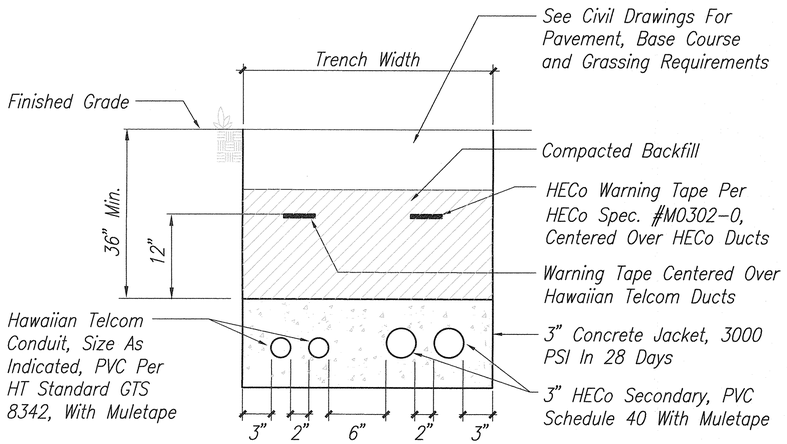
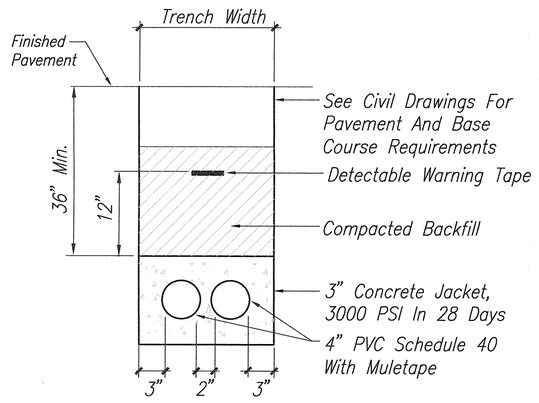
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	146	161



1/E-1 TYPICAL UTILITY COMPANY DUCT SECTION
Not To Scale



2/E-1 SIGNAL CORPS DUCT SECTION
Not To Scale

ELECTRICAL SYMBOL LIST

SYMBOL EXISTING	SYMBOL NEW	DESCRIPTION
		Street Light Luminaire And Bracket Arm Mounted On Joint Utility Pole
		Manhole Or Handhole, Type As Noted
P16	P16	Joint Pole, Pole #16 Indicated
		Guy And Anchor
		Underground Ductline
	-OH/-	Overhead Wiring (ST=Sub Transmission, P=Primary, S=Secondary, N=Neutral, T=Telephone, TV=Cable Television, SL=Street Lighting, G=Guy Wire)
	X	Denotes Demolition/Removal
	2/E-2	Detail Indicator: Top Half Denotes Detail Number, Left Denotes Sheet On Which Detail Shown
	GND	Ground
	HECo	Hawaiian Electric Company
	HT	Hawaiian Telcom
	WP	Weatherproof
	1	Note Indicator

Kaipapau Utility Relocation
46/12kV Overhead

HAWAIIAN ELECTRIC CO., INC.
ENGINEERING DEPT.

HECO DWG. or P.O. NO.	REV.
1-1/-1	0

TYPE OF REVIEW
- ☐ Preliminary, submit final copy
- ☐ Revise as noted & resubmit for review
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- ☐ As to substance only without comments
- ☐ Submit reproducible per Specs

Reviewed By: I. LEE — Date: 12/4/20

Reviewed	M	E	CSA
		su cu	

Hawaiian Electric Company's review shall in no way relieve Vendor/Contractor from responsibility for engineering, design, workmanship, material, performance of equipment and material, and any other liability under contract or by law.

APPROVED

Hawaiian Telcom — Date 12/15/20

MICHELE N. ADOLPHO
LICENSED PROFESSIONAL ENGINEER
No. 10017-E
HAWAII, U.S.A.

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SIGNATURE — LIC. EXPIRATION 4/30/22
Project Engineer for ECS Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL SYMBOL LIST AND DUCT DETAILS

Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

Scale: As Noted — Date: November 2020

SHEET No. E-1 OF 16 SHEETS

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

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RMTC JOB NO. : 1-19548-0E

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	147	161

HIGHWAY LIGHTING NOTES:

1. The Contractor shall notify the State Highways, Highway Lighting and Traffic Supervisor 72 hours in advance before commencing work on the highway lighting system. Phone: 837-8056.

2. All luminaires shall be LED type with wattage, initial lumen output, and I.E.S. Type light distribution as shown on the approved plans.

3. The Contractor shall have one set of approved plans at job site at all times during the construction work and record all changes which occur during construction of the highway lighting system.

4. Contractor to stencil date of installation at the bottom of each lighting control node.

5. Final acceptance and inspection will be undertaken only after all work has been completed.

6. Temporary Lighting: The Contractor shall schedule the construction work in such a manner that highway lighting is provided during all hours of darkness either with new, temporary or existing luminaires or a combination thereof. Temporary pole assemblies, wiring and connections may need to be utilized. Temporary wiring may be installed in exposed conduit, where not subject to vehicular damage, or with overhead wiring. Overhead wiring shall be a minimum of 20 feet above roadways at its lowest measured point, unless approved by the Engineer.

   Contractor shall maintain existing circuiting or provide temporary connections to existing highway lights through construction of the new highway lighting system. Existing highway lights scheduled for demolition shall remain in operation to maintain existing illumination levels utilizing either existing or temporary pole assemblies, luminaires, wiring and connections until new highway lights can be energized and are approved by the Engineer. New highway lights shall be energized by either permanent or temporary wiring and connections prior to demolition of the existing highway lighting system.

   Submit all proposed temporary lighting plans to the Engineer for review and acceptance. Temporary lighting standard assemblies, if required, and associated structural support design shall be stamped by a registered structural engineer and submitted to the Engineer for acceptance.

   Temporary highway lighting systems shall be removed after completion of bridge replacement. Costs associated with removal of the temporary lighting system shall be considered incidental to the cost of the temporary highway lighting system.

7. All temporary pole locations shall be staked, and approval of locations shall be obtained from the Engineer before installation. Pole locations in the field will be required to clear underground and aerial utility lines. New pole locations shall not conflict with any existing or proposed utility and shall not obstruct any roadway sign. The Contractor shall be responsible for costs incurred by conflicting utilities.

8. The Contractor shall at his expense, keep the project and surrounding area free from dust nuisance and shall be responsible for cleaning and removal of all silt and debris generated by the excavation work and deposited and accumulated within downstream waterways, ditches, drain pipes and on public roadways. Any citations (fines) received by the State for the Contractor's noncompliance of any Department of Health regulations shall be deducted from the progress payment.

9. The Contractor shall locate existing buried utility lines in the vicinity of the excavation work prior to commencing excavation. As a minimum, an electronic magnetic device for detection of buried lines shall be utilized prior to excavation. Trenches shall be excavated with care. The Contractor shall be responsible for damages to existing utilities resulting from his negligence and shall bear cost of repairs to the utilities. Method of repair shall be approved by the State.

10. The Electrical Contractor shall have personnel on the project that comply with the following qualifications:

    a. One (1) registered master electrician in the company.

    b. Certified journeyman electrician at each construction location to perform splicing of cables and all required wiring work.

11. Submit lighting calculations using the proposed luminaire for acceptance by the Engineer. Lighting criteria shall be as follows:

    Design Illumination Level = 0.8 footcandle average maintained.

    Design Uniformity Ratio
    (Average to Minimum) = 3.5 to 1 maximum.

    Design Maintenance Factor = 0.85

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

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RMTC JOB NO. : 1-19548 OE

MICHELE N. ADOLPHO
LICENSED PROFESSIONAL ENGINEER
No. 10017-E
HAWAII, U.S.A.

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Signature 4/30/22
LIC EXPIRATION
Project Engineer for FCS, Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGHWAY LIGHTING NOTES

Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

Scale: As Noted Date: November 2020

SHEET No. E-2 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	148	161

HAWAIIAN ELECTRIC COMPANY NOTES:

1. 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 Division (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 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 Division at 543-7070 for assistance in identifying and safeguarding overhead power lines.

6. Pole Bracing
Contractor shall not excavate within 10 feet of Hawaiian Electric's utility poles or any anchor system supporting the utility pole. If Contractor must excavate an area more than 12 inches deep by 12 inches wide, and 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 notify Hawaiian Electric which may lead to implementing pole bracing requirements. Hawaiian Electric requires a minimum of ten (10) working days to conduct the review of Contractor's Submittal. Contractor shall submit its bracing calculations and drawings, prepared and stamped by a licensed structural engineer, to Hawaiian Electric's Customer Installations Division (543-7070) for review. 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 receipt of pole bracing calculation or drawing submittals of any Contractor, including work procedure, shall not relieve Contractor from any liability resulting from Contractor's excavation near or around Hawaiian Electric's utility poles.

7. Underground Lines
The Contractor shall exercise extreme caution 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 Division at 543-7070 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.

8. 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).

9. Excavations
When trench excavation is adjacent to or beneath Hawaiian Electric's existing structures or facilities, the Contractor is responsible for:
a) Arranging for Hawaiian Electric Standby Personnel to observe work at Contractor's cost.
b) 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.
c) Properly supporting existing structures or facilities with beams, struts, under-pinnings, or other necessary methods to fully protect it from damage.
d) Backfilling with proper backfill material including special thermal backfill where existing (refer to Engineering Division 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.

Kaipapau Utility Relocation
46/12kV Overhead

HAWAIIAN ELECTRIC CO., INC.
ENGINEERING DEPT.

HECO DWG. or P.O. NO.	REV.
1-1/-2	0

TYPE OF REVIEW
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Reviewed By: I. LEE Date: 12/4/20

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

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RMTC JOB NO. : 1-19548-0E

MICHELE N. ADOLPHO
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SIGNATURE 4/30/22 LIC. EXPIRATION

Project Engineer for ECS Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HAWAIIAN ELECTRIC
COMPANY NOTES
Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

Scale: As Noted Date: November 2020

SHEET No. E-3 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	149	161

Table 1: 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 Hawaiian Electric'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" and 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.

Table 2: 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 Hawaiian Electric's STD. 30-1030) for a distance of 5' plus pipe diameter.
   - If clearance is between 12" and 24", 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 jac[illegible]all be total clear distance between the concrete

Hawaiian Electric Company's review shall in no way relieve Consultant from responsibility for services performed and any other liability under contract or by law.

5. 36" clearance is required for trenchless installation work.

Kaipapau Utility Relocation
46/12kV Overhead

HAWAIIAN ELECTRIC CO., INC.
ENGINEERING DEPT.

HECO DWG. or P.O. NO.	REV.
1-1/-3	0

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Reviewed	M	E	CSA
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RMTC JOB NO. : 1-19548-0E

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No. 10017-E
HAWAII, U.S.A.

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SIGNATURE 4/30/22 LIC. EXPIRATION
Project Engineer for ECS Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HAWAIIAN ELECTRIC
COMPANY NOTES
Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

Scale: As Noted — Date: November 2020

SHEET No. E-4 OF 16 SHEETS

149

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	150	161

HAWAIIAN ELECTRIC COMPANY NOTES (CONT.):

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 Division at 543-7070 a minimum of three (3) 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 (See Tables 1 & 2 on Sheet E-4).
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.

