

CONSTRUCTION PHASING NOTES - STATES CONTRACTOR/HECO

1. (JP-27)
 - A. CONTRACTOR TO EXPOSE THE EXISTING 2-3" DUCTS AS REQUIRED UNDER HECO'S SUPERVISION.
 - B. HECO TO BREAK THE CONCRETE ENCASEMENT AROUND THE EXISTING DUCTS AND TO CUT AND REMOVE THE EXISTING EMPTY DUCT.
 - C. CONTRACTOR TO INSTALL AND CONNECT THE NEW DUCT FROM THE EXISTING EMPTY DUCT TO PROPOSED (JP-27).
 - D. HECO TO INSTALL CABLES IN THE NEW DUCT FROM PROPOSED (JP-27) TO THE EXISTING CABLES FROM THE EXISTING OCCUPIED DUCT.
 - E. HECO TO CUT EXISTING 2-3 INCH DUCTS 1'-0" BELOW EXISTING GROUND AT EXISTING POLE, JP-27, AND TO REMOVE RISER BENDS.
 - F. CONTRACTOR TO INSTALL AND CONNECT THE SECOND DUCT FROM THE EXISTING DUCT TO PROPOSED (JP-27).
 - G. CONTRACTOR TO ENCASE THE NEW DUCTS IN CONCRETE.
2. (JP-28)
 - A. CONTRACTOR TO INSTALL 1-3" PVC STANDARD RADIUS BEND AND CONNECT TO EXISTING 2' X 4' SERVICE BOX UNDER HECO'S SUPERVISION.
3. (JP-29)
 - A. CONTRACTOR TO EXPOSE THE EXISTING 2-3" DUCTS AS REQUIRED UNDER HECO'S SUPERVISION.
 - B. HECO TO BREAK THE CONCRETE ENCASEMENT AROUND THE EXISTING DUCTS WHICH ARE TO REMAIN IN PLACE AS A PROTECTIVE GUARD FOR THE EXISTING ENERGIZED 12KV CABLES.
 - C. CONTRACTOR TO CONSTRUCT THE NEW DUCTLINE FROM PROPOSED (JP-29) TO WITHIN 5-FEET OF THE EXISTING DUCTLINE.
 - D. HECO TO REMOVE THE EXISTING DUCTLINE; TO INSTALL AND REMOVE CABLES.
 - E. HECO TO INSTALL SPLIT DUCT AROUND THE EXPOSED CABLES.

F. CONTRACTOR TO ENCASE THE DUCTS IN CONCRETE.

- G. HECO TO CUT EXISTING 2-3 INCH DUCTS 1'-0" BELOW EXISTING GROUND AT EXISTING POLE, JP-29, AND TO REMOVE RISER BENDS.

SPECIAL NOTE TO STATE'S CONTRACTOR

THE EXISTING CABLES WHICH ARE IN DUCT LINES AND IN EXISTING HANDHOLES ARE ENERGIZED. THESE ENERGIZED INSULATED CABLES ARE TO REMAIN IN PLACE DURING CONSTRUCTION. ONLY HECO MEN ARE TO HANDLE THOSE CABLES AND TO ERECT TEMPORARY GUARDS TO PROTECT THESE CABLES FROM DAMAGE. CONTRACTOR TO EXERCISE DUE CARE AND PRECAUTIONS TO AVOID DISTURBANCE OF ENERGIZED CABLES, TEMPORARY GUARDS, ETC. AND SHALL WORK CAUTIOUSLY TO AVOID ACCIDENTS.

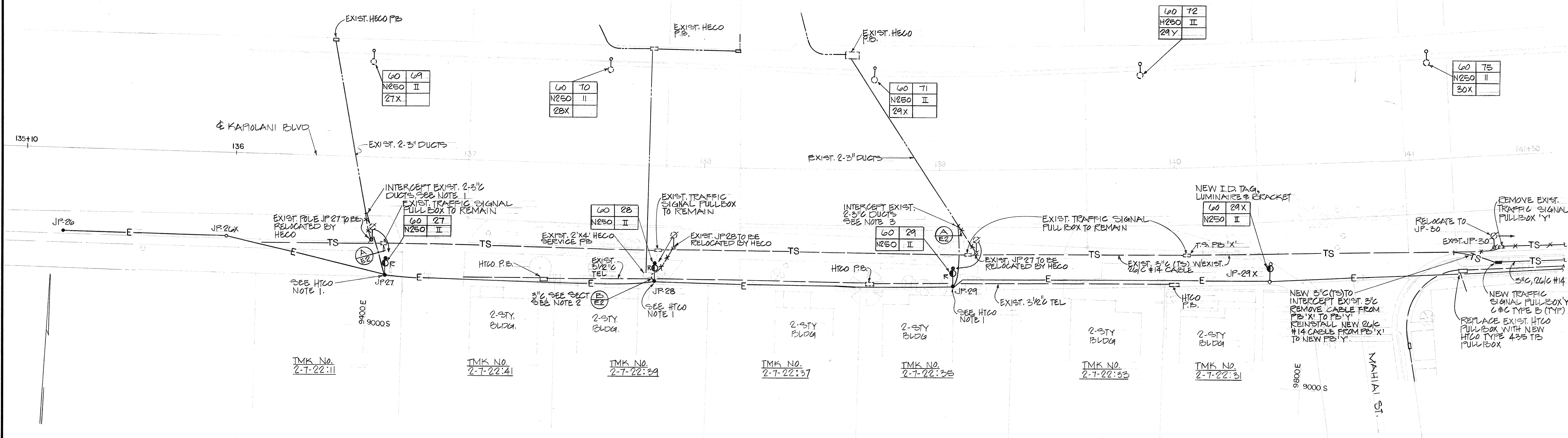
HTCO NOTES

1. CONTRACTOR SHALL ADJUST EXISTING HTCO DUCTLINE TO CLEAR RELOCATED JOINT POLES USING HTCO SPLIT DUCT CONSTRUCTION.

CITY AND COUNTY STREET LIGHTING NOTES

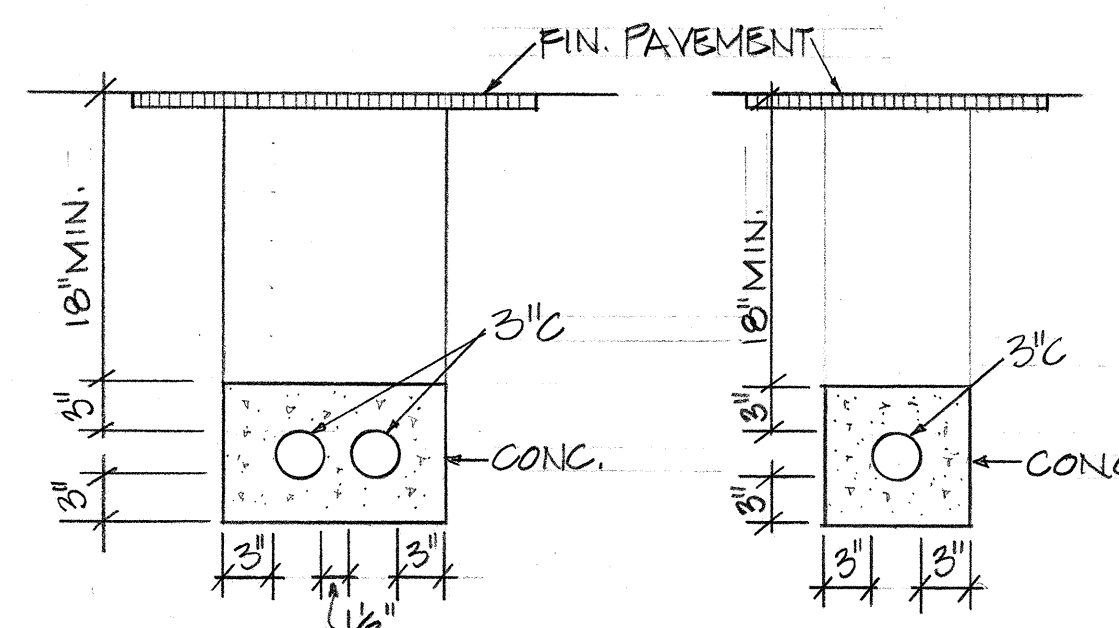
1. CONTRACTOR SHALL NOTIFY AND COORDINATE WORK WITH CITY AND COUNTY OF HONOLULU ELECTRICAL AND MAINTENANCE SERVICES DIVISION, DEPARTMENT OF TRANSPORTATION SERVICES 72 HOURS IN ADVANCE OF COMMENCING WORK ON THE CITY AND COUNTY STREET LIGHT SYSTEM (PHONE NO. 523-4905).
2. EXISTING STREET LIGHT SYSTEM SHALL BE KEPT OPERATIONAL DURING CONSTRUCTION.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(157)-24	1979	129	146



ELECTRIC, TELEPHONE, CATV AND STREET LIGHT PLAN (STA. 135+10 TO 141+50)

SCALE: 1" = 20'-0"



A SECTION
E2 N.T.S.

B SECTION
E2 N.T.S.

APPROVED BY

Kenneth Z. Young
DIRECTOR
DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU

10/21/79
DATE

W. Wilson
HAWAIIAN ELECTRIC COMPANY,
ENGINEERING DESIGN DEPT.

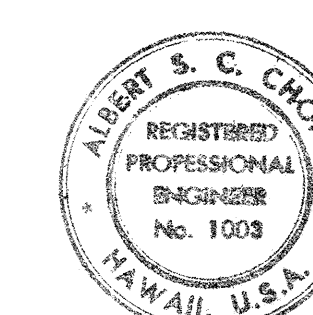
8/14/79
DATE

John E. Elliott
HAWAIIAN ELECTRIC COMPANY,
CUSTOMER ENGINEERING DEPT.

8/16/79
DATE

W. Wilson
HAWAIIAN TELEPHONE COMPANY

6-25-79
DATE



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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION
ELECTRIC, TELEPHONE, CATV AND STREET LIGHT PLAN
STA. 135 + 10 TO 141 + 50

INTERSTATE ROUTE H-1
KAPIOLANI INTERCHANGE ON-RAMP
F.A.I. PROJ. NO. I-HI-1(157)-24

SCALE: 1" = 20' DATE:
SHEET No. E2 OF 17 SHEETS

CONSTRUCTION PHASING NOTES - STATE'S CONTRACTOR/HECO

- SPECIAL NOTE TO STATE'S CONTRACTOR

- NOTE:
REMOVAL OF HTCO P.B. SHALL NOT BE PAID FOR
SEPARATELY BUT SHALL BE INCIDENTAL TO
ITEM NO. 630.321 REPLACING HTCO PULLBOX
435T-B.

HTCO NOTES

- SCALE: 1" = 20'-0"

APPROVED BY _____

10/31/7
DATE

8/14/79
DATE

DATE
8/16/77

DATE
6-27-71

DATE _____

6-25-79
DATE

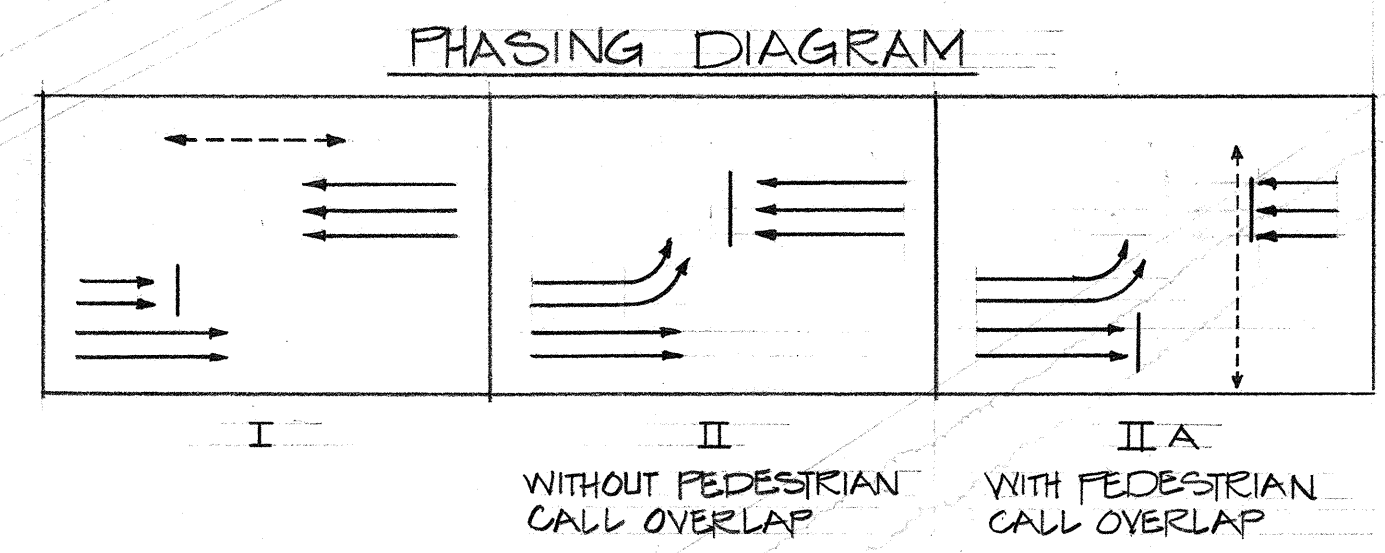
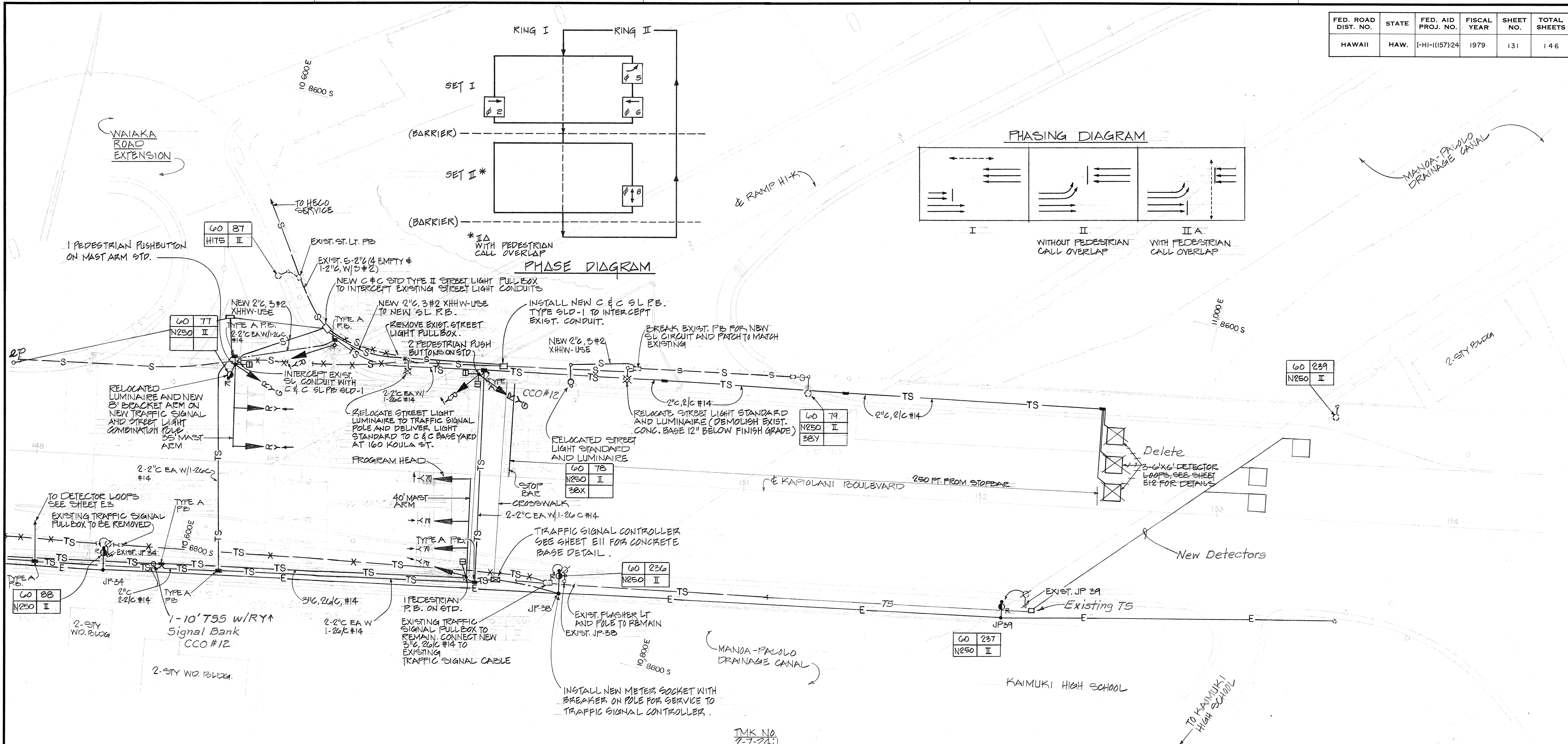
THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION
Albert R. Chang

INTERSTATE ROUTE H-1
KAPIOLANI INTERCHANGE ON-RAMP
F.A.I. PROJ. NO. 1-H1-1(157):24

130

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

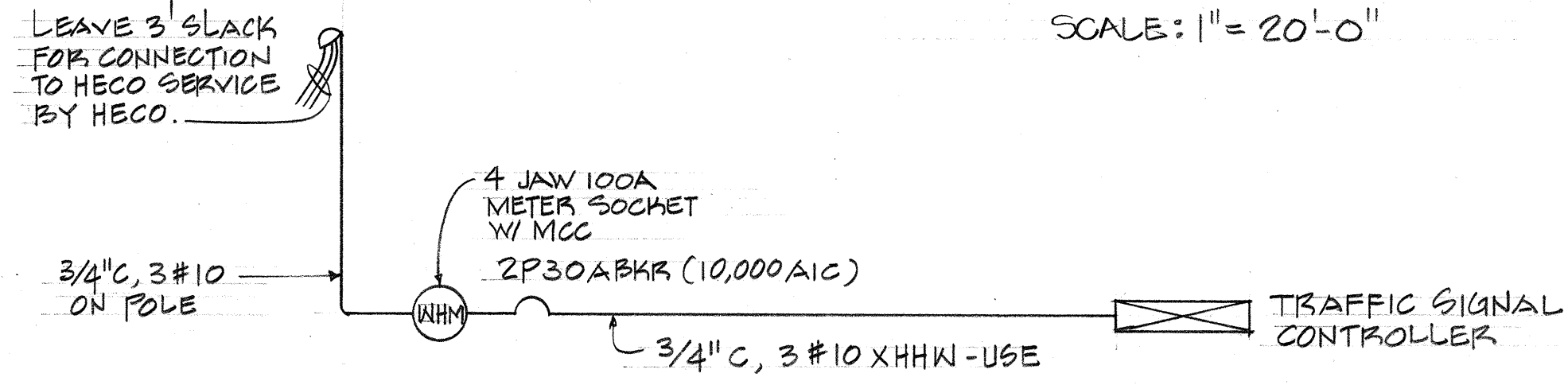
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(157):24	1979	131	146



PHASE DIAGRAM

ELECTRIC, TELEPHONE, CATV, STREET LIGHT AND TRAFFIC SIGNAL PLAN (STA. 148+00 TO 154+17)
SCALE: 1" = 20'-0"

SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NO.	

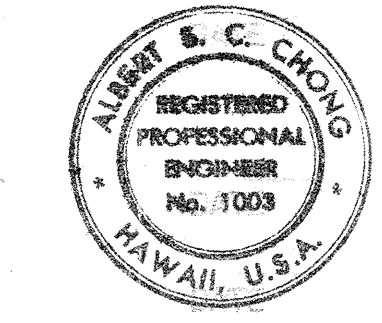


SINGLE LINE DIAGRAM FOR TRAFFIC SIGNAL CONTROLLER

APPROVED BY
 DIRECTOR
 DEPARTMENT OF TRANSPORTATION SERVICES
 CITY AND COUNTY OF HONOLULU
 HAWAIIAN ELECTRIC COMPANY, ENGINEERING DESIGN DEPT.
 HAWAIIAN ELECTRIC COMPANY, CUSTOMER ENGINEERING DEPT.
 HAWAIIAN TELEPHONE COMPANY

10/31/79
 DATE
 8/14/79
 DATE
 8/16/79
 DATE
 6-25-79
 DATE

APPROVED BY
 DIRECTOR
 DEPARTMENT OF TRANSPORTATION SERVICES
 CITY AND COUNTY OF HONOLULU
 HAWAIIAN ELECTRIC COMPANY
 HAWAIIAN TELEPHONE COMPANY



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 OR UNDER MY SUPERVISION
 Albert S. C. Chong

5/30/80	ADDED PHASE DIAGRAM
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION LAND TRANSPORTATION FACILITIES DIVISION ELECTRIC, TELEPHONE, CATV AND STREET LIGHT PLAN STA. 148 + 00 TO 154 + 17 INTERSTATE ROUTE H-1 KAPIOLANI INTERCHANGE ON-RAMP F.A.I. PROJ. NO. I-HI-1(157):24 SCALE: 1" = 20' DATE: SHEET No. E4 OF 17 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(157):24	1979	132	146

WAIKA ROAD
EXTENSION

DISCONNECT EXISTING
SIGN LIT

SEE SHEET E4
FOR CONTINUATION

F4
NISO II
STA 4+12

PROVIDE EXPANSION
FITTING

SEE DET. (D) TYP
(E3)

PROVIDE EXPANSION
FITTING

2" EMBEDDED IN
RAMP (TYP)

JB FOR LANDSCAPE
SPRINKLER CONTROLLER
UNDER RAMP VERIFY
LOCATION, EDGE OF ABUTMENT

F3
NISO II
STA 2+72

SEE DET. (D) TYP
(E3)

SEE DET. (B) TYP
(E3)

F1
NISO II
STA 1+32

SEE DET. (A) TYP
(E3) 2" (SL)
(B) TYP
(E3)

F2
NISO II

MANOA-PALO
DRAINAGE CANAL

SEE SHEET E4 FOR LIGHTING AND TRAFFIC SIGNALS
ALONG KAPOLANI BLVD.

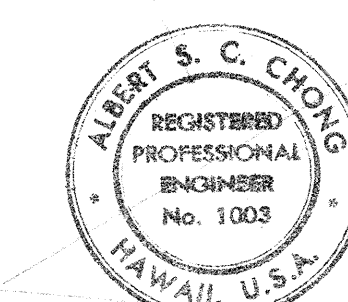
KAPOLANI BOULEVARD

3-STY
BLDG

2-STY
BLDG

2-STY BLDG

RAMP ELECTRICAL PLAN (STA 0+00 TO 5+00)
SCALE: 1" = 20'-0"



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Albert S. Chong

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

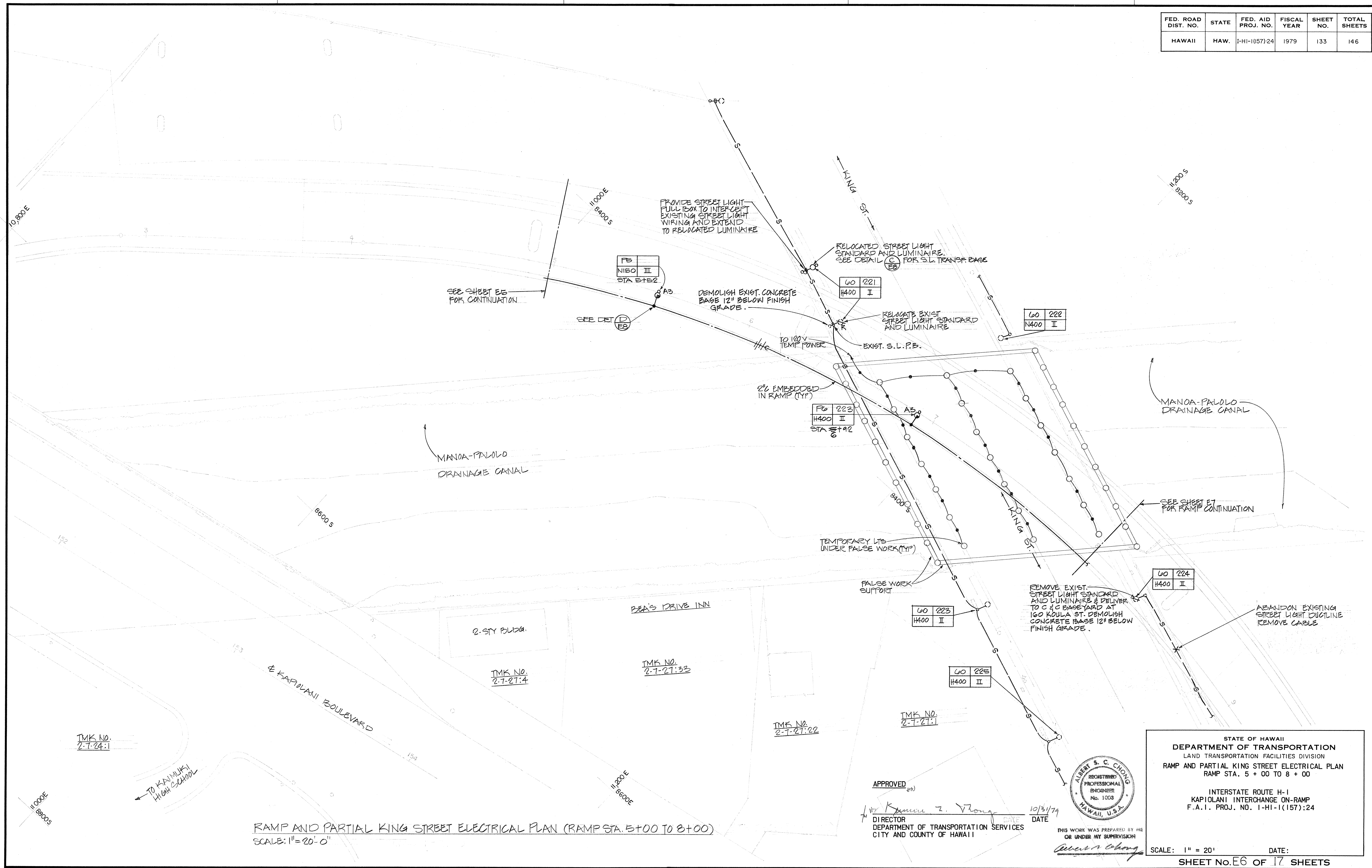
RAMP ELECTRICAL PLAN
STA. 0 + 00 TO 5 + 00

INTERSTATE ROUTE H-1
KAPOLANI INTERCHANGE ON-RAMP
F.A.I. PROJ. NO. I-HI-1-(157):24

SCALE: 1" = 20' DATE:

SHEET No. E5 OF 17 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(157):24	1979	133	146

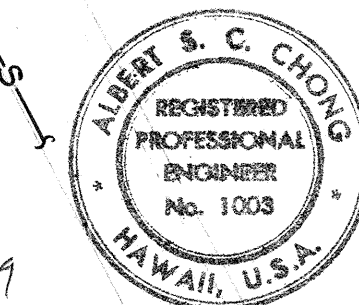


SURVEY PLOTTED BY _____ DATE _____
 DRAWN BY _____
 DESIGNED BY _____
 CHECKED BY _____
 NO. _____

RAMP AND PARTIAL KING STREET ELECTRICAL PLAN (RAMP STA. 5+00 TO 8+00)
 SCALE: 1" = 20' 0"

APPROVED _____
 DIRECTOR
 DEPARTMENT OF TRANSPORTATION SERVICES
 CITY AND COUNTY OF HAWAII

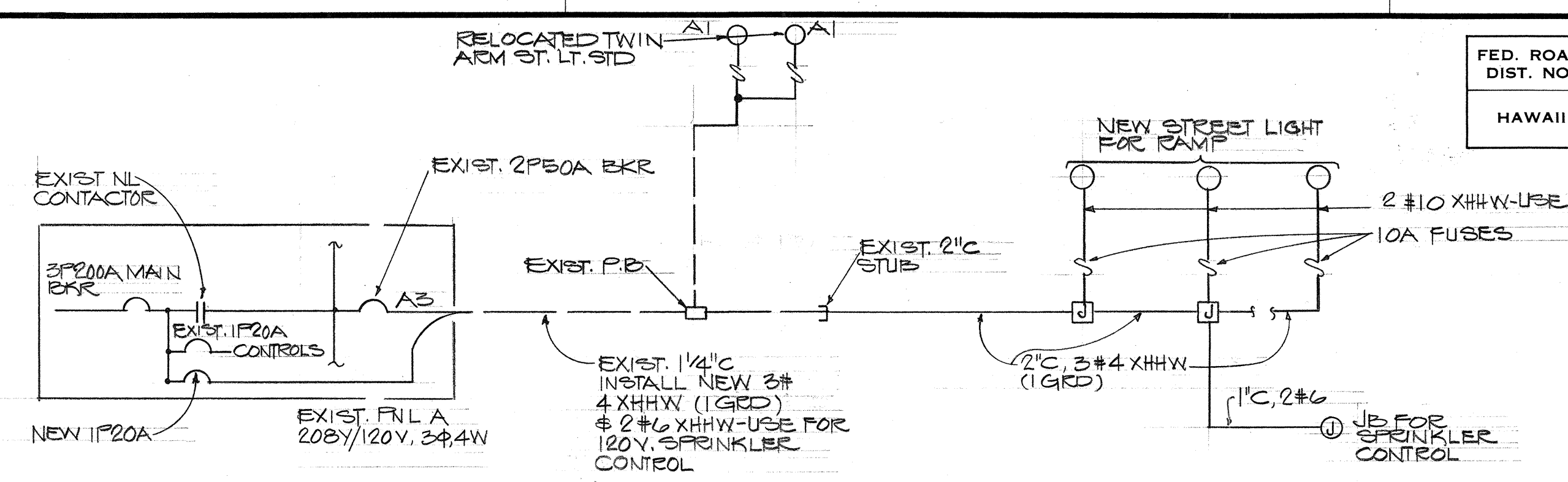
DATE 10/31/79



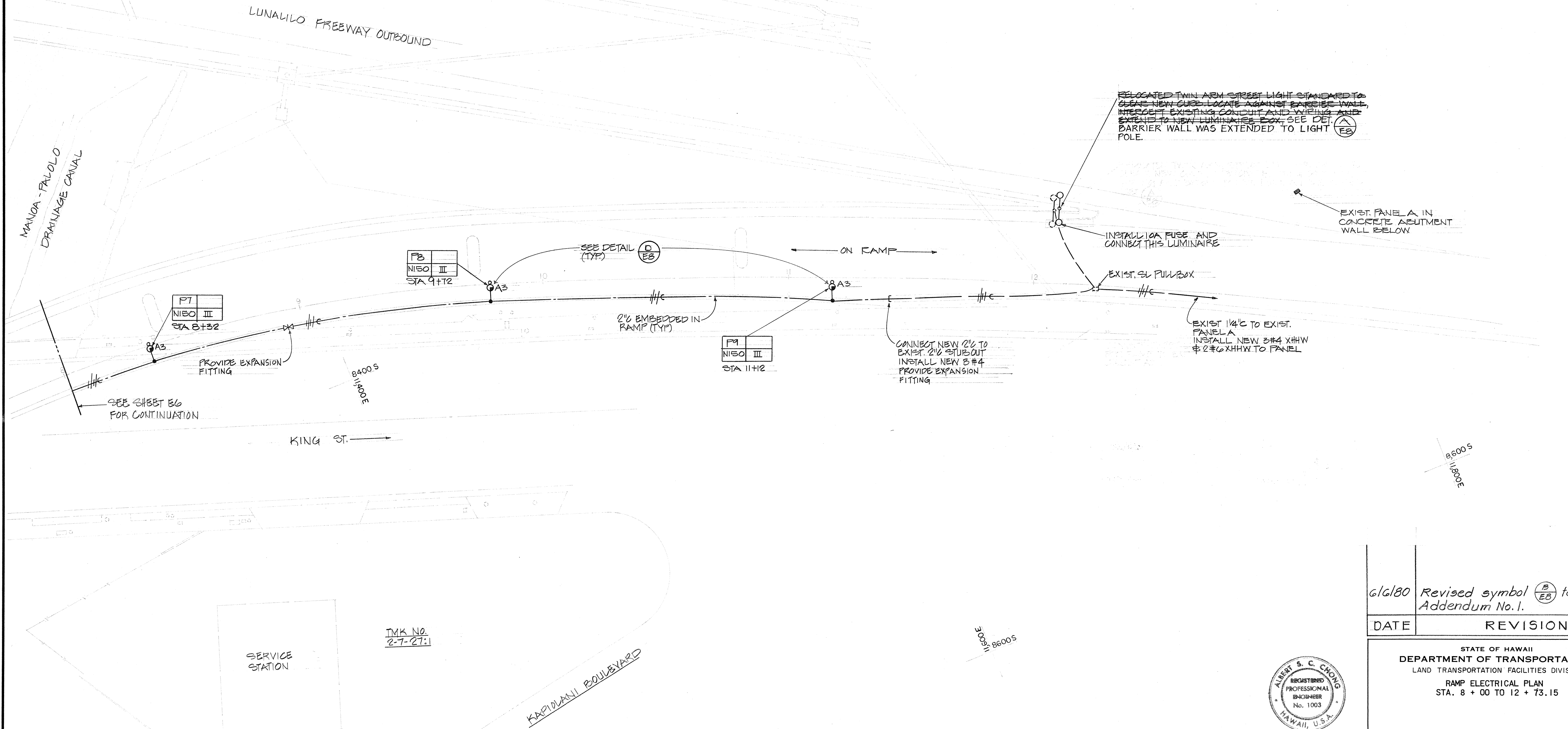
THIS WORK WAS PREPARED BY ME
 OR UNDER MY SUPERVISION
 Albert S. C. Chong

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 LAND TRANSPORTATION FACILITIES DIVISION
 RAMP AND PARTIAL KING STREET ELECTRICAL PLAN
 RAMP STA. 5 + 00 TO 8 + 00
 INTERSTATE ROUTE H-1
 KAPIOLANI INTERCHANGE ON-RAMP
 F.A.I. PROJ. NO. I-HI-1(157):24
 SCALE: 1" = 20' DATE: _____
 SHEET No. E6 OF 17 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-(157)24	1979	134	146

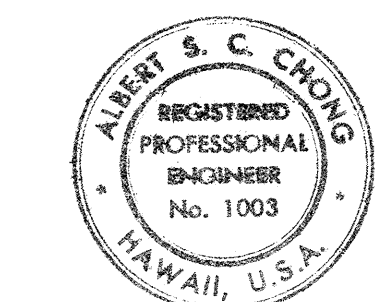


SINGLE LINE DIAGRAM FOR RAMP LIGHTS



RAMP ELECTRICAL PLAN (STA. 8+00 TO 12+73.15)
SCALE: 1" = 20'-0"

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



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Albert S. Chong

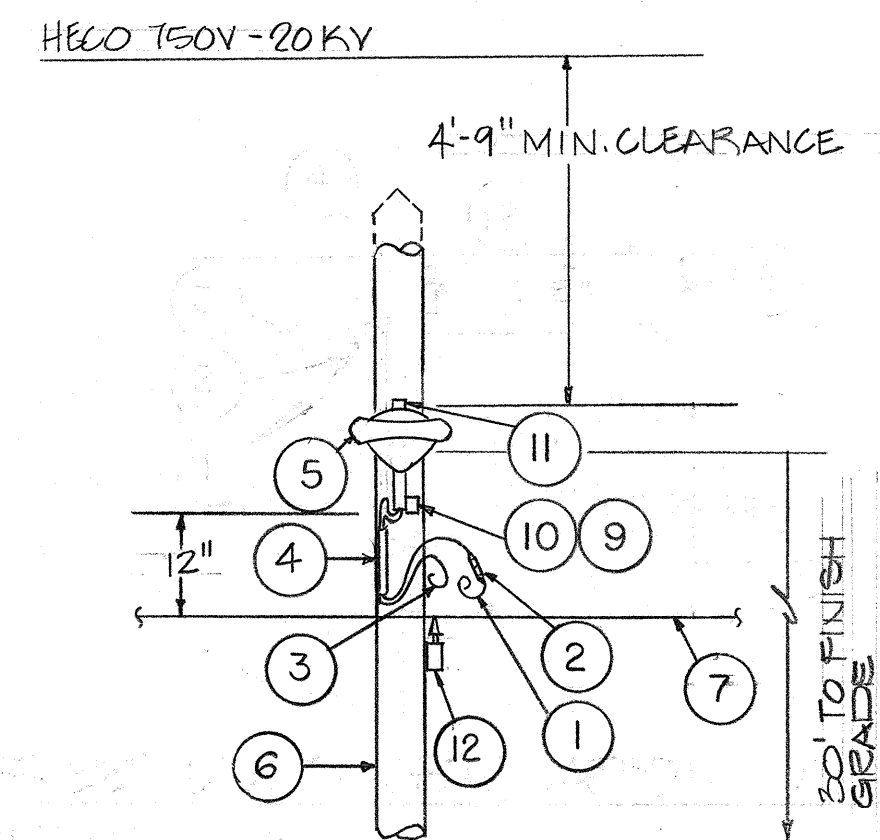
6/6/80	Revised symbol (B/ES) to (D/ES), per Addendum No. 1.
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION
RAMP ELECTRICAL PLAN
STA. 8 + 00 TO 12 + 73.15

INTERSTATE ROUTE H-1
KAPOLANI INTERCHANGE ON-RAMP
F.A.I. PROJ. NO. I-HI-(157): 24

SCALE: 1" = 20' DATE:

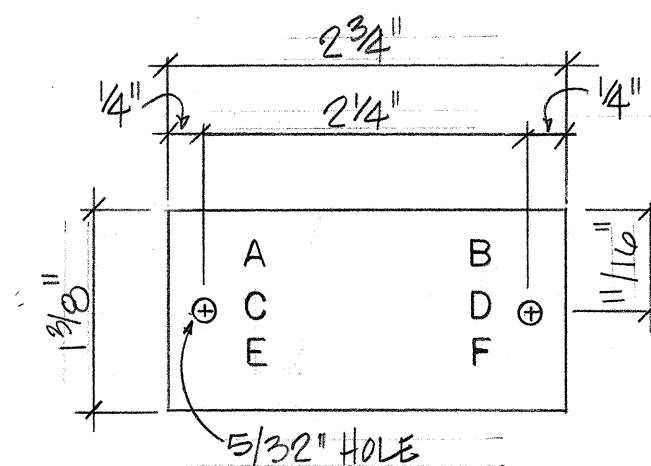
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(157)24	1979	135	146



STREET LIGHT INSTALLATION ON WOOD POLE

ITEM	DESCRIPTION
1	NO. 8 AWG RHW-USE BLACK; SINGLE CONDUCTOR STRANDED COPPER WIRE
2	IN-LINE FUSE HOLDER AND 10A FUSE SUITABLE FOR NO. 8 AWG COPPER WIRE
3	NO. 8 AWG RHW-USE; WHITE SINGLE CONDUCTOR STRANDED COPPER WIRE
4	3/4" PVC SCHEDULE 40 CONDUIT
5	LUMINAIRE AND BRACKET ARM
6	WOOD POLE
7	ALUMINUM SECONDARY BY H.E. COMPANY
8(4/A)	18" MINIMUM CLEARANCE. IF NOT POSSIBLE WHEN SERVICE DROP PASSES OVER LUMINAIRE, H.E. CO. WILL SELECT A SPLICING POINT WHICH WILL PROVIDE FOR PASSAGE TO THE RIGHT OR LEFT OF THE LUMINAIRE TO PROVIDE 18" CLEARANCE.
9	MACHINE BOLT, 5/8" X REQUIRED LENGTH, GALVANIZED WITH NUT & WASHER
10	LAG SCREW, 1/2" X 4" GALVANIZED
11	PHOTOELECTRIC CONTROL
12	CROSSARM BY HAWAIIAN ELECTRIC COMPANY

NOTE: FINAL CONNECTIONS TO BE MADE BY HAWAIIAN ELECTRIC COMPANY.



