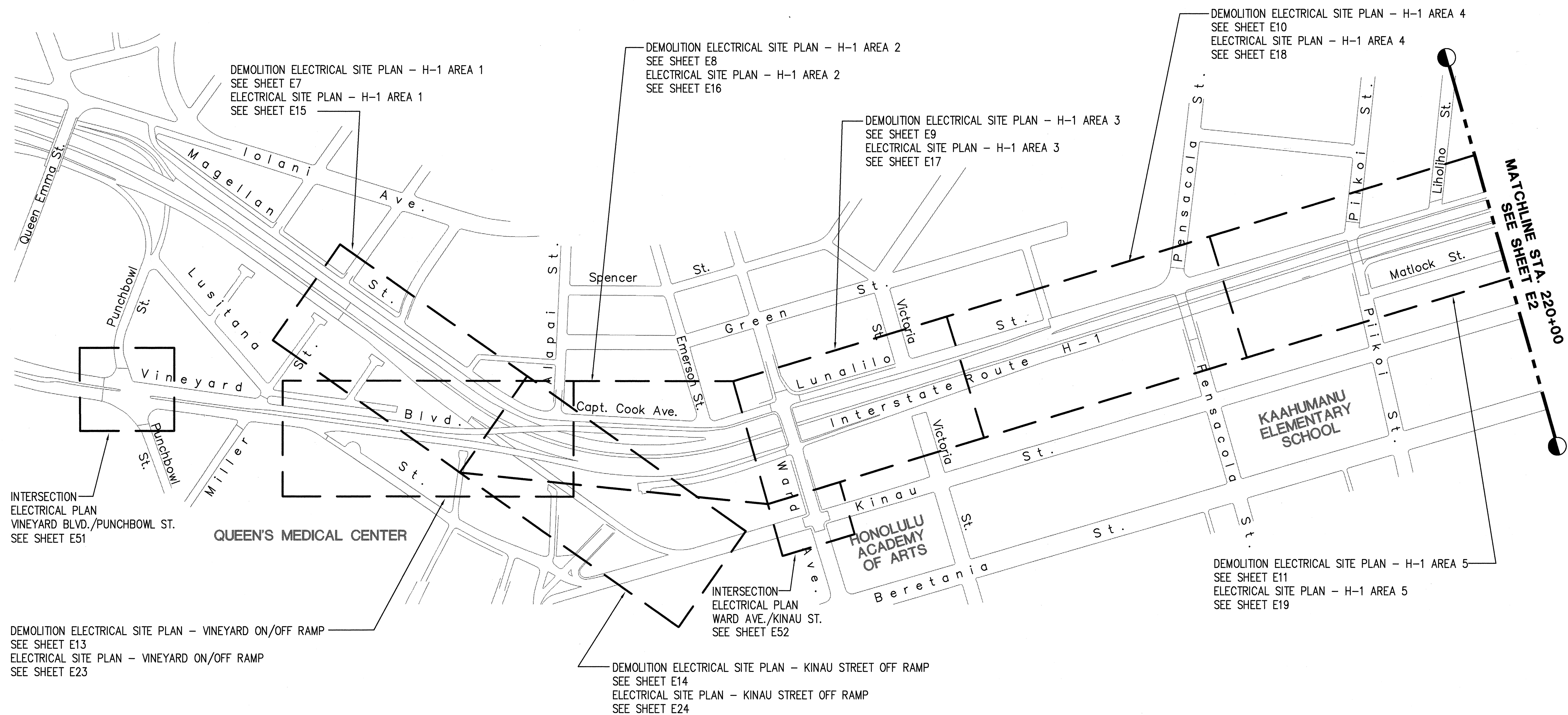
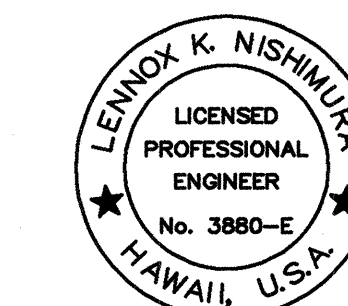
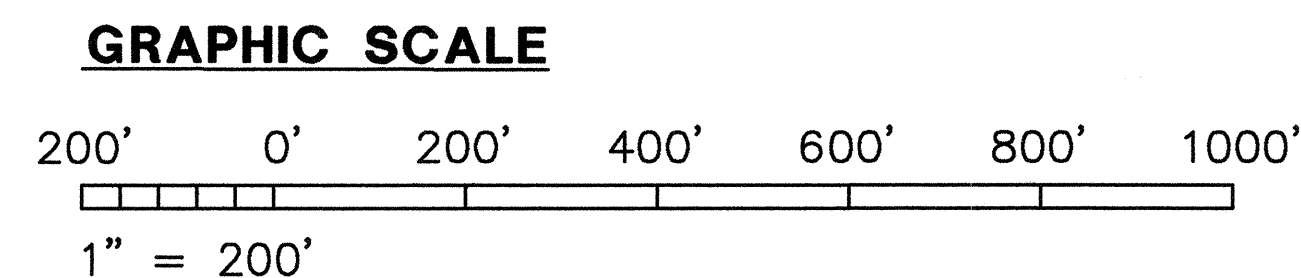


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	399	557



DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
APPROVED BY	
NOTED BY	
REVISIONS	
DATE	1 = 1
SCALE	

ELECTRICAL KEY PLAN I
SCALE: 1"=200'

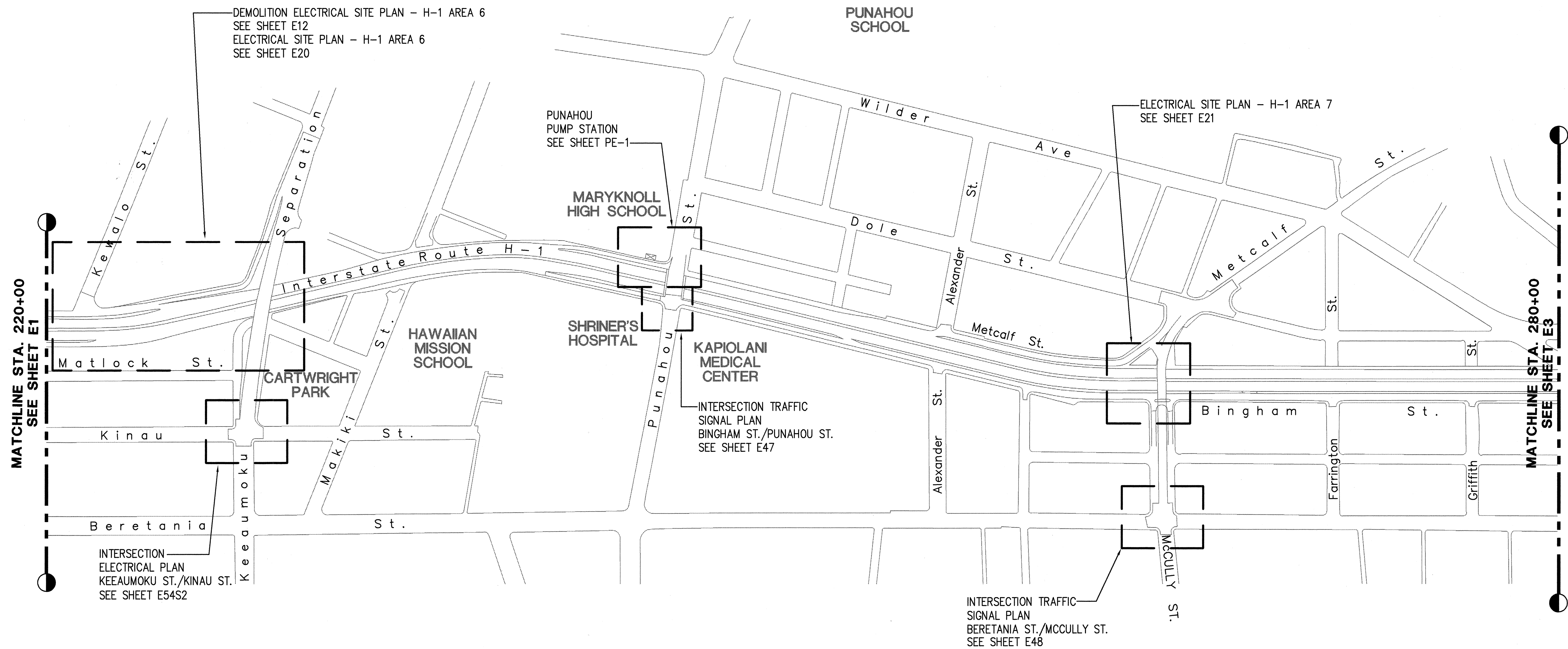


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By *Lennox K. Nishimura*
Its **PROJECT ENGINEER**

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL KEY PLAN I

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)
Scale: 1"=200' Date: June 1, 1999
SHEET NO. **E1** OF 58 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	400	557



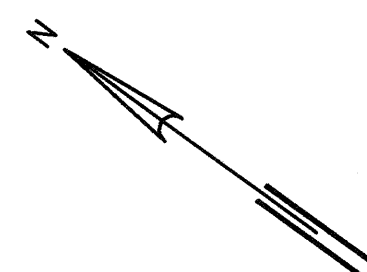
MATCHLINE STA. 220+00
SEE SHEET E1

MATCHLINE STA. 280+00
SEE SHEET E3

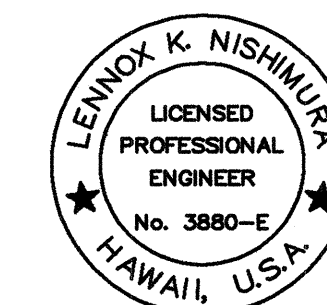
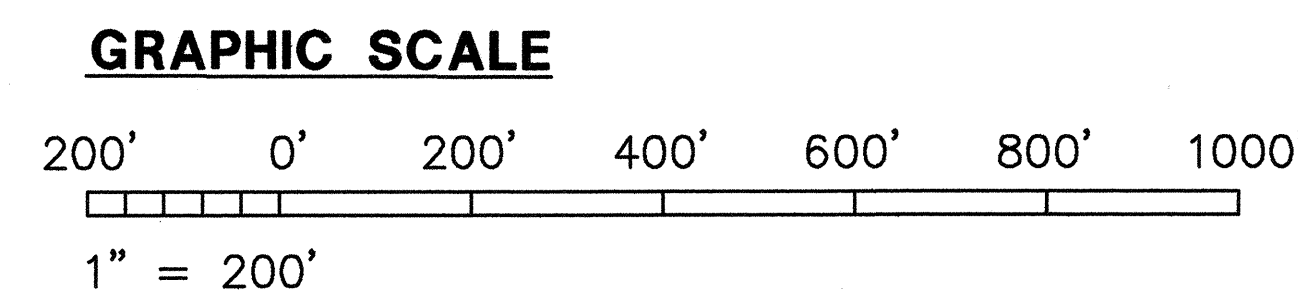
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REVISED:

DATE: 1 = 1
SCALE:

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
NOTED BY	
CHECKED BY	
NO.	



ELECTRICAL KEY PLAN II
SCALE: 1"=200'



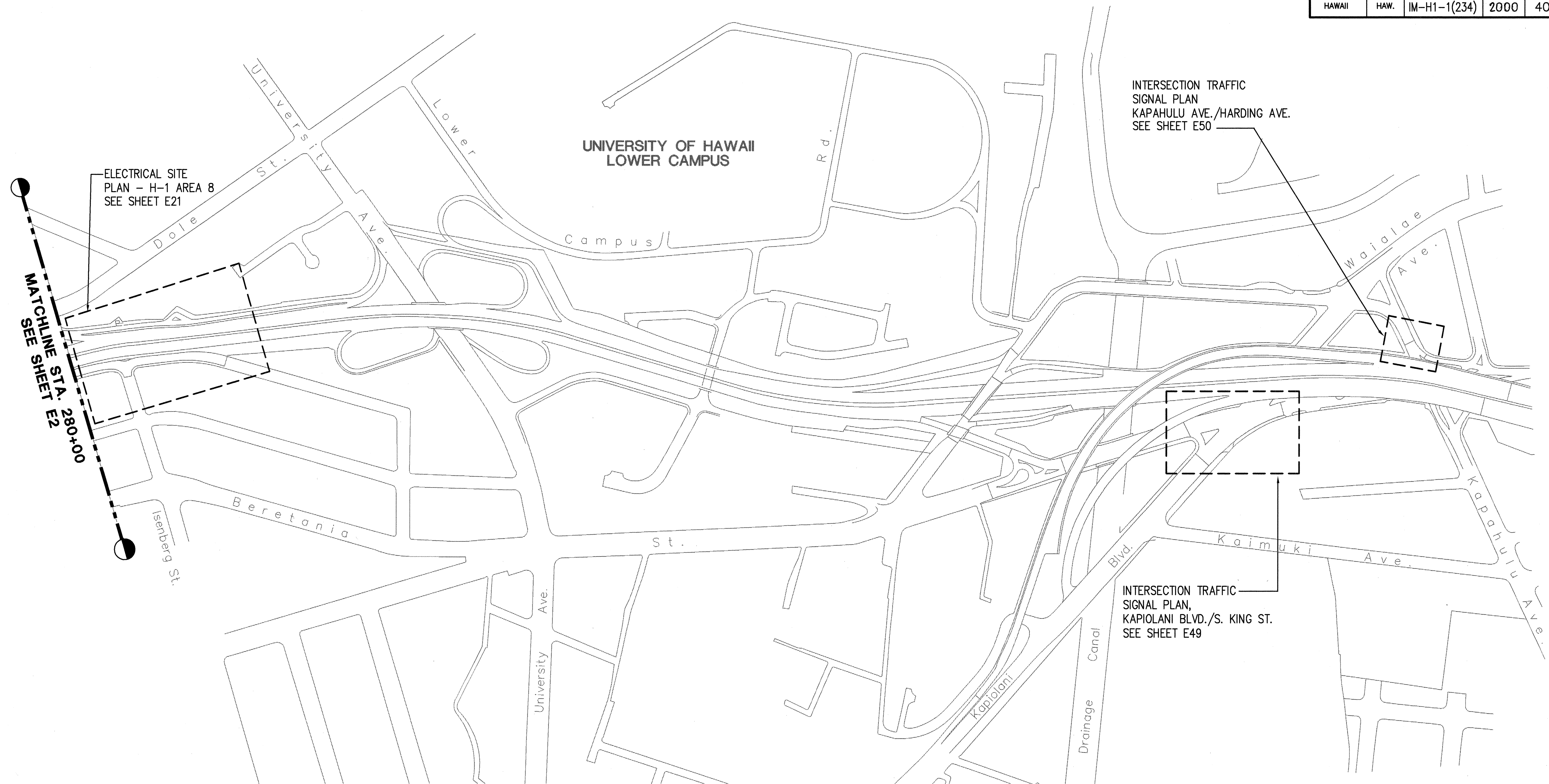
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Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
ELECTRICAL KEY PLAN II

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)
Scale: 1"=200' Date: June 1, 1999

SHEET NO. E2 OF 58 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	401	557



ELECTRICAL SITE
PLAN - H-1 AREA 8
SEE SHEET E21

MATCHLINE STA. 280+00
SEE SHEET E2

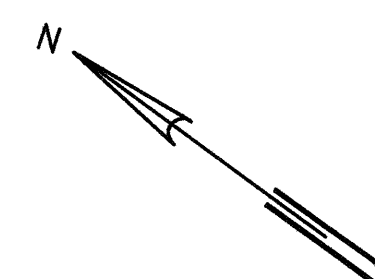
INTERSECTION TRAFFIC
SIGNAL PLAN
KAPAHULU AVE./HARDING AVE.
SEE SHEET E50

INTERSECTION TRAFFIC
SIGNAL PLAN,
KAPIOLANI BLVD./S. KING ST.
SEE SHEET E49

DATE: 1 = 1
SCALE: 1 = 1

PM: OPER: CAD
REVISED:

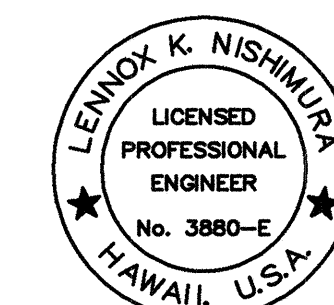
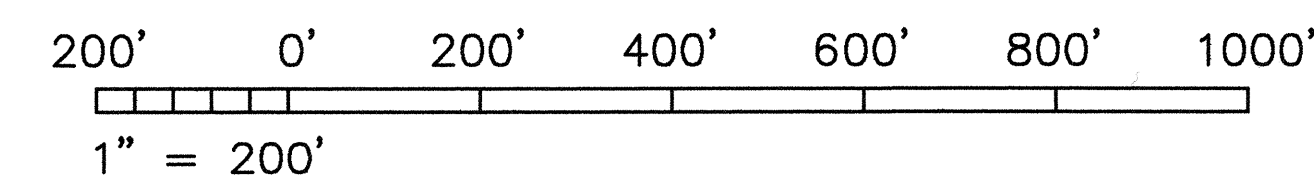
ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DRAWN BY	
FILED BY	
NOTED BY	
QUANTIFIED BY	
CHECKED BY	



ELECTRICAL KEY PLAN III

SCALE: 1"=200'

GRAPHIC SCALE



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Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL KEY PLAN III

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)

Scale: 1"=200' Date: June 1, 1999

SHEET NO. E3 OF 58 SHEETS

FILE: 103-3E40

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	402	557

ELECTRICAL SYMBOL LIST

SYMBOL		DESCRIPTION	SYMBOL		DESCRIPTION
EXISTING	NEW		EXISTING	NEW	
		STREET LIGHT STANDARD, SINGLE LUMINAIRE ARM, 250W HPS			VEHICLE LOOP DETECTOR
		STREET LIGHT STANDARD, TWIN LUMINAIRE ARM, 250W HPS			UNDERGROUND STREET LIGHT DUCTLINE AND WIRING
		STREET LIGHT STANDARD ON CONCRETE STRUCTURE, 250W HPS			STREET LIGHT CONDUIT AND WIRING CONCEALED IN CONCRETE BARRIER
		ROADWAY LIGHTING LUMINAIRE, WALL MOUNTED UNDER CONCRETE CANOPY, 250W HPS			EXPOSED STREET LIGHT CONDUIT AND WIRING
		ROADWAY LIGHTING LUMINAIRE, WALL MOUNTED, SINGLE LUMINAIRE ARM, 250W HPS			DIRECT BURIED STREET LIGHT DUCTLINE AND WIRING IN PLANTER AREA
		WALL MOUNTED ROADWAY LIGHTING LUMINAIRE			
		JUNCTION BOX, WALL MOUNTED			OVERHEAD WIRING
		EXISTING STREET LIGHT PULLBOX			CONCEALED CONDUIT BELOW GRADE
		EXISTING TRAFFIC SIGNAL PULLBOX			EQUIPMENT TERMINATION WITH FLEXIBLE CONDUIT WHIP
		STREET LIGHT PULLBOX, TYPE "A" SEE E42			DENOTES DEMOLITION/REMOVAL
		STREET LIGHT PULLBOX, TYPE "B" SEE E42			DETAIL INDICATOR: TOP HALF DENOTES DETAIL NUMBER, LEFT DENOTES SHEET ON WHICH DETAIL SHOWN
		CAST JUNCTION BOX, SIZE AS NOTED ON PLANS			
		2' x 4' HECO HANDHOLE			
P16		UTILITY POLE, POLE #16 INDICATED			DUCT INDICATOR, SEE SCHEDULE, SHEET E44
		HIGHWAY SIGNAGE LIGHTING			CONDUCTOR INDICATOR, SEE SCHEDULE, SHEET E44
		HIGHWAY LIGHTING SERVICE EQUIPMENT			NOTE INDICATOR
					GROUND FAULT CIRCUIT INTERRUPTOR
		PHOTOCELL			GROUND
		HIGH WATER HIGHWAY WARNING LIGHT			HAWAIIAN ELECTRIC COMPANY
					HAWAIIAN TELEPHONE COMPANY
					DENOTES NOT IN CONTRACT
		DENOTES EXPANSION COUPLING			TRAFFIC SIGNAL LIGHT
					TRAFFIC SIGNAL PULLBOX
					WEATHERPROOF

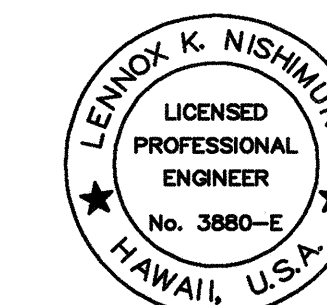
STREET LIGHT STANDARD IDENTIFICATION LEGEND:

<u>LEGEND</u>		<u>DESCRIPTION</u>
1	121+93	← STATION NUMBER
2	2, CKT #3,AB	← STREET LIGHT POLE NUMBER, CIRCUIT NUMBER, PHASE (VERIFY POLE NO. WITH D.O.T.)
3	14'	← POLE CLEAR SETBACK FROM EDGE OF PAVEMENT, SEE NOTE NO. 1 BELOW
4	15'	← LUMINAIRE ARM SPAN IN FEET
5	TB	← POLE BASE MOUNTING TYPE, SEE NOTE NO. 2 BELOW
6	35'	← LUMINAIRE MOUNTING HEIGHT ABOVE PAVEMENT

SYMBOL NOTES:

1. "BGR" INDICATES SETBACK IS BEHIND GUARD RAIL; "TM" INDICATES MOUNTING IS ON TOP OF MEDIAN BARRIER; "TW" INDICATES MOUNTING IS ON TOP OF WALL; "BR" INDICATES MOUNTING IS ON BRIDGE RAIL.
2. "TB" INDICATES TRANSFORMER BASE; "BTB" INDICATES BREAKAWAY TRANSFORMER BASE.

ORIGINAL PLAN	SURVEY PLOTTED BY _____ DATE _____
NOTEBOOK	DRAWN BY _____
	TRACED BY _____
	DESIGNED BY _____
	QUANTITIES BY _____
40.	CHECKED BY _____



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By Lennox K. Nishimura
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL SYMBOL LIST,

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I Project No. IM-H1-1(234)

Scale: NONE Date: June 1, 1999

SHEET NO. **E4** OF **58** SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	404	557

HIGHWAY LIGHTING NOTES:

1. THE CONTRACTOR SHALL NOTIFY THE STATE HIGHWAYS, HIGHWAY LIGHTING AND TRAFFIC SUPERVISOR 72 HOURS IN ADVANCE BEFORE COMMENCING INSTALLATION OF HIGHWAY LIGHTING SYSTEM. PHONE: 837-8056.
2. ALL LUMINAIRES SHALL BE HIGH PRESSURE SODIUM TYPE WITH WATTAGE AND I.E.S. TYPE LIGHT DISTRIBUTION AS SHOWN ON THE APPROVED PLANS.
3. THE CONTRACTOR SHALL HAVE ONE SET OF APPROVED PLANS AT JOB SITE AT ALL TIMES DURING THE CONSTRUCTION WORK AND RECORD ALL CHANGES WHICH OCCUR DURING CONSTRUCTION OF THE HIGHWAY LIGHTING SYSTEM.
4. CONTRACTOR TO STENCIL DATE OF INSTALLATION AT THE BOTTOM OF EACH PHOTOCELL.
5. FINAL ACCEPTANCE AND INSPECTION WILL BE UNDERTAKEN ONLY AFTER ALL WORK HAS BEEN COMPLETED.
6. THE CONTRACTOR SHALL MEASURE AND RECORD GROUND RESISTANCE AT EACH STANDARD WITH FOUNDATIONS IN GRADE, AND SUBMIT RECORDED GROUND RESISTANCE TO TRAFFIC SECTION, AND OAHU DISTRICT MAINTENANCE SECTION, DEPARTMENT OF TRANSPORTATION, STATE HIGHWAYS. THE CONTRACTOR SHALL CERTIFY ALL ELECTRICAL TESTS, INCLUDING BUT NOT LIMITED TO: CONTINUITY TEST AND THE GROUND ROD RESISTANT TEST PRIOR TO SUBMISSION TO THE ENGINEER.

7. TRIM TREE BRANCHES TO CLEAR REMOVAL OR INSTALLATION OF HIGHWAY LIGHT STANDARDS, AT NO ADDITIONAL COST THE STATE.

8. TEMPORARY LIGHTING

THE CONTRACTOR SHALL SCHEDULE THE CONSTRUCTION WORK IN SUCH A MANNER THAT HIGHWAY LIGHTING IS PROVIDED DURING ALL HOURS OF DARKNESS EITHER WITH NEW, TEMPORARY OR EXISTING LUMINAIRES OR A COMBINATION THEREOF. TEMPORARY WIRING AND CONNECTIONS MAY NEED TO BE UTILIZED. TEMPORARY WIRING MAY BE INSTALLED IN EXPOSED CONDUIT, WHERE NOT SUBJECT TO VEHICULAR DAMAGE, OR WITH OVERHEAD WIRING. OVERHEAD WIRING SHALL BE A MINIMUM OF 20 FEET ABOVE ROADWAYS AT ITS LOWEST MEASURED POINT, UNLESS APPROVED BY THE ENGINEER.

FOR OTHER THAN THE PIIKOI VIADUCT, THE CONTRACTOR SHALL MAINTAIN EXISTING CIRCUITING OR PROVIDE TEMPORARY CONNECTIONS TO EXISTING HIGHWAY LIGHTS THROUGH CONSTRUCTION OF THE NEW HIGHWAY LIGHTING SYSTEM. EXISTING HIGHWAY LIGHTS SCHEDULED FOR DEMOLITION SHALL REMAIN IN OPERATION TO MAINTAIN EXISTING ILLUMINATION LEVELS UTILIZING EITHER EXISTING OR TEMPORARY WIRING AND CONNECTIONS UNTIL NEW HIGHWAY LIGHTS CAN BE ENERGIZED AND ARE APPROVED BY THE ENGINEER. NEW HIGHWAY LIGHTS SHALL BE ENERGIZED BY EITHER PERMANENT OR TEMPORARY WIRING AND CONNECTIONS PRIOR TO DEMOLITION OF THE EXISTING HIGHWAY LIGHTING SYSTEM.

PIIKOI VIADUCT: THE CONTRACTOR SHALL PROVIDE A TEMPORARY LIGHTING SYSTEM FOR THE PIIKOI VIADUCT TO PRODUCE AN AVERAGE OF 1 FOOTCANDLE MINIMUM ON THE ROADWAY AND AN AVERAGE TO MINIMUM UNIFORMITY RATIO OF 3:1. ONE ACCEPTABLE TEMPORARY LIGHTING METHOD MAY BE TO MOUNT TEMPORARY LIGHT POLES SPACED AT APPROXIMATELY 170 FEET ON CENTER TO THE OUTSIDE FACE OF THE VIADUCT STRUCTURE ALONG EACH DIRECTION OF TRAVEL. ALTERNATE TEMPORARY LIGHTING SCHEMES SHALL BE SUBMITTED FOR APPROVAL BY THE ENGINEER. TEMPORARY HIGHWAY LIGHTING LUMINAIRES SHALL BE 250 WATT, TYPE II DISTRIBUTION, HIGH PRESSURE SODIUM TYPE, MOUNTED 35 FEET ABOVE THE ROADWAY AND PLACED ON 10 FOOT BRACKET ARMS. THE CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF THE PROPOSED TEMPORARY LIGHTING SYSTEM, ILLUMINATION CALCULATIONS AND STRUCTURALLY ENGINEERED DRAWINGS OF POLE FOUNDATIONS AND MOUNTING DETAILS FOR APPROVAL BY THE ENGINEER.

9. WHERE EXISTING HIGHWAY LIGHTING LUMINAIRES ON METAL STANDARDS ARE INDICATED TO BE REMOVED, THE LUMINAIRE AND POLE SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR. EXISTING FOUNDATIONS IN GRADE SHALL BE DEMOLISHED TO 24" BELOW GRADE AND THE SURFACES AFFECTED SHALL BE RESTORED TO MATCH THE SURROUNDINGS. UNLESS INDICATED OTHERWISE, EXISTING FOUNDATIONS ON STRUCTURES SHALL BE ABANDONED IN PLACE, EXISTING ANCHOR BOLTS AND CONDUIT SHALL BE CUT FLUSH WITH THE TOP OF THE EXISTING FOUNDATION, AND THE CONCRETE STRUCTURE SHALL BE FINISHED TO MATCH THE EXISTING SURROUNDING SURFACES.

10. ALL TEMPORARY AND PERMANENT NEW POLE LOCATIONS SHALL BE STAKED, AND APPROVAL OF LOCATIONS SHALL BE OBTAINED FROM THE ENGINEER BEFORE INSTALLATION. POLE LOCATIONS IN THE FIELD WILL BE REQUIRED TO CLEAR UNDERGROUND AND AERIAL UTILITY LINES. NEW POLE LOCATIONS SHALL NOT CONFLICT WITH ANY EXISTING OR PROPOSED UTILITY AND SHALL NOT OBSTRUCT ANY ROADWAY SIGN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COSTS INCURRED BY CONFLICTING UTILITIES.

11. THE CONTRACTOR SHALL AT HIS EXPENSE, KEEP THE PROJECT AND SURROUNDING AREA FREE FROM DUST NUISANCE AND SHALL BE RESPONSIBLE FOR CLEANING AND REMOVAL OF ALL SILT AND DEBRIS GENERATED BY THE EXCAVATION WORK AND DEPOSITED AND ACCUMULATED WITHIN DOWNSTREAM WATERWAYS, DITCHES, DRAIN PIPES AND ON PUBLIC ROADWAYS. ANY CITATIONS (FINES) RECEIVED BY THE STATE FOR THE CONTRACTOR'S NONCOMPLIANCE OF ANY DEPARTMENT OF HEALTH REGULATIONS SHALL BE DEDUCTED FROM THE PROGRESS PAYMENT.

12. THE CONTRACTOR SHALL LOCATE EXISTING BURIED UTILITY 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.

13. THE CONTRACTOR SHALL RECONNECT ELECTRICAL POWER TO ALL EXISTING SIGN LIGHTING SYSTEMS AND UNDERPASS LIGHTING FIXTURES. THE CONTRACTOR SHALL PROVIDE ADDITIONAL WIRING AND CONDUIT AS REQUIRED FOR AN OPERATIONAL SYSTEM, AT NO ADDITIONAL COST TO THE STATE.

14. AFTER THE EXACT LOCATION OF THE LIGHTING POLE BASE IS DETERMINED, PLACE 2" x 2" x 18" HUBS OR OTHER APPROVED MARKER AT THESE LOCATIONS TO INFORM THE CONTRACTING OFFICER OF FINAL LOCATION. OBTAIN APPROVAL PRIOR TO CONSTRUCTION OF LIGHT BASES. ACTUAL FIELD CONDITIONS MAY DIFFER FROM THAT SHOWN ON THESE DRAWINGS. USE EXTREME CAUTION WHEN EXCAVATING FOR NEW DUCTLINES.

15. THE ELECTRICAL CONTRACTOR SHALL HAVE PERSONNEL ON THE PROJECT THAT COMPLY WITH THE FOLLOWING QUALIFICATIONS:
 - a. ONE (1) REGISTERED MASTER ELECTRICIAN IN THE COMPANY.
 - b. CERTIFIED JOURNEYMAN ELECTRICIAN AT EACH CONSTRUCTION LOCATION TO PERFORM SPLICING OF CABLES AND ALL REQUIRED WIRING WORK.

16. PROVIDE CONDUIT EXPANSION FITTINGS TO ACCOMMODATE EXPANSIONS AND DEFLECTIONS WHERE CONDUITS CROSS SEISMIC CONTROL AND EXPANSION JOINTS. EXPANSION FITTINGS SHALL BE OF WEATHERTIGHT CONSTRUCTION WITH INSULATED BUSHING ON END OF MOVEABLE CONDUIT. FACTORY-FORMED COPPER BRAID RING ALLOWING CONDUIT EXPANSION AND CONTRACTION. FERALOY END FITTING, STEEL CONDUIT BODY, ZINC ELECTROPLATE AND ALUMINUM CELLULOSE LACQUER FINISH, 8" MAXIMUM CONDUIT MOVEMENT. CROUSE-HINDS "XJ" SERIES FOR EXPOSED CONDUIT AND "XD" SERIES FOR CONDUIT CONCEALED IN CONCRETE OR APPROVED EQUAL. REFER TO STRUCTURAL PLANS FOR EXACT LOCATIONS OF EXPANSION JOINTS.

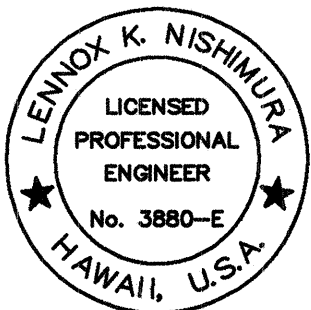
17. ALL DUCTLINES TO BE INSTALLED IN CONCRETE SHALL BE INSPECTED AND APPROVED BY THE STATE INSPECTOR AND THE STATE ELECTRICAL MAINTENANCE SUPERVISOR BEFORE PLACING CONCRETE. NOTIFY THE INSPECTOR AND SUPERVISOR 48 HOURS BEFORE PLACING CONCRETE.

18. DESIGN ILLUMINATION LEVEL = 1.0 FOOTCANDLE AVERAGE MAINTAINED. DESIGN UNIFORMITY RATIO (AVERAGE:MINIMUM) = 3:1 MAXIMUM. DESIGN MAINTENANCE FACTOR = 0.65

PM: OPER: CAD
REVISD:

DATE: SCALE: 1 = 1

SURVEY PLOTTED BY	DATE
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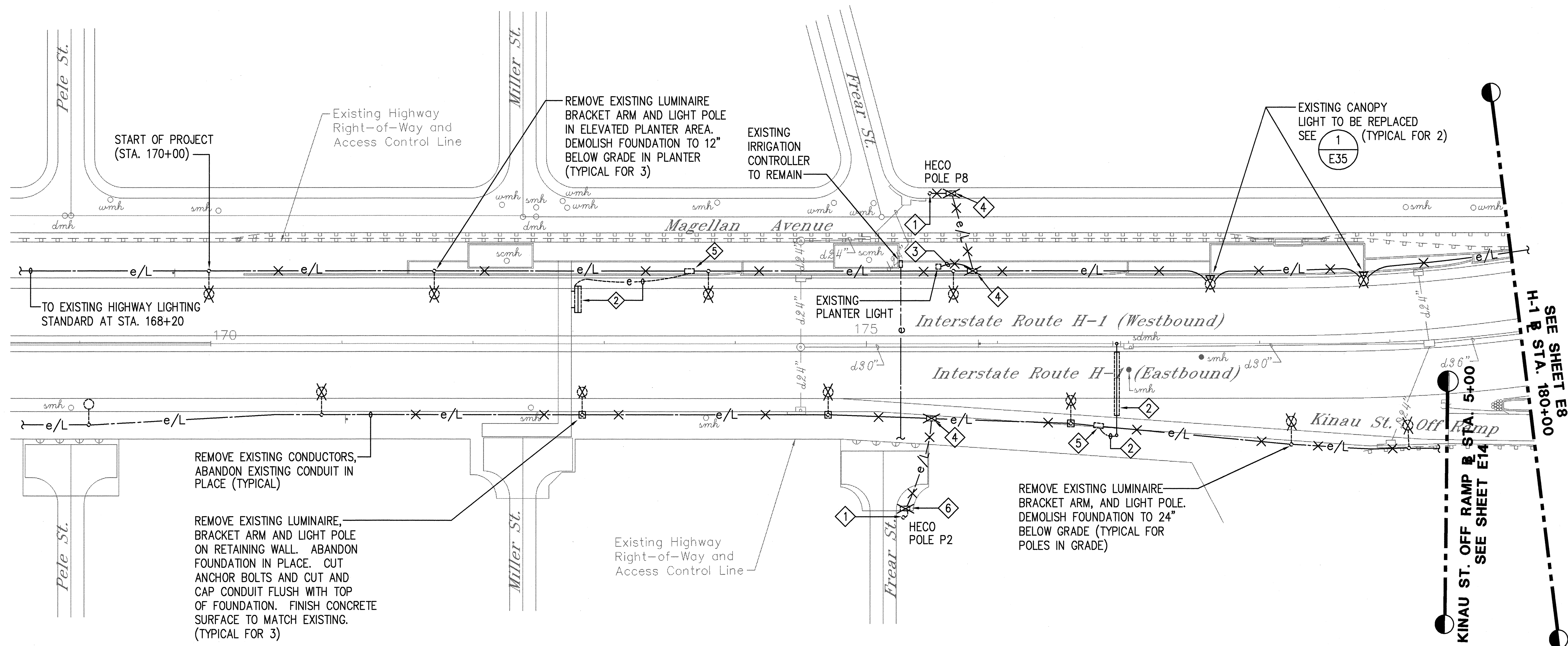


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By Lennox K. Nishimura
Its PROJECT ENGINEER

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
HIGHWAY LIGHTING NOTES	
INTERSTATE ROUTE H-1 RESURFACING	
Vic. of Punchbowl Off Ramp to Kapiolani IC	
F.A.I Project No. IM-H1-1(234)	
Scale: NONE	Date: June 1, 1999
SHEET NO. E6 OF 58 SHEETS	

FILE: 103-3E2A

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	405	557



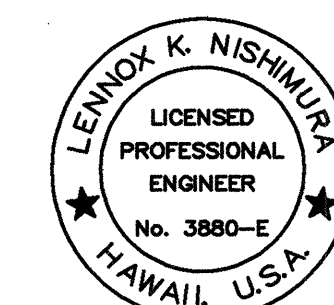
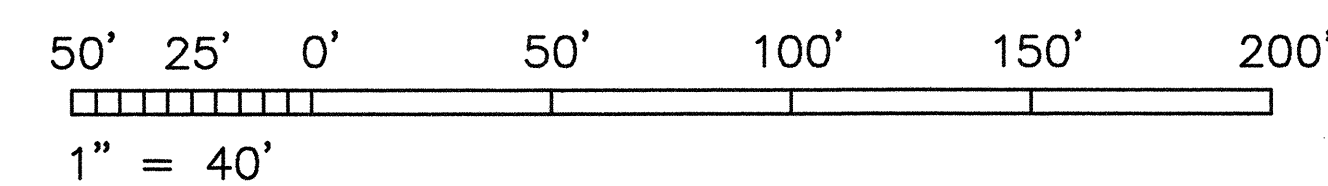
NOTES:

- 1 REMOVE EXISTING CIRCUIT BREAKER, LIGHTING CONTACTOR AND CONDUIT AND WIRING ON EXISTING UTILITY POLE. COORDINATE REMOVAL OF METER SOCKET WITH HECO. SEE DETAIL 3
E38
- 2 EXISTING SIGN LIGHTS, CONDUIT AND WIRING TO REMAIN.
- 3 REMOVE EXISTING 6#8 CONDUCTORS TO PLANTER LIGHTS, ABANDON CONDUIT AND LIGHTS IN PLACE.
- 4 EXISTING PULLBOX TO BE DEMOLISHED TO 6" BELOW GRADE. FILL WITH #3 ROCK.
- 5 EXISTING PULLBOX TO REMAIN. DUCT SEAL UNUSED CONDUIT PENETRATIONS.
- 6 EXISTING PULLBOX TO BE DEMOLISHED TO 6" BELOW GRADE. FILL WITH #3 ROCK. PATCH WITH 4" OF CONCRETE TO MATCH EXISTING.

DEMOLITION ELECTRICAL SITE PLAN - H-1 AREA 1

SCALE: 1"=40'

GRAPHIC SCALE



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ECS, INC.
By *Lennox K. Nishimura*
Its **PROJECT ENGINEER**

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DEMOLITION ELECTRICAL SITE

PLAN - H-1 AREA 1

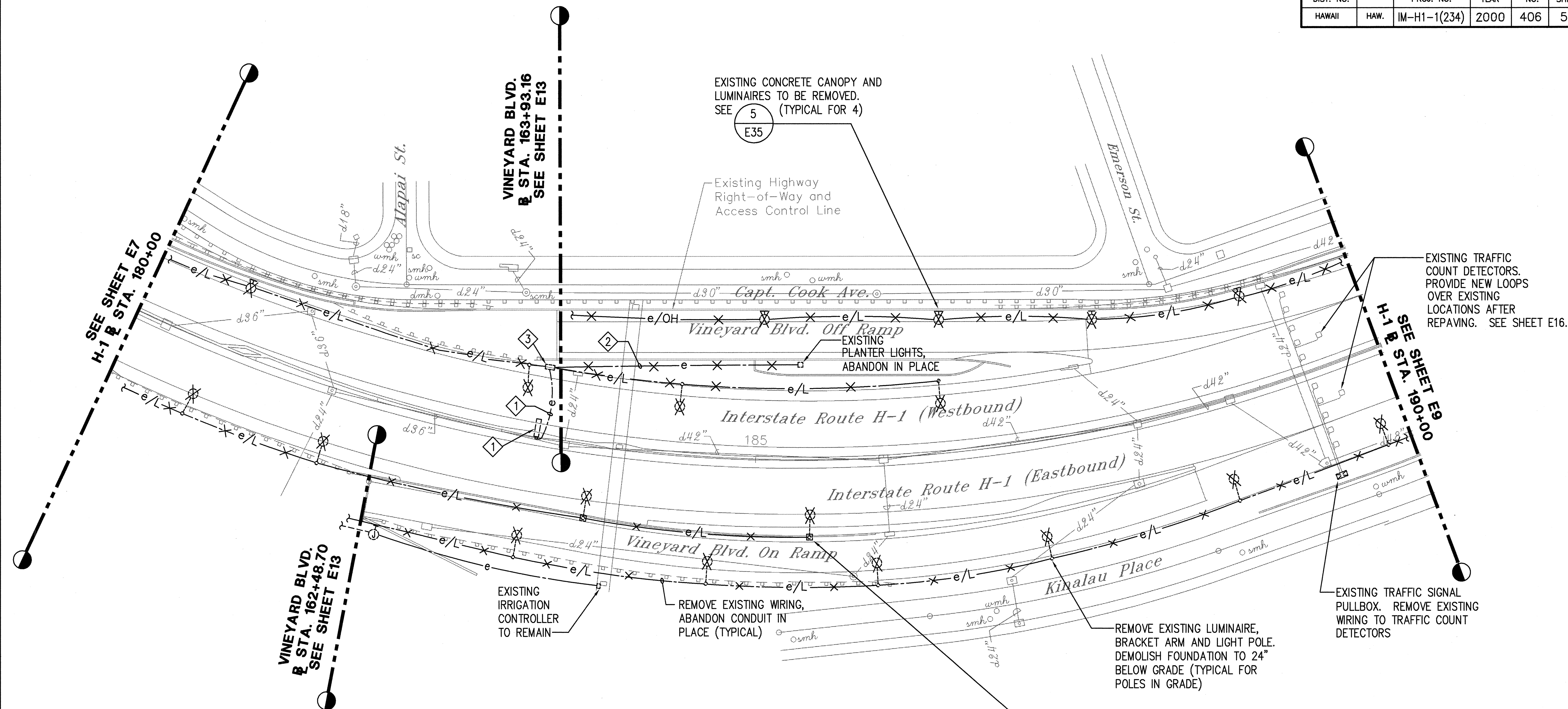
INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)

Scale: 1"=40' Date: June 1, 1999

SHEET NO. **E7** OF **58** SHEETS

FILE: 103-353

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	406	557



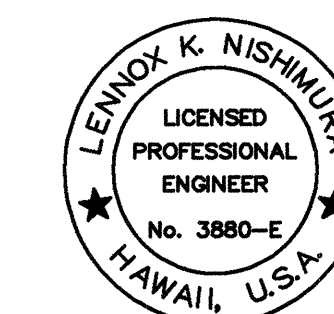
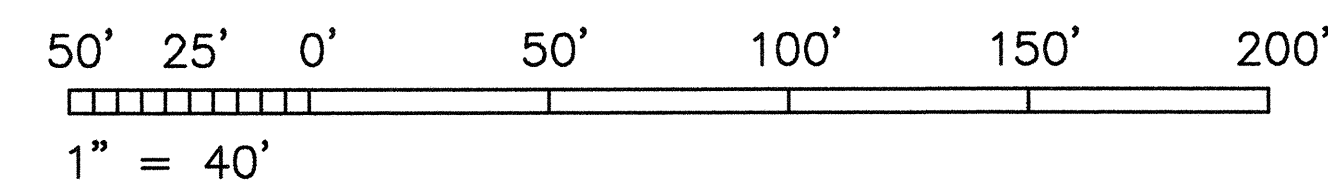
NOTES:

- 1 EXISTING SIGN LIGHTS, CONDUIT AND WIRING TO REMAIN.
- 2 REMOVE EXISTING 3#4 CONDUCTORS TO PLANTER LIGHTS. ABANDON CONDUIT AND LIGHTS IN PLACE.
- 3 EXISTING PULLBOX TO REMAIN. DUCT SEAL UNUSED CONDUIT PENETRATIONS.

DEMOLITION ELECTRICAL SITE PLAN - H-1 AREA 2

SCALE: 1"=40'

GRAPHIC SCALE



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ECS, INC.
By: *Lennox K. Nishimura*
Its: PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**DEMOLITION ELECTRICAL SITE
PLAN - H-1 AREA 2**

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)

Scale: 1"=40' Date: June 1, 1999

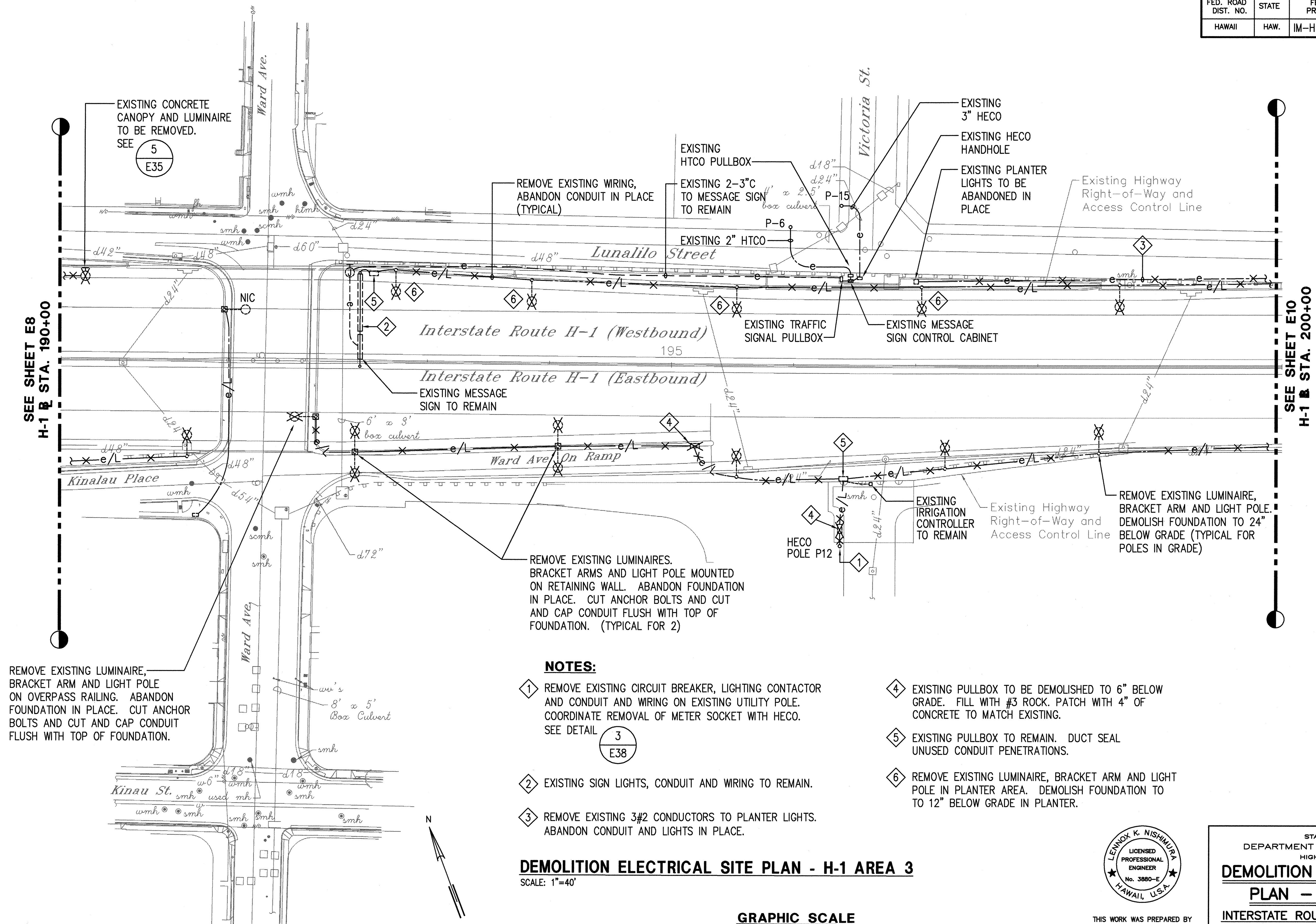
SHEET NO. **E8** OF **58** SHEETS

SURVEY PLOTTED BY	DATE
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CHECKED BY	
ORIGINAL PLAN	
NOTED	
NO.	

PM: OPER: CAD
OPER: REVIS: D:

DATE: 1 = 1
SCALE: 1 = 1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	407	557



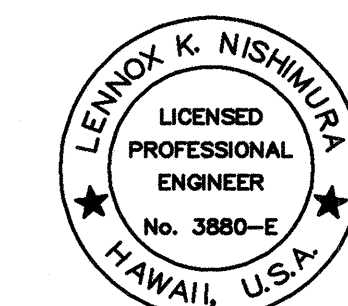
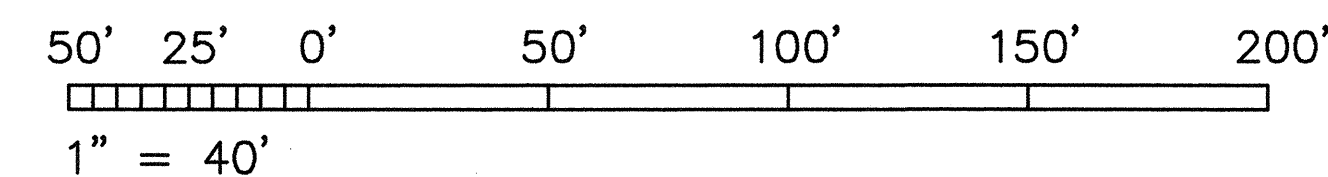
NOTES:

- 1 REMOVE EXISTING CIRCUIT BREAKER, LIGHTING CONTACTOR AND CONDUIT AND WIRING ON EXISTING UTILITY POLE. COORDINATE REMOVAL OF METER SOCKET WITH HECO. SEE DETAIL 3 E38
- 2 EXISTING SIGN LIGHTS, CONDUIT AND WIRING TO REMAIN.
- 3 REMOVE EXISTING 3#2 CONDUCTORS TO PLANTER LIGHTS. ABANDON CONDUIT AND LIGHTS IN PLACE.
- 4 EXISTING PULLBOX TO BE DEMOLISHED TO 6" BELOW GRADE. FILL WITH #3 ROCK. PATCH WITH 4" OF CONCRETE TO MATCH EXISTING.
- 5 EXISTING PULLBOX TO REMAIN. DUCT SEAL UNUSED CONDUIT PENETRATIONS.
- 6 REMOVE EXISTING LUMINAIRE, BRACKET ARM AND LIGHT POLE IN PLANTER AREA. DEMOLISH FOUNDATION TO 12" BELOW GRADE IN PLANTER.