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 Group at 543-2567 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 Group at 543-2567 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
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RMTC JOB NO. : 1-19548-0E

Kaipapau Utility Relocation
46/12kV Overhead

HAWAIIAN ELECTRIC CO., INC.
ENGINEERING DEPT.

HECO DWG. or P.O. NO.	REV.
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Reviewed By: T. LEE — Date: 12/4/20

Reviewed	M	E	CSA

US ARMY SIGNAL CORPS - NETWORK ENTERPRISE CENTER - HAWAII, JOINT TRUNKING SYSTEM/OUTSIDE CABLE PLANT GENERAL CONSTRUCTION NOTES:

1. All work impacting US Army Signal Corps (SC) telecommunications facilities and infrastructure shall be completed in accordance with:
   a. Military Standards and US Army Regulations (current version).
   b. US Army Technical Criteria for the Installation Information Infrastructure Architecture (I3A) dated February 2010 (or most current). A copy of the I3A Technical Criteria can be found at: http://www.lrl.usace.army.mil/ed2/article.asp?id=1416&MyCategory=212.
   c. National Electric Code (NEC) and National Electric Safety Code (NESC), most current version.
   d. ANSI/TIA/EIA Telecommunication Standards.
   e. National Electrical Manufacturer's Association (NEMA) Bulletin No. TCB 2-2000.

   NOTE: The Contractor shall be responsible for acquisition of all applicable guidance and directives.

2. The Contractor shall ensure the following for OSP placements:
   a. All duct joints shall be reamed to avoid burrs, obstructions, or areas where the mandrel will not flow freely or smoothly. Contractors shall utilize the NEMA Bulletin No. TCB 2-2000 for the general guidelines on the selection and installation of underground non-metallic duct. An electronic copy of this file is available at: http://www.nema.org/stds/tcb2.cfm.
   b. All protruding surfaces in the communication ducts at the joints of connection points shall be repaired or replaced by the Contractor until accepted by the Government and/or the Government Service Provider.
   c. All new communication ducts shall be swabbed (cleaned) and bi-directional mandrel tested by the Contractor. Ducts shall be completely dry and clean (free of dirt, rocks and debris).
   d. Mandrels shall flow freely and smoothly with no noticeable obstructions or hang-ups.
   e. All equipment and personnel for mandrel testing shall be provided by the Contractor.
   f. Mandrels used for communication duct testing shall be 12-inches in length, solid, non-tapered, and a diameter of 0.25-inches less than the inner diameter of the ducts being tested.
   g. Government and/or Government Service Provider shall witness all mandrel testing and Government and/or Government Service Provider acceptance of mandrelled ducts is required.
   h. Upon completion of mandrel testing, ducts shall be plugged in order to prevent debris from entering before use.
3. The Contractor shall ensure the casting of all "new" maintenance hole covers bear the imprinting of the words "USA Signal Corps." The inside neck of the maintenance hole shall be permanently labeled with the maintenance hole identifier provided by the Government.
4. The cover and ring of the maintenance hole shall be manufactured with thread holes (5/8" threads) to accept security bolts. Security patterns are unique to the US Army.
5. The Contractor shall obtain and fund for all required permits, notices, licenses and authorizations for the intended work for Federal and US Military Facilities and infrastructure.
6. The Contractor shall be responsible to validate military and defense cables identified and shall ensure other utilities/facilities, both aerial and underground, are secured and not impacted during operation. Outages and damages to other utilities shall be the responsibility of the Contractor.
7. The Network Enterprise Center POC is Mr. Walter Selders, walter.l.selders.civ@mail.mil, (808) 787-5357. Alternate POC is Mr. Barton Wynn, barton.j.wynn.civ@mail.mil, (808) 787-1799.

MICHELE N. ADOLPHO
LICENSED PROFESSIONAL ENGINEER
No. 10017-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. "OBSERVATION OF CONSTRUCTION" IS DEFINED IN CHAPTER 16-115, HAWAII ADMINISTRATIVE RULES, ENTITLED "PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS."

SIGNATURE — LIC. EXPIRATION 4/30/22
Project Engineer for ECS Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HAWAIIAN ELECTRIC COMPANY NOTES
US ARMY SIGNAL CORPS NOTES
Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

Scale: As Noted — Date: November 2020

SHEET No. E-5 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	151	161

HAWAIIAN TELCOM NOTES:

1. The Contractor shall procure and pay for all licenses and permits and shall give all notices necessary and incident to the due and lawful prosecution of the work.

2. The Contractor shall obtain an excavation permit and toning request from Hawaiian Telcom's Excavation Permit Section, located at 1177 Bishop Street, two weeks prior to the start of construction. Hours of business are 8:00am to 11:00am and 12:00pm to 3:00pm Monday through Friday, except holidays.

3. Prior to the excavation of the ductline, the Contractor shall request Hawaiian Telcom to locate existing ductline wherever required. For underground cable locating and marking, five (5) working days advance notice is required. Three (3) working days advance notice is required for any inspection by a designated representative.

4. The locations of existing utilities are approximate only. The Contractor shall exercise extreme caution and shall maintain proper clearances whenever construction crosses or is in close proximity of Hawaiian Telcom facilities. The Contractor shall verify their locations and shall be liable for any damages to Hawaiian Telcom facilities. Any damages shall be reported immediately to Hawaiian Telcom's repair section at #611 (24 hours) or to the excavation permit section at 546-7746 (normal working hours, Monday through Friday, except holidays). As a result of his operations, adjustments to the new ductline alignment, if required, shall be made to provide the required clearances.

5. The Contractor shall take necessary precaution not to damage existing cables or ducts. A Hawaiian Telcom inspector or designated representative is required to be at any job site whenever there will be a breakage into or entry into any structure that contain Hawaiian Telcom's facilities. Temporary cable and duct supports shall be provided wherever necessary.

6. The Contractor shall notify Hawaiian Telcom's inspector or designated representative a minimum of 72 hours prior to excavation, bracing, or backfilling of Hawaiian Telcom's structures or facilities.

7. All applicable construction work shall be done in accordance with the "Hawaiian Telcom Standard Specifications for Placing Telephone Systems" dated January 2007, all subsequent amendments and additions, and all other pertinent standards for telephone construction. Contractor shall familiarize his personnel by obtaining applicable specifications.

8. When excavation is adjacent to or beneath Hawaiian Telcom's existing structures or facilities, the Contractor shall:

   a) Sheet and/or brace the excavation to prevent slides, cave-ins, or settlements to ensure no movement to Hawaiian Telcom's structures or facilities.

   b) Protect existing structures and/or facilities with beams, struts, or underpinning while excavating beneath them to ensure no movement to Hawaiian Telcom's structures or facilities.

9. The Contractor shall brace all poles or light standards near the new ductline, manhole, or handhole during his operations.

10. The Contractor shall saw-cut A.C. pavement and concrete gutter wherever new manholes, handholes, or ductlines are to be placed and shall restore to existing condition or better.

11. The Contractor shall comply with the policy adopted by the Department of Planning and Permitting, City and County of Honolulu, concerning the replacement of concrete sidewalks after excavation work.

12. The underground pipes, cables, or ductlines known to exist by the engineer from his search of records are indicated on the plans. The Contractor shall verify the locations and depths of the facilities and exercise proper care in excavating in the area. Wherever connections of new utilities to existing utilities are shown on the plans, the Contractor shall expose the existing lines at the proposed connections to verify their locations and depths prior to excavation for the new lines.

13. Wherever connections to existing utilities are shown on the plans, the Contractor shall expose the existing lines prior to excavation of the main trenches to verify their locations and depths.

14. The Contractor, at his own expense, shall keep the project and surrounding area free from dust nuisance. The cost for supplementary measures, which will be required by the City and County, shall be borne by the Contractor.

15. The Contractor shall pump all manholes dry during final inspection.

16. The Contractor shall notify Hawaiian Telcom inspector 24 hours priors to the pouring of concrete or backfilling.

17. When connecting to manhole walls, all existing reinforcing bars shall be left intact. Ducts shall be adjusted in the field in order to clear reinforcing.

18. The Contractor shall be responsible for laying out all required lines and grades and shall preserve all bench marks and working points neccessary to lay out the work correctly. The new ductline shall be adjusted by the Contractor to suit the existing conditions and the details as described in the plans.

19. Minimum concrete strength shall be:

For ductline	2500 PSI at 28 days
For manhole	3000 PSI at 28 days or as specified in design notes

20. Bends in the duct alignment, due to changes in grade shall have a minimum radius of 25 feet. All 90 degree c-bends at a pole or at the building floor slab penetration, shall have a bend radius of ten times the diameter of the duct or greater.

21. After ductline has been completed, a mandrel with a square front not less than 12" long and having a diameter of 1/4" less than the inside diameter of the duct, shall be pulled through each duct after which a brush with stiff bristles shall be pulled through to make certain that no particles of earth, sand, or gravel have been left inside. Ducts shall be completely dry and clean.

22. All ducts and conduits shall have an 1800# polyester mule-tape (Neptco, WP1800P, Hawaiian Telcom Material Code No. 571154) installed throughout its entire length. All ducts shall be capped to prevent entry of foreign material during construction and at the completion of installation.

APPROVED

Hawaiian Telcom — Date 12/15/20

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

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RMTC JOB NO. : 1-19548-0E

MICHELE N. ADOLPHO
LICENSED PROFESSIONAL ENGINEER
No. 10017-E
HAWAII, U.S.A.

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SIGNATURE 4/30/22 LIC. EXPIRATION
Project Engineer for ECS Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HAWAIIAN TELCOM NOTES

Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

Scale: As Noted — Date: November 2020

SHEET No. E-6 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	152	161

SPECTRUM NOTES:

1. The Contractor shall procure and pay for all licenses and permits and shall give all notices necessary and incident to the due and lawfull prosecution of the work.

2. The locations of existing utilities are approximate only. The Contractor shall verify their locations and shall be responsible for any damages to these utilities as a result of his operations. Adjustments to the new ductline alignment, if required, shall be made to provide the required clearances.

3. The Contractor shall brace all poles or light standards near the new ductline, manhole or handhole during its operations.

4. The Contractor shall saw-cut A.C. pavement, concrete gutter, and concrete sidewalk wherever new manholes, handholes, pullboxes or ductlines are to be placed and shall restore to existing condition or better.

5. The underground pipes, cables, or ductlines known to exist by the Engineer from his search of records are indicated on the plans. The Contractor shall verify the locations and depths of the facilities and exercise proper care in excavating in the areas. Wherever connections of new utilities to existing utilities are shown on the plans, the Contractor shall expose the existing lines at the proposed connections to verify their locations and depths prior to excavation for the new lines.

6. The Contractor, at his own expense, shall keep the project and surrounding area free from dust nuisance. The cost for suplementary measures, which will be required by The State, shall be borne by the Contractor.

7. Prior to the excavation of the ductline, the Contractor shall request that Spectrum to locate existing ductline wherever required.

8. The Contractor shall take necessary precaution not to damage existing cables or ducts. Any work involving existing cables or ducts shall be done in the presence of the Spectrum inspector or his representative.

9. The Contractor shall notify the Spectrum inspector 72 hours prior to the start of work on CATV infrastructure, pouring of concrete, or backfilling. Spectrum's inspector, Moki Place, can be reached at 306-0658.

