

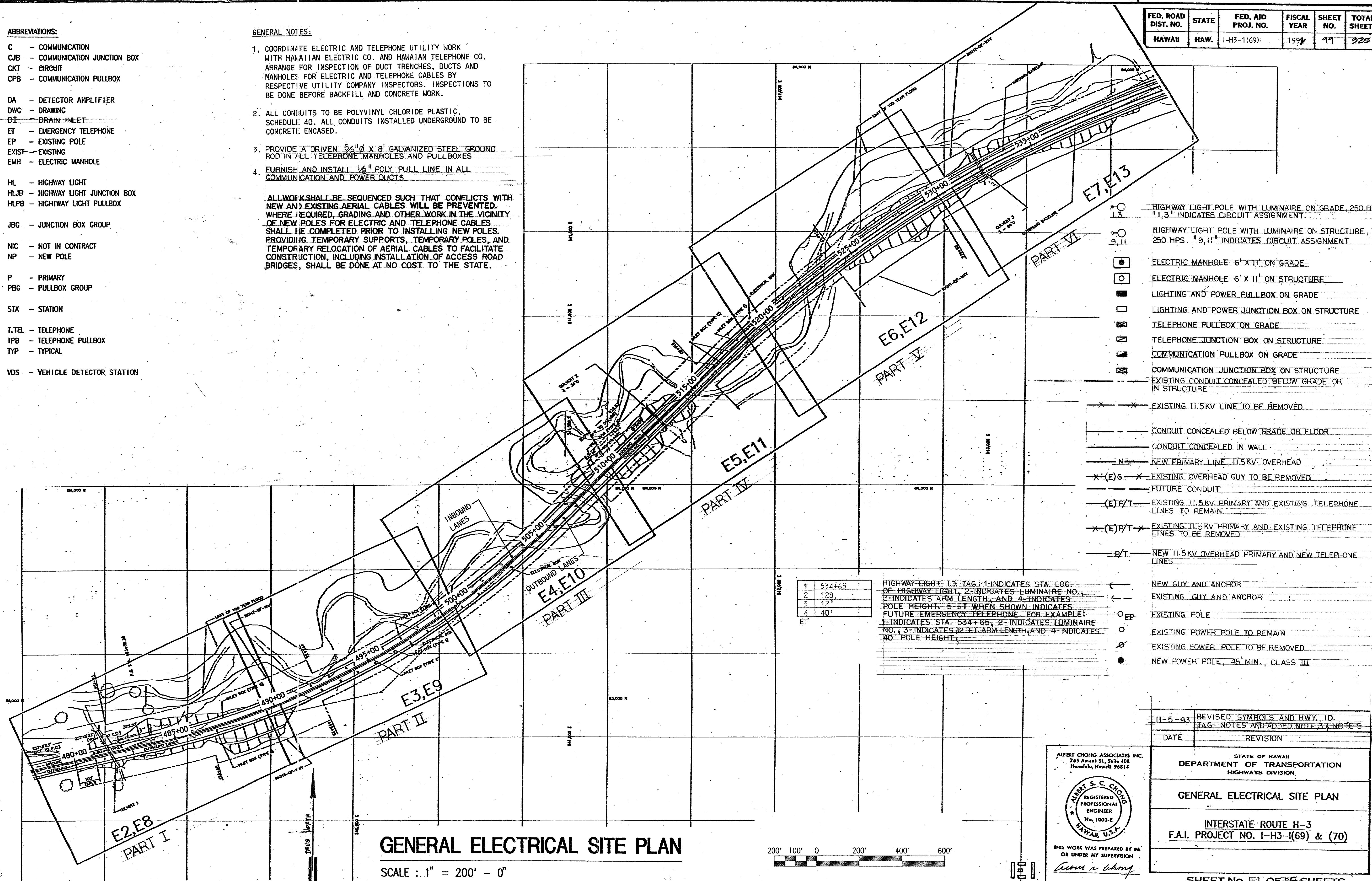
ABBREVIATIONS:

- C - COMMUNICATION
CJB - COMMUNICATION JUNCTION BOX
CKT - CIRCUIT
CPB - COMMUNICATION PULLBOX
- DA - DETECTOR AMPLIFIER
DWG - DRAWING
DI - DRAIN INLET
ET - EMERGENCY TELEPHONE
EP - EXISTING POLE
EXIST - EXISTING
EMH - ELECTRIC MANHOLE
- HL - HIGHWAY LIGHT
HLJB - HIGHWAY LIGHT JUNCTION BOX
HLPB - HIGHWAY LIGHT PULLBOX
- JBG - JUNCTION BOX GROUP
- NIC - NOT IN CONTRACT
NP - NEW POLE
- P - PRIMARY
PBG - PULLBOX GROUP
- STA - STATION
- T, TEL - TELEPHONE
TPB - TELEPHONE PULLBOX
TYP - TYPICAL
- VDS - VEHICLE DETECTOR STATION

GENERAL NOTES:

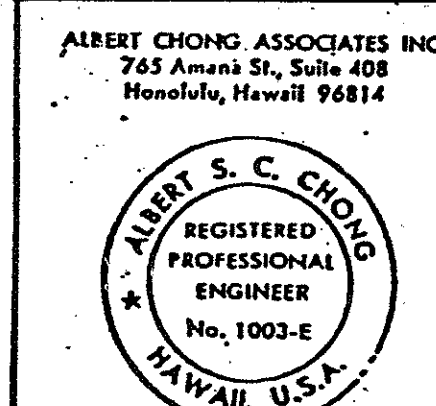
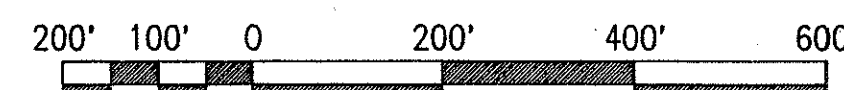
- COORDINATE ELECTRIC AND TELEPHONE UTILITY WORK WITH HAWAIIAN ELECTRIC CO. AND HAWAIIAN TELEPHONE CO. ARRANGE FOR INSPECTION OF DUCT TRENCHES, DUCTS AND MANHOLES FOR ELECTRIC AND TELEPHONE CABLES BY RESPECTIVE UTILITY COMPANY INSPECTORS. INSPECTIONS TO BE DONE BEFORE BACKFILL AND CONCRETE WORK.
 - ALL CONDUITS TO BE POLYVINYL CHLORIDE PLASTIC, SCHEDULE 40. ALL CONDUITS INSTALLED UNDERGROUND TO BE CONCRETE ENCASED.
 - PROVIDE A DRIVEN 5/8" X 8' GALVANIZED STEEL GROUND ROD IN ALL TELEPHONE MANHOLES AND PULLBOXES
 - FURNISH AND INSTALL 1/8" POLY PULL LINE IN ALL COMMUNICATION AND POWER DUCTS
- ALL WORK SHALL BE SEQUENCED SUCH THAT CONFLICTS WITH NEW AND EXISTING AERIAL CABLES WILL BE PREVENTED. WHERE REQUIRED, GRADING AND OTHER WORK IN THE VICINITY OF NEW POLES FOR ELECTRIC AND TELEPHONE CABLES SHALL BE COMPLETED PRIOR TO INSTALLING NEW POLES. PROVIDING TEMPORARY SUPPORTS, TEMPORARY POLES, AND TEMPORARY RELOCATION OF AERIAL CABLES TO FACILITATE CONSTRUCTION, INCLUDING INSTALLATION OF ACCESS ROAD BRIDGES, SHALL BE DONE AT NO COST TO THE STATE.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1994	99	325



GENERAL ELECTRICAL SITE PLAN

SCALE : 1" = 200' - 0"



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

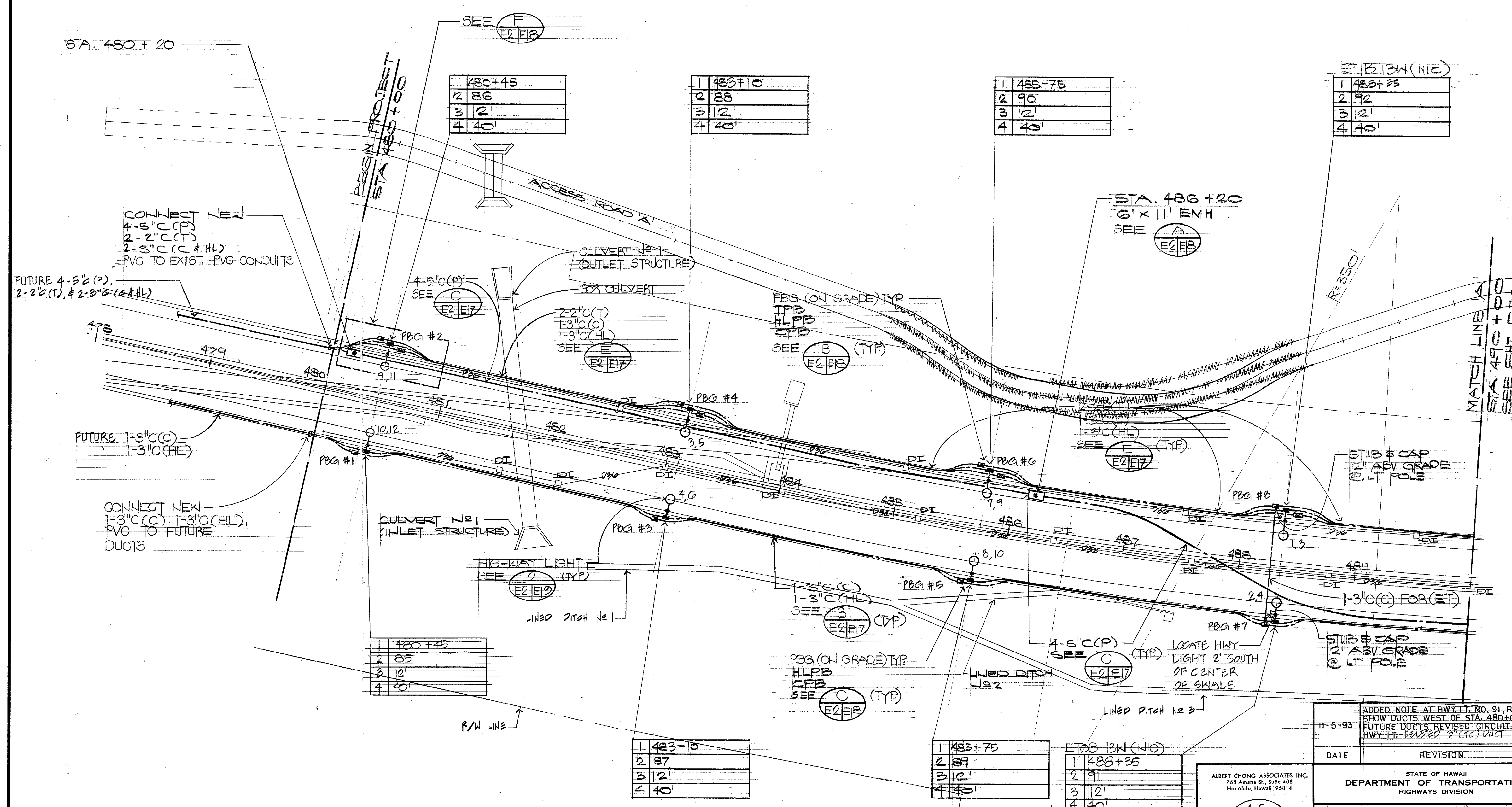
Albert S. C. Chong

11-5-93	REVISED SYMBOLS AND HWY. I.D. TAG NOTES AND ADDED NOTE 3 & NOTE 5
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
GENERAL ELECTRICAL SITE PLAN	
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO. I-H3-1(69) & (70)	

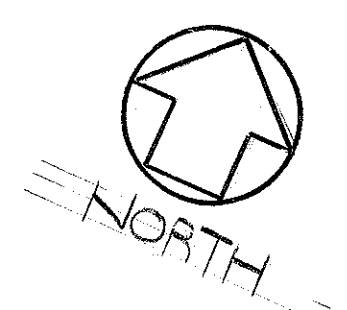
SHEET No. E1 OF 28 SHEETS

ADD.99

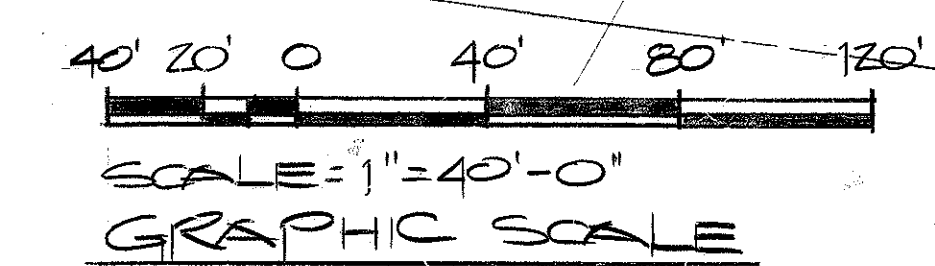
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1 (69)	1991	100	325



SURVEY PLOTTED BY	DATE
DESIGNED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	



ELECTRICAL SITE PLAN - PART I
SCALE = 1" = 40'-0"



ALBERT CHONG ASSOCIATES INC.
765 Amana St., Suite 408
Honolulu, Hawaii 96814

REGISTERED PROFESSIONAL ENGINEER
No. 1003-E
HAWAII, U.S.A.

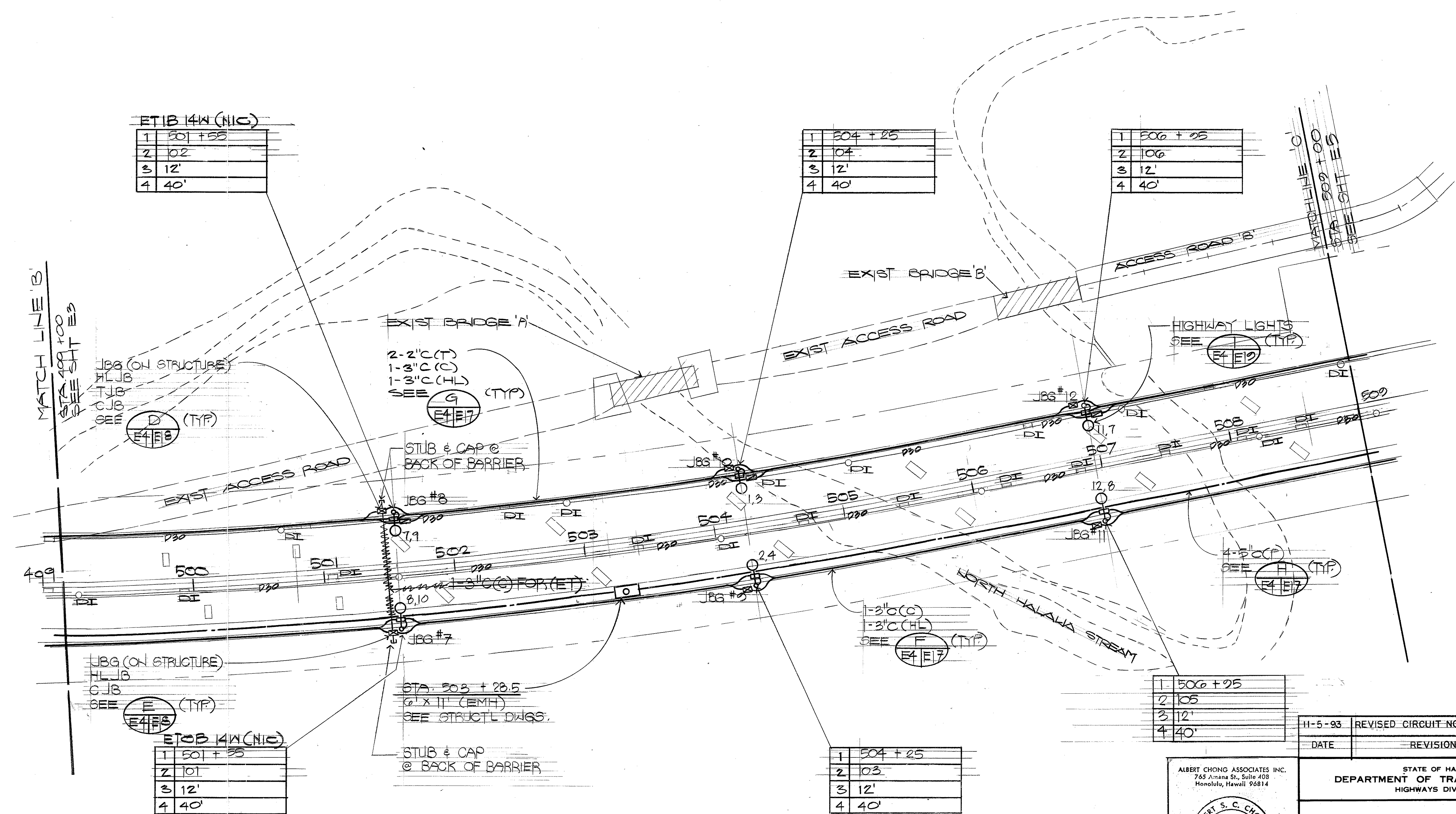
THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION

Albert S. Chong

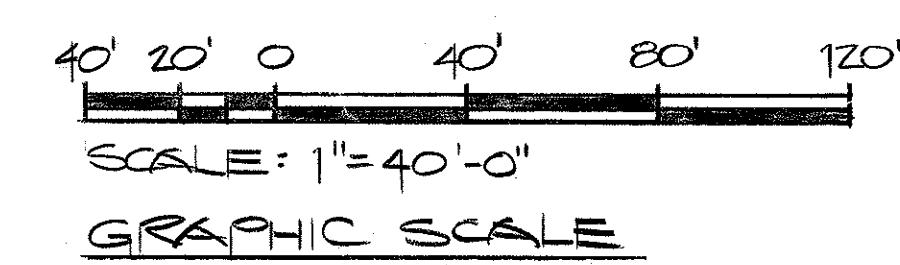
DATE	REVISION
11-5-93	ADDED NOTE AT HWY. LT. NO. 91, REVISED TO SHOW DUCTS WEST OF STA. 480+00. AS FUTURE DUCTS, REVISED CIRCUIT NO. FOR HWY. LT. DELETED 2" (C) and
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
ELECTRICAL SITE PLAN - PART I	
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO. I-H3-1(69) & (70)	
SHEET No. E2 OF 28 SHEETS	

ADD.100

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69) & (70)	1991	102	325



ELECTRICAL SITE PLAN - PART III SCALE: 1" = 40'-0"



ALBERT CHONG ASSOCIATES INC.
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REGISTERED PROFESSIONAL ENGINEER
No. 1003-E
HAWAII, U.S.A.

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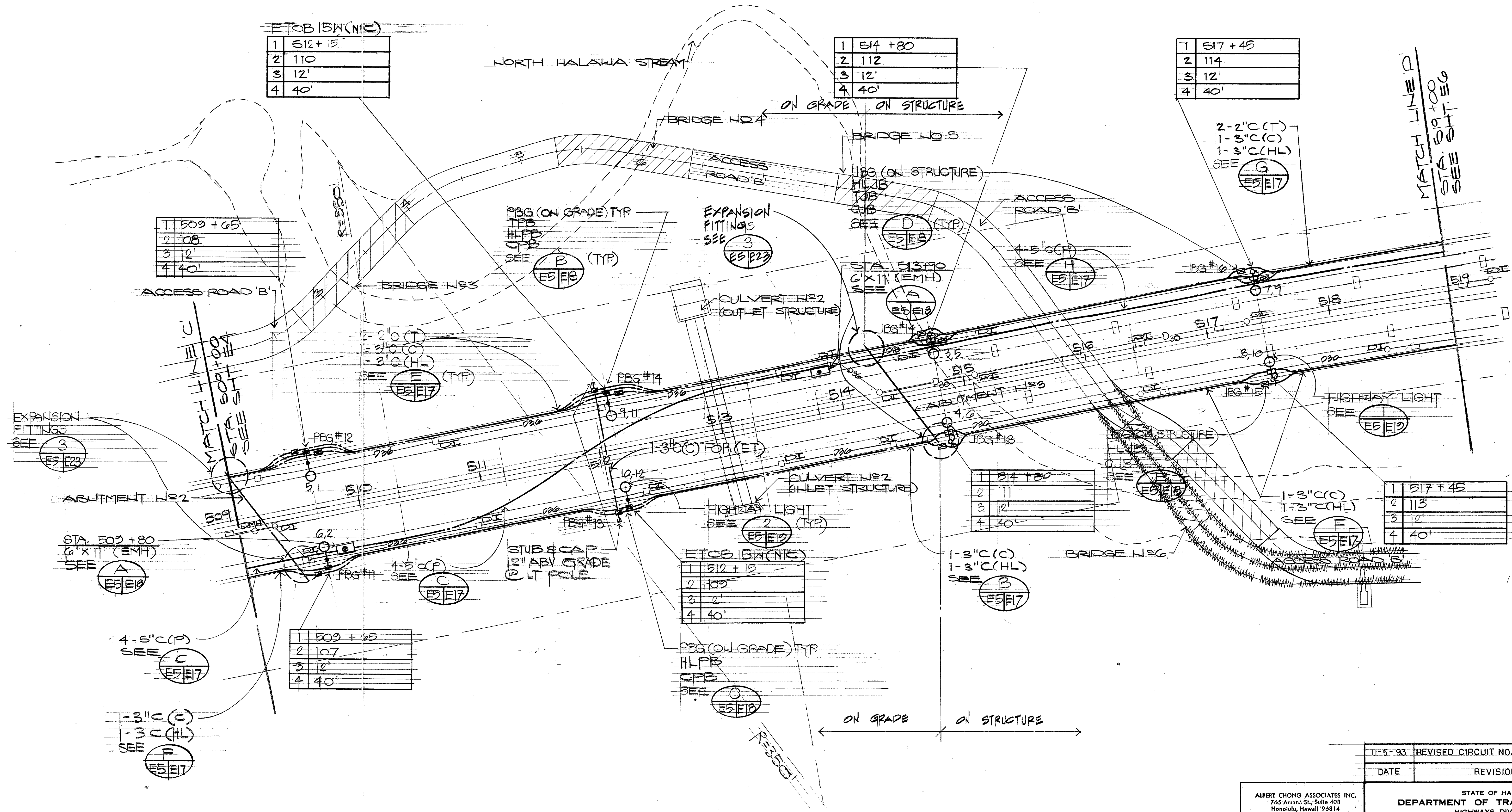
Albert S. Chong

H-5-93	REVISED CIRCUIT NO. FOR HWY. LT.
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
ELECTRICAL SITE PLAN - PART III	
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO. I-H3-1(69) & (70)	
SHEET NO. E4 OF 28 SHEETS	

ORIGINAL PLAN
DATE
DRAWN BY
DESIGNED BY
NOTED BY
CHECKED BY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1991	103	325

SURVEY PLOTTED BY	DATE
DESIGNED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	



ELECTRICAL SITE PLAN - PART IV
 SCALE: 1" = 40'-0"

ALBERT CHONG ASSOCIATES INC.
 765 Amana St., Suite 408
 Honolulu, Hawaii 96814

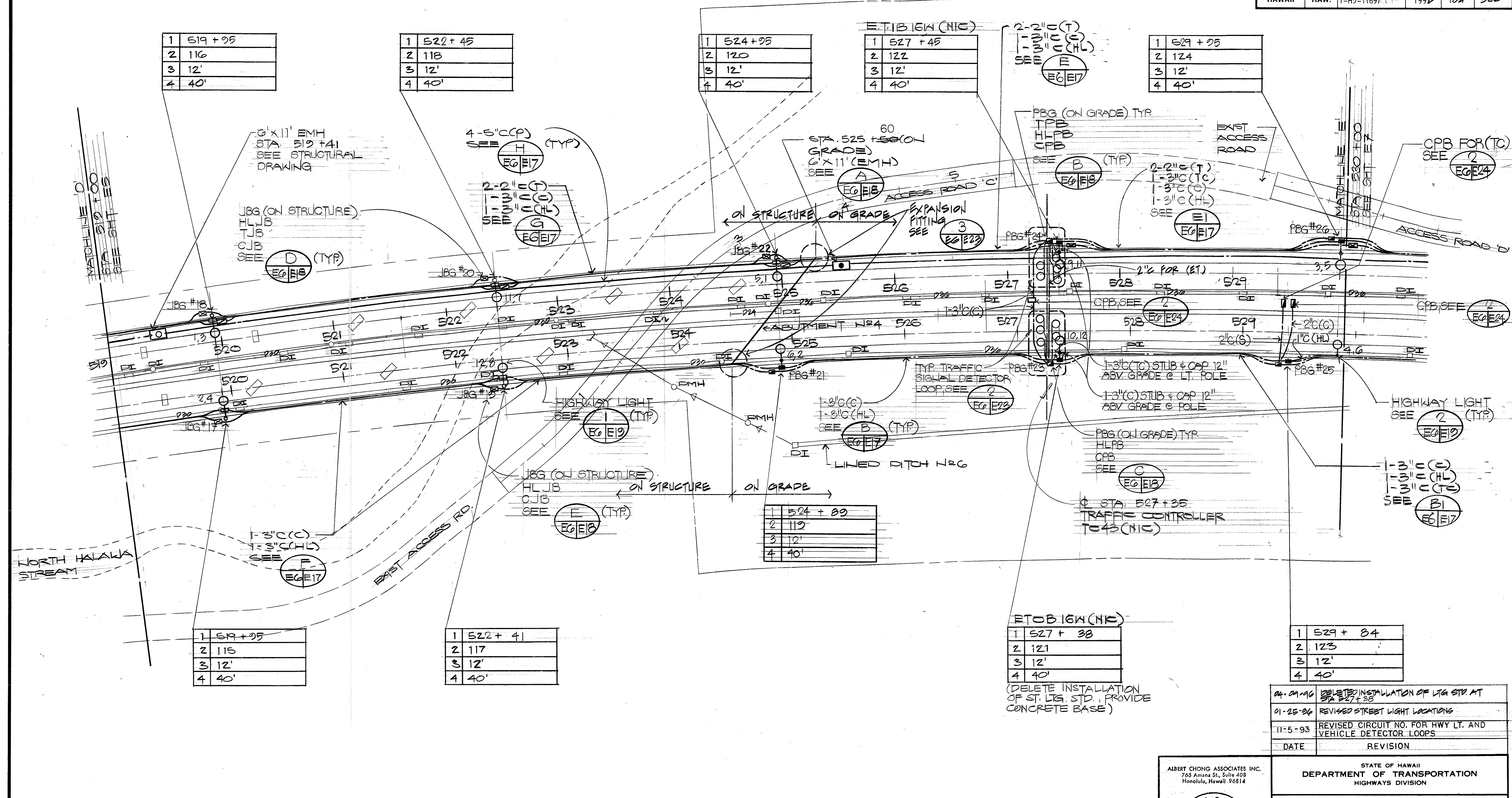
ALBERT S. C. CHONG
 REGISTERED PROFESSIONAL ENGINEER
 No. 1003-E
 HAWAII, U.S.A.

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 OR UNDER MY SUPERVISION

Albert Chong

11-5-93	REVISED CIRCUIT NO. FOR HWY. LT.
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
ELECTRICAL SITE PLAN - PART IV	
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO. I-H3-1(69) & (70)	
SHEET No. E5 OF 28 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69) & (70)	1991	104	325



ELECTRICAL SITE PLAN - PART V SCALE: 1" = 40'-0"

ETOB 16W (NIC)

1	527 + 38
2	121
3	12'
4	40'

(DELETE INSTALLATION OF ST. LIG. STD. PROVIDE CONCRETE BASE)

DATE	REVISION
04-01-90	DELETED INSTALLATION OF LIG. STD. AT STA 527+38
01-25-94	REVISED STREET LIGHT LOCATIONS
11-5-93	REVISED CIRCUIT NO. FOR HWY LT. AND VEHICLE DETECTOR LOOPS

ALBERT CHONG ASSOCIATES INC.
765 Amana St., Suite 408
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REGISTERED PROFESSIONAL ENGINEER
No. 1003-E
HAWAII, U.S.A.

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Albert S. Chong

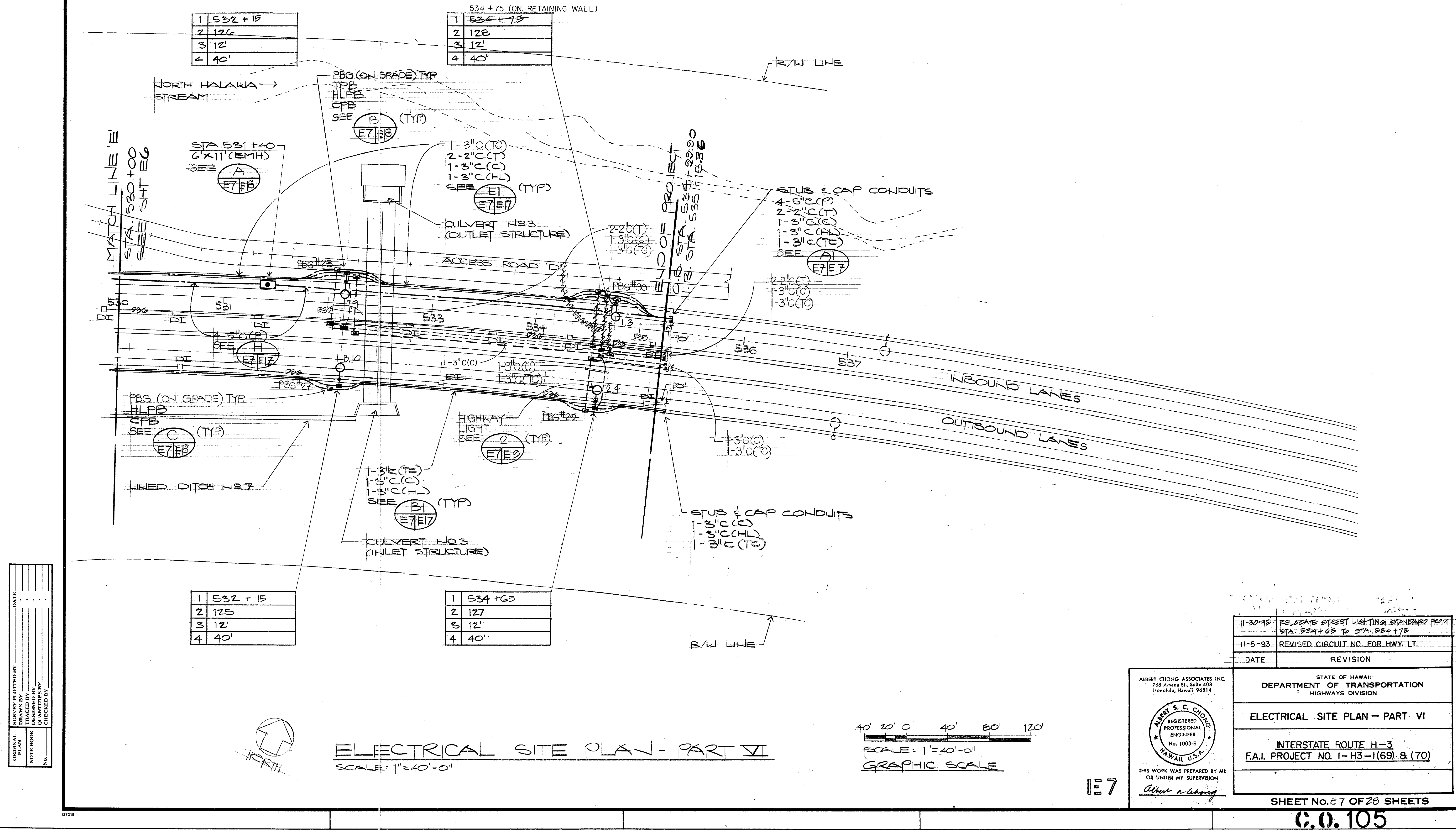
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ELECTRICAL SITE PLAN - PART V

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. 1-H3-1(69) & (70)

SHEET No. E6 OF 28 SHEETS

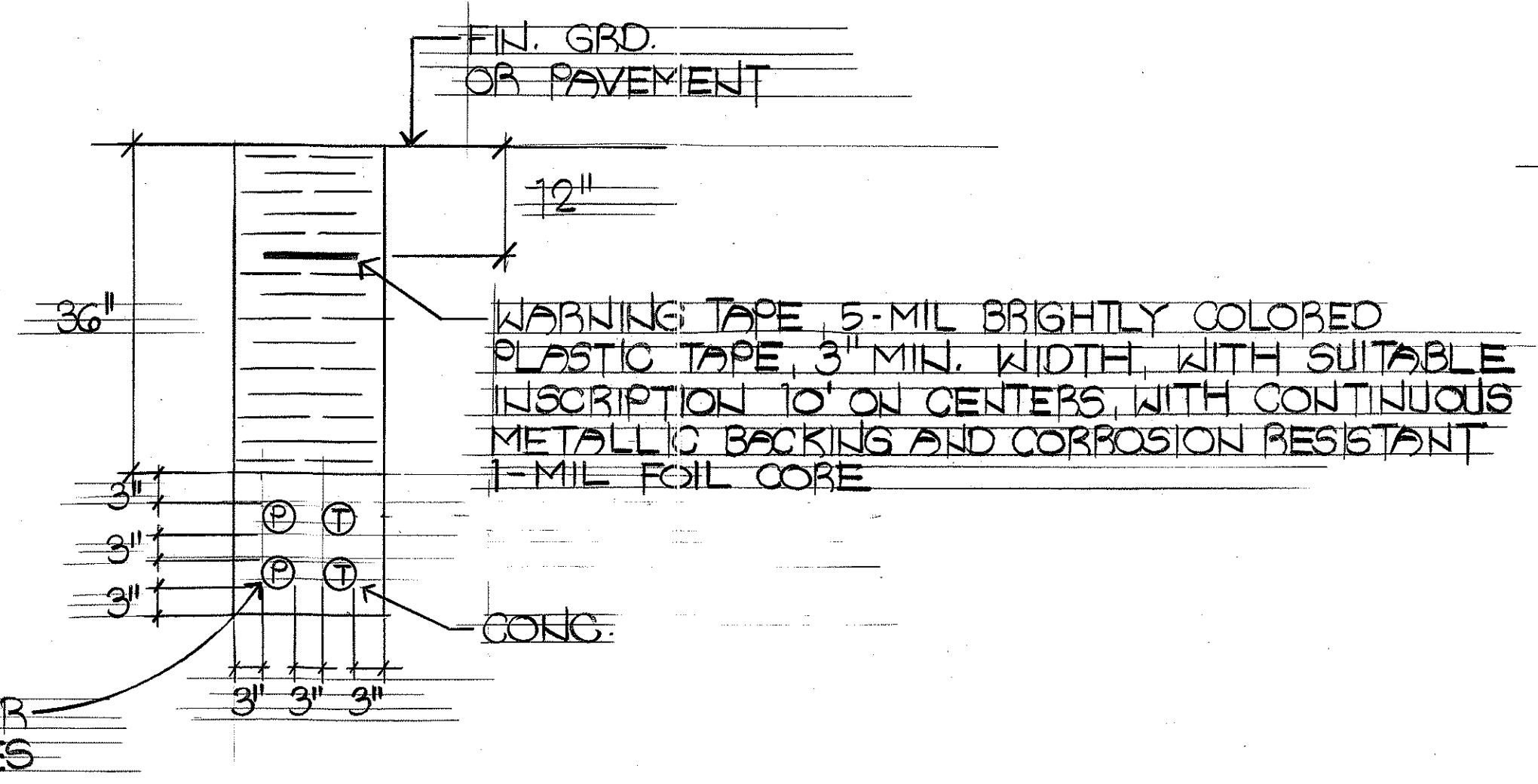
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1991	105	325



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1 (69)	1992	ADD 105S-1	325

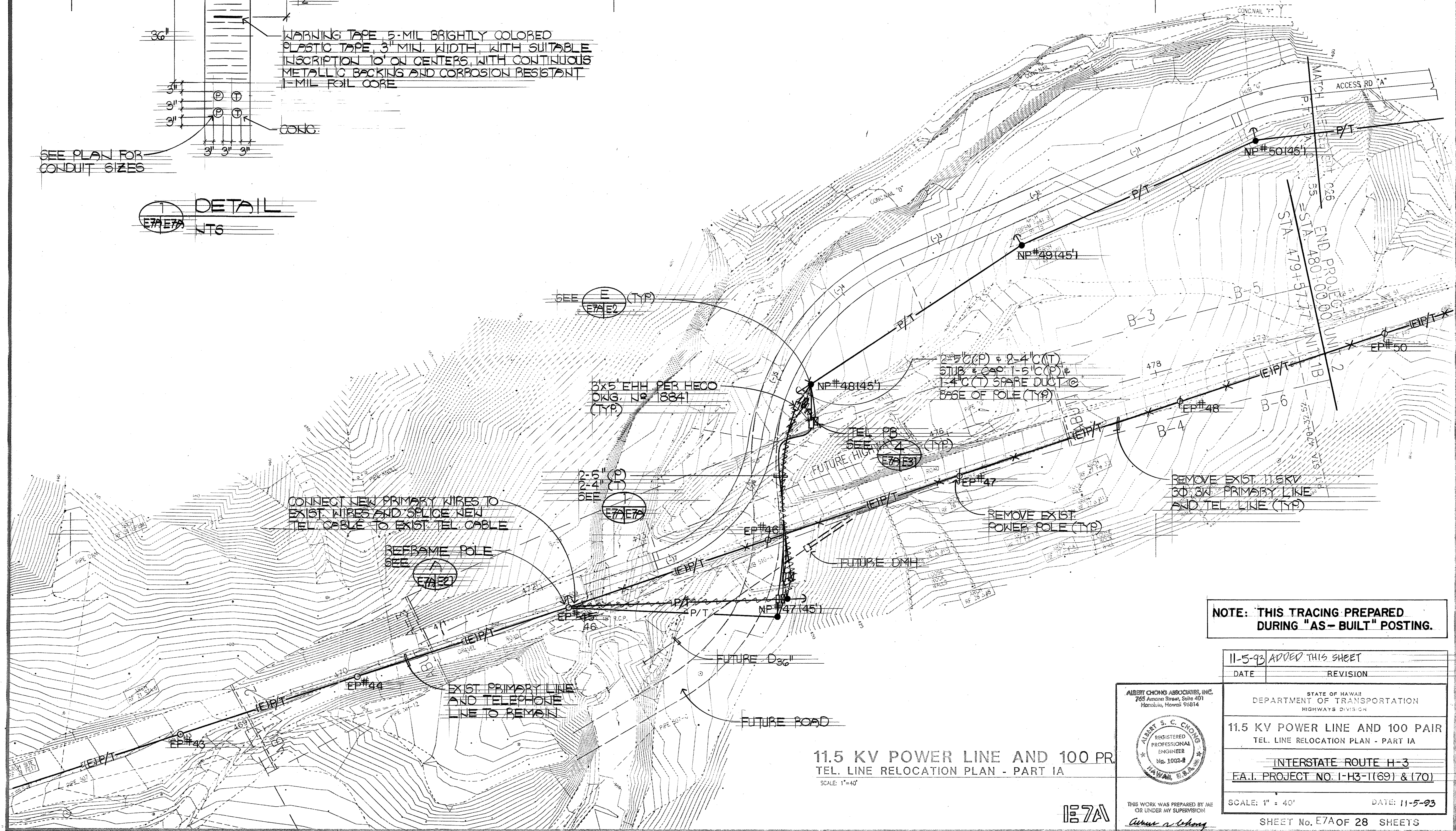
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85,000 N

538,500 E
85,000 N



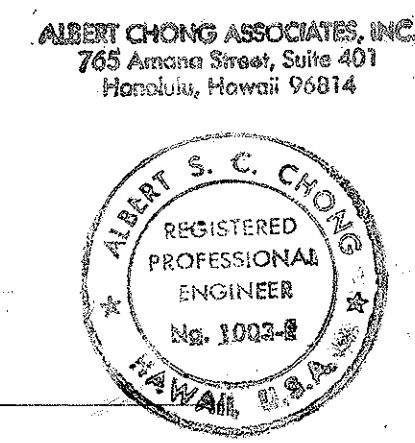
DETAIL
LT6

DESIGNED BY	DATE
TRACED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NOT BOOK	
NO.	



