FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
OAHU	HAW.	99-33	2000	77	89

WATER NOTES (9/9/98 VERSION)

1. UNLESS OTHERWISE SPECIFIED, ALL MATERIALS AND CONSTRUCTION OF WATER SYSTEM FACILITIES AND APPURTENANCES SHALL BE IN ACCORDANCE WITH THE CITY AND COUNTY OF HONOLULU, BOARD OF WATER SUPPLY'S "WATER SYSTEM STANDARDS", VOLUME 1, DATED 1985, THE "APPROVED MATERIAL LIST AND STANDARD DETAILS FOR WATER SYSTEM CONSTRUCTION", VOLUME 2, DATED 1985, AND THE "WATER SYSTEM EXTERNAL CORROSION CONTROL STANDARDS", VOLUME 3, DATED 1991, AND ALL SUBSEQUENT AMENDMENTS AND ADDITIONS.

2. THE CONTRACTOR SHALL NOTIFY THE BOARD OF WATER SUPPLY IN WRITING ONE WEEK PRIOR TO COMMENCING WORK ON THE WATER SYSTEM.

3. PAYMENT FOR ITEMS OF WORK CALLED FOR IN THE PLANS, SPECIAL PROVISIONS AND SPECIFICATIONS FOR WHICH PAYMENT IS NOT SPECIFIED SHALL NOT BE MADE DIRECTLY BUT SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS ITEMS OF THE PROPOSAL AND NO ADDITIONAL COMPENSATION SHALL BE MADE.

4. THE CONTRACTOR IS ALERTED TO THE ENCOUNTERING OF OBSTACLES WHETHER SHOWN ON THE PLANS OR NOT, OR WHICH MAY DIFFER IN LOCATION FROM THAT SHOWN ON THE PLANS WHICH MAY INTERFERE WITH HIS NORMAL METHOD OF OPERATIONS. THE CONTRACTOR SHALL TAKE INTO ACCOUNT ANY ADDITIONAL COSTS ANTICIPATED DUE TO THESE CONDITIONS AND SHALL HAVE THESE COSTS INCLUDED IN THE BID ITEMS WHICH HE/SHE FEELS MOST APPROPRIATE. NO SEPARATE ADDITIONAL COMPENSATION SHALL BE MADE.

5. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL ASSUMPTIONS, DEDUCTIONS, OR CONCLUSIONS HE/SHE MAY MAKE OR DERIVE FROM THE SUBSURFACE INFORMATION OR DATA FURNISHED ON THE PLANS. THE CONTRACTOR MUST SATISFY HIMSELF/HERSELF THROUGH HIS/HER OWN INVESTIGATIONS AS TO WHAT SUBSURFACE CONDITIONS ARE TO BE ENCOUNTERED.

6. PRIOR TO START OF EXCAVATION, THE CONTRACTOR SHALL NOTIFY ALL AGENCIES AND UTILITIES AND HAVE THEM LOCATE THEIR RESPECTIVE LINES AFFECTED. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ALL OF HIS/HER CONSTRUCTION AND SHALL PAY FOR ALL DAMAGES TO AND FOR THE PROTECTION OF EXISTING UTILITIES AND STRUCTURES.

7. 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 AND GRADE MAY BE CHANGED IF THERE ARE CONFLICTS WITH ANY EXISTING UNDERGROUND UTILITIES AND STRUCTURES, WHETHER SHOWN ON THE PLANS OR NOT. PAYMENT FOR WORK INCLUDED IN THIS PARAGRAPH SHALL BE CONSIDERED INCIDENTAL TO THE APPROPRIATE ITEMS OF THE PROPOSAL, AND NO ADDITIONAL COMPENSATION SHALL BE MADE.

8. 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 BOARD OF WATER SUPPLY AND THE STATE.