10. Wherever connections to existing utilities are shown on the plans, the Contractor shall expose the existing lines prior to excavation of the main trenches to verify their locations and depths.

11. Contractor shall provide all materials and furnish all labor and equipment necessary to install the ductline in place complete.

12. The Contractor shall be responsible for laying out all required lines and grades and shall preserve all bench marks and working points necessary to lay out the work correctly. The new ductline shall be adjusted by the Contractor to suit the existing conditions and the details as described in the plans.

13. The Contractor, at his own expense, shall keep the project area free from dust nuisance. The work shall be in conformance with the Air Polution Control Standards and Regulations of the State of Hawaii, Department of Health.

14. The location of CATV facilities shown on plans are from existing records with varying degrees of accuracy as to its actual fixed location. The Contractor shall use extreme caution when working in close proximity of CATV facilities.

15. The Contractor shall obtain excavation permit clearance from Spectrum's Engineering Section located at 200 Akamainui St., Mililani Tech Park.

16. Any work required to relocate CATV facilities shall be done by Spectrum and the Contractor shall be responsible for all coordination requirements and associated costs.

17. Any damage to Spectrum's Facilities shall be reported to Spectrum's Pepair Dispatch Department at 625-8282.

18. The Contractor shall tunnel under existing concrete curb and gutter as necessary to extend conduit into existing CATV pullbox and into the proposed power supply pullbox.

19. All existing improvements that are disturbed during the construction phase shall be restored to its original or better condition at no cost to the State in accordance with State's Standards.

20. At locations where existing CATV pullbox replacement is proposed, the Contractor shall take all necessary precaution not to damage the existing cables in the pullbox. All damages to existing cables shall be repaired by Spectrum and paid for by the Contractor.

21. Coordinate all penetration of telephone pullboxes with GTE Hawaiian Tel Inspector.

22. Smooth finish inside wall of existing pullboxes and hand-holes to its original condition or better. All entrances into the pullbox shall be grouted around the conduits.

23. For conduits larger than 2", the Contractor shall install NEPTCO WP1800 muletape or approved equal in all ductlines, leave muletape in place for future use as a pull or fish line, unless otherwise noted. Reference GTE Material Code No. 571154. All ducts shall be capped to prevent entry of foreign material during construction and at completion of installation. Endbells are required for conduits 2" and larger.

24. For conduits equal or less than 2", the Contractor shall place poly cord through out project, and secure in manholes, handholes, and pullboxes. Endbells are required for conduits 2" and larger.

25. Penetration into pullboxes if necessary to be from factory installed opening or from bricks position. Penetration from pullbox walls is not acceptable. All conduits shall enter through the end of the pullbox at 90 degrees.

26. A minimum of (2) precast sections must be used on all 2x4 or 2x6 pullboxes.

27. Two minimum layers of bricks to be used shall always be at least one layer lower than the lowest duct entering the pullbox. At no time however, shall there be less than two layers of bricks on each installation.

28. At no time shall cement mortar, wood, or any other material be used between precast sections. Leveling or raising of boxes to grade must be done at brickwork section using cement mortar. The permanent installation of wooden wedges to accomplish this purpose will not be accepted.

29. Concrete precast base may be used as an alternative to bricks.

30. Trenching to be by hand digging near and across existing utility lines.

31. Minimum clearance between street light stand and fire hydrants shall be three feet.

32. Underground utilities shown hereon is for information only. No guarantee is made on the accuracy or completeness of said installation.

33. For underground cable locating and marking, five working days advance notice is required. Three working days advance notice is required for any inspection by a designated representative. Contractor shall take necessary precaution not to damage any existing cables or ducts. Spectrum's Inspector or designated representative is required to be at any job site whenever there will be a breakage into or entry into any structure that contain Spectrum's Facilities.

34. Concrete strength shall be 3000 psi in 28 days.

35. Bends in the duct alignment, due to changes in grade shall have a minimum radius of 20-feet. All 90-degree C-bends at a pole or at the building floor slab penetration, shall have a bend radius of ten times the diameter of the duct or greater.

36. After ductline has been completed, a mandrel with a square front, not less than 12-inch long, and having a diameter of 1/4-inch less than the inside diameter of duct, shall be pulled through each duct after which a brush with stiff bristles shall be pulled through to make certain that no particles of earth, sand, or gravel have been left inside. ducts shall be completely dry and clean.

37. Metallic entrance conduits shall be grounded.

38. All conduits within a building shall:

    a) Be installed in the shortest and straightest possible run.
    b) Have no section longer than 100-feet nor contain more than two 90-degree bends. An approved sized junction box or gutter box shall be placed if this is exceeded.
    c) All bends shall be long sweep-radius bends but the inside radius of the bend must never be less than ten times the diameter of the conduit.

39. All construction must be Inspected and approved by Spectrum prior to the installation of any of its facilities and the energizing of its system.

40. Contractor and/or customer shall provide Spectrum with sufficient installation time in their occupancy time table.

41. Install 4-mil. thick orange color warning tape 3-inch wide, entire length of trench when placing CATV conduits. Tape should read "Caution Buried Cable Line Below". Manufactured by Harris Industries, Inc., catalog number UT-43 or equivalent tape. tape to be installed 12-inches below grade.

42. 5/8" copper ground rods shall be suplied and placed by Contractor in all pullboxes unless otherwise directed by Spectrum. Ground rods will be placed in the corner 3" to 4' from the wall and away from any conduit with no more than 8" sticking up above ground.

APPROVED

David Jamman 12/28/2020
Spectrum Date

MICHELE N. ADOLPHO
LICENSED PROFESSIONAL ENGINEER
No. 10017-E
HAWAII, U.S.A.

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Michele N. Adolpho 4/30/22
SIGNATURE LIC. EXPIRATION
Project Engineer for ECS Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SPECTRUM NOTES

Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

Scale: As Noted Date: November 2020

SHEET No. E-7 OF 16 SHEETS

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

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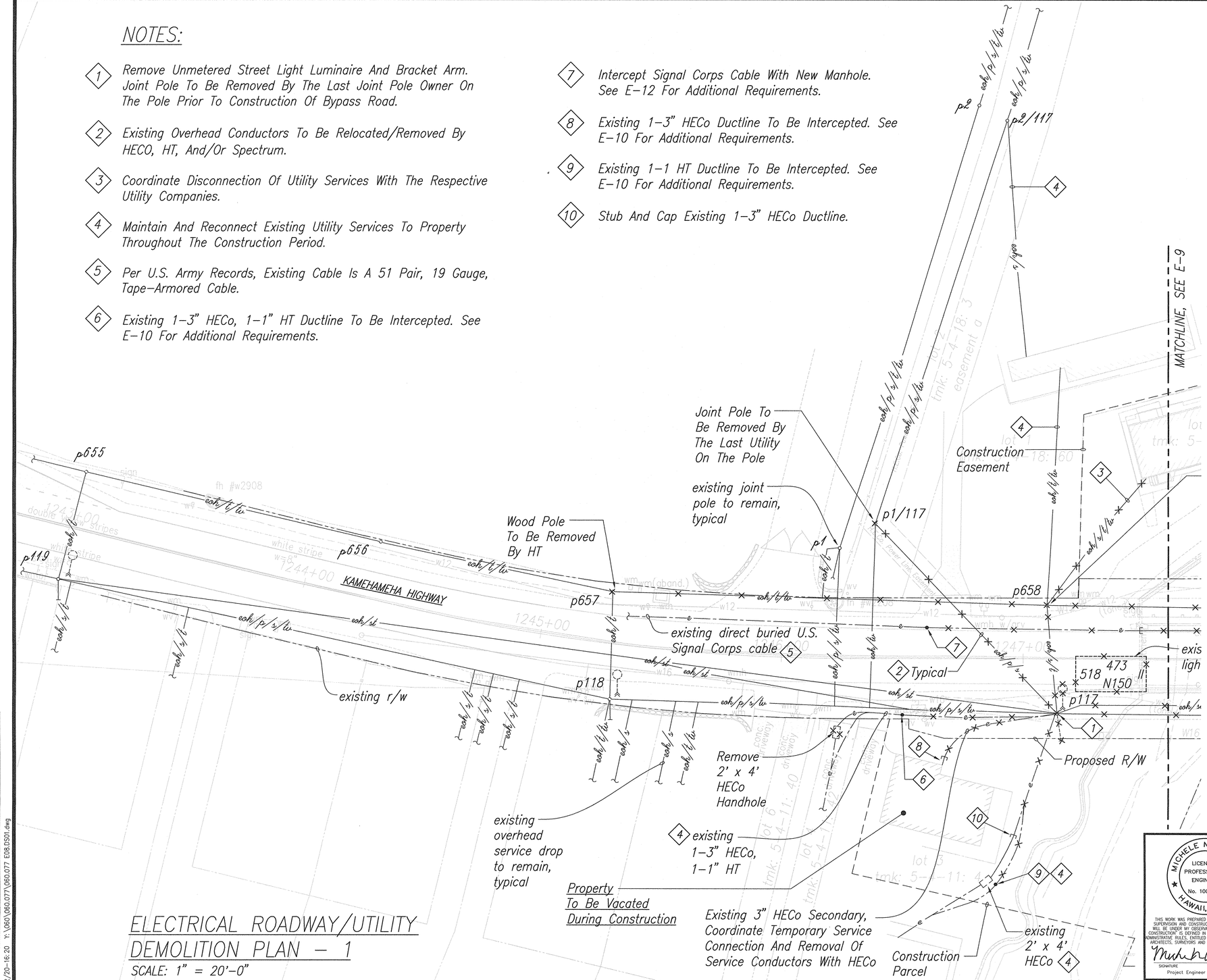
RMTC JOB NO. : 1-19548-0E

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	153	161

NOTES:

1. Remove Unmetered Street Light Luminaire And Bracket Arm. Joint Pole To Be Removed By The Last Joint Pole Owner On The Pole Prior To Construction Of Bypass Road.
2. Existing Overhead Conductors To Be Relocated/Removed By HECO, HT, And/Or Spectrum.
3. Coordinate Disconnection Of Utility Services With The Respective Utility Companies.
4. Maintain And Reconnect Existing Utility Services To Property Throughout The Construction Period.
5. Per U.S. Army Records, Existing Cable Is A 51 Pair, 19 Gauge, Tape-Armored Cable.
6. Existing 1-3" HECo, 1-1" HT Ductline To Be Intercepted. See E-10 For Additional Requirements.
7. Intercept Signal Corps Cable With New Manhole. See E-12 For Additional Requirements.
8. Existing 1-3" HECo Ductline To Be Intercepted. See E-10 For Additional Requirements.
9. Existing 1-1 HT Ductline To Be Intercepted. See E-10 For Additional Requirements.
10. Stub And Cap Existing 1-3" HECo Ductline.



Kaipapau Utility Relocation
46/12kV Overhead

HAWAIIAN ELECTRIC CO., INC.
ENGINEERING DEPT.

HECO DWG. or P.O. NO.	REV.
1-1/-5	0

TYPE OF REVIEW

- ☐ Preliminary, submit final copy
- ☐ Revise as noted & resubmit for review
- ☐ Revise as noted & submit final copy
- ☒ Final review
- ☐ As to substance only without comments
- ☐ Submit reproducible per Specs

Reviewed By: T. LEE — Date: 12/4/20

Reviewed	M	E	CSA
		su cu	

Hawaiian Electric Company's review shall in no way relieve Vendor/Contractor from responsibility for engineering, design, workmanship, material, performance of equipment and material, and any other liability under contract or by law.