TYPE "B"
(C & C METAL STANDARD)

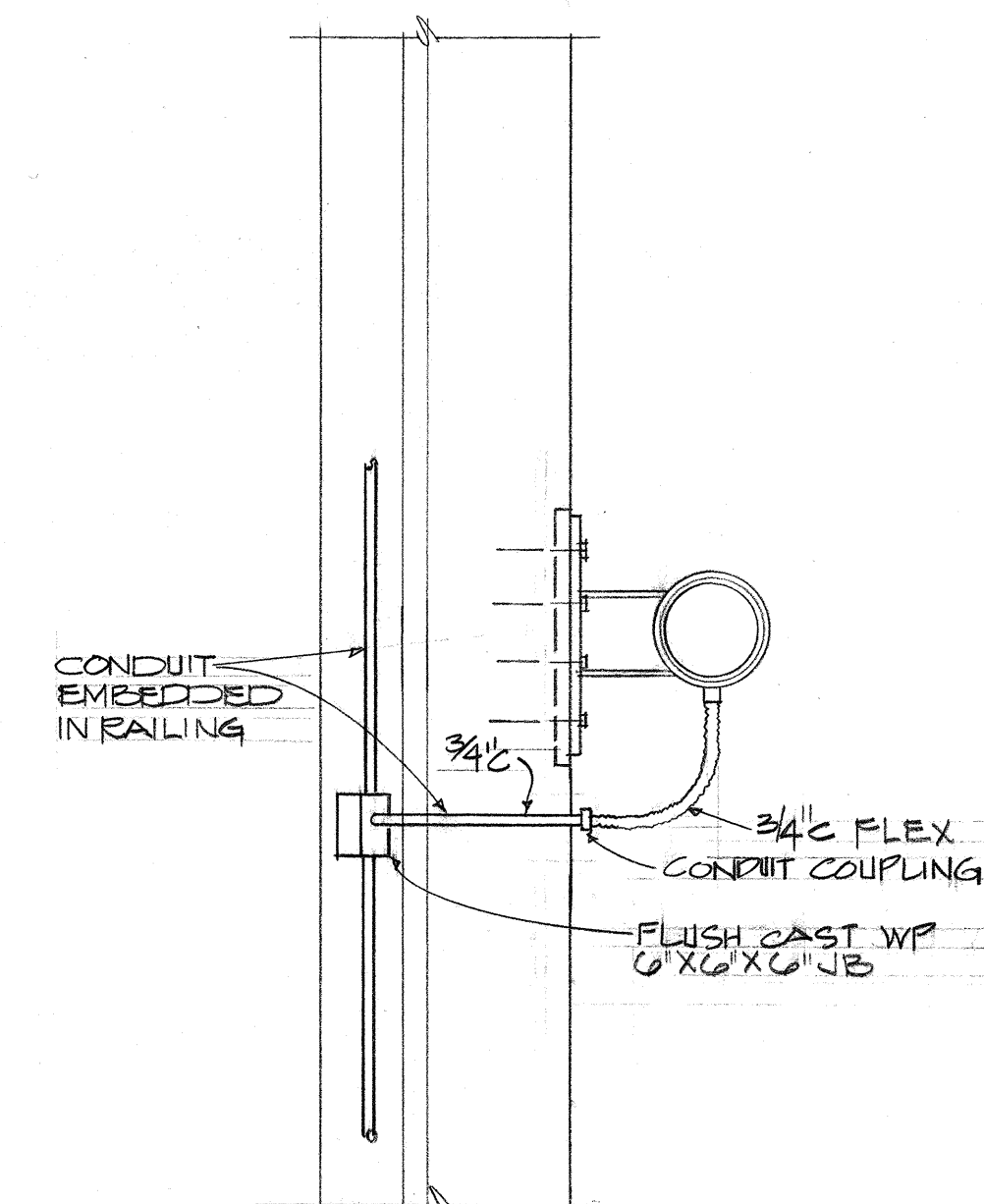
- LEGEND**
- CONTRACT NO. OBTAINED FROM CITY AND COUNTY.
 - LIGHT NO. FROM CONTRACT DRAWING.
 - LAMP DATA, SEE CODE BELOW.
 - REFRACTOR DATA, SEE CODE BELOW.
 - POST NO. FROM CONTRACT DRAWING TO RUN CONSECUTIVELY ON EACH STREET.
 - LAMP VOLTAGE (OBTAIN FROM SUPPLIER).

LAMP CODE DATA
250 WATT HIGH PRESSURE SODIUM N250

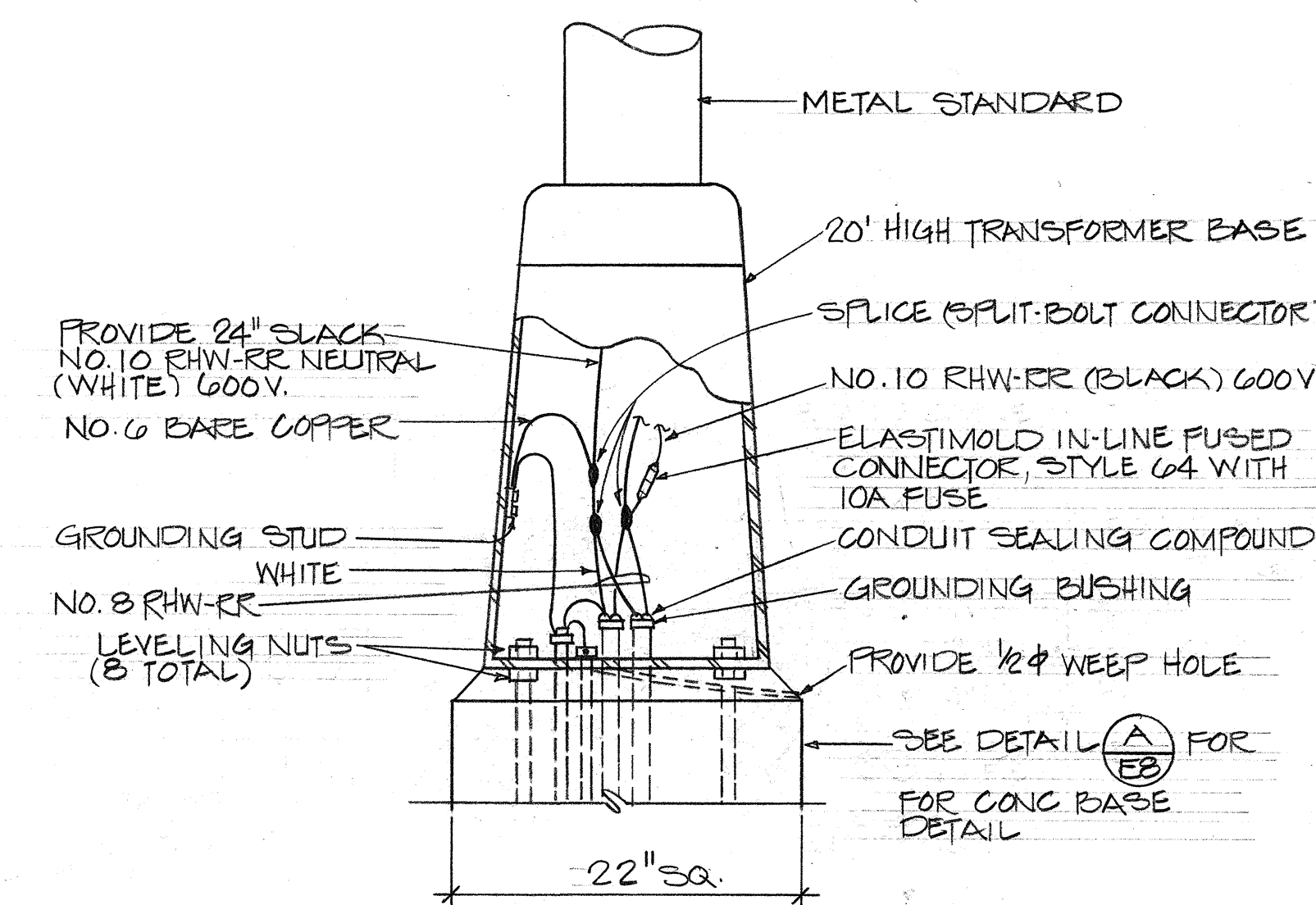
REFRACTOR CODE
USE ROMAN NUMERAL IES TYPE AS INDICATED ON DRAWING OR IN SPECIFICATIONS I THROUGH V.

NOTES

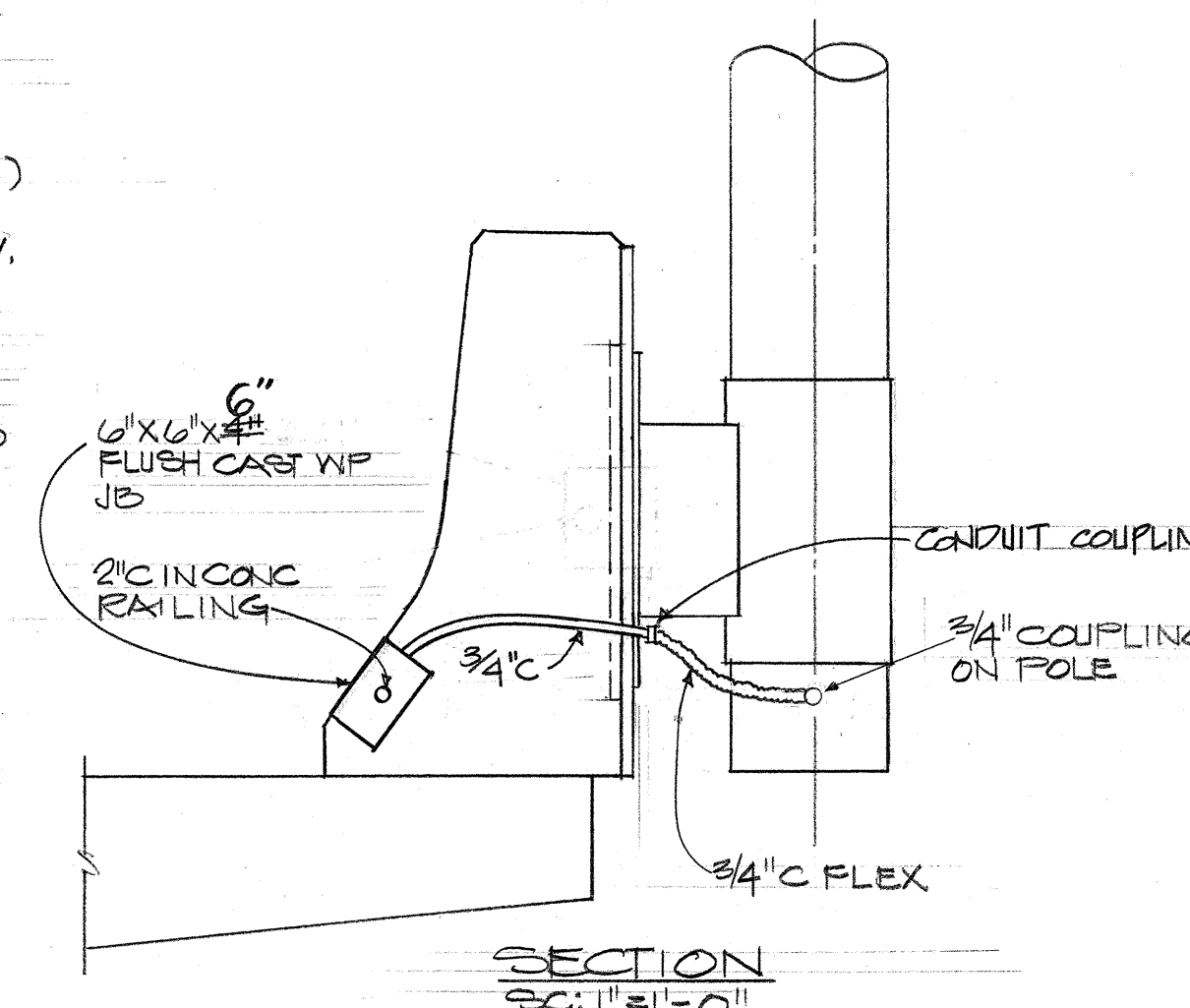
- MAKE TAG FROM 3-PLY LAMINATED PLASTIC, BLACK-WHITE-BLACK.
- ATTACH TO STEEL POSTS WITH NO. 7 CADMIUM-PLATED DRIVE SCREWS, NO. 29 DRILL HOLES IN POST.
- LETTERS - NO. 5 REDUCTION, 1/5" ENGRAVED OR STENCILLED.



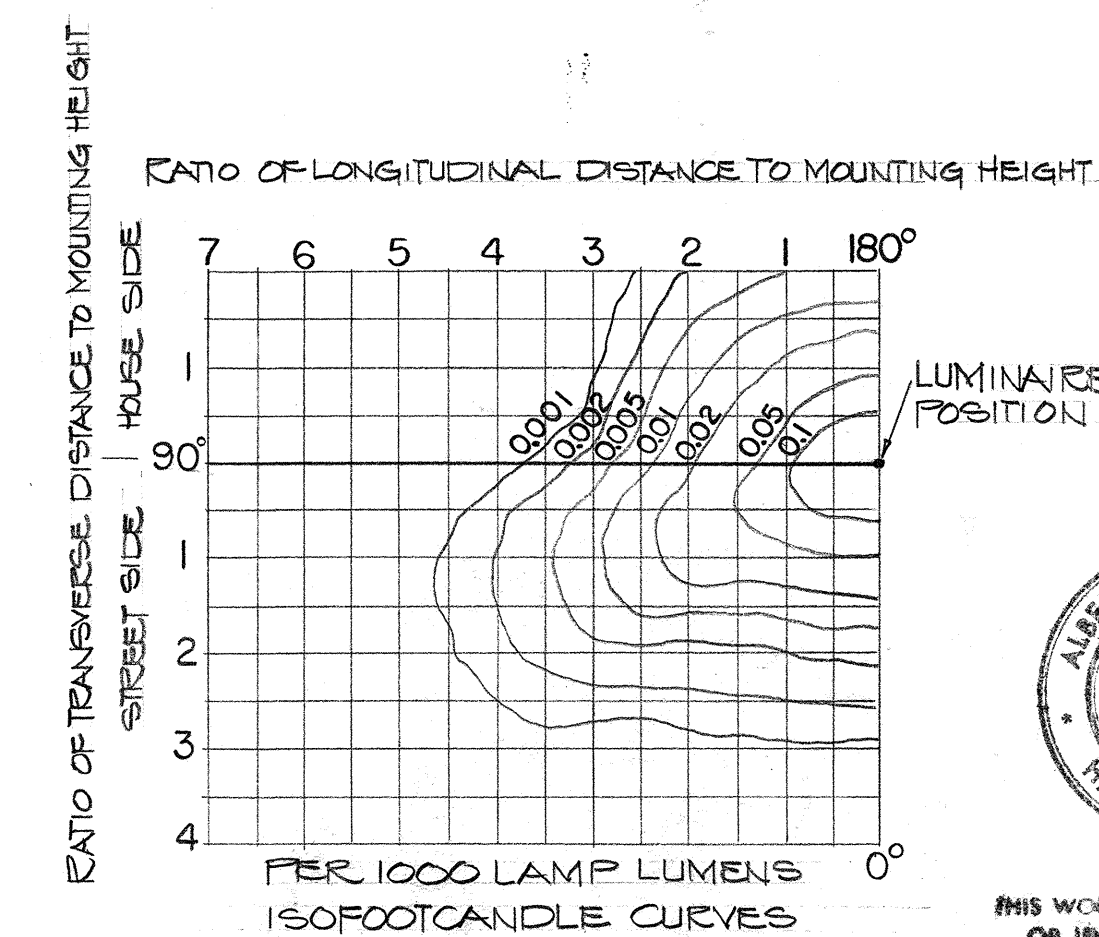
IDENTIFICATION TAG DETAIL
N.T.S.



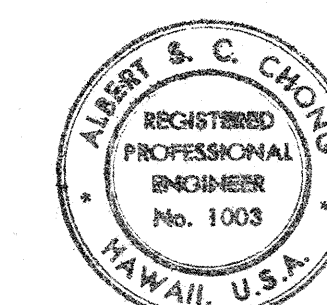
TRANSFORMER BASE DETAILS
N.T.S.



RAMP LIGHTING SUPPORT DETAIL
N.T.S.



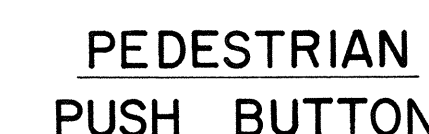
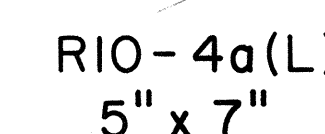
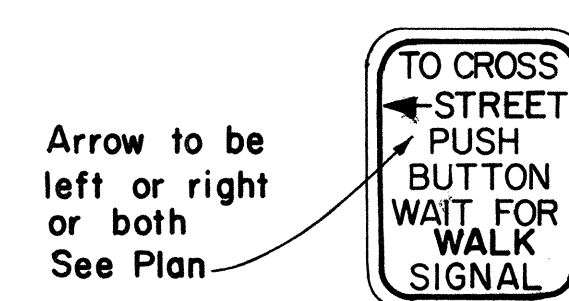
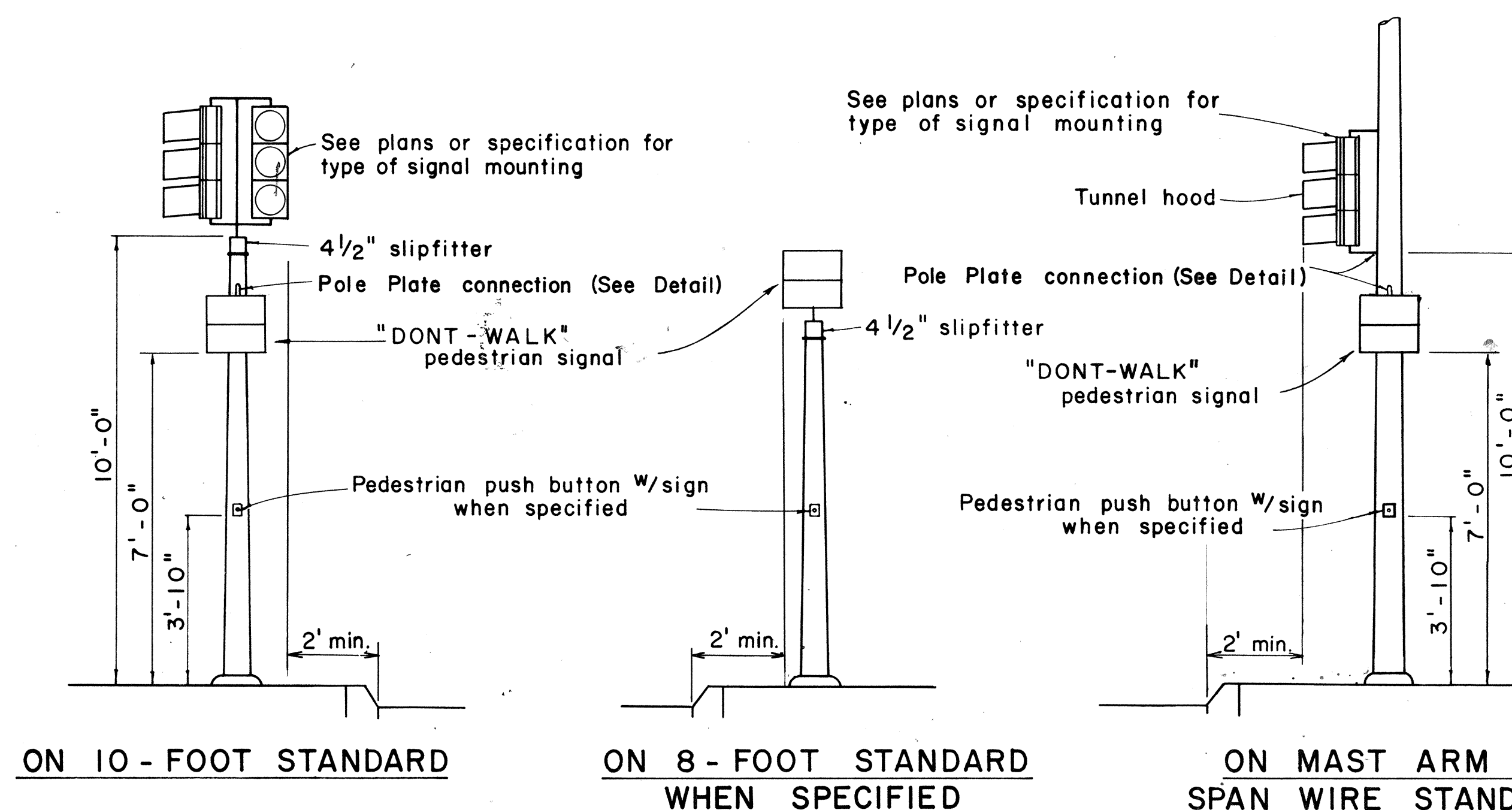
RAMP LUMINAIRE DISTRIBUTION CURVE



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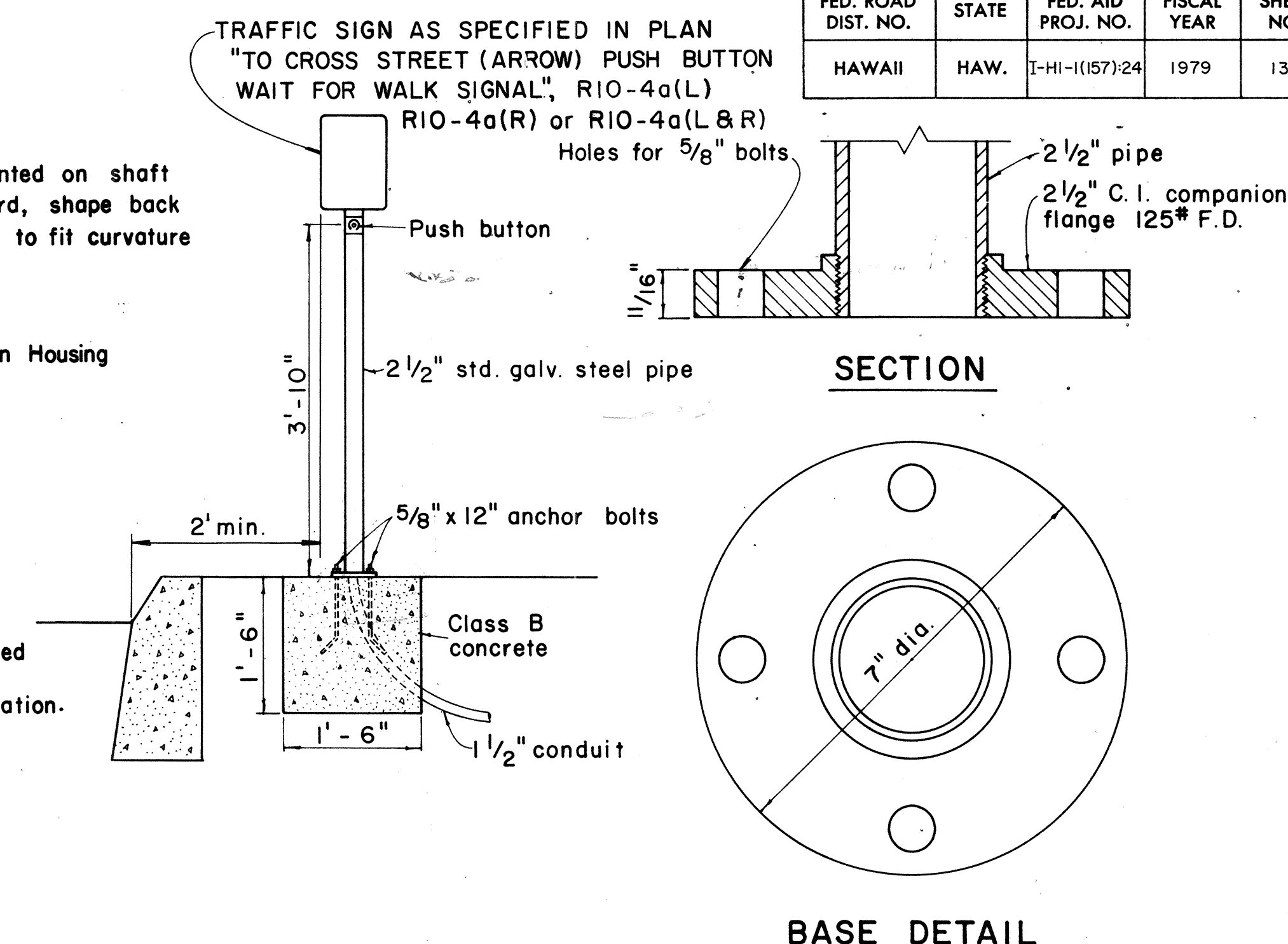
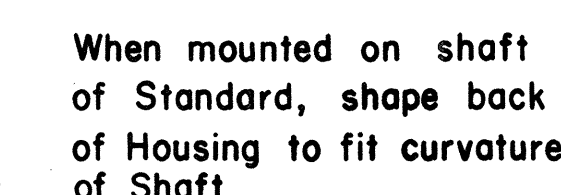
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION LAND TRANSPORTATION FACILITIES DIVISION STREET LIGHT STANDARD DETAILS	INTERSTATE ROUTE H-1 KAPIOLANI INTERCHANGE ON-RAMP F.A.I. PROJ. NO. I-HI-1(157)24
SCALE: NOT TO SCALE	DATE:
SHEET NO. E8 OF 17 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(157):24	1979	136	146

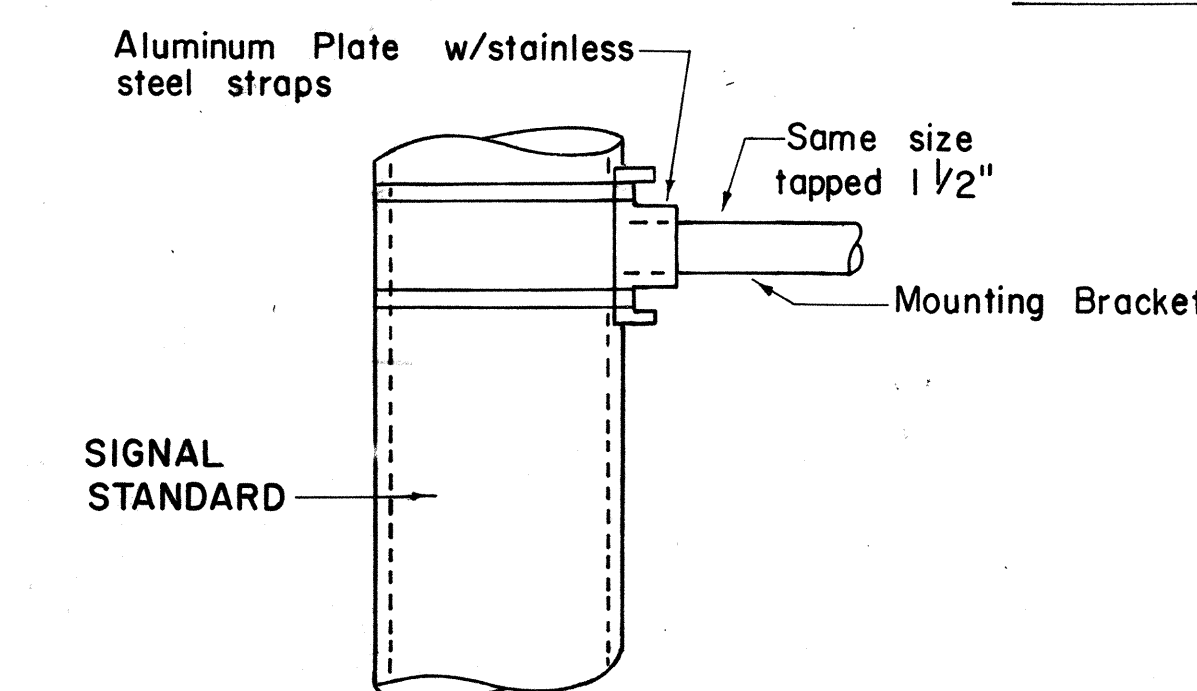


NOTE:

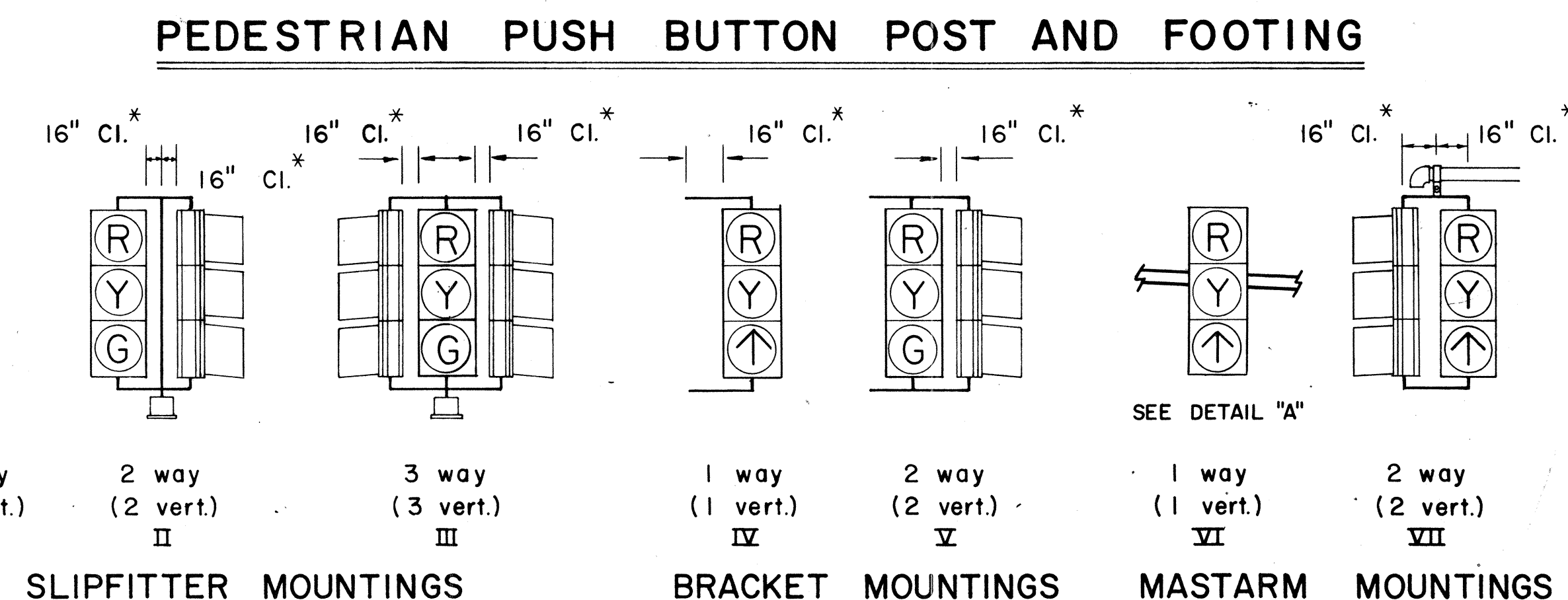
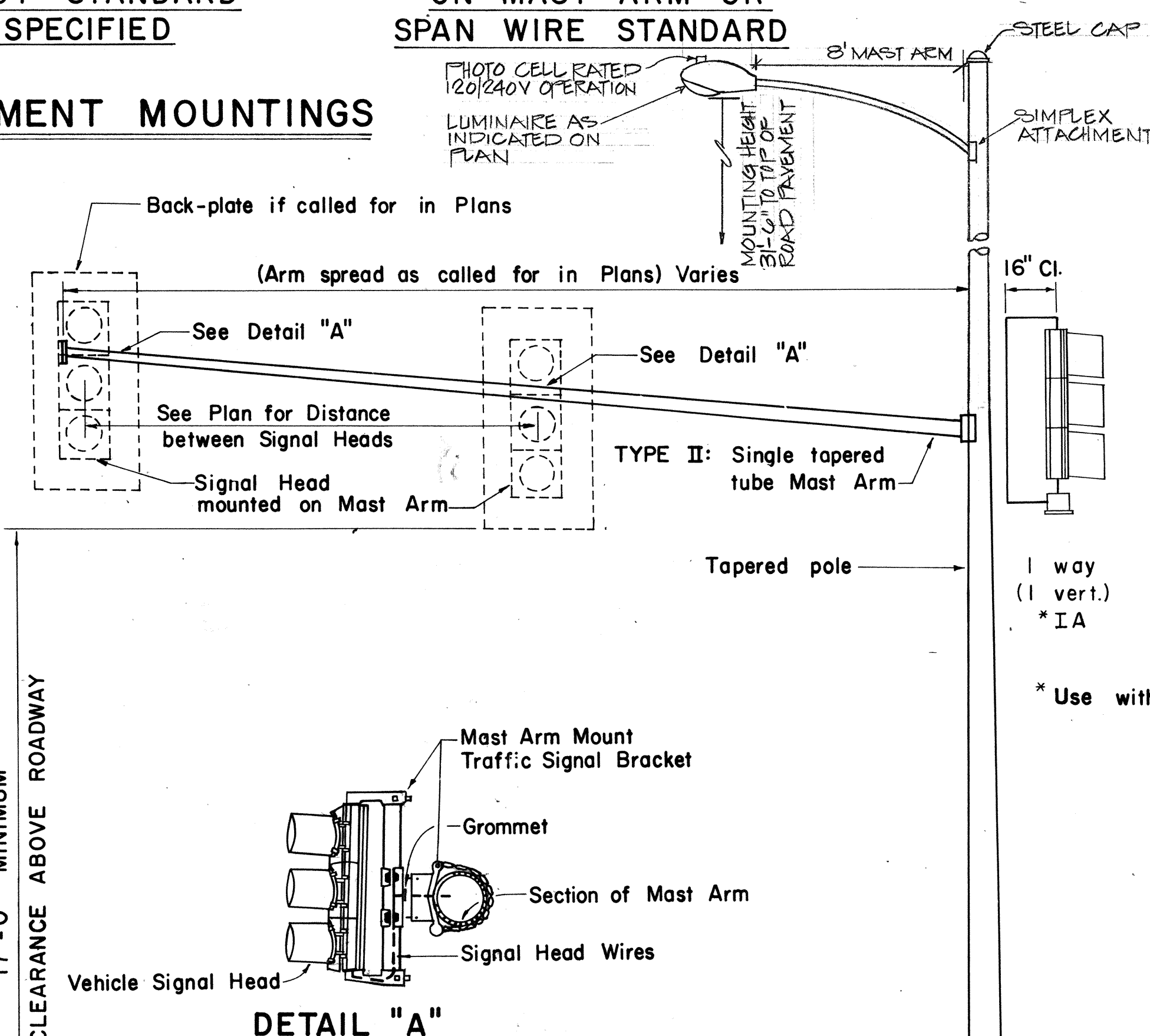
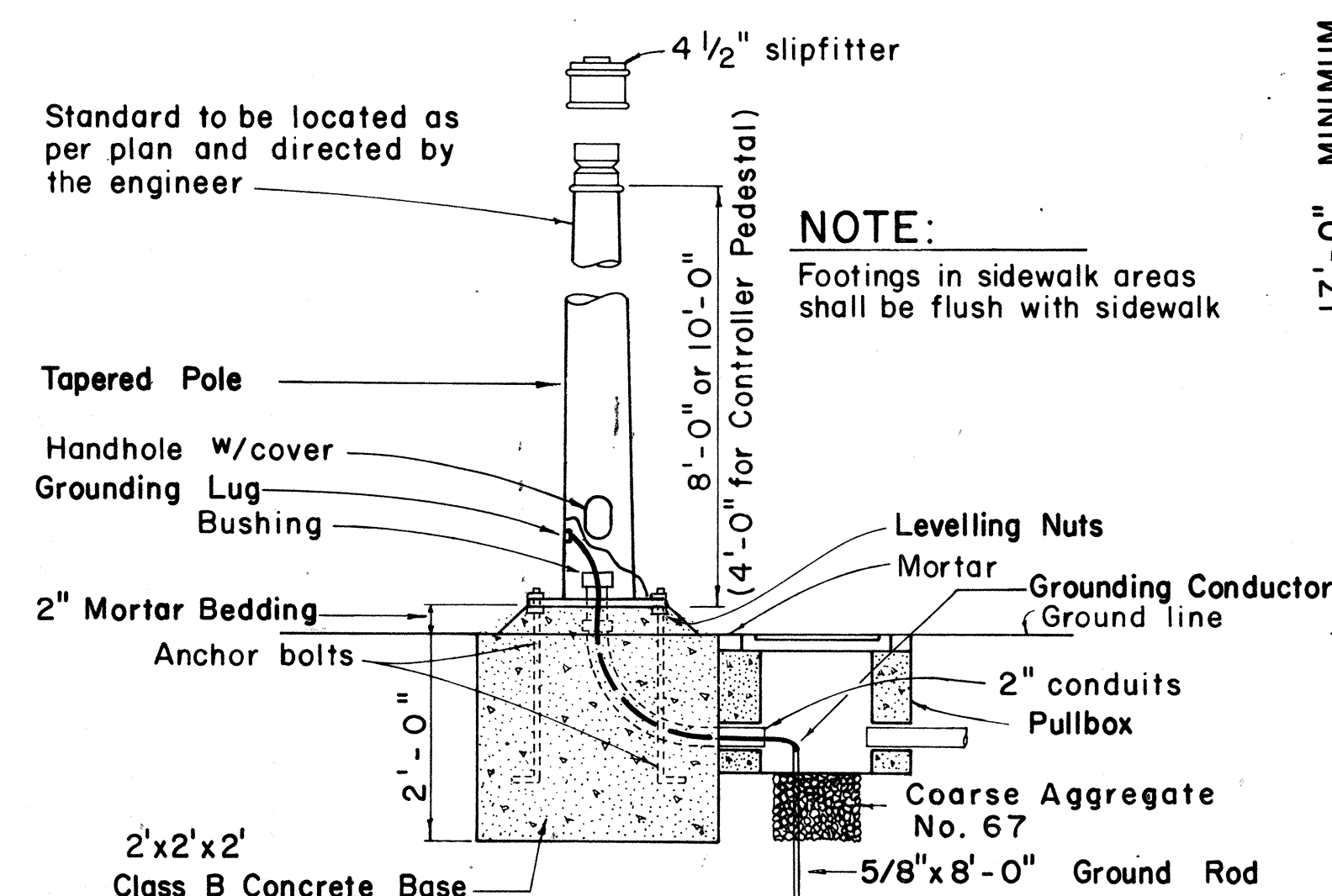
1. Conduits shall protrude 2" max. above finished surface of foundation.
2. Conduits shall slope away from pole foundation.



