

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-072-1(34) B	1991	58	123

GENERAL UTILITY NOTES:

- SEE ELECTRIC PLANS FOR ELECTRIC AND TELEPHONE NOTES.
- THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES AND STRUCTURES AS SHOWN ON THE PLANS ARE FROM THE LATEST AVAILABLE DATA BUT ARE NOT GUARANTEED AS TO THE ACCURACY OR THE ENCOUNTERING OF OTHER OBSTACLES DURING THE COURSE OF THE WORK. THE CONTRACTOR SHALL NOT ASSUME THAT WHERE NO UTILITIES ARE SHOWN, THAT NONE EXIST. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL PAY FOR ALL DAMAGES TO EXISTING UTILITIES.
- PRIOR TO EXCAVATING FOR NEW LINES, THE CONTRACTOR SHALL NOTIFY ALL AGENCIES, INCLUDING THE BOARD OF WATER SUPPLY, DEPARTMENT OF PUBLIC WORKS, HAWAIIAN TELEPHONE COMPANY AND HONOLULU GAS COMPANY, AND HAVE THEM LOCATE THEIR RESPECTIVE LINES AFFECTED. THE CONTRACTOR SHALL BE HELD RESPONSIBLE AND SHALL PAY FOR ALL DAMAGES TO AND MAINTENANCE AND PROTECTION OF EXISTING FACILITIES AND STRUCTURES.
- THE CONTRACTOR SHALL EXPOSE, VERIFY AND BACKFILL ALL EXISTING UNDERGROUND UTILITIES AND STRUCTURES AT CROSSINGS PRIOR TO EXCAVATION OF PIPELINE TRENCH.

WATER NOTES:

- UNLESS OTHERWISE SPECIFIED, ALL MATERIALS AND CONSTRUCTION OF WATER SYSTEM FACILITIES AND APPURTENANCES SHALL BE IN ACCORDANCE WITH THE "STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION" DATED 1985, AS AMENDED, OF THE HAWAII HIGHWAYS DIVISION, DEPARTMENT OF TRANSPORTATION AND THE CITY AND COUNTY OF HONOLULU BOARD OF WATER SUPPLY'S "WATER SYSTEM STANDARD DETAILS FOR WATER SYSTEM CONSTRUCTION", VOLUME 2, DATED 1985, AND ALL SUBSEQUENT AMENDMENTS AND ADDITIONS.
- ALL PLANS APPROVED BY THE BOARD OF WATER SUPPLY ARE BASED SOLELY ON THE ADEQUACY OF THE WATER SUPPLY. ALL OTHER FEATURES OF THE WATER SYSTEM SUCH AS LINES, GRADES, FITTINGS, ETC., AND DRAINAGE AND OTHER FEATURES OF THE IMPROVEMENTS SHALL NOT BE THE RESPONSIBILITY OF THE BOARD OF WATER SUPPLY.
- THE CONTRACTOR SHALL NOTIFY THE BOARD OF WATER SUPPLY IN WRITING ONE WEEK PRIOR TO COMMENCING WORK ON THE WATER SYSTEM.
- PRIOR TO INSTALLATION, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL BY BOARD OF WATER SUPPLY, THE MANUFACTURER'S CERTIFICATION THAT ALL CAST IRON (GRAY OR DUCTILE) FITTINGS FOR THE PROJECT CONFORM IN ALL RESPECTS TO THE WATER SYSTEM STANDARDS, DATED 1985.
- POLYGON SHAPE FOR MECHANICAL JOINT GLANDS AS DESCRIBED IN AWWA STANDARD C III SHALL BE "STRAIGHT SIDED" OR AN APPROVED EQUAL ON A JOB TO JOB BASIS.
- ALL WATER MAINS AND APPURTENANCES SHALL BE SUBJECTED TO A HYDROSTATIC TEST PRESSURE OF 150 PSI BY THE CONTRACTOR IN THE PRESENCE OF THE BOARD OF WATER SUPPLY INSPECTOR.
- EXISTING UTILITIES CROSSING NEW WATER LINES ARE TO REMAIN IN SERVICE AND IN PLACE. IF RELOCATED FOR THE CONTRACTOR'S CONVENIENCE, INTERRUPTION OF SERVICE SHALL BE FOR A MINIMUM PERIOD OF TIME AND SHALL BE DONE AT THE CONTRACTOR'S EXPENSE AND ONLY WITH THE APPROVAL OF THE STATE.
- ALL WATER LINE TRENCHES SHALL BE BACKFILLED AS CALLED FOR UNDER PART III, SECTION 1.2.2. OF THE WATER SYSTEM STANDARDS, DATED 1985. COMPACTION OF TRENCH BACKFILL SHALL MEET APPLICABLE REQUIREMENTS OF THE STATE OF HAWAII.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL WATER LINES DURING CONSTRUCTION. THE CONTRACTOR SHALL BE ESPECIALLY CAREFUL WHEN EXCAVATING BEHIND WATER LINE TEES AND BENDS WHEREVER THERE IS A POSSIBILITY OF WATER LINE MOVEMENT DUE TO REMOVAL OF THE SUPPORTING EARTH BEYOND THE EXISTING REACTION BLOCKS. THE CONTRACTOR SHALL TAKE WHATEVER MEASURE NECESSARY TO PROTECT THE WATER LINES, SUCH AS CONSTRUCTING SPECIAL REACTION BLOCKS (WITH BWS APPROVAL) AND/OR MODIFYING HIS CONSTRUCTION METHODS.
- THE CONTRACTOR SHALL CUT AND PLUG ALL EXISTING UNUSED LATERALS AT THE MAIN WHETHER OR NOT SHOWN ON THE PLANS. METER AND VALVE BOXES TO BE OR ALREADY ABANDONED SHALL BE DEMOLISHED OR REMOVED AND PROPERLY DISPOSED OF. THE DAMAGED AREA SHALL BE REPAIRED TO AN EQUAL OR BETTER CONDITION THAN THE IMMEDIATE AREA. ALL WORK SHALL BE DONE AT THE EXPENSE OF THE CONTRACTOR.

