GENERAL NOTES

1. The scope of work for this project consists of cold planing and resurfacing of existing pavement; reconstructing weakened pavement areas; constructing curb ramps, driveways, sidewalks, bus pads, concrete guardrail; adjusting manhole and valve box frame and cover; installing guardrail, loop detectors, pavement marking, signing and striping.
2. The Contractor is reminded of the requirements of Subsection 105.16 - Subcontracting, which requires him to perform work to not less than 30 percent of the total contract cost less deductible items. Non-compliance with this Subsection may be grounds for rejection of bid.
3. The Contractor's attention is directed to the following Sections: Subsection 104.11 - Utilities and Services; Subsection 107.06 - Contractor Duty Regarding Public Convenience; and Section 645 - Work Zone Traffic Control.
4. At the end of each day's work, the Contractor shall remove all equipment and other obstructions to permit free and safe passage of public traffic.
5. The existence and location of underground utilities, manholes, monuments and structures as shown on the plans are from the latest available data, but the accuracy is not guaranteed. The encountering of other obstacles during the course of work is possible. The Contractor shall tone for the exact locations and depths of all underground facilities, either shown on or omitted from the plans, in areas where work may affect these properties. Toning shall be considered incidentalto the various contract items and will not be paid for seperately. The Contractor shall be held liable for any damages incurred to the existing facilities and/or improvements as a result of his operations.
6. The Contractor shall notify in writing, the Oahu Transit Services, Inc. Roads Supervision Office, 811 Middle St., Honolulu, HI 96819 (phone #848-4571), two (2) weeks prior to construction, informing them of location, scope of work, and closure of Name of Highway and/or traffic lanes and dates of closure.
7. The Contractor shall notify the Engineer in writing, two (2) weeks prior to starting construction operations.
8. The Contractor shall indemnify and be solely responsible for the protection of adjacent properties, utilities and existing structures from damages due to construction. Repairing any damage shall be at the Contractor's own expense, to the satisfaction of the Engineer.
9. Existing drainage system will be functional at all times during construction. The Contractor shall furnish materials, equipment, labor, tools and incidentals necessary to maintain flow. This work shall be considered incidental to any culvert work or the various contract items and will not be paid for separately.
10. Earth swale shall be graded to drain. This work shall be considered incidental to various contract items.
11. Smooth riding connections shall be constructed at all limits of resurfacing and reconstruction, including the beginning and end of project, connecting approaches, side streets, walkways and driveways as shown on the plans and/or as directed by the Engineer.This work shall be considered incidental to asphalt concrete and will not be paid for separately.
12. The Contractor shall clean and remove any accumulation of aggregates along the roadside within 10 feet of the edge of pavement. This work shall be considered incidental to bulk of work or the various contract items and will not be paid for separately.
13. Removal and disposal of existing curb and gutter, curb, sidewalk and asphalt concrete pavement, curb, sidewalk and any debris shall be considered incidental to their respective bid items.
14. All saw cutting work shall be considered incidental to Roadway Excavation or Asphalt Concrete or Various Contract Items or their respective bid items.
15. Prior to placement of new aggregate subbase course, the existing subbase shall be compacted to a relative compaction greater than or equal to 95%.
16. Dressing of sidewalk shall consist of clearing and grubbing, grading, reshaping and compacting with suitable material the area adjacent to the improvement as shown on the plans and/or as directed by the Engineer and shall be considered incidental to Sidewalk.
17. All curbing angle points within the curb ramps shall be rounded with R=6."
18. The Contractor shall provide and maintain for access to and from all existing driveways, sidewalks and ADA access routes, and side streets and cross streets at all times; shall coordinate with adjacent property owners including possible unavoidable closure of access to/from businesses/homes and notify users and adjacent property owners at least 5 workings days in advance prior to reconstruction/paving the driveways/roadways. This work shall be considered incidentalto curb ramps, or sidewalk, or the various contract items and will not be paid for separately.
19. Provide smooth transition where new sidewalk construction meets the existing grade or sidewalk. Transition shall not be steeper than 2% cross and longitudinal slopes and not less 6.0 feet long or as specified on the plans. This work shall be considered incidental to curb ramps, or sidewalk, or the various contract items and will not be paid for separately.
20. The Contractor shall remove and dispose of all existing raised pavement markers, thermoplastic line markings, traffic tapes, and epoxy adhesives prior to the overlaying of Asphalt Concrete. This work shall be considered incidental to Asphalt Concrete Pavement, Mix No. IV and will not be paid for separately.
21. No material and/or equipment shall be stockpiled or otherwise stored within the highway right-of-way except at locations designated in writing and approved by the Engineer. If use of location is approved by the engineer, the Contractor shall obtain a permit to use the property within the highway right-of-way from the Oahu District Office at telephone no. 831-6712.
22. All holes, depressions and wheel ruts shall be filled and compacted with HMA Pavement, Mix No. V prior to resurfacing. This work shall be paid for under HMA Pavement, Mix No. V (Leveling Course). Minimum depth for the use of leveling course shall be ¾ inch.
23. During non-working hours, the trenches on all streets shall be covered using 1-inch thick steel plates with non-skid surfaces and all lanes maintained for traffic.
24. All chain link fence work shall be considered incidental to various contract items.
25. The Contractor shall be responsible for all Highway Monuments and State Survey Disk in the project area. If any of the Highway Monuments or Survey Disks are disturbed or removed, the contractor will be responsible to reset the monuments at no cost to the State Highways Division. The contractor shall hire a State of Hawaii Licensed Land Surveyor to reset the monuments at the cost of the contractors.
26. Boring logs for the drilled shaft work are available for viewing.
27. All work specified in the contract but not listed separately in the proposal schedule shall be considered incidental to other various contract items and shall not be paid for separately.

