

WASTEWATER NOTES

1. All wastewater lines and appurtenances shall conform to Standard Details for Public Works Construction, dated September 1984, of the Department of Public Works, County of Maui.
2. All sewerline and appurtenances shall follow the Design Standards of the Wastewater Reclamation Division, City and County of Honolulu, volumes 1 & 2, dated July 1993 and July 1984 respectively, unless otherwise noted.
3. Before construction commences, the Contractor shall schedule and document a pre-construction meeting with all agencies having utilities affected by the work.

4. The Department of Transportation (DOT), and the Department of Environmental Management, Wastewater Reclamation Division, has the right to stop construction, should any work be found contrary to the approved plans and specifications, or detrimental to the public interest.

5. All existing utilities, whether or not shown on the plans, if damaged during construction, shall be repaired by the Contractor and the contractor shall pay all expenses.

6. The Contractor shall notify the DOT and the Department of Environmental Management, Wastewater Reclamation Division one (1) week prior to connection to any existing wastewater lines. to any existing wastewater lines.

7. Should the Contractor excavate beyond the trench pay-width, as specified in the Standard Details for Public Works Construction, dated September 1984, and such action results in a greater load to the pipe, the Contractor shall provide, at the Contractor's expense, a higher class of bedding material that will withstand the added load.

8. Wastewater laterals shall be six (6) inches in diameter at a minimum of 1% slope, unless approved otherwise.

9. Where the clearance between a wastewater line and a new or existing utility line is eighteen (18) inches or less, the wastewater line shall be concrete jacketed in accordance with the Standard Details of Public Works Construction dated September 1984.

10. When the wastewater mains are of a different material than the laterals, the Contractor shall install approved adapters.

11. All backfill for wastewater trenches shall be compacted in 8" loose lifts to a minimum of 90% of its maximum density.

12. Where construction is to be done in phases or increments, each phase or increment shall be approved by DOT and the Department of Environmental Management, Wastewater Reclamation Division before the next phase or increment is started.

13. All wastewater mains shall pass a mandrel test as a condition of acceptance 30 days after completion and backfill. The mandrel diameter shall be 95% or more of the inside diameter of the pipe being tested. A certification letter from the Contractor, signed by the DSA inspector, will be forwarded to the DOT and the Department of Environmental Management, Wastewater Reclamation Division.

14. Prior to final acceptance and inspection by Closed Circuit Television (CCTV) all wastewater lines installed, including laterals, with water and any accumulated construction debris and other foreign materials shall be removed.

15. "As-Built" drawings shall be submitted as a condition for the final acceptance of the project. If main transmission lines will be dedicated to the county, the contractor shall submit an Autocad release 14 drawing file to the Wastewater Reclamation Division (WWRD).

16. All main wastewater lines which will be dedicated to the County of Maui shall be inspected by closed circuit television (CCTV) in strict accordance with Department of Public Works CCTV policy, effective date July 5, 2001. Final acceptance of the system shall be contingent upon the passing of all requirements of this policy. CCTV results should be submitted on DVD per memo dated October 1, 2006.

17. Any connection made under the water table will require CCTV at high tide to determine water tightness in accordance with Department of Public Works. Final acceptance of the system shall be contingent upon the passing of all requirements of this policy.

18. Contractor must have a Site Specific Spill Prevention Plan (SSSPP) approved by WWRD prior to sewerline construction and connection of existing facilities or any work within 5 feet of Wastewater System improvements.

19. The Contractor shall be responsible for any sewage spills caused during construction. The Contractor shall notify the State Department of Health and utilize appropriate sampling and analyzing procedures. The Contractor shall be responsible for all public notifications and press releases.

20. All buried materials.....(See water note 11).

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	8	166

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY NOTES

KAHULUI AIRPORT
ACCESS ROAD, PHASE I
Federal Aid Project No. NH-0380(10)
Scale: None Date: February 2013

SHEET No. T-8 OF 13 SHEETS

NOTES FOR WATER SYSTEM:

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	9	166

1. The Contractor shall notify the Department of Water Supply (DWS), in writing one (1) week prior to commencement of work on the potable water system.

2. All materials used and methods of construction of water system facilities shall be in accordance with the latest revisions of DWS Standards. Contractor shall obtain the latest revisions of the DWS Standard Details before commencing construction.

3. All water system work shall be performed by contractors possessing valid State of Hawaii contractor's licenses, regardless of the value of the work.