- THE CONTRACTOR SHALL PROVIDE A SCHEDULE FOR APPROVAL TO THE STATE FOR ALL WORK TO BE PERFORMED ON THE EXISTING WATER METERS AND RELATED PIPING. DOWNTIME SHALL BE HELD TO A MINIMUM AND SHALL BE AT NON-PEAK HOURS. ALL RESIDENTS SHALL BE ADVISED OF ANY SHUTDOWNS AT LEAST 7 DAYS PRIOR TO SUCH SHUTDOWNS.
- THE CONTRACTOR SHALL VERIFY THE LOCATION, PIPE SIZES AND TYPES, AND DEPTHS OF ALL WATER METERS, LATERALS AND SERVICE CONNECTIONS PRIOR TO BEGINNING OF ANY METER RELOCATION. THE CONTRACTOR SHALL NOTIFY THE STATE OF ANY DISCREPANCIES WITH THE PLANS. ADJUSTMENTS TO THE PLANS SHALL BE MADE PRIOR TO RELOCATION OF THE METERS.
- RELOCATION, ADJUSTMENT, LOWERING AND ANY ITEMS OF WORK TO THE EXISTING WATER METERS SHALL INCLUDE ALL PIPING, FITTINGS, VALVES, ADAPTERS, METER BOXES AND ALL NECESSARY ITEMS TO COMPLETE THE WORK. UNLESS OTHERWISE APPROVED BY THE STATE, ALL MATERIALS SHALL BE NEW OF THE SAME TYPE AND SIZE AS THE EXISTING. EXISTING METER BOXES SHALL BE DEMOLISHED AND REMOVED.
- RE-APPROVAL SHALL BE REQUIRED IF THIS PROJECT IS NOT UNDER CONSTRUCTION WITHIN A PERIOD OF TWO YEARS.
- NUTS AND BOLTS FOR FLANGED CONNECTIONS WITHIN METER BOXES SHALL BE BRONZE OR STAINLESS STEEL EXCEPT COUPLING ADAPTERS WHERE "COR-TEN" (US STEEL) OR "MAYARI" (BETHELEHEM STEEL) MAY BE USED. FLANGED CONNECTIONS OUTSIDE OF METER BOX MAY USE "COR-TEN" OR "MAYARI" TYPE NUTS AND BOLTS.
- AFTER INSTALLATION OF TAPPING SLEEVE AND VALVE AND PRIOR TO ACTUAL TAPPING OPERATIONS, THE ASSEMBLY SHALL BE TESTED AT 150 PSI ON BOTH SIDES OF THE VALVE.
- THE CONTRACTOR SHALL EXPOSE, VERIFY AND BACKFILL ALL EXISTING UNDERGROUND UTILITIES AND STRUCTURES AT CROSSINGS PRIOR TO EXCAVATION OF PIPELINE TRENCH. THE WATER MAIN ALIGNMENT SHALL BE CHANGED IF THERE ARE CONFLICTS WITH HECO OR HTCO DUCTS.
- ALL A.C. AND CONCRETE PAVEMENT TO BE TRENCHED (FOR PIPELINE OR ANY WATER SYSTEM INSTALLATION) SHALL BE "SAWCUT" TO THE REQUIRED WIDTH PRIOR TO REPAVING.
- UNLESS OTHERWISE SPECIFIED, CONNECTIONS TO EXISTING WATER MAINS AND CHLORINATION OF NEW MAINS SHALL BE DONE BY THE CONTRACTOR, WITH THE BOARD OF WATER SUPPLY'S INSPECTOR COORDINATING THE WORK. ALL CONNECTIONS SHALL BE MADE AFTER NORMAL WORKING HOURS, WITH MAXIMUM DOWN TIME OF SIX (6) HOURS. FOR DETAILS, CONTACT THE BWS PLANNING AND ENGINEERING DIVISION, ENGINEERING BRANCH, CONSTRUCTION SECTION.
- WHEREVER CONNECTIONS TO EXISTING MAINS ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING MAINS PRIOR TO EXCAVATION FOR THE CONNECTION SHALL BE EXCAVATED WHEN THE CONTRACTOR IS READY TO MAKE THE CONNECTION.
- EXISTING UTILITIES CROSSING THE WATER MAIN ARE TO REMAIN IN SERVICE AND IN PLACE. IF RELOCATED FOR THE CONTRACTOR'S CONVENIENCE, INTERRUPTION OF SERVICE SHALL BE FOR A MINIMUM PERIOD OF TIME AND SHALL BE DONE AT THE CONTRACTOR'S EXPENSE AND ONLY WITH THE APPROVAL OF THE ENGINEER.
- THE BRIDGE DECKS FOR TEMPORARY BRIDGE INSTALLATION SHALL BE FLUSH WITH ADJOINING PAVEMENT OR SIDEWALK. NO BUMPS OR ELEVATED BRIDGE DECKS WILL BE ALLOWED.
- ALL WATER MAIN TRENCHES SHALL BE BACKFILLED AS CALLED FOR UNDER PART III, SECTION 1.2.2, TRENCH BACKFILL, OF THE "WATER SYSTEM STANDARDS", DATED 1985. COMPACTION OF TRENCH BACKFILL SHALL MEET APPLICABLE REQUIREMENTS OF "THE STANDARD SPECIFICATION FOR PUBLIC WORKS CONSTRUCTION", SEPTEMBER 1986, OF THE COUNTIES OF THE STATE OF HAWAII.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF CHLORINATED WATER TO SAFEGUARD PUBLIC HEALTH AND ENVIRONMENT IN ACCORDANCE WITH APPLICABLE BOARD OF HEALTH REQUIREMENTS.
- SHOULD MAJOR TREE ROOTS 2" AND GREATER BE ENCOUNTERED DURING CONSTRUCTION, THESE ROOTS SHALL BE CUT AND SEALED WITH ASPHALTIC PAINT.

