

GENERAL NOTES:

- ALL EXISTING UTILITIES WHETHER OR NOT SHOWN ON PLANS SHALL BE PROTECTED AT ALL TIMES DURING CONSTRUCTION UNLESS OTHERWISE NOTED, AND ALL DAMAGED PORTIONS SHALL BE REPLACED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE AFFECTED UTILITY COMPANY. PERSONNEL INJURY RESULTING FROM CONTACT WITH THE EXISTING UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- UNLESS OTHERWISE SPECIFIED, ALL MATERIALS AND CONSTRUCTION OF UTILITY FACILITIES AND APPURTENANCES SHALL BE IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION," DATED 1985 AS AMENDED, OF THE HAWAII HIGHWAYS DIVISION, DEPARTMENT OF TRANSPORTATION.
- THE CONTRACTOR SHALL VERIFY AND CHECK ALL DIMENSIONS AND DETAILS ON THE DRAWINGS BEFORE PROCEEDING WITH THE WORK. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.
- 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.
- UTILITIES SHALL BE INSTALLED PURSUANT TO THE PROVISIONS OF ORDINANCE NO. 2875 AS AMENDED BY ORDINANCE NO. 3357 (UNDERGROUND UTILITIES).
- NO BLASTING SHALL BE ALLOWED ON THIS PROJECT.
- VERIFY AND CHECK ALL DIMENSIONS AND DETAILS SHOWN ON THE DRAWINGS PRIOR TO START OF CONSTRUCTION. ANY DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.
- THE CONTRACTOR SHALL OBSERVE AND COMPLY WITH ALL FEDERAL, STATE AND LOCAL LAWS REQUIRED FOR THE PROTECTION OF PUBLIC HEALTH AND SAFETY AND ENVIRONMENTAL QUALITY.
- THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES, APPURTENANCES AND STRUCTURES AS SHOWN ON THE PLANS ARE BASED ON EXISTING RECORDS OF VARYING DEGREES OF ACCURACY AND COMPLETENESS. THEY ARE NOT GUARANTEED AS TO THE LOCATION SHOWN OR THAT OTHER OBSTACLES MAY NOT BE ENCOUNTERED IN THE COURSE OF WORK. THE CONTRACTOR SHALL ASSUME THAT UNDERGROUND UTILITIES MAY EXIST, ALTHOUGH NOT SHOWN.
- WHEN WORK IS TO BE DONE OUTSIDE THE STATE'S OR CITY'S R/W THE CONTRACTOR SHALL GIVE ALL PROPERTY OWNERS AND LEASEHOLDERS FIVE (5) DAYS NOTICE BEFORE ENTERING INTO THEIR RESPECTIVE PROPERTIES.

TRAFFIC NOTES FOR WORK IN C&C HONOLULU STREETS OR HIGHWAYS:

- A PERMIT SHALL BE OBTAINED FROM THE DEPARTMENT OF TRANSPORTATION SERVICES BEFORE WORK ON ANY PORTION OF A PUBLIC STREET OR HIGHWAY MAY BEGIN.
- THE CONTRACTOR SHALL PROVIDE, INSTALL, AND MAINTAIN ALL NECESSARY SIGNS AND OTHER PROTECTIVE FACILITIES, WHICH SHALL CONFORM WITH THE "RULES AND REGULATIONS GOVERNING THE USE OF TRAFFIC CONTROL DEVICES AT WORK SITES ON OR ADJACENT TO PUBLIC STREETS AND HIGHWAYS" ADOPTED BY THE HIGHWAY SAFETY COORDINATOR, AND THE FEDERAL HIGHWAYS STREETS AND HIGHWAYS, "PART VI - TRAFFIC CONTROLS FOR STREET AND HIGHWAY CONSTRUCTION AND MAINTENANCE OPERATIONS."
- WORK ON ANY CITY STREET AREA MAY BE PERFORMED ONLY BETWEEN THE HOURS OF 8:30 A.M. TO 3:00 P.M., MONDAY THROUGH FRIDAY, UNLESS OTHERWISE PERMITTED BY THE DEPARTMENT OF TRANSPORTATION SERVICES.
- DURING WORKING HOURS, THE CONTRACTOR SHALL PROVIDE FOR THROUGH TRAFFIC. DURING NON-WORKING HOURS, ALL TRENCHES SHALL BE COVERED WITH A SAFE NON-SKID BRIDGING MATERIAL.
- DRIVEWAYS SHALL BE KEPT OPEN UNLESS THE OWNERS OF THE PROPERTY USING THESE RIGHTS-OF-WAY ARE OTHERWISE PROVIDED FOR SATISFACTORILY.
- WHERE PEDESTRIAN WALKWAYS EXIST, THEY SHALL BE MAINTAINED IN PASSABLE CONDITIONS OR OTHER FACILITIES FOR PEDESTRIANS SHALL BE PROVIDED. PASSAGE BETWEEN WALKWAYS AT INTERSECTIONS SHALL LIKEWISE BE PROVIDED.
- THE CONTRACTOR SHALL REPLACE ALL TRAFFIC SIGNS, POSTS AND PAVEMENT MARKINGS DISTURBED DURING THE CONSTRUCTION.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF TRANSPORTATION SERVICES AT 523-4029 ONE WEEK PRIOR TO ANY SIGNING OR STRIPING WORK.
- THE CONTRACTOR SHALL NOTIFY MTL, HENRY ONISHI OR KENNETH HONG AT 531-7066, TWO WEEKS PRIOR TO CONSTRUCTION, INFORMING THEM OF LOCATION, SCOPE OF WORK, PROPOSED CLOSURE OF ANY STREET OR TRAFFIC LANES, AND THE NEED TO RELOCATE ANY BUS STOP.

