

GENERAL NOTES

1. VERIFY AND CHECK ALL DIMENSIONS AND DETAILS ON THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS FOR ANY DISCREPANCY. ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.
2. WORK INCIDENTAL TO THE CONTRACT AND NECESSARY TO COMPLETE THE PROJECT, ALTHOUGH NOT SPECIFICALLY REFERRED TO ON THE CONTRACT DOCUMENTS, SHALL BE FURNISHED AND PERFORMED BY THE CONTRACTOR.
3. IN PERFORMING ALL WORK, THE CONTRACTOR SHALL EXERCISE DUE CARE AND CAUTION NECESSARY TO AVOID ANY DAMAGE TO AND IMPAIRMENT IN THE USE OF ANY EXISTING UTILITY LINE. ANY DAMAGE INFLICTED ON EXISTING UTILITY LINES RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE IMMEDIATELY REPAIRED OR RESTORED AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
4. THE CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING THE SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS; AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPTING FOR LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.
5. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. LOCATION OF EXISTING UTILITY LINES SHOWN ON PLAN AND PROFILE ARE APPROXIMATE. THEREFORE, NO ASSURANCE CAN BE PROVIDED THAT THE ACTUAL LOCATIONS WILL BE PRECISELY AS SHOWN ON THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION OF NEW LINES.
6. ADEQUATE PROVISIONS FOR TRAFFIC CONTROL SHALL BE PROVIDED IN ACCORDANCE WITH RULES AND REGULATIONS GOVERNING THE TRAFFIC CONTROL DEVICES AT WORK SITES ON OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS OF THE STATE OF HAWAII\* AND WITH FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM CONTROL DEVICES FOR STREETS AND HIGHWAYS," 1988.
7. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COUNTY OF HAWAII DEPARTMENT OF PUBLIC WORKS "STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION", DATED SEPTEMBER 1984 AND "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" DATED SEPTEMBER 1986.
8. THE ENGINEER RESERVES THE RIGHT TO MAKE CHANGES TO THE DRAINAGE SYSTEM AS SUCH CHANGES ARE FOUND TO BE NECESSARY AS THE LAND IS CLEARED AND EROSION CONTROL CONSTRUCTION PROGRESSES.
9. SURVEY MONUMENT STAKEOUT SHALL BE MADE BY REGISTERED SURVEYORS.
10. REGISTERED SURVEYOR SHALL SUBMIT A LETTER TO THE DEPARTMENT OF PUBLIC WORKS CERTIFYING THAT THE MONUMENT STAKEOUT AND INSTALLATION IS CORRECT.
11. THE CONTRACTOR SHALL NOTIFY THE ENGINEER 10 DAYS IN ADVANCE OF OPENING ANY OR UTILIZING EXISTING BORROW PITS FOR ONSITE BORROW, SO THAT A DETERMINATION CAN BE MADE AS TO THE SUITABILITY OF THE BORROW MATERIAL TO BE INCORPORATED INTO THE ROAD CONSTRUCTION.
12. THE CONTRACTOR SHALL CONDUCT ALL TESTS AS SPECIFIED AND BE RESPONSIBLE FOR EXPENSES INCURRED IN CONDUCTING THESE TESTS.
13. CONTRACTOR SHALL MAKE ARRANGEMENTS FOR UTILITIES SUCH AS ELECTRICITY, WATER, ETC., REQUIRED FOR HIS OPERATIONS AND ALL COST SHALL BE BORNE BY THE CONTRACTOR.
14. THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER RECORD DRAWINGS OF ALL UTILITIES AND STRUCTURES UPON COMPLETION OF WORK. A PROFILE ALONG THE CENTERLINE SHALL ALSO BE PROVIDED TO VERIFY THE FINISHED GRADES.
15. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS.
16. PERMITS SHALL BE OBTAINED BY THE CONTRACTOR.
17. THE CONTRACTOR SHALL COORDINATE THE STORAGE OF HIS MATERIAL WITH THE ENGINEER.
18. ALL CONSTRUCTION AND GRADING STAKEOUT SHALL BE DONE BY A REGISTERED SURVEYOR.
19. THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH, SAFETY, AND ENVIRONMENTAL QUALITY.
20. THE REQUIRED PERMIT UNDER CHAPTER 22, ARTICLE 3, SECTION 22-44 OF THE HAWAII COUNTY CODE SHALL BE OBTAINED FROM THE DEPARTMENT OF PUBLIC WORKS BY THE CONTRACTOR.
21. THE EXISTING PAVEMENT SHALL BE SAW-CUT BEFORE COMMENCEMENT OF TRENCHING WORK.
22. ANY PAVEMENT OUTSIDE THE CONTRACT ZONE LIMITS DAMAGED AS A RESULT OF CONSTRUCTION OPERATIONS SHALL BE RESTORED TO ITS ORIGINAL, OR BETTER, CONDITION. SUCH RESTORATION SHALL BE TO THE SATISFACTION OF THE ENGINEER.
23. NO MATERIAL EXCEPT FOR THE TRENCH EXCAVATED MATERIAL SHALL BE STOCKPILED CLOSER THAN SIX (6) FEET FROM THE EXISTING EDGE OF PAVEMENT.
24. NO CONSTRUCTION EQUIPMENT SHALL BE PARKED WITHIN THE ROAD RIGHT-OF-WAY IN SUCH A MANNER THAT THE EQUIPMENT WILL OBSTRUCT THE NORMAL MOVEMENT AND SIGHT DISTANCE OF THE DRIVING MOTORIST, EXCEPT DURING ACTUAL WORKING HOURS.
25. EXCEPT DURING ACTUAL WORK HOURS, ALL SIGNS WHICH DO NOT PERTAIN TO THE CONSTRUCTION ACTIVITY, SUCH AS "MEN WORKING" AND "FLAGMEN AHEAD" SHALL BE COVERED OR LAID DOWN. HOWEVER, ALL SIGNS NECESSARY FOR THE SAFETY OF THE PUBLIC SHALL BE MAINTAINED.
26. ANY PAVEMENT MARKINGS, STRUCTURES, AND APPURTENANCES DAMAGED BY THE UTILITIES LINE INSTALLATION SHALL BE REPAINTED OR RECONSTRUCTED SATISFACTORY TO THE ENGINEER.
27. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE ADEQUATE, SAFE NON-SKID BRIDGING MATERIAL OVER THE TRENCH, INCLUDING SHORING WHEN TRENCHING IN PAVEMENT AREAS TO HANDLE ALL TYPES OF VEHICULAR TRAFFIC. NO TRENCH SHALL BE LEFT OPEN DURING NON-WORKING HOURS, STRIKES, JOB SHUTDOWN.
28. THE PERMITTEE SHALL MAINTAIN TO THE SATISFACTION OF THE ENGINEER THE AREA WORKED WITHIN THE RIGHT-OF-WAY FOR A PERIOD OF ONE YEAR FROM THE DATE OF INSTALLATION COMPLETION, WHICH INCLUDES ANY PAVEMENT AND SHOULDER DAMAGED DURING THE INSTALLATION WORK.
29. COMPACTION TESTS FOR CONSTRUCTION WITHIN COUNTY RIGHT-OF-WAY SHALL BE THE SAME AS FOR CONSTRUCTION WITHIN STATE RIGHT-OF-WAY. (NOTE 12- NOTES FOR CONSTRUCTION WITHIN STATE RIGHT-OF-WAY.) SUBMIT TEST RESULTS TO THE HAWAII COUNTY ENGINEER.
30. VERIFY ALL STREET AND CENTERLINE MONUMENT TIES.
31. FOR MODIFIED TYPE "B" WHEELCHAIR RAMP, SEE SHEET C-30.