LEGEND

Symbol	Description
	Existing Concrete
	New Concrete/Bus Pad
	Sidewalk Reconstruction
	Reconstruction Areas
	Cold Planing Resurfacing Limits
—e—	Existing Electrical Line
jp	Existing Joint Pole
emh	Existing Electric Manhole
EMH	Adjusted Elec. MH Frame/Cover
—t—	Existing Telephone Line
tp	Existing Telephone Pole
tmh	Existing Telephone Manhole
tpb	Existing Telephone Pull Box
TMH	Adjusted Tele. MH Frame/Cover
—w—12—	Existing 12" Water Line
wmh	Existing Water Manhole
WMH	Adjusted Water MH Frame/Cover
wv	Existing Water Valve Box
WV	Adjusted Water Valve Box
wm	Existing Water Meter
WM	Adjusted Water Meter
fh	Existing Fire Hydrant
(TI)	Technical Infeasibility
(1A)	Ramp Number
—s—12—	Existing Sewer Line
smh	Existing Sewer Manhole
SMH	Adjusted Sewer MH Frame/Cover
—g—6—	Existing 6" Gas Line
gv	Existing Gas Valve Box
GV	Adjusted Gas Valve Box
gmh	Existing Gas Manhole
GMH	Adjusted Gas MH Frame/Cover
mon.	Existing Monument
MON.	Adjusted Monument
---d--24---	Existing 24" Drain Line
sdmh	Existing Storm Drain Manhole
SDMH	Adjusted Storm Drain MH Frame/Cover
gdi	Existing Grated Drop Inlet
cb	Existing Catch Basin
sign	Existing Traffic Sign
hl	Existing Highway Lighting Standard
hlpb	Existing Highway Lighting Pullbox
tsp	Existing Traffic Signal Pole
tspb	Existing Traffic Signal Pullbox
TSPB	Adjusted Traffic Signal Pullbox
	Existing Metal Guardrail
	New Metal Guardrail
—X—	Existing Chain Link Fence
	New Chain Link Fence

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES AND LEGEND

LILIHA STREET REHABILITATION
North King Street to School Street
Project No. 7413A-01-04M

Scale: NTS   Date: April, 2014

SHEET No. 1 OF 1 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7413A-01-04M	2014	C.O.3S-1	62

HECO NOTES

1. LOCATION OF HECO FACILITIES

The location of HECO'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 HECO'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 HECO's planning and design section of the customers installations department (543-5654) located at 820 Ward Avenue, 4th floor, a minimum of ten (10) working days prior to starting construction.

