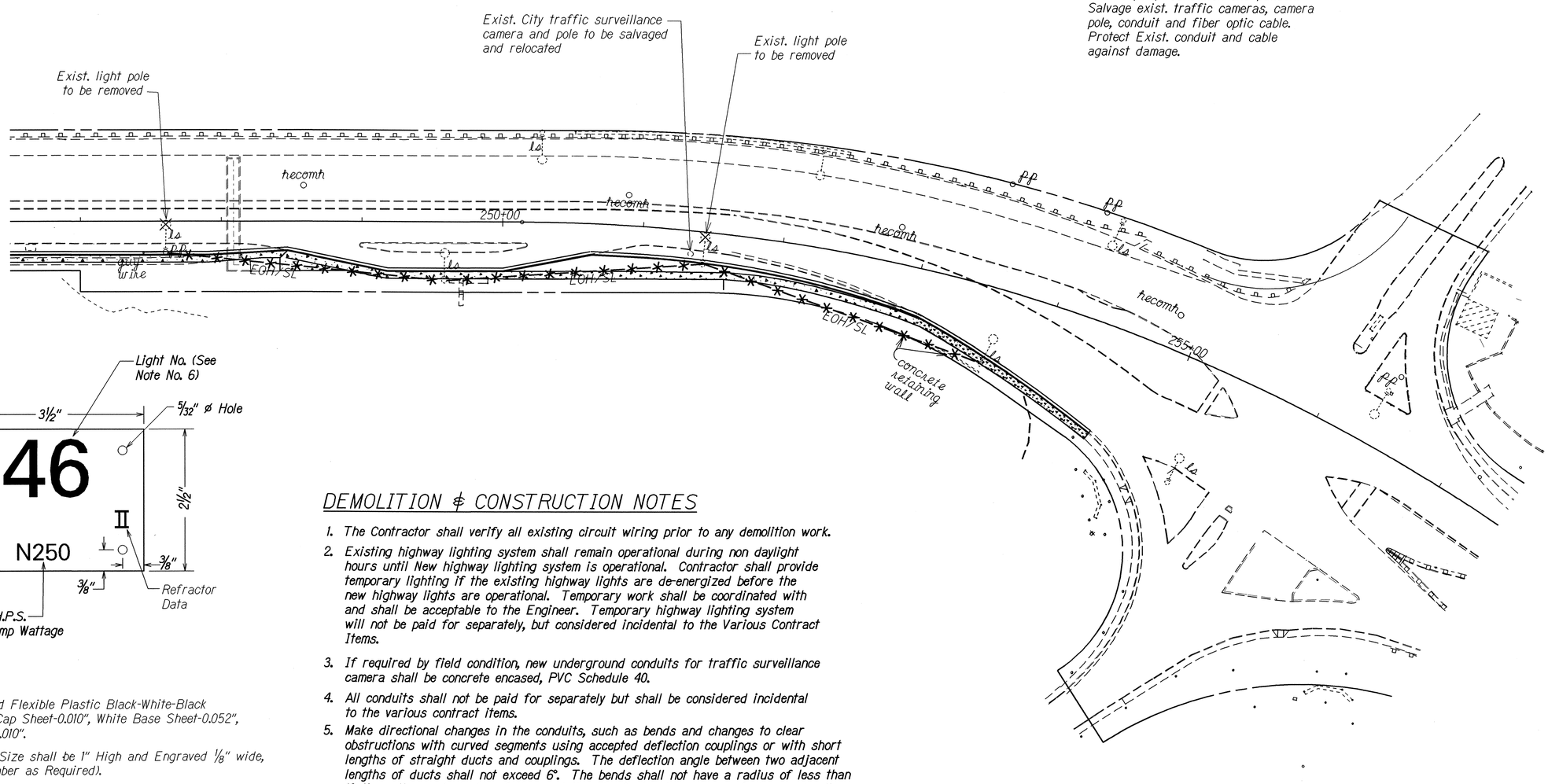
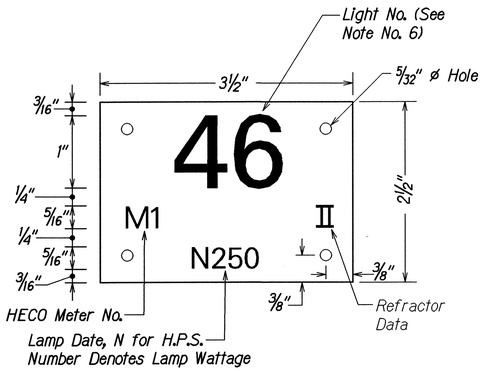
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-099-1(22)	2005	49	60

CITY CAMERA NOTE:

Remove exist. City traffic surveillance camera pole, foundation and pullbox. Salvage exist. traffic cameras, camera pole, conduit and fiber optic cable. Protect Exist. conduit and cable against damage.





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 (Number as Required).
3. Nomenclature Size Shall be 5/16" High and Engraved 1/32" Wide, White in Color (HECO Contract Number, Lamp Data and Refractor Data as Required).
4. Attach to Aluminum and Steel Poles with No. 8 Satinless Steel, 1/2" long drive screw in 1/8" Drill Hole. Attach to Wood Pole With 4d Aluminum Nails.
5. Numbers are Inscribed by Cutting Through "Black Cap Street" to Expose "White Letters".
6. Light Numbers Shall be Obtained From the State.

LIGHT POLE TAG DETAIL

Not to Scale

DEMOLITION & CONSTRUCTION NOTES

1. The Contractor shall verify all existing circuit wiring prior to any demolition work.
2. Existing highway lighting system shall remain operational during non daylight hours until New highway lighting system is operational. Contractor shall provide temporary lighting if the existing highway lights are de-energized before the new highway lights are operational. Temporary work shall be coordinated with and shall be acceptable to the Engineer. Temporary highway lighting system will not be paid for separately, but considered incidental to the Various Contract Items.
3. If required by field condition, new underground conduits for traffic surveillance camera shall be concrete encased, PVC Schedule 40.
4. All conduits shall not be paid for separately but shall be considered incidental to the various contract items.
5. Make directional changes in the conduits, such as bends and changes to clear obstructions with curved segments using accepted deflection couplings or with short lengths of straight ducts and couplings. The deflection angle between two adjacent lengths of ducts shall not exceed 6°. The bends shall not have a radius of less than 12 times the nominal size of the conduit. The Contractor may use factory-made ells.
6. Connecting into existing traffic surveillance camera system and making all necessary adjustments shall not be paid for separately, but considered incidental to the various contract items.
7. The Contractor shall notify the Traffic Signal Branch, Department of Transportation Services, City & County of Honolulu, (Phone No. 523-4589) two weeks prior to commencing any work on the traffic surveillance camera system.
8. The Department of Transportation Services, City & County of Honolulu, will assist the Engineer in construction inspection for the traffic surveillance camera system. The Contractor shall notify the Electrical and Maintenance Services Division, Department of Transportation Services, three (3) working days prior to commencing work on the traffic surveillance camera system (Phone No. 523-4589).

ELECTRICAL SYMBOLS

- Existing utility pole with street light
- Existing utility pole with street light to be removed
- New utility pole with street light
- *—EOH/SL—* Existing overhead street light circuit to be removed
- —OH/SL— New overhead street light circuit

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY M. Takafuji	
	TRACED BY	
NOTE BOOK	DESIGNED BY Peter Chan	
td2may	QUANTITIES BY	
Submitted	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGHWAY LIGHTING DEMOLITION AND SYMBOLS DETAILS

KAMEHAMEHA HIGHWAY BIKEWAY
Vicinity of Radford Drive to Arizona Memorial
Federal Aid Project No. CMAQ-099-1(22)

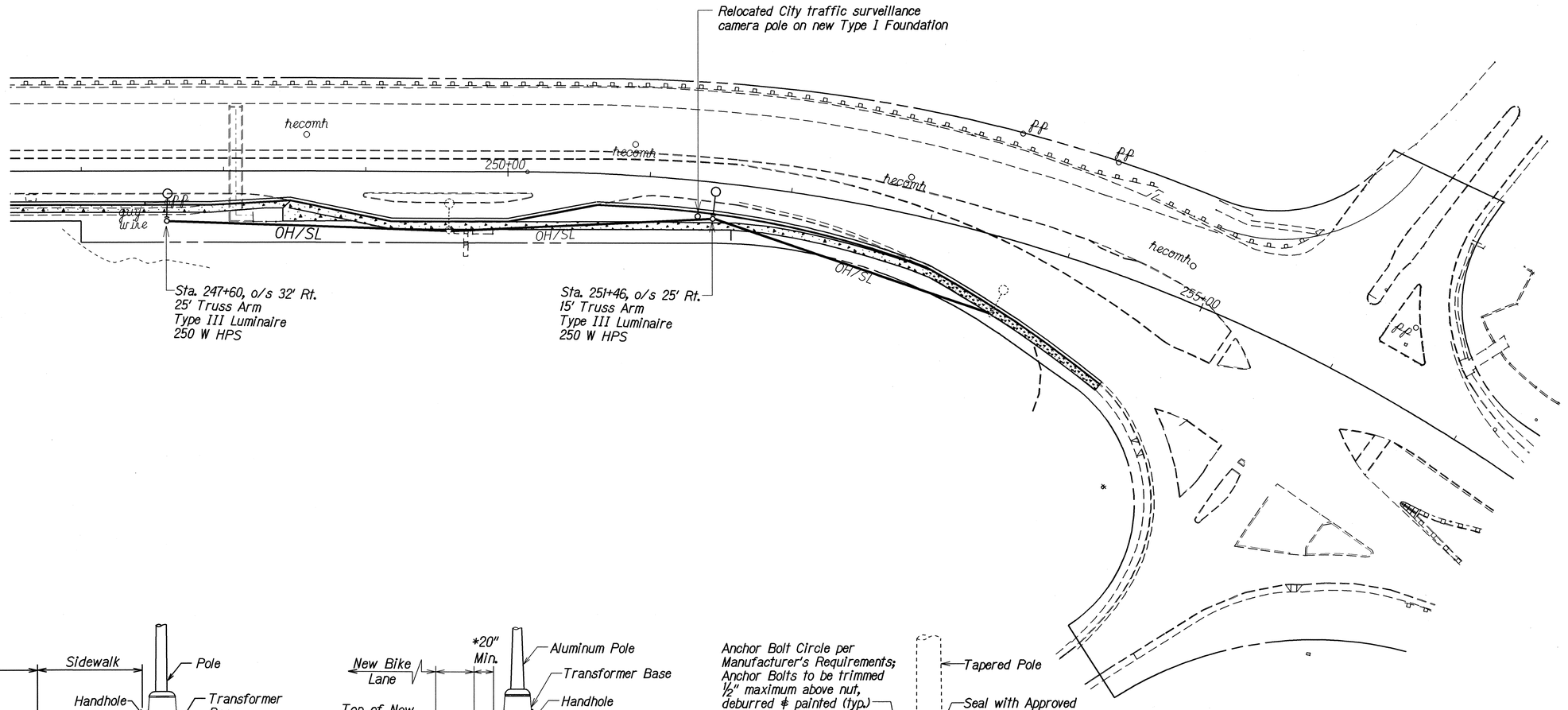
Scale: 1"=40' Date: November 2004

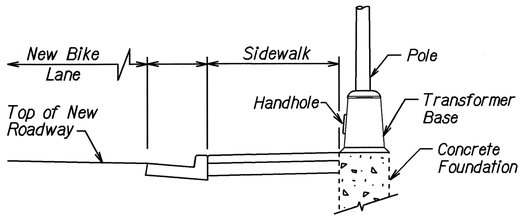
SHEET No. E1 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-099-1(22)	2005	50	60

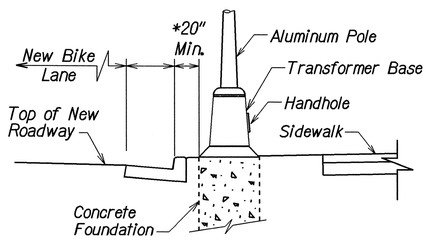
CITY CAMERA NOTE

Install salvaged City traffic surveillance camera and pole on new Type I Foundation. Install Type A pullbox. Reconnect existing conduit to Type A pullbox. Install existing cable in new system and connect.



