

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-011-2(16)	1977	2	14

## TRAFFIC SIGNAL SYSTEM

### LEGEND

- ⑤ Traffic signal standard - Designation "E"
- PPB Pedestrian push button and sign on appropriate crosswalk side of standard.
- Type "I" Traffic signal standard (State std. DWG. DT 400)
- Vehicle indication signal head Designation "2"
- 2 Pedestrian indication signal head Designation "4"
- 25' Type "II" Traffic signal standard, numeral indicates mast arm length (State std. DWG. DT 400)
- TD Detection loop, dimensions as called for, 3 turns except as otherwise noted, (State std. DWG. DT 405)
- 50' Quadrupole loop detector (State DWG. DT 405) A separate "presence" amplifier shall be provided at each controller for each detector at "stop" line.
- Existing traffic signal pullbox, Type "B", (State std. DWG. DT 401), except as noted on Sheet No. 3
- Traffic signal controller with coordinating unit, detector amplifiers, and monitor.
- Traffic signal master for recording traffic sensor information and dispatching programs to controllers.
- Existing pullbox, Type "A" (State std. DWG. DT 401)
- Multipole loop detector, State standard DWG. DT 405.
- HELCO service pole with meter and 30A 2P fused safety switch in nema 3 enclosure. "Hot" meter sequence - 5/8"x8" ground rod. #6 ground wire.
- P53 Pedestrian pushbutton on pedestal (State std. DWG. DT 400).
- Conduits for traffic signal system. P.V.C. shed. 40 or steel (bitumastic coated, concrete encased per state spec. G23-03 (C) (G), 1-2" except as noted by  $\Delta$  in schedule of conduits & cables. Schedule also notes those existing (installed under another contract.)

### GENERAL NOTES:

- All traffic signal controller equipment shall be completely wired in cabinet and shall control the traffic signal lights as shown on the plan.
- "Turn on" services shall be performed by the contractor with personnel trained and qualified by the manufacturer of the controller.
- Insulation test for each detector shall read not less than 10 megohms with 1000 volt megger.

### SIGNAL INDICATION NOTES:

- If a signal is green, and will remain green during the next phase, it shall be green during the clearance interval.
- If a signal is green, and will become red during the next phase, it shall be yellow during the clearance interval.
- If a signal is red, and will remain red or become green during the next phase, it shall be red during the clearance interval.
- When a single traffic movement has the right of way, it shall not be necessary to show or time any clearance interval in order to accord right of way to an additional non-conflicting movement.

### PHASE DIAGRAM NOTES:

- Each solid block in the phase diagram represents a part of the time cycle (number of seconds for one complete sequence of indications) allocated to the combination of traffic movements shown, receiving the right of way simultaneously, during one or more intervals (one of the several divisions of the time cycle during which signal indications do not change).
- Heavy solid lines indicate the preferential sequence, subject to determined demand.
- The controller shall be capable of skipping any movement or combination of movements subject to detected demand.

### WIRING NOTES:

- Each conductor of the local loop cable shall be cut and spliced through in each pull box. Each signal head wire shall be connected to the appropriate local loop conductor in each pull box. Splices and connections shall be made with "wire nuts" consisting of a vinyl jacket insulator over a metal shell encasing an expandable metal steel spring. The entire splice assembly shall then be secured by insertion into a unitized resin-containing bag which is the product of the "wire nut" manufacturer.
- Wiring from signal to local loop cable shall consist of one #14 AWG, 600V, stranded, TW, conductor per indication plus one neutral.
- Referring to schedule of conduits & cables, "TD lead in" is #14 AWG, twisted pair, shielded, IMSA\* spec. 20-2, "Command" cable is #14 AWG, IMSA\* spec. 20-1 with conductors as required for lane sampling, coordination, and control.
- International municipal signal association.

### CONSTRUCTION NOTES:

- Location of existing underground structures and utilities, such as pipe lines, conduits, cables, etc., shown are approximate only. It is not the intent of this plan to show the exact location of all underground structures and utilities. It is the responsibility of the contractor to verify the locations of all existing utilities by investigation. Existing utilities damaged by the contractor shall be repaired by the contractor at his own expense.
- Locations of traffic marking and markers (lane lines, stop lines, crosswalk, etc.) shown on the plans shall be verified by the contractor with the Engineer prior to installation of the traffic signal system.
- The location of traffic signal standards type I & II, pedestrian pushbuttons, controller pull-boxes, handholes, conduits and traffic detectors shall be staked out in the field by the contractor and approval of the locations obtained from the Engineer prior to construction and installation.
- All traffic signal work shall conform to the requirements of the "manual for uniform traffic control devices for streets and highways," Federal Highway Administration (1971).
- The contractor shall remove any existing pavement markings not required to remain.
- 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 facilities and precaution shall conform with the rules & regulations governing the use of traffic control devices at work sites and or adjacent to public streets and highways adopted by the highway safety coordinator and the U.S. Federal Highway Administration "Manual" referred to in note 4 above.
- All lanes shall be open to traffic during the morning peak hours from 6 A.M. to 8 A.M. and during the afternoon peak hours from 3 P.M. to 5 P.M. and during off peak hours, only 1 lane of each street may be closed at all other times. During non-working hours, all lanes shall be opened to traffic.
- Pavement, curbs and sidewalk shall be power saw cut to provide clean, solid, vertical joints, cut, as much as possible, shall be made in a straight line. Asphaltic concrete shall be mix No. 3 and concrete for sidewalks and curb shall have a strength of 2500 p.s.i. at 28 days. For restored A.C. pavement, the finish surface shall be slightly humped not to exceed 3/8 inch. All other surfaces shall match the existing work. Above described work incidental.
- Overhead utility lines that are not shown on the plans require extreme care while working in the proximity of the said utility. The Contractor is responsible to apprise his men of the possible hazards and to exercise every precaution while working in the area.
- Existing signs indicated for removal shall be salvaged and stored as directed by the Engineer. Sign posts indicated for removal which are embedded in sidewalk concrete shall be cut or burned off 2 inches below conc. grade and the resulting hole patch w/ grout.

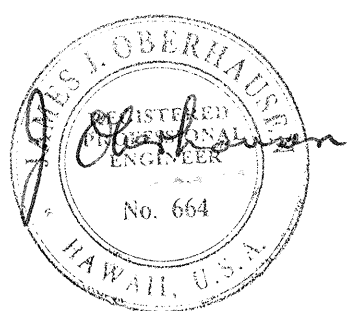
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

### TRAFFIC SIGNAL SYSTEM LEGEND AND NOTES

KANOELEHUA AVENUE,  
TRAFFIC SIGNALS AT FOUR LOCATIONS  
PROJECT NO. F-011-2 (16)

July 23, 1976

SHEET No. 1 OF 1 SHEETS



THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION.  
*Kenneth O. Nage*  
Signature