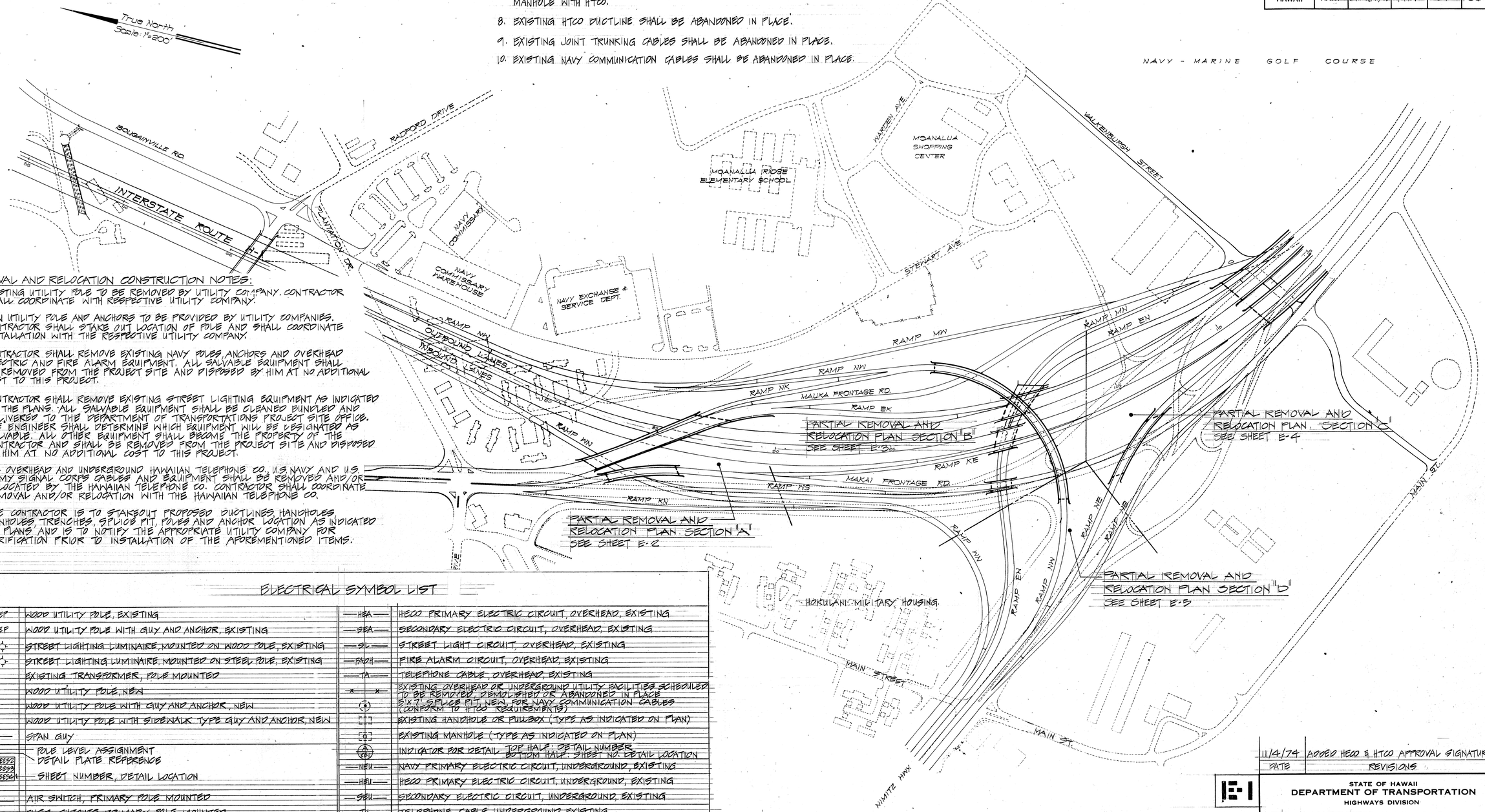
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73)15	1974	157	369

7. EXISTING HTCO MANHOLE SHALL BE ABANDONED IN PLACE. CONTRACTOR SHALL FILL MANHOLE WITH EARTH AFTER EXISTING TELEPHONE CABLES HAVE BEEN REMOVED OR ABANDONED IN PLACE. THE CONTRACTOR SHALL COORDINATE THE FILLING OF THE MANHOLE WITH HTCO.
8. EXISTING HTCO DUCTLINE SHALL BE ABANDONED IN PLACE.
9. EXISTING JOINT TRUNKING CABLES SHALL BE ABANDONED IN PLACE.
10. EXISTING NAVY COMMUNICATION CABLES SHALL BE ABANDONED IN PLACE.



REMOVAL AND RELOCATION CONSTRUCTION NOTES:

1. EXISTING UTILITY POLE TO BE REMOVED BY UTILITY COMPANY. CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY COMPANY.
2. NEW UTILITY POLE AND ANCHORS TO BE PROVIDED BY UTILITY COMPANIES. CONTRACTOR SHALL STAKE OUT LOCATION OF POLE AND SHALL COORDINATE INSTALLATION WITH THE RESPECTIVE UTILITY COMPANY.
3. CONTRACTOR SHALL REMOVE EXISTING NAVY POLES, ANCHORS AND OVERHEAD ELECTRIC AND FIRE ALARM EQUIPMENT. ALL SALVABLE EQUIPMENT SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED BY HIM AT NO ADDITIONAL COST TO THIS PROJECT.
4. CONTRACTOR SHALL REMOVE EXISTING STREET LIGHTING EQUIPMENT AS INDICATED ON THE PLANS. ALL SALVABLE EQUIPMENT SHALL BE CLEANED BUNDLED AND DELIVERED TO THE DEPARTMENT OF TRANSPORTATIONS PROJECT SITE OFFICE. THE ENGINEER SHALL DETERMINE WHICH EQUIPMENT WILL BE DESIGNATED AS SALVABLE. ALL OTHER EQUIPMENT SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE PROJECT SITE AND DISPOSED BY HIM AT NO ADDITIONAL COST TO THIS PROJECT.
5. ALL OVERHEAD AND UNDERGROUND HAWAIIAN TELEPHONE CO., U.S. NAVY AND U.S. ARMY SIGNAL CORPS CABLES AND EQUIPMENT SHALL BE REMOVED AND/OR RELOCATED BY THE HAWAIIAN TELEPHONE CO. CONTRACTOR SHALL COORDINATE REMOVAL AND/OR RELOCATION WITH THE HAWAIIAN TELEPHONE CO.
6. THE CONTRACTOR IS TO STAKEOUT PROPOSED DUCTLINES, HANDHOLES, MANHOLES, TRENCHES, SPLICE PIT, POLES AND ANCHOR LOCATION AS INDICATED ON PLANS AND IS TO NOTIFY THE APPROPRIATE UTILITY COMPANY FOR VERIFICATION PRIOR TO INSTALLATION OF THE AFOREMENTIONED ITEMS.

ELECTRICAL SYMBOL LIST

EP	WOOD UTILITY POLE, EXISTING
EP	WOOD UTILITY POLE WITH GUY AND ANCHOR, EXISTING
EP	STREET LIGHTING LUMINAIRE, MOUNTED ON WOOD POLE, EXISTING
	STREET LIGHTING LUMINAIRE, MOUNTED ON STEEL POLE, EXISTING
	EXISTING TRANSFORMER, POLE MOUNTED
	WOOD UTILITY POLE, NEW
	WOOD UTILITY POLE WITH GUY AND ANCHOR, NEW
	WOOD UTILITY POLE WITH SIDEWALK TYPE GUY AND ANCHOR, NEW
SG	SPAN GUY
A P2-12 EE52 B P1-12 EE53 C T-1 EE54	POLE LEVEL ASSIGNMENT DETAIL PLATE REFERENCE SHEET NUMBER, DETAIL LOCATION
AS	AIR SWITCH, PRIMARY POLE MOUNTED
	FUSE CUTOUTS, PRIMARY POLE MOUNTED
	OVERHEAD PRIMARY CONDUCTORS, 3 ø, 3 WIRE
	OVERHEAD PRIMARY CONDUCTORS, 1 ø, 2 WIRE
	DEADEND
(2)	MATERIAL LIST DESIGNATION
FA //	OVERHEAD FIRE ALARM CONDUCTORS, HASH MARKS INDICATE NUMBER OF CONDUCTORS
NEA	NAVY PRIMARY ELECTRIC CIRCUIT, OVERHEAD, EXISTING
HEA	HECO PRIMARY ELECTRIC CIRCUIT, OVERHEAD, EXISTING
SEA	SECONDARY ELECTRIC CIRCUIT, OVERHEAD, EXISTING
SL	STREET LIGHT CIRCUIT, OVERHEAD, EXISTING
FAOH	FIRE ALARM CIRCUIT, OVERHEAD, EXISTING
TA	TELEPHONE CABLE, OVERHEAD, EXISTING
X X	EXISTING OVERHEAD OR UNDERGROUND UTILITY FACILITIES SCHEDULED TO BE REMOVED, DEMOLISHED OR ABANDONED IN PLACE
	SPLICE PIT, NEW, FOR NAVY COMMUNICATION CABLES (CONFORM TO HTCO REQUIREMENTS)
	EXISTING HANDHOLE OR PULLBOX (TYPE AS INDICATED ON PLAN)
	EXISTING MANHOLE (TYPE AS INDICATED ON PLAN)
A / EE52	INDICATOR FOR DETAIL: TOP HALF: DETAIL NUMBER BOTTOM HALF: SHEET NO. DETAIL LOCATION
NEU	NAVY PRIMARY ELECTRIC CIRCUIT, UNDERGROUND, EXISTING
HEU	HECO PRIMARY ELECTRIC CIRCUIT, UNDERGROUND, EXISTING
SEU	SECONDARY ELECTRIC CIRCUIT, UNDERGROUND, EXISTING
TU	TELEPHONE CABLE, UNDERGROUND, EXISTING
JCC	JOINT TRUNKING CABLE, UNDERGROUND, EXISTING
NCC	NAVY COMMUNICATION CABLE, UNDERGROUND, EXISTING
	UNDERGROUND RACEWAY, NEW
1	RACEWAY SECTION INDICATOR, NUMBER IS SECTION DETAIL ASSIGNMENT
A / E52	DETAIL INDICATOR: TOP HALF: DETAIL ASSIGNMENT BOTTOM HALF: SHEET ASSIGNMENT

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

REMOVAL AND RELOCATION SHEET LAYOUT

SCALE: 1"=200'

APPROVED:

HAWAIIAN ELECTRIC CO., INC. — 7/5/74 DATE
JK EN

HAWAIIAN TELEPHONE CO. — 11-4-74 DATE
R. Maw

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

REGISTERED PROFESSIONAL ENGINEER No. 1390 HAWAII, U.S.A.

DATE	REVISIONS
11/4/74	ADDED HECO & HTCO APPROVAL SIGNATURES

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRIC, COMMUNICATION, AND LIGHTING REMOVAL AND RELOCATION SHEET LAYOUT

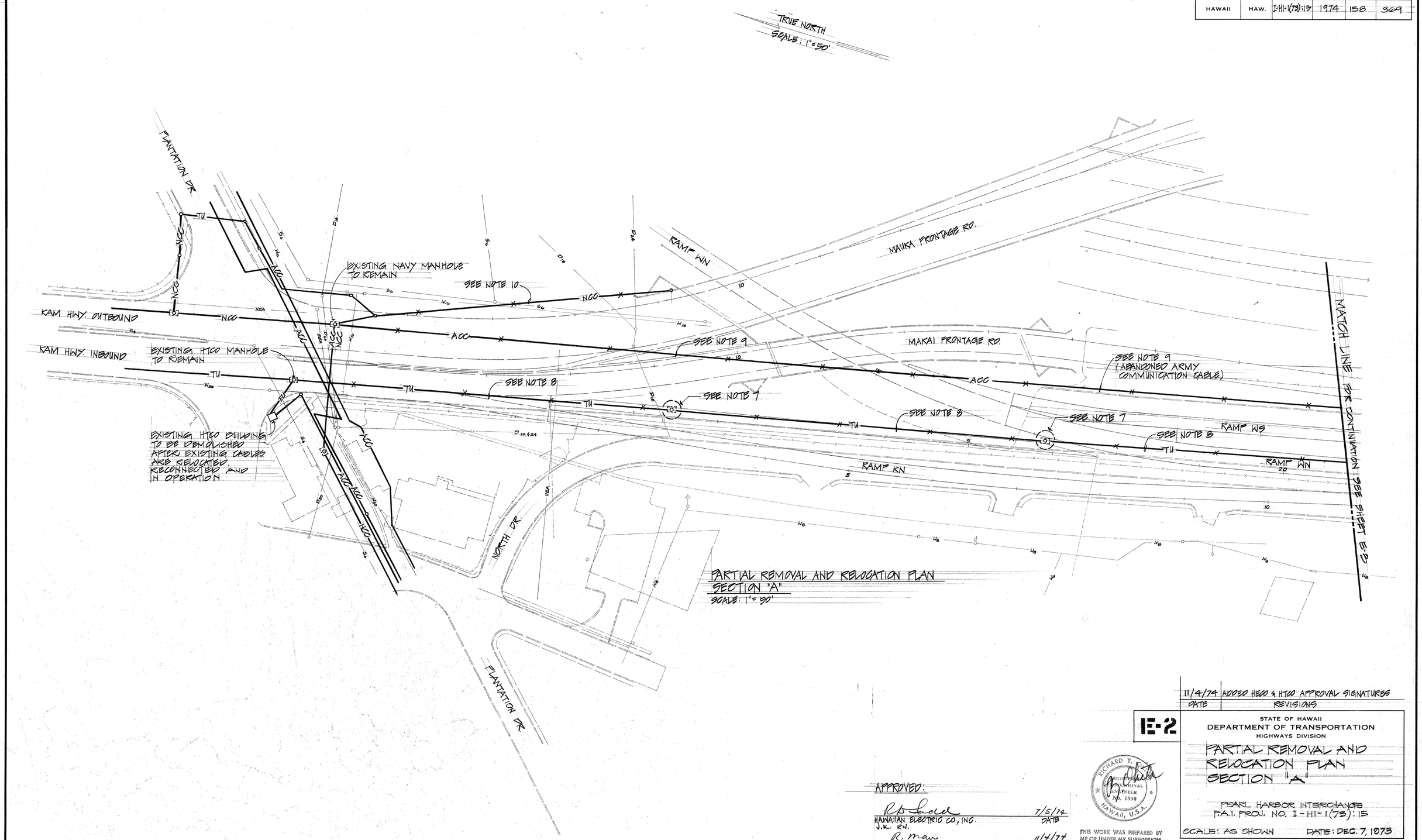
PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(73)15

SCALE: AS SHOWN — DATE: DEC. 7, 1973

SHEET No. 1 OF 62 SHEETS

157R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):13	1974	158	369



PARTIAL REMOVAL AND RELOCATION PLAN
SECTION "A"
SCALE: 1"= 50'

APPROVED:

HAWAIIAN ELECTRIC CO., INC. — 7/5/74 DATE
J.K. KN.

HAWAIIAN TELEPHONE CO. — 11/4/74 DATE
R. Man

RICHARD Y. [illegible]
REGISTERED PROFESSIONAL ENGINEER No. 1390
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

DATE	REVISIONS
11/4/74	ADDED HECO & HTCO APPROVAL SIGNATURES

E-2

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL REMOVAL AND RELOCATION PLAN SECTION "A"

PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(73):15

SCALE: AS SHOWN — DATE: DEC. 7, 1973

SHEET NO. 2 OF 62 SHEETS

158R

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

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	159	369

TRUE NORTH
SCALE: 1"=50'

DISCONNECT EXISTING OVERHEAD NAVY PRIMARY ELECTRIC AND FIRE ALARM CIRCUITS AFTER RECONNECTING UNDERGROUND

SEE NOTE 3

Ramp EK Sta. 4+23.99, 337.60' o/s Lt.
EXISTING NAVY ELECTRIC MANHOLE #1
REMOVE PRIMARY ELECTRIC AND FIRE ALARM CABLES FROM EXISTING MANHOLE TO POLE MH0 #30 AND RECONNECT TO EXISTING UNDERGROUND FIRE ALARM AND PRIMARY ELECTRIC CIRCUITS.

SEE NOTE 3

EXISTING NAVY ELECTRIC DUCTLINE

SEE NOTE 3

SEE NOTE 3

MAUKA FRONTAGE RD.

CONNECT TO EXISTING DUCTS. COST OF CONNECTION IS CONSIDERED INCIDENTAL TO COST OF DUCTLINE CONSTRUCTION

TOP ELEV. PER PLAN AND BE AT FINISH ROADWAY ELEV.
NAVY ELECTRIC MANHOLE #2 (A E20)
℄ STA. 0+22
Ramp EK ℄ Sta. 4+98.07
22.55' o/s Lt.

RAMP EK

SEE NOTE 3

EXISTING OVERHEAD NAVY ELECTRIC AND FIRE ALARM EQUIPMENT SHALL REMAIN IN OPERATION UNTIL PERMANENT UNDERGROUND FACILITIES ARE INSTALLED, RECONNECTED AND IN OPERATION. COORDINATE OUTAGE WITH NAVY.

FOR CONTINUATION SEE SHEET E-2

MATCH LINE

FIELD DIRECTIVE
Dec. 23, 1974
See Sht. 182R
TOP ELEV. IS TO BE SEVEN(7) INCHES ABOVE FINISH ROADWAY GRADE

FOR ONE-LINE DIAGRAM SEE SHEET E-19
FOR DUCTLINE PROFILE SEE SHEET E-20 SECTION B

H-1 OUTBOUND

H-1 INBOUND

RAMP KE

NAVY ELECTRIC MANHOLE #3 (A E20)
℄ STA. 5+40
Ramp KE Sta. 5+44.54
41.32' o/s Rt.

RAMP MW

MAUKA FRONTAGE RD.

RAMP MN

RAMP EN

SEE NOTE 10

FOR CONTINUATION SEE SHEET E-4

SEE NOTE 9

SEE NOTE 8

SEE NOTE 7

KAM HWY OUTBOUND

KAM HWY INBOUND

RAMP NW

RAMP WS

MAKAI FRONTAGE RD.

NORTH DR.

RAMP IAN

SEE NOTE 3

SEE NOTE 3

SEE NOTE 3

NAVY ELECTRIC MANHOLE #4 (A E20)
℄ STA. 6+57
Ramp WN ℄ Sta. 24+17.86
79.15' o/s Rt.

TOP ELEV. IS TO BE SEVEN(7) INCHES ABOVE FINISH ROADWAY GRADE

DEADEND EXISTING OVERHEAD NAVY 11KV PRIMARY AND FIRE ALARM CIRCUITS AT NEW ELECTRIC POLE. RECONNECT TO NEW UNDERGROUND PRIMARY AND FIRE ALARM CIRCUITS. SEE FOR RISER AND POLE FRAMING DETAILS (A E21)

FOR CONTINUATION SEE SHEET E-5

MATCH LINE

PARTIAL REMOVAL AND RELOCATION PLAN
SECTION "B"
SCALE: 1"=50'

APPROVED:
R. Kau
HAWAIIAN TELEPHONE CO
11/4/74
DATE

RICHARD Y. SUZUKI
REGISTERED PROFESSIONAL ENGINEER
No. 1390
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

DATE	REVISIONS
11/4/74	ADDED NAVY DUCTLINE REFERENCE ADDED HTCO APPROVAL SIGNATURES

E-3

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL REMOVAL AND RELOCATION PLAN SECTION "B"

PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(73):15

SCALE: AS SHOWN DATE: DEC. 7, 1973

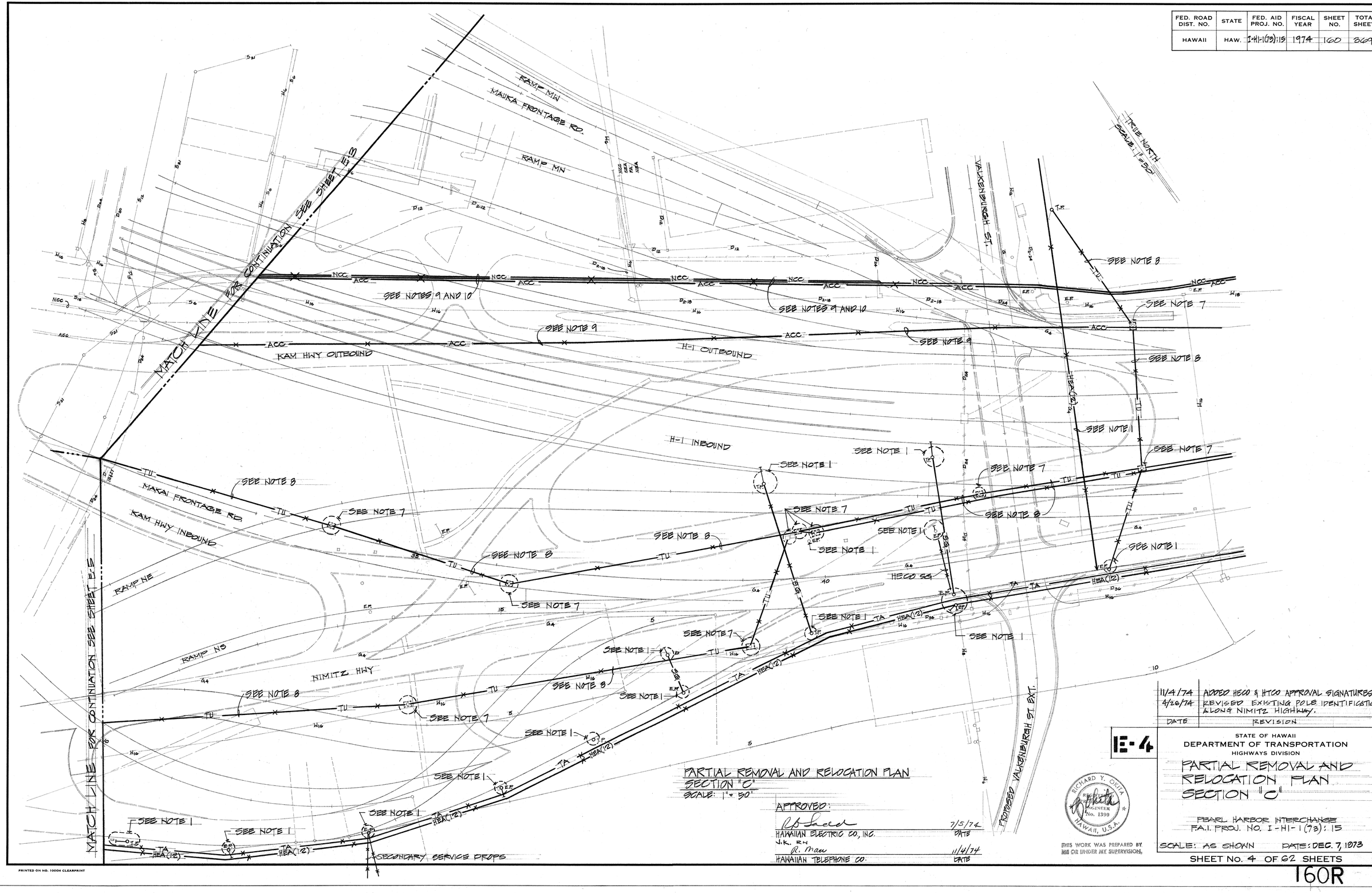
SHEET No. 3 OF 62 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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NOTE BOOK	DESIGNED BY	
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	160	369



DATE	REVISION
11/4/74	ADDED HECO & HTCO APPROVAL SIGNATURES
4/26/74	REVISED EXISTING POLE IDENTIFICATION ALONG NIMITZ HIGHWAY.

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

ORIGINAL PLAN
NOTE BOOK
No.

PRINTED ON NO. 1000H CLEARPRINT

PARTIAL REMOVAL AND RELOCATION PLAN SECTION "C"

SCALE: 1" = 50'

APPROVED:

HAWAIIAN ELECTRIC CO., INC. — 7/5/74 DATE

J.K. RH

R. Maw
HAWAIIAN TELEPHONE CO. — 11/4/74 DATE

RICHARD Y. OKITA — REGISTERED PROFESSIONAL ENGINEER No. 1390 — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

E-4

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL REMOVAL AND RELOCATION PLAN SECTION "C"

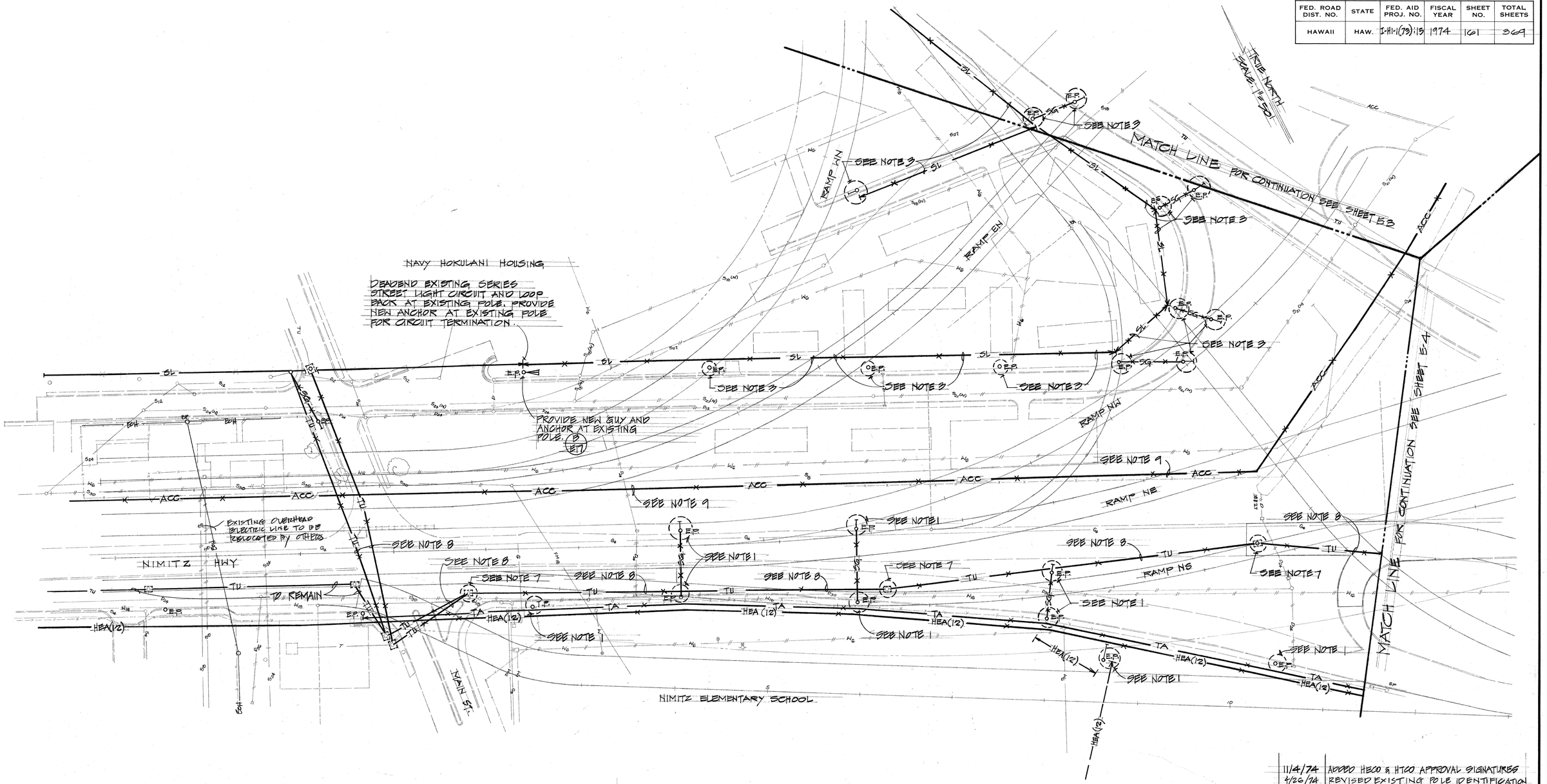
PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(73):15

SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET No. 4 OF 62 SHEETS

160R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	161	369



PARTIAL REMOVAL AND RELOCATION PLAN
SECTION "D"
SCALE: 1"=50'

DATE	REVISION
11/4/74	ADDED HECO & HTCO APPROVAL SIGNATURES
4/26/74	REVISED EXISTING POLE IDENTIFICATION ALONG NIMITZ HIGHWAY

E-5

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL REMOVAL AND RELOCATION PLAN SECTION "D"

PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(73):15

SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET NO. 5 OF 62 SHEETS

APPROVED:

HAWAIIAN ELECTRIC CO., INC. — DATE 7/5/74
J.K.I RN

HAWAIIAN TELEPHONE CO. — DATE 11/4/74
A. Man

RICHARD Y. ONTA
REGISTERED PROFESSIONAL ENGINEER
No. 1390
HAWAII, U.S.A.

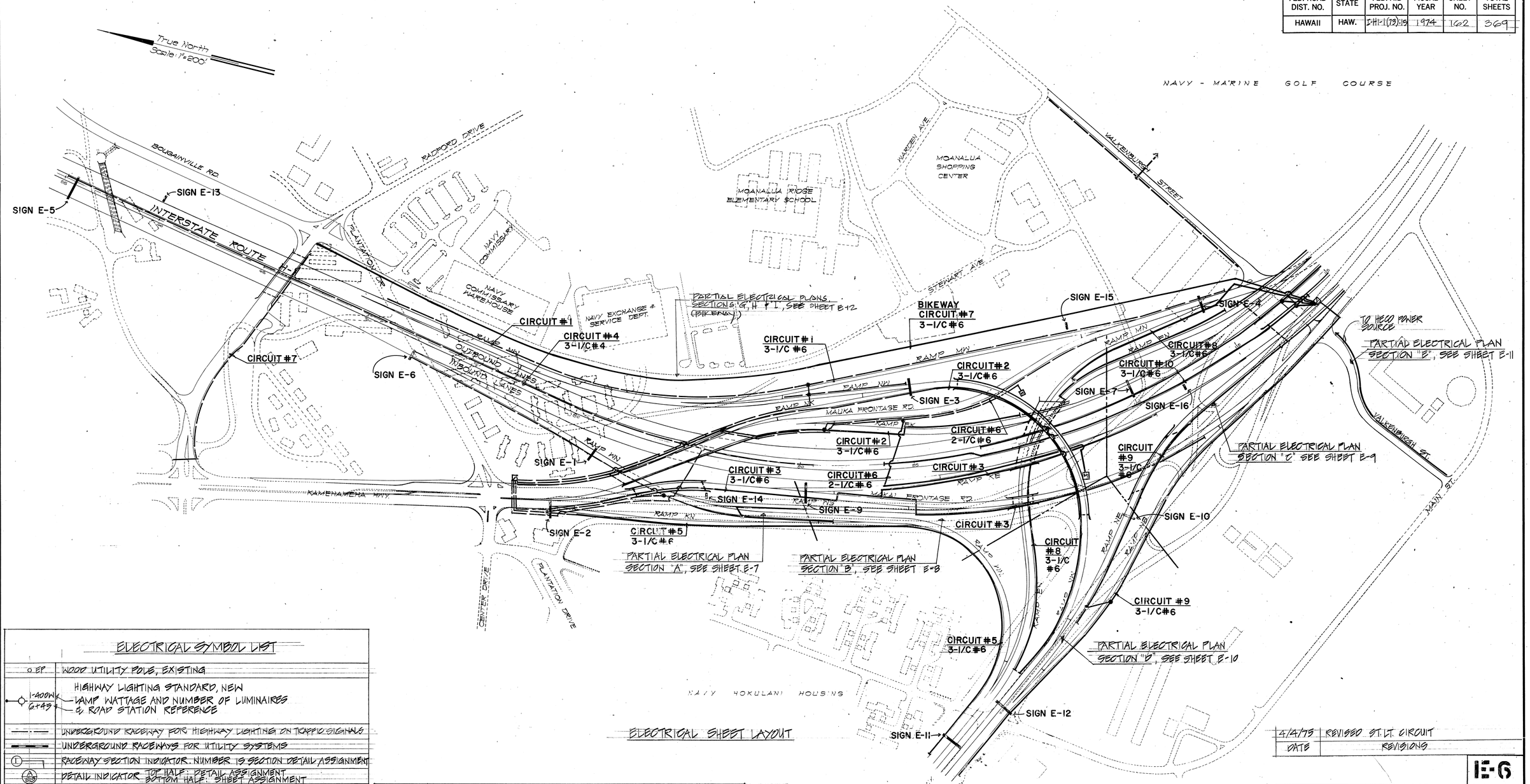
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	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
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PRINTED ON NO. 1000H CLEARPRINT

161R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	162	369



ELECTRICAL SYMBOL LIST

○ EP	WOOD UTILITY POLE, EXISTING
1-400W 6+45	HIGHWAY LIGHTING STANDARD, NEW — LAMP WATTAGE AND NUMBER OF LUMINAIRES & ROAD STATION REFERENCE
	UNDERGROUND RACEWAY FOR HIGHWAY LIGHTING OR TRAFFIC SIGNALS
	UNDERGROUND RACEWAYS FOR UTILITY SYSTEMS
(1)	RACEWAY SECTION INDICATOR. NUMBER IS SECTION DETAIL ASSIGNMENT
(A) (E-6)	DETAIL INDICATOR TOP HALF: DETAIL ASSIGNMENT BOTTOM HALF: SHEET ASSIGNMENT
○	MANHOLE, REINFORCED CONCRETE, NEW. ADDRESS, SIZE AND TYPE AS INDICATED ON PLAN.
○	MANHOLE, EXISTING. TYPE AS INDICATED ON PLAN
	HANDHOLE, REINFORCED CONCRETE, NEW. ADDRESS SIZE AND TYPE AS INDICATED ON PLAN.
	HANDHOLE EXISTING. TYPE AS INDICATED ON PLAN
M	JUNCTION BOX, CAST METAL
M	SPRINKLER CONTROLLER EQUIPMENT, NEW
C	TRAFFIC SIGNAL CONTROLLER CABINET AND EQUIPMENT
	TRAFFIC SIGNAL STANDARD WITH TRAFFIC SIGNAL HEAD
	TRAFFIC SIGNAL STANDARD WITH MAST ARM AND TRAFFIC SIGNAL HEAD
	TRAFFIC SIGNAL HEAD: RED, YELLOW AND GREEN

	TRAFFIC SIGNAL HEAD: RED, YELLOW, AND GREEN ARROW
	TRAFFIC SIGNAL HEAD: WALK, DON'T WALK
TS	UNDERGROUND TRAFFIC SIGNAL RACEWAY, EXISTING
B	HIGHWAY LIGHTING ON TRAFFIC SIGNAL PULLBOX 11"x 28", PRECAST CONCRETE, HDT STANDARD TYPE "B"
A	HIGHWAY LIGHTING OR TRAFFIC SIGNAL PULLBOX, 2'-8"x3'-0" PRECAST OR REINFORCED CONCRETE, HDT STANDARD TYPE "A"

ELECTRICAL SHEET LAYOUT

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

DD-13-2-1,2

4/4/75	REVISED ST. LT. CIRCUIT
DATE	REVISIONS

E-6

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL SHEET LAYOUT AND SYMBOL LIST

PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(73):15

SCALE: AS SHOWN DATE: DEC. 7, 1973

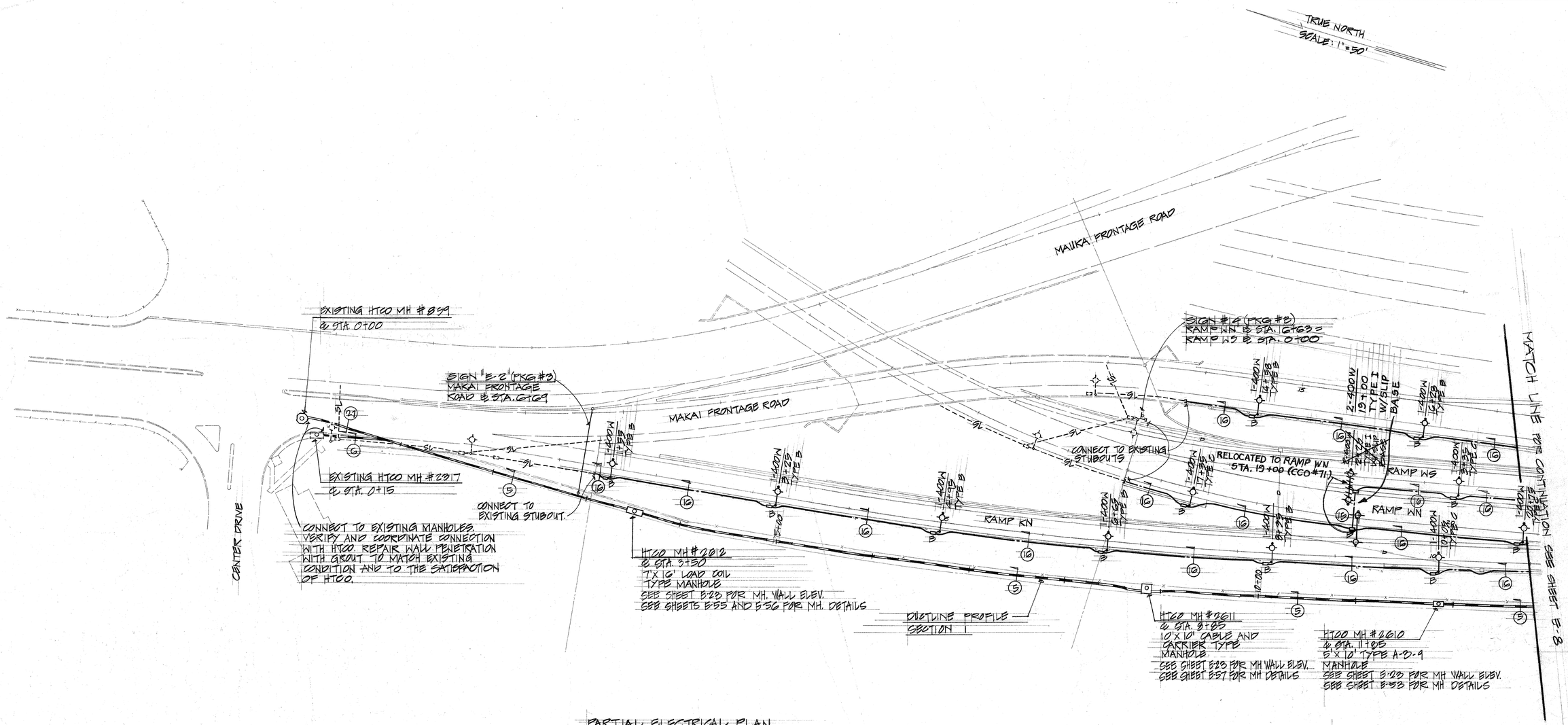
SHEET No. 6 OF 62 SHEETS

RICHARD Y. OKI — REGISTERED PROFESSIONAL ENGINEER — No. 1250 — HAWAII, U.S.A.

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C.0.162

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(78):15	1974	163	369



PARTIAL ELECTRICAL PLAN SECTION "A"

SCALE: 1" = 50'

DATE	REVISIONS
7/7/75	REVISED TO SLIP BASE ON GORE OF RAMP WS
11/4/74	ADDED HTCO DUCTLINE REFERENCE ADDED HTCO APPROVAL SIGNATURE

E-7

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL ELECTRICAL PLAN SECTION "A"

PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(78):15

SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET No. 7 OF 62 SHEETS

APPROVED:

A. Mau 11/4/74
HAWAIIAN TELEPHONE CO. DATE

RICHARD Y. OKITA REGISTERED PROFESSIONAL ENGINEER No. 1390 HAWAII, U.S.A.

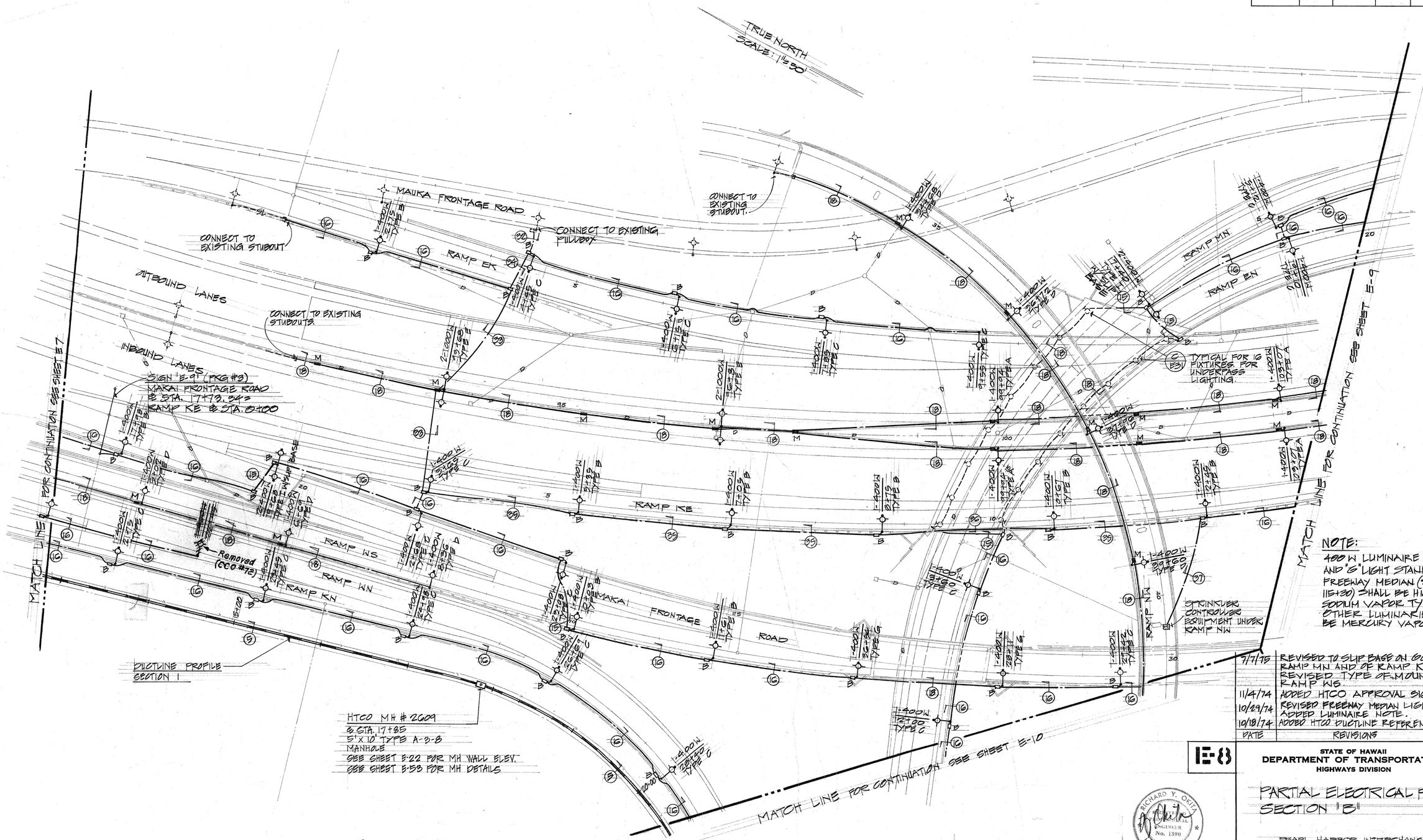
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ORIGINAL PLAN | SURVEY PLOTTED BY: | DRAWN BY: | TRACED BY: | DESIGNED BY: | QUANTITIES BY: | CHECKED BY: | DATE: | NOTE BOOK | No.

PRINTED ON NO. 1000H CLEARPRINT

C.O. 163R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	164	369



NOTE:
400 W LUMINAIRE ON TYPE "A" AND "E" LIGHT STANDARD IN FREEWAY MEDIAN (STA. 99+94 TO 115+30) SHALL BE HIGH PRESSURE SODIUM VAPOR TYPE. ALL OTHER LUMINARIES SHALL BE MERCURY VAPOR TYPE.

DATE	REVISIONS
7/7/75	REVISED TO SLIP BASE ON CORE OF RAMP MN AND OF RAMP KE. REVISED TYPE OF MOUNTING ON RAMP WS.
11/4/74	ADDED HTCO APPROVAL SIGNATURE
10/29/74	REVISED FREEWAY MEDIAN LIGHTING AND ADDED LUMINAIRE NOTE.
10/18/74	ADDED HTCO DUCTLINE REFERENCE

E-8

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL ELECTRICAL PLAN SECTION "B"

PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(73):15

SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET No. 8 OF 62 SHEETS

PARTIAL ELECTRICAL PLAN
SECTION "B"
SCALE: 1"=50'

APPROVED:

R. Man
HAWAIIAN TELEPHONE CO. 11/4/74 DATE

RICHARD Y. OKITA
REGISTERED PROFESSIONAL ENGINEER
No. 1390
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

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

PRINTED ON NO. 1000H CLEARPRINT

C.O. 164R

DDB-2-1/V

DATE	REVISIONS
10/12/76	DELETED LIGHTING IN SECTION OF FREEWAY MEDIAN RELOCATED ST. LT. STDS ON MAKAI FRONTAGE ROAD. SEE C.O. 170 5-2 FOR LOCATION. RELOCATED TRAFFIC SIGNAL CONTROLLER. SEE 120R FOR LOCATION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(79)15	1974	165	369

DATE	REVISIONS
10/18/74	REVISED DUCT SECTIONS AND ADDED DUCTLINE REFERENCE
10/29/74	REVISED FREEWAY MEDIAN LIGHTING, DUCT SECTION AND ADDED LUMINAIRE NOTE.
11/4/74	ADDED HECO & HTCO APROVAL SIGNATURES
4/4/75	REVISED RACEWAY REQUIREMENTS
7/7/75	REVISED TO SUIT BASE ON RAMP N5

NOTE:

400 W LUMINAIRE ON TYPE "A" AND "C" LIGHT STANDARD IN FREEWAY MEDIAN (STA. 99+94 TO 116+30) SHALL BE HIGH PRESSURE SODIUM VAPOR TYPE. ALL OTHER LUMINAIRES SHALL BE MERCURY VAPOR TYPE.

MATCH LINE FOR CONTINUATION SEE SHEET E-8

MATCH LINE FOR CONTINUATION SEE SHEET E-10

MATCH LINE FOR CONTINUATION SEE SHEET E-11

MATCH LINE FOR CONTINUATION SEE SHEET E-12

TRUE NORTH
SCALE: 1" = 50'

37+10 (G E31)

39+09 (G E31)

41+00 (G E31)

BIKEWAY

RIGHT OF WAY

NCC

RAMP MN

RAMP EN

RAMP NE

RAMP N5

MAKAI FRONTAGE ROAD

OUTBOUND

INBOUND

BIKEWAY & WALKWAY

N.I.C.

SEE C.O. SHT. 170 5-2

(CCO # 72)

SIGN # "E-4" (PKG. 3) MAUKA FRONTAGE ROAD @ STA. 90+66

SIGN "E-7" (PKG #3) OUTBOUND @ STA. 105+00

SIGN # E-16 (PKG #3) INBOUND @ STA. 107+00

SIGN # "E-8" (BY OTHERS) OUTBOUND STA. 116+18

1-400W 20'+80 TYPE C

1-400W 20'+80 TYPE B

1-400W 14'+15 TYPE B

1-400W 18'+85 TYPE B

1-400W 20'+20 TYPE A

1-400W 10'+70 TYPE A

1-400W 10'+38 TYPE A

1-400W 10'+95 TYPE A

1-400W 10'+62 TYPE U

1-400W 11'+67 TYPE C

1-400W 11'+28 TYPE B

1-400W 15'+30 TYPE B

1-400W 12'+80 TYPE B

1-400W 17'+30 TYPE B

1-400W 39'+80 TYPE C

1-400W 39'+35 TYPE C

1-400W 39'+35 TYPE L W/SLIP BASE

2-400W 15'+35 TYPE L W/SLIP BASE

2-400W 39'+78 TYPE L W/SLIP BASE

2-400W 41'+95 TYPE L

1-400W 112'+48 TYPE B

1-400W 115'+30 TYPE B

1-400W 10'+25 TYPE L

EXTEND CIRCUITS DOWN THROUGH PIER STRUCTURE DOWN TO PULLBOX ON GROUND LEVEL.

STUB AND CAP 2" CONDUIT FOR FUTURE EMERGENCY COMMUNICATION SYSTEM 1'-0" BEYOND END OF STRUCTURE #8 MEDIAN PARAPET

STUB AND CAP 2" HIGHWAY LIGHTING CONDUITS AND 2" FUTURE EMERGENCY COMMUNICATION CONDUIT 1'-0" BEYOND END OF STRUCTURE #8 FOR FUTURE EXTENSION BY OTHERS

STUB AND CAP 10-4" HTCO DUCTS H-1 @ STA. 115+00 16' RIGHT & HTCO DUCTLINE

DELETED (CCO # 35)

PROVIDE 1-5" HECO RISER CONDUITS AT NEW JOINT POLES

EXIST. R/W ℄

(N) A.C.G.

(N) N-16

(N) E-0

12 K.V. Neu.

CCO # 85: SEE PLAN SHT. NO. 165 5-1 FOR SIG. SPLICE PIT (FOR ARMY COMM. CABLE)

SPLICE PIT FOR ACC CABLE. SEE SHEET E-60

CONTROL OF ACCESS

RIGHT OF WAY

10' R/W ℄ & DUCTLINE (TYPICAL)

DUCTLINE PROFILE SECTION 4

DUCTLINE PROFILE SECTION 5

DUCTLINE PROFILE SECTION 6

DUCTLINE PROFILE SECTION 10

PROVIDE 2-4" HECO RISER CONDUITS AT NEW HECO POLE

HECO MH E
@ STA. 17+55
6'x11' MANHOLE
SEE SHEET E-21 FOR MH WALL ELEV.
SEE SHEET E-45 FOR MH DETAILS

HTCO MH # 2561
@ STA. 16+05
5'x10' TYPE A-3-A MANHOLE
SEE SHEET E-22 FOR MH WALL ELEV.
SEE SHEET E-55 FOR MH DETAILS

HTCO MH F
@ STA. 21+70
6'x11' MANHOLE
SEE SHEET E-21 FOR MH WALL ELEV.
SEE SHEET E-45 FOR MH DETAILS

HTCO MH # 2562
@ STA. 22+00
5'x10' TYPE A-3-A MANHOLE
SEE SHEET E-22 FOR MH WALL ELEV.
SEE SHEET E-55 FOR MH DETAILS

HTCO MH # 2568
@ STA. 24+50
10'x10' CABLE AND CARRIER TYPE MANHOLE
SEE SHEET E-22 FOR MH WALL ELEV.
SEE SHEET E-57 FOR MH DETAILS

HECO MH "G"
@ STA. 25+85
@ STA. 0+00
6'x11' MANHOLE
SEE SHEET E-20 FOR MH WALL ELEV.
SEE SHEET E-45 FOR MH DETAILS

HTCO MH # 2564
@ STA. 27+05
@ STA. 0+00
SPECIAL CORNER TYPE MANHOLE
SEE SHEET E-22 FOR MH WALL ELEV.
SEE SHEET E-58 FOR MH DETAILS

HECO MH "H"
@ STA. 28+45
6'x11' HECO MANHOLE
SEE SHEET E-21 FOR MH WALL ELEV.
SEE SHEET E-45 FOR MH DETAILS.

PARTIAL ELECTRICAL PLAN SECTION "C"

SCALE: 1" = 50'

APPROVED:

HAWAIIAN ELECTRIC CO., INC. — 7/5/74 DATE
V.P. EN

HAWAIIAN TELEPHONE CO. — 11/4/74 DATE

RICHARD Y. OKIA — REGISTERED PROFESSIONAL ENGINEER — No. 1390 — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

E-9

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL ELECTRICAL PLAN SECTION "C"

PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(79): 15

SCALE: AS SHOWN — DATE: DEC. 7, 1973

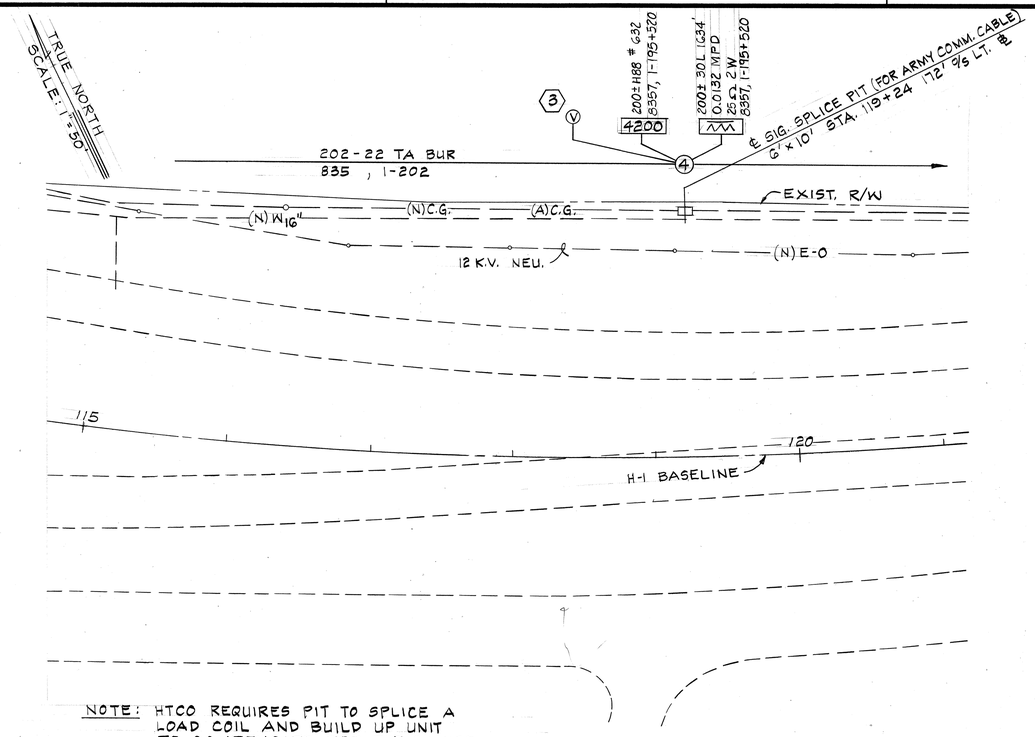
SHEET No. 9 OF 62 SHEETS

C.O. 165R

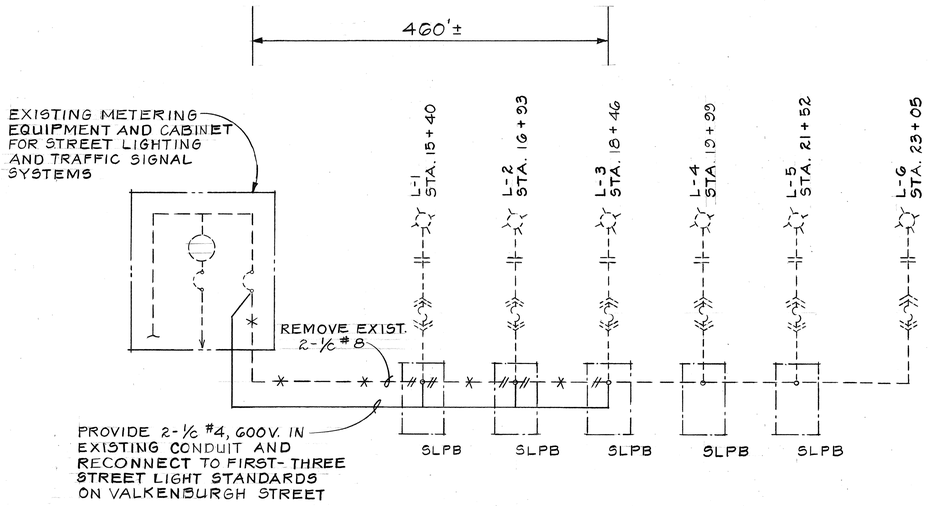
ORIGINAL PLANS	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	165 S-1	369



NOTE: HTCO REQUIRES PIT TO SPLICE A LOAD COIL AND BUILD UP UNIT TO COMPENSATE FOR THE CHANGE IN CABLE FOOTAGE ON PROJ.



CONTRACT CHANGE ORDER NO 19
PARTIAL ONE LINE DIAGRAM
STREET LIGHTING SYSTEM ON VALKENBURGH STREET

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

THIS TRACING PREPARED DURING "AS-BUILT" POSTING

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

H.T. CO. & HIGHWAY LIGHTING CHANGE ORDERS

PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(73):15

SCALE: AS SHOWN DATE: MAY 1977

SHEET No. 9A OF 62 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73)15	1974	166	369

NOTE :

1. ST. LTG STDS SIMILIAR TO TYPE I EXCEPT AS NOTED. INTERIOR LUMINAIRE 700 W MERCURY VAPOR EXTERIOR LUMINAIRE 400 W MERCURY VAPOR MOUNTING HEIGHT : 40'

TRUE NORTH
SCALE: 1"=50'

(CCO#32)
HANDHOLE DELETED, PROVIDE 4-4" RISER CONDUITS FROM DUCTBANK TO POLE #NH-9, ONLY

~~HTCO MH # 2214 4'x6' HANDHOLE PROVIDE 6-4" HTCO RISER CONDUITS FROM HANDHOLE TO EXISTING POLE NH4 SEE SHT. B-20 FOR HH WALL ELEV. SEE SHEET E-62~~

DUCTLINE PROFILE SECTION 2

~~CONNECT 4-4" HTCO DUCTS TO BOTH EXISTING MANHOLES # 2208 & 896 VERIFY AND COORDINATE CONNECTIONS WITH HTCO~~

(CCO#32)
4-4" DUCTS BETWEEN MANHOLES DELETED

HTCO MH #2607
℄ STA. 27+85
5'STA. 2+90
TYPE V-D MANHOLE
SEE SHEET B-22 FOR MH WALL ELEV.
SEE SHEET E-54 FOR MH DETAILS

PROVIDE 1-5" HECO RISER CONDUIT AT NEW HECO POLE

HTCO MH #896
PROVIDE 1-5" HECO RISER CONDUIT AT NEW HECO POLE.

