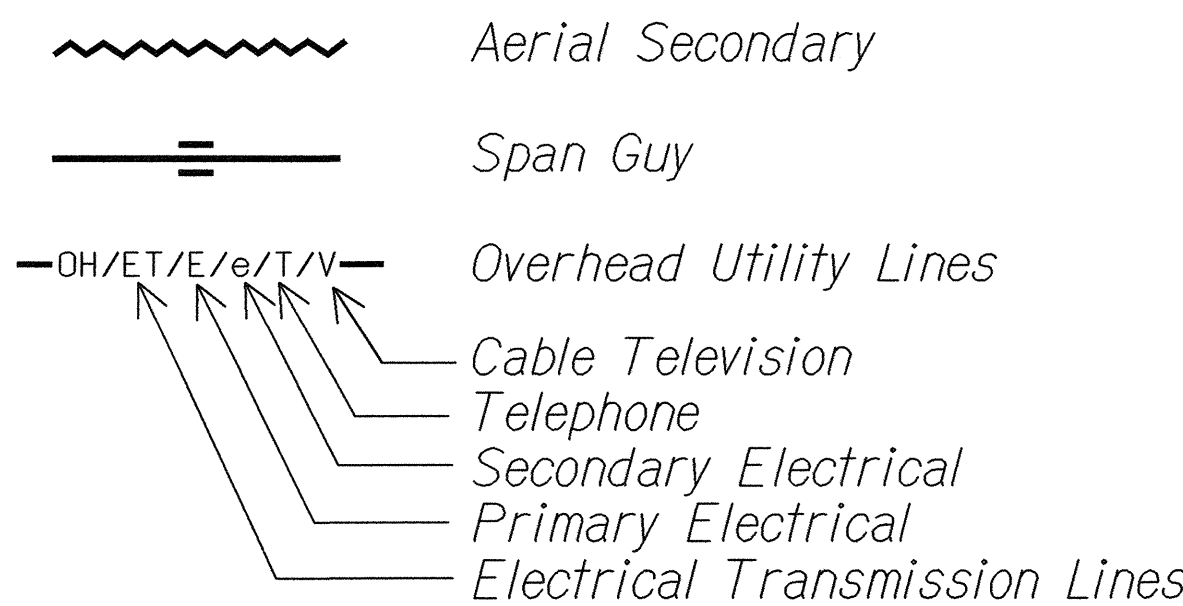


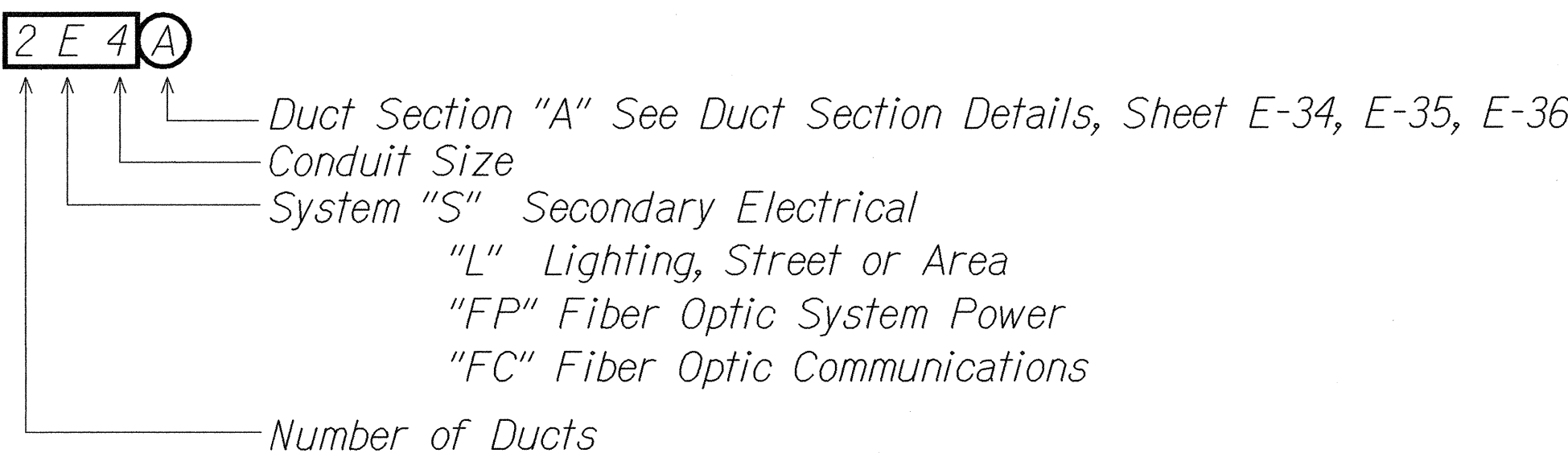
ELECTRICAL SYMBOLS

| SYMBOL | DESCRIPTION |
|--------|--|
| | Pullbox, see schedule on this sheet |
| | Existing pullbox for lighting standards mounted on concrete structure |
| | Transformer |
| | New highway lighting standard with 250W HPS luminaire & break away transformer base foundation. 10 foot bracket arm unless noted otherwise. IES type II distribution. |
| | Existing utility pole with new 10 foot bracket arm unless noted otherwise and 250W HPS luminaire. Coordinate connection with Hawaiian Electric Co. IES type II distribution. See detail |
| | Existing highway lighting standard with 250W HPS luminaire |
| (JP) | Existing joint pole with 250W HPS luminaire |
| (WP) | Existing 250W HPS luminaire on wood pole |
| | Existing highway lighting standard with 150W HPS luminaire |
| (WP) | Existing 150W HPS luminaire on wood pole |
| | New highway lighting standard with 250W HPS luminaire and transformer base foundation. 10 foot bracket arm unless noted otherwise. IES type II distribution |
| | New highway lighting standard with 250W HPS luminaire and transformer base foundation. 10 foot bracket arm unless noted otherwise. IES type III distribution |
| | New double arm, highway lighting standard & transformer base foundation with (2) new bracket arms & (2) new 250W HPS luminaires. 10 foot bracket arm unless noted otherwise. IES type II distribution. |
| | Equipment connection (i.e. Sign connection) |
| | Existing utility lines to be removed |
| | Existing underground highway lighting ductline to remain |
| | Existing underground highway lighting ductline. Remove existing conductors. Draw a brush/mandrel through to clean, provide new lighting conductors in existing duct to be reused |
| | Existing direct buried underground highway lighting cable |
| | New underground highway lighting ductline. |
| | Lighting standard indicator symbol. "A1" denotes feeder circuit "A1", "A-B" denotes phases A & B, & 20+50' O/S 6' RT denotes station location |
| | Detail indicator. "1" indicates detail number. "E1" indicates sheet on which the detail is referenced. "E2" indicates sheet on which detail appears |
| | Plan note indicator. See note "1" on plan. |
| (WP) | Existing Wood Light Pole |
| (JP) | Existing Wood Joint Utility Pole |
| (GP) | Existing Galvanized Pole |