DEMOLITION ELECTRICAL SITE PLAN - H-1 AREA 3

SCALE: 1"=40'

GRAPHIC SCALE



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ME OR UNDER MY SUPERVISION.
ECS, INC.
By *Lennox K. Nishimura*
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

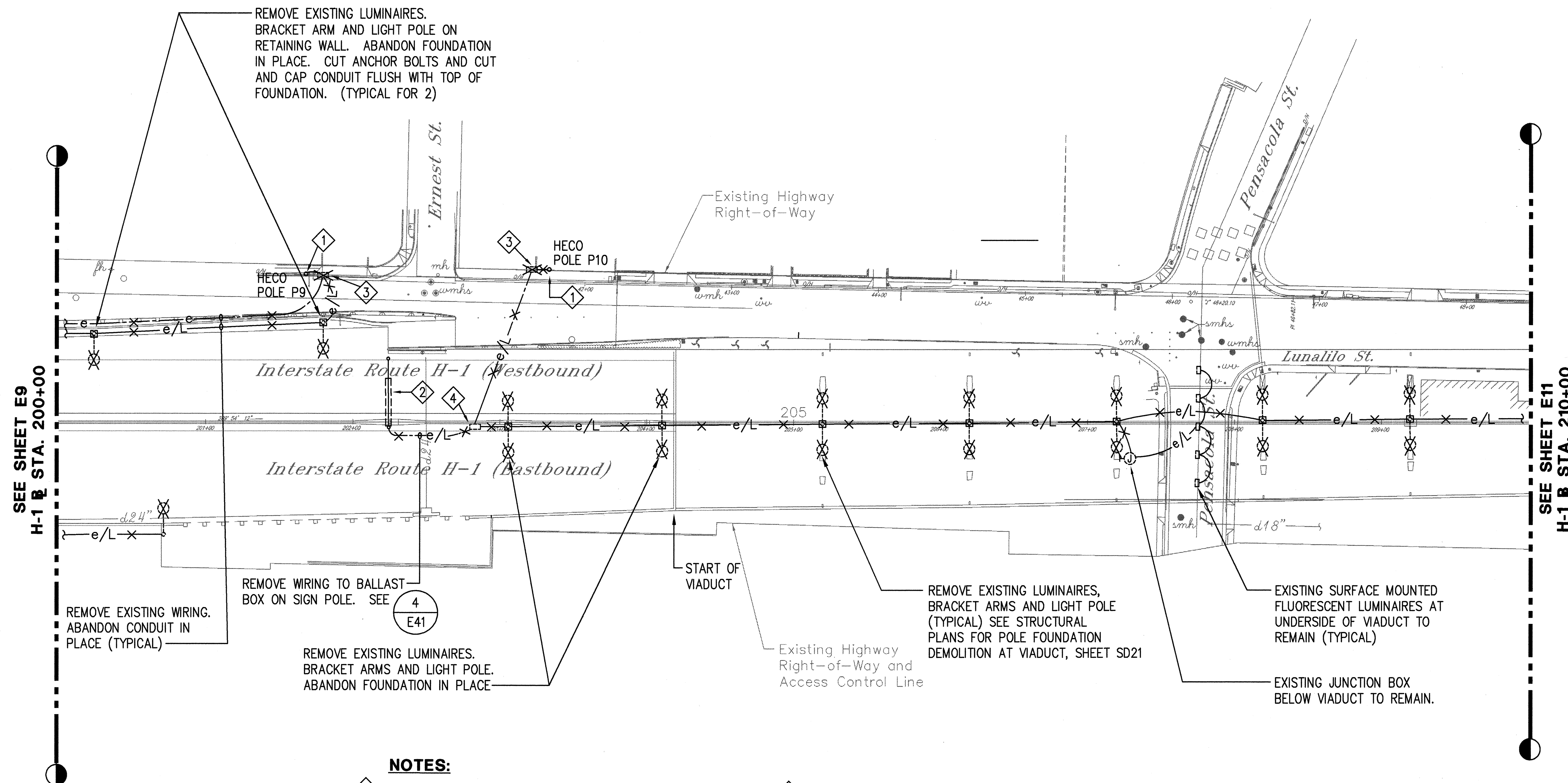
**DEMOLITION ELECTRICAL SITE
PLAN - H-1 AREA 3**

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)

Scale: 1"=40' Date: June 1, 1999

SHEET NO. E9 OF 58 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	408	557



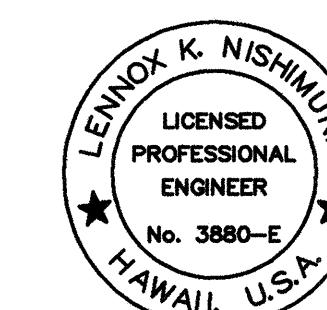
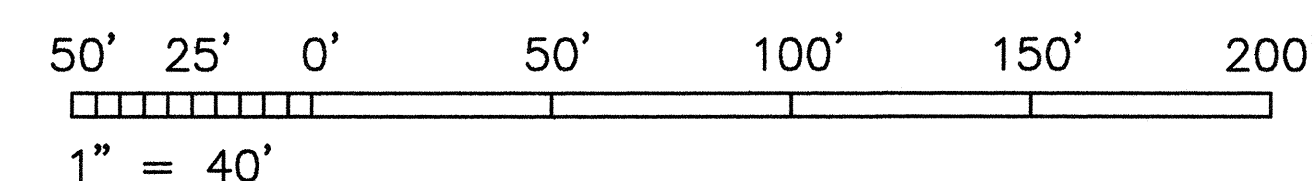
NOTES:

- 1 REMOVE EXISTING CIRCUIT BREAKER, LIGHTING CONTACTOR AND CONDUIT AND WIRING ON EXISTING UTILITY POLE. COORDINATE REMOVAL OF METER SOCKET WITH HECO. SEE DETAIL 3
E38
- 2 EXISTING SIGN LIGHT TO REMAIN.
- 3 EXISTING PULLBOX TO BE DEMOLISHED TO 6" BELOW GRADE. FILL WITH #3 ROCK. PATCH WITH 4" OF CONCRETE TO MATCH EXISTING.
- 4 EXISTING PULLBOX TO BE ABANDONED. DUCT SEAL UNUSED CONDUIT PENETRATIONS.

DEMOLITION ELECTRICAL SITE PLAN - H-1 AREA 4

SCALE: 1"=40'

GRAPHIC SCALE



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By *Lennox K. Nishimura*
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

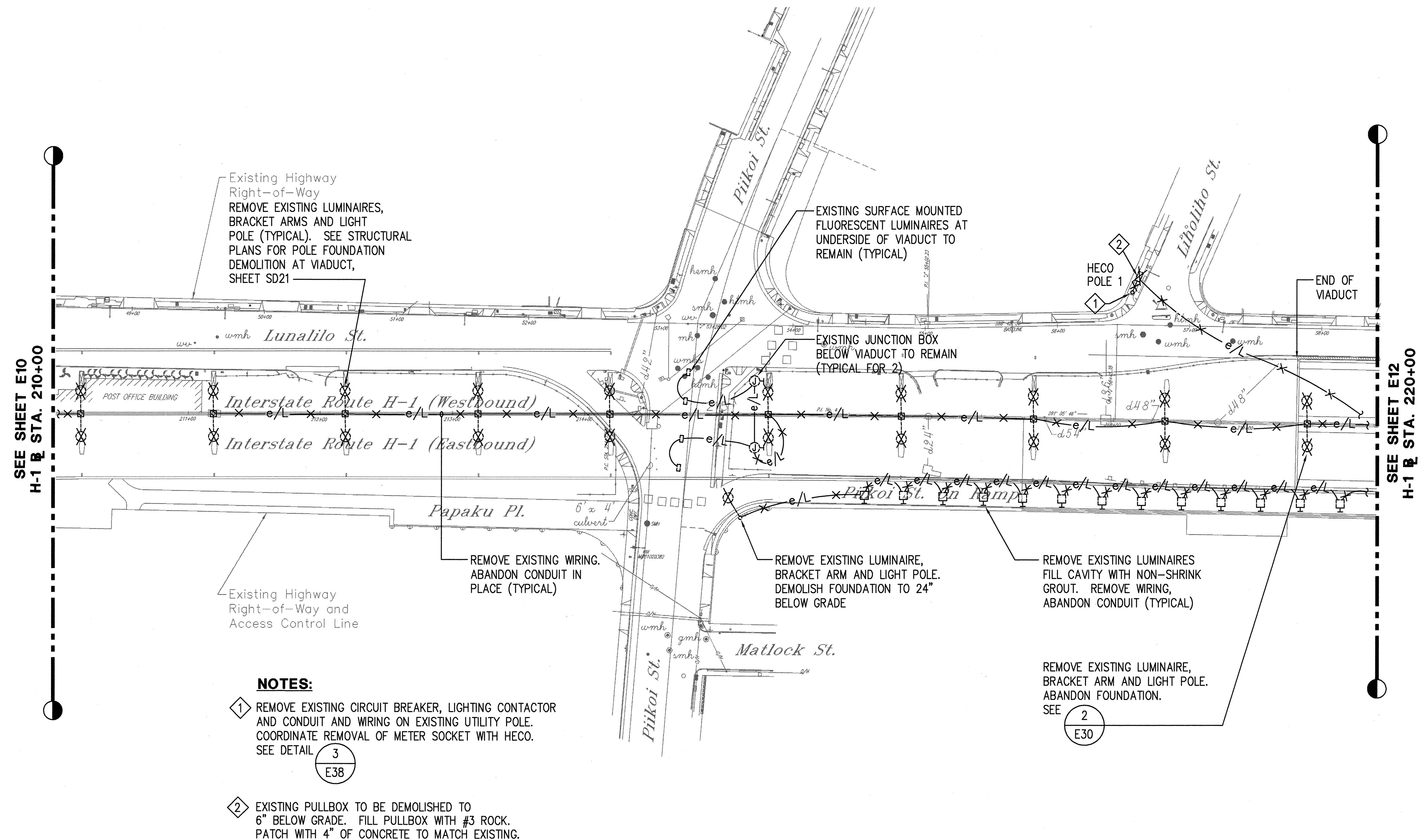
DEMOLITION ELECTRICAL SITE PLAN - H-1 AREA 4

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)

Scale: 1"=40' Date: June 1, 1999

SHEET NO. E10 OF 58 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	409	557

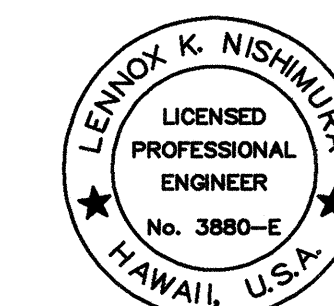
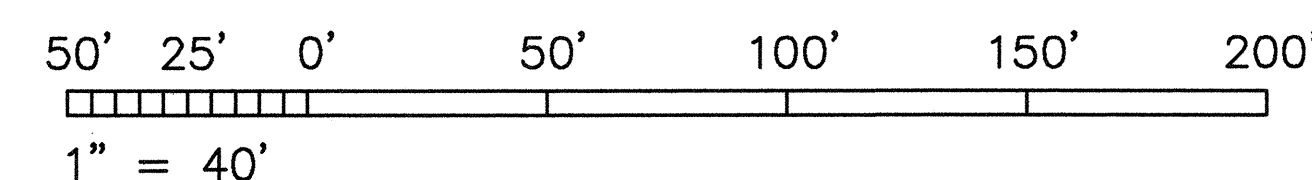


NOTES:

- 1 REMOVE EXISTING CIRCUIT BREAKER, LIGHTING CONTACTOR AND CONDUIT AND WIRING ON EXISTING UTILITY POLE. COORDINATE REMOVAL OF METER SOCKET WITH HECO. SEE DETAIL 3
E38
- 2 EXISTING PULLBOX TO BE DEMOLISHED TO 6" BELOW GRADE. FILL PULLBOX WITH #3 ROCK. PATCH WITH 4" OF CONCRETE TO MATCH EXISTING.

DEMOLITION ELECTRICAL SITE PLAN - H-1 AREA 5 SCALE: 1"=40'

GRAPHIC SCALE



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ECS, INC.
By *Lennox K. Nishikura*
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

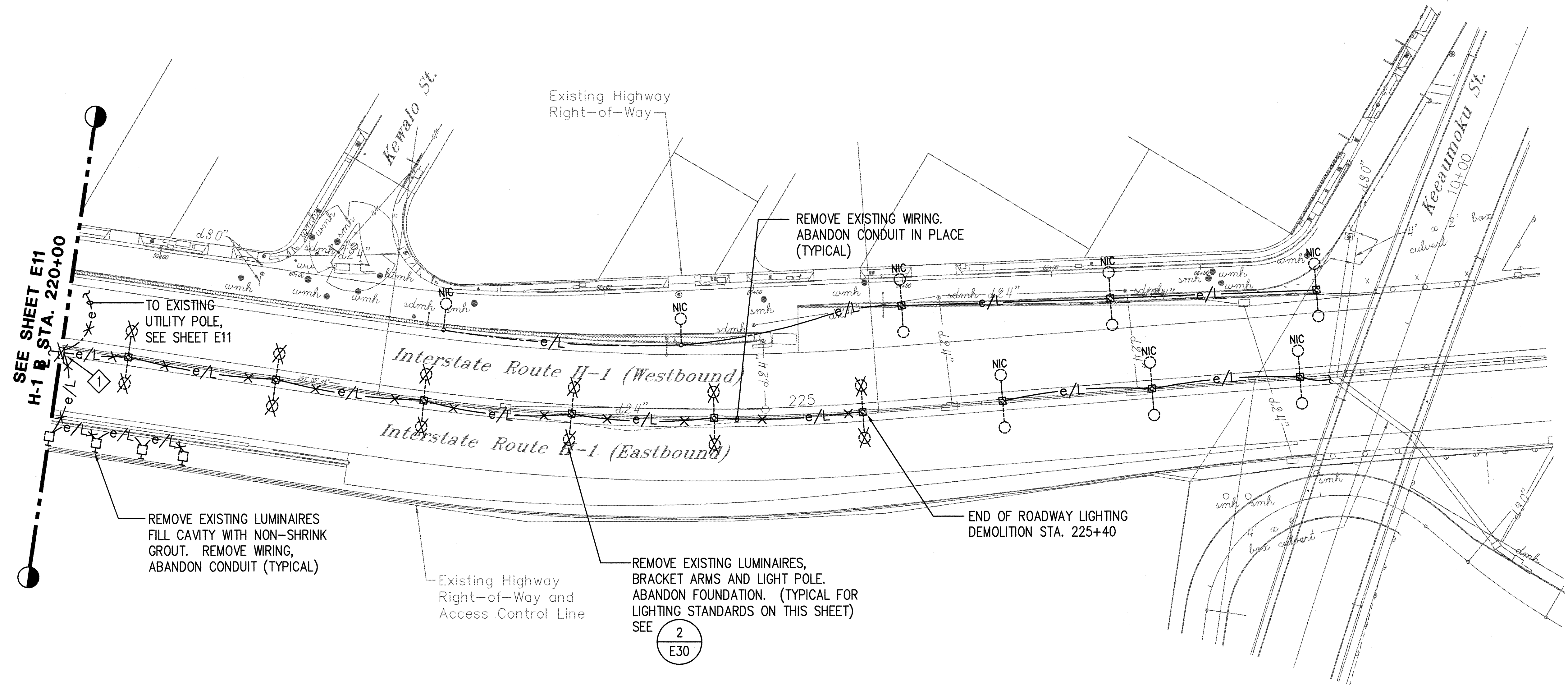
**DEMOLITION ELECTRICAL SITE
PLAN - H-1 AREA 5**

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)

Scale: 1"=40' Date: June 1, 1999

SHEET NO. E11 OF 58 SHEETS

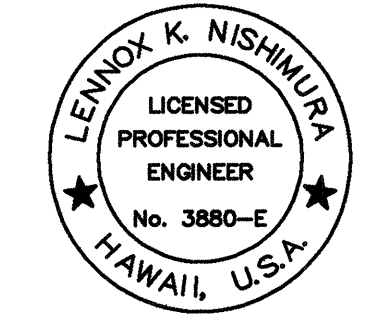
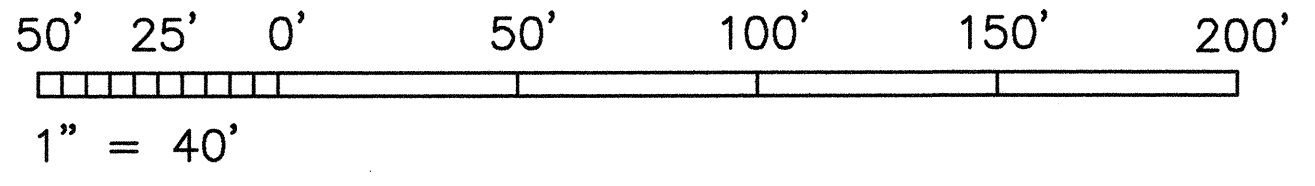
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	410	557



NOTE:
1 EXISTING PULLBOX TO BE ABANDONED.
DUCT SEAL UNUSED CONDUIT PENETRATIONS.

DEMOLITION ELECTRICAL SITE PLAN - H-1 AREA 6
SCALE: 1"=40'

GRAPHIC SCALE



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ECS, INC.
By *Lennox K. Nishimura*
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**DEMOLITION ELECTRICAL SITE
PLAN - H-1 AREA 6**

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)

Scale: 1"=40' Date: June 1, 1999

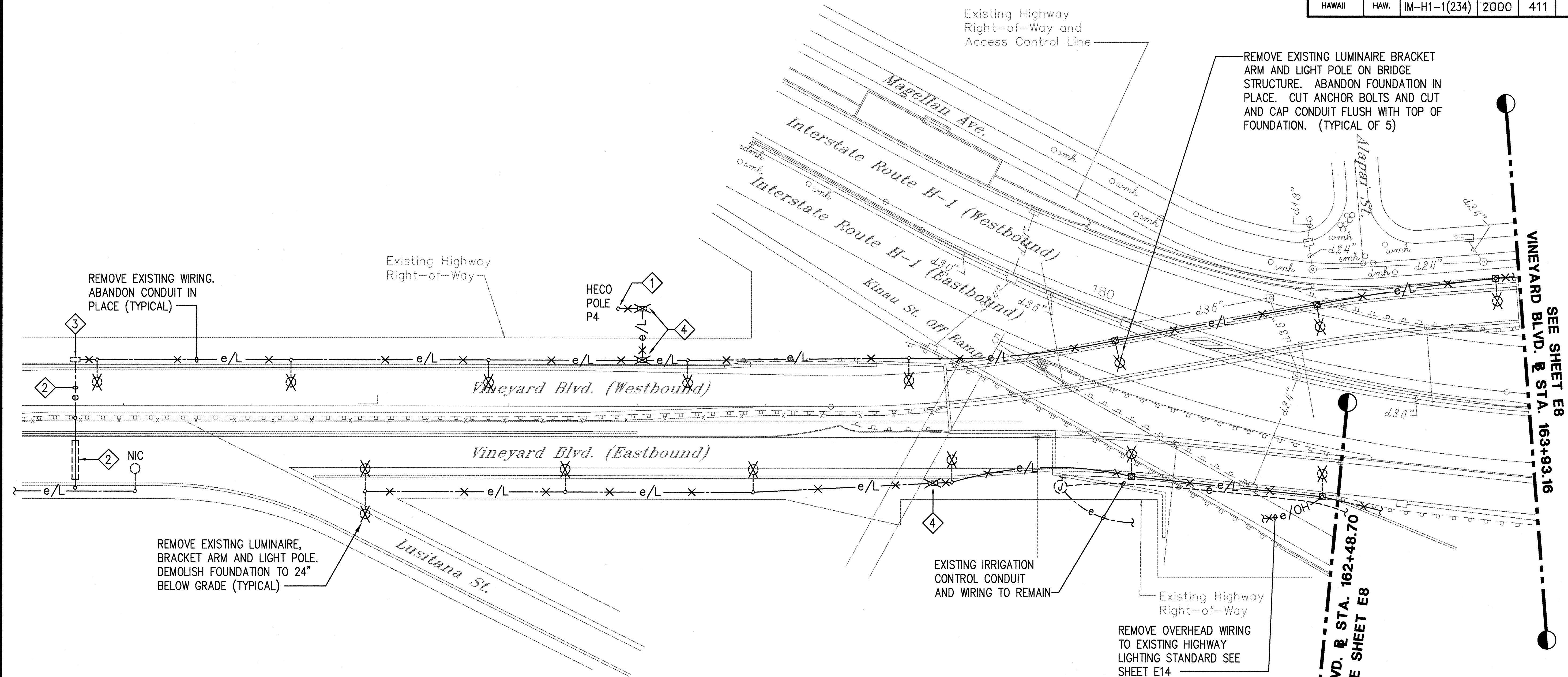
SHEET NO. E12 OF 58 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTES	
No.	

DATE: 1 = 1
SCALE: 1 = 1

PM: OPER: CAD
REVIS: REVISED:

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	411	557



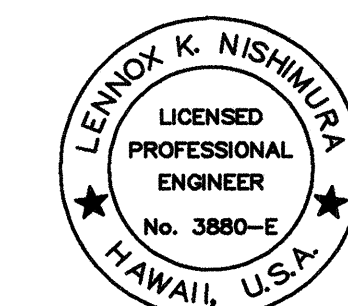
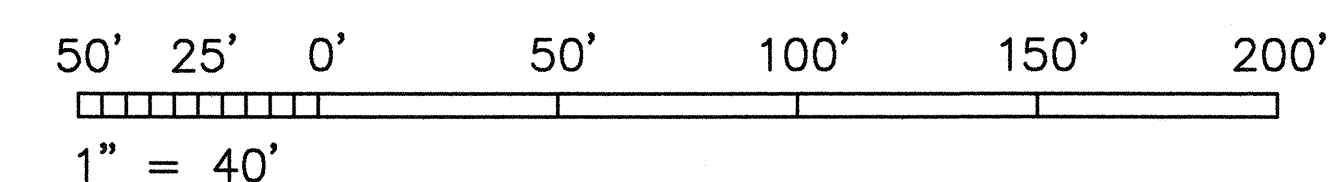
NOTES:

- 1 REMOVE EXISTING CIRCUIT BREAKER, LIGHTING CONTACTOR, CONDUIT AND WIRING ON EXISTING UTILITY POLE. COORDINATE REMOVAL OF METER SOCKET WITH HECO. SEE DETAIL 3 E38
- 2 EXISTING SIGN LIGHTS, CONDUIT AND WIRING TO REMAIN.
- 3 EXISTING PULLBOX TO REMAIN. DUCT SEAL UNUSED CONDUIT PENETRATIONS.
- 4 EXISTING PULLBOX TO BE DEMOLISHED TO 6" BELOW GRADE. FILL WITH #3 ROCK.

DEMOLITION ELECTRICAL SITE PLAN - VINEYARD ON/OFF RAMP

SCALE: 1"=40'

GRAPHIC SCALE



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ECS, INC.
By *Lennox K. Nishimura*
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

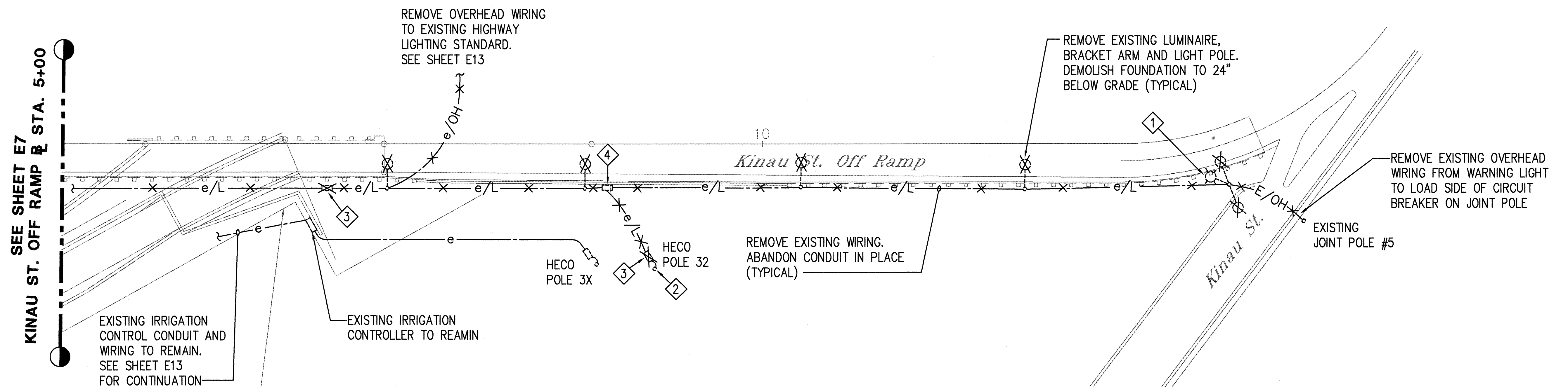
**DEMOLITION ELECTRICAL SITE
PLAN-VINEYARD ON/OFF RAMP**

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)

Scale: 1"=40' Date: June 1, 1999

SHEET NO. E13 OF 58 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	412	557



NOTES:

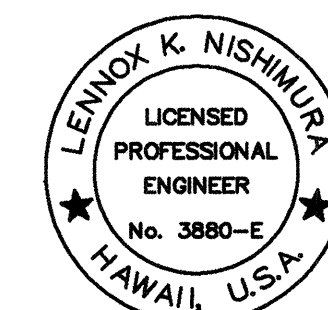
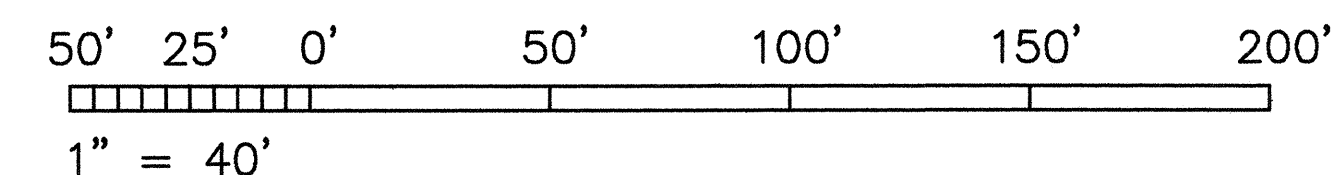
- 1 REMOVE EXISTING TRAFFIC SIGNAL WARNING LIGHT AND FLASHER. RELOCATE TO NEW HIGHWAY LIGHTING STANDARD. SEE SHEET E24
- 2 REMOVE EXISTING CIRCUIT BREAKER, LIGHTING CONTACTOR AND CONDUIT AND WIRING ON EXISTING UTILITY POLE. COORDINATE REMOVAL OF METER SOCKET WITH HECO. SEE DETAIL 3
- 3 EXISTING PULLBOX TO BE DEMOLISHED TO 6" BELOW GRADE. FILL PULLBOX WITH #3 ROCK.
- 4 EXISTING PULLBOX TO REMAIN. DUCT SEAL UNUSED CONDUIT PENETRATION.

3
E38

DEMOLITION ELECTRICAL SITE PLAN - KINAU STREET OFF RAMP

SCALE: 1"=40'

GRAPHIC SCALE



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ECS, INC.
By *Lennox K. Nishimura*
Its PROJECT ENGINEER

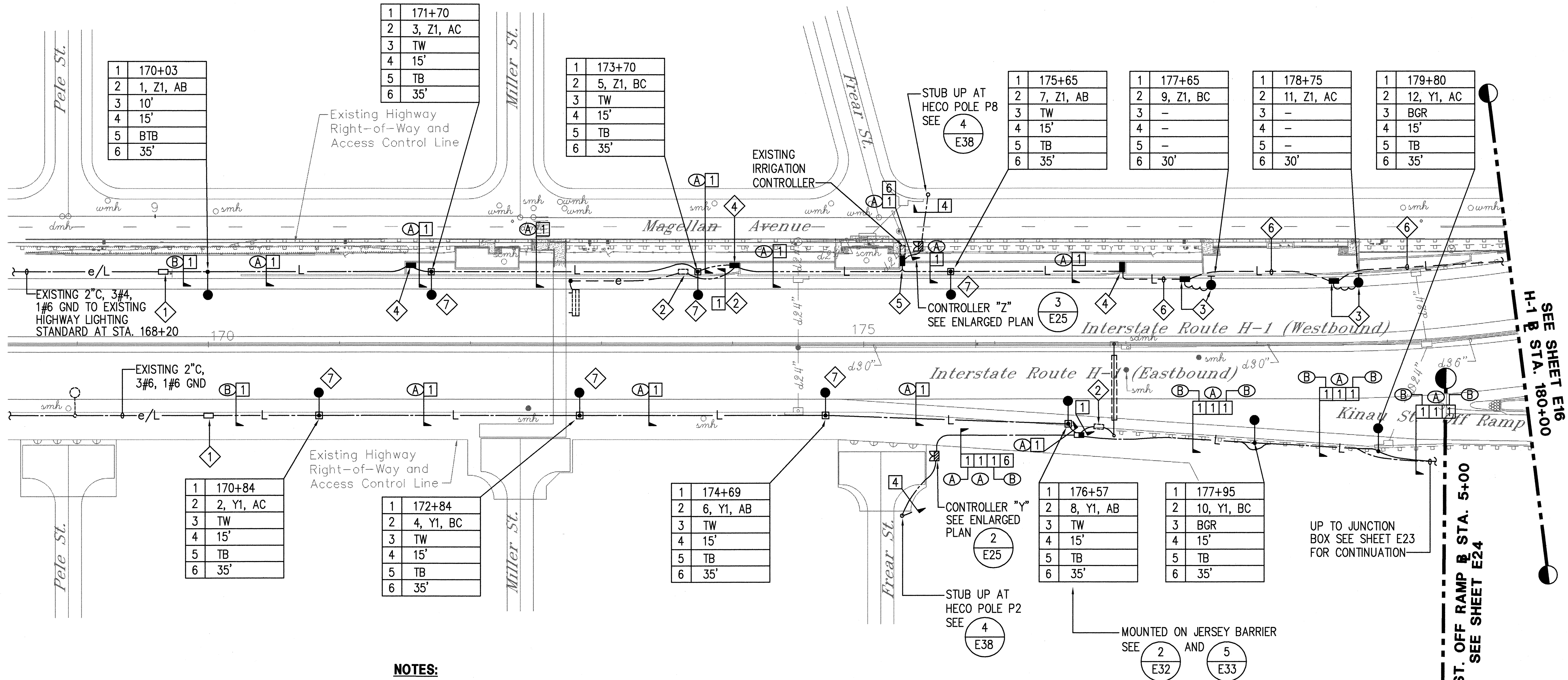
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
DEMOLITION ELECTRICAL SITE PLAN - KINAU STREET OFF RAMP	
INTERSTATE ROUTE H-1 RESURFACING Vic. of Punchbowl Off Ramp to Kapiolani IC F.A.I. Project No. IM-H1-1(234)	
Scale: 1"=40'	Date: June 1, 1999
SHEET NO. E14 OF 58 SHEETS	

SURVEY PLANNED BY	DATE
DRAWN BY	
CHECKED BY	
QUANTITIES BY	
DESIGNED BY	
ORIGINAL PLAN	
NOTES	
No.	

PM: OPER: CAD
REVISED:

DATE: 1 = 1
SCALE:

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	413	557



NOTES:

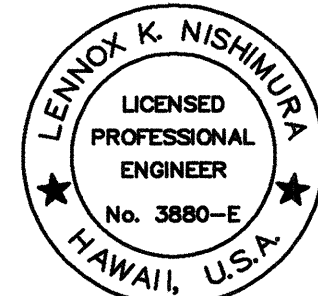
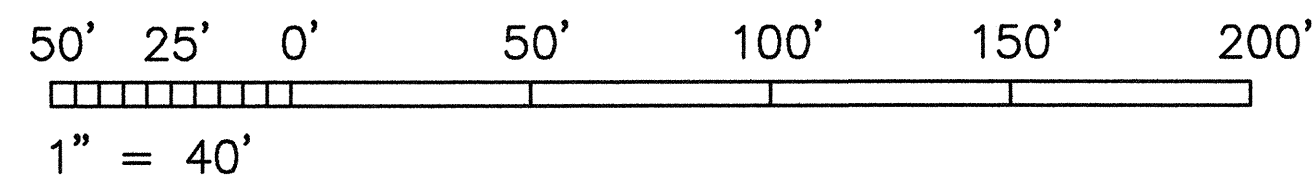
- INTERCEPT EXISTING CONDUIT AND WIRING WITH NEW HANDHOLE. CONNECT PHASE "A" AND "B" OF NEW FEEDER TO EXISTING 120/240V, 1Ø, 3W HIGHWAY LIGHTING CIRCUIT.
- CONNECT EXISTING 120V SIGN LIGHTING CIRCUIT TO PHASE "C" OF NEW HIGHWAY LIGHTING FEEDER IN EXISTING HANDHOLE. PROVIDE 2#6, 1#10 GND TO LINE SIDE OF EXISTING FUSES IN HANDHOLE.
- REPLACE EXISTING LUMINAIRE WITH NEW 250W HPS LUMINAIRE. PROVIDE NEW CAST JUNCTION BOX. SEE DETAIL.

- 12" SQUARE x 6" D CAST JUNCTION BOX. SEE E39
- 18" SQUARE x 6" D CAST JUNCTION BOX SIMILAR TO E39
- 2" PVC COATED GRC, 4#2 RHW-USE, 1#6 GND.
- HIGHWAY LIGHTING STANDARD MOUNTED ON RETAINING WALL. SEE E32 AND E33

ELECTRICAL SITE PLAN - H-1 AREA 1

SCALE: 1"=40'

GRAPHIC SCALE



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ECS, INC.
By *Lennox K. Nishiwara*
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**ELECTRICAL SITE
PLAN - H-1 AREA 1**
INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)
Scale: 1"=40' Date: June 1, 1999
SHEET NO. E15 OF 58 SHEETS

413

PM: OPER: CAD
REVISED:

DATE: 1 = 1
SCALE:

SURVEY PLOTTED BY	DATE
DESIGNED BY	
CHECKED BY	
APPROVED BY	
ORIGINAL PLAN	
NOTEBOOK	
No.	

FILE: 103-3E11

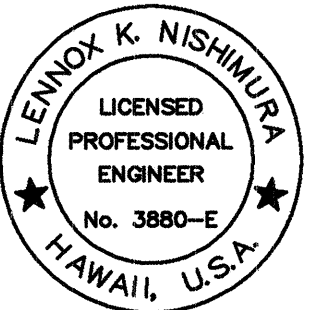
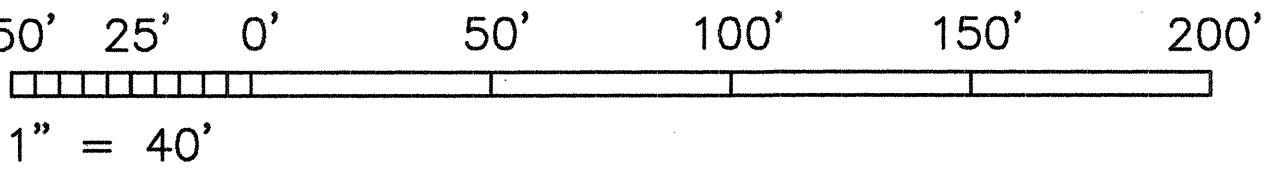
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	414	557

- NOTES:**
- 1 EXPANSION JOINT. PROVIDE EXPANSION COUPLING.
 - 2 CONNECT EXISTING 120V SIGN LIGHT CIRCUIT TO PHASE "C" OF NEW HIGHWAY LIGHTING FEEDER IN EXISTING HANDHOLE. PROVIDE 2#6, 1#10 GND TO LINE SIDE OF EXISTING FUSES IN HANDHOLE.
 - 3 WALL MOUNTED HIGHWAY LIGHTING LUMINAIRE WITH BRACKET ARM. SEE E35
 - 4 18" SQUARE x 6" DEEP CAST JUNCTION BOX. SEE E40
 - 5 2" PVC COATED GRC, 4#2 RHW-USE, 1#6 GND
 - 6 2" PVC COATED GRC, 3#2 RHW-USE, 1#6 GND
 - 7 2" PVC COATED GRC, 2#2 RHW-USE, 1#6 GND

ELECTRICAL SITE PLAN - H-1 AREA 2

SCALE: 1"=40'

GRAPHIC SCALE



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By *Lennox K. Nishimura*
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**ELECTRICAL SITE
PLAN - H-1 AREA 2**

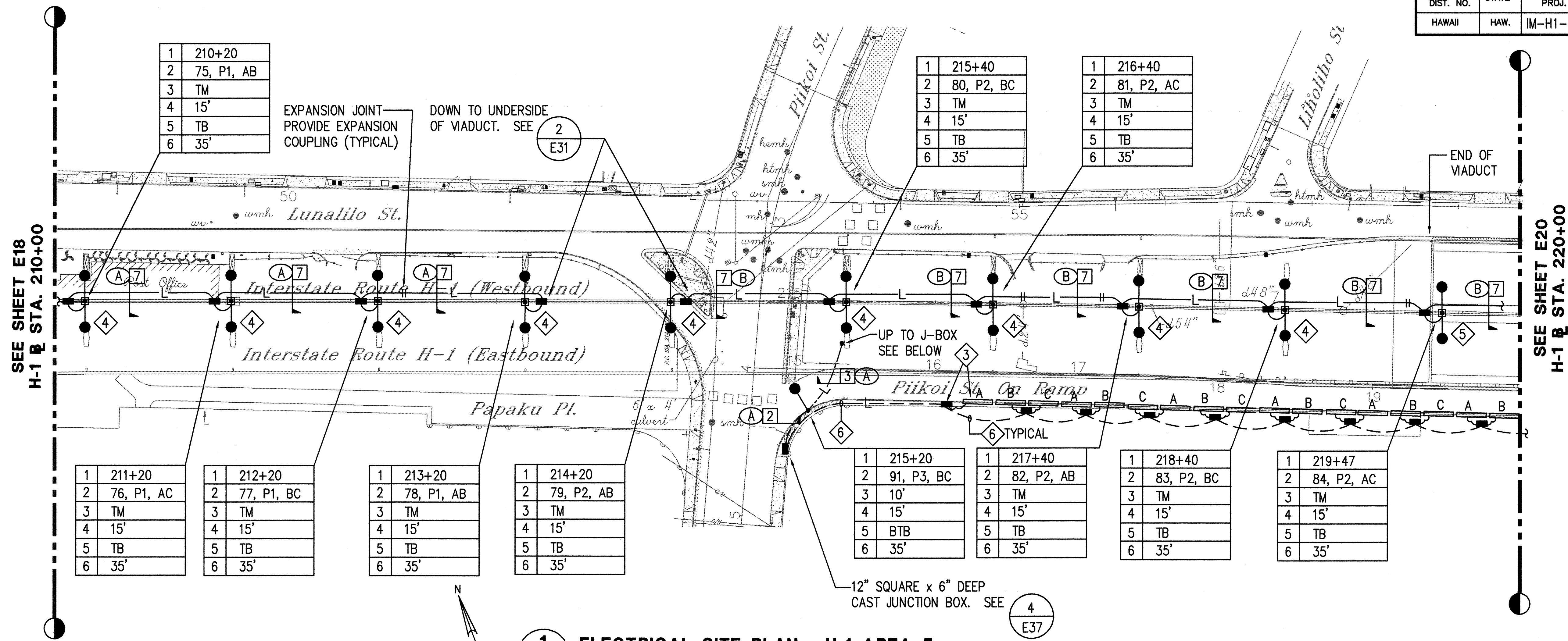
INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)

Scale: 1"=40' Date: June 1, 1999

SHEET NO. E16 OF 58 SHEETS

FILE: 103-3E12

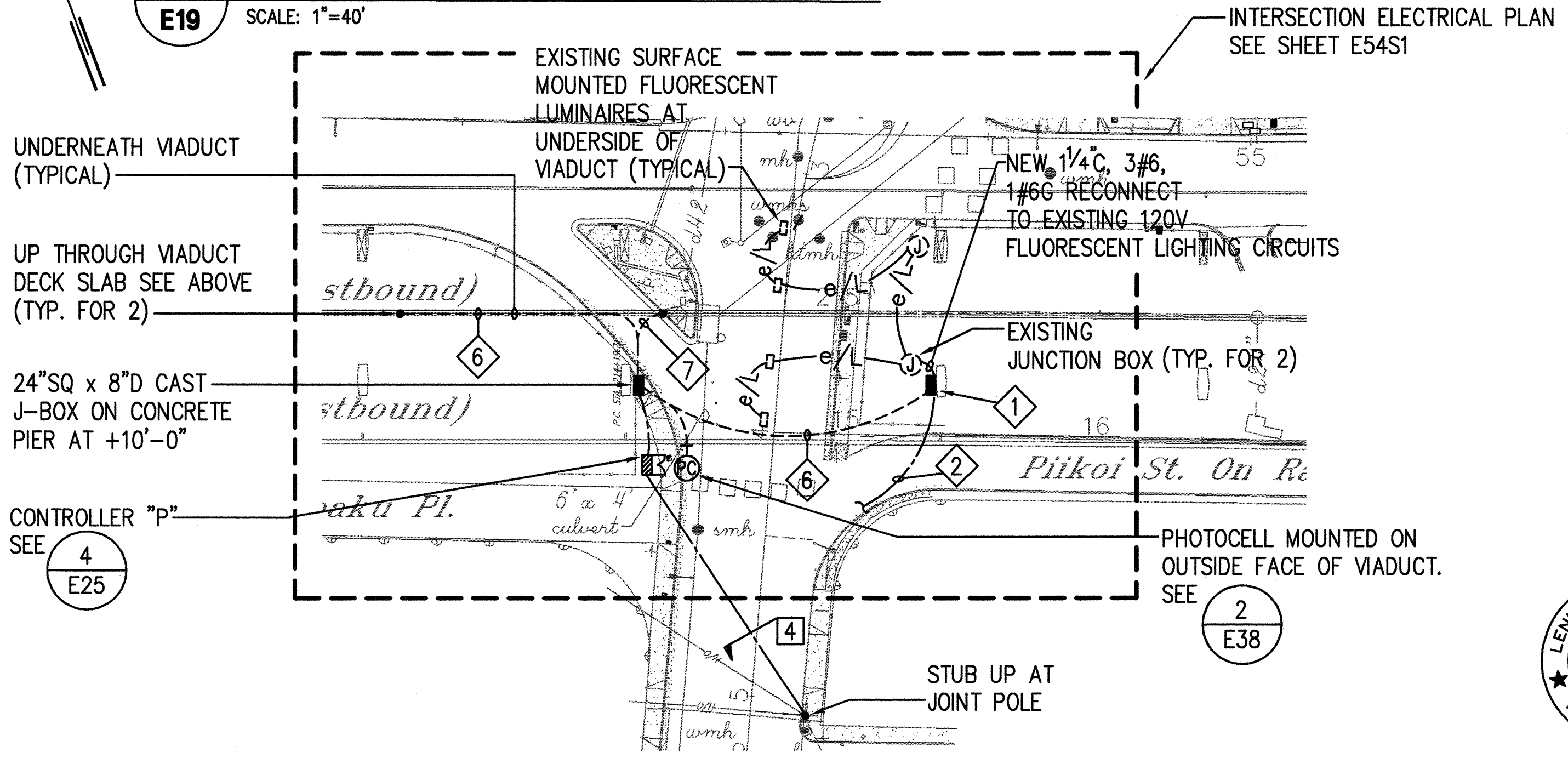
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	417	557



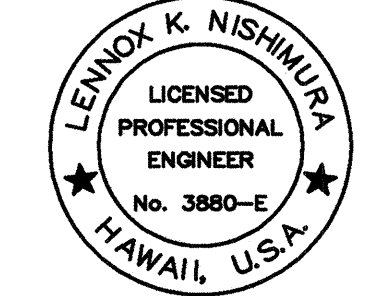
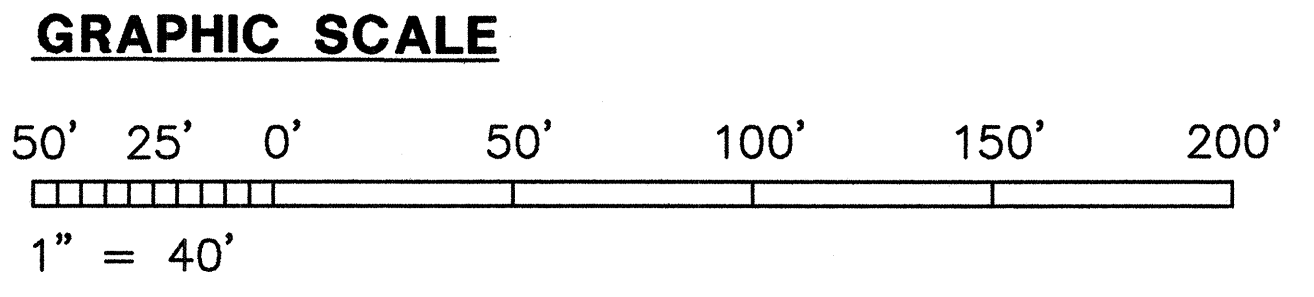
1 ELECTRICAL SITE PLAN - H-1 AREA 5
 SCALE: 1"=40'

NOTES:

- 1 NEW 24"L x 18"W x 8"D JUNCTION BOX AT UNDERSIDE OF VIADUCT. CONNECT PHASES A AND B OF NEW HIGHWAY LIGHTING FEEDER "P3" TO EXISTING 120V FLUORESCENT LUMINAIRES
- 2 TO LIGHT POLE #91. SEE 1/E19
- 3 120V FLUORESCENT LUMINAIRES AND JUNCTION BOX MOUNTED ON RETAINING WALL (TYPICAL). SEE 1/E37
- 4 HIGHWAY LIGHTING STANDARD ON VIADUCT MEDIAN CONCRETE BARRIER. SEE 1/E30 AND 1/E31
- 5 HIGHWAY LIGHTING LUMINAIRE ON MEDIAN CONCRETE BARRIER. SEE 1/E30 AND 2/E30
- 6 2" PVC COATED GRC, 4#2 RHW-USE, 1#6 GND
- 7 2" PVC COATED GRC, 3#2 RHW-USE, 1#6 GND



2 PARTIAL PIIKOI STREET LIGHTING PLAN (BELOW VIADUCT)
 SCALE: 1"=40'



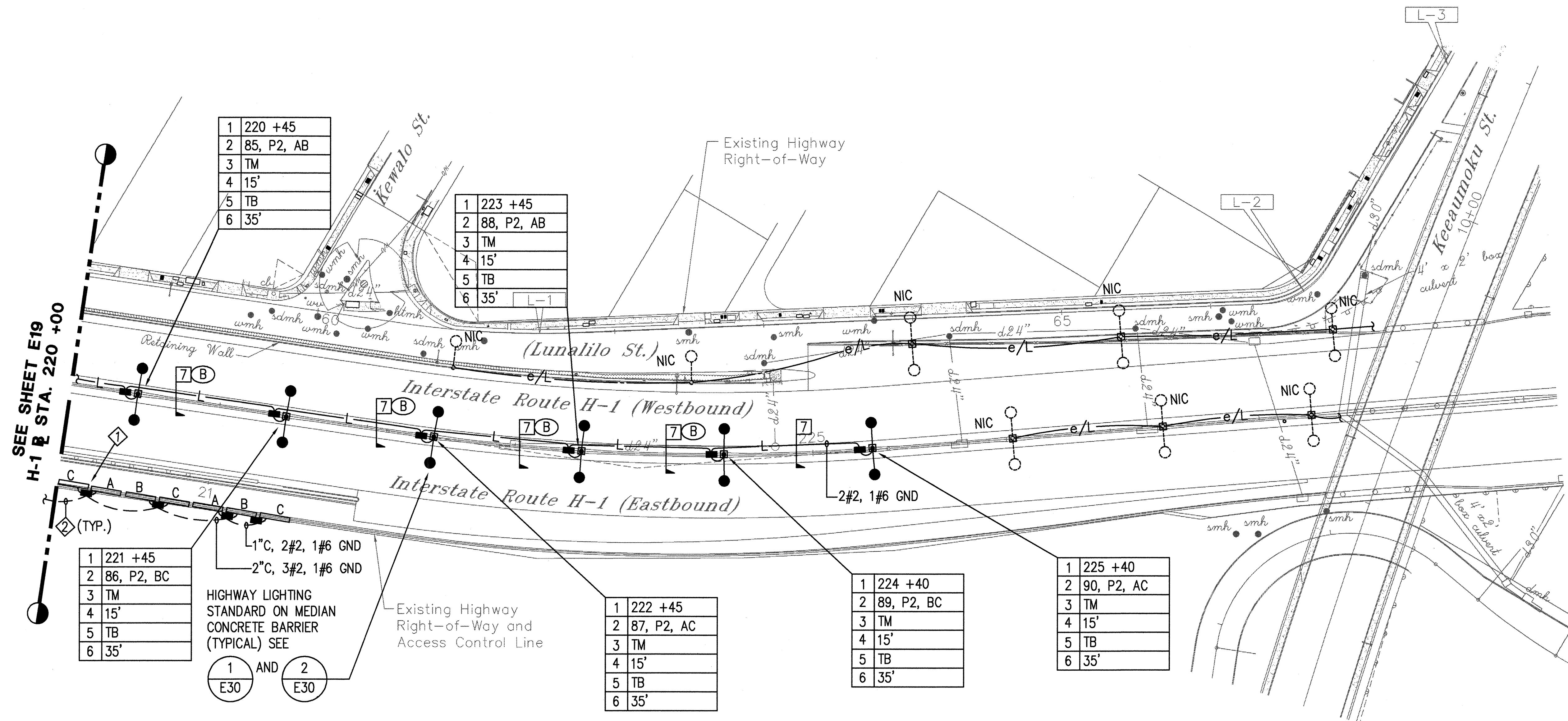
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
 ECS, INC.
 By *Lennox K. Nishimura*
 Its PROJECT ENGINEER

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
ELECTRICAL SITE
PLAN - H-1 AREA 5
 INTERSTATE ROUTE H-1 RESURFACING
 Vic. of Punchbowl Off Ramp to Kapiolani IC
 F.A.I Project No. IM-H1-1(234)
 Scale: 1"=40' Date: June 1, 1999
 SHEET NO. E19 OF 58 SHEETS

DATE: 1 = 1
 SCALE: 1 = 1
 PM: OPER: CAD
 REVISIONS:

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NO. 1	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	418	557



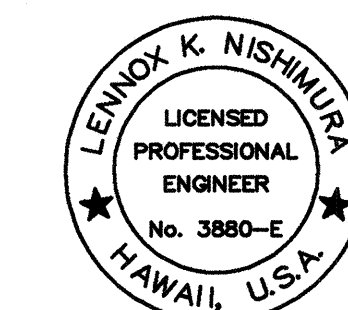
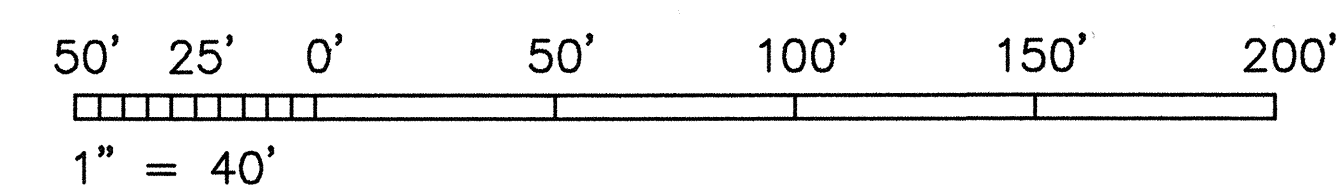
NOTES:

- 120V FLUORESCENT LUMINAIRES AND JUNCTION BOX MOUNTED ON RETAINING WALL (TYPICAL). SEE CONNECT TO PHASE LEG OF FEEDER "P3" AS SHOWN.
- 2" PVC COATED GRC, 4#2, RHW-USE, 1#6 GND

ELECTRICAL SITE PLAN - H-1 AREA 6

SCALE: 1"=40'

GRAPHIC SCALE



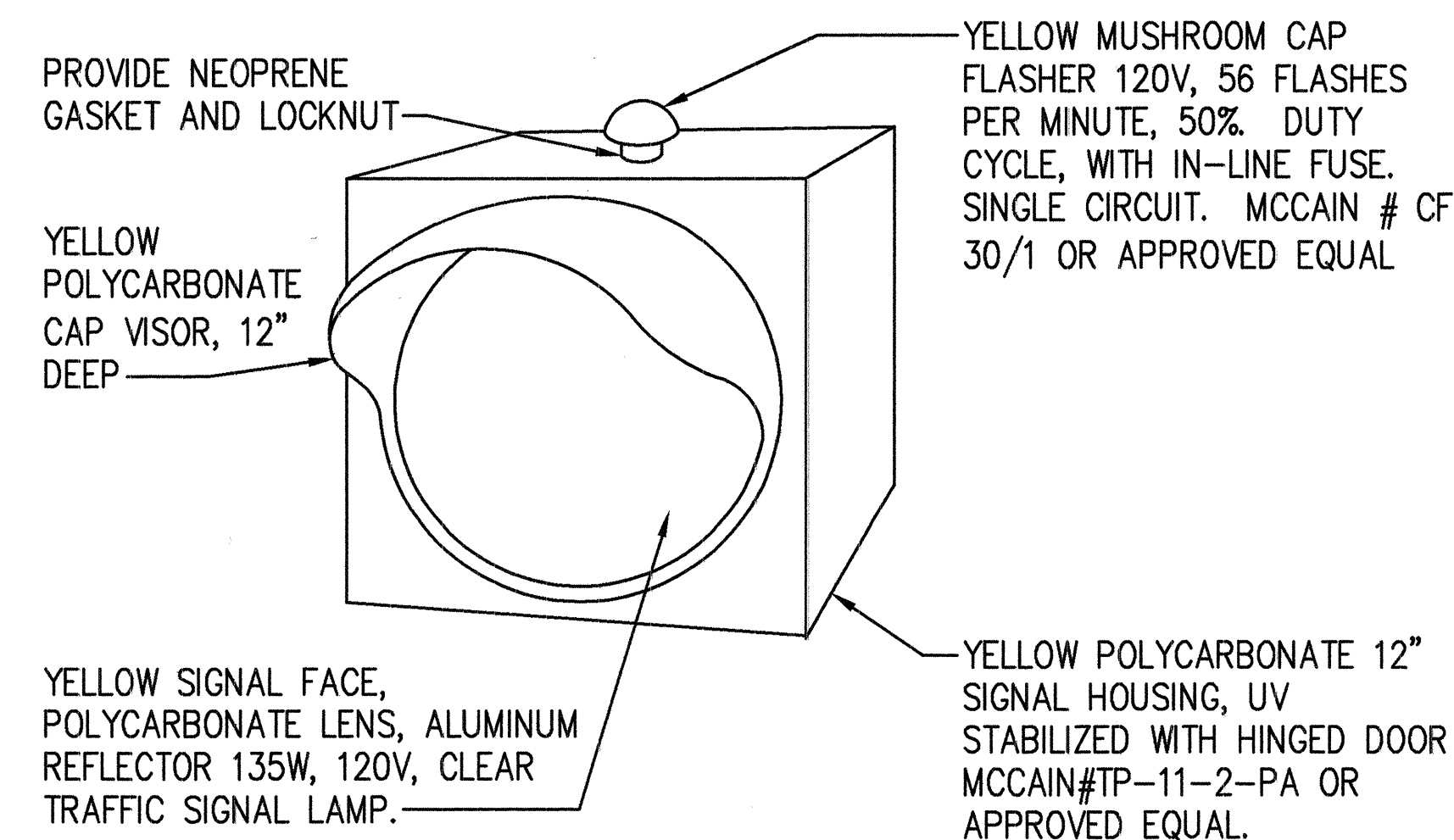
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
ECS, INC.
By: *Lennox K. Nishimura*
Its: PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