9. ANY COST INCURRED BY GASCO, HECO, OR HTCO BY THIS PROJECT SHALL BE PAID BY THE BOARD OF WATER SUPPLY THROUGH THE CONTRACTOR. PAYMENT SHALL BE ONLY FOR THE ACTUAL COST AS SHOWN ON THE UTILITY COMPANY'S INVOICE. NO PAYMENT WILL BE MADE FOR PROFIT, TAX, OVERHEAD, AND BOND COST.

10. IF THE CONTRACTOR ELECTS NOT TO EXPOSE AND VERIFY ALL EXISTING UNDERGROUND UTILITIES AND STRUCTURES AT CROSSINGS PRIOR TO PIPELINE EXCAVATION, HE FORFEITS HIS RIGHTS FOR ANY CLAIMS FOR COMPENSATION CAUSED BY ANY CONFLICTS WITH EXISTING UTILITIES AND STRUCTURES.

11. ALL A.C. AND CONCRETE PAVEMENT TO BE TRENCHED (FOR PIPELINE OR ANY WATER SYSTEM INSTALLATION) SHALL BE "SAW-CUT" TO THE REQUIRED WIDTH PRIOR TO REPAVING.

12. PAYMENT FOR RESTORATION OF DRIVEWAYS, CURBS AND GUTTERS SHALL NOT BE MADE DIRECTLY BUT SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS ITEMS OF THE PROPOSAL.

13. RESTORATION OF PAYMENT SHALL BE IN ACCORDANCE WITH THE DETAILS SHOWN ON THE PLANS AND DONE WITH EQUIVALENT TO OR BETTER QUALITY MATERIALS.

14. 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. FOR DETAILS, CONTACT THE BWS PLANNING AND ENGINEERING DIVISION, ENGINEERING BRANCH, CONSTRUCTION SECTION.

15. WHEREVER CONNECTIONS TO EXISTING MAINS ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING MAINS PRIOR TO EXCAVATION OF MAIN TRENCH. THE REMAINING EXCAVATION FOR THE CONNECTION SHALL BE EXCAVATED WHEN THE CONTRACTOR IS READY TO MAKE THE CONNECTION.

16. THE BRIDGE DECKS FOR TEMPORARY BRIDGE INSTALLATIONS SHALL BE FLUSH WITH ADJOINING PAVEMENT OF SIDEWALK. NO BUMPS OR ELEVATED BRIDGE DECKS SHALL BE ALLOWED.

17. 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 SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION", SEPTEMBER 1986, OF THE COUNTIES OF THE STATE OF HAWAII.

18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER DISPOSAL OF ALL EFFLUENT ASSOCIATED WITH THE CONSTRUCTION ACTIVITY AND THE DISINFECTION AND HYDROTESTING OPERATIONS TO SAFEGUARD PUBLIC HEALTH AND SAFETY IN ACCORDANCE WITH APPLICABLE DEPARTMENT OF HEALTH REQUIREMENTS. ALL PERMITS AND LICENSES FOR CONSTRUCTION WATER DISPOSAL, INCLUDING ALL APPLICATIONS, CHARGES, FEES, AND TAXES, ARE THE RESPONSIBILITY OF THE CONTRACTOR.

19. SHOULD MAJOR TREE ROOTS 2" AND GREATER BE ENCOUNTERED DURING CONSTRUCTION, THESE ROOTS SHALL BE CUT AND SEALED WITH ASPHALTIC PAINT.

20. DURING NON-WORKING HOURS, THE TRENCHES ON ALL STREETS SHALL BE COVERED WITH NON-SKID STEEL PLATES AND ALL LANES MAINTAINED OPEN FOR TRAFFIC.

21. 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 SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS ITEMS OF THE PROPOSAL. THE CONTRACTOR SHALL VERIFY THE SIZE AND TYPE OF LINE TO BE PLUGGED.

22. ALL SALVAGE MATERIALS SHALL BE CLEANED, REPAINTED AND DELIVERED TO THE KALIHI BWS CORPORATION YARD.

23. 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.