NOTE: THIS TRACING PREPARED DURING "AS-BUILT" POSTING.

11-5-93	ADDED THIS SHEET
DATE	REVISION



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

11.5 KV POWER LINE AND 100 PAIR TEL. LINE RELOCATION PLAN - PART IA

INTERSTATE ROUTE H-3
E.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: 1" = 40' DATE: 11-5-93

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

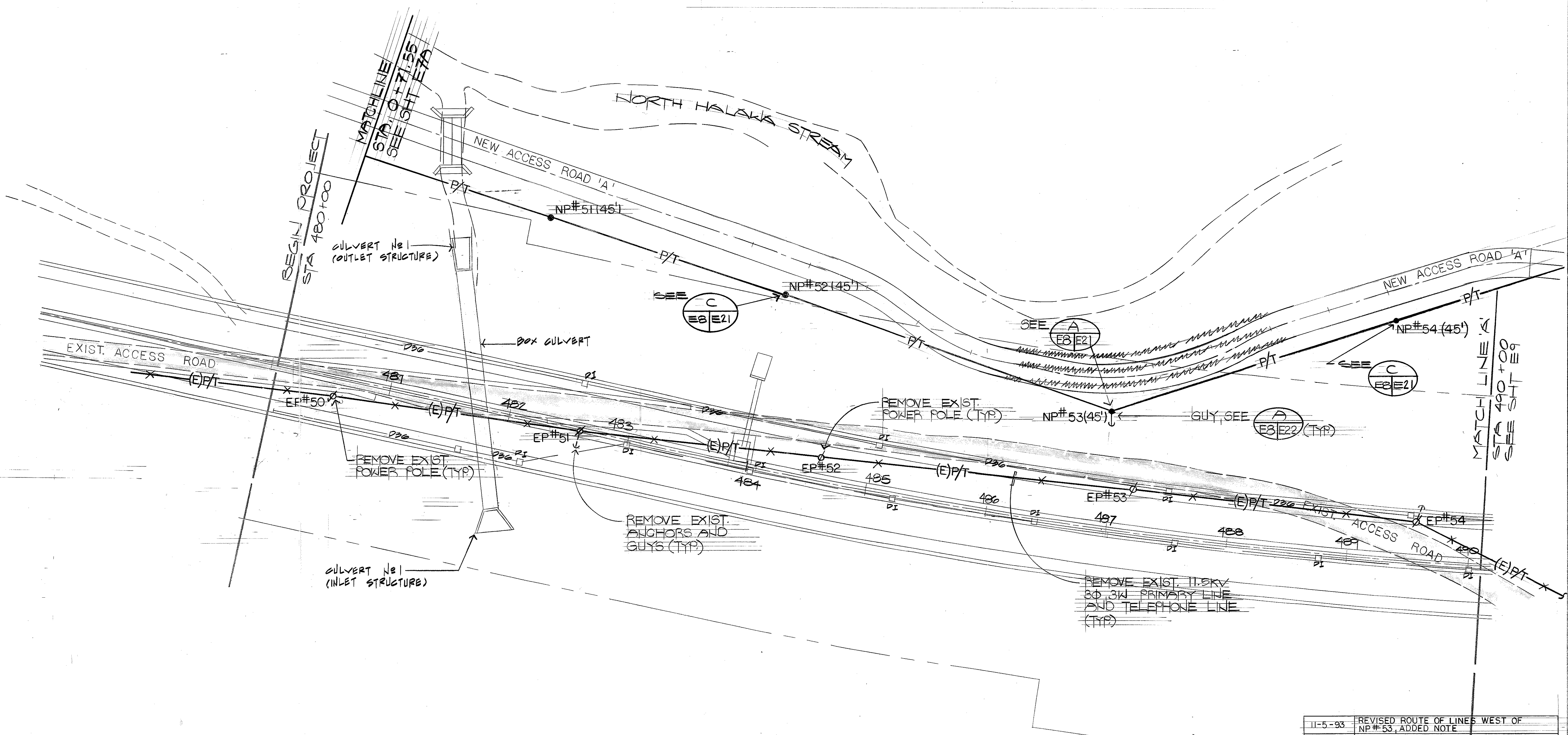
Albert S. C. Chong

SHEET No. E7A OF 28 SHEETS

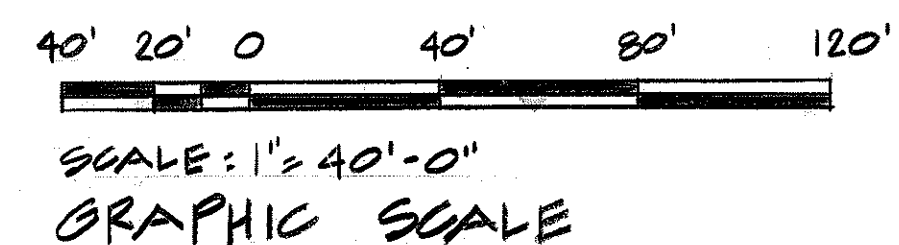
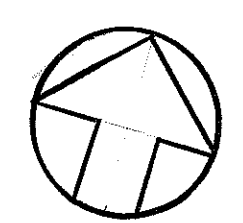
ADD. 105S-1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69) (70)	1991	106	225

NOTE:
 1. CONTRACTOR SHALL CHECK WORK SCHEDULE AND SHALL PROVIDE TEMPORARY SUPPORTS AND/OR TEMPORARY POLES TO REROUTE OVERHEAD LINES AS REQUIRED TO KEEP LINES CLEAR OF CONSTRUCTION OPERATIONS AT NO COST TO THE STATE. WHERE REQUIRED, GRADING IN VICINITY OF NEW POLES SHALL BE COMPLETED PRIOR TO INSTALLING NEW POLES.



11.5KV POWER LINE AND 100 PAIR TELEPHONE LINE
 RELOCATION PLAN - PART I
 SCALE: 1" = 40'-0"



ALBERT CHONG ASSOCIATES INC.
 765 Amara St., Suite 408
 Honolulu, Hawaii 96814

REGISTERED PROFESSIONAL ENGINEER
 No. 1003-E
 HAWAII, U.S.A.

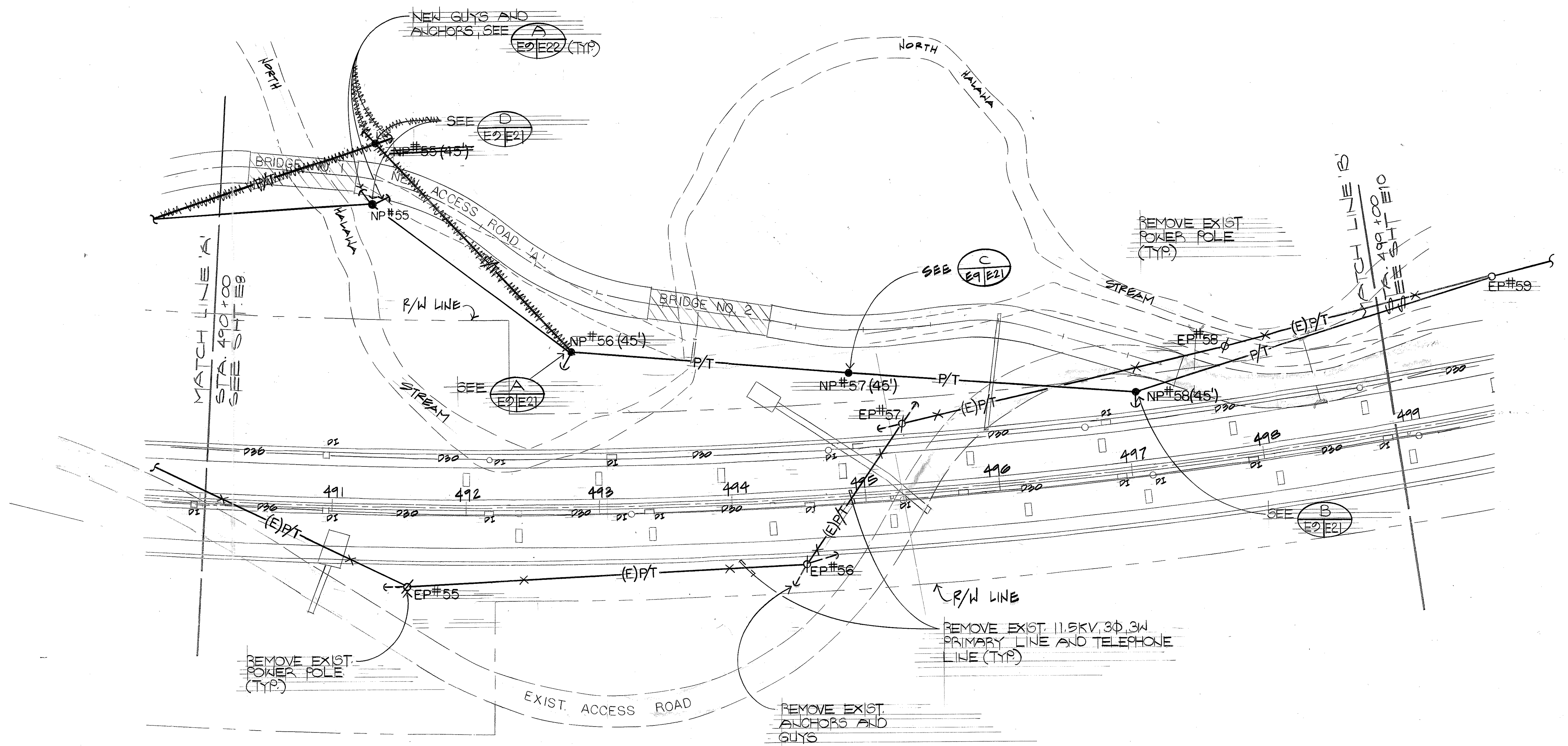
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Albert S. Chong

11-5-93	REVISED ROUTE OF LINES WEST OF NP#53, ADDED NOTE
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
11.5KV POWER LINE AND 100 PAIR TEL. LINE RELOCATION PLAN - PART I	
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO. 1-H3-1(69) & (70)	
SHEET No. E8 OF 28 SHEETS	

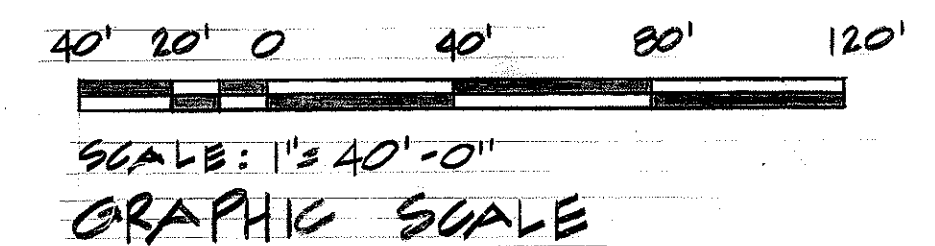
ORIGINAL PLAN	DATE
DRAWN BY	
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1991	107	325

NOTE:
 CONTRACTOR SHALL CHECK WORK SCHEDULE AND SHALL PROVIDE TEMPORARY SUPPORTS AND/OR TEMPORARY POLES TO REROUTE OVERHEAD LINES AS REQUIRED TO KEEP LINES CLEAR OF CONSTRUCTION OPERATIONS AT NO COST TO THE STATE. WHERE REQUIRED, GRADING IN VICINITY OF NEW POLES SHALL BE COMPLETED PRIOR TO INSTALLING NEW POLES.



11.5KV POWER LINE AND 100 PAIR TELEPHONE LINE
 RELOCATION PLAN — PART II
 SCALE: 1"=40'-0"

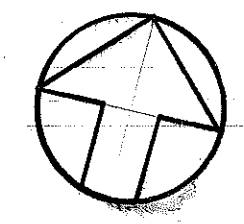


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 765 Amana St., Suite 408
 Honolulu, Hawaii 96814

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STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 11.5KV POWER LINE AND 100 PAIR
 TEL. LINE RELOCATION PLAN - PART II
 INTERSTATE ROUTE H-3
 F.A.I. PROJECT NO. 1-H3-1(69) & (70)
 SHEET NO. E9 OF 28 SHEETS

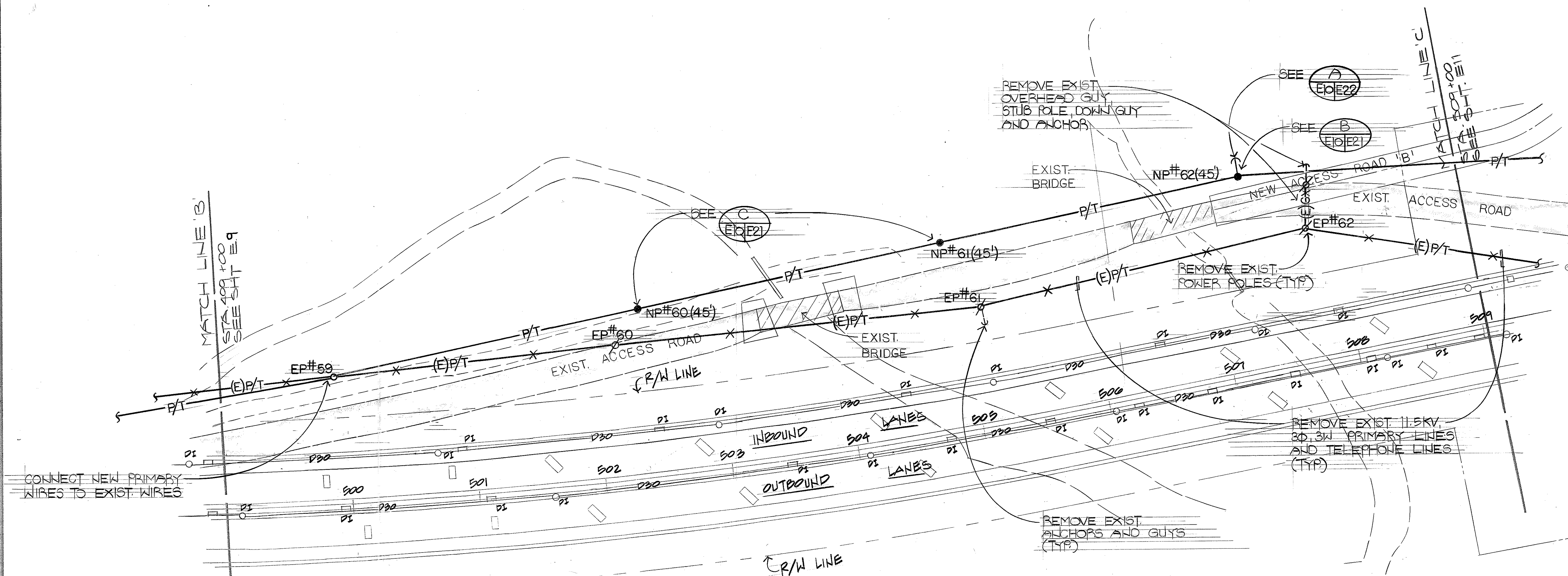
DATE	_____
SURVEY PLOTTED BY	_____
DESIGNED BY	_____
NOTED BY	_____
CHECKED BY	_____
NO.	_____



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1991	108	225

NOTE:

CONTRACTOR SHALL CHECK WORK SCHEDULE AND SHALL PROVIDE TEMPORARY SUPPORTS AND/OR TEMPORARY POLES TO REROUTE OVERHEAD LINES AS REQUIRED TO KEEP LINES CLEAR OF CONSTRUCTION OPERATIONS AT NO COST TO THE STATE. WHERE REQUIRED, GRADING IN VICINITY OF NEW POLES SHALL BE COMPLETED PRIOR TO INSTALLING NEW POLES



11.5KV POWER LINE AND 100 PAIR TELEPHONE LINE
RELOCATION PLAN - III
SCALE: 1" = 40' - 0"

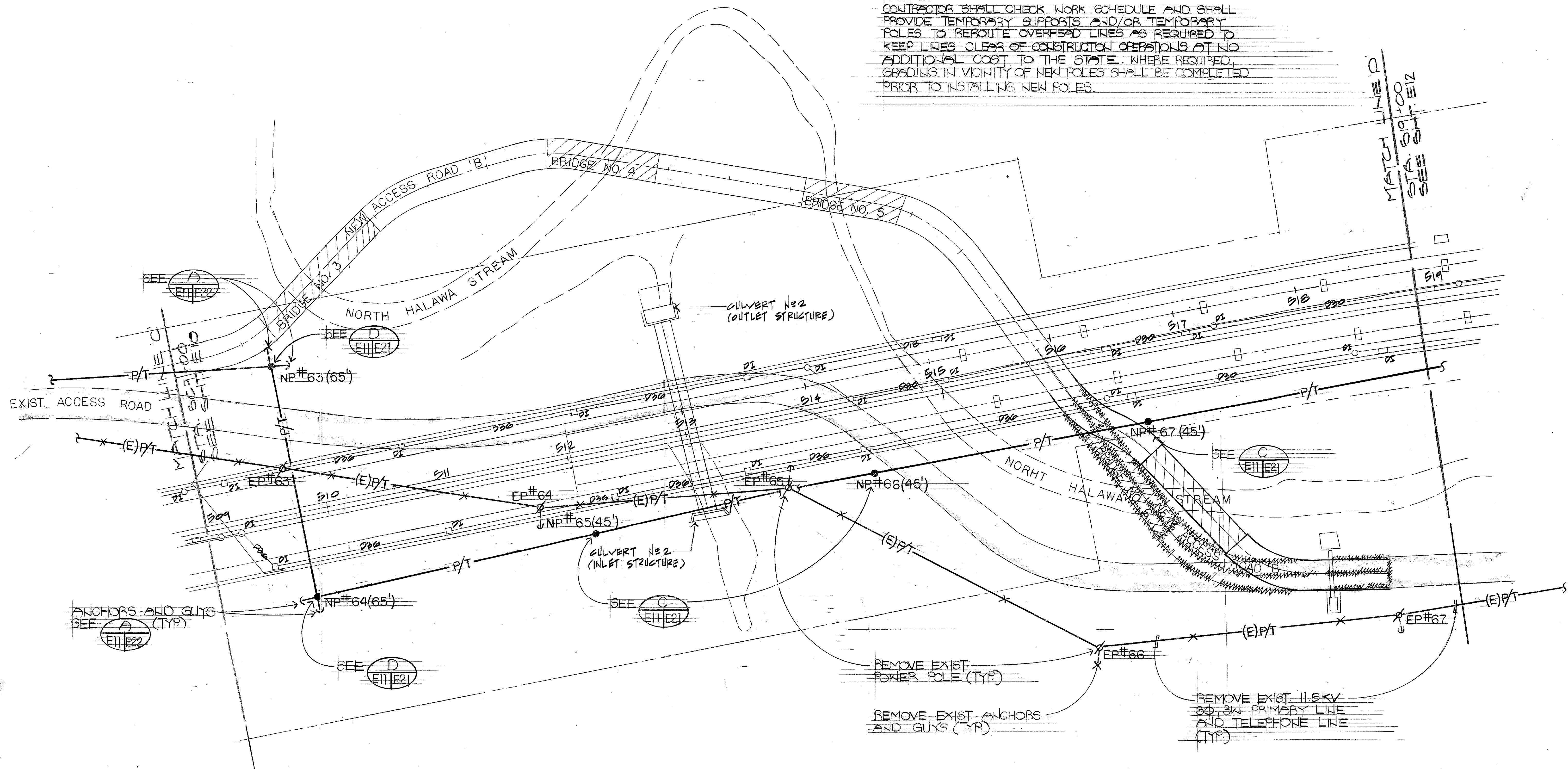
40' 20' 0 40' 80' 120'
SCALE: 1" = 40' - 0"
GRAPHIC SCALE

ALBERT CHONG ASSOCIATES INC. 765 Alameda St., Suite 408 Honolulu, Hawaii 96814 REGISTERED PROFESSIONAL ENGINEER No. 1003-E HAWAII, U.S.A. THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION <i>Albert Chong</i>	STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
	11.5KV POWER LINE AND 100 PAIR TEL. LINE RELOCATION PLAN - PART III
	INTERSTATE ROUTE H-3 F.A.I. PROJECT NO. 1-H3-1(69) & (70)
	SHEET NO. E10 OF 22 SHEETS

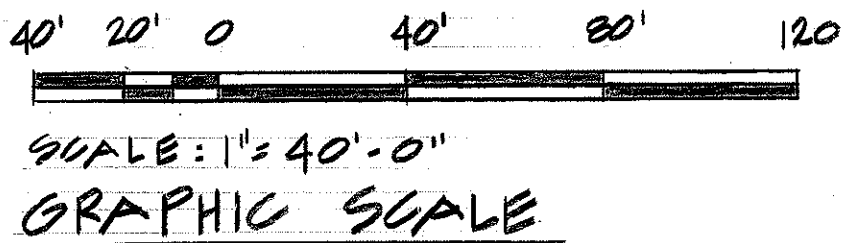
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1991	109	325

NOTE:

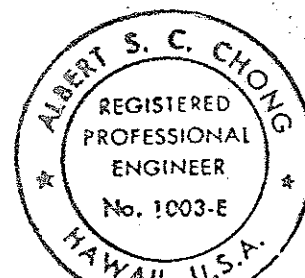
CONTRACTOR SHALL CHECK WORK SCHEDULE AND SHALL PROVIDE TEMPORARY SUPPORTS AND/OR TEMPORARY POLES TO REROUTE OVERHEAD LINES AS REQUIRED TO KEEP LINES CLEAR OF CONSTRUCTION OPERATIONS AT NO ADDITIONAL COST TO THE STATE. WHERE REQUIRED, GRADING IN VICINITY OF NEW POLES SHALL BE COMPLETED PRIOR TO INSTALLING NEW POLES.



11.5KV POWER LINE AND 100 PAIR TELEPHONE LINE
RELOCATION PLAN — PART IV



ALBERT CHONG ASSOCIATES INC.
765 Amana St., Suite 408
Honolulu, Hawaii 96814



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Albert S. Chong

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

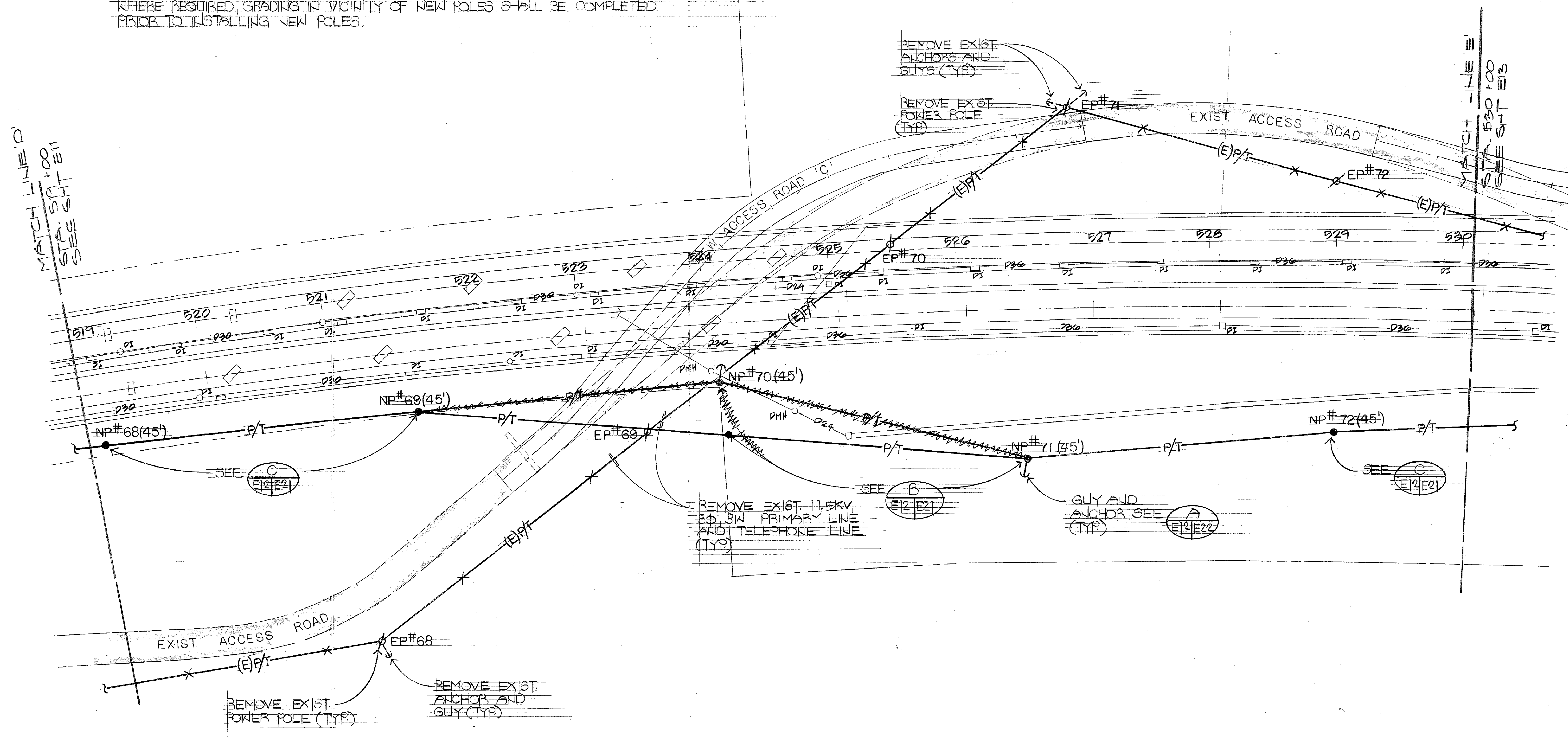
11.5KV POWER LINE AND 100 PAIR
TEL. LINE RELOCATION PLAN — PART IV

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

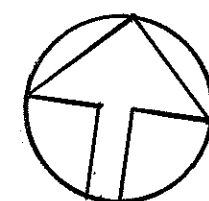
SHEET No. 111 OF 28 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1991	110	325

NOTE:
CONTRACTOR SHALL CHECK WORK SCHEDULE AND SHALL PROVIDE TEMPORARY SUPPORTS AND/OR TEMPORARY POLES TO REROUTE OVERHEAD LINES AS REQUIRED TO KEEP LINES CLEAR OF CONSTRUCTION OPERATIONS AT NO COST TO THE STATE. WHERE REQUIRED, GRADING IN VICINITY OF NEW POLES SHALL BE COMPLETED PRIOR TO INSTALLING NEW POLES.



ORIGINAL PLAN	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NO.	



11.5KV POWER LINE AND 100 PAIR TELEPHONE LINE
RELOCATION PLAN - PART V
SCALE: 1"=40'-0"

40' 20' 0 40' 80' 120'
SCALE: 1"=40'-0"
GRAPHIC SCALE

ALBERT S. C. CHONG
REGISTERED PROFESSIONAL ENGINEER
No. 1003-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Albert S. Chong

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

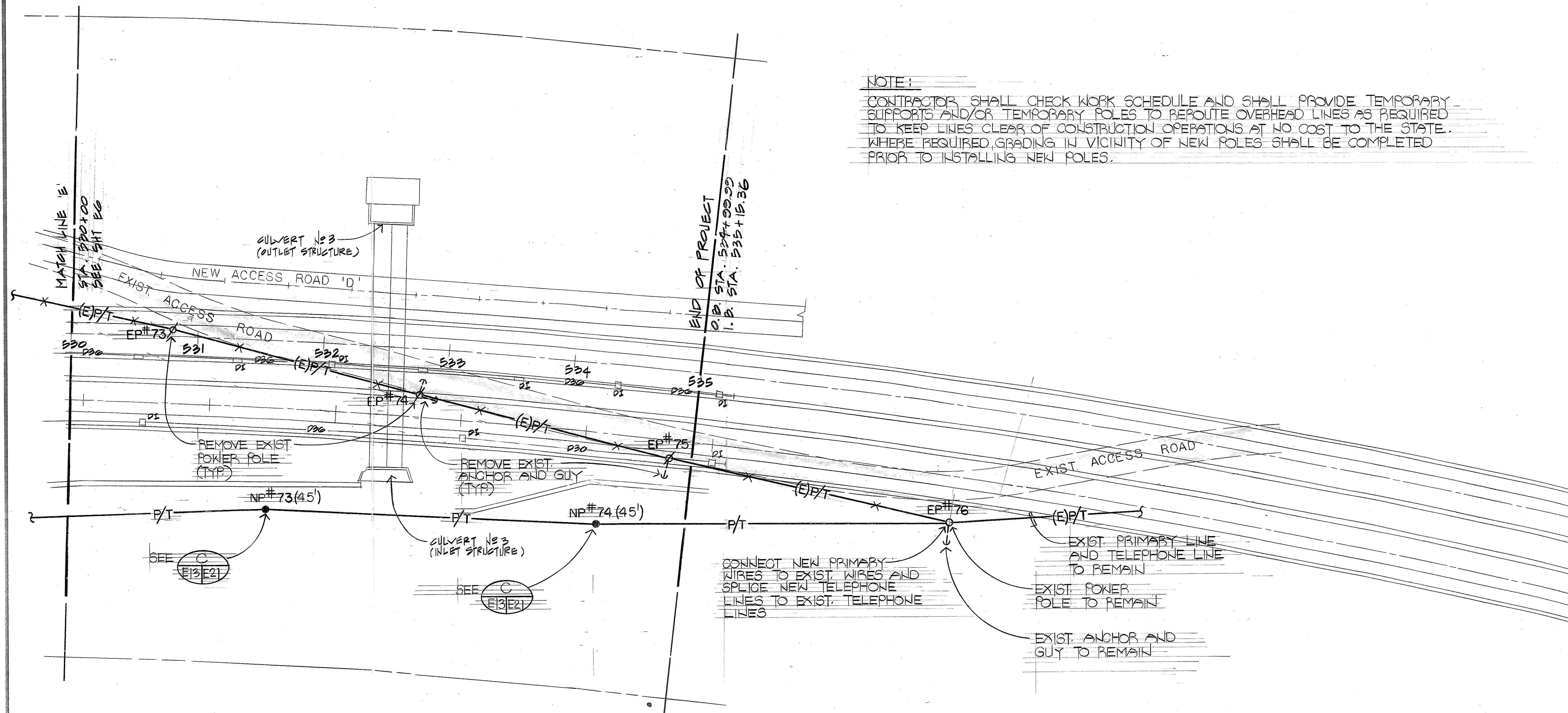
11.5KV POWER LINE AND 100 PAIR TEL. LINE RELOCATION PLAN - PART V

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. 1-H3-1(69) & (70)

SHEET NO. 110 OF 325 SHEETS

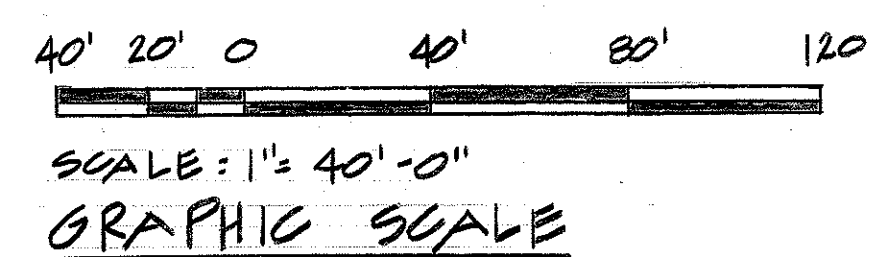
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1994	111	225

NOTE:
 CONTRACTOR SHALL CHECK WORK SCHEDULE AND SHALL PROVIDE TEMPORARY SUPPORTS AND/OR TEMPORARY POLES TO REROUTE OVERHEAD LINES AS REQUIRED TO KEEP LINES CLEAR OF CONSTRUCTION OPERATIONS AT NO COST TO THE STATE. WHERE REQUIRED, GRADING IN VICINITY OF NEW POLES SHALL BE COMPLETED PRIOR TO INSTALLING NEW POLES.