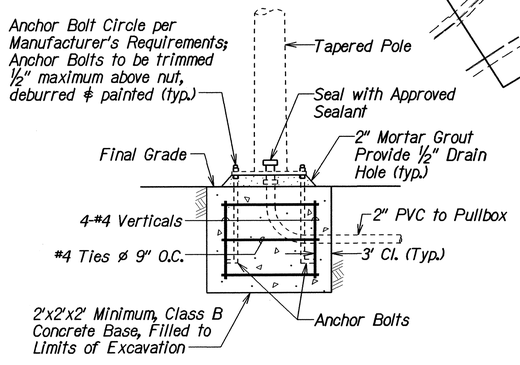


RELOCATED HIGHWAY LIGHTING DETAIL
AT STA. 247+60 RT.
Not to Scale



* - If 20" min. cannot be maintained due to conflict with other utilities, coordinate field adjustments with Engineer.

RELOCATED HIGHWAY LIGHTING DETAIL
AT STA. 251+46 RT.
Not to Scale



TYPE I FOUNDATION DETAIL

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY M. Takafuji	
NOTE BOOK 1d2.may	TRACED BY	
N. 61mmhp	DESIGNED BY Peter Chan	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

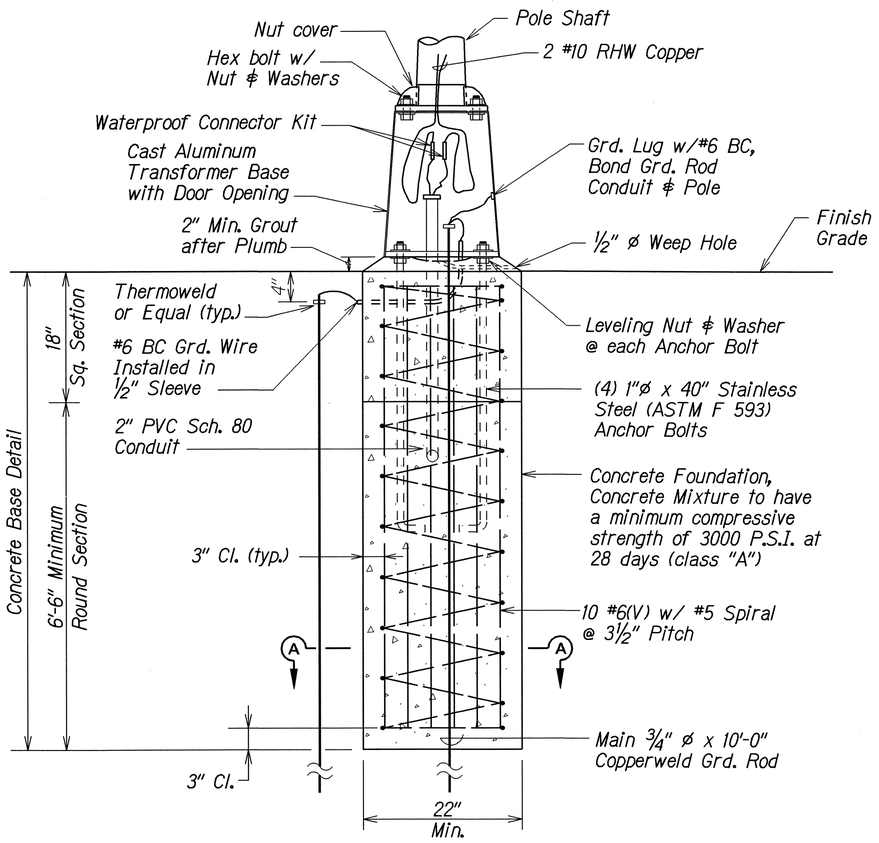
HIGHWAY LIGHTING PLAN

KAMEHAMEHA HIGHWAY BIKEWAY
Vicinity of Radford Drive to Arizona Memorial
Federal Aid Project No. CMAQ-099-1(22)

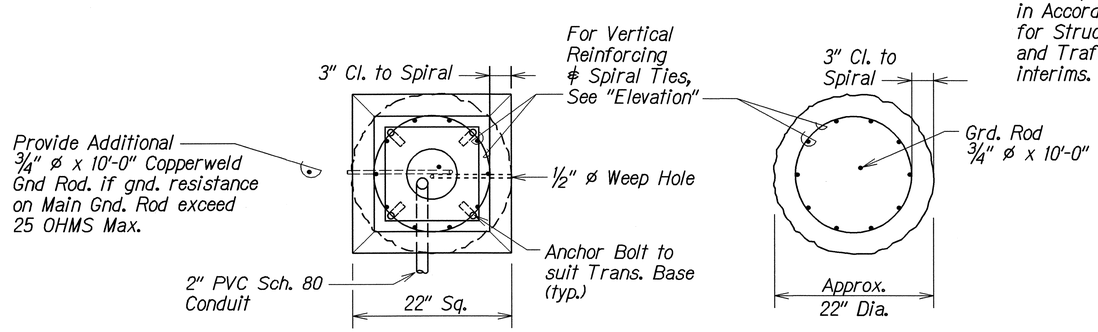
Scale: 1"=40' Date: November 2004

SHEET No. E2 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-01-04	2005	51	60



ELEVATION

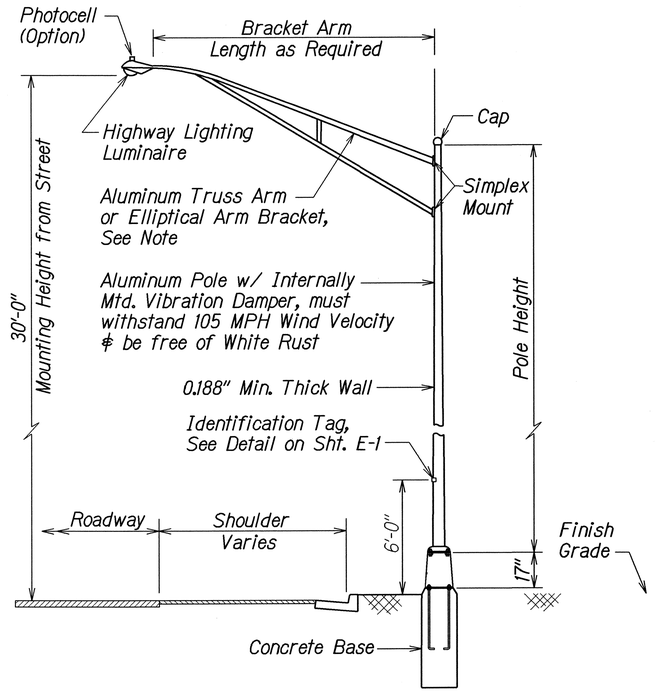


PLAN

SECTION A-A

TYPICAL CONCRETE FOUNDATION AND TRANSFORMER BASE DETAIL

Not to Scale



NOTE:

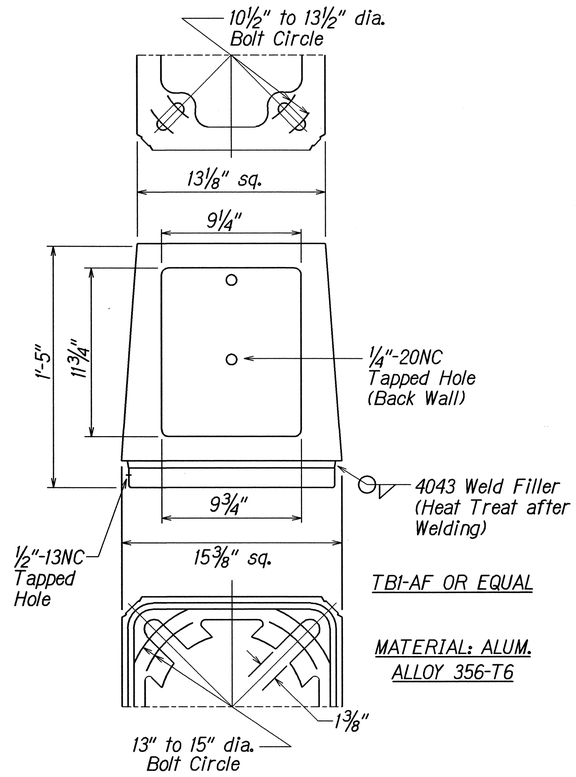
For 4' to 10' Arm, Use Elliptical Bracket Arm
For 10' to 15' arm, Use Truss Bracket Arm

TYPICAL LIGHT STANDARD INSTALLATION WITH TRANSFORMER BASE

Not to Scale

POLE NOTE

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



TBI-AF OR EQUAL

MATERIAL: ALUM. ALLOY 356-T6

BASE SUPPLIED WITH:

1. Door and ¼"-20NC S.S. Screw
2. Eight 1" Washers ½" Thick x 2¾" O.D. (Washers Mechanical Galvanized per ASTM B454)
3. Four 1"-8NC x 3¾" 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
7. Transformer Base shall be Breakaway Type.

