

1. The Contractor Shall Notify Electrical Maintenance Section, Department Of Transportation, State Highway Division, 72 hours In Advance Before Commencing Installation Of Highway Lighting System. Phone: 837-8056.
2. All Luminaries Shall Be High Pressure Sodium Type With Wattage And I.E.S. Type Light Distribution As Shown On The Approved Plans.
3. The Contractor Shall Have One Set Of Approved Plans At Job Site At All Times During The Construction Work And Record All Changes Occur On Construction Of Highway Lighting System.
4. The Contractor Shall Stencil Date Of Installation At The Bottom Of Photocell. One Photocell Only Is Required As Indicated On Plan.
5. Final Acceptance And Inspection Will Be Undertaken Only After All Work Has Been Completed.
6. The Contractor Shall Measure And Record Ground Resistance At Each Standard in the Presence of an Oahu District Maintenance Representative and Submit Recorded Ground Resistance To Oahu District Maintenance Section, Dept. Of Transportation, State Highway. The Contractor's Electrical Engineer Shall Certify All Electrical Tests, Including But Not Limited To: Continuity Test And The Ground Rod Resistant Test Prior To Submission To The Engineer.
7. Trim Tree Branches To Clear Removal Or Installation Of Street Light Standards, At No Additional Cost To The State.
8. Construction Work Shall Be Scheduled In Such A Manner That Street Lighting Is Provided During All Hours Of Darkness Either With New Or Existing Luminaries Or A Combination Thereof Temporary Connections Shall Be Made To Accomplish This End. The Continuity Of Street Lighting Circuits Shall Be Maintained Until The Existing Street Lighting Fixtures Are Ready For Removal.
The Contractor Shall Reconnect Electrical Power To All Existing Sign Lighting Systems And Underpass Lighting Fixtures. The Contractor Shall Provide Additional Wiring And Conduit As Required For An Operational System, At No Additional Cost To The State.
9. Where Existing Circuit Highway Lighting Luminaires On Metal Standards Are Indicated To Be Removed, The Luminaire And Pole Shall Be Removed And Disposed Of By The Contractor. The Foundation Shall Be Demolished To 36" Below Grade And The Surfaces Affected Shall Be Restored To Match The Surroundings.
10. New Pole Locations Shall Be Staked and Approval Of Locations Shall Be Obtained From The Engineer Prior to Installation. Poles Shall Be Installed To Clear Utilities, Both Underground and Overhead, and Guardrails.
11. The Contractor Shall At His Expense Keep The Project And Surrounding Area Free From Dust Nuisance And Shall Be Responsible For Cleaning And Removal Of All Silt And Debris Generated By The Excavation Work And Deposited And Accumulated Within Downstream Waterways, Ditches, Drain Pipes And On Public Roadways. Any Citations (Fines) Received By The State For The Contractor's Noncompliance Of Any Department Of Health Regulations Shall Be Deducted From The Progress Payment.
12. The Contractor Shall Locate Existing Buried Utility Lined In The Vicinity Of The Excavation Work Prior To Commencing Excavation. As A Minimum An Electronic Magnetic Device For Detection Of Buried Lines Shall Be Utilized Prior To Excavation. This Work Shall Not Be Paid For Separately, But Considered Incidental to the Ductline. Trenches Shall Be Excavated With Care. The Contractor Shall Be Responsible For Damages To Existing Utilities Resulting From His Negligence And Shall Bear Cost Of Repairs To The Utilities. Method Of Repair Shall Be Determined By The Affected Utility Company.

- ## HIGHWAY LIGHTING SYMBOLS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	65B-01-01M	2001	45	58

- | | | | |
|------------------------|-------------------|-----|-------------------|
| Contract No. | Type Installation | | Pole No. |
| | 1 | 6 | |
| Luminaire | I-N250 | II | Type Distribution |
| Circuit No. | 2 | A,B | Phase |
| # Station | Sta. 101+40 | 15' | Arm Length |
| Additional Description | | | |



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C. Hun

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HIGHWAY LIGHTING NOTES

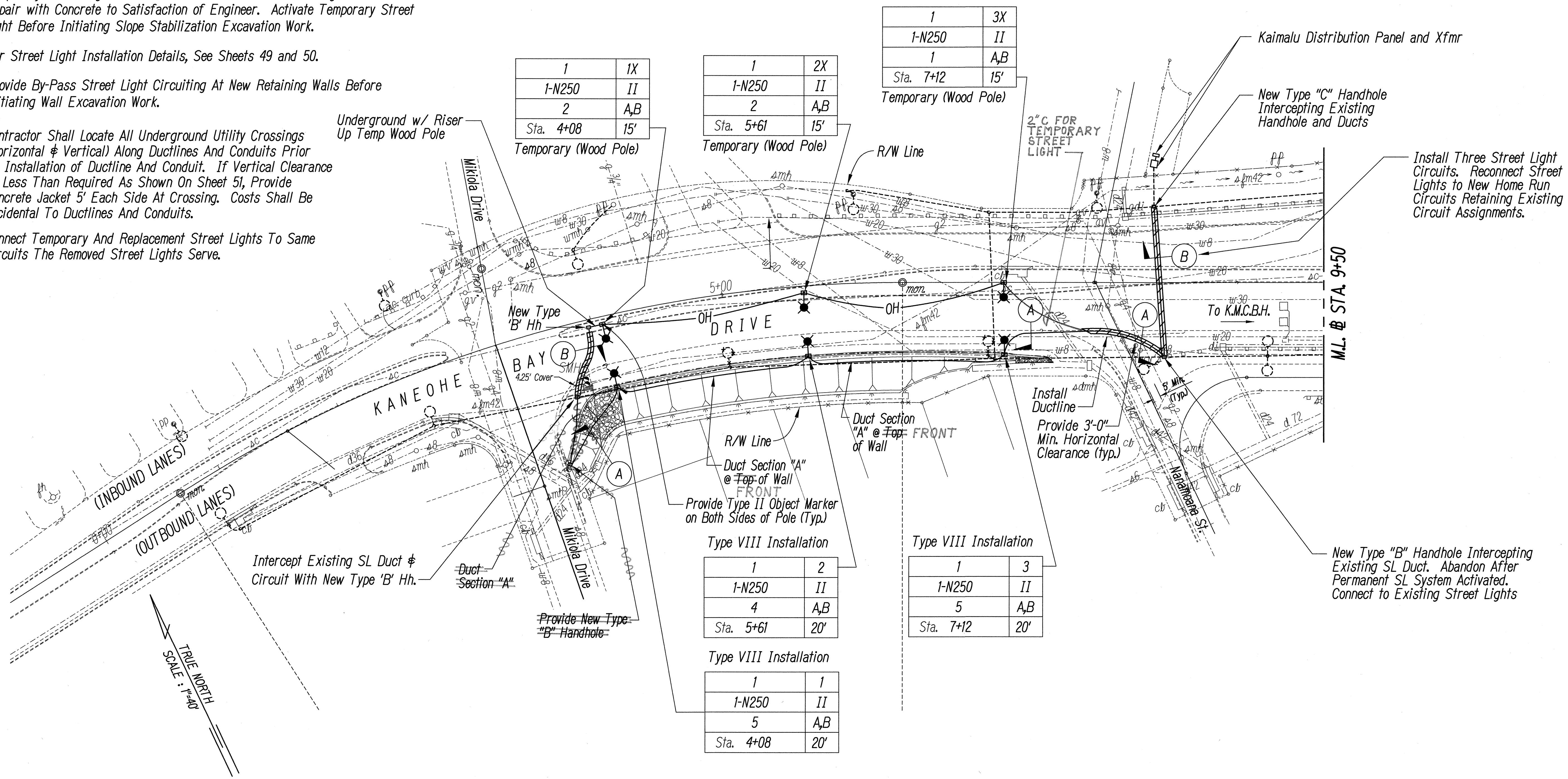
MOKAPU SADDLE ROAD SLOPE STABILITY
Vicinity of Mikiola Dr. to Kahinani Place
Project No. 65B-01-01M