26. PIPE:

- POLYVINYL CHLORIDE (PVC) PIPES (SIZES 4" TO 12") SHALL BE CLASS 150. TRANSMISSION PVC PIPES (16" MAIN) SHALL BE AS SPECIFIED FOR PVC SIZES 4" TO 12" WITH THE FOLLOWING MODIFICATION:
 - PVC PIPES SHALL CONFORM TO AWWA STANDARD C905;
 - PVC PIPES SHALL BE CAST IRON PIPE EQUIVALENT O.D. TYPE; AND
 - DR RATIO SHALL BE 18.ALL VALVES, CAST IRON PIPES AND FITTINGS SHALL BE WRAPPED WITH POLYETHYLENE. NO BENDING OF POLYVINYL CHLORIDE PIPES WILL BE PERMITTED. THE INSTALLATION OF PVC PIPE ACCORDING TO THE PLANS AND SPECIFICATIONS AS BID ON BY THE CONTRACTOR, MAY REQUIRE ADDITIONAL DESIGN WORK, ADDITIONAL FITTINGS AND SPECIAL COUPLINGS, NOT SPECIFIED IN THE PLANS AND SPECIFICATIONS. PAYMENT FOR ADDITIONAL DESIGN WORK, ADDITIONAL FITTINGS AND SPECIAL COUPLINGS SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE BID IN THE PROPOSAL FOR PVC PIPE. ANY ADDITIONAL DESIGN WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COPPER TONING WIRE SHALL BE INSTALLED ALONG THE ENTIRE LENGTH OF THE PIPELINE.
 - DUCTILE IRON PIPES SHALL BE CLASS 52, WRAPPED WITH POLYETHYLENE. PAYMENT FOR POLYETHYLENE WRAP SHALL BE INCIDENTAL TO THE UNIT PRICE BID FOR D.I. PIPE, VALVES AND FITTINGS.
- DURING NON-WORKING HOURS, THE TRENCHES ON CITY STREETS SHALL BE COVERED WITH NON-SKID STEEL PLATES AND ALL LANES MAINTAINED OPEN FOR TRAFFIC.
 - UNLESS OTHERWISE SPECIFIED, ALL ABANDONED LINES SHALL BE CUT AND PLUGGED WITH CLASS DWS 2000 CONCRETE. PAYMENT FOR CUTTING AND PLUGGING WILL NOT BE MADE DIRECTLY BUT WILL BE INCIDENTAL TO THE VARIOUS ITEMS OF THE PROPOSAL. THE CONTRACTOR SHALL VERIFY THE SIZE AND TYPE OF LINE TO BE PLUGGED.
 - ALL SALVAGE MATERIALS SHALL BE CLEANED, REPAINTED AND DELIVERED TO THE KALIHI BWS CORPORATION YARD.
 - ALL WATER MAINS AND APPURTENANCES INCLUDING SERVICE LATERALS AND SERVICE CONNECTIONS SHALL BE SUBJECTED TO A HYDROSTATIC TEST PRESSURE OF 150 PSI BY THE CONTRACTOR IN THE PRESENCE OF THE BOARD OF WATER SUPPLY INSPECTOR.
 - ALL LATERALS (1" TO 2-1/2") SHALL BE REPLACED OR RECONNECTED WITH EITHER COPPER OR PLASTIC TUBING.
 - PAYMENT FOR SERVICE LATERALS AND SERVICE CONNECTIONS SHALL BE MADE AT THE UNIT PRICE AND IN THE PROPOSAL. PAYMENT SHALL INCLUDE TAPS INTO MAINS, RECONNECTIONS TO EXISTING SERVICES, TRANSFERRAL OF METERS, AND INSTALLING PIPE LATERALS, FITTINGS, CORPORATION STOPS, STOP COCKS, GLOBE VALVES, METER SPLICES, BRASS PIPES, CAPS AND ALL APPURTENANCES, AS REQUIRED, IN PLACE COMPLETE PAYMENT FOR METER BOXES, INCLUSIVE OF C.I. FRAMES AND COVERS AND TYPE "A" VALVES BOXES SHALL BE MADE AT THE RESPECTIVE UNIT PRICE BID IN THE BID.
