

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	56A-03-00	2004	54	66

Electrical Symbols

Symbol	Description
	Street Light, 250W HPS with Cut-Off Optics, Bracket Arm, and Pole by KIUC; For Concrete Footing, see Detail A/E-4
	Existing Street Light, Bracket Arm, and Pole; Un-Metered
	Existing Utility Pole, Unless Otherwise Noted
	Existing Guy Wire and Anchor
<div>KED 090-560 5366 (Existing)</div>	Existing Utility Pole Identification Nameplate
	Handhole & Designator; Indicates Type "E1" Handhole, See Handhole Schedule on Sheet E-3
	Existing Overhead Utility Lines; "p"-Primary, "s"-Secondary, "t"-Telephone
	Electrical Ductline & Designators; Indicates Type "B" Duct Section with Type "3E" Duct; See Duct Section Detail and Duct Schedule on Sheet E-5

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

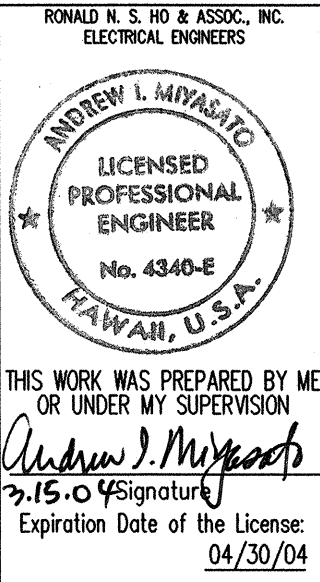
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Approved by:

Kauai Island Utility Cooperative

4/15/04

Date



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Electrical Symbols

KUHIO HIGHWAY IMPROVEMENTS
Extension Of Temporary Kapaa Bypass Road
Project No. 56A-03-00

Scale: AS NOTED Date: Mar 2004

SHEET No. E-1 OF 7 SHEETS

FED.ROAD DIST.NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	56A-03-00	2004	55	66

Kauai Island Utility Cooperative ("KIUC") Underground Construction Notes and Requirements: The Following Notes are Not Intended to be Used in Place of the Service Installation Manual, Please Refer to Service Installation Manual for All Service Issues.

- Contractor Shall Contact Kauai Island Utility Cooperative's ("KIUC") Construction Coordinator/Inspector Prior to Start of Work on KIUC Facilities and for Scheduling Site Inspections (Westside: 246-2323; Eastside: 822-4995).
- Contractor Shall Contact KIUC's Distribution Engineer (Tel: 246-2373) for Design Approvals, Standard Detail Drawings, and any Items not Addressed in These Notes or Drawings.
- All Contractors Entering KIUC Facilities Must be Approved by KIUC and Must have Proper Licensing and Insurance Coverage. Contact KIUC's Legal Coordinator (Tel: 246-4369) for Details.
- All Trenches and Pullboxes must be Inspected by KIUC Prior to Backfilling and Concrete-Encasing Operations. For Detailed Trenching and Backfilling Requirements Refer to KIUC's Service Installation Manual.
- Contractor Shall Provide a Poly-line 200 lb. Test Line or Equivalent as a Pulling Wire in All 1", 2", 3" & 4" KIUC Conduits. In All 5" and 6" KIUC Conduits, the Contractor Shall Install Neptco WP1800 Muletape as a Pulling Line.
- All Conduits, Pullboxes, Handholes, and Manholes Shall be Cleaned and Free from Objectionable Materials. Conduit Ends Shall be Adequately Covered Until the Conductor is Installed by the Electric Company. (Covers Shall be Carlon Plug with Pull Tab Series P258 Equivalent or Better.)
- For All KIUC Conduits Other than for Services, Refer to Conduit Schedule on Drawings.
- For All Electric Services Where the Conductor is #3/0 or Less, the Distance from KIUC's Handhole and Utility Meter is Less 125 Feet, and Not Crossing Any Driveways or Roads the Conduit Shall be 2-inch Schedule 40 PVC. For Services Greater than 125 feet but Less than 150 feet, Contact KIUC Planner for Field Verification and Underground Service Requirements. Any Deviations Shall Require KIUC Written Approval.
- Primary and Secondary Conduits for New Line Extensions Shall be Schedule 40 PVC (Carlon P&C Duct Type DB Equivalent or Better). Under Driveways and Roadways, the Conduits Shall be Encased in a Minimum of 3 Inch Concrete Jacket Extending 12 inches Outside the Edge of Pavement.
- Schedule 80 PVC Conduit may be Substituted for the Concrete Encased Schedule 40 PVC for Service Conduit Only Crossing Under Unpaved Private Driveways & Roadways from KIUC Pole/Hand-hole to Utility Meter Socket. If Concrete Driveway Will be Built Over Service Conduit Immediately After Conduit is Installed, than Schedule 40 PVC may be Used Provided that it Meets with Rule No. 21.
- All Primary and Secondary Conduits Which are Crossing State or County Roadways Shall be Schedule 40 PVC Encased in a Minimum 3-Inch Concrete Jacket, Which Shall Extend a Minimum of 12 Inches Outside of the Edge of Pavement.