24. ALL LATERALS (1" TO 2-1/2") SHALL BE REPLACED OR RECONNECTED WITH EITHER COPPER OR PLASTIC TUBING.

25. THE CONTRACTOR SHALL FURNISH AND INSTALL DIELECTRIC COUPLINGS FOR ALL SERVICE LATERAL CONNECTIONS. PAYMENTS FOR DIELECTRIC COUPLINGS WILL NOT BE MADE DIRECTLY, BUT SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS ITEMS IN THE PROPOSAL.

26. PAYMENT FOR SERVICE LATERALS AND SERVICE CONNECTION SHALL BE MADE AT THE UNIT PRICE BID IN THE PROPOSAL. PAYMENT SHALL INCLUDE TAPS INTO MAINS, RECONNECTIONS TO EXISTING SERVICES, TRANSFERAL OF METERS, AND INSTALLING PIPE LATERALS, FITTINGS, BALL CORPS, BALL STOPS, 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.

27. DEMOLISH AND BACKFILL ALL ABANDONED MANHOLES, VALVE BOXES AND METER BOXES. SALVAGE ALL CAST IRON FRAMES AND COVERS.

28. AFTER INSTALLATION OF TAPPING SLEEVE AND TAPPING VALVE AND PRIOR TO TAPPING THE EXISTING WATER MAIN, THE ASSEMBLY SHALL BE PRESSURE TESTED AT 150 PSI ON BOTH SIDES OF THE VALVE AND IN ACCORDANCE WITH THE WATER SYSTEM STANDARDS, DATED 1985.

29. THE NEW WATER MAIN SHALL BE COMPLETED IN PHASES AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL COMPLETE EACH PHASE INCLUDING INSTALLATION AND TESTING OF THE WATER MAIN, TRANSFER OF SERVICES AND FINAL PAVING OF THE STREET PRIOR TO BEGINNING THE NEXT PHASE; HOWEVER, THE CONTRACTOR MAY COMMENCE WORK ON THE NEXT PHASE UPON SATISFACTORY PROGRESS OF ALL REMAINING WORK ON THE PREVIOUS PHASE AS APPROVED IN WRITING BY BWS.

30. THE CONTRACTOR SHALL INSTALL THE FIRT HYDRANT REFLECTIVE MARKERS. PAYMENT FOR INSTALLATION OF REFLECTIVE HYDRANT MARKERS SHALL BE MADE AT THE RESPECTIVE UNIT PRICE IN THE PROPOSAL.

31. MECHANICAL JOINT GLANDS SHALL BE "STRAIGHT-SIDED" AND POLYGON IN SHAPE AS DESCRIBED IN AWWA C111 AND SHALL BE APPLICABLE TO BOTH CAST IRON AND DUCTILE IRON GLANDS OR AN APPROVED EQUAL ON A JOB TO JOB BASIS.

32. ALL AIR RELIEF VALVES SHALL HAVE A MINIMUM WORKING PRESSURE RANGE OF 0 TO 150 PSI.

33. ALL PVC FITTINGS SHALL CONFORM TO AMERICAN WATER WORKS ASSOCIATION (AWWA) C-907. THE USE OF HUB CLAMPS AND SET SCREWS ON PVC FITTINGS IS NOT APPROVED. PRIOR TO THE PVC FITTING INSTALLATION, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL BY THE BOARD OF WATER SUPPLY, THE MANUFACTURER'S CERTIFICATION THAT ALL PVC FITTINGS CONFORM IN ALL RESPECTS TO AWWA C-907.

34. 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 5,000 OHM-CM. REMAINDER OF THE BACKFILL MATERIAL SHALL BE AS SPECIFIED IN VOLUME 1 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 BIPHENYLS (PCB).