4. The exact depth and location of existing waterlines, service laterals and other utilities are not known. It shall be the Contractor's responsibility to locate prior to trenching for the new waterline. The cost of lowering, relocating or adjusting existing waterlines, service laterals and other utilities shall be considered incidental to the cost of the new waterline, unless noted otherwise, and will not be paid for separately.

5. Concrete for reaction blocks and anchor blocks shall be DWS class 2500.

6. The maximum distance between valve nut and top of valve manhole cover shall be three (3) feet. All gate valves shall have concrete anchor blocks.

7. The Contractor shall submit a materials list to DWS for approval prior to construction.

8. Connection to DWS system:

A. The Contractor shall be responsible for furnishing all necessary fittings and other materials and equipment required for the hook-up. He shall verify the exact location, depth, type, and condition of the existing line before ordering materials for the hook-up. He shall, however, check with DWS before excavating for verification purposes.

B. Whenever feasible, mechanical joint fittings shall be used for buried applications, and flanged joint fittings shall be used for exposed applications.

C. Authorized DWS personnel will be required to make the final connection to the existing line. The Contractor shall be responsible for all costs incurred by DWS for said work, including the cost of pressure testing and disinfection.

D. If the DWS provides only inspection and supervising operators, and does not provide personnel for the actual connection, the Contractor shall provide all pipefitters and laborers to make the connection.

E. The Contractor shall be responsible for furnishing all material, equipment and labor for trench excavation, backfilling, cleaning and chlorination, paving, and other work necessary to complete the hook-up, as directed by and to the satisfaction of DWS.
9. Minimum cover over water main, 6" diameter or larger, shall be 3'-0". Minimum cover for 4" diameter shall be 2'-6". Minimum cover for diameters less than 4" shall be 1'-6".

10. Bolts for exposed flanged ductile iron pipe joints shall be either silicon bronze bolts and nuts or 316 stainless steel bolting with the heavy duty stainless steel nuts. Nuts to be furnished with Tripac 2000 blue coating system. Anti-Seize shall not be used. T-Bolts for ductile iron mechanical joint (MJ) pipe and fitting connections in underground situations shall be one of the following systems:

A. 316 stainless steel T-Bolts with the heavy duty stainless steel nuts (only) furnished with Tripac 2000 blue coating system. Anti-Seize shall not be used.

B. Cor-Ten T-Bolts and nuts with high glaze zinc sacrificial anodes, equivalent to "Duratron" sacrificial "Sac-Nut" modules, installed on the nuts for all standard Cor-Ten T-Bolts.

C. Cor-Ten T-Bolts and nuts both factory coated with Tripac 2000 blue coating system by "Tripac Fasteners".

11. All buried metals shall be wrapped and properly taped with Poly-Wrap. For all buried installations of ductile iron pipe and fittings, Poly-Wrap is required except within concrete jackets.

12. Water mains and appurtenances shall be subject to Hydrostatic Testing in accordance with the latest revision of AWWA C600, under the "Hydrostatic Testing" section, to a pressure of at least 1.5 times the working pressure. Unless otherwise stated in the construction documents or limited by the pressure rating of equipment, the pressure test and leakage test shall be performed at 225 pounds per square inch pressure.

13. Maintenance of Water Service: The Contractor shall be responsible for maintaining water service to consumers at all times. If water service disruption is necessary, the Contractor shall notify consumers.

14. D.I. Nipples: The Contractor shall furnish and install ductile iron nipples whether or not specified on the plans for complete installation of the waterlines.

15. Temporary Cleanouts: The Contractor shall furnish and install temporary cleanouts as necessary to test, flush, and chlorinate the waterline. (Also see chlorination notes for cleaning waterline).

16. Exposed Waterlines: The Contractor shall remove and dispose of all portions of abandoned waterlines that are exposed or within 12-inches below the ground surface.

17. Utility Adjustment: The Contractor shall adjust to finished grades, all existing valve boxes and manholes, including frame and covers for all utilities (i.e. water, sewer, drain, etc.) affected by the work whether shown or not shown on the plans.

18. Road Improvements Damaged: The Contractor shall restore all road improvements, disturbed or damaged during construction in accordance with the "Hawaii Standard Specifications for Road, Bridge and Public Works Construction, 1994", as amended, to the satisfaction of the Department of Public Works and Environmental Management. Road improvements include, but are not limited to, pavement markers, striping, and speed humps.

