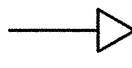
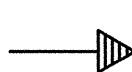
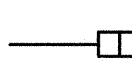



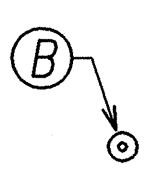
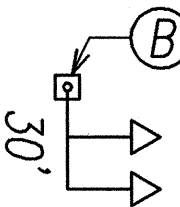
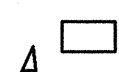
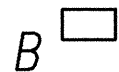
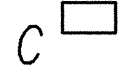
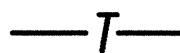
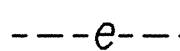
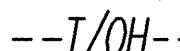


ELECTRICAL SYMBOLS	
SYMBOL	DESCRIPTION
	TRAFFIC SIGNAL HEAD RYG, PROVIDE NECESSARY MOUNTING BRACKETS AND ACCESSORIES
	TRAFFIC SIGNAL HEAD RYG, PROGRAMMABLE VISIBILITY, PROVIDE NECESSARY MOUNTING BRACKETS AND ACCESSORIES
	PEDESTRIAN TRAFFIC SIGNAL HEAD, PROVIDE NECESSARY MOUNTING BRACKETS AND ACCESSORIES
	OPTICOM EVP DETECTOR, PROVIDE NECESSARY MOUNTING BRACKETS AND ACCESSORIES, SEE DETAIL E-17
	PEDESTRIAN PUSHBUTTON SHALL MEET CURRENT AMERICAN WITH DISABILITIES ACT (ADA) ACCESSIBILITY GUIDELINES AND WILL BE SUBJECT TO ENGINEER'S APPROVAL SEE SHEET E-15
	CCTV SYSTEM CAMERA
	TYPE 1 TRAFFIC SIGNAL STANDARD, POLE "B" INDICATED, SEE PLAN FOR HEIGHT, SEE DET. A/E-15, AND SHEETS E-13, E-14, E-15
	TYPE II TRAFFIC SIGNAL STANDARD, WITH TRAFFIC SIGNAL HEADS AND NECESSARY MOUNTING BRACKETS AND ACCESSORIES (POLE "B" WITH 30' MAST ARM INDICATED)
	TYPE "A" METRIC TRAFFIC SIGNAL PULLBOX (APPROX. 22" X 28"), SEE DETAIL A/E-11
	TYPE "B" METRIC TRAFFIC SIGNAL PULLBOX (APPROX. 28" X 40"), SEE DETAIL B/E-11
	TYPE "C" METRIC TRAFFIC SIGNAL PULLBOX (APPROX. 28" X 57"), SEE DETAIL C/E-11
	TRAFFIC SIGNAL CONDUIT & WIRING
	EXST. UNDERGROUND ELEC./SIGNAL CONDUITS & CABLES TO REMAIN
	EXST. OVERHEAD TRAFFIC SIGNAL CABLES

- A. *Trenching to be by hand digging near and across existing utility lines.*
- B. *Unless otherwise requested by the Board of Water Supply, minimum clearance between water lines and conduits shall be:*
Horizontal = 3 feet
Vertical = 6 inches
- C. *Adjust new conduit alignment, if required to provide clearances. If conduit cannot be realigned, adjustments to existing water system shall be performed in accordance with standards of the Board of Water Supply.*
- D. *Underground utilities shown hereon are for information only. No guarantee is made on the accuracy or completeness of said information.*
- E. *All new concrete pullbox and handhole covers which are located in finished sidewalks shall be provided with new exposed aggregate concrete covers to match new exposed aggregate concrete sidewalk finish.*
- F. *Sawcut, remove and replace existing AC pavement, concrete curbs, concrete sidewalks and curb ramps as required to install the traffic signal system.*

Reconstruction of sidewalk, curbs, ramps, gutters and driveways shall conform to the standard details of the State of Hawaii Department of Transportation. See "Concrete Sidewalk Restoration Detail" on this sheet for additional reconstruction requirements.
- G. *The Contractor shall be responsible for removal of all silt and debris resulting from his work and deposited in drainage facilities, roadways and other areas. The cost for any necessary remedial action shall be payable by the Contractor.*
- H. *The Contractor, at his own expense, shall keep the project area free from dust nuisance. The work shall be in conformance with the air pollution control standards and regulations of the State Department of Health.*



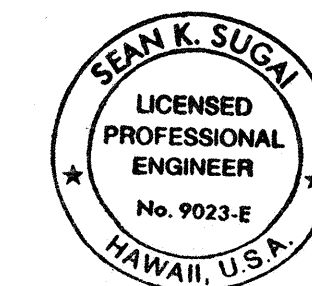
Dowel Requirements:

Curbs – Use #4 Reinf. Bar, 18" Long, Spaced 6" From Edges.
Gutters – Use Two #4 Reinf. Bar, 18" Long, Spaced 6" From Edges.
Sidewalks – Use #3 Reinf. Bar, 12" Long, Spaced 18" O.C.

CONCRETE SIDEWALK RESTORATION DETAIL
NOT TO SCALE

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

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AKG 4/25/0
SIGNATURE
APRIL 30, 2008
EXPIRATION DATE OF LICENSE
THIS WORK WAS PREPARED BY ME OR
UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL SYMBOLS,
GENERAL CONSTRUCTION NOTES

TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS

PROJECT NO. HWY-0-04-04

NIMITZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

SHEET No. E-1 OF 22 SHEETS

HAWAIIAN ELECTRIC COMPANY NOTES

1. LOCATION OF HECO FACILITIES

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 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 And Underground 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 Requiements 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. UNDERGROUND LINES

The Contractor Shall Exercise Extreme Caution Whenever Construction Crosses Or Is In Close Proximity Of Underground Lines. HECO's Existing Electrical Cables Are Energized And Will Remain Energized During Construction. Only HECO Personnel Are To Break Into Existing HECO Facilities, Handle These Cables, And Erect Temporary Guards To Protect These Cables From Damage. The Cost Of HECO's Assistance In Providing Proper Support And Protection Of Its Underground Lines Will Be Charged To The Contractor. Special Precautions Are Required When Excavating Near HECO's 138KV Underground Lines (See HECO Instructions To Consultants/Contractors On "Excavation Near HECO's Underground 138KV Lines" For Detailed Requirements).

For Verification Of Underground Lines, The Contractor Shall Call HECO's Underground Division At 543-7049 A Minimum Of 72 Hours In Advance.

For Assistance In Providing Proper Support And Protection Of These Lines, The Contractor Shall Call HECO's Construction & Maintenance Dept., Customer & System Superintendent, At 543-4223, A Minimum Of Two (2) Weeks In Advance.

8. UNDERGROUND FUEL PIPELINES

The Contractor Shall Exercise Extreme Caution Whenever Construction Crosses Or Is In Close Proximity Of HECO's Underground Fuel Oil Pipelines. Special Precautions Are Required When Excavating Near HECO's Underground Fuel Oil Pipelines (See HECO Instructions To Consultants/Contractors On "Excavation Near HECO's Underground Fuel Pipelines" For Detailed Requirements).

9. EXCAVATIONS

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

- A) Sheetting 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).

10. 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.

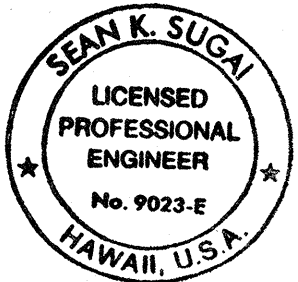
11. CONFLICTS

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.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	25	45

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

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SIGNATURE: *Sean K. Sugai* 4/25/06
APRIL 30, 2008
EXPIRATION DATE OF LICENSE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION HECO NOTES I TRAFFIC OPERATIONAL IMPROVEMENTS AT VARIOUS INTERSECTIONS & ROADWAYS PROJECT NO. HWY-0-04-04 NIMITZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS DATE: March 2006 SHEET No. E-2 OF 22 SHEETS

HAWAIIAN ELECTRIC COMPANY NOTES (Continued)

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	26	45

12. 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.

13. 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 Superintended At 543-4223 A Minimum Of 5 Working Days In Advance To Arrange For HECO Stand-by Personnel.

14. 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 Clerances 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 Clerances 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.

15. INDEMNITY

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 Or Contributed To By The 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.

DATE	____
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DRAWN BY	____
DESIGNED BY	____
NOTED BY	____
CHECKED BY	____
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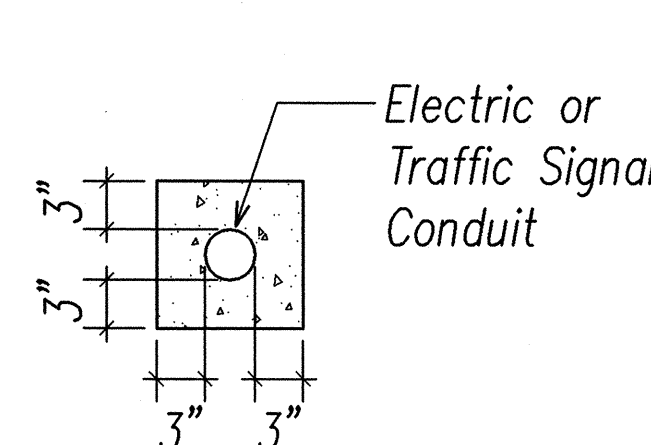
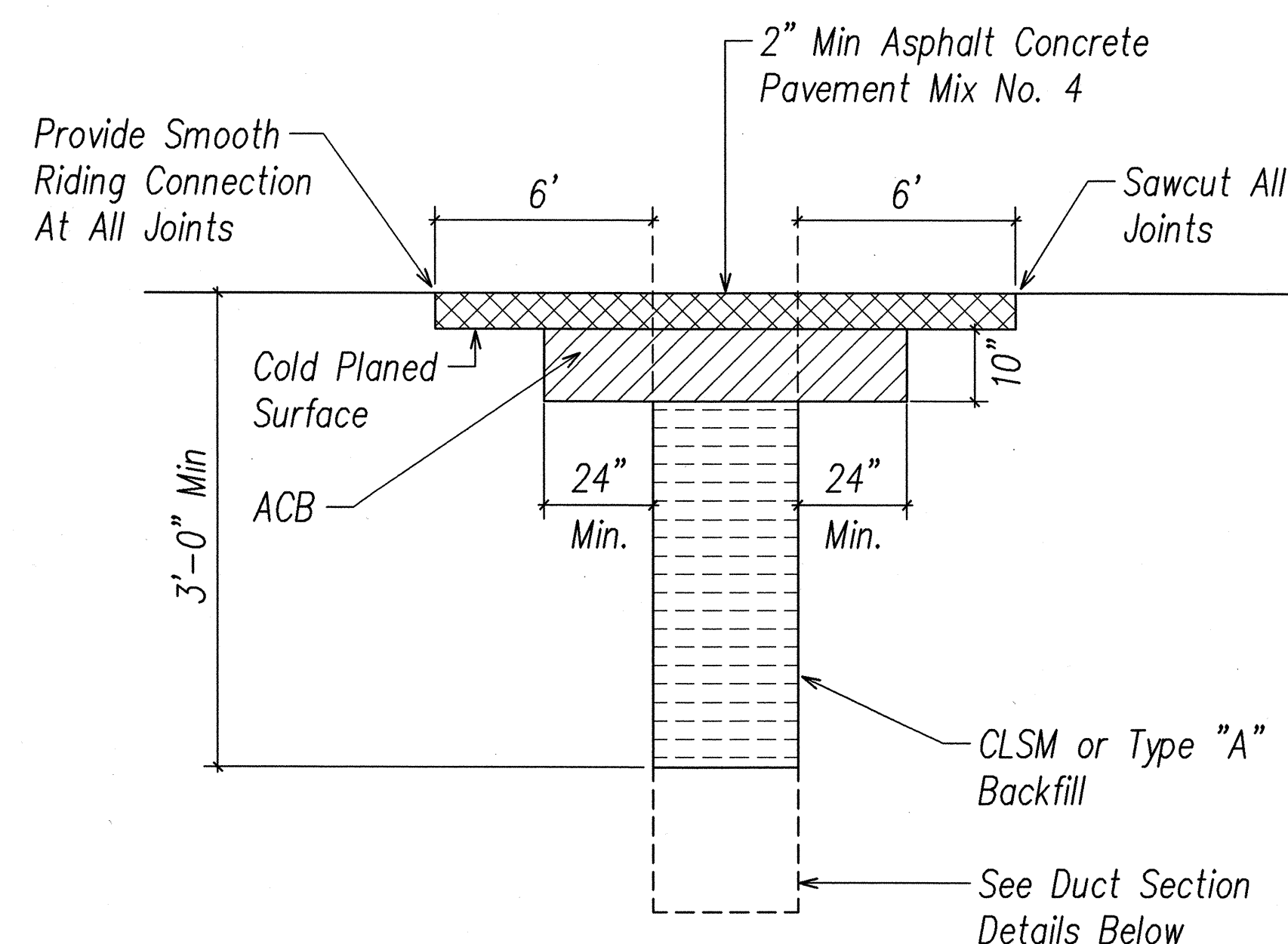


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APRIL 30, 2008
EXPIRATION DATE OF LICENSE
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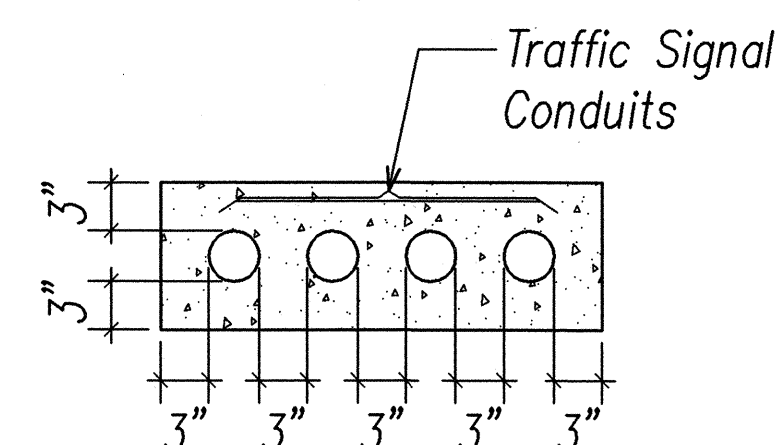
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION HECO NOTES II TRAFFIC OPERATIONAL IMPROVEMENTS AT VARIOUS INTERSECTIONS & ROADWAYS PROJECT NO. HWY-0-04-04 NIMITZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS DATE: March 2006
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SHEET No. E-3 OF 22 SHEETS

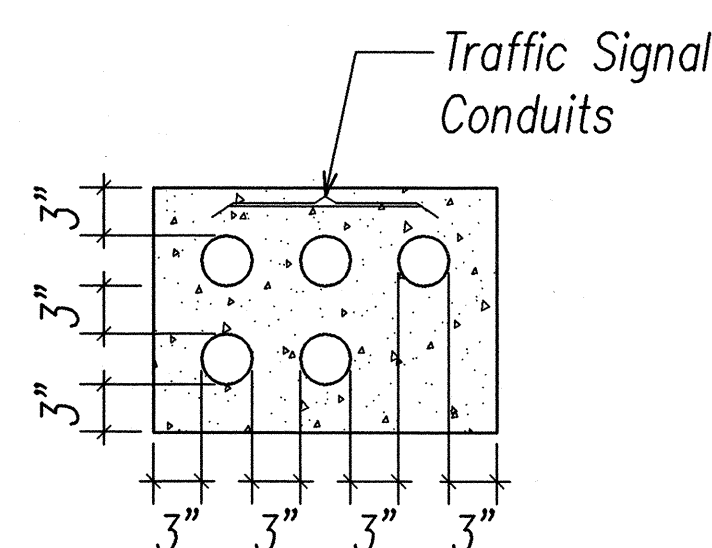
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	27	45



SECTION A

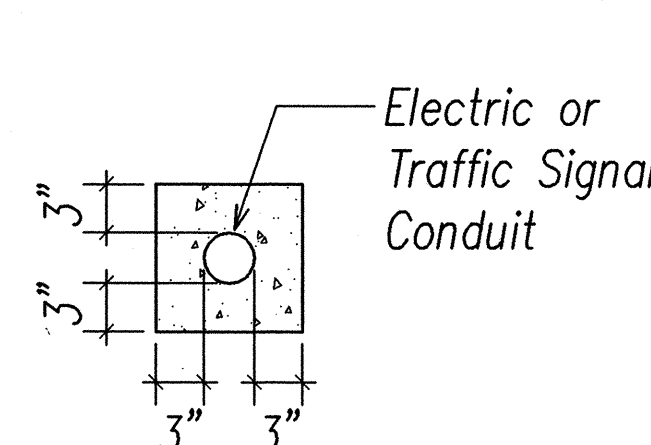
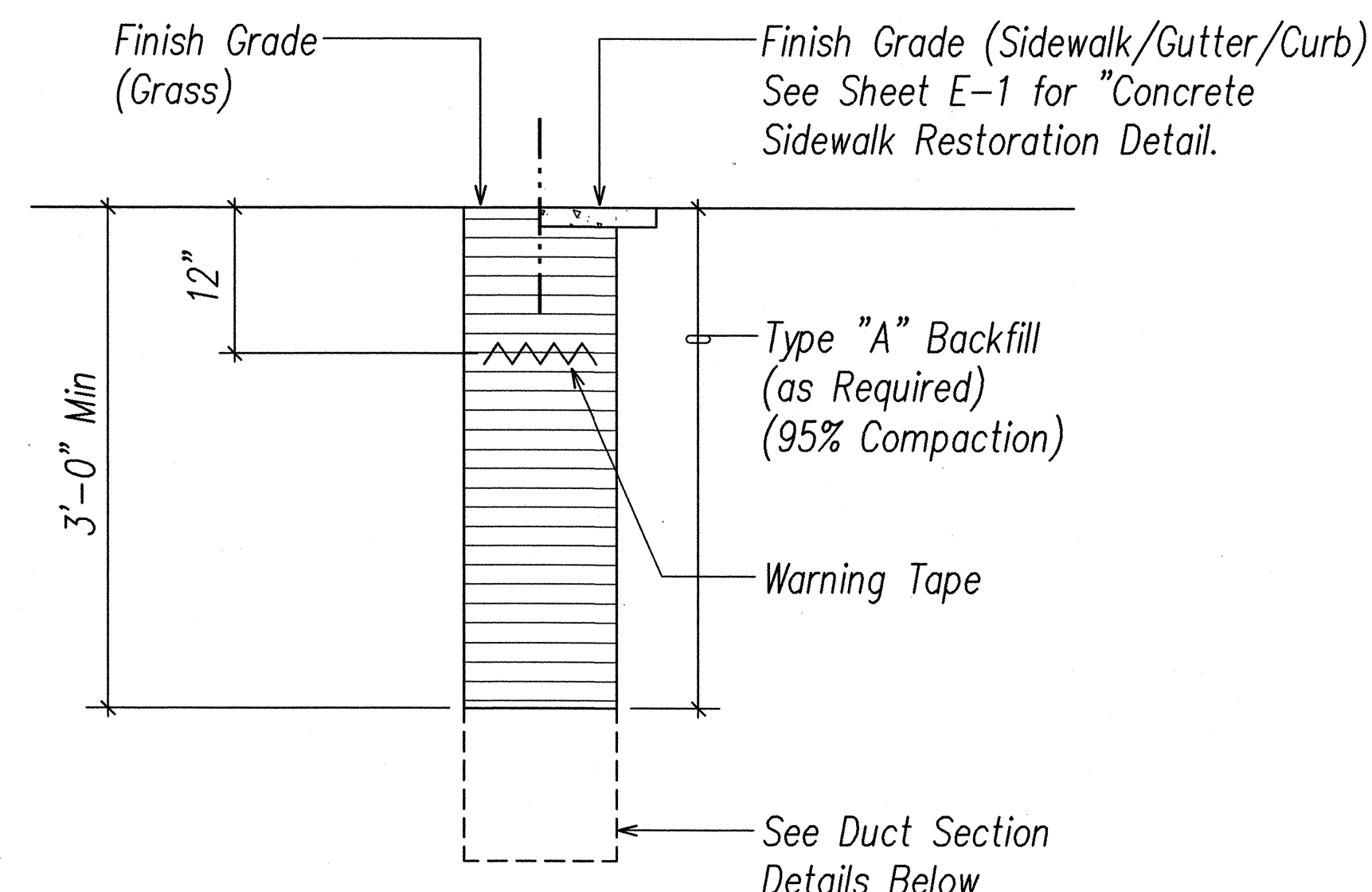


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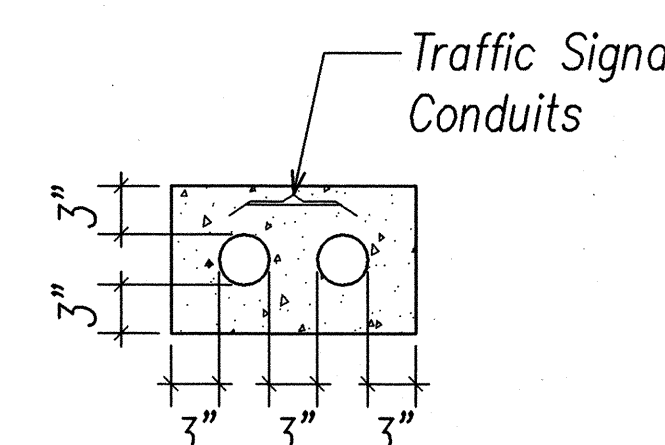


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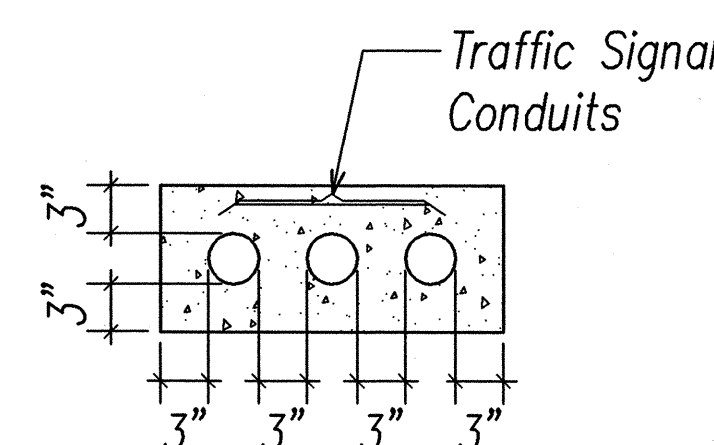
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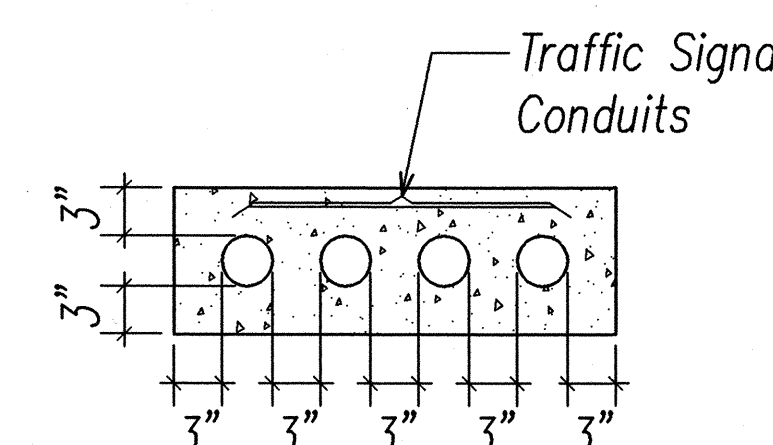
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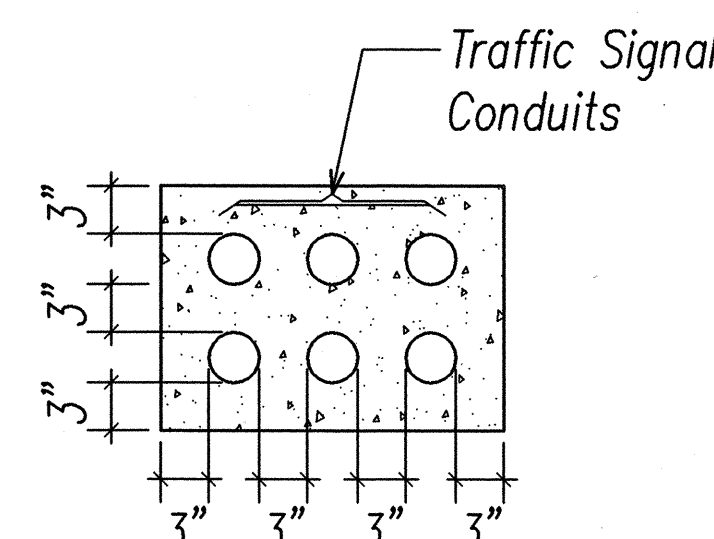
SECTION E



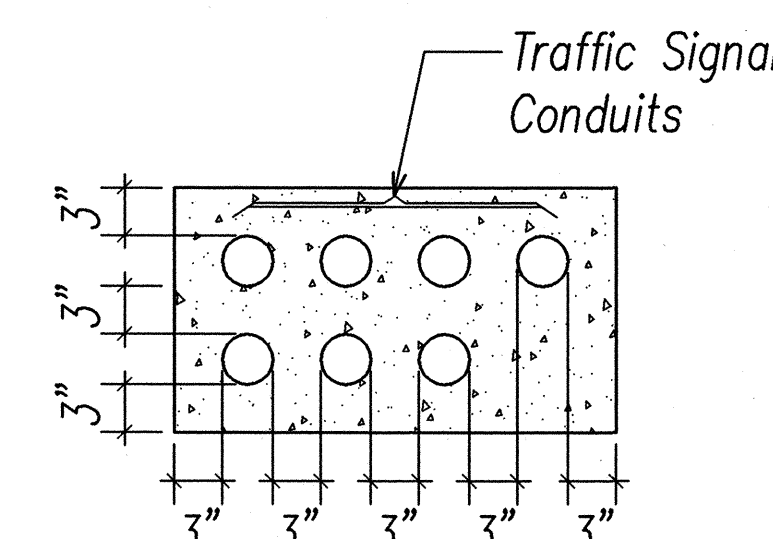
SECTION F



SECTION G



SECTION H



SECTION I

SIDEWALK/PLANTER

TRENCH RESTORATION & DUCT SECTION DETAILS

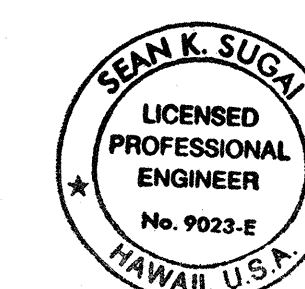
NOT TO SCALE

BACKFILL NOTES:

- Trench Backfill Material "A"
- 1. Sand Equivalent ≥ 2
- 2. 8" Max. Lift Loose
- 3. 95% Compaction

NOTES:

- Tack Coat Existing Asphalt Bound Material Faces Prior To Filling Excavation With Asphalt Bound Material.
- When Ground Water Is Encountered In Trenches, Backfill With Gravel Conforming To ASTM C-33, Size 67 Material Until One Foot Above Waterlevel. Encapsulate The Size 67 And Sides Of The Trench And Overlap At The Top Of The Material For The Width Of The Trench. Complete Backfilling The Trench Per Detail.
- 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".
- Base Course & Sub-Base Course Per 1994 State Standard Specifications For Highway Construction.
- Sawcutting & Repairing Of Existing A.C. Pavement Shall Not Be Paid For Separately, But considered Incidental to the Various Contract Items.
- The Metal Detectable Reel Warning Tape Shall Be A Minimum Of 8 Mils Thick And 3" 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 Cables 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.



