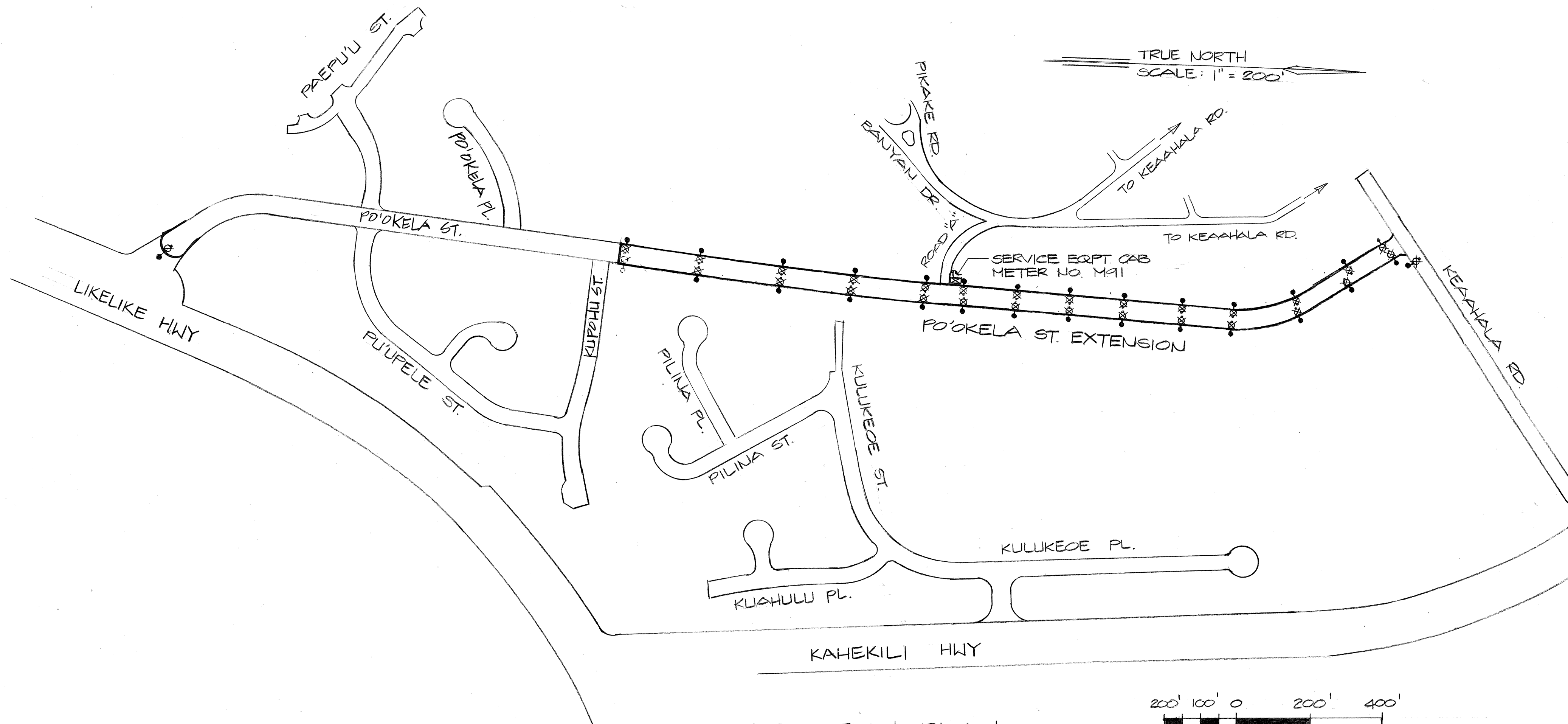
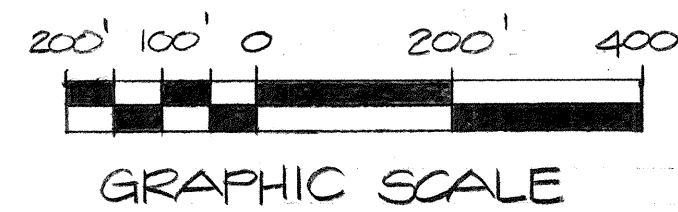


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-05-91	1991	44	49



LOCATION PLAN

SCALE: 1" = 200' - 0"
TMK: 4-5-23:1



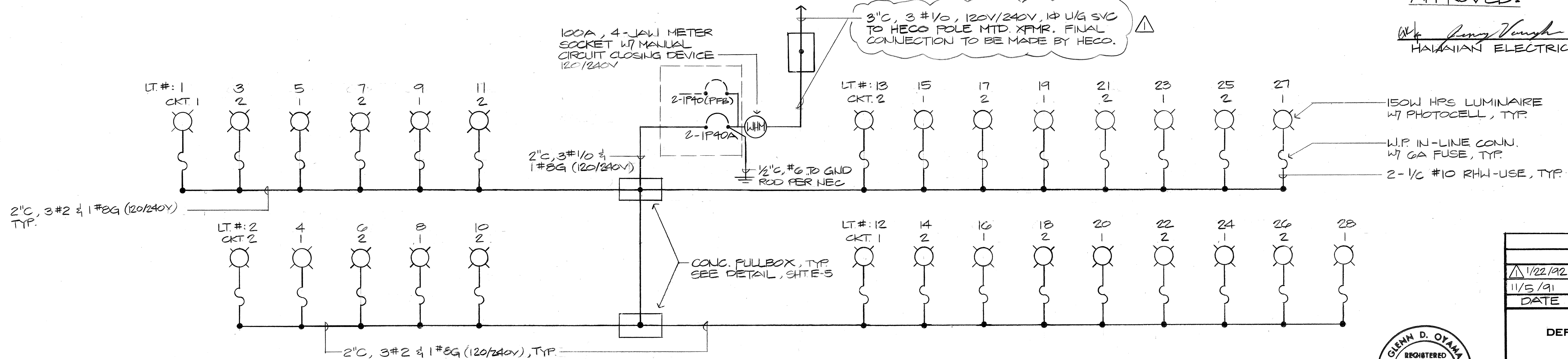
ELECTRICAL SYMBOLS

EXST	NEW	DESCRIPTION
---	•	STREET LIGHT, 150W HPS, 120V
---	•	STREET LIGHT, 100W HPS, 120V
---	□	CONC. PULLBOX (SEE DETAIL, SHT E-5)
---	---	U/G DUCTLINE (ST. LIGHT)
---	---	U/G DUCTLINE (ELEC.)
---	---	U/G DUCTLINE (TEL)
---	---	U/G DUCTLINE (CATV)
---	---	OVERHEAD LINE
OPF	•	POWER POLE
E---	---	GUY WIRE
---	---	STREET LIGHT I.D. TAG (SEE DETAIL, SHT E-4)
---	---	SERVICE EQUIPMENT CABINET (ST. LIGHTS)
---	---	STUB-OUT CONDUIT W/ NYLON PULL-STRING

APPROVED:

[Signature]
HAWAIIAN ELECTRIC

1/23/92
DATE

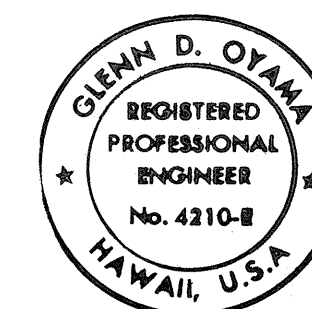


ONE-LINE DIAGRAM

APPROVED

[Signature]
ELECTRICAL AND MAINTENANCE
SVCS. DIV., DTS
DATE: 1/14/92

THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION
[Signature]
NAKAMURA, OTAMA & ASSOC., INC.
CONSULTING ENGINEERS

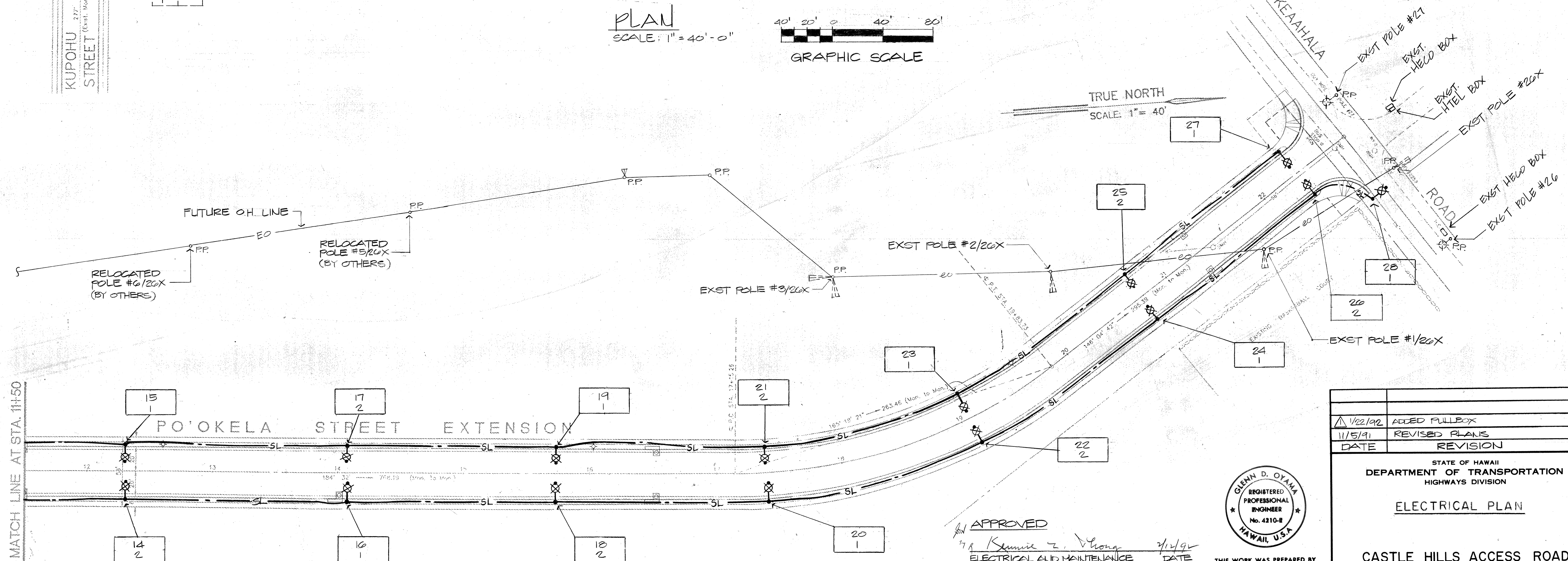


1/22/92	REVISED DUCT SIZE
11/5/91	REV. PLAN, SYMBOLS, DIAGRAM
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
LOCATION PLAN, SYMBOL LIST ONE-LINE DIAGRAM	
CASTLE HILLS ACCESS ROAD PROJ. NO. HWY-0-05-91	
SCALE: AS SHOWN	DATE: JUNE 1991
SHEET No. E-1 OF 6 SHEETS	

C.O. ADD. 44

ORIGINAL PLAN	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NO.	

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



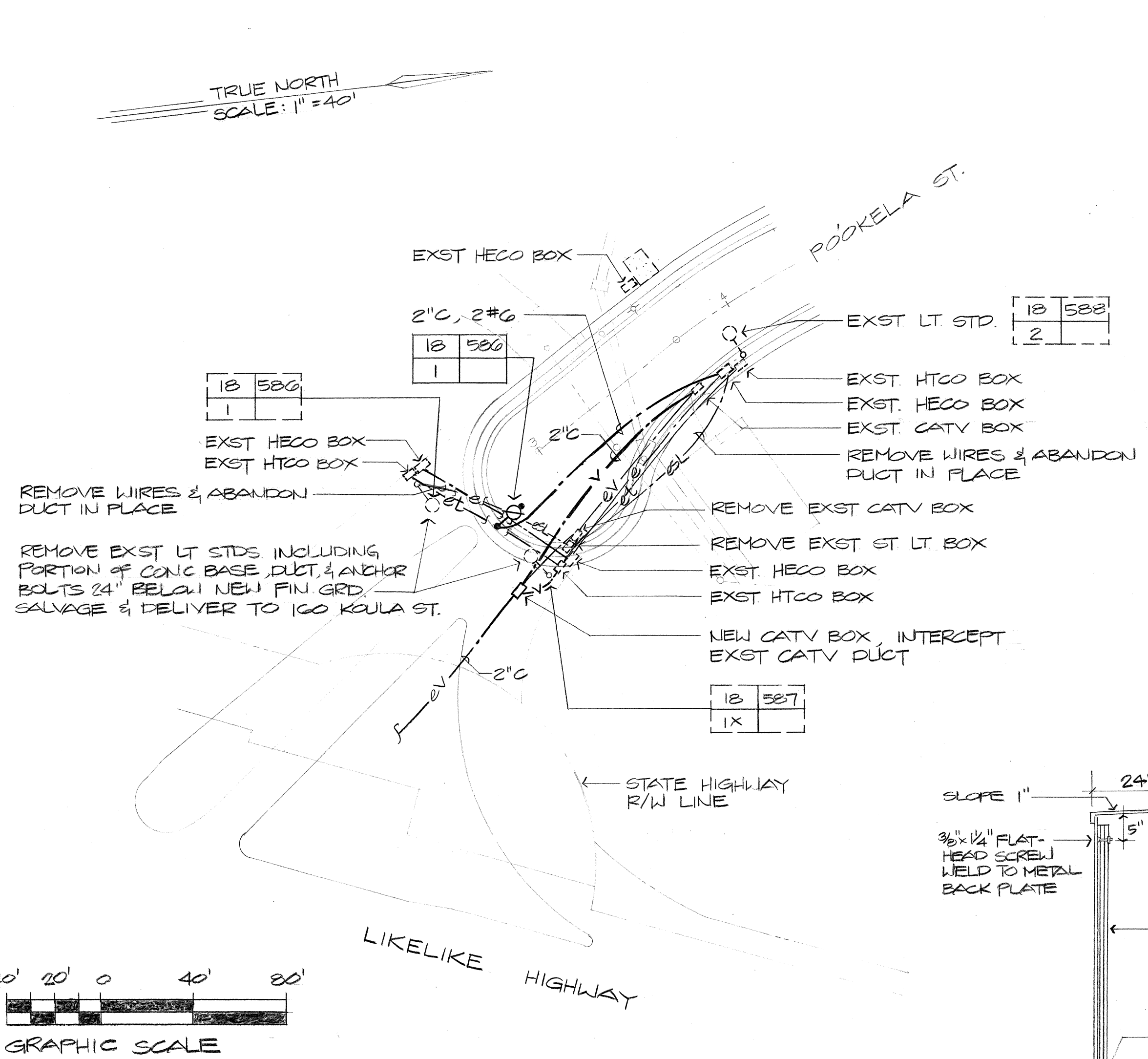
40' 20' 0 40' 80'

