

HAWAIIAN ELECTRIC COMPANY NOTES

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(42)	2009	101	121

1. LOCATION OF HECO FACILITIES

The Location Of HECO's Overhead Facilities Shown On The Plans Are From Existing Records With Varying Degrees Of Accuracy And Are Not Guaranteed As Shown. The Contractor Shall Verify In The Field The Locations Of The Facilities And Shall Exercise Proper Care In Excavating And Working In The Area. Wherever Connections Of New Utilities To Existing Utilities And Utility Crossings Are Shown, The Contractor Shall Expose The Existing Lines At The Proposed Connections And Crossings To Verify The Depths Prior To Excavation For The New Lines. The Contractor Shall Be Responsible For Any Damages To HECO's Facilities Whether Shown Or Not Shown On The Plans.

2. COMPLIANCE WITH HAWAII OCCUPATIONAL SAFETY AND HEALTH LAWS

The Contractor Shall Comply With The State Of Hawaii's Occupational Safety And Health Laws And Regulations, Including Without Limitation, Those Related To Working On Or Near Exposed Or Energized Electrical Lines And Equipment.

3. EXCAVATION PERMIT

The Contractor Shall Obtain An Excavation Permit From HECO's Technical Division (534-5654) Located At 820 Ward Avenue, 4th Floor, Two Weeks Prior To Starting Construction. Please Refer To Our Request Number At That Time.

4. CAUTION!!! ELECTRICAL HAZARD!!!

Existing HECO Overhead Lines Are Energized And Will Remain Energized During Construction Unless Prior Special Arrangements Have Been Made With HECO. Only HECO Personnel Are To Handle These Energized Lines And Erect Temporary Guards To Protect These Lines From Damage. The Contractor Shall Work Cautiously At All Times To Avoid Accidents And Damage To Existing HECO Facilities Which Can Result In Electrocution.

5. OVERHEAD LINES

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.

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.

Contact HECO's Customer Installations Department At 543-7846 For Assistance In Identifying And Safeguarding Overhead Power Lines.

Refer To Section X Of HECO's Electrical Service Installation Manual For Additional Guidelines When Working Around HECO's Facilities. A Copy May Be Obtained From HECO's Customer Installations Department.

6. POLE BRACING

A Minimum Clearance Of 10 Feet Must Be Maintained When Excavating Around Utility Poles And/Or Their Anchor System To Prevent Weakening Or Pole Support Failure. Should Work Require Excavating Within 10-feet Of A Pole And/or Its Anchor System, The Contractor Shall Protect, Support, Secure, And Take All Other Precautions To Prevent Damage To Or Leaning Of These Poles. The Contractor Is Responsible For All Associated Costs To Brace, Repair, Or Straighten Poles. All Means Of Structural Support For The Poles Proposed By The Contractor Shall First Be Reviewed By HECO Before Implementation. For Pole Bracing Instructions, The Contractor Shall Call The HECO Construction And Maintenance Dept., Customer & System Superintendent At 543-4223 A Minimum Of Two (2) Weeks In Advance.

7. EXCAVATIONS

When Trench Excavation Is Adjacent To Or Beneath HECO's Existing Structures Or Facilities, The Contractor Is Responsible For:

- A) Sheeting And Bracing The Excavation And Stabilizing The Existing Ground To Render It Safe And Secure And To Prevent Possible Slides, Cave-ins, And Settlements.
- B) Properly Supporting Existing Structures Or Facilities With Beams, Struts, Or Under-pinnings To Fully Protect It From Damage.
- C) Backfilling With Proper Backfill Material Including Special Thermal Backfill Where Existing (refer To Engineering Department For Thermal Backfill Specifications).

8. RELOCATION OF HECO FACILITIES

Any Work Required To Relocate Or Modify HECO Facilities Shall Be Done By HECO, Or By The Contractor Under HECO's Supervision. The Contractor Shall Be Responsible For All Coordination, And Shall Provide Necessary Support For HECO's Work, Which May Include, But Not Limited To, Excavation And Backfill, Permits And Traffic Control, Barricading, And Restoration Of Pavement, Sidewalks, And Other Facilities.

All Costs Associated With Any Relocation Or Modification (either Temporary Or Permanent) For The Convenience Of The Contractor, Or To Enable The Contractor To Perform His Work In A Safe And Expedious Manner In Fulfilling His Contract Obligations Shall Be Borne By The Contractor.

9. CONFLICTS

Any Redesign Or Relocation Of HECO's Facilities Not Shown On The Plans May Be Cause For Lengthy Delays. The Contractor Acknowledges That HECO Is Not Responsible For Any Delay Or Damage That May Arise As A Result Of Any Conflicts Discovered Or Identified With Respect To The Location Or Construction Of HECO's Electrical Facilities In The Field, Regardless Of Whether The Contractor Has Met The Requested Minimum Advance Notices. In Order To Minimize Any Delay Or Impact Arising From Such Conflicts, HECO Should Be Notified Immediately Upon Discovery Of Identification Of Such Conflict.

10. DAMAGE TO HECO FACILITIES

The Contractor Shall Be Responsible For The Protection Of All HECO Surface And Subsurface Utilities And Shall Be Responsible For Any Damages To HECO's Facilities As A Result Of His Operations. The Contractor Shall Immediately Report Such Damages To HECO's Trouble Dispatcher At 548-7961. Repair Work Shall Be Done By HECO Or By The Contractor Under HECO's Supervision. Cost For Damages To HECO's Facilities Shall Be Borne By The Contractor.

In Case Of Damage Or Suspected Damage To HECO's Fuel Pipeline, The Contractor Shall Immediately Notify HECO's Honolulu Power Plant Shift Supervisor At 533-2102 (a 24-hour Number) So HECO Personnel Can Secure The Damaged Section And Report Any Oil Spills To The Proper Authorities. All Costs Associated With The Damage, Repair, And Oil Spill Cleanup Shall Be Borne By The Contractor.

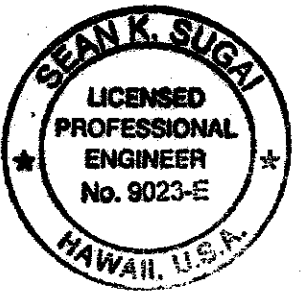
11. HECO STAND-BY PERSONNEL

The Contractor May Request HECO To Provide An Inspector To Stand-by During Construction Near HECO's Facilities. The Cost Of Such Inspection Will Be Charged To The Contractor.

The Contractor Shall Call The HECO Construction And Maintenance Dept., Customer & System Superintendent At 543-4223 A Minimum Of 5 Working Days In Advance To Arrange For HECO Stand-By Personnel.

DRAWING REVIEW
Reviewed for HECO's Facilities Only
Date 5/11/09 By [Signature]
Engineering Department
Hawaiian Electric Company, Inc.

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



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

SIGNATURE [Signature] 5/11/09
EXPIRATION DATE OF LICENSE 4/30/10

APPROVED BY: _____
HAWAIIAN ELECTRIC COMPANY, INC. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
HECO NOTES
**KAMEHAMEHA HIGHWAY - REPLACEMENT
OF SOUTH PUNALUU STREAM BRIDGE**
Federal Aid Project No. BR-083-1(42)
Scale: NONE Date: May 2009
SHEET No. E2 OF 13 SHEETS

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

LAST SAVE: 04/13/09 @ 11:30:52 BY: 041 PLOT SC 11-0-41
HAWAIIAN ELECTRIC COMPANY, INC.

HAWAIIAN ELECTRIC COMPANY NOTES (Continued)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(42)	2009	102	121

12. CLEARANCES

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(A)
Water Lines, Crossing	12(B)
Sewer Lines, Parallel	36(C)
Sewer Lines, Crossing	24(D)
Drain Lines, Parallel	12
Drain Lines, Crossing	6(E)
Electrical and Gas Lines, Parallel	12
Electrical and Gas Lines, Crossing	12
Telephone Lines, Parallel	6(E)
Telephone Lines, Crossing	6(E)
Chevron Oil Lines, Parallel	36
Chevron Oil Lines, Crossing	48 BELOW OIL LINE (F)

- A. The Minimum Horizontal Clearances To Water Lines Parallel To Electrical Ductlines Should Be Increased To 60 Inches If The Water Line Is Greater Than Or Equal To 16 Inches In Diameter.
- B. The Mimimum Vertical Clearances To Water Lines Crossing Electrical Ductlines Can Be Reduced To 6 Inches If The Electrical Ductline Structure Is Concrete Encased And Is Below The Water Line And The Water Line Is Less Than 16 Inches In Diameter.
- C. A Minimum Horizontal Clearance Of 36 Inches Is Required Between New Handholes And Existing Sewer Laterals.
- D. The Minimum Vertical Clearances To Sewer Pipes Crossing Electrical Ductlines Can Be Reduced To 12 Inches If The Sewer Pipe Is Jacketed In Concrete.
- E. The Minimum Clearances Shall Be Increased To 12 Inches If The Electrical Ductline Is Direct Buried.
- F. The Minimum Vertical Clearances To Oil Lines Crossing Electrical Ductlines Can Be Reduced To 24 Inches Below Oil Lines If The Crossings Are Encased In 6 Inches Of Concrete.
- G. The Contractor Shall Notify The Construction Manager & HECO Of Any Heat Sources (Power Cable Duct Bank, Steamline, Etc.) Encountered That Are Not Properly Identified On The Drawing.

The Following Clearance Shall Be Maintained Between HECO's Fuel Oil Pipelines And All Adjacent Structures: 24-inches, Parallel Or Crossing. The Minimum Clearance Can Be Reduced To 12 Inches (parallel And Below Only) If The Structure Is Jacketed In Concrete.

13. The Contractor Shall Indemnify, Defend And Hold Harmless HECO From And Against All Losses, Damages, Claims, And Actions, Including But Not Limited To Reasonable Attorney's Fees And Costs Based Upon Or Arising Out Of Damage To Property Or Injuries To Persons, Or Other Tortious Acts Caused By Contributed To By Contractor Or Anyone Acting Under Its Direction Or Control Or On Its Behalf; Provided Contractor's Indemnity Shall Not Be Applicable To Any Liability Based Upon The Sole Negligence Of HECO.

14. STAKEOUT

The Contractor Shall Arrange For Toneouts Of All Underground Facilities And Shall Stakeout All Proposed HECO Facilities Within The Project Area So As To Not Conflict With Any Utility (Existing Or Proposed) And Any Proposed Construction Or Improvement Work For Verification By HECO Before Proceeding With HECO Work.

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

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DRAWING REVIEW

Reviewed for HECO's Facilities Only

Date 5/11/09 By [Signature]

Engineering Department
Hawaiian Electric Company, Inc.

HECO's review of these drawings shall in no way release 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.



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC.

DATE

SIGNATURE [Signature] 5/11/09

EXPIRATION DATE
OF LICENSE 4/30/10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECO NOTES

KAMEHAMEHA HIGHWAY - REPLACEMENT
OF SOUTH PUNALUU STREAM BRIDGE
Federal Aid Project No. BR-083-1(42)

Scale: NONE

Date: May 2009

SHEET No. E3 OF 13 SHEETS

HAWAIIAN TELCOM NOTES:

- 1. The Location Of Hawaiian Telcom's Existing Facilities Are Approximate Only. The Contractor Shall Exercise Extreme Caution And Shall Maintain Proper Clearances Whenever Construction Crosses Or Is In Close Proximity To Hawaiian Telcom's Facilities. The Contractor Shall Verify Their Locations And Shall Be Liable For Any Damages To Hawaiian Telcom Facilities. Any Damages Shall Be Reported Immediately To Hawaiian Telcom's Repair Section At # 611 (24 Hours) Or To The Excavation Permit Section at 546-7746 (Normal Working Hours, Monday Thru Friday, Except Holidays).
- 2. The Contractor Shall Take Necessary Precautions Not To Damage Existing Cables. Any Work Involving Existing Hawaiian Telcom Cables Shall Be Done In The Presence Of A Hawaiian Telcom Inspector Or Designated Representative.
- 3. The Contractor Shall Notify Hawaiian Telcom's Inspector Or Designated Representative a Minimum of 72 Hours Prior To Bracing of Hawaiian Telcom's Structures Or Facilities.
- 4. Should It Become Necessary To Relocate Any Hawaiian Telcom Facilities, The Work Shall be Done By Hawaiian Telcom. The Contractor Shall Be Responsible For All Coordination And Costs Associated With The Relocation.
- 5. The Contractor Shall Procure and Pay For All Licenses And Permits And Shall Give All Notices Necessary And Incident To The Due And Lawful Prosecution Of The Work.
- 6. The Contractor Shall Obtain An Excavation Permit And Toning Request From Hawaiian Telcom's Excavation Permit Section, Located At 1177 Bishop Street, Two Weeks Prior To The Start Of Construction. Hours Of Business Are 8:00AM to 11:00AM and 12:00PM to 3:00PM Monday Through Friday, Except Holidays.
- 7. All Applicable Construction Work Shall Be Done In Accordance With The "Hawaiian Telcom Standard Specifications for Placing Telephone Systems" Dated January 2007. All Subsequent Amendments And Additions, And All Other Pertinent Standards For Telephone Construction. Contractor Shall Familiarize His Personnel By Obtaining Applicable Specifications.
- 8. When Excavation Is Adjacent To Or Beneath Hawaiian Telcom's Existing Structures Or Facilities, The Contractor Shall:
 - a) Sheet And/Or Brace The Excavation To Prevent Slides, Cave-Ins, Or Settlements To Ensure No Movement To Hawaiian Telcom's Structures Or Facilities.
 - b) Protect Existing Structures And/Or Facilities With Beams, Struts, Or Underpinning While Excavating Beneath Them To Ensure No Movement To Hawaiian Telcom's Structures Or Facilities.
- 9. The Contractor Shall Brace All Poles Or Light Standards Near The New Ductline, Manhole, Or Handhole During His Operations.

OCEANIC TIME WARNER CABLE NOTES:

- 1. The Contractor Shall Take Necessary Precaution Not To Damage Existing Cables. Any Work Involving Existing Cables Shall Be Done In The Presence Of The Oceanic's Inspector Or His Representative.
- 2. Any Work Required To Relocate CATV Facilities Shall Be Done By Oceanic Time Warner Cable And The Contractor Shall Be Responsible For All Coordination Requirements And Associated Costs.
- 3. Any Damage To Oceanic's Facilities Shall Be Reported To Oceanic's Repair Dispatch Department At 625-8437 Or 625-8666.
- 4. All Construction Must Be Inspected And Approved By Oceanic Time Warner Cable Prior To The Installation Of Any Of Its Facilities And The Energizing Of Its System.
- 5. Contractor And/Or Customer Shall Provide Oceanic Time Warner Cable With Sufficient Installation Time In Their Occupancy Time Table.

HAWAIIAN TELCOM NOTES - CONTINUED:

- 10. 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 In 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..
- 11. The Contractor, At His Own Expense, Shall Keep The Project And Surrounding Area Free From Dust Nuisance. The Cost For Supplementary Measures, Which Will Be Required By The City And County, Shall Be Borne By The Contractor.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(42)	2009	103	121

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

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APPROVED BY:

HAWAIIAN TELCOM
Lona Porter
OCEANIC TIME WARNER CABLE

5/15/09
DATE
5/16/09
DATE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Sean K. Sugi
SIGNATURE
4/30/10
EXPIRATION DATE OF LICENSE



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

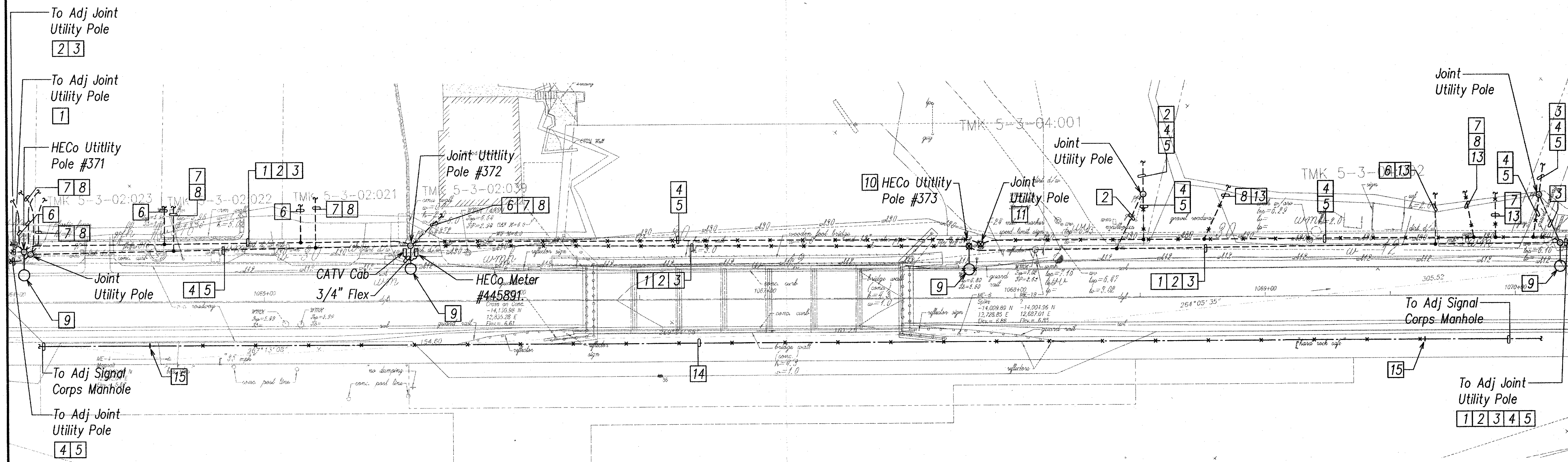
HAWAIIAN TELCOM NOTES
OCEANIC CABLE NOTES

KAMEHAMEHA HIGHWAY - REPLACEMENT
OF SOUTH PUNALUU STREAM BRIDGE
Federal Aid Project No. BR-083-1(42)

Scale: NONE
Date: May 2009

SHEET No. E4 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(42)	2009	104	121



Notes:

- All Items Shown Are Existing Unless Otherwise Noted.
- "X" Thru Item Denotes "Existing Item To Be Removed".
- Coordinate Utility Work With Respective Utility Companies.
- 1

46KV HECO Primary Electric Lines.

2

12.47KV HECO Primary Electric Lines.

3

120/240V HECO Secondary Electric Lines.

4

Oceanic CATV Line.

5

Hawaiian Telcom Telephone Line.

6

HECO 120/240V Electric Service Drop.

7

Oceanic Cable CATV Service Drop.

8

Hawaiian Telcom Telephone Service Drop.

9

Light Fixture and Mast Arm Mounted To Wood Utility Pole.