NOTES FOR CONSTRUCTION WITHIN STATE RIGHT-OF-WAY:

- THE CONTRACTOR SHALL OBTAIN A CONSTRUCTION PERMIT FROM THE STATE'S HIGHWAY DISTRICT ENGINEER AT 727 KAKOI STREET PRIOR TO COMMENCEMENT OF WORK WITHIN STATE HIGHWAY RIGHT-OF-WAY.
- CONSTRUCTION AND RESTORATION OF ALL EXISTING HIGHWAY FACILITIES WITHIN STATE RIGHT-OF-WAY SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE SECTIONS OF THE HAWAII STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 1985, OF THE HAWAII HIGHWAYS DIVISION.
- ALL LANES SHALL BE OPENED TO TRAFFIC DURING THE MORNING PEAK HOURS FROM 6:00 A.M. TO 8:30 A.M. AND DURING THE AFTERNOON PEAK HOURS FROM 3:00 P.M. TO 6:00 P.M., AND DURING OFF-WORK HOURS. ONLY ONE LANE OF KAMEHAMEHA HIGHWAY, HALAWA SERVICE ROAD, AND IWAIIWA STREET SHALL BE CLOSED AT ANY OTHER TIME.
- 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 "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 1978, AS AMENDED, BY THE FEDERAL HIGHWAY ADMINISTRATION. IF LANE CLOSURES OTHER THAN THOSE SHOWN ON THE PLANS 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.
- THE MINIMUM PAVEMENT STRUCTURE SHALL CONSIST OF:
 - COMMERCIAL DRIVEWAYS, SIDEROADS AND UTILITY INSTALLATIONS ON MINOR HIGHWAYS.
 - 2-1/2" ASPHALT CONCRETE, 8" AGGREGATE BASE COURSE, AND 12" AGGREGATE SUBBASE; OR 2-1/2" ASPHALT CONCRETE AND 8" ASPHALT TREATED BASE COURSE OR ASPHALT CONCRETE.
 - 6" OF CLASS "A" CONCRETE REINFORCED WITH 6"x6" - 6/6 WIRE MESH ON 12" AGGREGATE SUBBASE IF DEEMED NECESSARY BY ENGINEER.
 - CHANNELIZED INTERSECTIONS AND UTILITY INSTALLATIONS ON MAJOR HIGHWAYS.
 - 4" ASPHALT CONCRETE, 8" AGGREGATE BASE COURSE AND 12" AGGREGATE SUBBASE, OR 4" ASPHALT CONCRETE AND 8" ASPHALT TREATED BASE COURSE OR ASPHALT CONCRETE, OR MATCH EXISTING PAVEMENT STRUCTURE, WHICHEVER IS GREATER.
- 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.
- 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.
- 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 OPENED MORE THAN 150 FEET IN ADVANCE OF THE INSTALLED AND TESTED PIPE AND/OR DUCTLINE OR AS DIRECTED BY THE ENGINEER.
- LONGITUDINAL DRAINAGE ALONG THE HIGHWAY SHALL BE MAINTAINED.
- PAVEMENT STRIPING SHALL BE DONE BY CONTRACTOR.
- 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 DIVISION'S REVIEW AND APPROVAL.
- ALL REGULATORY, GUIDE AND CONSTRUCTION SIGNS AND BARRICADES SHALL BE OF HIGH INTENSITY REFLECTIVE SHEETING.

ELECTRICAL & MAINTENANCE SERVICES DIVISION NOTES FOR CITY & COUNTY OF HONOLULU STREETS AND HIGHWAYS:

- STREET LIGHTING AND TRAFFIC SIGNALS SHALL BE KEPT OPERATIONAL DURING CONSTRUCTION. ANY RELOCATION REQUIRED SHALL BE APPROVED BY THE ELECTRICAL & MAINTENANCE SERVICES DIVISION, DEPARTMENT OF TRANSPORTATION SERVICES AND PAID FOR BY THE CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO EXISTING STREET LIGHTING AND TRAFFIC SIGNAL FACILITIES AND DAMAGES SHALL BE REPAIRED BY THE CONTRACTOR.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(203)	1987	4	87

GRADING NOTES:

- ALL CLEARING, GRUBBING & GRADING WORK SHALL CONFORM TO CHAPTER 23, REVISED ORDINANCES OF HONOLULU 1978, AS AMENDED (ORDINANCE NO. 81-13) AND SOILS REPORT DATED FEBRUARY 11, 1986, BY ERNEST K. HIRATA & ASSOCIATES, INC.
- THE CONTRACTOR SHALL OBTAIN A GRADING PERMIT FROM THE CITY & COUNTY OF HONOLULU, DIVISION OF ENGINEERING PRIOR TO COMMENCEMENT OF THE GRADING WORK.
- 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 CHIEF ENGINEER, DEPT. OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU, OR DISTRICT ENGINEER, STATE OF HAWAII SHALL BE PAYABLE BY THE CONTRACTOR.
- THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE CITY OR STATE MAY REQUIRE SUPPLEMENTARY MEASURES AS NECESSARY. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.
- FILLS ON SLOPES STEEPER THAN 5:1 SHALL BE KEYED.
- THE CITY SHALL BE INFORMED OF THE LOCATION OF THE DISPOSAL SITE FOR THE EXCESS MATERIAL FROM THE PROJECT WHEN THE APPLICATION FOR A GRUBBING AND/OR GRADING PERMIT IS MADE. THE DISPOSAL SITE MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCES.
- THE LIMITS OF THE AREA TO BE CLEARED AND GRUBBED AND LIMITS OF THE AREA TO BE GRADED SHALL BE FLAGGED BEFORE THE COMMENCEMENT OF THE WORK.
- ALL CLEARING, GRUBBING AND GRADING OPERATIONS SHALL BE PERFORMED IN CONFORMANCE WITH THE APPLICABLE PROVISIONS OF CHAPTER 54, WATER QUALITY STANDARDS, AND CHAPTER 55, WATER POLLUTION CONTROL, OF TITLE ELEVEN, ADMINISTRATIVE RULES OF THE STATE DEPARTMENT OF HEALTH.
- TEMPORARY EROSION CONTROL PROCEDURES SHALL BE SUBMITTED FOR APPROVAL PRIOR TO APPLICATION FOR A GRUBBING OR GRADING PERMIT.
- APPROVAL OF THIS GRADING PLAN BY THE CITY AND COUNTY OF HONOLULU IS CONDITIONED UPON THE SUBMISSION OF SATISFACTORY DRAINAGE DATA. THESE PLANS SHALL BE AMENDED SHOULD THE DRAINAGE DATA SO REQUIRE.
- ALL EXISTING PAVEMENTS, CONCRETE WALKS, CURBS AND GUTTERS, AND OTHER IMPROVEMENTS, WHETHER SHOWN OR NOT, DAMAGED OR UNDERMINED BY THE CONTRACTOR AS A RESULT OF HIS OPERATIONS SHALL BE RECONSTRUCTED OR REPLACED BY THE CONTRACTOR TO MATCH EXISTING CONDITIONS AT THE CONTRACTOR'S OWN EXPENSE.
- THE CONTRACTOR SHALL NOTIFY THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU, AT LEAST 24 HOUR BEFORE COMMENCING WORK, TO ARRANGE FOR NECESSARY INSPECTIONAL SERVICES AT PHONE 523-4881.
- ALL SLOPES AND EXPOSED AREAS SHALL BE SODDED OR PLANTED AS SOON AS FINAL GRADES HAVE BEEN ESTABLISHED. PLANTING SHALL NOT BE DELAYED UNTIL ALL GRADING WORK HAS BEEN COMPLETED. GRADING TO FINAL GRADE SHALL BE CONTINUOUS, AND ANY AREA WITHIN WHICH WORK HAS BEEN INTERRUPTED OR DELAYED, SHALL BE PLANTED.
- TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN-PLACE AND ESTABLISHED.

APPROVED FOR GRADING AND CONSTRUCTION WITHIN CITY R/W ONLY:

[Signature]
DIRECTOR & CHIEF ENGINEER, DPW

8/22/86
DATE

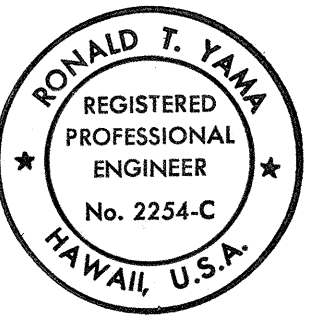
[Signature]
CHIEF, DIV. OF ENGINEERING, DPW

8/22/86
DATE

APPROVED:

[Signature]
DIRECTOR, DEPT. OF TRANS. SERVICES

9/22/86
DATE



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

[Signature]

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
CONSTRUCTION NOTES
H-I NON-POTABLE WATER SYSTEM KALAUAO SPRINGS TO HALAWA RESERVOIR F.A.I. PROJ. NO. IR-HI-1 (203)
SCALE: NOT TO SCALE DATE: 1/20/87
SHEET No. C-2 OF 64 SHEETS

WATER NOTES:

