FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	108	246
		U-098-1(4)	1963	48	88

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

APPROVED:

J. A. Rolfing Jr. — PRINCPL. ELEC. ENGR. H.E.Co. LTD. — DATE 4/3/63

[signature] — PRINCPL. DISTR. ENGR. H.E.Co. LTD — DATE 4/9/63

F. H. Judd — PLANT ENGR. SUPV., H.T.Co., LTD. — DATE 3-14-63

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITIES

RELOCATION OF ELECTRIC, TELEPHONE AND U.S. ARMY SIGNAL CORPS SYSTEMS

LUNALILO FREEWAY PROJ. No. U-072-1(3)
VINEYARD BOULEVARD PROJ. No. U-098-1(4)

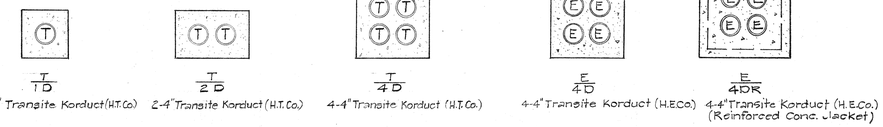
SCALE: 1" = 50' DATE: 1963

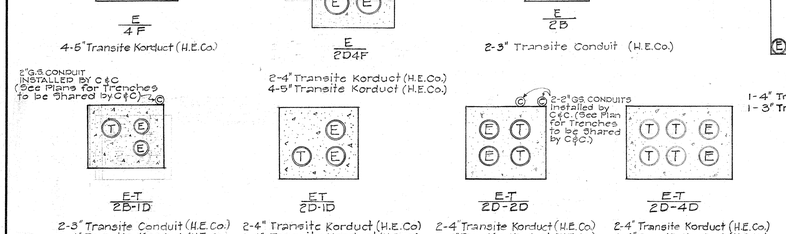
SHEET No. 2 OF 24 SHEETS

U09S10400.4S U07210300.10S

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	115	246
		U-098-1(4)	1963	49	88
		F-090-1(2)	1963	51	93

SHEET 1





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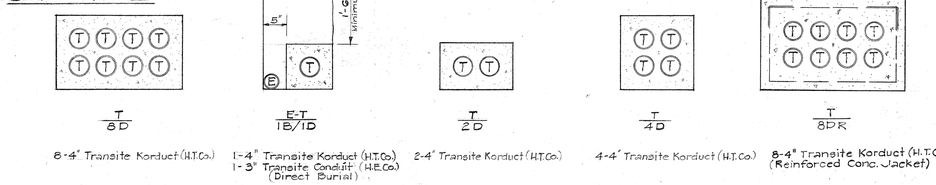

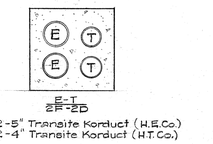

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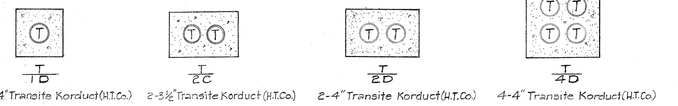

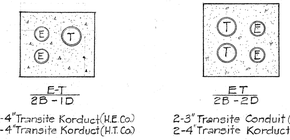

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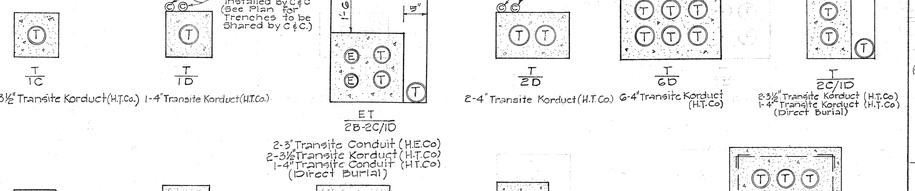

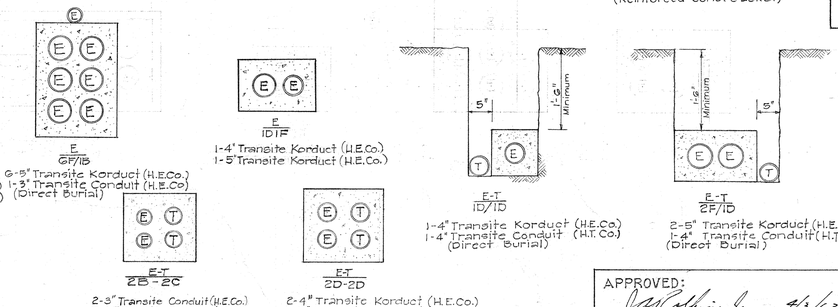

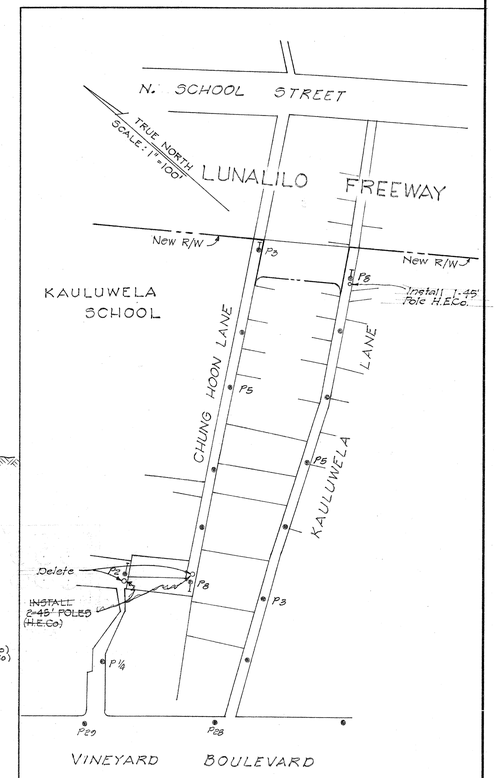

PLAN SHOWING LOCATION FOR INSTALLATION OF 2-45' POLES (H.E.Co.)
Scale: 1"=100'

DUCT SECTIONS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
UTILITIES
RELOCATION OF
ELECTRIC AND TELEPHONE SYSTEMS

LUNALILO FREEWAY — PROJ. No. U-072-1(3)
VINEYARD BOULEVARD — PROJ. No. U-098-1(4)
LILIHA STREET — PROJ. No. F-090-1(2)

SCALE: AS SHOWN — DATE: 1963

APPROVED:
PRINCPL. ELEC. ENGR., H.T.Co., LTD. — DATE 4/3/63
PRINCPL. DISTR. ENGR., H.E.Co., LTD. — DATE 4/4/63
PLANT ENG'G. SUPV., H.T.Co., LTD. — DATE 3-14-63

SHEET No. 12 OF 24 SHEETS

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

PRINTED ON CLEARPRINT 1000-H

F 090102000.51 U 098S10400.49 U 072103000.115

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	U-072(3)	1963	115-A	246
		U-098(4)	1963	49-A	85
		F-090(2)	1963	51-A	93

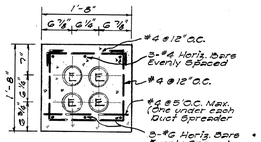
SHEET 1

T / 1D — 1-4" Transite Korduct (H.T.Co)

T / 2D — 2-4" Transite Korduct (H.T.Co.)

T / 4D — 4-4" Transite Korduct (H.T.Co.)

E / 4D — 4-4" Transite Korduct (H.E.Co.)



E / 4DR — 4-4" Transite Korduct (H.E.Co.) (Reinforced Conc. Jacket)

E / 2D — 2-4" Transite Korduct (H.E.Co.)

E / 2F — 2-5" Transite Korduct (H.E.Co.)

E / 1D1F — 1-4" Transite Korduct (H.E.Co.) 1-5" Transite Korduct (H.E.Co.)

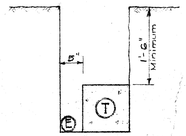
E / 1D3F — 1-4" Transite Korduct (H.E.Co.) 3-5" Transite Korduct (H.E.Co.)

E / 1D — 1-4" Transite Korduct (H.E.Co.)

E / 4F — 4-5" Transite Korduct (H.E.Co.)

E / 2D4F — 2-4" Transite Korduct (H.E.Co.) 4-5" Transite Korduct (H.E.Co.)

E / 2D — 2-3" Transite Conduit (H.E.Co.)



E-T / 1B/1D — 1-4" Transite Korduct (H.T.Co.) 1-3" Transite Conduit (H.E.Co.) (Direct Burial)

2"G.S. CONDUIT INSTALLED BY C&C (See Plans for Trenches to be Shared by C&C)

E-T / 2B-1D — 2-3" Transite Conduit (H.E.Co.) 1-4" Transite Korduct (H.T.Co.)

E-T / 2D-1D — 2-4" Transite Korduct (H.E.Co.) 1-4" Transite Korduct (H.T.Co.)

2-2"G.S. CONDUITS installed by C&C (See Plan for Trenches to be Shared by C&C.)

E-T / 2D-2D — 2-4" Transite Korduct (H.E.Co.) 2-4" Transite Korduct (H.T.Co.)

E-T / 2D-4D — 2-4" Transite Korduct (H.E.Co.) 4-4" Transite Korduct (H.T.Co.)

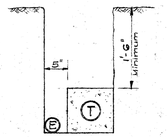
2-2"G.S. CONDUITS INSTALLED BY C&C (See Plan for Trenches to be Shared by C&C)

E-T / 1D3F-4D — 1-4" Transite Korduct (H.E.Co.) 3-5" Transite Korduct (H.E.Co.) 4-4" Transite Korduct (H.T.Co.)

E-T / 4F-4D — 4-5" Transite Korduct (H.E.Co.) 4-4" Transite Korduct (H.T.Co.)

SHEET 2

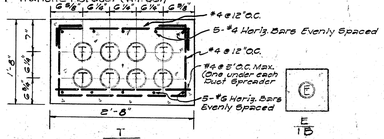
T / 8D — 8-4" Transite Korduct (H.T.Co.)



E-T / 1B/1D — 1-4" Transite Korduct (H.T.Co.) 1-3" Transite Conduit (H.E.Co.) (Direct Burial)

T / 2D — 2-4" Transite Korduct (H.T.Co.)

T / 4D — 4-4" Transite Korduct (H.T.Co.)



T / 8DR — 8-4" Transite Korduct (H.T.Co.) (Reinforced Conc. Jacket)

E / 2B — 2-3" Transite Conduit (H.E.Co.)

E / 2F — 2-5" Transite Korduct (H.E.Co.)

E / 4F — 4-5" Transite Korduct (H.E.Co.)

E / 2FR — 2-5" Galv. Steel Conduit (Reinforced Conc. Jacket) To 5' on undisturbed earth

T / 1D — 1-4" Transite Korduct (H.T.Co.)

E-T / 2D-2D — 2-4" Transite Korduct (H.E.Co.) 2-4" Transite Korduct (H.T.Co.)

E / 2DV — 2-4" Transite Korduct (H.E.Co.)

E / 2FV — 2-5" Transite Korduct (H.E.Co.)

2"G.S. CONDUITS installed by C&C (See Plan for Trenches to be Shared by C&C)

E-T / 2B-1C — 2-3" Transite Conduit (H.E.Co.) 1-4" Transite Korduct (H.T.Co.)

2"G.S. CONDUIT installed by C&C (See Plan for Trenches to be Shared by C&C)

E-T / 2D-1D — 2-4" Transite Korduct (H.E.Co.) 1-4" Transite Korduct (H.T.Co.)

2"G.S. CONDUITS installed by C&C (See Plan for Trenches to be Shared by C&C)

E-T / 2B-1D — 2-3" Transite Conduit (H.E.Co.) 1-4" Transite Korduct (H.T.Co.)

SHEET 3

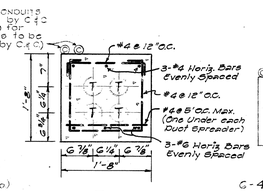
T / 1D — 1-4" Transite Korduct (H.T.Co.)

T / 2C — 2-3½" Transite Korduct (H.T.Co.)

T / 2D — 2-4" Transite Korduct (H.T.Co.)