10

To be Removed by HECO.

11

To be Removed by Hawaiian Telcom.

12

To be Removed by Oceanic Cable.

13

Coordinate Disconnecting of Service Drop with Respective Utility Company.

14

1-50 Pair Signal Corps Joint Trunk System Cable Routed On Side Of Bridge Deck.

15

Cut Existing Cable And Remove Section Attached To Bridge Deck To Facilitate Removal Of Bridge.

DRAWING REVIEW

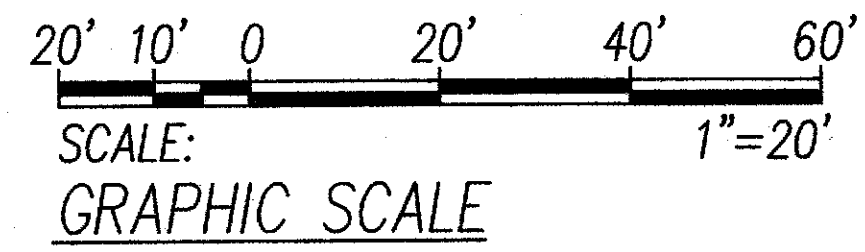
Reviewed for HECO's Facilities Only
Date 5/13/09 By *Michael H.*
Engineering Department
Hawaiian Electric Company, Inc.
HECO's review of these drawings shall in no way relieve the Customer, its Consultant, its Contractor or anyone acting on the Customer's behalf from the responsibility for engineering, design, materials and any other liability associated with this project.

APPROVED BY:

HAWAIIAN ELECTRIC COMPANY, INC.	DATE
<i>L. J. Porter</i>	5/15/09
HAWAIIAN TELCOM	DATE
<i>L. J. Porter</i>	5/15/09
OCEANIC TIME WARNER CABLE	DATE



ELECTRICAL DEMOLITION PLAN
SCALE: 1"=20'



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SIGNATURE *slub* 4/30/10
EXPIRATION DATE OF LICENSE

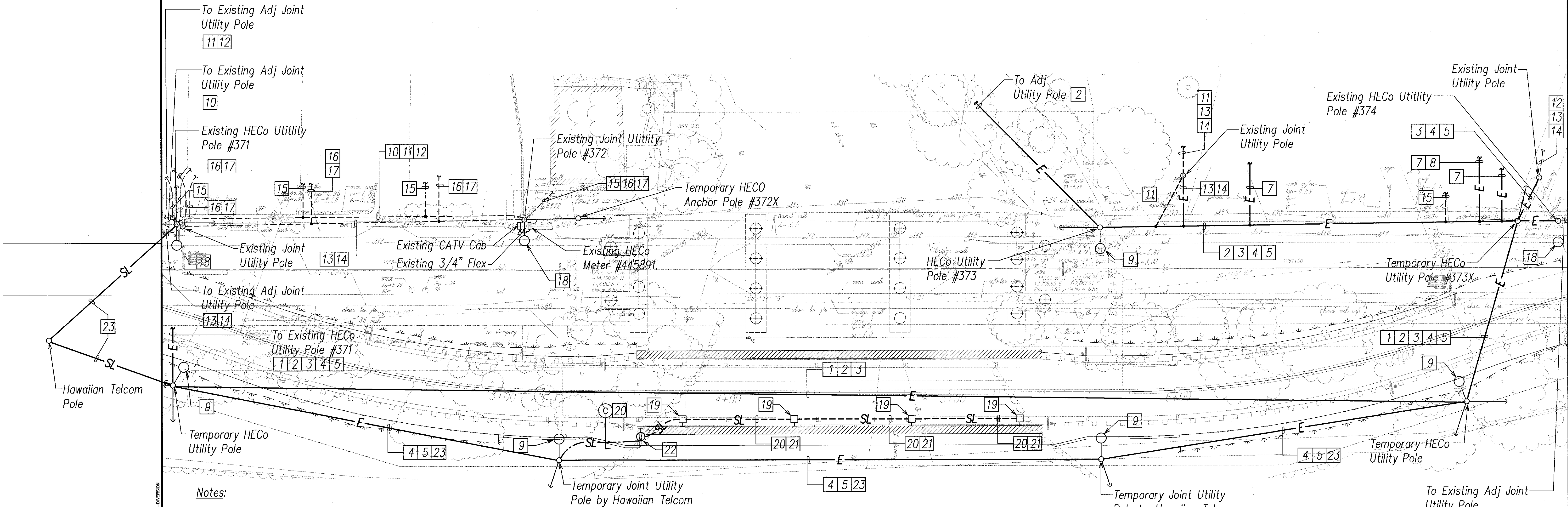
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL DEMOLITION PLAN

**KAMEHAMEHA HIGHWAY – REPLACEMENT
OF SOUTH PUNALUU STREAM BRIDGE**
Federal Aid Project No. BR-083-1(42)
Scale: AS NOTED Date: May 2009
SHEET No. E5 OF 13 SHEETS

SURVEY PLOTTED BY	DATE
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DESIGNED BY	
NOTED BY	
CHECKED BY	
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V:\road\proj\080208\080208_E-05_Plan.dwg PUNALUU BRIDGE_WORL

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(42)	2009	CO.105	121



Notes:

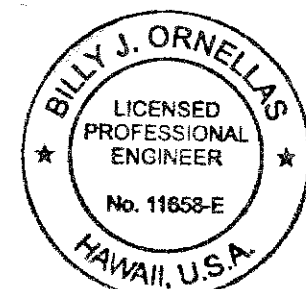
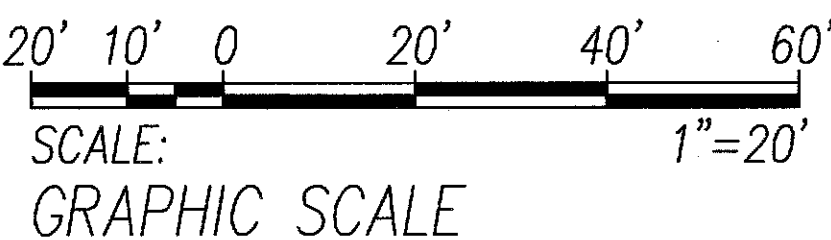
- All Items Shown Are New Unless Otherwise Noted.
- All Temporary Overhead Utility Lines and Street Lighting Equipment Shall be Removed After Installation of the Permanent Overhead Utility Lines and Street Lighting System is Completed. All Temporary Overhead Utility Lines Shall be Removed by the Respective Utility Company.
- Coordinate Utility Work With Respective Utility Companies.
- Temporary 46KV HECO Primary Electric Lines.
 - Temporary 12.47KV HECO Primary Electric Lines.
 - Temporary 120/240V HECO Secondary Electric Lines.
 - Temporary Oceanic Cable CATV Line.
 - Temporary Hawaiian Telcom Telephone Line.
 - Temporary HECO 120/240V Electric Service Drop.
 - Temporary Oceanic Cable CATV Service Drop.
 - Temporary Hawaiian Telcom Telephone Service Drop.
 - Light Fixture and Mast Arm Mounted to Wood Utility Pole +30'-0" Above Roadway for Temporary Street Lighting. See B/107 for Detail.

- Existing 46KV HECO Primary Electric Lines.
- Existing 12.47KV HECO Primary Electric Lines.
- Existing 120/240V HECO Secondary Electric Lines.
- Existing Oceanic Cable CATV Lines.
- Existing Hawaiian Telcom Telephone Lines.
- Existing HECO 120/240V Electric Service Drop.
- Existing Oceanic Cable CATV Service Drop.
- Existing Hawaiian Telcom Telephone Service Drop.
- Existing Light Fixture and Mast Arm Mounted to Wood Utility Pole.

- Surface Mounted High Pressure Sodium Light Fixture Mounted to Top of Temporary Bridge Structure. See A/110 for Detail.
- 1"C, 2#8, 1#10 Gnd.
- Route PVC Conduit Exposed on Top of Temporary Bridge Structure.
- 2-Gang Type "FD" Cast Junction Box Mounted to Side of Temporary Bridge Structure +2'-0" Above Grade.
- Temporary Overhead Street Light Cable.



TEMPORARY ELECTRICAL PLAN
SCALE: 1"=20'



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.
SIGNATURE: [Signature]
EXPIRATION DATE OF LICENSE: 4/30/10

5/11/09	1	ADDED OVERHEAD STREET LIGHT CONNECTION
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APPROVED BY:	
HAWAIIAN ELECTRIC COMPANY, INC.	DATE
HAWAIIAN TELCOM	DATE
OCEANIC TIME WARNER CABLE	DATE

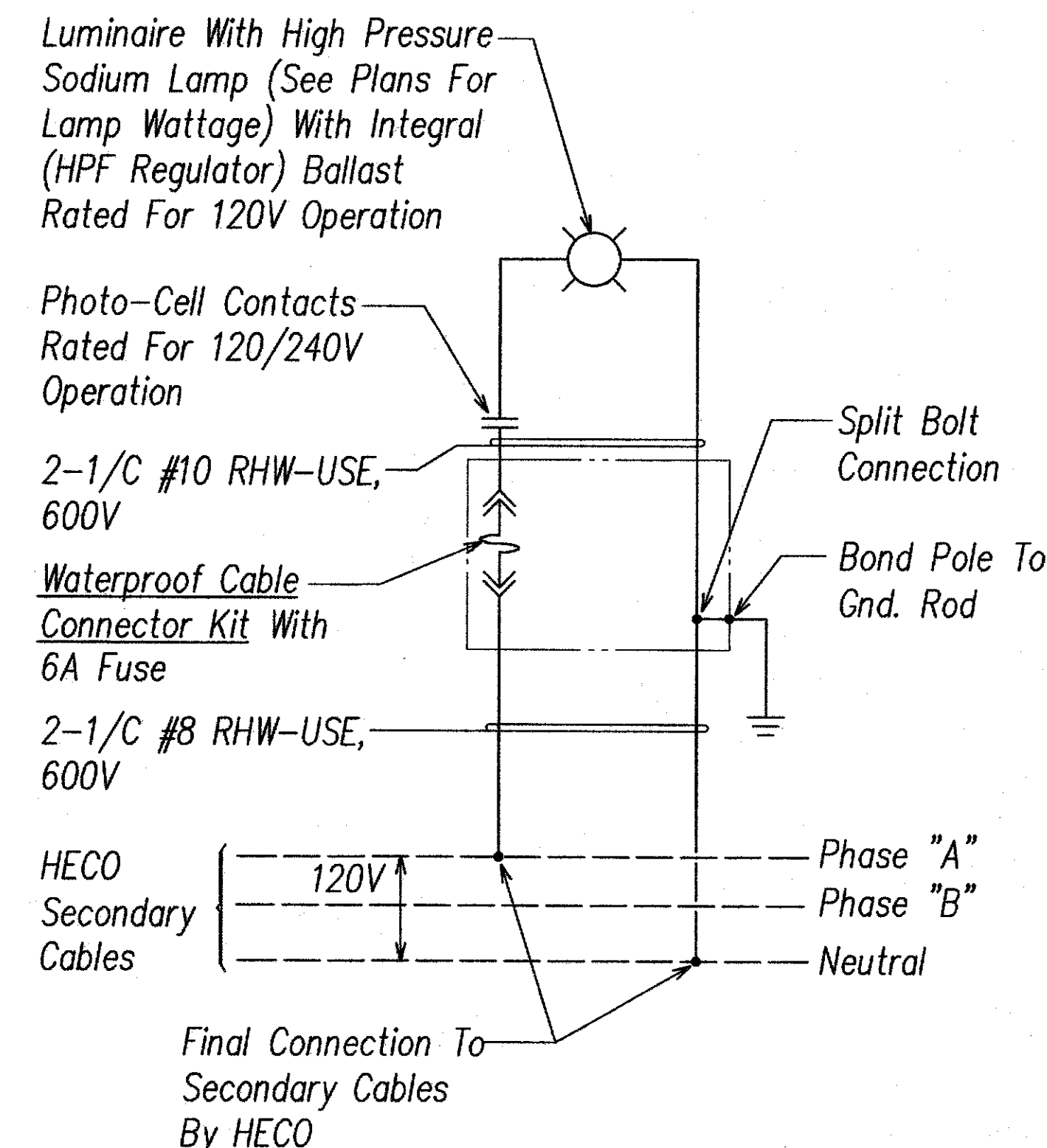
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TEMPORARY ELECTRICAL PLAN

KAMEHAMEHA HIGHWAY - REPLACEMENT
OF SOUTH PUNALUU STREAM BRIDGE
Federal Aid Project No. BR-083-1(42)

Scale: AS NOTED Date: May 2009

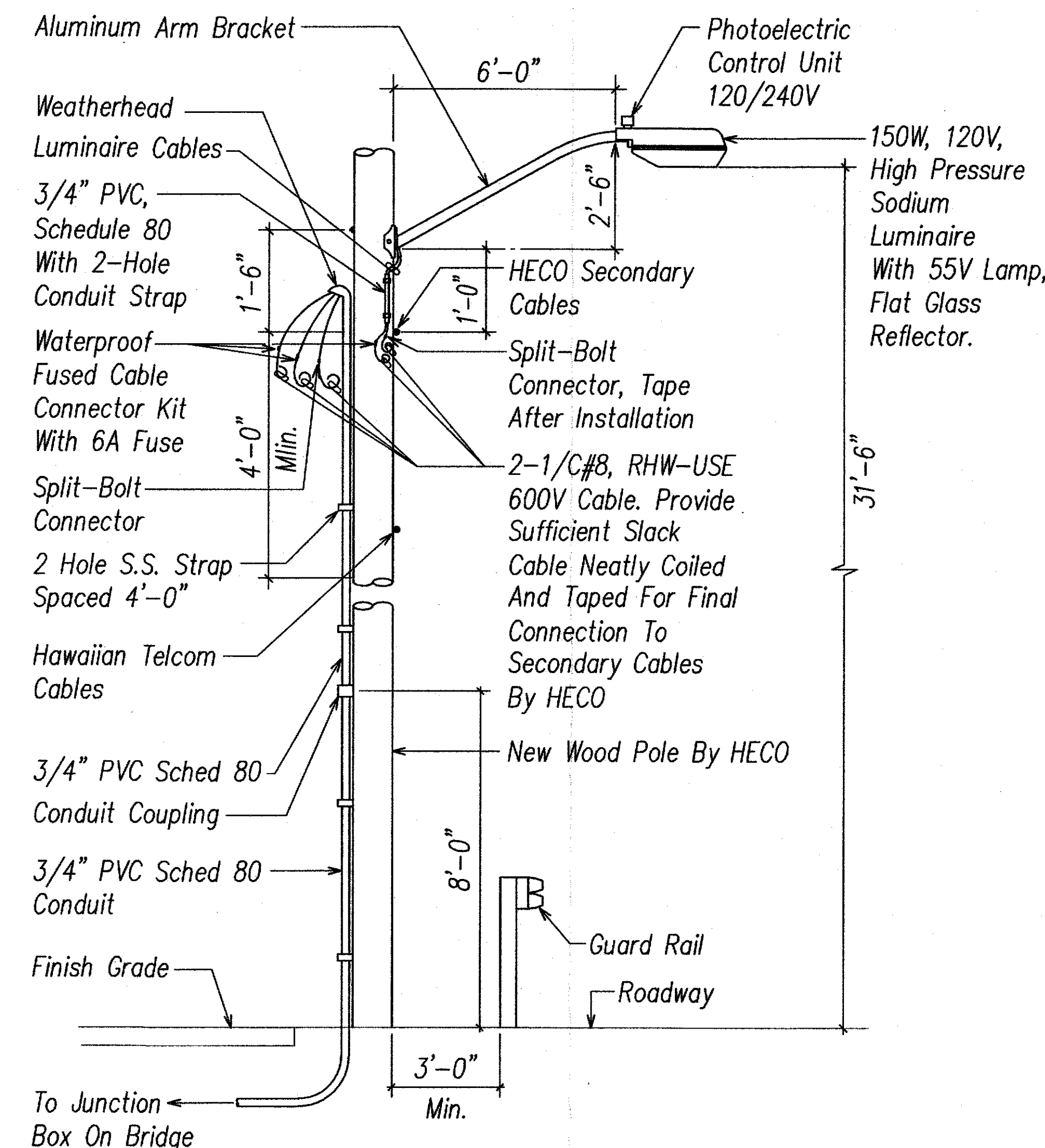
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(42)	2009	107	121



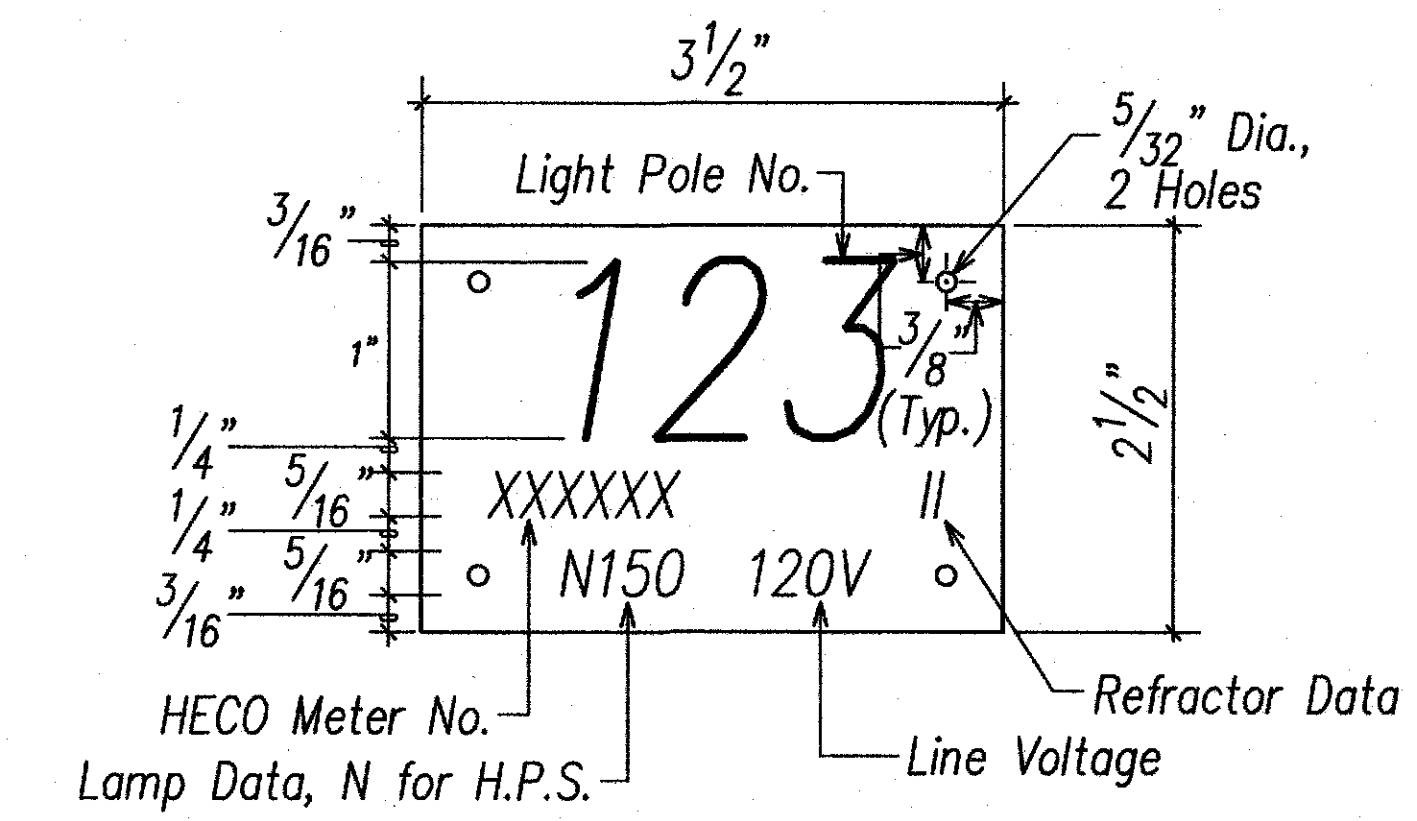
Notes:

1. All Neutral Conductors Shall Be Identified With White Insulation. Other Means Of Identification Is Not Acceptable.
2. All Lamps Shall Meet EPA 1990 Toxic Characteristic Loading Procedure.