19. Mechanical joint glands shall be "Straight-Sided", polygon in shape, and ductile iron gland thickness shall meet or exceed gray iron gland thickness, as described in AWWA C111. Reduced metal gland section is not permitted.

20. Prior to installation, the Contractor shall submit for approval by the engineer, the manufacturer's certification that all pipes, fittings, special castings, and valves conform in all respects to the water system standards.

21. The Contractor shall submit two sets of record drawings via a consultant prior to acceptance of the water system. An electronic image file in Tiff format shall be provided to the DWS for all projects.

22. All air relief valves shall have a minimum working pressure range of 0 to 300 PSI.

23. Pipe cushion shall be of high resistivity material. The Contractor shall submit a soil certification that high resistant cushion material has a resistivity greater than 5000 OHM-CM. Remainder of the backfill material shall be as specified in section 209.04 of the Water System Standards. Pipe cushion and backfill material shall contain no hazardous substances above regulatory action levels including but not limited to lead, asbestos, mercury, chromium, cadmium, zinc, strontium, and polychlorinated biphenyl (PCB).

24. All materials (pipe, pipe lubricants, paints, sealants, form oil, concrete admixtures, etc.) in direct contact with the potable water shall have National Sanitation Foundation (NSF) approvals. The Contractor shall submit these approvals to the Department of Water for review and approval prior to its application.

25. Lubricate hydrant nozzle threads with non-toxic grease.

26. The contrator shall paint and number the Fire hydrant.

STATE OF HAWAII
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HIGHWAYS DIVISION

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KAHULUI AIRPORT
ACCESS ROAD, PHASE I
Federal Aid Project No. NH-0380(10)
Scale: None Date: February 2013

SHEET No. T-9 OF 13 SHEETS

"AS-BUILT"

9

CHLORINATION NOTES FOR WATER SYSTEM PIPELINES:

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	10	166

- Water mains and appurtenances shall be disinfected in accordance with AWWA C651. All procedures and materials (liquid chlorine of calcium hypochlorite) used for the chlorination of the project shall conform to AWWA requirements.
- Prior to chlorination, the project pipelines shall be thoroughly cleaned in accordance with AWWA C651. Cleaning of lines 8" and larger shall be by pigging using foam pigs or other mechanical means to remove dirt and other deleterious material. Smaller lines can be flushed in accordance with AWWA requirements if adequate water supply is provided, otherwise clean by mechanical means. The Contractor shall submit his plan for pipeline cleaning, including fitting requirements of pigging or other mechanical means, for approval prior to proceeding.
- The interior surfaces of the project shall be exposed to the chlorinating solution for a minimum of 24 hours and the chlorine residual shall not be less than 10 PPM after such time.
- Should calcium hypochlorite be used, no solid and/or undissolved portion of the compound shall be introduced into any section of the project to be chlorinated.
- At the end of the 24-hour disinfection period, representative samples shall be taken and analyzed to assure a chlorine residual of at least 10 PPM. Measurements for chlorine residual tests shall be by a trained, qualified tester approved by the Director.
- Should the results indicate adequate chlorination, the project shall be thoroughly flushed and filled with potable water from the existing potable water system and again tested for chlorine residual. The flushing shall be considered adequate if the test results indicate that the water in the project has a comparable chlorine residual as the water in the existing system.
- Following the acceptable flushing of the high concentration chlorine solution, two consecutive sets of acceptable samples shall be taken at least 24 hours apart from representative points in the project and subjected to microbiological tests performed by a certified laboratory approved by the Department of Health. At least one set of samples shall be collected and tested from every 1200 feet of the new water mains, plus one set from the end of the line and at least one set from each branch. Positive results will not be acceptable and the entire chlorination process will be repeated.
- Analysis for residual chlorine shall be made in accordance with "Standard Methods for the Examination of Water and Wastewater", American Public Health Association, current edition.
- Microbiological tests shall be made in accordance with "Standard Methods for the Examination of Water and Wastewater", American Public Health Association, current edition.
- The Developer/Contractor shall be responsible for all costs associated with all of the foregoing.

