FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	260	331

HAWAIIAN ELECTRIC COMPANY (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 PERMIT

The Contractor shall obtain an Excavation Permit from HECO's Technical Division (543–5654) located at 820 Ward Avenue, 4th floor, two weeks prior to starting construction. Please refer to HECO's request number at that time.

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 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 HECO at least four (4) weeks prior to the planned encroachment so that, if feasible, the necessary protections (e.g. relocate or de–energize HECO lines) can be put in place. 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.

Refer to Section X of HECO's Electric Service Installation Manual for additional guidelines when working around HECO's facilities. A copy may be obtained from HECO's Customer Installations Department.

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 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 straighten poles. All means of structural support for the pole proposed by the Contractor shall first be reviewed by HECO before implementation. For pole bracing instructions, the Contractor shall call the HECO Construction and Maintenance Dept., Customer & System Superintendent at 543–4223 a minimum of two (2) weeks in advance.

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. 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 HECO's Underground Division at 543–7049 a minimum of 72 hours in advance.

For assistance in providing proper support and protection of these lines, the Contractor shall call HECO's Construction & Maintenance Dept., Customer & System Superintendent, at 543–4223, a minimum of two (2) weeks in advance.

8. UNDERGROUND FUEL PIPELINES

The Contractor shall exercise extreme caution whenever construction crosses or 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 Instructions 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) 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.
b) properly supporting existing structures or facilities with beams, struts, or under–pinnings to fully protect it from damage.
c) 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 or 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, excavation and backfill, permits and traffic control, barricading, and restoration of pavement, sidewalks, and other facilities.

All costs associated with any relocation or modification (either temporary or permanent) for the convenience of the Contractor, or to enable the Contractor to perform his work in a safe and expeditious manner in fulfilling his contract obligations shall be borne by the Contractor.

11. CONFLICTS

Any redesign or relocation of 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 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 Honolulu Power Plant Shift Supervisor at 533–2102 (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.

GARY I. FUNASAKI
LICENSED PROFESSIONAL ENGINEER
No. 4195-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
20 FEB 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECO NOTES 1

North–South Road
Phase 1B
F.A.I. Proj. No. STP–8930(2)

Scale: AS NOTED   Date: Feb 21, 2007

SHEET No. E0.4 OF 62 SHEETS

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

LAST SAVE: 02/20/07 @ 08:43:29 BY: RN PLOT SC 1'=1'
Y:\acad\projects\24107B\e0–04_24107b_HecoNote01

HAWAIIAN ELECTRIC COMPANY (HECO) NOTES CONT.

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 the HECO Construction and Maintenance Dept., Customer & System Superintendent at 543-4223 a minimum of 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:

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 must be increased to 60 inches if the water line is greater than 16 inches in diameter
(b) The minimum vertical clearances to water lines 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) A minimum horizontal clerance 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 ductline 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.

The Contractor shall notify the Engineer & HECO of any heat sources (power cable duct bank, steamline, etc.) encountered that are not properly identified on the drawing.

The following clearance shall be maintained between HECO'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.

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.

16. SCHEDULE

Contractor shall furnish his construction schedule 45 working days prior to starting work on HECO facilities. Contractor shall give HECO, in writing, 40 working days notice to proceed 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 543-4356 at least 48 hours prior to placing concrete.

Contractor to coordinate work to break into HECO's existing electrical facilities with HECO's Underground Division at 543-7871 at least 10 working days in advance.

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 verification 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 a 1/8" polyolefin 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.

GARY I. FUNASAKI
LICENSED PROFESSIONAL ENGINEER
No. 4195-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
20 Feb 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECO NOTES II

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E0.5 OF 62 SHEETS

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

LAST SAVE: 02/20/07 @ 08:43:58 BY: RN PLOT SC 1"=1'
Y:\cad\projects\24107B\e0-05_24107b_HecoNote02

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	262	331

Hawaiian Telcom (HTCO) 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 3239 Ualena St., 3rd flr., two weeks prior to the start of construction. Hours of business are: 8:00 am to 11:00 am and 12:00 pm to 3:30 pm Monday thru 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 location 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 location 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 840-1444 (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 whenever there will be breakage into or entry into any structure that contain Hawaiian Telcom facilities. Temporary cable and duct supports shall be provided whenever 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 Underground Telephone Systems" dated March 1999. All subsequent amendments and addition, and all other pertinent standard 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 settlement ensuring no movement to Hawaiian Telcom's structures or facilities.

