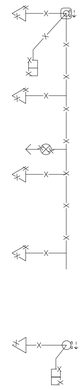
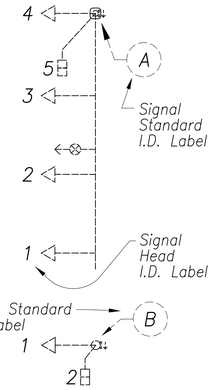
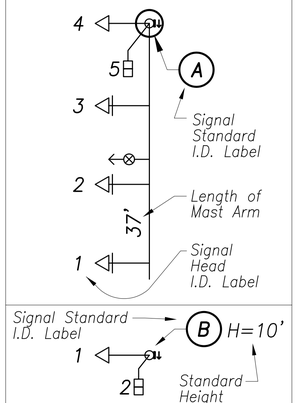
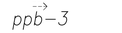
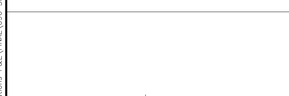
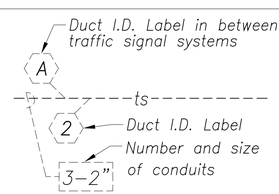
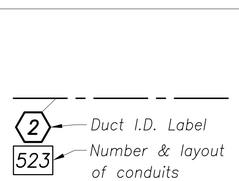
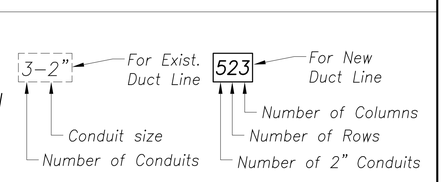
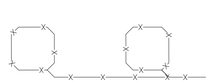
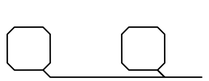
TRAFFIC SIGNAL LEGEND

Demolition	Existing	New	Description
C	C	C	Traffic Signal Controller Assembly with Software and Foundation for Controller Assembly
			Type II Traffic Signal Standard with Mast Arm and Traffic Signal Heads Type I Traffic Signal Standard and Traffic Signal Heads
			12" RYG Traffic Signal Head
			12" Traffic Signal Head with Green Arrow or 12" Programmable Visibility Traffic Signal Head See traffic signal plans for arrow direction.
			Signal Head w/ Back Plate w/ Retroreflective Borders
			Pedestrian Signal Head
			Pedestrian Push Button
			EVP Optical Receiver
			Type A Pullbox. See details on Sheet 103.
			Type B Pullbox. See details on Sheet 103.
			Type C Pullbox. See details On Sheet 104.
			Traffic Signal Ducts. 
			Loop Detectors Sensing Unit
			Approach–Only Microwave Vehicle Detector

CABLE NOTES

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP–0300(163)	2020	96	284

Type 1 Signal–Loop Cable for Load Circuits from Cabinet Looped to Field Pullboxes. Polytheylene insulated, stranded; 14 AWG copper; 26 conductor cable; polyethylene jacketed; color–coded; IMSA Specification No. 20–1 certified.

Type 2 Home–Run Cable Tie–In Loop Detector Stubs or Pedestrian Push Button to the Cabinet. Polyethylene insulated, stranded–tinned–copper 14 AWG; two conductor cable; polyethylene jacketed; 600 volts rated; IMSA Specification No. 50–2 certified.

Type 3 Inter–Connect Cable Tie–In One Signalized Intersection to Another. Polyethylene insulated, solid copper, 19 AWG; 24 conductor (12 Twisted Pairs) cable;

Type 4 Detector–Loop Sensor Cable: Stranded No. 12, Single Conductor To IMSA Spec 51–5

Type 5 Signal–Drop Cable: Stranded No. 14, 4 Conductors

Type 6 Service Cable: Solid, No. 6, 3 Conductors No. 8, 1 Ground

Type 7 Optical Cable: Stranded, No. 20, 3 Conductors No. 20, 1 Ground

T3 Fiber Optic Cable

Approved By:

Chief, Traffic Signals & Technology, DTS Date

ORIGINAL PLAN
NOTE BOOK
No.