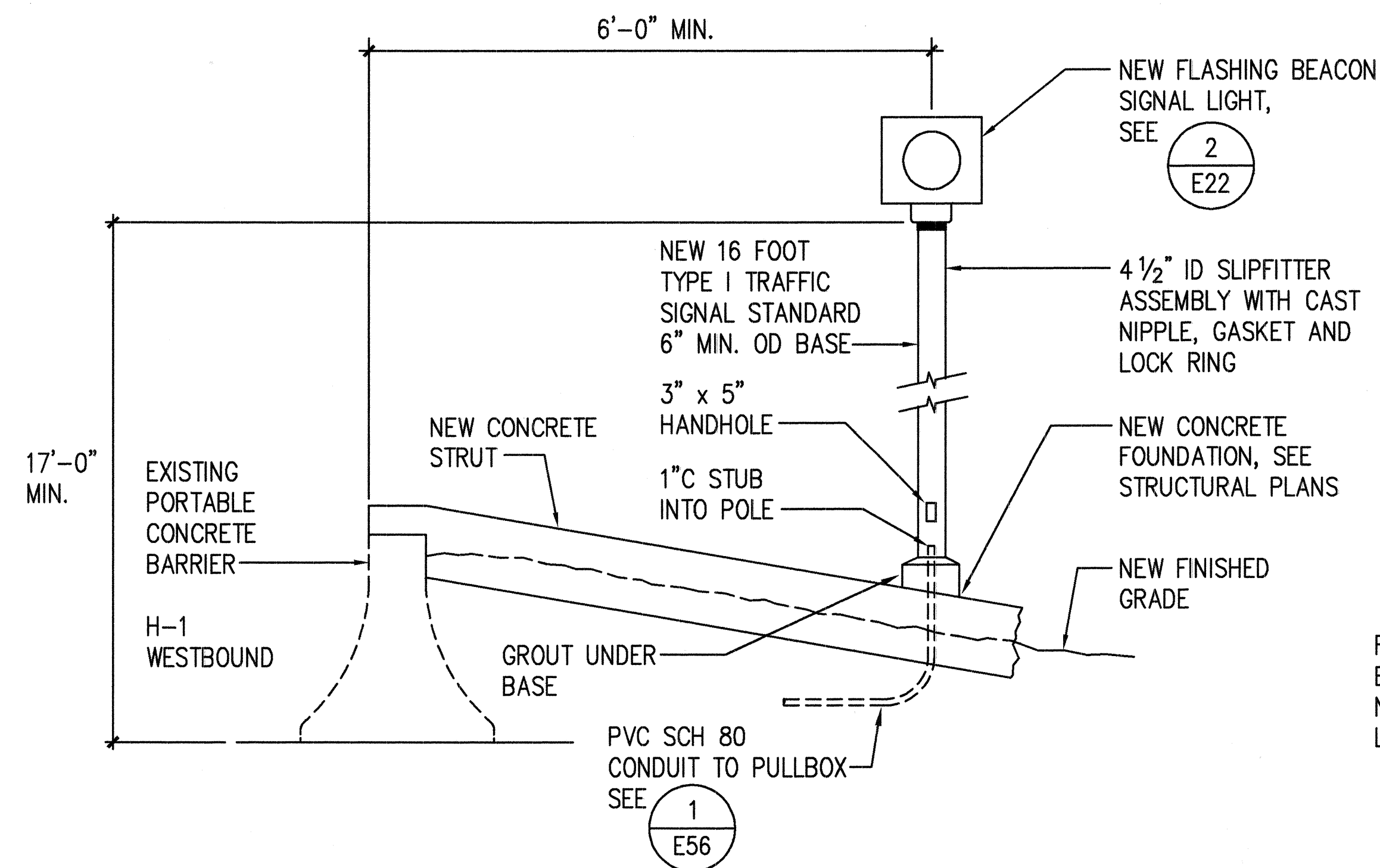
**ELECTRICAL SITE
PLAN - H-1 AREA 6**

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)
Scale: 1"=40' Date: June 1, 1999
SHEET NO. E20 OF 58 SHEETS

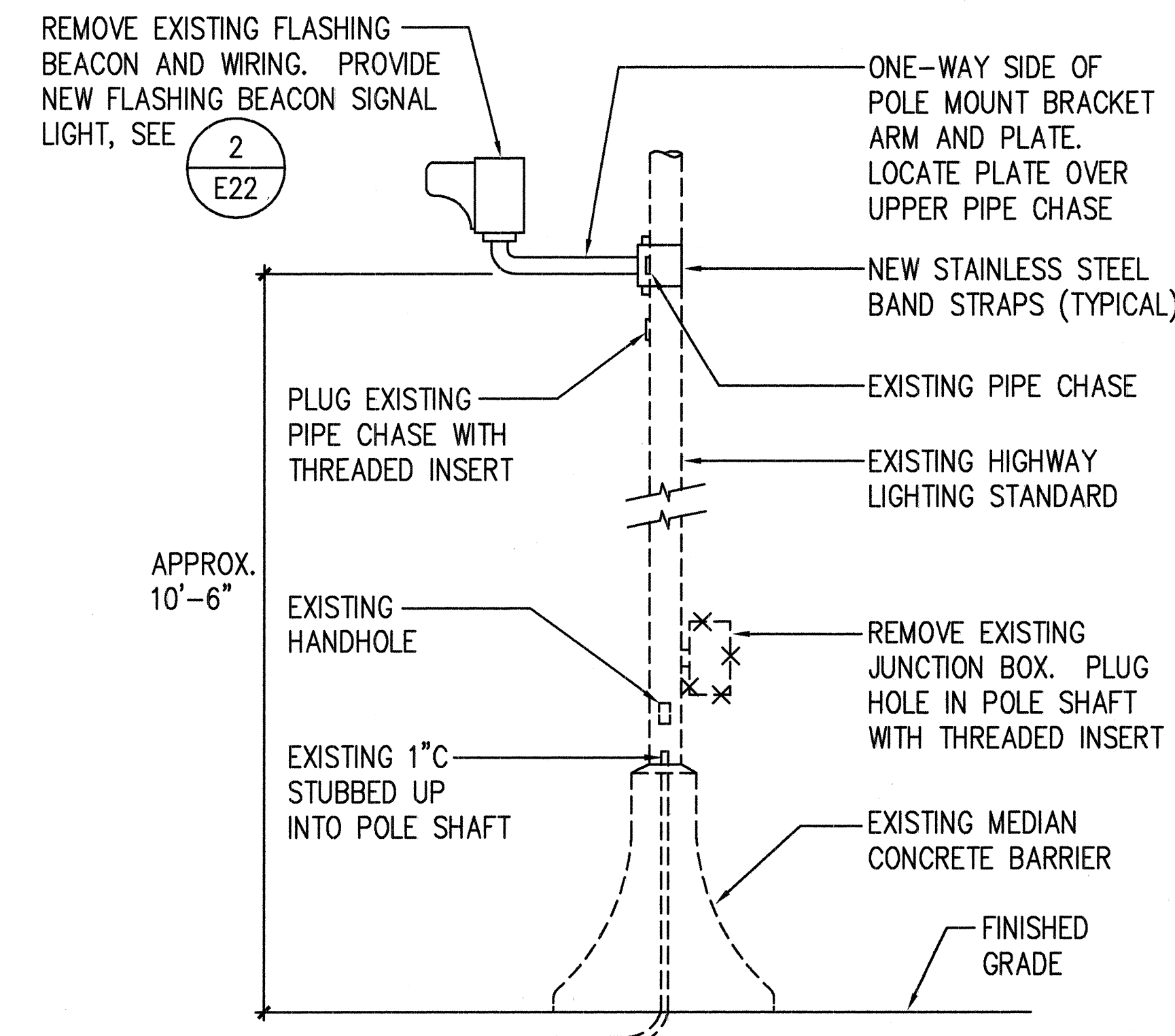
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	420	557



2 FLASHING BEACON DETAIL
E22 NOT TO SCALE

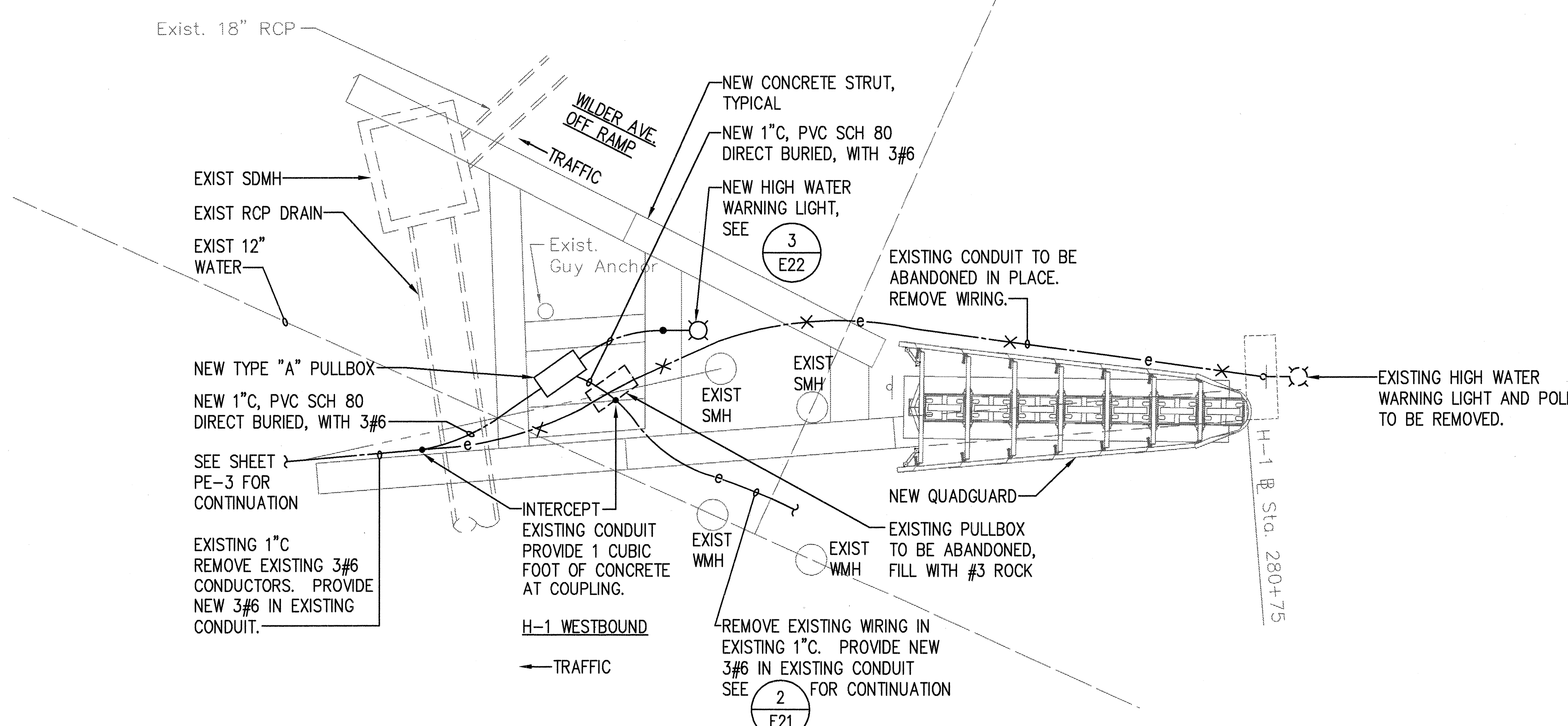


3 HIGHWAY WARNING LIGHT - WILDER AVE OFF RAMP
E22 NOT TO SCALE

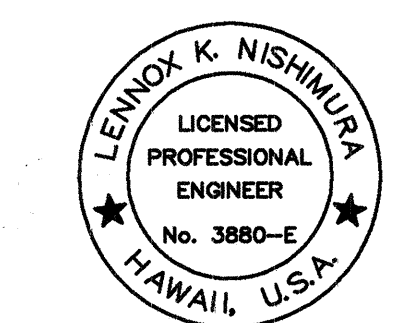
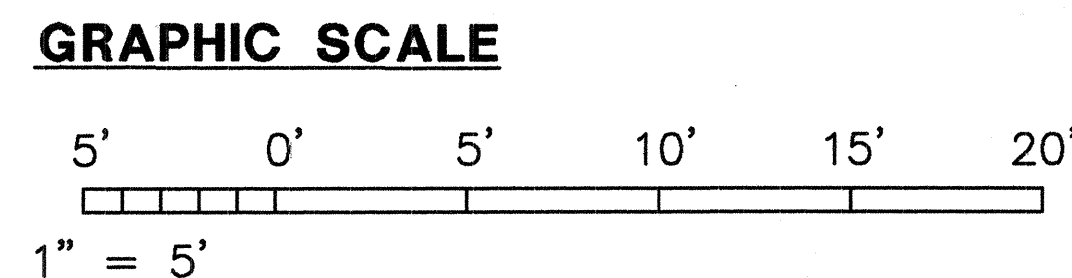


4 HIGHWAY WARNING LIGHT ON LIGHTING STANDARD
E22 NOT TO SCALE

NOTE:
SIGN PANEL MOUNTED ON POLE NOT SHOWN. SEE PAVEMENT MARKING AND SIGNING PLANS



1 WILDER AVE. OFF RAMP PARTIAL ELECTRICAL PLAN
E22 SCALE: 1"=5'



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ECS, INC.
By *Lemox K. Nishimura*
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**WILDER AVE. OFF RAMP
PARTIAL ELECTRICAL PLAN**

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)

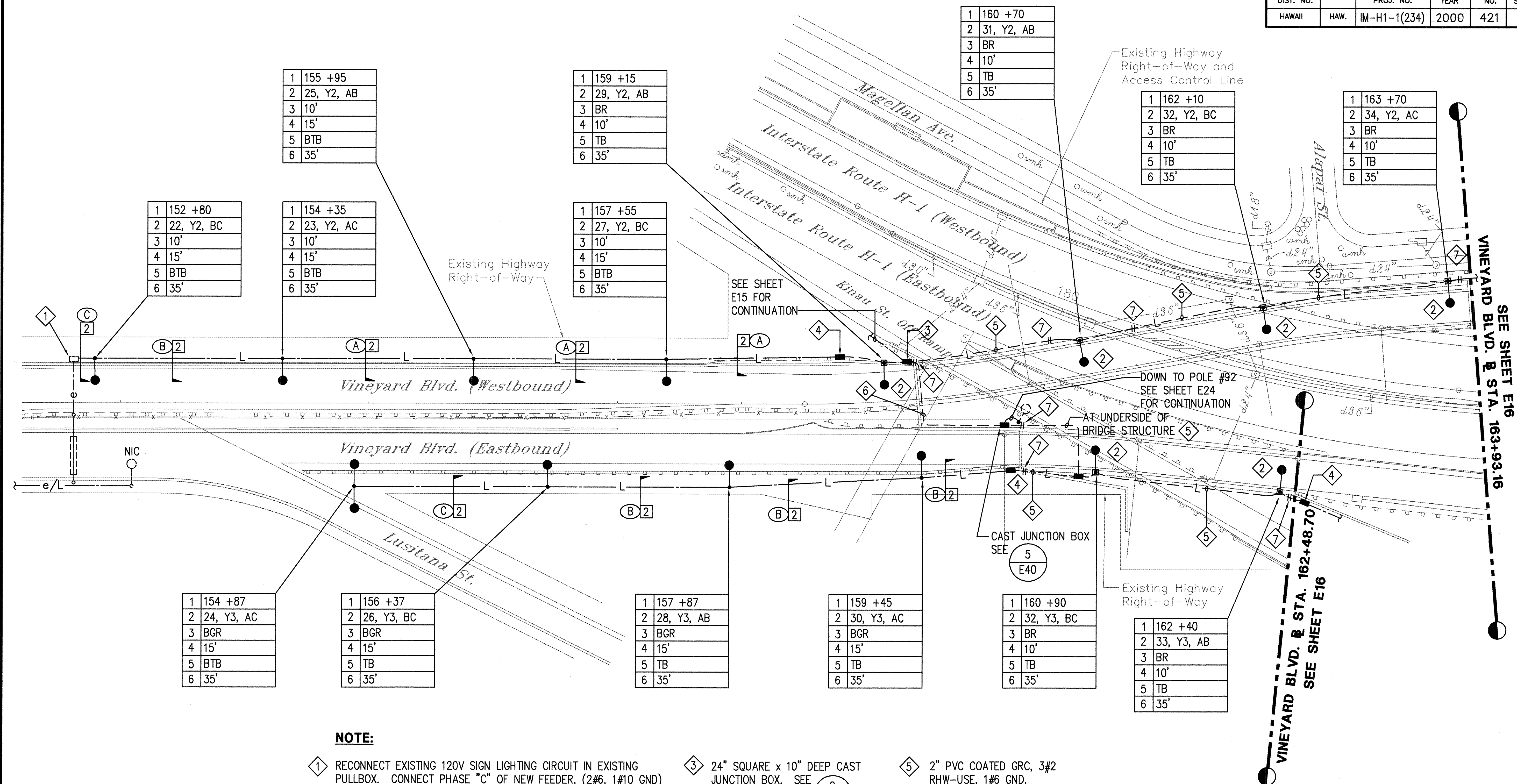
Scale: 1"=5' Date: June 1, 1999

SHEET NO. E22 OF 58 SHEETS

SURVEY PLATTED BY	DATE
DRAWN BY	
CHECKED BY	
QUANTITIES BY	
ORIGINAL PLAN	
NOTED	
NO.	

FILE: 103-3158

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	421	557

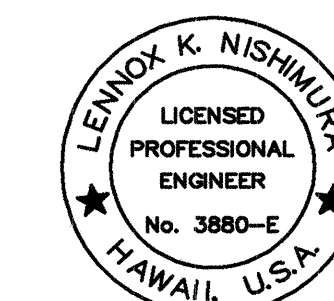
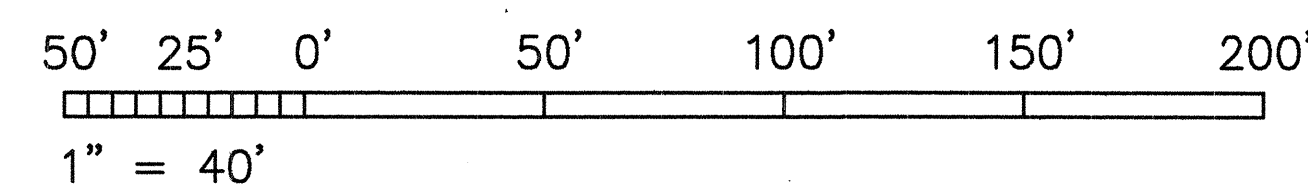


NOTE:

- ① RECONNECT EXISTING 120V SIGN LIGHTING CIRCUIT IN EXISTING PULLBOX. CONNECT PHASE "C" OF NEW FEEDER, (2#6, 1#10 GND) TO LINE SIDE OF EXISTING FUSES IN PULLBOX.
- ② HIGHWAY LIGHTING STANDARD AND JUNCTION BOX MOUNTED ON BRIDGE RAIL SEE ① AND ④
- ③ 24" SQUARE x 10" DEEP CAST JUNCTION BOX. SEE ②
- ④ 12" SQUARE x 6" DEEP CAST JUNCTION BOX. SEE ②
- ⑤ 2" PVC COATED GRC, 3#2 RHW-USE, 1#6 GND.
- ⑥ 2-2" PVC COATED GRC, 3#2 RHW-USE, 1#6 GND IN EACH.
- ⑦ EXPANSION JOINT. PROVIDE EXPANSION COUPLING.

ELECTRICAL SITE PLAN - VINEYARD ON/OFF RAMP
SCALE: 1"=40'

GRAPHIC SCALE



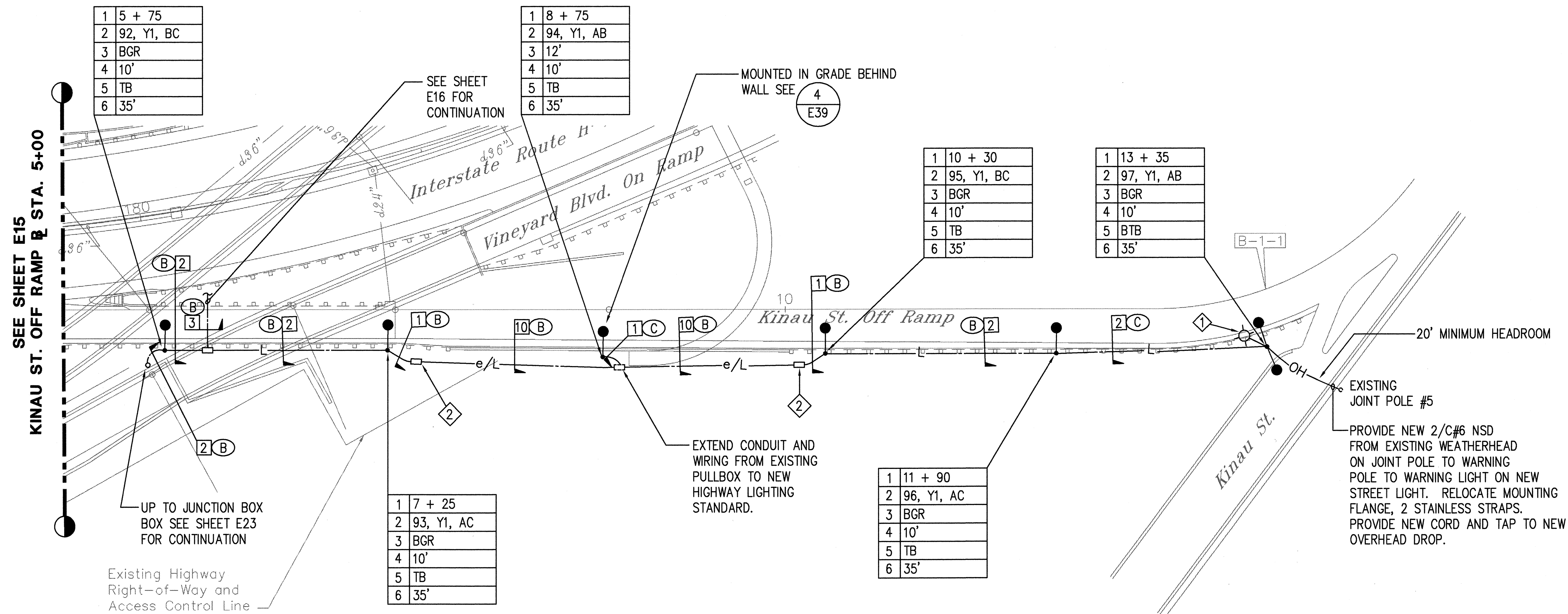
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
ECS, INC.
By: *Lennox K. Nishimura*
PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**ELECTRICAL SITE PLAN -
VINEYARD ON/OFF RAMP**

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I Project No. IM-H1-1(234)
Scale: 1"=40' Date: June 1, 1999
SHEET NO. E23 OF 58 SHEETS

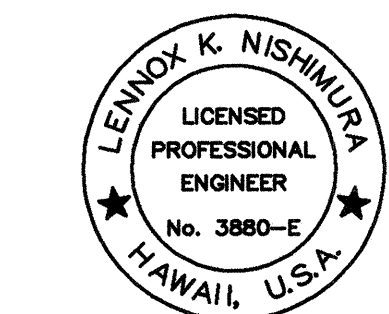
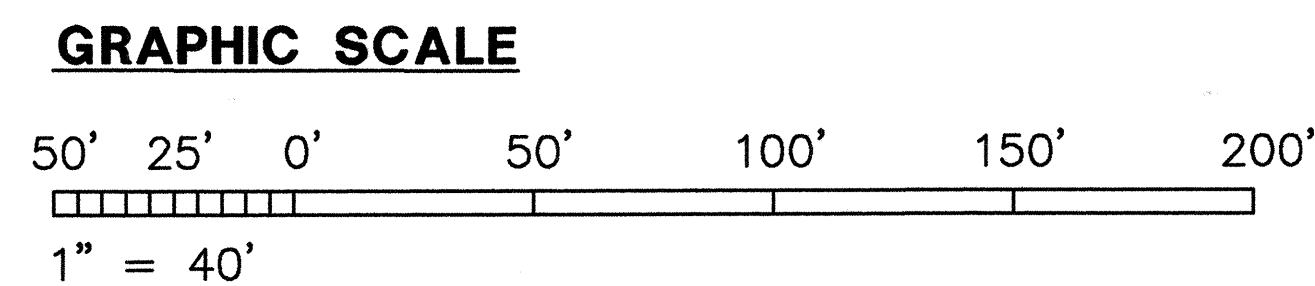
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	422	557



- NOTES:**
- 1 RELOCATE EXISTING TRAFFIC SIGNAL WARNING LIGHT AND FLASHER TO NEW HIGHWAY LIGHTING STANDARD. RECONNECT WIRING AS REQUIRED.
 - 2 INTERCEPT EXISTING CONDUIT WITH NEW PULLBOX.

ELECTRICAL SITE PLAN - KINAU STREET OFF RAMP

SCALE: 1"=40'



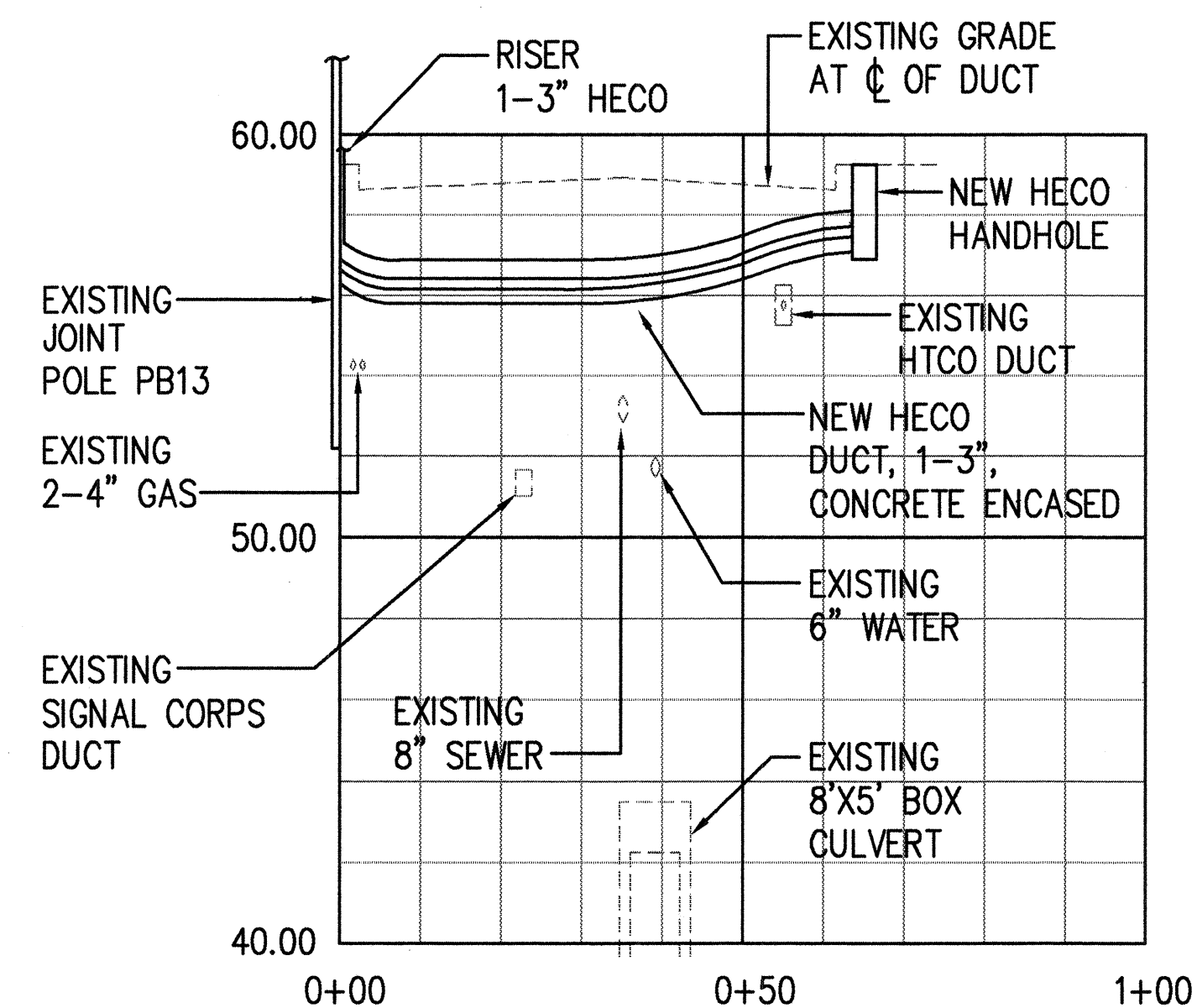
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
ECS, INC.
By *James K. Nishimura*
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**ELECTRICAL SITE PLAN -
KINAU STREET OFF RAMP**
INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I Project No. IM-H1-1(234)
Scale: 1"=40' Date: June 1, 1999
SHEET NO. E24 OF 58 SHEETS

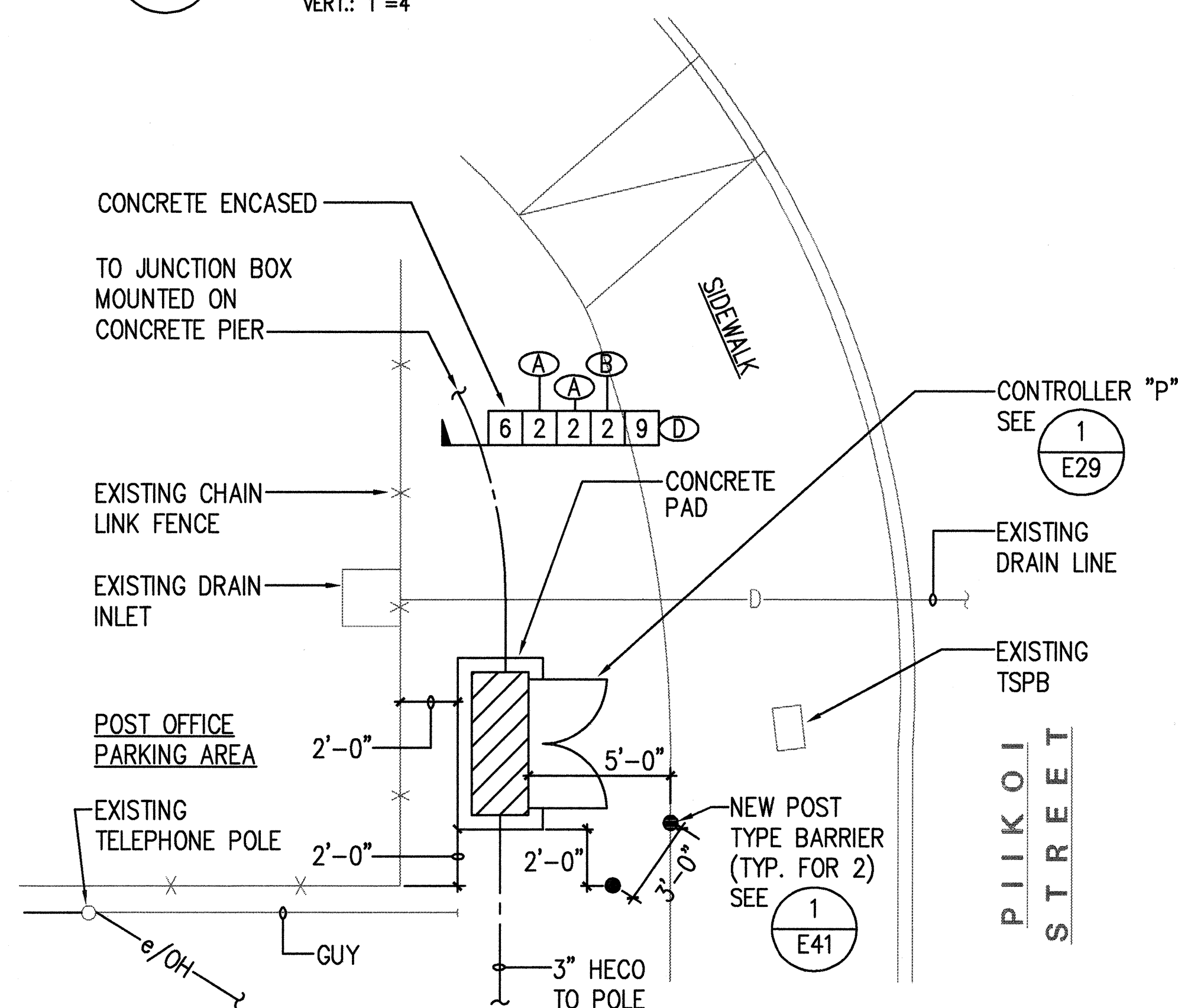
SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTES	
No.	

DATE: 1 = 1
SCALE: 1" = 40'
PM: OPER: CM
REVISED:

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	423	557



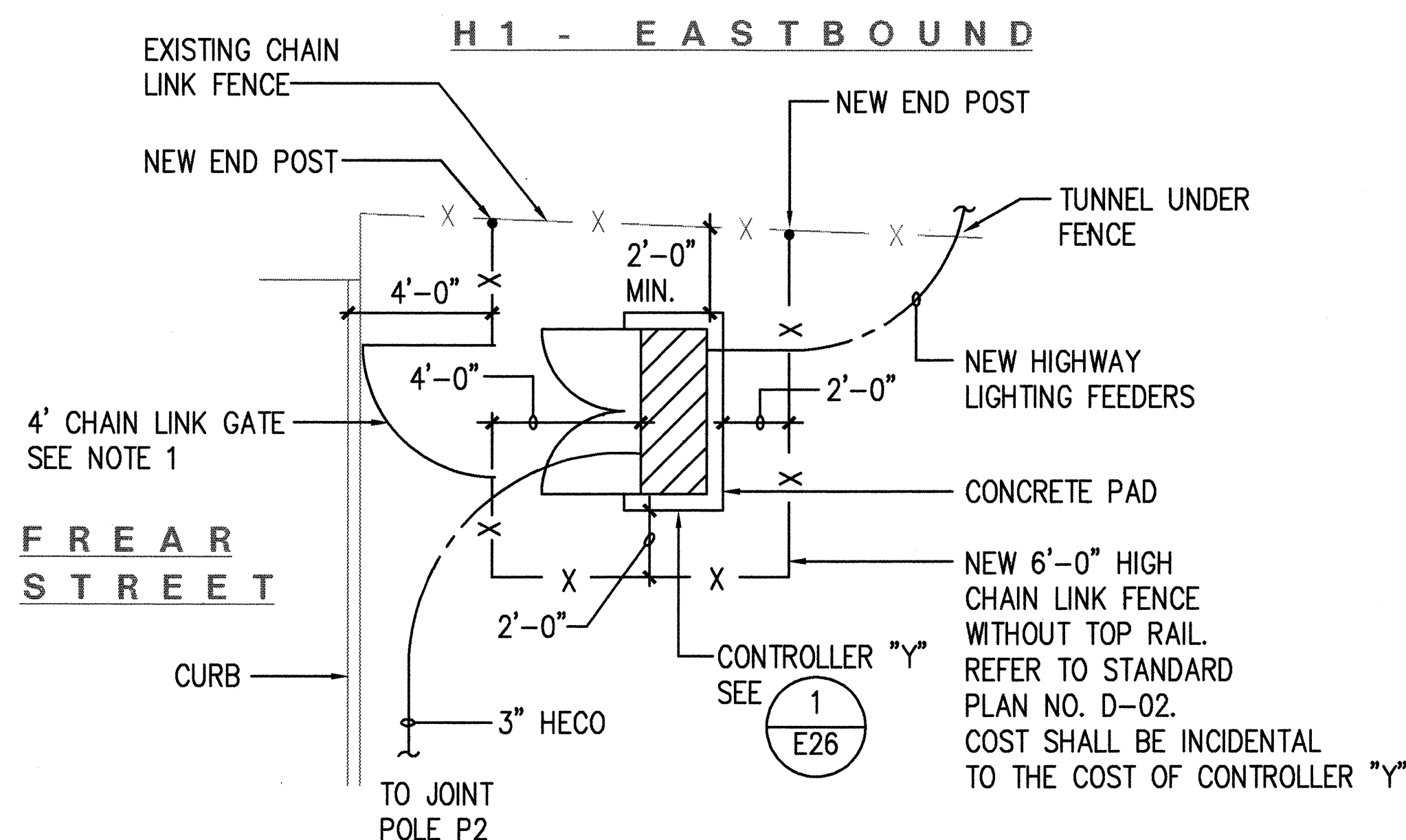
1 PROFILE - WARD AVENUE CROSSING
E25 SCALE: HORIZ.: 1"=20'
 VERT.: 1"=4'



NOTE:

MATERIAL AND LABOR COST OF INSTALLING POST TYPE BARRIERS SHALL BE INCIDENTAL TO THE COST OF CONTROLLER "P".

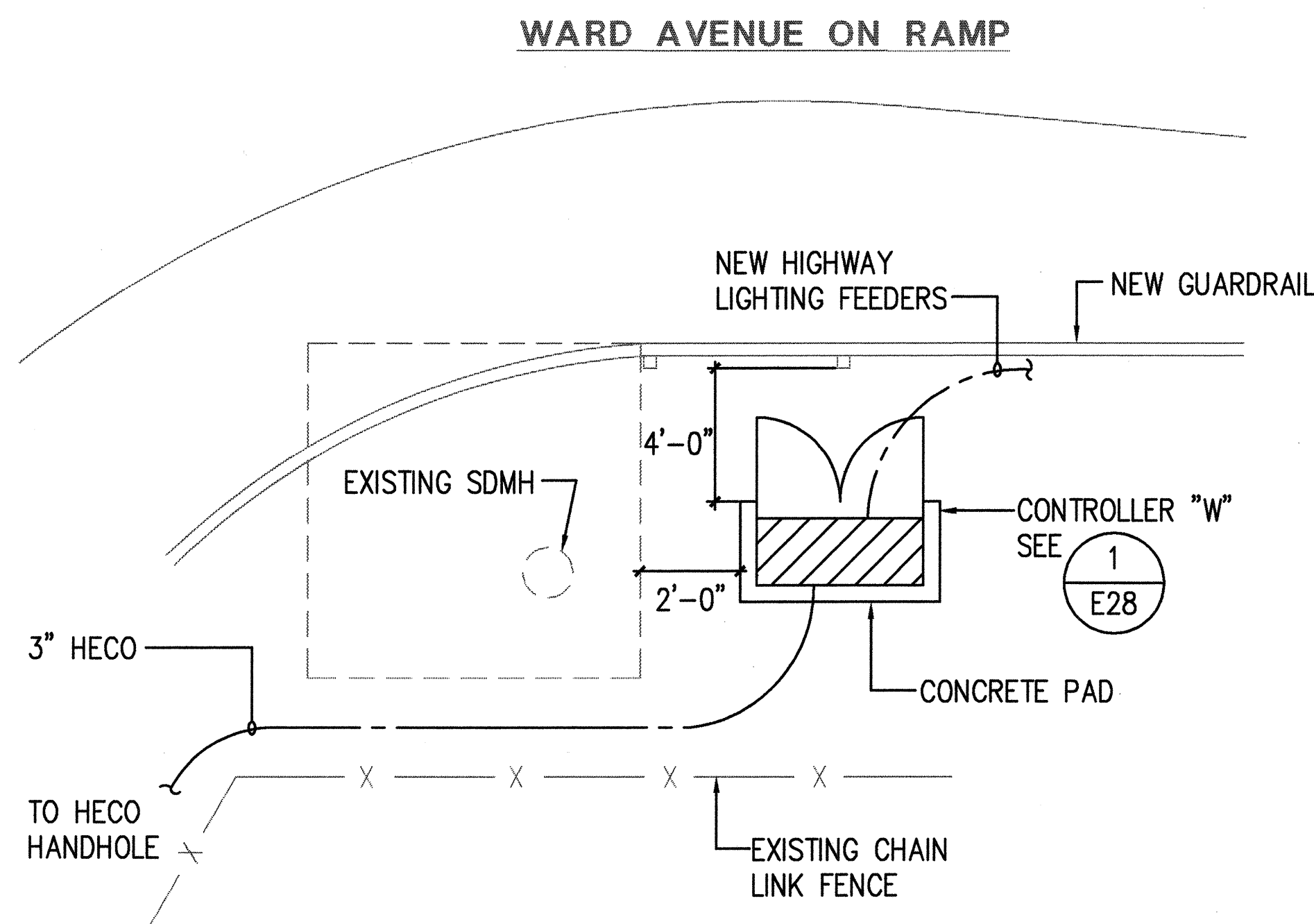
4 CONTROLLER "P" DETAIL PLAN
E25 SCALE: 1/4" = 1'-0"



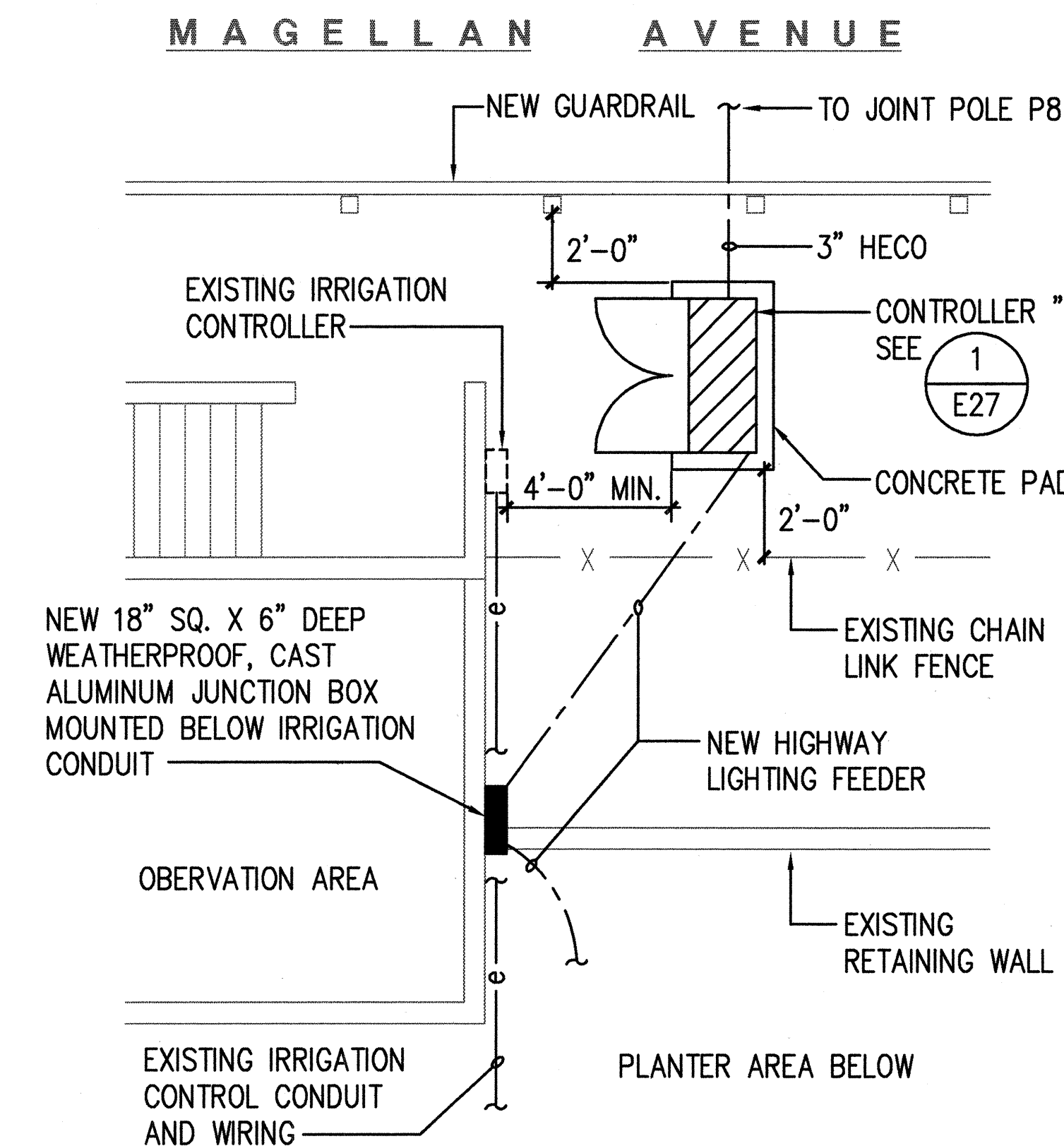
NOTE:

1. PROVIDE DOUBLE LOCKING HASP OR BAR AND ONE CORBIN SESAME PADLOCK. ONE PADLOCK SHALL BE PROVIDED BY HECO.

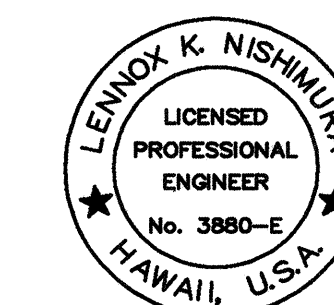
2 CONTROLLER "Y" DETAIL PLAN
E25 SCALE: 1/4" = 1'-0"



5 CONTROLLER "W" DETAIL PLAN
E25 SCALE: 1/4" = 1'-0"



3 CONTROLLER "Z" DETAIL PLAN
E25 SCALE: 1/4" = 1'-0"

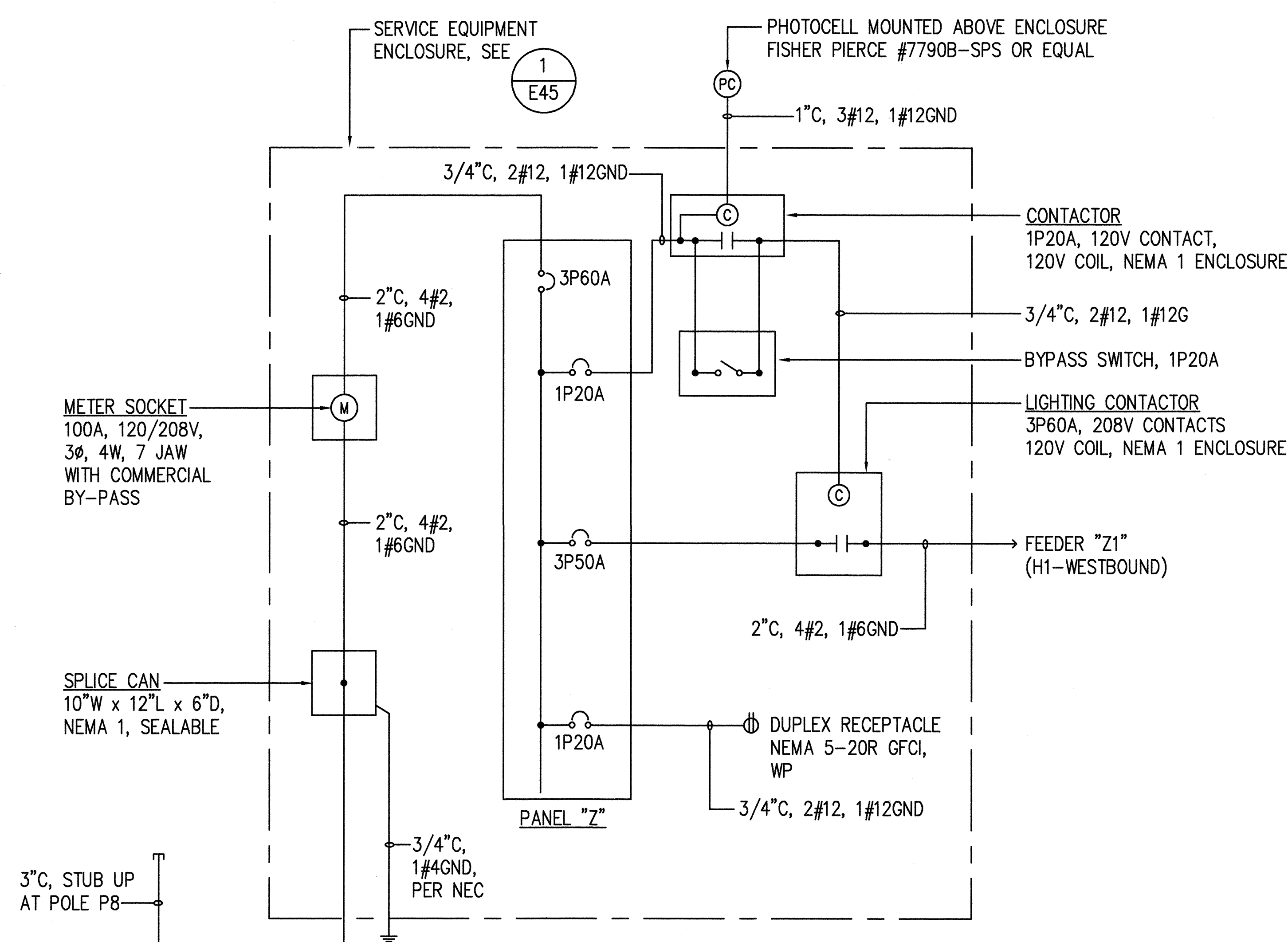


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 By: *Lennox K. Nishimura*
 Its: **PROJECT ENGINEER**

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
HIGHWAY LIGHTING CONTROLLER
DETAIL PLANS
INTERSTATE ROUTE H-1 RESURFACING
 Vic. of Punchbowl Off Ramp to Kapiolani IC
 F.A.I. Project No. IM-H1-1(234)
 Scale: NONE Date: June 1, 1999
 SHEET NO. **E25** OF 58 SHEETS

FILE: 103-3625

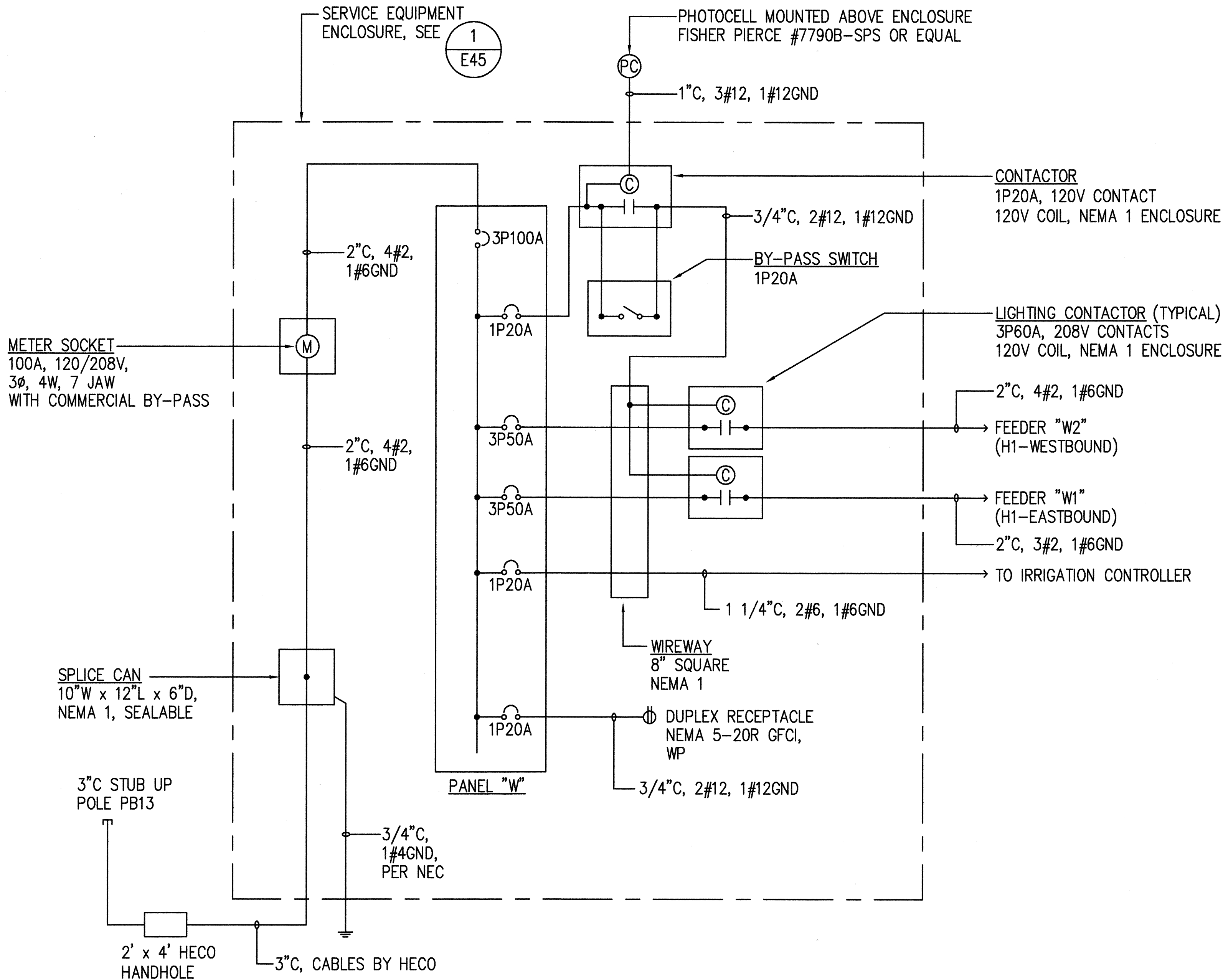
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	425	557



HIGHWAY LIGHTING CONTROLLER "Z" ONE LINE DIAGRAM
 SCALE: 1/4" = 1'-0"

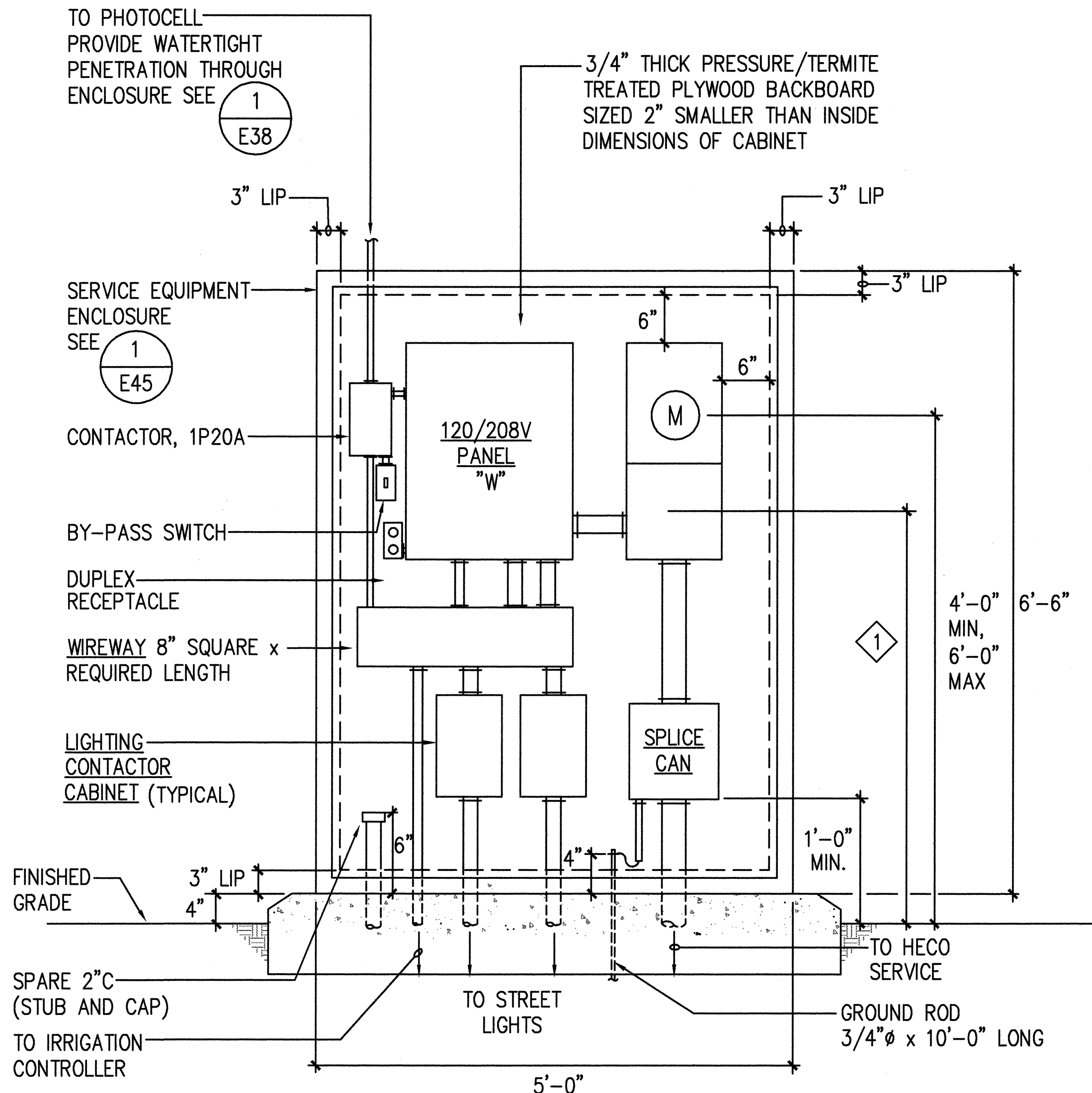
PANEL "Z"										208Y/120 VOLTS, 3 PHASE, 4 WIRE 3P60 AMP MAIN BREAKER REQ'D OPTIONS:										MIN AIC: 10,000 MOUNTING: SURFACE		(AWG)
WIRE SIZE (AWG)	CKT NO	USE			CKT BKR		CONNECTED LOAD (KVA)						CKT BKR		USE			CKT NO	WIRE SIZE (AWG)			
					POLE	AMP	PHASE A		PHASE B		PHASE C		AMP	POLE								
-	1	PFB			1	-	-	0.5					20	1	LIGHTING CONTACTOR			2	12			
-	3	PFB			1	-			-		0.5			20	1	RECEPTACLE			4	12		
-	5	PFB			1	-							-	-	-	PFB			6	-		
-	7	PFB			1	-	-	1.9					50					8	2			
-	9	PFB			1	-			-		1.9					FEEDER "Z1"			10	2		
-	11	PFB			1	-					-		1.9		3				12	2		
CONNECTED LOAD/PHASE TOTAL CONNECTED LOAD DEMAND FACTOR TOTAL DEMAND LOAD							2.4		2.4		1.9											
							6.7 KVA															
							1.0															
							6.7 KVA= 19 AMPS															

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	426	557



HIGHWAY LIGHTING CONTROLLER "W" ONE LINE DIAGRAM

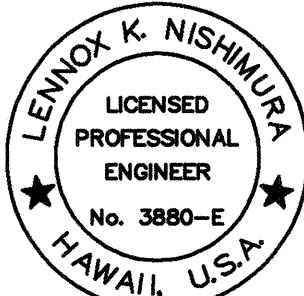
PANEL "W"				208Y/120 VOLTS, 3 PHASE, 4 WIRE 3P100 AMP MAIN BREAKER REQ'D OPTIONS:						MIN AIC: 10,000 MOUNTING: SURFACE				WIRE SIZE (AWG)
WIRE SIZE (AWG)	CKT NO	USE	CKT BKR POLE AMP	CONNECTED LOAD (KVA)			CKT BKR AMP POLE	USE	CKT NO	WIRE SIZE (AWG)				
12	1	RECEPTACLE	1 20	0.5	1.1		50			2	2			
12	3	LIGHTING CONTACTOR	1 20		0.5	1.1			FEEDER "W1"	4	2			
6	5	IRRIGATION CONTROLLER	1 20			1.0	1.1	3		6	2			
-	7	PFB	1 -	-	1.6		50			8	2			
-	9	PFB	1 -		-	1.6			FEEDER "W2"	10	2			
-	11	PFB	1 -			-	1.6			12	2			
CONNECTED LOAD/PHASE				3.2		3.2		3.7						
TOTAL CONNECTED LOAD				10.1 KVA										
DEMAND FACTOR				1.0										
TOTAL DEMAND LOAD				10.1 KVA= 28 AMPS										



NOTE:

① 3'-0" MINIMUM TO CENTER OF COMMERCIAL BY-PASS FACILITY.