HECO MH B
℄ STA. 2+05
6'X11' MANHOLE
SEE SHT. B-21 FOR MH WALL ELEV.
SEE SHEET E-49 FOR MH DETAILS

DUCTLINE PROFILE SECTION 4

HTCO MH #2008
℄ STA. 3+15

STUB AND CAP 16-4" HTCO DUCTS

DELETE SPLICE PIT (CCO#103)

HECO MH-A
℄ STA. 0+00
6'X11' MANHOLE
SEE SHT-E-21 FOR MH WALL ELEV.
SEE SHT. E-49 FOR MH DETAILS

SPLICE PIT FOR ACC CABLE SEE SHEET E-60

DELETE 2-4" DUCTS IN CONC JACKET (CCO#103)

SIGN #E-11 (PKG#3)
RAMP EN
℄ STA. 1+12

HECO MH #1
4'X6' HANDHOLE
SEE SHEET B-21 FOR HH WALL ELEV.
SEE SHEETS E-46 & E-47 FOR HANDHOLE DETAILS

DUCTLINE PROFILE SECTION 1

HTCO MH # 2608
℄ STA. 21+85
5'×10' TYPE A-3-9 MANHOLE
SEE SHT B-22 FOR MH WALL ELEV.
SEE SHT E-50 FOR MH DETAILS

MATCH LINE FOR CONTINUATION SEE SHEET B-8

DUCTLINE PROFILE SECTION 3

SIGN #E-12 (PKG#3)
RAMP NW
℄ STA. 5+75.50

DUCTLINE PROFILE SECTION 9

HECO PULLBOX
EXISTING SECONDARY ELECTRIC SERVICE DUCTS TO HTCO BLDG.

HTCO MH #887
℄ STA. 0+00

HTCO MH #2233
℄ STA. 0+08

P-7Z

P-7X

P-7Y

FENCE

SEE INSET

(CCO#103)

DUCTLINE PROFILE SECTION 8

SPLICE PIT FOR ACC CABLE. SEE SHEET E-60

CONNECT NEW HTCO DUCTS TO EXISTING HTCO MANHOLES # 2233 & 887 MANHOLE WALL AFTER INSTALLATION OF DUCTS ACCORDING TO HTCO REQUIREMENTS

HECO MH C
℄ STA. 2+10
℄ STA. 6+15
6'X11' MANHOLE
SEE SHEET E-21 FOR MH WALL ELEV.
SEE SHT. E-49 FOR MH DETAILS

10' R/W TO ℄ DUCTLINE (TYPICAL)

HTCO MH # 2560
℄ STA. 10+00
5'X10' TYPE A-3-9 MANHOLE
SEE SHT. B-22 FOR MH WALL ELEV.
SEE SHT E-50 FOR MH DETAILS

HECO MH D
℄ STA. 11+65
6'X11' MANHOLE
SEE SHT. B-21 FOR MH WALL ELEV.
SEE SHT. E-49 FOR MH DETAILS

PROVIDE 1-4" HECO RISER CONDUIT AT EACH NEW HECO POLE

SIGN #E-10" (PKG#3)
RAMP NW
℄ STA. 45+00

DUCTLINE PROFILE SECTION 7

RAMP EN
RAMP NW
RAMP NE
RAMP NS

CONTROL OF ACCESS

BIKEWAY & WALKWAY

10' R/W TO ℄ DUCTLINE

RIGHT OF WAY

MATCH LINE FOR CONTINUATION SEE SHEET B-9

PROVIDE 2-4" HECO RISER CONDUIT AT NEW HECO POLE P-7Z

32-4" HTCO

4'x6' HECO HH #1

HECO ENG PD

2-4" HECO

22-4" HTCO (31)

8-4" HTCO

BY OTHERS

EXISTING HTCO MH # 887

EXISTING HTCO MH # 2233

4-4" HTCO

12-4" HTCO

16-4" HTCO

DUCT ASSIGNMENT

PROVIDE 1-4" HECO RISER CONDUIT AT JOINT POLE P-7X

1-4" HECO

PROVIDE 1-4" HECO RISER CONDUIT AT NEW HECO POLE P-7Y

INSET "A"

PARTIAL ELECTRICAL PLAN
SECTION "D"
SCALE: 1"= 50'

DATE	REVISIONS
9/10/76	REVISED SIGN E-12 STATIONING AND ADDED PULLBOX AND NOTE.
7/7/75	REVISED TYPE OF MOUNTING ON RAMP NE
4/4/75	REVISED RACEWAY REQUIREMENTS
3/6/75	REVISED HECO DUCT SECTIONS & DELETED TRANSFORMER & SWITCHING PAD
11/4/74	REVISED DUCT SECTIONS AND ADDED DUCTLINE REFERENCE
	ADDED HECO & HTCO APPROVAL SIGNATURES

E-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL ELECTRICAL PLAN
SECTION "D"

PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(73) : 15

SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET No. 10 OF 62 SHEETS

APPROVED:

HAWAIIAN ELECTRIC CO., INC. — DATE 7/5/74
J.K. RN.

HAWAIIAN TELEPHONE CO. — DATE 11/4/74

RICHARD Y. OTA — REGISTERED ENGINEER No. 1390 — HAWAII, U.S.A.

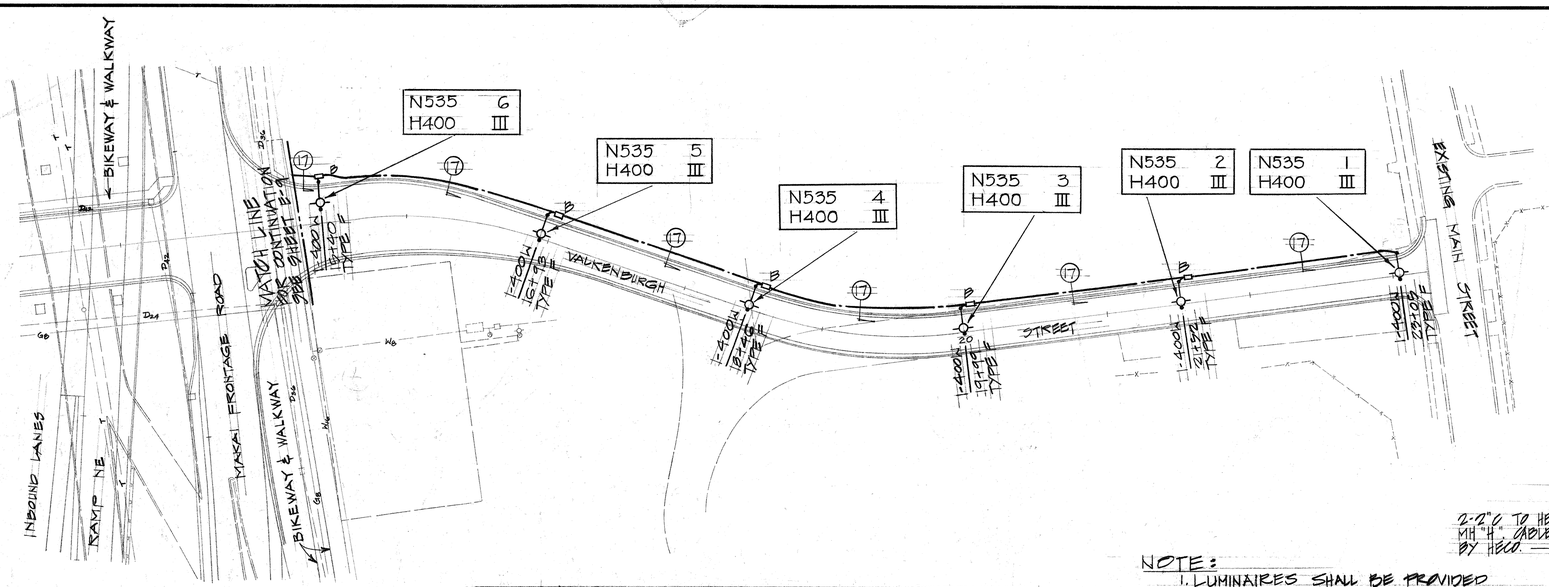
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ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

PRINTED ON NO. 100H CLEARPRINT

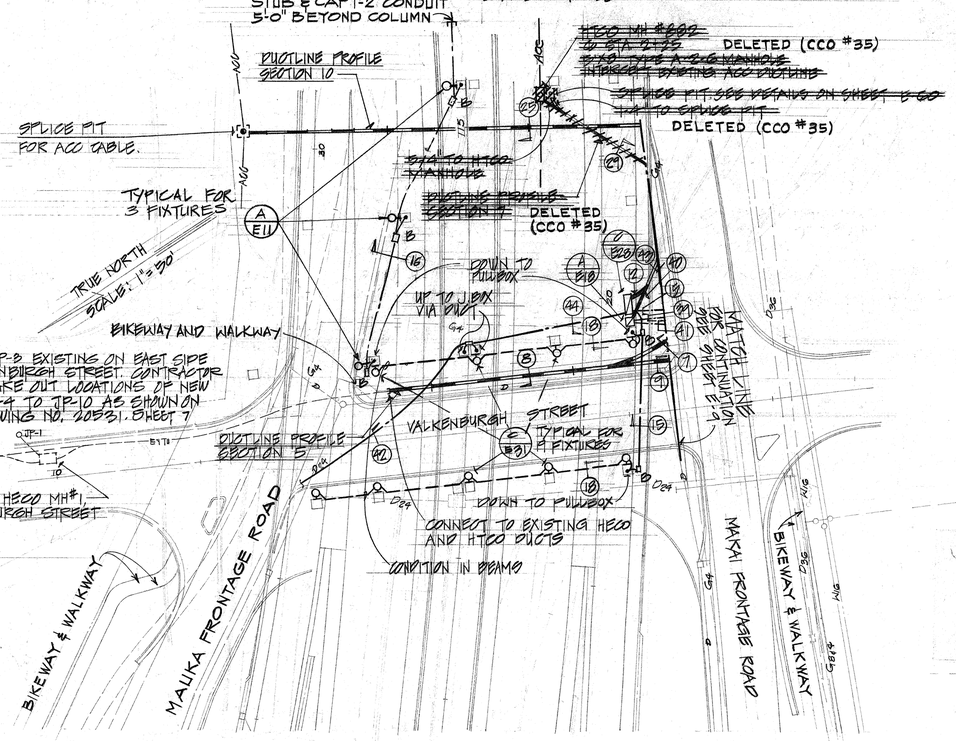
CO 166R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(78)15	1974	167	369



PARTIAL ELECTRICAL PLAN SECTION "E"

SCALE: 1"=50'

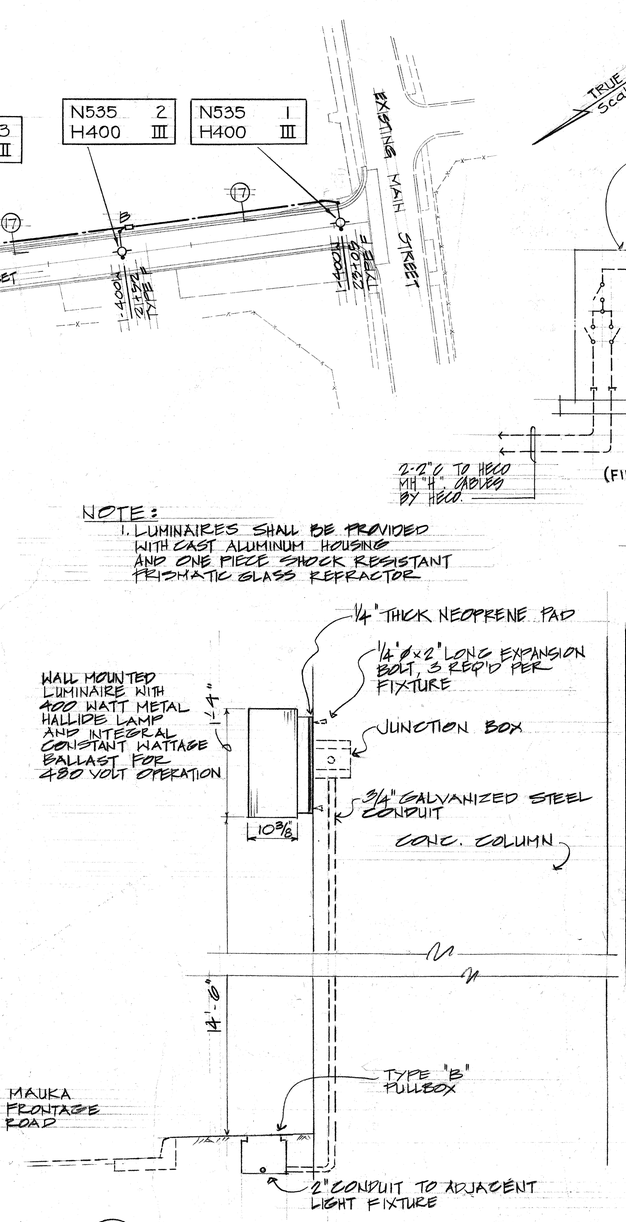


PARTIAL ELECTRICAL PLAN SECTION "F"

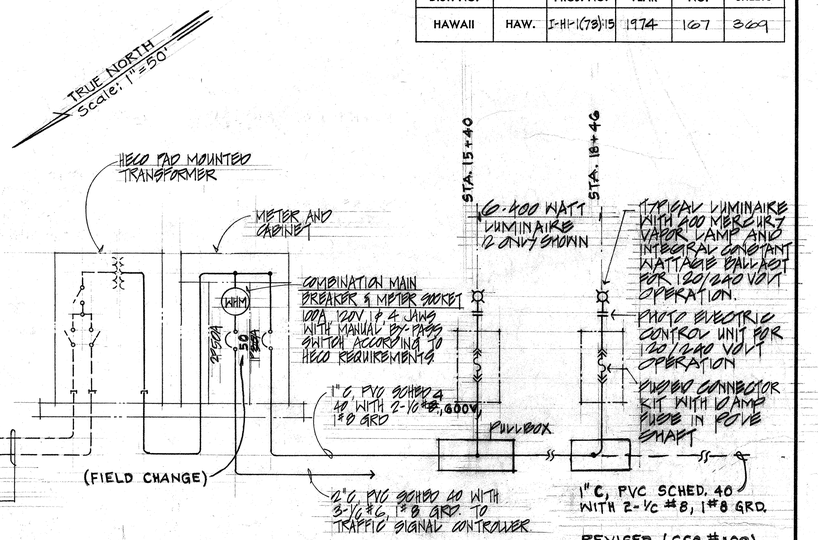
SCALE: 1"=30'

NOTE:

1. LUMINAIRES SHALL BE PROVIDED WITH CAST ALUMINUM HOUSING AND ONE PIECE SHOCK RESISTANT PRISMATIC GLASS REFRACTOR



A/E11 UNDERPASS LIGHTING ALONG MAUKA FRONTAGE ROAD

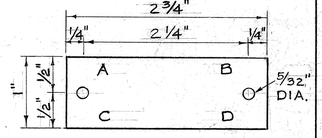


ONE LINE DIAGRAM STREET LIGHTING SYSTEM AND TRAFFIC SIGNAL SERVICE ON VALKENBURGH STREET

REVISED (CCO #109) SEE PLAN SHT. NO. 165 E-1 FOR REVISED ST. LIGHTING SYSTEM ON VALKENBURGH STREET.

LEGEND

A. Contract No.
B. Light No. (As shown on Plans)
C. Lamp Data
D. Refractor Data



NOTES:

1. Fabricate from 3-Ply laminated plastic, black-white-black.
2. Attach to pole w/self tapping cadmium plated or stainless steel screws.
3. Attach 6'-0" above curb or finished grade. Tag shall be on street side of pole.
4. Letters shall be No. 5 reduction 1/5", engraved or stenciled.

IDENTIFICATION TAG
Not to Scale

DATE	REVISION
5/2/77	ADDED IDENTIFICATION TAGS
4/4/75	ADDED TRANSFORMER & SWITCHBOARD AND REVISED ONE LINE DIAGRAM & RACEWAY REQUIREMENTS.
11/11/74	DELETED METER SOCKET FOR ST. LT. ON VALKENBURGH ST.
11/6/74	ADDED HECO & HTCO APPROVAL SIGNATURES
10/29/74	ADDED 3-400W METAL HALLIDE LAMPS ALONG MAUKA FRONTAGE ROAD AND DETAIL A/E11
10/18/74	ADDED DUCTLINE REFERENCE
4/26/74	REVISED LOCATION OF EXISTING HECO & HTCO DUCTLINE ON VALKENBURGH ST.

APPROVED:

HAWAIIAN ELECTRIC CO., INC. EDD, CED, DATE
11-6-74

N.K. RN.
R. Mau 11/4/74
HAWAIIAN TELEPHONE CO. DATE

RICHARD Y. OKITA REGISTERED PROFESSIONAL ENGINEER No. 1398 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

E-11

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL ELECTRICAL PLAN SECTION "E" & "F"

PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(78): 15

SCALE: AS SHOWN DATE: DEC. 7, 1973

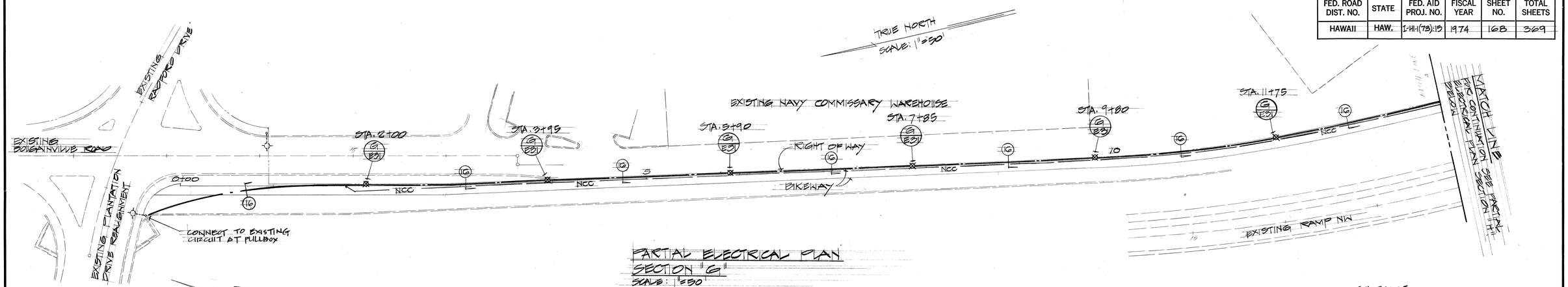
SHEET No. 11 OF 62 SHEETS

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

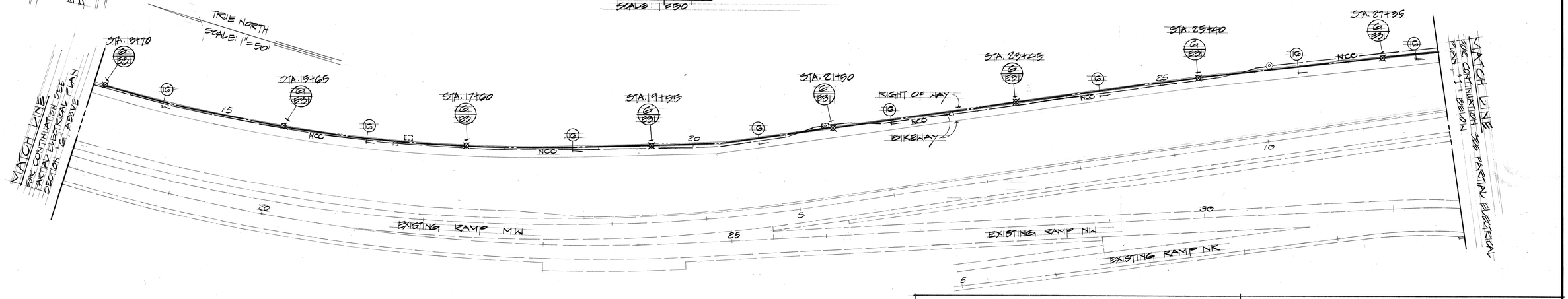
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C.O. ADD. 167

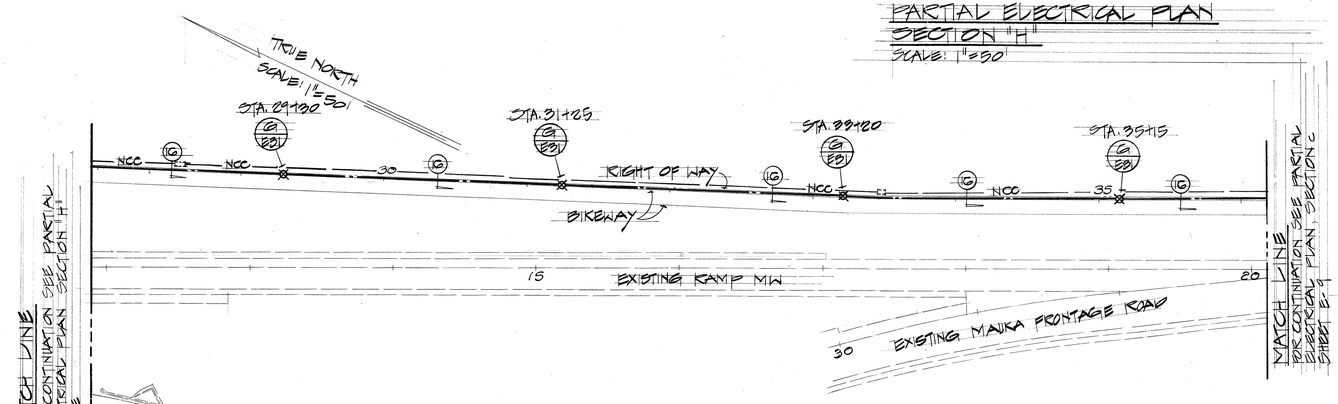
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	168	369



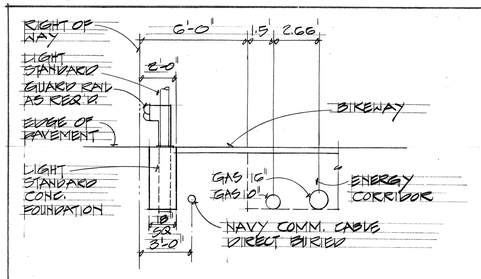
PARTIAL ELECTRICAL PLAN SECTION "G"
SCALE: 1"=50'



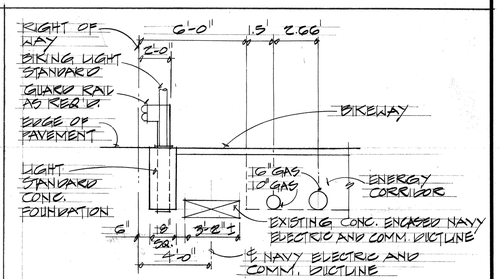
PARTIAL ELECTRICAL PLAN SECTION "H"
SCALE: 1"=50'



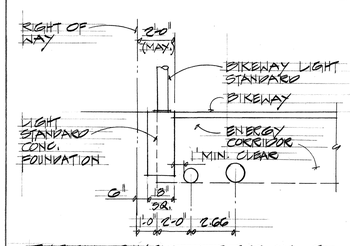
PARTIAL ELECTRICAL PLAN SECTION "I"
SCALE: 1"=50'



TYPICAL BIKEWAY SECTION - 1
SCALE: 1/4"=1'-0"



TYPICAL BIKEWAY SECTION - 2
SCALE: 1/4"=1'-0"



TYPICAL BIKEWAY SECTION - 3
SCALE: 1/4"=1'-0"

RICHARD Y. OKITA
REGISTERED PROFESSIONAL ENGINEER
No. 7390
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

E-12

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

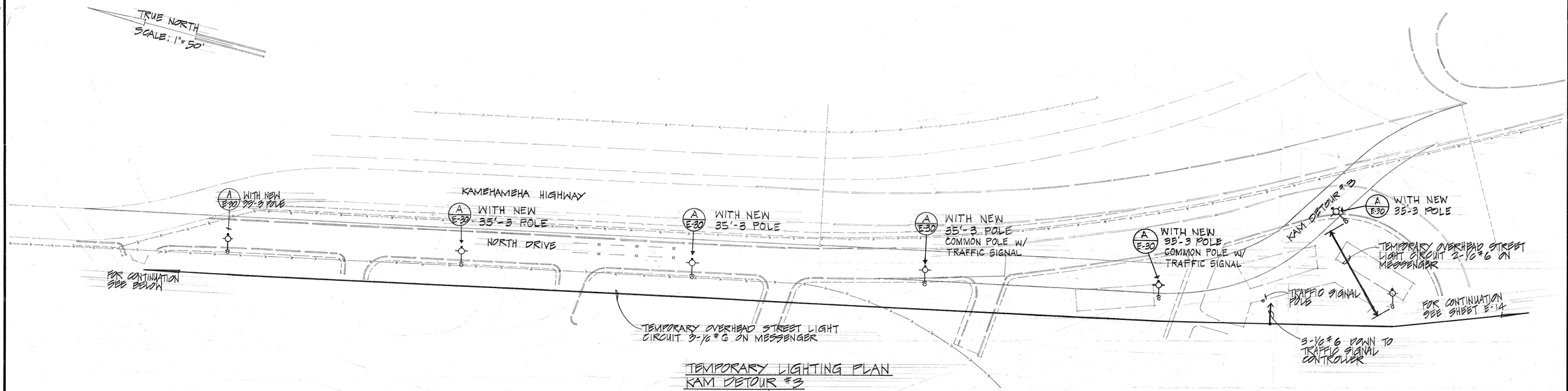
BIKEWAY LIGHTING PLAN

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(73):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET No. 12 OF 60 SHEETS

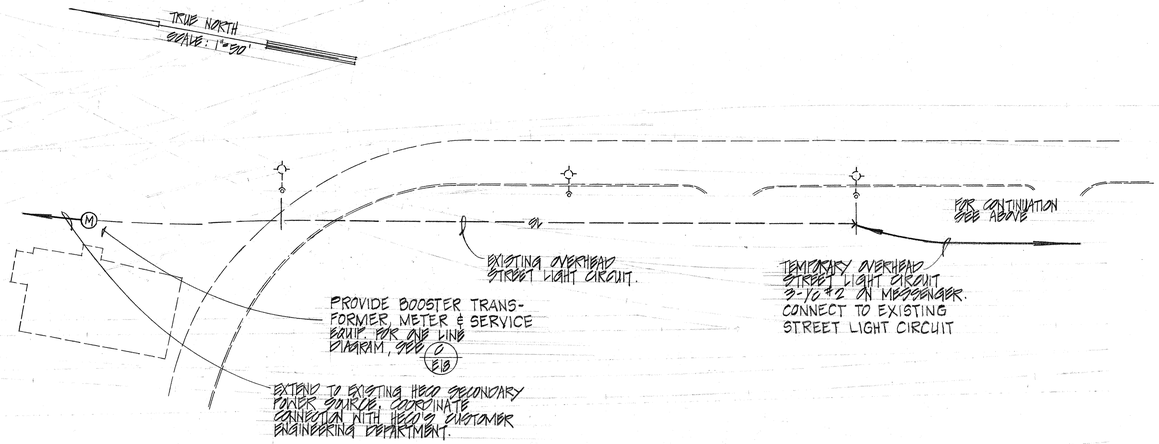
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NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-(19):15	1974	169	369



TEMPORARY LIGHTING PLAN
KAM DETOUR #3
SCALE: 1" = 50'

SCHEDULE OF DRY TYPE TRANSFORMERS FOR SIGN LIGHTING SYSTEM									
SIGN	LAMPS 96"	LAMPS 72"	LAMPS 48"	KVA	PHASE	PRI VOLT	SEC. VOLT	TAPS	FUSE SIZE
E-2	1	3	2	3	1	480 V	120/240V	2-5%	8A
E-3	-	3	1	3					8A
E-4	3	3	-	5					15A
E-7	4	3	1	5					15A
E-9	2	1	1	3					8A
E-10	-	2	1	2					6A
E-11	4	2	-	5					15A
E-12	4	2	2	5					15A
E-14	2	-	-	1.5					4A
E-15	-	2	-	1					3A
E-16	1	-	-	1					3A



DATE	REVISION
4/4/73	REVISED ST. LT. CIRCUITING
4/26/74	REVISED NOTES PER HECO SERVICE FOR TEMPO. LIGHTS.

E-13

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETOUR ROAD LIGHTING PLAN

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(19):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

RICHARD Y. OKADA
REGISTERED ENGINEER
No. 1390
HAWAII, U.S.A.

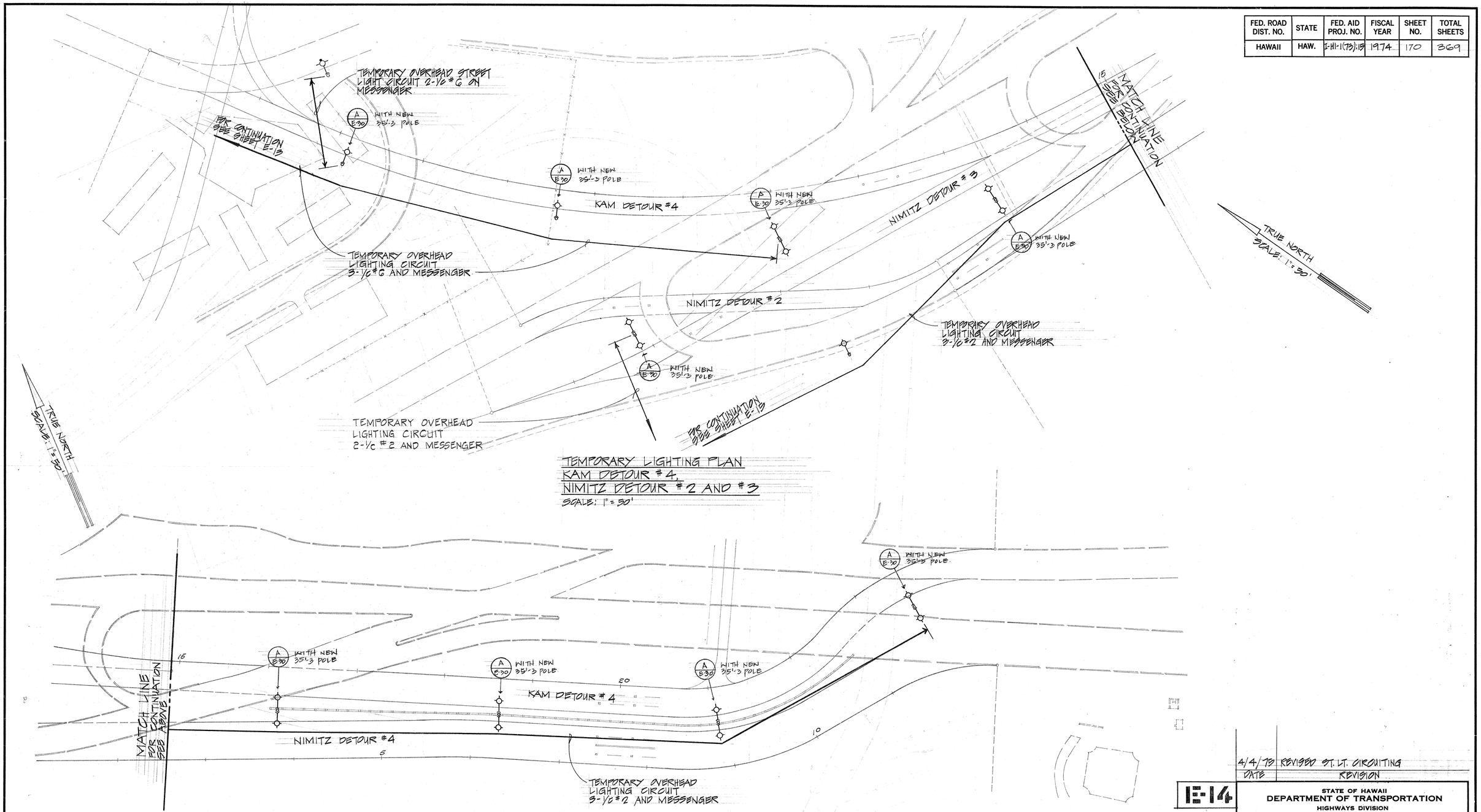
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SHEET No. 13 OF 60 SHEETS

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

C.O.169R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	170	369



TEMPORARY LIGHTING PLAN
KAM DETOUR #4,
NIMITZ DETOUR #2 AND #3
SCALE: 1" = 50'

TEMPORARY LIGHTING PLAN
KAM DETOUR #4
NIMITZ DETOUR #4
SCALE: 1" = 50"

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

4/4/73 REVISED ST. LT. CIRCUITING
DATE REVISION

E-14

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETOUR ROAD LIGHTING PLAN

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(73):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

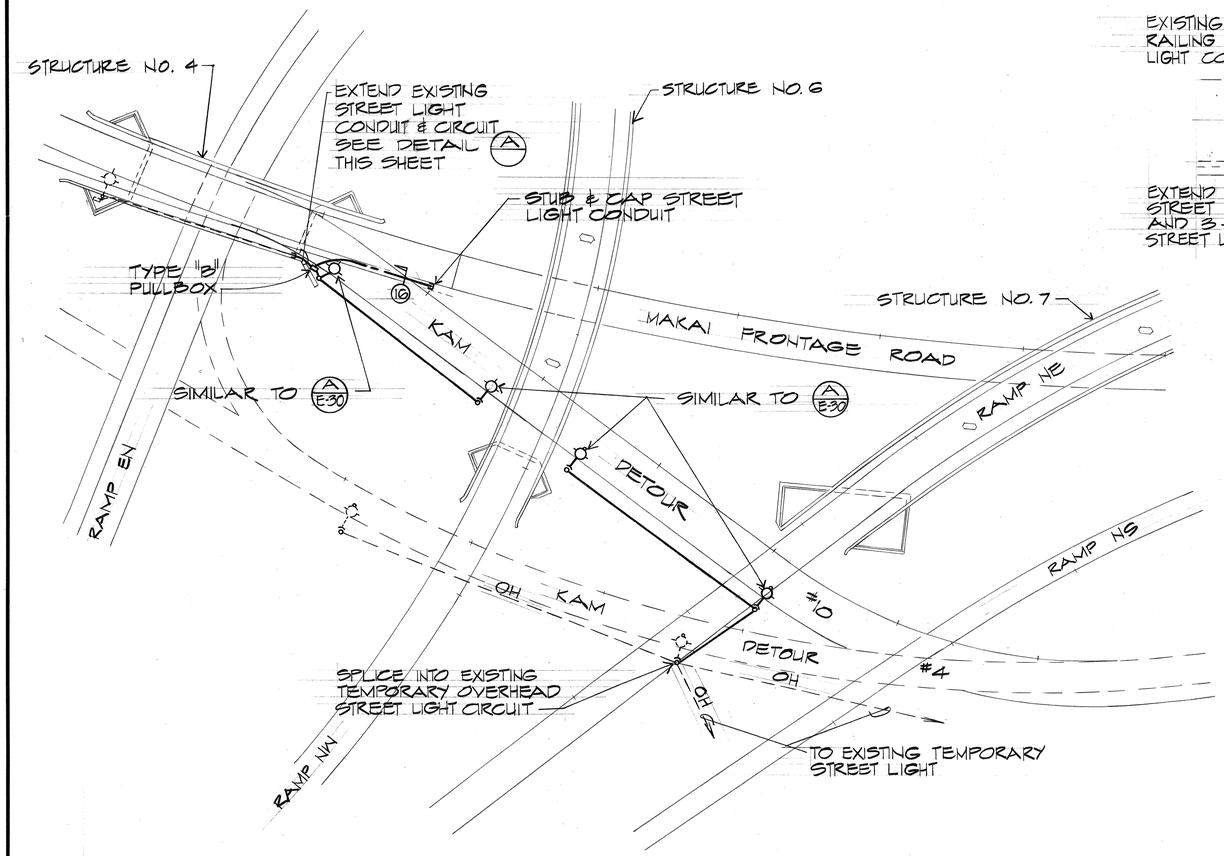
RICHARD Y. OKI
REGISTERED PROFESSIONAL ENGINEER No. 1390
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

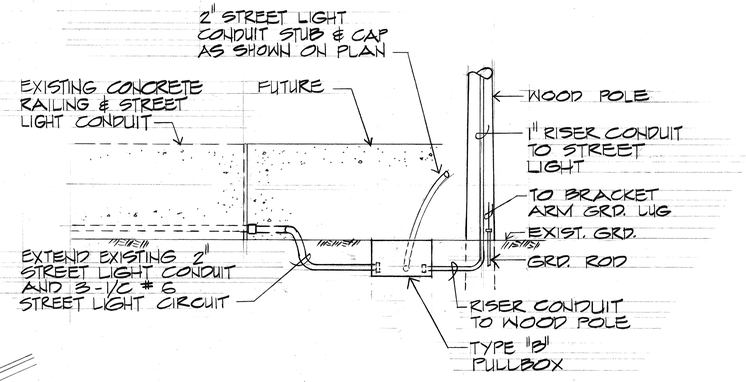
SHEET No. 14 OF 62 SHEETS

C.O.170

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73)15	1974	170 S-1	369



TEMPORARY LIGHTING PLAN
KAM DETOUR #10
SCALE: 1"=50'



STREET LIGHT CONDUIT EXTENSION DETAIL A
NO TO SCALE

LEGENDS:

- 400W MERCURY VAPOR LAMP W/INTEGRAL CONSTANT WATTAGE BALLAST FOR 240/480V OPERATION, MOUNTED ON 35'-3" WOOD POLE.
- 400W MERCURY VAPOR LAMP W/INTEGRAL CONSTANT WATTAGE BALLAST AND PHOTO ELECTRIC CELL FOR 120/240V OPERATION MOUNTED ON 35'-3" WOOD POLE.
- EXISTING STREET LIGHT STANDARD
- EXISTING TEMPORARY STREET LIGHT MOUNTED ON WOOD POLE.
- OH — EXISTING TEMPORARY OVERHEAD STREET LIGHT CIRCUIT UNLESS NOTED OTHERWISE.
- TEMPORARY OVERHEAD STREET LIGHT CIRCUIT 2-1/C #6 AND MESSENGER.

NOTE:

LIGHTING MAST ARMS AND LUMINAIRES SHALL BE THE ORIGINAL EQUIPMENT OBTAINED UNDER THE BASIC CONTRACT.

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

CLARENCE W. Y. CHING
REGISTERED PROFESSIONAL ENGINEER
No. 1002
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETOUR ROAD LIGHTING PLAN

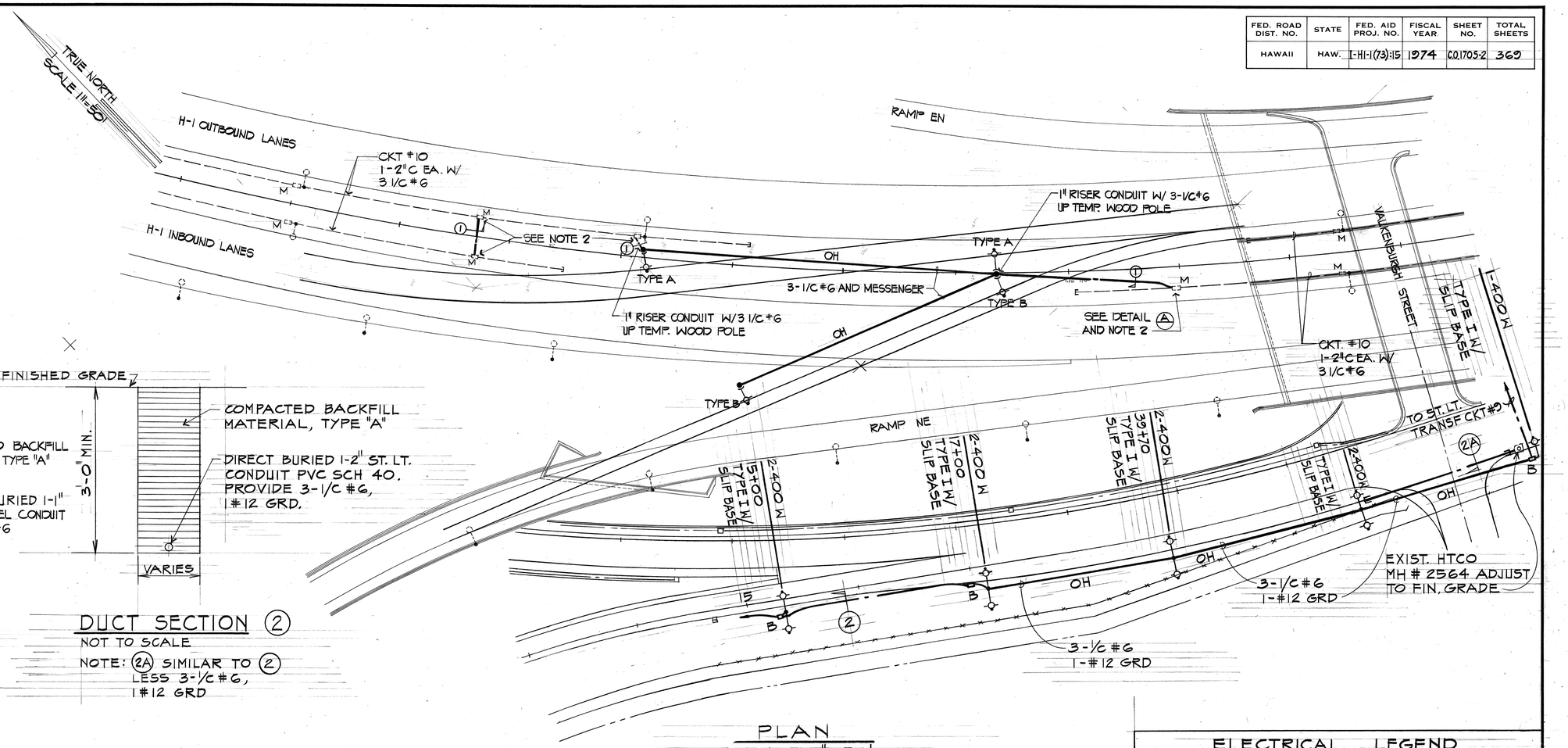
PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(73):15

SCALE: AS SHOWN DATE: MAY 10 1976

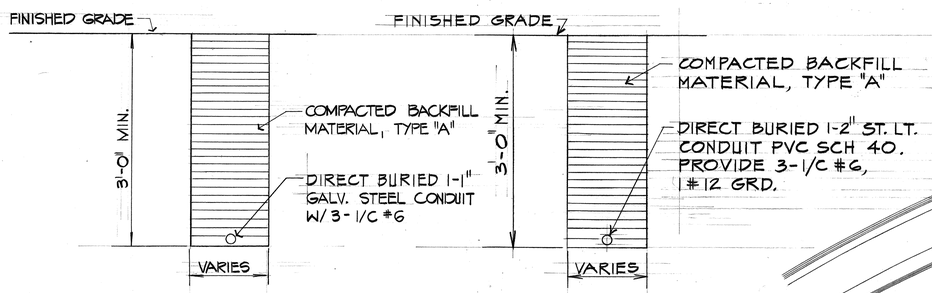
SHEET No. OF SHEETS

C.O. 170 S-1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	C0.1705-2	369

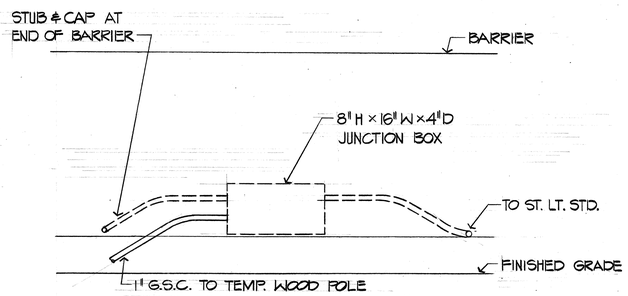


PLAN
SCALE: 1" = 50'



DUCT SECTION (1)
NOT TO SCALE

DUCT SECTION (2)
NOT TO SCALE
NOTE: (2A) SIMILAR TO (2) LESS 3-I/C #6, 1#12 GRD



DETAIL (A)
NOT TO SCALE

NOTES:

1. TEMP. ST. LT. STD. SIMILAR TO DETAIL (A) E-30 LESS PHOTO ELECTRIC CONTROL AND AS NOTED BELOW.
   TYPE A
   400 W HIGH PRESSURE SODIUM VAPOR LUMINAIRE: MH = 45'
   IES TYPE MC III
   TYPE B
   400 W MERCURY VAPOR LUMINAIRE: MH 35'
   IES TYPE MS II
2. SPLICE 3-I/C #6 INTO CKT. #10 3-I/C #6 AT JUNCTION BOX

ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
	ST. LT. STD.
	TEMP. ST. LT. STD. MOUNTED ON WOOD POLE
M	JUNCTION BOX
	ST. LT. CONDUIT SYSTEM, BY OTHERS
	ST. LT. CONDUIT SYSTEM
OH	TEMP. OVERHEAD ST. LT. CKT.
	ST. LT. PULL BOX
	ST. LT. STD
2	DUCT SECTION INDICATOR
	STUB OUT 5' BEYOND CURVE CAP & MARK

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

H-1 INBOUND AND R-NE DETOURS TEMPORARY LIGHTING PLAN

PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1 (73):15

SCALE: AS SHOWN DATE: OCT. 12, 1976

SHEET NO. OF SHEETS

CLARENCE W. Y. CHING
REGISTERED PROFESSIONAL ENGINEER
No. 1002
HAWAII, U.S.A.

C. Ching

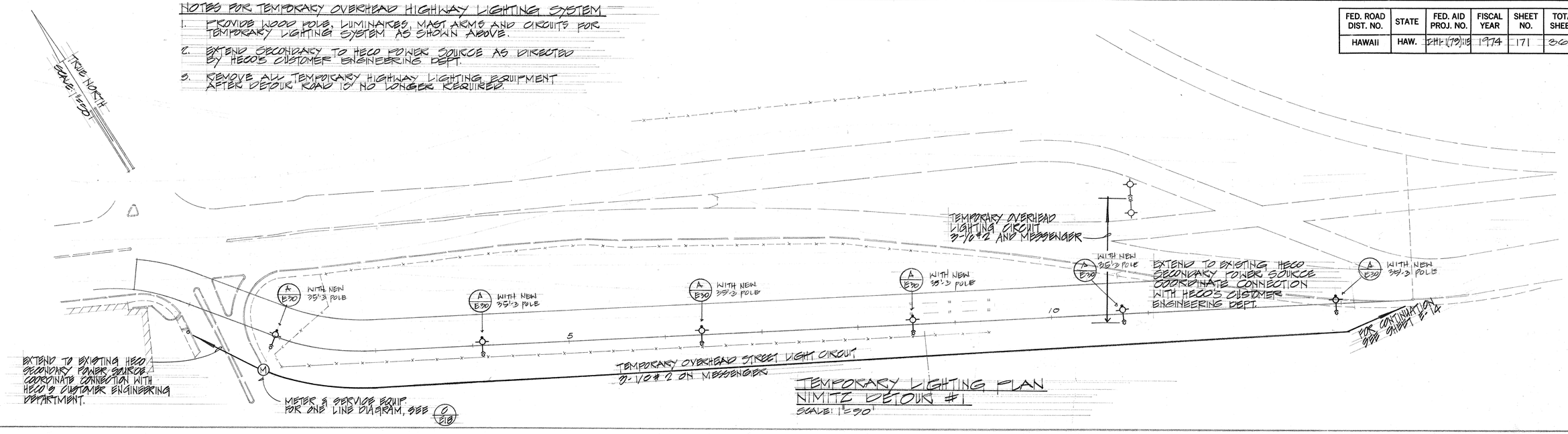
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C.O. 170 S-2

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73)15	1974	171	369

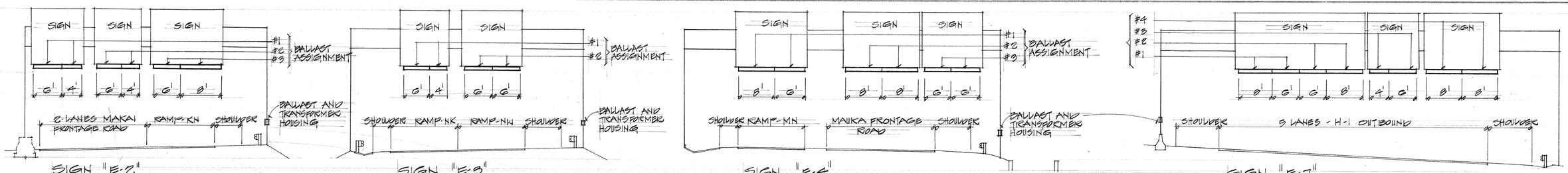
NOTES FOR TEMPORARY OVERHEAD HIGHWAY LIGHTING SYSTEM

1. PROVIDE WOOD POLE, LUMINAIRES, MAST ARMS AND CIRCUITS FOR TEMPORARY LIGHTING SYSTEM AS SHOWN ABOVE.
2. EXTEND SECONDARY TO HECO POWER SOURCE AS DIRECTED BY HECO'S CUSTOMER ENGINEERING DEPT.
3. REMOVE ALL TEMPORARY HIGHWAY LIGHTING EQUIPMENT AFTER DETOUR ROAD IS NO LONGER REQUIRED.



TEMPORARY LIGHTING PLAN NIMITZ DETOUR #1

SCALE: 1"=50'

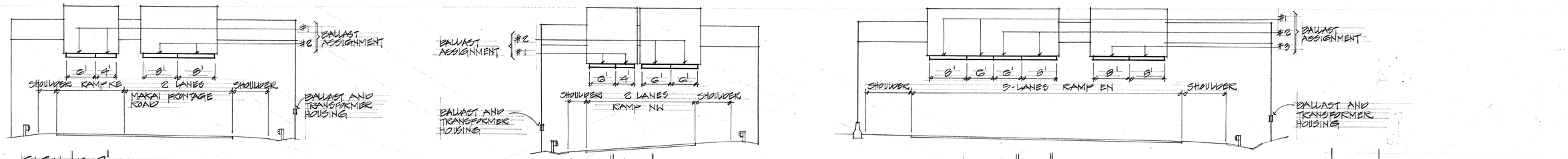


SIGN "E-2" MAKAI FRONTAGE ROAD @ STA. 6+69

SIGN "E-3" RAMP NW @ STA. 31+12

SIGN "E-4" MAUKA FRONTAGE ROAD @ STA. 36+66

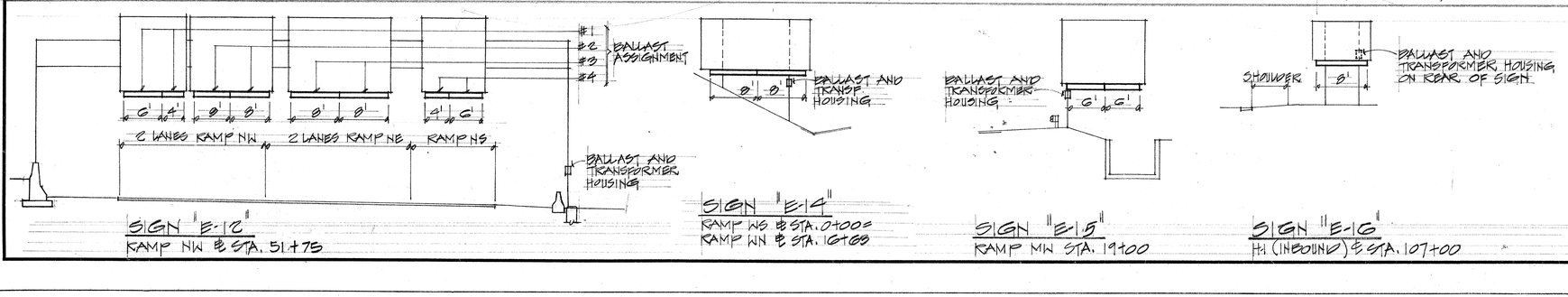
SIGN "E-7" H-1 OUTBOUND @ STA. 105+00



SIGN "E-9" MAKAI FRONTAGE RD. @ STA. 17+73.34 = RAMP KE @ STA. 0+00

SIGN "E-10" RAMP NW @ STA. 43+00

SIGN "E-11" SIGN EN @ STA. 1+12



SIGN "E-12" RAMP NW @ STA. 51+75

SIGN "E-14" RAMP WS @ STA. 0+00 = RAMP WN @ STA. 1+68

SIGN "E-15" RAMP MN STA. 19+00

SIGN "E-16" H-1 (INBOUND) @ STA. 107+00

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

RICHARD Y. OKITA REGISTERED PROFESSIONAL ENGINEER No. 1388 HAWAII, U.S.A.

DATE	REVISION
9/10/76	REVISED SIGN E-12 LOCATION
4/4/79	REVISED ST. LT. CIRCUITING
4/26/74	REVISED NOTES FOR HECO SERVICE FOR TEMPO. LIGHTS.

E-15

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETOUR ROAD LIGHTING PLAN AND SIGN

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(73):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET NO. 15 OF 60 SHEETS

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

C.0171R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(79)115	1974	172	369

DELETE

TRAFFIC DETECTOR LOOPS SEE (B E33)

EXISTING TRAFFIC SIGNAL PULLBOX

EDGE OF VIADUCT STRUCTURE

1#6, 2 1/C #8 TO HECO SECONDARY POWER SOURCE. VERIFY LOCATION WITH HECO. INSTALL COMBINATION METER SOCKET AND MAIN BREAKER ON POLE

TYPE A TRAFFIC SIGNAL PULLBOX

TRAFFIC SIGNAL CONTROLLER

PUSH BUTTON STATION MTD ON PIPE STAND

PROVIDE 1-2" CONDUIT FROM EXISTING PULLBOX TO NEW TRAFFIC SIGNAL STANDARD AND TRAFFIC SIGNAL CONTROLLER

TRAFFIC SIGNAL STD WITH MAST ARM AND PUSH BUTTON STATION

VALKENBURG STREET

INSTALL TRAFFIC SIGNAL CABLES IN EXISTING 2" CONDUITS

PROVIDE 1-2" CONDUIT FROM EXISTING PULLBOX TO NEW TRAFFIC SIGNAL STANDARD

TRAFFIC SIGNAL STD. WITH PUSH BUTTON STATION

TRAFFIC DETECTOR LOOPS SEE (B E33)

TRAFFIC DETOUR LOOPS SEE (B E33)

TRAFFIC SIGNAL STANDARD

PROVIDE 1-2" CONDUIT FROM EXISTING PULLBOX TO NEW TRAFFIC SIGNAL STANDARD AND TRAFFIC DETECTOR LOOPS

TRAFFIC SIGNAL STD WITH MAST ARM.

PUSH BUTTON STATION MOUNTED ON PIPE STAND

TYPE B TRAFFIC SIGNAL PULLBOX

MAUKA FRONTAGE ROAD

TS

25'

15'

120'

20'

19

21

99

(A) TRAFFIC SIGNAL SYSTEM (E-16)

MAUKA FRONTAGE ROAD/MAKAI FRONTAGE ROAD

AT

VALKENBURG STREET

SCALE: 1"=20'

EDGE OF VIADUCT STRUCTURE

(A E-18) SEE ONE LINE DIAGRAM ON SHEET E-11

2C, 3-1/0 #6, 1 #8 GRD

TYPE 'B' TRAFFIC SIGNAL PULLBOX

TRAFFIC SIGNAL CONTROLLER

TYPE A TRAFFIC SIGNAL PULLBOX

TRAFFIC SIGNAL STANDARD

TRAFFIC SIGNAL STD WITH PUSH BUTTON STATION

TRAFFIC SIGNAL STD

TRAFFIC DETECTOR LOOPS SEE (B E33)

TRAFFIC DETECTOR LOOPS SEE (B E33)

TRAFFIC SIGNAL STANDARD WITH MASTARM AND PUSH BUTTON STATION

TYPE 'B' TRAFFIC SIGNAL PULLBOX

TYPE 'B' TRAFFIC SIGNAL PULLBOX

25'

20'

100'

TRAFFIC DETECTOR LOOPS. SEE (B E33)

TYPE "B" TRAFFIC SIGNAL PULLBOX

STUB AND CAP 2" CONDUIT 1'-0" BEYOND EDGE OF CONC. GUTTER FOR FUTURE TRAFFIC DETECTOR LOOPS

TYPE "B" TRAFFIC SIGNAL PULLBOX. PROVIDE 1-2" PVC SCHEDULE 40 RISER CONDUIT FROM PULLBOX TO 1'-0" BELOW TRAFFIC SIGNAL CABLE LEVEL ON POLE.

TRAFFIC DETECTOR LOOPS. SEE (B E33)

TRAFFIC SIGNAL CABLE AND MESSENGER

TRAFFIC SIGNAL HEADS SUPPORTED ON MESSENGER CABLE

TRAFFIC DETECTOR LOOPS. SEE (B E33)

NEW 35'-3 POLE

STOP LINE

K-EW DETOUR

TYPE "B" TRAFFIC SIGNAL PULLBOX. PROVIDE 1-2" PVC SCHEDULE 40 RISER CONDUIT FROM PULLBOX TO 1'-0" BELOW TRAFFIC SIGNAL CABLE LEVEL ON POLE.

TRUE NORTH

SCALE: 1"=50'

250'

19'

TS

160'

NEW 35'-3 POLE. COMMON WITH STREET LIGHTING POLE.

TRAFFIC SIGNAL CABLE AND MESSENGER

NEW 35'-3 POLE

KAM DETOUR #4

TRAFFIC SIGNAL CONTROLLER

TYPE "B" TRAFFIC SIGNAL PULLBOX. PROVIDE 3-2" RISER CONDUITS FROM PULLBOXES TO 1'-0" BELOW TRAFFIC SIGNAL CABLE LEVEL ON POLE AND PROVIDE 3-2" CONDUITS FROM TRAFFIC SIGNAL PULLBOX TO TRAFFIC SIGNAL CONTROLLER.