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

Aug 28, 2020–6:25pm
N:\CAD\WO 2015\1512–Traffic Signal Modernization @ Various Locations P&E\ENA\1006 Signal Notes 1.dwg

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License Expiration Date 04–30–22

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Conrad Higashionna

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL NOTES

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

Scale: Date: July 2020

SHEET No. TS–1 OF 113 SHEETS

FED ROAD DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	97	284

TRAFFIC SIGNAL NOTES

1. The locations of the traffic signal standards, pedestrian push buttons, traffic controller, pull boxes, conduits and loop detectors shall be staked out in the field by the Contractor and approval of the locations shall be obtained from the Engineer prior to construction and installation.

2. Any required splicing shall be done in the pull boxes.

3. Furnishing and installing controller barriers, risers on poles and conduit stub outs (pull boxes to the edge of pavement) will not be paid for separately but shall be considered incidental to the various contract items.

4. A solid #8 bare copper wire shall be pulled with the traffic signal control cable for equipment ground. Cost shall be incidental to the installation of the control cable.

5. All traffic signal controller equipment shall be completely wired in the cabinet and shall control traffic signals as called for on the plans.

6. The Contractor shall install the meter socket breaker as shown in the electrical drawings.

7. The loop amplifier units furnished for this project shall be capable of operating the loop detector configurations shown on the plans. Cost for the loop amplifier shall be incidental to the installation of the loop detector.

8. Should any defect be encountered during the controller warranty period, the manufacturer will be notified and he shall promptly correct such defect. Service call (by factory qualified representative) during the warranty period for repairs or other maintenance shall be answered within 24 hours and shall be done at no expense whatsoever to the State. All repairs shall be done as soon as possible.

9. Existing traffic signal standards to be replaced shall be removed together with its respective footing. The Contractor may elect to remove only the top portion of the footing and shall ensure that the remaining footing is 2 feet below the existing or finish ground. Costs shall be considered incidental to the various contract items.

10. The existing traffic signal and CCTV systems shall remain in operation until the new traffic signal system is put into service. The Contractor shall arrange his work accordingly and shall provide temporary relocations and wiring, as necessary. Payment shall be considered incidental to the various contract items.

11. The Contractor shall clean and/or repair the existing traffic signal pull boxes to be used prior to installing conduits and cables. This work will not be paid for separately but shall considered incidental to the various contract items.

12. The Contractor shall clean all existing conduits prior to pulling cables. This work will not be paid for separately but shall be considered incidental to the various contract items.

13. The existing controller foundations and pull boxes not to be incorporated in the final signal system shall be removed in accordance with Section 202, "Removal of Structures and Obstruction" of the Standard Specifications. Pavement shall be constructed to match surrounding pavement.

14. The Contractor shall maintain a 36" clearance between the control duct line and loop detectors.

15. Restoration of existing pavements and improvements unavoidably damaged shall be incidental to the various contract items. Restoration shall be to the original or better condition.

16. Removing and disposing of existing power source equipment (i.e. meter, conduits, cables, etc.) shall not be paid for separately but considered incidental to the various contract items.

17. The Contractor shall verify and remove existing traffic signal heads, standards, foundations, pedestrian pushbuttons, pull box frame and covers, cables, and appurtenances, etc. which are called for removal in the plans, abandoned, or not incorporated into the new traffic signal system. The Engineer shall determine the salvageable equipment. All salvageable equipment shall become the property of the City Department of Transportation Services and the un-salvageable equipment shall become the property of the Contractor for proper disposal. Removing and salvaging existing traffic signal equipment shall not be paid for separately but considered incidental to the various contract items.

18. The Contractor shall notify the Traffic Signal and Technology Division, Department of Transportation Services, three (3) days prior to commencing work of the Traffic Signal and CCTV system (Phone: 768-8388).

19. Concrete encased conduits and Type 2 cables between the pedestrian push button and pull box shall be furnished and installed in sufficient numbers and lengths, as required. Cost shall be incidental to the installation of pedestrian push buttons.

20. Concrete encased conduits and signal drop cables between traffic signal standards and pull boxes shall be furnished and installed in sufficient numbers and lengths, as required. Cost shall be incidental to traffic signal foundation.