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, AND THE "APPROVED MATERIAL LIST AND STANDARD DETAILS FOR WATER SYSTEM CONSTRUCTION", VOLUME 2, DATED 1985, AND ALL SUBSEQUENT AMENDMENTS AND ADDITIONS.
2. THE CONTRACTOR SHALL NOTIFY THE BOARD OF WATER SUPPLY, PLANNING AND ENGINEERING DIVISION, IN WRITING AT LEAST ONE WEEK PRIOR TO COMMENCING WORK ON THE WATER SYSTEM.
3. CONTRACTOR SHALL NOTIFY THE BOARD OF WATER SUPPLY AT LEAST 48 HOURS IN ADVANCE OF EACH CONCRETE POUR.
4. ALL FOOTINGS SHALL BEAR ON FIRM SOIL SUBJECT TO THE APPROVAL OF THE BOARD OF WATER SUPPLY AND THE ENGINEER.
5. 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 IMPROVEMENTS SHALL NOT BE THE RESPONSIBILITY OF THE BOARD OF WATER SUPPLY.
6. UNLESS OTHERWISE SPECIFIED, CONNECTIONS TO AND/OR DISCONNECTING EXISTING WATER MAINS SHALL BE DONE BY THE CONTRACTOR, WITH THE BWS INSPECTOR COORDINATING THE WORK. FOR DETAILS CONTACT BWS PLANNING AND ENGINEERING DIVISION, ENGINEERING BRANCH, CONSTRUCTION SECTION.
7. PRIOR TO START OF EXCAVATION, THE CONTRACTOR SHALL NOTIFY ALL AGENCIES AND HAVE THEM LOCATE THEIR RESPECTIVE LINES AFFECTED, EXCEPT FOR NAVY ELECTRICAL SEWER AND WATER LINES THE CONTRACTOR SHALL TONE AND LOCATE THESE LINES PRIOR TO EXCAVATING. (SEE NAVY NOTES SHT.C-4)
8. PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL VERIFY IN THE FIELD THE LOCATION OF EXISTING WATER MAINS AND APPURTENANCES. WHERE OTHER LINES ARE TO CROSS OVER OR UNDER EXISTING WATER MAINS, THE CONTRACTOR SHALL EXPOSE THE EXISTING WATER MAINS PRIOR TO TRENCHING. EXCAVATION AROUND WATER MAINS SHALL BE BY HAND.
9. UNLESS OTHERWISE SPECIFIED; EXCAVATION, BACKFILLING AND CONNECTION OF THE NEW 20" MAIN TO THE 16" STUBOUT AT THE KALAUAO SPRINGS PUMPING STATION SHALL BE DONE BY THE CONTRACTOR WITH THE BOARD OF WATER SUPPLY INSPECTOR COORDINATING THE WORK. FOR DETAILS, THE CONTRACTOR SHALL CONTACT THE BOARD OF WATER SUPPLY, PLANNING AND ENGINEERING DIVISION, ENGINEERING BRANCH, CONSTRUCTION SECTION. ALL MATERIAL SHALL BE SUPPLIED BY THE CONTRACTOR.
10. ALL CAST IRON (GRAY OR DUCTILE) PIPES, FITTINGS, AND VALVES SHALL BE ENCLOSED IN PLASTIC MATERIAL IN ACCORDANCE WITH ANSI SPECIFICATIONS A 21.5-1982 OR AWWA SPECIFICATIONS C105-82 "POLYETHYLENE ENCASEMENT FOR DUCTILE IRON PIPING FOR WATER AND OTHER LIQUIDS."
11. ALL WATER MAIN TRENCHES SHALL BE BACKFILLED AS CALLED FOR IN THE SPECIFICATIONS. COMPACTION OF TRENCH BACKFILL SHALL MEET APPLICABLE REQUIREMENTS OF THE STATE OF HAWAII OR CITY AND COUNTY OF HONOLULU.
12. NUTS AND BOLTS FOR FLANGED CONNECTIONS SHALL BE BRONZE OR STAINLESS STEEL EXCEPT AT COUPLING ADAPTORS WHERE "COR-TEN" (U.S. STEEL), "MAYARI" (BETHLEHEM STEEL) OR APPROVED EQUAL MAY BE USED.
13. 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.
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 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 FOR THE NEW LINES.
15. WATER PIPELINE EASEMENTS SHALL BE GRANTED TO THE BOARD OF WATER SUPPLY FOR ALL LINES TO BE CONVEYED TO THE BWS WHICH ARE LOCATED WITHIN PRIVATE PROPERTY AND ROADWAYS THAT WILL NOT BE DEDICATED TO THE CITY.
16. TEST PRESSURE SHALL BE 150 PSI. ALL MATERIAL, LABOR, TOOLS, EQUIPMENT AND INCIDENTALS NECESSARY FOR TEMPORARY TESTING OF WATERLINES BY THE CONTRACTOR SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS CONTRACT ITEMS IN THE PROPOSAL.
17. AFTER INSTALLATION OF TAPPING SLEEVE AND VALVE, THE ASSEMBLY SHALL BE TESTED WITH PREVAILING LINE PRESSURE PRIOR TO ACTUAL TAPPING OPERATIONS.
18. CONTRACTOR SHALL FURNISH AND INSTALL ADDITIONAL FITTINGS IF NECESSARY TO MEET FIELD CONDITIONS.
19. REAPPROVAL SHALL BE REQUIRED IF THIS PROJECT IS NOT UNDER CONSTRUCTION WITHIN A PERIOD OF ONE YEAR. (SEE RULES AND REGULATIONS OF THE BOARD OF WATER SUPPLY.)
20. THERE SHALL BE A MINIMUM HORIZONTAL CLEARANCE OF 3 FEET, AND A MINIMUM VERTICAL CLEARANCE OF 6 INCHES BETWEEN WATER MAINS AND OTHER LINES.
21. ITEMS INDICATED AS "RELOCATE" ON THE PLANS SHALL BE REMOVED, CLEANED, PAINTED AND REINSTALLED AT THE NEW LOCATION BY THE CONTRACTOR UNLESS OTHERWISE SPECIFIED.

