Contact shall not Exceed 3/16".



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APRIL 30, 2022
LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
TYPICAL DUCT SECTION

Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)

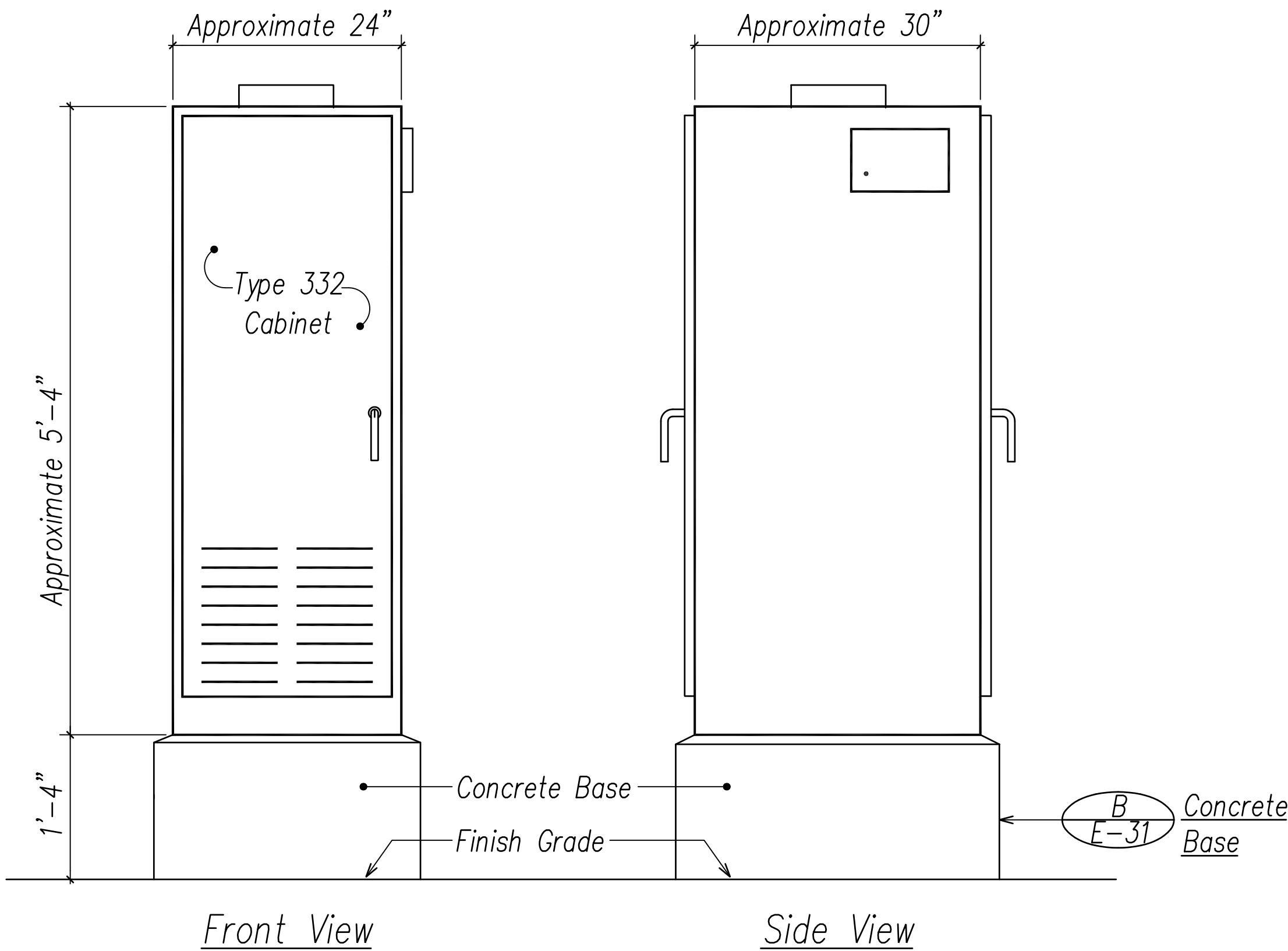
Scale: As Noted Date: June 25, 2021

