

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) Unit 2	1967	26	83

GENERAL NOTES ~ WATER

- The Contractor shall notify the Board of Water Supply in writing one week prior to commencing work on the water system.
- The Contractor shall arrange with the Board of Water Supply to cut off existing unused service laterals and remove meter boxes and appurtenances prior to commencement of clearing and grading operations. Contractor to provide all necessary excavation.
- Items indicated as "salvage" on the plans shall be removed, cleaned, and returned to B.W.S. Heeia Store Yard by the Contractor.
- Items indicated as "relocate" on the plans shall be removed, cleaned, painted and reinstalled at the new location by the Contractor unless otherwise specified.
- Asterisk (*) indicates work to be performed by B.W.S. Materials to be furnished by the Contractor unless specified as "relocate".
- All excavation and backfill shall be done by the Contractor, including excavation for the relocation and lowering of existing main and for meter to consumer's service pipe.
- The minimum clearance between fire hydrants and utility poles or light standards shall be 3.0 feet.
- The locations of existing water mains and appurtenances shown on the plans are approximate only. Any adjustment to the water mains and appurtenances whether shown on the construction plans or not shall be made and paid for by the project.
- The Contractor shall plug the ends of abandoned water mains with class "C-1" concrete. Payment for class "C-1" concrete used as plugs shall be considered incidental to the various contract items for the water system.
- Prior to final inspection, all fire hydrants shall be cleaned of all oil, grease, dirt or other loose material and given one coat of an approved red lead and one coat of an approved aluminum hydrant paint.

GENERAL NOTES ~ SEWER

- The Contractor shall notify the Division of Sewers in writing 2 working days prior to commencing work on the sewer system.
- Existing sewer lines and manholes shown on the plans are approximate only. The Contractor shall verify their actual locations and shall make adjustments to any new or existing sewer facility as directed by the Engineer.

GENERAL NOTES ~ EXISTING TEL - ELEC.

- All existing utility poles to remain in-place. Contractor to work around poles.
- Relocation of utility poles to be done by others.

GENERAL NOTES ~ SIGNAL CORPS (HTCo.)

- The Contractor shall notify Hawh. Tel. Co. in writing 10 working days prior to commencing work on their utility system.
- Existing Signal Corps facilities shown on these plans are approximate only. The Contractor shall verify their actual locations and shall make adjustments to any new or existing facility as directed by the Engineer.
- Ducts encased in concrete jacket:
 - Normal distance from face of jacket to all ducts to be 3" minimum.
 - Clear distance of 1/2" minimum between ducts
- Unless otherwise shown on the plans, the minimum depth of duct lines from finished grade to:
 - Top of concrete jacket where ducts are concrete encased = 2'-0"
- Final depth of all pull boxes and handholes shall be determined in the field by the Engineer.
- Existing cables which are to remain in place during construction shall be handled by the utility Company's men only. The Contractor shall exercise caution to avoid disturbances to the cables or temporary guards erected by the utility company.

GENERAL NOTES ~ GAS

- On this project the relocation of the gas system will be done by the utility company's forces or its Contractor. The State's Contractor and the utility company shall mutually coordinate the work to minimize conflicts and delays to either party.
- The existing gas lines shown on the plans are approximate only. The State Contractor shall use precaution when working in the Vicinity of the gas lines.
- Cutting, plugging and reconnecting of live gas lines will be done by the Honolulu Gas Company, Ltd.
- There shall be at least 6" clearance between any gas line and any underground structure not used in conjunction with the gas line. If this clearance cannot be attained, the gas line shall be protected with a Honolulu Gas Company Ltd., approved insulating material.

UTILITY LEGEND

- E.P. Existing Electric or Telephone Pole
- ⊗ E.P. Existing Electric or Telephone Pole to be removed
- E.P. New Electric or Telephone Pole
- E.P. Existing Electric or Telephone Pole with existing Anchor
- E.P. Existing Electric or Telephone Pole with new Anchor
- E.P. New Electric or Telephone with new Anchor.
- P.B. Existing Pull Box or Service Box
- S.B. New Pull Box or Service Box
- ▬ Reinforced or nonreinforced concrete encased ducts.
- ▨ Existing ductline.
- New direct burial ductline.
- W6 — Existing water line
- W—G — New water line
- S—G — New Sewer line
- - - # - - - Cut existing Sewer, Water or Gas line
- - - AIP - - - Cut and abandon in place existing Sewer, Water or Gas lines
- Existing (Water, Sewer, Gas) Manhole
- New (Water, Sewer, Gas) Manhole
- - - □ - - - Existing Water Meter
- - - ■ - - - New Water Meter
- ⊕ Existing Fire Hydrant
- Sc — Existing Signal Corps Cable
- SD — 24—Proposed Storm Drain Line
- G2 — Existing Gas Line
- G — 2 — New Gas Line

APPROVED:	
<i>D. Nagato</i> ^{2d.}	10/12/67
CHIEF, ENGINEERING DIV. BWS.	DATE
<i>X. Chang</i>	10/10/67
SEWER SYSTEM DIRECTOR, DIV. OF SEWERS	DATE
<i>David C. Vaughan</i>	10/11/67
HONOLULU GAS Co. Ltd.	DATE
<i>J. H. Quill</i>	10-10-67
HAWAIIAN TELEPHONE Co. Ltd.	DATE

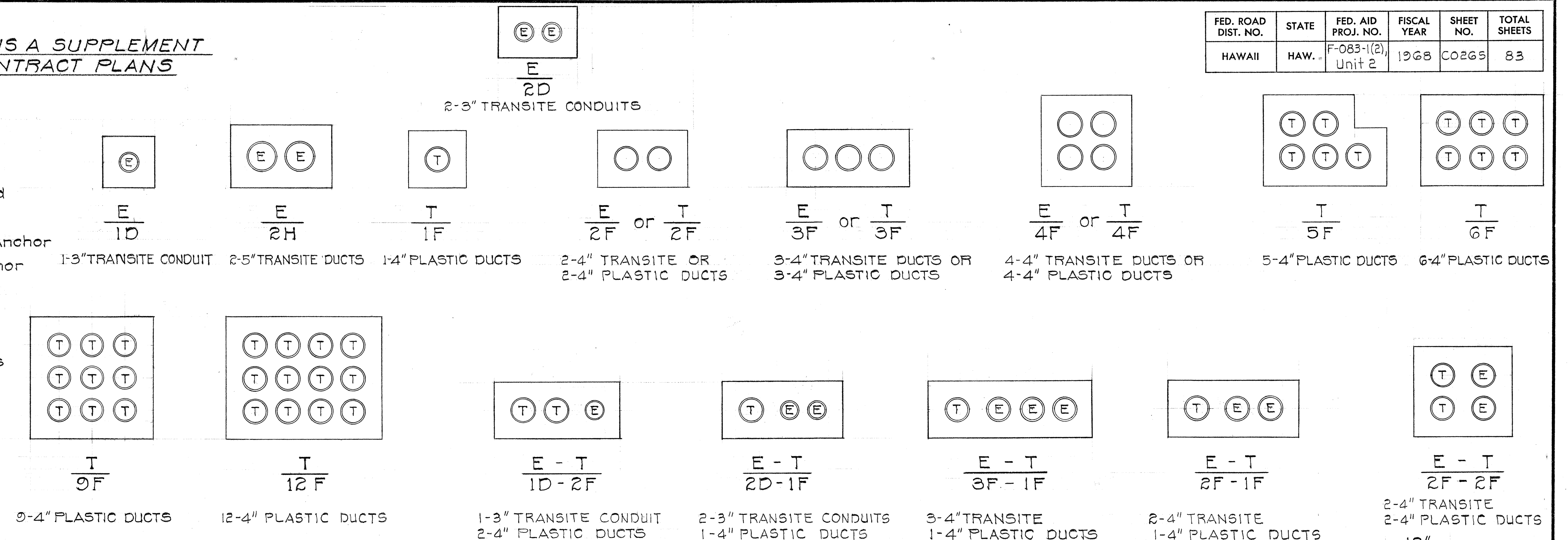
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
UTILITY GENERAL NOTES
SEWER — GAS — WATER
SIGNAL CORPS
KAMEHAMEHA HIGHWAY
F.A. Proj. No. F-083-1(2), Unit 2
Scale: As Noted Date: Aug. 1967
SHEET No. 1 OF 18 SHEETS

THIS SHEET IS A SUPPLEMENT
TO THE CONTRACT PLANS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2), Unit 2	1968	C0265	83

UTILITY LEGEND

- E.P. Existing Electric or Telephone Pole
- ✕ E.P. Existing Electric or Telephone Pole to be removed
- E.P. New Electric or Telephone Pole
- E.P. Existing Electric or Telephone Pole with existing Anchor
- E.P. Existing Electric or Telephone Pole with new Anchor
- E.P. New Electric or Telephone Pole with new Anchor
- P.B. Existing Pull Box or Service Box
- S.B. New Pull Box or Service Box
- ▬ Reinforced or nonreinforced concrete encased ducts
- ▬ Existing ductline
- New direct burial ductline
- ▬ A.I.P. Existing ductline abandon in place



GENERAL NOTES - ELECTRIC AND TELEPHONE

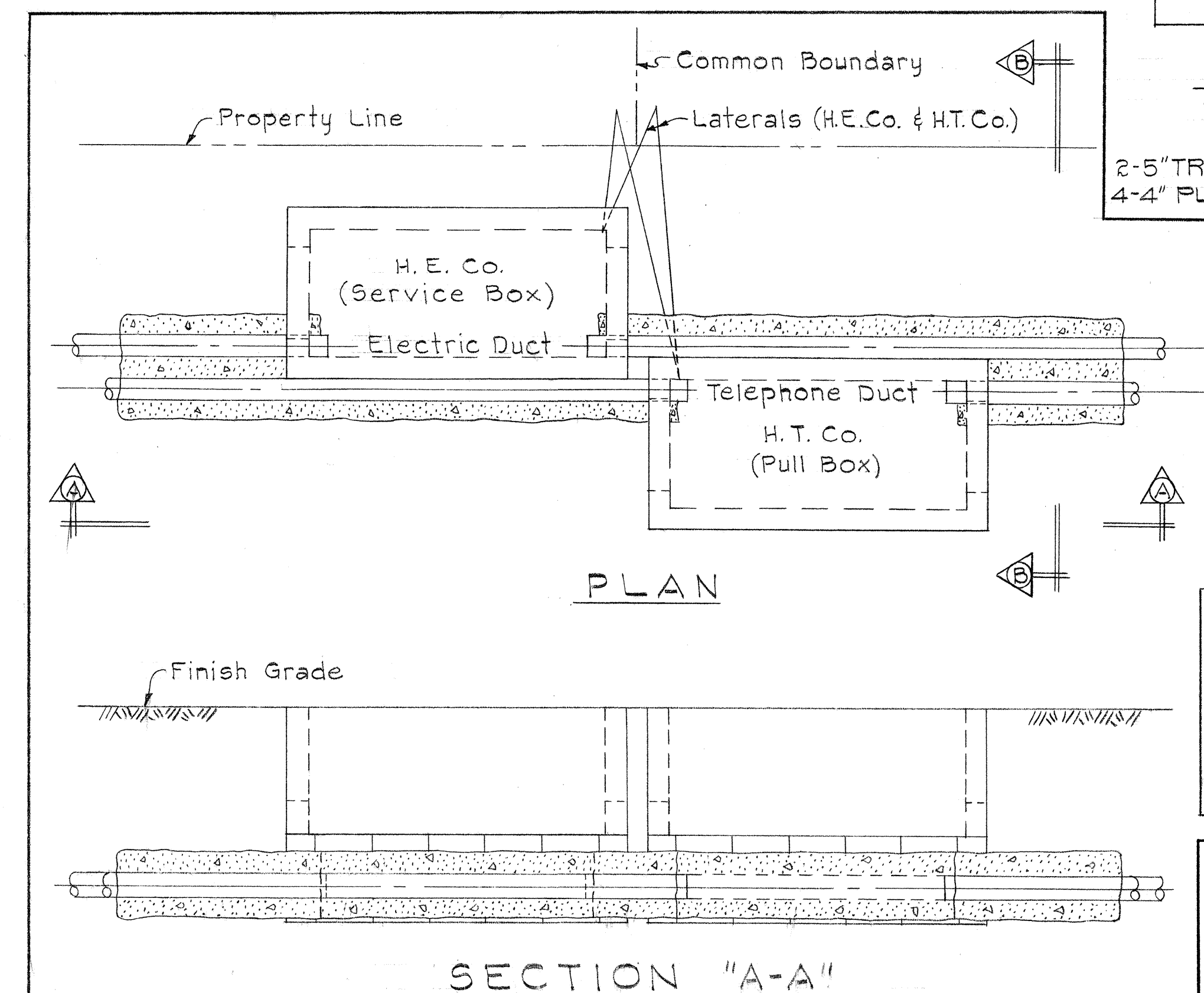
- The Contractor shall notify each utility in writing 10 working days prior to commencing work on their respective utility system.
- Existing electric and telephone facilities shown on these plans are approximate only. The Contractor shall verify their actual locations and shall make adjustments to any new or existing facility as directed by the Engineer.
- The Contractor shall notify the affected property owners at least one week in advance as to the time and duration the trenching and installing of underground electric and telephone service will be performed in their property.
- Ducts encased in concrete jacket:
 - Normal distance from face of jacket to all ducts to be 3" minimum.
 - Clear distance of 1 1/2" minimum between ducts of same utility Company.
 - Clear distances of 3" minimum between H.E.Co. and H.T.Co. ducts.
- Unless otherwise shown on the plans, the minimum depth of duct lines from finished grade:
 - Top of concrete jacket where ducts are concrete encased = 2'-0"
 - Top of ducts (direct burial) - in property 1'-6" - in sidewalk 2'-0"
 - Top of steel conduits (direct burial) = 1'-6"
- Final depth of all pull boxes, service boxes, handholes and manholes shall be determined in the field by the Engineer.
- Anchor holes shall be backfilled by the Contractor.
- Existing utility cables remaining in place during construction shall be handled by the utility Company's men only. The Contractor shall exercise caution to avoid disturbances to the cables or temporary guards erected by the utility company.
- Hawaiian Telephone Co. conduit bends, that connect directly from pullbox or handhole to pole shall be direct burial, the payment of which shall be incidental to the installation of the pullbox, handhole, or to pole excavation.
- Where the plans show a tap or an interception into an existing ductline the Contractor shall first expose the ductline; the utility company will break into the encasement; the Contractor shall then finish the work. All work and materials shall be incidental to the ductline, service box or handhole for which the work is being done.
- Ductline profiles are drawn for Kamehameha Highway crossings only, all other ductlines shall follow Note 5 above or in the case of under roadway crossings, the top of encasement shall be 6" below existing subgrade.
- Where possible, slope ductline to drain towards Pullbox, Service Box, Handhole or Manhole.
- All utility installations for this project are for the Hawaiian Electric Company unless otherwise noted.
- The furnishing and installing of precast handhole will be paid for at the contract unit price each for "Furnishing and Installing (3 ft. x 5 ft.) Precast Concrete Handhole With Steel Frame Covers and Miscellaneous Metals for HECO", which price shall be full compensation for furnishing and installing the handhole complete in place, for excavation and backfill, and for all materials, labor, equipment, tools and incidentals necessary to complete the work.

LEGEND FOR CONDUIT

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

DUCTLINE SECTIONS

SCALE: Not to Scale



TYPICAL DETAIL LAYOUT OF SERVICE & PULL BOX

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

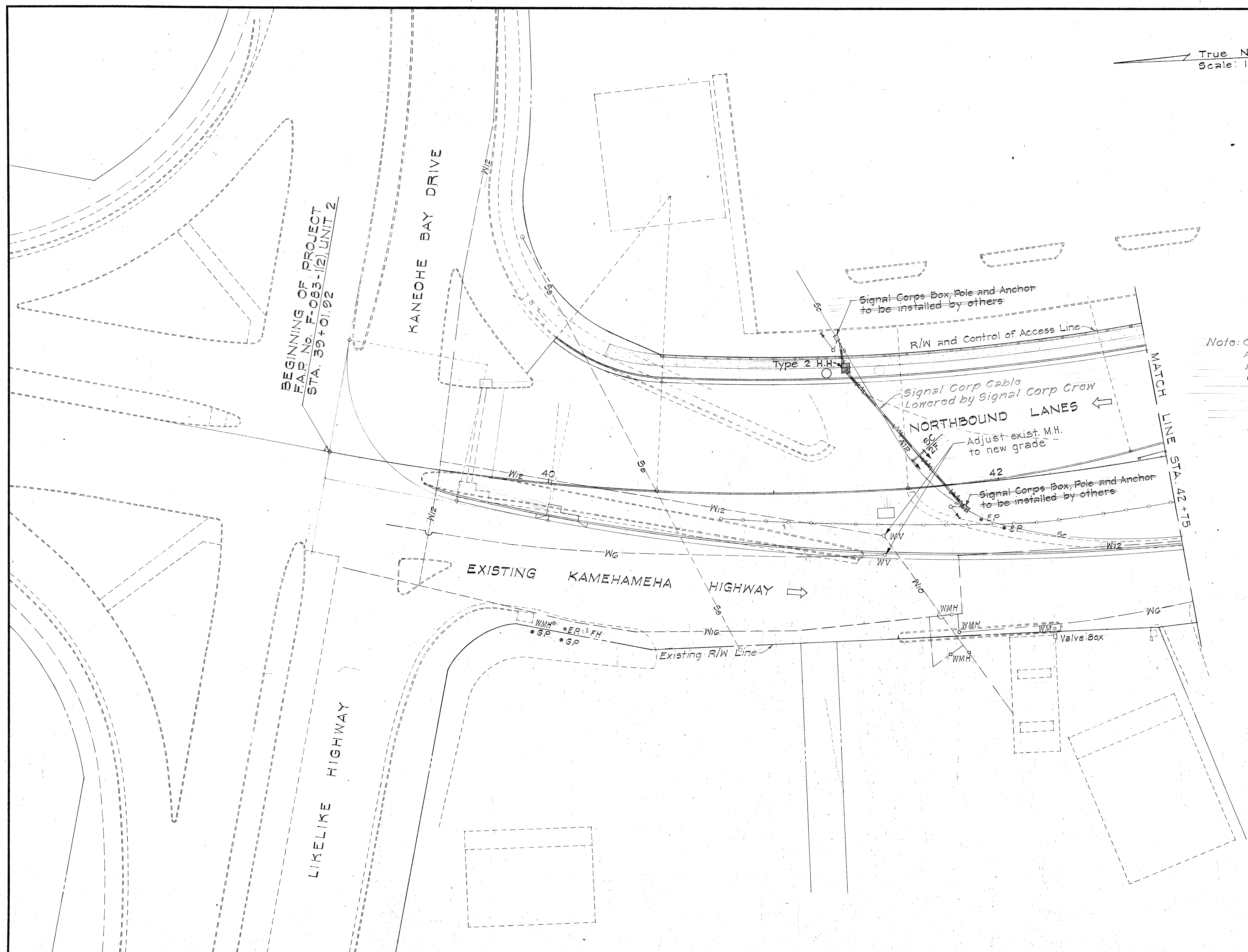
APPROVED:
HAWAIIAN ELECTRIC CO., INC. 9/15/68
HAWAIIAN TELEPHONE CO., LTD. 9/15/68
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
UTILITIES
ELECTRIC - TELEPHONE
General Notes - Miscellaneous Details
KAMEHAMEHA HIGHWAY
F-083-1(2), Unit 2
Scale: As Noted Date: March, 1968
SHEET No. OF SHEETS

C0265

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2)	1967	27	83
Unit 2					

True North
Scale: 1" = 20'



Note: Contract Work for Relocation of Army Signal Corp System Deleted by C.C.O. #4 Cancellation of Utility Agreement No. 94

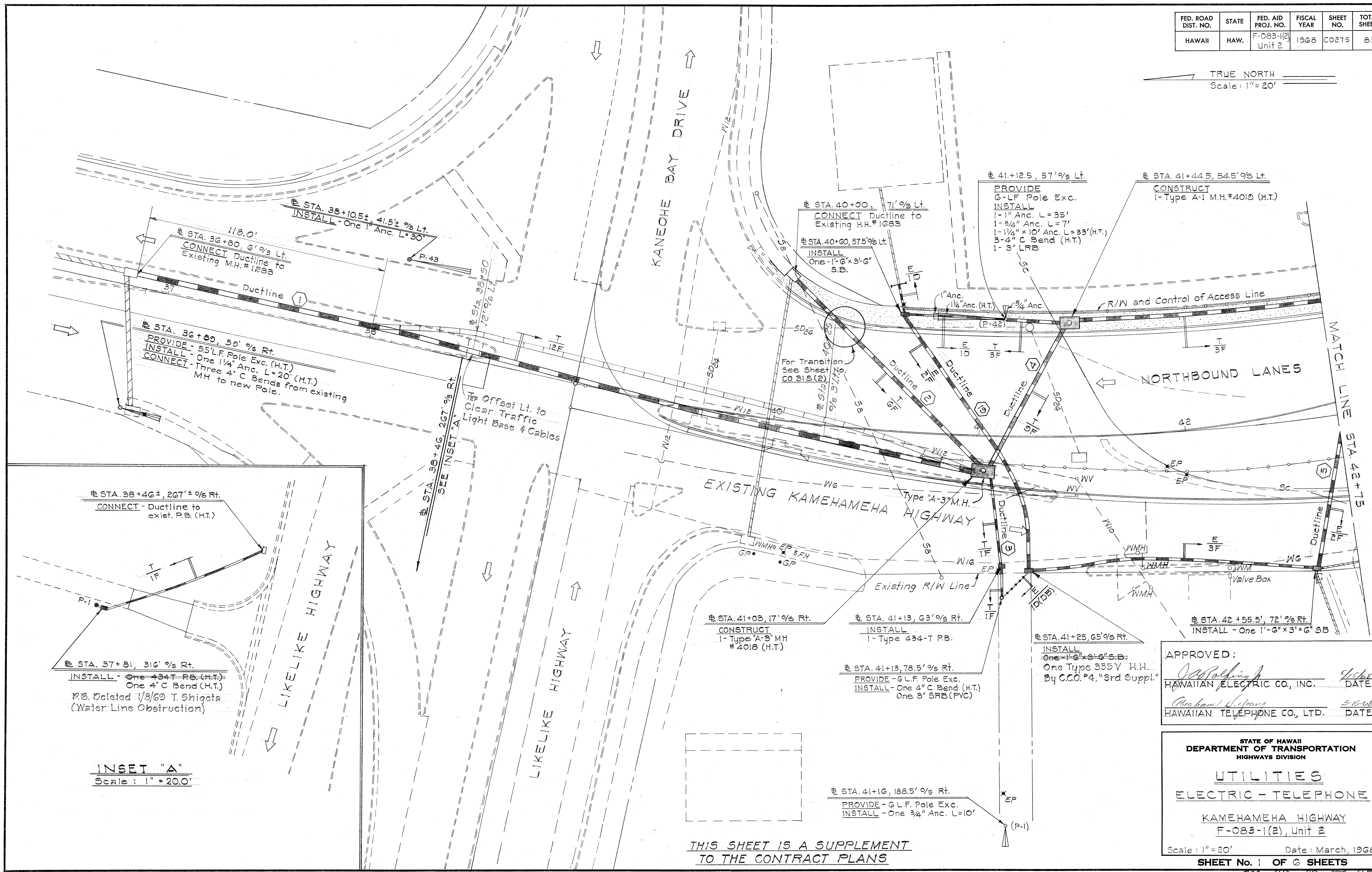
APPROVED: *R. Nagata* 10/12/67
CHIEF, ENGINEERING DIVISION BWS. DATE
J. J. Judd 10-10-67
HAWAIIAN TELEPHONE CO. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
UTILITY RELOCATION PLAN
WATER — SIGNAL CORPS
KAMEHAMEHA HIGHWAY
FA Proj. No. F-083-1(2), Unit 2
Scale: As Noted Date: Aug. 1967
SHEET No. 2 OF 18 SHEETS