SIGNATURE: *[Signature]*
APRIL 30, 2008
EXPIRATION DATE OF LICENSE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRENCH RESTORATION & DUCT SECTION DETAILS

TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS

PROJECT NO. HWY-0-04-04
NIMITZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

SHEET No. E-4 OF 22 SHEETS

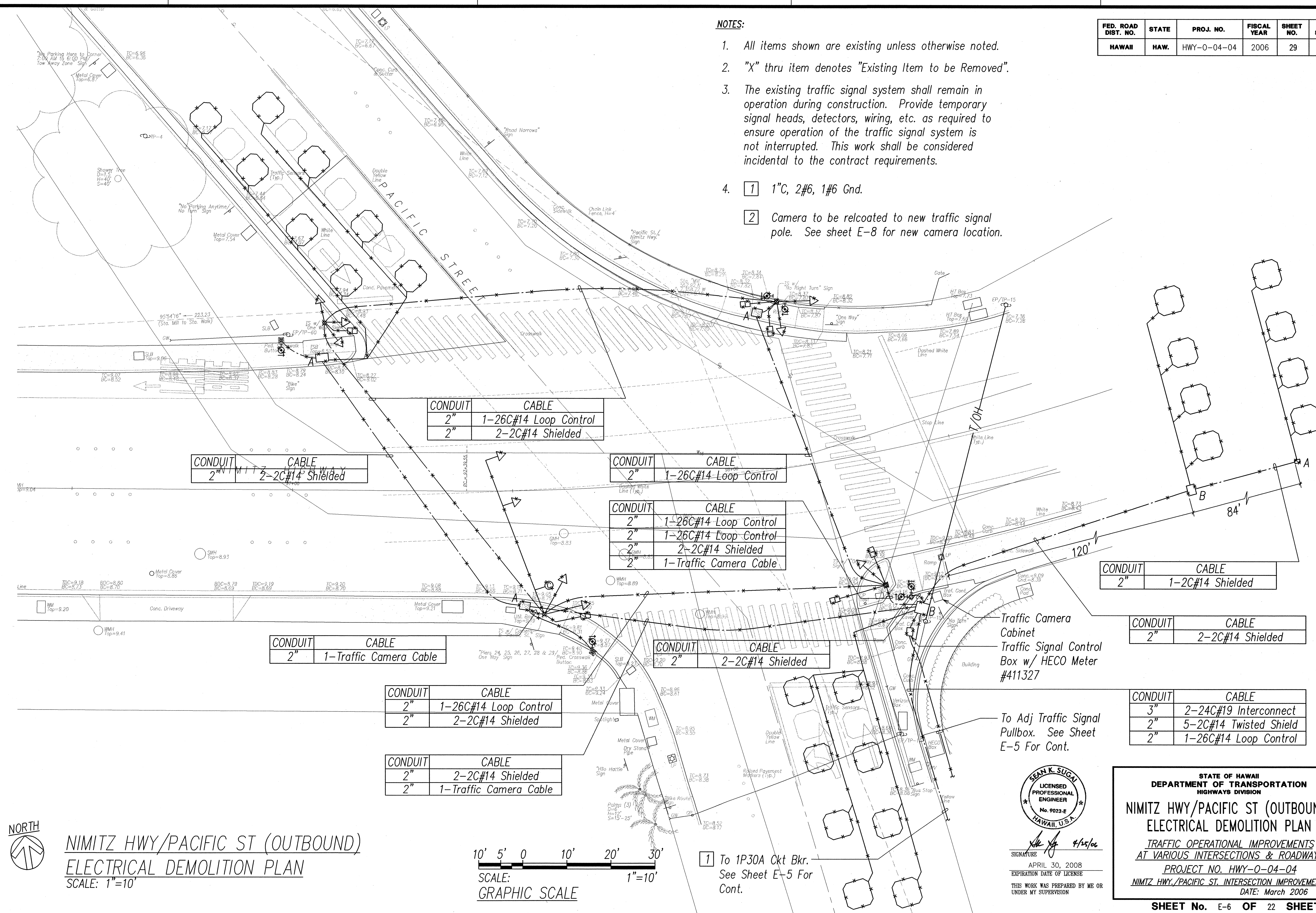
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	29	45

- NOTES:
- All items shown are existing unless otherwise noted.
 - "X" thru item denotes "Existing Item to be Removed".
 - The existing traffic signal system shall remain in operation during construction. Provide temporary signal heads, detectors, wiring, etc. as required to ensure operation of the traffic signal system is not interrupted. This work shall be considered incidental to the contract requirements.
 - 1

 1"C, 2#6, 1#6 Gnd.

2

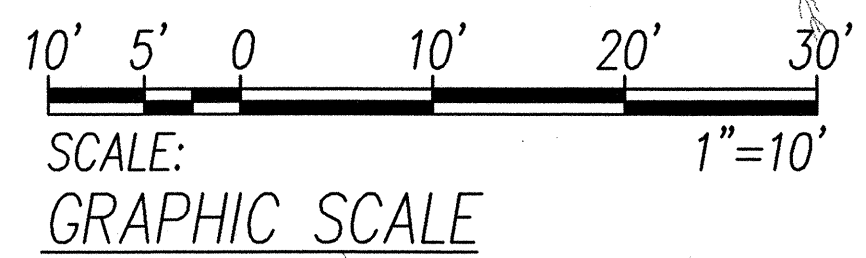
 Camera to be relocated to new traffic signal pole. See sheet E-8 for new camera location.



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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NO.		



NIMITZ HWY/PACIFIC ST (OUTBOUND)
ELECTRICAL DEMOLITION PLAN
SCALE: 1"=10'



1 To 1P30A Ckt Bkr.
See Sheet E-5 For Cont.

SEAN K. SUGA
LICENSED PROFESSIONAL ENGINEER
No. 9023-E
HAWAII, U.S.A.
SIGNATURE
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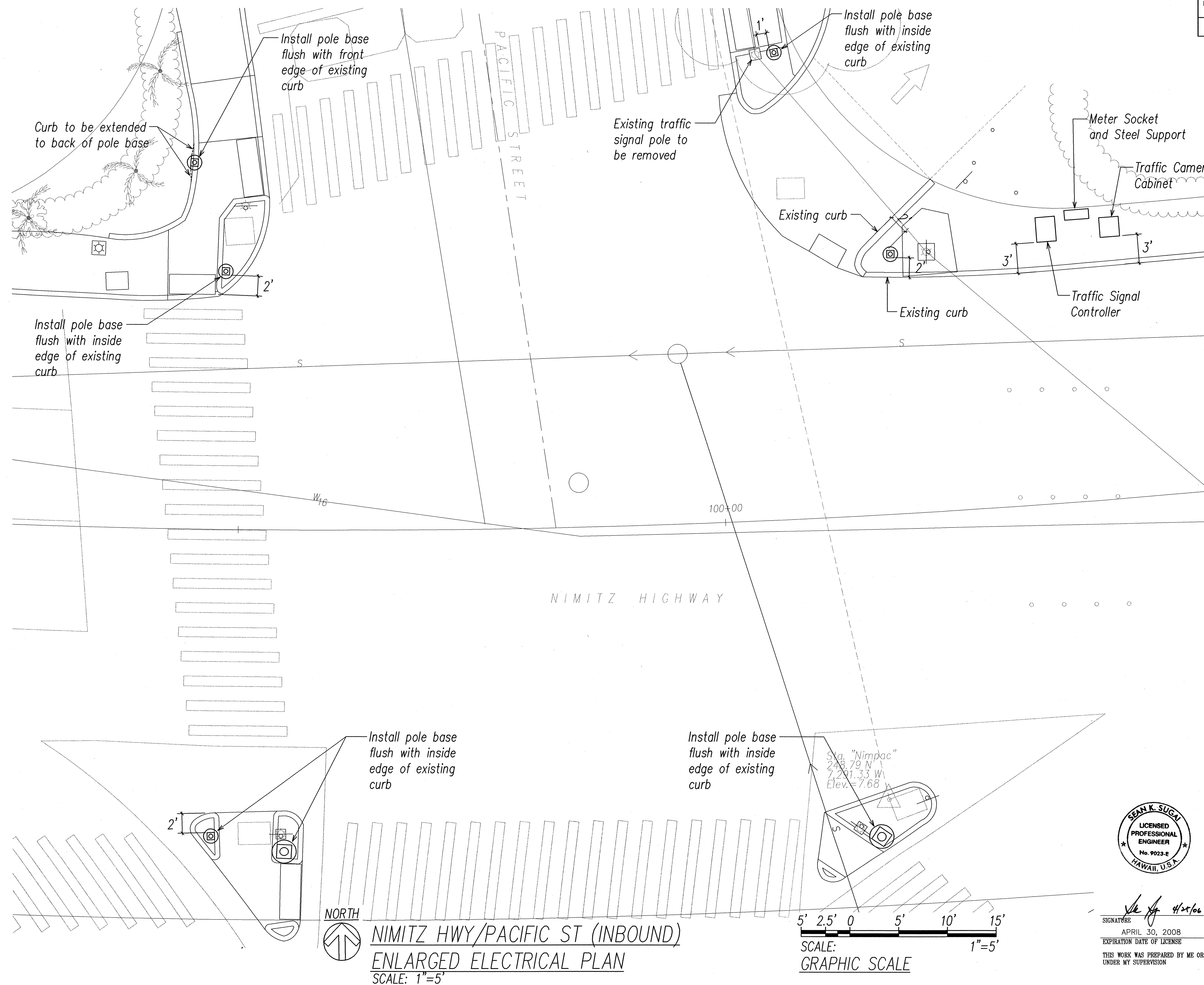
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NIMITZ HWY/PACIFIC ST (OUTBOUND)
ELECTRICAL DEMOLITION PLAN

TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS
PROJECT NO. HWY-0-04-04
NIMITZ HWY/PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

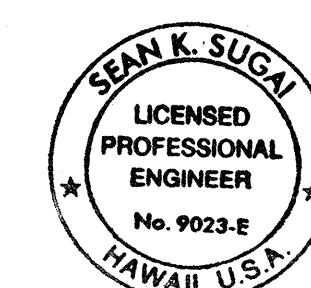
SHEET No. E-6 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	32	45



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

LAST SAVE: 04/27/06 09:41:58 BY: RY PLOT: 05-15
 C:\Users\ryp\Documents\Projects\Nimitz-Pacific-Intersec\Nimitz-Pacific-Intersec.dwg (2006-241132-Nimitz-Pacific-Intersec.dwg) WRTS: BASE-NIMITZ2006-11-10-00 PROJECTED 04/13/06 BASE-NIMITZ2006-11-10-00 NIMITZ2006



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STATE OF HAWAII
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 HIGHWAYS DIVISION

NIMITZ HWY/PACIFIC ST (INBOUND)
ENLARGED ELECTRICAL PLAN

TRAFFIC OPERATIONAL IMPROVEMENTS
 AT VARIOUS INTERSECTIONS & ROADWAYS
 PROJECT NO. HWY-0-04-04
 NIMITZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS
 DATE: March 2006

SHEET No. E-9 OF 22 SHEETS

This engineering plan view illustrates the proposed relocation of traffic signal poles and the installation of a camera cabinet at the intersection of Nimitz Highway and Pacific Street. The drawing includes the following details:

- Project Information:**

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	33	45
- Intersection Details:**
 - Pacific Street:** The street runs diagonally across the top of the plan. A stationing point is marked: Sta. "Mill" 562.91 N, 7.58/22 W, Elev. 8.10.
 - Nimitz Highway:** The main thoroughfare runs horizontally across the middle of the plan.
- Proposed Relocations and Installations:**
 - Top Left:** "Install pole base flush with edge of existing concrete sidewalk/curb ramp" (3' offset).
 - Top Right:** "Existing traffic signal pole to be removed" (3' offset) and "Install pole base flush with back edge of existing curb" (1' offset). A note specifies: "Curb to be extended to front of pole base".
 - Bottom Left:** "Install pole base flush with back edge of existing concrete sidewalk" (3' offset) and "Existing traffic signal pole to be removed".
 - Bottom Center:** "Install pole base flush with front edge of existing curb" (2' offset).
 - Bottom Right:** "Install pole base flush with inside edge of existing curb" (2' offset). This area includes the "Existing Traffic Camera Cabinet", "Traffic Signal Controller", and "Meter Socket & Steel Support". Dimensions shown include 3', 2', 5', 1', and 11'.
- Other Features:**
 - Diagonal hatching indicates the "Edge of existing curb" and "Top of existing curb ramp".
 - A dashed line labeled "W6" is shown in the lower right quadrant.

The drawing is signed by **SEAN K. SUGA**, a Licensed Professional Engineer (No. 9023-E), State of Hawaii. The project is titled **NIMITZ HWY/PACIFIC ST (OUTBOUND)** under the **STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION**.

NORTH



5' 2.5' 0 5' 10' 15'

SCALE: 1"=5'

GRAPHIC SCALE



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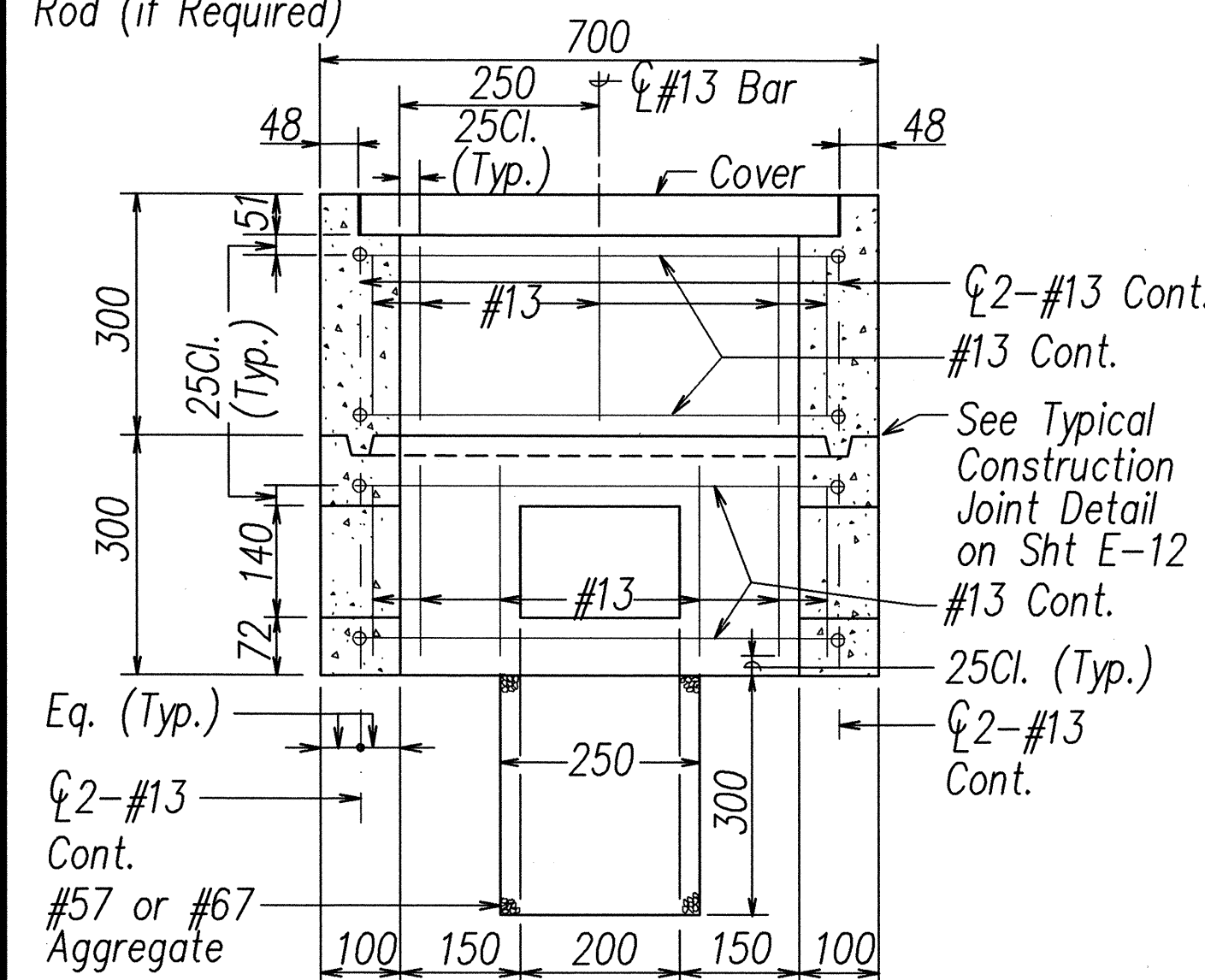
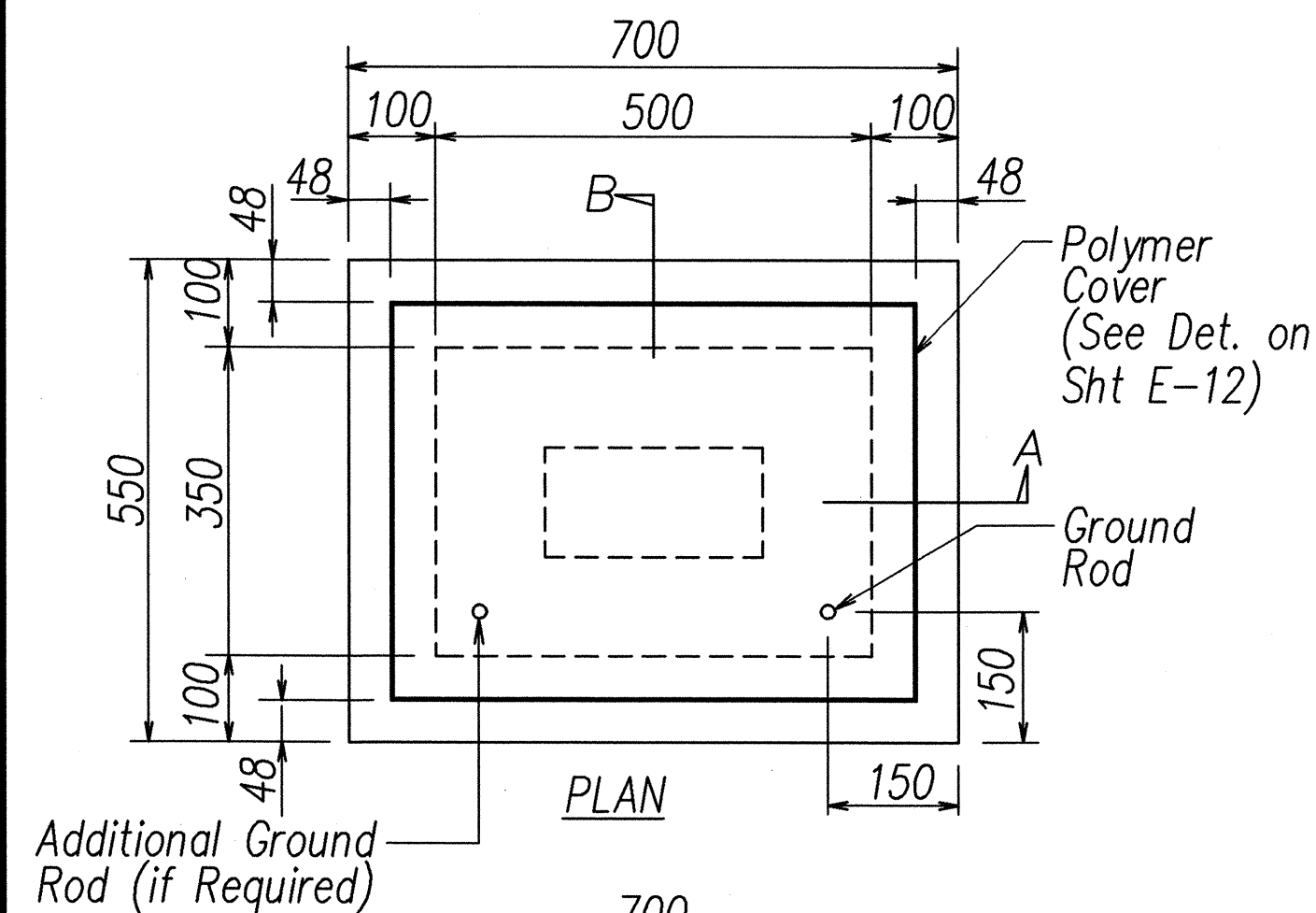
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NIMITZ HWY/PACIFIC ST (OUTBOUND)
ENLARGED ELECTRICAL PLAN

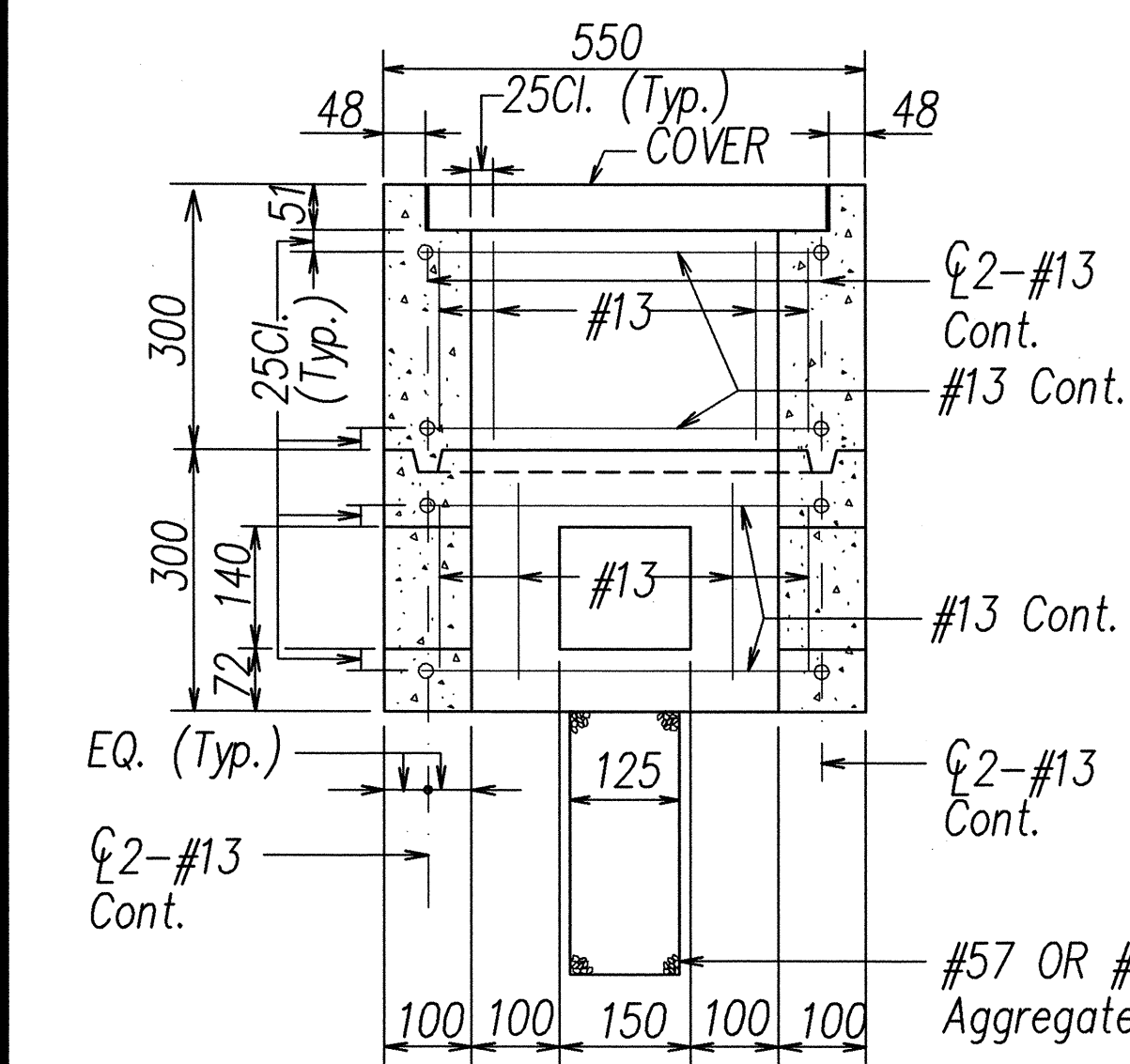
TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS
PROJECT NO. HWY-0-04-04
NIMITZ HWY/PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