T / 4D — 4-4" Transite Korduct (H.T.Co.)

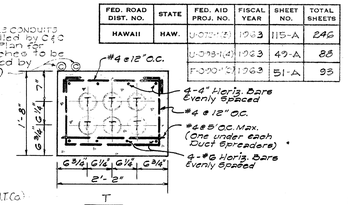
2-2"G.S. CONDUITS installed by C&C (See Plan for Trenches to be Shared by C&C)



T / 4DR — 4-4" Transite Korduct (H.T.Co) (Reinforced Conc. Jacket)

2-2"G.S. CONDUITS installed by C&C (See Plan for Trenches to be Shared by C&C)

T / 6D — 6-4" Transite Korduct (H.T.Co)



T / 6DR — 6-4" Transite Korduct (H.T.Co.) (Reinforced Conc. Jacket)

E / 2D — 2-4" Transite Korduct (H.E.Co.)

E / 2F — 2-5" Transite Korduct (H.E.Co.)

E / 6F — 6-5" Transite Korduct (H.E.Co.)

E / 6F (V) — 6-5" Transite Korduct (H.E.Co.)

E-T / 2B-1D — 1-4" Transite Korduct (H.E.Co.) 1-4" Transite Korduct (H.T.Co.)

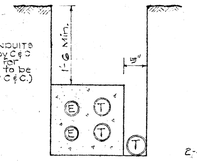
E-T / 2B-2D — 2-3" Transite Conduit (H.E.Co.) 2-4" Transite Korduct (H.T.Co.)

SHEET 4

T / 1C — 1-3½" Transite Korduct (H.T.Co.)

T / 1D — 1-4" Transite Korduct (H.T.Co.)

2"G.S. CONDUITS installed by C&C (See Plan for Trenches to be Shared by C&C)

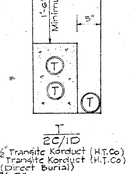


E-T / 2B-2C/1D — 2-3" Transite Conduit (H.E.Co.) 2-3½" Transite Korduct (H.T.Co.) 1-4" Transite Conduit (H.T.Co.) (Direct Burial)

2"G.S. CONDUITS installed by C&C (See Plan for Trenches to be Shared by C&C)

T / 2D — 2-4" Transite Korduct (H.T.Co.)

T / 6D — 6-4" Transite Korduct (H.T.Co.)



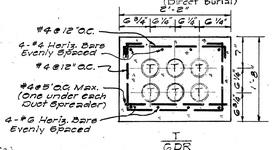
T / 2C/1D — 2-3½" Transite Korduct (H.T.Co.) 1-4" Transite Korduct (H.T.Co.) (Direct Burial)

E / 1B — 1-3" Transite Conduit (H.E.Co.)

E / 1D — 1-4" Transite Korduct (H.E.Co.)

E / 2D — 2-4" Transite Korduct (H.E.Co.)

E / 1F — 1-5" Transite Korduct (H.E.Co.)



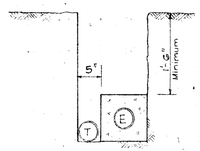
T / 6DR — 6-4" Transite Korduct (H.T.Co.) (Reinforced Conc. Jacket)

E / 1D1F — 1-4" Transite Korduct (H.E.Co.) 1-5" Transite Korduct (H.E.Co.)

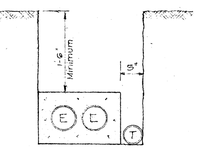
E / GF/1B — 6-5" Transite Korduct (H.E.Co.) 1-3" Transite Conduit (H.E.Co.) (Direct Burial)

E-T / 2B-2C — 2-3" Transite Conduit (H.E.Co.) 2-3½" Transite Korduct (H.T.Co.)

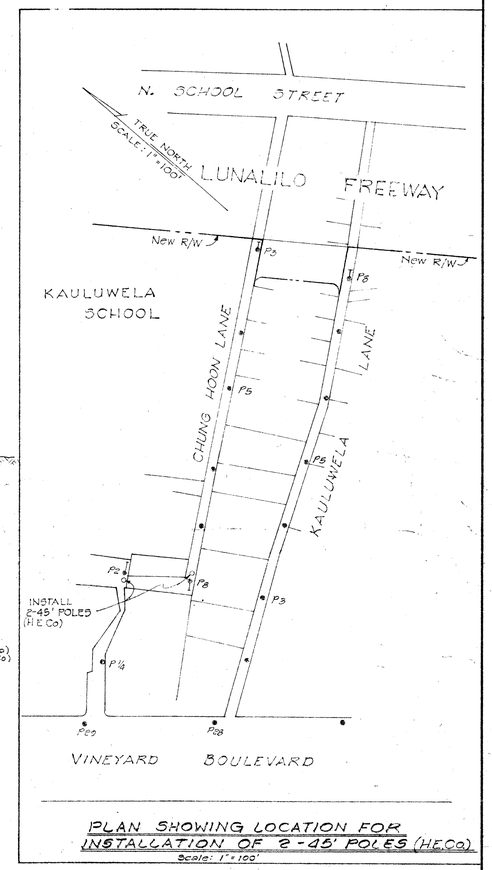
E-T / 2D-2D — 2-4" Transite Korduct (H.E.Co.) 2-4" Transite Korduct (H.T.Co.)



E-T / 1D/1D — 1-4" Transite Korduct (H.E.Co) 1-4" Transite Conduit (H.T.Co.) (Direct Burial)



E-T / 2F/1D — 2-5" Transite Korduct (H.E.Co.) 1-4" Transite Conduit (H.T.Co.) (Direct Burial)



PLAN SHOWING LOCATION FOR INSTALLATION OF 2-45' POLES (H.E.Co)
Scale: 1"=100'

SUPPLEMENTAL PLAN

DUCT SECTIONS

NOTES:
1. 2" Minimum clearance between reinforcing steel and face of concrete.
2. All concrete shall be Class "A-1".

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

APPROVED:

PRINCPL. ELEC. ENGR. HECo. LTD. DATE

PRINCPL. DISTR. ENGR. H.E.Co. LTD. DATE

PLANT ENGG. SUPV. H.T.Co. LTD. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITIES
RELOCATION OF
ELECTRIC AND TELEPHONE SYSTEMS

LUNALILO FREEWAY	PROJ. No. U-072-1(3)
VINEYARD BOULEVARD	PROJ. No. U-098-1(4)
LILIHA STREET	PROJ. No. F-090-1(2)

SCALE: AS SHOWN DATE: 1963

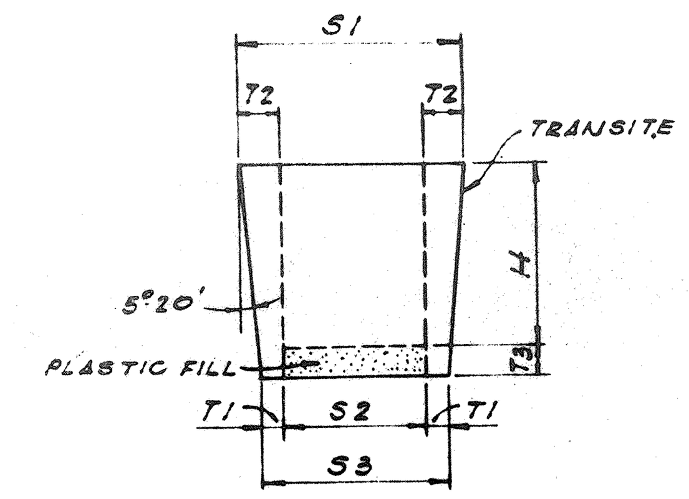
SHEET No. 12 OF 24 SHEETS

PRINTED ON CLEARPRINT 1000-H

F 090102 00.51A U 098 104 00.49A U 072 103 00.115A

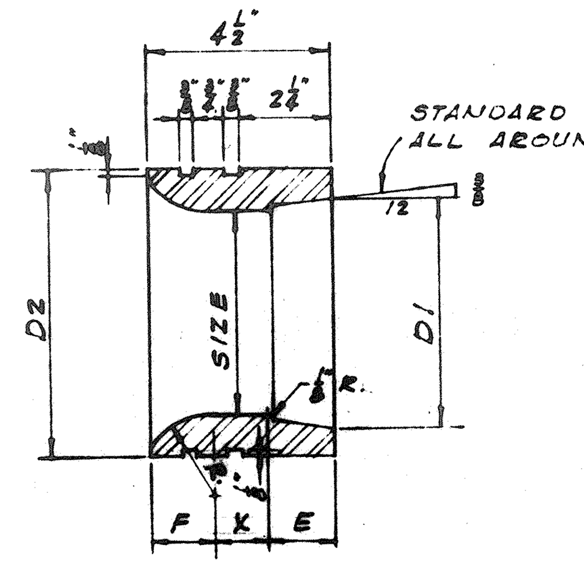
141-A

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No	FISCAL YEAR	SHEET No	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	116	246
		U-098-1(4)	1963	50	88
		F-090-1(2)	1963	52	93



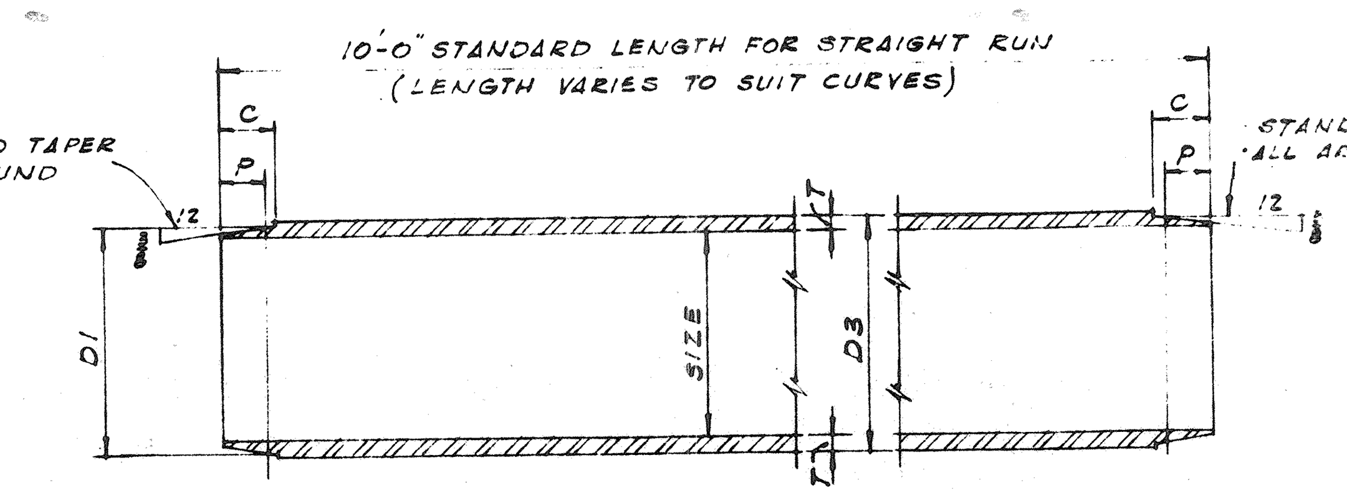
PLUGS FOR TRANSITE KORDUCTS
3" = 1'-0"

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



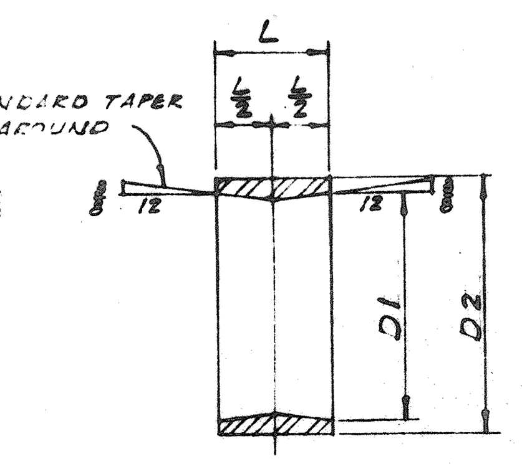
JUNIOR END BELLS
3" = 1'-0"