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

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

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

13. 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.

14. 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 depth of the facilities and exercise proper care in excavating in the area. Wherever connections of new utilities to existing utilites are shown on the plans, the Contractor shall expose the existing line at the proposed connections to verify their locatons and depth prior to excavation for the new lines.

15. 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.

16. 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.

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

18. The Contractor shall notify Hawaiian Telcom inspector 24 hours prior to pouring of concrete or backfilling.

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

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

21. Minimum concrete strength shall be:
for ductline, 2500 psi at 28 days
for manhole, 3000 psi at 28 days or as specified in design notes

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

APPROVED BY:

HAWAIIAN TELCOM DATE

OCEANIC TIME WARNER CABLE DATE

Oceanic Time Warner Cable (CATV) Notes

1. The location of CATV facilities are basically within existing CATV conduits. The Contractor shall use extreme caution when working in close proximity of CATV facilities.

2. The Contractor shall obtain excavation permit clearance from Oceanic Time Warner Cable's Engineering Section located at 200 Akamainui St., Mililani Tech. Park. phone 625-8443.

3. Any work required to relocate CATV facilities shall be done by Oceanic Time Warner Cable and the Contractor shall be responsible for all coordination requirements and associated applicable costs.

4. Any damage to CATV facilities shall be reported immediately to Oceanic Time Warner Cable's Repair Dispatch Department at 625-8437.

5. Contact Oceanic Time Warner Cable inspector 72 hours prior to starting work on CATV infrastructure. Call Moki Place at 625-8378.

6. All conduits shall enter through the end of the pullbox at 90 degrees to the wall of pullbox.

7. All entrances into the pullbox shall be grouted around the conduits and the inside surfaces shall be smooth and flush with the existing wall.

8. All 4" conduits shall have muletape and all other size conduits shall have pullstring.

9. End bels are required on all 4" and 2" conduits.

10. After ductline has been completed, a mandrel not less than 12" long and having a diameter of 1/4" less than the inside diameter of duct shall be pulled through each duct.

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER No. 4195-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
20 FEB 2007

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HTCO & CATV NOTES

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E0.6 OF 62 SHEETS

DATE	REVISION

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

LAST SAVE: 02/20/07 @ 08:44:47 BY: RN PLOT SC: 1'0"=1'
N:\wood projects\24107B\e0-06_24107b_htco_catv-Notes01

262

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	263	331

U.S. Army Signal Corps Notes:

1. The location of underground facilities as shown on the plans are from record of varying degrees of accuracy and are not guaranteed as shown. The Contractor shall take necessary precautions not to damage existing cables or ducts. Any work involving existing cables, ducts or structures containing Signal Corps facilities shall be coordinated with the 30th Signal Battalion (Joint Trunking System Executive Agent) representative.

2. The Contractor shall notify the U.S. Army 30th Signal Battalion JTS EA prior to proceeding with work on the Signal Corps System, 72 hours in advance (phone 656–6656 or 656–3514).

3. The Contractor will be responsible for any damages to the existing Signal Corps System. Any and all damages shall be immediately reported to the U.S. Army JTS EA and repaired at no cost to the State or Government.

4. Existing Signal Corps Ductline may consist of transite or lead–containing material. If removed, the transite and lead–containing material shall be properly disposed.

5. The Contractor will be responsible for any changes, relocations and provide "As–Built" records to the JTS EA upon completion of the project. Mail "As–Built" Drawings to: 30th Signal Battalion, Wheeler Army Airfield, 148 Curtis Loop, Room 157, Schofield Barracks, HI 96857–5020.