 - DEMOLISH AND BACKFILL ALL ABANDONED MANHOLES, VALVE BOXES AND METER BOXES. SALVAGE ALL CAST IRON FRAMES AND COVERS.
 - THE CONTRACTOR SHALL FURNISH AND INSTALL DIELECTRIC COUPLINGS, WHERE REQUIRED, FOR ALL SERVICE LATERAL RECONNECTIONS. PAYMENT FOR DIELECTRIC COUPLINGS WILL NOT BE MADE DIRECTLY, BUT SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS ITEMS IN THE PROPOSAL.

FOR ADDITIONAL NOTES SEE "GENERAL UTILITY NOTES" THIS SHEET.

Approved: *[Signature]* Date: 7/18/90
Chief, Planning and Engineering
Board of Water Supply

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
UTILITY NOTES
KALANIANA'OLE HIGHWAY
E. HIND DR. TO E. HALEMAUMAU ST.
F.A. PROJECT NO. F-072-(134) B
DATE: _____
SHEET NO. 58 OF 123 SHEETS



ORIGINAL PLAN	DATE
DESIGNED BY	DATE
CHECKED BY	DATE
NOTED BY	DATE
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
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SEWER NOTES:

1. Unless otherwise specified, all materials and construction of sewer system facilities and appurtenances shall be in accordance with the "Standard Specification for Road and Bridge Construction" dated 1985, as amended, of the Hawaii Highways Division, Department of Transportation, and the "Standard Specifications", Sept. 1986 and "Standard Details" September 1984, of the Department of Public Works, City and County of Honolulu and all subsequent amendments and additions.
2. The Contractor shall notify the Division of Wastewater Management at least 7 days prior to commencement of work, and submit four sets of approved Construction Plans.
3. Private sewer laterals are shown schematically. Contractor shall expose the private laterals to determine location and invert, prior to extending the sewer laterals within the new road right of way.
4. Existing sewer laterals shall be exposed to determine location and slope. The State, as confirmed by Wastewater Management, shall then determine the actual type of extension required for each lot. Sewer extension types shown are based on the best available data and may require changes at the time of construction.
5. At the Contractors option, and with the approval of the State, and confirmed by Wastewater Management, the Contractor may tap into the existing mains and provide new lateral connections.
6. Building plumbing facilities shall be controlled by sewer lateral inverts.
7. The Contractor shall be responsible for maintaining continuous sewer service to all affected areas during construction.
8. All manholes shall be reconstructed to new grade.
9. For additional notes see "General Utility Notes".

