

GENERAL SCOPE OF WORK

- The general scope of work for this project consists of:
 - Reconfiguring the lighting control scheme in the inbound and outbound viaducts of the Halawa H-3.
 - Correcting grounding deficiencies in both viaducts.
 - Correcting voltage drop deficiencies in both viaducts.
 - Providing solar power for the new irrigation controllers in the Halawa Interchange.
- The existing lighting control scheme consists of one remote control station located at the mauka end of both the inbound and outbound viaducts. This arrangement doesn't give the staff the ability to turn on the lights from the tunnel end. The remote lighting control station works by operating a 480V lighting contactor in the Halawa Vault. This contactor switches not only the lighting circuits at 277V, but also the convenience receptacles at 120V. This is undesirable because power is needed at the receptacles 24 hours a day. Therefore, this project will solve these problems by:
 - Demolishing the existing remote lighting control stations.
 - Reconfigure the lighting controls by providing a new switch at both ends of the viaduct, inbound and outbound.
 - Bypassing the existing 480V contactors in the Halawa Vault and providing new lighting contactors in the viaducts to switch only the lighting loads.
- The existing power distribution voltage is 480V, three phase, four wire. A green equipment grounding conductor is run with the phase conductors but is undersized for the voltage drop per the NEC. Therefore, the existing phase conductors and equipment grounding conductor will be pulled out and replaced with new phase conductors and a larger equipment grounding conductor.
- 120/208V power is now being derived via 9 KVA three phase delta/wye step down transformers. However, the wye secondary is not adequately grounded per the NEC. Therefore, this project will provide a new grounding electrode conductor the length of both viaducts and connect at the existing grounding electrode conductor at the Halawa Vault and to ground rods at the makai end.
- There are two existing power centers spaced equidistant in the viaducts. These power centers derive 120V power that feeds convenience receptacles throughout. However, because of the length of the branch circuits there is a voltage drop problem. To solve this, this project will provide new power centers spaced closer together to minimize the voltage drop.
- A new irrigation control system will be provided for a portion of the Halawa interchange. The existing power feed to the pump house is no longer active and the wires have been found to be discontinuous back to the power source. Therefore, a new solar power system will be provided to energize the new irrigation controllers.

GENERAL NOTES

- All conduits shall be schedule 40 PVC. Provide expansion fittings per NEC 347-9. Assume a temperature change of 30 degrees fahrenheit minimum.
- Provide junction boxes for pulling purposes or at a maximum of 200 feet on center. All junction boxes shall be NEMA 4X stainless steel.
- Test all receptacles after completion to demonstrate proper working condition and circuit continuity.
- All new transformers shall be provided with 2-2½ percent taps above and 4-2½ percent taps below the rated voltage. Set the taps such that the output of the transformer is between 120 V and 123 V to allow for a five percent voltage drop to the farthest receptacle.
- Route new #2 electrode grounding conductor exposed along the corner of the wall and the ceiling of the diaphragm. Support at intervals of no less than 4 feet on center. All splices to the cable shall be made with exothermic welding methods. All hardware shall be stainless steel.

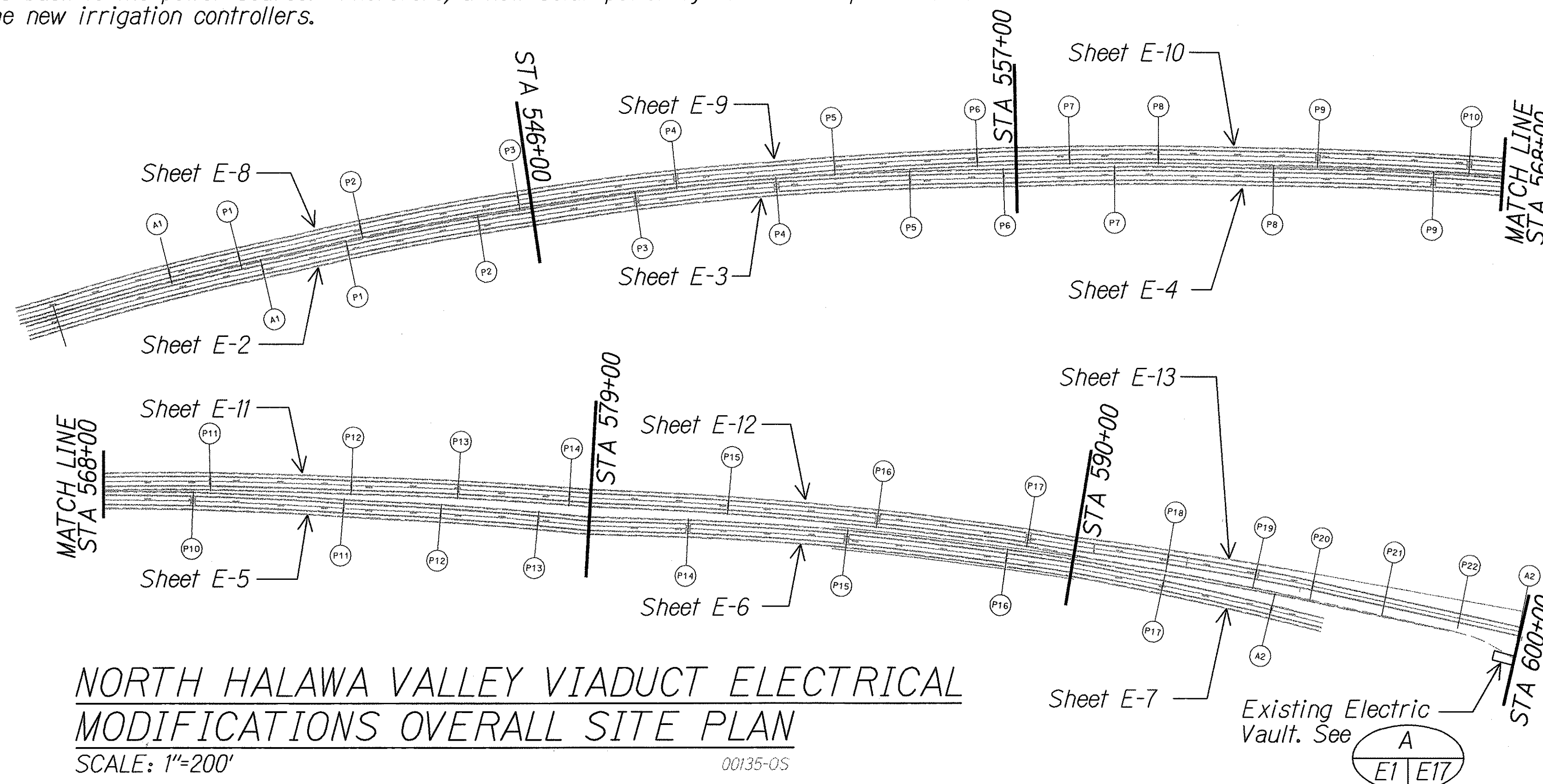
ELECTRICAL SYMBOLS

	Panel, +6'-6" to top
	Fluorescent light fixture
	Barred letter in or adjacent to ltrg fixture Symbol indicates fixture type
	Duplex receptacle - 20A, 120V, +18" AFF UON
	Junction box
	Transformer
	Enclosed circuit breaker
	Lighting contactor
	Single pole switch - 3 = 3 way - 20A, 277V 4 = 4 way, D = Dimmer, M = Manual motor starter, P = Pilot, F = Fan controller, K = Key operator, +48" AFF

WP Weatherproof
UON Unless otherwise noted

	Conduit up
	Conduit down
	Conduit & wiring below referenced plane
	Conduit & wiring exposed
	Control circuits
	Homerun to applicable panel
	Conduit stub
	Flexible conduit

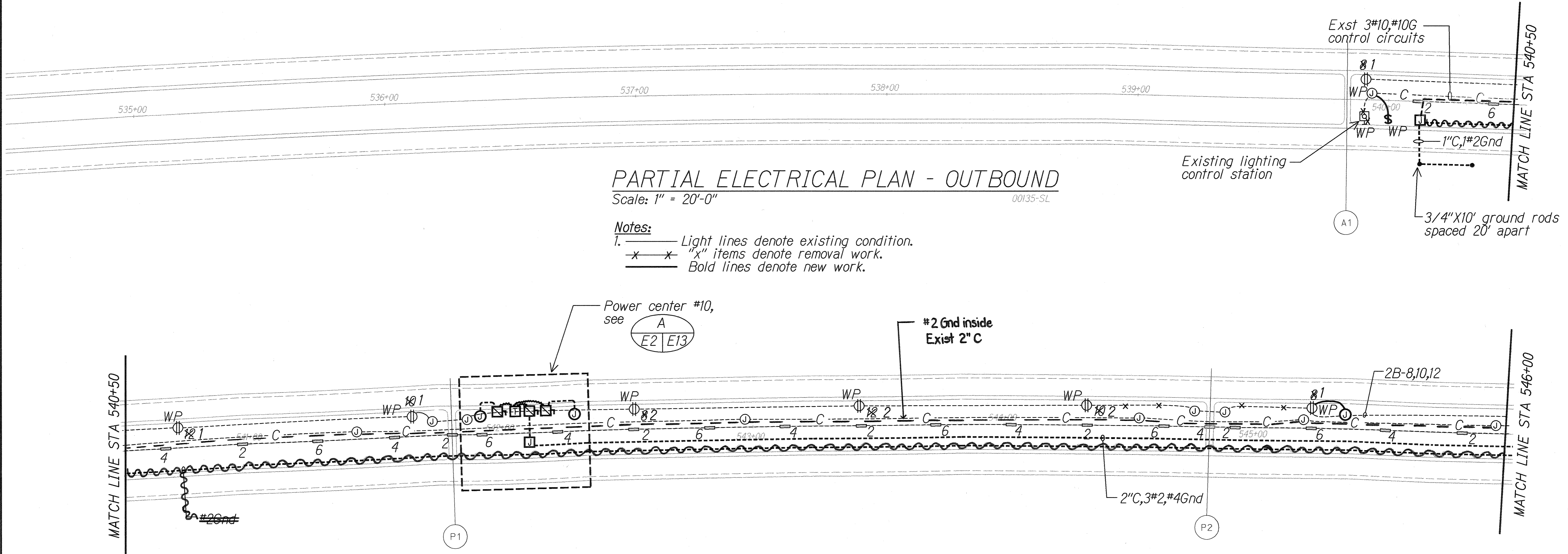
Minimum conduit size shall be ¾".
Any circuit w/ no further designation
indicates a two (2) wire circuit.
Circuits w/ additional wires are
indicated as follows: --- 3 wires,
--- 4 wires, etc. Minimum conductor
size shall be #12. Although not indicated
A separate green ground conductor sized
Per the N.E.C. Shall be installed in all
branch circuit conduits.



**NORTH HALAWA VALLEY VIADUCT ELECTRICAL
MODIFICATIONS OVERALL SITE PLAN**
SCALE: 1"=200'
00135-05

	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
	OVERALL SITE PLAN ELECTRICAL SYMBOLS
	H-3 FINISH (UNIT VIIA) FAIP NO. I-H3-K75, UNIT VIIA
	Scale: As Noted Date: April, 2001 SHEET No. E-1 OF 20 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K75, UNIT VIIA	2003	24	60



PARTIAL ELECTRICAL PLAN - OUTBOUND
Scale: 1" = 20'-0"
00135-SM

- Notes:
- Light lines denote existing condition.
 - "x" items denote removal work.
 - Bold lines denote new work.

