

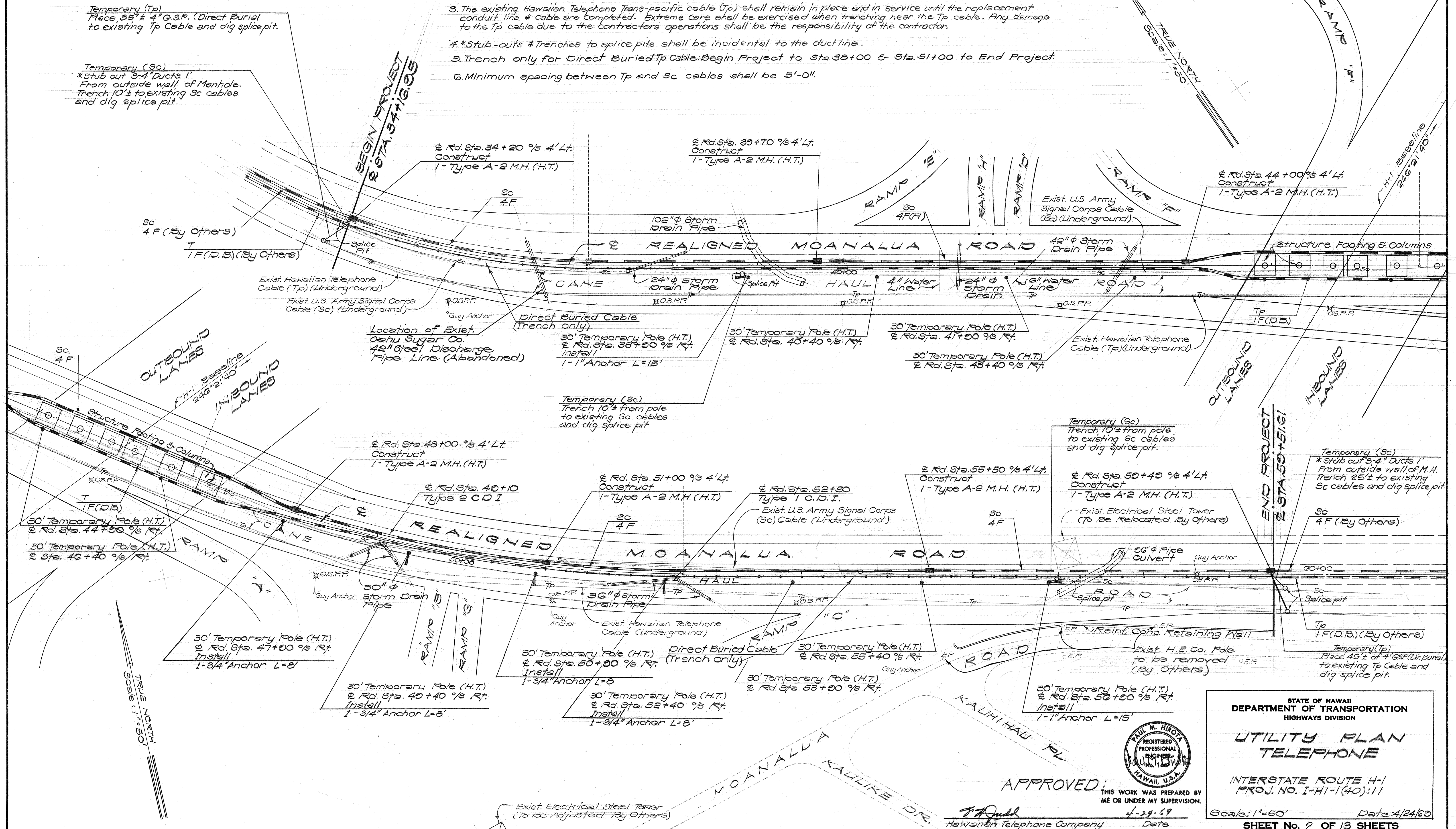
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-41-11(65):10 I-41-1(40):11	1969	67	185

NOTES:

1. The contractor shall provide splice pits (8 pits required) at approximate locations shown on the plans. Exact locations to be determined by H.T.Co. at time of construction.
2. Splice pits shall be done in accordance with H.T.Co. standards. Cost of splice pits to be incidental to the duct lines.
3. The existing Hawaiian Telephone Trans-Pacific cable (Tp) shall remain in place and in service until the replacement conduit line & cable are completed. Extreme care shall be exercised when trenching near the Tp cable. Any damage to the Tp cable due to the contractors operations shall be the responsibility of the contractor.
4. *Stub-outs & Trenches to splice pits shall be incidental to the duct line.
5. Trench only for Direct Buried Tp Cable: Begin Project to Sta. 38+00 & Sta. 51+00 to End Project.
6. Minimum spacing between Tp and Sc cables shall be 5'-0".

Temporary (Tp)
Place 35" ± 4" G.S.P. (Direct Burial
to existing Tp Cable and dig splice pit.

Temporary (90)
*Stub out 3-4" Ducts 1'
From outside wall of Manhole.
Trench 10'± to existing Sc cables
and dig splice pit.



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY PLAN
TELEPHONE

INTERSTATE ROUTE 4-1
PROJ. NO. I-HI-1(40):11

Scale: 1"=50' Date: 4/24/63

SHEET No. 2 OF 13 SHEETS

APPROVED.

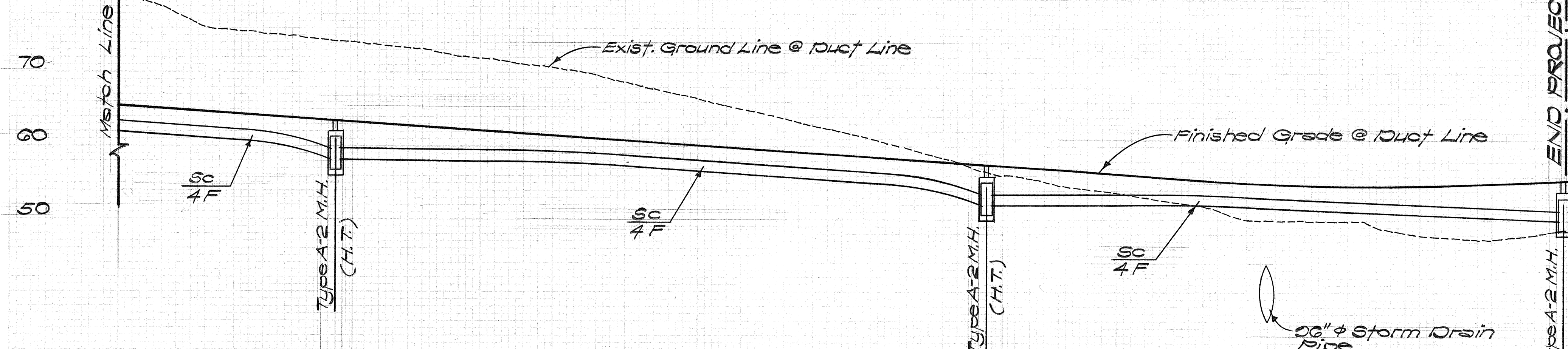
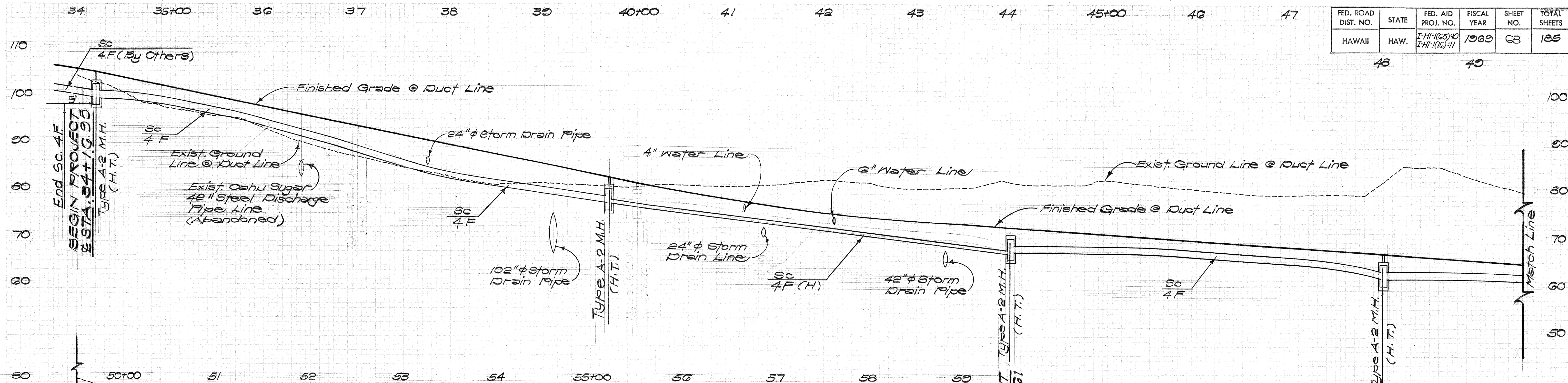
THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

J. H. Dudd
Hawaiian Telephone Company



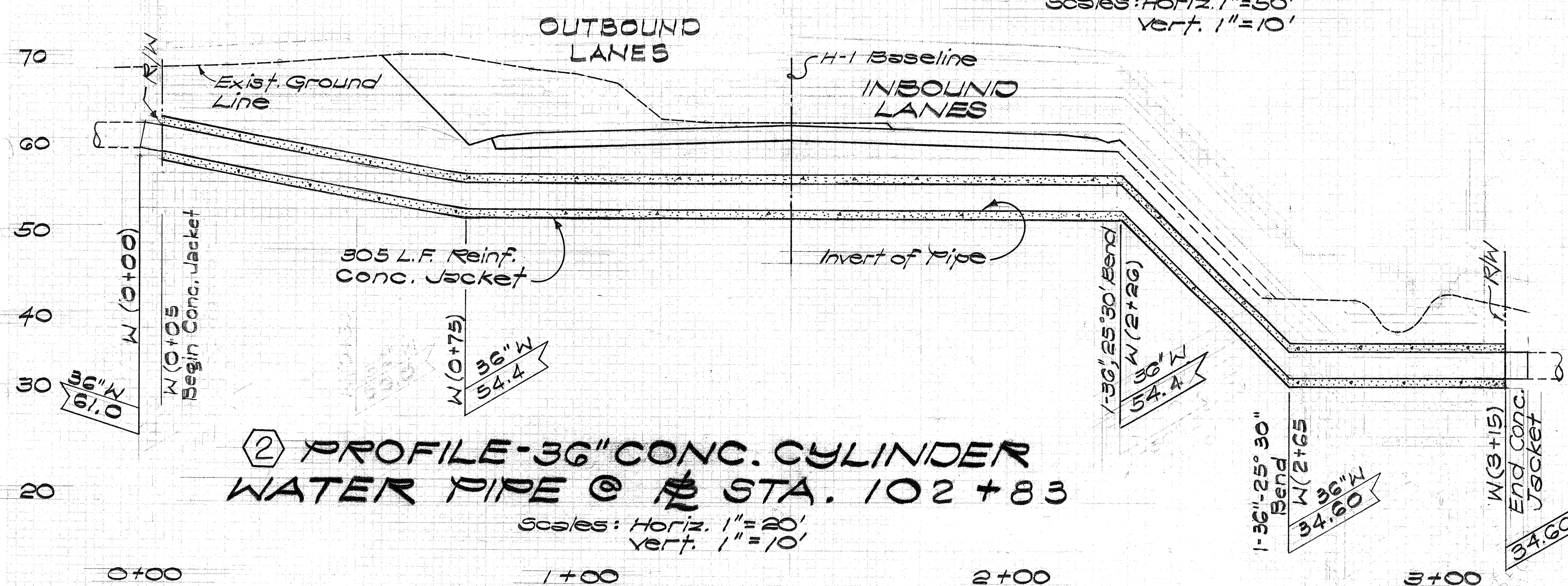
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(65)10 I-HI-1(16)-11	1969	68	135

48 49



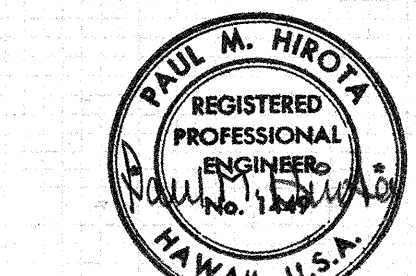
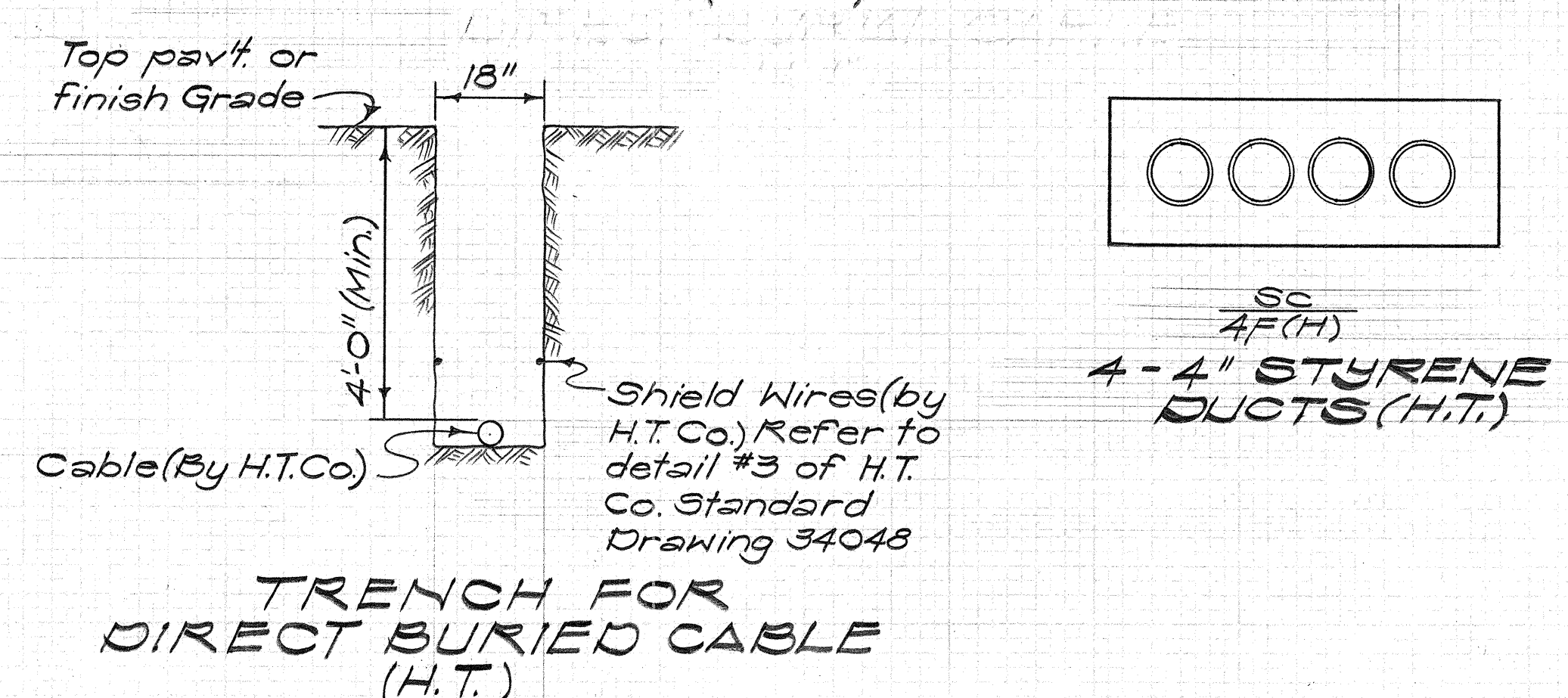
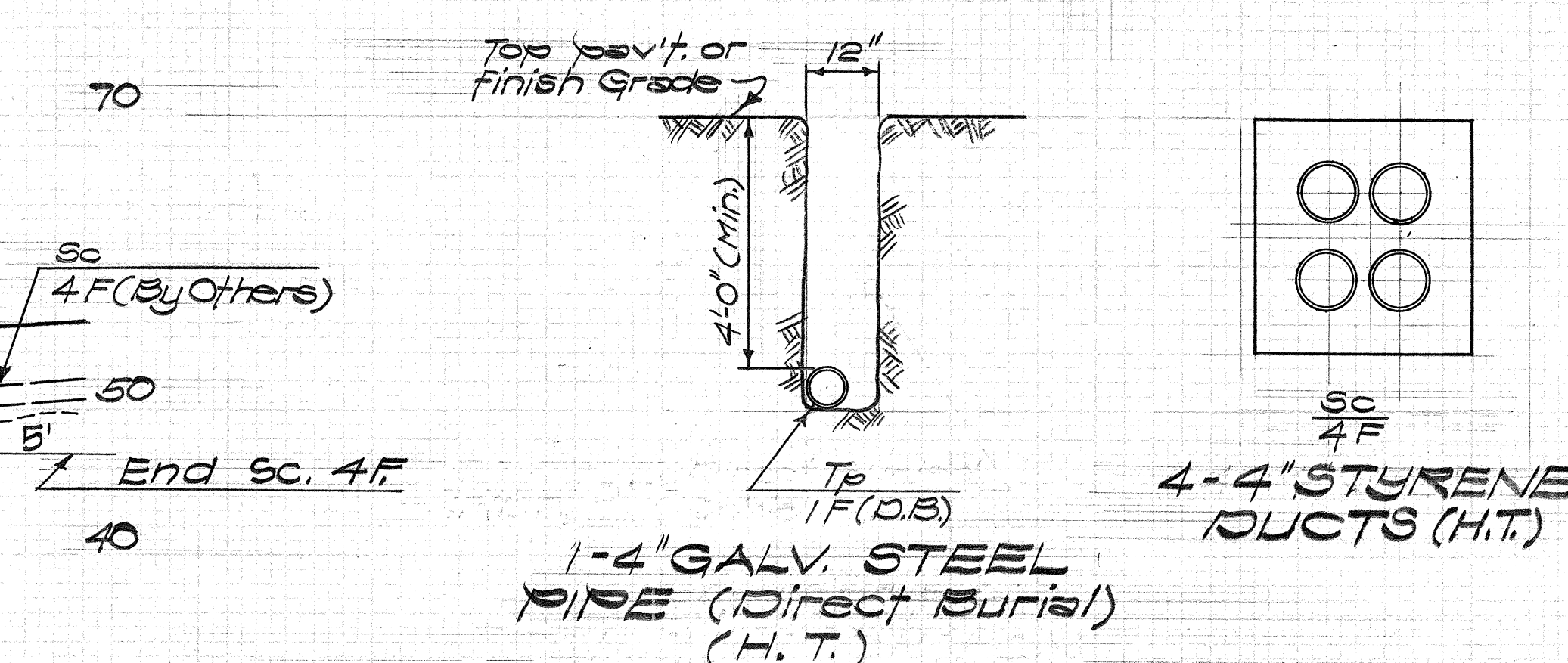
① PROFILE - REALIGNED MOANALUA ROAD SIGNAL CORPS CABLE DUCT LINE (SC)

Scales: Horiz. 1"=50'
Vert. 1"=10'



② PROFILE - 36" CONC. CYLINDER WATER PIPE @ STA. 102+83

Scales: Horiz. 1"=20'
Vert. 1"=10'



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ME OR UNDER MY SUPERVISION.