A ROADWAY LIGHT CONNECTION DIAGRAM
107



B TEMPORARY ROADWAY LIGHT ON UTILITY POLE
107 NOT TO SCALE



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.
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".

C ID TAG DETAIL
107 NOT TO SCALE

ROADWAY LIGHTING NOTES:

1. Connection And/or Disconnection of Electric Service To Roadway Lights Shall Be By HECO And Paid For By The Contractor.
2. All Luminaires Shall Be High Pressure Sodium Type With Wattage And IES Type Distribution As Indicated.
3. Contractor Shall Stencil The Date Of Installation On The Bottom Of Photocell.
4. Mast Arm, Luminaire, and Pole Count:
Temporary Lighting: 4 Luminaires, 4 Brackets, 4 Surface Mounted HPS Light Fixtures
Permanent Lighting: 3 Metal Poles, 4 Luminaires, 4 Brackets.
5. Contractor Shall Maintain One Set Of Approved Plans At The Project Site At All Times During Construction Work.
6. Contractor Shall Arrange With HECO To Energize Roadway Lights A Minimum Of Six Hours For Final Inspection And Acceptance. Contractor Shall Pay For All Testing Costs.
7. Final Acceptance Of The Project Will Be Granted Only After All Work Has Been Completed And The "As-Built" Tracings Have Been Submitted To The State Of Hawaii Department Of Transportation Highways Division.
8. The Contractor Shall Measure And Record The Ground Resistance At Each Standard With No External Ground Wires Connected To The Ground Rod. Contractor Shall Schedule Ground Resistance Measurements 48 Hours In Advance And Shall Not Proceed With Measurements Until Approval Is Granted. Schedules Are Subject To Change Depending Upon Weather Conditions. Reports Shall Include Name Of Personnel Conducting The Test, Meter Type And Serial Number, Date Of Test And Soil Conditions. Test Results Shall Be Certified By The Contractor And Submitted To The Engineering For Acceptance.
9. Contractor Shall Not Backfill Trenches Until Approval Is Granted By The Engineer.
10. All Concrete Work Shall Be Scheduled At Least 24 Hours In Advance. Concrete Shall Not Be Poured Until Approval Is Granted By The Engineer.
11. All Work Shall Be Performed By A Duly Licensed Electrician.
12. Trench Dirt And Material Will Not Be Allowed To Be Stored On Roadway Or Sidewalk.
13. Temporary Trench Patches Shall Match Grade.
14. Submit Shop Drawings For All Roadway Lighting Components Including Luminaires, Lamps, Photocell And Mast Arms, For Approval.
15. All Neutral Conductors Shall Have Solid White Insulation. Any Other Method Of Identification Is Unacceptable.
16. Ensure All Roadway Light Poles, Bracket Arms, And Luminaires Are Grounded Per NEC Article 410.15(B)(5).

ORIGINAL PLAN
DATE
DESIGNED BY
CHECKED BY
No.



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SIGNATURE: [Signature] 4/30/10
EXPIRATION DATE OF LICENSE

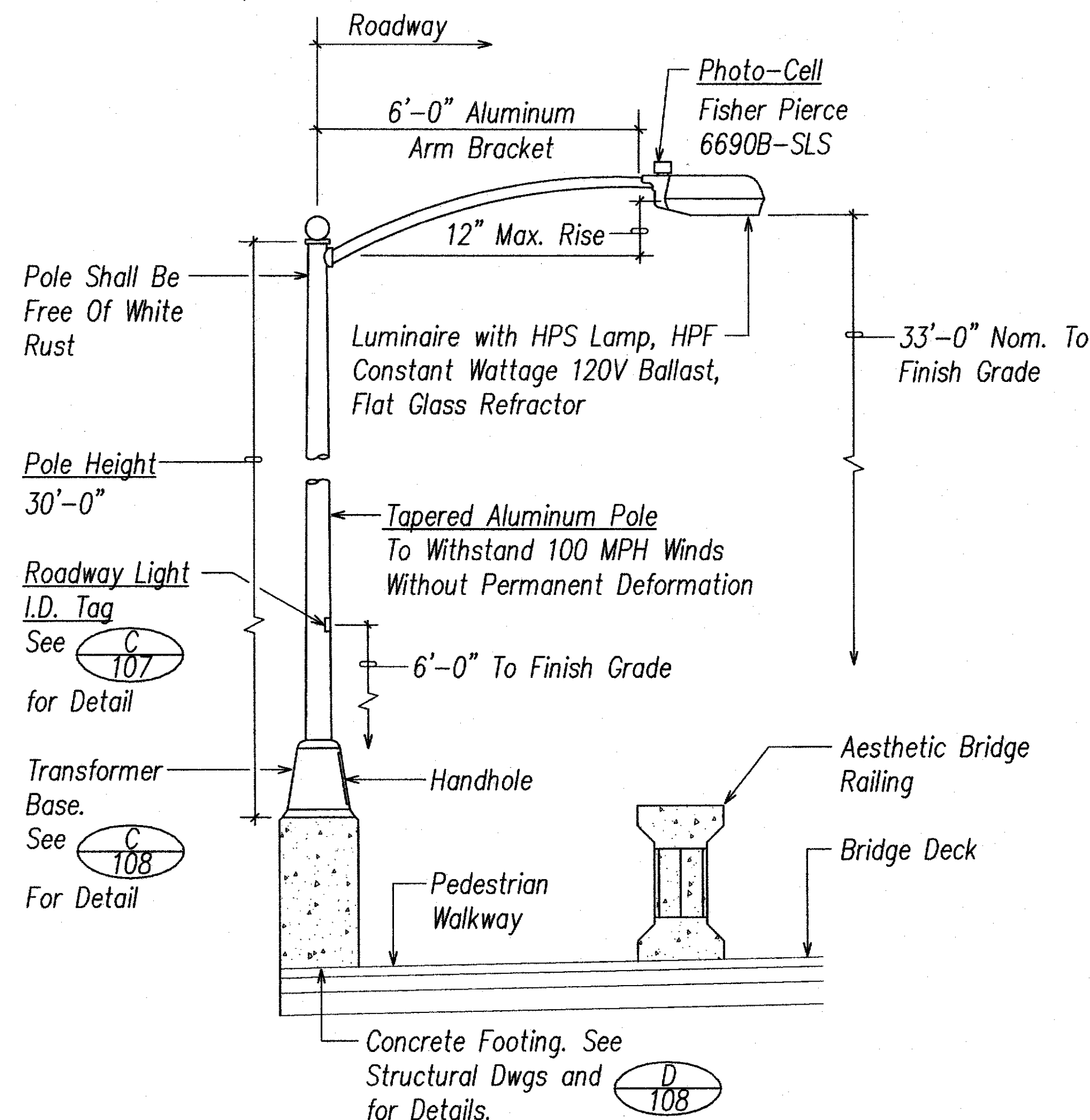
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**ROADWAY LIGHT ON UTILITY POLE,
LIGHT CONNECTION DIAGRAM**

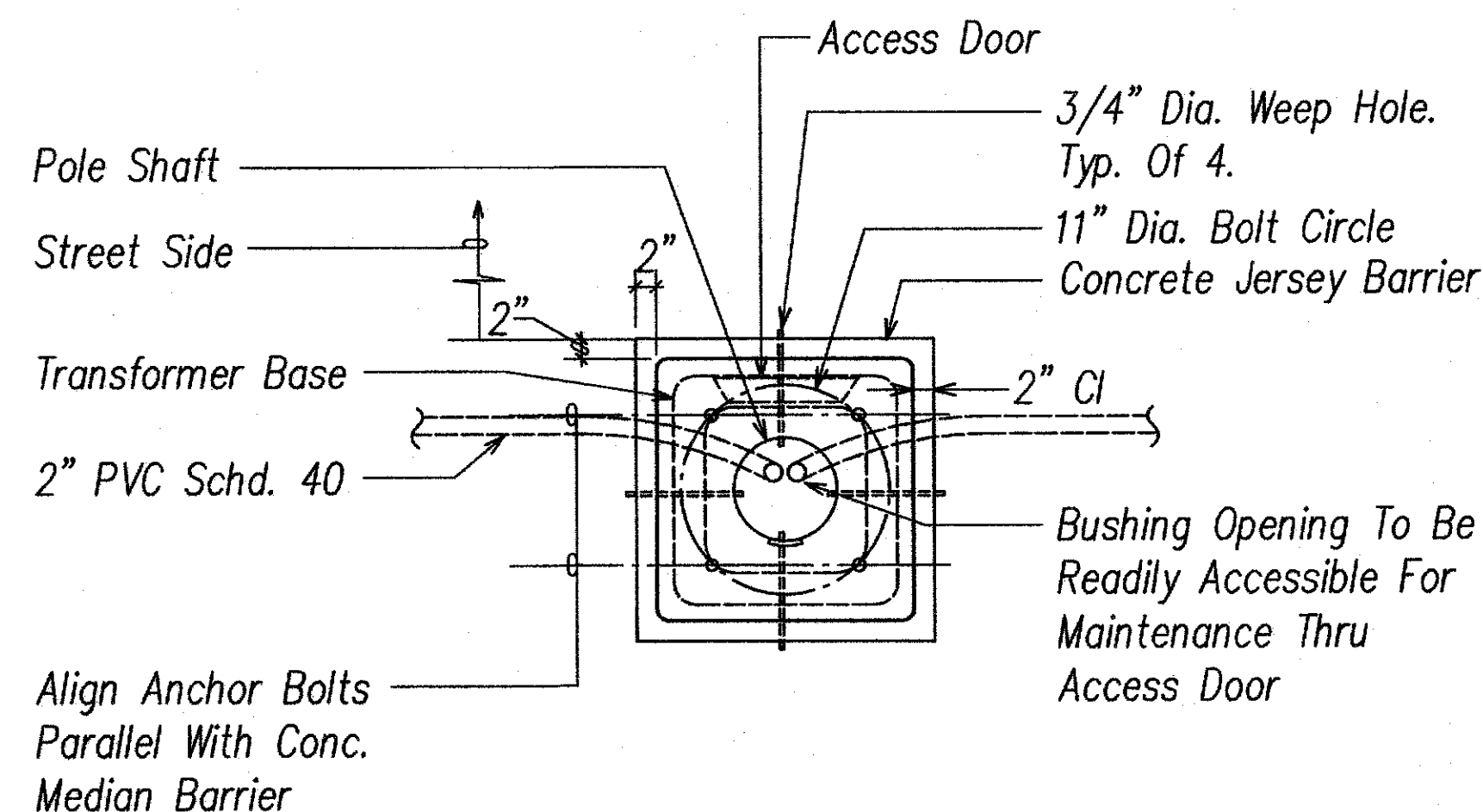
KAMEHAMEHA HIGHWAY - REPLACEMENT
OF SOUTH PUNALUU STREAM BRIDGE
Federal Aid Project No. BR-083-1(42)

Scale: AS NOTED Date: May 2009

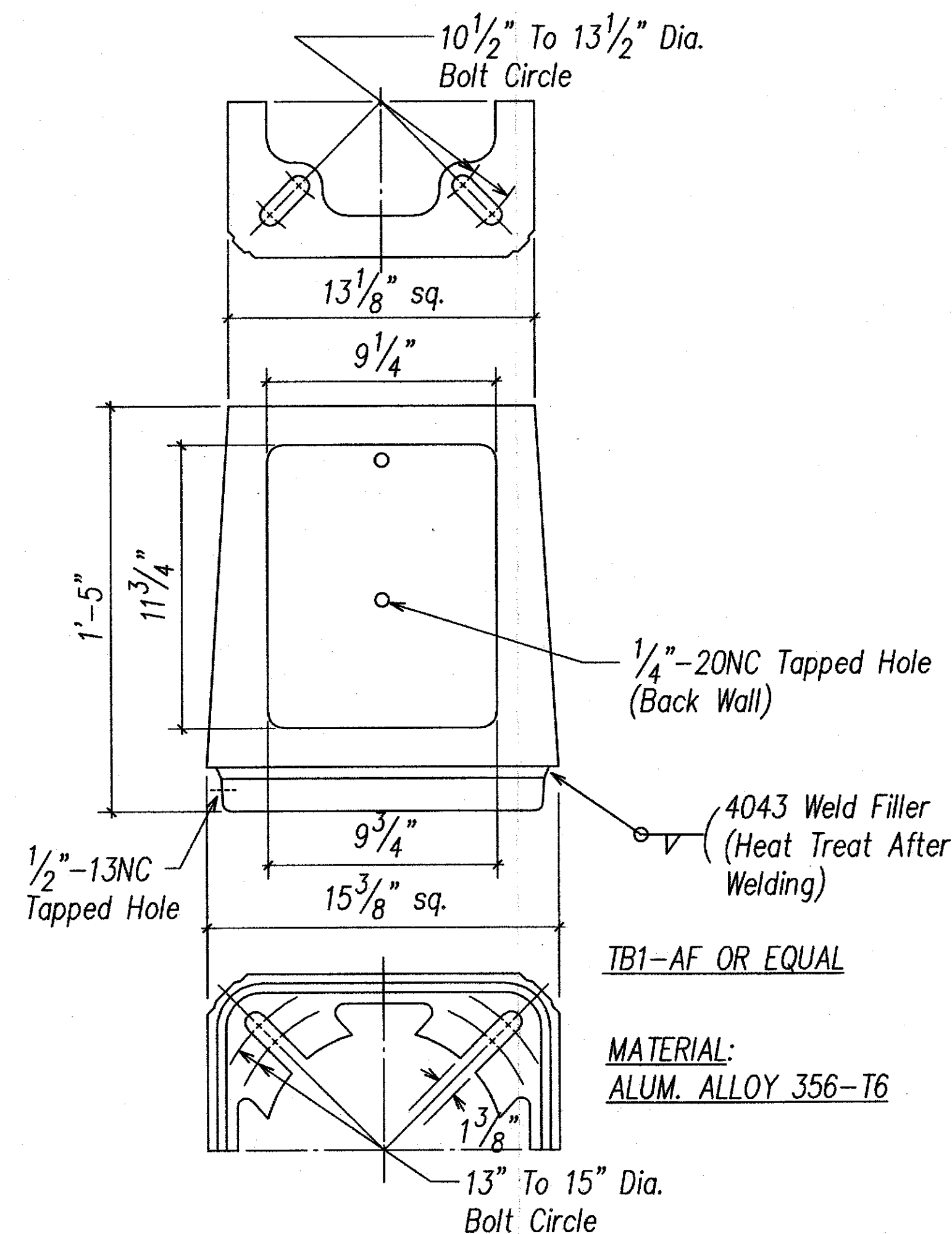
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(42)	2009	108	121



A
108
ROADWAY LIGHT ON BRIDGE
NOT TO SCALE



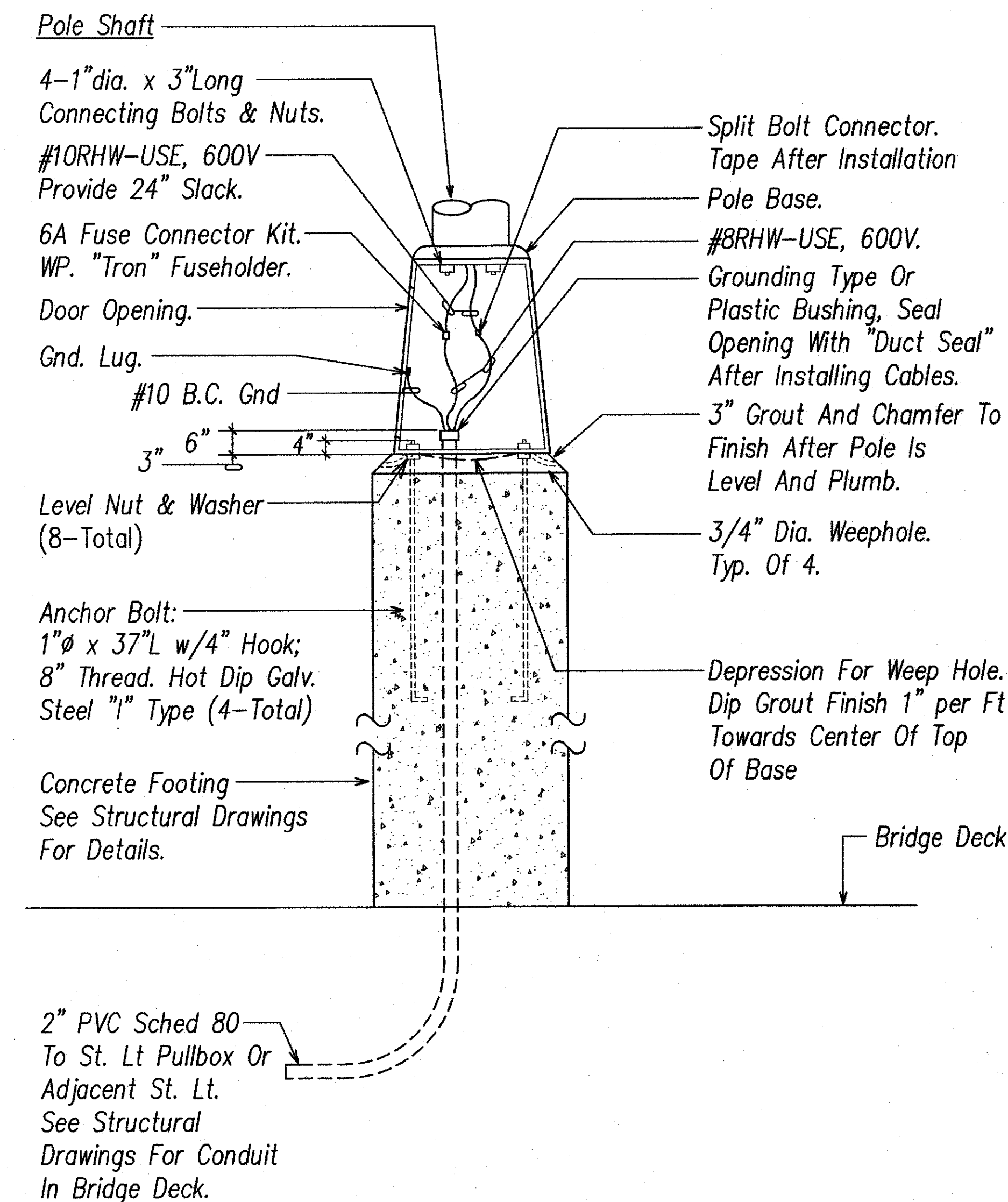
B
108
TRANSFORMER BASE PLAN
NOT TO SCALE



BASE SUPPLIED WITH:

1. Door And 1/4"-20NC S.S. Screw
2. Eight 1" Washers 1/2" Thick x 2 3/4" O.D. (Washers Mechanical Galvanized Per ASTM B454)
3. Four 1"-8NC x 3 3/4" Long Galvanized Steel Hex. Hd. Bolts
4. Four 1"-8NC Galvanized Steel Hex. Nuts
5. Four 1" Galvanized Steel Lock Washers
6. Four 1" x 2" O.D. Galvanized Steel Flatwashers

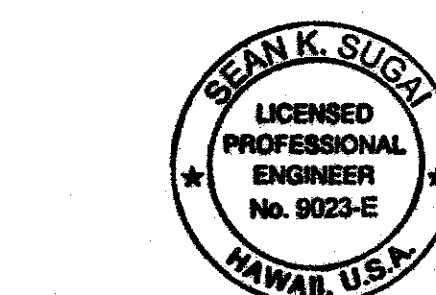
C
108
TRANSFORMER BASE DETAIL
NOT TO SCALE



D
108
ROADWAY LIGHT BASE DETAIL
NOT TO SCALE

DATE
SURVEY PLOTTED BY
DRAWN BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
NO.