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
DATE	

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Paul K. Uyeda 3/14/03
MK ENGINEERS, LTD.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN - OUTBOUND

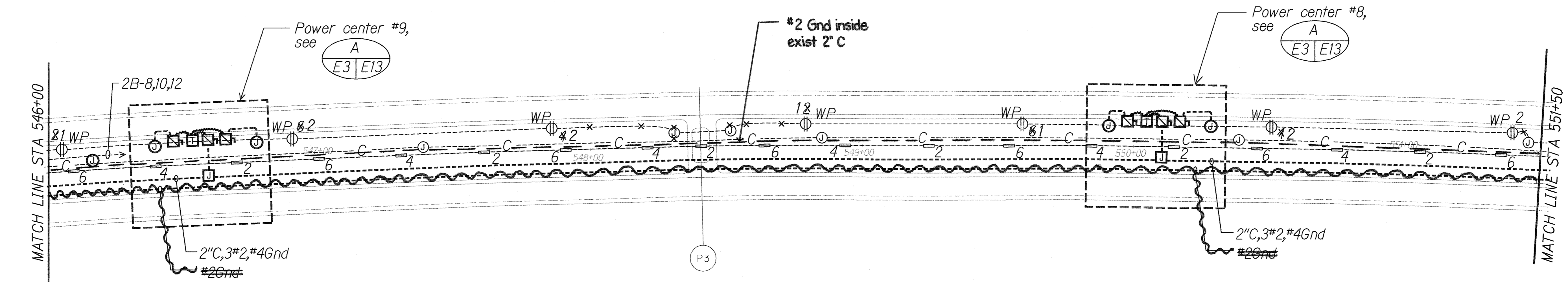
H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-K75, UNIT VIIA

Scale: As Noted Date: April, 2001

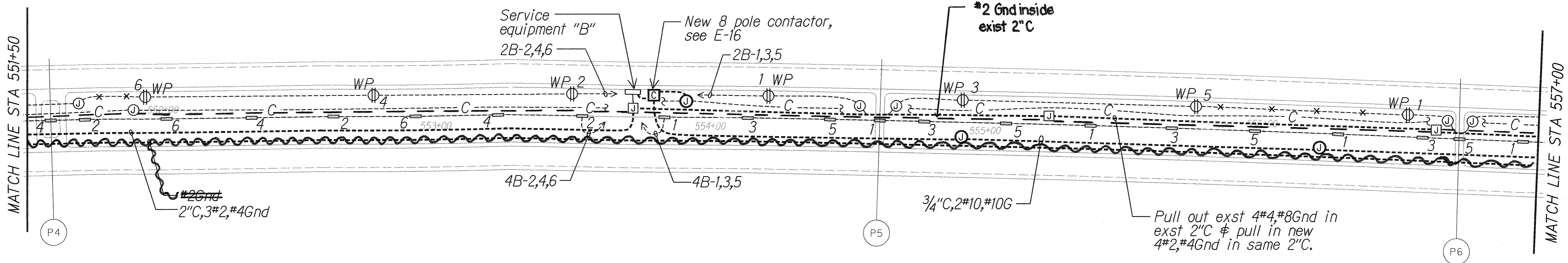
SHEET No. E-2 OF 20 SHEETS

"AC-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K(75), UNIT VIIA	2003	25	60



PARTIAL ELECTRICAL PLAN - OUTBOUND
 Scale: 1" = 20'-0"
 00135-SN
Notes:
 1. Light lines denote existing condition.
 -x- "x" items denote removal work.
 Bold lines denote new work.



PARTIAL ELECTRICAL PLAN - OUTBOUND
 Scale: 1" = 20'-0"
 00135-SO
Notes:
 1. Light lines denote existing condition.
 -x- "x" items denote removal work.
 Bold lines denote new work.

ORIGINAL PLAN	DATE
DESIGNED BY	
TRACED BY	
NOTED BY	
CHECKED BY	
DATE	

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Paul K. Uyeda 3/12/03
MK ENGINEERS, LTD.

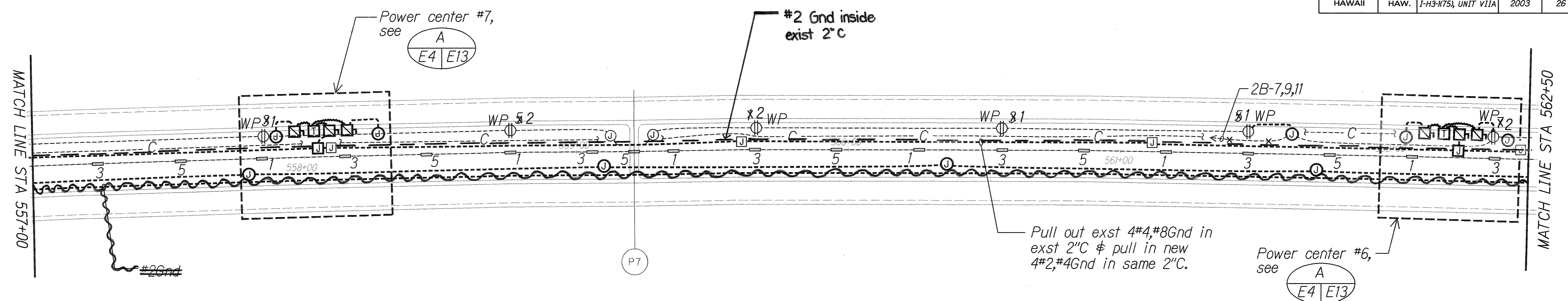
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN - OUTBOUND

H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-K(75), UNIT VIIA
Scale: As Noted Date: April, 2001
SHEET No. E-3 OF 20 SHEETS

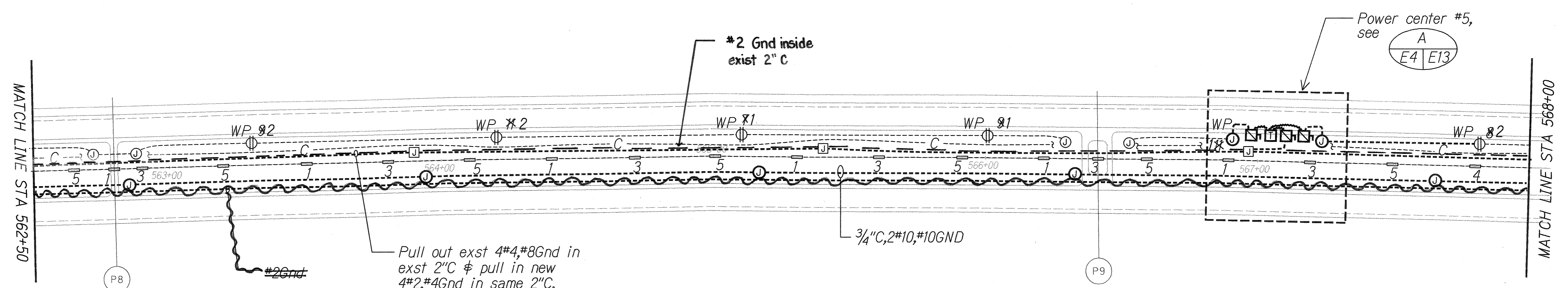
"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K75, UNIT VIIA	2003	26	60



PARTIAL ELECTRICAL PLAN - OUTBOUND
Scale: 1" = 20'-0"

- Notes:
- 1. Light lines denote existing condition.
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 - Bold lines denote new work.



PARTIAL ELECTRICAL PLAN - OUTBOUND
Scale: 1" = 20'-0"

- Notes:
- 1. Light lines denote existing condition.
 - x-x- "x" items denote removal work.
 - Bold lines denote new work.

SURVEY PLOTTED BY	DATE
DESIGNED BY	
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	
N.	

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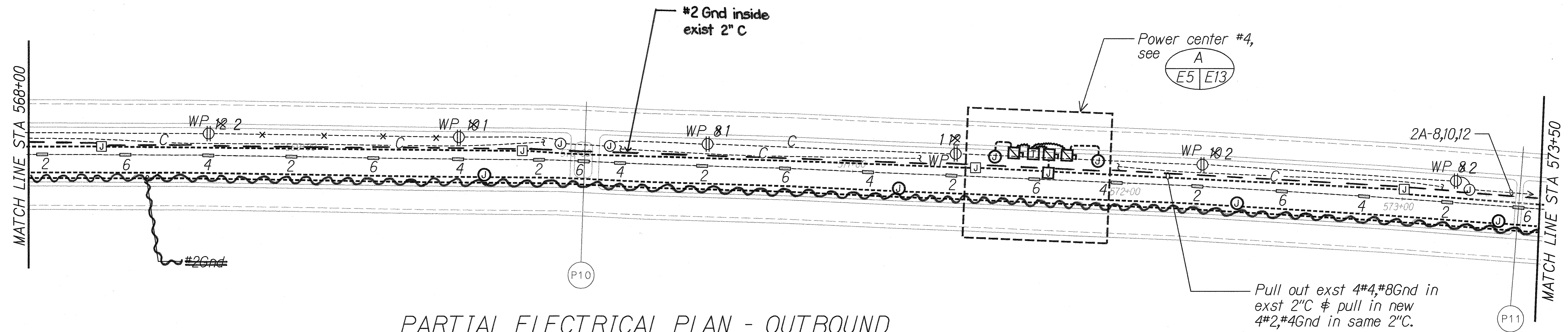
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN - OUTBOUND

H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-K75, UNIT VIIA
Scale: As Noted Date: April, 2001
SHEET No. E-4 OF 20 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K75, UNIT VIIA	2003	27	60



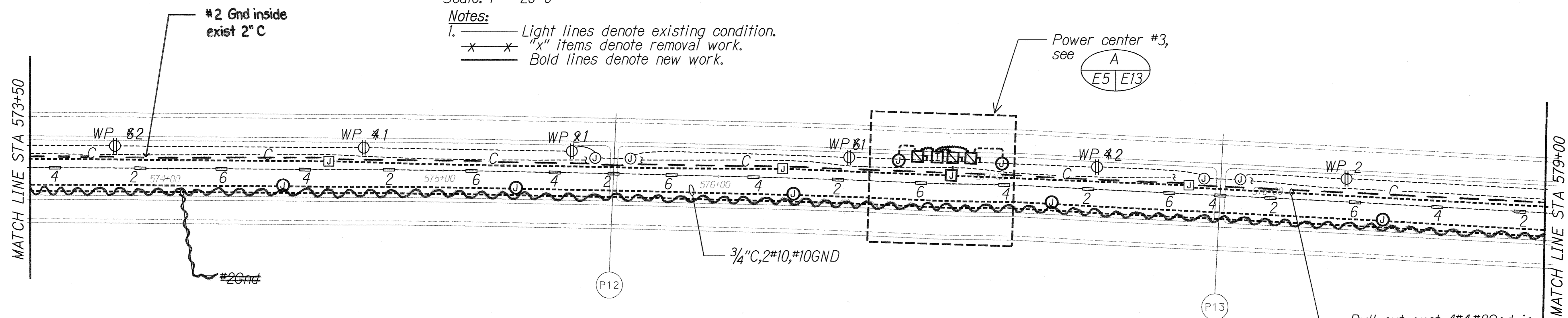
PARTIAL ELECTRICAL PLAN - OUTBOUND

Scale: 1" = 20'-0"

00135-SR

Notes:

1. Light lines denote existing condition.
 -x-x- "x" items denote removal work.
 Bold lines denote new work.



PARTIAL ELECTRICAL PLAN - OUTBOUND

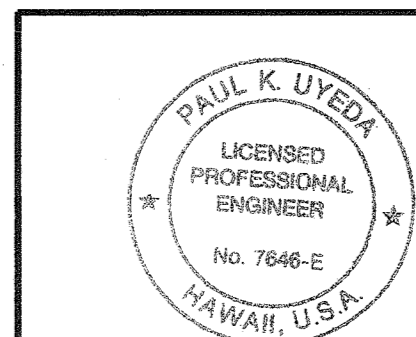
Scale: 1" = 20'-0"

00135-SS

Notes:

1. Light lines denote existing condition.
 -x-x- "x" items denote removal work.
 Bold lines denote new work.

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



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Paul K. Uyeda 3/12/03
MK ENGINEERS, LTD.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN - OUTBOUND

H-3 FINISH (UNIT VIIA)

FAIP NO. I-H3-K75, UNIT VIIA

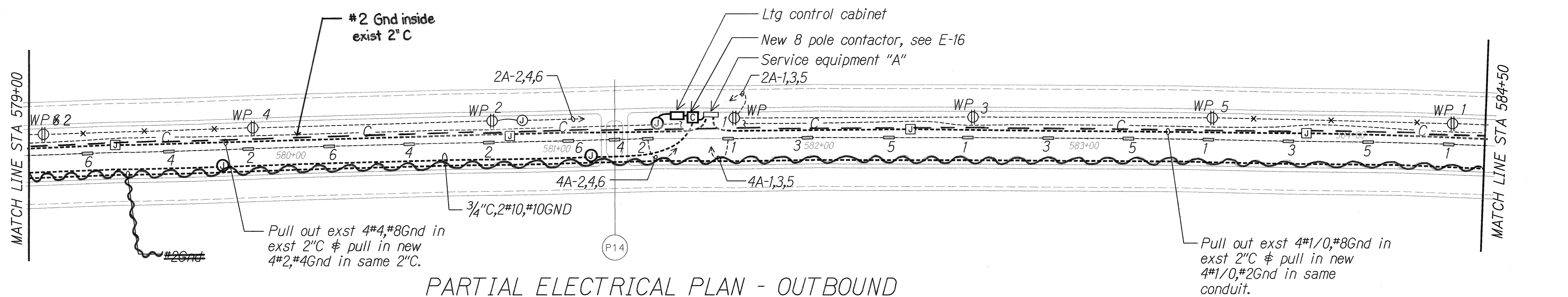
Scale: As Noted Date: April, 2001

SHEET No. E-5 OF 20 SHEETS

"AS-BUILT"