APPROVED: *[Signature]* 4-29-69
Hawaiian Telephone Company Date
[Signature] 6/24/69
Chief, Engineering Division, BWS Date

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

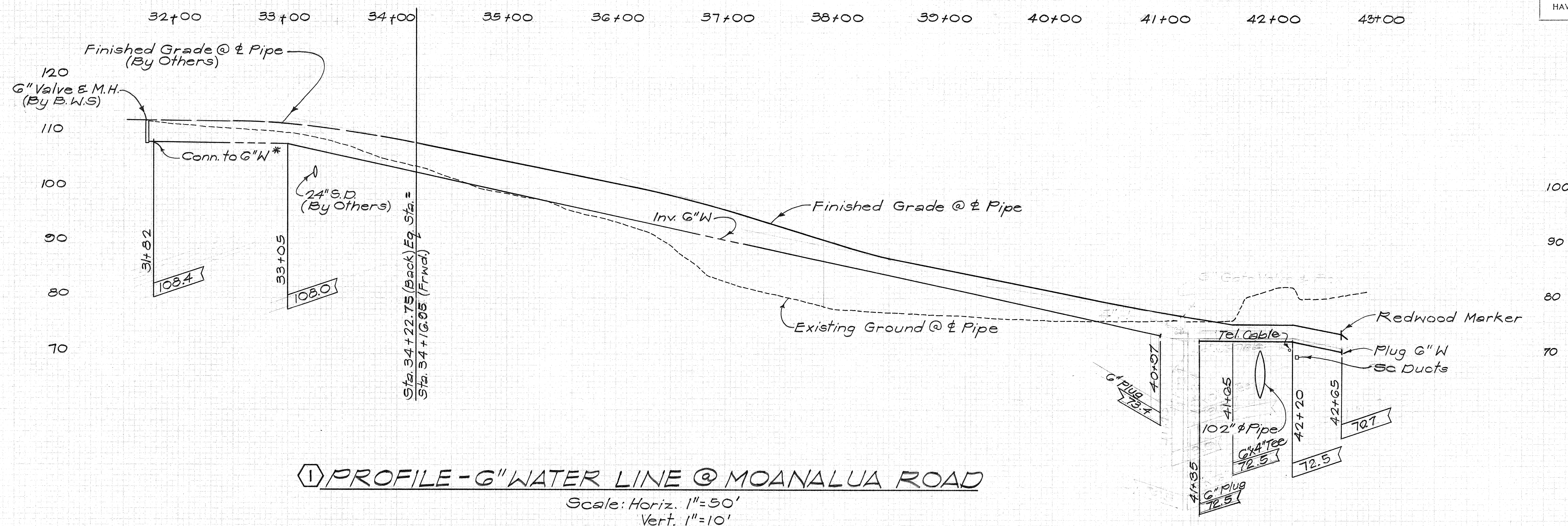
**UTILITY PROFILE
WATER & TELEPHONE**

INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1(40)-11
PROJ. NO. I-HI-1(16)-11
Scale: As Noted Date: 4/24/69

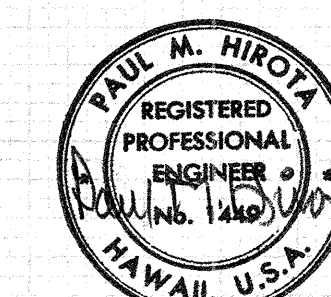
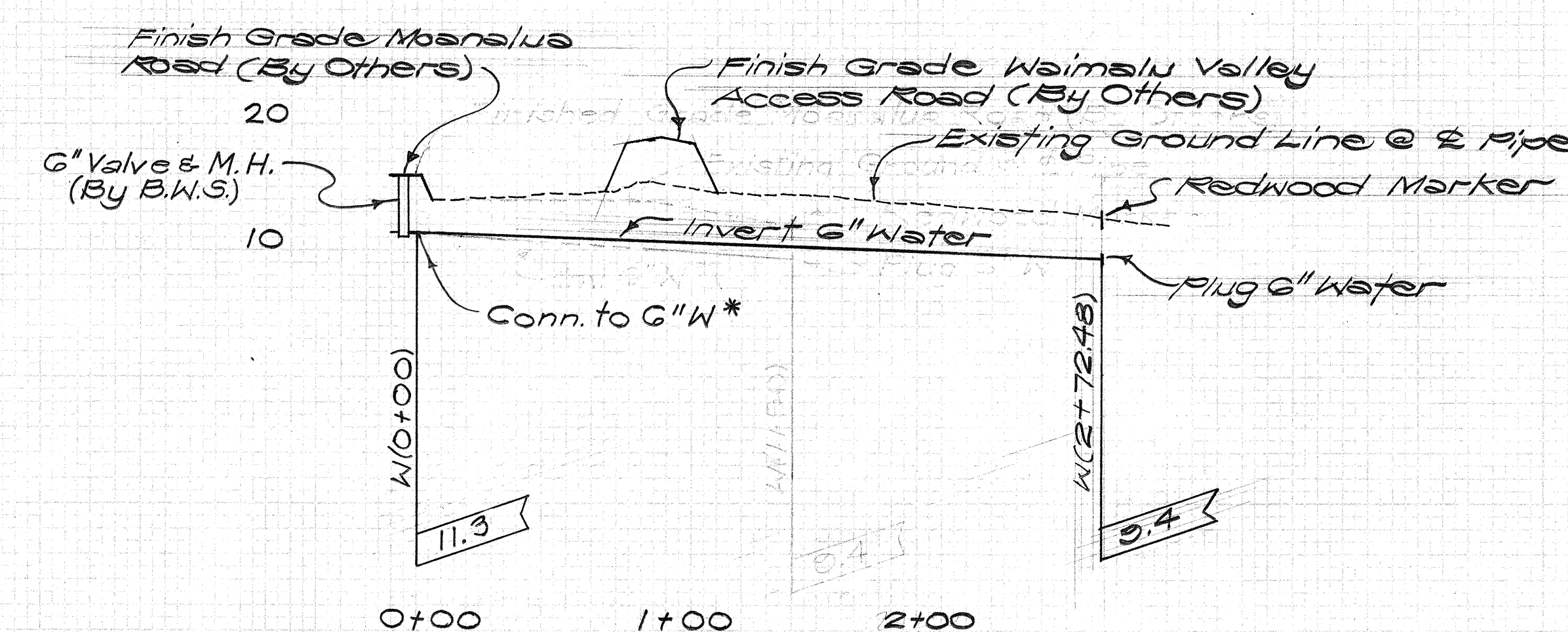
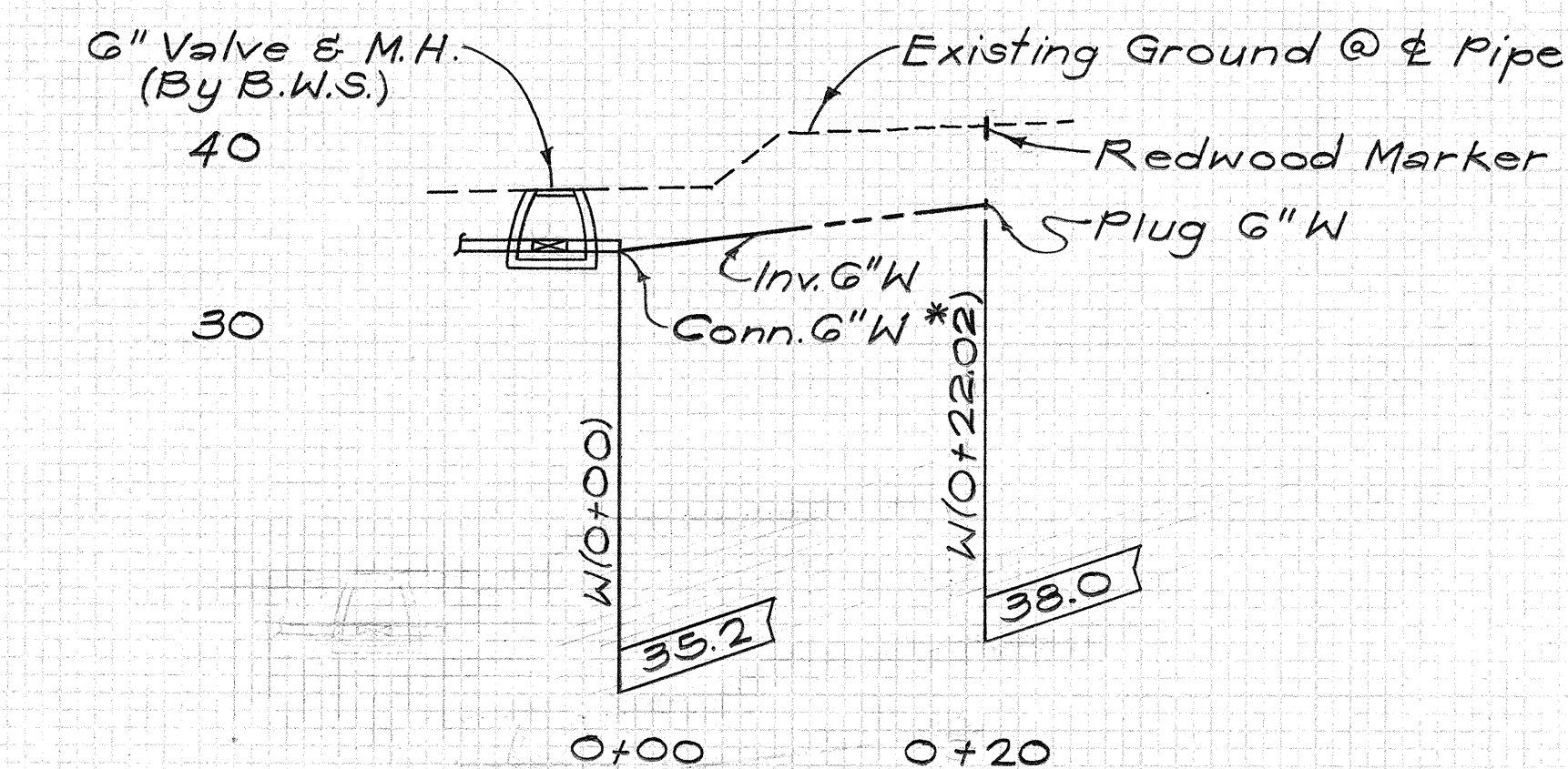
SHEET No. 5 OF 13 SHEETS

68

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(65)10 I-HI-1(60)11	1960	63	185



*Exact invert and location to be determined in the field.



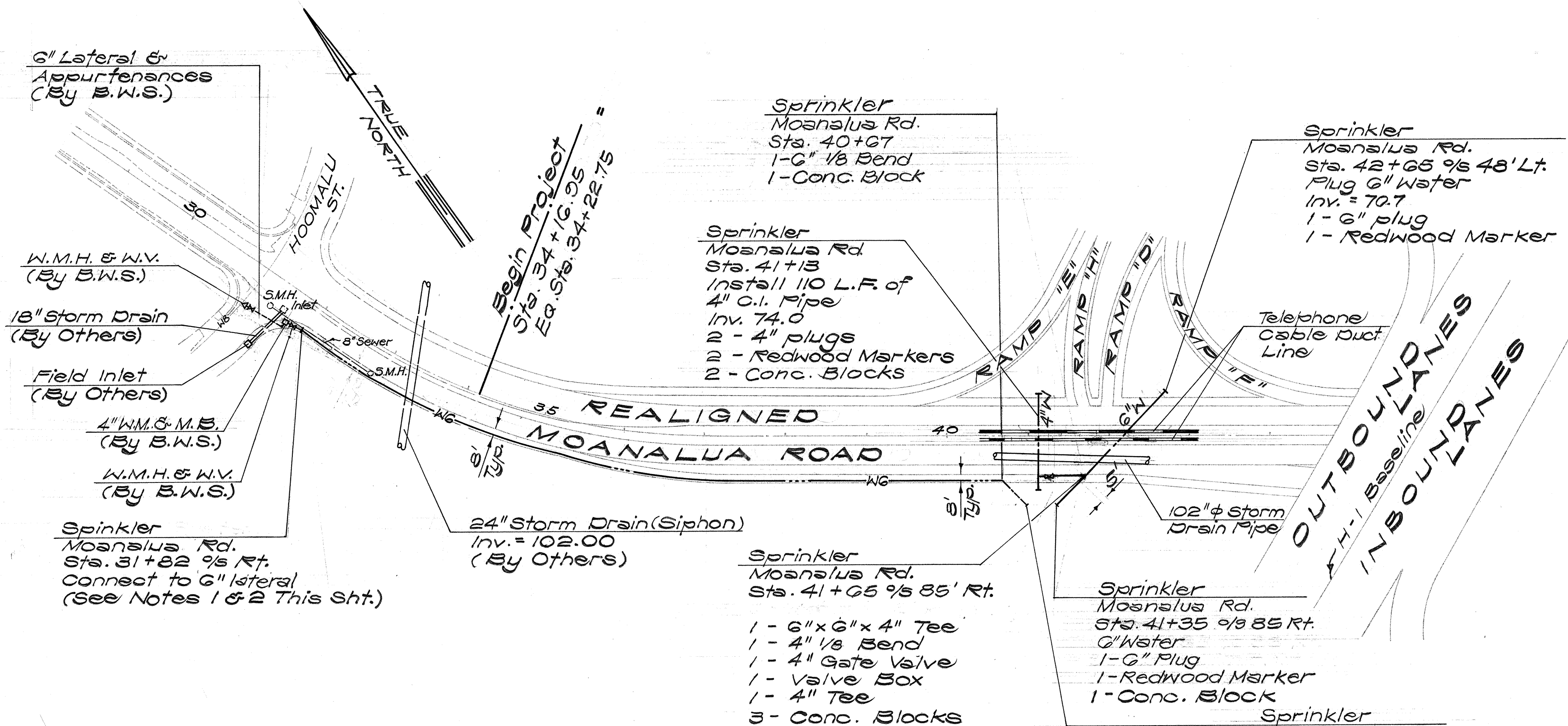
THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

APPROVED: *S. Kawakami* 6/24/69
 Chief, Engineering Division; B.W.S. Date

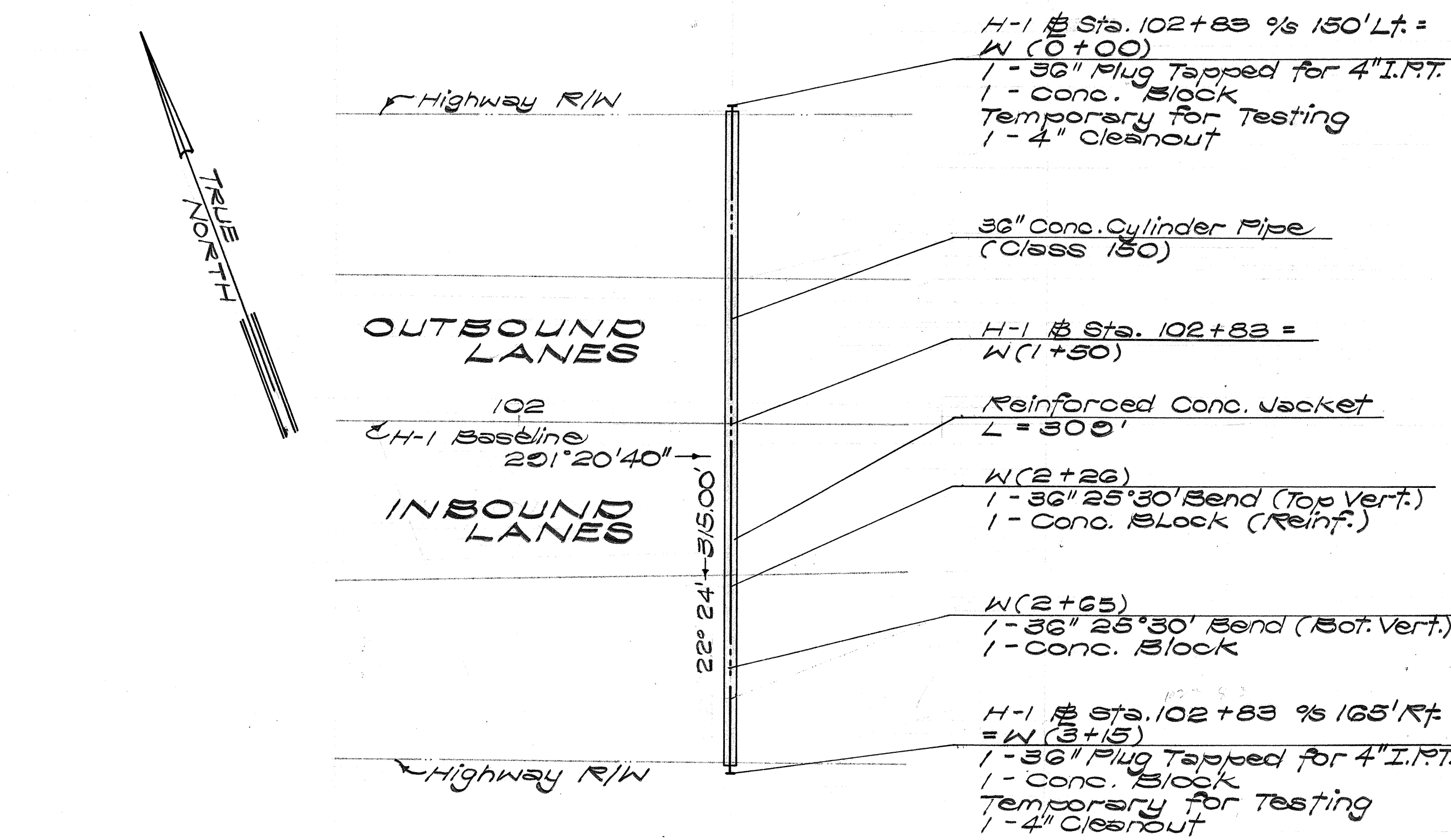
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
UTILITY PROFILE SPRINKLER SYSTEM	
INTERSTATE ROUTE H-1 PROJ. NO. I-HI-1(65)10	
Scale: As Shown	Date: 4/24/69
SHEET No. 6 OF 13 SHEETS	

(69)

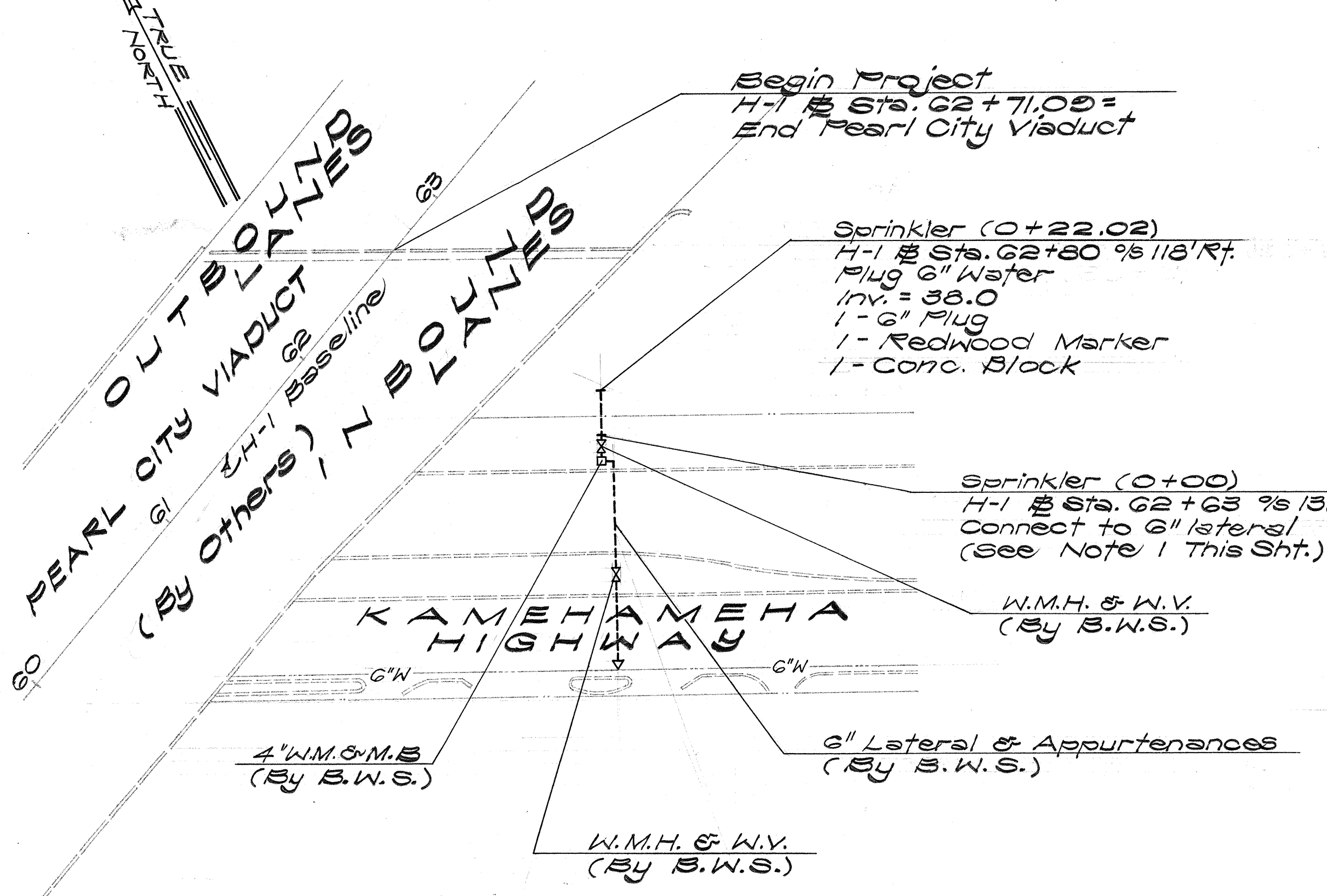
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(65)10 I-HI-1(40)11	1969	70	185