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) Unit 2	1968	00278	03

TRUE NORTH
Scale: 1" = 20'



INSET "A"
Scale: 1" = 20.0'

THIS SHEET IS A SUPPLEMENT
TO THE CONTRACT PLANS

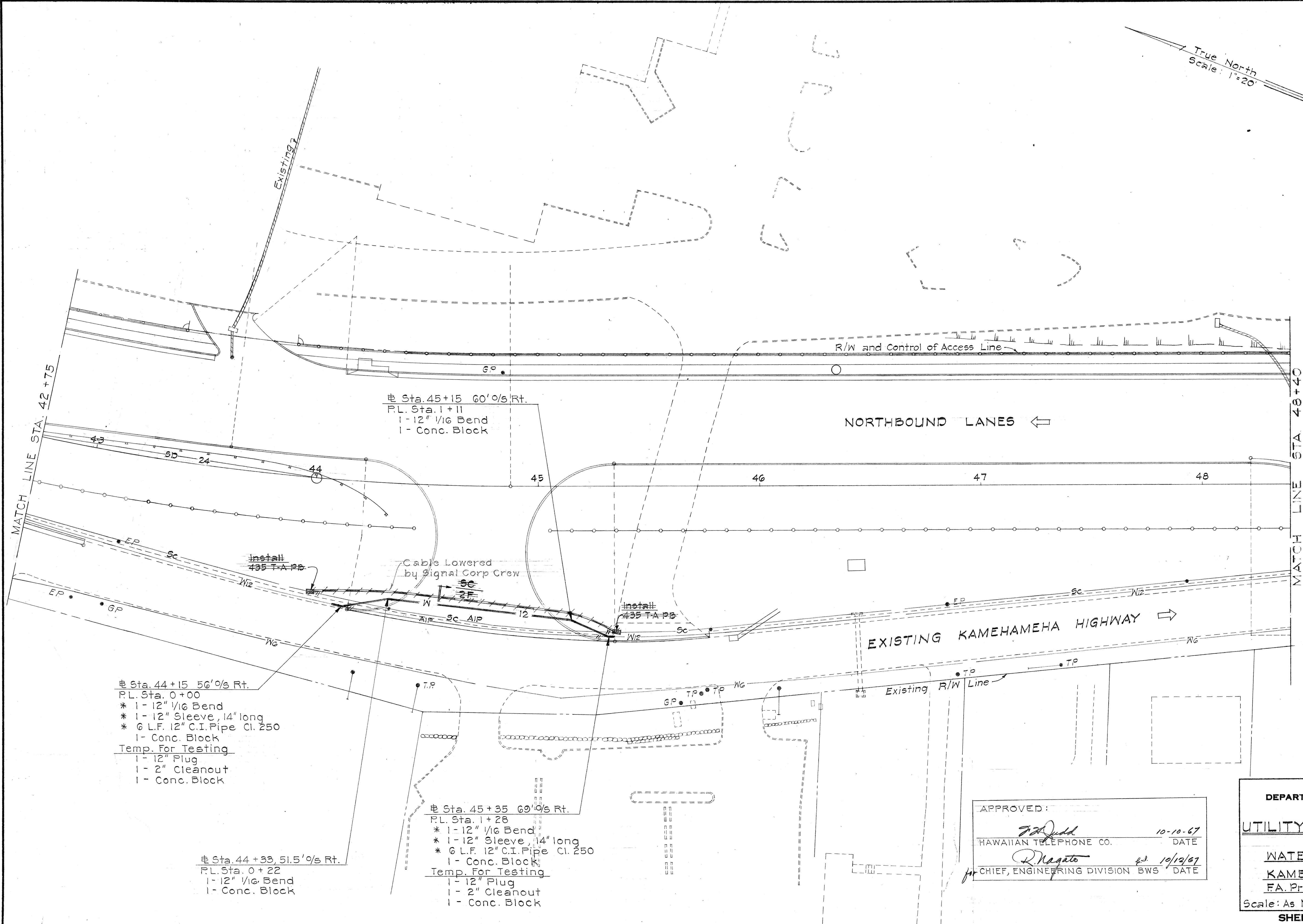
APPROVED:
[Signature] 4/15/68
HAWAIIAN ELECTRIC CO., INC. DATE
[Signature] 5-15-68
HAWAIIAN TELEPHONE CO., LTD. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
UTILITIES
ELECTRIC - TELEPHONE
KAMEHAMEHA HIGHWAY
F-083-1(2), Unit 2
Scale: 1" = 20' Date: March, 1968
SHEET No. 1 OF 6 SHEETS

SURVEY PLOTTED BY	DATE
DESIGNED BY	
NOTED 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.	F-083-12	1967	28	83
Unit 2					

True North
Scale: 1"=20'

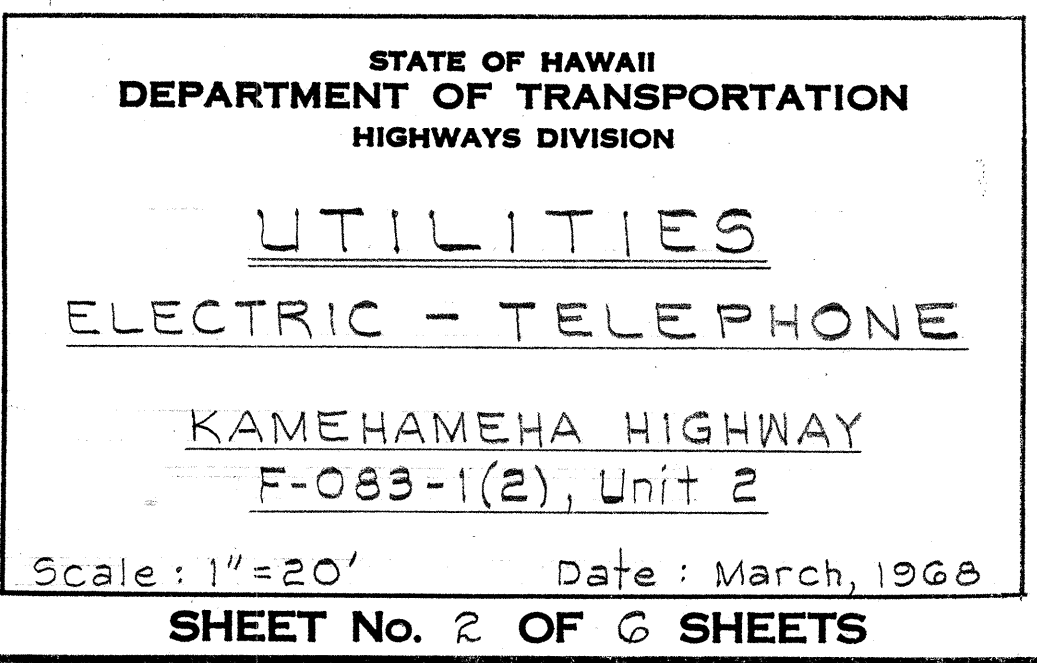


APPROVED: *[Signature]* 10-10-67
 HAWAIIAN TELEPHONE CO. DATE
[Signature] 10/12/67
 CHIEF, ENGINEERING DIVISION BWS DATE

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
UTILITY RELOCATION PLAN
 WATER - SIGNAL CORPS
 KAMEHAMEHA HIGHWAY
 F.A. Proj. No. F-083-12, Unit 2
 Scale: As Noted. Date: Aug. 1967
SHEET No. 3 OF 18 SHEETS

DIST. NO.	
HAWAII	HAW.

TRUE NORTH
Scale: 1" = 20'



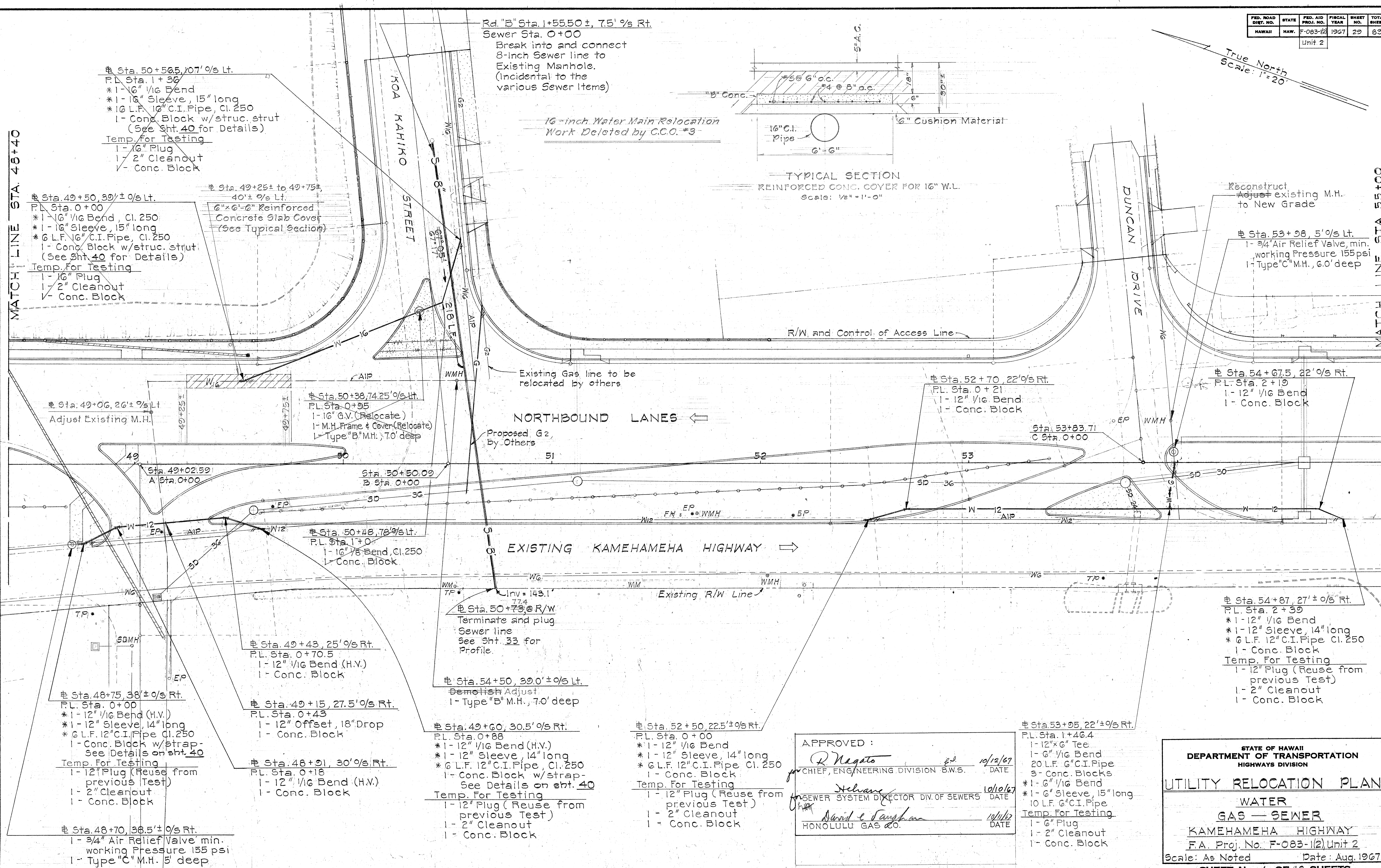
APPROVED : *James L. King* 5/15/68
HAWAIIAN ELECTRIC CO., INC. DATE

Charles L. King 5/15/68
HAWAIIAN TELEPHONE CO., LTD. DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-12	1967	29	83
		Unit 2			

Unit 2

True North
Scale: 1" = 20'



APPROVED :		
<i>R. Nagato</i>	<i>g.d.</i>	<i>10/12/67</i>
CHIEF, ENGINEERING DIVISION	B.W.S.	DATE
<i>H. Evans</i>		<i>10/10/67</i>
SEWER SYSTEM DIRECTOR	DIV. OF SEWERS	DATE
<i>David L. Tangham</i>		<i>10/11/67</i>
HONOLULU GAS CO.		DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

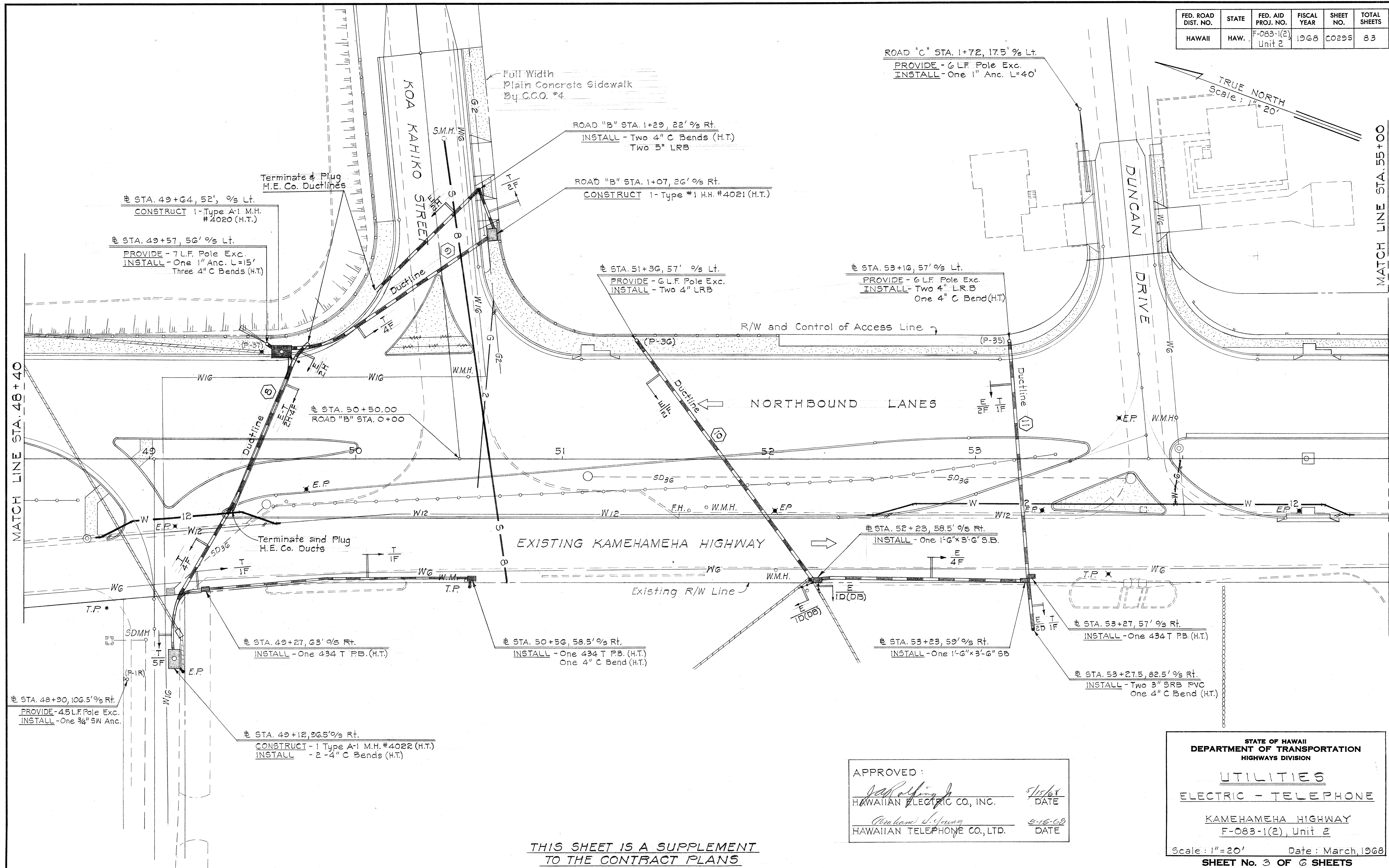
UTILITY RELOCATION PLAN

WATER
GAS — SEWER
KAMEHAMEHA HIGHWAY
F.A. Proj. No. F-083-1(2) Unit 2

Scale: As Noted Date: Aug. 1967

SHEET No. 4 OF 18 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) Unit 2	1968	00295	83



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

APPROVED:

[Signature] 5/15/68
HAWAIIAN ELECTRIC CO., INC. DATE

[Signature] 5-16-68
HAWAIIAN TELEPHONE CO., LTD. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITIES
ELECTRIC - TELEPHONE

KAMEHAMEHA HIGHWAY
F-083-1(2), Unit 2

Scale: 1"=20' Date: March, 1968
SHEET No. 3 OF 6 SHEETS

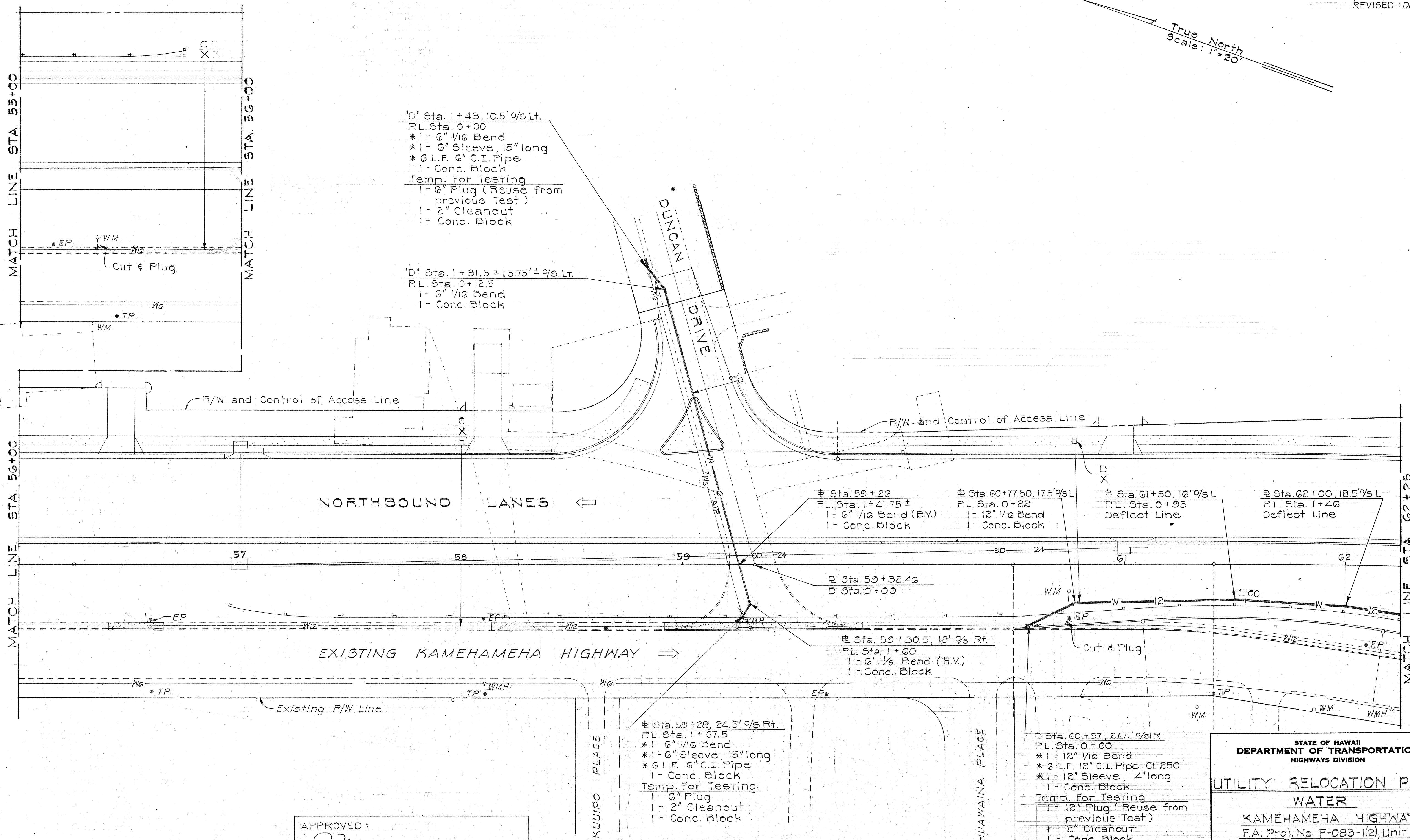
THIS SHEET IS A SUPPLEMENT
TO THE CONTRACT PLANS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-12	1967	30	83