GRAPHIC SCALE

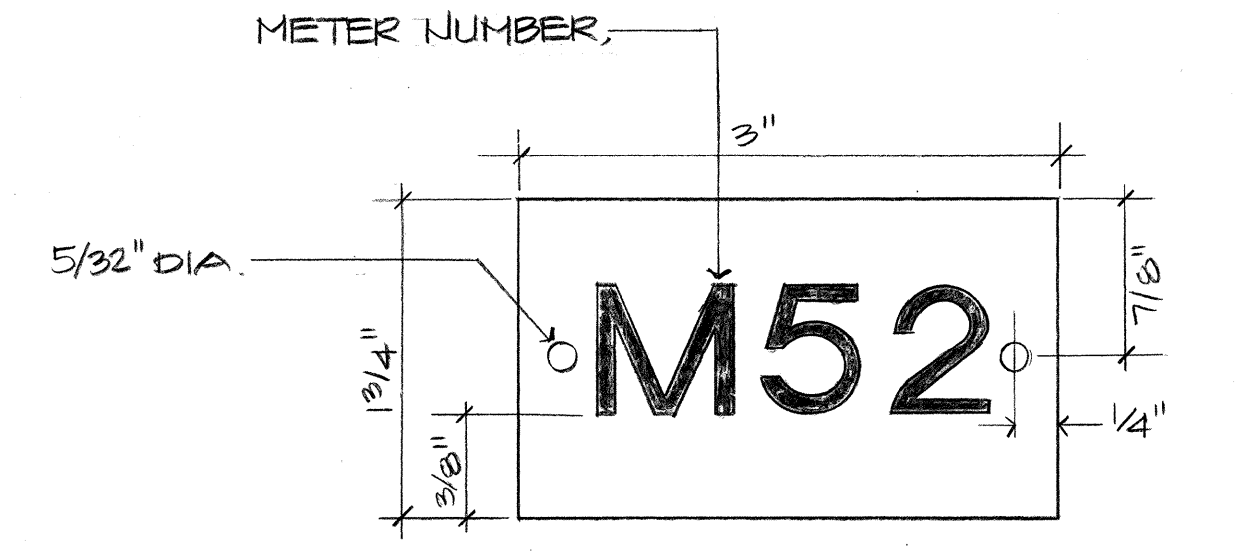
SHEET No.E-2 OF 6 SHEETS

C.O. ADD. 45

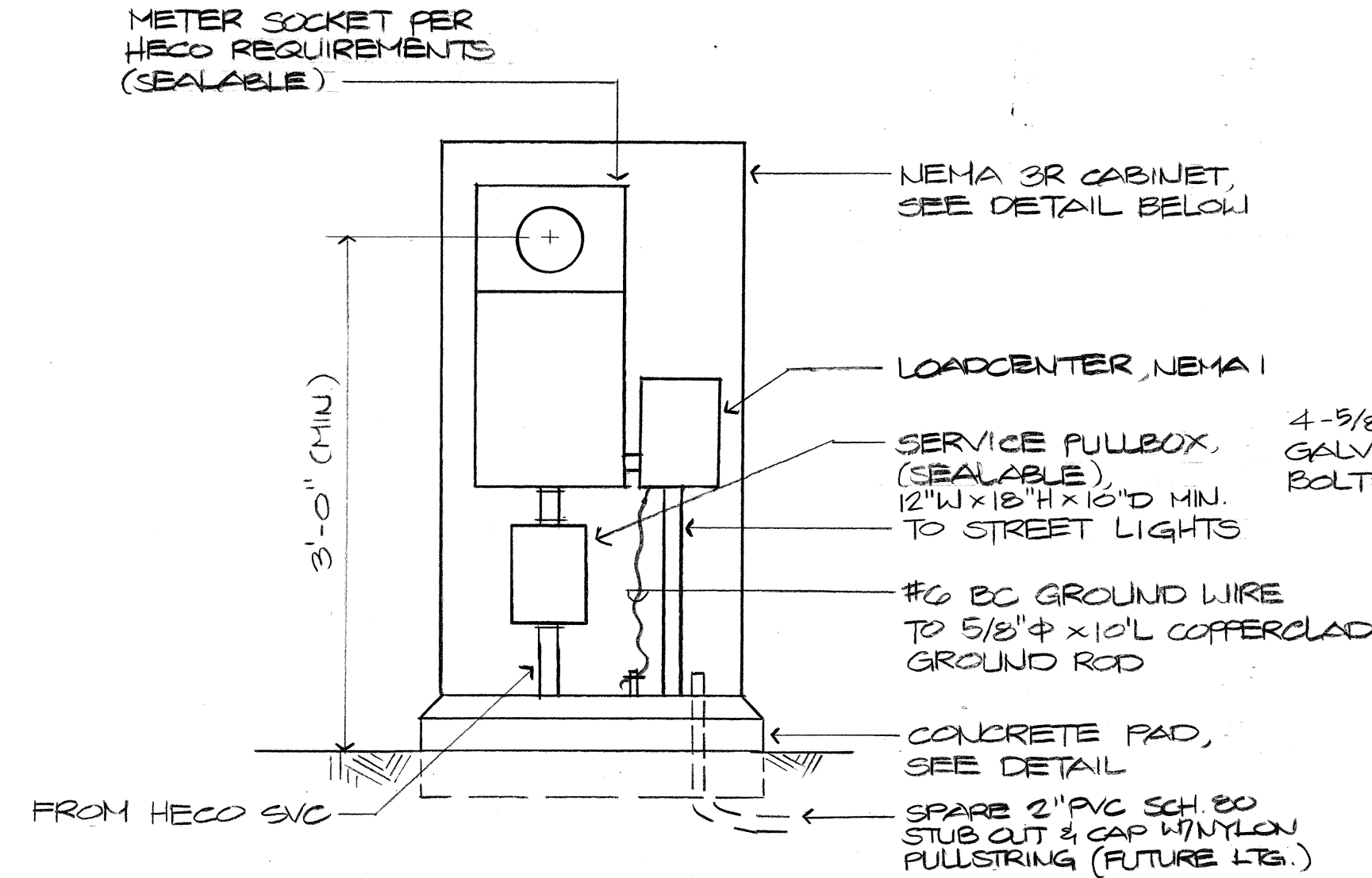
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-05-91	1991	46	49



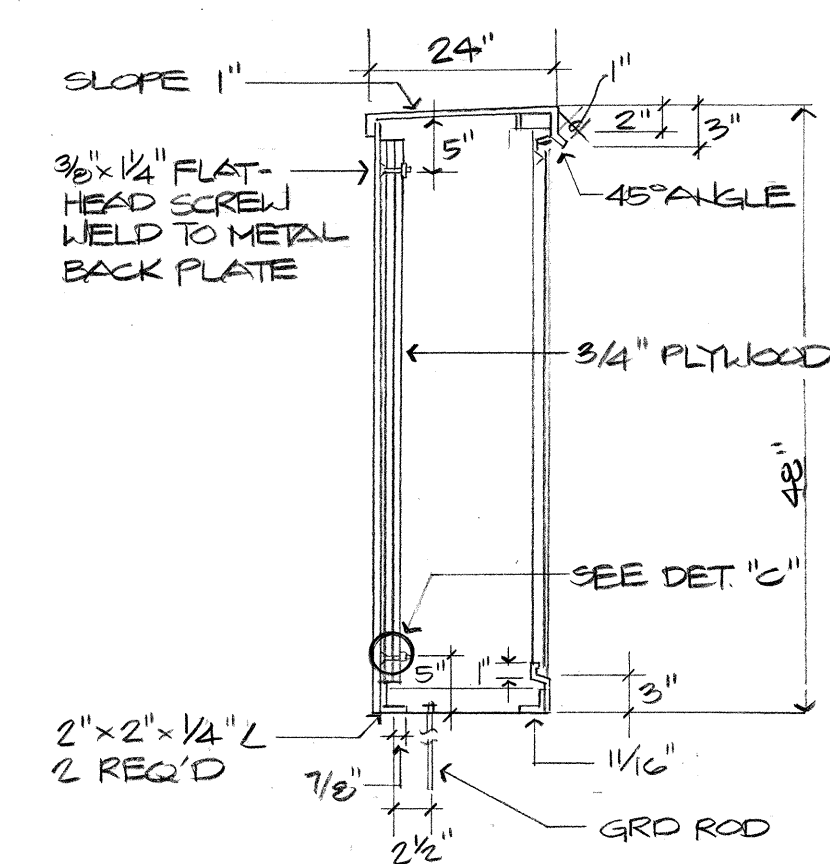
PLAN
SCALE: 1" = 40'-0"
NOTE:
ADJUST EXST BOXES TO MATCH NEW FINISHED GRADE



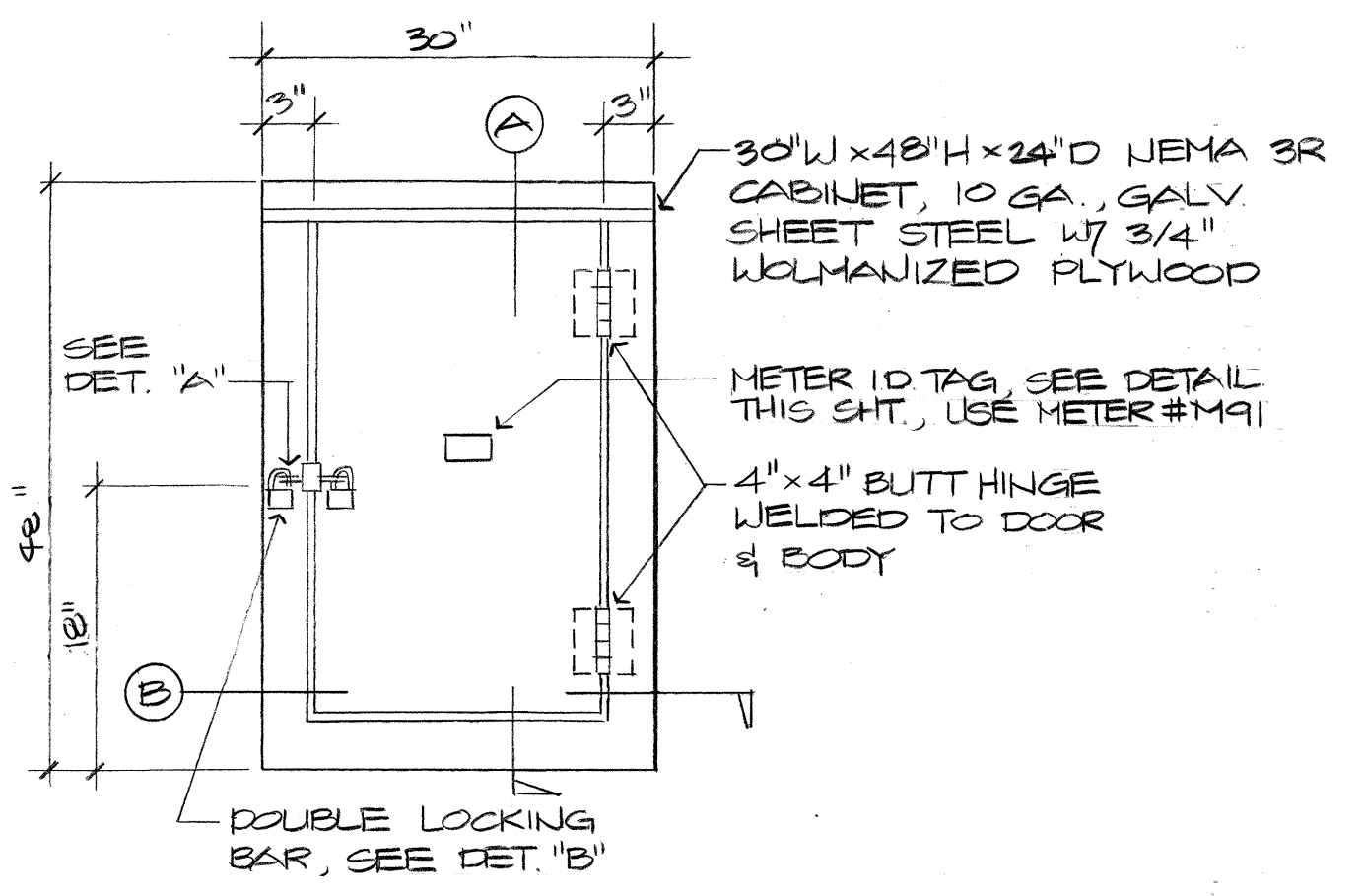
METER ENCLOSURE I.D. TAG DETAIL
N.T.S.
NOTES:
1. USE 2 PLY LAMINATED FLEXIBLE PLASTIC, BLACK-WHITE THICKNESS: BLACK CAP SHEET - 0.010", WHITE BASE SHEET - 0.052"
2. NUMBER SIZE SHALL BE 1" HIGH & ENGRAVED 1/8" WIDE, WHITE IN COLOR (NUMBER AS REQ'D)
3. ATTACH TO METER ENCLOSURE W/ 1/2" RD HEAD BOLTS & NUTS OR #8 STAINLESS STEEL DRIVE SCREW
4. NUMBERS ARE INSCRIBED BY CUTTING THROUGH "BLACK" CAP SHEET TO EXPOSE "WHITE LETTERS"



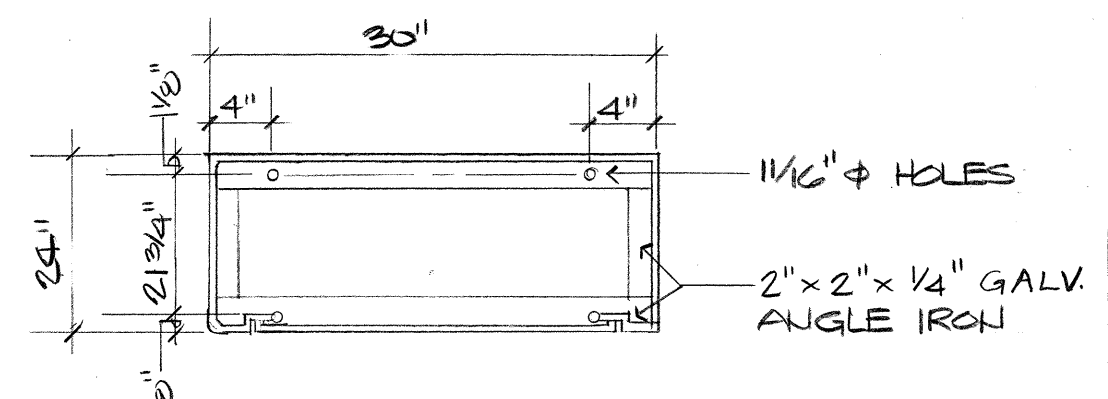
SERVICE EQUIPMENT ELEVATION
N.T.S.
NOTES: 1. SUBMIT SHOP DRAWING FOR APPROVAL.
2. CABINET TO BE PRIMED W/ ONE COAT SHOP PRIMER & FINISHED W/ 2 COATS ACRYLIC ENAMEL, COLOR AS SELECTED BY ENGINEER.
3. PADLOCKS: ONE FURNISHED BY HECO, 1 FURNISHED BY OWNER - BRASS CORBIN SESAME COMBINATION