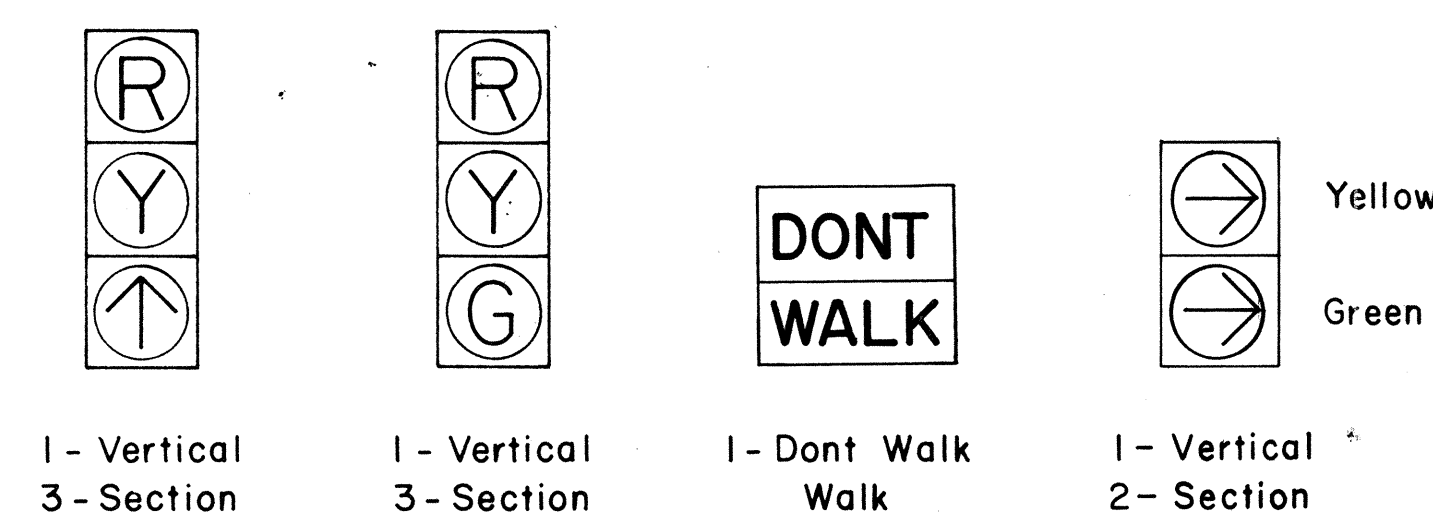
TYPICAL EQUIPMENT MOUNTINGS



DETAIL OF POLE PLATE CONNECTIONS



TYPICAL VEHICULAR AND PEDESTRIAN SIGNAL MOUNTINGS



TYPICAL SIGNAL ARRANGEMENTS

NO.	REVISION	APPROVED BY	DATE
1	Revise code nos. for Pedestrian Push Button signs.	H.T.	3/23
2	Revise Details of Traffic and Pedestrian Signals, Standards and Pedestrian Push Button and Signs.	H.T.	3/5
3	Revise signal indications.	H.T.	9/22
4	Remove Note No. 3 & Revise clearance and dimension.	H.T.	9/19

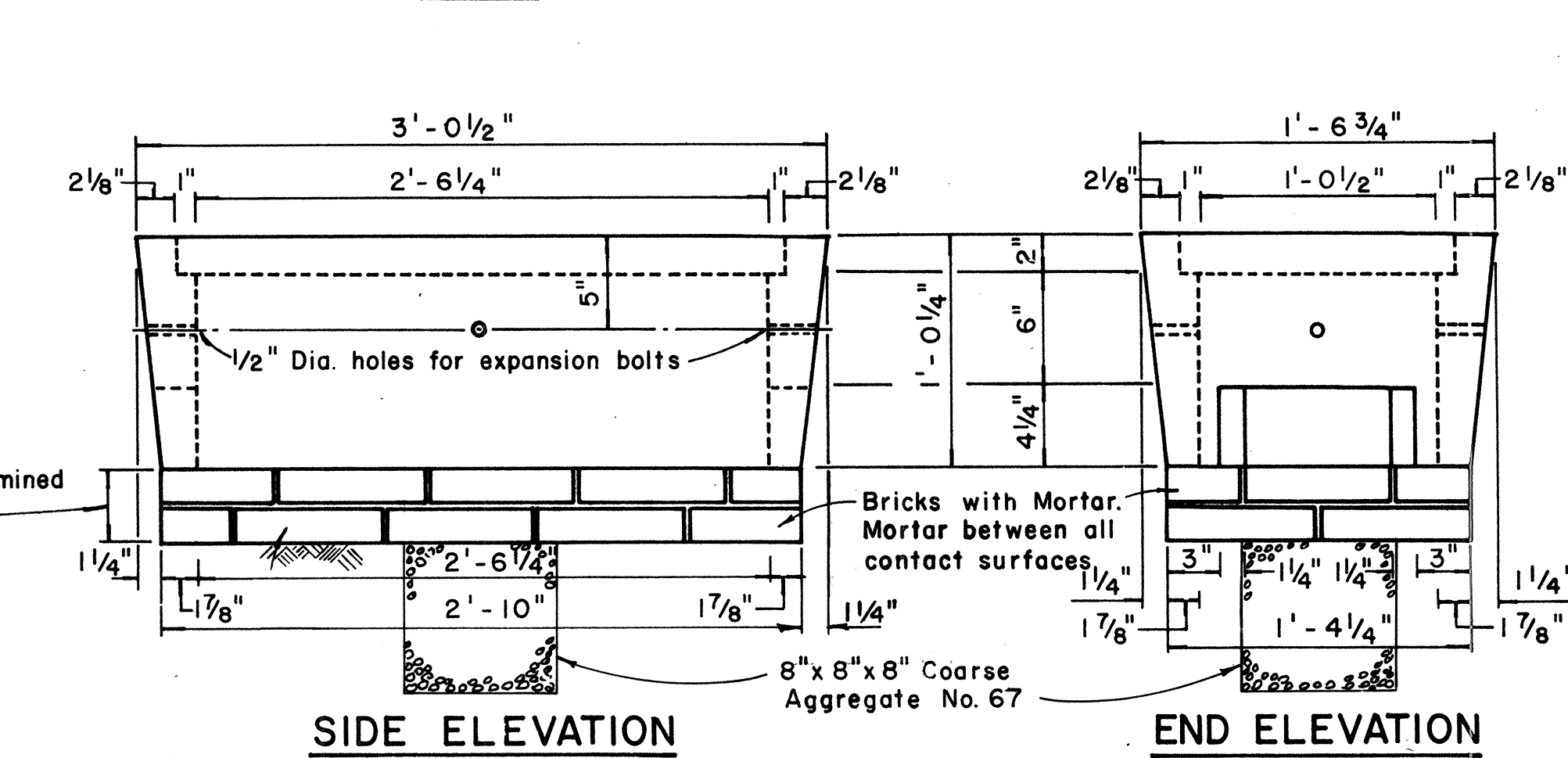
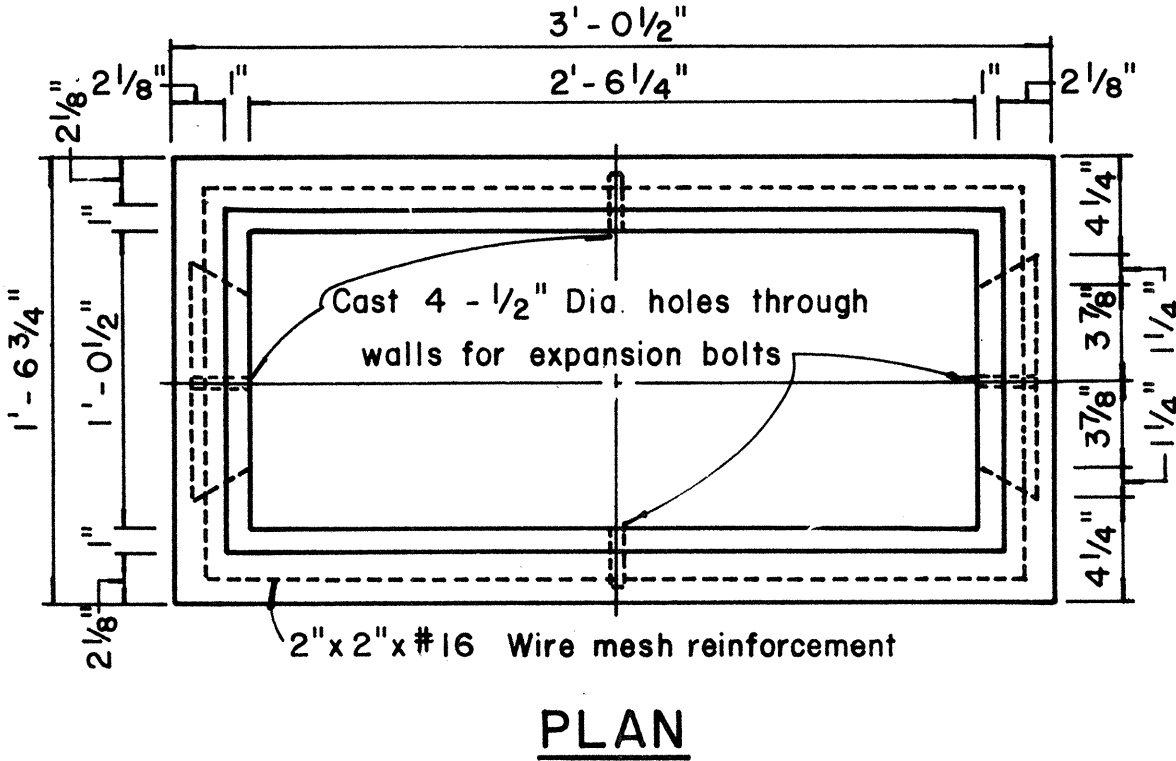
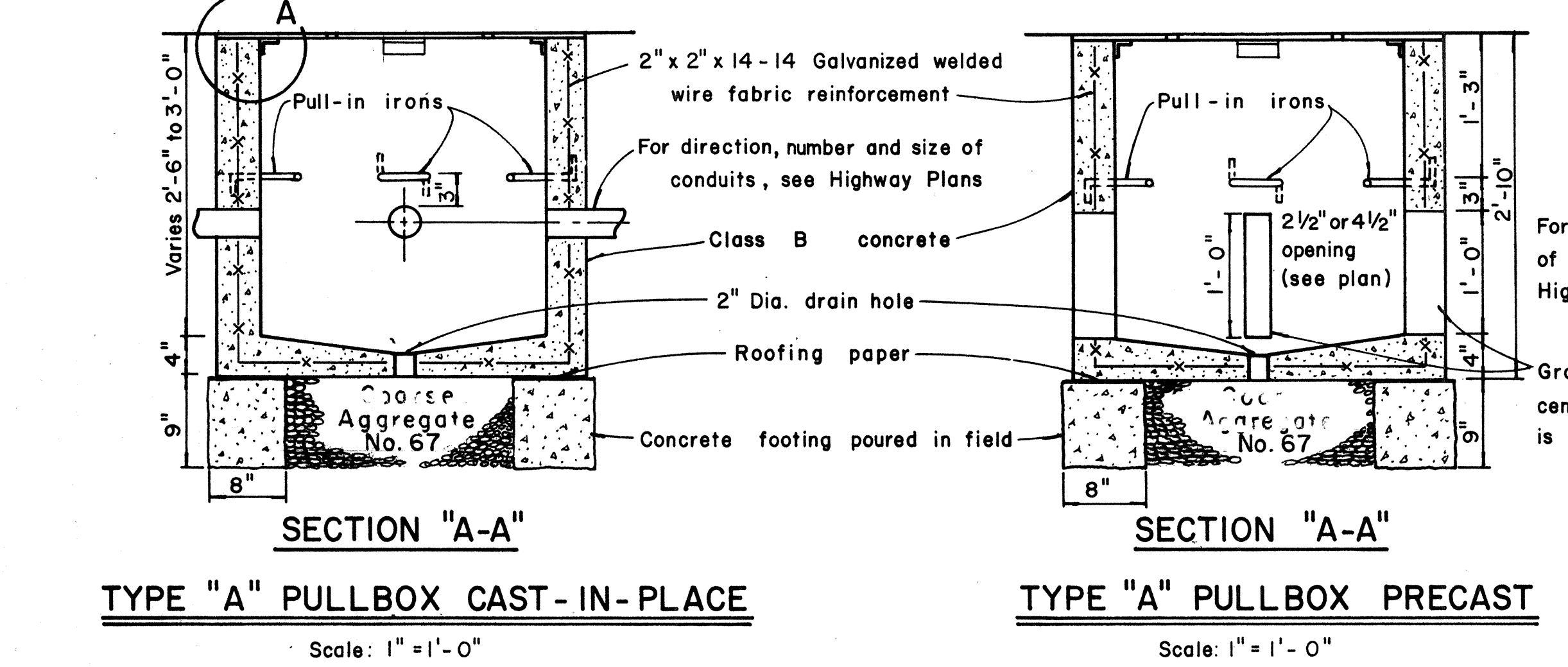
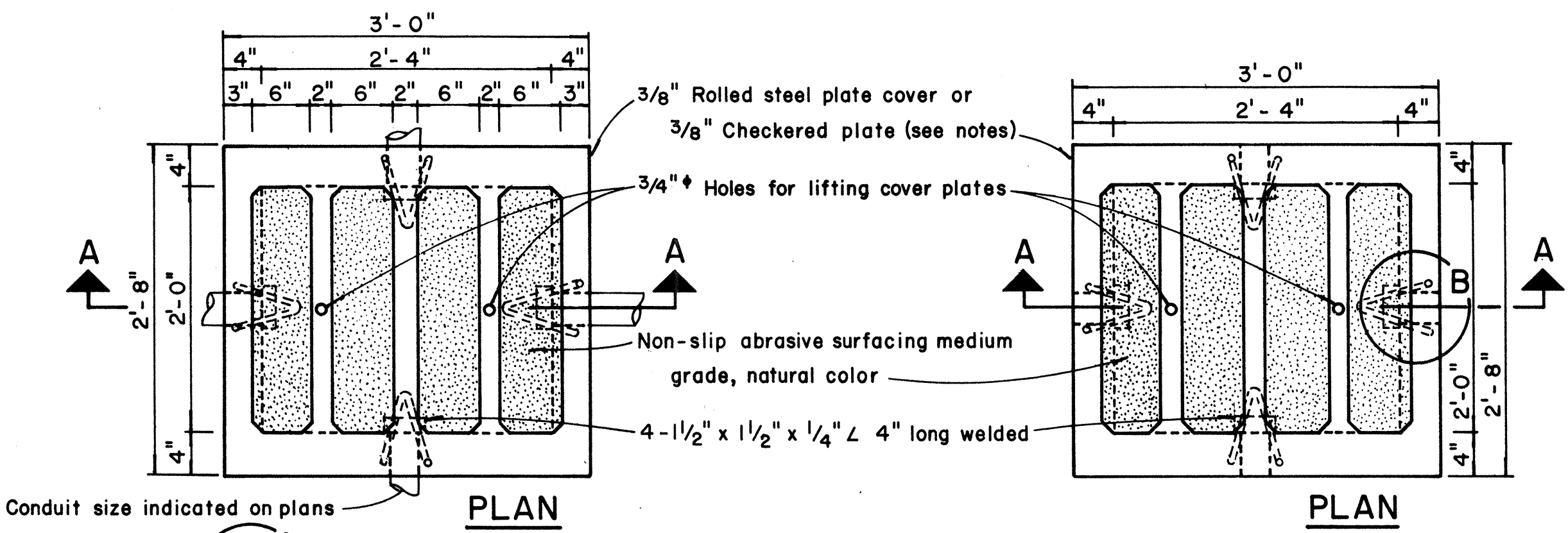
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

TRAFFIC SIGNAL SYSTEM
MISCELLANEOUS DETAILS

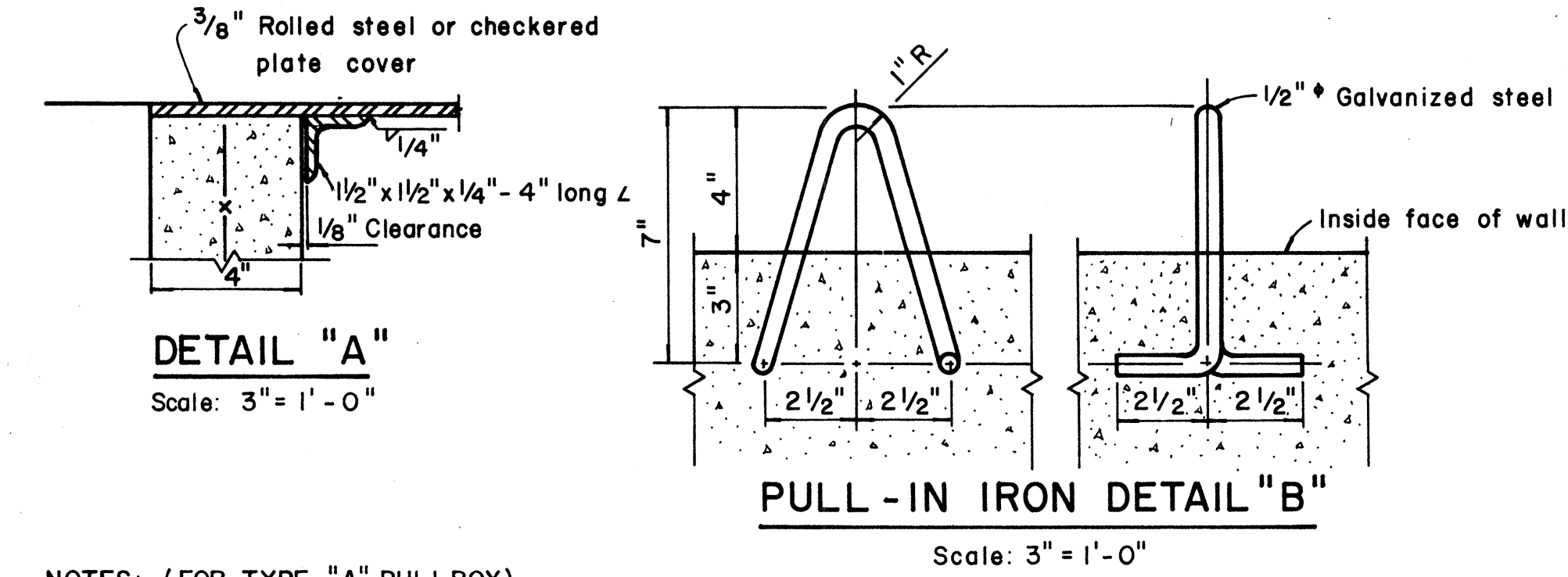
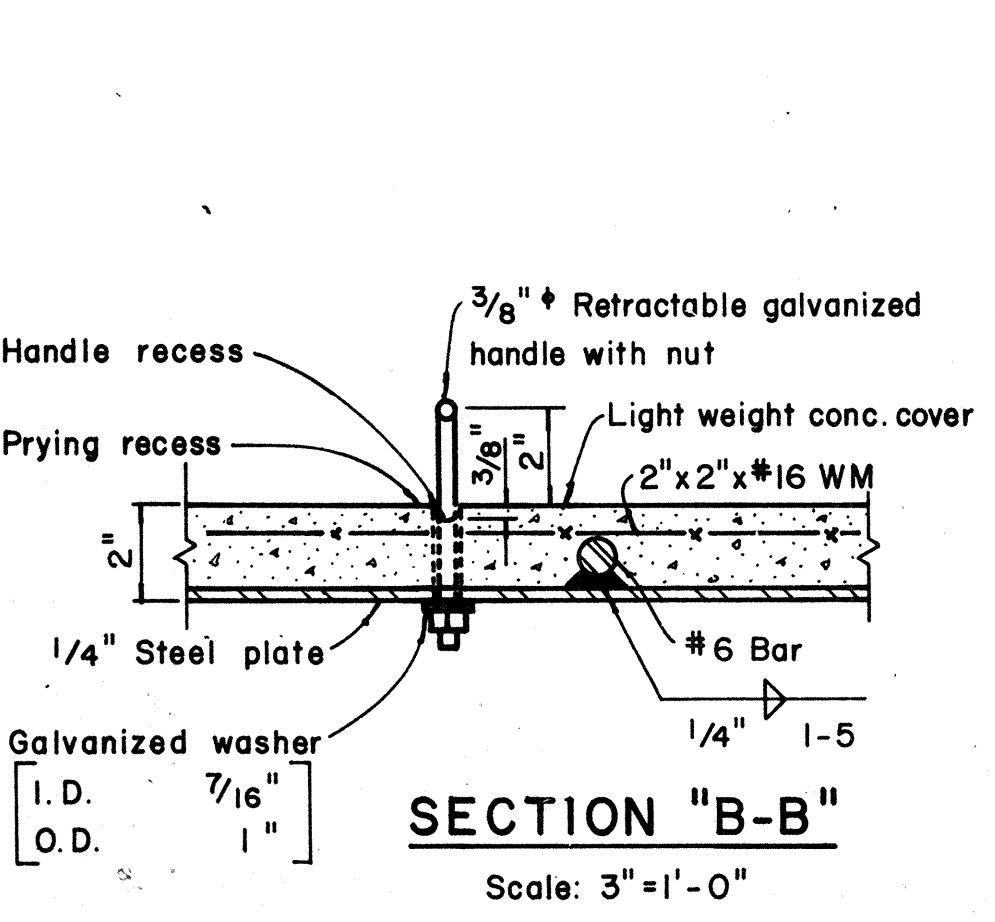
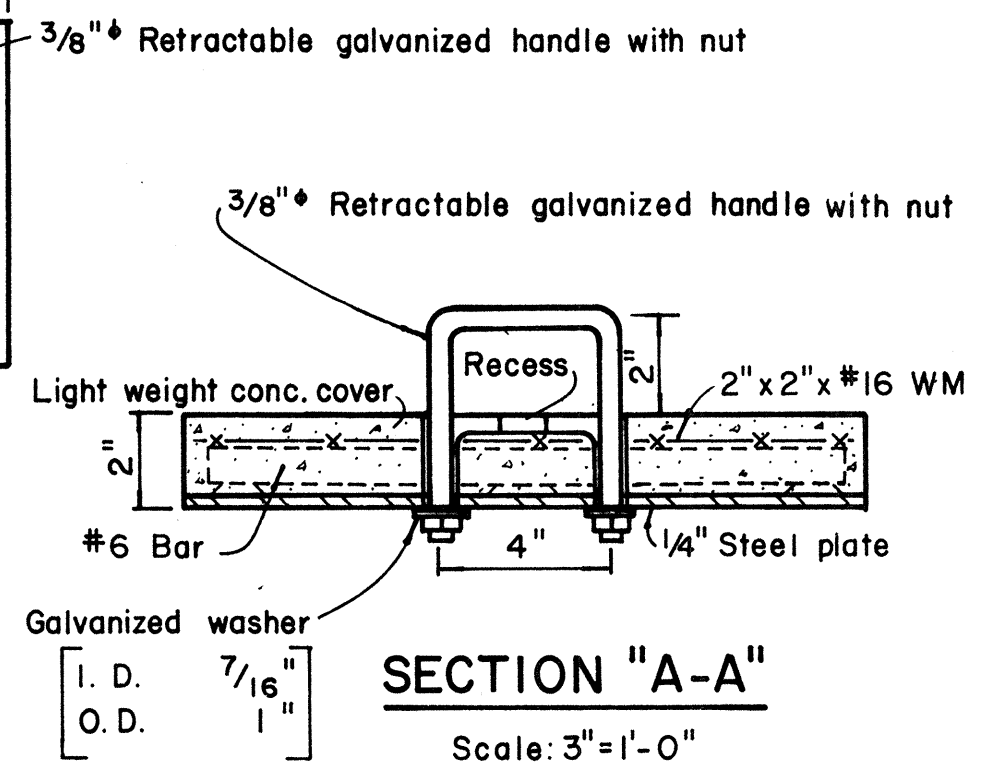
Not to Scale

SHEET No. F 9 OF 17 SHEETS DT 400

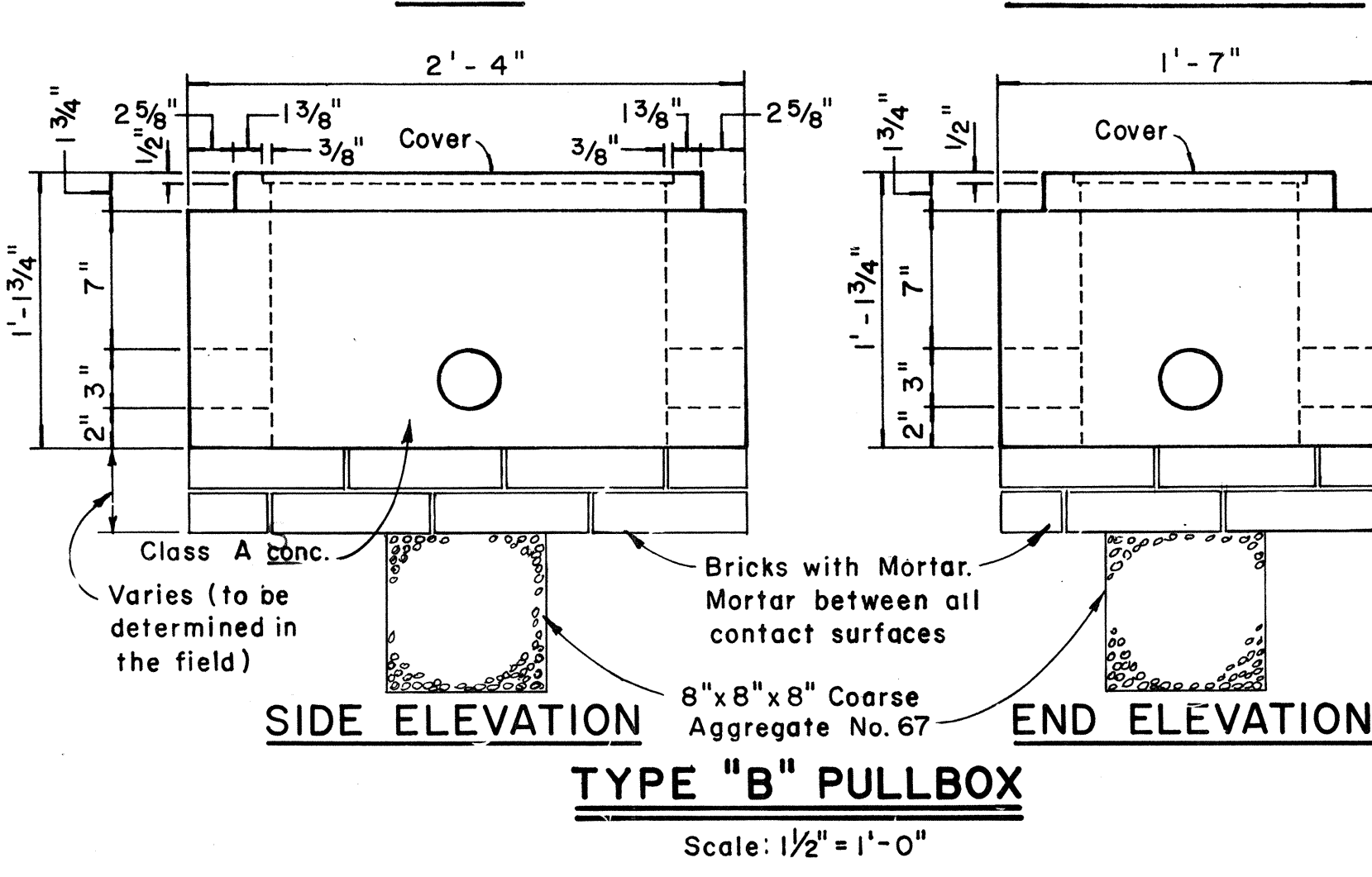
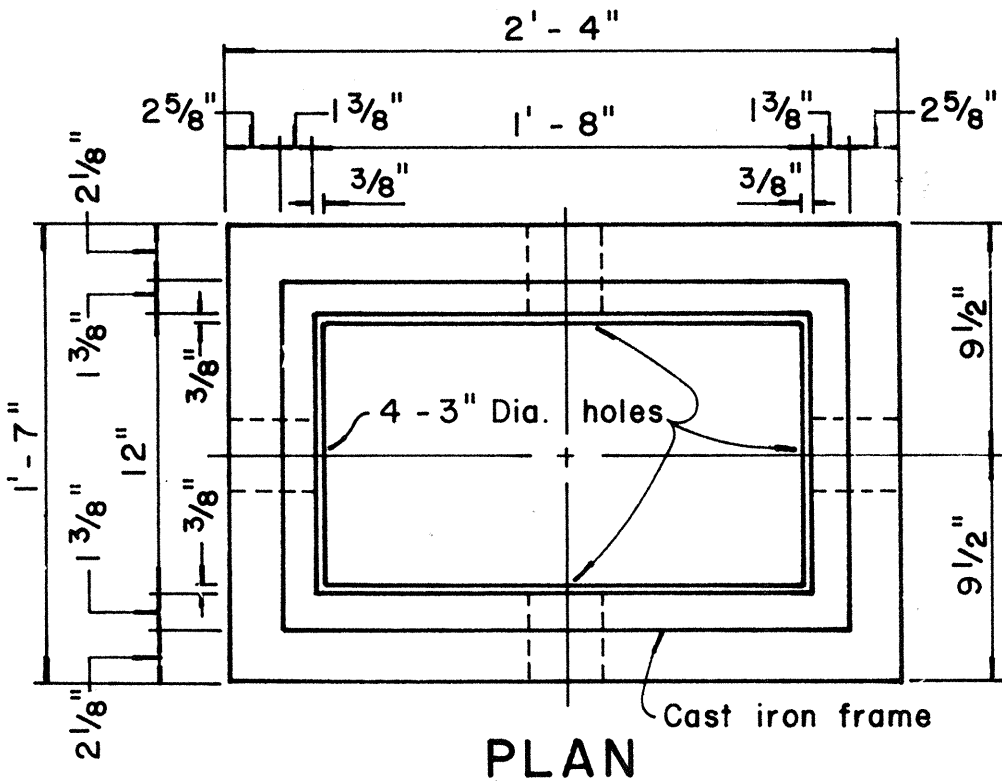
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-HI-11(57)-24	1979	137	146



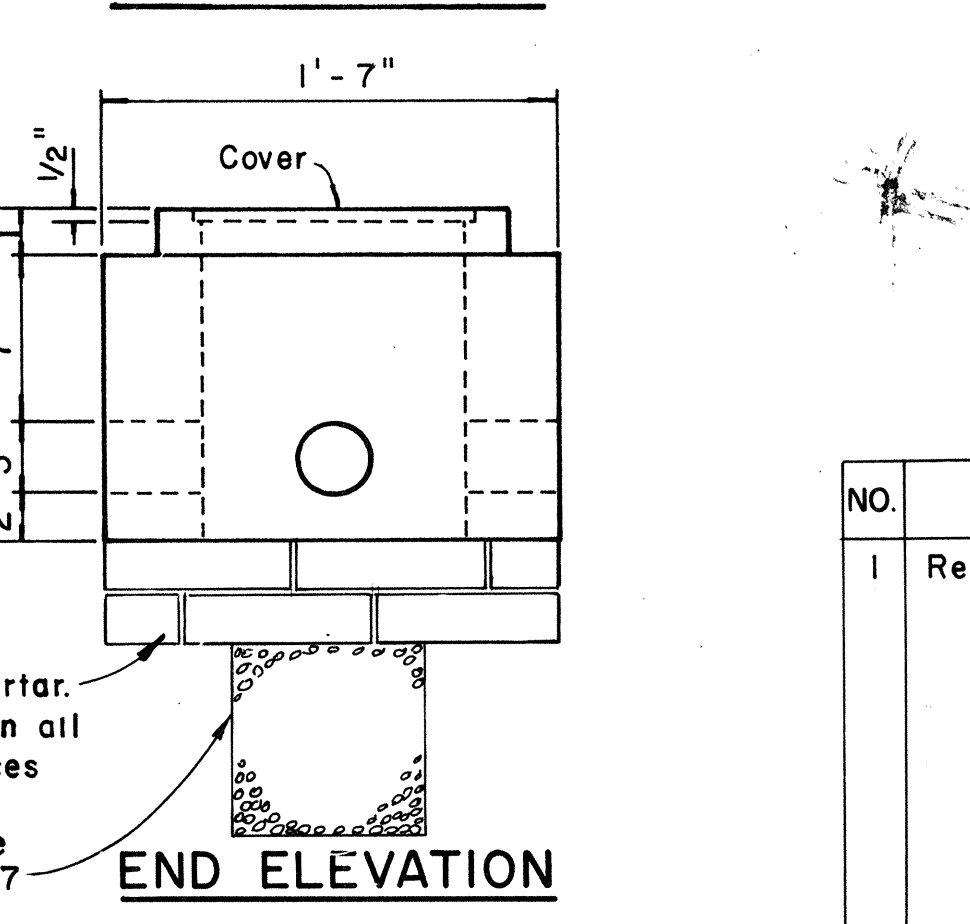
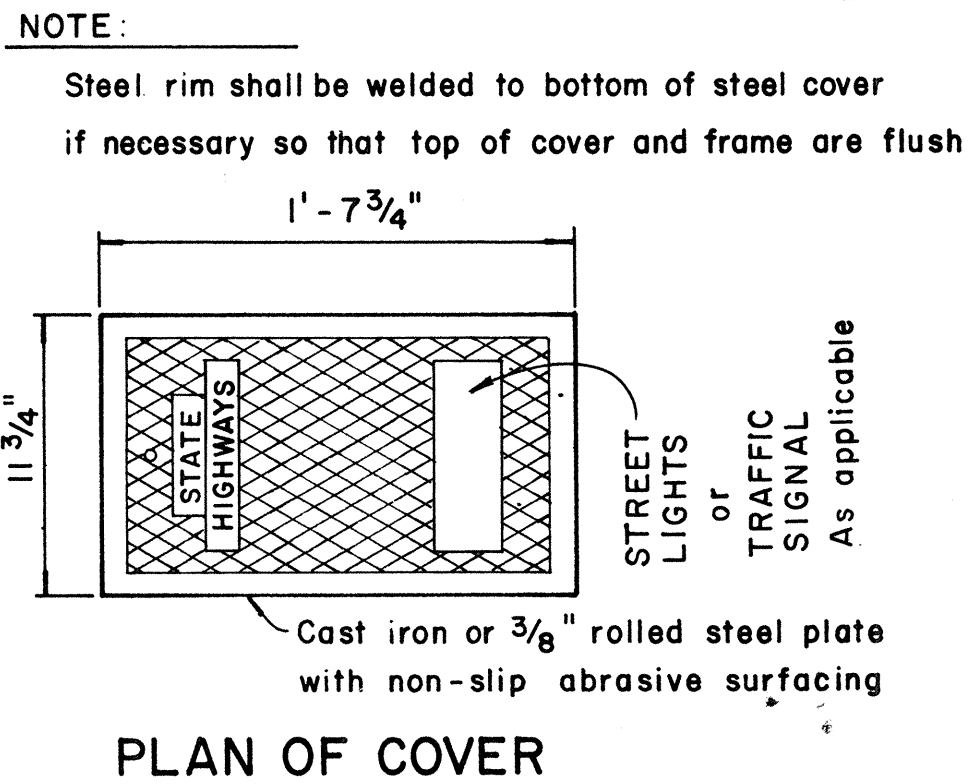
TYPE "C" PULLBOX
Scale: 1/2" = 1'-0"



- NOTES: (FOR TYPE "A" PULLBOX)
- 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.
 - 3/8" Checkered plate cover shall be used on all pullboxes located in median areas and other locations where there are no pedestrians walking.
 - Pull irons shall be placed opposite each conduit slot.
 - Covers on all pullboxes located in sidewalk areas shall be set flush with the concrete sidewalk.
 - Each pullbox shall have a pair of pull irons opposite each other for lifting purposes.