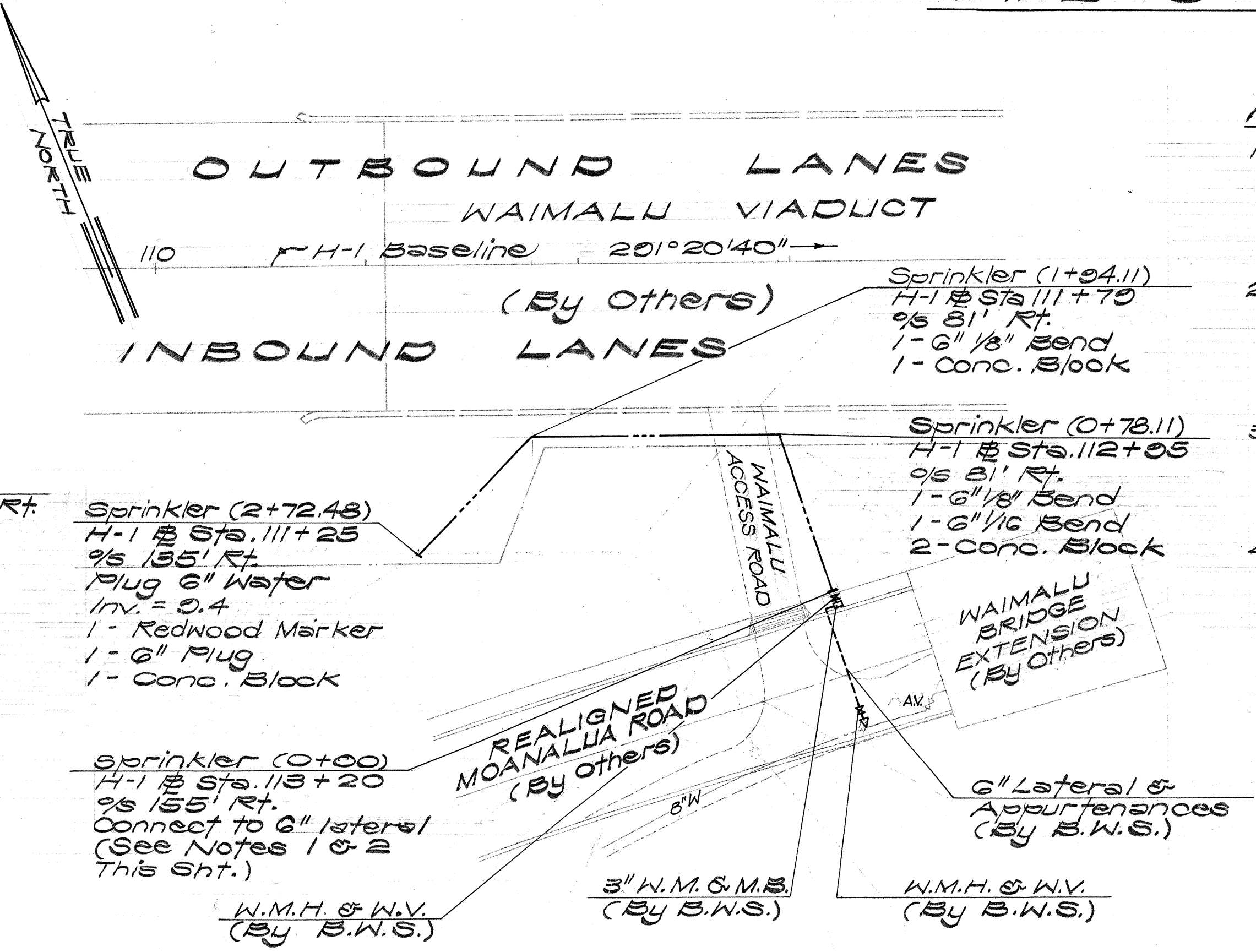
① PLAN - G" WATER LINE @
MOANALUA ROAD
Scale: 1" = 100'



② PLAN - 36" CONCRETE CYLINDER PIPE @ H-1 # STA. 102+83
Scale: 1" = 50'



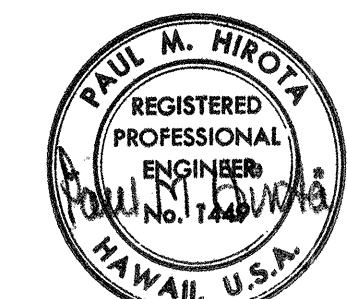
③ PLAN - G" WATER LINE @
KAMEHAMEHA HIGHWAY
Scale: 1" = 50'



④ PLAN - G" WATER LINE @
WAIMALU VIADUCT
Scale: 1" = 50'

- NOTES:**
- The Contractor shall stake out the proposed location of the water line in the vicinity of the 6" lateral to be furnished and installed by the Board of Water supply and coordinate his work with the Board of Water Supply.
 - The Contractor shall also coordinate his work on the water line with others, when they are affected, who will be working on the Moanalua Road realignment outside the limits of this project.
 - Plugs shall be marked with a 1"x2"x12" redwood marker. Marker shall be considered incidental to the cost for the various items of the sprinkler system.
 - See sheet 66 for general water notes.

APPROVED: *S. Kawakami* 6/24/69
Chief Engineering Div. B.W.S. Date



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**UTILITY PLAN
WATER & SPRINKLER**

INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1(65)10
PROJ. NO. I-HI-1(16)11
Scale: As Shown Date: 4/24/69

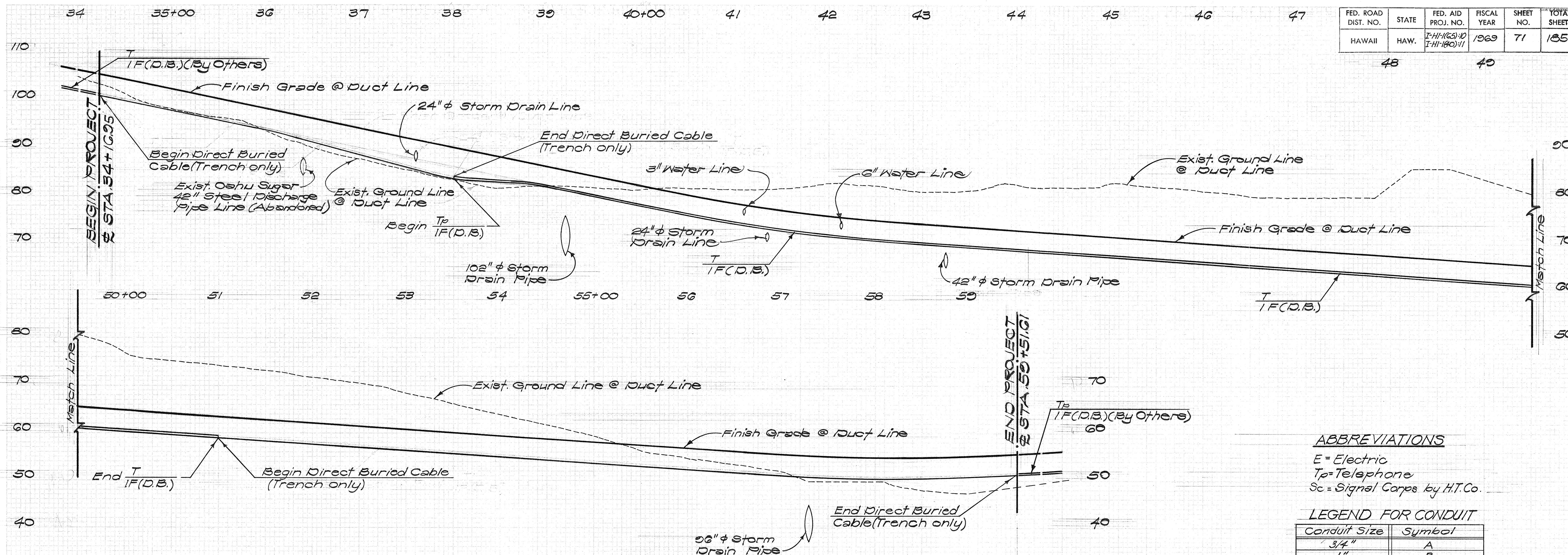
SHEET No. 3 OF 13 SHEETS

PLAN	DATE
TRACED BY	DATE
DESIGNED BY	DATE
CHECKED BY	DATE
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI(40):11	1969	71	135

48

49



PROFILE - REALIGNED MOANALUA ROAD TRANSPACIFIC CABLE DUCT LINE

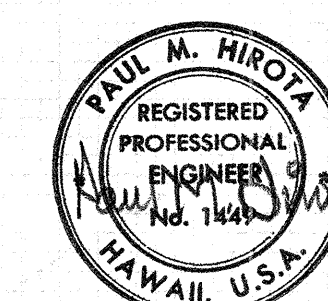
Scales: Horiz. 1" = 50'
Vert. 1" = 10'

ABBREVIATIONS

E = Electric
Tp = Telephone
Sc = Signal Corps by H.T.Co.

LEGEND FOR CONDUIT

Conduit Size	Symbol
3/4"	A
1"	B
2"	C
3"	D
3 1/2"	E
4"	F
4 1/2"	G
5"	H



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

APPROVED: T. A. Quill 4-29-69
Hawaiian Telephone Company Date

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

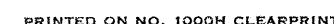
UTILITY PROFILE TELEPHONE

INTERSTATE ROUTE H-1
PROJ. NO. I-HI-1(40):11

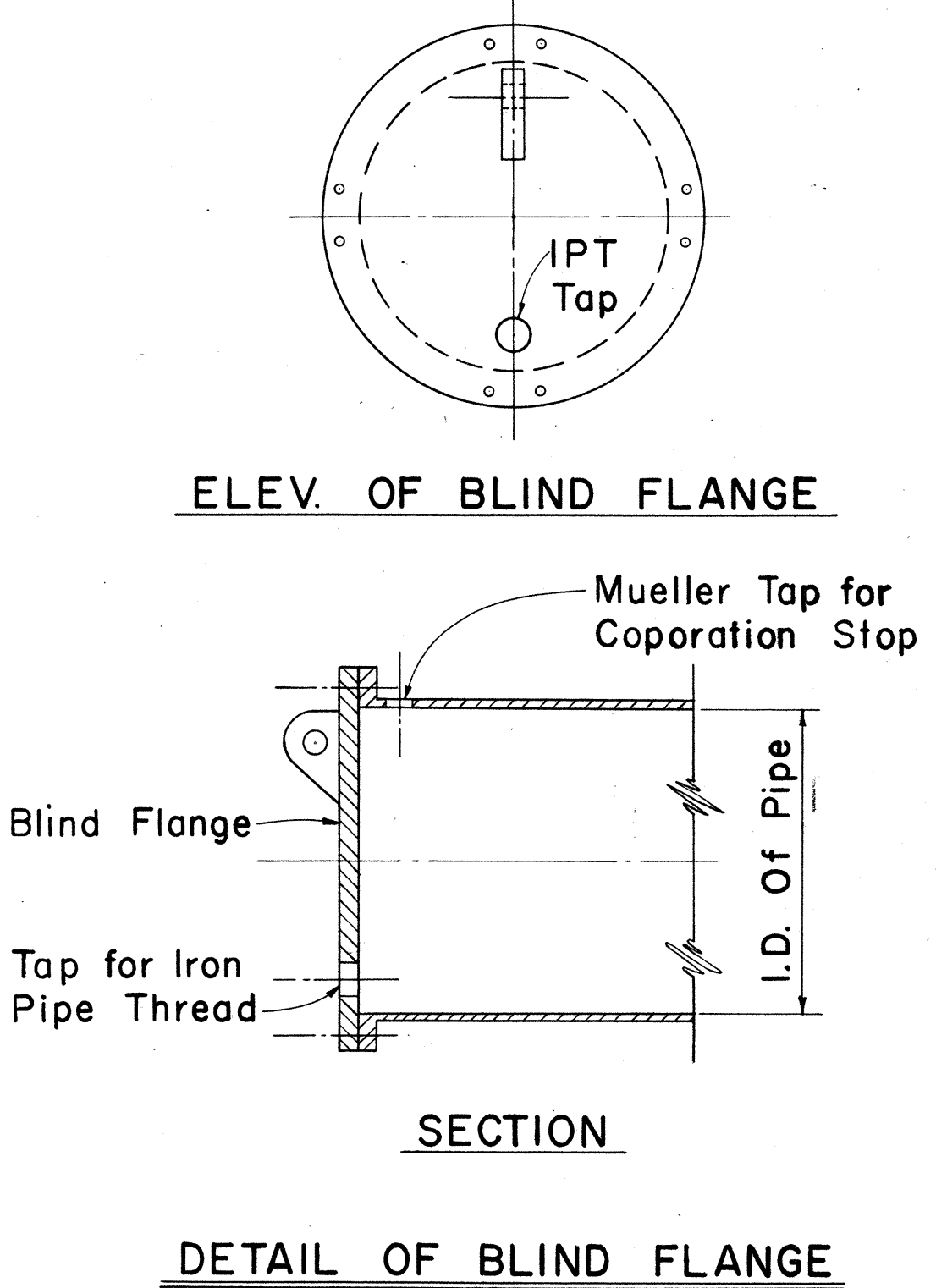
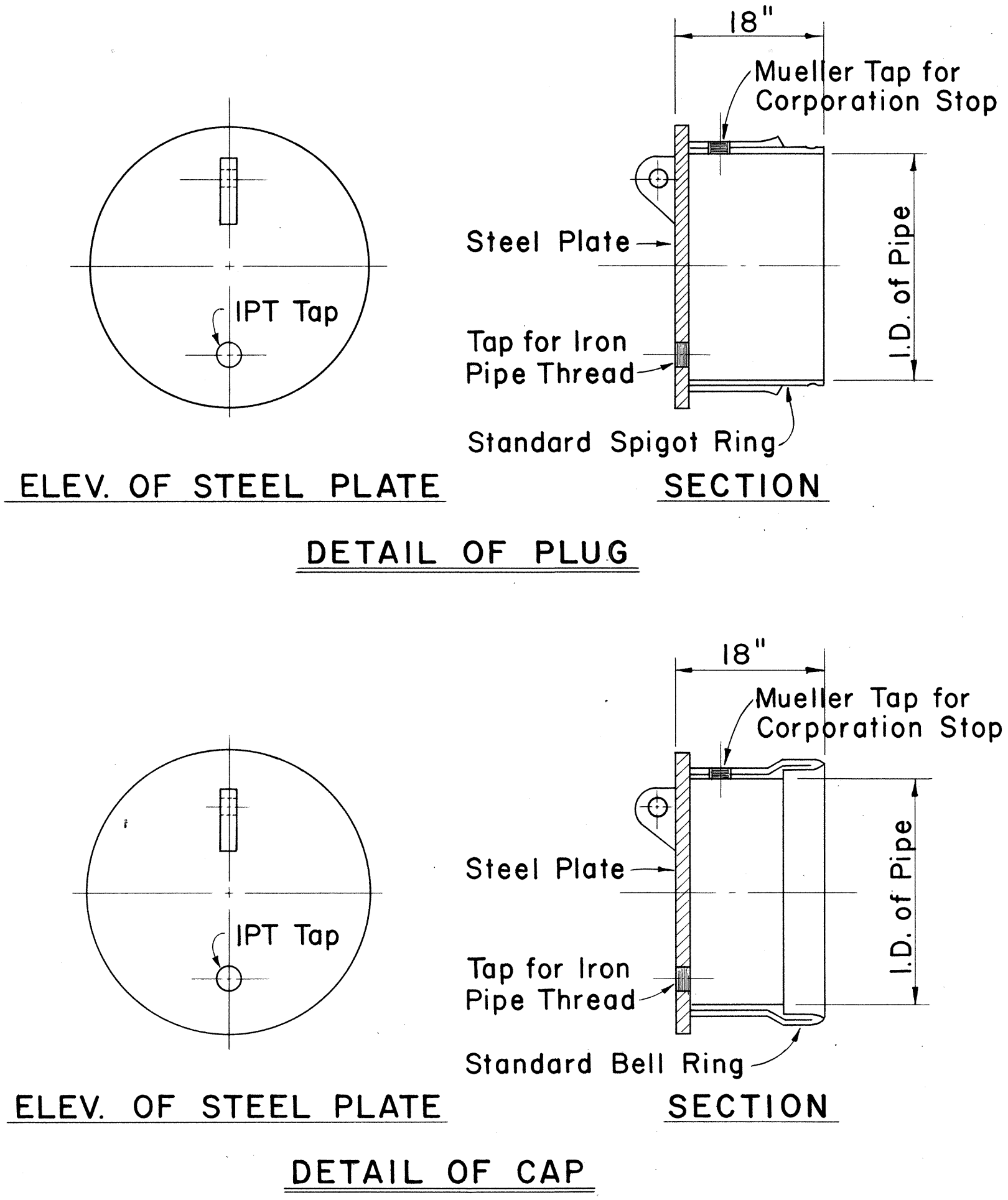
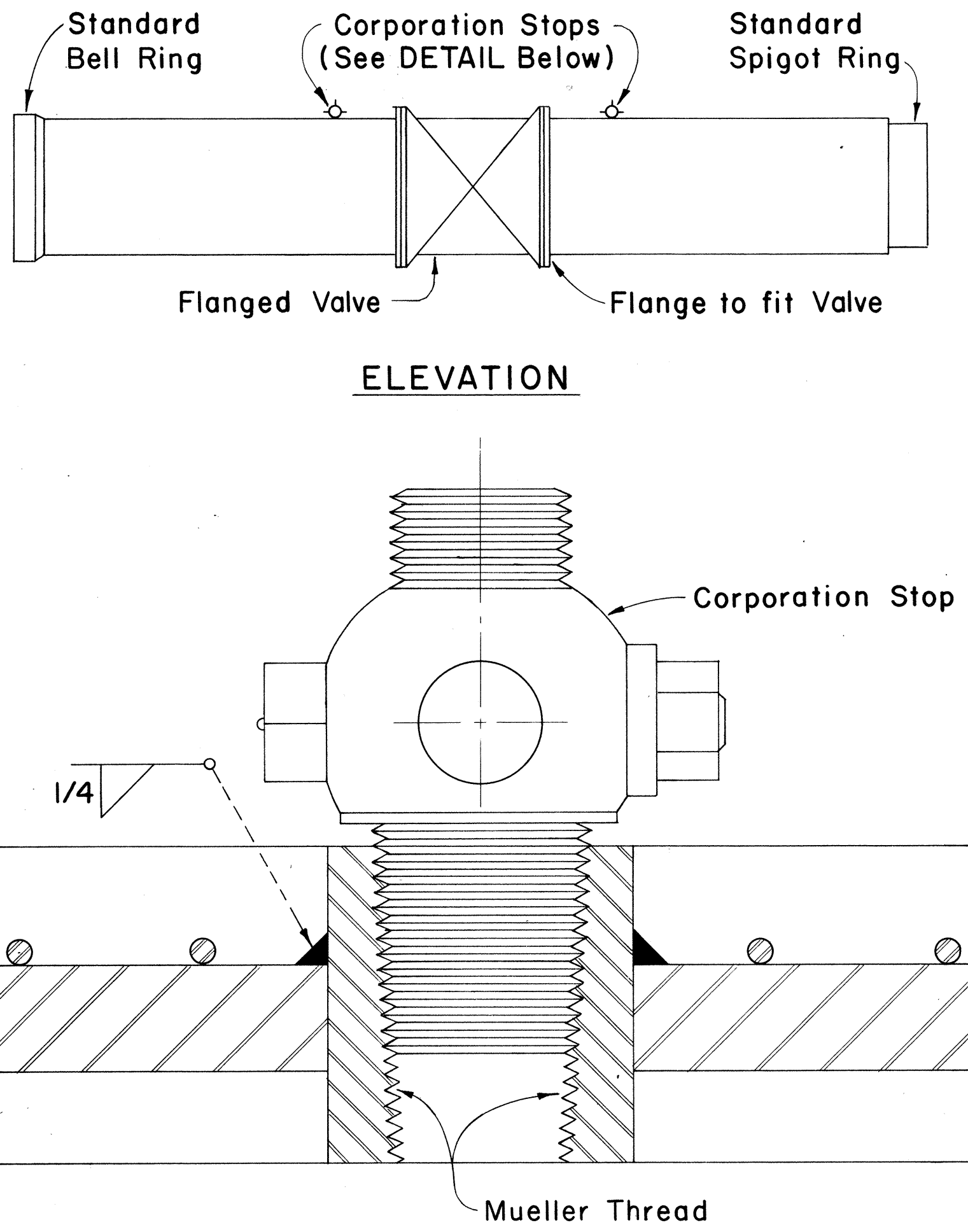
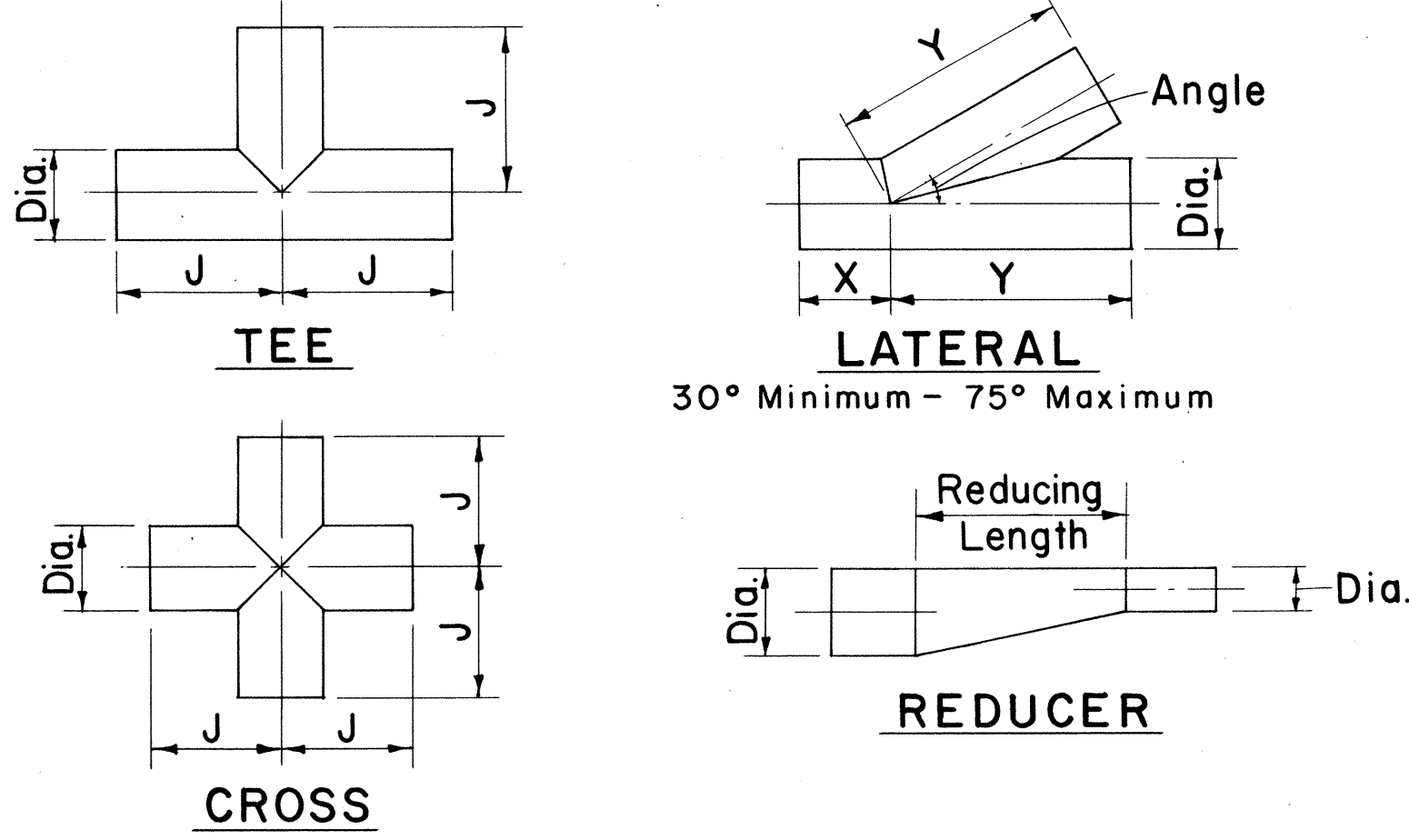
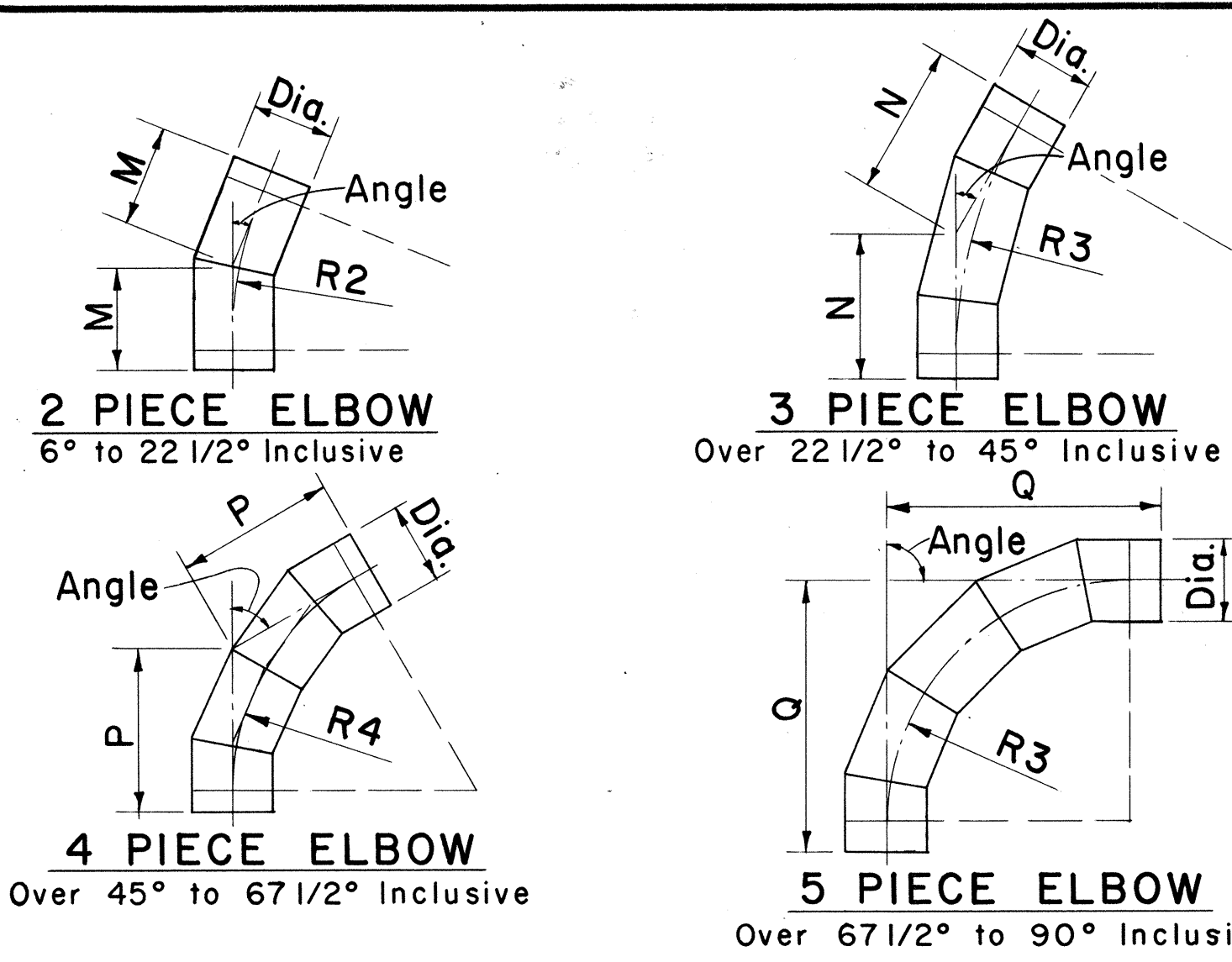
Scale: As Noted Date: 4/24/69