APPROVED

Stephanie Iwamoto — 12/15/20
Hawaiian Telcom — Date

David Tamura — 12/28/2020
Spectrum — Date

GRAPHIC SCALE

20' 0' 20' 40' 60' 80'
1" = 20'

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

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RMTC JOB NO. : 1-19548-0E

ELECTRICAL ROADWAY/UTILITY DEMOLITION PLAN - 1
SCALE: 1" = 20'-0"

MICHELE N. ADOLPHO
LICENSED PROFESSIONAL ENGINEER
No. 10017-E
HAWAII, U.S.A.

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4/30/22
SIGNATURE — LIC. EXPIRATION
Project Engineer for ECS Inc.

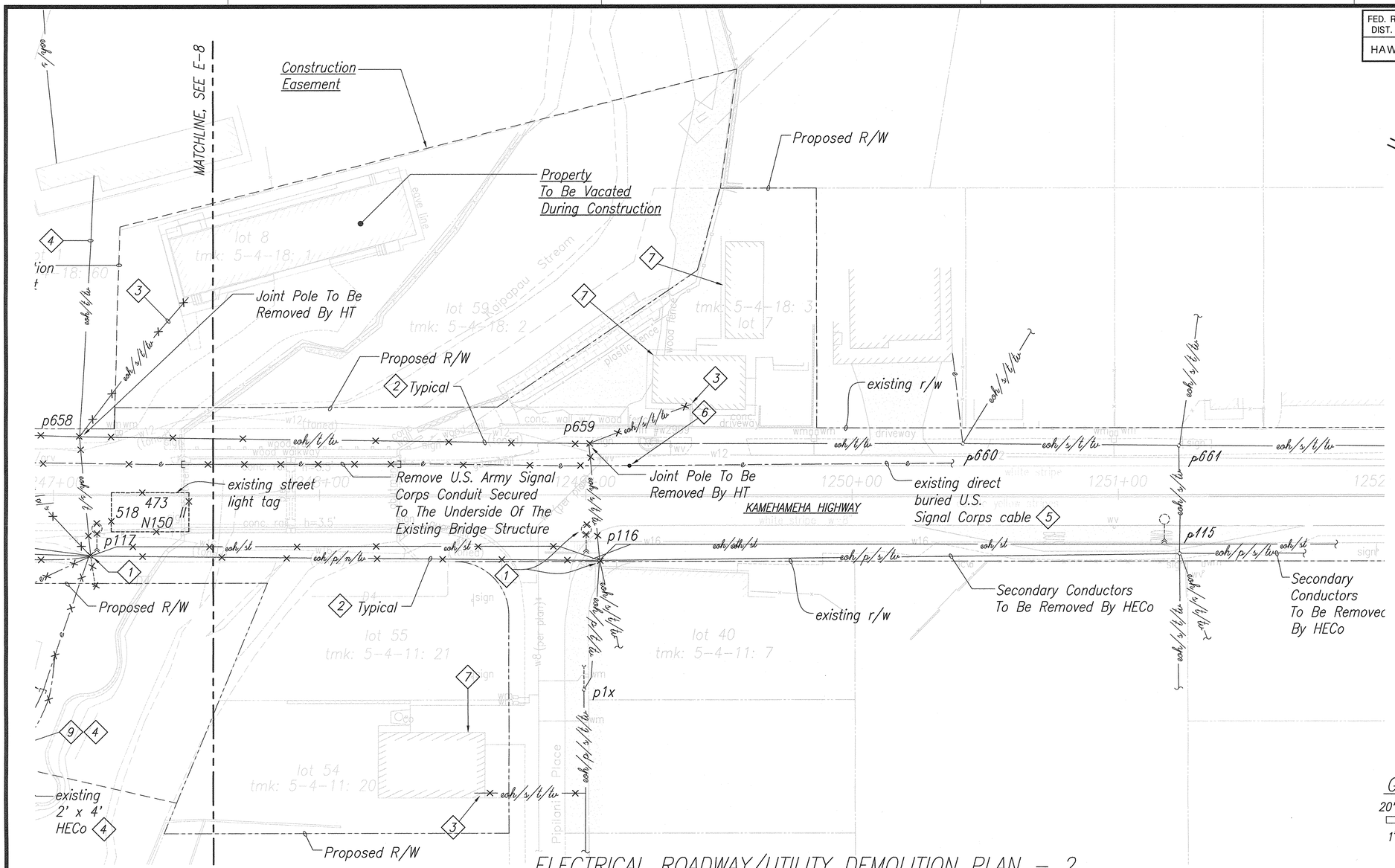
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL ROADWAY/UTILITY DEMOLITION PLAN - 1
Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

Scale: As Noted — Date: November 2020

SHEET No. E-8 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	154	161



ELECTRICAL ROADWAY/UTILITY DEMOLITION PLAN – 2

SCALE: 1" = 20'-0"

Kaipapau Utility Relocation
46/12kV Overhead

HAWAIIAN ELECTRIC CO., INC.
ENGINEERING DEPT.

HECO DWG. or P.O. NO.	REV.
1-1/-6	0

TYPE OF REVIEW

- ☐ Preliminary, submit final copy
- ☐ Revise as noted & resubmit for review
- ☐ Revise as noted & submit final copy
- ☒ Final review
- ☐ As to substance only without comments
- ☐ Submit reproducible per Specs

Reviewed By: I. LEE — Date: 12/4/20

Reviewed	M	E	CSA
		su Cu	

Hawaiian Electric Company's review shall in no way relieve Vendor/Contractor from responsibility for engineering, design, workmanship, material, performance of equipment and material, and any other liability under contract or by law.

APPROVED

Stephen Dorcino — 12/15/20
Hawaiian Telcom — Date

Dan Tamura — 12/28/2020
Spectrum — Date

GRAPHIC SCALE
20' 0' 20' 40' 60' 80'
1" = 20'

NOTES:

1. Remove Unmetered Street Light Luminaire And Bracket Arm. Joint Pole To Be Removed By The Last Joint Pole Owner On The Pole Prior To Construction Of Bypass Road.
2. Existing Overhead Conductors To Be Relocated/Removed By HECO, HT, And/Or Spectrum.
3. Coordinate Disconnection Of Utility Services With The Respective Utility Companies.
4. Maintain And Reconnect Existing Utility Services To Property Throughout The Construction Period.
5. Per U.S. Army Records, Existing Cable Is A 51 Pair, 19 Gauge, Tape-Armored Cable.
6. Intercept Signal Corps Cable With New Manhole, See E-13 For Additional Requirements.
7. Building To Be Demolished Prior To Start Of Construction.

ORIGINAL PLAN | SURVEY PLOTTED BY: HSY | DRAWN BY: | TRACED BY: WC | DESIGNED BY: | QUANTITIES BY: | CHECKED BY: | DATE:
NOTE BOOK | No.:
11/16/20-16:18 Y:\060\060.077\060.077 E09.0502.dwg

RMTC JOB NO. : 1-19548-0E

MICHELE N. ADOLPHO — LICENSED PROFESSIONAL ENGINEER — No. 10017-E — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. 'OBSERVATION OF CONSTRUCTION' IS DEFINED IN CHAPTER 16-115, HAWAII ADMINISTRATIVE RULES, ENTITLED 'PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS.'

SIGNATURE — 4/30/22 — LIC. EXPIRATION
Project Engineer for ECS Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL ROADWAY/UTILITY DEMOLITION PLAN – 2
Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

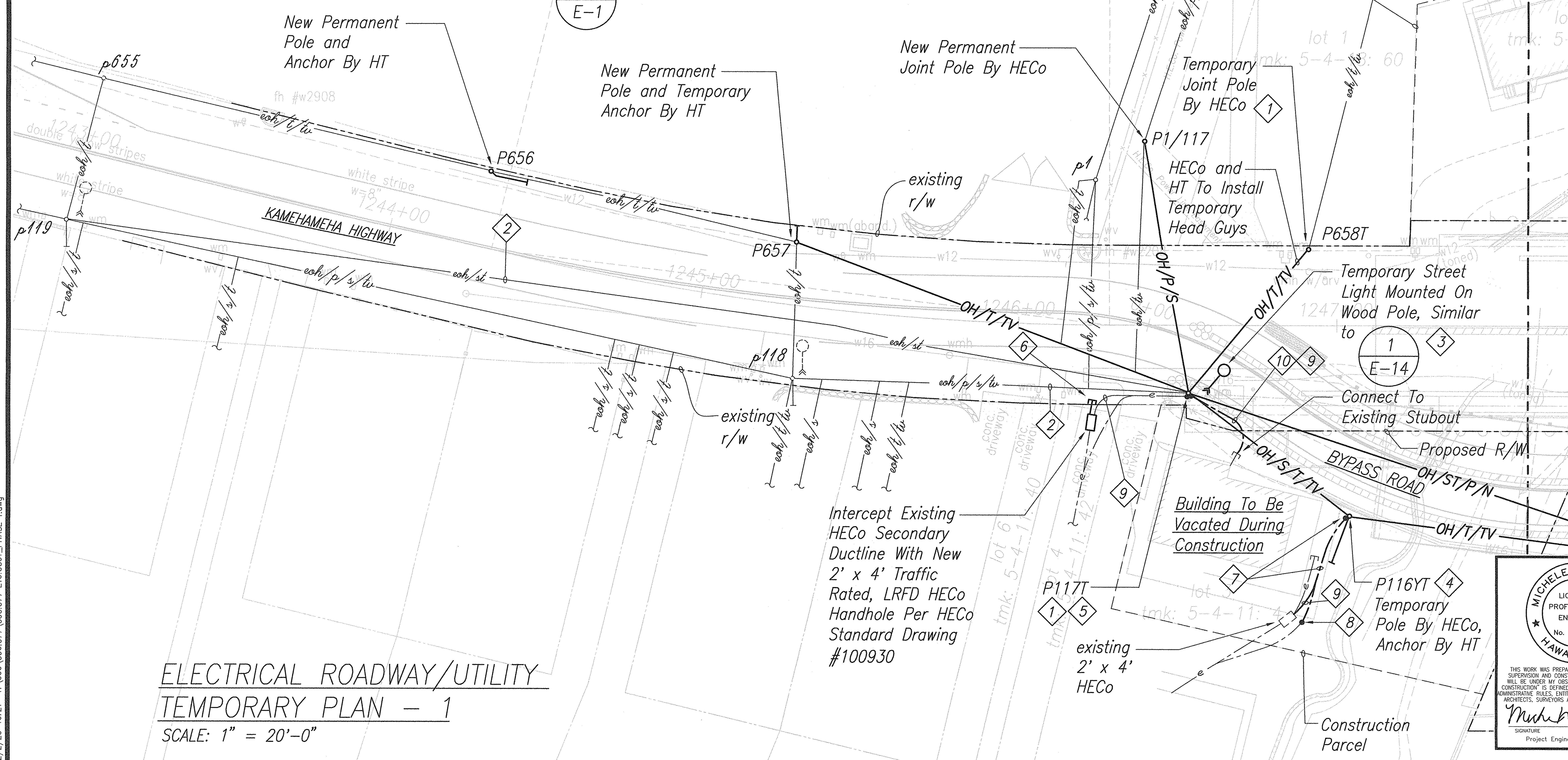
Scale: As Noted — Date: November 2020

SHEET No. E-9 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	155	161

NOTES:

1. Temporary Joint Pole To Be Removed By The Last Joint Pole Owner On The Pole After Construction Of New Bridge Is Completed.
2. Overhead Conductors To Be Relocated Or Adjusted By The Utility Companies After Construction Of New Bridge Is Completed.
3. Temporary Street Light Luminaire To Be Removed After Construction Of New Bridge Is Completed.
4. Temporary Wood Pole To Be Removed By HT After Construction Of New Bridge Is Completed.
5. Intercept Existing 1–3" HECo, 1–1" HT And Stubup At Temporary Joint Pole. For Typical Duct Section, See 1/E–1
6. New 3" HECo Secondary Ductline, Stub And Cap. For Typical Duct Section, See 1/E–1
7. New 1–3" HECo, 1–1" HT Ductline, Stubup At Temporary Joint Pole. Remove Ducts After Utility Companies Remove Cables In Ducts. For Typical Duct Section, See 1/E–1
8. Intercept 1" HT Ductline.
9. Remove 1–3" HECo Duct After HECo Removes Cables In Duct. Work To Be Completed During The Permanent Phase.
10. New 1–3" HECo Ductline, Stubup At Temporary Joint Pole. Coordinate Temporary Service Connection With HECo. For Typical Duct Section, See 1/E–1



ELECTRICAL ROADWAY/UTILITY TEMPORARY PLAN – 1

SCALE: 1" = 20'–0"

Kaipapau Utility Relocation
46/12kV Overhead

HAWAIIAN ELECTRIC CO., INC.
ENGINEERING DEPT.

HECO DWG. or P.O. NO.	REV.
1-1/-7	0

TYPE OF REVIEW
- ☐ Preliminary, submit final copy
- ☐ Revise as noted & resubmit for review
- ☐ Revise as noted & submit final copy
- ☒ Final review
- ☐ As to substance only without comments
- ☐ Submit reproducible per Specs

Reviewed By	Date
I. LEE	12/4/20

Reviewed	M	E	CSA
		su	

Hawaiian Electric Company's review shall in no way relieve Vendor/Contractor from responsibility for engineering, design, workmanship, material, performance of equipment and material, and any other liability under contract or by law.

APPROVED

Hawaiian Telcom	12/15/20 Date
Spectrum	12/28/2020 Date

GRAPHIC SCALE
20' 0' 20' 40' 60' 80'
1" = 20'

MICHELE N. ADOLPHO
LICENSED PROFESSIONAL ENGINEER
No. 10017–E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. "OBSERVATION OF CONSTRUCTION" IS DEFINED IN CHAPTER 16–115, HAWAII ADMINISTRATIVE RULES, ENTITLED "PROFESSIONAL ENGINEERS, ARCHITECTS, SURVEYORS AND LANDSCAPE ARCHITECTS."

SIGNATURE 4/30/22 LIC. EXPIRATION
Project Engineer for ECS Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL ROADWAY/UTILITY TEMPORARY PLAN – 1
Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

Scale: As Noted
Date: November 2020

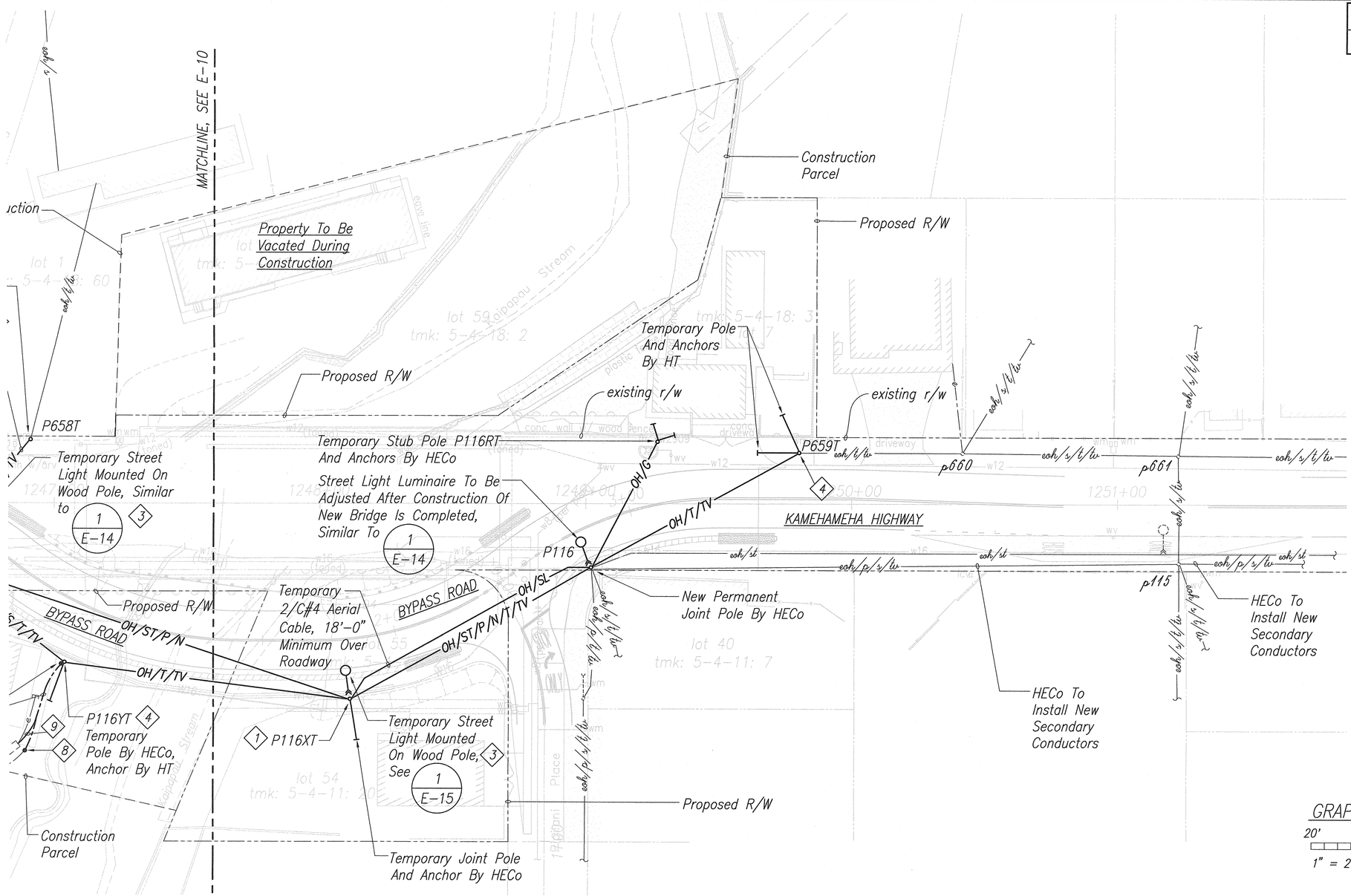
SHEET No. E-10 OF 16 SHEETS

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

12/2/20–16:21 Y:\060\060.077\060.077 E10.0501_PHASE 1.dwg

RMTC JOB NO. : 1–19548–0E

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	156	161



Kaipapau Utility Relocation
46/12kV Overhead

HAWAIIAN ELECTRIC CO., INC.
ENGINEERING DEPT.

HECO DWG. or P.O. NO.	REV.
1-1/-8	0

TYPE OF REVIEW

- ☐ Preliminary, submit final copy
- ☐ Revise as noted & resubmit for review
- ☐ Revise as noted & submit final copy
- ☒ Final review
- ☐ As to substance only without comments
- ☐ Submit reproducible per Specs

Reviewed By: I. LEE Date: 12/4/20

Reviewed	M	E	CSA
		su cu	

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APPROVED

Stephen Irvine — 12/15/20
Hawaiian Telcom — Date

David Jamnan — 12/28/2020
Spectrum — Date

GRAPHIC SCALE
20' 0' 20' 40' 60' 80'
1" = 20'

ELECTRICAL ROADWAY/UTILITY TEMPORARY PLAN – 2
SCALE: 1" = 20'-0"

NOTES:

1. Temporary Wood Pole To Be Removed By The Last Joint Pole Owner On The Pole After Construction Of New Bridge Is Completed.
2. Overhead Conductors To Be Relocated Or Adjusted By The Utility Companies After Construction Of New Bridge Is Completed.
3. Temporary Street Light Luminaire To Be Removed After Construction Of New Bridge Is Completed.
4. Temporary Wood Pole To Be Removed By HT After Construction Of New Bridge Is Completed.

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

11/16/20-16:19 X:\060\060.077\060.077 E11.0S01_PHASE 1.dwg

RMTC JOB NO. : 1-19548-0E

MICHELE N. ADOLPHO
LICENSED PROFESSIONAL ENGINEER
No. 10017-E
HAWAII, U.S.A.

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SIGNATURE — 4/30/22 — LIC. EXPIRATION
Project Engineer for ECS Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL ROADWAY/UTILITY TEMPORARY PLAN – 2
Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