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



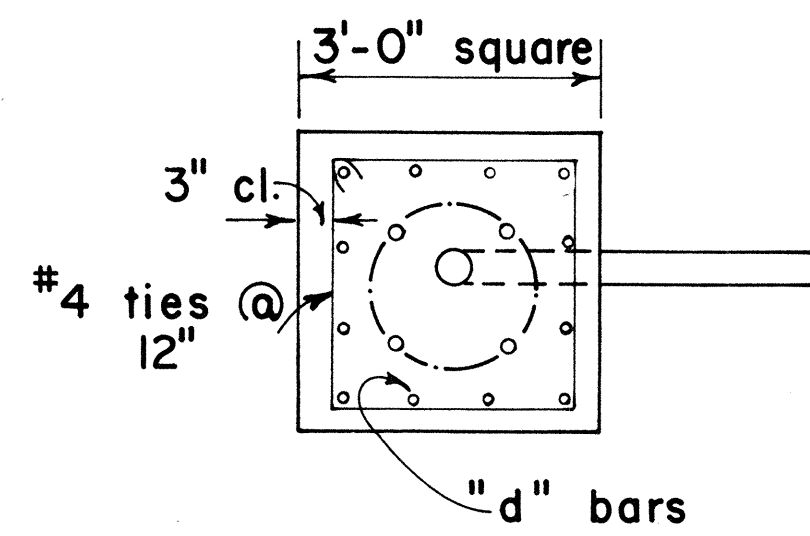
TYPE "B" PULLBOX
Scale: 1/2" = 1'-0"

APPROVAL RECOMMENDED:
Erich Tanaka
TRAFFIC ENGINEER
DATE: 12/6/79

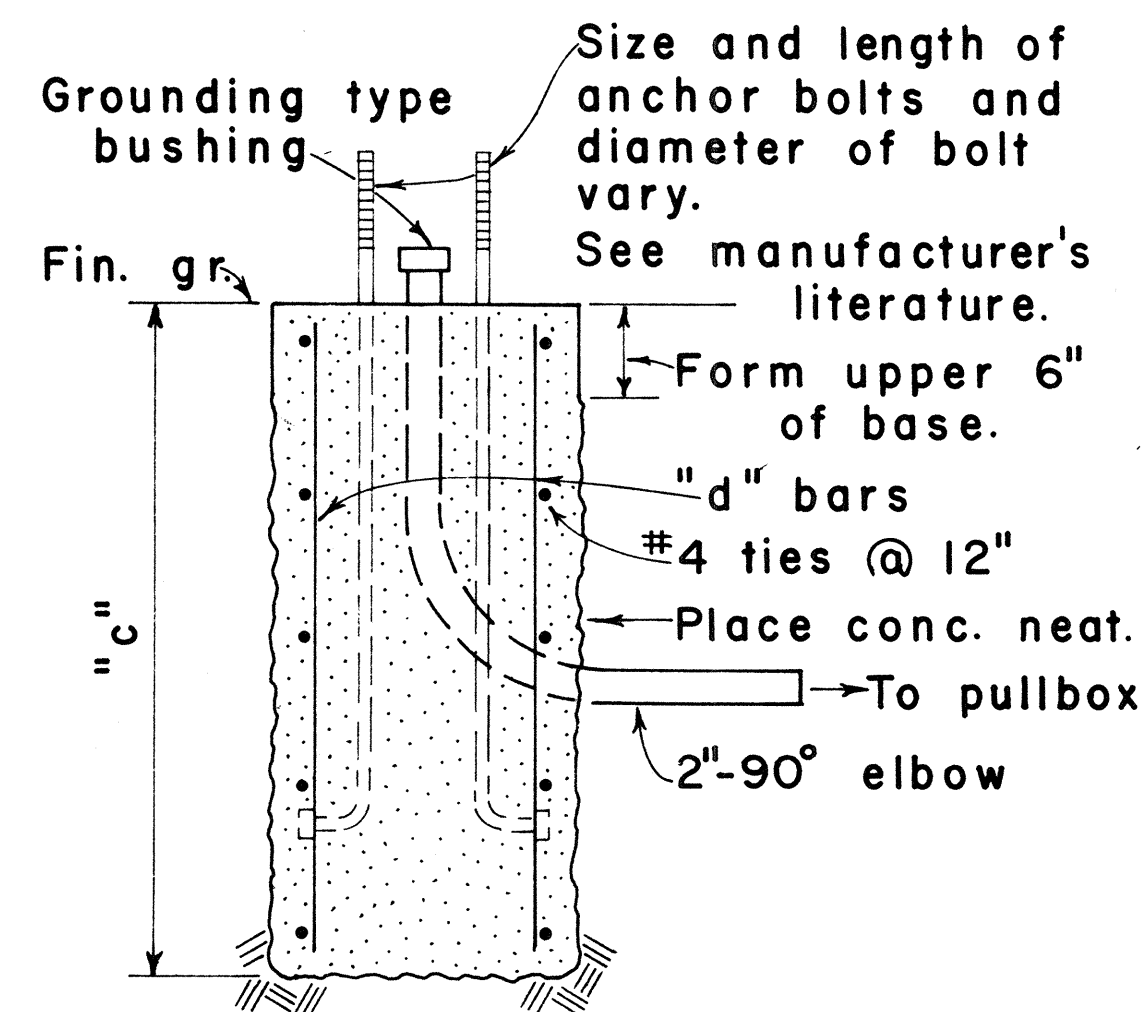
APPROVED:
Andrew J. J. J.
ASSISTANT CHIEF, ENGINEERING
DATE: 12-30-79

NO.	REVISION	APPROVED BY	DATE
1	Revised Type B & C Pullbox details	H.T.	8-5-76

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION
STANDARD DETAILS
PULLBOXES
Scale as noted Date
SHEET No. E100F 17 SHEETS DT 401



PLAN - SECTION



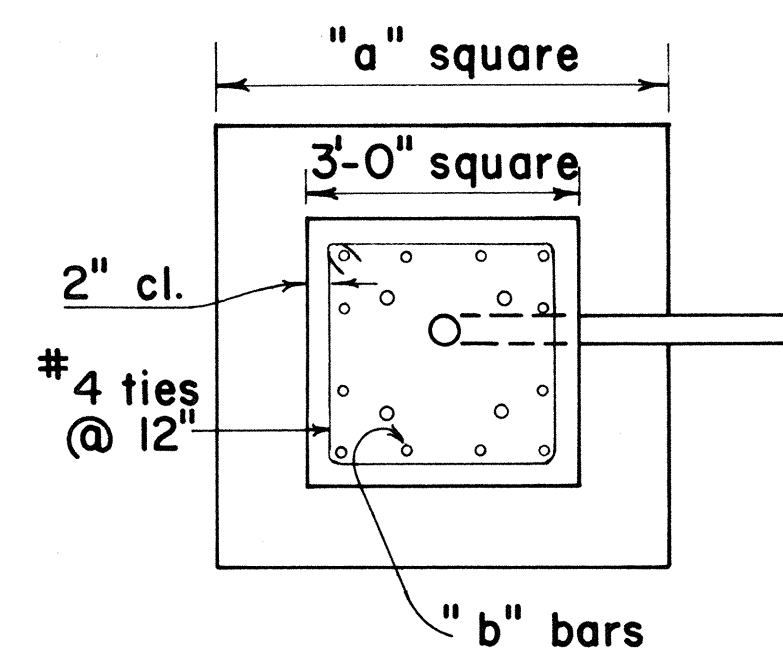
NOTE:

Concrete shall be Class B.

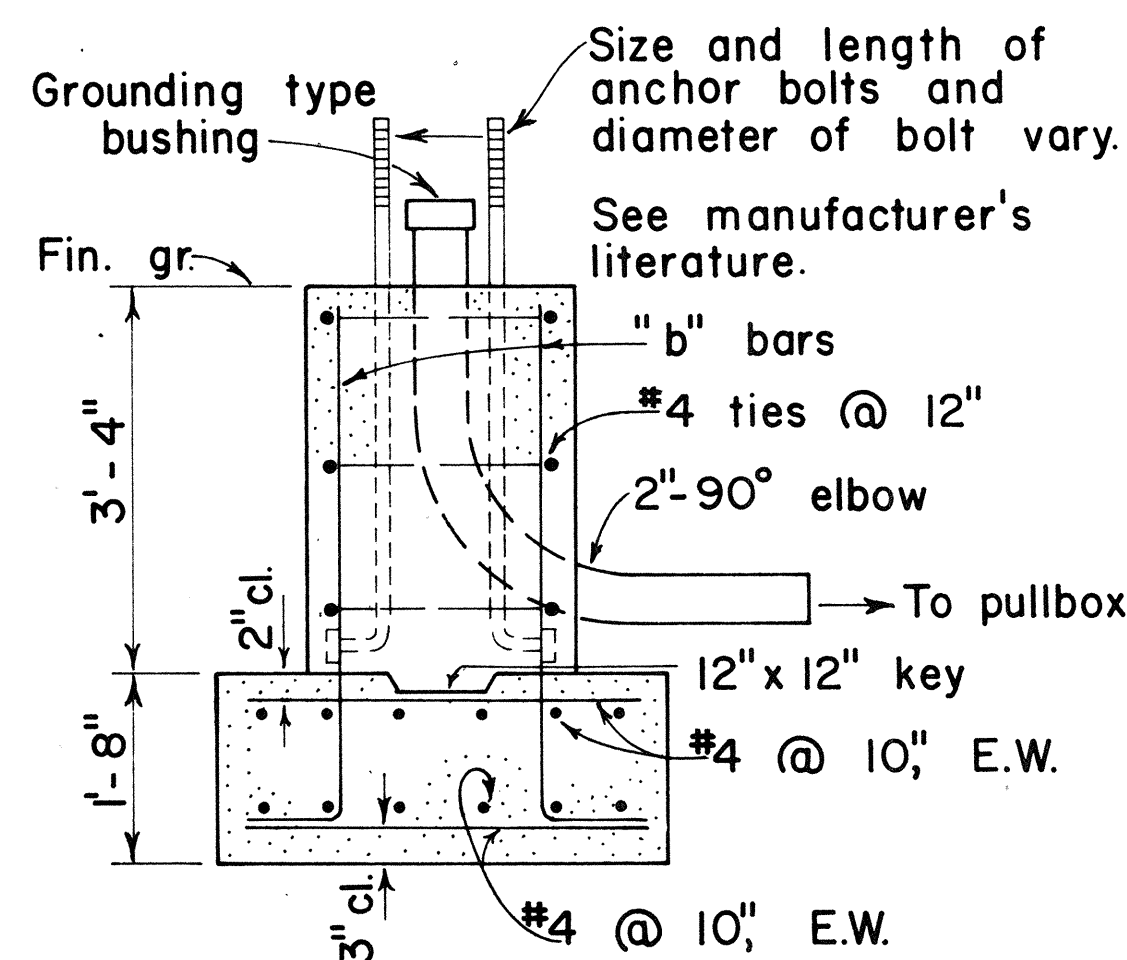
SECTION

MAST ARM LENGTH	"c"	"d" BARS
16' - 18'	5' - 0"	12 - #6
20'	5' - 6"	12 - #6
25'	6' - 0"	12 - #6
30'	6' - 6"	12 - #6
35'	7' - 0"	12 - #8
40'	8' - 0"	12 - #8

TYPE II



PLAN - SECTION



NOTE:

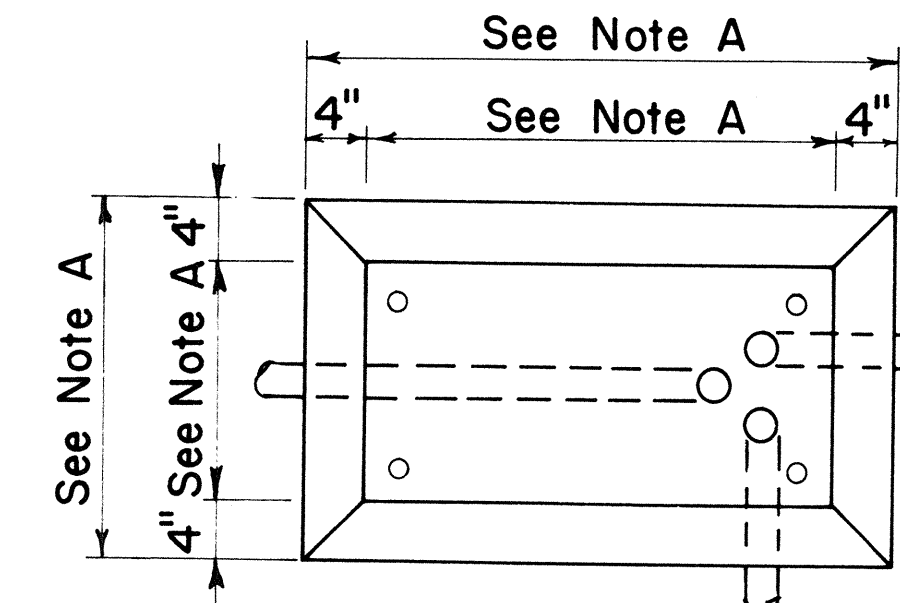
Concrete shall be Class B.

SECTION

MAST ARM LENGTH	"a"	"b" BARS
16' - 18'	5' - 0"	12 - #6
20'	5' - 6"	12 - #6
25'	6' - 0"	12 - #6
30'	6' - 6"	12 - #8
35'	6' - 6"	12 - #8
40'	7' - 0"	12 - #8

TYPE II A

FOOTING FOR MAST ARM STANDARD

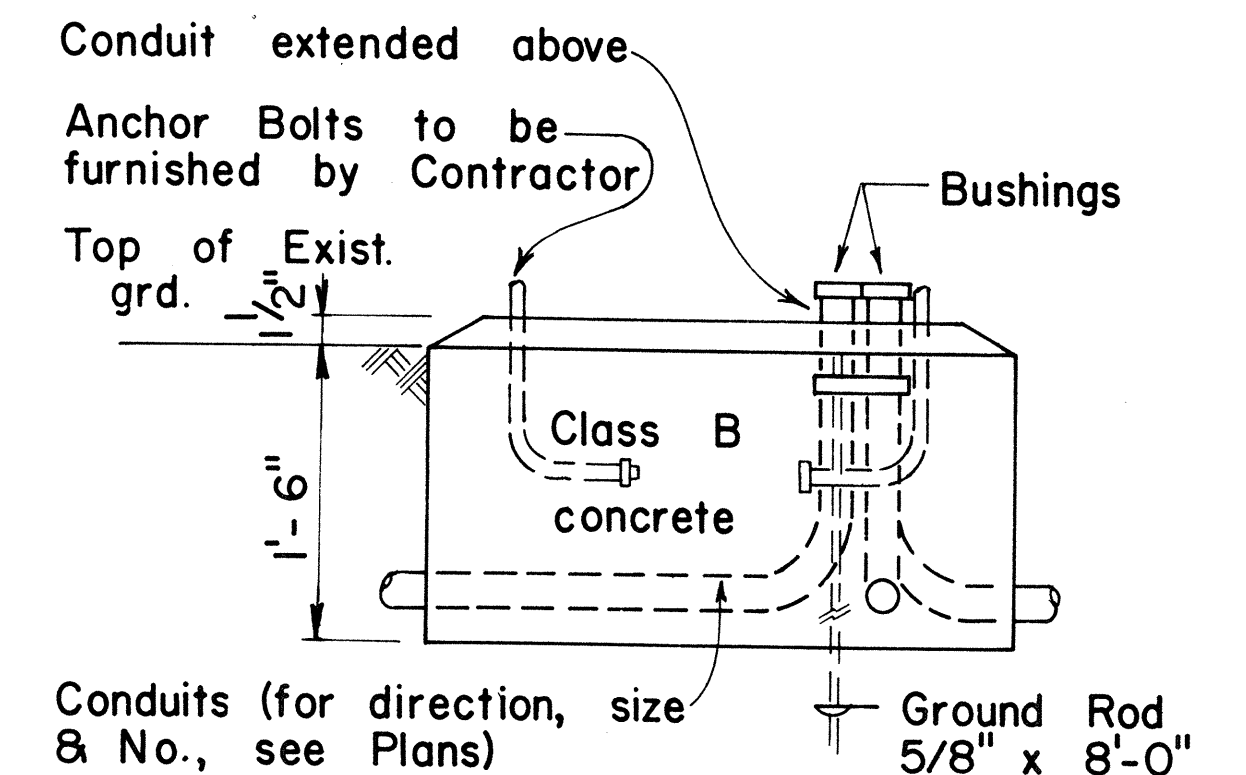


PLAN

CONCRETE BASE FOR CONTROLLER CABINET

NOTES:

- Dimensions to be determined by the size of the Controller Cabinet to be furnished under this Contract.
- Details of Conduits, Anchor Bolts, etc., are approximate only. Exact details shall be secured by the Contractor from Manufacturer.



ELEVATION

APPROVAL RECOMMENDED:
Erich Tanaka 3/4/76
TRAFFIC ENGINEER DATE

APPROVED:
Robert Z. Zaksch 2-5-76
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

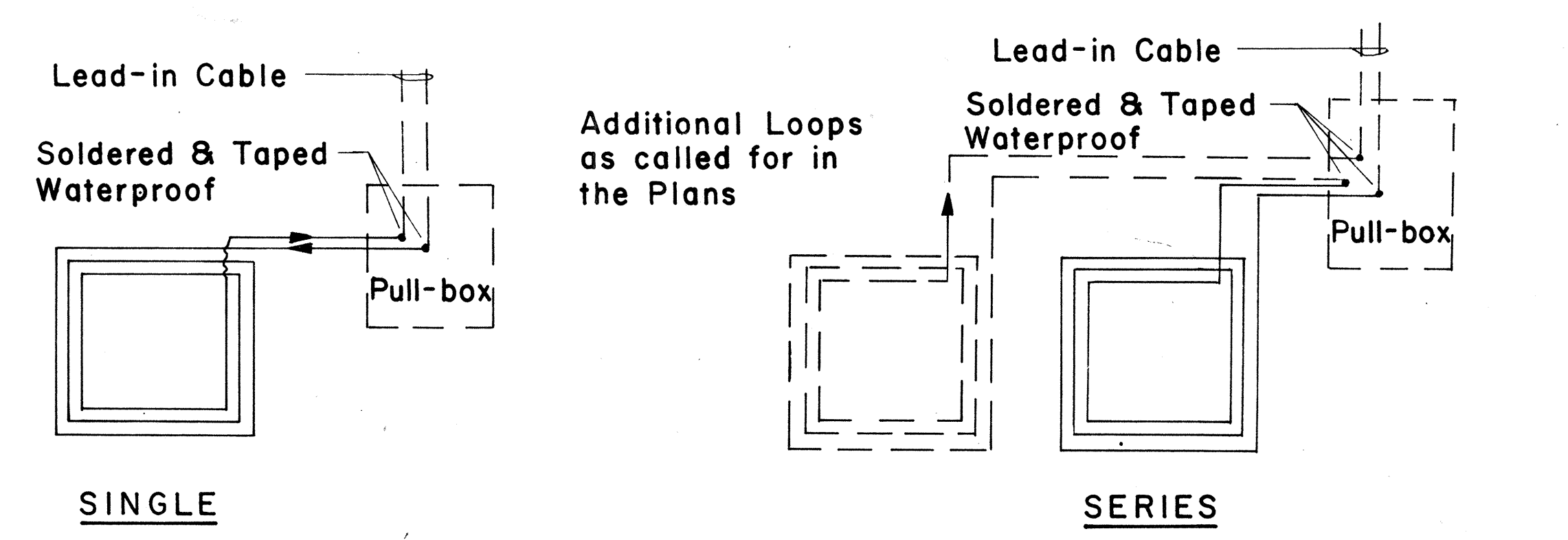
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

TRAFFIC SIGNAL SYSTEM
MISCELLANEOUS DETAILS

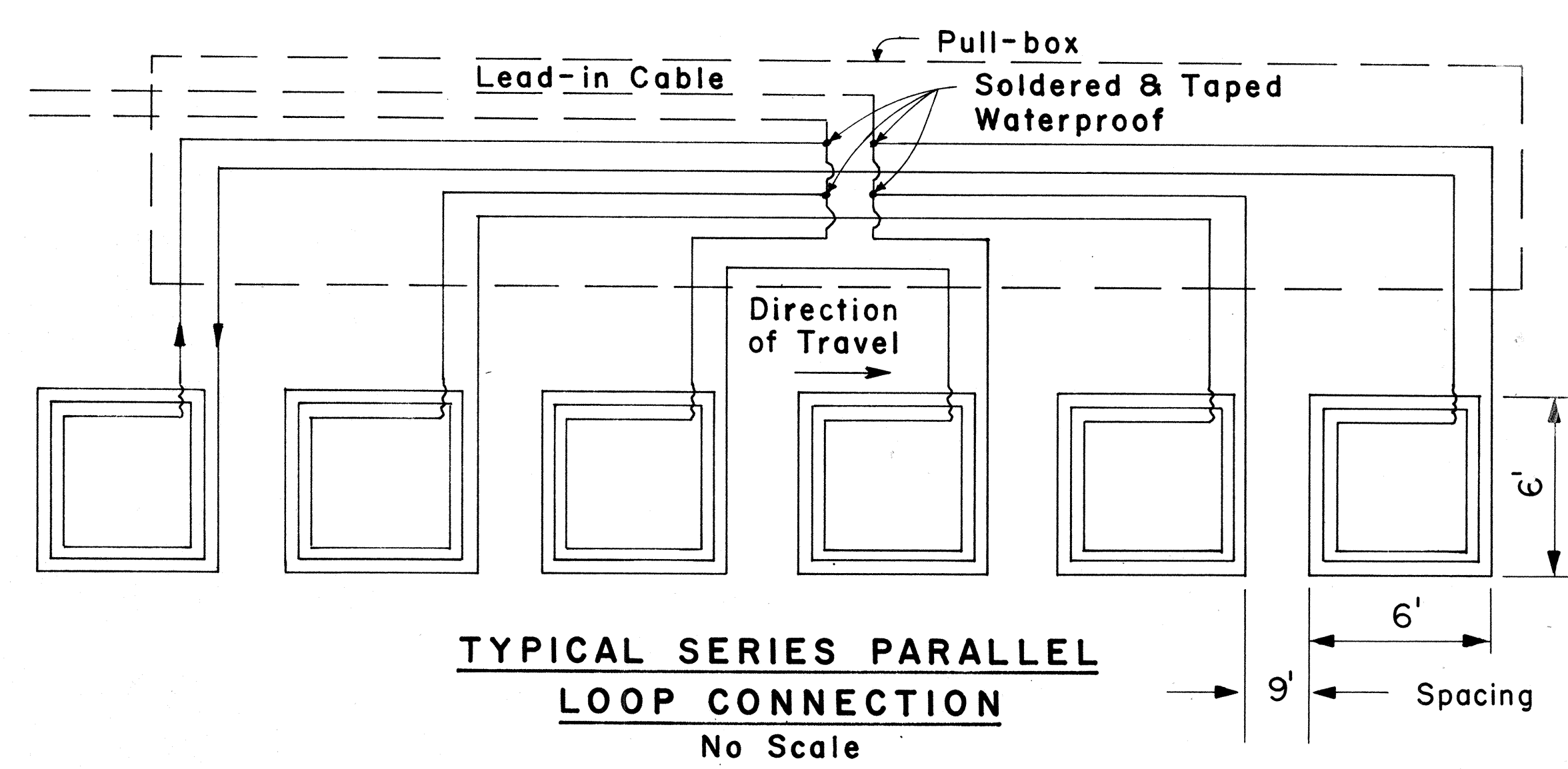
Not to Scale

SHEET No. E 11 OF 17 SHEETS DT404

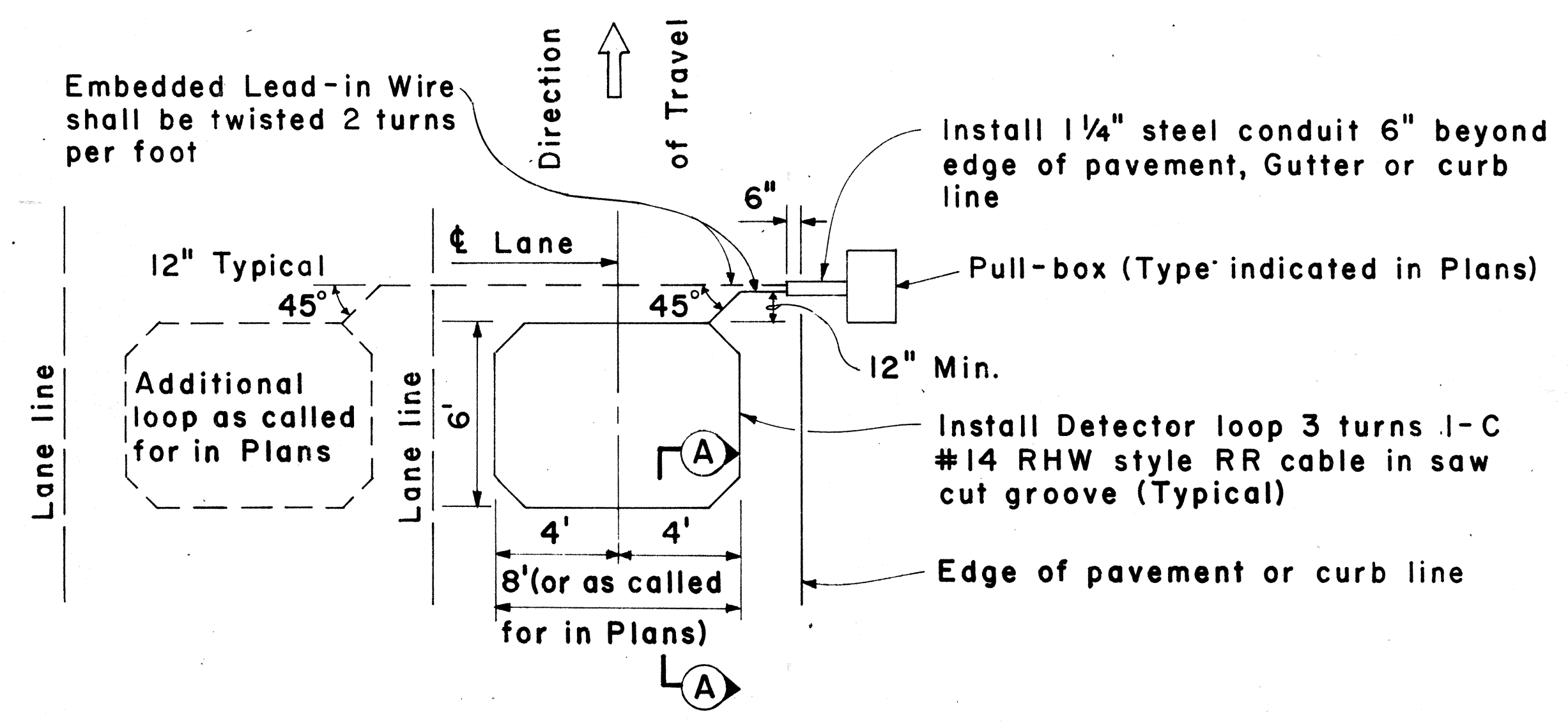
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(157):24	1979	139	146



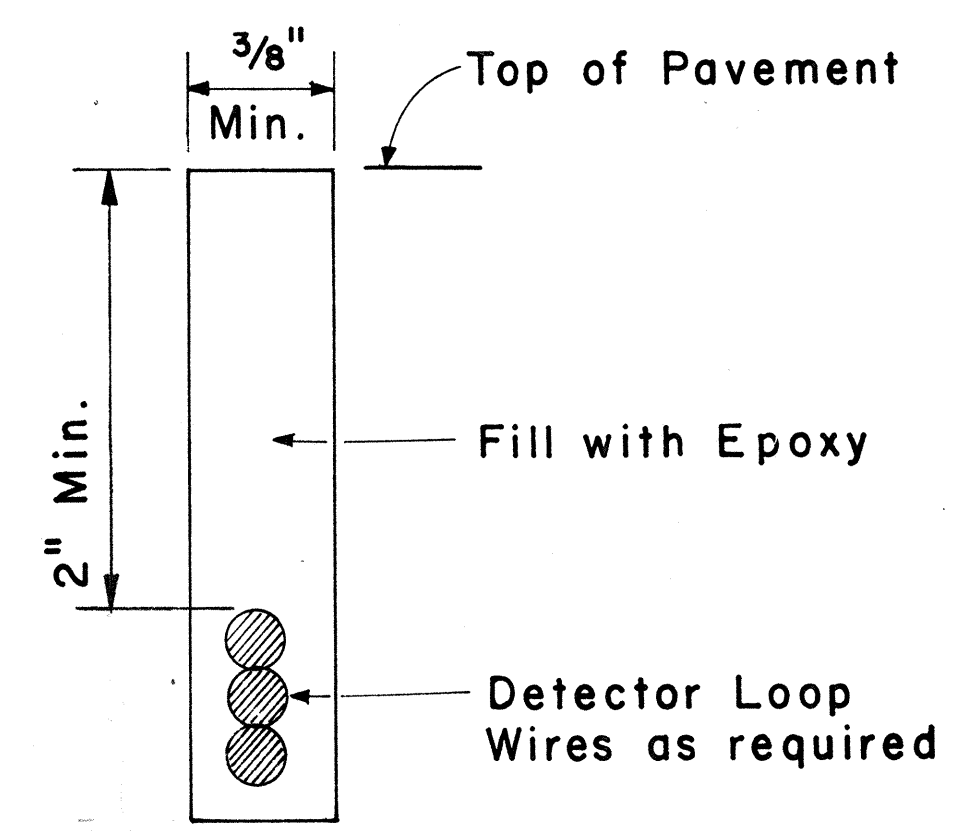
TYPICAL LOOP CONFIGURATIONS
No Scale



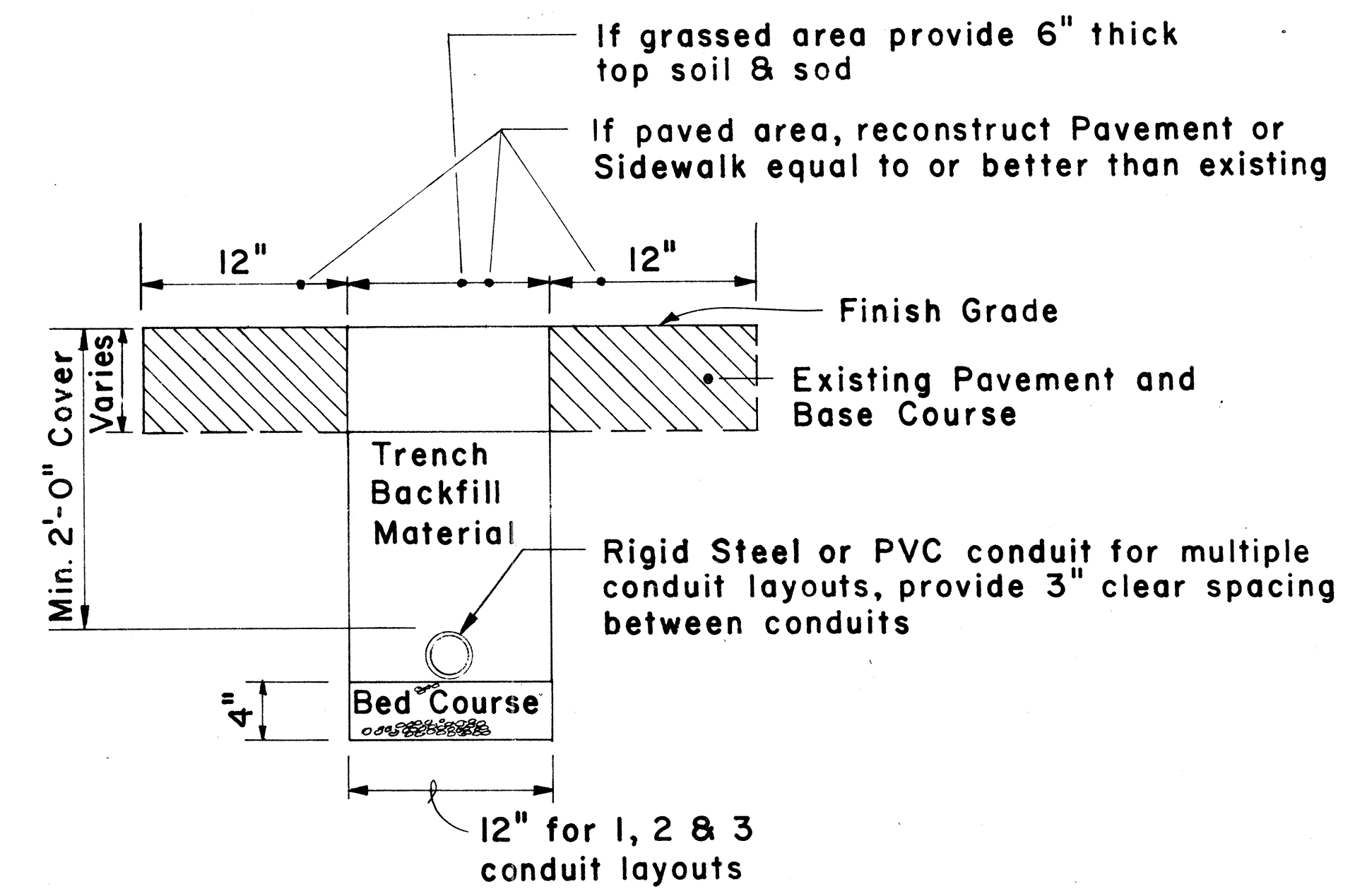
TYPICAL SERIES PARALLEL LOOP CONNECTION
No Scale



PLAN - MULTIPLE LOOP LAYOUT
Scale : 1/4" = 1' - 0"



Detector Loop Saw-Cut SECTION A-A (TYPICAL)
No Scale



TYPICAL TRENCH SECTION FOR CONDUIT
Scale : 1 1/2" = 1' - 0"

NOTE:
1. All conduits under roadways shall be steel or PVC schedule 80. All other conduits shall be steel or PVC schedule 40.