SHEET No. E-10 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	34	45



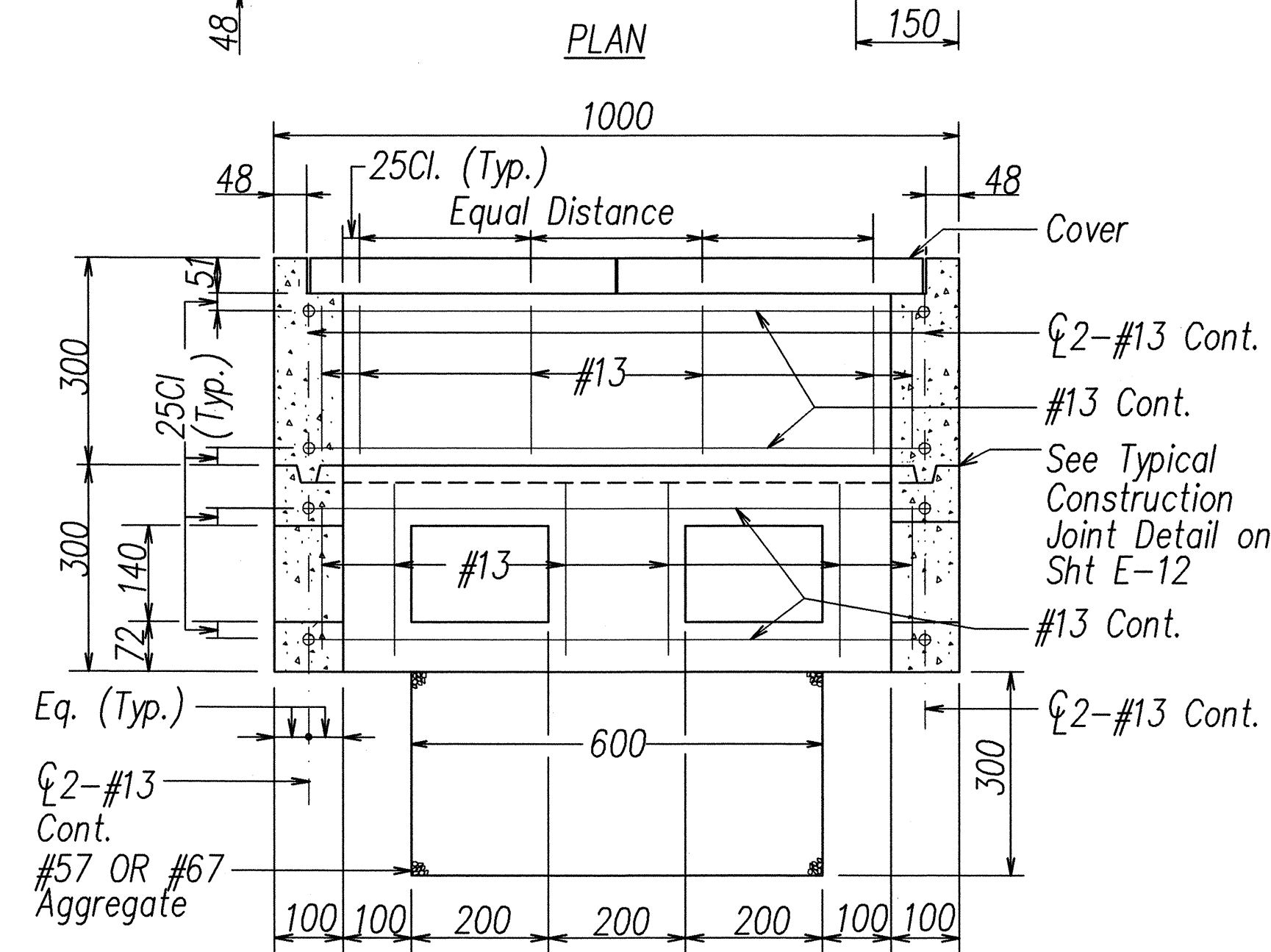
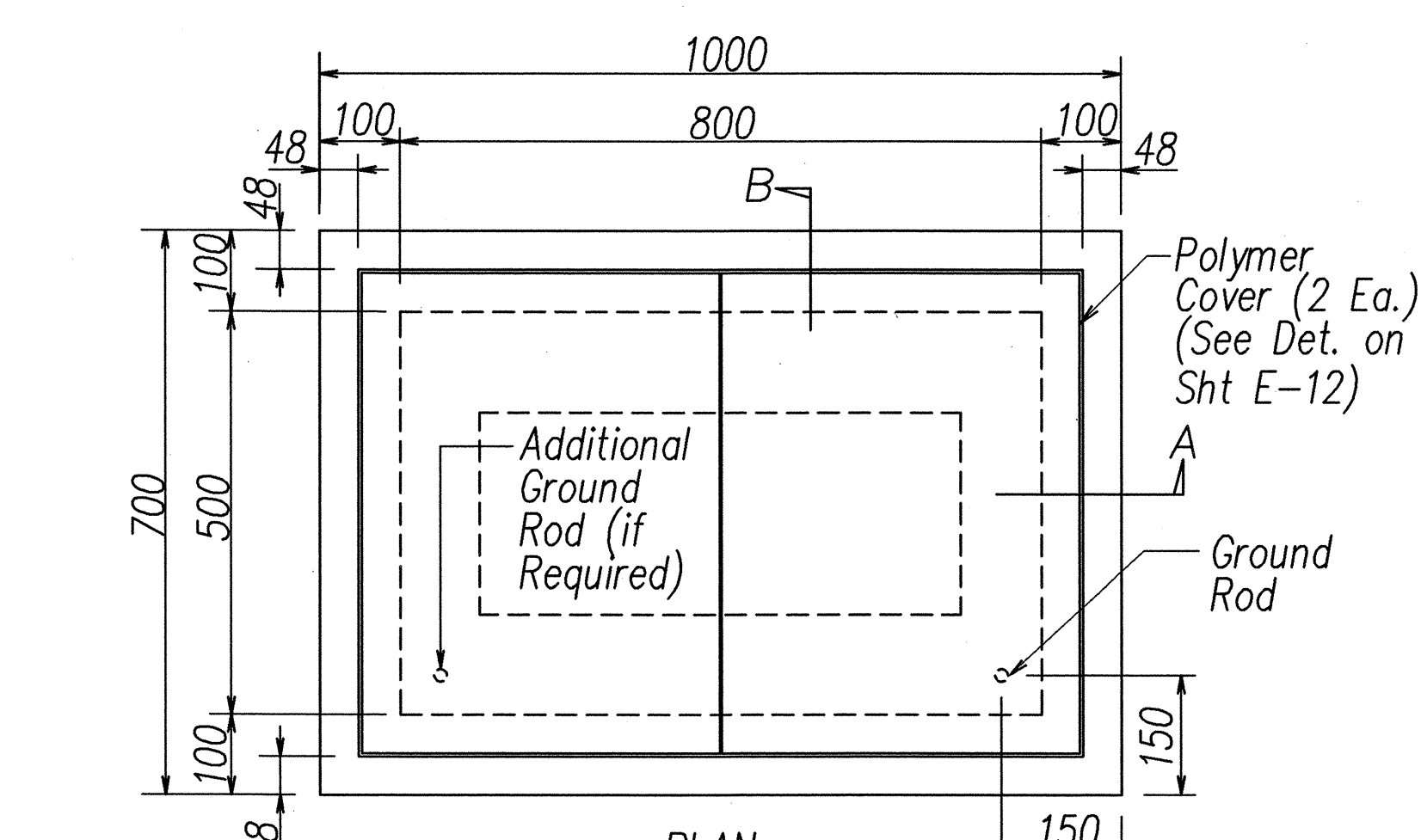
SECTION A-A



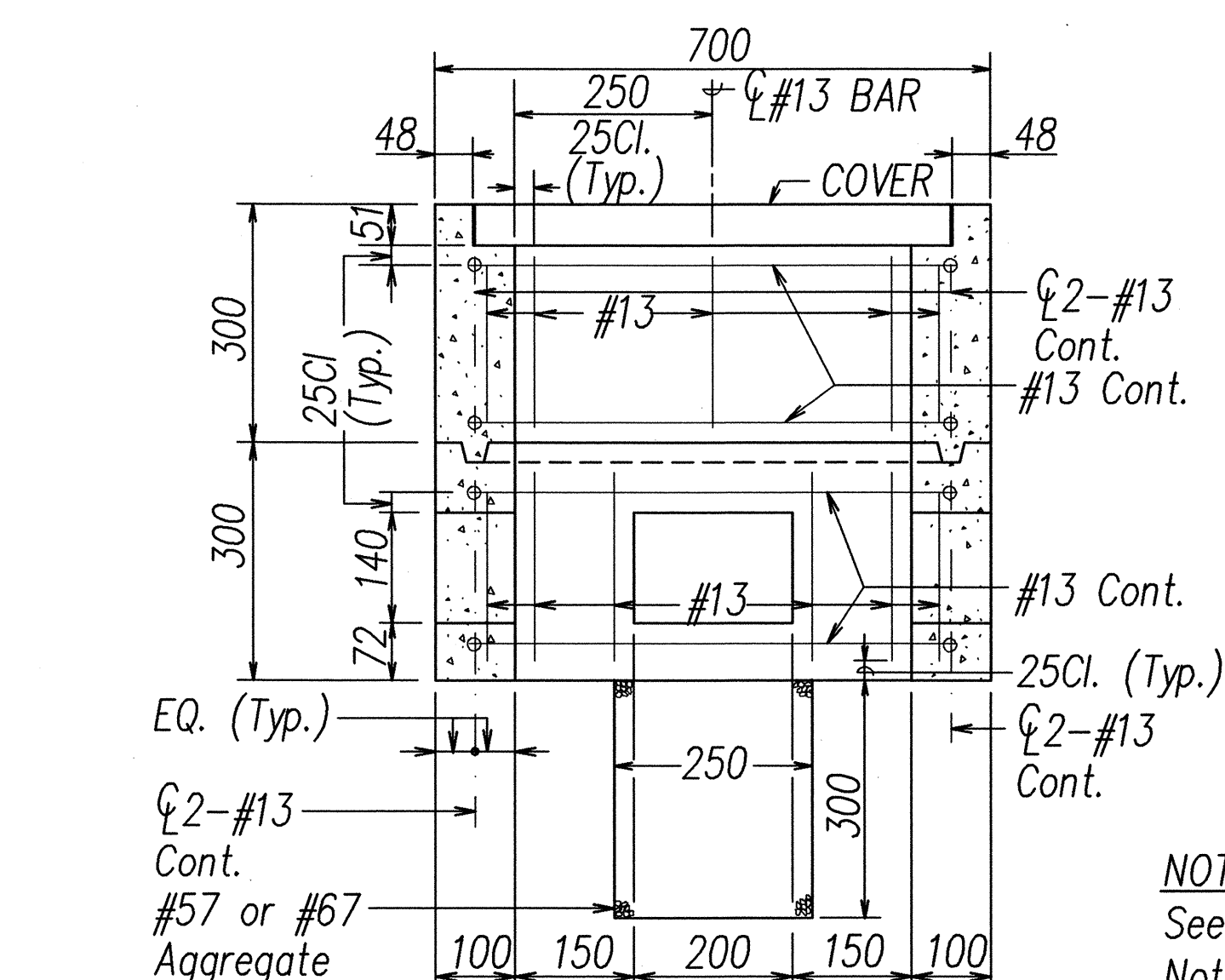
SECTION B-B

NOTE:
See General
Notes on
Sht E-12

A TYPE "A" PULLBOX OLD TYPE "B"
E-11 NOT TO SCALE



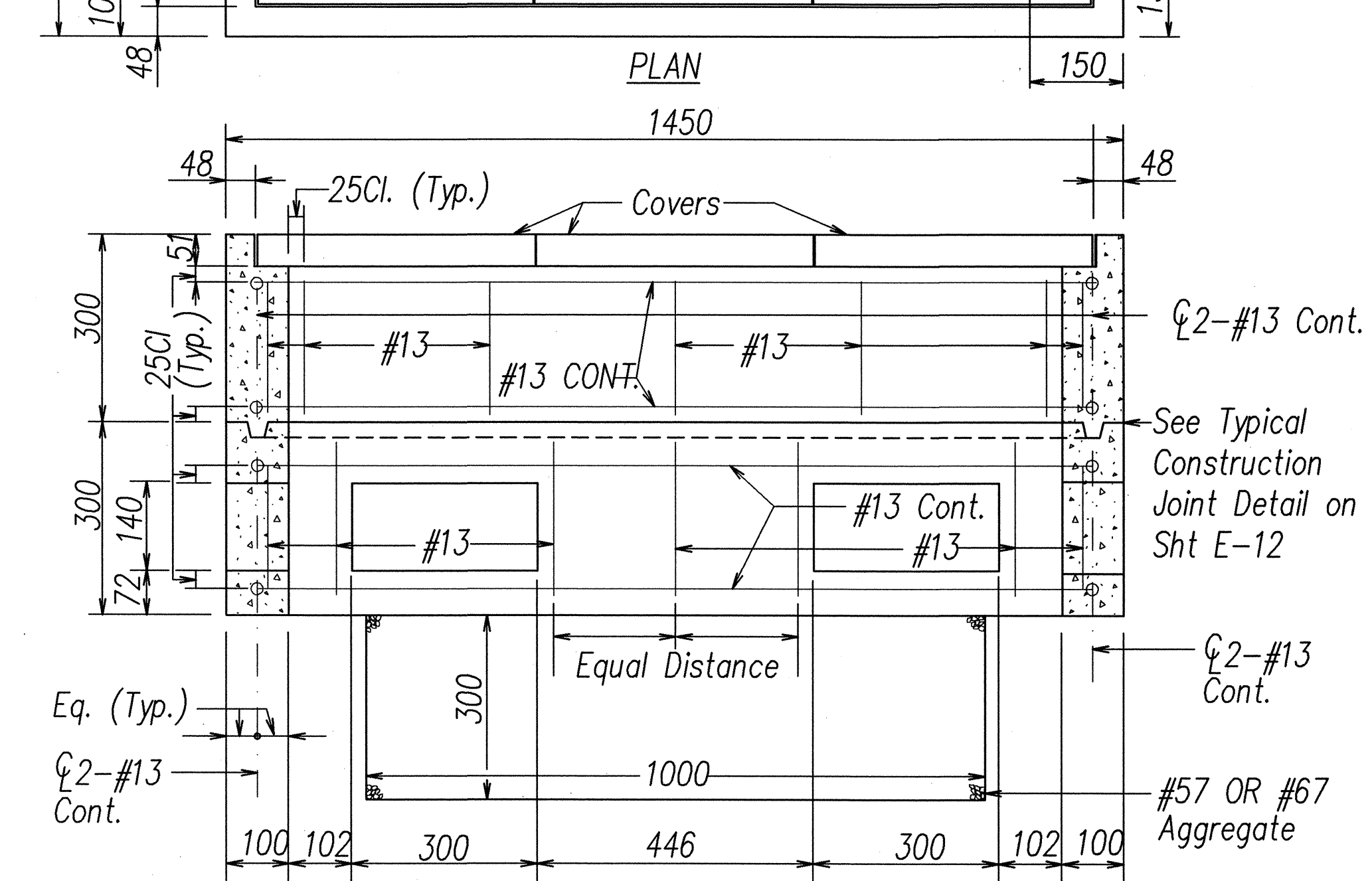
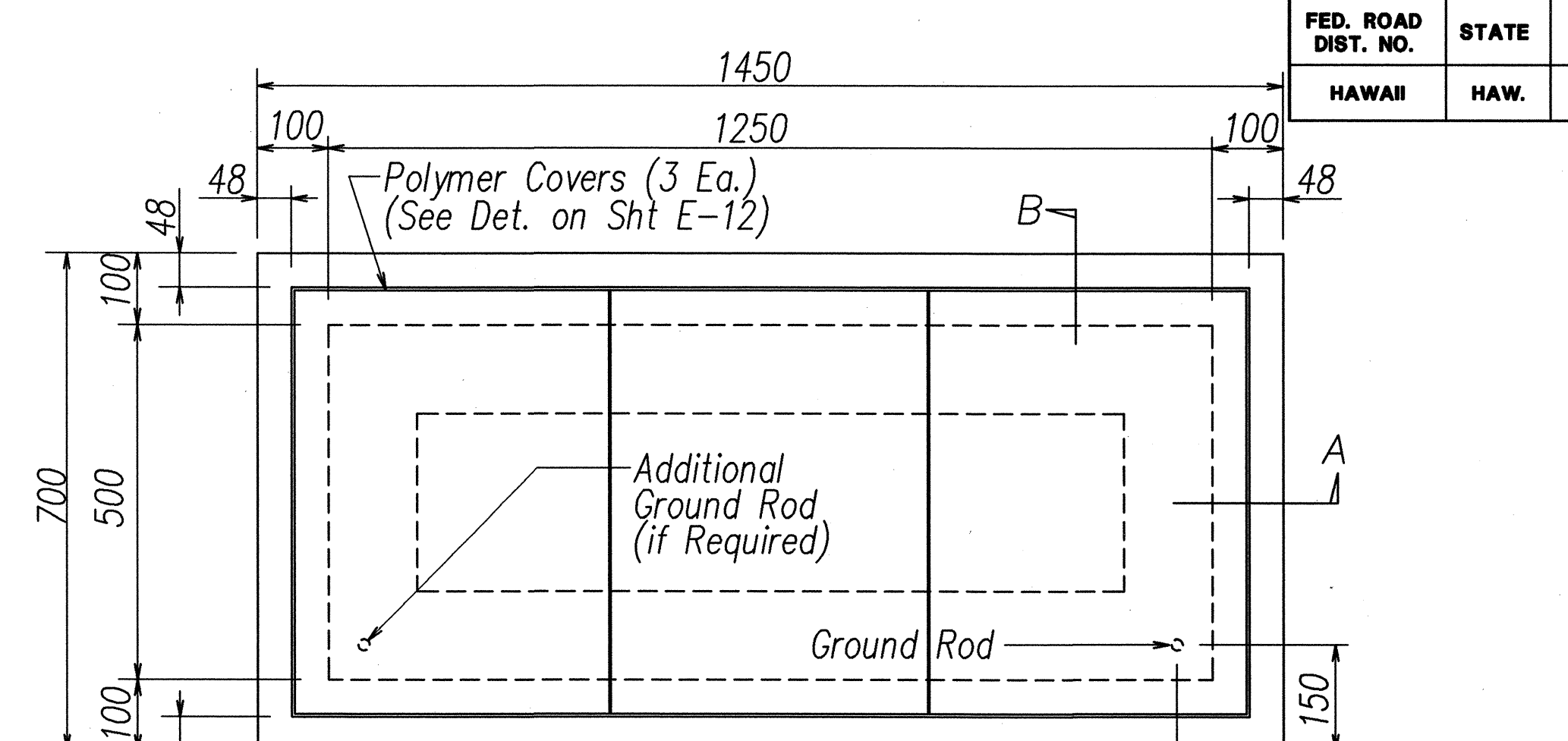
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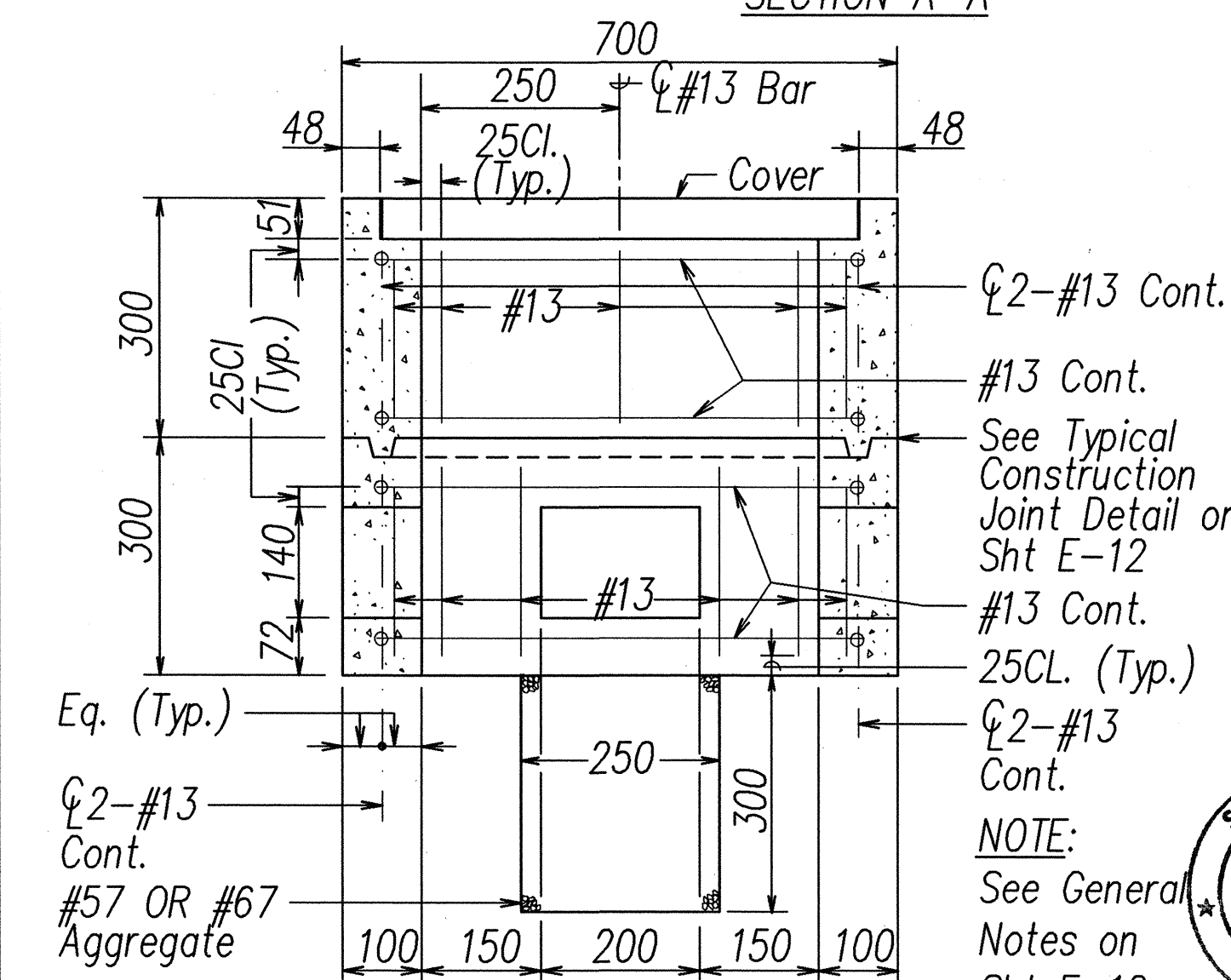
SECTION B-B

NOTE:
See General
Notes on
Sht E-12

B TYPE "B" PULLBOX (OLD TYPE "C")
E-11 NOT TO SCALE

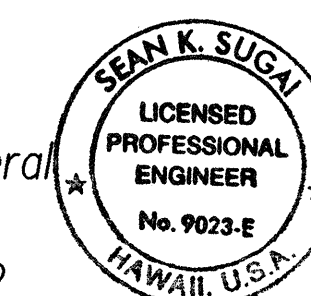


SECTION A-A



SECTION B-B

NOTE:
See General
Notes on
Sht E-12



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Sheet are in Millimeters

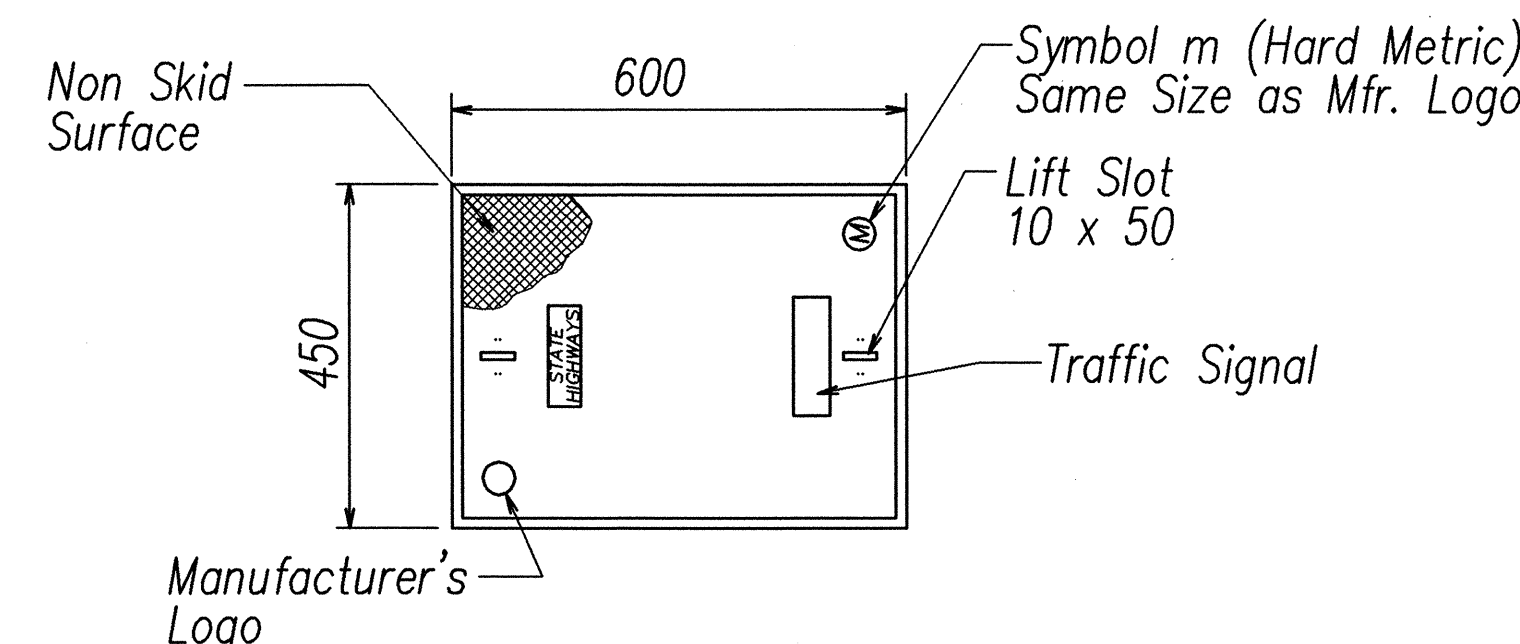
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**TRAFFIC SIGNAL
PULLBOX DETAILS I**
TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS
PROJECT NO. HWY-0-04-04
NIMITZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

SHEET No. E-11 OF 22 SHEETS

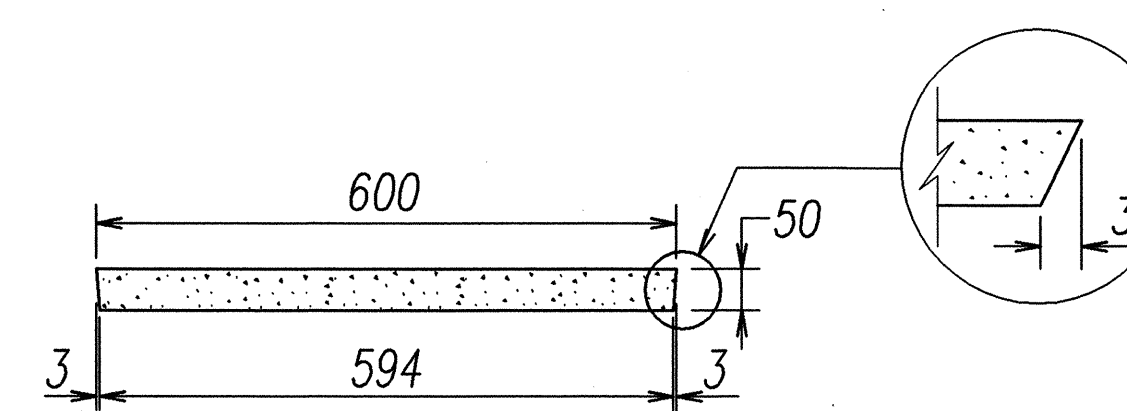
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	35	45

GENERAL NOTES FOR TRAFFIC SIGNAL PULLBOX DETAILS ON SHEET E-11

1. Provide a minimum of one 16mm 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).
11. Type "C" pullbox shall be installed in a location protected from vehicular traffic (i.e. raised sidewalk, behind a.c. curbs, traffic signal standard or pipe guards).