11.5KV POWER LINE AND 100 PAIR TELEPHONE LINE
 RELOCATION PLAN - VI

SCALE : 1" = 40' - 0"



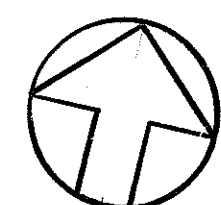
1:13

ALBERT CHONG ASSOCIATES INC.
 765 Amana St., Suite 408
 Honolulu, Hawaii 96814

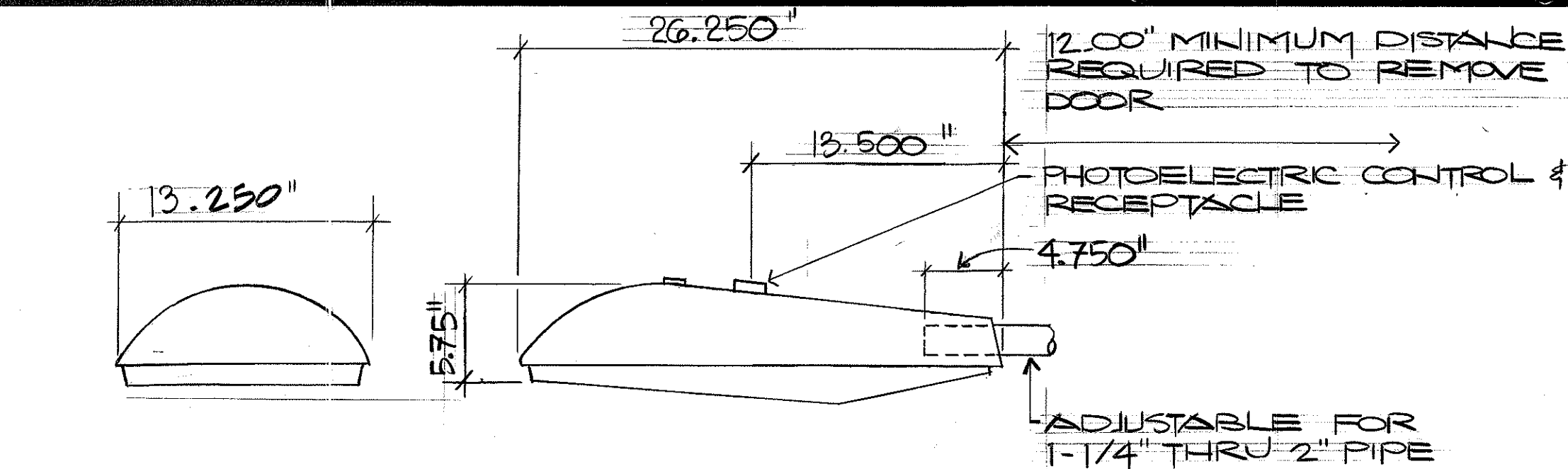
 THIS WORK WAS PREPARED BY ME
 OR UNDER MY SUPERVISION
Albert S. Chong

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 11.5KV POWER LINE AND 100 PAIR
 TEL. LINE RELOCATION PLAN - PART VI
 INTERSTATE ROUTE H-3
 F.A.I. PROJECT NO. 1-H3-1(69) & (70)
 SHEET No. E/3 OF 28 SHEETS

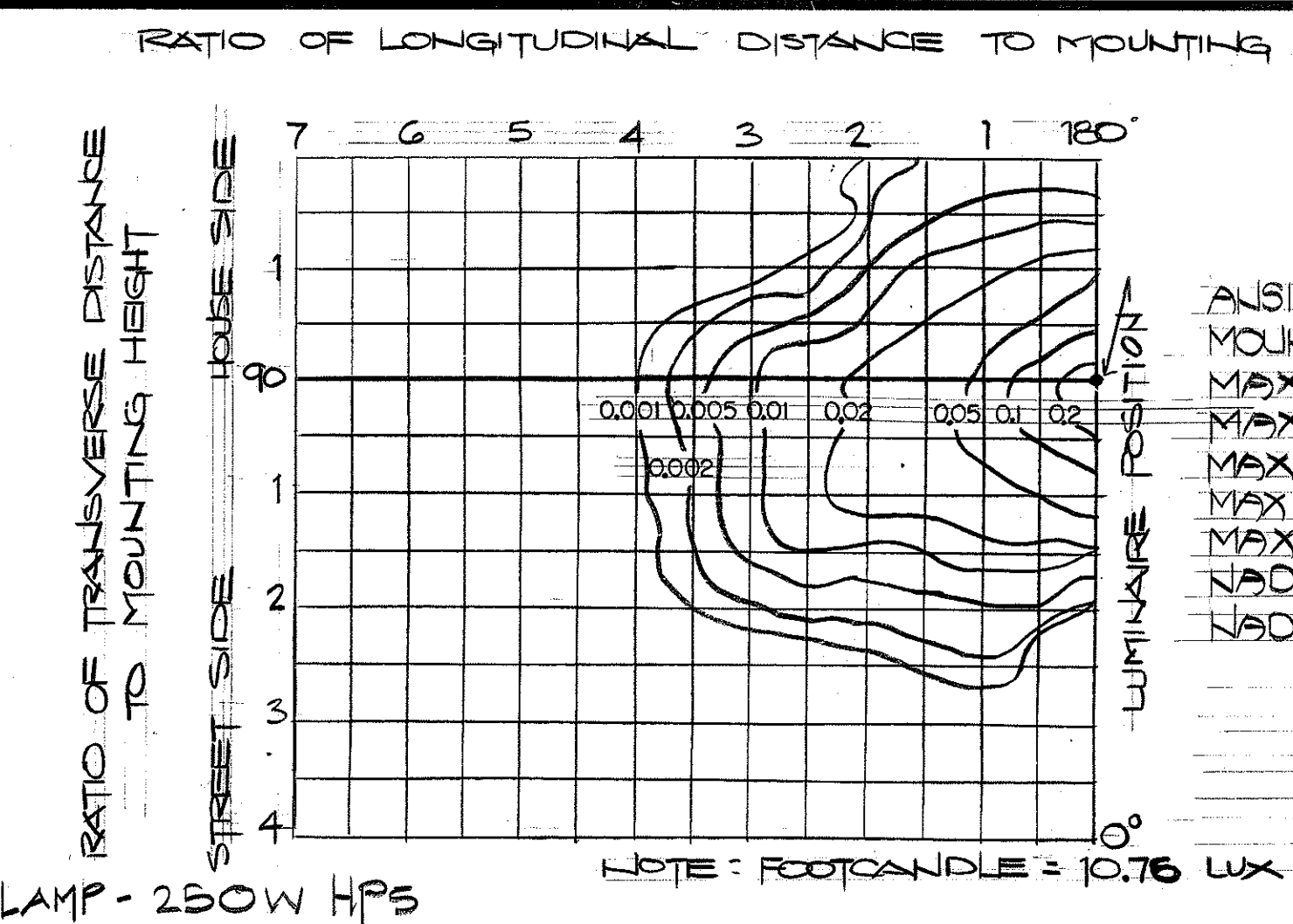
SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1991	112	325



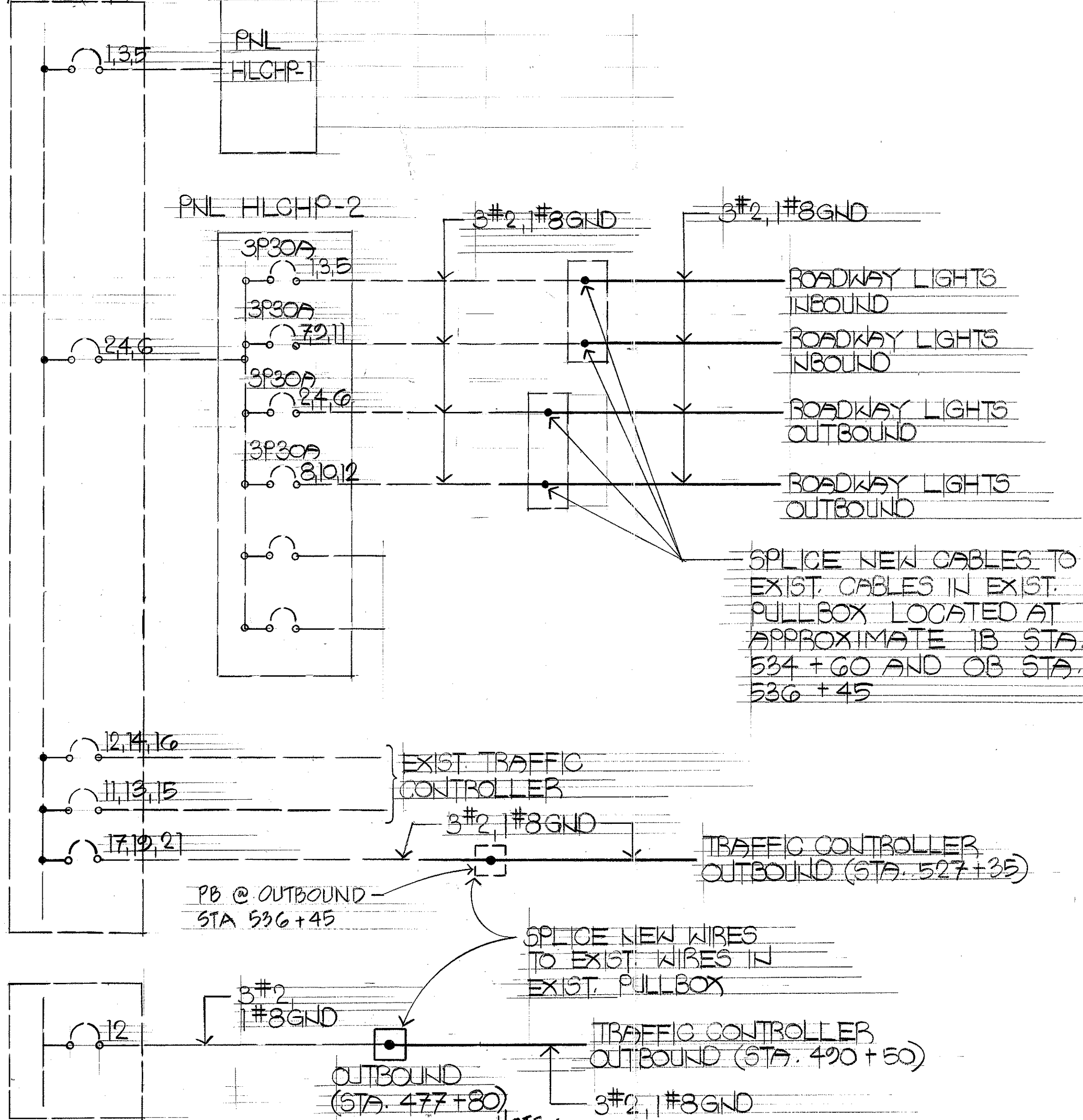
LUMINAIRE ELEVATION DETAIL
NTS



ANSI/IES TYPEOUTOFF MEDIUM/TYPE II
MOUNTING HT30 FT
MAX. CANDELA377.8
MAX. CONE70.0°
MAX. VERTICLE PLANE 67.5°/292.5°
MAX. CANDELA AT 20°1.2
MAX. CANDELA AT 80°2.3
NAOIR FOOTCANDLES0.2617
NAOIR CANDELA235.6

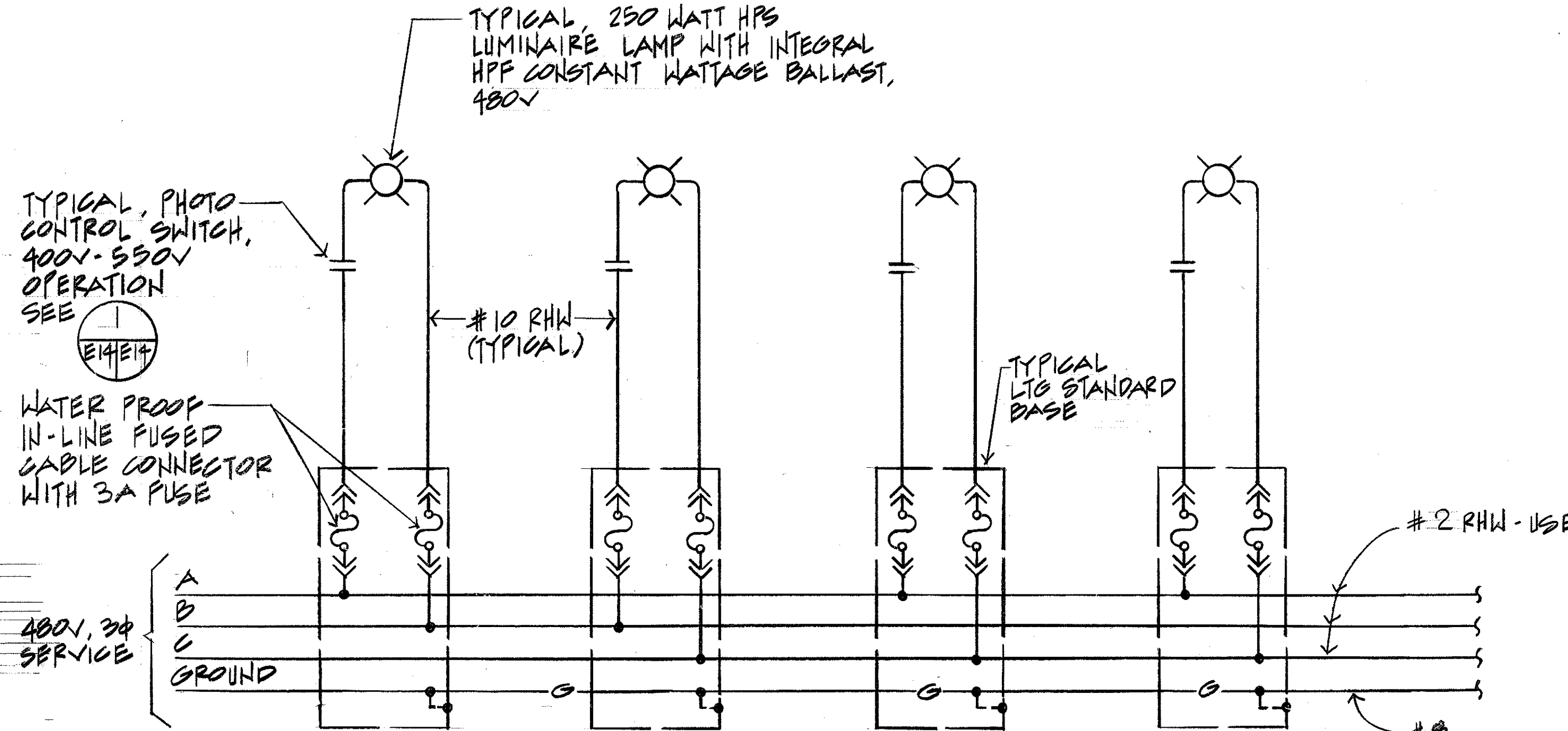
MULTIPLY ALL LUMEN, CANDELA AND FOOTCANDLE VALUES BY THIS RATIO:
RATIO = ACTUAL LAMP LUMENS ÷ 1000

PANEL HLOHP
480/277V, 3Ø 4W

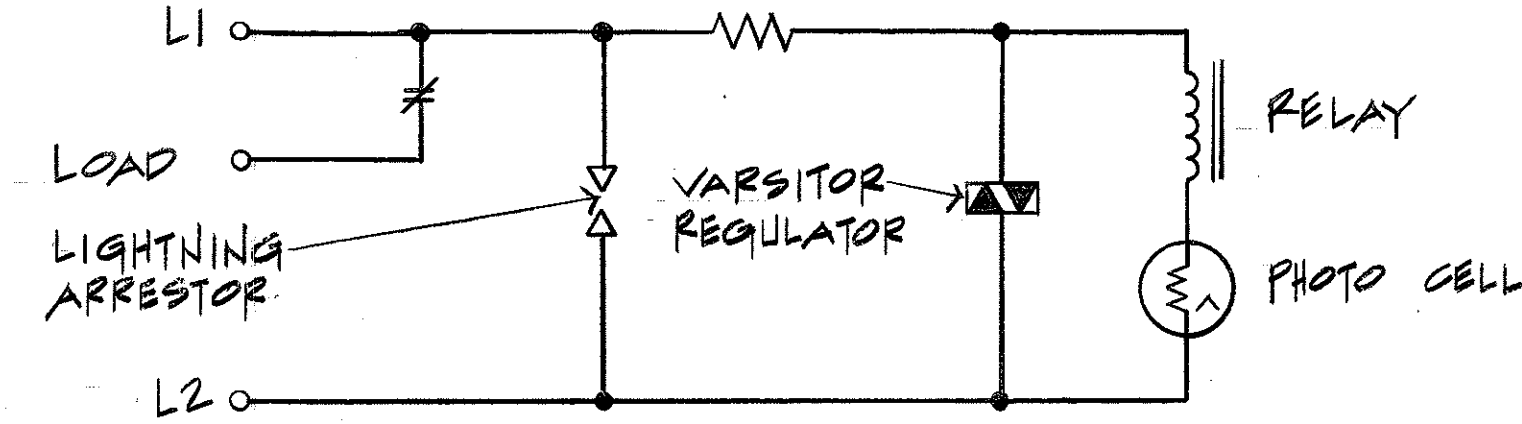


- NOTE:
1. ALL DASHED LINES INDICATE EXISTING OR WORK BY OTHERS. SOLID ARE NEW WORK.
 2. RUN TRAFFIC CONTROLLER WIRES IN HIGHWAY LIGHT DUCT (HL)

SINGLE LINE DIAGRAMS



TYPICAL HIGHWAY LIGHTING WIRING DIAGRAM



DETAIL WIRING

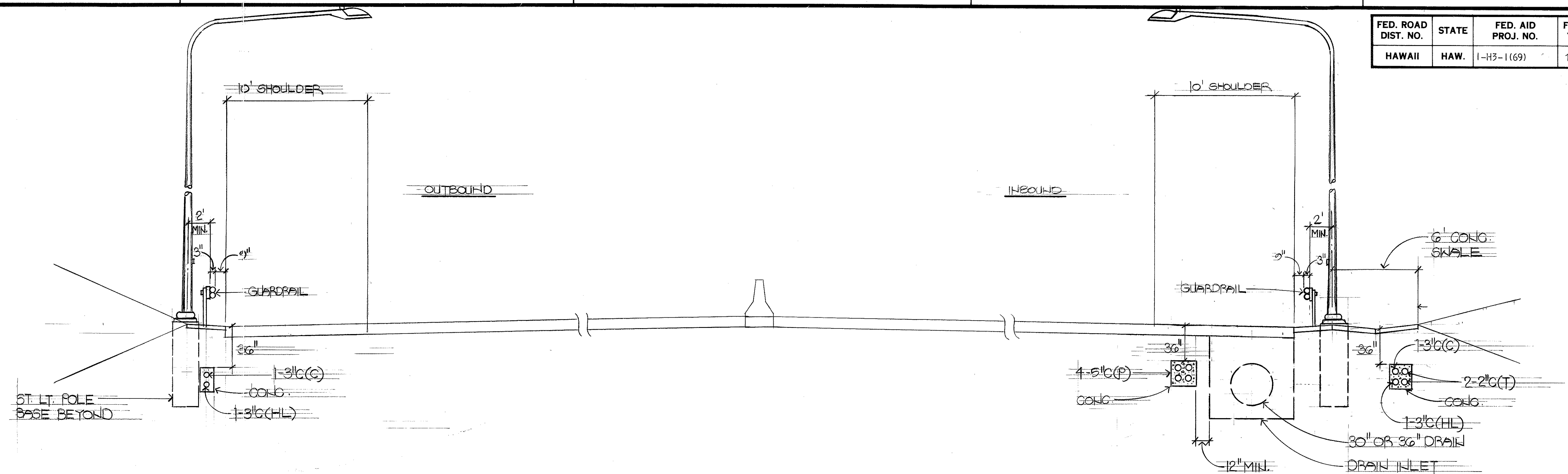
11-5-93	REVISED SINGLE LINE DIAGRAM
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
SINGLE LINE DIAGRAM AND TYPICAL HIGHWAY LIGHTING WIRING DIAGRAM	
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO. 1-H3-1(69) & (70)	
SHEET NO. E14 OF 28 SHEETS	

ALBERT CHONG ASSOCIATES INC.
765 Amana St., Suite 408
Honolulu, Hawaii 96814

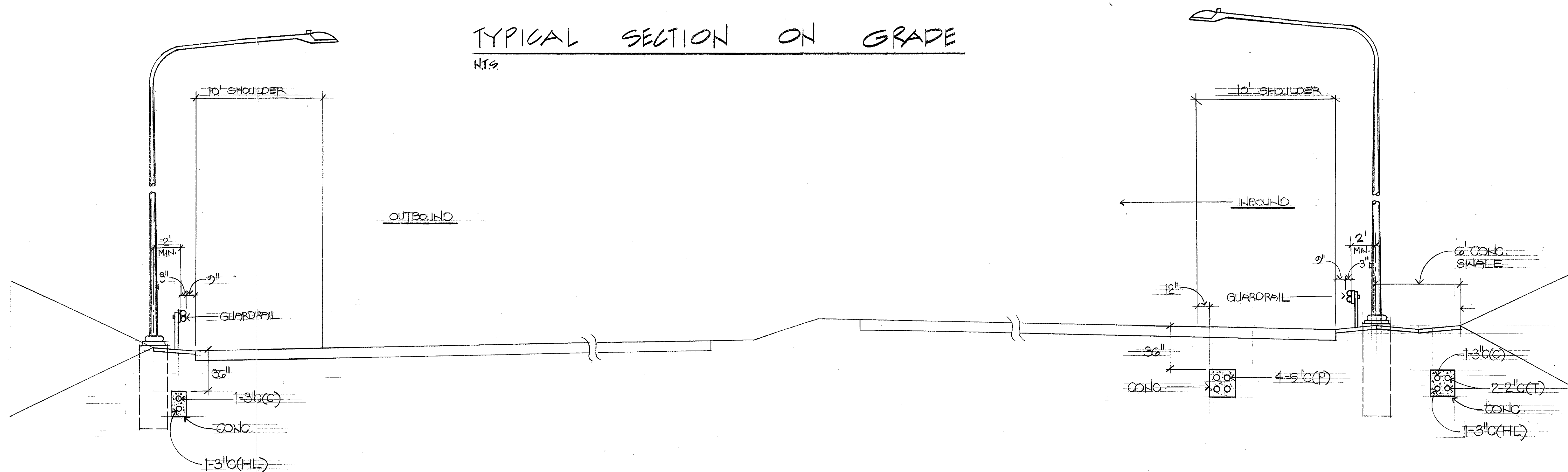
REGISTERED PROFESSIONAL ENGINEER
No. 1003-E
HAWAII, U.S.A.

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Albert S. Chong

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1991	113	3



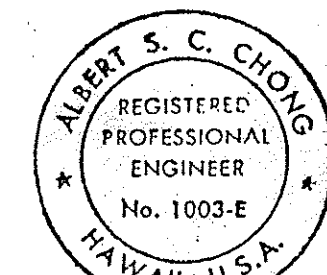
TYPICAL SECTION ON GRADE
NTS



TYPICAL SECTIONS ON GRADE
NTS

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

ALBERT CHONG ASSOCIATES INC.
755 Kamea St., Suite 108
Honolulu, Hawaii 96814



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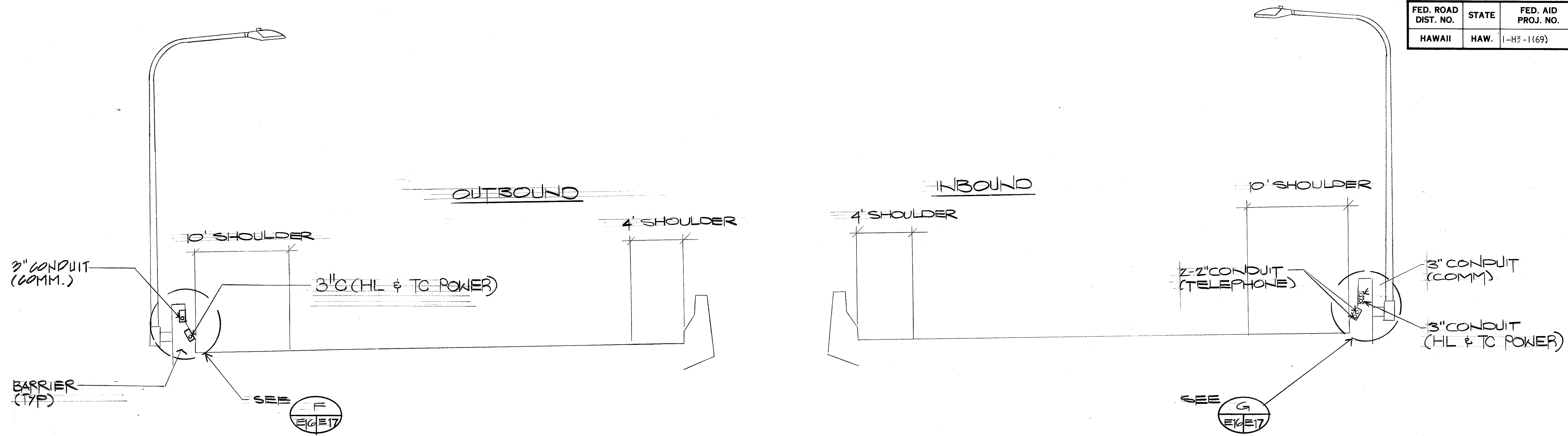
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL SECTIONS ON GRADE

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. 1-H3-1(69) & (70)

SHEET NO. 113 OF 28 SHEETS

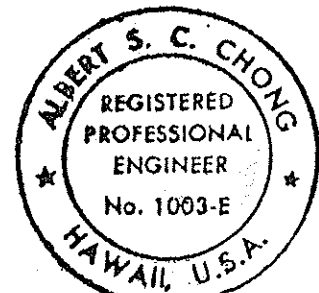
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	114	325



TYPICAL SECTION ON STRUCTURE
N.T.S.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

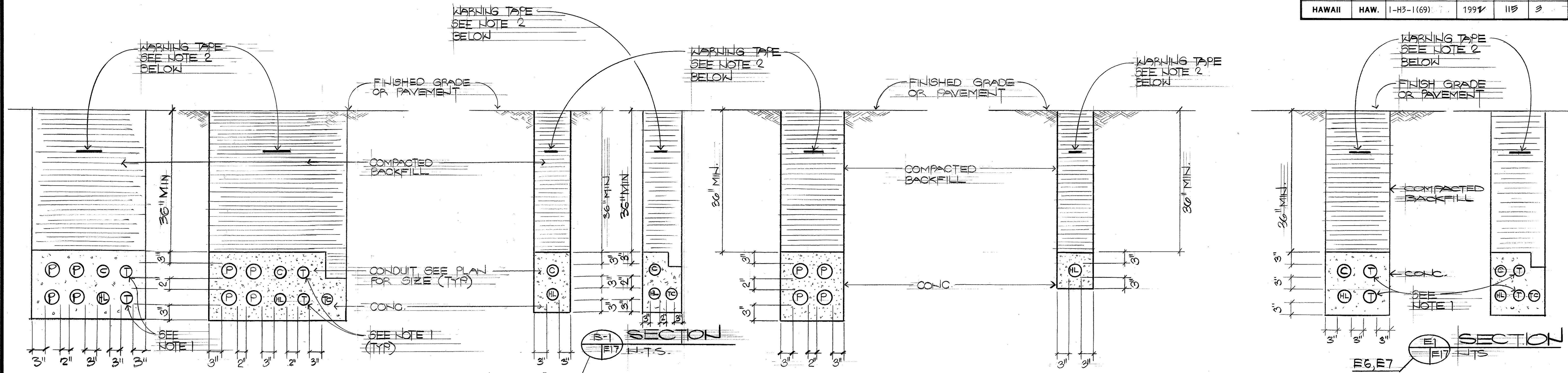
TYPICAL SECTION ON STRUCTURE

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SHEET No. E16 OF 28 SHEETS

E16

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1991	115	3



A SECTION
E17 NTS

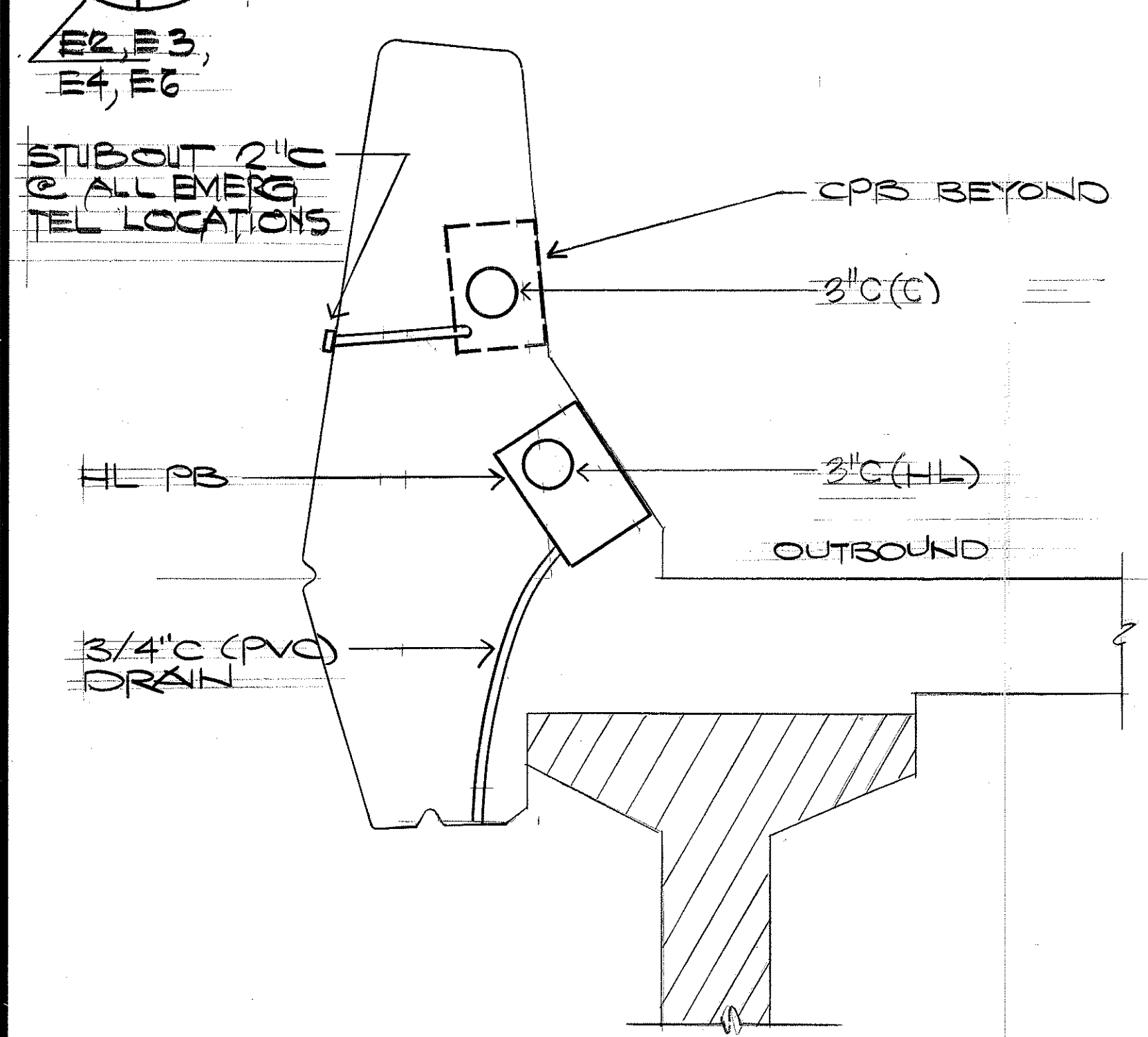
B SECTION
E17 NTS

C SECTION
E17 NTS

D SECTION
E17 NTS

E SECTION
E17 NTS

A SECTION
E17 NTS



F SECTION
E17 NTS

G SECTION
E17 NTS

H SECTION
E17 NTS

E3, E4, E5, E6, E7, E16

E3, E4, E5, E6, E7, E16

E3, E4, E5, E6, E7, E16

- NOTES:**
- ALL TEL. OUTLINES SHALL CONTAIN A NEPTCO WP1800P MULETAPE, MEASURE DISTANCE OF ONE OUT OF OUTLINE AND PROVIDE MEASUREMENTS TO HTOO INSPECTOR (DO NOT SUBSTITUTE MULETAPE)
 - PROVIDE 5-MIL BRIGHTLY COLORED PLASTIC TAPE, 3" MIN. WIDTH WITH SUITABLE DESCRIPTION, 10" ON CENTERS, WITH CONTINUOUS METALLIC BACKING AND CORROSION RESISTANT 1-MIL FOIL CORE.

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

ALBERT CHONG ASSOCIATES INC.
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ALBERT S. C. CHONG
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No. 1003-E
HAWAII, U.S.A.