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



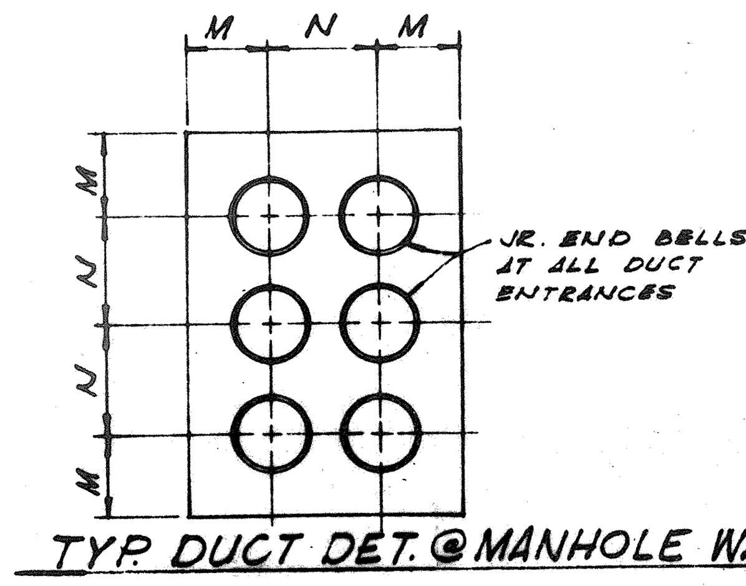
TRANSITE KORDUCTS
3" = 1'-0"

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



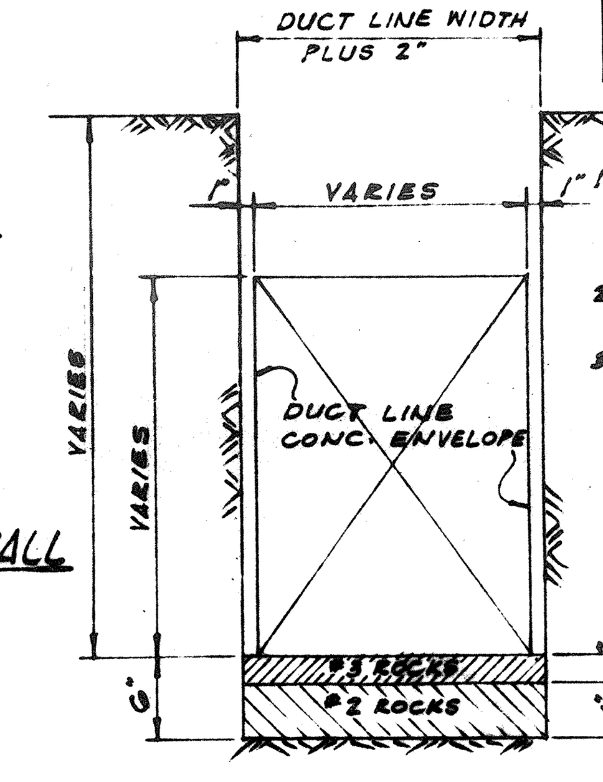
TAPERED COUPLINGS
3" = 1'-0"

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



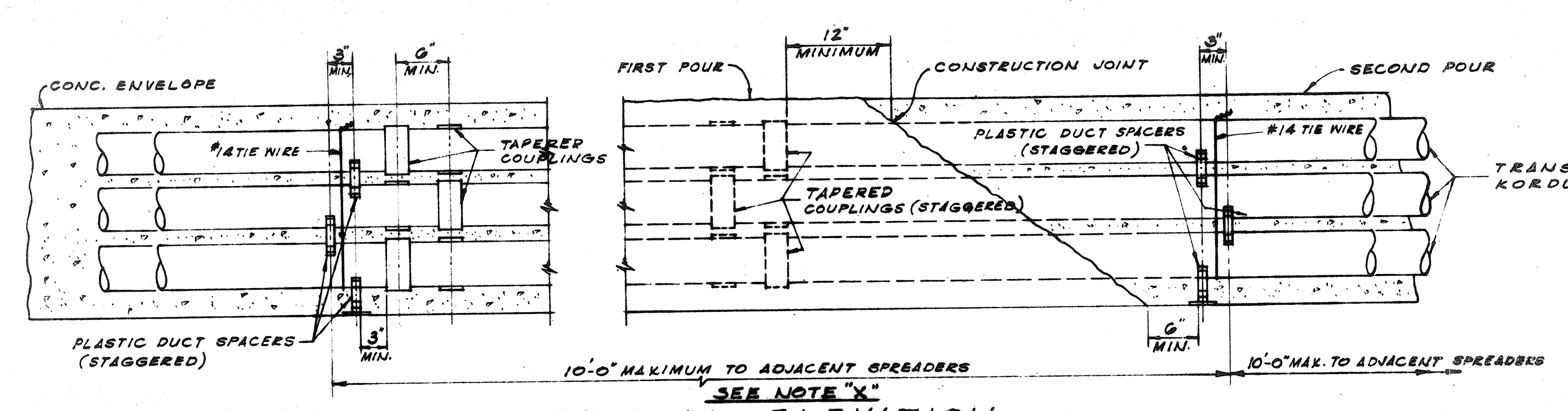
TYP. DUCT DET. @ MANHOLE WALL
NO SCALE

SIZE	M	N
3"	5"	6"
4"	5 1/2"	7"
4 1/2"	5 1/2"	7 1/2"
5"	6"	8"



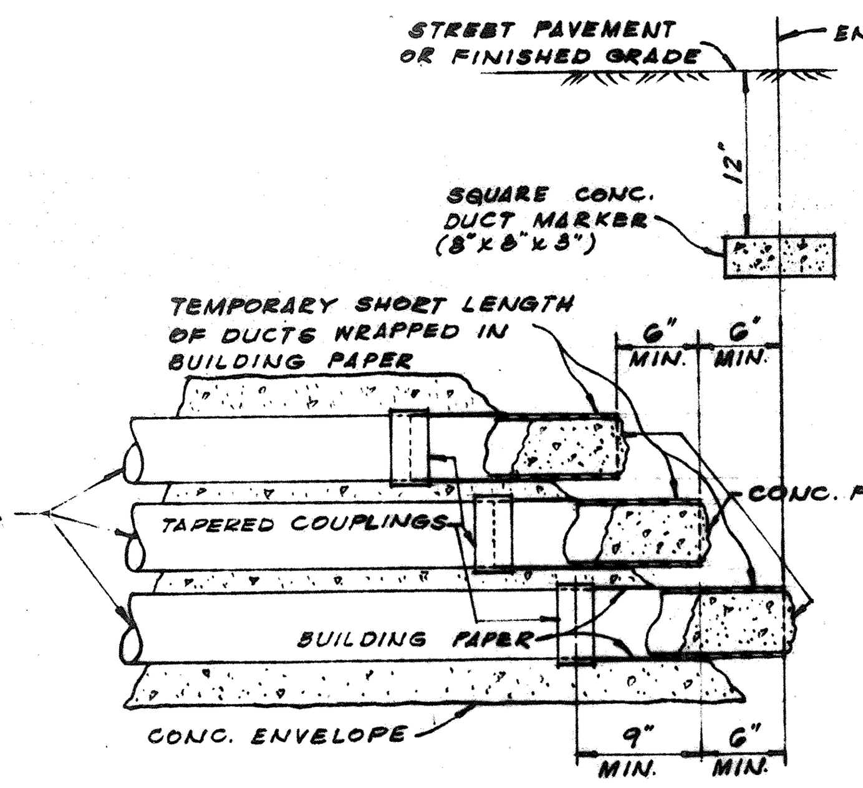
NOTES:
1. SIZE OF CONC. ENVELOPE AND DEPTH OF EXCAVATION TO BE DETERMINED BY PROJECT CONCERNED.
2. WIDEN TRENCH EXCAVATION WHEN FORMS ARE USED.
3. ROCK FOUNDATION REQUIRED ONLY WHEN WATER IS ENCOUNTERED. (SEE DRAINAGE DETAIL.)

TYPICAL EXCAVATION DETAIL
NO SCALE

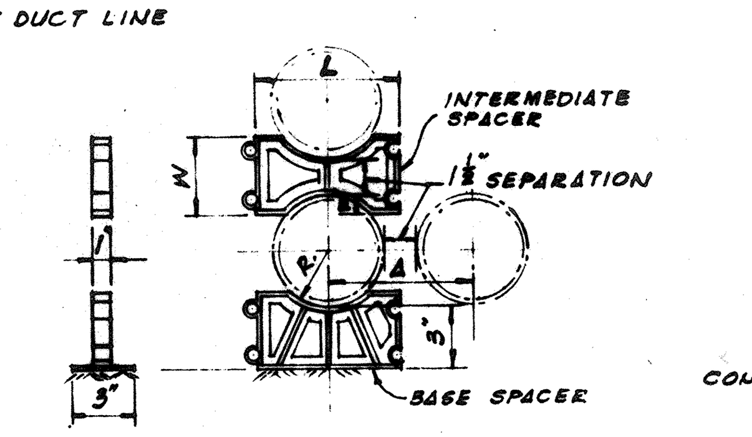


TYPICAL DUCT ENVELOPE ELEVATION
(6 WAY DUCT LINE SHOWN)
1" = 1'-0"

NOTE "X"
PROVIDE ONE SET OF SPACERS;
(a) 10 FT. STRAIGHT RUN FOR 4 DUCTS HIGH OR LESS.
(b) 5 FT. STRAIGHT RUN FOR 5 DUCTS HIGH OR MORE.



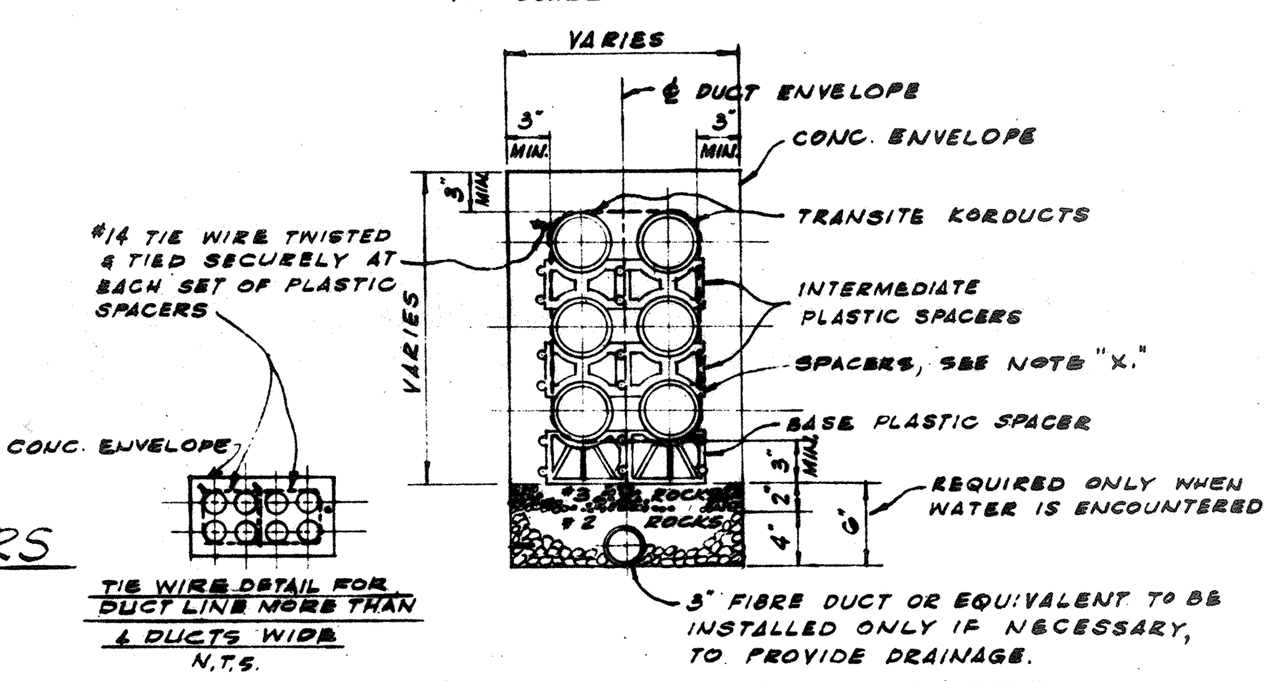
TYPICAL STUB OUT DETAIL
1" = 1'-0"