Scale: None Date: May, 2001

SHEET No. 1 OF 8 SHEETS

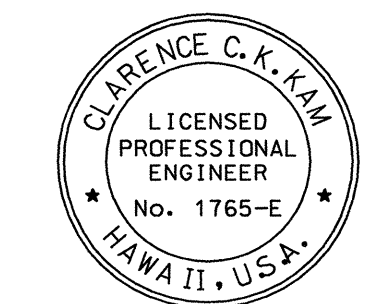
Notes:

1. Temporary Street Light Shall be Installed Centered of Existing Median. Repair with Concrete to Satisfaction of Engineer. Activate Temporary Street Light Before Initiating Slope Stabilization Excavation Work.
2. For Street Light Installation Details, See Sheets 49 and 50.
3. Provide By-Pass Street Light Circuiting At New Retaining Walls Before Initiating Wall Excavation Work.
4. Contractor Shall Locate All Underground Utility Crossings (Horizontal & Vertical) Along Ductlines And Conduits Prior To Installation of Ductline And Conduit. If Vertical Clearance Is Less Than Required As Shown On Sheet 51, Provide Concrete Jacket 5' Each Side At Crossing. Costs Shall Be Incidental To Ductlines And Conduits.
5. Connect Temporary And Replacement Street Lights To Same Circuits The Removed Street Lights Serve.



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

Approved: *Wassellomua* 5/15/01
Chief, Wastewater Branch, DPP Date



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C. Kim

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGHWAY LIGHTING PLANS

MOKAPU SADDLE ROAD SLOPE STABILITY
Vicinity of Mikiola Dr. to Kahinani Place
Project No. 65B-01-01M
Scale: 1"=40' Date: May, 2001

SHEET No. 2 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	65B-01-01M	2001	47	58

Notes:

1. Temporary Street Light Shall be Installed Centered of Existing Median. Provide Wood Poles. Patch Sidewalk After Removal of Pole, Matching Existing Condition Repair with Concrete to Satisfaction of Engineer. Activate Temporary Street Light Before Initiating Slope Stabilization Excavation Work.
2. For Street Light Installation Details, See Sheets 49 and 50.
3. Existing Traffic Signal Design Per STP-065-1(7).
4. New Temp Light Riser Pole (No Street Light) w/ Street Light Riser From Underground.

5. Applies To All Plan Sheets - Existing Traffic Signal Ductline And Handholes To Remain. Protect During Pavement Work.
6. Contractor Shall Locate All Underground Utility Crossings (Horizontal & Vertical) Along Ductlines And Conduits Prior To Installation of Ductline And Conduit. If Vertical Clearance Is Less Than Required As Shown On Sheet 51, Provide Concrete Jacket 5' Each Side At Crossing. Costs Shall Be Incidental To Ductlines And Conduits.
7. The Contractor Shall Provide Temporary Support for Traffic Signal Pullboxes, Conduits & Cables During Construction. The Cost for This Work Shall be Incidental to the Contract Price of the Various Contract Items. The Contractor Shall be Responsible for any Damages Due to His Negligence at No Cost to the State. The Contractor Shall Refer to Project STP-065-1(7) for the Original Design and Layout.

DRAWING REVIEW

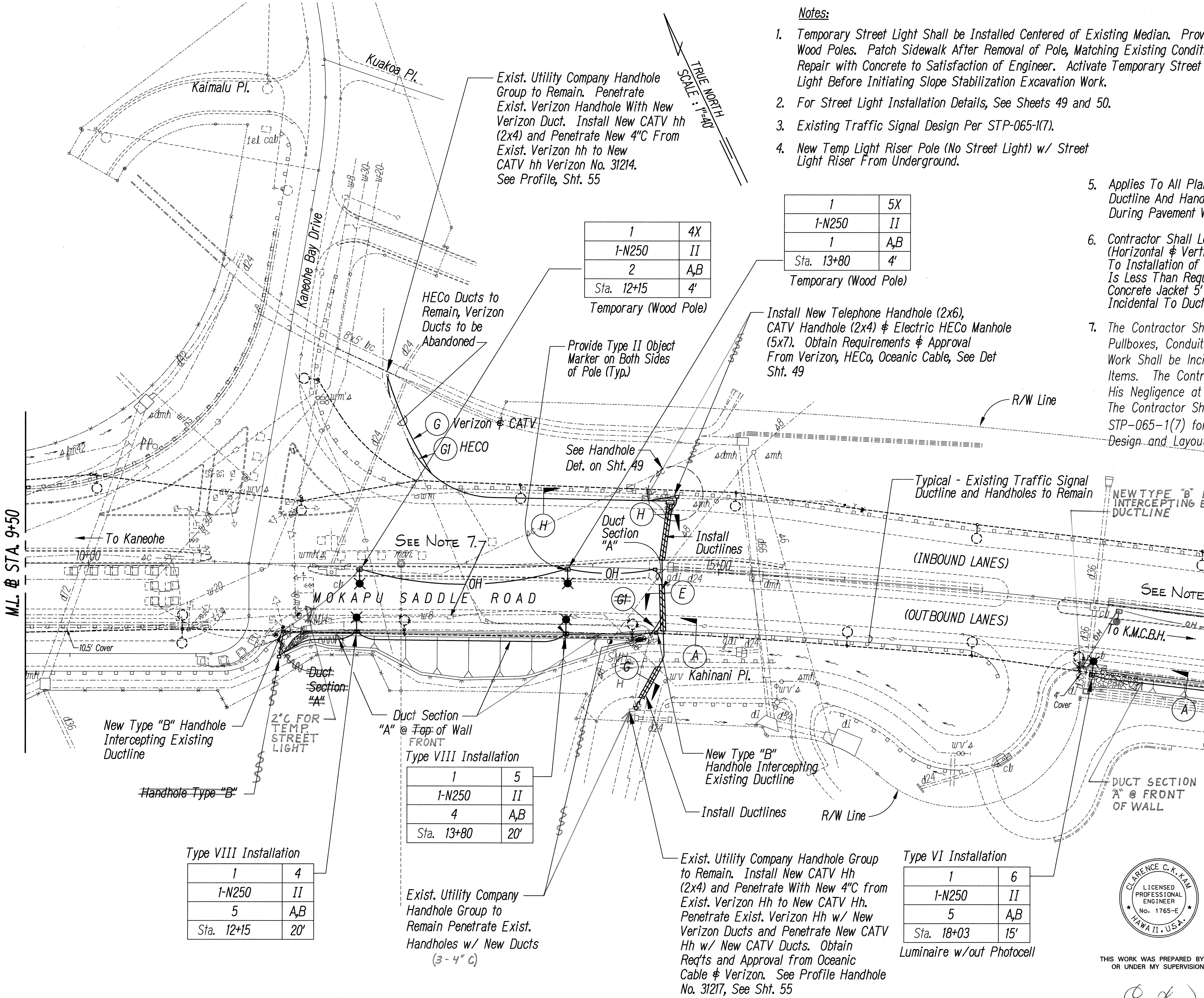
Reviewed for HECO's Facilities Only
Date 5/1/01 By *[Signature]*
Engineering Department
Hawaiian Electric Company, Inc.
HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