21. The Contractor shall verify all work in the field prior to submitting of bid, ordering of materials, fabrication of brackets, etc.

22. The Contractor shall not construct conduits, pull boxes, traffic signal standard foundations, etc. outside of State or County right-of-way unless shown otherwise on the plans.

23. Existing conduits not incorporated into the new traffic signal system shall be plugged with concrete and abandoned in place. This work shall be incidental to the various contract items.

24. The Contractor shall use a 5-foot length to transition from normal duct section to fit conduits within pullbox knockout unless otherwise noted. All conduits shall enter pullbox through knockouts.

25. The Contractor shall remove all temporary microwave detectors not incorporated in the final signal system after the new signal system is operational and prior to final acceptance unless otherwise notified by the State. Temporary microwave detectors shall be salvaged and delivered to the City and County Department of Transportation Services.

26. The Contractor shall provide 3'-0" minimum cover over top of concrete jacket for traffic signal ducts installed within the traveled way and shoulders, unless otherwise called for on the plans.

27. For new Type I Traffic Signal Standards, the Contractor shall provide new Type I Signal Standard and new footing per 2008 Standard Plan TE-32, unless otherwise called for on the plans. The Contractor shall provide new traffic signal heads, pedestrian signal heads, ADA compliant pedestrian push button, and necessary new mounting equipment and accessories as required and as shown on the plans. The Contractor shall provide one 2-inch Schedule 40 conduit concrete encased with cables required for traffic and pedestrian signal heads and pedestrian push buttons.

28. For new Type II Traffic Signal Standards, the Contractor shall provide new Type II Signal Standard and new drilled shaft foundation per 2008 Standard Plan TE-33A.1 and TE-33A.2, unless otherwise called for on the plans. The Contractor shall provide new traffic signal heads, pedestrian signal heads, ADA compliant pedestrian push button, and necessary new mounting equipment and accessories as required and as shown on the plans. The Contractor shall provide 2-inch Schedule 40 conduits concrete encased with cables for traffic signal heads, pedestrian signal heads, pedestrian push buttons, and Opticom detector.

29. The Contractor shall ensure that traffic signal standards are designed and manufactured to be compatible with the drilled shaft design to avoid bolt circle-cage conflicts.

30. Existing traffic signal pullboxes, street light pullboxes, and traffic signal standards to remain shall be adjusted to finish grade. The cost shall be incidental to the various contract items.

31. Existing traffic signal systems shall remain operational at all times during construction; the Contractor shall provide temporary equipment or power as needed to facilitate construction. The cost shall be incidental to the various contract items.

Approved By:

Chief, Traffic Signals & Technology, DTS　　Date

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Conrad Higashionna

DATE	REVISION
9/16/20	Added Note 31.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL NOTES

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

Scale:　　Date: July 2020

SHEET No. TS-2 OF 113 SHEETS

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

DESIGN REQUIREMENTS FOR TRAFFIC SIGNAL STANDARDS:

Manufacturer designed traffic signal standards and mast arms being furnished for this project shall conform with the new design requirements noted below:

*New traffic signal standards shall use the **AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 1st Edition (2015),** with 2017 Interim Revisions as its design reference.*

Changes to the Design Criteria for Bridges and Structures dated August 8, 2014 include:

1. *7th Paragraph on pages 5 – 6 shall now read:*

   "AASHTO LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 1st Edition (2015) including all subsequent interim revisions and editions. This shall govern design of structural supports for highway signs, luminaires, and traffic signals. This shall also govern of other support structures such as for variable message signs, traffic management cameras, transmission lines other than overhead electrical lines and communication equipment including those attached to bridge structures except as modified herein. Supports for overhead electrical supply and communication lines, at a minimum, shall be analyzed and designed in accordance with the National Electrical Safety Code per the Hawaii Administrative Rules (HAR), Chapter 6–73, Installation, Operation and Maintenance of Overhead and Underground Electrical Supply and Communication Lines."