SHEET No. 4 OF 13 SHEETS

3. The limit of blacksand backfill around the valve shall be the trench width x 4 ft. on each side of valve and fill to 6" below finish grade. Payment for blacksand backfill shall be incidental to installing valve boxes.



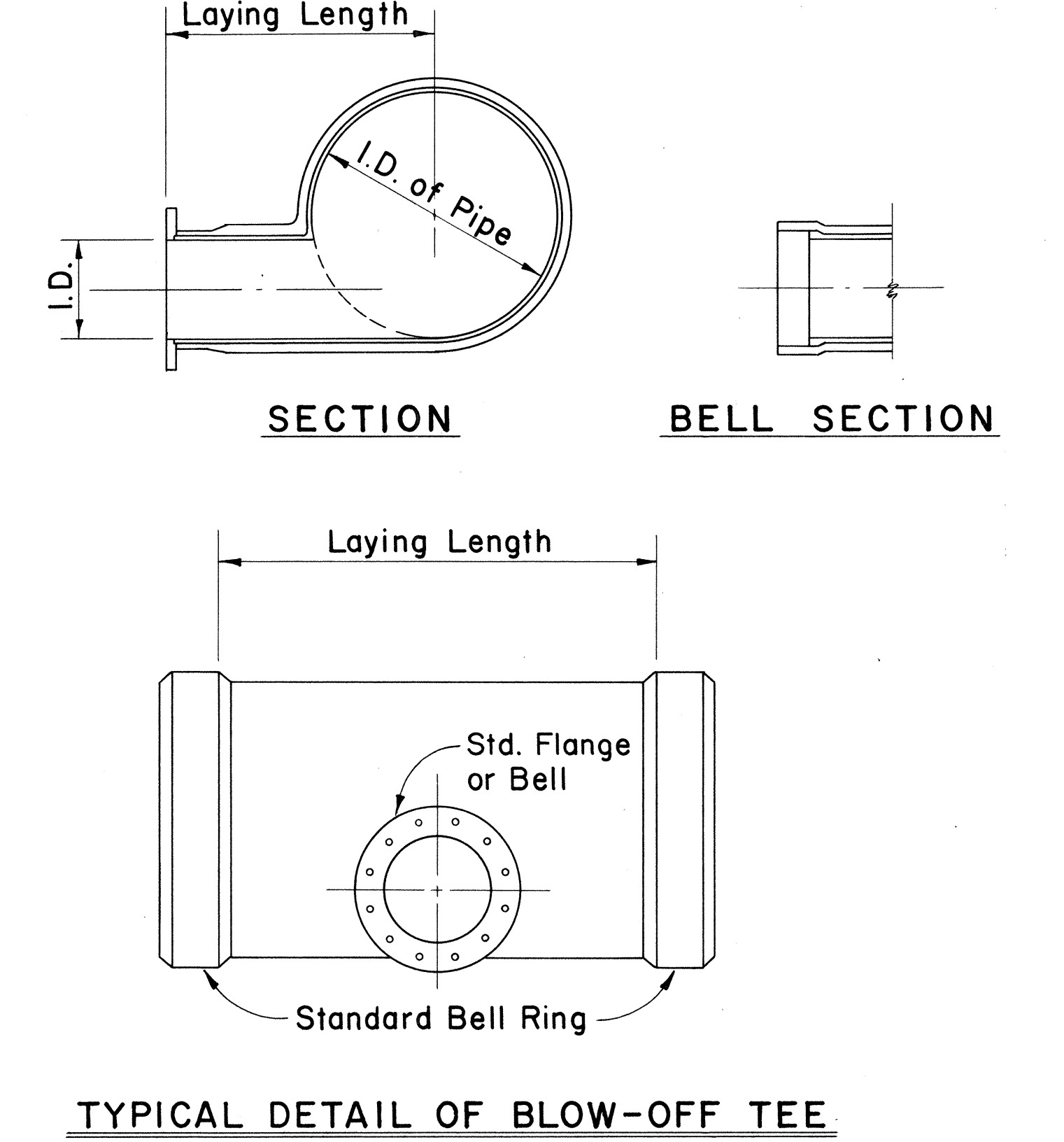
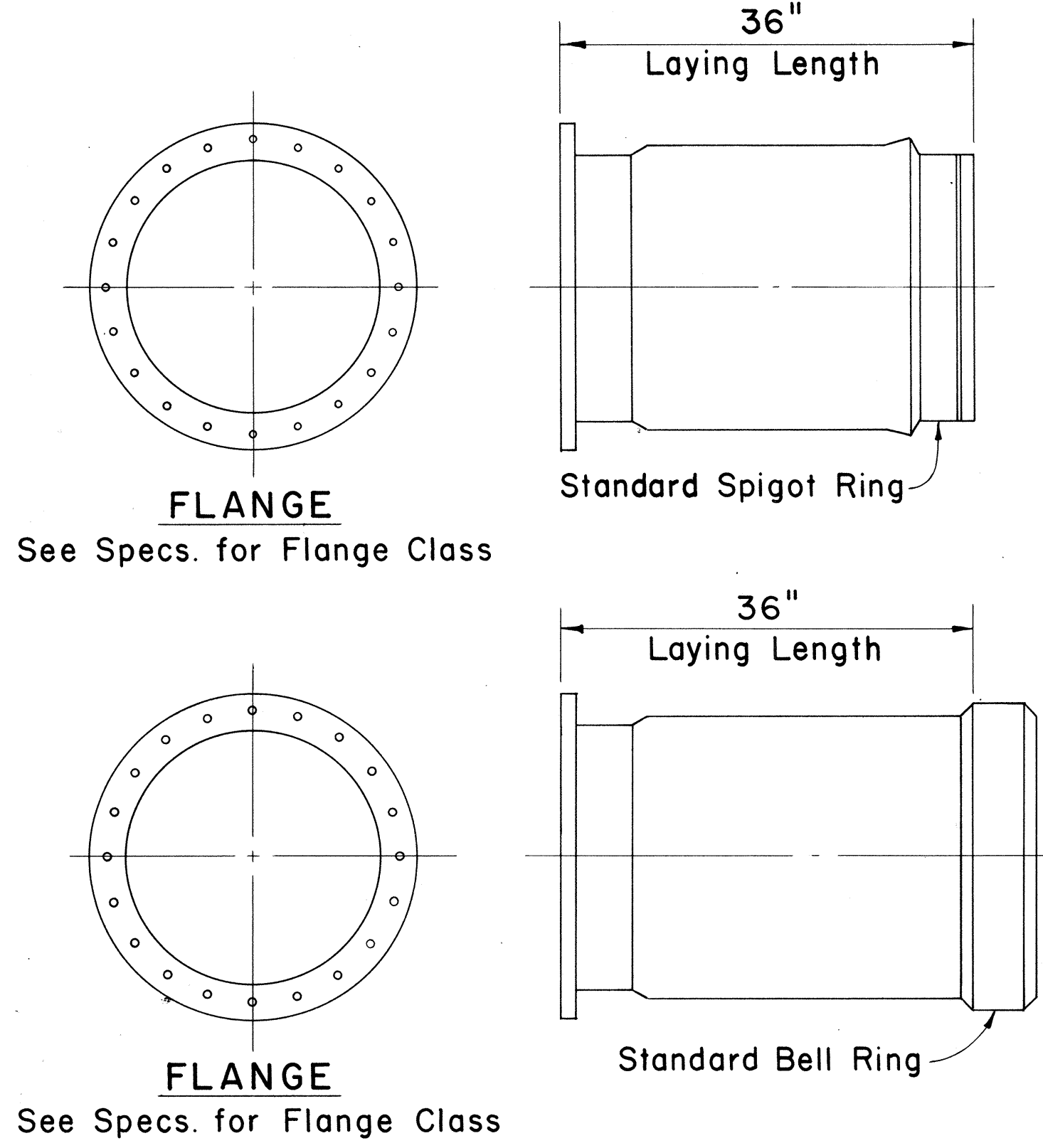
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H-1(25)10 1-H-1(16)11	1000	73	185



STANDARD FITTING DIMENSIONS													
DIAMETER	TEE		CROSS (Both Ways) J+J	LATERAL (30° to 75°)		ELBOWS (Center to End)							
	Run J+J	Outlet J		Run X+Y	Outlet Y	2 Piece (up to 22 1/2°)		3 Piece (22 1/2° to 45°)		4 Piece (45° to 67 1/2°)		5 Piece (67 1/2° to 90°)	
	M	R2	N	R3	P	R4	Q	R5					
16"	34"	17"	34"	62"	52"	12"	60"	18"	44"	26"	39"	44"	40"
18"	36"	18"	36"	66"	56"	12"	60"	19"	47"	27"	41"	36"	32"
20"	38"	19"	38"	72"	60"	13"	65"	20"	49"	28"	42"	54"	50"
22"	40"	20"	40"	78"	66"	13"	65"	21"	51"	30"	45"	41"	37"
24"	42"	21"	42"	84"	72"	14"	70"	22"	54"	32"	48"	64"	60"
30"	60"	30"	60"	96"	84"	15"	75"	25"	61"	37"	51"	79"	75"
36"	66"	33"	66"	110"	96"	16"	80"	27"	66"	40"	60"	94"	90"

DIMENSIONS FOR ECCENTRIC REDUCER REDUCING SECTION
 36" x 30" Eccentric Reducer - Length 66"
 30" x 24" Eccentric Reducer - Length 66"
 24" x 20" Eccentric Reducer - Length 26"
 20" x 16" Eccentric Reducer - Length 26"

NOTE :
 All dimensions shown are laying lengths.
 All fittings and specials shall be fabricated independent from pipe sections and in accordance with the dimensions shown.
 All fittings and specials shall be all bell unless otherwise noted.
 All tees, wyes, crosses and reducers 16-inch in diameter and larger shall be reinforced with steel ribs or steel crotch plates welded continuously to the cylinder or by other methods to withstand the longitudinal crushing effect caused by the test pressure as called for in the plans.