4. CAUTION!!! ELECTRICAL HAZARD!!!

Existing HECO overhead and underground lines are energized and will remain energized during construction unless prior special arrangements have been made with HECO. Only HECO 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 HECO 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 overhead lines. It is the contractors 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 HECO at least four (4) weeks prior to the planned encroachment to that, if feasible, the necessary protections (E.G. relocate or de-energize HECO lines) can be investigated. HECO may also be able to blanket its distribution (12kv and below) lines to provide a visual aid in preventing accidental contact. HECO's cost of safeguarding or identifying its lines will be charged to the contractor.

Contact HECO's customer installations department at 543-7846 for assistance in identifying and safeguarding overhead power lines.

6. POLE BRACING

A minimum clearance of 10 feet must be maintained when excavating around utility poles and/or their anchor system to prevent weakening or poles support failure. Should work require excavating within 10 feet of a pole and/or its anchor system, the contractor shall protect, support, secure, and take all other precautions to prevent damage to or leaning of these poles. The contractor is responsible for all pole bracing designs and structural calculations, as well as the associate costs and/or anchor system proposed by the contractor shall be submitted to HECO's customer installations department (543-7846) for review a minimum of ten (10) working days prior to implementation. The cost of HECO's review/assistance in providing proper support and protection of its poles will be charged to the contractor.

7. UNDERGROUND LINES

The Contractor shall exercise extreme caution whenever construction crosses or is in close proximity of underground lines. HECO's existing electrical cables are energized and will remain energized during construction. Only HECO personnel are to break into existing HECO facilities, handle these cables, and erect temporary guards to protect these cables from damage. The cost of HECO's assistance in providing proper support and protection of its underground lines will be charged to the contractor. For assistance/coordination in providing support and protection of these lines, the contractor shall call HECO's customer installations department at 543-7846 a mimimum of ten (10) working days in advance.

Special precautions are required when excavating near HECO's 138kv underground lines (see HECO instructions to consultants/contractors on "excavation near HECO's underground 138kv lines" for detailed requirements).

For verification of underground lines, the contractor shall call the Hawaii One call center at 866-423-7287 mimimum of five (5) working days in advance.

8. UNDERGROUND FUEL PIPELINES

The Contractor shall exercise extreme caution whenever construction crosses of is in close proximity of HECO's underground fuel oil pipelines. Special precautions are required when excavating near HECO's underground fuel oil pipelines (see HECO's specific fuel pipeline "guidelines" to consultants/contractors on excavation near HECO's underground fuel pipelines for detailed requirements).

9. EXCAVATIONS

When trench excavation is adjacent to or beneath HECO's existing structures or facilities, the contractor is responsible for:

a) Arranging for HECO standby personnel to observe work at contractors 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-pinning, 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 department for thermal backfill specifications).

10. RELOCATION OF HECO FACILITIES

Any work required to relocate of modify HECO facilities shall be done by HECO, or by the contractor under HECO's supervision. The contractor shall be responsible for all coordination, and shall provide necessary support for HECO'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.

11. CONFLICTS

Any redesign or relocation of HECO's facilities not shown on the plans may be cause for lengthy delays. The contractor acknowledges that HECO 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 HECO'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, HECO should be notified immediately upon discovery or identification of such conflict.

12. DAMAGE TO HECO FACILITIES

The Contractor shall be responsible for the protection of all HECO surface and subsurface utilities and shall be responsible for any damages to HECO's facilities as a result of his operations. The contractor shall immediately report such damages or any hazardous conditions related to HECO's lines to HECO's trouble dispatcher at 548-7961. Repair work shall be done by HECO or by the contractor under HECO's supervision. Costs for damages to HECO's facilities shall be borne by the contractor.