TRANSFORMER BASE DETAIL

Not to Scale

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY M. Takafuji	
NOTE BOOK	TRACED BY Peter Chan	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

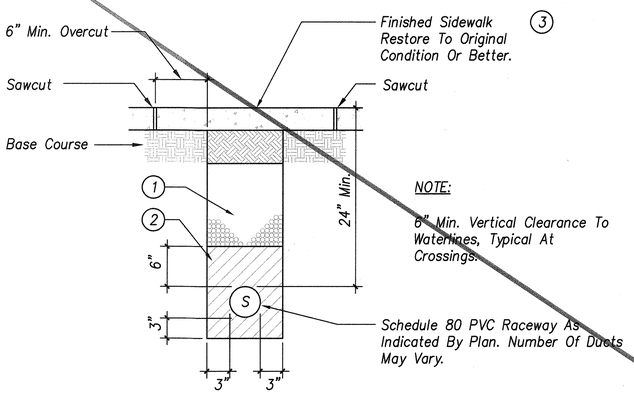
HIGHWAY LIGHTING DETAILS

KAMEHAMEHA HIGHWAY BIKEWAY
Vicinity of Radford Drive to Arizona Memorial
Federal Aid Project No. CMAQ-099-1(22)

Not To Scale — Date: November 2004

SHEET No. E3 OF 4 SHEETS

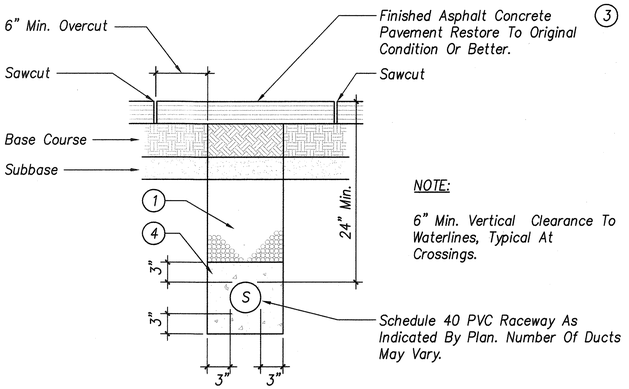
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-099-1(22)	2005	C.O. 51 S-1	60



NOTE:

6" Min. Vertical Clearance To Waterlines, Typical At Crossings.

DIRECT BURIED DUCT TYPE [A]



NOTE:

6" Min. Vertical Clearance To Waterlines, Typical At Crossings.

ENCASED DUCT TYPE [B]

A / S-1 TYPICAL DUCT SECTIONS
Not to Scale

NOTES:

1. Type "A" backfill – beach sand, earth, or earth and gravel. If earth and gravel, the maximum rock size shall be 1" and the mixture shall not contain more than 50% by volume of rock particles.
2. Type "B" backfill – beach sand, earth, or earth and gravel. If earth and gravel, the mixture must pass a 1/2" mesh screen and contain not more than 20% by volume of rock particles.
3. Concrete structure/pavement shall be equivalent or better than existing in thickness and quality.
4. Provide 3" concrete jacket for schedule 40 PVC conduits under roadway conditions.

TRAFFIC SIGNAL NOTES:

1. The locations of the traffic signal standards, pedestrian push buttons, pullboxes, conduits shall be staked out in the field by the Contractor and approval of the locations shall be obtained from the Engineer prior to construction and installation.
2. All splicing shall be done in the pullboxes.
3. Should any defect be encountered during the warranty period, the manufacturer will be notified and he shall promptly correct such defect. Service call (by factory qualified representative) during the warranty period for repairs or other maintenance shall be answered within 24 hours and shall be done at no expense to the State. All repairs shall be done as soon as possible.
4. All traffic signal work shall conform to the requirements of the "Manual on uniform traffic control devices for streets and highway", Federal Highway Administration (1988) and amendments.
5. All conduits between pullboxes and traffic signal standards shall be considered incidental to various contract items.
6. After installing all the traffic signal cables, the Contractor shall duct seal all conduits in the pullboxes and traffic signal standards. The duct seal material shall be approved by the Traffic Signal Inspector/Engineer and shall be considered incidental to the direct buried and/ or concrete encased conduits.
7. Connecting into existing traffic signal system and making all necessary adjustments shall not be paid for separately, but considered incidental to the various traffic signal contract items.
8. The Contractor shall notify the Traffic Control Branch, department of Transporation Services, City & County of Honolulu, (phone no. 523-4589) three (3) working days prior to commencing any work on the traffic signal system.
9. The Department of Transportation Services, City & County of Honolulu, will assist the engineer in construction inspection for the traffic signal system.
10. The traffic signal system shall be kept operational during construction. Any relocation required shall be approved by the Traffic Control Branch, Department of Transportation Services, and paid for by the contractor.
11. The Contractor shall be responsible for any damages to the existing traffic signal facilities, including the traffic signal interconnect system. Any and all damages to these facilities shall be repaired by the Contractor at his cost in accordance with the requirements of the City and County of Honolulu.
12. The Contractor shall be responsible for any damages to the existing traffic signal fiber optic cable system. Any and all damages to these facilities shall be repaired by the contractor at his cost in accordance with the requirements of the City and County of Honolulu.

HIGHWAY LIGHTING NOTES:

1. The Contractor shall notify the State Highways, Highway Lighting and Traffic Supervisor 72 hours in advance before commencing any work on the highway lighting system. Phone: 837-8056.
2. The Contractor shall have one set of approved plans at the job site at all times during the construction work and record all changes which occur during construction of the highway lighting system.
3. Final acceptance and inspection will be undertaken only after all work has been completed.
4. The Contractor shall maintain existing circuiting and operation of the lighitng system during the hours of darkness.
5. The Contractor shall locate existing buried utility lines in the vicinity of the excavation work prior to commencing excavation. As a minimum, an electronic magnetic device for detection of buried lines shall be utilized prior to excavation. Trenches shall be excavated with care. The Contractor shall be responsible for damages to existing utilities resulting from his negligence and shall bear cost of repairs to the utilities. Method of repair shall be determined by the State.

ELECTRICAL SYMBOLS

Symbol Exist	Symbol New	Description	Remarks
		Traffic Light Pole	
		Mast Arm	
		Traffic Signal Head–Red,Yellow,Green Arrow	
		Traffic Signal Head–Red, Yellow, Green Left Turn Arrow	
		Push Button	
		Traffic Light Pole, Type I	
		Traffic Signal Head–Red,Yellow,Green, Green Left Turn Arrow	
		Pedestrian Signal	
		Pullbox (Type As Indicated)	
		Pedestrian Push Button (Arrow Denotes Direction Of Crossing)	
		Pedestrian Signal	
—e/TS—	—TS—	Underground Traffic Signal Ductlines And Cables	
—e/SL—		Underground Street Light Ductlines	
—e/FO—		Underground Fiber Optic Ductlines And Cable	
	×	Removal/Demolition	
	1 / E-1	Detail Indicator Top Half: Detail Number Bottom Half: Sheet On Which Shown	
	1	Note Indicator, Note #1 Indicated	
	A	Indicates Duct Section Type.	
	SLPB	Street Light Pullbox	
	TSPB	Traffic Signal Pullbox	

A.I.C.

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

LENNOX K. NISHIMURA LICENSED PROFESSIONAL ENGINEER No. 3880-E HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

PROJECT ENGINEER for ECS, Inc.

APRIL 30, 2006
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL NOTES AND SYMBOL LIST

KAMEHAMEHA HIGHWAY BIKEWAY
Vicinity of Radford Drive to Arizona Memorial
Federal Aid Project No. CMAQ-099-1(22)

Scale: As Shown Date: June 2005

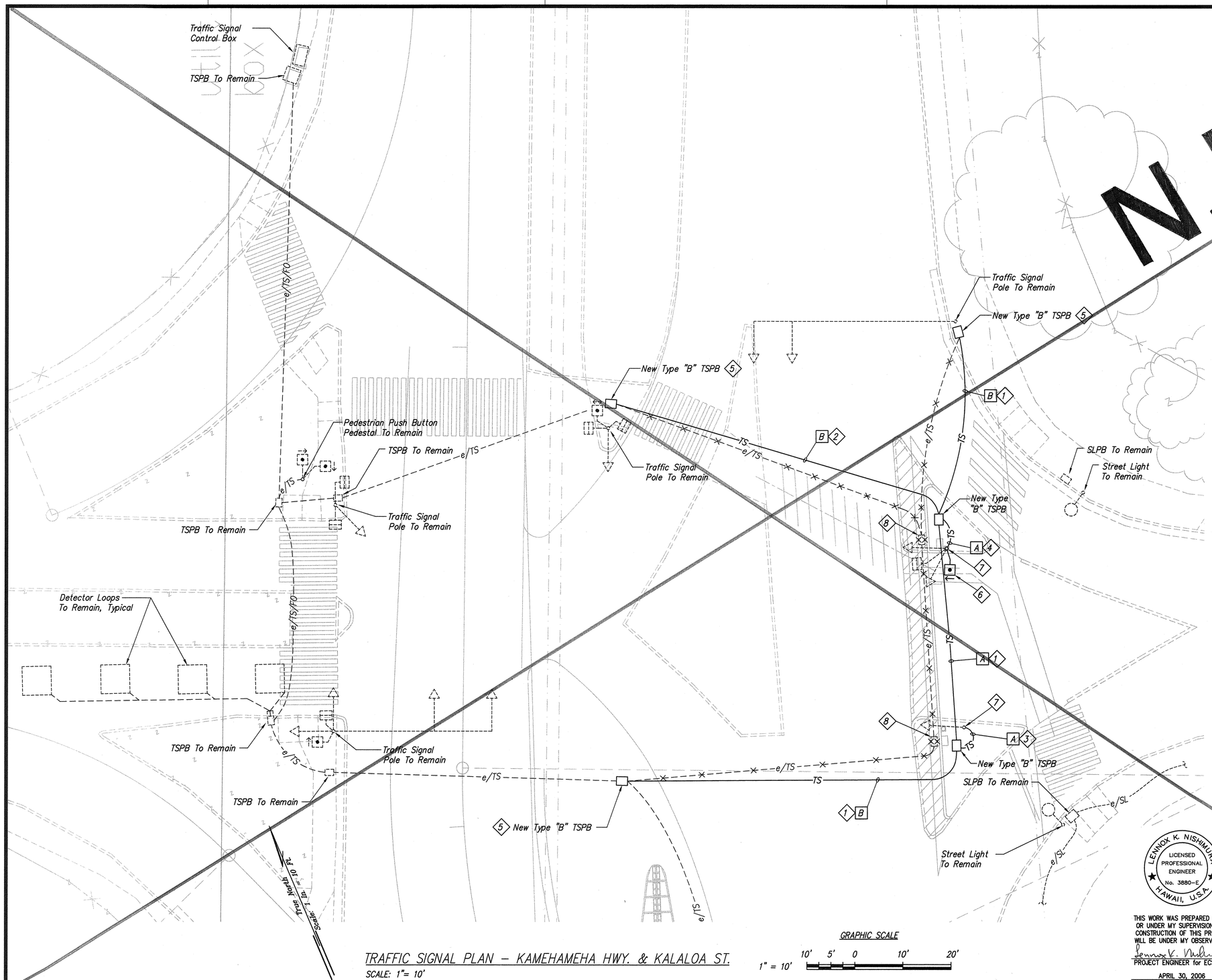
SHEET No. 1 OF 5 SHEETS

8/29/05-11:12 Y:\030\030.006\30-6 51 S01.dwg

"AS-BUILT"

C.O. 51 S-1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-099-1(22)	2005	C.O. 51 S-2	60



N.I.C.