APPROVED :
S. H. Kawakani 6/22/69
 CHIEF, ENGINEERING DIVISION
 BOARD OF WATER SUPPLY
 SHEET NO. 1 OF 2 SHEETS

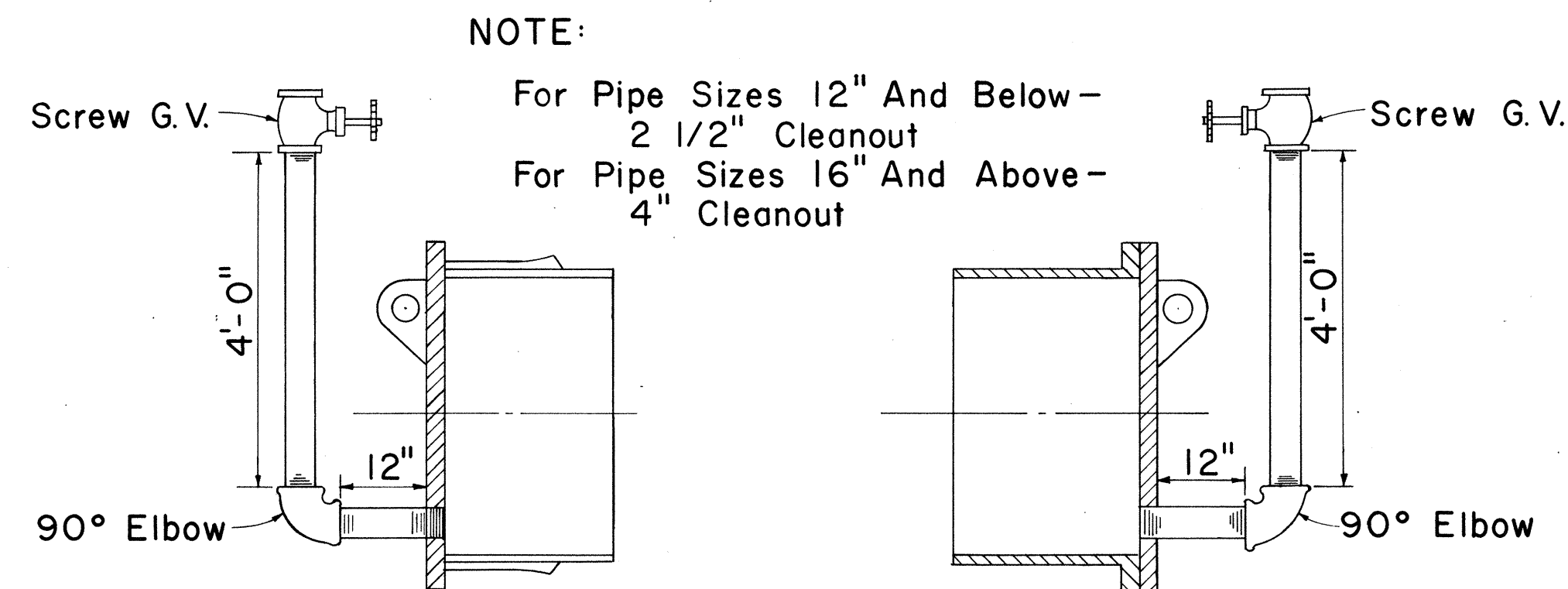
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 BOARD OF WATER SUPPLY
 CITY & COUNTY OF HONOLULU

**CONCRETE CYLINDER PIPE
 MISCELLANEOUS DETAILS**

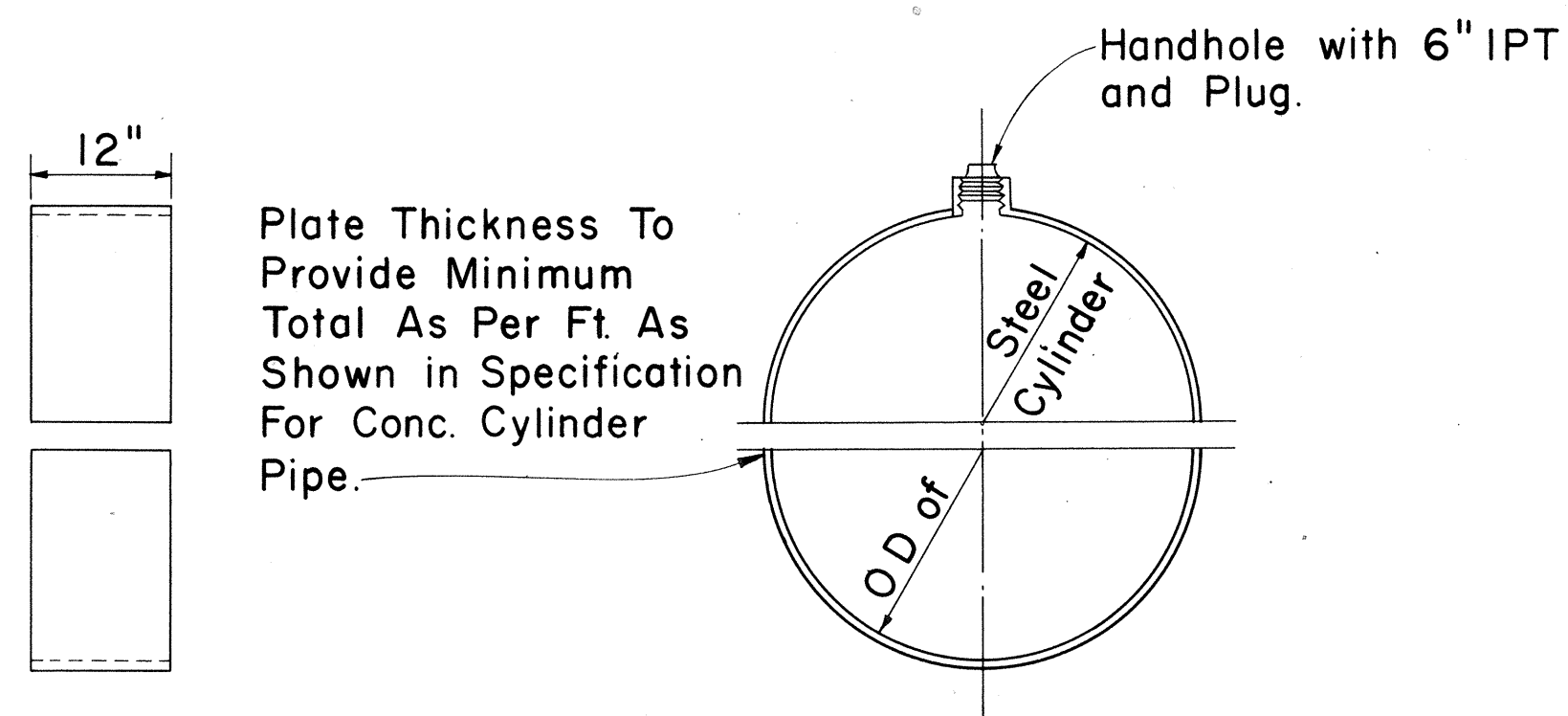
Scale: No Scale Date: _____
SHEET No. 8 OF 13 SHEETS

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

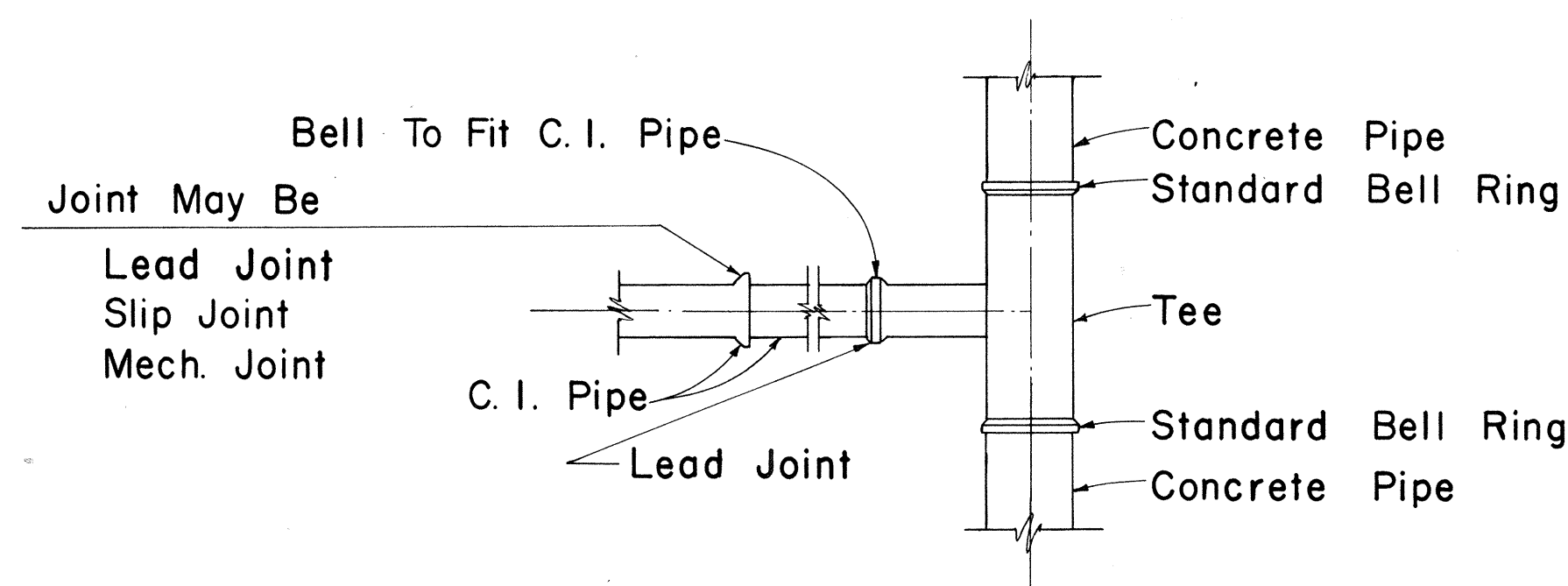
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HAWAII	HAW.	7-HI-1(65)10 7-HI-1(66)11	1969	74	185



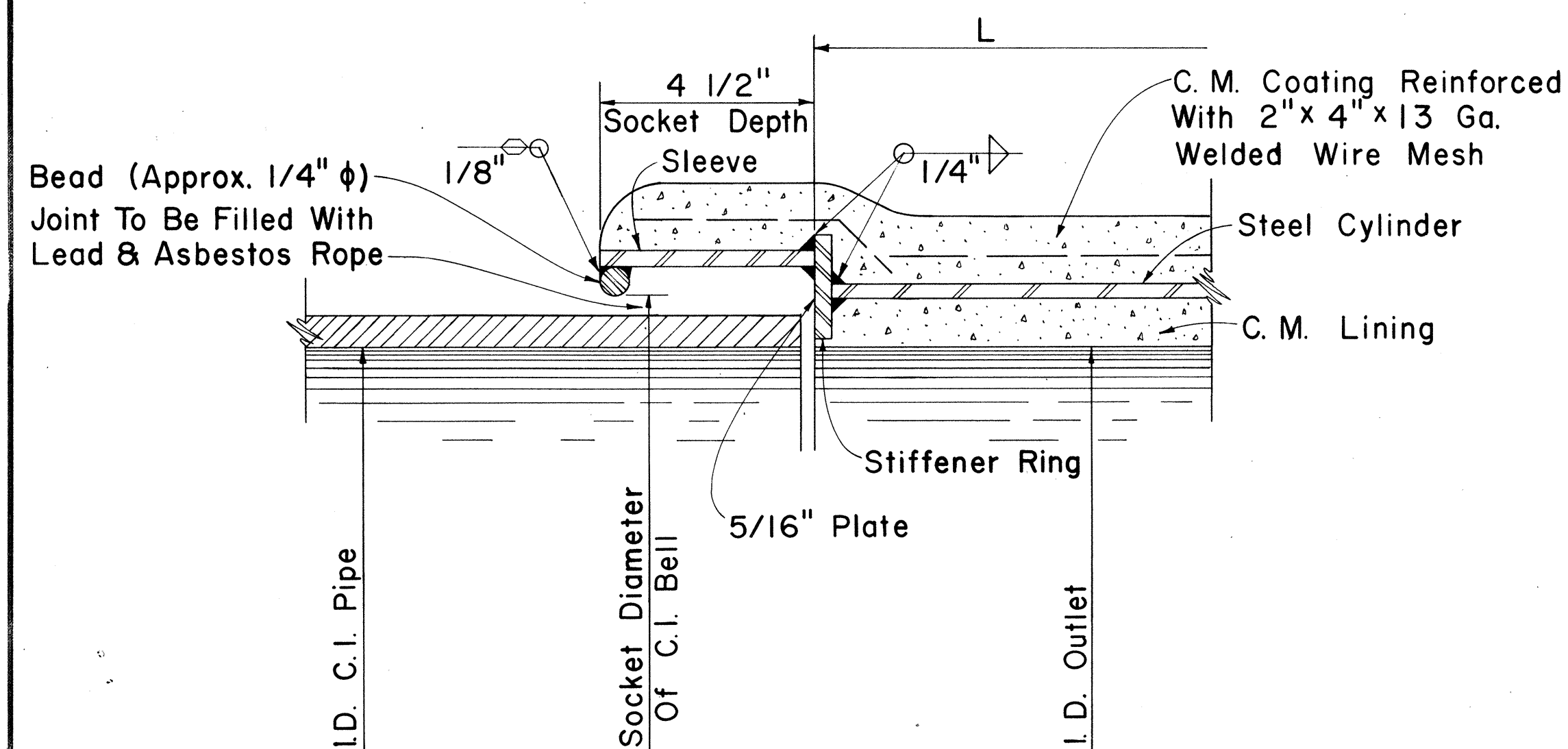
TYPICAL SECTION OF TEMPORARY CLEANOUT



DETAIL OF SPLIT BUTT STRAP



TYPICAL CAST IRON PIPE CONNECTION
TO CONCRETE CYLINDER PIPE



DETAIL OF C.I. ADAPTER

APPROVED:

S. Kawakami 6/22/69
CHIEF, ENGINEERING DIVISION DATE
BOARD OF WATER SUPPLY

SHEET NO. 2 OF 2 SHEETS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BOARD OF WATER SUPPLY
CITY & COUNTY OF HONOLULU

CONCRETE CYLINDER PIPE
MISCELLANEOUS DETAILS

Scale: No Scale Date:

SHEET No. 2 OF 2 SHEETS

74

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

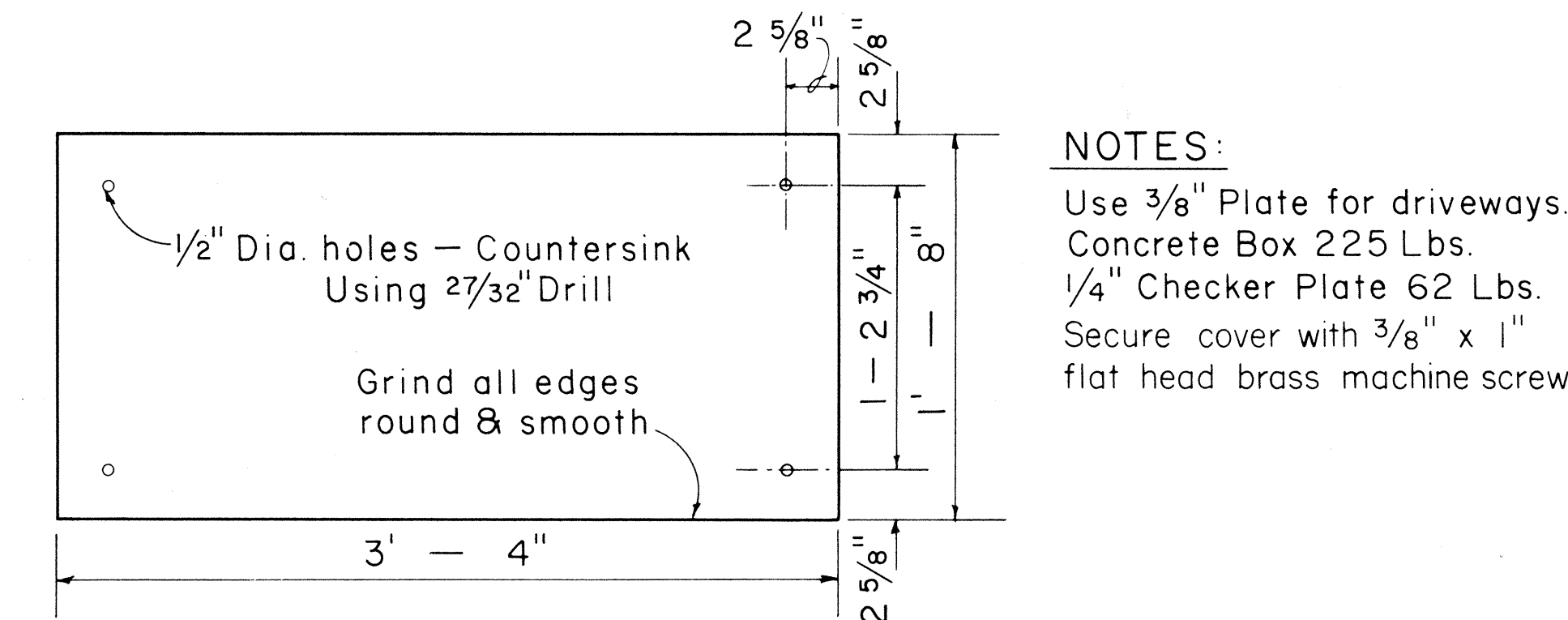
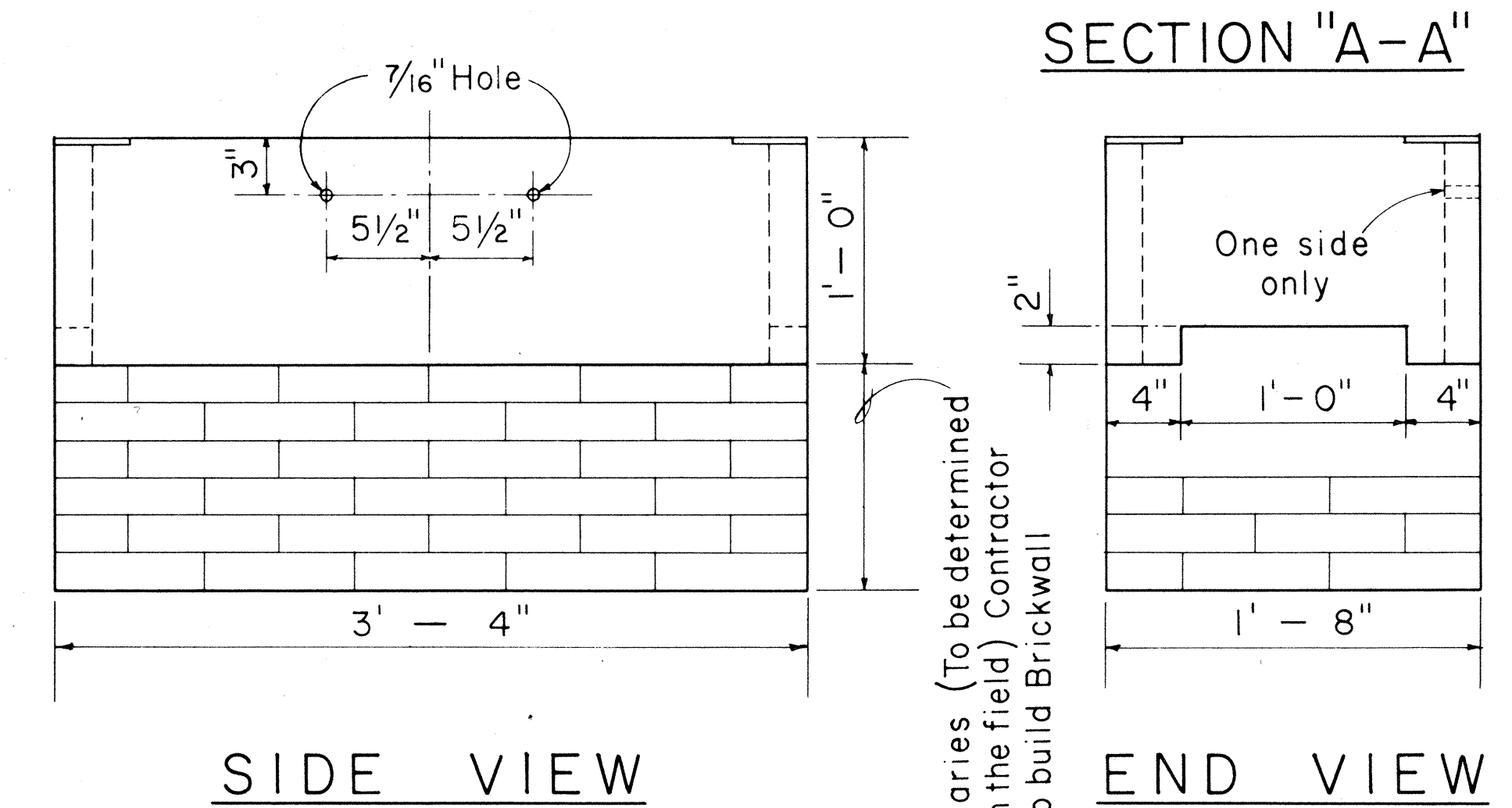
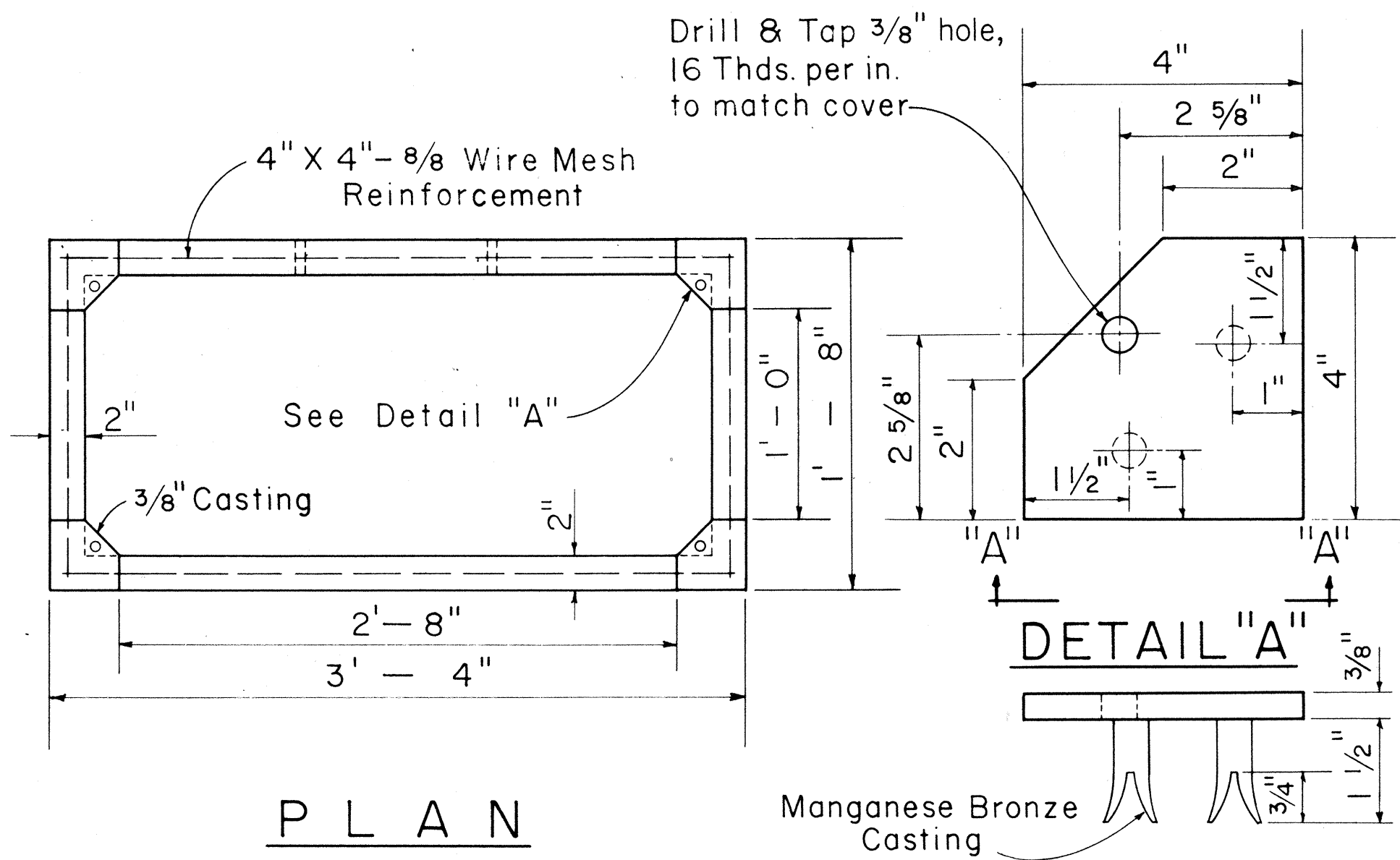
NOTE:
The ultimate fiber stress for creosoted Southern Yellow Pine & Douglas Fir is 7,400 Lbs. per square inch.
Weights are for untreated poles. Add 5% as estimate of added weight of creosote treatment.