2. *Section 4.0 on pages 14–16 shall be replaced with the following:*

"4.0 MODIFICATIONS TO AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS

*4.01 **Wind Load** [Article 3.8]. For all State roadways other than those with a functional classification of local roads, all structural supports for highway signs, luminaires, and traffic signals are to be designed for a mean recurrence interval of 1700 years. Local roads under State jurisdiction shall be designed for a minimum recurrence interval of 700 years. Roadside sign supports located where failure would not impact the travel way can be designed for a 10–year mean recurrence interval. For unusual or differing exposure conditions [Article 3.8.3], the basic wind speed should be increased using rational procedures and sound engineering judgement. The wind maps for Effective Wind Speed, Topographic Effects and Exposure Category included in the State Building Code (HAR, Chapter 3–180) should be used for guidance.*

*4.02 **Height and Exposure Factor, K_z** [Article 3.8.4]. For support structures on bridges, the height and exposure factor shall be determined based on the maximum height they are above the surrounding ground. For severe exposure conditions such as along the coastline, the factor shall be increased based on the latest ASCE Standard ASCE/SEI 7 Minimum Design Loads for Buildings and Other Structures. The wind maps for Effective Wind Speed, Topographic Effects and Exposure Category included in the State Building Code (HAR, Chapter 3–180) should also be used for guidance. If height and exposure factors are not considered, then the consultants shall provide reason(s) for not considering in the structural calculations for the project.*

*4.03 **Minimum Anchor Bolts** [Article 5.16]. Cantilevered traffic signal structures with mast arms greater than 40 feet and other cantilevered support structures with design life of 50 year or more shall have base plate connections with a minimum of six (6) anchor bolts. A minimum of four (4) anchor bolts shall be provided for all other base plate connections.*

*4.04 **Use of Grout** [Article 5.16]. Grout shall not be used under base plates for all support structures except for ordinary street light poles unless approved by the Bridge Design Engineer. Anchor bolts with leveling nuts shall be designed to transfer all loads from the structure to its base support. See Figure C5.16–1 Typical Double–Nut Connection.*

A wire cloth screen shall be specified to be placed vertically between the base plate and the top of the foundation and wrapped horizontally around the base plate with a three (3) inch minimum lap. The wire cloth shall be galvanized steel standard grade plain weave 2x2 mesh 0.063–inch diameter wires. Secure the wire cloth at the lapped ends with stainless steel wire ties (minimum of 2). Loop the wire ties and twist tie them securely. Also, alternate means of protecting the underside of the base plate from debris, birds, bees, and other nesting animals may be proposed for consideration. In any case, the fabricator needs to be aware that the fabrication documents need to account for the wire cloth mesh.

*4.05 **Plumbness of Anchor Bolts** [Article 5.16]. The designer shall include this provision of the design specification in the construction plans and/or specifications.*

Anchor bolts shall be installed with misalignments of less than 1:40 from vertical. After installation, firm contact shall exist between the anchor bolt nuts, washers, and base plate on any anchor bolt installed in a misaligned position.

*4.06 **Fatigue Importance Factors** [Article 11.6] noted in Table 11.6–1 for overhead sign and traffic signal structures shall be based on Fatigue Category I.*

Support structures other than noted in Table 11.6–1 with round cross sections under 50 feet, roadside sign structures, and temporary structures do not need to be designed for fatigue.

Support structures 50 feet or more in height shall be designed for fatigue and be based on Fatigue Category I.

*4.07 **Galloping** [Article 11.7.1.1]. Provisions shall be made to install effective vibration mitigation devices on overhead cantilevered sign and traffic signal support structures unless they are designed for galloping–induced cyclic loads. With approval from Hawaii Department of Transportation, mitigation devices may be installed after construction if vibration due galloping is identified. Responsible party for the mitigation devices shall be determined during design and included in the construction documents.*

*4.08 **Natural Wind Gust** [Article 11.7.1.2]. Overhead sign, traffic signal, and high–level support structures shall be designed to resist an equivalent static natural wind gust pressure. For unusual or differing exposure conditions, the equivalent static natural wind gust pressure should be increased using references noted in the specifications.*