NOTES:

1. Sawcut and trench to install new conduits. Restore to match existing.
   1–2"C with 1–26/C #14
   1–2"C spare
2. Sawcut and trench to install new conduits. Restore to match existing.
   1–2"C with 1–26/C #14
   1–2"C with 1–2/C#14
3. Sawcut and trench to install new conduits. Restore to match existing.
   1–2"C with 1–4/C #14
4. Sawcut and trench to install new conduits. Restore to match existing.
   1–2"C with 3–4/C #14 and 1–2/C #14
5. Remove existing TSPB and replace with new TSPB flush with finished grade. Maintain existing circuiting and ductlines unless otherwise noted.
6. Remove existing pedestrian push button and replace with new push button. Reconnect push button circuit to new push button. Plug any holes in existing pole. See C.O. 52 (1/S-3)
7. Provide new concrete foundation and relocate existing traffic signal standard. Intercept existing circuits in TSPB and extend to traffic signal heads, pedestrian signal heads and push button. Demolish existing concrete foundation and conduit to 12" below finished grade. See C.O. 51 (1/S-5)
8. Demolish existing traffic signal pullbox. Remove all cables, wiring and conduit.

TRAFFIC SIGNAL PLAN – KAMEHAMEHA HWY. & KALALOA ST.
SCALE: 1"= 10'

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

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

LENNOX K. NISHIMURA
LICENSED PROFESSIONAL ENGINEER
No. 3880-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
Lennox K. Nishimura
PROJECT ENGINEER for ECS, Inc.
APRIL 30, 2006
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PLAN
KAMEHAMEHA HWY. & KALALOA ST.

KAMEHAMEHA HIGHWAY BIKEWAY
Vicinity of Radford Drive to Arizona Memorial
Federal Aid Project No. CMAQ-099-1(22)

Scale: As Shown Date: June 2005

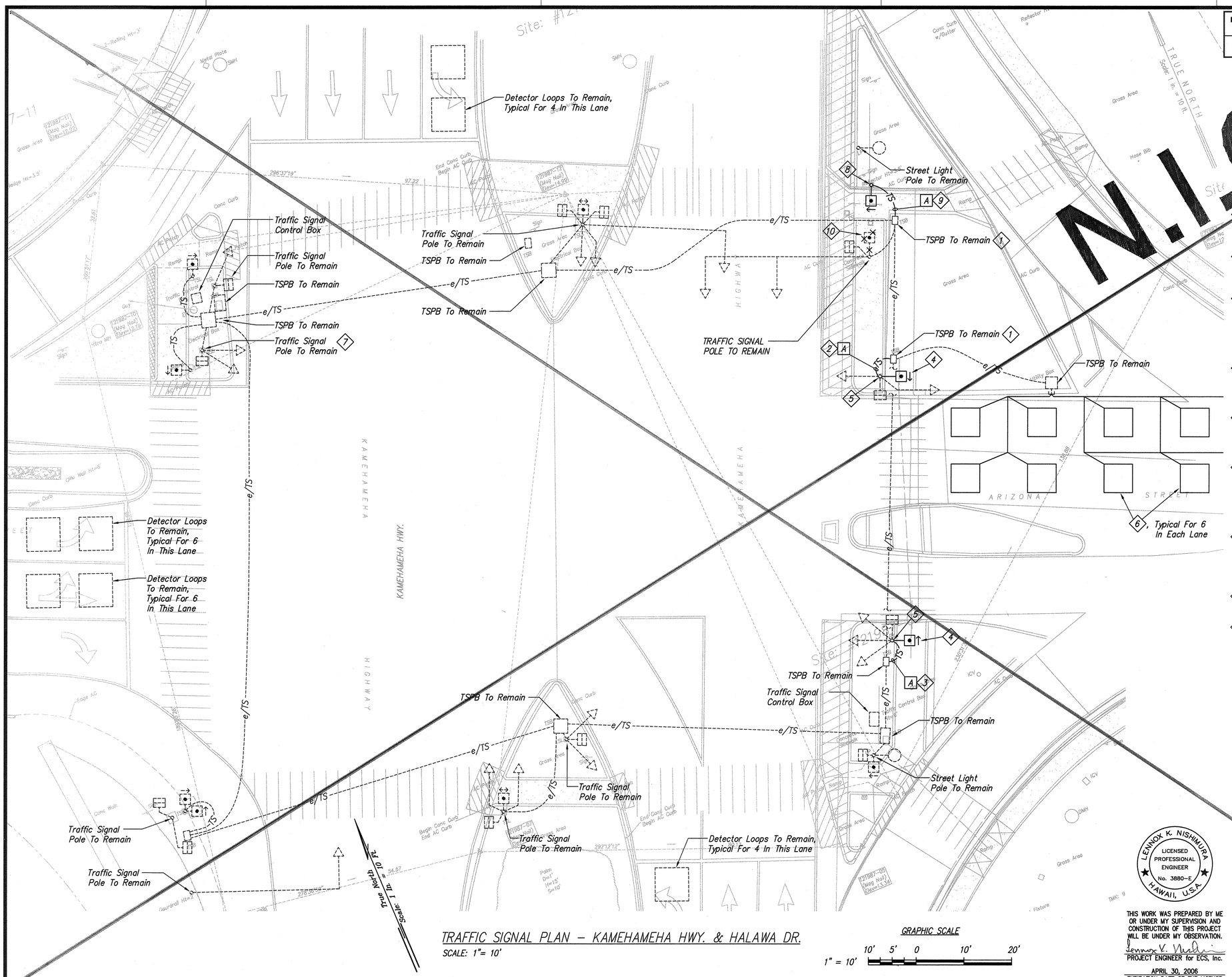
SHEET No. 2 OF 5 SHEETS

8/29/05-11:12 Y:\030\030.006\30-6 51 S02.KAM-KALALOA.dwg

"AS-BUILT"

C.O. 51 S-2

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-099-1(22)	2005	C.O. 51 S-3	60



N.I.C.

NOTES:

1. Adjust existing pullbox frame and cover to be flush with new sidewalk. See C.O. 52 (1/S-2)
2. Sawcut and trench to install new conduits. Restore to match existing. 1-2"C with 3-4/C #14 and 1-2/C #14
3. Sawcut and trench to install new conduits. Restore to match existing. 1-2"C with 4-4/C #14 and 1-2/C #14
4. Remove existing pedestrian push button and replace with new push button. Reconnect push button circuit to new push button. Plug any holes in existing pole. See C.O. 52 (1/S-3)
5. Provide new concrete foundation and relocate existing traffic signal standard. Intercept existing circuits in TSPB and extend to traffic signal heads, pedestrian signal heads and push button.
6. Provide new detector loops. Abandon existing detector loops in place. See C.O. 37 (1/S-1)
7. Provide microwave detector on existing traffic signal light pole. Provide new conductors in existing conduits from the microwave detector to the traffic signal control box. See C.O. 52 (1/S-4)
8. Provide new pedestrian push button pedestal with pedestrian push button. Extend existing circuits and connect to pedestrian push button. See C.O. 52 (2/S-3)
9. Trench to install new conduit. 1-2"C with 1-2/C#14
10. Remove pedestrian push button and associated conductors. Plug any holes in existing pole.

TRAFFIC SIGNAL PLAN – KAMEHAMEHA HWY. & HALAWA DR.
SCALE: 1"= 10'

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

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

LENNOX K. NISHIMURA
LICENSED PROFESSIONAL ENGINEER
No. 3880-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
PROJECT ENGINEER for ECS, Inc.
APRIL 30, 2006
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PLAN
KAMEHAMEHA HWY. & HALAWA DR.

KAMEHAMEHA HIGHWAY BIKEWAY
Vicinity of Radford Drive to Arizona Memorial
Federal Aid Project No. CMAQ-099-1(22)

Scale: As Shown Date: June 2005

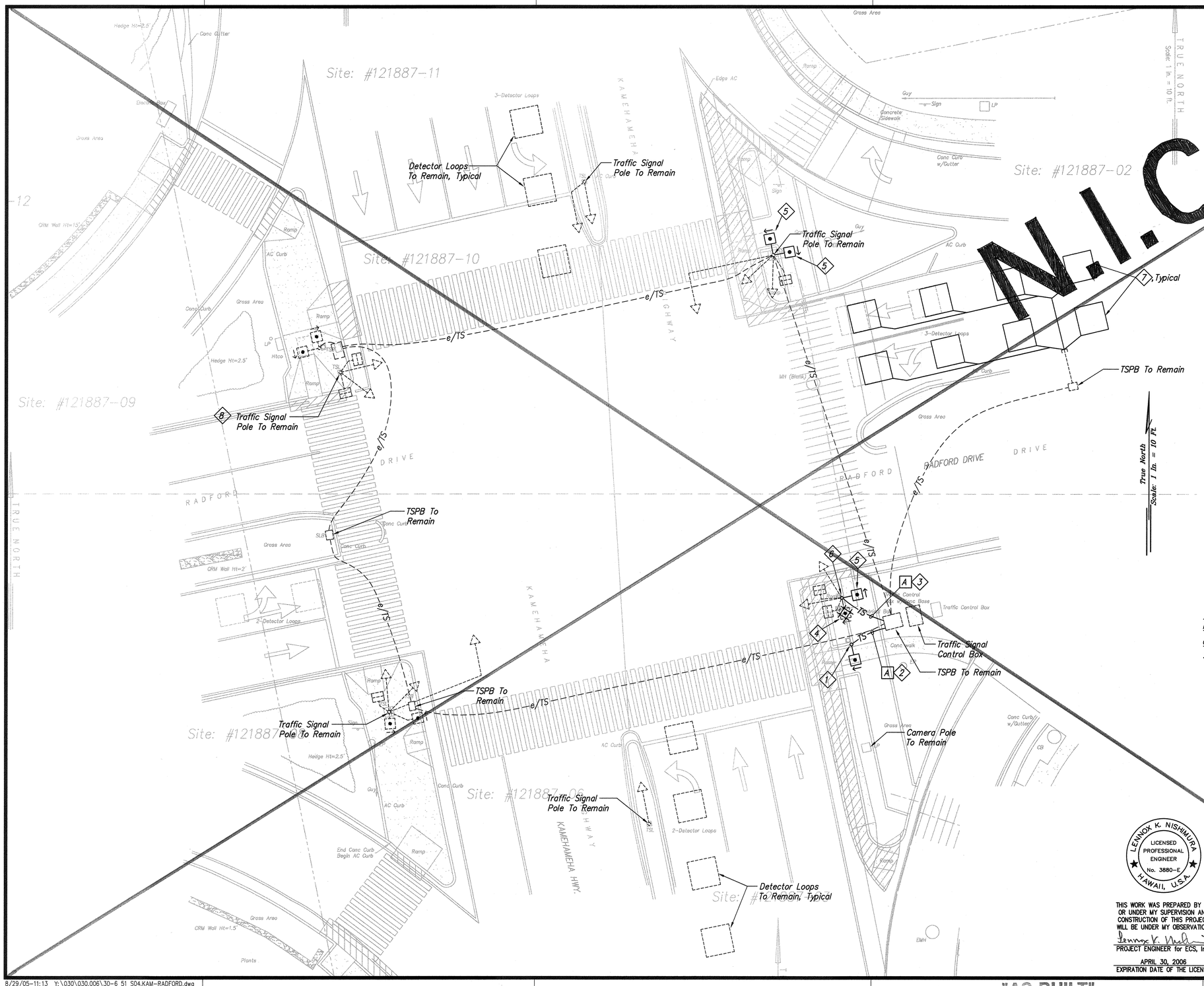
SHEET No. 3 OF 5 SHEETS

8/29/05-11:12 Y:\030\030.006\30-6 51 S03.KAM_ARIZONA.dwg

"AS-BUILT"