NOTES FOR CONSTRUCTION WITHIN COUNTY RIGHT-OF-WAY

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE COUNTY OF HAWAII DEPARTMENT OF PUBLIC WORKS "STANDARD DETAILS FOR PUBLIC WORK CONSTRUCTION", DATED SEPTEMBER 1984 AND "STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION", DATED SEPTEMBER 1986.
2. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UTILITIES, WHETHER SHOWN ON THE PLAN OR NOT, AND SHALL BE RESPONSIBLE FOR THE REPAIR OR REPLACEMENT OF SAME IN THE EVENT OF DAMAGES DUE TO HIS CONSTRUCTION PRACTICES. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE RESPECTIVE UTILITY COMPANIES.
3. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", AND AS DIRECTED BY THE CHIEF ENGINEER.
4. THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS 48 HOURS BEFORE THE COMMENCEMENT OF ANY UTILITY LINE WORK TO SCHEDULE A FIELD REVIEW AND SECURE APPROVAL OF THE PROPOSED UTILITY LINE LOCATION WITHIN THE COUNTY RIGHT-OF-WAY.
5. THE PROPOSED UTILITY LINE LOCATION SHALL BE LAID OUT IN THE FIELD PRIOR TO THE CONDUCTING OF THE FIELD REVIEW BY THE DEPARTMENT OF PUBLIC WORKS.
6. FIELD ADJUSTMENTS SHALL BE MADE AS DIRECTED BY THE DEPARTMENT OF PUBLIC WORKS PRIOR TO COMMENCEMENT OF ANY UTILITY LINE WORK.
7. THE REQUIRED PERMIT UNDER CHAPTER 22, ARTICLE 3, SECTION 22-44 OF THE HAWAII COUNTY CODE, SHALL BE OBTAINED FROM THE DEPARTMENT OF PUBLIC WORKS BY THE CONTRACTOR FOR WORK WITHIN THE COUNTY RIGHT-OF-WAY.
8. THE CONTRACTOR SHALL PROVIDE AT LEAST ONE (1) LANE FOR TRAFFIC MOVEMENT AT ALL TIMES. TWO (2) LANES FOR TRAFFIC MOVEMENT SHALL BE PROVIDED BETWEEN THE HOURS OF 3:30 PM TO 8:30 AM.
9. THE EXISTING PAVEMENT SHALL BE SAW-CUT BEFORE COMMENCEMENT OF TRENCHING WORK.
10. ANY PAVEMENT OUTSIDE THE CONTRACT ZONE LIMITS DAMAGED AS A RESULT OF CONSTRUCTION OPERATIONS SHALL BE RESTORED TO ITS ORIGINAL, OR BETTER, CONDITION, AS DIRECTED BY THE CHIEF ENGINEER.
11. A TEMPORARY COLD MIX PATCH SHALL BE APPLIED IMMEDIATELY UPON COMPLETION OF BACKFILLING OPERATION AND SHALL BE MAINTAINED UNTIL A PERMANENT PATCH IS AUTHORIZED BY THE DEPARTMENT OF PUBLIC WORKS.
12. NO MATERIAL, EXCEPT FOR THE TRENCH EXCAVATED MATERIAL, SHALL BE STOCKPILED CLOSER THAN SIX (6) FEET FROM THE EXISTING EDGE OF PAVEMENT.
13. NO CONSTRUCTION EQUIPMENT SHALL BE PARKED WITHIN THE ROAD RIGHT-OF-WAY IN SUCH A MANNER THAT THE EQUIPMENT WILL OBSTRUCT THE NORMAL MOVEMENT AND SIGHT DISTANCE OF THE DRIVING MOTORIST, EXCEPT DURING ACTUAL WORKING HOURS.
14. EXCEPT DURING ACTUAL WORKING HOURS, ALL SIGNS WHICH DO NOT PERTAIN TO THE CONSTRUCTION ACTIVITY, SUCH AS "MEN WORKING" AND "FLAGMAN AHEAD" SHALL BE COVERED OR LAYED DOWN. HOWEVER, ALL SIGNS NECESSARY FOR THE SAFETY OF THE PUBLIC SHALL BE MAINTAINED.
15. ANY PAVEMENT MARKINGS, STRUCTURES, AND APPURTENANCES DAMAGED BY THE WATERLINE INSTALLATION SHALL BE REPAINTED OR RECONSTRUCTED AS DIRECTED BY THE CHIEF ENGINEER.
16. NO TRENCHING SHALL BE LEFT OPEN FOR MORE THAN FIVE (5) WORKING DAYS.
17. SHOULD TRENCHING OCCUR THROUGH AN EXISTING SIDEWALK OR SHOULD DAMAGES OCCUR TO THE SIDEWALK AS A RESULT OF TRENCHING, THE FOLLOWING PROCEDURE SHALL BE UTILIZED TO REPAIR THE SIDEWALK:
- A. ALL PORTLAND CEMENT CONCRETE TO BE REMOVED SHALL FIRST BE CUT WITH A CONCRETE SAW THAT HAS A DIAMOND OR CARBORUNDUM ABRASIVE WHEEL. THOSE CUTS SHALL BE MADE TO A DEPTH EQUAL TO AT LEAST ONE-FOURTH OF THE DEPTH OF THE SLAB, OR ENOUGH AS IS DEEMED NECESSARY BY THE DEPARTMENT OF PUBLIC WORKS, TO PERMIT BREAKING OUT THE BALANCE OF THE CONCRETE WITHOUT SPALLING OFF THE EXPOSED EDGES OF THE SLAB LEFT IN PLACE.
- B. IF ANY BLOCK IS TOUCHED, THE WHOLE BLOCK SHALL BE REMOVED AND LATER REPLACED, UNLESS MINOR VARIATION IS AUTHORIZED BY THE CHIEF ENGINEER OR HIS REPRESENTATIVE.
- C. ANY DAMAGES TO ADJACENT AREAS DUE TO SETTLEMENT OR TO ANY OTHER EFFECTS WHATSOEVER CAUSED BY THE TRENCH CONSTRUCTION SHALL BE PROPERLY REPAIRED AND CORRECTED.
- D. ALL OTHER INCIDENTAL WORK SHALL BE SATISFACTORILY PERFORMED TO EFFECT PROPER RESTORATION OF THE SIDEWALK AREA.
18. THE PERMITTEE SHALL MAINTAIN, TO THE SATISFACTION OF THE DEPARTMENT OF PUBLIC WORKS, THE AREA WORKED WITHIN THE GOVERNMENT RIGHT-OF-WAY INCLUDING ANY REPAIRS TO PAVEMENT AND SHOULDER DAMAGED AS A RESULT OF THE INSTALLATION WORK, FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL INSPECTION, AS NOTED BY THE DEPARTMENT OF PUBLIC WORKS. THE PERMITTEE SHALL UNDERTAKE REPAIRS EXPEDITIOUSLY, WHENEVER DIRECTED BY THE CHIEF ENGINEER DURING THE MAINTENANCE PERIOD.
19. ALL STREET MONUMENTS IN THE COUNTY ROADS TO BE PER DPW STD. DETAIL R-14.