| (AL) | Existing Aluminum Pole |

OVERHEAD SYMBOLS



DUCT DESIGNATION



PULLBOX, HANDHOLE, MANHOLE SCHEDULE

- (51) State Highways Type "A" Pullbox. See , (Power for Fiber Optic Communications)
- (52) State Highways Type "B" Pullbox. See , (Fiber Optic Communication)
- (53) State Highways Type "C" Pullbox. See , (Highway Lighting)

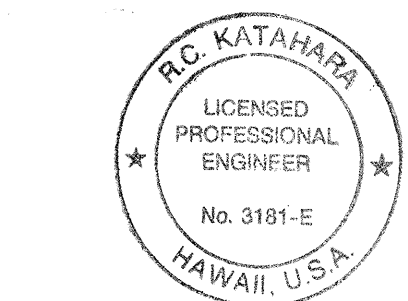
GENERAL NOTES

- Obtain all standards and drawings related to this project from the utility companies. Verify that the HECO project drawings are the same as the contract drawings. Notify the Engineer of any differences between them. If differences exist, obtain a resolution prior to proceeding with the work which is affected.
- Prior to starting work, notify the utility companies in writing when work will start, and provide them with a construction schedule.
- Existing lighting shall remain operational until new lighting system is operational, and accepted.
- The following minimum clearances shall be provided when installing new electrical ductlines and handholes:

Horizontal clearances to = 3' other utilities.
Vertical clearances to = 6" other utilities (when crossing).
- Exercise caution when trenching near existing utilities. See notes on sheet E-3.
- See sheet E-32 for requirements when crossing existing utilities.
- Where existing landscaped areas are impacted by project, contractor shall remove and replace existing landscaping to match original condition at no cost to the state.
- Trim trees as required to install new lighting standards.
- Where installation of light standards or conduits is in area with a slope greater than 1:4, provide erosion control. See detail on sheet E-30.

| | |
|---------|--|
| 6-05-02 | Revise "Existing underground highway lighting ductline to be demolished. Remove existing conductors and conduit" to "Existing utility lines to be removed" |
|---------|--|

| DATE | REVISION |
|--|----------|
| STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION ELECTRICAL SYMBOLS, LEGEND AND GENERAL NOTES MOANALUA FREEWAY LIGHTING IMPROVEMENTS Kamehameha Highway to H1 Halawa Interchange Proj. No. 78A-01-02M Oahu, Hawaii Scale: As Noted Date: May 2002 SHEET No. E-1 OF 92 SHEETS | |



This work was prepared by me or under my supervision.
Mc Ketchum 1/10/02
MK ENGINEERS, LTD.
LICENSE EXPIRATION DATE: 4/30/04

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