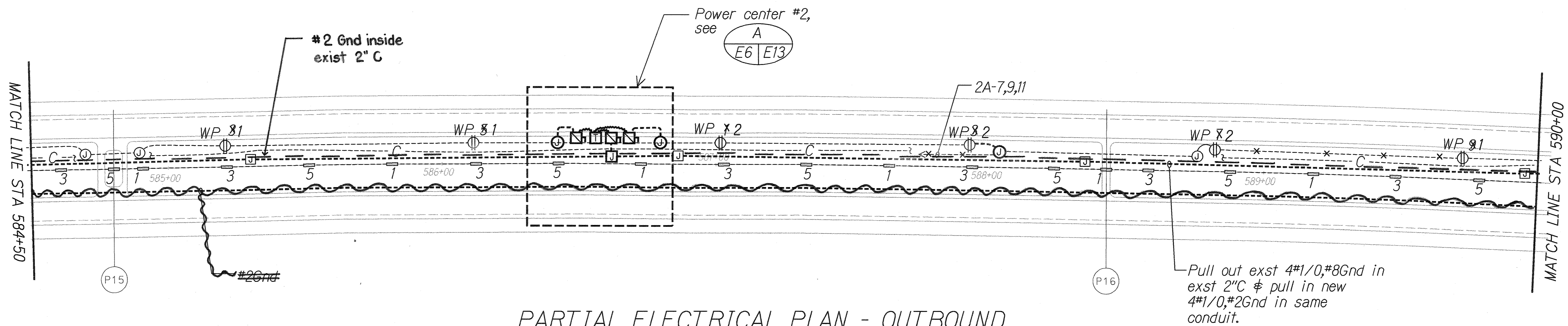
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K75, UNIT VIIA	2003	28	60



PARTIAL ELECTRICAL PLAN - OUTBOUND

Scale: 1" = 20'-0"
Notes:
1. Light lines denote existing condition.
-x-x- "x" items denote removal work.
Bold lines denote new work.



PARTIAL ELECTRICAL PLAN - OUTBOUND

Scale: 1" = 20'-0"
Notes:
1. Light lines denote existing condition.
-x-x- "x" items denote removal work.
Bold lines denote new work.

DESIGNED BY	DATE
TRACED BY	
NOTED BY	
CHECKED BY	
APPROVED BY	

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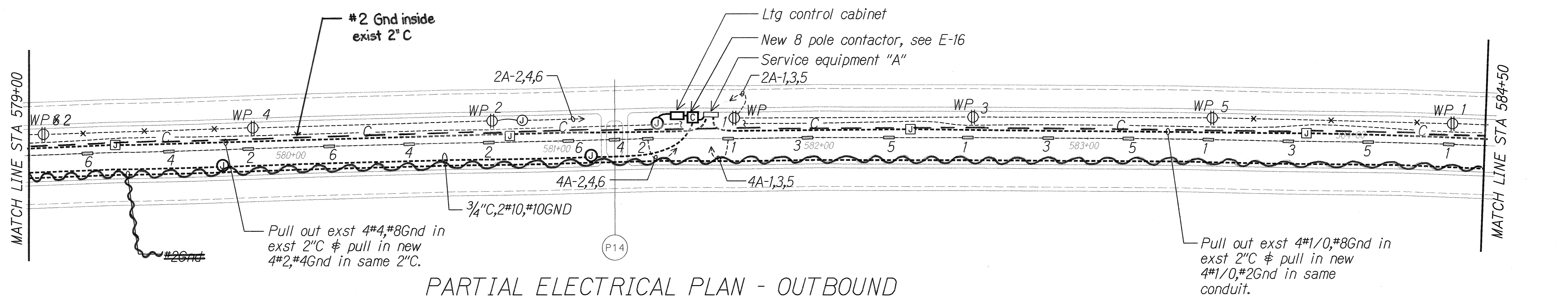
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN - OUTBOUND

H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-K75, UNIT VIIA
Scale: As Noted Date: April, 2001
SHEET No. E-6 OF 20 SHEETS

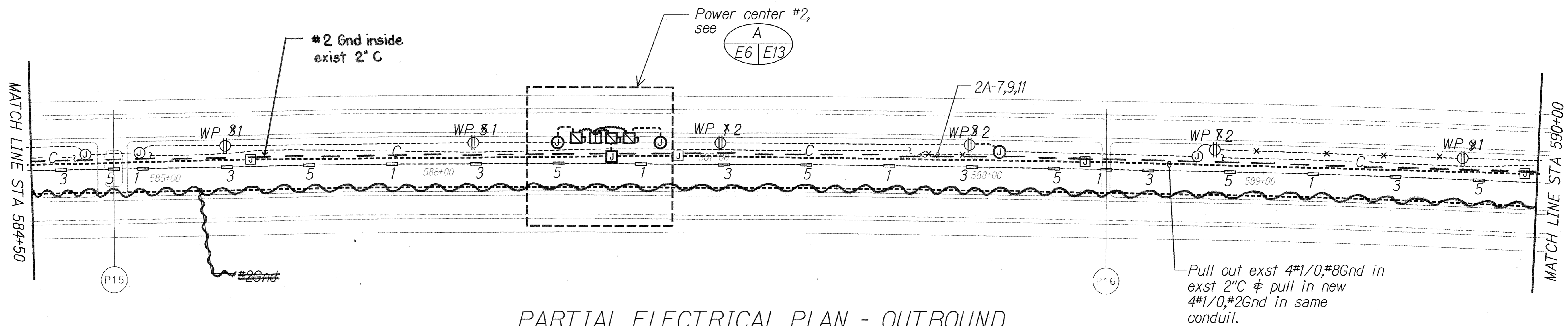
"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K75, UNIT VIIA	2003	28	60



PARTIAL ELECTRICAL PLAN - OUTBOUND

Scale: 1" = 20'-0"
Notes:
1. Light lines denote existing condition.
-x-x- "x" items denote removal work.
Bold lines denote new work.



PARTIAL ELECTRICAL PLAN - OUTBOUND

Scale: 1" = 20'-0"
Notes:
1. Light lines denote existing condition.
-x-x- "x" items denote removal work.
Bold lines denote new work.

DESIGNED BY	DATE
DRAWN BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
REVISIONS	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN - OUTBOUND

H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-K75, UNIT VIIA
Scale: As Noted Date: April, 2001
SHEET No. E-6 OF 20 SHEETS

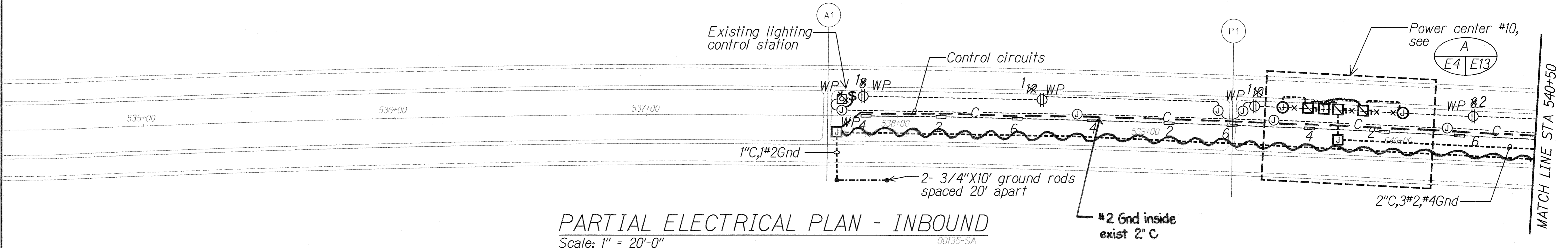
PAUL K. UYEDA
LICENSED PROFESSIONAL ENGINEER
No. 7646-E
HAWAII, U.S.A.

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Paul K. Uyeda 3/16/03
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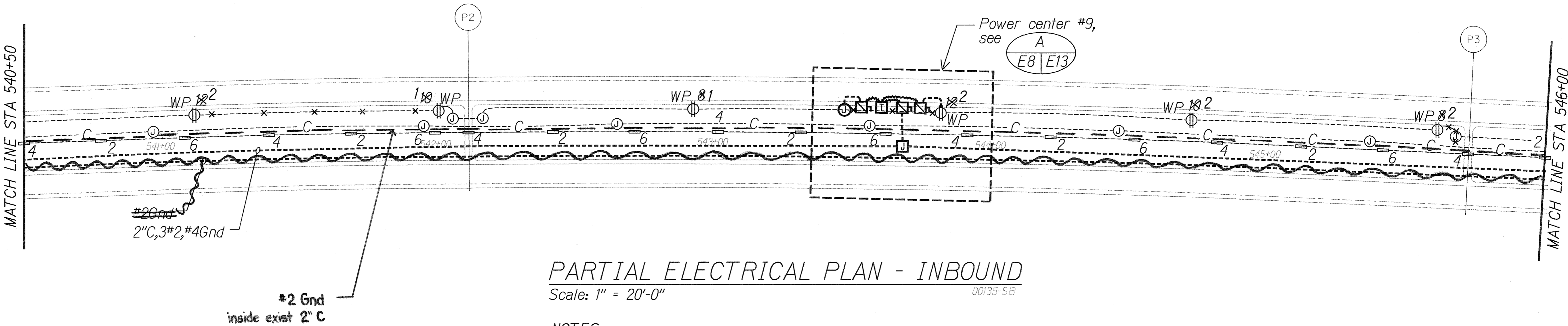
"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K75, UNIT VIIA	2003	30	60



PARTIAL ELECTRICAL PLAN - INBOUND
Scale: 1" = 20'-0"

- NOTES:
- Light lines denote existing condition.
 - "x" items denote removal work.
 - Bold lines denote new work.



PARTIAL ELECTRICAL PLAN - INBOUND
Scale: 1" = 20'-0"

- NOTES:
- Light lines denote existing condition.
 - "x" items denote removal work.
 - Bold lines denote new work.

SURVEY PLOTTED BY	DATE
DESIGNED BY	
TRACED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN - INBOUND

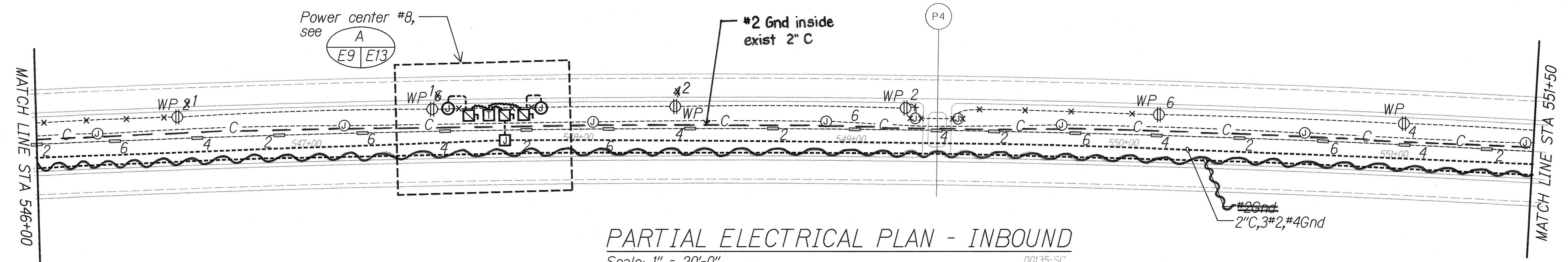
H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-K75, UNIT VIIA

Scale: As Noted Date: April, 2001

SHEET No. E-8 OF 20 SHEETS

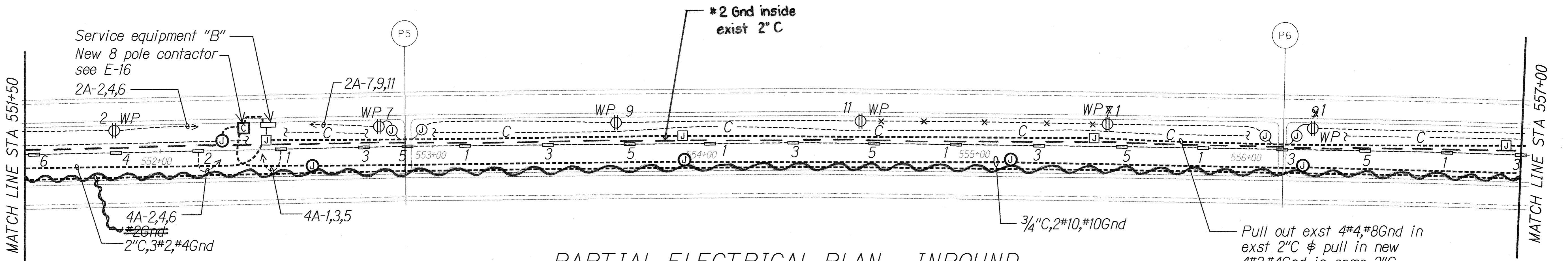
"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K75, UNIT VIIA	2003	31	60



PARTIAL ELECTRICAL PLAN - INBOUND
Scale: 1" = 20'-0"
00135-SC

NOTES:
1. Light lines denote existing condition.
-x-x- "x" items denote removal work.
Bold lines denote new work.