35. ALL SECTIONS OF THE WATER MAIN REQUIRING REINFORCED CONCRETE JACKETING SHALL BE DUCTILE IRON PIPE WITH DUCTILE IRON FITTINGS.

36. ALL POLYVINYL CHLORIDE (PVC) PIPE DEFLECTIONS SHALL BE ACCOMPLISHED ONLY BY THE USE OF SPECIAL PVC DEFLECTION COUPLINGS. DEFLECTION AROUND CURVES SHALL BE ACCOMPLISHED ONLY BY THE USE OF PVC DEFLECTION COUPLINGS.

37. CLEANING SHALL BE BY THE USE OF "PIGS" INTRODUCED INTO THE PIPELINE AND RUN COMPLETELY THROUGH ALL INSTALLED PIPELINES AND ALL BRANCH LINES FOR FIRE HYDRANTS. "PIGGING" OF SERVICE LATERALS IS NOT REQUIRED. BARE FOAM "PIGS" SHALL BE USED TO SWAB PIPING CLEAN AS EACH LENGTH OF THE PIPELINE IS INSTALLED. EACH "PIG" SHALL CONSIST OF A CYLINDRICAL PIECE OF POLYURETHANE FOAM WITH A DENSITY OF 3-7 POUNDS PER CUBIC FOOT AND A VINYL-COATED NOSE. OUTSIDE DIAMETER OF THE "PIG" SHALL BE EQUAL TO 1-1/4" TO 1-1/2" TIMES THE INSIDE DIAMETER OF THE PIPE BEING INSTALLED. THE LENGTH OF THE "PIG" SHALL BE 1-1/2 TO 2 TIMES ITS DIAMETER. PRIOR TO USE, THE "PIG" SHALL BE SUBMERGED IN A CHLORINE SOLUTION OF 1 OZ. OF 5% CHLORINE BLEACH IN 5 GALLONS OF WATER. "PIGGING" OF THE PIPELINE SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE NEW PIPELINE.

38. BALL CORPS AND BALL STOPS SHALL BE INSTALLED IN LIEU OF THE CORPORATION STOPS AND STOPCOCKS, RESPECTIVELY.

39. TRAFFIC CONTROL PLAN: THE CONTRACTOR SHALL BECOME FAMILIAR WITH AND SHALL MEET THE LATEST REQUIREMENTS OF THE CITY DEPARTMENT OF TRANSPORTATION SERVICE (DTS). AFTER THE AWARD OF THE CONSTRUCTION CONTRACT, THE CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN TO THE CITY DEPARTMENT OF PLANNING AND PERMITTING TRAFFIC REVIEW BRANCH FOR REVIEW AND APPROVAL BEFORE APPLYING FOR A STREET USAGE PERMIT. THE TRAFFIC CONTROL PLAN SHALL MEET ALL DTS REQUIREMENTS INCLUDING PREPARATION BY OR UNDER THE SUPERVISION OF, A LICENSED PROFESSIONAL ENGINEER. PAYMENT FOR THE PREPARATION AND IMPLEMENTATION OF THE APPROVED TRAFFIC CONTROL PLAN SHALL NOT BE MADE DIRECTLY BUT SHALL BE CONSIDERED INCIDENTAL AND SHALL BE INCLUDED IN THE VARIOUS ITEMS IN THE BID.

40. THE CONTRACTOR SHALL COORDINATE THE SECURING OF THE EXISTING WATER SYSTEM WITH THE BWS PRIOR TO EXCAVATING BEHIND OR REMOVING ANY EXISTING THRUST BLOCKS, STRUCTURAL STRUTS OR REACTION BEAMS, OR ANY FITTINGS SUCH AS TEES, PLUGS, CAPS, BENDS, OFFSETS, AND VALVES, OR ANY OTHER PIPELINE APPURTENANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ASSOCIATED DAMAGES RESULTING FROM FAILURE TO ADEQUATELY SECURE THE EXISTING SYSTEM.