APPROVAL RECOMMENDED:
Euchi Tanaka 3/4/76
TRAFFIC ENGINEER DATE

APPROVED:
Hubert S. Ralston 3-5-76
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Add dimensions to Loop Configurations	H.T.	3-22-76

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

TRAFFIC SIGNAL SYSTEM
MISCELLANEOUS DETAILS

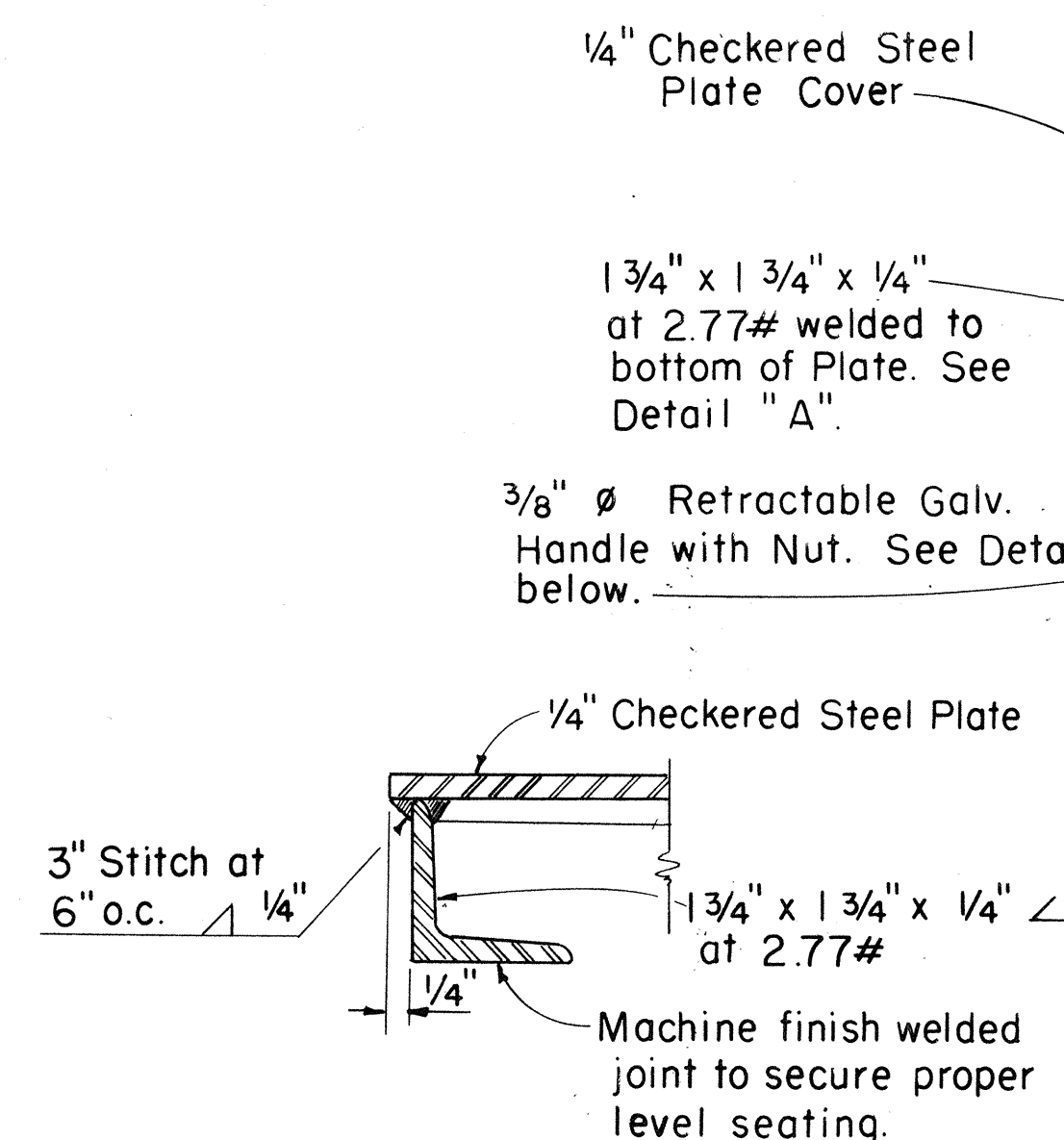
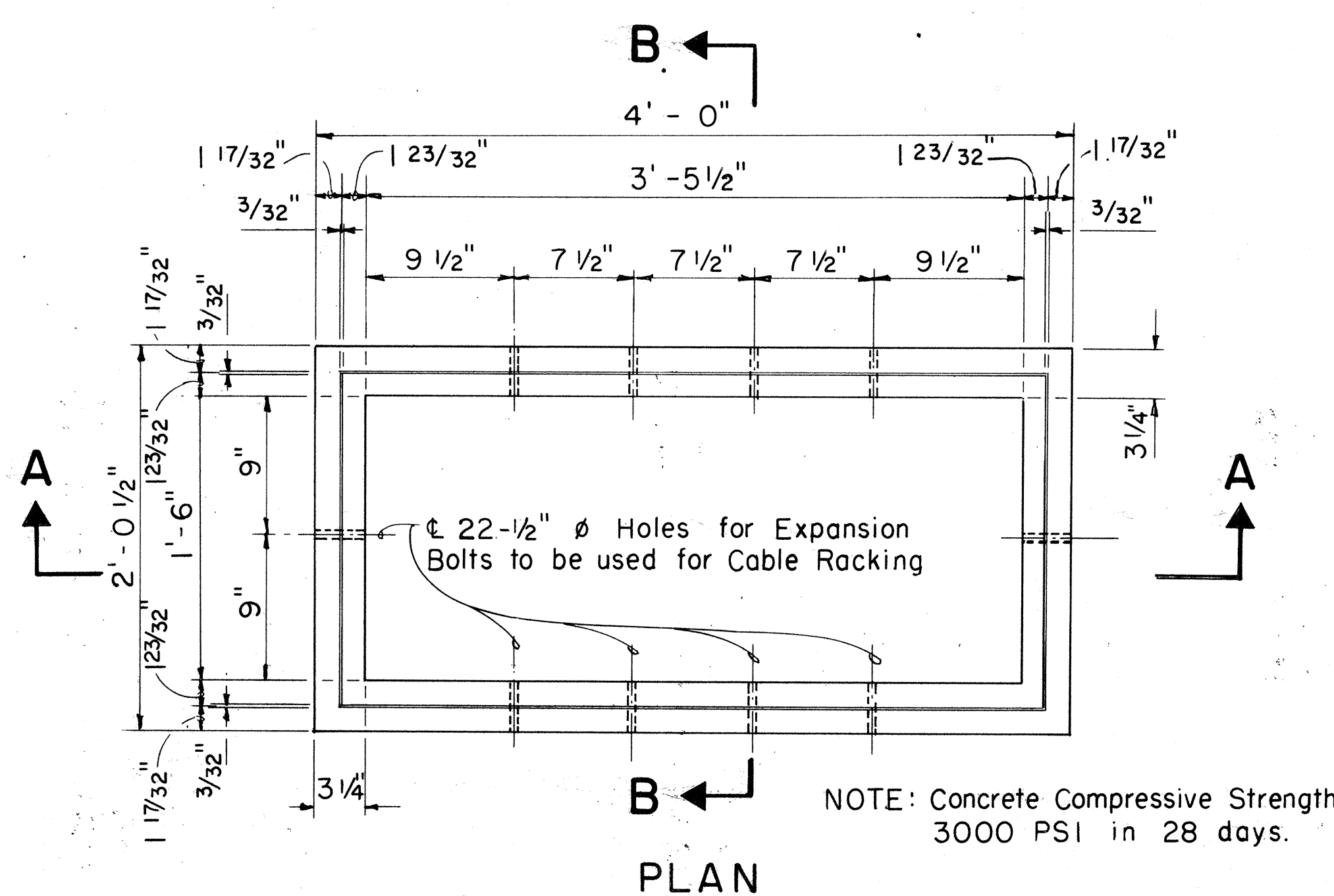
Scale : As Noted
SHEET NO. E12 OF 17 SHEETS DT 405

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

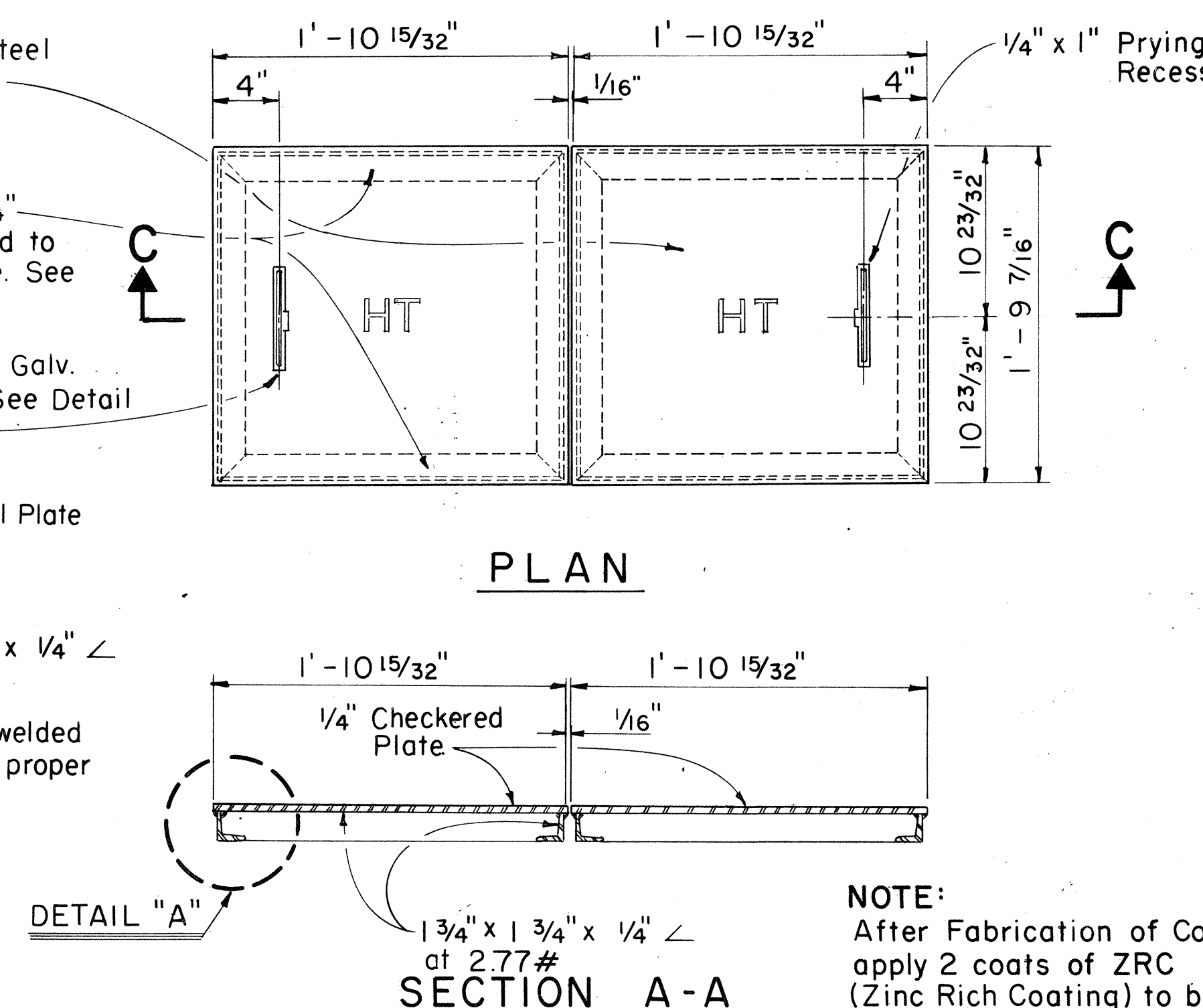
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(157)-24	1979	140	146

INSTALLATION NOTES:

1. A minimum of Two(2) Precast Sections must be used on all installations.
2. The minimum layers of Bricks to be used shall always be at least One (1) layer lower than the lowest Duct entering the Pullbox. At no time, however, shall there be less than Two (2) layers of Bricks on each installation.
3. At no time shall Cement Mortar, Wood or any other material be used between Precast Sections. Leveling or raising of Boxes to grade must be done at Brickwork Section using Cement Mortar. The permanent installation of Wooden Wedges to accomplish this purpose will not be accepted.
4. For 3-Cover P.B. join 435TB P.B. Half Section to Full Section using Strap and Bolts as shown in 3-Cover P.B. Section Plan.

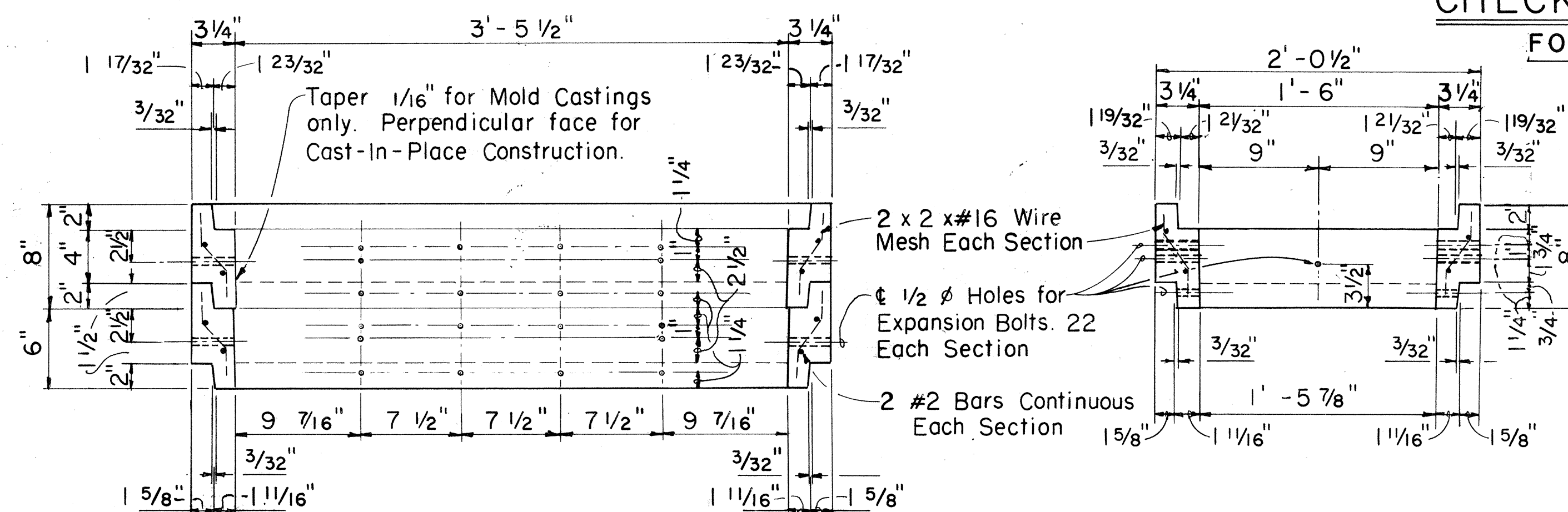


DETAIL A
SCALE: 6" = 1'-0"



SECTION A-A

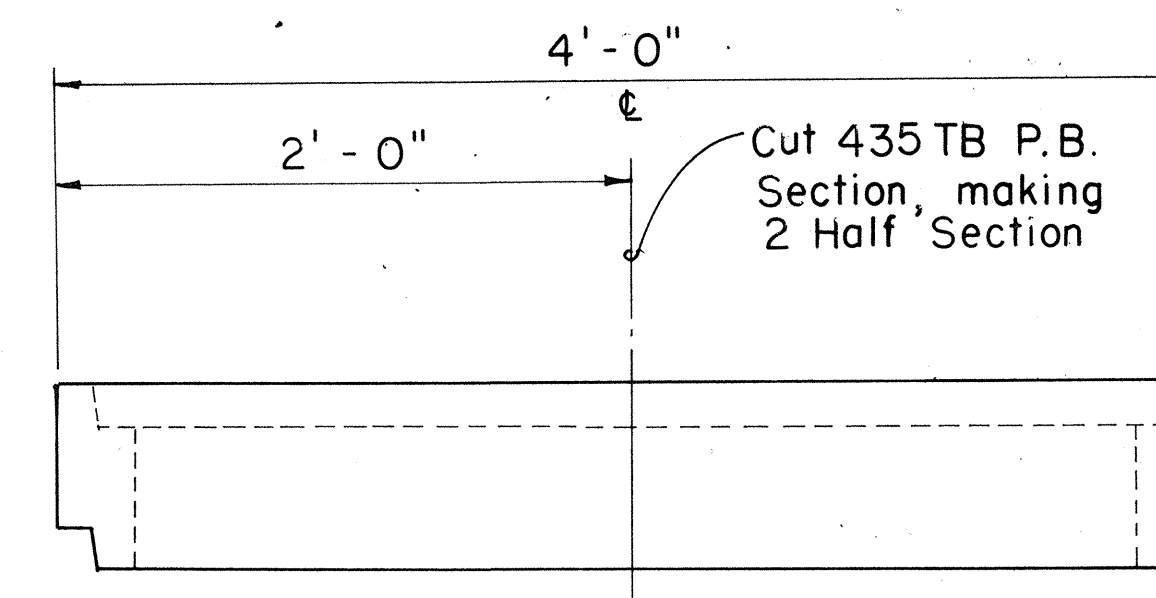
CHECKERED STEEL PLATE COVERS FOR LIGHT LOADING AREAS-APPROX. WT. 55 LBS. SCALE: 1 1/2" = 1'-0" (EXCEPT AS NOTED)



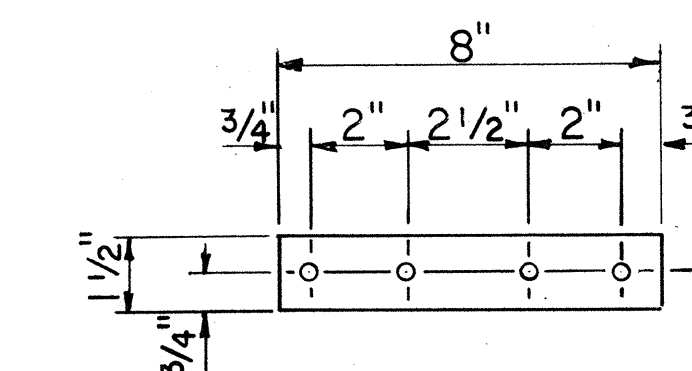
SECTION A-A

SECTION B-B

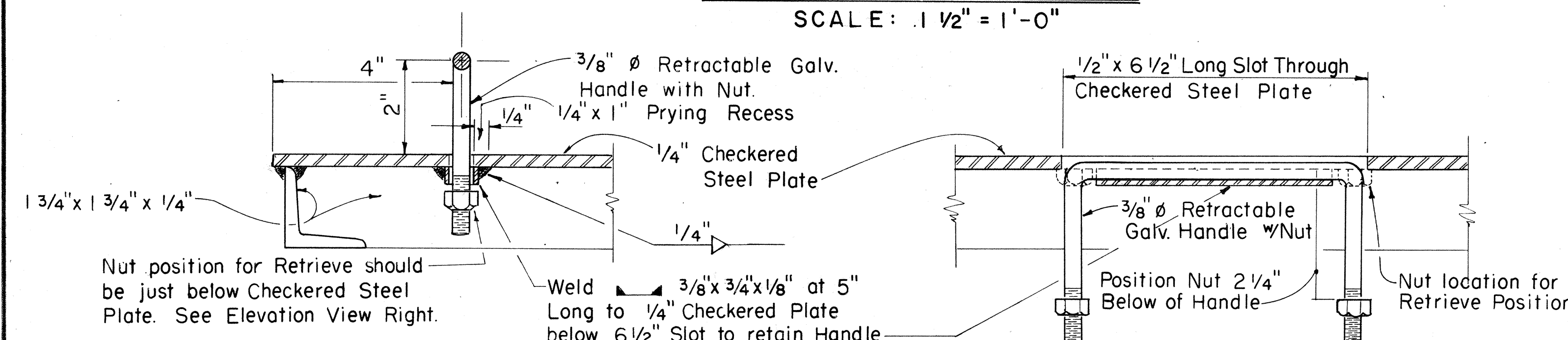
PULLBOX #435 T-B
SCALE: 1 1/2" = 1'-0"



435TB P.B. SECTION



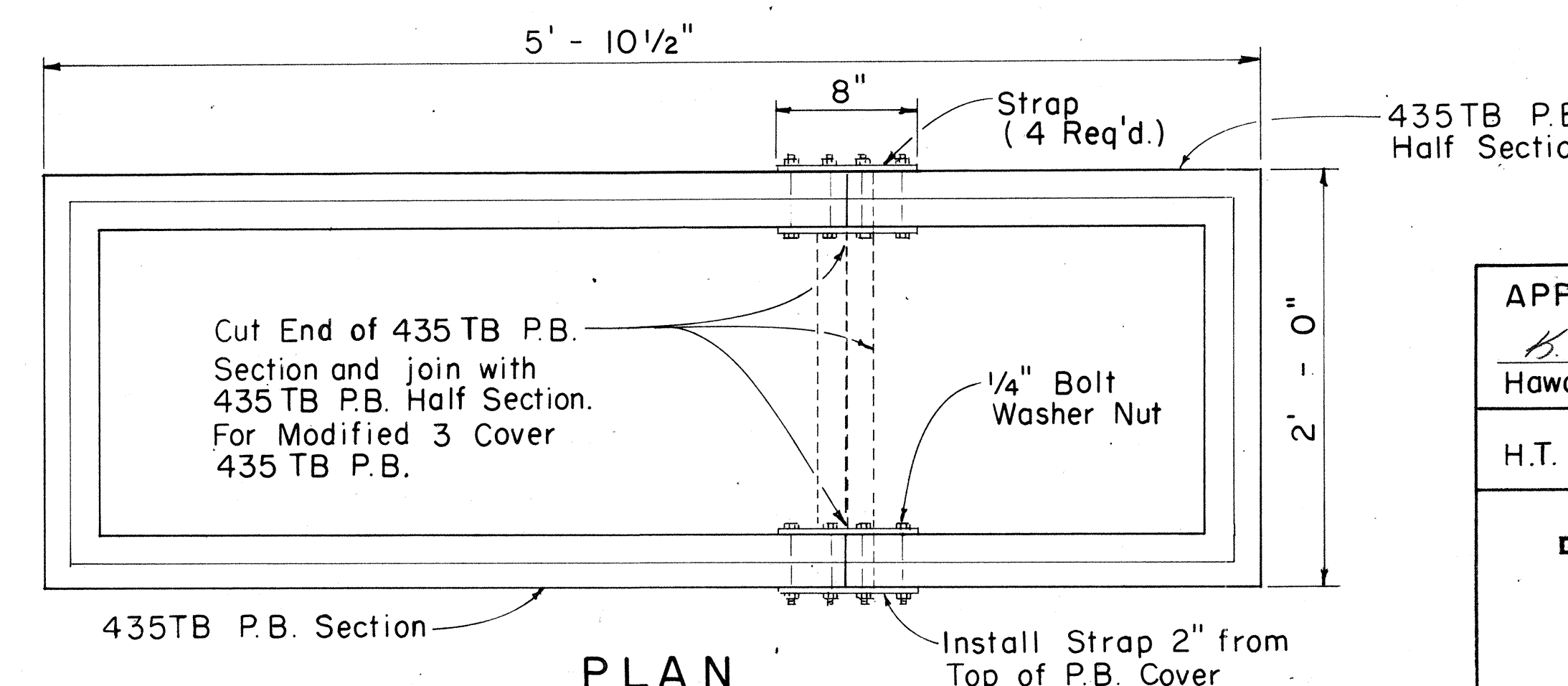
STRAP DETAIL
1/4" BAR
SCALE: 3" = 1'-0"



SECTION-RETRIEVE POSITION

ELEVATION - AT REST POSITION

RETRACTABLE HANDLE
SCALE: 6" = 1'-0"



PLAN

MODIFIED 3-COVER P.B. SECTION

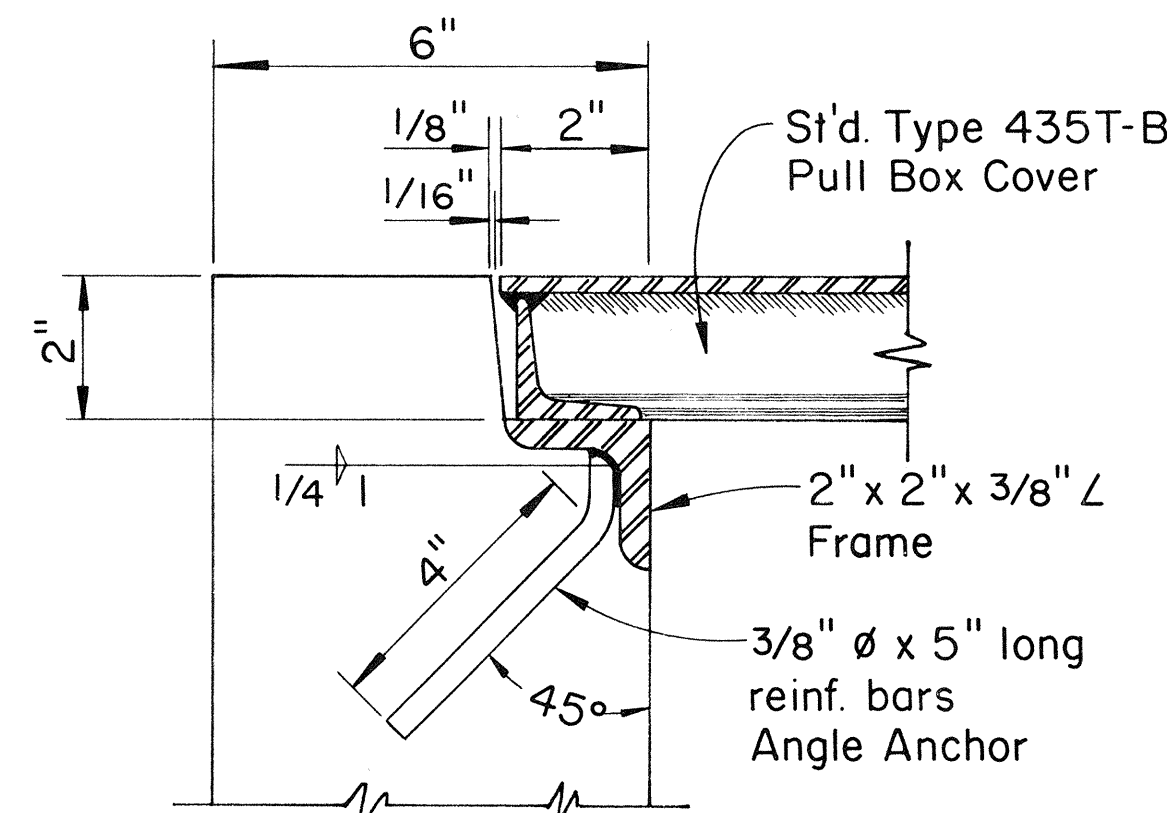
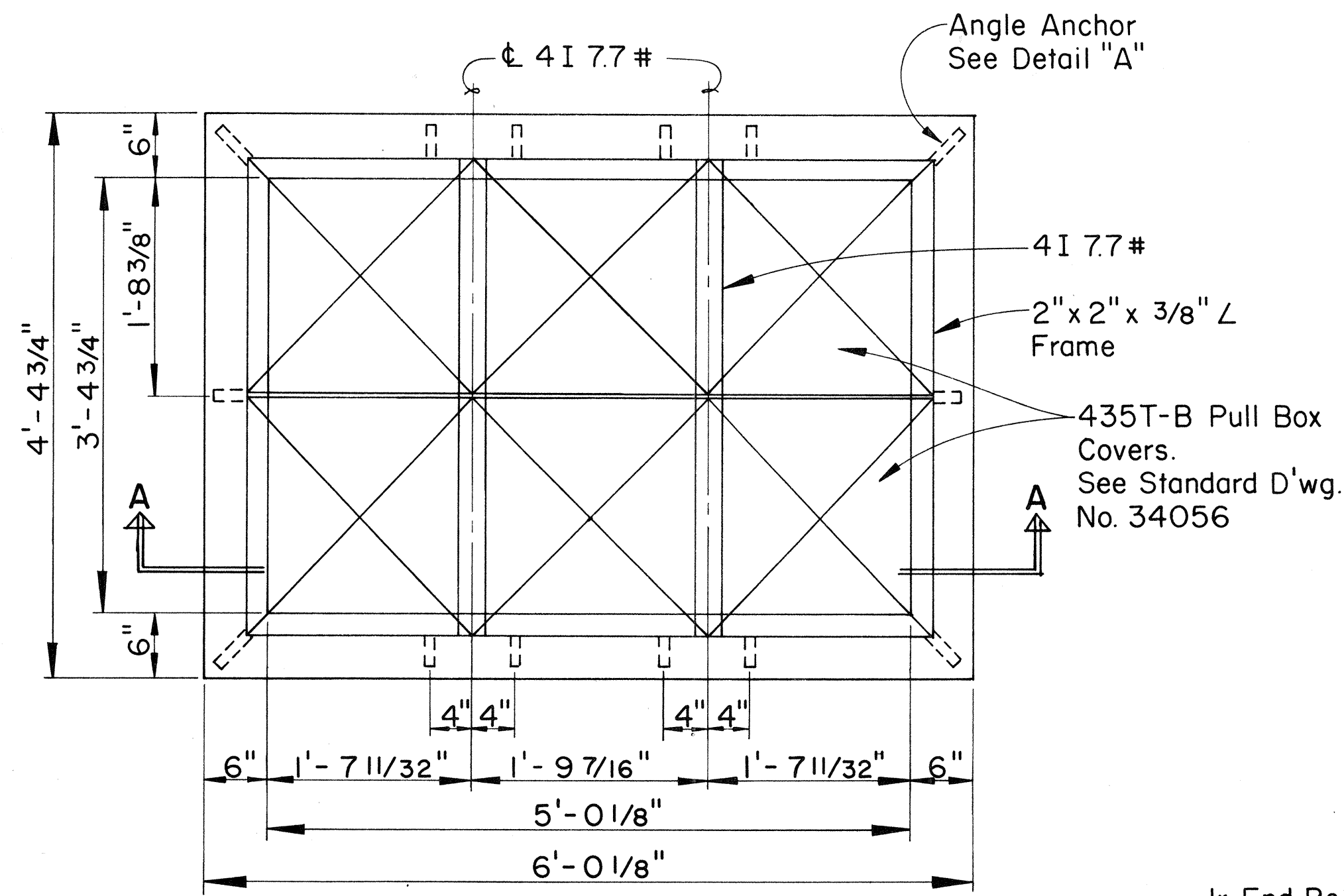
APPROVED:
B. Updegraff 5-18-80
Hawdian Telephone Co., Ltd. Date
H.T. Co., Ltd. Drawing No. 34056

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

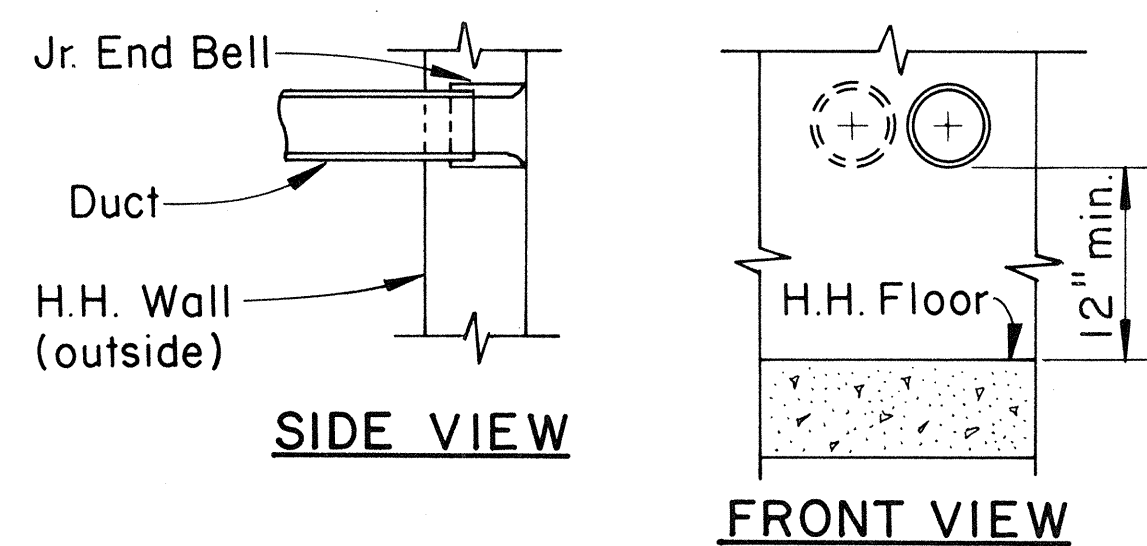
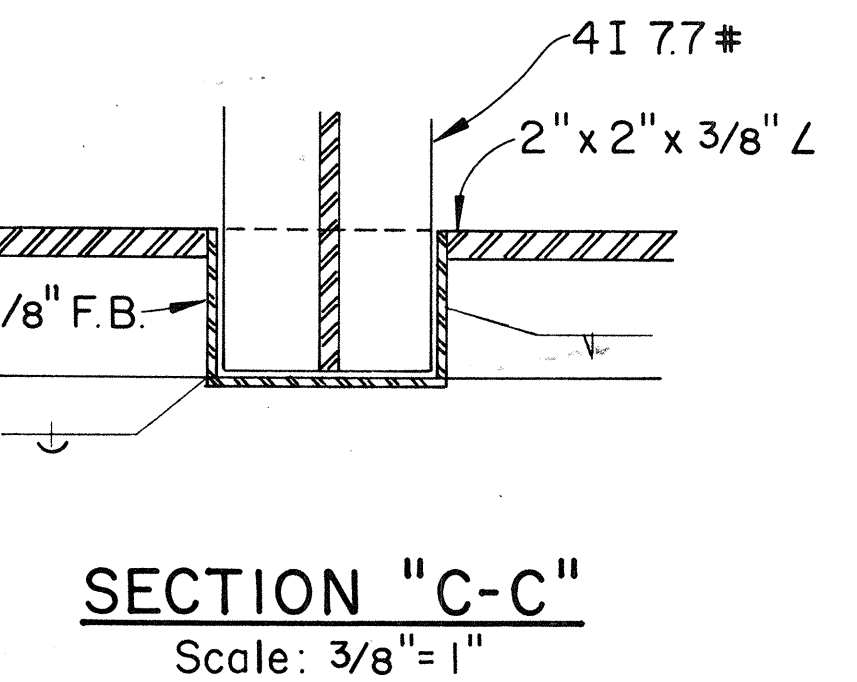
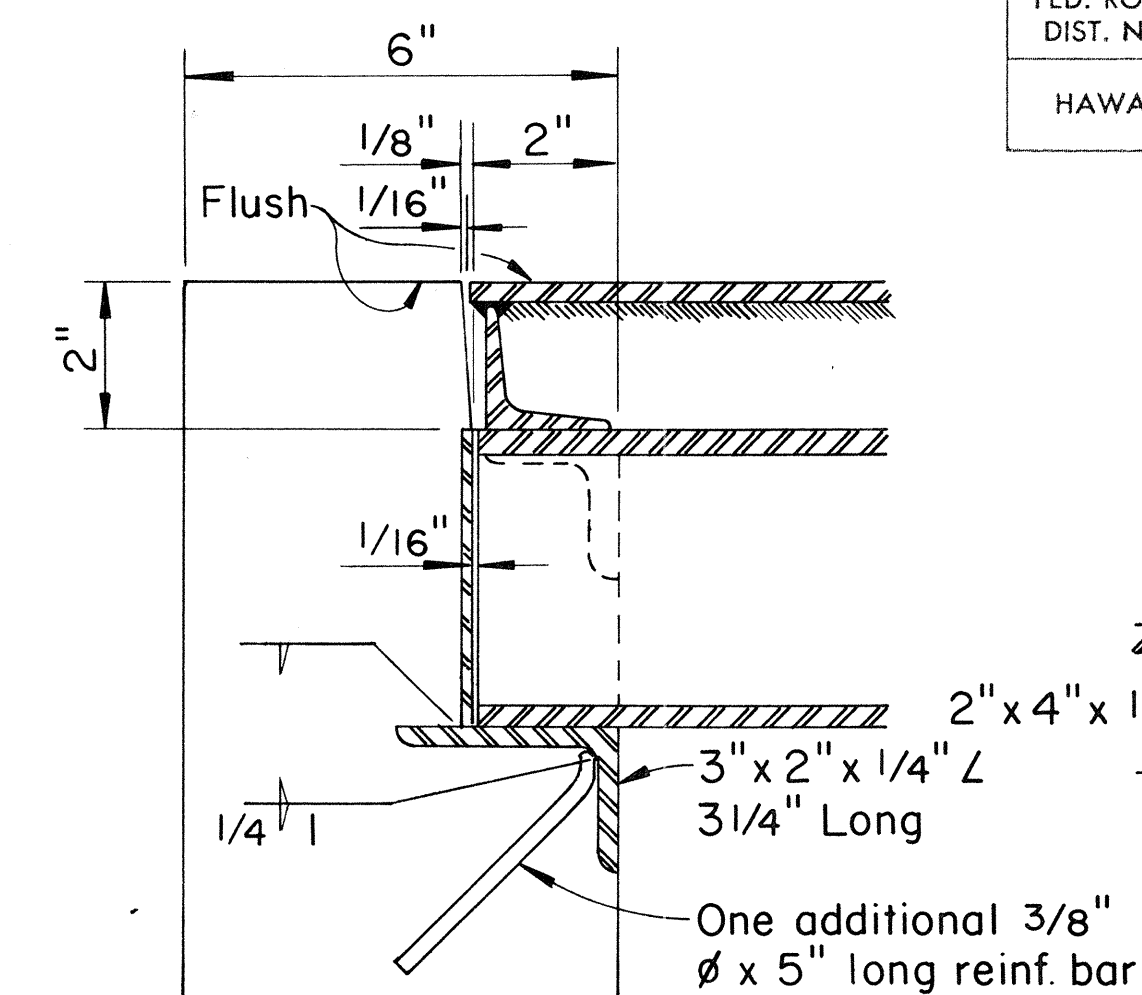
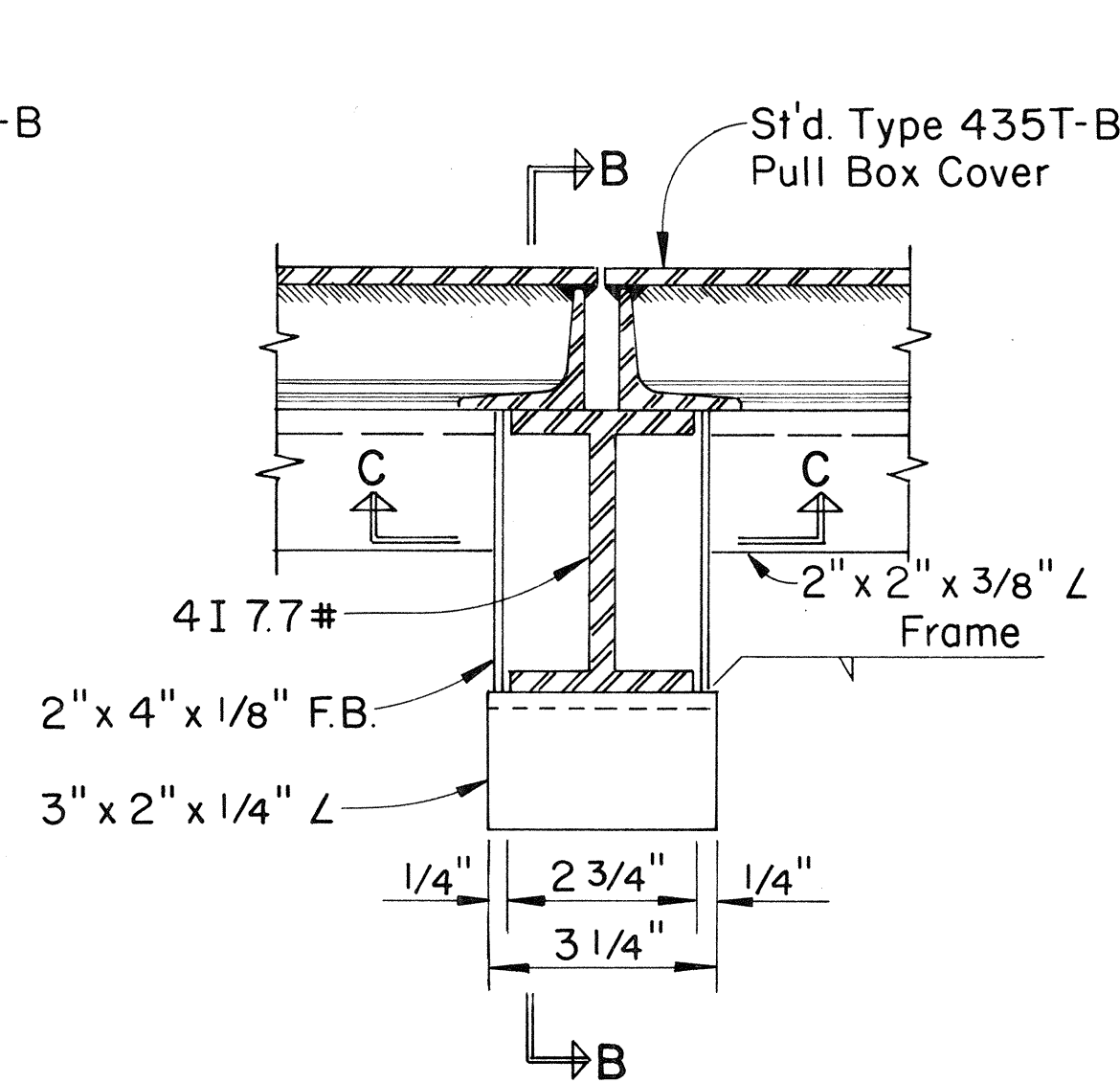
LARGE PULLBOX
NO. 435 T-B