- Liquid chlorine or calcium hypochlorite, that has been tested and certified as meeting the specifications of ANSI/NSF Standard 60, drinking water treatment chemicals – health effects, shall be used for the chlorination of the water mains and storage tanks.
- The Contractor shall be responsible for the proper disposal of chlorinated water to safeguard public health and environment in accordance with applicable State Department of Health requirements. A neutralizing chemical shall be applied to the water to be wasted to thoroughly neutralize the chlorine residual remaining in the water in accordance with AWWA C651-99, Section 4.5.2, and Appendix C.
- The Contractor shall be responsible for obtaining a National Pollutant Discharge Elimination System (NPDES) permit from the Department of Health, clean water branch prior to the start of construction, for the disposal of water used for hydrotesting and chlorination.
- All measurements for chlorine residual shall be analyzed using E.P.A. approved methods for drinking water.
- All microbiological tests shall be performed by a laboratory approved by the Department of Health, State of Hawaii.
- See ANSI/AWWA C651-99, Section 4.3.6 for swabbing chlorination procedures.

HAWAIIAN TELCOM GENERAL NOTES:

- 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. And damages shall be reported immediately to Hawaiian Telcom repair section at 611.
- Prior to excavation, the Contractor shall request Hawaiian Telcom to locate and mark existing underground cables wherever required. Five (5) working days advance notice is required. Plans are required for cable locate request.
- If required, adjustments shall be made to new construction to provide required clearances from existing Hawaiian Telcom facilities.
- The Contractor shall take necessary precaution not to damage existing cables or ducts. A Hawaiian Telcom inspector or his 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 facilities. Temporary cable and duct supports shall be provided wherever necessary.
- The Contractor shall notify the Hawaiian Telcom inspector or his designated representative a minimum of 72 hours prior to excavation, bracing, or backfilling of Hawaiian Telcom facilities. Contact Lynette Yoshida, Area Supervisor at 242-5105

- When excavation is adjacent to or beneath Hawaiian Telcom existing facilities, the Contractor shall:
 - Sheet and/or brace the excavation to prevent slides, cave-ins, or settlements to ensure no movements to Hawaiian Telcom facilities.
 - Protect existing structures and/or facilities with beams, struts, or underpinning while excavating beneath them to ensure no movements to Hawaiian Telcom facilities.
- The underground pipes, cables, or ductlines known to exist by the Engineer from his search of the 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.

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KAHULUI AIRPORT ACCESS ROAD, PHASE I Federal Aid Project No. NH-0380(10) Scale: None Date: February 2013	
SHEET No. T-10 OF 13 SHEETS	

MECO NOTES:

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	11	166

1. Location of MECO Facilities

The location of MECO'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 utilities 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 MECO'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. Caution!!! Electrical Hazard!!!

Existing MECO overhead and underground lines are energized and will remain energized during construction unless prior special arrangements have been made with MECO. Only MECO 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 MECO facilities, which can result in electrocution.

4. Overhead Lines

State law (OSHA 1910.269(k)(2B) requires that a worker and the longest object he or she may contact cannot come closer than a minimum radial clearance of 10 feet when working close to or under any overhead lines rated 50kv and below. For each additional 10kv above 50kv, an additional 4 inches shall be added to the 10-foot clearance requirement. The preceding information on line clearance requirements is provided as a convenience and it is the Contractor's responsibility to be informed of and comply with any revisions or amendments to the law.

Should the Contractor anticipate that his work will result in the need to encroach within the minimum required clearance at any time, the Contractor shall notify MECO at least four (4) weeks prior to the planned encroachment so that, if feasible, the necessary protections (e.g. relocate or de-energize MECO lines) can be put in place. MECO may also be able to blanket its distribution (12kv and below) lines to provide a visual aid in preventing accidental contact. MECO's cost of safeguarding or identifying its lines will be charged to the Contractor.

Contact MECO's customer installations department at 871-2390 for assistance in identifying and safeguarding overhead power lines.

Refer to MECO's electrical safety Contractor's guide brochure. A copy may be obtained from MECO's Customer Installations Department.

5. 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 pole 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 associated costs to brace, repair, or strengthen poles. All means of structural support for the pole proposed by the Contractor shall first be reviewed by MECO before implementation. For pole bracing instructions, the Contractor shall call MECO's Customer Installation Department at 871-2390 a minimum of two (2) weeks in advance.

6. Underground Lines

The Contractor shall exercise extreme caution whenever construction crosses or is in close proximity of underground lines. MECO's existing electrical cables are energized and will remain energized during construction. Only MECO personnel are to break into existing MECO facilities, handle these cables, and erect temporary guards to protect these cables from damage. The cost of MECO's assistance in providing proper support and protection of its underground lines will be charged to the Contractor.