1 **CONTROLLER "W" EQUIPMENT ELEVATION**
E28 NOT TO SCALE



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ECS, INC.
By Pennox K. Nashimi
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

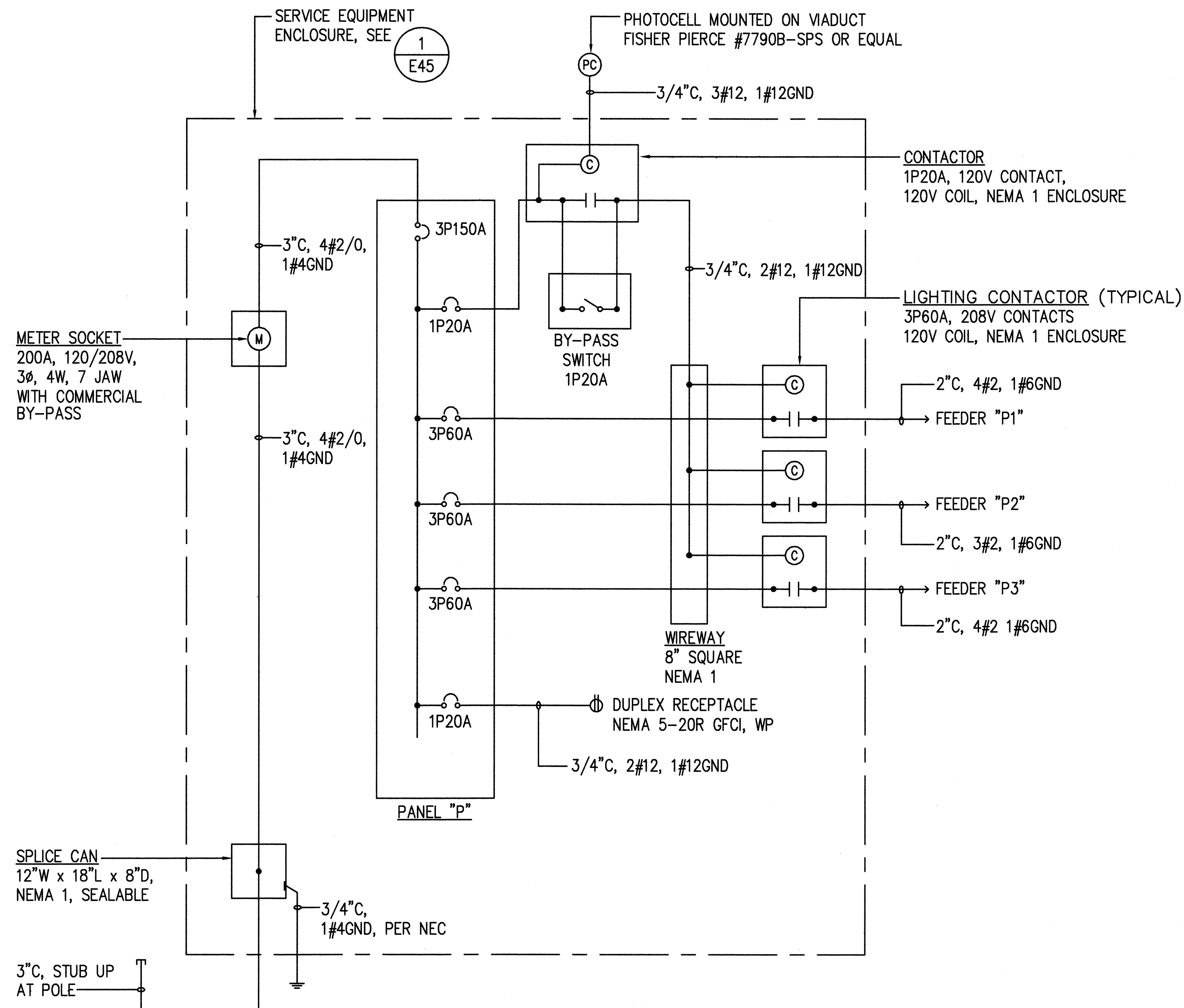
CONTROLLER "W" ONE LINE
DIAGRAM AND ELEVATION

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I Project No. IM-H1-1(234)

Scale: NONE Date: June 1, 1999

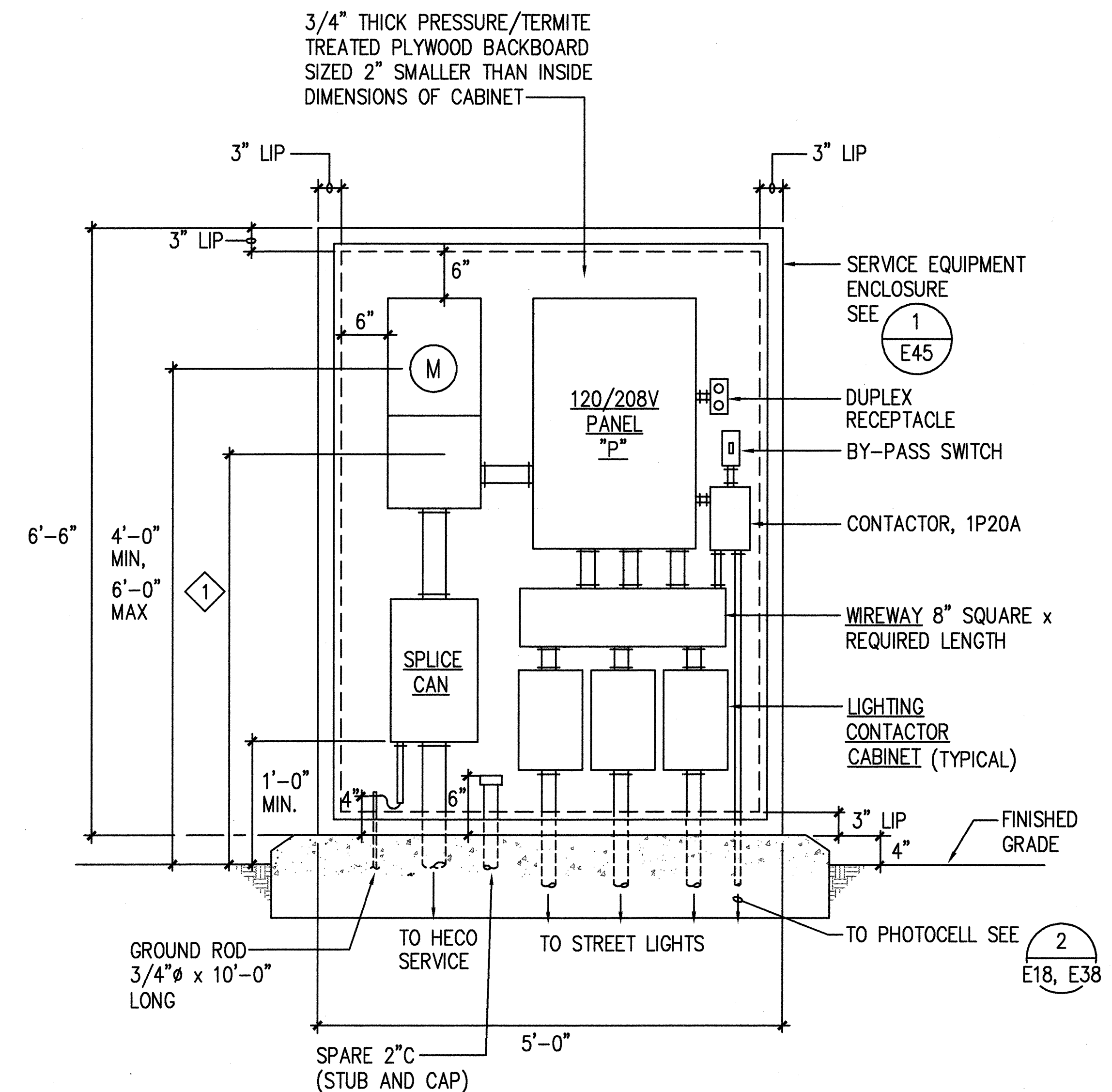
SHEET NO. **E28** OF **58** SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	427	557



HIGHWAY LIGHTING CONTROLLER "P" ONE LINE DIAGRAM - PIIKOI VIADUCT

WIRE SIZE (AWG)	PANEL "P"		208Y/120 VOLTS, 3 PHASE, 4 WIRE						MIN AIC: 10,000		WIRE SIZE (AWG)	
			3P150 AMP MAIN BREAKER						MOUNTING: SURFACE			
REQ'D OPTIONS:												
WIRE SIZE (AWG)	CKT NO	USE	CKT BKR		CONNECTED LOAD (KVA)			CKT BKR		USE	CKT NO	
			POLE	AMP	PHASE A	PHASE B	PHASE C	AMP	POLE			
2	1		3	/	2.5	0.5		20	1	RECEPTACLE	2	
2	3	FEEDER "P1"		/			2.5	0.5	20	1	LIGHTING CONTACTOR	4
2	5			60			2.5	-	-	1	PFB	6
-	7	PFB	1	-	-	2.4			60	/		8
-	9	PFB	1	-			-	2.4		/	FEEDER "P2"	10
-	11	PFB	1	-				-	2.4	3		12
-	13	PFB	1	-	-	2.0			60	/		14
-	15	PFB	1	-			-	2.0		/	FEEDER "P3"	16
-	17	PFB	1	-				-	2.0	3		18
CONNECTED LOAD/PHASE					7.4		7.4		6.9			
TOTAL CONNECTED LOAD					21.7		KVA					
DEMAND FACTOR					1.0							
TOTAL DEMAND LOAD					21.7		KVA= 61 AMPS					

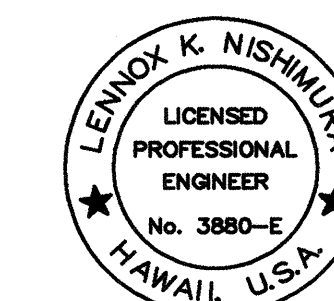


NOTE:

1 3'-0" MINIMUM TO CENTER OF COMMERCIAL BY-PASS FACILITY.

1 CONTROLLER "P" EQUIPMENT ELEVATION

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



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ECS, INC.
By Lennox K. Vukobratovic
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

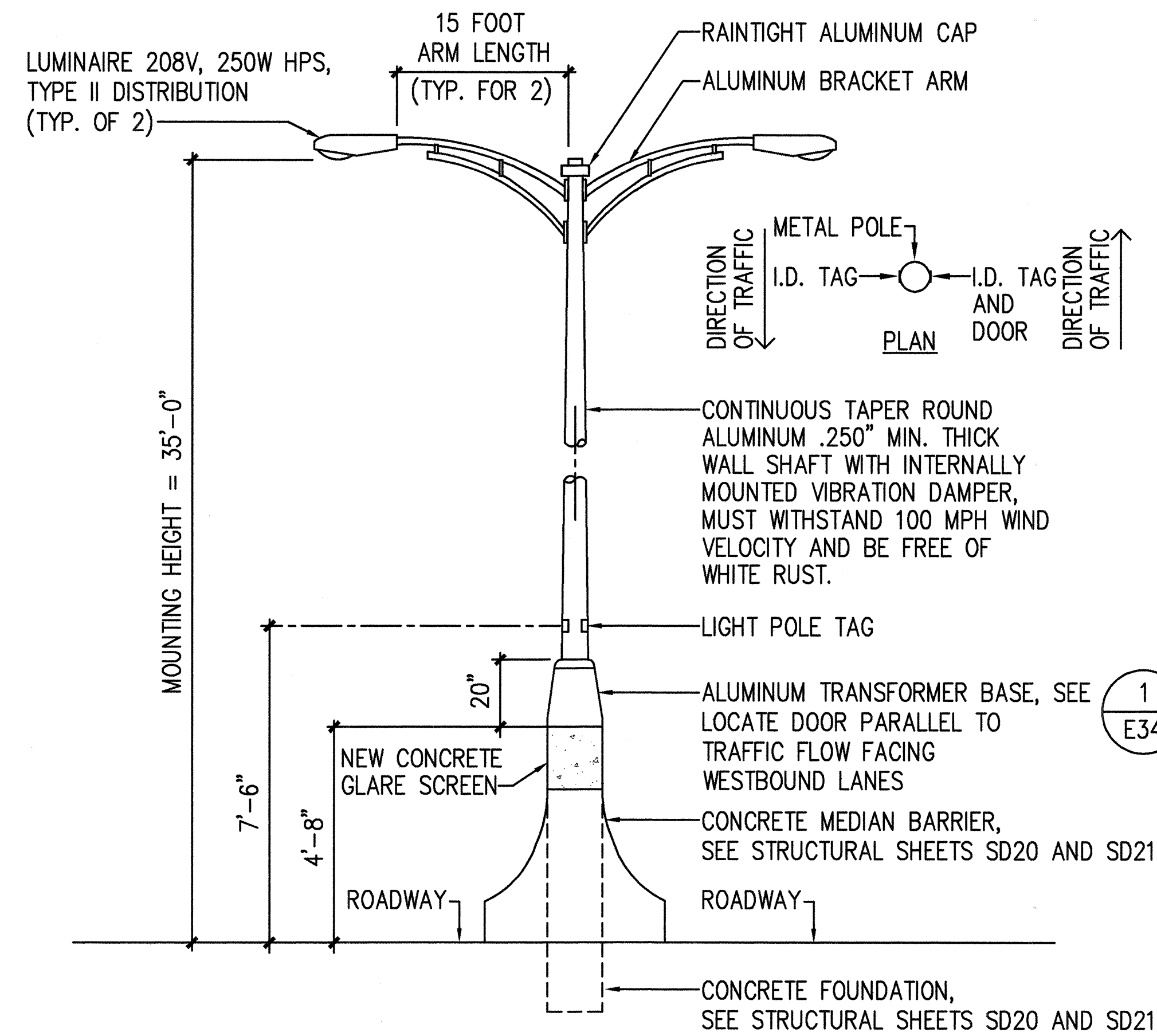
CONTROLLER "P" ONE LINE
DIAGRAM AND ELEVATION

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I Project No. IM-H1-1(234)

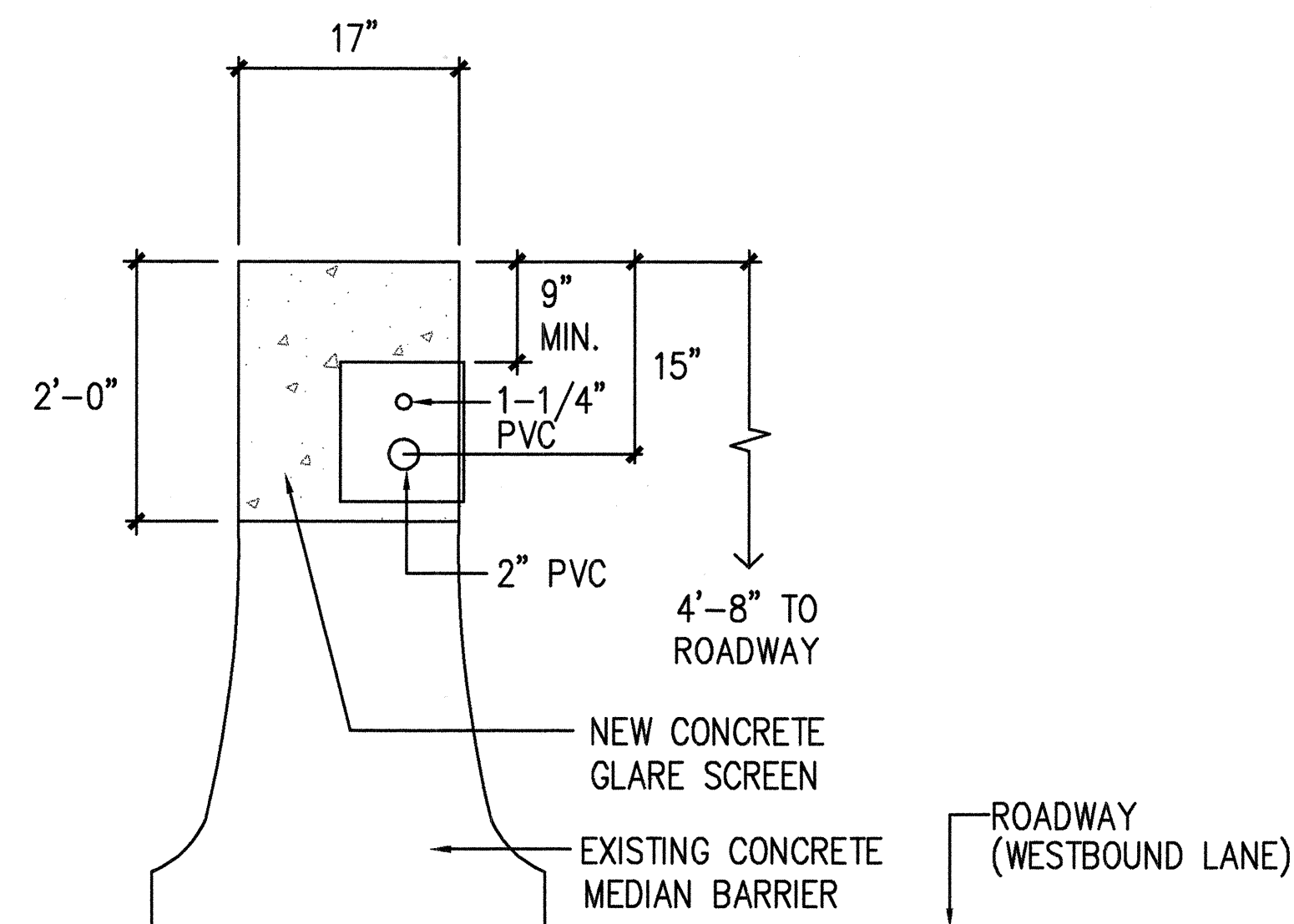
Scale: NONE Date: June 1, 1999

SHEET NO. **E29** OF **58** SHEETS

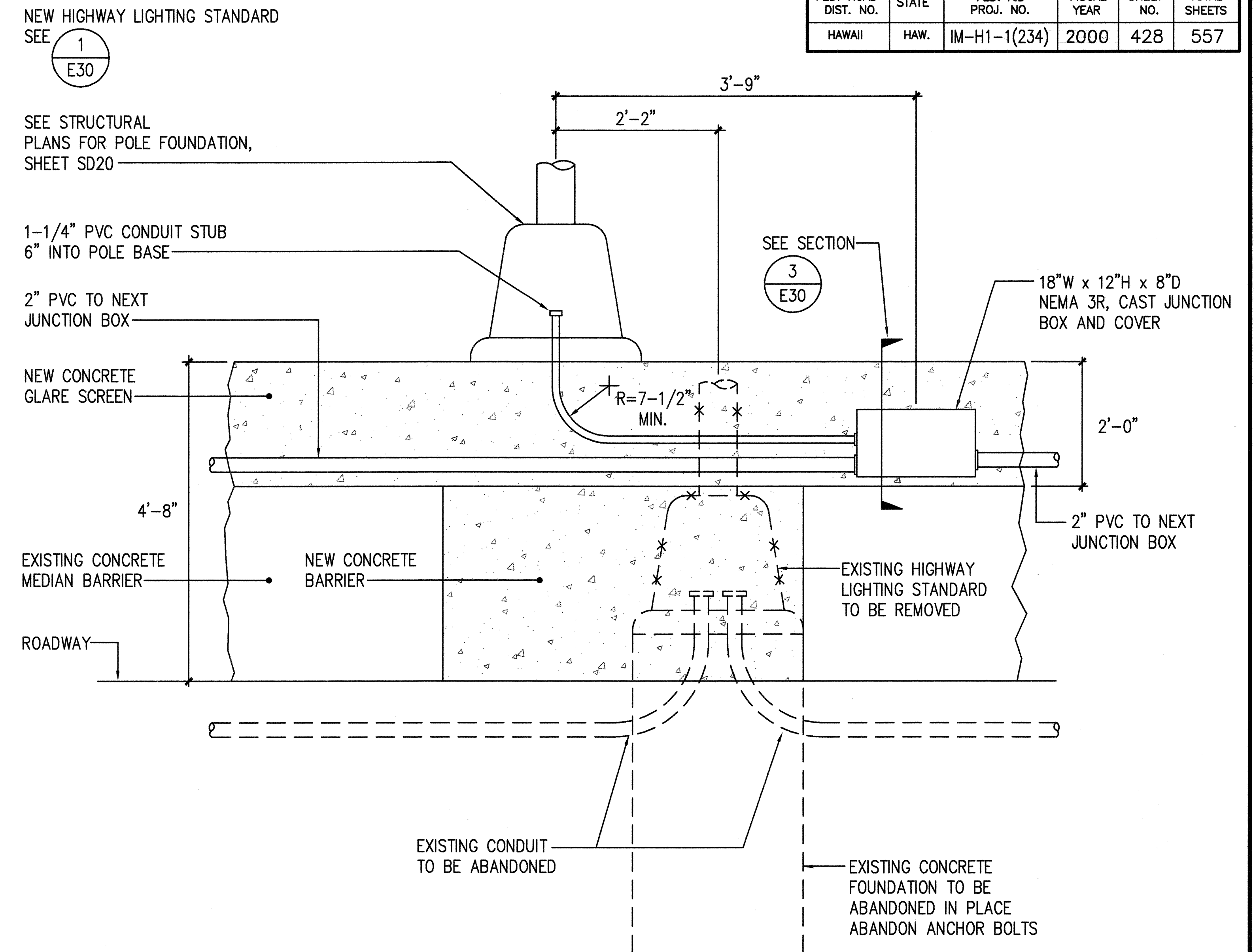
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	428	557



1 **TYPICAL LIGHT STANDARD INSTALLATION**
E30 **ON MEDIAN CONCRETE BARRIER**
NOT TO SCALE




3 SECTION AT MEDIAN BARRIER
E30 NOT TO SCALE



2 CONDUIT DETAIL IN MEDIAN BARRIER ON GRADE
E30 NOT TO SCALE

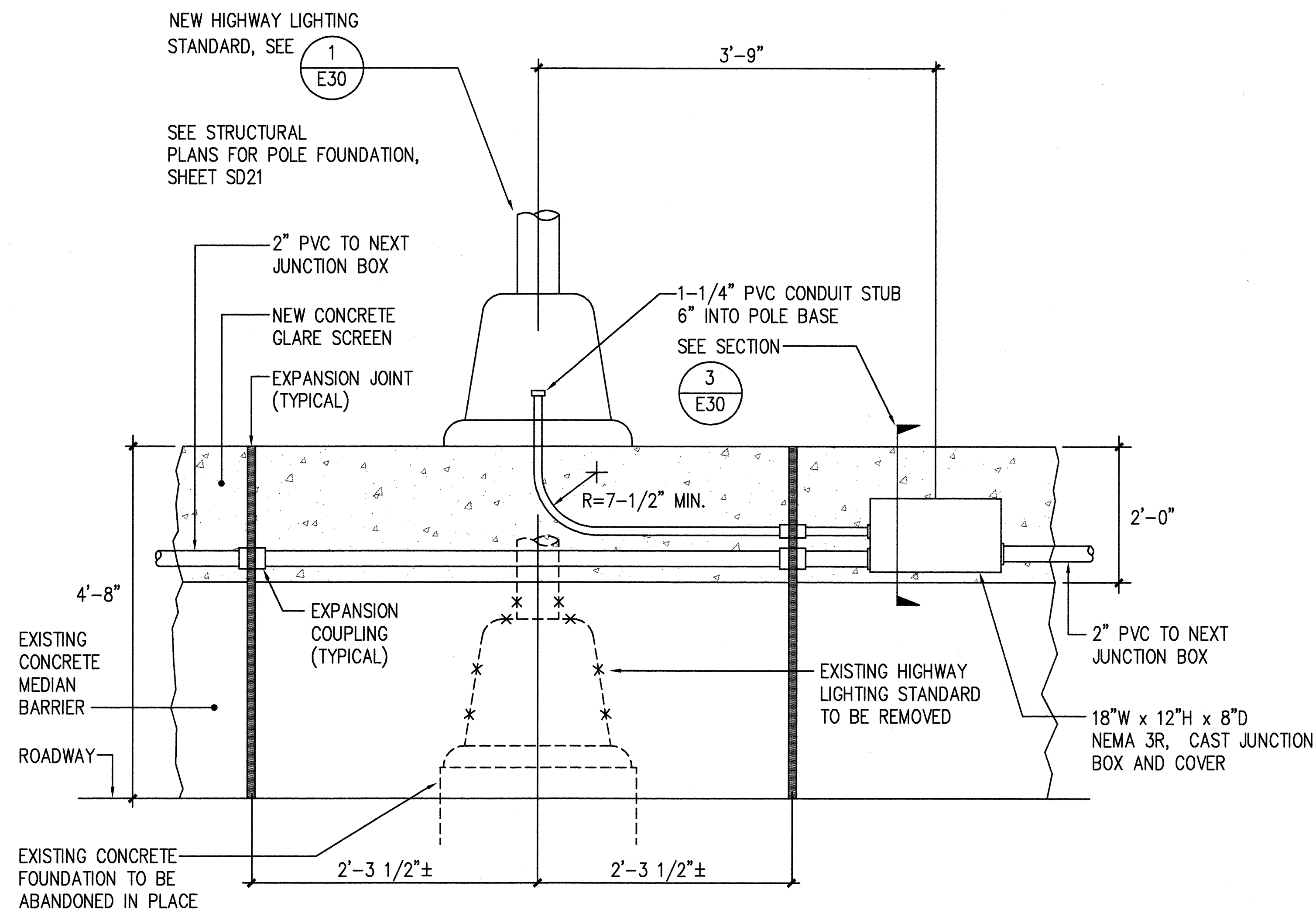
ORIGINAL PLAN	SURVEY PLOTTED BY _____ DATE _____
NOTEBOOK	DRAWN BY _____
	TRACED BY _____
	DESIGNED BY _____
	QUANTITIES BY _____
No. _____	CHECKED BY _____



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ECS, INC.
By: Lennox K. Washburn
Its PROJECT ENGINEER

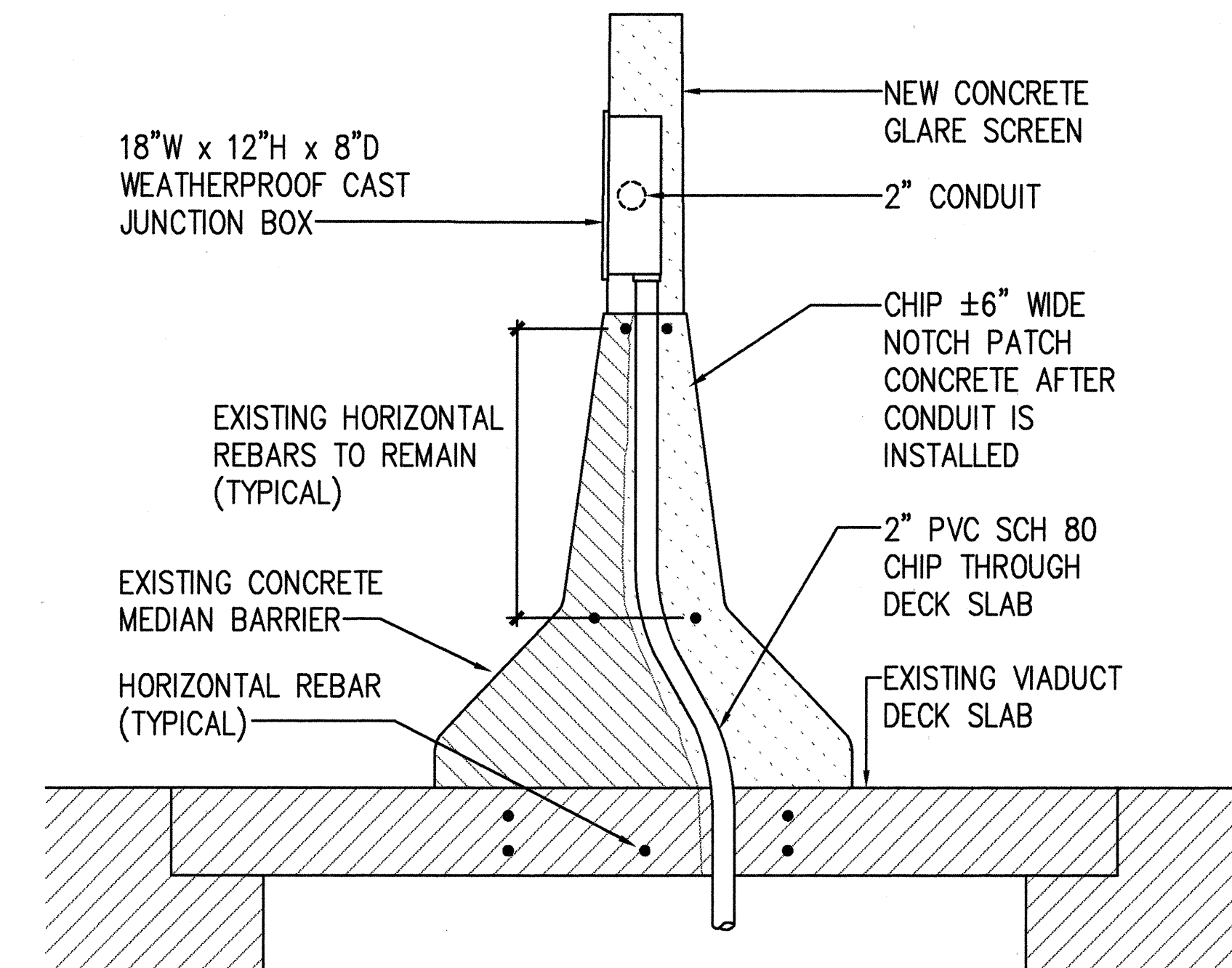
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
MEDIAN—MOUNTED LIGHT
POLE DETAILS
INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I Project No. IM-H1-1(234)
Scale: NONE Date: June 1, 1999
SHEET NO. **E30** OF **58** SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	429	557



NOTE:
EXPANSION JOINTS SHOWN ARE IN ADDITION TO THOSE SHOWN ON SITE PLANS.

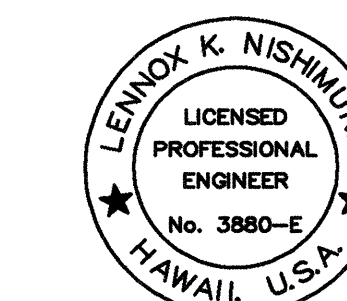
1 CONDUIT DETAIL IN MEDIAN BARRIER AT VIADUCT E31 NOT TO SCALE



NOTE:
REFER TO STRUCTURAL PLANS FOR EXISTING REBAR LOCATIONS, SHEET SD20.

2 CONDUIT PENETRATION THROUGH VIADUCT SLAB E31 NOT TO SCALE

SURVEY PLANNED BY	DATE
DRAWN BY	
CHECKED BY	
ORIGINAL PLAN	
NOTED BY	
NO.	

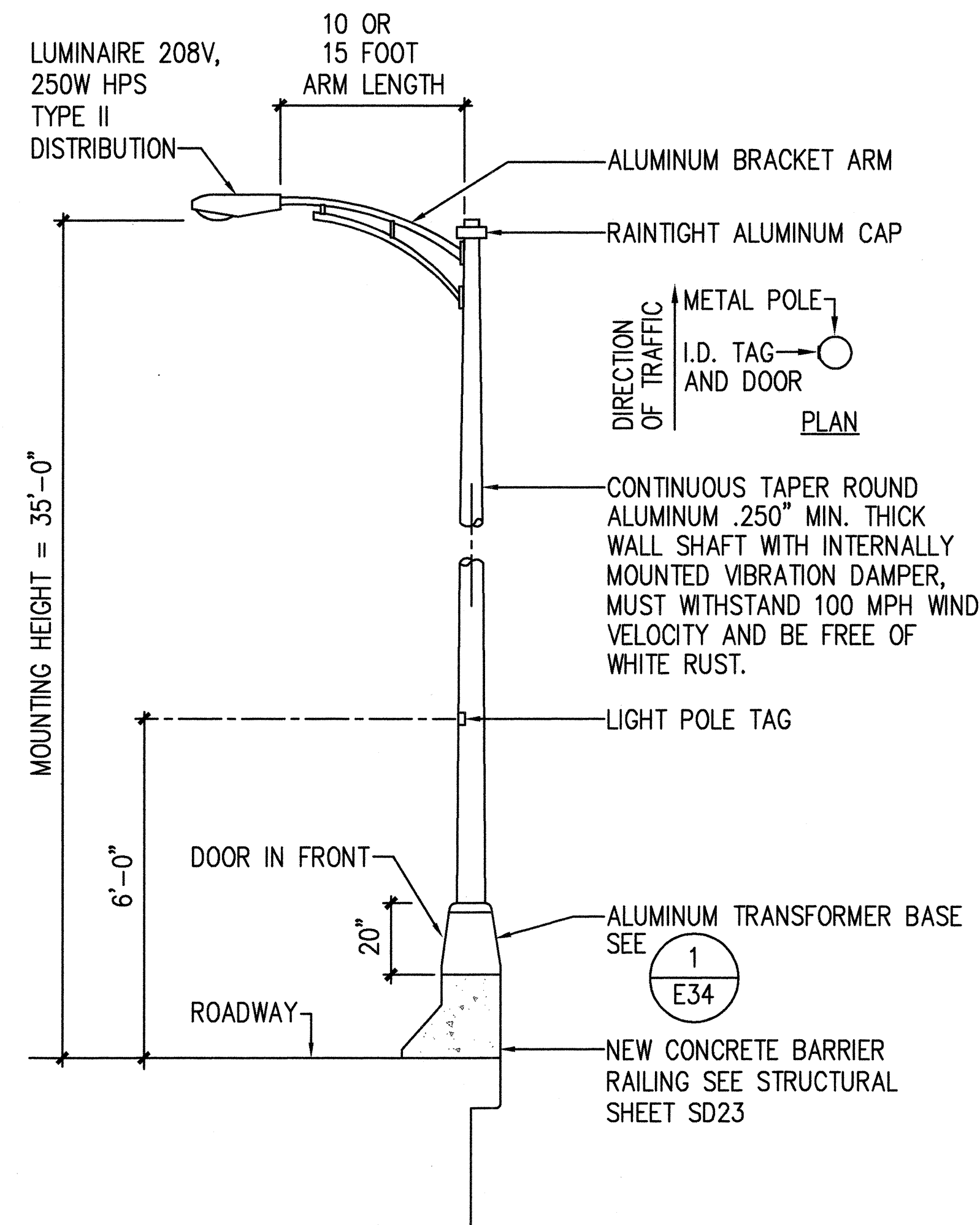


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By *Lennox K. Nishilura*
Its PROJECT ENGINEER

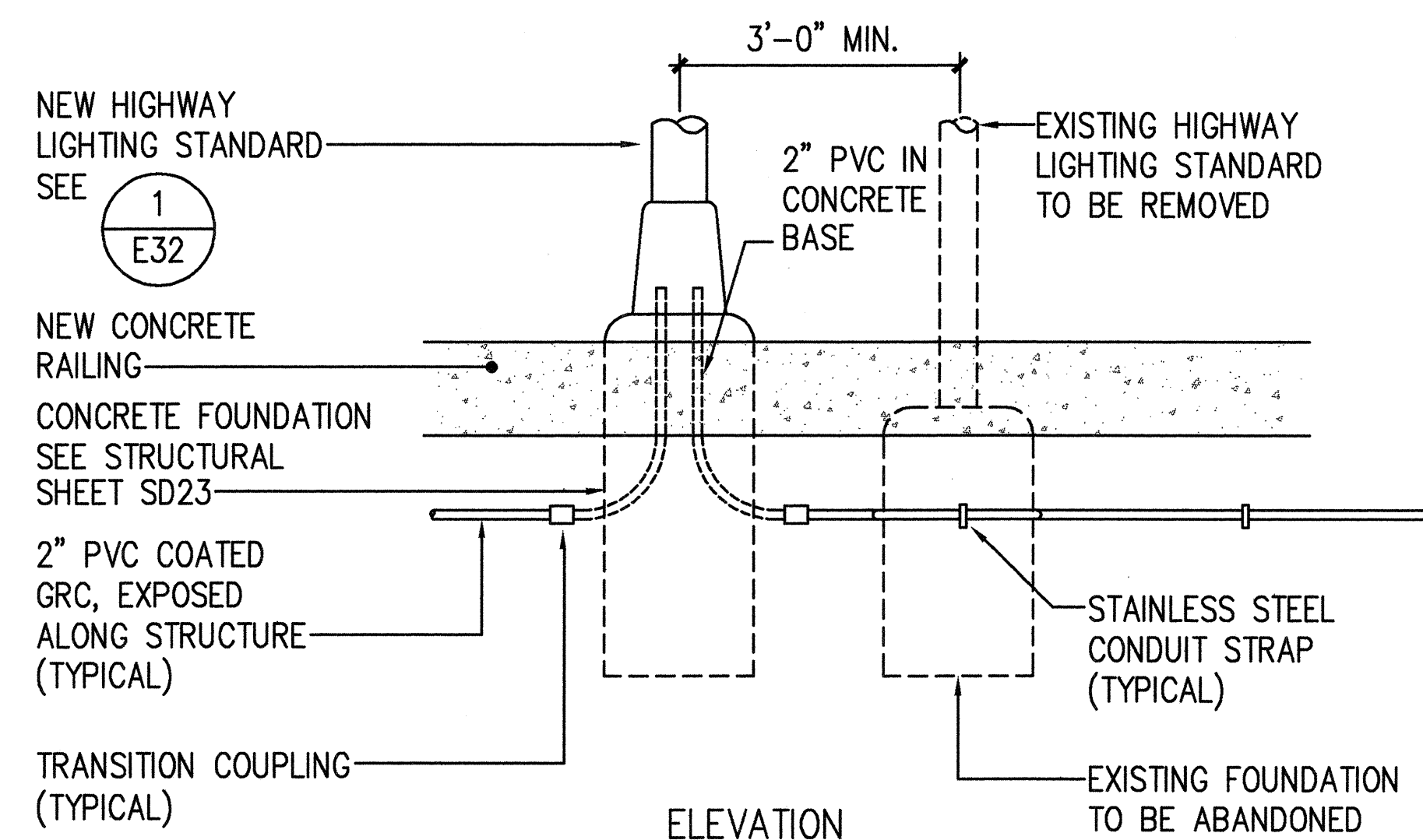
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
MEDIAN-MOUNTED LIGHT POLE DETAILS	
INTERSTATE ROUTE H-1 RESURFACING Vic. of Punchbowl Off Ramp to Kapiolani IC F.A.I. Project No. IM-H1-1(234)	
Scale: NONE	Date: June 1, 1999
SHEET NO. E31 OF 58 SHEETS	

FILE: 103-3E22A

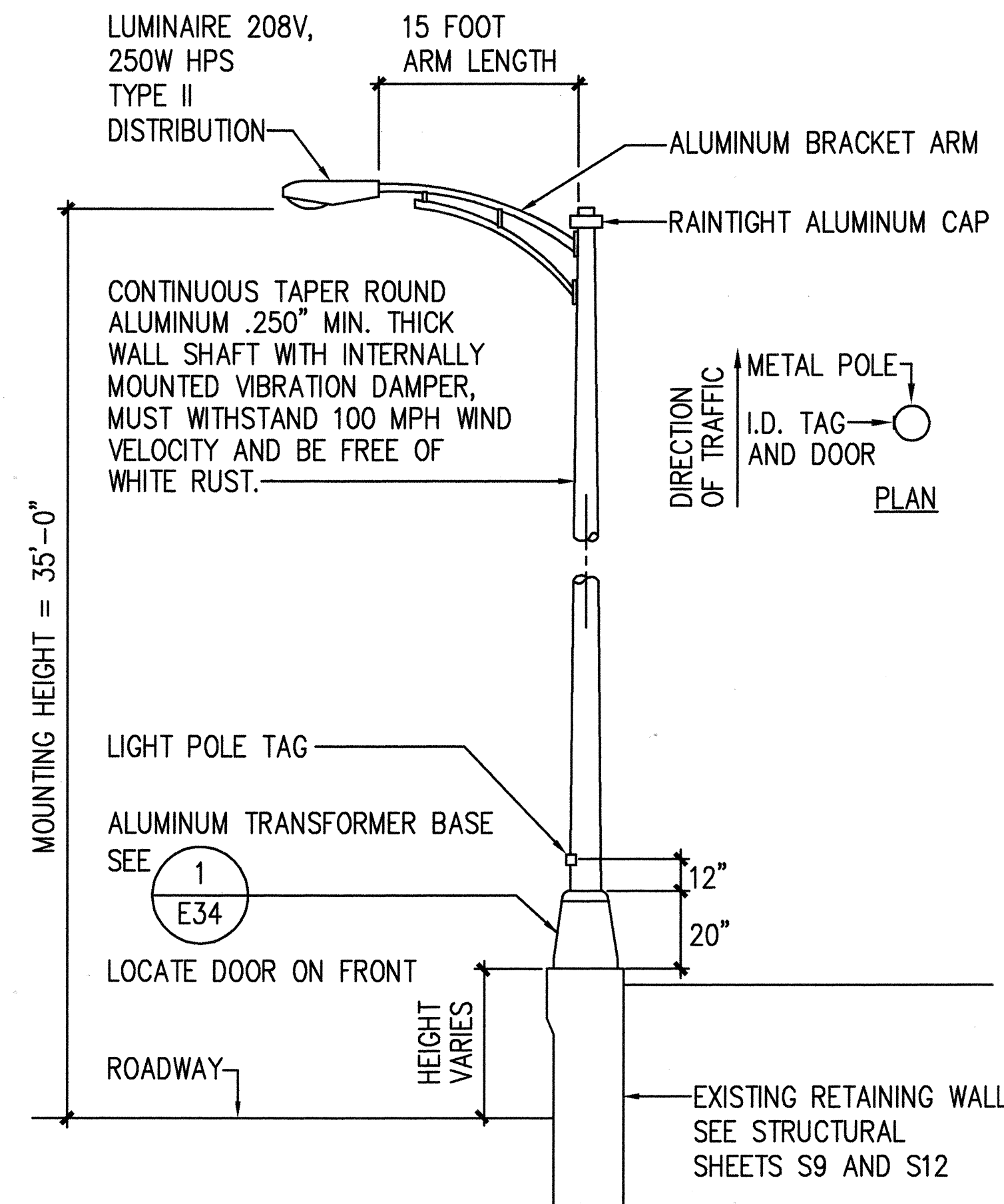
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	430	557



1
E32 **TYPICAL LIGHT STANDARD INSTALLATION ON CONCRETE BRIDGE RAILING**
NOT TO SCALE

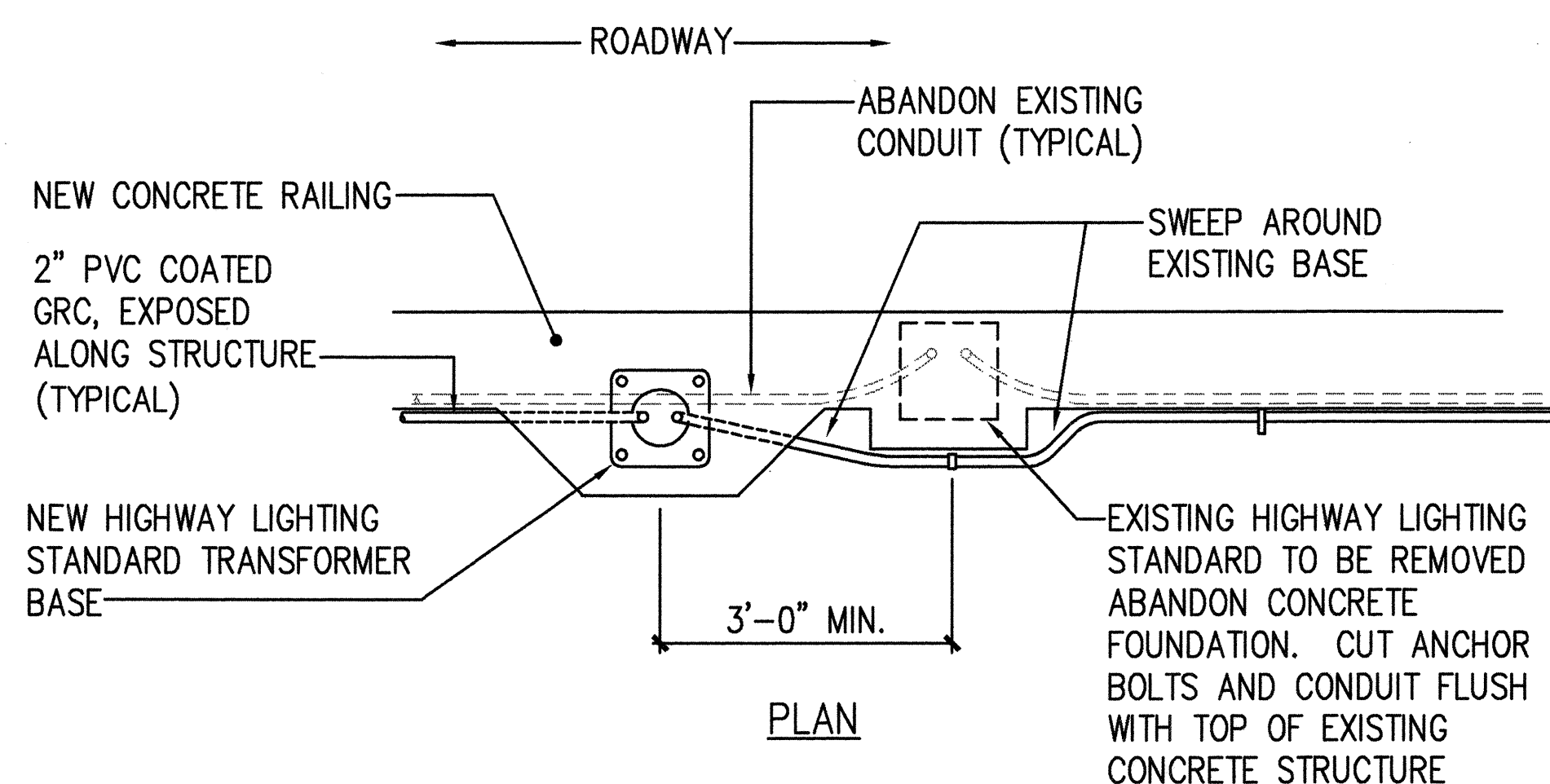


4
E32 **CONDUIT PLACEMENT DETAIL AT BRIDGE RAILING**
NOT TO SCALE

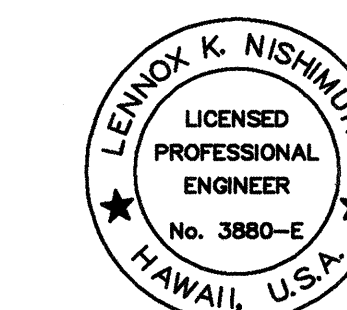


NOTE: LIGHTING STANDARD MOUNTED ON JERSEY BARRIER SIMILAR. SEE SHEET SD24

2
E32 **TYPICAL LIGHT STANDARD INSTALLATION ON RETAINING WALL**
NOT TO SCALE



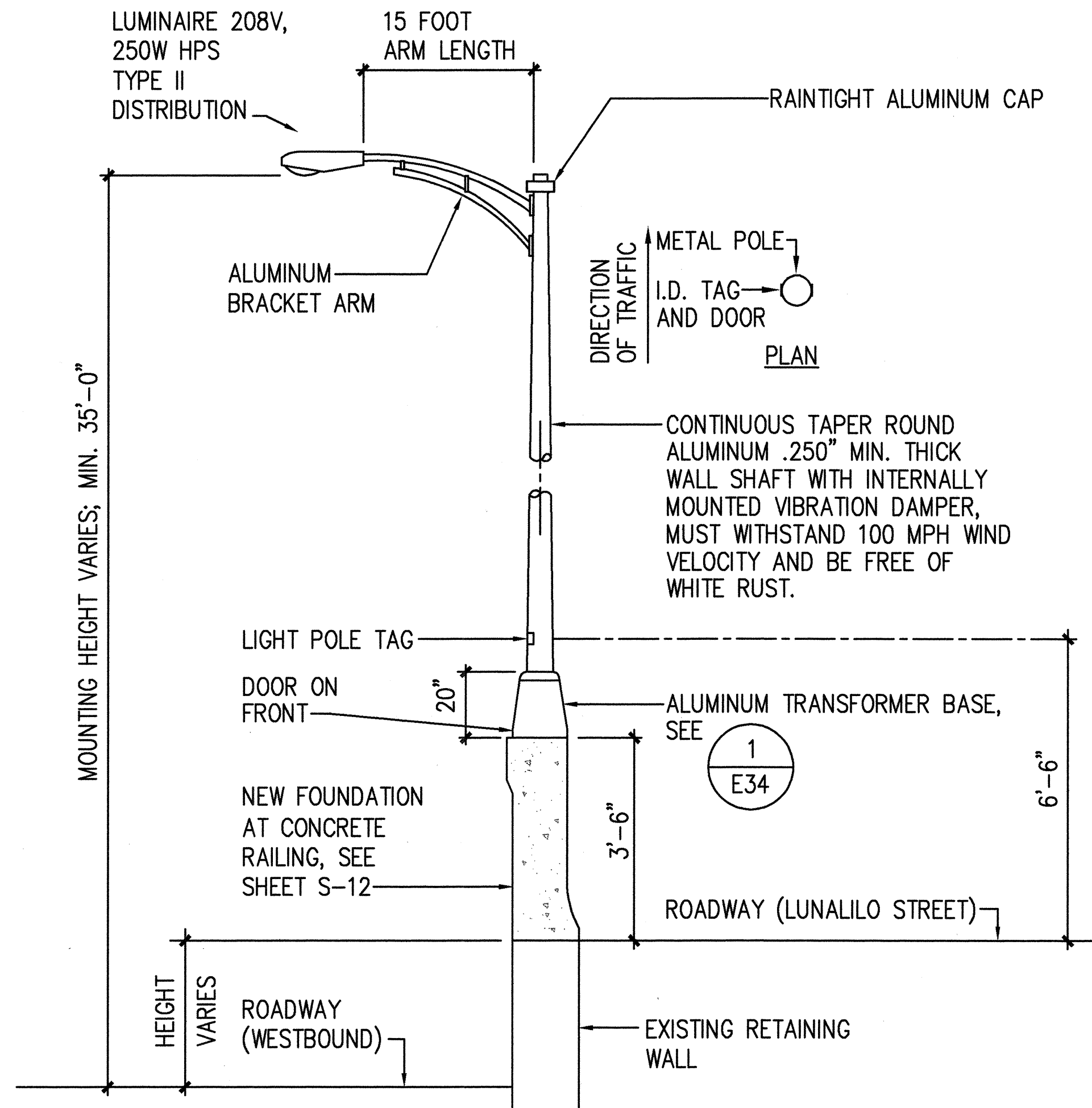
3
E32 **LIGHT STANDARD INSTALLATION AT WARD AVENUE ON RAMP**
NOT TO SCALE



