FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	64	98

GENERAL NOTES:

1. All Work shall be done in Accordance with the "Hawaii Standard Specifications for Road, Bridge, and Public Works Construction", 1994, State of Hawaii Department of Transportation, Highways Division, Except as Modified Herein or in the Special Provisions.

2. The Contractor shall verify with the Respective Utility Companies and Government Agencies, the Locations of all Electric, Telephone, Roadway Light, Water, Sewer, Drain, and other Lines Crossing the Excavation Path or in Excavation Areas.

3. The Contractor shall Notify all Affected Utility Companies and Government Agencies of their Intent to Begin Construction on any Intersection or Street at Least Two (2) Weeks prior to the Start of such Construction.

4. The Contractor shall Install all Roadway Lighting Luminaires, Poles, In-grade Roadway Lighting Pole Foundations, Risers from Pullboxes to Foundations, Metering Requirements, and Wiring as Specified In these Plans and the Specifications.

5. The Contractor shall Install Roadway Lighting Conductors and make Connections to Existing Conductors at or Past Project Interfaces as Required.

6. The Contractor shall Coordinate with the State Handling of all Salvageable Materials Indicated to be Removed.

7. The Contractor shall Provide Temporary Lights and Wiring as Required to Maintain Roadway Lighting During Construction at no cost to the state.

8. The Contractor shall notify the Traffic Signal & Technology, Department of Transportation Services, three (3) working days prior to commencing work on the traffic signal system (phone: 523-4589).

9. The traffic signal system shall be kept operational during construction. Any relocation required shall be approved by the Traffic Signals & Technology, Department of Transportation Services, and paid for by the Contractor.

10. The Contractor shall be responsible for any damages to the existing traffic signal facilities, including the traffic signal interconnect system.

11. The Contractor shall provide microwave detector system for all existing signalized intersections where existing loop detector system will be out of service for more than one (1) week.

ELECTRICAL SYMBOLS

Symbol	Description
●—●	Roadway Light Standard, See Sheet E24
○—●	Roadway Light on Utility Pole, See Sheet E25
○---⊖	Existing Roadway Light on HECO Pole to be Removed
○---○	Existing Roadway Light and Wood Pole to be Removed
○—○	Existing Roadway Light Standard to Remain
—·—	Underground Wiring as Noted
---e---	Existing Underground Duct
—OH—	Overhead Cable as Noted
--OH--	Existing Overhead Cable as Noted
▭	Pullbox, Type A, See Sheet E23
PB	Pullbox
Ⓐ—┘	Duct Section Designator, Section "A" Indicated, See Sections on Sheet E21
℄	Kahekili Highway Baseline
⊢⊙↑	Pedestrian Pushbutton with Crossing Direction Indicated

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

LAST SAVE: 06/18/03 @ 10:36:31 BY: TE PLOT SC: 1"=0"=1"
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KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2962-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL SYMBOLS, GENERAL NOTES

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: None Date: SEPT 2002

SHEET No. E1 OF 31 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	65	98

HAWAIIAN ELECTRIC COMPANY NOTES

1. The location of HECO's 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 within or under any overhead lines.
2. The Contractor shall comply with the State of Hawaii's Occupational Safety and Health law (DOSH).
3. The Contractor shall obtain an excavation permit from HECO's Mapping and Records Division located at 820 Ward Avenue, 4th Floor, two weeks prior to starting construction.
4. The Contractor to stakeout all facilities for verification by the utility involved and/or affected before proceeding.
5. All manholes, pullboxes and ductlines to be installed in concrete, shall be inspected and approved by the utility company before placing concrete. Notify utility company 48 hours prior to placing concrete.
6. All completed ductlines shall be mandrel tested by the Contractor in the presence of the utility company's inspector using the utility company's standard practice.
7. The Contractor shall install a 1/8" polyolefin pull line in all completed HECO ductlines after mandrel testing is complete.
8. The Contractor shall be responsible for all proposed work within private property to enable the conversion from overhead to underground. The Contractor shall coordinate all work with the utility companies.
9. The Contractor shall give HECO forty (40) working days notice to proceed with it's portion of the work.
10. Barricading of HECO's facilities, if required, shall be done by Contractor. Breaking into existing HECO facilities shall be done by HECO.
11. HECO shall remove all existing HECO facilities except as noted on the plans.
12. Special Note:
    The existing electrical circuits will remain energized during construction. The Contractor will work cautiously at all times to avoid accidents and/or damage to these circuits, which can result in electrocution. The Contractor shall not disturb barricades erected by HECO. He shall work cautiously to avoid accidents and damages to existing facilities.
13. The following terms will be used interchangeably throughout this project:
    a. HTCO or "T" for Verizon Hawaii, Inc.
    b. HECO or "E" for Hawaiian Electric Company
    c. Oceanic Cable or "V" for Oceanic Cablevision
14. The Contractor shall furnish his construction schedule forty-five (45) working days prior to starting any HECO work.
15. For verifying the location of underground ductlines and for assistance in providing proper support and protection of underground ductlines, the Contractor shall contact the HECO underground superintendent at 543-7395, a minimum of 72 hours in advance.

HAWAIIAN ELECTRIC COMPANY NOTES (Continued)

16. The Contractor shall be liable for any damages to HECOs facilities. The Contractor shall report any HECO facility damage to the HECO trouble dispatcher at 548-7961. Location and depth of all handholes and manholes shall be verified and approved in the field by HECO prior to excavation, construction, or installation.
17. The Contractor shall exercise extreme caution when the excavation and construction crosses or is in close proximity to underground electrical facilities and shall maintain minimum 10'-0" clearance for his equipment while working close to and/or under overhead facilities.
18. When trench excavation is adjacent to or under 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.
19. Any work required to relocate HECO facilities shall be done by HECO and the Contractor shall be responsible for all coordination, and for costs if applicable.
20. Should it become necessary to temporarily relocate any HECO facilities to enable the Contractor to perform his work in a safe and expeditious manner in fulfilling his contract obligations, these temporary relocations will be done by HECO, or by the Contractor under HECO's supervision, with all costs being borne by the Contractor.
21. Any damage to HECO's facilities shall be reported immediately to HECO's trouble dispatcher at 543-7874.
22. All HECO overhead and underground facilities shown on these plans or whose approximate locations within the project boundaries have been made known by any reasonable means at any time to the Contractor shall be protected at all times by the Contractor during construction. Costs for damages to HECO facilities shall be borne by the Contractor. This repair work shall be done by HECO, or by the Contractor under HECO's supervision.
23. CAUTION!!! ELECTRICAL HAZARD!!!!
    Existing electrical facilities, overhead lines and underground encased buried duct lines are energized and will remain energized during construction. Cables in service boxes, transformer vaults and handholes are also energized. Only Hawaiian Electric Company personnel are to handle these energized cables and erect temporary guards to protect cables from damage. Contractor shall work cautiously to avoid accidents and damage to existing facilities. Contractor shall coordinate his work with HECO U.G. Division (543-7871) and Inspection Division (543-5456). Advance notice shall be 10 days for U.G. Division and 3 days for Inspection Division.
24. The Contractor shall furnish and install all materials to complete conduits. construction of the underground ductline system, including riser. All electric ducts shall be encased in concrete jacket unless otherwise specified. All ducts and conduits shall be inspected and approved by HECO prior to placing concrete. The Contractor shall notify HECO's inspection division (548-4356) at least 72 hours prior to placing concrete.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

HAWAIIAN ELECTRIC COMPANY NOTES (Continued)

25. The Contractor is to stake out all temporary & permanent new pole locations so as not to conflict with any existing or proposed utility for HECO approval. The Contractor shall be responsible for cost incurred by conflicting utilities.
26. The Contractor shall install Schedule 40 PVC conduit for all HECO ductline, no split ducts will be allowed. No notching of HECO boxes will be allowed.
27. HECO to receive 75 working days notice for any relocation work.
28. When excavating near utility poles, the Contractor shall protect, support, secure and take all other precautions to prevent damage to or leaning of these poles. Contractor is responsible for all costs associated to repair or straighten pole.
29. For construction of underground facilities refer to HECO Specifications CS7003 and CS7001.
30. All duct line installation shall be concrete encased, Schedule 40 PVC.
31. 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 locations and depths of the facilities and exercise proper care in excavating 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.
32. Locations of all existing handholes and service boxes are approximate and exact location shall be determined in the field.
33. The Following Clearances Shall Be Maintained Between HECO'S Ductline and All Adjacent Structures (Charted and Uncharted) in the Trench:

Structure Type	Minimum Clearance (Inches)
Water Lines, Parallel	36
Water Lines, Crossing	12 (A)
Sewer Lines, Parallel	36 (B)
Sewer Lines, Crossing	24 (C)
Drain Lines, Parallel	12
Drain Lines, Crossing	6 (D)
Electrical Lines, Parallel	12
Electrical Lines, Crossing	12
Telephone Lines, Parallel	6
Telephone Lines, Crossing	6

A. The Minimum Vertical Clearances to Water Lines Crossing Electrical Ductlines can be Reduced to 6 Inches if the Electrical Ductline Structure is Smaller than 16 Inches, Is Concrete Encased, and is Below the Water Line.

B. A Minimum Horizontal Clearance of 36 Inches is Required Between New Handholes and Existing Sewer Laterals.

KEN OUCHI
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HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
K. Ouchi

HAWAIIAN ELECTRIC COMPANY NOTES (Continued)

C. The Minimum Vertical Clearances to Sewer Pipes Crossing Electrical Ductlines can be Reduced to 12 Inches if the Sewer Pipe is Jacketed in Concrete.

34. The Contractor shall provide two sets of as-built reproducible tracings showing the offsets, stationing and vertical elevation of the duct line(s) constructed. One set is for the State Department of Transportation, Highways Division and the other is for the Hawaiian Electric Company.
35. The Contractor shall use proper care in excavating the area. He shall be responsible for any damage to surface or underground facilities whether shown or not shown on the plans.

HECO REFERENCE SPECIFICATIONS

CS7001	Construction of Underground Facilities
CS7003	Construction of Electrical Facilities
CS7202	General Conditions for Construction of Projects
CS9301	Concrete Work
CS9401-2	Precast Manholes and Handholes

DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 8/12/03 By [signature]

Engineering Department
Hawaiian Electric Company, Inc.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECO NOTES

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED — Date: SEPT 2002

SHEET No. E2 OF 31 SHEETS

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

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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	66	98

HECO OVERHEAD LINE NOTES

1. State Law Requires that a Worker and the Longest Object He or She may Contact cannot come closer than a Minimum Radial Clearance of 10 Feet when Working Close To or Under any Overhead Lines Rated 50KV and Below. For Each Additional 1KV Above 50KV, An Additional 0.4 Inch Shall be Added to the 10-Foot Clearance Requirement. The Preceding Information on Line Clearance Requirements is Provided as a Convenience and It is the Contractor's Responsibility to be Informed Of and Comply with any Revisions or Amendments to the Law.

2. Should the Contractor Anticipate That His Work will Result in the Need to Encroach Within the Minimum Required Clearance at any Time, the Contractor shall Notify HECO at Least Four (4) Weeks Prior to the Planned Encroachment so that, if Feasible, the Necessary Protections (e.g. Relocate, De-energize, or Blanket HECO Lines) can be put in Place. HECO's Cost of Safeguarding Its Lines will be Charged to the Contractor.

3. Contact HECO's Customer Installations Department at 543-7846 for Assistance in Identifying and Safeguarding Overhead Power Lines.

4. Refer to Section X of HECO's Electric Service Installation Manual for Additional Guidelines When Working Around HECO's Facilities. A Copy may be Obtained from HECO's Customer Installations Department.

GENERAL DEMOLITION NOTE

Existing Lighting System to Remain in Operation Until the New System is Completed.

SHEET NOTES

[1] Pole to be Relocated by HECO. Relocate Existing Roadway Light and Overhead Lighting Circuit temporarily to new Pole.

[2] Remove Roadway Light and Wood Pole and Backfill Hole.

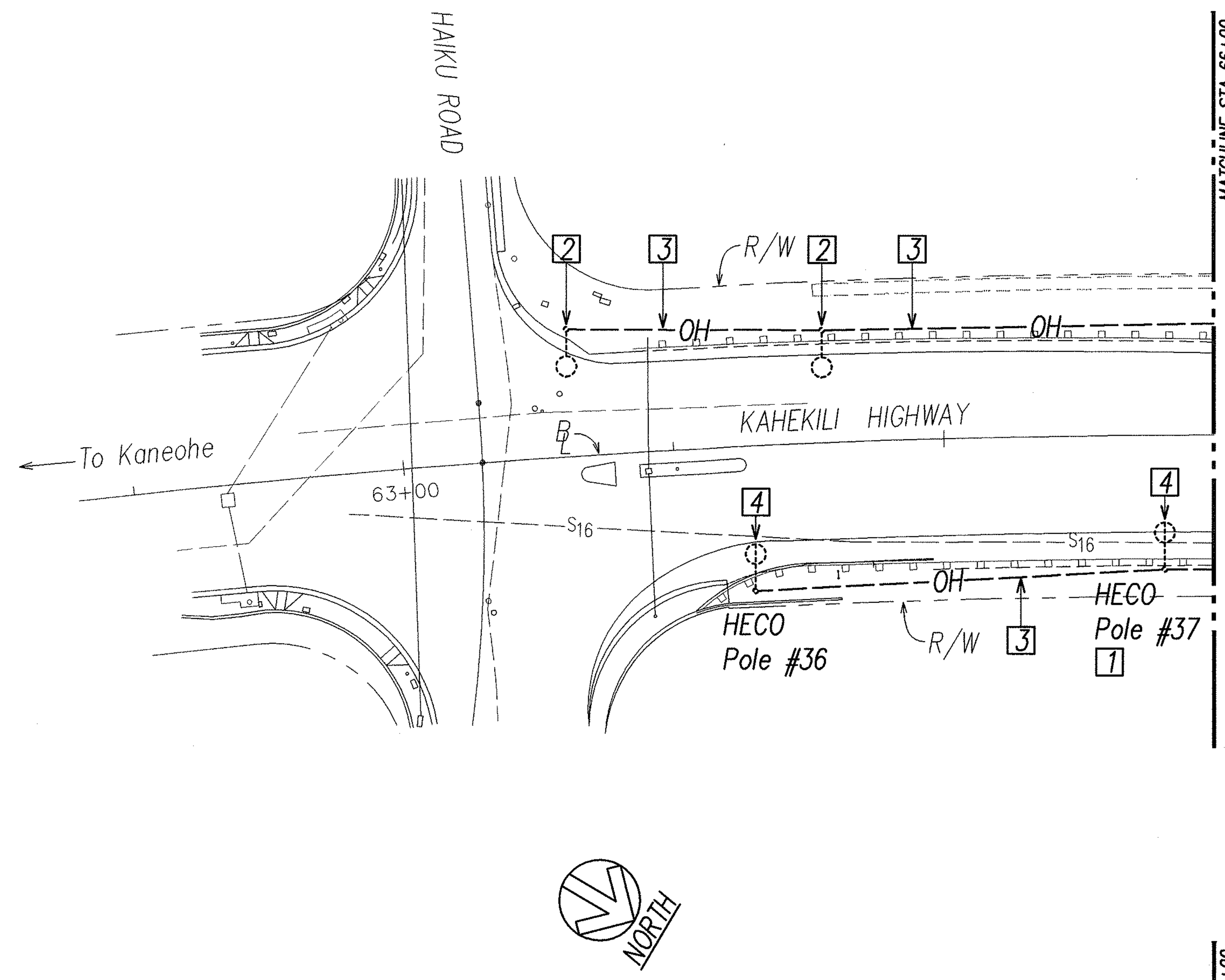
[3] Remove Overhead 120/240V Roadway Light Circuit.

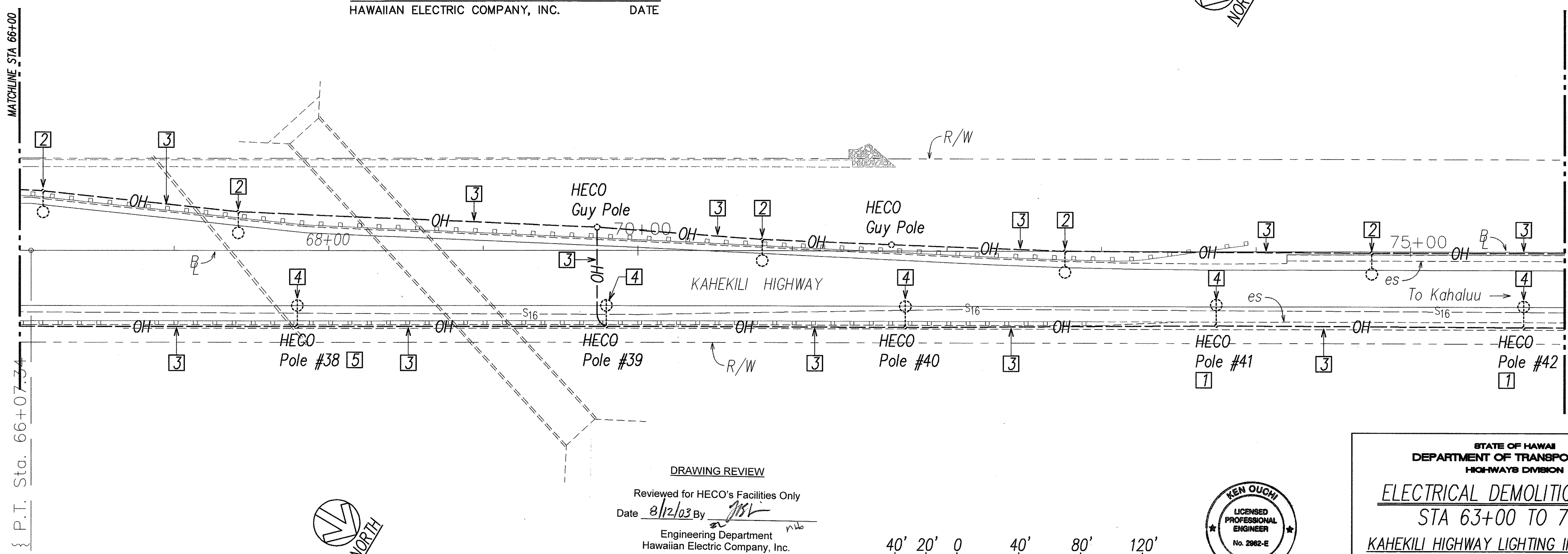
[4] Remove Roadway Light on HECO Pole.

[5] Pole Mounted Transformer for 120/240V Roadway Light Circuits to be Removed by HECO.

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC. DATE





DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 8/12/03 By

Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

KEN OUCHI
LICENSED PROFESSIONAL ENGINEER
No. 2962-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL DEMOLITION PLANS
STA 63+00 TO 76+00

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED Date: SEPT 2002

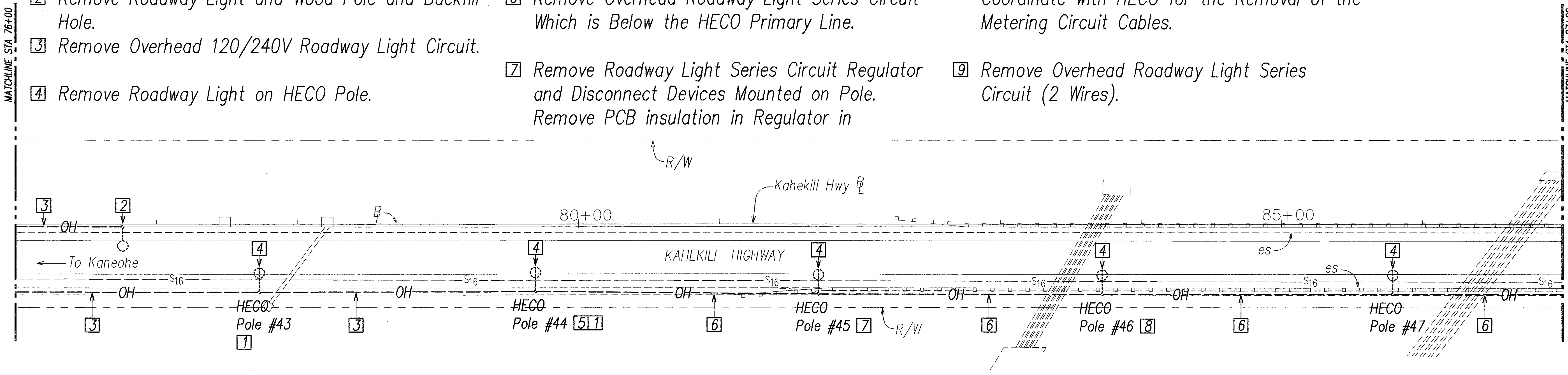
SHEET No. E3 OF 31 SHEETS

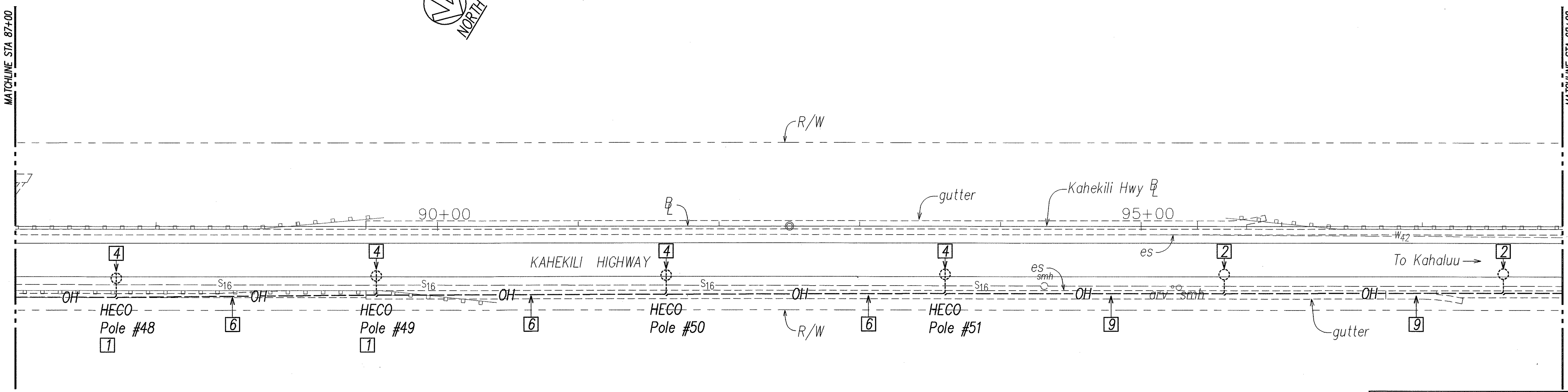
ORIGINAL PLAN	
SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
NOTE BOOK No.	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	67	98

SHEET NOTES

1. Pole to be Relocated by HECO. Relocate Existing Roadway Light and Overhead Lighting Conduit temporarily to new Pole.
2. Remove Roadway Light and Wood Pole and Backfill Hole.
3. Remove Overhead 120/240V Roadway Light Circuit.
4. Remove Roadway Light on HECO Pole.
5. Pole Mounted Transformer for Roadway Lights Series Circuit Regulator to be Removed by HECO.
6. Remove Overhead Roadway Light Series Circuit Which is Below the HECO Primary Line.
7. Remove Roadway Light Series Circuit Regulator and Disconnect Devices Mounted on Pole. Remove PCB insulation in Regulator in accordance with Section 670 of the Specifications.
8. Remove Meter Socket on Pole. Also Remove Conduit Up to Metering Transformers. Coordinate with HECO for the Removal of the Metering Circuit Cables.
9. Remove Overhead Roadway Light Series Circuit (2 Wires).





NORTH

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

KEN OUCHI LICENSED PROFESSIONAL ENGINEER HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL DEMOLITION PLANS
STA 76+00 TO 98+00
KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED Date: SEPT 2002

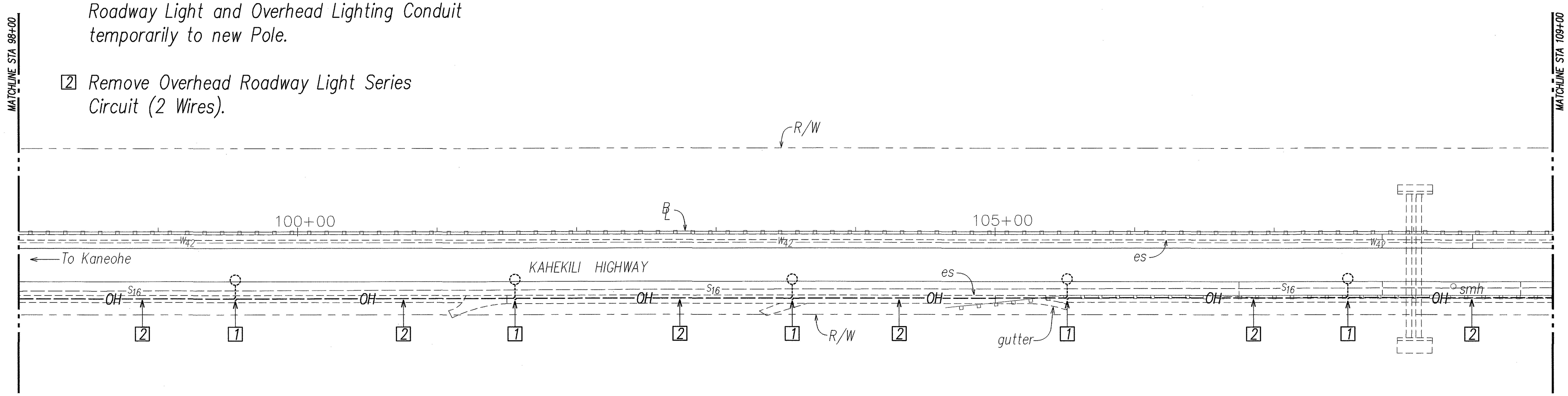
SHEET No. E4 OF 31 SHEETS

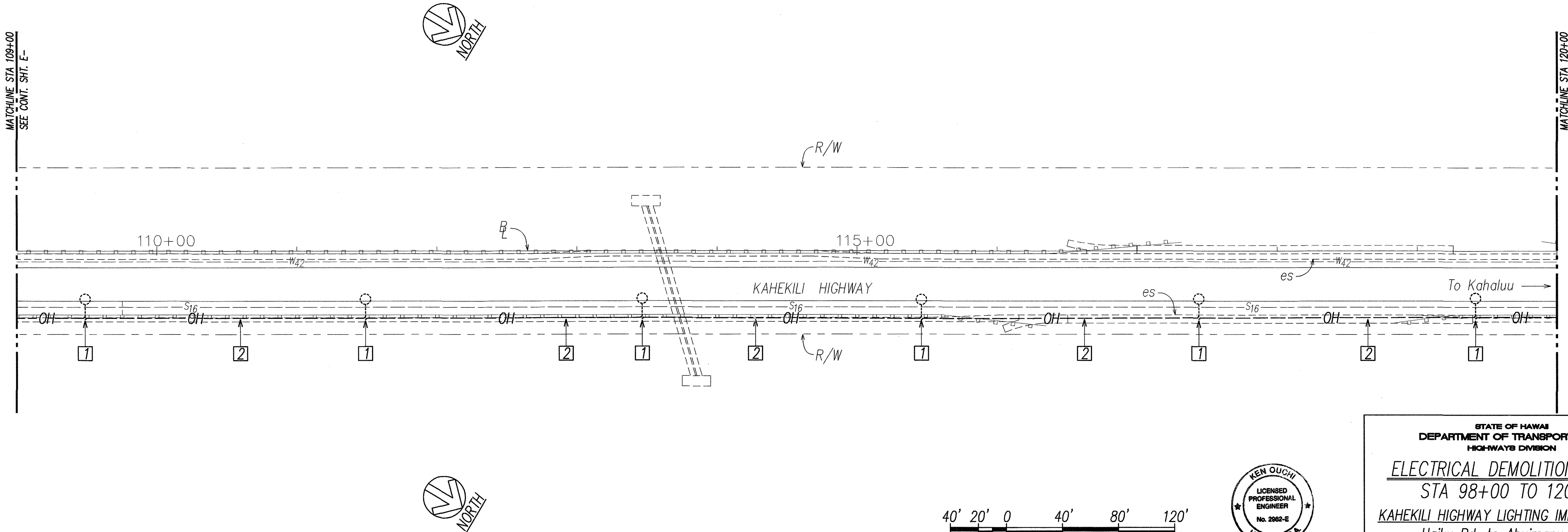
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	68	98

SHEET NOTES

1. Pole to be Relocated by HECO. Relocate Existing Roadway Light and Overhead Lighting Conduit temporarily to new Pole.

2. Remove Overhead Roadway Light Series Circuit (2 Wires).





40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2962-E HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL DEMOLITION PLANS
STA 98+00 TO 120+00

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED Date: SEPT 2002

SHEET No. E5 OF 31 SHEETS

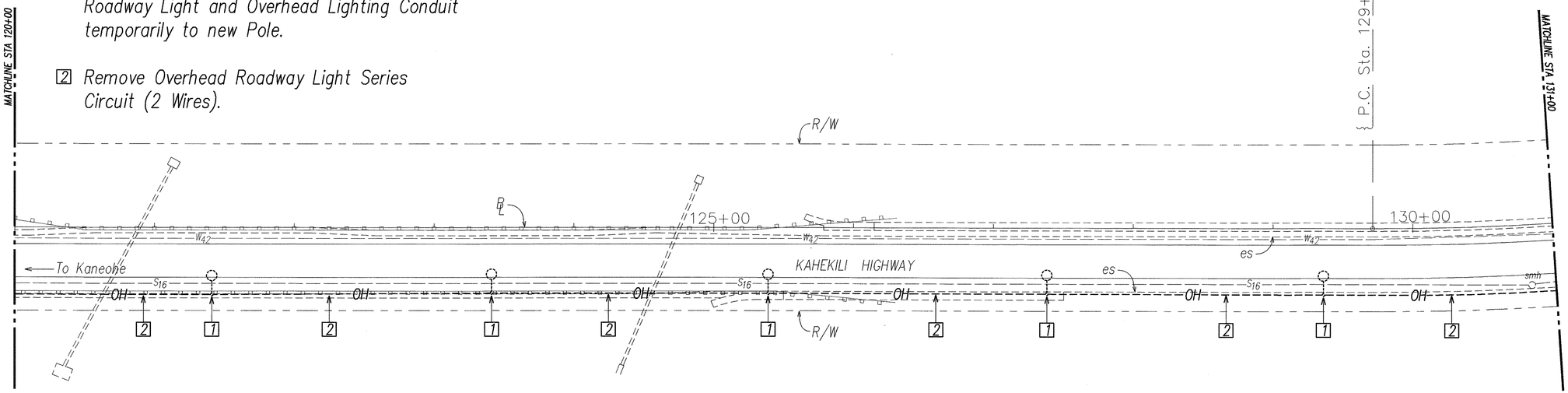
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
	DESIGNED BY	
NOTE BOOK	QUANTITIES BY	
No.	CHECKED BY	

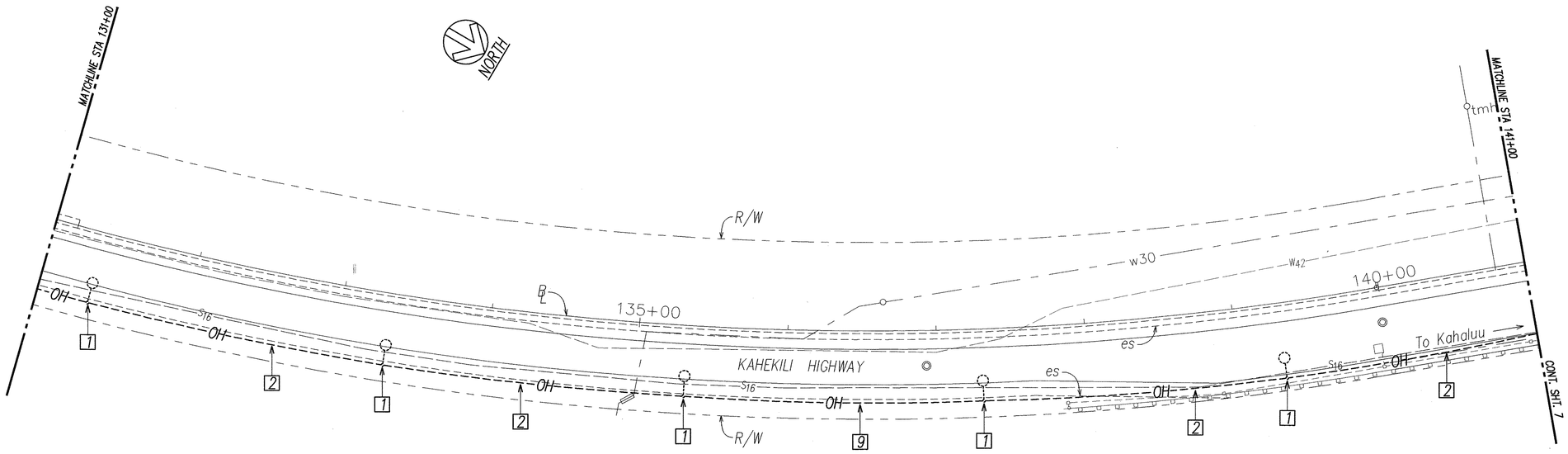
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	69	98

SHEET NOTES

1. Pole to be Relocated by HECO. Relocate Existing Roadway Light and Overhead Lighting Conduit temporarily to new Pole.

2. Remove Overhead Roadway Light Series Circuit (2 Wires).





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40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

KEN OUCHI
LICENSED PROFESSIONAL ENGINEER
No. 2982-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL DEMOLITION PLANS
STA 120+00 TO 141+00
KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED Date: SEPT 2002

SHEET No. E6 OF 31 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	C.0.70	98

SHEET NOTES

⚠1 [1] Remove Wood Pole and Roadway Light.

[2] Remove Overhead Roadway Light Series Circuit (2 Wires).

[3] Remove Overhead Traffic Signal Cables (2).

[4] Remove Overhead 120V Circuit for School Warning Light.