SHEET No. 13 OF 17 SHEETS

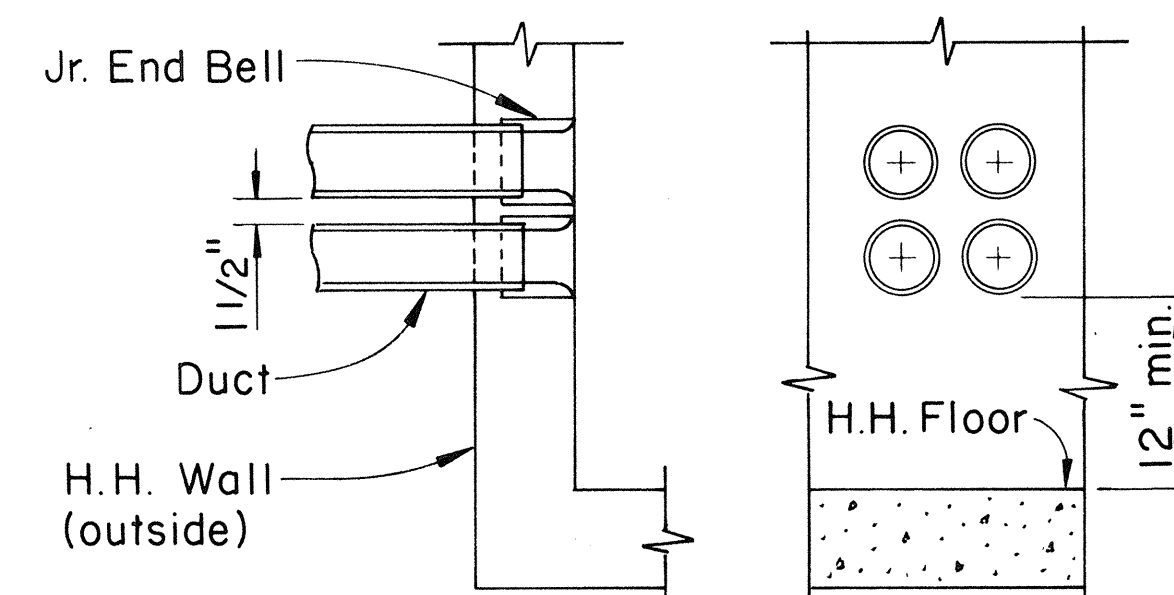
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(157)24	1979	141	146



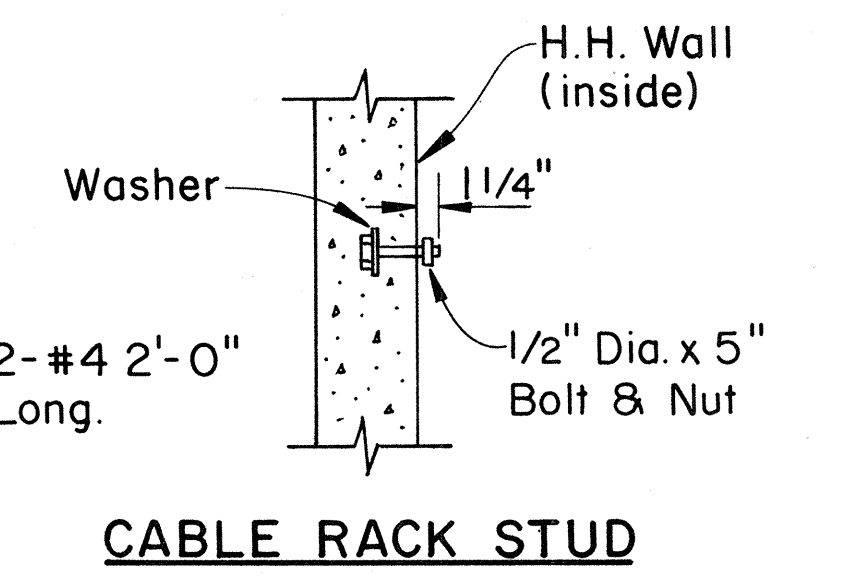
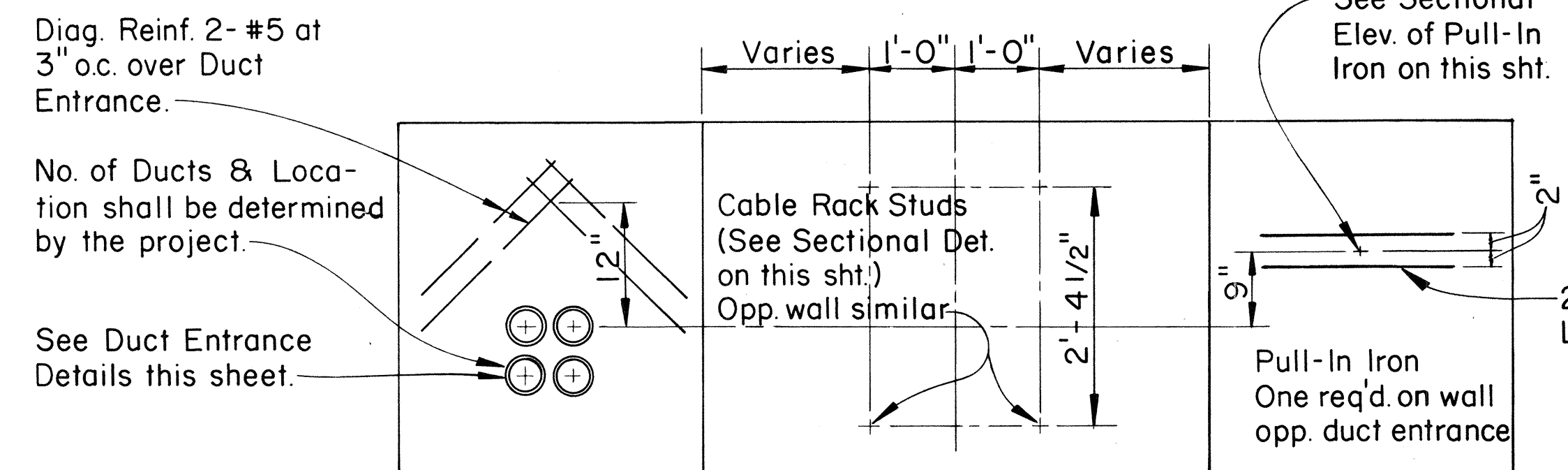
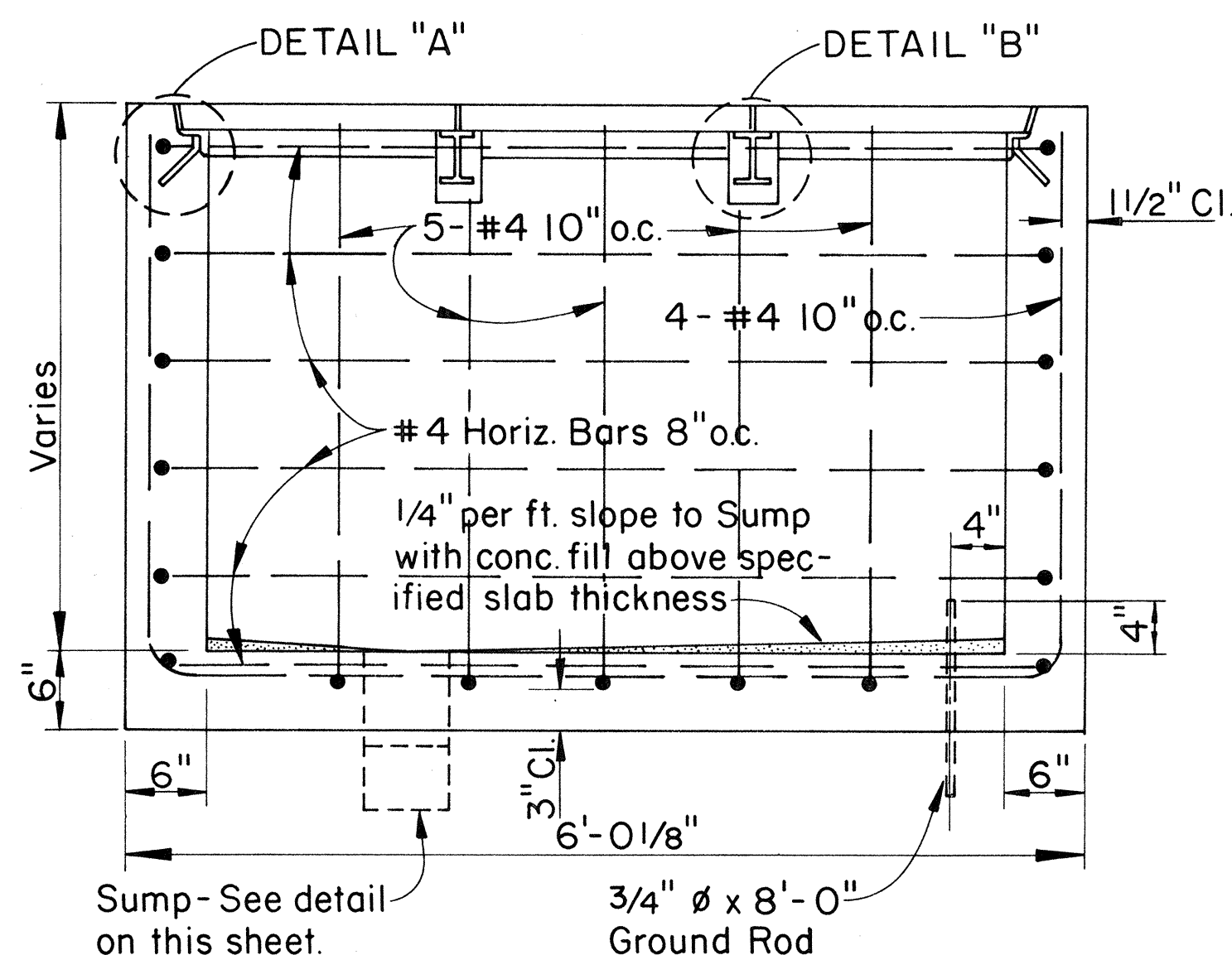
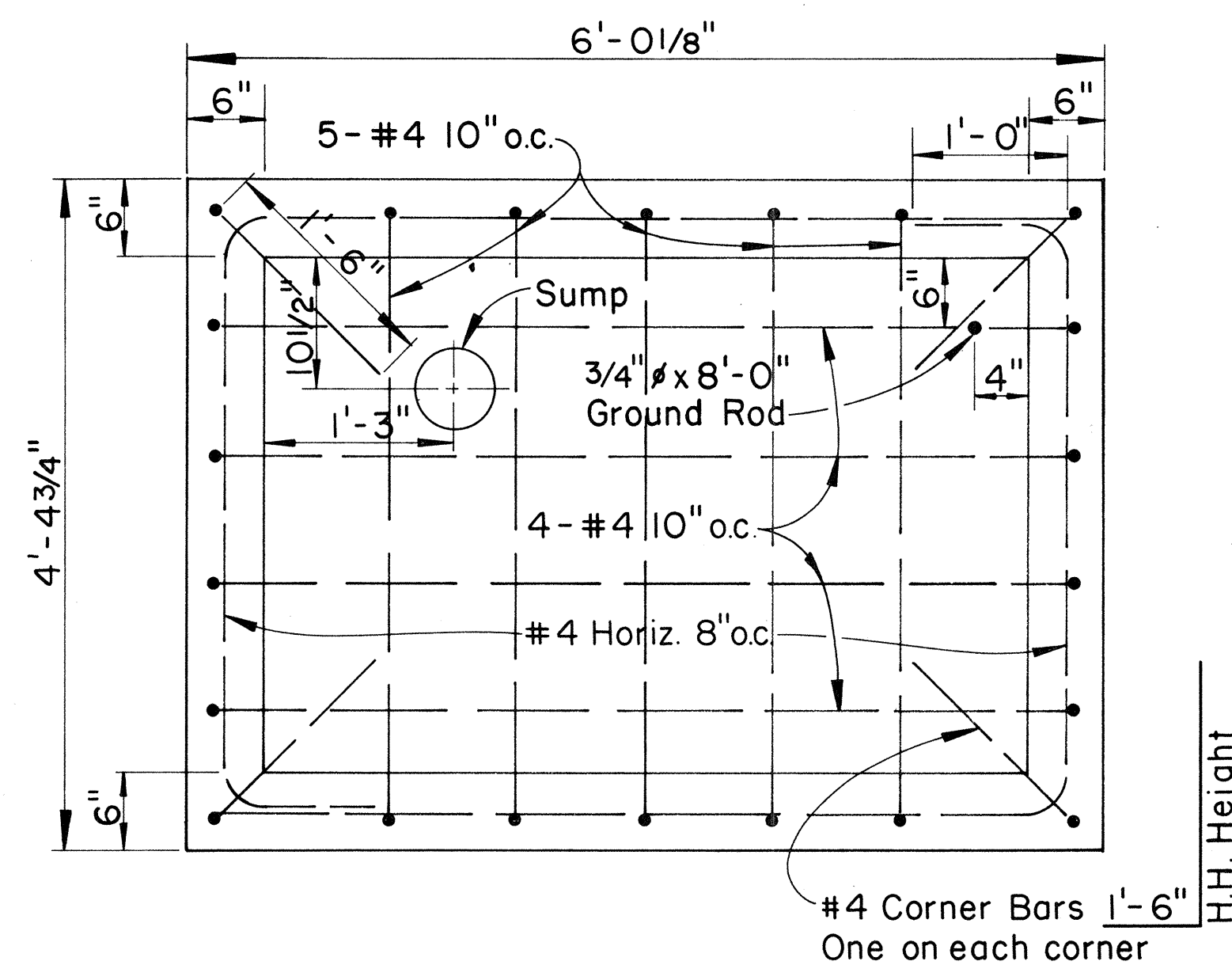
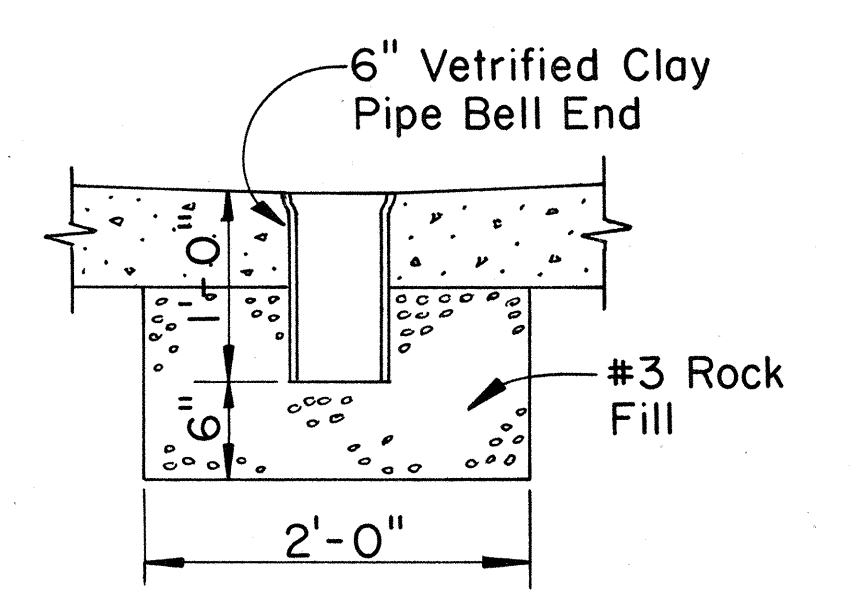
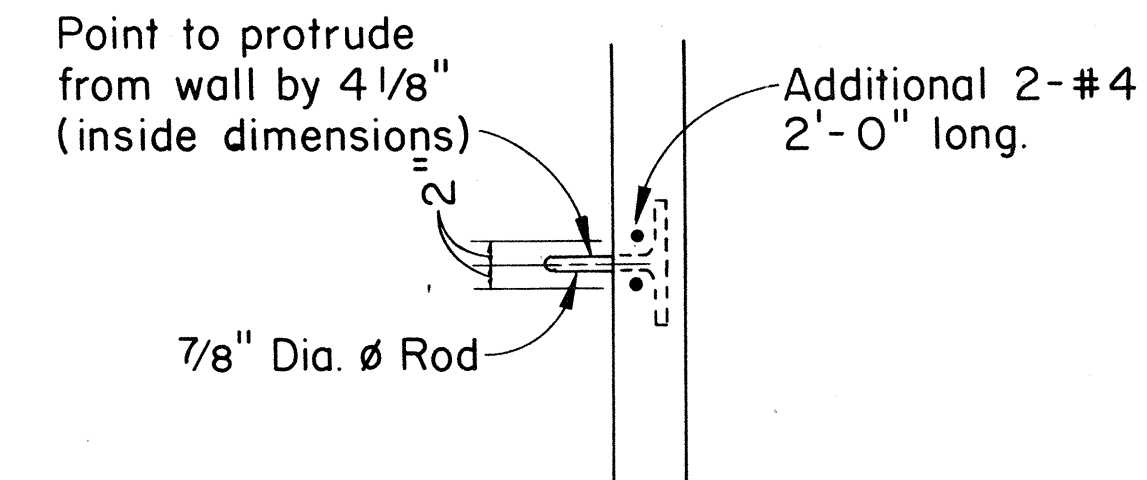
NOTE:
Section is typical.



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



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



GENERAL NOTES:

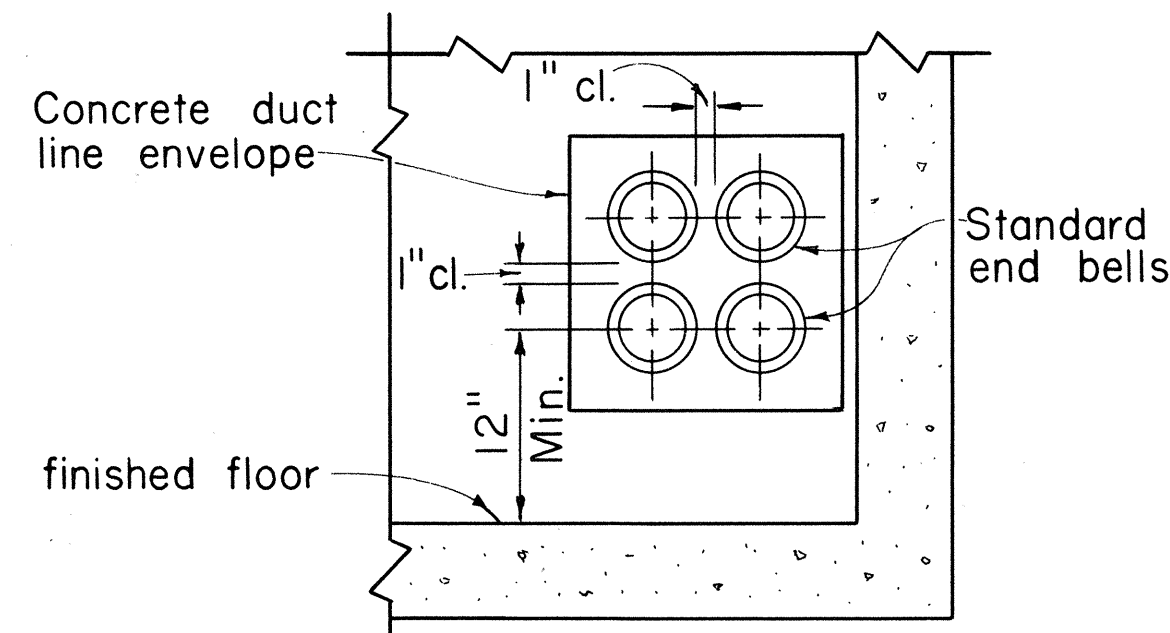
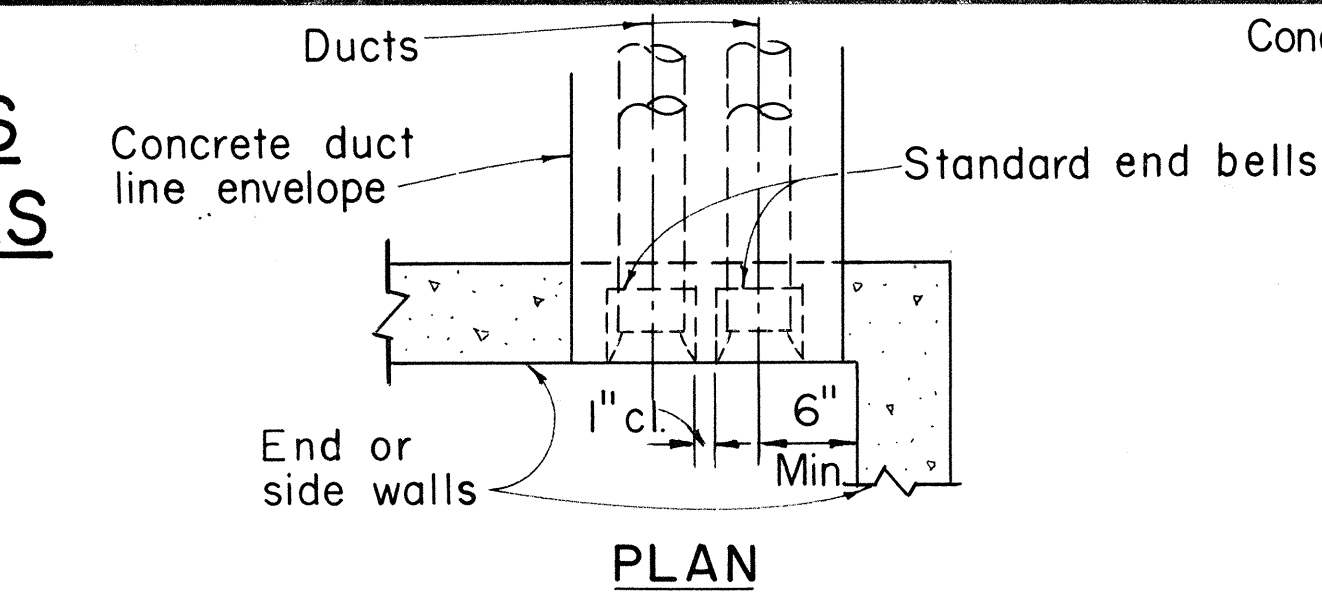
- Concrete finish: floors-wood floated finish-exposed wall surfaces and edges-smooth and free from defects.
- Concrete to develop compressive strength-3000 p.s.i. in 28 days.
- Steel work all structural steel shall be hot dip galvanized after fabrication.
- For duct line construction standards, see st'd.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

APPROVED:
[Signature]
HAWAIIAN TELEPHONE CO., LTD. DATE: 5-12-80

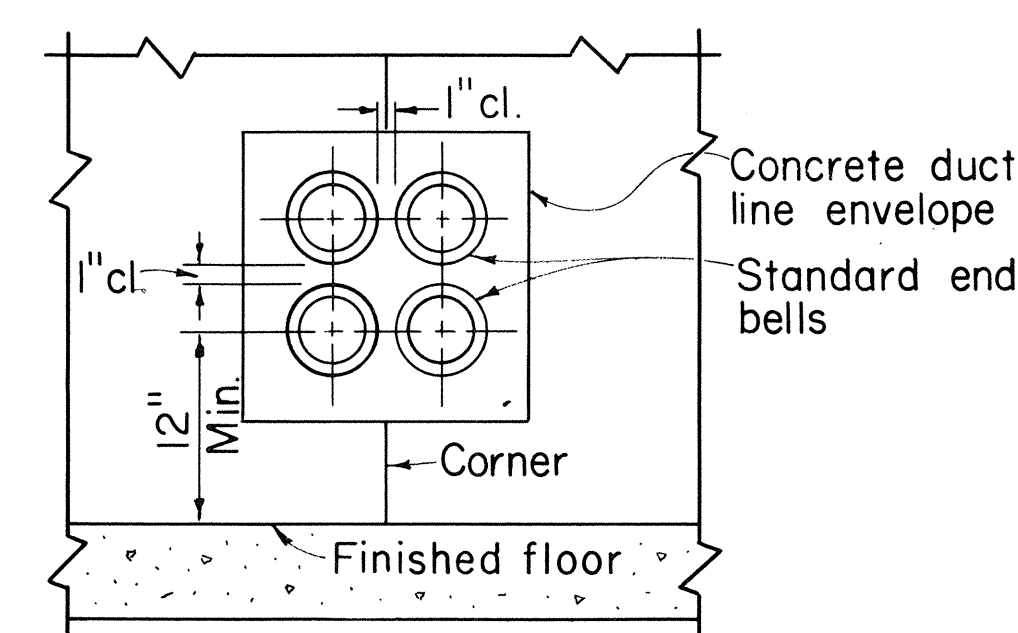
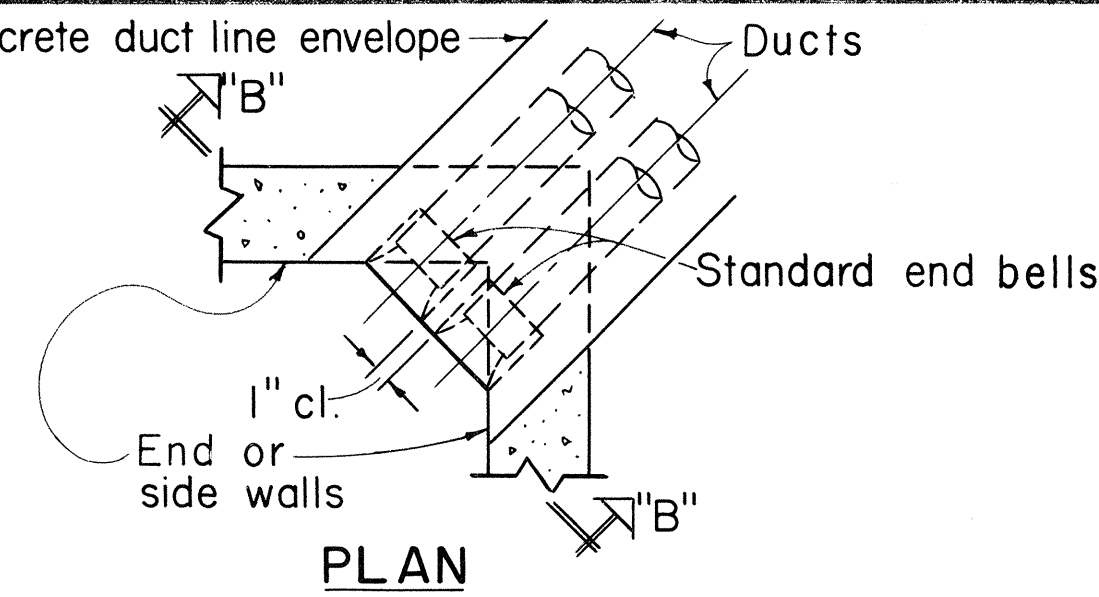
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**STANDARD HANDHOLE
TYPE #1 USING TYPE
435T-B PULLBOX COVERS**
Scale: As Shown Date: SHEET No. 141 OF 17 SHEETS

GENERAL NOTES FOR MANHOLES & HANDHOLES STANDARD DETAILS

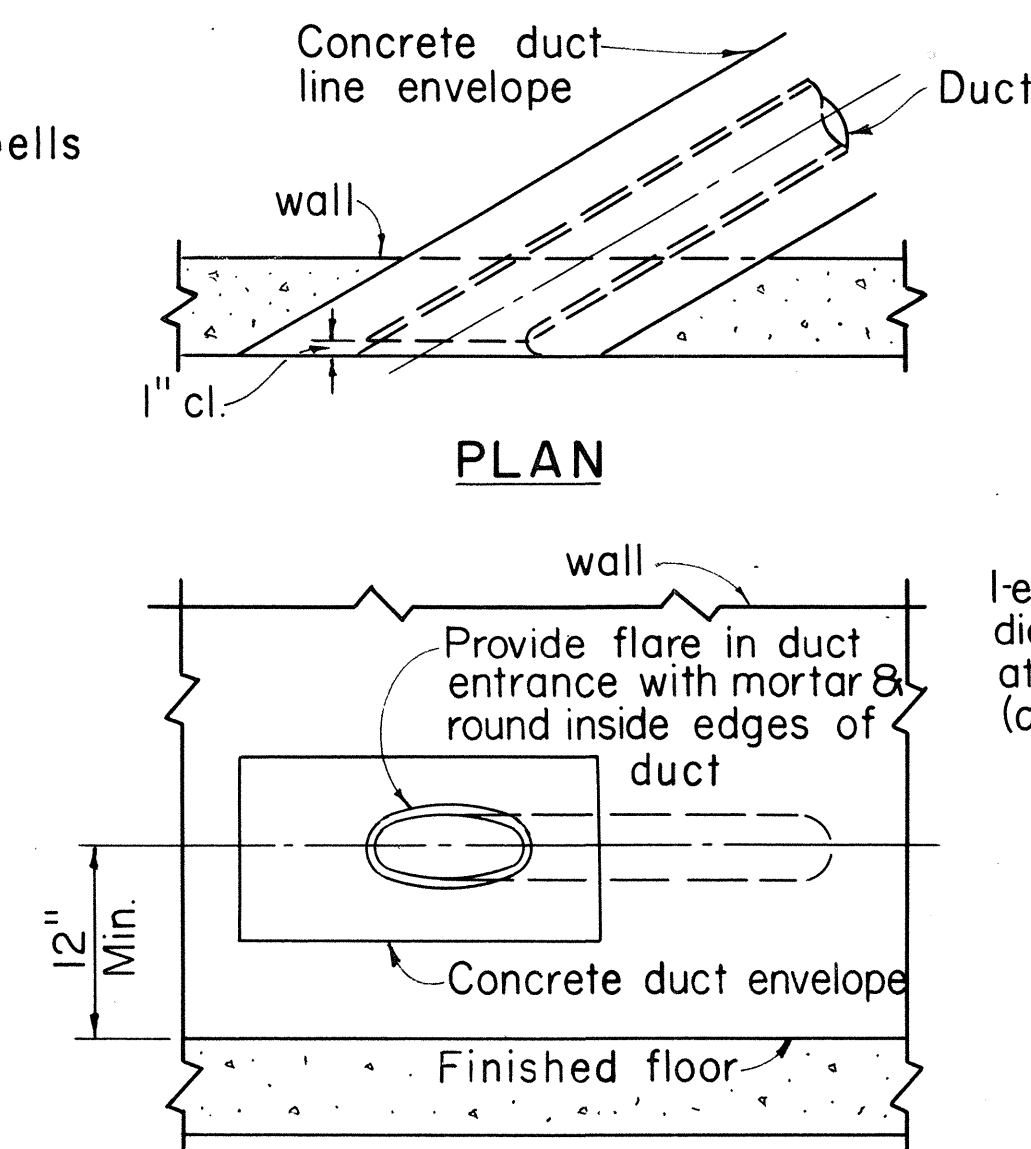
1. All work shall be subject to inspection by the Hawaiian Electric Co., Inc., Contracting & Inspection Division, City & County of Honolulu and/or Land Transportation Facilities Division, State of Hawaii, whichever Government has authority over the work.
2. Contractor shall notify the Hawaiian Electric Co., Inc., Contracting & Inspection Division, phone 548-4427 or 548-4428 24 hours before proceeding with any work on facilities owned by Hawaiian Electric Co., Inc..
3. Ducts: For number, size and exact location of Duct Entrances, refer to Project Drawings.
4. Pulling Irons: For number and locations, refer to Project Drawings.



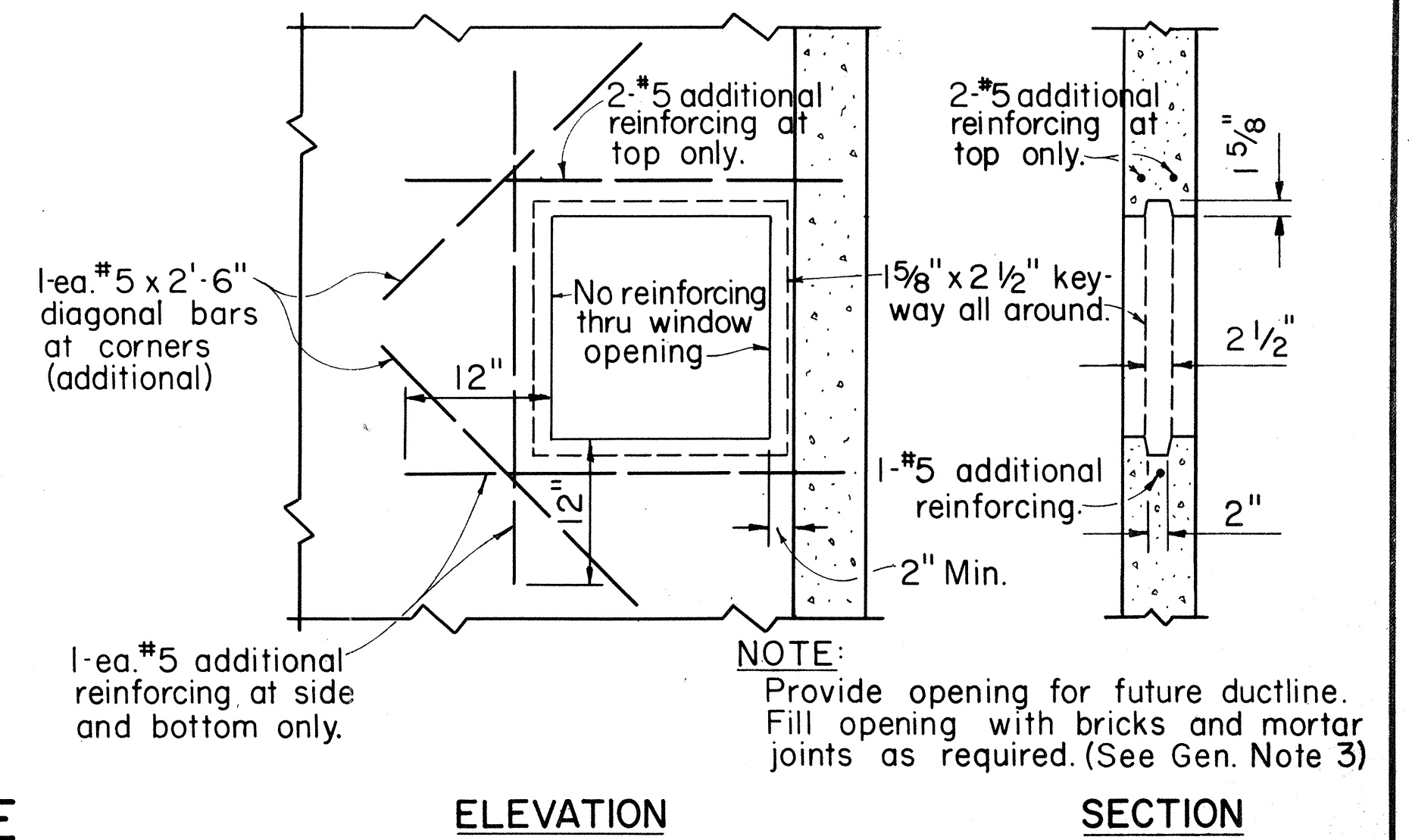
**ELEVATION
END OR SIDE ENTRANCE**
Scale: 1" = 1'-0"



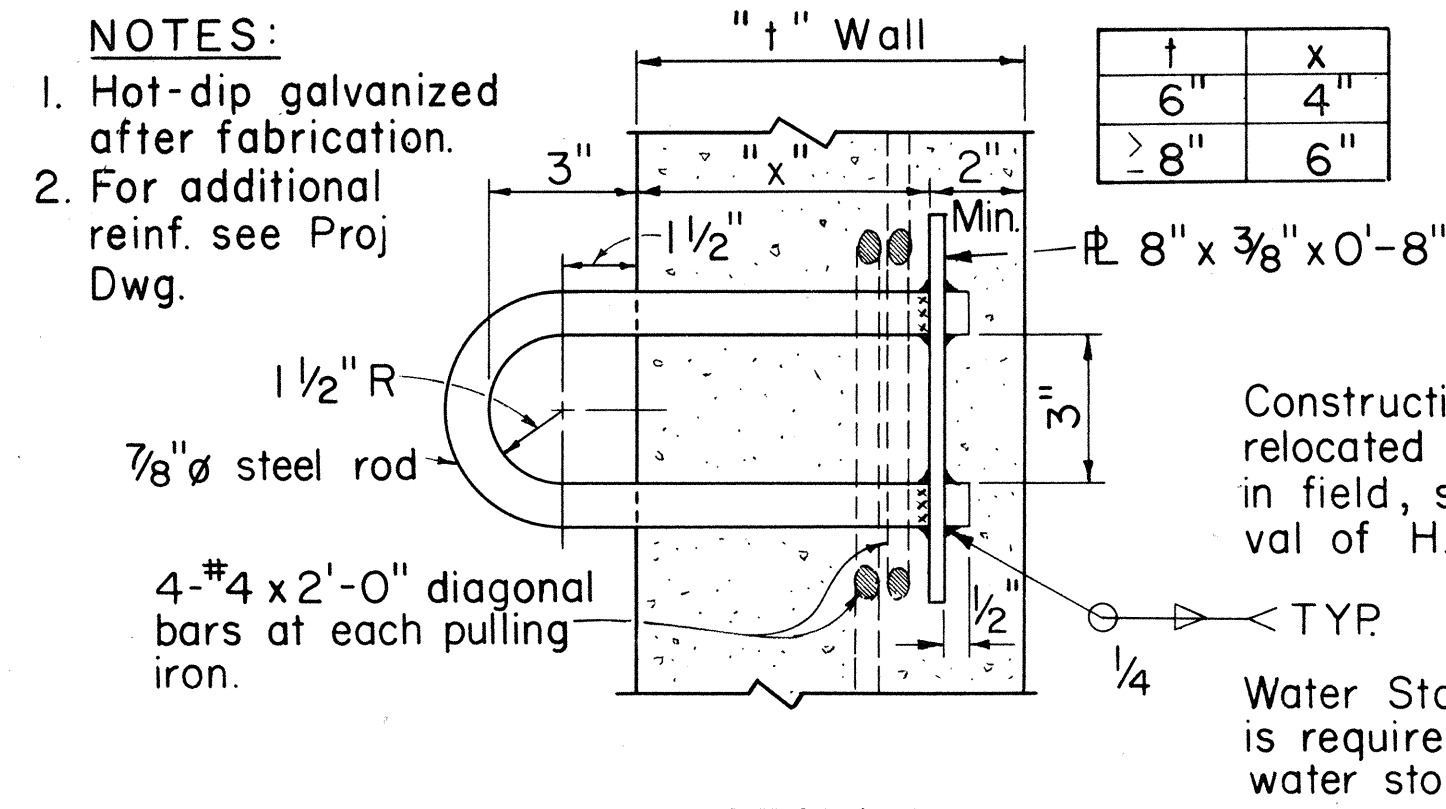
**ELEVATION "B-B"
CORNER ENTRANCE**
Scale: 1" = 1'-0"