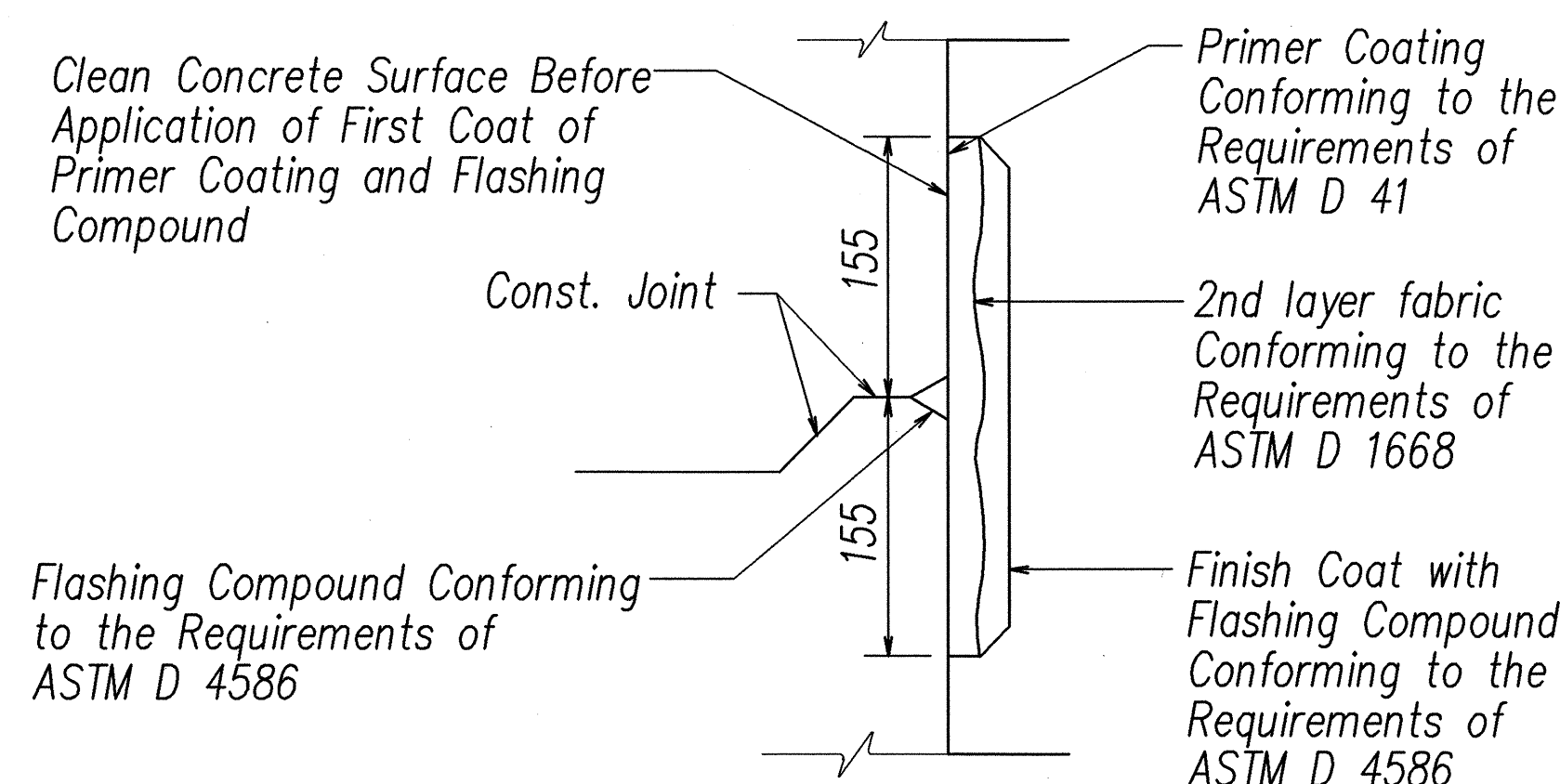


PLAN VIEW



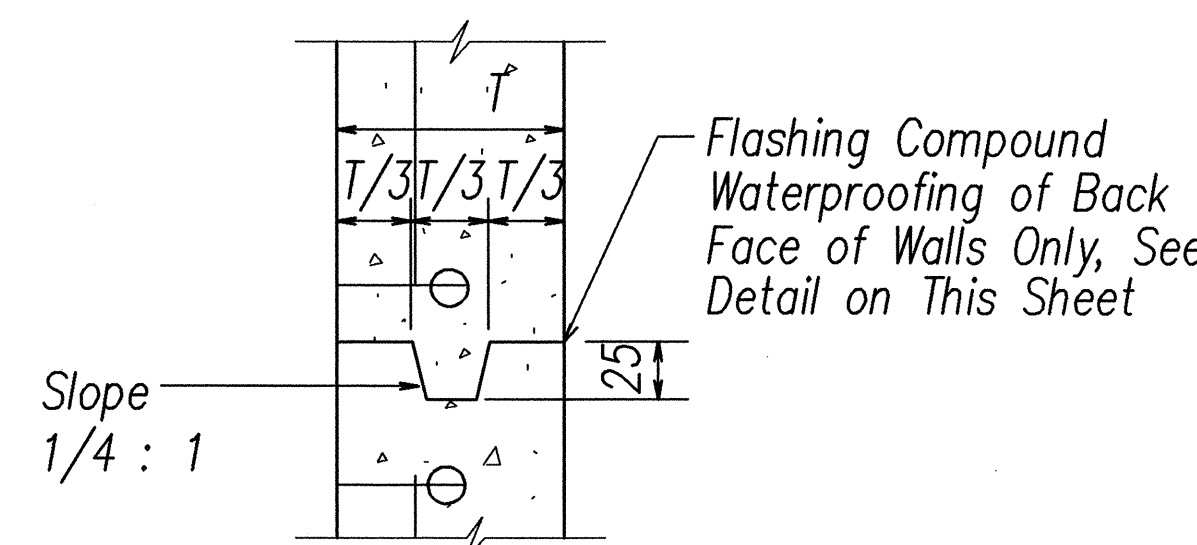
ELEVATION

Note: See Highway Lighting and Traffic Signal Pullbox Details on Sht E-11



A
E-12
TYPICAL FLASHING COMPOUND
WATERPROOFING DETAILS
NOT TO SCALE

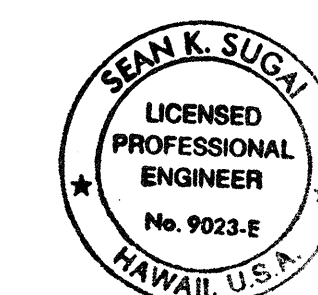
B
E-12
POLYMER CONCRETE COVER
NOT TO SCALE



Note: See Highway Lighting and Traffic Signal Pullbox Details on Sht E-11

C
E-12
TYPICAL CONSTRUCTION JOINT DETAIL
NOT TO SCALE

All Dimensions on this Sheet are in Millimeters Unless Otherwise Shown



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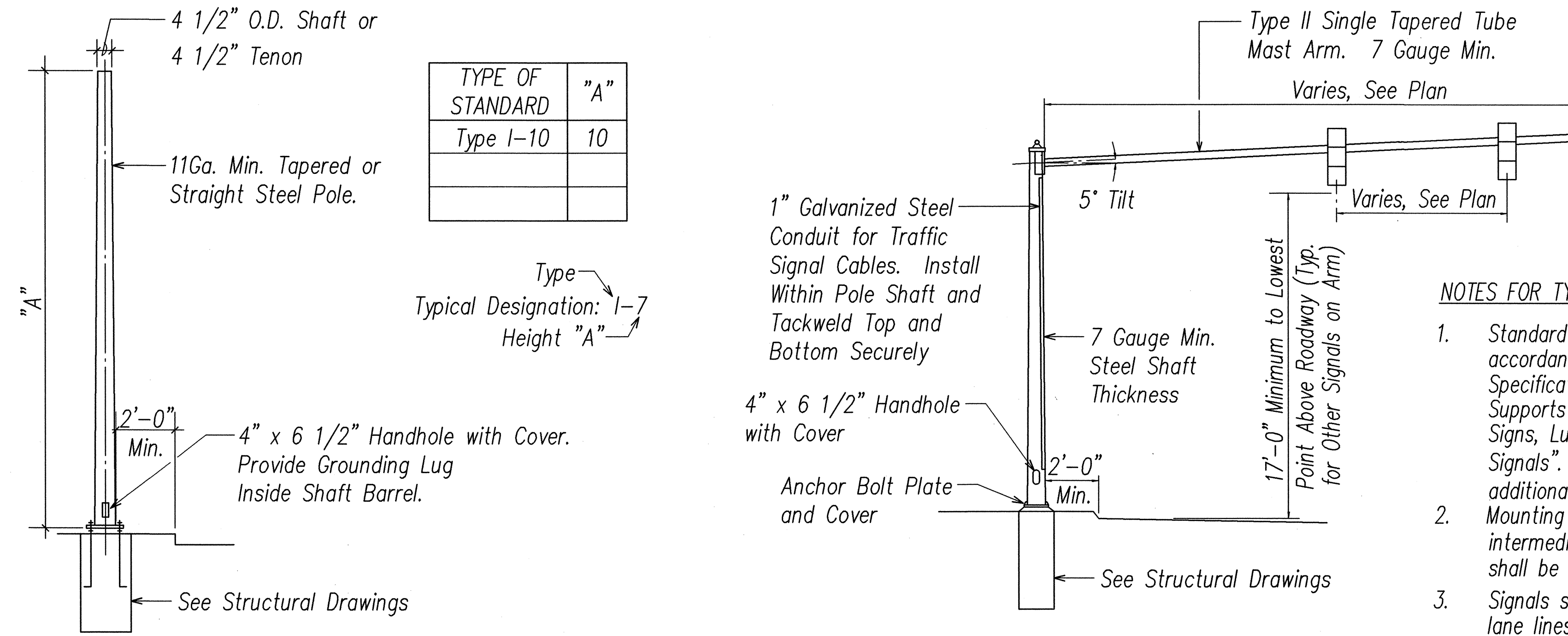
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL
PULLBOX DETAILS II

TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS
PROJECT NO. HWY-0-04-04
NIMITZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

SHEET No. E-12 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	36	45

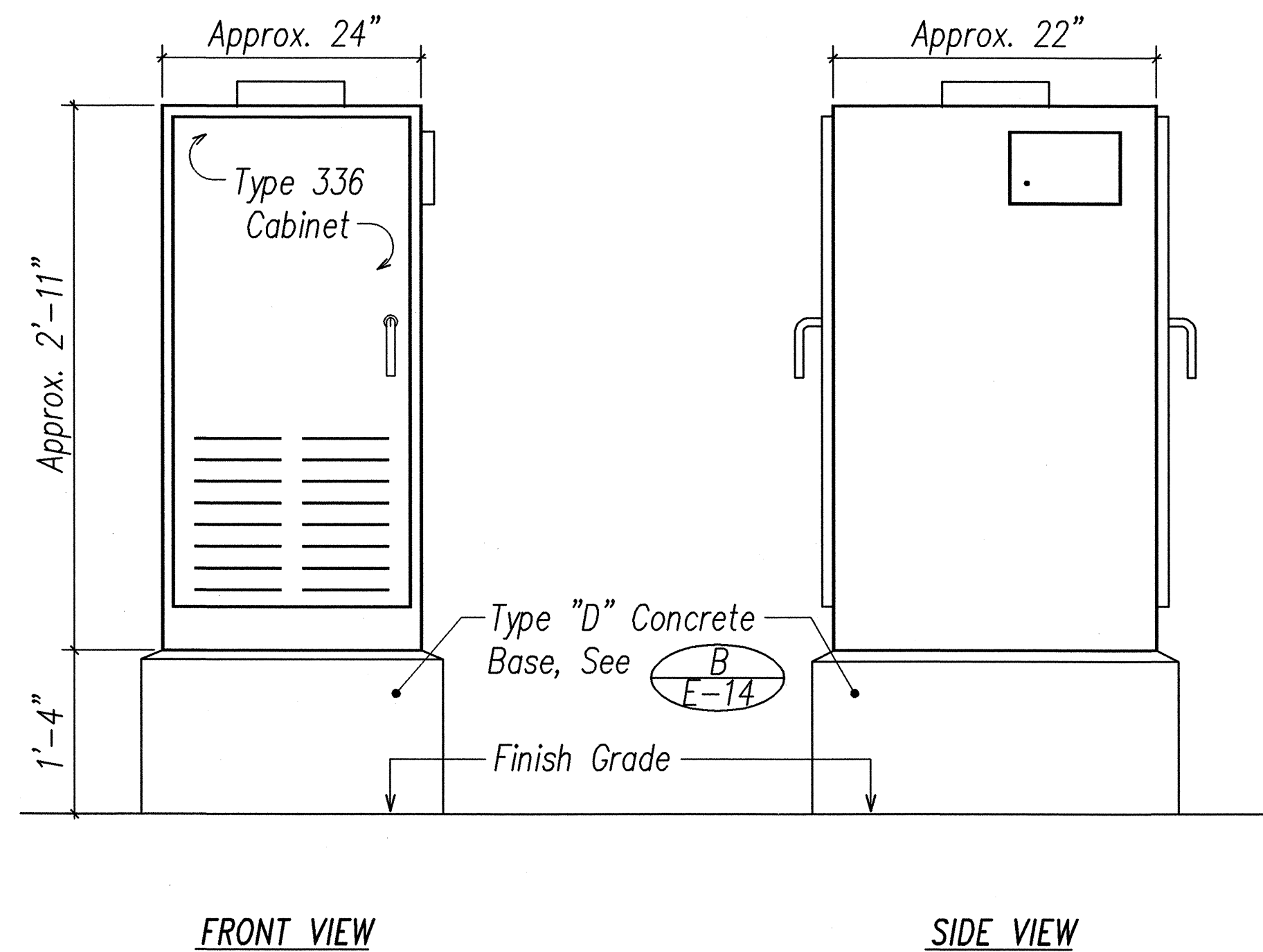


NOTES FOR TYPE II STANDARD:

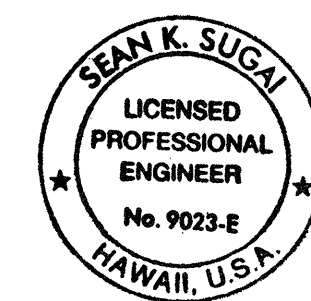
- Standard shall be designed in accordance with "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals". See Sheet S0.1 for additional design requirements.
- Mounting for signals at intermediate points of mast arm shall be of the adjustable type.
- Signals shall be centered over lane lines.
- Submit shop drawings for approval.

A TYPE I TRAFFIC SIGNAL STANDARD
E-13 NOT TO SCALE

B TYPE II TRAFFIC SIGNAL STANDARD
E-13 NOT TO SCALE



C TYPE 336 TRAFFIC SIGNAL CONTROLLER CABINET DETAIL
E-13 NOT TO SCALE



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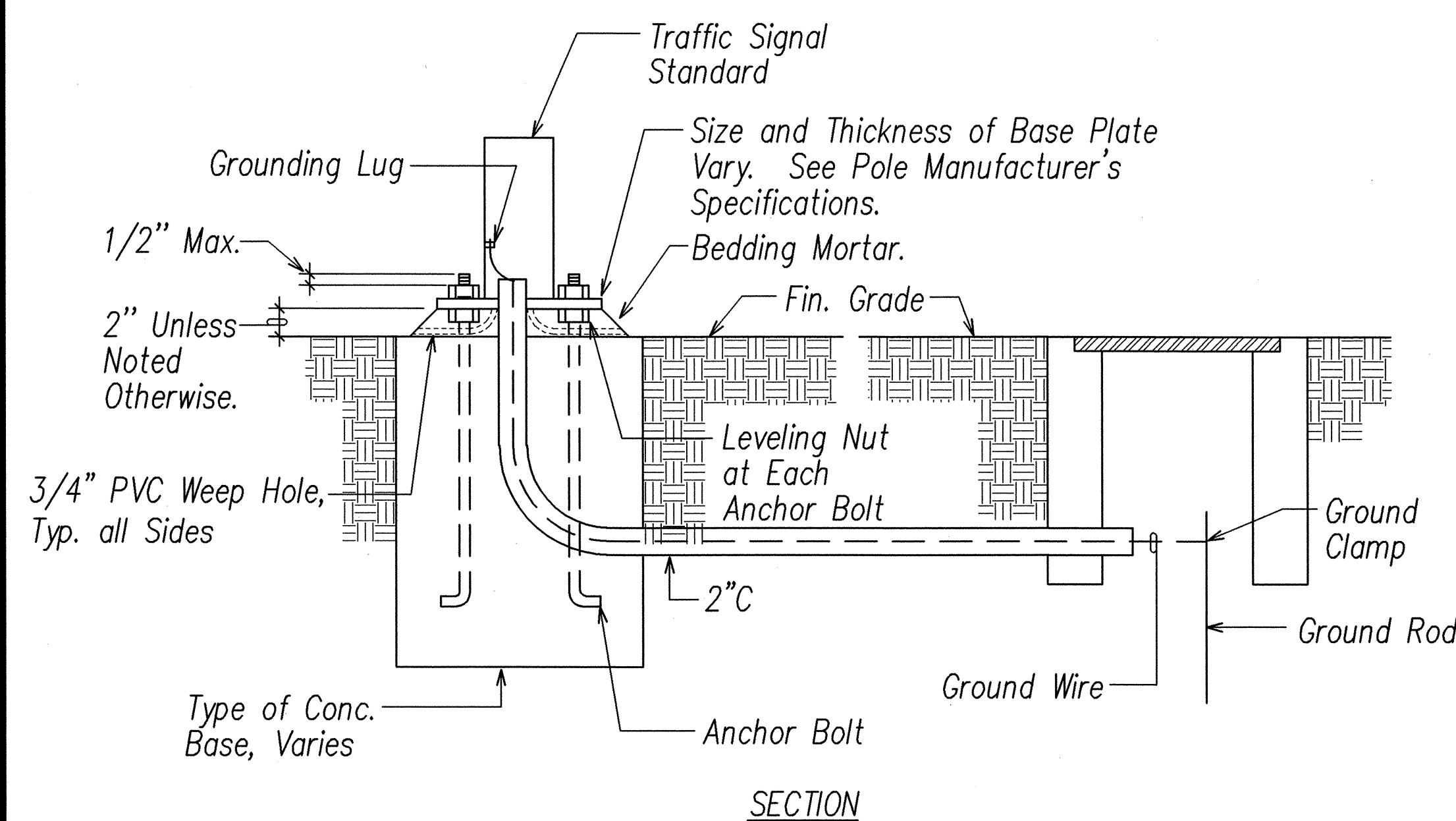
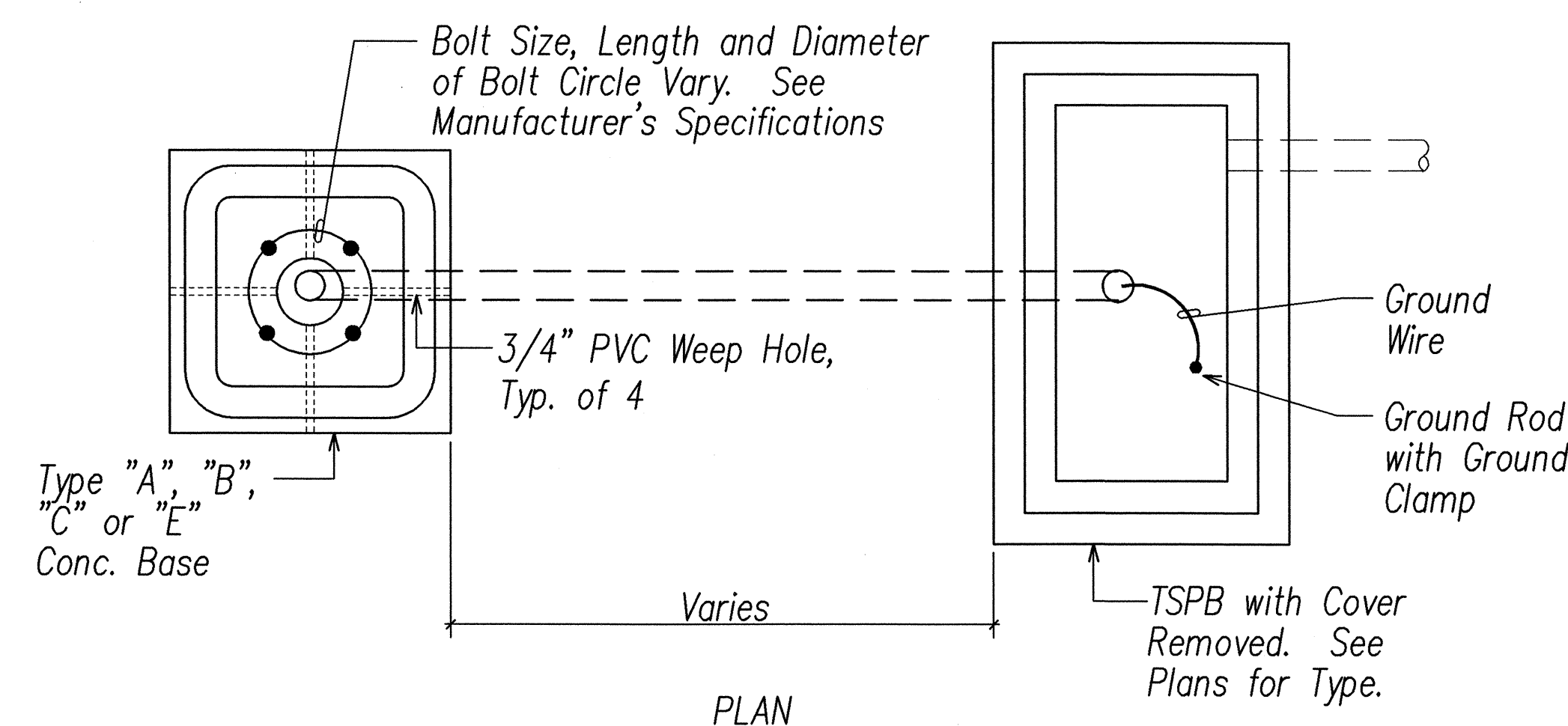
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS I