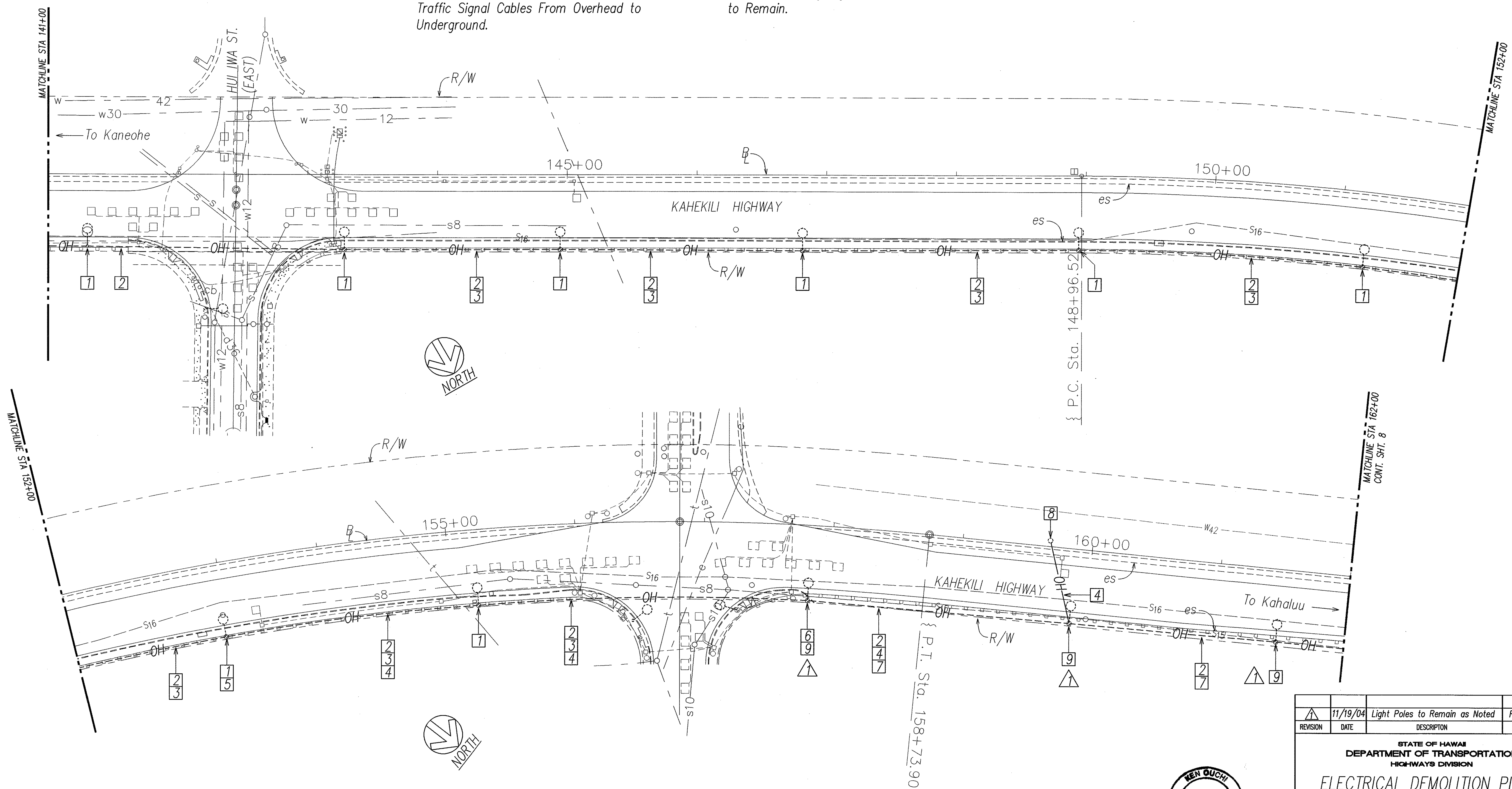
[5] Remove School Warning Light on Pole.

[6] Disconnect and Remove 120V Circuit and Traffic Signal Cables From Overhead to Underground.

[7] Remove Overhead Traffic Signal Cables.

[8] Remove School Warning Light and Wood Pole.

⚠1 [9] Remove Roadway Light. Wood Pole to Remain.



40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

REVISION	DATE	DESCRIPTION	BY	APPROVED
⚠1	11/19/04	Light Poles to Remain as Noted	RHA	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL DEMOLITION PLANS
STA 141+00 TO 162+00

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED Date: SEPT 2002

SHEET No. E7 OF 31 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	C.O.71	98

SHEET NOTES

△1 [1] Remove Roadway Light. Wood Pole to Remain.

[2] Remove Overhead Roadway Light Series Circuit (2 Wires).

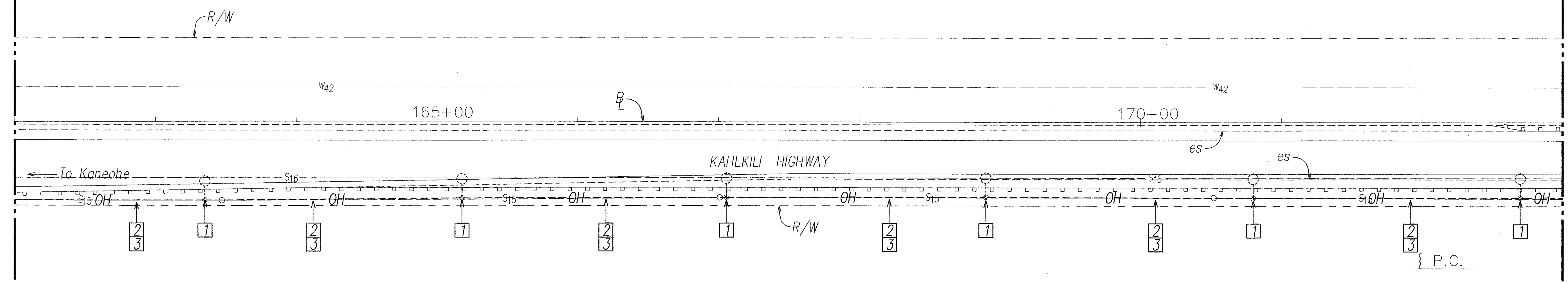
[3] Remove Overhead Traffic Signal Tie Cable.

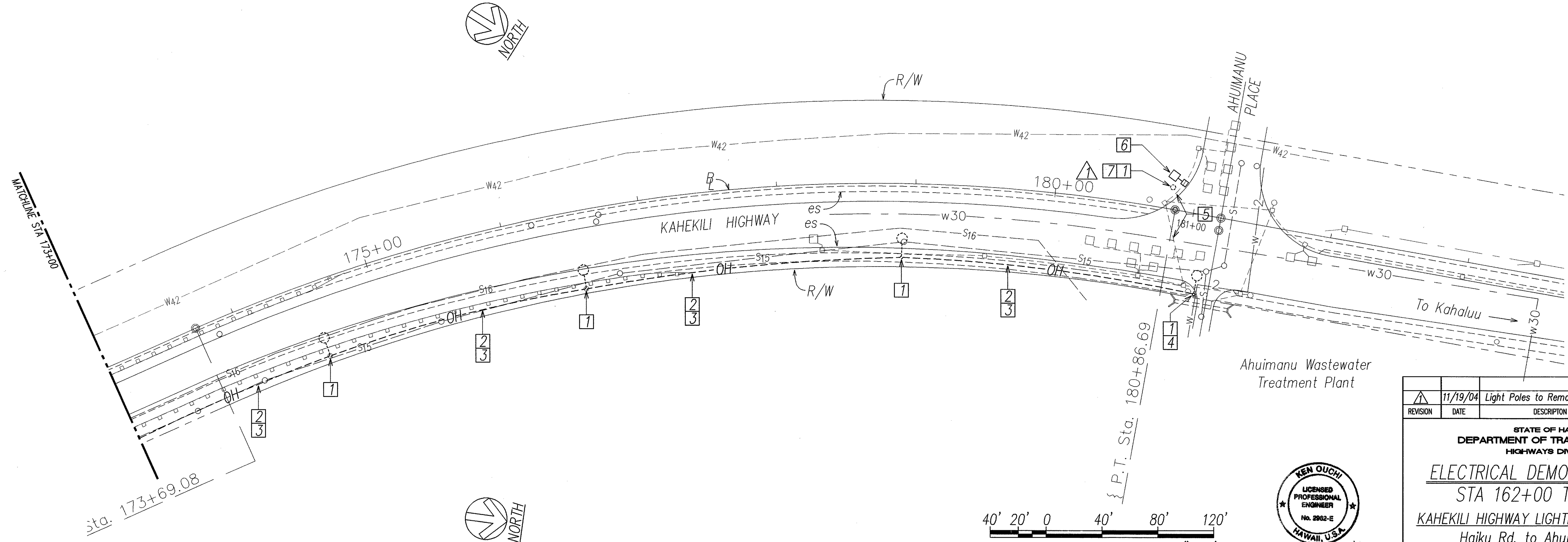
[4] Remove Traffic Signal Tie Cable From Overhead to Underground.

[5] Remove Traffic Signal Tie Cable from Existing Underground Duct.

[6] Existing Traffic Signal Controller.

△1 [7] Remove Wiring Connection to Roadway Light from Meter Socket on Pole.





40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2962-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

REVISION	DATE	DESCRIPTION	BY	APPROVED
△1	11/19/04	Light Poles to Remain	RHA	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL DEMOLITION PLANS
STA 162+00 TO 181+00

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED — Date: SEPT 2002

SHEET No. E8 OF 31 SHEETS

C.O. 71

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

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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	C.O.72	98

GENERAL NOTES

1. New Roadway Lighting consists of two separate systems between Haiku Road (South end) and Ahuimanu Place (North end). System Electrical Service Diagrams on sht. E19 and Feeder Diagrams on sht. E20.
2. Existing Roadway Lighting to remain until New Lighting is Operational. Suggested Sequence of Installation is to do the Northern System before the Southern System.
3. New Roadway Light Standards are Located In-line with the Existing Overhead Lighting Circuit Cables Which are to Remain Until the New Lighting System is Completed. Support the Existing Cables on the New Light Standards Temporarily by Insulators on Brackets Attached to the Arms of the New Light Standards. Submit the Proposed Temporary Brackets for Review.
4. HECO will raise the Height of the Existing Overhead Utility Line for Roadway Light Standards Nos. 855B and 856 to 872 (18 Total). Coordinate the Installation of the Light Standards with the Work by HECO. See HECO Notes for Overhead Line on Sht. E3.

SHEET NOTES

(1) Light Standard on Utility Pole per Sht. E25.

(2) Underground Ductline under Existing Pavement. Excavation and Backfill per Section (1) on Sht. E22.

(3) Existing 16" Sewer Force Main, "Ahuimanu Sewer Force Main, Sec. 1."

(4) Maintain 5' Horizontal Clearance Between Light Standard and Existing Sewer Force Main (Contractor to Verify Condition).

(5) Maintain 3' Horizontal Clearance Between the Electrical Ductline and the Existing 16" Sewer Force Main (Contractor to Verify Condition).

(6) Light Standard Setback Condition No. 1 per Sht. E26.

(7) Light Standard Setback Condition No. 2 per Sht. E26.

(8) Electrical Duct Crossing Existing Sewer Force Main per Section 1/E21.

(9) Underground Ductline Under Unpaved Shoulder, Excavation and Backfill per Section (2) on Sht. E22.

DRAWING REVIEW

Reviewed for HECO's Facilities Only

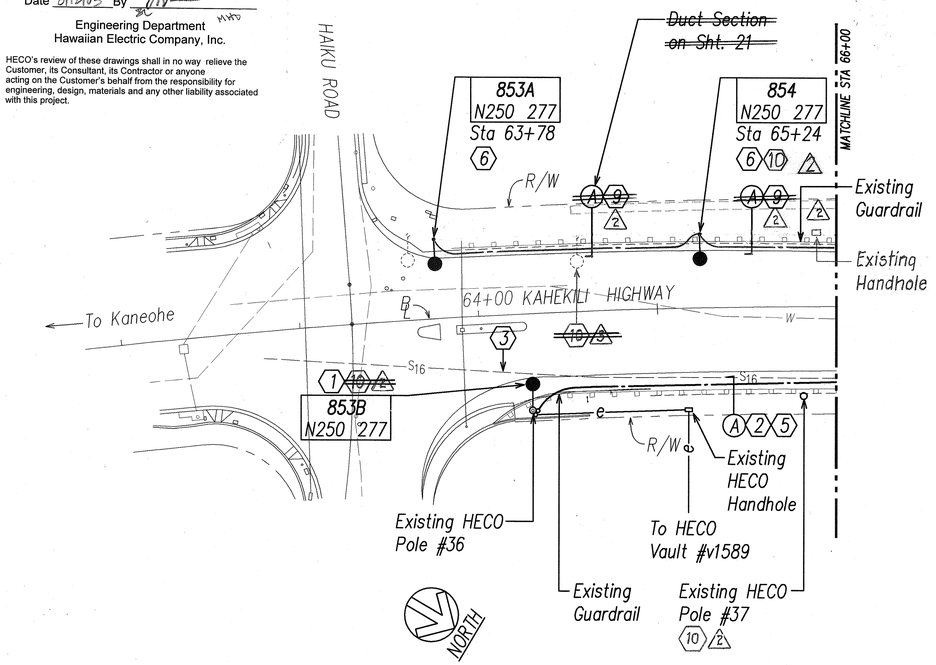
Date 8/12/03 By

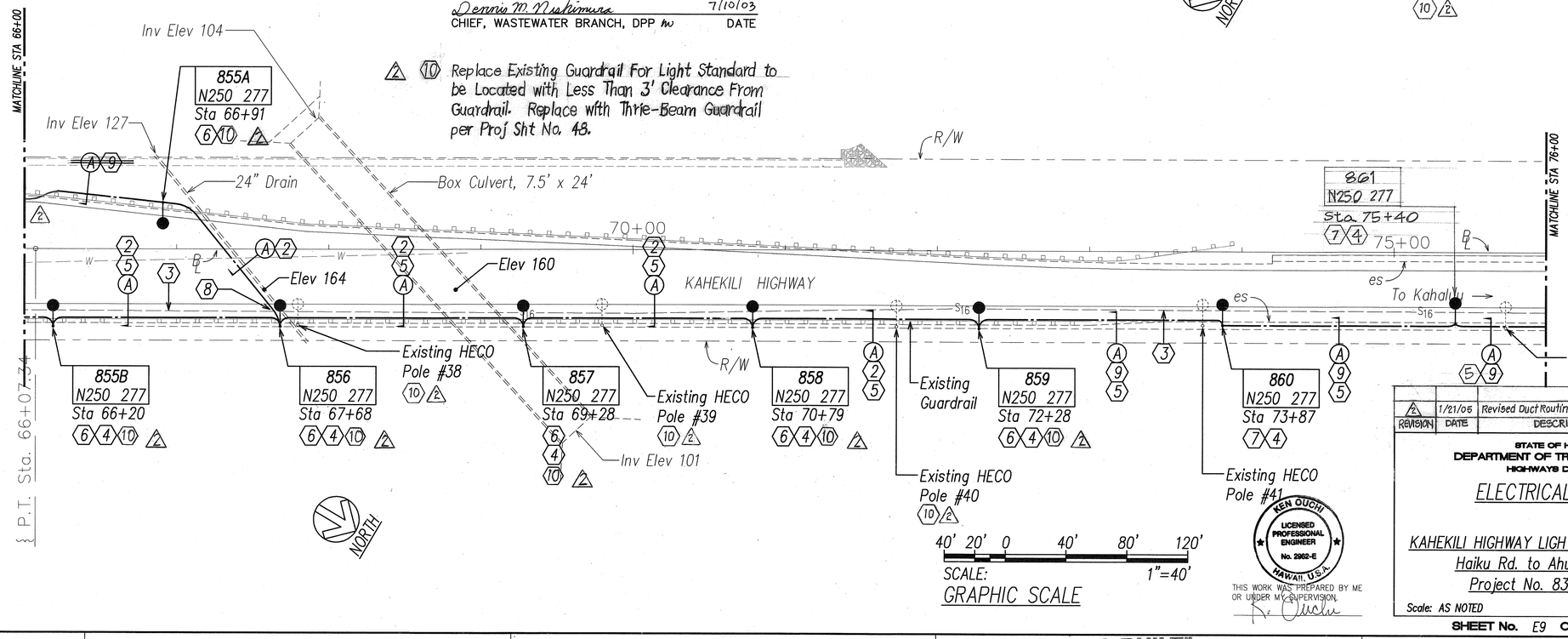
Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

APPROVED BY:

Dennis M. Nishimura 7/10/03
CHIEF, WASTEWATER BRANCH, DPP DATE





(2) (10) Replace Existing Guardrail For Light Standard to be Located with Less Than 3' Clearance From Guardrail. Replace with Thrie-Beam Guardrail per Proj Sht No. 48.

40' 20' 0 40' 80' 120'
SCALE: 1"=40'
GRAPHIC SCALE

KEN OUCHI
LICENSED PROFESSIONAL ENGINEER
No. 2962-E
HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

No.	DATE	REVISION	BY	APPROVED
2	1/21/05	Revised Duct Routing. Added Note	RHA	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLANS

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED Date: SEPT 2002

SHEET No. E9 OF 31 SHEETS

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

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"AS-BUILT"

C.O. 72

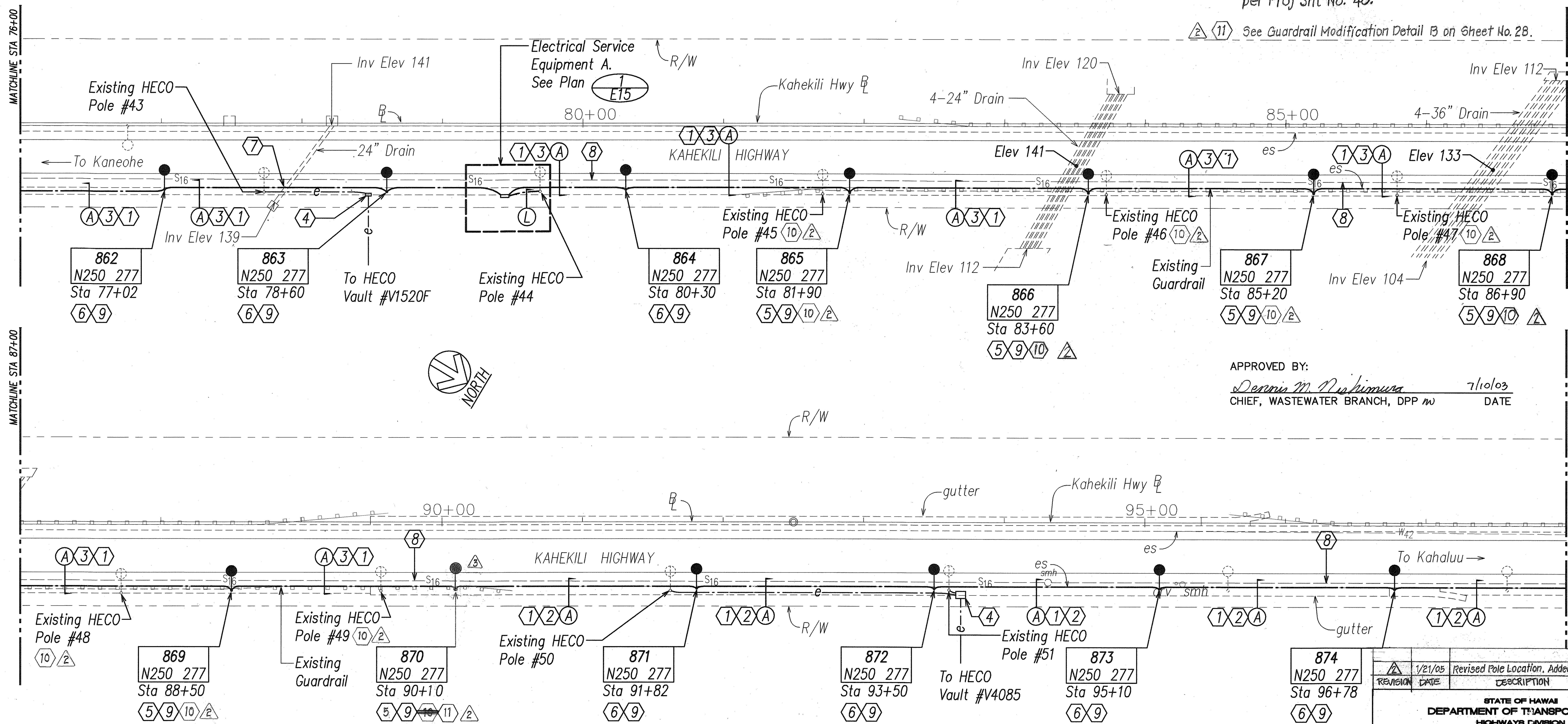
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	C.O.73	98

GENERAL NOTES

1. New Roadway Lighting consists of two separate systems between Haiku Road (South end) and Ahuimanu Place (North end). System Electrical Service Diagrams on sht. E19 and Feeder Diagrams on sht. E20.
2. Existing Roadway Lighting to remain until New Lighting is Operational. Suggested Sequence of Installation is to do the Northern System before the Southern System.
3. New Roadway Light Standards are Located In-line with the Existing Overhead Lighting Circuit Cables Which are to Remain Until the New Lighting System is Completed. Support the Existing Cables on the New Light Standards Temporarily by Insulators on Brackets Attached to the Arms of the New Light Standards. Submit the Proposed Temporary Brackets for Review.

SHEET NOTES

1. Maintain 3' Horizontal Clearance of the Electrical Ductline From the Parallel Existing Sewer Line (Contractor to Verify Condition).
2. Underground Ductline under Existing Pavement. Excavation and Backfill per Section (1) on Sht. E22.
3. Underground Ductline under unpaved shoulder, Excavation and Backfill per Section (2) on Sht. E22.
4. Existing HECO Handhole.
5. Light Standard Setback Condition No. 1 per Sht. E26.
6. Light Standard Setback Condition No. 2 per Sht. E26.
7. Electrical Duct Crossing Existing 24" Drain per Section 2/E21.
8. Existing 16" Sewer Force Main, "Ahuimanu Serwer Force Main, Sec. 1."
9. Maintain 5' Horizontal Clearance Between Light Standard and Existing Serwer Force Main (Contractor to Verify Condition).
10. (Δ2) Replace Existing Guardrail For Light Standard to be Located with Less Than 3' Clearance From Guardrail. Replace with Thrie-Beam Guardrail per Proj Sht No. 48.
11. (Δ2) See Guardrail Modification Detail B on Sheet No. 28.



APPROVED BY:
Dennis M. Nishimura 7/10/03
CHIEF, WASTEWATER BRANCH, DPP — DATE

DRAWING REVIEW
Reviewed for HECO's Facilities Only
Date 8/12/03 By
Engineering Department
Hawaiian Electric Company, Inc.
HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

40' 20' 0 40' 80' 120'
SCALE: 1"=40'
GRAPHIC SCALE

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2962-E HAWAII, U.S.A.
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

REVISION	DATE	DESCRIPTION	BY	APPROVED
Δ2	1/21/05	Revised Pole Location, Added Note	RHA	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLANS

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED — Date: SEPT 2002

SHEET No. E10 OF 31 SHEETS

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

"AS-BUILT"

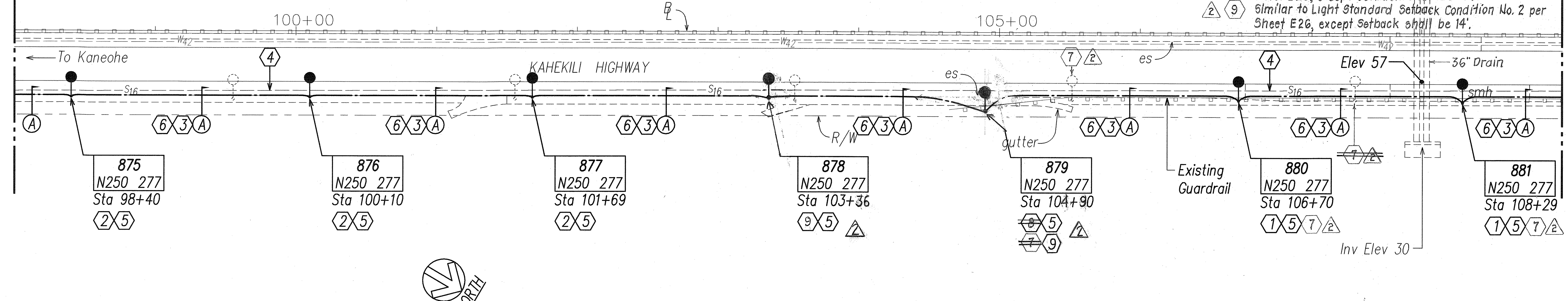
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	C.O.74	98

GENERAL NOTES

1. New Roadway Lighting consists of two separate systems between Haiku Road (South end) and Ahuimanu Place (North end). System Electrical Service Diagrams on sht. E19 and Feeder Diagrams on sht. E20.
2. Existing Roadway Lighting to remain until New Lighting is Operational. Suggested Sequence of Installation is to do the Northern System before the Southern System.
3. New Roadway Light Standards are Located In-line with the Existing Overhead Lighting Circuit Cables Which are to Remain Until the New Lighting System is Completed. Support the Existing Cables on the New Light Standards Temporarily by Insulators on Brackets Attached to the Arms of the New Light Standards. Submit the Proposed Temporary Brackets for Review.

SHEET NOTES

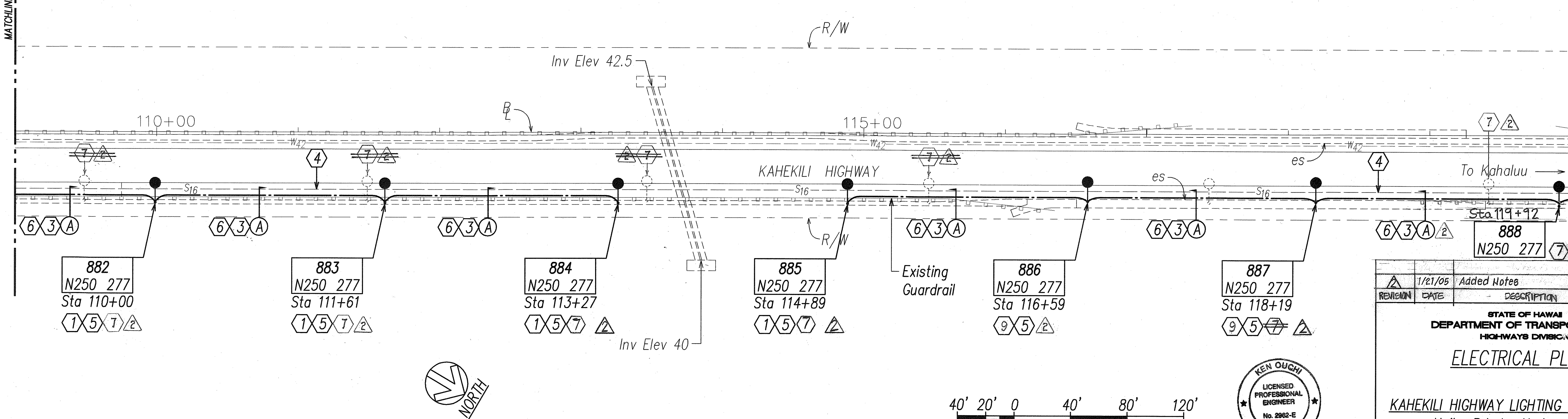
1. Light Standard Setback Condition No. 1 per Sht. E26.
2. Light Standard Setback Condition No. 2 per Sht. E26.
3. Underground Ductline Under Existing Pavement. Excavation and Backfill per Section 1 on Sht. E22.
4. Existing 16" Sewer Force Main, "Ahuimanu Sewer Force Main, Sec. 1."
5. Maintain 5' Horizontal Clearance Between Light Standard and Existing Sewer Force Main (Contractor to Verify Condition).
6. Maintain 3' horizontal clearance of the Electrical Ductline from the parallel existing Sewer Line (Contractor to Verify Condition).
7. (2) Replace Existing Guardrail For Light Standard to be Located with Less Than 3' Clearance From Guardrail. Replace with Thrie-Beam Guardrail per Proj Sht No. 48.
8. (2) Similar to Light Standard Setback Condition No. 1 per Sheet E26, except Setback shall be 14'.
9. (2) Similar to Light Standard Setback Condition No. 2 per Sheet E26, except Setback shall be 14'.



APPROVED BY:

Dennis M. Nishimura 7/10/03

CHIEF, WASTEWATER BRANCH, DPP DATE



40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

REVISION	DATE	DESCRIPTION	BY	APPROVED
2	1/21/05	Added Notes	RHA	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLANS

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED Date: SEPT 2002

SHEET No. E11 OF 31 SHEETS

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2962-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

K. Ouchi

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

LAST SAVE: 06/17/03 @ 09:03:50 BY: TM PLOT SC 1=40

"AS-BUILT"

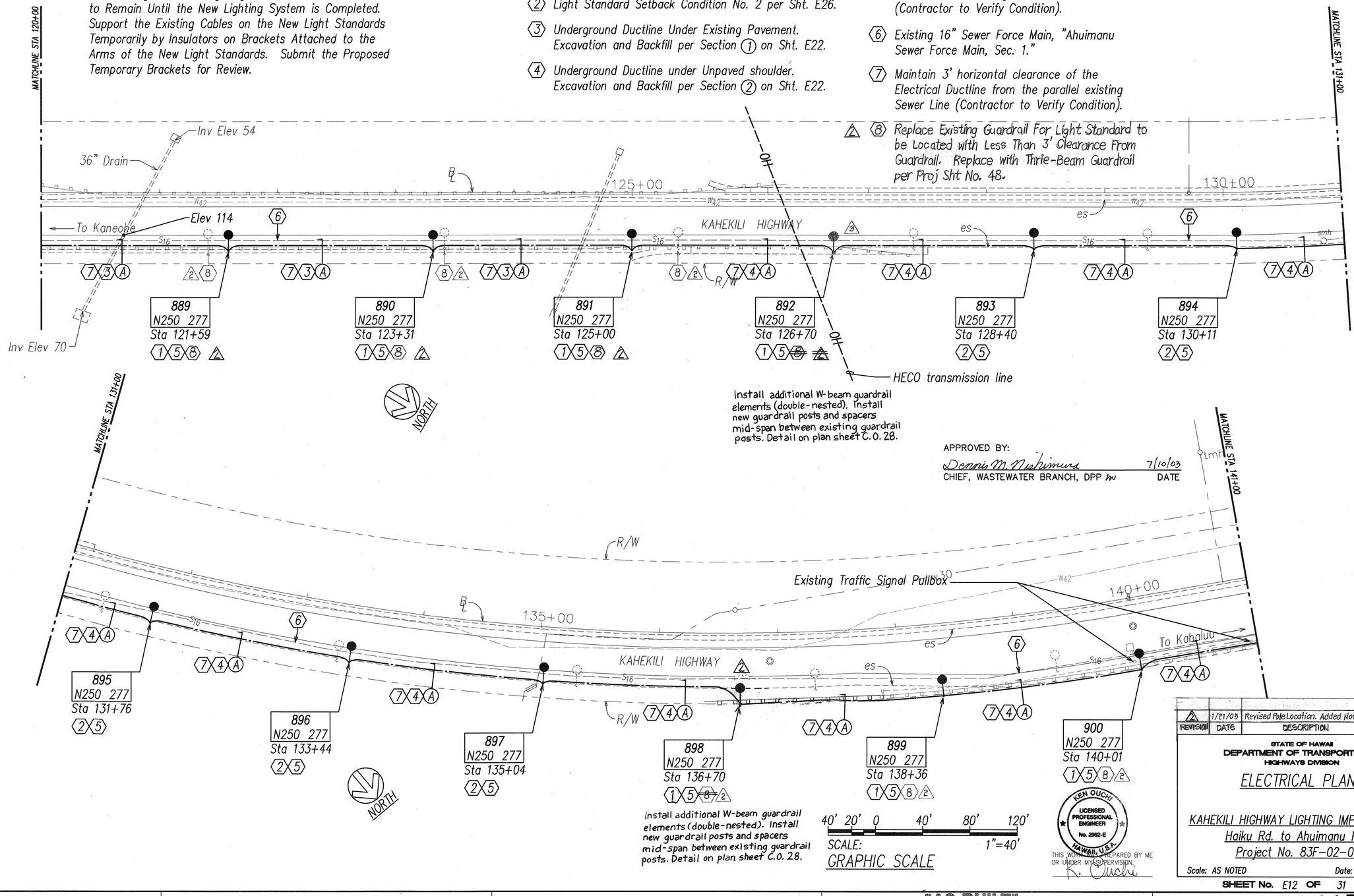
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	C.O.75	98

SHEET GENERAL NOTE

New Roadway Light Standards are Located In-line with the Existing Overhead Lighting Circuit Cables Which are to Remain Until the New Lighting System is Completed. Support the Existing Cables on the New Light Standards Temporarily by Insulators on Brackets Attached to the Arms of the New Light Standards. Submit the Proposed Temporary Brackets for Review.

SHEET NOTES

1. *Light Standard Setback Condition No. 1 per Sht. E26.*
2. *Light Standard Setback Condition No. 2 per Sht. E26.*
3. *Underground Ductline Under Existing Pavement. Excavation and Backfill per Section (1) on Sht. E22.*
4. *Underground Ductline under Unpaved shoulder. Excavation and Backfill per Section (2) on Sht. E22.*
5. *Maintain 5' Horizonal Clearance Between Light Standard and Existing Sewer Force Main (Contractor to Verify Condition).*
6. *Existing 16" Sewer Force Main, "Ahuimanu Sewer Force Main, Sec. 1."*
7. *Maintain 3' horizontal clearance of the Electrical Ductline from the parallel existing Sewer Line (Contractor to Verify Condition).*
8. *Replace Existing Guardrail For Light Standard to be Located with Less Than 3' Clearance From Guardrail. Replace with Thrie-Beam Guardrail per Proj Sht No. 48.*



Install additional W-beam guardrail elements (double-nested). Install new guardrail posts and spacers mid-span between existing guardrail posts. Detail on plan sheet C.O. 28.

Install additional W-beam guardrail elements (double-nested). Install new guardrail posts and spacers mid-span between existing guardrail posts. Detail on plan sheet C.O. 28.