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Albert S. Chong

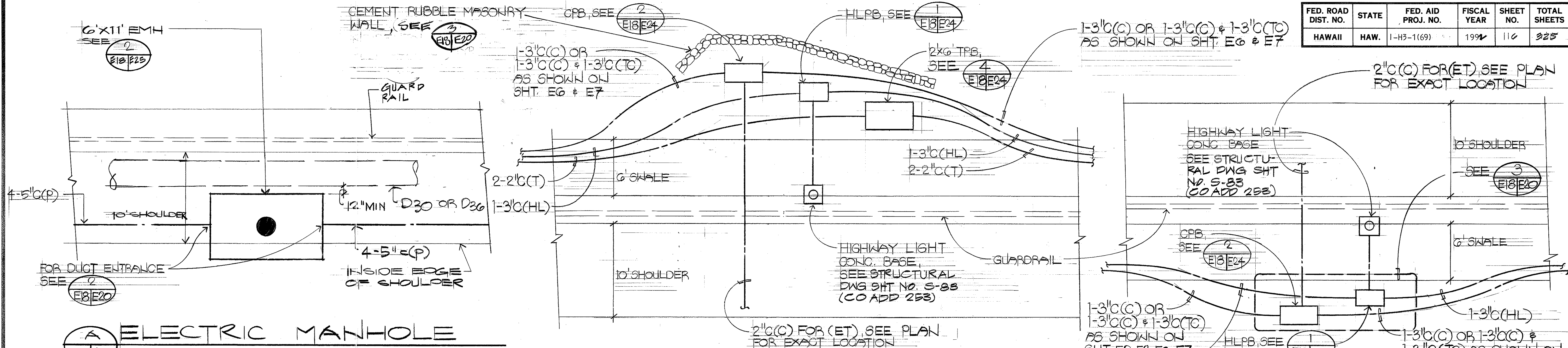
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SECTIONS

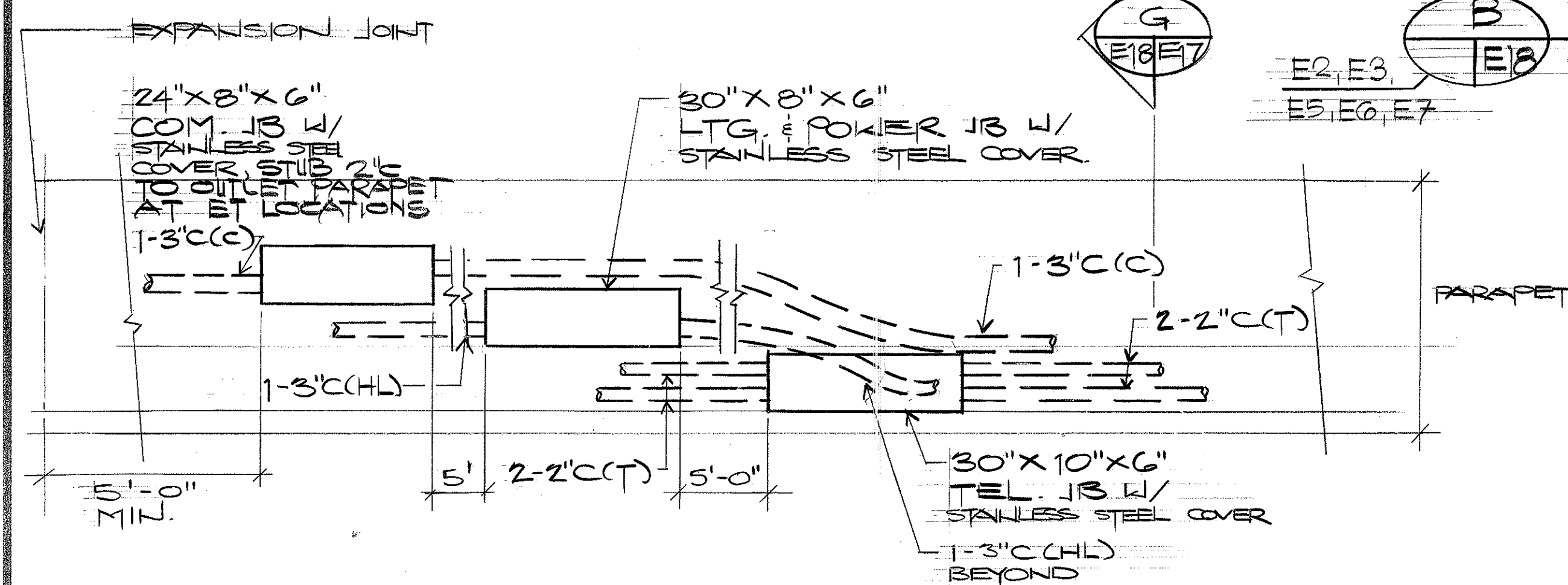
INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) 8(70)

SHEET No. E17 OF 78 SHEETS

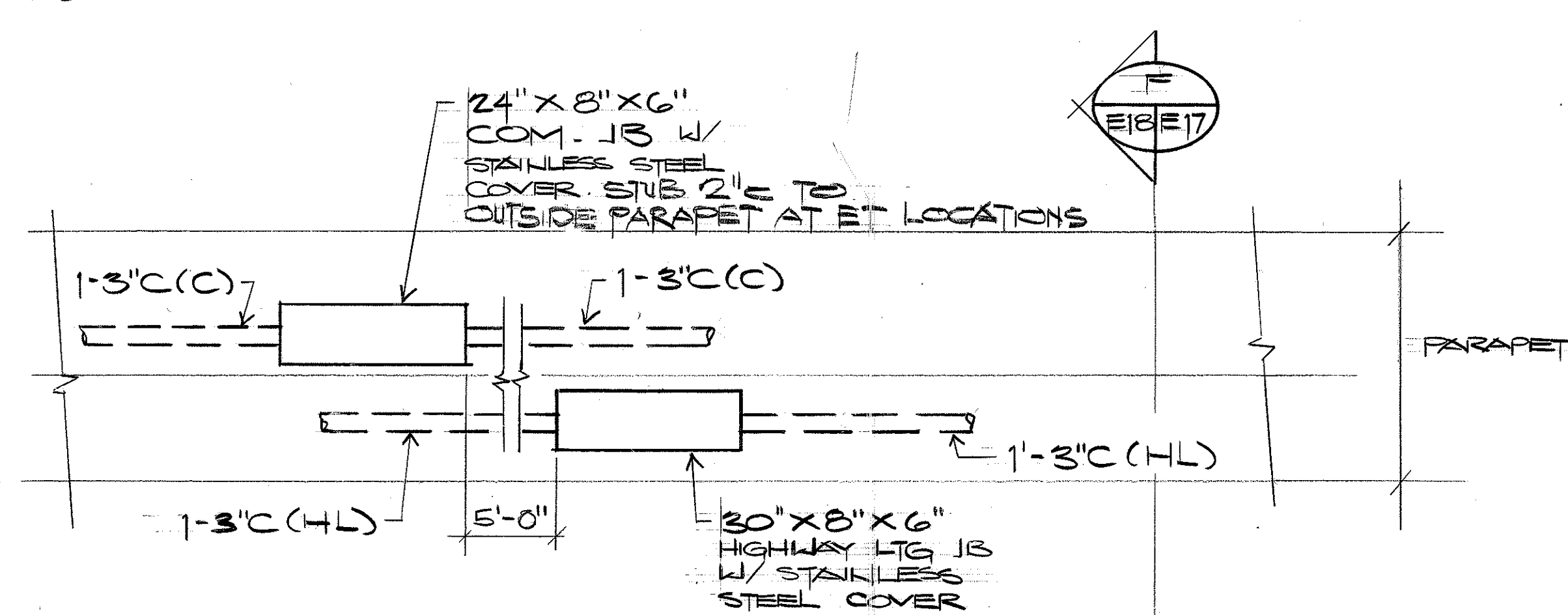
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1991	116	325



A ELECTRIC MANHOLE E2, E3, E5, E6, E7

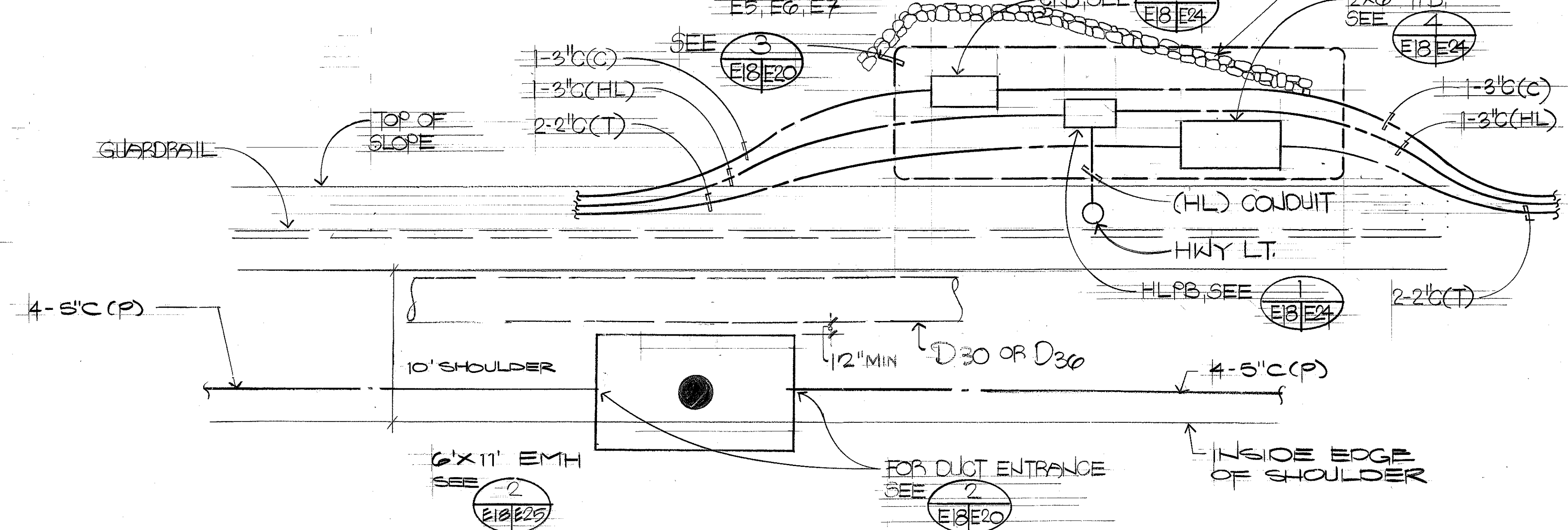


D ELEVATION E3, E4, E5, E6 SCALE: 3/4" = 1'-0"



E ELEVATION E3, E4, E5, E6 SCALE: 3/4" = 1'-0"

B PULLBOX GROUP E2, E3, E5, E6, E7



F MANHOLE / PULLBOX E2, E3, E5, E6, E7

04-29-96	REVISED ST LITS CONCRETE BASE DETAIL REFERENCE
11-5-93	ADDED CEMENT RUBBLE WALL IN DETAIL B AND ADDED REF. 3/E20 IN DET. B AND F
DATE	REVISION

ALBERT CHUNG ASSOCIATES, INC.
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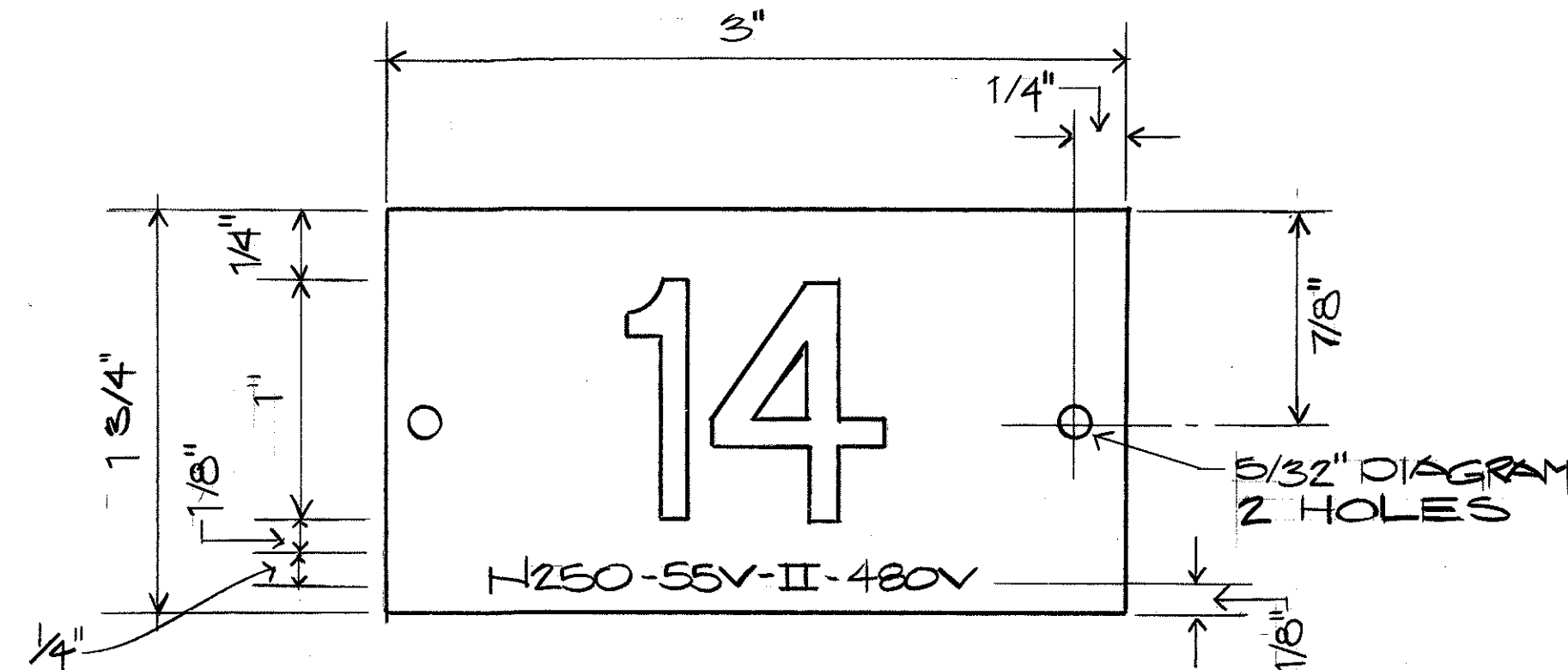
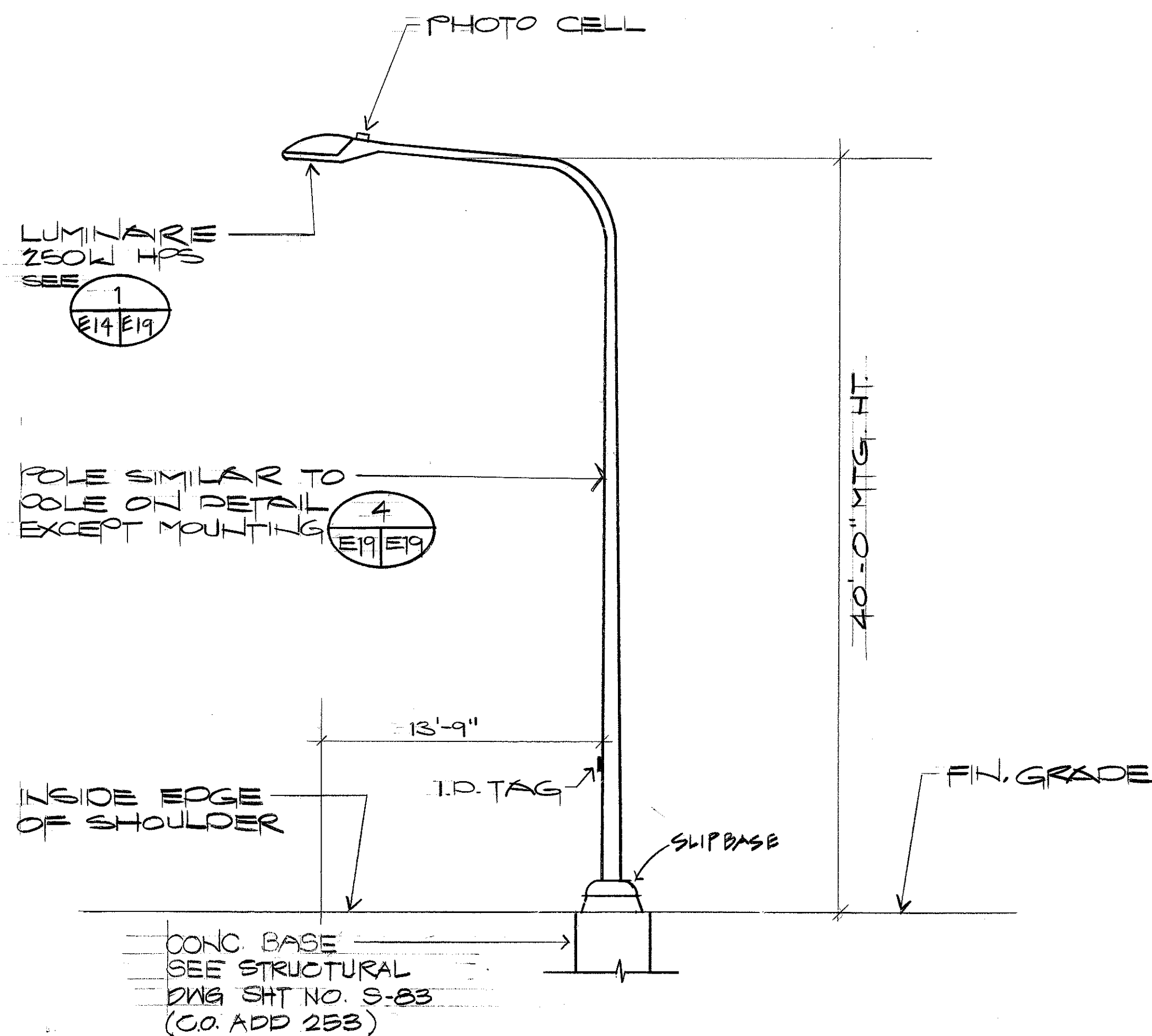
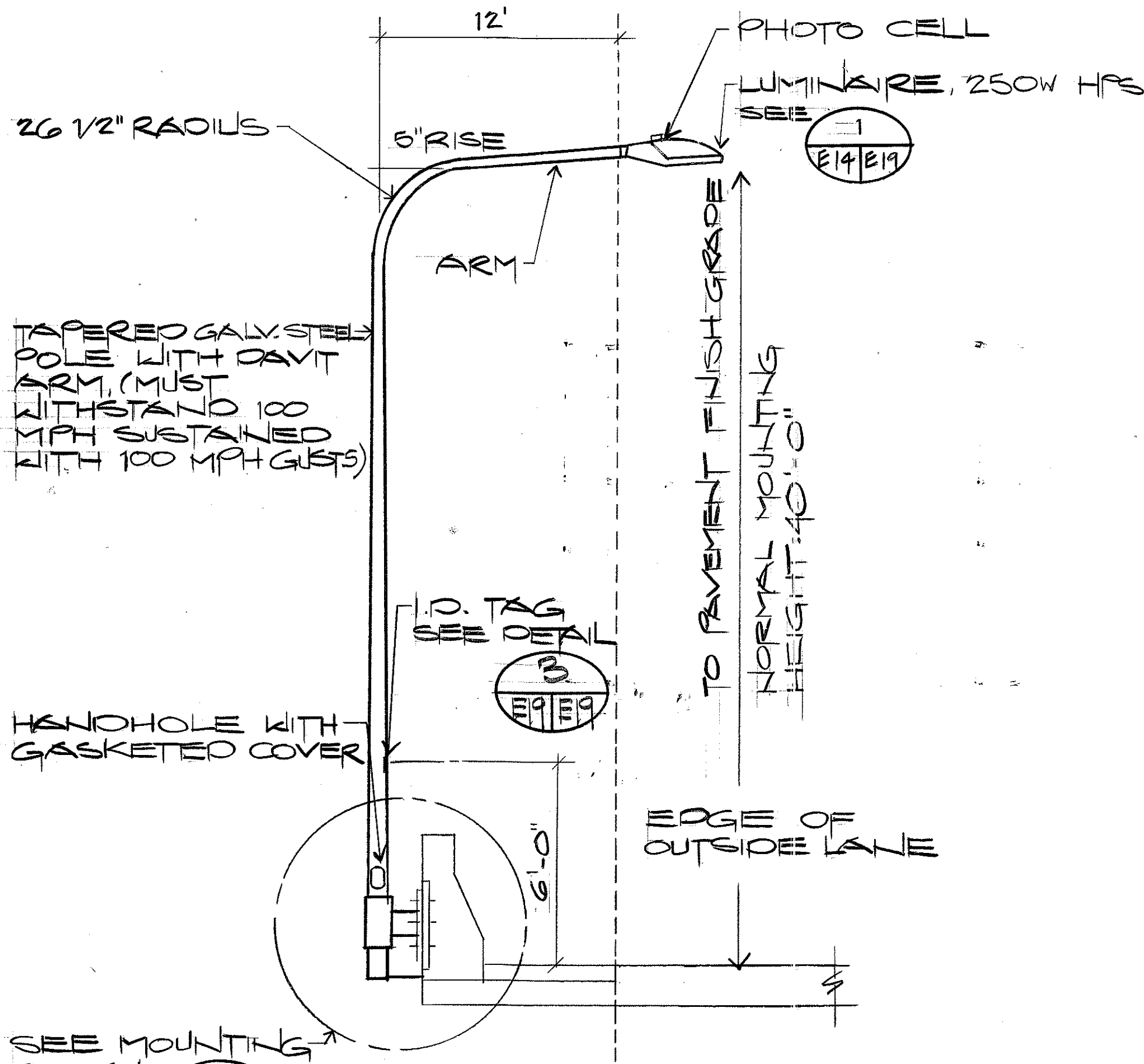
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MANHOLE AND PULLBOX LAYOUT DETAILS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. 1-H3-1 (69) & (70)

SHEET No. E18 OF 28 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1991	117	325

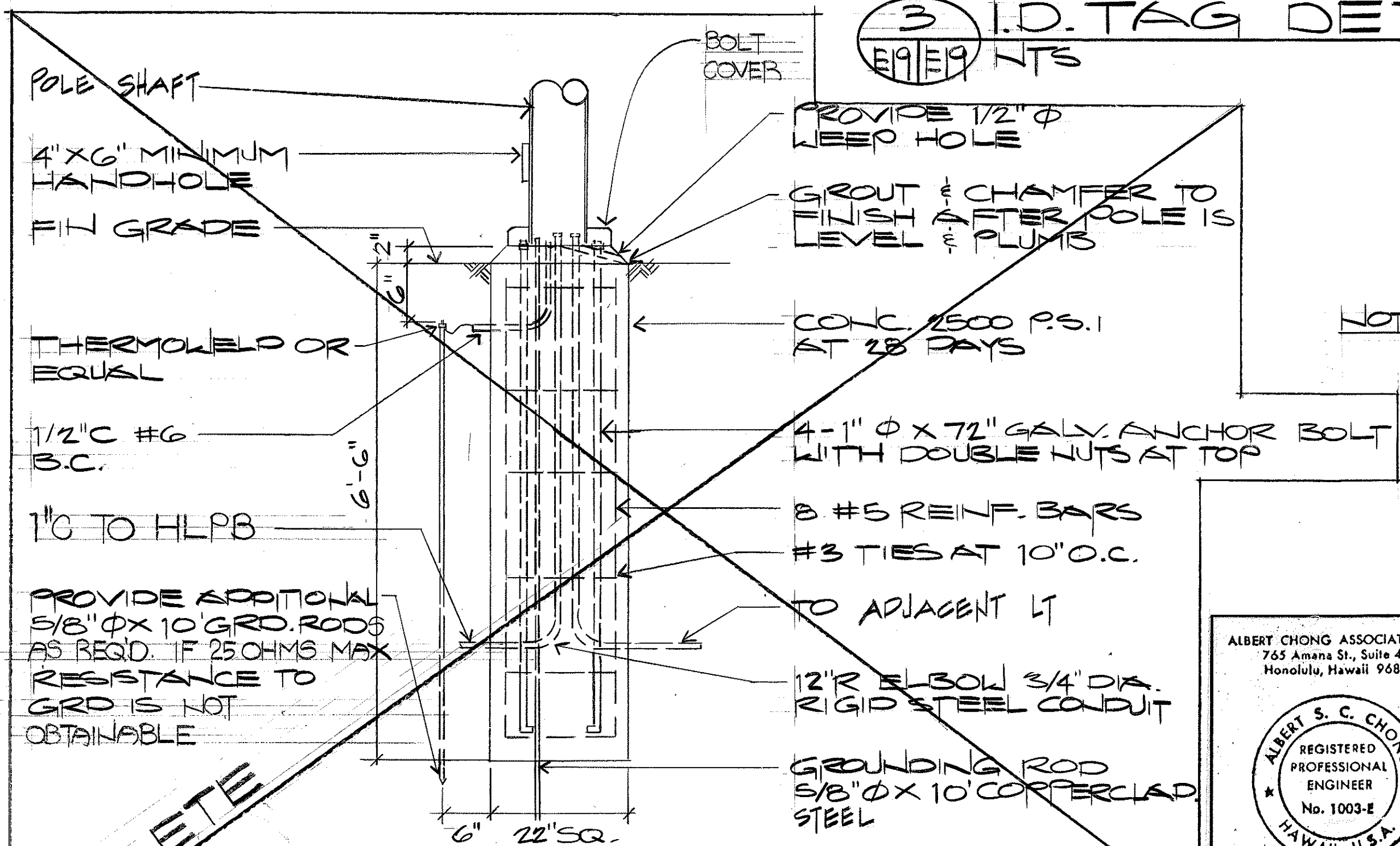
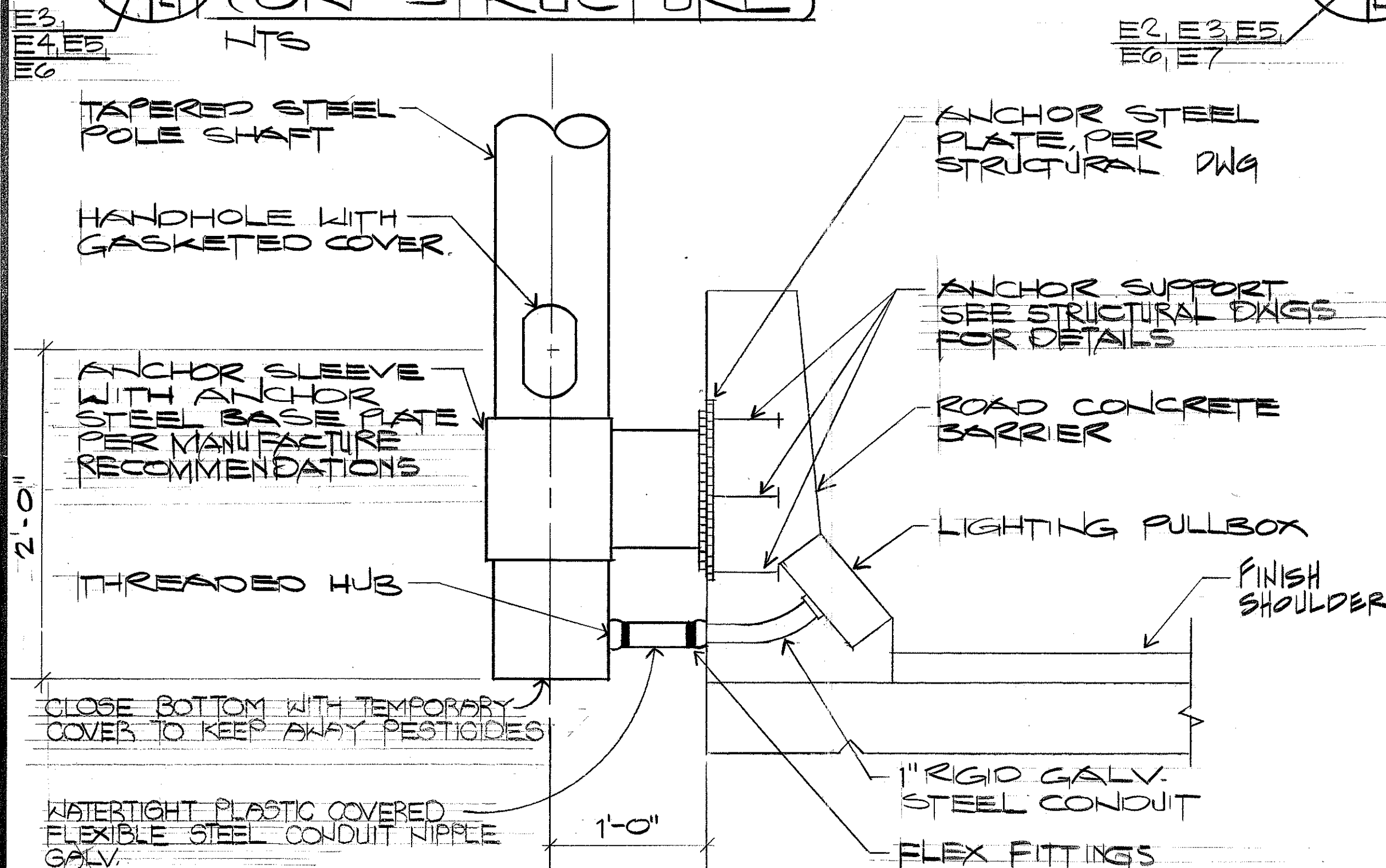


1. USE 3-PLY PLASTIC - BLACK, WHITE, BLACK.
2. NUMBER SIZE SHALL BE 1" HIGH AND ENGRAVED. 1/8" WIDE, WHITE IN COLOR (NO. AS REQUIRED).
3. NOMENCLATURE SIZE SHALL BE 1/4" HIGH AND ENGRAVED 1/32" WIDE, WHITE IN COLOR (WATTAGE, LAMP VOLTAGE, IES DISTRIBUTION AND BALLAST VOLTAGE).
4. ATTACH SECURELY TO POLE WITH NO. 7 CADMIUM PLATED SCREWS.
5. "N" FOR SODIUM LAMPS
6. ATTACH TAG 6'-0" ABOVE FINISH GRADE ON STREET SIDE.

1 LIGHT STANDARD DETAIL (ON STRUCTURE)

2 LIGHT STANDARD DETAIL (ON GRADE)

3 I.D. TAG DETAIL



NOTE: POLE & LUMINAIRES TO WITHSTAND 100 MPH WIND

4 TYPICAL HIGHWAY LIGHT INSTALLATION ON STRUCTURE

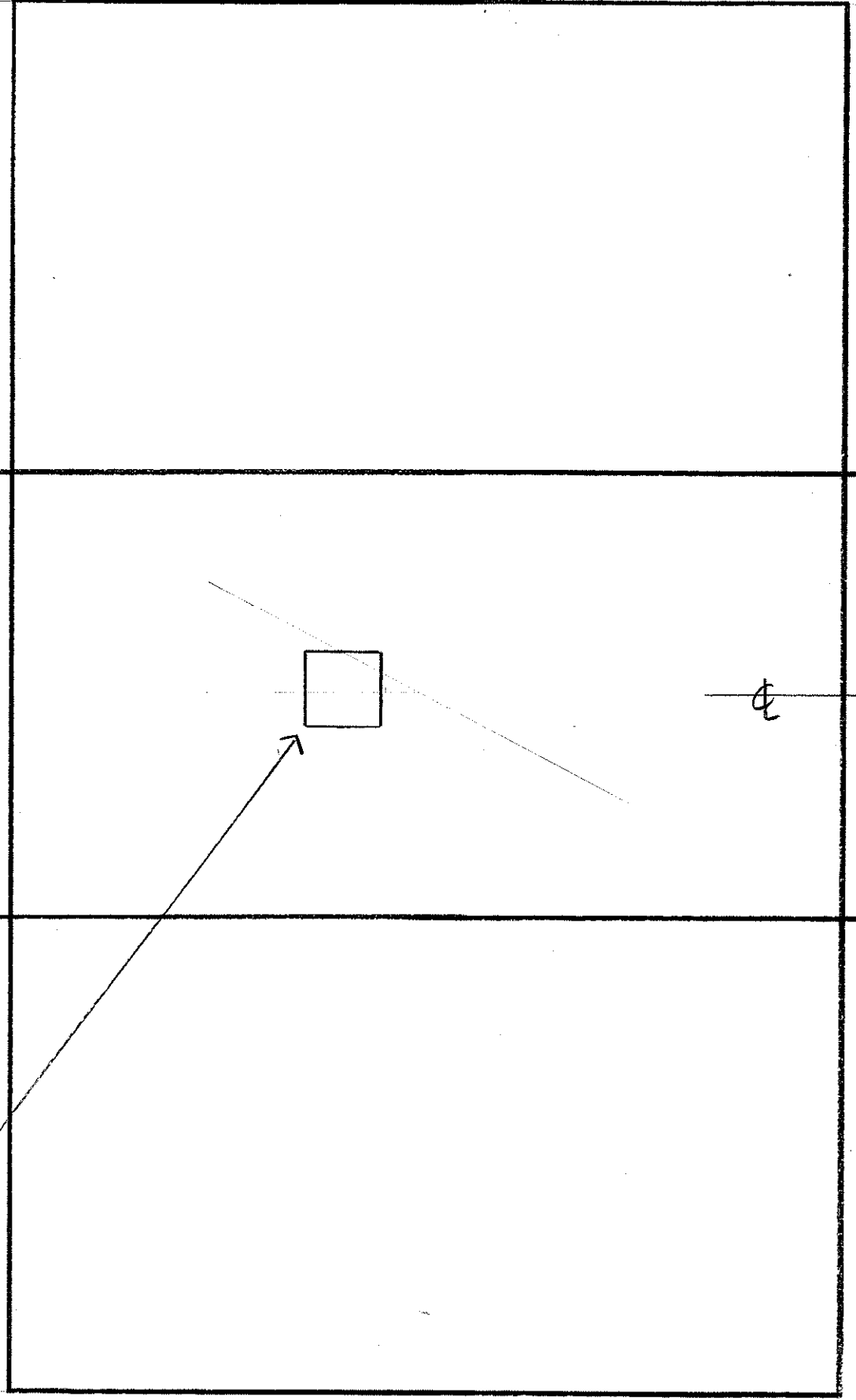
5 POLE BASE DETAIL

ALBERT CHONG ASSOCIATES INC.
765 Amana St., Suite 408
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No. 1003-E
HAWAII, U.S.A.
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Albert S. Chong

04-07-96	REVISED ST LIG. CONCRETE BASE REFERENCE DELETED POLE BASE DETAIL
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
DETAILS	
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO. 1-H3-1(69) 8 (70)	
SHEET No. E19 OF 28 SHEETS	

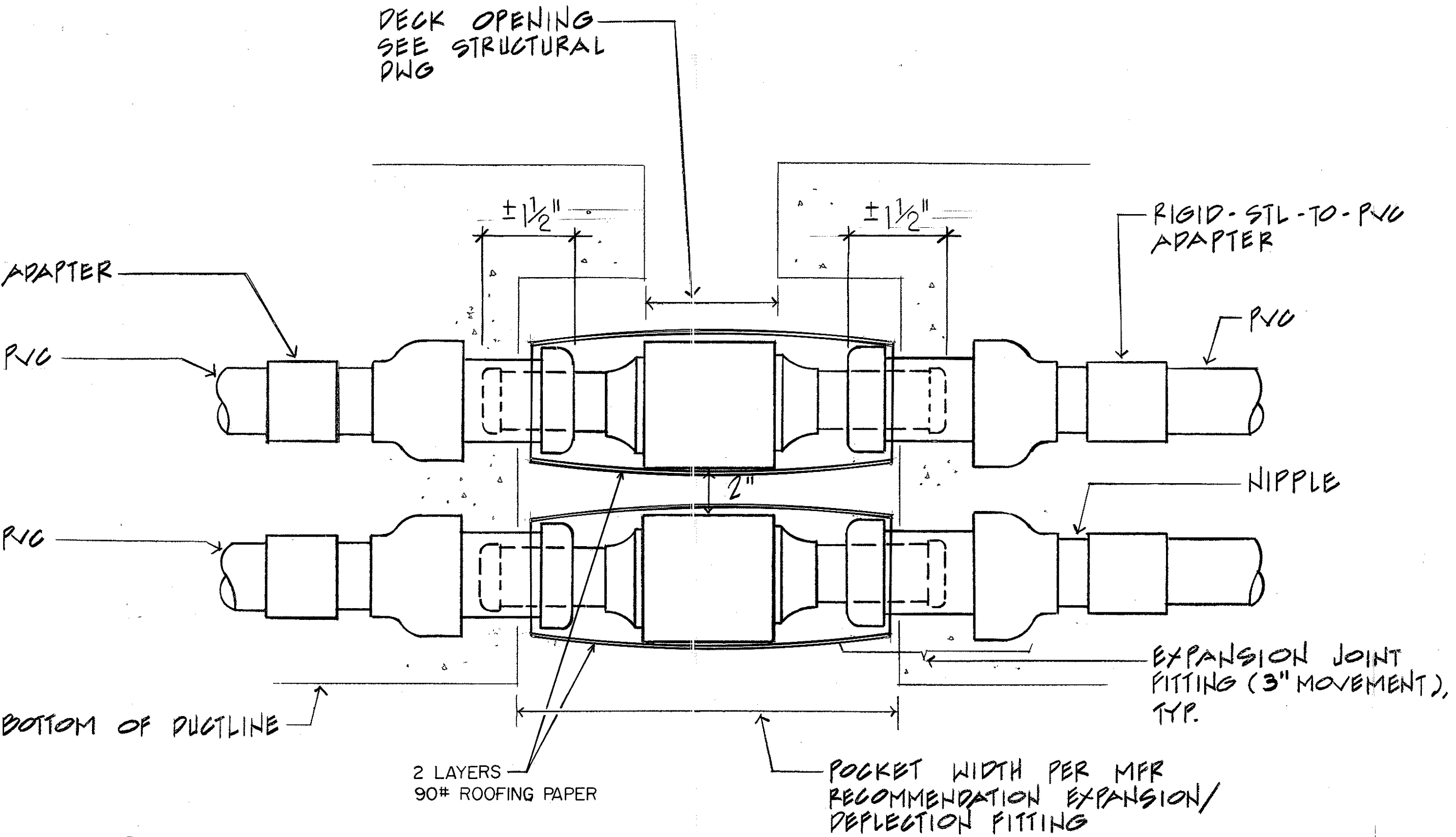
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1991	118	9

R/W SIDE



PULLING IRON, SEE SHT E25 & E26 (TYP)

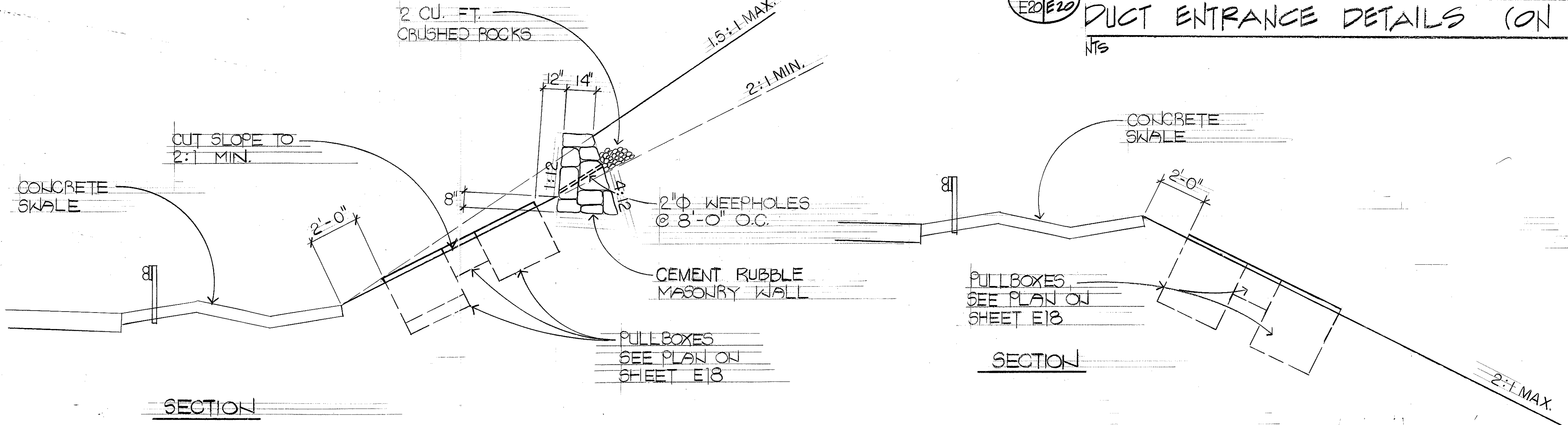
ROAD SIDE



1 DUCTLINE - TYPICAL EXPANSION/DEFLECTION FITTING DETAIL 3" MAX (MOVEMENTS) N.T.S. (AT TYPES E-E, EF-S, S-EF, E-S, & S-E JOINTS)

SUMP - SEE SHT. E-26 FOR DETAILS. MANHOLES ABOVE WATER TABLE SHALL HAVE OPEN SUMP

2 TYPICAL ELECTRICAL MANHOLE DUCT ENTRANCE DETAILS (ON GRADE) N.T.S.



SECTION

3 TYP SECTIONS NOT TO SCALE

7-15-94	INDICATED LENGTH OF EXPANSION IN DET. 1 AND REVISED PULL IRON AND ADDED SUMP NOTE IN DET. 2
11-5-93	ADDED DETAIL 3
DATE	REVISION

ALBERT CHONG ASSOCIATES INC.
765 Aiea St., Suite 408
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ALBERT S. C. CHONG
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No. 1003-E
HAWAII, U.S.A.