C.O. 51 S-3

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-099-1(22)	2005	C.O. 51 S-4	60



NOTES:

1. Provide new pedestrian push button pedestal with pedestrian push button. Extend existing circuits and connect to push buttons. See C.O. 52 (2/S-3)
2. Trench to install new conduit. 1-2"C with 1-2/C#14
3. Trench to install new conduit. 1-2"C with 4-4/C #14 and 1-2/C #14.
4. Remove pedestrian push buttons and associated conductors. Plug any holes in existing pole.
5. Remove existing pedestrian push buttons and replace with new pushbuttons. Reconnect push button circuits to new push buttons. Plug any holes in existing pole. See C.O. 52 (1/S-3)
6. Provide new concrete foundation and relocate existing traffic signal standard. Intercept existing circuits in TSPB and extend to traffic signal heads, pedestrian signal heads and push button.
7. Provide new detector loops. Abandon existing detector loops in place. See C.O. 37 (1/S-1)
8. Provide microwave detector on existing traffic signal light pole. Provide new conductors in existing conduits from the microwave detector to the traffic signal control box. See C.O. 52 (1/S-4)

TRAFFIC SIGNAL PLAN – KAMEHAMEHA HWY. & RADFORD DR.

SCALE: 1"= 10'

GRAPHIC SCALE

1" = 10' — 10' 5' 0 10' 20'

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

ORIGINAL PLAN — NOTE BOOK — No.

LENNOX K. NISHIMURA — LICENSED PROFESSIONAL ENGINEER — No. 3880-E — HAWAII, U.S.A.

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PROJECT ENGINEER for ECS, Inc.

APRIL 30, 2006
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PLAN
KAMEHAMEHA HWY. & RADFORD DR.

KAMEHAMEHA HIGHWAY BIKEWAY
Vicinity of Radford Drive to Arizona Memorial
Federal Aid Project No. CMAQ-099-1(22)

Scale: As Shown — Date: June 2005

SHEET No. 4 OF 5 SHEETS

8/29/05-11:13 Y:\030\030.006\30-6 51 S04.KAM-RADFORD.dwg

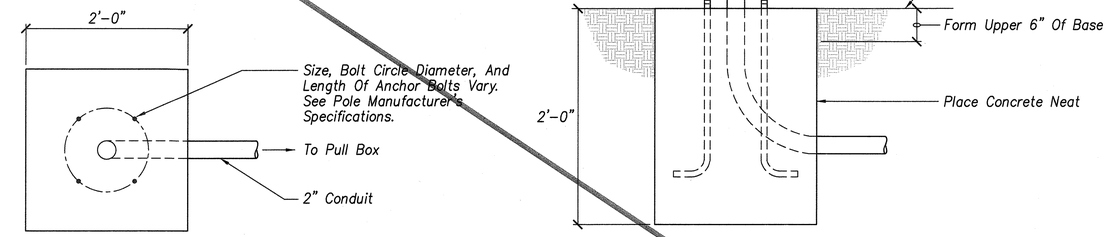
"AS-BUILT"

C.O. 51 S-4

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-099-1(22)	2005	C.O. 51 S-5	60

NOTES:

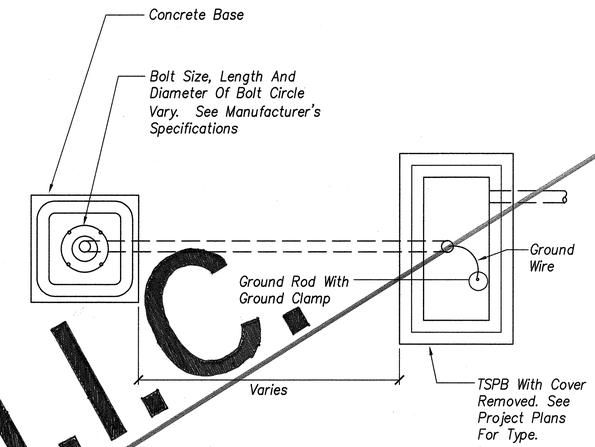
1. Concrete shall be Class "B".
2. Type "1" concrete base shall be used for Type I, traffic signal standards.
3. Conduit bend is incidental to concrete base.



PLAN–SECTION

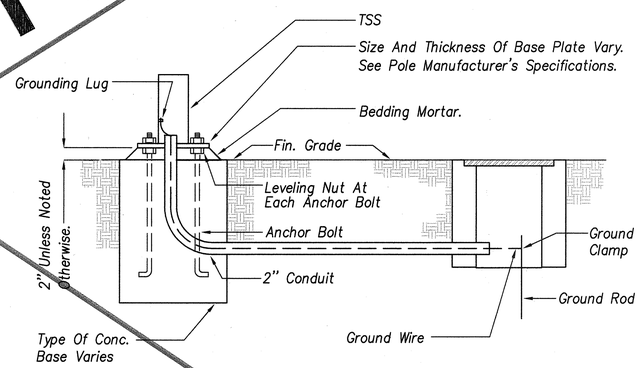
VERTICAL SECTION

1 / S-5 TYPE "A" CONCRETE BASE
Not to Scale



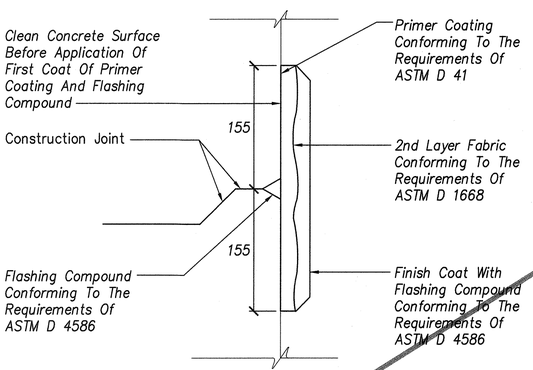
N.I.C.

PLAN



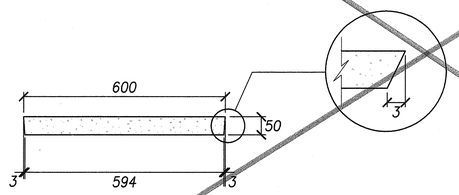
SECTION

2 / S-5 TYPICAL STANDARD AND PEDESTAL INSTALLATION
Not to Scale

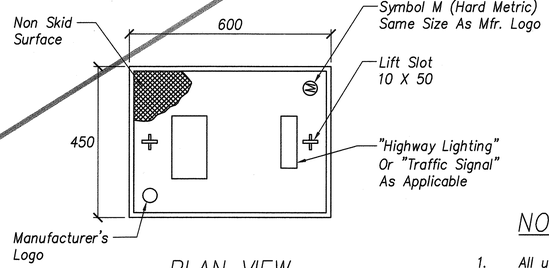


TYPICAL FLASHING COMPOUND WATERPROOFING DETAILS

3 / S-5
Not to Scale



ELEVATION



PLAN VIEW

4 / S-5 POLYMER CONCRETE COVER
Not to Scale

NOTES:

1. All units on this sheet are indicated in metric unless otherwise noted.
2. Cover shall be labeled to identify the system for which the box is apart of.

LENNOX K. NISHIMURA
LICENSED PROFESSIONAL ENGINEER
No. 3880-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
PROJECT ENGINEER for ECS, Inc.
APRIL 30, 2006
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL MISCELLANEOUS DETAILS

KAMEHAMEHA HIGHWAY BIKEWAY
Vicinity of Radford Drive to Arizona Memorial
Federal Aid Project No. CMAQ-099-1(22)

Scale: As Shown Date: June 2005

SHEET No. 5 OF 5 SHEETS

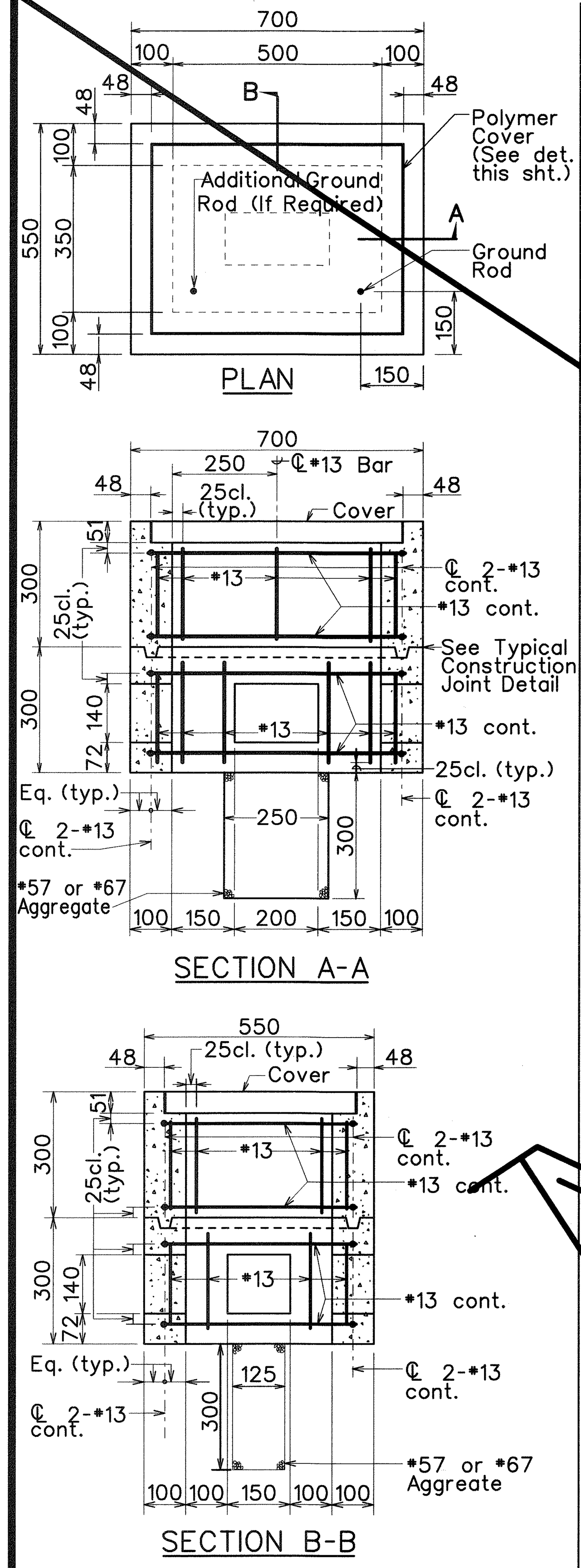
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