PARTIAL ELECTRICAL PLAN - INBOUND
Scale: 1" = 20'-0"
00135-SD

NOTES:
1. Light lines denote existing condition.
-x-x- "x" items denote removal work.
Bold lines denote new work.

SURVEY PLOTTED BY	DATE
DESIGNED BY	
NOTED BY	
CHECKED BY	

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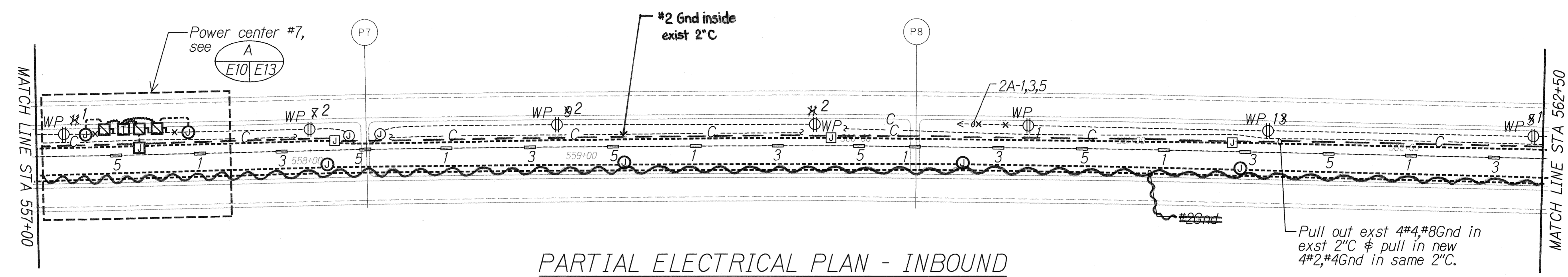
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN - INBOUND

H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-K75, UNIT VIIA
Scale: As Noted Date: April, 2001
SHEET No. E-9 OF 20 SHEETS

"AS-BUILT"

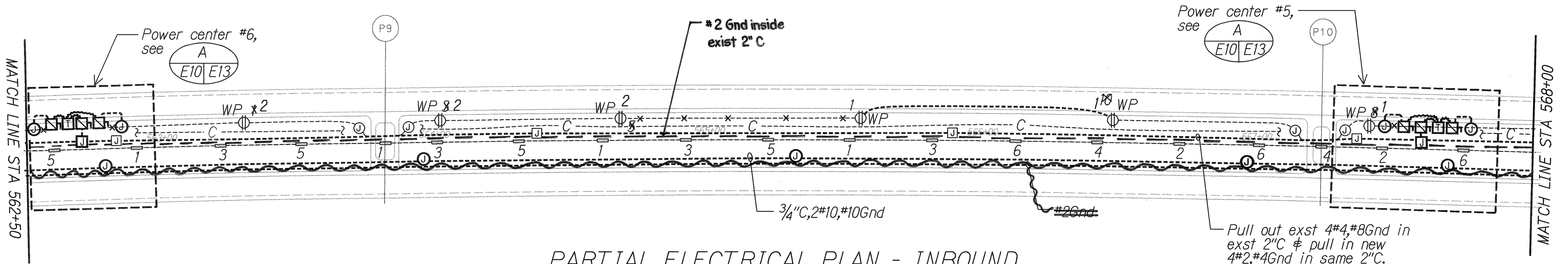
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K75), UNIT VIIA	2003	32	60



PARTIAL ELECTRICAL PLAN - INBOUND

Scale: 1" = 20'-0" 00135-SE

- NOTES:
- 1. Light lines denote existing condition.
 - x x "x" items denote removal work.
 - Bold lines denote new work.



PARTIAL ELECTRICAL PLAN - INBOUND

Scale: 1" = 20'-0" 00135-SF

- NOTES:
- 1. Light lines denote existing condition.
 - x x "x" items denote removal work.
 - Bold lines denote new work.

DATE	_____
DESIGNED BY	_____
DRAWN BY	_____
CHECKED BY	_____
NOTED BY	_____
DATE	_____

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Paul K. Uyeda 3/12/03
MK ENGINEERS, LTD.

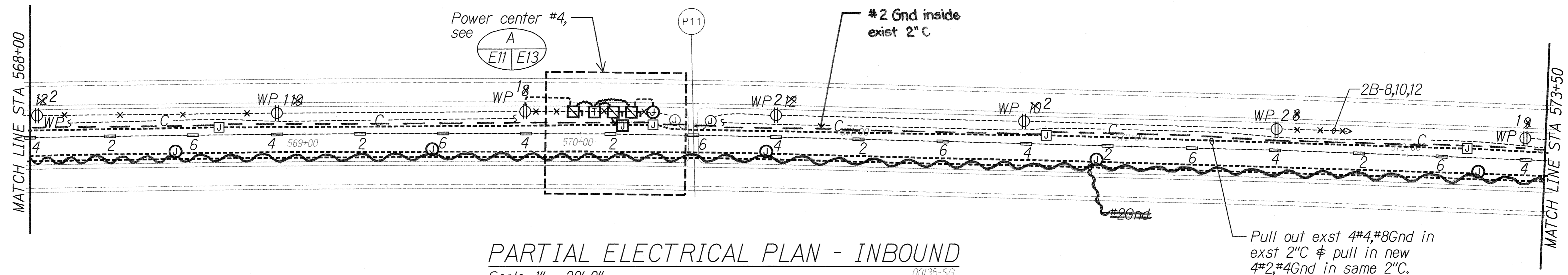
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN - INBOUND

H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-K75), UNIT VIIA
Scale: As Noted Date: April, 2001
SHEET No. E-10 OF 20 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K75, UNIT VIIA	2003	33	60



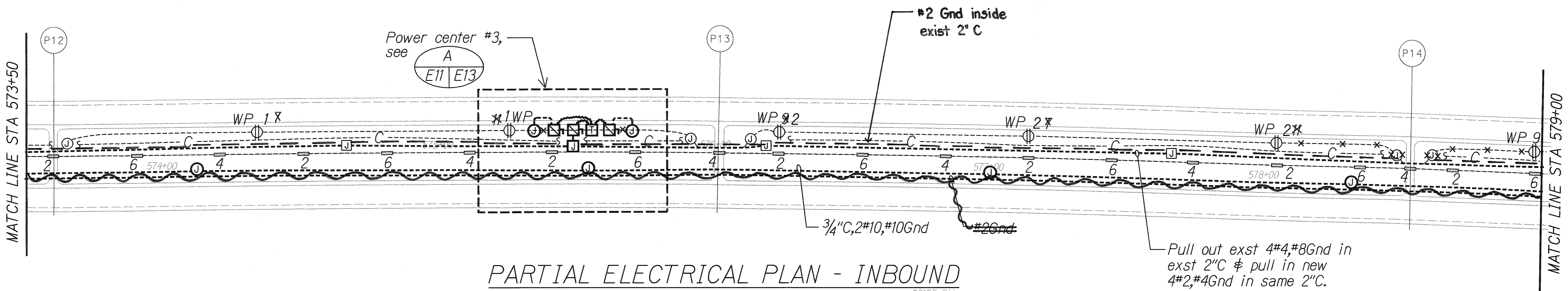
PARTIAL ELECTRICAL PLAN - INBOUND

Scale: 1" = 20'-0"

00135-SG

NOTES:

1. Light lines denote existing condition.
2. "x" items denote removal work.
3. Bold lines denote new work.



PARTIAL ELECTRICAL PLAN - INBOUND

Scale: 1" = 20'-0"

00135-SH

NOTES:

1. Light lines denote existing condition.
2. "x" items denote removal work.
3. Bold lines denote new work.

SURVEY PLOTTED BY	DATE
DESIGNED BY	
TRACED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
Nº	

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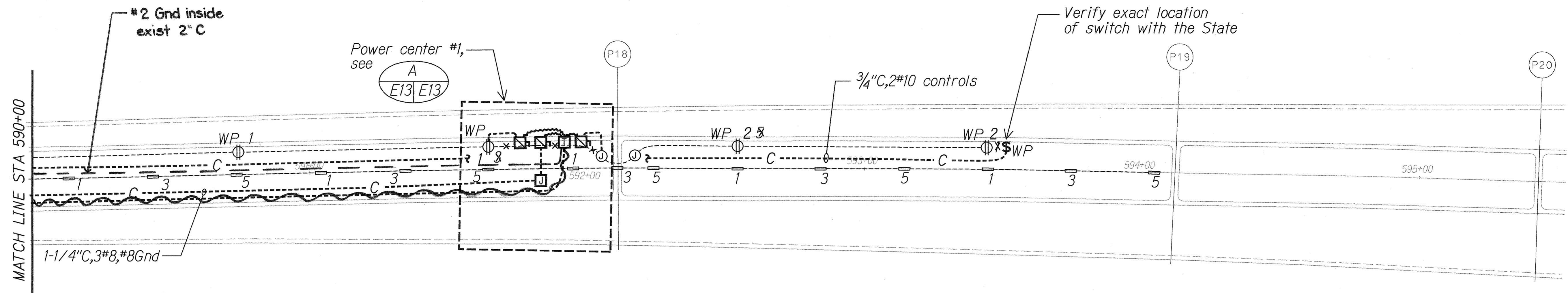
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL PLAN - INBOUND

H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-K75, UNIT VIIA
Scale: As Noted Date: April, 2001
SHEET No. E-11 OF 20 SHEETS