APPROVED BY:

Dennis M. Nishimura 7/10/03

CHIEF, WASTEWATER BRANCH, DPP DATE

40' 20' 0 40' 80' 120'

SCALE: 1"=40'

GRAPHIC SCALE

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2962-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

REVISION	DATE	DESCRIPTION	BY	APPROVED
2	1/21/05	Revised Pole Location. Added Note	RHA	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLANS

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED Date: SEPT 2002

SHEET No. E12 OF 31 SHEETS

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

LAST SAVE: 06/17/03 @ 09:04:07 BY: TM PLOT SC: 1=40
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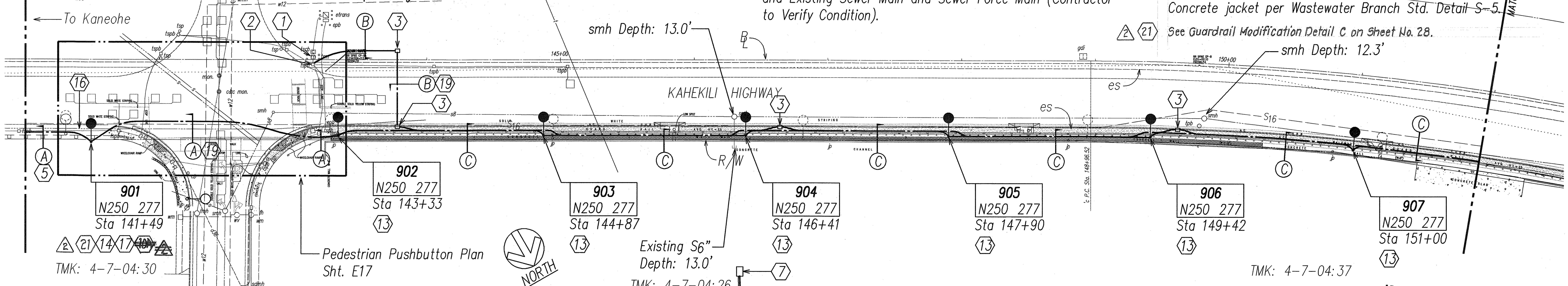
"AS-BUILT"

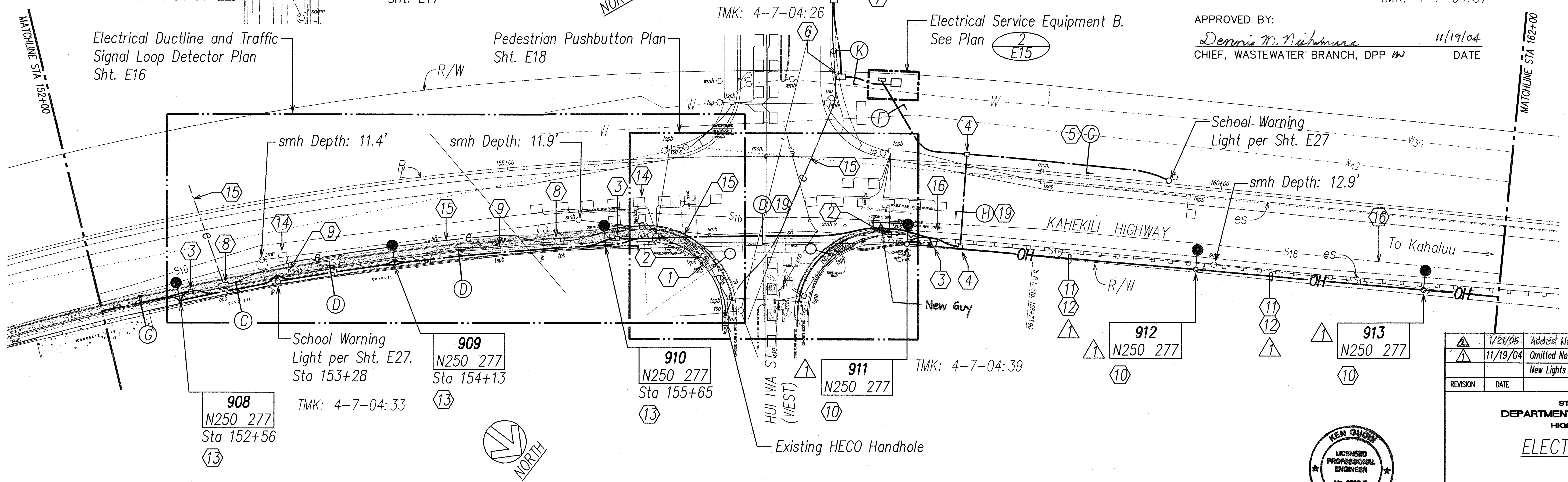
C.O. 75

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	C.0.76	98

SHEET NOTES

1. Existing Traffic Signal Controller.
2. Existing Traffic Signal Pullbox.
3. Traffic Signal Pullbox per Sht. E23.
4. Lighting Pullbox per Sht. E23.
5. Underground Ductline under Unpaved Shoulder. Excavation and Backfill per Section (2) on Sht. E22.
6. 3' x 5' HECO Handhole per HECO Std. Dwg. #15501.
7. Existing HECO Handhole. Coordinate entry of 2-4" Ducts with HECO U.G. Division.
8. Extend Top of Existing HECO Handhole to be Level with the New Sidewalk Surface.
9. Replace Existing Traffic Signal Pullbox with New Pullbox in Same Location.
10. △ Roadway Light on Existing Pole Per 3/E26
10. △2 ~~Replace Existing Guardrail For Light Standard to be Located with Less Than 3' Clearance From Guardrail. Replace with Thrie Beam Guardrail per Proj Sht. No. 48.~~ See Detail "C" on Plan Sheet C.0.28.
11. △ Light Circuit Aerial Cable, Quadruplex, 3#4 XLP Wrapped Around HD Copper Neutral Messenger.
12. △ Traffic Signal Tie Cable Support By Messenger Per 2/E26
13. Light Standard Setback Condition No. 3 per Sht. E26.
14. Light Standard Setback Condition No. 1 Per Sht. E26
15. Existing HECO Ductline.
16. Existing 16" Sewer Force Main, "Ahuimanu Sewer Force Main, Sec. 1."
17. Maintain 5' Horizontal Clearance Between Light Standard and Existing Sewer Main and Sewer Force Main (Contractor to Verify Condition).
18. Maintain 3' horizontal clearance of the Electrical Ductline from the parallel existing Sewer Line (Contractor to Verify Condition).
19. For Electrical Ductline crossing over existing Sewer Line, vertical clearance shall be 24" minimum with top of Ductline 18" minimum below grade. Where 24" vertical clearance cannot be met, provide reinf. concrete jacket for the Sewer Line. Where Electrical Ductline crosses under existing Sewer Line, provide reinf. concrete jacket for the Sewer Line. Concrete jacket shall be per Wastewater Branch Std. Detail S-5 (Contractor to Verify Condition).
20. Provide Reinf. Concrete Jacket for Existing Sewer Line Where Clearance of (17) and (18) cannot be met. Concrete jacket per Wastewater Branch Std. Detail S-5.
21. △2 See Guardrail Modification Detail C on Sheet No. 28.





APPROVED BY:
Dennis M. Nishimura 11/19/04
CHIEF, WASTEWATER BRANCH, DPP DATE

40' 20' 0 40' 80' 120'
SCALE: 1"=40'
GRAPHIC SCALE

REVISION	DATE	DESCRIPTION	BY	APPROVED
△2	1/21/05	Added Note	RHA	
△	11/19/04	Omitted New Light Poles and U.G. Feed. New Lights on Existing Poles w/O.H. Feed.	RHA	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLANS

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED Date: SEPT 2002

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2862-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SHEET No. E13 OF 31 SHEETS

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

"AS-BUILT"

C.O. 76

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	C.0.77	98

SHEET NOTES

⟨1⟩ Roadway Light on Existing Wood Pole Per (3 / E26)

⟨2⟩ Light Circuit Aerial Cable, Quadruplex, 3#4 XLP Wrapped Around HD Copper Neutral Messenger.

⟨3⟩ Traffic Signal Tie Cable Support By Messenger Per (2 / E26)

⟨4⟩ Roadway Light Connected to Existing Meter on Pole per Light 924 Feeder Diagram on Sht E20.

⟨5⟩ Existing Traffic Signal Pullbox.

⟨6⟩ Guy Strand, 3/16" Galv. Steel, Utilities Grade.

⟨7⟩ Existing 16" Sewer Force Main, "Ahuimanu Sewer Force Main, Sec. 1."

⟨8⟩ Maintain 5' Horizontal Clearance Between Light Standard and Existing Sewer Main and Sewer Force Main (Contractor to Verify Condition).

⟨9⟩ Guy Pole, 35' Class 4 Wood.

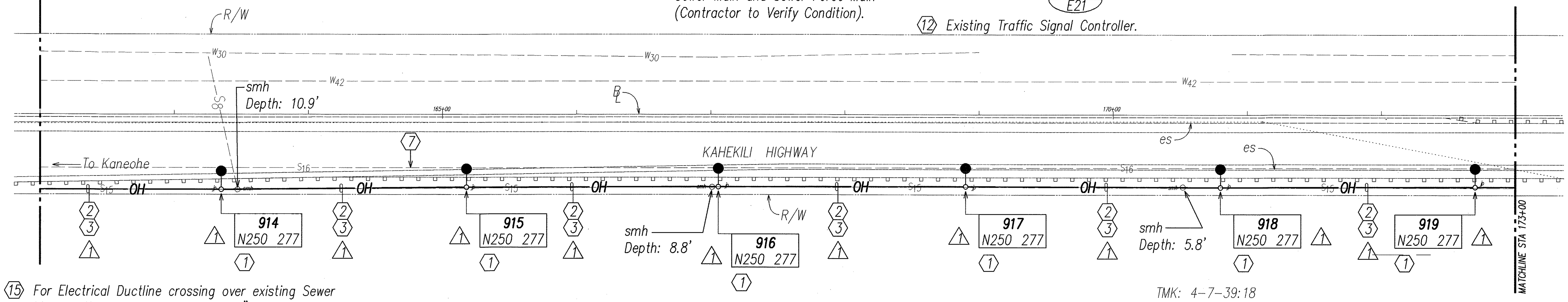
⟨10⟩ Down Guy Assembly with Guy Strand, 5/8" x 8' Galv. Steel Anchor Rod, 8" Screw Anchor, and Pole Line Hardware as required.

⟨11⟩ Electrical Ductline Crossing Existing Sewer Force Main per Section (3 / E21)

⟨12⟩ Existing Traffic Signal Controller.

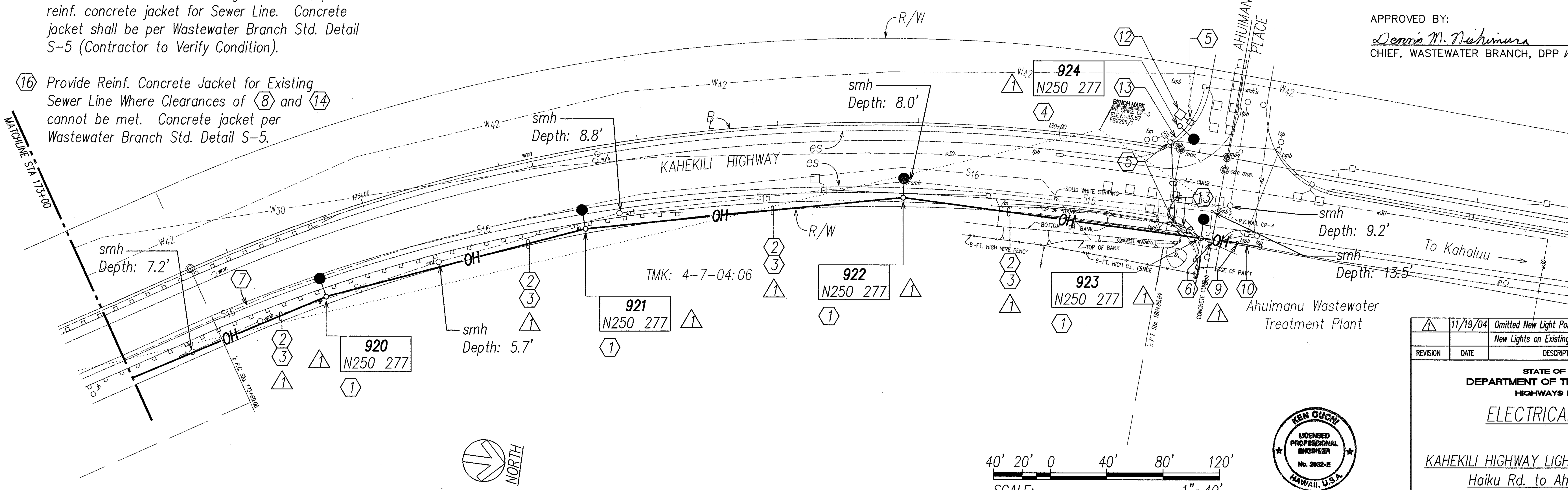
⟨13⟩ Traffic Signal Tie Cable in existing 2" duct, replacing the existing Tie Cable.

⟨14⟩ Maintain 3' horizontal clearance of the Electrical Ductline from the parallel existing Sewer Line (Contractor to Verify Condition).



⟨15⟩ For Electrical Ductline crossing over existing Sewer Line, vertical clearance shall be 24" minimum with top of Ductline 18" minimum below grade. Where 24" vertical clearance cannot be met, provide reinf. concrete jacket for the Sewer Line. Where Electrical Ductline crosses under existing Sewer Line, provide reinf. concrete jacket for Sewer Line. Concrete jacket shall be per Wastewater Branch Std. Detail S-5 (Contractor to Verify Condition).

⟨16⟩ Provide Reinf. Concrete Jacket for Existing Sewer Line Where Clearances of ⟨8⟩ and ⟨14⟩ cannot be met. Concrete jacket per Wastewater Branch Std. Detail S-5.



APPROVED BY:
Dennis M. Nishimura 11/19/04
CHIEF, WASTEWATER BRANCH, DPP — DATE

SCALE: 1"=40'
GRAPHIC SCALE
40' 20' 0 40' 80' 120'

REVISION	DATE	DESCRIPTION	BY	APPROVED
1	11/19/04	Omitted New Light Poles and U.G. Feed. New Lights on Existing Poles w/O.H. Feed.	RHA	

KEN OUCHI — LICENSED PROFESSIONAL ENGINEER — No. 2962-E — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
K. Ouchi

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLANS

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

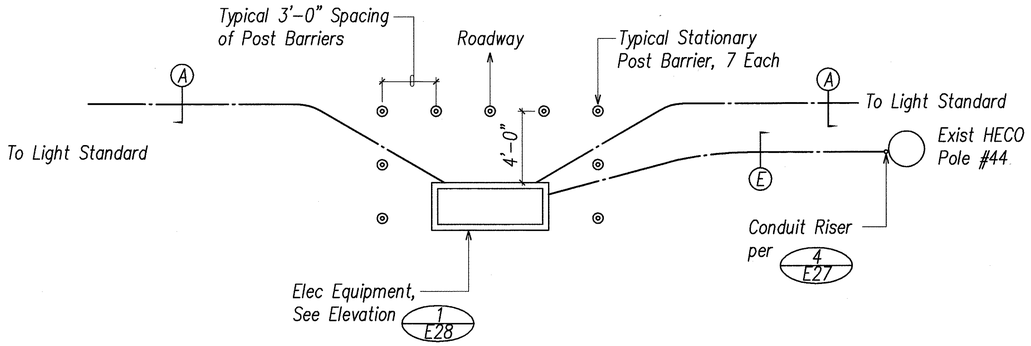
Scale: AS NOTED — Date: SEPT 2002

SHEET No. E14 OF 31 SHEETS

C.O. 77

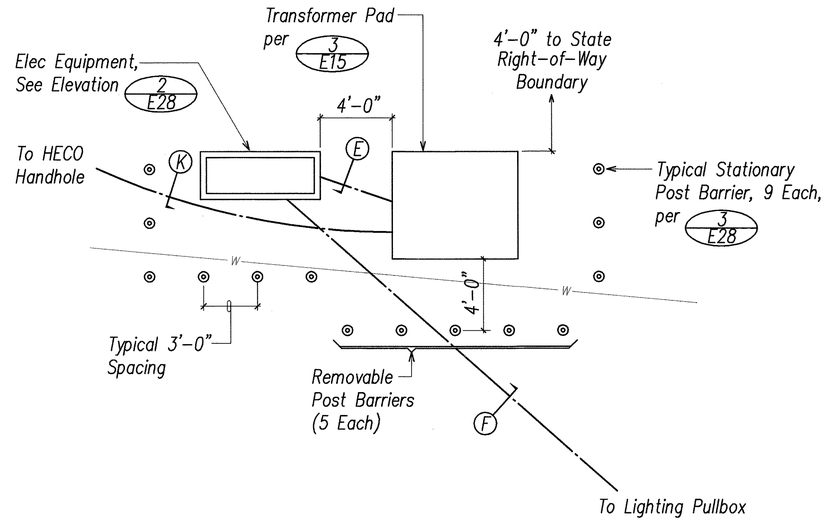
ORIGINAL PLAN / NOTE BOOK / No. — SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY — DATE

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	78	98



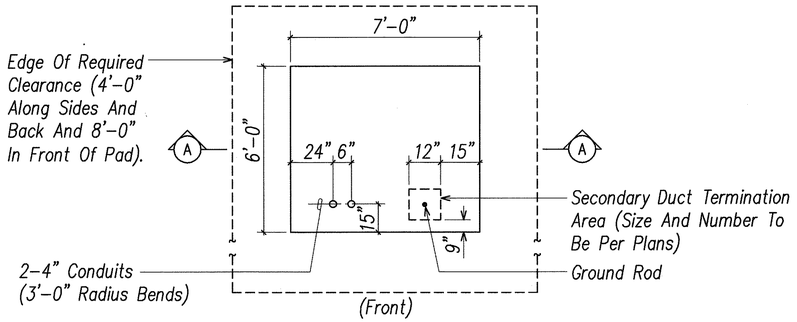
NORTH

1 E15 ELECTRICAL SERVICE EQUIP "A" PLAN
SCALE: 1/4"=1'-0"

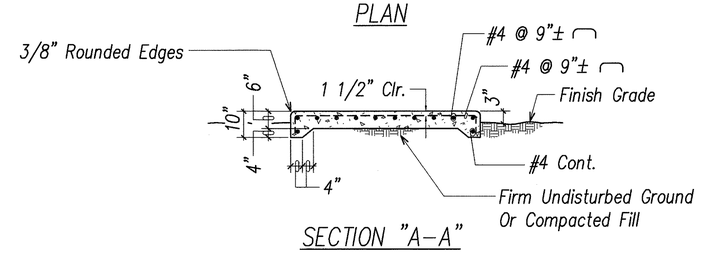


NORTH

2 E15 ELECTRICAL SERVICE EQUIP "B" PLAN
SCALE: 1/4"=1'-0"



PLAN



SECTION "A-A"

3 E15 TRANSFORMER PAD
Not to Scale

Notes:

1. See HECO Standard Dwg. No. 30-5000 for Locations and Clearances.
2. See HECO Standard Dwg. No. 22-2005 for Additional Requirements.
3. 5/8" Dia. x 8'-0" Ground Rod Furnished By HECO and Contractor Installed. If Ground Resistance Exceeds 25 OHMS Provide Additional Ground Rod Or Ground Wire.
4. Pad To Be Per Heco Standard Dwg. No. 30-5014.
5. Concrete: 3000 PSI In 28 Days.
6. Reinforcing: Clean and New Round Deformed Bars.
7. Construction To Comply With ACI 318 As Amended.
8. Locate, Secure, And Cap All Conduits Before Pouring Pad.

4' 2' 0 4' 8' 12'
SCALE: 1/4"=1'-0"
GRAPHIC SCALE

KEN OUCHI
LICENSED PROFESSIONAL ENGINEER
No. 2962-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL SERVICE EQUIPMENT PLANS

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED Date: SEPT 2002

SHEET No. E15 OF 31 SHEETS

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

LAST SAVE: 06/18/03 @ 10:23:23 BY: TE PLOT SC: 1/4"=1'
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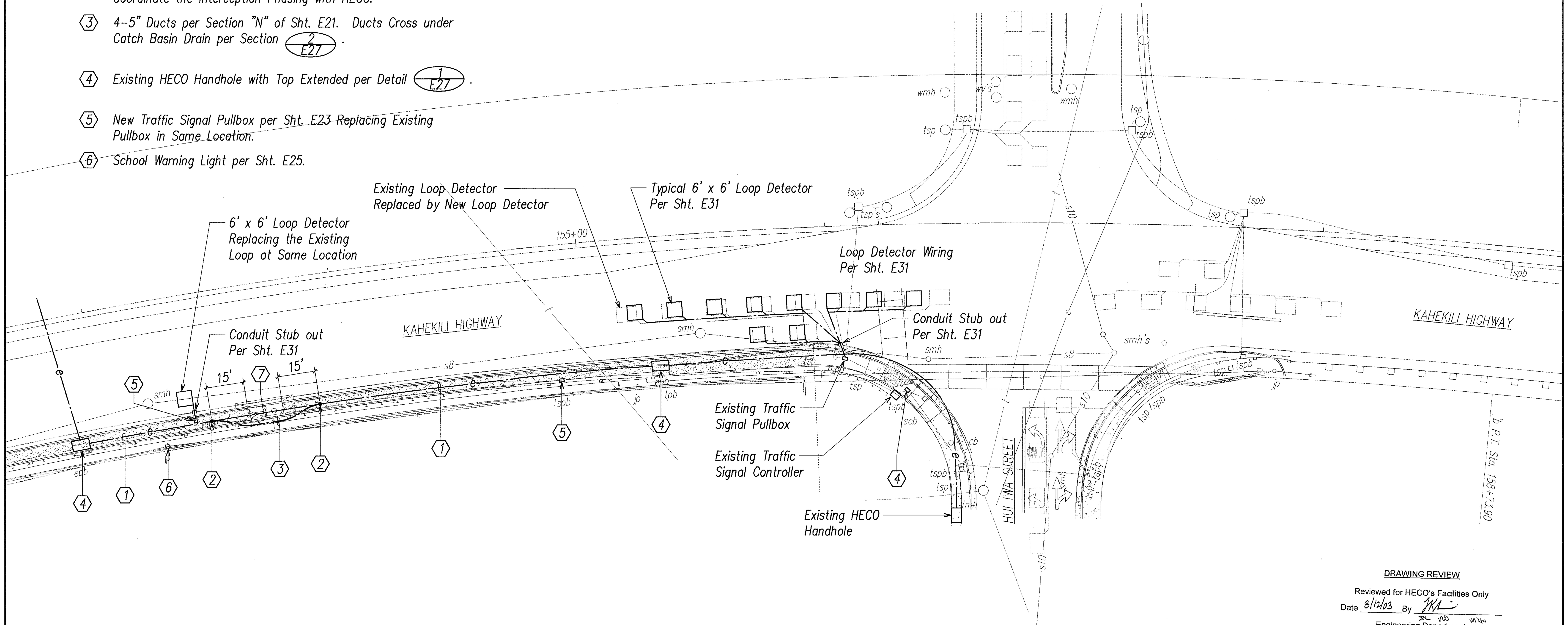
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	79	98

SHEET NOTES

1. Existing 4–5" Ducts, 2 High by 2 Wide, Encased in Concrete.
2. Intercept Existing 4–5" Ducts in 2 Phases; 2 Ducts per Phase. Coordinate the Interception Phasing with HECO.
3. 4–5" Ducts per Section "N" of Sht. E21. Ducts Cross under Catch Basin Drain per Section 2/E27.
4. Existing HECO Handhole with Top Extended per Detail 1/E27.
5. New Traffic Signal Pullbox per Sht. E23 Replacing Existing Pullbox in Same Location.
6. School Warning Light per Sht. E25.
7. Existing Ductline to be Abandoned After Removal of Cables by HECO and to be Demolished as Necessary for Construction of Catch Basin.



ELECTRICAL DUCTLINE AND TRAFFIC SIGNAL LOOP DETECTOR PLAN

SCALE: 1"=20'

20' 10' 0 20' 40' 60'
SCALE: 1"=20'
GRAPHIC SCALE

DRAWING REVIEW
Reviewed for HECO's Facilities Only
Date 8/12/03 By [signature]
Engineering Department
Hawaiian Electric Company, Inc.
HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

KEN OUCHI
LICENSED PROFESSIONAL ENGINEER
No. 6962-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
K. Ouchi

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL DUCTLINE AND TRAFFIC SIGNAL LOOP DETECTOR PLAN
KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M
Scale: AS NOTED Date: SEPT 2002
SHEET No. E16 OF 31 SHEETS

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

LAST SAVE: 08/08/03 @ 08:52:33 BY: TE PLOT SC 1=20

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	80	98

Sheet Notes:

⟨1⟩ Pedestrian pushbutton pedestal per (3/E30).

⟨2⟩ 1-2"C per section "M" on sht. E21 with 3-2C #14 Type 2 Cables. Excavation and Backfill per Section (3) on Sht. E22.

⟨3⟩ 1-2"C per section "M" with 1-2C #14 Type 2 Cable. Excavation and Backfill per Section (3) on Sht. E22.

⟨4⟩ Replace existing cables for pedestrian pushbuttons with 3-2C #14 Type 2 Cables in same 2" duct. Other cables in same duct to remain.

⟨5⟩ Replace existing cables for pedestrian pushbuttons with 2-2C #14 Type 2 Cables in same 2" duct. Other cables in same duct to remain.

⟨6⟩ Replace existing cables for pedestrian pushbuttons with 1-2C #14 Type 2 Cable in same 2" duct. Other cables in same duct to remain.

⟨7⟩ Replace pedestrian pushbutton on signal light standard. New pushbutton per Sht. E30.

⟨8⟩ Remove existing pedestrian pushbutton(s) on existing signal light standard.

⟨9⟩ Remove cable for pedestrian pushbutton.

⟨10⟩ Replace existing loop detectors in pavement with new loop detectors in same location. Wiring per sht. E31.

⟨11⟩ Connect loop detector wires to existing home-run cable in pullbox.

⟨12⟩ New interconnect Type 3 cables (2). See diagram on sht. E20.

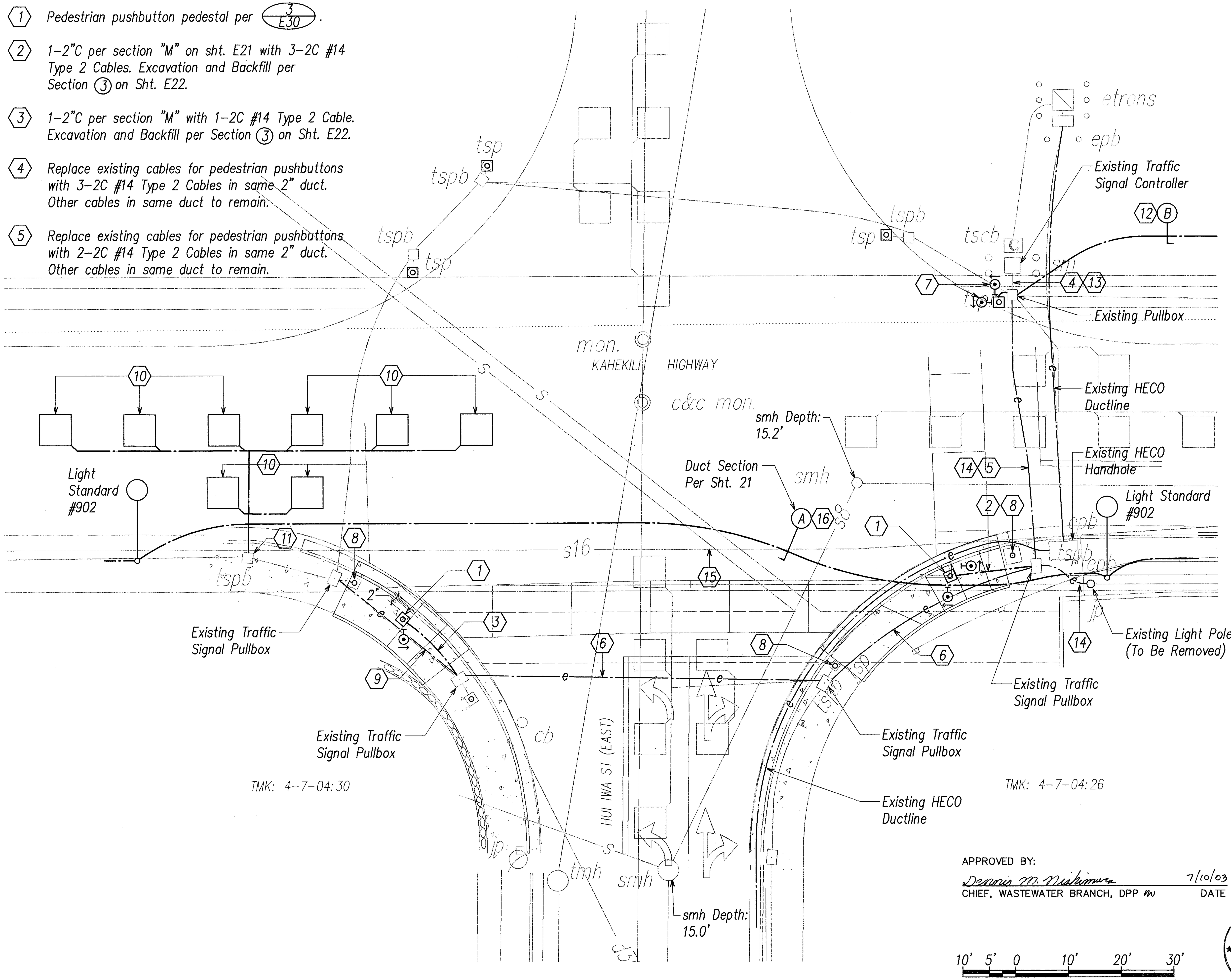
⟨13⟩ Replace existing tie cables (2) with new cables in same duct.

⟨14⟩ Remove existing interconnect tie cables (2).

⟨15⟩ Existing 16" Sewer Force Main, "Ahuimanu Sewer Force Main, Sec. 1."

⟨16⟩ For Electrical Ductline crossing over existing Sewer Line, vertical clearance shall be 24" minimum with top of Ductline 18" minimum below grade. Where 24" vertical clearance cannot be met, provide reinf. concrete jacket for the Sewer Line. Where Electrical Ductline crosses under existing Sewer Line, provide reinf. concrete jacket for the Sewer Line. Concrete jacket shall be per Wastewater Branch Std. Detail S-5 (Contractor to Verify Condition).

General requirements per notes on sht. E1.



PEDESTRIAN PUSHBUTTON PLAN
HUI IWA ST. INTERSECTION – EAST

APPROVED BY:
Dennis M. Nishimura 7/10/03
CHIEF, WASTEWATER BRANCH, DPP — DATE

10' 5' 0 10' 20' 30'
SCALE: 1"=10'
GRAPHIC SCALE

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2962-E HAWAII, U.S.A.
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K. Ouchi

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PEDESTRIAN PUSHBUTTON PLAN
HUI IWA ST. INTERSECTION – EAST
KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED — Date: SEPT 2002

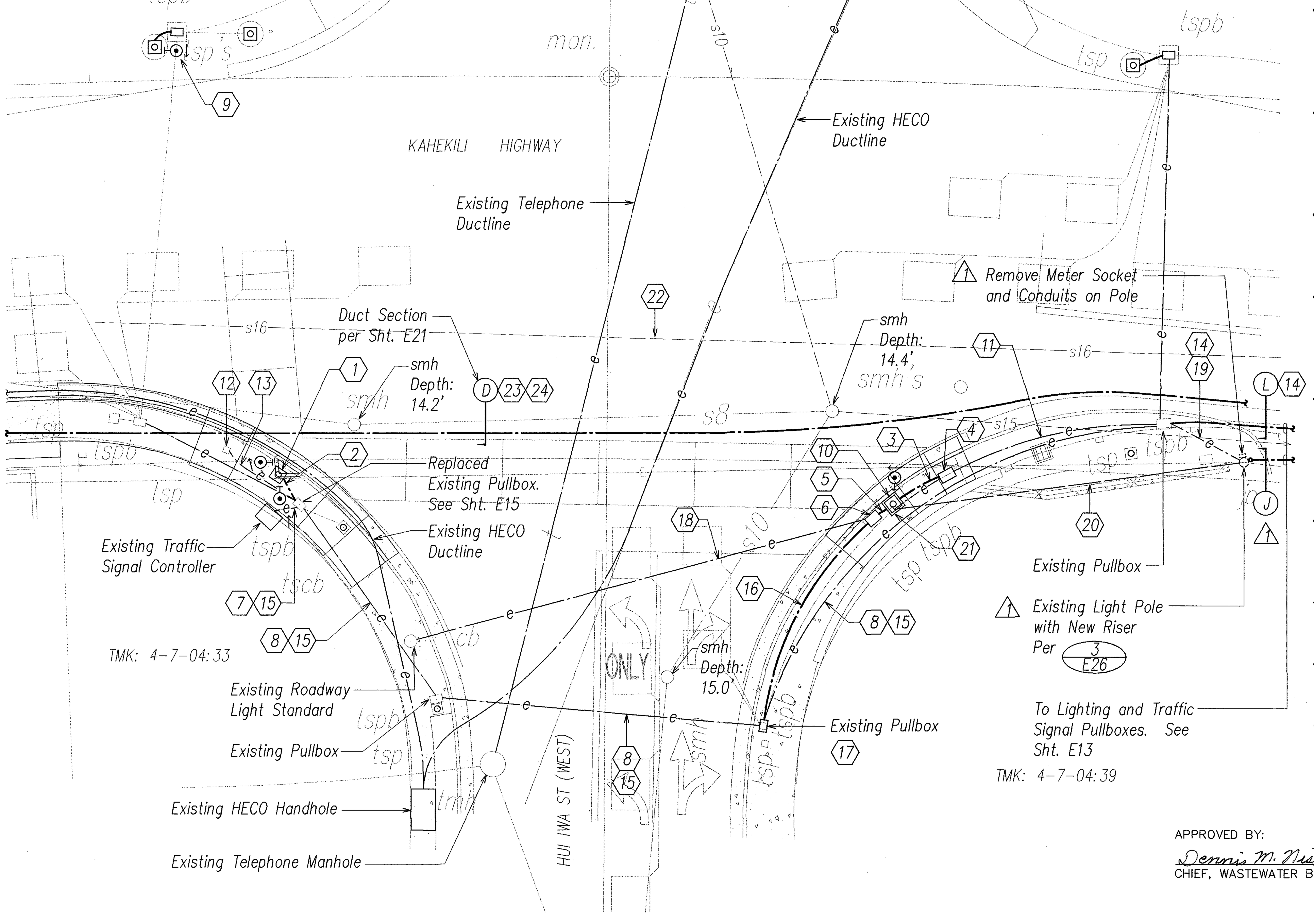
SHEET No. E17 OF 31 SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	C.O.81	98

Sheet Notes:

1. Pedestrian Pushbutton Pedestal Per 3/E30.
2. 1-2"C Per Section "M" on Sht. E21 with 3-2C #14 Type 2 Cables. Excavation and Backfill per Section (3) on Sht. E22.
3. 1-2"C Per Section "M" with Type 5 Cable for Traffic Signal "Walk" Light and Type 2 Cable for Pedestrian Pushbutton.
4. Pullbox Intercepting Existing Traffic Signal Duct. Pullbox per Sht. E23.
5. 1-2"C Per Section "M" on Sht. 21 with 3#6 Lighting Feeder Cables and 3C #6 Type 6 Cable.
6. Pullbox Intercepting Existing Roadway Lighting Duct. Pullbox per Sht. E23.
7. Replace Existing Cables for Pedestrian Pushbuttons with 2-2C #14 Type 2 Cable in Same Duct. Other Cables in Same Duct to Remain.
8. Replace Existing Cables for Pedestrian Pushbuttons with 1-2C #14 Type 2 Cables in Same Duct. Other Cables in Same Duct to Remain.
9. Replace pedestrian pushbutton on existing signal light standard. New pushbutton per 1/E30.
10. Relocated Roadway Light Standard with Existing Traffic Signal "Walk" Light and New Pedestrian Pushbutton. Locate per plan 3/E27.
11. Existing Traffic Signal Cables for "Walk" Light and Pedestrian Push-button. Reconnect to Relocated "Walk" Light and New Pedestrian Pushbutton.
12. Remove Existing Pedestrian Pushbuttons on Existing Signal Light Standard.
13. Remove Cable for Pedestrian Pushbutton.
14. New Interconnect Type 3 Cable. See Diagram on Sht E20.
15. Replace Existing Tie Cable with New Cable in Same Duct. Other Cables in Same Duct to Remain.
16. 1-2"C Per Section "M" on Sht. E21 with 3C #6 Type 6 Cable. Cut and Patch Concrete Walkway. Excavation and Backfill per Section (2) on Sht. E22.
17. Connect New and Existing Type 6 Cables in Pullbox.
18. Replace Existing Lighting Feeder Cables with New 3 #6 Cables.
19. Replace Existing Tie Cable in Existing Duct.
20. Remove Overhead Electrical Service Cable.
21. Demolish Concrete Foundation of Relocated Roadway Light Standard, Including Anchor Bolts, to Below New Sidewalk Surface.
22. Existing 16" Sewer Force Main, "Ahuimanu Sewer Force Main, Sec. 1."
23. Maintain 3' horizontal clearance of the Electrical Ductline from the parallel existing Sewer Line (Contractor to Verify Condition).
24. For Electrical Ductline crossing over existing Sewer Line, vertical clearance shall be 24" minimum with top of Ductline 18" minimum below grade. Where 24" vertical clearance cannot be met, provide reinf. concrete jacket for the Sewer Line. Where Electrical Ductline crosses under existing Sewer Line, provide reinf. concrete jacket for Sewer Line. Concrete jacket shall be per Wastewater Branck Std. Detail S-5 (Contractor to Verify Condition).