PHASE DIAGRAM

PHASE II - DETOUR SIGNALIZED INTERSECTION

SCALE: 1"=50'

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

DATE	REVISION
10/12/76	DELETE TRAFFIC SIGNAL SYSTEM DETAIL (A E-16)
5/1/75	REVISED STRIPING, TRAFFIC SIGNAL SYSTEM & WHEEL CHAIR RAMP
4/4/75	ADDED TRANSFORMER PAD.
4/26/74	INDICATE ARM LENGTH DIMENSION

RICHARD Y. OKA REGISTERED PROFESSIONAL ENGINEER No. 4390 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

E-16

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL PLANS

PEARL HARBOR INTERCHANGE

F.A.I. PROJECT NO. I-HI-1(79)115

SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET NO. 16 OF 60 SHEETS

C.O. 172R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1-(79)-15	1974	173	369

SAG CLEARANCE ABOVE GRADE & CONDUCTORS SHALL BE FILLED UP TO MAINTAIN MINIMUM CLEARANCE AS REQUIRED IN GOVERNMENT ORDER NO. 5183, STATE OF HAWAII

LEVEL ASSIGNMENT NUMBER

D SECONDARY LEVEL (CENTER INSULATOR)
E STREET LIGHTING
F COMMUNICATION LEVEL
POLE RINGS
FIN. GRADE
3'-0" SETTING DEPTH
35'-0" POLE

SAG CLEARANCE ABOVE GRADE AND CONDUCTORS SHALL BE FILLED UP TO MAINTAIN MINIMUM CLEARANCE AS REQUIRED IN GOVERNMENT ORDER NO. 5183, STATE OF HAWAII

A PRIMARY LEVEL
B PRIMARY BUCK LEVEL
C TRANSFORMER MTG. LEVEL
D SECONDARY LEVEL (CENTER INSULATOR)
E FIRE ALARM
F COMMUNICATION LEVEL
POLE RINGS
3'-6" SETTING DEPTH
43'-0" (WITH PRIMARY BUCK LEVEL)
40'-0" (WITHOUT PRIMARY BUCK LEVEL)
40'-0" & 43'-0" POLE

NOTES:
DASH LINES INDICATE PRIMARY LEVEL ON 40'-0" POLE

A E17 POLE LEVEL ASSIGNMENT

DETAIL "B-1" B1 E17
DETAIL "B-4" B4 E17
DETAIL "B-3" B3 E17
2'-0"
2'-8"
DETAIL "B-2" B2 E17
FINISH GRADE
6'-9"
5'-0"
DETAIL "B-5" B5 E17

B1 E17 DETAIL "B-1"
PRIMARY CROSSARM
B2 E17 DETAIL "B-2"
FINISH GRADE
B3 E17 DETAIL "B-3"
B4 E17 DETAIL "B-4"
ANCHOR ROD TO BE IN LINE WITH GUY
UNDISTURBED EARTH
FINISH GRADE
UNDISTURBED EARTH
BACKFILL WITH EXCAVATED EARTH & AVAILABLE ROCK TAMP SOLID
FILL WITH SOIL & ANCHOR SLUG ABOVE DEADMAN
18" CONCRETE ANCHOR SLUG
4" X 4" GALV. SQ. WASHER
4'-8"
B5 E17 DETAIL "B-5"

B E17 TYPICAL ANCHOR AND GUYING DETAILS
NOT TO SCALE

INSULATOR
CROSSARM
STEEL PIN
WASHER & NUT
BONDING WIRE AND MOLDING

C E17 TYPICAL POST TYPE INSULATOR WITH STEEL PIN
NOT TO SCALE

PLAN
ELEVATION

D E17 FIRE ALARM-DEADEND CONSTRICTION
NOT TO SCALE

DIRECTION OF TRAFFIC
PREFERRED QUADRANT
POLE
GROUND ROD
GROUND WIRE & WOOD MOULDING
PLAN

GROUND WIRE & WOOD MOULDING
POLE
FIN. GRADE
GROUND ROD CLAMP
GROUND ROD
12" MIN.
SECTION

NOTES:
1. PROVIDE AT EACH NEW POLE AND WHERE SHOWN ON PLANS.

E E17 GROUNDING DETAIL
NOT TO SCALE

MATERIAL LIST - OVERHEAD AND UNDERGROUND SYSTEMS

ITEM	POLE & ANCHOR GROUP - SEE SPECIFICATIONS
1	ANCHOR SLUG, CONCRETE, 18" DIAMETER
2	ANCHOR ROD, 1" ϕ x 8'-0", TRIPLE EYE WITH WASHER AND NUT
3	GUY STRAND, 3/8" DIAMETER
4	GUY GUARD, 8'-0" STEEL
5	GUY EYE BOLT, 5/8" DIAMETER
6	GUY POLE ATTACHMENTS
7	POLE, CREOSOTE, ANSI CLASS 3
8	POLE STEPS, GALVANIZED, STEEL
9	PREFORMED STRAND GRIPS
10	STRAIN INSULATOR, 20,000#
11	EYE NUT, 5/8" DIA. BOLT HOLE

ITEM	POLE FRAMING GROUP - SEE SPECIFICATIONS
12	BONDING WIRE, #6 SDBC AND STAPLES
13	CROSSARM BRACE BOLT, CARRIAGE, 3/8" DIA., WASHERS AND NUT
14	CROSSARM BOLT, 5/8" DIA. WASHERS & NUT
15	CROSSARM BRACE, 1/4" x 1 1/2" x 30" (5'-7" ARM) 1/4" x 1 1/2" x 34" (8'-0" ARM)
16	DOUBLE ARMING BOLTS, 5/8" DIA. WASHERS & NUTS
17	CROSSARM 3 1/4" x 4 1/2" x 5'-7" 3 1/4" x 4 1/2" x 8'-0"
18	GROUND WIRE, #4 SDBC AND STAPLES
19	LAG SCREW, 1/2" DIAMETER
20	SIGN, HIGH VOLTAGE WITH FLATHEAD NAILS
21	WOOD MOULDING, 1/2" WIRING WITH 2-HOLE STRAPS AND NAILS

ITEM	WIRING GROUP - SEE SPECIFICATIONS
22	CONDUIT, PVC WITH 2-HOLE STRAPS
23	CONNECTOR, SPLIT BOLT, BRONZE
24	CUTOUT, 100 AMPERES, 15KV, OPEN FUSED
25	EYEBOLT, 5/8" DIAMETER
26	EYENUT, 15KV, CLEVIS STRAIN INSULATOR WITH WIRE GRIP
27	GROUND ROD, 3/4" ϕ x 8'-0" WITH CLAMP
28	INSULATOR, 15KV, POST TYPE WITH STEEL PINS
29	INSULATOR, 15KV, CLEVIS DEADEND WITH 5/8" MOUNTING BOLT, WASHER AND NUT
30	INSULATOR, STRAIN, BOB
31	TIE WIRE, PRIMARY, #6 SDBC
32	POTHEAD, 15KV, WITH CROSSARM MOUNTING BRACKET
33	GRIP, CABLE, BRONZE
34	LIGHTING ARRESTOR, 15KV, WITH CROSSARM MTG. BRACKET
35	INSULATOR, WITH CLEVIS, BOLT, NUTS AND WASHERS
36	PRIMARY CABLE, 1/c #1/0 PEI-PJ, 15 KV, UNGROUNDED, WITH CONCENTRIC NEUTRAL.

INSULATOR
CROSSARM
EYENUT
BOLT
PARTIAL INSULATOR
WASHER AND NUT

F E17 CLEVIS DEADEND INSULATOR
NOT TO SCALE

RICHARD Y. OKI
REGISTERED PROFESSIONAL ENGINEER
No. 3390
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

E-17

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

OVERHEAD DETAILS

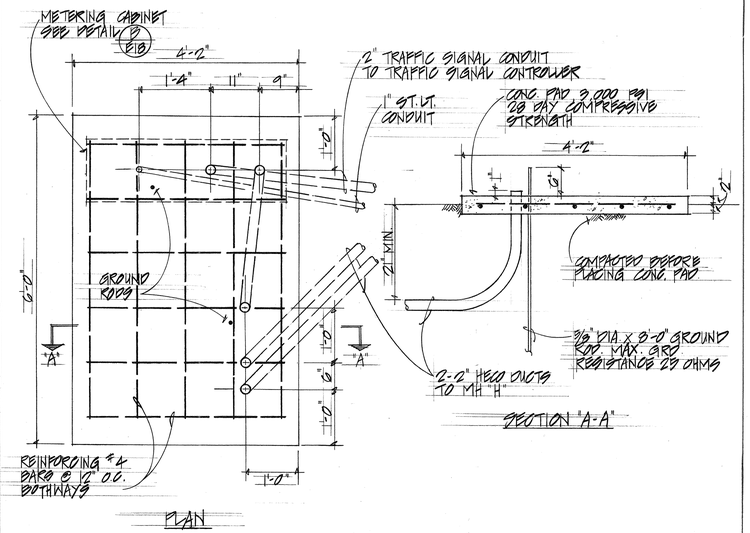
PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-H1-1(79):15
SCALE: AS SHOWN DATE: DEC. 1973

SHEET NO. 16 OF 62 SHEETS

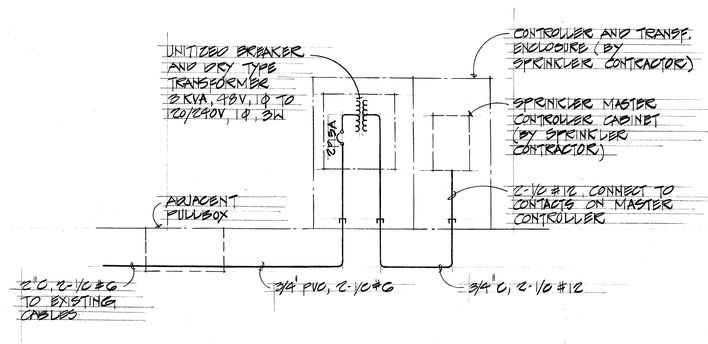
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

PRINTED ON NO. 1000H CLEARPRINT

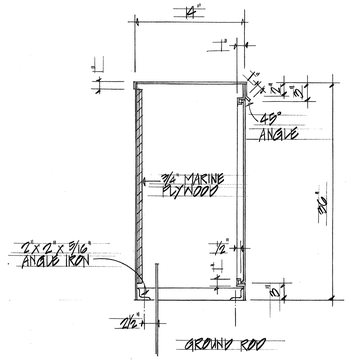
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(75)15	1974	174	369



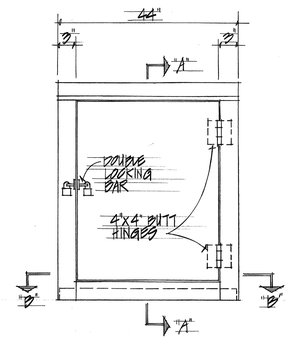
A TRANSFORMER PAD DETAIL
E/E18 NOT TO SCALE



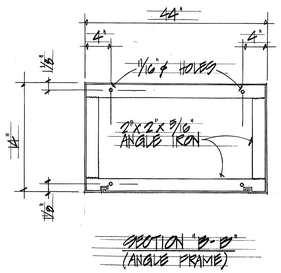
ONE LINE DIAGRAM
SPRINKLER MASTER CONTROLLER



SECTION "A-A"



ELEVATION

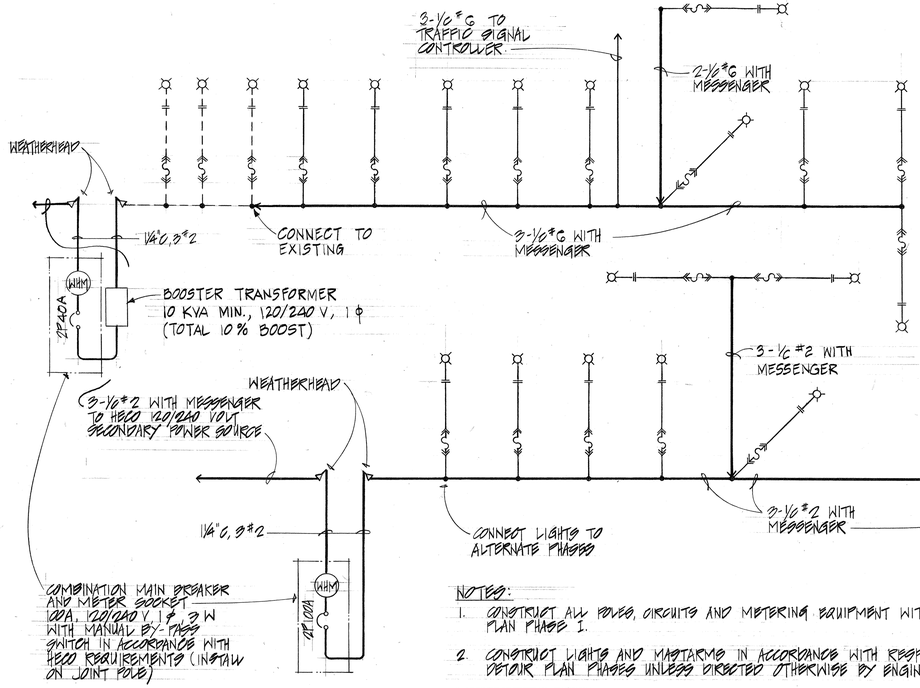


SECTION "B-B"
(ANGLE FRAME)

NOTES:

1. BOXES TO BE PRIMED WITH ONE COAT SHOP PRIMER.
2. MADE FROM 10 GA. GALV. SHEET STEEL.
3. PAINT TO MATCH TRANSFORMER.
4. SECURE TO CONC. PAD WITH 4-3/8" ANCHOR BOLTS.
5. METER CABINET SHALL BE NEMA 3R.
6. ONE PADLOCK WITH 2 KEYS PROVIDED BY HECO AND ONE PADLOCK WITH 2 KEYS PROVIDED BY CONTRACTOR.

D METERING CABINET DETAIL
E/E18 NOT TO SCALE



NOTES:

1. CONSTRUCT ALL POLES, CIRCUITS AND METERING EQUIPMENT WITH DETOUR PLAN PHASE I.
2. CONSTRUCT LIGHTS AND MASTARMS IN ACCORDANCE WITH RESPECTIVE DETOUR PLAN PHASES UNLESS DIRECTED OTHERWISE BY ENGINEER.

C CONNECTION DIAGRAM
E/E18 TEMPORARY OVERHEAD STREET LIGHTING SYSTEM

APPROVED:

HAWAIIAN ELECTRIC CO., INC. CED 11-6-74 DATE

RICHARD Y. OKITA
REGISTERED PROFESSIONAL ENGINEER
No. 1390
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

DATE	REVISIONS
4/4/75	ADDED DETAILS A/E18 & B/E18
11/6/74	REVISED ST. LT. CONNECTION DIAGRAM
	ADDED HECO APPROVAL SIGNATURE

E-18

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ONE LINE DIAGRAMS

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(73):15

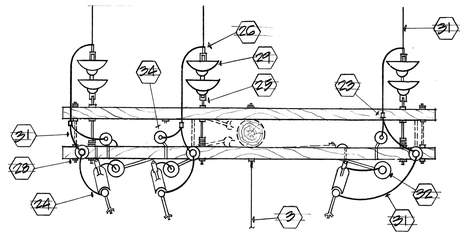
SCALE: AS SHOWN DATE: DEC. 7, 1973

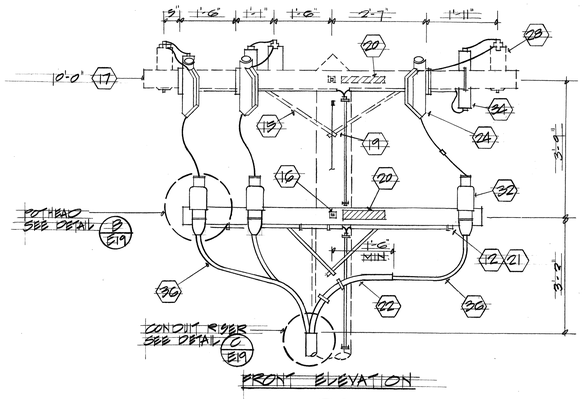
SHEET No. 18 OF 62 SHEETS

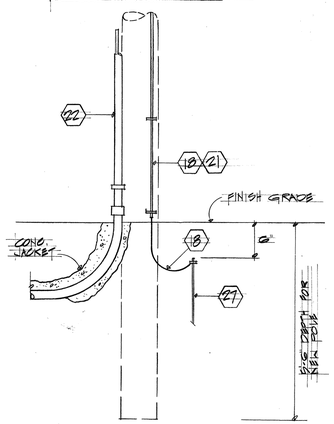
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
NOTE BOOK	TRACED BY	"
	DESIGNED BY	"
No.	QUANTITIES BY	"
	CHECKED BY	"

C.0.174R

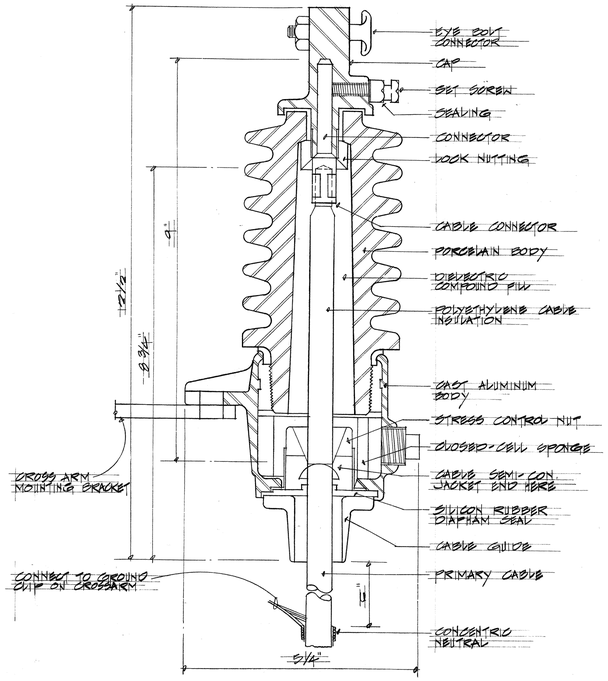
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73)15	1974	175	3609



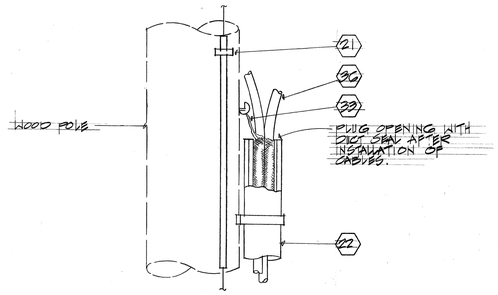




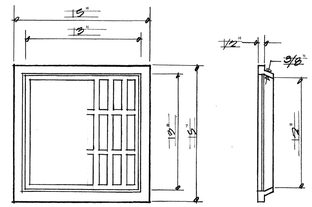
A DETAIL - PRIMARY SERVICE RISER - TYPE I
E19 NOT TO SCALE



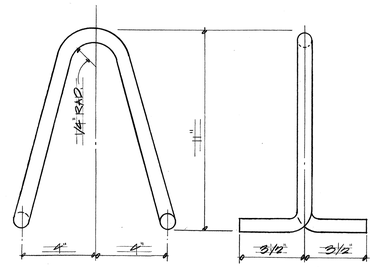
B POTHEAD
E19 PRIMARY CABLE TERMINATOR
NOT TO SCALE



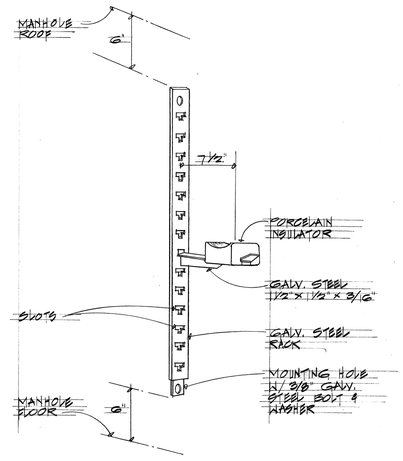
C DETAIL - CONDUIT RISER
E19 NOT TO SCALE



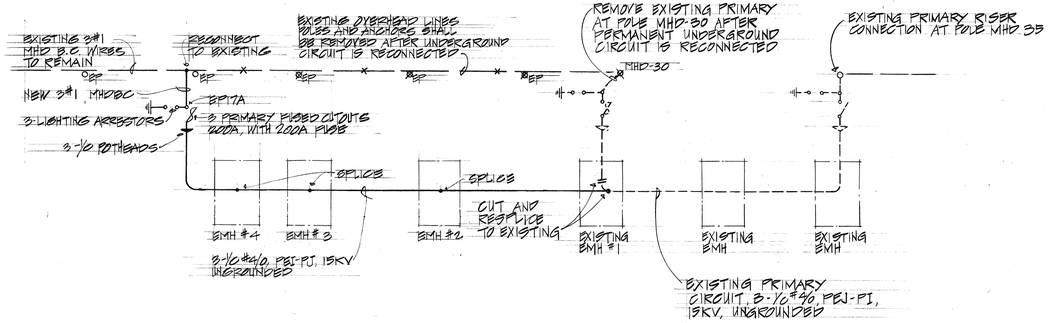
D DETAIL - SUMP FRAME AND COVER
E19 NOT TO SCALE



E DETAIL - PULL-IN IRON
E19 NOT TO SCALE



F DETAIL - CABLE RACK AND INSULATOR (SLOT TYPE)
E19 NOT TO SCALE



NAVY ELECTRIC SYSTEM ONE LINE DIAGRAM
NOTE: COORDINATE POWER OUTAGE WITH NAVY. PROVIDE ADVANCE NOTICE AS REQUIRED BY NAVY.

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

RICHARD Y. OKITA REGISTERED ENGINEER No. 3990 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

E19

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

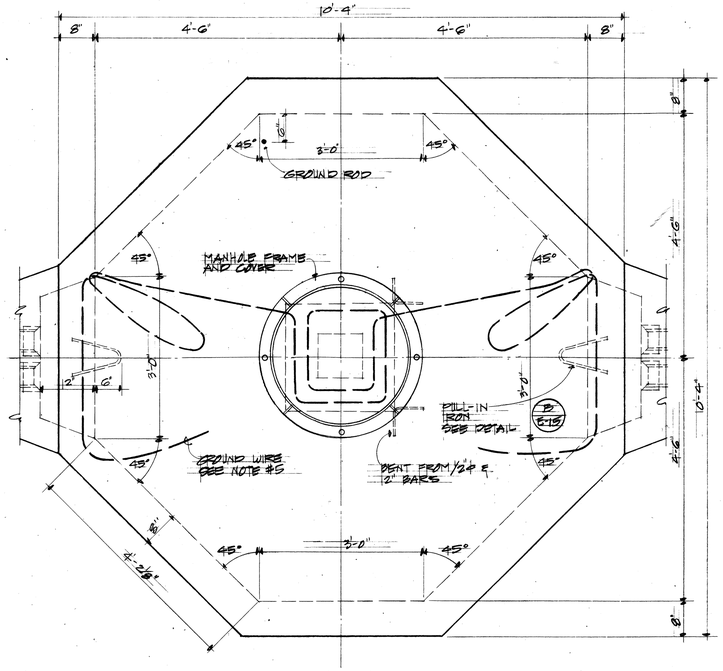
POLE RISER AND MANHOLE DETAILS

PEARL HARBOR INTERCHANGE
F.A.I PROJECT NO. I-HI-1(73):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

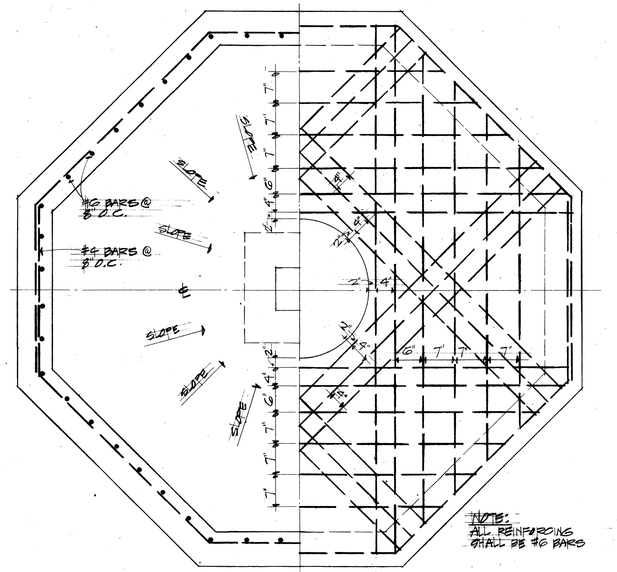
SHEET No. 19 OF 60 SHEETS

175

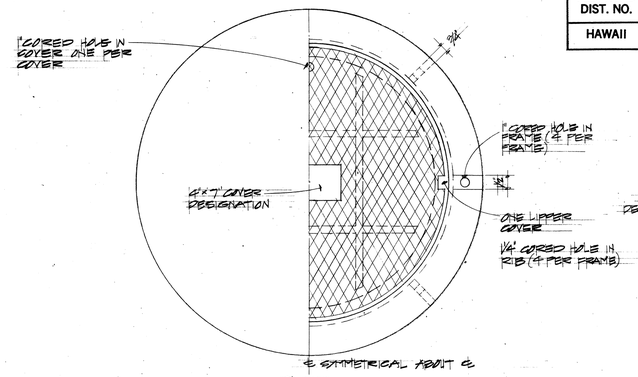
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73).15	1974	176	369



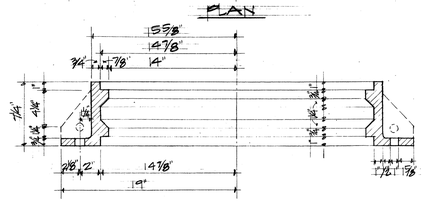
PLAN
SCALE: 3/4" = 1'-0"



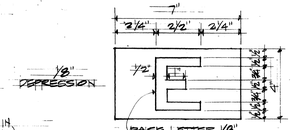
REINFORCING FOR
SECTION UNDER TOP — TOP SLAB-BOT FACE
SCALE: 3/4" = 1'-0"



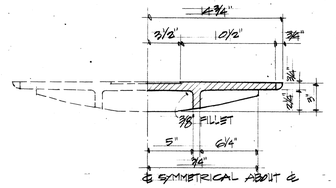
PLAN



FRAME SECTION

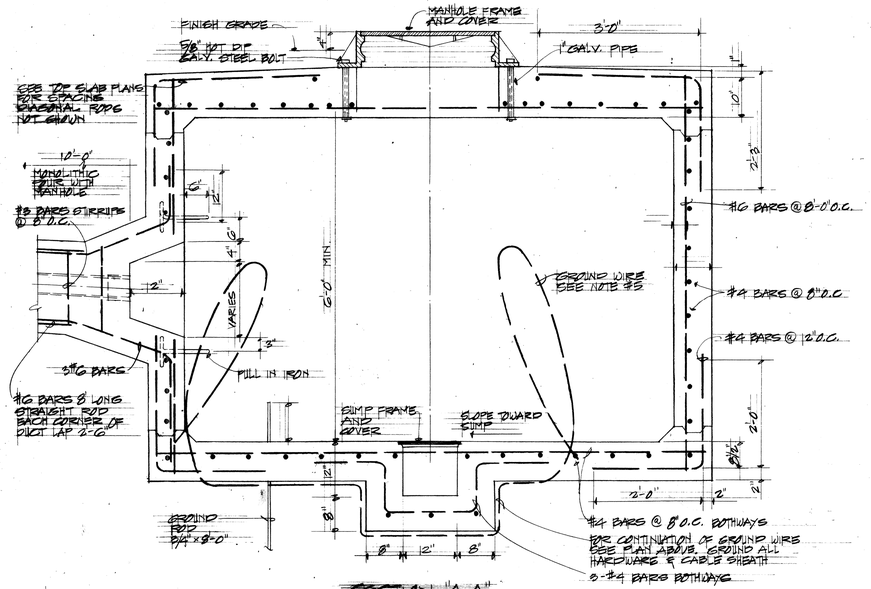


COVER DESIGNATION
NOT TO SCALE



COVER SECTION
NOT TO SCALE

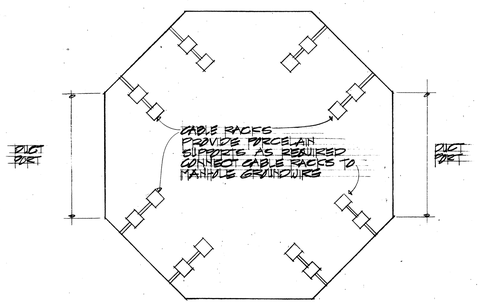
C E-20 28" MANHOLE FRAME & COVER
NOT TO SCALE



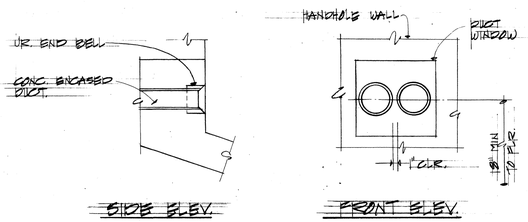
SECTION "A-A"

NOTES:
1. CONC. FOR MANHOLE SHALL BE 3000 PSI, 28 DAY COMPRESSIVE STRENGTH.
2. CONC. FOR DUCTLINE SHALL BE 2500 PSI, 28 DAY COMPRESSIVE STRENGTH.
3. REINFORCING STEEL SHALL BE INTERMEDIATE GRADE-25,000 PSI & LAPPED 40 DIAMETERS AT ALL SPLICES, WHICH SHALL BE STAGGERED.
4. DIMENSIONS FROM STEEL TO FACE OF CONC. DENOTES CLEAR COVER.
5. GROUND WIRE SHALL BE NO. 4/0 AWG TINNED COPPER.

A E-20 DETAIL - NAVY ELECTRIC MANHOLE
SCALE: 3/4" = 1'-0"

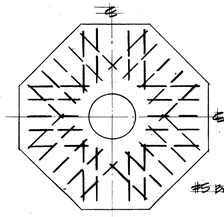


B E-20 CABLE RACKS LOCATION PLAN
NOT TO SCALE



SIDE ELEV. — FRONT ELEV.

D E-20 TYPICAL DUCT ENTRANCE DETAIL
NOT TO SCALE



E E-20 REINFORCING FOR TOP SLAB-TOP FACE
SCALE: 1/4" = 1'-0"

RICHARD Y. OKITA — REGISTERED PROFESSIONAL ENGINEER — No. 1381 — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

E-20

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

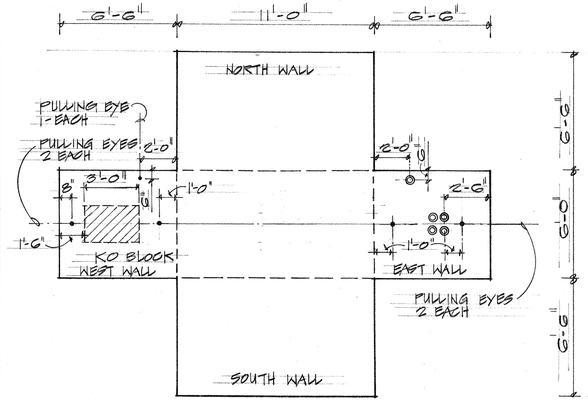
ELECTRICAL MANHOLE DETAILS

PEARL HARBOR INTERCHANGE
P.A.I. PROJECT NO. I-HI-1(73):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

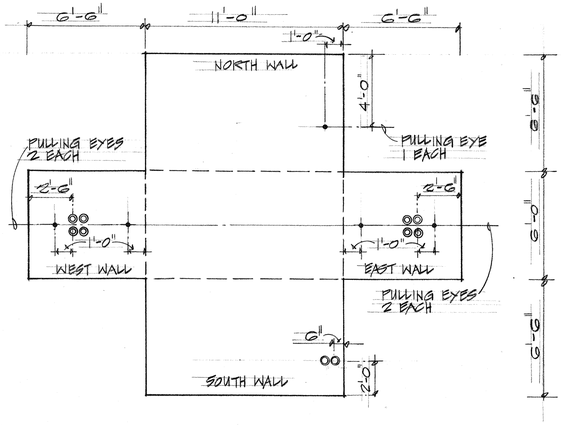
SHEET No. 20 OF 60 SHEETS

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

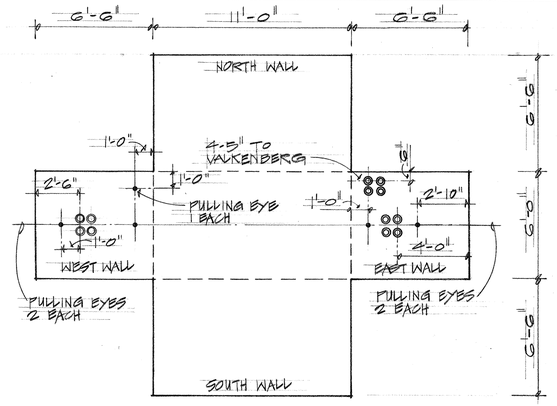
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(78)15	1974	177	369
DATE	REVISION				
3/6/75	REVISED DETAIL K/E21				



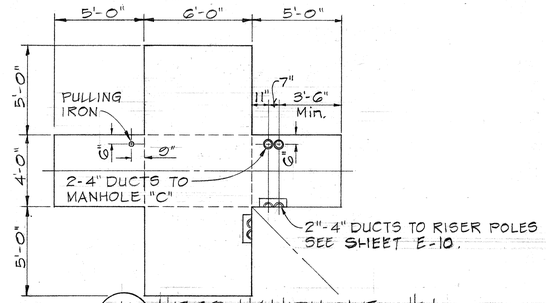
A E21 HECO MANHOLE "A"
SCALE: 1/4"=1'-0"



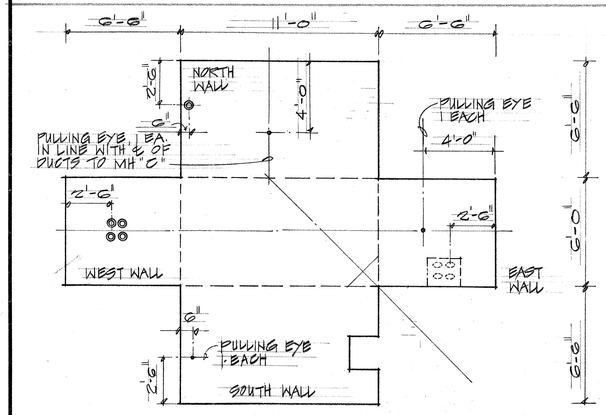
D E21 HECO MANHOLE "D"
SCALE: 1/4"=1'-0"



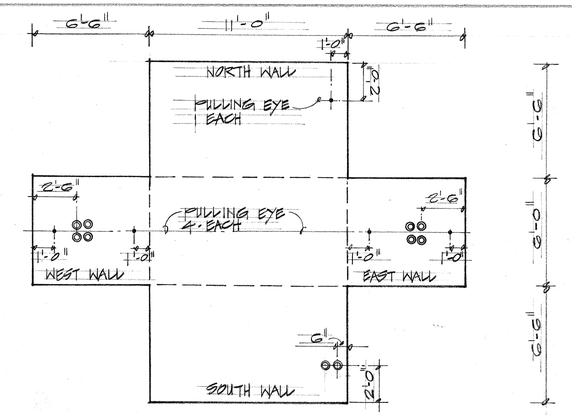
G E21 HECO MANHOLE "G"
SCALE: 1/4"=1'-0"



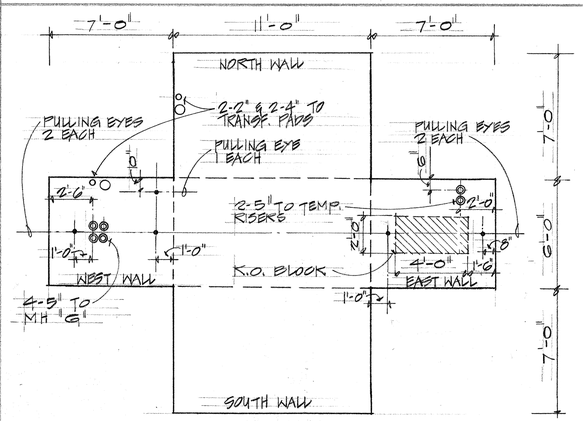
K E21 HECO HANDHOLE #1
SCALE: 1/4"=1'-0"



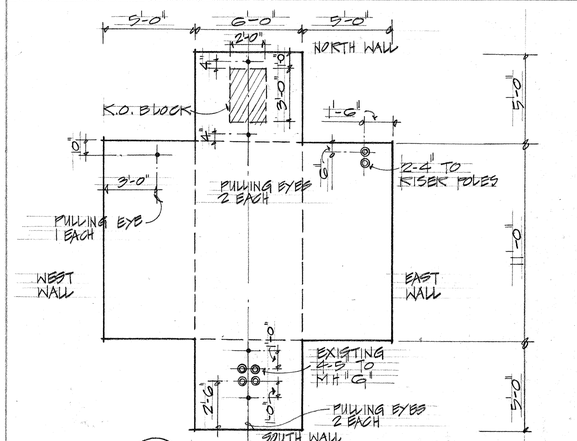
B E21 HECO MANHOLE "B"
SCALE: 1/4"=1'-0"



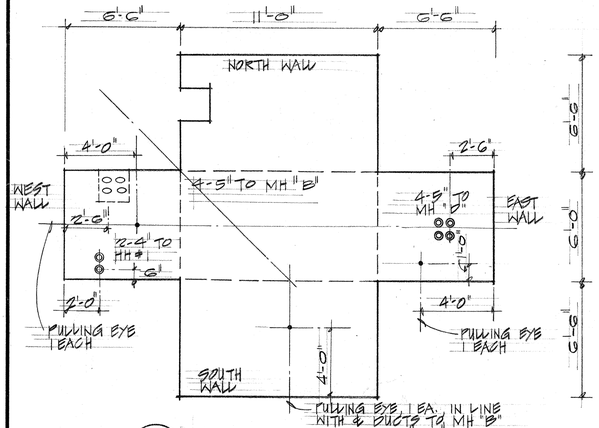
E E21 HECO MANHOLE "E"
SCALE: 1/4"=1'-0"



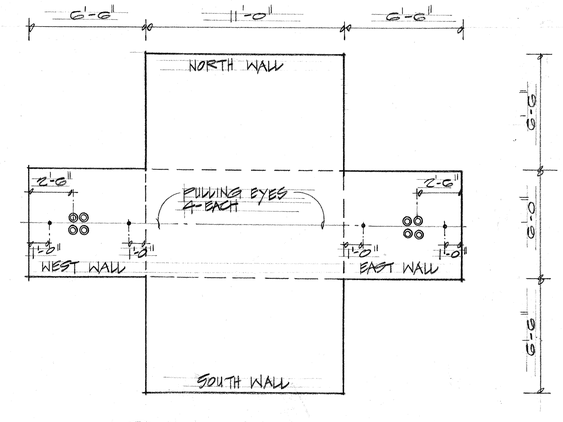
H E21 HECO MANHOLE "H"
SCALE: 1/4"=1'-0"



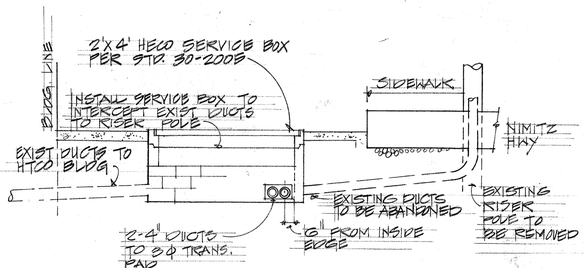
L E21 HECO HANDHOLE #2
SCALE: 1/4"=1'-0"



C E21 HECO MANHOLE "C"
SCALE: 1/4"=1'-0"



F E21 HECO MANHOLE "F"
SCALE: 1/4"=1'-0"

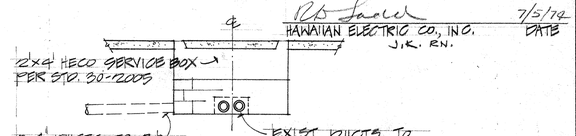


PHASING NOTES:
1. STATES CONTRACTOR IS TO EXPOSE DUCTLINE.
2. HECO TO BREAK INTO DUCTLINE AND PROVIDE CABLE PROTECTION.
3. CONTRACTOR TO INSTALL 2'X 4' SERVICE BOX.

ALL WORK IS TO BE DONE UTILIZING EXTREME CAUTION AS THE SECONDARY CABLES WILL REMAIN ENERGIZED DURING CONSTRUCTION.

J E21 SERVICE BOX DETAIL
NOT TO SCALE

APPROVED:
R.O. Swartwood 7/5/74
HAWAIIAN ELECTRIC CO., INC. DATE
J.K. EN.



DATE	REVISION
4/4/74	REVISED DETAIL H/E21
7/5/74	ADDED HECO APPROVAL SIGNATURE
4/26/74	REVISED NOTES FOR HECO SERVICE BOX

E-21

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANHOLE, HANDHOLE AND SPLICE BOX DETAILS

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(78):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

RICHARD Y. TOM
REGISTERED
No. 1390
PROFESSIONAL ENGINEER
HAWAII, U.S.A.

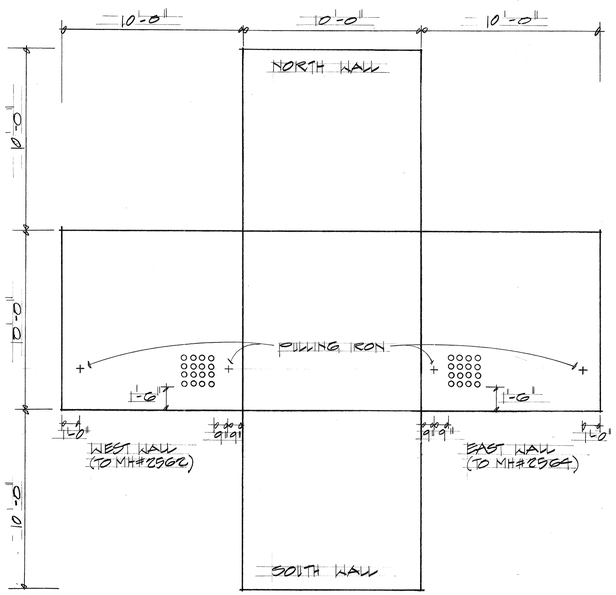
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SHEET NO. 21 OF 62 SHEETS

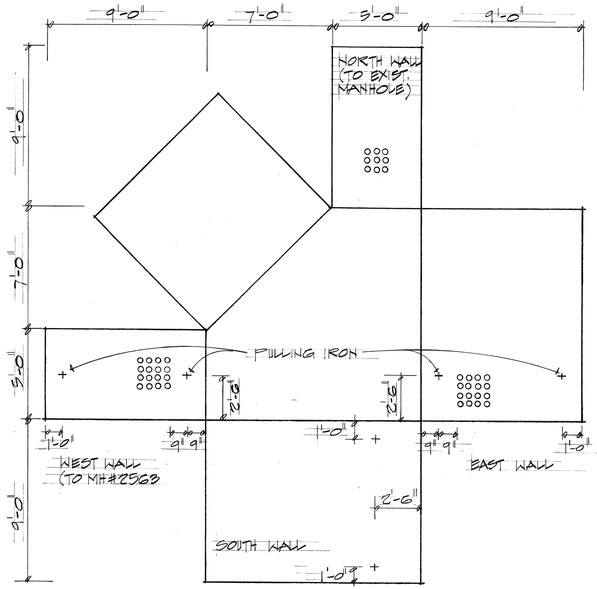
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
	TRACED BY	"
NOTE BOOK	DESIGNED BY	"
	QUANTITIES BY	"
No.	CHECKED BY	"

177R

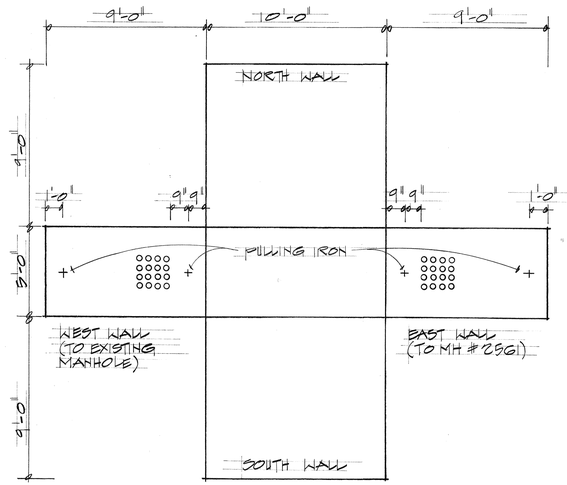
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(79)15	1974	178	369



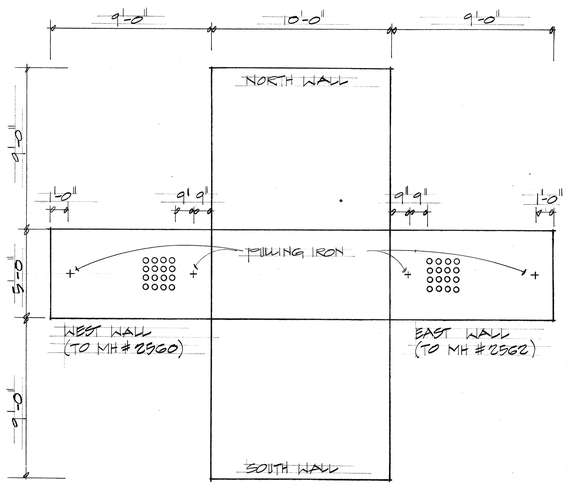
A HTCO MANHOLE: 2563
E-22 SCALE: 1/4"=1'-0"



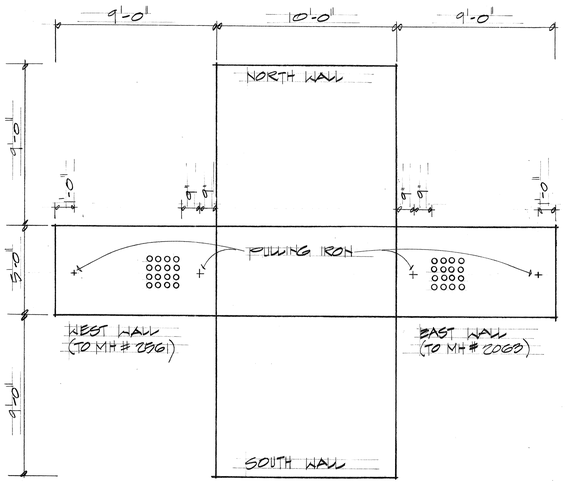
B HTCO MANHOLE: 2564
E-22 SCALE 1/4"=1'-0"



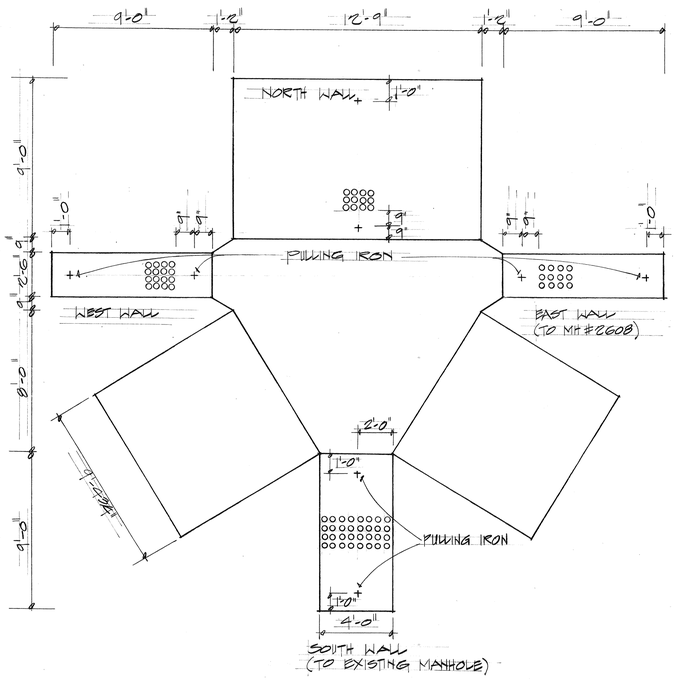
C HTCO MANHOLE: 2560
E-22 SCALE: 1/4"=1'-0"



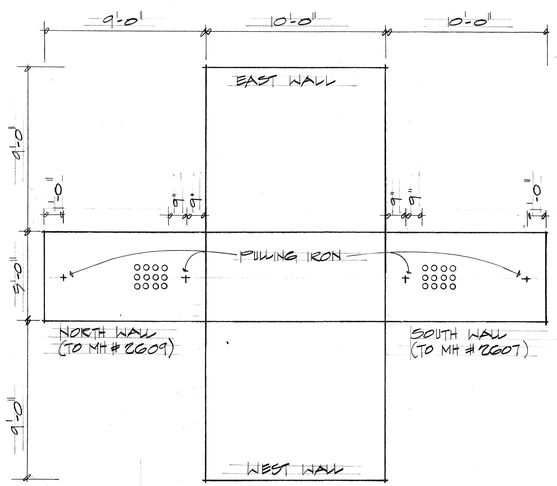
D HTCO MANHOLE: 2561
E-22 SCALE: 1/4"=1'-0"



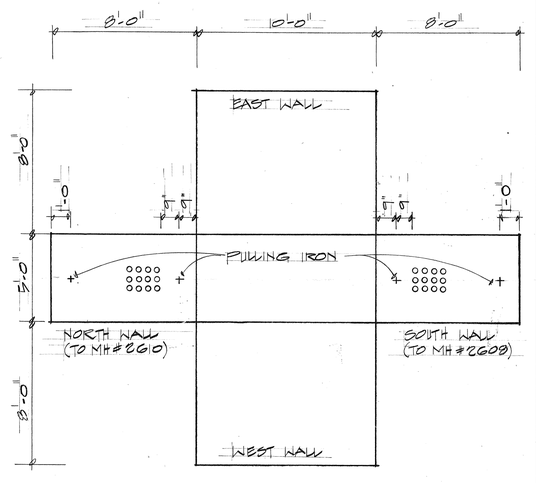
E HTCO MANHOLE: 2562
E-22 SCALE: 1/4"=1'-0"



F HTCO MANHOLE: 2607
E-22 SCALE: 1/4"=1'-0"



G HTCO MANHOLE: 2608
E-22 SCALE: 1/4"=1'-0"



H HTCO MANHOLE: 2609
E-22 SCALE: 1/4"=1'-0"

E-22

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

DATE	REVISIONS
11/4/74	ADDED HTCO APPROVAL SIGNATURE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANHOLE WALL ELEVATIONS

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(79)15

SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET No. 22 OF 62 SHEETS

RICHARD Y. OKITA
REGISTERED PROFESSIONAL ENGINEER
No. 1590
HAWAII, U.S.A.

APPROVED:

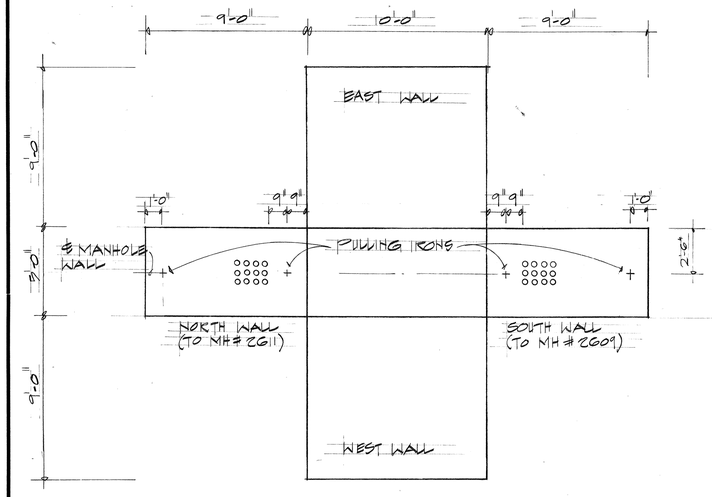
R. Man
HAWAIIAN TELEPHONE CO.

11/4/74
DATE

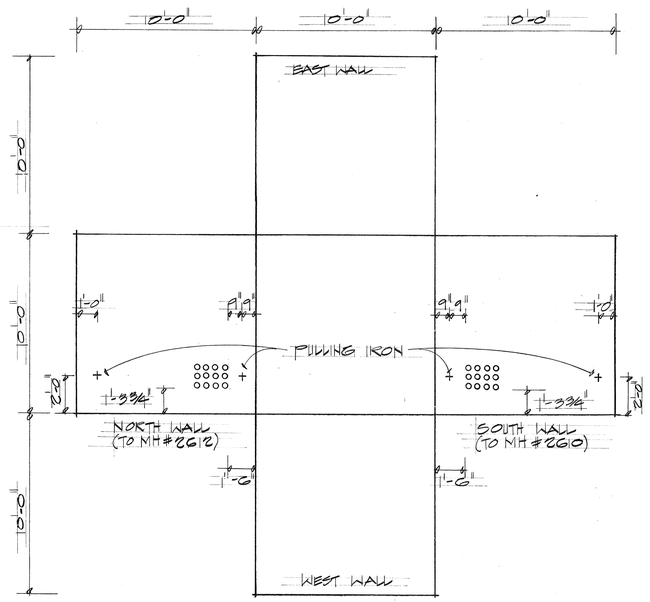
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

178R

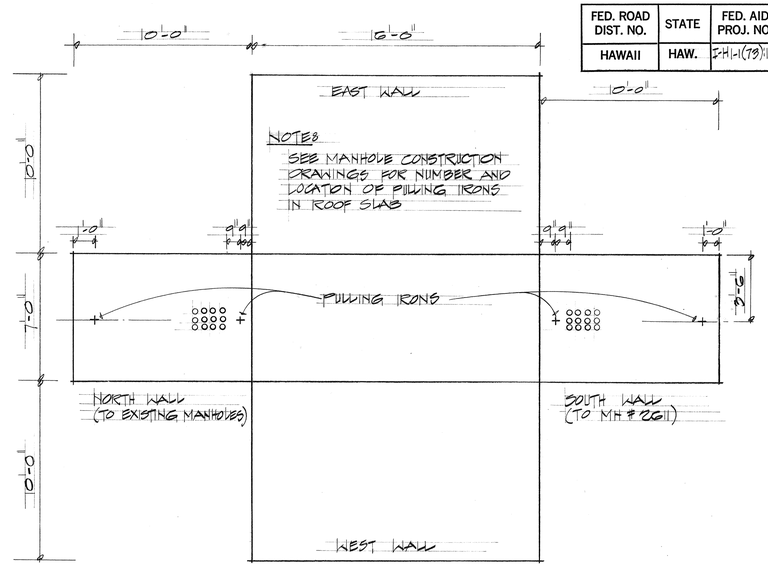
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(78)115	1974	179	369



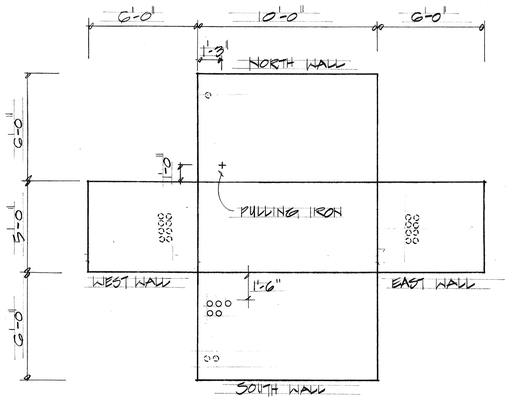
A HTCO MANHOLE: 2610
B-23 SCALE: 1/4"=1'-0"



B HTCO MANHOLE: 2611
B-23 SCALE: 1/4"=1'-0"

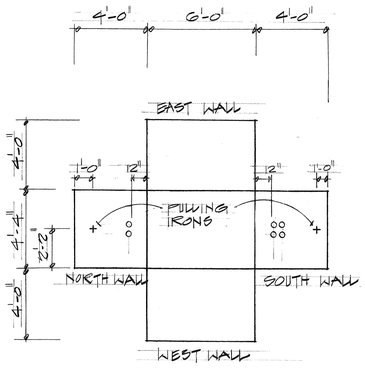


C HTCO MANHOLE: 2612
B-23 SCALE: 1/4"=1'-0"

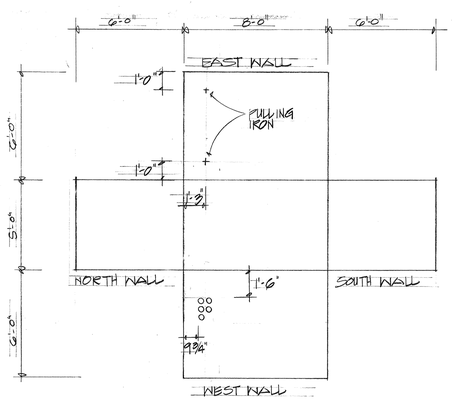


NOTE:
COORDINATE LOCATION OF EXISTING DUCTS IN NEW MANHOLE WALL WITH HTCO INSPECTOR

D HTCO MANHOLE 2008
E-23 SCALE: 1/4"=1'-0"



E HTCO HANDHOLE # 2714
E-23 SCALE: 1/4"=1'-0"



F HTCO MANHOLE 882
E-23 SCALE: 1/4"=1'-0"

APPROVED:

R. Mau 11/4/74
HAWAIIAN TELEPHONE CO. DATE

RICHARD Y. OKUMA REGISTERED PROFESSIONAL ENGINEER No. 1990 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

DATE	REVISIONS
11/4/74	ADDED HTCO MANHOLE 882 WALL ELEVATION ADDED HTCO APPROVAL SIGNATURE

E-23

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANHOLE WALL ELEVATIONS

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-H1-1(78)115

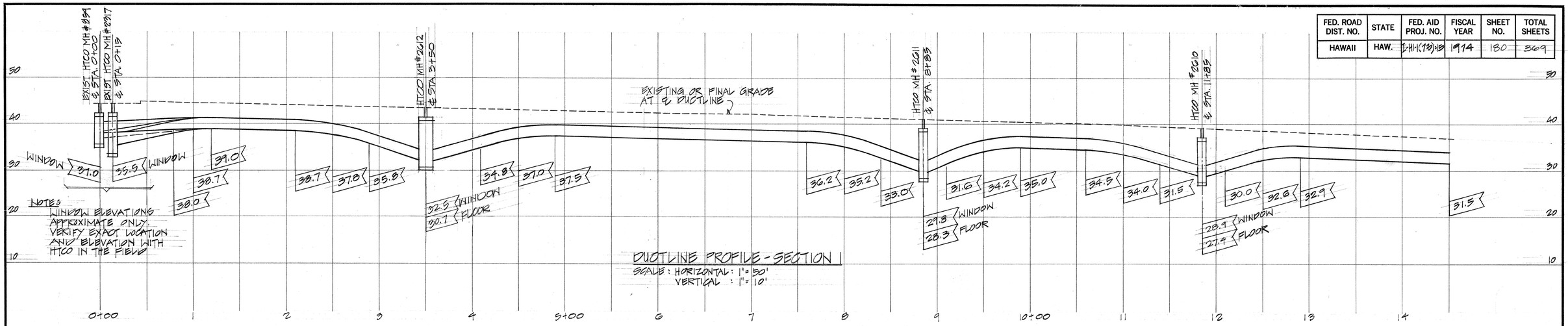
SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET No. 23 OF 62 SHEETS

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

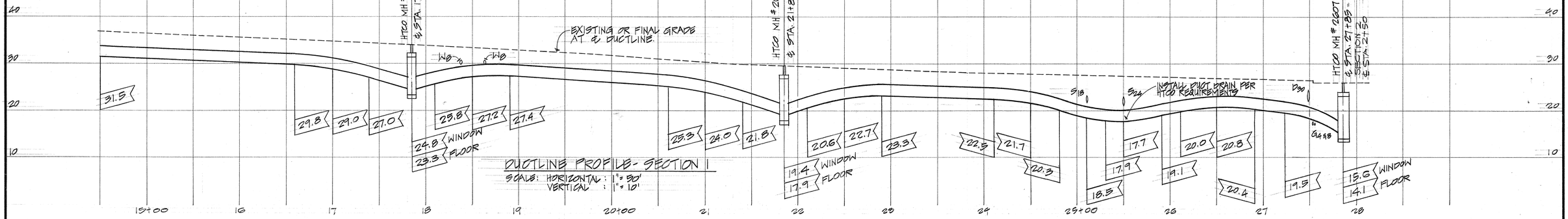
179R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(19)+15	1974	180	369



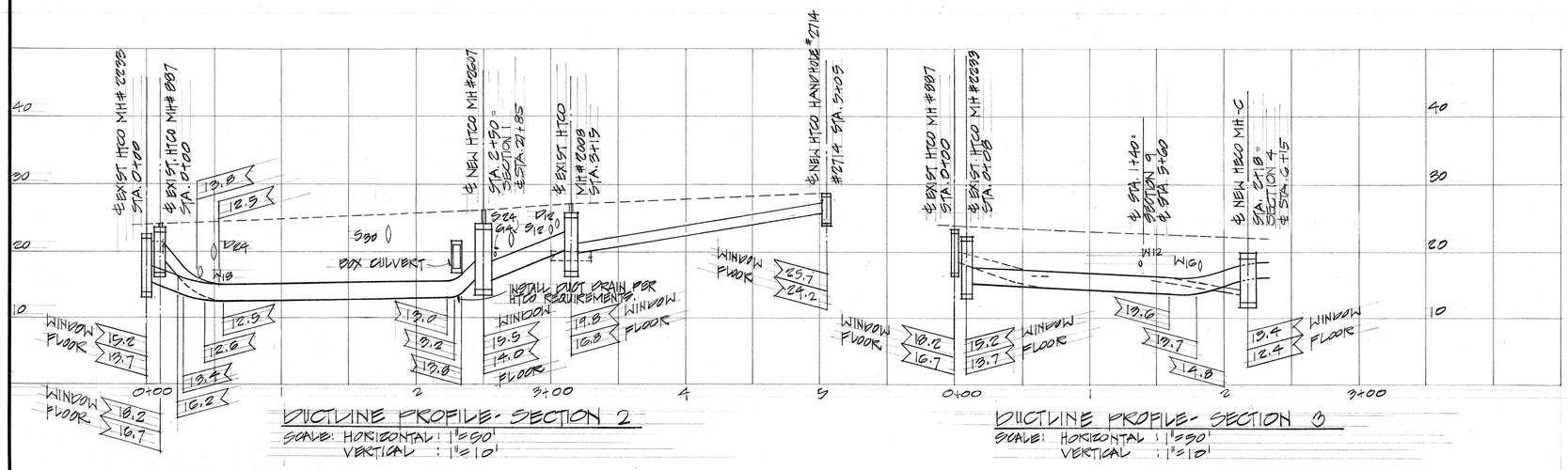
DUCTLINE PROFILE - SECTION 1

SCALE: HORIZONTAL: 1"= 50'
VERTICAL : 1"= 10'



DUCTLINE PROFILE - SECTION 1

SCALE: HORIZONTAL: 1"= 50'
VERTICAL : 1"= 10'



DUCTLINE PROFILE - SECTION 2

SCALE: HORIZONTAL: 1"=50'
VERTICAL : 1"=10'

DUCTLINE PROFILE - SECTION 3

SCALE: HORIZONTAL: 1"=50'
VERTICAL : 1"=10'

APPROVED:

HAWAIIAN ELECTRIC CO., INC.	7/5/74 DATE	11/4/74	ADDED DUCTLINE PROFILE REFERENCE, SECTION 2&3
HAWAIIAN TELEPHONE CO.	11/4/74 DATE		ADDED HECO & HTCO APPROVAL SIGNATURES
		DATE	REVISIONS

E-24

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DUCTLINE PROFILES

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(19):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

RICHARD Y. OKI
REGISTERED PROFESSIONAL ENGINEER
No. 1393
HAWAII, U.S.A.