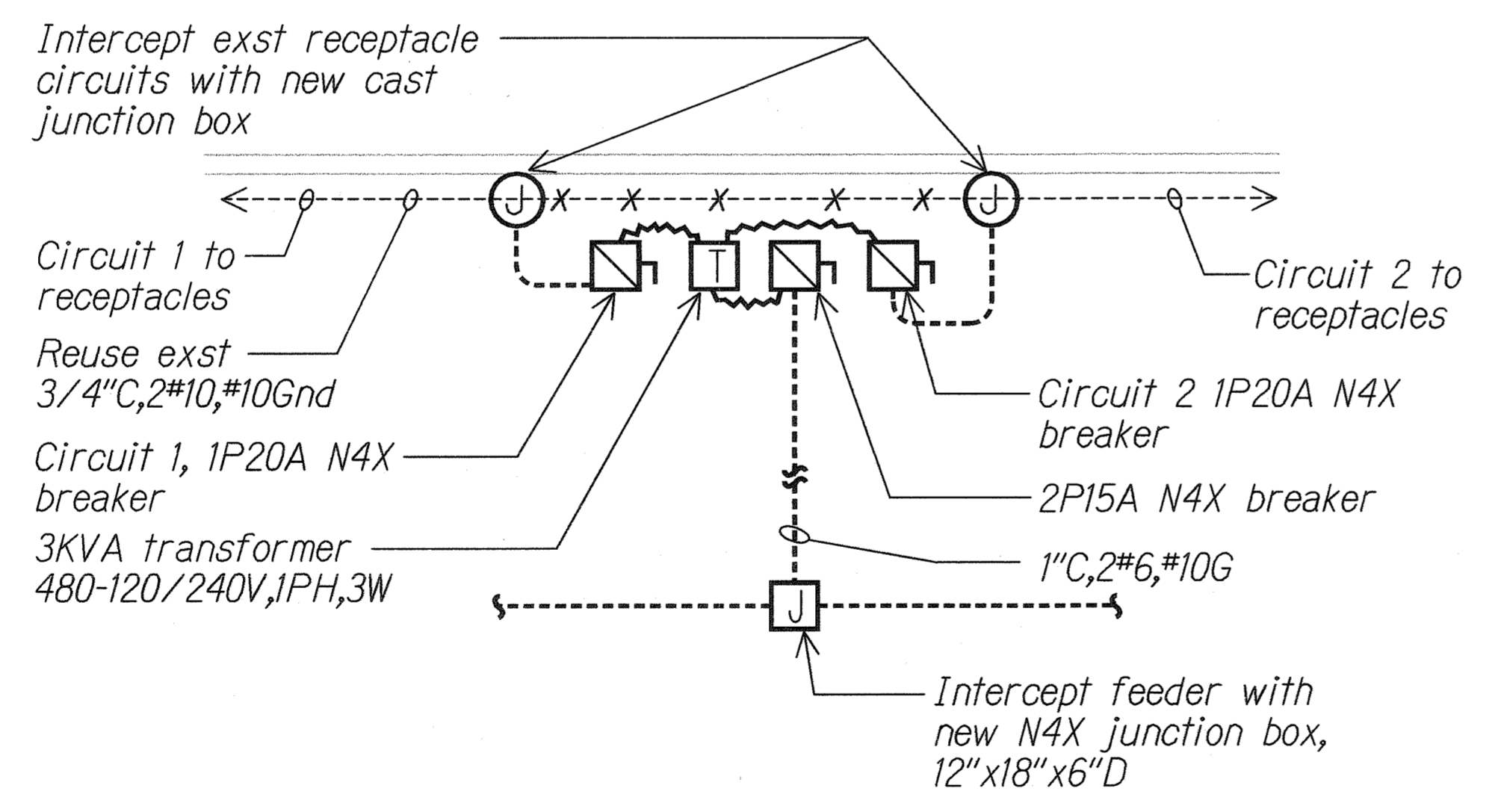
"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K75, UNIT VIIA	2003	35	60



PARTIAL ELECTRICAL PLAN - INBOUND
Scale: 1" = 20'-0"
00135-SK

NOTES:
1. Light lines denote existing condition.
-x-x- "x" items denote removal work.
Bold lines denote new work.



POWER CENTER DETAIL
No Scale
00135-D2
Notes:
1. Light lines denote existing condition.
-x-x- "x" items denote removal work.
Bold lines denote new work.

SURVEY PLOTTED BY	DATE
DESIGNED BY	
TRACED BY	
ENGINEER BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
Nr.	

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Paul K. Uyeda 3/12/03
MK ENGINEERS, LTD.

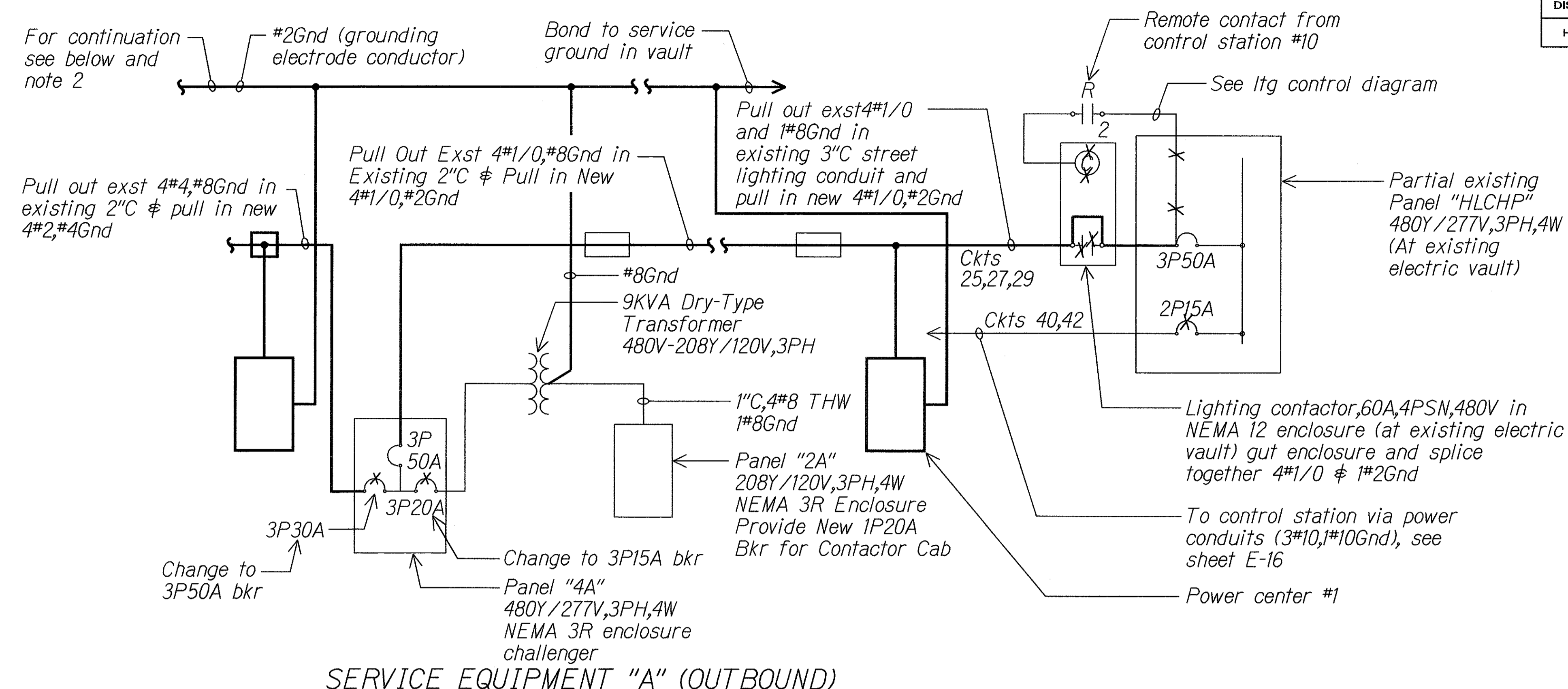
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**ELECTRICAL PLAN - INBOUND
POWER CENTER DETAIL**

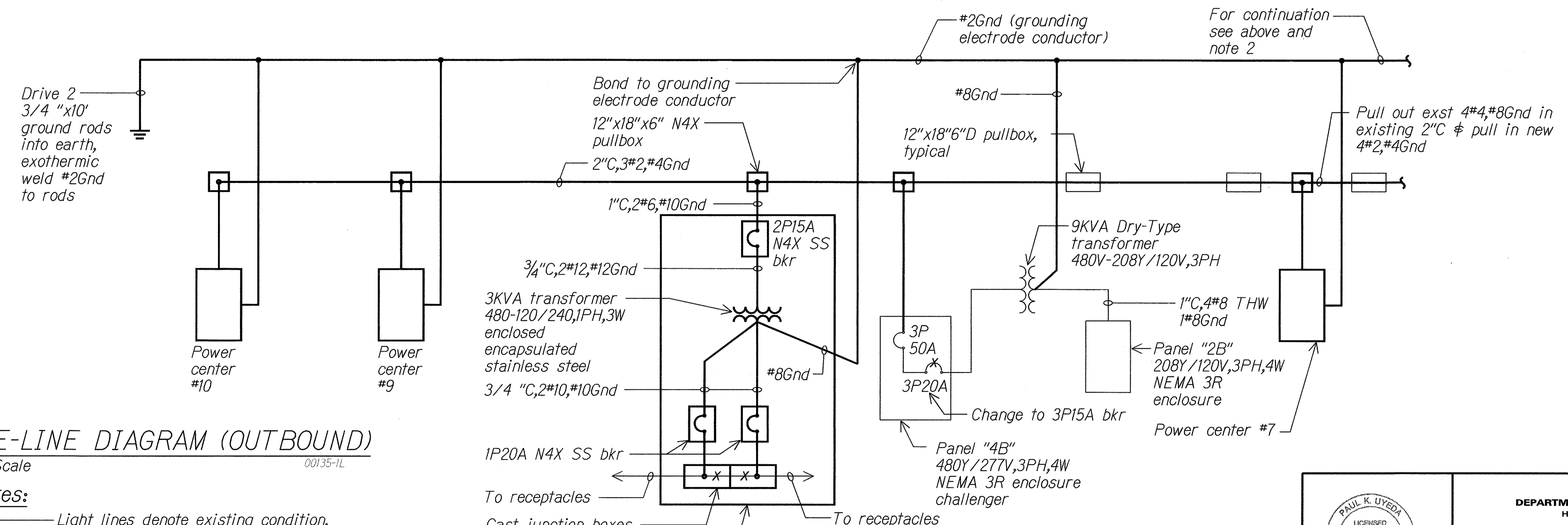
H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-K75, UNIT VIIA
Scale: As Noted Date: April, 2001
SHEET No. E-13 OF 20 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K75, UNIT VIIA	2003	36	60



SERVICE EQUIPMENT "A" (OUTBOUND)



SERVICE EQUIPMENT "B" (OUTBOUND)

ONE-LINE DIAGRAM (OUTBOUND)
No Scale

- Notes:**
- Light lines denote existing condition.
X-X "X" items denote removal work.
Bold lines denote new work.
 - Not all power centers are shown, see plans for locations.
 - Connect power centers on alternating phases to balance loading on feeder.

PAUL K. UYEDA
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No. 7846-E
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MK ENGINEERS, LTD.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ONE-LINE DIAGRAM (OUTBOUND)

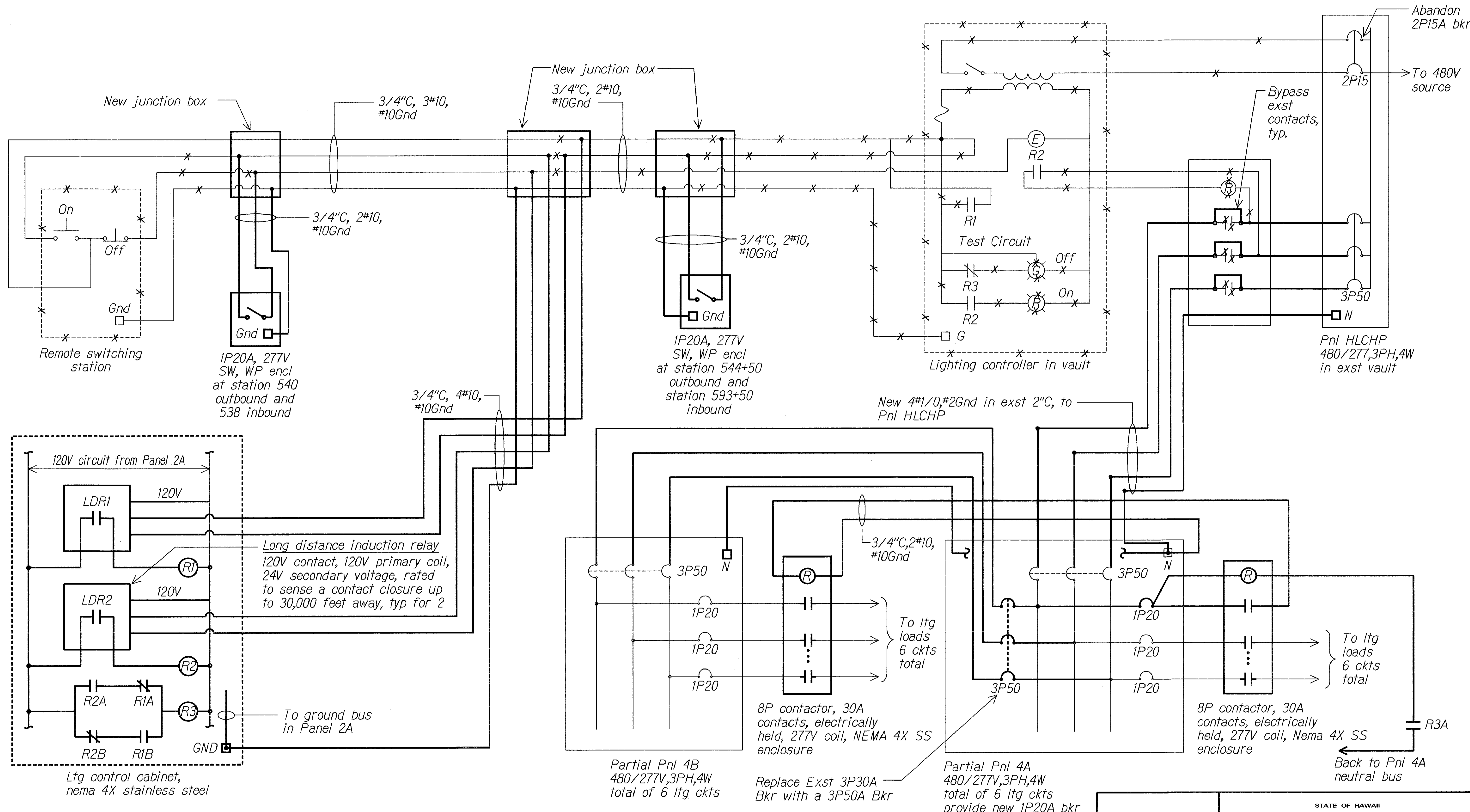
H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-K75, UNIT VIIA
Scale: As Noted Date: April, 2001

SHEET No. E-14 OF 20 SHEETS

For continuation — ☐ #2Gnd (Grounding) ☐ Bond to service ☐ Remote contact from control station #10



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K75, UNIT VIIA	2003	38	60



Notes:

- Light lines denote existing condition.
 -X-X- "X" items denote removal work.
 Bold lines denote new work.
- This control diagram is typical for both inbound and outbound viaducts.