22. ANY ADJUSTMENT TO THE EXISTING WATER SYSTEM REQUIRED DURING CONSTRUCTION TO MEET REQUIREMENTS OF BWS STANDARDS, WHETHER SHOWN ON THE PLANS OR NOT, SHALL BE DONE BY THE CONTRACTOR AT NO COST TO THE BOARD.
23. FURNISHING AND PLACING CRUSHED ROCK, ASPHALT FILLER, RUNGS, CORPORATION STOPS AND INCIDENTALS (FOR WATER MANHOLES) BY THE CONTRACTOR, SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS CONTRACT ITEMS IN THE PROPOSAL.
24. DETAILS FOR TYPES B & C MANHOLES INCLUDING CORP. STOPS ARE SHOWN UNDER FIGURES 8, 9, 10, 11 AND 20 OF THE WATER SYSTEM STANDARDS DATED 1985.
25. DETAILS FOR TYPE A MANHOLE INCLUDING CORP. STOPS ARE SHOWN UNDER FIGURES 2, 3, 4, 5, 6, 7, 8 AND 20 OF THE WATER SYSTEM STANDARDS DATED 1985.
26. THE MEASUREMENT FROM METER DIAL TO BOTTOM OF METER BOX COVER SHALL BE 6 INCHES MINIMUM AND 12 INCHES MAXIMUM.
27. 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. C.I. FRAMES AND COVERS AND METERS SHALL BE CLEANED AND SALVAGED AND DELIVERED TO THE APPROPRIATE BWS CORPORATION YARD. 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.
28. FOR TURBINE METERS 3" AND LARGER, CONTRACTOR SHALL NOTIFY CUSTOMER SERVICE DIVISION IN WRITING AFTER THE PLAN IS APPROVED, NO LATER THAN 120 DAYS, PRIOR TO WITHDRAWING METER FROM BWS STOREYARD. SUCH NOTICE SHALL INDICATE NUMBER, SIZE, AND TYPE OF METER AND APPROXIMATE MONTH AND YEAR METER IS ANTICIPATED TO BE DRAWN OUT. IF THE APPROVED PLAN IS ALLOWED TO LAPSE, THE 120-DAY NOTICE WILL BE VOIDED. THE CONTRACTOR SHALL PAY FOR AND INSTALL THE METERS.
29. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL SUBMIT FOR APPROVAL BY THE BOARD OF WATER SUPPLY THE MANUFACTURERS CERTIFICATION THAT ALL CAST IRON (GRAY OR DUCTILE) FITTINGS FOR THE PROJECT CONFORM IN ALL RESPECTS TO THE WATER SYSTEM STANDARDS, DATED 1985.

SPECIAL WATER NOTES:

1. ACCEPTANCE OF THE WATER SYSTEM AND FACILITIES IS CONTINGENT ON RECEIPT BY THE BOARD OF WATER SUPPLY (BOARD) OF DOCUMENTS FULFILLING THE FOLLOWING REQUIREMENTS:
- A. THE BOARD SHALL BE HELD FREE AND CLEAR OF ALL DAMAGES, LIABILITY AND/OR LITIGATIONS ARISING FROM:
1. DISCHARGE OF WATER FROM THE RESERVOIR DRAINAGE SYSTEM.
2. SURFACE RUNOFF FROM RESERVOIR SITE.
3. DESIGN AND SIZING OF DRAINAGE SYSTEM AND/OR STRUCTURES OUTSIDE THE PROPERTY OF THE BOARD.
4. MAINTENANCE OF DOWNSTREAM WATERWAY AND/OR CONDUITS OUTSIDE THE PROPERTY OF THE BOARD.
2. FUTURE DEVELOPMENT ON OR AFFECTED BY THE DOWNSTREAM WATERWAYS AND/OR CONDUITS SHALL BE CORRECTED BY THE LAND OWNER AT NO ADDITIONAL COST TO THE BOARD. ALL PLANS TO THAT EFFECT SHALL BE SUBMITTED TO THE BOARD FOR APPROVAL.

CONSTRUCTION NOTES FOR PRI GASCO, INC. GAS FACILITIES:

1. THE GASCO, INC. GAS PIPELINES IN THE PROJECT AREA ARE PLASTIC COATED AND CATHODICALLY PROTECTED. THE CONTRACTOR SHALL BE EXTREMELY 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 RELOCATION 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 CONTRACTOR.
4. THE CONTRACTOR SHALL NOTIFY GASCO, INC. IMMEDIATELY AFTER ANY DAMAGE HAD 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.