- All Primary and Secondary Conduits Which are Crossing State or County Roadways Shall be Schedule 40 PVC Encased in a Minimum 3-Inch Concrete Jacket, Which Shall Extend a Minimum of 12 Inches Outside of the Edge of Pavement.
- Electrical Supply Conduits, When Installed Near Communications Cables, Shall be Separated from Communication Duct Systems and Buried Communication Cables or Conductors by not Less than 3 Inches of Concrete or 12 Inches of Earth When Paralleling or Crossing.
- Chairs (Duct Seats) Shall be Installed and Spaced at a Maximum of 5 Feet Separation When Concrete Encasing Conduits.
- All Conduits Shall Enter Boxes at a 90 Degree Angle Perpendicular and Flush to the Wall with Bell Ends to Prevent Cable Damage.
- 90 Degree Conduit Bends Shall be Factory Made with a Minimum Radius of 3 Feet in Trench Runs.
- Conduit Bends Exceeding 90 Degrees will not be Accepted.
- The Contractor Shall Maintain a 36 Inch Minimum Horizontal Clearance When Running KIUC Conduits Parallel to Water and Sewer Lines. If Clearance Is Less than 36 Inches, KIUC Conduits Shall be Concrete Encased.
- No Foreign Pullboxes, Handholes, Manholes, Concrete Slab/Boxes, Structures, Etc. are to be Installed Over KIUC Facilities with the Exception of HTCO, CATV or Waterline Conduit/Pipe Crossings. Such Crossings Must be Approved by KIUC's Service Assurance Department and the KIUC Conduit Shall be Concrete Encased. Concrete Encasement Shall be a Minimum of 3 Inches and Extend a Minimum of 12 Inches Beyond the Crossing Conduit or Pipe.
- Yellow Marker Tape Shall be Placed 12 Inches Above KIUC Conduits in the Trench During Backfilling. (E-Z Code WBT 6 Inch Wide, 4 Mill Polyethylene Protect-A-Line Warning Tape NA-0708 "ELECTRIC LINE" in Yellow, Equivalent or Better.)
- Unless Otherwise Noted, the Top of all KIUC Conduits Shall be at a Depth of 24 Inches Minimum.
- All KIUC Handholes, Pullboxes, and Manholes Shall be Walker Industries Type or Approved Equal. Contact KIUC Prior to Ordering Underground Boxes for Vendor Approval. Contractor Shall Submit Manufacturer's Shop Drawings of All KIUC Handholes and Manholes ~~for Box Sizes Greater than 3' x 5'~~ for KIUC review and Approval.
- Typically, the Top of All KIUC Boxes Shall be 1 Inch Above Finish Grade, Single-Phase Transformer Pads Shall be 2 inches Above Finished Grade, and Three-Phase Transformer Pads Shall be 4 Inches Above Finished Grade Unless Otherwise Noted. (Special Conditions may Apply to Sidewalks, Roadways, Etc., See Specific Location Notation)
- At no Time Shall Cement Mortar, Wood or any Other Material

be Used Between Pre-Cast Sections of KIUC Pullboxes, Handholes, or Manholes. The Permanent Installation of Wooden Wedges to Level or Raise the Pre-Cast Sections Shall not be Permitted.

- A Minimum of 6 Inches of #3 Crushed Rock Backfill Shall be Placed Loosely Beneath the Bottom Section of Handholes and Pullboxes. Crushed Rock or Other Foreign Material Shall not be Placed Inside Handholes and Pullboxes.

Water Notes:

- The Contractor Shall Verify in the Field the Location of the Existing Water Facilities Prior to Trenching. Excavation Around Existing Water Facilities Shall be Done by Hand.
- Material Used for Backfilling at the Water Facilities Crossings Shall not Contain any Stones, Rocks or Other Similar Material and Shall not Contain Vegetable Matter or Debris of Any Kind. No "Adobe" or Similar Material Shall be Used.
- Provide Concrete Encasement for the Conduits at All Waterline, Service Lateral and Fire Hydrant Crossings. The Contractor Shall Notify the Department of Water at Least 24 Hours Prior to Scheduling Backfilling Operations at the Water Facilities Crossings.
- Clearance Between Waterline and Other Utilities Shall Conform to Table 100-1 - Waterline Clearances of the Water System Standards 2002.