LIGHTING SCHEMATIC DIAGRAM
 No Scale

PAUL K. UYEDA
 LICENSED PROFESSIONAL ENGINEER
 No. 7648-E
 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Paul K. Uyeda 3/12/03
 MK ENGINEERS, LTD.

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

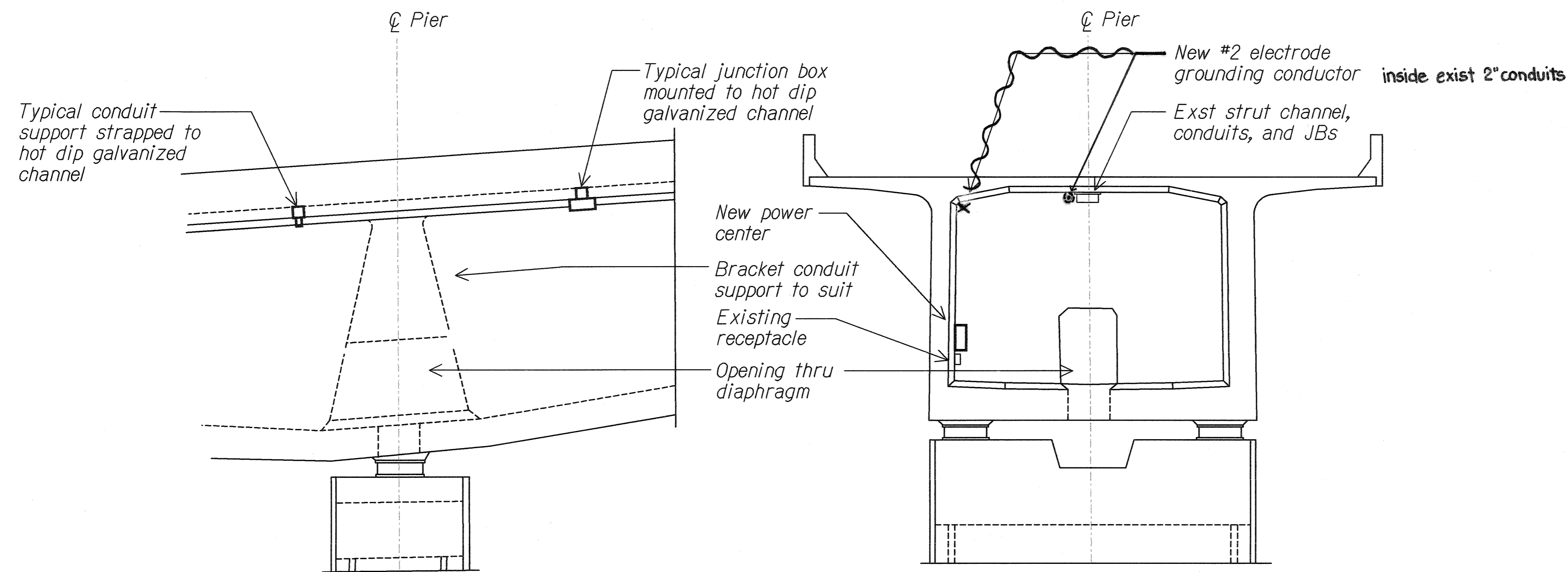
LIGHTING SCHEMATIC DIAGRAM

H-3 FINISH (UNIT VIIA)
 FAIP NO. I-H3-K75, UNIT VIIA

Scale: As Noted Date: April, 2001

SHEET No. E-16 OF 20 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-K75, UNIT VIIA	2003	39	60



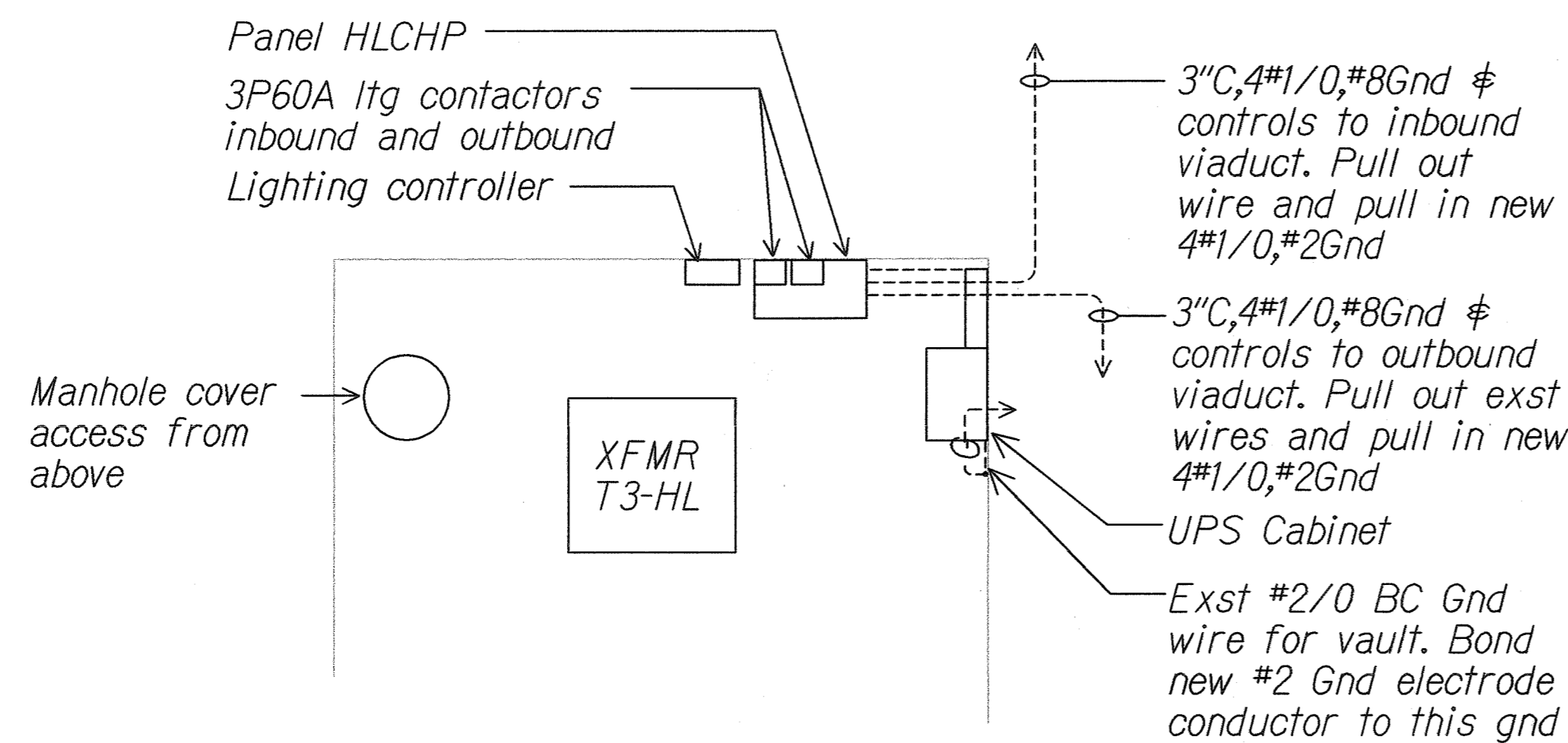
LONGITUDINAL SECTION

CROSS SECTION

TYPICAL PIER DIAPHRAGM ELECTRICAL DETAIL

Not to Scale

00135-D1



PARTIAL HALAWA VAULT PLAN

Scale: 1/4" = 1'-0"

00135-D4

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HIGHWAYS DIVISION

Miscellaneous Details

H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-K75, UNIT VIIA
Scale: As Noted Date: April, 2001

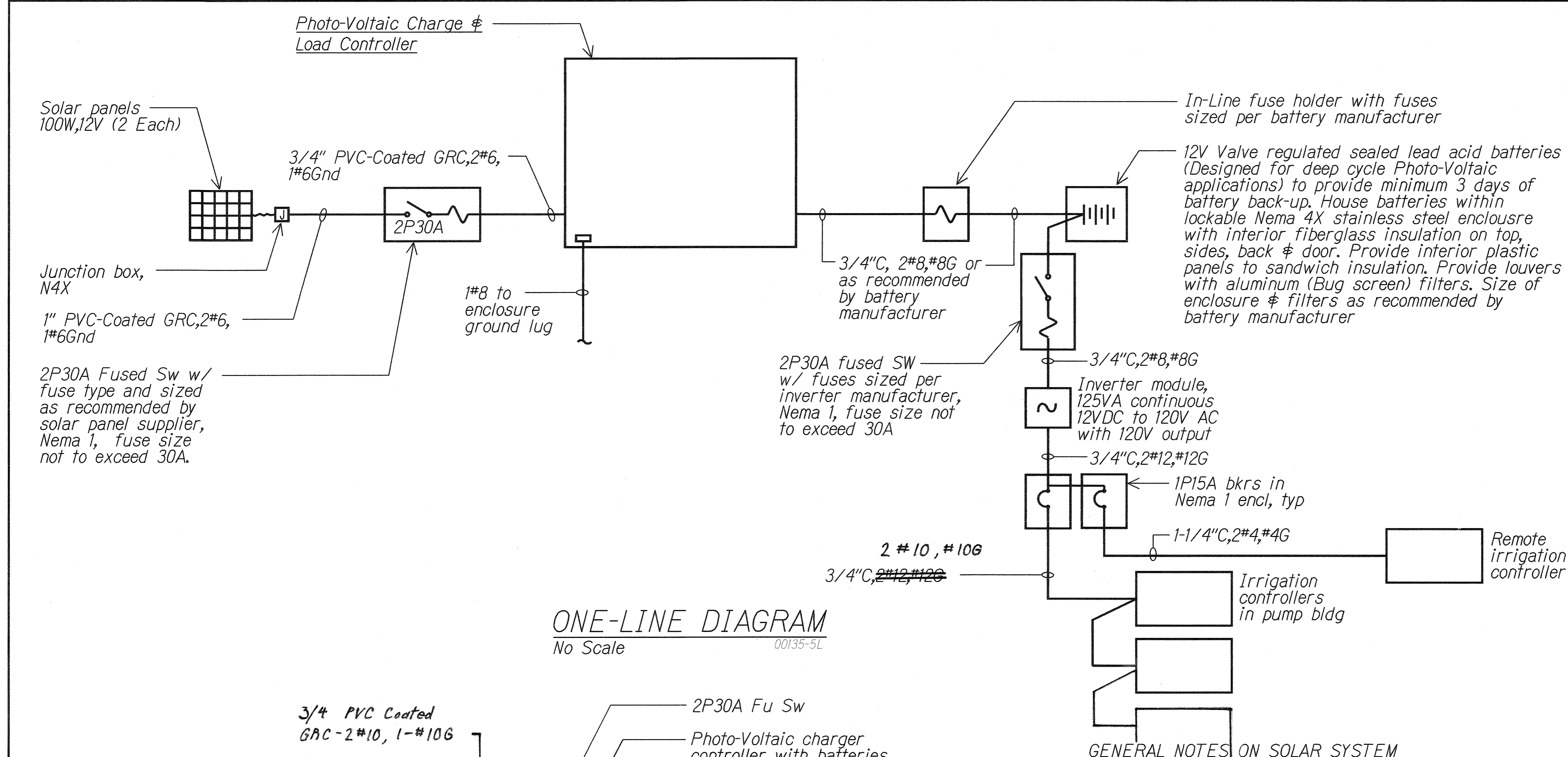
SHEET No. E-17 OF 20 SHEETS

SURVEY PLOTTED BY	DATE
DESIGNED BY	
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
N.	