SHEET NO. E-28 OF 32 SHEETS

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

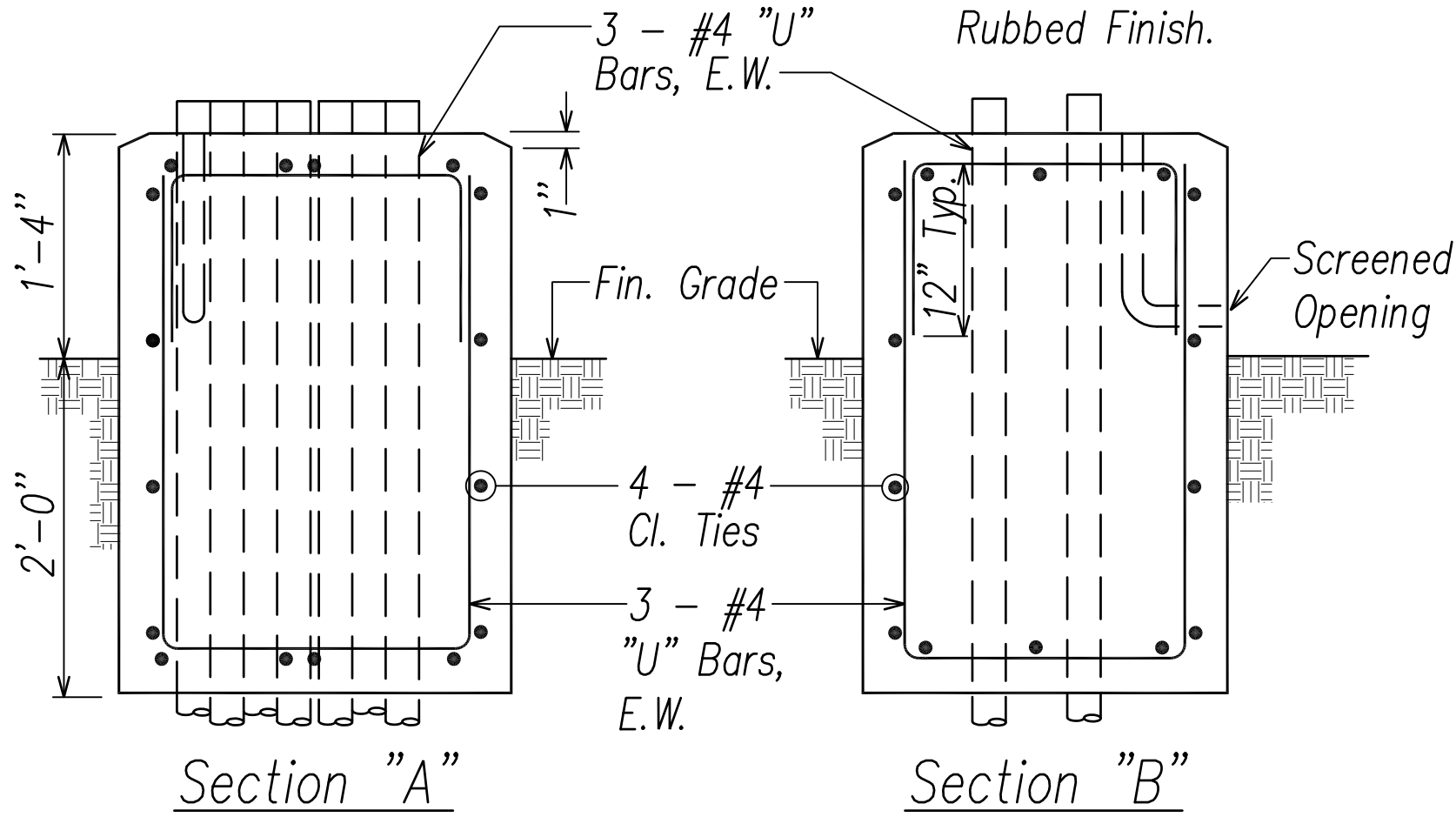
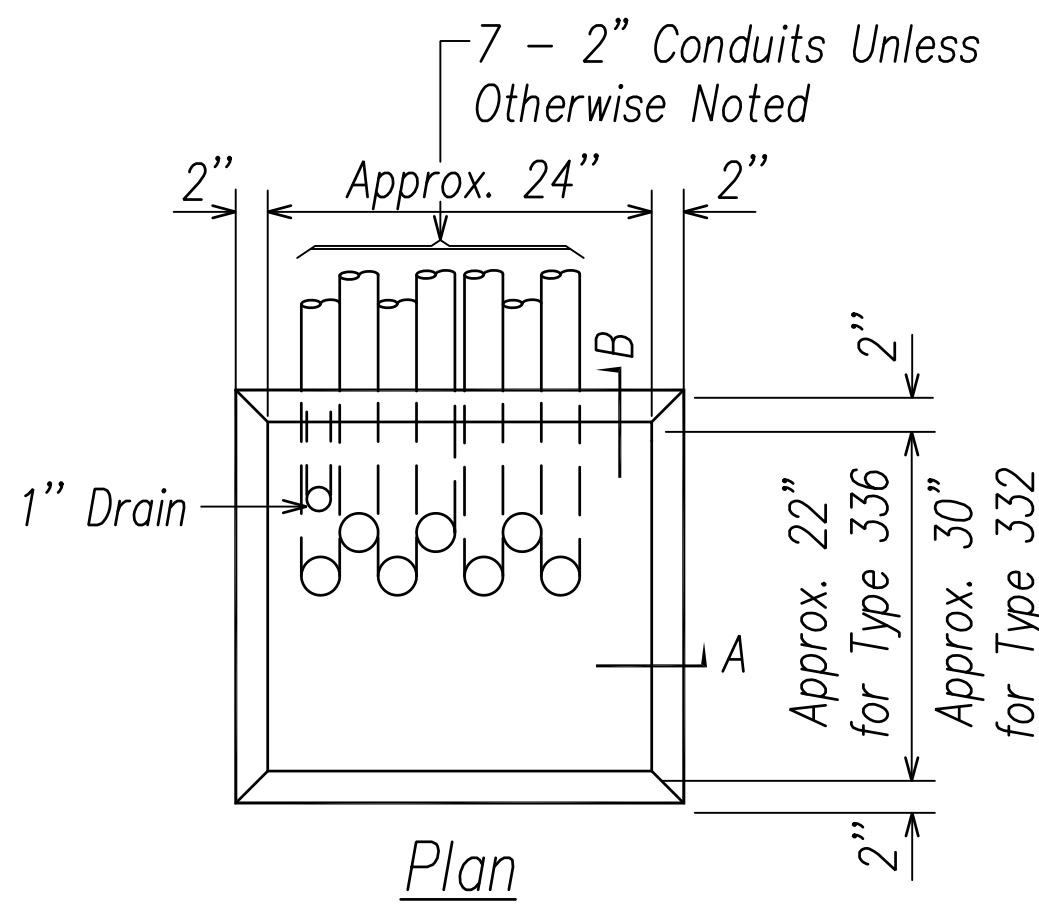
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DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	NH-0300(152)	2021	149	170