41. PIPE ALTERNATIVES:

    A. DUCTILE IRON PIPES SHALL BE CLASS 52, DOUBLE WRAPPED WITH POLYETHYLENE

    B. POLYVINYL CHLORIDE (PVC) PIPES SHALL BE CLASS 150 *. ALL VALVES, CAST IRON PIPES AND FITTINGS SHALL BE DOUBLE 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.

PAYMENT FOR POLYETHYLENE WRAP SHALL BE INCIDENTAL TO THE UNIT PRICE BID FOR DI PIPE, VALVES AND FITTINGS.

DOUBLE POLYETHYLENE WRAP SHALL NOT BE LESS THAN 16 MILS.

* CLASS 150 OR 200 FOR DIAMETERS 12" AND SMALLER
CLASS 150 FOR DIAMETERS GREATER THAN 12"

42. ALL CONNECTIONS WITHOUT TEMPORARY FOR TESTING MATERIALS SHALL BE TESTED TO THE PREVAILING LINE PRESSURE. ALL JOINTS SHALL BE LEFT EXPOSED FOR 24 HOURS TO CHECK FOR LEAKS PRIOR TO BACKFILL.

43. THE CONTRACTOR SHALL SWAB TO CHLORINATE THE ENTIRE INSIDE SURFACE OF EACH CONNECTION WITHOUT TEMPORARY FOR TESTING MATERIALS WITH DISINFECTION SOLUTION OF 5 OUNCES OF SODIUM HYPOCHLORITE MIXED WITH 10 GALLONS OF WATER.

SHT NO.	STREET NAME	CONNECTION STATION	NORMAL WORKING HOURS	AFTER WORKING HOURS	REMARKS (MAXIMUM DOWNTIME)
4	KALANIANAOLE HIGHWAY AND AINAKOA AVENUE	0+27.12, O/S 41.10' LT STATE ℄=0+00 WL		X	8 HOURS
4	KALANIANAOLE HIGHWAY	0+35.37, O/S 17.43' RT STATE ℄	X		6 HOURS
4	KALANIANAOLE HIGHWAY	0+35.37, O/S 43.94' RT STATE ℄		X	8 HOURS
5	KALANIANAOLE HIGHWAY	7+56, O/S 42.96' RT STATE ℄	X		6 HOURS
6	KALANIANAOLE HIGHWAY AND KALANIIKI STREET	11+87, O/S 36.10' LT STATE ℄	X		6 HOURS
7	KALANIANAOLE HIGHWAY	17+18.55, OS 42.68' RT STATE ℄	X		6 HOURS
7	KALANIANAOLE HIGHWAY	19+30.61, O/S 42.68' RT STATE ℄	X		6 HOURS
8	KALANIANAOLE HIGHWAY	22+49.47, O/S 45.69' RT STATE ℄	X		6 HOURS
8	KALANIANAOLE HIGHWAY	26+27.99, O/S 49.19' RT STATE ℄		X	8 HOURS
8	KALANIANAOLE HIGHWAY	26+35.05, O/S 44.93' RT STATE ℄	X		6 HOURS