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HAWAII	HAW.	IR-HI-1(203)	1987	5	87

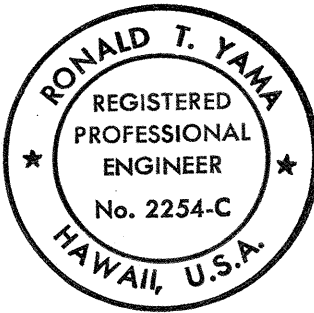
PRI-HAWAIIAN INDEPENDENT REFINERY INC. (HIRI) OIL LINE NOTES:

1. AN EXCAVATION PERMIT IS REQUIRED FOR ALL CONSTRUCTION OR INSTALLATIONS WITHIN 10 FEET OF THE HIRI PIPELINES.
2. THE PERMIT FORM IS AVAILABLE AT THE OFFICE OF THE SUPERINTENDENT OF MAINTENANCE AND CONSTRUCTION, HIRI REFINERY AT CAMPBELL INDUSTRIAL PARK. TELEPHONE: 682-4505.
3. THE SUPERINTENDENT OF MAINTENANCE AND CONSTRUCTION MUST BE NOTIFIED AT LEAST 48 HOURS PRIOR TO EXCAVATION* IN ORDER THAT A HIRI REPRESENTATIVE CAN LOCATE THE HIRI PIPELINES.
4. THE CONTRACTOR SHALL BACKFILL ONLY IN THE PRESENCE OF A HIRI REPRESENTATIVE. BACKFILL CUSHION SHALL BE INORGANIC SAND CONSISTING OF AT LEAST A 6" DEPTH ENTIRELY AROUND THE PIPELINES.
5. A COMPLETE SET OF FINAL CONSTRUCTION DRAWINGS COVERING THE INSTALLATION OR CONSTRUCTION MUST BE PRESENTED WHEN REQUESTING THE PERMIT FORM. THESE DRAWINGS WILL BE RETAINED UNTIL SUCH TIME THAT THE PROJECT "AS BUILT" DRAWINGS ARE MADE AVAILABLE.
6. THE CONTRACTOR WILL REIMBURSE HIRI FOR ANY CONSULTING SERVICES STEMMING FROM THE PROPOSED WORK OR WORK METHODS IN CONNECTION WITH EXCAVATION* AND/OR CONSTRUCTION NEAR THE HIRI PIPELINES.

*NOTE: EXCAVATION INCLUDES GRADING AND GRUBBING OF THE PROJECT AREA ABOVE THE HIRI PIPELINES OR IN THE VICINITY OF HIRI SURFACE STRUCTURES SUCH AS VALVE VAULTS, VALVE CAGES AND CONTROL DEVICES.

HAWAIIAN TELEPHONE CO. (HTCO) NOTES:

1. THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN THE EXCAVATION AND CONSTRUCTION CROSSES OR IS IN CLOSE PROXIMITY OF UNDERGROUND TELEPHONE FACILITIES AND, ALSO, SHALL MAINTAIN ADEQUATE CLEARANCE FOR HIS EQUIPMENT WHILE WORKING CLOSE TO AND/OR UNDER THE OVERHEAD CABLE FACILITIES. ANY DAMAGES TO THE EXISTING TELEPHONE CABLES SHALL BE REPAIRED BY THE TELEPHONE COMPANY AND PAID FOR BY THE CONTRACTOR. REPORT ALL DAMAGES TO HTCO. CABLE DISPATCH CENTER-PHONE 546-5965.
2. SHOULD IT BECOME NECESSARY, ANY WORK REQUIRED TO RELOCATE THE UNDERGROUND OR AERIAL CABLES SHALL BE DONE BY HTCO. AND PAID FOR BY THE CONTRACTOR.
3. CONTACT HTCO. RECORD SECTION AT 834-6215 AT MINIMUM OF 72 HOURS IN ADVANCE FOR VERIFYING THE LOCATIONS OF UNDERGROUND CABLES.
4. FOR ASSISTANCE IN PROVIDING PROPER SUPPORT AND PROTECTION OF UNDERGROUND DUCTLINES AND POLE BRACINGS, CONTACT HTCO. INSPECTOR MR. JOE GILMAN AT 834-6382 A MINIMUM OF 72 HOURS IN ADVANCE.



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Ronald T. Yama

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
CONSTRUCTION NOTES
H-I NON-POTABLE WATER SYSTEM KALAUAO SPRINGS TO HALAWA RESERVOIR F.A.I. PROJ. NO. IR-HI-1 (203)
SCALE: NOT TO SCALE DATE: 1/20/87
SHEET NO. C-3 OF 64 SHEETS

APPROVED:

John H. Mualam
CHIEF, PLANNING & ENGINEERING DIV., BWS

DATE
9/9/87

DATE: _____
SURVEY PLOTTED BY: _____
DRAWN BY: _____
THICK BY: _____
DESIGNED BY: _____
QUANTITIES BY: _____
CHECKED BY: _____
ORIGINAL PLAN: _____
NOTE BOOK: _____
NO: _____

LIST OF SOILS ENGINEER'S RECOMMENDATIONS
(SOIL REPORT BY E.K. HIRATA & ASSOCIATES, INC.)

A. ACCESS ROAD

1. SLOPE STABILITY

- a. CUT SLOPES EXPOSING THE HIGHLY WEATHERED ROCK SHALL HAVE A MAXIMUM SLOPE GRADIENT OF 1-1/2:1 (HORIZONTAL TO VERTICAL). DIRECTLY BELOW THE TANK SITE MAXIMUM SLOPE OF GRADIENTS SHALL BE 1-1/4:1 CUT SLOPES. FILL SLOPES SHALL BE 2:1 OR FLATTER.
- b. ALL SLOPES SHALL BE PLANTED AS SOON AS PRACTICAL. AT THE RESERVOIR TANK SITE, SLOPES CUT INTO THE BASALT SHALL BE A SLOPE GRADIENT OF 1/2:1.