In case of damage or suspected damage to HECO's fuel pipeline, the contractor shall immediately notify HECO's security command center at 543-7685 (A 24-hour number) so HECO personnel can secure the damaged section and report any oil spills to the proper authorities. All costs associated with the damage, repair, and oil spill cleanup shall be borne by the contractor.

13. HECO STAND-BY PERSONNEL

The contractor may request HECO to provide an inspector to stand-by during construction near HECO's facilities. The cost of such inspection will be charged to the contractor.

The contractor shall call HECO's customer installations department at 543-7846 a minimum of five (5) working days in advance to arrange for HECO stand-by personnel.

14. CLEARANCES

The following clearances shall be maintained between HECO's ductline and all adjacent structures (charted and uncharted) in the trench:

The contractor shall notify the construction manager and HECO of any heat sources (power cable duct bank, steamline, etc.) encountered that are not properly identified on the drawing.

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NOTE BOOK
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9/3/15	4 Added New Sheet

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES AND LEGEND

LILIHA STREET REHABILITATION
North King Street to School Street
Project No. 7413A-01-04M

Scale: NTS Date: September, 2015

SHEET No. 1 OF 2 SHEETS

C.O. 3 S-1

FED. ROAD	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7413A-01-04M	2014	C.O.3S-2	62

HECO NOTES

Minimum Separation Clearances to Existing Underground Ductlines Horizontal (Parallel)

Utility Being Installed	Existing Direct Buried Cable	Existing Direct Buried in Conduit (no concrete encasement)	Existing 3" Concrete Encasement	Applicable Notes:
HECO DB Conduits	12"	3"	0"	
HECO 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	36"	36"	36"	1, 4
Water Service Lateral	12"	12"	12"	
Water (Concrete Jacketed)	36"	36"	36"	1, 4
Gas DB	12"	12"	12"	1
Gas (Concrete Jacketed)	12"	12"	12"	1
Sewer DB	36"	36"	36"	1, 2
Sewer (Concrete Jacketed)	36"	36"	36"	1, 2
Drain	12"	12"	12"	1
Fuel Pipelines				3

Notes:

1. Where space is available, parallel clearance to other utilities, or foreign structures other than communication or traffic signal shall be 36".
2. If 36" clearance cannot be met:
   - If clearance is less than 12", jacket sewer line with reinforced concrete (per HECO's Std. 30-1030) for a distance of 5' plus pipe diameter.
   - If clearance is between 12" and 36", jacket sewer line with plain concrete.
3. All Fuel Pipeline crossings shall be reviewed and approved by the company that owns and maintains it.
4. 5 feet clear to water mains 16" and larger.
5. For situations with 0" minimum separation, a 6" separation is recommended.
6. Clearances measured from outer edges or diameters of utilities.

Minimum Separation Clearances to Existing Underground Ductlines Vertical (Crossing)

Utility Being Installed	Existing Direct Buried Cable	Existing Direct Buried in Conduit (no concrete encasement)	Existing 3" Concrete Encasement	Applicable Notes:
HECO DB Conduits	6	3"	0"	
HECO 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"	6"	
Water DB	6"	6"	6"	2
Water Service Lateral	6"	6"	6"	
Water (Concrete Jacketed)	6"	6"	6"	2
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				3

Notes:

1. If clearance cannot be met:
   - If clearance is less than 12", jacket sewer line with reinforced concrete (per HECO's Std. 30-1030) for a distance of 5' plus pipe diameter.
   - If clearance is between 12" and 24", jacket sewer line with plain concrete.
2. 12" vertical clearance for pipe diameters greater than 16".
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.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES AND LEGEND

LILIHA STREET REHABILITATION
North King Street to School Street
Project No. 7413A-01-04M

Scale: NTS Date: September, 2015

SHEET No. 1 OF 1 SHEETS

C.O.3 S-2

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7413A-01-04M	2014	C.O.3S-3	62

HECO NOTES

15. *INDEMNITY*

The contractor shall indemnify, defend and hold harmless HECO 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 HECO.