8/29/05-11:13 Y:\030\030.006\30-6 51 S05.dwg

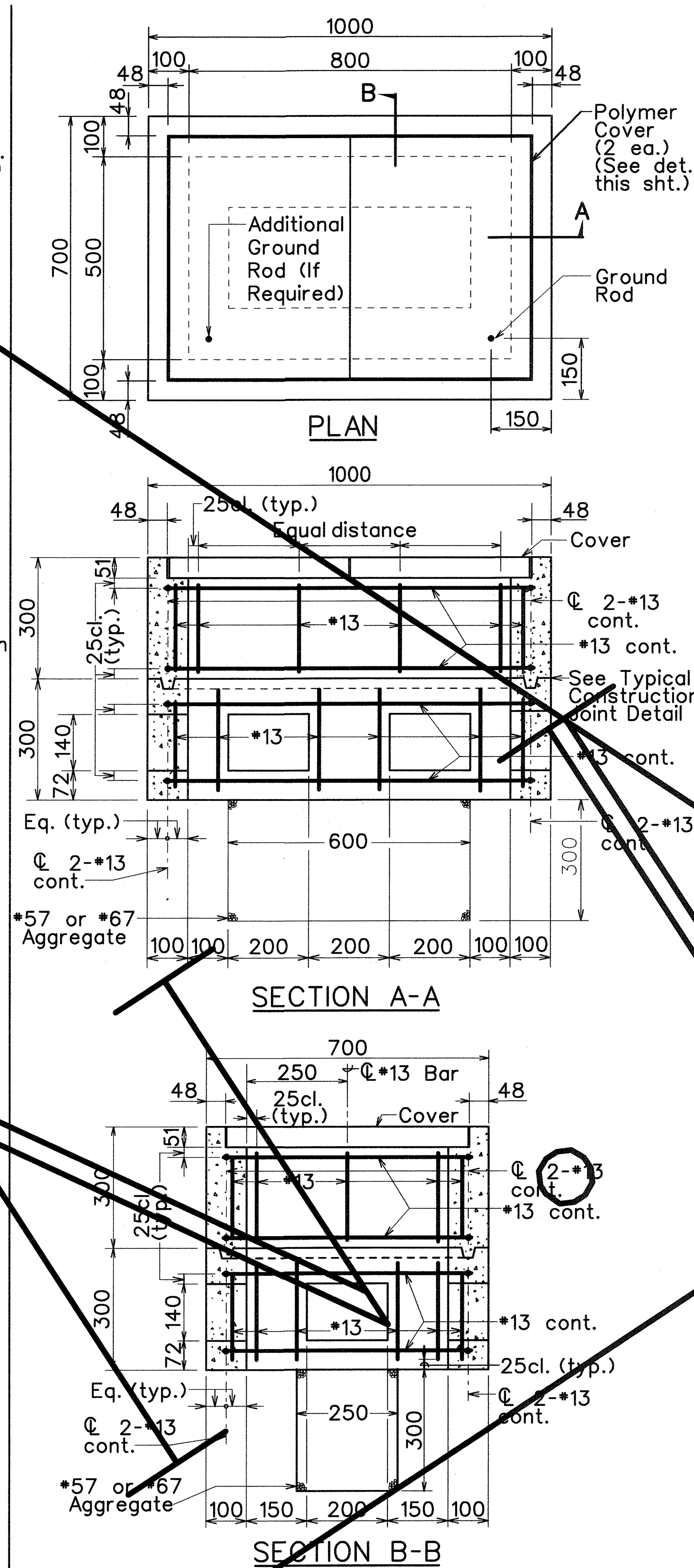
"AS-BUILT"

C.O. 51 S-5

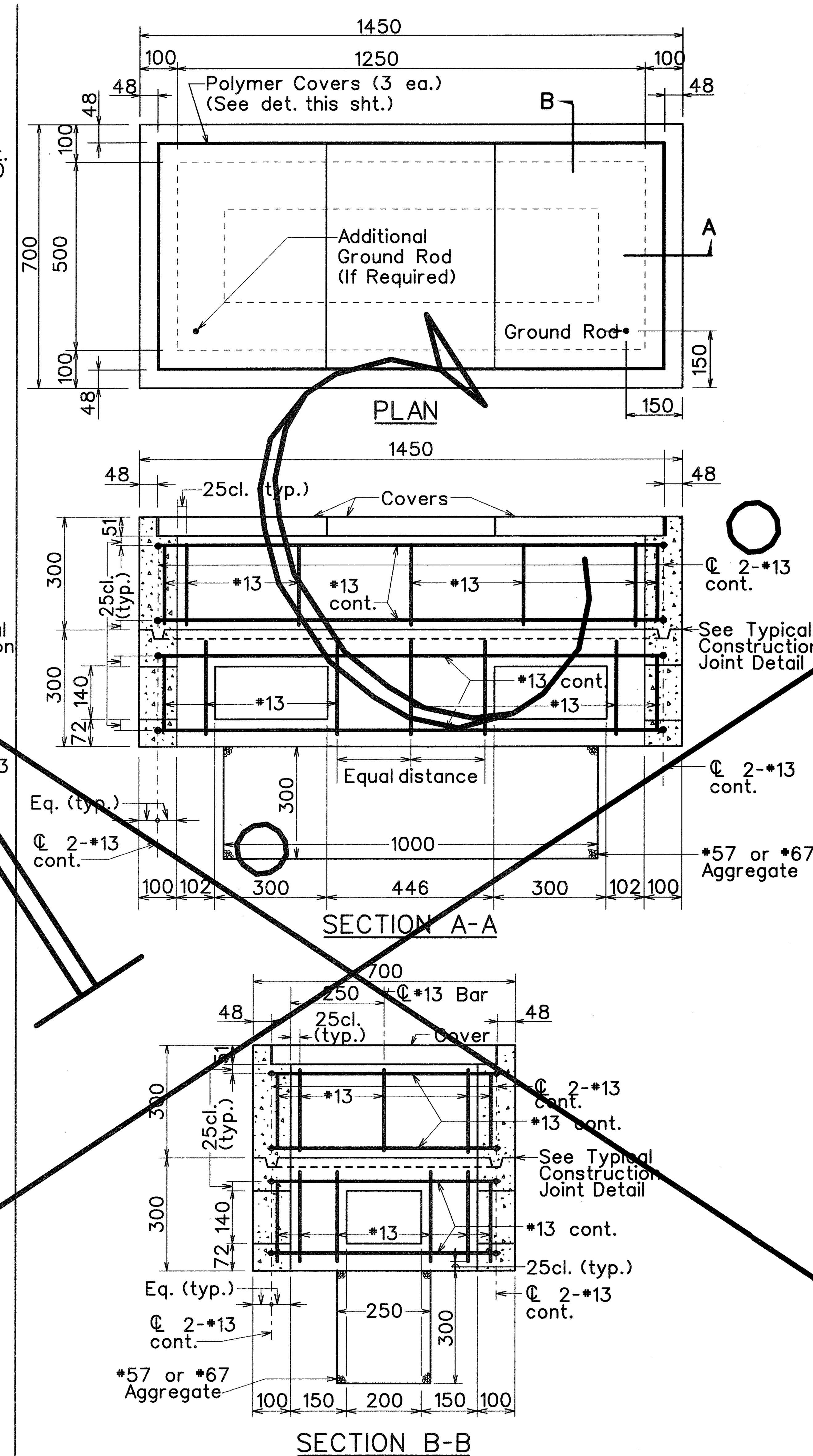
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-099-1(22)	2005	52	60



TYPE "A" PULLBOX (Old Type "B")



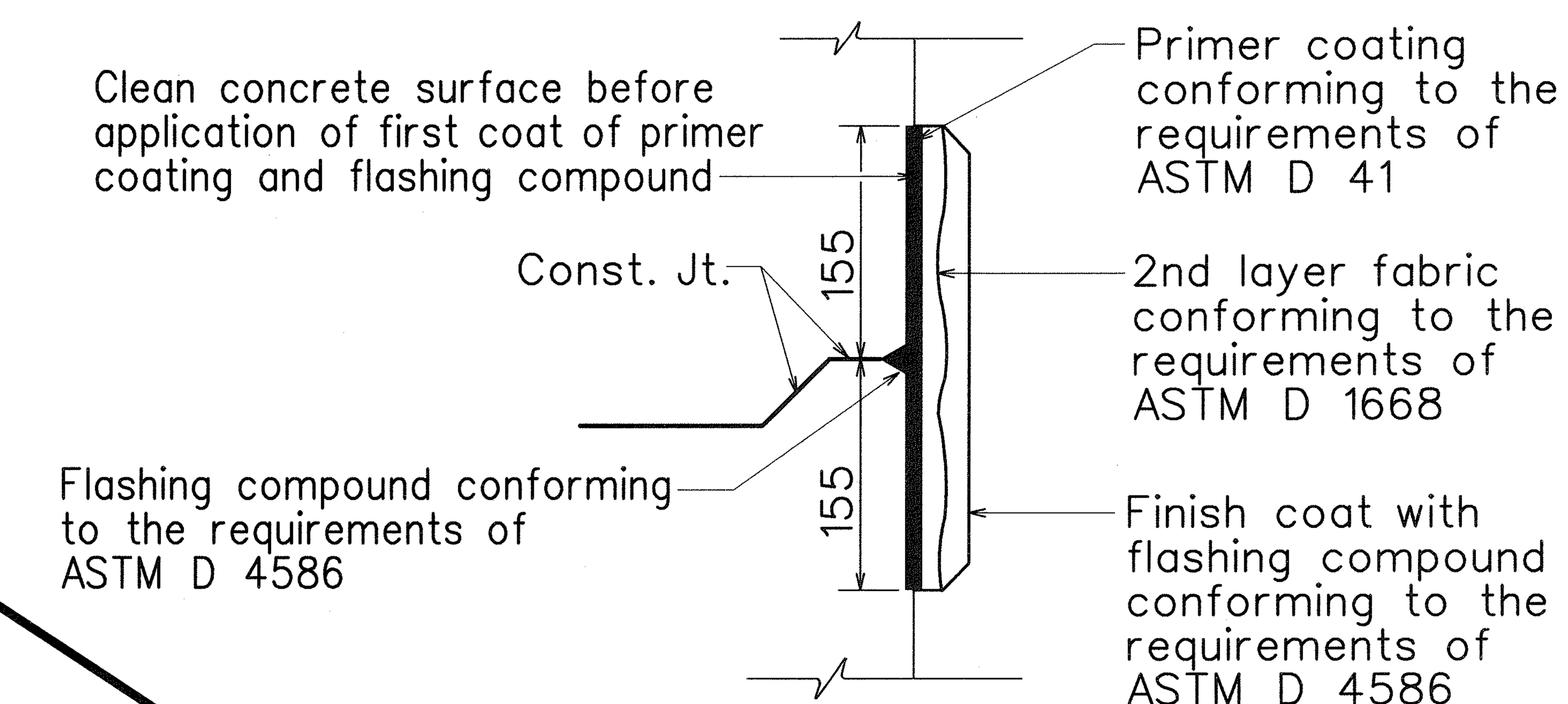
TYPE "B" PULLBOX (Old Type "C")