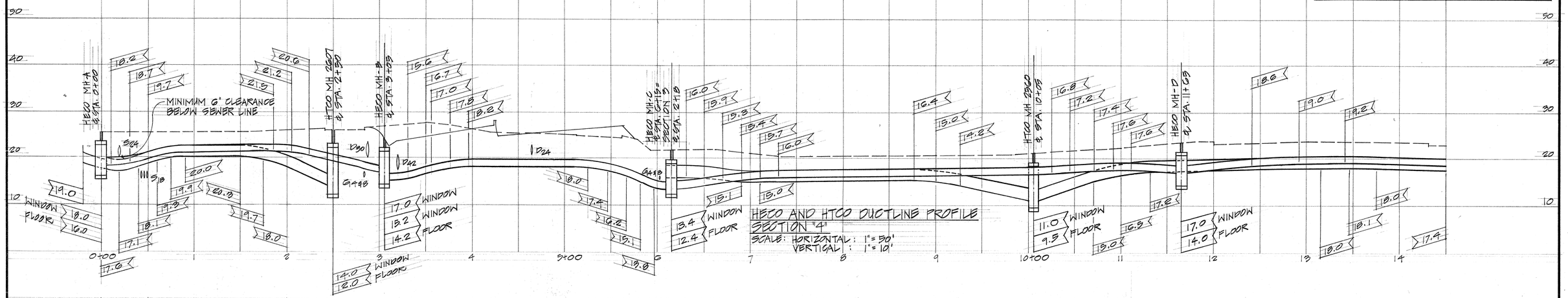
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SHEET No. 24 OF 62 SHEETS

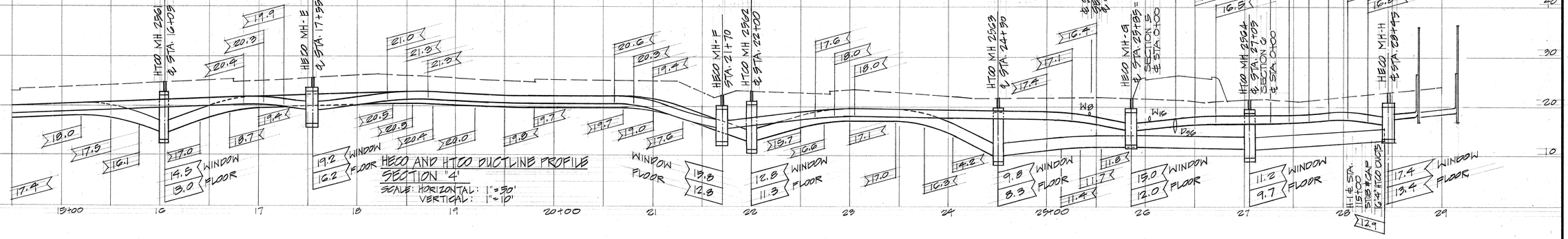
ORIGINAL PLAT	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
	TRACED BY	"
	DESIGNED BY	"
NOTE BOOK	QUANTITIES BY	"
No.	CHECKED BY	"

180R

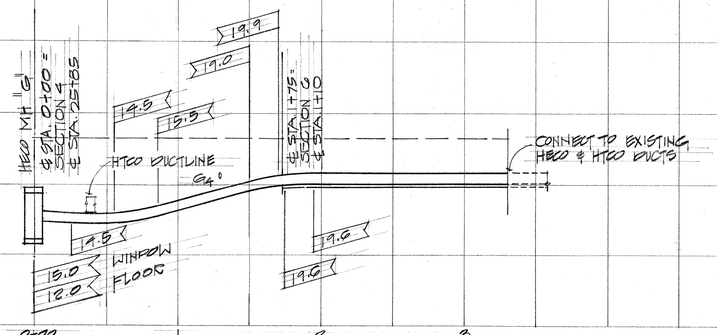
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(78):15	1974	181	369



HECO AND HTCO DUCTLINE PROFILE
SECTION "4"
SCALE: HORIZONTAL : 1"=50'
VERTICAL : 1"=10'



HECO AND HTCO DUCTLINE PROFILE
SECTION "4"
SCALE: HORIZONTAL : 1"=50'
VERTICAL : 1"=10'



HECO AND HTCO DUCTLINE PROFILE
SECTION "5"
SCALE: HORIZONTAL : 1"=50'
VERTICAL : 1"=10'

APPROVED:

HAWAIIAN ELECTRIC CO., INC. — DATE 7/5/74

HAWAIIAN TELEPHONE CO. — DATE 11/4/74

RICHARD Y. OKIMA — REGISTERED PROFESSIONAL ENGINEER — No. 1390 — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

DATE	REVISION
11/4/74	REVISED HTCO DUCTLINE PROFILE FROM STA. 24+50 TO 28+42 ADDED HECO & HTCO APPROVAL SIGNATURE
4/26/74	REVISED HECO DUCTLINE PROFILE

IE-25

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DUCTLINE PROFILES

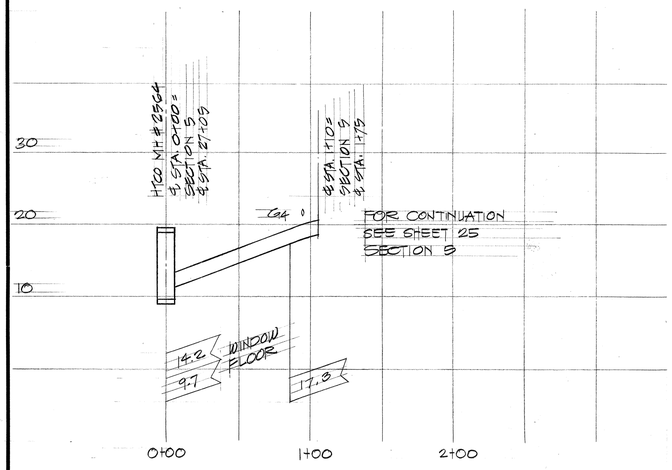
PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(78):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET No. 25 OF 62 SHEETS

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

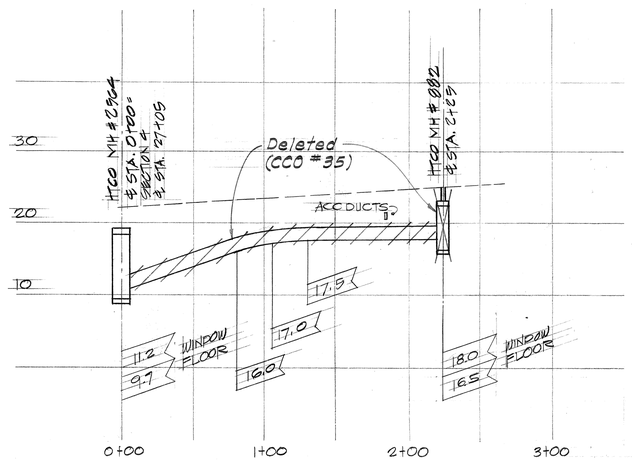
C.O. ADD. 181

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73)15	1974	182	369



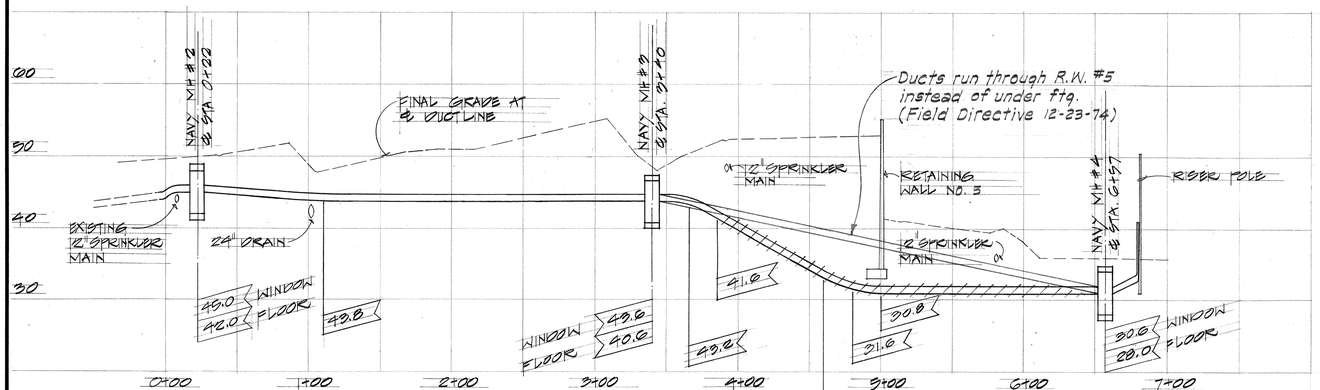
DUCT LINE PROFILE
SECTION 6

SCALE: HORIZONTAL: 1"=50'
VERTICAL: 1"=10'



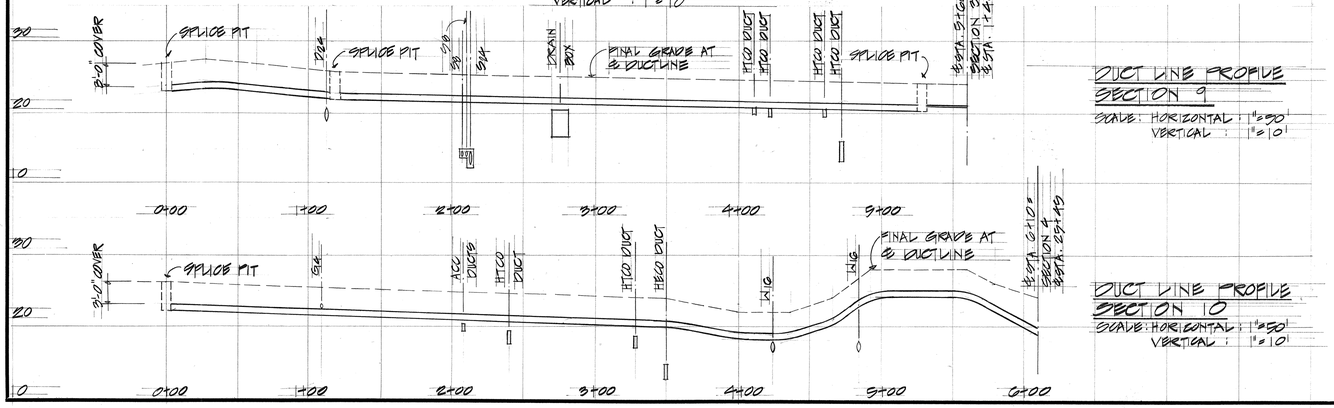
DUCT LINE PROFILE
SECTION 7

SCALE: HORIZONTAL: 1"=50'
VERTICAL: 1"=10'



DUCT LINE PROFILE
SECTION 8

SCALE: HORIZONTAL: 1"=50'
VERTICAL: 1"=10'

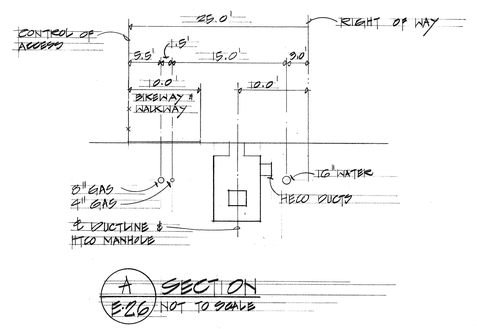


DUCT LINE PROFILE
SECTION 9

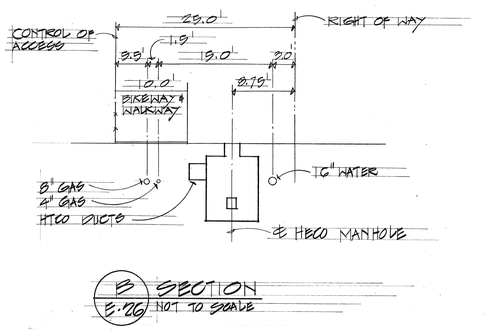
SCALE: HORIZONTAL: 1"=50'
VERTICAL: 1"=10'

DUCT LINE PROFILE
SECTION 10

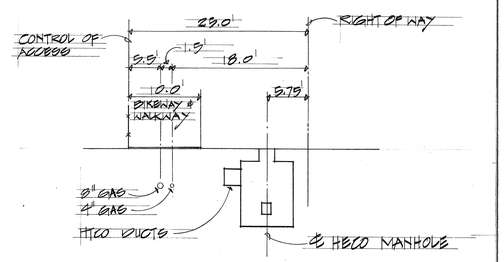
SCALE: HORIZONTAL: 1"=50'
VERTICAL: 1"=10'



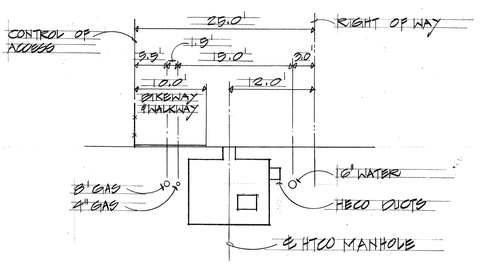
A SECTION E-26 NOT TO SCALE



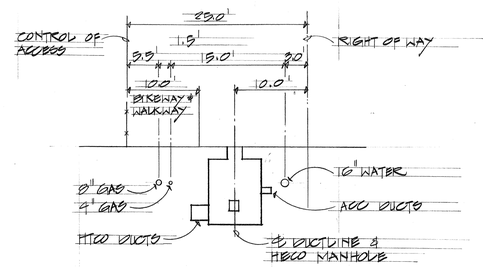
B SECTION E-26 NOT TO SCALE



C SECTION E-26 NOT TO SCALE



D SECTION E-26 NOT TO SCALE



E SECTION E-26 NOT TO SCALE

DATE	REVISIONS
11/4/74	ADDED DUCTLINE PROFILE SECTION 8,9,10 & SECTIONS ALONG THE MAKAI CORRIDOR. ADDED HTCO APPROVAL SIGNTURE

E-26

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DUCTLINE PROFILES

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(73):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET NO. 26 OF 62 SHEETS

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

APPROVED:

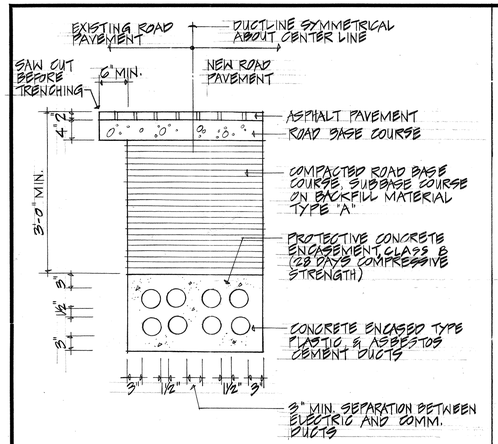
R Mau
HAWAIIAN TELEPHONE CO
11/4/74
DATE

RICHARD Y. OKUDA
REGISTERED PROFESSIONAL ENGINEER
No. 1390
HAWAII, U.S.A.

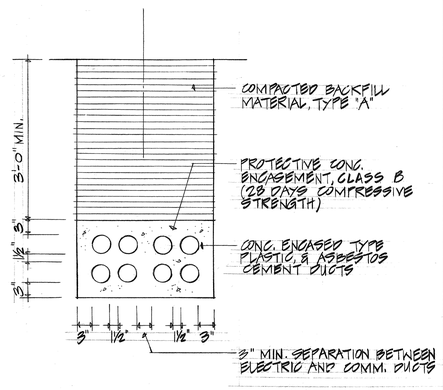
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

182R

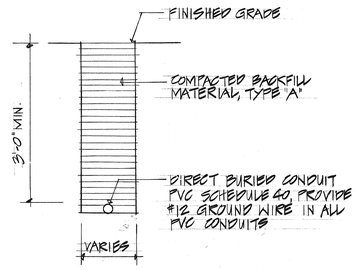
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IHI-1(79)15	1974	188	369



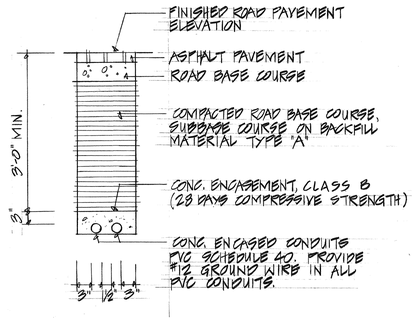
A E-27 TYPICAL CONCRETE ENCASED RACEWAY SECTION UNDER ROAD PAVEMENT
NOT TO SCALE



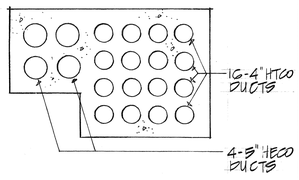
B E-27 TYPICAL CONCRETE ENCASED RACEWAY SECTION IN OPEN AREAS
NOT TO SCALE



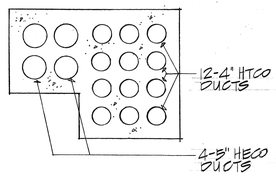
C E-27 TYPICAL DIRECT BURIED RACEWAY SECTION FOR LIGHTING AND POWER CIRCUITS
NOT TO SCALE



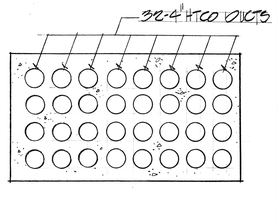
D E-27 TYPICAL CONCRETE ENCASED RACEWAY SECTION FOR LIGHTING & POWER CIRCUITS
NOT TO SCALE



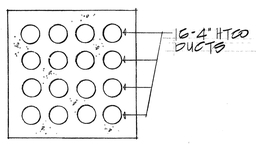
DUCT SECTION (1)



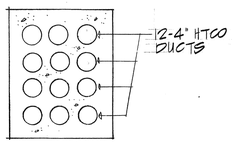
DUCT SECTION (2)



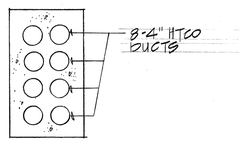
DUCT SECTION (3)



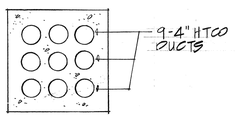
DUCT SECTION (4)



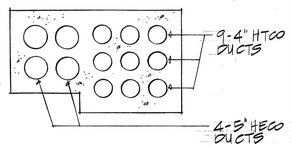
DUCT SECTION (5)



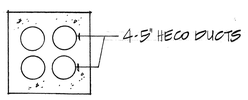
DUCT SECTION (6)



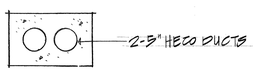
DUCT SECTION (7)



DUCT SECTION (8)



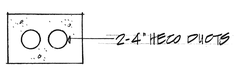
DUCT SECTION (9)



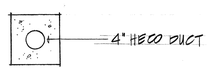
DUCT SECTION (10)



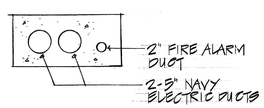
DUCT SECTION (11)



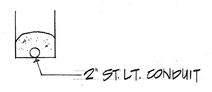
DUCT SECTION (12)



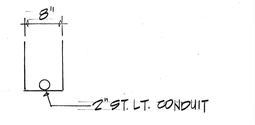
DUCT SECTION (13)



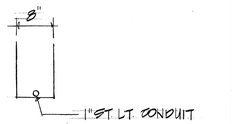
DUCT SECTION (14)



DUCT SECTION (15)



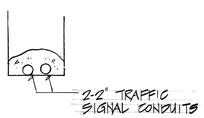
DUCT SECTION (16)



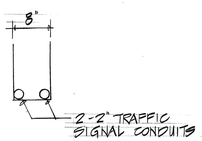
DUCT SECTION (17)



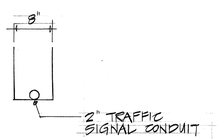
DUCT SECTION (18)



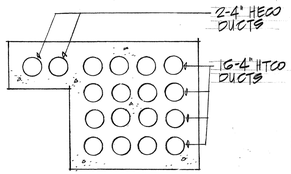
DUCT SECTION (19)



DUCT SECTION (20)



DUCT SECTION (21)



DUCT SECTION (22)

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

APPROVED:

HAWAIIAN ELECTRIC CO., INC. — 7/5/74 DATE

HAWAIIAN TELEPHONE CO. — 11/4/74 DATE

DATE	REVISIONS
11/4/74	ADDED HECO & HTCO APPROVAL SIGNATURES

E-27

RICHARD Y. OKITA REGISTERED PROFESSIONAL ENGINEER No. 1390 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DUCT SECTIONS

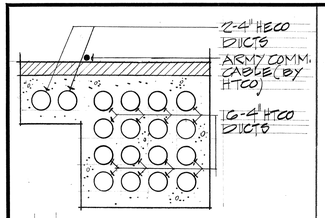
PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(73)15

SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET No. 27 OF 62 SHEETS

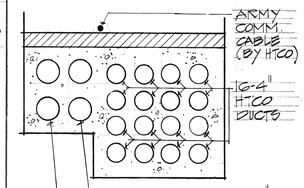
183R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-(09)115	1974	184	364



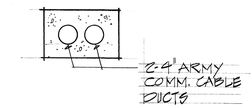
NOTE:
DUCT SECTION 23A SIMILAR TO DUCT SECTION 23 EXCEPT PROVIDE 2-4" GSP FOR ARMY COMM. CABLE.

DUCT SECTION (23) NOT TO SCALE

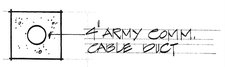


NOTE:
DUCT SECTION 24A SIMILAR TO DUCT SECTION 24 EXCEPT PROVIDE 1-4" GSP FOR ARMY COMM. CABLE.

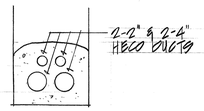
DUCT SECTION (24) NOT TO SCALE



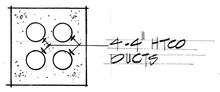
DUCT SECTION (25) NOT TO SCALE



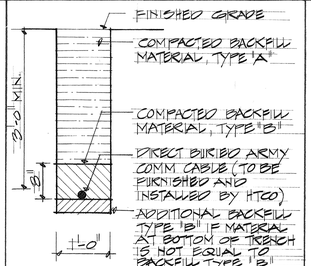
DUCT SECTION (26) NOT TO SCALE



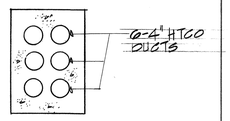
DUCT SECTION (43) NOT TO SCALE



DUCT SECTION (27) NOT TO SCALE



DUCT SECTION (28) NOT TO SCALE

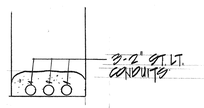


DUCT SECTION (29) NOT TO SCALE

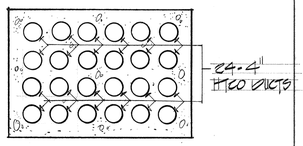
NOTE:
COST OF FUTURE EMERGENCY COMMUNICATION CONDUIT SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE HIGHWAY LIGHTING SYSTEM



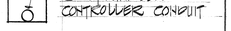
DUCT SECTION (30) NOT TO SCALE



DUCT SECTION (44) NOT TO SCALE



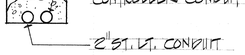
DUCT SECTION (31) NOT TO SCALE



DUCT SECTION (32) NOT TO SCALE



DUCT SECTION (39) NOT TO SCALE



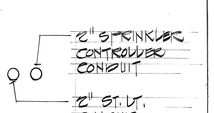
DUCT SECTION (34) NOT TO SCALE



D E28 HIGHWAY LIGHTING CONTROL DIAGRAM



DUCT SECTION (35) NOT TO SCALE

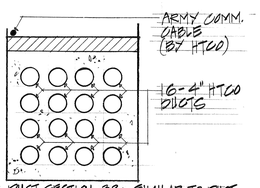


NOTE:
DUCTS THROUGH STRUCTURE

DUCT SECTION (36) NOT TO SCALE

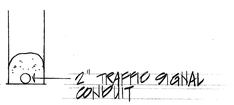


DUCT SECTION (37) NOT TO SCALE

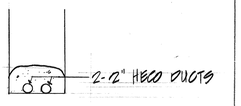


NOTE: DUCT SECTION 38A SIMILAR TO DUCT SECTION 38 EXCEPT PROVIDE 1-4" GSP FOR ARMY COMM. CABLE.
DUCT SECTION 38B SIMILAR TO DUCT SECTION 38 EXCEPT PROVIDE 2-4" GSP FOR ARMY COMM. CABLE

DUCT SECTION (38) NOT TO SCALE



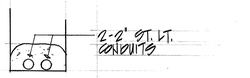
DUCT SECTION (39) NOT TO SCALE



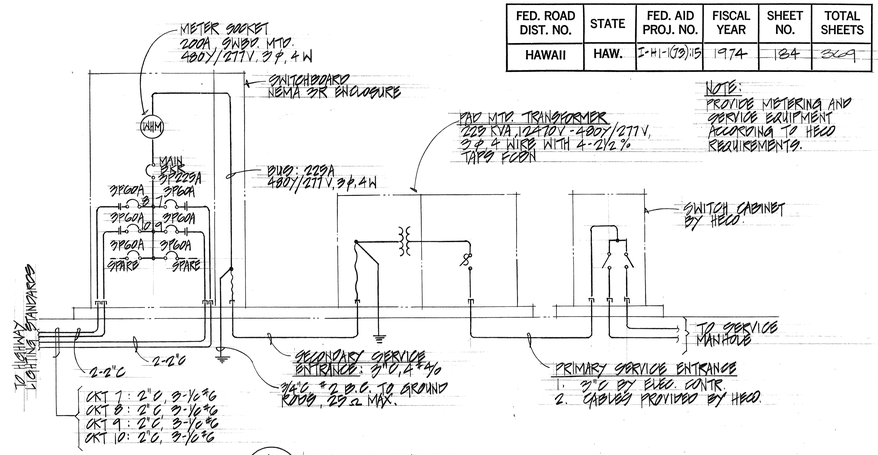
DUCT SECTION (40) NOT TO SCALE



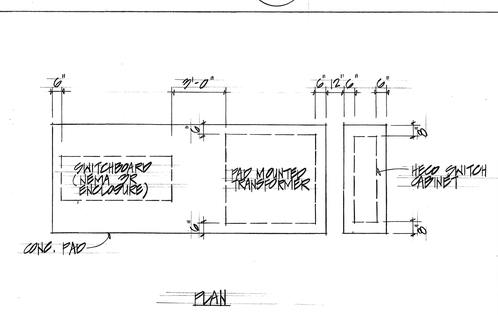
DUCT SECTION (41) NOT TO SCALE



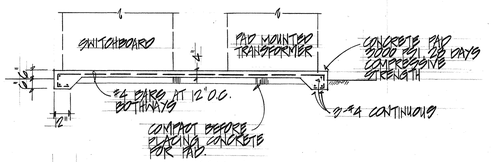
DUCT SECTION (42) NOT TO SCALE



A E28 ONE LINE DIAGRAM



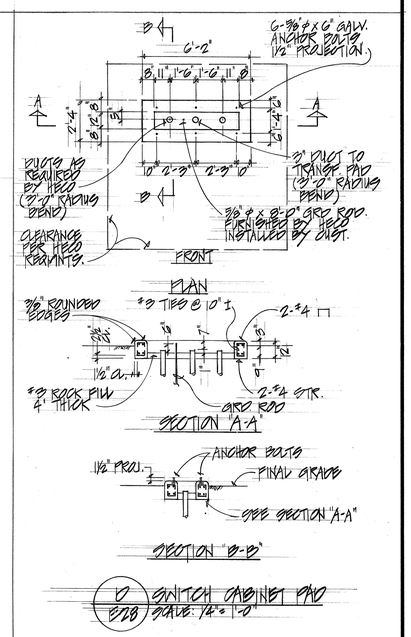
PLAN



SECTION

NOTES:
1. PROVIDE ANCHOR BOLTS AND CONDUITS FOR TRANSFORMER AND SWITCHBOARD AT LOCATIONS AS RECOMMENDED BY MANUFACTURER.

C E28 CONCRETE TRANSFORMER & SWITCHING PAD
SCALE: 1/4" = 1'-0"



D E28 SWITCH CABINET PAD
SCALE: 1/4" = 1'-0"

DATE	REVISIONS
4/4/75	ADDED DUCT SECTIONS 39, 40, 41, 42, 43, 44, AND DETAILS A/E28, B/E28, C/E28 AND D/E 28.
11/4/74	REVISED DUCT SECTIONS 23, 24 AND 36 AND ADDED DUCT SECTION 39. ADDED HECO & HTCO APPROVAL SIGNATURES

E-28

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DUCT SECTIONS

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(73)115

SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET NO. 28 OF 62 SHEETS

APPROVED:

HAWAIIAN ELECTRIC CO., INC. — 7/5/74 DATE

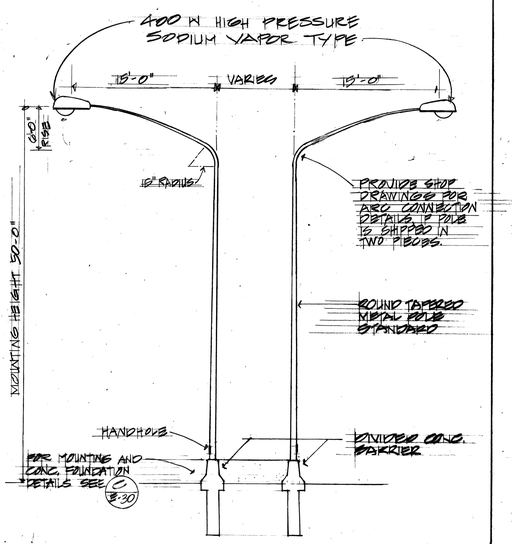
HAWAIIAN TELEPHONE CO. — 11/4/74 DATE

RICHARD Y. OKITA REGISTERED PROFESSIONAL ENGINEER No. 1390 HAWAII, U.S.A.

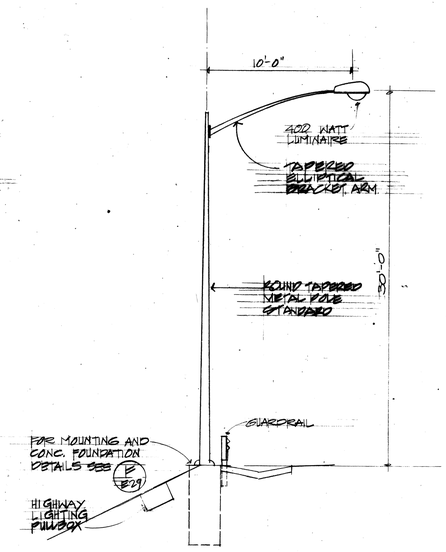
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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

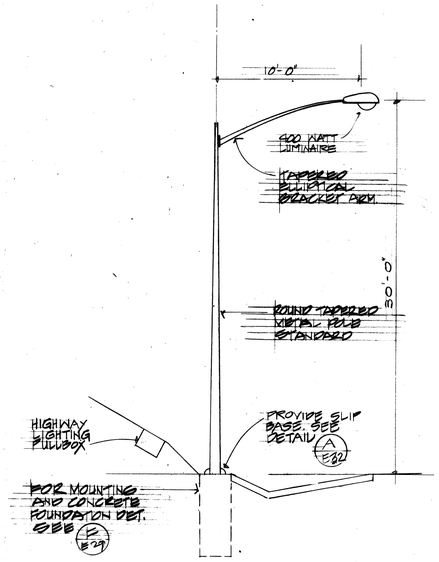
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73).15	1974	185	369



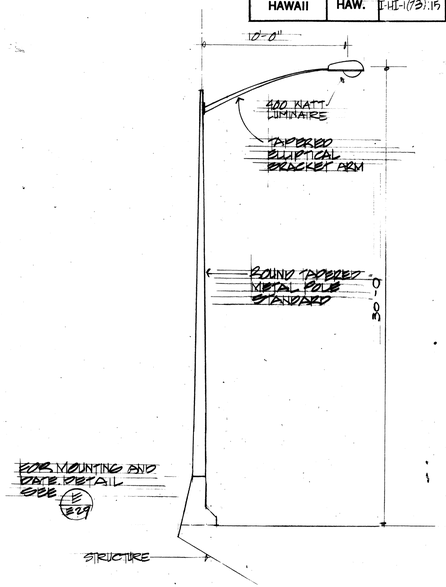
A E-29 TYPE "A" LIGHTING STANDARD DETAIL



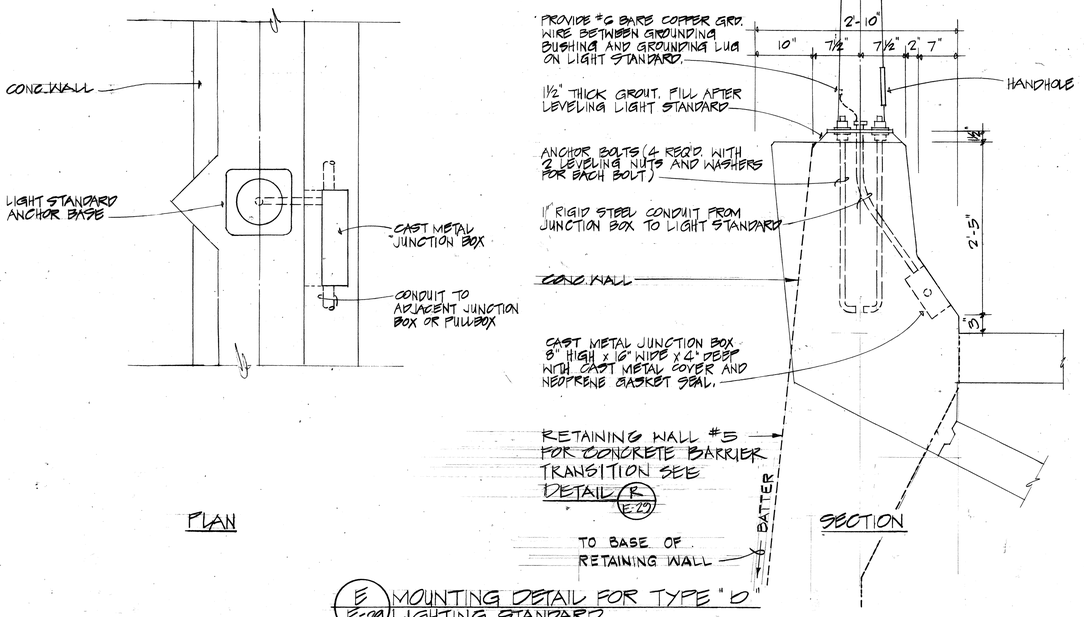
B E-29 TYPE "B" LIGHTING STANDARD DETAIL



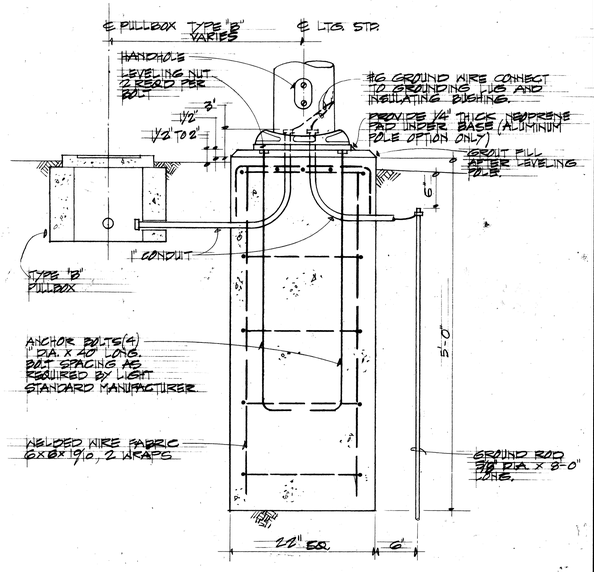
C E-29 TYPE "C" LIGHTING STANDARD DETAIL



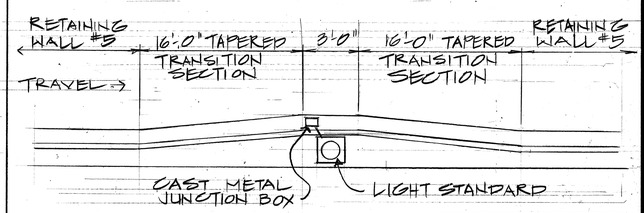
D E-29 TYPE "D" LIGHTING STANDARD DETAIL



E E-29 MOUNTING DETAIL FOR TYPE "D" LIGHTING STANDARD
NOT TO SCALE



F E-29 MOUNTING DETAIL FOR TYPE "B" & "C" LIGHTING STANDARD
NOT TO SCALE



R E-29 TYPICAL CONCRETE BARRIER TRANSITION AT RETAINING WALL #5
NOT TO SCALE

DATE	REVISIONS
7/7/75	REVISED DETAIL E/E-29 & ADDED DETAIL R/E-29
10/29/74	REVISED DETAIL A/E-29

E-29

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGHWAY LIGHTING DETAILS

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(73):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

RICHARD Y. OKIA
REGISTERED PROFESSIONAL ENGINEER
No. 1590
HAWAII, U.S.A.

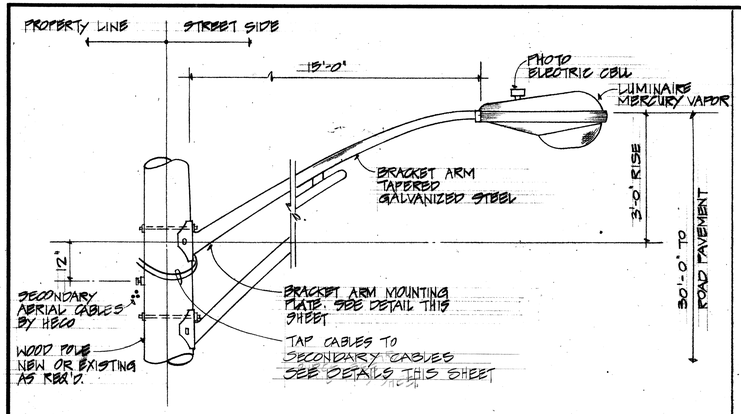
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SHEET No. 29 OF 60 SHEETS

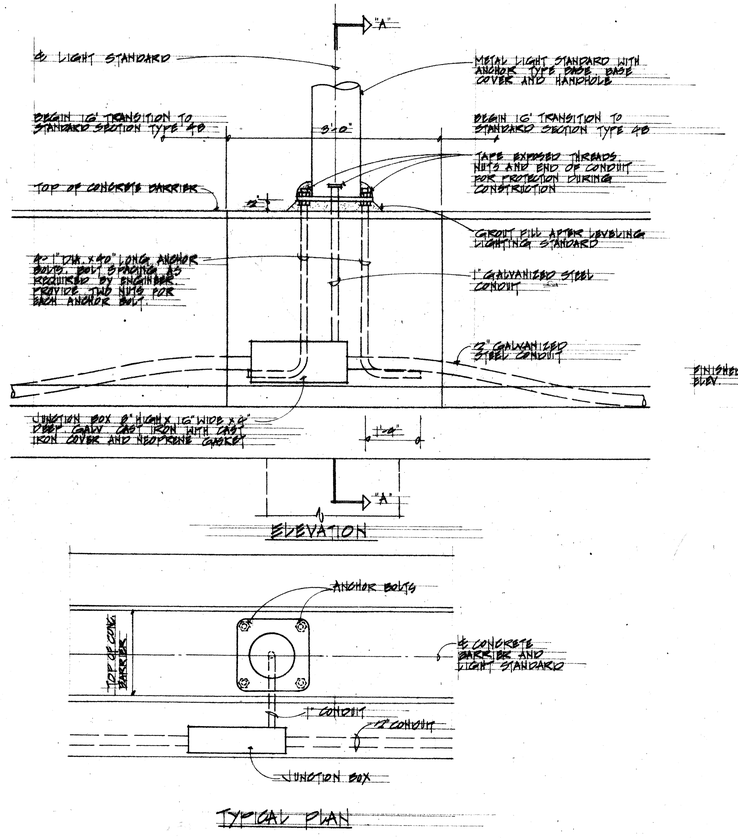
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

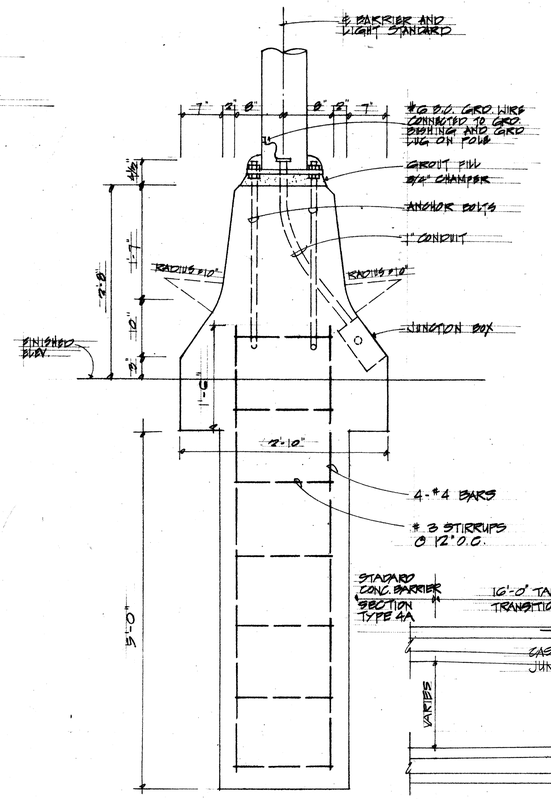
C.O. 185

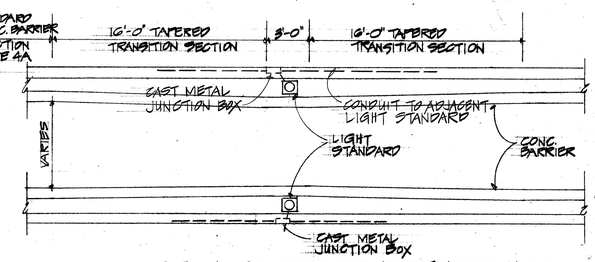
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(79):15	1974	186	369



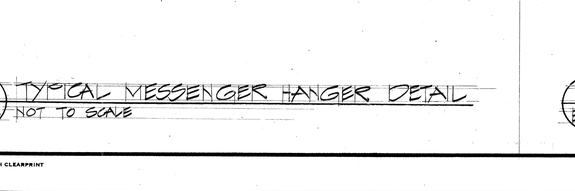
A E-30 TEMPORARY LIGHTING DETAIL
NOT TO SCALE





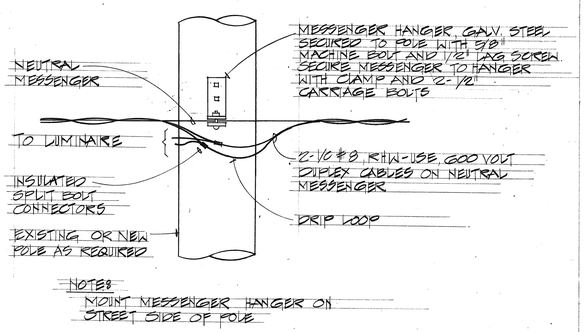


TYPICAL CONCRETE BARRIER TRANSITION AT MEDIAN BARRIER TRANSITION

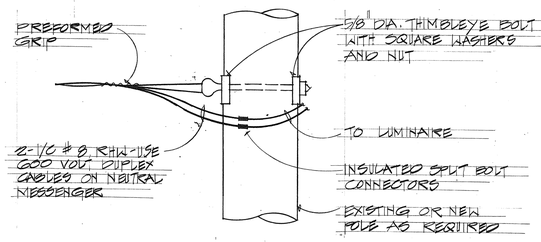


B E-30 STREET LIGHT MAST ARM MOUNTING DETAIL
NOT TO SCALE

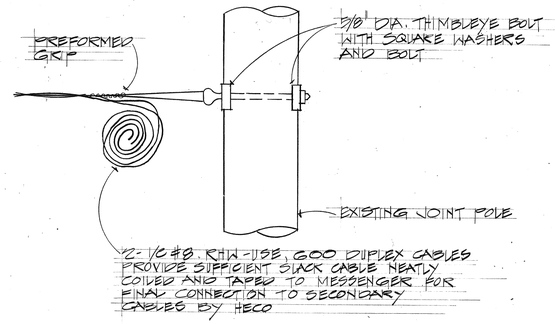
C E-30 MOUNTING DETAIL FOR TYPE "A&B" LIGHTING STANDARDS
NOT TO SCALE



D E-30 TYPICAL MESSENGER HANGER DETAIL
NOT TO SCALE



E E-30 TYPICAL DEAD END DETAIL
NOT TO SCALE



F E-30 TYPICAL DEAD END DETAIL AT HECO CONNECTION
NOT TO SCALE

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

RICHARD Y. OKITA — REGISTERED PROFESSIONAL ENGINEER — No. 1390 — HAWAII, U.S.A.

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E-30

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

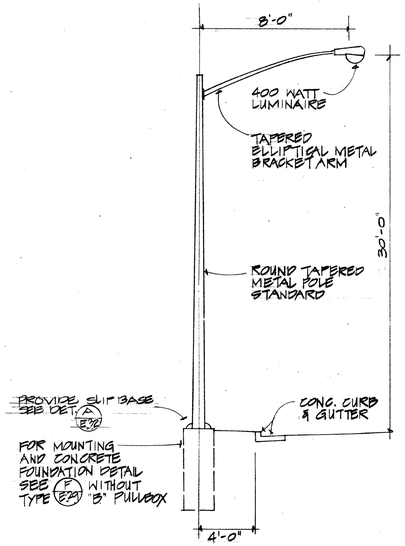
HIGHWAY LIGHTING DETAILS

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(79):13
SCALE: AS SHOWN DATE: DEC. 7, 1973

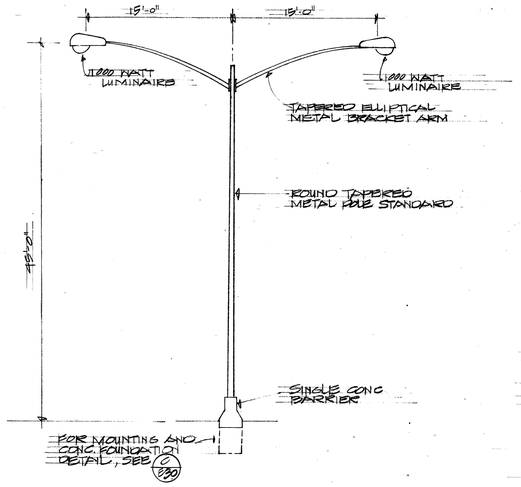
SHEET NO. 30 OF 62 SHEETS

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HH(13)15	1974	187	369

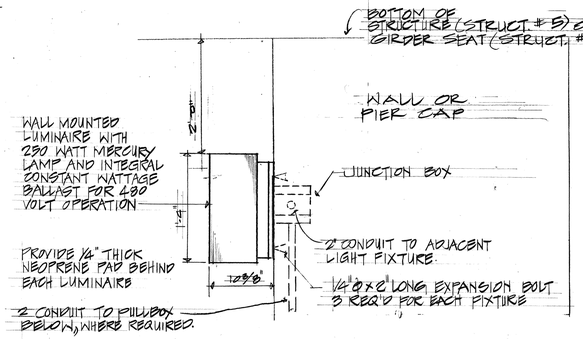


A E31 TYPE "F" LIGHTING STANDARD DETAIL
NOT TO SCALE

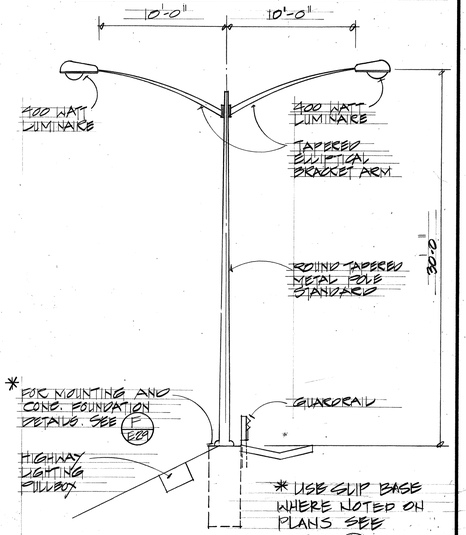


B E31 TYPE "B" LIGHTING STANDARD DETAIL
NOT TO SCALE

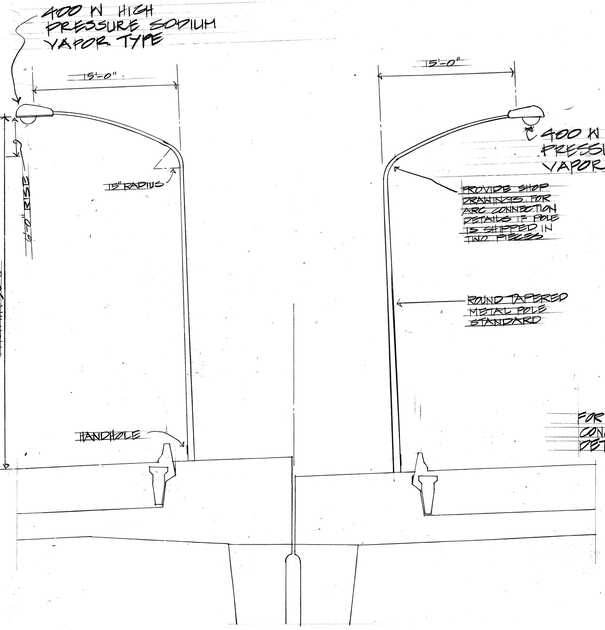
NOTE:
1. LUMINAIRE SHALL BE PROVIDED WITH CAST ALUMINUM HOUSING AND ONE PIECE SHOCK RESISTANT PRISMATIC GLASS REFRACTOR



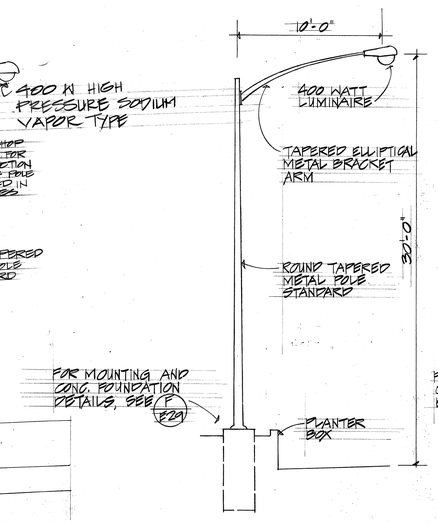
C E31 UNDERPASS LIGHTING DETAIL
NOT TO SCALE



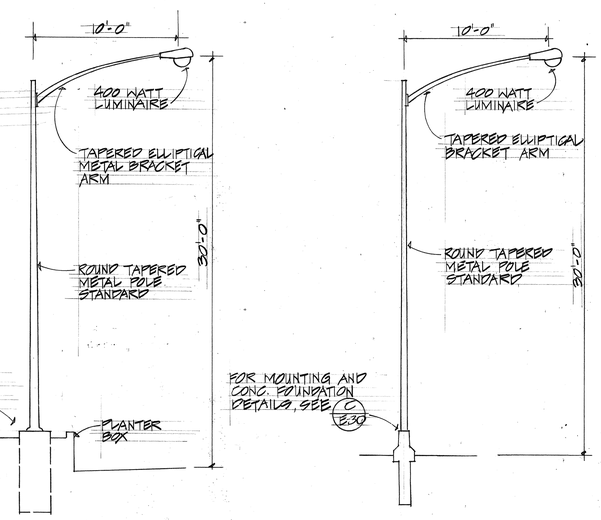
H E-31 TYPE "I" LIGHTING STANDARD DETAIL
NOT TO SCALE



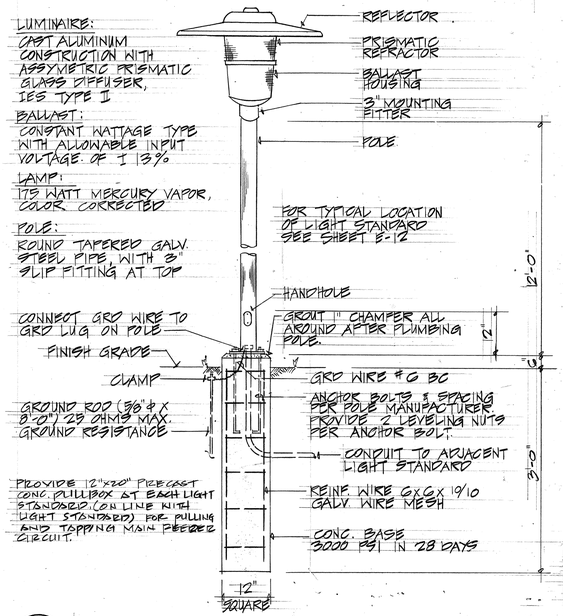
D B-31 TYPE "G" LIGHTING STANDARD DETAIL
NOT TO SCALE



E E31 TYPE "G" LIGHTING STANDARD DETAIL
NOT TO SCALE



F E31 TYPE "H" LIGHTING STANDARD DETAIL
NOT TO SCALE



G E31 BIKEWAY LIGHTING STANDARD DETAIL
NOT TO SCALE

DATE	REVISION
7/7/75	ADDED NOTE ON DETAIL H E-31
10/29/74	REVISED DETAIL D/E-31 AND CLARIFIED DETAIL C/E-31

E-31

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGHWAY LIGHTING DETAILS

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(73):15
SCALE: AS SHOWN DATE DEC. 7, 1973

RICHARD Y. OKITA REGISTERED PROFESSIONAL ENGINEER No. 1390 HAWAII, U.S.A.