Unit 2

REVISED: Dec. 29, 1967

True North
Scale: 1"=20'



APPROVED :
R. Nagata
for CHIEF, ENGINEERING DIVISION B.W.S. DATE 10/12/67

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
UTILITY RELOCATION PLAN
WATER
KAMEHAMEHA HIGHWAY
F.A. Proj. No. F-083-12, Unit 2
Scale: As Shown Date: Aug. 1967
SHEET No. 5 OF 18 SHEETS

0030

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) Unit 2	1968	C0306	83

TRUE NORTH
Scale: 1" = 20'

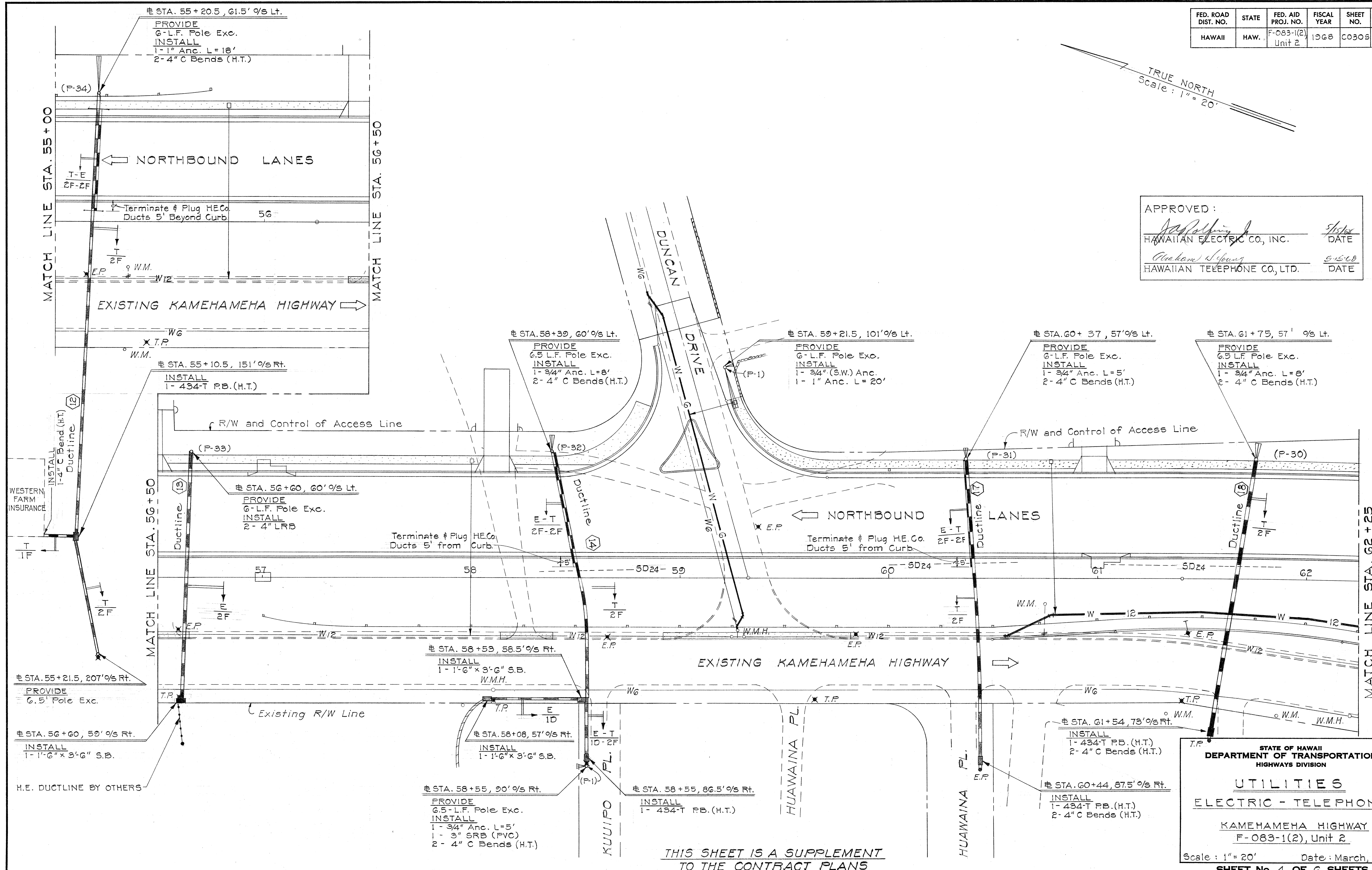
APPROVED:

Joseph S. Young
HAWAIIAN ELECTRIC CO., INC.

5/15/68
DATE

William S. Young
HAWAIIAN TELEPHONE CO., LTD.

5-15-68
DATE



THIS SHEET IS A SUPPLEMENT
TO THE CONTRACT PLANS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITIES
ELECTRIC - TELEPHONE

KAMEHAMEHA HIGHWAY
F-083-1(2), Unit 2

Scale: 1" = 20' Date: March, 1968
SHEET No. 4 OF 6 SHEETS

C0306

DATE
DRAWN BY
DESIGNED BY
NOTED BY
CHECKED BY

REVISED: Dec. 29, 1967

KANE OHE ELEMENTARY SCHOOL

1 - 12" x 6" Tee
 1 - G.V. (Relocate)
 1 - M.H. Frame & Cover (Relocate)
 1 - Type "C" M.H., 5' deep
 1 - Conc. Block
 Demolish
 1 - Type "C" M.H., 5' deep

电 Sta. 66+74, 68.5' 9/3 Rt.
 PL Sta. 1 + 06
 * 1-12" 1/8 Bend
 * 1-12" Sleeve, 14" long
 * @ L.F. 12" C.I. Pipe, Cl. 25
 1 - Conc. Block
Temp. For Testing
 1-12" Plug (Reuse from
 previous Test)
 1-2" Cleanout
 1 - Conc. Block

UTILITY RELOCATION PLAN

WATER

KAMEHAMEHA HIGHWAY
F.A. Proj. No. F-083-1(2), Unit 2

Scale: As Noted Date: Aug. 1967

SHEET No. 6 OF 18 SHEETS

C O 31

"F" Sta. 1 + 22
PL. Sta. 0 + 00
* 1 - 6" 1/16 Bend
* 1 - 6" Sleeve, 15" long
* 6 L.F. 6" C.I. Pipe
1 - Conc. Block
Temp. For Testing
1 - 6" Plug. (Reuse from
previous Test)
1 - 2" Cleanout
1 - Conc. Block

"E" Sta. 1+10.5
P.L. Sta. 0+16
1 - 6" 1/16 Bend
1 - Conc. Block

电 Sta. 63+50
P.L. Sta. 1+30
1- 6" 1/16 Bend (B.V.)
1- Conc. Block

Sta. 63 + 57.5, 20' 0" s Rt.
P.L. Sta. 1 + 55
1 - 6" 1/16 Bend (T.V.)
1 - Conc. Block

Sta. 65+33, 60'0" Rt.
P.L. Sta. 4+87
* 1-12" 1/8 Bend
* 1-12" Sleeve, 14" long
* G.L.F. 12" C.I. Pipe, Cl. 250
1- Conc. Block (w/ strap
See Sht. 40 for Details)
Temp. for Testing
1-12" Plug (Reuse from
previous Test)
1- 2" Cleanout
1- Conc. Block

Existing H.T.Co. and H.E.Co
Ductline

By B.W.S. w/ Contractor
to perform Excavation
and Backfill

"E" Sta.
P.L. Sta.
1 - 3/4" Air Relief Valve, min.
working Pressure 155 psi
1 - Type "C" M.H., 4' Deep

电 Sta. 63+60, 27' 0" S Rt.
P.L. Sta. 1+63
1 - 6" 1/16 Bend
1 - Conc. Block

Sta. 65+	17.45' O/S Rt.
P.L. Sta. 4	+ 63
1 - 12" 1/8	Bend
1 - Conc	Block

Temp. For Testing

- 1- 6" Plug (Reuse from previous Test)
- 1- 2" Cleanout
- 1- Conc. Block

Sta. 63+30.68
Sta. 0+00

Sta. 63 + 60, 32' 0" S Rt
P.L. Sta. 1 + 68
1 - Type "C" M.H. 5' deep
1 - G.V. (Relocate)
1 - M.H. Frame & Cover
(Relocate)

Elect. Sta. 63+27 35' 0" S Rt.
FL Sta. 2+72.50
Install Fire Hydrant
 1- 12"x 6" Tee
 1- 6" G.V. (Relocate)
 1- 6" 1/4 Bend
 1- F.H. (Relocate)
 1- M.H. Frame & Cover (Relocate)
 1- Type "C" M.H. 5' deep
 15 L.F. 6" C.I. Pipe
 3- Conc. Blocks
Demolish
 1- Type "C" M.H. 5' deep /

Sta. 63+60, 37.5' o/s Rt.
P.L. Sta. 3+05
1 - 12" x 6" Tee
1 - Conc. Block

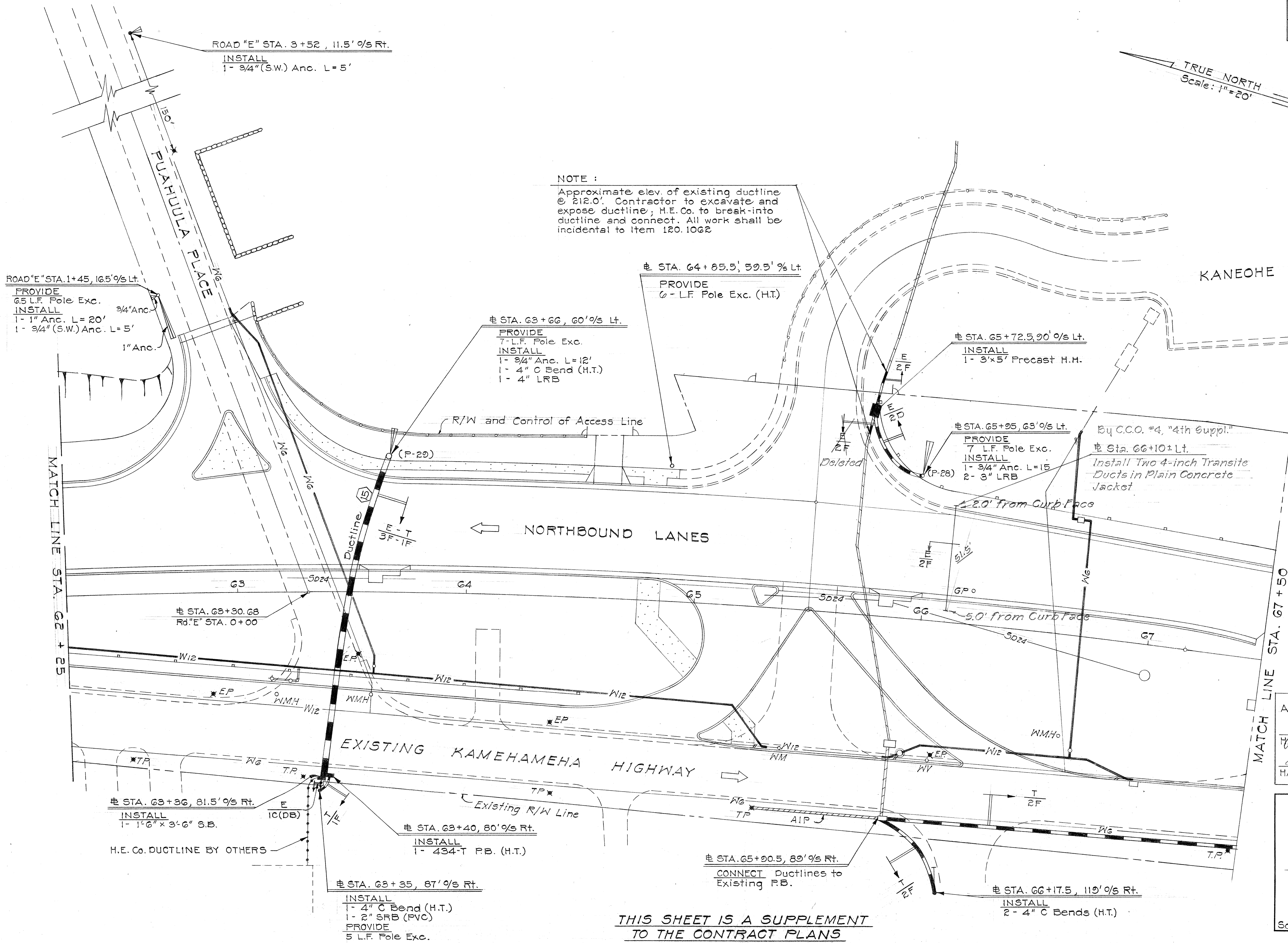
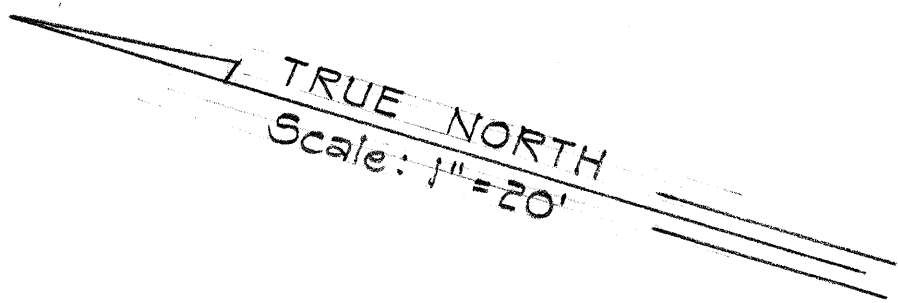
Elect Sta. 63 + 60, 44.5' O/S Rt.
Demolish
1- Type "C" M.H. 5' deep

1- Sta. G5 + 80, 60' o/s Rt.
 P.L. Sta. 0 + 00
 * 1- 12" 1/16 Bend
 * 1- 12" Sleeve, 14" long
 * 6- L.F. 12" C.I. Pipe, Cl. 250
 1- Conc. Block
Temp. For Testing
 1- 12" Plug (Reuse from
 previous Test)
 1- 2" Cleanout
 1- Conc. Block

@ Sta. 65+25.56' @ Rt.
 RL Sta. 0+07
 1- 12" G.V. (Relocate)
 1- M.H. Frame & Cover (Relocate)
 1- Type "B" M.H. 5' deep
 1- Conc. Block
 1- 3/4" Air Relief Valve, min.
 working Pressure 155 psi

1 - Sta. 66+79, 54' 0" S Rt
 P.L. Sta. 0+89
 1 - 12" 1/16 Bend
 1 - Conc. Block

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2), Unit 2	1968	CO315(1)	63



APPROVED:

[Signature] 7/5/68
HAWAIIAN ELECTRIC CO., INC. DATE

[Signature] 3-15-68
HAWAIIAN TELEPHONE CO., LTD. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

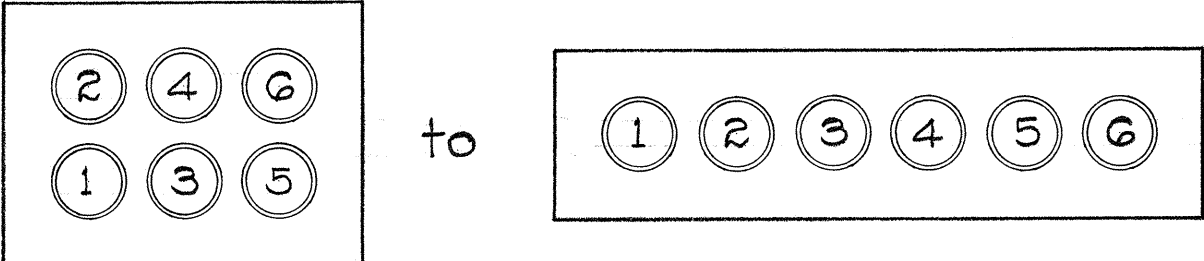
UTILITIES
ELECTRIC - TELEPHONE

KAMEHAMEHA HIGHWAY
F-083-1(2), Unit 2

Scale: 1" = 20' Date: March, 1968
SHEET No. 5 OF 6 SHEETS

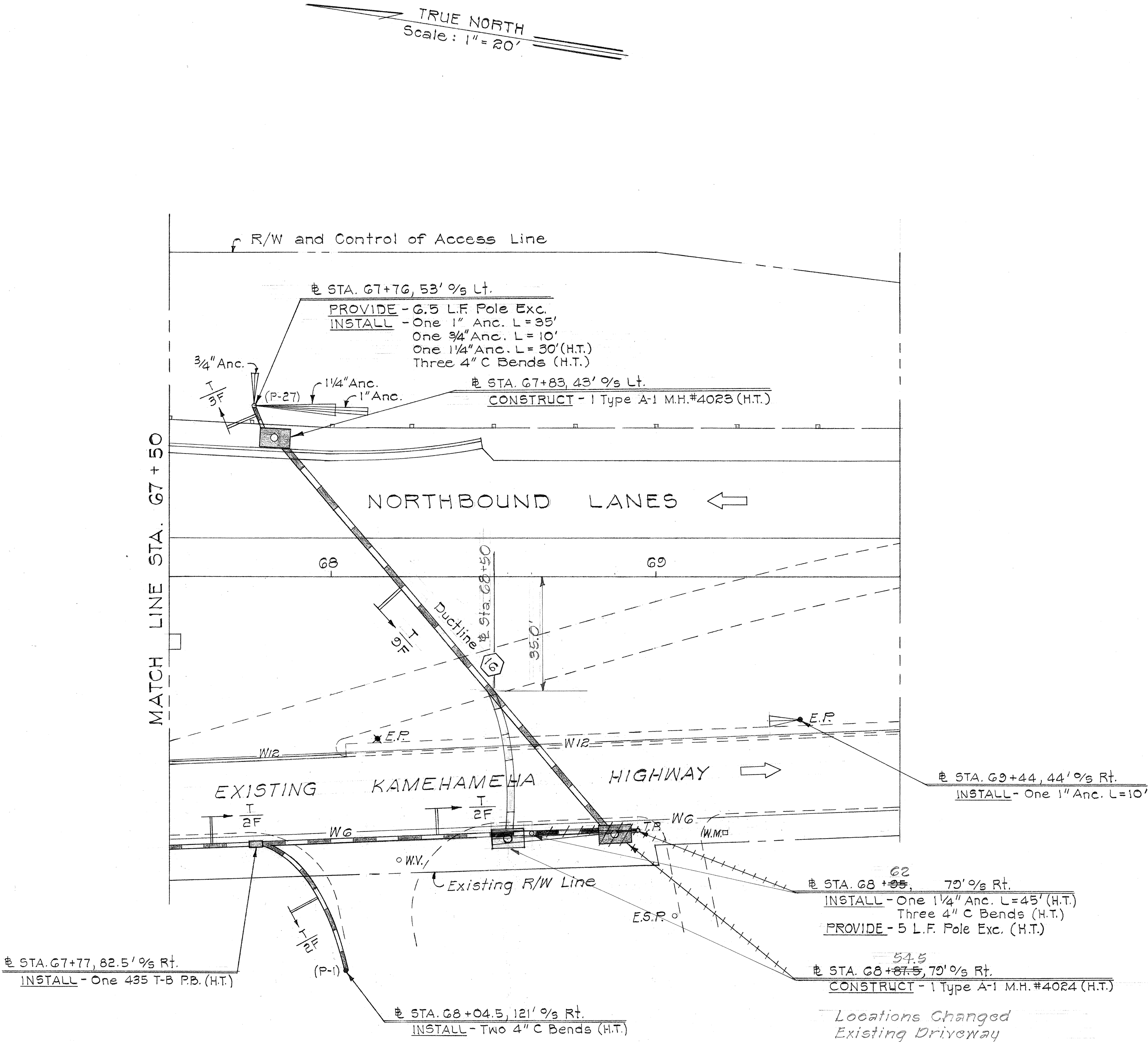
CO315(1)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2), Unit 2	1968	CO315(2)	83



TRANSITION OF DUCTLINE ② AT SD24

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



THIS SHEET IS A SUPPLEMENT
TO THE CONTRACT PLANS

APPROVED:

[Signature]

5/15/68

HAWAIIAN ELECTRIC CO., INC.

DATE

[Signature]

5-15-68

HAWAIIAN TELEPHONE CO., LTD.