LAST SAVE: 05/04/08 @ 14:37:44 BY: BD PLOT SC 1'-0"=1'



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SIGNATURE: *Sean K. Sugai*

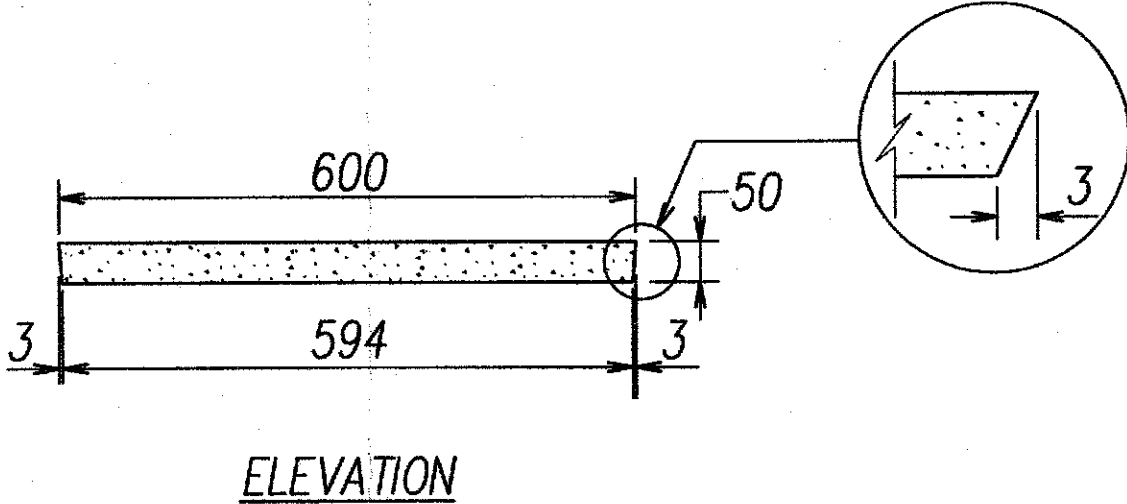
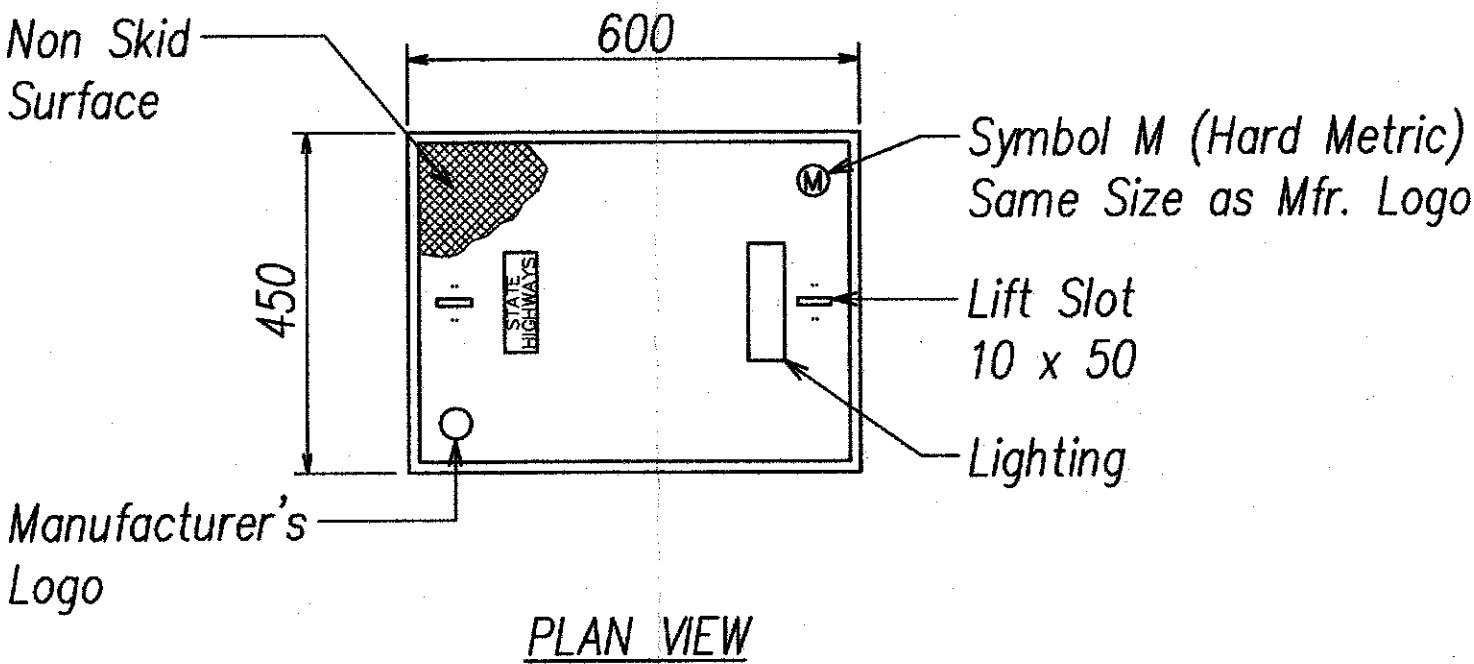
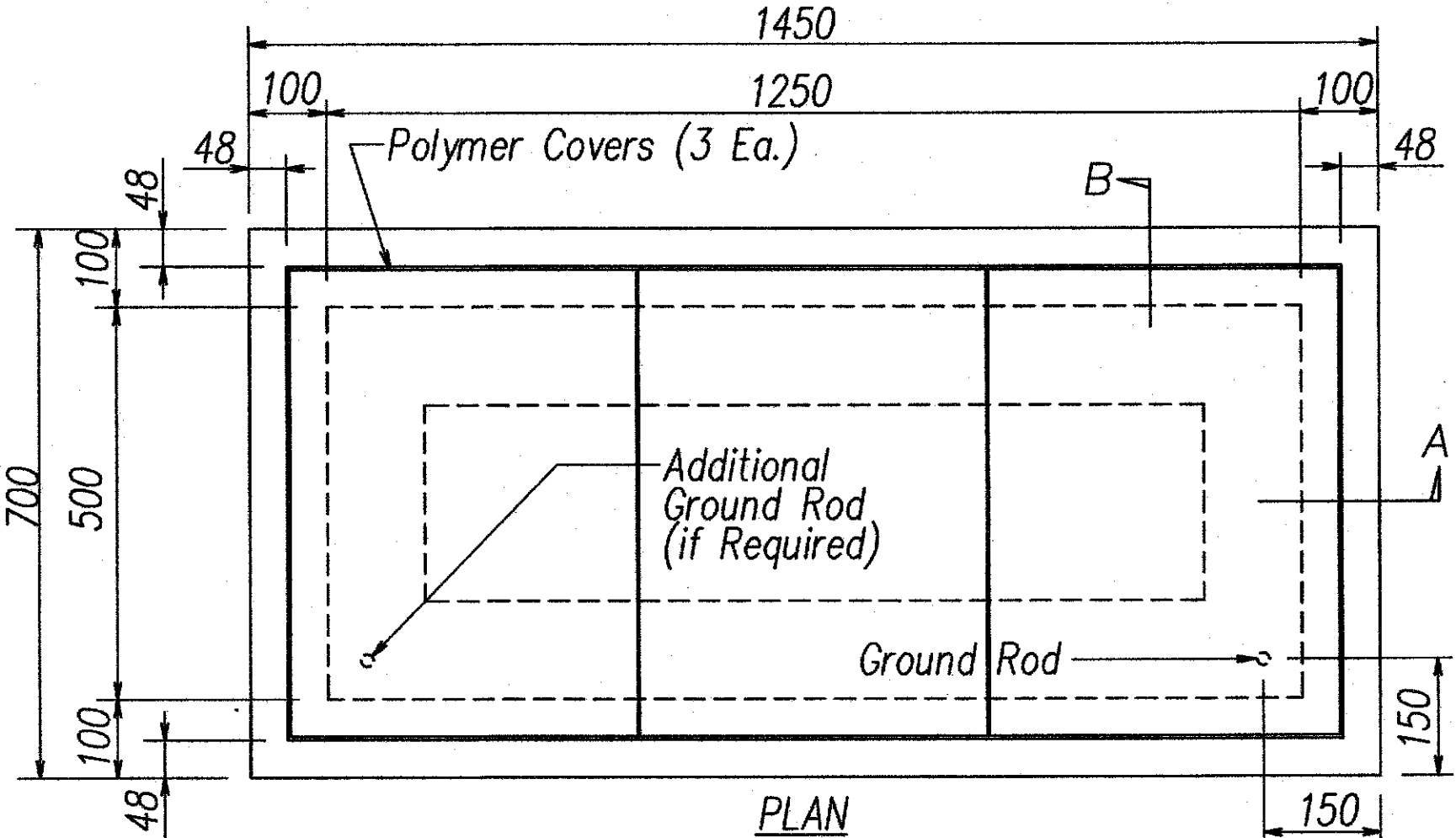
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ROADWAY LIGHT POLE DETAILS

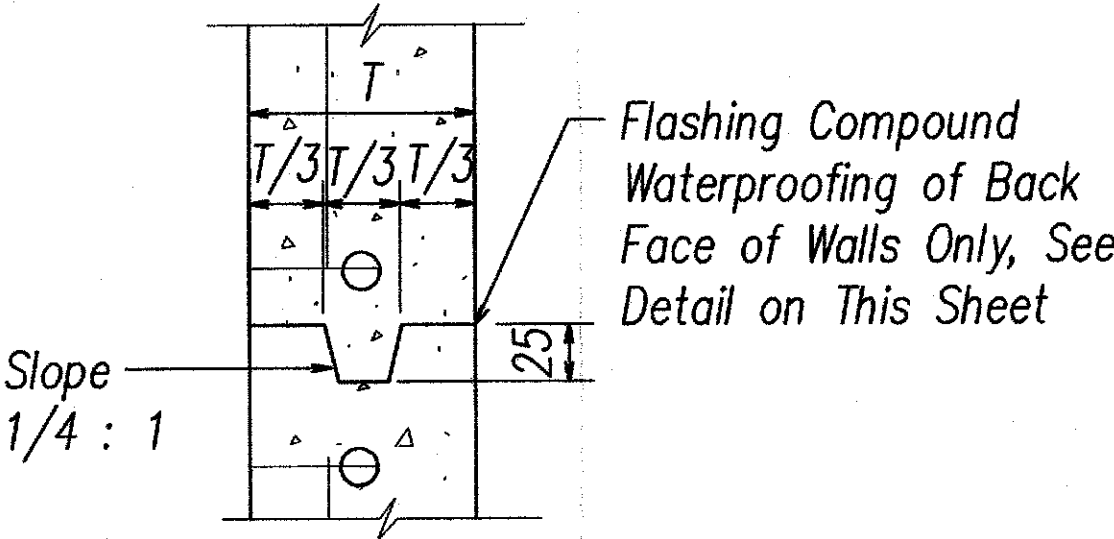
KAMEHAMEHA HIGHWAY - REPLACEMENT
OF SOUTH PUNALUU STREAM BRIDGE
Federal Aid Project No. BR-083-1(42)
Scale: AS NOTED Date: May 2009
SHEET No. E9 OF 13 SHEETS