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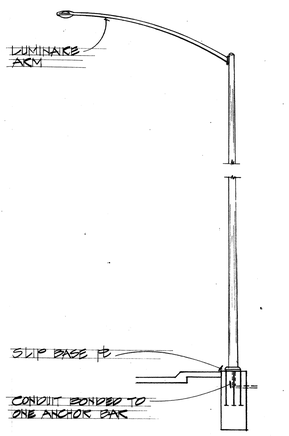
SHEET NO. 31 OF 62 SHEETS

C.O.187R

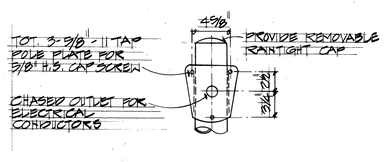
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

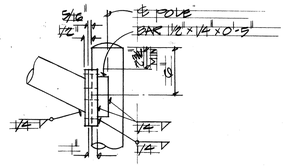
PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1(73)15	1974	188	369

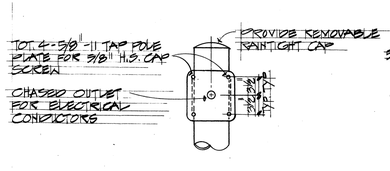


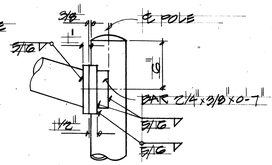
ELEVATION





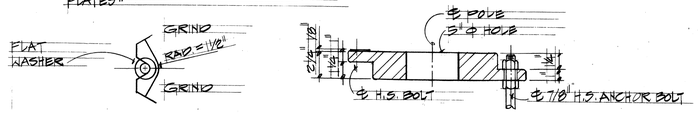
DETAIL "A"



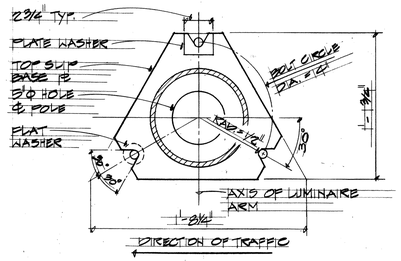


DETAIL "A"

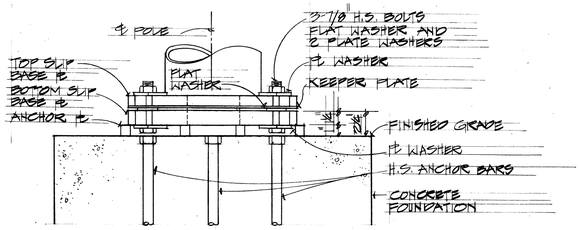
NOTE:
FOR DETAILS NOT SHOWN, SEE SECTION "E-E" "WELDED OPTION" AND "PLAN - BOTTOM PLATES"



CAST OPTION



PLAN - TOP PLATE



ELEVATION

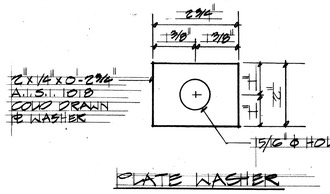
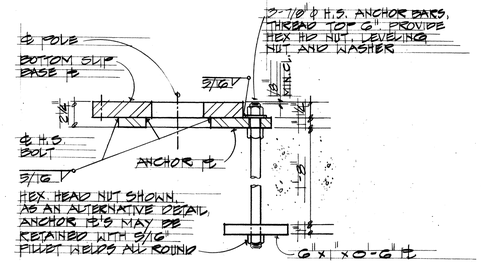
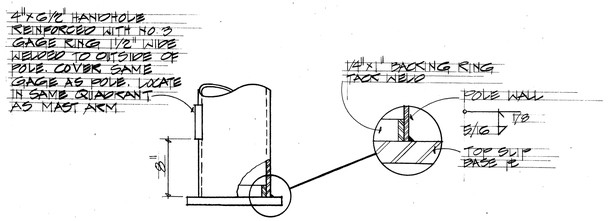


PLATE WASHER



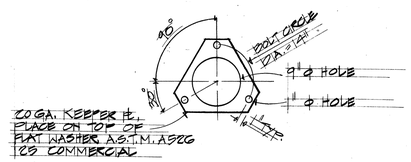
WELDED OPTION
SECTION "E-E"



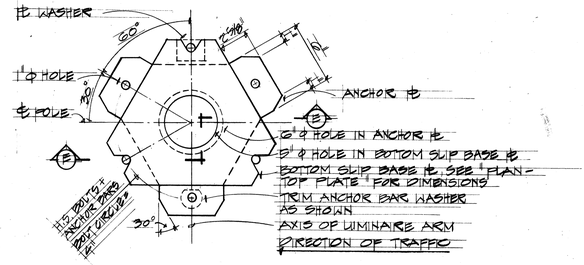
DETAIL "B"



POLE SPLICE



KEEPER PLATE



PLAN - BOTTOM PLATES

SLIP BASE PLATE DETAILS

A E32 TYPICAL SLIP BASE INSERT DETAIL FOR HIGHWAY LIGHTING STANDARDS
NOT TO SCALE

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

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E-32

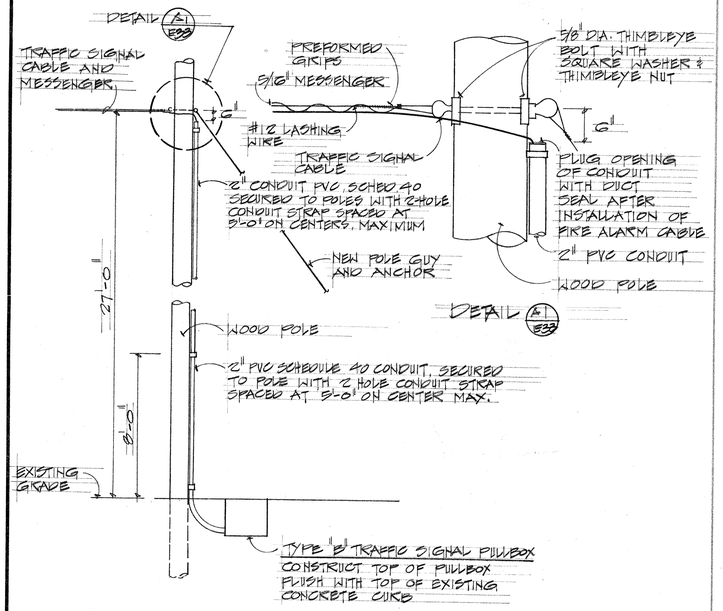
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HIGHWAY LIGHTING DETAILS

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI(73)15
SCALE: AS SHOWN DATE: DEC. 7, 1973

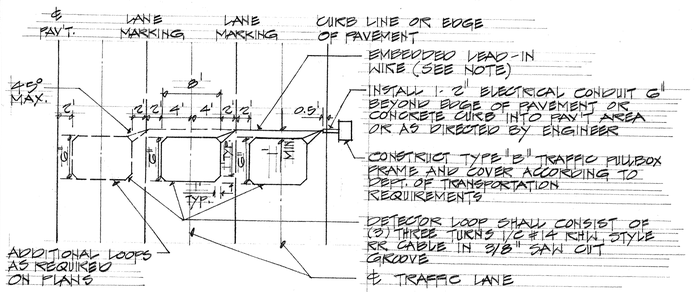
SHEET NO. 32 OF 60 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F.H.1-1(78):15	1974	189	369

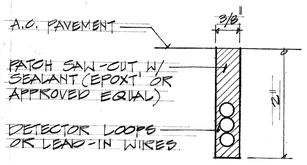


ELEVATION

A E-33 TRAFFIC SIGNAL RISER DETAIL
NOT TO SCALE



TYPICAL LAYOUT PLAN - THRU LANES

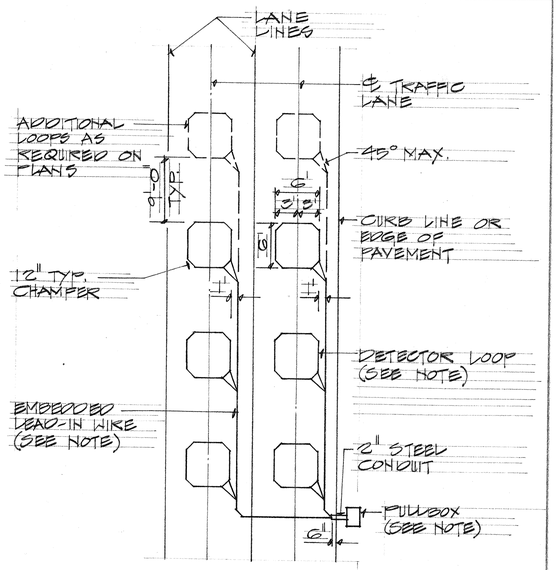


TYPICAL 'X'-SECTION OF LOOP SAW CUT

NOTES:

1. INSTALL DETECTOR LOOP 3 TURNS OF 1-1/C #14 RHW STYLE RR CABLE IN SAW CUT
2. EMBEDDED LEAD-IN WIRE SHALL BE TURNED 2 TURNS PER FT.
3. WIRING IN PULLBOX SHALL BE AS RECOMMENDED BY THE LOOP DETECTOR MANUFACTURER
4. EXACT LOCATION OF DETECTOR LOOPS SHALL BE DIRECTED BY ENGINEER

B E-33 DETECTOR LOOP DETAILS
NOT TO SCALE



TYPICAL LAYOUT PLAN - LEFT TURN LANES

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

RICHARD Y. ONO REGISTERED PROFESSIONAL ENGINEER No. 1390 HAWAII, U.S.A.

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E-33

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT No. I-HI-1(78):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET No. 33 OF 60 SHEETS

189

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI(78)15	1974	190	369

NEW PROGRAM TRANSMITTER SIMPLEX TIME RECORDER CO. 6111-843

EXISTING SUB DISTRIBUTION PANEL SDPA

EXISTING PROGRAM TRANSMITTER (VERIFY LOCATION & WIRING REQUIREMENTS)

INSTALL NEW 5#12 IN EXISTING FEEDER RACEWAY

EXISTING H.H. "C"

EXISTING H.H. "A"

EXISTING H.H. "B"

INSTALL NEW 5#12 IN EXISTING FEEDER RACEWAY

EXISTING H.H. "D"

B E-34 PROGRAM CONTROL SCHEMATIC DIAGRAM

ELECTRICAL SYMBOL LIST

⊖	RECEP. SPECIAL, 30A, 250V, 3 POLE, NEMA 6-30R
S_M	MANUAL MOTOR STARTER, NEMA SIZE M-1P
– – – –	SURFACE RATED CONDUIT
1P-1, 2 #-6	ARROW HOMERUN TO PANEL. LETTER DESIGNATES PANEL NUMBER DESIGNATES CIRCUITS
	NEW ELECTRIC PANEL
	EXISTING ELECTRIC PANEL
	TRANSFORMER
(A)	INDICATOR FOR DUCT SECTION
(1)	INDICATOR FOR ELECTRICAL NOTES.
(A/E-34)	INDICATOR FOR DETAIL TOP HALF-DETAIL NO. BOTTOM HALF-SHEET NO. DETAIL LOCATION
– – Ex – –	RACEWAY EXPOSED.

* PANEL 1B AC DIST PANEL

EXISTING PANEL "G"

EXISTING PANEL "K"

NEW PAD MTD DRY TYPE TRANSFORMER (A E-33)

DISCONNECT & REMOVE EXISTING J BOX AND 2-3P 100A CIRCUIT BREAKER. DEMOLISH WALL AS REQ'D.

NEW PROGRAM TRANSMITTER 1#6, 5#12 IN 1"C

INTERCEPT EXISTING RACEWAYS & CIRCUIT W/ NEW SUB-DISTRIBUTION PANEL. REPAIR EXISTING WALL TO MATCH EXISTING

REMOVE EXISTING 3#4/0 & 1#6/0 CABLES FROM EXISTING 3"C

INSTALL NEW 5#12 IN EXISTING FEEDER RACEWAY

PENETRATE EXISTING SHINGLE & REPAIR TO MATCH EXISTING

EXISTING HANDHOLE "E"

CUT EXISTING SIDEWALK & REPAIR TO MATCH EXISTING

UNIT EXISTING CLASSROOM "A" SERVICES

REMOVE EXISTING 3#4/0 & 1#6/0 CABLES FROM EXISTING 3"C

EXISTING HANDHOLE "D"

INSTALL NEW 5#12 IN EXISTING FEEDER RACEWAY

EXISTING HANDHOLE "A"

NEW DRY TYPE TRANSFORMER

EXISTING H.D.O. TRANSFORMER VAULT

EXISTING PANEL "A"

EXISTING PANEL "B"

EXISTING ELECTRIC ROOM

SEE DETAIL (B E-33)

EXISTING PANEL "B"

EXISTING CAFETORIUM

BUILDING "C"

BUILDING "C"

NEW SURFACE RATED CONDUIT ROUTED AT BUILDING LINE PROVIDE CONDUIT STRAPS

* SEE ABOVE FOR NEW LOCATION

NEW PANEL "1B" PANEL "2A" LOCATED ELSEWHERE ABOVE

NEW PANEL "1BA" PANEL "2BA" LOCATED ELSEWHERE ABOVE

EXISTING HANDHOLE "B"

EXISTING PANEL "A"

EXISTING ADM. BUILDING

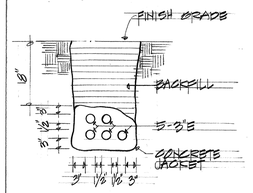
SIMPLEX (CONTROL STATION INDICATOR)

EXISTING PANEL "B"

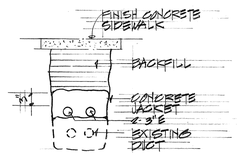
EXISTING HANDHOLE "F"

EXISTING PANEL "I"

EXISTING HANDHOLE "G"



DUCT SECTION (A)



DUCT SECTION (B)



EXISTING 3"E TO BE USED FOR NEW UNIT "B" FEEDER

DUCT SECTION (C) EXISTING



EXISTING 3"E TO BE USED FOR NEW UNIT "B" FEEDER

DUCT SECTION (D) EXISTING



EXISTING 3"E, UNIT "B" & 3" SPARE TO BE USED FOR NEW UNIT "B" FEEDER

DUCT SECTION (E) EXISTING

(A E-34) ELECTRICAL SITE PLAN FOR AIR CONDITIONING WORK AT NIMITZ ELEMENTARY SCHOOL

SCALE: 1/8"=1'-0"

DATE	REVISION
27 DEC 74	ADDED PROGRAM TRANSMITTER AT BLDG. B AND CONTROL CIRCUITS BETWEEN BLDG. B AND ELECTRIC ROOM IN CAFETORIUM.

RICHARD Y. OKIE — REGISTERED PROFESSIONAL ENGINEER — No. 1390 — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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

E-34

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL SITE PLAN & DUCT SECTIONS FOR A/C WORK AT NIMITZ ELEMENTARY

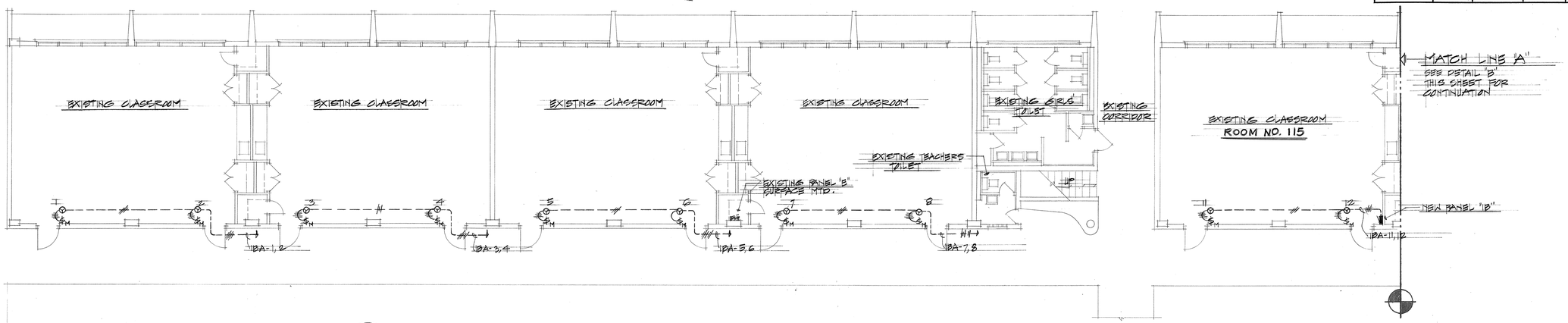
PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(75):15

SCALE: AS SHOWN DATE: DEC. 7, 1973

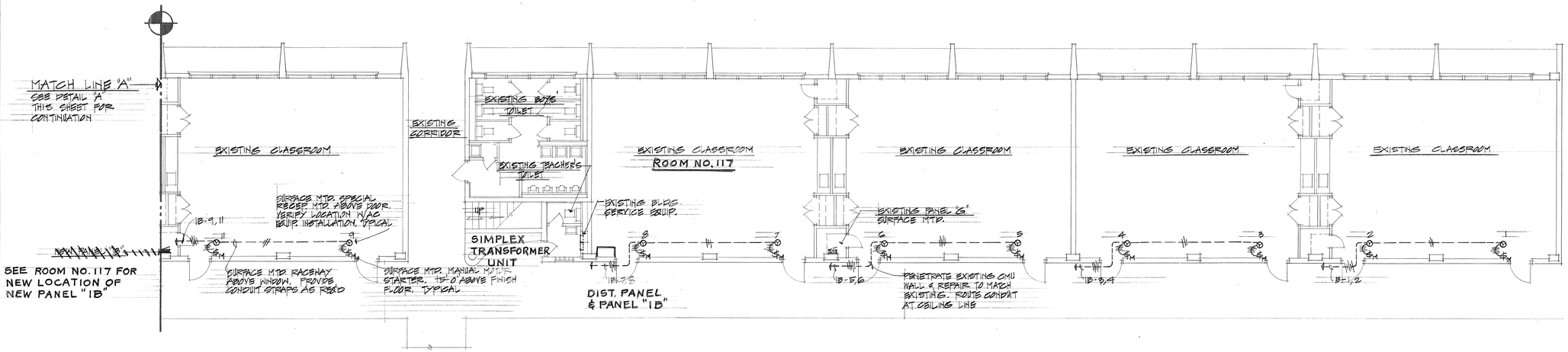
SHEET No. 34 OF 60 SHEETS

C.O. 190

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73)15	1974	191	369



A PARTIAL FIRST FLOOR BUILDING "D" - ELECTRICAL PLAN
E-35 SCALE: 1/8" = 1'-0"

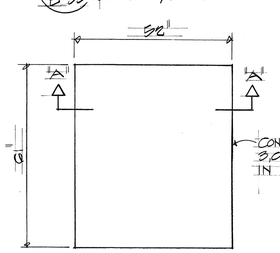


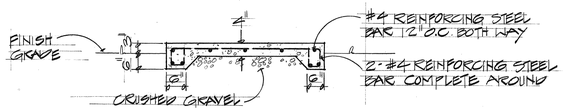
B PARTIAL FIRST FLOOR BUILDING "D" - ELECTRICAL PLAN
E-35 SCALE: 1/8" = 1'-0"

PANEL "1B"

208Y/120 VOLTS, 3 PHASE, 4 WIRE
BREAKER MIN. A.I.C. 7,500
SURFACE MTG., 225A MAIN LUGS ONLY

CKT. NO.	USE	CIRCUIT BREAKER POLES	CIRCUIT BREAKER AMPS	CONNECTED LOAD (KVA) A	B	C	WIRE SIZE
1	A.C. UNIT	2	50	2.4	2.4		10
2				2.4	2.4		
3				2.4		2.4	
4				2.4		2.4	
5					2.4	2.4	
6					2.0	2.0	
7				2.4	2.4		
8				2.4	2.4		
9	" (FPB PANEL 1BA & 2B)			2.4		2.4	"
10	FPB (FPB PANEL 1BA & 2B)			1.0		1.0	—
11	A.C. UNIT				2.4	2.4	10
12	FPB (AC UNIT PANEL 1BA & 2B)	"	"		1.0	1.0	—
	PANEL 2BA SIMILAR	TOTAL LOAD/PHASE		17.8	17.4	16.0	
	PANEL 1BA & 2B SIMILAR EXCEPT AS NOTED.	TOTAL		51.2	KVA		
		DEMAND FACTOR		0.94			
		DEMAND LOAD		48.1	KVA		





NOTE:
1. TRANSFORMER PAD DIMENSIONS TAKEN FROM WESTINGHOUSE 300 KVA TRANSFORMER. ELECTRICAL CONTRACTOR TO OBTAIN EXACT DIMENSIONS FROM SUPPLIER.
2. OBTAIN FROM SUPPLIER CONDUIT STUB UP LOCATION & BOLT REQUIREMENTS PRIOR TO CONSTRUCTION.

C TRANSFORMER CONCRETE PAD DETAIL
E-35 SCALE: 1/2" = 1'-0"

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

RICHARD Y. TOM REGISTERED PROFESSIONAL ENGINEER No. 1390 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

E-35

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

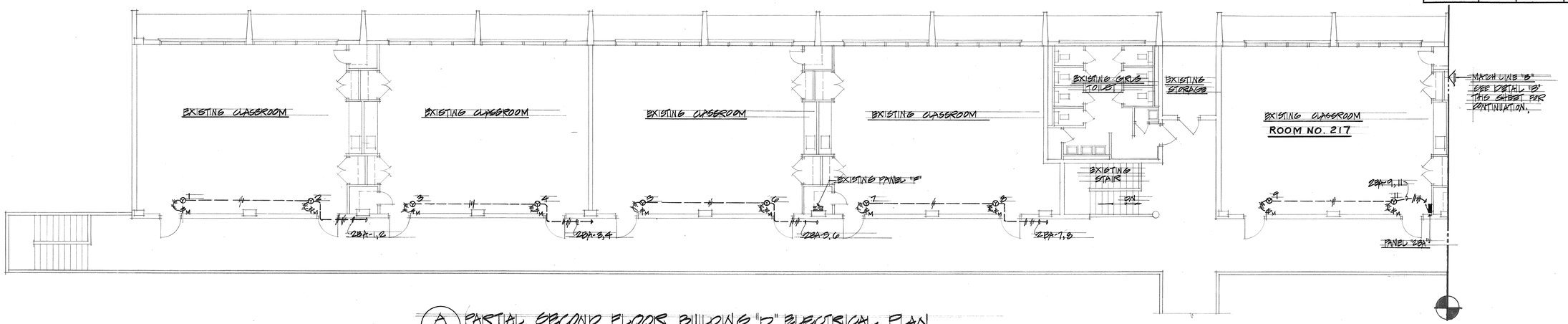
PARTIAL ELECTRICAL PLAN BLDG "D"
A/C WORK AT NIMITZ ELEMENTARY

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(73)15

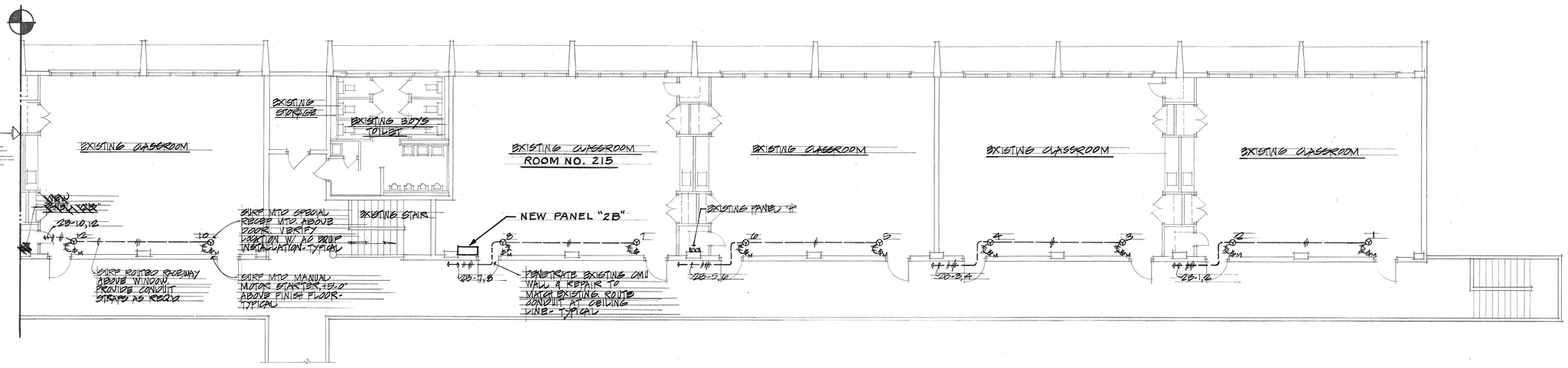
SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET NO. 35 OF 60 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(78):5	1974	192	369



A PARTIAL SECOND FLOOR BUILDING "D" ELECTRICAL PLAN
E-36 SCALE: 1/8"=1'-0"



B PARTIAL SECOND FLOOR BUILDING "D" ELECTRICAL PLAN
E-36 SCALE: 1/8"=1'-0"

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

E-36

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PARTIAL ELECTRICAL PLAN-BLDG "D"
A/C WORK AT NIMITZ ELEMENTARY

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(78):15

SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET NO. 36 OF 60 SHEETS

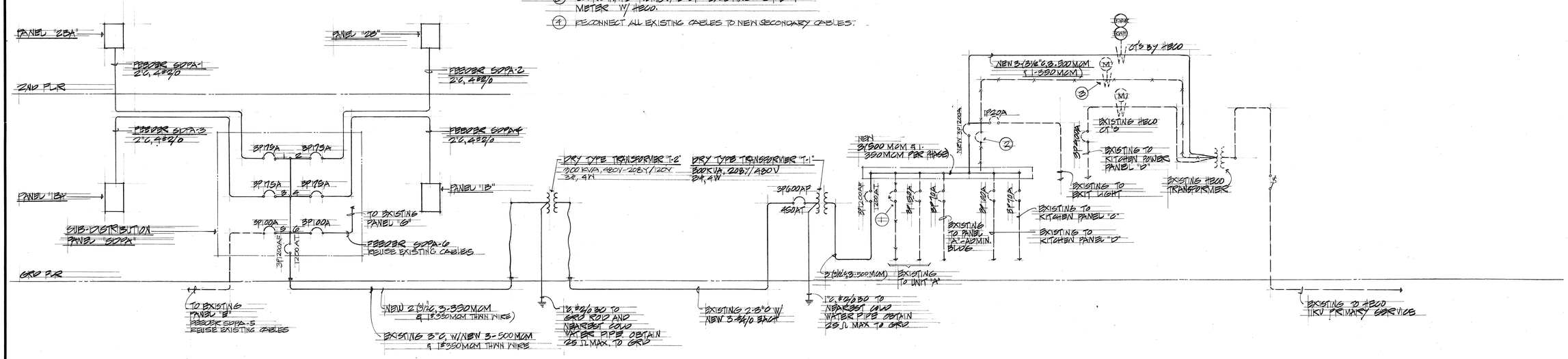
RICHARD Y. OKIMOTO REGISTERED PROFESSIONAL ENGINEER No. 1590 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(78)15	1974	193	369

ELECTRICAL NOTES:

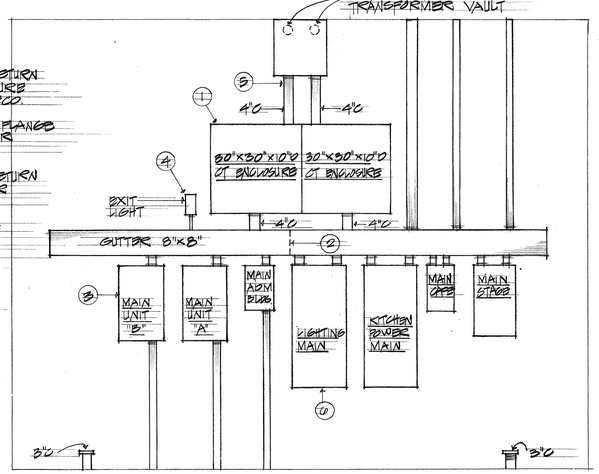
1. DISCONNECT, REMOVE & RETURN TO STATE OF HAWAII 3P150A CIRCUIT BREAKER
2. DISCONNECT, REMOVE & RETURN TO STATE OF HAWAII 3P400A CIRCUIT BREAKER
3. COORDINATE REMOVAL OF EXISTING CT'S & METER W/ HECO.
4. RECONNECT ALL EXISTING CABLES TO NEW SECONDARY CABLES.



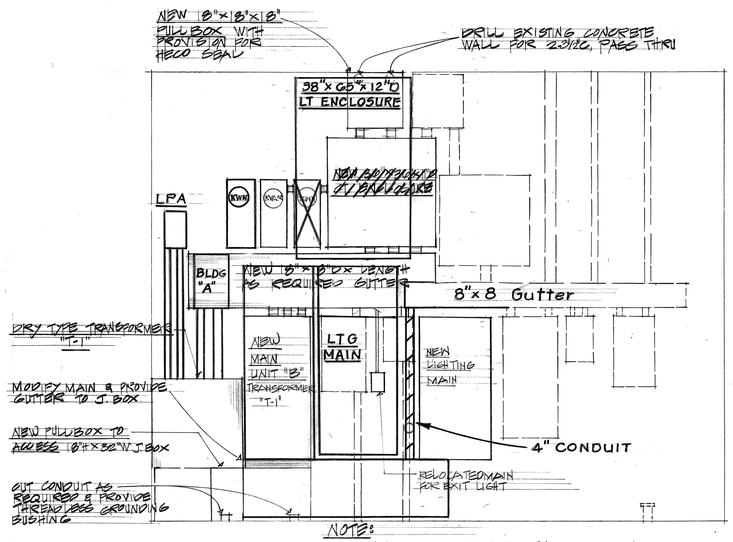
(A) ONE LINE DIAGRAM
E-37

ELECTRICAL NOTES:

1. DISCONNECT, REMOVE & RETURN TO OWNER CT'S ENCLOSURE COORDINATE WORK W/ HECO.
2. CUT GUTTER & PROVIDE FLANGE TO MATCH EXISTING FOR GUTTER EXTENSION.
3. DISCONNECT, REMOVE & RETURN TO OWNER MAIN BREAKER FOR UNIT "B"
4. DISCONNECT & RELOCATE MAIN FOR EXIT LIGHT
5. DISCONNECT & REMOVE CONDUCTOR & CABLE.
6. DISCONNECT, REMOVE & RETURN TO OWNER MAIN BREAKER FOR LIGHTING.

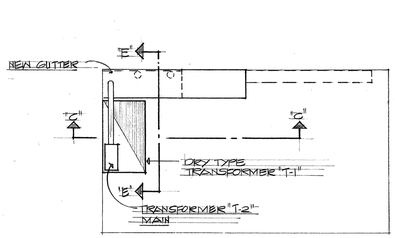


(B) DEMOLITION ELEVATION EXISTING ELECTRIC ROOM
E-37 SCALE: 1/2"=1'-0"

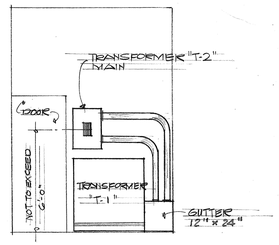


NOTE:
1. DASH LINES INDICATES EXISTING CONDITION.
2. SOLID LINES INDICATES NEW CONDITION.

(C) ELEVATION EXISTING ELECTRIC ROOM
E-37 SCALE: 1/2"=1'-0"



(D) ELECTRICAL PLAN EXISTING ELECTRICAL ROOM
E-55 SCALE: 1/4"=1'-0"



(E) ELEVATION - EXISTING ELECTRIC ROOM
E-55 SCALE: 1/4"=1'-0"

E-37

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ONE LINE DIAGRAM & MISC. DETAILS FOR A/C WORK AT NIMITZ ELEMENTARY
PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(78):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

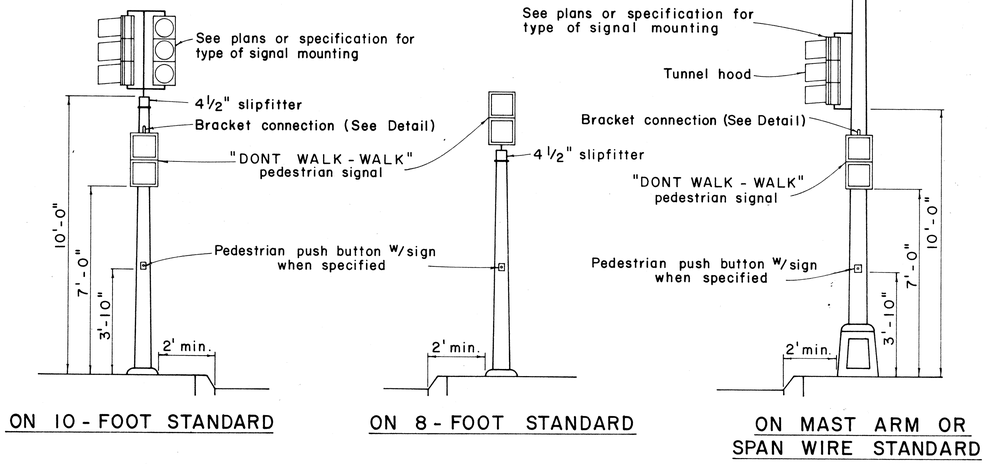
SHEET No. 37 OF 60 SHEETS

RICHARD Y. OKITA — REGISTERED PROFESSIONAL ENGINEER — No. 3893 — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(19);1E	1974	194	369

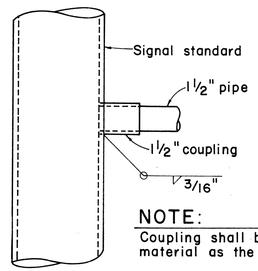


ON 10 - FOOT STANDARD

ON 8 - FOOT STANDARD

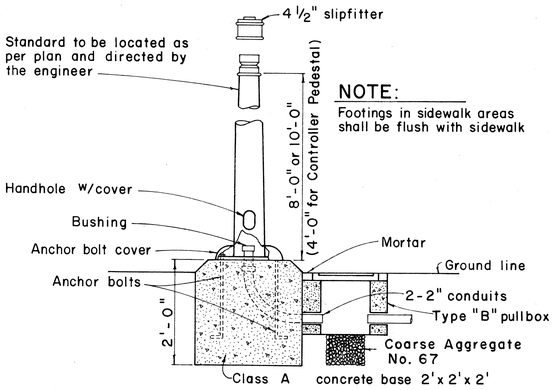
ON MAST ARM OR SPAN WIRE STANDARD

TYPICAL EQUIPMENT MOUNTINGS



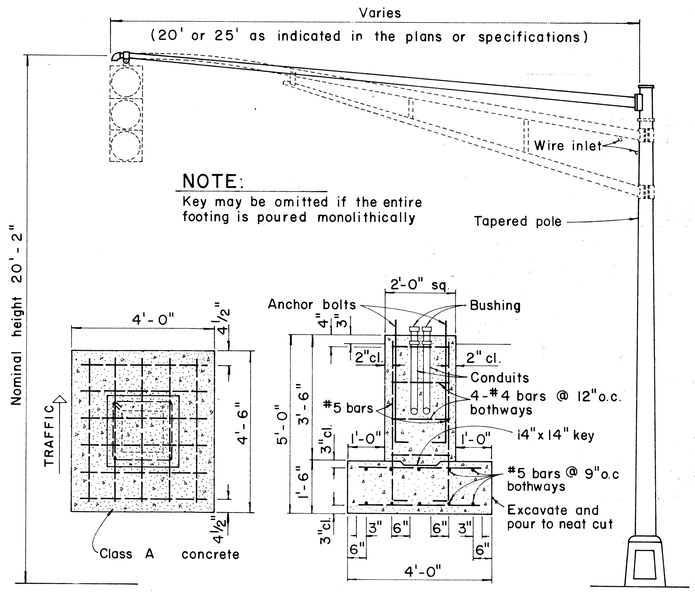
NOTE:
Coupling shall be of the same material as the standard

DETAIL OF BRACKET CONNECTION



NOTE:
Footings in sidewalk areas shall be flush with sidewalk

FOOTING FOR SIGNAL STANDARD OR CONTROLLER PEDESTAL



NOTE:
Key may be omitted if the entire footing is poured monolithically

MAST ARM FOOTING AND STANDARD

TRAFFIC SIGN AS SPECIFIED IN PLAN
1. "PUSH BUTTON FOR GREEN LIGHT"(R10-3)
2. "PUSH BUTTON FOR WALK SIGNAL"(R10-4)

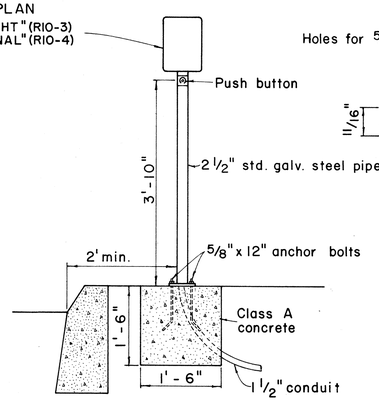


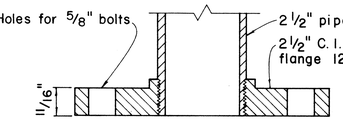
R10-3
9" x 12"



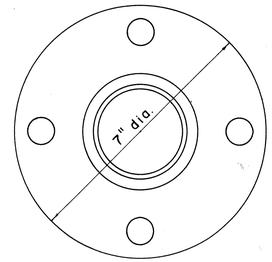
R10-4
9" x 12"

NOTE:
1. Conduits shall protrude 2"max. above finished surface of foundation.
2. Conduits shall slope away from pole foundation.
3. Post and base shall be painted with one coat of approved weather proof dark green enamel.



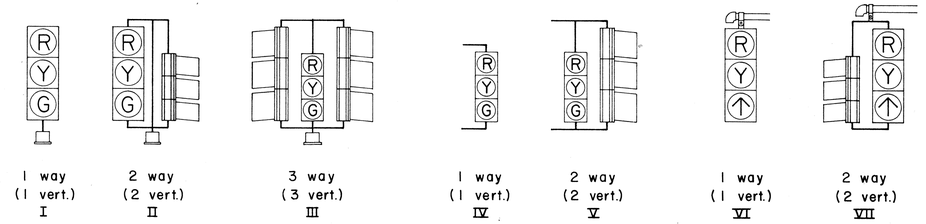


SECTION



BASE DETAIL

PEDESTRIAN PUSH BUTTON POST AND FOOTING



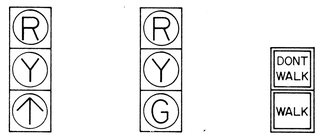
I way (1 vert.) I
2 way (2 vert.) II
3 way (3 vert.) III
I way (1 vert.) IV
2 way (2 vert.) V
I way (1 vert.) VI
2 way (2 vert.) VII

SLIPFITTER MOUNTINGS

BRACKET MOUNTINGS

MASTARM MOUNTINGS

TYPICAL VEHICULAR AND PEDESTRIAN SIGNAL MOUNTINGS



1 - Vertical 3 - Section

1 - Vertical 3 - Section

1 - Dont Walk Walk

TYPICAL SIGNAL ARRANGEMENTS

E-38

APPROVAL RECOMMENDED:

Eiichi Tanaka 12/29/69
TRAFFIC ENGINEER DATE

Edwin E. Eslick 12/30/69
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Revise code nos. for Pedestrian Push Button signs.	H.T.	3/23/72

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL SYSTEM

MISCELLANEOUS DETAILS

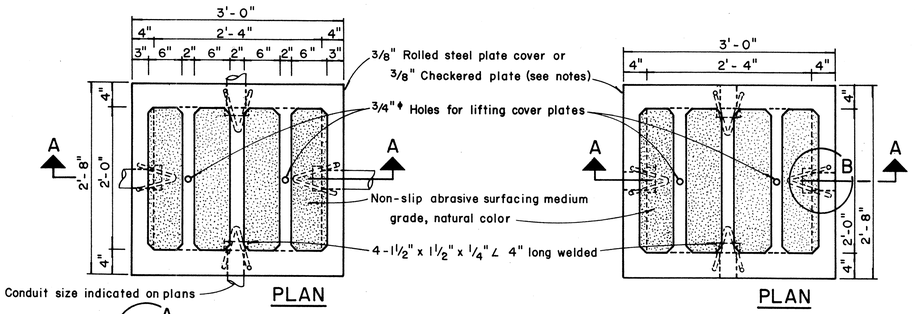
PEARL HARBOR INTERCHANGE
P.A.I. PROJECT NO. I-HI-1(78);1E
Not to Scale DATE: DEC. 7, 1973

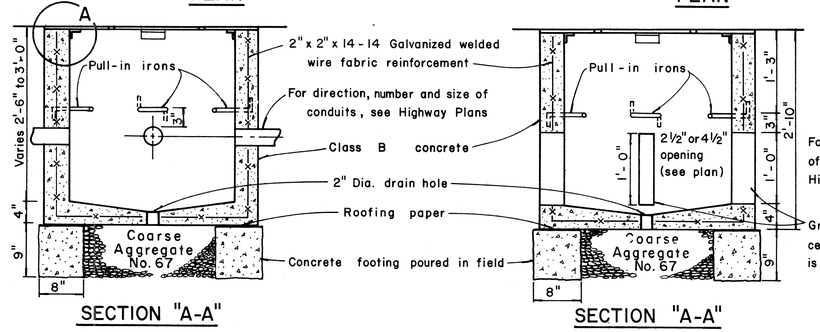
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
ORIGINAL PLAN
NOTE BOOK
No.

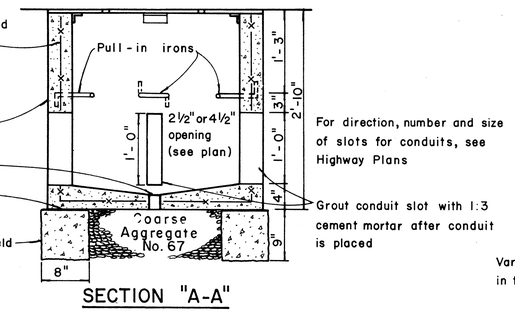
SHEET No. 38 OF 60 SHEETS DT 400

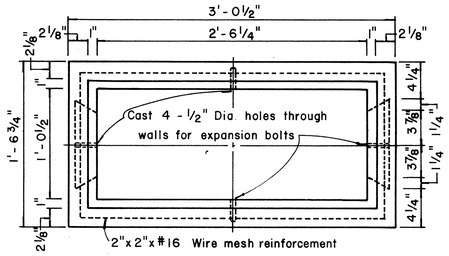
PRINTED ON NO. 1000H CLEARPRINT

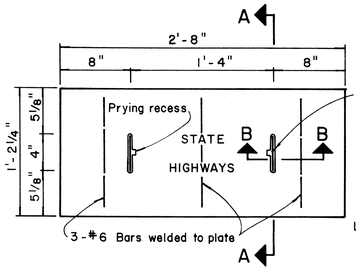
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	~~HI-1(17)~~ I-HI-1(133):15	~~1974~~	195	369

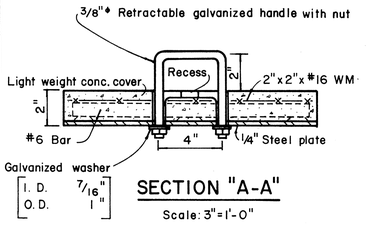


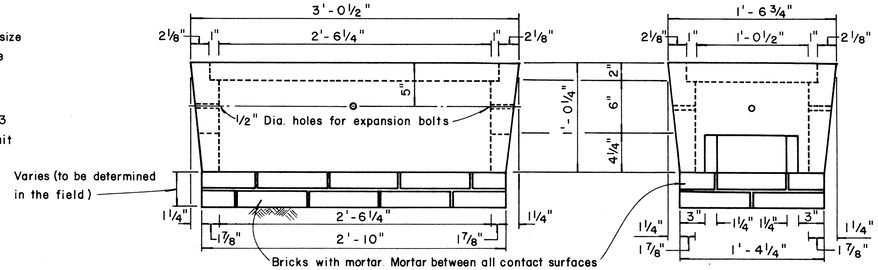


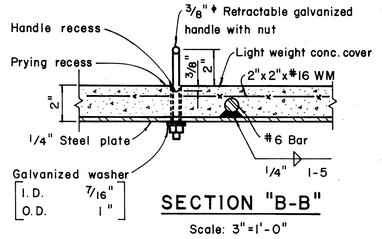


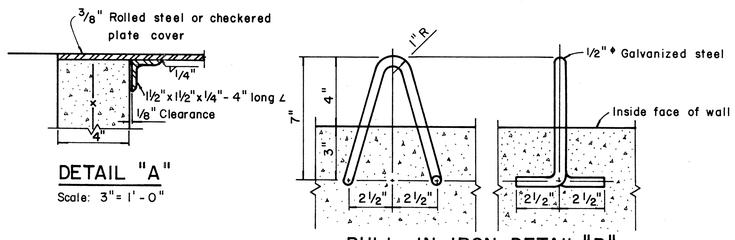


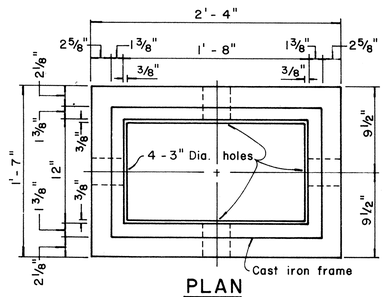


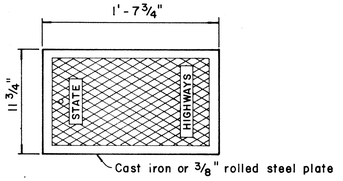


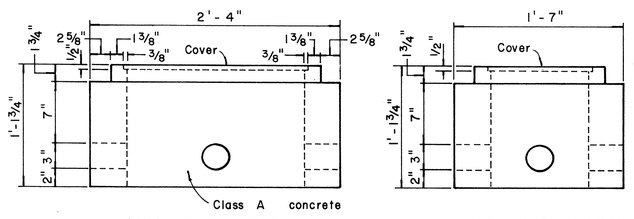












NOTE:
Steel rim shall be welded to bottom of steel cover if necessary so that top of cover and frame are flush.

NOTES: (FOR TYPE "A" PULLBOX)

1. 3/8" Rolled steel plate cover with non-slip abrasive surfacing medium grade, natural color shall be used on all pullboxes located on sidewalk areas where pedestrians are walking.
2. 3/8" Checkered plate cover shall be used on all pullboxes located in median areas and other locations where there are no pedestrians walking.
3. Pull irons shall be placed opposite each conduit slot.
4. Covers on all pullboxes located in sidewalk areas shall be set flush with the concrete sidewalk.
5. Each pullbox shall have a pair of pull irons opposite each other for lifting purposes.

APPROVAL RECOMMENDED:
Eiichi Tanaka
TRAFFIC ENGINEER — DATE 12/27/69

APPROVED:
ASSISTANT CHIEF, ENGINEERING — DATE 12-30-69

E-39

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
PULLBOXES

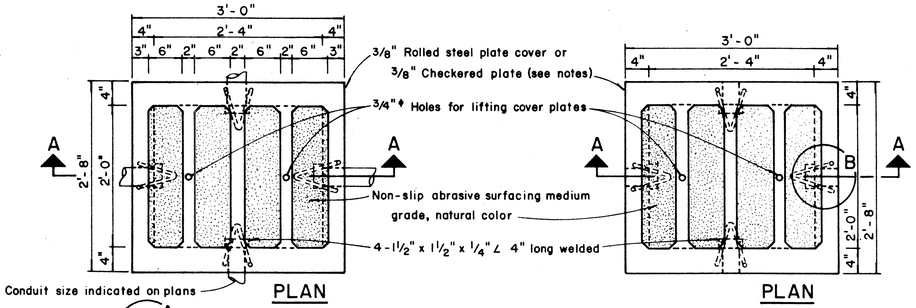
PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(133):15
Scale as noted — Date

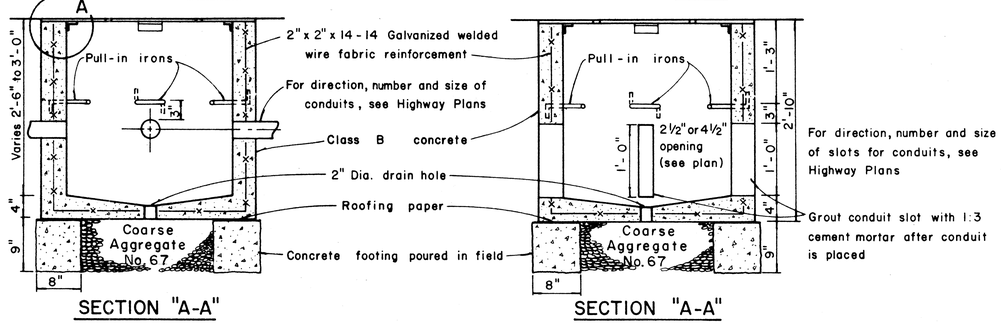
SHEET No. 39 OF 60 SHEETS DT 401

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

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(13)-H	1974	196	869



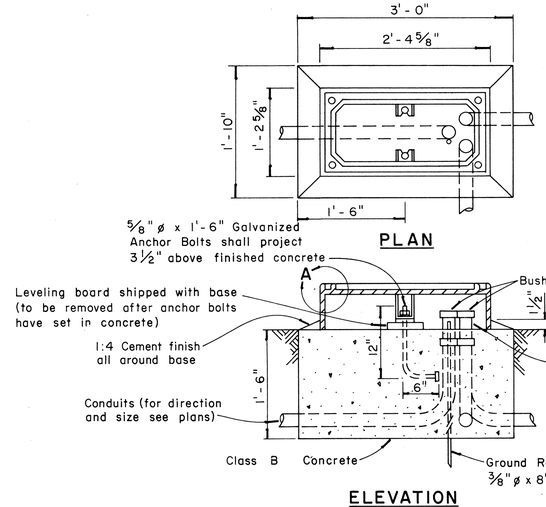


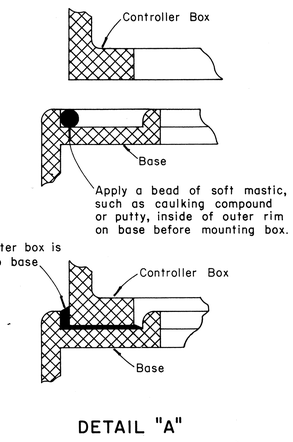
TYPE "A" PULLBOX CAST-IN-PLACE

Scale: 1" = 1'-0"

TYPE "A" PULLBOX PRECAST

Scale: 1" = 1'-0"

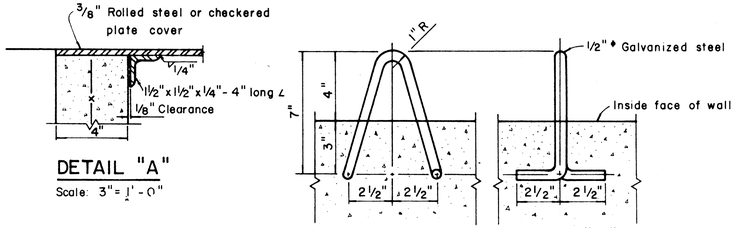




NOTE:
Dimensions and details are approximate only. Exact details and dimensions shall be furnished by the manufacturer and as directed by the Engineer.

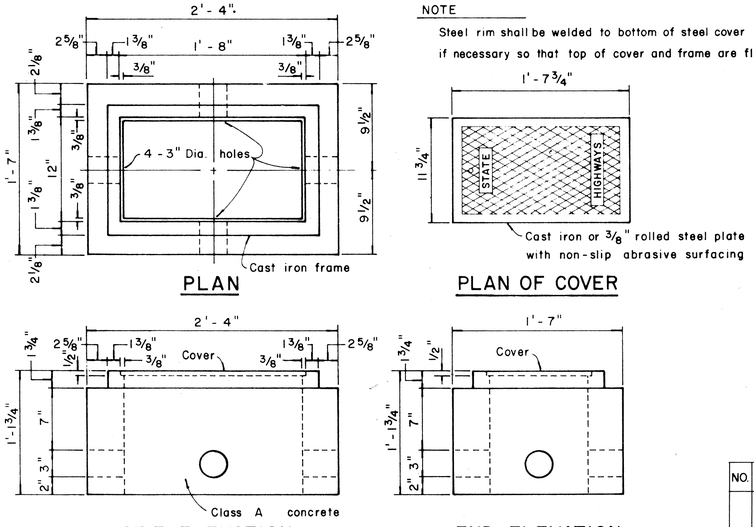
INSTALLATION DETAILS FOR TYPE "M" CONTROLLER BOX

Scale: 1" = 1'-0"



NOTES: (FOR TYPE "A" PULLBOX)

1. 3/8" Rolled steel plate cover with non-slip abrasive surfacing medium grade, natural color shall be used on all pullboxes located on sidewalk areas where pedestrians are walking.
2. 3/8" Checkered plate cover shall be used on all pullboxes located in median areas and other locations where there are no pedestrians walking.
3. Pull irons shall be placed opposite each conduit slot.
4. Covers on all pullboxes located in sidewalk areas shall be set flush with the concrete sidewalk.
5. Each pullbox shall have a pair of pull irons opposite each other for lifting purposes.



TYPE "B" PULLBOX

Scale: 1 1/2" = 1'-0"

APPROVAL RECOMMENDED:
Eiichi Tanaka
TRAFFIC ENGINEER — 12/20/69 DATE

APPROVED:
ASSISTANT CHIEF, ENGINEERING — 12-30-69 DATE

E-40

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
PULLBOXES AND TYPE "M" CONTROLLER BOX

Scale as noted — Date:

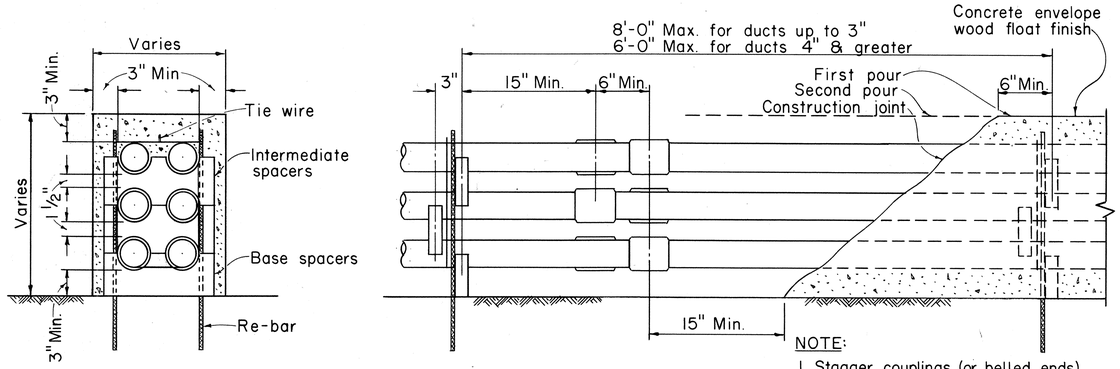
SHEET No. 40 OF 60 SHEETS DT 402

196

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

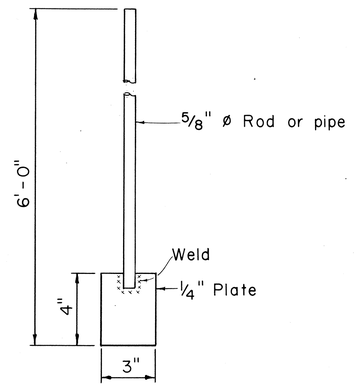
PRINTED ON NO. 1000M CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	197	369

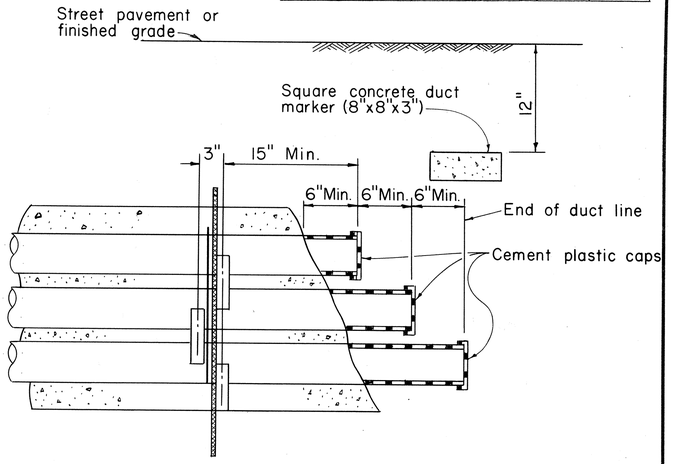


NOTE:
1. Stagger couplings (or belled ends).
2. Anchor conduit with # 14 steel tie wire & #4 reinforcing bars.
3. Cement all joints.
4. Avoid standing on conduit.

TYPICAL DUCT LINE
(6-WAY DUCT SHOWN)
Scale: 1 1/2" = 1'-0"

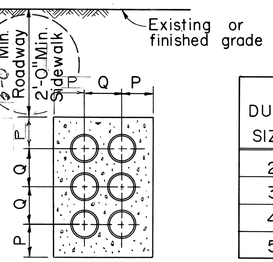


HAND SPADE
Scale: 3" = 1'-0"



TYPICAL STUB OUT DETAIL
(6-WAY DUCT SHOWN)
Scale: 1 1/2" = 1'-0"

THE MOST RESTRICTIVE CONDITION SHALL PREVAIL WHERE CONFLICT OCCURS BETWEEN HECO REQUIREMENTS, GENERAL ORDER #6 OF THE STATE OF HAWAII, AND/OR THE STATES ACCOMODATION POLICY

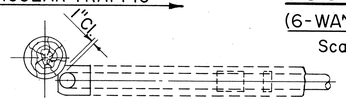


NOTE:
1. Maintain 1 1/2" minimum spacing between conduit; 3" minimum concrete envelope around top, bottom & sides.
2. Dimensions are minimum dimensions.
3. THE BOTTOM ROW IN AN ENCASED DUCT BANK OF 3 OR MORE LAYERS SHALL BE TYPE DB DUCTS, THE REMAINING DUCTS SHALL BE TYPE EB.

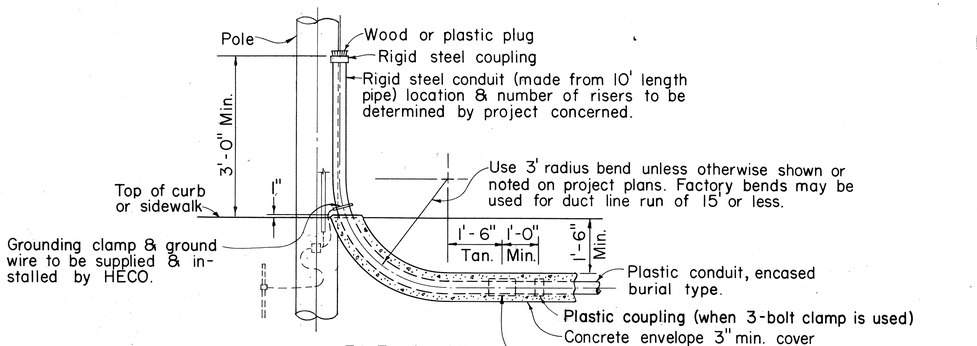
DUCT SIZE	DIMENSIONS (INCHES) P	Q
2	4 1/4	4 1/8
3	4 3/4	5 1/8
4	5 1/4	6 1/4
5	5 7/8	7 5/8

ENCASED BURIAL TYPICAL DUCT SECTION
(6-WAY DUCT SHOWN)
Scale: 1" = 1'-0"

DIRECTION OF VEHICULAR TRAFFIC



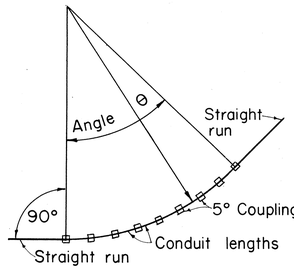
PLAN



ELEVATION

TYPICAL RISER DETAIL
(POLE RISER SHOWN)
Scale: 1/2" = 1'-0"

TABLE "A"	
APPROX. RADIUS OF BEND, R	LENGTH OF EA. CONDUIT-FT USING 5° BEND AT COUPL.
11'-6"	1
17'-3"	1.5
23'-0"	2
28'-9"	2.5
34'-6"	3
40'-3"	3.5
46'-0"	4
51'-9"	4.5
57'-6"	5
69'-0"	6
80'-6"	7
92'-0"	8

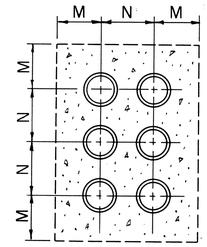


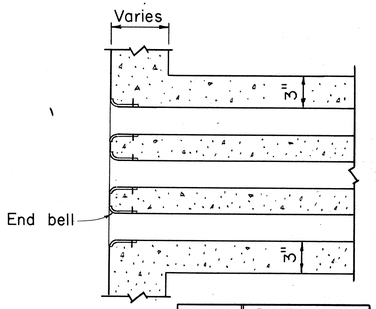
EXAMPLE:
Radius of bend (R) = 60'
Angle of bend (θ) = 45°
From Table A, the nearest value to 60' radius is 57'-6". Length of conduit = 5'.
From Table B, for 45° angle.
Number of couplings required = 9
Number of conduit lengths required = 8

TABLE "B"		
ANGLE OF BEND θ	NO. OF COUPLINGS	LENGTH OF CONDUIT
15°	3	2
30°	6	5
45°	9	8
60°	12	11
75°	15	14
90°	18	17

METHOD OF FORMING CURVES:
There are 4 methods of forming curves with plastic conduit.
1. "Cold" bending: Limit trench formed radius sweeps to 25' minimum radius.
2. "Heat" bending: Do not heat bend conduit.
3. 5° angle couplings may be used as shown.
4. Factory made elbows and sweeps may be used only when specified by Engineer.