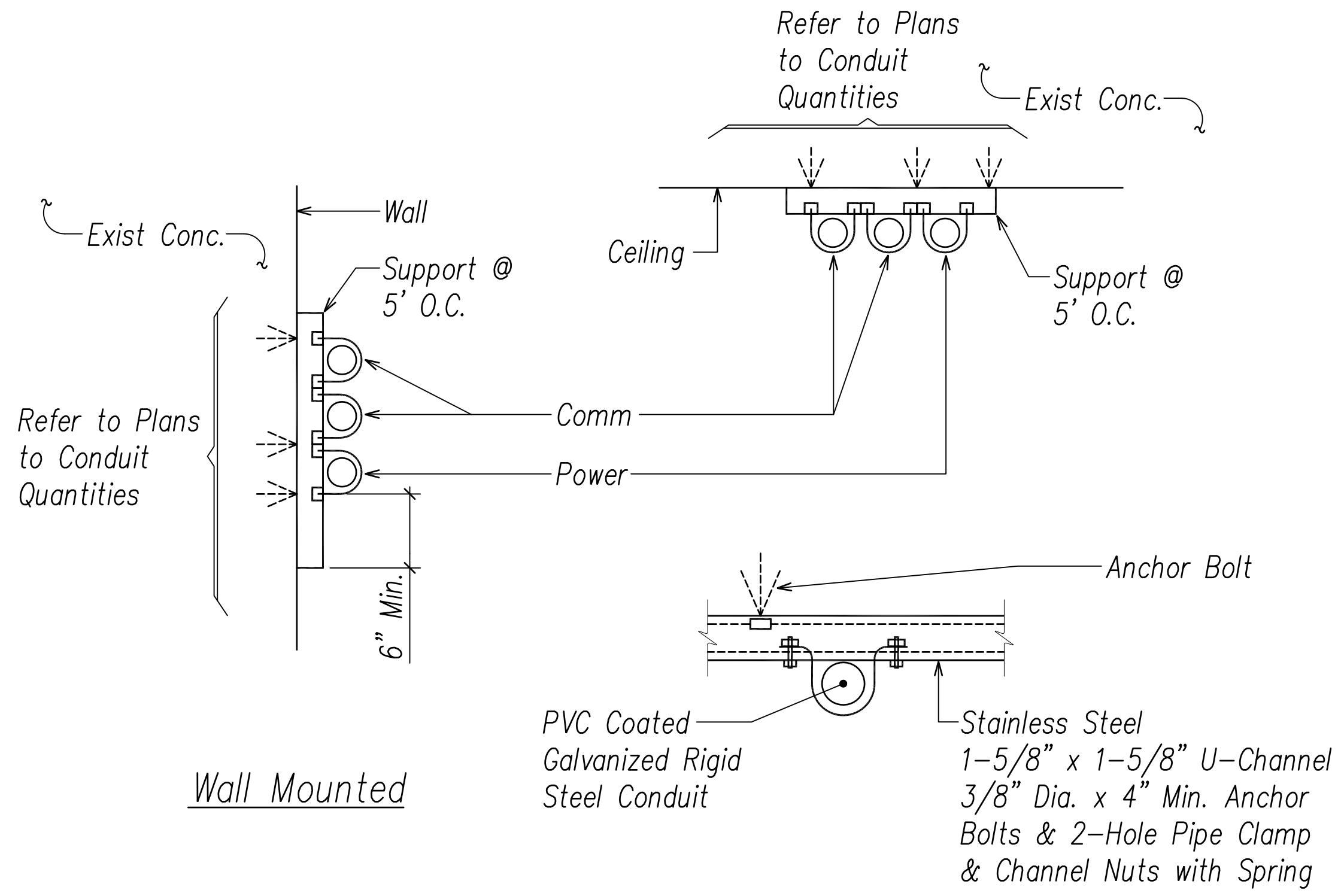
Note: Splice Cabinet with Rack Mounted Interconnect Center. Rack Mounted Interconnect Center shall be Paid Under Section 681-CCTV System.