DATE

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

UTILITIES

ELECTRIC - TELEPHONE

KAMEHAMEHA HIGHWAY

F-083-1(2), Unit 2

Scale: 1"=20'

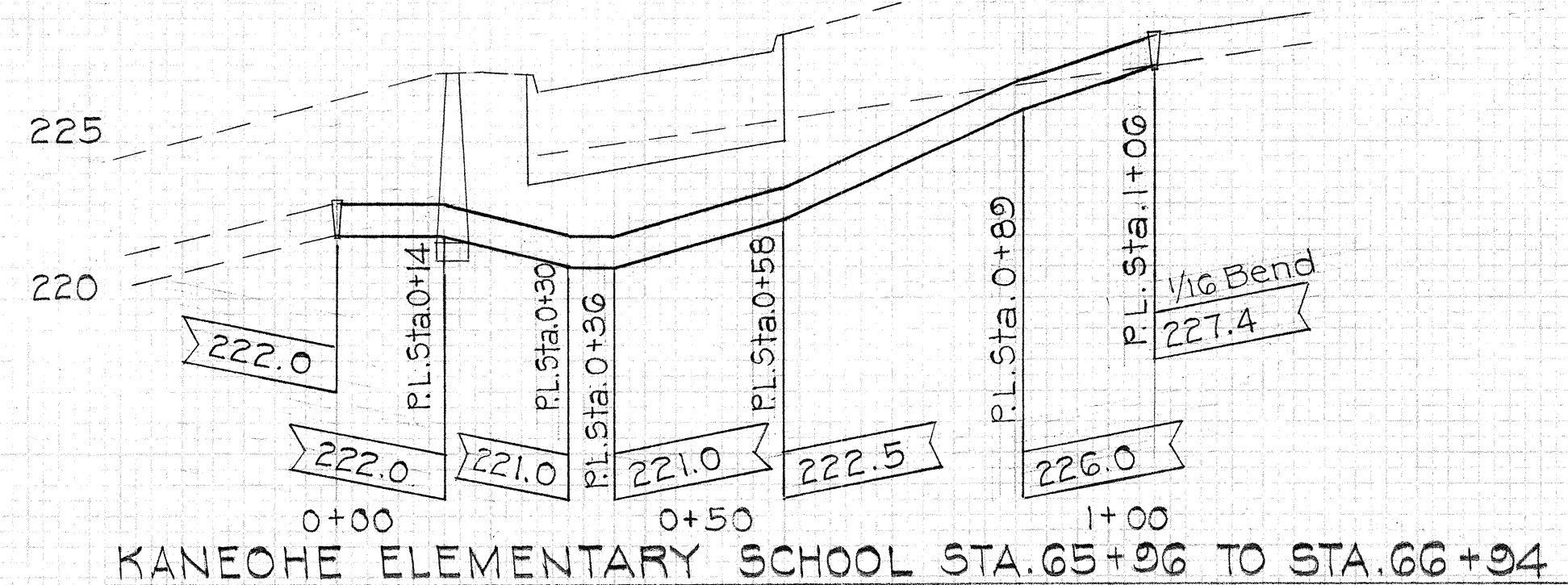
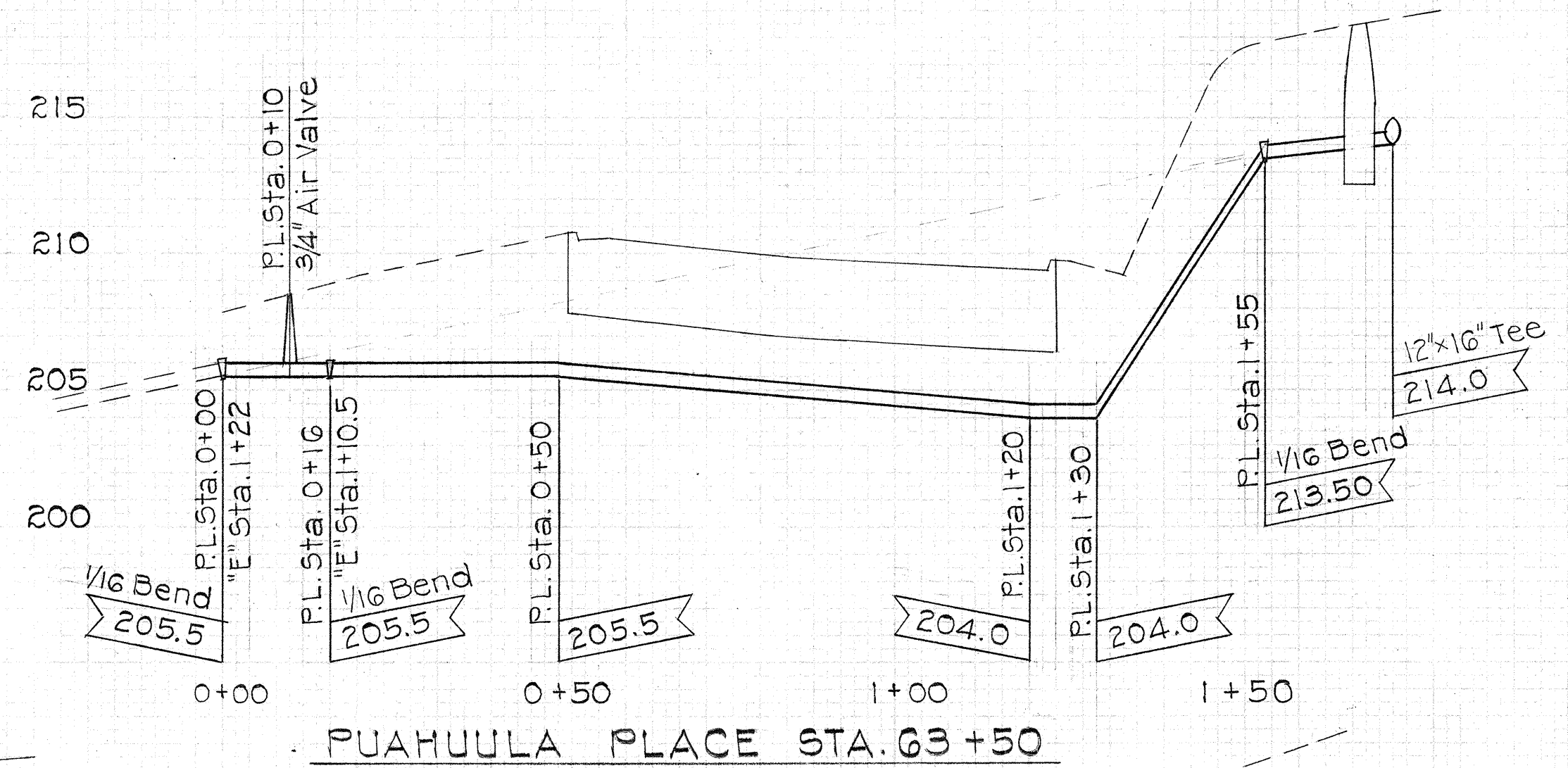
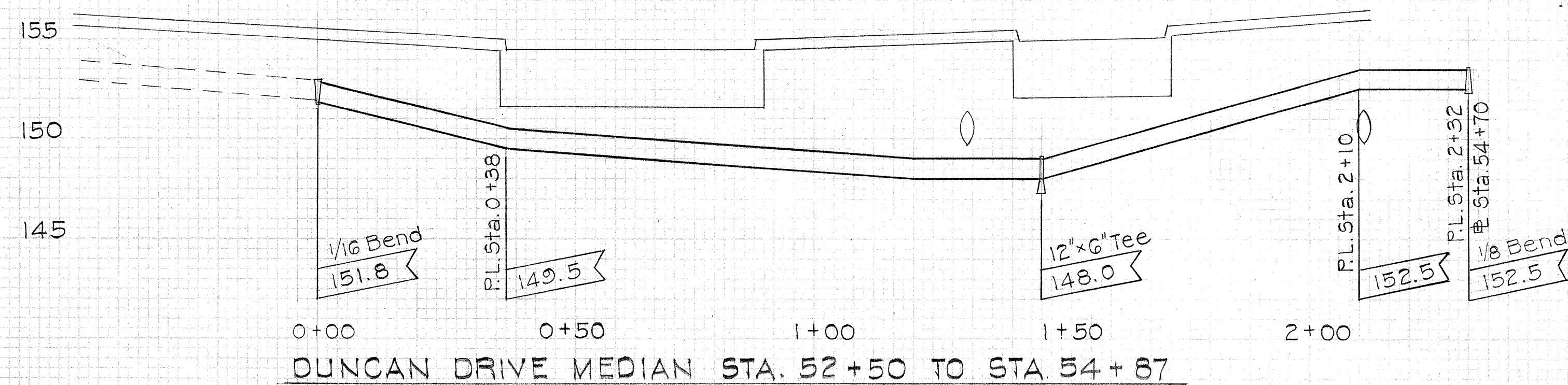
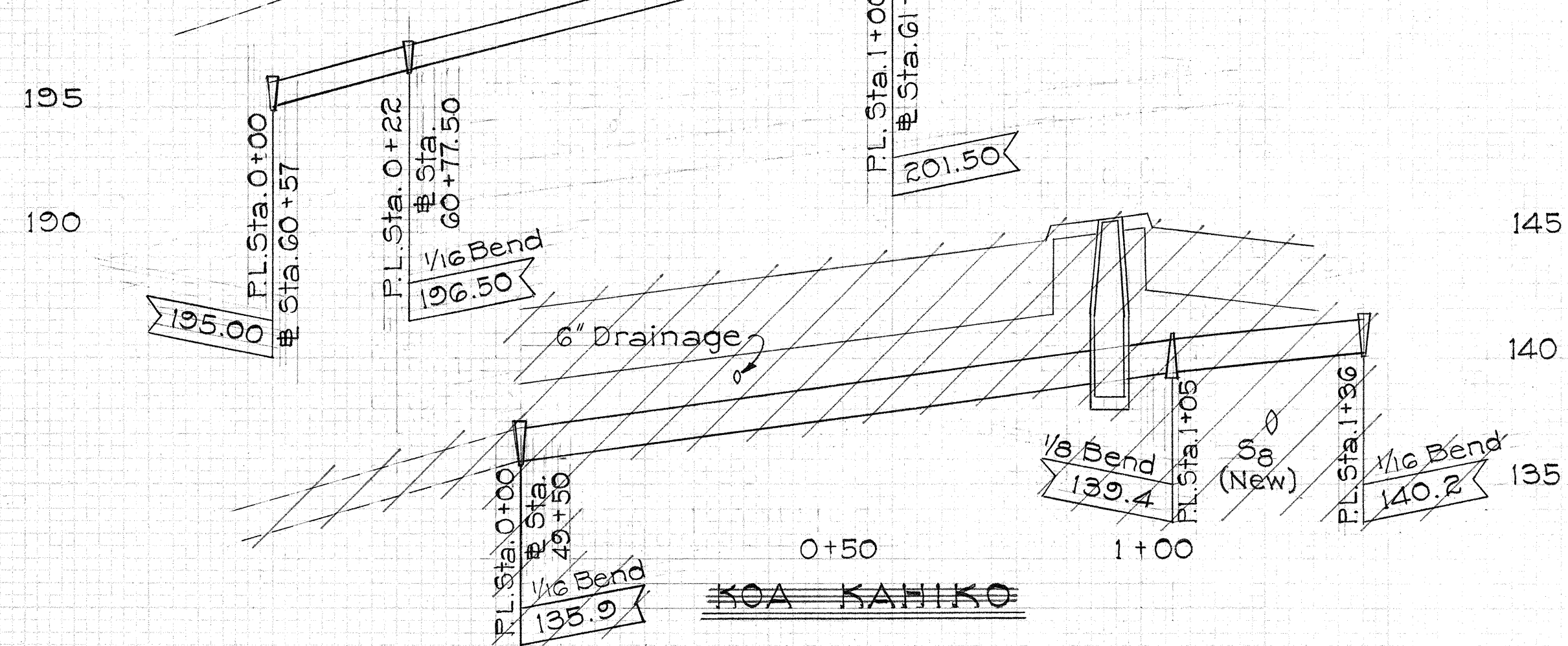
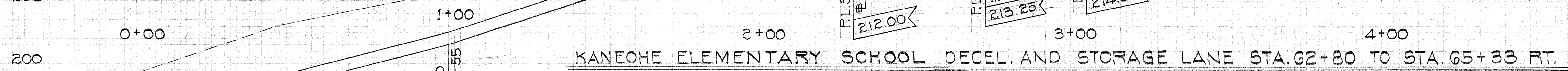
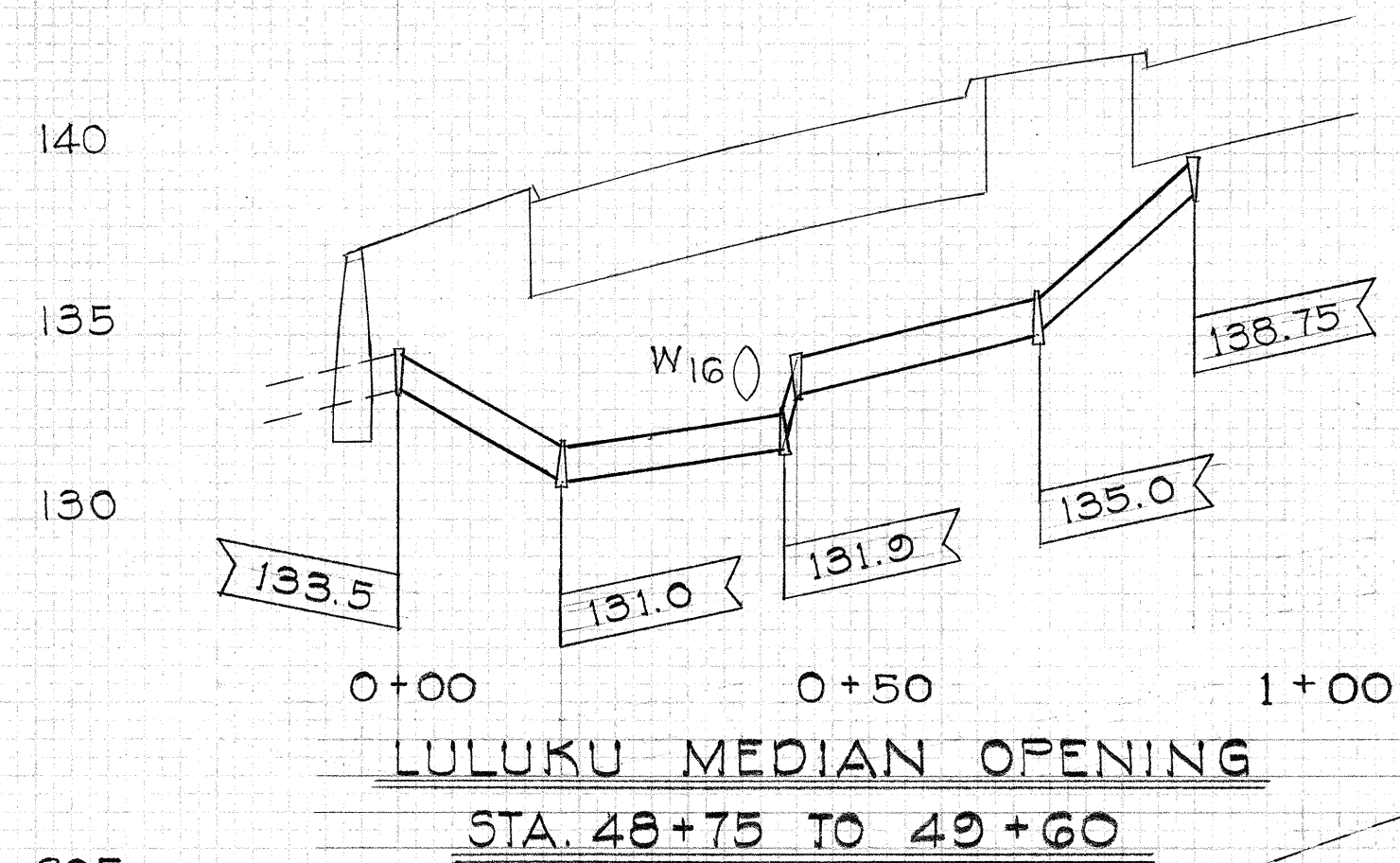
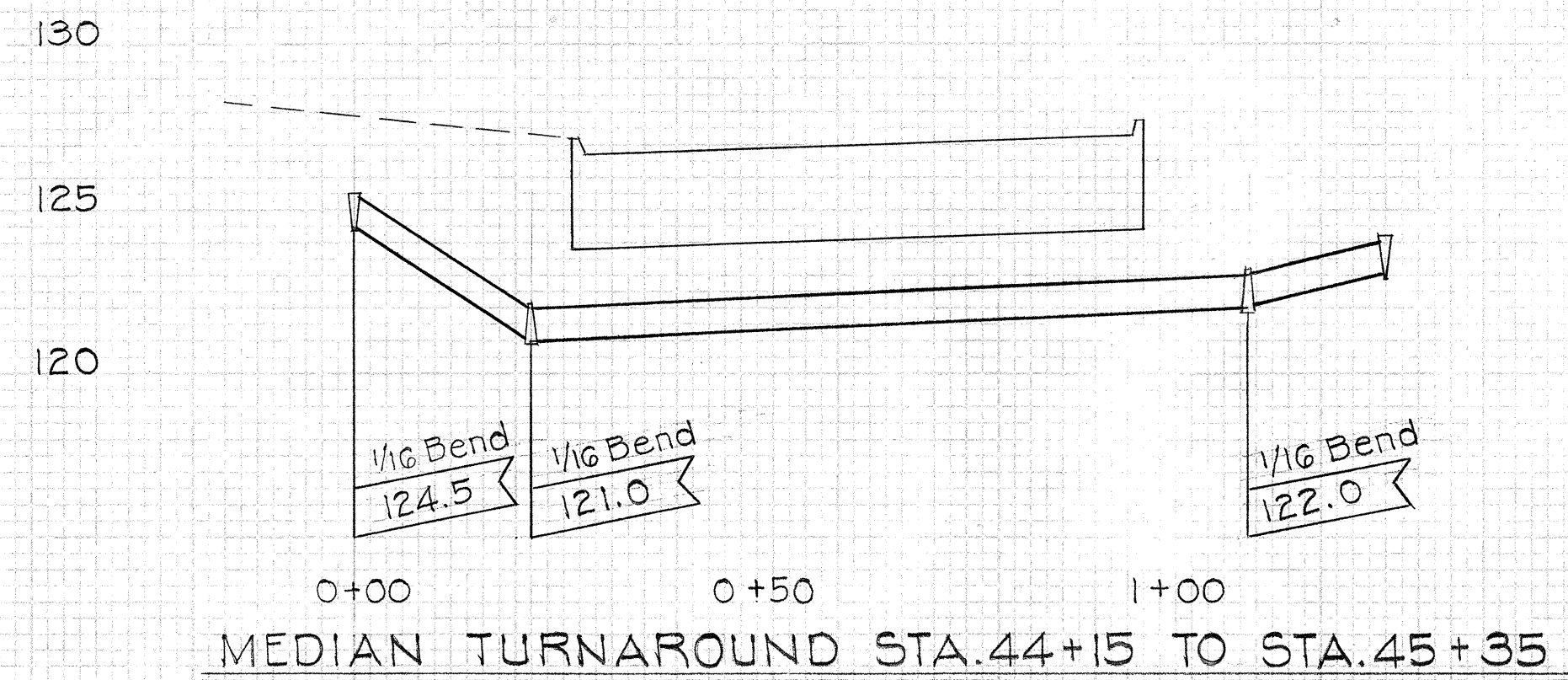
Date: March, 1968

SHEET No. 6 OF 6 SHEETS

CO315(2)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) Unit 2	1967	32	83

REVISED : Dec. 29, 1967



KANEOHE ELEMENTARY SCHOOL

APPROVED:
R. Nagata 10/12/67
CHIEF, ENGINEERING DIV. BWS DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITY PROFILE
WATER