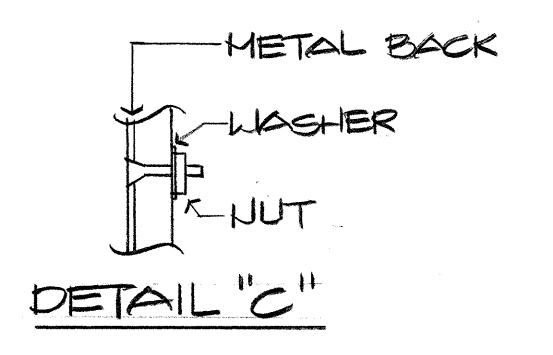
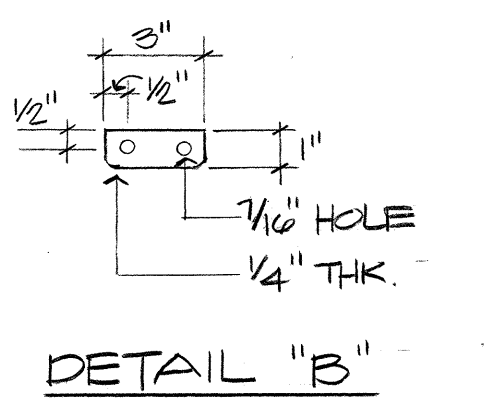
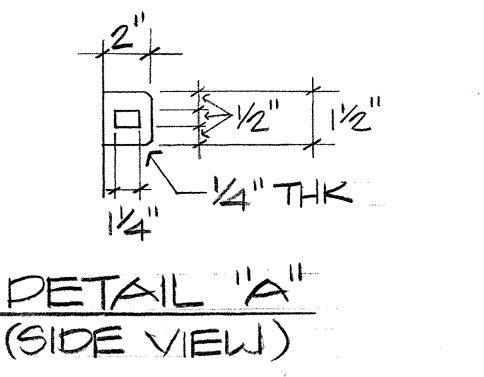
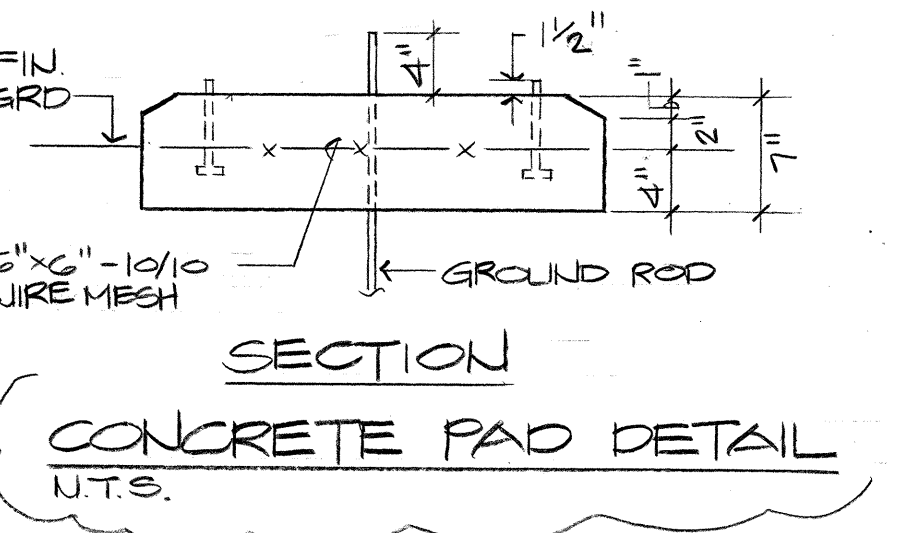
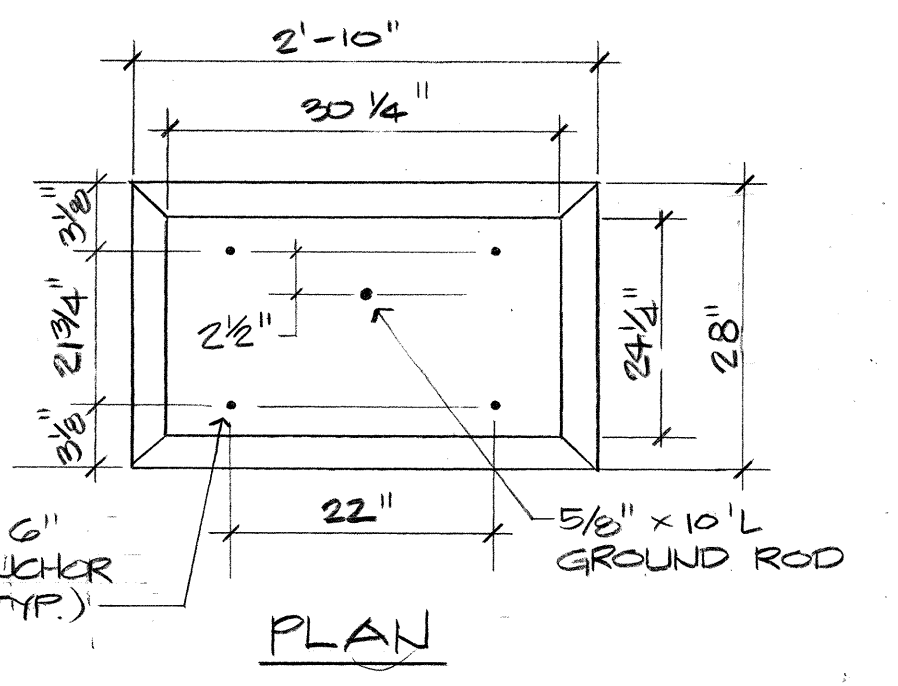
SECTION "A"
N.T.S.



NEMA 3R CABINET DETAIL
N.T.S.



SECTION "B"
N.T.S.



STREET LIGHTING NOTES
(CONTINUED FROM SHT. E-4)

- CONTRACTOR SHALL MEASURE AND RECORD THE GROUND RESISTANCE AT EACH STANDARD W/ NO EXTERNAL GND WIRES CONNECTED TO THE GND ROD. CONTRACTOR SHALL SCHEDULE MEASUREMENTS 48 HOURS IN ADVANCE AND SHALL NOT PROCEED W/ MEASUREMENTS UNTIL APPROVAL IS GRANTED. SCHEDULES ARE SUBJECT TO CHANGE DEPENDING UPON WEATHER CONDITIONS. REPORTS SHALL INCLUDE NAME OF PERSONNEL CONDUCTING THE TEST, METER TYPE & SERIAL NUMBER, DATE OF TEST & SOIL CONDITIONS. TEST RESULTS SHALL BE CERTIFIED BY THE CONTRACTOR AND SUBMITTED TO ELEC. & MAINTENANCE SERVICES DIV., DEPT. OF TRANSPORTATION SERVICES.
- CONTRACTOR SHALL NOT BACKFILL TRENCHES UNTIL APPROVAL HAS BEEN GRANTED BY THE STREET LIGHT INSPECTOR
- CONTRACTOR SHALL INFORM THE STREET LIGHT INSPECTOR OF ALL CONCRETE POURS AT LEAST 24 HOURS IN ADVANCE. CONCRETE SHALL NOT BE POURED UNTIL APPROVAL HAS BEEN GRANTED BY THE STREET LIGHT INSPECTOR.

APPROVED
GUY J. VAN DER BEEK
HAWAIIAN ELECTRIC
1/23/92
DATE

APPROVED
GUY J. VAN DER BEEK
ELECTRICAL AND MAINTENANCE
SVCS. DIV., DTS
7/12/92
DATE



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
GLENN D. OYAMA
HAWAIIAN ELECTRIC
CONSULTING ENGINEERS

1/22/92	REVISED DETAILS
11/5/91	REVISED DETAIL
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**ELECTRICAL PLAN
DETAILS**

CASTLE HILLS ACCESS ROAD
PROJ. NO. HWY-0-05-91

SCALE: AS SHOWN DATE: JUNE 1991

SHEET No. E-30F OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-05-91	1991	47	49

STREET LIGHTING NOTES:

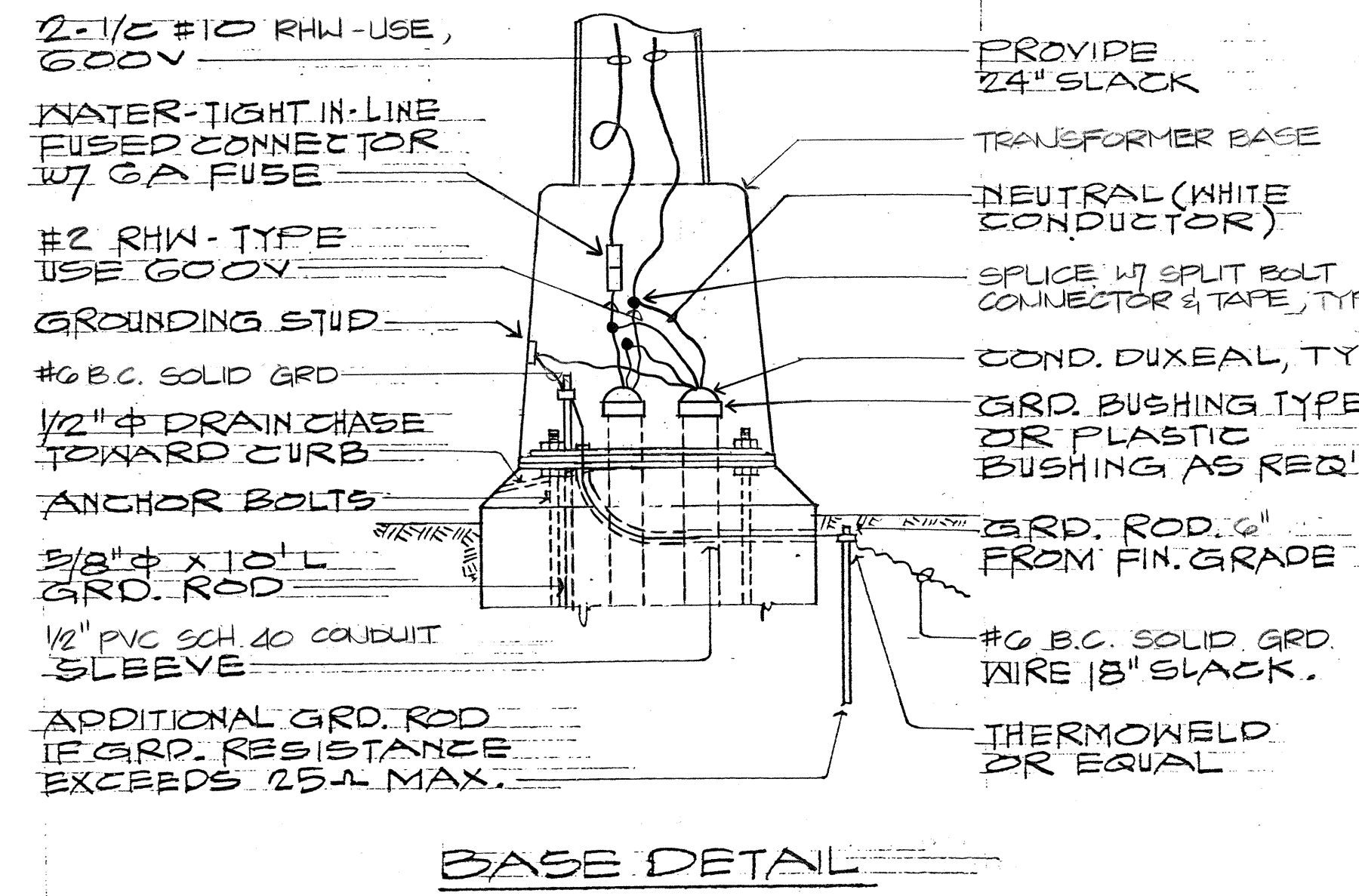
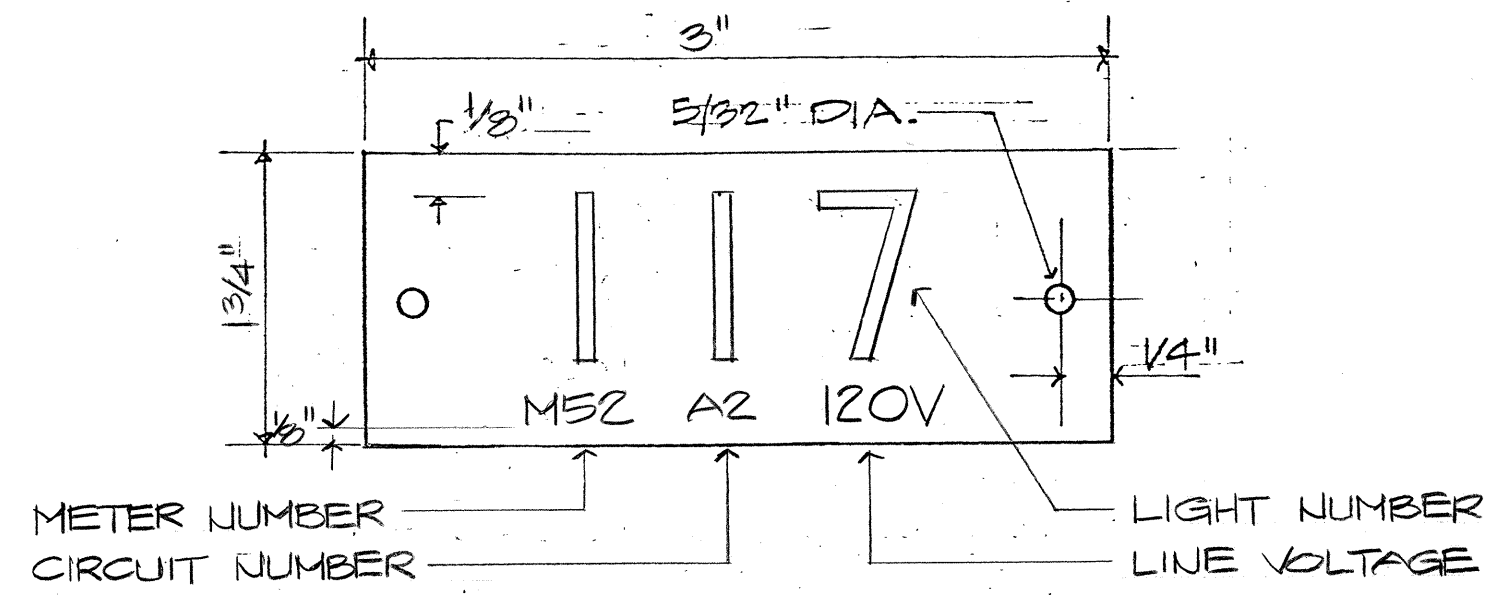
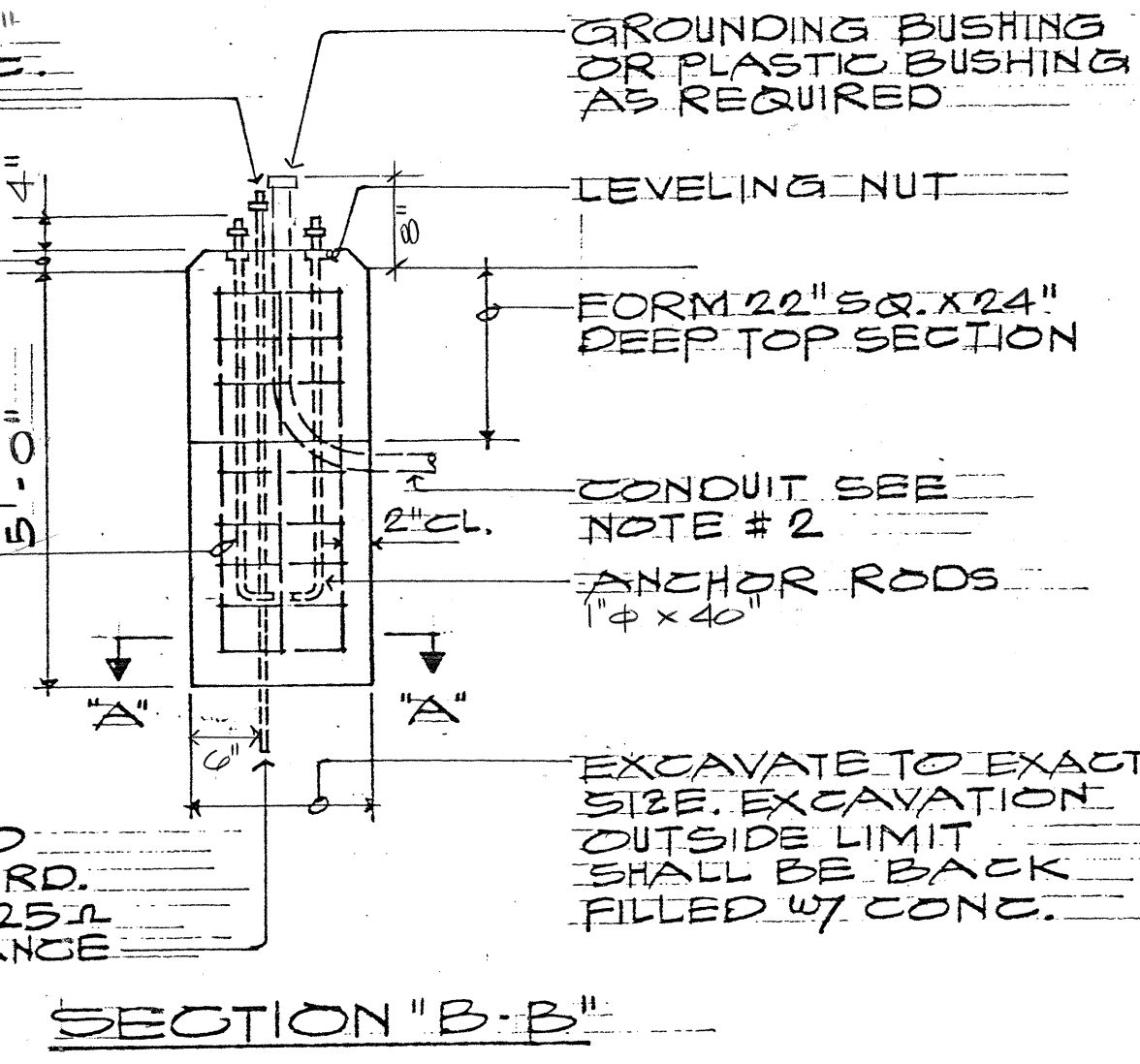
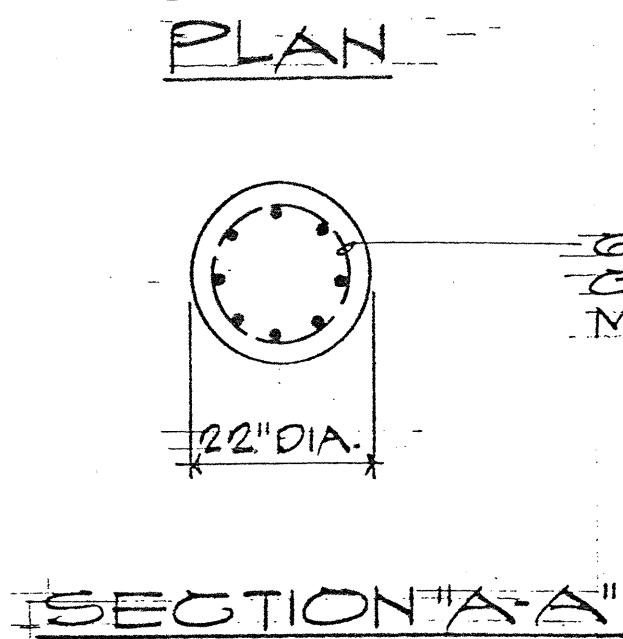
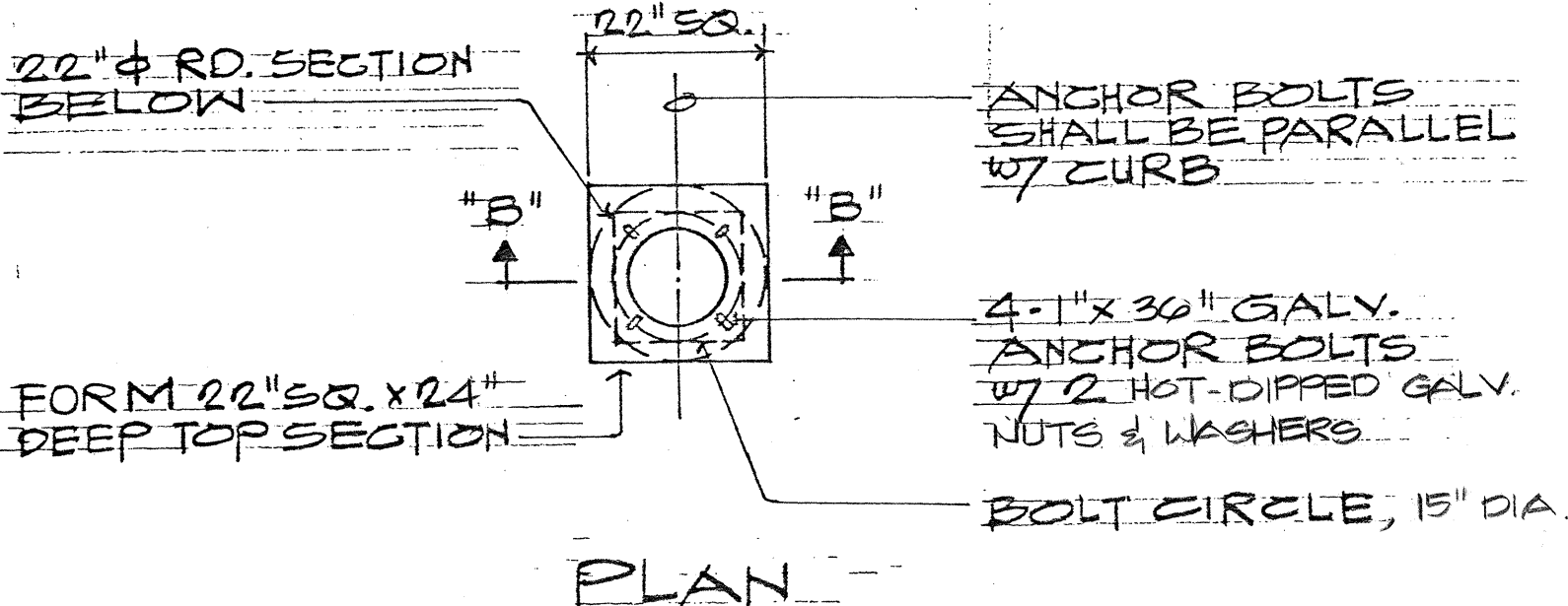
- STREET LIGHT SYSTEM FOR THIS INCREMENT OF THE SUBDIVISION SHALL BE UNDER METER NO. M91
- STREET LIGHT NUMBERS FOR THIS INCREMENT OF THE SUBDIVISION SHALL BE NO. 642 TO 649 INCLUSIVE.
- ALL SECONDARY CKT. EXTENSIONS ON H.E.CO. SECONDARY CABLES SHALL BE PROVIDED BY CONTRACTOR TO NEAREST S.W. RETAIL CONNECTIONS SHALL BE BY H.E.CO. & PAID BY THE CONTRACTOR.
- CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING & INFORMING H.E.CO. OF ST. LT. SERVICE EXPT. LOCATIONS ON SITE PRIOR TO INSTALLATION OF THEIR SECONDARY CABLES.
- CONTRACTOR SHALL NOTIFY ELEC. & MAINTENANCE SERVICES DIVISION, DEPT. OF TRANSPORTATION SERVICES, C & C OF HON. 3 WORKING DAYS IN ADVANCE OF COMMENCING INSTALLATION OF STREET LIGHT SYSTEM. PHONE: 523-4905
- ALL LUMINAIRES SHALL BE HIGH PRESSURE SODIUM TYPE W/ I.E.S. TYPE I MEDIUM, SEMI-CUTOFF LIGHT DISTRIBUTION AND WATTAGE AS SHOWN ON PLAN.
- FOR TYP. CONSTRUCTION DETAILS, SEE THIS SHEET & ALSO REFER TO APPLICABLE STANDARD DETAILS OF THE ELEC. & MAINTENANCE SERVICES DIVISION, DEPT. OF TRANSPORTATION SERVICES, C & C OF HONOLULU.
- CONTRACTOR SHALL STENCIL DATE OF INSTALLATION AT BOTTOM OF PHOTO CELL.
- CONTRACTOR SHALL OBTAIN WRITTEN ACCEPTANCE OF STREET LIGHT SYSTEM FROM ELEC. & MAINTENANCE SERVICES DIVISION, DEPT. OF TRANSPORTATION SERVICES, C & C OF HONOLULU.
- LUMINAIRES & POLE COUNTS.
POLE: HT. 30'-0" (8' ARM)
H 150W LUMINAIRES: 28
N 100W LUMINAIRES: 1
- CONTRACTOR TO ARRANGE W/ H.E.CO. TO ENERGIZE STREET LIGHTS A MIN. OF 6 HRS. FOR FINAL INSPECTION & ACCEPTANCE. CONTRACTOR TO ASSUME COST.
- CONTRACTOR SHALL HAVE ONE SET OF APPROVED PLANS AT THE JOB SITE AT ALL TIMES DURING THE CONSTRUCTION WORK.
- FINAL ACCEPTANCE INSPECTION WILL BE UNDERTAKEN ONLY AFTER ALL WORK HAS BEEN COMPLETED & AS-BUILT CLOTH TRACING IN INK HAS BEEN GIVEN TO THE ELEC. & MAINTENANCE SERVICES DIVISION, DEPT. OF TRANSPORTATION SERVICES, C & C OF HONOLULU. CONTRACTOR TO PREPARE "AS-BUILT" CLOTH TRACING IN INK.