ADDITIONAL NOTES WHEN WORK INVOLVES CONSTRUCTION OF HECO FACILITIES

16. *SCHEDULE*

Contractor shall furnish his construction schedule six (6) months prior to starting work on HECO facilities. Contractor shall give HECO, in writing, three (3) months notice to procedd with HECO'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 HECO's underground facilities shall be constructed in accordance with the latest revisions of HECO specifications CS7001, CS7003, CS7202, CS9301, and CS9401 and applicable HECO 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 HECO prior to excavation and prior to placing concrete. Contractor shall notify HECO's inspection division at 543-4329 at least five (5) working days prior to installing facilities and or placing concrete.

20. *STAKEOUT*

The Contractor shall arrange for toneouts of all underground facilities and shall stakeout all proposed HECO facilities within the project area so as to not conflict with any utility (existing or proposed) and any proposed construction or improvement work for vefification by HECO before proceeding with HECO 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 HECO's inspector using HECO'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 HECO with two sets of AS-Built reproducible tracings showing the offsets, stationing, and vertical elevation of the duct line(s) constructed.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES AND LEGEND

LILIHA STREET REHABILITATION
North King Street to School Street
Project No. 7413A-01-04M

Scale: NTS Date: September, 2015

SHEET No. 2 OF 2 SHEETS

C.O. 3 S-3

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	7413A-01-04M	2014	C.O.3S-4	62

EXCAVATION NEAR HECO 138 kV 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 (approx. 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 flowablility requirements as well as provide construction advantages. FTB is a concrete-like backfill consisting of a coarse 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. If 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 exavating near HECO's 138kV and/or 46 kV 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 ductbank 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 Underground Supervisor at 543-5837, at least 5 working days 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 upfront payment will be required prior to scheduling. To coordinate this stand-by inspecctor, please send a request to HECO's Underground Supervisor at 543-5837, at least 5 working days 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 wil be charged to the Contractor. The Contractor shall exercise due care and precautions to avoide distrubing 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 on 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. In any portion of the FTB is removed during excavation, the FTB must be replaced per HECO specifications. The base design mix ID# for FTB is XX67N015 per the attached Ameron Hawaii Concrete Mix Submittal Number 2388 dated 4/25/02. PLEASE NOTE: DO NOT USE ANY OTHER ADDITIVIES SUCH AS AIR ENTRAINING AGENT, WATER REDUCING AGENT, ETC., IN THE ABOVE MIXTURE.

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

12. 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)

13. Concrete Mix Submittal:

    1. The proportions for the following mix designs are derived in accodance with the guide lines of ACI 211 and ASTM C94 "Standard specification for ready mix concrete", Option C.

    2. The mixes may be modified to maintain yield, slump, setting time and strength. Prior to unloading, a minimum of two (2) gallons of water per cubic yard, may be added provided that the specification limits for slump and time are not exceeded.

    Remarks Reinforced masonry group proportions are selected from test results per ASTM C 1019. "Standard Method of Sampling and Testing Grout".

Material	Coarse Agg	Fine Agg	Fine Agg	Cement
Type	Basalt	Coral	Basalt	I / II
Source	Kapaa	Maui	Kapaa	Hawaiian
Spec	ASTM C-33	ASTM C-33	ASTM C-33	ASTM C-150

Weights in Lbs. per cubic yard (SSD)

		Mix:	FLUIDIZED THERMAL BACKFILL
Pcode	Abs	Sp. G	XX67N015
Slump			N/A
3 Fine	3.5	2.70	1550
Dune Sand	2.0	2.65	500
Conc. Sand	4.5	2.65	1300
Cement		3.15	150 (1.6sk)
Water		1.00	433 (52 gal)
Air			1.7%

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GENERAL NOTES AND LEGEND

LILIHA STREET REHABILITATION
North King Street to School Street
Project No. 7413A-01-04M

Scale: NTS Date: September, 2015

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