KAMEHAMEHA HIGHWAY
F.A.P. Proj. No. F-083-1(2), Unit 2

Scale: Horiz. = 1" = 20'
Vert. = 1" = 5' Date: Aug., 1967

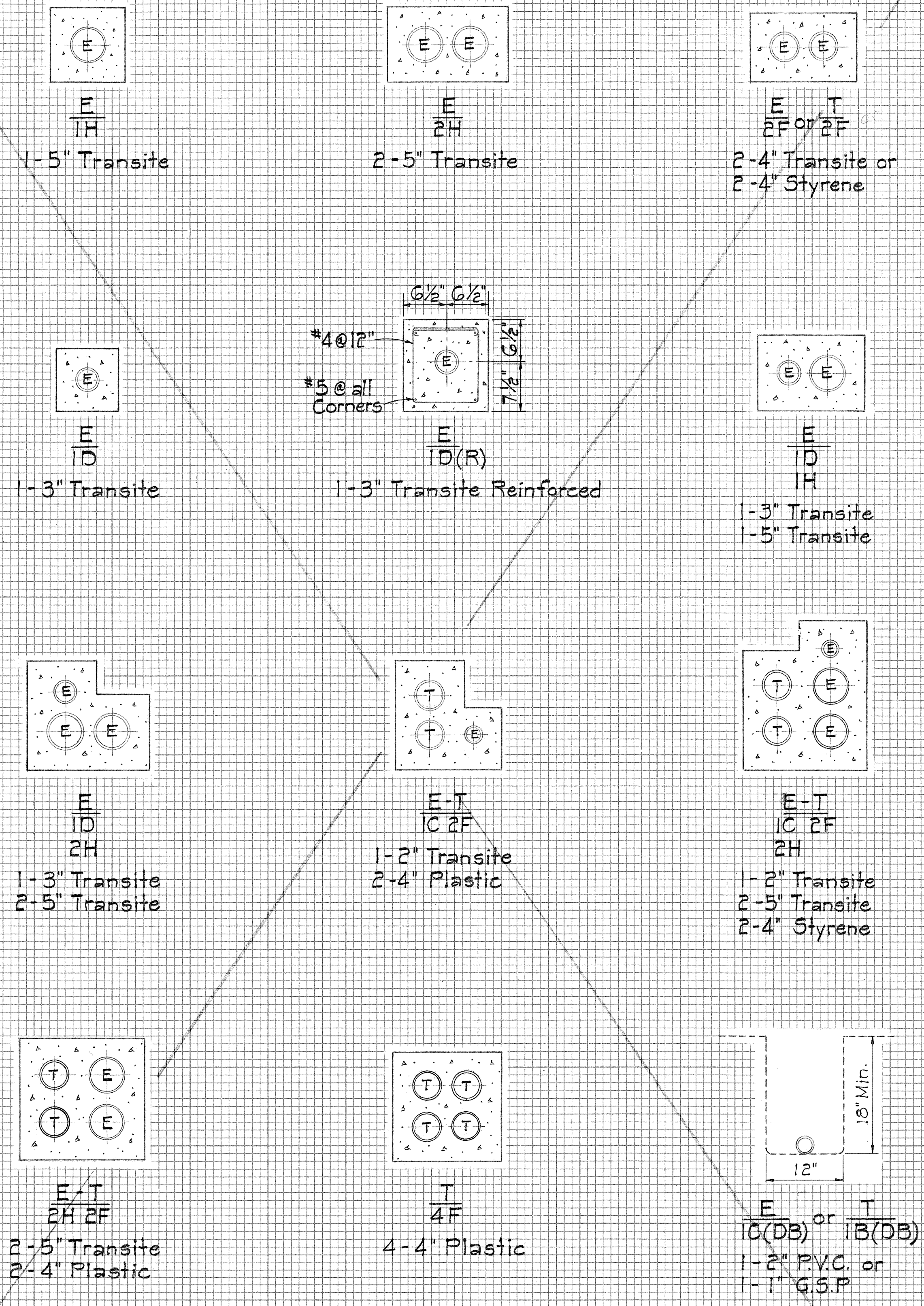
SHEET NO. 7 OF 18 SHEETS

0 0 3 2

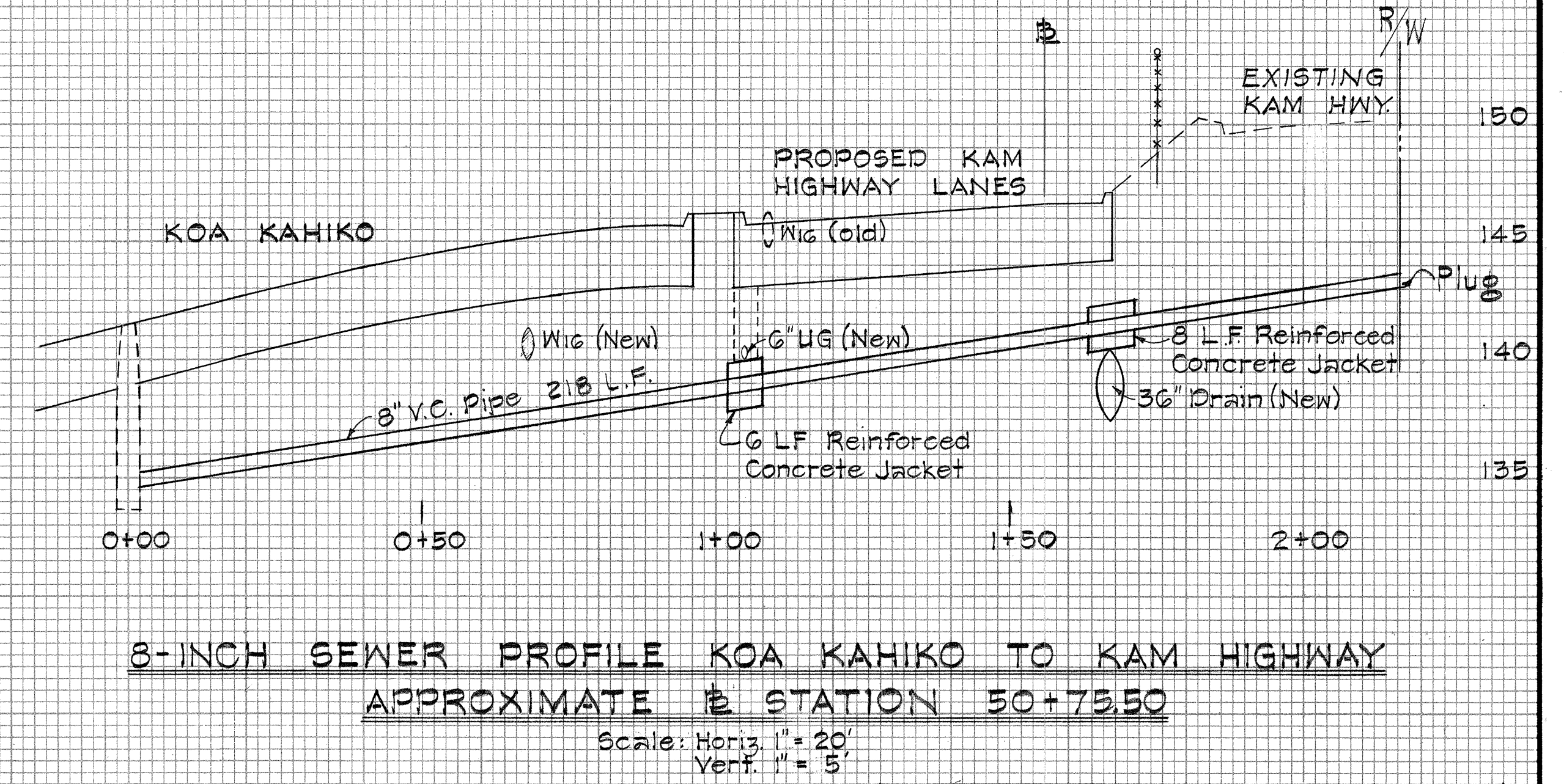
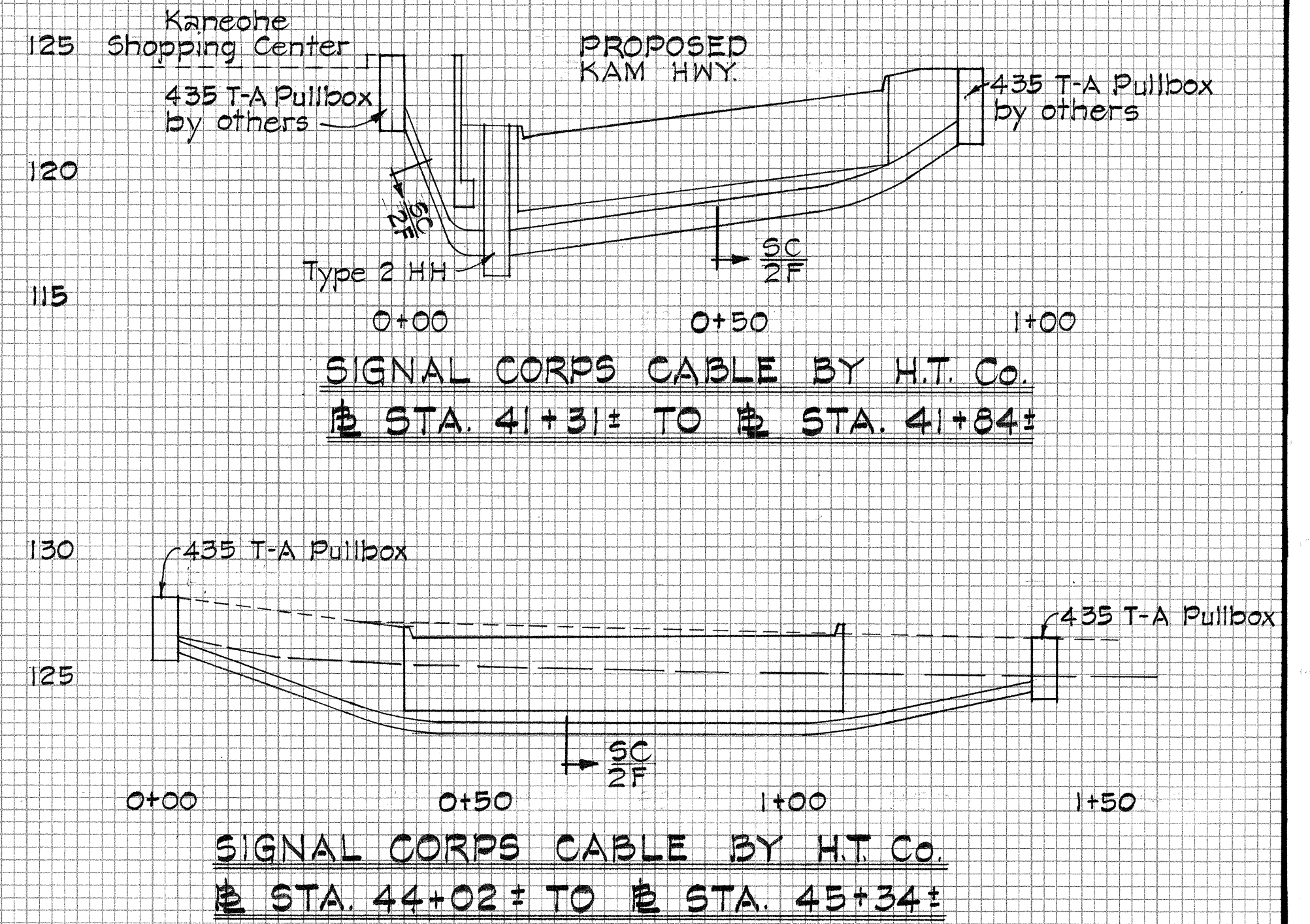
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) Unit 2	1967	33	83