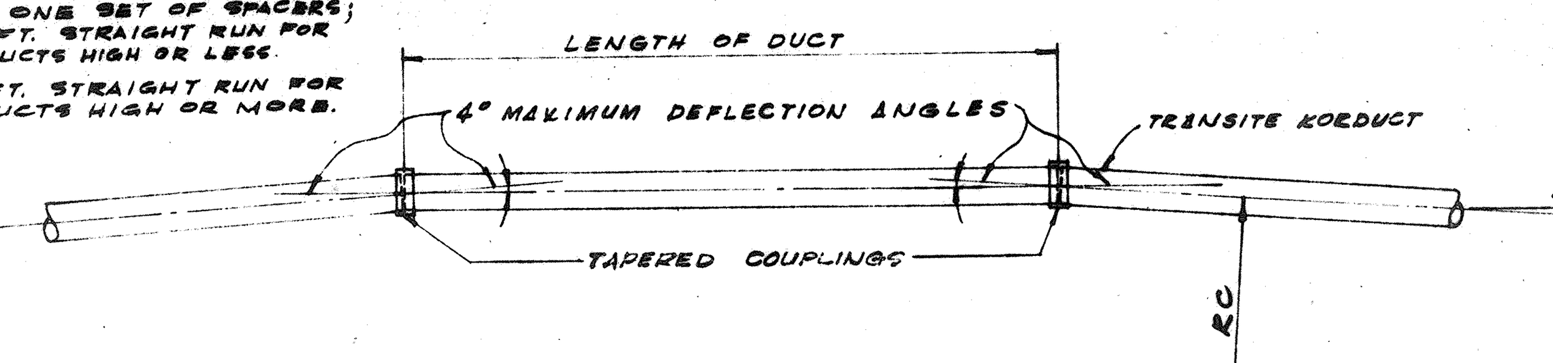
TYP. PLASTIC SPACERS
NO SCALE

SIZE	R	E	W	A	L
3"	1 27/32"	7/8"	3 1/4"	5 1/8"	5"
4"	2 15/32"	1 1/8"	3 3/4"	6 1/4"	6 1/8"
4 1/2"	2 23/32"	1 1/4"	4"	6 7/8"	6 3/4"
5"	3 1/16"	1 3/8"	4 1/4"	7 5/8"	7 1/2"

FOR 1 1/2" SEPARATION

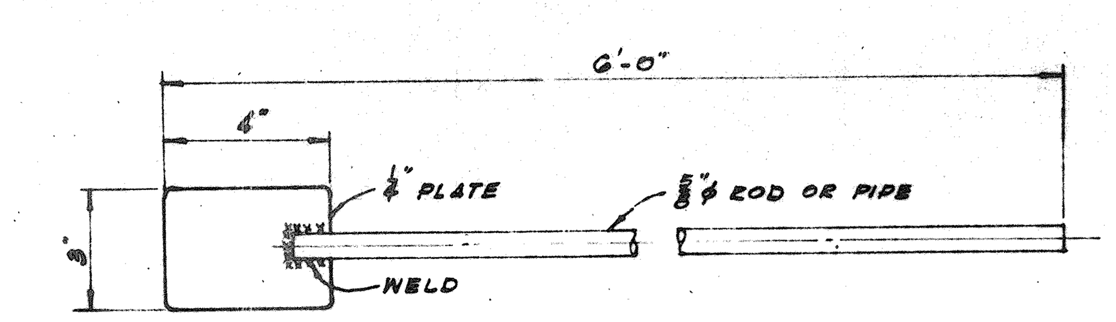


TYP. DUCT PLASTIC SPACERS & DRAINAGE SECTION
(6 WAY DUCT SHOWN - 3 HIGH - 2 WIDE)
NO SCALE

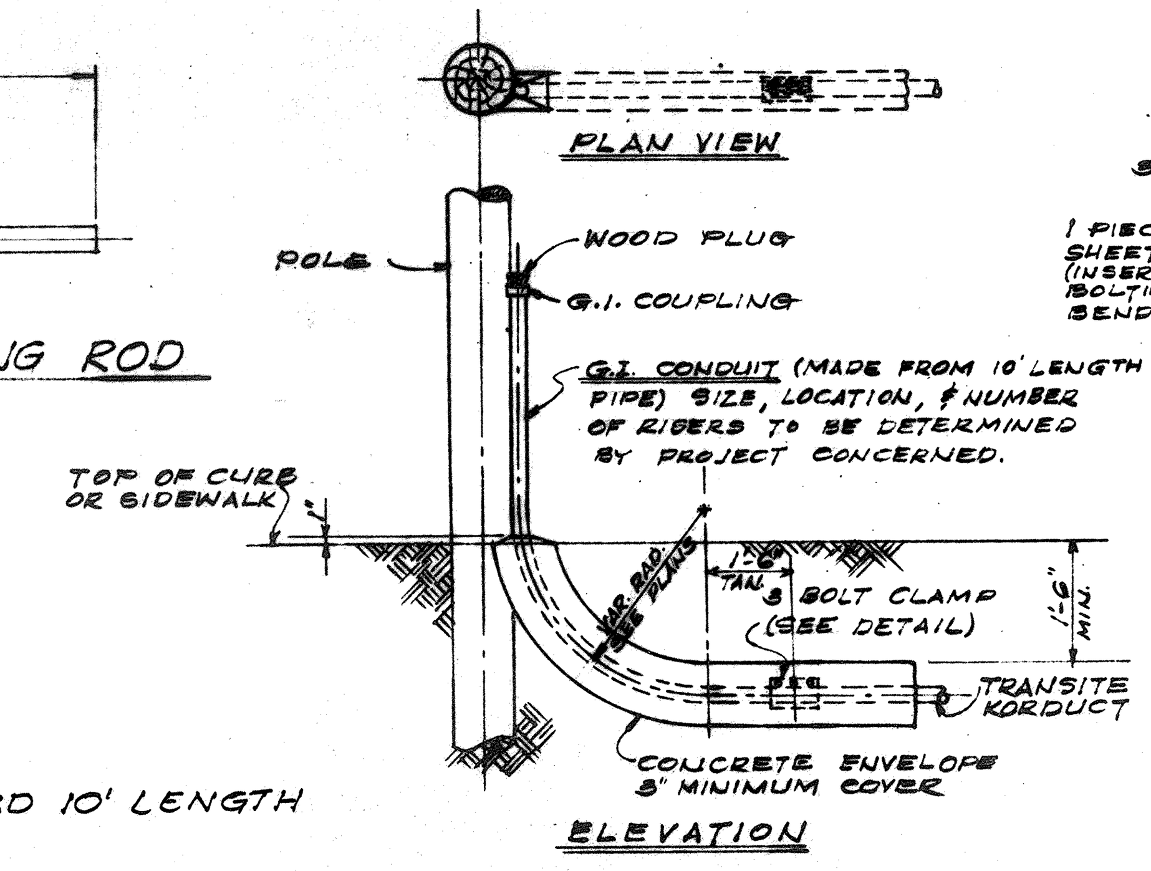


METHOD OF FORMING CURVES
1/2" = 1'-0"

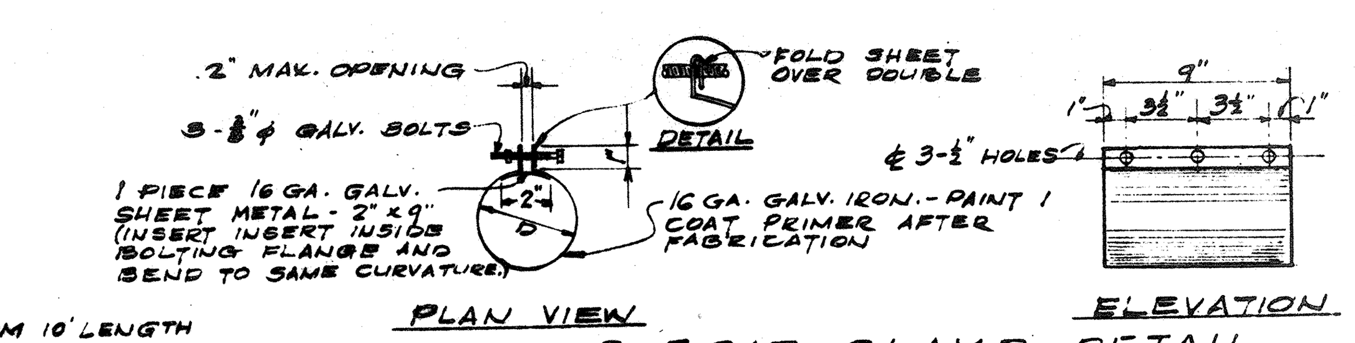
MINIMUM RADIUS TO FORM CURVES																			
LENGTH OF DUCT	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"
MIN. RAD. RC	14'-4"	21'-6"	28'-8"	35'-10"	42'-11"	50'-1"	57'-3"	64'-5"	71'-7"	78'-9"	85'-11"	93'-1"	100'-3"	107'-5"	114'-7"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



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



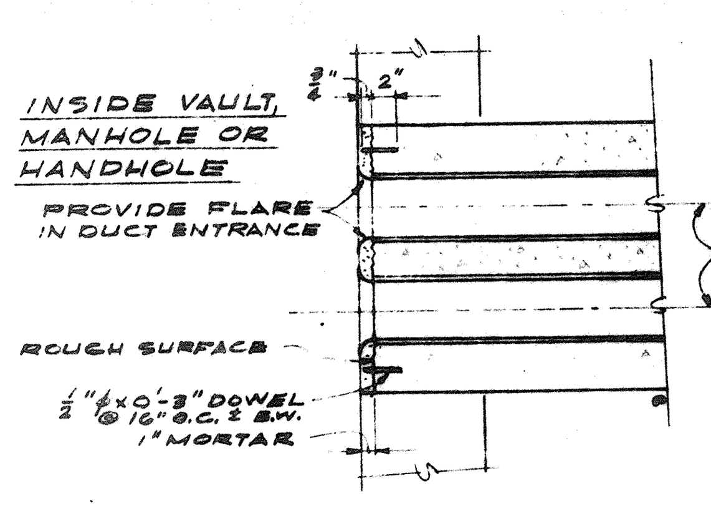
TYPICAL POLE RISER DETAIL
3/16" = 1'-0"



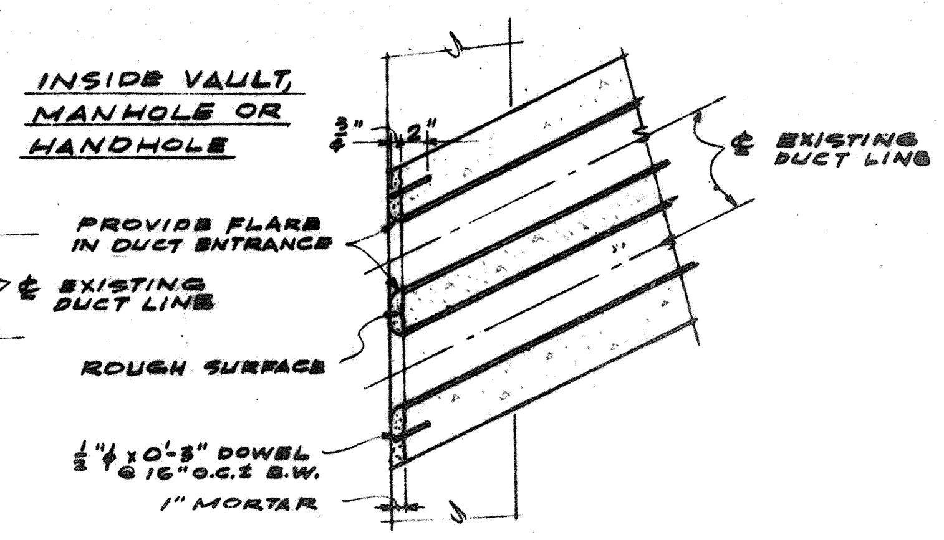
3 BOLT CLAMP DETAIL
1 1/2" = 1'-0"