AT&T Notes:

1. The location of AT&T's underground facilities as shown on the plans are from record of varying degrees of accuracy and are not guaranteed as shown. The Contractor shall exercise extreme caution when the excavation and construction crosses or is in close proximity to underground fiber optic facilities. Any damage to the existing underground facilities shall be repaired and paid for by the Contractor.

2. This project involves work that will impact AT&T's fiber optic communications cable. Call 1–800–227–2600 72 hours prior to the start of work, to arrange for exact cable location.

3. Whenever a Contractor is working over or near the AT&T cable, an AT&T technician must be on site.

GARY I. FUNASAKI
LICENSED PROFESSIONAL ENGINEER
No. 4195-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
20 Feb 2007

DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

U.S. ARMY SIGNAL CORPS, & AT&T NOTES

North–South Road
Phase 1B
F.A.I. Proj. No. STP–8930(2)

Scale: AS NOTED　　Date: Feb 21, 2007

SHEET No. E0.7 OF 62 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	264	331

Sandwich Isles Communications' Notes

General

1. All work shall be in strict accordance with Specifications and requirements of Sandwich Isles Communications (SIC), which complies with all applicable County and State requirements.
2. All materials used on SIC portion of the project must be listed on the Sandwich Isles Communications (SIC) List of Approved Materials.
3. All PVC conduits, sweeps, couplings, adapters and bell ends shall be Schedule 40, unless otherwise specified.
4. All high density polyethylene conduits shall be SDR 11. Typical 3-Pack Unit includes two 1-1/2" SDR 11 rated conduits in colors of orange and red; and one 1-1/2" toneable HDPE duct (Contractor is required to confirm continuity on the toneable HDPE duct from manhole to manhole), black in color, unless otherwise specified. All conduits to be pressure tested at 120 PSI. After the conduits are installed, a round solid test mandrel having a diameter of one fourth-inch less than the inside diameter of the conduit shall be pulled through each conduit. Suffixes listed in RUS Spec 515B for conduits are applicable. Fusion splicing of the conduit shall be acceptable only when pulling joints through bores. All couplings shall be double "E-LOC" manufactured by ETOC Specialty Products, Inc.
5. Main conduit runs except riser conduits and cross connect pedestal conduits shall be constructed with minimum 6-foot radius curves, unless otherwise approved by the Engineer.
6. Contractor shall notify SIC's Representatice (Leroy Brack – Ph: 524-8400, Fax 599-4653) three working days prior to commencing work on the SIC system.

Conduits

1. Install muletape in all conduits designated for copper cable and cap all conduits after testing. The NEPTCO (or approved equal) muletape is available in 3000 ft., 6500 ft., and 10,000 ft. reels from Westinghouse Electric Supply Company (WESCO), the NEPTCO muletape is prelubricated and printed with sequential footage markings. Muletape will not be installed in conduits designated for fiber.
2. All ducts shall have temporary watertight plugs or seals to keep them free of moisture and debris (Jackmoon Plug or equivalent). Duct tape is unacceptable.
3. When installing the toneable HDPE duct it shall be necessary to pull the conduit approximately five (5) feet inside of the manhole. Peel back the locator wire the entire five (5) feet, turn and "J" hook it to the inside wall. At the end of the locator wire, it shall be necessary to leave a one (1) inch loop to attach the locator equipment. Cut the duct 18" from the inside wall of the manhole. This excess duct, labor and materials shall be compensated under the UM unit.
4. Stubout conduits from handholes to individual residential lots shall be Schedule 40 PVC, 1" diameter and extended 5' beyond property line. Cap and seal end and mark locations with above ground marker.
5. All conduits shall enter handholes at 90 degree angle and shall extend into manhole as follows: (a) black conduit: 18", (b) all others: 12". Any exceptions shall only be permitted when specified by the Engineer.
6. All conduits entering manholes or handholes shall be grouted between conduits and sidewall, inside and out. All conduits will enter the manholes and handholes on the property side at all times unless otherwise specified by the Engineer.
7. Backfill and compaction for ductline trenches, manholes and handholes shall be in accordance with:
   - A. State Highway Department's Standard Specifications for Road and Bridge Construction with latest amendments, if construction is located under a State street or road, or located in private property.
   - B. The Standard Specifications for Road, Bridge and Public Works Construction, dated 1986, of the Department of Public Works, City and County of Honolulu, with latest amendments; County of Kauai, Maui, or Hawaii, as the case may be, if construction is located under County streets and roads.
8. Backfilling shall be subject to the approval of the SIC inspector, the authorized representative of the Department of Transportation, State of Hawaii and/or Department of Public Works, City and County of Honolulu, County of Kauai, Maui or Hawaii, as the case may be.
9. Excavated material may be reused as backfill, providing that it conforms to requirements of Type "A" and Type "B" backfill, as required within the Standard Specifications. A written soils report of conformance by a licensed third party Geotechnical Engineer is needed prior to backfill using the excavated material.
   - A. Type "A" backfill is defined as beach sand, earth or earth and gravel. Maximum particle size shall be 1" and mixture shall not contain more then 20% by volume of rock particles.
   - B. Type "B" backfill is defined as beach sand, earth or earth and gravel. Maximum particle size shall be 1/2" and mixture shall not contain more then 20% by volume of rock particles.
10. All conduit runs shall have a non-metallic warning tape placed 12 inches above the conduit run. The tape should read "Caution Buried Telephone Cable Below".