Approved by:

[Signature] 4/15/04
Kauai Island Utility Cooperative Date

Wayne Hwang 3/24/04
Manager and Chief Engineer Date
Dept. of Water, County of Kauai

SURVEY PLOTTED BY	DATE
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<div>RONALD N. S. HO & ASSOC., INC. ELECTRICAL ENGINEERS THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION <u>Andrew I. Miyasato</u> 3.18.04 Signature Expiration Date of the License: 04/30/04</div>	<div>STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION <u>Installation Notes</u> KUHIU HIGHWAY IMPROVEMENTS Extension Of Temporary Kapaa Bypass Road Project No. 56A-03-00 Scale: AS NOTED Date: Mar 2004 SHEET No. E-2 OF 7 SHEETS</div>
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FED.ROAD DIST.NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	56A-03-00	2004	56	66

General Utility Notes

1. All Work on Utility Facilities Shall be Done in Strict Accordance with the Specifications and Requirements of Verizon Hawaii and Kauai Island Utility Cooperative for the Facilities within their Jurisdiction.

2. The Contractor Shall Closely Coordinate All Work with Verizon Hawaii and Kauai Island Utility Cooperative.

3. All Trenches must be Inspected by Verizon Hawaii and Kauai Island Utility Cooperative Prior to Backfilling and Concrete-Encasing Operations. The Contractor Shall Notify the Verizon Hawaii Inspector: Steve Rapozo at 246-3208 (Lihue to Kekaha) or Ernest Koerte at 246-3205 (Kapaa to Haena) at least 24 Hours prior to the pouring of concrete or backfilling.

4. Conduits Crossing Roadways Shall be Encased in a Concrete Jacket; Concrete Encasement Shall Extend a Minimum of 12 Inches Beyond the Edge of Pavement.

5. Minimum Clearances Between Electrical and Telephone Conduits Shall be 12 Inches Horizontally and 6 Inches Vertically; However, if the Conduits are Concrete Encased, a 3 Inch Clearance May be Utilized in Both Directions.

6. At no Time Shall Cement Mortar, Wood or any Other Material be Used Between Precast Sections of Pullboxes, Handholes and Manholes. Leveling or Raising of Boxes Shall be Done at the Brick Work Section Using Cement Mortar. The Permanent Installation of Wooden Wedges to Level or Raise the Precast Sections Shall not be Permitted.

7. If a 12" Precasted Base is not Provided, then a Minimum of Two Layers of Brick Shall be Used on All of the Pullbox Installations. There Shall be no Less than One Full Layer of Brick Below the Lowest Duct Entering or Leaving the Pullbox.

8. Unless Indicated Otherwise, Conduits Shall Enter Boxes at an 90 Degree Angle and be Flush to the Wall with Flared or Bell Ends to Prevent Cable Damage.

9. A Minimum of 3 Inches of #3 Crushed Rock Backfill Shall be Placed Loosely at the Bottom of Handholes or Pullboxes. Clearance Above Crush Rock Backfill to be a Minimum of 3 Inches.

10. The Top of All Utility Boxes Shall be Installed Flush with Finish Grade When Installed in Sidewalk or Planter Strip Near sidewalk. other locations to be installed 1 inch above finish grade unless indicated otherwise.

11. Backfill Material Around All Waterlines Shall be Select Materials.

12. Water Works Inspection Shall be Conducted at All Waterline Crossings.
13. The Contractor Shall Maintain a 18" Minimum Separation Between Waterlines and Top of Direct Buried Utility Conduits. When Utility Conduits are Concrete Encased at Intersection of Waterline and Utility Conduits, a 18" Minimum Separation Between Waterline and Outer Edge of Concrete Encasing the Utliity Conduits Shall be Maintained. Stones, Rocks, Etc. Shall Not be Used with Backfill Material. Contractor Shall Notify the Department of Water 24 Hours Prior to Scheduled Electrical/Water Trench Backfilling Operations.

14. The Location of Overhead and Underground Facilities Shown on the Plans are from Existing Records with Varying Degrees of Accuracy and are not Guaranteed as Shown. The Contractor Shall Exercise Extreme Caution Whenever Construction Crosses or is in Close Proximity of Underground Lines and Shall Maintain Adequate Clearance When Operating Equipment Equipment within or Under Any Overhead Lines. Any Damages to the Existing Facilities Shall be Repaired by Respective Utility Co. and Paid by Contractor.

15. When Trench Excavation is Adjacent to 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.

16. Should it Become Necessary, Any Work Required to Relocate Existing Utility Facilities Shall be Done by Respective Utility Co. The Contractor Shall be Responsible for Coordination.

Handhole Schedule	
Item	Description
E1	2'-0" x 4'-0" Precast Concrete Pullbox with Precast Concrete Cover, Provided in Accordance with KIUC Standard Drawing No. PB-2x4, See Detail A/E-3/E-5.