ADD 3 TEMPORARY STREET LIGHTS ON WOOD POLES IN EXISTING MEDIAN (DIRECTLY ACROSS NEW PERMANENT STREET LIGHTS AT WALL #3).

Approved: *[Signature]* 5/15/01
Chief, Wastewater Branch, DPP
Date
Hawaiian Electric Company Date
[Signature] 5/2/01
Verizon Hawaii Inc. Date
[Signature] 5/08/01
Oceanic Cable Date

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HIGHWAY LIGHTING PLANS

MOKAPU SADDLE ROAD SLOPE STABILITY
Vicinity of Mikiola Dr. to Kahinani Place
Project No. 65B-01-01M
Scale: 1"=40' Date: May, 2001



Exist. Utility Company Handhole Group to Remain. Penetrate Exist. Verizon Handhole With New Verizon Duct. Install New CATV hh (2x4) and Penetrate New 4" C From Exist. Verizon hh to New CATV hh Verizon No. 31214. See Profile, Sht. 55

1	4X
1-N250	II
2	A,B
Sta. 12+15	4'

Temporary (Wood Pole)

1	5X
1-N250	II
1	A,B
Sta. 13+80	4'

Temporary (Wood Pole)

Install New Telephone Handhole (2x6), CATV Handhole (2x4) & Electric HECO Manhole (5x7). Obtain Requirements & Approval From Verizon, HECO, Oceanic Cable, See Det Sht. 49

Provide Type II Object Marker on Both Sides of Pole (Typ.)

HECO Ducts to Remain, Verizon Ducts to be Abandoned

Verizon & CATV
G1 HECO

See Handhole Det. on Sht. 49

Typical - Existing Traffic Signal Ductline and Handholes to Remain

NEW TYPE "B" HANDHOLE INTERCEPTING EXIST. DUCTLINE

SEE NOTE 7.

Duct Section "A" @ Top of Wall FRONT Type VIII Installation

1	5
1-N250	II
4	A,B
Sta. 13+80	20'

New Type "B" Handhole Intercepting Existing Ductline

Install Ductlines

Type VI Installation

1	6
1-N250	II
5	A,B
Sta. 18+03	15'

Luminaire w/out Photocell

Exist. Utility Company Handhole Group to Remain. Install New CATV Hh (2x4) and Penetrate With New 4" C from Exist. Verizon Hh to New CATV Hh. Penetrate Exist. Verizon Hh w/ New Verizon Ducts and Penetrate New CATV Hh w/ New CATV Ducts. Obtain Req'ts and Approval from Oceanic Cable & Verizon. See Profile Handhole No. 31217, See Sht. 55

Exist. Utility Company Handhole Group to Remain Penetrate Exist. Handholes w/ New Ducts (3-4" C)

Type VIII Installation

1	4
1-N250	II
5	A,B
Sta. 12+15	20'

New Type "B" Handhole Intercepting Existing Ductline

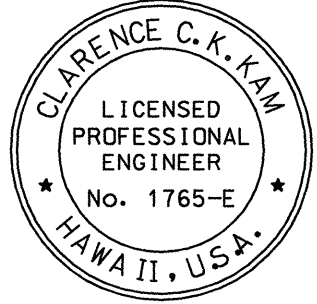
Handhole Type "B"

Duct Section "A" 2" C FOR TEMP STREET LIGHT

ML. @ STA. 9+50

ML. @ STA. 19+50

DATE _____
SURVEY PLOTTED BY _____
DRAWN BY _____
CHECKED BY _____
NOTE BOOK _____
QUANTITIES BY _____
CHECKED BY _____
ORIGINAL PLAN _____
DATE _____