REFER TO SPECIFICATION SHEET U-18585A

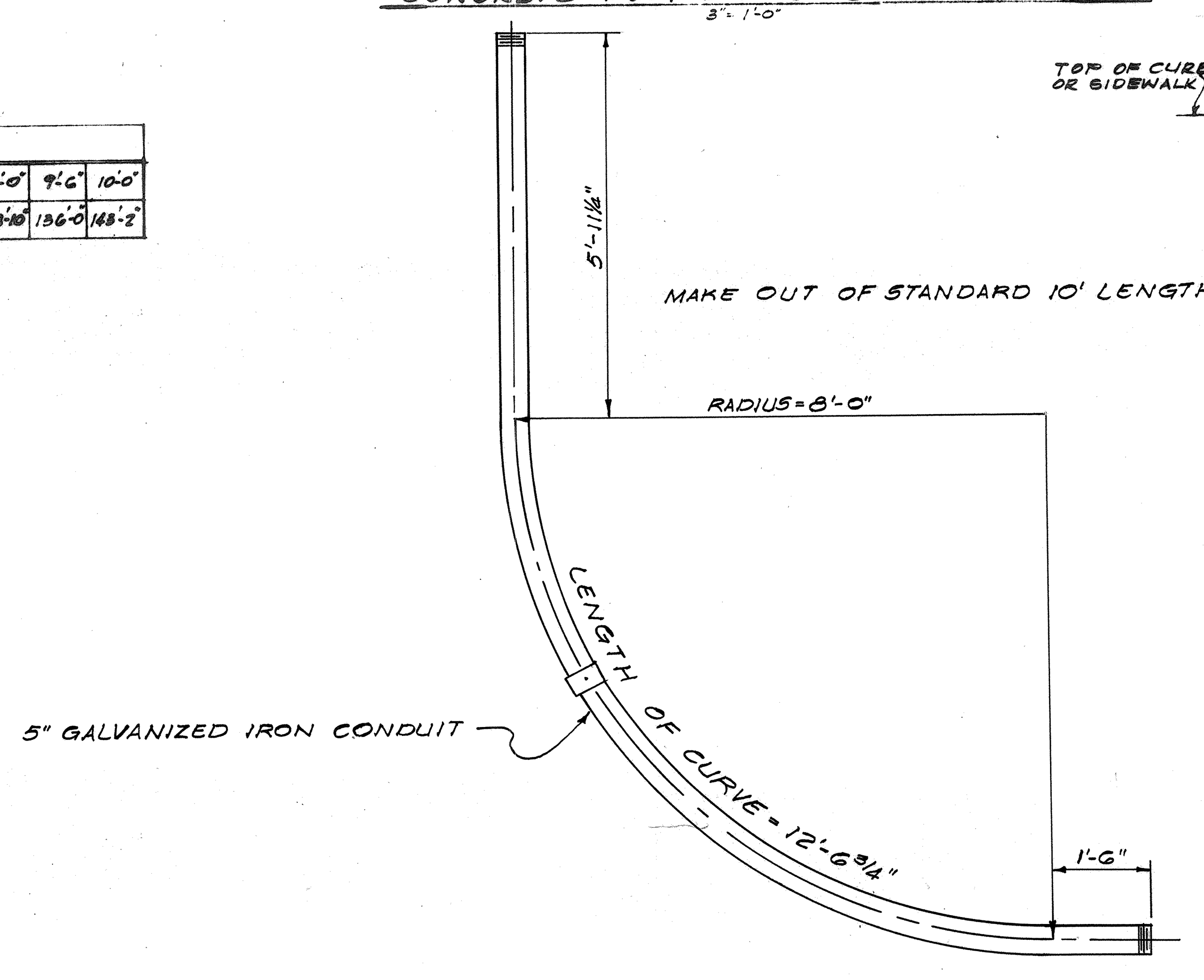
ALL MATERIALS SHALL BE NEW AND SHALL BE MANUFACTURED IN THE UNITED STATES.



DUCT LINE ENTRANCE AT EXISTING DUCT LINE
1" = 1'-0"



DUCT LINE DIAGONAL ENTRANCE
1" = 1'-0"



46 KV RISER CONDUIT BEND
(8'-0" RADIUS)
NO SCALE

REDUCED PLAN SHEET
DETAIL DRAWINGS ARE NOT TO SPECIFIC SCALES AS NOTED

DRAWING NUMBER **U-18585**

APPROVED:

[signature] 4/3/63
PRINCPL. ELEC. ENGR., H.E. CO., LTD. DATE

[signature] 4/4/63
PRINCPL. DISTR. ENGR., H.E. CO., LTD. DATE

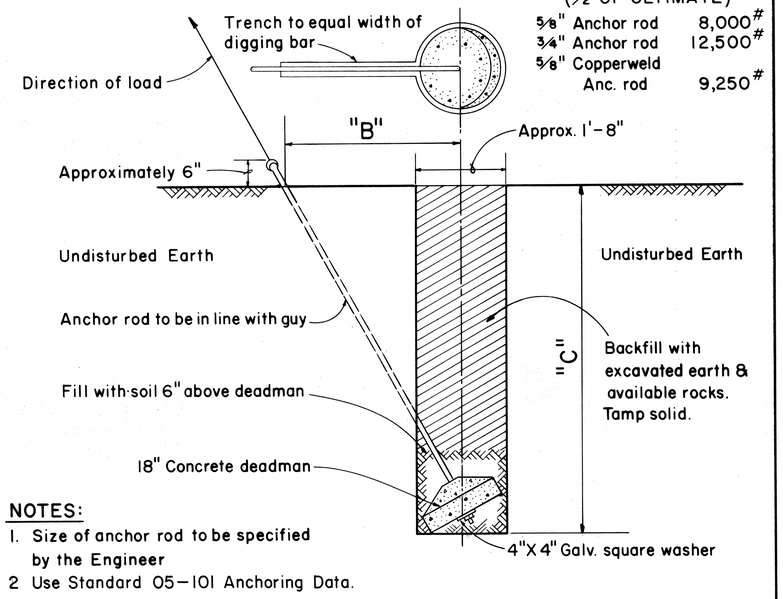
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONSTRUCTION STANDARDS TRANSITE KORDUCTS UNDERGROUND DUCT LINES

LUNALILO FREEWAY — PROJ. NO. U-072-1(3)
VINEYARD BOULEVARD — PROJ. NO. U-098-1(4)
LILIHA STREET — PROJ. NO. F-090-1(2)
SCALES: AS SHOWN — DATE: 1963

SHEET NO. 13 OF 24 SHEETS

FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	U-072-1-(3)	1963	120	246
		U-098-1-(4)	1963	51	88
		F-090-1-(2)	1963	56	93

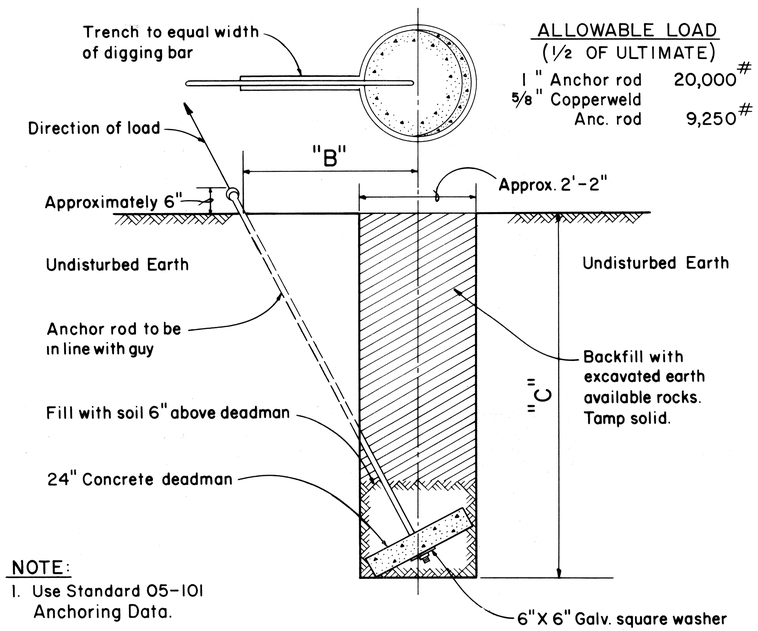


NOTES:
1. Size of anchor rod to be specified by the Engineer
2 Use Standard 05-101 Anchoring Data.

GUY ANCHOR 18" DEADMAN

Scale: ¾" = 1' - 0"

05-102



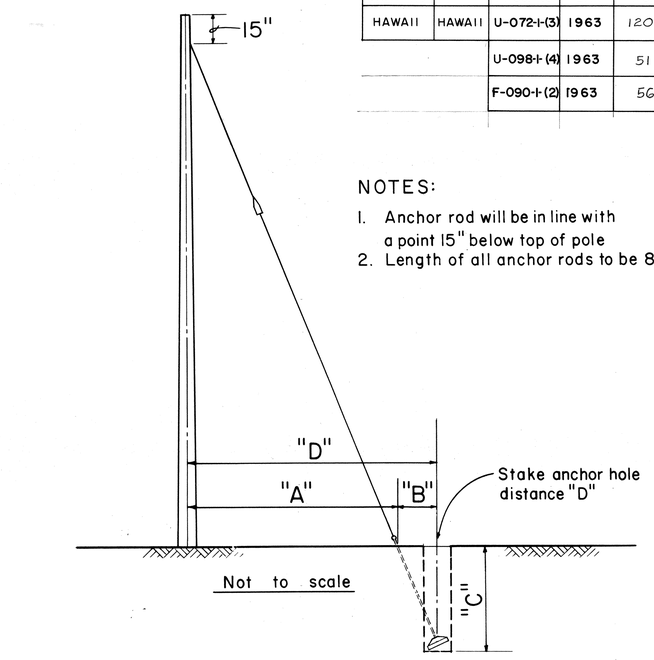
ALLOWABLE LOAD
(½ OF ULTIMATE)
1" Anchor rod 20,000#
⅝" Copperweld Anc. rod 9,250#

NOTE:
1. Use Standard 05-101 Anchoring Data.

GUY ANCHOR 24" DEADMAN

Scale: ¾" = 1' - 0"

05-103



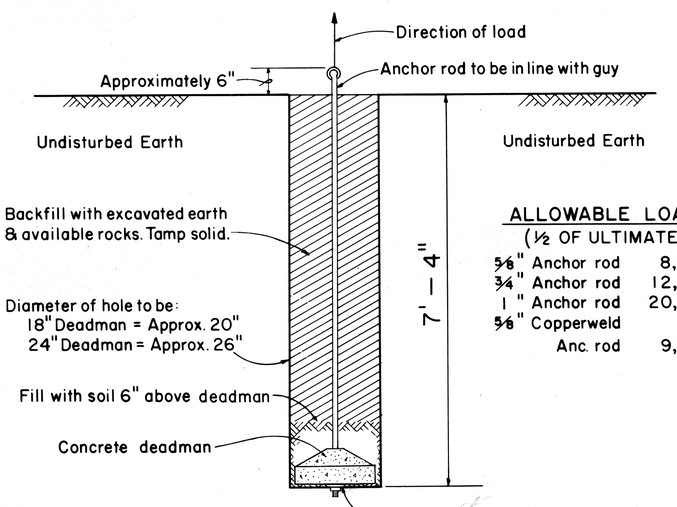
NOTES:
1. Anchor rod will be in line with a point 15" below top of pole
2. Length of all anchor rods to be 8'-0"

FOR 35', 40', 45', 50', 55', & 60' POLES				
LEAD-ANCHOR ROD TO ℄ OF POLE "A"	ANCHOR ROD TO ℄ OF HOLE "B"	VERTICAL DEPTH 18" D.M. "C"	VERTICAL DEPTH 24" D.M. "C"	TOTAL DISTANCE POLE TO HOLE D = (A + B)
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 25', & 30' POLES				
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"

D. M. = Deadman

ANCHORING DATA

05-101



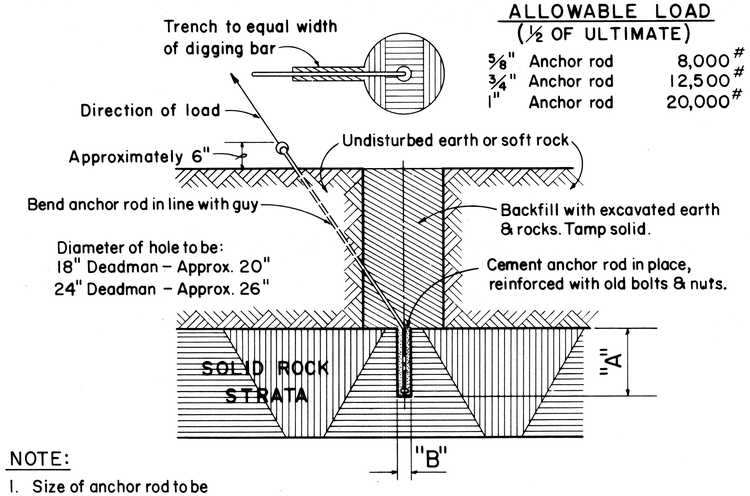
ALLOWABLE LOAD
(½ OF ULTIMATE)
⅝" Anchor rod 8,000#
¾" Anchor rod 12,500#
1" Anchor rod 20,000#
⅝" Copperweld Anc. rod 9,250#

NOTES:
1. Size of anchor rod to be specified by the Engineer.
2. Use Standard 05-101 Anchoring Data.