108

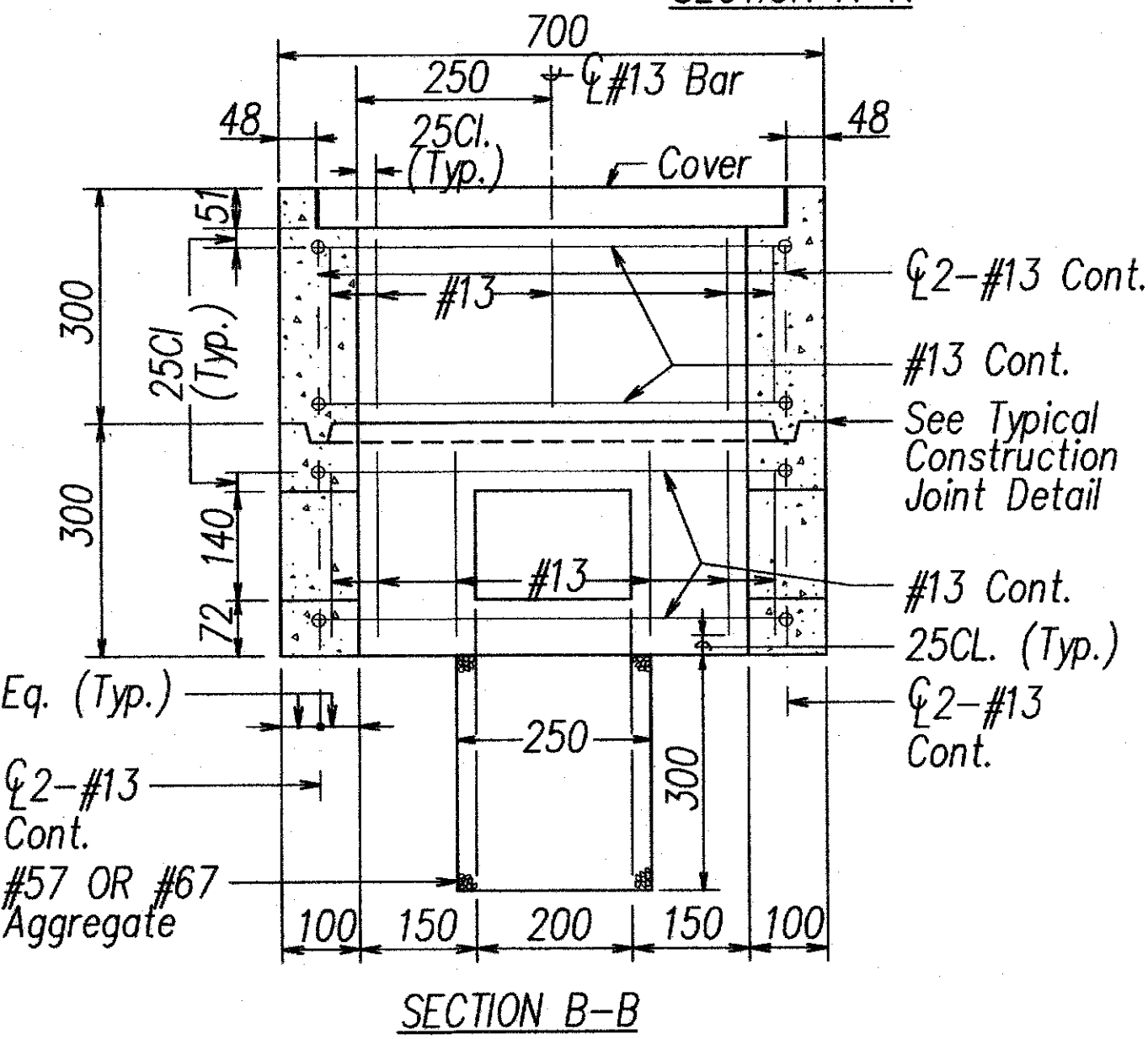
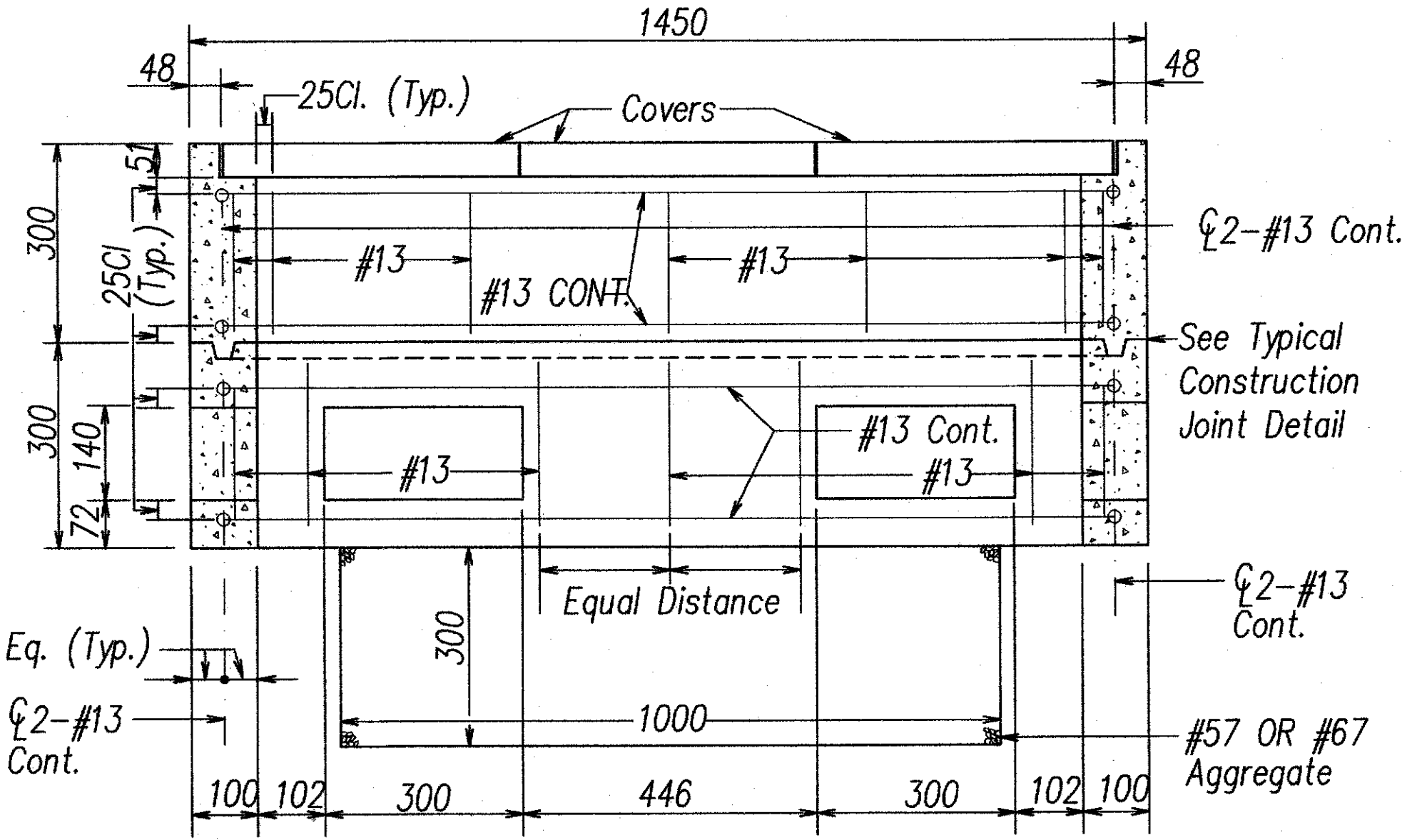
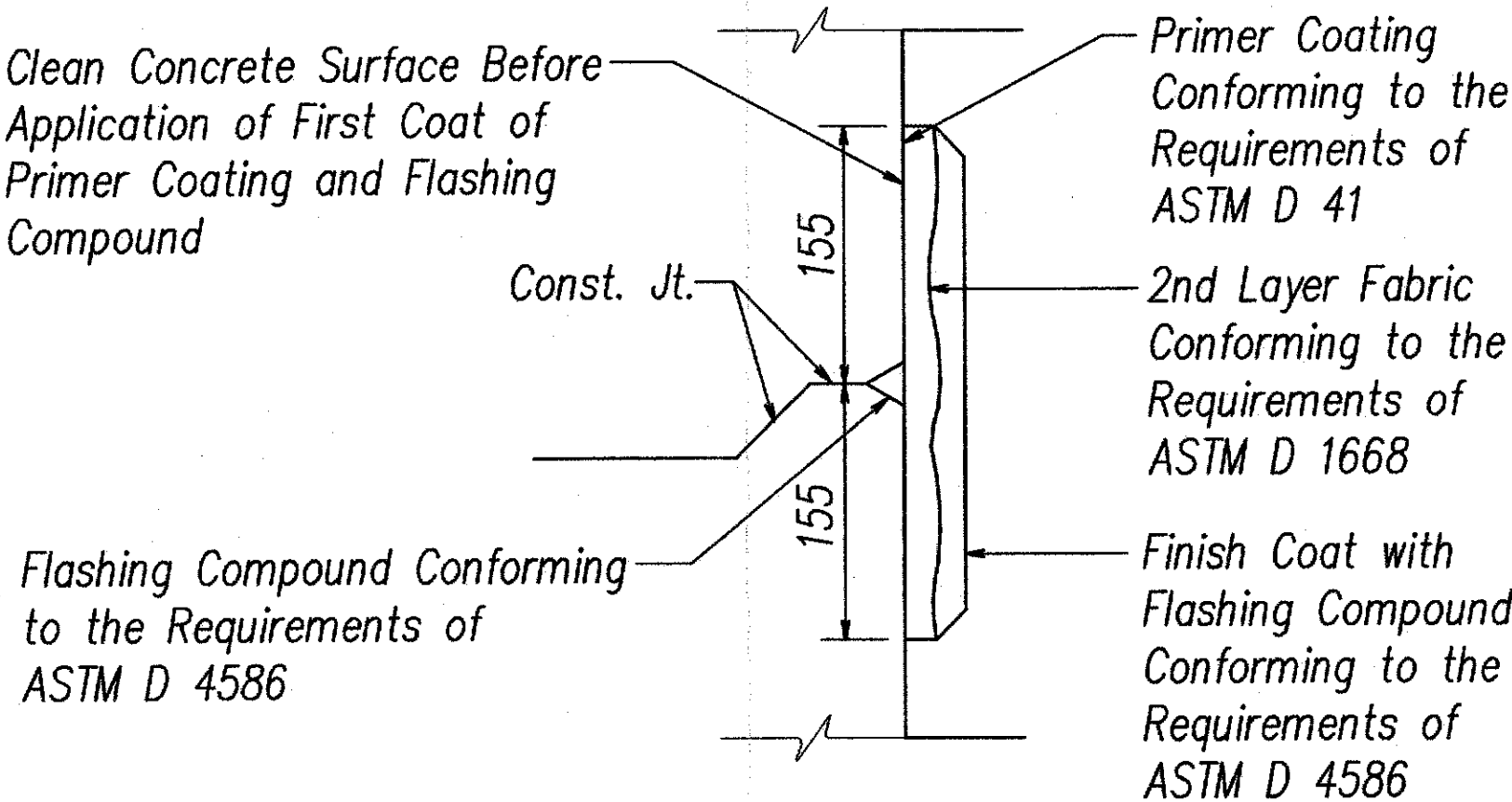
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(42)	2009	109	121



POLYMER CONCRETE COVER
NOT TO SCALE



TYPICAL CONSTRUCTION JOINT DETAIL
NOT TO SCALE



TYPE "C" PULLBOX (OLD TYPE "D")
NOT TO SCALE

TYPICAL FLASHING COMPOUND WATERPROOFING DETAILS
NOT TO SCALE

GENERAL NOTES FOR PULLBOX

1. Provide a Minimum of One 16mm x 2.5m Copperweld Ground Rod in Each Pullbox When Directed by the 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).
11. Pullbox shall be Installed in a Location Protected from Vehicular Traffic.

All Dimensions on This Sheet Are in Millimeters.



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SIGNATURE: *Sean K. Sugi* 4/30/10 EXPIRATION DATE OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**ROADWAY LIGHTING
PULLBOX DETAIL**

KAMEHAMEHA HIGHWAY – REPLACEMENT
OF SOUTH PUNALUU STREAM BRIDGE
Federal Aid Project No. BR-083-1(42)

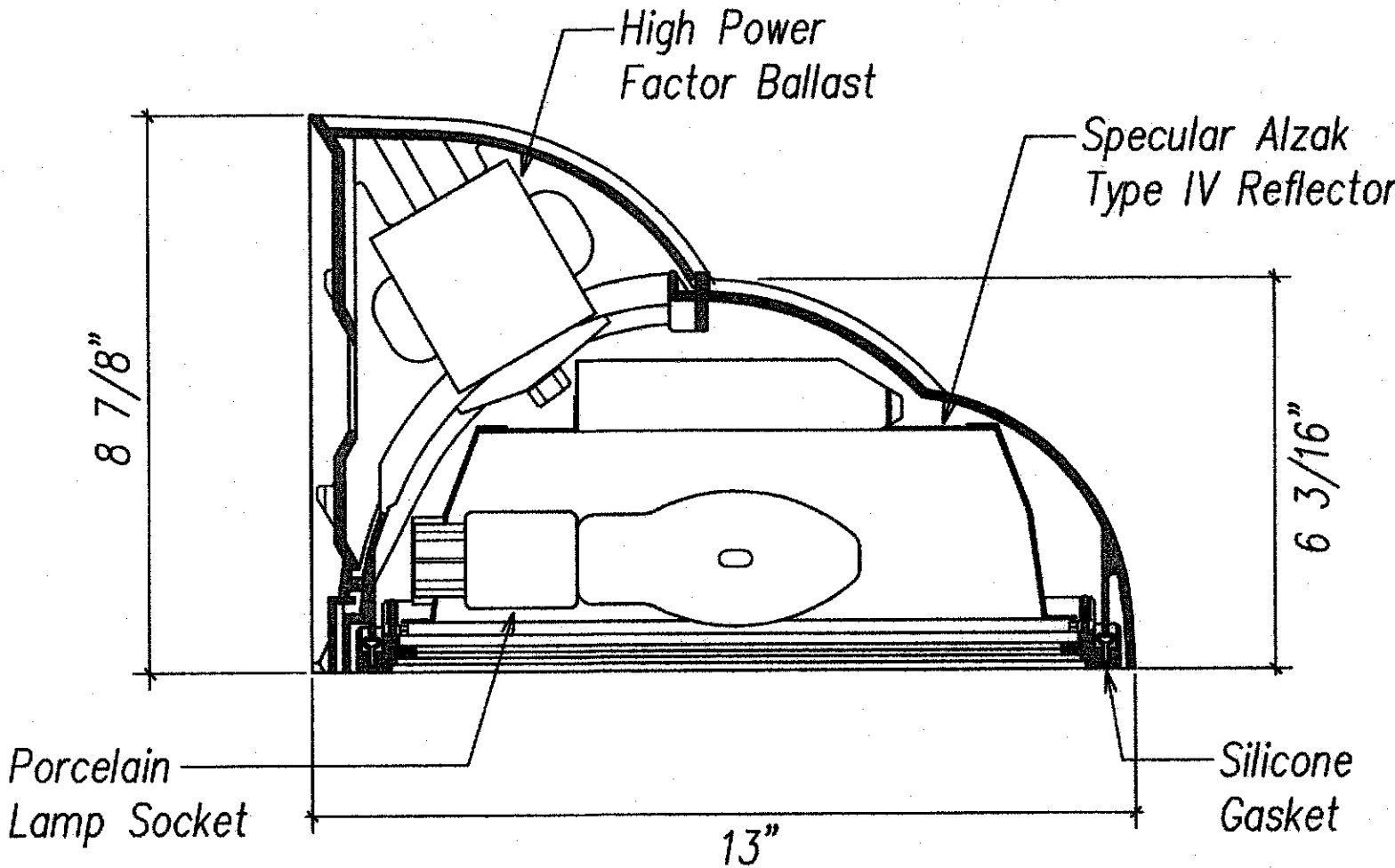
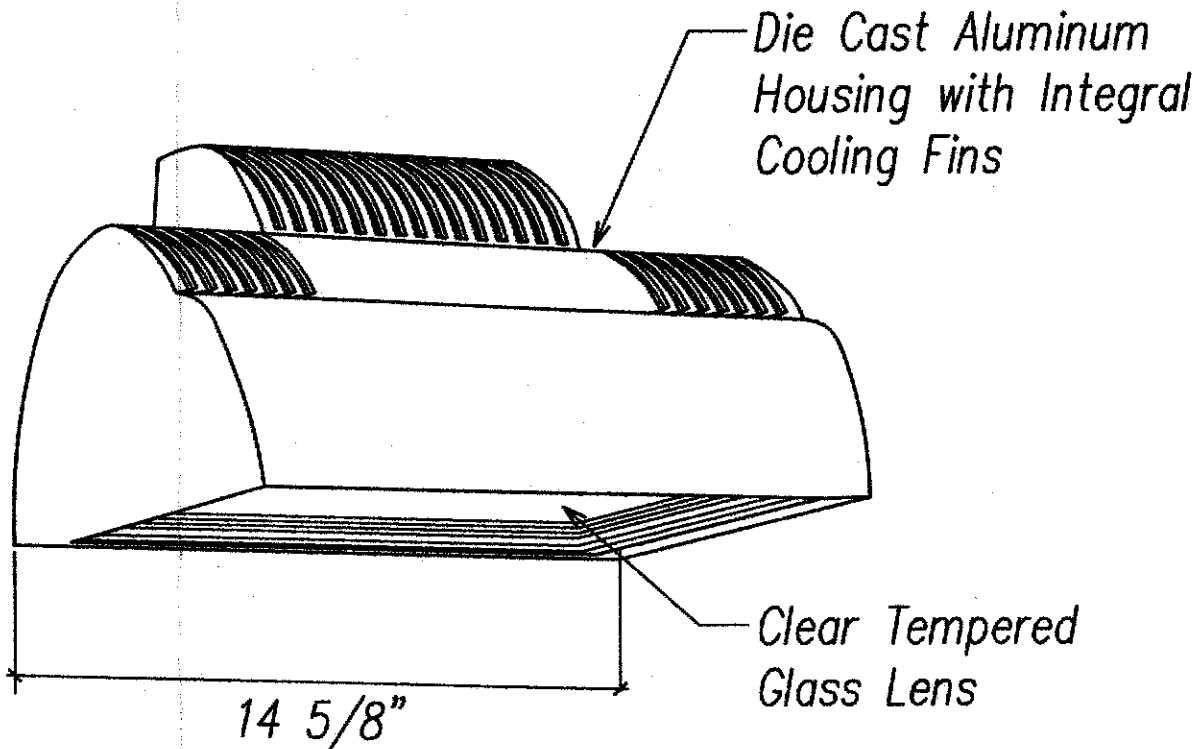
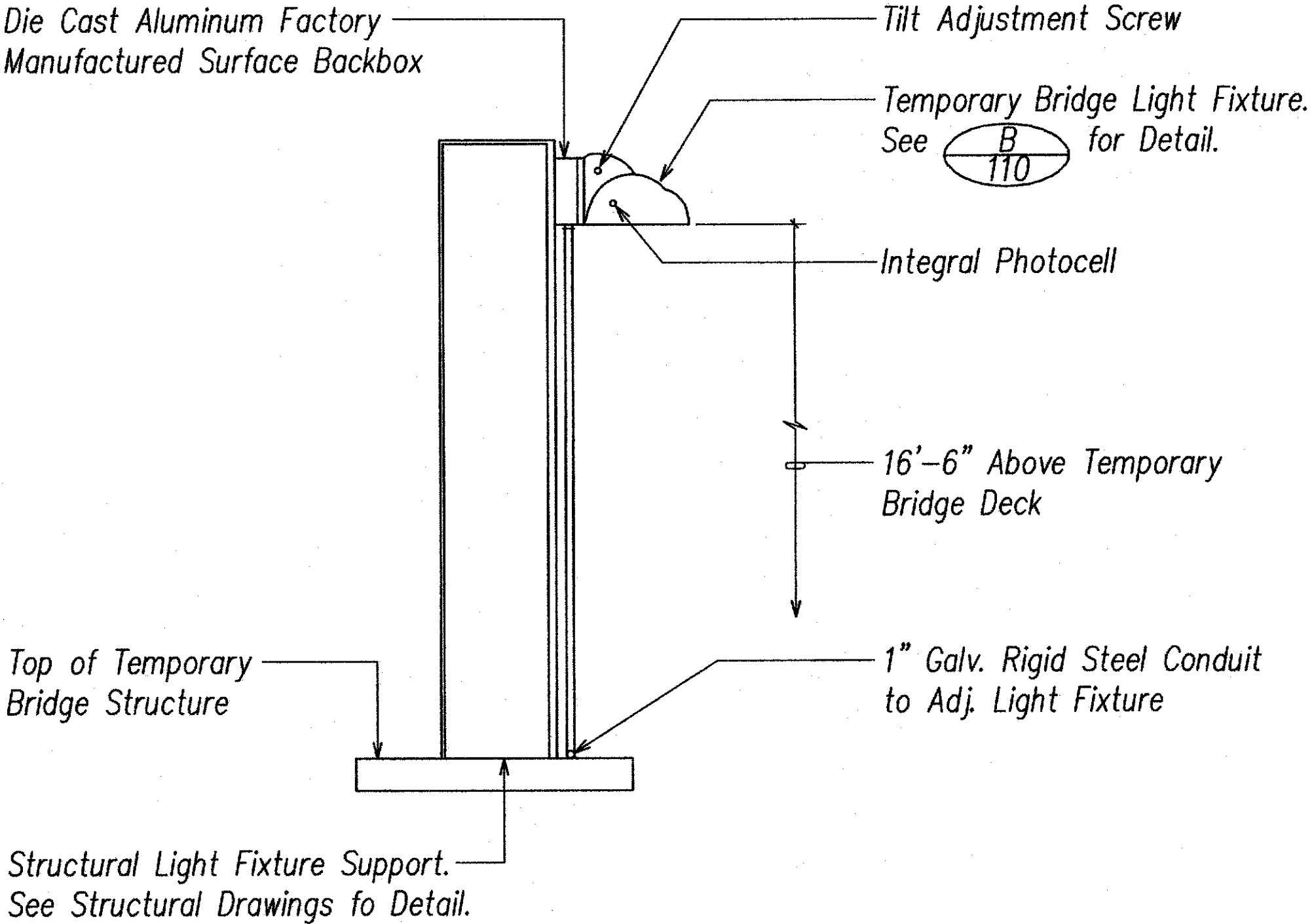
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SHEET No. E10 OF 13 SHEETS