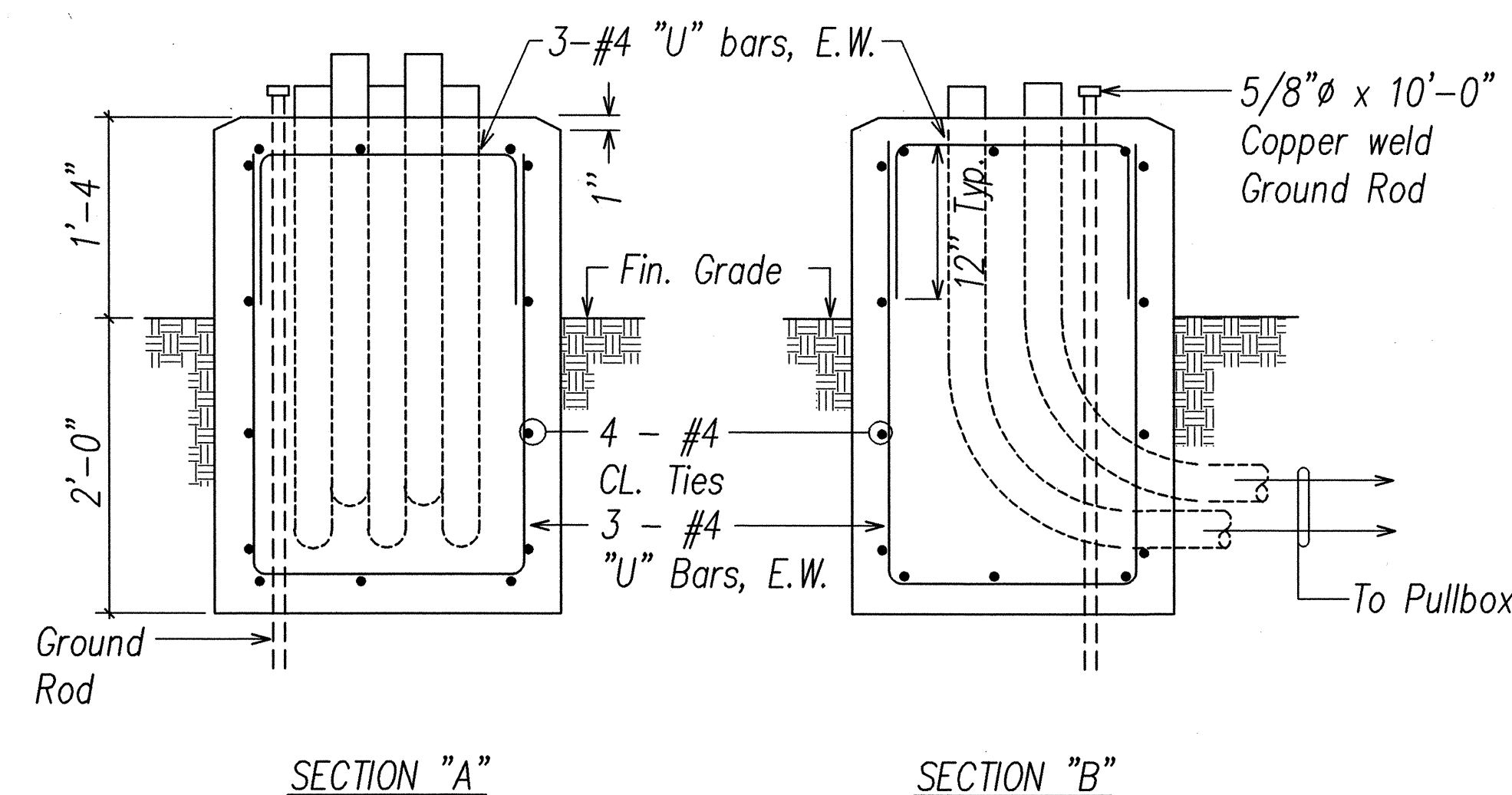
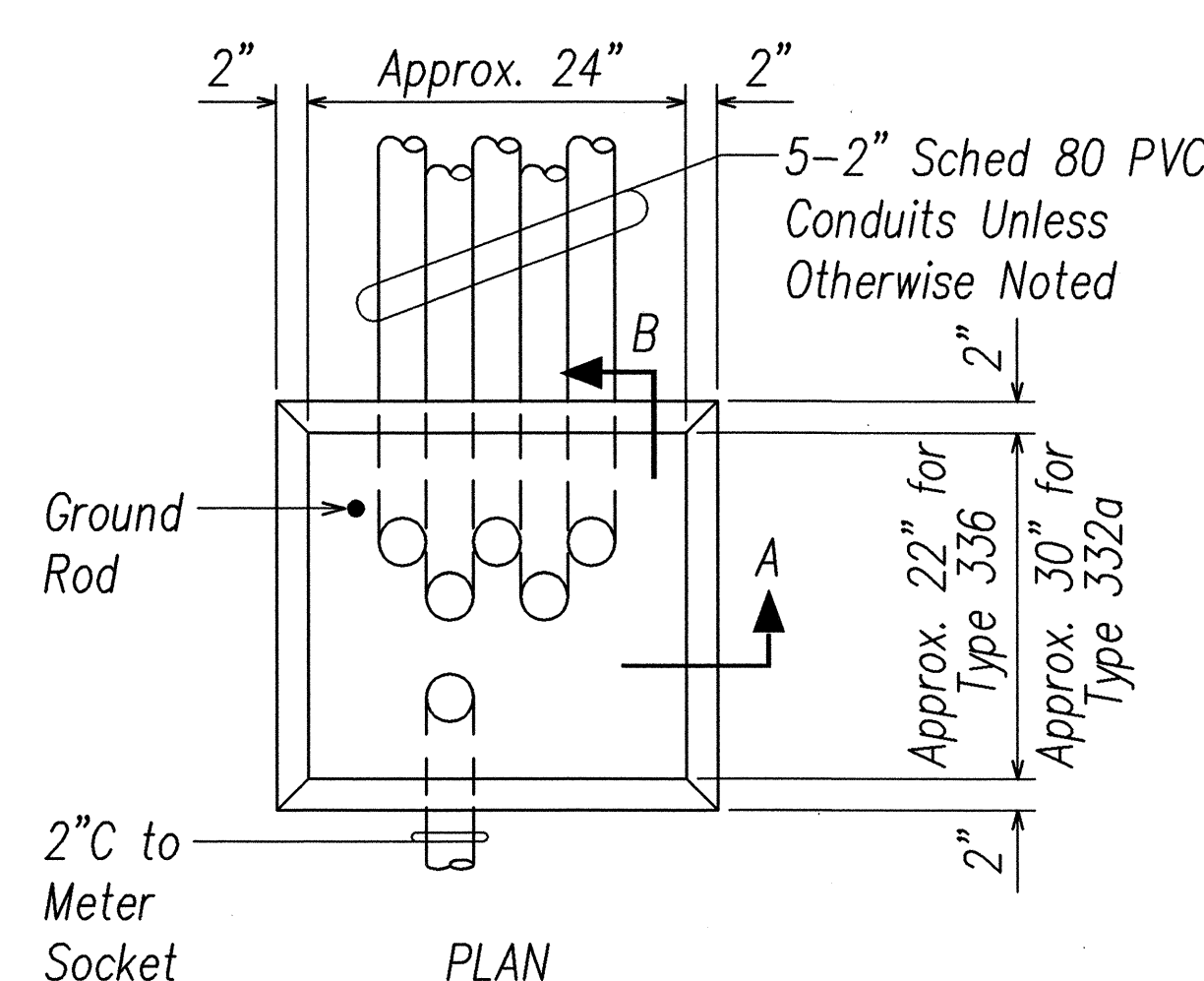
TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS
PROJECT NO. HWY-0-04-04
NIMITZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

SHEET No. E-13 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	37	45



A
E-14 TYPICAL STANDARD & PEDESTAL DETAIL
NOT TO SCALE



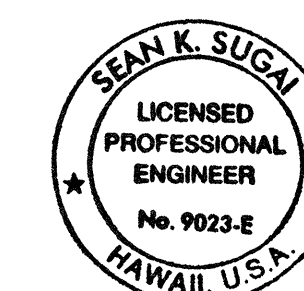
B
E-14 CONTROLLER CONCRETE BASE DETAIL
NOT TO SCALE

NOTES:

1. Concrete shall be class "B".
2. Dimensions shall be altered to suit controller cabinet actually furnished.
3. Conduit bends and drain are incidental to concrete base.
4. Refer to cabinet manufacturer's specifications for details of anchor bolts and base setting.
5. All exposed surfaces of concrete base shall be given a Class 2, rubbed finish.

ORIGINAL PLAN	DATE
NOTE BOOK	DRAWN BY
	DESIGNED BY
	CHECKED BY
	NO.

LAST SAVE: 04/21/08 @ 07:44:59 87% RPT PLOT SC: 1-0-1
C:\Road Projects\241138\Nimitz-Pacific-Hwy\Drawings\241138-241138-1-0-1.dwg



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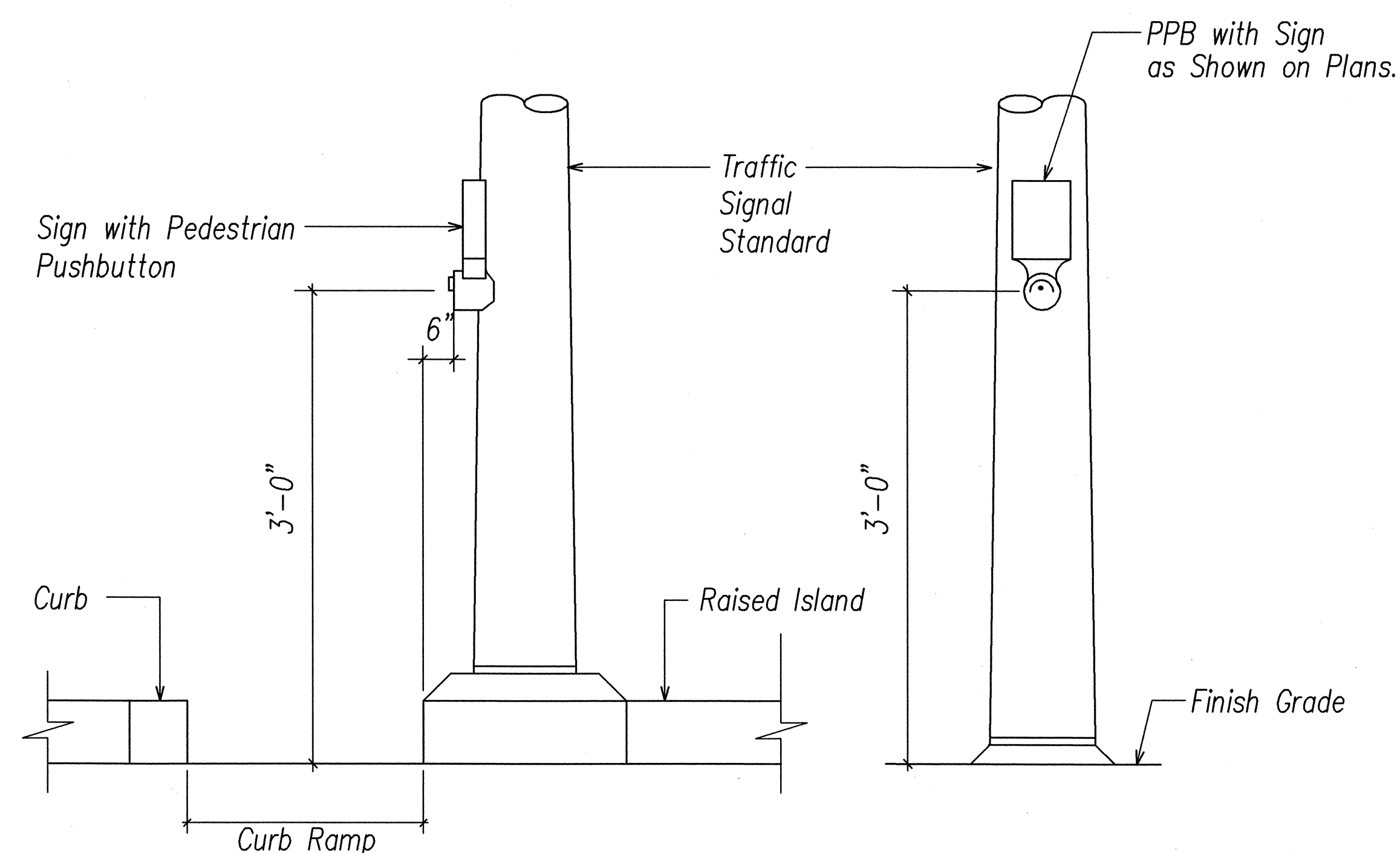
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS II

TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS
PROJECT NO. HWY-0-04-04
NIMITZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

SHEET No. E-14 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	38	45

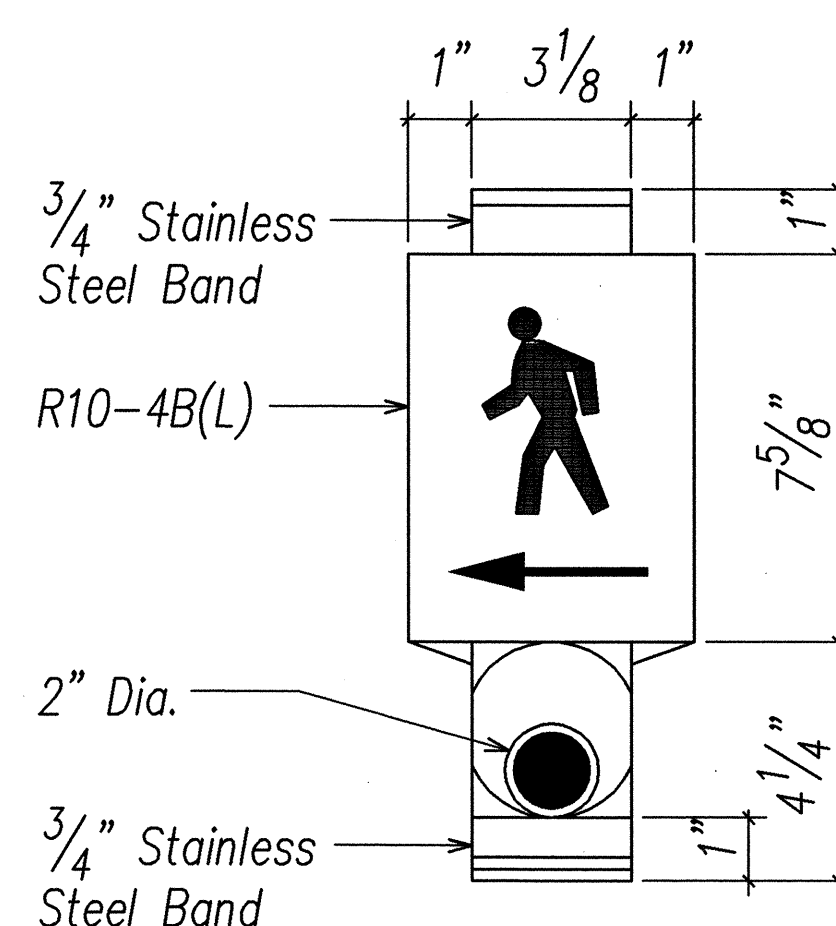


AT RAISED CONCRETE ISLAND

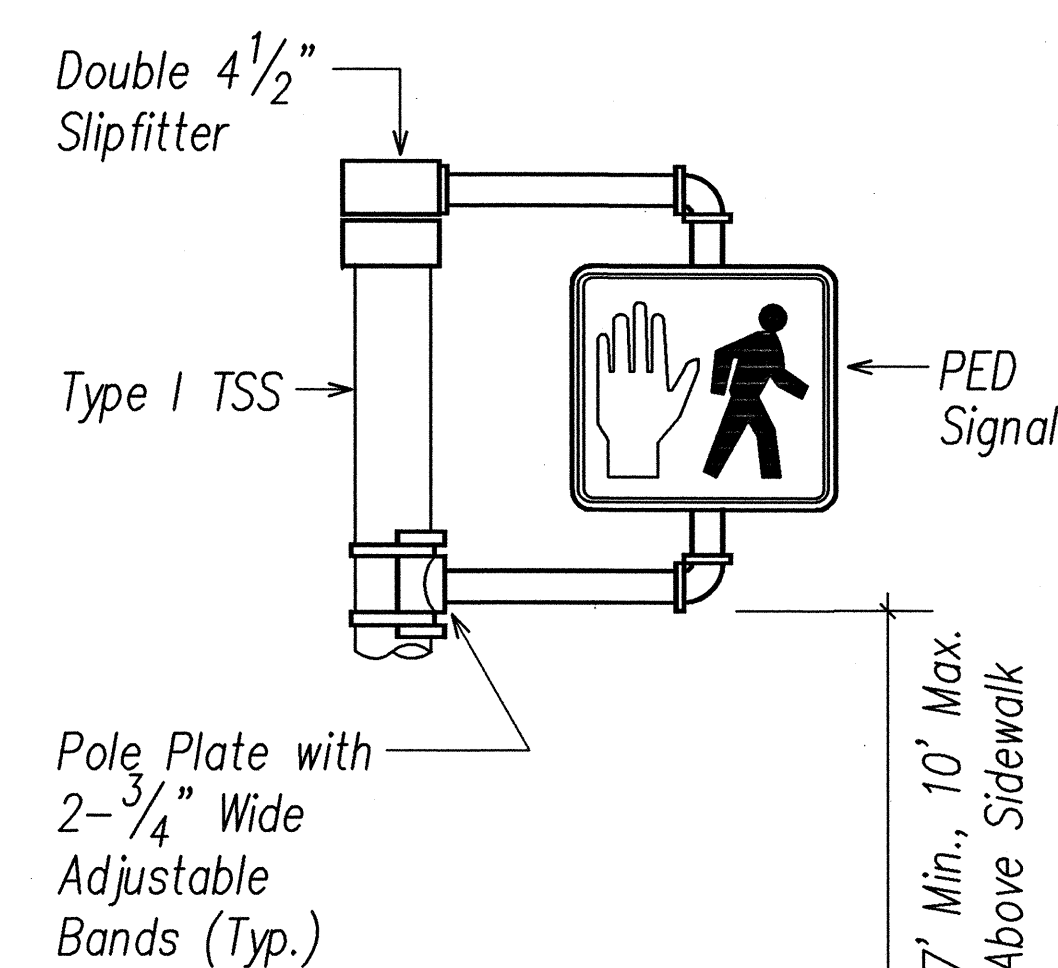
AT SHOULDER

DETAIL NOTES:

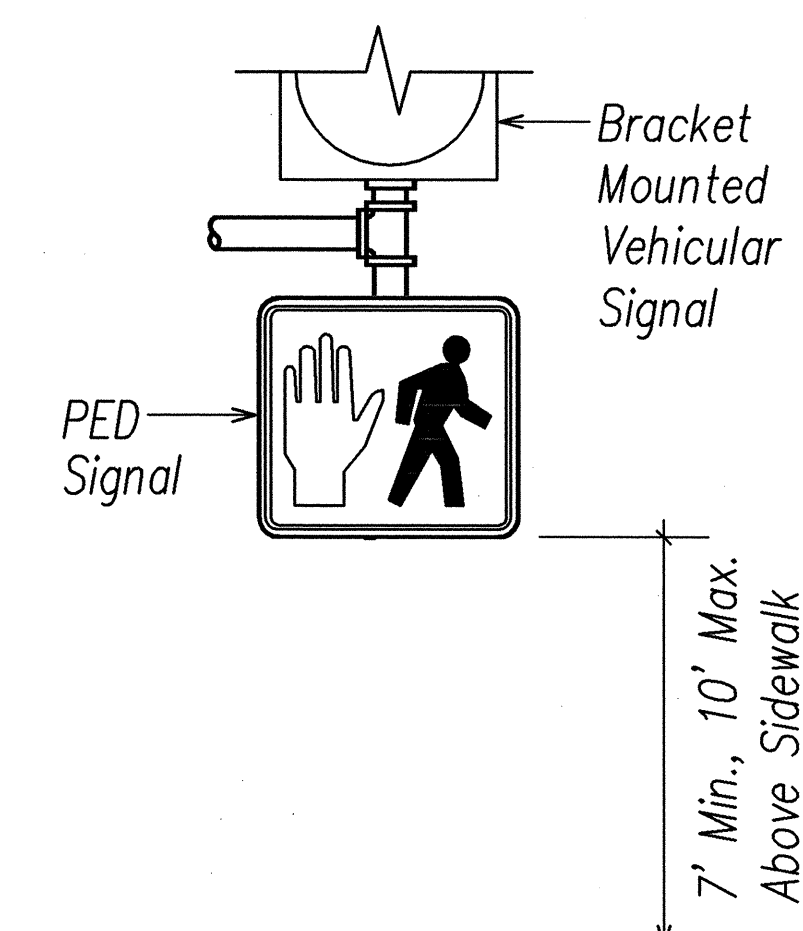
- The pedestrian pushbutton unit shall consist of a one piece assembly with a raised walking man, arrow indication and push button.
- The pushbutton activator shall be of the mushroom plunger type, ADA acceptable, 2 inches in diameter that requires less than 5 lbs. of pressure to activate.
- The raised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



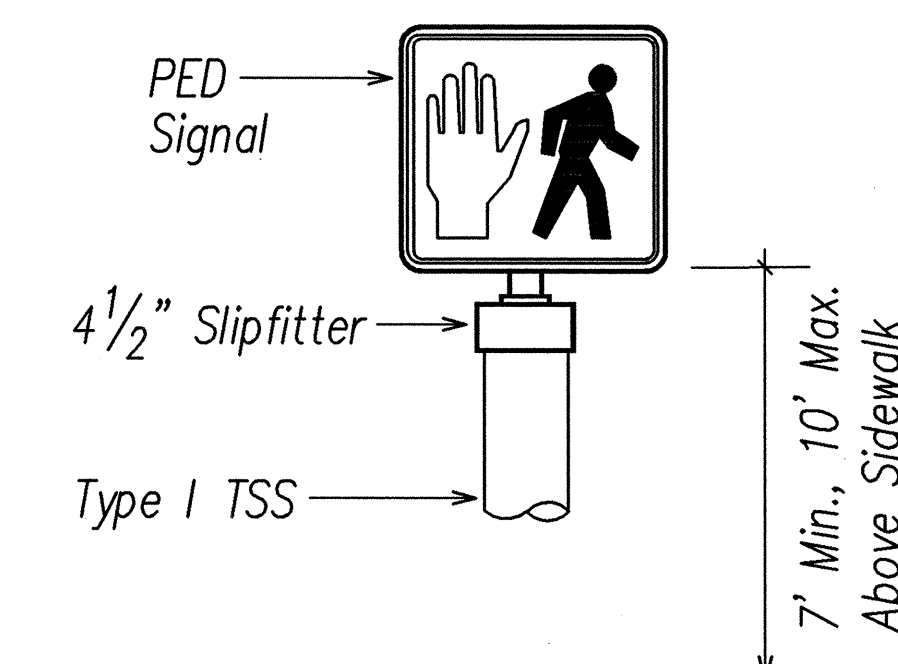
A PEDESTRIAN PUSHBUTTON DETAILS
E-15 NOT TO SCALE