SEWER NOTES

1. THE CONTRACTOR SHALL FURNISH ALL MATERIALS, LABOR AND EQUIPMENT FOR ALL SEWER WORK WITHIN THE COUNTY'S RIGHT-OF-WAY.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INVESTIGATION, INSPECTION AND VERIFICATION OF ALL EXISTING UTILITIES SUPPLEMENTED BY ACTUAL DIGGING IN THE FIELD IF NECESSARY, TO DETERMINE AND ACTUAL LOCATION OF SUCH UTILITIES WITH THEIR BRANCH AND SERVICE LINES, WHETHER INDICATED ON THE PLANS OR NOT.
3. THE CONTRACTOR WILL BE REQUIRED TO TAKE OUT AND PAY FOR ALL NECESSARY PERMITS AND LICENSES WHICH ARE REQUIRED BY LOCAL ORDINANCES FOR THE PROSECUTION OF THIS WORK.
4. WORKMANSHIP SHALL BE FIRST CLASS AND THE CONTRACTOR SHALL REPAIR ALL DAMAGES SUSTAINED DURING THE COURSE OF HIS WORK AND LEAVE COMPLETED WORK IN ITS ORIGINAL CONDITION. ALL WORK TO BE DONE BY ITS RESPECTIVE TRADESMEN.
5. THE CONTRACTOR SHALL NOTIFY THE WASTEWATER DIVISION (961-8338) 48 HOURS PRIOR TO ANY WORK BEING DONE ON THE EXISTING COUNTY SEWER SYSTEM AND WHEN INSPECTIONS ARE REQUIRED.
6. THE WASTEWATER DIVISION (961-8338) SHALL INSPECT THE SEWER LINE INSTALLATION FROM THE SEWER MAIN LINE TO THE CLEANOUT BY THE PROPERTY LINE. ANY WORK NOT PROPERLY INSPECTED PRIOR TO BACKFILL SHALL BE RE-EXCAVATED AT THE CONTRACTOR'S EXPENSE.
7. ALL DETAILS NOT SHOWN ON THE PLANS SHALL CONFORM TO THE STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER, 1984 AND THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER, 1986.
8. ALL MANHOLE CONNECTIONS SHALL BE MADE AS PER STANDARD DETAIL S-48 OR WITH A TWO FOOT LONG VITRIFIED CLAY STUB TOGETHER WITH APPROPRIATE RUBBER COUPLER. ALL MANHOLE CONNECTIONS SHALL BE INSPECTED DURING CONSTRUCTION. ANY CONNECTIONS NOT INSPECTED SHALL BE REJECTED.
9. ALL RUBBER COUPLINGS UTILIZED SHALL HAVE PURE STAINLESS STEEL STRAPS INCLUDING THE TIGHTENING SCREW.
10. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE WASTEWATER DIVISION SHOULD ANY EXISTING SEWER LINE BE DAMAGED. THE SEWER LINE SHALL BE REPAIRED BY THE CONTRACTOR AND ANY ROCKS AND/OR DEBRIS THAT ENTERED THE SEWER SYSTEM SHALL BE PHYSICALLY REMOVED.
11. UNLESS OTHERWISE INDICATED, PIPELINE INVERTS SHALL BE INSTALLED AT A CONSTANT SLOPE AND ON A STRAIGHT LINE CONNECTING THE INVERT ELEVATIONS SHOWN ON THE DRAWINGS.
12. IN THE EVENT THAT ANY CHANGES IN ALIGNMENT OR GRADE FOR THE PROPOSED SEWERS ARE REQUIRED DUE TO UNFORESEEN CONFLICTS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER WHO IN TURN SHALL BE RESPONSIBLE FOR THE REQUIRED CHANGES WHICH ARE TO BE PRESENTED TO THE DEPARTMENT OF PUBLIC WORKS FOR APPROVAL OF REVISED ALIGNMENT OR GRADE.
13. CRUSHED ROCK CRADLE IS PERMITTED WHERE THE SOIL IS STABLE. IN AREAS OF UNSTABLE SOIL THE ENGINEER WILL DISCUSS AND DETERMINE THE PIPE SUPPORT REQUIRED.
14. THE ENGINEER RESERVES THE RIGHT TO REQUEST THE CONTRACTOR TO USE CONCRETE CRADLES, JACKETS AND/OR PILINGS.
15. TESTING SHALL BE DONE IN ACCORDANCE WITH THE LATEST STANDARDS OF THE WASTEWATER DIVISION, DEPARTMENT OF PUBLIC WORKS.
16. GRAVITY SEWER SYSTEM PIPE AND APPURTENANCES SHALL BE ANY OF THE APPROVED MATERIALS PER THE STANDARD SPECIFICATIONS.
17. UNLESS OTHERWISE SHOWN, DIMENSIONS ARE FROM CENTERLINE OF PIPES TO CENTERLINE OF STRUCTURES OR BOUNDARY LINES.
18. PRIOR TO BEGINNING TRENCH EXCAVATION FOR THE NEW SEWER LINES, THE CONTRACTOR SHALL EXPOSE ALL EXISTING UTILITY LINES AND VERIFY THEIR LOCATIONS AND INVERTS AT THE POINTS OF CROSSING. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES WHICH MAY PREVENT THE INSTALLATION OF THE NEW SEWER LINES IN ACCORDANCE WITH THE GRADES AND CLEARANCES SHOWN ON THE PLANS.
19. ALL SEWER MANHOLES TO BE ECCENTRIC TYPE WITH PVC LINER.
20. ECCENTRIC MANHOLE CONE SECTIONS WITH STAINLESS STEEL TOP RUNGS ARE REQUIRED.