A
E-1 E-17
E-7,E-12

"AS-BUILT"

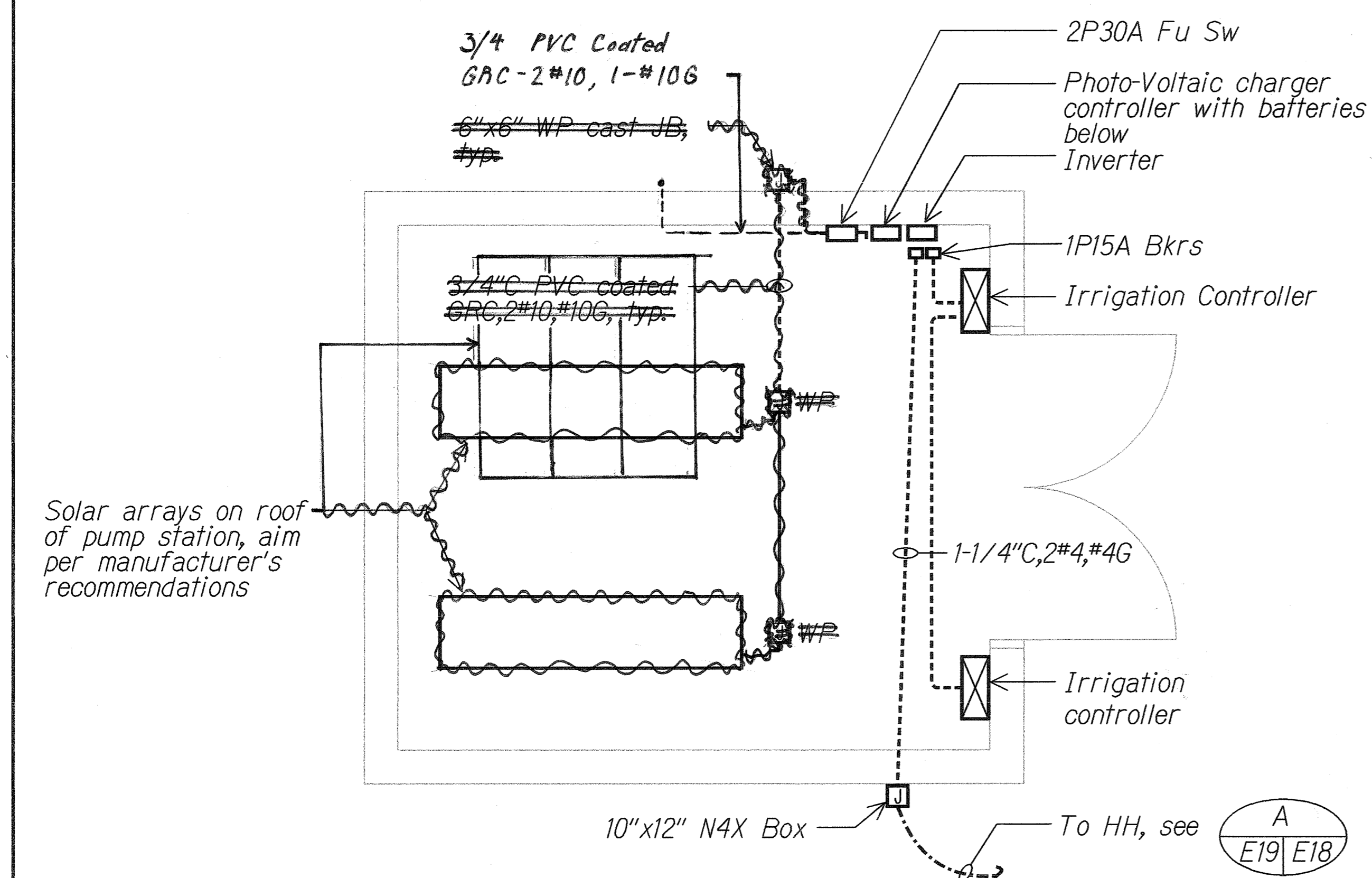
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75), UNIT VIIA	2003	41	60



ONE-LINE DIAGRAM
No Scale 00135-5L

GENERAL NOTES ON SOLAR SYSTEM

- See specifications section 632 for details on products and methods.
- These drawings are based on one manufacturer's products. The Contractor is required to size the solar system to adequately provide power for the actual irrigation controllers and valves provided. The solar system including the solar panels, controller, inverter, and batteries shall be sized for the actual loads provided. Any changes to the solar equipment sizing including apparatus, overcurrent protection and wires shall be done at no additional cost to the State. Submit calculations and documentation to demonstrate that this requirement will be met by the equipment proposed.
- Batteries shall be sized for a two day backup.
- Mounting of the solar panels shall be per the manufacturer's recommendations using their standard mounting brackets. The brackets shall be painted with two coats of an epoxy based rust inhibiting paint after installation. Do not compromise the water integrity of the cast concrete roof.
- All hardware, boxes, and mounting brackets exposed to the exterior of the building shall be stainless steel unless specifically approved by the specifications.



A PUMP HOUSE ELECTRICAL PLAN
Scale: 1/2" = 1'-0" 00135-PA

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MK ENGINEERS, LTD.

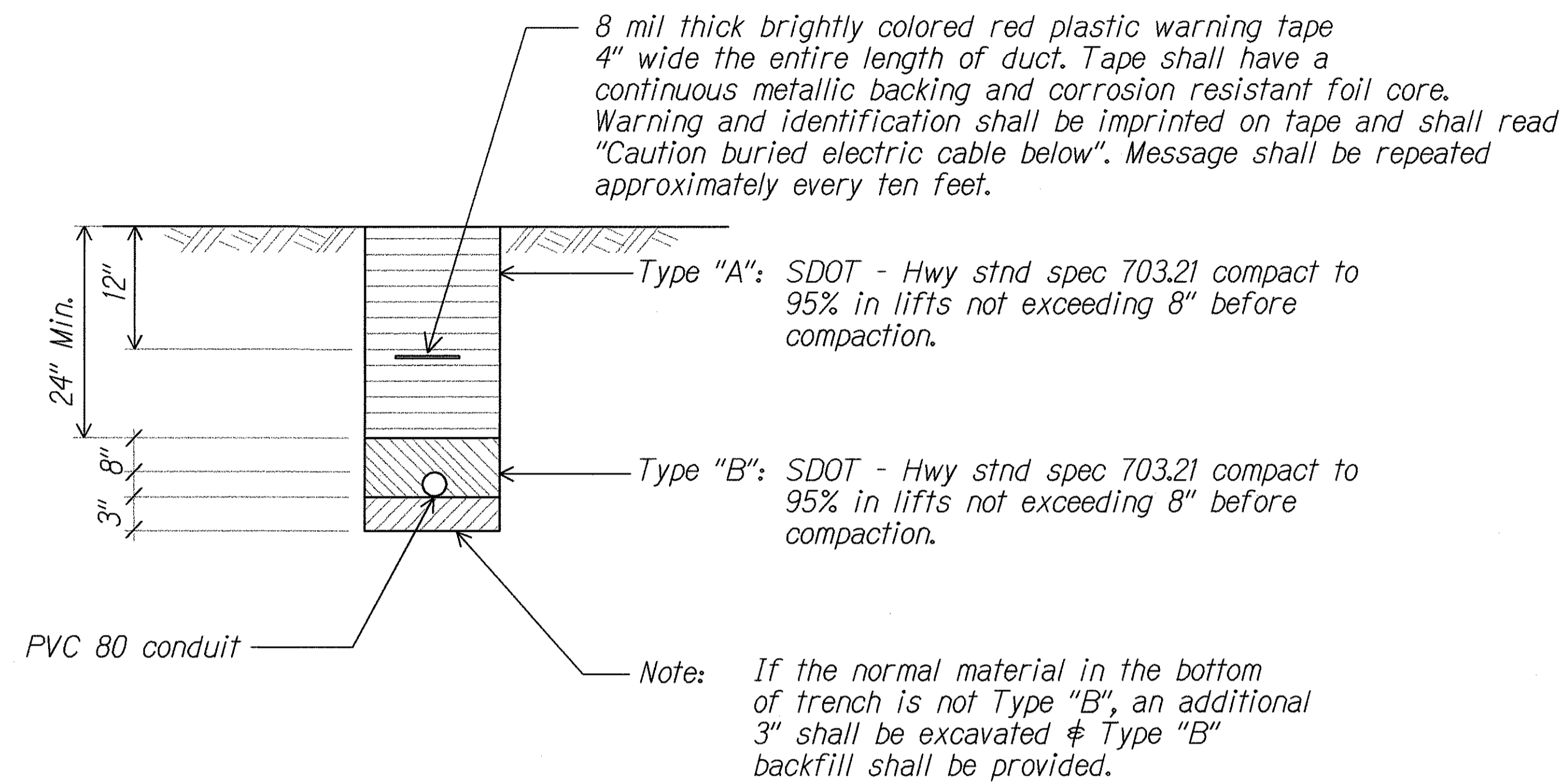
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**ONE-LINE DIAGRAM &
PUMP HOUSE ELECTRICAL PLAN**

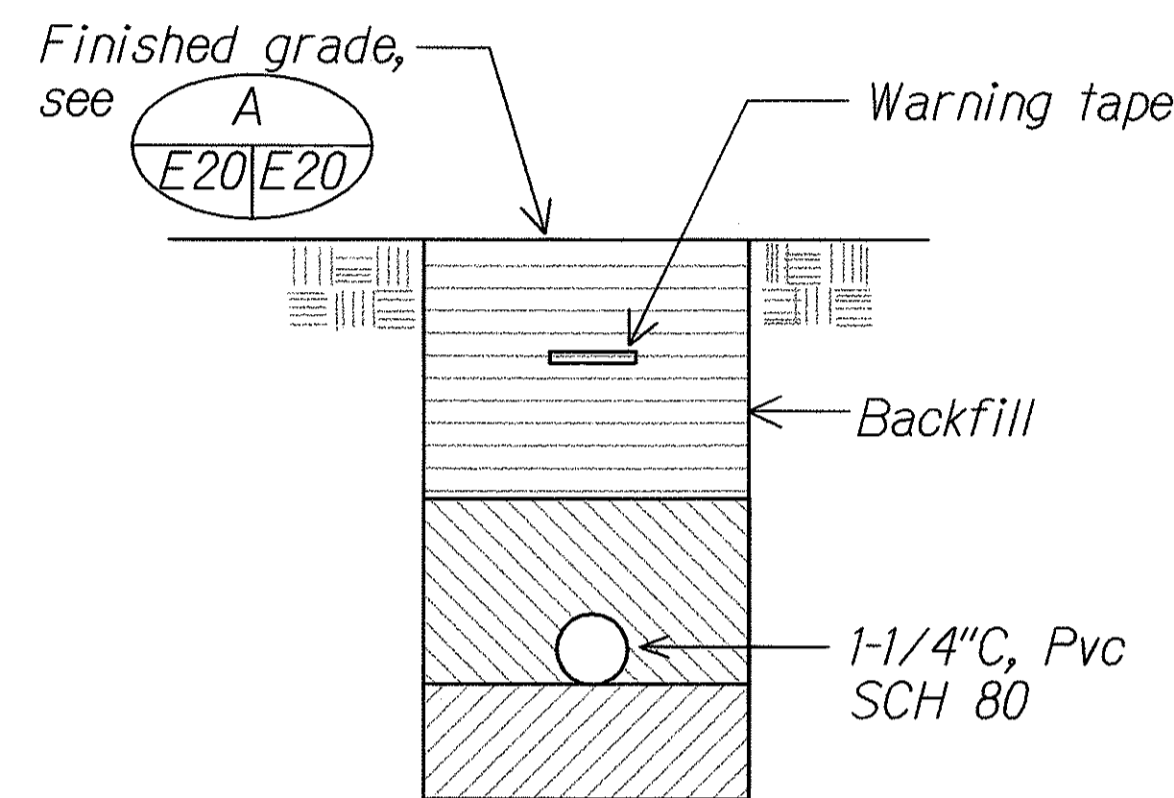
H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-1(75), UNIT VIIA
Scale: As Noted Date: April, 2001
SHEET No. E-19 OF 20 SHEETS