(SEE SHT E-3 FOR CONTINUATION OF STREET LIGHTING NOTES)



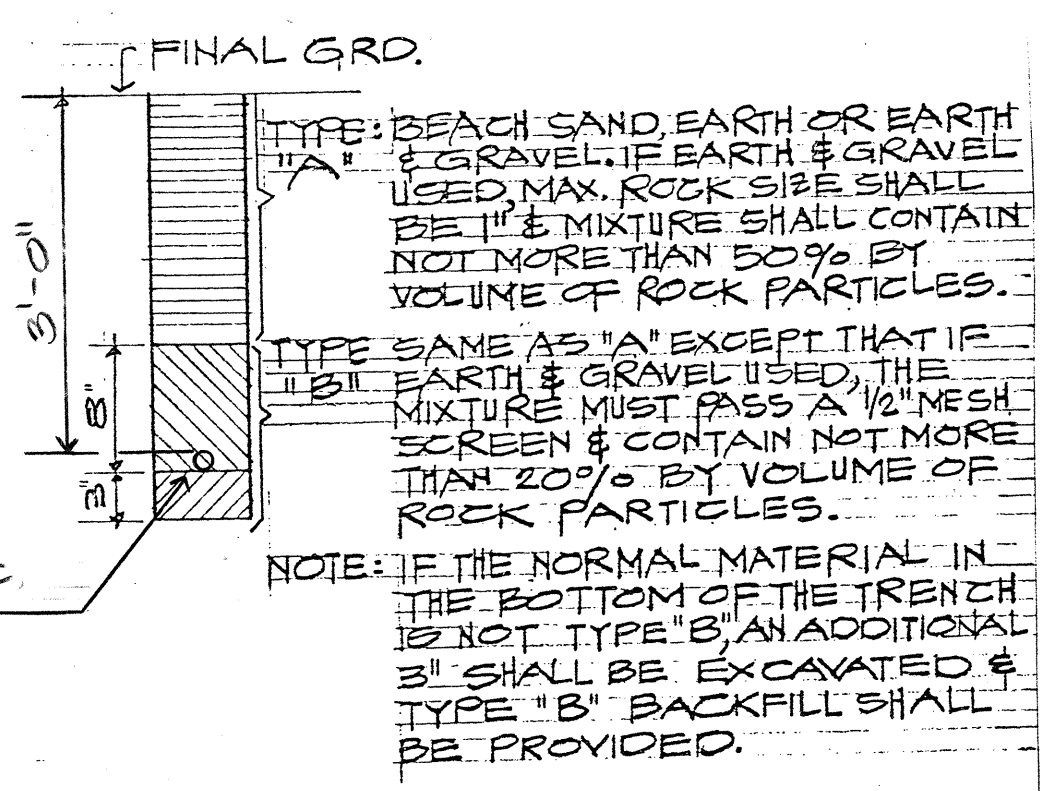
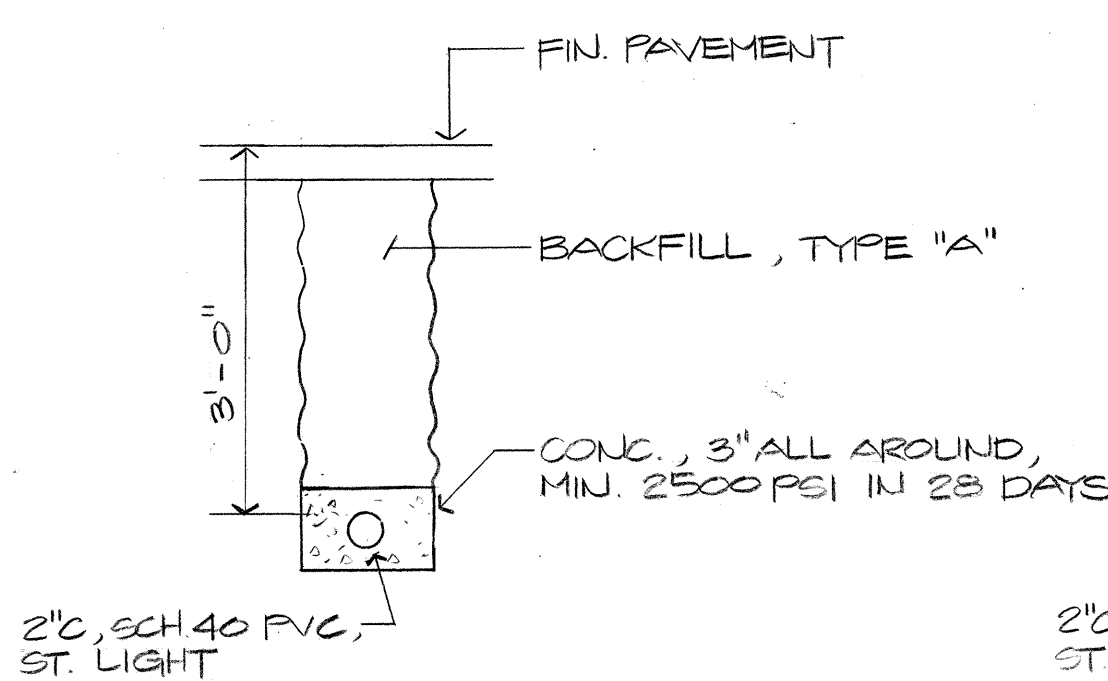
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Glenn D. Oyama
ELECTRICAL AND MAINTENANCE SVCS. DIV., DTS

DATE	REVISION
1/22/92	ADDED NOTE
11/5/91	REV. NOTES, DETAILS
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
DETAILS	
CASTLE HILLS ACCESS ROAD PROJ. NO. HWY-0-05-91	
SCALE: AS SHOWN	DATE: JUNE 1991
SHEET No. E-4 OF 6 SHEETS	



STREET LIGHT DETAILS

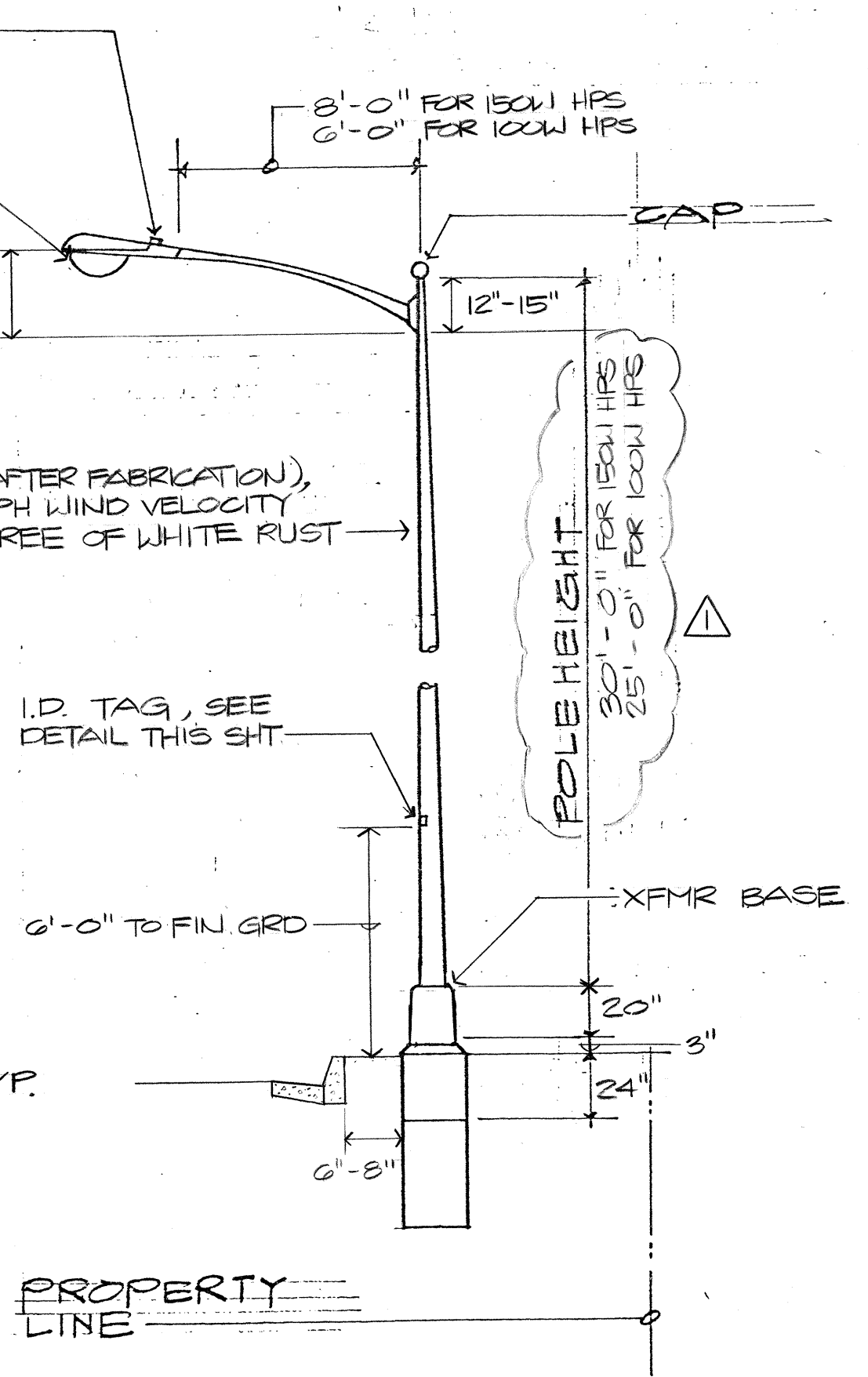
N.T.S.



NOTES:

- CONC. 2500 P.S.I. IN 28 DAYS.
- WHEN SCHEDULE 80 PVC IS USED, PROVIDE SCHEDULE 80 PVC CONDUIT BEND.
- ALL NEUTRALS SHALL HAVE SOLID WHITE INSULATION. ANY OTHER MEANS OF IDENTIFICATION IS NOT ACCEPTABLE.