APPLICATION OF 5° COUPLING FOR LONG RADIUS BENDS





TYPICAL CONDUIT ENTRANCE INTO HANDHOLE, MANHOLE & VAULT WALLS
(6-WAY DUCT SHOWN)
Scale: 1 1/2" = 1'-0"

DUCT SIZE	DIMENSIONS (INCHES) M	N
2	4	5
3	5	6
4	5 1/2	7
5	6	8

DATE	REVISION
7/5/74	ADDED HECO APPROVAL SIGNATURE
1/26/74	REVISED NOTES FOR COVER OVER DUCTLINES

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

APPROVED: VK RN
R D Lueder 7/5/74
Hawaiian Electric Co., Inc. Date

E-41
HECo., Inc. Drawing Number
20191

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION STANDARDS PLASTIC CONDUIT UNDERGROUND DUCT LINES

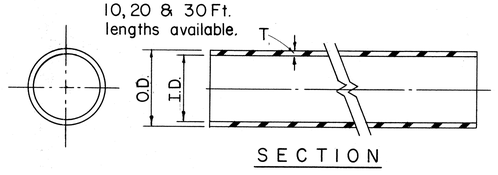
Scale as noted

SHEET No. 41 OF 62 SHEETS

ADD.197R

DATE	REVISION
7/5/74	ADDED HECO APPROVAL SIGNATURE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(78)15	1974	198	369

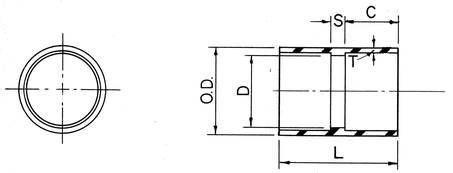


SECTION

CONDUIT

CONDUIT SIZE	EB (ENCASED BURIAL) HECO CODE	O.D.	I.D.	T (MIN.)	WEIGHT #/10² FT.	DB (DIRECT BURIAL) HECO CODE	O.D.	I.D.	T (MIN.)	WEIGHT #/10² FT.
2	29002	2.375	•2.25	.060	21	29010	2.375	2.15	.110	38
3	29004	3.500	3.35	.075	39	29012	3.500	3.25	.125	64
4	29006	4.500	4.31	.095	63	29014	4.500	4.18	.160	104
5	29008	5.563	5.36	.100	82	29016	5.563	5.20	.180	146

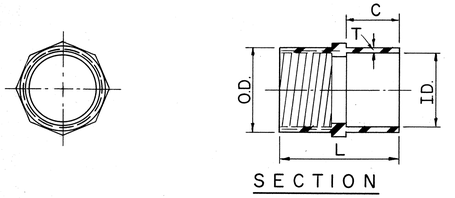
NOTE:
Type EB & DB Conduits have same O.D. for a given size. All fittings which go over Conduits are DB type & fit both types of Conduits.



SECTION

COUPLING

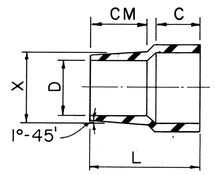
SIZE	HECO CODE	O.D.	D	L	C	S	T
2	29018	2.620	2.255	2 7/16	1.16	.110	.110
3	29020	3.780	3.350	3 3/8	1.63	.120	.125
4	29022	4.855	4.310	3 11/16	1.78	.120	.160
5	29024	5.965	5.363	4 3/32	1.97	.160	.180



SECTION

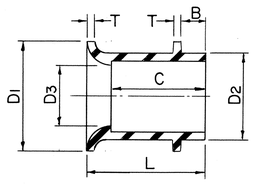
ADAPTER - PLASTIC TO STEEL

SIZE	HECO CODE	O.D.	I.D.	L	T	C
2	29026			2 15/16	1 1/16	1.16
3	29028			3 7/16	1 5/8	1.63
4	29030			3 11/16	1 23/32	1.78
5	29032			4 1/16	1 27/32	1.97



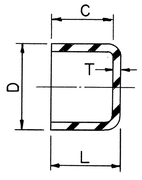
ADAPTER - PLASTIC TO TRANSITE (ASBESTOS-CEMENT)

SIZE	HECO CODE	L	X	C.M.	D	C
2	29034	3 1/16	2.580	1 3/4	2.18	1.16
3	29036	3 19/32	3.620	1 3/4	3.09	1.63
4	29038	4 1/32	4.620	2	4.03	1.78
5	29040					



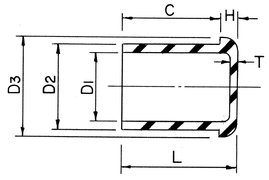
END BELL

SIZE	HECO CODE	D1	D2	D3	B	C	L	T
2	29042	3.01	2.520	2.255	.50	1.16	1.54	.060
3	29044	4.10	3.680	3.350	.75	1.63	2.00	.075
4	29046	5.31	4.725	4.310	.75	1.78	2.28	.095
5	29048	6.36	5.805	5.363	1.00	1.97	2.47	.100



CAP (RIGID) - FOR SEMI-PERMANENT USE

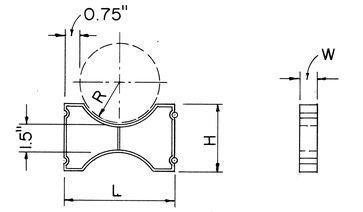
SIZE	HECO CODE	D	C	L	T
2	29050	2.52	.59	.65	.060
3	29052	3.68	.81	.89	.075
4	29054	4.725	.91	1.01	.095
5	29056	5.805	1.00	1.10	.100



CAP (TEMPORARY)

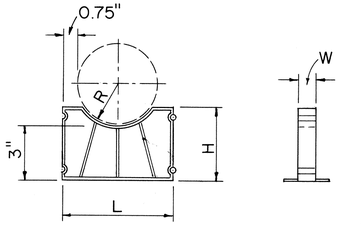
SIZE	HECO CODE	D1	D2	D3	C	H	L	T
2	29058	2.260	2.375	2.500	.593	.125	.718	.060
3	29060	3.360	3.500	3.656	.812	.156	.968	.075
4	29062	4.320	4.500	4.687	.906	.187	1.092	.095
5	29064	5.375	5.638	5.760	1.000	.218	1.218	.100

NOTE:
Cap will go over conduit or "plug" the coupling.



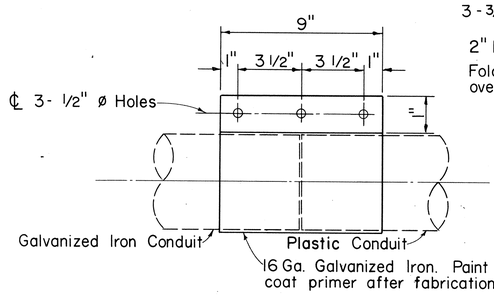
INTERMEDIATE SPACER

SIZE	HECO CODE	L	W	H	R
2	29066	4.00	1	2.75	1.188
3	29068	5.00	1	3.25	1.750
4	29070	6.13	1	3.75	2.250
5	29072	7.50	1	4.25	2.782



BASE SPACER

SIZE	HECO CODE	L	W	H	R
2	29074	4.00	1	3.63	1.188
3	29076	5.00	1	3.88	1.750
4	29078	6.13	1	4.13	2.250
5	29080	7.50	1	4.38	2.782



SIZE	HECO CODE
2	13126
3	13128
4	13130
5	13132

3 - BOLT CLAMP

NOTES:
1. All dimensions in inches.
2. Spacers shown are different than that used for transite.
3. These accessories are to be used with ABS (Acrylonitrile-Butadiene - Styrene), or PVC (Poly-Vinyl Chloride) Plastic Conduit, per HECO purchase specification M7001-O.

APPROVED: VK RN
R P Laird
Hawaiian Electric Co., Inc.
7/5/74 Date

E-42

HECo., Inc. Drawing Number
42276

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
ACCESSORY DETAILS FOR PLASTIC CONDUIT UNDERGROUND DUCT LINES

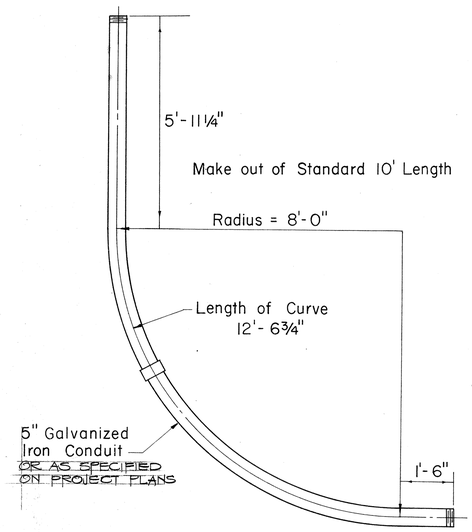
Scales: Not to Scale

SHEET No. 42 OF 62 SHEETS

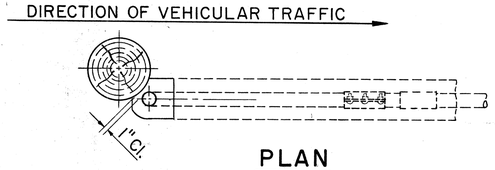
198R

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

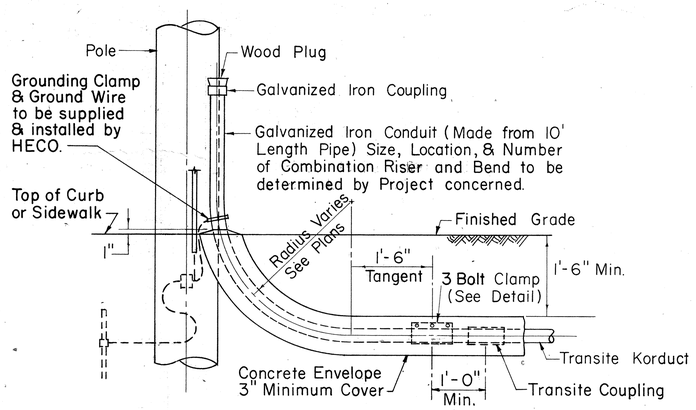
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(73):15	1974	199	269



46 KV COMBINATION RISER AND BEND
(8'-0" RADIUS)
Not to Scale

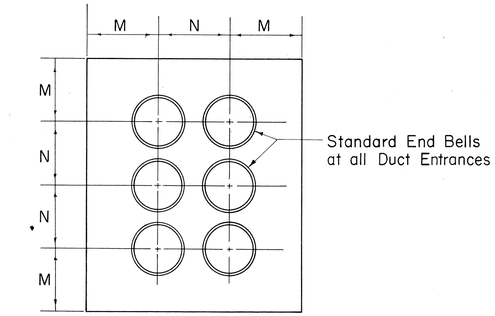


PLAN



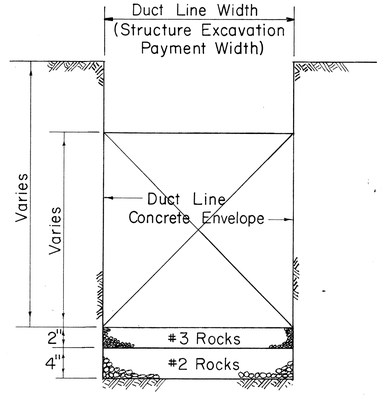
ELEVATION

TYPICAL DETAIL COMBINATION RISER AND BEND
Scale: ¾" = 1'-0"



TYPICAL DUCT DETAIL AT MANHOLE WALL
Not to Scale

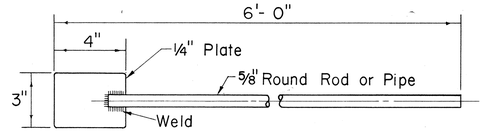
SIZE	M	N
3"	5"	6"
4"	5½"	7"
4½"	5½"	7½"
5"	6"	8"



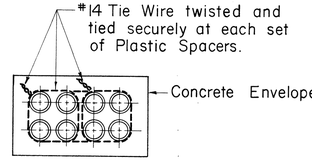
TYPICAL EXCAVATION DETAIL
Not to Scale

NOTES

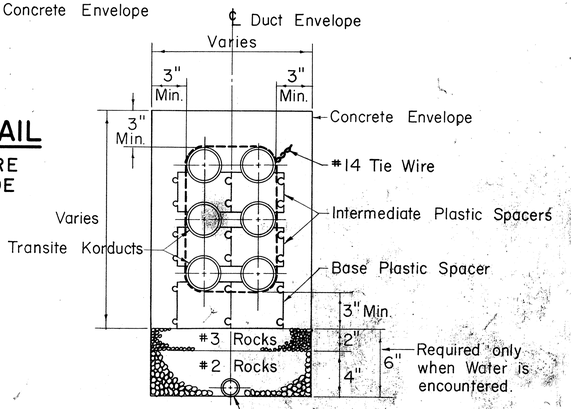
1. Size of Concrete Envelope and Depth of Excavation to be determined by Project concerned.
2. Rock Foundation required only when Water is encountered



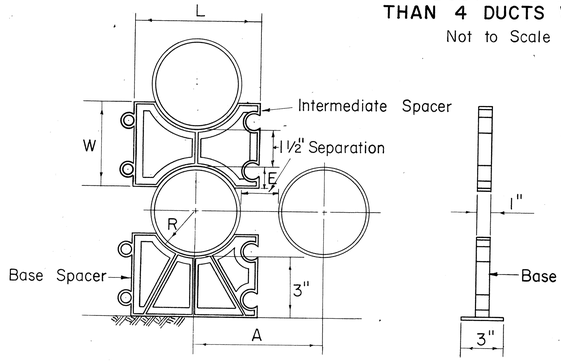
CONCRETE DUCT ENVELOPE TAMPING ROD
Scale: 3" = 1'-0"



TIE WIRE DETAIL
FOR DUCT LINE MORE THAN 4 DUCTS WIDE
Not to Scale



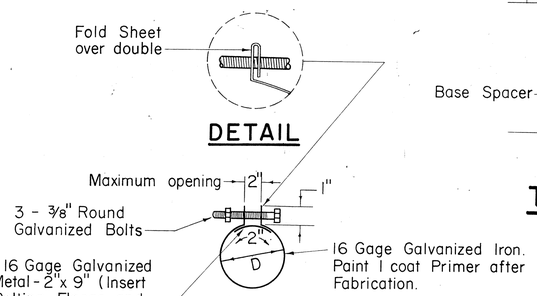
TYPICAL DUCT PLASTIC SPACERS & DRAINAGE SECTION
(6 WAY DUCT SHOWN - 3 HIGH - 2 WIDE)
Not to Scale

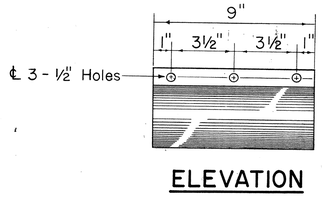


TYPICAL PLASTIC SPACERS
Not to Scale

SIZE	R	E	W	A	L
3"	$1\frac{27}{32}$"	⅞"	$3\frac{1}{4}$"	$5\frac{1}{8}$"	5"
4"	$2\frac{13}{32}$"	$1\frac{1}{8}$"	$3\frac{3}{4}$"	$6\frac{1}{4}$"	$6\frac{1}{8}$"
$4\frac{1}{2}$"	$2\frac{23}{32}$"	$1\frac{1}{4}$"	4"	$6\frac{7}{8}$"	$6\frac{3}{4}$"
5"	$3\frac{1}{16}$"	$1\frac{3}{8}$"	$4\frac{1}{4}$"	$7\frac{5}{8}$"	$7\frac{1}{2}$"

For 1½" Separation





ELEVATION

3 BOLT CLAMP DETAIL
Scale: 3" = 1'-0"

APPROVED:

R P Lovell 7/5/74
HAWAIIAN ELECTRIC CO., INC. DATE
VK RN.

DATE	REVISION
7/5/74	ADDED HECO APPROVAL SIGNATURE
4/26/74	REVISED NOTE FOR 46KV RISER AND BEND

E-43

HECo., Inc. Drawing Number
18585 SHEET No. 1 OF 2 SHEETS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

CONSTRUCTION STANDARDS
TRANSITE KORDUCTS
UNDERGROUND DUCT LINES

Scales: As Noted Date

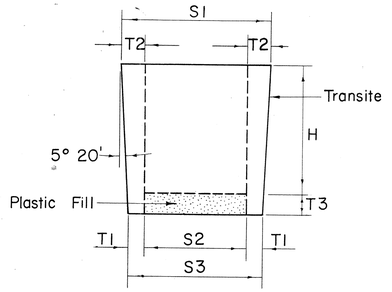
SHEET NO. 43 OF 62 SHEETS

LIETZ 1103 ARKWRIGHT TRACING CLOTH 10-60 200P

199R

DATE	REVISION
7/5/74	ADDED HECO APPROVAL SIGNATURE

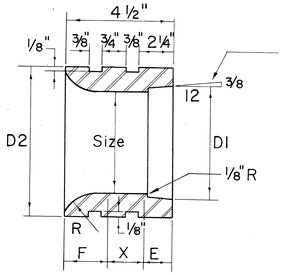
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(73):15	1974	200	369



PLUGS FOR TRANSITE KORDUCTS

Not to Scale

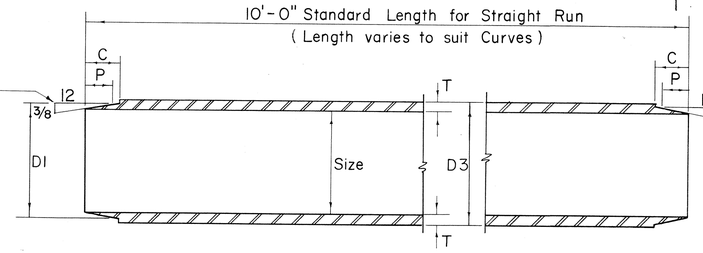
SIZE	H	S1	S2	S3	T1	T2	T3
3"	4"	3 3/8"	2"	2 5/8"	5/16"	11/16"	3/4"
4"	4 1/2"	4 27/64"	2 3/4"	3 37/64"	13/32"	27/32"	3/4"
4 1/2"	4 1/2"	4 59/64"	3"	4 5/64"	35/64"	31/32"	3/4"
5"	4 1/2"	5 27/64"	3 1/2"	4 37/64"	35/64"	31/32"	3/4"



STANDARD END BELLS

Not to Scale

SIZE	D1	D2	F	X	E	R
3"	3 25/64"	4 1/2"	1 11/32"	1 29/32"	1 1/4"	1 3/4"
4"	4 25/64"	5 3/4"	1 9/16"	1 9/16"	1 3/8"	2"
4 1/2"	4 57/64"	6 1/4"	1 9/16"	1 9/16"	1 3/8"	2"
5"	5 29/64"	7"	1 9/16"	1 7/16"	1 1/2"	2"



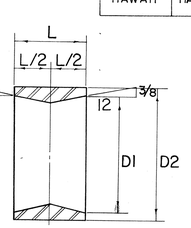
TRANSITE KORDUCTS

Not to Scale

SIZE	D1	D3	C	P	T
3"	3 25/64"	3 35/64"	1 1/8"	7/8"	17/64"
4"	4 25/64"	4 35/64"	1 1/4"	1"	17/64"
4 1/2"	4 57/64"	5 3/64"	1 1/4"	1"	17/64"
5"	5 29/64"	5 39/64"	1 25/64"	1 1/8"	19/64"

Note "X"

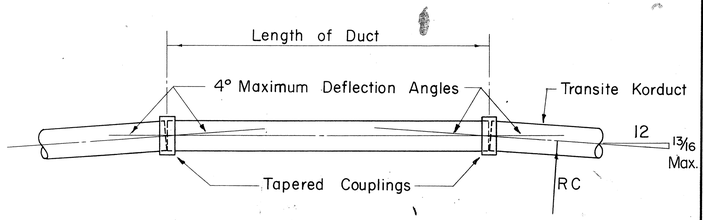
Provide one set of Spacers
(a) 10 Ft. straight run for 4 Ducts high or less.
(b) 5 Ft. straight run for 5 Ducts high or more.



SIZE	D1	D2	L
3"	3 25/32"	4 11/64"	2 1/4"
4"	4 25/64"	5 3/16"	2 1/2"
4 1/2"	4 57/64"	5 49/64"	2 1/2"
5"	5 29/64"	6 21/64"	2 3/4"

TAPERED COUPLINGS

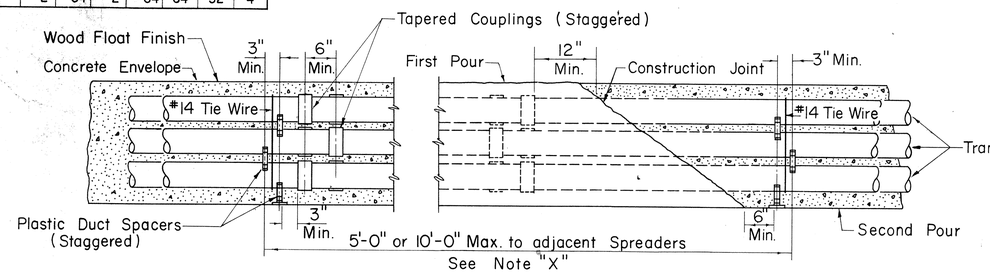
Not to Scale



METHOD OF FORMING CURVES

Not to Scale

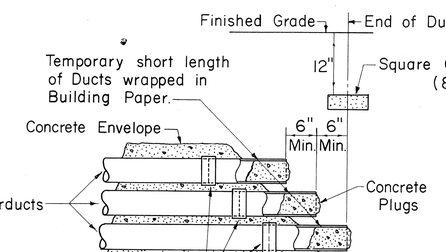
MINIMUM RADIUS TO FORM CURVES									
LENGTH OF DUCT	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"
MIN. RAD. RC	14'-4"	21'-6"	28'-8"	35'-10"	42'-11"	50'-1"	57'-3"	64'-5"	71'-7"	78'-9"
LENGTH OF DUCT	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	
MIN. RAD. RC	85'-11"	93'-1"	100'-3"	107'-5"	114'-7"	121'-8"	128'-10"	136'-0"	143'-2"	



TYPICAL DUCT ENVELOPE ELEVATION

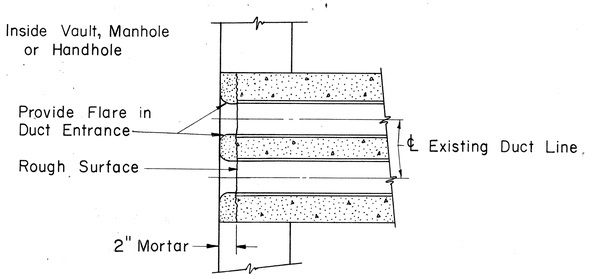
(6 WAY DUCT LINE SHOWN)

Not to Scale



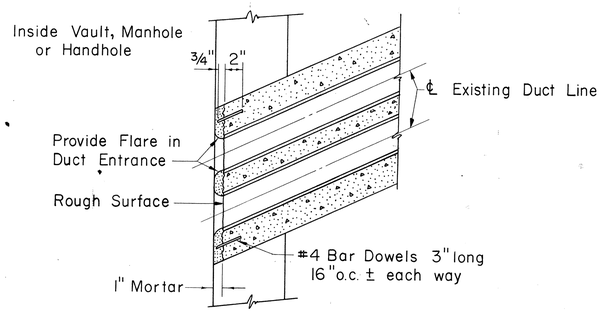
TYPICAL STUB OUT DETAIL

Not to Scale



DUCT LINE ENTRANCE AT EXISTING DUCT LINE

Scale: 1½" = 1'-0"



DUCT LINE DIAGONAL ENTRANCE

Scale: 1½" = 1'-0".

APPROVED:

R B Lewis 7/5/74

HAWAIIAN ELECTRIC CO., INC. DATE

JK RN

E-44

HECo., Inc. Drawing Number

18585 SHEET No. 2 OF 2 SHEETS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

CONSTRUCTION STANDARDS
TRANSITE KORDUCTS
UNDERGROUND DUCT LINES

Scales: As Noted Date

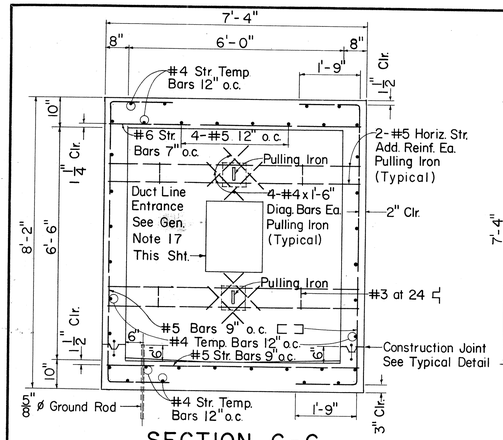
SHEET NO. 44 OF 62 SHEETS

200R

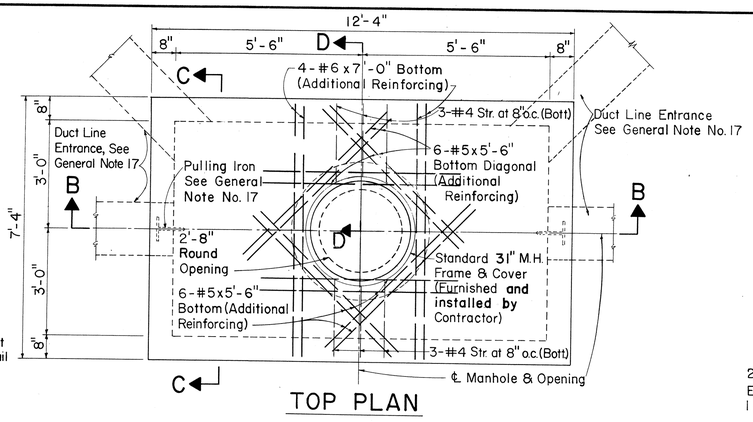
LIETZ 1103 ARKWRIGHT TRACING CLOTH 10-60 200P

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(73)15	1974	201	369

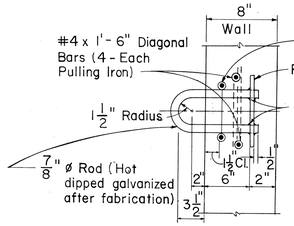
DATE	REVISION
7/5/74	ADDED HECO APPROVAL SIGNATURE



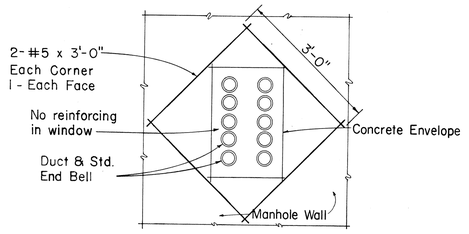
SECTION C-C



TOP PLAN

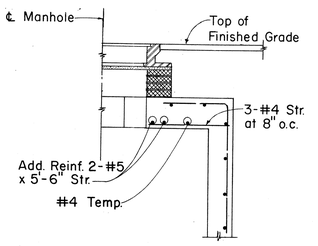


PULLING IRON DETAIL

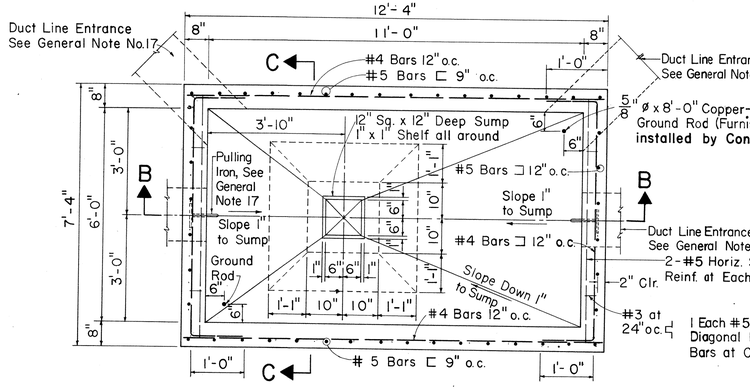


ELEVATION

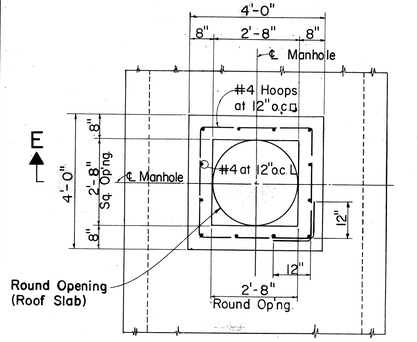
REINFORCING AT DUCT WINDOW



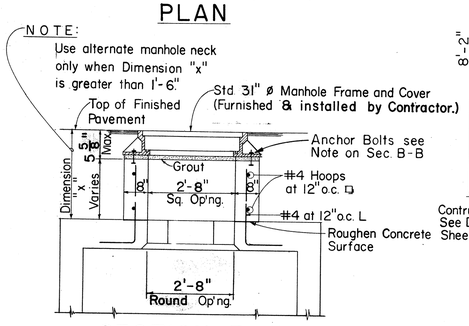
SECTION D-D



SECTIONAL PLAN A-A

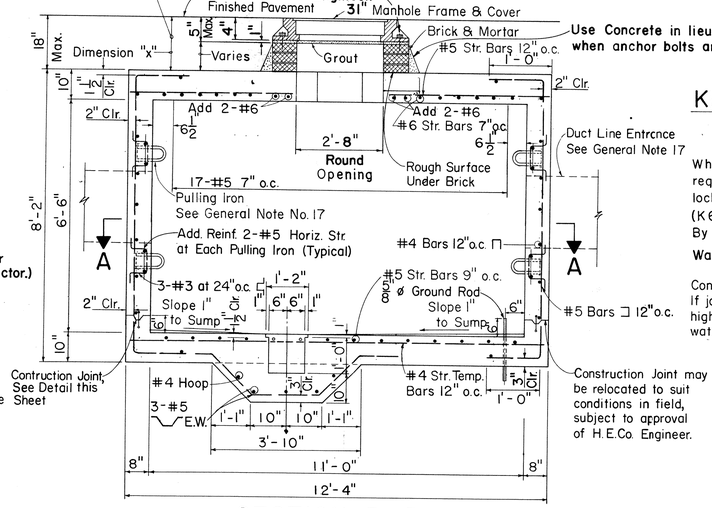


PLAN

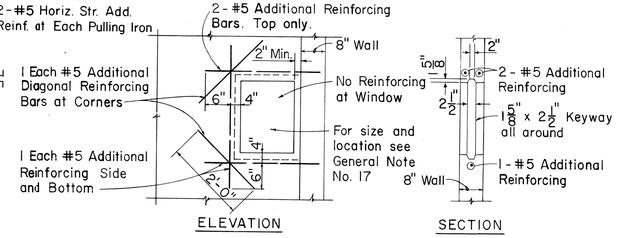


SECTION E-E

ALTERNATE MANHOLE NECK



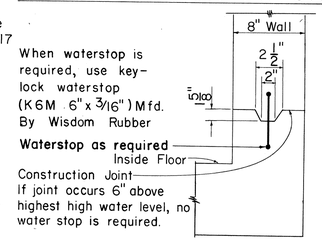
SECTION B-B



ELEVATION SECTION

NOTE:
Provide opening for future duct line. Fill opening with bricks with mortar joints as required. (See project drawing).

KNOCKOUT FOR FUTURE DUCT LINE



TYPICAL DETAIL OF CONSTRUCTION JOINT AND KEYWAY

QUANTITY OF MATERIALS, (M.H. ONLY)

* Concrete	= 11.52 Cu.Yds.
Reinf. Steel	= 1444.61 lbs.
Misc. Steel (Pulling Irons, ea.	= 10.90 lbs.

ADDITIONAL QUANTITY OF MATERIALS FOR ALTERNATE NECK (Dim. "X" = 2'-0")

Concrete	= 0.50 Cu. Yds.
Reinf. Steel	= 40.0 lbs.

* NOTE: Conc. for M.H. necks when used in lieu of bricks (for dim "X" < 1'-6") for anchor bolt installation is not included in above totals.

APPROVED: HK RN

HAWAIIAN ELECTRIC Co., Inc. — DATE 7/5/74

GENERAL NOTES

1. EXCAVATION : Excavate for manhole to accurate alignment, grades and dimensions as shown on drawings. All excavation must be approved by ~~Engineering Dept. H.E. Co.~~ HECO CONTRACTING & INSPECT. DIV. before any concrete is poured. All excess cut shall be backfilled with concrete or approved aggregate.
2. BACKFILL : Remove all debris before backfilling. Backfill in accordance with latest specifications of Division of Highways, State of Hawaii.
3. All work to be done in dry.
4. Concrete shall be Class A conforming to the requirements of Section 601 of the State Standard Specification.
5. MIXING : Ready-Mixed A.S.T.M. C-94-47.
6. REINFORCING : Round deformed bars (clean and new). Grade 40 Billet Steel per ASTM A615.
7. SPLICE : Lap 30 bar diameters unless otherwise shown.
8. CURING : Keep concrete moist at least 7 days after pouring (By approved method)
9. FINISH : All surfaces smooth and free from defects. Top of manhole - wood floated. Manhole floor - steel troweled. Inside walls and ceiling - cement washed.
10. Install all inserts, including pulling irons, ground rods, etc, before pouring concrete.
11. POURING : Notify the H.E.Co. Contracting and Inspection Division, 24 hours before pouring any concrete. All concrete pouring shall be done in the presence of an H.E.Co. Engineer or Inspector.
12. FORMS : Make of good sound lumber, of sufficient strength, water tight and conforming to shape and dimensions indicated on drawings.
13. The Contractor to furnish and install for each manhole:
    a. 2-5/8" ø x 8'-0" copper-clad steel ground rods.
    b. Standard 31" manhole frame and cover. (H.E. Standard)
14. Slope manhole floor down 1" toward sump.
15. All work shall be subject to inspection by the Hawaiian Electric Co. Inc.; and/or Division of Highways, State of Hawaii; and/or Division of Engineering, City & County of Honolulu.
16. All materials shall be new and shall be manufactured in the United States of America
17. For number, size, and exact location of ducts entrances and pulling irons, refer to project drawings.
18. Waterstop shall conform to the requirements of Section 705 07 of the State Standard Specifications for Road & Bridge Construction.

REFERENCE DRAWINGS AND SPECIF.

011327 & 011328 - Standard H.E.Co. 31" Manhole Frame and Cover.
20191 & 18585 - Underground Ductline Construction Standards - Details.
CS 7001-0 - Construction of Underground Facilities - Specification

E-45

FOR USE IN AREAS SUBJECT TO VEHICULAR TRAFFIC

HECo., Inc. Drawing Number
18775

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

MANHOLE TYPE No. 1 (6'-0" x 11'-0") UNDERGROUND STANDARDS

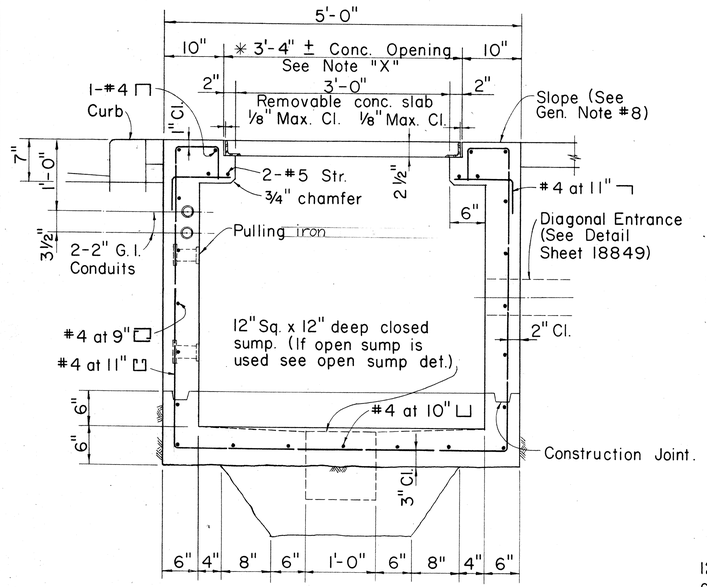
Scales: Not to Scale

SHEET NO. 45 OF 62 SHEETS

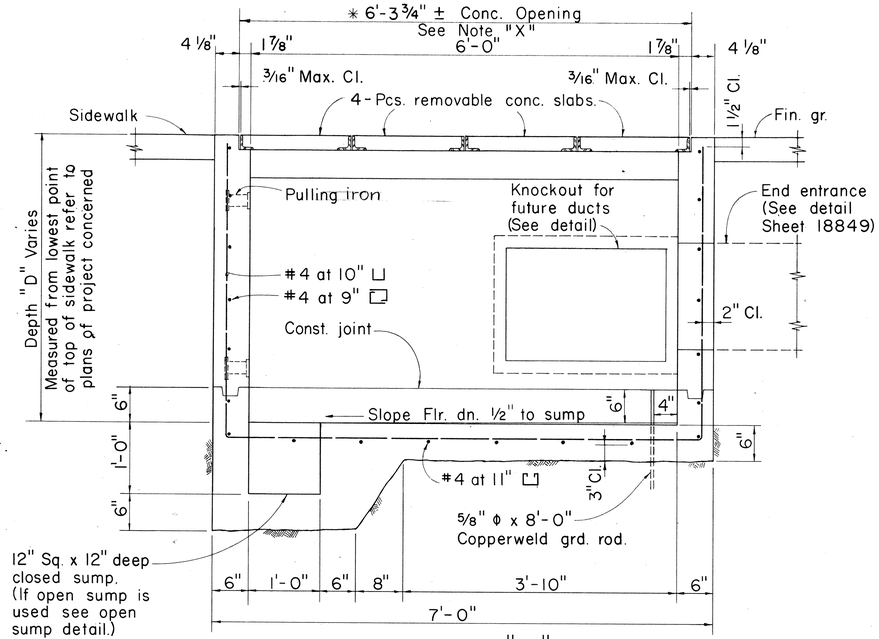
ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DRAWN BY	
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
NOTE BOOK	
No.	

201R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	F-HI-1(73):15	1974	202	369



SECTION "B-B"
Scale: 1"=1'-0"



SECTION "A-A"
Scale: 1"=1'-0"

GENERAL NOTES

1. The general conditions of specifications sheet 16190 shall govern throughout the entire work.
2. Concrete to develop compressive cylinder strength of 3000 PSI in 28 days.
3. CONCRETE FINISH: Top of H.H.- wood floated (sidewalk finish) according to Div. of Hwy., State of Hawaii or Div. of Engr., City and County of Honolulu specs. whichever the case may be unless otherwise directed. Floor - smooth metal trowelled. Exposed wall surfaces and edges - smooth and free from defects.
   CONCRETE POURING: Notify the Hawn Elec. Co., Contracting & Inspect. Div. 24 hours before pouring any conc. All conc. shall be poured in the presence of Haw'n. Elec. Co. Eng's. or its representative.
4. REINFORCING:
   Round deformed bars, new billet stock intermediate grade ASTM A-15. All hooked bars shall have ACI std. hook unless otherwise shown.
5. FORMS:
   Form handhole to size and shape as shown. Exterior face of handhole wall shall be formed except;
   A.) Excavation in solid material such as coral or rock - neat cut; no forms required. Excavation in solid material other than coral or rock-lining such as salvaged corrugated iron, canec, etc. shall be used.
6. PULLING IRON
   For location and number required see duct entrance plan of project concerned.
7. DRAINAGE:
   Slope floor down 1/2" to sump.
8. Slope top of handhole to match existing grade.
9. FINISH STEEL WORK:
   Angle iron frames, lifting devices for removable concrete slabs shall be hot dip galvanized after fabrication.
10. EXCAVATION:
    Excavate for handhole to accurate alignment grades and dimensions as shown on drawing. All excavation must be approved by the Contracting & Inspec. Div, The Hawaiian Electric Co, Inc., before any concrete is poured. All excess cut shall be backfilled with concrete or rock.
11. BACKFILL:
    Remove all debris before backfilling. Backfill in accordance with latest specifications of and subject to approval of Div. of Hwys., State of Hawaii or Div. of Engr., C. & C. of Hon. whichever the case may be unless otherwise directed.
12. For duct line construction standards, see H. E. Co. dwg. U-18585, Rev. #2 and specification sheet U-18585A.
13. DUCTS:
    For size, location and number required, see duct entrance plan of project concerned.
14. ALL MATERIALS SHALL BE NEW AND SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA.

* NOTE "X" IMPORTANT

Maximum clearances between removable concrete cover slabs and concrete opening at the supports must be kept. Concrete contractor shall measure cover slab steel frame after fabrication to obtain proper clearances. Any variation in clearances shall be corrected to the satisfaction of the Engineer at contractor's expense.

REINFORCED CONCRETE QUANTITIES

QUANTITIES OF MATERIALS FOR DEPTH "D"= 5'-0",

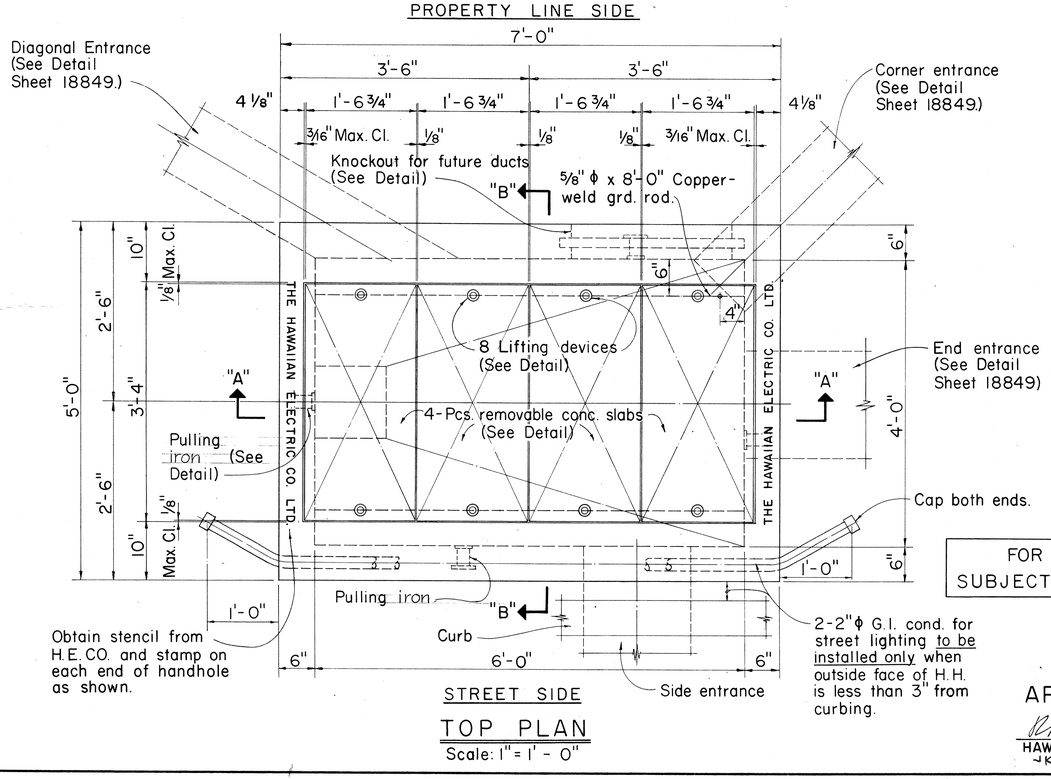
Total concrete	=	35 Cu. Yds.
Total reinf. steel	=	450 Lbs.
Total misc. steel	=	160 Lbs.

WEIGHT PER REMOVABLE CONCRETE SLAB,

Concrete	=	150 Lbs.
Reinf. steel	=	7 Lbs.
Misc. steel	=	40 Lbs.
TOTAL		197 Lbs.

MATERIALS FOR 6" DEPTH OF 6" THICK WALL,

Concrete	=	0.2 Cu. Yds.
Reinf. steel	=	18 Lbs.



TOP PLAN
Scale: 1"= 1'- 0"

FOR USE IN AREAS NOT SUBJECT TO VEHICULAR TRAFFIC

APPROVED:

HAWAIIAN ELECTRIC CO., INC. — DATE 7/5/74

J.K. RN

DATE	REVISION
7/5/74	ADDED HECO APPROVAL SIGNATURE
4/26/74	REVISED NOTES FOR HECO HANDHOLE

E-46

HECo., Inc. Drawing Number

18842 SHEET No. 1 OF 2 SHEETS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

HANDHOLE TYPE 46 (4'-0" x 6'-0")

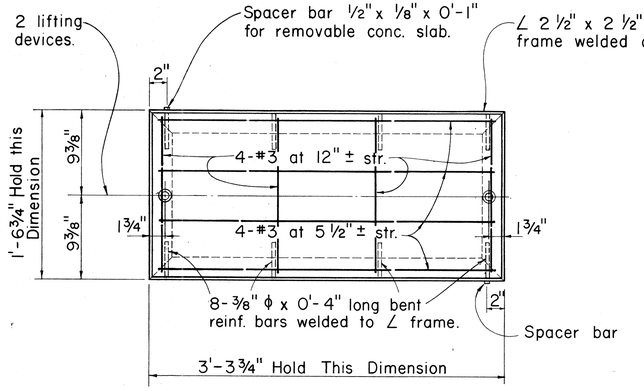
Scale: As Shown

SHEET No. 46 OF 62 SHEETS

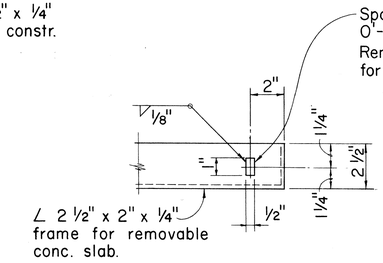
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
	TRACED BY	"
NOTE BOOK	DESIGNED BY	"
	QUANTITIES BY	"
No.	CHECKED BY	"

202R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(73):15	1974	203	369



TOP PLAN

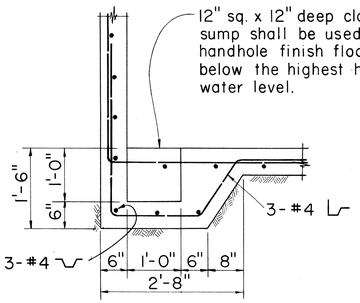


PART ELEVATION

SPACER BAR FOR REMOVABLE CONC. SLAB

Scale: 3" = 1'-0"

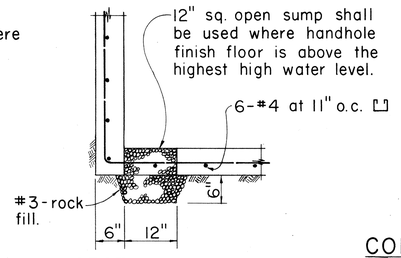
NOTE:
Exact location of sump to be determined in the field.



SECT. ELEVATION

CLOSED SUMP

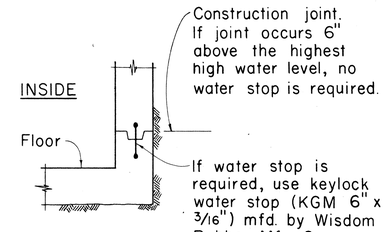
Scale: ¾" = 1'-0"



SECT. ELEVATION

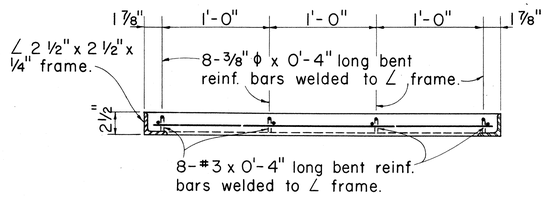
OPEN SUMP

Scale: ¾" = 1'-0"



CONSTRUCTION JOINT TYPICAL

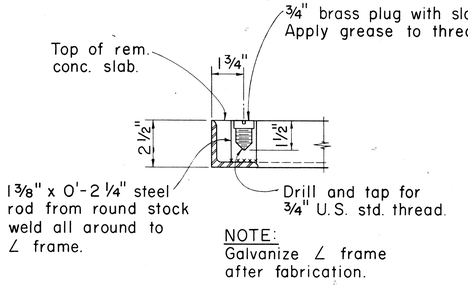
Scale: 1" = 1'-0"



SECTION

REMOVABLE CONC. SLAB

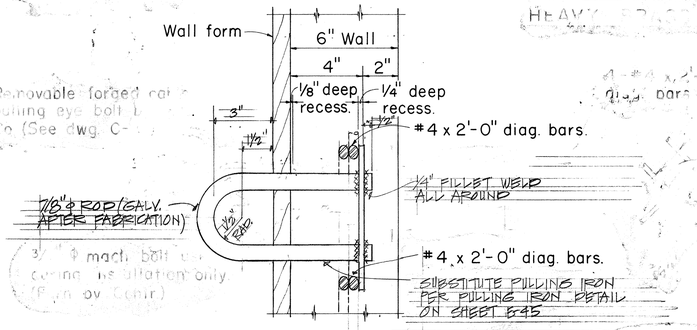
Scale: 1½" = 1'-0"



NOTE:
Galvanize ∠ frame after fabrication.

REMOVABLE CONC. COVER SLAB LIFTING DEVICE

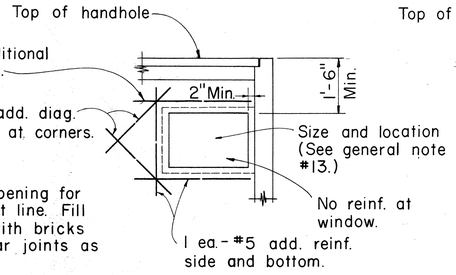
Scale: 3" = 1'-0"



SECT. ELEVATION

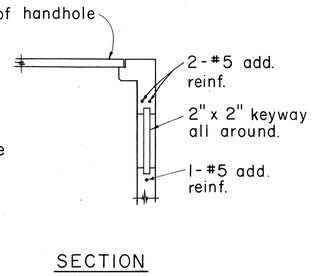
PULLING IRON DETAIL

SCALE: 3" = 1'-0"



NOTE:
Provide opening for future duct line. Fill opening with bricks and mortar joints as required.

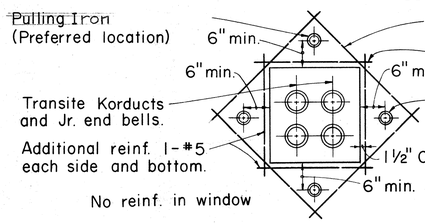
ELEVATION



SECTION

KNOCKOUT FOR FUTURE DUCT LINE

Scale: ½" = 1'-0"



ELEVATION

NOTE:
Generally 2 pulling iron are required and located on opposite wall of each duct entrance unless otherwise shown or noted. H.E. CO. Engineers shall determine number required.

TYP. DET. AT DUCT WINDOW

DATE	REVISION
7/5/74	ADDED HECO APPROVAL SIGNATURE
9/26/74	REVISED PULLING IRON DETAIL

E-47

HECo., Inc. Drawing Number

18842

SHEET No. 2 OF 2 SHEETS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

HANDHOLE TYPE
46 (4'-0" x 6'-0")

APPROVED:

HAWAIIAN ELECTRIC CO., INC. — DATE 7/5/74

J.E. RN

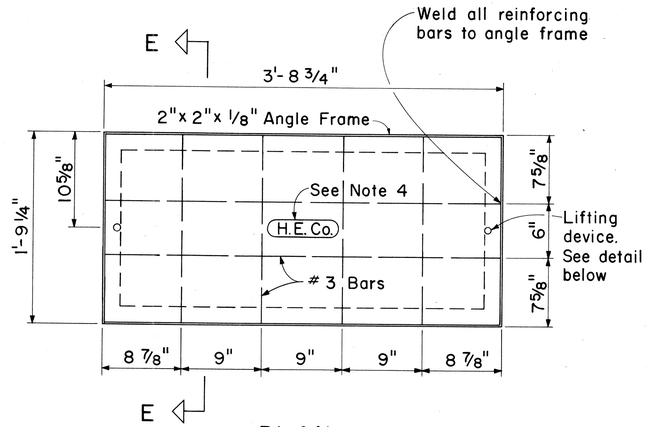
SHEET No. 47 OF 62 SHEETS

ADD. 203R

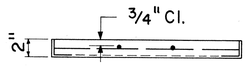
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

DATE	REVISION
7/5/74	ADDED HECO APPROVAL SIGNATURE

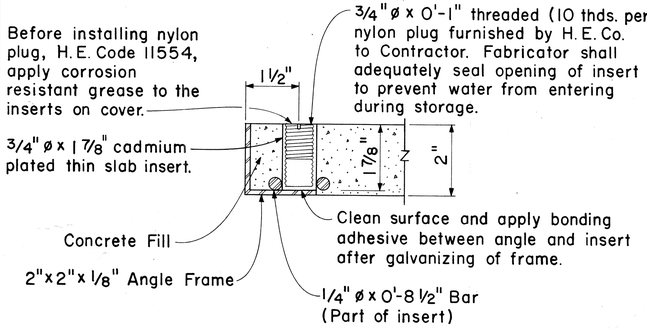
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	204	369



PLAN
Scale: 1 1/2" = 1"-0"



SECTION E-E
Scale: 1 1/2" = 1'-0"



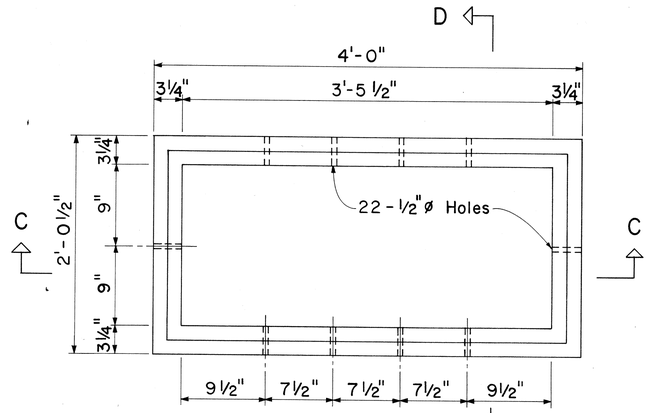
LIFTING DEVICE DETAIL
Scale: 1/2 Actual Size

CONCRETE COVER FOR 1'-6" x 3'-5 1/2" SERVICE BOX

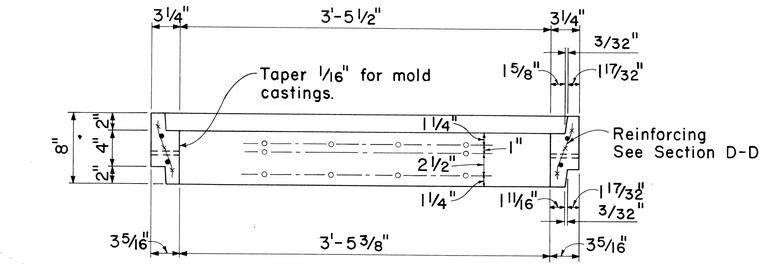
NOTES:
1. Galvanize Angle Frame per ASTM 153 (as amended to date) after fabrication.
2. Concrete compressive strength = 3,000 psi in 28 days.
3. Finished surface shall be broomed or roughened per City & County or State Standards for sidewalks.
4. Company identification marking stamped on Cover.
5. "Contractor Furnished" item.

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

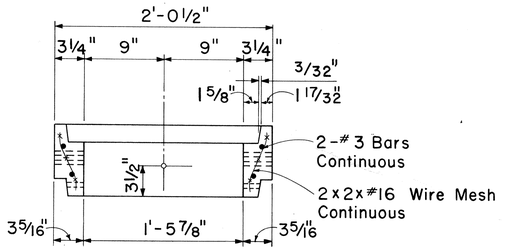
H.E. Co. DWG. NO. 011312



PLAN



SECTION C-C



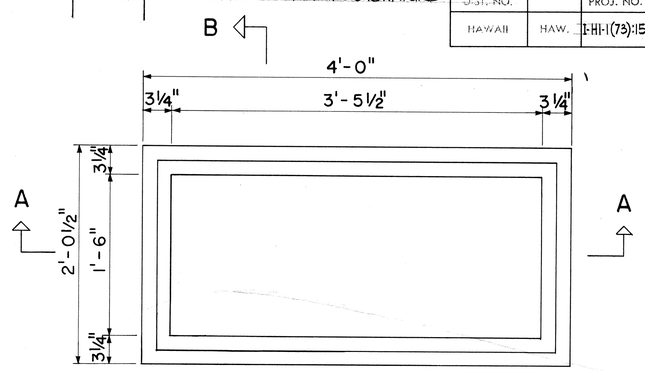
SECTION D-D

CONCRETE SERVICE BOX EXTENSION 1'-6" x 3'-5 1/2" x 0'-8" DEPTH

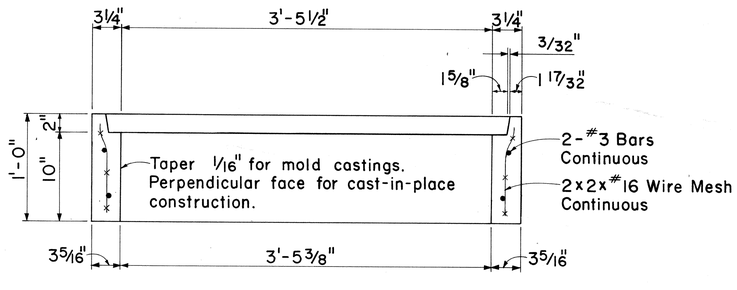
Scale: 1 1/2" = 1'-0

NOTES:
1. Concrete compressive strength = 3,000 psi in 28 days.
2. Weight per section = 200 lbs. ±.
3. See Drawing 011312 for Concrete Cover.
4. "Contractor Furnished" item.

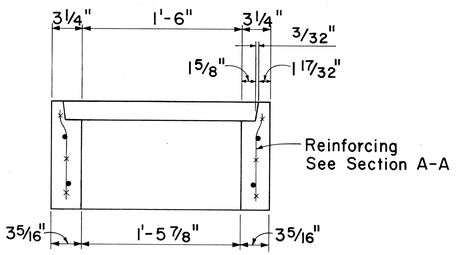
H.E. Co. DWG. NO. 011311



PLAN



SECTION A-A



SECTION B-B

CONCRETE SERVICE BOX BODY 1'-6" x 3'-5 1/2" x 1'-0" DEPTH

Scale: 1 1/2" = 1'-0

NOTES:
1. Concrete compressive strength = 3,000 psi in 28 days.
2. Weight of box = 412 lbs. ±
3. See Drawing 011312 for Concrete Cover.
4. "Contractor Furnished" item.