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STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
DETAILS
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO. 1-H3-1(69) & (70)

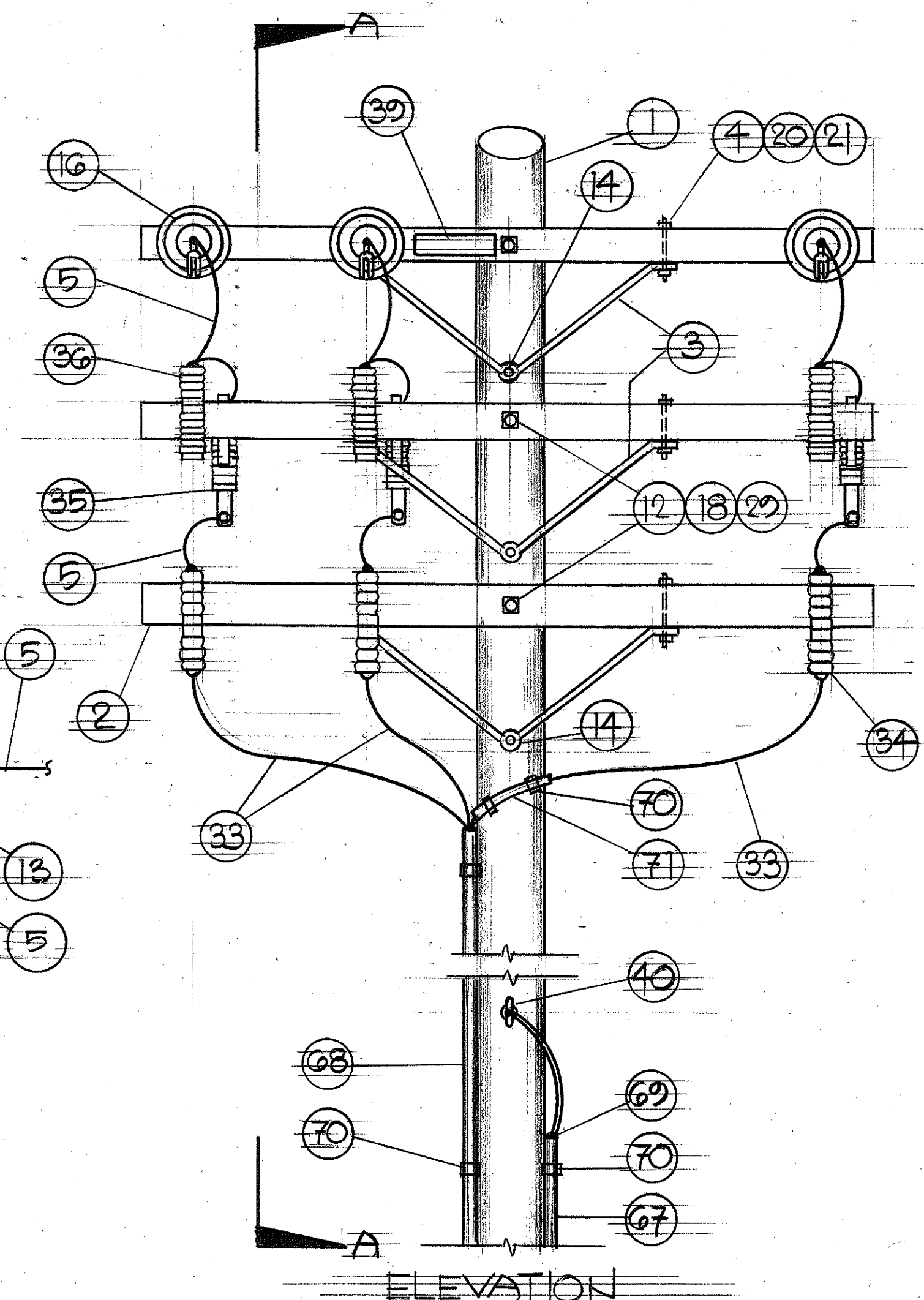
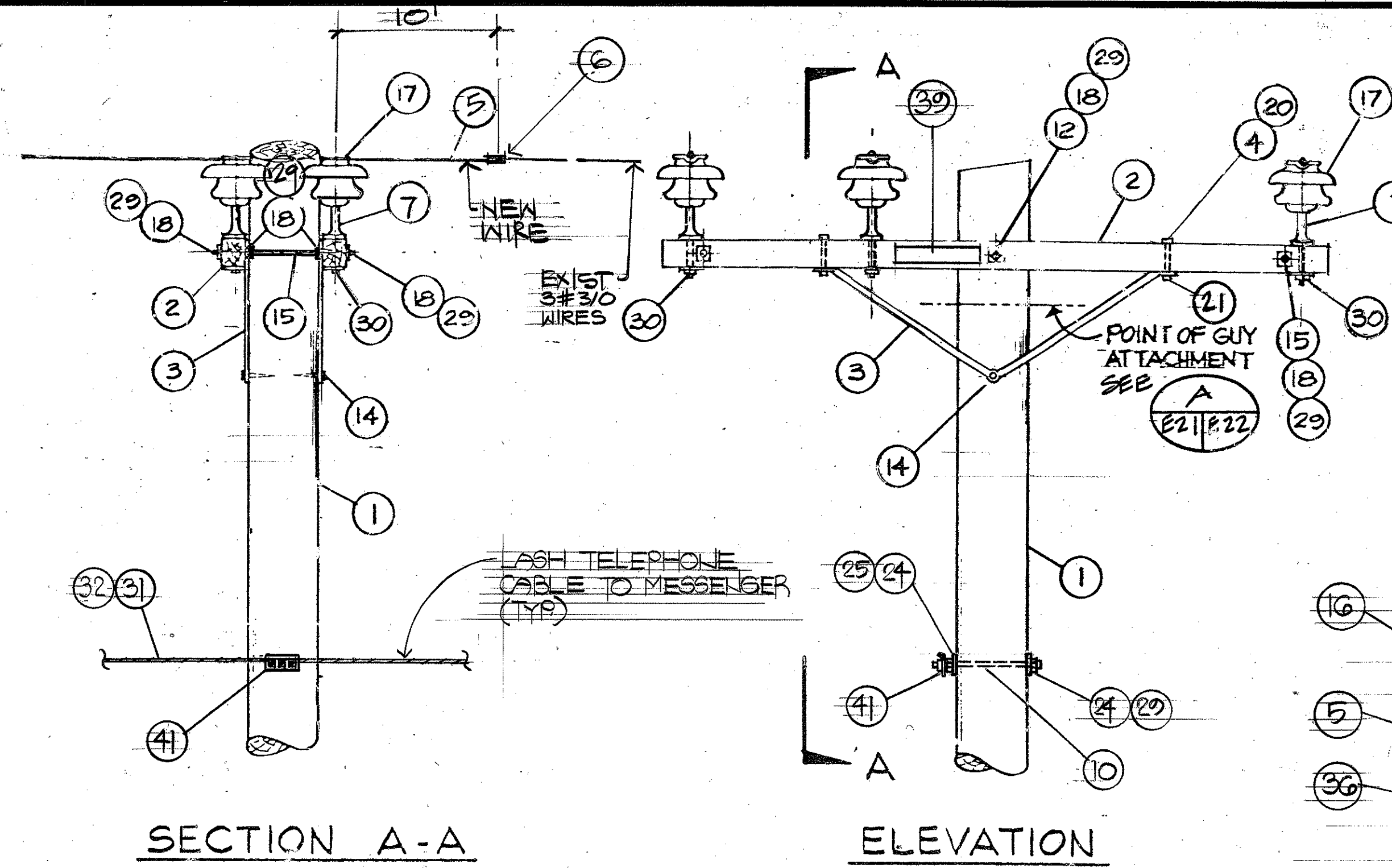
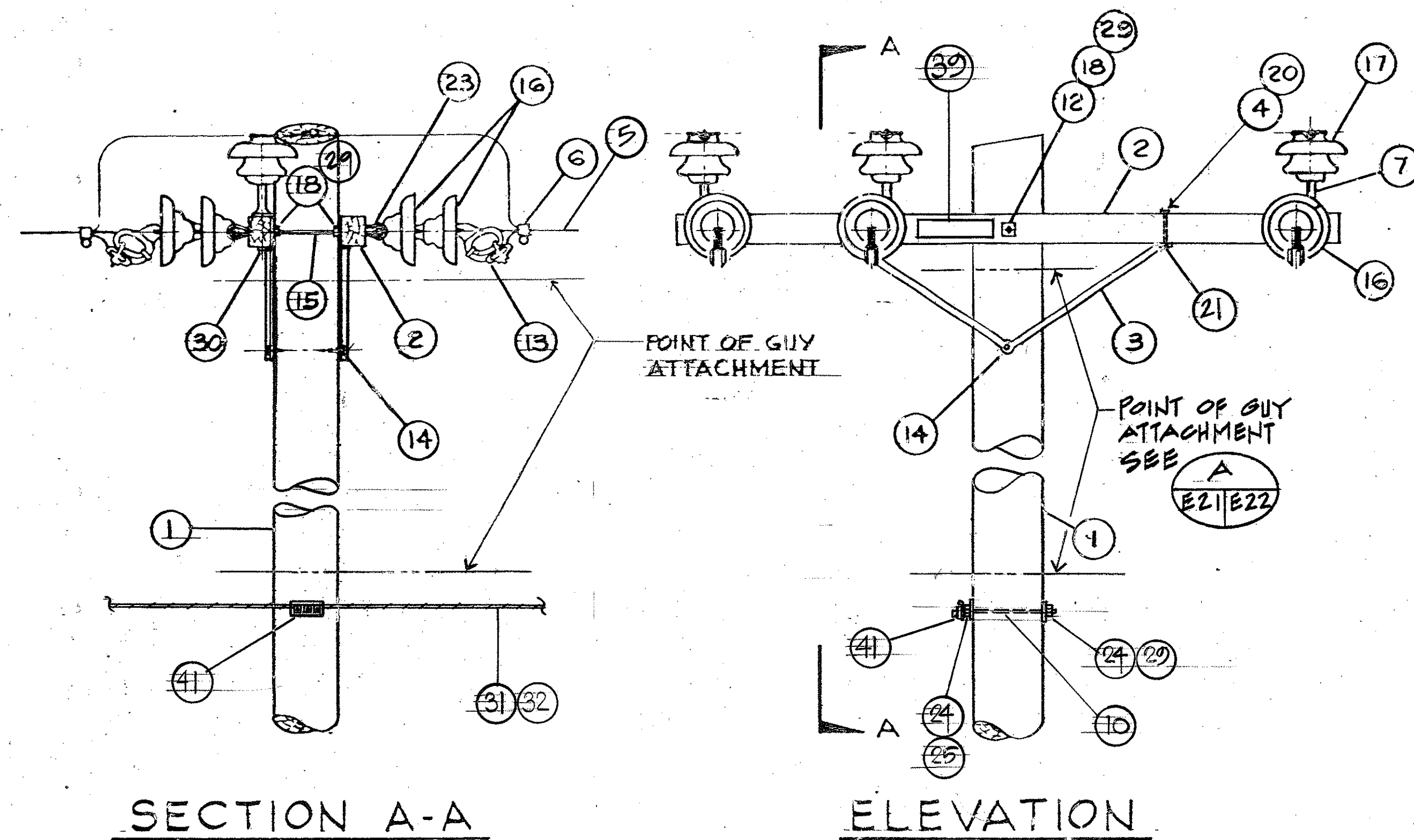
SHEET No. E20 OF 28 SHEETS

C.O. ADD 118

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QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1991	119	325

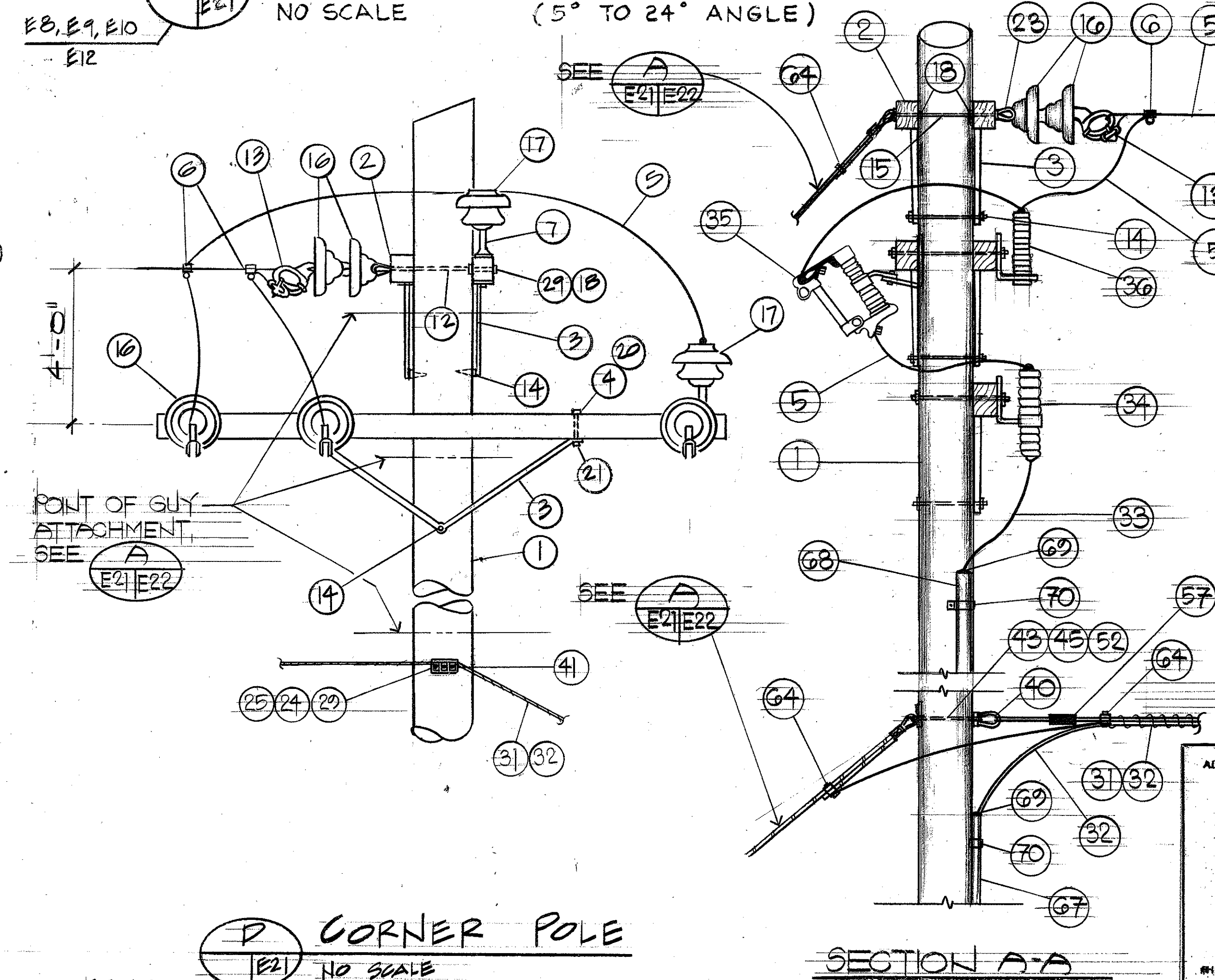
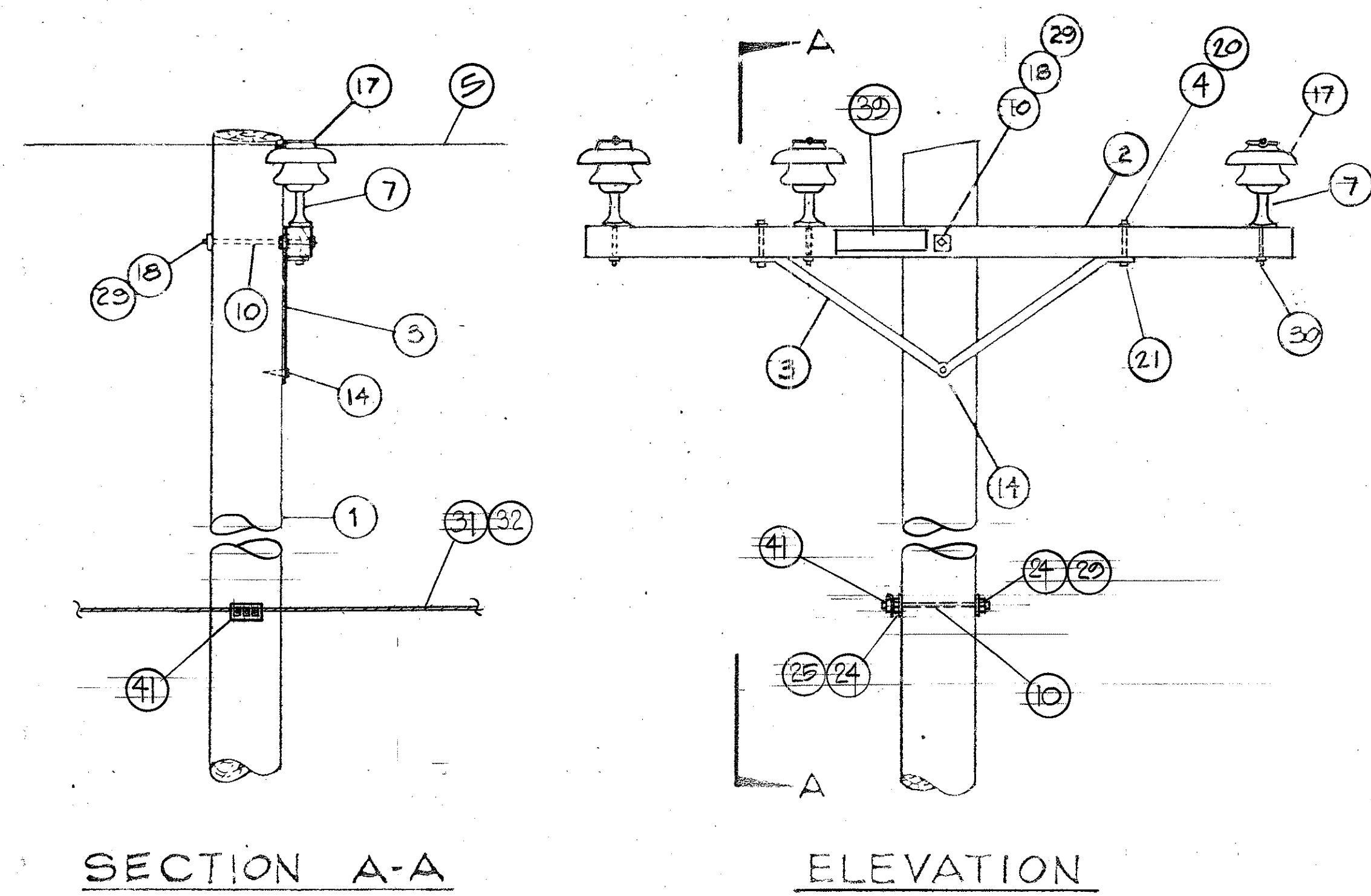
NOTE:
1. SEE DETAIL C FOR BONDING DETAIL
2. SEE DETAIL A FOR GUYING DETAIL



A HEAVY ANGLE THRU POLE TYPE "C"
NO SCALE (24° TO 60° ANGLE)
E21, E22, E7A

B ANGLE THRU POLE TYPE "B"
NO SCALE (5° TO 24° ANGLE)
E8, E9, E10, E12

E DEAD END POLE
E7A, E21, E22



C THRU POLE TYPE "A"
NO SCALE (0° TO 5° ANGLE)
E7A, E8, E9, E10, E11, E12, E13

D CORNER POLE
NO SCALE
E8, E9, E11

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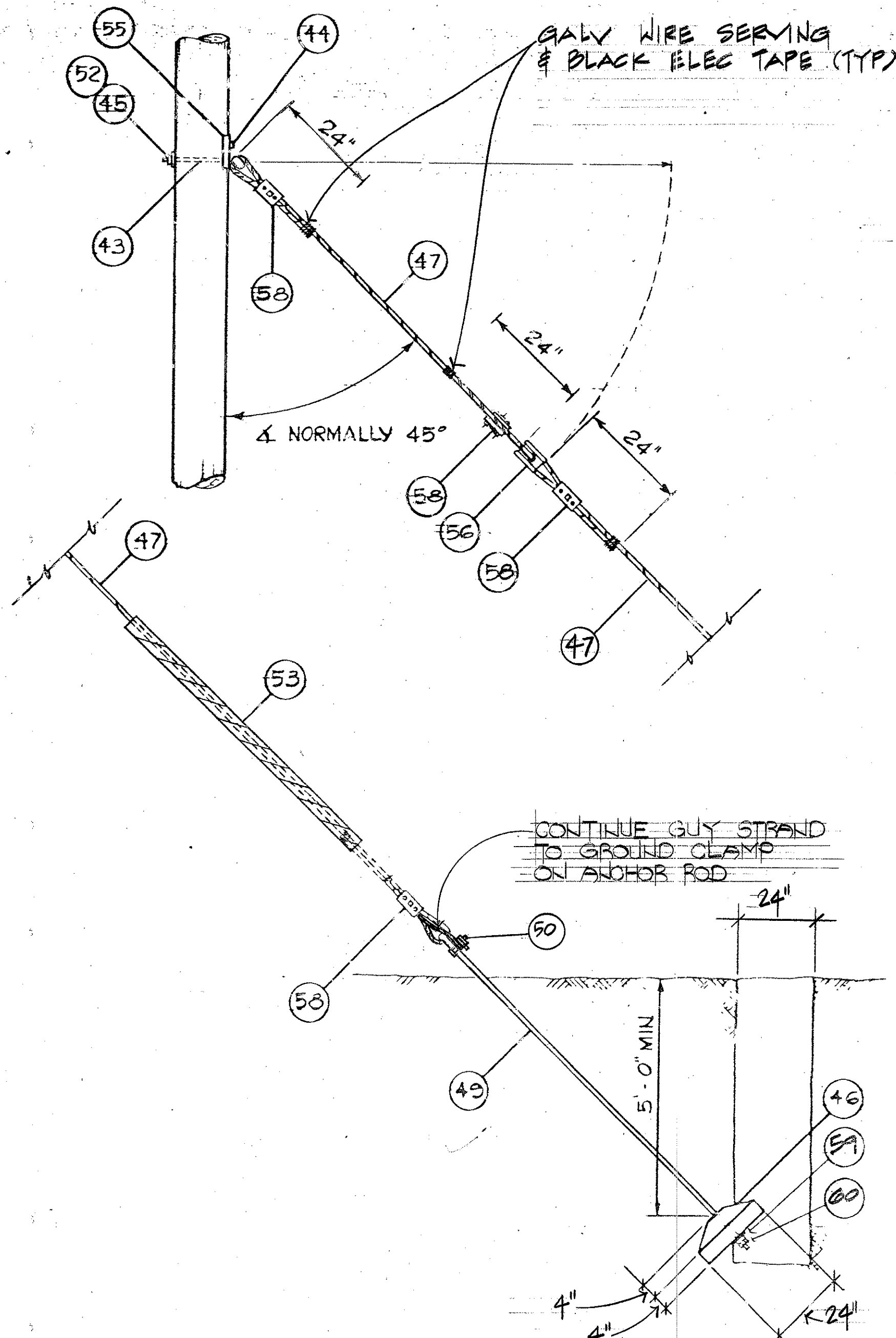
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REGISTERED PROFESSIONAL ENGINEER
No. 1003-E
HAWAII, U.S.A.

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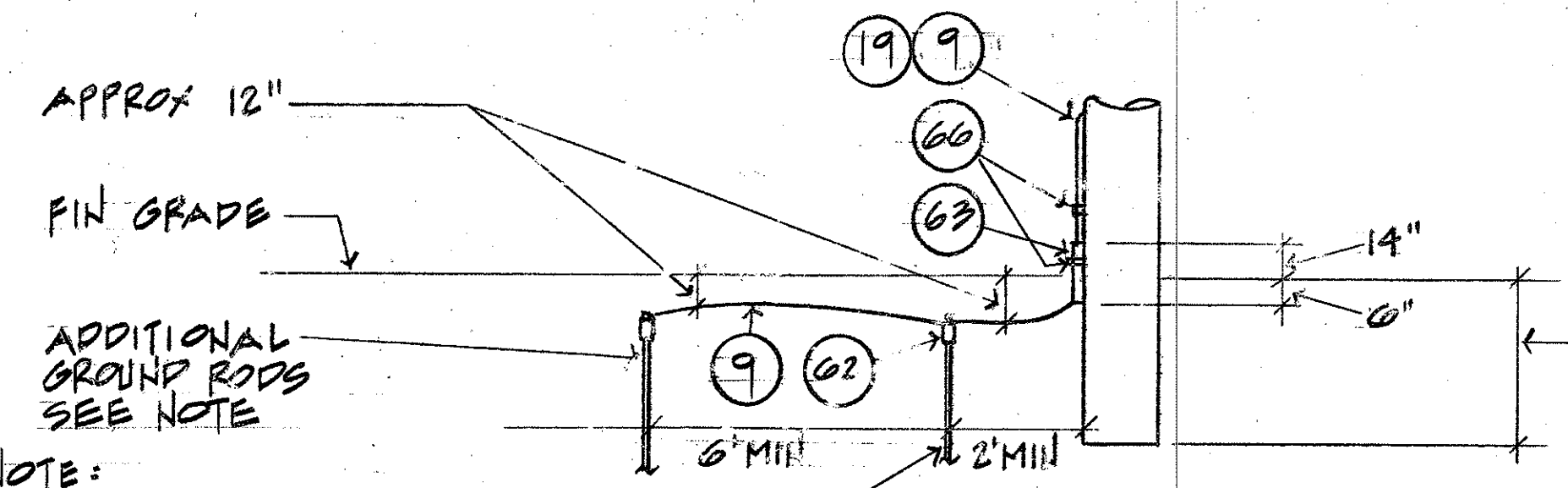
Albert S. Chong

11-5-93	ADDED E7A TO DETAIL A & C, ADDED DETAIL E
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
POLE DETAILS	
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO. 1-H3-1(69) & (70)	
SHEET NO. E21 OF 28 SHEETS	

DATE
SURVEY PLOTTED BY
DESIGNED BY
NOTED BY
CHECKED BY
ORIGINAL
PLAN
BOOK
NO.

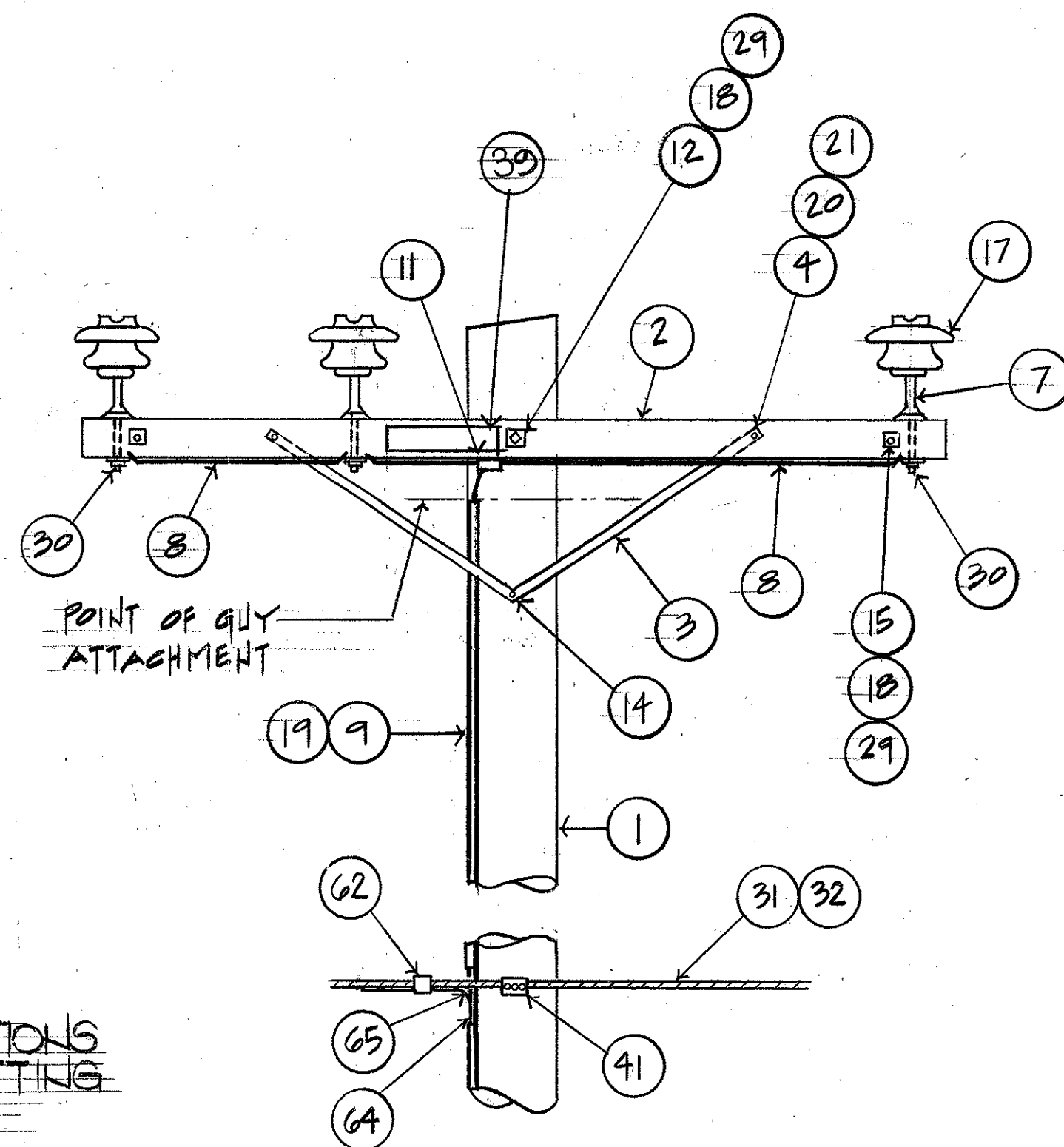


A TYPICAL GUY AND ANCHOR ASSY
E8, E9, E10, E11, E12
E22 NTS



NOTE:
PROVIDE ADDITIONAL RODS
AS REQ'D TO OBTAIN 25 OHMS
TO GROUND

B GROUNDING DETAIL
E8, E9, E10, E11, E12, E13
E22 NTS

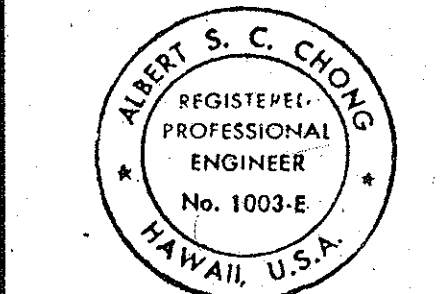


C TYPICAL BONDING DETAIL
E21
E22 E22 NTS

LIST OF MATERIAL		FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
PART NO.	DESCRIPTION	HAWAII	HAW.	1-H3-1(69)	1991	120	225
1	WOOD POLE, CLASS III, 45 FT. OR 65 FT. SEE NOTE 1 BELOW						
2	CROSSARM, DOUGLAS FIR, 3 1/2" X 4 1/2" X 8'-0"	46					
3	BRACE, CROSSARM, ANGLE, 28" SPAN	47					
4	MACHINE BOLT, 1/2" X 6"	48					
5	CONDUCTOR, #3/0 ALUMINUM (AAAC)	49					
6	CLAMP, HOT LINE TAP ASSEMBLY	50					
7	INSULATOR PIN, FORGED STEEL HIGH TENSION, 1 3/8" LEAD THREADS	51					
8	#8 MHD COPPER, BOND TO INSULATOR PIN	52					
9	#4 SOFT DRAWN COPPER, ARRESTER GROUND WIRE	53					
10	MACHINE BOLT, 5/8" X 14"	54					
11	CONNECTOR, SPLIT BOLT, COPPER ALLOY	55					
12	MACHINE BOLT, 5/8" X 18"	56					
13	STRAIN CLAMP, ENVELOPE TYPE, ULTIMATE STRENGTH 8,000 LBS.	57					
14	LAG SCREW, 5/8" X 4", FETTER DRIVE	58					
15	DOUBLE ARMING BOLT, 5/8" X 18"	59					
16	SUSPENSION INSULATOR 10" DIA., CLEVIS TYPE, SEE SPECS	60					
17	POST TYPE INSULATOR, SEE SPECS	61					
18	SQUARE WASHER, 2 1/4" X 2 1/4" X 3/16", W/ 11/16" HOLE	62					
19	WOOD MOULDING, HALF ROUND, STAPLE EVERY 12" WITH COPPERCLAD STAPLES	63					
20	ROUND WASHER, 1/2" HOLE	64					
21	M-F LOCKNUT, SQUARE, 1/2" BOLT SIZE	65					
22	NOT USED	66					
23	EYENUT, 5/8" BOLT SIZE	67					
24	CURVED WASHER 2 1/2" X 2 1/2" X 3/16", W/ 11/16" HOLE	68					
25	PLACE NUT	69					
26	GALVANIZED STEEL MESSENGER	70					
27	CURVED WASHER	71					
28	NOT USED						
29	M-F LOCKNUT, SQUARE, 5/8" BOLT SIZE						
30	M-F LOCKNUT, SQUARE, 3/4" BOLT SIZE						
31	CABLE MESSENGER, 6,000 POUNDS, GALV STEEL						
32	100 PR TELEPHONE CABLE						
33	CABLE, 15KV, 1/C #4/0 SHIELDED						
34	CABLE TERMINATION KIT, 15KV						
35	PRIMARY FUSED CUTOFF, 15KV, 200A						
36	SURGE ARRESTOR, 9/10KV						
37	NOT USED						
38	NOT USED						
39	HIGH VOLTAGE SIGN						
40	EYENUT, 5/8"						
41	THREE BOLT SUSPENSION CLAMP, ALUMINUM						
42	CORNER SUSPENSION CLAMP						
43	THIMBLEYE BOLT, 5/8" X 10"						
44	LAG SCREW, 1/2" X 4" (FETTERDRIVE)						
45	WASHERS, SQUARE, 2-1/4" X 2-1/4" X 3/16", 11/16" HOLE						

NOTE:
1. LENGTH OF POLES ARE INDICATED ON SHEETS E8 TO E13.