FINAL	DATE
SURVEY	BY
NOTE BOOK	NO.
AREAS CHECKED	

ORIGINAL	DATE
SURVEY	BY
NOTE BOOK	NO.
AREAS CHECKED	

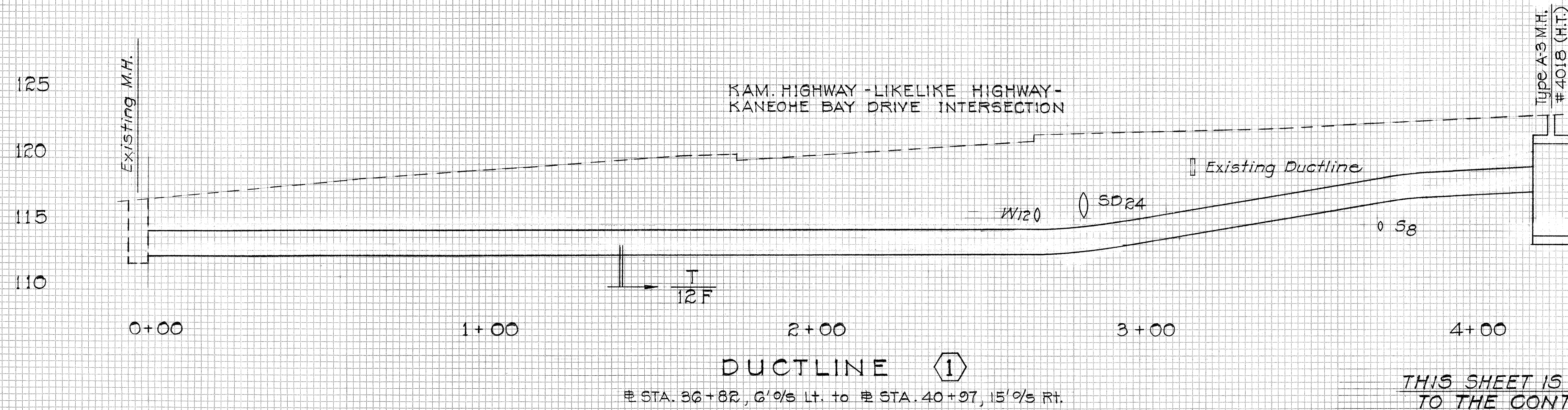
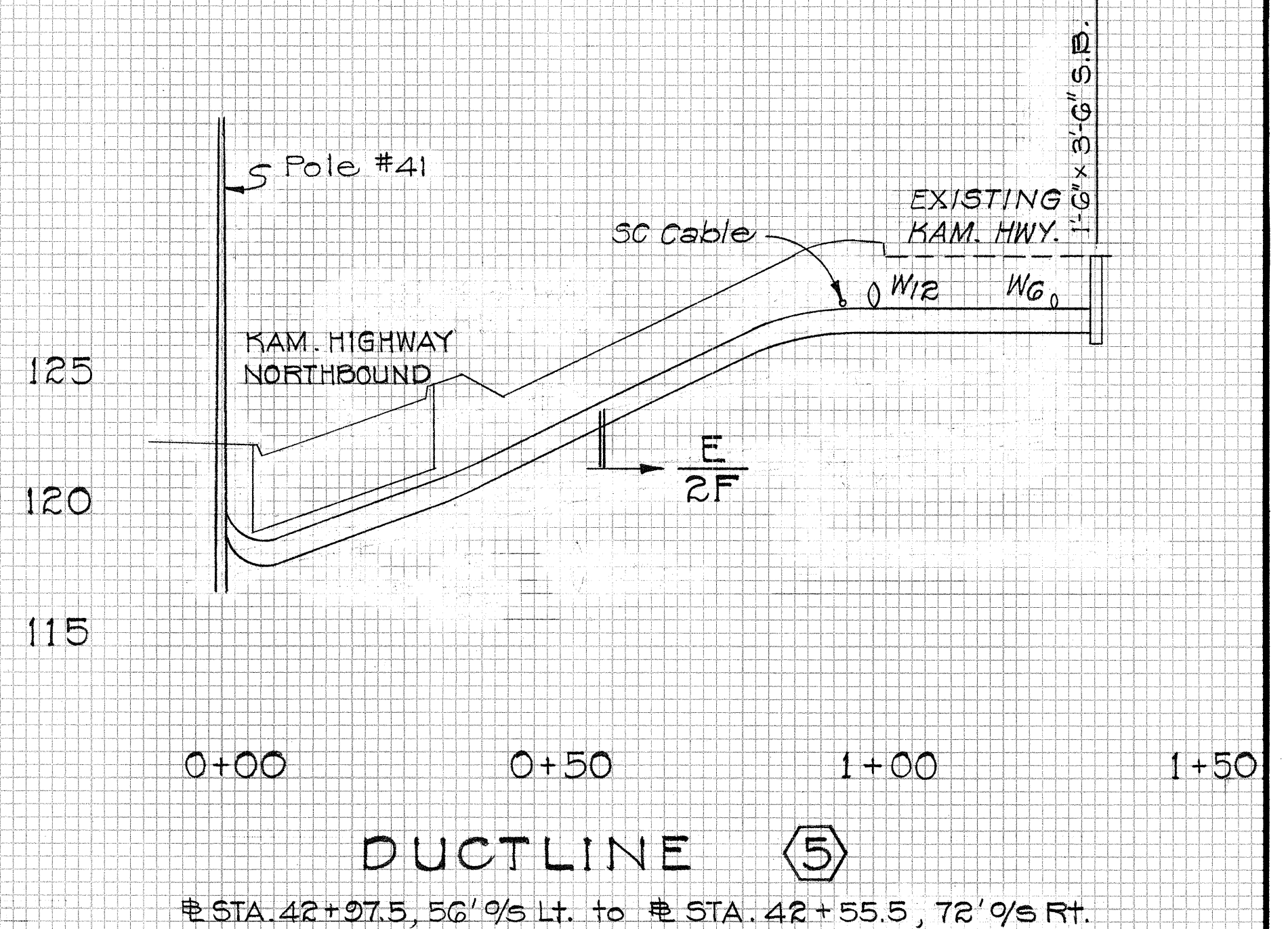
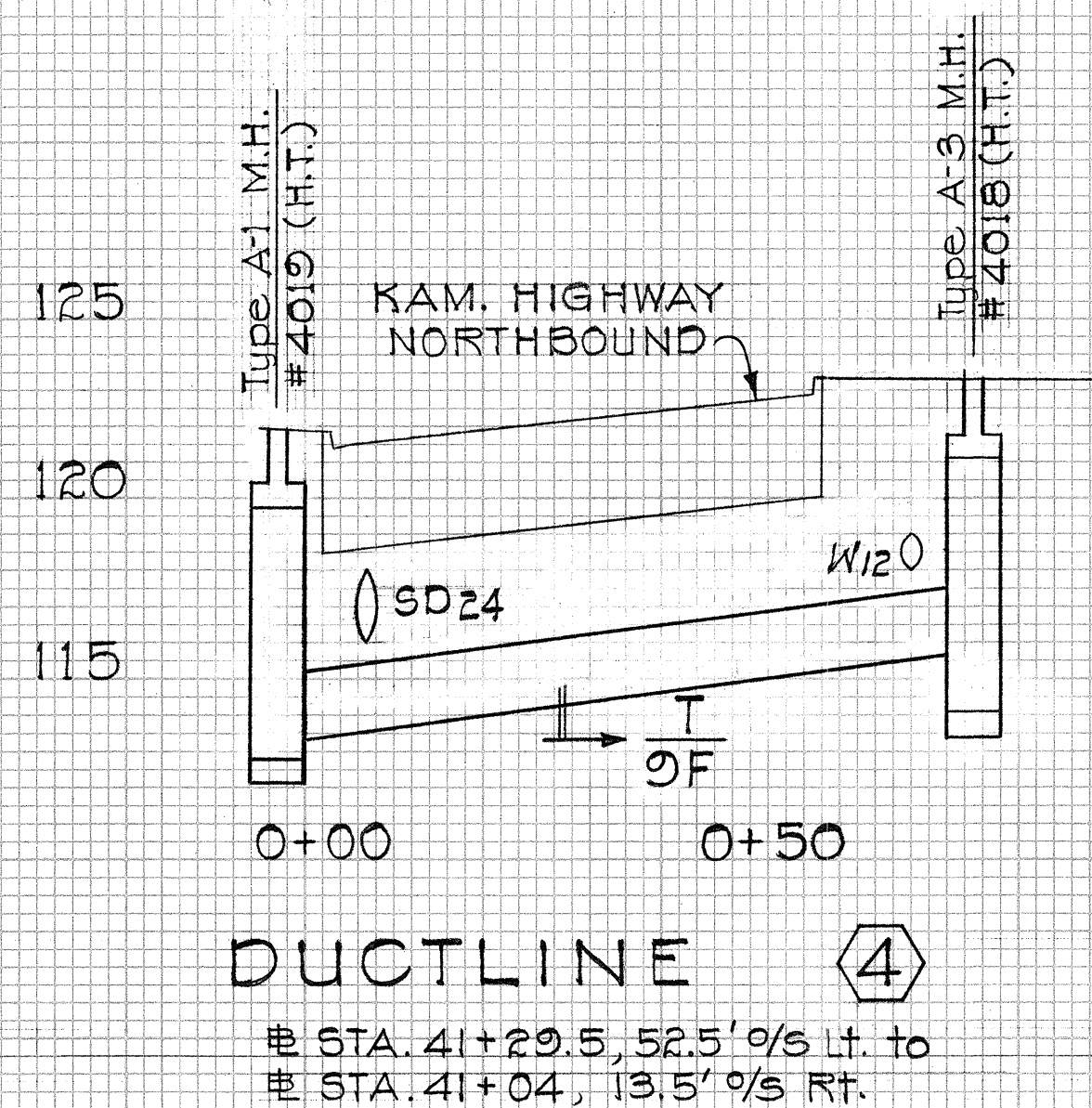
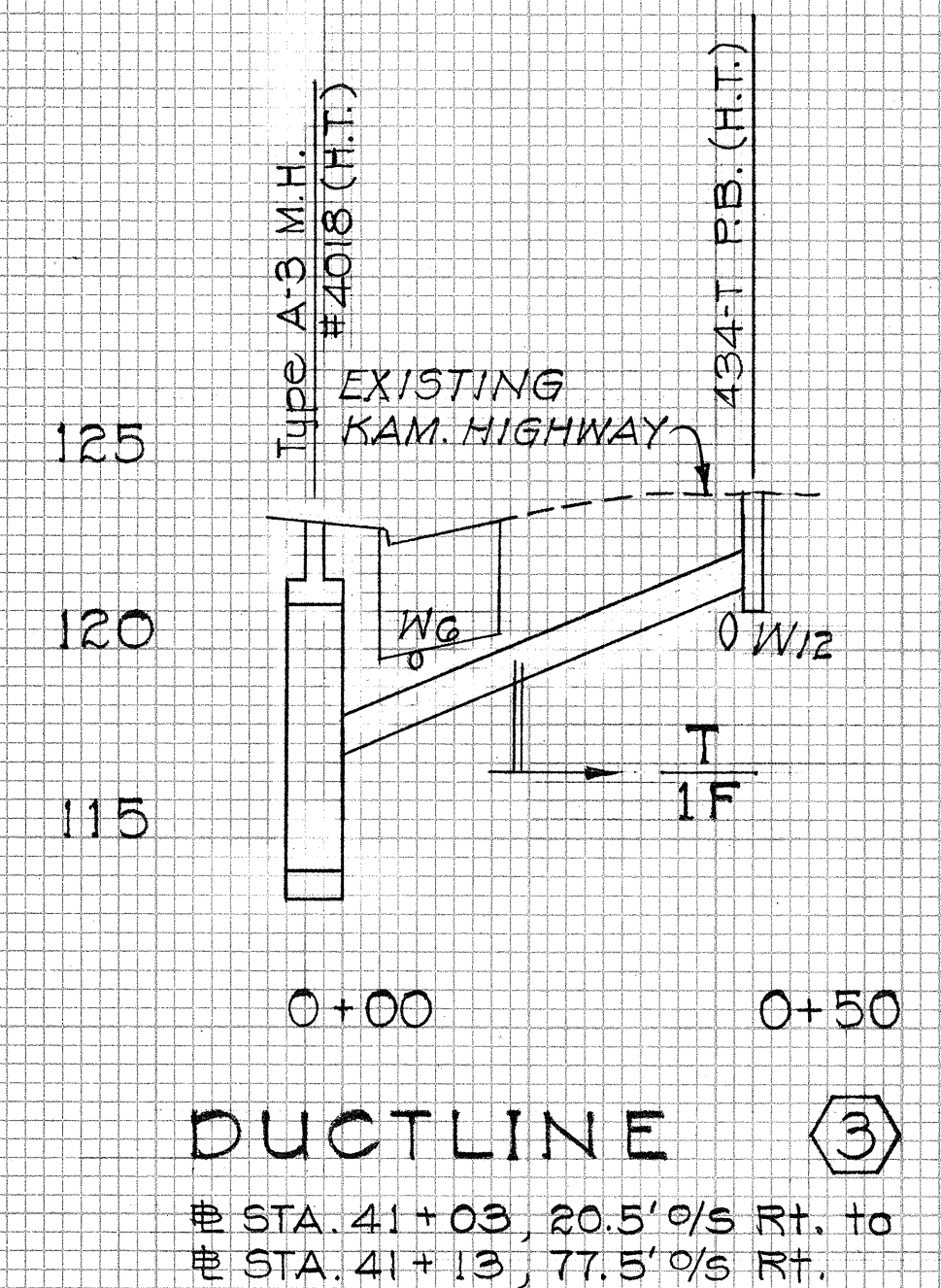
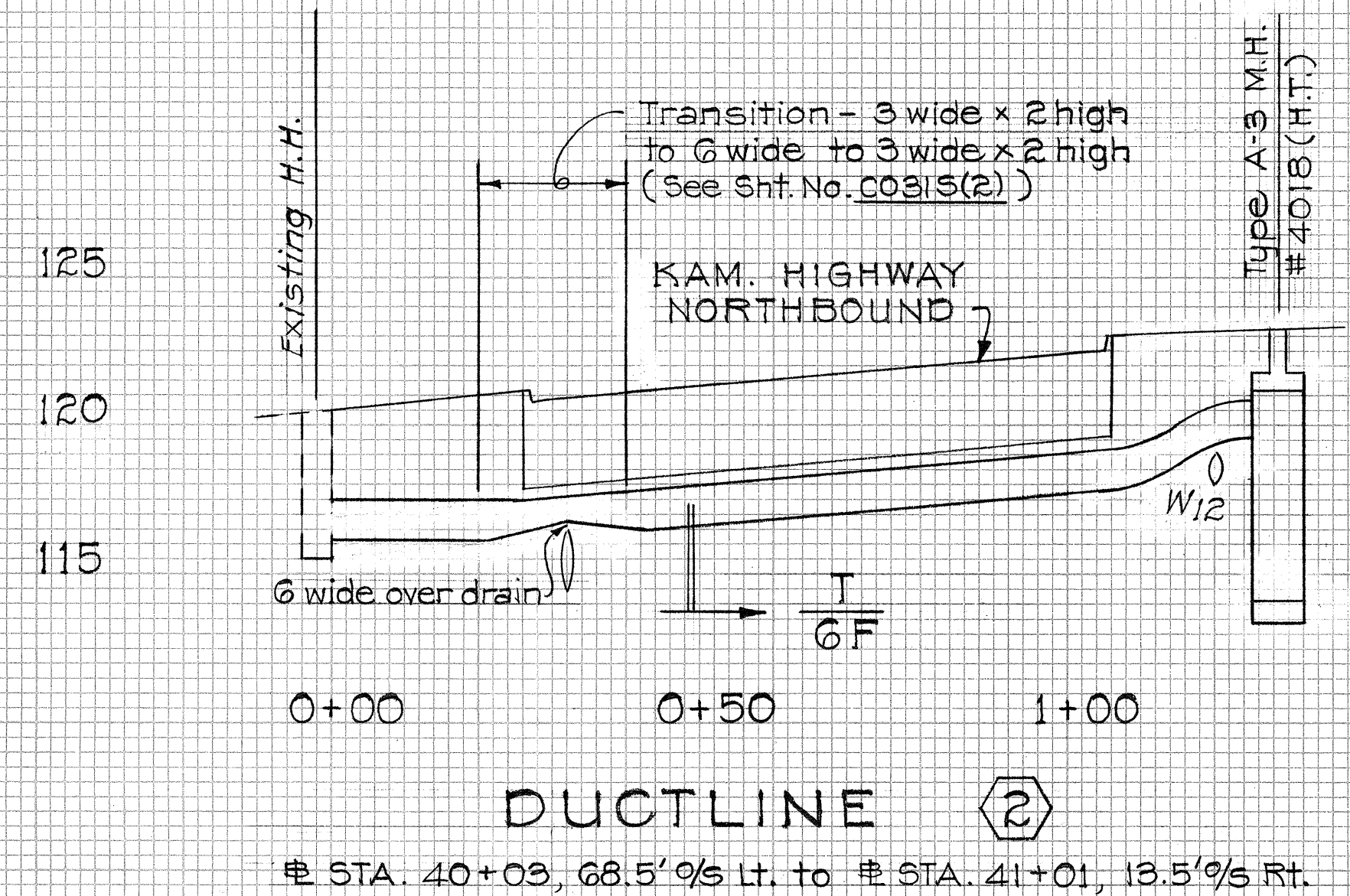
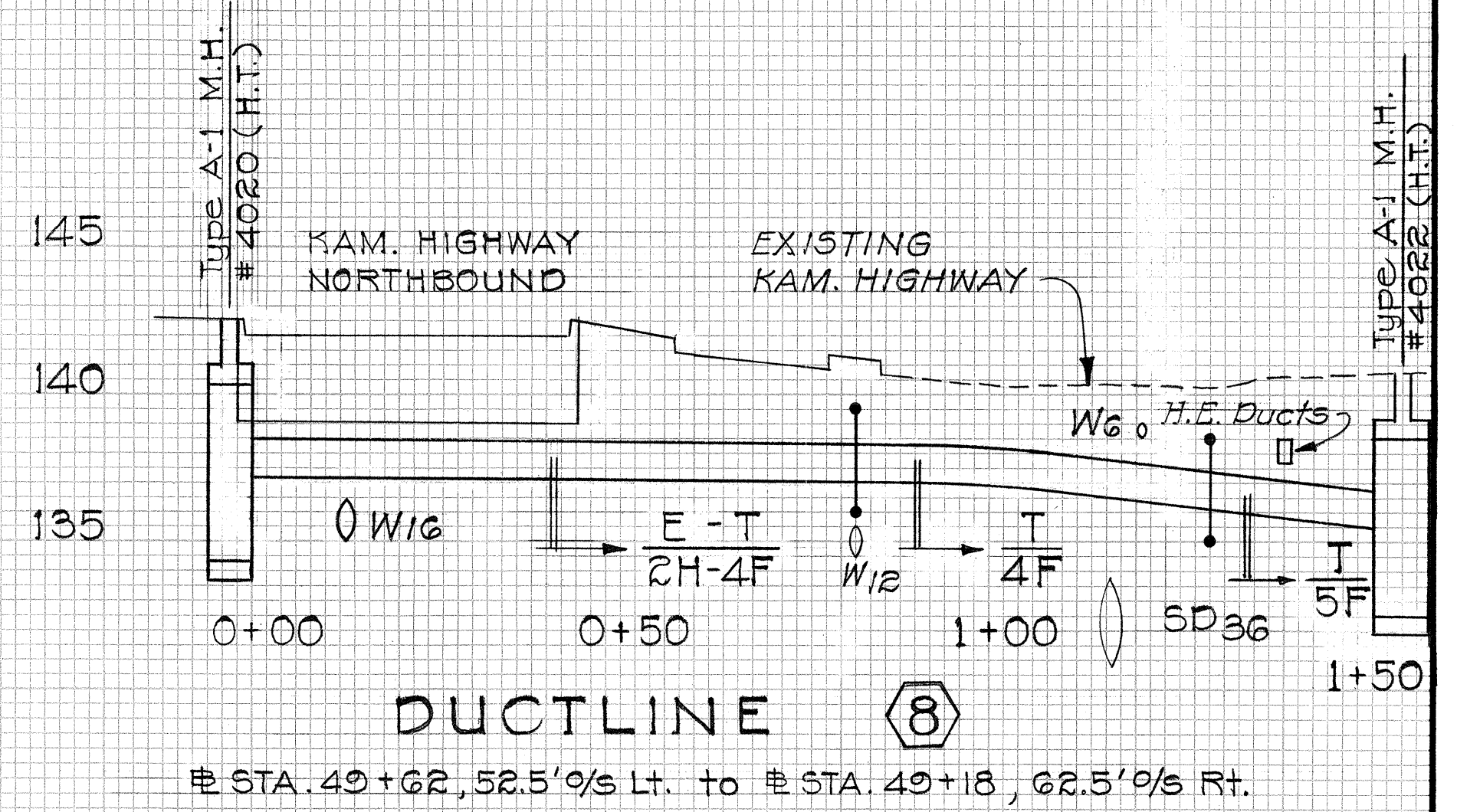
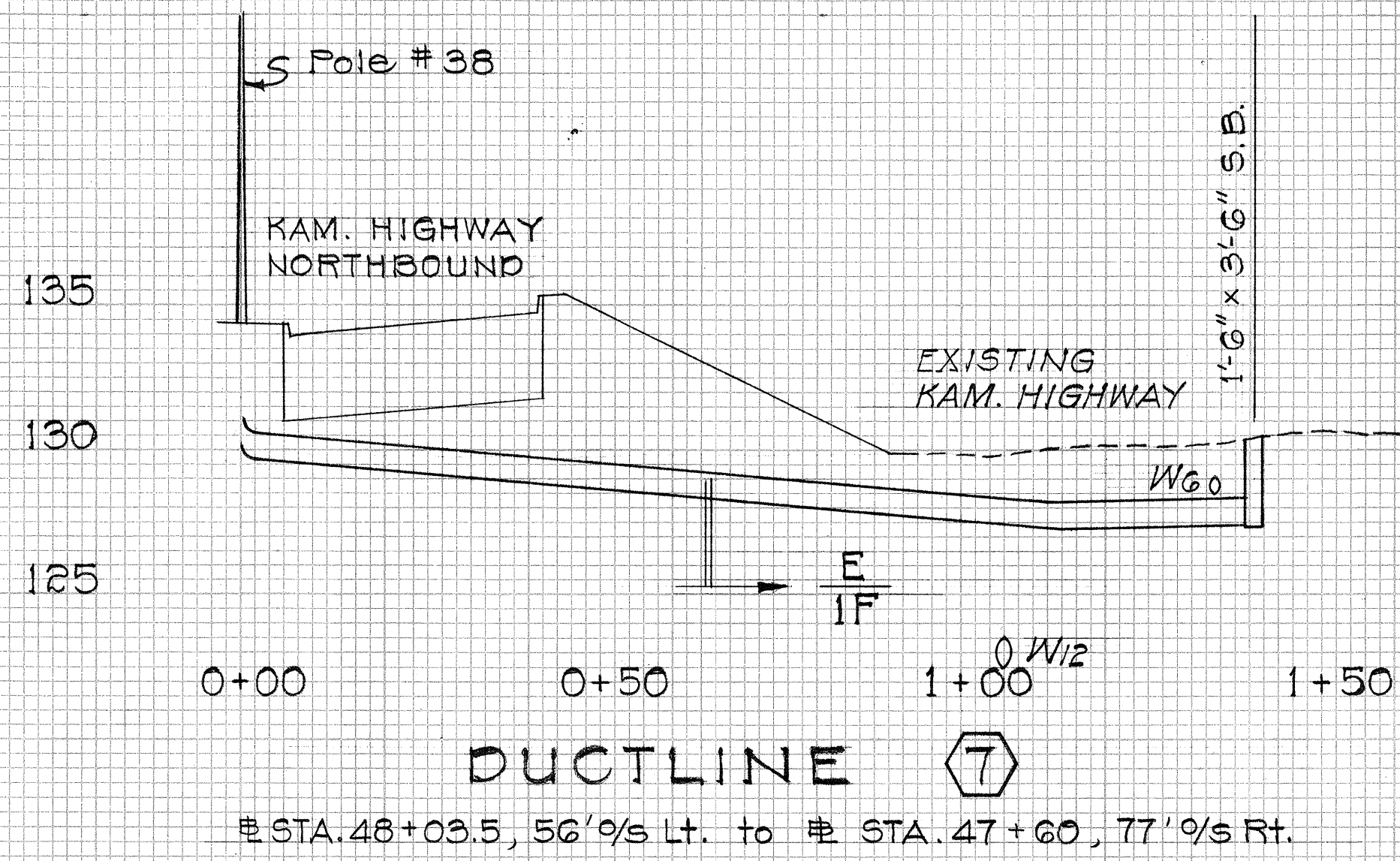
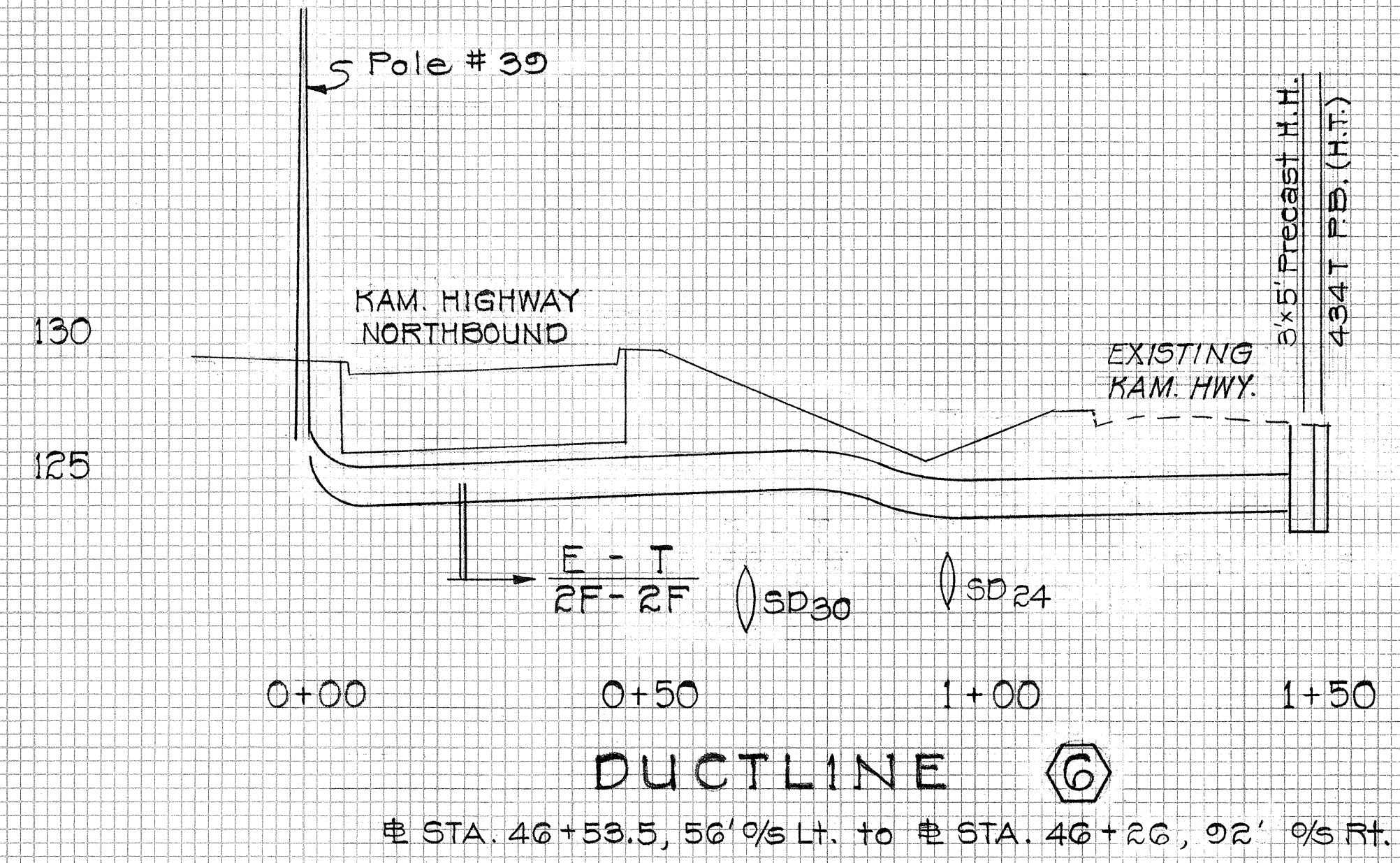


TYPICAL DUCT SECTIONS
Scale: 1" = 1'



APPROVED:		DATE	
<i>[Signature]</i>		10-11-67	
HAWAIIAN TELEPHONE Co. Ltd.		DATE	
<i>[Signature]</i>		10/10/67	
SEWER SYSTEM DIV. OF SEWERS		DATE	
KAMEHAMEHA HIGHWAY			
F.A. Proj. No. F-083-1(2), Unit 2			
Scale: As Noted		Date: Aug. 1967	
SHEET No. 8 OF 18 SHEETS			

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2), Unit 2	1968	C0335(1)	83



APPROVED:

John A. Young 5/15/68
HAWAIIAN ELECTRIC CO., INC. DATE

Charles A. Young 5-15-68
HAWAIIAN TELEPHONE CO., LTD. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITIES
ELECTRIC-TELEPHONE PROFILES

KAMEHAMEHA HIGHWAY
F.A. Proj. No. F-083-1(2), Unit 2

Scale: Horiz. 1" = 20'
Vert. 1" = 5'

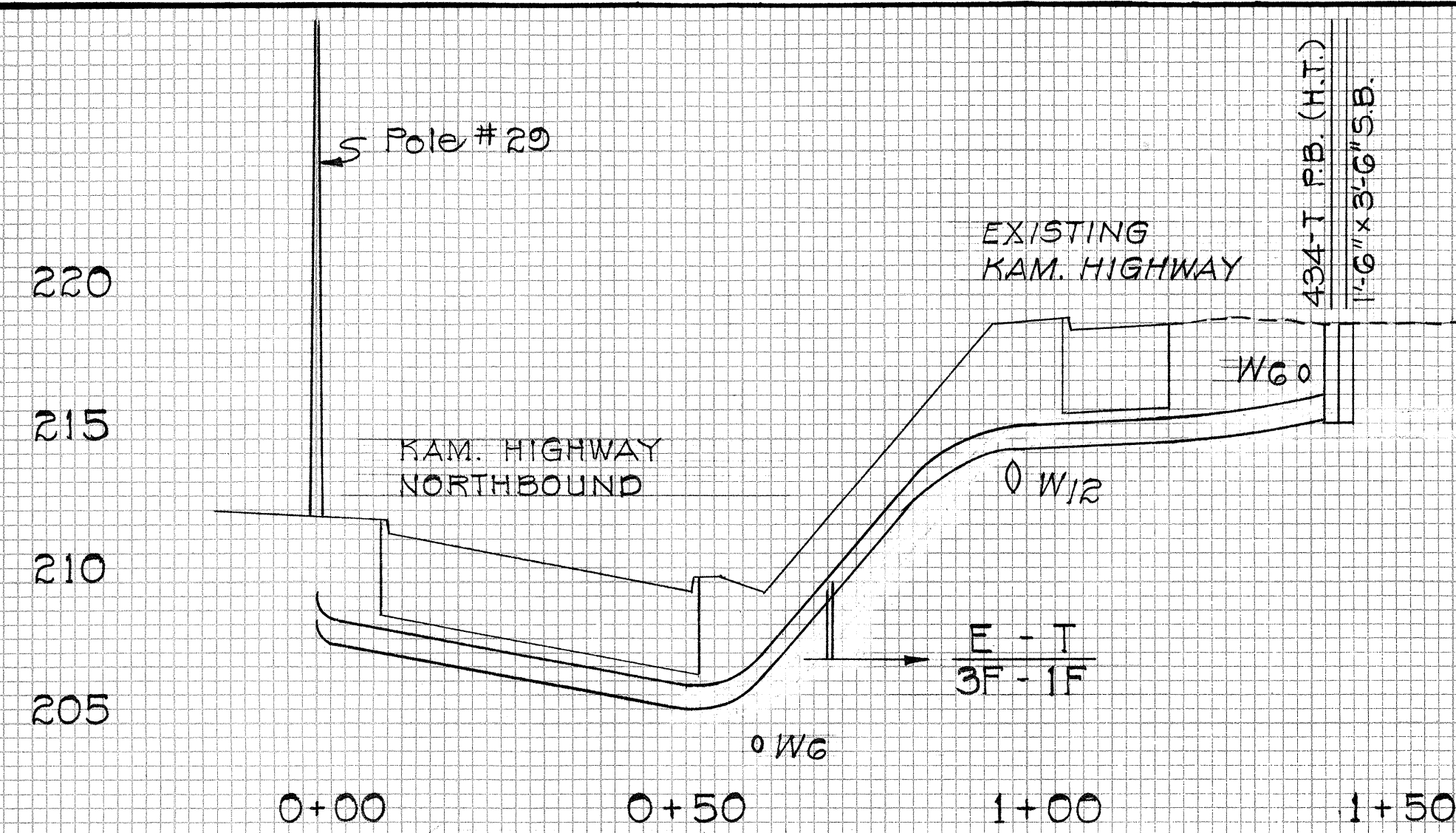
Date: March, 1968

SHEET No. OF SHEETS

THIS SHEET IS A SUPPLEMENT
TO THE CONTRACT PLANS

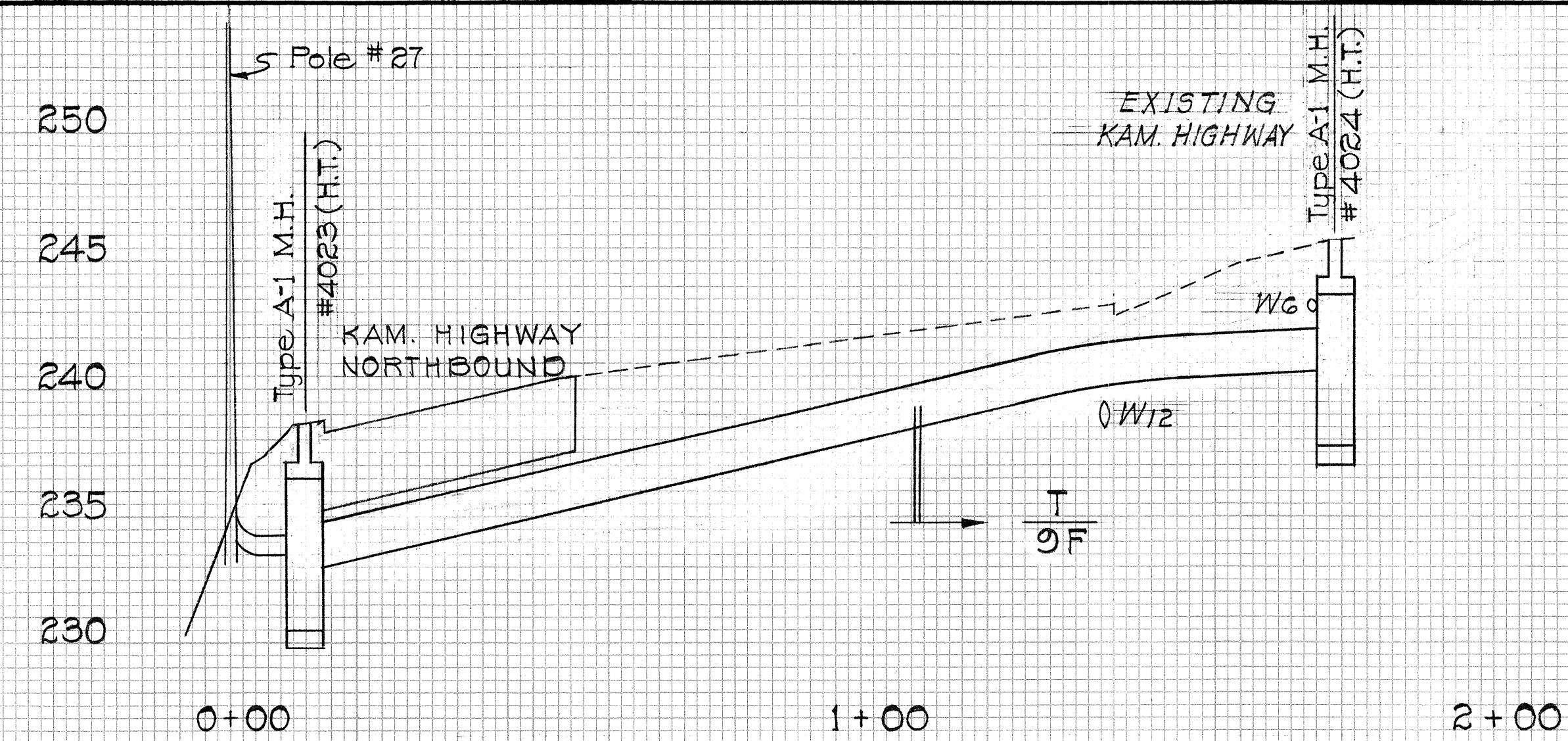
C0335(1)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2), Unit 2	1968	C0335(2)	83