*4.09 **Truck–Induced Gust** [Article 11.7.1.3]. Overhead sign and traffic signal support structures shall be designed to resist an equivalent static truck gust pressure range based on a truck speed of 20 mph over the posted speed.*

*4.10 **Square or Rectangular Steel Post Sections** [Sections 5 and 11]. Square or rectangular steel sections are not recommended to be used for overhead sign and traffic signal supports because they are more prone to poor fatigue performance. However, the post sections contained it the Highways Division Standard Plans (2008) for overhead sign structures (Standard Plans TE–17A through TE–19M) shall be considered acceptable and may still be used. Any special designs or deviations from the Standard Plans shall be coordinated with the Bridge Design Engineer.*

*4.11 **Traffic Signs on Light Poles and Traffic Signals**. All light poles of highway light standards shall be designed for a traffic sign of nine (9) sf with its resulting wind force applied 10 feet above the finish grade. See Standard Plan TE–47 (5/31/07). Consider making provision for traffic signs on traffic signal poles.*

*4.12 **Standard Plans**. Standard Plans contained in the Highways Division Standard Plans (2008) shall be considered acceptable and may still be used. Any special designs or deviations from the Standard Plans shall be coordinated with the Bridge Design Engineer."*

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Conrad Higashionna

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL NOTES

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

Scale: Date: July 2020

SHEET No. TS–3 OF 113 SHEETS

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

Aug 28, 2020–6:25am
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	99	284

HAWAIIAN ELECTRIC COMPANY NOTES

1. Hawaiian Electric Company notes apply to new traffic signal system construction. For HECO notes, see electrical plans drawings E-2 thru E-4.

EXCAVATION NEAR HECO 138kV AND/OR 46kV UNDERGROUND LINES

HECO's 138kV High Pressure Fluid Filled (HPFF) underground cables are installed in specially coated, cathodically protected steel pipes and are surrounded by a special low strength (approximately 100 psi) Fluidized Thermal Backfill (FTB). HECO's 46kV underground ductlines may also be covered by FTB. FTB is a backfill engineered to meet specific thermal resistivity, thermal stability, strength, and flowability requirements as well as provide construction advantages. FTB is a concrete-like backfill consisting of a course and/or medium stone aggregate, sand, and a small amount of cement for strength. The proportions are selected to minimize thermal resistivity, and maximize flowability without segregation of the components. FTB will flow readily to fill all the voids yet harden quickly to a uniform density. It provides mechanical protection for the cable system and support for underground and surface facilities. FTB is supplied as a ready-mix in concrete trucks and may be installed by pouring or pumping.

The Contractor shall take the following precautions when excavating near HECO's 138kV underground lines:

1. **The Contractor shall call The Hawaii One Call Center at 866-423-7287 for field verification of HECO's underground lines a minimum of 5 working days prior to excavation.**

2. **The Contractor is responsible for properly supporting and protecting the 138kV cable pipes and FTB duckbank at all times.**

3. **A HECO stand-by inspector must be on-site anytime the excavation is within 10 feet of the outside face of the FTB enclosure surrounding the 138kV cable pipes.** The cost of such inspection will be charged to the Contractor and upfront payment will be required prior to scheduling. To coordinate this stand-by inspector, please contact HECO's Customer Installations Department at 543-7070, at least three months prior to excavation.

4. **A HECO stand-by inspector for excavation near 46kV ductlines with FTB is not required but can be requested.** The cost of such inspection will be charged to the Contractor and up front payment will be required prior to scheduling. To coordinate this stand-by inspector, please send a request to HECO's Customer Installations Department at 543-7070, at least at least three months prior to excavation.

5. **Once the Contractor reaches the FTB surrounding the 138kV cable pipes, the Contractor shall use only hand tools to further excavate and remove the FTB.**

6. **The Contractor shall take great care when excavating the FTB nearing the 138kV cable pipes to prevent damage to the protective coating on the cable pipes.** Only HECO personnel are to handle these cable pipes and erect temporary guards to protect these cable pipes from damage. The cost of HECO's assistance in providing proper support and protection of its underground lines will be charged to the Contractor. The Contractor shall exercise due care and precautions to avoid disturbing any energized cables and temporary guards and shall work cautiously at all times to avoid accidents.