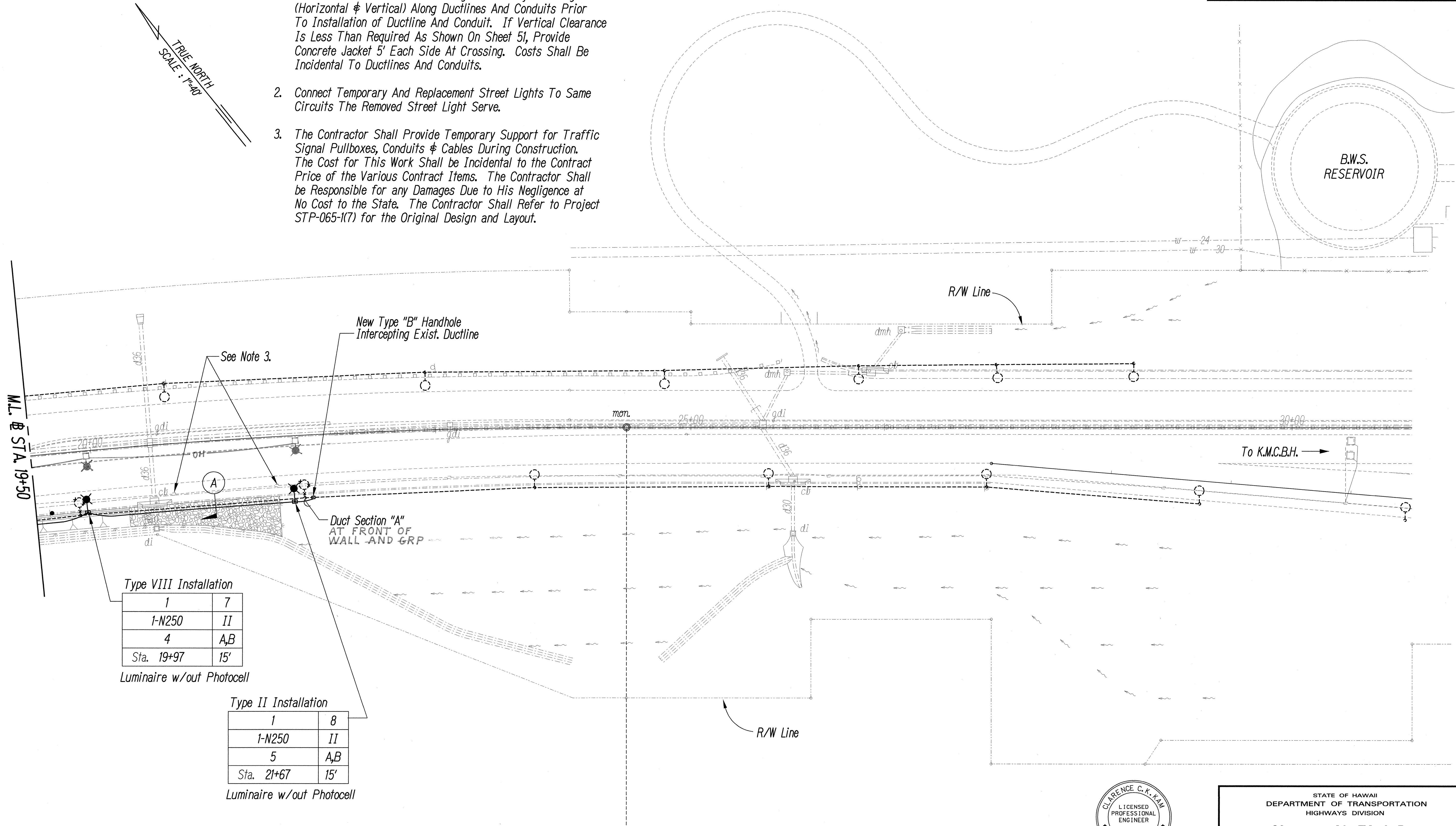


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[Signature]

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	65B-01-01M	2001	48	58

- Notes:
- Contractor Shall Locate All Underground Utility Crossings (Horizontal & Vertical) Along Ductlines And Conduits Prior To Installation of Ductline And Conduit. If Vertical Clearance Is Less Than Required As Shown On Sheet 51, Provide Concrete Jacket 5' Each Side At Crossing. Costs Shall Be Incidental To Ductlines And Conduits.
 - Connect Temporary And Replacement Street Lights To Same Circuits The Removed Street Light Serve.
 - The Contractor Shall Provide Temporary Support for Traffic Signal Pullboxes, Conduits & Cables During Construction. The Cost for This Work Shall be Incidental to the Contract Price of the Various Contract Items. The Contractor Shall be Responsible for any Damages Due to His Negligence at No Cost to the State. The Contractor Shall Refer to Project STP-065-1(7) for the Original Design and Layout.



Type VIII Installation

1	7
1-N250	II
4	A,B
Sta. 19+97	15'

Luminaire w/out Photocell

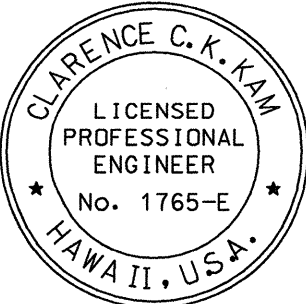
Type II Installation

1	8
1-N250	II
5	A,B
Sta. 21+67	15'

Luminaire w/out Photocell

Note:
For Street Light Installation Details, See Sheets 49 and 50.