GRADING NOTES

1. ALL GRADING WORK SHALL CONFORM TO CHAPTER 10 OF THE HAWAII COUNTY CODE AND SOIL REPORTS BY GEOLABS ENTITLED "GEOTECHNICAL ENGINEERING EXPLORATION KEALAKEHE PLANNED COMMUNITY ROADWAY, KEALAKEHE, HAWAII", AND "GEOTECHNICAL ENGINEERING RECONNAISSANCE PROPOSED 1.0 MG RESERVOIR-VILLAGES OF LA'I'OPUA, KEALAKEHE, NORTH KONA, HAWAII", AND SHALL NOT COMMENCE UNTIL A GRADING PERMIT IS APPROVED.
2. THE CONTRACTOR SHALL REMOVE ALL SILT AND DEBRIS RESULTING FROM HIS WORK AND DEPOSITED IN DRAINAGE FACILITIES, ROADWAYS AND OTHER AREAS. THE COSTS INCURRED FOR ANY NECESSARY REMEDIAL ACTION BY THE ENGINEER SHALL BE PAYABLE BY THE CONTRACTOR.
3. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.
4. ALL GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS CONTAINED IN THE PUBLIC HEALTH REGULATIONS, STATE DEPARTMENT OF HEALTH, ON WATER POLLUTION CONTROL AND WATER QUALITY STANDARDS, AND TO THE EROSION AND SEDIMENTATION CONTROL STANDARDS AND GUIDELINES OF THE DEPARTMENT OF PUBLIC WORKS, COUNTY OF HAWAII.
5. ALL SLOPES AND EXPOSED AREAS SHALL BE SOODED OR PLANTED AS FINAL GRADES HAVE BEEN ESTABLISHED. PLANTING SHALL NOT BE DELAYED UNTIL ALL GRADING WORK HAS BEEN COMPLETED. GRADING TO FINAL GRADES SHALL BE CONTINUOUS, AND ANY AREA WITHIN WHICH WORK HAS BEEN INTERRUPTED OR DELAYED, SHALL BE PLANTED.
6. FILLS ON SLOPES STEEPER THAN 5: 1 SHALL BE KEYED.
7. THE COUNTY SHALL BE INFORMED OF THE LOCATION OF THE DISPOSAL SITE FOR THE EXCESS MATERIAL FROM THE PROJECT WHEN THE APPLICATION FOR A GRADING PERMIT IS MADE. THE DISPOSAL SITE MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.
8. THE COUNTY SHALL BE INFORMED OF THE LOCATION OF THE BORROW SITE FOR THE BORROW REQUIRED FOR THIS PROJECT WHEN THE APPLICATION FOR A GRADING PERMIT IS MADE. THE BORROW SITE MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.
9. NO GRADING WORK SHALL BE DONE ON SATURDAYS, SUNDAYS AND HOLIDAYS AT ANY TIME WITHOUT PRIOR NOTICE TO THE CHIEF ENGINEER.
10. FILL SHALL BE COMPACTED TO 90 PERCENT OF MAXIMUM DENSITY PER ASTM D-1557 TEST.
11. ALL VEGETATION SHALL BE REMOVED PRIOR TO PLACING FILL ON NATURAL GROUND SURFACE.
12. THE LIMITS OF THE AREA TO BE GRADED SHALL BE FLAGGED BEFORE THE COMMENCEMENT OF THE GRADING WORK.
13. TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN-PLACE AND ESTABLISHED.
14. TEMPORARY EROSION CONTROL PROCEDURES SHALL BE SUBMITTED FOR APPROVAL PRIOR TO THE APPLICATION FOR A GRADING PERMIT.
15. SUMMARY OF EARTHWORK CALCULATIONS:
- |                      |   |         |    |
|----------------------|---|---------|----|
| ESTIMATED EXCAVATION | = | 278.000 | CY |
| ESTIMATED EMBANKMENT | = | 70.200  | CY |
| AREA TO BE GRADED    | = | 42.5    | AC |

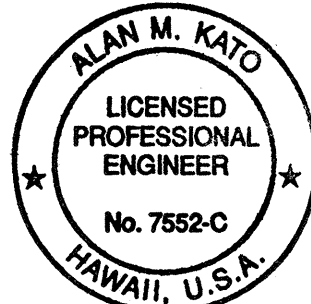
- NOTES:
- A. QUANTITIES SHOWN ARE FOR PERMIT PURPOSES ONLY AND SHALL NOT BE USED FOR BIDDING PURPOSES.
- B. CONTRACTOR SHALL BE RESPONSIBLE TO COMPLETE THE GRADING WORK TO THE GRADES AND DIMENSIONS SHOWN ON THE PLANS.
- C. ROADWAY CROSS SECTIONS ARE FOR ROADWAY EARTHWORK ONLY. UTILITY (LINES AND STRUCTURES) AND RESERVOIR EARTHWORK ARE EXCLUDED FROM ROADWAY SECTIONS.