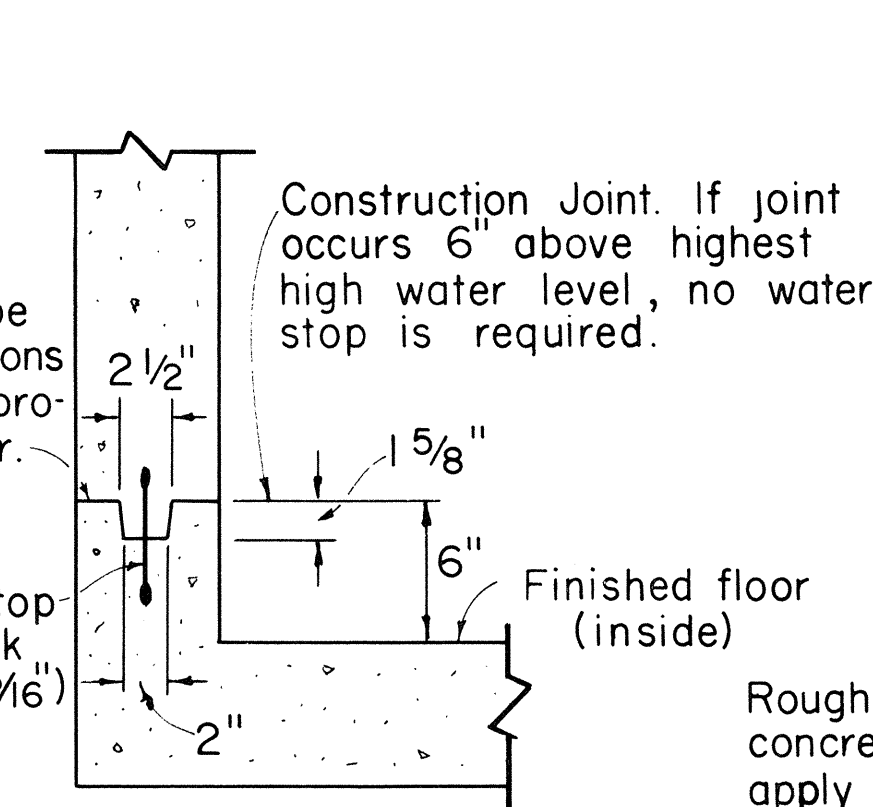
**ELEVATION
DIAGONAL ENTRANCE**
Scale: 1" = 1'-0"



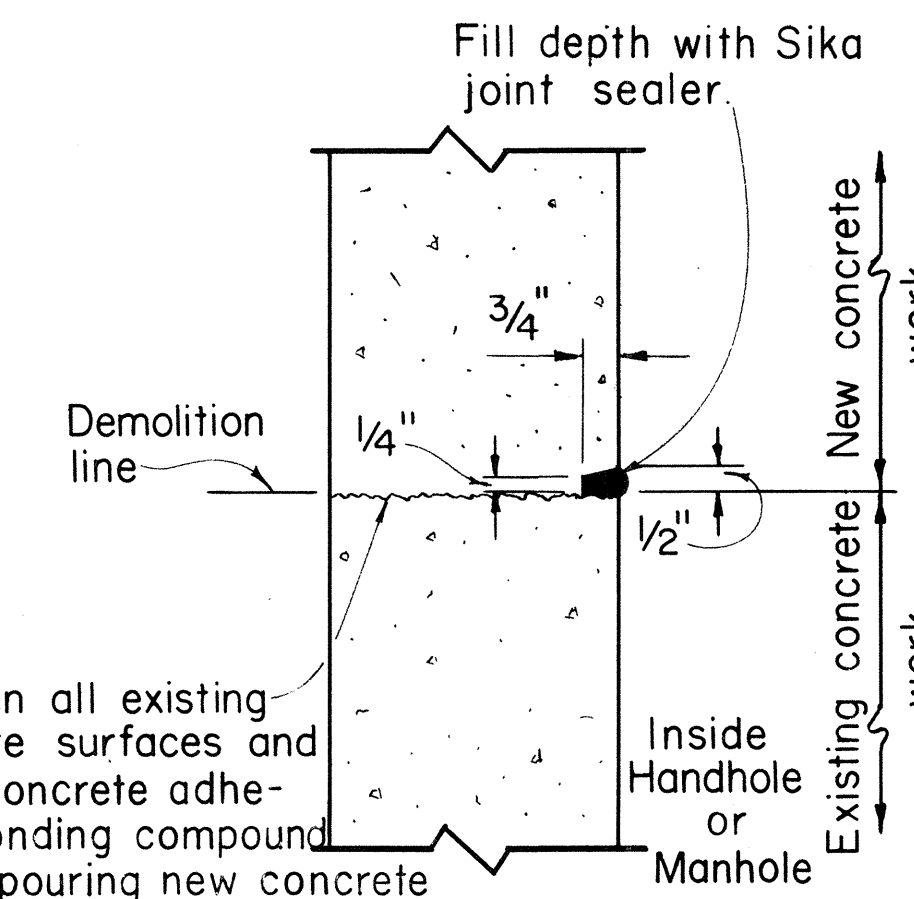
**ELEVATION
KNOCKOUT FOR FUTURE DUCT LINE**
Scale: 1" = 1'-0"



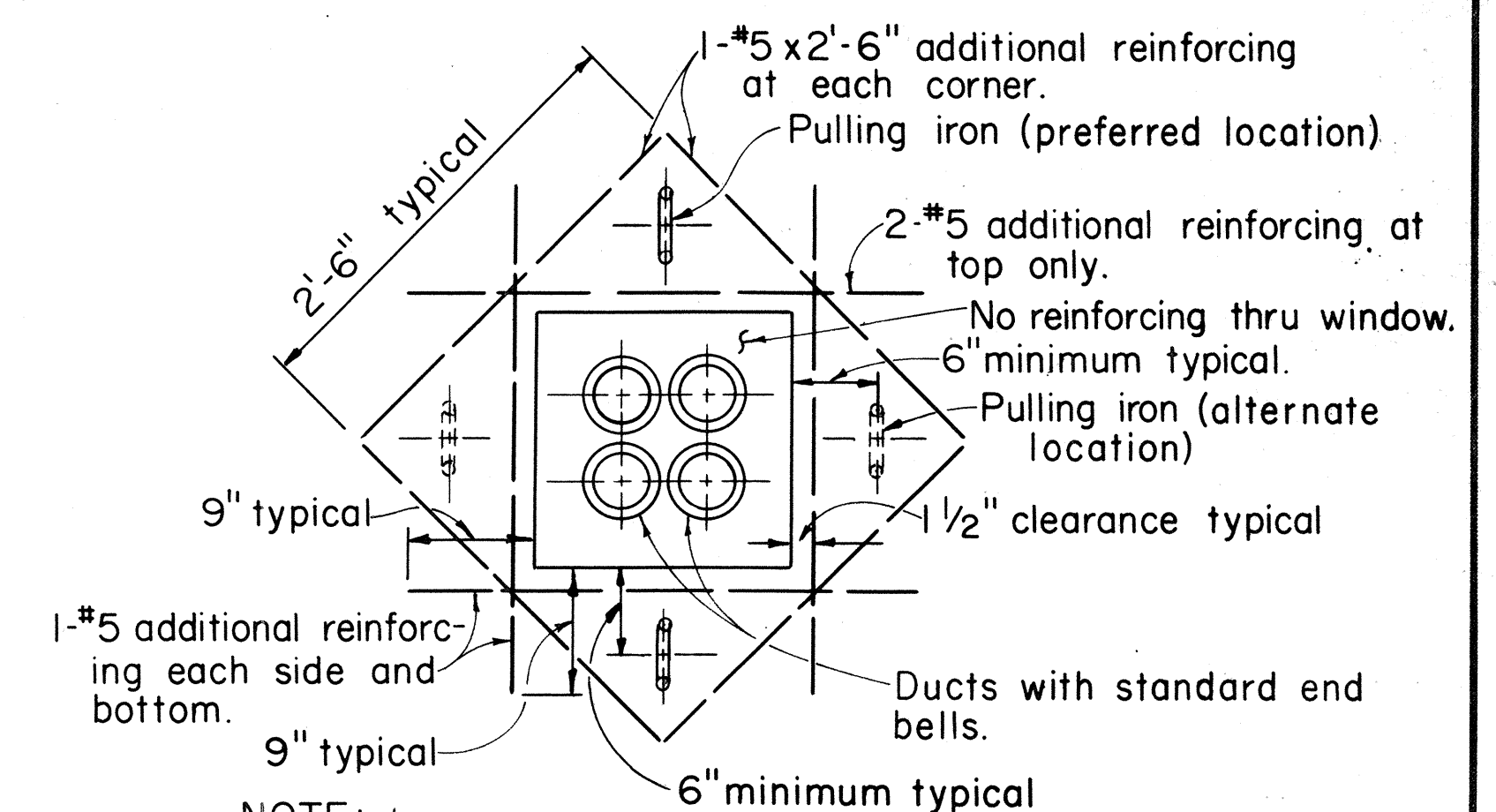
**SECTION
PULLING IRON**
Scale: 3" = 1'-0"



**SECTION
TYPICAL CONSTRUCTION JOINT**
Scale: 1 1/2" = 1'-0"

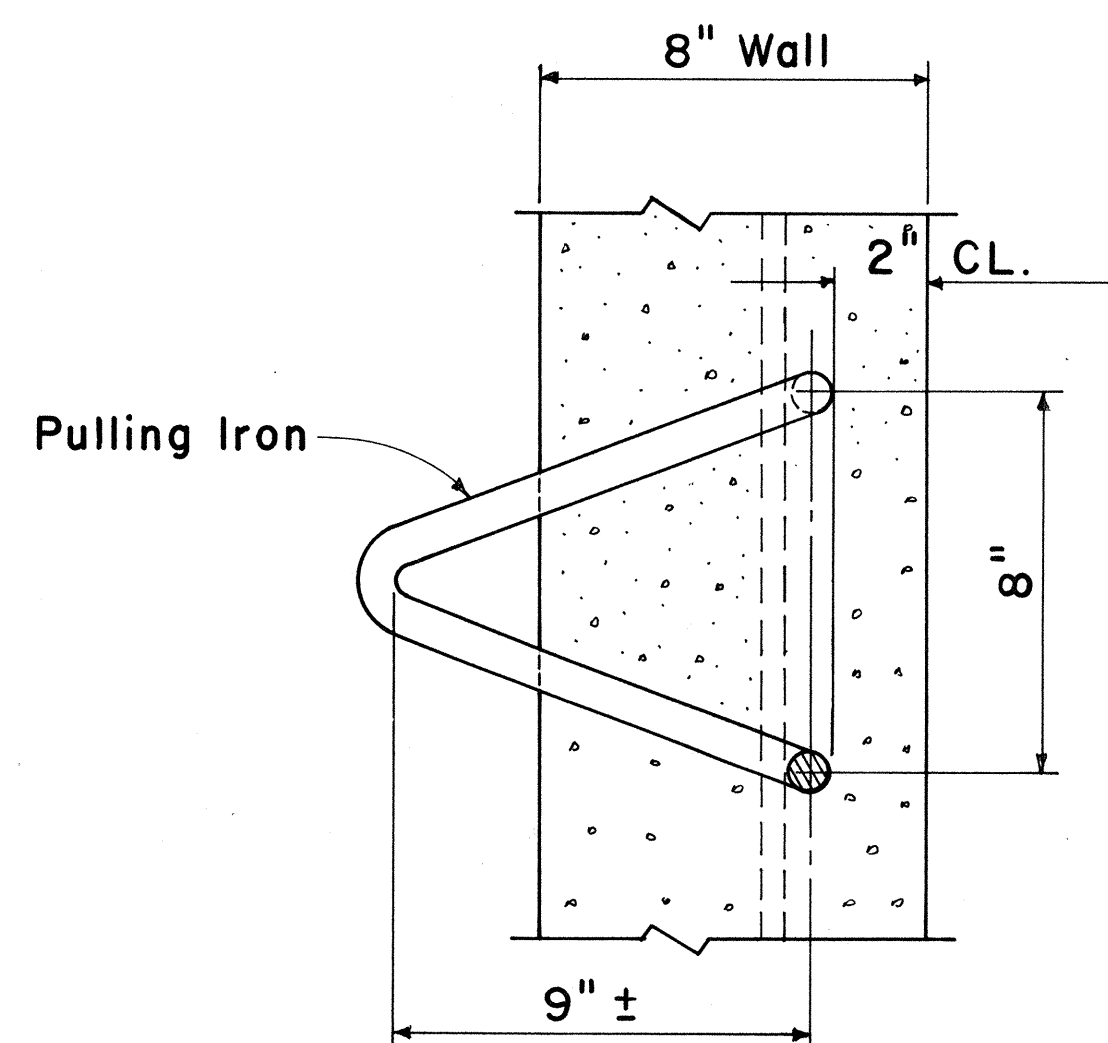


**SECTION
TYPICAL COLD JOINT**
Scale: 3" = 1'-0"

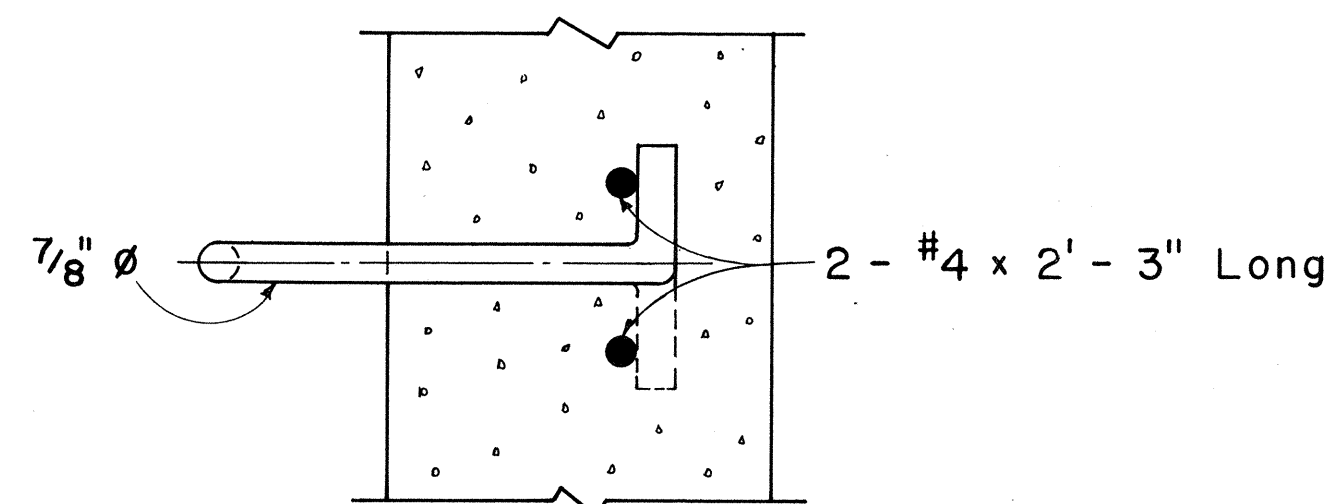


NOTE:
Generally 2 pulling irons are required and located on opposite wall of each duct window unless otherwise shown or noted. H.E.Co. Engineer shall determine number required.

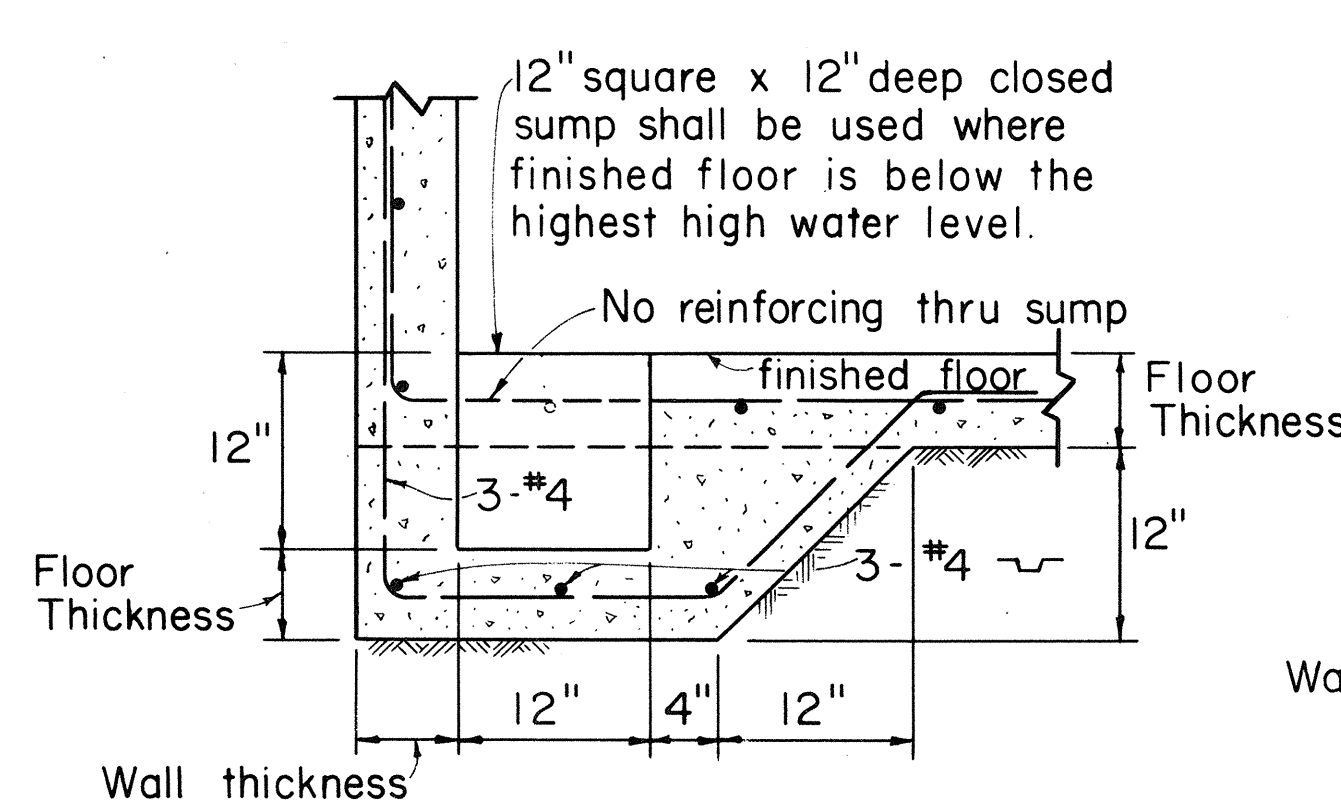
**ELEVATION
TYPICAL DUCT WINDOW**
Scale: 1" = 1'-0"



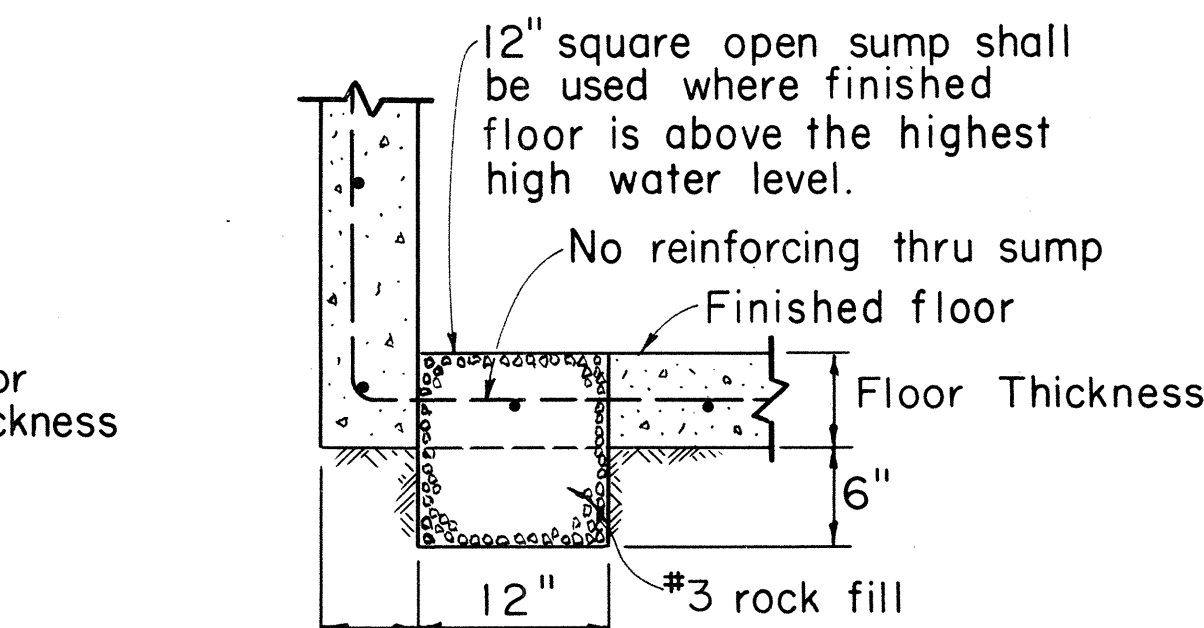
**PLAN
PULLING IRON FOR 8" WALL**
Scale: 3" = 1'-0"



SECTION



**SECTION
CLOSED SUMP**
Scale: 1" = 1'-0"

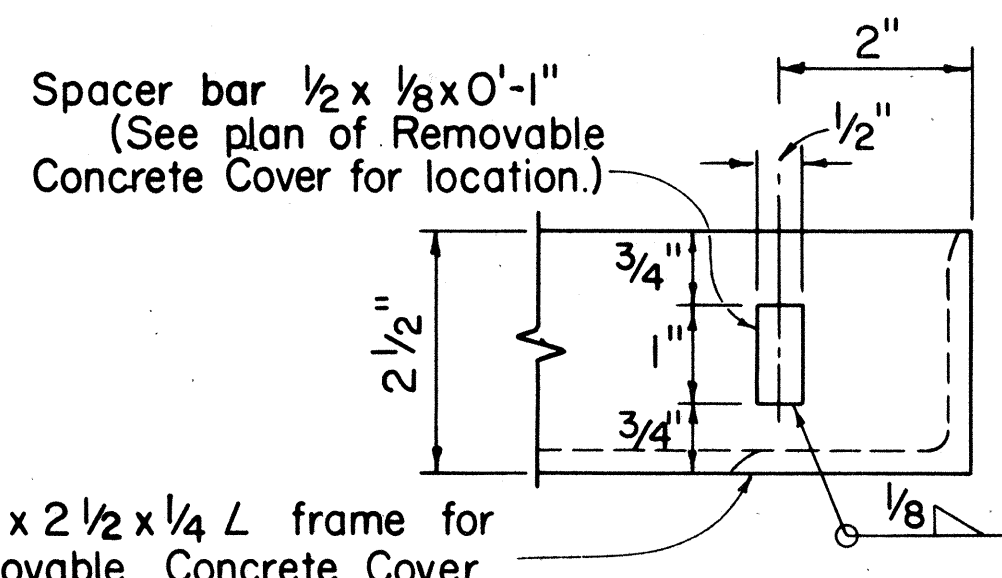


**SECTION
OPEN SUMP**
Scale: 1" = 1'-0"

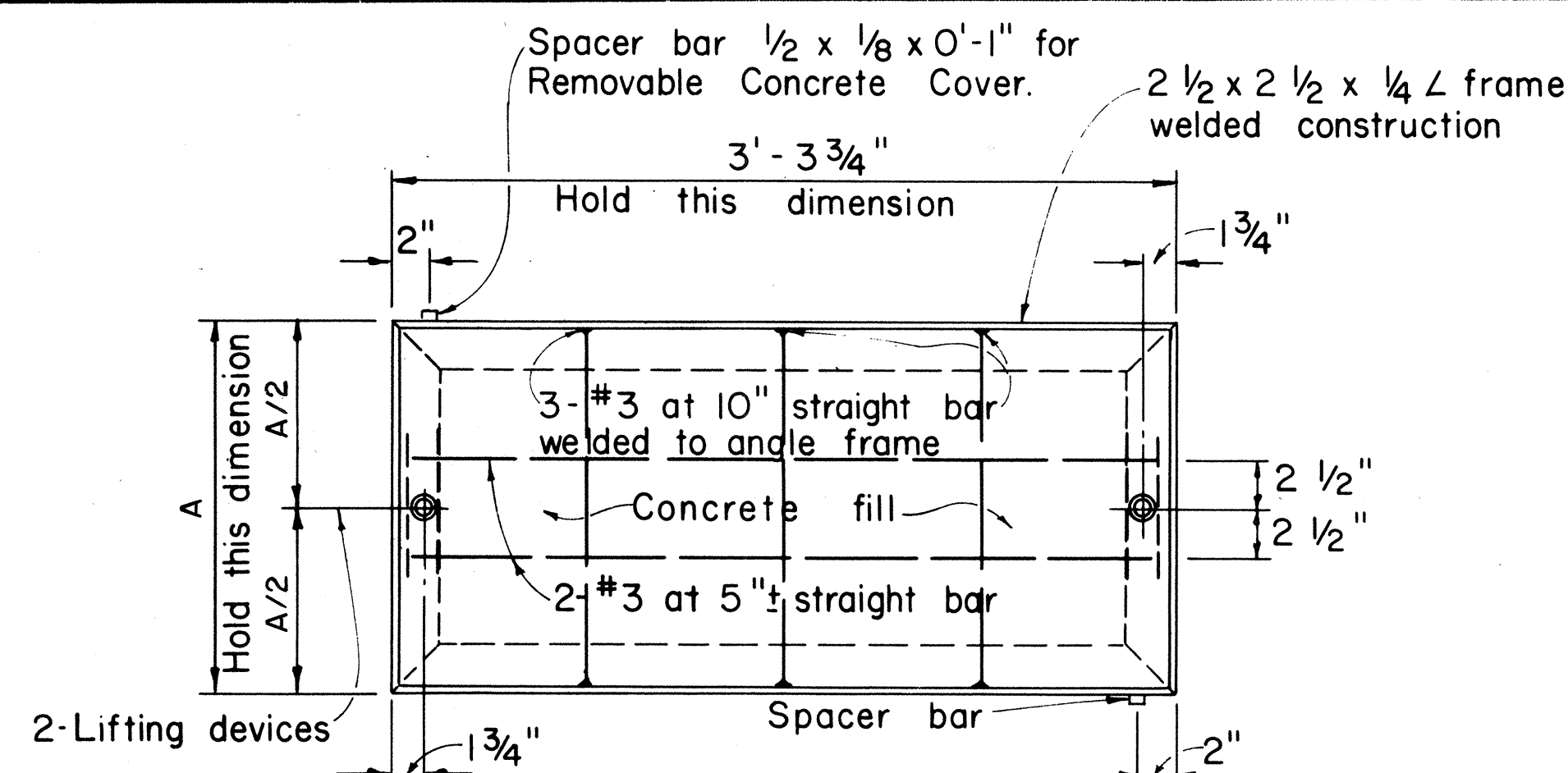
APPROVED:
Hawaiian Electric Co., Inc. Date 5/12/80

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(157)24	1979	142	146

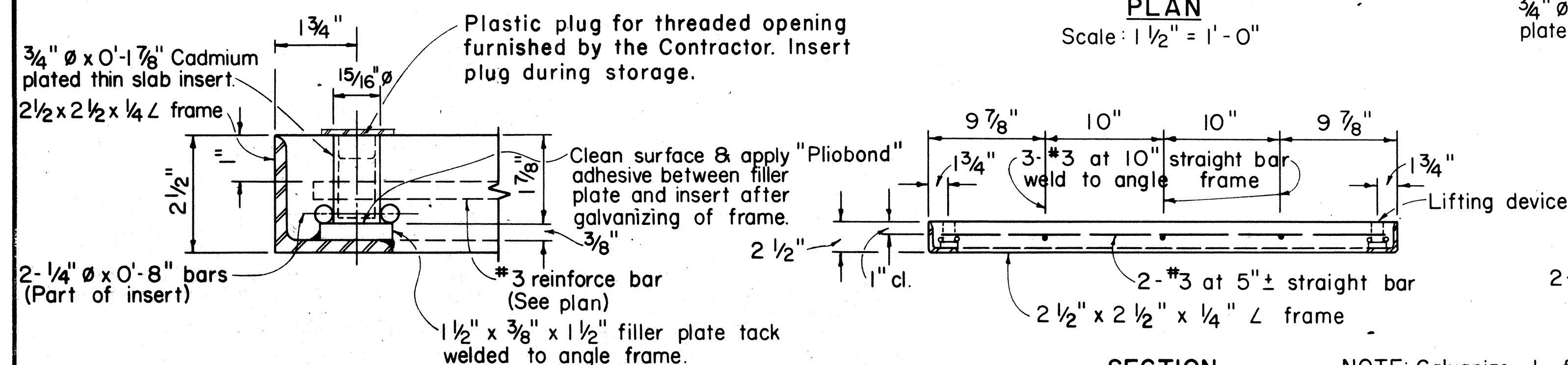
DD-630.007
HECo., Inc. Drawing Number
16688
SHEET NO. 1 OF 2 SHEETS
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**MISCELLANEOUS DETAILS
HANDHOLES & MANHOLES
UNDERGROUND STANDARDS**
Scale as noted
SHEET No. 15 OF 17 SHEETS



PART ELEVATION
SPACER BAR
Scale: 1/2 full size



PLAN
Scale : $1 \frac{1}{2}'' = 1' - 0''$

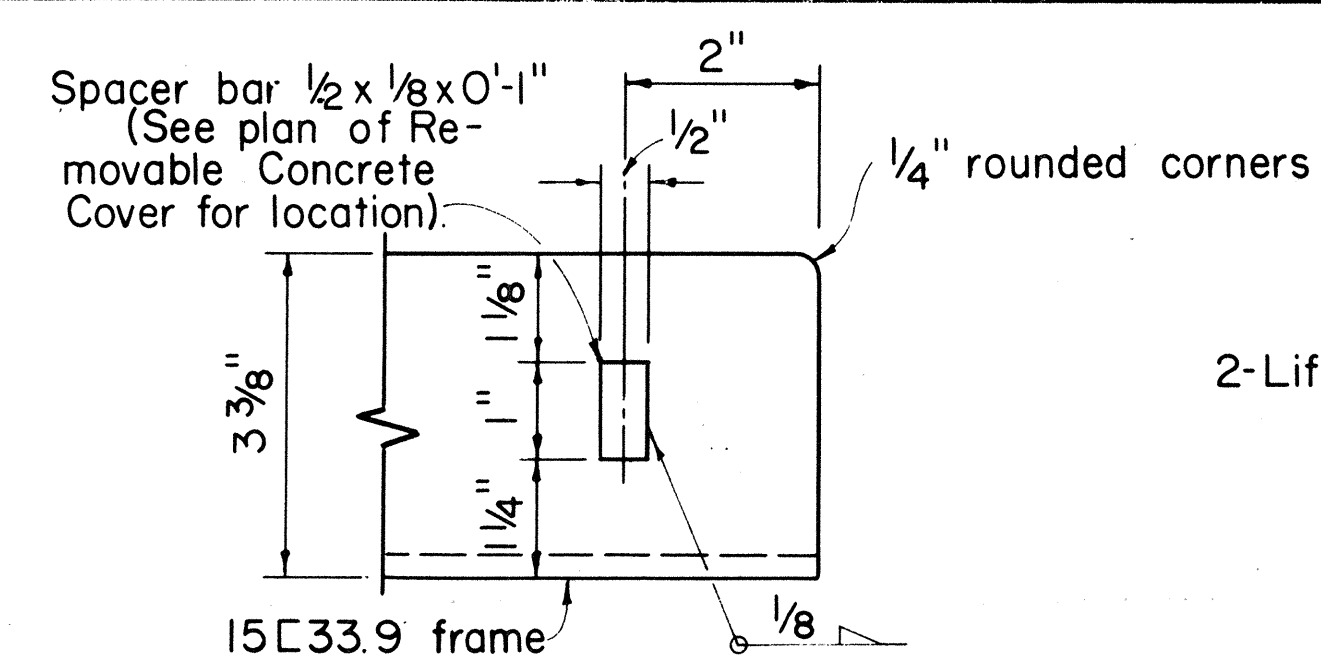


PART SECTION
LIFTING DEVICE
Scale: 1/2 full size

TYPE	DIMENSIONS	
	A	A/2
"SW"	1'-6 ³ / ₄ "	9 ³ / ₈ "
"SWI"	1'-2 ¹³ / ₁₆ "	7 ¹³ / ₃₂ "

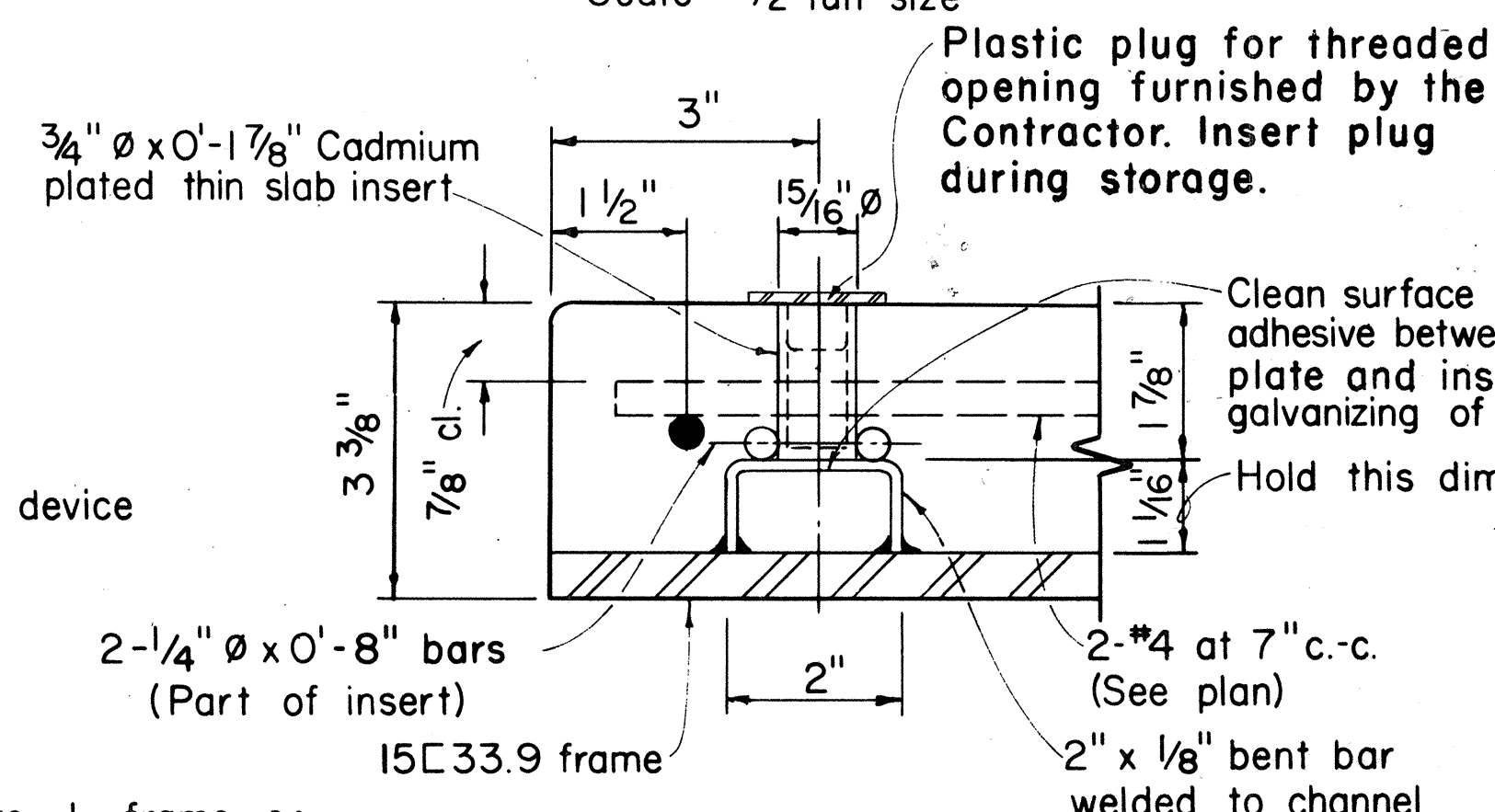
SECTION
Scale: $1\frac{1}{2}'' = 1' - 0''$

NOTE: Galvanize L frame or C frame, steel rods, and spacer bars after fabrication.