ELEVATION

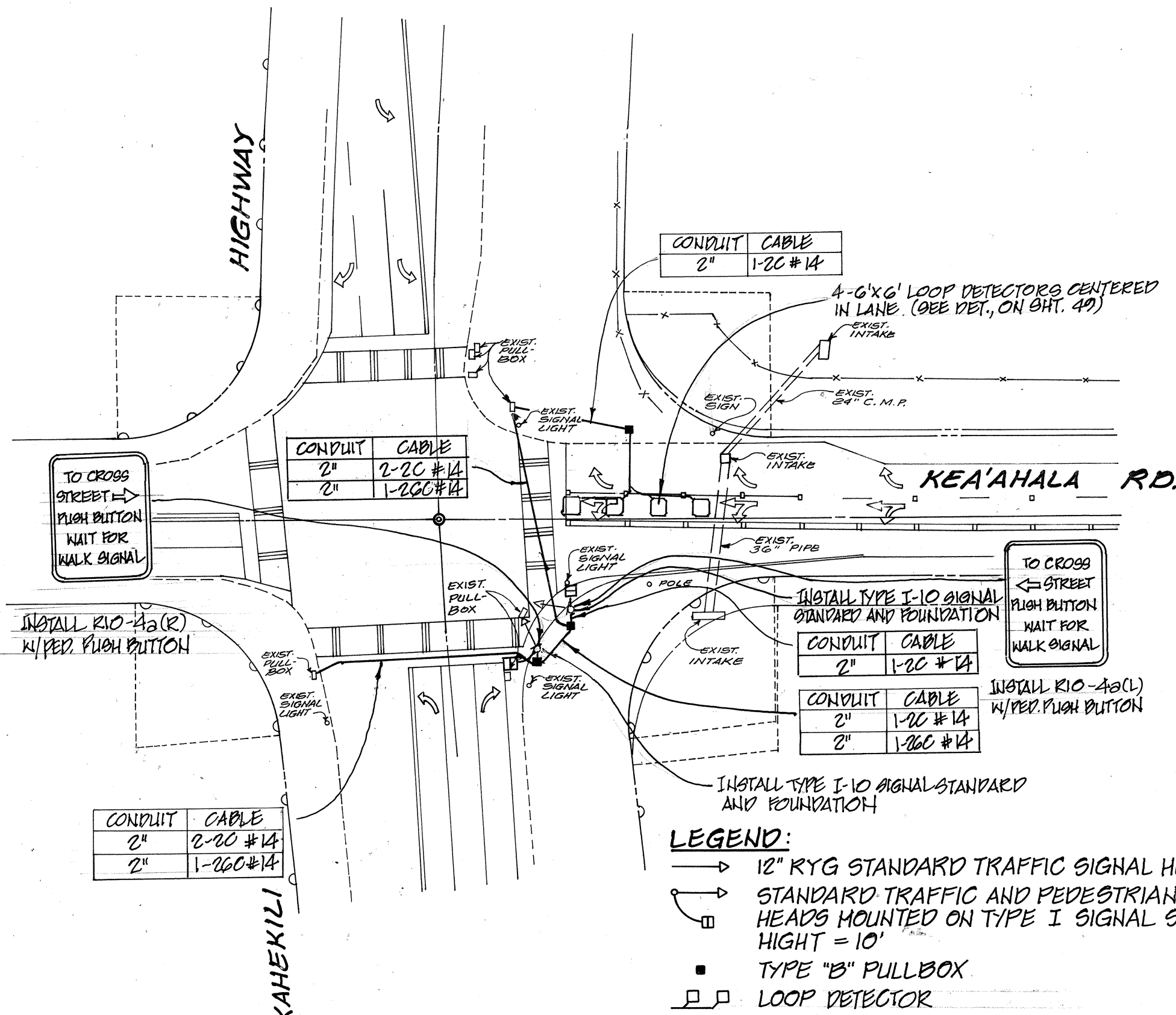


APPROVED

Glenn D. Oyama
ELECTRICAL AND MAINTENANCE SVCS. DIV., DTS

DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-05-91	1991	48	49



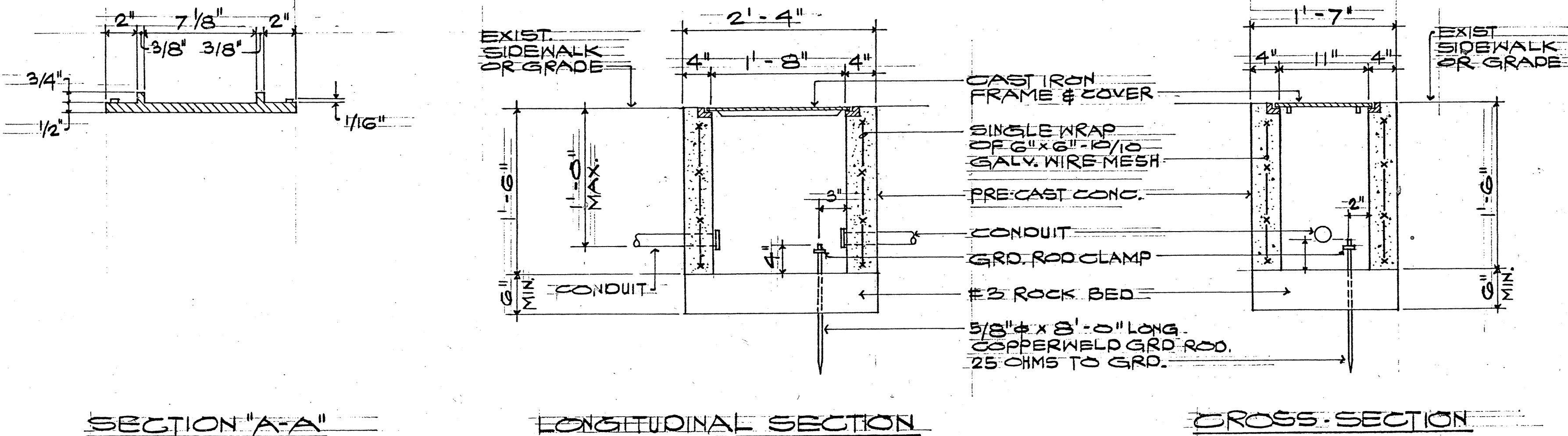
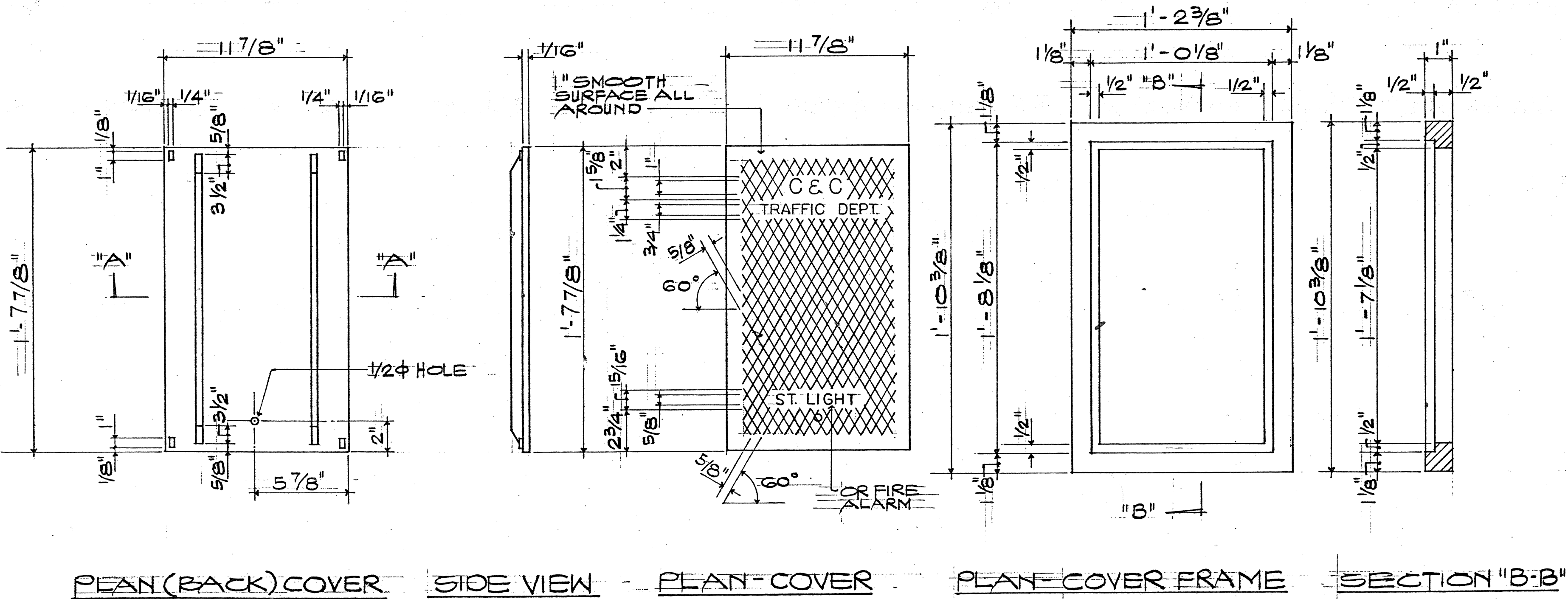
TRAFFIC SIGNAL RELOCATION
@ KEA'AHALA RD. & KAHEKILI HWY.
 SCALE: 1"=40'

TRAFFIC SIGNAL NOTES

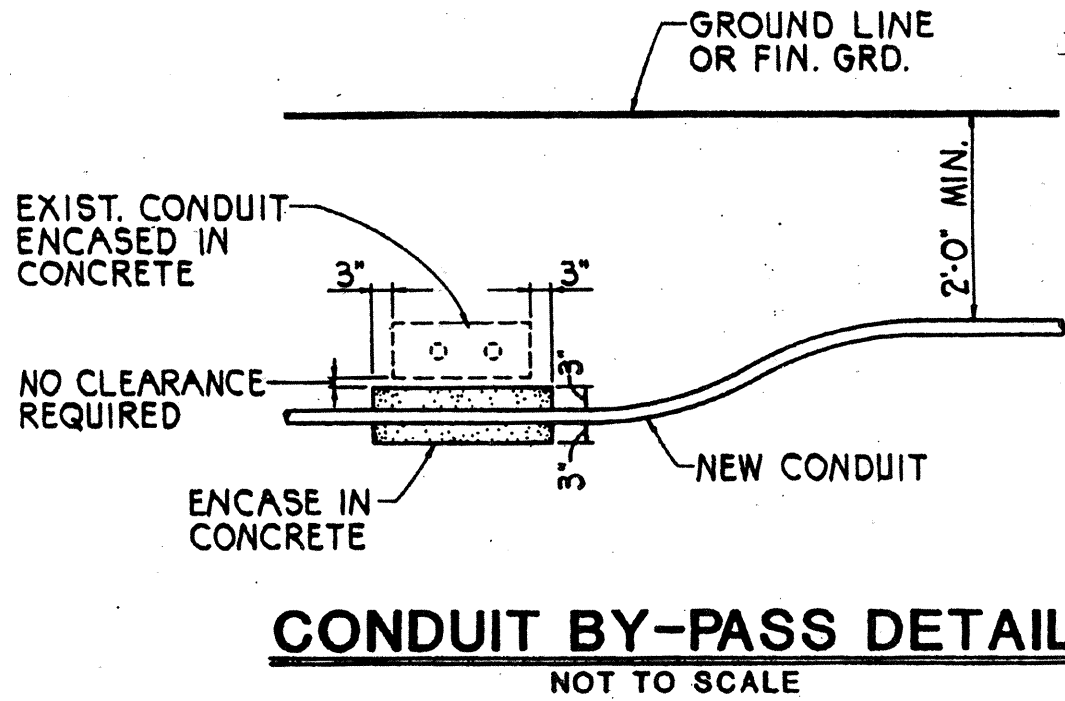
- LOCATIONS OF EXISTING UNDERGROUND STRUCTURES AND UTILITIES SUCH AS PIPELINES, CONDUITS, CABLES, ETC., SHOWN ON PLANS ARE APPROXIMATE ONLY. IT IS NOT THE INTENT OF THESE PLANS TO SHOW THE EXACT LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES WITH THE RESPECTIVE OWNERS. EXISTING UTILITIES DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT HIS OWN COST.
- THE LOCATIONS OF THE TRAFFIC SIGNAL STANDARDS, PEDESTRIAN PUSH BUTTONS, PULLBOXES, CONDUITS AND LOOP DETECTORS SHALL BE STAKED OUT IN THE FIELD BY THE CONTRACTOR AND APPROVAL OF THE LOCATIONS SHALL BE OBTAINED FROM THE ENGINEER PRIOR TO CONSTRUCTION AND INSTALLATION.
- ALL TRAFFIC SIGNAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", FEDERAL HIGHWAY ADMINISTRATION (1984) AND AMENDMENTS.
- LOCATIONS OF TRAFFIC MARKINGS AND MARKERS (LANE LINES, STOP LINES, CROSSWALK, ETC.) SHOWN ON THE PLANS SHALL BE VERIFIED WITH THE ENGINEER PRIOR TO THE INSTALLATION OF THE TRAFFIC SIGNAL SYSTEM.
- MAINTENANCE OF TRAFFIC THROUGH THE CONSTRUCTION AREA SHALL BE IN ACCORDANCE WITH PART VI OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", FEDERAL HIGHWAY ADMINISTRATION (1984) AND AS SPECIFIED IN THE SPECIAL PROVISIONS. THE CONTRACTOR SHALL FURNISH AND MAINTAIN ADEQUATE BARRICADES, BLINKERS, CONSTRUCTION SIGNS, ETC., FOR THE SAFETY OF THE MOTORING PUBLIC.
- A SOLID #8 BARE COPPER WIRE SHALL BE PULLED WITH THE TRAFFIC CONTROL CABLE FOR EQUIPMENT GROUND. COST SHALL BE INCIDENTAL TO THE INSTALLATION OF THE CONTROL CABLE.
- THE CONTRACTOR SHALL KEEP THE EXISTING TRAFFIC SIGNALS AND LOCAL INTERSECTION CONTROLLERS IN OPERATION UNTIL SUCH TIME AS THE NEW CONTROLLERS AND COMMUNICATION SYSTEM ARE PLACED IN OPERATION. THE LOCAL INTERSECTION SHALL NOT BE PLACED OUT OF OPERATION WITHOUT THE PERMISSION OF THE ENGINEER.
- THE FOLLOWING STATE STANDARD DETAILS SHALL BE USED:
 TE-01 TE-04 TE-38

ELECTRICAL & MAINTENANCE SERVICES DIVISION NOTES

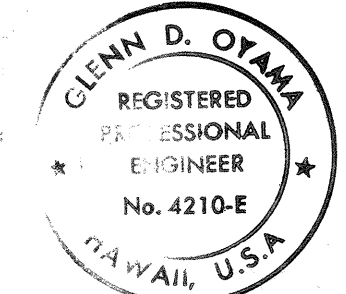
- THE CONTRACTOR SHALL NOTIFY THE ELECTRICAL & MAINTENANCE SERVICES DIVISION, DEPARTMENT OF TRANSPORTATION SERVICES, THREE (3) WORKING DAYS PRIOR TO COMMENCING WORK ON THE TRAFFIC SIGNAL SYSTEM (PHONE 527-5007).
- TRAFFIC SIGNALS SHALL BE KEPT OPERATIONAL DURING CONSTRUCTION. ANY RELOCATION REQUIRED SHALL BE APPROVED BY THE ELECTRICAL & MAINTENANCE SERVICES DIVISION, DEPARTMENT OF TRANSPORTATION SERVICES, AND PAID FOR BY THE CONTRACTOR.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO EXISTING STREET LIGHTING AND TRAFFIC SIGNAL FACILITIES, INCLUDING THE TRAFFIC SIGNAL INTERCONNECT SYSTEM, AND ANY AND ALL DAMAGES TO THESE FACILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT HIS COST IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY AND COUNTY OF HONOLULU.



TYPICAL 19" x 28" STREET LIGHT PULLBOX DETAIL (TYPE SLD-1)
 N.T.S.



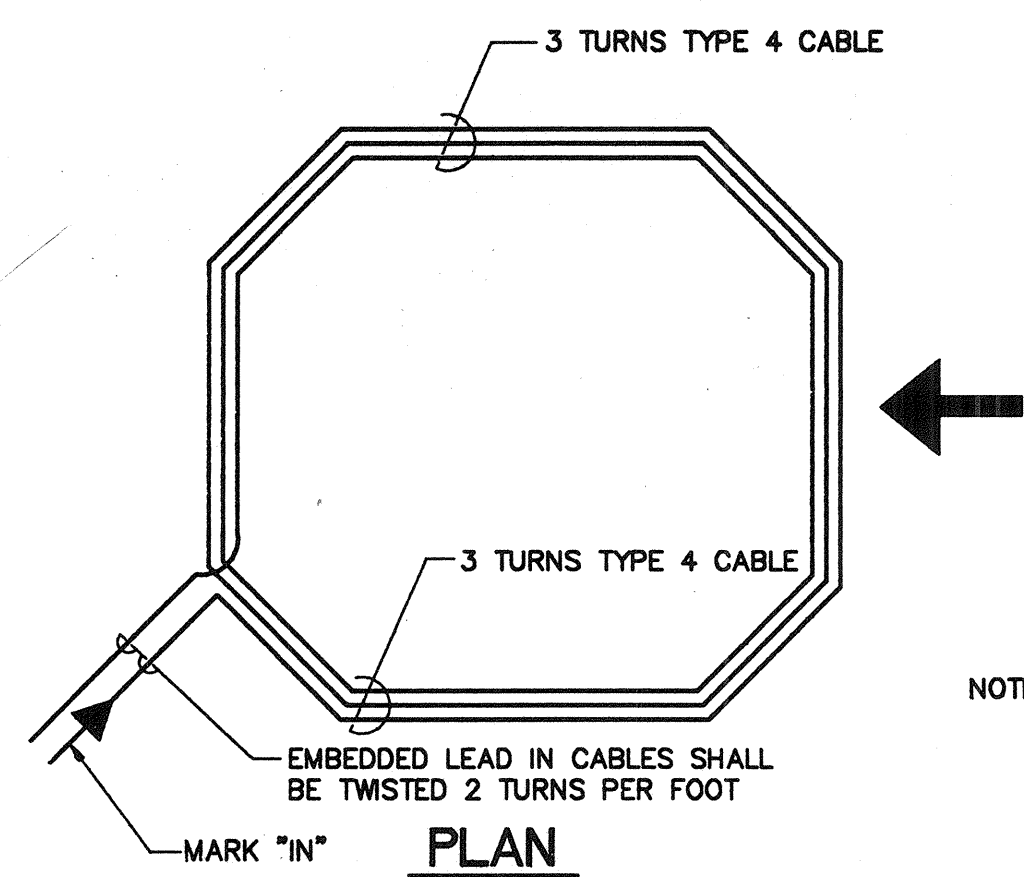
APPROVED
Kenneth Z. Young
 ELECTRICAL AND MAINTENANCE SVCS. DIV., DTS
 DATE 7/12/91



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn D. Oyama
 MAKAMURA, OYAMA & ASSOC., INC.
 CONSULTING ENGINEERS

DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION TRAFFIC SIGNAL RELOCATION PLAN STREET LIGHT PULLBOX DETAILS CASTLE HILLS ACCESS ROAD PROJ. NO. HWY-0-05-91 SCALE: AS SHOWN DATE: JUNE 1991 SHEET No. E-5 OF 6 SHEETS	

FED. ROAD DIS. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HWY-0-5-91	1992	49	49