GAS NOTES:

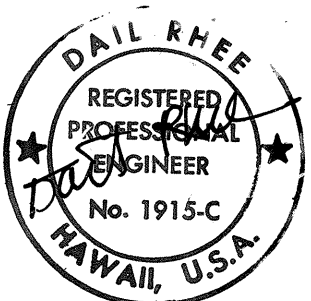
1. The Gasco, Inc. gas pipelines in the project area plastic coated and cathodically protected. The Contractor shall be careful when working near these gas pipelines.
2. Prior written clearance must be obtained from Gasco, Inc. at least five working days before starting excavation near these gas pipelines. Since gas line locations on field maps are approximate, the Contractor, after obtaining written clearance, shall call Gasco, Inc. a minimum of 48 hours before starting excavation to arrange for field location of the existing gas pipelines. The telephone number is 547-3575 during business hours, and 526-0066 after hours.
3. For relocations of any gas pipeline, the Contractor shall notify Gasco, Inc. five working days before starting work. The Contractor shall provide the necessary excavation and backfill, arrange for traffic permits, and restore pavement, sidewalks, or other facilities. Any relocation of gas facilities shall be done by Gasco, Inc. and paid for by the State.
4. The Contractor shall notify Gasco, Inc. immediately after any damage has been caused to existing gas pipelines, coatings, or its cathodic protection devices. Repair work on such damage shall be done by Gasco, Inc., with payment for this work to be borne by the Contractor.
5. Minimum vertical and horizontal clearance between the gas pipelines and other pipelines, conduits, ductlines, or other facilities shall be 12 inches. Adequate support and protection for gas pipelines exposed in the trench shall be provided by the Contractor and approved by Gasco, Inc.
6. The Contractor shall work in an expeditious manner in order to keep the uncovered gas pipelines exposed for as short a period of time as possible.
7. For additional notes see "General Utility Notes".
8. Structure excavation for Gas System shall be measured from Finish Grade to bottom of trench. Trench width for Pay Quantity shall be 18 inches.
9. It is recommended that the Contractor excavate the trench for the new gas line and allow the Gas Co. to install the new 4" gas main prior to any roadway excavation or other construction within the roadway right-of-way. The existing gas main is within the roadway Structural Section in many areas.
10. From Station 146+90± to Station 173+90±, all existing Gas Laterals (to existing line) shall be connected to the new 4" Gas Line.
11. All existing gas laterals shall be adjusted to comply with the State's minimum cover requirements.

LEGEND:

	Existing Gas Manhole
	Existing Gas Line w/ Size Shown
	Existing Sewer Manhole
	Existing Sewer Line w/ Size Shown
	Existing Sewer Force Main w/ Size Shown
	Existing Water Manhole
	Existing Water Line w/ Size Shown
	New Sewer Manhole
	New Sewer Line w/ Size Shown
	New Sewer Force Main w/ Size Shown
	New Water Manhole
	New Water Line w/ Size Shown
	Cut and Plug
	New Gas Line w/ Size Shown

ABBREVIATIONS:

AIP	Abandoned in Place
ARV	Air Relief Valve
BLK	Bottom Outlet Tee
BO Tee	Blow Off Tee
CI	Class
C.O.	Clean Out
Conn	Connection
Cu	Copper Water Line
Constr.	Construction
D.I.	Drain Inlet
FH	Fire Hydrant
GMH	Gas Manhole
GV	Gate Valve
L.F.	Lineal Feet
LJ	Lead Joint
Psi	Pounds Per Square Inch
Reinf.	Reinforced
SFM	Sewer Force Main
SL	Sewer Line
SMH	Sewer Manhole
temp.	Temporary
TV	Top Vertical
WL	Water Line
WM	Water Meter
WMH	Water Manhole
WP	Working Pressure
VC	Virified Clay
BV	Bottom Vertical
TV	Top Vertical



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY NOTES

KALANIANA'OLE HIGHWAY
E. HIND DR. TO E. HALEMAUMAU ST.
F.A. PROJECT NO. F-072-1(34)B

DATE:

SHEET NO. 59 OF 123 SHEETS