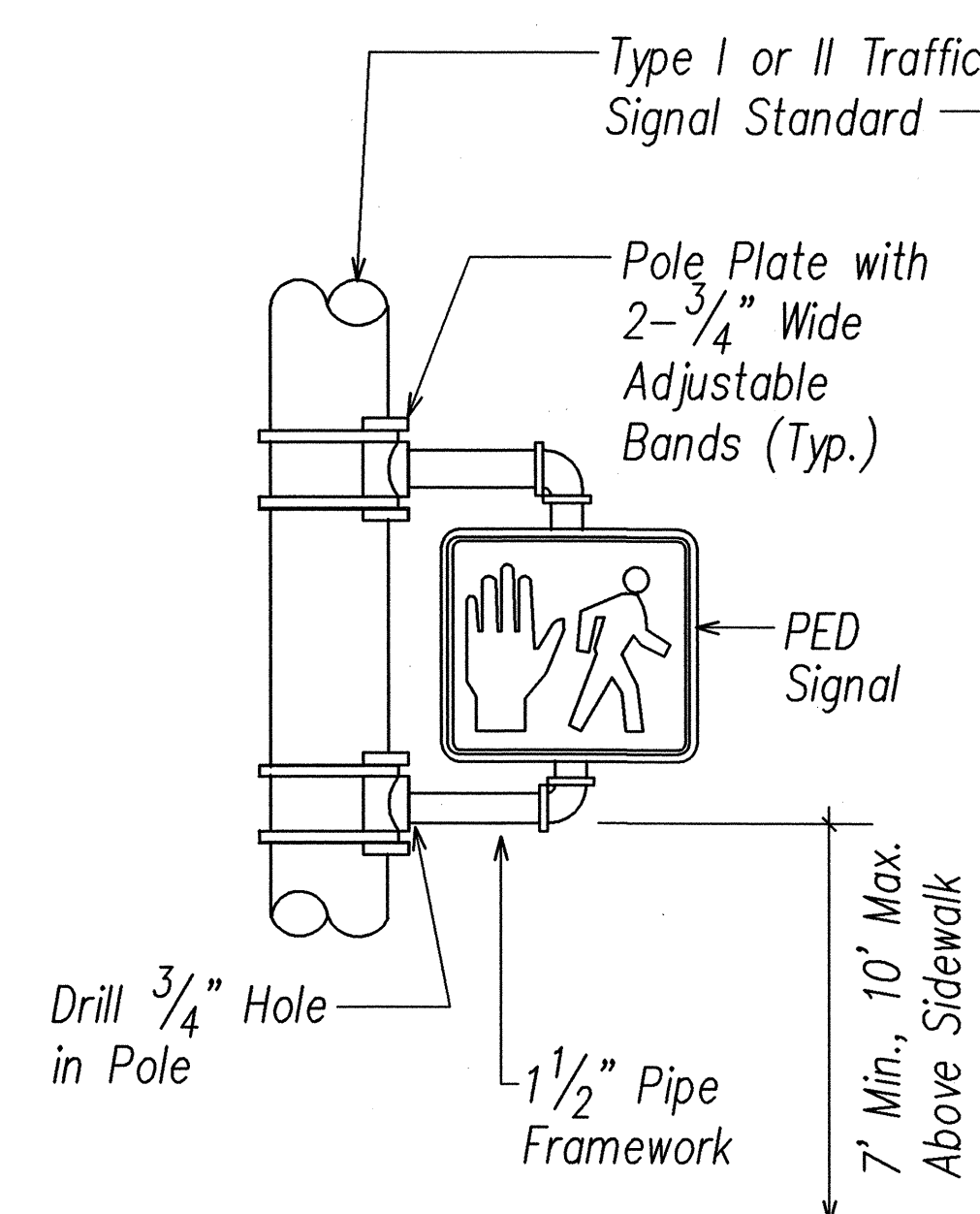
CANTILEVER - ONE WAY



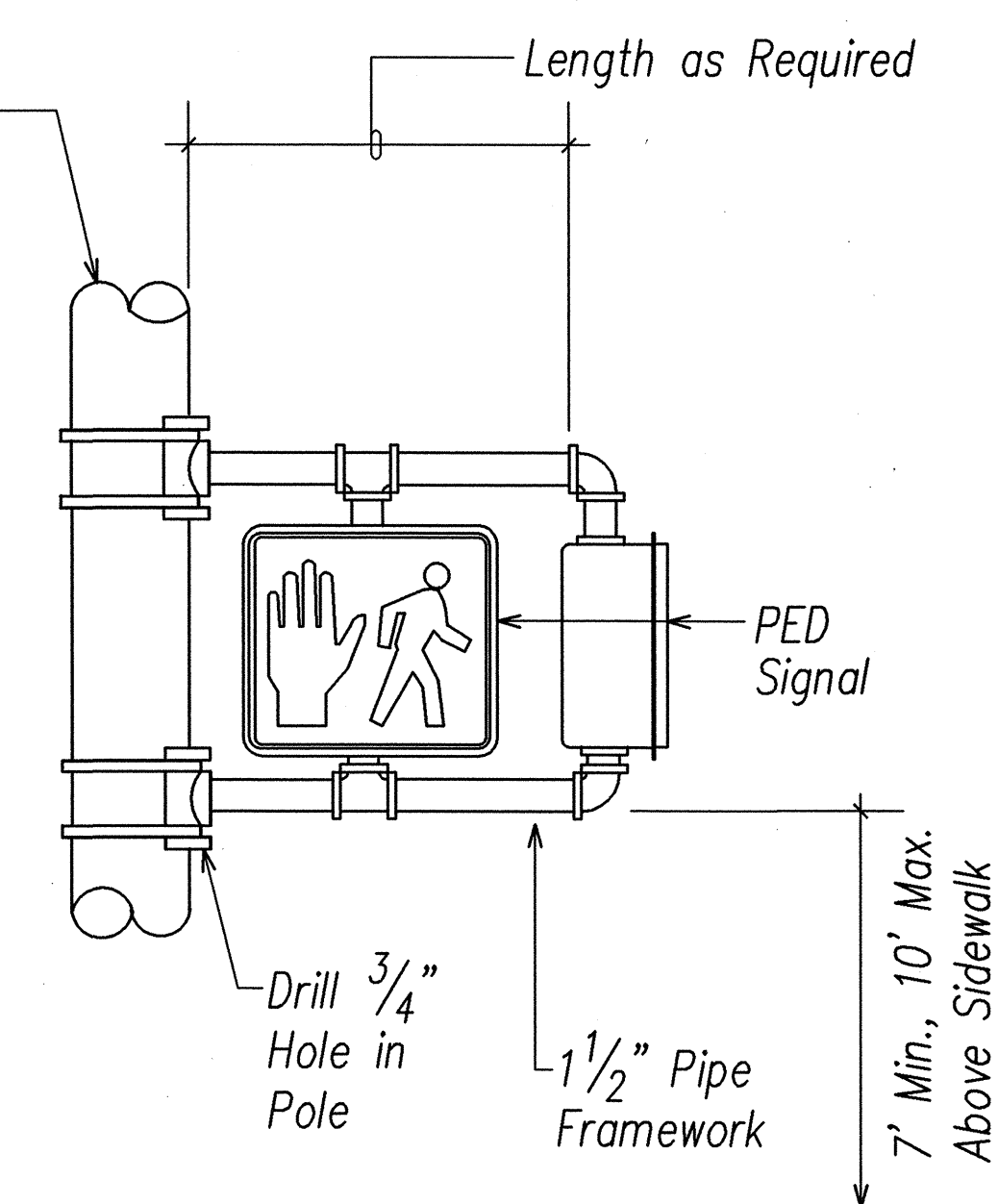
UNDERSLUNG - ONE WAY



TOP OF POLE - ONE WAY



BRACKET MOUNT - ONE WAY



BRACKET MOUNT - TWO WAY

B PEDESTRIAN SIGNAL MOUNTING DETAILS
E-15 NOT TO SCALE



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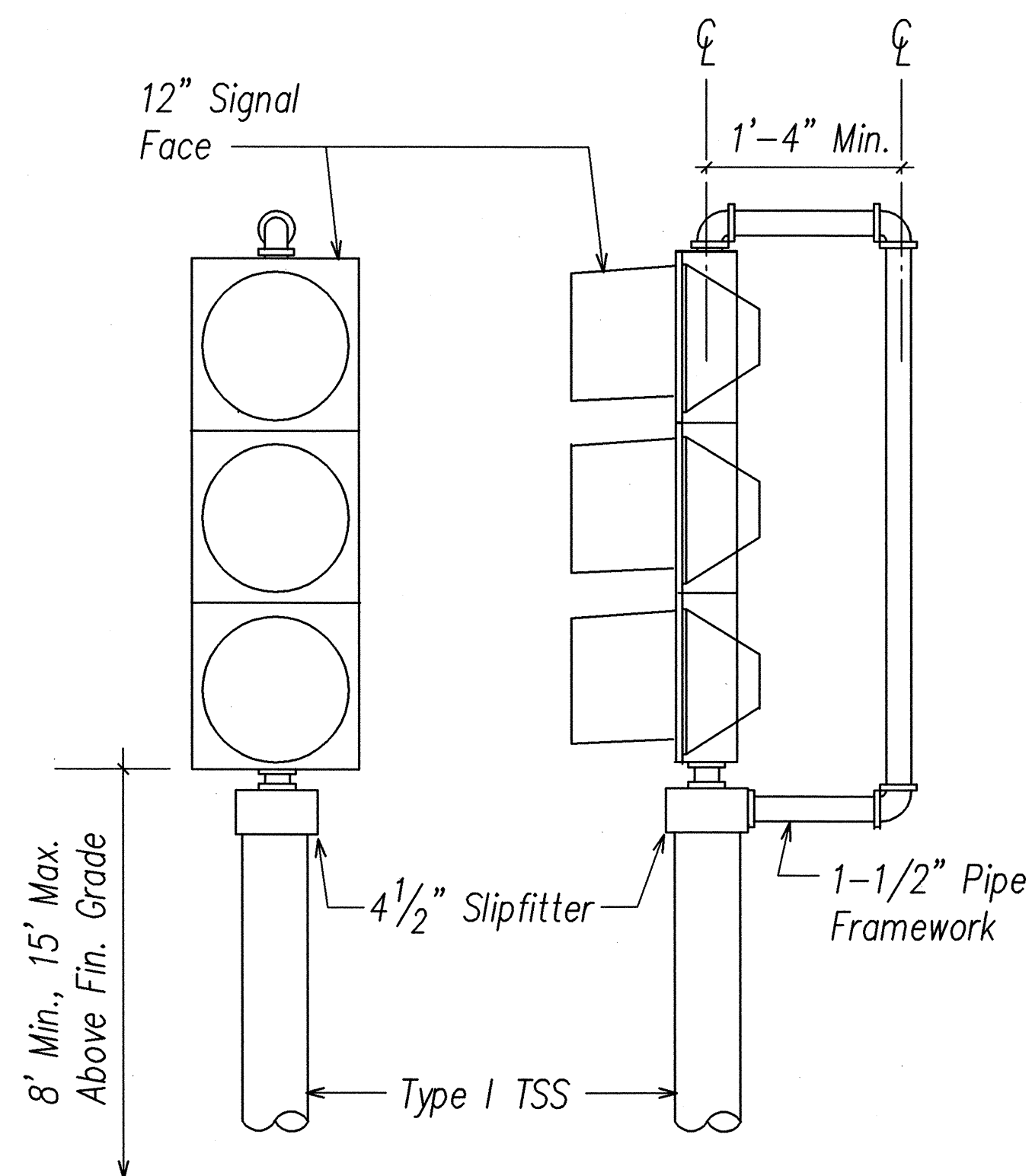
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS III

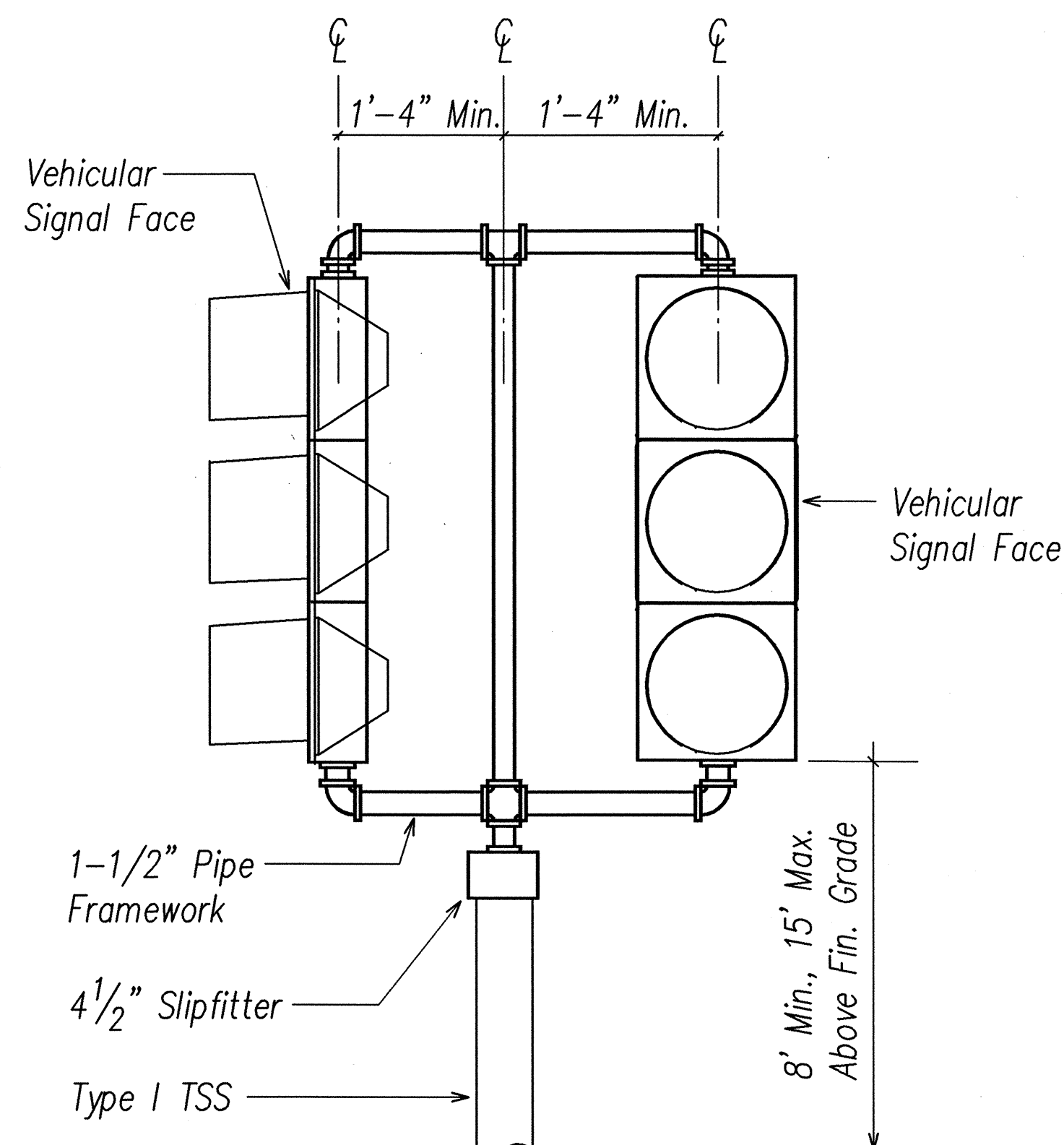
TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS
PROJECT NO. HWY-0-04-04
NIMTZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

SHEET No. E-15 OF 22 SHEETS

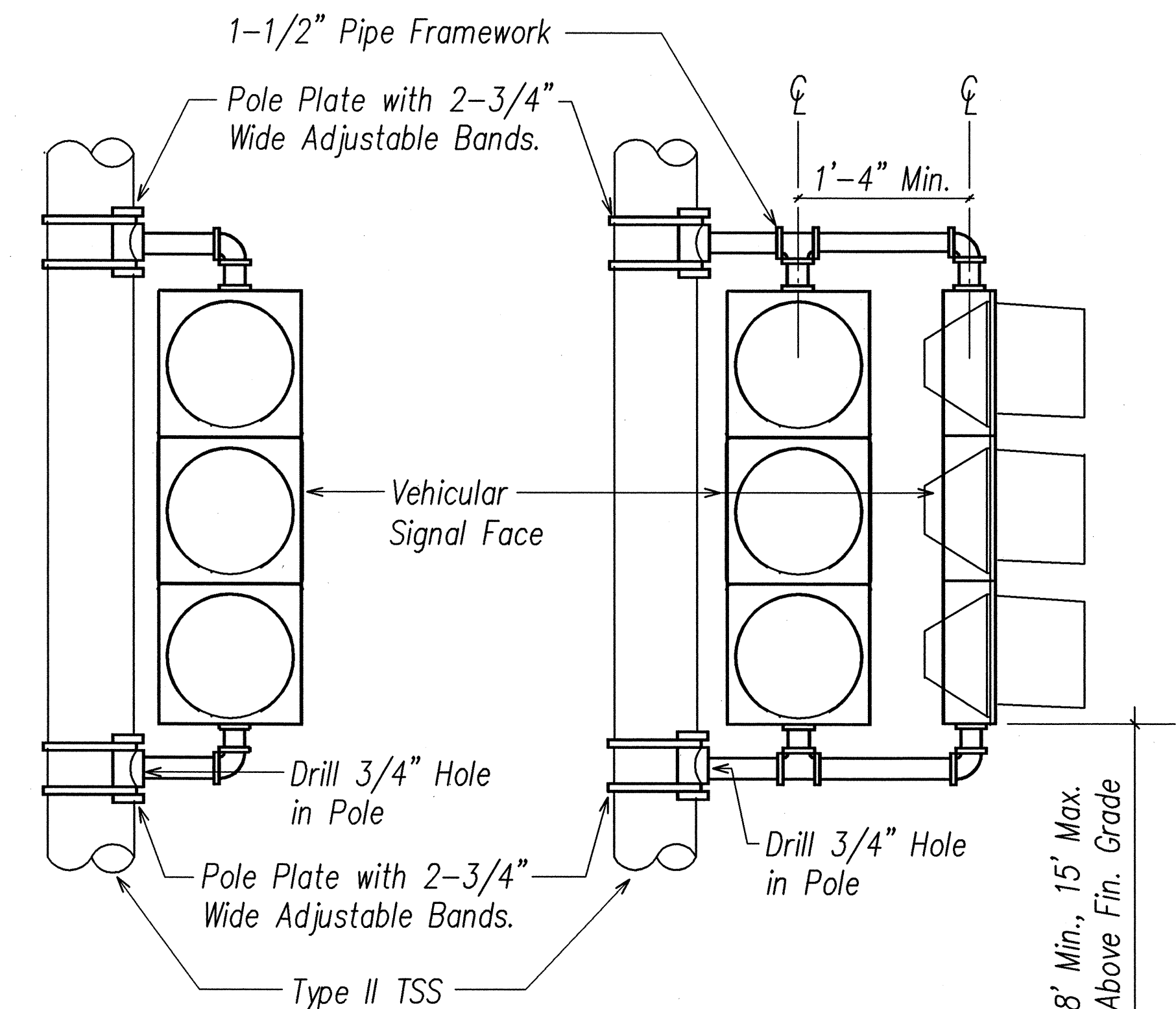
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	39	45



TOP OF POLE - ONE WAY MOUNTING

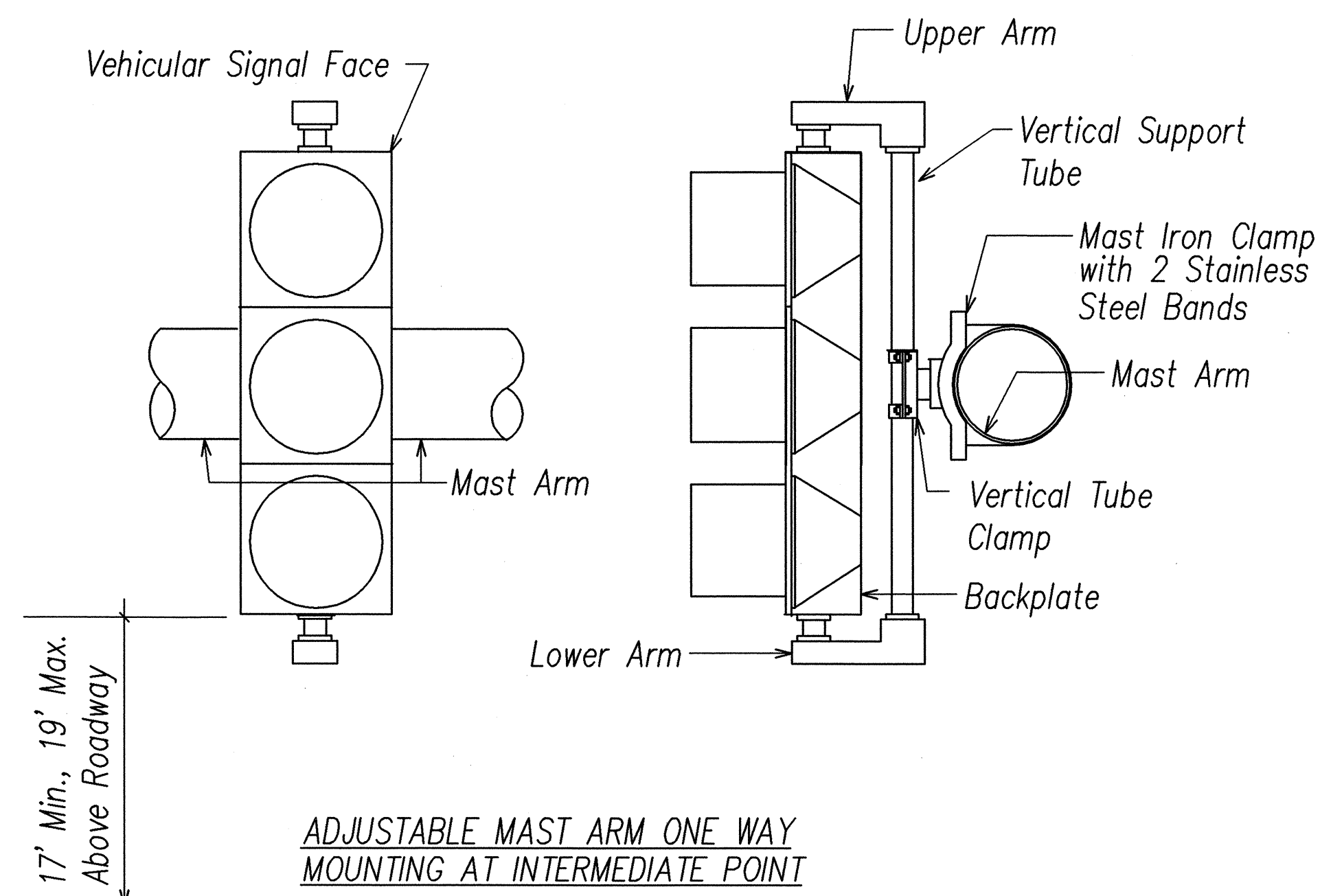


TOP OF POLE - TWO WAY MOUNTING



BRACKET MOUNT - ONE WAY

BRACKET MOUNT - TWO WAY

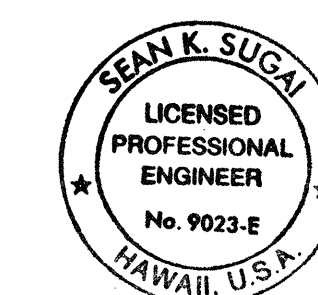


ADJUSTABLE MAST ARM ONE WAY MOUNTING AT INTERMEDIATE POINT

MAST ARM MOUNTING NOTES:

1. Stainless steel bands shall be 1/2" wide x .050" thick, minimum. tensile strength shall be 100,000 psi minimum.
2. Upper arm, lower arm and vertical support tube shall be of 356 cast aluminum.
3. All wiring shall be concealed.
4. Vertical tube clamp shall be of malleable iron, grade 32510.
5. All aluminum parts shall have an alodine 1200 finish.
6. Signal as noted on plans.

A
E-16 VEHICULAR SIGNAL MOUNTING DETAILS
NOT TO SCALE



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STATE OF HAWAII
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HIGHWAYS DIVISION
TRAFFIC SIGNAL DETAILS IV

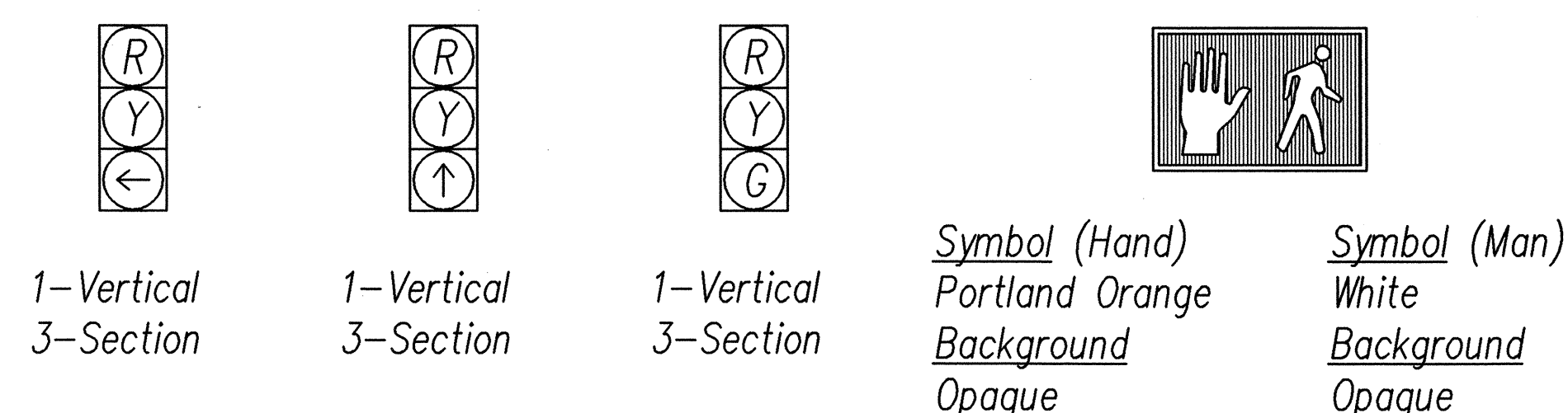
TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS
PROJECT NO. HWY-0-04-04
NIMITZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

SHEET No. E-16 OF 22 SHEETS

16" C.C. 16" C.C. 16" C.C. 16" C.C. 16" C.C. 16" C.C. 16" C.C. 16" C.C.