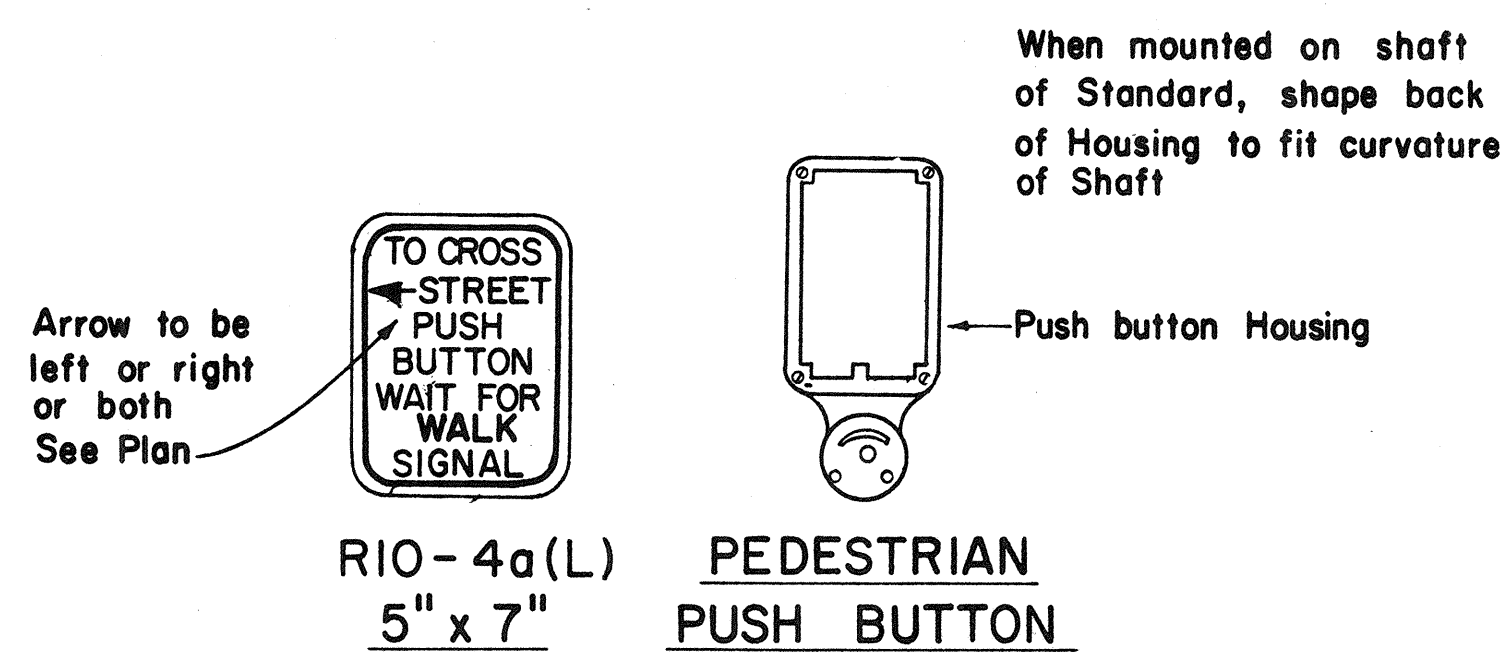


TYPICAL SENSOR LOOP

WIRING DIAGRAM

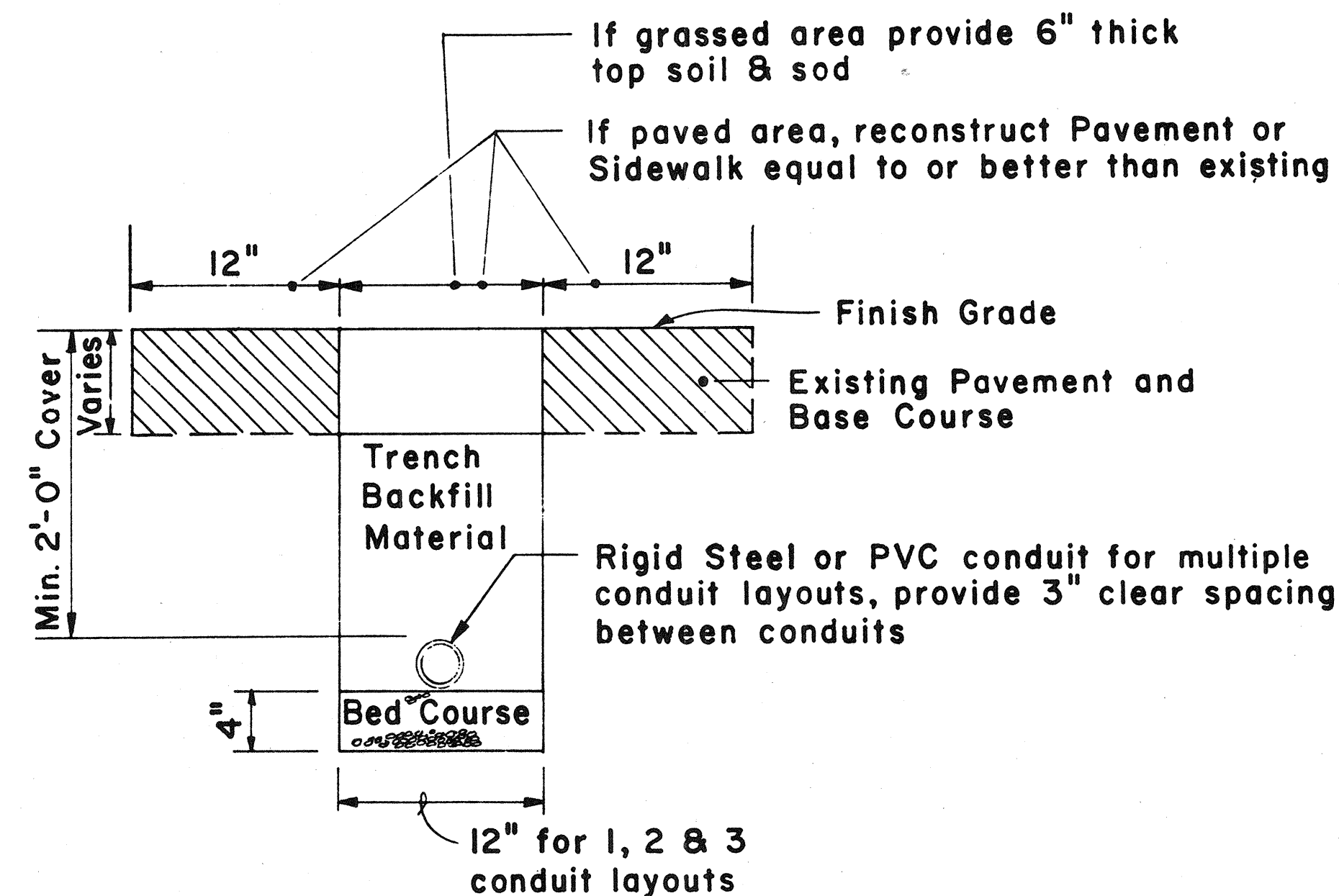
NOT SCALE

NOTE: TYPE 4 - LOOP SENSOR CABLE:
SOLID NO. 12, SINGLE CONDUCTOR
TO IMSA SPEC 51-5

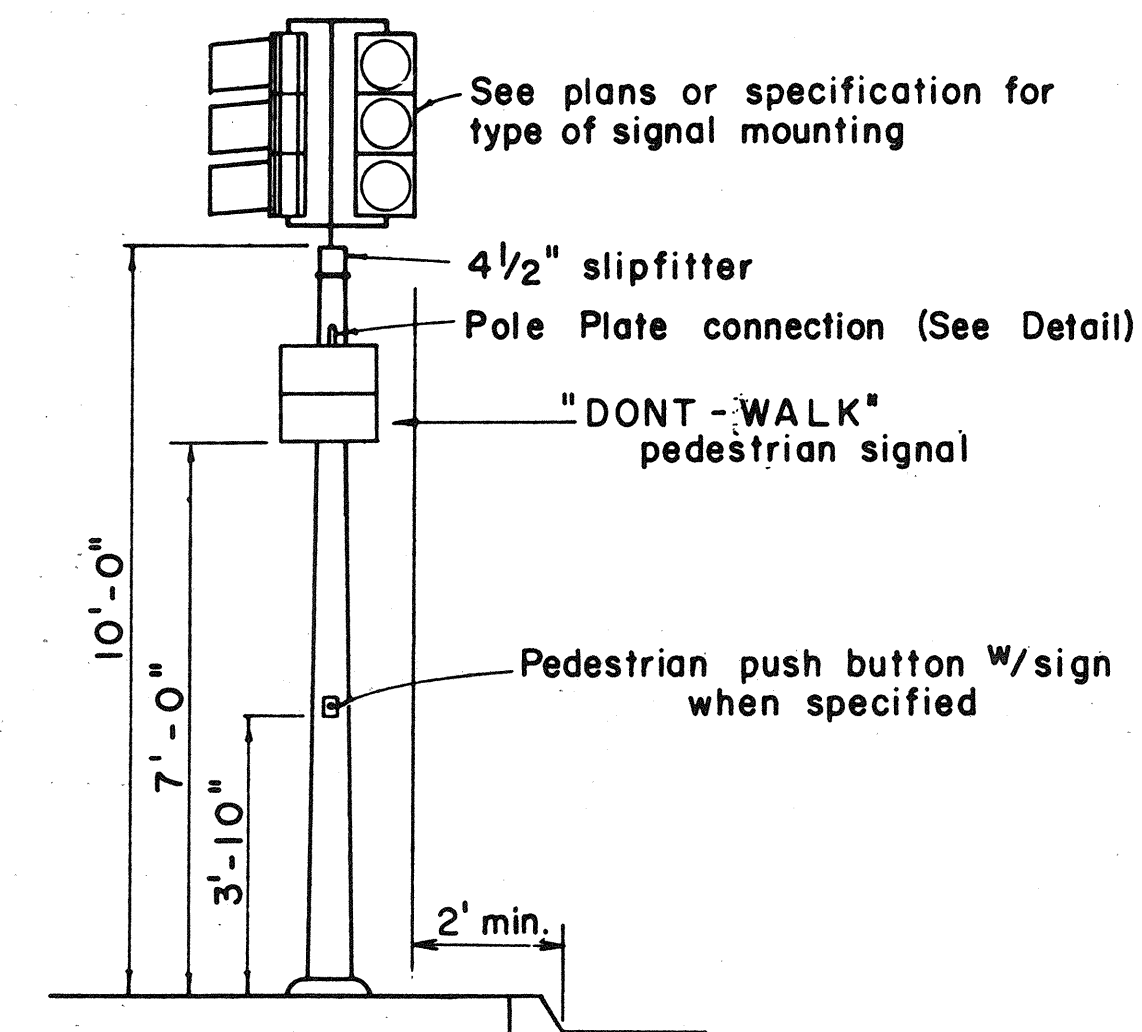


NOTE:

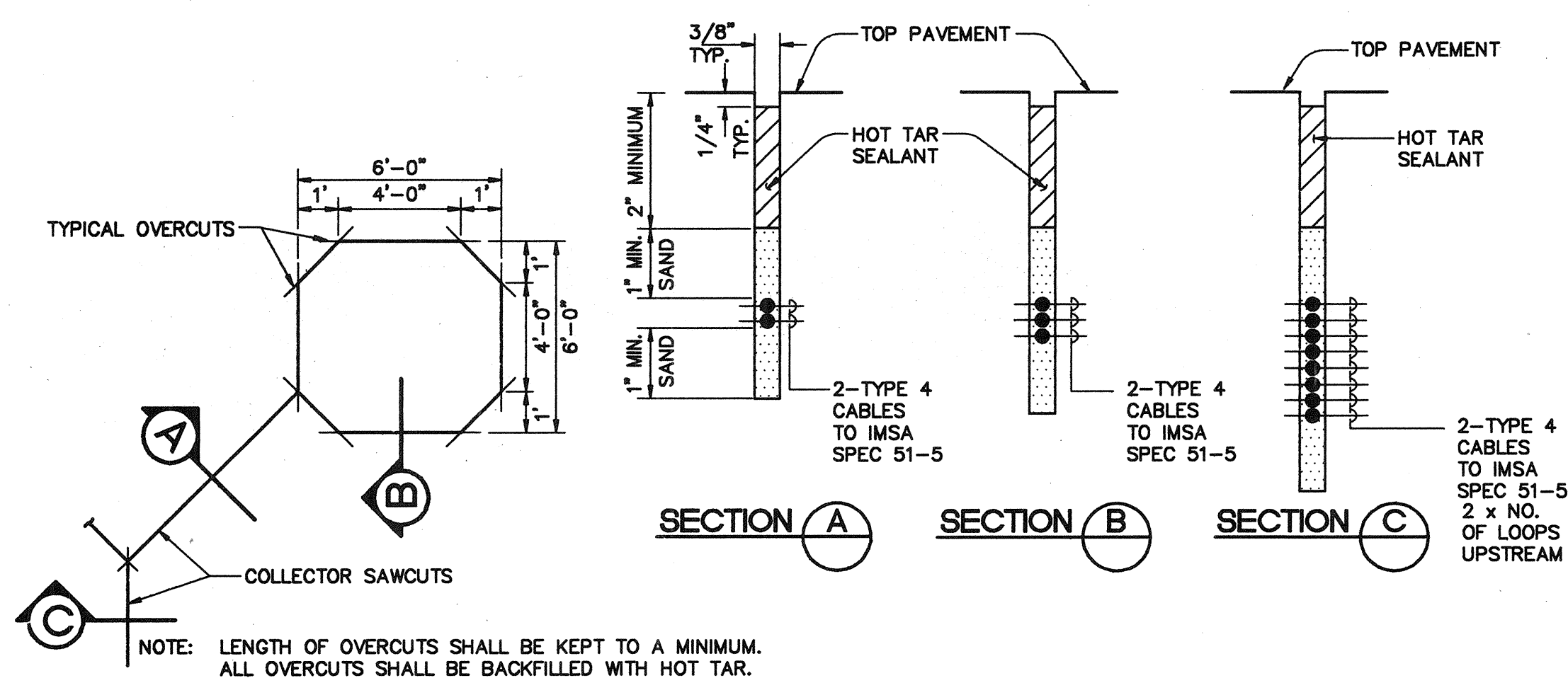
1. Conduits shall protrude 2" max. above finished surface of foundation.
2. Conduits shall slope away from pole foundation.