E-48

H.E. Co. DWG. NO. 011310

APPROVED:

HAWAIIAN ELECTRIC Co., Inc. — DATE 7/5/74

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

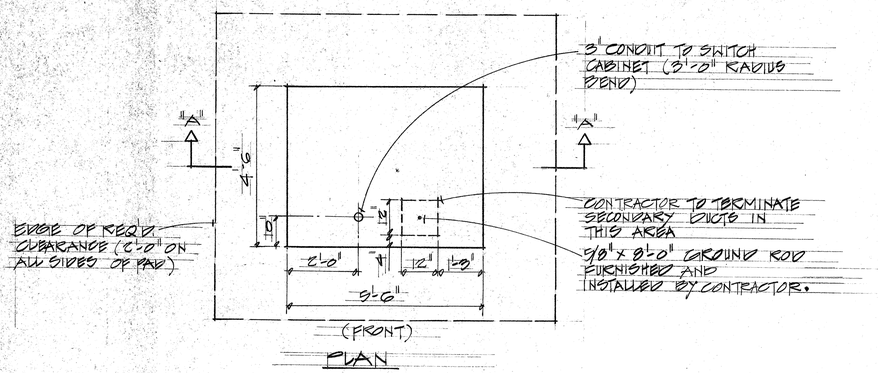
STANDARD DETAILS
CONCRETE SERVICE BOX BODY, EXTENSION AND COVER

Scale: As Noted Date:

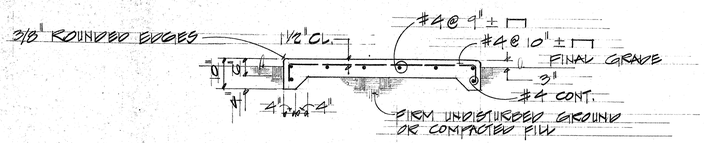
SHEET No. 48 OF 62 SHEETS

204R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-I(78):15	1974	205	369



PLAN

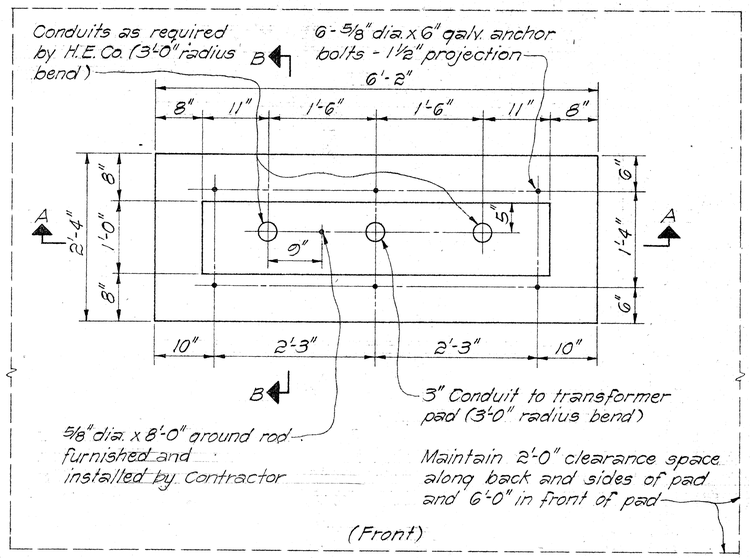


SECTION "A"-"A"

FIGURE ONE

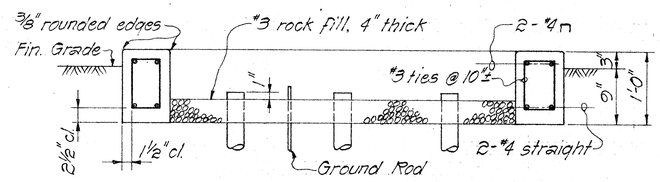
75-300 KVA TRANSFORMER PAD

SCALE: ½" = 1'-0"



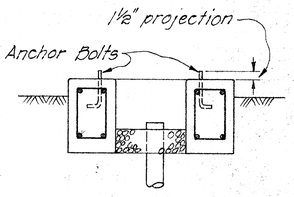
PLAN

Scale: 1" = 1'-0"



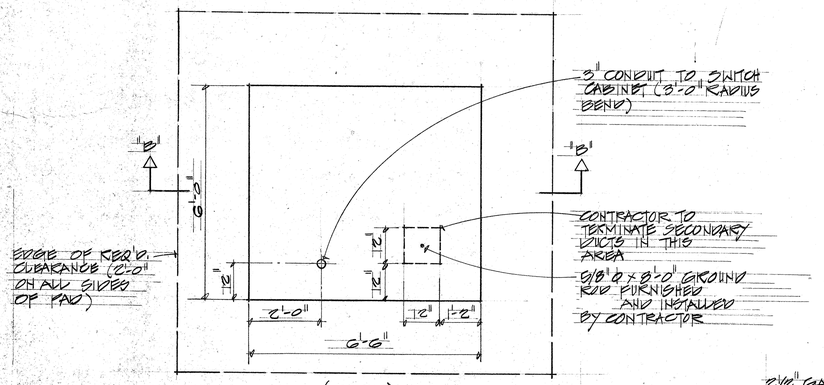
SECTION A-A

Scale: 1" = 1'-0"

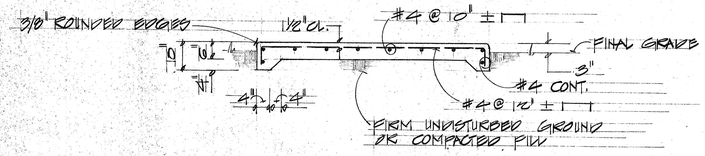


SECTION B-B

Scale: 1" = 1'-0"



PLAN



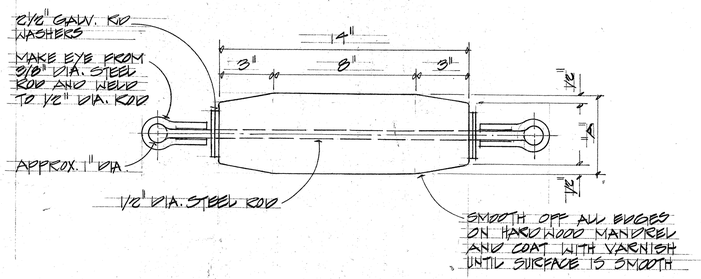
SECTION "B-B"

FIGURE TWO

500-750 KVA TRANSFORMER PAD

SCALE: ½" = 1'-0"

NOTE:
DIMENSION "A" TO BE ½" LESS THAN THE INSIDE DIAMETER OF THE SPECIFIED SIZE CONDUIT



MANDREL DETAIL

SCALE 3" = 1'-0"

SWITCH CABINET PAD

(For use with 75-500 KVA Padmount Transformers)

E-49

APPROVED: J.I.K. B.N.

HAWAIIAN ELECTRIC CO., INC. 7/5/74 DATE

DATE	REVISION
7/5/74	ADDED HECO APPROVAL SIGNATURE
1/26/74	REVISED NOTES FOR HECO TRANSFORMER AND SWITCHING PAD

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HECO SWITCH CABINET CONCRETE PAD

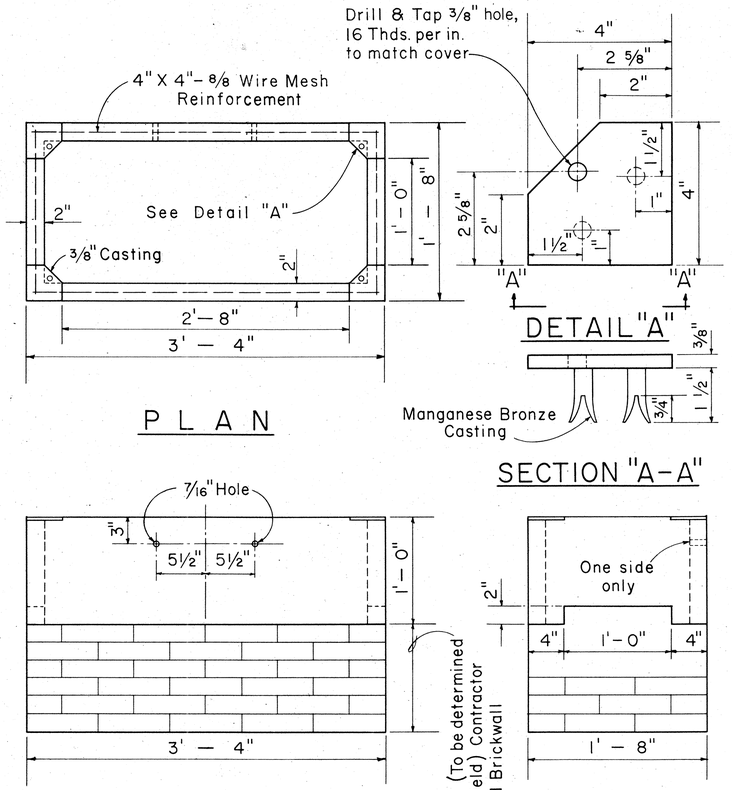
PEARL HARBOR INTERCHANGE
FAI PROJECT NO. I-H-1-(78):15
SCALE: AS SHOWN DATE: DEC. 7, 1973

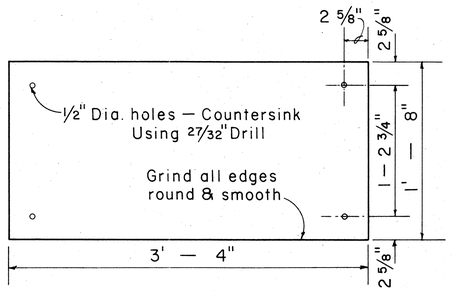
SHEET No. 49 OF 62 SHEETS

ADD.205R

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

CRYSTALENE® LA 2920





NOTES:
Use 3/8" Plate for driveways.
Concrete Box 225 Lbs.
1/4" Checker Plate 62 Lbs.
Secure cover with 3/8" x 1" flat head brass machine screws.

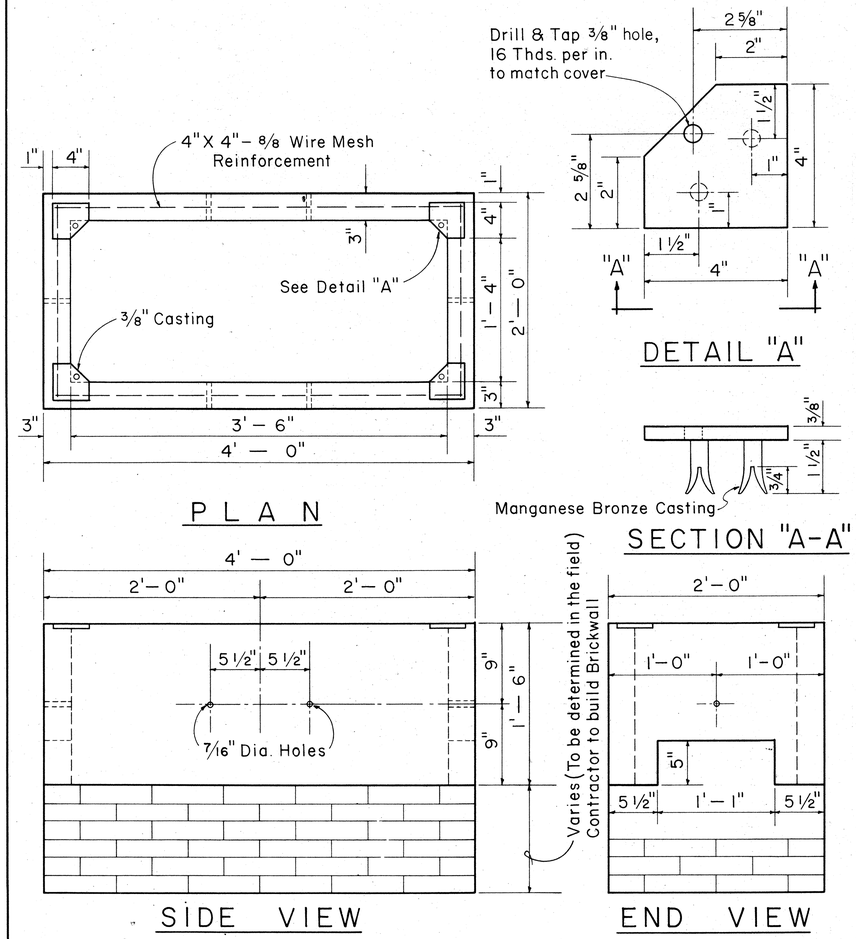
1/4" CHECKER PLATE COVER

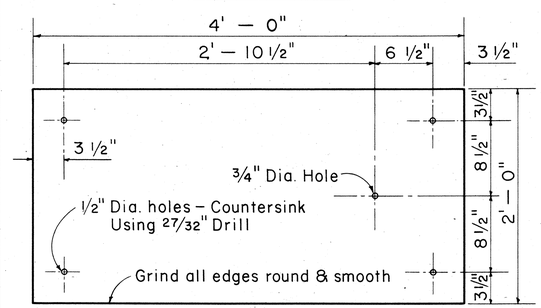
(Hot dip galvanize checkered plate after drilling, countersinking, and grinding edge)

1'-4" X 3'-0" CONCRETE SERVICE BOX

Scale: 1 1/2" = 1'-0"

011250





NOTES:
Use 3/8" Plate for driveway.
Concrete Box 575 Lbs.
1/4" Checker Plate 130 Lbs.
Secure cover with 3/8" x 1" flat head brass machine screws.

1/4" CHECKER PLATE COVER

(Hot dip galvanize checkered plate after drilling, countersinking, and grinding edge)

1'-6" X 3'-6" CONCRETE SERVICE BOX

Scale: 1 1/2" = 1'-0"

011255

DATE	REVISION
11/4/74	ADDED HECO & HTCO APPROVAL SIGNATURES

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(13)13	1974	200	309

CREOSOTED DOUGLAS FIR & YELLOW PINE POLE DATA

LENGTH IN FEET	CLASS	APPROX. MINIMUM DIMENSIONS (INCHES) AT TOP DIA.	AT TOP CIR.	6' FROM BUTT DIA.	6' FROM BUTT CIR.	AVERAGE WEIGHT (LBS.) DOUGLAS FIR	POLE SETTING DEPTH (FT.) IN SOIL	IN ROCK	BREAKING LOAD 2'-0" BELOW TOP OF POLE (LBS.)
25	5	6.04	19	8.26	26	525	4.5	3	1900
30	3	7.32	23	10.32	32.5	810	5	3.5	3000
	5	6.04	19	8.90	28	600	5	3.5	1900
35	2	7.96	25	12.23	37.5	1260	5	3.5	3700
	5	6.04	19	9.55	30	770	5	3.5	1900
40	3	7.32	23	11.77	37	1320	5.5	3.5	3000
45	2	7.96	25	13.20	41.5	1845	6	4.	3700
	3	7.32	23	12.25	38.5	1575	6	4	3000
50	2	7.96	25	13.70	43.	2150	6.5	4	3700
	3	7.32	23	12.70	40	1850	6.5	4	3000
55	1	8.59	27	15.11	47.5	2860	7	4.5	4500
	2	7.96	25	14.15	44.5	2475	7	4.5	3700
	3	7.32	23	13.20	41.5	2145	7	4.5	3000
60	1	8.59	27	15.75	49.5	3360	7	4.5	4500
	2	7.96	25	14.62	46	2820	7	4.5	3700
65	1	8.59	27	16.20	51	3835	7.5	5	4500
	2	7.96	25	15.11	47.5	3250	7.5	5	3700
70	1	8.59	27	16.70	52.5	4340	7.5	5	4500
	2	7.96	25	15.60	49	3640	7.5	5	3700
75	1	8.59	27	17.20	54	4800	8	5.5	4500
	2	7.96	25	16.05	50.5	4050	8	5.5	3700
80	1	8.59	27	17.50	55	5240	8	6	4500
	2	7.96	25	16.40	51.5	4400	8	6	3700
85	1	8.59	27	18.00	56.5	5780	8.5	6.5	4500
	2	7.96	25	16.88	53	4930	8.5	6.5	3700
90	1	8.59	27	18.30	57.5	6300	8.5	6.5	4500
	2	7.96	25	17.20	54	5400	8.5	6.5	3700

NOTE:
The ultimate fiber stress for creosoted Southern Yellow Pine & Douglas Fir is 7,400 Lbs. per square inch.

Weights are for untreated poles. Add 5% as estimate of added weight of creosote treatment.

REFERENCES:
American Standards Association 05.4-1941, 05.6-1945.
Standard Handbook for Electrical Engineers, Eighth Edition
H. E. Co. Specification for Poles.

WOOD POLE DATA

E-50

APPROVED:

HAWAIIAN ELECTRIC Co., Inc. — 7/5/74 DATE

HAWAIIAN TELEPHONE Co. — 11/4/74 DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
H.E.Co. AND H.T.Co.
SERVICE BOX DETAILS
AND WOOD POLE DATA

Scales: As Noted — Date

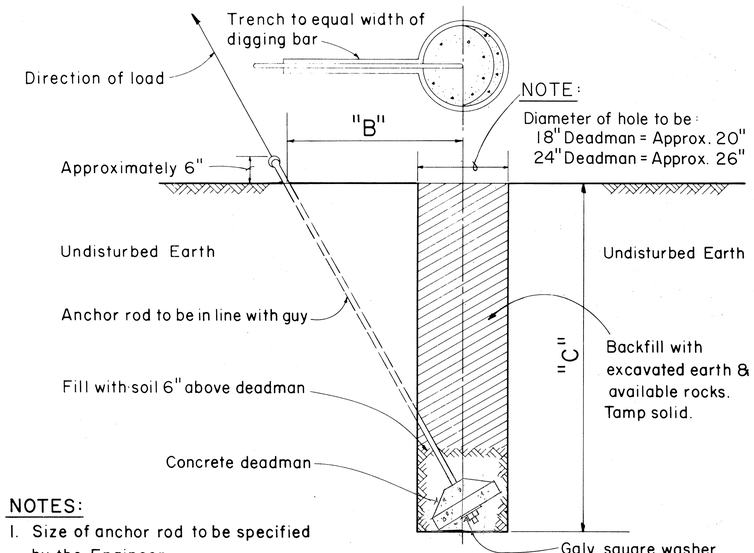
SHEET NO. 50 OF 62 SHEETS

206R

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

LIETZ 1103 ARKWRIGHT TRACING CLOTH 10-60 200P

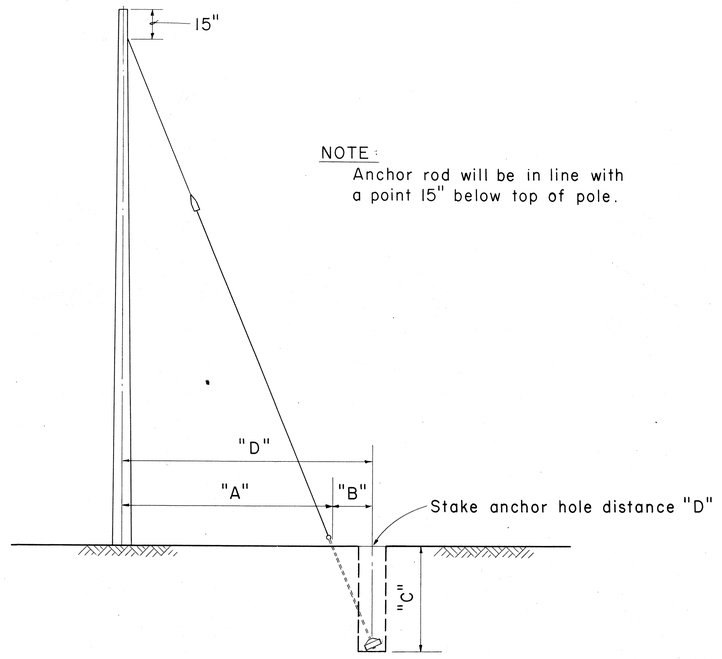
FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(19)15	1974	207	329



NOTES:
1. Size of anchor rod to be specified by the Engineer
2. Use Anchoring Data.

GUY ANCHOR DEADMAN

Scale: 3/4" = 1' – 0"



Not to Scale

FOR 25', & 30' POLES WITH 8'-0" ANCHOR RODS				
"A"	"B"	"C"		"D" = ("A" + "B")
LEAD-ANCHOR ROD TO ℄ OF POLE	ANCHOR ROD TO ℄ OF HOLE	VERTICAL DEPTH 18" D.M.	VERTICAL DEPTH 24" D.M.	TOTAL DISTANCE POLE TO HOLE
5'-0"	1'-8"	7'-1"	7'-4"	6'-8"
10'-0"	3'-0"	6'-7"	7'-0"	13'-0"
15'-0"	4'-0"	6'-1"	6'-6"	19'-0"
20'-0"	4'-8"	5'-6"	5'-10"	24'-8"
25'-0"	5'-2"	4'-11"	5'-4"	30'-2"
FOR 35' THRU 70' POLES WITH 8'-0" ANCHOR RODS				
5'-0"	1'-0"	7'-3"	7'-4"	6'-0"
10'-0"	1'-11"	7'-1"	7'-3"	11'-11"
15'-0"	2'-8"	6'-9"	7'-1"	17'-8"
20'-0"	3'-3"	6'-6"	6'-10"	23'-3"
25'-0	3'-10"	6'-2"	6'-7"	28'-10"
FOR 40' THRU 70' POLES WITH 1 1/4" x 10'-0" ANCHOR RODS				
5'-0"	1'-7"		9'-4"	6'-7"
10'-0"	3'-0"		9'-0"	13'-0"
15'-0"	4'-2"		8'-6"	19'-2"
20'-0"	5'-3"		7'-11"	25'-3"
25'-0"	6'-2"		7'-3"	31'-2"

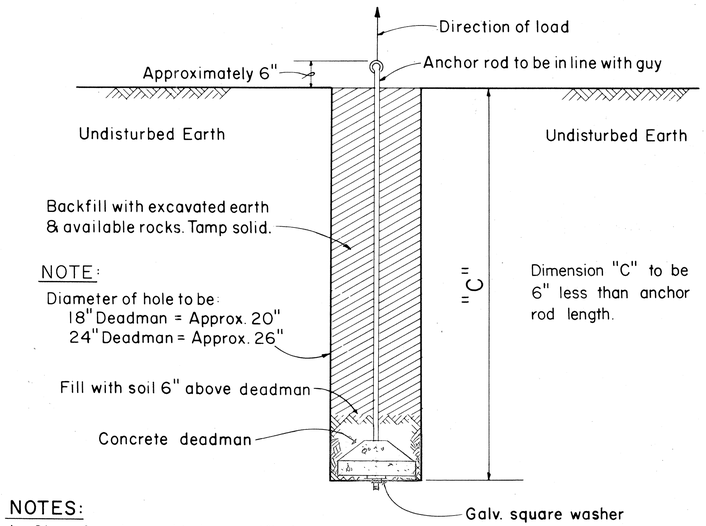
D.M. = Deadman

TABLE 2 ANCHOR ROD - ANCHOR SLUG - SQUARE WASHER COMBINATION

H.E. CODE NO.	ANCHOR ROD	WORKING TENSION 1/2 ULT (LBS.)	H.E. CODE NO.	CONC. ANC. (IN.)	H.E. CODE NO.	WASHER SIZE	QTY.
617	5/8" x 8'-0" Steel	8,000	518	18	2320	4" x 4" x 3/16"	2
615	5/8" x 8'-0" Cu Cov Stl	9,250	518	18	**	3" x 3" x 1/8"	2
618	3/4" x 8'-0" Steel	11,500	518	18	2330	6" x 6" x 3/8"	1
619	1" x 8'-0" Steel	18,000	524	24	2331	6" x 6" x 1/2"	1
616	1" x 8'-0" Cu Cov Stl	22,500	524	24	**	4" x 4" x 3/16"	2
613	1 1/4" x 10'-0" Steel	29,000	524	24	2330	6" x 6" x 3/8"	2

** Use bronze square washers included in anchor rod assembly on copper covered steel (Cu Cov Stl) anchor rods.

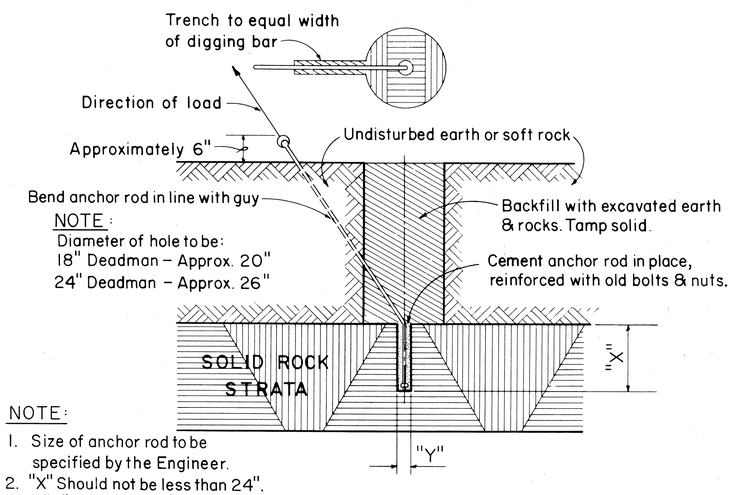
ANCHORING DATA



NOTES:
1. Size of anchor rod to be specified by the Engineer.
2. Use Anchoring Data.

SIDE – WALK ANCHOR

Scale: 3/4" = 1' – 0"



NOTE:
1. Size of anchor rod to be specified by the Engineer.
2. "X" Should not be less than 24". If "X" is less than 24" complete hole & install anchor.
3. "Y" 5/8" Anchor rod drill 2" hole
   3/4" Anchor rod drill 2" hole
   1" Anchor rod drill 2 1/2" hole
   1 1/4" Anchor rod drill 3" hole
4. Use Anchoring Data.
5. THIS CONSTRUCTION IS TO BE DONE IN PRESENCE OF HECO INSPECTOR.

ROCK ANCHOR

Not to Scale

APPROVED:

HAWAIIAN ELECTRIC Co., Inc. — YK — 7/5/74 DATE

DATE	REVISION
4/26/74	REVISED ANCHOR DETAILS
7/5/74	ADDED HECO APPROVAL SIGNATURE

E-51

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
H.E.Co. AND H.T.Co.
ANCHOR DETAILS AND ANCHORING DATA

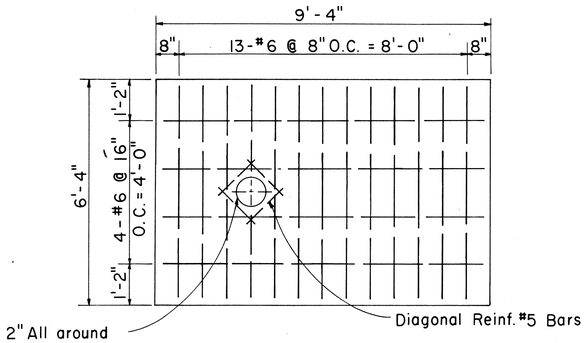
Scales: As Noted Date

SHEET No. 51 OF 62 SHEETS

207R

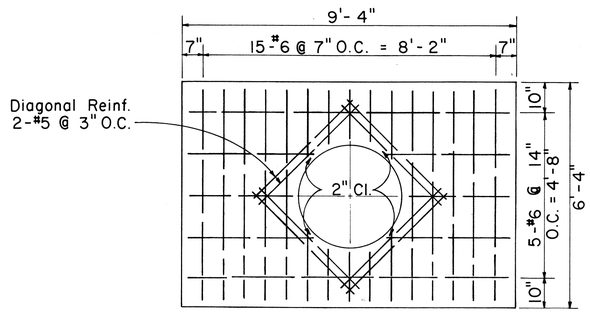
DATE	REVISION
11/4/74	ADDED HTCO APPROVAL SIGNATURE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	208	369



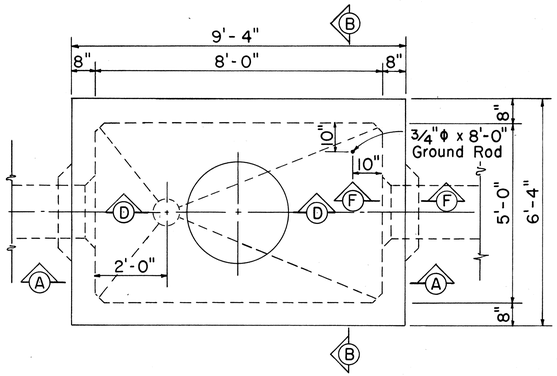
FLOOR SLAB REINF. PLAN

Scale: 1/2"=1'-0"



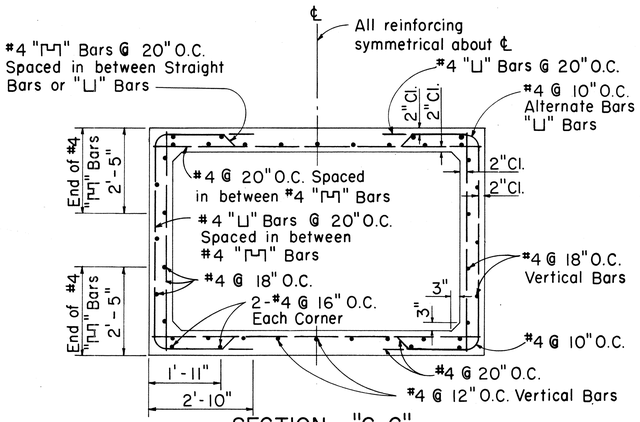
ROOF SLAB REINF. PLAN

Scale: 1/2"=1'-0"



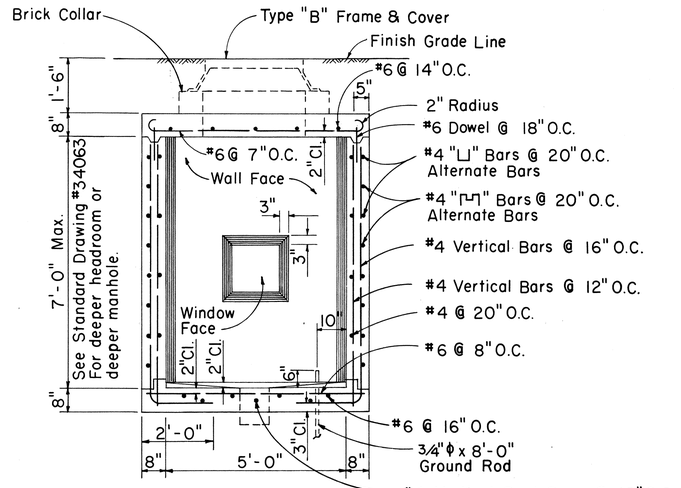
PLAN - M.H. TYPE "A-2" SERIES FOR ROADWAY & SIDEWALK AREAS

Scale: 1/2"=1'-0"



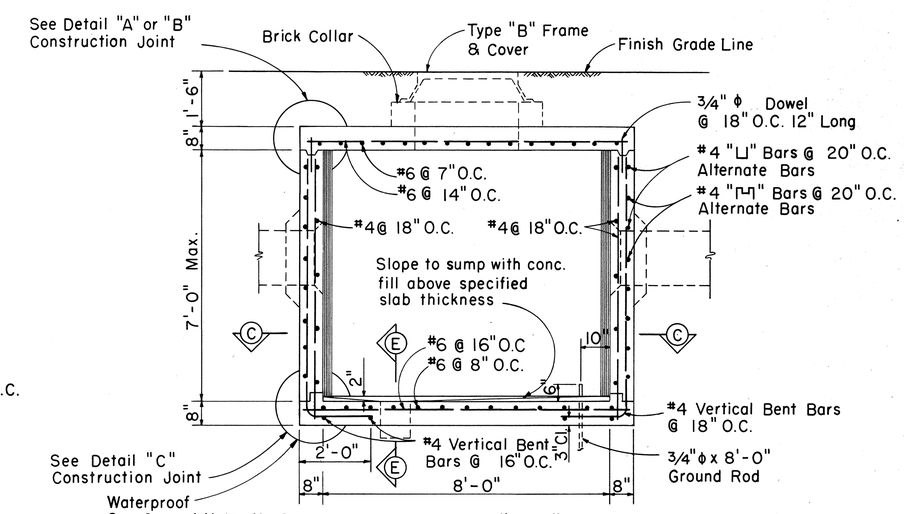
SECTION "C-C"

Scale: 1/2"=1'-0"



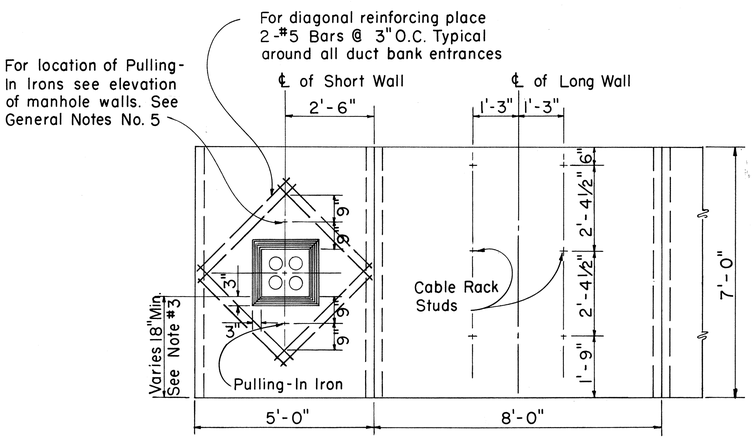
SECTION "B-B"

Scale: 1/2"=1'-0"



SECTION "A-A"

Scale: 1/2"=1'-0"



ELEVATION OF M.H. WALLS - TYPE "A-2" SERIES

(OPPOSITE FACES SIMILAR)

Scale: 1/2"=1'-0"

GENERAL NOTES:

1. Design Data:
   fs= 20,000 psi; f'c= 3,000 psi; fc= 1,350 psi; n=10
   w= Equivalent Fluid Pressure: 30#/ft²
2. All Construction Joints shall be waterproofed with two applications of Thoro Seal or equal.
3. For Duct Window location see Plan Profile Sheets for Elevations.
4. Duct Window to suit - See Plan & Profile & Standard Detail Sheets for Location & Details.
5. For Details "A", "B", "C," Sections "D-D", "E-E", "F-F" and other miscellaneous Manhole Construction Details see Supplement Sheet to Type "A-1," "A-2" and "A-3" Telephone Manholes.

TYPE "A-2"- 6.0' / 6.5' / 7.0'

Manhole Classification
Width & Length Designation "2" = 5.0' x 8.0'
Manhole Headroom

APPROVED:

a Mau 11/4/74

Hawaiian Telephone Co., Ltd. Date

E-52

H.T. Co., Ltd. Drawing No. 34062

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE "A-2" MANHOLES FOR 6.0' TO 7.0' HEADROOM

Scale: As Noted Date:

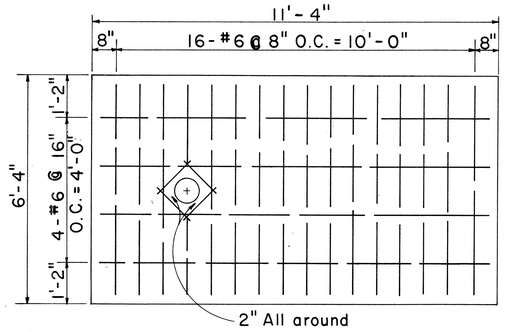
SHEET No. 52 OF 62 SHEETS

208R

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

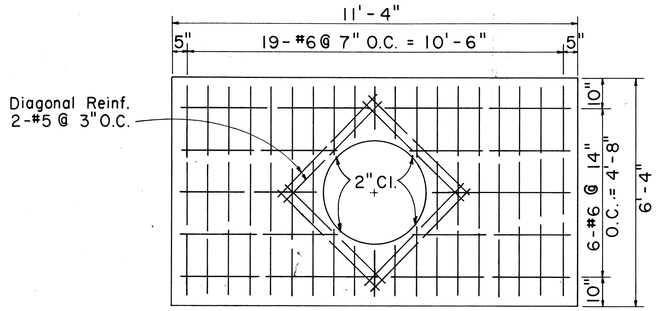
DATE	REVISION
11/4/74	ADDED HTCO APPROVAL SIGNATURE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	209	869



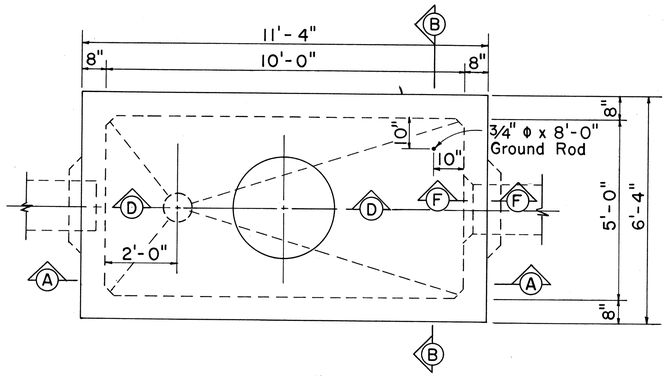
FLOOR SLAB REINF. PLAN

Scale: 1/2"=1'-0"



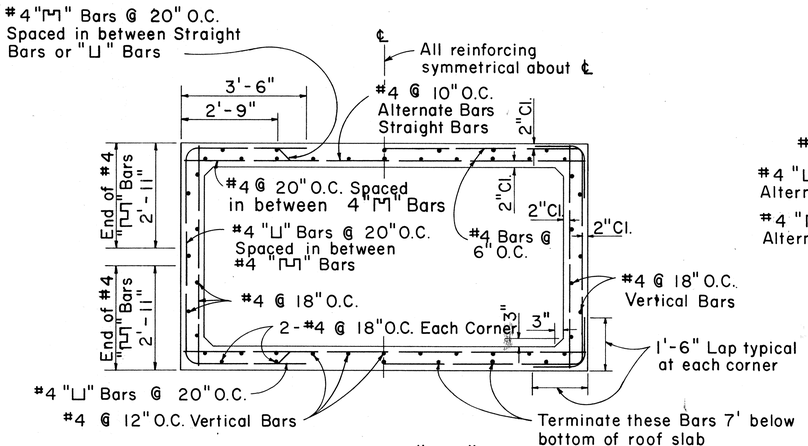
ROOF SLAB REINF. PLAN

Scale: 1/2"=1'-0"



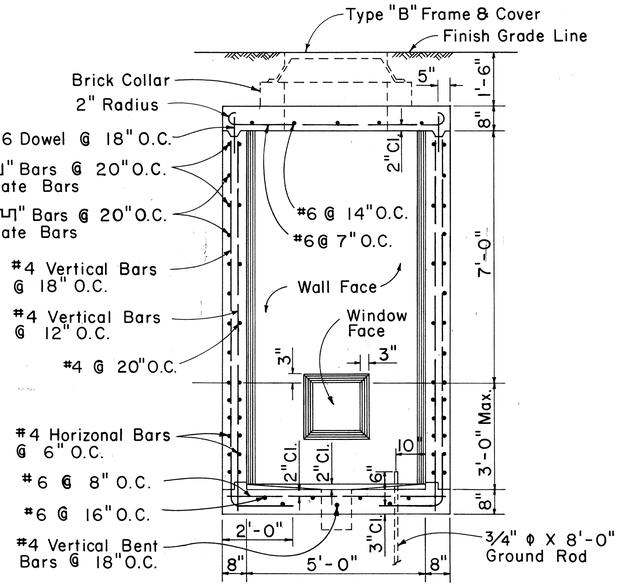
PLAN - M.H. TYPE "A-3" SERIES FOR ROADWAY & SIDEWALK AREAS

Scale: 1/2"=1'-0"



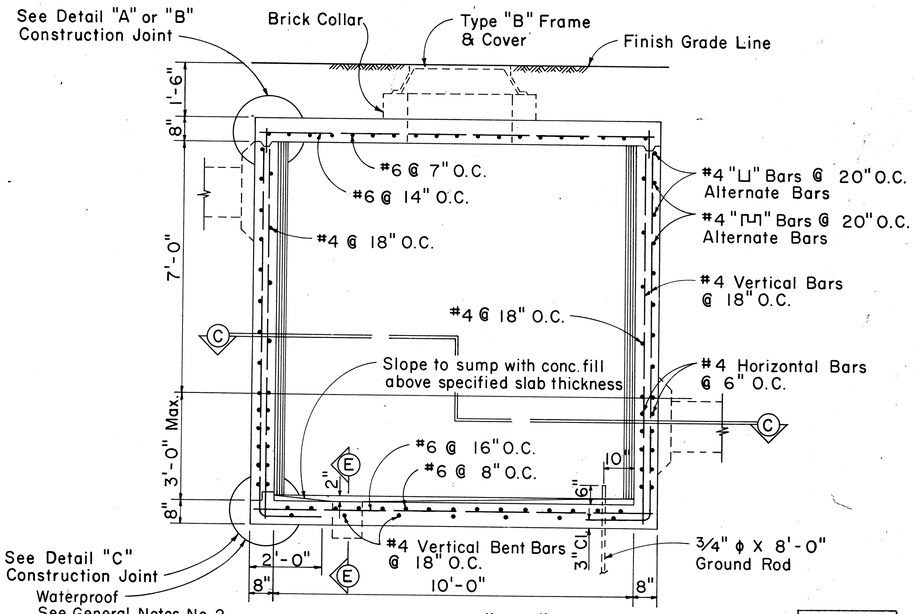
SECTION "C-C"

Scale: 1/2"=1'-0"



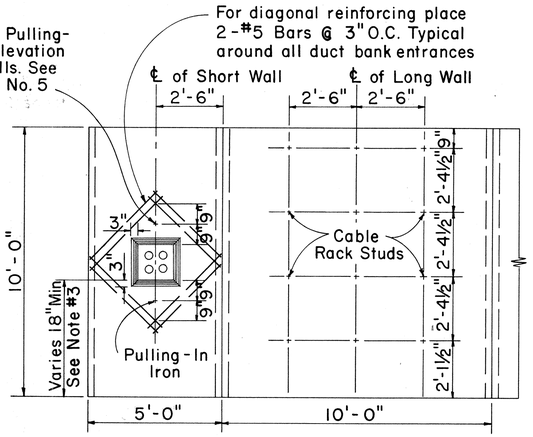
SECTION "B-B"

Scale: 1/2"=1'-0"



SECTION "A-A"

Scale: 1/2"=1'-0"



ELEVATION OF M.H. WALLS - TYPE "A-3" SERIES

(OPPOSITE FACES SIMILAR)

Scale: 3/8"=1'-0"

GENERAL NOTES:

1. Design Data:
   fs= 20,000 psi; fc'= 3,000 psi; fc= 1,350 psi; n=10
   w= Equivalent Fluid Pressure: 30#/ft²
2. All Construction Joints shall be waterproofed with two applications of Thoro Seal or equal.
3. For Duct Window location see Plan Profile Sheets for Elevations.
4. Duct Window to suit - See Plan & Profile & Standard Detail Sheets for Location & Details.
5. For Details "A", "B", "C", Sections "D-D", "E-E", "F-F" and other miscellaneous Manhole Construction Details see Supplement Sheet to Type "A-1", "A-2" and "A-3" Telephone Manholes.
6. Step and Ladder required only in Manholes with Headroom of 9.0' or more. Step and Ladder to be furnished by H.T.CO.

TYPE "A-3"-7.5'
8.0
8.5
9.0
9.5
10.0

Manhole Classification
Width & Length Designation "3" = 5.0' x 10.0'
Manhole Headroom

APPROVED:

R Maw 11/4/74

Hawaiian Telephone Co., Ltd. Date

E-53

H.T. Co., Ltd. Drawing No. 34065

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE "A-3" MANHOLES FOR 7.5' TO 10.0' HEADROOM

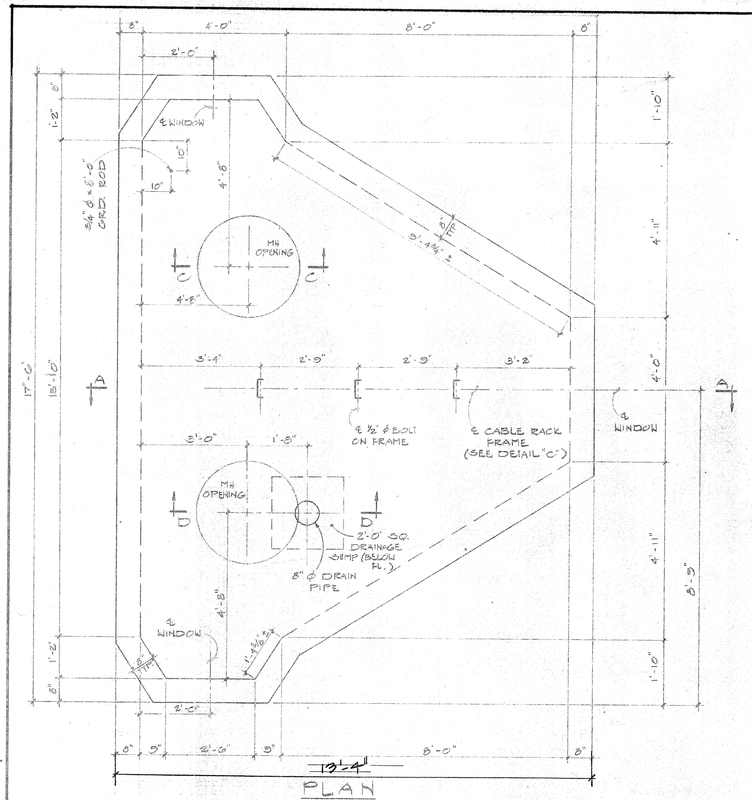
Scale: As Noted Date:

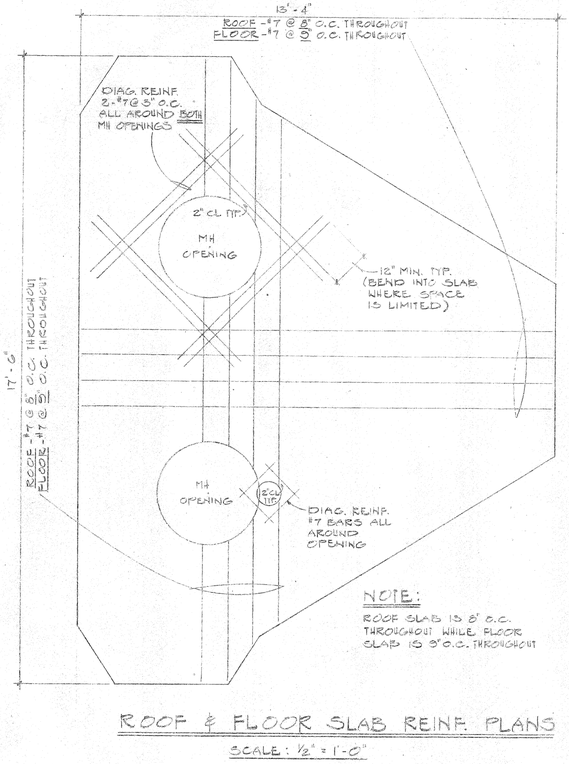
SHEET No. 53 OF 62 SHEETS

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

209R

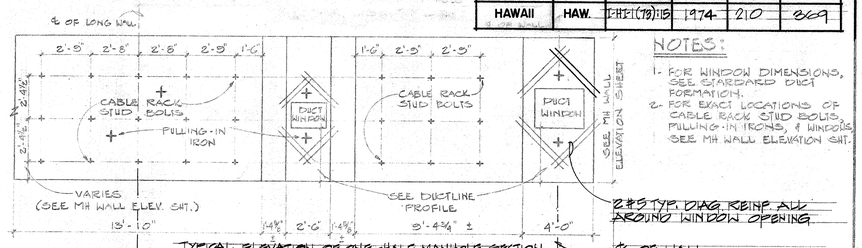
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73)15	1974	210	269





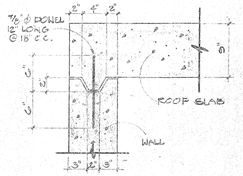
NOTE:
ROOF SLAB IS 8" O.C. THROUGHOUT WHILE FLOOR SLAB IS 8" O.C. THROUGHOUT

ROOF & FLOOR SLAB REINF. PLANS
SCALE: ½" = 1'-0"

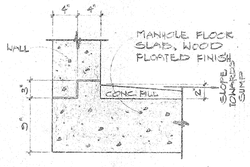


TYPICAL INSIDE WALL ELEVATION
SCALE: ¼" = 1'-0"

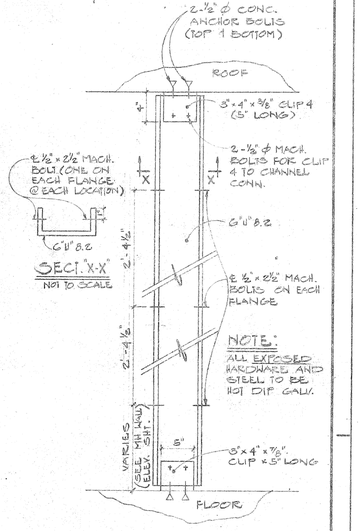
NOTES:
1- FOR WINDOW DIMENSIONS, SEE STANDARD DUCT FORMATION.
2- FOR EXACT LOCATIONS OF CABLE RACK STUD BOLTS, PULLING-IN IRONS, & WINDOWS, SEE MH WALL ELEVATION SHT.



DETAIL "A"
TOP CONSTRUCTION JOINT
SCALE: 1" = 1'-0"

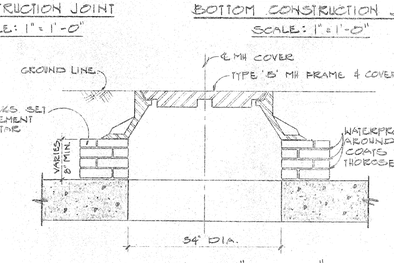


DETAIL "B"
BOTTOM CONSTRUCTION JOINT
SCALE: 1" = 1'-0"

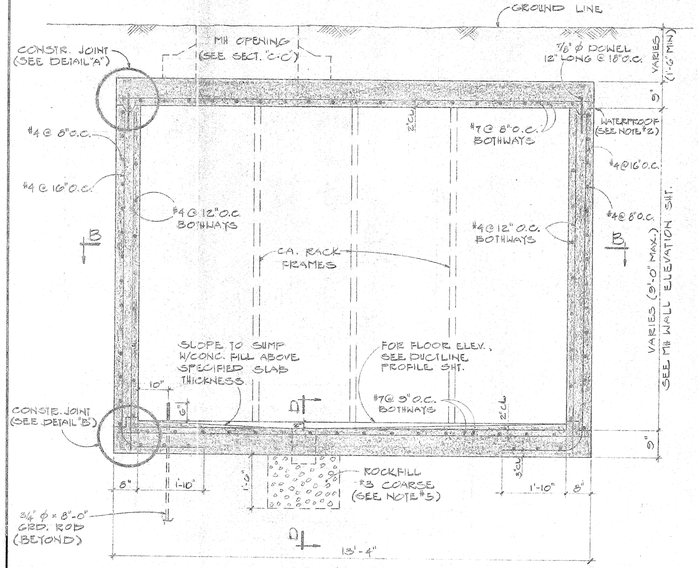


NOTE:
ALL EXPOSED HARDWARE AND STEEL TO BE HOT DIP GALV.