SURVEY PLOTTED BY _____ DATE _____

ORIGINAL PLAN _____

NOTE BOOK _____

DESIGNED BY _____

QUANTITIES BY _____

CHECKED BY _____

NO. _____

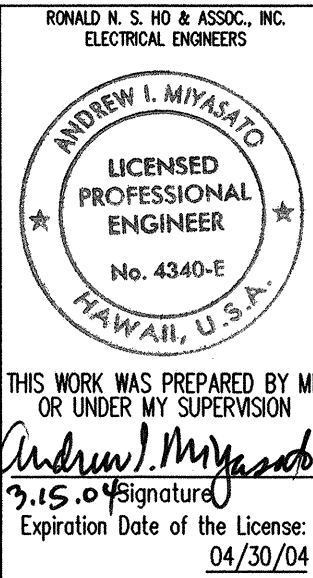
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Approved by:

[Signature]
Kauai Island Utility Cooperative

4/15/04

Date



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

General Utility Notes
& Handhole Schedule

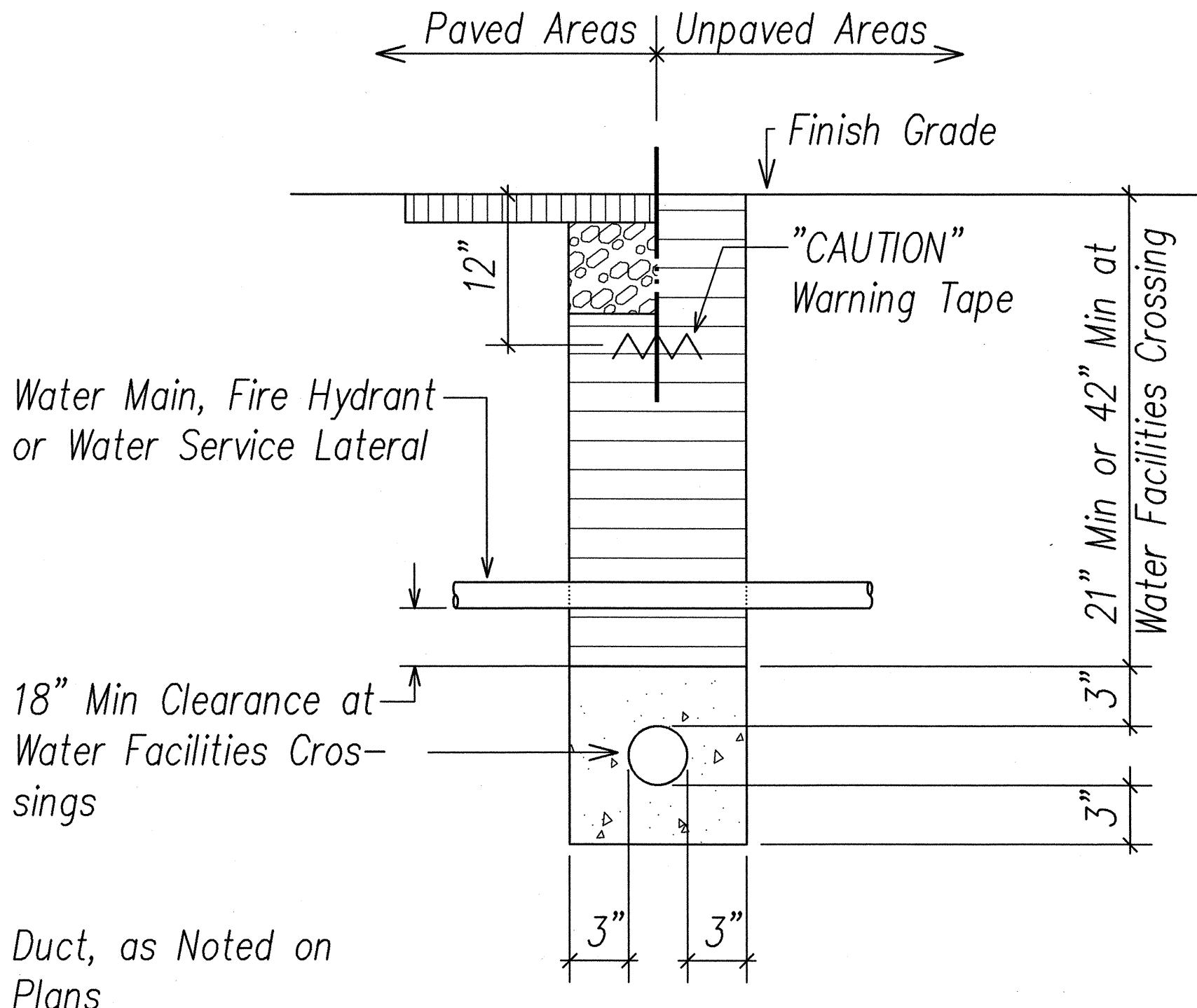
KUHIO HIGHWAY IMPROVEMENTS
Extension Of Temporary Kapaa Bypass Road
Project No. 56A-03-00