A
E-31 Type 332 Traffic Controller Cabinet Detail
NOT TO SCALE

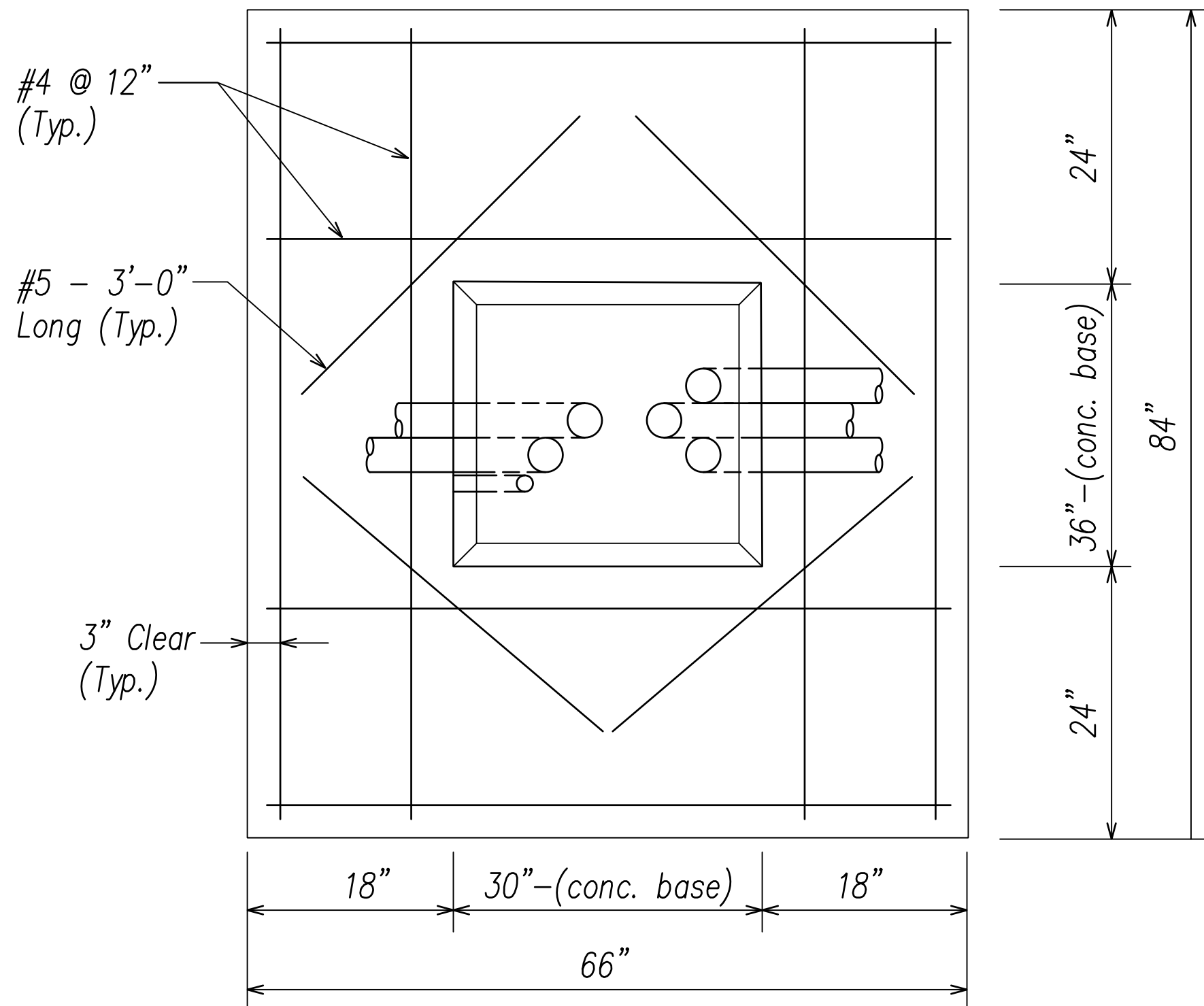


B
E-31 Type "D" Concrete Base Detail
NOT TO SCALE

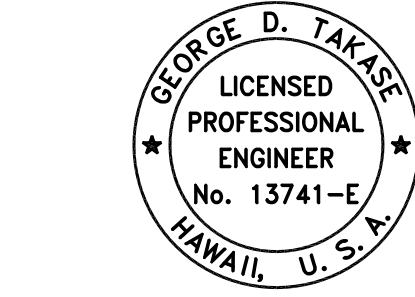
- Notes:
1. Concrete shall be Class "B".
 2. Dimensions shall be Altered to Suit Cntrller Cabinet Actually Furnished.
 3. Conduit Bends and Drain are Incidental to Concrete Base.
 4. Refer to Cabinet Manufacturer's Specifications for Details of Anchor Bolts and Base Setting.
 5. All Exposed Surfaces of Concrete Base shall be Given a Class 2, Rubbed Finish.