REFERENCES:
American Standards Association O5.4-1941, O5.6-1945.
Standard Handbook for Electrical Engineers, Eighth Edition
H. E. Co. Specification for Poles.

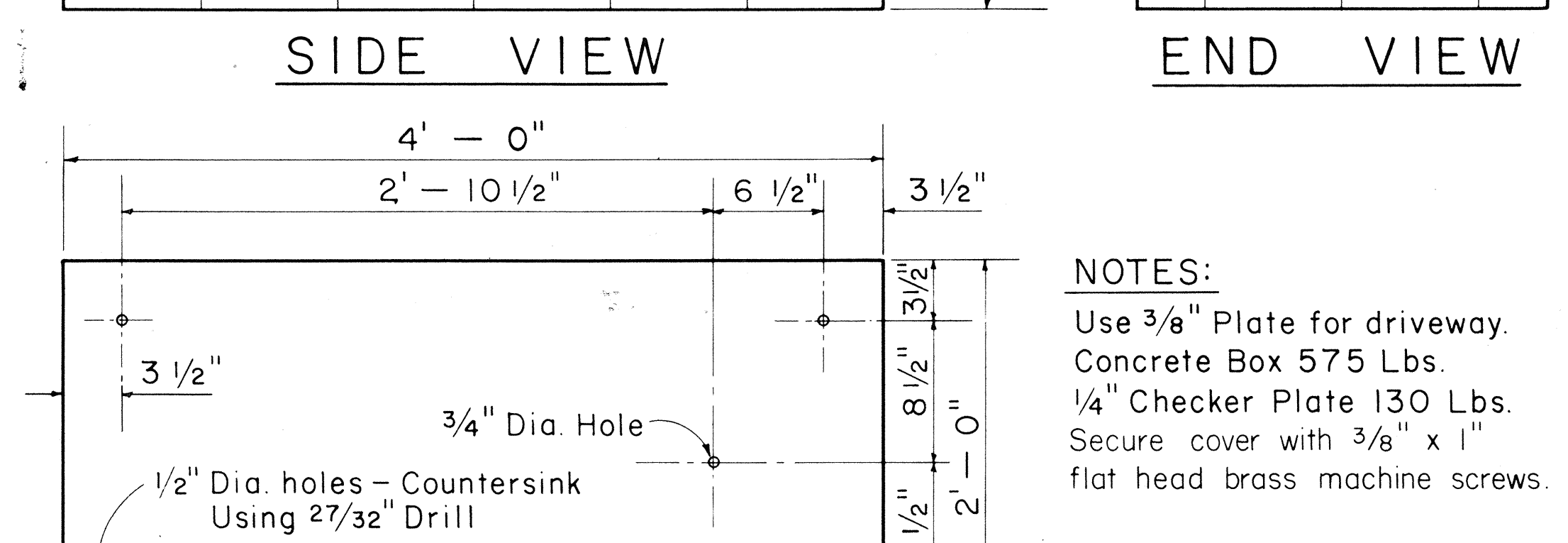
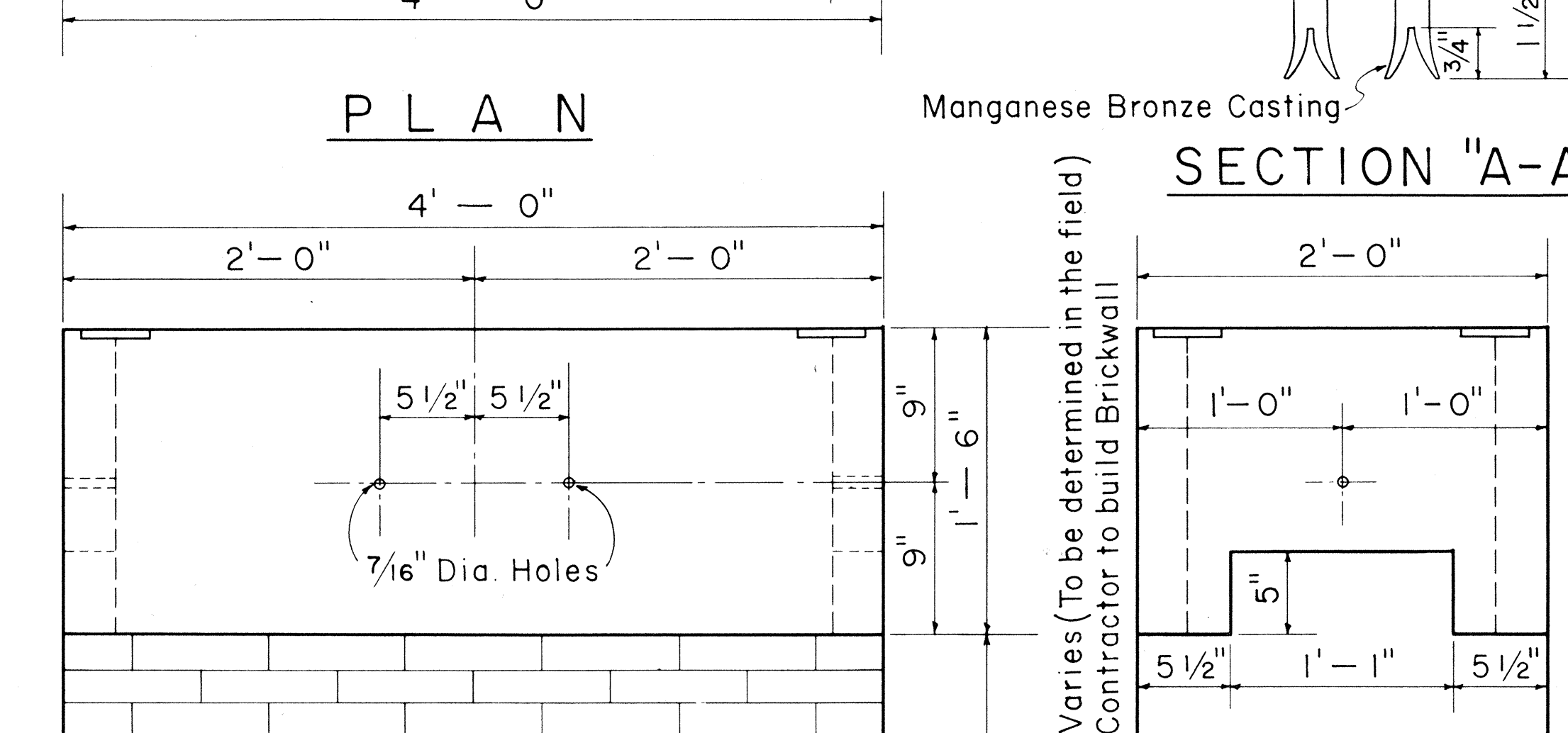
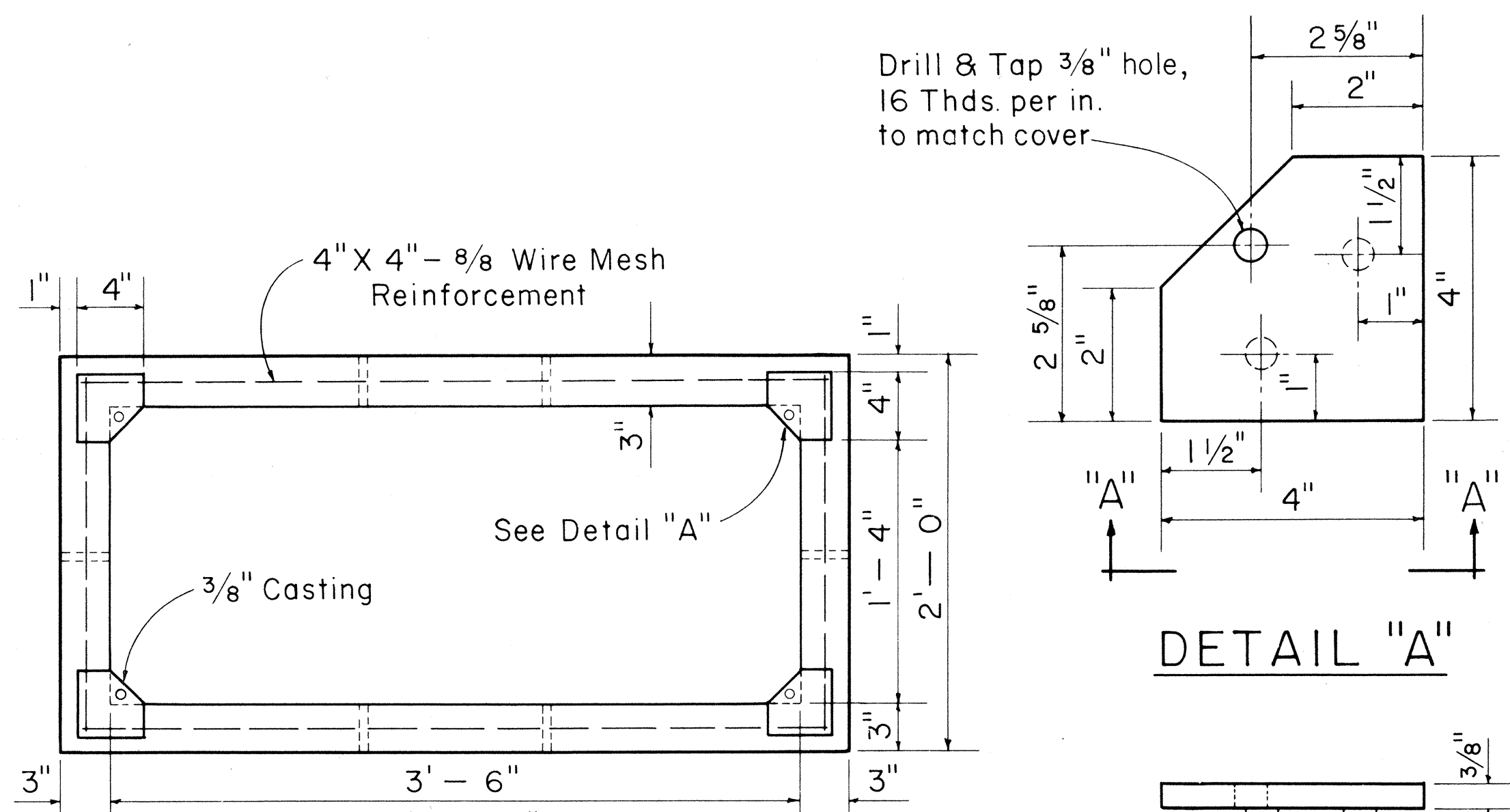
WOOD POLE DATA

APPROVED:
HAWAIIAN ELECTRIC Co., Inc. DATE
HAWAIIAN TELEPHONE Co. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
H.E. Co. AND H.T. Co.
SERVICE BOX DETAILS
AND WOOD POLE DATA
Scales: As Noted
Date: 4/24/69
SHEET NO. 10 OF 13 SHEETS

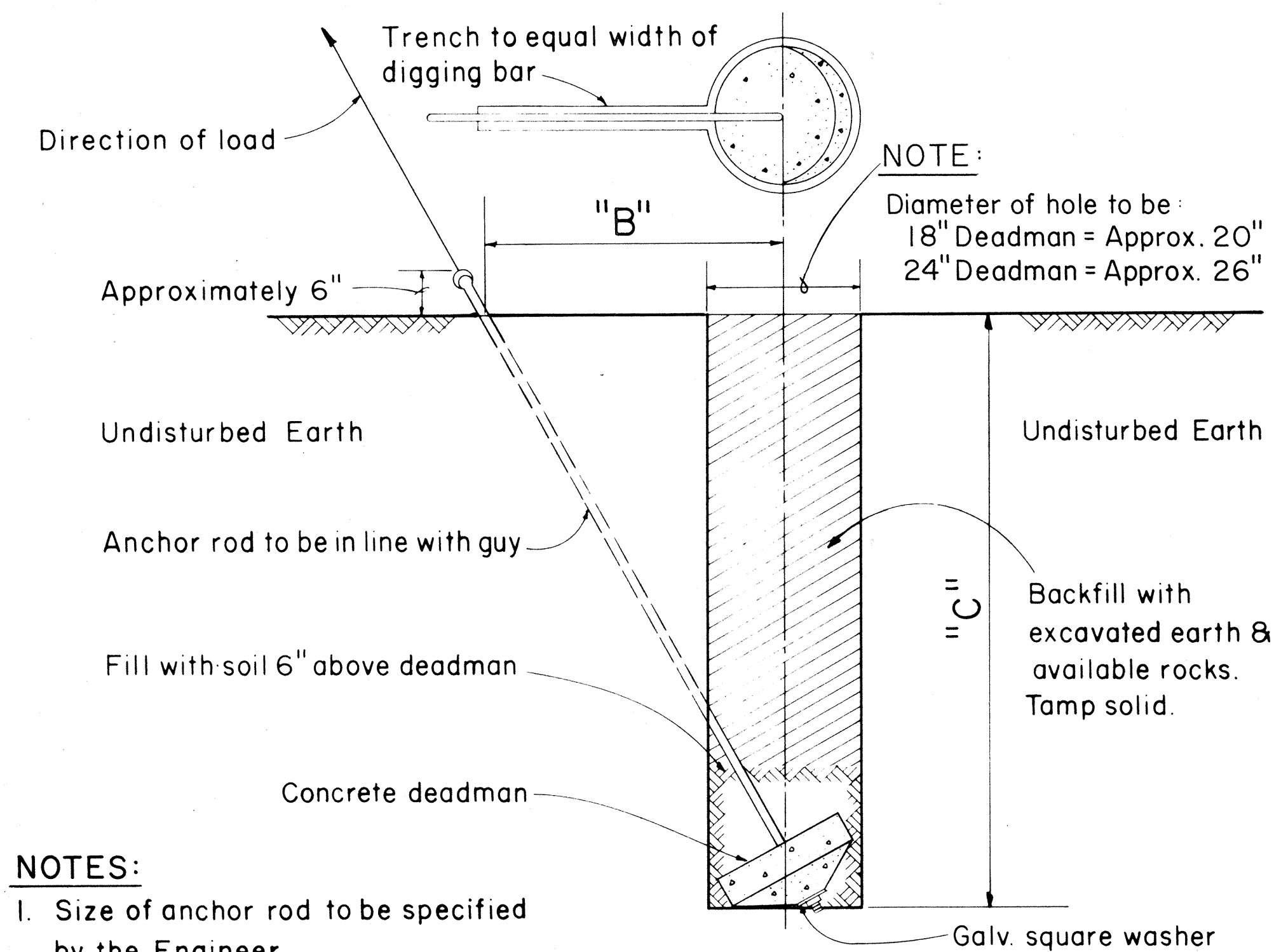


1'-4" X 3'-0" CONCRETE SERVICE BOX
Scale: 1 1/2" = 1' - 0"
OII250



1'-6" X 3'-6" CONCRETE SERVICE BOX
Scale: 1 1/2" = 1' - 0"
OII255

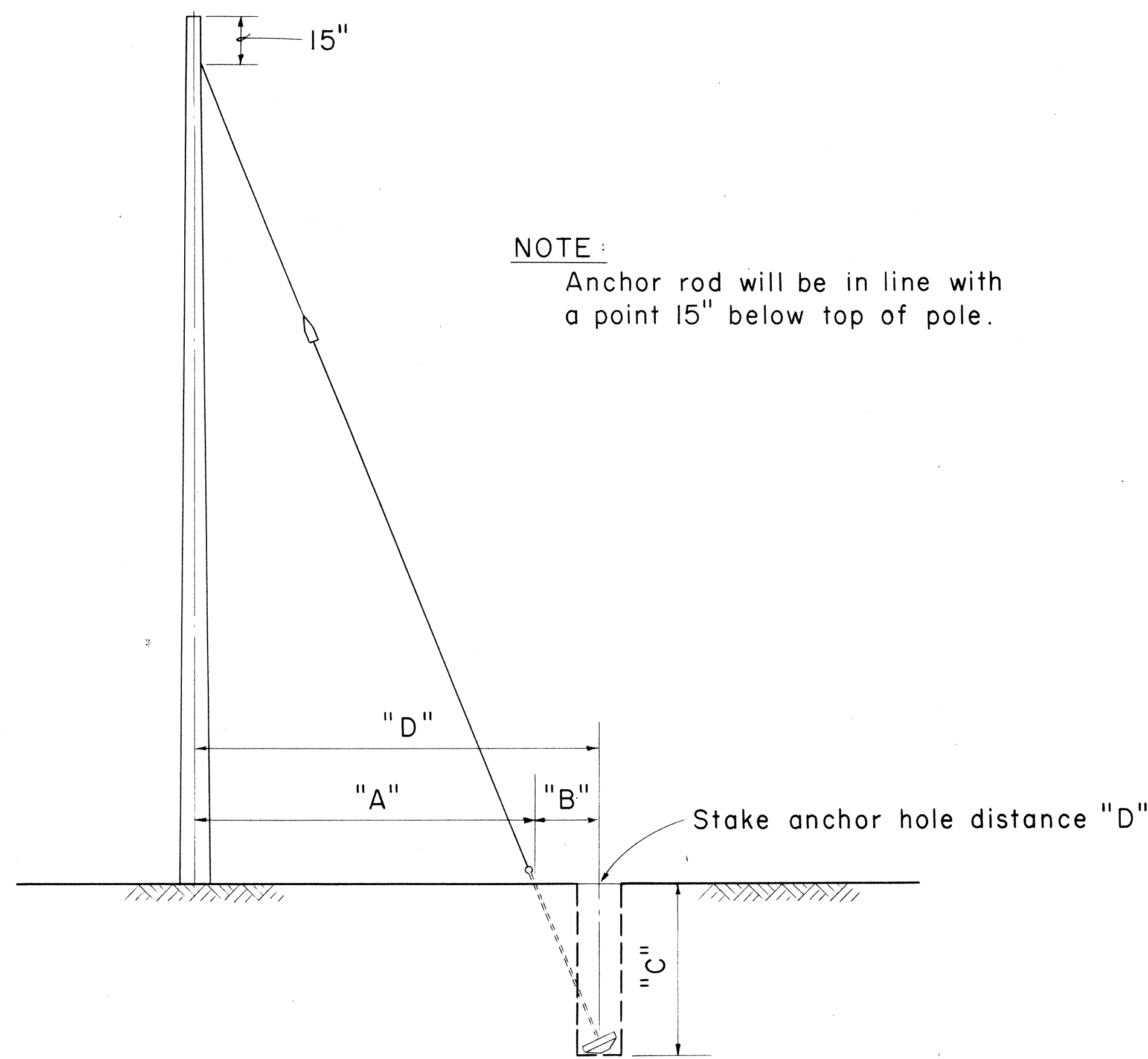
DATE
DRAWN BY
CHECKED BY
DESIGNED BY
NOTED BY
No.