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△	2/5/94	ADDED/DELETED NOTES REVISED			
Rev	Date	Description	Eng	App	



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.



PROJECT NO. 190A-02-92



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**HOUSING FINANCE AND DEVELOPMENT CORPORATION**  
STATE OF HAWAII

**VILLAGES OF LA'I'OPUA**  
BACKBONE INFRASTRUCTURE PHASE-2A

**CONSTRUCTION NOTES-1**

Designed by: AK

Drawn by: RS

Date: NOV 1993

Proj. no.: (BCA) 841.0104

Date: \_\_\_\_\_

Date: \_\_\_\_\_



NOTES FOR CONSTRUCTION WITHIN STATE RIGHT-OF-WAY

1. THE CONTRACTOR SHALL OBTAIN A CONSTRUCTION PERMIT FROM THE STATE'S HIGHWAY DISTRICT ENGINEER AT 50 MAKAALA STREET, HILO, HAWAII PRIOR TO COMMENCEMENT OF WORK WITHIN STATE HIGHWAY RIGHT-OF-WAY.
2. CONSTRUCTION AND RESTORATION OF ALL EXISTING HIGHWAY FACILITIES WITHIN STATE RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE SECTIONS OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, DATED 1976, AND THE SPECIFICATION FOR INSTALLATION OF MISCELLANEOUS IMPROVEMENTS WITHIN STATE HIGHWAYS, DATED MAY 1, 1984, OF THE STATE HIGHWAYS DIVISION.
3. ALL LANES SHALL BE OPENED TO TRAFFIC DURING THE MORNING PEAK HOURS FROM 6 A.M. TO 8:30 A.M. AND DURING THE AFTERNOON PEAK HOURS FROM 3 P.M. TO 6 P.M. AND DURING OFF-WORK HOURS. ONE LANE OF TRAFFIC IN EACH DIRECTION SHALL BE MAINTAINED OPEN AT ALL TIMES.
4. THE CONTRACTOR SHALL PROVIDE, INSTALL AND MAINTAIN ALL NECESSARY SIGNS, LIGHTS, FLARES, BARRICADES, MARKERS, CONES, AND OTHER PROTECTIVE FACILITIES AND SHALL TAKE ALL NECESSARY PRECAUTIONS FOR THE PROTECTION AND FOR THE CONVENIENCE AND SAFETY OF PUBLIC TRAFFIC. ALL SUCH PROTECTIVE FACILITIES AND PRECAUTIONS TO BE TAKEN SHALL CONFORM WITH THE "ADMINISTRATIVE RULES OF HAWAII GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORK SITES ON OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS" ADOPTED BY THE DIRECTOR OF TRANSPORTATION, AND THE CURRENT U.S. FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS, PART VI-TRAFFIC CONTROL FOR HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS". IF LANE CLOSURES ARE REQUIRED DURING CONSTRUCTION, A TRAFFIC CONTROL PLAN SHALL BE INCORPORATED INTO THE CONSTRUCTION PLANS AND MUST BE APPROVED BY THE DIVISION PRIOR TO THE ISSUANCE OF THE PERMIT.
5. NO MATERIAL AND/OR EQUIPMENT SHALL BE STOCKPILED OR OTHERWISE STORED WITHIN HIGHWAY RIGHTS-OF-WAY EXCEPT AT LOCATIONS DESIGNATED IN WRITING AND APPROVED BY THE DISTRICT ENGINEER.
6. PRIOR TO COMMENCING TRENCH EXCAVATION WORK, THE CONTRACTOR SHALL TAKE A PROFILE ALONG THE NEW CENTERLINE OF UTILITY TRENCH AND THAT SUCH INFORMATION SHALL BE USED IN THE VERIFICATION OF RESTORING THE ROADWAY TO ITS ORIGINAL CONDITION. A COPY OF THE PROFILE SHALL BE SUBMITTED TO THE DISTRICT ENGINEER.
7. THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE ADEQUATE, SAFE, NON-SKID BRIDGING MATERIAL OVER THE TRENCH, INCLUDING SHORING, WHEN TRENCHING IN PAVEMENT AREAS TO HANDLE ALL TYPES OF VEHICULAR TRAFFIC.
8. NO TRENCH SHALL BE OPENED MORE THAN 10 FEET IN ADVANCE OF THE INSTALLATION AND TESTED PIPE AND/OR DUCTLINE.
9. LONGITUDINAL DRAINAGE ALONG THE HIGHWAY SHALL BE MAINTAINED.
10. APPROVAL OF PERMIT CONSTRUCTION PLANS SHALL BE VALID FOR A PERIOD OF ONE YEAR THEREOF FROM THE DATE OF NOTIFICATION OF APPROVAL TO THE APPLICANT. IN THE EVENT CONSTRUCTION DOES NOT COMMENCE WITHIN THIS ONE-YEAR PERIOD, THE APPLICANT WILL BE REQUIRED TO RESUBMIT HIS CONSTRUCTION PLANS FOR THE DIVISION'S REVIEW AND APPROVAL.
11. ALL REGULATORY, GUIDE AND CONSTRUCTION SIGNS AND BARRICADES SHALL BE OF HIGH INTENSITY REFLECTIVE SHEETING.
12. COMPACTION TESTS SHALL BE TAKEN IN ACCORDANCE WITH THE "SPECIFICATIONS FOR THE INSTALLATION OF MISCELLANEOUS IMPROVEMENTS WITHIN STATE HIGHWAYS", DATED MAY 1, 1984 AS FOLLOWS:  
( TEST ASPHALT CONCRETE IN PLACE.)
1. SUBBASE: ONE COMPACTION TEST PER 300 FEET.
2. BASE COURSE: ONE COMPACTION TEST PER 200 FEET.
3. ONE COMPACTION TEST FOR EACH 300 LINEAR FEET OF TRENCH.
- SUBMIT TEST RESULTS TO THE HAWAII DISTRICT ENGINEER.