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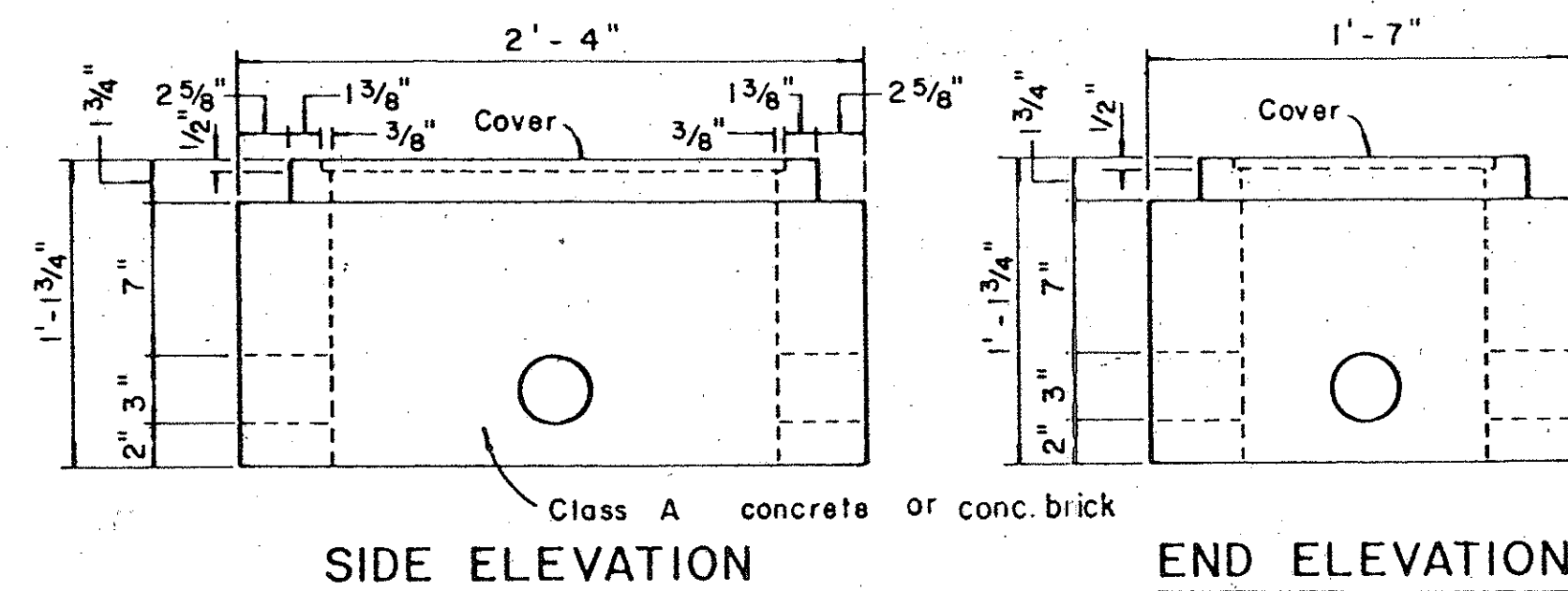
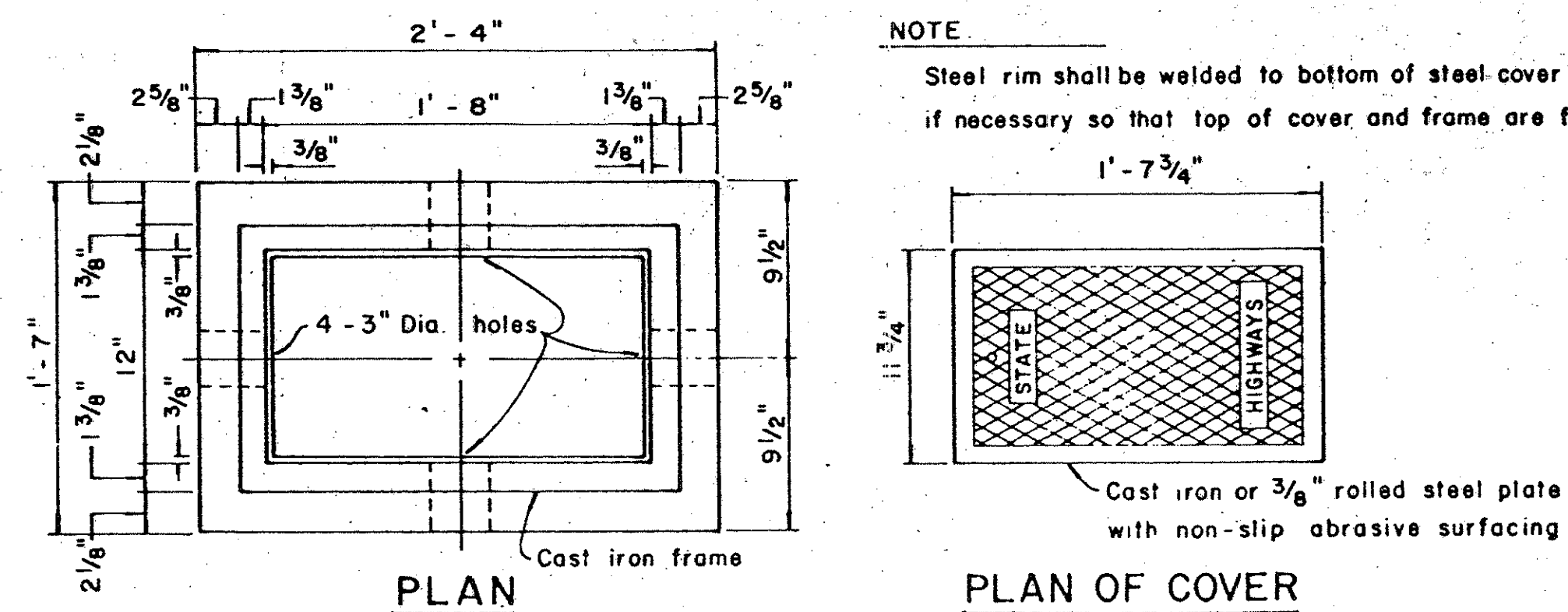
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
POLE DETAILS	
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO. 1-H3-1(69) & (70)	
SHEET NO. 120 OF 225 SHEETS	

ADD. 120

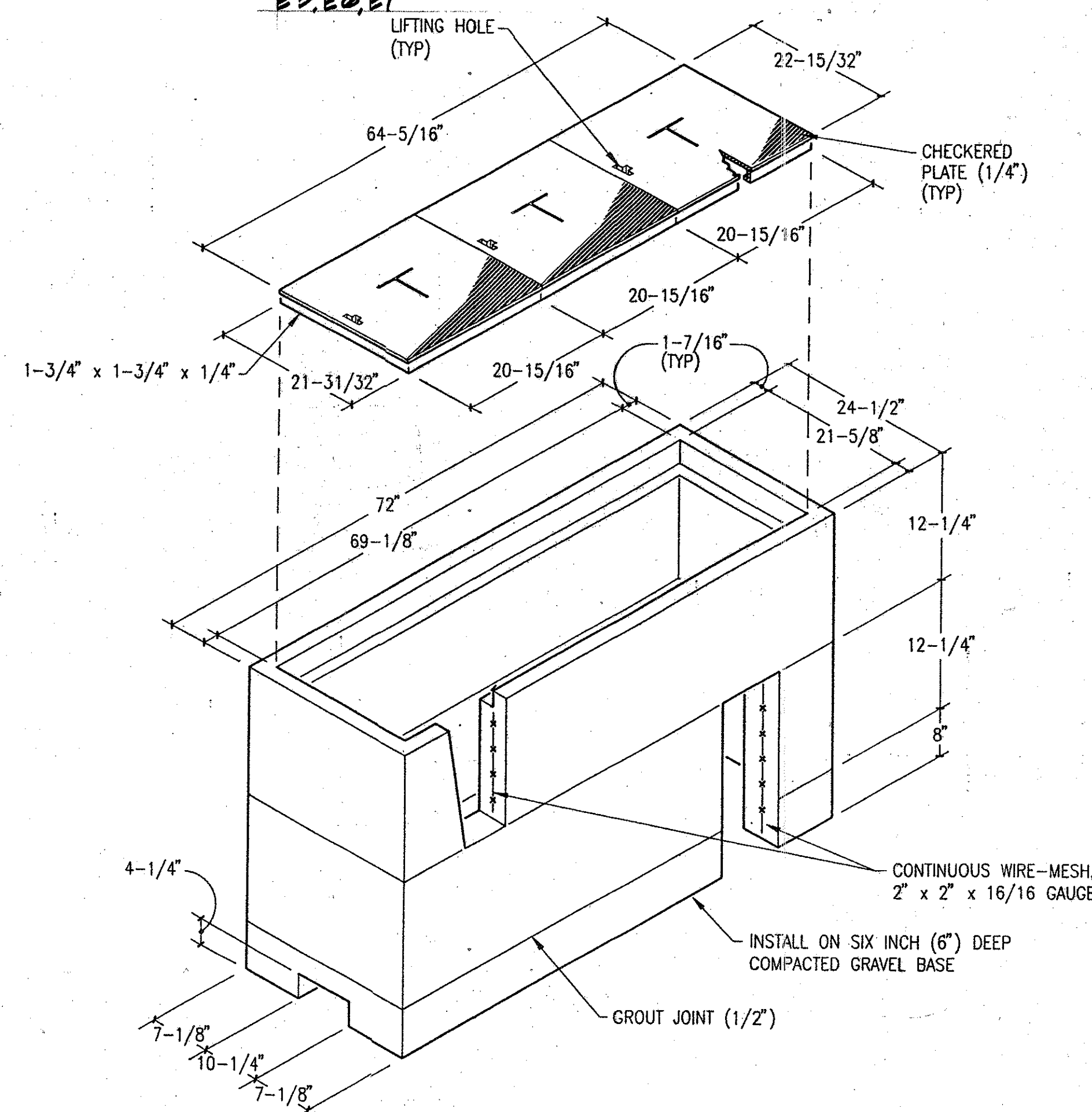
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	199V	22	325

NOTES:

- CAST IRON COVER SHALL BE SECURED IN PLACE WITH WATERPROOF SILICONE SEALANT.
- BOX & COVER SHALL BE DESIGNED FOR HEAVY TRAFFIC LOADS.
- THE WORD "DETECTOR" SHALL BE EMBOSSED ON COVER.

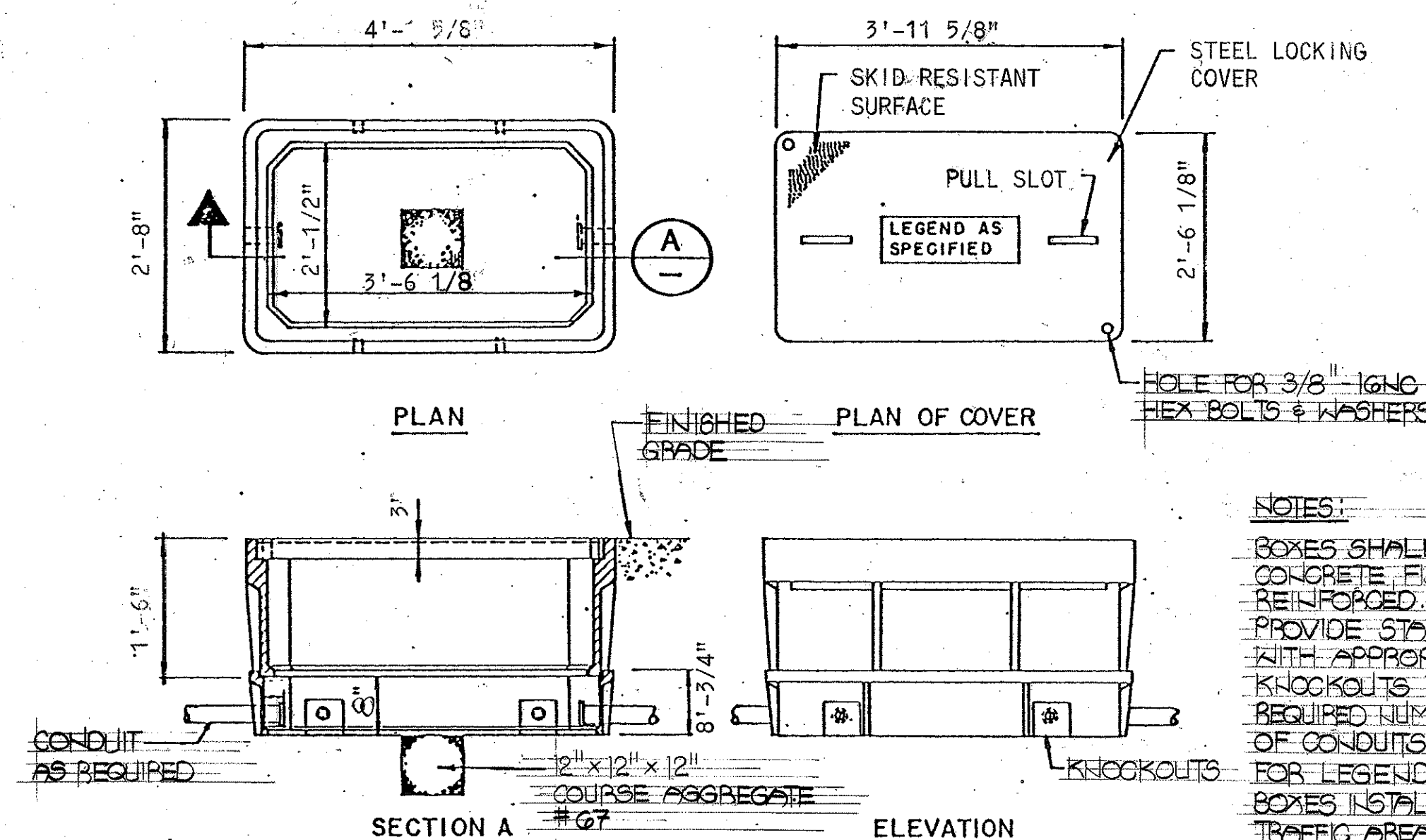


TYPE "B" PULLBOX
Scale: 1 1/2" = 1'-0"



PULL BOX DETAIL (2' x 6')

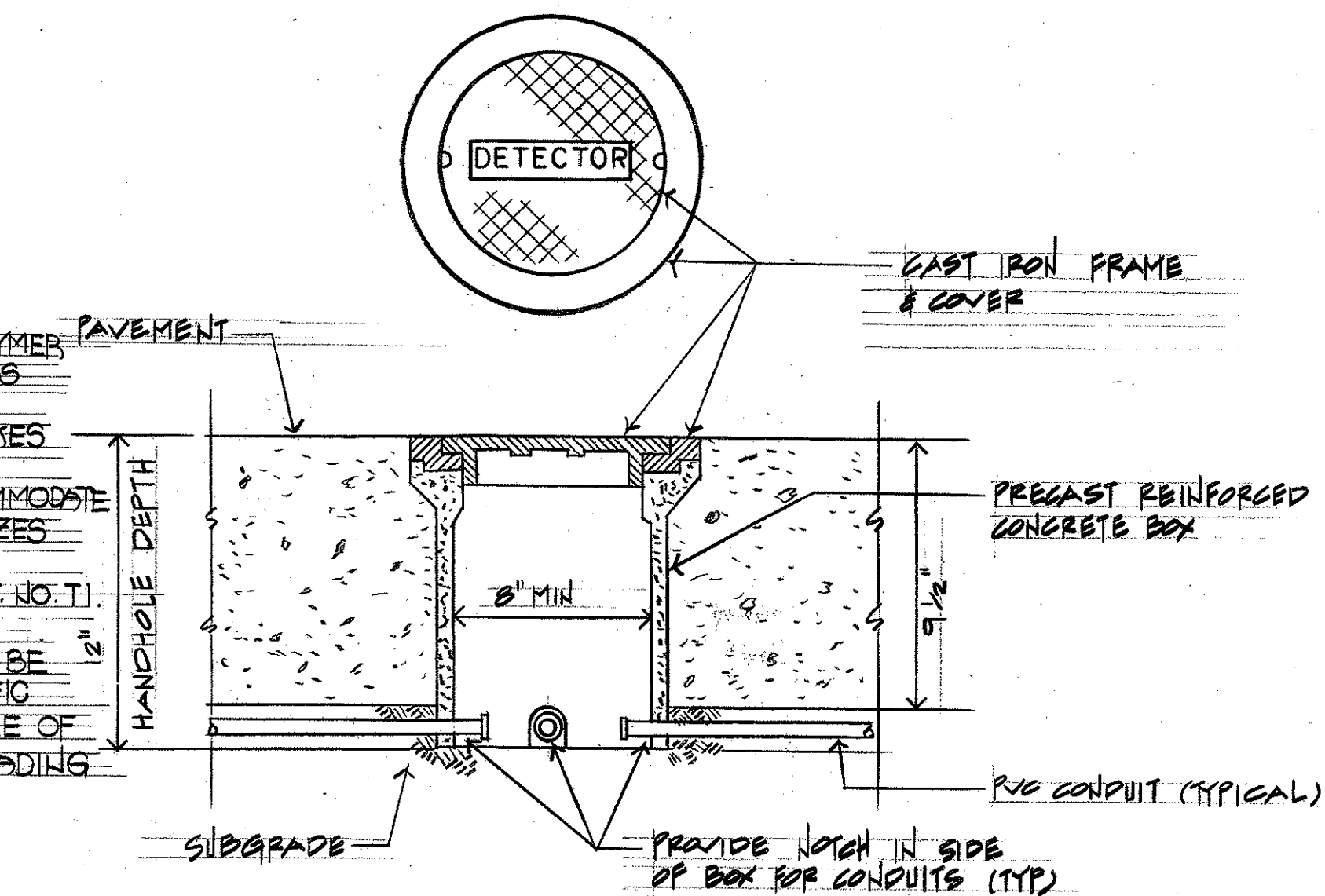
NOT TO SCALE



INGRADE PULL BOX DETAIL
NTS

NOTES:

- BOXES SHALL BE POLYMER CONCRETE, FIBER GLASS REINFORCED. PROVIDE STACKED BOXES WITH APPROPRIATE KNOCKOUTS TO ACCOMMODATE REQUIRED NUMBER & SIZES OF CONDUITS. FOR LEGEND SEE GHT. NO. 11.
- BOXES INSTALLED IN TRAFFIC AREAS SHALL BE APPROVED WITH TRAFFIC BEARING LIDS CAPABLE OF SUPPORTING H-20 LOADING.



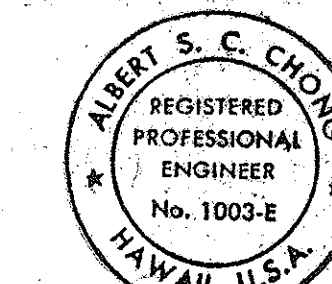
DETECTOR PULLBOX DETAIL
NTS

NOTE:

- PROVIDE 5/8" DIA. x 8'-0" LONG GALV. GROUND ROD IN ALL TELEPHONE PULLBOXES AND HANDHOLES.

DATE	_____
SURVEY PLOTTED BY	_____
ORIGINAL PLAN	_____
DESIGNED BY	_____
NOTE BOOK	_____
QUANTITIES BY	_____
CHECKED BY	_____
NO.	_____

ALBERT CHONG ASSOCIATES, INC.
785 AMANA STREET, SUITE 401
HONOLULU, HAWAII 96814



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Albert S. Chong

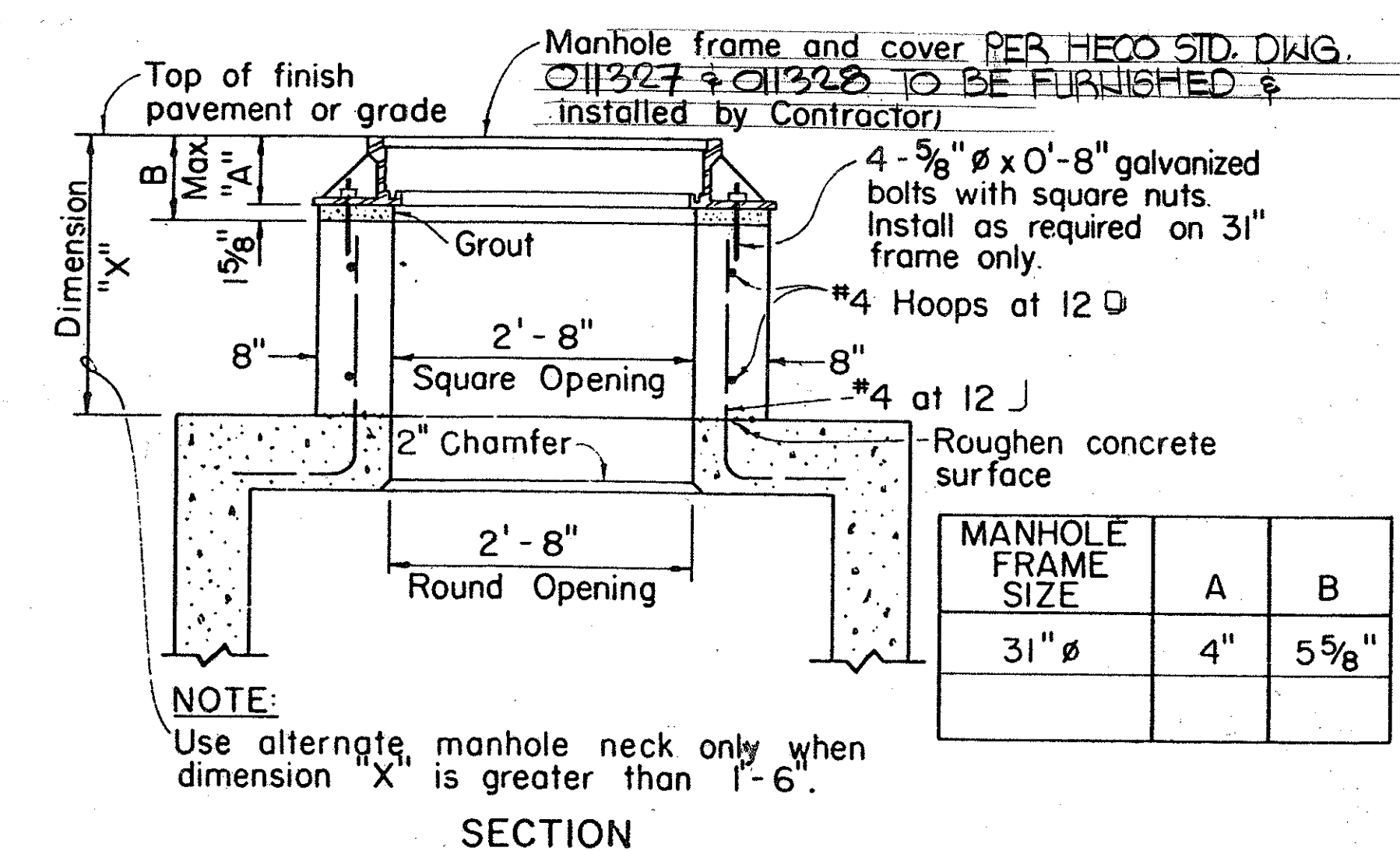
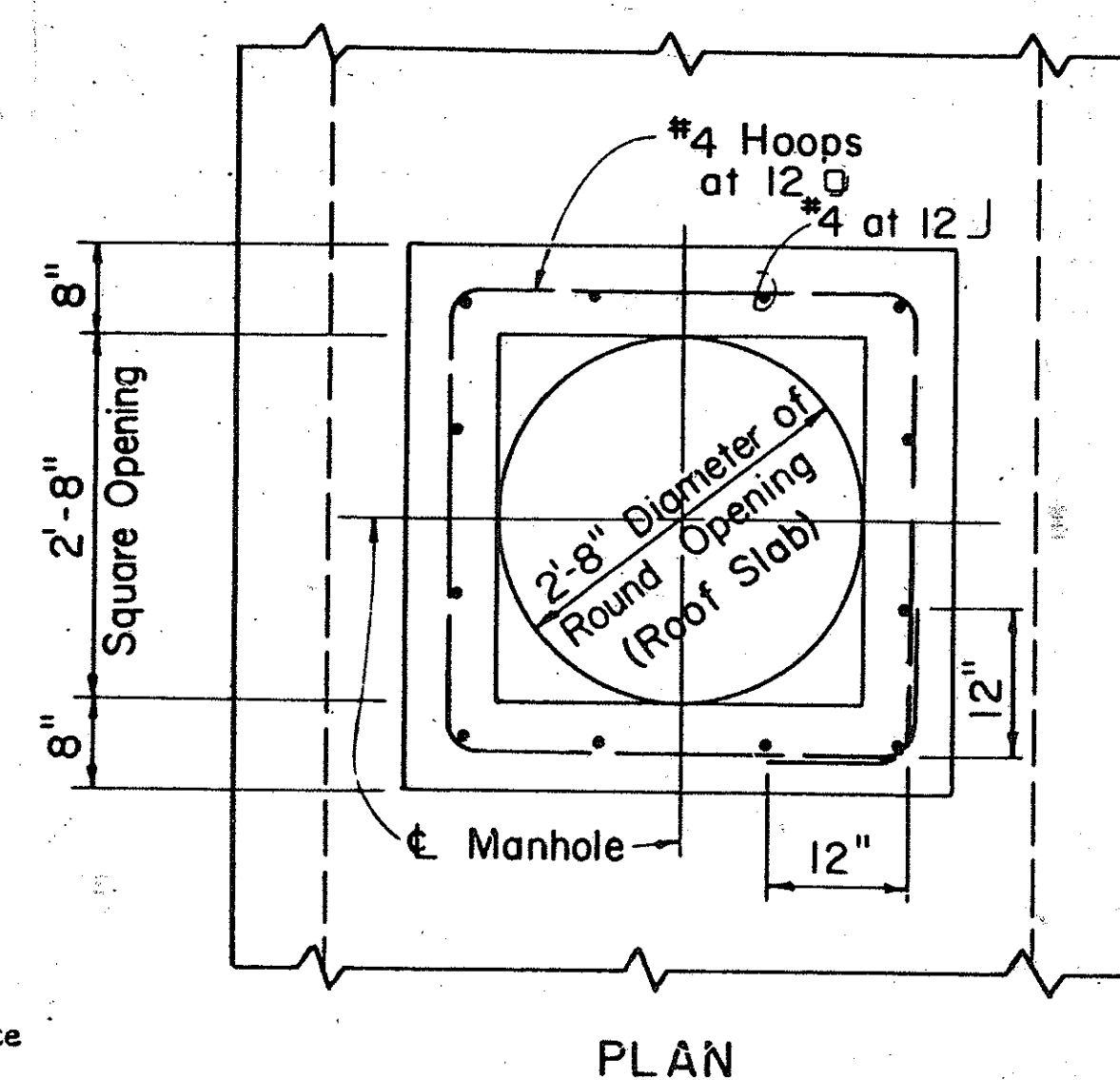
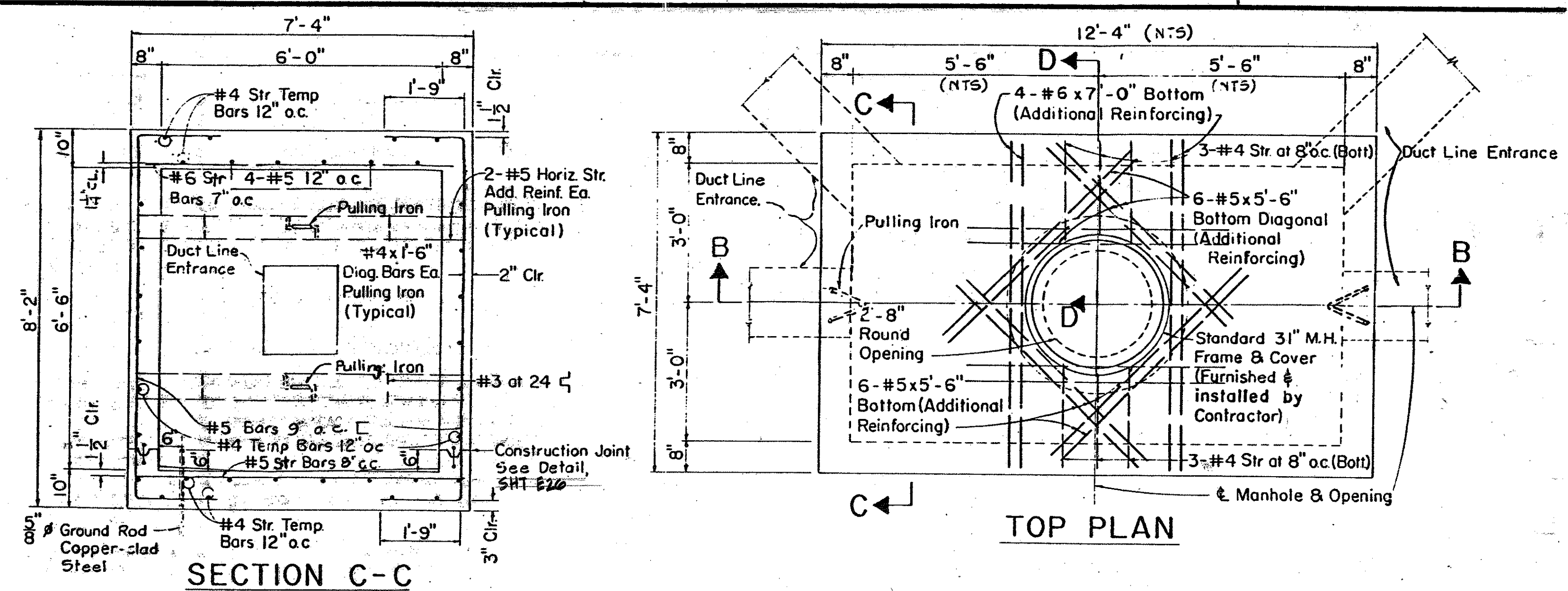
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETAILS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. 1-H3-1(69) & (70)

SHEET No. 24 OF 28 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1997	123	325

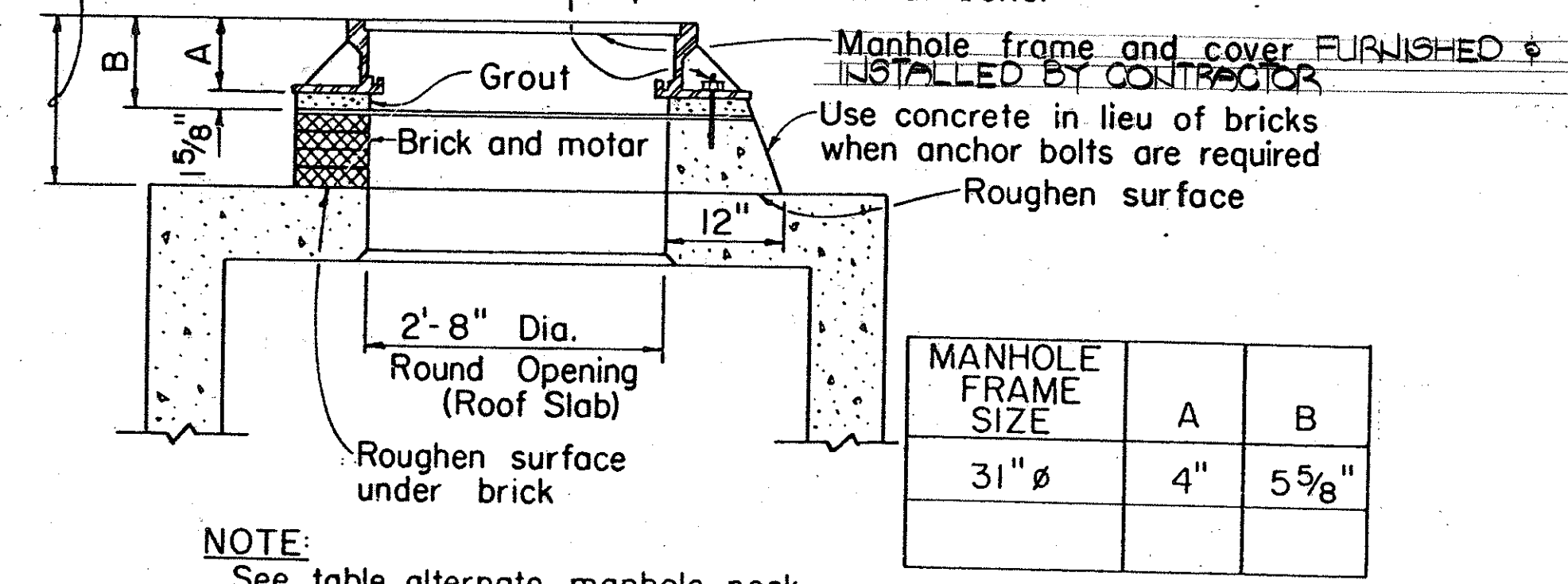


4 ALTERNATE MANHOLE NECK

Scale: 3/4" = 1'-0"

Variable to suit conditions in the field. Minimum 1'-0" to provide for future adjustments. When dimension is greater than 1'-6", use alternate manhole neck.