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

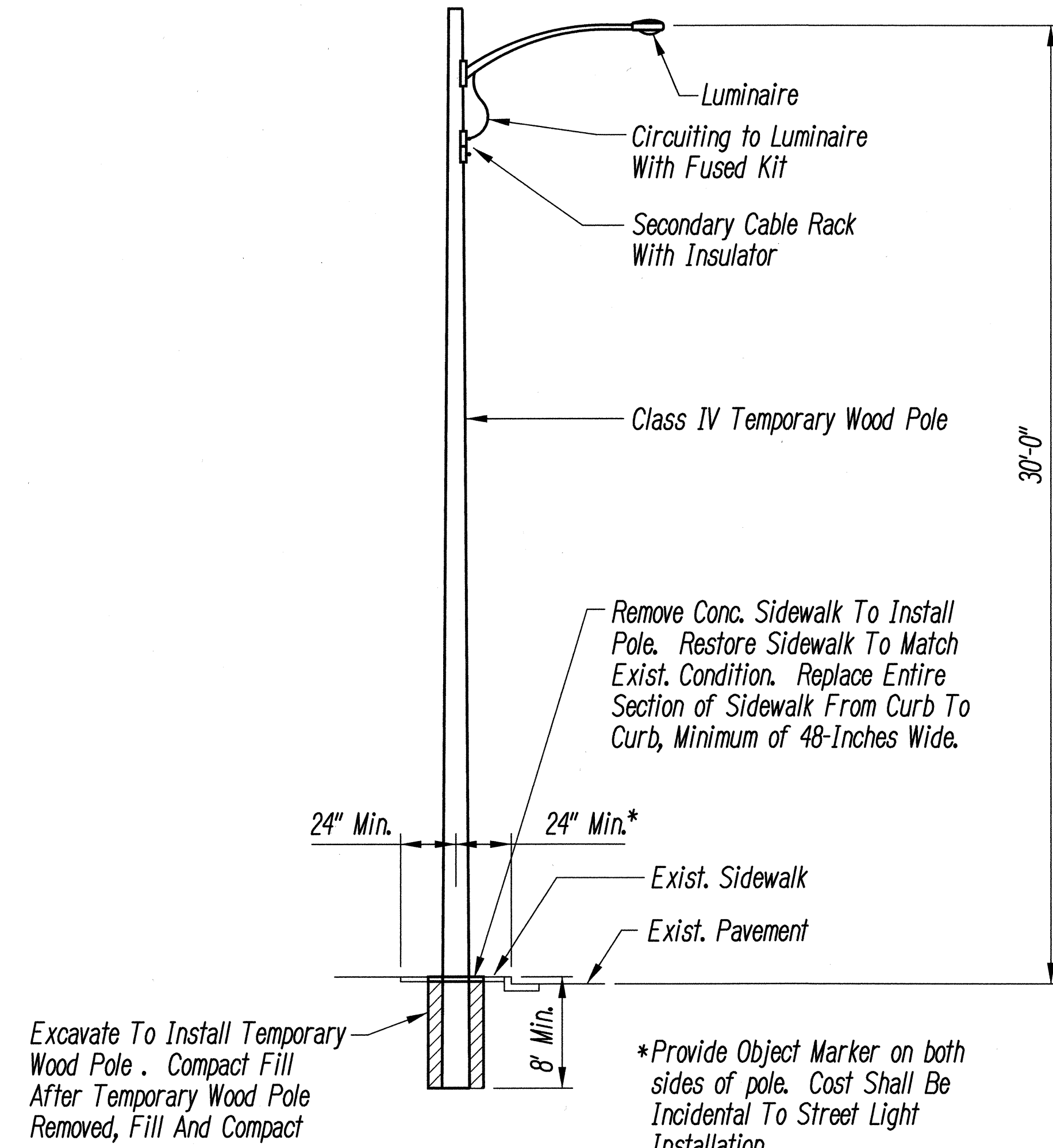


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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HIGHWAY LIGHTING PLAN

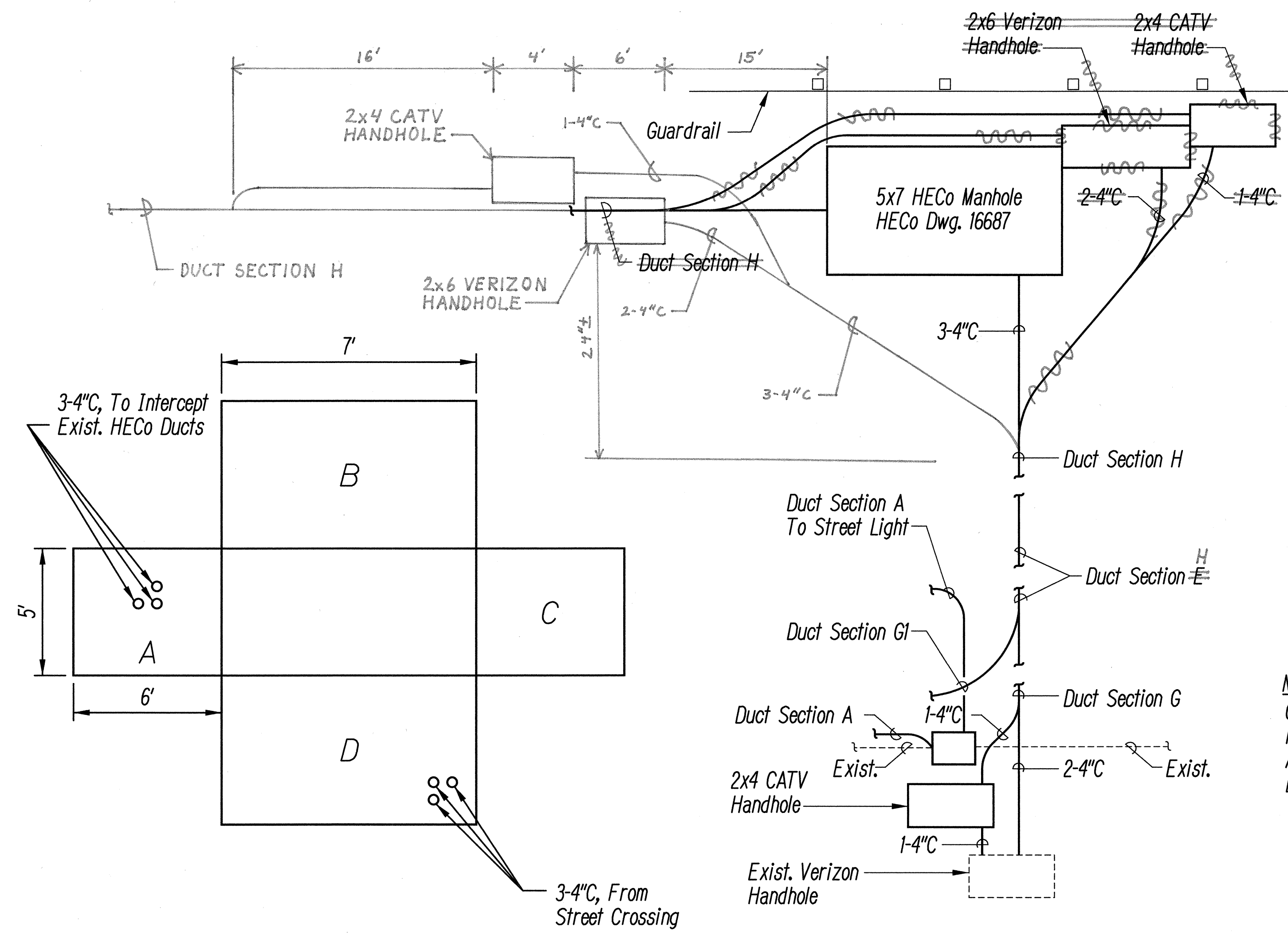
MOKAPU SADDLE ROAD SLOPE STABILITY
Vicinity of Mikiola Dr. to Kahinani Place
Project No. 65B-01-01M
Scale: 1"=40' Date: May, 2001
SHEET No. 4 OF 8 SHEETS

48



TYPICAL TEMPORARY WOOD POLE INSTALLATION
NOT TO SCALE

CABLE/CONDUCTOR/CONDUIT SCHEDULE	
Duct Section B @ Mikiola Drive	2-2" C Spare 1-2" C, 3#6, 1#6 Grd - Street Lights
Duct Section A Between Mikiola Drive & Nanamoana Place	1-2" C Spare 1-2" C, 3#6, 1#6 Grd - Street Lights
Duct Section B Crossing Highway @ Nanamoana Place	1-2" C, 3#6, 1#6 Grd - Street Lights to Mikiola Drive 1-2" C, 3#6, 1#6 Grd - Street Lights toward H-3 1-2" C Spare
Duct Section A Between Kaneohe Bay Drive & Kahinani Place	1-2" C Spare 1-2" C, 3#6, 1#6 Grd - Street Lights
Duct Section A From Kahinani Place Towards H-3	1-2" C Spare 1-2" C, 3#6, 1#6 Grd - Street Lights



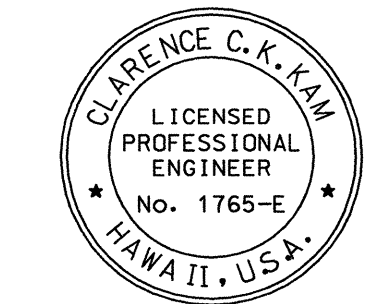
HECO MANHOLE WALLS DEVELOPED VIEW
NOT TO SCALE

HANDHOLE & MANHOLE GROUP DETAIL
NOT TO SCALE

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

DRAWING REVIEW
Reviewed for HECO's Facilities Only
Date 5/1/01 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.