TYPE "C" PULLBOX (Old Type "D")

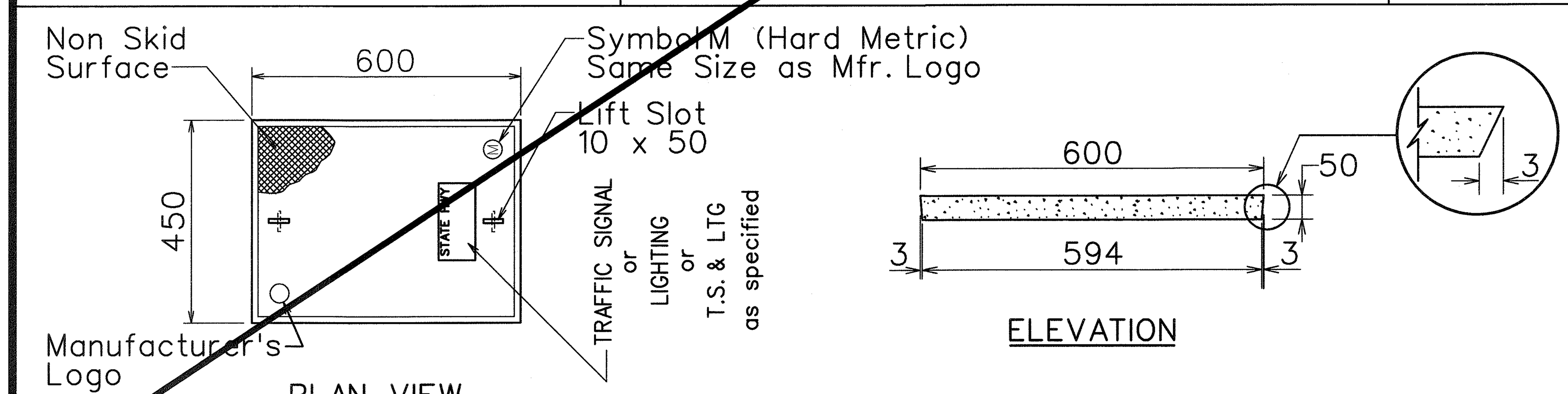
GENERAL NOTES

1. Provide a minimum of one 16 ø 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 (21 MPa (3,000 psi), 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).

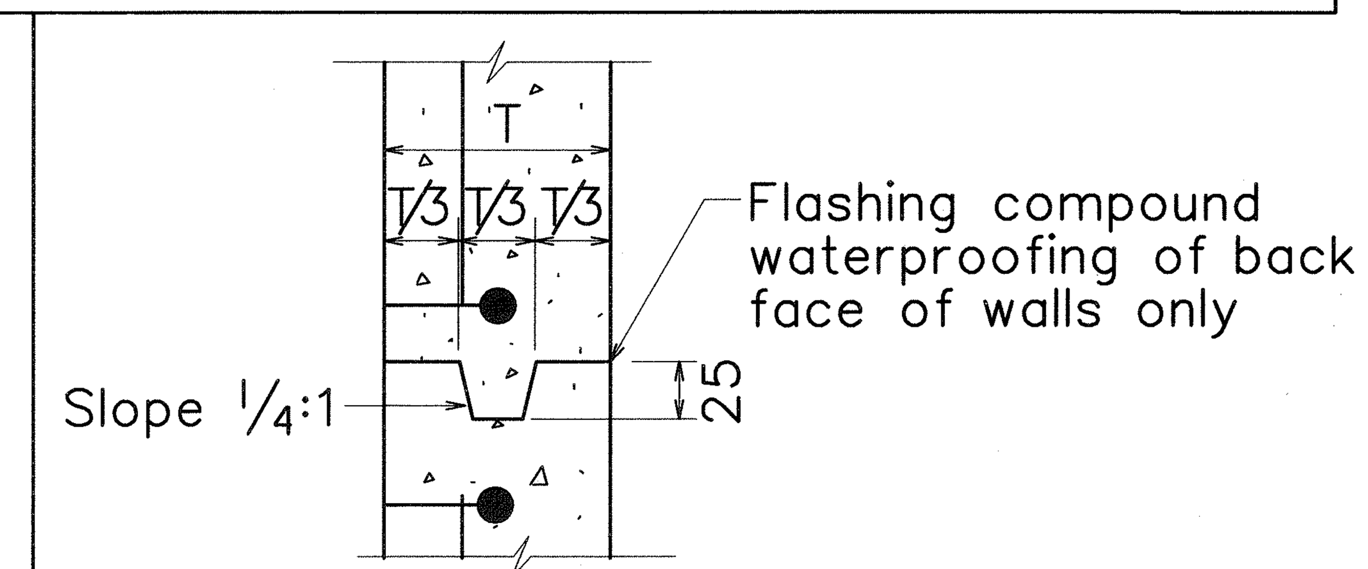


TYPICAL FLASHING COMPOUND WATERPROOFING DETAILS

ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN



POLYMER CONCRETE COVER



TYPICAL CONSTRUCTION JOINT DETAIL

LEGEND FOR AS-BUILT POSTINGS

~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PULLBOX & COVER DETAILS

KAMEHAMEHA HIGHWAY BIKEWAY
Vicinity of Radford Drive to Arizona Memorial
Federal Aid Project No. CMAQ-099-1(22)

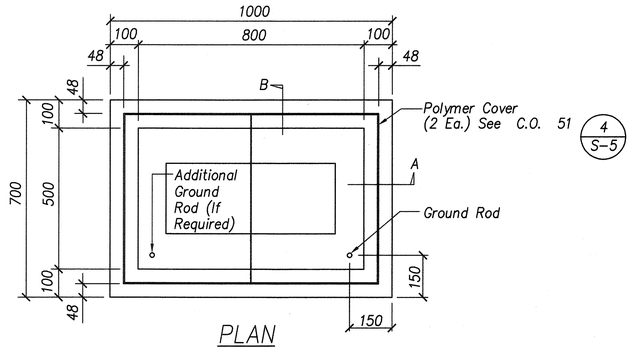
Scale: As Shown   Date: November 2004

SHEET No. E4 OF 4 SHEETS

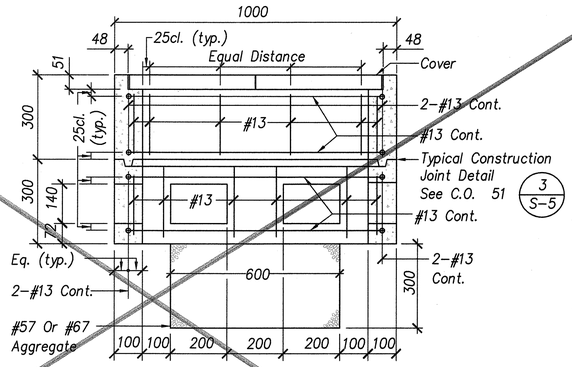
ORIGINAL PLAN / SURVEY PLOTTED BY / DRAWN BY / TRACED BY / DESIGNED BY Peter Chan / QUANTITIES BY / CHECKED BY / NOTE BOOK / DATE

"AS-BUILT"

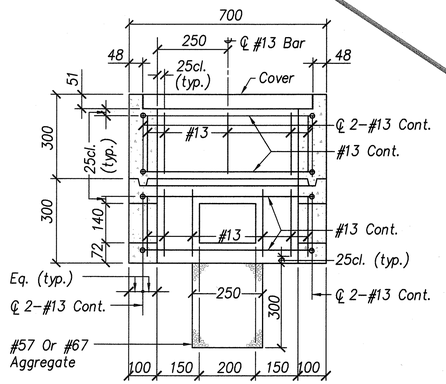
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-099-1(22)	2005	C.O. 52 S-1	60



PLAN



SECTION A-A



SECTION B-B

1/S-1 TYPE "B" HANDHOLE
Not to Scale

GENERAL HANDHOLE NOTES:

1. Provide a minimum of one 16ø x 3.0m copperclad ground rod in each handhole. When directed by the Traffic Signal Inspector/Engineer, install additional ground rods. Cost of ground rods shall be incidental to the handholes.
2. All pre-cast concrete handholes shall be manufactured in two pieces.
3. The handhole with cover shall be capable of supporting an MS 18 loading.
4. The maximum weight of the handhole cover shall not exceed 27 kilograms.
5. The openings for the conduits on all handholes shall be pre-cast concrete knockouts.
6. After installing the conduits in the openings of the handholes, the Contractor shall fill the excess opening in the pre-cast knockouts with concrete mortar.
7. Prior to installing the handholes, 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).

N.I.C.

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

LENNOX K. NISHIMURA
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HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

Lennox K. Nishimura
PROJECT ENGINEER for ECS, Inc.

APRIL 30, 2006
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PULLBOX DETAILS

KAMEHAMEHA HIGHWAY BIKEWAY
Vicinity of Radford Drive to Arizona Memorial
Federal Aid Project No. CMAQ-099-1(22)

Scale: As Shown Date: June 2005

SHEET No. 1 OF 4 SHEETS

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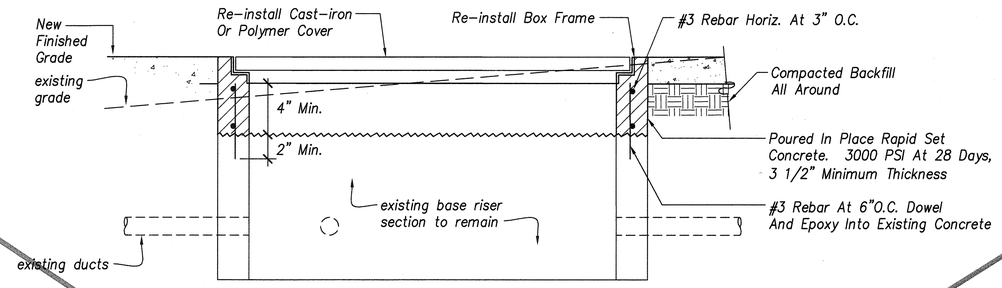
"AS-BUILT"

C.O. 52 S-1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-099-1(22)	2005	C.O. 52 S-2	60



1 / S-2 TRAFFIC SIGNAL BOX ADJUSTMENT
Not to Scale

N.I.C.