2. SITE GRADING

- a. THE SITE SHALL BE CLEARED OF ALL VEGETATION AND OTHER DELETERIOUS MATERIAL, AND BE WASTED FROM THE PROPERTY. PRIOR TO PLACEMENT OF FILL, THE EXISTING GROUND SHALL BE SCARIFIED TO A DEPTH OF SIX INCHES AND COMPACTED TO A MINIMUM OF 90 PERCENT COMPACTION AS DETERMINED BY ASTM D-1557.
- b. THE ONSITE SOILS MAY BE REUSED IN COMPACTED FILLS. REUSED MATERIAL SHALL BE LIMITED TO DEEPER FILL AREAS, AND NOT BE PLACED WITHIN 2 FEET OF FINISHED SUBGRADE.
- c. STRUCTURAL FILL SHALL BE PLACED IN HORIZONTAL LIFTS SIX INCHES IN THICKNESS AND COMPACTED TO A MINIMUM OF 90 PERCENT COMPACTION AS DETERMINED BY ASTM D-1557. FILL PLACED WITHIN 2 FEET OF FINISH SUBGRADE SHALL BE COMPACTED TO A MINIMUM OF 95 PERCENT COMPACTION.
- d. FILLS PLACED IN AREAS WITH A SLOPE GRADIENT OF 5:1 (HORIZONTAL TO VERTICAL) OR STEEPER, SHALL BE CONTINUALLY BENCHED.
- e. ANY IMPORTED STRUCTURAL FILL SHALL BE NON-EXPANSIVE GRANULAR MATERIAL. FOR IMPORTED STRUCTURAL FILL, NOT MORE THAN 15 PERCENT OF SOIL BY WEIGHT, SHALL PASS THE #200 SIEVE, AND THE P.I. OF THE SOIL SHALL NOT BE GREATER THAN 10. THE MATERIAL SHALL HAVE A MINIMUM CBR VALUE OF 35.

B. RESERVOIR TANK

1. SLOPE STABILITY

- a. CUT SLOPES INTO BASALT SHALL HAVE A MAXIMUM SLOPE GRADIENT OF 1/2:1 (HORIZONTAL TO VERTICAL). CUT SLOPES INTO THE HIGHLY WEATHERED ROCK AND OVERLYING SURFACE SOILS SHALL BE AT A SLOPE GRADIENT OF 2:1 OR FLATTER.
- b. A SIX FOOT WIDE BENCH SHALL BE CONSTRUCTED AT THE TRANSITION BETWEEN THE 1/2:1 AND 2:1 SLOPE. BENCHES WILL NOT BE NECESSARY IN THE BASALT STRATUM TO MAXIMUM HEIGHTS OF 50 FEET.

2. INSPECTION

- a. ALL FOOTING EXCAVATIONS SHALL BE INSPECTED BY A QUALIFIED FOUNDATION ENGINEER PRIOR TO PLACING CONCRETE OR STEEL. ANY STRUCTURAL FILL WHICH IS PLACED SHALL BE INSPECTED AND TESTED.

3. LIMITATIONS

- a. THE BORING LOGS INDICATE THE APPROXIMATE SUBSURFACE SOIL CONDITIONS ENCOUNTERED ONLY AT THOSE LOCATIONS WHERE THE BORINGS WERE MADE AND MAY NOT REPRESENT CONDITIONS AT OTHER LOCATIONS.
- b. DURING CONSTRUCTION, SHOULD SUBSURFACE CONDITIONS DIFFER FROM THOSE ENCOUNTERED IN THE BORINGS, THE SOILS ENGINEER SHALL BE ADVISED IMMEDIATELY IN ORDER TO REVIEW AND TO REVISE THE RECOMMENDATIONS.

ABANDONED HICKAM AIR FORCE BASE FUEL LINES:

CONTRACTOR SHALL CONTACT THE DEPARTMENT OF THE AIR FORCE AT PHONE NUMBER 449-2158, AFTER THE ABANDONED AIR FORCE FUEL LINES HAVE BEEN EXCAVATED AND PRIOR TO THEIR REMOVAL.

SEWER NOTES:

1. ALL SEWER CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, MAY 1975 AND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION SEPTEMBER 1984, AS AMENDED, OF THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU, AND REVISED ORDINANCES OF HONOLULU, 1978, AS AMENDED.
2. THE CONTRACTOR SHALL NOTIFY THE DIVISION OF WASTEWATER MANAGEMENT, CITY AND COUNTY OF HONOLULU, SEVEN (7) DAYS PRIOR TO COMMENCEMENT OF WORK, AND SUBMIT FOUR (4) SETS OF APPROVED CONSTRUCTION DRAWINGS.