PEDESTRIAN PUSHBUTTON PLAN

SCALE: 1"=10'-0"
(HUI IWA ST. INTERSECTION - WEST)

APPROVED BY:
Dennis M. Nishimura 11/19/04
CHIEF, WASTEWATER BRANCH, DPP — DATE

10' 5' 0 10' 20' 30'
SCALE: 1"=10'
GRAPHIC SCALE

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2982-E HAWAII, U.S.A.

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K. Ouchi

REVISION	DATE	DESCRIPTION	BY	APPROVED
1	11/19/04	Exisiting Light Pole to Remain. New U.G. Ducts.	RHA	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PEDESTRIAN PUSHBUTTON PLAN
HUI IWA ST. INTERSECTION - WEST
KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED — Date: SEPT 2002

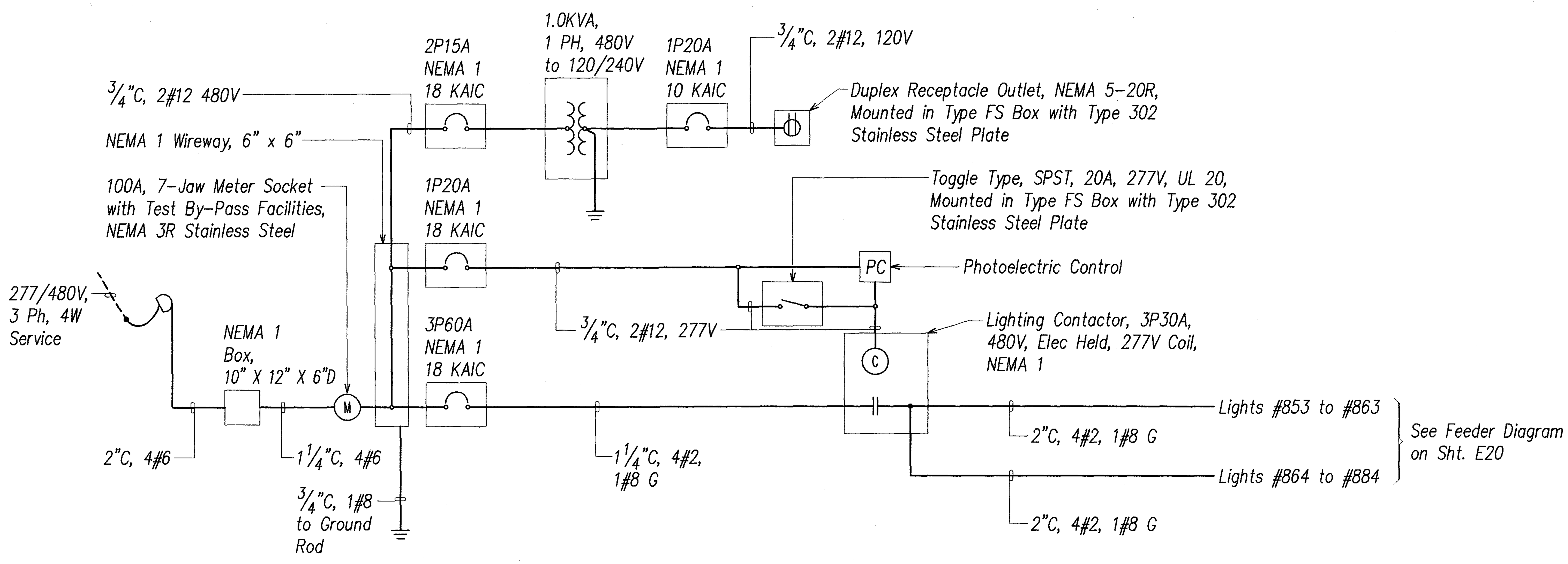
SHEET No. E18 OF 31 SHEETS

C.O. 81

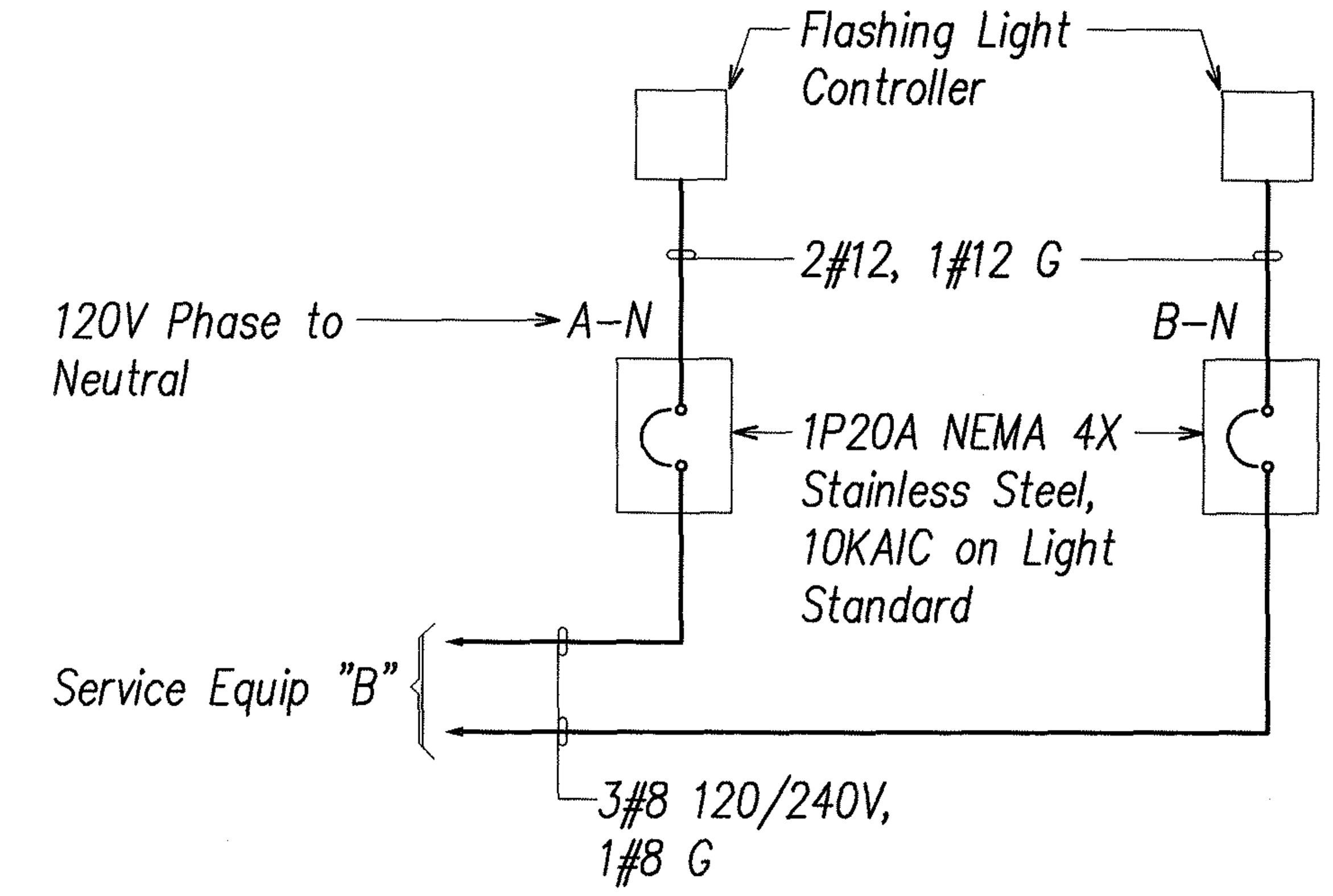
ORIGINAL PLAN / NOTE BOOK / No. — SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY / QUANTITIES BY / CHECKED BY — DATE

LAST SAVE: 11/18/04 @ 09:13:59 BY: GN PLOT SC 1=10

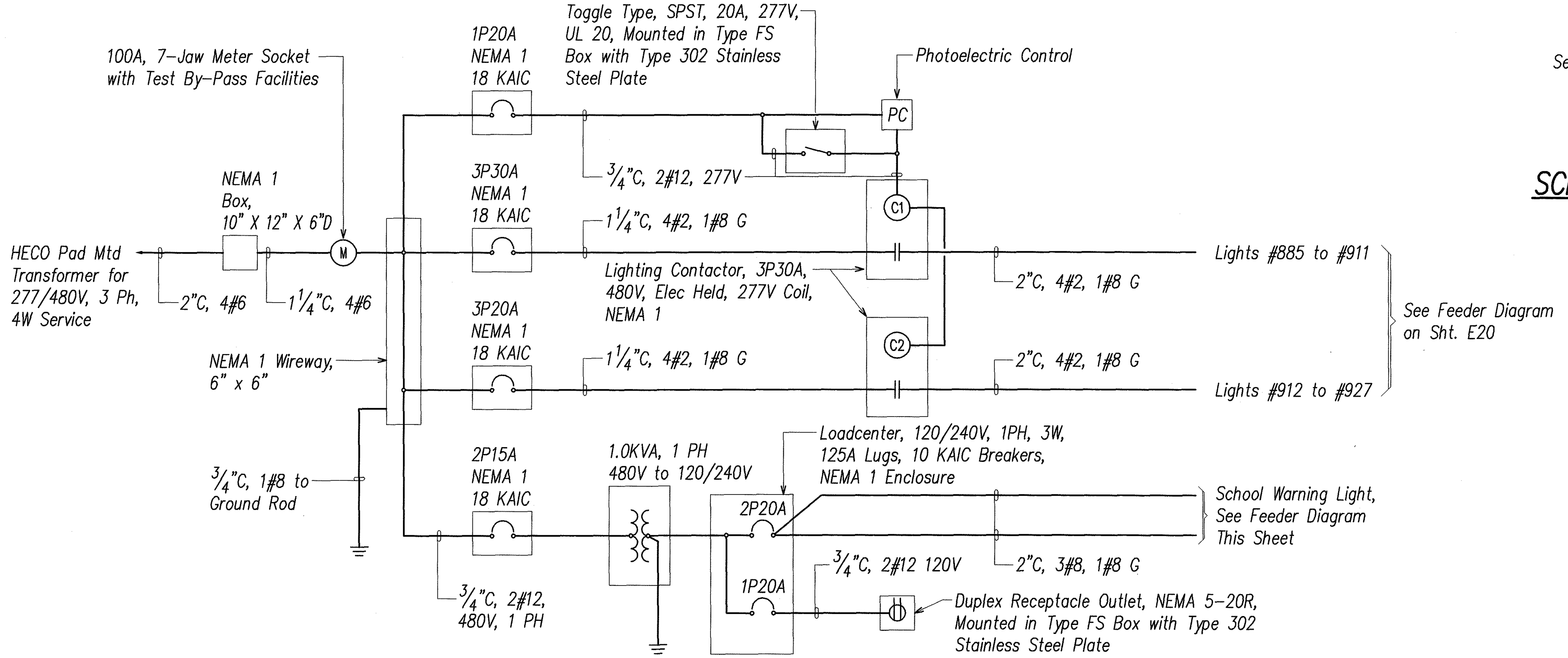
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	82	98



SERVICE EQUIP "A" ELECTRICAL ONE LINE DIAGRAM



SCHOOL WARNING LIGHT FEEDER DIAGRAM



SERVICE EQUIP "B" ELECTRICAL ONE LINE DIAGRAM

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

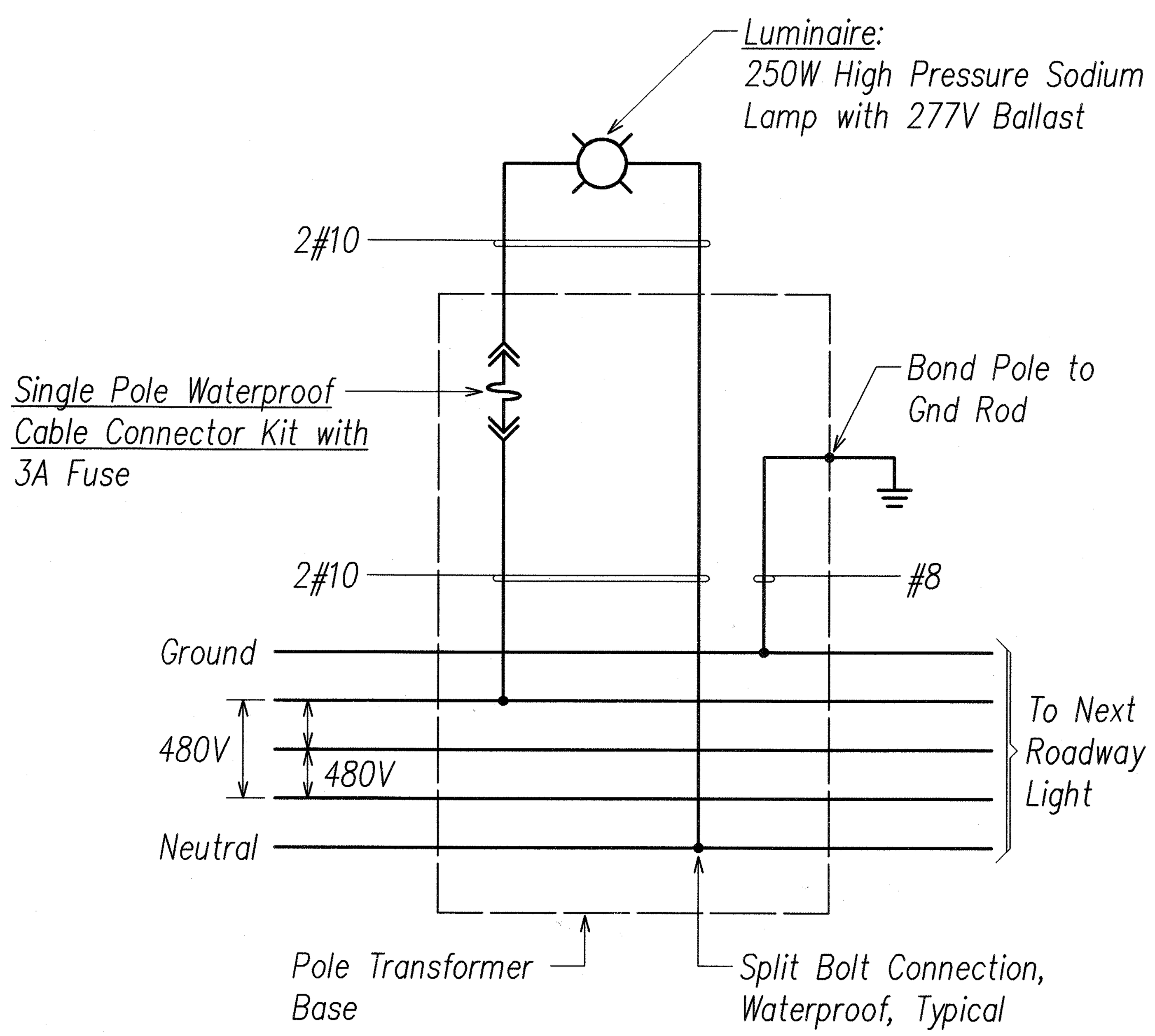
ELECTRICAL DIAGRAMS

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED   Date: SEPT 2002

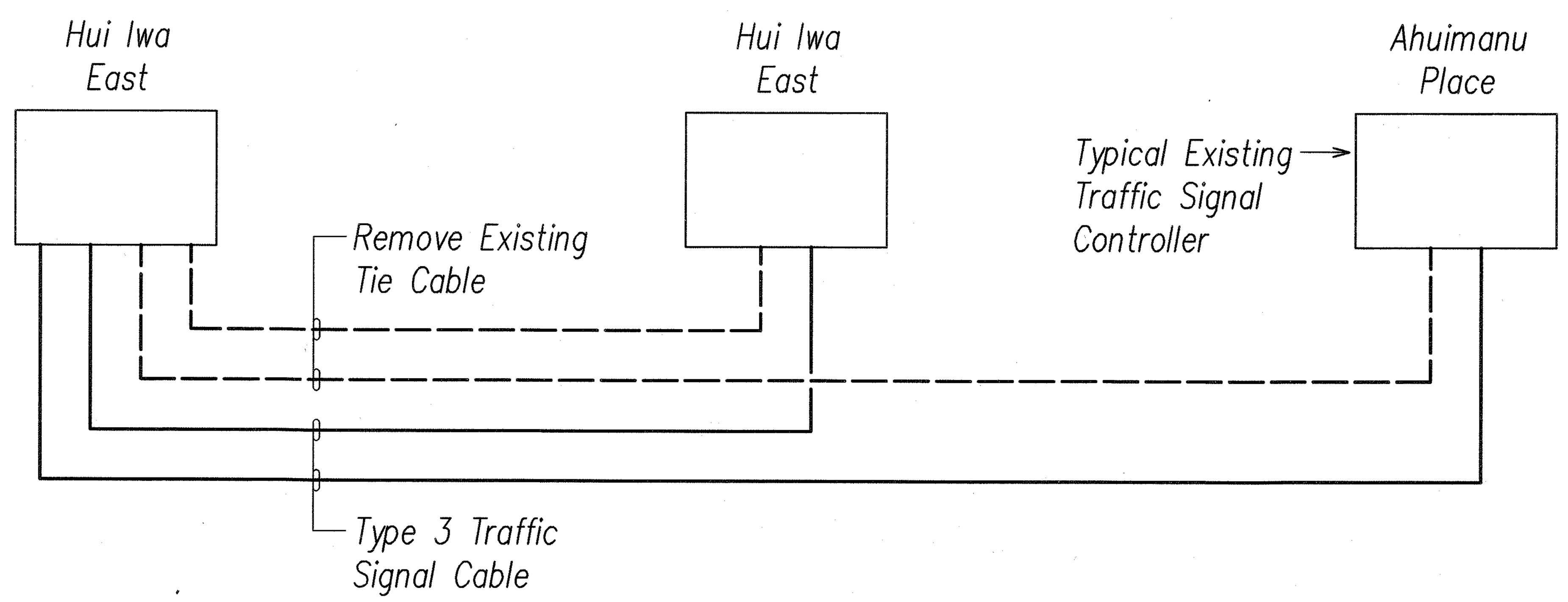
SHEET No. E19 OF 31 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	C.O.83	98



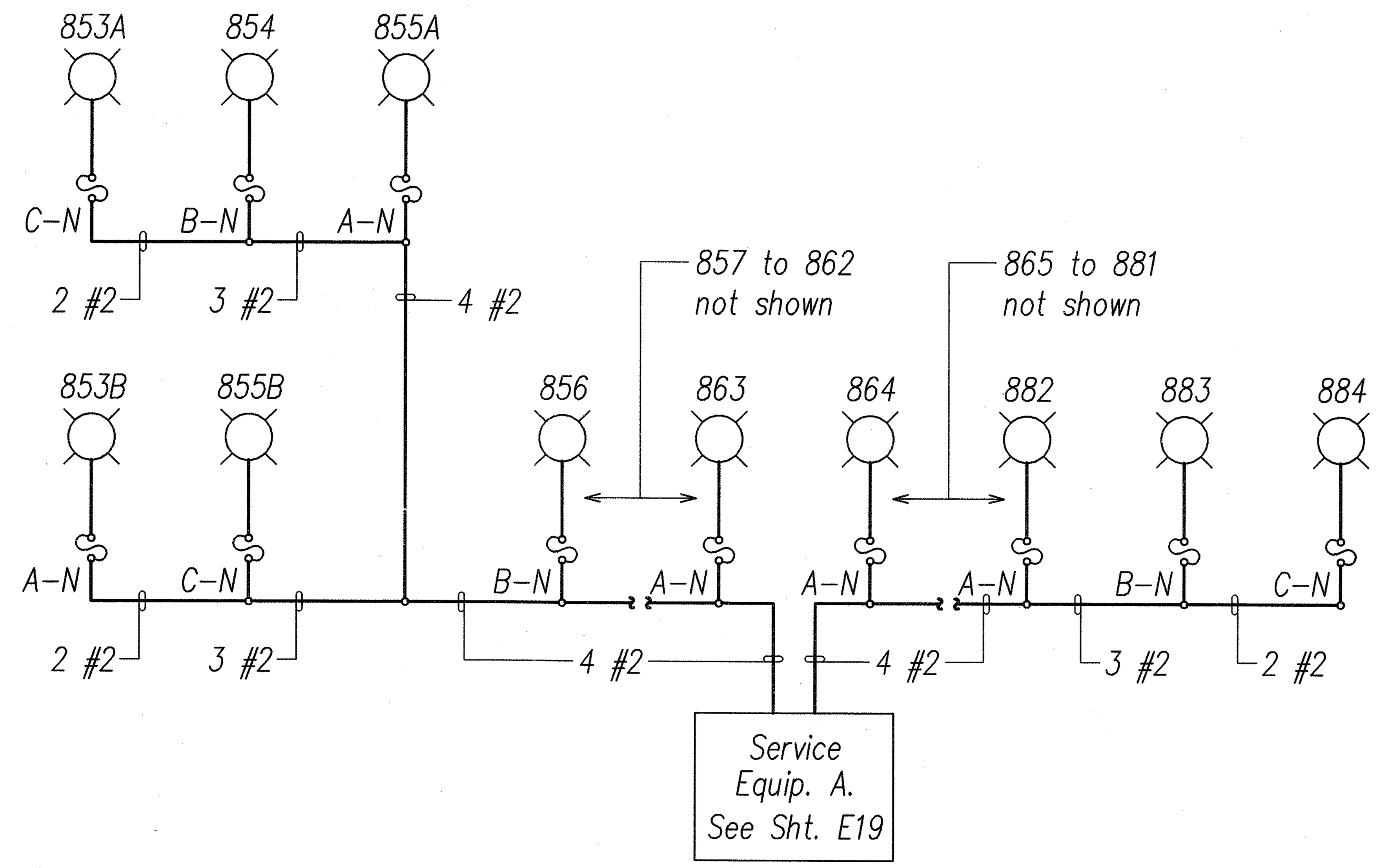
TYPICAL ROADWAY LIGHT CONNECTION DIAGRAM

NOT TO SCALE



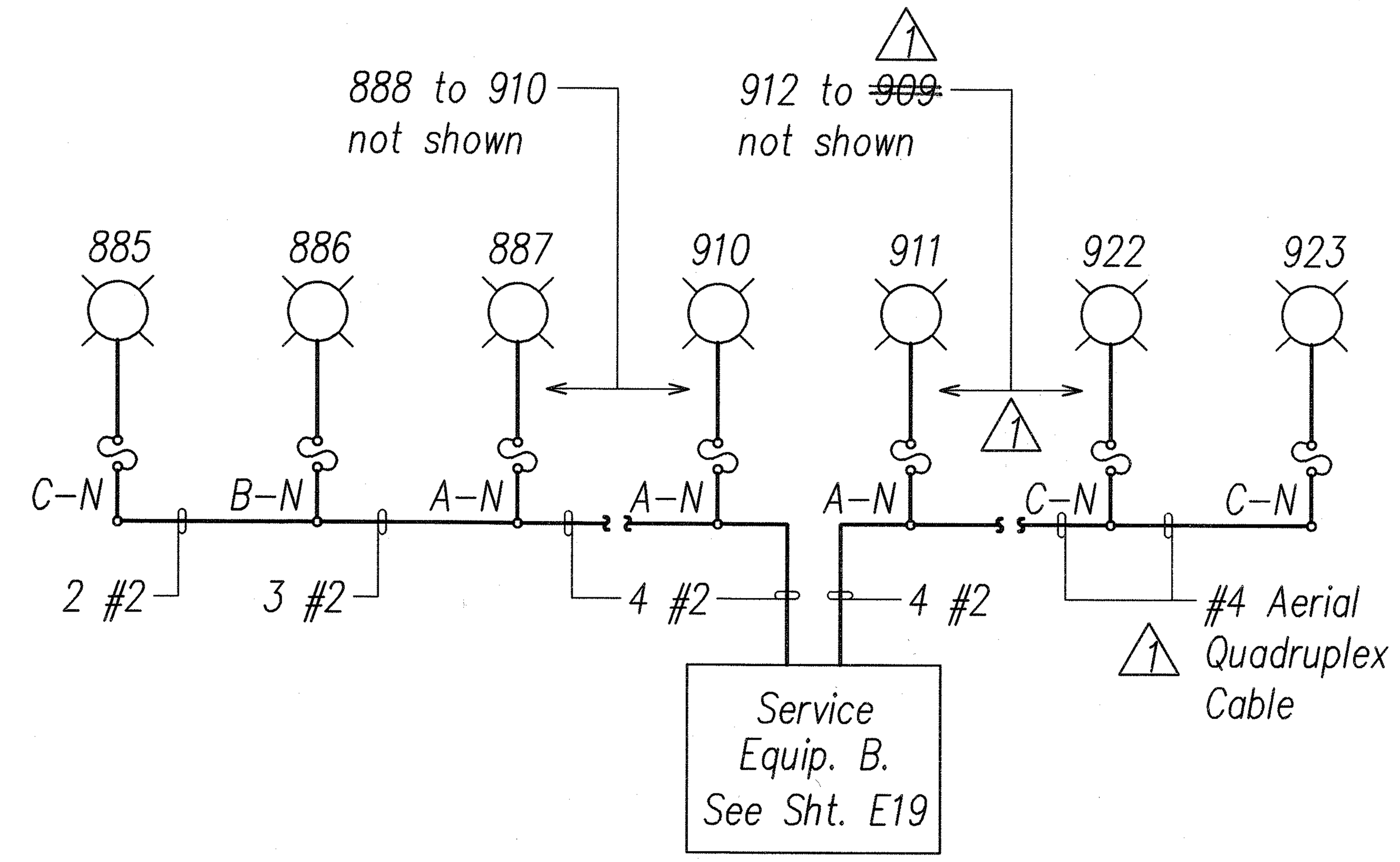
TRAFFIC SIGNAL TIE CABLE DIAGRAM

NOT TO SCALE

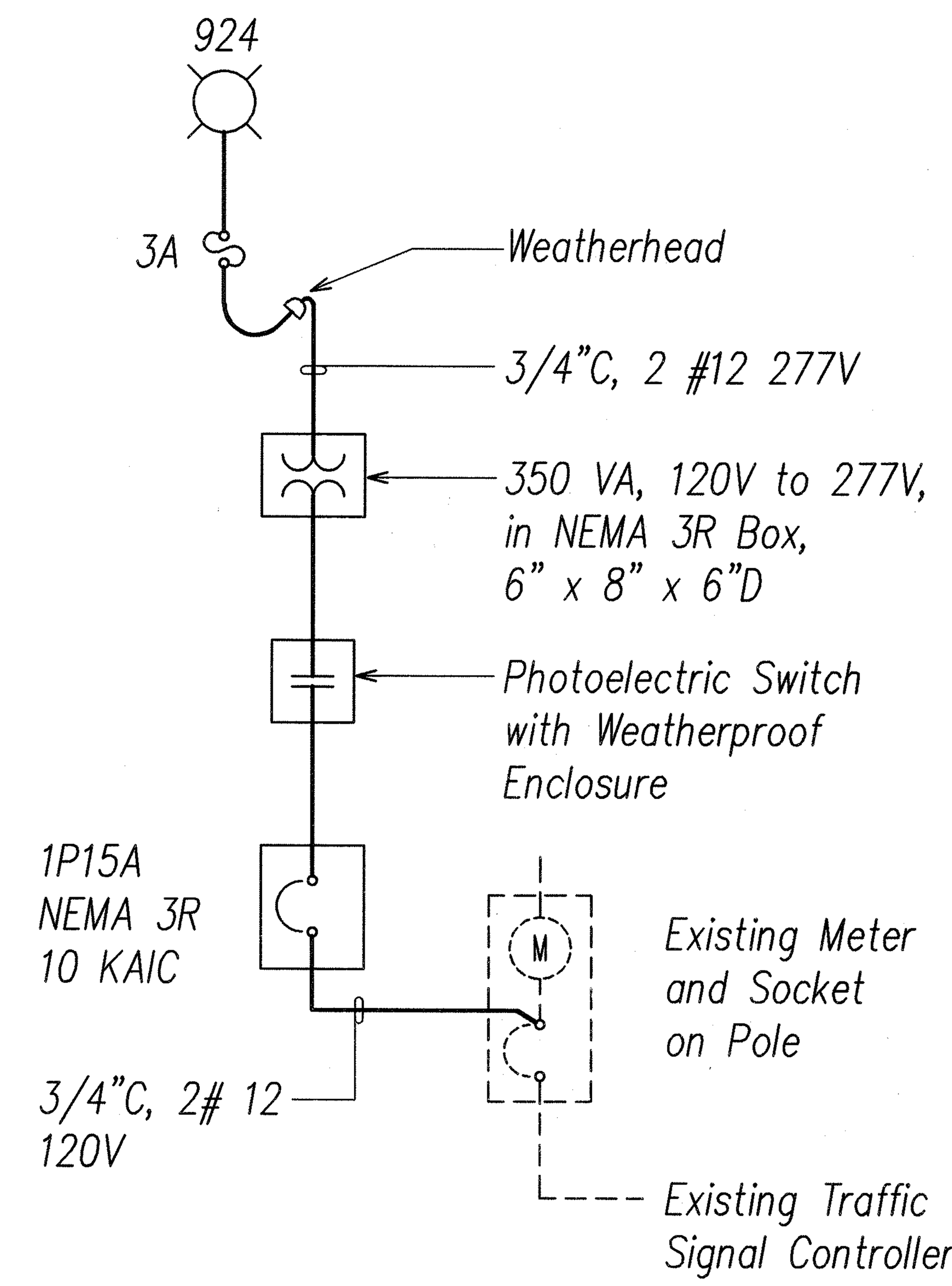


Notes:

1. 1#8 G Included with all #2 Feeder Cables.
2. "A-N" Denotes Phase A to Neutral Connection.



ROADWAY LIGHTING FEEDER DIAGRAMS



ROADWAY LIGHT 924 FEEDER DIAGRAM

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

LAST SAVE: 11/22/04 @ 09:11:31 BY: RN PLOT SC 1"=1"

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KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2982-E HAWAII, U.S.A.