Scale: AS NOTED Date: Mar 2004

SHEET No. E-3 OF 7 SHEETS

Backfill Notes:

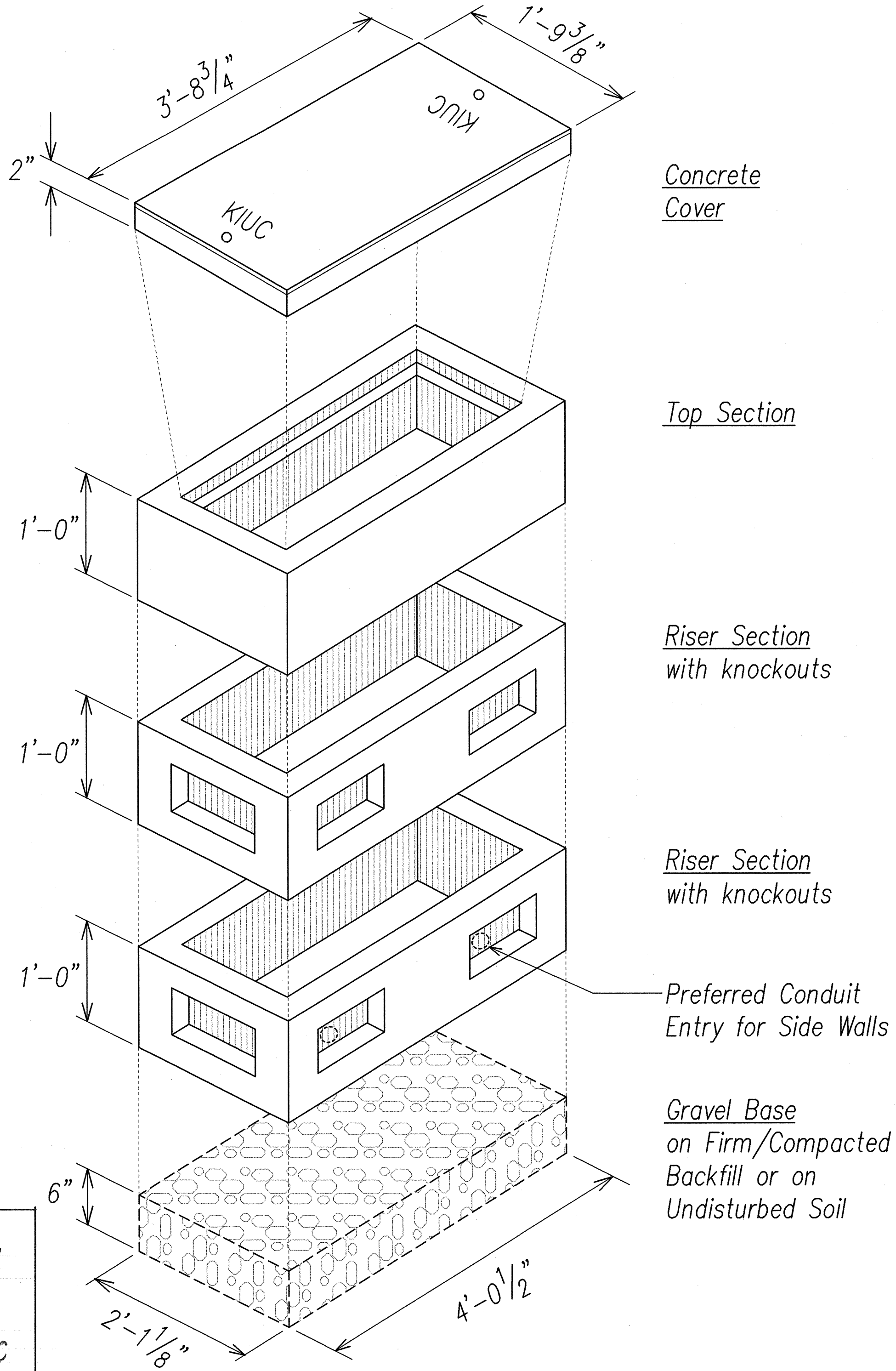
- Type "A" Backfill - Earth & Gravel. Rock Size to be 1" Max. & the Mixture to Contain Not More than 50% by Volume of Rock Particles. 95% Compaction.
- Type "B" Backfill - Earth & Gravel. Mixture Must Pass a 1/2" Mesh Screen & Contain Not More than 20% by Volume of Rock Particles. 95% Compaction.
- Note - If Normal Material at Bottom of Trench is Not Type "B", an Additional 3" Shall be Excavated & Type "B" Backfill Provided.
- Concrete - 3" Encasement, 3000 psi Compressive Strength @ 28 Days.