C
E-31 Conduit Mounting Detail
NOT TO SCALE



D
E-31 Plan View of Concrete Apron for Equipment Cabinet
NOT TO SCALE

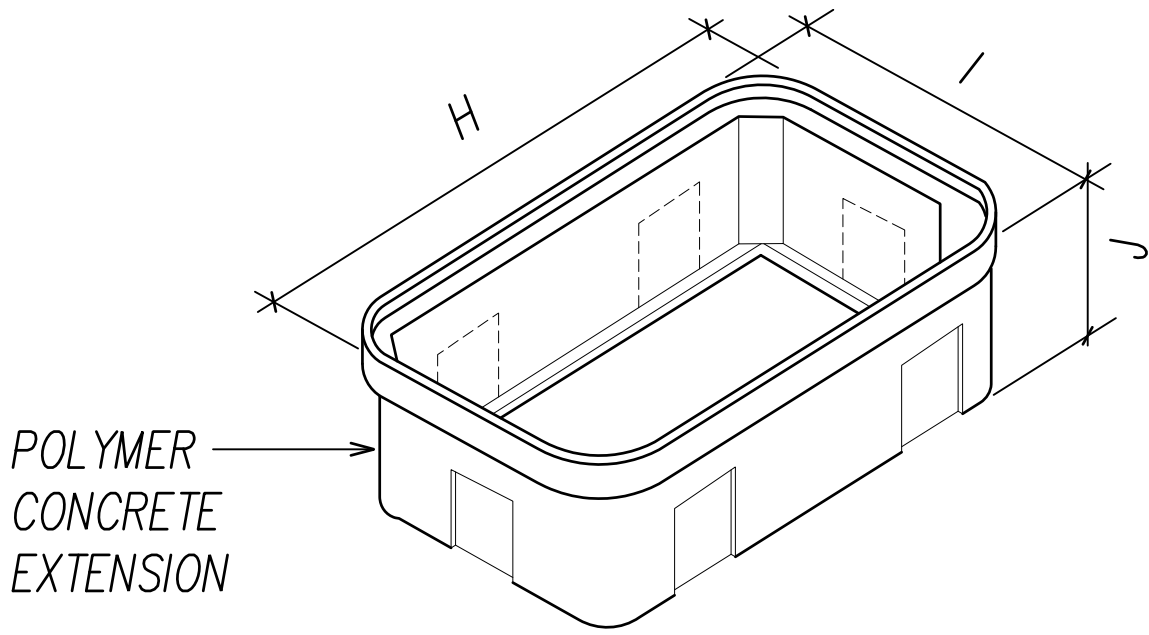
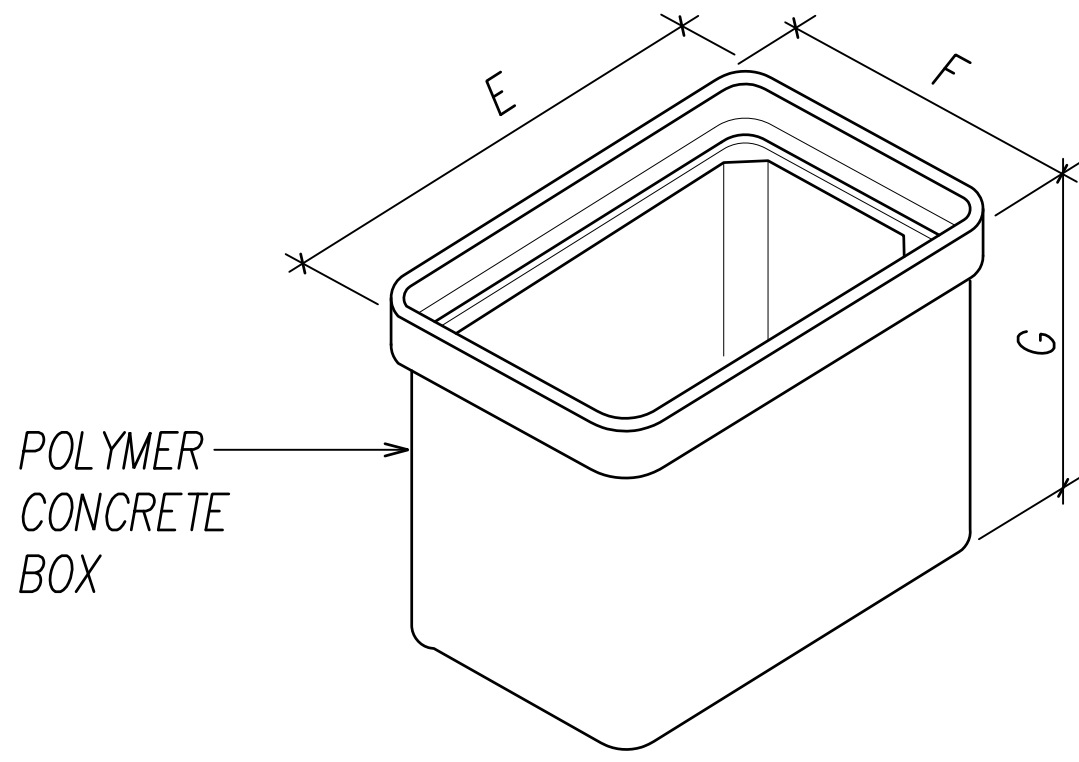
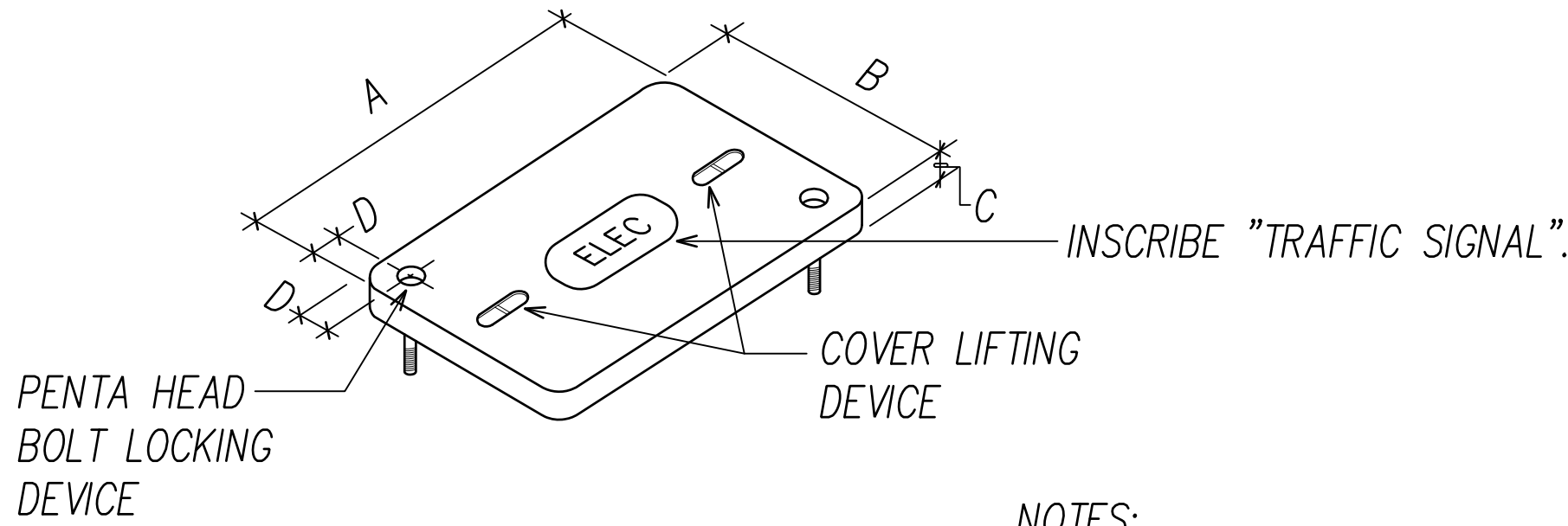