NOTES FOR NAVY UTILITIES:

A. NAVY 16" JET FUEL (JP-5) LINE

1. THE CONTRACTOR SHALL NOTIFY THE NAVY FUEL DEPARTMENT SUPERINTENDENT, NAVAL SUPPLY CENTER, PEARL HARBOR, HI 96860-5300 IN WRITING TEN DAYS PRIOR TO ANY CONSTRUCTION IN THE VICINITY OF THE FUEL LINE.
2. THE CONTRACTOR SHALL CONTACT THE GENERAL FOREMAN OR SUPERVISOR IN CHARGE, TELEPHONE 471-9810 OR 471-9692, WITH TWO DAYS ADVANCE NOTICE OF EXACT TIME AND LOCATION OF EXCAVATION IN VICINITY OF NAVY FUEL PIPELINE.
3. JET FUEL PIPELINE SHALL BE LOCATED BY TONING PRIOR TO EXCAVATION.
4. EXCAVATION WITHIN ONE FOOT OF THE JET FUEL PIPELINE SHALL BE BY HAND DIGGING.
5. THE CONTRACTOR SHALL IMMEDIATELY REPORT ANY DAMAGE TO PIPELINE, PIPELINE COATING/WRAPPING, OR ATTACHED SIGNAL CABLE TO GENERAL FOREMAN OR SUPERVISOR IN CHARGE AT 471-9810, 471-9692, 471-8081, OR 474-4263.
6. REPAIRS TO THE PIPELINE SHALL BE MADE AT THE EXPENSE OF THE CONTRACTOR.
7. BACK FILL CUSHION SHALL BE INORGANIC SAND PLACED TO A MINIMUM 6" DEPTH ENTIRELY AROUND THE JET FUEL PIPELINE.

B. NAVY ELECTRICAL, SEWER AND WATER LINES

1. THE CONTRACTOR SHALL TONE TO LOCATE THE NAVY'S EXISTING UTILITY LINES PRIOR TO EXCAVATING AND ANY EXCAVATION WITHIN THREE FEET OF THE NAVY UTILITIES SHALL BE BY HAND DIGGING.
2. ANY DAMAGE TO NAVY WATER, SEWER OR ELECTRICAL LINES MUST BE IMMEDIATELY REPORTED TO THE NAVY PUBLIC WORKS CENTER (PWC) EMERGENCY SERVICES, TELEPHONE NO. 471-8486.

NOTES FOR CONSTRUCTION WITHIN ALOHA STADIUM:

1. WORK AT THE STADIUM SHALL COMMENCE NO EARLIER THAN FEBRUARY 2, 1987 (THE CONCLUSION OF THE FOOTBALL SEASON).
2. NO WORK SHALL BE DONE ON WEEKENDS DUE TO SWAP MEET AND OTHER EVENTS.
3. ALL ENTRANCES, EXITS AND ROADWAYS SHALL BE LEFT IN A SAFE AND USABLE CONDITION EACH DAY THERE IS AN EVENT AND EVERY WEEKEND.
4. NO EQUIPMENT OR MATERIALS SHALL BE STORED ON STADIUM PROPERTY OVER THE WEEKENDS.
5. THE CONTRACTOR SHALL PROPERLY, SAFELY AND ADEQUATELY BARRICADE AND WARN THE PUBLIC OF ALL CONSTRUCTION HAZARDS.
6. THE STADIUM MANAGER SHALL COORDINATE HIS OPERATIONS WITH THE STADIUM'S, CONSTRUCTION, EVENTS AND OPERATIONS.
7. THE STADIUM MANAGER RESERVES THE RIGHT TO SUSPEND THE CONTRACTOR'S WORK FOR STADIUM RELATED ACTIVITIES AT ANY TIME.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IR-HI-1(203)	1987	6	87

ABBREVIATIONS:

bs BUS STOP
b-f-v BUTTERFLY VALVE
di DRAIN INLET
dmh DRAIN MANHOLE
eb ELECTRICAL BOX
fh FIRE HYDRANT
gr GUARD RAIL
hdwl HEADWALL
irr. h. h. IRRIGATION HANDHOLE
lp LIGHT POLE
mh MANHOLE
pb PHONE BOOTH
pp POWER POLE
ref REFLECTOR
sco SEWER CLEANOUT
smh SEWER MANHOLE
tb TRAFFIC BOX
ts TRAFFIC SIGNAL
wmh WATER MANHOLE
wv WATER VALVE
wv.h.h. WATER VALVE HANDHOLE

APPROVED:

William Z. H. Perry
CHIEF, DIV. OF ENGINEERING, DPW
(FOR GRADING ONLY)

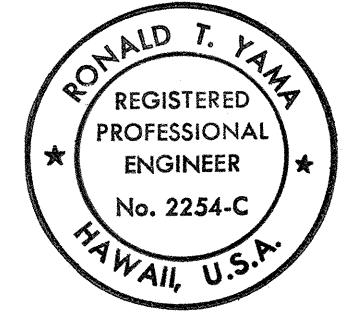
8/27/86
DATE

Jan K. Hale
CHIEF, DIV. OF WASTEWATER
MANAGEMENT, DPW

8/22/86
DATE

Shirley M. Mink
CHIEF, PLANNING & ENGINEERING
DIV., BWS

9/3/86
DATE



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

Ronald T. Yama

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
CONSTRUCTION NOTES
H-I NON-POTABLE WATER SYSTEM KALAUAO SPRINGS TO HALAWA RESERVOIR F.A.I. PROJ. NO. IR-HI-1 (203)
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