Section A

Duct Section Details Not to Scale

Duct Schedule		
Item	Description	Remarks
1E	1"C, Schedule 40 PVC	Provide with Pullwire; Conductors to be Furnished & Installed by KIUC.
3E	3"C, Schedule 40 PVC	Provide with Pullwire; Conductors to be Furnished & Installed by KIUC.



Note:
All Handholes Shall be Walker Industries Type or Approved Equal. Contact KIUC Inspector at 822-4995 Prior to Ordering.

Note: Detailed Drawings in Accordance with KIUC Standard Drawing No. PB-2X4; Contact KIUC's Engineering Dept.

KIUC 2' x 4' Precast Pullbox Detail Not to Scale

Approved by:

[Signature] 4/16/04
Kauai Island Utility Cooperative Date

[Signature] 3/24/04
Manager and Chief Engineer Date
Dept. of Water, County of Kauai

RONALD N. S. HO & ASSOC., INC.
ELECTRICAL ENGINEERS

ANDREW I. MIYASHIRO
LICENSED PROFESSIONAL ENGINEER
No. 4340-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
[Signature]
Signature
Expiration Date of the License: 04/30/04

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Duct Section Details and Schedule

KUHIO HIGHWAY IMPROVEMENTS
Extension Of Temporary Kapaa Bypass Road
Project No. 56A-03-00

Scale: AS NOTED Date: Mar 2004

SHEET No. E-5 OF 7 SHEETS

ORIGINAL PLAN
NOTE BOOK
No. 1
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PROJECT: 56A-03-00-58

FED.ROAD DIST.NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	56A-03-00	2004	59	66

Plan Notes:

- 1 Existing Streetlight and Bracket Arm to be Demolished by KIUC. Existing Wood Pole to Remain in Place.
- 2 Existing Sign with Flashing Light to be Demolished. Coordinate/Schedule Demolition of Associated Secondary Service with KIUC.
- 3 Riser Up Existing Utility Pole per KIUC Requirements and Approval.
- 4 Existing Utility Pole and Associated Appertenances to be Replaced by KIUC. Coordinate/Schedule New Work with KIUC.

Approved by:

[Signature]
Kadai Island Utility Cooperative

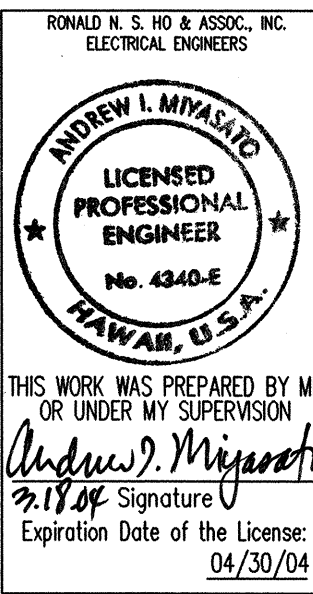
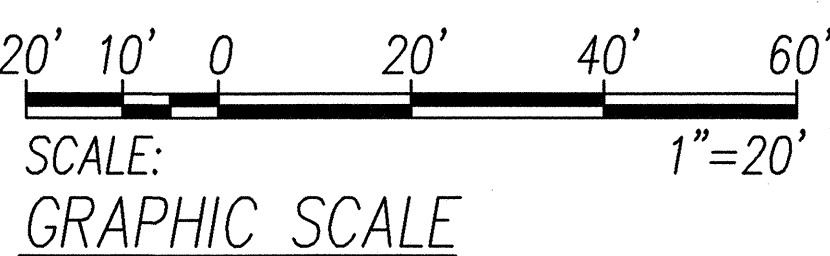
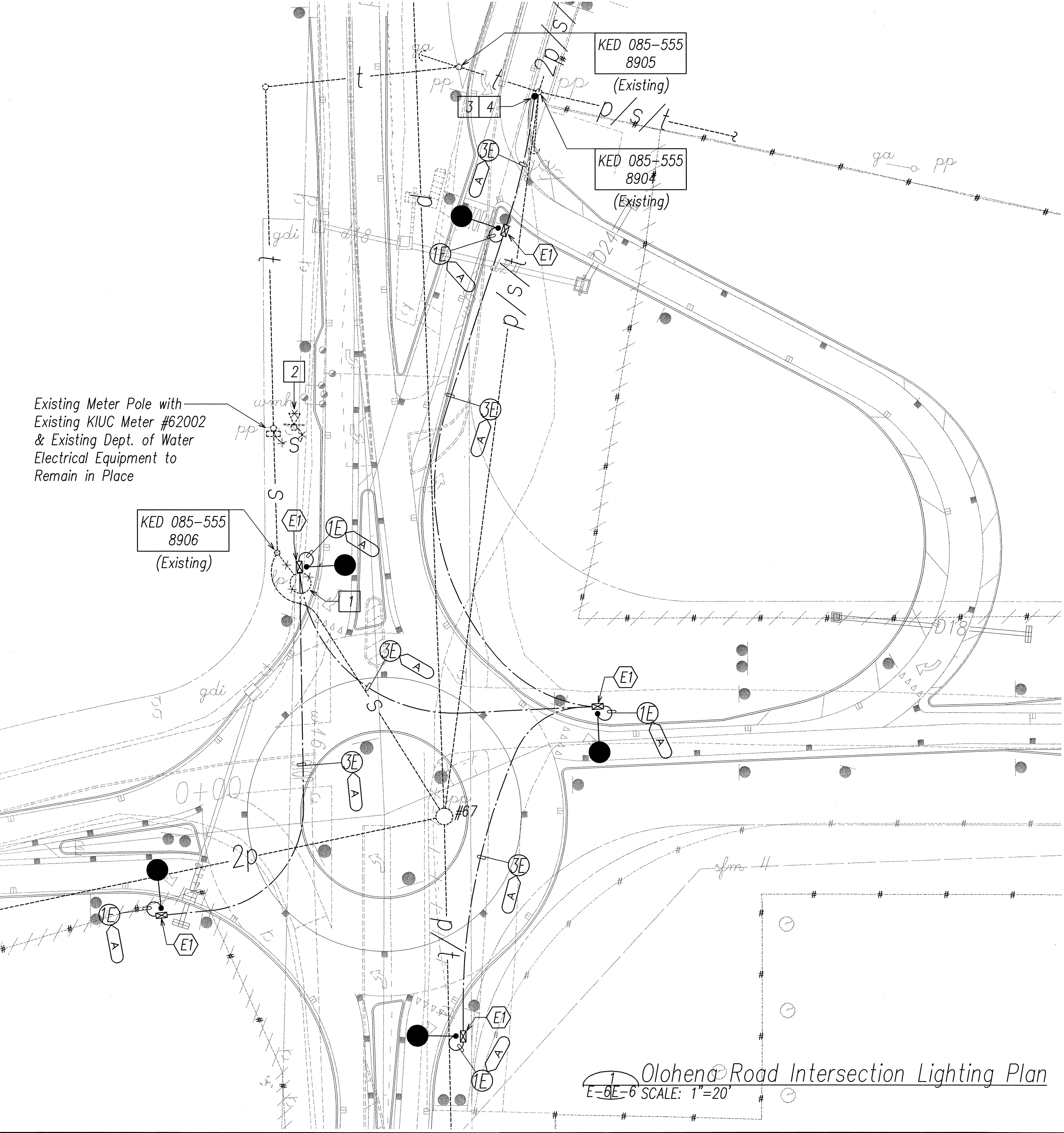
4/15/04
Date

[Signature]
Manager and Chief Engineer
Dept. of Water, County of Kauai

3/24/04
Date

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	TRACED BY	
	DESIGNED BY	
	CHECKED BY	

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Olohena Road Intersection
Lighting Plan

KUHIO HIGHWAY IMPROVEMENTS
Extension Of Temporary Kapaa Bypass Road
Project No. 56A-03-00