WATER NOTES

1. ALL WORK SHALL CONFORM TO THE DEPARTMENT OF WATER SUPPLY "WATER SYSTEM STANDARDS," VOLUMES 1 AND 2, DATED 1985, AS AMENDED.
2. THE CONTRACTOR SHALL INFORM THE D. W. S. ENGINEER 72 HOURS PRIOR TO THE BEGINNING OF ANY WATERLINE WORK AND TWO WEEKS PRIOR TO ANY CONNECTION, CHLORINATION, SHUT-OFF OR RELOCATION WORK.
3. ALL WORK, EQUIPMENT, AND MATERIAL FURNISHED BY THE D. W. S. SHALL BE PAID FOR BY THE CONTRACTOR.
4. ALL EXISTING WATERLINES, WATERLINE APPURTENANCES AND OTHER UTILITY LOCATIONS SHOWN ON THE PLANS ARE OBTAINED FROM LATEST RELIABLE SOURCES. THE CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY THE EXACT LOCATION OF ALL UTILITIES IN THE FIELD AND SHALL BEAR ALL COST FOR DAMAGES DONE DURING THE CONTRACT PERIOD.
5. ALL CONNECTIONS TO EXISTING WATERLINES SHALL BE DONE BY THE D.W.S. CONTRACTOR SHALL PERFORM ALL EXCAVATION, BACKFILL, ROAD REPAIR, TRAFFIC CONTROL, AND PROVIDE EQUIPMENT NECESSARY TO COMPLETE THE CONNECTION.
6. WHERE WATER SHUT OFF OF MORE THAN 3 HOURS BECOMES NECESSARY, THE CONTRACTOR, AT HIS OWN COST, SHALL PROVIDE A TEMPORARY BY-PASS LINE. THE BY-PASS SIZE SHALL BE DETERMINED BY THE D. W. S. ENGINEER. IF NECESSARY, THE D. W. S. ENGINEER MAY REQUIRE A BY-PASS LINE, REGARDLESS OF THE EXPECTED WATER SHUT-OFF PERIOD.
7. MINIMUM HORIZONTAL CLEARANCE BETWEEN WATERLINES AND OTHER UTILITIES SHALL BE 8 FEET UNLESS OTHERWISE SPECIFIED. MINIMUM VERTICAL CLEARANCE BETWEEN WATERLINE AND OTHER UTILITIES SHALL BE 12" PROVIDED CONCRETE JACKETS ARE USED, AND 18" IF NO CONCRETE JACKETS ARE USED. IN ALL INSTANCES, THE WATERLINES SHALL BE AT A GRADE HIGHER THAN OTHER UTILITIES.
8. ALL FITTINGS (CLASS 250) AND ALL GATE VALVES (CLASS 200) SHALL BE CAST IRON, WITH MECHANICAL JOINTS UNLESS OTHERWISE SPECIFIED. ALL BUTTERFLY VALVES SHALL BE MINIMUM 200# AND EPOXY COATED INTERNALLY.
9. ALL PIPELINES, 4" AND LARGER IN DIAMETER, SHALL BE DUCTILE IRON, PUSH ON JOINT CLASS 52, AND ALL PIPELINES SMALLER THAN 4" IN DIAMETER SHALL BE SOFT COPPER, TYPE K, UNLESS OTHERWISE SPECIFIED.
10. THE WATERLINE SHALL BE TESTED AT A MINIMUM OF 225 PSI, AT THE LOW POINT UNDER D. W. S. SUPERVISION.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CHLORINATION OF THE WATER SYSTEM AND SHALL BEAR ALL COST. THE PERSONS ENGAGED TO DO THE CHLORINATION WORK MUST BE LICENSED BY THE STATE OF HAWAII AND APPROVED BY THE DEPARTMENT OF HEALTH.
12. EXISTING VALVES, F.H. UNITS, VALVE BOXES, FRAMES AND COVERS DESIGNATED "REMOVE AND SALVAGE" SHALL BE CLEANED OF ALL DIRT, SCABS, AND CONCRETE AND DELIVERED TO THE RESPECTIVE D. W. S. BASEYARD. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS BID ITEMS.
13. EXISTING WATERLINE, VALVES, FITTINGS AND APPURTENANCES NOT DESIGNATED "REMOVE AND SALVAGE" SHALL BE ABANDONED IN PLACE. ALL EXPOSED VALVE BOXES, VALVES, PIPES AND APPURTENANCES SHALL BE REMOVED AND DISPOSED OF PROPERLY AT NO COST TO THE D. W. S.
14. WHEN COMPACTION TEST(S) ARE REQUIRED FOR THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE D. W. S. WITH PROCTOR RESULTS OF MATERIALS TO BE USED FOR THAT PORTION OF WORK REQUIRING COMPACTION. THESE RESULTS SHALL BE CERTIFIED AND SHALL BE FURNISHED TO D. W. S. ONE WEEK PRIOR TO COMMENCEMENT OF WORK.
15. APPROVAL OF THIS PROJECT BY THE COUNTY OF HAWAII DEPARTMENT OF WATER SUPPLY IS CONDITIONAL UPON AND LIMITED TO THE SCOPE OF WORK PROPOSED UNDER THIS PROJECT. THE DEPARTMENT OF WATER SUPPLY WILL NOT OPERATE NOR ASSUME OWNERSHIP UNTIL THE RESERVOIR AND RELATED FACILITIES ARE COMPLETED AND RENDERED OPERATIONAL IN ACCORDANCE WITH THE "WATER SYSTEM STANDARDS" AND TITLE TO THE LAND AND FACILITIES HAVE BEEN CONVEYED TO THE DEPARTMENT.
16. VALVE WRENCH EXTENSION TO BE INSTALLED FOR EACH BUTTERFLY VALVE, SEE DETAIL SHEET C-29.
17. PRIOR TO CONSTRUCTING THE NEW RESERVOIR, THE CONTRACTOR SHALL EXCAVATE AND EXPOSE THE EXISTING WATERLINES AT THE PROPOSED CONNECTIONS TO VERIFY THE INVERT ELEVATION IN THE PRESENCE OF THE D. W. S. ENGINEER.
18. ALL WATER AND ELECTRIC CROSSINGS SHALL BE SEPARATED BY CONCRETE.
19. SOLDER AND FLUX USED ON THE WATER SYSTEM SHALL CONTAIN NO MORE THAN 0. 2% LEAD.
20. 4"x4"x4" CONCRETE SLAB FOR FIRE HYDRANT INSTALLATION SHALL BE REINFORCED WITH A 6x6/10x10 WELDED WIRE MESH.
21. ALL FUTURE FIRE HYDRANT CONNECTIONS ON KEALAKEHE PARKWAY AND FIRE HYDRANT CONNECTIONS LAYOUT "A" ON MID-LEVEL ROADWAY ARE TO BE INSTALLED AT SLOPE = 0. 0%
22. DEPARTMENT OF WATER SUPPLY STANDARD TABLE EXTENSIONS FOR THRUST BLOCKS.