"AS-BUILT"

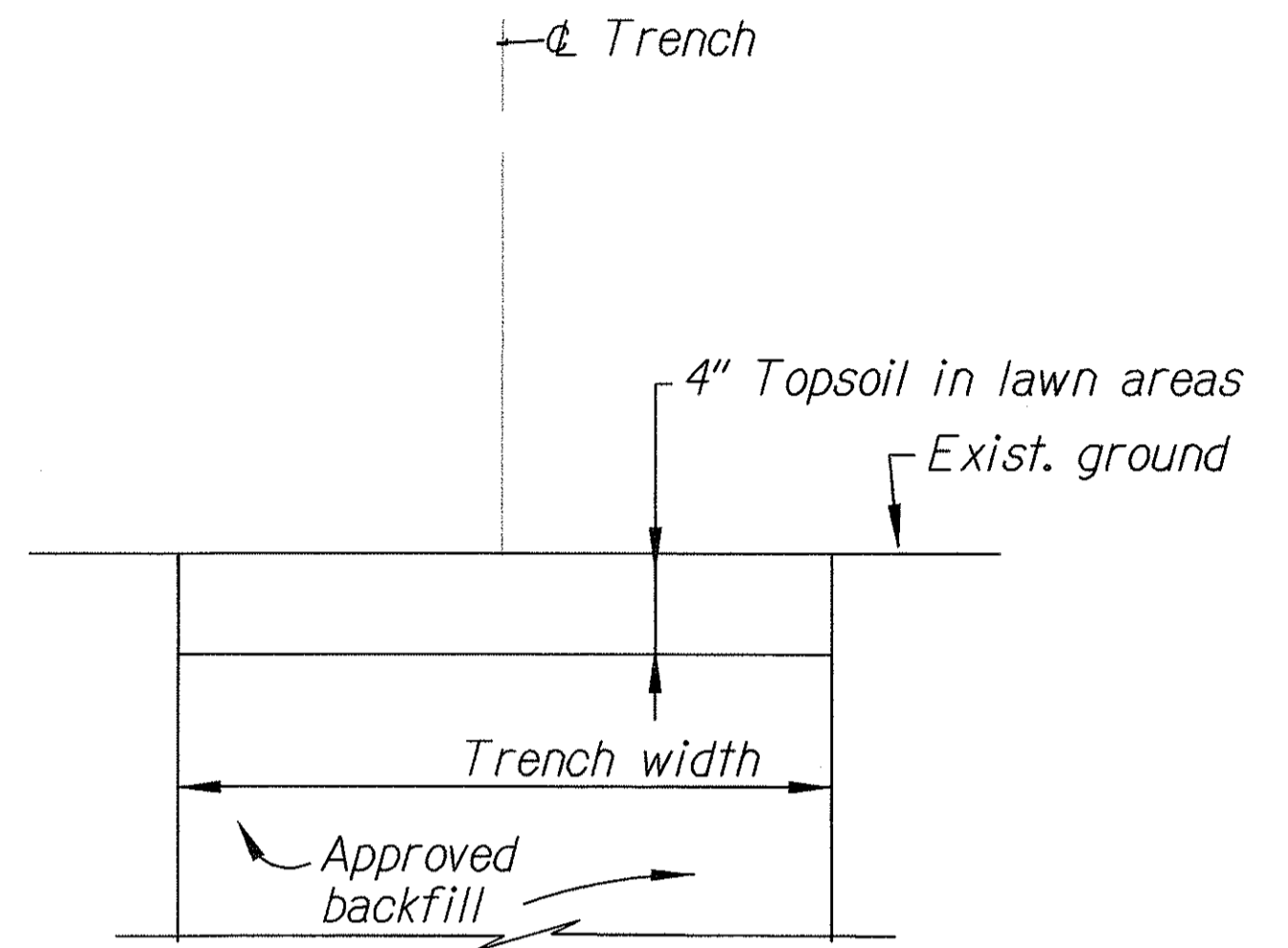
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75), UNIT VIIA	2003	42	60



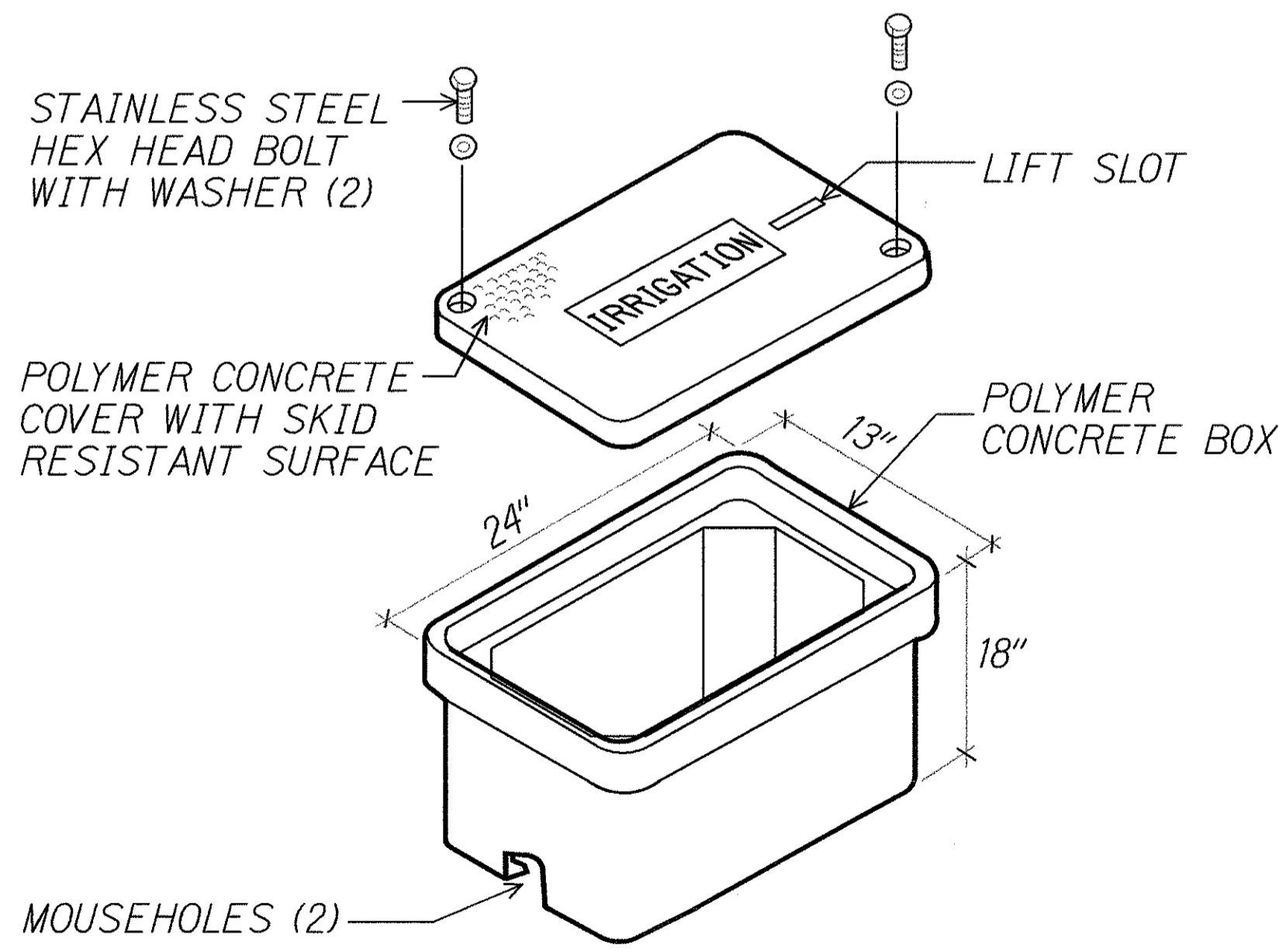
TYPICAL DUCT SECTION (DIRECT BURIED)
Not to Scale



DUCT SECTION (A)

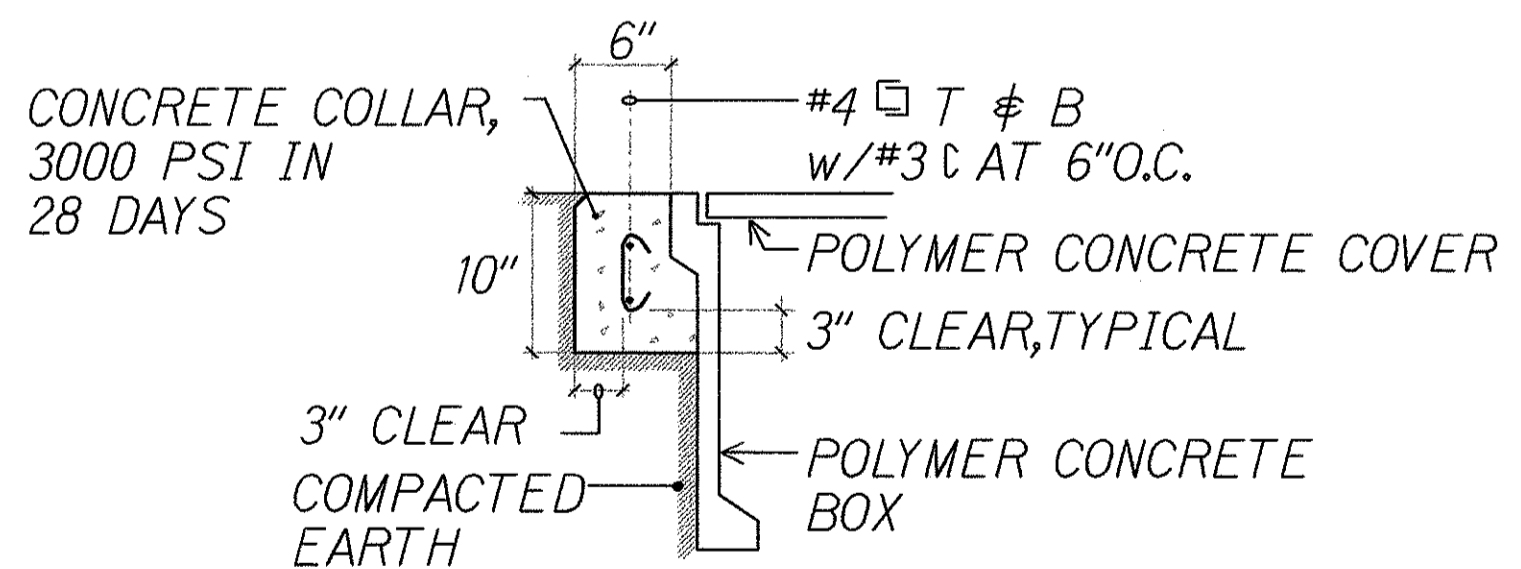


TRENCH RESTORATION DETAIL
Not to Scale



- NOTES:**
- PULLBOX ASSEMBLY SHALL HAVE A 10,400 POUND LOAD RATING IN ACCORDANCE WITH W.U.C. 3.6.
 - BOX AND BASE SHALL NOT CONTAIN STEEL REINFORCING.
 - PULLBOX SHALL BE SET ON COMPACTED GRANULAR FILL. PROVIDE BUILD-UP BRICKS WITH MORTAR AS NECESSARY TO ACCOMMODATE DUCTLINE ENTRIES.
 - PROVIDE CONCRETE COLLAR RING SURROUNDING PULLBOX, SEE DETAIL THIS SHEET.

POLYMER CONCRETE PULLBOX #1
NTS



SURVEY PLOTTED BY	DATE
DRAWN BY	
CHECKED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	
No.	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DUCT SECTION DETAILS

H-3 FINISH (UNIT VIIA)
FAIP NO. I-H3-1(75), UNIT VIIA
Scale: As Noted Date: April, 2001
SHEET No. E-20 OF 20 SHEETS