For MECO assistance, the Contractor shall call Hawaii One-Line Center at 1-866-423-7287 for verification of underground lines, call a minimum of 72 hours in advance.

For assistance in providing proper support and protection of these lines, call MECO a minimum of two (2) weeks in advance.

7. Underground Fuel Pipelines

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

8. Excavations

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

- Sheeting and bracing the excavation and stabilizing the existing ground to render it safe and secure and to prevent possible slides, cave-ins, and settlements.
- Properly supporting existing structures or facilities with beams, struts, or under-pinnings to fully protect it from damage.
- Backfilling with proper backfill material including special thermal backfill where existing (refer to Engineering Department for thermal backfill specifications).

9. Relocation of MECO Facilities

Any work required to relocate or modify MECO facilities shall be done by MECO, or by the Contractor under MECO's supervision. The Contractor shall be responsible for all coordination, and shall provide necessary support for MECO's work, which may include, but not be limited to, 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.

10. Conflicts

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

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KAHULUI AIRPORT ACCESS ROAD, PHASE I Federal Aid Project No. NH-0380(10)	
Scale: None	Date: February 2013
SHEET No. T-11 OF 13 SHEETS	

MECO NOTES:

11. Damage to MECO Facilities

The Contractor shall be responsible for the protection of all MECO surface and subsurface utilities and shall be responsible for any damages to MECO's facilities as a result of his operations. The Contractor shall immediately report such damages to MECO's trouble dispatcher at 871-7777. Repair work shall be done by MECO or by the Contractor under MECO's supervision. Costs for damages to MECO's facilities shall be borne by the Contractor.

In case of damage or suspected damage to MECO's fuel pipeline, the Contractor shall immediately notify MECO at 871-7777 so MECO 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.

12. MECO Stand-By Personnel

The Contractor may request MECO Field Operations Division stand-by during construction near MECO's facilities. The cost of such inspection will be charged to the Contractor.

The Contractor shall call the MECO Customer Installation Department at 871-2394 a minimum of 5 working days in advance to arrange for MECO stand-by personnel.

13. Clearances

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

Structure Type	Minimum Clearance (inches)
Water lines, parallel	36 (A)
Water lines, crossing	12 (B)
Sewer lines, parallel	36 (C)
Sewer lines, crossing	24 (D)
Drain lines, parallel	12
Drain lines, crossing	6 (E)
Electrical and Gas lines, parallel	12
Electrical and Gas lines, crossing	12
Telephone lines, parallel	6 (E)
Telephone lines, crossing	6 (E)
Chevron oil lines, parallel	36
Chevron oil lines, crossing	48 Below oil line (F)

- A. The minimum horizontal clearances to water lines parallel to electrical ductlines should be increased to 60 inches if the water line is greater than or equal to 16 inches in diameter.
- B. The minimum vertical clearances to water line crossing electrical ductlines can be reduced to 6 inches if the electrical ductline structure is concrete encased and is below the water line and the water line is less than 16 inches in diameter.
- C. The minimum horizontal clearances of 36 inches is required between new handholes and existing sewer laterals.

- D. The minimum vertical clearances to sewer pipes crossing electrical ductlines can be reduced to 12 inches if the sewer pipe is jacketed in concrete.
- E. The minimum clearances shall be increased to 12 inches if the electrical ductlines is direct buried.
- F. The minimum vertical clearances to oil lines crossing electrical ductlines can be reduced to 24 inches below oil lines if the crossings are encased in 6 inches of concrete.
- G. The Contractor shall notify the construction manager & MECO of any heat sources (power cable duct bank, steamline, etc.) encountered that are not properly identified on the drawing.

The following clearances shall be maintained between MECO's fuel oil pipelines and all adjacent structures: 24-inches, parallel or crossing. The minimum clearance can be reduced to 12 inches (parallel and below only) if the structure is jacketed in concrete.

14. Indemnity

The Contractor shall indemnify, defend and hold harmless MECO 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 tortuous 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 MECO.

OCEANIC/TIME WARNER CABLE NOTES:

1. Contractor shall coordinate with Oceanic/Time Warner Cable Company. Contact Mr. Bill Hanke at (808) 877-4425 ext. 838.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-0380(10)	2013	12	166

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UTILITY NOTES	
KAHULUI AIRPORT ACCESS ROAD, PHASE I Federal Aid Project No. NH-0380(10)	
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SHEET No. T-12 OF 13 SHEETS	