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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**CABINET AND CONDUIT
MOUNTING DETAILS**
Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)
Scale: As Noted Date: June 25, 2021
SHEET NO. **E-31** OF **32** SHEETS

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

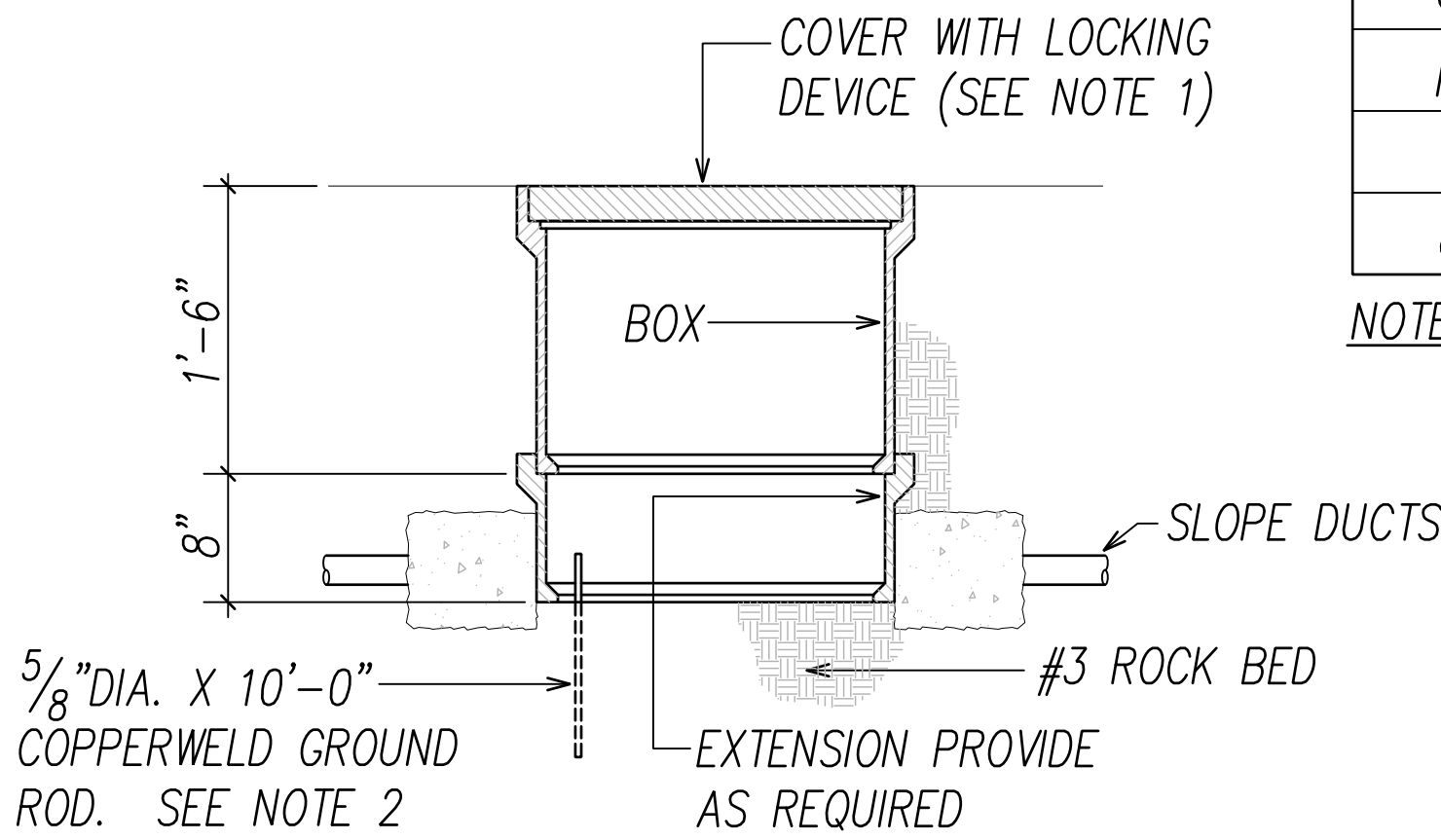
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- NOTES:
1. TO PROPERLY SECURE THE COVER, BE SURE THAT THE PENTAHEAD BOLTS ARE IN PLACE AND TIGHTENED. THE PENTA BOLTS SHALL BE FASTENED SECURELY TO THE COVERS (BY MEANS OF A COTTER PIN, FOR EXAMPLE), SO THE BOLTS CANNOT BE EASILY REMOVED FROM THE COVERS, EVEN WHEN THE COVERS ARE REMOVED FROM THE BOXES.
 2. GROUND ROD SHALL BE INSTALLED IN THE CORNER, 6" FROM EACH WALL AND 6" ABOVE FINAL FLOOR GRADE.
 3. NON-CONCRETE BOXES, COVERS, AND EXTENSIONS SHALL BE RATED FOR A VERTICAL LOAD OF 20,000 LBS (20K) MINIMUM.