Approved:
Hawaiian Electric Company Date
Verizon Hawaii Inc. Date

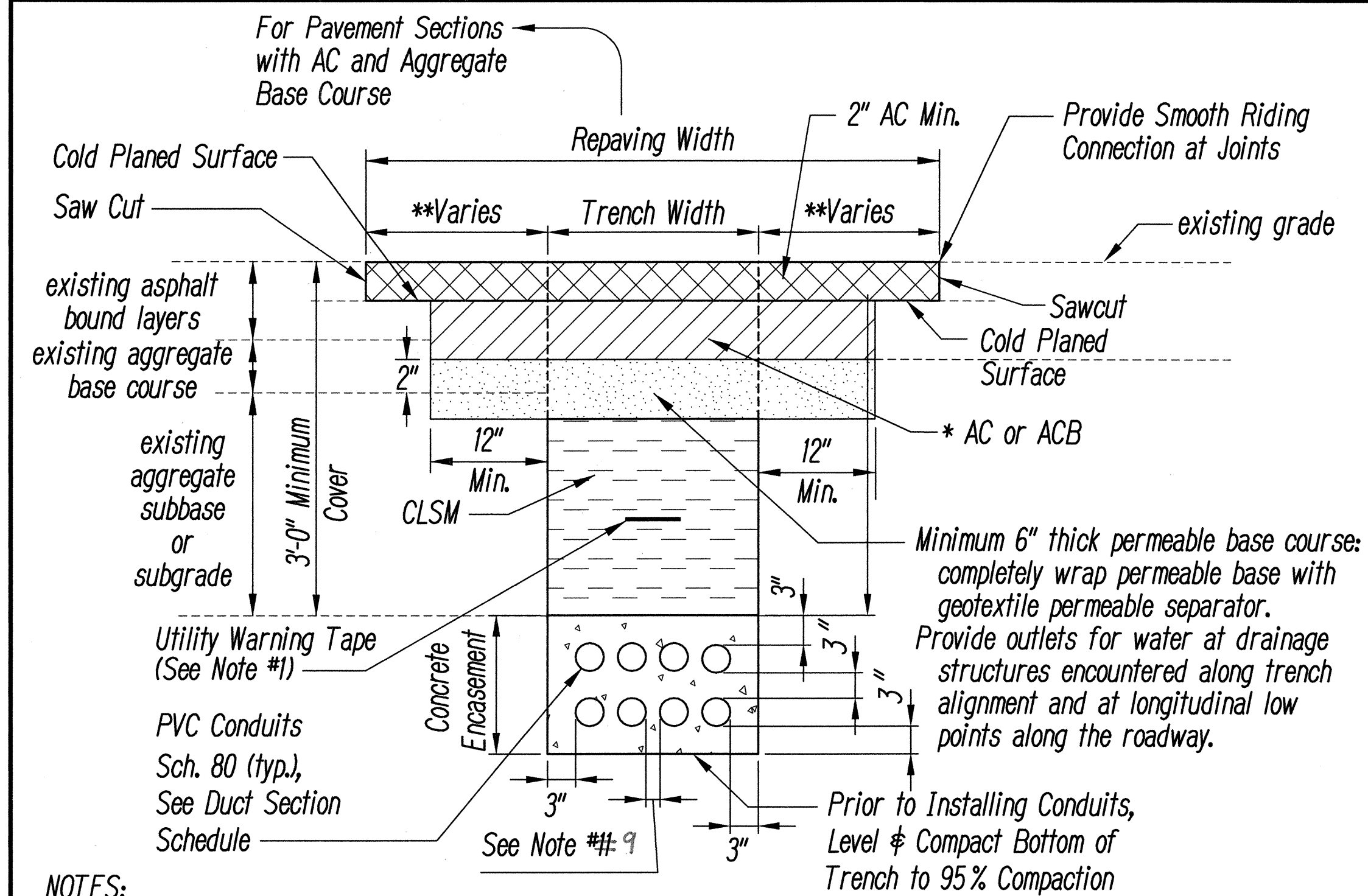


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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HIGHWAY LIGHTING DETAILS
SINGLE LINE DIAGRAMS
MOKAPU SADDLE ROAD SLOPE STABILITY
Vicinity of Mikiola Dr. to Kahinani Place
Project No. 65B-01-01M
Scale: None Date: May, 2001
SHEET No. 5 OF 8 SHEETS

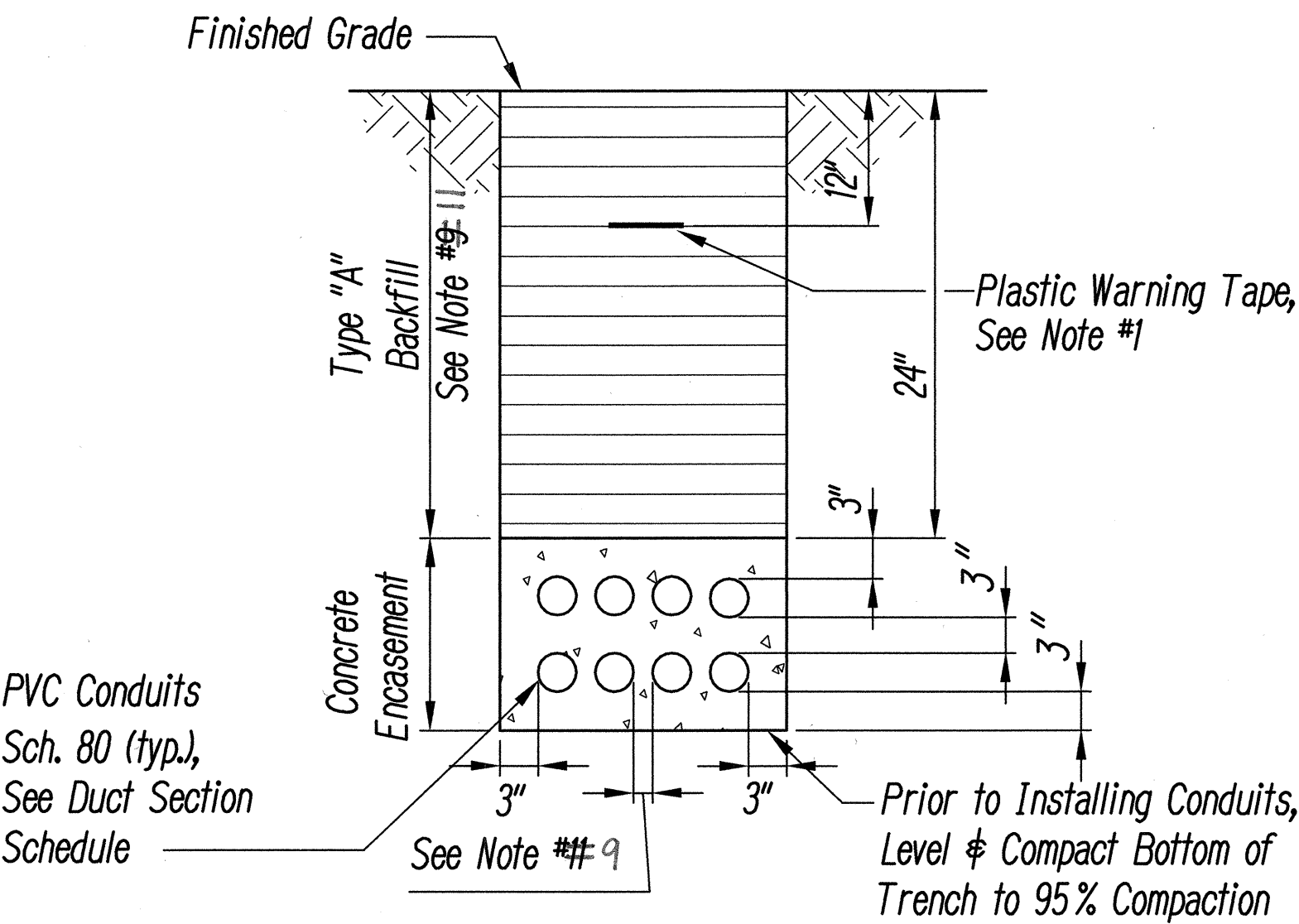
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	65B-01-01M	2001	51	58