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By *Lennox K. Nishimura*
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
BRIDGE AND WALL-MOUNTED LIGHT POLE DETAILS
INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)
Scale: NONE Date: June 1, 1999
SHEET NO. E32 OF 58 SHEETS

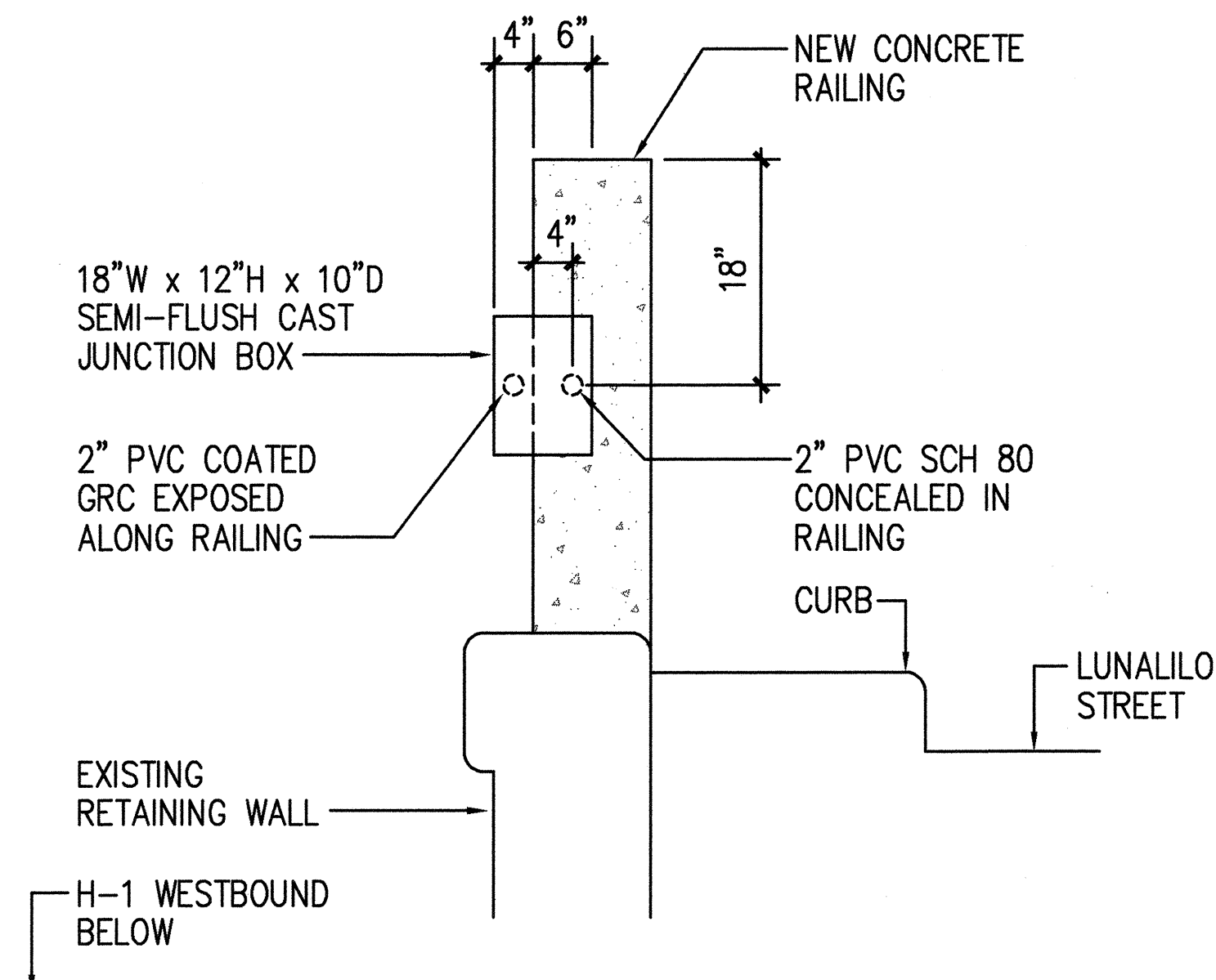
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	431	557



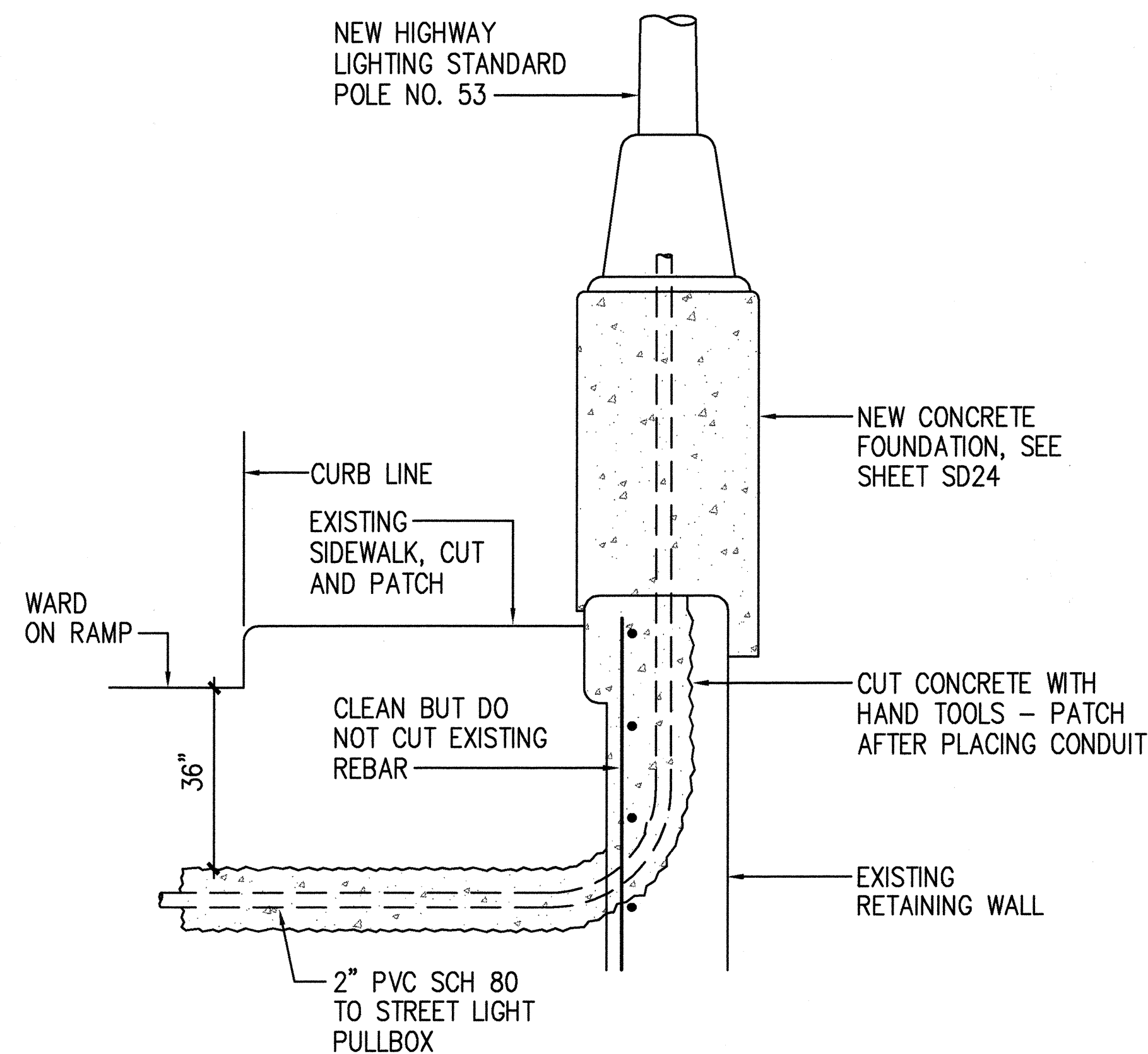
NOTE:

SEE 2 FOR HIGHWAY LIGHTING STANDARD FOUNDATION AT STA. 201+98.5

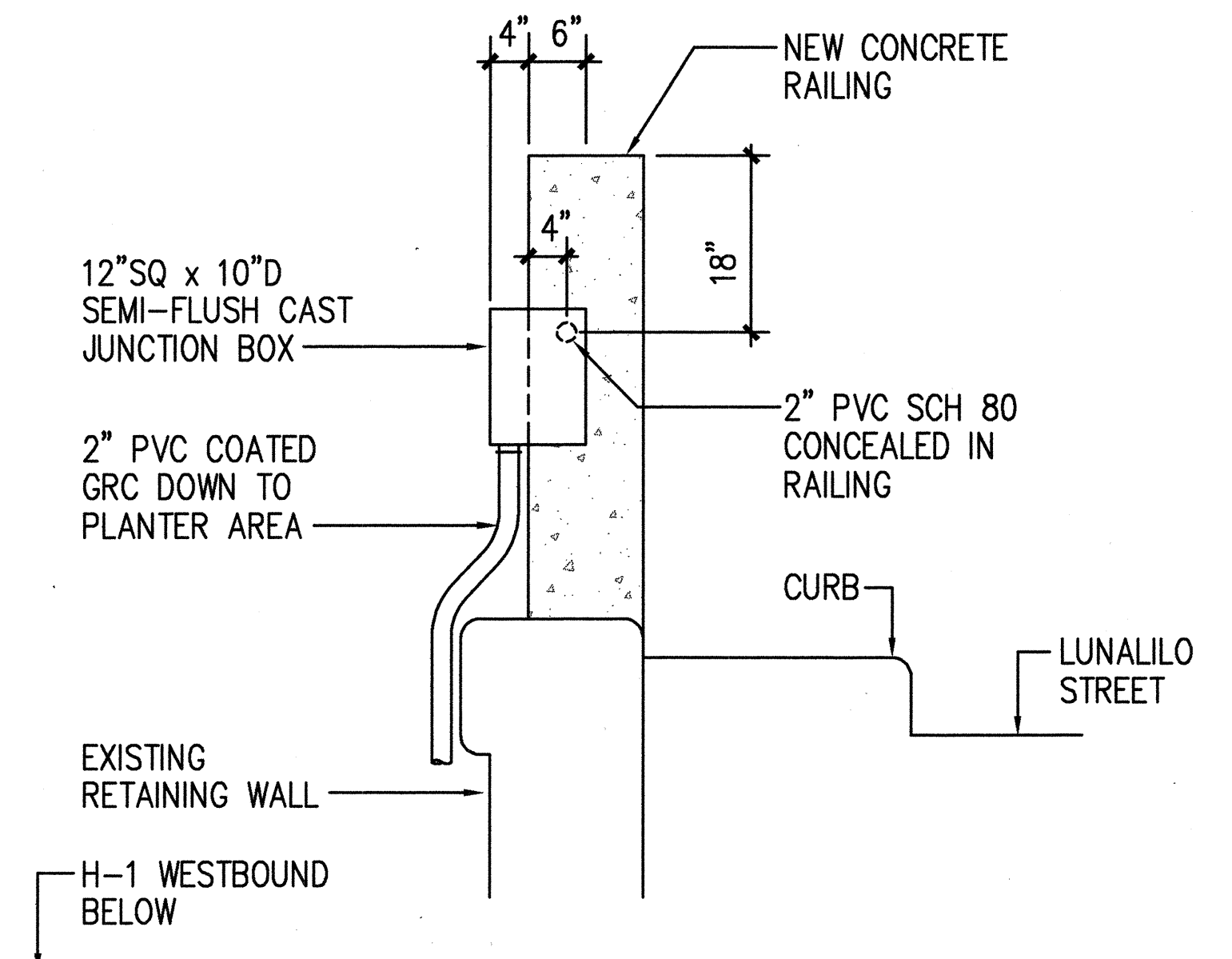
1 LIGHT STANDARD INSTALLATION ON CONCRETE RAILING
E33 NOT TO SCALE



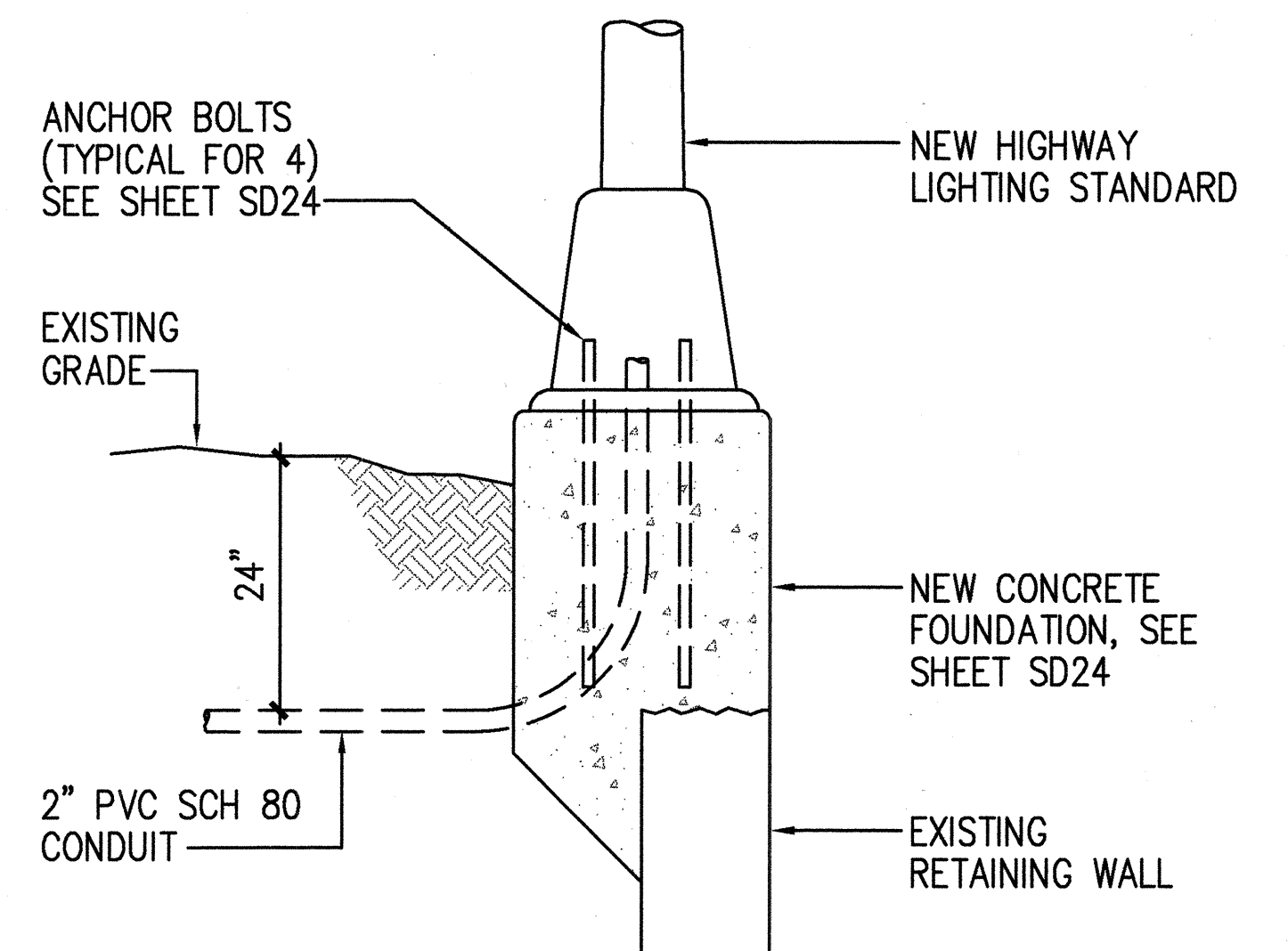
2 SECTION AT SEMI-FLUSH JUNCTION BOX
E33 AT STA. 198+65
NOT TO SCALE



4 SECTION AT WARD AVENUE ON RAMP -
E33 POLE NO. 53
NOT TO SCALE



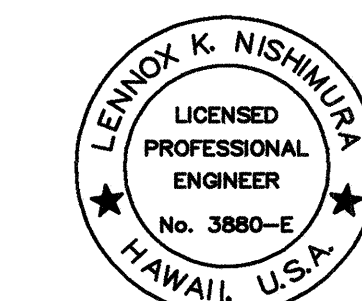
3 SECTION AT SEMI-FLUSH JUNCTION BOX
E33 AT STA. 192+25
NOT TO SCALE



NOTE:

SIMILAR FOR LIGHT STANDARD ON JERSEY BARRIER

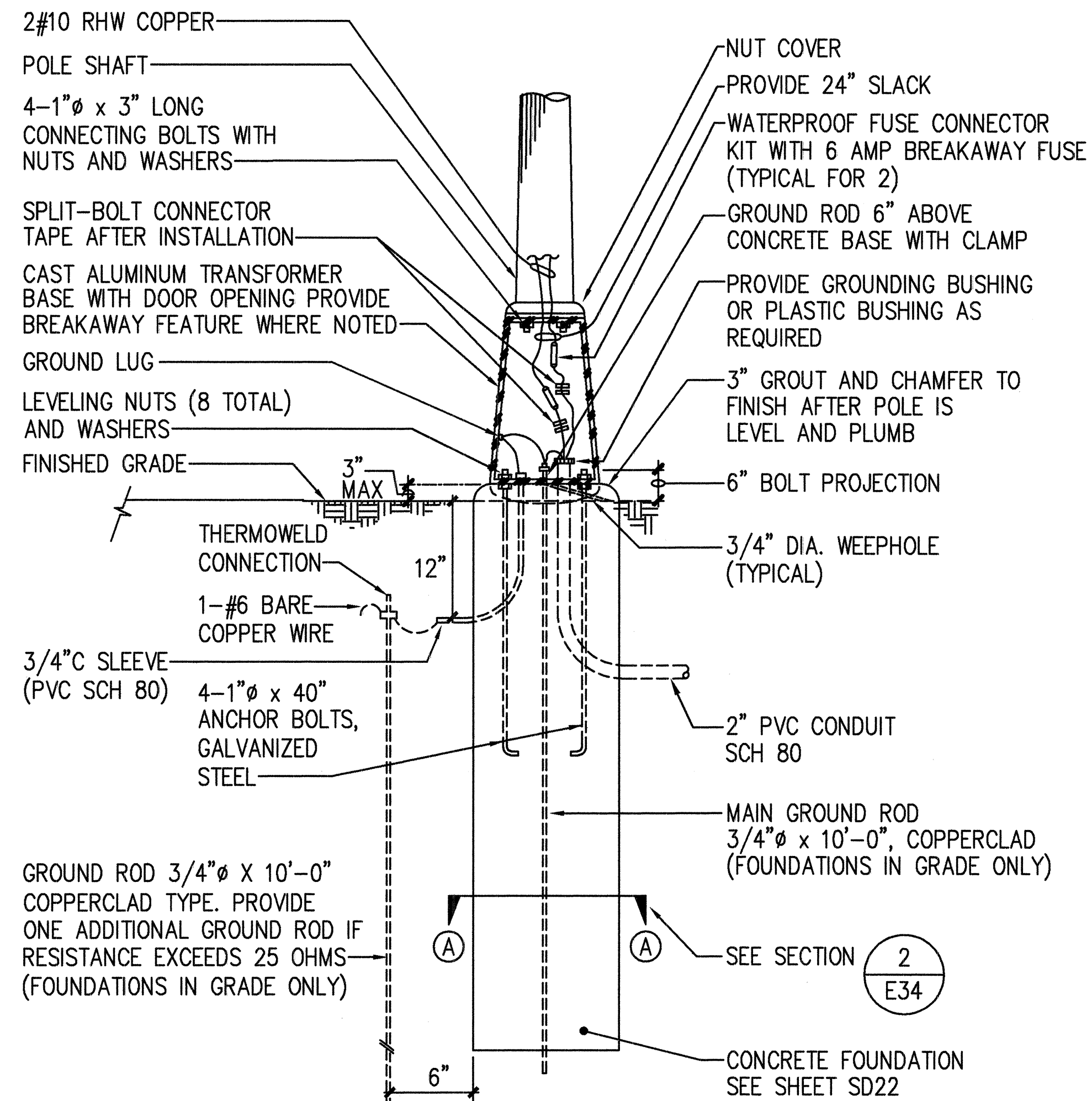
5 CONDUIT DETAIL AT LIGHT STANDARD
E33 ON RETAINING WALL
NOT TO SCALE



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ECS, INC.
By *Lennox K. Nishimura*
Its PROJECT ENGINEER

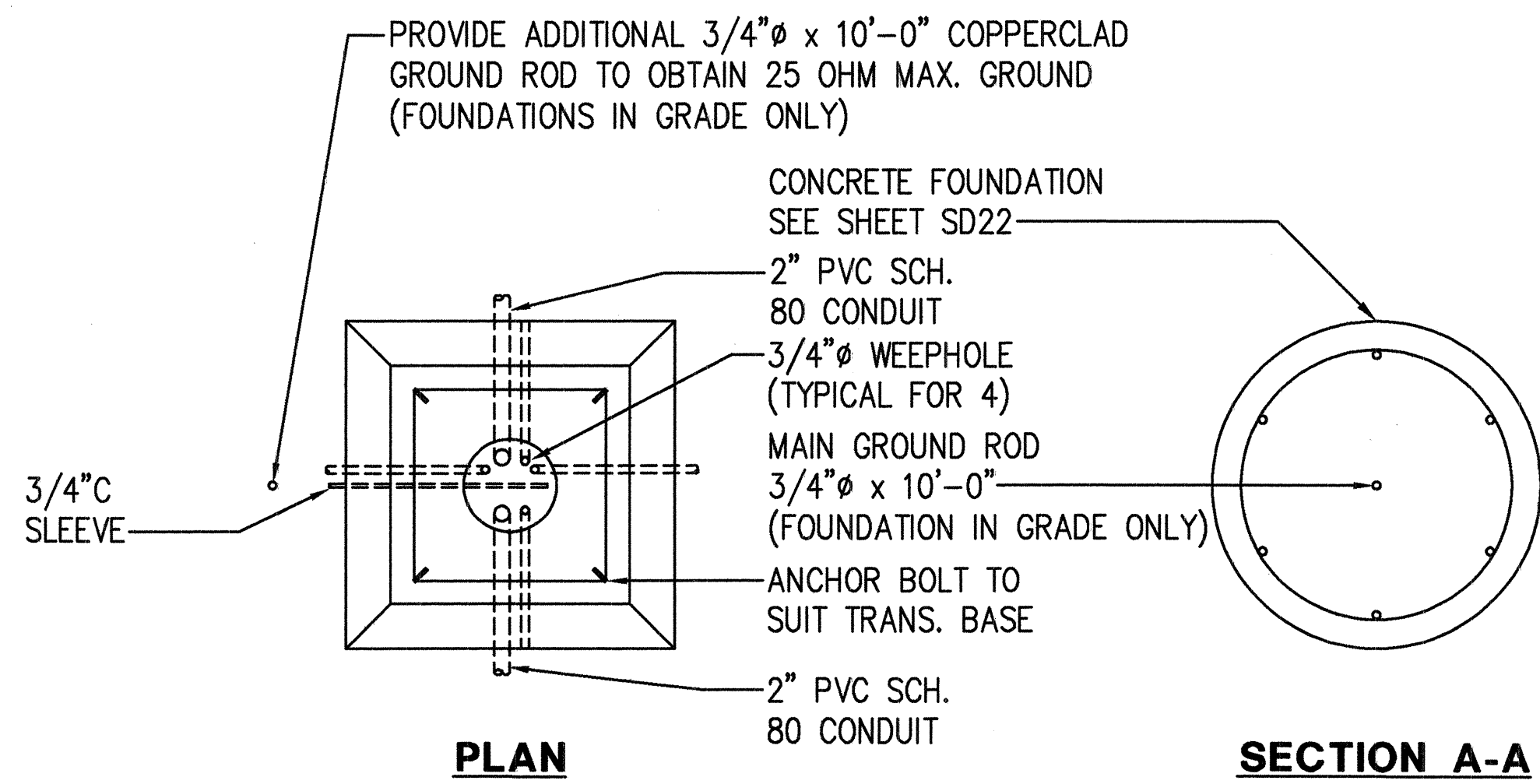
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**BRIDGE AND WALL-MOUNTED
LIGHT POLE DETAILS**
INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I Project No. IM-H1-1(234)
Scale: NONE Date: June 1, 1999
SHEET NO. E33 OF 58 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	432	557

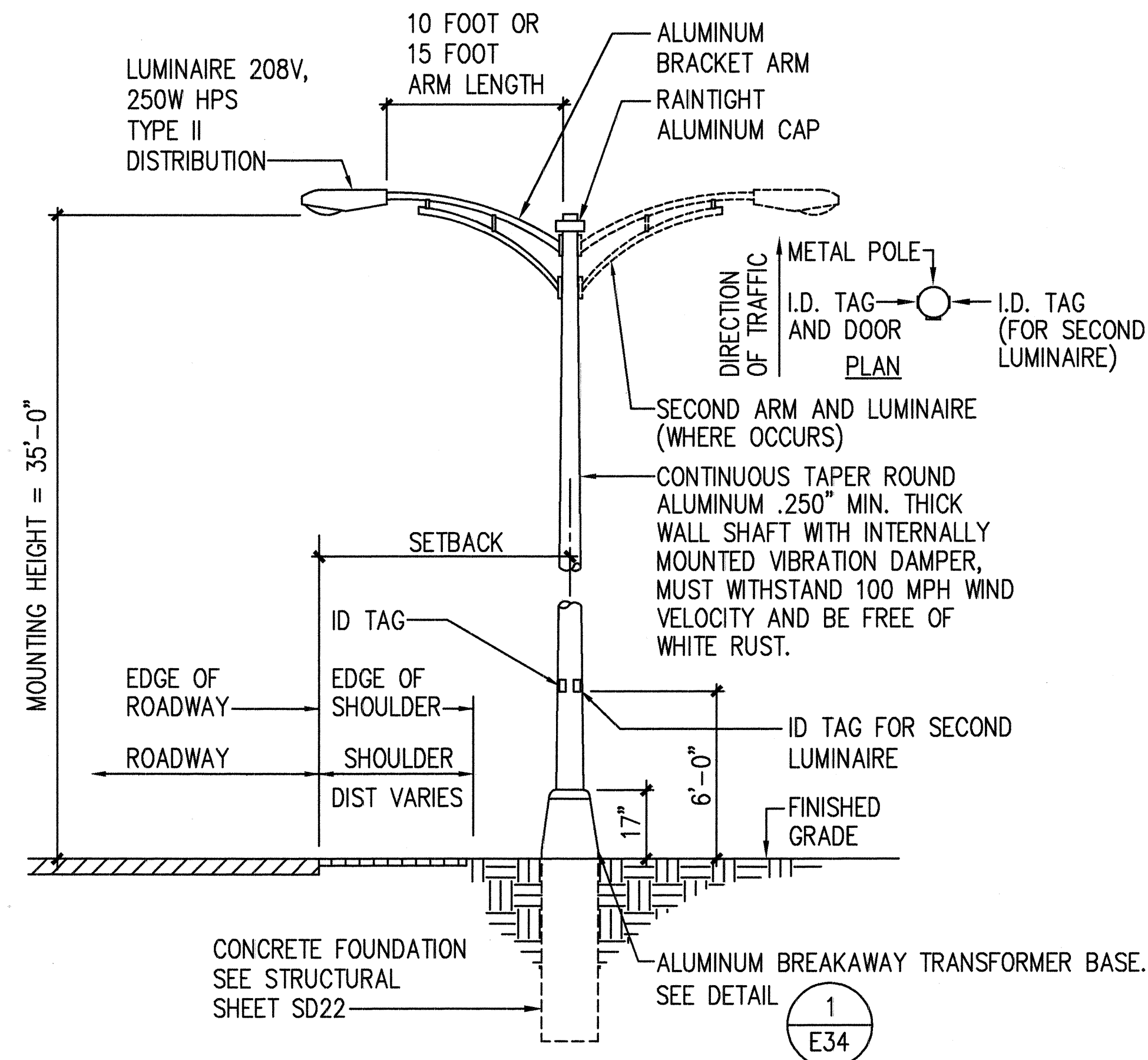


NOTE:
FOUNDATION IN GRADE SHOWN.

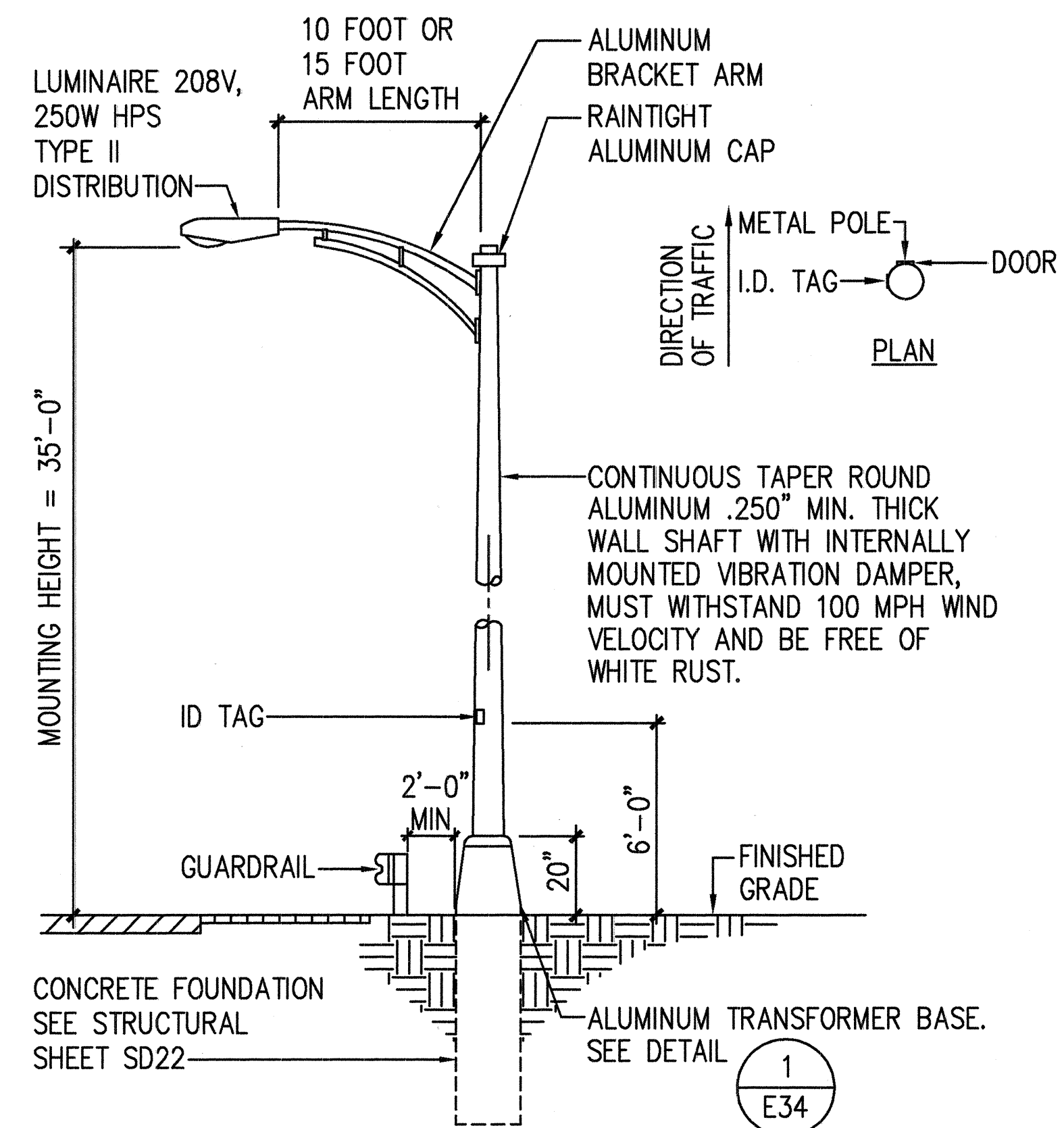
1
E34 **TYPICAL TRANSFORMER BASE DETAIL**
NOT TO SCALE



2
E34 **TYPICAL CONCRETE FOUNDATION & TRANSFORMER BASE DETAIL**
NOT TO SCALE

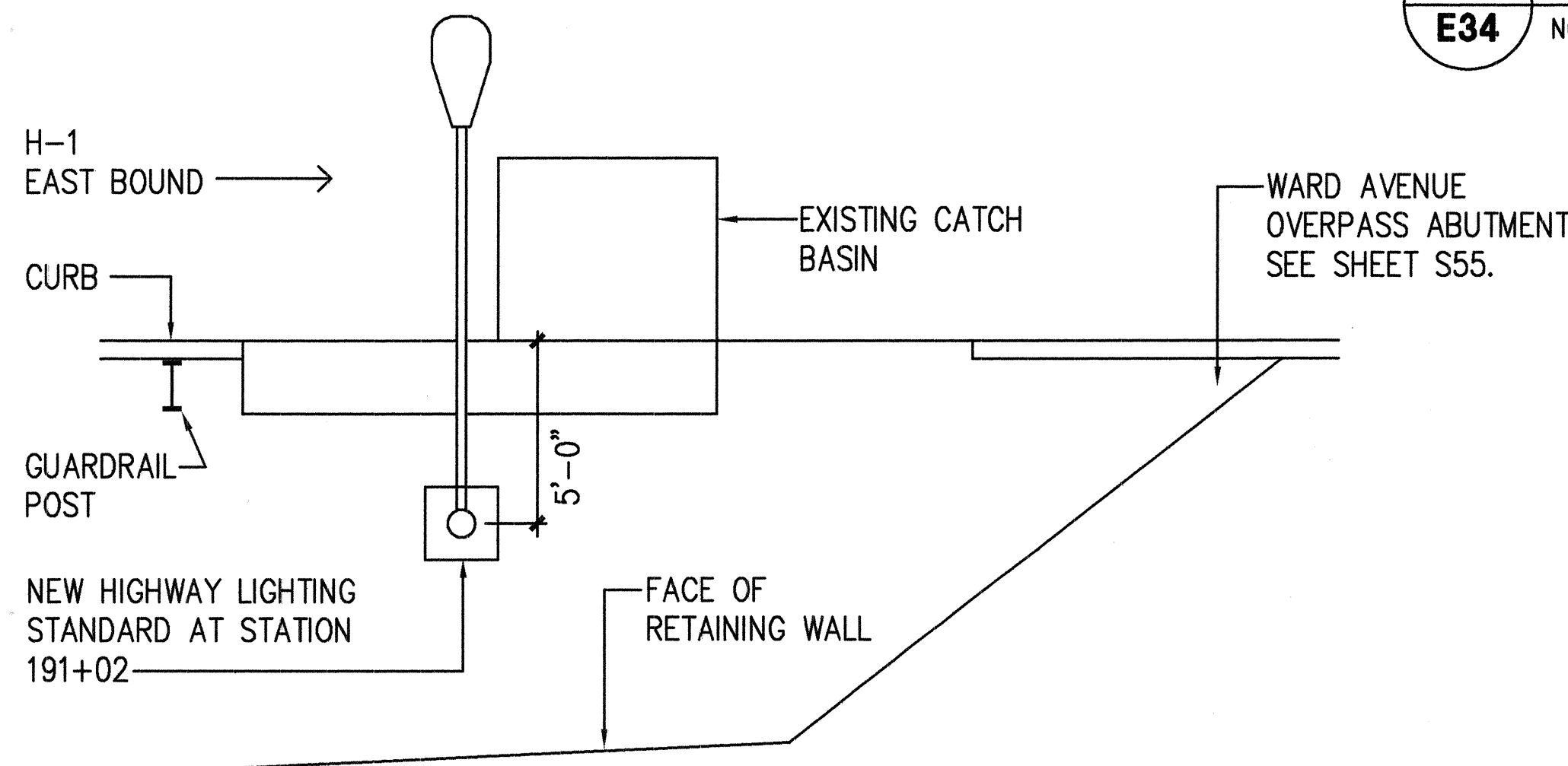


3
E34 **TYPICAL LIGHT STANDARD INSTALLATION ON GRADE WITH BREAKAWAY BASE**
NOT TO SCALE

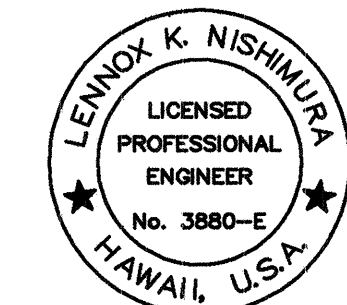


NOTE:
MAINTAIN 2'-0" CLEARANCE BETWEEN GUARDRAIL AND HIGHWAY LIGHTING STANDARD. IF THE 2'-0" CLEARANCE CAN NOT BE MAINTAINED, CONTRACTOR SHALL MODIFY THE GUARDRAIL SYSTEM IN ACCORDANCE WITH THE AASHTO ROADSIDE GUIDE.

4
E34 **TYPICAL LIGHT STANDARD INSTALLATION ON GRADE**
NOT TO SCALE



5
E34 **HIGHWAY LIGHTING STANDARD AT STATION 191+02**
NOT TO SCALE



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ECS, INC.
By *Lennox K. Nishimura*
Its PROJECT ENGINEER

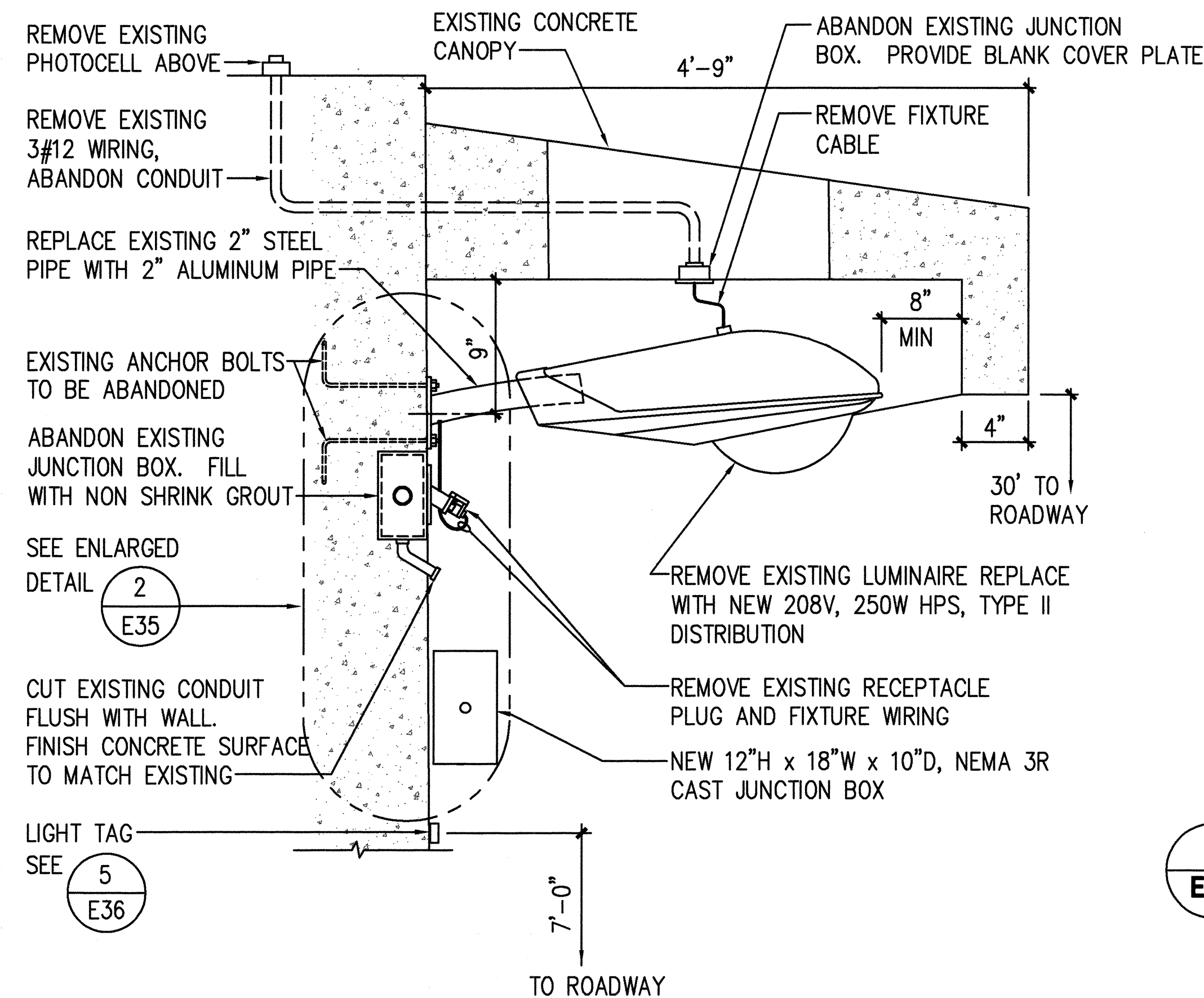
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
GRADE-LEVEL LIGHT POLE DETAILS
INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)
Scale: NONE Date: June 1, 1999
SHEET NO. E34 OF 58 SHEETS

PM: OPER: CM
OPER: REVISED:

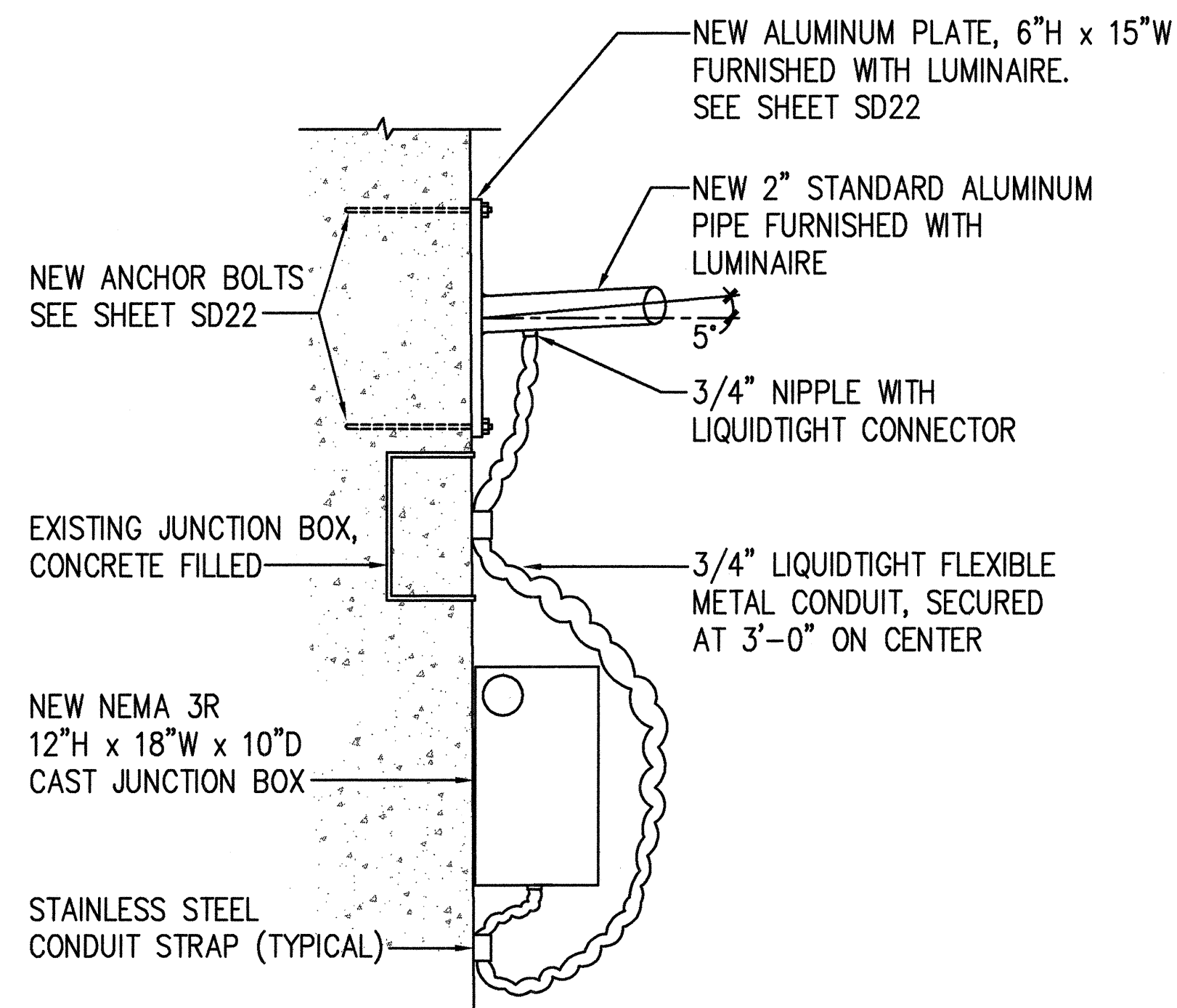
SURVEY PLATTED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
DATE	SCALE: NONE
ORIGINAL PLAN	
NOTED BY	
DATE	

FILE: 103-3E24

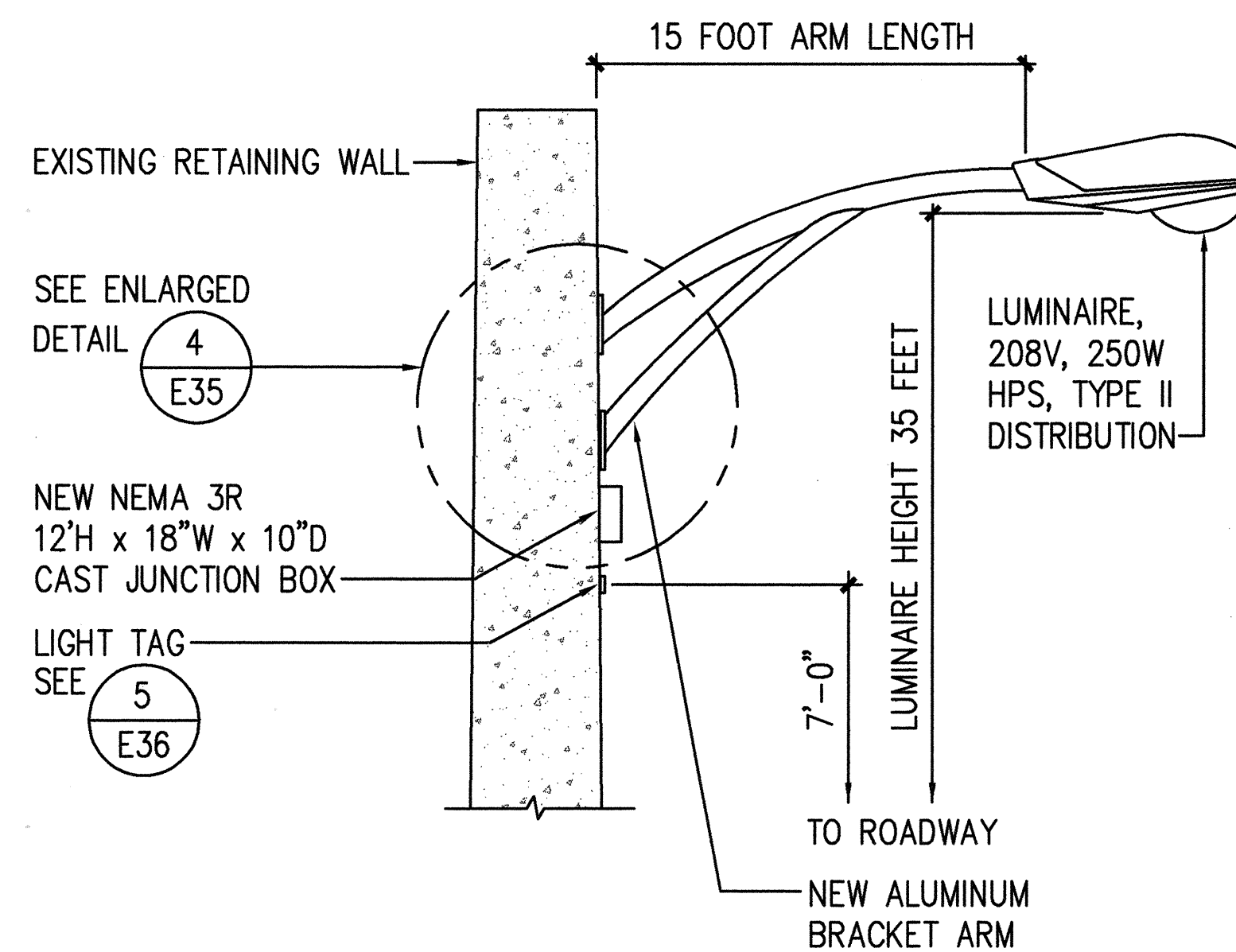
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	433	557



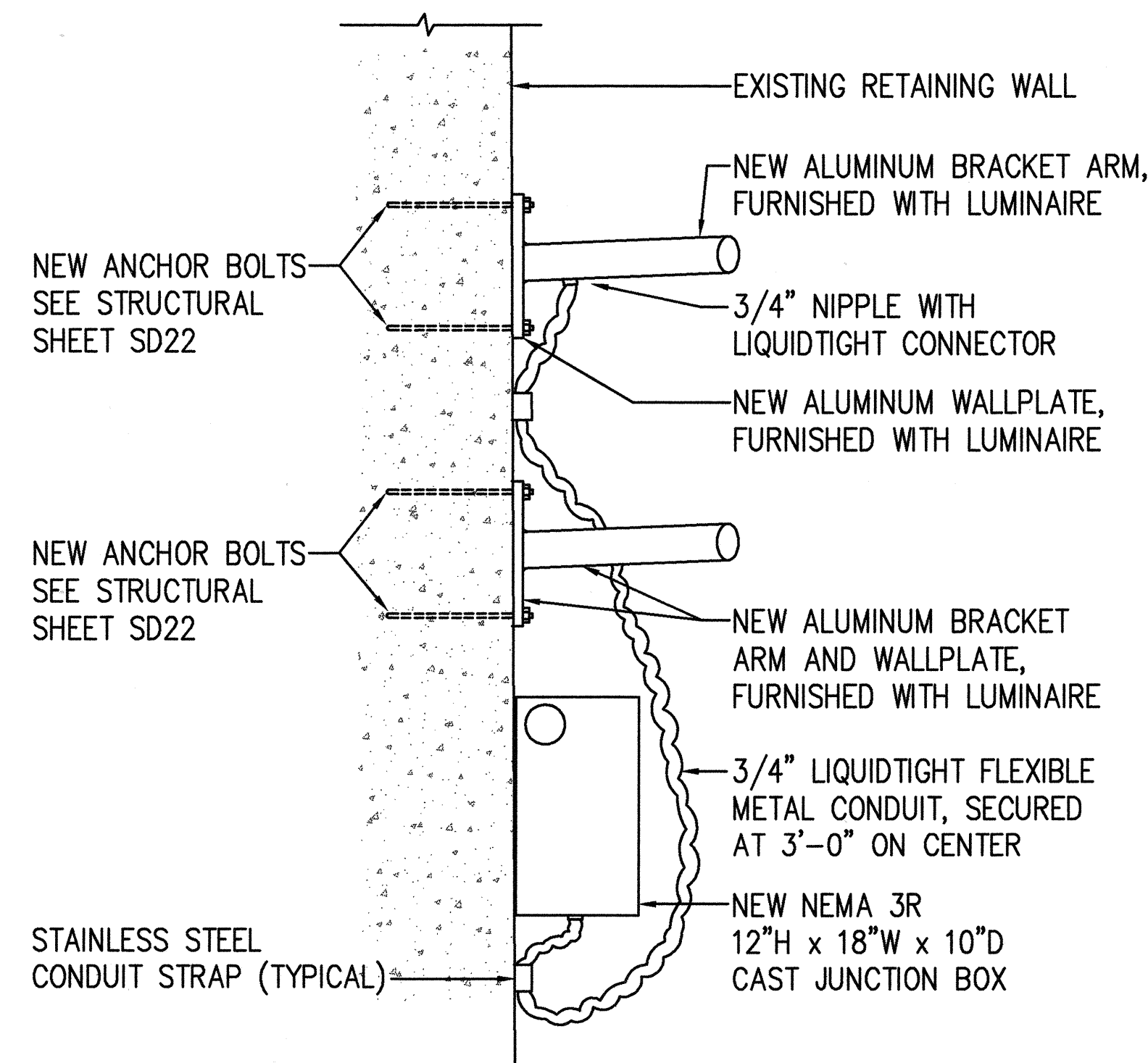
1 WALL MOUNTED ROADWAY LUMINAIRE WITH CONCRETE CANOPY MOUNTING DETAIL
NOT TO SCALE