HORIZONTAL THRUST BLOCK-MINIMUM BEARING AREAS  
PLATE 105

PIPE SIZE		MINIMUM BEARING AREAS (SQ. FT.) FOR HORIZONTAL THRUST BLOCKS	
		PRESSURE=225 PSI	
		TYPE OF SOIL CONDITION	
		F	G
16"	TEES, CAPS	17. 0	13. 6
16"	1/4	24. 0	19. 2
16"	1/8	13. 0	10. 4
16"	1/16	6. 6	5. 3
16"	1/32	3. 3	2. 7
24"	1/8	29. 2	23. 4

TOP VERTICAL THRUST BLOCK SCHEDULE  
PLATE 106

TOP VERTICAL THRUST BLOCK SCHEDULE							
PIPE SIZE	BEND	PRESSURE=225 PSI CONCRETE BLOCK				HANGER	"X" BAR
		A	B	C	D		
16"	1/4	7.00	9.00	9.00	7.00	3 #8	2 #7
16"	1/8	7.00	7.00	3.50	6.75	3 #7	2 #7
16"	1/16	6.25	5.50	4.21	4.75	3 #6	2 #7
16"	1/32	5.50	4.83	4.28	3.00	3 #6	2 #7
24"	1/8	9.50	9.00	4.25	9.00	3 #8	2 #7

HELCO AND HTCO NOTES

1. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN THE EXCAVATION AND CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF UNDERGROUND TELEPHONE AND SIGNAL CABLE FACILITIES AND MAINTAIN ADEQUATE CLEARANCE FOR HIS EQUIPMENT WHILE WORKING CLOSE TO AND/OR UNDER THE OVERHEAD FACILITIES. ANY DAMAGE TO THE EXISTING UNDERGROUND AND OVERHEAD UTILITIES SHALL BE REPAIRED AND PAID FOR BY THE CONTRACTOR.
2. SHOULD IT BECOME NECESSARY, ANY WORK REQUIRED TO RELOCATE HELCO FACILITIES SHALL BE DONE BY HELCO AND PAID FOR BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION.
3. FOR FIELD LOCATION OF HTCO'S FACILITIES, CONTACT HTCO OUTSIDE PLANT ENGINEERING SECTION A MINIMUM OF 72 HOURS IN ADVANCE OF THE START OF CONSTRUCTION.
4. THE CONTRACTOR IS TO EXERCISE EXTREME CAUTION WHEN THE EXCAVATION AND CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF HELCO UNDERGROUND ELECTRICAL FACILITIES AND MAINTAIN ADEQUATE CLEARANCE FOR HIS EQUIPMENT WHILE WORKING CLOSE TO AND/OR UNDER HELCO'S OVERHEAD FACILITIES.
5. THE CONTRACTOR IS TO OBTAIN AN EXCAVATION PERMIT FROM HELCO MAPPING AND RECORDS DIVISION PRIOR TO START OF CONSTRUCTION.
6. FOR VERIFYING THE LOCATION OF HELCO UNDERGROUND DUCT LINES AND FOR ASSISTANCE IN PROVIDING PROPER SUPPORT AND PROTECTION OF THE UNDERGROUND DUCT LINES, THE CONTRACTOR IS TO CONTACT HELCO UNDERGROUND DIVISION A MINIMUM OF 72 HOURS IN ADVANCE.
7. WHEN TRENCH EXCAVATION IS ADJACENT TO OR UNDER EXISTING STRUCTURES OR FACILITIES, THE CONTRACTOR IS RESPONSIBLE FOR PROPERLY SHEETING AND BRACING THE EXCAVATION AND STABILIZING THE EXISTING GROUND TO RENDER IT SAFE AND SECURE FROM POSSIBLE SLIDES, CAVE-INS AND SETTLEMENT, AND FOR PROPERLY SUPPORTING EXISTING STRUCTURES AND FACILITIES WITH BEAMS, STRUTS OR UNDERPINNING TO FULLY PROTECT IT FROM DAMAGE.
8. SHOULD FIELD CONDITIONS AND/OR CONSTRUCTION PROCEDURES REQUIRE THAT POLES BE BRACED TO FACILITATE CONSTRUCTION, THE CONTRACTOR IS TO CONTACT HELCO DISTRICT CONSTRUCTION SUPERINTENDENT A MINIMUM OF 72 HOURS IN ADVANCE FOR BRACING INSTRUCTION.
9. THE EXISTENCE AND LOCATION OF HELCO OVERHEAD AND UNDERGROUND FACILITIES AS SHOWN ON THE PLANS ARE FROM EXISTING RECORDS OF VARYING DEGREES OF ACCURACY AND ARE NOT GUARANTEED AS SHOWN. SHOULD RELOCATION OF HELCO FACILITIES BE REQUIRED, HELCO IS TO BE CONTACTED FOUR (4) WEEKS IN ADVANCE. ANY WORK REQUIRED TO RELOCATE HELCO FACILITIES SHALL BE DONE BY HELCO AND PAID FOR BY THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION.
10. THE CONTRACTOR IS TO COMPLY WITH THE DIRECTIONS OF THE STATE OF HAWAII OCCUPATIONAL SAFETY AND HEALTH LAW (OOSH).
11. THE CONTRACTOR SHALL REPORT ANY DAMAGES TO HELCO'S FACILITIES TO THE HELCO TROUBLE DISPATCHER.
12. THE CONTRACTOR SHALL EXCAVATE AND BACKFILL AROUND TELEPHONE CABLES IN THE PRESENCE OF HTCO ENGINEER OR HIS REPRESENTATIVE. ALL EXCAVATION WITHIN TWO FEET OF TELEPHONE CABLES SHALL BE DONE BY HAND.
13. FOR RELOCATION OF ANY TELEPHONE CABLES AND/OR DUCTLINES, THE CONTRACTOR SHALL NOTIFY HTCO FIVE (5) WORKING DAYS BEFORE STARTING WORK. THE CONTRACTOR SHALL PROVIDE THE NECESSARY EXCAVATION AND BACKFILL, ARRANGE FOR TRAFFIC PERMITS AND RESTORE SIDEWALK, PAVEMENT OR OTHER FACILITIES.
14. THE CONTRACTOR SHALL NOTIFY HTCO IMMEDIATELY AFTER ANY DAMAGE HAS BEEN CAUSED TO EXISTING CABLES, DUCTLINES, PULLBOXES, MANHOLES, POLES AND GUYS. REPAIR WORK ON DAMAGED CABLES SHALL BE DONE BY HTCO AND OTHER WORK INVOLVING EXISTING UNDERGROUND FACILITIES SHALL BE DONE BY THE CONTRACTOR IN THE PRESENCE OF HTCO ENGINEER OR HIS REPRESENTATIVE WITH PAYMENT FOR THIS WORK TO BE BORNE BY THE CONTRACTOR.
15. PROVIDE ADEQUATE SUPPORT AND PROTECTION OF TELEPHONE CABLES AND/OR DUCTLINES EXPOSED IN THE TRENCH. SUCH SUPPORT AND PROTECTION SHALL BE APPROVED BY HTCO.