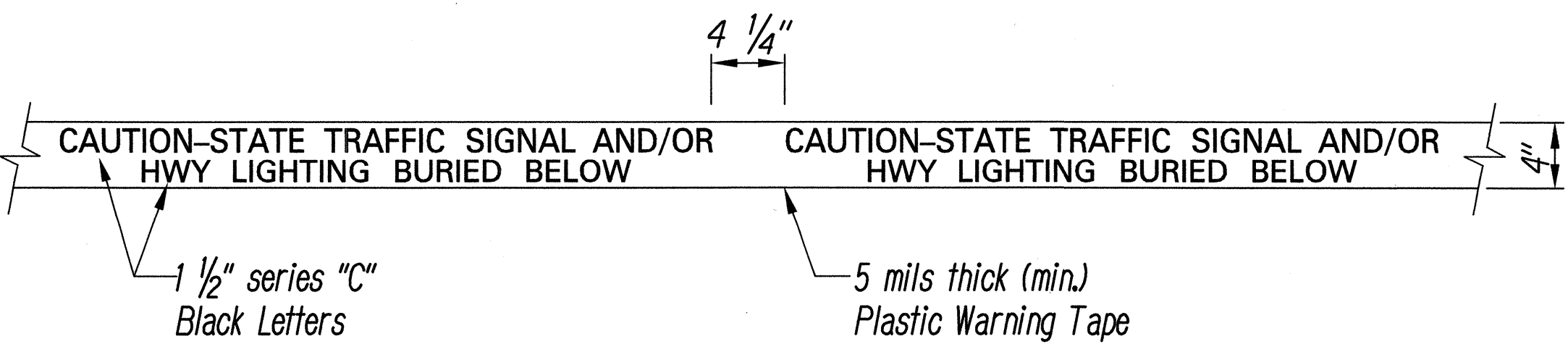
NOTES:

1. This trench restoration is to be used wherever the pavement is an asphalt surface, including medians and paved areas between guardrails.
2. Tack coat existing asphalt bound material faces prior to filling excavation with asphalt bound material.