SIDE - WALK ANCHOR

Scale: ¾"= 1' - 0"

05-104



ALLOWABLE LOAD
(½ OF ULTIMATE)
⅝" Anchor rod 8,000#
¾" Anchor rod 12,500#
1" Anchor rod 20,000#

NOTE:
1. Size of anchor rod to be specified by the Engineer.
2. "A" Should not be less than 24" If "A" is less than 24" complete hole & install anchor per O.H. Standard 05-102,103,or104.
3. "B" ⅝" Anchor rod drill 2" hole
   ¾" Anchor rod drill 2" hole
   1" Anchor rod drill 2½" hole
4. Use Standard 05-101 Anchoring Data.

ROCK ANCHOR

Not to Scale

05-105

APPROVED:

DIRECTOR OF TRANSPORTATION	DATE
[signature]	3-14-63
PLANT ENG'G SUPV. H.T. CO., LTD.	DATE
[signature]	4/3/63
PRINCPL. ELEC. ENGR. H. E. CO., LTD.	DATE
[signature]	4/4/63
PRINCPL. DISTR. ENGR. H.E. CO., LTD.	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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

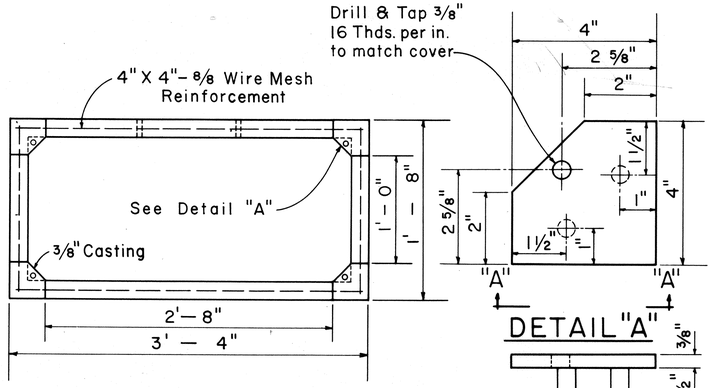
LUNALILO FREEWAY — PROJ. No. U-072-1-(3)
VINEYARD BOULEVARD — PROJ. No. U-098-1-(4)
LILIHA STREET — PROJ. No. F-090-1-(2)

Scales: As Noted — Date 1963

SHEET No. 19 OF 24 SHEETS

F 090 1 02 00.56 U 098 1 04 00.51 U 072 1 03 00.120

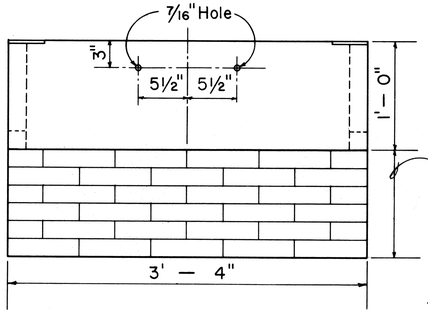
FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	U-072-1-(3)	1963	121	246
		U-098-1-(4)	1963	52	88
		F-090-1-(2)	1963	57	93



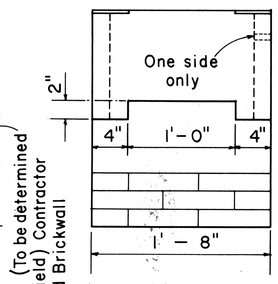
PLAN

DETAIL "A"

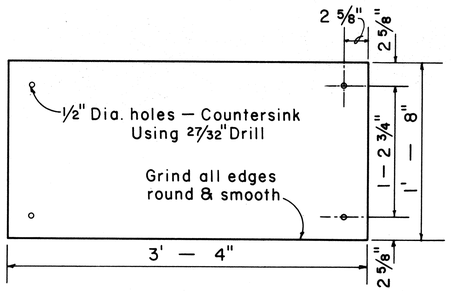
SECTION "A-A"



SIDE VIEW



END VIEW



NOTES:
Use 3/8" Plate for driveways.
Concrete Box 225 Lbs.
1/4" Checker Plate 62 Lbs.

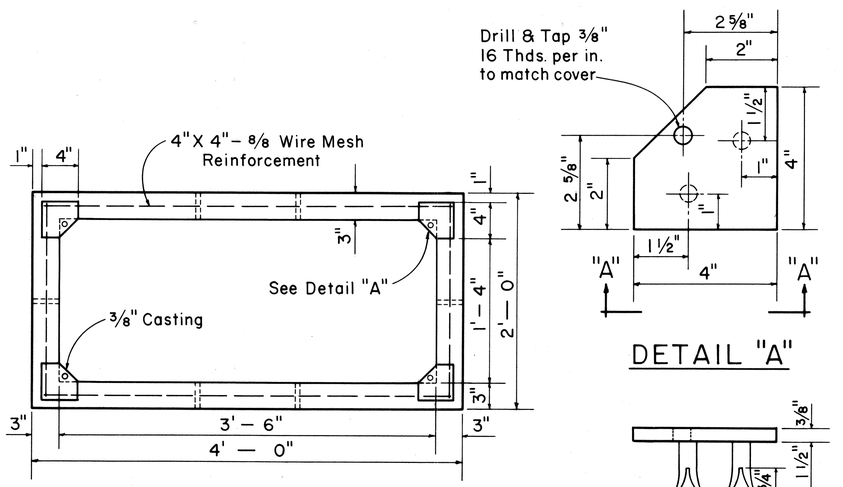
1/4" CHECKER PLATE COVER

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

1'– 4" X 3'– 0" CONCRETE SERVICE BOX

Scale: 1 1/2" = 1'– 0"

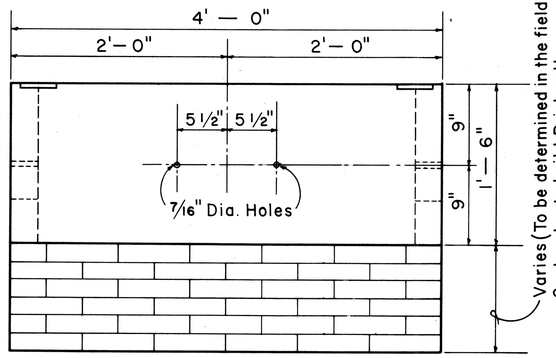
UI-103



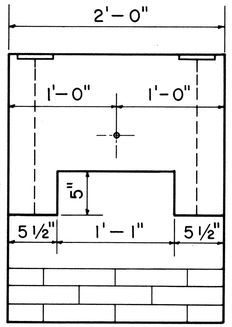
PLAN

DETAIL "A"

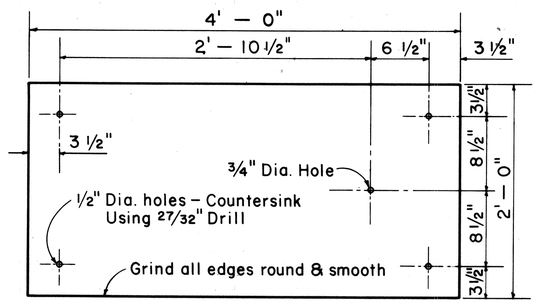
SECTION "A-A"



SIDE VIEW



END VIEW



NOTES:
Use 3/8" Plate for driveway.
Concrete Box 575 Lbs.
1/4" Checker Plate 130 Lbs.

1/4" CHECKER PLATE COVER

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

1'– 6" X 3'– 6" CONCRETE SERVICE BOX

Scale: 1 1/2" = 1'– 0"

UI-103

SOUTHERN PINE & DOUGLAS FIR – 8 LB. CREOSOTED TREATMENT										
LENGTH IN FEET	CLASS	APPROXIMATE MINIMUM DIMENSIONS – INCHES				AVERAGE WEIGHT IN POUNDS		POLE SETTING DEPTH		BREAKING LOAD 2'-0" BELOW TOP OF POLES (LBS.)
		AT TOP		6'-0" FROM BUTT						
		DIA.	CIR.	DIA.	CIR.	S. P.	D. F.	DEPTH IN SOIL	DEPTH IN ROCK	
JOINT POLES (J.P. POLES)										
25	5	6.05	19	8.28	26.0	491	525	4'– 6"	3'– 0"	1,900
30	5	6.05	19	8.92	28.0	660	600	5'– 0"	3'– 0"	1,900
35	5	6.05	19	9.55	30.0	862	770	5'– 0"	3'– 6"	1,900
40	3	7.32	23	11.79	37.0	1,403	1,320	5'– 6"	3'– 6"	3,000
45	3	7.32	23	12.26	38.5	1,664	1,575	6'– 0"	4'– 0"	3,000
50	3	7.32	23	12.73	40.0	1,925	1,850	6'– 6"	4'– 0"	3,000
55	3	7.32	23	13.23	41.5	2,200	2,145	7'– 0"	4'– 6"	3,000
TRANSMISSION POLES (T. POLES)										
45	2	7.96	25	13.23	41.5	1,911	1,845	6'– 0"	4'– 0"	3,700
50	2	7.96	25	13.69	43.0	2,214	2,150	6'– 6"	4'– 0"	3,700
60	1	8.59	27	15.77	49.5	3,451	3,360	7'– 0"	4'– 6"	4,500

S. P. – SOUTHERN YELLOW PINE
D. F. – DOUGLAS FIR

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

REFERENCES:
American Standard Association 05.4 – 1,941, 05.6 – 1,945
Standard Handbook for Electrical Engineers. Eighth Edition
H. E. Co. Specifications for poles.

