

| FED. ROAD DIST. NO. | STATE | FEDERAL AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|-----------------------|-------------|-----------|--------------|
| HAWAII | HAW. | HES-STP-3500(4) | 1994 | 12 | 26 |

WATER NOTES

- The Contractor shall notify the Department of Water Supply (DWS), in writing, one (1) week prior to commencement of work.
- All materials used and method of construction of water system facilities shall be in accordance with the latest revisions of DWS Standards. Contractor shall obtain the latest revisions of the DWS Standard Details before commencing construction.
- The exact depth and location of existing waterlines, service laterals and other utilities are not known. It shall be the Contractor's responsibility to locate same prior to trenching for the new waterline. The cost of lowering, relocating or adjusting existing waterlines, service laterals and other utilities shall be considered incidental to the cost of the new waterline, unless noted otherwise, and will not be paid for separately.
- Concrete for reaction blocks and anchor blocks shall be DWS Class 2500.
- The maximum distance between valve nut and top of manhole cover shall be three (3) feet.
- The Contractor shall submit a materials list to DWS for approval prior to construction.
- Connection to DWS system:
 - The Contractor shall verify the exact location, depth, type, and condition of the existing line before ordering materials for the hook-up. He shall, however, check with DWS before excavating for verification purposes. He shall be responsible for furnishing all necessary fittings and other materials required for the hook-up.
 - Whenever feasible, Mechanical Joint Fittings shall be used.
 - Authorized DWS personnel will make the final connection to the existing line. The Contractor shall be responsible for all costs incurred by DWS for said work, including the cost of pressure testing.
 - The Contractor shall be responsible for furnishing all material, equipment and labor for chlorination, trench excavation, backfilling, paving, and other work necessary to complete the hook-up, as directed by and to the satisfaction of DWS.
- Minimum cover over water main, 6" diameter or larger, shall be 3'-0". Minimum cover for 4" diameter shall be 2'-6". Minimum cover for diameters less than 4" shall be 1'-6".
- All buried metals shall be wrapped with Poly-Wrap. For Ductile Iron pipe installation, Poly-Wrap shall be required.
- All nuts and bolts shall be painted with asphaltic paint.

CHLORINATION OF WATER SYSTEMS:

- Liquid chlorine or calcium hypochlorite, conforming to AWWA standards shall be used for the chlorination of the project.
- Prior to chlorination, the project shall be thoroughly flushed.
- The interior surfaces of the project shall be exposed to the chlorinating solution for a minimum of 24 hours and the chlorine residual shall not be less than 10 ppm after such time.
- Should calcium hypochlorite be used, no solid and/or undissolved portion of the compound shall be introduced into any section of the project to be chlorinated.
- At the end of the 24-hour disinfection period, representative samples shall be taken and analyzed to assure a chlorine residual of at least 10 ppm.
- Should the results indicate adequate chlorination, the project shall be thoroughly flushed and filled with water from the existing system and again tested for chlorine residual. The flushing shall be considered adequate if the results indicate that the water in the project has a comparable chlorine residual as the water in the existing system.
- Following the acceptable flushing of the project, two consecutive sets of acceptable samples, taken at least 24 hours apart, from representative points in the project shall be taken and subjected to microbiological tests. At least one set of samples shall be collected from every 1,200 feet of the new water main, plus one from the end of the line and at least one set from each branch. Positive results will not be acceptable and the process will be repeated.
- Analysis for residual chlorine shall be made in accordance with "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER," American Public Health Association, 18th Edition.
- Microbiological tests shall be made in accordance with "STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER," American Public Health Association, 18th Edition.
- All measurements for chlorine residual and microbiological tests shall be performed by a laboratory approved by the Director.
- The Contractor shall be responsible for all costs associated with all of the foregoing. This work shall be considered incidental to the waterline relocations.

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| ORIGINAL PLAN | SURVEY PLOTTED BY | DATE |
| NOTED BY | DRAWN BY | |
| DESIGNED BY | TRACED BY | |
| CHECKED BY | CHECKED BY | |

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WATER NOTES

PUUNENE AVENUE
INTERSECTION IMPROVEMENTS
at Kamehameha Avenue

Fed. Aid Project No. HES-STP-3500(4)

Date: December, 1993

SHEET No. 1 OF 1 SHEETS