REVISION	DATE	DESCRIPTION	BY	APPROVED
1	11/19/04	Added and Revised Feeder Diagrams	RHA	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY LIGHTING FEEDERS AND TRAF SIGNAL TIE CABLE DIAGRAMS

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

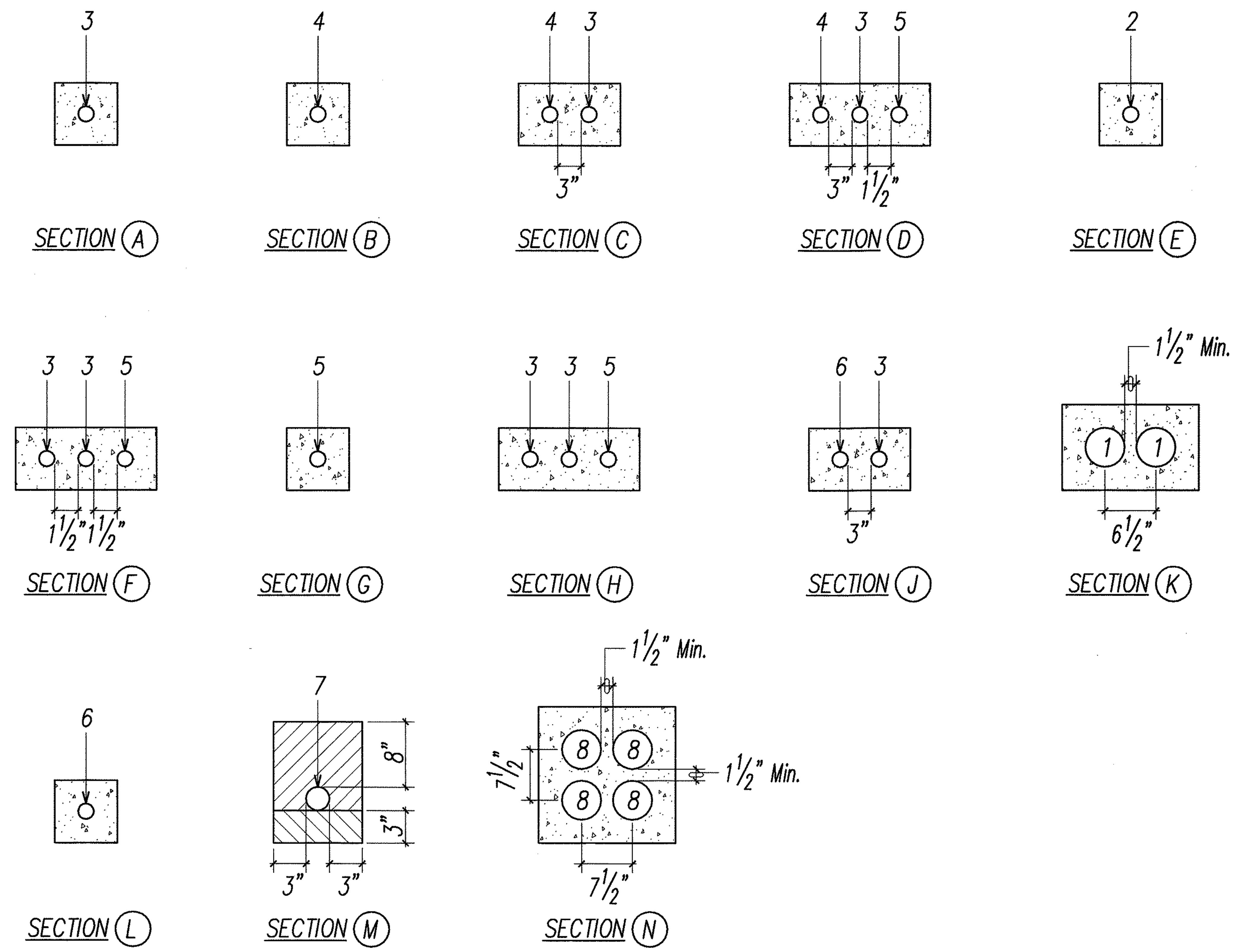
Scale: As Noted — Date: SEPT 2002

SHEET No. E20 OF 31 SHEETS

"AS-BUILT"

C.O. 83

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	84	98



Duct Section Symbols:

- 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, 2500 psi compressive strength @ 28 days.

Trenching for ducts per the excavation and backfill sections on Sht. E22.

DUCT SECTIONS

Not to Scale

UNDERGROUND DUCT SCHEDULE			
NO.	SIZE	USE	CABLES
1	4"	HECO	By HECO
2	2"	277/480V, 3 PH, 4W Service	4#6
3	2"	277/480V Lighting Feeder	See Note 2
4	2"	Traffic Signal	2-Type 3 Tie Cables
5	2"	120V School Warning Light Feeders	3#8, 1#8 G
6	2"	Traffic Signal	1-Type 3 Tie Cable
7	2"	As Noted on Plans	As Noted
8	5"	HECO	By HECO

Schedule Notes:

1. PVC Schedule 40, conduit for Nos. 1 to 6; Schedule 80 for No. 7.
2. See lighting feeder diagrams on Sht. E20.

DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 8/12/03 By JKL

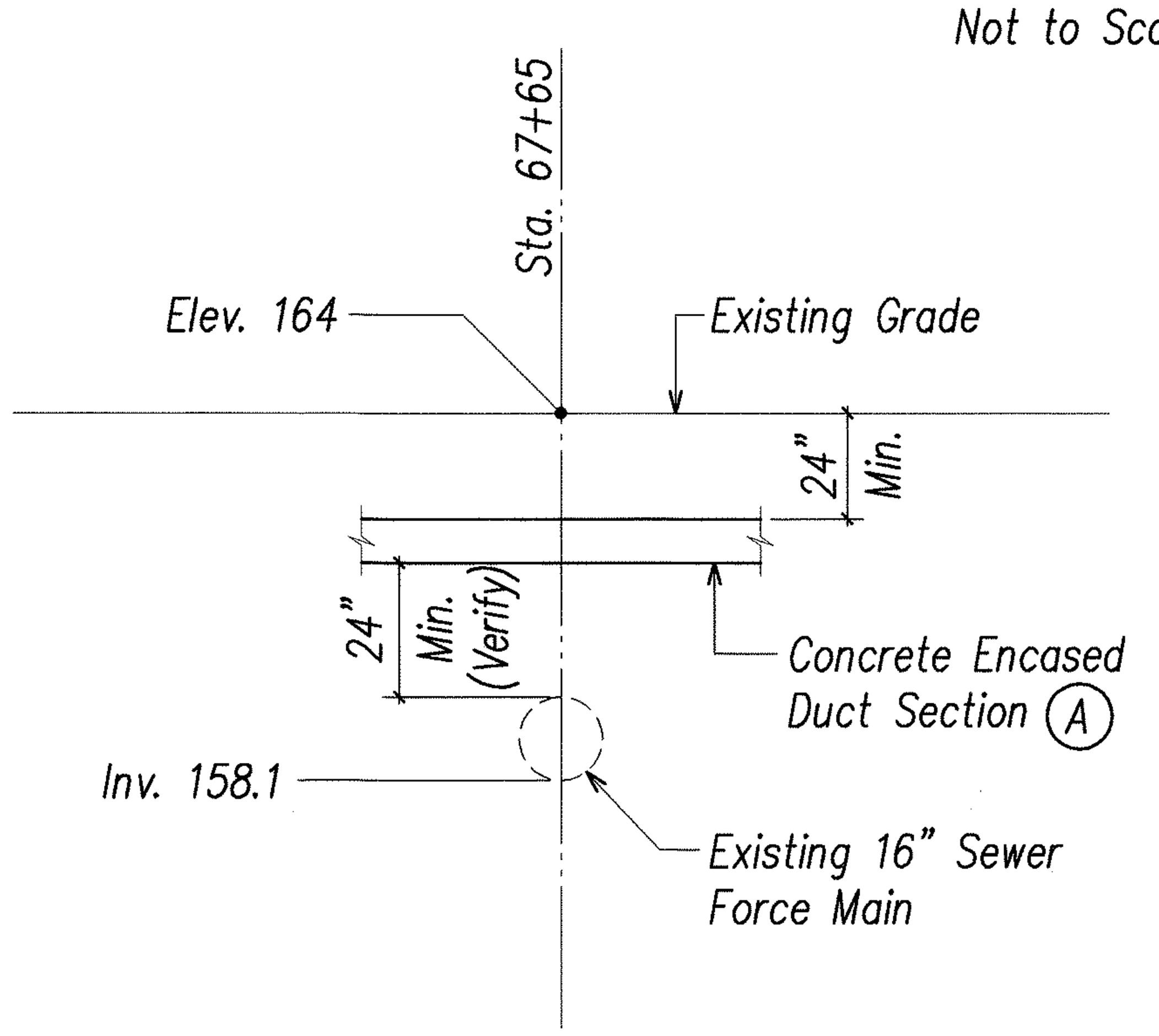
Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

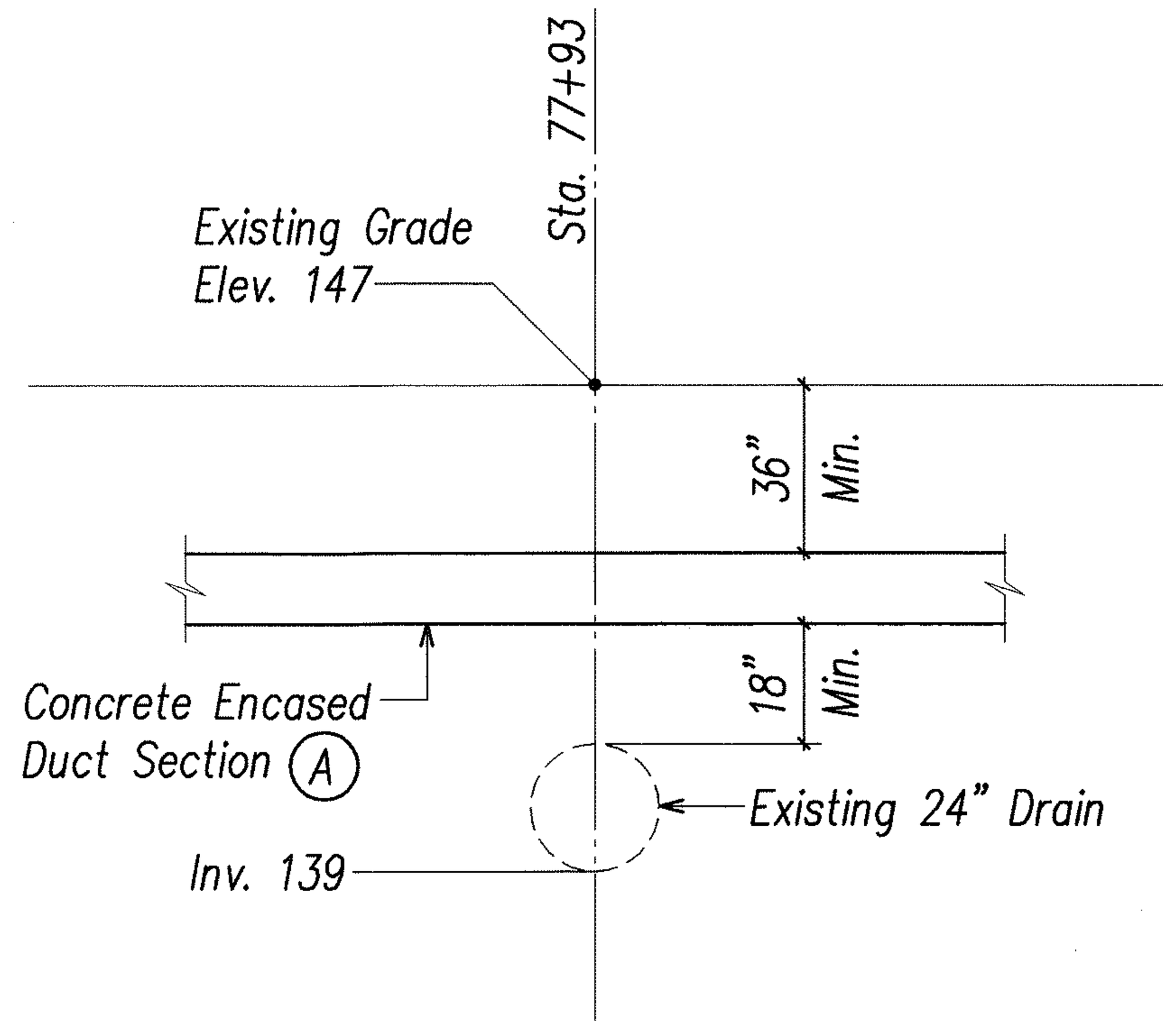
APPROVED BY:

Dennis M. Nishimura 7/10/03

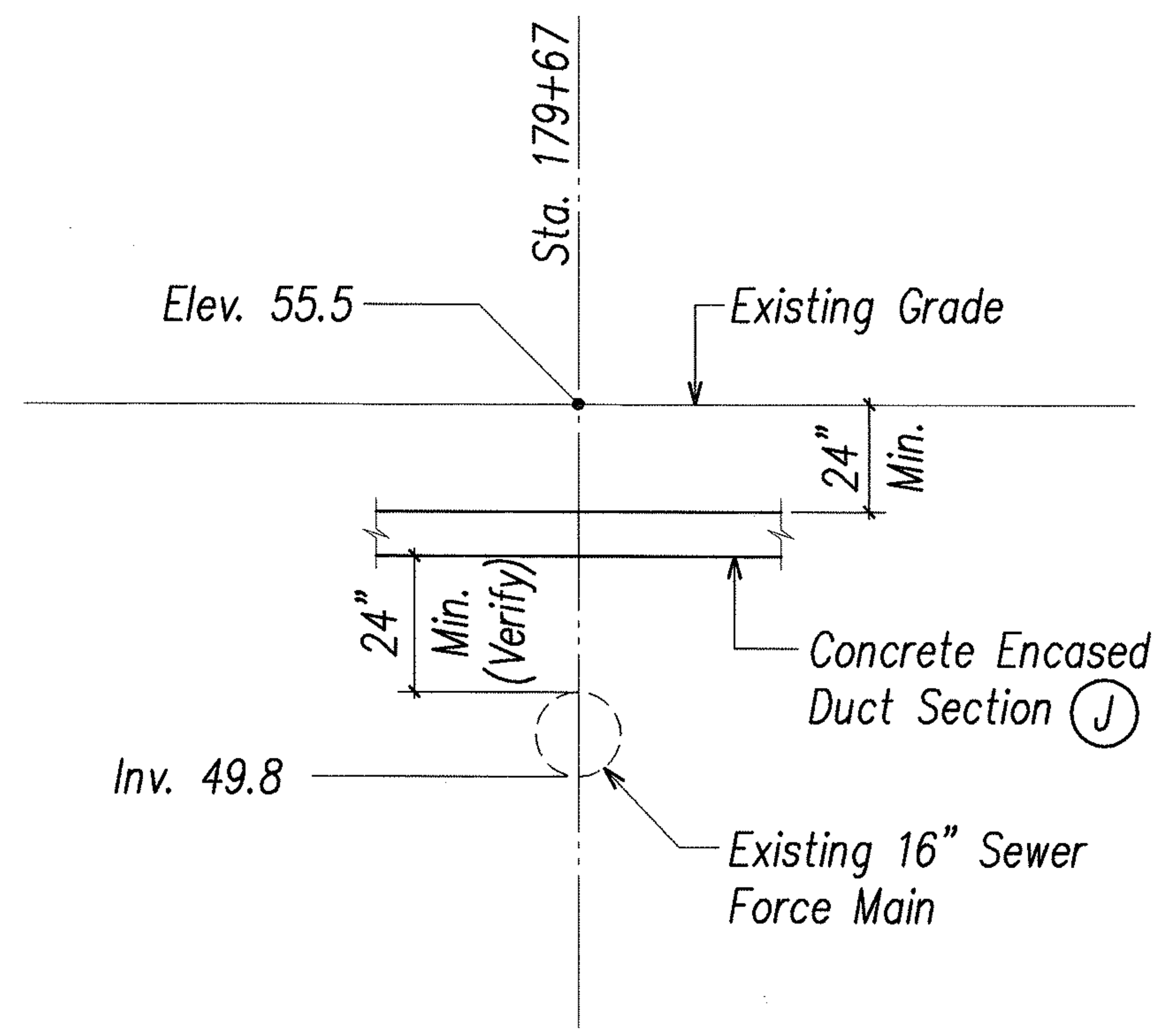
CHIEF, WASTEWATER BRANCH, DPP DATE



1 / E21 **SEWER CROSSING SECTION**
Not to Scale



2 / E21 **DRAIN CROSSING SECTION**
Not to Scale



3 / E21 **SEWER CROSSING SECTION**
Not to Scale

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DUCT SECTIONS

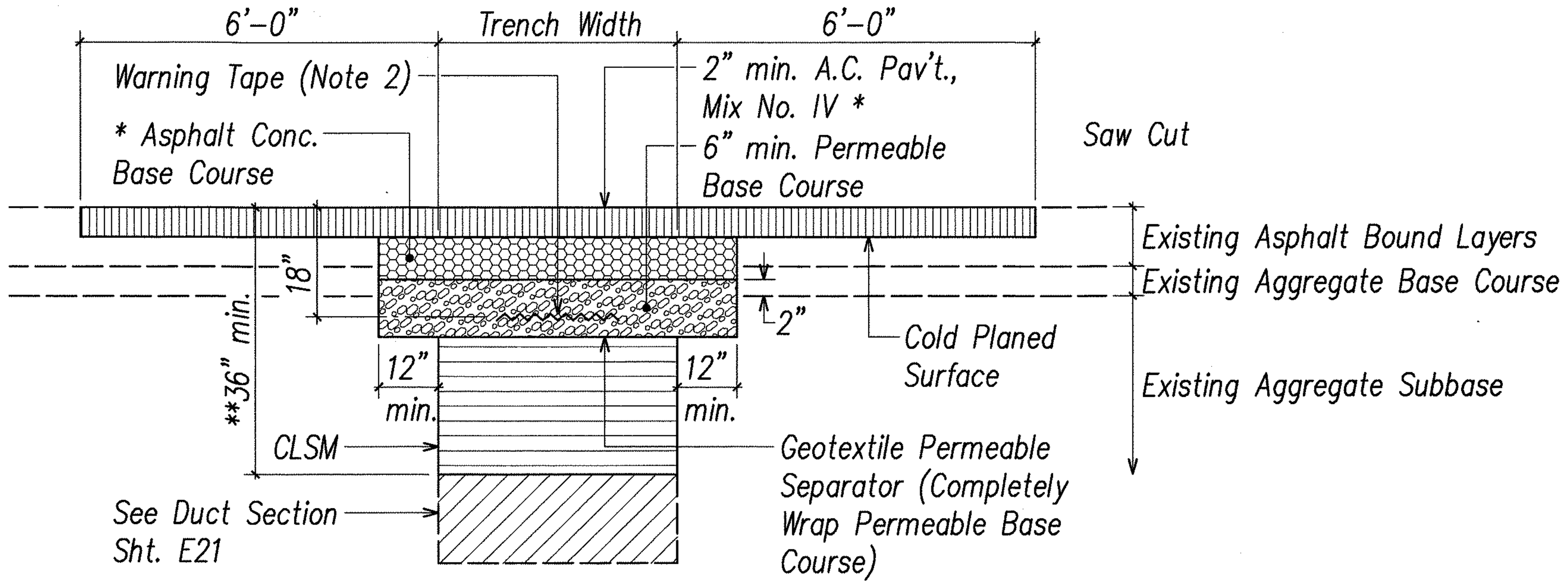
KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: As Noted Date: SEPT 2002

SHEET No. E21 OF 31 SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	85	98

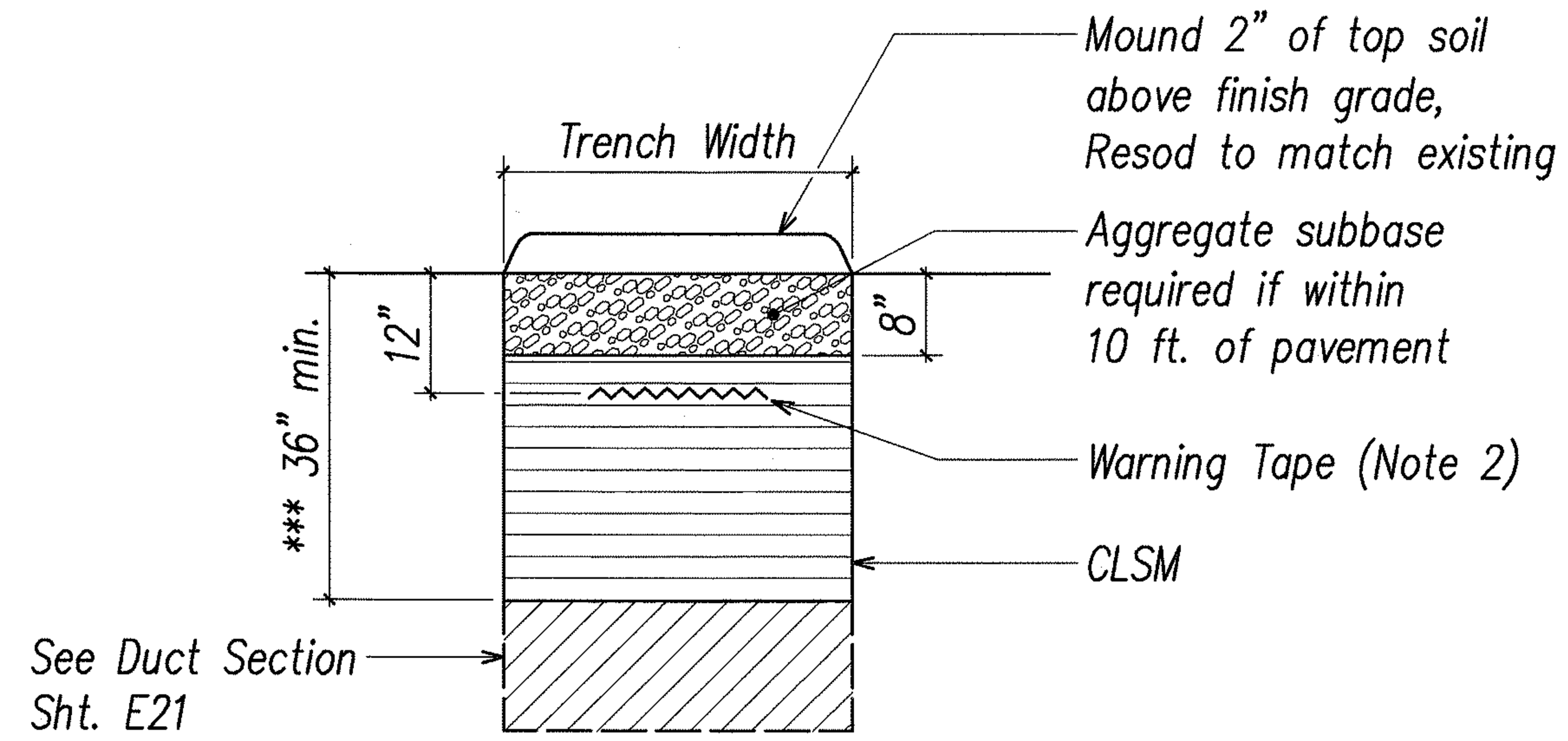


* A.C. and base course to match existing thickness or the minimum thickness shown, whichever is greater.

** Exception is where duct(s) encounter water, sewer and drain lines at the same depth. The ducts shall cross over the water, sewer and drain lines with a minimum depth of 24".

① EXCAVATION AND BACKFILL SECTION

Within State right-of-way under roadway & paved shoulder



*** Exception is where duct(s) encounter water, sewer and drain lines at the same depth. The ducts shall cross over the water, sewer and drain lines with a minimum depth of 18".

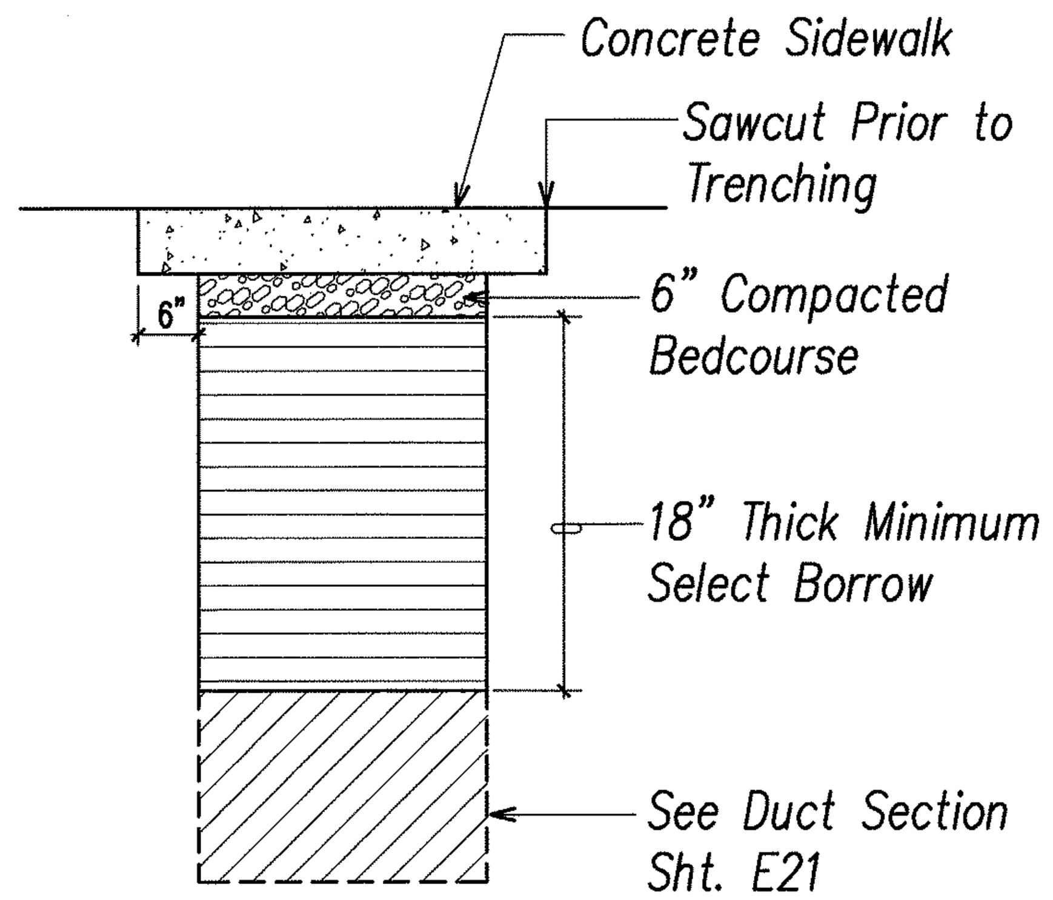
② EXCAVATION AND BACKFILL SECTION

Within State right-of-way under unpaved shoulder

STATE RIGHT-OF-WAY BACKFILL NOTES

Notes:

1. Base course & sub-base course per 1994 State Standard Specifications for Highway Construction.
2. 3" wide, 8-mil red colored plastic tape. 1-mil continuous metallic backing, corrosion resistant, inscribed with: "CAUTION-ELECTRICAL LINE BURIED BELOW" in black lettering, repeated at thirty-six inch intervals.



③ EXCAVATION AND BACKFILL SECTION

Under concrete sidewalk

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

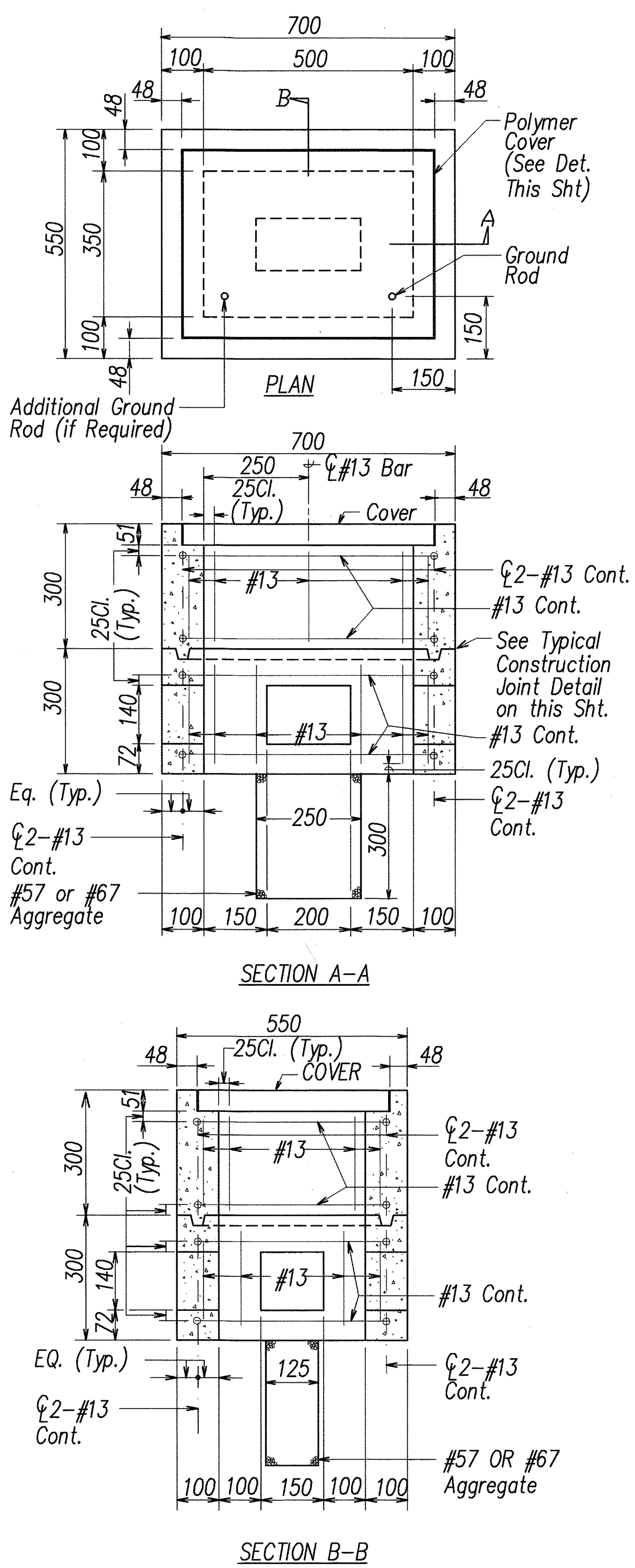
EXCAVATION & BACKFILL SECTIONS

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

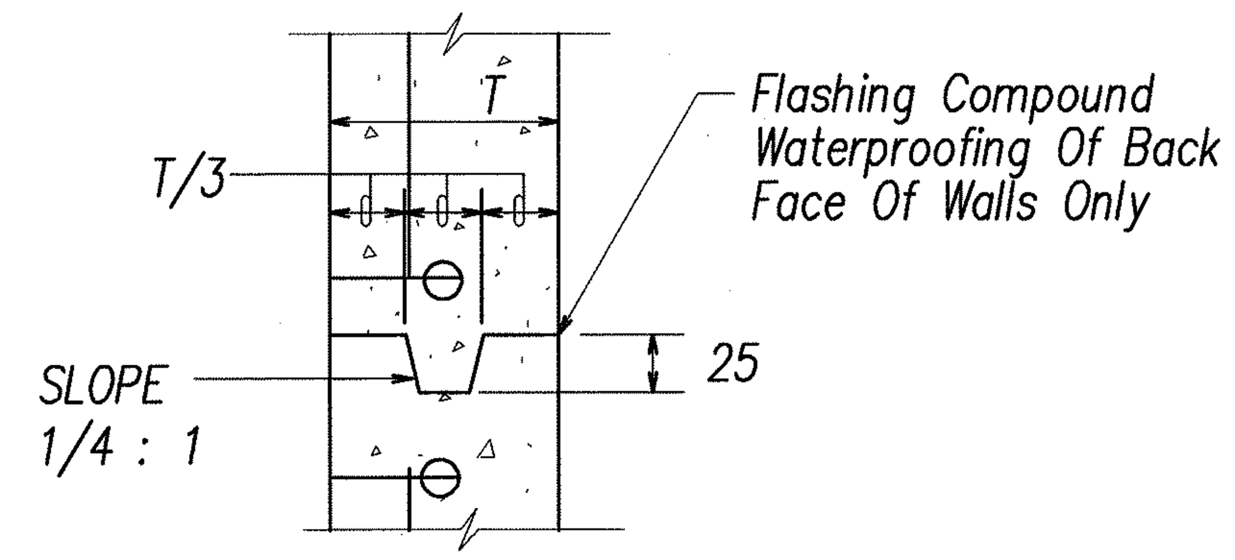
Scale: As Noted
Date: SEPT 2002

SHEET No. E22 OF 31 SHEETS

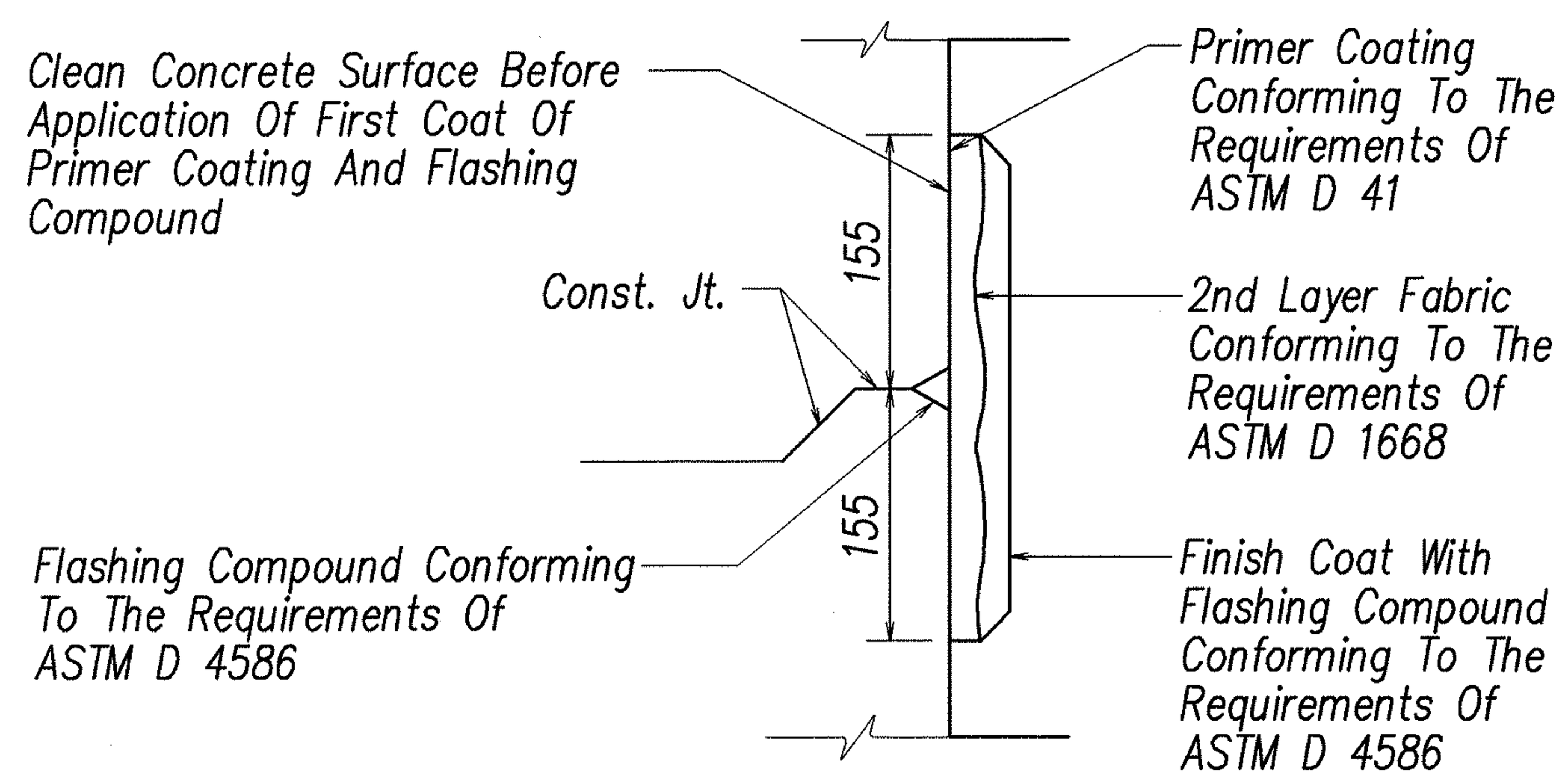
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	86	98