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

GUY ANCHOR DEADMAN

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



Not to Scale

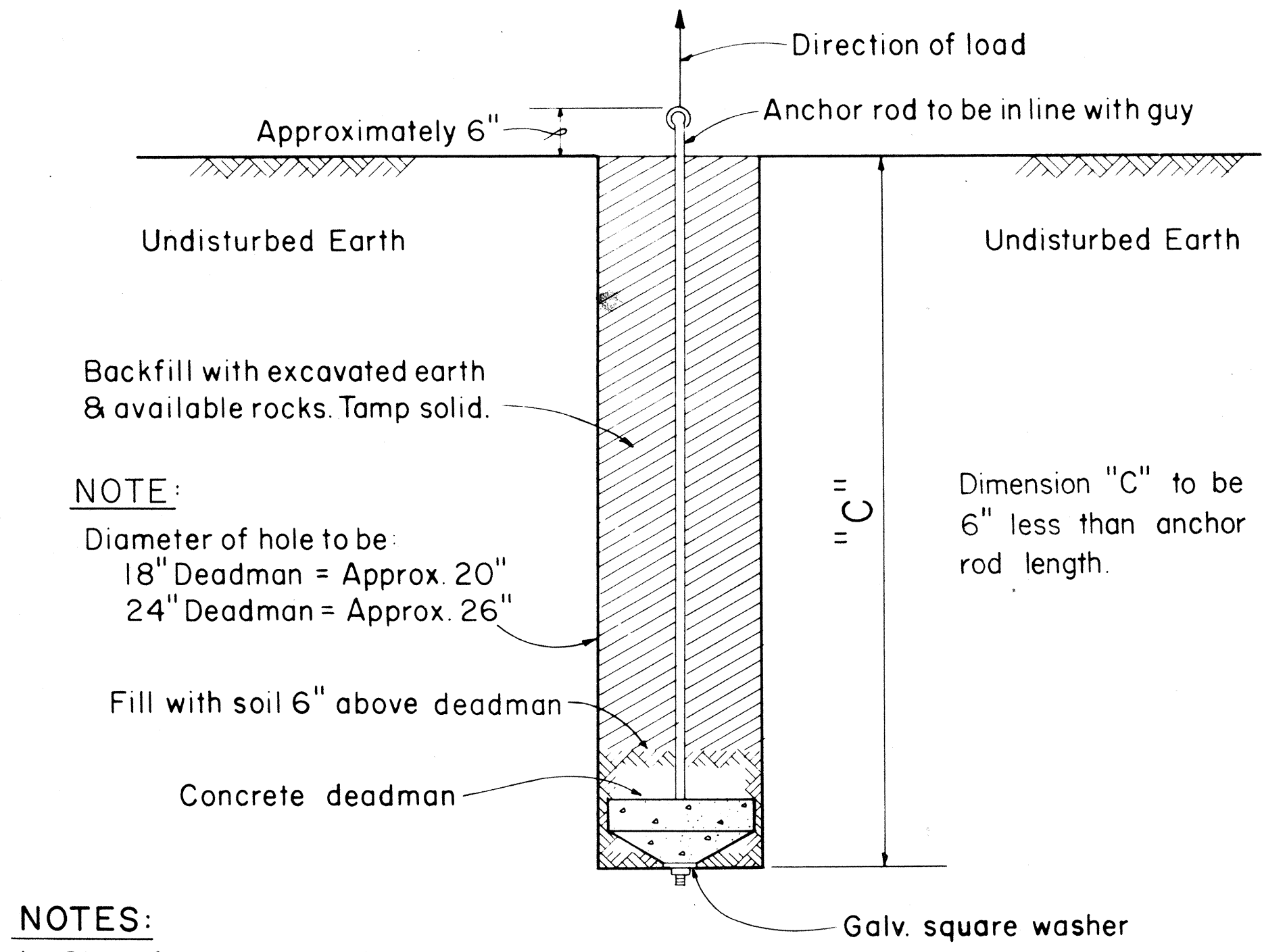
FOR 25', & 30' POLES WITH 8'-0" ANCHOR RODS				
"A"	"B"	"C"		"D" = ("A" + "B")
LEAD-ANCHOR ROD TO C OF POLE	ANCHOR ROD TO C OF HOLE	VERTICAL DEPTH 18" D.M.	24" D.M.	TOTAL DISTANCE POLE TO HOLE
5' - 0"	1' - 8"	7' - 1"	7' - 4"	6' - 8"
10' - 0"	3' - 0"	6' - 7"	7' - 0"	13' - 0"
15' - 0"	4' - 0"	6' - 1"	6'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

D. M. = Deadman

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

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

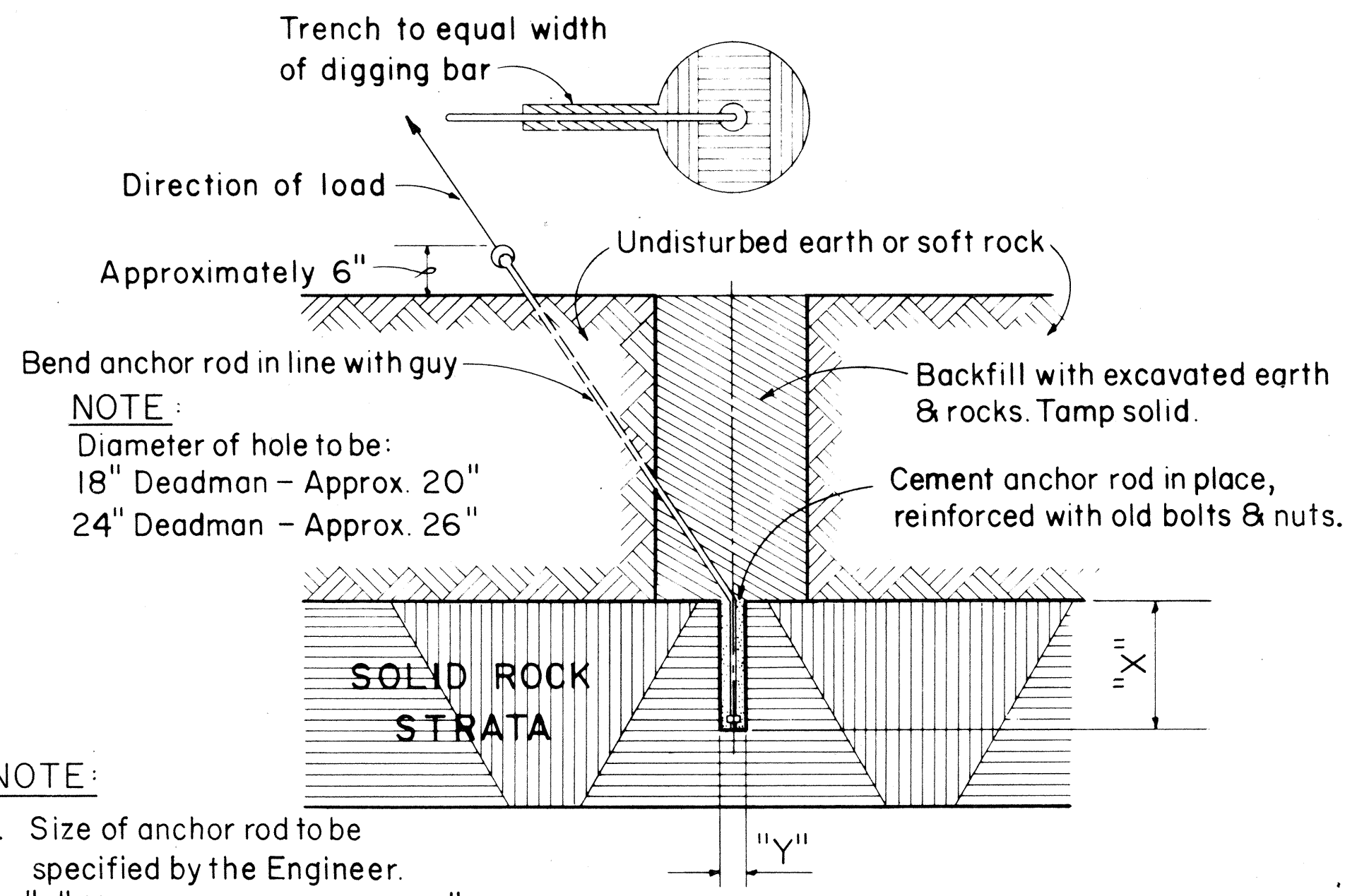
ANCHORING DATA



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

SIDE - WALK ANCHOR

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



- NOTE:
1. Size of anchor rod to be specified by the Engineer.
 2. "X" Should not be less than 24". If "X" is less than 24" complete hole & install anchor.
 3. "Y" 5/8" Anchor rod drill 2" hole 3/4" Anchor rod drill 2" hole 1" Anchor rod drill 2 1/2" hole 1 1/4" Anchor rod drill 3" hole
 4. Use Anchoring Data.