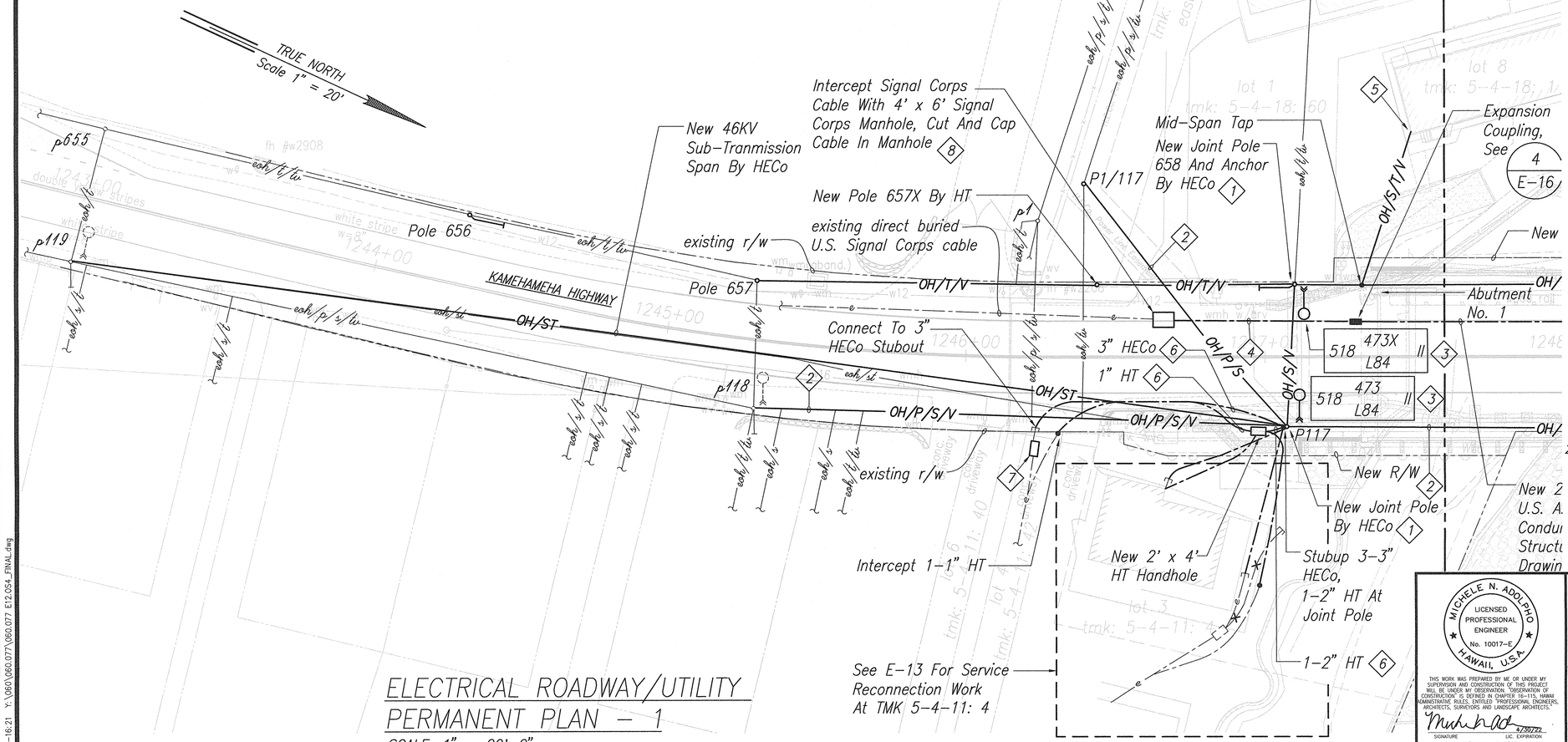
Scale: As Noted — Date: November 2020

SHEET No. E-11 OF 16 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	157	161

NOTES:

1. Permanent Utility Pole, By Utility Companies, After Construction Of Bridge Replacement.
2. Relocated Or Adjusted Overhead Conductors By Utility Companies, After Construction Of Bridge Replacement.
3. New Unmetered LED Street Lighting Luminaire And Bracket Arm Mounted On Joint Pole, See 1/E-14
4. 2-4" PVC Schedule 40, Concrete Encased Signal Corps Ductline, See 2/E-1
5. Permanent Utility Service Connection. Coordinate With The Respective Utility Companies.
6. For Typical Duct Section, See 1/E-1
7. 2' x 4' HECo Handhole Installed During Temporary Phase, See E-10.
8. Provide Stabilization Layer Below Manhole, See 3/E-16



ELECTRICAL ROADWAY/UTILITY PERMANENT PLAN – 1

SCALE: 1" = 20'-0"

Kaipapau Utility Relocation
46/12kV Overhead

HAWAIIAN ELECTRIC CO., INC.
ENGINEERING DEPT.

HECO DWG. or P.O. NO.	REV.
1-1/-9	0

TYPE OF REVIEW

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Reviewed By: I. LEE — Date: 12/4/20

Reviewed	M	E	CSA
		su Cu	

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APPROVED

Stephen Iwano — 12/15/20
Hawaiian Telcom — Date

Daniel Tamura — 12/28/2020
Spectrum — Date

GRAPHIC SCALE
20' 0' 20' 40' 60' 80'
1" = 20'

ORIGINAL PLANS	SURVEY PLOTTED BY	RSY	DATE
REVISED PLANS	DRAWN BY		
No.	NOTE BOOK	TRACED BY	WC
		DESIGNED BY	
		QUANTITIES BY	
		CHECKED BY	

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RMTC JOB NO. : 1-19548-0E

MICHELE N. ADOLPHO
LICENSED PROFESSIONAL ENGINEER
No. 10017-E
HAWAII, U.S.A.

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SIGNATURE — 4/30/22 LIC. EXPIRATION
Project Engineer for ECS Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL ROADWAY/UTILITY PERMANENT PLAN – 1

Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

Scale: As Noted — Date: November 2020

SHEET No. E-12 OF 16 SHEETS

ENGINEERING DEPT.	
HECO DWG. or P.O. NO. 1-1/-10	REV. 0

TYPE OF REVIEW

- ☐ Preliminary, submit final copy
- ☐ Revise as noted & resubmit for review
- ☐ Revise as noted & submit final copy
- ☒ Final review
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- ☐ Submit reproducible per Specs

Reviewed By: I. LEE — Date 12/4/20

Reviewed	M	E	CSA
		su CL	

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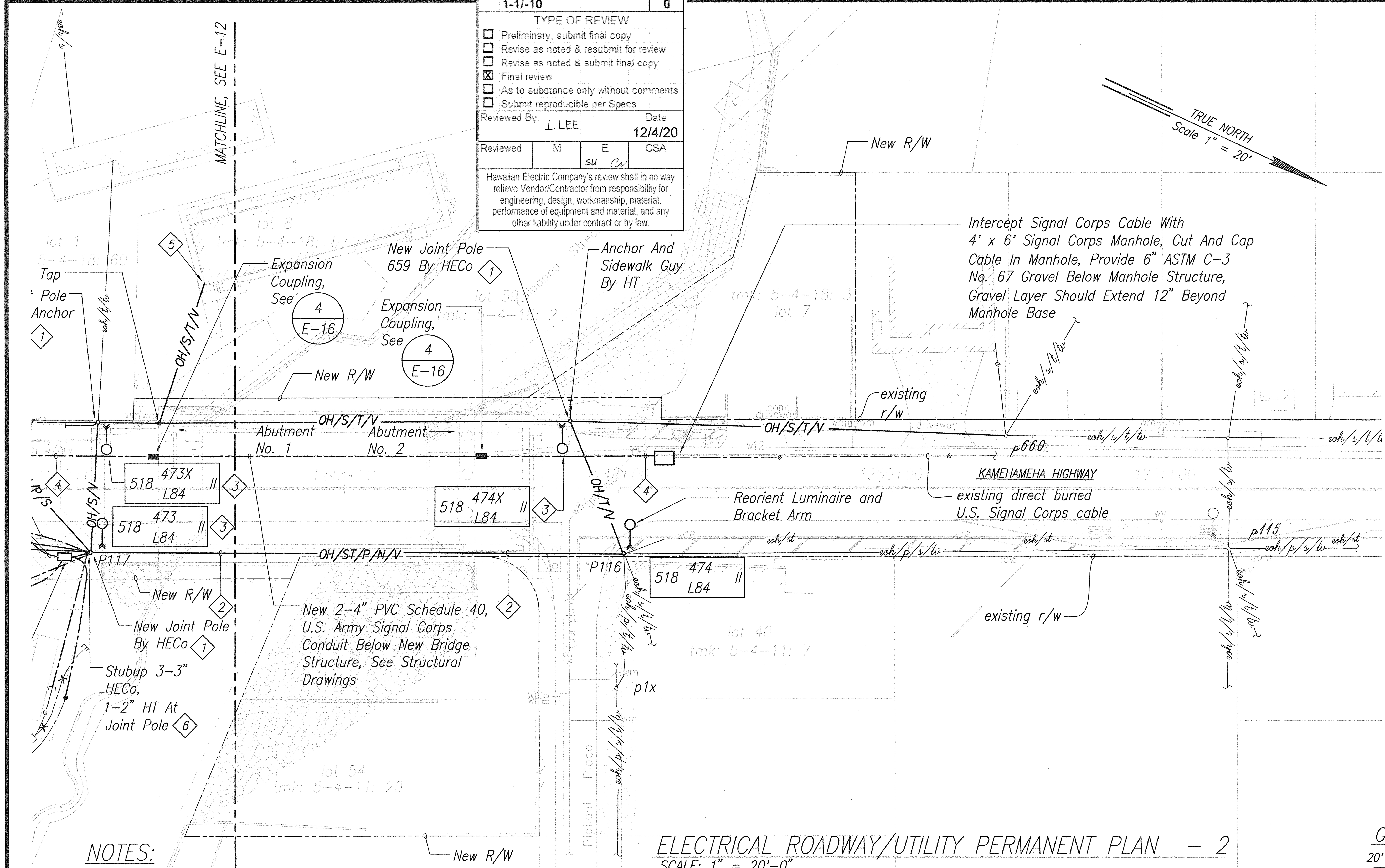
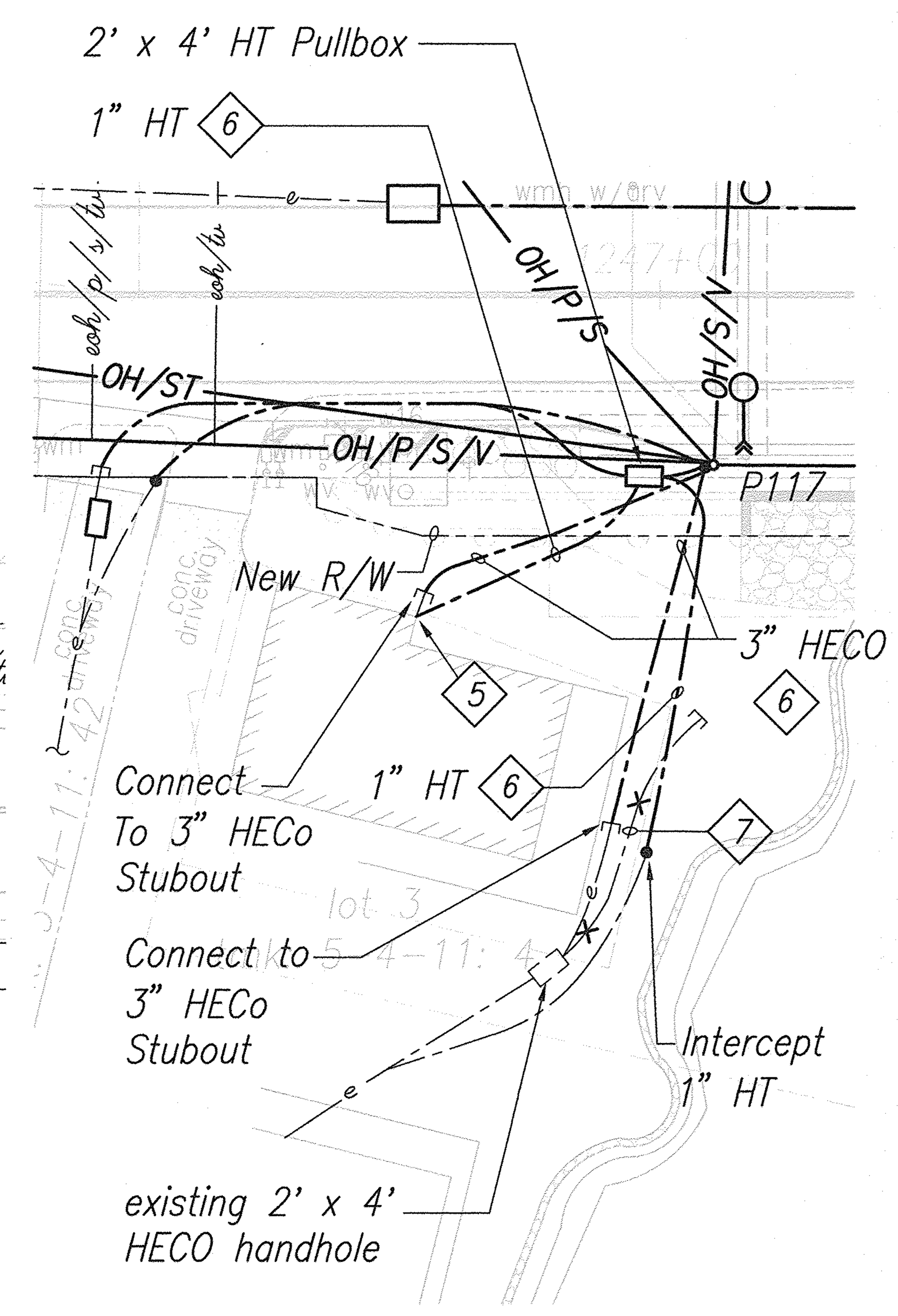
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	158	161



ELECTRICAL ROADWAY/UTILITY PERMANENT PLAN – 2
SCALE: 1" = 20'-0"



SERVICE RECONNECTION AT TMK 5-4-11:4
SCALE: 1" = 20'-0"

GRAPHIC SCALE

20' 0' 20' 40' 60' 80'

1" = 20'

NOTES:

1. Permanent Utility Pole, By Utility Companies, After Construction Of Bridge Replacement.
2. Relocated Or Adjusted Overhead Conductors By Utility Companies, After Construction Of Bridge Replacement.
3. New Unmetered LED Street Lighting Luminaire And Bracket Arm Mounted On Joint Pole, See 1/E-14
4. 2-4" PVC Schedule 40, Concrete Encased Signal Corps Ductline, See 2/E-1
5. Permanent Utility Service Connection. Coordinate With The Respective Utility Companies.
6. For Typical Duct Section, See 1/E-1
7. Remove Ductline After HECo Removes Cables In Duct.