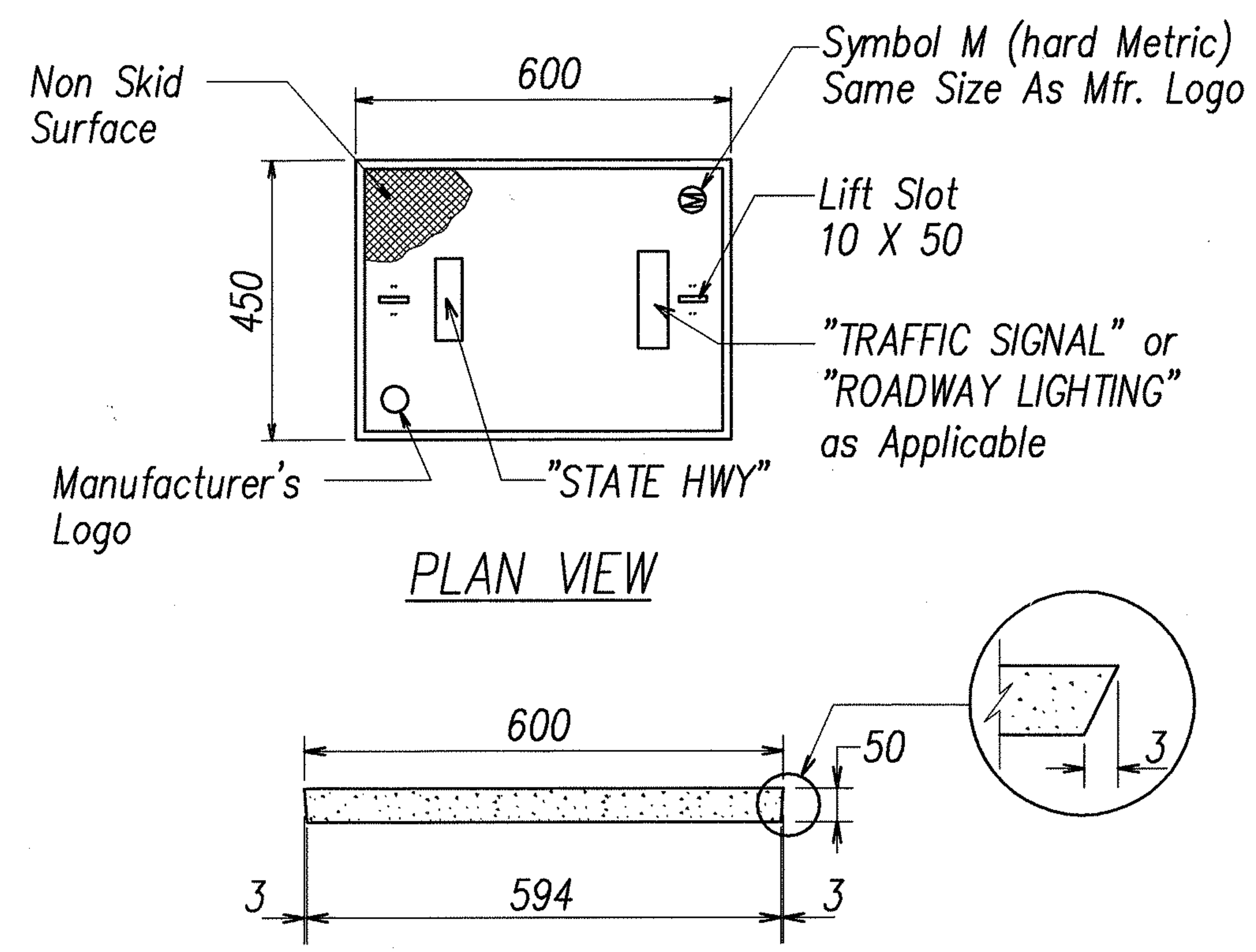
TYPE "A" PULLBOX (OLD TYPE "B")
NOT TO SCALE



TYPICAL CONSTRUCTION JOINT DETAIL
NOT TO SCALE



TYPICAL CONSTRUCTION JOINT DETAIL WATERPROOFING DETAILS
NOT TO SCALE



POLYMER CONCRETE COVER
NOT TO SCALE

GENERAL NOTES:

1. Provide A Minimum Of One 16 X 2.5m Copperweld Ground Rod In Each Pullbox. When Directed By The Traffic Signal Inspector/engineer, Install Additional Ground Rods. Cost Of Ground Rods Shall Be Incidental To The Pullboxes.
2. All Pre-cast Concrete Pullboxes Shall Be Manufactured In Two Pieces.
3. The Pullbox With Cover Shall Be Capable Of Supporting An Ms 18 Loading.
4. The Maximum Weight Of The Pullbox Cover Shall Not Exceed 27 Kilograms.
5. The Openings For The Conduits On All Pullboxes Shall Be Pre-cast Concrete Knockouts.
6. After Installing The Conduits In The Openings Of The Pullboxes, The Contractor Shall Fill The Excess Opening In The Pre-cast Knockouts With Concrete Mortar.
7. Prior To Installing The Pullboxes, The Contractor Shall Level The Bottom Of The Trench And Achieve A Minimum Of 95% Relative Compaction Of The Bottom Of The Trench.
8. All Concrete Shall Be Class A (25mpa, Min.)
9. Rebars Shall Be Grade 300 And All Lapped Splices Shall Be 360mm Minimum.
10. The #57 Or #67 Size Aggregate Shall Conform To Latest Version Of AASHTO M43 (ASTM D 448).

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PULLBOX

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED Date: SEPT 2002

SHEET No. E23 OF 31 SHEETS

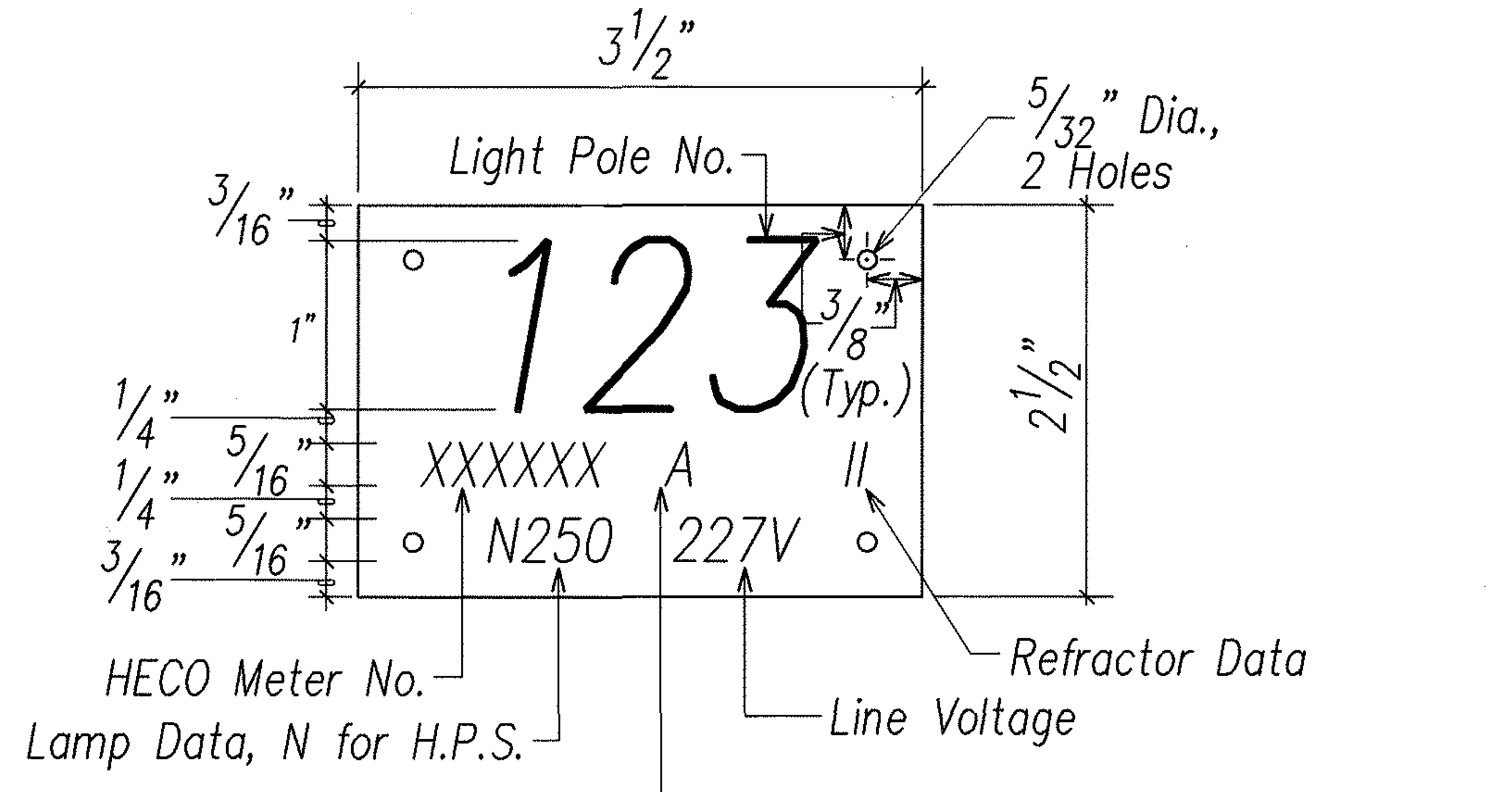
ORIGINAL PLAN | NOTE BOOK | No. | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

DRILLED SHAFT SCHEDULE

Light Pole Nos.	Minimum Diameter	Minimum Embedment	Vertical Bars
860 thru 879 886 thru 887 892 thru 900	22"	6'-0"	8-#5
853A thru 859 880 thru 885 888 thru 891	22"	8'-0"	8-#5
△1 901 thru 910	30"	12'-0"	8-#6

NOTES:

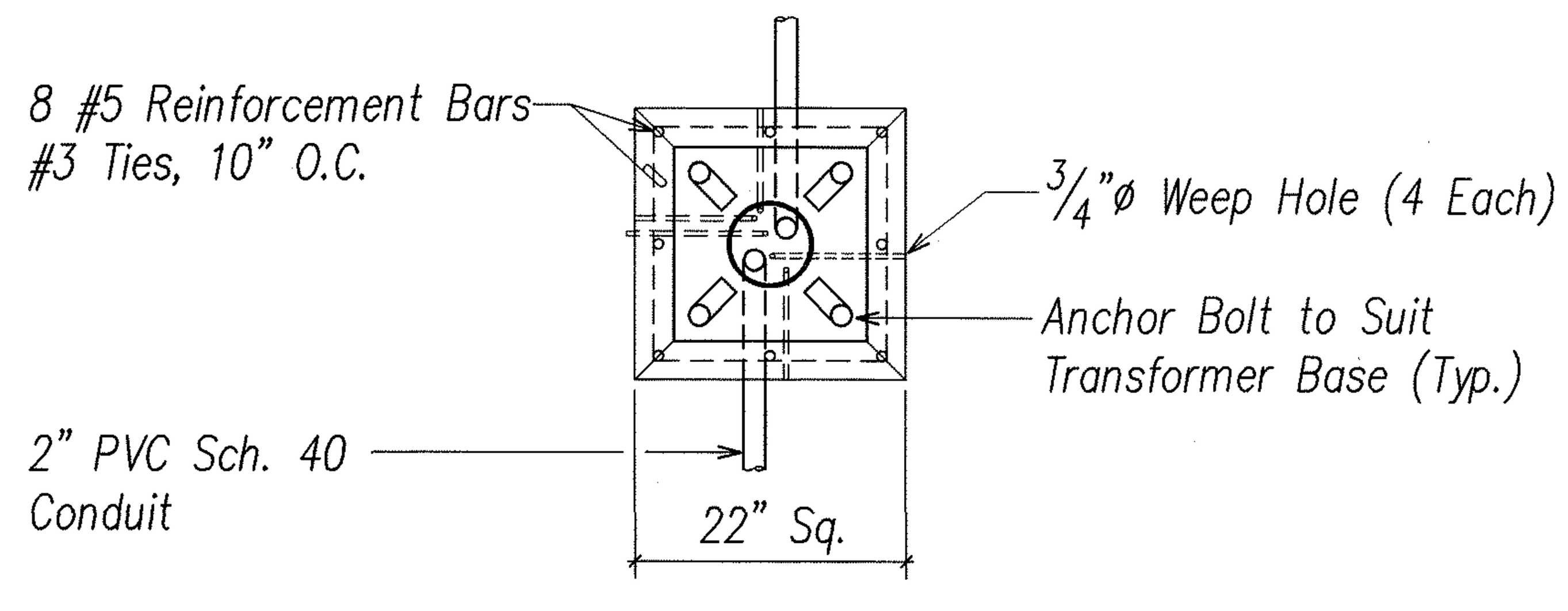
1. Concrete with Minimum 28-Day Compressive Strength of 4,500 psi.
2. Reinforcing Steel of Deformed Bars Conforming to ASTM A615, Grade 60.
3. 3" Clear Concrete Cover for Reinforcing Bars.
4. Drilled Shaft Installed with No Permanent Casing.



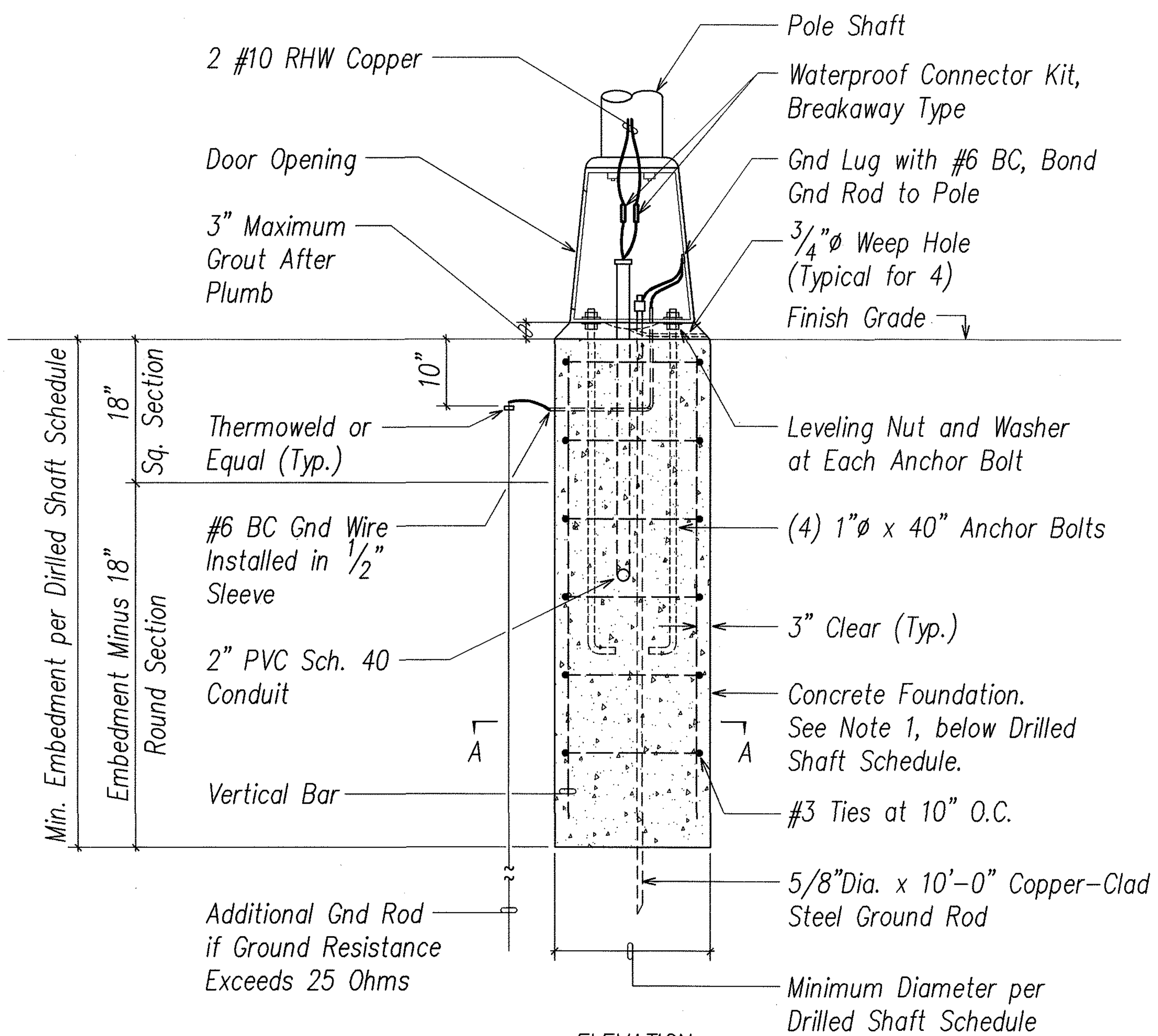
NOTES:

1. Use 3 Ply Laminated Flexible Plastic Black-White-Black Thickness: Black Cap Sheet-0.010", White Base Sheet-0.052", Black Base Sheet-0.010".
2. Light Pole Number Size shall be 1" High and Engraved 1/8" Wide, White in Color. Pole Number as Indicated on Electrical Plans, Sht. E9 to E14.
3. Nomenclature Size shall be 5/16" High and Engraved 1/32" Wide, White in Color (Meter Number, Circuit Number, Line Voltage, Lamp Data and Refractor Data as Required).
4. Attach to Aluminum and Steel Poles with No. 8 Stainless Steel, 1/2" Long Drive Screw in 1/8" Drill Hole. Attach to Wood Poles with 4D Aluminum Nails.
5. Numbers are Inscribed by Cutting through "Black Cap Sheet" to Expose "White Letters".

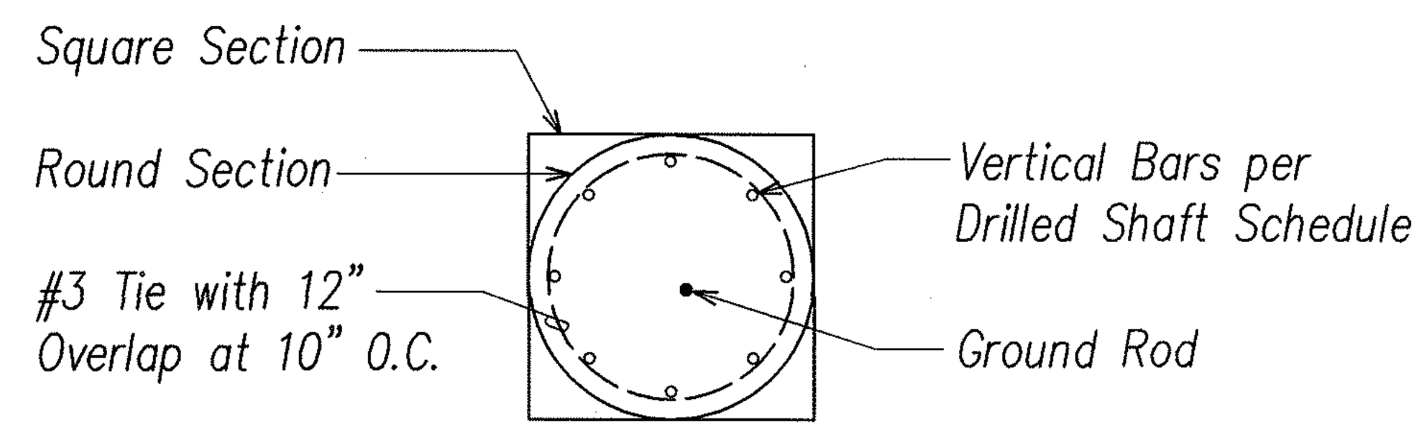
(1/E24) ROADWAY LIGHT I.D. TAG METERED SYSTEM
NOT TO SCALE



PLAN

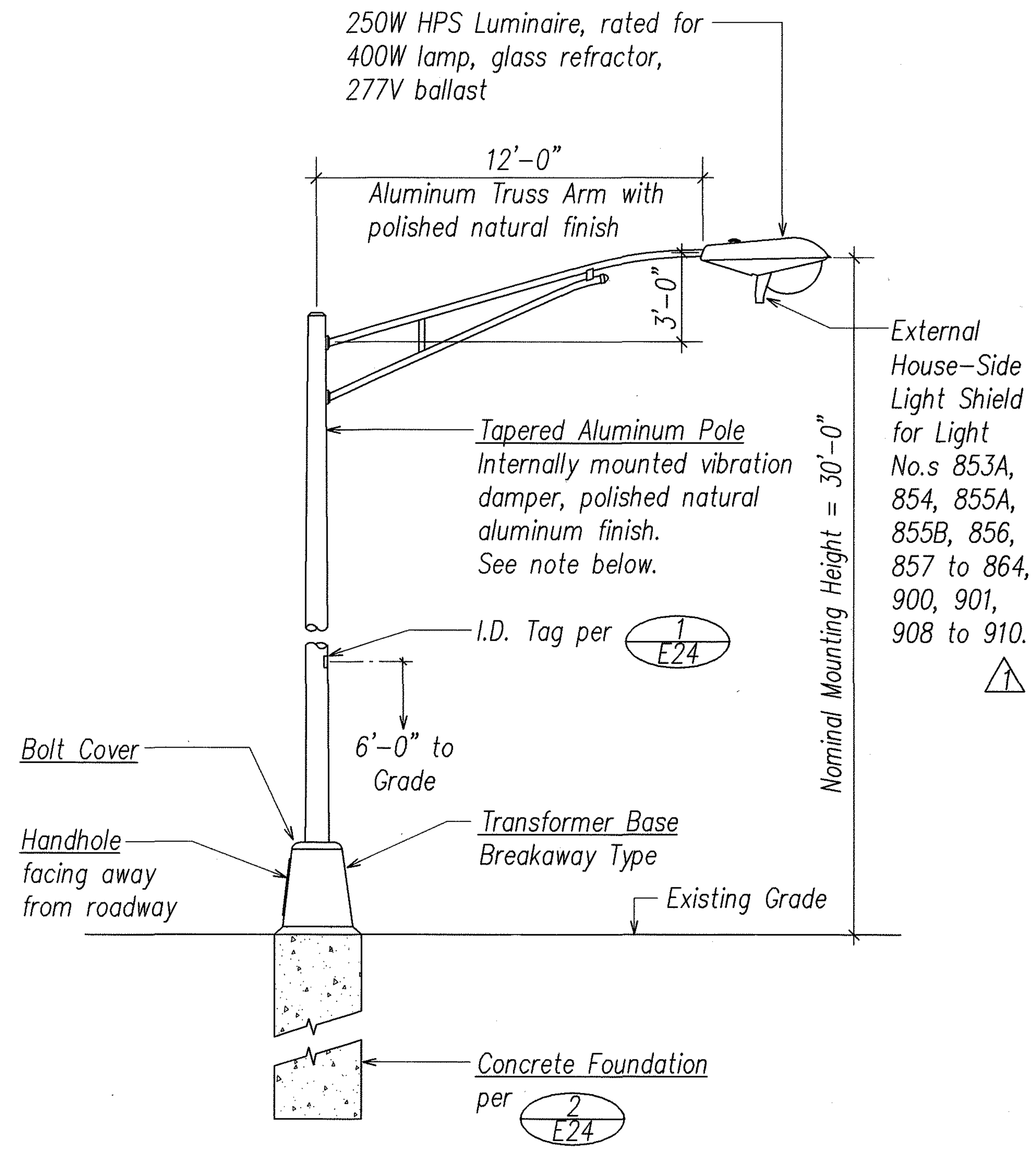


ELEVATION



SECTION A-A

(2/E24) TYPICAL CONCRETE FOUNDATION AND TRANSFORMER BASE DETAIL
NOT TO SCALE



ELEVATION

POLE NOTE:

All Components of the Light Standard shall be Designed in Accordance with AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals", Dated 2001, 4th Edition, including interims.

ROADWAY LIGHT STANDARD
NOT TO SCALE

REVISION	DATE	DESCRIPTION	BY	APPROVED
△1	11/19/04	Revised Light Numbers	RHA	

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2969-E HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY LIGHT STANDARD

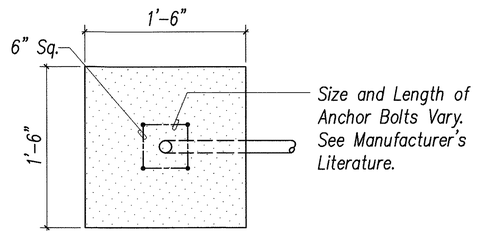
KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: As Noted   Date: SEPT 2002

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

LAST SAVE: 11/22/04 @ 09:15:02 BY: RN PLOT SC 1'-0"=1'

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	88	98



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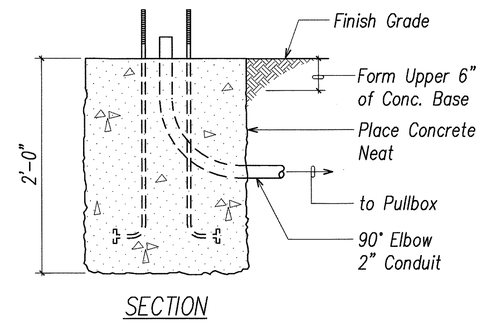
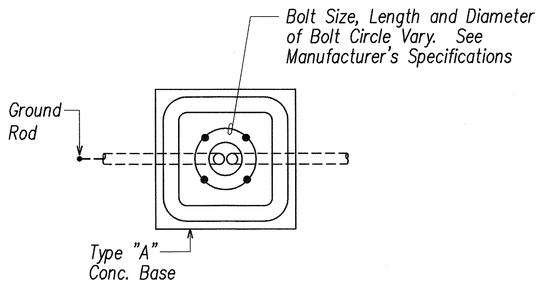


SECTION

NOTES:

1. Concrete shall be class "B".
2. Type "A" concrete base shall be used for type I-10, I-7 and I-3 standards.
3. Conduit bend is incidental to concrete base construction.

TYPE "A" CONCRETE BASE
NOT TO SCALE



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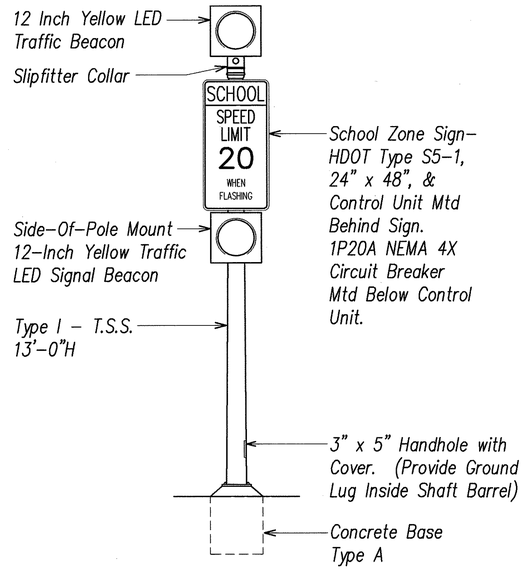
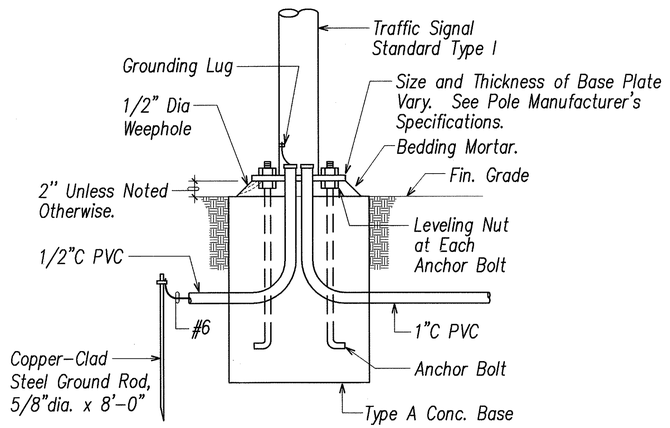
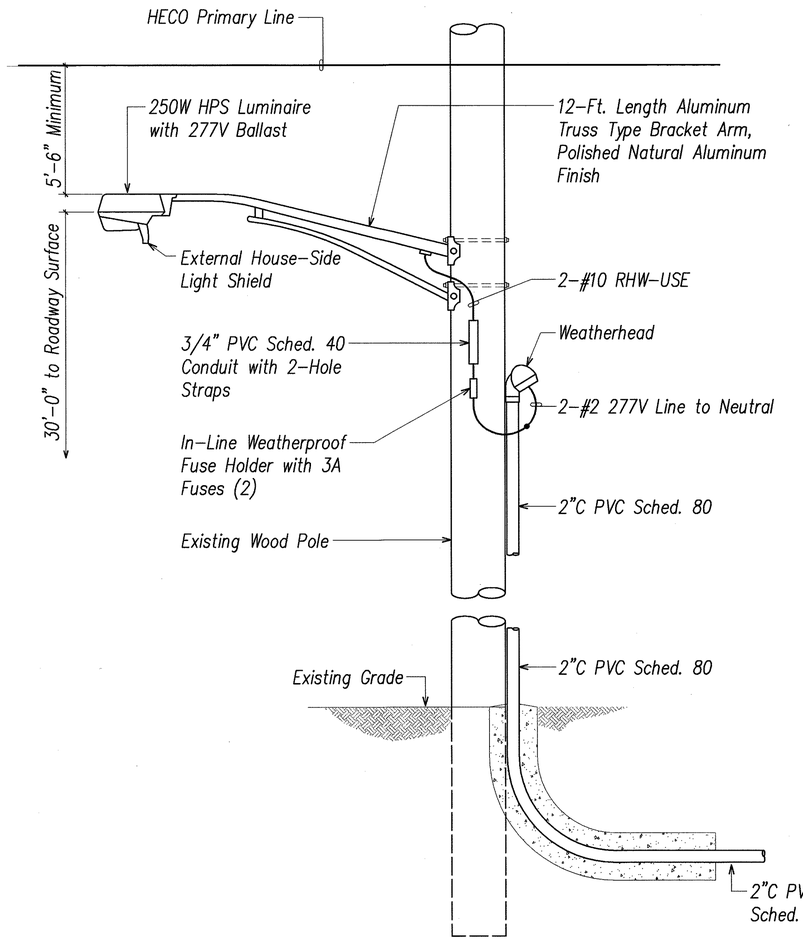


SCHOOL ZONE WARNING LIGHT
NOT TO SCALE



SECTION

TYPICAL STANDARD
NOT TO SCALE



ROADWAY LIGHT ON UTILITY POLE
NOT TO SCALE

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLAN
NOTE BOOK
No.

LAST SAVE: 06/18/03 @ 10:21:38 BY TE PLOT SC: 1'-0"=1'
Z:\KAD\PROJECTS\21088\21088ds03

KEN OUCHI
LICENSED PROFESSIONAL ENGINEER
No. 2962-E
HAWAII, U.S.A.