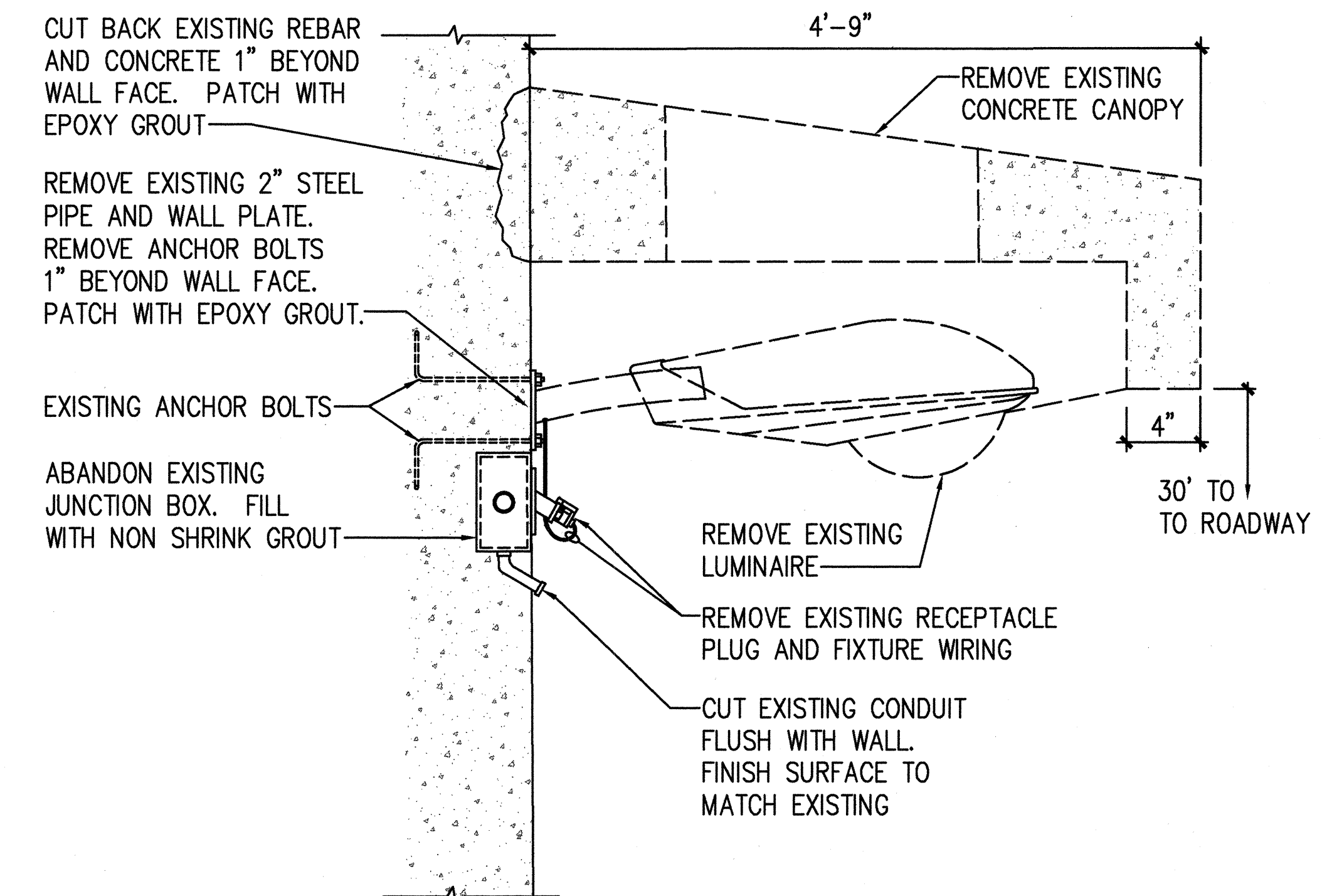
2 ENLARGED DETAIL AT WALL MOUNTING LUMINAIRE
NOT TO SCALE



3 WALL MOUNTED ROADWAY LUMINAIRE WITH BRACKET ARM MOUNTING DETAIL
NOT TO SCALE

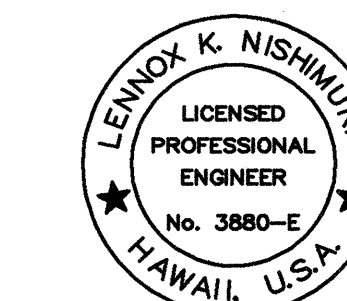


4 DETAIL AT BRACKET ARM ATTACHMENT TO RETAINING WALL
NOT TO SCALE



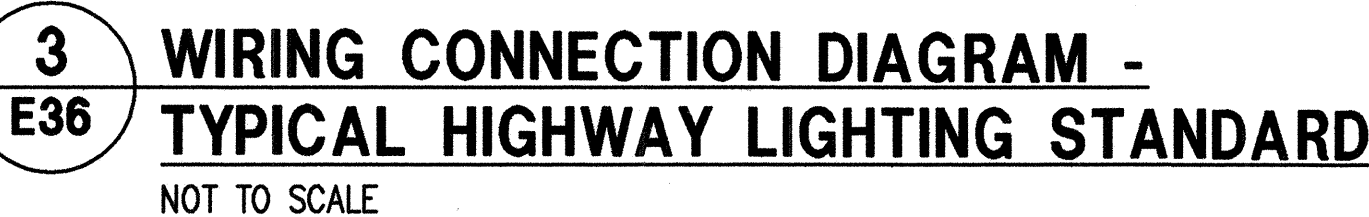
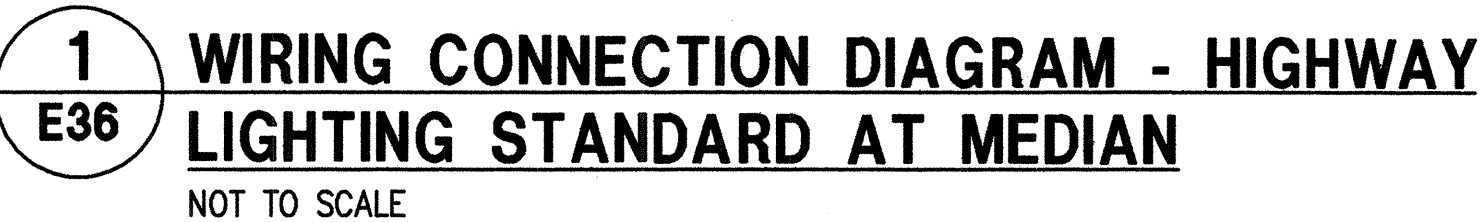
5 WALL MOUNTED ROADWAY LUMINAIRE WITH CONCRETE CANOPY DEMOLITION DETAIL
NOT TO SCALE

SURVEY PLOTTED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
DATE	
SCALE	NONE
DATE	
SCALE	NONE
DATE	
SCALE	NONE

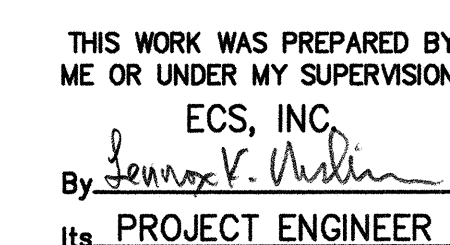


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ME OR UNDER MY SUPERVISION.
ECS, INC.
By *Lennox K. Nishimura*
Its PROJECT ENGINEER

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
MISCELLANEOUS LUMINAIRE MOUNTING DETAILS
INTERSTATE ROUTE H-1 RESURFACING Vic. of Punchbowl Off Ramp to Kapiolani IC F.A.I. Project No. IM-H1-1(234)
Scale: NONE Date: June 1, 1999
SHEET NO. E35 OF 58 SHEETS

[illegible]

- 5** **HIGHWAY LIGHT POLE TAG**
E36 **DETAIL METERED SYSTEM**
NOT TO SCALE



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

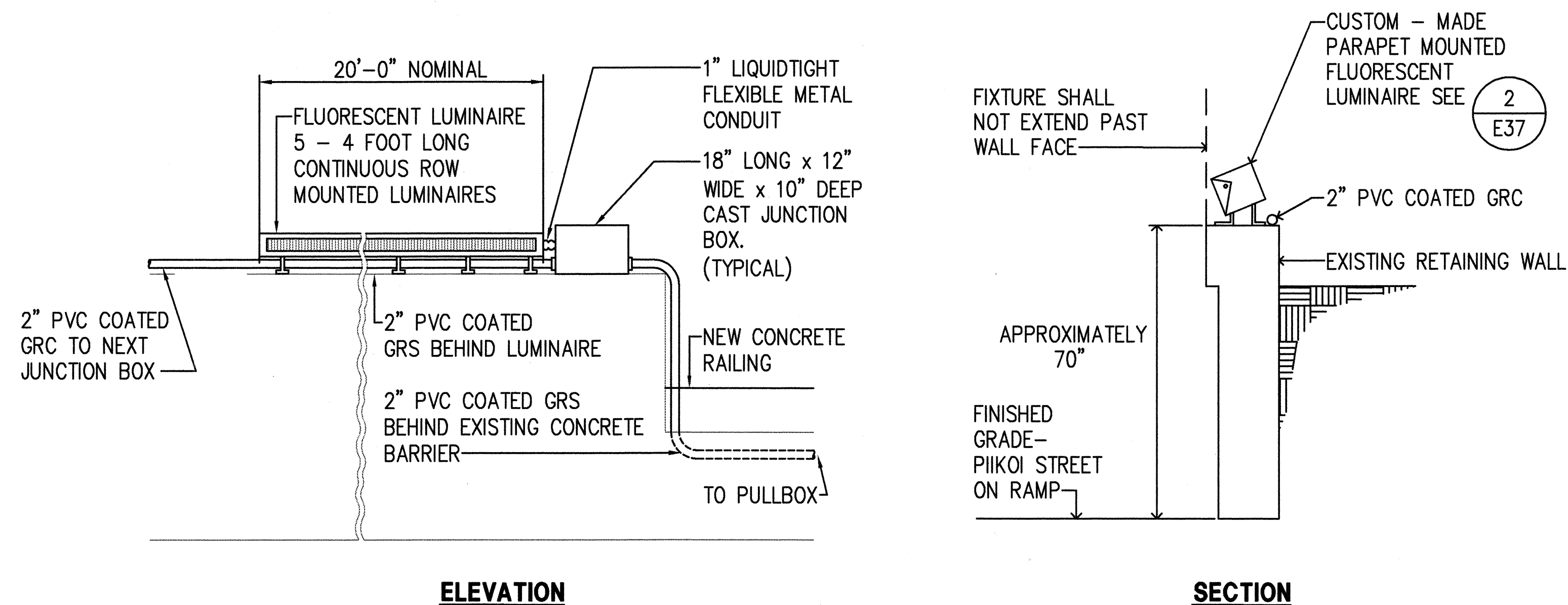
TYPICAL WIRING DIAGRAMS AND
LIGHT POLE TAG DETAILS

INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I Project No. IM-H1-1(234)

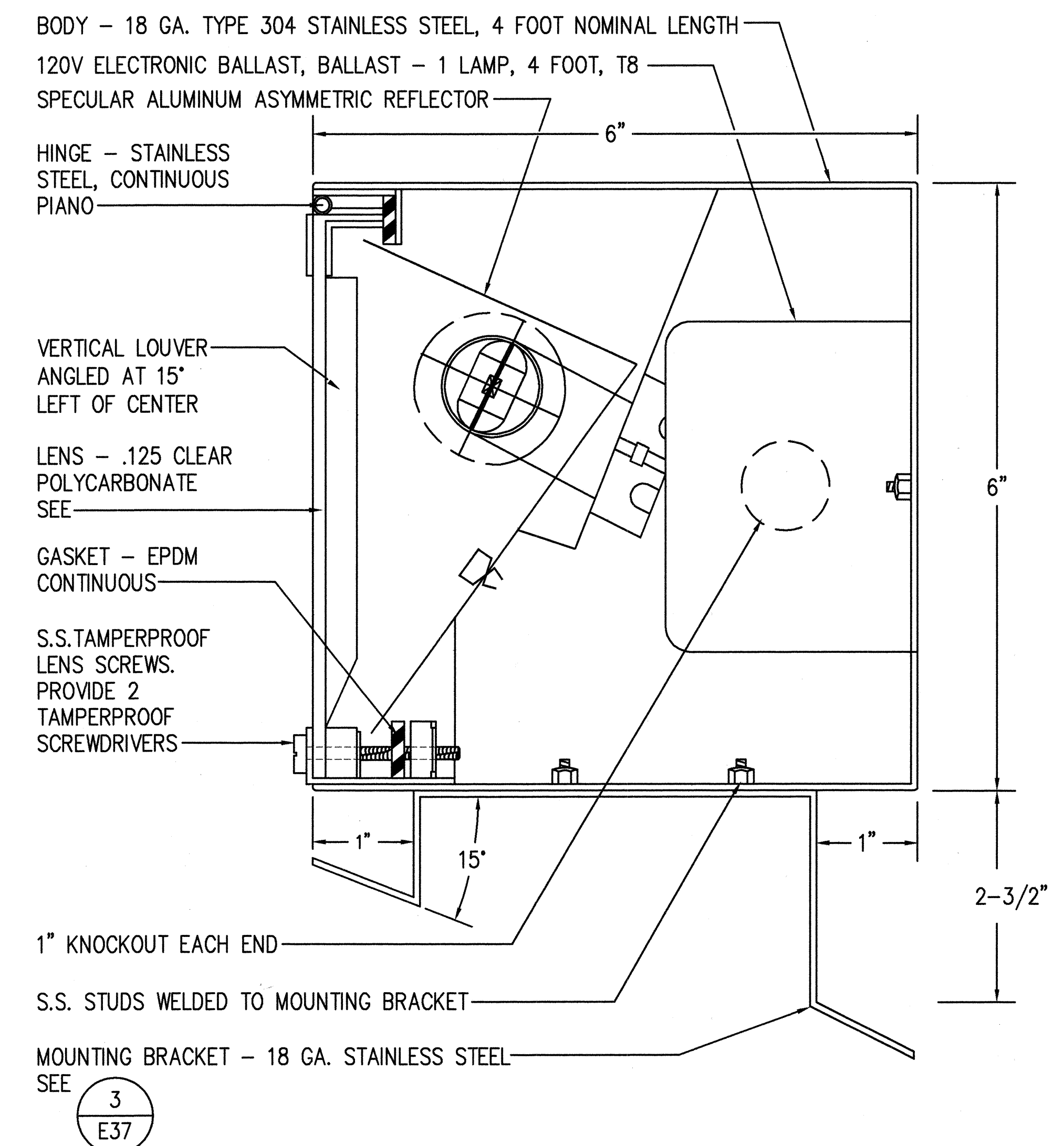
Scale: NONE Date: June 1, 1999

SHEET NO. **E36** OF **58** SHEETS

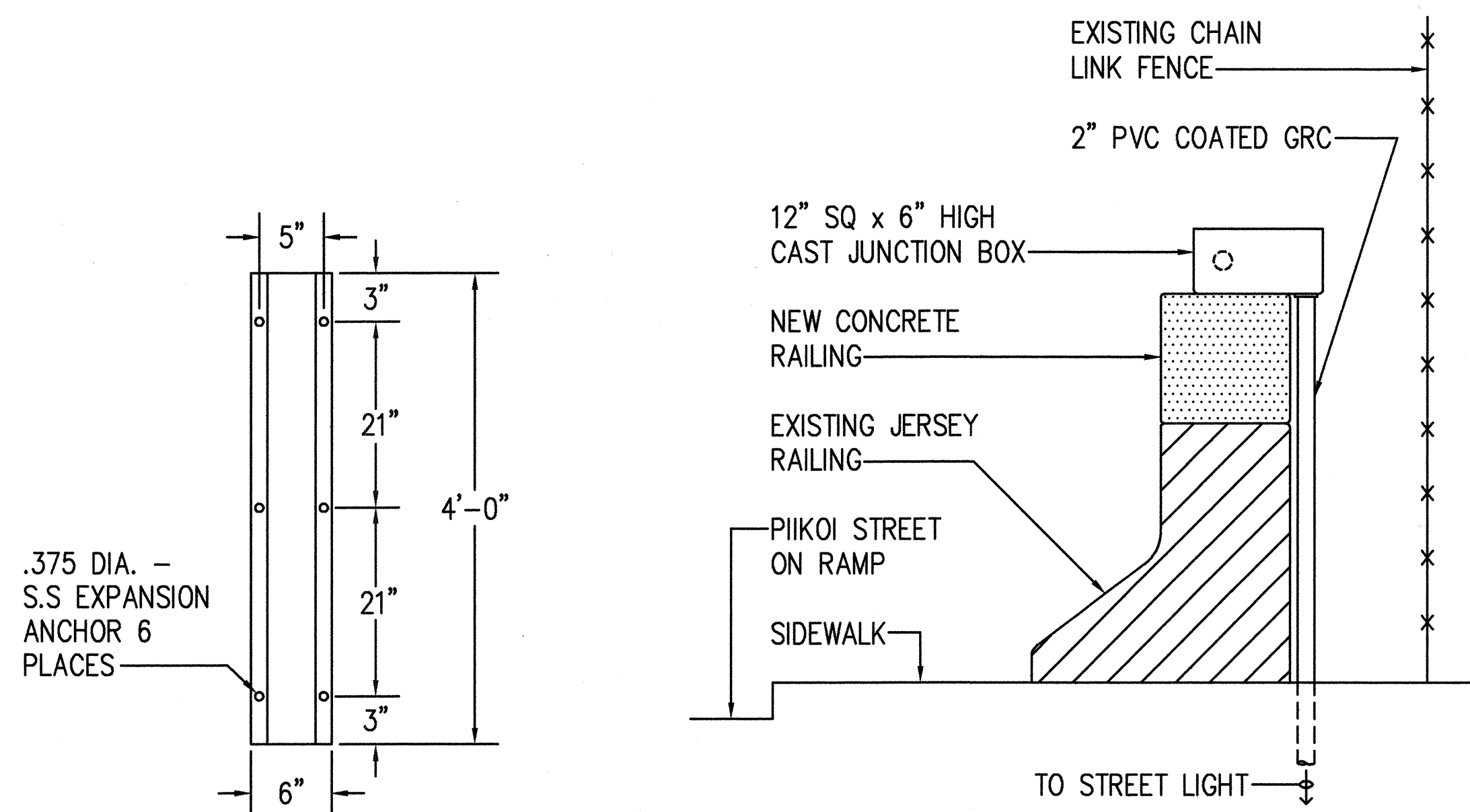
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	435	557



1 **FLUORESCENT LUMINAIRE AT PIIKOI STREET**
E37 NOT TO SCALE



2 PARAPET MOUNTED FLUORESCENT LUMINAIRE
E37 NOT TO SCALE



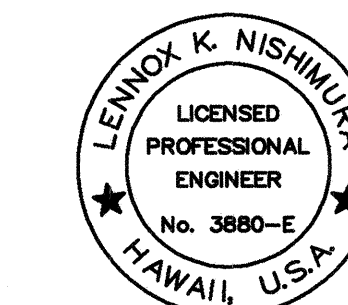
3 MOUNTING DETAIL

E37 NOT TO SCALE

4
F37 **JUNCTION BOX AT
PIIKOI STREET ON RAMP**
NOT TO SCALE

NOTES:

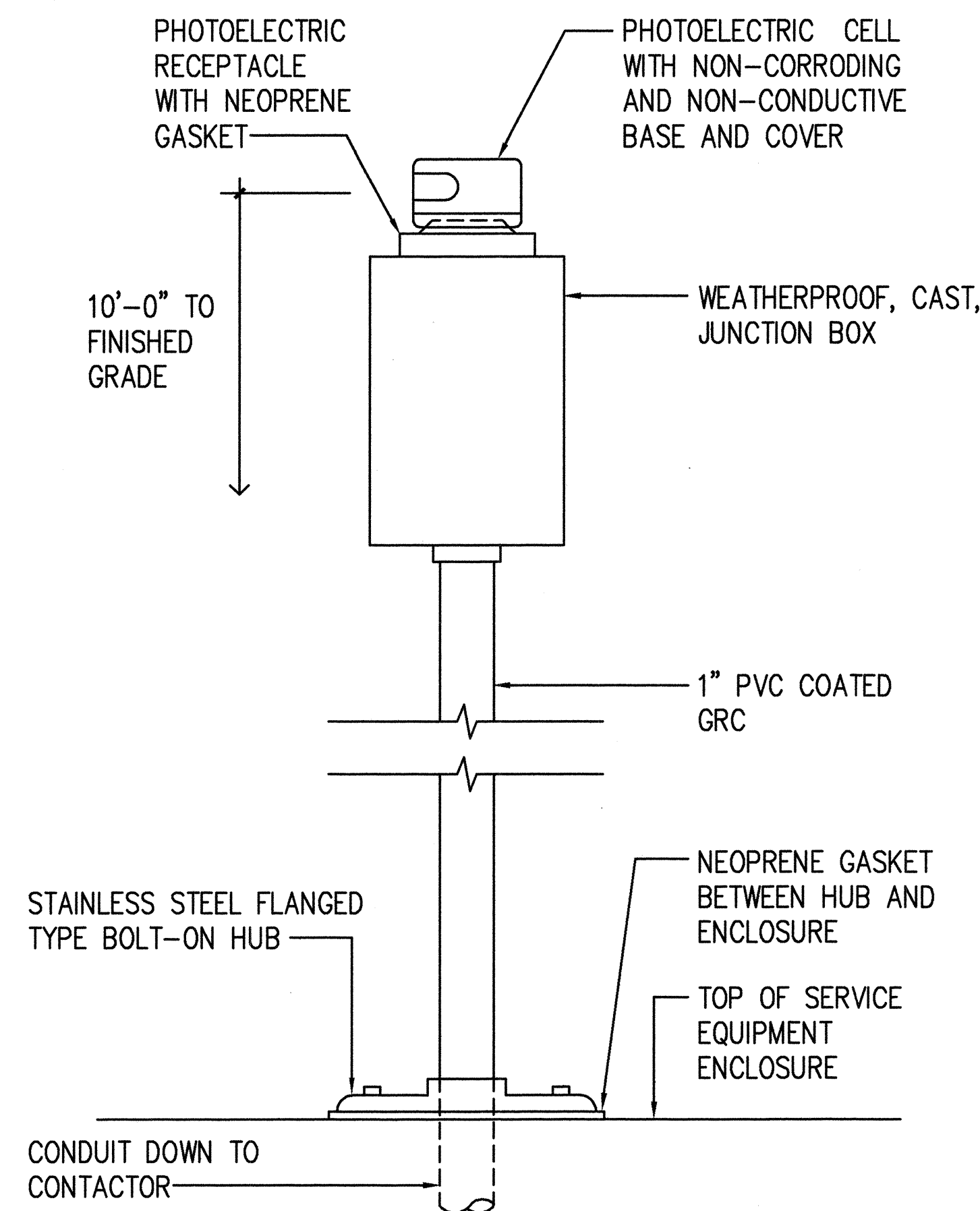
1. FIXTURE SHALL BE U.L. LISTED AND PROVIDED WITH WEEP HOLES.
2. FIXTURE SHALL BE DESIGNED FOR CONTINUOUS ROW MOUNTING AND THROUGH WIRING.
3. LUMINAIRE SHALL BE DESIGNED TO PRODUCE AN AVERAGE FOOTCANDLE LEVEL BETWEEN 1.0 AND 2.5 WITH AVERAGE TO MINIMUM UNIFORMITY RATIO OF 4 TO 1 MAX. ILLUMINATION LEVELS ON THE ROADWAY SHALL BE MEASURED BEGINNING AT 3 FEET FROM THE RETAINING WALL.
4. SUBMIT SHOP DRAWINGS, PHOTOMETRICS AND ILLUMINATION CALCULATIONS FOR APPROVAL PRIOR TO FABRICATION.
5. MANUFACTURER: PARAMOUNT OR APPROVED EQUAL



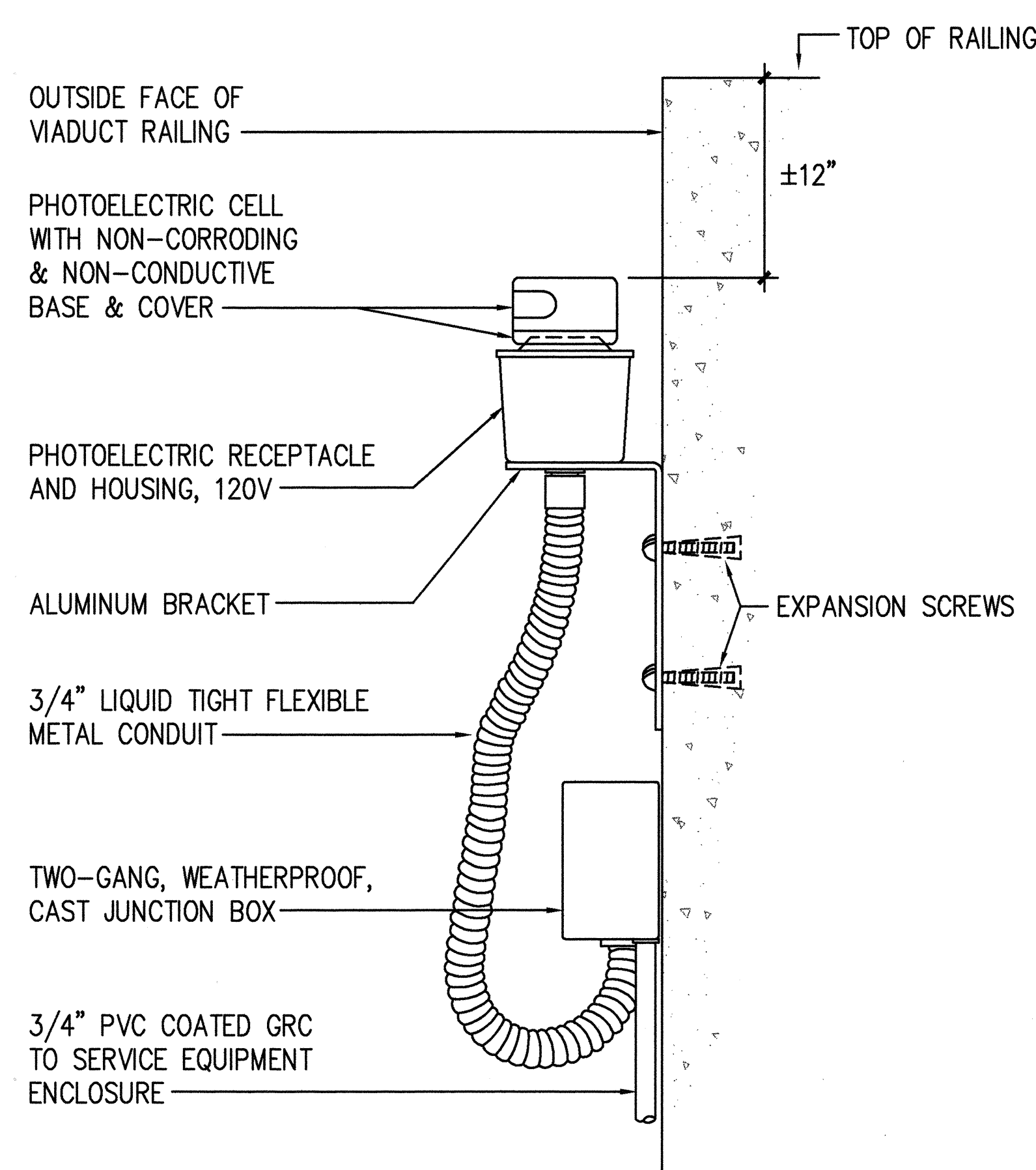
THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.
ECS, INC.
By James K. Nishimura
Its PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
PIIKOI STREET ON RAMP
LIGHTING DETAILS
INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I Project No. IM-H1-1(234)
Scale: AS NOTED Date: June 1, 1999
SHEET NO. **E37** OF **58** SHEETS

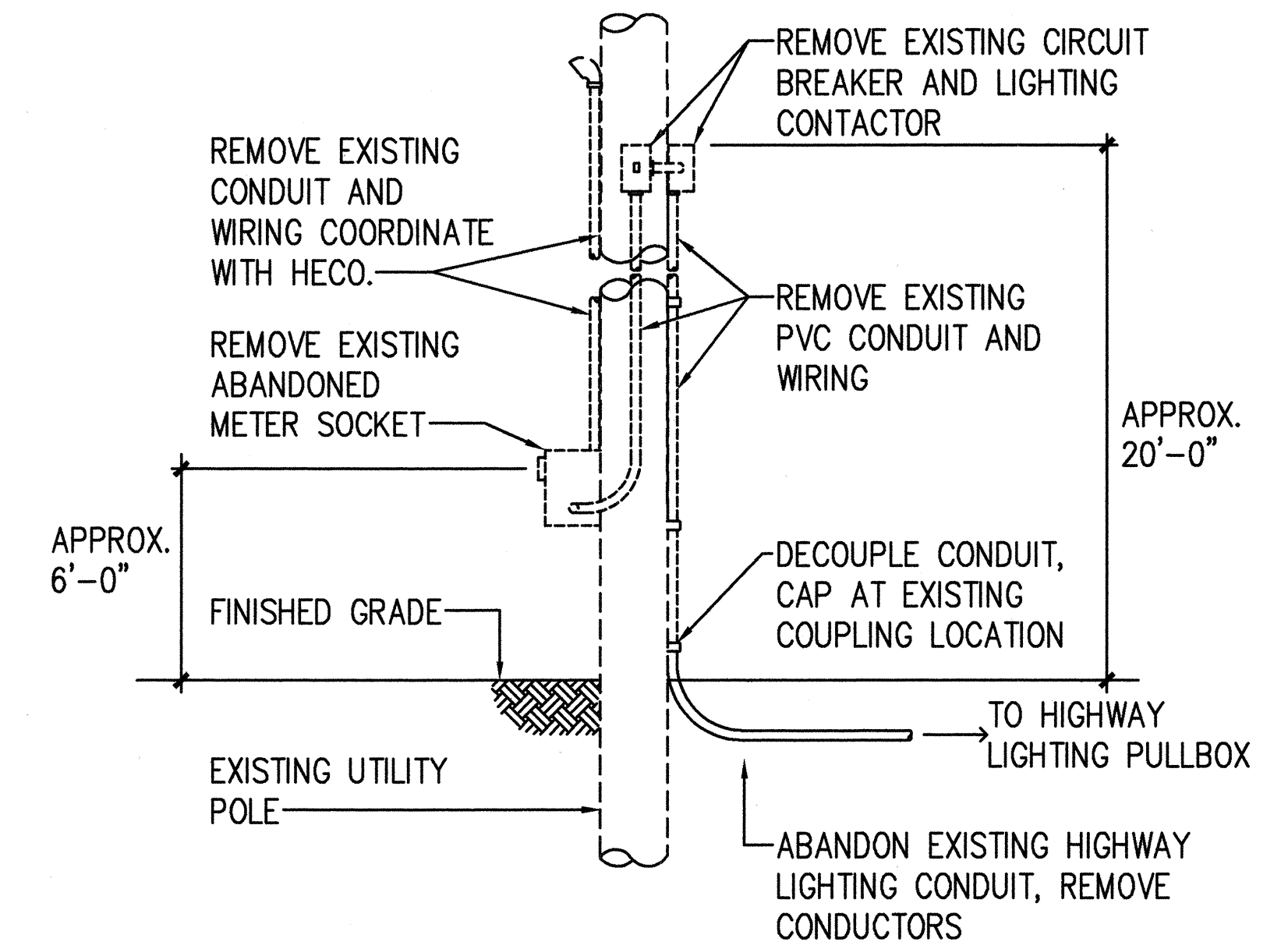
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	436	557



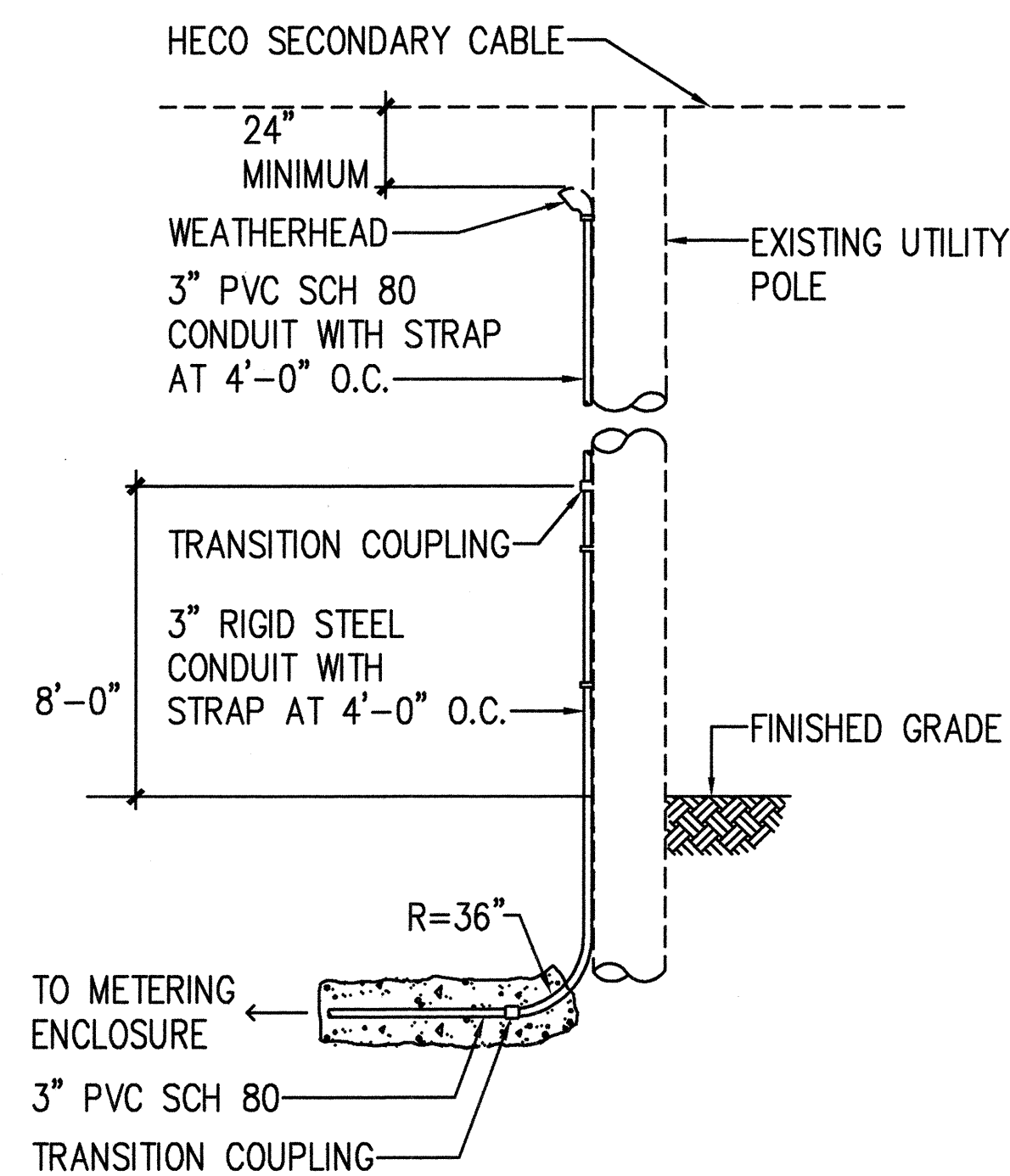
1 PHOTOCELL MOUNTED ABOVE EQUIPMENT ENCLOSURE
NOT TO SCALE



2 PHOTOCELL MOUNTED AT VIADUCT
NOT TO SCALE



3 POLE-MOUNTED SERVICE EQUIPMENT DEMOLITION DETAIL
NOT TO SCALE

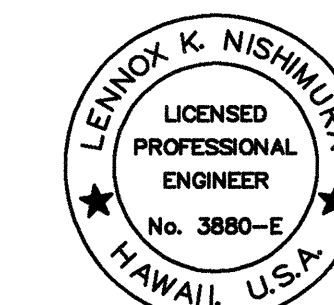


4 CONDUIT STUB-UP AT UTILITY POLE
NOT TO SCALE

SURVEY PLOTTED BY	DATE
DRAWN BY	
CHECKED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTES	
NO.	

PM: CAD
OPER: REVISOR

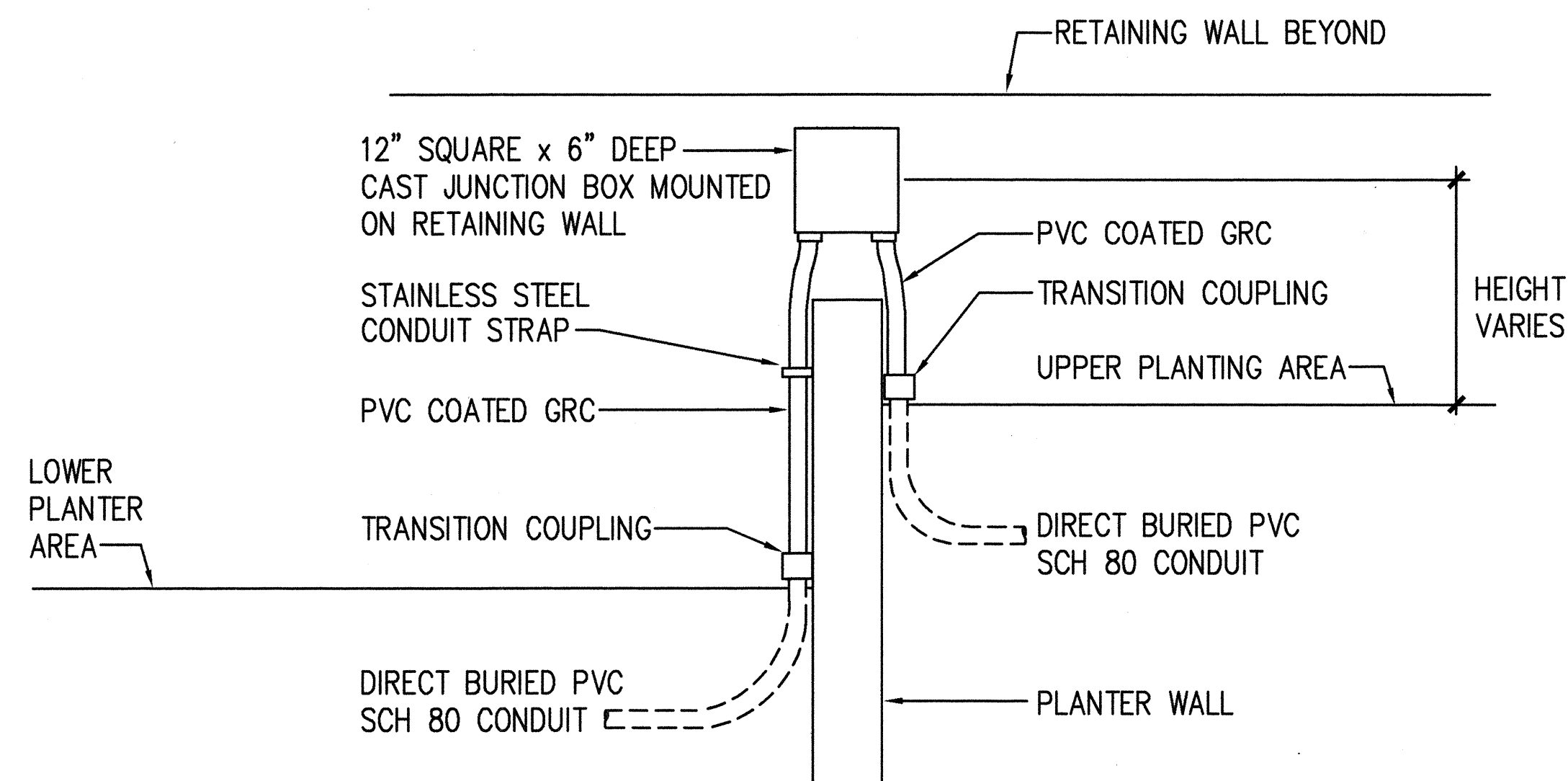
DATE: 1 = 1
SCALE:



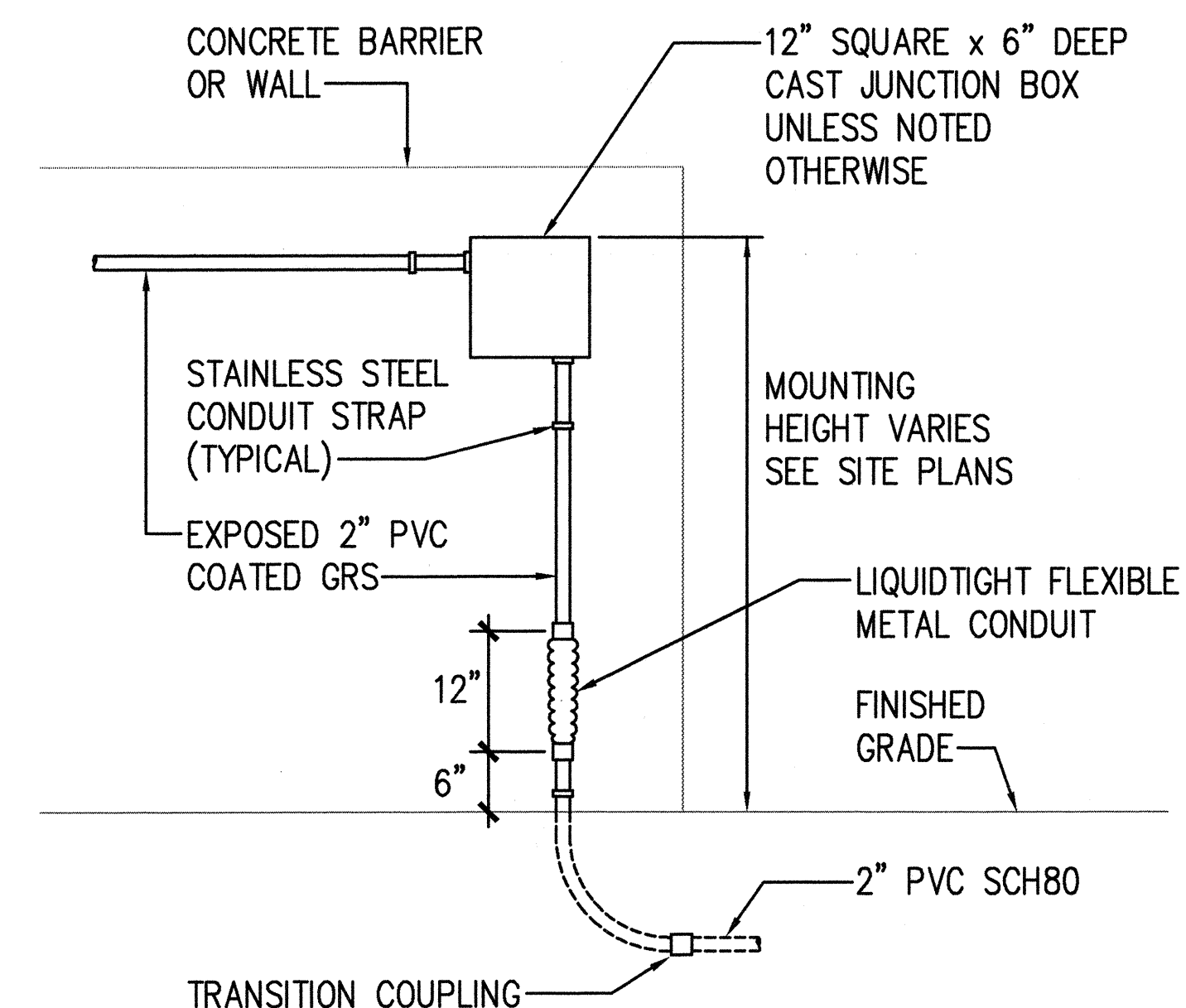
THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.
ECS, INC.
By *Lennox K. Nishimura*
Its PROJECT ENGINEER

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
MISCELLANEOUS ELECTRICAL DETAILS
INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)
Scale: NONE Date: June 1, 1999
SHEET NO. E38 OF 58 SHEETS

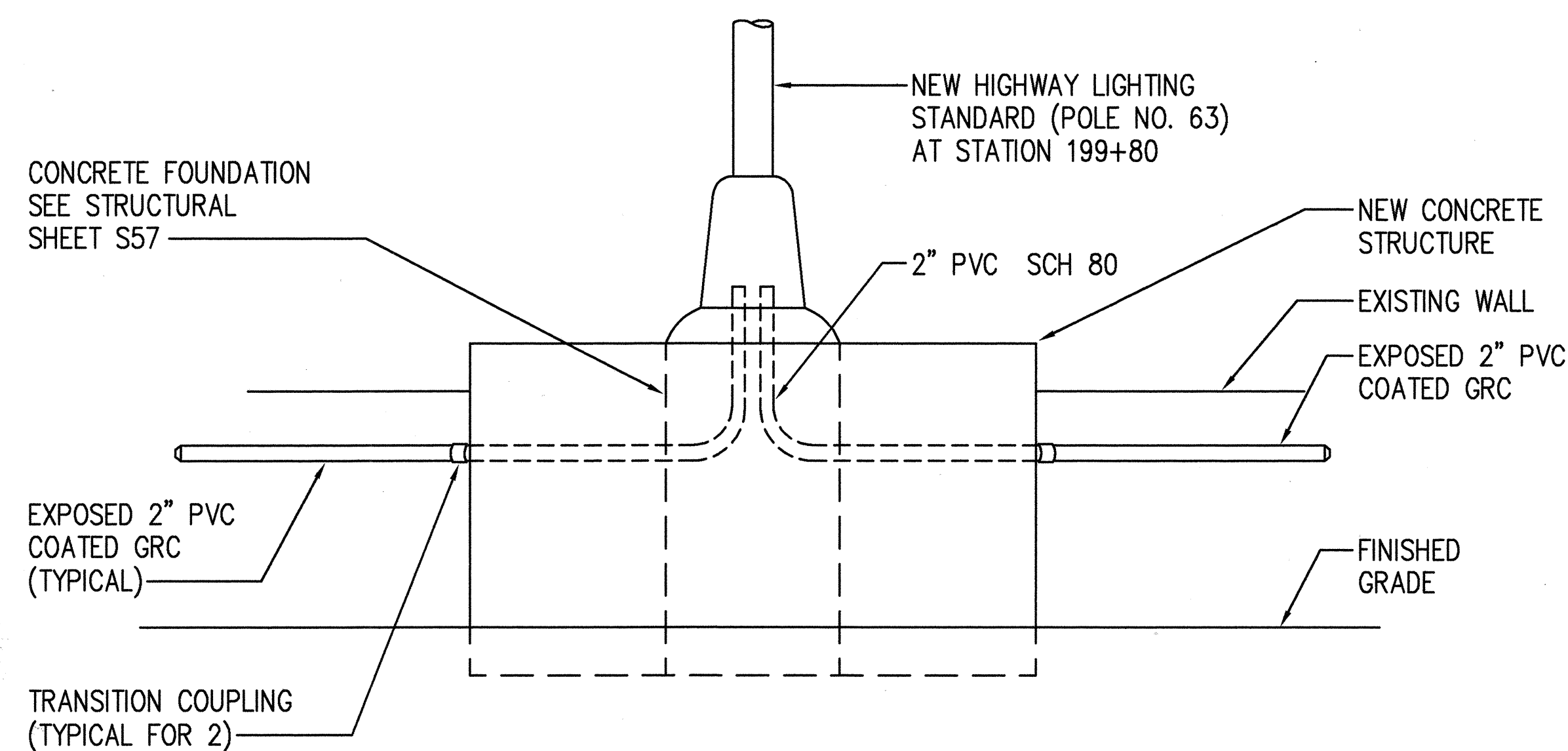
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	437	557



1
E39 **TYPICAL JUNCTION BOX MOUNTING
DETAIL AT PLANTER AREA**
NOT TO SCALE

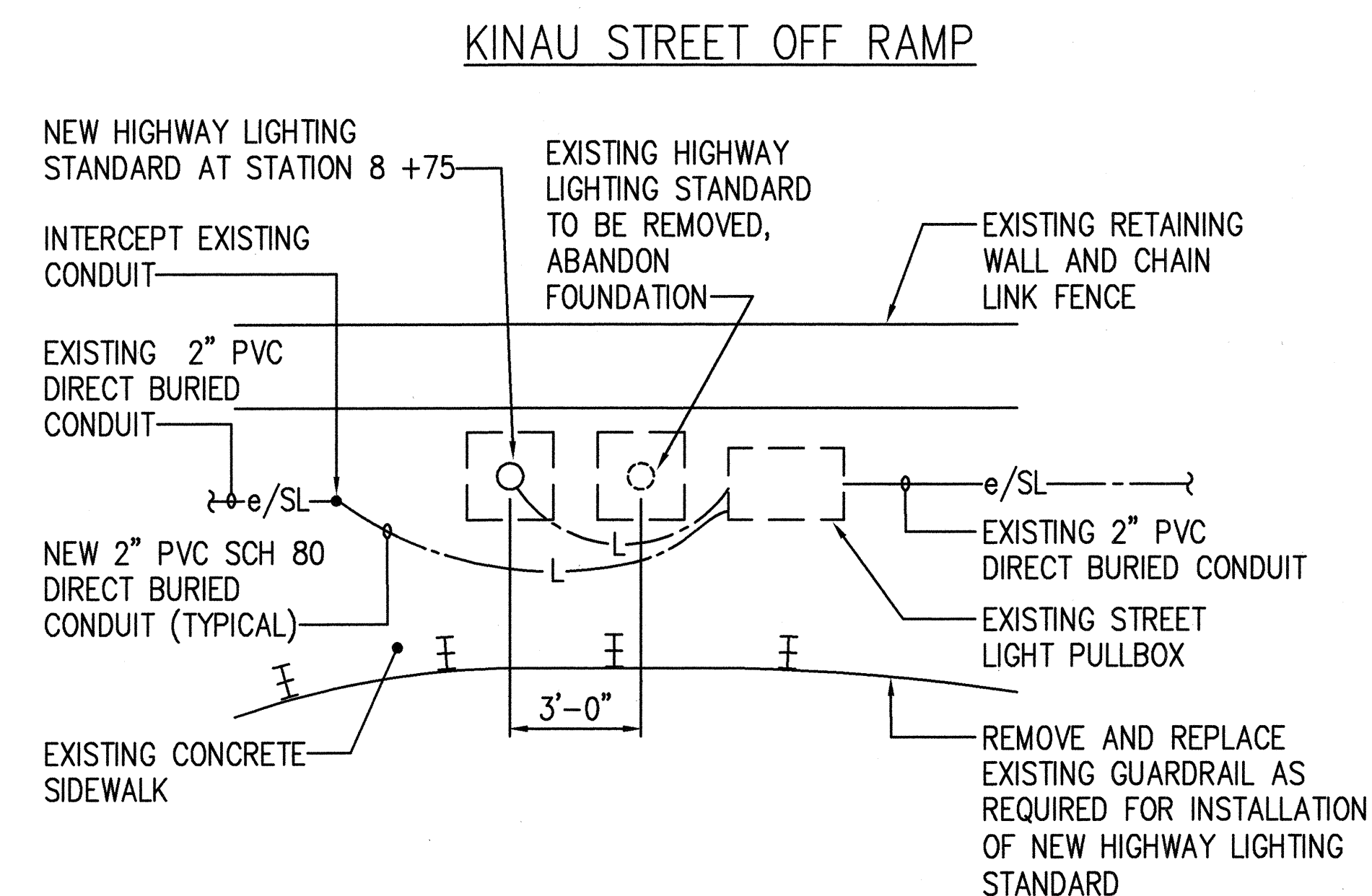


2
E39 **TYPICAL TRANSITION FROM UNDERGROUND
CONDUIT TO EXPOSED CONDUIT**
NOT TO SCALE



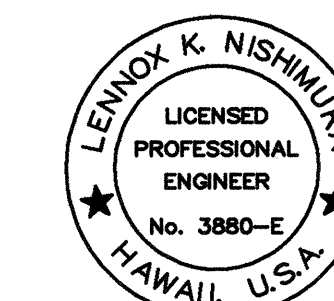
NOTE:
GUARDRAIL NOT SHOWN FOR CLARITY

3
E39 **DETAIL OF LIGHT POLE AT STATION 199+80**
NOT TO SCALE



4
E39 **DETAIL OF LIGHT POLE LOCATION,
KINAU STREET OFF RAMP, STATION 8+75**
NOT TO SCALE

SURVEY PLATTED BY	DATE
DRAWN BY	
PLACED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTED	
No.	