TYPICAL TRENCH SECTION
FOR CONDUIT
Scale : $1\frac{1}{2}" = 1' - 0"$

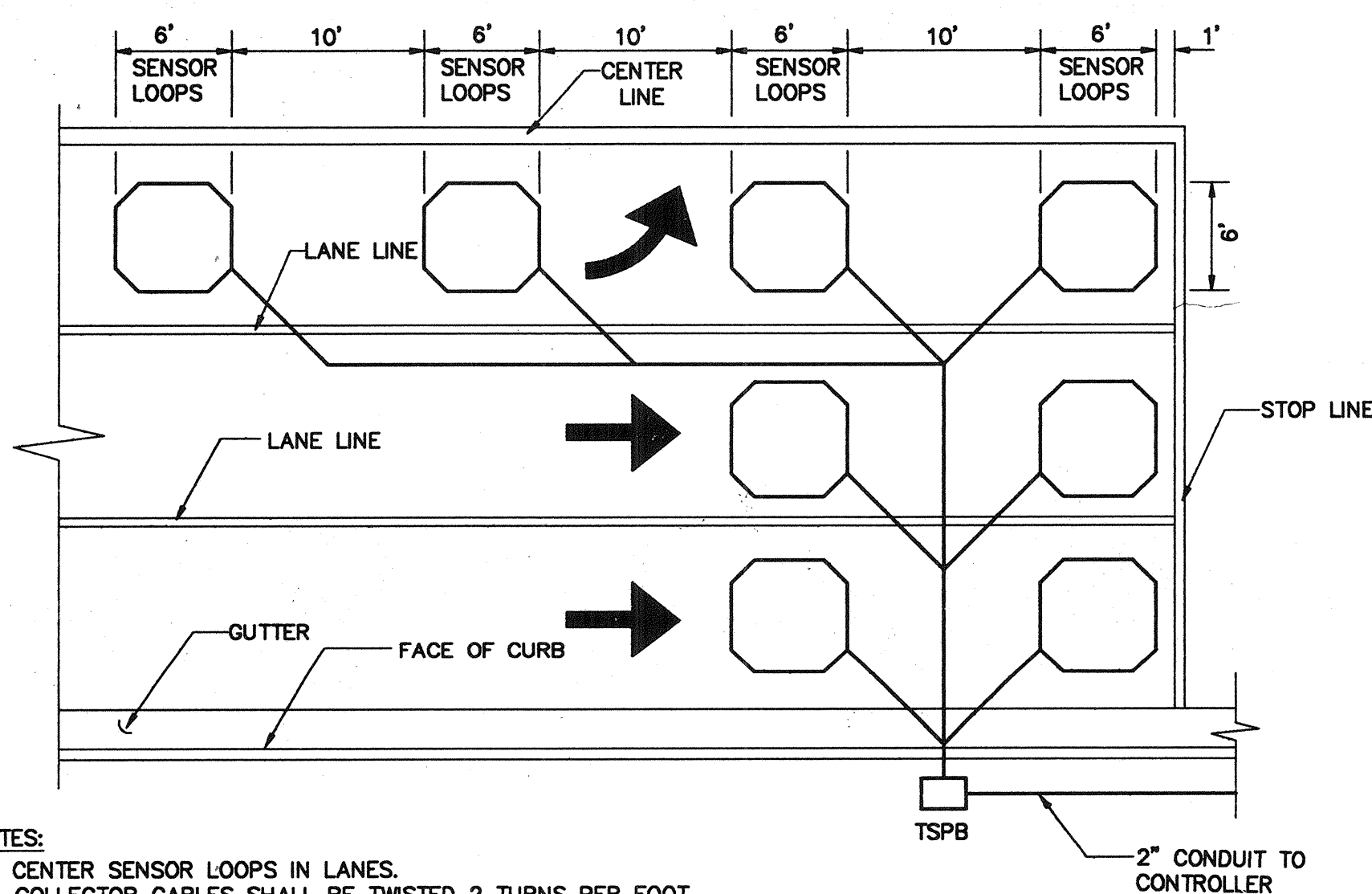


ON 10 - FOOT STANDARD



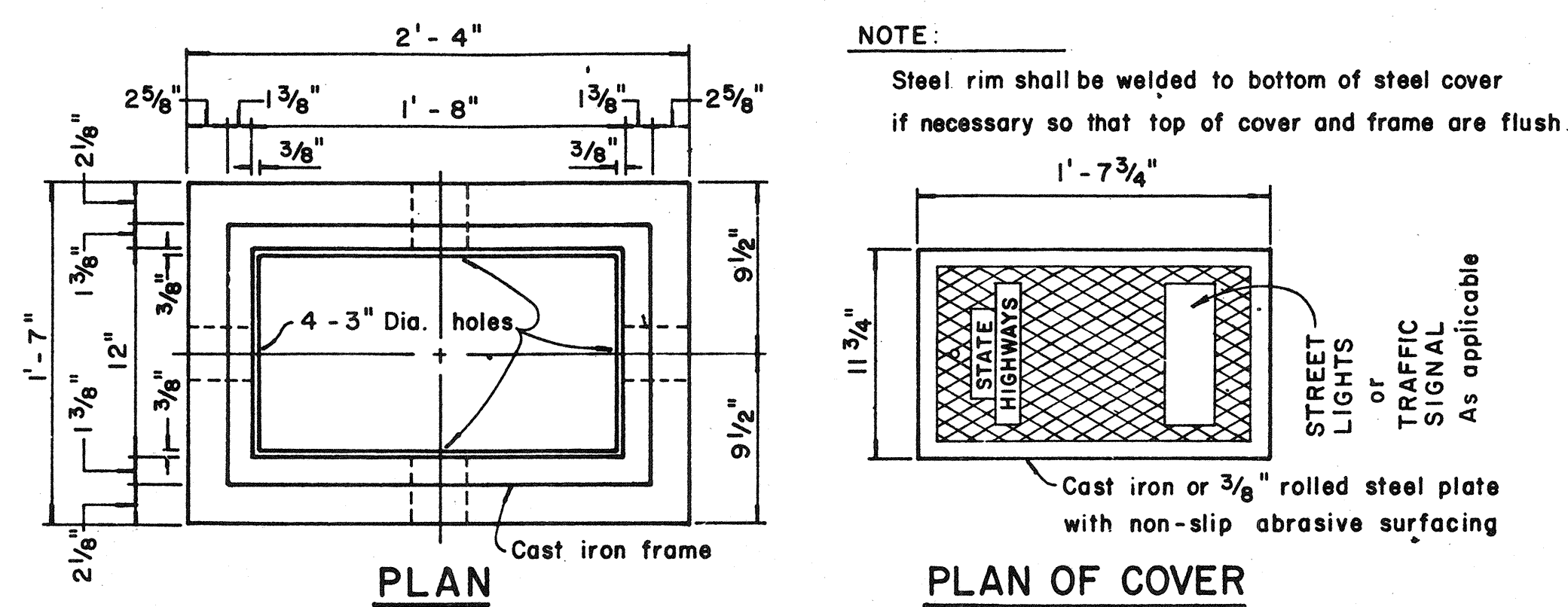
**TYPICAL SENSOR LOOP
SAWCUT DETAIL**

NOT SCALE

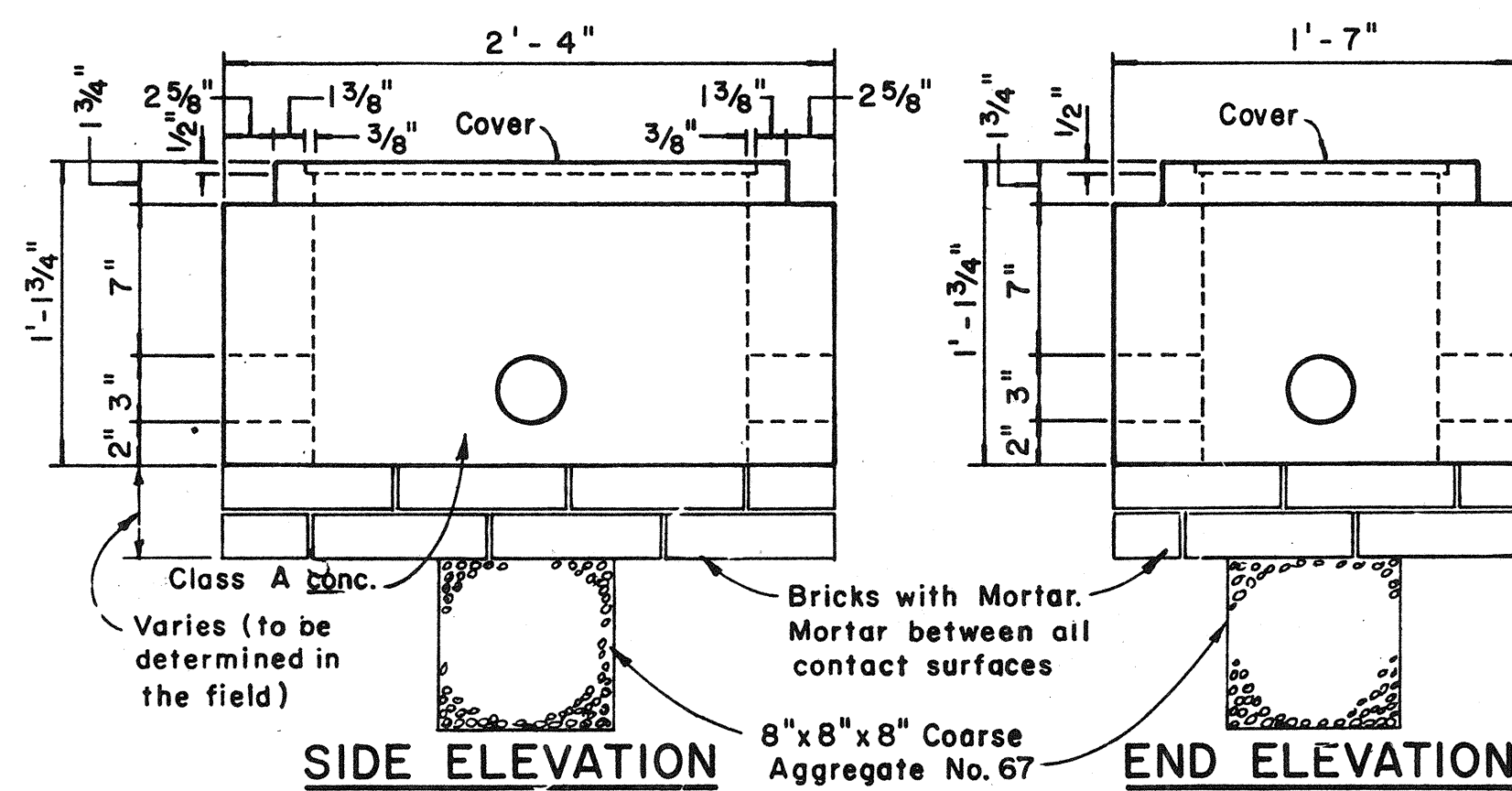


TYPICAL SENSOR LOOP LAYOUT

NOT SCALE



PLAN OF COVER

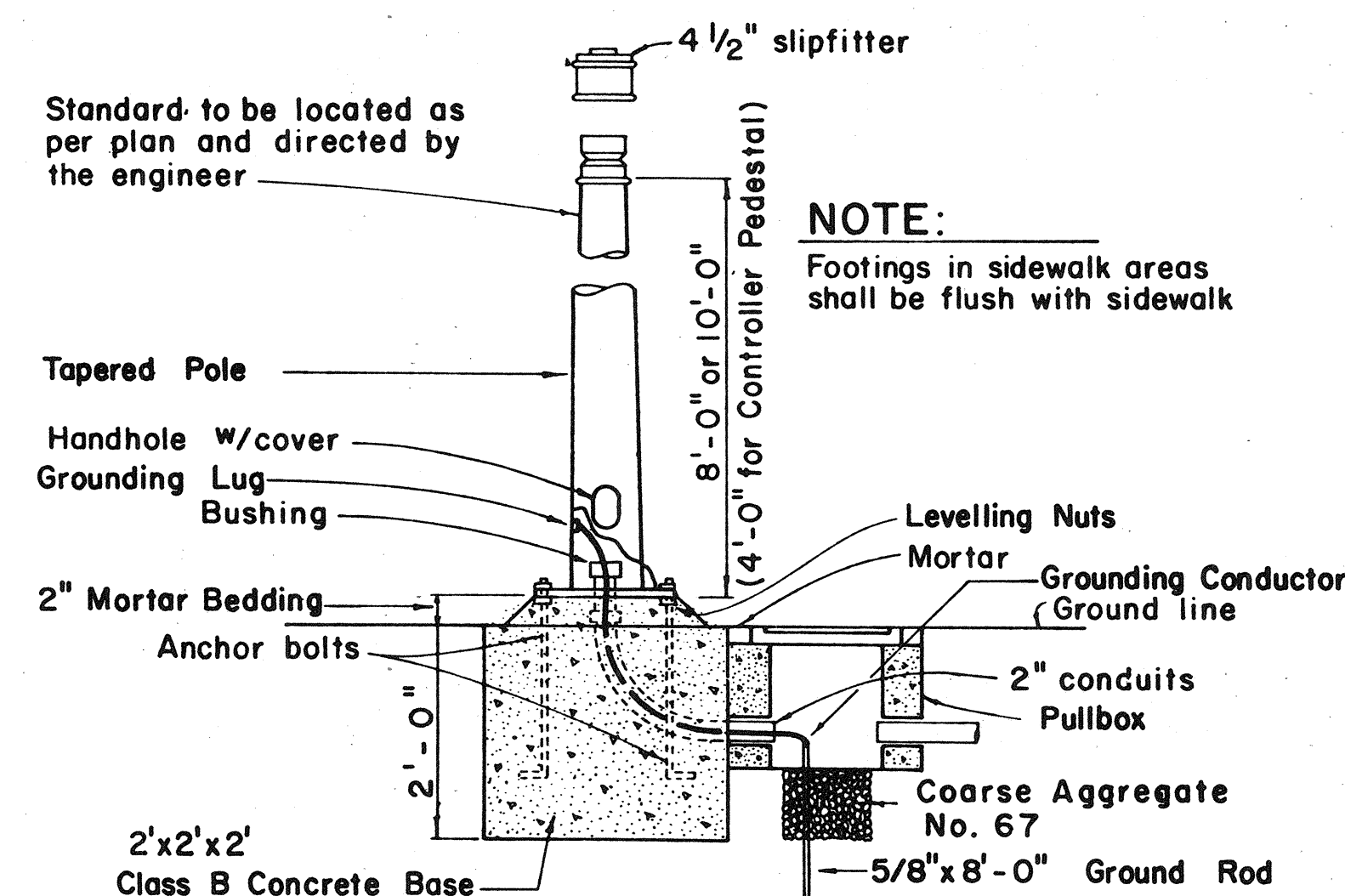


TYPE "B" PULLBOX
Scale: $1\frac{1}{2}" = 1'-0"$

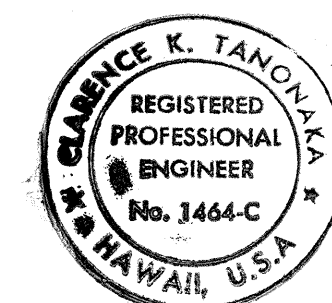
APPROVED:

ELECTRICAL AND MAINTENANCE
SVCS. DIV., D.O.T.S

DATE _____



TYPE I SIGNAL STANDARD OR CONTROLLER PEDESTAL AND FOOTING



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.
Clarence T. Jensen
ParEn, Inc.
dba PARK ENGINEERING

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNAL DETAILS

CASTLE HILLS ACCESS ROAD
PROJ. NO. HWY-0-05-91

SCALE: AS SHOWN DATE: MARCH, 1991

SHEET No. E6 OF 6 SHEETS

ADD. 49

Z:\DSE\TRAFFIC 10/26/91