WOOD POLE DATA

05-501

APPROVED:

DIRECTOR OF TRANSPORTATION — DATE 3-14-63

PLANT ENG'G SUPV. H.T. CO., LTD. — DATE

PRINCPL. ELEC. ENGR. H. E. CO., LTD. — DATE 4/3/63

PRINCPL. DISTR. ENGR. H.E.CO., LTD. — DATE 4/9/63

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
H. E. Co. AND H. T. Co.
SERVICE BOX DETAILS
AND WOOD POLE DATA

LUNALILO FREEWAY
VINEYARD BOULEVARD
LILIHA STREET

PROJ. No. U-072-1-(3)
PROJ. No. U-098-1-(4)
PROJ. No. F-090-1-(2)

Scales: As Noted — Date 1963

SHEET NO. 20 OF 24 SHEETS

ORIGINAL PLAN | NOTE BOOK | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

F 090 1 02 00.57 U 098 1 04 00.52 U 072 1 03 00.121

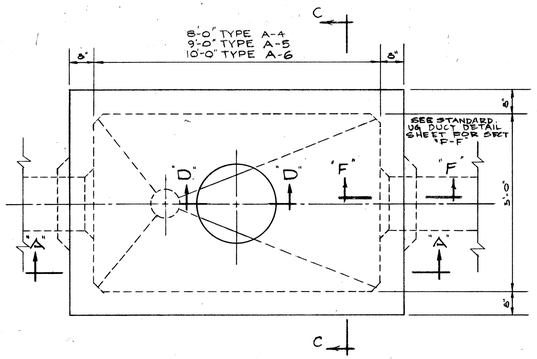
34

LIETZ 1103 ARKWRIGHT TRACING CLOTH 10-60 200P

142

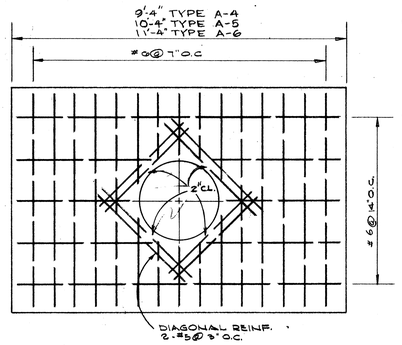
55

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW	U-072-1(3)	1963	123	246
		U-098-1(4)	1963	53	88
		F-090-1(2)	1963	58	93



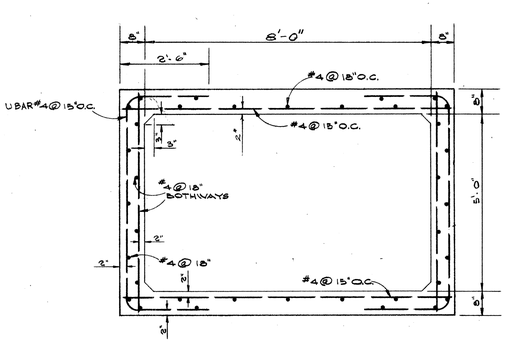
PLAN - M.H. TYPE "A" FOR ROADWAY AREAS

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



ROOF SLAB REINF. PLAN

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

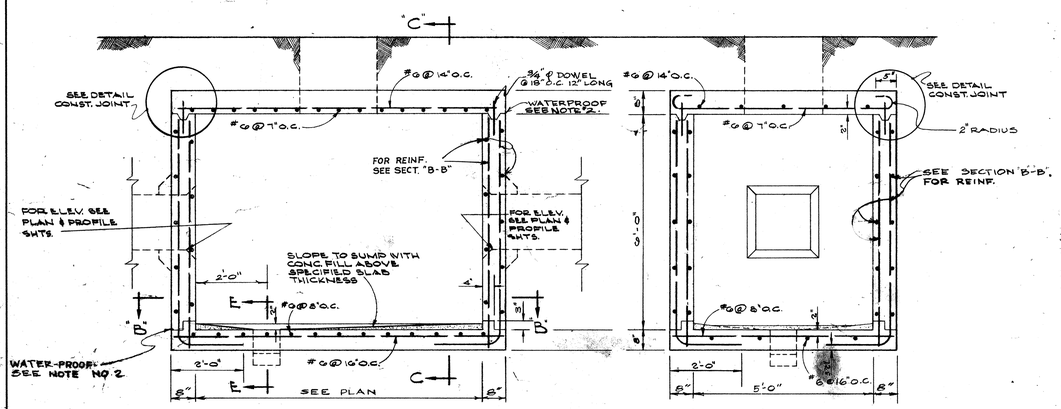


SECTION "B-B" TYPE A-4

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

GENERAL NOTES:

1. DESIGN DATA
   f_s = 20,000 PSI
   f_c = 3,000 PSI ; f_c = 1200 PSI
   n = 10
   W = EQUIV. FLUID PRESS = 30#/FT²
2. ALL CONSTRUCTION JOINTS SHALL BE WATERPROOFED WITH TWO APPLICATIONS OF THORO SEAL OR EQUAL.
3. FOR DUCT WINDOW LOCATION SEE PLAN PROFILE SHEETS FOR ELEVATIONS.
4. DUCT WINDOW TO SUIT. SEE PLAN & PROFILE & STANDARD DETAIL SHEETS FOR LOCATION & DETAILS.
5. FOR DUCT WINDOW DETAILS SEE SECTION "F-F", STANDARD UNDERGROUND DETAIL SHEET. No. 155

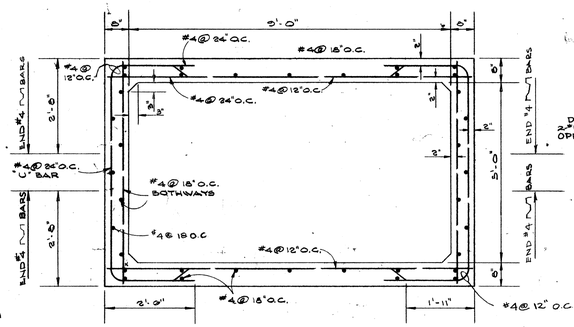


SECTION "A-A"

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

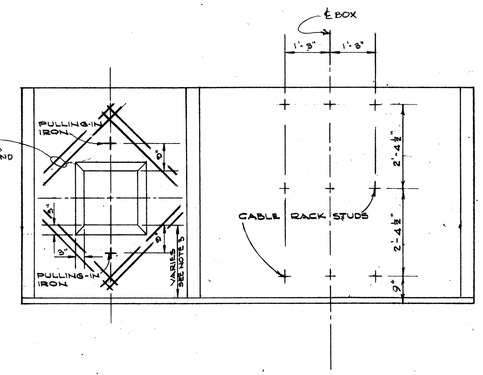
SECTION "C-C"

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



SECTION "B-B" TYPE A-5

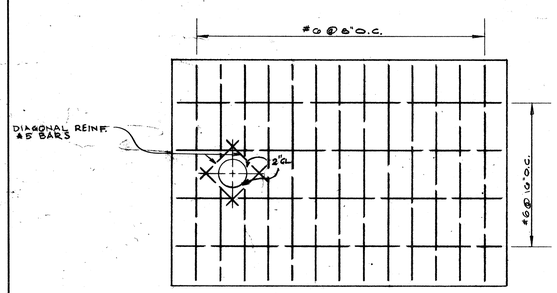
SCALE: $\frac{1}{2}$" = 1'-0"



ELEV. OF INSIDE WALLS - TYPE A-4

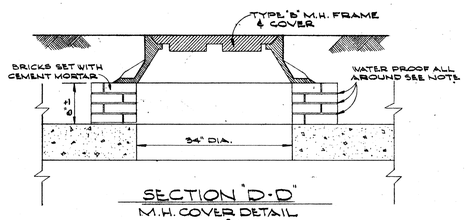
(OPPOSITE FACES SIMILAR)

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



FLOOR SLAB REINF. PLAN

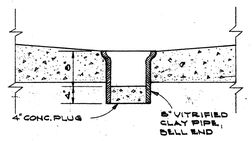
SCALE: $\frac{1}{2}$" = 1'-0"



SECTION "D-D"

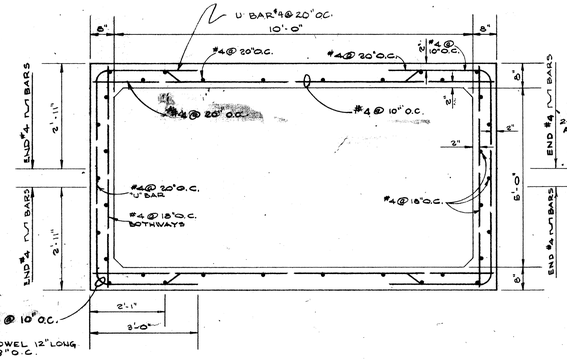
M.H. COVER DETAIL

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



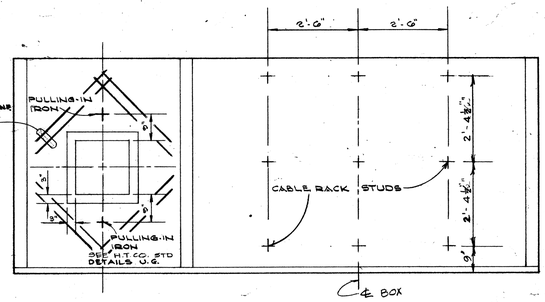
SECTION "E-E"

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



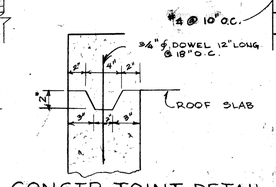
SECTION "B-B" TYPE A-6

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



ELEVATION OF INSIDE WALLS TYPES A-5, A-6

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



CONSTR. JOINT DETAIL

SCALE 1½" = 1'

STANDARD DETAILS
(HAWAIIAN TELEPHONE CO.)
SCALE: AS NOTED DATE: 1963

LUNALILO FREEWAY PROJ. No. U-072-1(3)
VINEYARD BOULEVARD PROJ. No. U-098-1(4)
LILIHA STREET PROJ. No. F-090-1(2)

FILE	DR. JMA	ENG. L FUJINAKA	TYPE 'A' MANHOLES FOR ROADWAY AREAS
ARRANGMENT	CHK. [illegible]	TEL.	
CONSTRUCTION	INDEX	APP'D. [illegible]	
MAINTENANCE	HAWAIIAN TELEPHONE COMPANY HAWAII	DATE	D
TOTAL PRINTS		SHEET OF	

SHEET No. 22 OF 24 SHEETS

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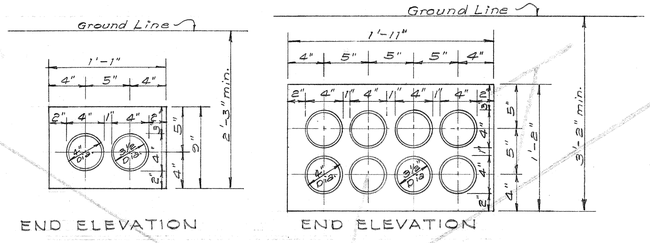
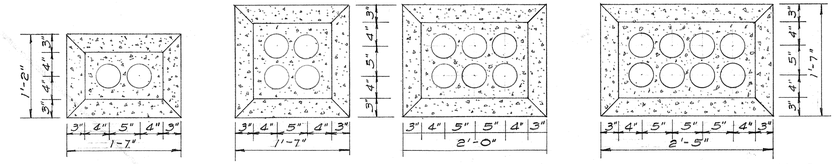
F 090 1020 0.55 U 098 1040 0.53 U 072 1030 0.123



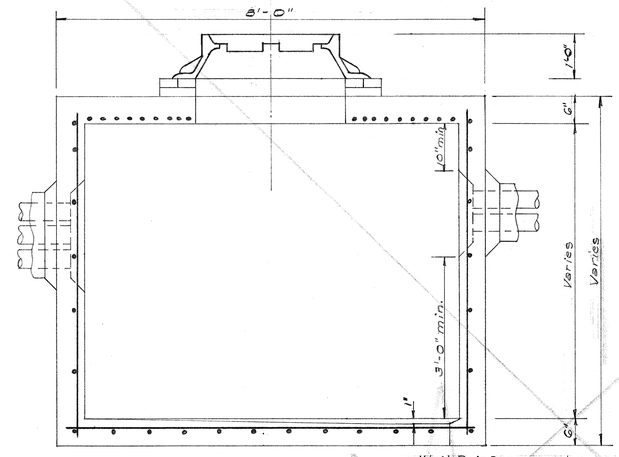
STANDARD DUCT CONSTRUCTION

Scale: 1½" = 1'-0"



DETAIL OF DUCT ENTRANCE

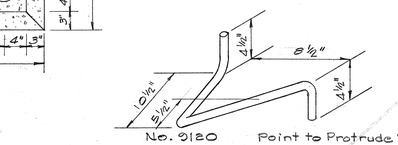
Scale: 1" = 1'-0"



SECTION A-A

Scale: ¾" = 1'-0"

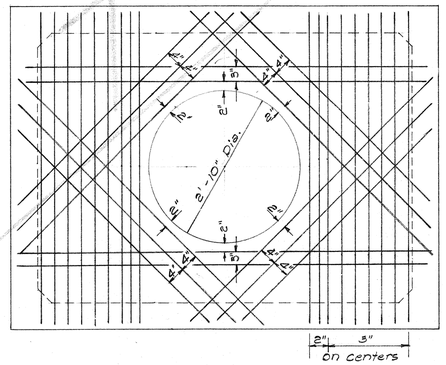
Wall Reinforcement
#3 Deformed Bars:
Horiz. 12" o.c.
Vert. 12" o.c.