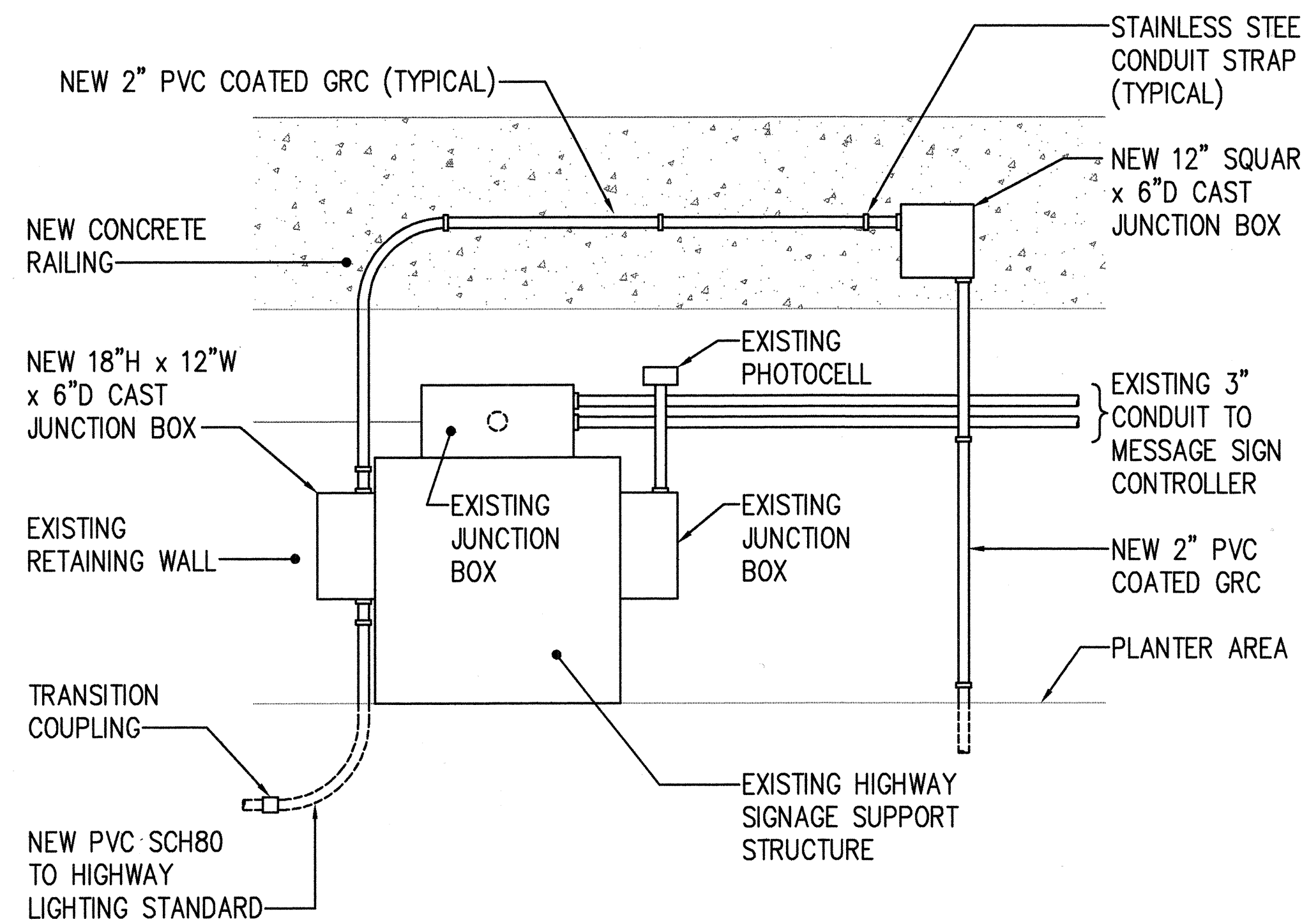


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ECS, INC.
By *Lennox K. Nishimura*
Its **PROJECT ENGINEER**

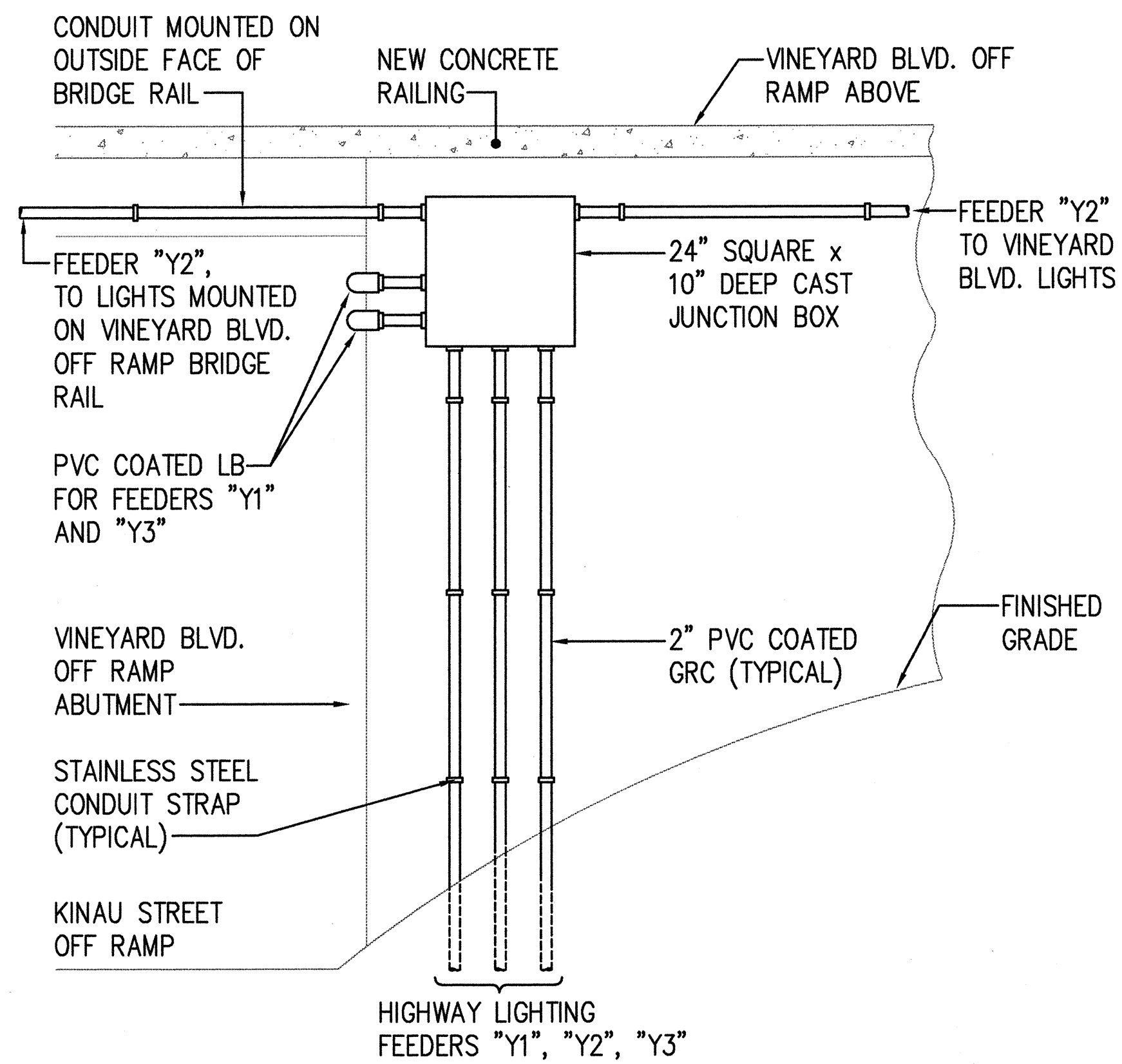
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
MISCELLANEOUS ELECTRICAL DETAILS	
INTERSTATE ROUTE H-1 RESURFACING	
Vic. of Punchbowl Off Ramp to Kapiolani IC	
F.A.I. Project No. IM-H1-1(234)	
Scale: NONE	Date: June 1, 1999
SHEET NO. E39 OF 58 SHEETS	

FILE: 103-3E39

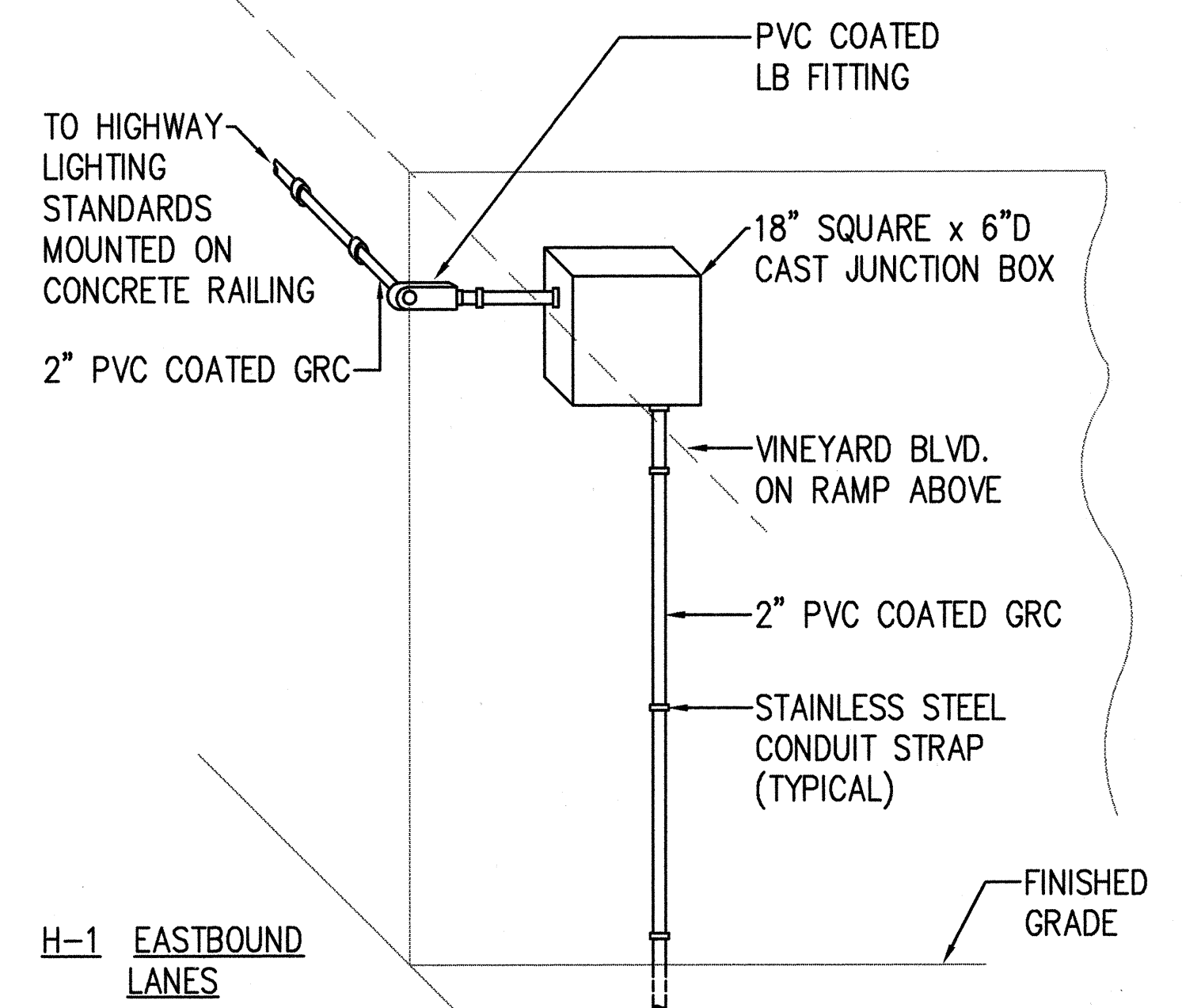
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	438	557



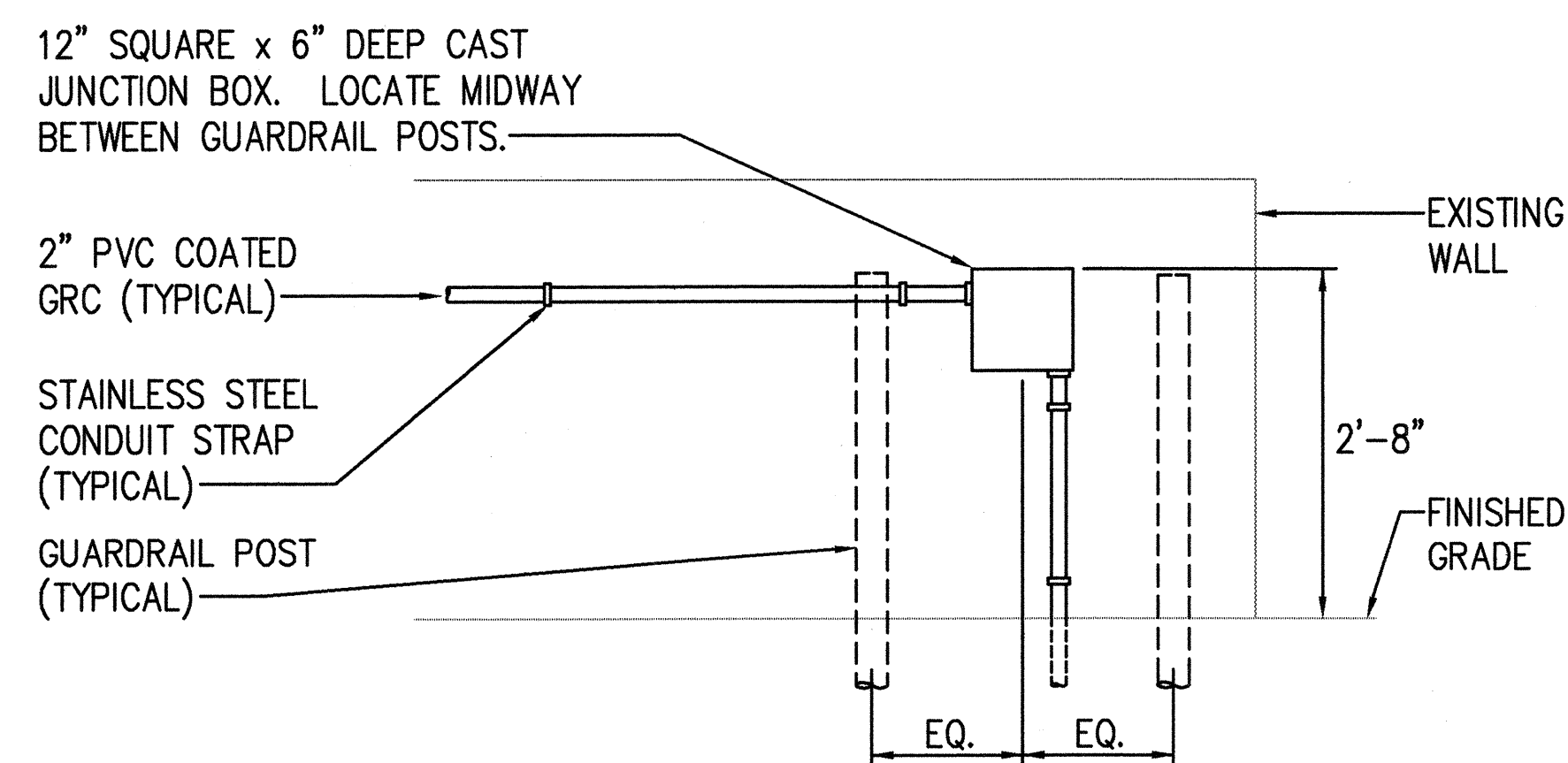
**1 CONDUIT ROUTING DETAIL AT
E40 WARD AVENUE OVERPASS**
NOT TO SCALE



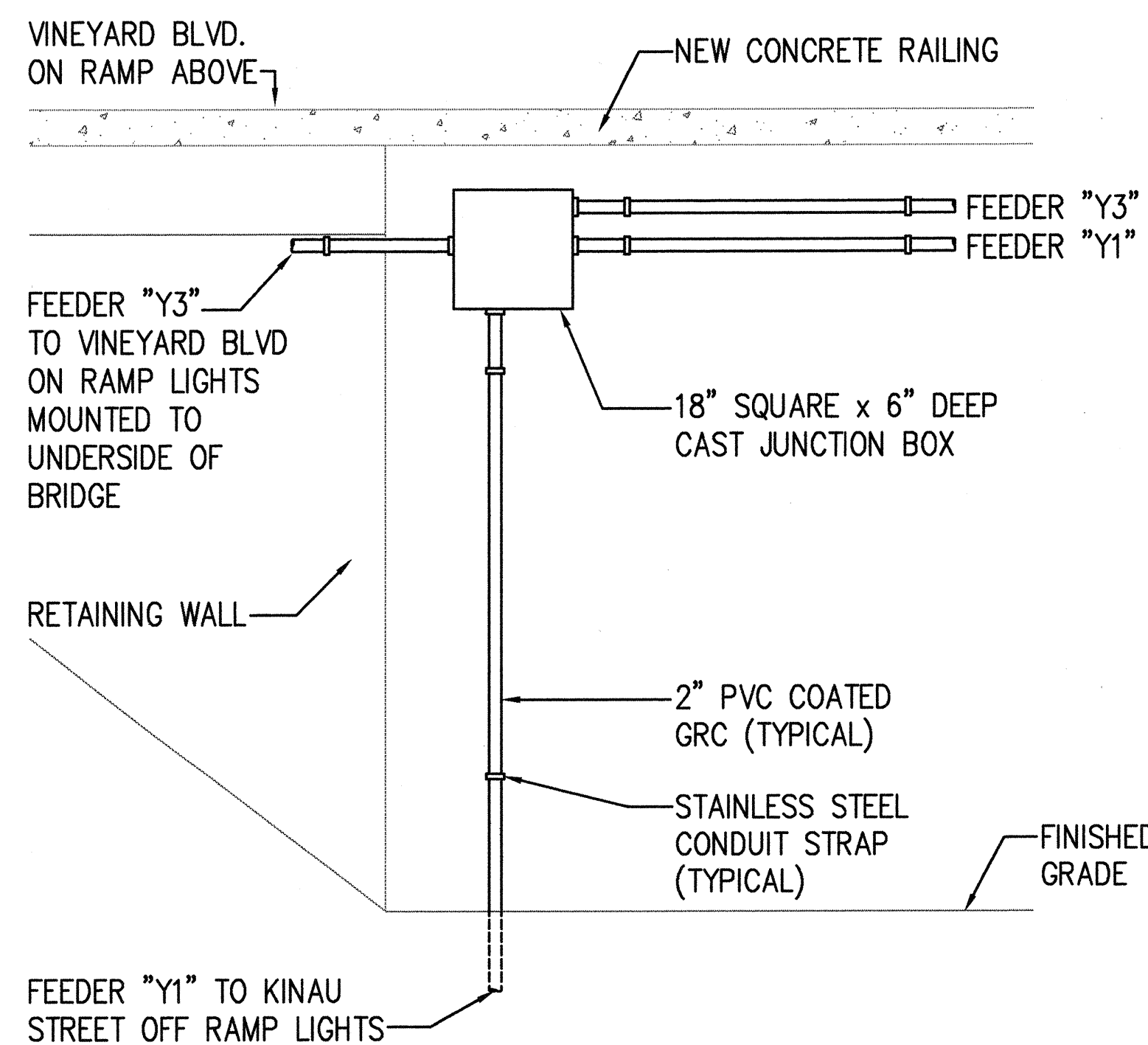
**2 CONDUIT ROUTING DETAIL AT VINEYARD
E40 BLVD. OFF RAMP ABUTMENT**
NOT TO SCALE



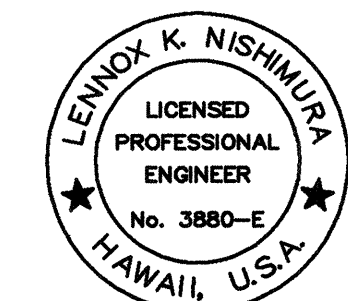
**3 JUNCTION BOX AT VINEYARD
E40 BLVD. ON RAMP ABUTMENT**
NOT TO SCALE



4 JUNCTION BOX MOUNTING DETAIL
E40 NOT TO SCALE



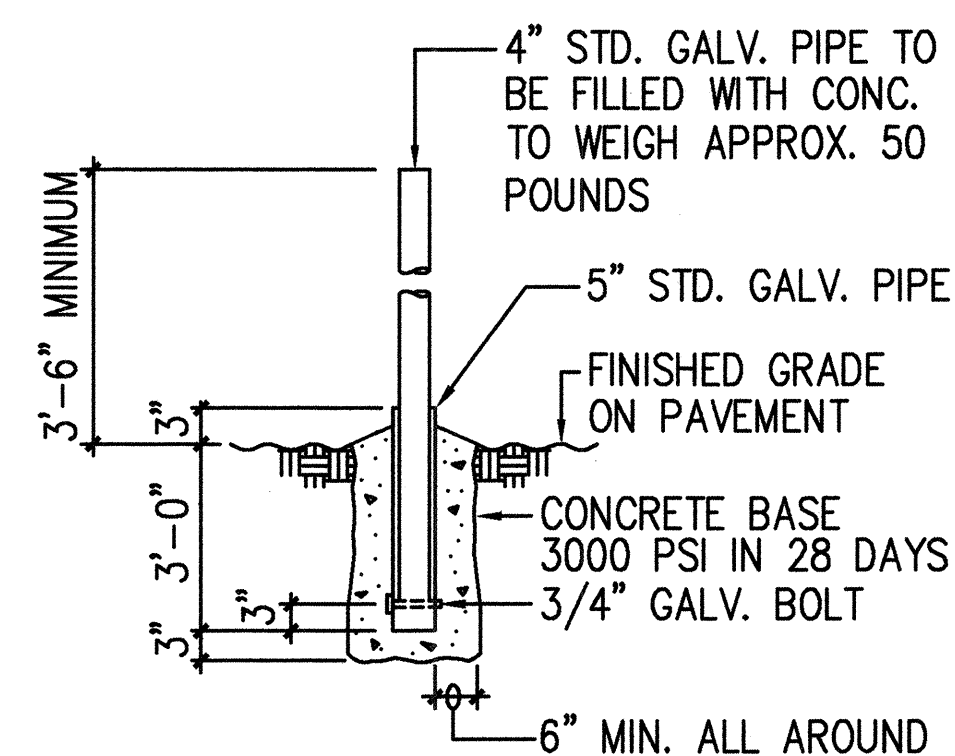
**5 JUNCTION BOX DETAIL AT
E40 KINAU STREET OFF RAMP**
NOT TO SCALE



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ECS, INC.
By *Lemox K. Nishimura*
Its PROJECT ENGINEER

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
MISCELLANEOUS ELECTRICAL DETAILS	
INTERSTATE ROUTE H-1 RESURFACING	
Vic. of Punchbowl Off Ramp to Kapiolani IC	
F.A.I. Project No. IM-H1-1(234)	
Scale: AS NOTED	Date: June 1, 1999
SHEET NO. E40 OF 58 SHEETS	

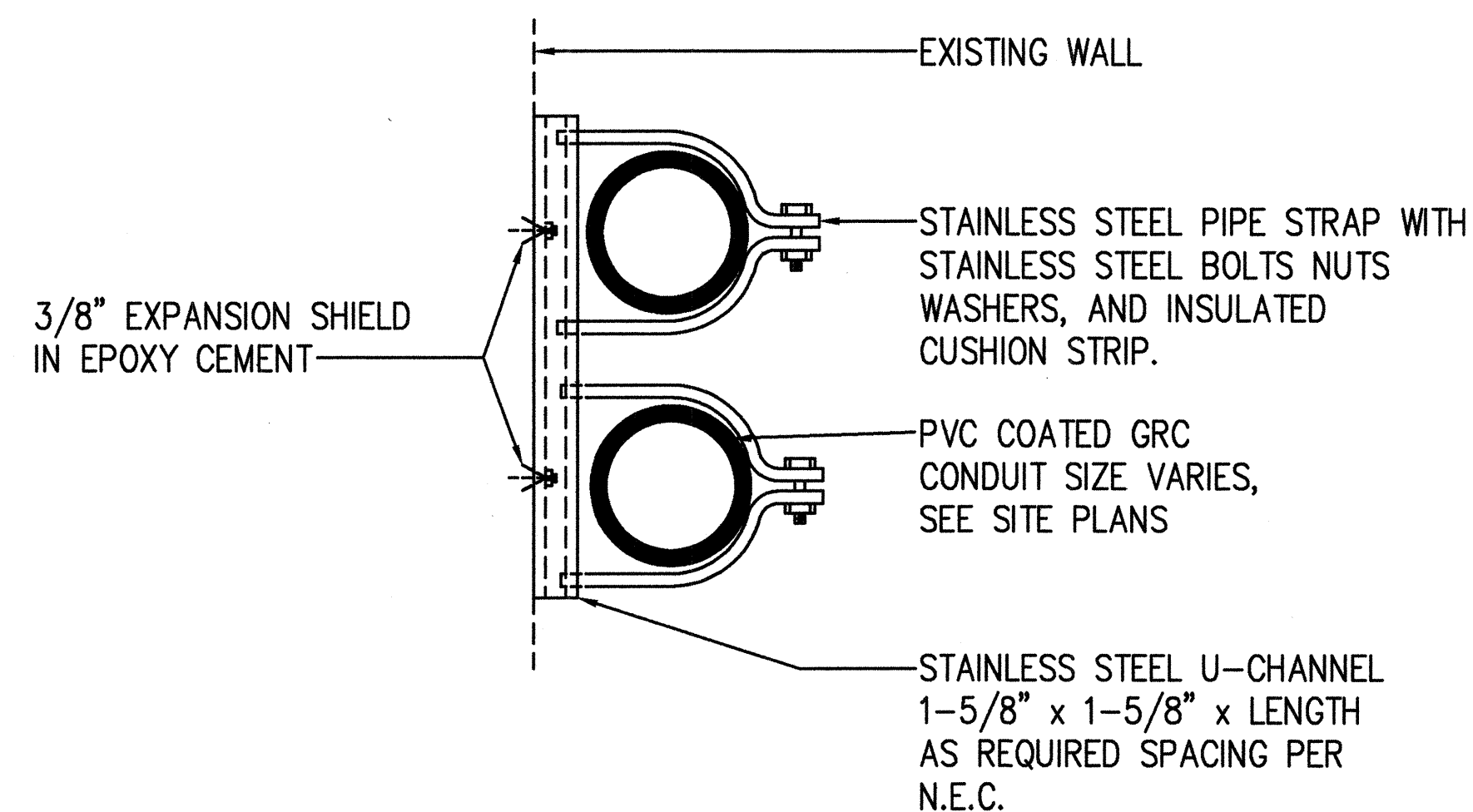
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	439	557



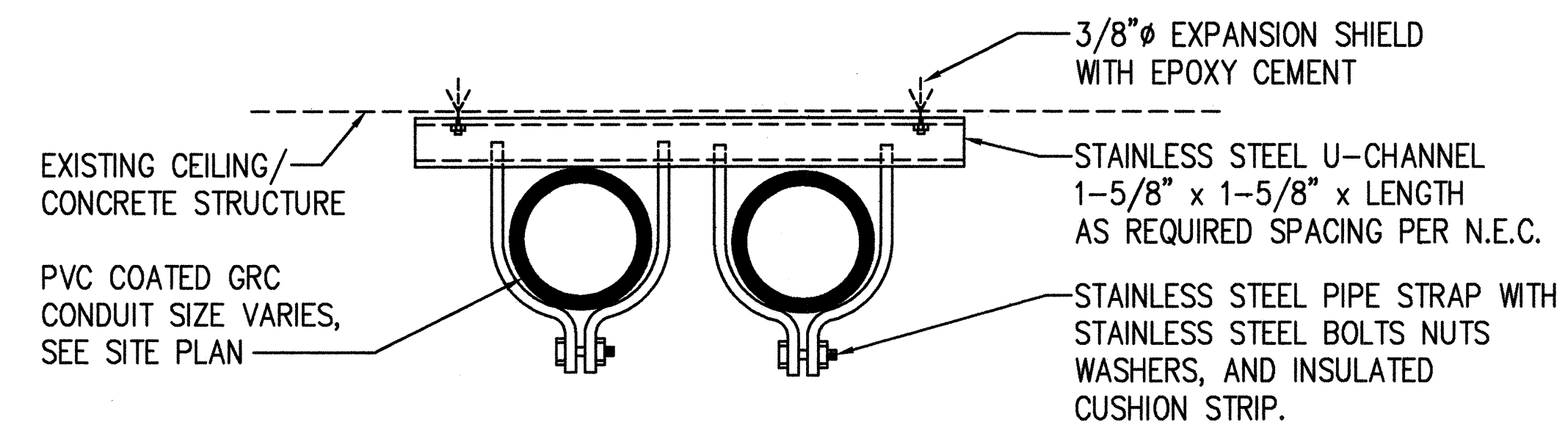
NOTE:

BARRIER POSTS ARE TO BE PAINTED YELLOW AS PER ANSI SPEC 253.1 TO COMPLY WITH OSHA STANDARDS FOR COLORING CODE.

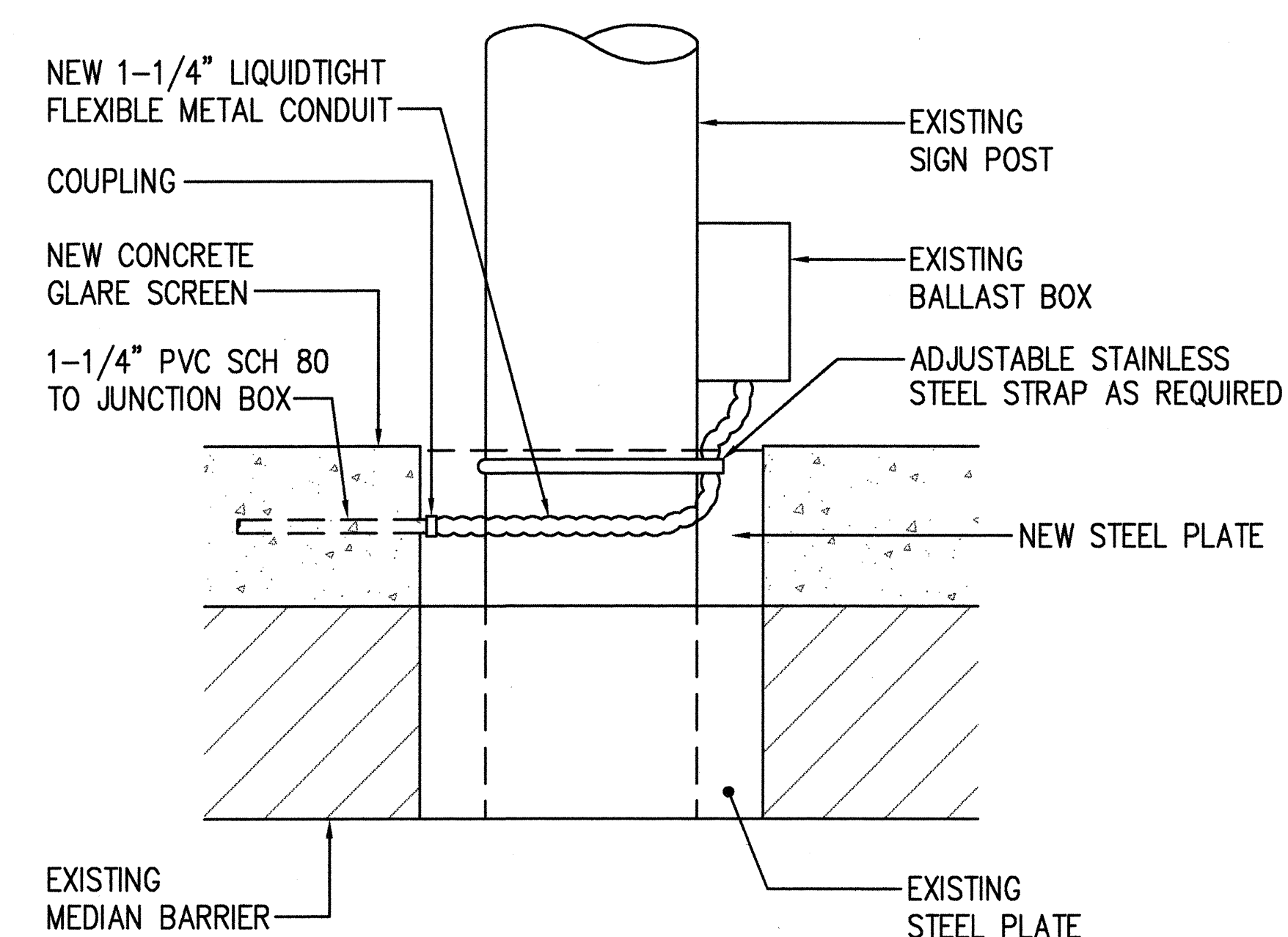
1 POST TYPE BARRIER
E41 NOT TO SCALE



2 TYPICAL WALL MOUNTED CONDUIT SUPPORT DETAIL
E41 NOT TO SCALE

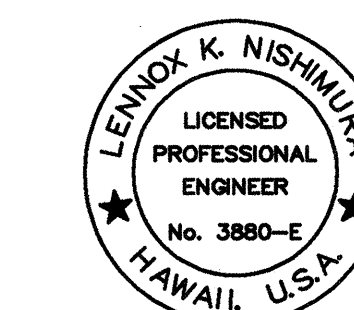


3 TYPICAL SURFACE CONDUIT SUPPORT DETAIL
E41 NOT TO SCALE



4 CONDUIT ROUTING AT HIGHWAY SIGNAGE POST
E41 NOT TO SCALE

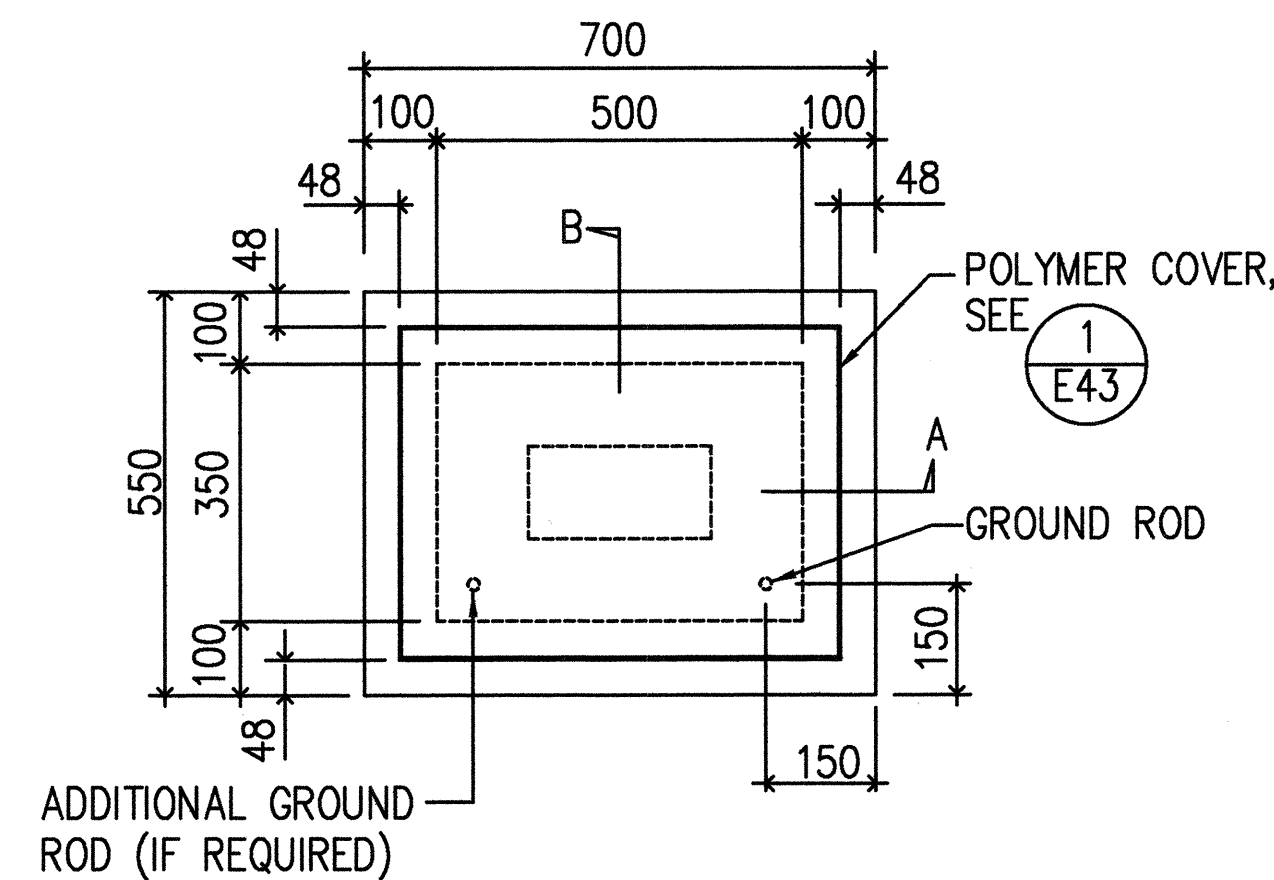
SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
NOVEMBER	
QUANTITIES BY	
CHECKED BY	
NO.	



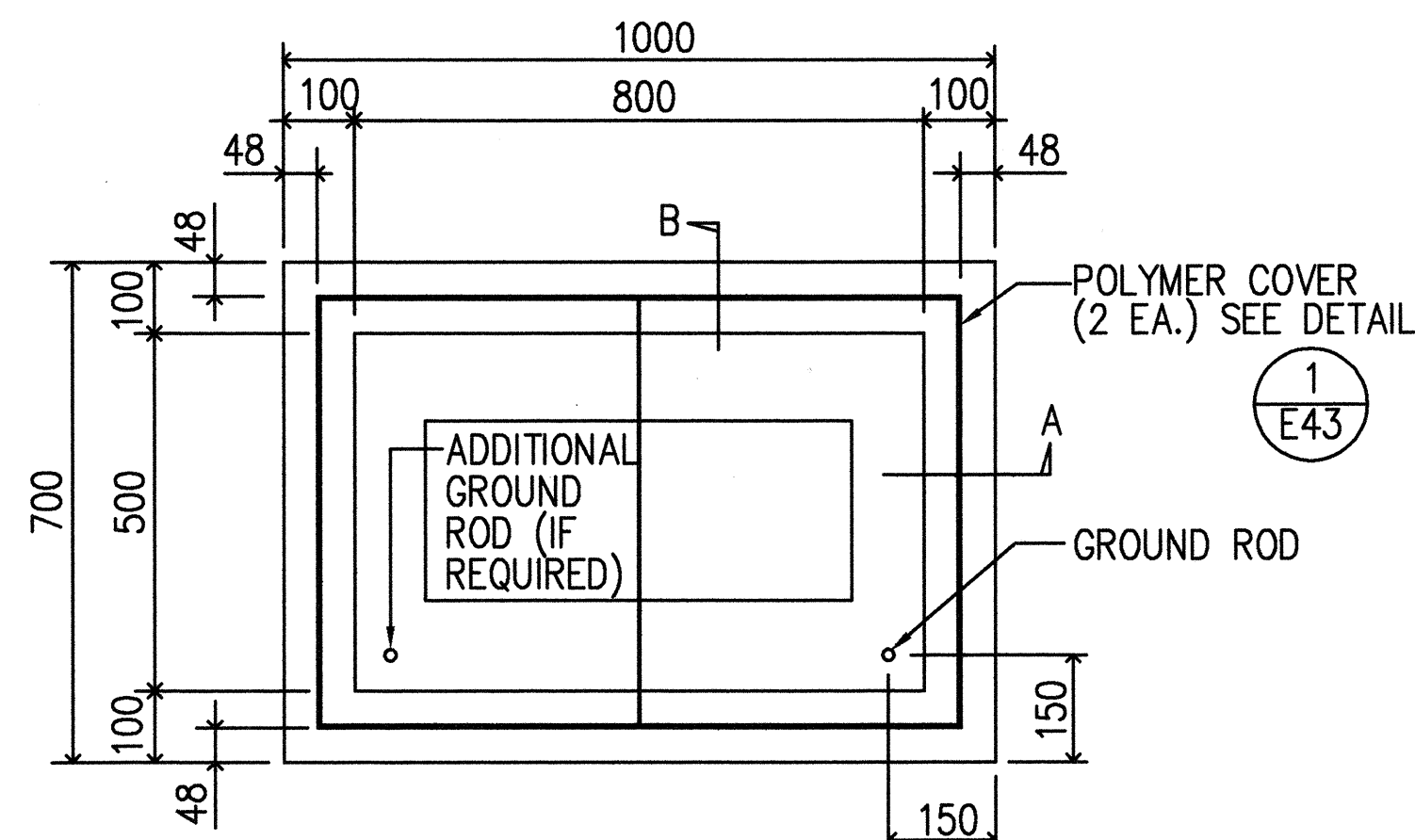
THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.
ECS, INC.
By *Lennox K. Nishimura*
Its **PROJECT ENGINEER**

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
MISCELLANEOUS ELECTRICAL DETAILS	
INTERSTATE ROUTE H-1 RESURFACING	
Vic. of Punchbowl Off Ramp to Kapiolani IC	
F.A.I. Project No. IM-H1-1(234)	
Scale: AS NOTED	Date: June 1, 1999
SHEET NO. E41 OF 58 SHEETS	

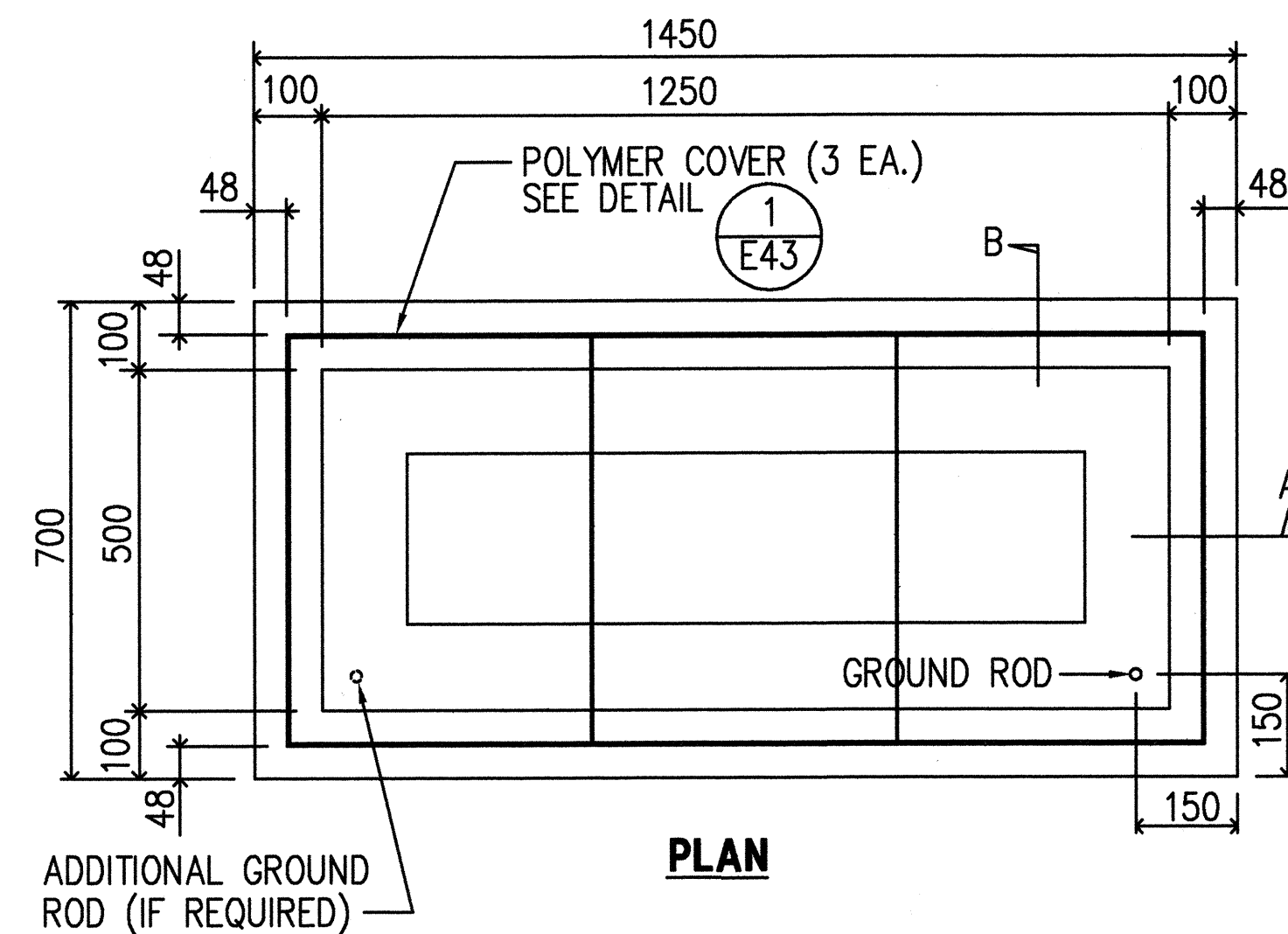
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	440	557