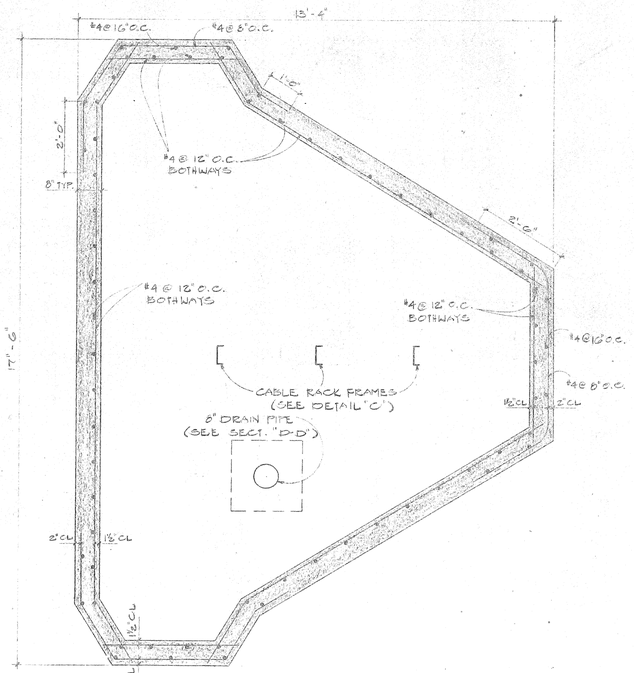
DETAIL "C"
CABLE RACK FRAME
NOT TO SCALE



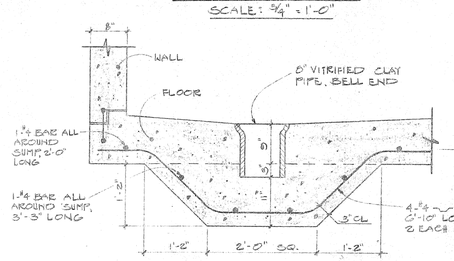
SECTION "C-C"
MH FRAME & COVER
SCALE: ¾" = 1'-0"



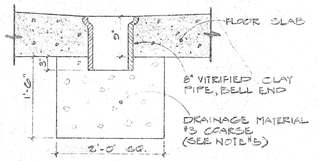
SECTION "A-A"
SCALE: ½" = 1'-0"



SECTION "B-B"
SCALE: ½" = 1'-0"



MANHOLE SUMP #2
SCALE: ¾" = 1'-0"
REQUIRED - WHERE MANHOLE FLOOR IS BELOW WATER TABLE



MANHOLE SUMP #1
SCALE: ¾" = 1'-0"

NOTES:
1- DESIGN DATA:
f_o = 20,000 PSI
f_c' = 3,000 PSI
f_c = 1,350 PSI
n = 10
w = EQUIV. FLUID PRESS. = 30 PSF
2- WHERE MANHOLES ARE LOCATED BELOW THE WATER TABLE, ALL CONSTRUCTION JOINTS SHALL BE WATERPROOFED WITH A CONTINUOUS STRIP OF RUBBER WATERSTOP.
3- FOR DUCT WINDOW ELEVATIONS, SEE PLAN & PROFILE SHTS. FOR LOCATION AND SIZE OF DUCT WINDOW, SEE ELEVATION OF MANHOLE WALLS AND STANDARD DUCT FORMATIONS.
4- PLACED #12 FISHWIRE IN ONE DESIGNATED DUCT THROUGHOUT ITS ENTIRE LENGTH WITH PROTRUSIONS OF 2 FEET IN MANHOLES AND HANDHOLES AT EACH END AND 1 FOOT IN PULLBOXES.
5- WHERE MANHOLES ARE LOCATED BELOW THE WATER TABLE, SUMP SHALL BE ONLY 2" DEEP VITRIFIED CLAY PIPE EMBEDDED IN CONC. SLAB. (THE CONC. FLR. SLAB SHALL BE CONTINUOUS BELOW THE SUMP WITHOUT ANY CONSTRUCTION JOINTS.) (SEE MANHOLE #2, (SECTION "D-D")

SECTION "D-D"

APPROVED:
R. Moon 11/4/74
HAWAIIAN TELEPHONE CO. DATE

DATE	REVISIONS
11/4/74	ADDED HTCO APPROVAL SIGNATURE

IE-54

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

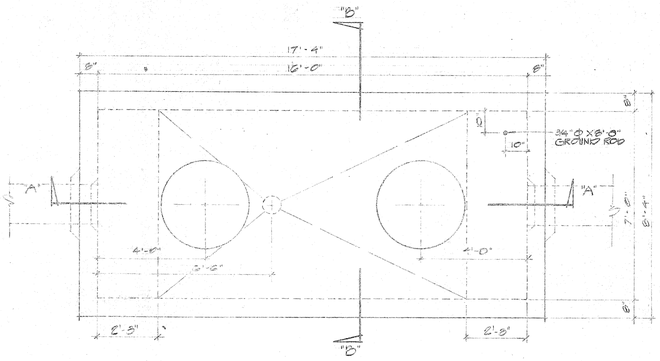
HTCO V-3 TYPE MANHOLE

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(73)15
SCALE: AS SHOWN DATE: DEC. 7, 1973

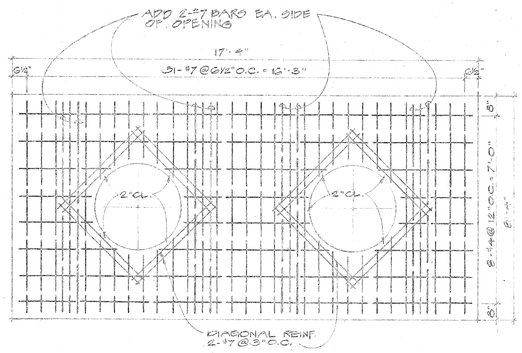
SHEET NO. 54 OF 62 SHEETS

210R

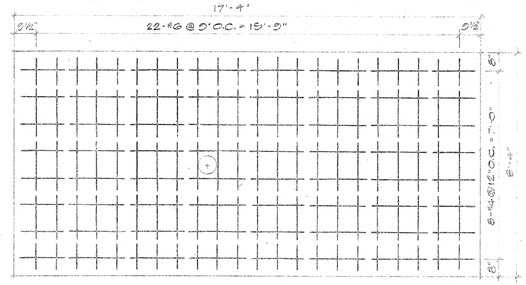
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(78)15	1974	211	369



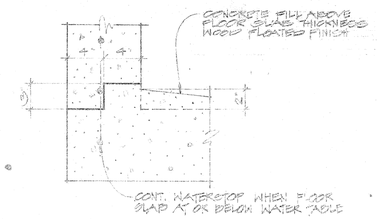
PLAN
SCALE: 3/8" = 1'-0"



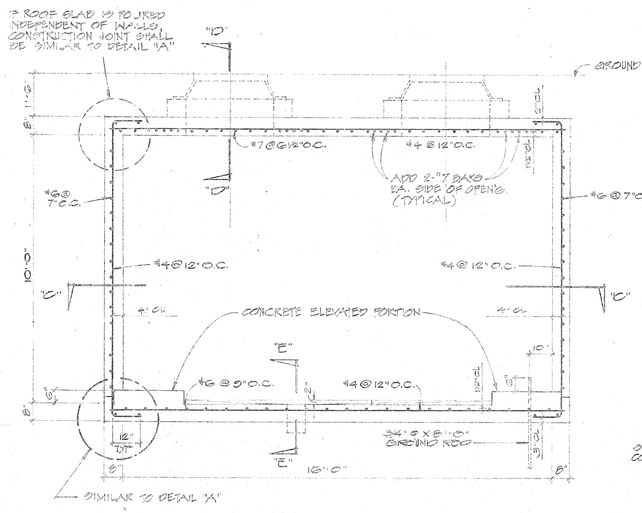
ROOF SLAB REINF. PLAN
SCALE: 3/8" = 1'-0"



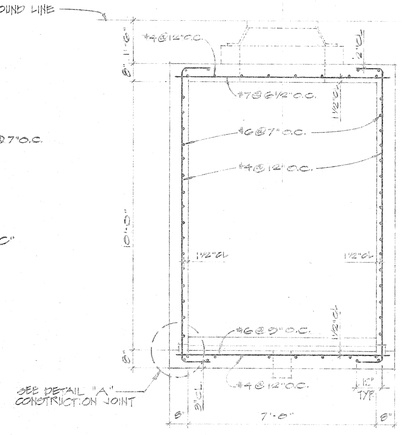
FLOOR SLAB REINF. PLAN
SCALE: 3/8" = 1'-0"



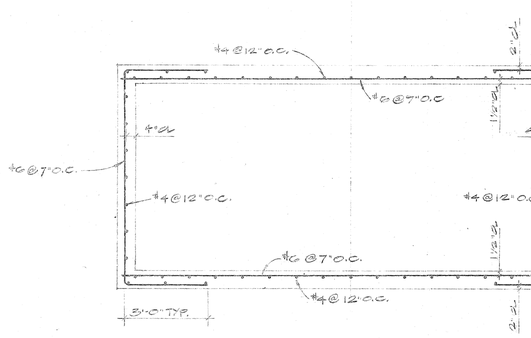
DETAIL "A"
SCALE: 1½" = 1'-0"



SECTION "A-A"
SCALE: 3/8" = 1'-0"



SECTION "B-B"
SCALE: 3/8" = 1'-0"

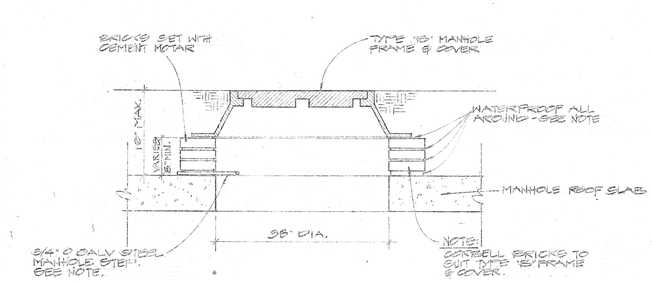


SECTION "C-C"
SCALE: 3/8" = 1'-0"

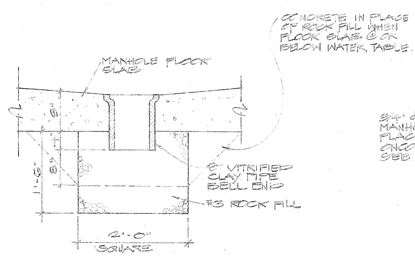
GENERAL NOTES:

1. DESIGN DATA
   fs = 20,000 PSI
   fc = 3,000 PSI, f'c = 2250 PSI
   N = 10
   W = ENVIR. FLUID PRESS.: 30 #/FT²
2. ALL CONSTRUCTION JOINTS SHALL BE WATERPROOFED WITH TWO APPLICATIONS OF THIOKOL SEAL OR EQUAL.
3. FOR DUCT WINDOW LOCATION SEE PLAN PROFILE SHEETS FOR ELEVATIONS.
4. DUCT WINDOW TO SUIT - SEE PLAN & PROFILE & STANDARD DETAIL SHEETS FOR LOCATION & DETAILS.
5. FOR DUCT WINDOW DETAILS SEE SECTION "F-F", STANDARD DUCT FORMATIONS & MANHOLE DETAILS SHEET.
6. STEP & LADDER AVAILABLE AT WESTINGHOUSE ELECTRIC SUPPLY CO. UPON REQUEST. (OWNER FURNISHED)

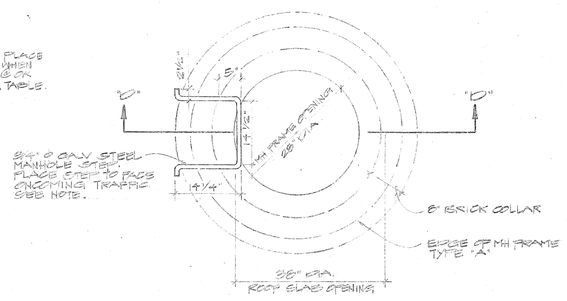
ITEM	STOCK NO
STEP	41-G-6750
LADDER W/PERMANENTLY RIVETED HOOKS	41-9115 & 41-G0049



SECTION "D-D"
MH FRAME & COVER DETAIL
SCALE: 3/4" = 1'-0"



SECTION "E-E"
MH SUMP DETAIL
SCALE: 3/4" = 1'-0"



PLAN VIEW MANHOLE STEP
SCALE: 3/4" = 1'-0"

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

APPROVED:

R. Mau 11/4/74
HAWAIIAN TELEPHONE CO. DATE

11/4/74	ADDED HTCO APPROVAL SIGNATURE
DATE	REVISIONS

E-55

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

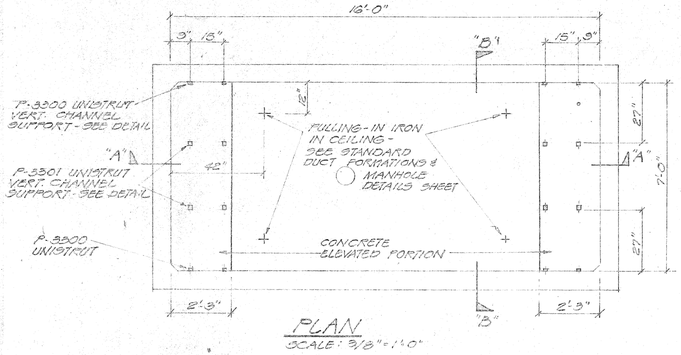
HTCO 7'x16'x10' LOAD COIL MANHOLE

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(78)15
SCALE: AS SHOWN DATE: DEC. 7, 1973

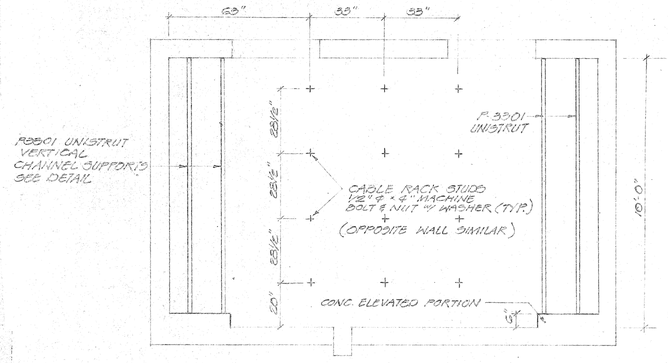
SHEET NO. 55 OF 62 SHEETS

211R

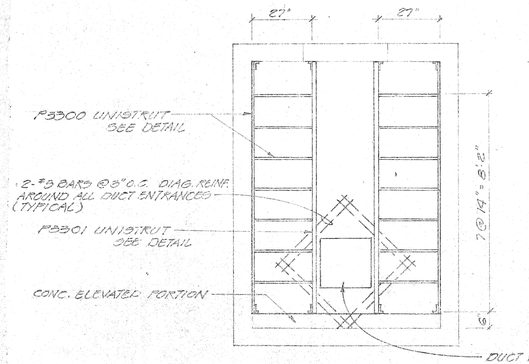
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-HI-1(78)15	1974	212	329



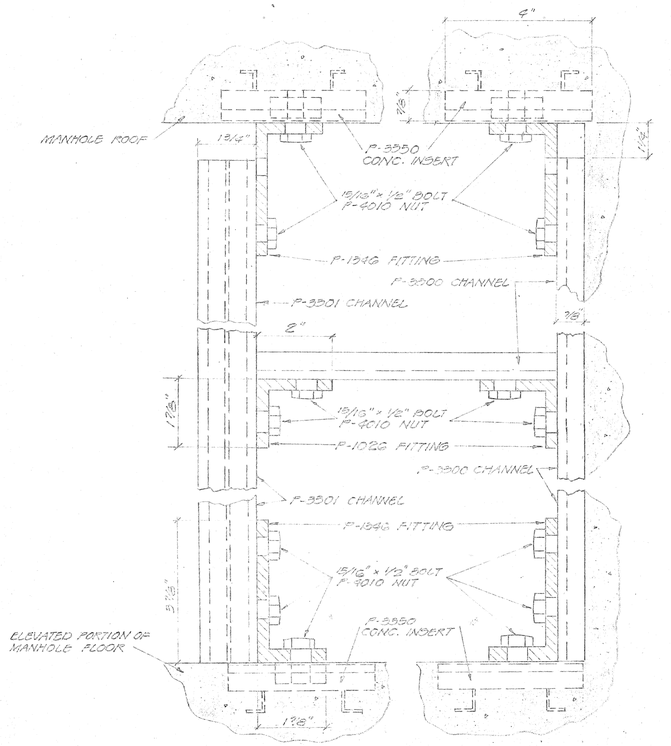
PLAN
SCALE: 3/8"=1'-0"



SECTION "A-A"
SCALE: 3/8"=1'-0"



SECTION "B-B"
SCALE: 3/8"=1'-0"



TYP. VERTICAL CHANNEL SUPPORTS DETAIL
NOT TO SCALE

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

APPROVED:

R. Main 11/4/74
HAWAIIAN TELEPHONE CO. DATE

DATE	REVISIONS
11/4/74	ADDED HTCO APPROVAL SIGNATURE

E-56

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

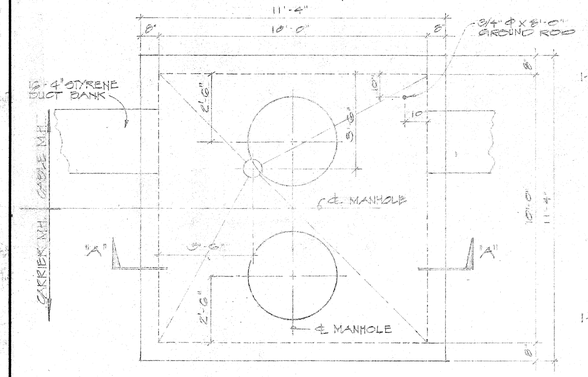
HTCO 7'x16'x10' LOAD COIL MANHOLE

PEARL HARBOR INTERCHANGE
F.A.I. PROJECT NO. I-HI-1(78)15
SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET NO. 5G OF 62 SHEETS

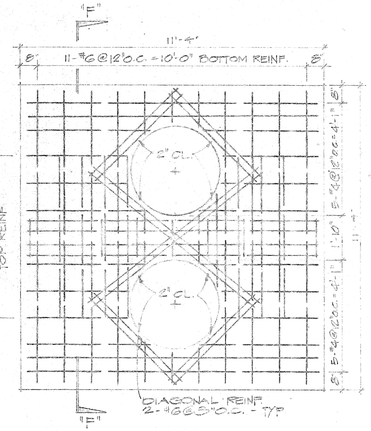
212R

FED ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FHI(79)19	1974	213	369



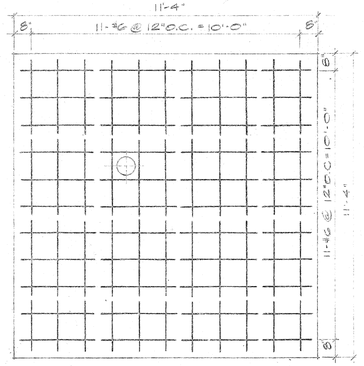
PLAN

SCALE: 3/8" = 1'-0"



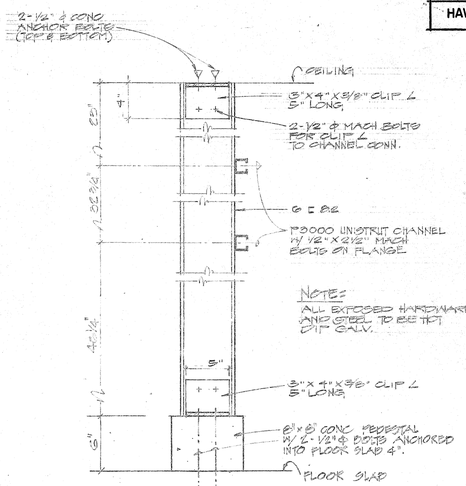
ROOF SLAB REINF. PLAN

SCALE: 3/8" = 1'-0"



FLOOR SLAB REINF. PLAN

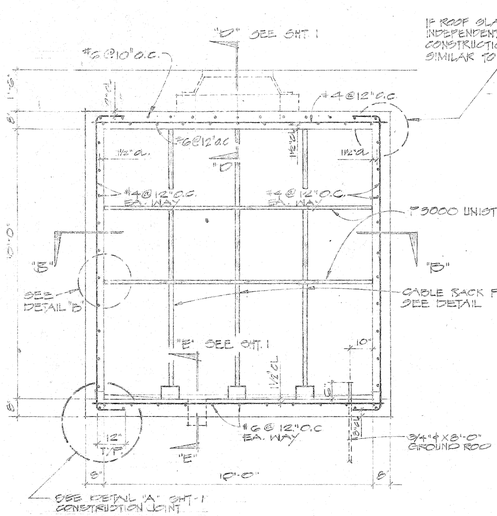
SCALE: 3/8" = 1'-0"



CABLE RACK FRAME DETAIL

SCALE: 1 1/2" = 1'-0"

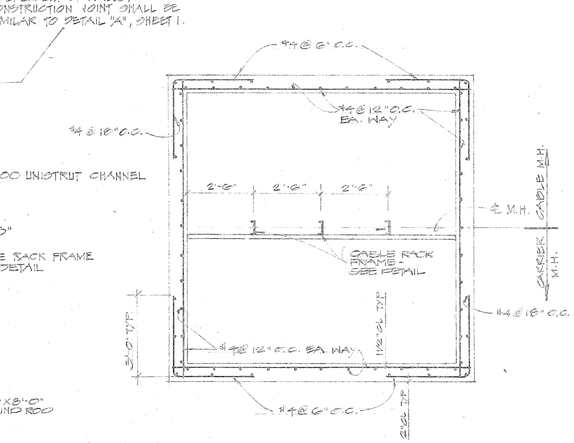
INTERIOR ELEVATION KEY



IF ROOF SLAB IS POURED INDEPENDENT OF WALLS, CONSTRUCTION JOINT SHALL BE SIMILAR TO DETAIL "A", SHEET 1.

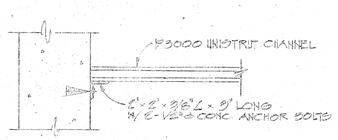
SECTION "A-A"

SCALE: 3/8" = 1'-0"



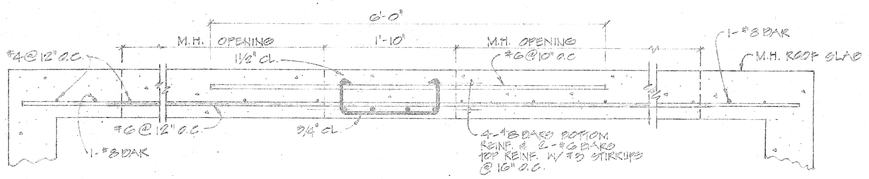
SECTION "B-B"

SCALE: 3/8" = 1'-0"



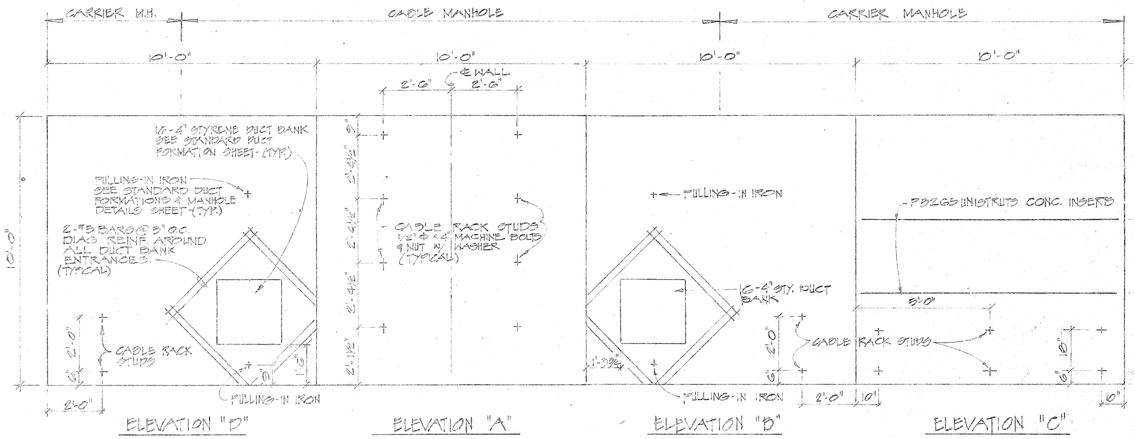
DETAIL "B"

SCALE: 1 1/2" = 1'-0"



SECTION "F-F"

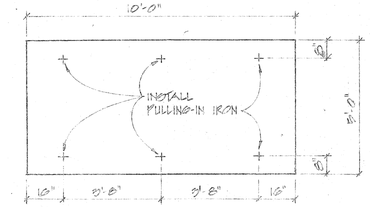
SCALE: 1" = 1'-0"



ELEVATION "D" ELEVATION "A" ELEVATION "B" ELEVATION "C"

MANHOLE WALL ELEVATIONS

SCALE: 3/8" = 1'-0"



CEILING PLAN FOR CARRIER M.H.

SCALE: 3/8" = 1'-0"

APPROVED:

R. Mau
HAWAIIAN TELEPHONE CO.

11/4/74
DATE

DATE	REVISION
11/4/74	ADDED HTCO APPROVAL SIGNATURE

E-57

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HTCO 10×10×10 CABLE AND CARRIER MANHOLE

PEARL HARBOR INTERCHANGE

F.A.I. PROJECT NO. I-HI-1(79)19

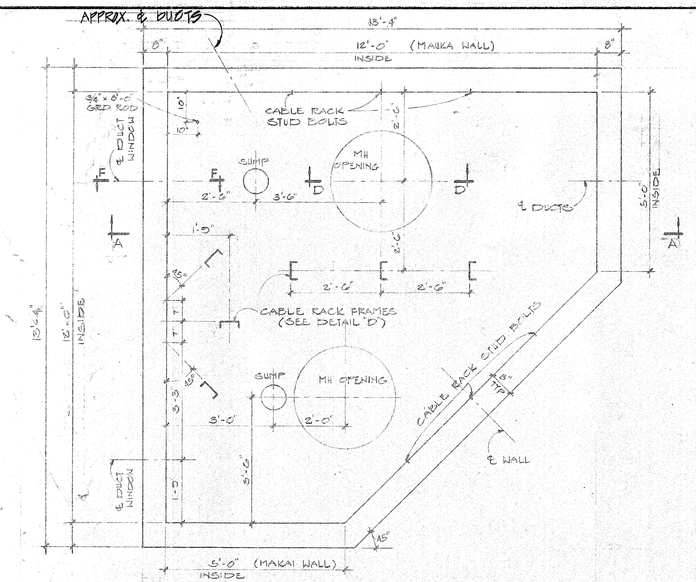
SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET NO. 57 OF 62 SHEETS

213R

25

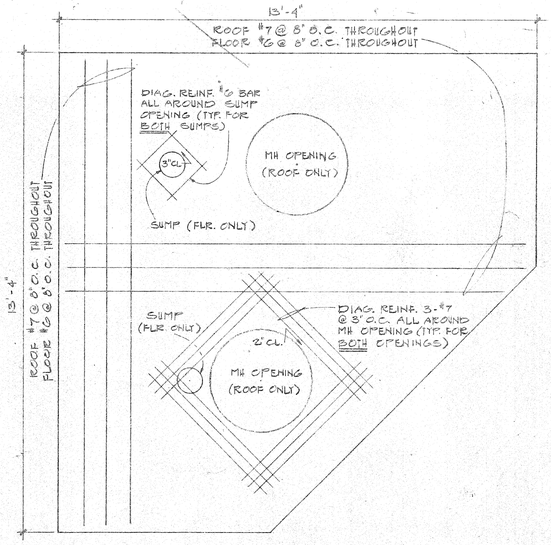
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FHI-(79)-15	1974	214	369



PLAN

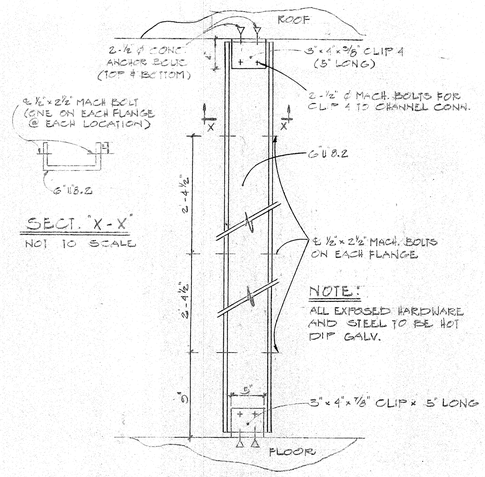
SCALE: ½" = 1'-0"

NOTE:
FOR SECTION F-F SEE STANDARD DUCT FORMATIONS AND MANHOLE DETAILS SHEET



ROOF & FLR. SLAB REINF. PLANS

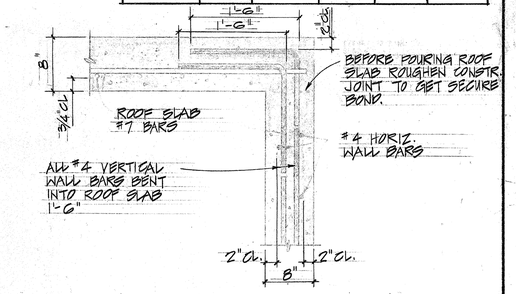
SCALE: ½" = 1'-0"



DETAIL "D"

CABLE RACK FRAME DETAIL

NOT TO SCALE

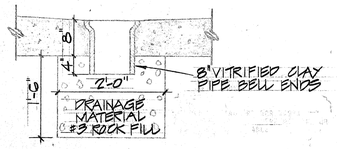


DETAIL "B"

CONSTRUCTION JOINT

SCALE: 1" = 1'-0"

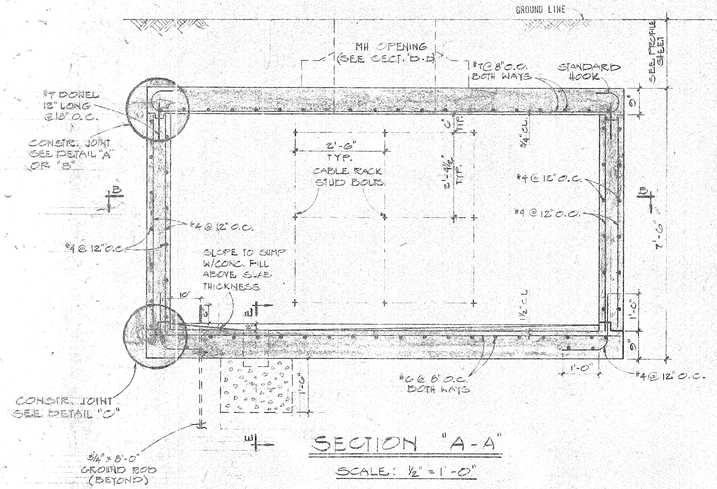
USE FOR CAST-IN-PLACE CONSTRUCTION



SECTION "E-E"

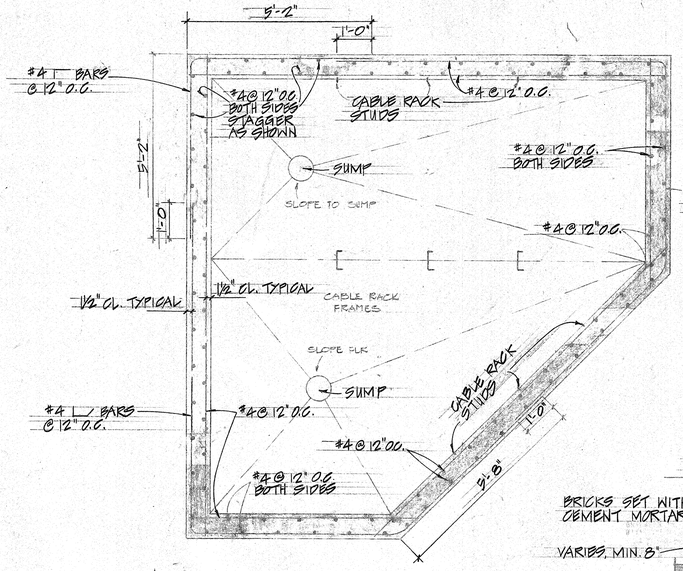
MH. SUMP DETAIL

SCALE: ¾" = 1'-0"



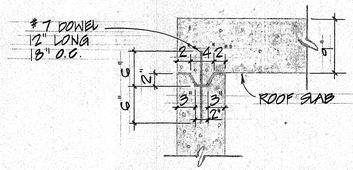
SECTION "A-A"

SCALE: ½" = 1'-0"



SECTION "B-B"

SCALE: ½" = 1'-0"

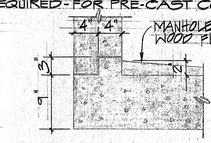


DETAIL "A"

(TOP CONSTR. JOINT DETAIL)

SCALE: 1" = 1'-0"

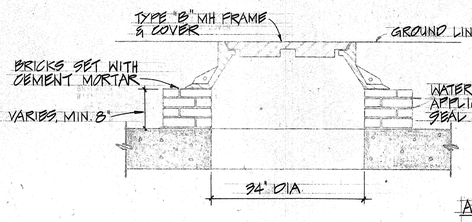
OPTIONAL - FOR CAST-IN-PLACE CONSTR.
REQUIRED - FOR PRE-CAST CONSTRUCTION



DETAIL "C"

(BOTTOM CONSTR. JOINT DETAIL)

SCALE: 1" = 1'-0"



SECTION "D-D"

SCALE: ¾" = 1'-0"

GENERAL NOTES:

1. DESIGN DATA
   fs = 20,000 PSI fc = 1,200 PSI w = EQUIV. FLUID PRESSURE
   fc = 3,000 PSI n = 10 30#/FT²
2. MINIMUM OVERLAP FOR A LAPPED SPLICE SHALL BE 24 BAR DIA. BUT NOT LESS THAN 12". LAP OF ADJACENT BARS SHALL NOT BE IN SAME LOCATION.
3. UNLESS OTHERWISE INDICATED, FOR VERTICAL LOCATION OF DUCT WINDOWS SEE PROFILE SHT.
4. MANHOLE WALLS SHALL BE DOUBLED FORM.
5. ALL CONCRETE SHALL BE CURED BY AN IMPERVIOUS LIQUID MEMBRANE COMPOUND
6. CONCRETE SHALL NOT BE LOADED EXCEPT BY ITS OWN WEIGHT, UNTIL 28 DAY HAVE PASSED SINCE PLACEMENT.
7. ALL CONSTRUCTION JOINTS SHALL BE WATERPROOFED WITH TWO APPLICATIONS OF THOROSEAL OR EQUAL.
8. PLUG ALL DUCTS AND STUBOUTS.
9. CONCRETE SHALL BE CLASS A-1 AND SHALL HAVE A COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS WITH A SLUMP OF 3".
10. CONCRETE ADMIXTURE SHALL BE 2½ LBS "TRICOSOL NORMAL" PER CUBIC YARD.
11. APPLY DAMPPROOFING TO THE SURFACES OF REINF. CONCRETE THAT ARE IN CONTACT WITH THE EARTH EXCLUDING THE UNDERSIDE OF THE FLOOR SLAB. MATERIAL AND APPLICATION SHALL BE ACCORDING TO THE 1951 EDITION OF THE "STATE" HIGHWAY DEPARTMENTS STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
12. WHERE MANHOLE IS LOCATED BELOW THE WATER TABLE, ALL CONSTRUCTION JOINTS SHALL BE WATERPROOFED WITH A CONTINUOUS STRIP OF RUBBER WATERSTOP.

DATE	REVISION
11/4/74	ADDED HTCO APPROVAL SIGNATURE

APPROVED:

a. Mau 11/4/74
HAWAIIAN TELEPHONE CO. DATE

E-58

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

HTCO SPECIAL CORNER TYPE MANHOLE

PEARL HARBOR INTERCHANGE

F.A.I. PROJECT NO. I-HI-1(73):15

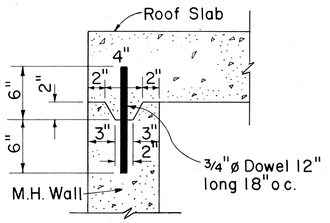
SCALE: AS SHOWN DATE: DEC. 7, 1973

SHEET NO. 58 OF 62 SHEETS

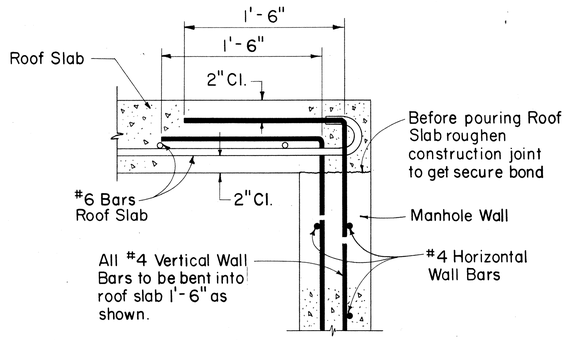
214R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	215	369

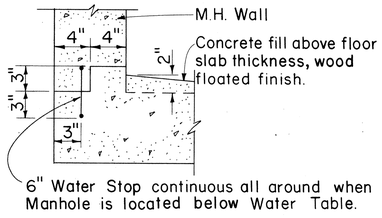
DATE	REVISION
11/4/74	ADDED HTCO APPROVAL SIGNATURE



DETAIL "A"
TOP CONSTRUCTION JOINT
Scale: 1 1/2" = 1'-0"
(Optional for cast-in-place construction Required for precast construction)

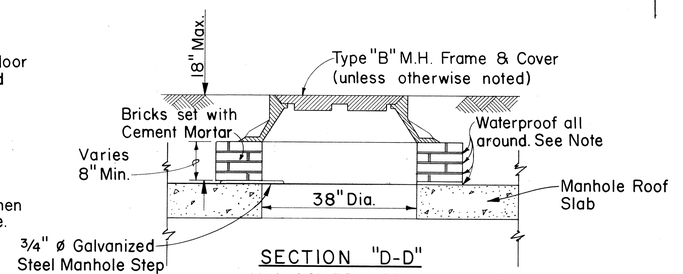


DETAIL "B"
(USED FOR CAST-IN-PLACE CONSTRUCTION)
Scale: 1 1/2" = 1'-0"

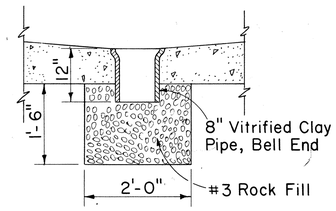


DETAIL "C"
BOTTOM CONSTRUCTION JOINT
Scale: 1 1/2" = 1'-0"

NOTE:
Corbel Bricks to suit Type A Frame & Cover.

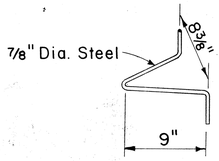


SECTION "D-D"
M.H. COVER DETAIL
Scale: 3/4" = 1'-0"

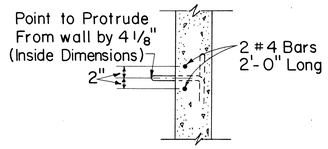


SECTION "E-E"
M.H. SUMP DETAIL
Scale: 3/4" = 1'-0"

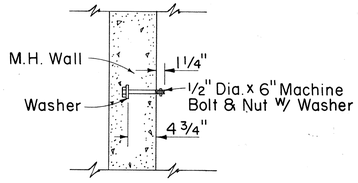
Note:
See Section "E1-E1" Below



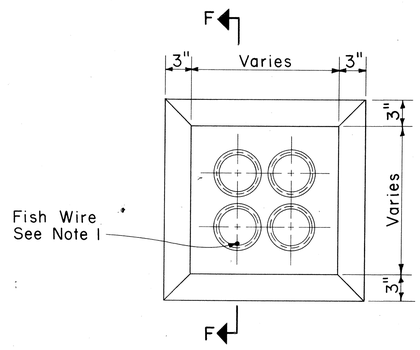
PULLING-IN IRON



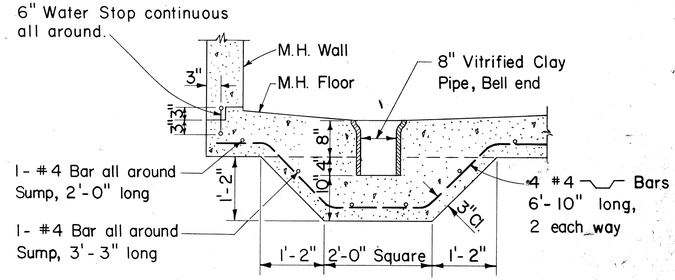
SECTIONAL VIEW OF PULLING-IN IRON
Scale: 3/4" = 1'-0"



CABLE RACK STUD BOLT DETAIL
Scale: 1" = 1'-0"



TYPICAL MANHOLE DUCT WINDOW
Scale: 1 1/2" = 1'-0"

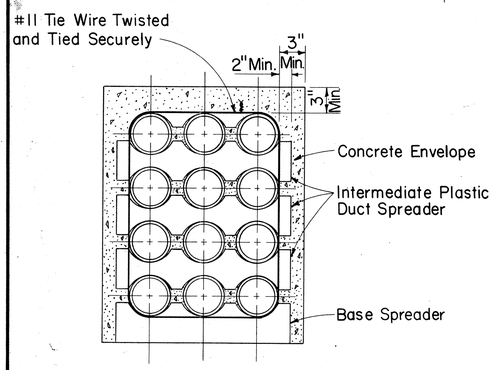


Note: Only for manholes located below water table

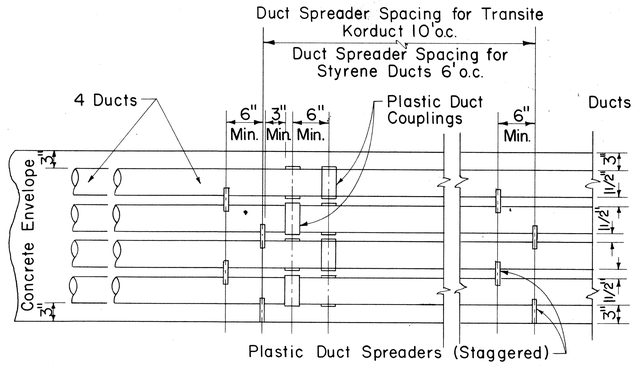
SECTION "E1-E1"
MANHOLE SUMP DETAIL
Scale: 3/4" = 1'-0"

NOTE

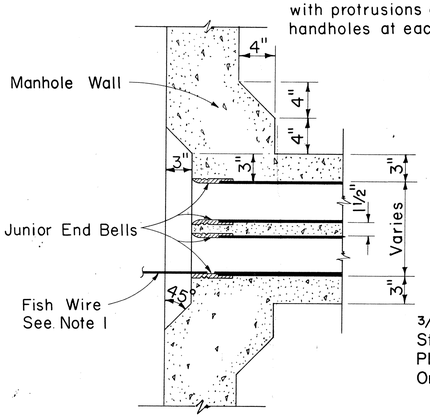
1. The Contractor shall place #12 Fish Wire in designated duct throughout its entire length with protrusions of 2 feet in manholes & handholes at each end and 1 foot in pullboxes.



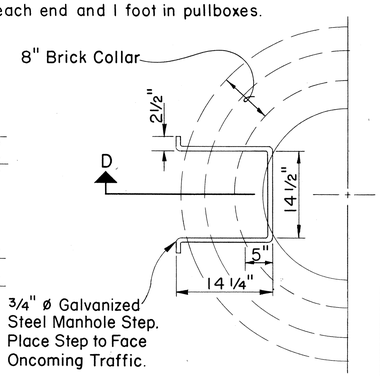
SECTION SHOWING SPACERS



TYPICAL DUCT ENVELOPE ELEVATION
ARRANGEMENT OF COUPLING & PLASTIC SPACERS
Scale: 1" = 1'-0"



SECTION "F-F"
TYPICAL WINDOW DETAIL & JUNIOR END BELL
Scale: 1 1/2" = 1'-0"



PART-PLAN
MANHOLE STEP
Scale: 1" = 1'-0"

E-59

Supplement Sheet to Type "A-1" (Drawing Nos. 34060 & 34061), Type "A-2" (Drwg. Nos. 34062 & 34063) and Type "A-3" (Drwg. Nos. 34064 & 34065) Telephone M.H.

APPROVED:

R. Man 11/4/74
Hawaiian Telephone Co., Ltd. Date

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

TYPE "A" MANHOLE AND MISCELLANEOUS TELEPHONE DETAILS

Scale: As Noted Date:

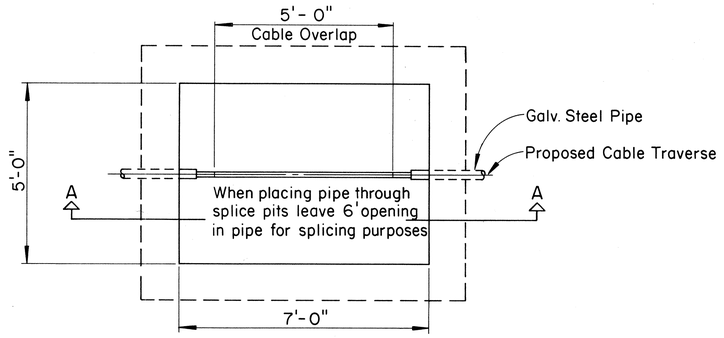
SHEET No. 59 OF 62 SHEETS

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

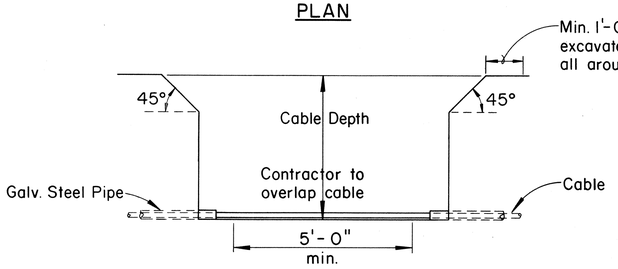
215R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	(HI-(73):13	1974	216	329

DATE	REVISION
11/4/74	ADDED HTCO APPROVAL SIGNATURE



PLAN

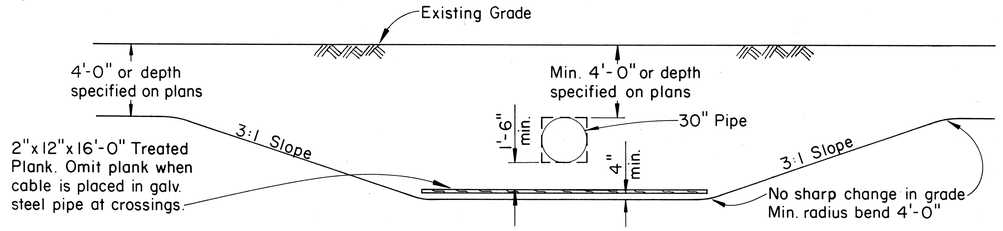


SECTION A-A

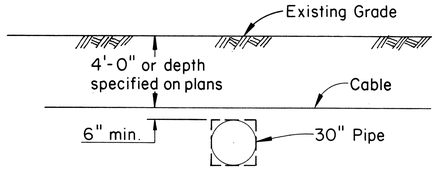
TYPICAL SPLICING PITS FOR BURIED CABLE

NOTES:

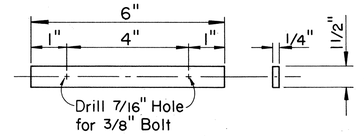
1. The Contractor shall dig pits at specified locations.
2. One face of pit shall be kept free of excavated material.
3. Where pits are located on sloping or irregular ground, the excavated material shall be placed in such a manner as to prevent surface water from draining into the pit.
4. Provide a fence around the pit at any location where stock have access to the route, and pits near farm homes to keep out small animals and pets.



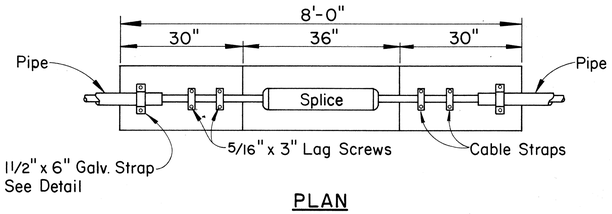
DETAIL OF CABLE CROSSING UNDER STORM CULVERTS-IRRIGATION PIPES, OTHER UTILITIES, OR FOREIGN PIPES



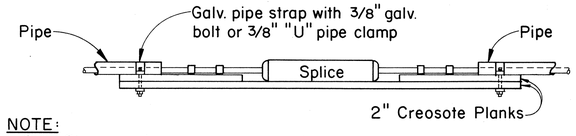
DETAIL OF CABLE CROSSING OVER STORM CULVERTS-IRRIGATION PIPES, OTHER UTILITIES, OR FOREIGN PIPES



GALVANIZED STRAP DETAIL



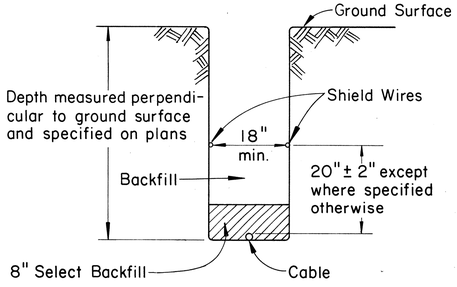
PLAN



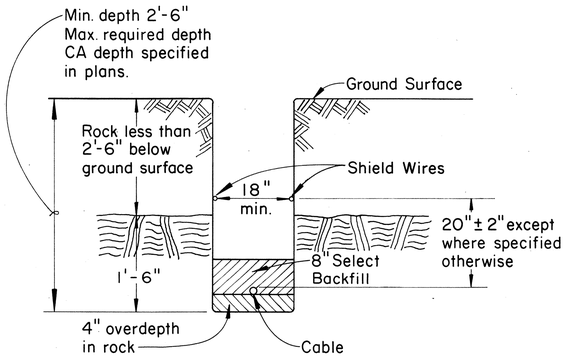
NOTE:
Galv. Strap may be substituted with pipe clamp.

ELEVATION

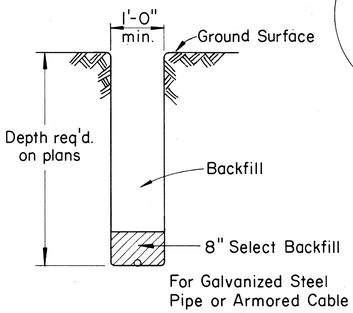
DETAIL OF SPLICE SUPPORT BETWEEN PIPE SECTIONS



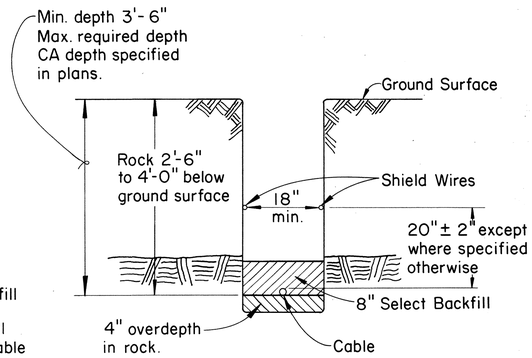
TYPICAL SECTION THROUGH NORMAL TRENCH



TYPICAL SECTION THROUGH TRENCH WITH ROCK LESS THAN 2'-6" BELOW SURFACE



TYPICAL SECTION FOR TRENCH WHERE NO SHIELD WIRE IS REQUIRED



TYPICAL SECTION THROUGH TRENCH WITH ROCK 2'-6" TO 4'-0" BELOW SURFACE

E-60

APPROVED:

R. Mau — 11/4/74

Hawaiian Telephone Co., Ltd. — Date

H.T. Co., Ltd. — Drawing Nos. 34047, 34048

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

SPLICING PITS AND STANDARD TRENCHING DETAILS FOR BURIED COAXIAL CABLE

Scale: Not to Scale

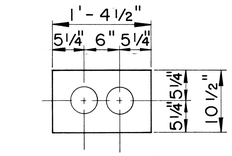
SHEET No. 60 OF 62 SHEETS

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

K+E IMPERIAL™ LA 3207

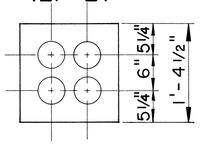
216R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	216S-1	369



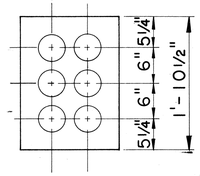
2 DUCTS

$\left(\frac{T}{2F-2}\right)$



2 WIDE X 2 HIGH

$\left(\frac{T}{4F-2}\right)$

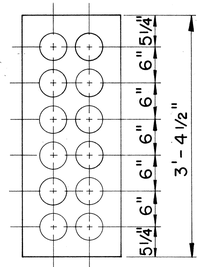


2 WIDE X 3 HIGH

$\left(\frac{T}{6F-2}\right)$

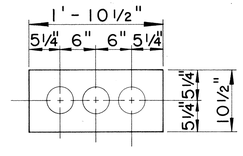
2 WIDE X 4 HIGH

$\left(\frac{T}{8F-2}\right)$



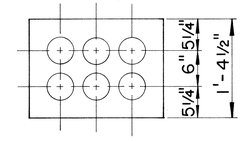
2 WIDE X 6 HIGH

$\left(\frac{T}{12F-2}\right)$



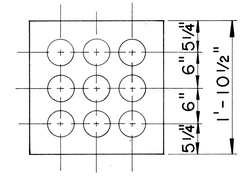
3 DUCTS

$\left(\frac{T}{3F-3}\right)$



3 WIDE X 2 HIGH

$\left(\frac{T}{6F-3}\right)$

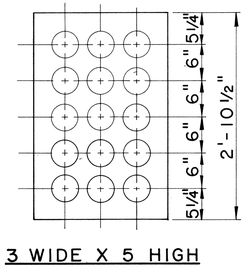


3 WIDE X 3 HIGH

$\left(\frac{T}{9F-3}\right)$

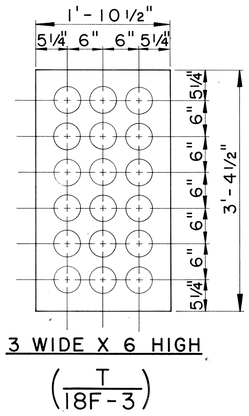
3 WIDE X 4 HIGH

$\left(\frac{T}{12F-3}\right)$



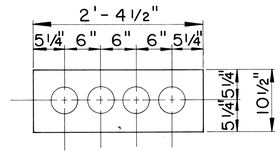
3 WIDE X 5 HIGH

$\left(\frac{T}{15F-3}\right)$



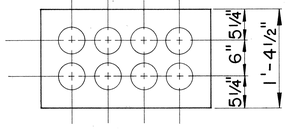
3 WIDE X 6 HIGH

$\left(\frac{T}{18F-3}\right)$



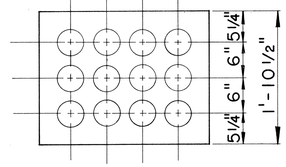
4 DUCTS

$\left(\frac{T}{4F-4}\right)$



4 WIDE X 2 HIGH

$\left(\frac{T}{8F-4}\right)$

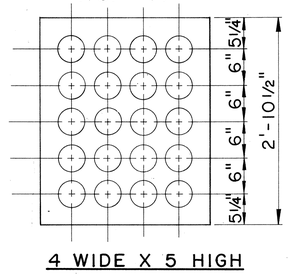


4 WIDE X 3 HIGH

$\left(\frac{T}{12F-4}\right)$

4 WIDE X 4 HIGH

$\left(\frac{T}{16F-4}\right)$

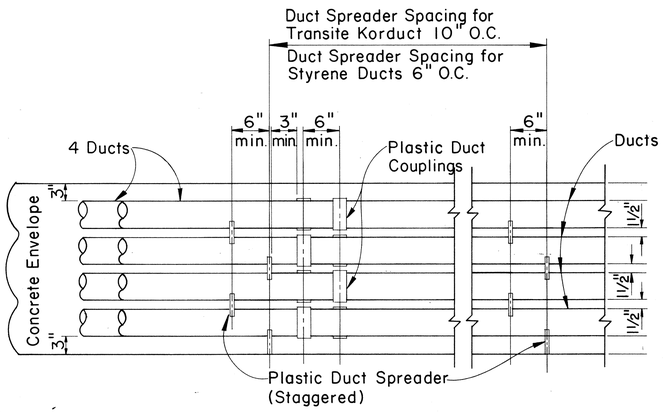


4 WIDE X 5 HIGH

$\left(\frac{T}{20F-4}\right)$

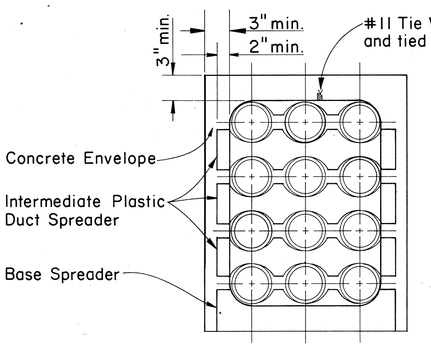
STANDARD DUCT FORMATIONS

Scale: 1"= 1'-0"



TYPICAL DUCT ENVELOPE ELEVATION ARRANGEMENT OF COUPLING & PLASTIC SPACERS

Scale: 1"= 1'-0"



NOTE:

1. The Contractor shall place #12 Fish Wire in designated duct throughout its entire length with protrusions of 2 feet in manholes & handholes at each end and 1 foot in pullboxes.

SECTION SHOWING SPACERS

Scale: 1 1/2"= 1'-0"

$\left(\frac{T}{20F-4}\right)$

- Denotes H.T. Co.
- Denotes Number of ducts bottom layer
- Denotes 4 inch ducts
- Denotes Total Number Of Ducts

SYMBOL IDENTIFICATION

E-61

APPROVED:

R. Mau — 11/4/74

Hawaiian Telephone Co., Ltd. — Date

H.T. Co., Ltd. Drawing No. 34028

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DUCT FORMATIONS

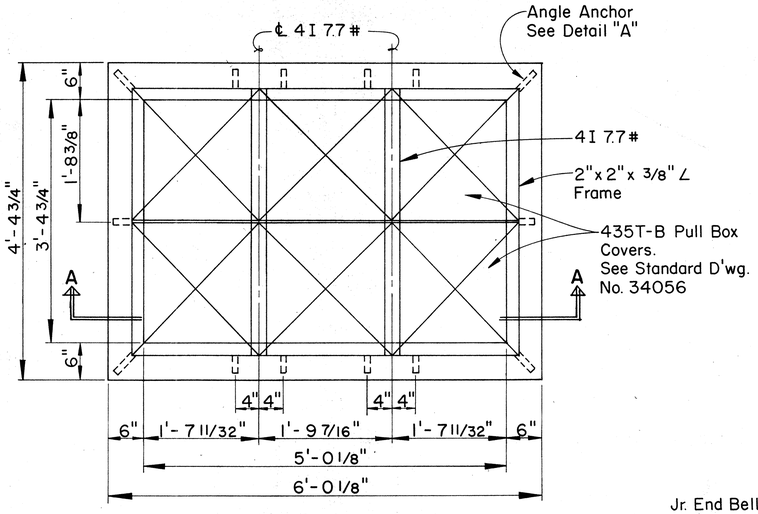
Scale: As Shown Date:

SHEET No. 61 OF 62 SHEETS

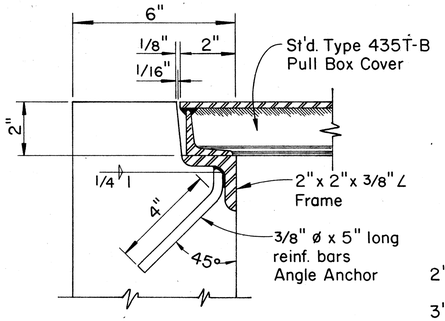
C.O. 216S-1

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(73):15	1974	216S-2	369

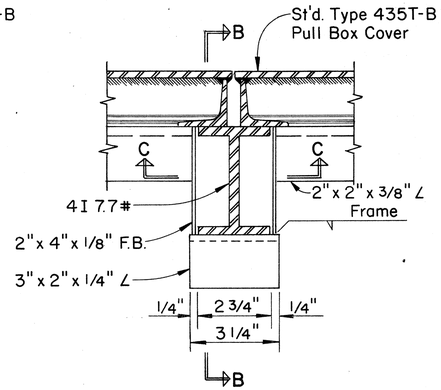


TOP PLAN
Scale: 1"= 1'-0"

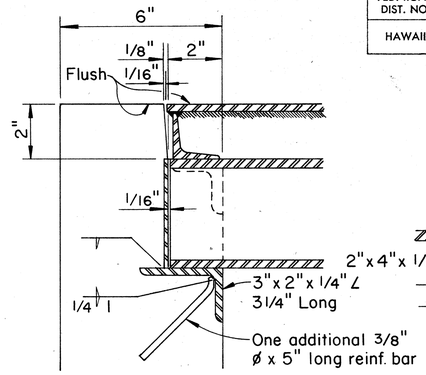


NOTE:
Section is typical.

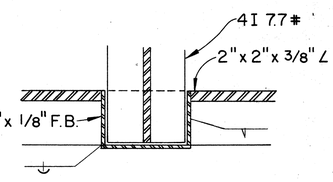
DETAIL "A"
Scale: 3/8"= 1"



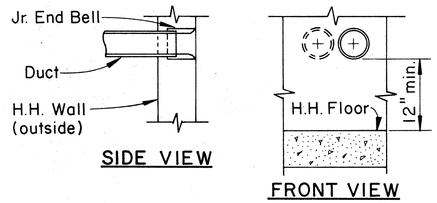
DETAIL "B"
Scale: 3/8"= 1"



SECTION "B-B"
Scale: 3/8"= 1"



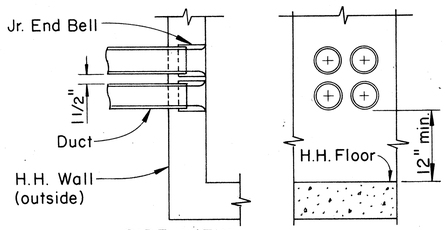
SECTION "C-C"
Scale: 3/8"= 1"



SIDE VIEW

FRONT VIEW

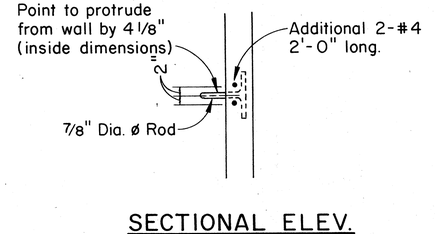
1 OR 2 DUCTS
Scale: 1"= 1'-0"



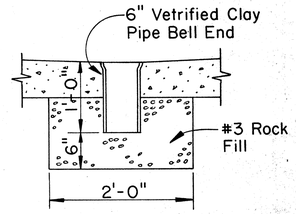
SIDE VIEW OR TOP PLAN 4 DUCTS

FRONT VIEW

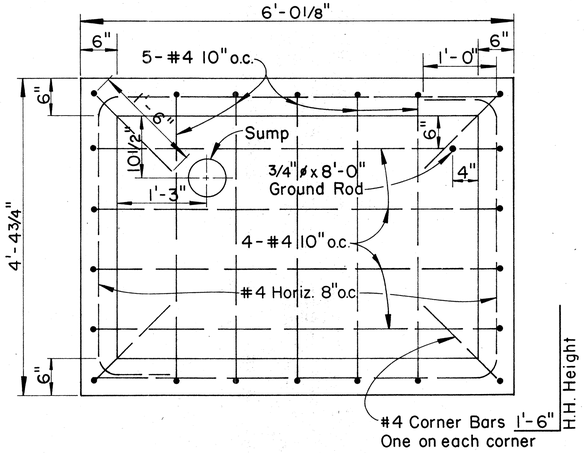
DUCT ENTRANCE DETAILS
Scale: 1"= 1'-0"



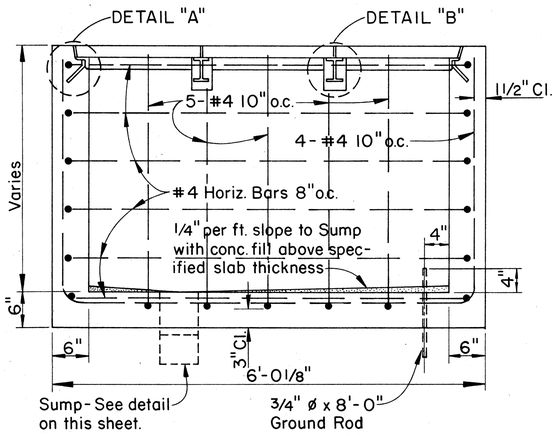
SECTIONAL ELEV. OF PULL-IN IRON
Scale: 3/4"= 1'-0"



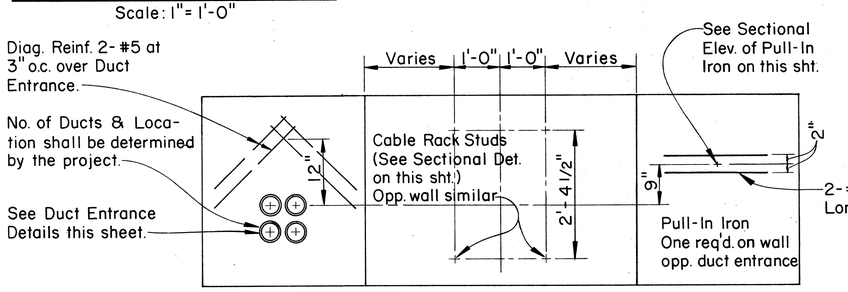
DETAIL OF SUMP
Scale: 1"= 1'-0"



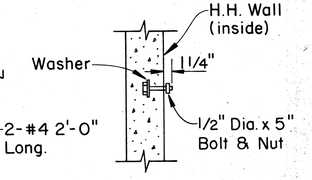
FLOOR PLAN
Scale: 1"= 1'-0"



SECTION "A-A"
Scale: 1"= 1'-0"



ELEV. OF INSIDE WALLS - H.H. TYPE I
Scale: 3/4"= 1'-0"



CABLE RACK STUD BOLT DETAIL
Scale: 1"= 1'-0"

GENERAL NOTES:

1. Concrete finish: floors-wood floated finish-exposed wall surfaces and edges-smooth and free from defects.
2. Concrete to develop compressive strength-3000 p.s.i. in 28 days.
3. Steel work all structural steel shall be hot dip galvanized after fabrication.
4. For duct line construction standards, see st'd. dwg. No. 34028.
5. These handholes are designed for installation in areas other than roadways.

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

APPROVED:
R. Mau
HAWAIIAN TELEPHONE CO., LTD.
11/4/74
DATE

E-62

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD HANDHOLE TYPE #1 USING TYPE 435T-B PULLBOX COVERS

Scale: As Shown Date:

SHEET No. 02 OF 02 SHEETS

C.O. 216S-2

K&E IMPERIAL™ TRACING CLOTH LA 3207