ABBREVIATION LIST

AC	ASPHALTIC CONCRETE	E	EAST OR ELECTRIC	N	NORTH	TC	TOP OF CURB
APPROX	APPROXIMATE	EHH	ELECTRICAL HANDHOLE	OD	OUTSIDE DIAMETER	TCCB	TOP OF CURB @ CATCH BASIN
ARV	AIR RELEASE VALVE	ELEV	ELEVATION	OH	OVERHEAD	TD	TOP OF DITCH
ASSY	ASSEMBLY	EMH	ELECTRICAL MANHOLE	O/S	OFFSET	THH	TELEPHONE HANDHOLE
BC	BOTTOM OF CURB	EP	EDGE OF PAVEMENT	PAVT	PAVEMENT	TMH	TELEPHONE MANHOLE
BLK(S)	BLOCK(S)	EPB	ELECTRICAL PULLBOX	PE	POLYETHYLENE	TPB	TELEPHONE PULLBOX
BV	BOTTOM VERTICAL	EUG	ELECTRICAL UNDERGROUND	PP	POWER POLE	TS	TRAFFIC SIGNAL
BW	BOTTOM OF WALL	EXIST	EXISTING	PSI	POUNDS PER SQUARE INCH	TSCAB	TRAFFIC SIGNAL CABINET
℄	BASELINE	FH	FIRE HYDRANT	PVC	POLYVINYL CHLORIDE	TSHH	TRAFFIC SIGNAL HANDHOLE
CBMH	CATCH BASIN MANHOLE	FL	FLANGE	RFG	RESTRAINING FLANGE/GLAND	TSP	TRAFFIC SIGNAL POLE
CLD	CENTERLINE OF DITCH	G	GAS	RT	RIGHT	TSPB	TRAFFIC SIGNAL PULLBOX
CLDW	CENTERLINE OF DRIVEWAY	GALV	GALVANIZED	R/W	RIGHT OF WAY	TV	TOP VERTICAL
CLR	CLEAR	GR	GUARDRAIL	S	SEWER OR SLOPE	TYP	TYPICAL
CLRD	CENTERLINE OF ROADWAY	GV	GATE VALVE	SL	STREET LIGHT	T/V	TOP OF VALVE
CO	CLEANOUT	GW	GUY WIRE	SLCAB	STREET LIGHT CABINET	UG	UNDERGROUND
CONC	CONCRETE	HORIZ	HORIZONTAL	SLHH	STREET LIGHT HANDHOLE	VERT	VERTICAL
CONN	CONNECTION	HT	HEIGHT	SLPB	STREET LIGHT PULLBOX	W	WATER
CRM	CONCRETE RUBBLE MASONRY	HWY	HIGHWAY	SMH	SEWER MANHOLE	W/	WITH
CU	COPPER UNIT	INV	INVERT	SP	SIGN POST	WL	WATER LINE
C&C	CITY AND COUNTY	LF	LINEAR FEET	STA	STATION	WM	WATER METER
℄	CENTERLINE	LOC	LOCATION	STD	STANDARD	WM#	WATER METER NUMBER
D	DRAIN	LT	LEFT	STRUCT	STRUCTURAL	WMH	WATER MANHOLE
DEFL	DEFLECT	MH	MANHOLE	S/N	SERVICE NUMBER	WP	WORKING PRESSURE
DET	DETAIL	MIN	MINIMUM			WV	WATER VALVE
DI	DUCTILE IRON	MJ	MECHANICAL JOINT				
DIA	DIAMETER						
DMH	DRAIN MANHOLE						

LEGEND

- NEW AIR RELIEF VALVE
- D_{24} EXISTING DRAIN LINE
- E_{UG} EXISTING ELECTRIC, UNDERGROUND
- EXISTING FIRE HYDRANT
- NEW FIRE HYDRANT
- G_4 EXISTING GAS LINE
- S_8 EXISTING SEWER LINE
- W_{12} EXISTING WATER LINE
- W_8 NEW WATER LINE

APPROVED:

for CHIEF, PLANNING AND ENGINEERING DIVISION
BOARD OF WATER SUPPLY
CITY & COUNTY OF HONOLULU

7/13/99
DATE

ENGINEERING DESIGN GROUP
1525 YOUNG STREET
HONOLULU, HAWAII 96826

EDGAR K.M. LEE
LICENSED PROFESSIONAL ENGINEER
No. 2150-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WATER NOTES

KALANIANAOLE HIGHWAY
8-INCH WATER MAIN
AINAKOA AVENUE TO LAUKAHI STREET
JOB 99-33

Scale: As Shown Date: May 1999

SHEET No. 3 OF 12 SHEETS

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