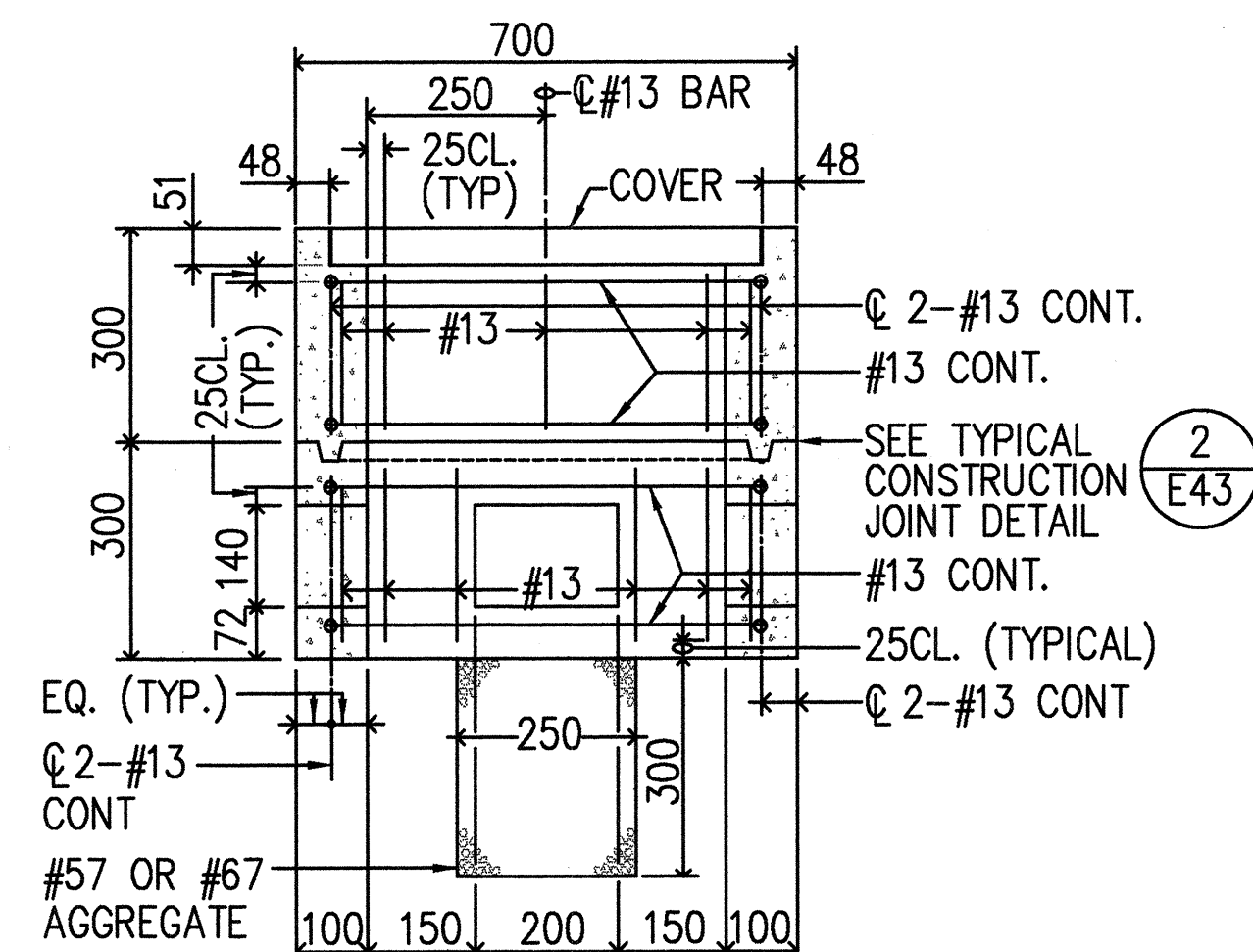
PLAN



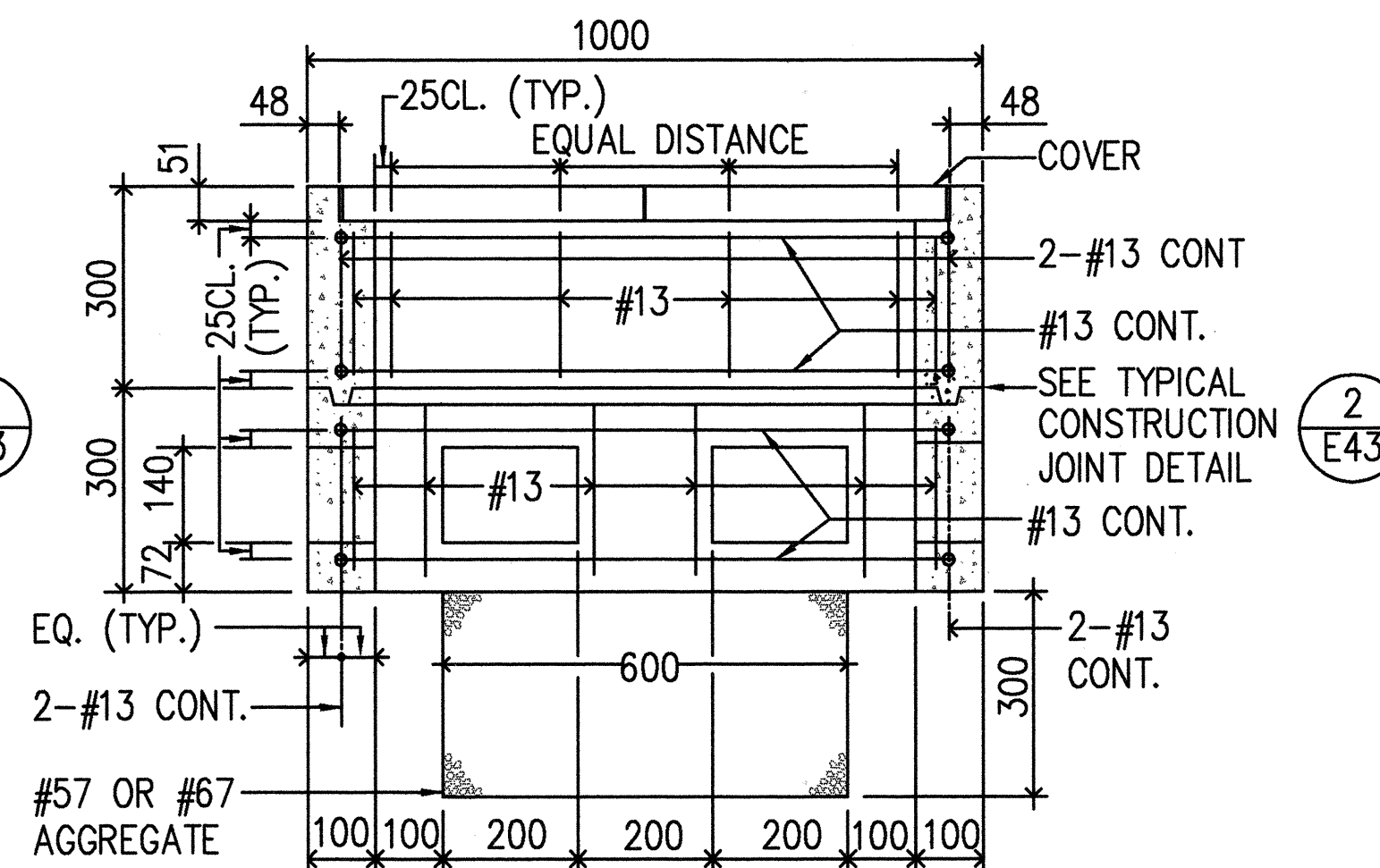
PLAN



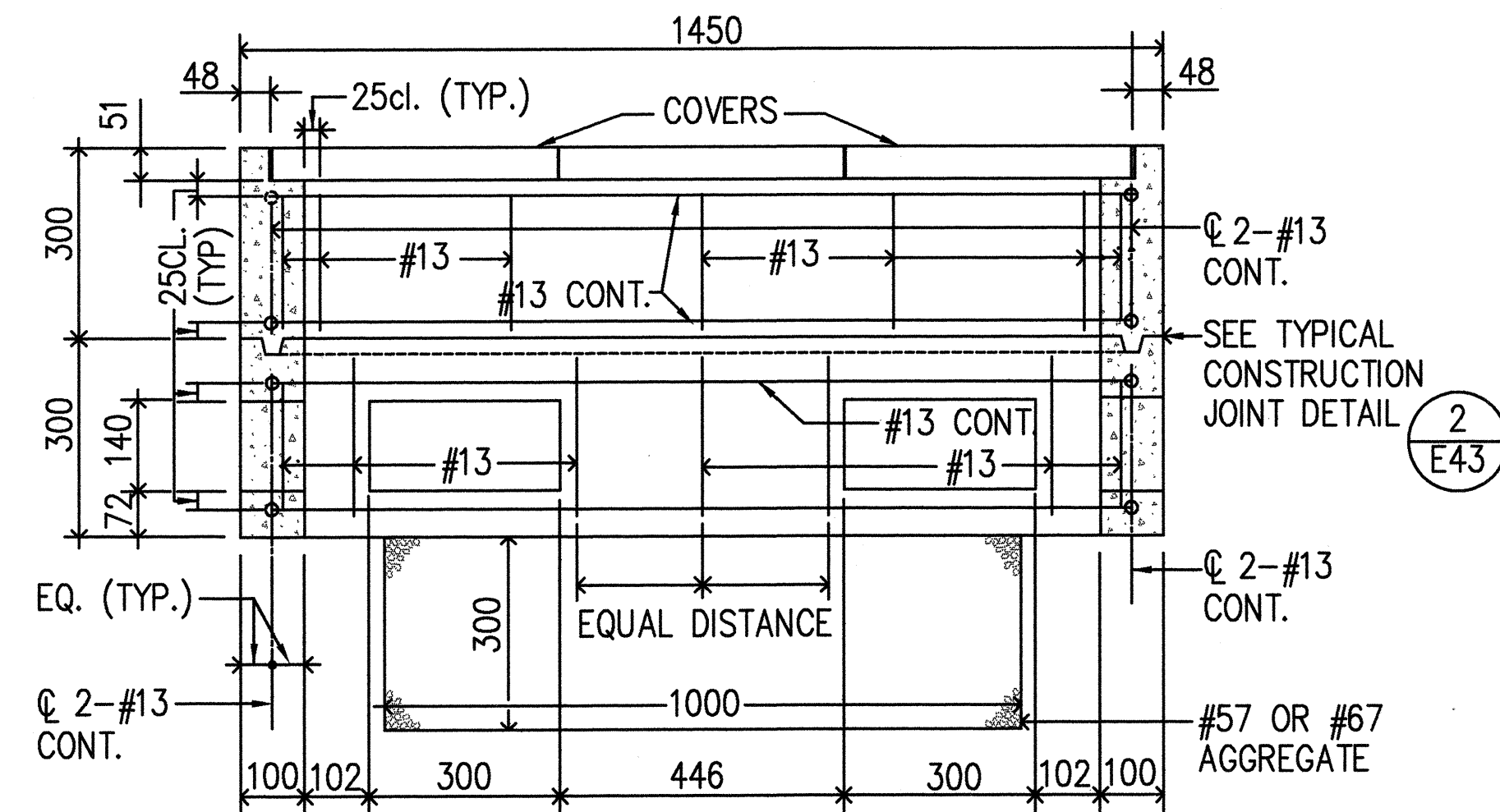
PLAN



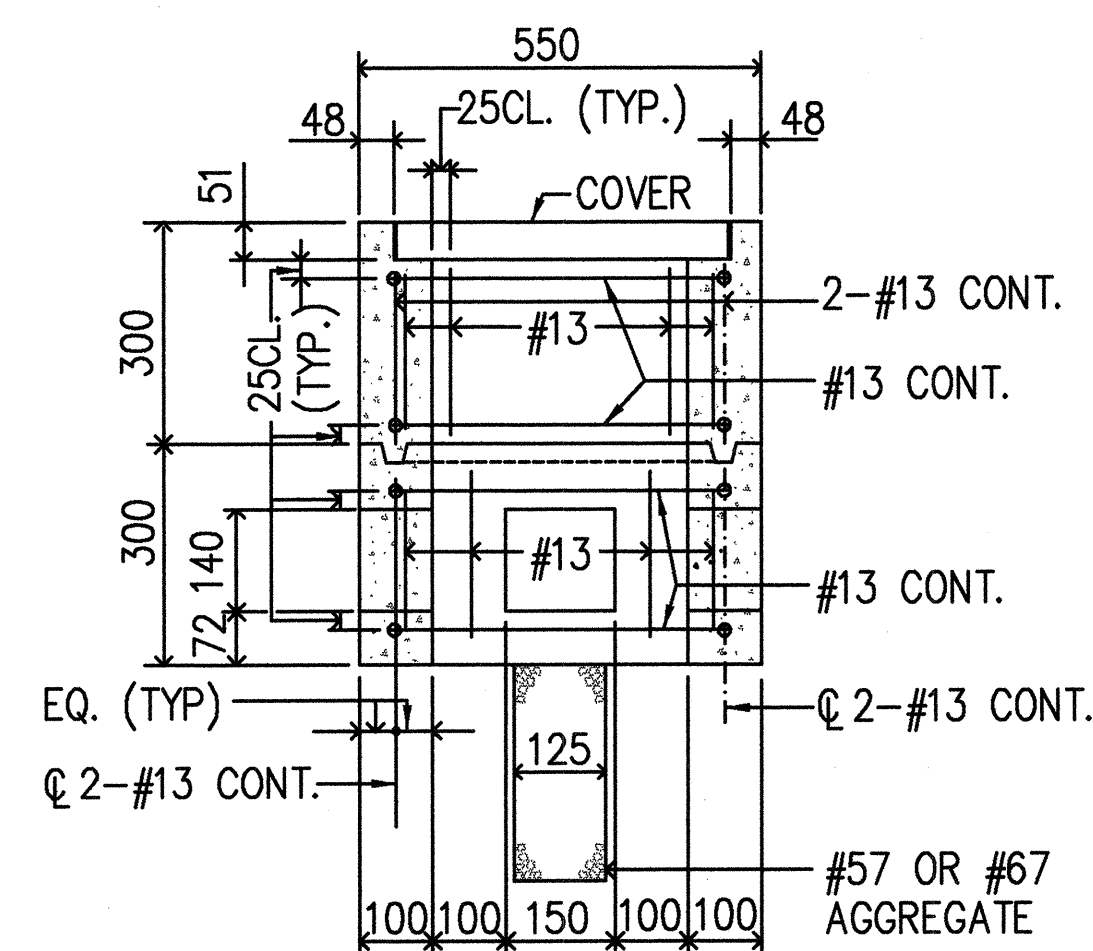
SECTION A-A



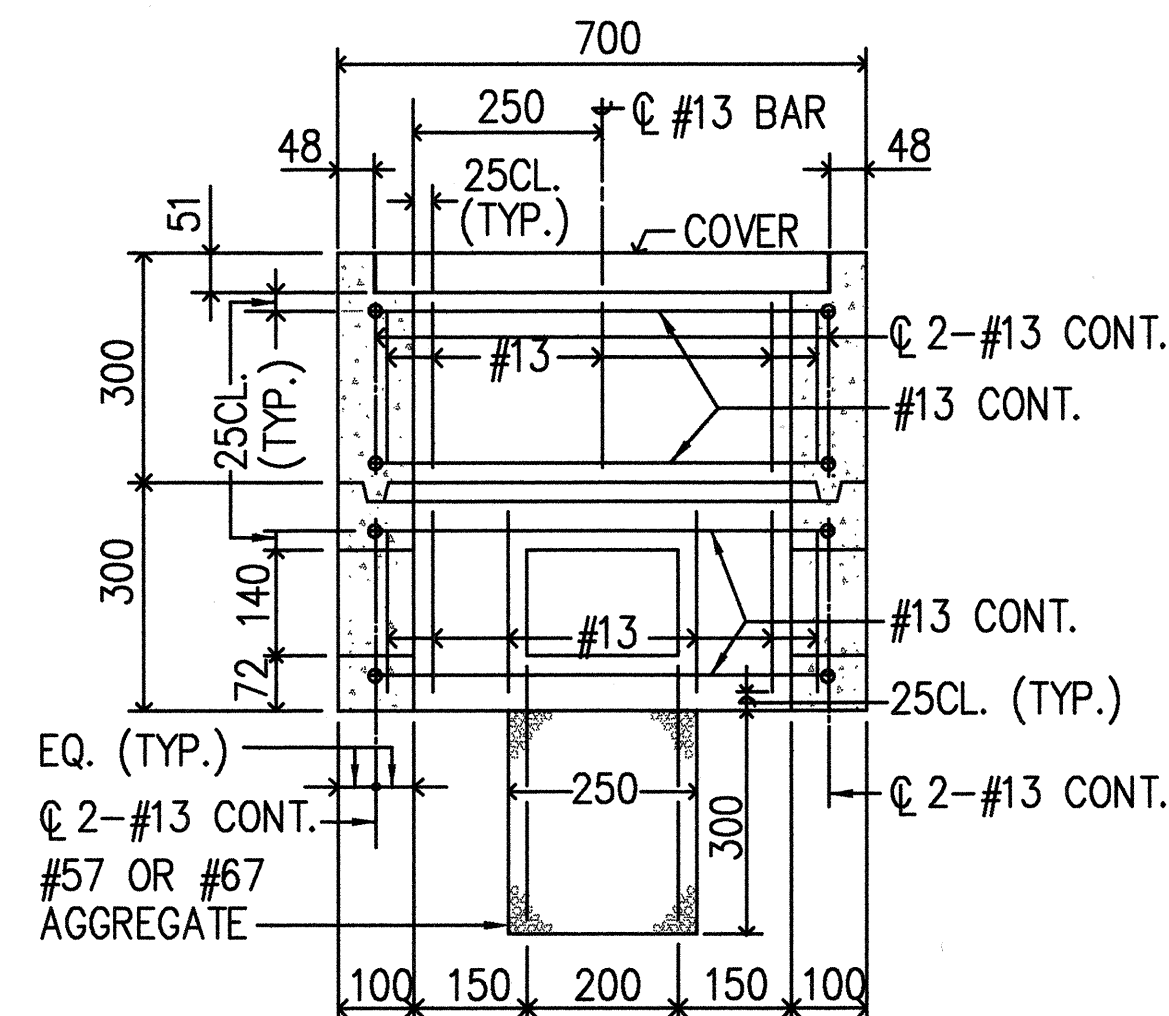
SECTION A-A



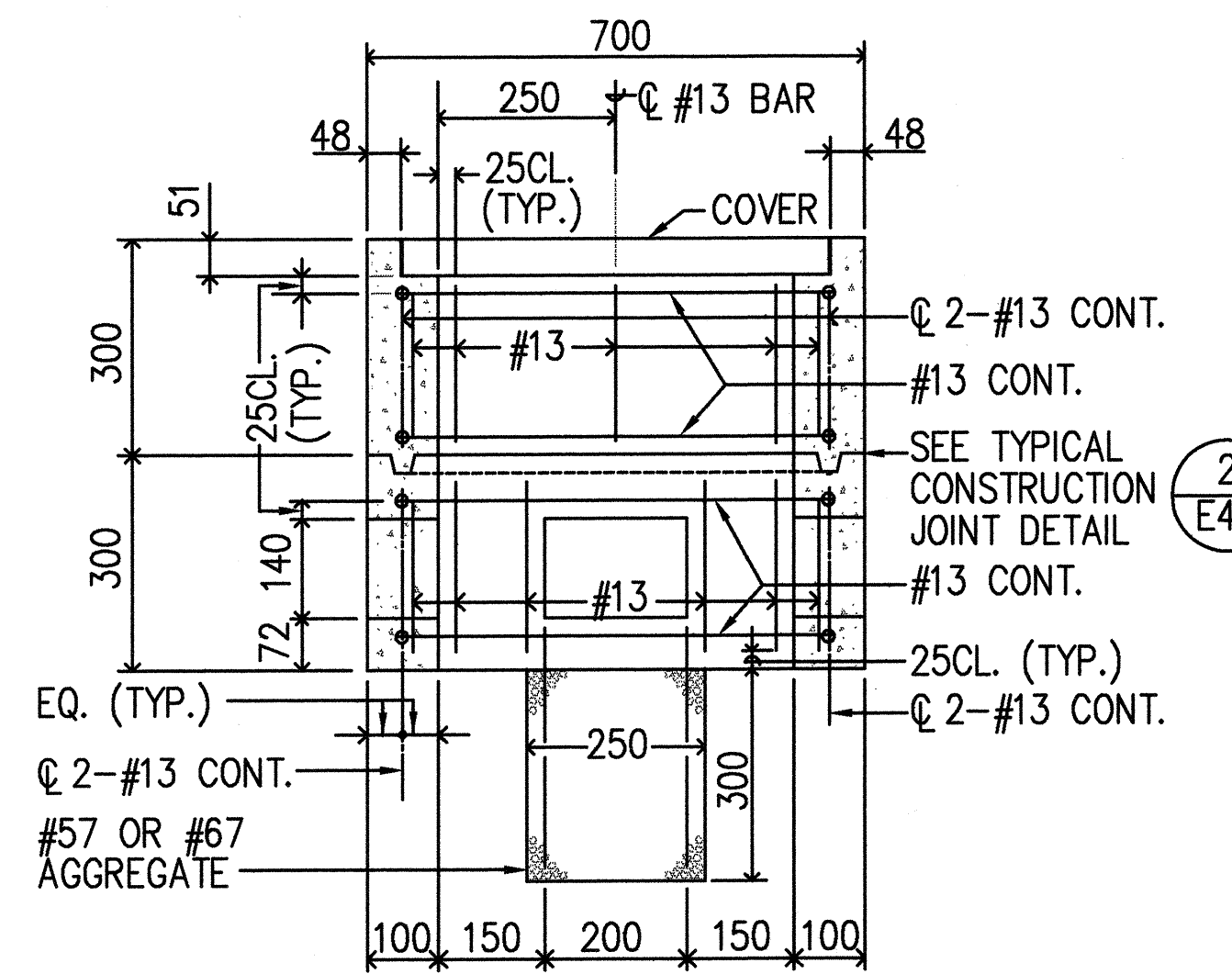
SECTION A-A



SECTION B-B



SECTION B-B



SECTION B-B

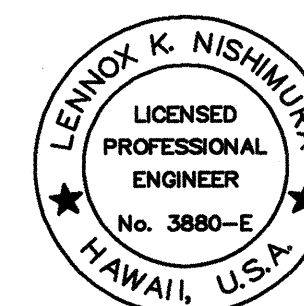
TYPE "A" PULLBOX
NO SCALE

TYPE "B" PULLBOX (OLD TYPE "C")
NO SCALE

TYPE "C" PULLBOX (OLD TYPE "D")
NO SCALE

NOTE:

ALL DIMENSIONS ARE IN MILLIMETERS
UNLESS OTHERWISE SHOWN.
1 MILLIMETER = 0.039 INCH



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.
ECS, INC.
By: *[Signature]*
Its: PROJECT ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PULLBOX DETAILS

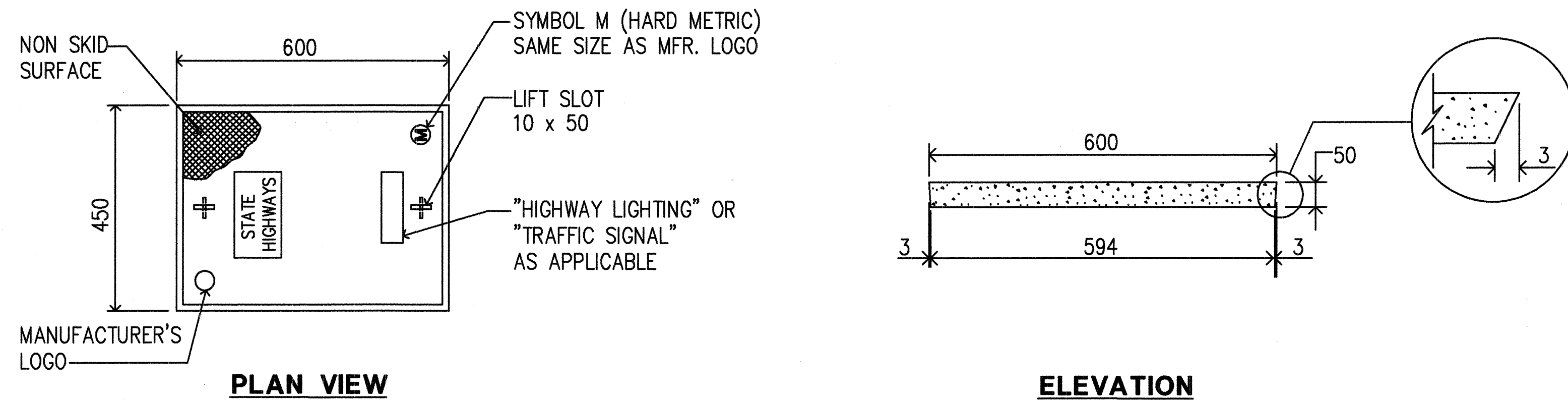
INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I. Project No. IM-H1-1(234)
Scale: AS NOTED Date: June 1, 1999
SHEET NO. E42 OF 58 SHEETS

SURVEY PLANNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTEBOOK	
No.	

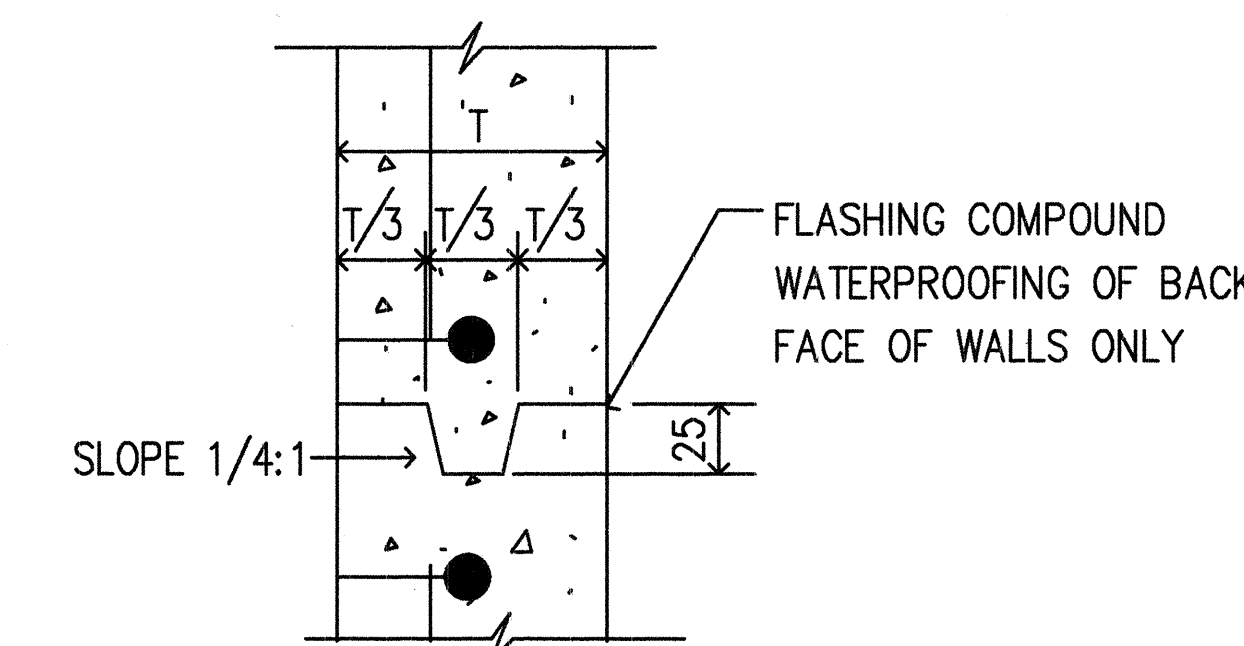
PM: OPER: CAD
REVISED:

DATE: 1 = 1
SCALE:

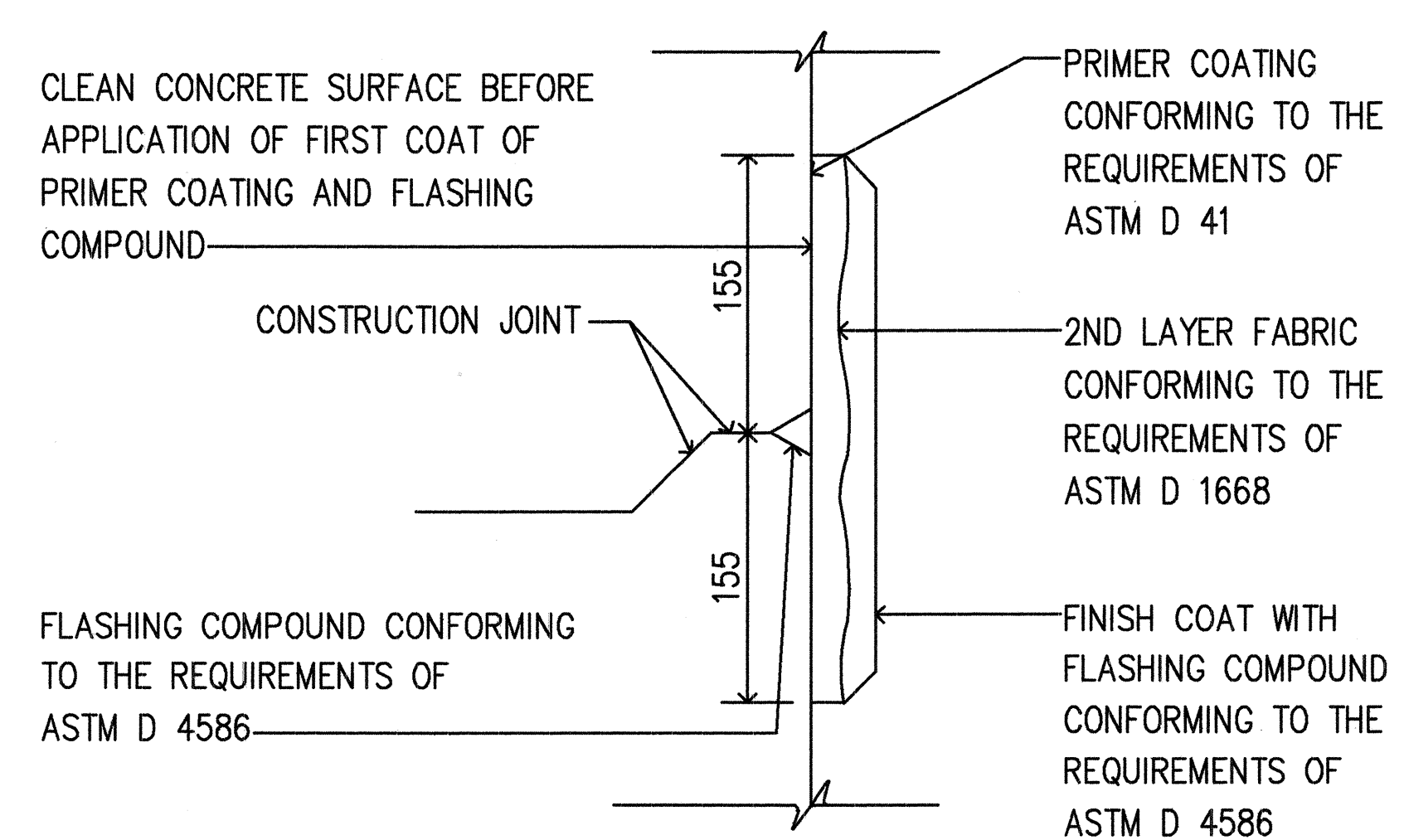
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	441	557



1 POLYMER CONCRETE COVER E43 NOT TO SCALE



2 TYPICAL CONSTRUCTION JOINT DETAIL E43 NOT TO SCALE



3 TYPICAL FLASHING COMPOUND WATERPROOFING DETAILS E43 NOT TO SCALE

GENERAL PULLBOX NOTES:

1. PROVIDE A MINIMUM OF ONE 19Ø x 3.0M COPPERCLAD 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 CONCTETE 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 SIDEWALKS, BEHIND A.C. CURBS, TRAFFIC SIGNAL STANDARDS OR PIPE GUARDS).

NOTE:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SHOWN.
1 MILLIMETER = 0.039 INCH



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ME OR UNDER MY SUPERVISION.
ECS, INC.
By *Lennox K. Nishimura*
Its **PROJECT ENGINEER**

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PULLBOX DETAILS

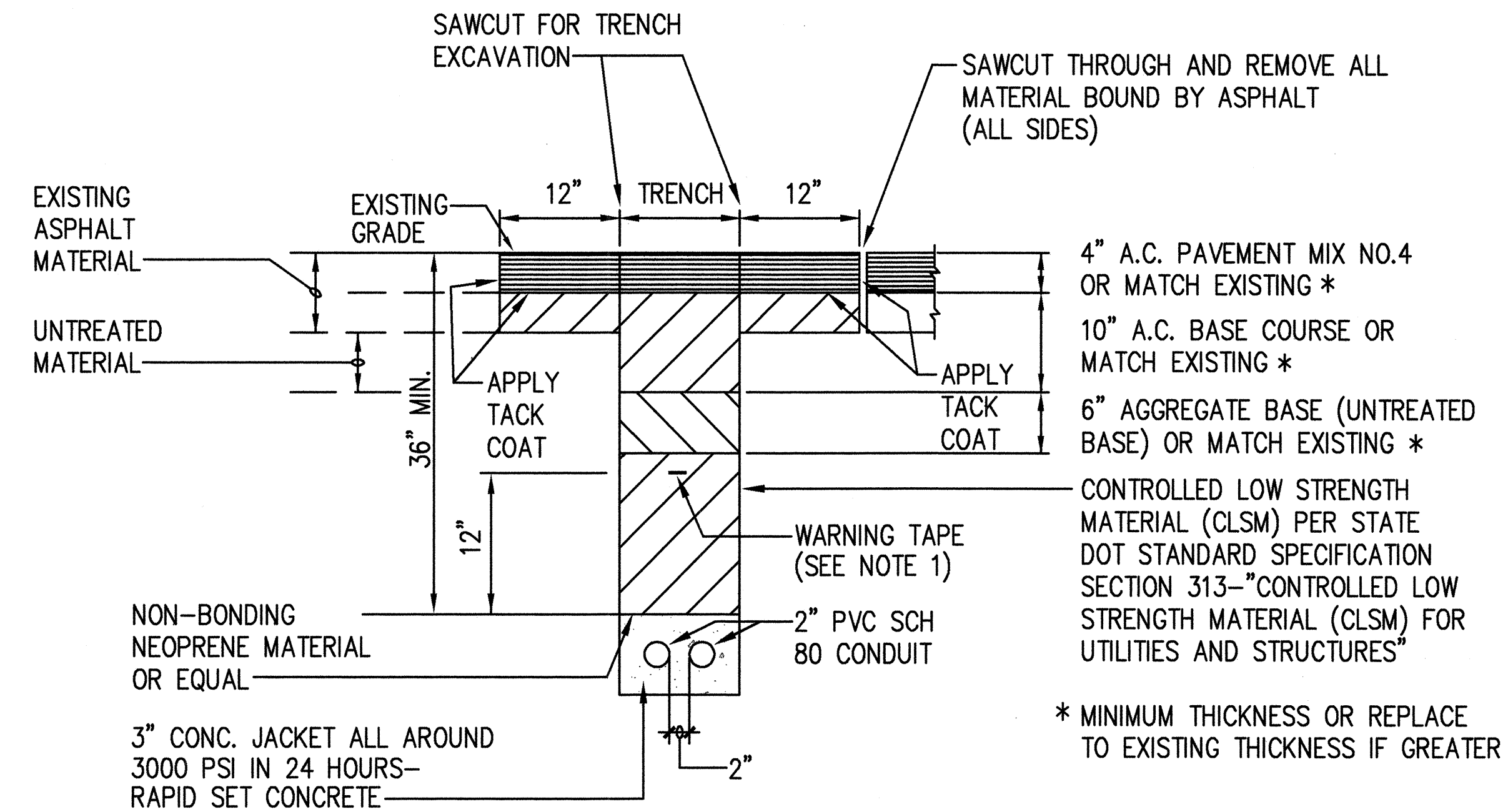
INTERSTATE ROUTE H-1 RESURFACING
Vic. of Punchbowl Off Ramp to Kapiolani IC
F.A.I Project No. IM-H1-1(234)
Scale: AS NOTED Date: June 1, 1999
SHEET NO. **E43** OF 58 SHEETS

PM:	CAD
OPER:	
REVIS:	

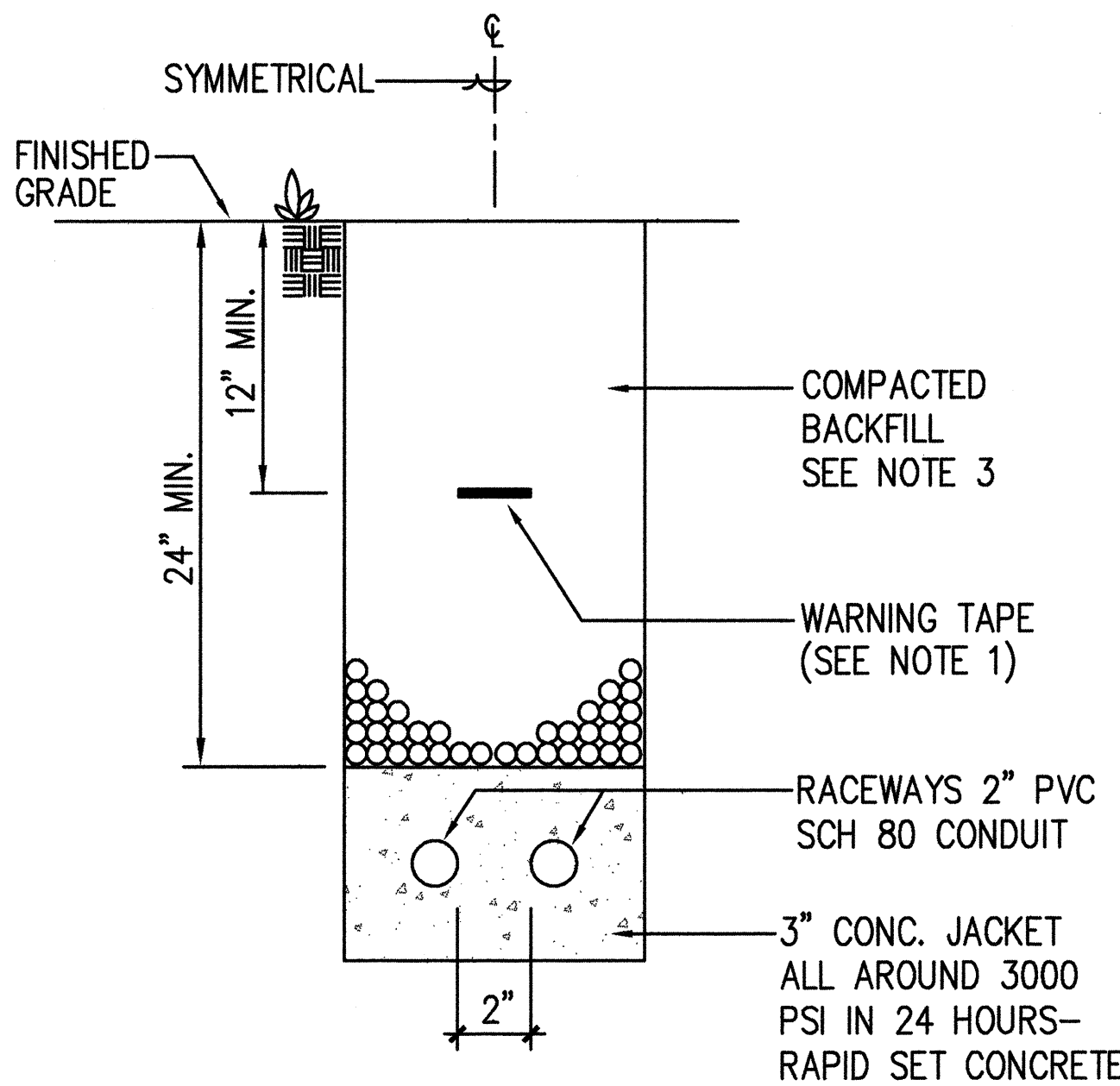
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SURVEY PLOTTED BY	DATE
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ORIGINAL PLAN	
NOTED BY	
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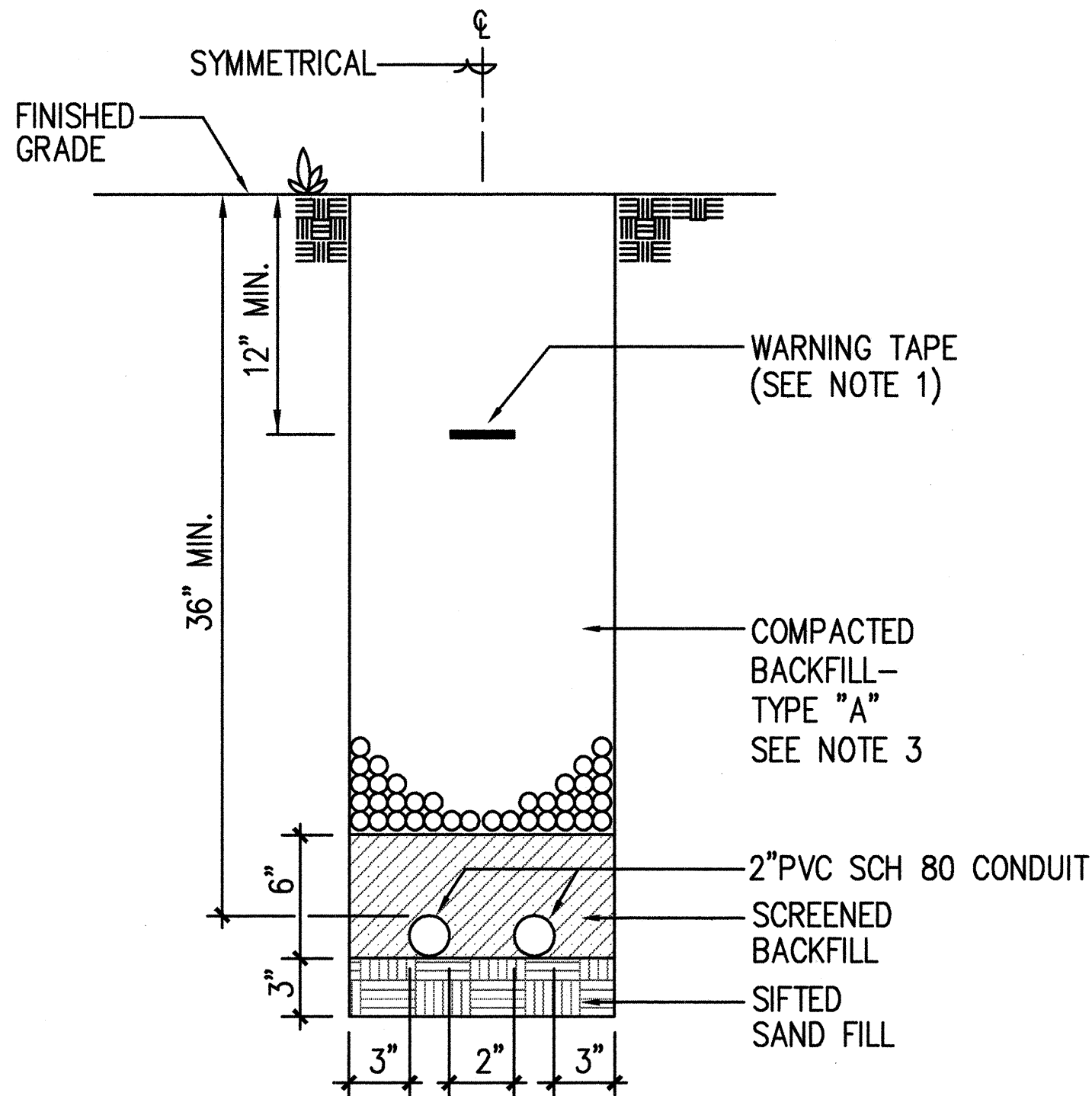
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(234)	2000	442	557



1
E44 **TYPICAL PAVEMENT RESTORATION**
IN STATE HIGHWAY - CONCRETE
ENCASED (ROADWAY AREAS)
NOT TO SCALE



2
E44 **TYPICAL DUCT SECTION - CONCRETE**
ENCASED (NON ROADWAY AREA)
NOT TO SCALE



3
E44 **TYPICAL DUCT SECTION -**
DIRECT BURIED
NOT TO SCALE

NOTES:

- 8 MIL THICK RED COLORED PLASTIC WARNING TAPE. 3" WIDE WITH CONTINUOUS METALLIC BACKING AND CORROSION RESISTANT FOIL CORE INSCRIBED WITH: "CAUTION - ELECTRICAL LINE BURIED BELOW" IN BLACK LETTERING, REPEATED AT 36" INTERVALS.
- REMOVE EXISTING CONDUCTORS FROM EXISTING CONDUIT. PULL WIRE BRUSH, SWAB AND MANDREL THROUGH CONDUIT. EXISTING CONDUIT SHALL BE FREE OF DEBRIS AND OBSTRUCTIONS PRIOR TO PULLING NEW CONDUCTORS.
- TYPE "A" BACKFILL: BEACH, SAND, EARTH OR EARTH AND GRAVEL USED. THE MAXIMUM ROCK SIZE SHALL BE 1" AND THE MIXTURE SHALL CONTAIN NOT MORE THAN 50% BY VOLUME OF ROCK PARTICLES.

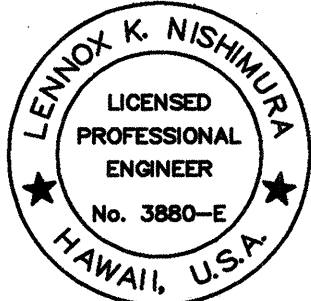
DUCT SCHEDULE	
TYPE	DESCRIPTION
1	2" PVC, SCHEDULE 80, DIRECT BURIED, HIGHWAY LIGHTING
2	2" PVC, SCHEDULE 80, CONCRETE ENCASED NON-ROADWAY AREA, HIGHWAY LIGHTING
3	2" PVC, SCHEDULE 80, CONCRETE ENCASED ROADWAY AREA, HIGHWAY LIGHTING
4	3" PVC, SCHEDULE 80, CONCRETE ENCASED ROADWAY AREA, HECO
5	EXISTING 2" PVC, HIGHWAY LIGHTING, SEE NOTE 2
6	2" PVC, SCHEDULE 80 DIRECT BURIED, WITH PULLSTRING, SPARE
7	2" PVC, SCHEDULE 80, CONCEALED IN CONCRETE STRUCTURE, HIGHWAY LIGHTING
8	1-1/4" PVC, SCHEDULE 80, CONCRETE ENCASED IRRIGATION
9	3/4" PVC, SCHEDULE 80, CONCRETE ENCASED, PHOTOCCELL CONTROL
10	EXISTING 2" PVC, HIGHWAY LIGHTING

CONDUCTOR SCHEDULE	
TYPE	DESCRIPTION
A	4#2 RHW-USE, 1#6 GND
B	3#2 RHW-USE, 1#6 GND
C	2#2 RHW-USE, 1#6 GND
D	3#12, 1#12 GND
E	2#6 RHW-USE, 1#6 GND

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
APPROVED BY	
NO.	

PM: OPER: CAD
REVISED:

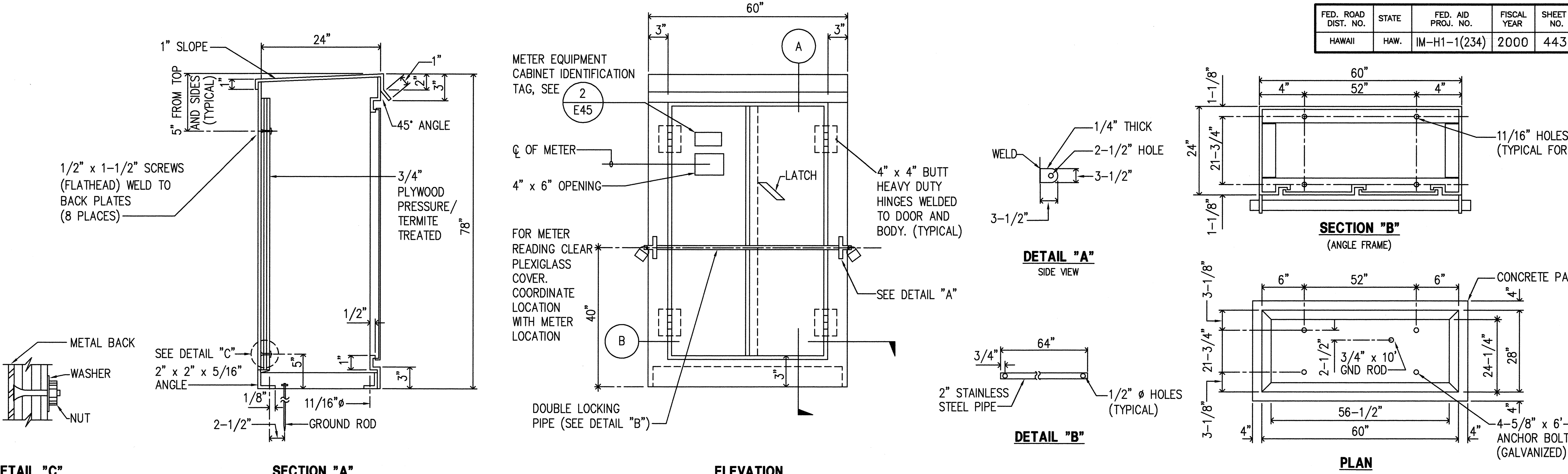
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SCALE:



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Its PROJECT ENGINEER

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
DUCT DETAILS	
INTERSTATE ROUTE H-1 RESURFACING	
Vic. of Punchbowl Off Ramp to Kapiolani IC	
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Scale: NONE	Date: June 1, 1999
SHEET NO. E44 OF 58 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	S
HAWAII	HAW.	IM-H1-1(234)	2000	443	



SECTION "A"
1" SLOPE
24"
1" FROM TOP AND SIDES (TYPICAL)
5" FROM TOP AND SIDES (TYPICAL)
1/2" x 1-1/2" SCREWS (FLATHEAD) WELD TO BACK PLATES (8 PLACES)
3/4" PLYWOOD PRESSURE/TERMITE TREATED
78"
45° ANGLE
1/2"
5"
1/8"
2-1/2"
11/16" Ø
GROUND ROD

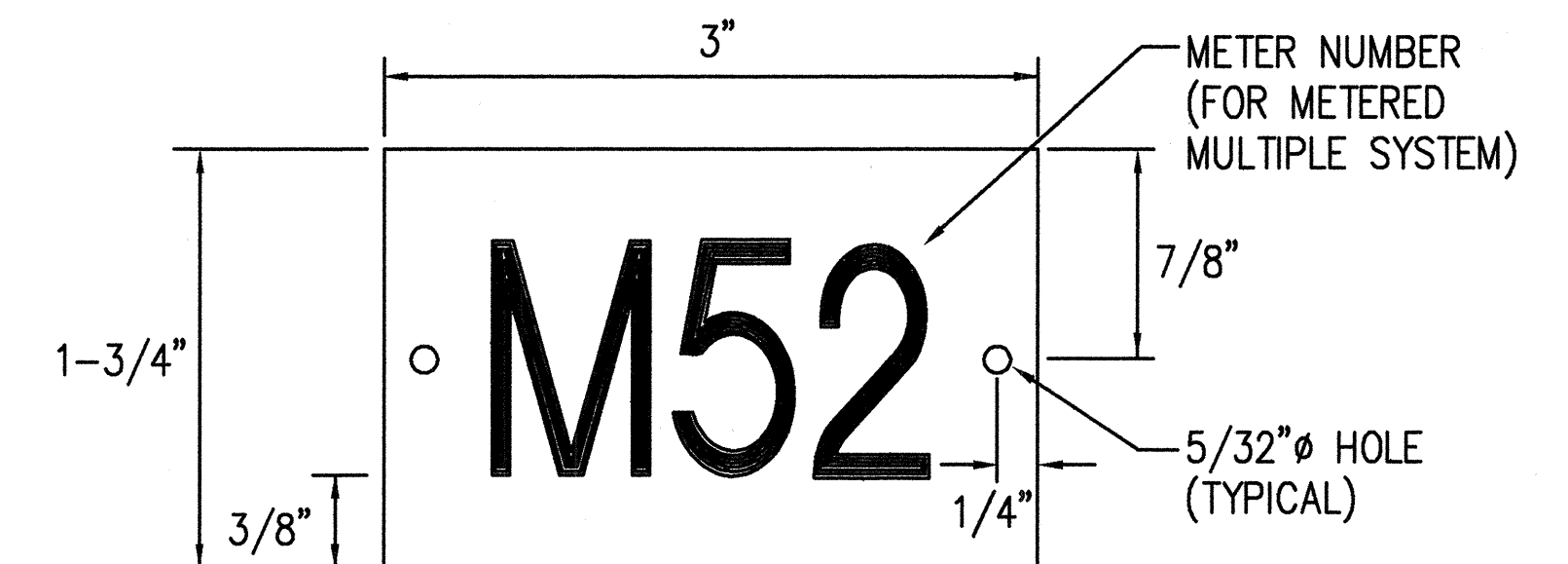
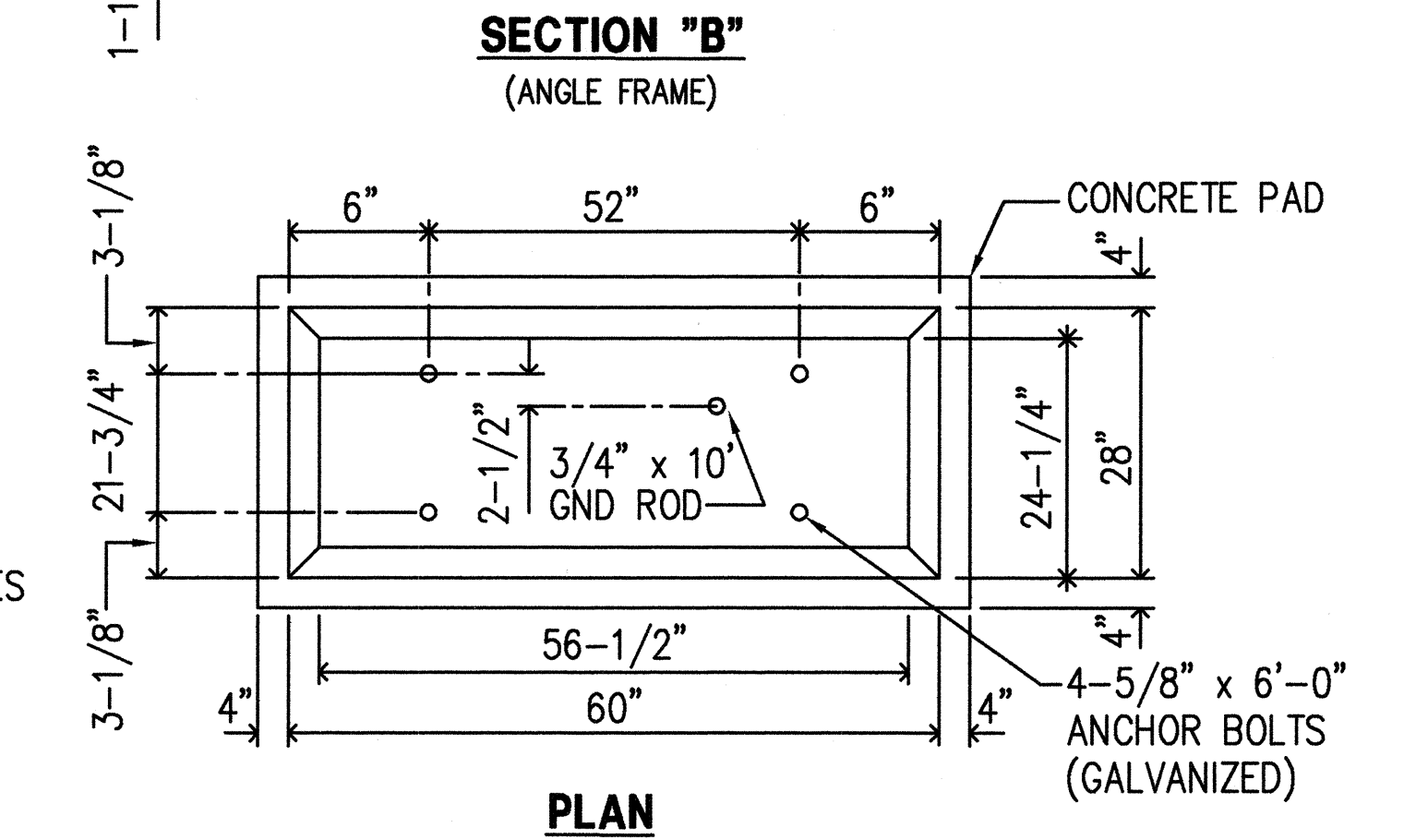
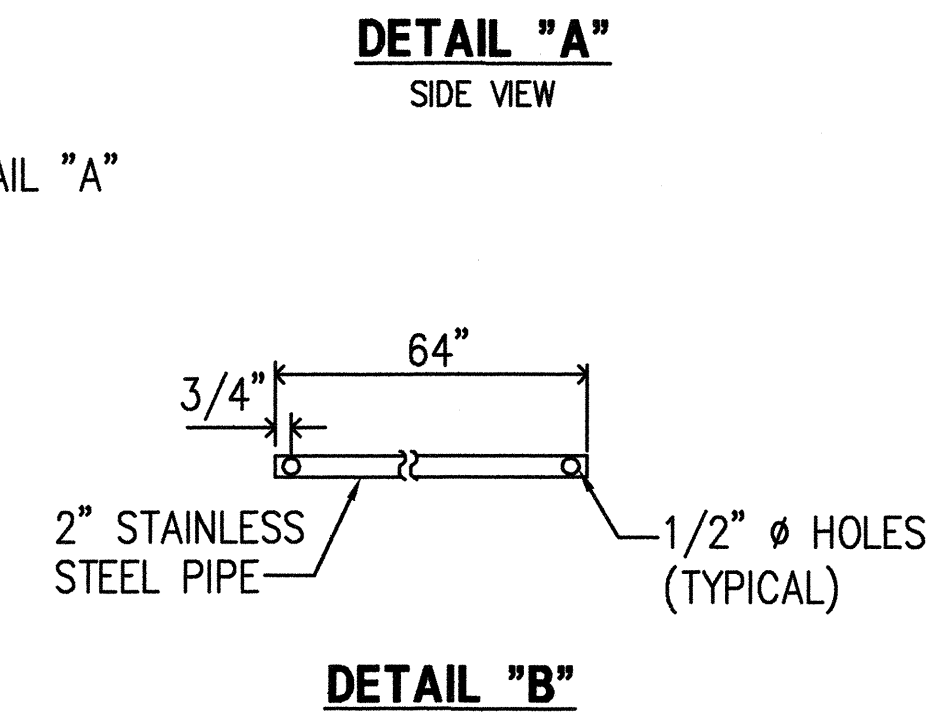
DETAIL "C"
METAL BACK
WASHER
NUT
SEE DETAIL "C"
2" x 2" x 5/16" ANGLE

ELEVATION
METER EQUIPMENT CABINET IDENTIFICATION TAG, SEE 2 (E45)
CL OF METER
4" x 6" OPENING
FOR METER READING CLEAR PLEXIGLASS COVER. COORDINATE LOCATION WITH METER LOCATION
40"
60"
3"
A
3"
4" x 4" BUTT HEAVY DUTY HINGES WELDED TO DOOR AND BODY. (TYPICAL)
LATCH
SEE DETAIL "A"
DOUBLE LOCKING PIPE (SEE DETAIL "B")
B

DETAIL "A"
SIDE VIEW
1/4" THICK
2-1/2" HOLE
3-1/2"
WELD
3-1/2"

DETAIL "B"
3/4"
64"
2" STAINLESS STEEL PIPE
1/2" Ø HOLES (TYPICAL)

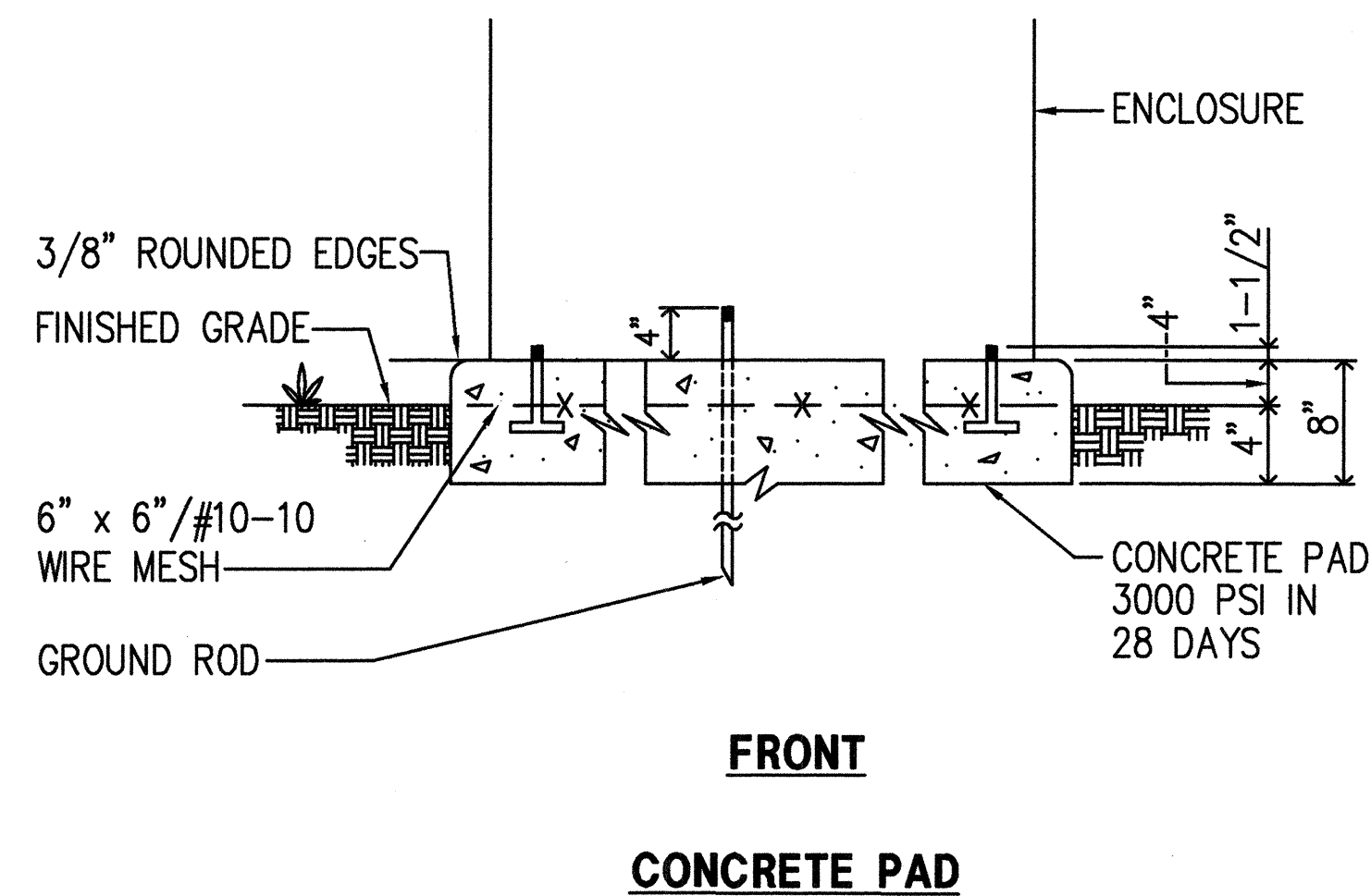
PLAN
60"
52"
4"
4"
11/16" HOLES (TYPICAL FOR 4)
1-1/8"
24"
21-3/4"
1-1/8"
SECTION "B" (ANGLE FRAME)
CONCRETE PAD
6"
52"
6"
4"
28"
24-1/4"
4"
4"
4-5/8" x 6'-0" ANCHOR BOLTS (GALVANIZED)
3/4" x 10' GND ROD
2-1/2"
56-1/2"
60"
4"
4"
3-1/8"
21-3/4"
3-1/8"




1. CABINET TO BE PRIMED WITH ONE COAT SHOP PRIMER. PAINT WITH TWO COATS EPOXY ENAMEL FINISH.
2. CABINET SHALL BE OF STAINLESS STEEL CONSTRUCTION.
3. ENCLOSURE SHALL BE NEMA 3R WITH NEOPRENE GASKETING.
4. PADLOCKS:
 - 1 - HEC₆ FURNISHED
 - 1 - CONTRACTOR SHALL OBTAIN CORBIN SESAME COMBINATION LOCK FROM THE HIGHWAY MAINTENANCE SECTION.
5. SHOP FABRICATION DRAWINGS SHALL BE SUBMITTED FOR APPROVAL.
6. AND ADDITIONAL GROUND ROD AS REQUIRED IF GROUND RESISTANCE EXCEEDS 25 OHMS (MAX ALLOWED).

1. USE 2 PLY PLASTIC – BLACK, WHITE. THICKNESS: BLACK CAP SHEET – 0.010"; WHITE BASE SHEET – 0.052".
2. NUMBER SIZE SHALL BE 1" HIGH AND ENGRAVED 1/8" WIDE, WHITE IN COLOR (NUMBER AS REQUIRED).
3. ATTACH TO METER ENCLOSURE WITH NO. 8 STAINLESS STEEL DRIVE SCREWS.
4. NUMBERS ARE INSCRIBED BY CUTTING THROUGH "BLACK CAP SHEET" TO EXPOSE "WHITE LETTERS".

2 METER EQUIPMENT CABINET I.D. TAG
E45 NOT TO SCALE



1 COMBINATION METER AND EQUIPMENT CABINET
E45 NOT TO SCALE



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By Jenna K. Newman
Its PROJECT ENGINEER

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METER AND EQUIPMENT

ENCLOSURE DETAILS

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