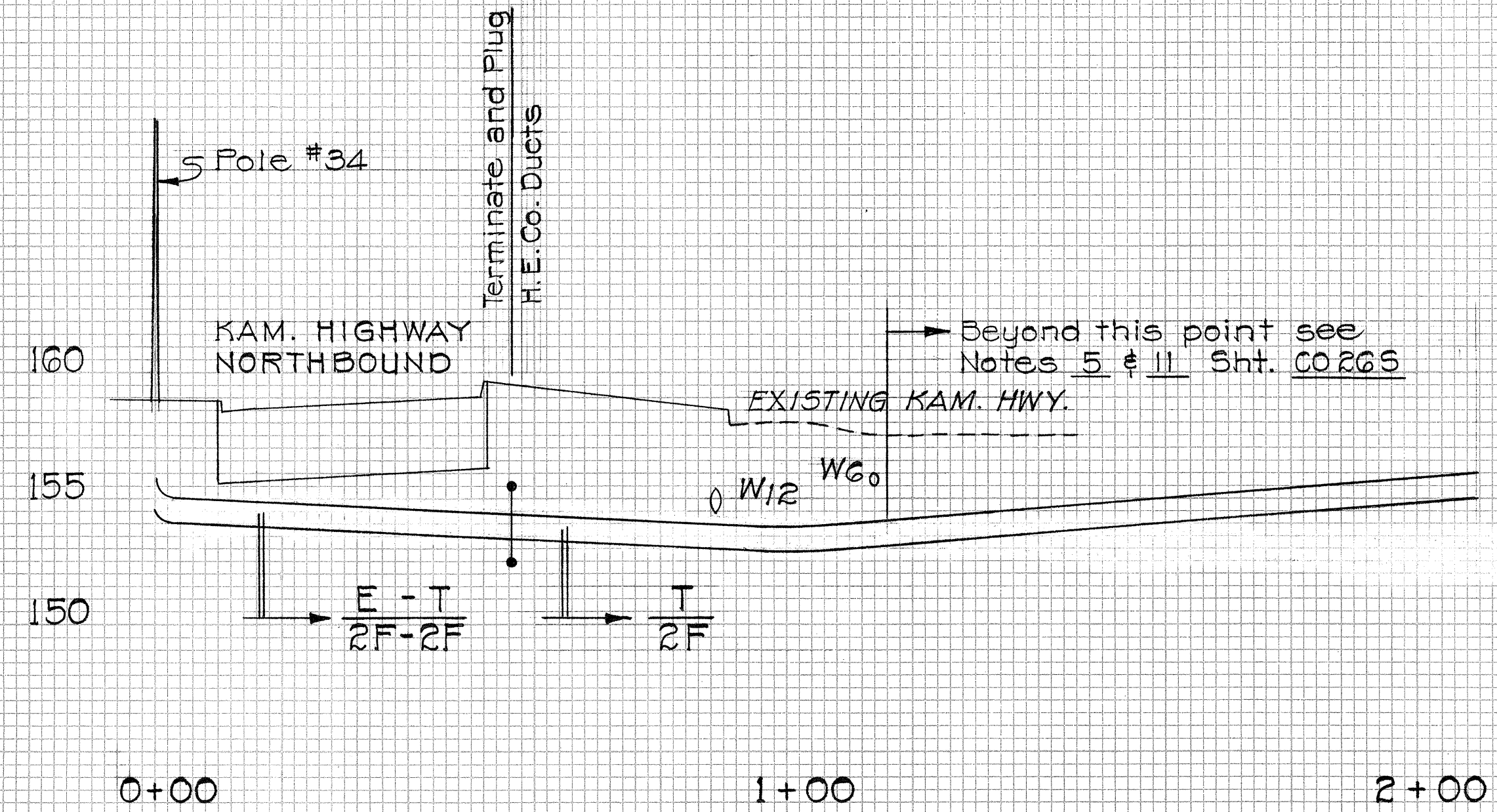
DUCTLINE 15

Sta. 63+66, 60' 9/16" Lt. to Sta. 63+38, 81' 9/16" Rt.



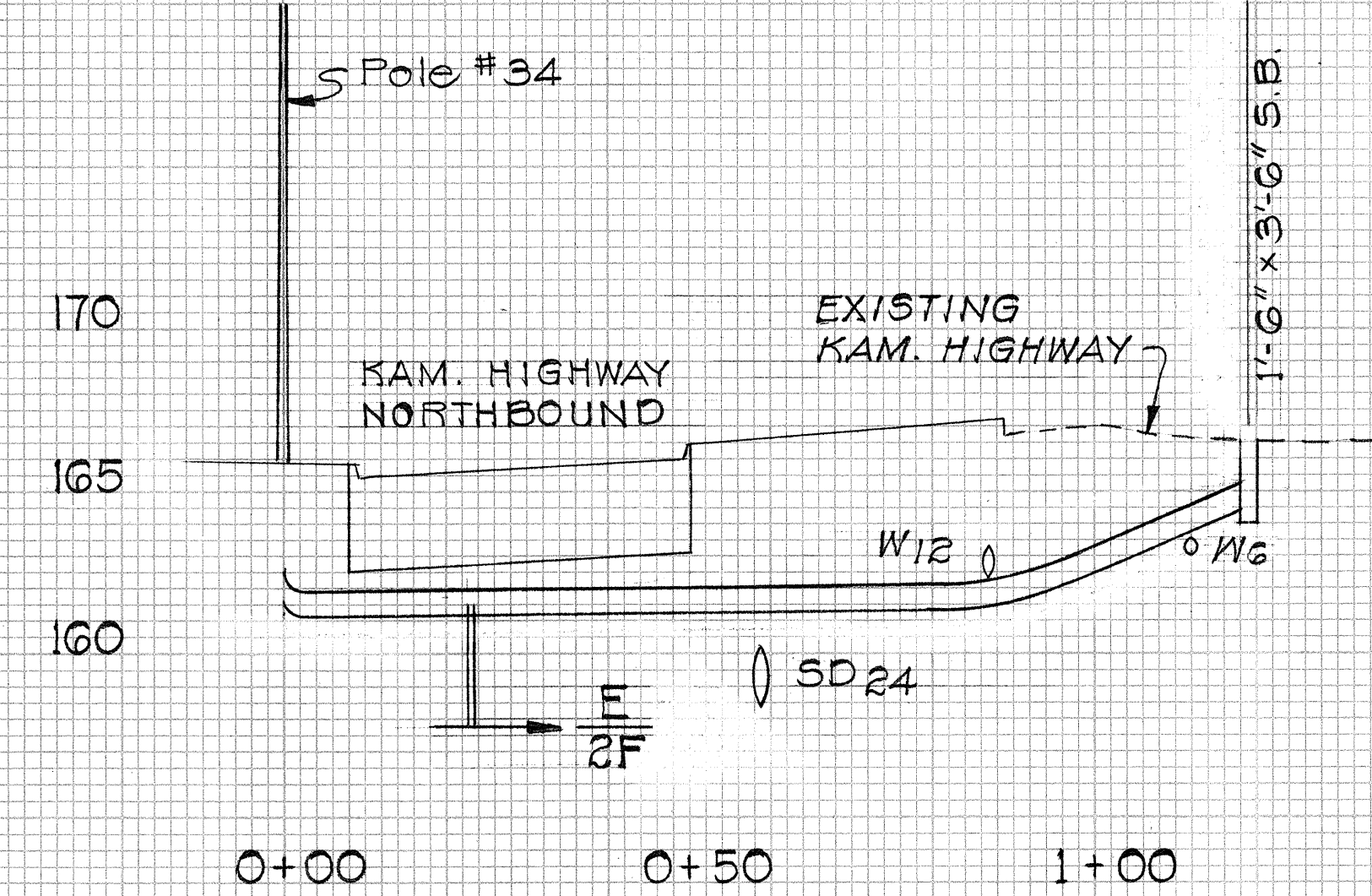
DUCTLINE 16

Sta. 67+76, 53' 9/16" Lt. to Sta. 68+30, 79' 9/16" Rt.



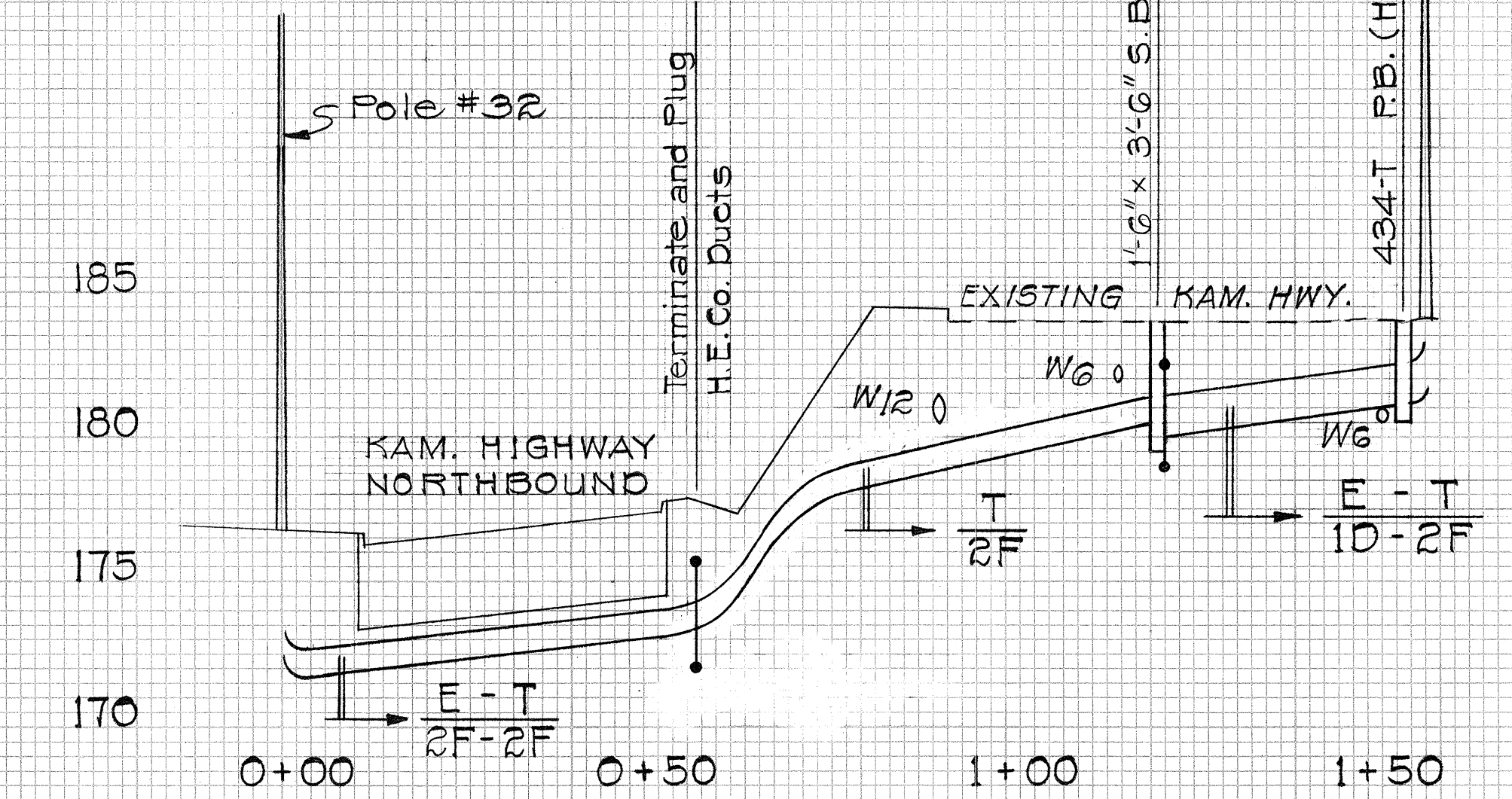
DUCTLINE 12

Sta. 55+20.5, 61.5' 9/16" Lt. to Sta. 55+21.5, 207' 9/16" Rt.



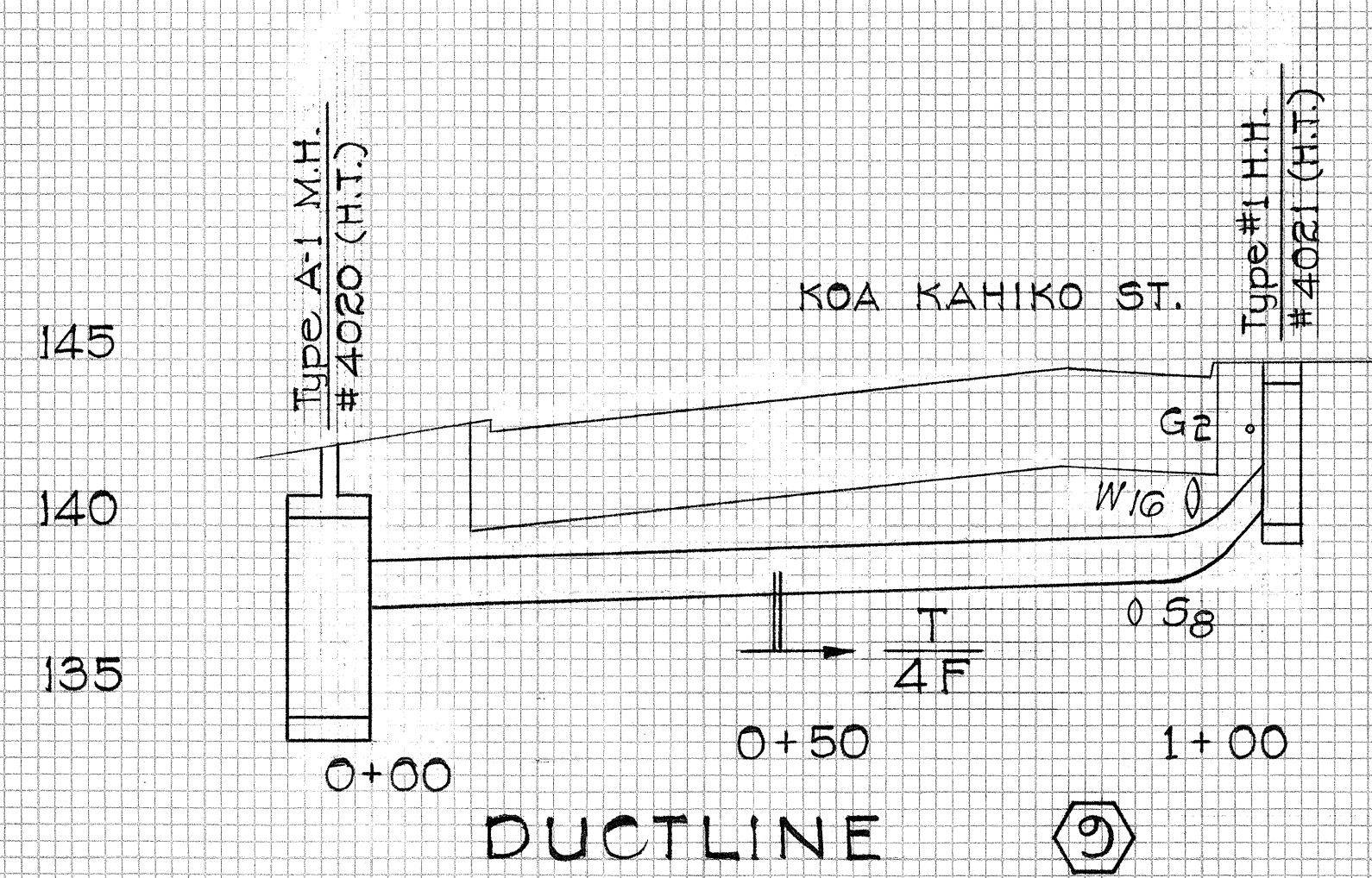
DUCTLINE 13

Sta. 56+60, 60' 9/16" Lt. to Sta. 56+62, 58' 9/16" Rt.



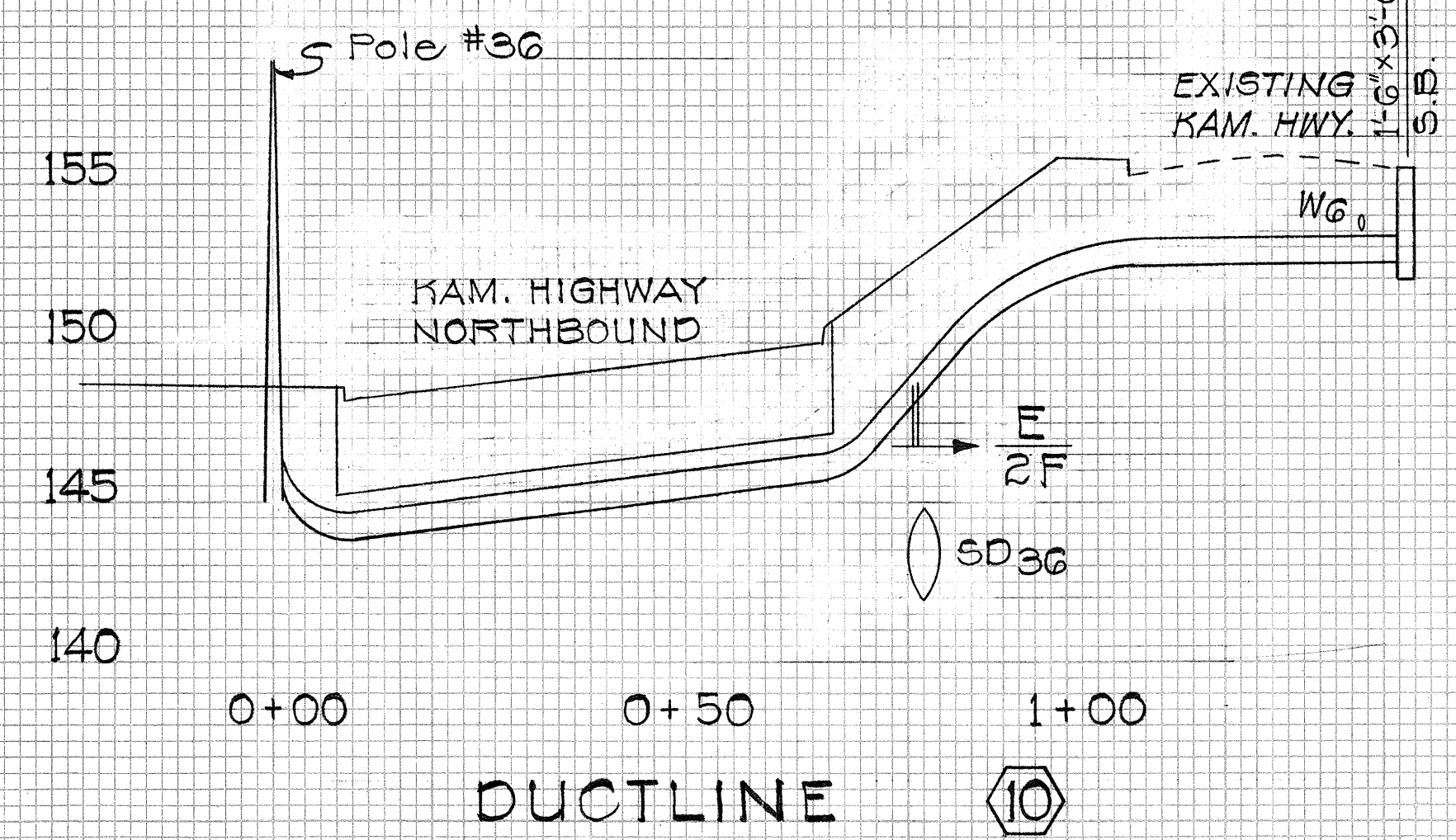
DUCTLINE 14

Sta. 58+39, 60' 9/16" Lt. to Sta. 58+55, 50' 9/16" Rt.