APPROVED

Stephen Iwaino — 12/15/20
Hawaiian Telcom — Date

David Tamm — 12/28/2020
Spectrum — Date

MICHELE N. ADOLPHO — LICENSED PROFESSIONAL ENGINEER — No. 10017-E — HAWAII, U.S.A.

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SIGNATURE — 4/30/22 LIC. EXPIRATION

Project Engineer for ECS Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL ROADWAY/UTILITY PERMANENT PLAN – 2

Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

Scale: As Noted — Date: November 2020

SHEET No. E-13 OF 16 SHEETS

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

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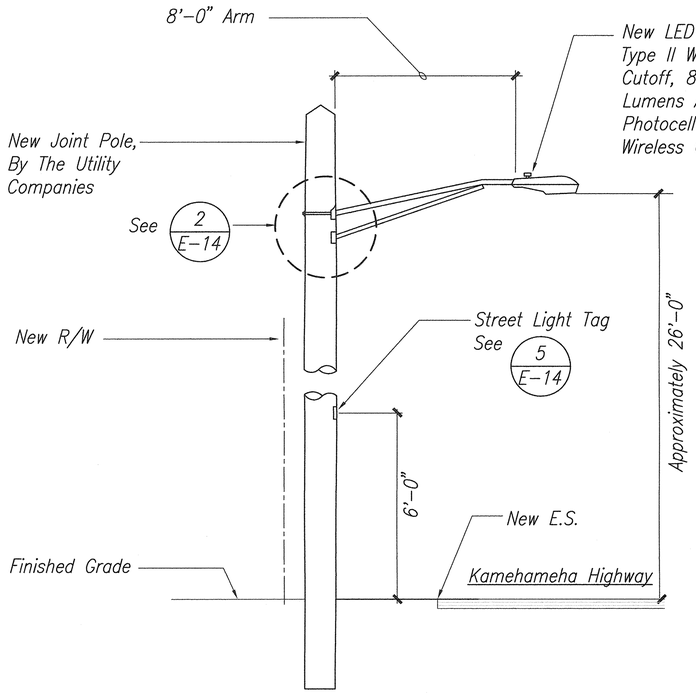
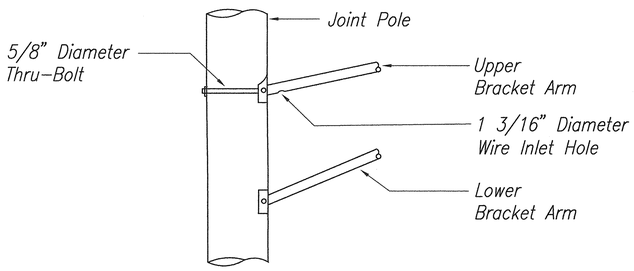
RMTC JOB NO. : 1-19548-0E

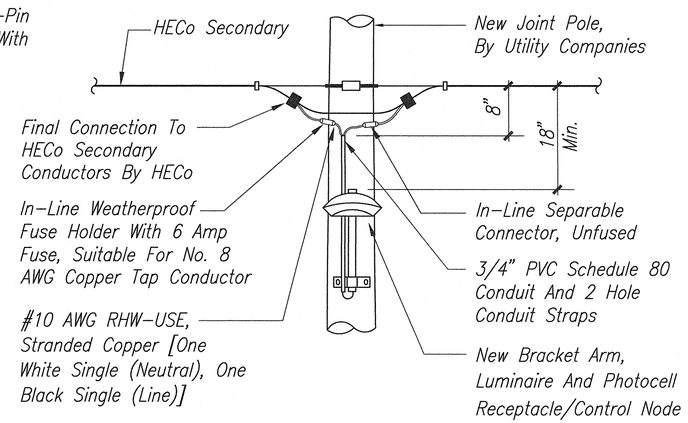
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	159	161



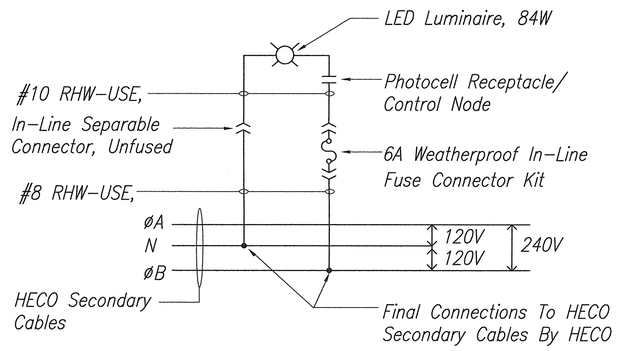
1 E-14 STREET LIGHT/WOOD POLE DETAIL
Not To Scale



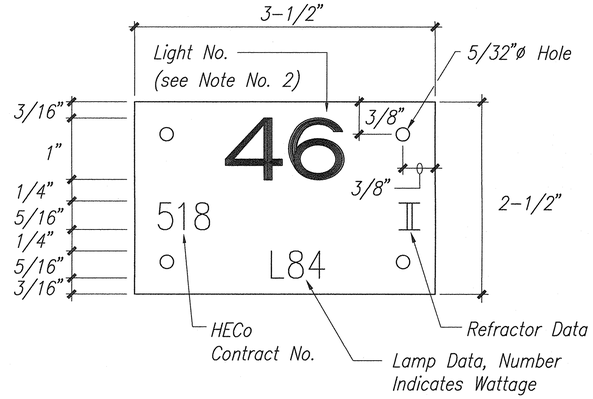
2 E-14 BRACKET ARM MOUNTING DETAIL
Not To Scale



3 E-14 STREET LIGHT ON JOINT POLE
Not To Scale



4 E-14 STREET LIGHT ON JOINT POLE WIRING DIAGRAM
Not To Scale



NOTES:

1. Use 3-Ply Laminated Flexible Plastic Black-White-Black Thickness; Black Cap Sheet-0.010", White Base Sheet-0.052", Black Base Sheet-0.010".
2. Light Number Size Shall Be 1" High And Engraved 1/8" Wide, White In Color. Obtain Light Numbers From The State.
3. Nomenclature Size Shall Be 5/16" High And Engraved 1/32" Wide, White In Color (HECo Contract Number, Lamp Data And Refractor Data As Required).
4. Attach To Wood Poles With 4D Aluminum Nails.
5. Numbers Are Inscribed By Cutting Through "Black Cap Sheet" To Expose "White Letters".

5 E-14 STREET LIGHT TAG
Not To Scale

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

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RMTC JOB NO. : 1-19548-0E

Kaipapau Utility Relocation
46/12kV Overhead

HAWAIIAN ELECTRIC CO., INC.
ENGINEERING DEPT.

HECO DWG or P.O. NO.	REV.
1-1/-11	0

TYPE OF REVIEW
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Reviewed By: I. LEE — Date: 12/4/20

Reviewed	M	E	CSA
		su	

Hawaiian Electric Company's review shall in no way

MICHELE N. ADOLPHO
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SIGNATURE 4/30/22 LIC. EXPIRATION
Project Engineer for ECS Inc.

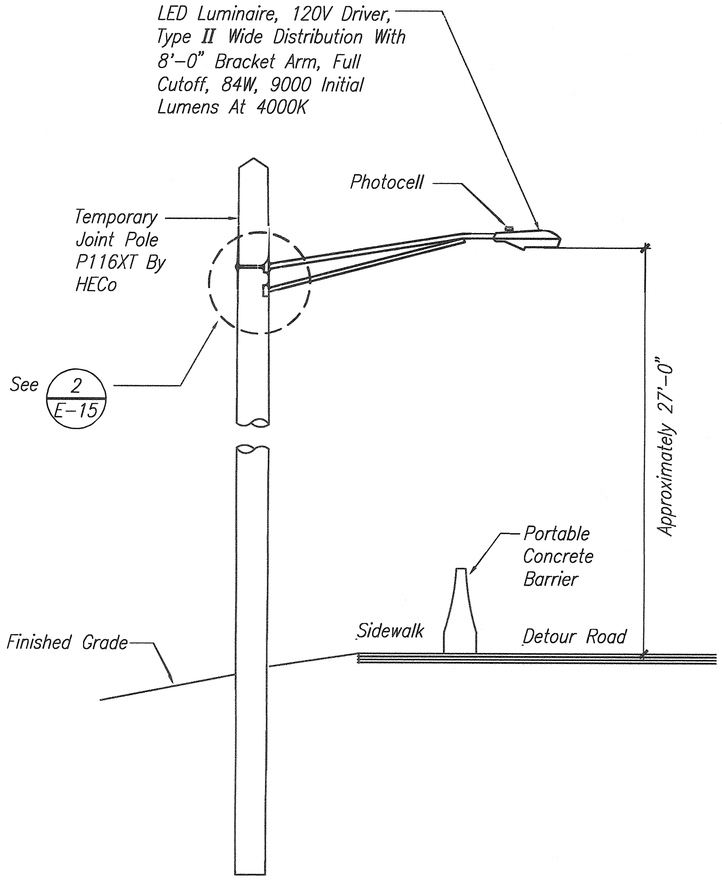
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGHWAY LIGHTING
DETAILS
Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