No. 9120 Point to Protrude Wall by 5⅛"

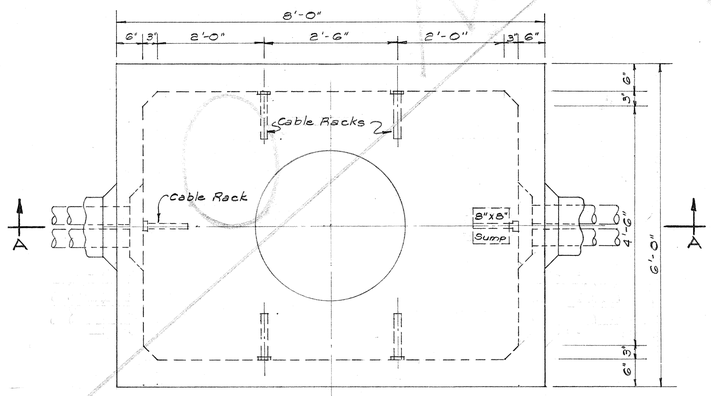
PULLING IRON

Scale: 1½" = 1'-0"
⅞" ϕ Diam. Mild Steel Rod Bent to Shape and Galvanized.



ROOF SLAB

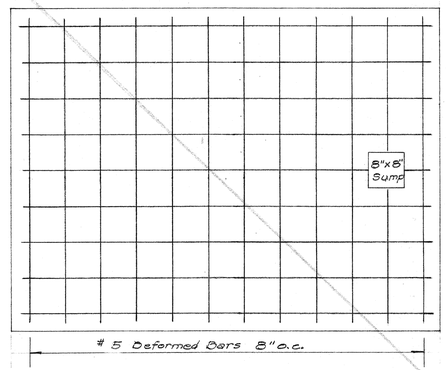
Scale: ¾" = 1'-0"
Place Diagonal Bars on Regular Use #4 Round Deformed Bars.



NOTE:
Cable Stanchions and Pulling Irons to be placed in Locations Designated by H.T. Co.

PLAN VIEW

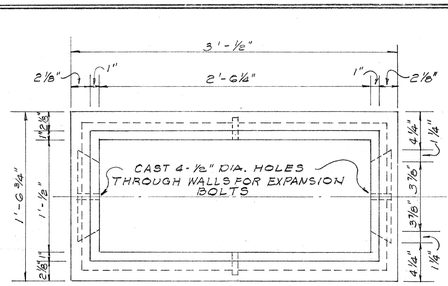
Scale: ¾" = 1'-0"



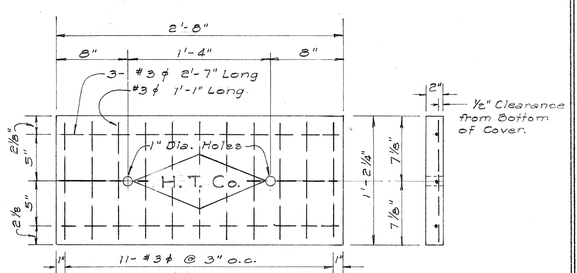
FLOOR SLAB

Scale: ¾" = 1'-0"
5 Round Deformed Bars

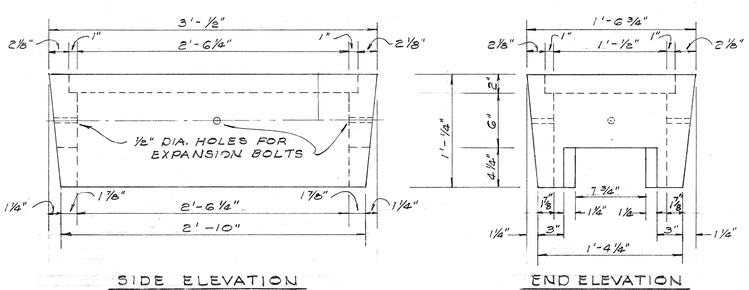
H. T. Co. MANHOLE



PLAN



PLAN OF COVER



SIDE ELEVATION

END ELEVATION

H. T. Co. #513 PULL BOX

Scale: 1½" = 1'-0"

NOTE: H.T.Co. #516 PULL BOX SIMILAR TO H.T.Co's. 1'-6" X 3'-6" CONCRETE SERVICE BOX
For Details See Sheet No 149

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

FED. ROAD DIST. No.	STATE	FED. AID PROJ. No.	FISCAL YEAR	SHEET No.	TOTAL SHEETS
HAWAII	HAW.	U-072-1(3)	1963	124	246
		U-098-1(4)	1963	54	88
		F-090-1(2)	1963	59	93

APPROVED:
T. K. Pruell 3-14-63
PLANT ENGG. SUPV., H.T.CO., LTD. DATE

BELT, COLLINS & ASSOC., LTD.
Civil and Structural Engineers

DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
STATE OF HAWAII

STANDARD DETAILS
(HAWAIIAN TELEPHONE CO.)

LUNALILO FREEWAY U-072-1(3)
VINEYARD BOULEVARD U-098-1(4)

SCALE: 1½"=1'-0" DATE: 1963

SHEET No. 23 OF 24 SHEETS

F090102 00.59 U099S10400.54 U072103 00.124 152

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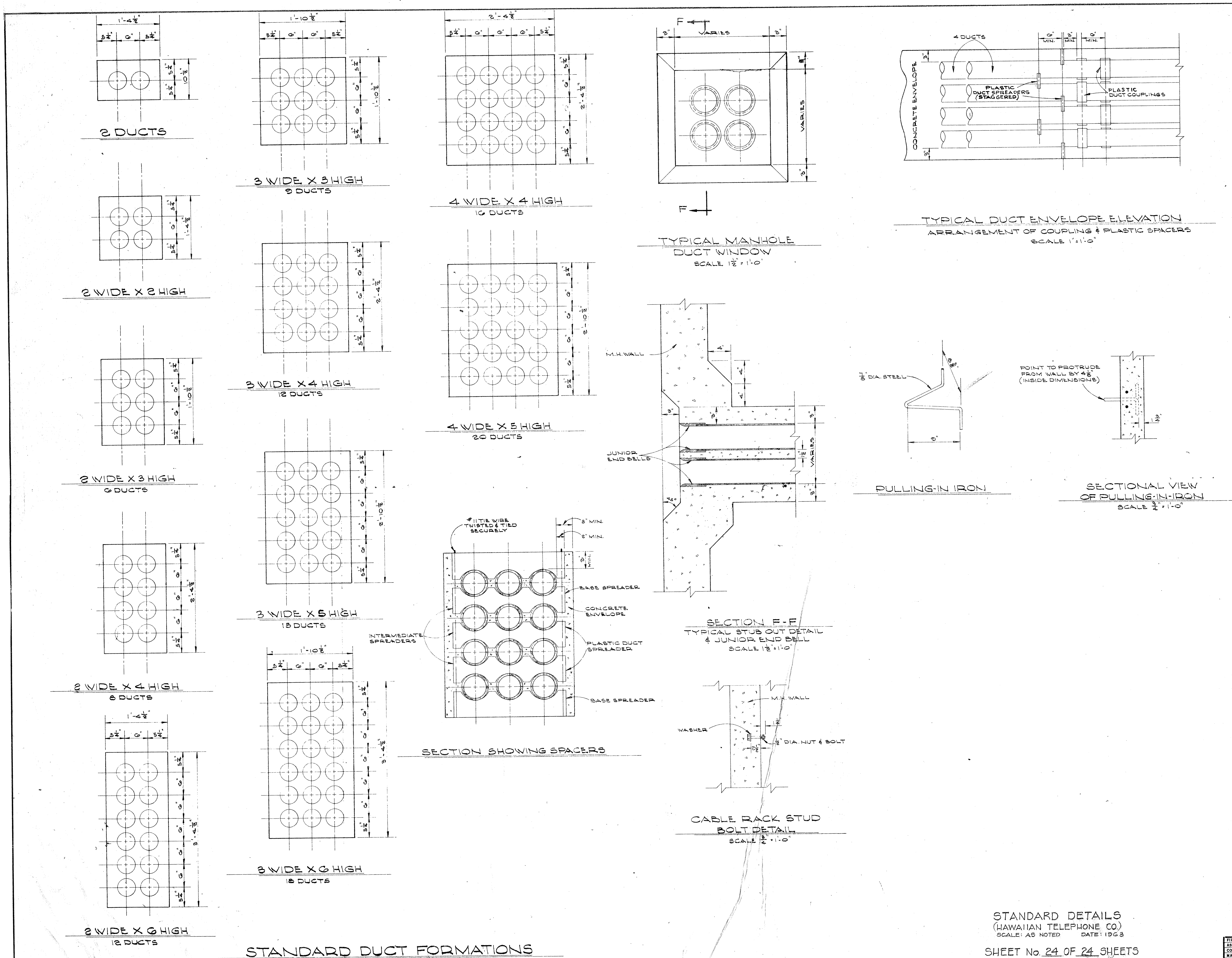
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
HAWAII	HAW	U-072-1(3)	1963	125	246
		U-098-1(4)	1963	55	88
		F-090-1(2)	1963	60	93



2 DUCTS
2 WIDE X 2 HIGH
2 WIDE X 3 HIGH
6 DUCTS
2 WIDE X 4 HIGH
8 DUCTS
2 WIDE X 6 HIGH
12 DUCTS
3 WIDE X 3 HIGH
9 DUCTS
3 WIDE X 4 HIGH
12 DUCTS
3 WIDE X 5 HIGH
15 DUCTS
3 WIDE X 6 HIGH
18 DUCTS
4 WIDE X 4 HIGH
16 DUCTS
4 WIDE X 5 HIGH
20 DUCTS
STANDARD DUCT FORMATIONS
#11 TIE WIRE TWISTED & TIED SECURELY
BASE SPREADER
CONCRETE ENVELOPE
INTERMEDIATE SPREADERS
PLASTIC DUCT SPREADER
SECTION SHOWING SPACERS
VARIES
TYPICAL MANHOLE DUCT WINDOW
SCALE 1½" = 1'-0"
M.H. WALL
JUNIOR END BELLS
SECTION F-F
TYPICAL STUB OUT DETAIL & JUNIOR END BELL
SCALE 1½" = 1'-0"
WASHER
DIA. NUT & BOLT
CABLE RACK STUD BOLT DETAIL
4 DUCTS
CONCRETE ENVELOPE
PLASTIC DUCT SPREADERS (STAGGERED)
PLASTIC DUCT COUPLINGS
TYPICAL DUCT ENVELOPE ELEVATION
ARRANGEMENT OF COUPLING & PLASTIC SPACERS
SCALE 1" = 1'-0"
DIA. STEEL
PULLING-IN IRON
POINT TO PROTRUDE FROM WALL BY 4½" (INSIDE DIMENSIONS)
SECTIONAL VIEW OF PULLING-IN-IRON

STANDARD DETAILS
(HAWAIIAN TELEPHONE CO.)
SCALE: AS NOTED DATE: 1963

SHEET No. 24 OF 24 SHEETS

LUNALILO FREEWAY PROJ. No. U-072-1(3)
VINEYARD BOULEVARD PROJ. No. U-098-1(4)
LILIHA STREET PROJ. No. F-090-1(2)

FILE
ASSIGNMENT
CONSTRUCTION
MAINTENANCE
TOTAL PRINTS

DR. JMS ENG. [illegible]
CHK. TEL.
INDEX APP'D. [illegible]

HAWAIIAN TELEPHONE COMPANY
HAWAII

DUCT FORMATION AND MANHOLE DETAILS

DATE DEC 19 '60
SHEET 4 OF 4

D