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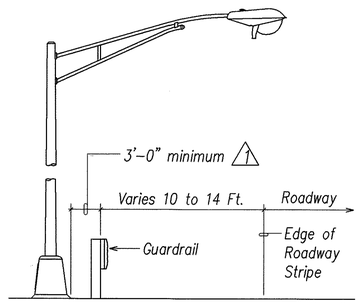
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY LIGHT ON UTILITY POLE
SCHOOL WARNING LIGHT
KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: AS NOTED Date: SEPT 2002

SHEET No. E25 OF 31 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	C.O.89	98



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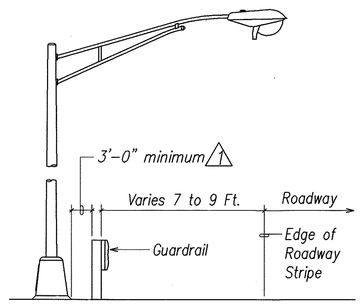

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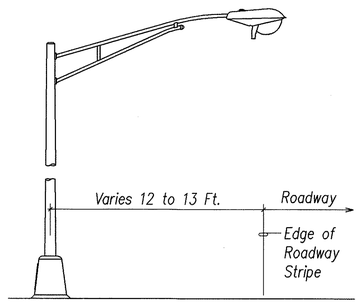

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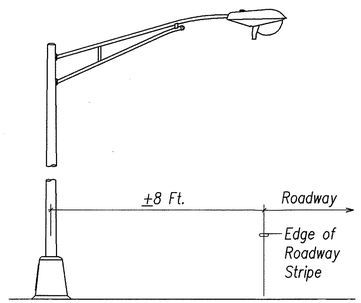

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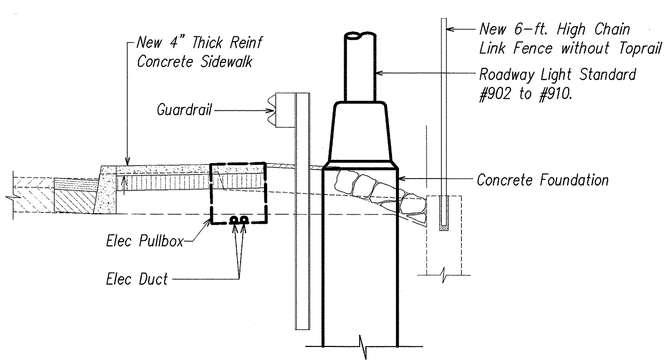

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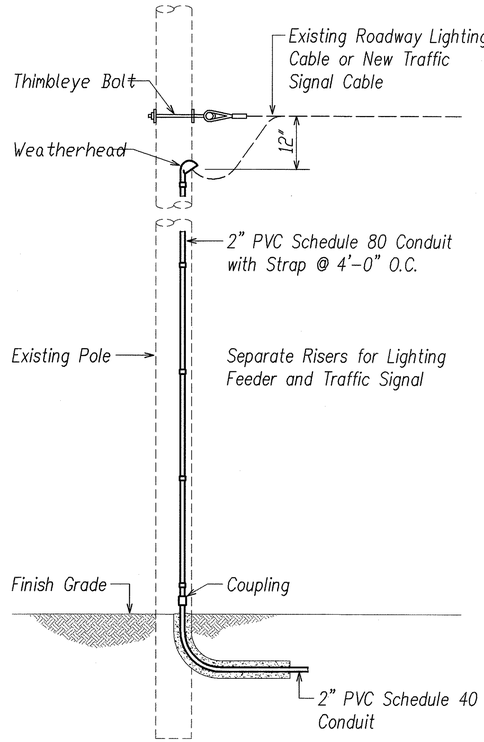
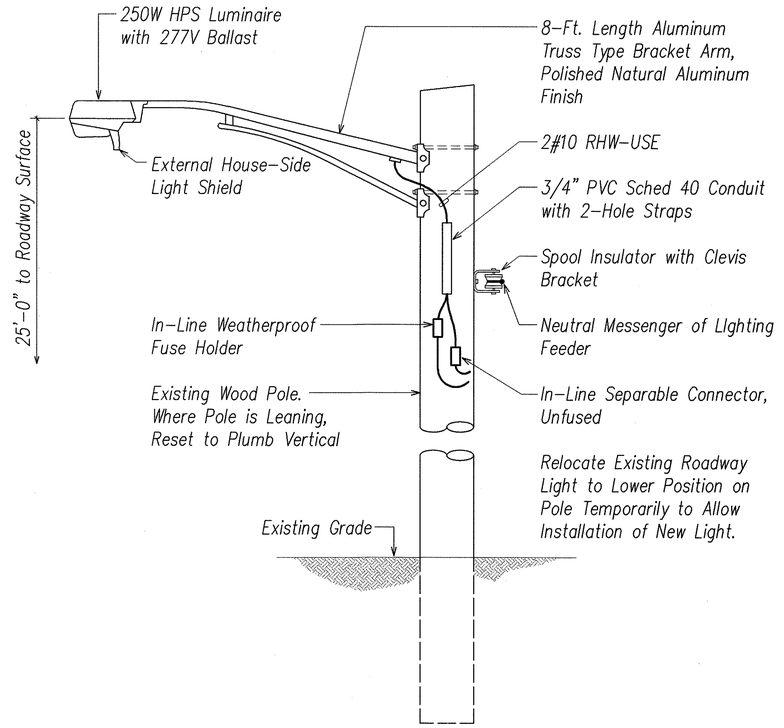
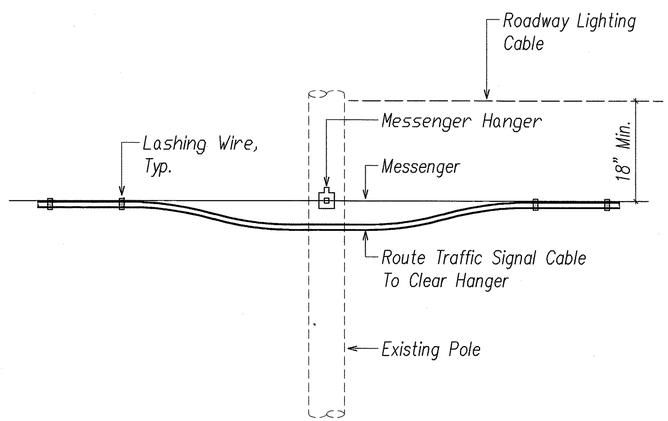


1 / E26 **RISER POLE DETAIL**
NOT TO SCALE



3 / E26 **ROADWAY LIGHT ON WOOD POLE**
NOT TO SCALE



2 / E26 **CABLE ATTACHMENT**
NOT TO SCALE

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

LAST SAVE: 11/19/04 @ 09:15:32 BY: GN PLOT SC: 1'-0"=1"
X:\Local\projects\210585\210585sh10

REVISION	DATE	DESCRIPTION	BY	APPROVED
1	11/19/04	Revised Space between Light Pole and Guard Rail.	RHA	
		Added Details.		

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY LIGHT STANDARD SETBACK CONDITIONS

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: As Noted Date: SEPT 2002

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2982-E HAWAII, U.S.A.

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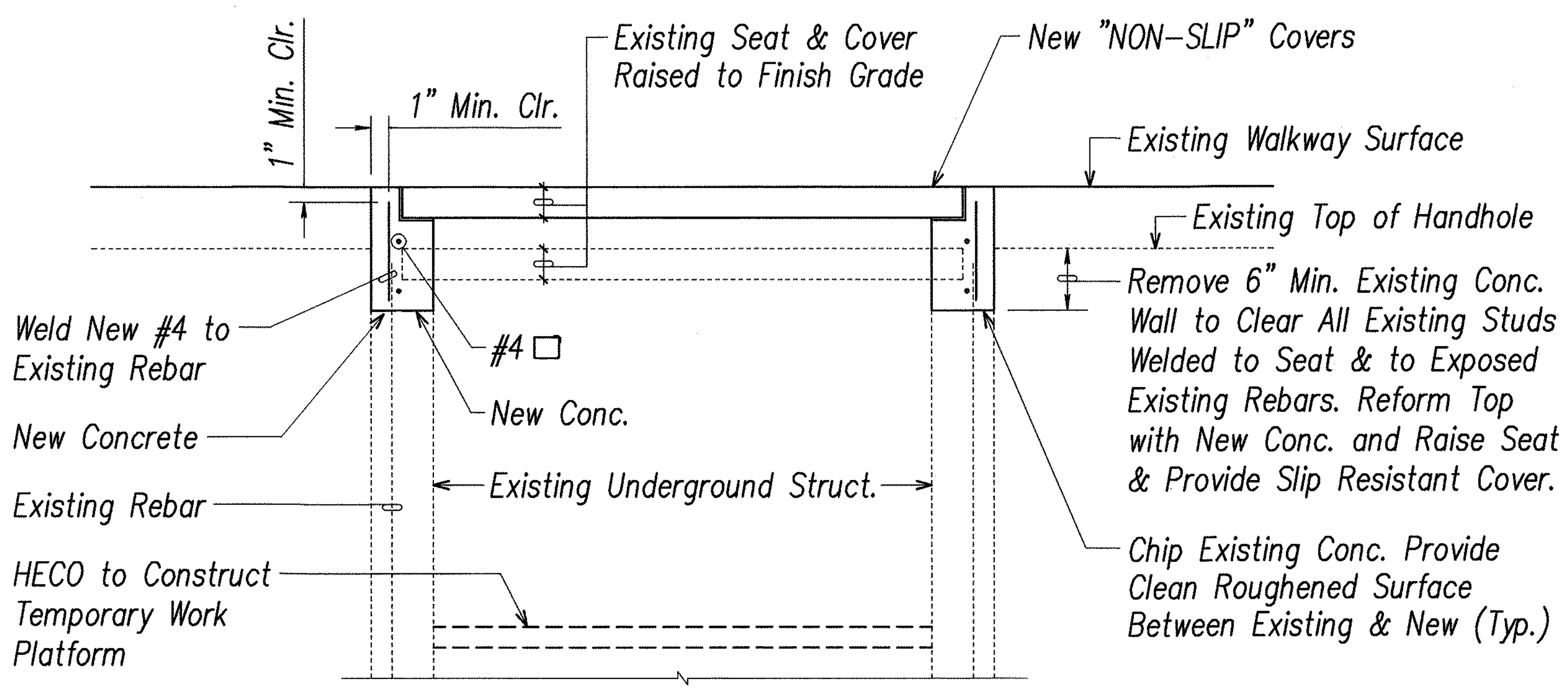
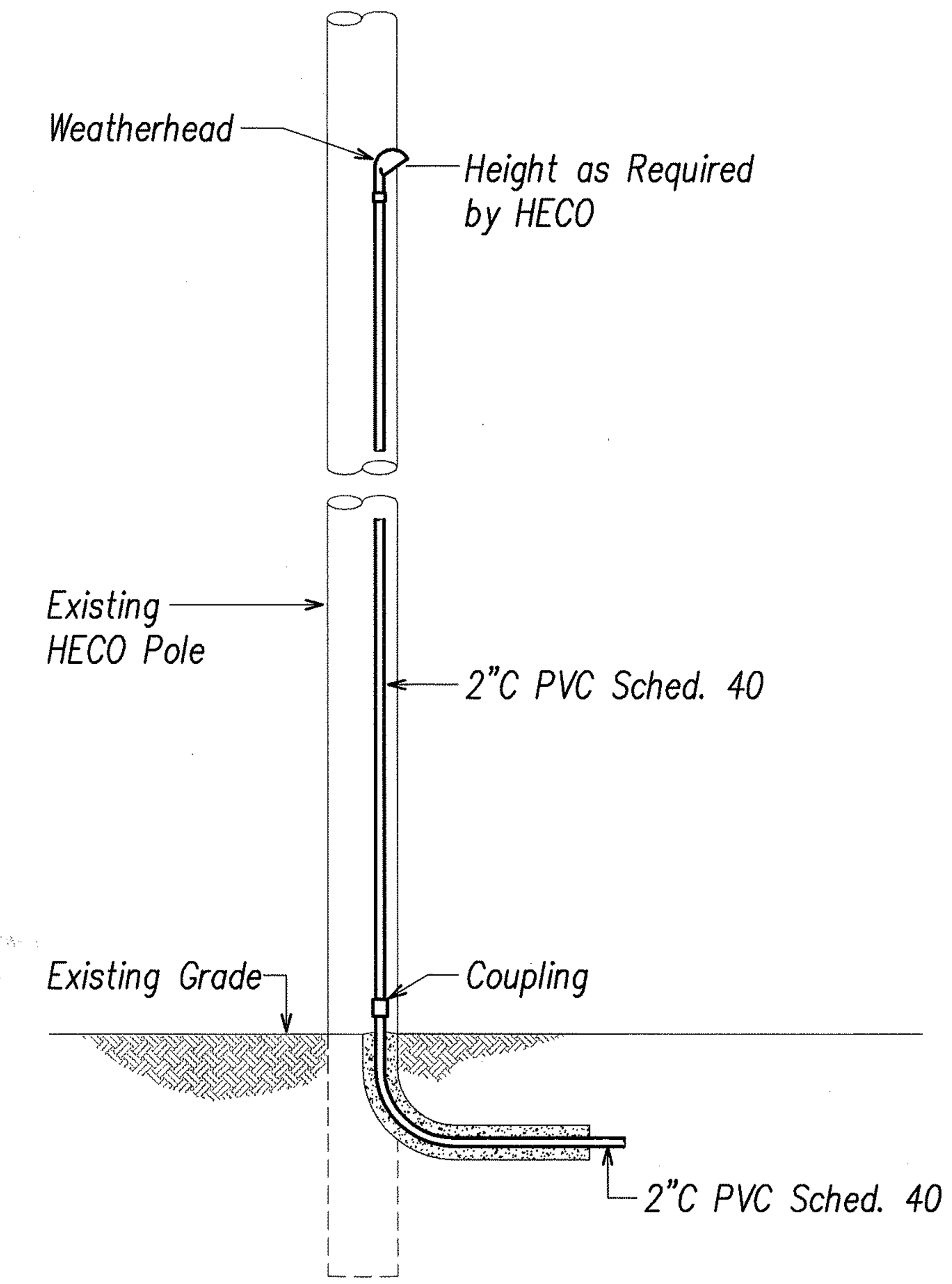
SHEET No. E26 OF 31 SHEETS

C.O. 89

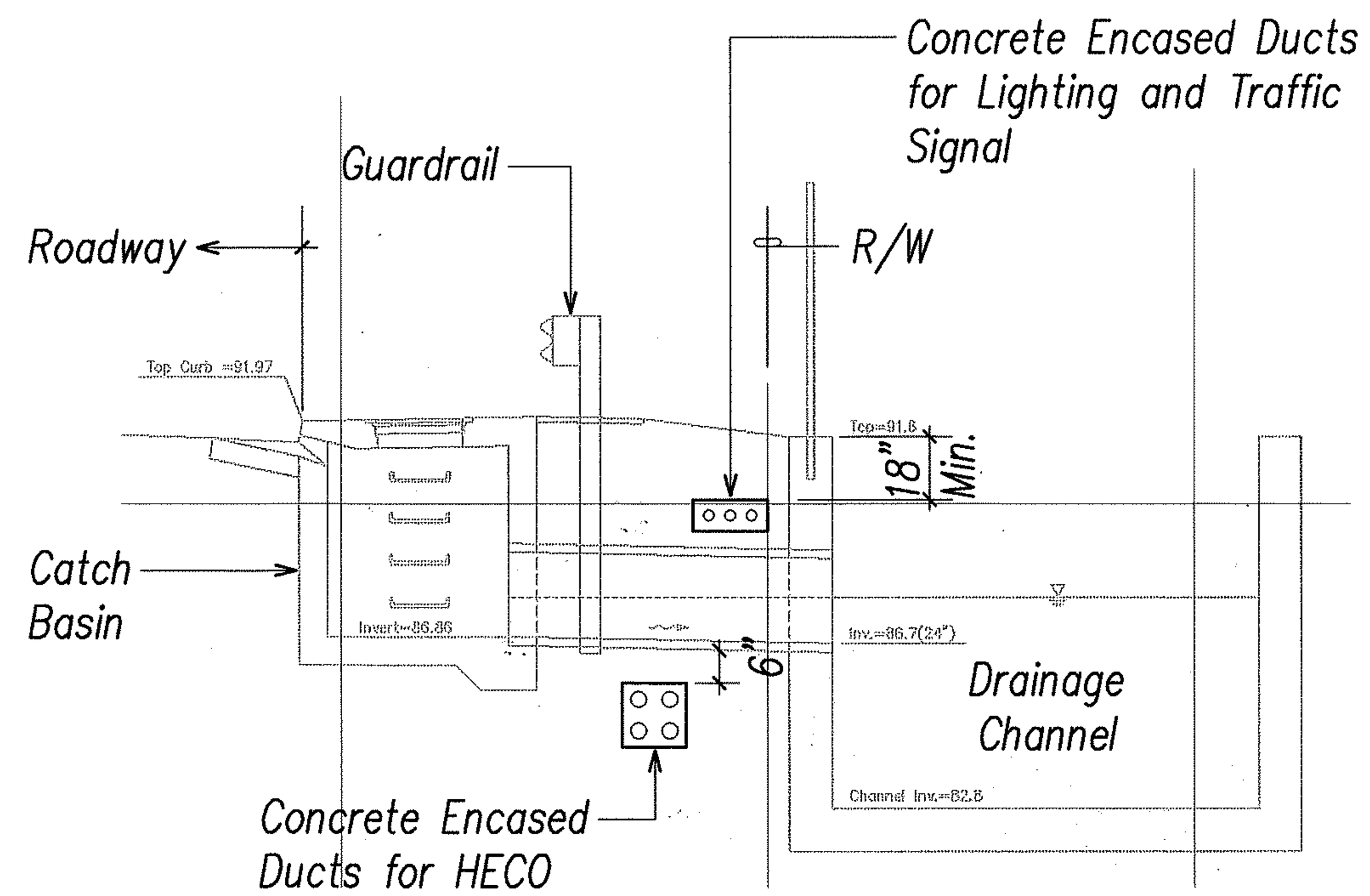
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	90	98

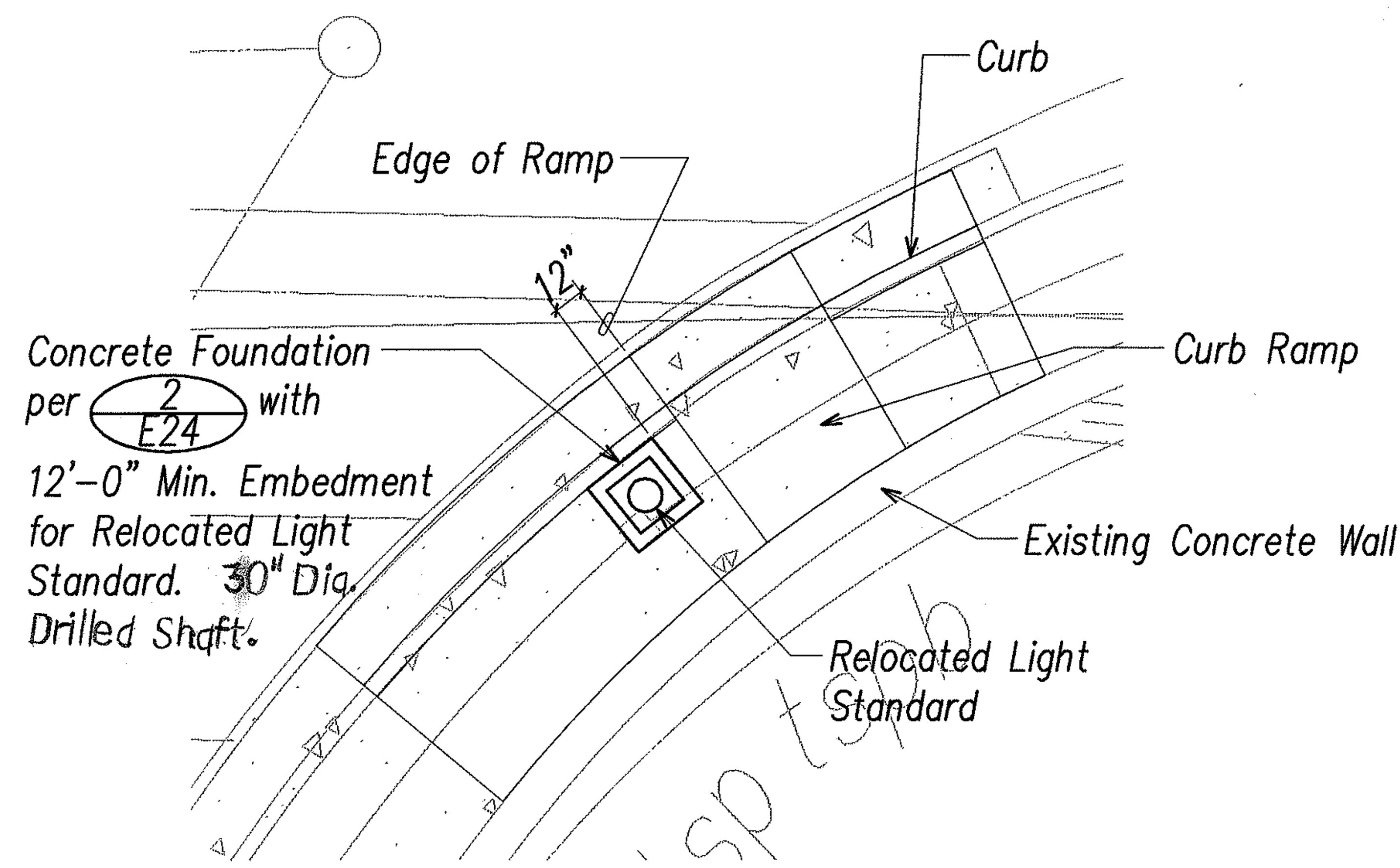


EXISTING RAISED HANDHOLE ADJUSTMENT
NOT TO SCALE



4/E27 SERVICE CONDUIT RISER
NOTE TO SCALE





DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 8/12/03 By JKL

Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

2/E27 DUCT SECTION (AT CATCH BASIN)
SCALE: 1/4"=1'-0"

3/E27 RELOCATED LIGHT STANDARD PLAN
SCALE: 1"=5'-0"

4' 2' 0 4' 8' 12'
SCALE: 1/4"=1'-0"

5' 0 5' 10' 15'
SCALE: 1"=5'

GRAPHIC SCALE

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2062-E HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

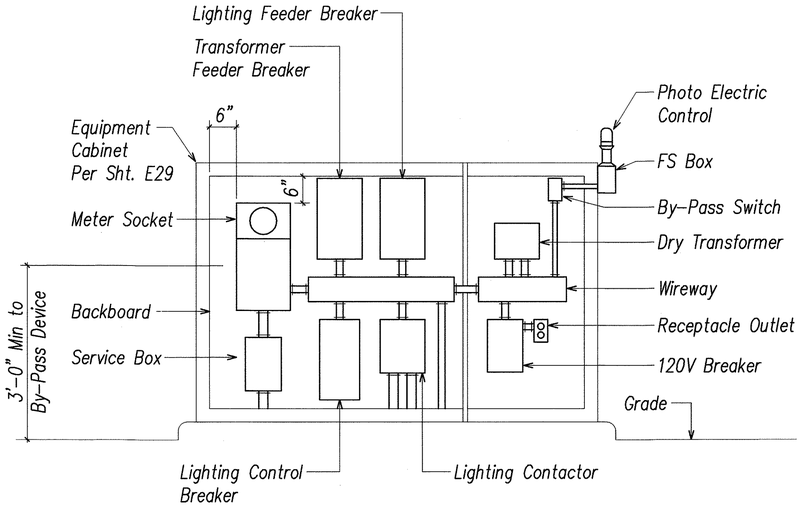
RAISED HANDHOLE ADJUSTMENT
DUCT SECTION, LIGHT STANDARD PLAN
KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

Scale: As Noted Date: SEPT 2002

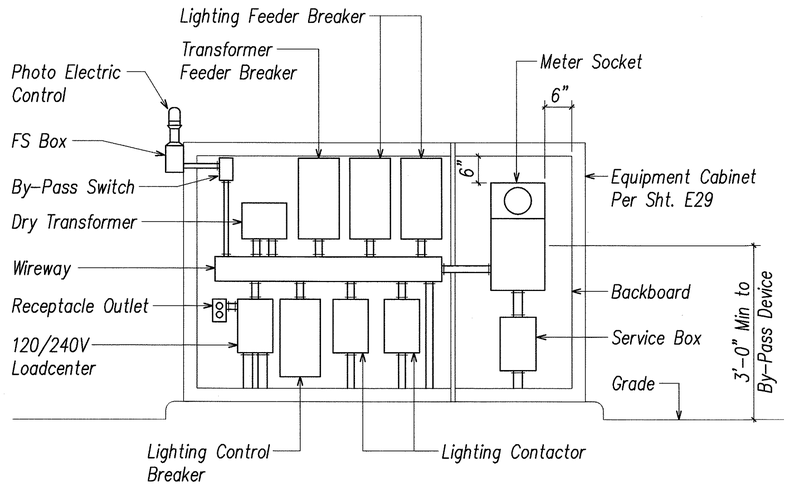
SHEET No. E27 OF 31 SHEETS

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

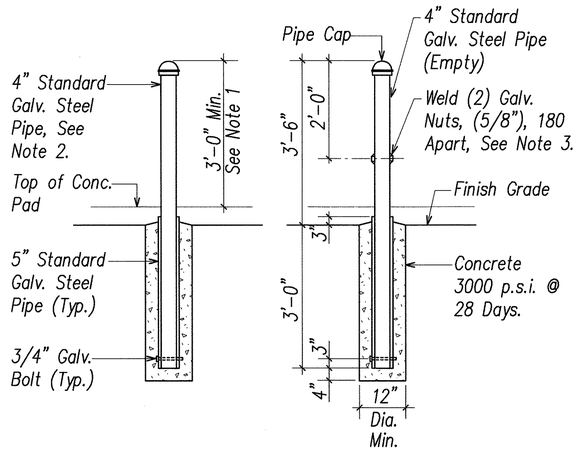
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	91	98



1 E28 ELECTRICAL EQUIPMENT ELEVATION
NOT TO SCALE



2 E28 ELECTRICAL EQUIPMENT ELEVATION
NOT TO SCALE



Stationary Barrier Removable Barrier

3 E28 POST BARRIER
NOT TO SCALE

Notes:

1. All Post Barriers shall be Installed at Same Height Above Top of Concrete Transformer Pad.
2. Stationary Galv. Pipe to be Filled with Concrete to Weigh Approximately 150 Lbs.
3. Welded Nuts are for Screwing in Bolts to Act as Handles for Lifting Removable Post Barriers. Bolt to be Removed after Installation.
4. Post Barriers shall be Painted Yellow per ANSI Spec. Z53.1 to Comply with OSHA Standards per Color Coding.
5. Post Barriers shall Comform to ASTM A53.

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

LAST SAVE: 06/08/03 @ 09:05:44 BY: TE PLOT SC: 1'-0"=1"
Z:\ACAD\PROJECTS\21088\21088e107

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 10602-E HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

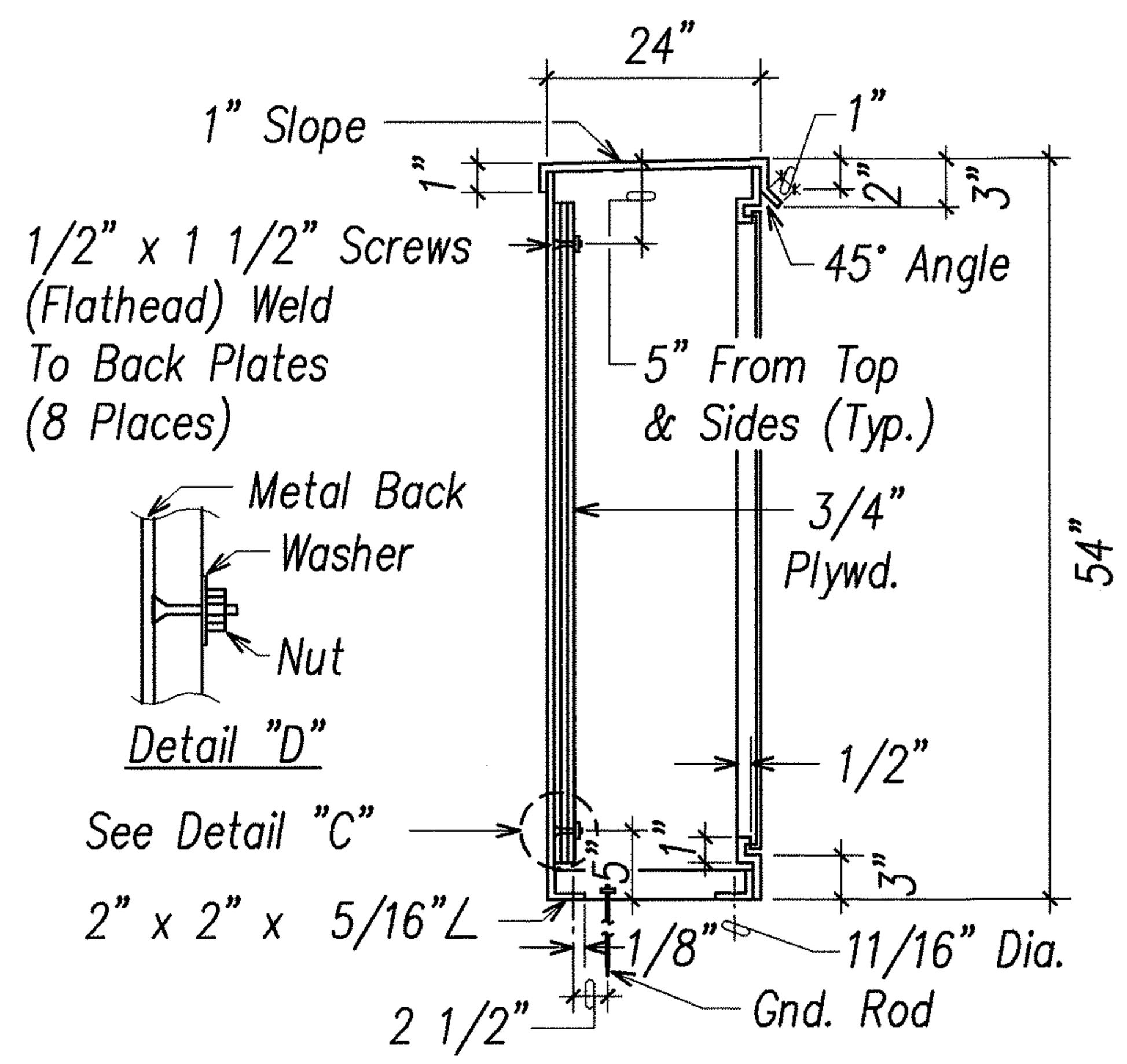
ELECTRICAL EQUIPMENT ELEVATIONS, POST BARRIER

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

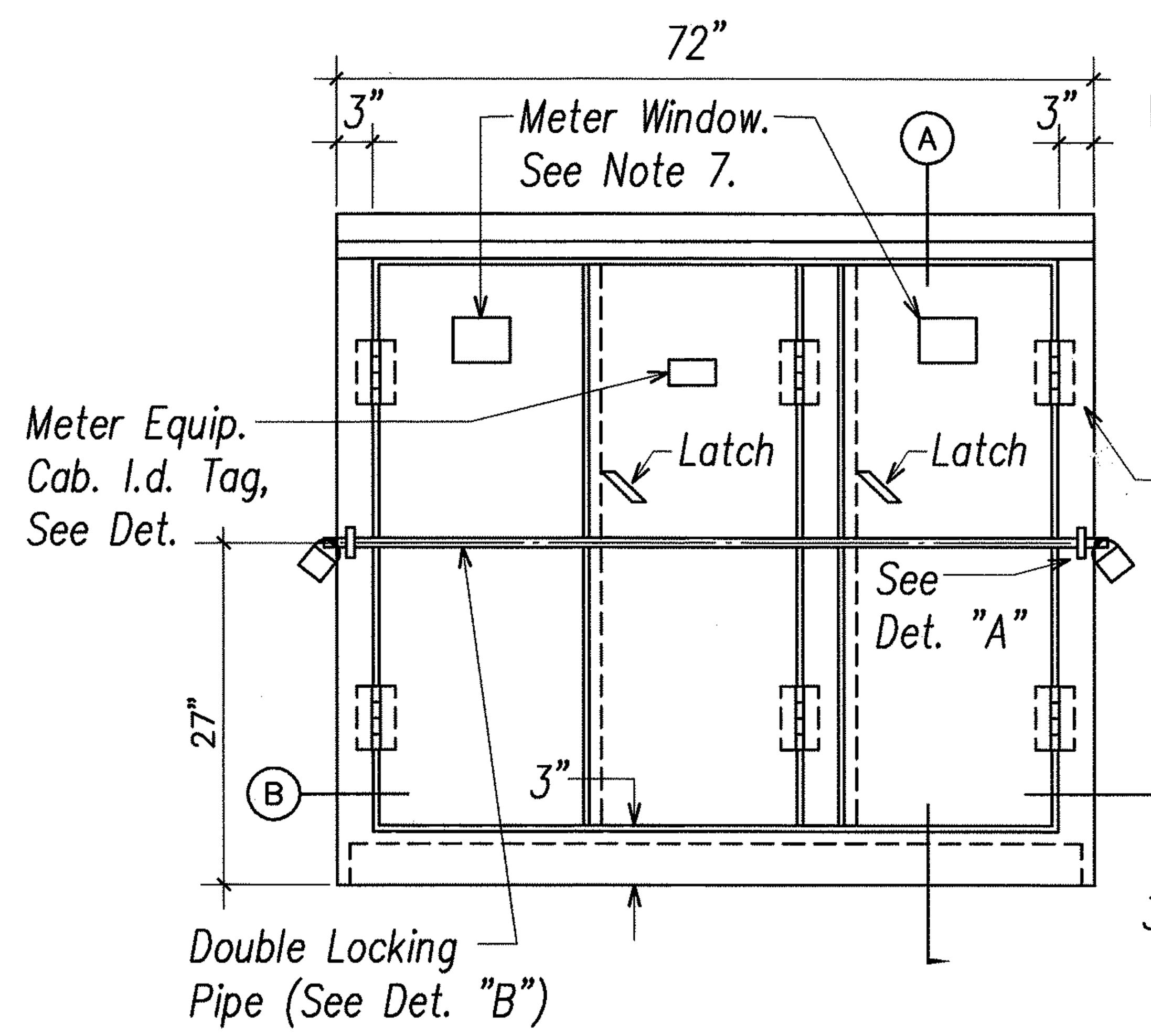
Scale: As Noted Date: SEPT 2002

SHEET No. E28 OF 31 SHEETS

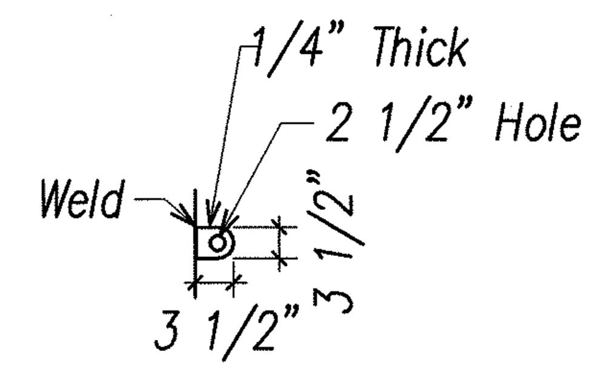
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	92	98



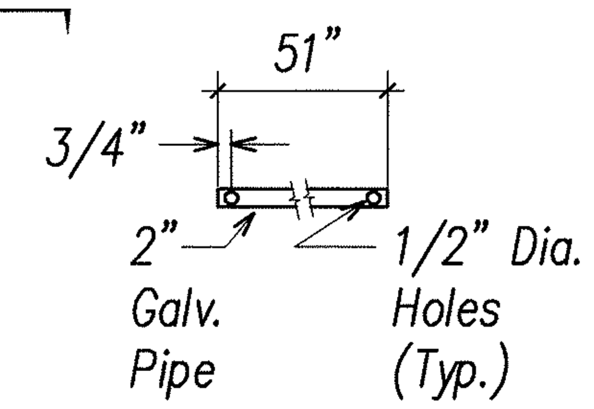
Section "A"