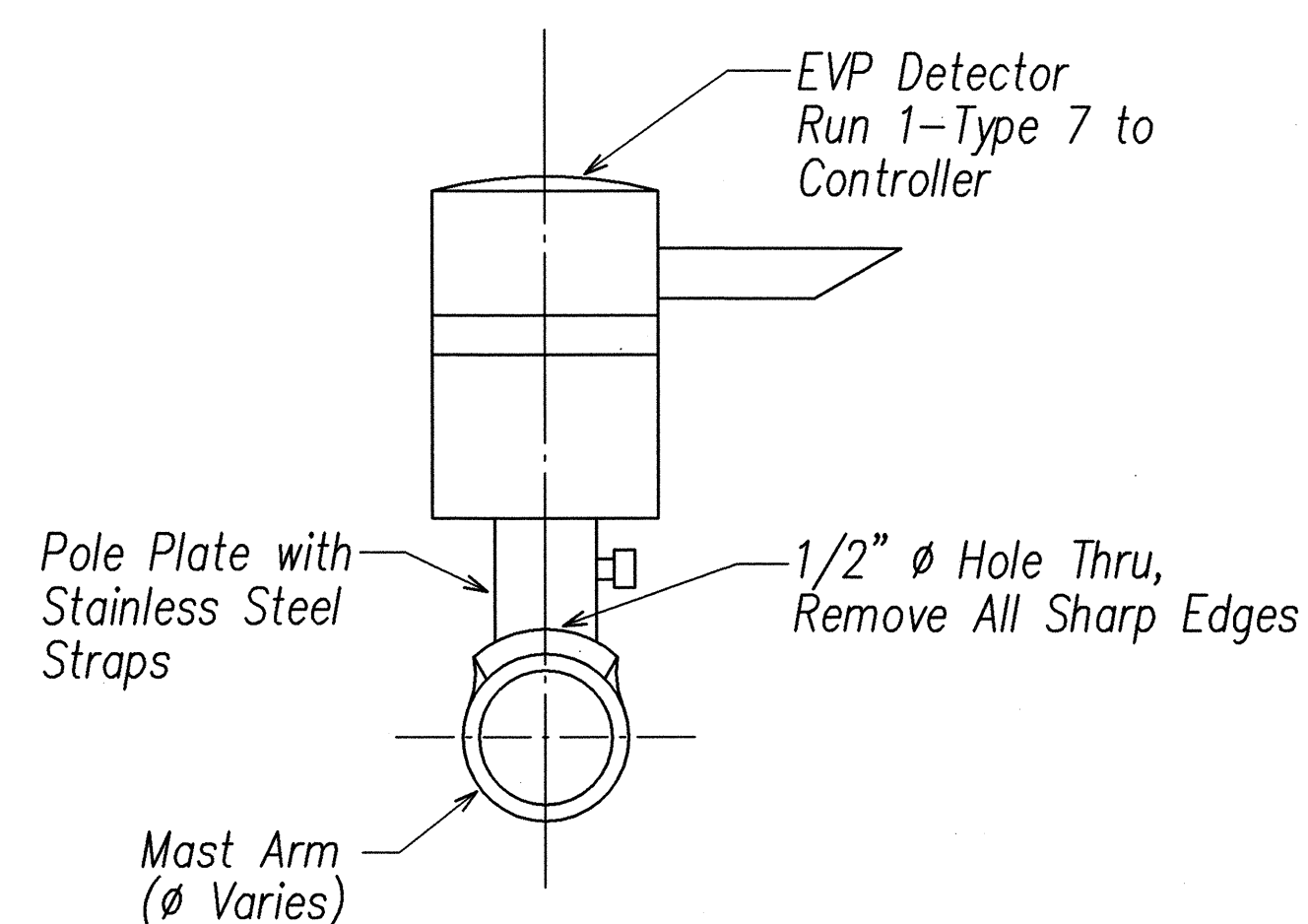
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SLIPFITTER MOUNTINGS BRACKET MOUNTINGS MAST ARM MOUNTINGS



A E-17 TYPICAL SIGNAL ARRANGEMENTS

B TYPICAL PEDESTAL/MAST ARM INSTALLATION OF EVP DETECTOR
E-17 NOT TO SCALE



C EVP DETECTOR HORIZONTAL MOUNTING DETAIL
E-17 NOT TO SCALE

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

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SIGNATURE *[Signature]* 4/20/06
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EXPIRATION DATE OF LICENSE
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UNDER MY SUPERVISION

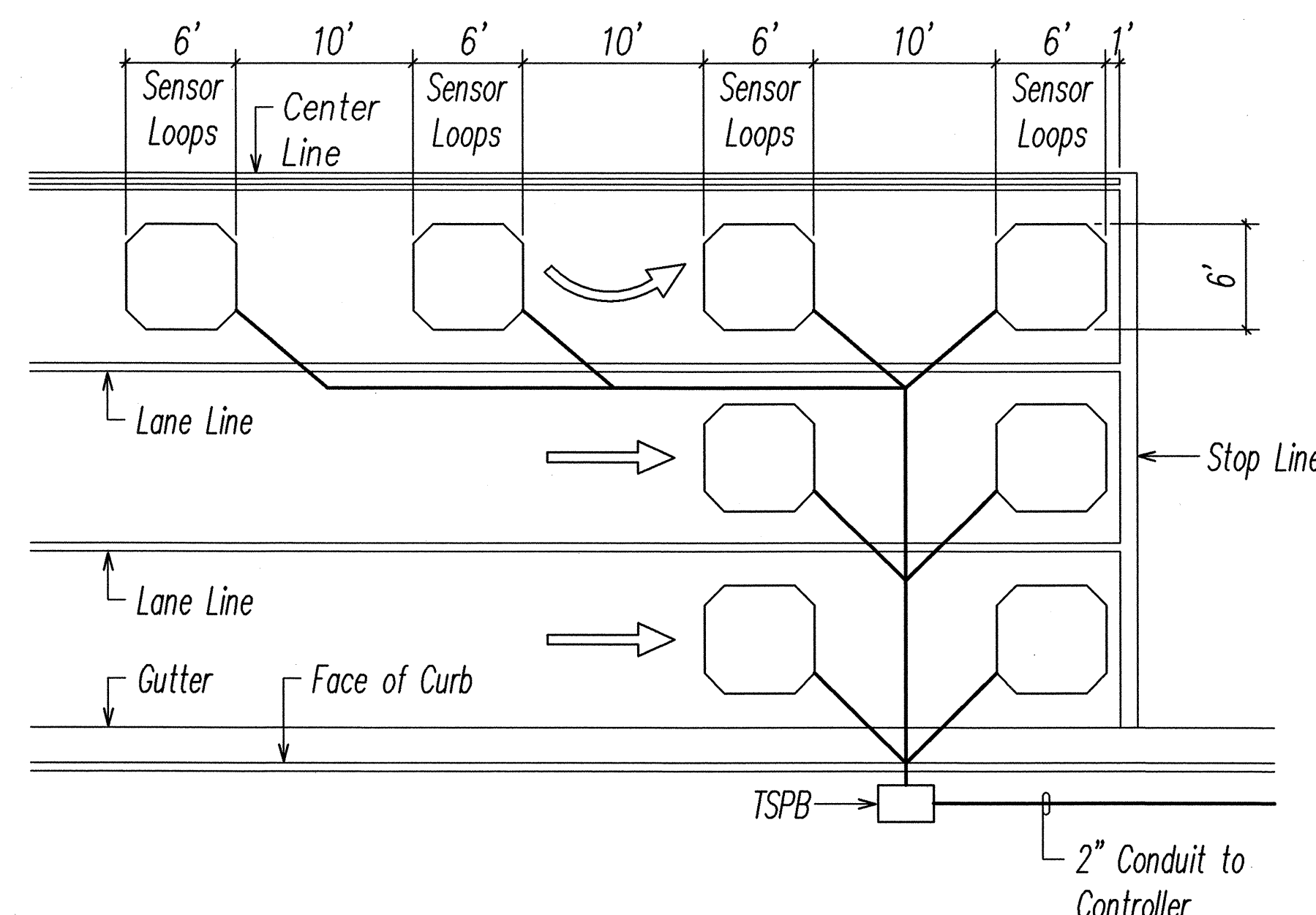
TRAFFIC SIGNAL DETAILS V

PROJECT NO. HWY-0-04-04

NIMTZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

SHEET No. E-17 OF 22 SHEETS

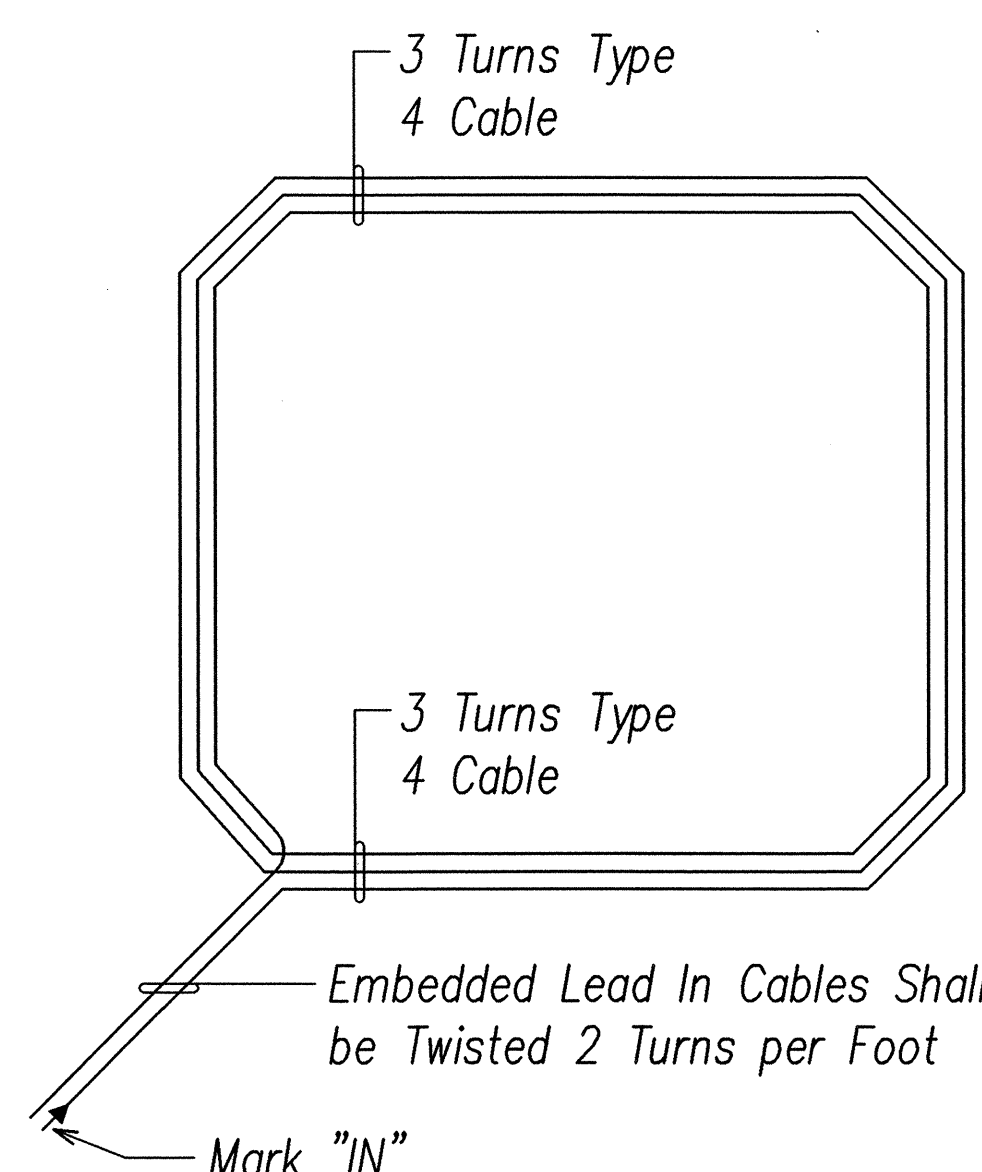
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	41	45



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.

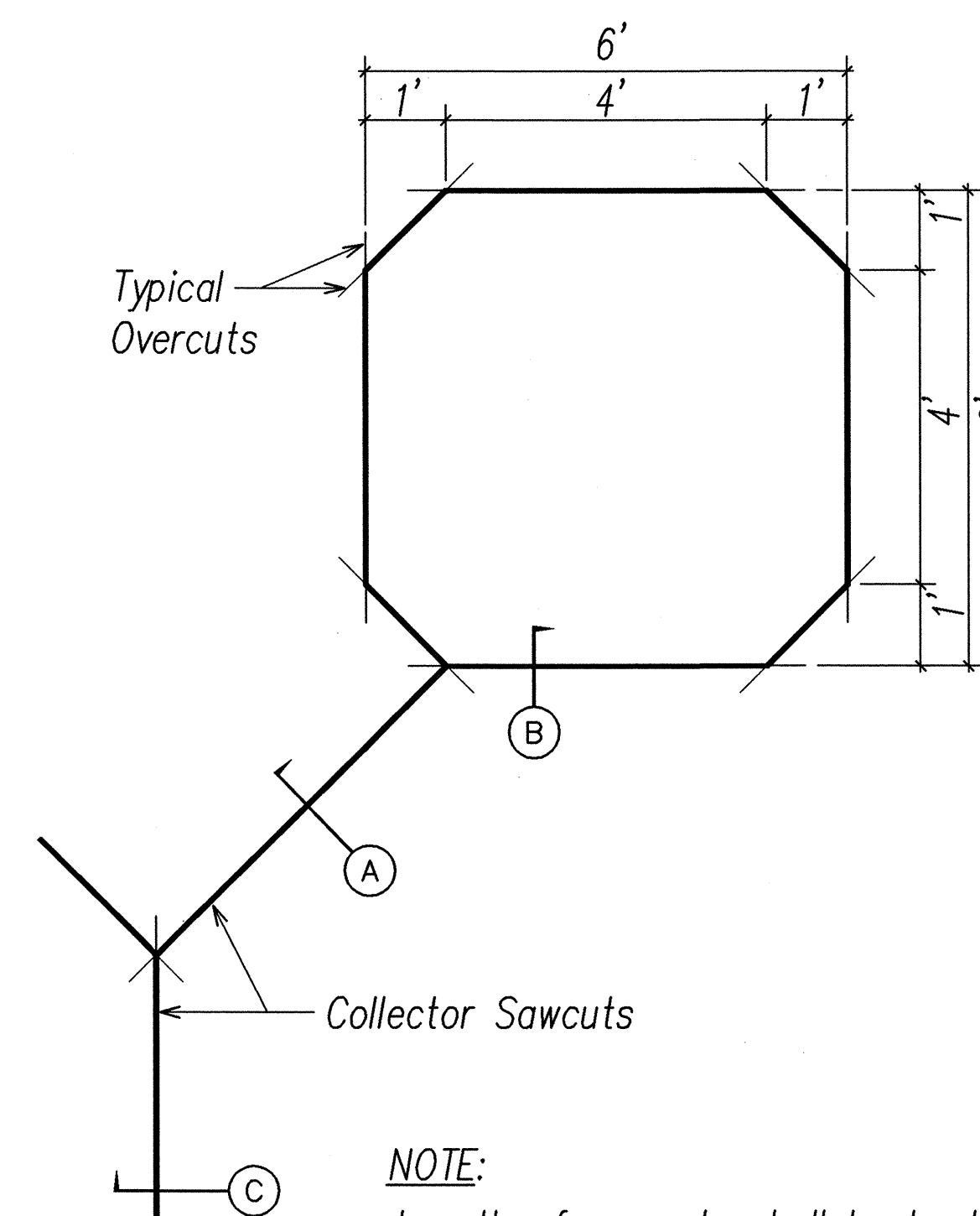
TYPICAL SENSOR LOOP LAYOUT
NOT TO SCALE



PLAN

NOTE: Type 4 Cable – Loop Sensor Cable: Solid No. 12, Single Conductor to IMSA Spec 51-5

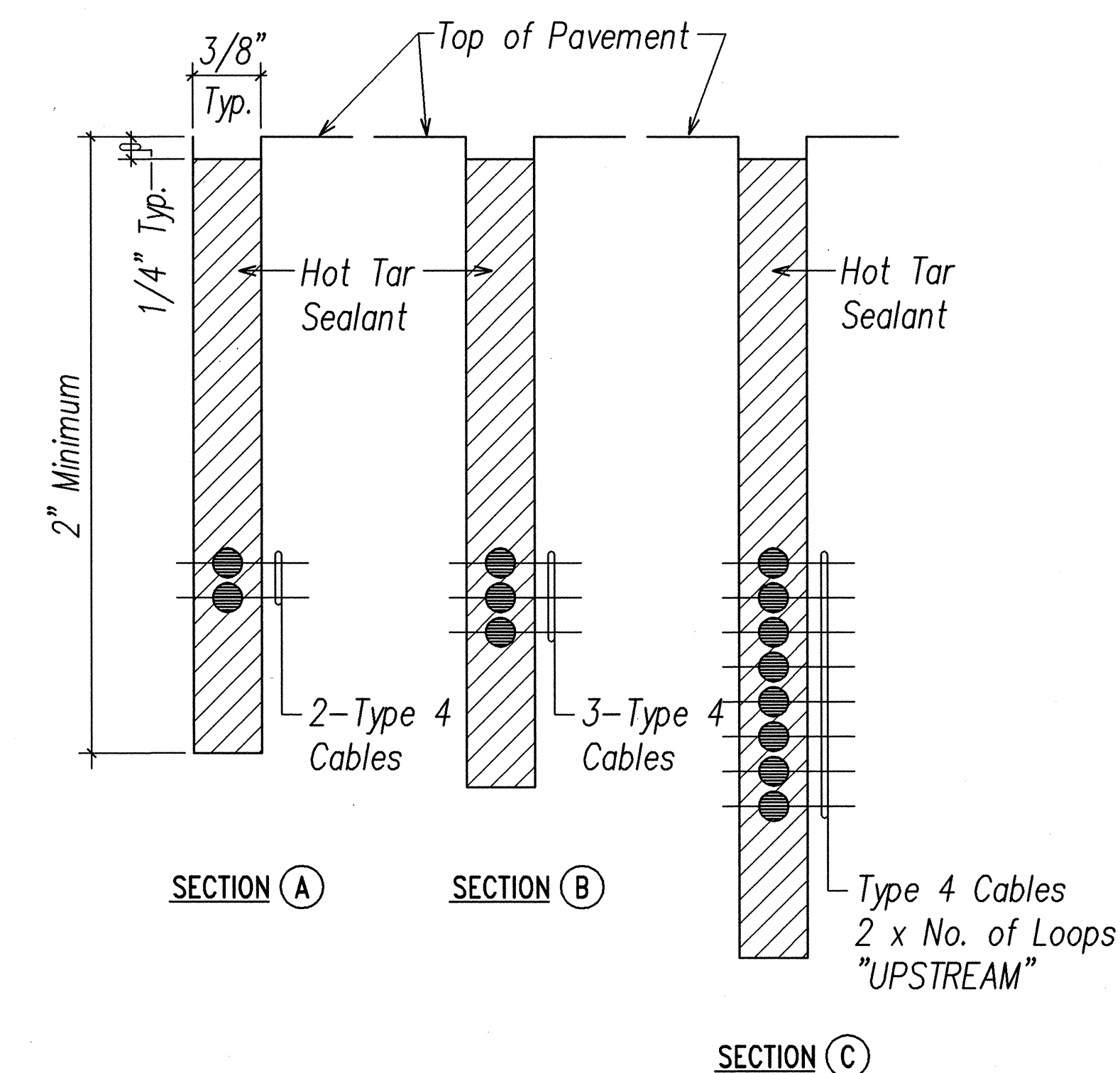
TYPICAL SENSOR LOOP WIRING DIAGRAM
NOT TO SCALE



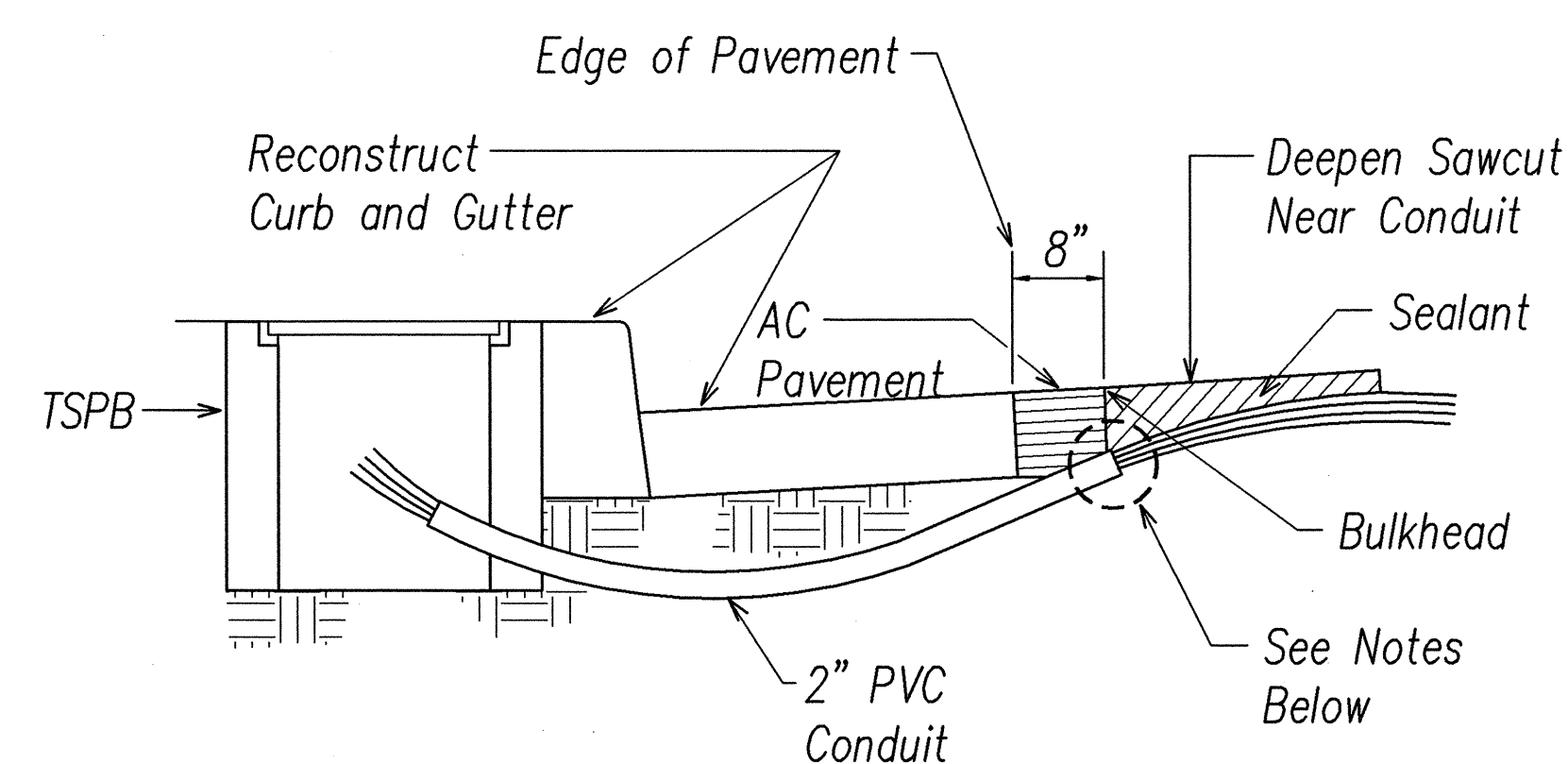
NOTE:

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

TYPICAL SENSOR LOOP SAWCUT DETAIL
NOT TO SCALE



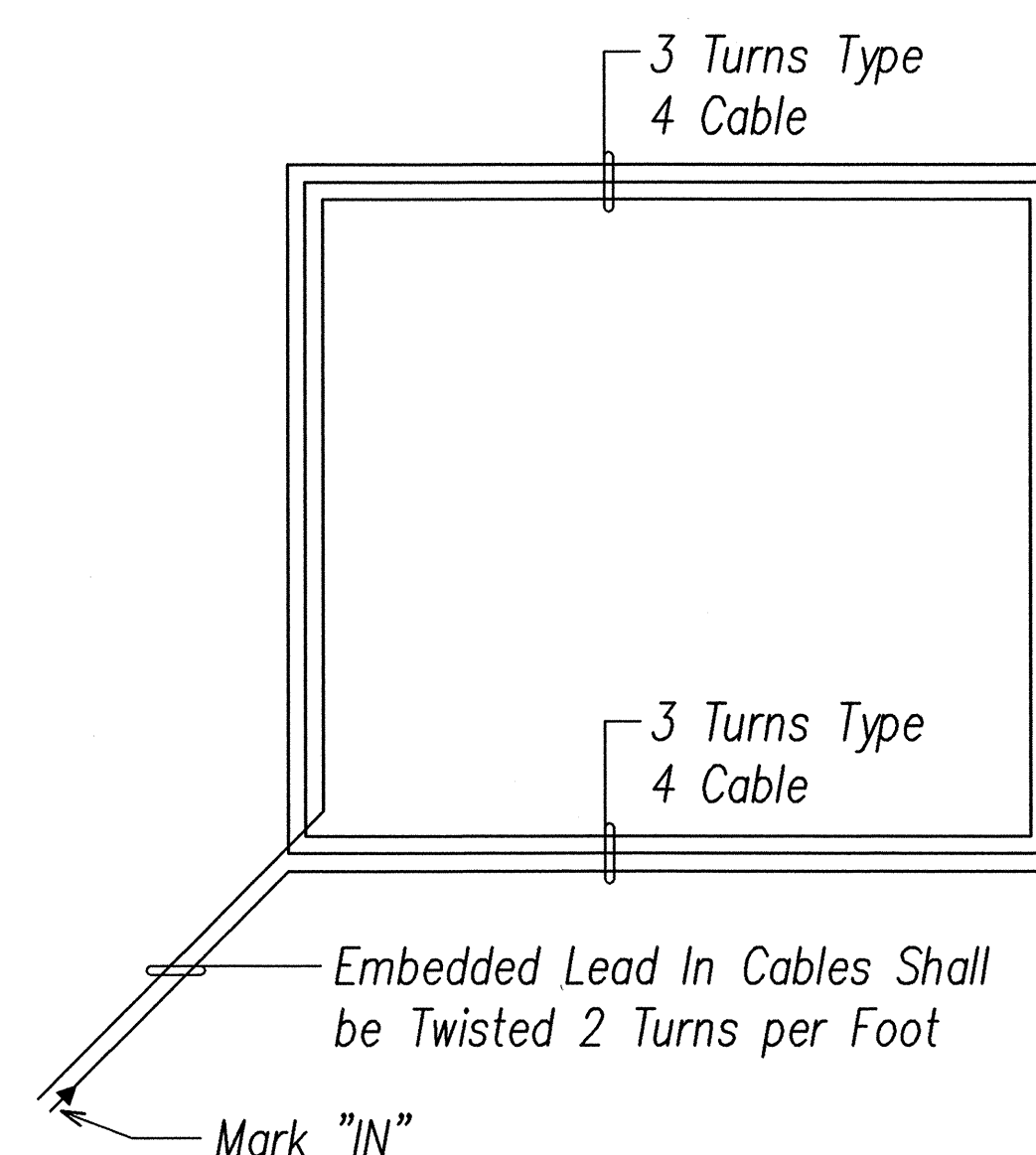
SECTION C



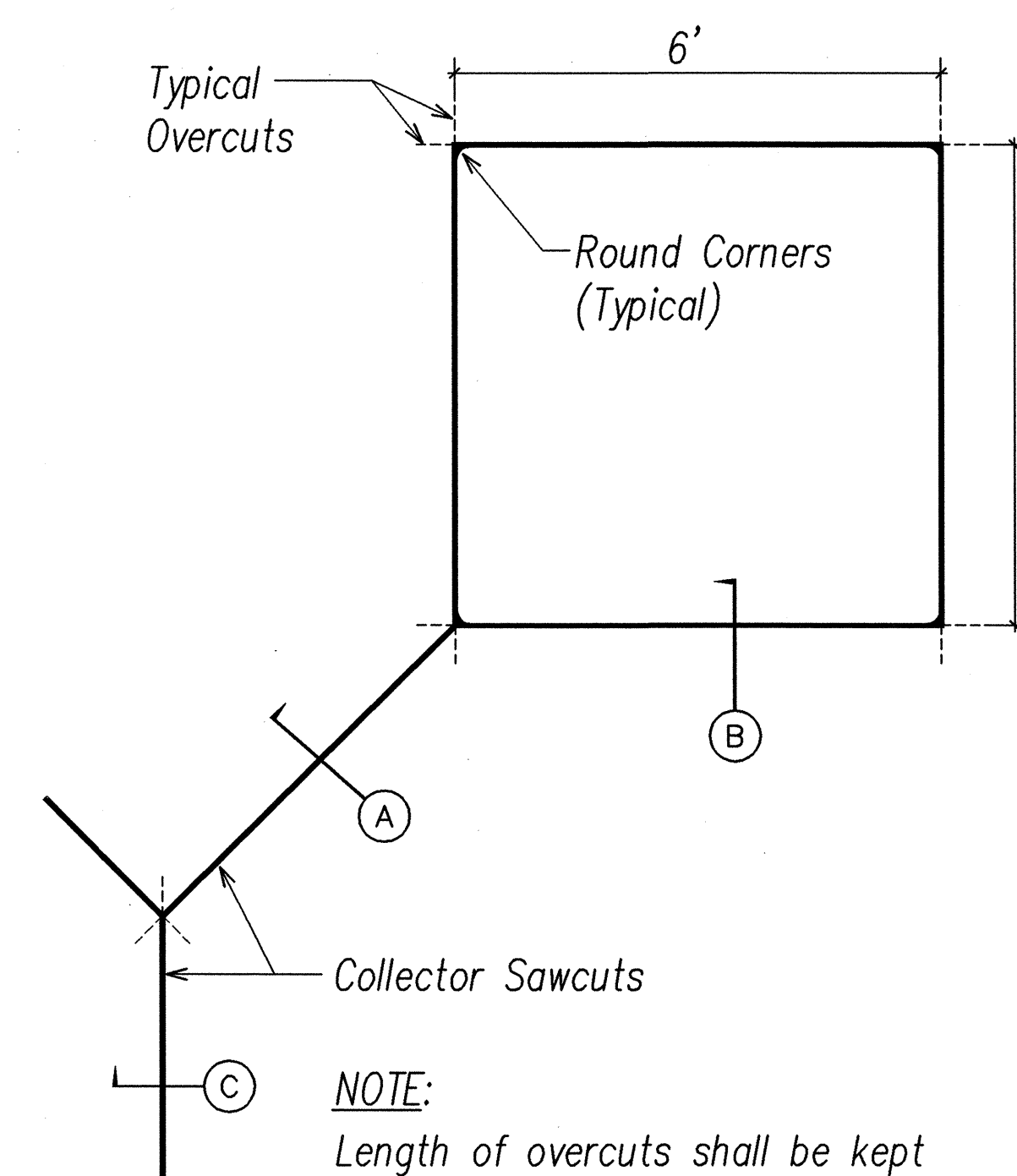
NOTES:

1. Seal roadway end of conduit after installation of conductors.
2. Install bulkhead across conduit trench.
3. Place hot tar in sawcut.
4. Backfill over conduit with new a.c.
5. Reconstruct curb and gutter as required.

DETAIL OF SENSOR LOOP INSTALLATION AT EDGE OF ROADWAY
NOT TO SCALE



TYPICAL ALTERNATE SENSOR LOOP WIRING DETAIL
NOT TO SCALE



NOTE:

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

TYPICAL ALTERNATE SENSOR LOOP SAWCUT DETAIL
NOT TO SCALE



SIGNATURE: *Sean K. Suga*
APRIL 30, 2008
EXPIRATION DATE OF LICENSE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

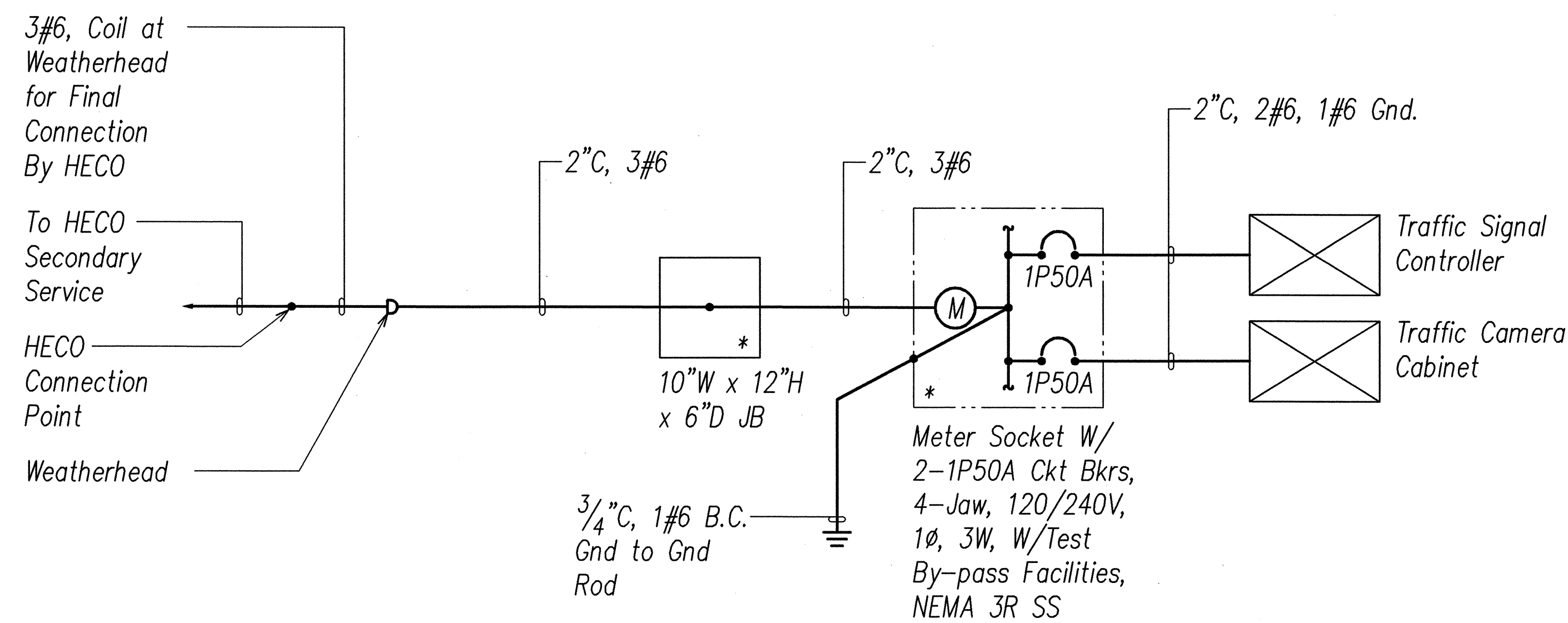
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL LOOP DETECTOR DETAILS

TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS
PROJECT NO. HWY-0-04-04
NIMITZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

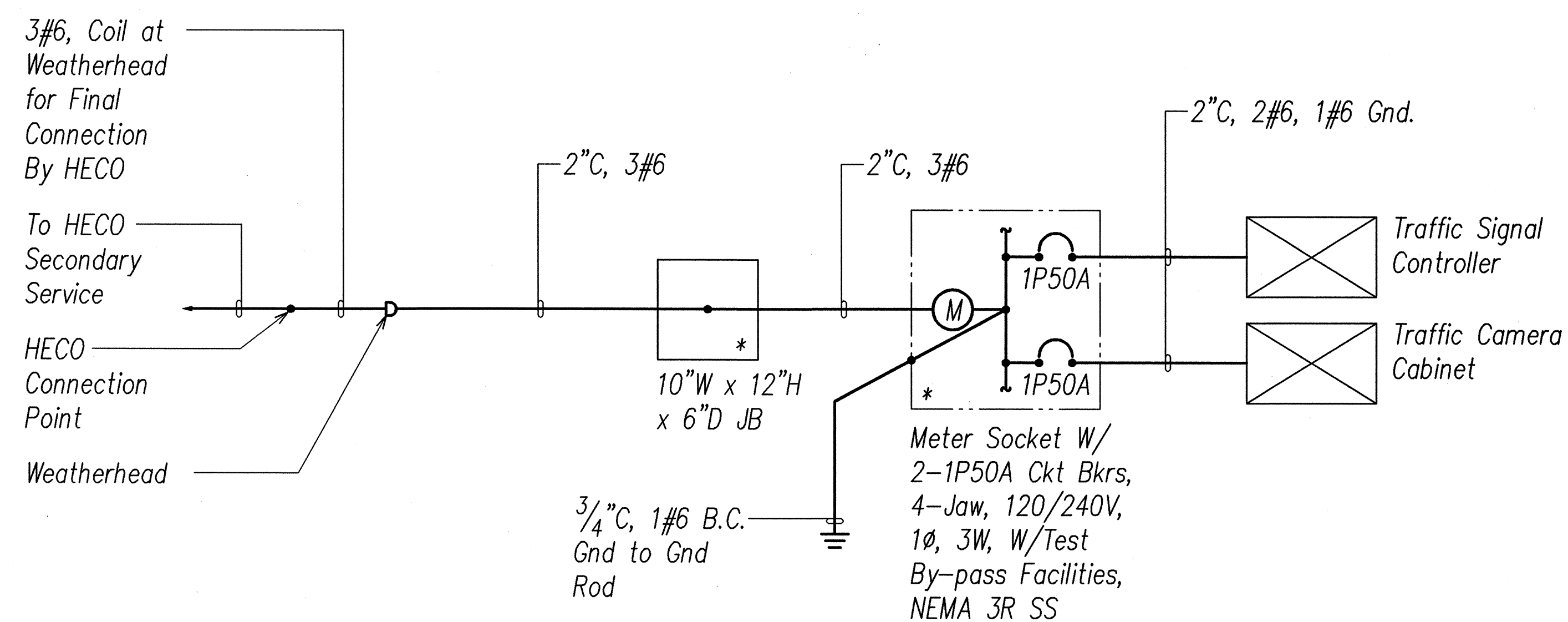
SHEET No. E-18 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	43	45



* Denotes "Provide Provisions for HECO Seal."

ONE LINE DIAGRAM - NIMITZ HWY./PACIFIC ST. (INBOUND)



* Denotes "Provide Provisions for HECO Seal."

ONE LINE DIAGRAM - NIMITZ HWY./PACIFIC ST. (OUTBOUND)

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

LAST SAVE: 04/21/06 @ 07:48:44 BY: RPT PLOT: S:\1-04-01\Nimitz-Hwy-04-04\Nimitz-Hwy-04-04.dwg



SIGNATURE *Sean K. Sugan*

APRIL 30, 2008

EXPIRATION DATE OF LICENSE

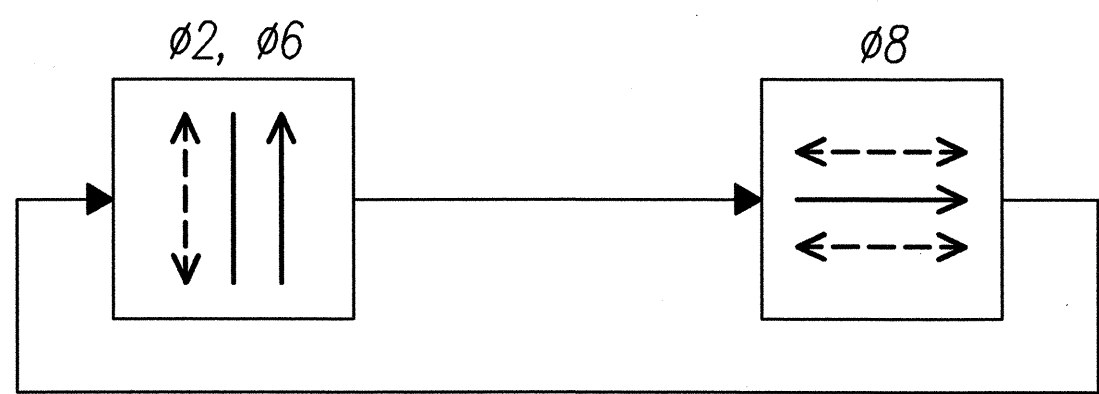
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ONE LINE DIAGRAMS

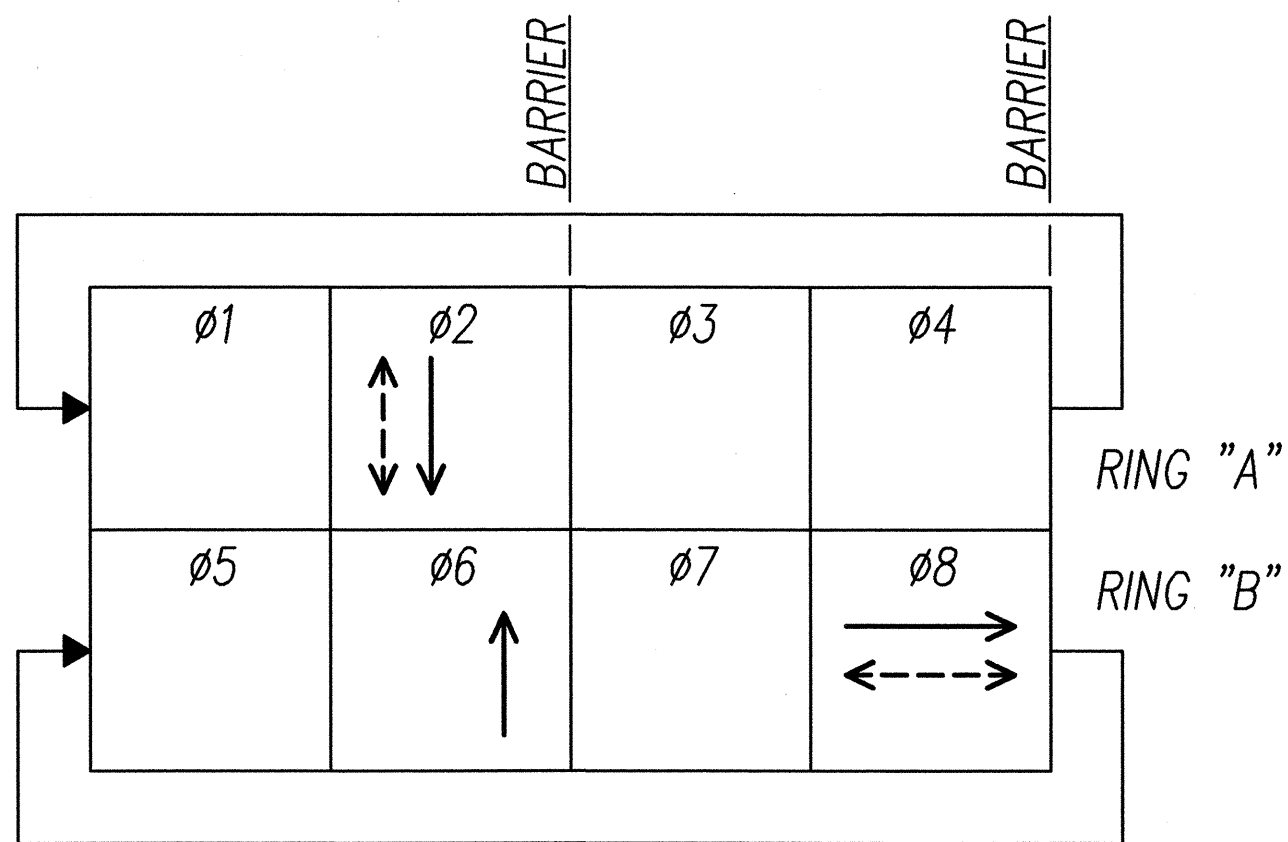
TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS
PROJECT NO. HWY-0-04-04
NIMITZ HWY./PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

SHEET No. E-20 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	44	45



PHASING DIAGRAM



PHASE ASSIGNMENT DIAGRAM

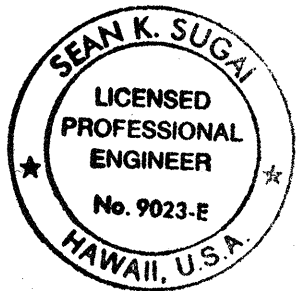
		SIGNAL INDICATION
12" RYG TRAFFIC SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY)	PEDESTRIAN SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY)	DESCRIPTION
		SYMBOL
A-1 D-1* B-1 D-2* C-1 D-3 C-2 E-1 C-3 F-1	A-2 E-2 C-4 F-2 D-4 G-1	

* - PROGRAMMED VISIBILITY

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

LAST SAVE: 04/21/06 @ 07:52:05 BY: RY PLOT 55: 1-0-1
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NIMITZ HWY/PACIFIC ST (INBOUND)
TRAFFIC SIGNAL PHASING DIAGRAMS



SIGNATURE: 4/16/06
APRIL 30, 2008
EXPIRATION DATE OF LICENSE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

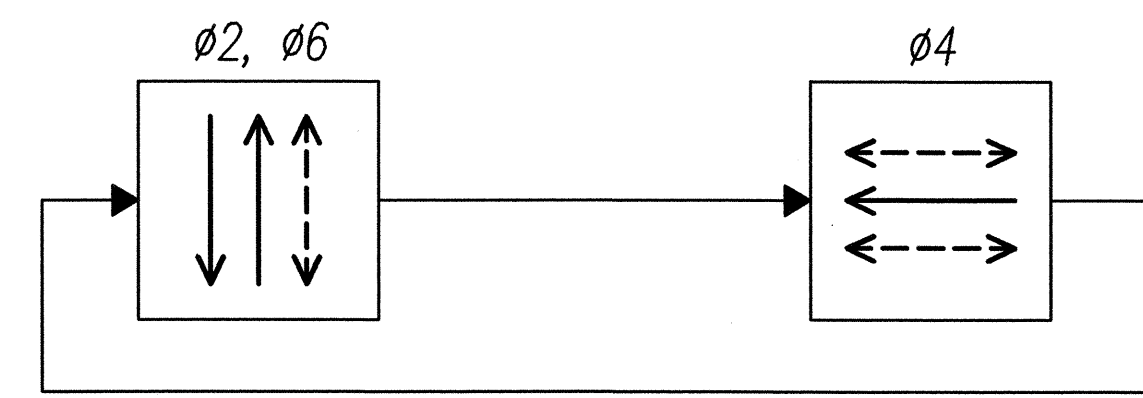
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NIMITZ HWY/PACIFIC ST (INBOUND)
TRAFFIC SIGNAL PHASING DIAGRAMS

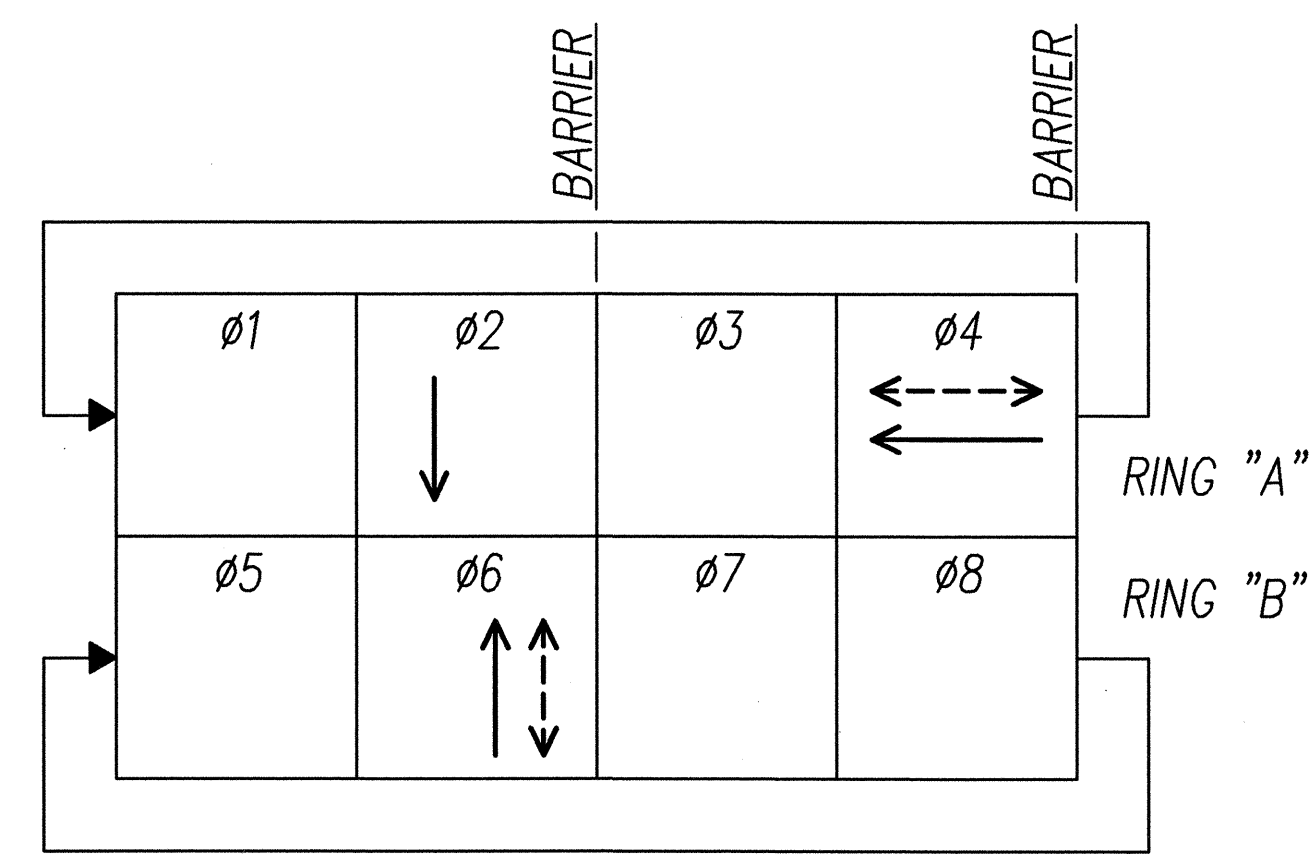
TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS
PROJECT NO. HWY-0-04-04
NIMITZ HWY/PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006

SHEET No. E-21 OF 22 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-04-04	2006	45	45



PHASING DIAGRAM



PHASE ASSIGNMENT DIAGRAM

NIMITZ HWY/PACIFIC ST (OUTBOUND)
TRAFFIC SIGNAL PHASING DIAGRAMS

		SIGNAL INDICATION
12" RYG TRAFFIC SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY)	PEDESTRIAN SIGNAL HEAD (L.E.D. SIGNAL ASSEMBLY)	DESCRIPTION
		SYMBOL
A-1* E-1 A-2* E-2 A-3 E-3 B-1 F-1 C-1 F-2 D-1 F-3 H-1* H-2	A-4 D-2 B-2 E-2 C-2 H-3	

* - PROGRAMMED VISABILITY

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

LAST SAVE: 04/21/06 07:54:23 BY: PLOT SC: 1-3-1
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SIGNATURE: *Sean K. Sugan* 4/15/06
APRIL 30, 2008
EXPIRATION DATE OF LICENSE
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

NIMITZ HWY/PACIFIC ST (OUTBOUND)
TRAFFIC SIGNAL PHASING DIAGRAMS

TRAFFIC OPERATIONAL IMPROVEMENTS
AT VARIOUS INTERSECTIONS & ROADWAYS
PROJECT NO. HWY-0-04-04
NIMITZ HWY/PACIFIC ST. INTERSECTION IMPROVEMENTS
DATE: March 2006