Manholes and Handholes:

1. All manholes shall have HS20-44 traffic loading covers (unless otherwise noted). Handholes shall have 20K traffic load rated cover.
2. All manhole and handhole covers shall have cover logo to read "SIC".
3. All handhole and manhole cover bolts shall be stainless steel 3/4" pentahead, unless otherwise noted.
4. All manholes and handholes are specified as follows:
   - A. UM35 and UM4x6 Manhole Assembly Units – Hawaii Precast, Inc. as per Master Purchase Agreement.
   - B. UHC 30x48x36 Handhole (Pullbox) Assembly Unit. This unit shall consist of one Armorcast polymer concrete box & cover assembly. Part number (A6001430TA-SIC2) or equivalent.
   - C. UHC 13x24x36 Handhole (Pullbox) Assembly Unit. This unit shall consist of one Armorcast polymer concrete box & cover assembly. Part number (A6001946TA-SIC2) or equivalent.
   - D. UH35 and UH4x6 handhole assembly unit – Hawaii Precast, Inc. as per Master Purchase Agreement.
5. Provide a 5/8-inch diameter x 8-feet copper clad ground rod at all handholes and manholes, unless otherwise specified.
6. All manholes and handholes to be ordered with all hardware, including cable racks, steps and pegs.
7. The tops of all manholes and handholes shall be flush to grade with the sidewalk or roadway, unless otherwise noted.
8. Set manhole or handhole on a level area, in the bottom of the excavation, on a 4" layer of crushed rock, for drainage purposes.
9. Before backfilling and compacting, make sure covers are in place and secure. Layer 6" to 8" of backfill material around the manhole or handhole. Tamp each individual layer of backfill material. Continue the layering and "tamping" until final grade is achieved.
10. The base of all manholes and handholes will be placed level. Some manholes have adjustable frames. All voids created during installation must be filled with mortar mix or concrete. This is especially true for manholes and handholes set in roadways.

APPROVED BY:

SANDWICH ISLES COMMUNICATIONS, INC. DATE

GARY I. FUNASAKI LICENSED PROFESSIONAL ENGINEER NO. 4195-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

12 FEB 2007

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SANDWICH ISLES COMMUNICATIONS' (SIC) NOTES

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Scale: AS NOTED Date: Feb 21, 2007

SHEET No. E0.8 OF 62 SHEETS

DATE	REVISION

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

ORIGINAL PLAN
NOTE BOOK
No.

LAST SAVE: 02/20/07 @ 08:46:09 BY: RN PLOT SC: 10"=1'
I:\Used projects\24107B\e0-08_24107b_SIC-Notes01