AC PAVEMENT AREAS



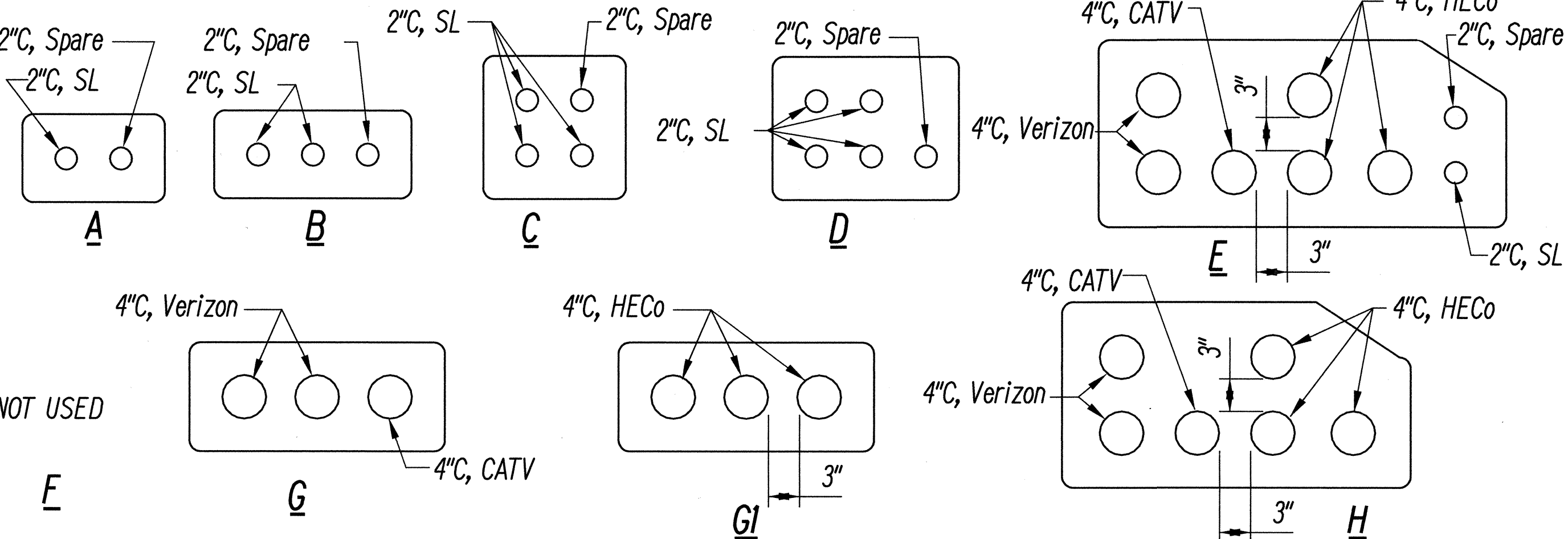
NON-PAVEMENT AREAS



METAL DETECTABLE RED PLASTIC WARNING TAPE

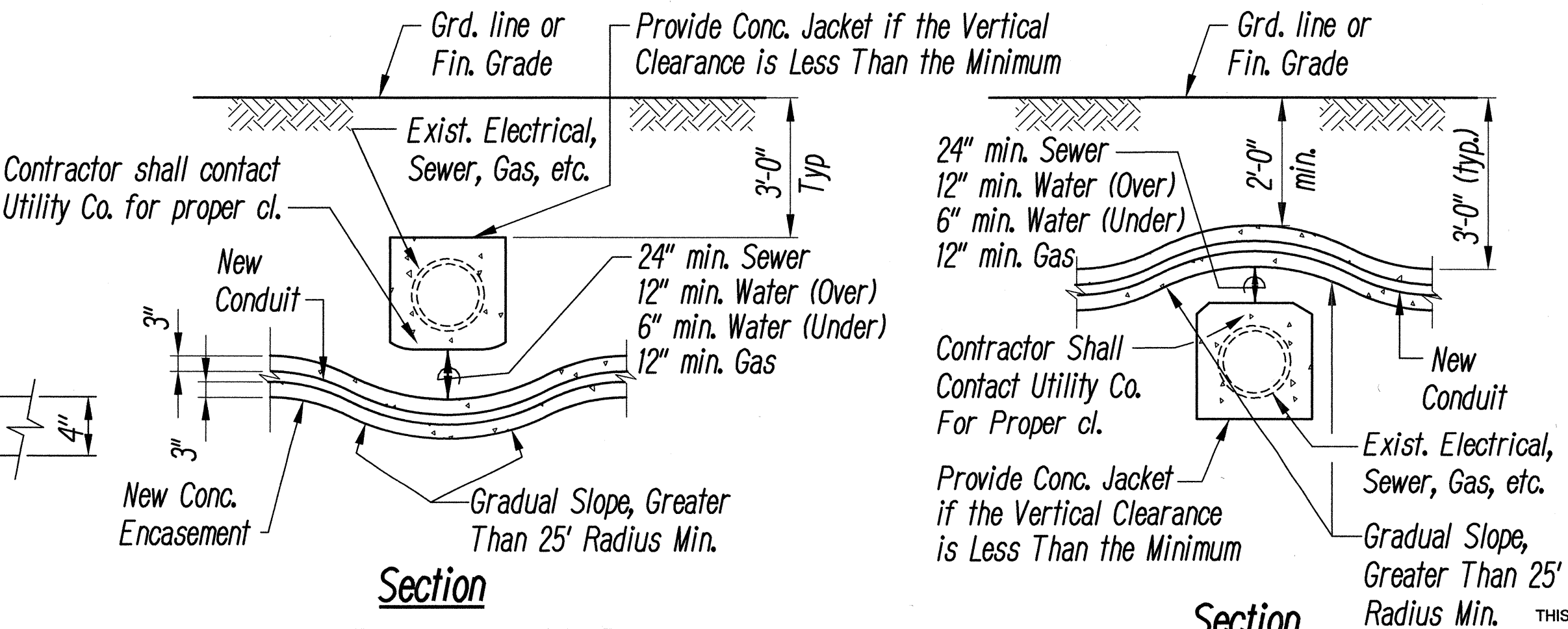
Not to Scale

- * NOTES:**
1. When thickness less than 6" use AC.
 2. When thickness 6" or greater, use ACB or AC.
- ** NOTES:**
1. If trench aligned traverse to direction of travel, 1 foot on each side of trench.
 2. If trench aligned along direction of travel, to edge of lane in which edge of trench is located.
 3. Smoothness of paved surfaces: The distance from the paved surface to the testing edge of a ten-foot straight edge between two points of contact shall not exceed 3/16 inch.



DUCT SECTION WITH CONCRETE ENCASED DUCTS DETAIL

Not to Scale



CONDUIT BY-PASS DETAIL AT VARIOUS UTILITIES

Not to Scale

TRENCH NOTES:

1. 5 mil Thick Red Colored Plastic Warning Tape 4" Wide, Entire Length of Duct. Tape to have Continuous Metallic Backing and Corrosion Resistant Foil Core. Warning and Identification to be Imprinted on Tape and Shall Read, "CAUTION BURIED ELECTRIC CABLE, TELEPHONE CABLE AND/OR HWY LIGHTING BELOW". Message Shall be Repeated Approximately Every Ten Feet. Tape Shall be Considered Incidental to Ductline Work. See Detail, This Sheet.
2. The Contractor May Begin Backfilling the Conduit Trench When the Concrete Reaches 2500 psi Compressive Strength After 3 days, Except in Travel ways.
3. Saw Cut Existing Pavement, Curbs, and Repair to the Satisfaction of the Engineer.
4. Excavation, Ductline Including Concrete Jacket, Backfill, Compaction, Shall be Completed and Ready for Acceptance. Incomplete Work Shall be Provided with Approved Safety Protection Measures.

5. Traffic Bearing Pavement Shall be Completed and Ready for Traffic Each Day. During the Course of the Work, Maintain a Minimum of (11-foot wide) Traffic Lane at All Times.
6. Backfill Shall Include Appropriate Road Base and Subbase Courses to Match Existing Condition and Compaction to Standard Specifications Requirements.
7. Trees and Shrub Encounters Shall be Avoided By Shifting Ductline. Adjust Ductline Route to Avoid Obstruction Both Above and Below Grade.
8. For Grassed Area, Re-sod and Maintain Per Specifications.
9. Provide 2" Separation Between Ducts of Same System. Provide 3" Separation Between Ducts of Different Systems.
10. Where Ductlines and Other Utilities Exist, the New Ductline May be Constructed Adjacent to Existing. When Necessary, Dive Under Existing Ductline or Utilities for Crossover. Existing Ductline Shall Remain Active Until New Street Light System is Completed.
11. Type "A" Backfill: Beach Sand, Earth, or Earth and Gravel Used, the Maximum Rock Size Shall be 1" and the Mixture Shall Contain Not More than 50% by Volume of Rock Particles.
12. If Material Below Duct Is Not Equivalent to Backfill Material "A", Excavate Material and Provide 3" Backfill Material "A".
13. When Ductlines Cannot Be Constructed With Clearances Required By Affected Utility Company Requirements, Provide Protective Concrete Jacket Around Existing Affected Utility Lines Extending Minimum Of 5-Foot Beyond Obstruction In Both Directions.

DRAWING REVIEW

Reviewed for HECO's Facilities Only
Date 5/1/01 By J. K. K.
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:

Hawaiian Electric Company Date
Verizon Hawaii Inc. Date
Oceanic Cable Date



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGHWAY LIGHTING DETAILS

MOKAPU SADDLE ROAD SLOPE STABILITY
Vicinity of Mikiola Dr. to Kahinani Place
Project No. 65B-01-01M
Scale: As Shown Date: May, 2001

SHEET No. 7 OF 8 SHEETS