NON-CONCRETE BOX SCHEDULE			
ITEM	13" X 24" PULLBOX	17" X 30" PULLBOX	24" X 36" PULLBOX
A	23 ¹ / ₄	30 ¹ / ₂	35 ⁵ / ₈
B	13 ³ / ₄	17 ¹ / ₂	24
C	2	2	3
D	1 ³ / ₄	2 ¹ / ₂	2 ³ / ₄
E	24 ¹ / ₂	31 ³ / ₄	36 ⁷ / ₈
F	15	18 ³ / ₄	25 ¹ / ₄
G	18	18	18
H	29 ¹ / ₄	36 ¹ / ₂	41 ⁷ / ₈
I	19 ³ / ₄	23 ¹ / ₂	30 ¹ / ₄
J	9	9	9

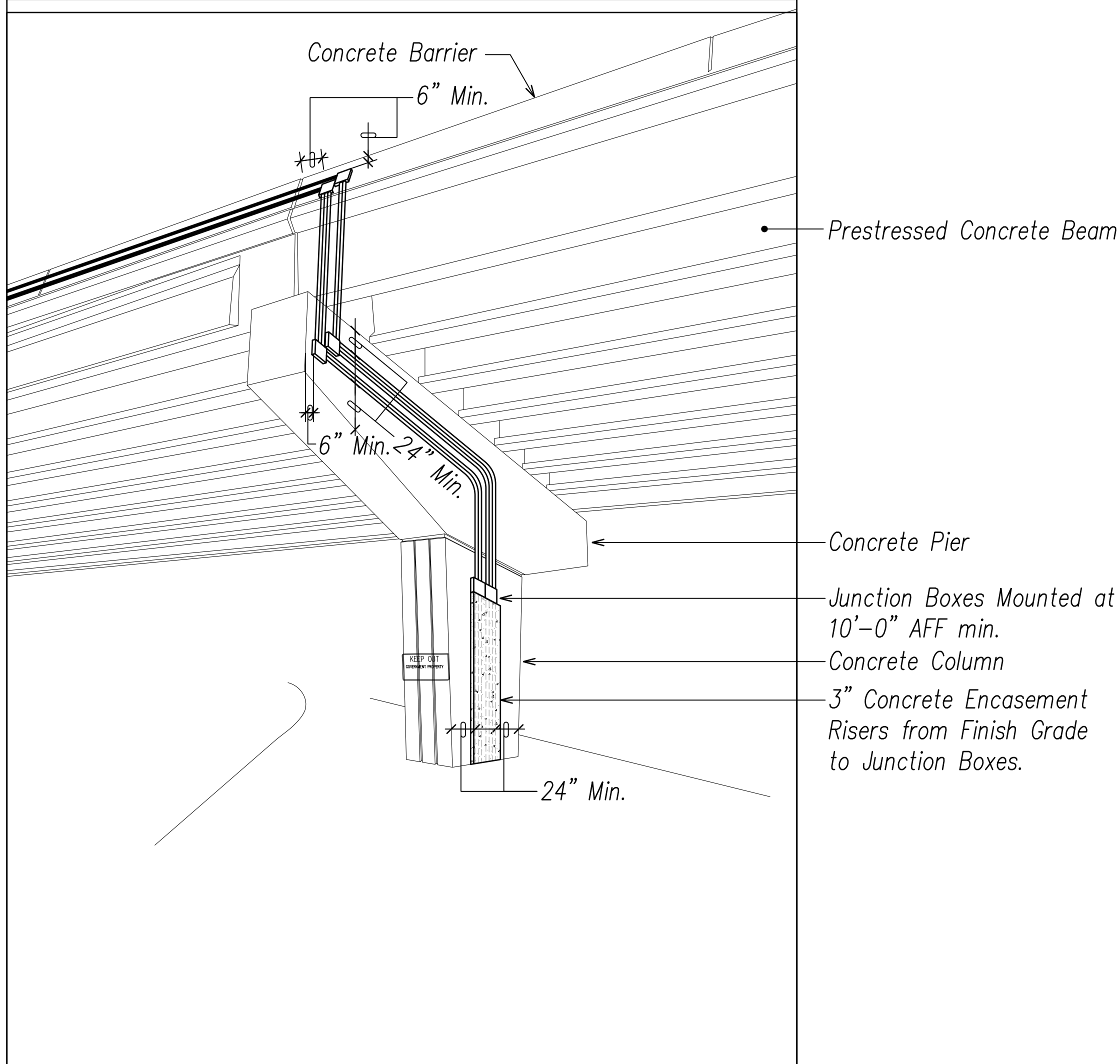
NOTE: ALL DIMENSIONS ARE IN INCHES & ARE NOMINAL.