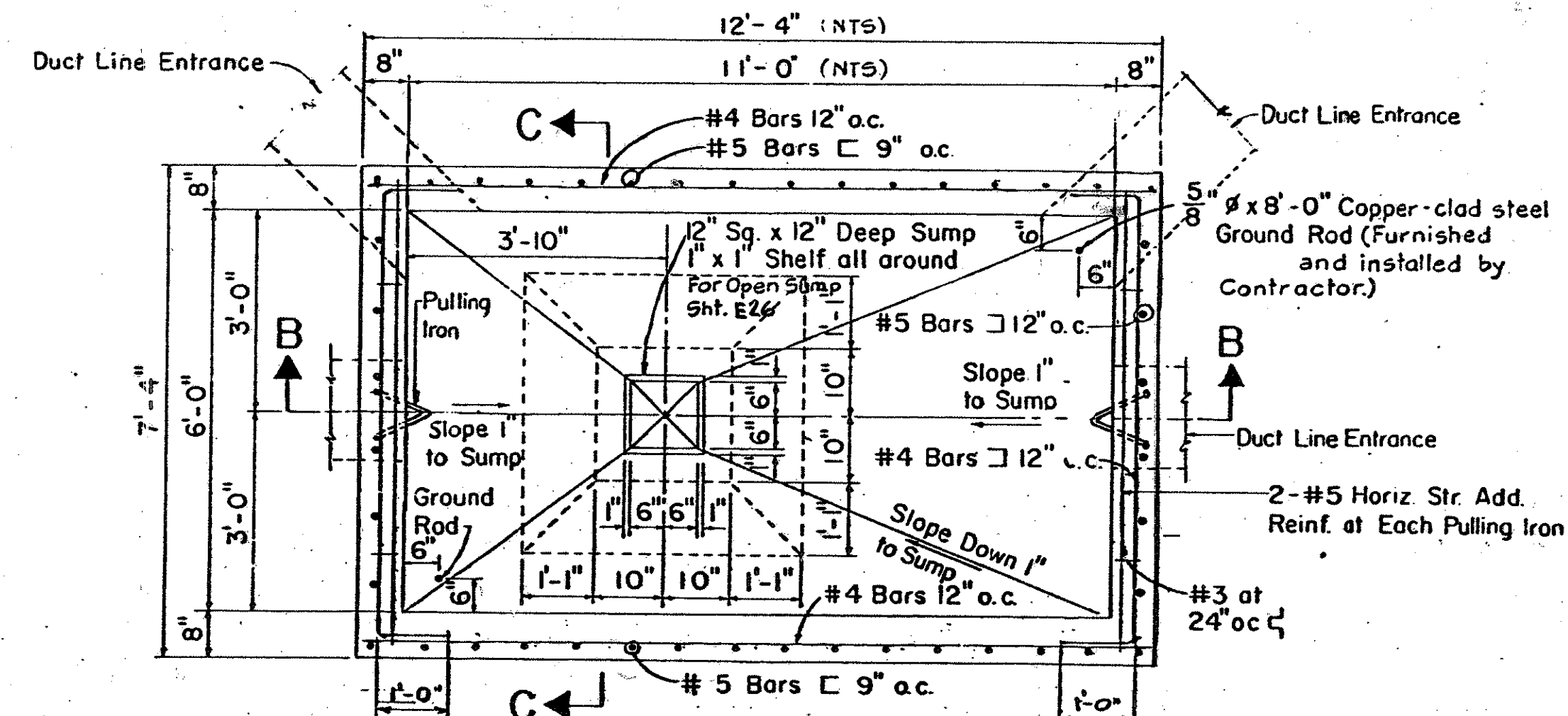
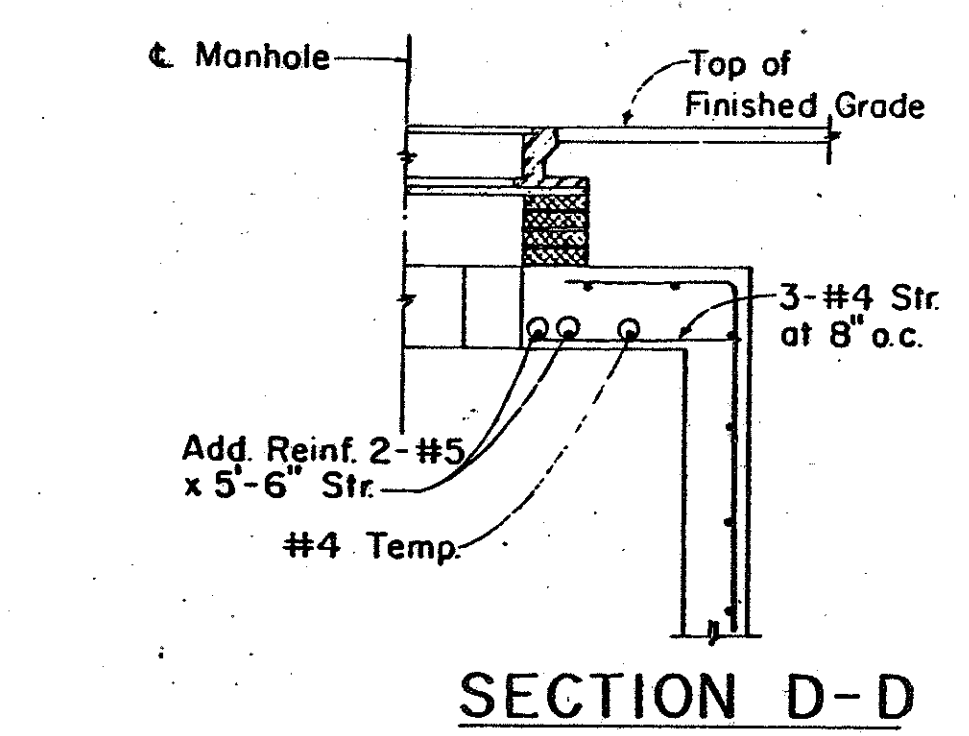
Provide 4-5/8" Ø x 0'-8" galvanized anchor bolts w/sq. nuts & washers (project 2 1/2") for 31" Ø manhole frame when installing in heavy traffic areas. See H.E.C.O. drawing No. 011328 for location of bolts. Apply generous coat of bitumastic paint on exposed surface of bolts.



3 31" Ø MANHOLE FRAME NECK DETAIL

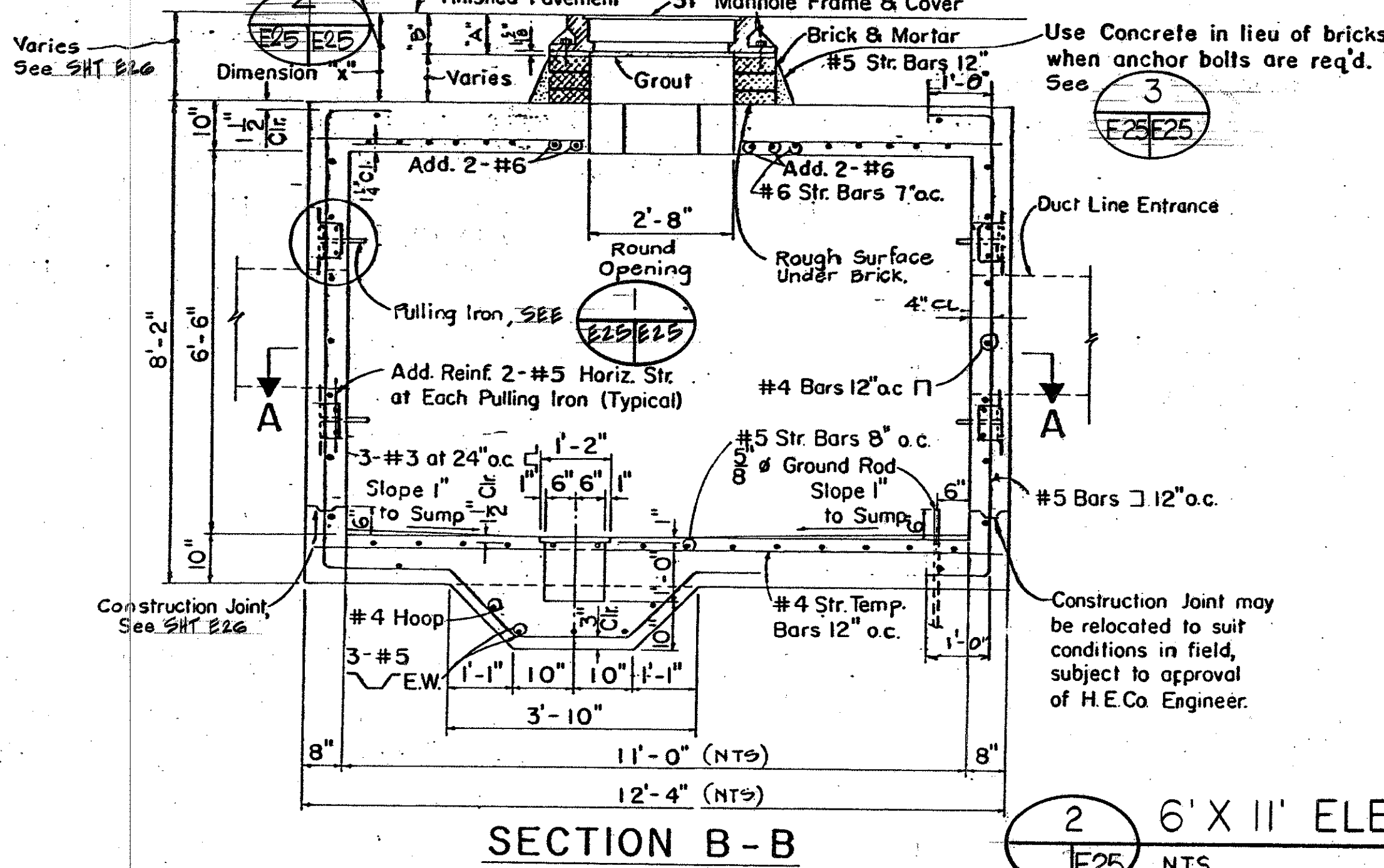
Scale: 3/4" = 1'-0"

NOTE: See table alternate manhole neck detail for dimension A and B.



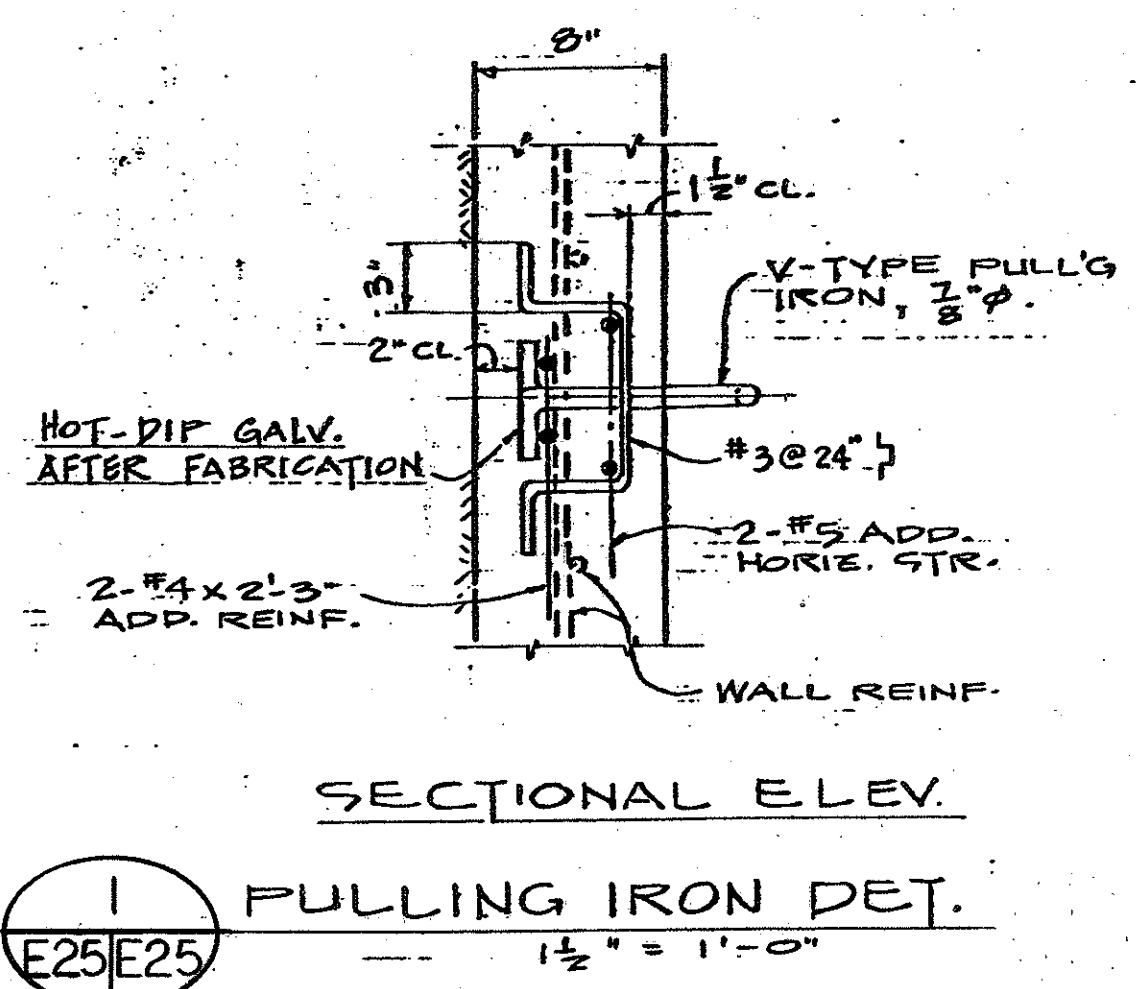
NOTE: Use alternate manhole neck only when dimension "x" is greater than 1'-6".

Provide 4-5/8" Ø x 0'-8" gal. bolts w/sq. nuts & washers (proj. 2 1/2") when M.H. is installed in heavy traffic areas or as directed by the Engineer.



2 6' X 11' ELECTRICAL MANHOLE DETAIL

NTS



ALBERT CHONG ASSOCIATES, INC.
785 Amana St., Suite 401
Honolulu, Hawaii 96814

REGISTERED PROFESSIONAL ENGINEER
No. 1009-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Albert Chong

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

6' X 11' ELECTRICAL MANHOLE DETAILS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. 1-H3-1(69) & (70)

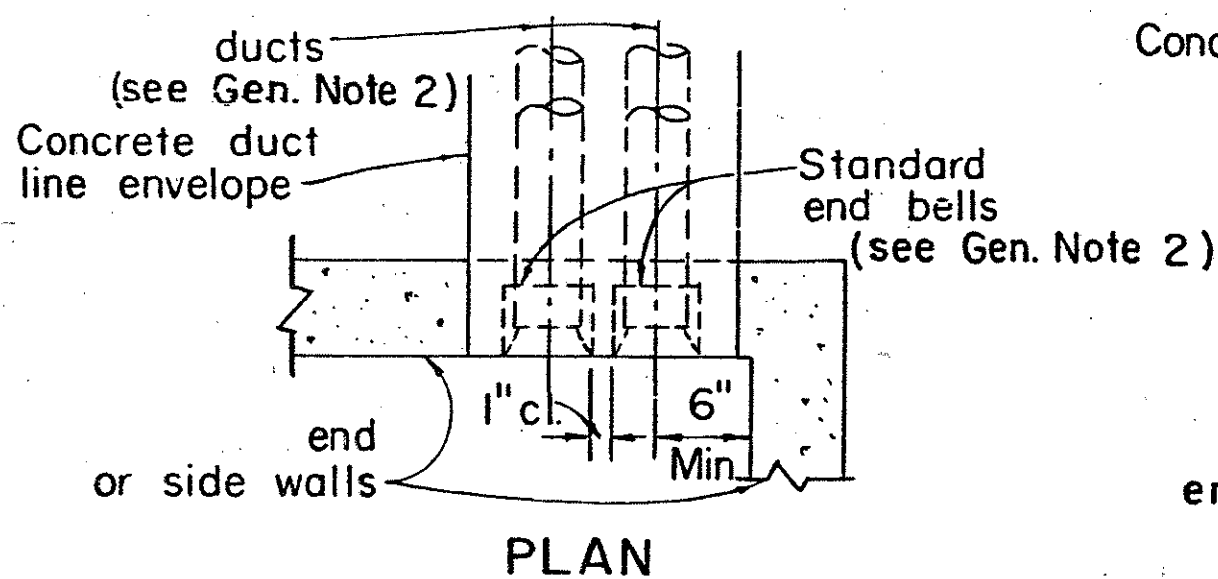
SHEET No. E25 OF 26 SHEETS

DATE	
DESIGNED BY	
CHECKED BY	
QUANTITIES BY	
NO.	

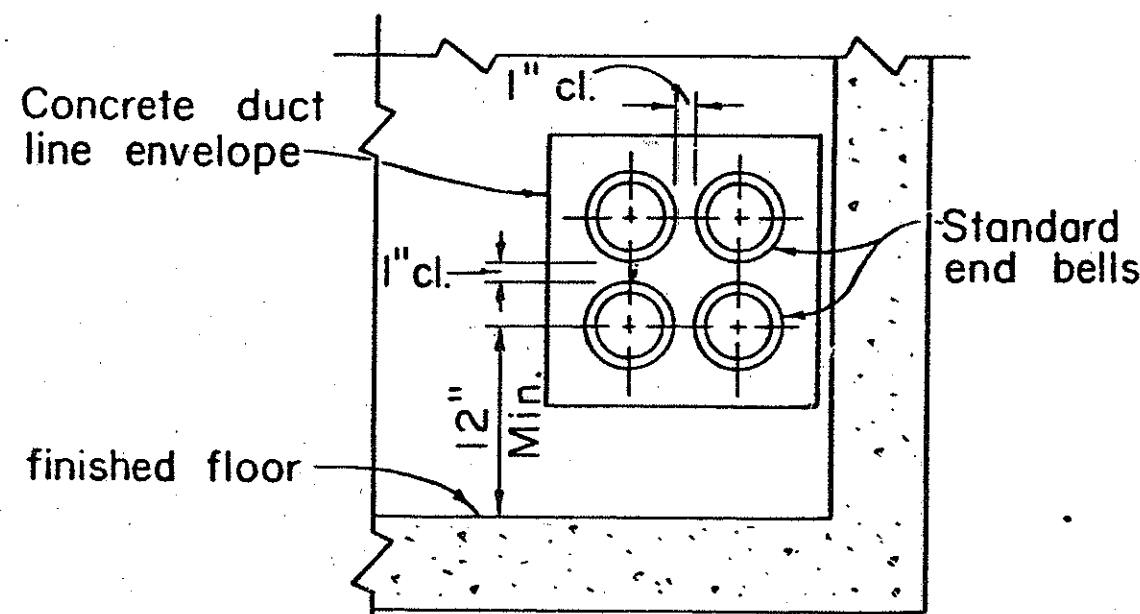
E25

GENERAL NOTES:

1. THE GENERAL CONDITIONS OF HAWAIIAN ELEC. CO. SPECIFICATIONS CS-7202 SHALL GOVERN THROUGHOUT THE ENTIRE WORK.
2. FOR CONSTRUCTION OF UNDERGROUND FACILITIES AND DUCT LINES, REFER TO HECO SPECIFICATIONS CS-7001 AND CS-7003.
3. ALL WORK SHALL BE SUBJECT TO INSPECTION BY THE HAWAIIAN ELECTRIC CO., INC., DIVISION OF ENGINEERING, CITY & COUNTY OF HONOLULU AND/OR DIVISION OF HIGHWAYS, STATE OF HAWAII, WHICHEVER AGENCY HAS AUTHORITY OVER THE WORK.
4. DUCTS: FOR NUMBER, SIZE AND EXACT LOCATION OF DUCT ENTRANCES, REFER TO PROJECT DRAWINGS.
5. PULLING IRONS: FOR NUMBER AND LOCATIONS, REFER TO PROJECT DRAWINGS.
6. HANDHOLE COVERS (REMOVABLE CONC. COVERS) MAXIMUM CLEARANCES BETWEEN REMOVABLE CONCRETE COVERS AND CONCRETE OPENINGS AT THE SUPPORTS MUST BE KEPT. CONCRETE CONTRACTOR SHALL MEASURE CONC. STEEL FRAME AFTER FABRICATION TO OBTAIN PROPER CLEARANCES. ALL COVERS AFTER BEING INSTALLED SHALL BE SEATED FIRMLY AND EVENLY AND FREE FROM ROCKING. ANY VARIATION IN CLEARANCE AND UNEVENNESS SHALL BE CORRECTED TO THE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
7. CONCRETE POURING: NOTIFY THE HAWAIIAN ELECTRIC CO., INC., CONTRACTING & INSPECTION DIVISION, PHONE 543-5668 24 HOURS BEFORE POURING CONCRETE. ALL CONCRETE POURING SHALL BE DONE IN THE PRESENCE OF AN H.E.CO., INC., ENGINEER OR INSPECTOR.
8. ALL MATERIALS SHALL BE NEW AND MANUFACTURED IN THE UNITED STATES OF AMERICA.



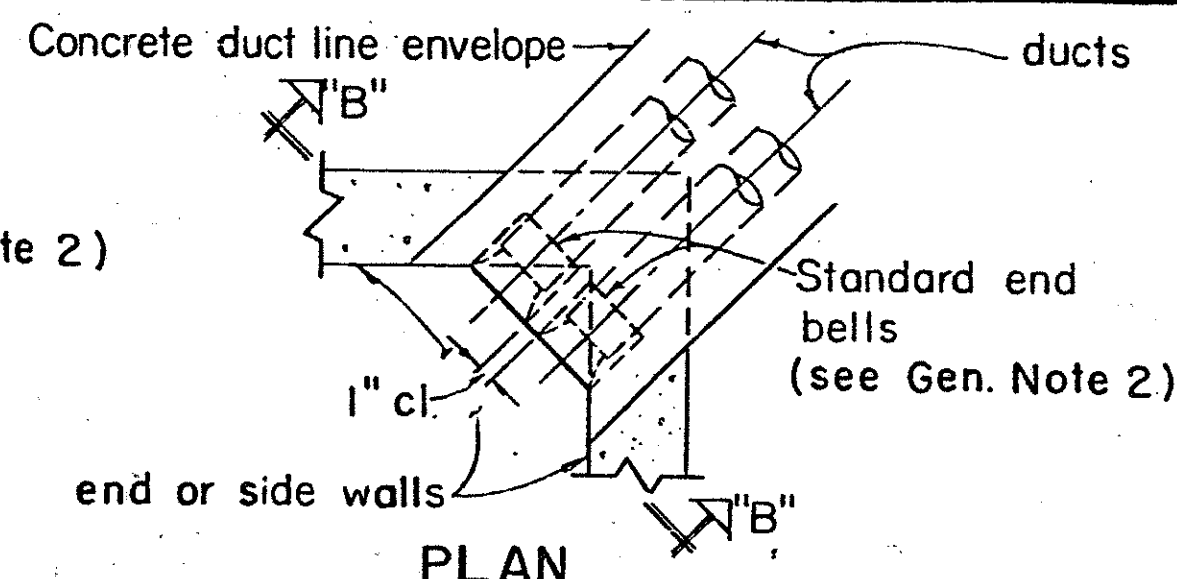
PLAN



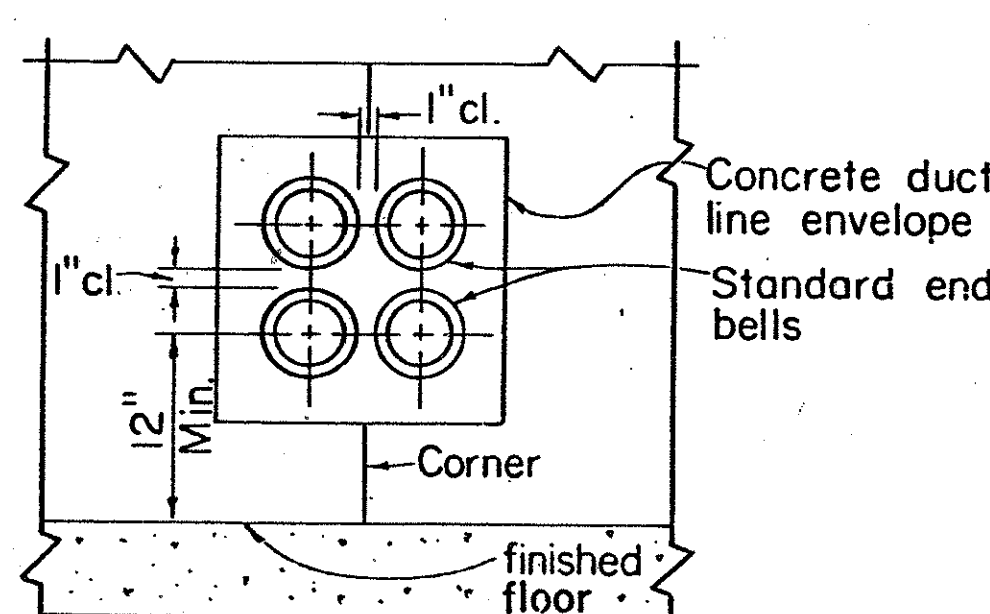
ELEVATION

END OR SIDE ENTRANCE

Scale: 1" = 1'-0"



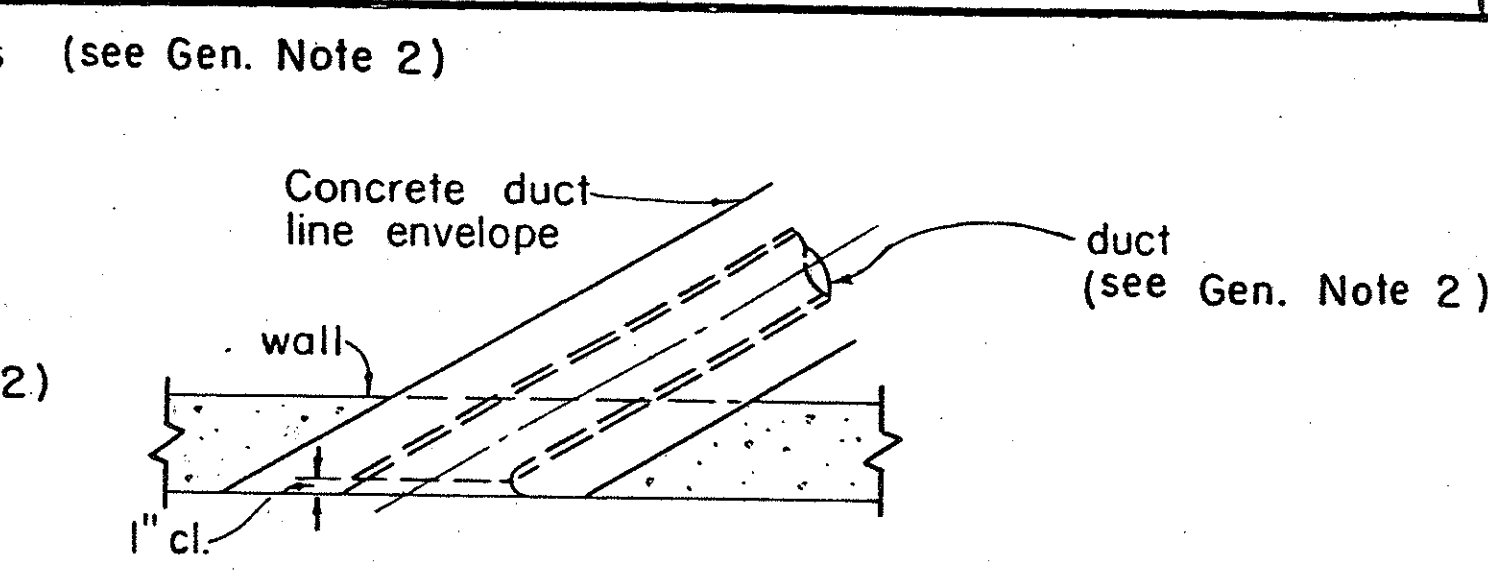
PLAN



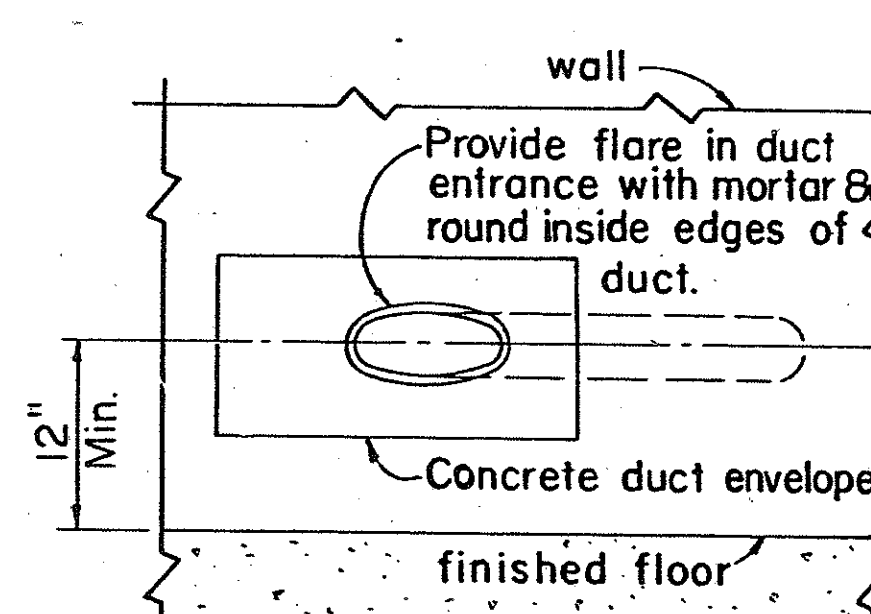
ELEVATION "B-B"

CORNER ENTRANCE

Scale: 1" = 1'-0"



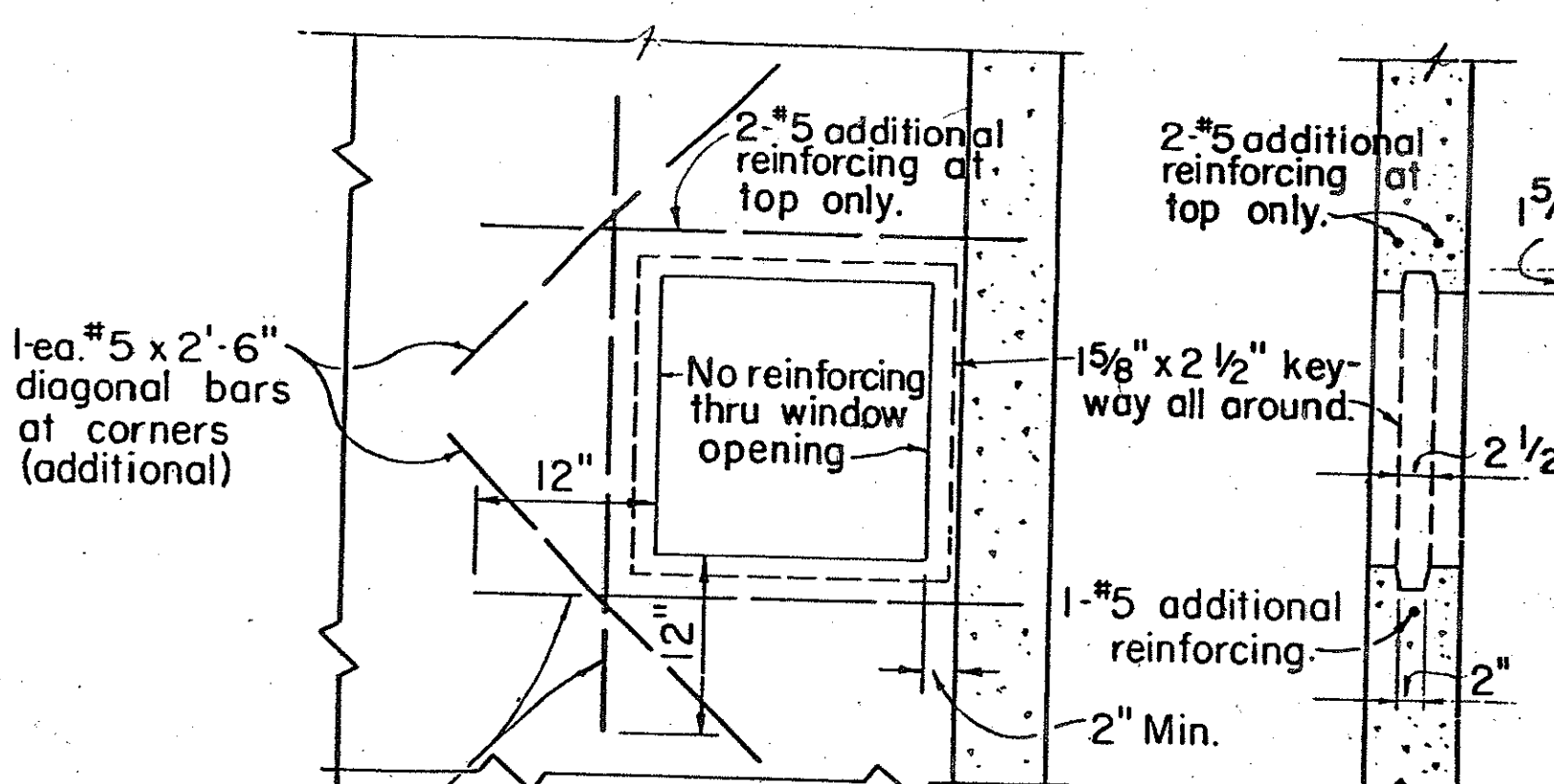
PLAN



ELEVATION

DIAGONAL ENTRANCE

Scale: 1" = 1'-0"



NOTE:

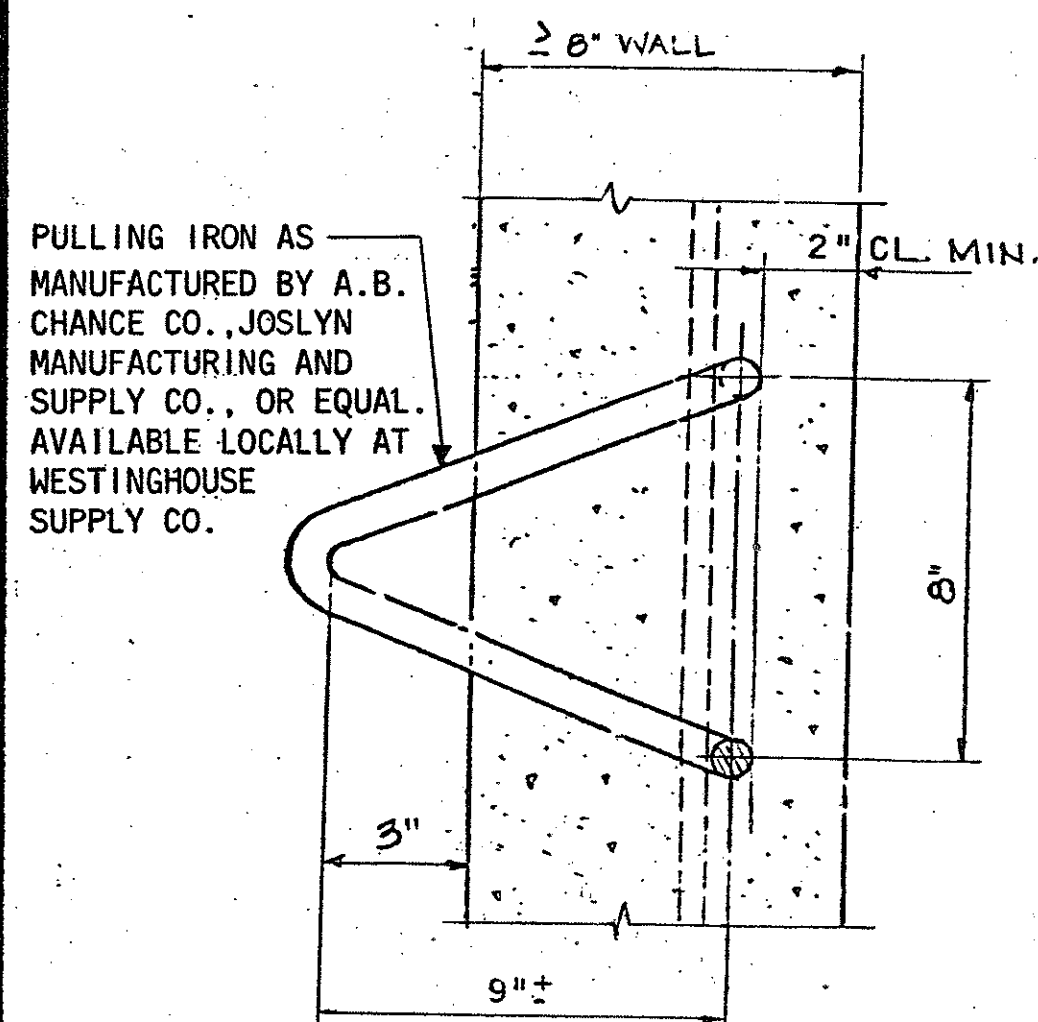
Provide opening for future ductline. Fill opening with bricks and mortar joints as required. (see Gen. Note 4)

ELEVATION

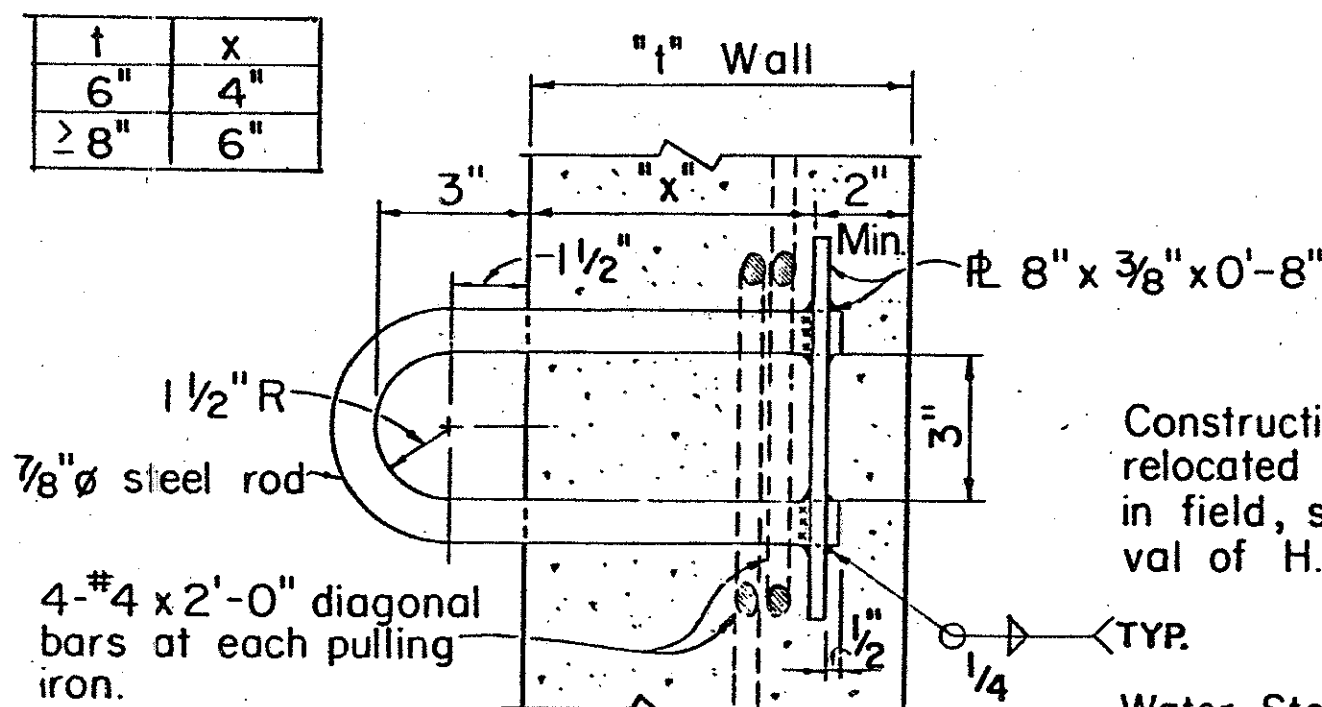
SECTION

KNOCKOUT FOR FUTURE DUCT LINE

Scale: 1" = 1'-0"



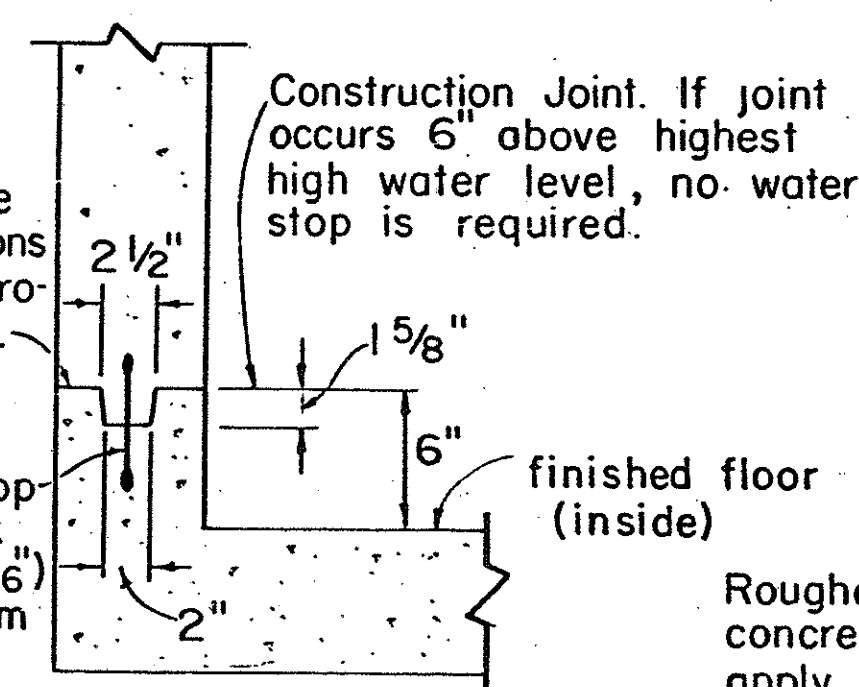
PLAN



SECTION

PULLING IRON FOR 6" & 8" WALL

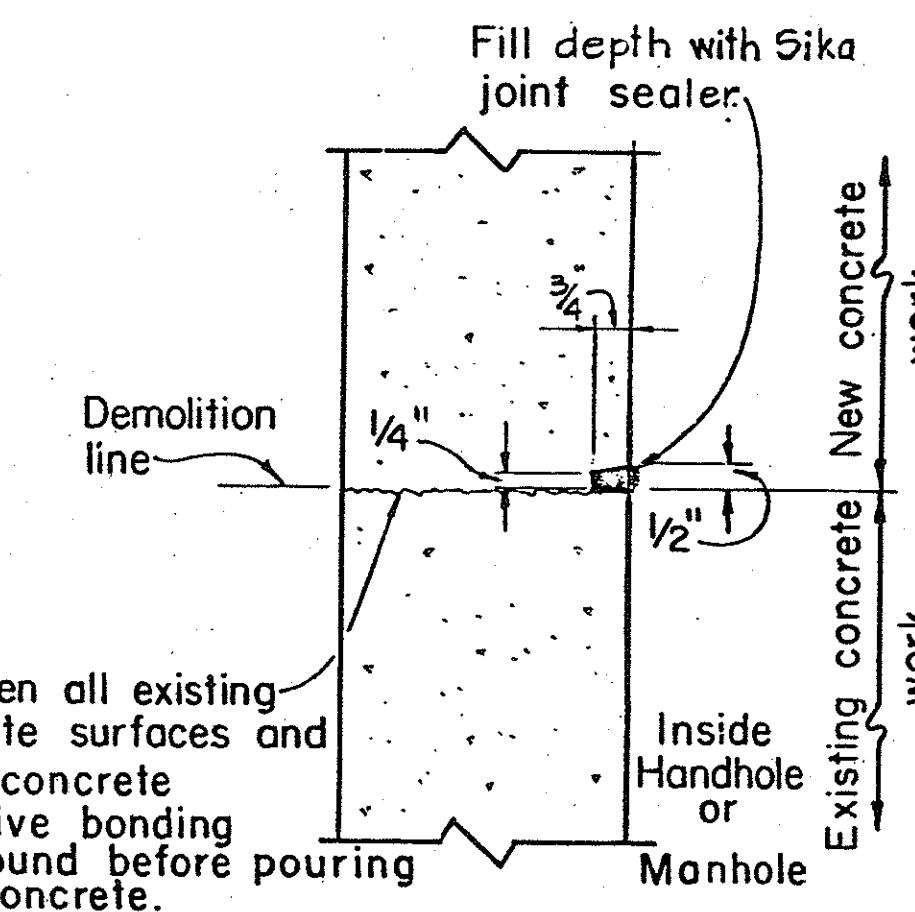
Scale: 3" = 1'-0"



SECTION

TYPICAL CONSTRUCTION JOINT

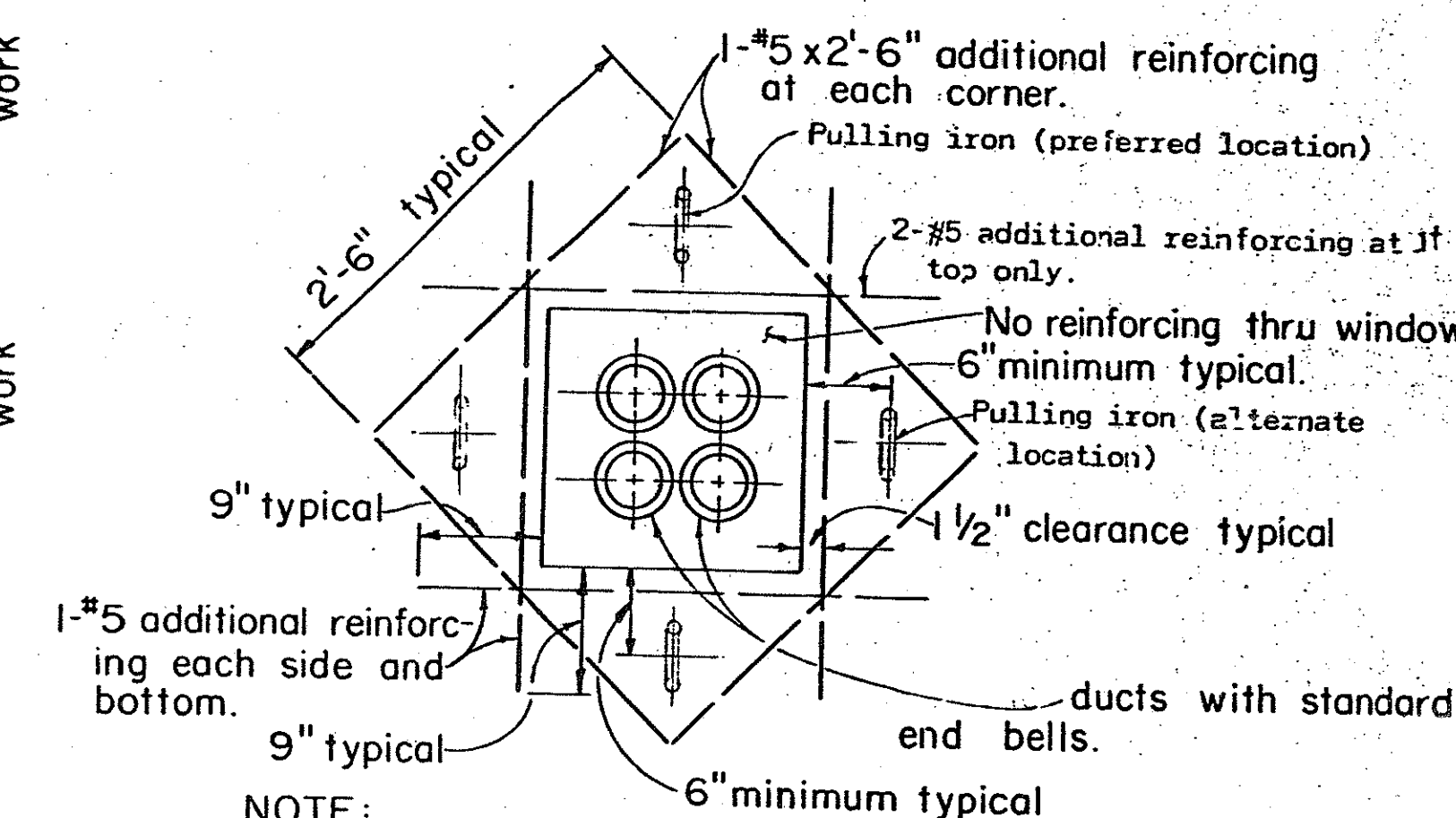
Scale: 1 1/2" = 1'-0"



SECTION

TYPICAL COLD JOINT

Scale: 3" = 1'-0"



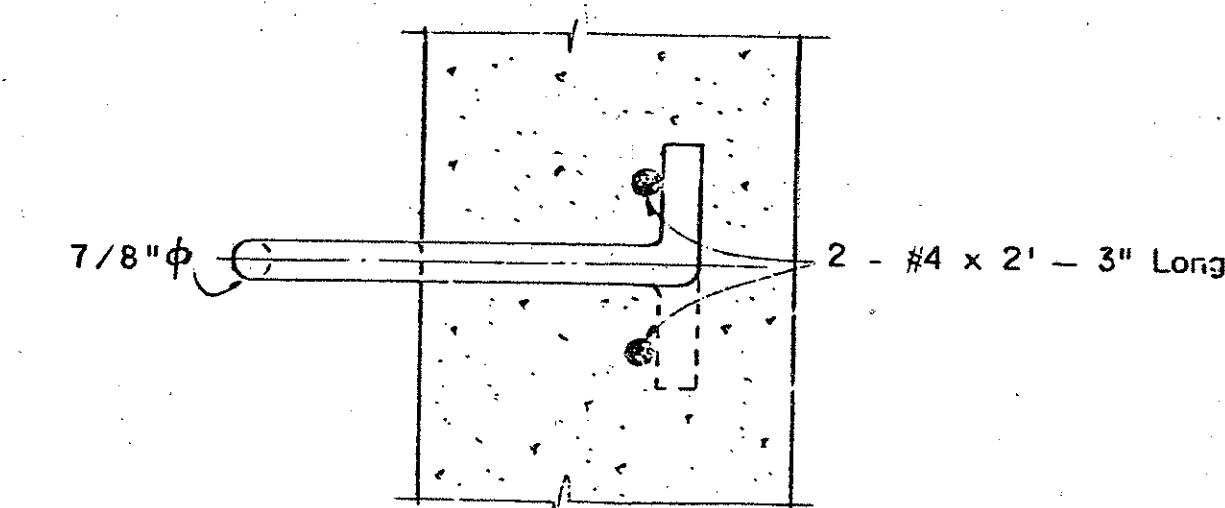
NOTE:

Generally 2 pulling irons are required and located on opposite wall of each duct window unless otherwise shown or noted. H.E.Co. Engineer shall determine number required.

ELEVATION

TYPICAL DUCT WINDOW

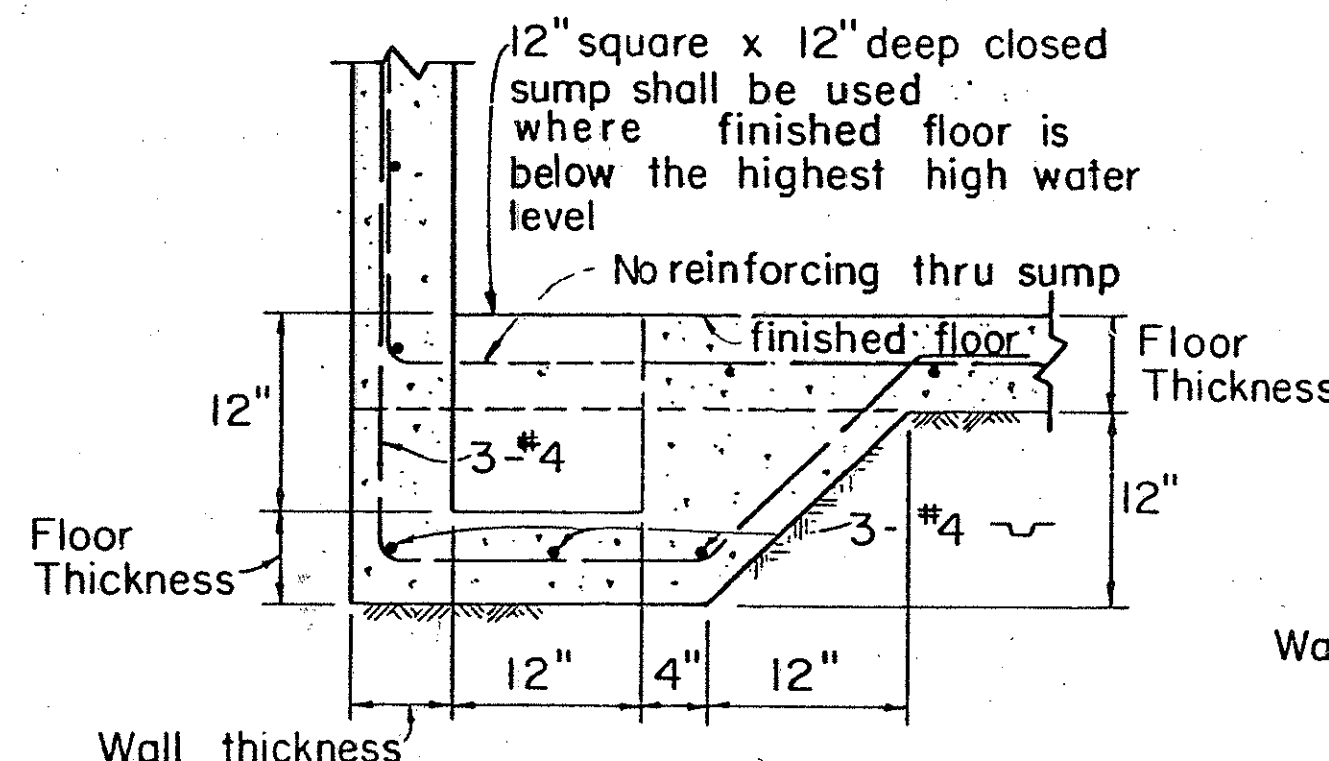
Scale: 1" = 1'-0"



SECTION

PULLING IRON FOR ≥ 8" WALL

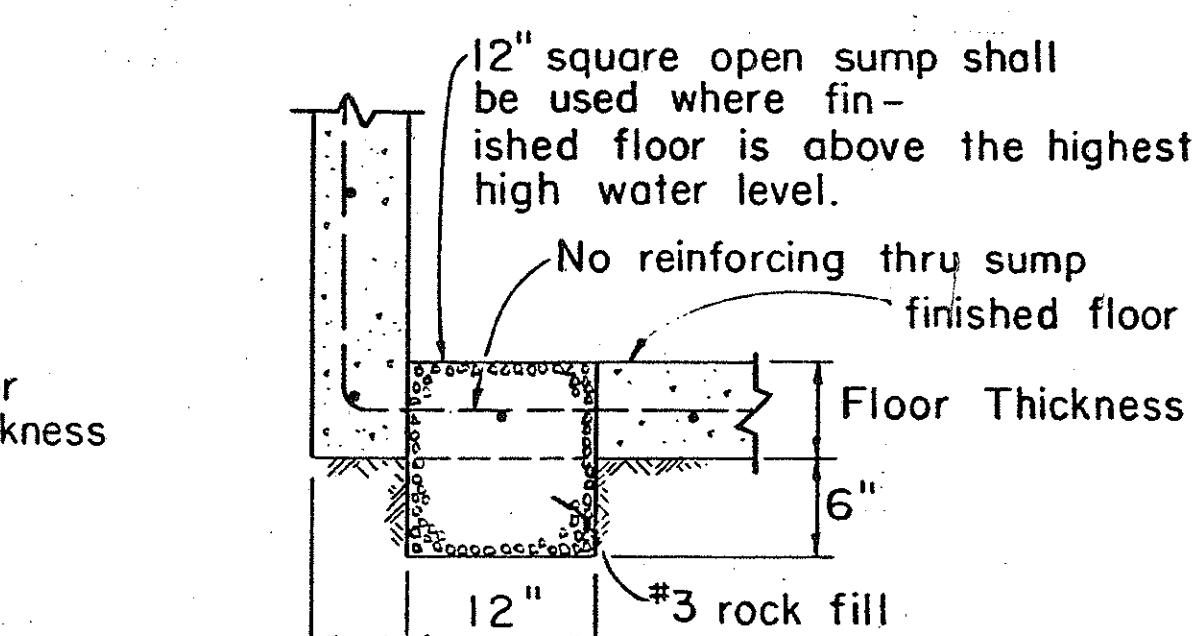
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SECTION

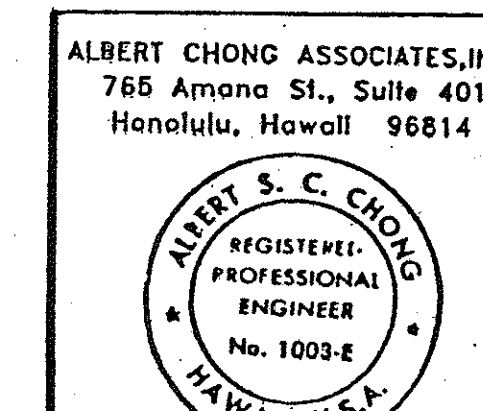
CLOSED SUMP

Scale: 1" = 1'-0"



SECTION

Scale: 1" = 1'-0"



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Albert S. C. Chong

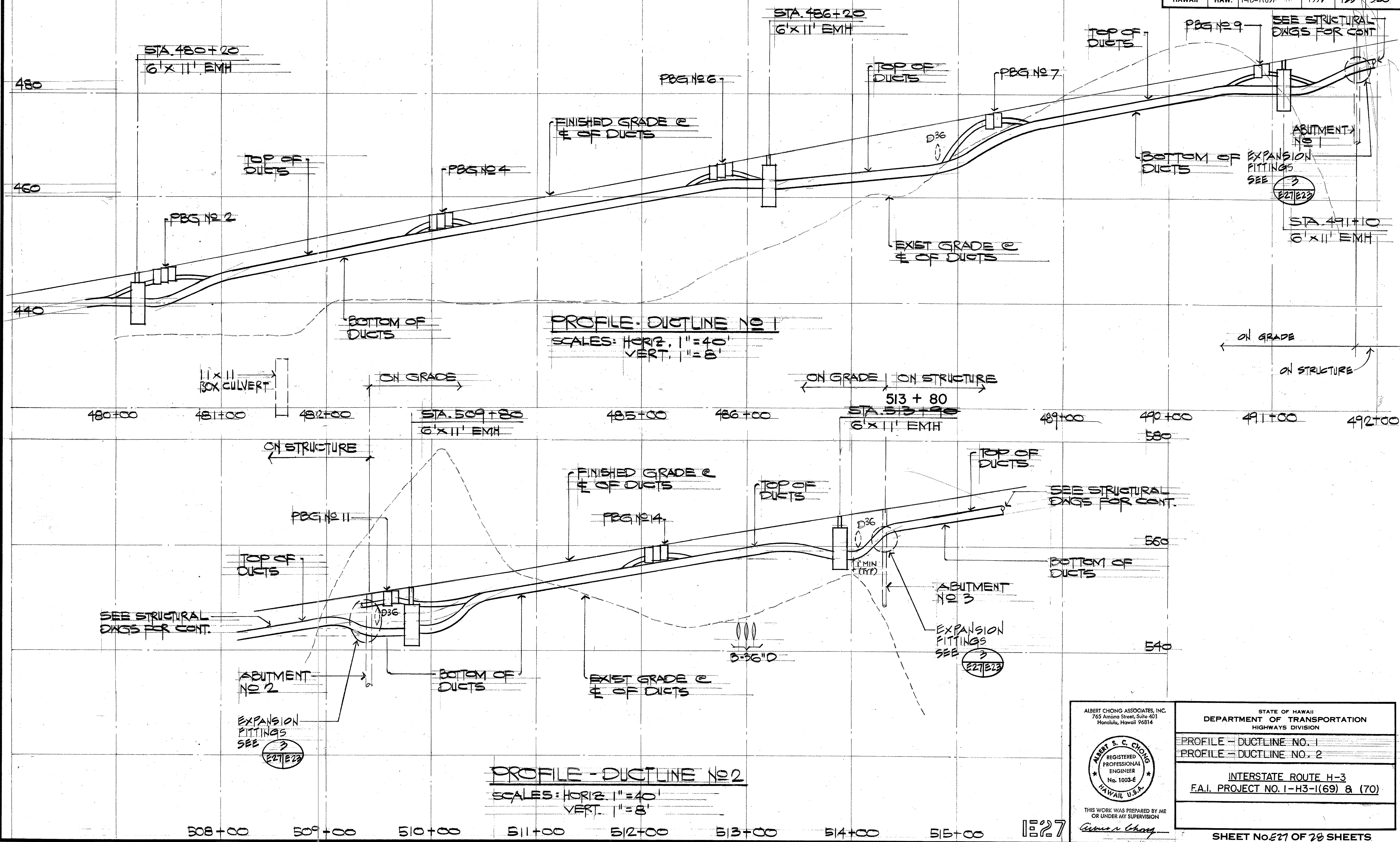
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETAILS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-(169) & (70)

SHEET No. 226 OF 228 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1997	125	325



ORIGINAL PLAN	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NO.	

ALBERT CHONG ASSOCIATES, INC.
 765 Amana Street, Suite 401
 Honolulu, Hawaii 96814

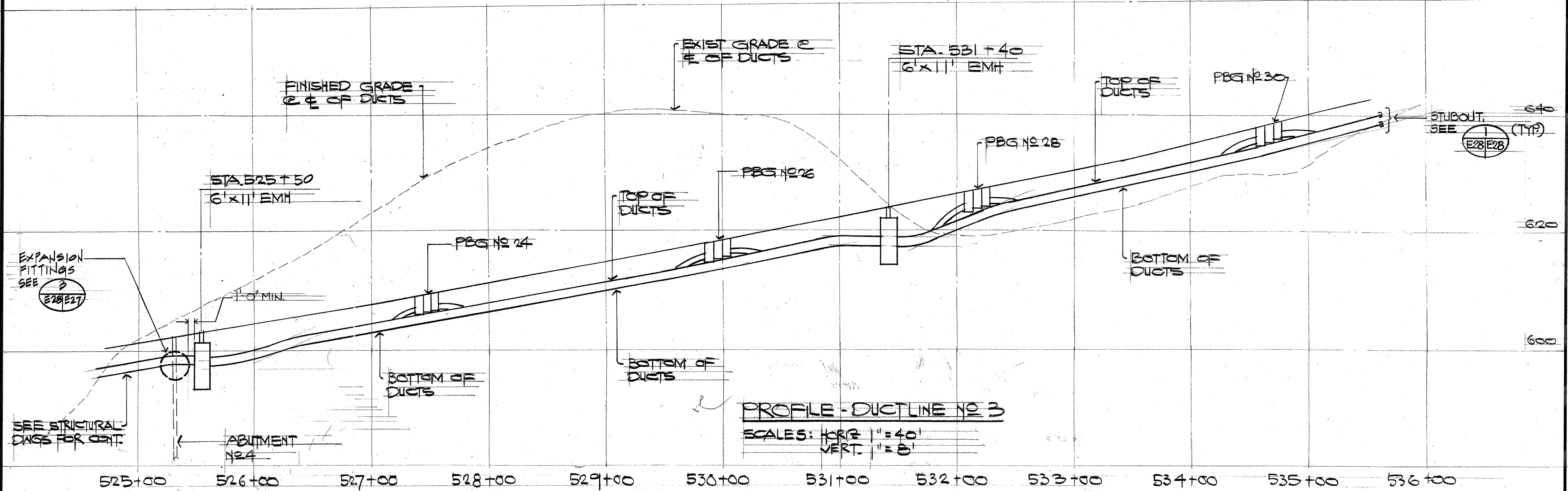
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

PROFILE - DUCTLINE NO. 1
 PROFILE - DUCTLINE NO. 2

INTERSTATE ROUTE H-3
 F.A.I. PROJECT NO. 1-H3-1(69) & (70)

SHEET No. 125 OF 28 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H3-1(69)	1991	126	325



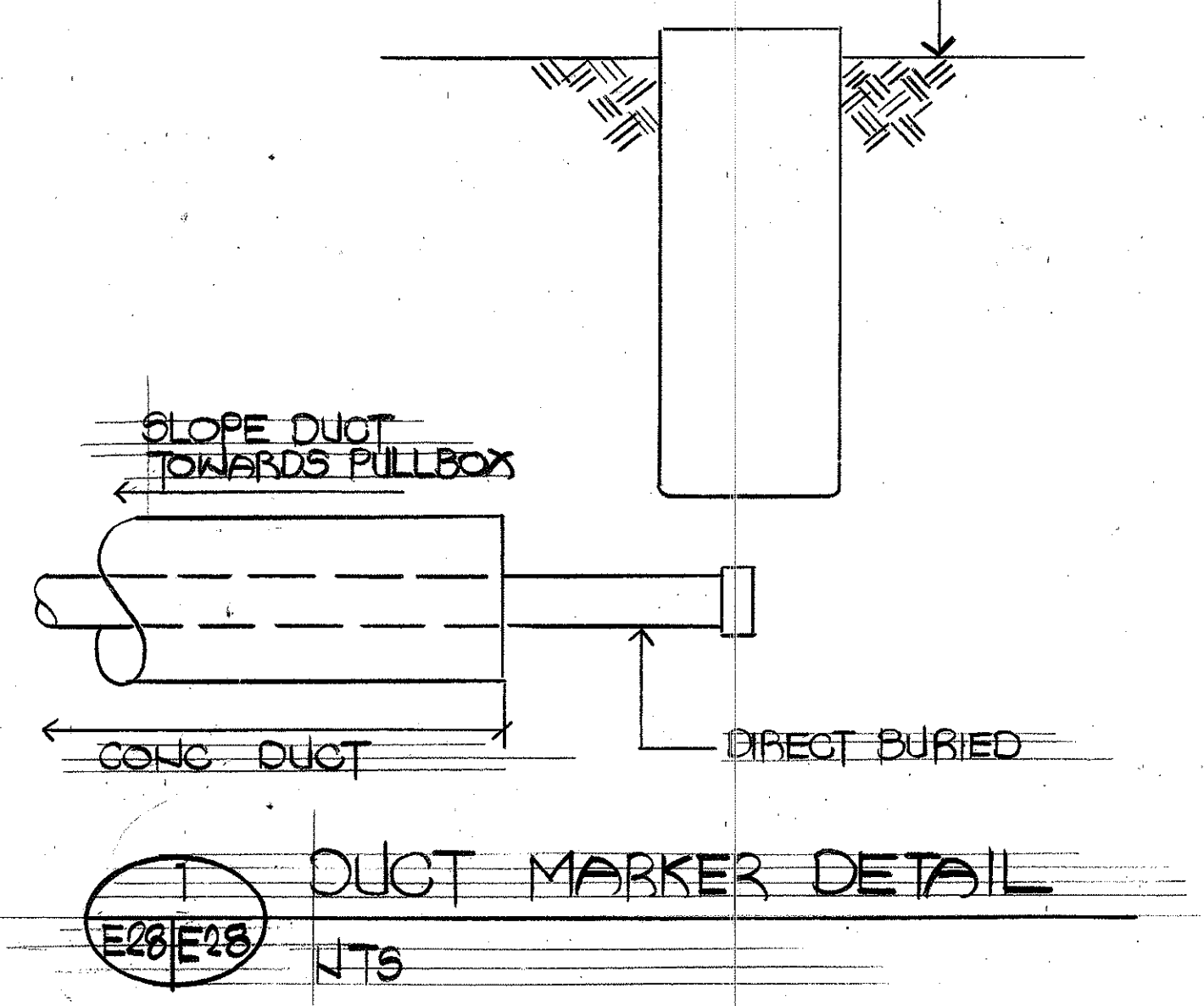
LETTER INSCRIBED ON TOP OF MARKER, 3" HIGH, 1/4" WIDE STROKE, 1/8" DEEP, TYPE OF DUCT:

"E" ELECTRICAL
 "C" COMMUNICATION OR
 "T" TELEPHONE

PLAN

NTS

FIN. GPD.



SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
NOTED BY	
CHECKED BY	

7-15-94	ADDED STUBOUT INFORMATION AND DET.
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
PROFILE - DUCTLINE NO. 3	
INTERSTATE ROUTE H-3 F.A.I. PROJECT NO. 1-H3-1(69) & (70)	
SHEET NO. E28 OF 28 SHEETS	

ALBERT CHONG ASSOCIATES, INC.
 765 Amana Street, Suite 401
 Honolulu, Hawaii 96814

ALBERT S. C. CHONG
 REGISTERED PROFESSIONAL ENGINEER
 No. 3003-E
 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY A/E OR UNDER MY SUPERVISION

Albert S. Chong

E28