7. **The Contractor shall be responsible for any damages to HECO's facilities and all costs associated with the damage and repair as a result of his operations.** Repair work shall be done by HECO or by the Contractor under HECO's supervision.

8. **If the coating the 138kV pipes is damaged in any way, it is imperative that the HECO stand-by inspector on-site be notified as soon as possible such that the coating may be repaired before backfilling.** Even a nick or pinhole puncture in the protective coating can jeopardize the integrity and reliable operation of the underground cable system.

9. **The 138kV and/or 46kV lines will remain energized at all times.** However, in the event that the lines are damaged, depending on the extent of the damage, the line may be instantaneously de-energized as a result of sophisticated relay protection equipment operating, or it may need to be manually de-energized by following a system operational protocol.

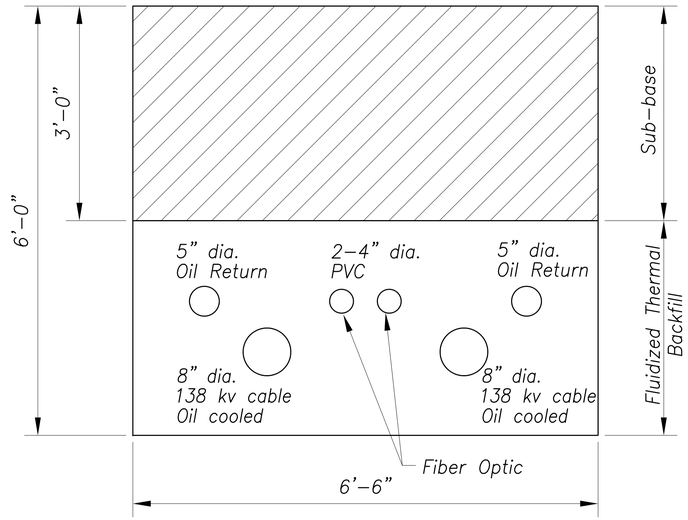
10. **If any portion of the FTB is removed during excavation, the FTB must be replaced per HECO specifications.** The HECO certified suppliers and their respective Mix ID Codes are listed in the table below. No other FTB mix shall be used unless it is approved by HECO.

Producer	Mix ID Code	Expiration	Comment
Island Ready Mix	XX67NO2	June 2021	Orca fine sand
HC&D	XX67HE04	June 2021	Orca fine sand

PLEASE CONTACT THE HAWAII ONE CALL CENTER AT 866-423-7287 AT LEAST FIVE (5) WORKING DAYS PRIOR TO ANY TRENCHING AND/OR BACKFILLING NEAR THE EXISTING HECO 138KV UNDERGROUND TRANSMISSION LINES:

IN CASE OF DAMAGE OR SUSPECTED DAMAGE, PLEASE IMMEDIATELY CONTACT:

HECO TROUBLE DISPATCHER AT PH: 548-7961
(THIS PHONE NUMBER IS MANNED 24-HOURS A DAY)



TYPICAL SECTION
HECO 138KV POWER LINES (A 99|99)
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ORIGINAL PLAN — DATE
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TRACED BY
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL NOTES

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

Scale: Date: July 2020

SHEET No. TS-4 OF 113 SHEETS

FED ROAD DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(163)	2020	100	284

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 8:00 a.m. to 11:00 a.m. and 12:00 p.m. to 3:00 p.m. 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 utililties 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 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 wherever there will be a breakage into or entry into any structure that contain Hawaiian Telcom 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 Public Works, 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 notify Hawaiian Telcom's inspector 24 hours prior to the pouring of concrete or backfilling.

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

Aug 28, 2020-6:25am N:\CAD\DWG\2015\1512-Traffic Signal Modernization @ Various Locations P&E\FINAL\100 Notes HTCO.dwg

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

License Expiration Date 04-30-22

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

Conrad Higashionna

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL NOTES

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

Scale: Date: July 2020

SHEET No. TS-5 OF 113 SHEETS