ELEVATION

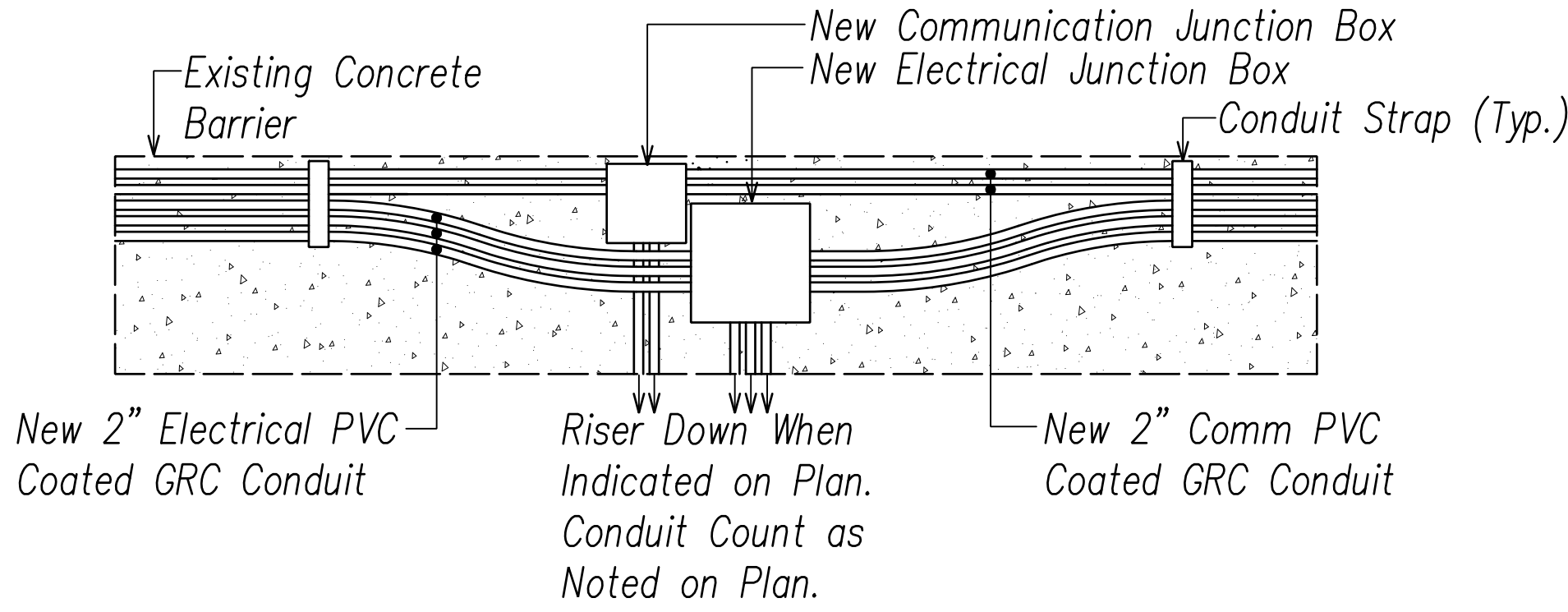
A
E-32

Non-Concrete Pullbox Detail
Not To Scale



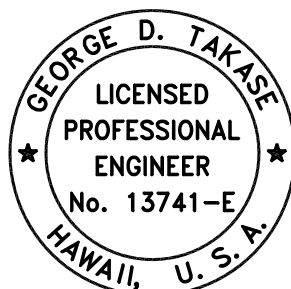
B
E-32

Viaduct Riser Detail
NOT TO SCALE



C
E-32

Typical Junction Box/Conduit Elevation Detail
NOT TO SCALE



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APRIL 30, 2022
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
VIADUCT RISER DETAIL

Freeway Management System, Phase 3,
Unit 1
Federal Aid Project No. NH-0300(152)

Scale: As Noted Date: June 25, 2021