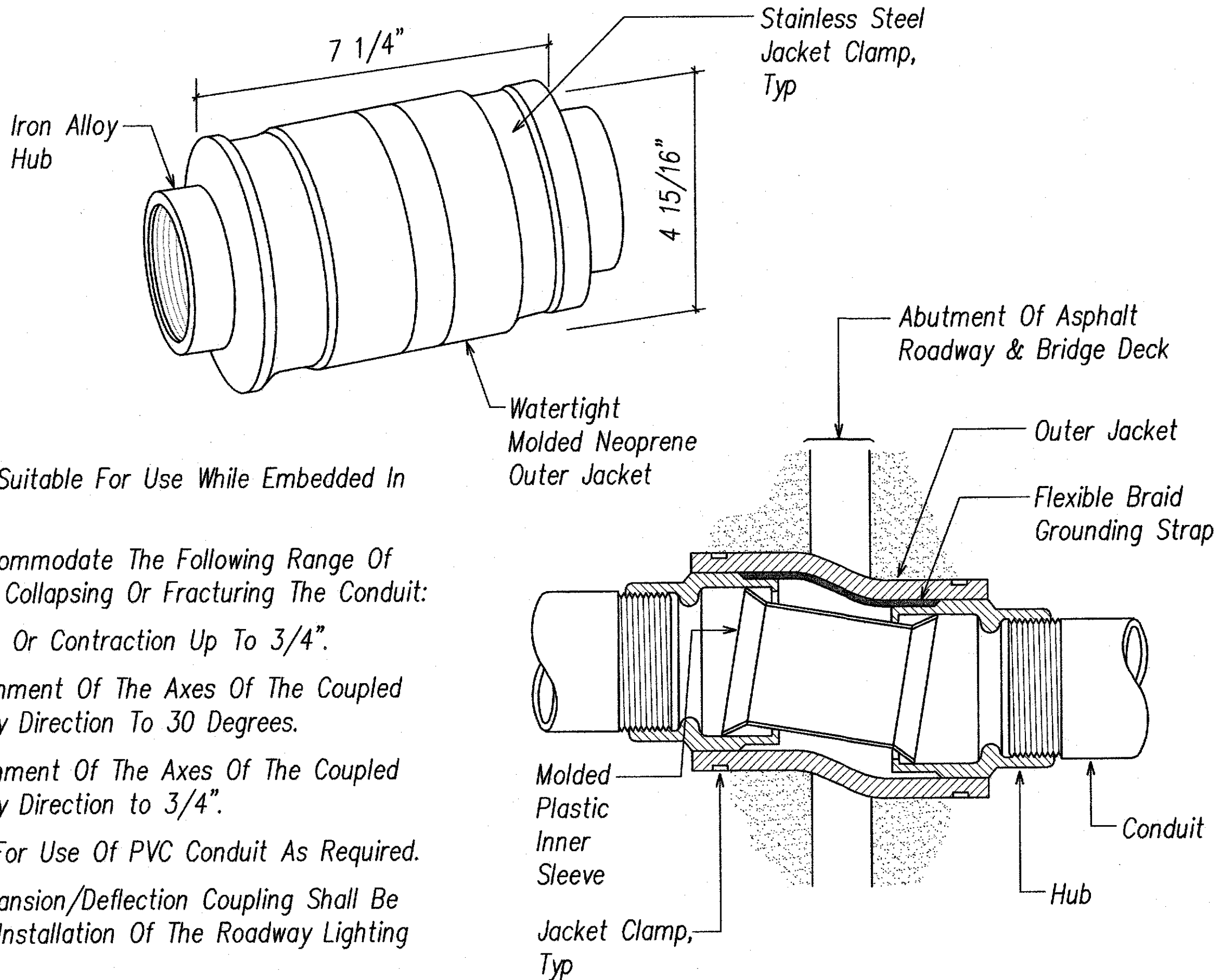
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NOTE BOOK	
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(42)	2009	110	121



\textcircled{A} 110 **TEMPORARY BRIDGE LIGHT FXTURE**
NOT TO SCALE



Notes:

- Coupling Shall Be Suitable For Use While Embedded In Concrete.
- Coupling Shall Accommodate The Following Range Of Movement Without Collapsing Or Fracturing The Conduit:
 - Axial Expansion Or Contraction Up To 3/4".
 - Angular Misalignment Of The Axes Of The Coupled Conduits In Any Direction To 30 Degrees.
 - Parallel Misalignment Of The Axes Of The Coupled Conduits In Any Direction to 3/4".
- Provide Adapters For Use Of PVC Conduit As Required.
- Installation Of Expansion/Deflection Coupling Shall Be Incidental To The Installation Of The Roadway Lighting Conduit.

\textcircled{C} 110 **TYPICAL EXPANSION/DEFLECTION COUPLING DETAIL**
NOT TO SCALE

Lamp: 1-100W HPS, ED-17.

Luminaire: One-Piece Die Cast Aluminum Housing with Integral Cooling Fins, Die Cast Aluminum Lens Frame with Clear Tempered Glass Lens, Silicone Gasketing, Stainless Steel Hinges and Mounting Hardware, Specular Alzak Reflector, Die Cast Aluminum Surface Mounting Plate, Dark Bronze Polyester Power Coat Paint Finish, 120V High Power Factor Ballast, UL Listed for Wet Locations.

Manufacturer: Kim Lighting WDH or Approved Equal.

\textcircled{B} 110 **TEMPORARY BRIDGE LIGHT FXTURE DETAIL**
NOT TO SCALE

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NOTE BOOK	
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SIGNATURE: *Sean K. Sugar* 5/7/10

EXPIRATION DATE OF LICENSE: 4/30/10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TEMPORARY BRIDGE LIGHTING DETAILS
KAMEHAMEHA HIGHWAY - REPLACEMENT OF SOUTH PUNALUU STREAM BRIDGE
Federal Aid Project No. BR-083-1(42)

Scale: AS NOTED
Date: May 2009

SHEET No. E11 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(42)	2009	111	121

STATE RIGHT-OF-WAY BACKFILL NOTES

- Trench Backfill Material "B"

1. Sand Equivalent ≥ 2

2. 8" Max. Lift Loose

3. 95% Compaction

Trench Backfill Material "A"

1. Sand Equivalent ≥ 20

2. 8" Max. Lift Loose

3. 95% Compaction

If Material Below Duct Is Not Equivalent To Backfill Material "A", Excavate Material & Provide 3" Backfill Material "A", See Above

Concrete - 3" Encasement, 2500 PSI Compressive Strength @ 28 Days.

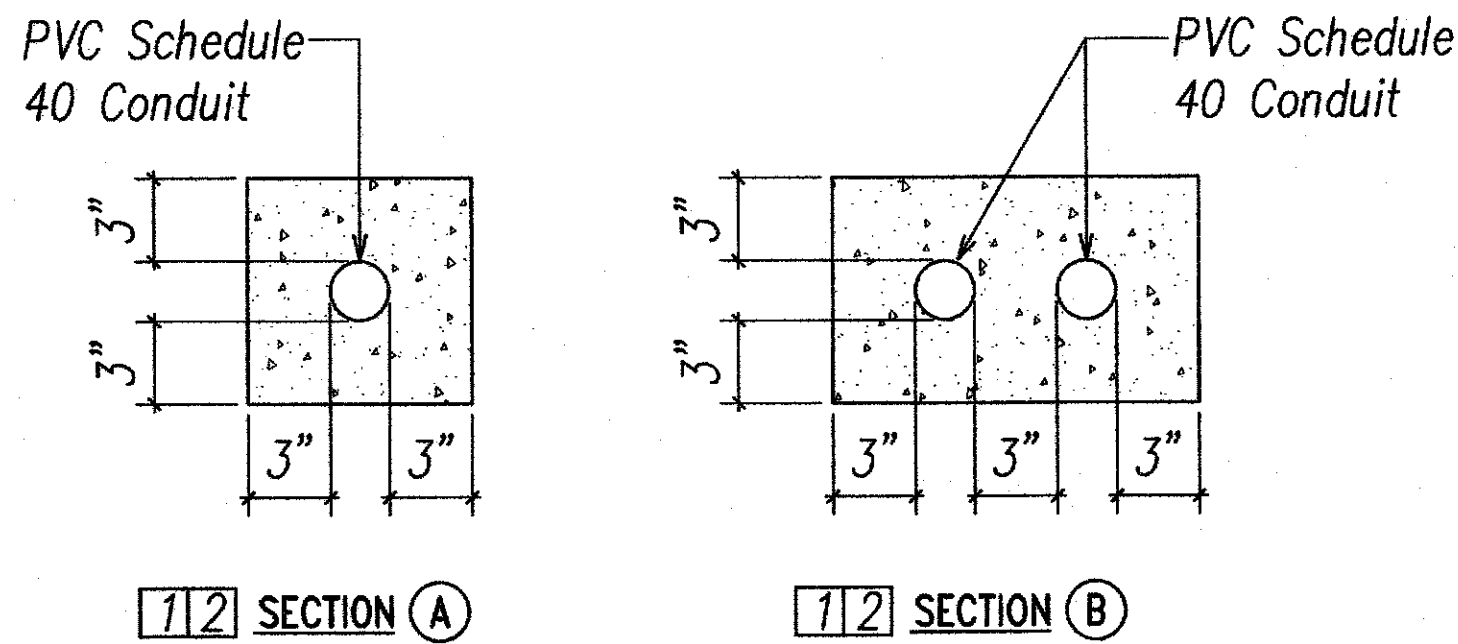
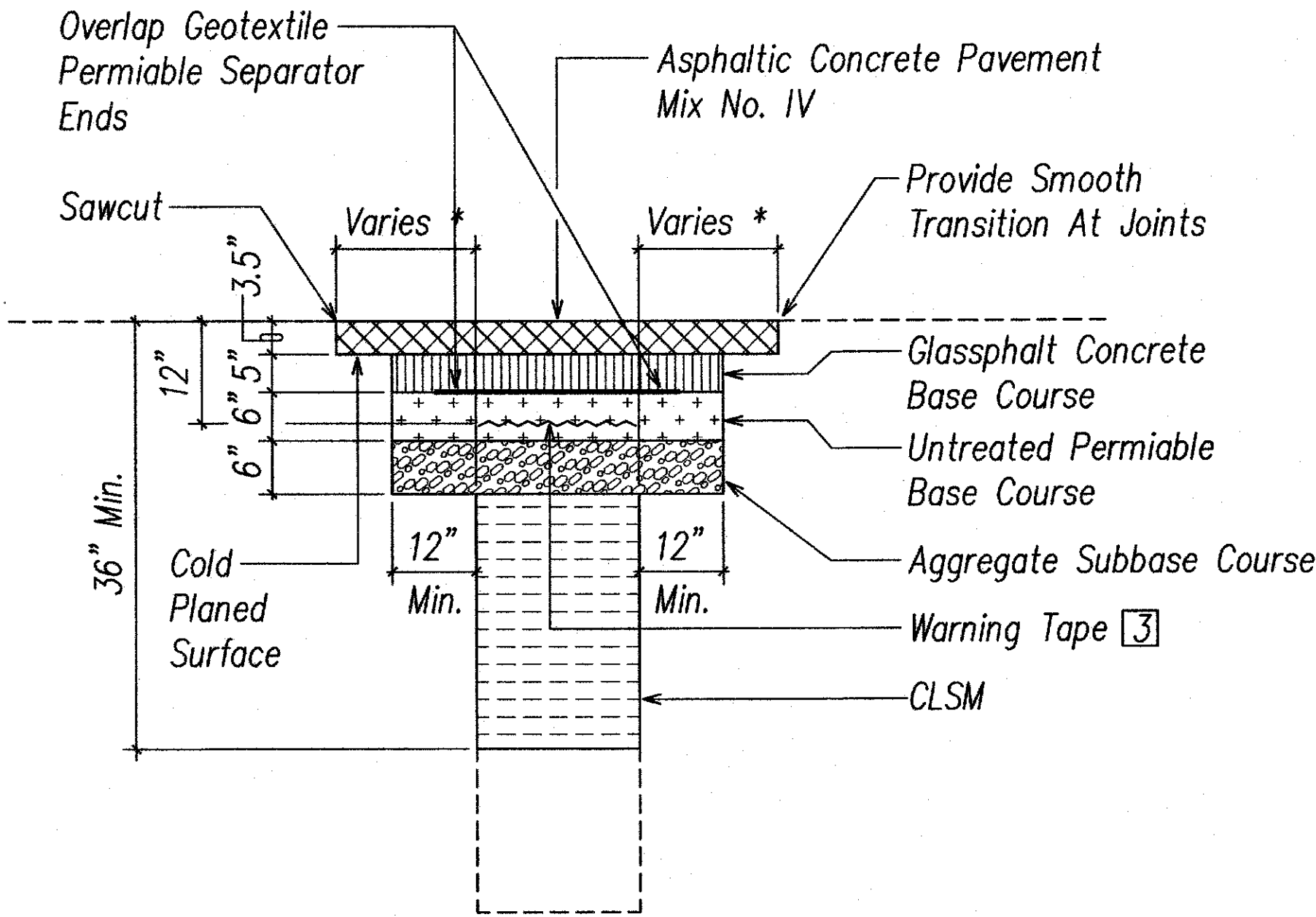
Notes:

- 1

Base Course & Sub-Base Course Per 1994 State Standard Specifications For Highway Construction.
- 2

Sawcutting & Repairing Of Exst A.C. Pavement Shall Not Be Paid For Seperately, But Considered Incidental To The Various Contract Items.
- 3

The Metal Detectable Reel Warning Tape Shall Be A Minimum Of 5 Mils Thick And 4" Wide With A Continuous Metallic Backing And Corrosion Resistant 1± Mil Thick Foil Core. The Message On The Tape Shall Read, "Caution-State Highway Lighting Buried Below", Utility 2" Series "C" Black Lettering. The Message Shall Be Repeated With A 36" Spacing. Warning Tape For Signal Corps Conduits Shall Be Per Signal Corps Standards.



Notes:

1.

Tack Coat Exst Asphalt Bound Material Faces Prior To Filling Excavation With Asphalt Bound Material.
2.

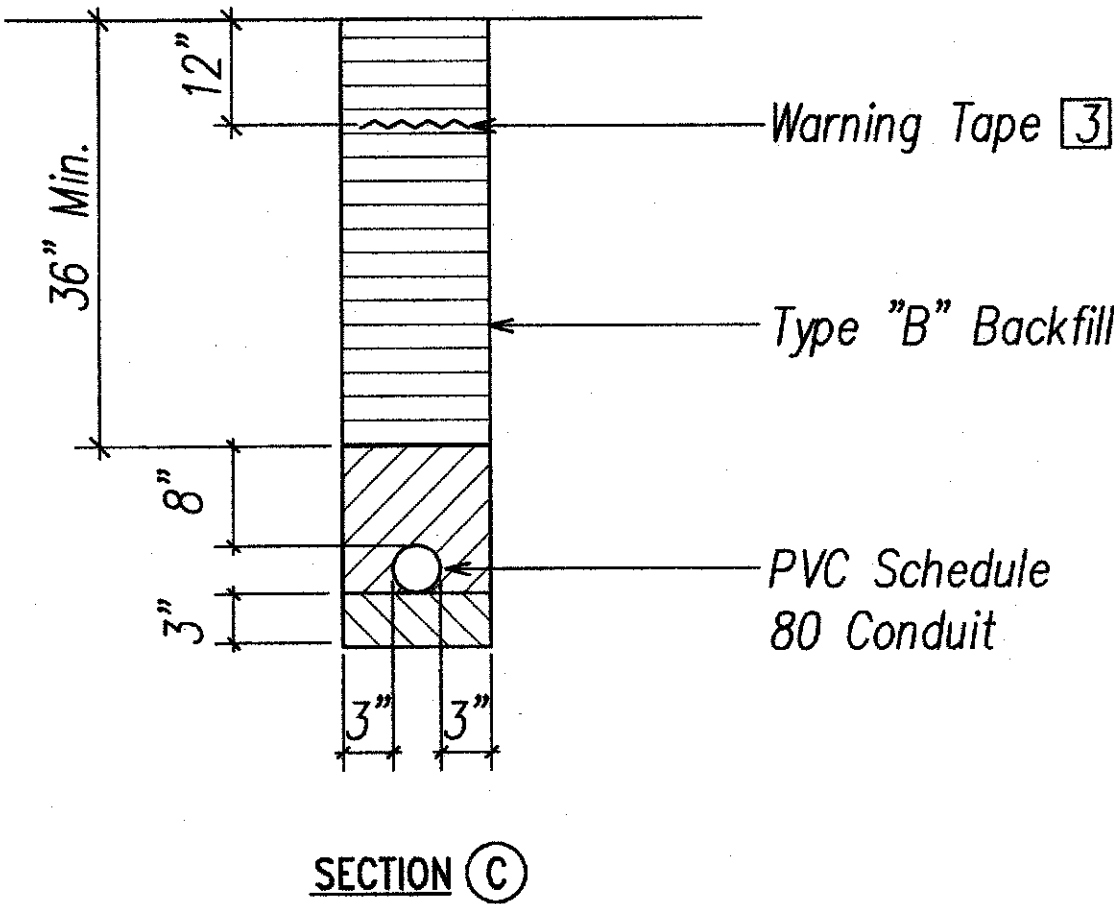
When Ground Water Is Encountered In Trenches, Backfill With Gravel Conforming To ASTM C-33, Size 67 Material Until One Foot Above Water Level. Encapsulate The Size 67 Material With A Permeable Separator That Lines The Bottom And Sides Of The Trench And Overlaps At The Top Of The Material For The Width Of The Trench. Complete Backfilling The Trench Per Detail.

* Note

1.

If Trench Aligned Transverse To Direction Of Travel, 1 Foot On Each Side Of Trench.
2.

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".