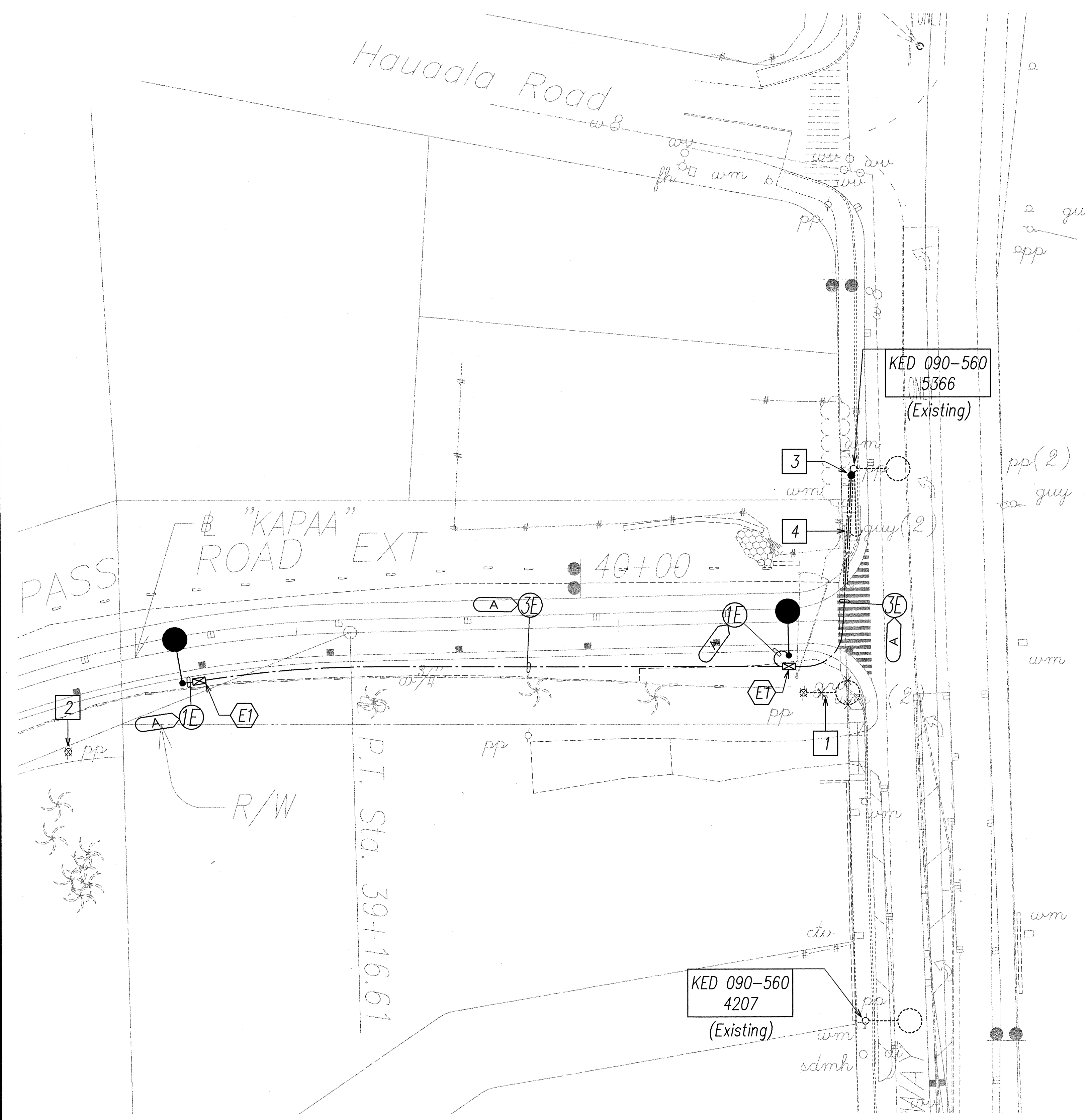
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SHEET No. E-6 OF 7 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	56A-03-00	2004	60	66

Plan Notes:

- 1 Existing Abandoned Streetlight, Bracket Arm and Wood Pole to be Demolished.
- 2 Existing Abandoned Wood Pole to be Demolished.
- 3 Riser Up Existing Utility Pole per KIUC Requirements and Approval.
- 4 Sawcut Existing Pavement for installation of New Ductline and Repair/Restore Affected Pavement Area to Match Adjacent Pavement Finish or Better.



Approved by:

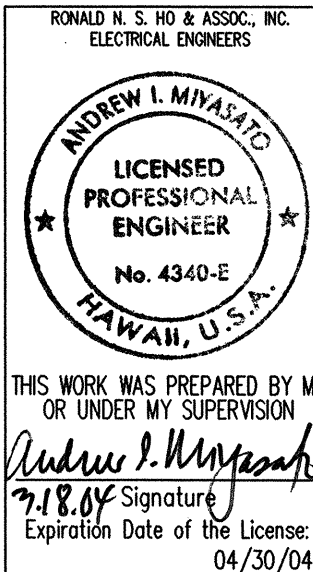
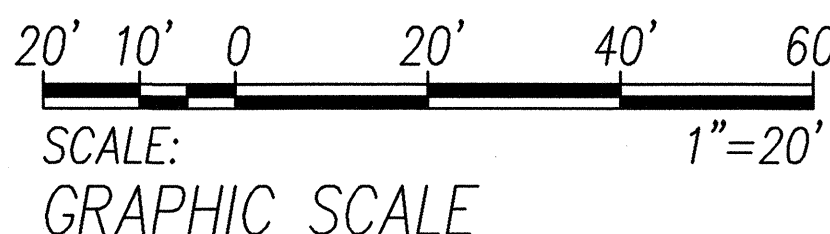
[Signature] 4/15/04
Kauai Island Utility Cooperative Date

[Signature] 3/24/04
Manager and Chief Engineer Date
Dept. of Water, County of Kauai

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
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Kuhio Highway Intersection Lighting Plan
E-7 SCALE: 1"=20'



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Kuhio Highway Intersection
Lighting Plan

KUHIO HIGHWAY IMPROVEMENTS
Extension Of Temporary Kapaa Bypass Road
Project No. 56A-03-00

Scale: AS NOTED Date: Mar 2004

SHEET No. E-7 OF 7 SHEETS