ROCK ANCHOR

Not to Scale

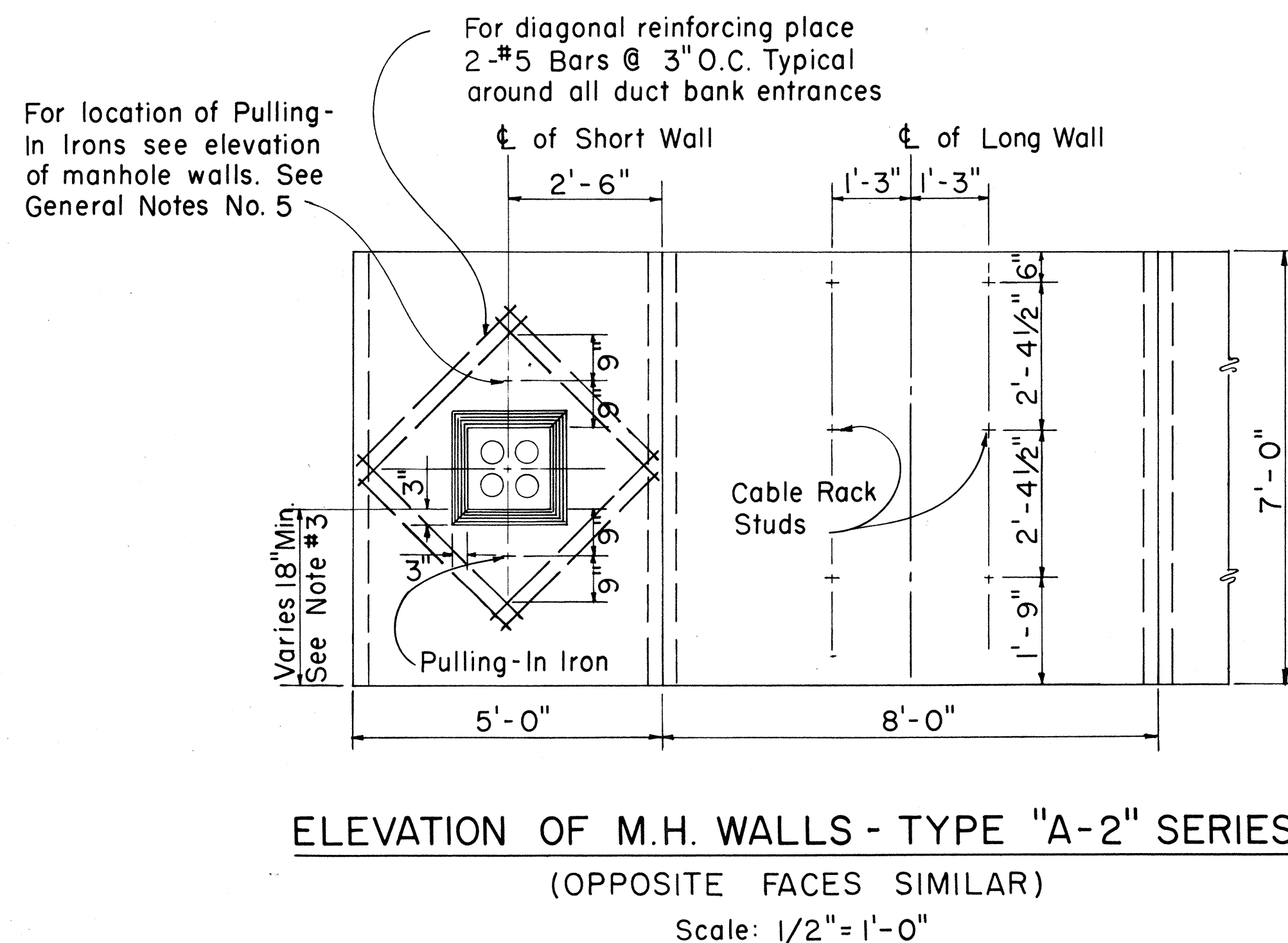
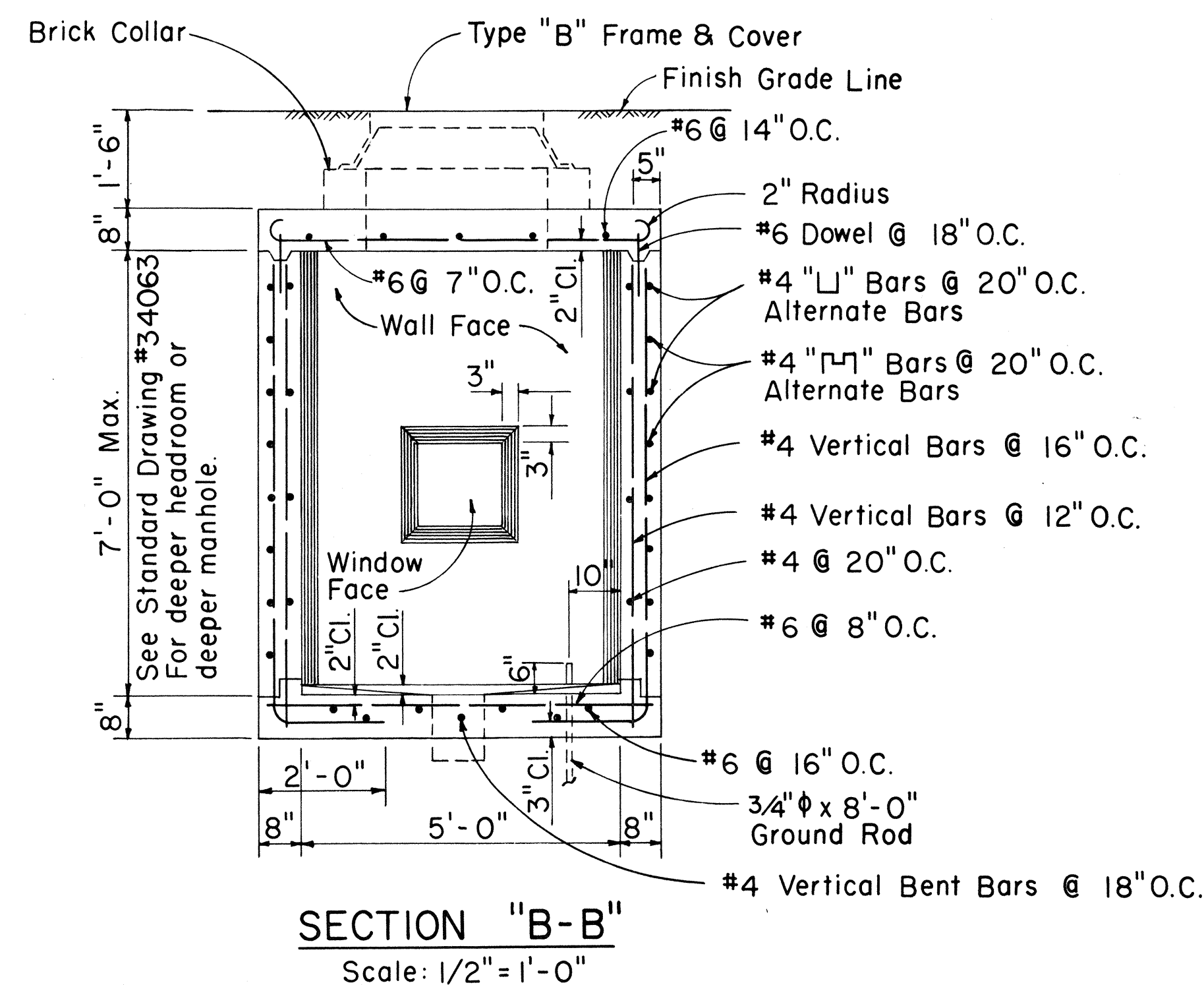
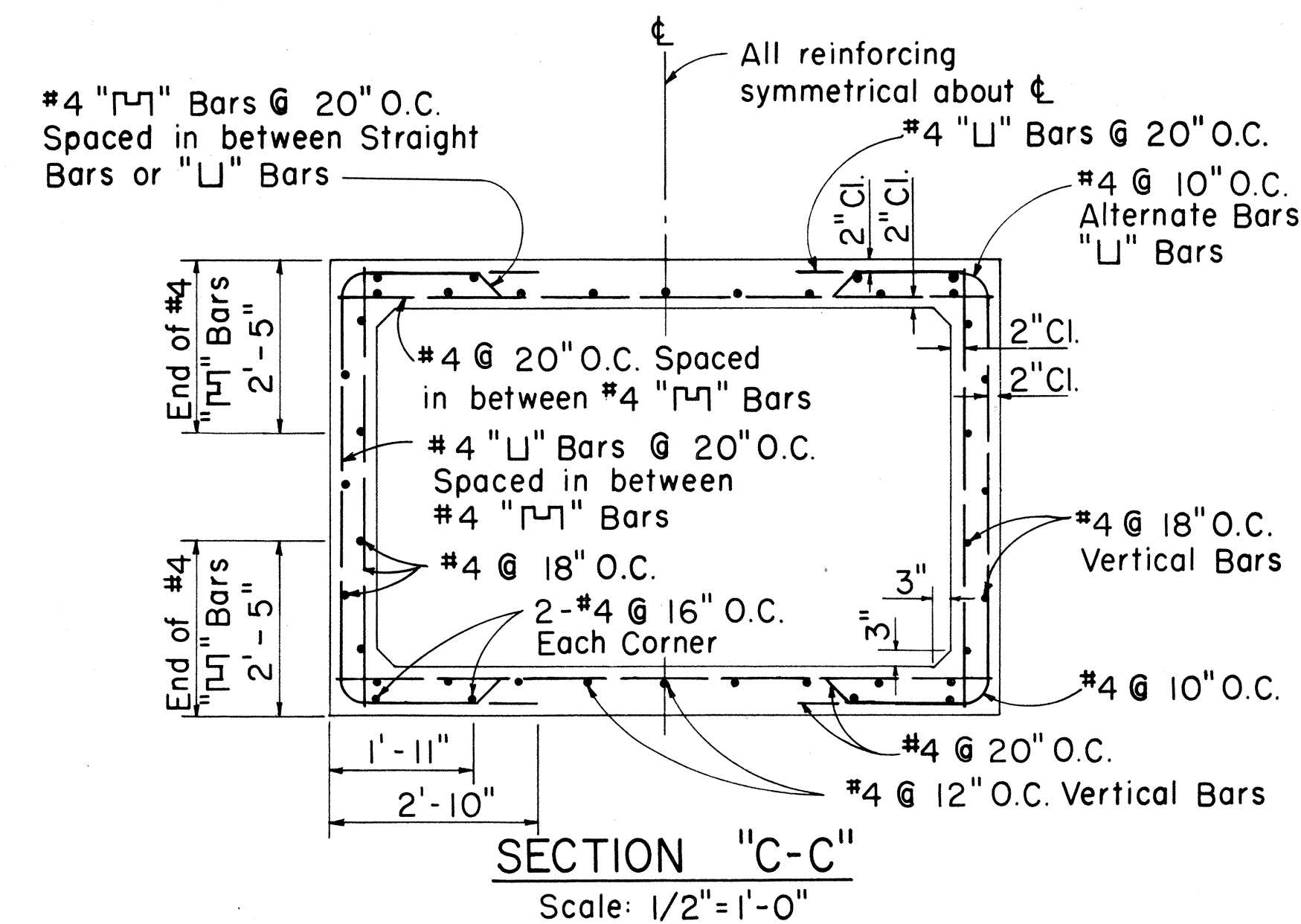
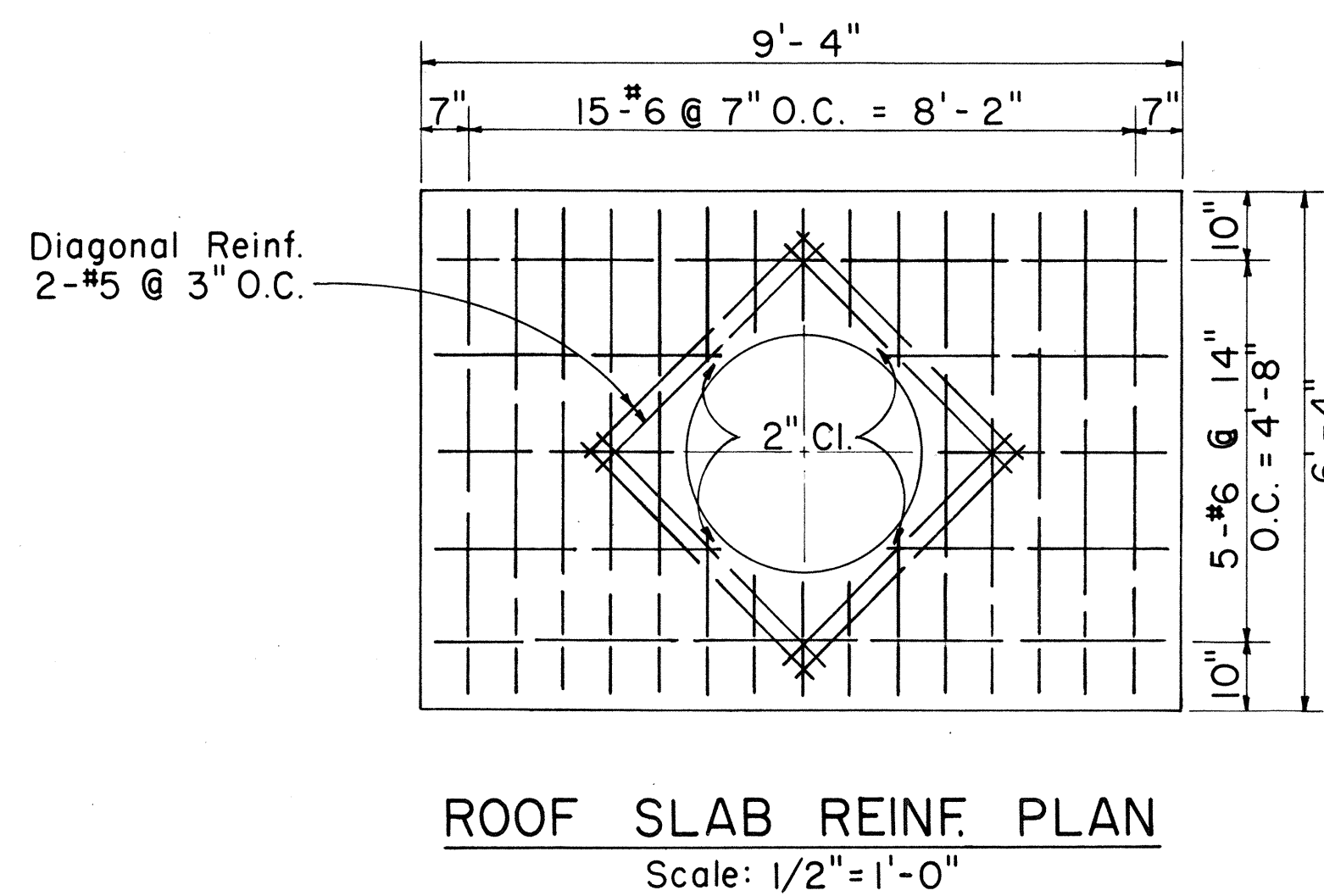
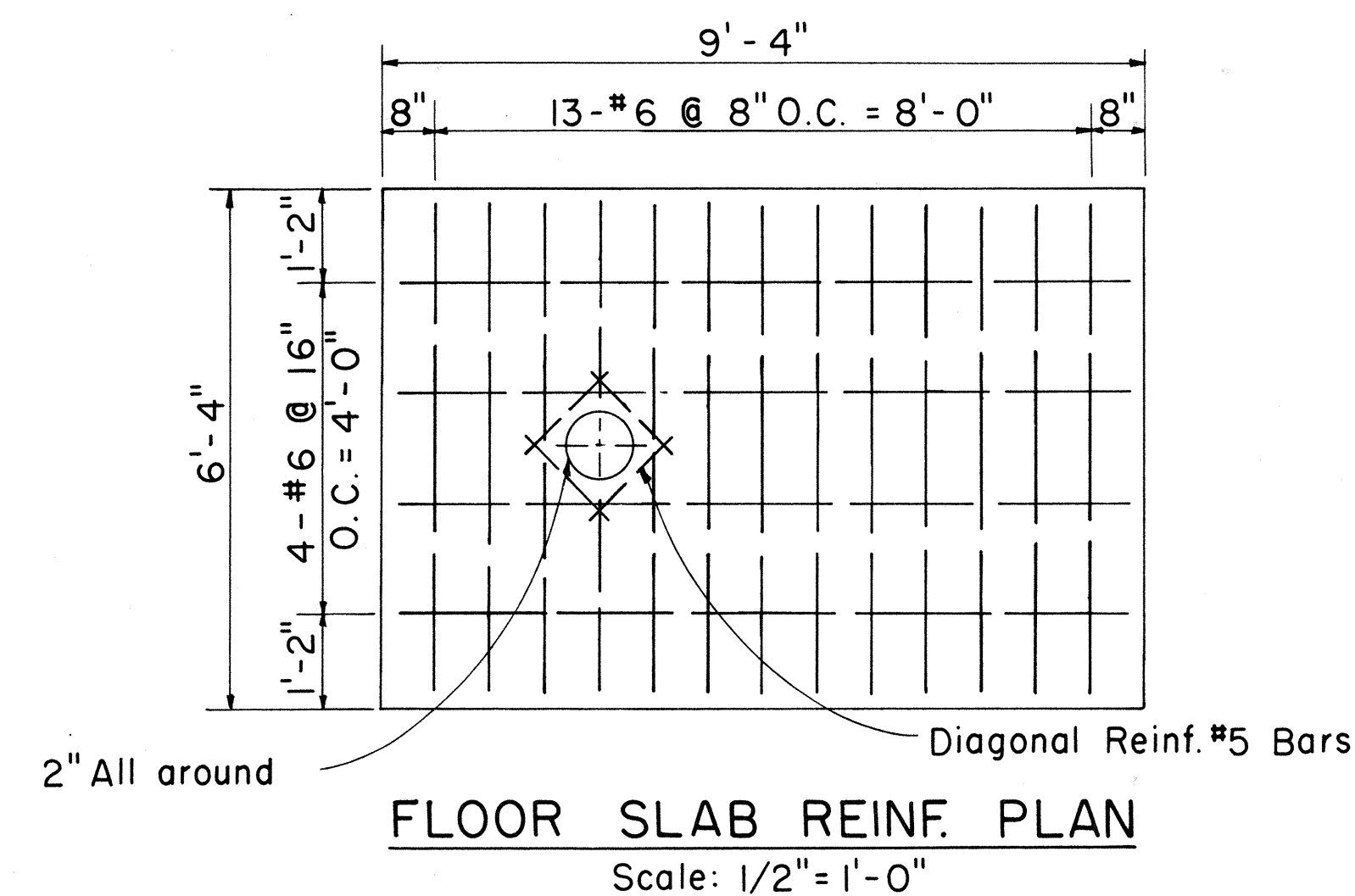
APPROVED:

HAWAIIAN ELECTRIC Co., Inc. DATE
HAWAIIAN TELEPHONE Co. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
H.E. Co. AND H.T. Co.
ANCHOR DETAILS AND
ANCHORING DATA

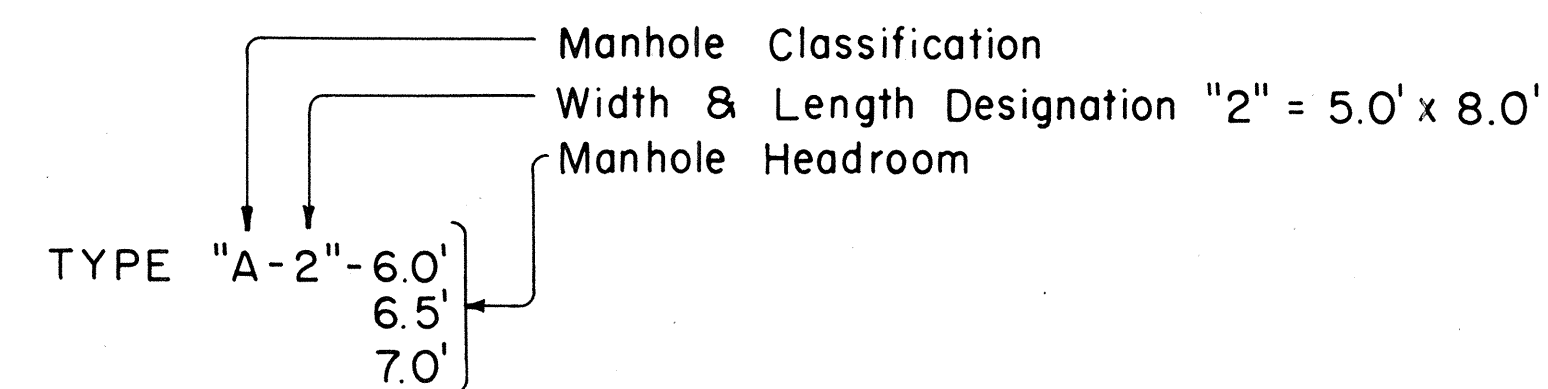
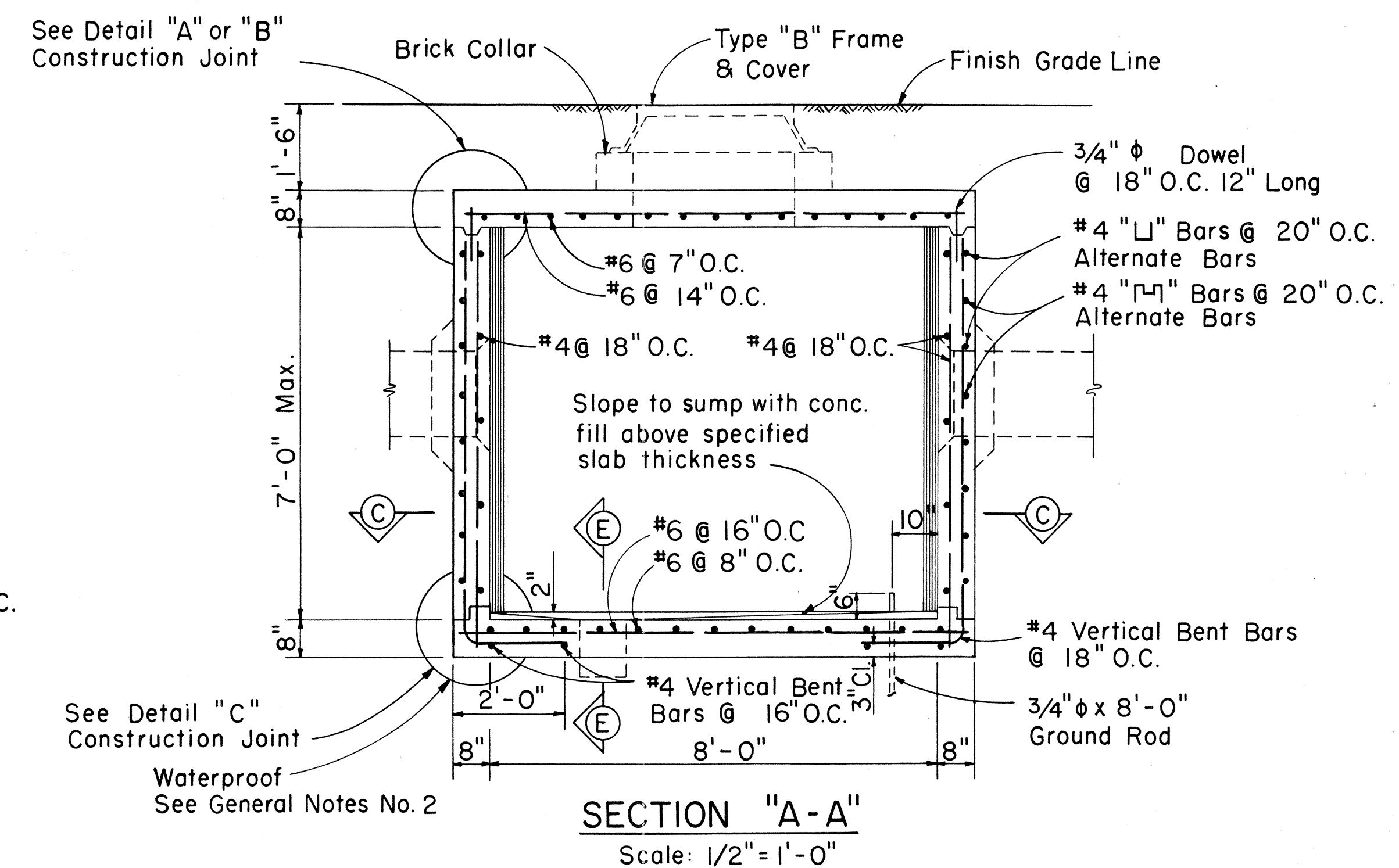
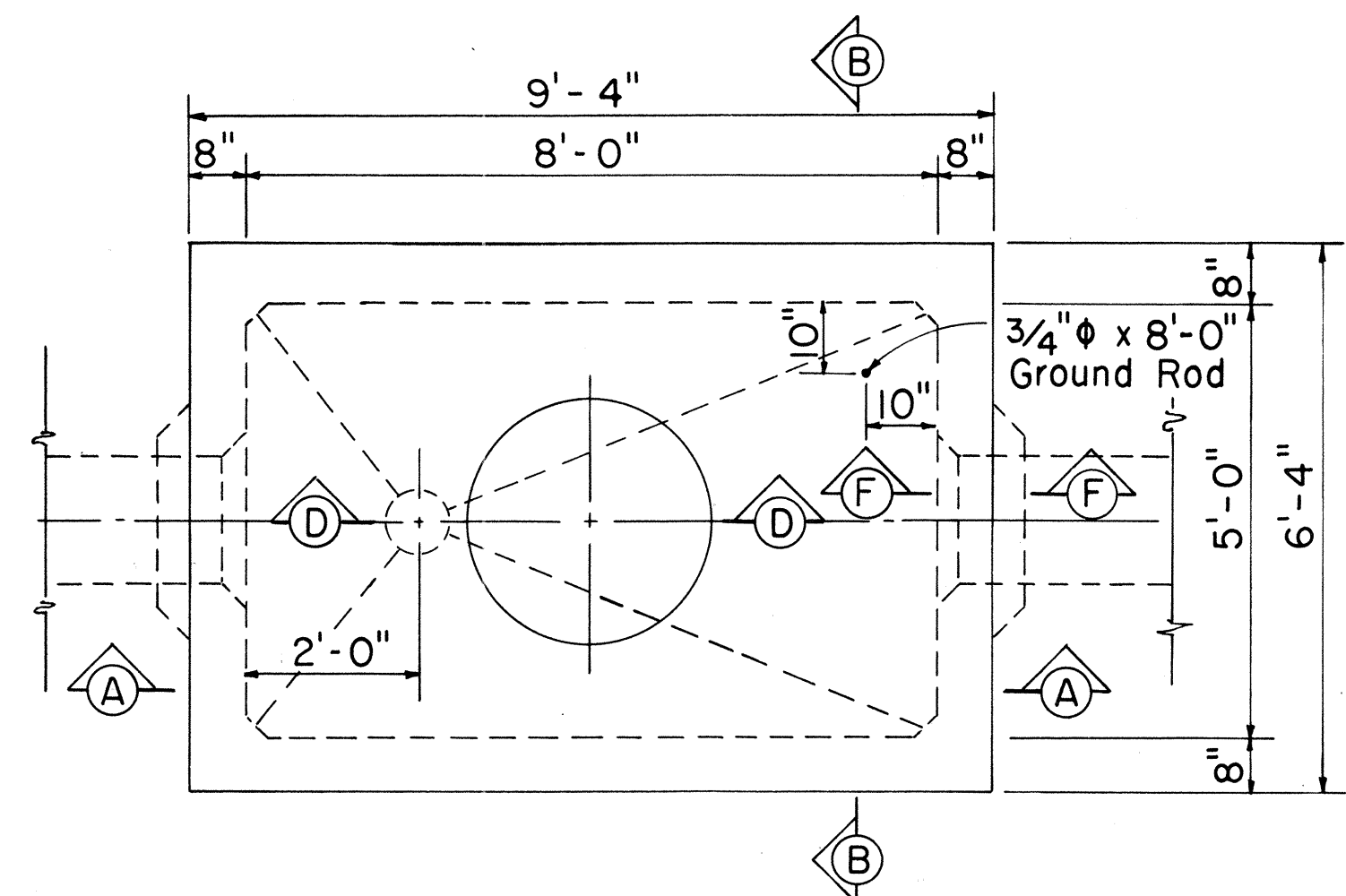
Scales: As Noted Date: 4/24/69

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H-1(65)10 1-H-1(40)11	1969	77	185



GENERAL NOTES:

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



APPROVED:
[Signature]
Hawaiian Telephone Co., Ltd. Date 4-29-69

H.T. Co., Ltd. Drawing No. 34062
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**TYPE "A-2" MANHOLES
FOR 6.0' TO 7.0'
HEADROOM**
Scale: As Noted Date: 4/24/69
SHEET No. 12 OF 13 SHEETS

7 S