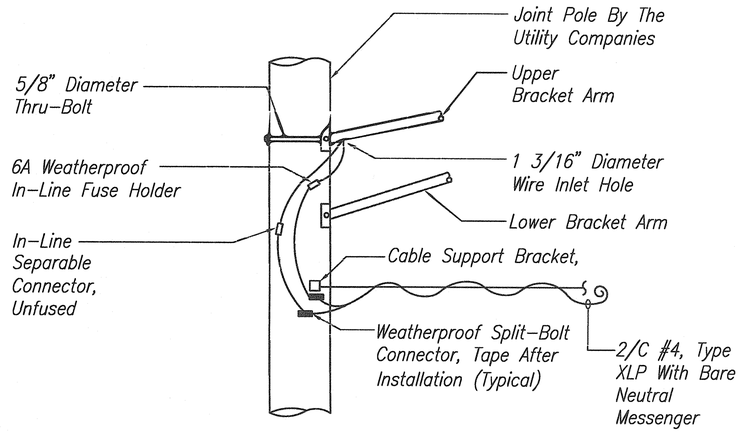
Scale: As Noted — Date: November 2020

SHEET No. E-14 OF 16 SHEETS

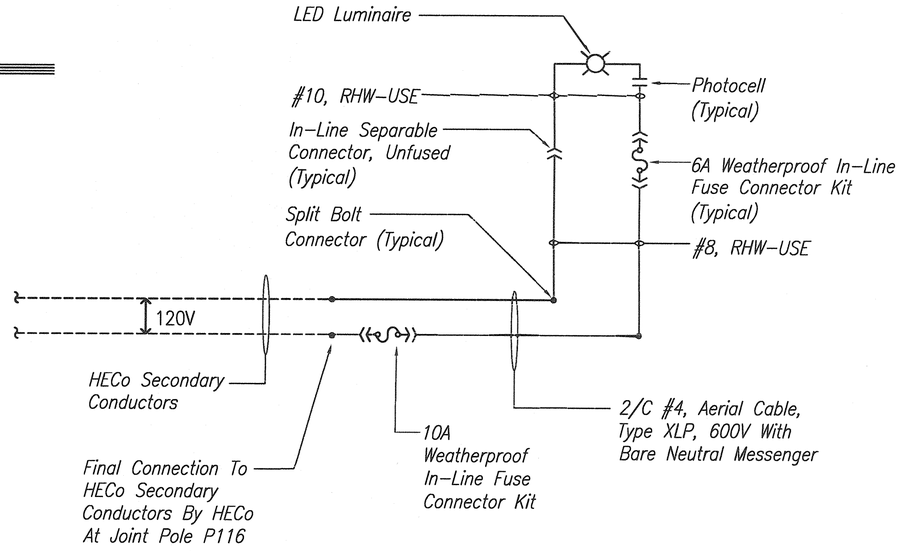
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	160	161



DETOUR ROAD LIGHT DETAIL
1 / E-15 (POLE 116XT)
Not To Scale



DETOUR ROAD LUMINAIRE CONNECTION DETAIL AT JOINT POLE P116XT
2 / E-15
Not To Scale



DETOUR ROAD LUMINAIRE AT JOINT POLE P116XT WIRING DIAGRAM
3 / E-15
Not To Scale

Kaipapau Utility Relocation
46/12kV Overhead
HAWAIIAN ELECTRIC CO., INC.
ENGINEERING DEPT.

HECO DWG. or P.O. NO. | REV.
1-1/-12 | **0**

TYPE OF REVIEW
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- ☐ Submit reproducible per Specs

Reviewed By: I. LEE Date: 12/4/20

Reviewed	M	E	CSA
		su	

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

11/16/20-16:19 Y:\060\060.077\060.077 E15.002.dwg

RMTC JOB NO. : 1 19548 OF

MICHELE N. ADOLPHO
LICENSED PROFESSIONAL ENGINEER
No. 10017-E
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SIGNATURE 4/30/22
Project Engineer for ECS Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

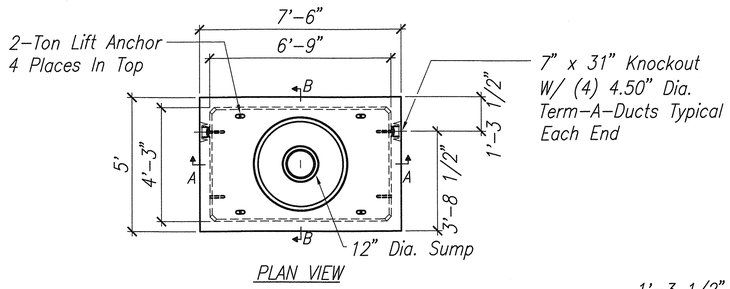
DETOUR ROAD LIGHTING DETAILS

Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

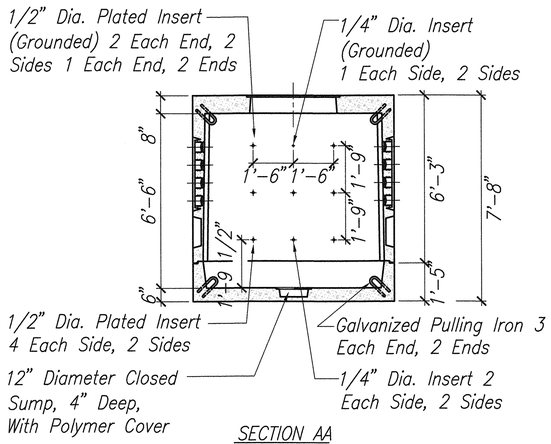
Scale: As Noted Date: November 2020

SHEET No. E-15 OF 16 SHEETS

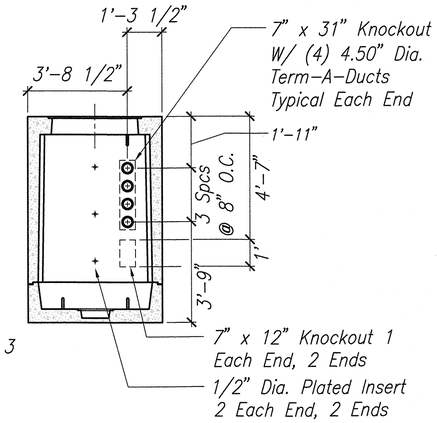
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(48)	2021	161	161



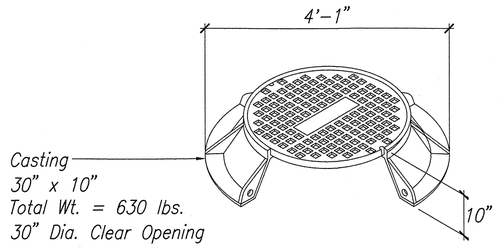
PLAN VIEW



SECTION AA



SECTION BB

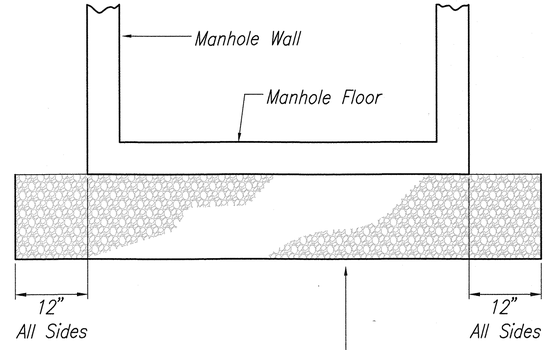


NOTES:

1. Manhole Covers Shall Be Labeled "US ARMY SIGNAL CORPS".
2. See Structural Drawing S0.4 Entitled "Structural General Notes," Notes 1, 2 And 3 For General Specifications; Design Specifications And Loads For Manhole; Manhole Cover And Manhole Frame Design Criteria.

2 E-16 SIGNAL CORPS MANHOLE FRAME & COVER

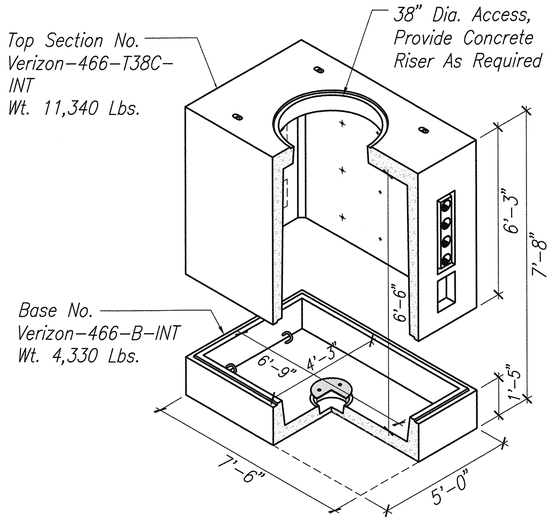
Not To Scale



24" Layer Of Compacted No. 2 Rock (ASTM C33, No. 67) Below Entire Manhole Structure, Wrapped In Filter Fabric (Mirafi 180N Or Approved Equal) With Sewn Seams Under Structure

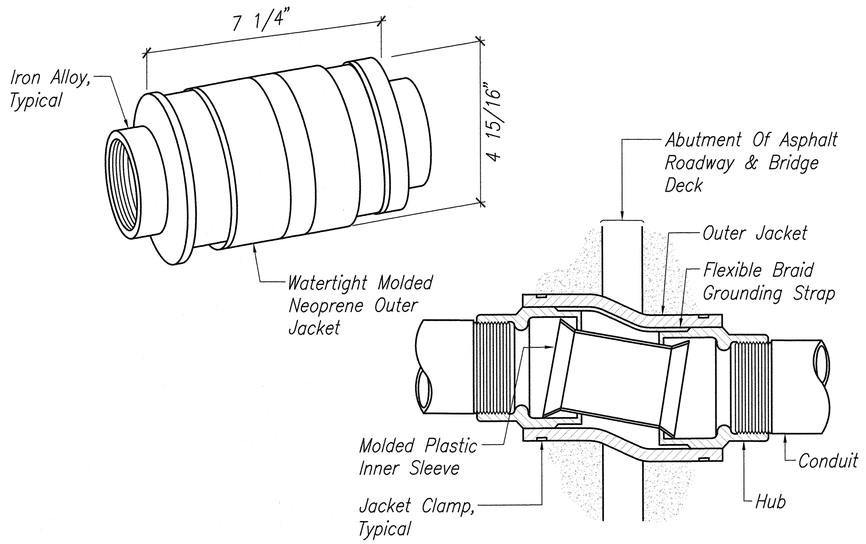
3 E-16 MANHOLE STABILIZATION LAYER

Not To Scale



1 E-16 4' x 6' SIGNAL CORPS MANHOLE

Not To Scale



4 E-16 TYPICAL EXPANSION/DEFLECTION COUPLING DETAIL

Not To Scale

EXPANSION COUPLING NOTES:

1. Coupling Shall Be Suitable For Use While Embedded In Concrete.
2. Coupling Shall Accomodate The Following Range Of Movement Without Collapsing Or Fracturing The Conduit:
   a) Axial Expansion Or Contraction Up To 3/4".
   b) Angular Misalignment Of The Axes Of The Coupled Conduits In Any Direction To 30 Degrees.
   c) Parallel Misalignment Of The Axes Of The Coupled Conduits In Any Direction To 3/4".
3. Provide Adapters For Use Of PVC Conduit As Required.

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

12/29/20-17:51 Y:\060\060.077\060.077 E16.003.dwg

RMTC JOB NO. : 1-19548-0E

MICHELE N. ADOLPHO
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SIGNATURE — 4/30/22 — I/C. EXPIRATION

Project Engineer for ECS Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNAL CORPS MANHOLE
DETAILS
Kamehameha Highway
Kaipapau Stream Bridge Replacement
Federal Aid Project No. BR-083-1(48)

Scale: As Noted — Date: November 2020

SHEET No. E-16 OF 16 SHEETS

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