DUCT SECTION DETAILS NOT TO SCALE

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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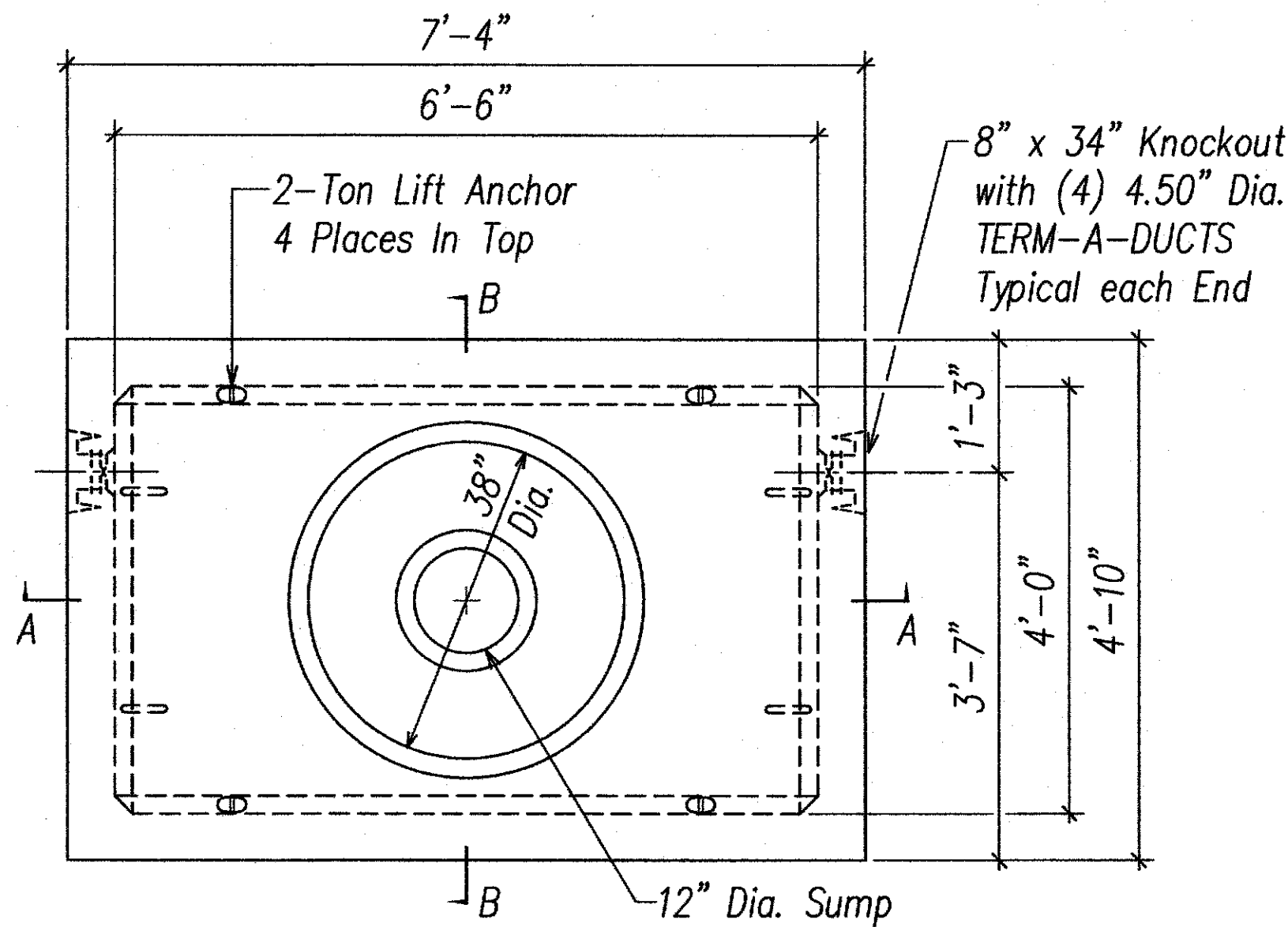


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OR UNDER MY SUPERVISION.

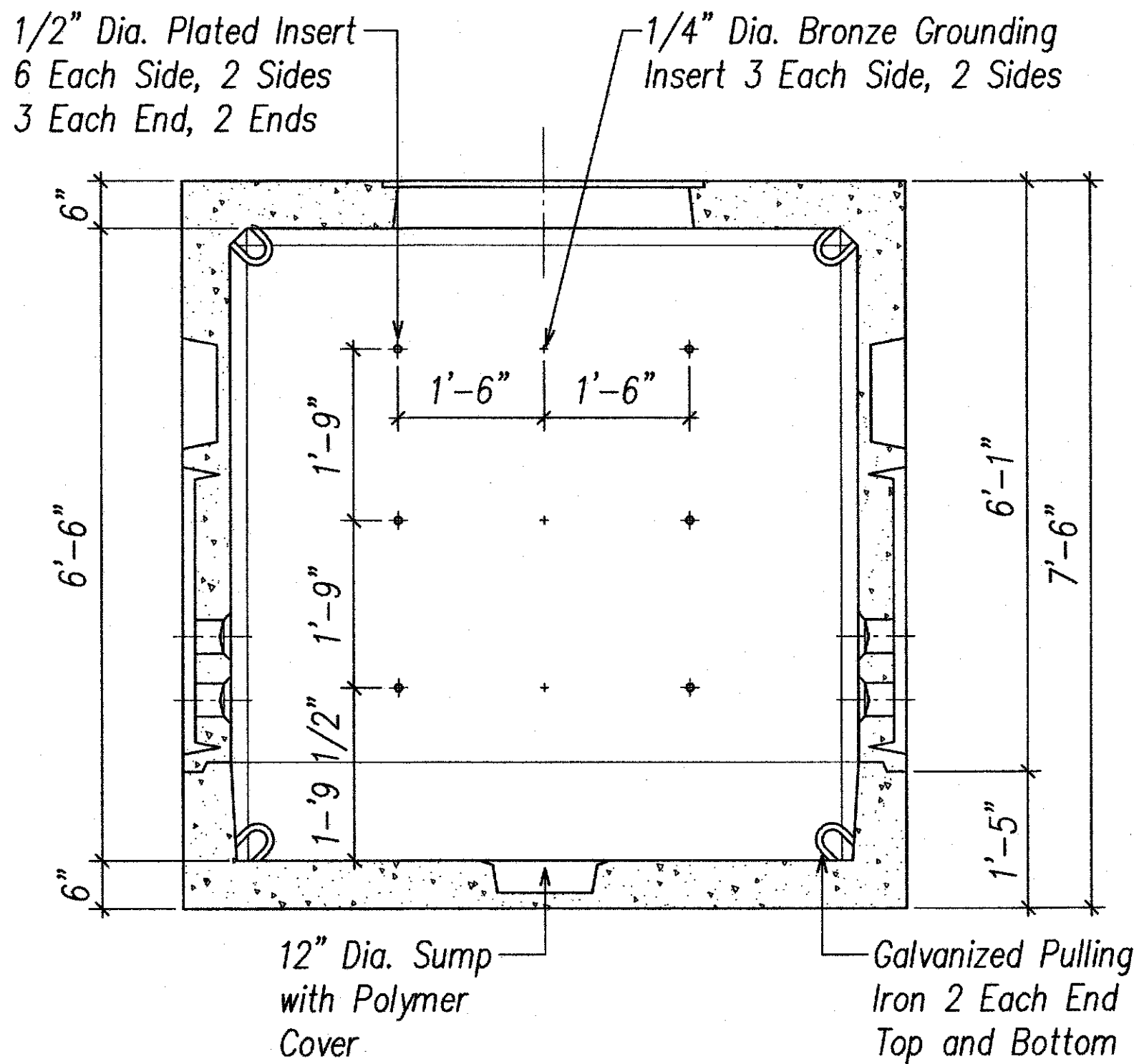
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EXPIRATION DATE OF LICENSE: 4/30/10

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
DUCT SECTION DETAILS
KAMEHAMEHA HIGHWAY - REPLACEMENT OF SOUTH PUNALUU STREAM BRIDGE Federal Aid Project No. BR-083-1(42)
Scale: AS NOTED Date: May 2009
SHEET No. E12 OF 13 SHEETS

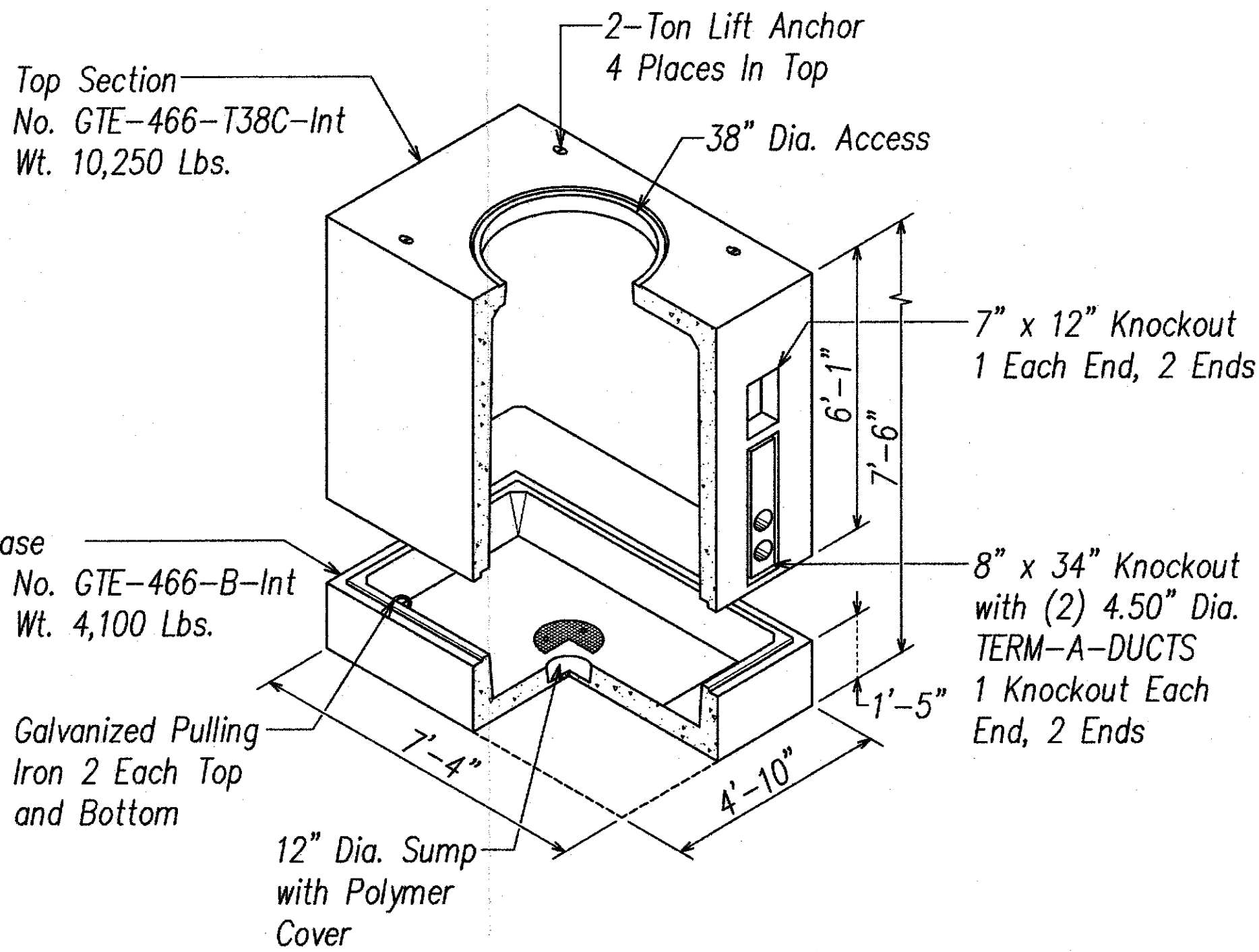
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(42)	2009	112	121



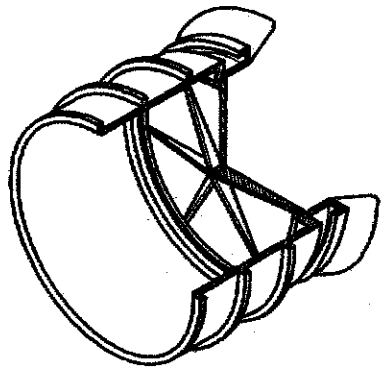
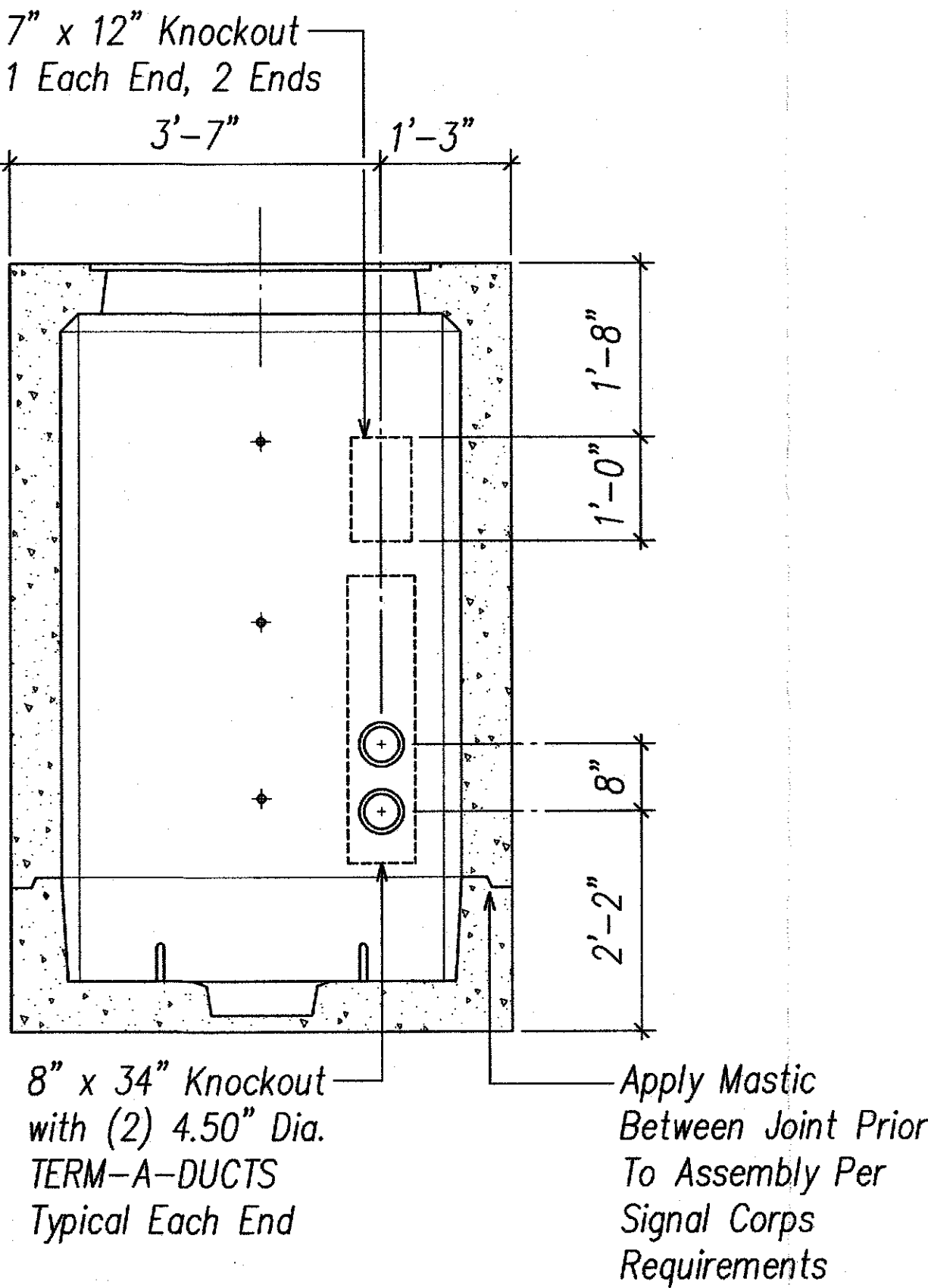
PLAN VIEW



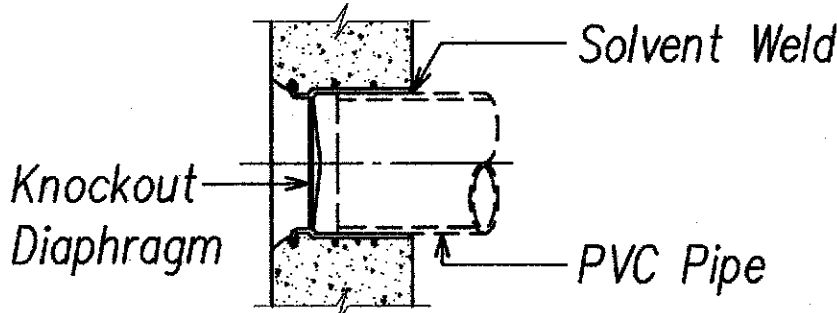
SECTION AA



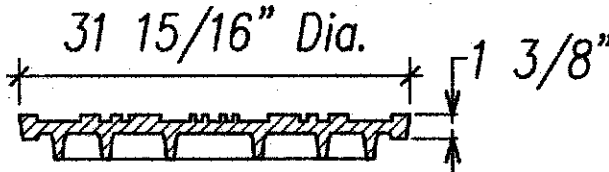
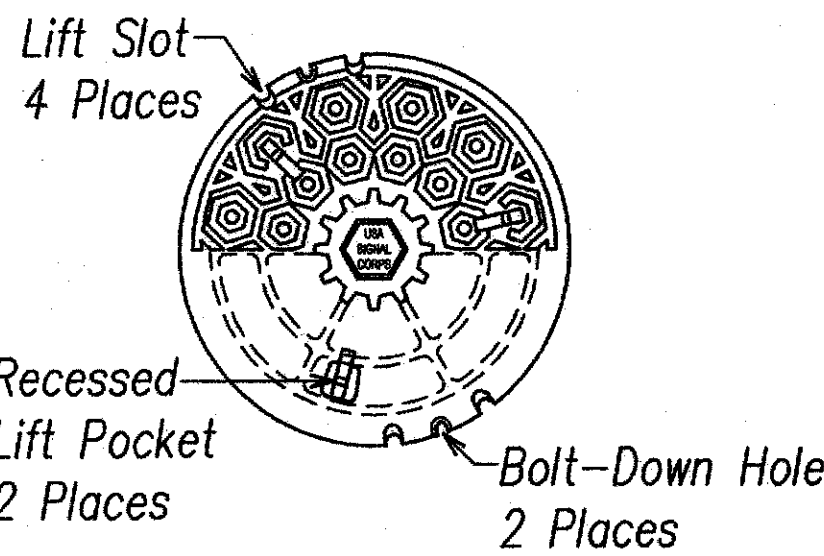
SECTION BB



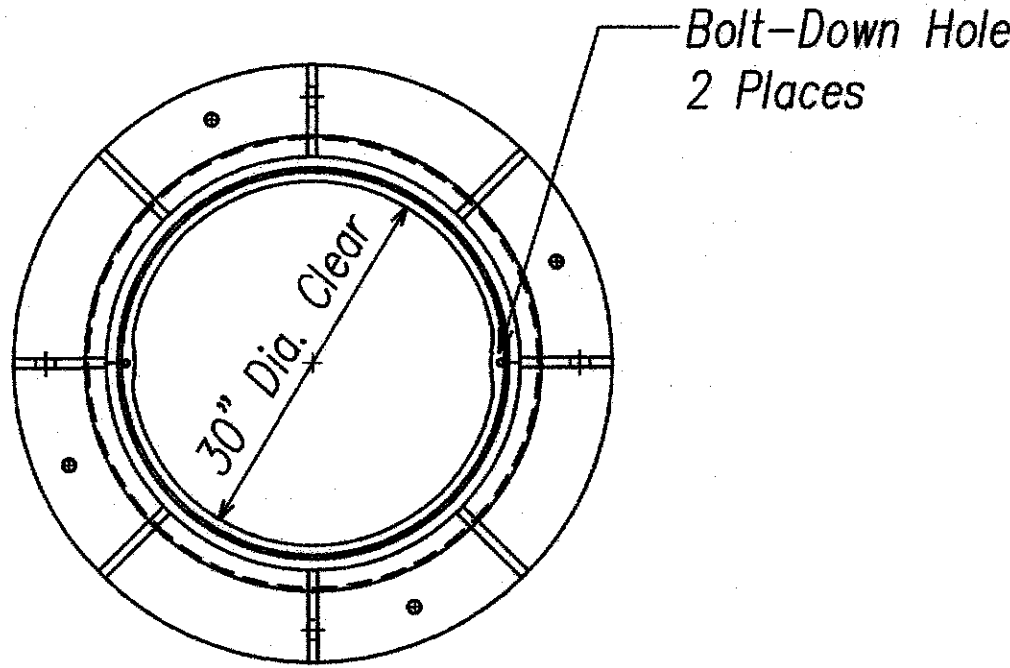
ISOMETRIC VIEW
OF TERM-A-DUCT



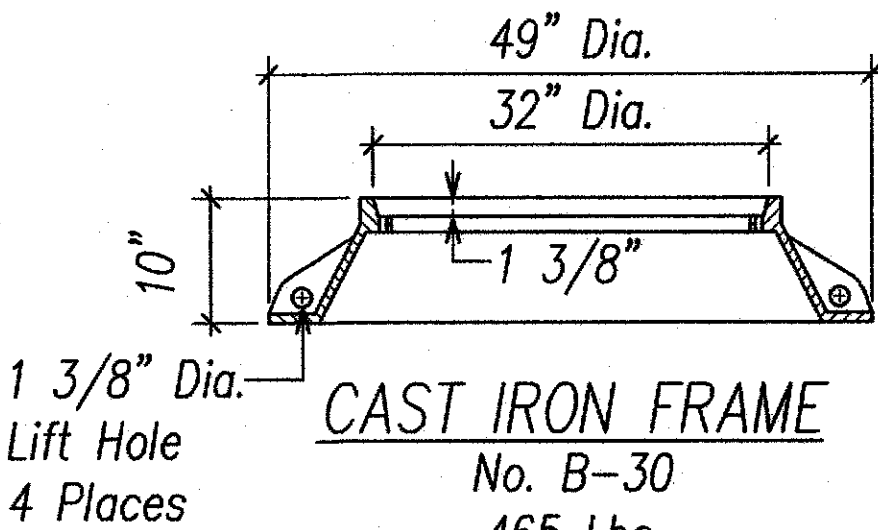
TYPICAL INSTALLATION
OF TERM-A-DUCT
Watertight Duct Connection
For Underground Utility Conduit



CAST IRON COVER
Suitable For Use In Traffic Areas
325 Lbs.