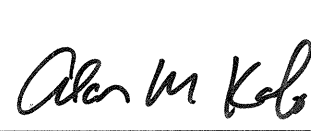
TOPOGRAPHIC SURVEY NOTES

1. TOPOGRAPHIC SURVEY WORK COMPLETED BY GROUND SURVEYS BY TOWILL, SHIGEOKA, AND ASSOCIATES, INC. AND R. M. TOWILL CORPORATION. TOPOGRAPHIC SURVEY WORK BY TOWILL, SHIGEOKA, AND ASSOCIATES, INC. INCLUDE:
- | ROAD        | JOB NO.        | F. B. | DATE         |
|-------------|----------------|-------|--------------|
| MAUKA-MAKAI | 1876           | 805   | JULY 3, 1991 |
|             | 1876           | 805   | NOT DATED    |
|             | 891            | 821   | JULY 3, 1991 |
| MID-LEVEL   | 1876-1         | NONE  | NOT DATED    |
| "A"         | 1876-4         | NONE  | NOT DATED    |
|             | 1876-2         | 822   | JULY 3, 1991 |
| "B"         | 1891-1         | NONE  | JULY 3, 1991 |
|             | 1876-4         | 820   | JULY 3, 1991 |
| "D"         | 1891-1, 1876-2 | 822   | NOT DATED    |
|             | 1876-2         | 822   | NOT DATED    |
- TOPOGRAPHIC SURVEY WORK BY R. M. TOWILL CORPORATION INCLUDE ROAD "B" "TOPOGRAPHIC SURVEY PORTION OF THE GOVERNMENT LAND OF KEALAKEHE" DATED FEBRUARY 1990.
2. ALL COORDINATES AND AZIMUTHS ARE BASED ON THE "KEAHUOLU" TRIANGULATION STATION. ELEVATIONS ARE REFERENCED TO MEAN SEA LEVEL.
3. LOCATION OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY AND ARE BASED ON RECORD INFORMATION.
4. ALL ELEVATIONS AND DISTANCES SHOWN ARE IN FEET.
5. BENCHMARKS ARE AS INDICATED ON SHEETS.

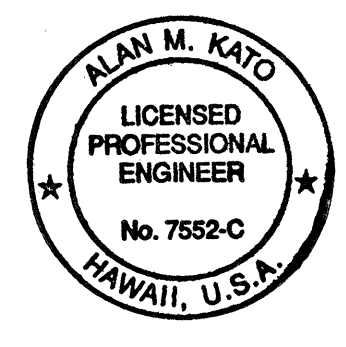
ARCHAEOLOGICAL PRESERVATION NOTES

1. KNOWN ARCHAEOLOGICAL SITES WITHIN THE PROJECT AREA ARE INDICATED ON THE PLANS FOR INFORMATION ONLY. NONE OF THE KNOWN SITES WITHIN THE AREA OF NEW CONSTRUCTION ARE TO BE PRESERVED.
2. SITES WITHIN THE GENERAL PROJECT AREA AND NEAR THE LIMITS OF WORK WHICH ARE TO BE PRESERVED WILL BE IDENTIFIED TO THE CONTRACTOR BY THE STATE'S ARCHAEOLOGIST. THESE SITES ARE TO REMAIN UNDISTURBED BY THE CONTRACTOR'S OPERATIONS. THE CONTRACTOR SHALL BE LIABLE FOR ANY DAMAGE TO THESE SITES BY HIS OPERATIONS AND SHALL BE RESPONSIBLE FOR ALL MITIGATION COSTS, AT NO EXPENSE TO THE STATE.
3. ANY APPARENT SITE OF ARCHAEOLOGICAL OR HISTORICAL SIGNIFICANCE IDENTIFIED BY THE CONTRACTOR AND WHICH IS NOT INDICATED ON THE PLANS, SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF CONTRACTING OFFICER AND ALL WORK IN THE AREA SHALL STOP UNTIL OTHERWISE DIRECTED.


△					
△					
△	2/15/94	REVISED NOTES PER D.W.S.	AK		
Rev	Date	Description	Eng	App	



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.



PROJECT NO. 190A-02-92



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Consultant:

Client:  
**HOUSING FINANCE AND DEVELOPMENT CORPORATION**  
STATE OF HAWAII

**VILLAGES OF LA'I OPUA**  
BACKBONE INFRASTRUCTURE PHASE-2A

CONSTRUCTION NOTES-2

Designed by: AK Date: NOV 1993

Drawn by: RS Proj. no.: (BCA) 841. 0104

Approved:

\_\_\_\_\_ Date \_\_\_\_\_

\_\_\_\_\_ Date \_\_\_\_\_