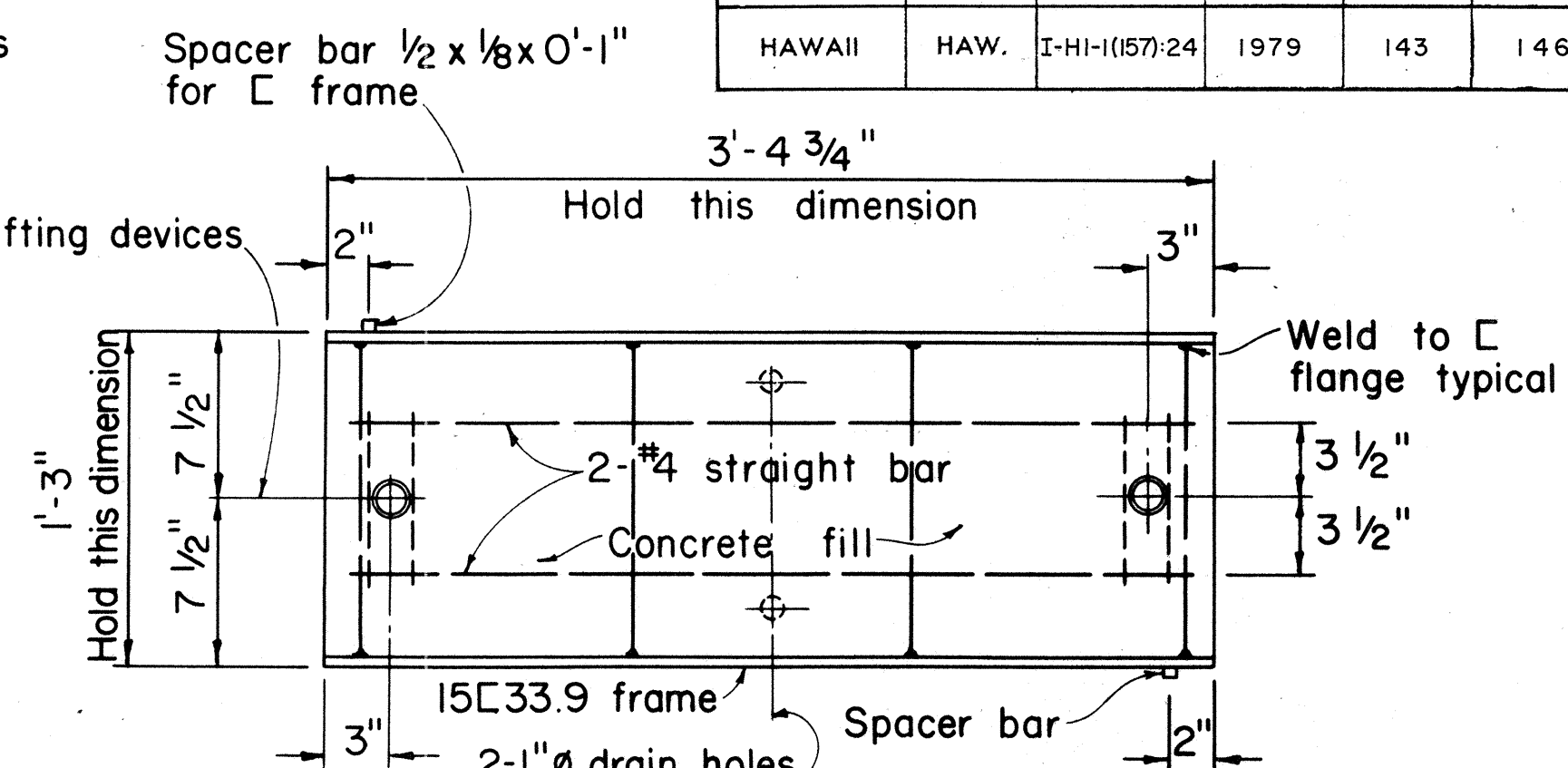


PART	ELEVATION
SPACER	BAR

Scale: 1/2 full size

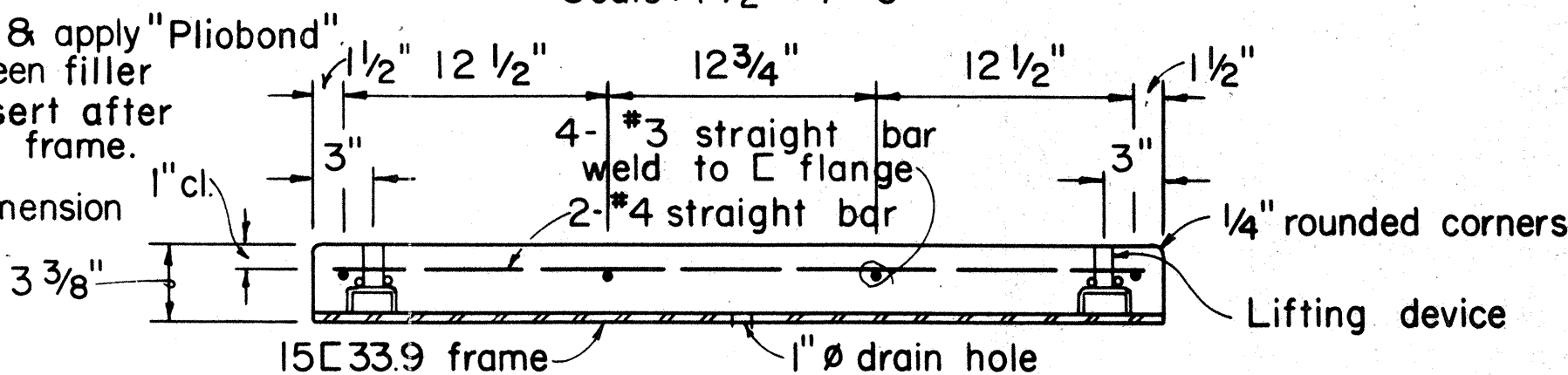


PART SECTION
LIFTING DEVICE
Scale: 1/2 full size



PLAN
Scale: $1\frac{1}{2}'' = 1'-0''$

Scale: $1\frac{1}{2}'' = 1' - 0''$

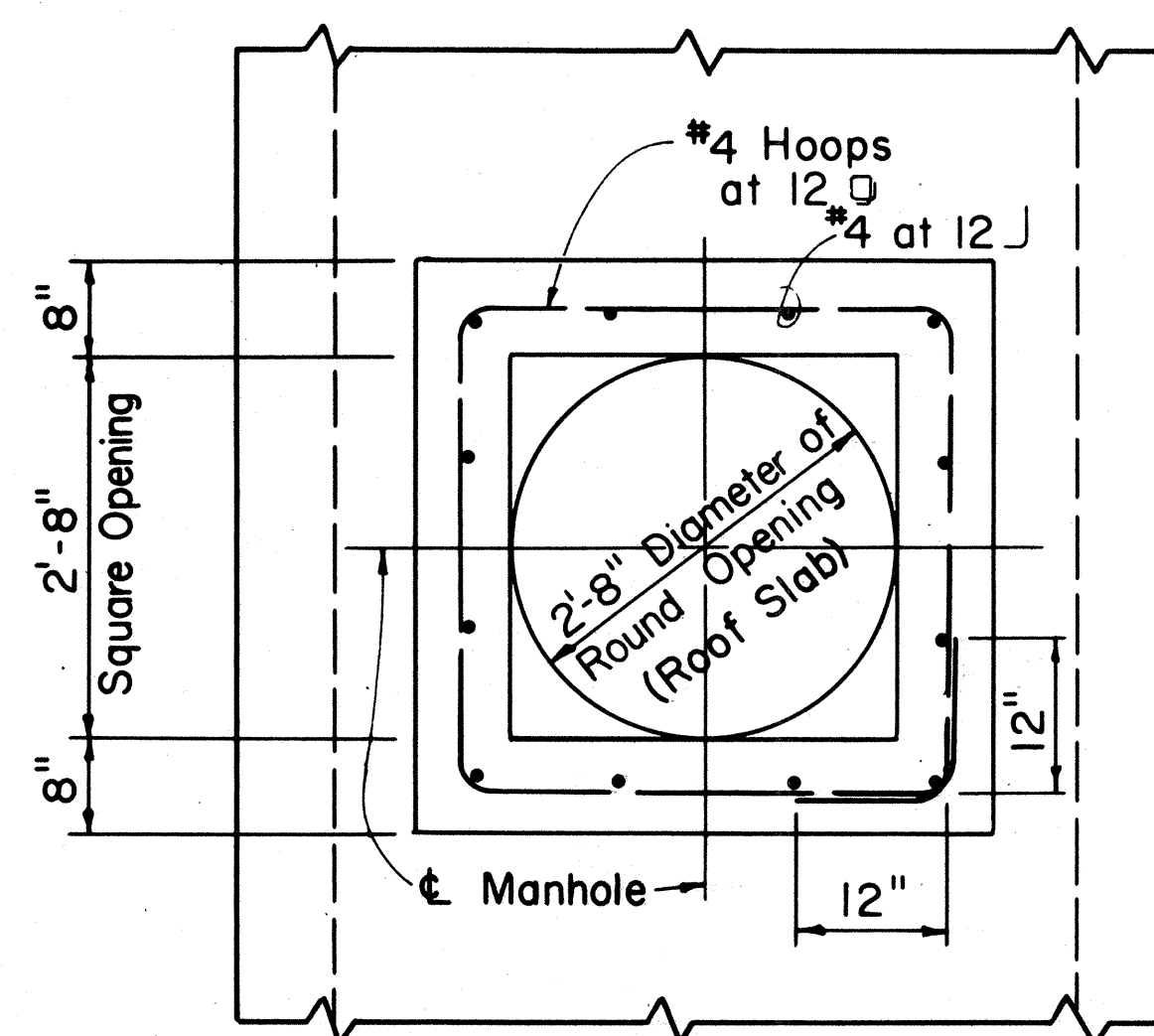


SECTION
Scale: $1\frac{1}{2}" = 1' - 0'$

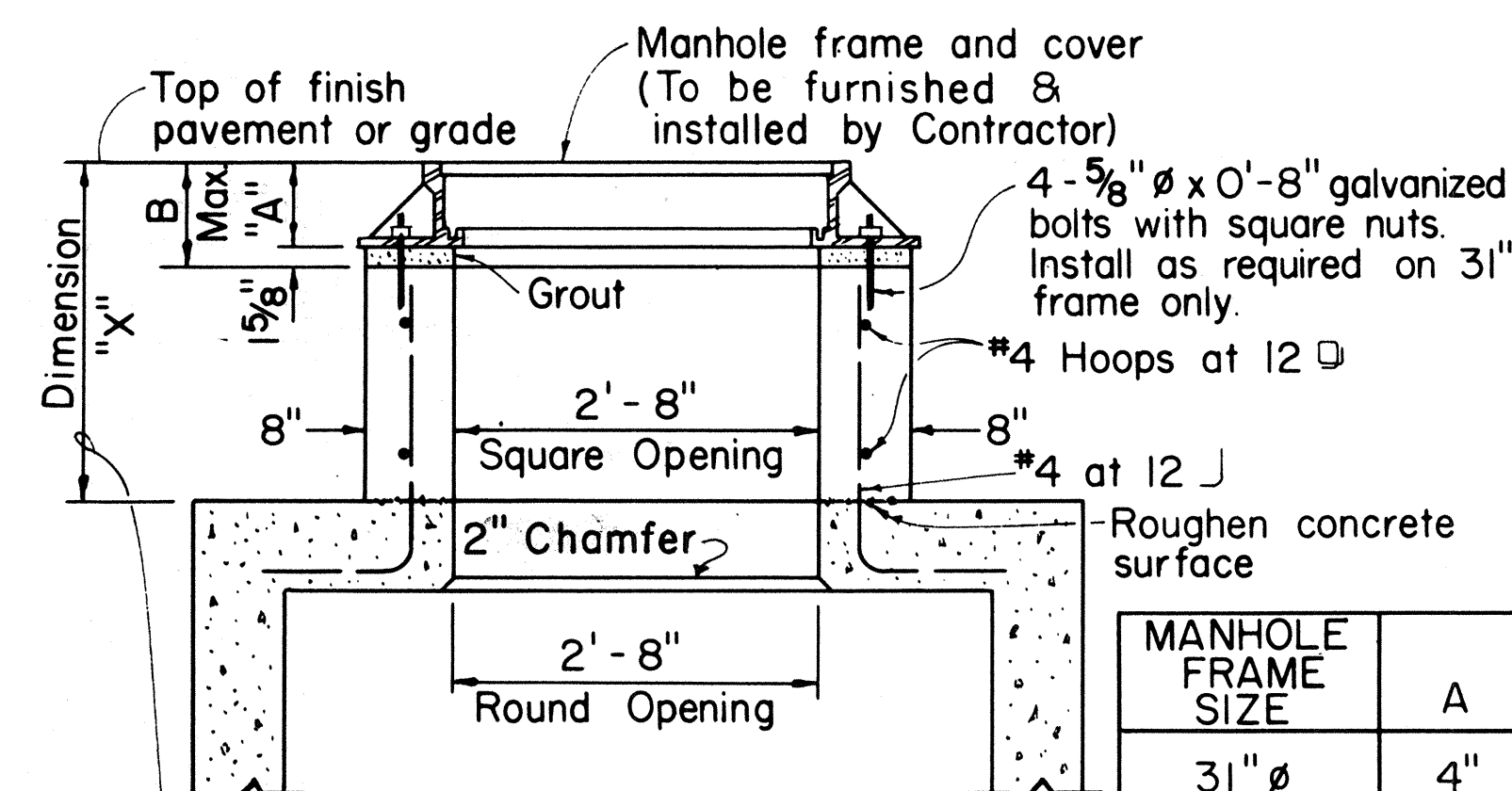
Scale: $1\frac{1}{2}'' = 1' - 0''$

TYPE "TR" REMOVABLE CONCRETE COVER

TYPE "SW" & "SWI" REMOVABLE CONCRETE COVER



PLAN



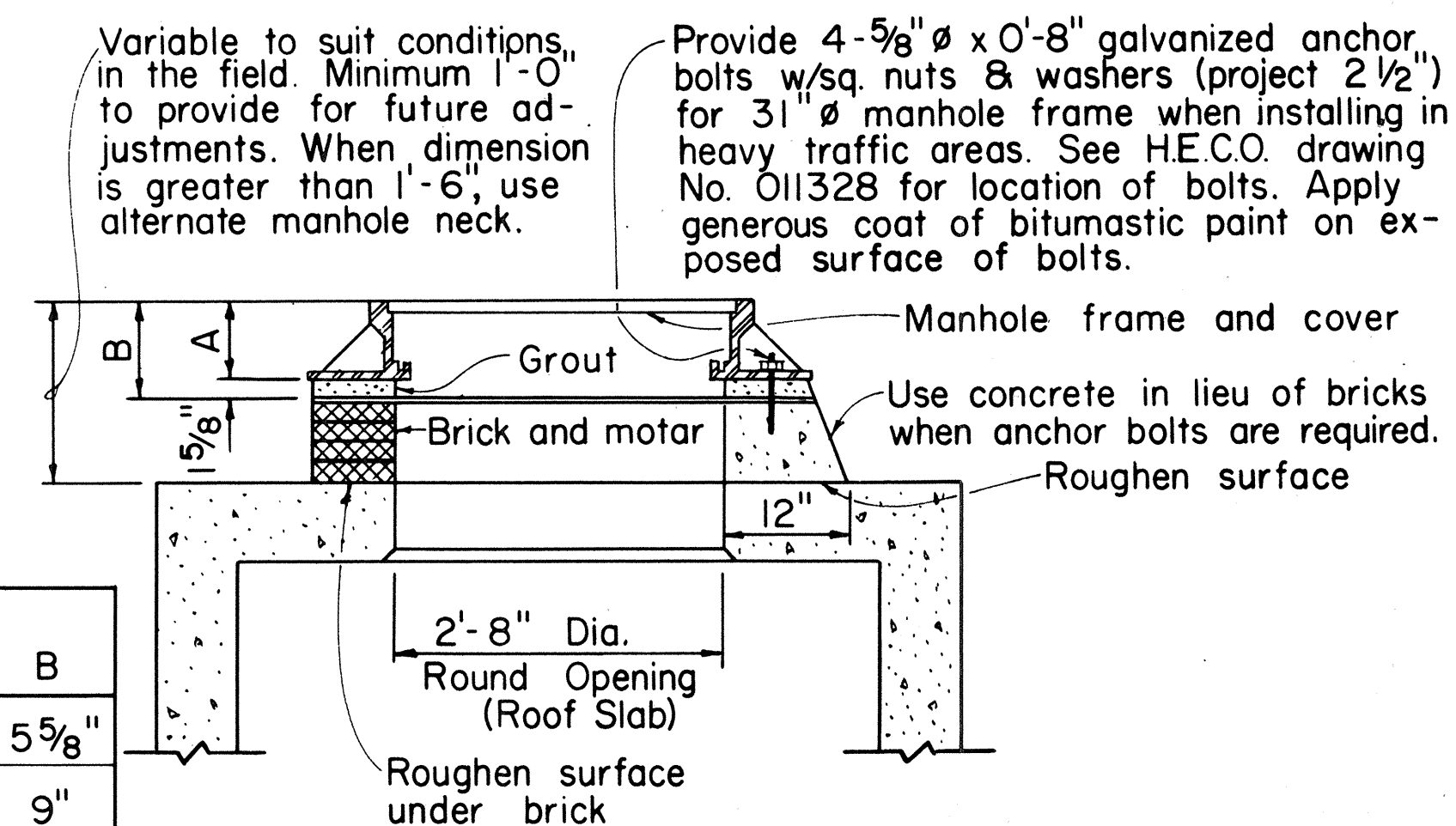
SECTION

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

MANHOLE FRAME SIZE	A	B
31" $\emptyset$	4"	5 ⁵ / ₈
28" $\emptyset$	7 ³ / ₈ "	9"

ALTERNATE MANHOLE NECK

Scale: $\frac{3}{4}" = 1' - 0"$



NOTE:

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

31" Ø & 28" Ø MANHOLE FRAME NECK DETAIL

Scale: $\frac{3}{4}" = 1' - 0"$

APPROVED:

3 m⁹ *Wences*
Hawaiian Electric Co., Inc.

5/12/18
Date

DD-630.008

HECo., Inc. Drawing Number

16688

SHEET NO. 2
OF 2 SHEETS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

MISCELLANEOUS DETAILS HANDHOLES & MANHOLES UNDERGROUND STANDARDS

Scale as noted

SHEET No. F16 OF 17 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11-1(157)24	1979	144	146

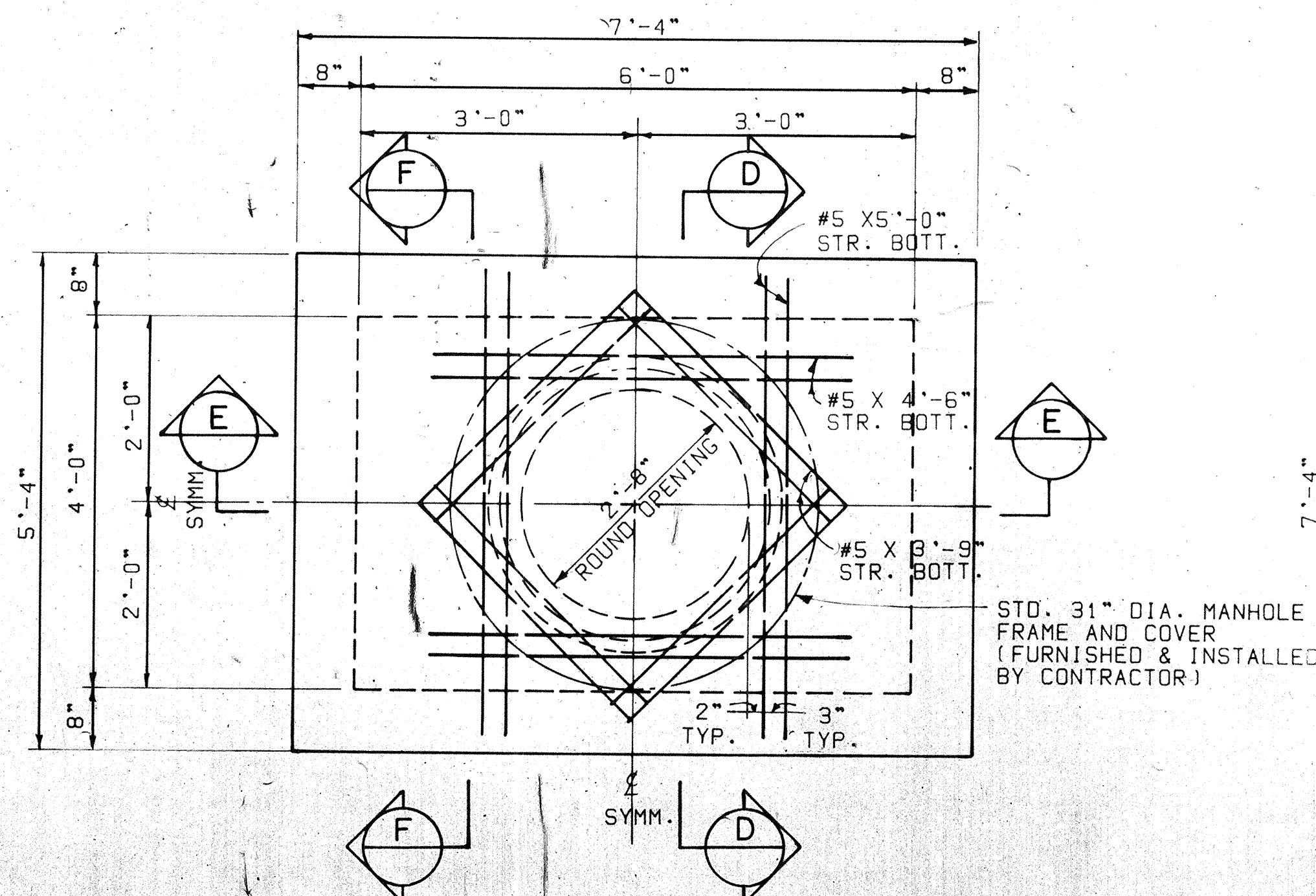
NOTES:

- SEE DWG. 16688 (2 SHEETS) FOR MANHOLE MISCELLANEOUS DETAILS AND GENERAL NOTES.
- SEE PROJECT DWGS. FOR LOCATION OF MANHOLE CONCERNED.
- FOR DUCT ENTRANCES AND LOCATION OF PULLING IRONS, SEE MANHOLE DEVELOPMENTS OF PROJECT CONCERNED.
- PULLING IRONS FOR 8" WALL: TYPE I PREFERRED. TYPE II OPTIONAL. SEE DWG. 16688, SHEET 1 OF 2 FOR DETAILS.

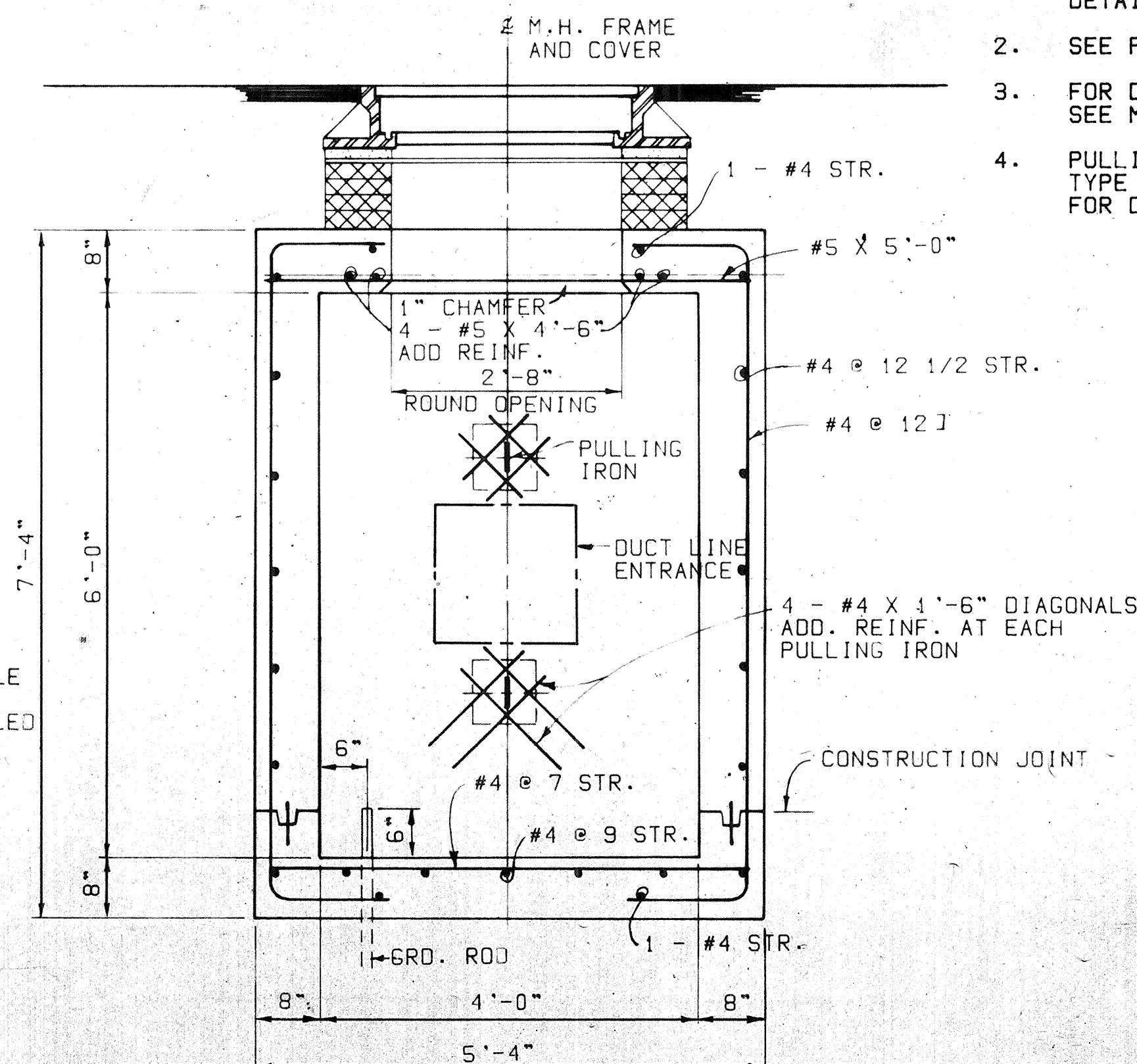
NOTE: IF NON-STD. 28" DIA. M.H. FRAME AND COVER ARE USED, SEE DWG. 16688 FOR NECK DETAIL.

NOTE: USE ALTERNATE M.H. NECK ONLY WHEN DIMENSION "X" IS GREATER THAN 1'-6". SEE DETAIL DWG. 16688

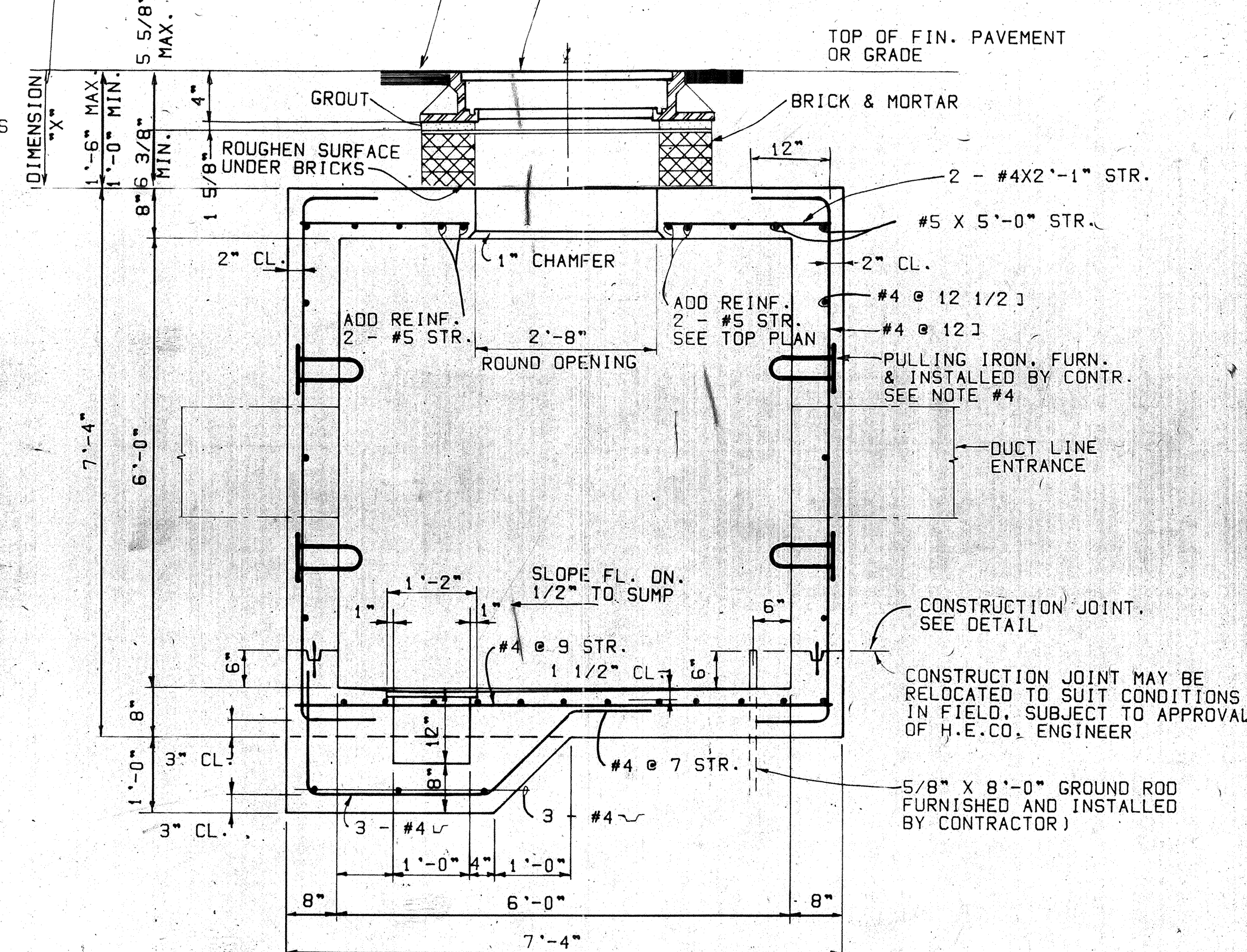
NOTE: STD. HECO 31" DIA. M.H. FRAME AND COVER FURNISHED AND INSTALLED BY CONTRACTOR. WHEN M.H. FRAME AND COVER ARE SUBJECTED TO HEAVY TRAFFIC, USE ANCHOR BOLTS PER M.H. NECK DETAIL ON DWG. 16688.



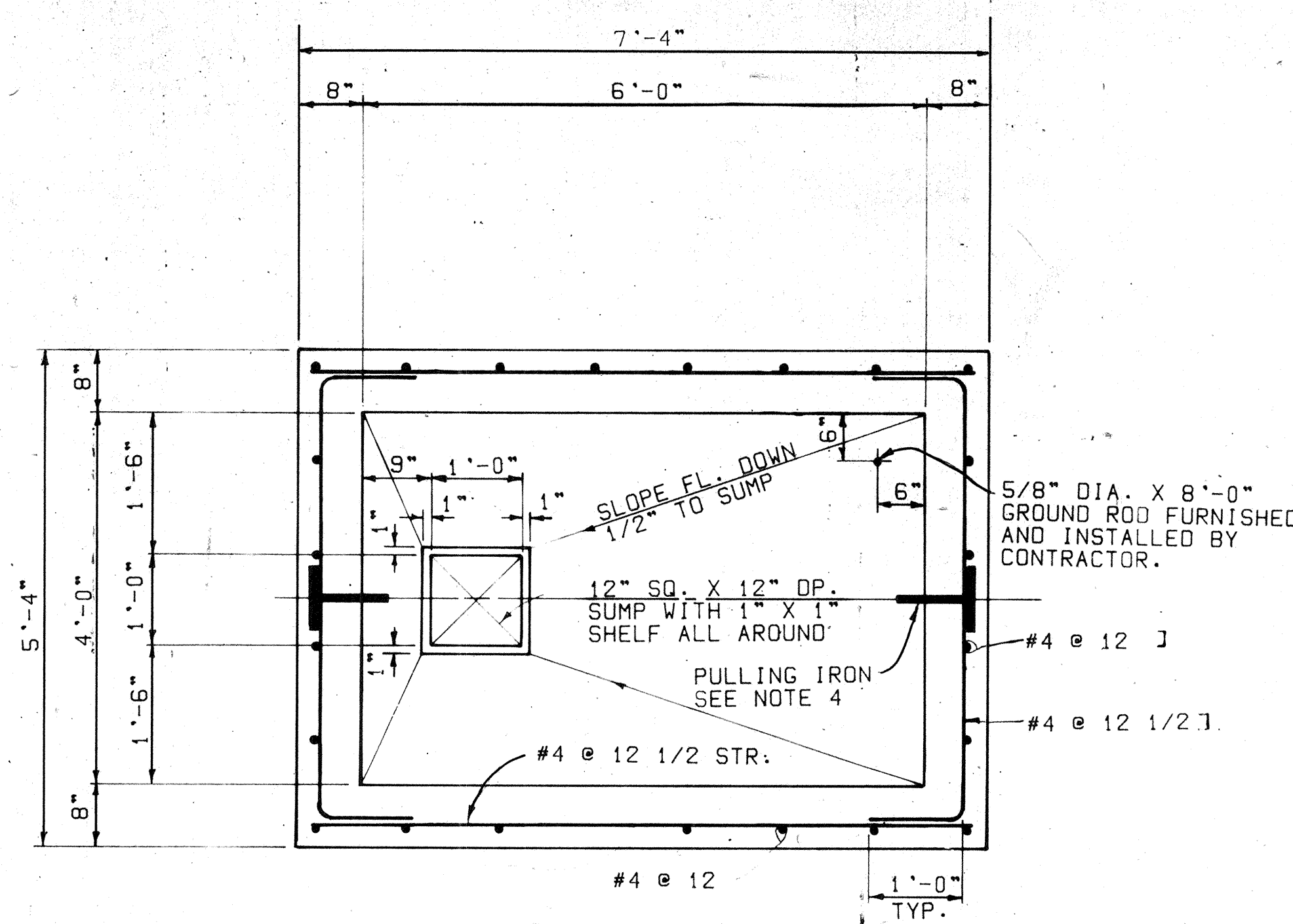
TOP PLAN
3/4" = 1'-0"



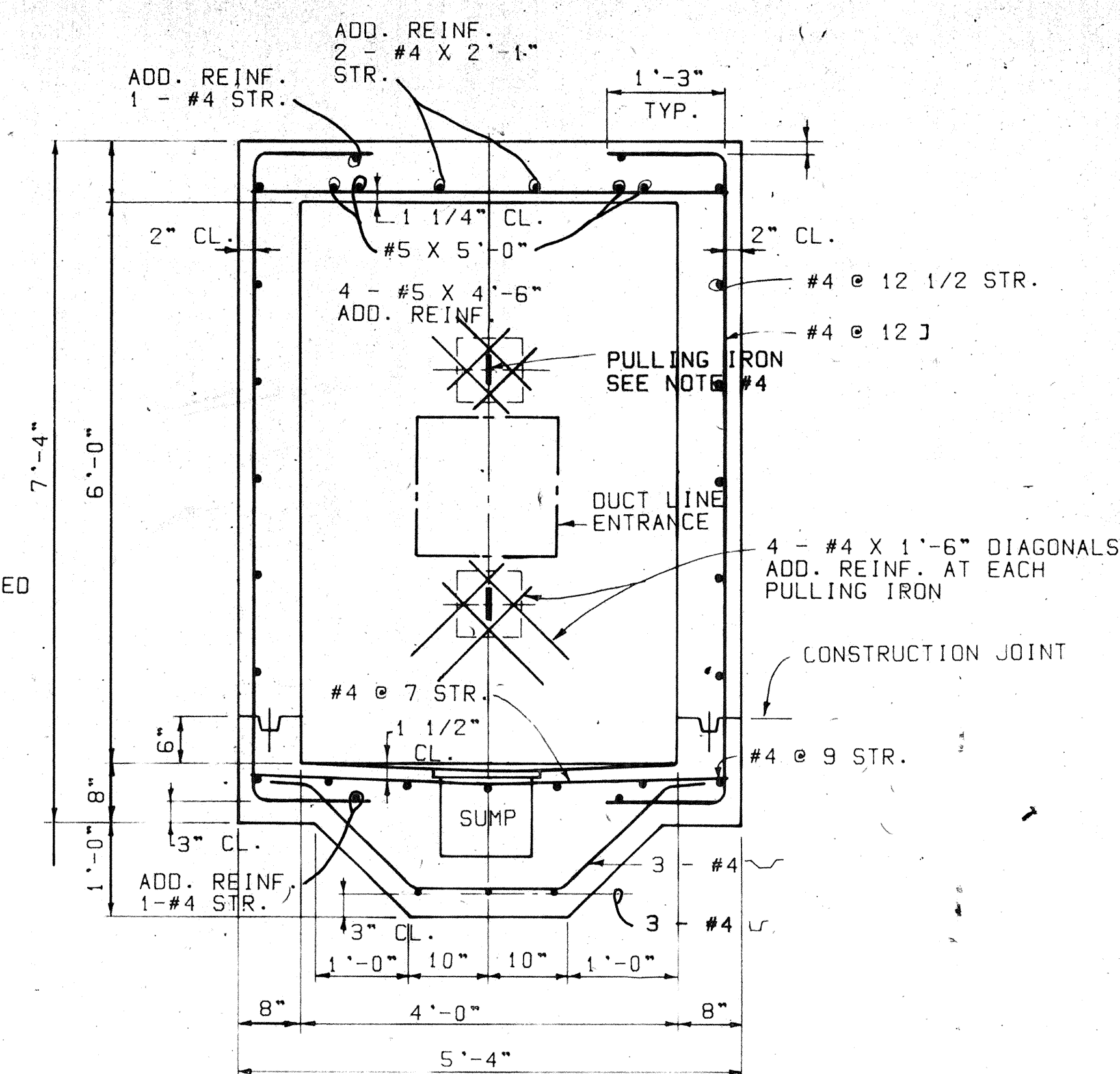
SECTION "D - D"
3/4" = 1'-0"



SECTION "E - E"
3/4" = 1'-0"



SECTIONAL PLAN
3/4" = 1'-0"



SECTION "F - F"
3/4" = 1'-0"

APPROVED

HAWAIIAN ELECTRIC COMPANY

DATE

HECo., Inc.		Drawing No.	
16687		SHEET NO. 1 OF 1 SHEET	
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION LAND TRANSPORTATION FACILITIES DIVISION			
MANHOLE, TYPE 46M (4'-0" x 6'-0") UNDERGROUND STANDARDS			
Scales As Noted		AUG 1978	
SHEET No. 17 OF 17 SHEETS			