FRAME PLAN



CAST IRON FRAME
No. B-30
465 Lbs.



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OR UNDER MY SUPERVISION.

Signature: *[Signature]* 6/3/09

EXPIRATION DATE
OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
SIGNAL CORPS
MANHOLE DETAILS
KAMEHAMEHA HIGHWAY -- REPLACEMENT
OF SOUTH PUNALUU STREAM BRIDGE
Federal Aid Project No. BR-083-1(42)
Scale: AS NOTED Date: May 2009
SHEET No. E13 OF 13 SHEETS

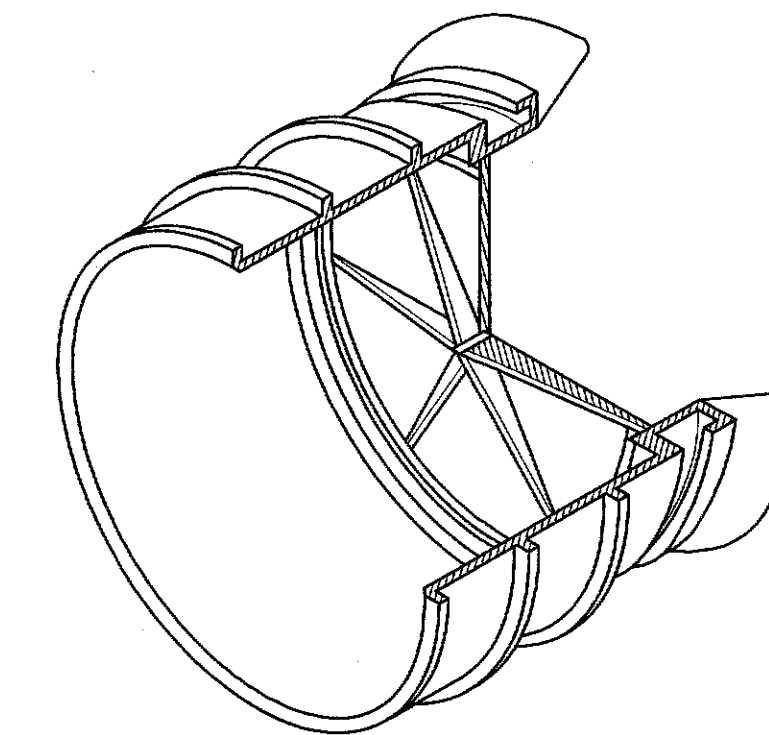
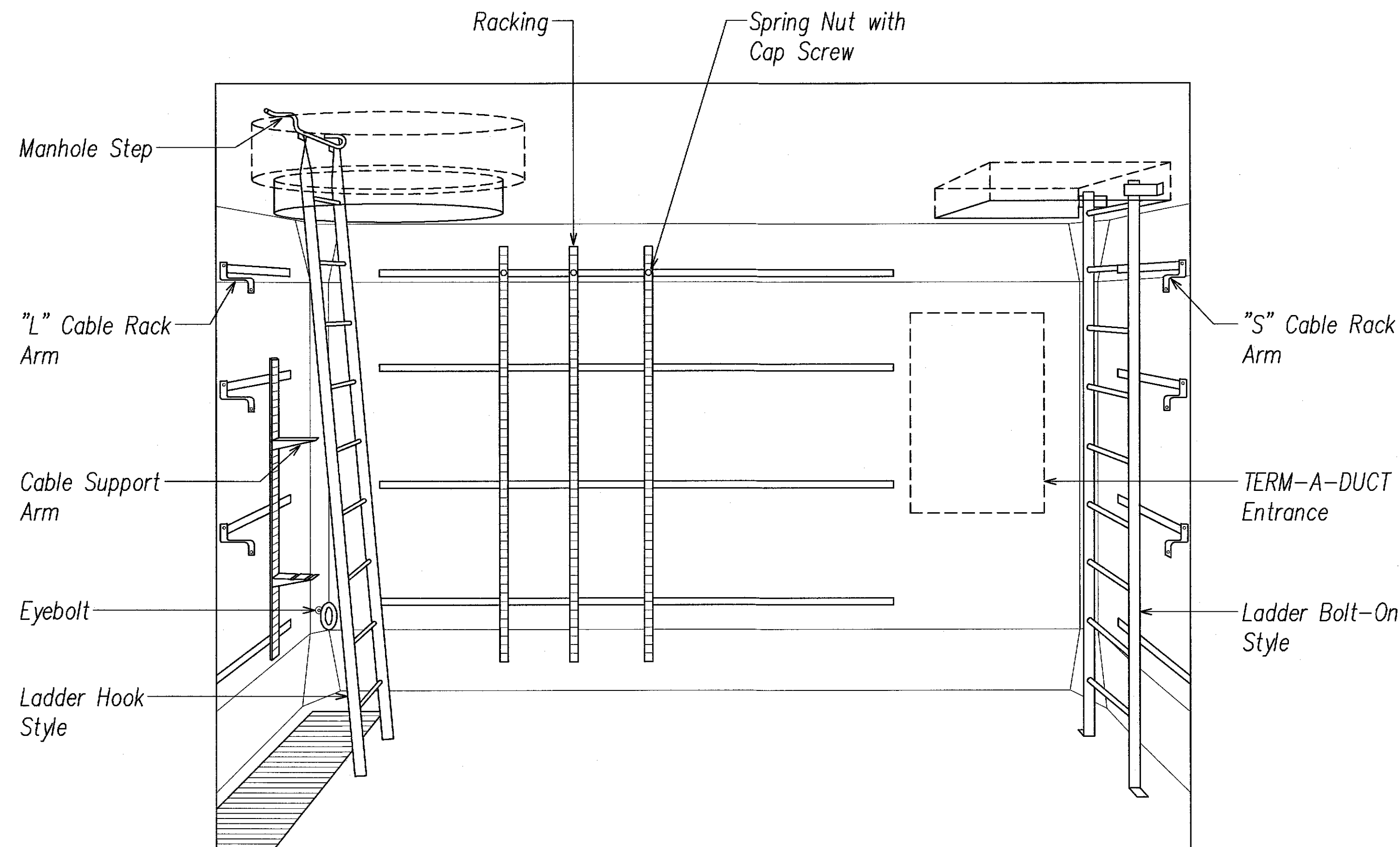
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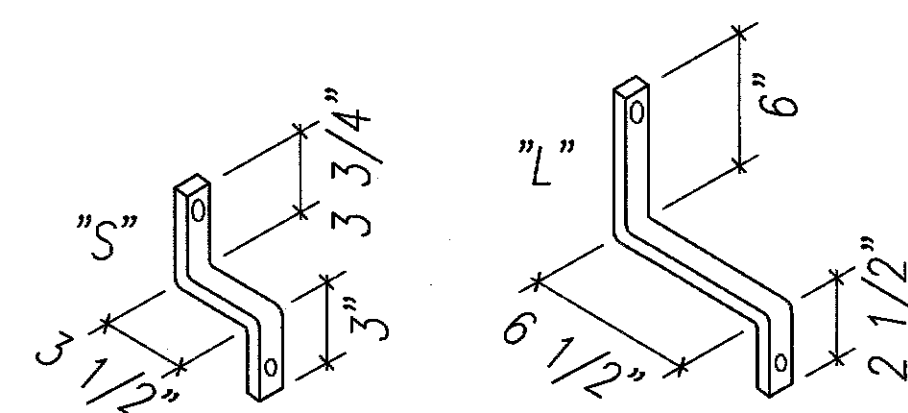
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Note: Provide Cable Racks Per Signal Corps Requirements.

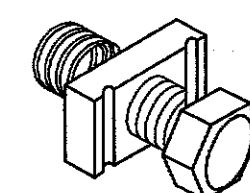
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-083-1(42)	2009	112S-1	121



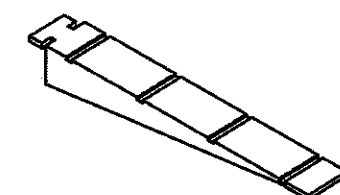
ISOMETRIC VIEW
OF TERM-A-DUCT



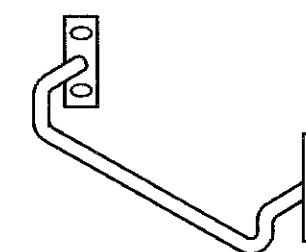
CABLE RACK BRACKETS
1" x 1/2" Steel, Hot Dipped Galvanized, with Mounting Hole/Slot for 1/2" Bolts



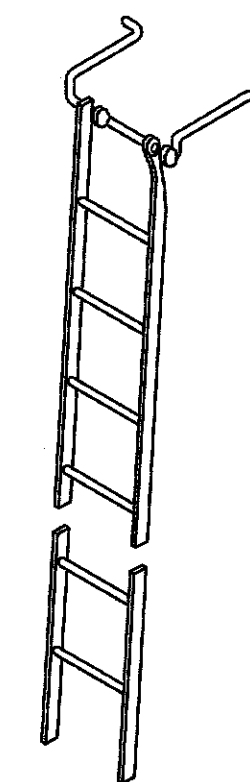
STRING NUT AND CAP SCREW
1/2" Nut, 1/2" x 1 1/4" Plated Cap Screw



CABLE SUPPORT ARMS
Formed from a 3/16" Steel Hot-Dipped Galvanized.
Lengths:
4"-7 1/2"-10"-14"-18"

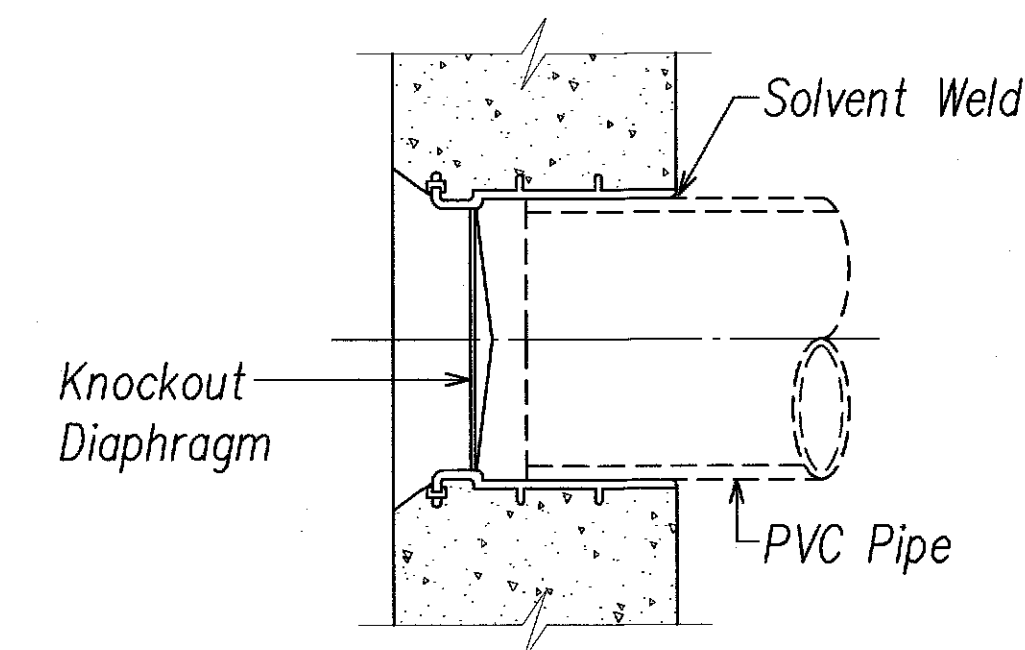


MANHOLE STEP BOLT-ON
3/4" Rebar, 16" Wide Galvanized

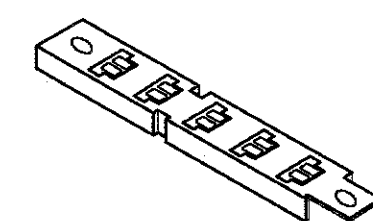


MANHOLE STEP
3/4" Rebar, 16" Wide Galvanized

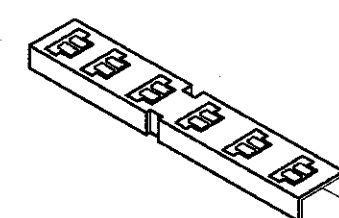
HOOK LADDER
3/4" Dia. Rungs on 12" Centers. Side Rails are 1 1/2" x 3/8" Flatbar (2 1/2" x 3/8" When Ladder Length is Over 12") Spacing @ 12" Hot-Dipped Galvanized



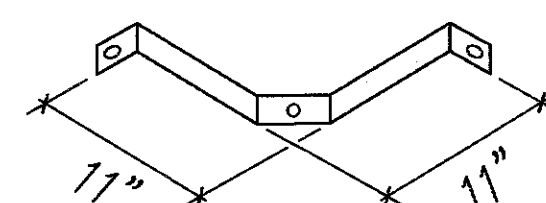
TYPICAL INSTALLATION
OF TERM-A-DUCT
Watertight Duct Connection
For Underground Utility Conduit



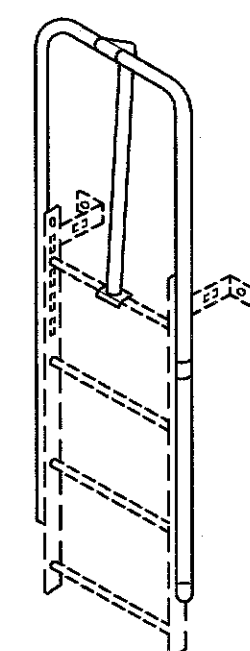
RACKING WITH TAB
Mounting Slots at Each End Interlock so that Racks may be Combined.
21" and 27" Lengths



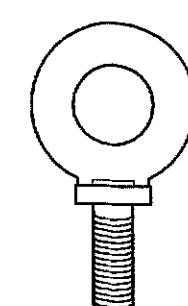
CUT RACKING
Lengths:
10 Hole - 15"
20 Hole - 30"
37 Hole - 55 1/2"
44 Hole - 66"
47 Hole - 70 1/2"
51 Hole - 76 1/2"
65 Hole - 97 1/2"



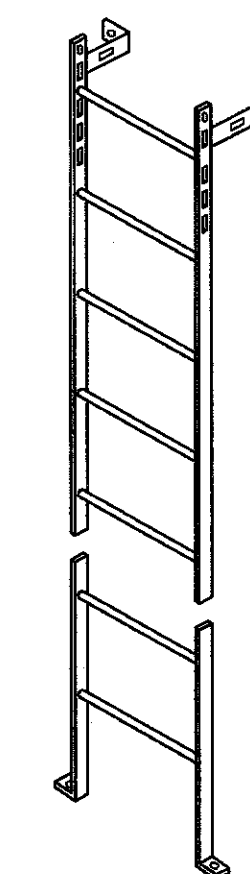
CORNER BRACKET
1/4" x 1 1/2" Flatbar Galvanized



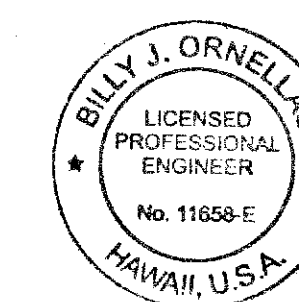
OPTIONAL PULL-UP EXTENDER
1 1/2" Dia. Aluminum Tubing
Extends 28" Above Top Rung on Ladder



EYEBOLT
3/4", 1" or 1 1/4"



BOLT-ON LADDER
3/4" Dia. (#6 Rebar) Rungs on 12" Center. Side Rails are 2" x 5/16" Flatbar 2 Mounting Brackets Furnished Hot-Dipped Galvanized



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SIGNATURE

4/30/10
EXPIRATION DATE
OF LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SIGNAL CORPS
MANHOLE DETAILS

KAMEHAMEHA HIGHWAY - REPLACEMENT
OF SOUTH PUNALUU STREAM BRIDGE
Federal Aid Project No. BR-083-1(42)

Scale: AS NOTED

Date: May 2009

SHEET No. E13A OF 13 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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