Elevation



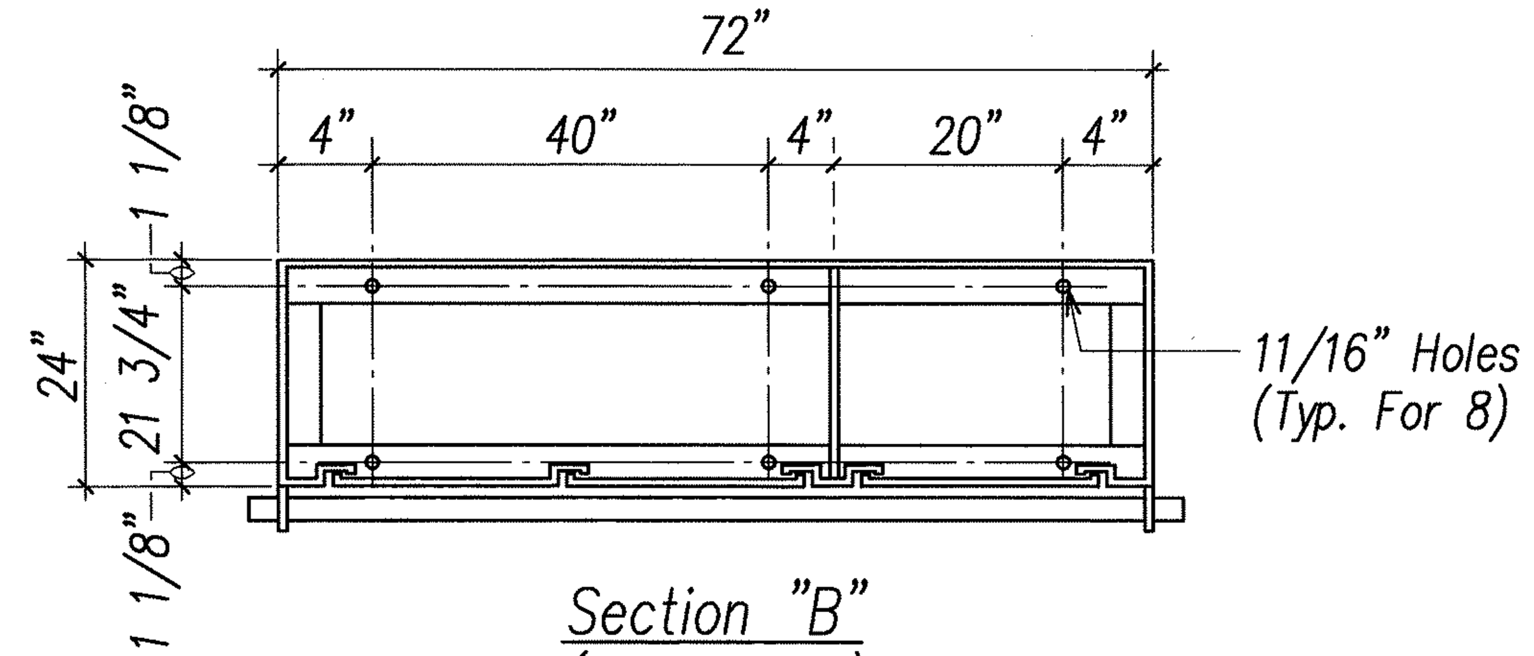
Detail "A"
Side View



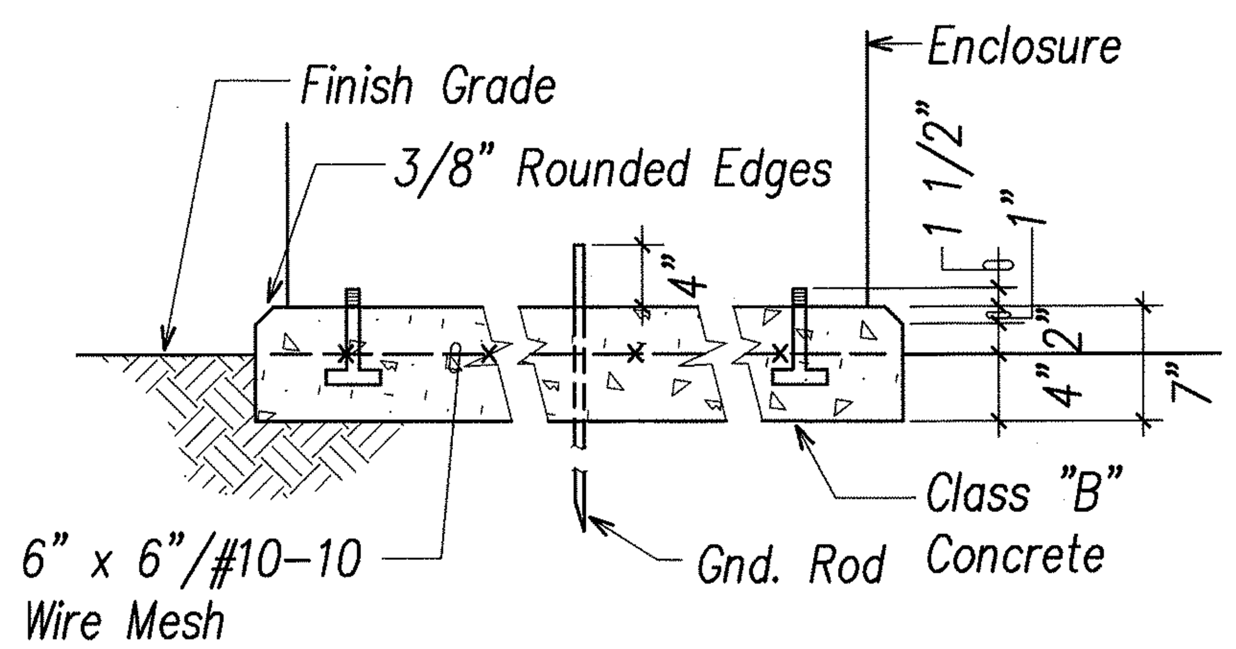
Detail "B"

Notes:

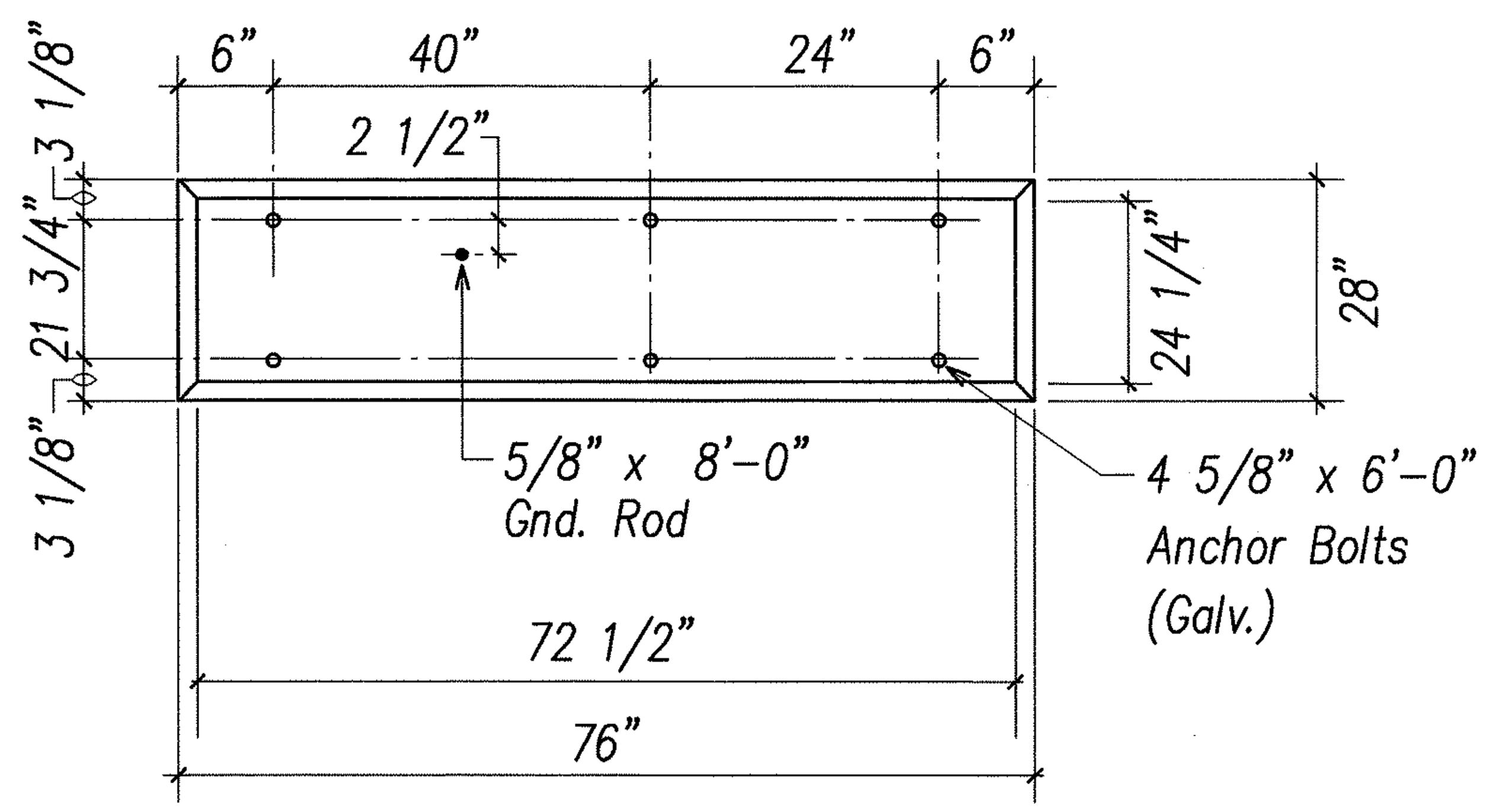
1. Cabinet to be primed with one coat shop primer.
2. Plywood to be treated (wolmanized) plywood.
3. Made from 0.125" Type 5052-H32 aluminum.
4. Provide epoxy enamel finish, color to match HECO pad mounted transformer.
5. Enclosure shall be NEMA 3R with neoprene gasketing.
6. Padlocks:
   2 – HECO furnished
   2 – Contractor furnished corbin sesamee combination type
7. 4" x 6" clear plexiglass window located for direct view of meter for reading by HECO.
8. Shop fabrication drawings shall be submitted for approval.



Section "B"
(Angle Frame)



Front



Plan

Concrete Pad

ELECTRICAL EQUIPMENT CABINET

NOT TO SCALE

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 3902-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

K. Ouchi

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL EQUIPMENT CABINET

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

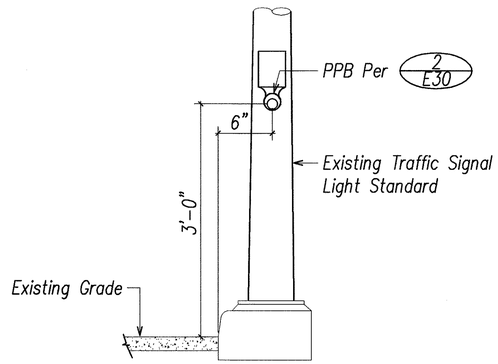
Scale: As Noted   Date: SEPT 2002

SHEET No. E29 OF 31 SHEETS

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

LAST SAVE: 08/08/03 @ 09:07:58 BY: TE PLOT SC 1"=1'
Z:\ACAD\PROJECTS\21088\21088e12

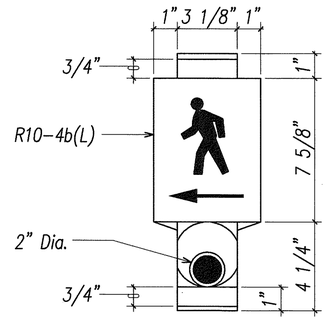
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	93	98



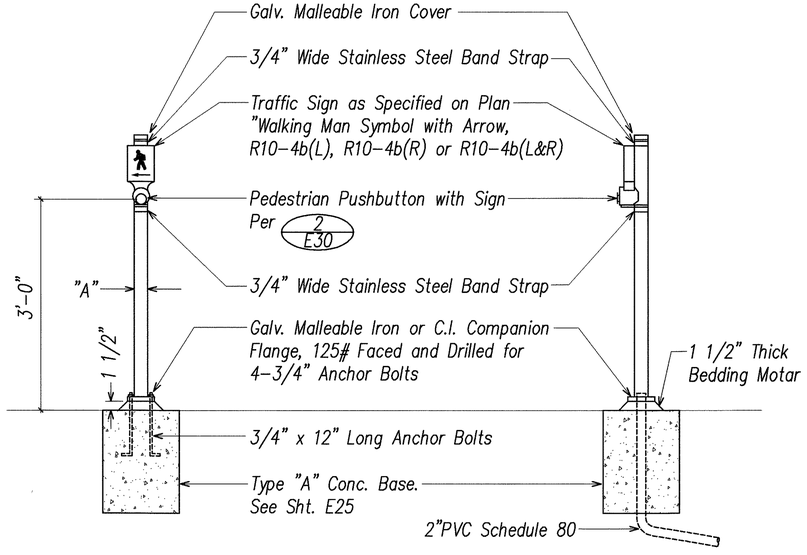
1/E30 PEDESTRIAN PUSHBUTTON MOUNTING
NOT TO SCALE

DETAIL NOTES:

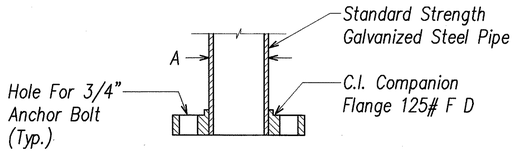
1. *The pedestrian pushbutton unit shall consist of a one piece assembly with a raise walking man, arrow indication and push button.*
2. *The pushbutton activator shall be of the mushroom plunger type, ADA acceptable, 2 inches in diameter that requires less than 5 lbs. of pressure to activate.*
3. *The raised man and arrows shall be directional and match the directional indication as shown on the plans.*
4. *The pushbutton shall be tamper proof, weatherproof and constructed so that electrical shocks are impossible.*
5. *The color scheme shall be:*
   White – Man, arrow and pushbutton
   Black – Background



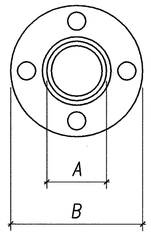
2/E30 PEDESTRIAN PUSHBUTTON (PPB)
NOT TO SCALE



FRONT VIEW SIDE VIEW



SECTION



TOP VIEW

FLANGE

NOTES:

1. *Conduits shall Protrude 2" Max above Finished Surface of Foundation.*
2. *Conduits Shall slope away from Post Foundation.*

DATA TABLE FOR PPB POST		
AMOUNT OF PPB	DIMENSIONS	
	A	B
1	3 1/2"	8"
2-3	4 1/2"	9"

3/E30 PEDESTRIAN PUSHBUTTON PEDESTAL AND BASE
NOT TO SCALE

ORIGINAL PLANS — NOTE BOOK — No. — SURVEY PLOTTED BY — DRAWN BY — TRACED BY — DESIGNED BY — QUANTITIES BY — CHECKED BY — DATE

LAST SAVE: 06/18/03 @ 10:25:38 PM TE PLOT SC 1'-0"=1"
Z:\ACAD\PROJECTS\21083\210884109

KEN OUCHI LICENSED PROFESSIONAL ENGINEER No. 2962-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

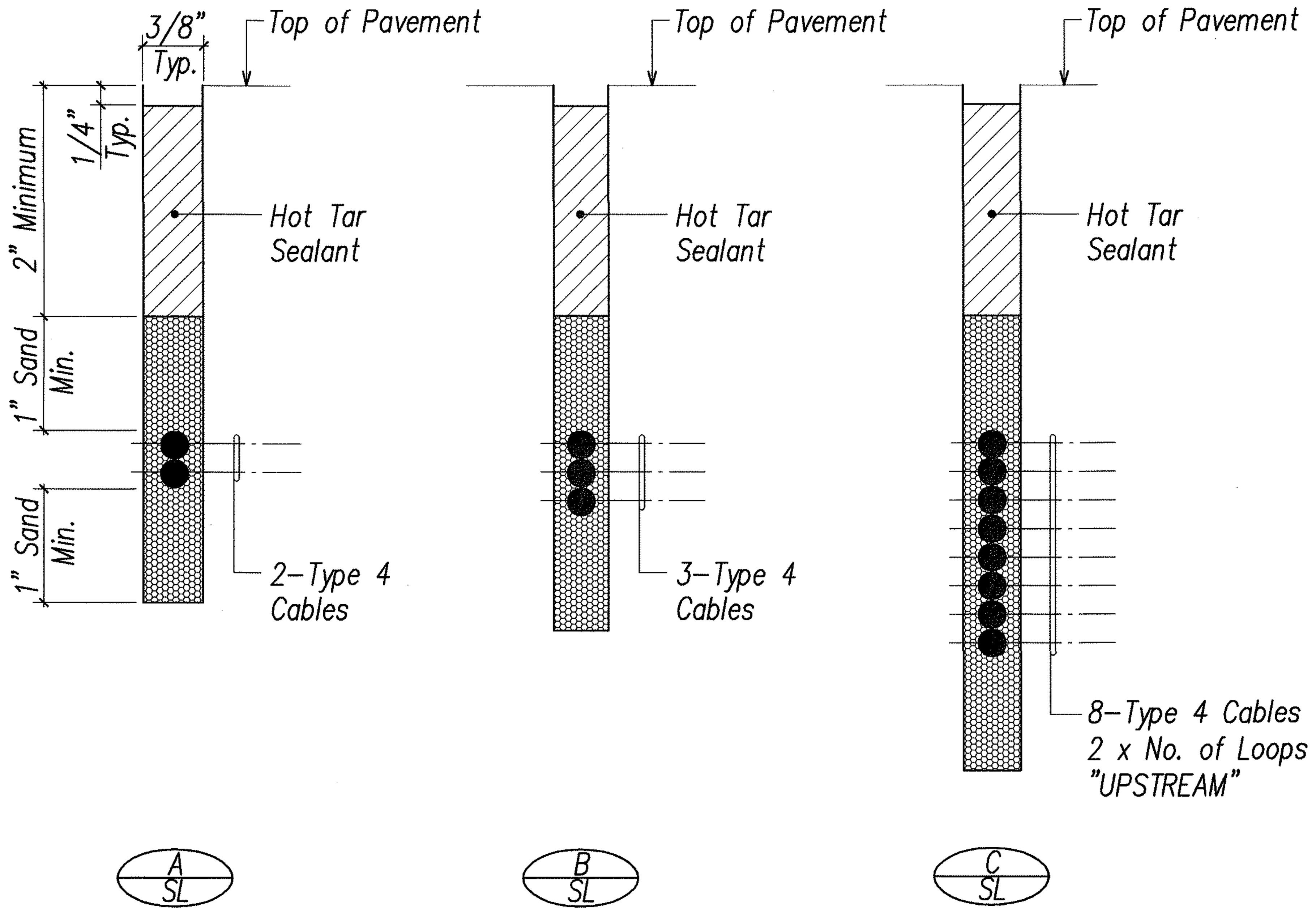
PEDESTRIAN PUSHBUTTON

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

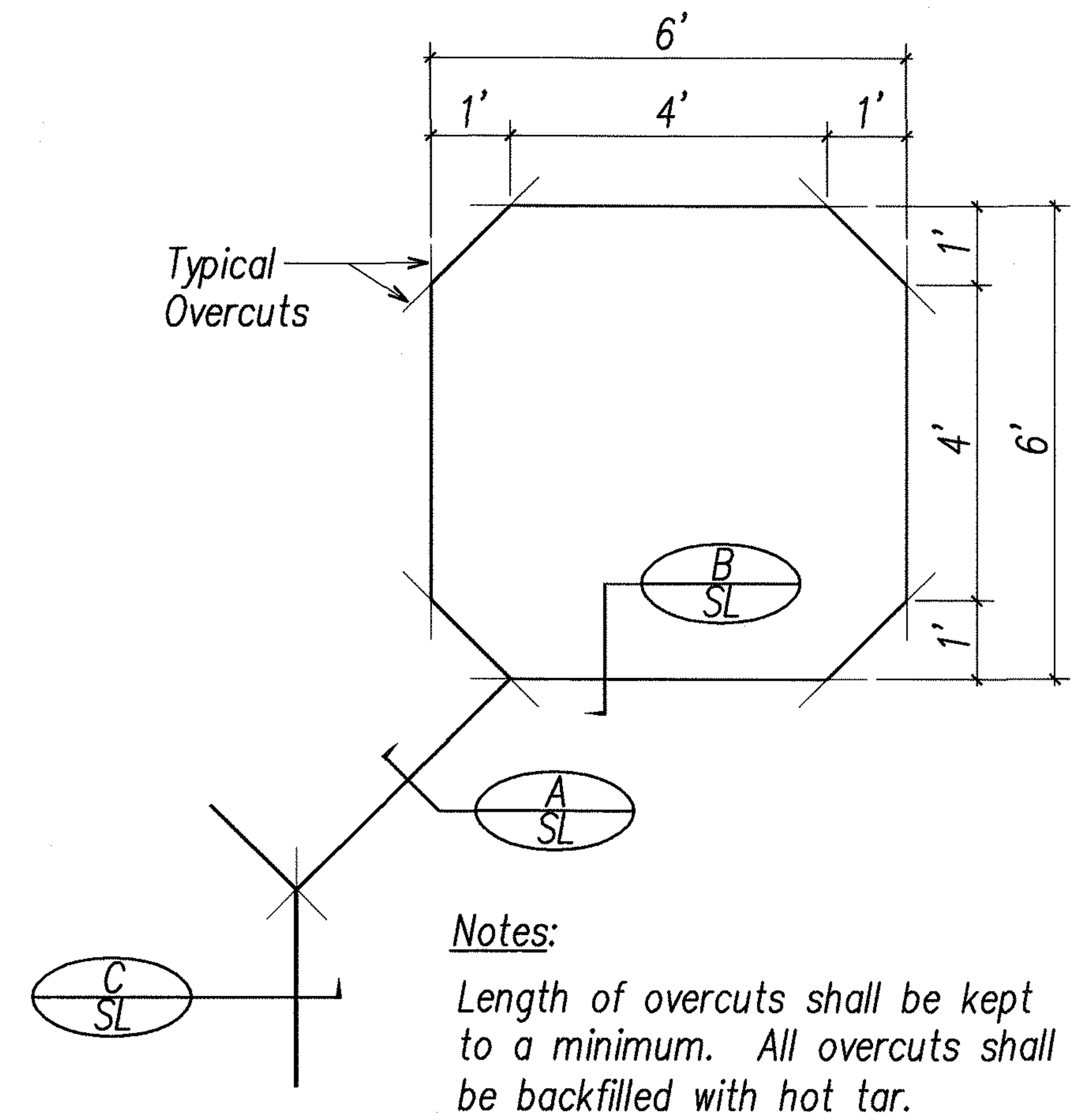
Scale: As Noted Date: SEPT 2002

SHEET No. E30 OF 31 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	83F-02-00M	2004	94	98

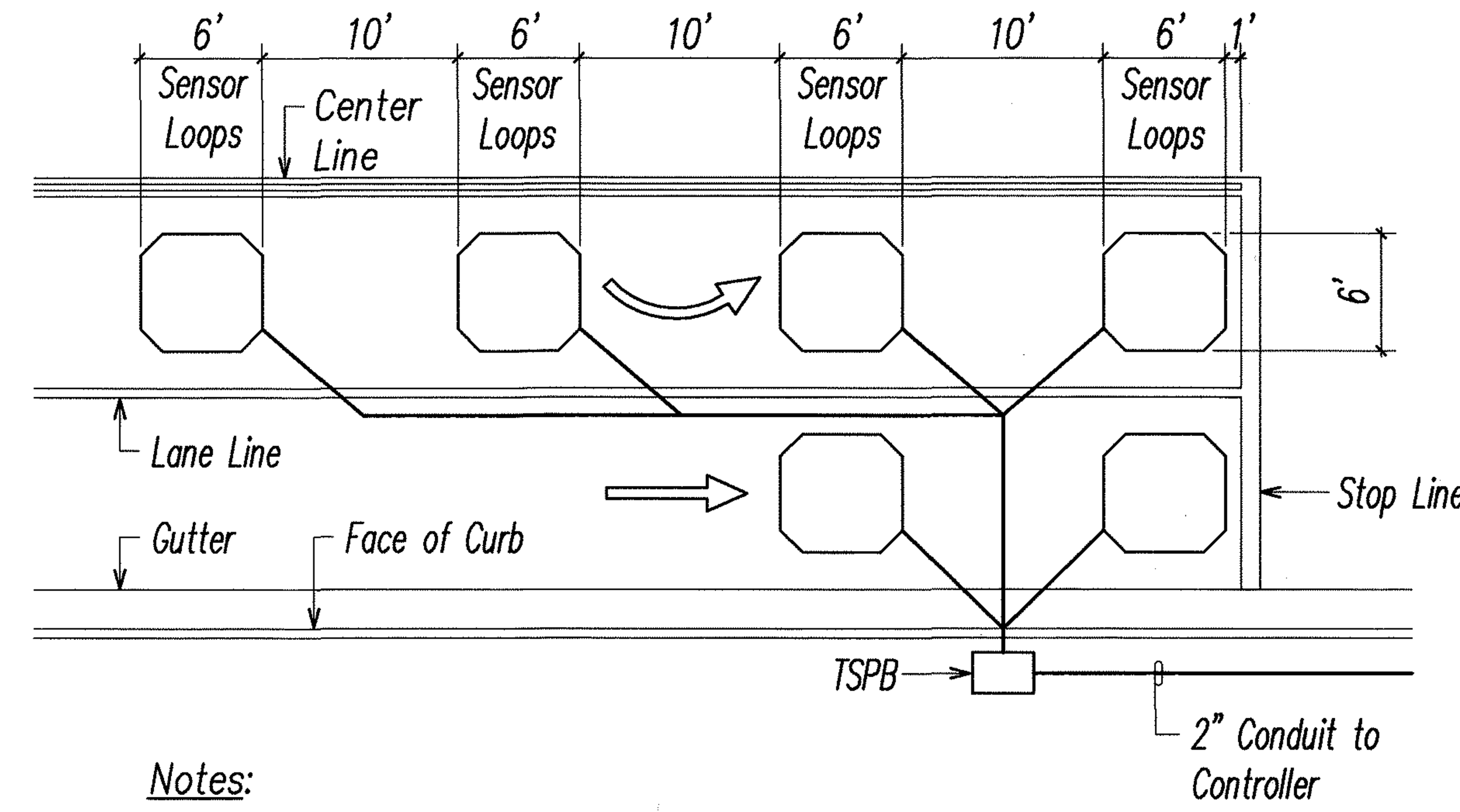


SENSOR LOOP SECTIONS
NOT TO SCALE



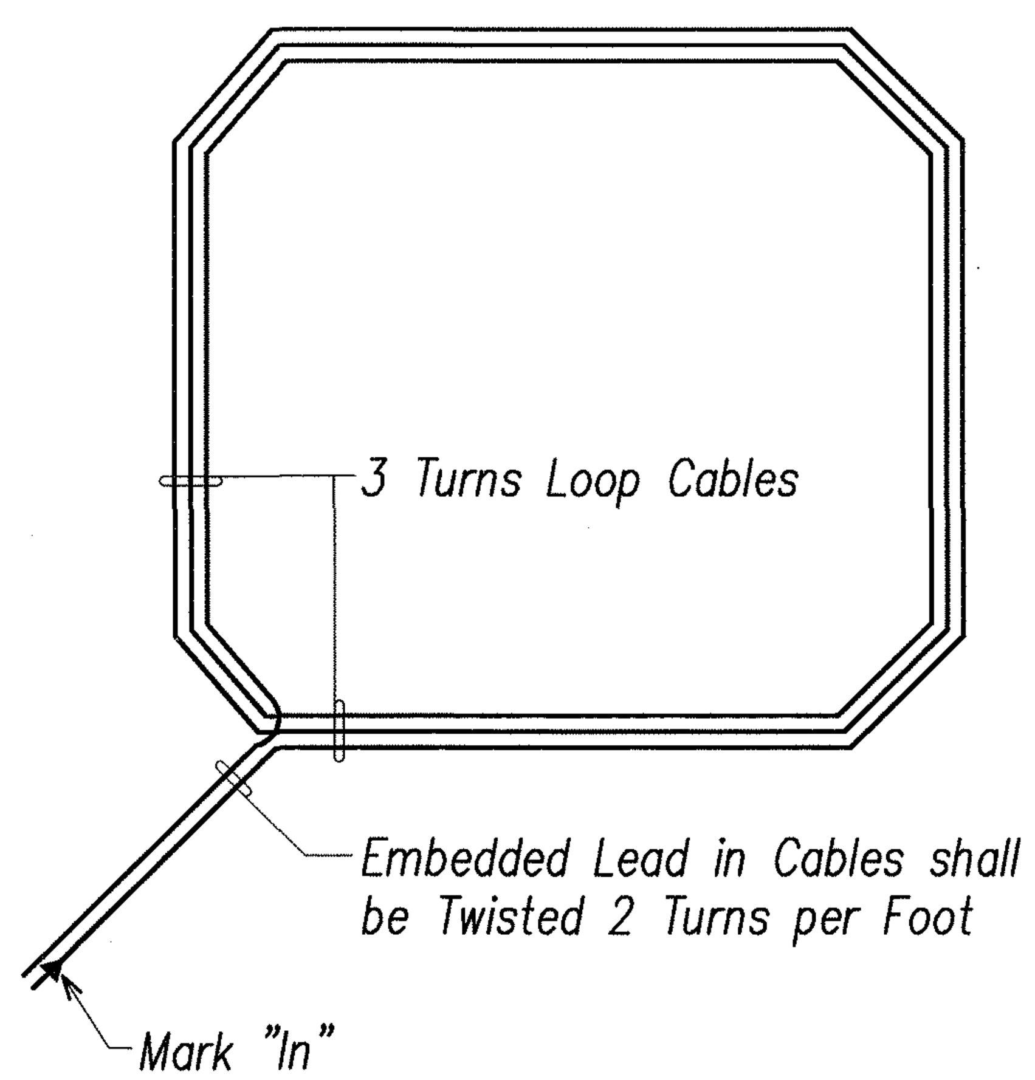
Notes:
Length of overcuts shall be kept to a minimum. All overcuts shall be backfilled with hot tar.

TYPICAL SENSOR LOOP SAWCUT PLAN
NOT TO SCALE



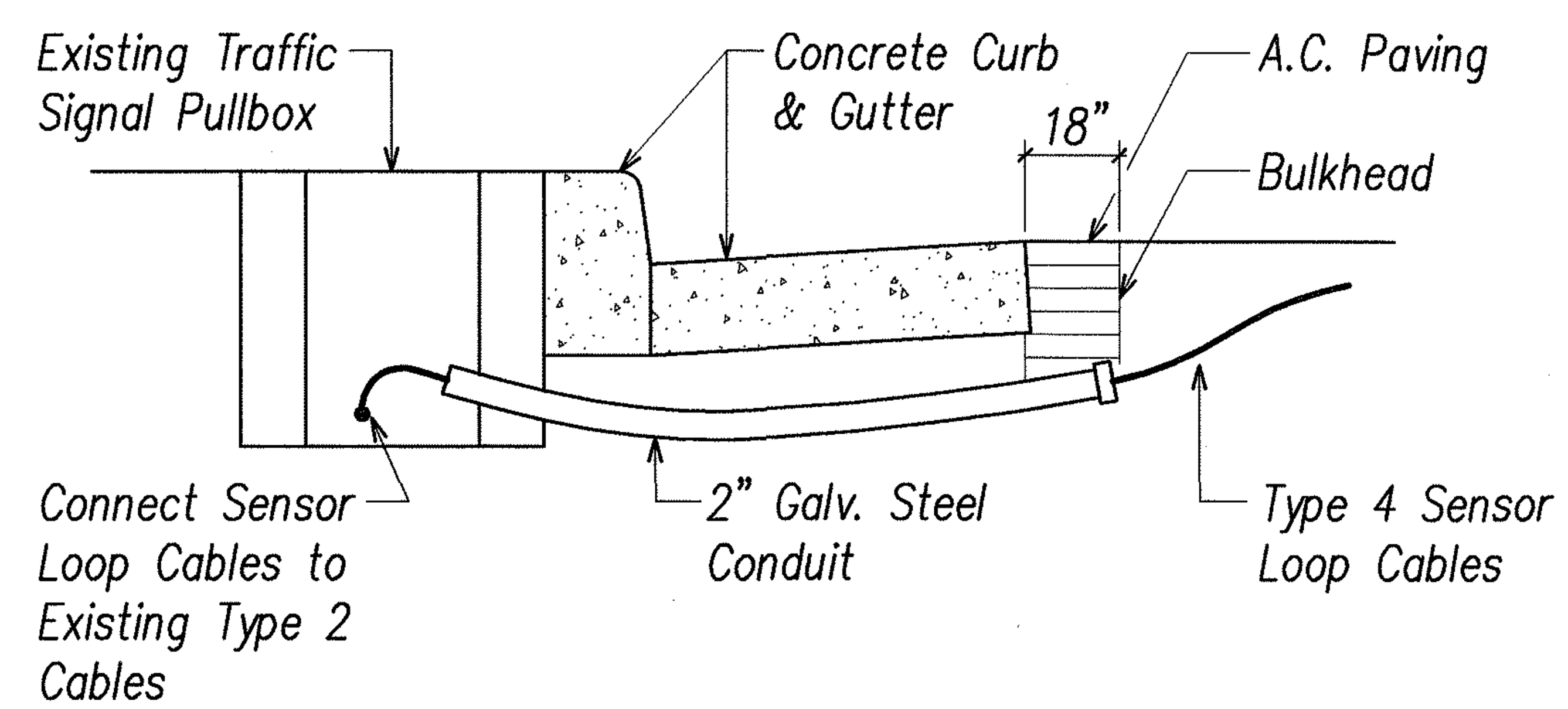
Notes:
1. Center sensor loops in lanes.
2. Collector cables shall be twisted 2 turns per foot.
3. Number of loops and locations vary. See project plans.
4. Number and locations of collector sawcuts may be varied in the field to suit.

TYPICAL SENSOR LOOP LAYOUT
NOT TO SCALE



Plan

TYPICAL SENSOR LOOP WIRING DIAGRAM
NOT TO SCALE



Notes:
1. Cap roadway end of conduit after installation.
2. Install bulkhead across conduit trench.
3. Backfill over conduit with new a.c. paving.
4. Reconstruct curb and gutter as required.

LOOP DETECTOR CONDUIT STUB OUT
NOT TO SCALE

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STATE OF HAWAII
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HIGHWAYS DIVISION

LOOP DETECTOR DETAILS

KAHEKILI HIGHWAY LIGHTING IMPROVEMENTS
Haiku Rd. to Ahuimanu Place
Project No. 83F-02-00M

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SHEET No. E31 OF 31 SHEETS