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

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Lennox K. Nishimura
PROJECT ENGINEER for ECS, Inc.

APRIL 30, 2006
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PULLBOX ADJUSTMENT DETAILS

KAMEHAMEHA HIGHWAY BIKEWAY
Vicinity of Radford Drive to Arizona Memorial
Federal Aid Project No. CMAQ-099-1(22)

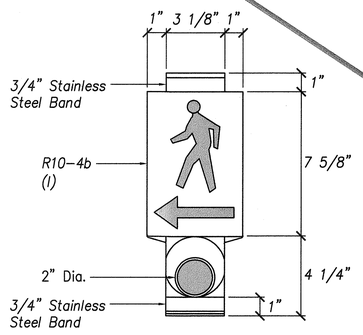
Scale: As Shown Date: June 2005

SHEET No. 2 OF 4 SHEETS

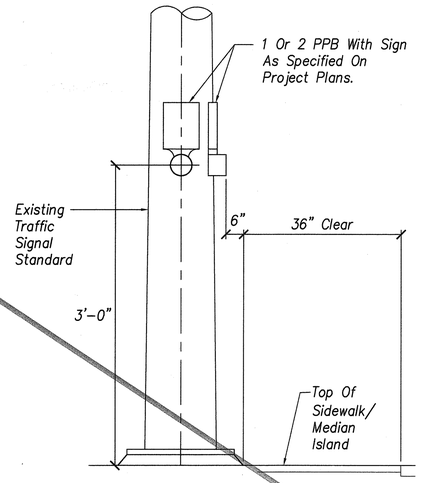
"AS-BUILT"

C.O. 52 S-2

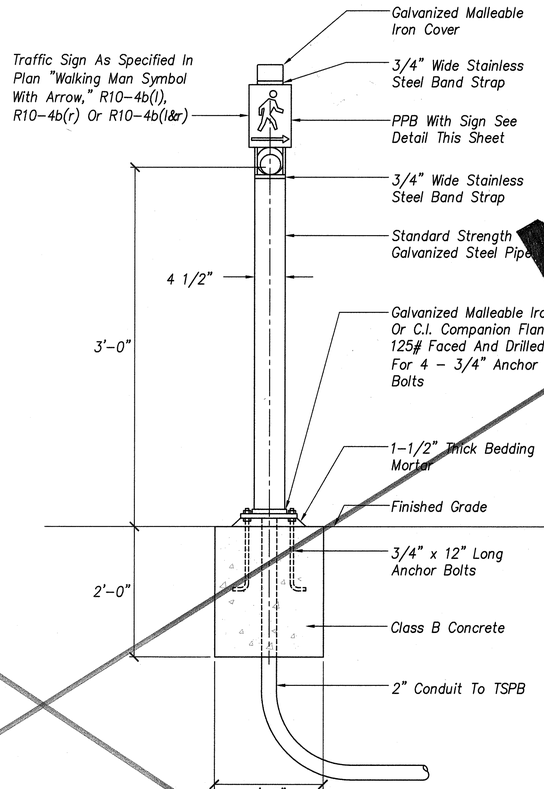
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-099-1(22)	2005	C.O. 52 S-3	60



LEFT



PPB ON EXISTING TSS



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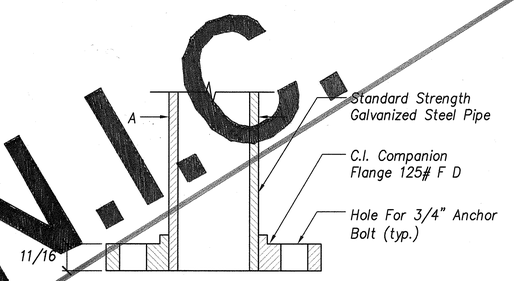
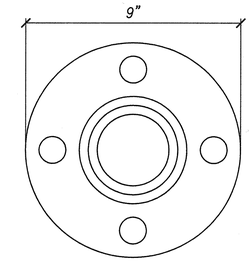


SECTION



TOP VIEW

3/S-3 FLANGE DETAIL
Not to Scale

NOTES:

1. Conduits shall protrude 2" max. Above finished surface of foundation.
2. Conduits shall slope away from post foundation.
3. Refer to traffic signal plan(s) for number of pedestrian push buttons to be provided.

2/S-3 PPB POST AND FOOTING DETAIL
Not to Scale

RIGHT

LEFT & RIGHT

NOTES:

The color scheme shall be:
white - man, arrow and push button
black - background

1/S-3 PEDESTRIAN PUSH BUTTON (PPB)DETAILS
Not to Scale

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

LENNOX K. NISHIMURA
LICENSED PROFESSIONAL ENGINEER
No. 3880-E
HAWAII, U.S.A.

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Lennox K. Nishimura
PROJECT ENGINEER for ECS, Inc.
APRIL 30, 2006
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PUSH BUTTON DETAILS

KAMEHAMEHA HIGHWAY BIKEWAY
Vicinity of Radford Drive to Arizona Memorial
Federal Aid Project No. CMAQ-099-1(22)

Scale: As Shown Date: June 2005

SHEET No. 3 OF 4 SHEETS

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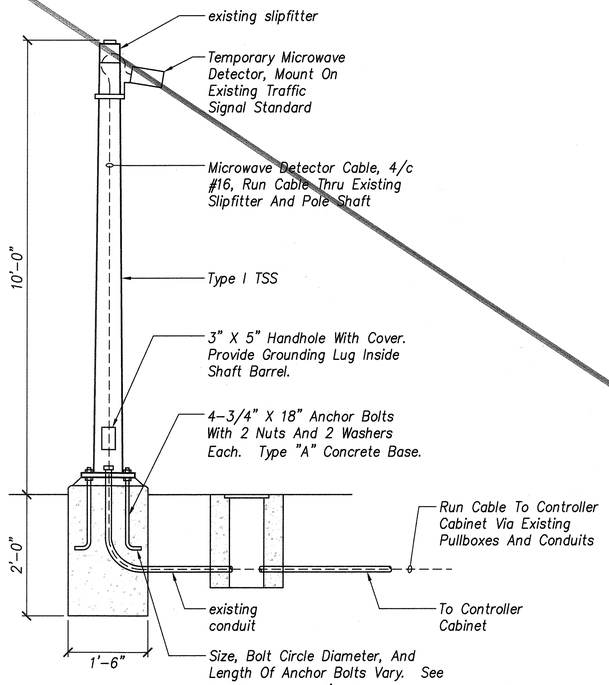
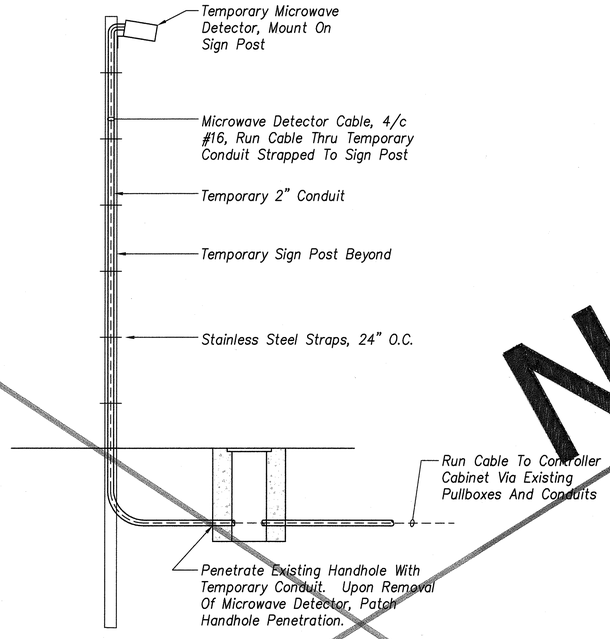
"AS-BUILT"

C.O. 52 S-3

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CMAQ-099-1(22)	2005	C.O. 52 S-4	60

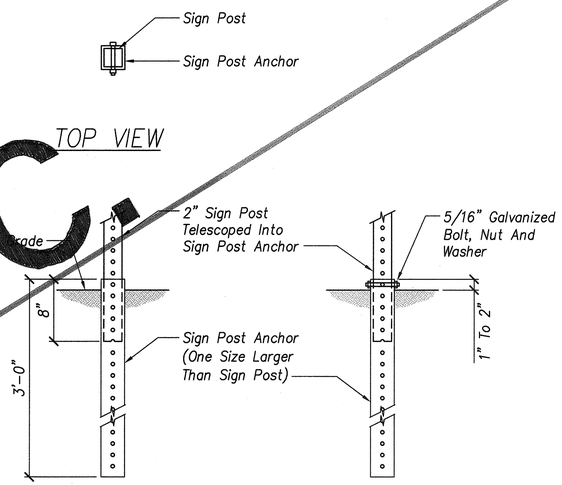


AT EXISTING TRAFFIC SIGNAL STANDARD



AT TEMP SIGN POST

N.I.C.



2 S-4 TEMPORARY SIGN POST DETAIL
Not to Scale

NOTES:

1. Standards shall be designed in accordance with standard specifications for structural supports.
2. Concrete shall be Class "B".
3. Type "A" concrete base shall be used for type I-10, traffic signal standards.
4. Conduit bend is incidental to concrete base.

1 S-4 TEMPORARY MICROWAVE DETECTOR DETAIL
Not to Scale

NOTES:

1. Microwave detector shall be operational before existing loop detectors are deactivated. Aim microwave vehicle detector towards affected lane(s).
2. Remove microwave detector and all associated cables after new loop detectors are installed and operational.

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

LEANNOK K. NISHIMURA
LICENSED PROFESSIONAL ENGINEER
No. 3880-E
HAWAII, U.S.A.

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PROJECT ENGINEER for ECS, Inc.

APRIL 30, 2006
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TEMPORARY MICROWAVE DETECTOR DETAIL

KAMEHAMEHA HIGHWAY BIKEWAY
Vicinity of Radford Drive to Arizona Memorial
Federal Aid Project No. CMAQ-099-1(22)

Scale: As Shown Date: June 2005

SHEET No. 4 OF 4 SHEETS

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"AS-BUILT"

C.O. 52 S-4