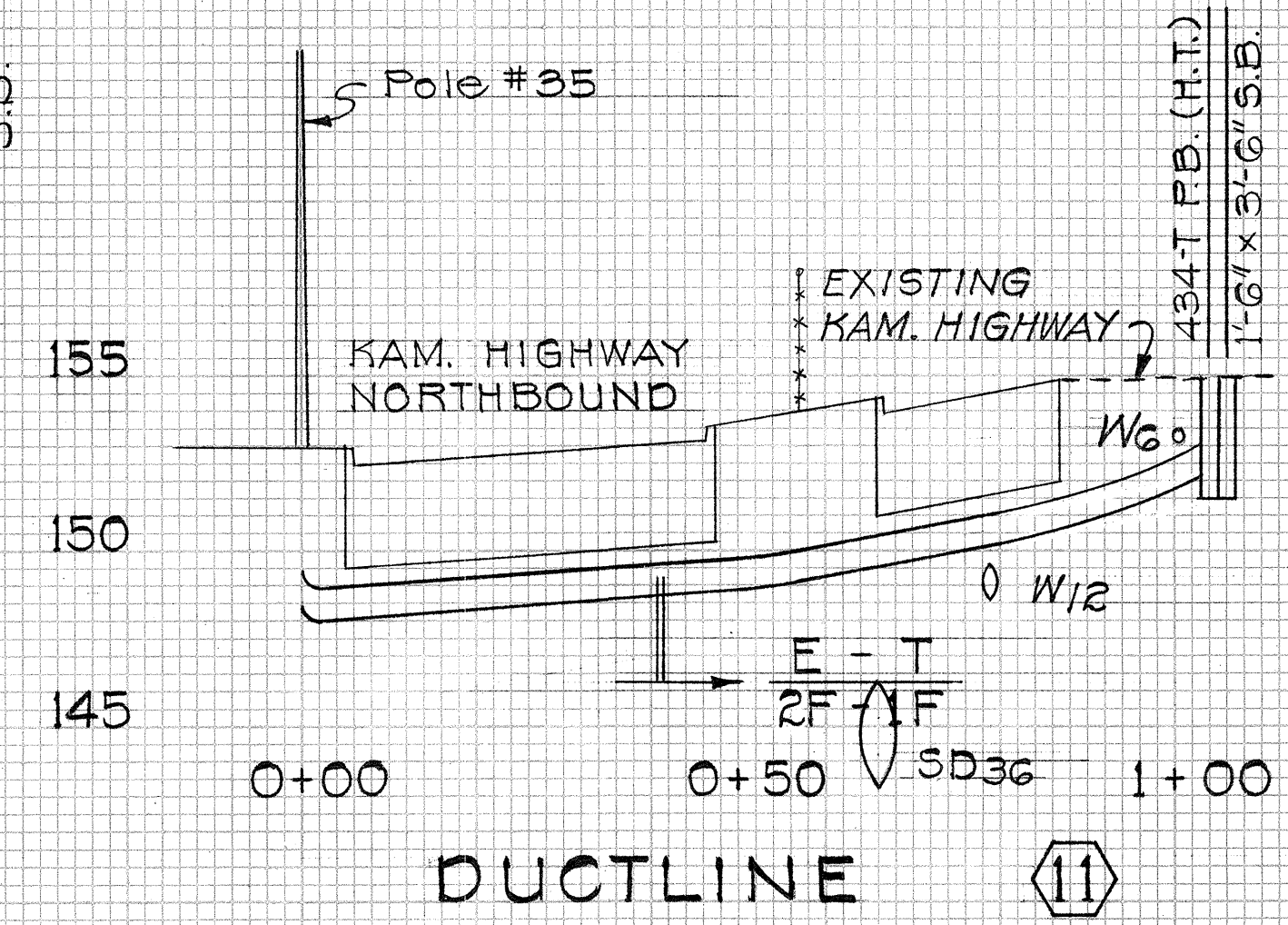
DUCTLINE 9

Sta. 49+64.5, 55' 9/16" Lt. to Sta. 50+64.5, 107' 9/16" Rt.



DUCTLINE 10

Sta. 51+36, 57' 9/16" Lt. to Sta. 52+20, 57' 9/16" Rt.



DUCTLINE 11

Sta. 53+16, 53' 9/16" Lt. to Sta. 53+25, 58' 9/16" Rt.

APPROVED:
[Signature] 5/15/68
 HAWAIIAN ELECTRIC CO., INC. DATE
[Signature] 5-15-68
 HAWAIIAN TELEPHONE CO., LTD. DATE

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
UTILITIES
 ELECTRIC-TELEPHONE PROFILES
 KAMEHAMEHA HIGHWAY
 F.A. Proj. No. F-083-1(2), Unit 2
 Scale: Horiz. 1" = 20'
 Vert. 1" = 5' Date: March, 1968
 SHEET No. OF SHEETS

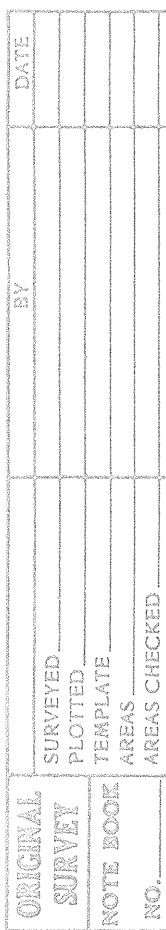
THIS SHEET IS A SUPPLEMENT TO THE CONTRACT PLANS

C 0 3 3 5 (2)

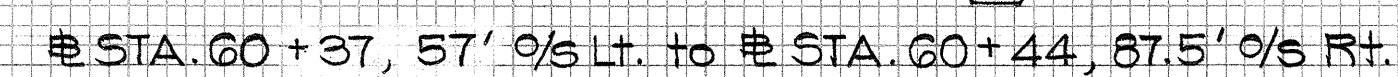
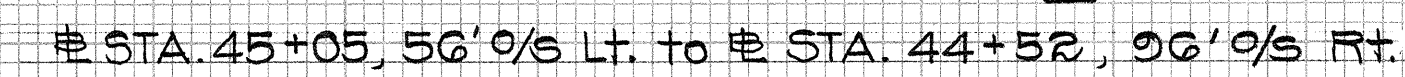
FINAL SURVEY
 SURVEYED
 PLOTTED
 TEMPLATE
 NOTE BOOK
 NO.

ORIGINAL SURVEY
 SURVEYED
 PLOTTED
 TEMPLATE
 NOTE BOOK
 NO.

FINAL	SURVEYED _____	BY _____	DATE _____
SURVEY	PLOTTED _____		
NOTE BOOK	TEMPLATE _____		
	AREAS _____		
NO.	AREAS CHECKED _____		



电 STA. 40+60, 57.5' o/s Lt. to 电 STA. 41+25, 65' o/s Rt.



APPROVED: J. A. Belfrage Jr. 5/15/68
HAWAIIAN ELECTRIC CO., INC. DATE

Maahani S. Young 5-15-68
HAWAIIAN TELEPHONE CO., LTD. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITIES

ELECTRIC-TELEPHONE PROFILES

KAMEHAMEHA HIGHWAY
F.A.Proj. No.F-083-1(2), Unit 2

Scale: Horiz. 1" = 20'
Vert. 1" = 5' Date : March, 1968

SHEET No. OF SHEETS

C O 3 3 \$ ((3))

Technical drawing of a rectangular stone platform with four sides labeled Kaneohe, Makai, Kailua, and Mauka. The drawing shows the layout of stones on each side, including dimensions and specific stone counts.

- Kaneohe Side:** 5'-0" wide, 3'-4 3/4" high. Features a 3x3 grid of stones. Dimensions: 2'-6" from left edge to first stone, 18" between stones, 2'-4 1/2" between stones, 6" from stones to right edge. "SET IN FIELD" dimension is 6".
- Makai Side:** 10'-0" wide, 3'-0" high. Features a 3x3 grid of stones. Dimensions: 2'-6" from left edge to first stone, 18" between stones, 2'-4 1/2" between stones, 6" from stones to right edge. "SET IN FIELD" dimension is 6".
- Kailua Side:** 5'-0" wide, 3'-0" high. Features a 3x3 grid of stones. Dimensions: 2'-6" from left edge to first stone, 18" between stones, 2'-4 1/2" between stones, 6" from stones to right edge. "SET IN FIELD" dimension is 6".
- Mauka Side:** 10'-0" wide, 3'-0" high. Features a 3x3 grid of stones. Dimensions: 2'-6" from left edge to first stone, 18" between stones, 2'-4 1/2" between stones, 6" from stones to right edge. "SET IN FIELD" dimension is 6".

The drawing also shows the "PULLING-IN IRON" dimension, which is 5'-0" from the edge to the first stone on the Kaneohe and Makai sides, and 5'-0" from the edge to the first stone on the Kailua and Mauka sides.

Technical drawing of a rectangular structure, likely a boat hull or a large container, showing dimensions and internal features. The drawing is oriented horizontally with a vertical centerline on the right side.

Dimensions:

- Overall Width (Left to Right):** 3'-0" (Total)
- Overall Height (Top to Bottom):** 9'-0" (Total)
- Internal Widths (from Left to Right):**
 - 4'-6" (MAKAI SIDE)
 - 8'-0" (KAILUA SIDE)
 - 4'-6" (MAUKA SIDE)
 - 8'-0" (KANEHOE SIDE)
- Internal Heights (from Bottom to Top):**
 - 18"
 - 2'-0"
 - 2'-3"
 - 2'-0"
 - 10 1/2'
 - 6"
- Internal Features:**
 - MAKAI SIDE:** A rectangular structure with a width of 6" and a height of 16 1/2". It contains six circular openings arranged in two rows of three. The distance from the bottom of the structure to the bottom of the openings is 22 1/2". The distance from the right side of the structure to the right side of the openings is 10 1/2".
 - MAUKA SIDE:** A rectangular structure with a width of 6" and a height of 16 1/2". It contains two circular openings arranged in a single row. The distance from the bottom of the structure to the bottom of the openings is 10 1/2". The distance from the right side of the structure to the right side of the openings is 2'-0".
 - PULLING-IN IRON:** A curved line indicating a pulling-in feature, located between the MAUKA SIDE and the KANEHOE SIDE.

[illegible]

Architectural drawing of a rectangular stone table with four sides labeled: Kaneohe Side, Makai Side, Kailua Side, and Mauka Side. The drawing shows the table's dimensions and features, including a central rectangular opening on the Kaneohe and Kailua sides. The opening is 22 1/2 inches wide and 22 inches deep. The table is 4 feet 6 inches wide and 8 feet 0 inches deep. The drawing includes a "PULLING-IN IRON" detail on the Makai side. The drawing is oriented with Kaneohe at the top and Mauka at the bottom.

Technical drawing of a rectangular box with four circular openings, showing dimensions and assembly details. The drawing includes a top view and a side view. The top view shows a box with four circular openings arranged in a 2x2 grid. The side view shows the box with a height of 10 1/2 inches. Dimensions are given in feet and inches. The drawing is labeled "PULLING-IN IRON" and "KANEHOE SIDE", "MAKAI SIDE", "KAILUA SIDE", and "MAUKA SIDE".

Dimensions and Labels:

- Top View Dimensions:
 - Overall Width: 4'-6"
 - Overall Depth: 8'-0"
 - Opening Width: 2'-2 1/2"
 - Opening Depth: 10 1/2"
 - Opening Spacing: 6"
- Side View Dimensions:
 - Overall Height: 10 1/2"
 - Opening Height: 6"
 - Opening Width: 2'-2 1/2"
 - Opening Depth: 10 1/2"
 - Opening Spacing: 6"
- Labels:
 - PULLING-IN IRON
 - KANEHOE SIDE
 - MAKAI SIDE
 - KAILUA SIDE
 - MAUKA SIDE

Technical drawing of a rectangular structure, likely a traditional Hawaiian canoe hull or a similar vessel, showing four sides with dimensions and details.

Dimensions:

- Overall Width (Top):** 6'-0"
- Overall Length (Bottom):** 4'-6" (KANE'OE SIDE) + 8'-0" (MAKAI SIDE) + 4'-6" (KAILUA SIDE) + 8'-0" (MAUKA SIDE) = 25'-0"
- Height (Right Side):** 3'-0" (MAKAI SIDE), 4'-0" (KAILUA SIDE), 18" (MAUKA SIDE)

Details:

- KANE'OE SIDE:** Shows a rectangular opening with two circular holes. Dimensions: 10 1/2" (height), 6" (width), 6 1/2" (width).
- MAKAI SIDE:** Shows a rectangular opening with eight circular holes arranged in a 3x3 grid. Dimensions: 22 1/2" (width), 22 1/2" (height), 3'-0" (overall height).
- KAILUA SIDE:** Shows a rectangular opening with three circular holes. Dimensions: 22 1/2" (width), 10 1/2" (height), 6" (width).
- MAUKA SIDE:** Shows a curved section labeled "PULLING-IN IRON". Dimensions: 18" (height), 4'-0" (width).

HAWAIIAN TELEPHONE CO. MANHOLES INTERIOR ELEVATION VIEWS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UTILITIES

H.T. Co. MANHOLES

INTERIOR ELEVATION VIEWS

KAMEHAMEHA HIGHWAY
F-083-1(2), Unit 2

Scale: As Noted Date: May, 1968

SHEET No. OF SHEETS

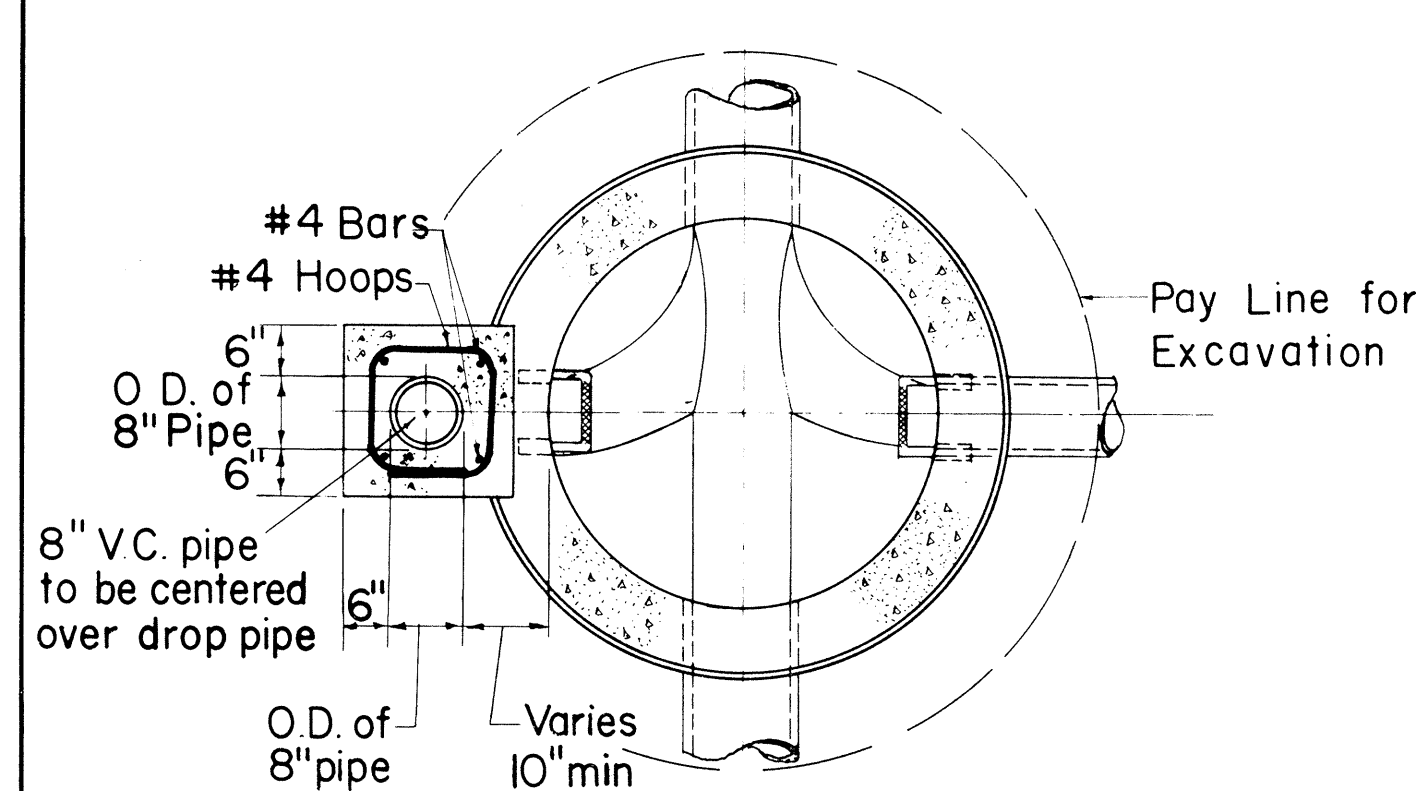
C O 33 S (4)

PRINTED ON NO. 1000H CLEARPRINT

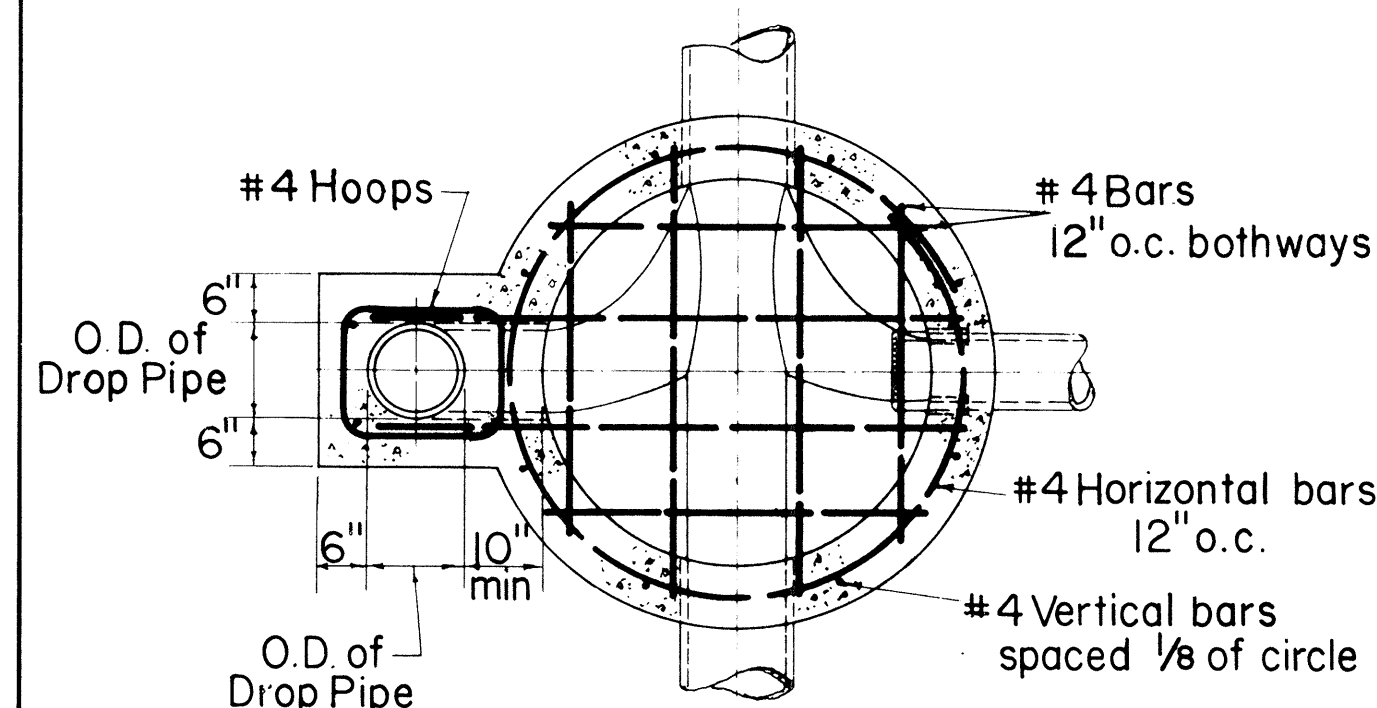
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	F-083-1(2) Unit 2	1967	35	83

NOTE:

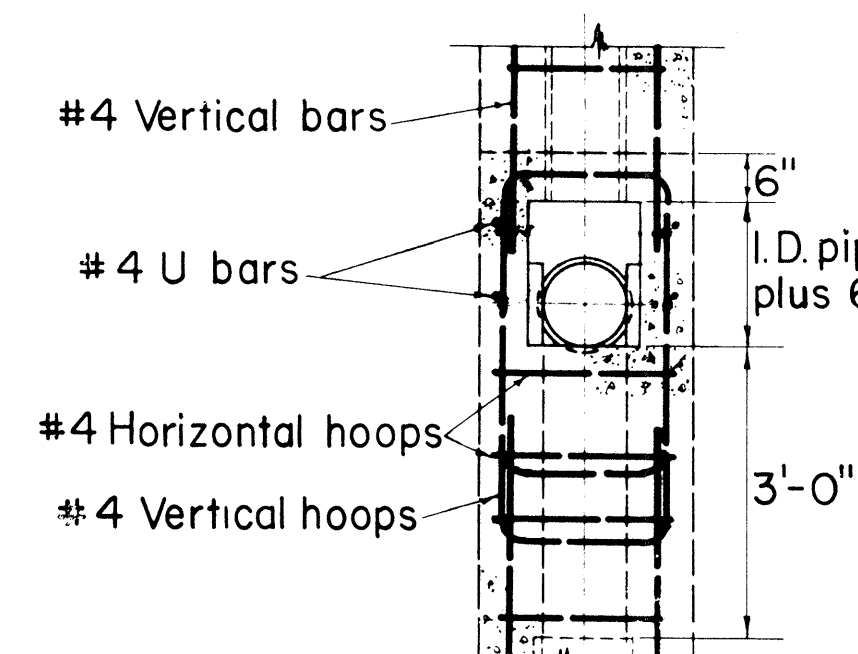
Reinforced concrete manhole walls (See detail of plain manhole) shall be used for portions below the water table.



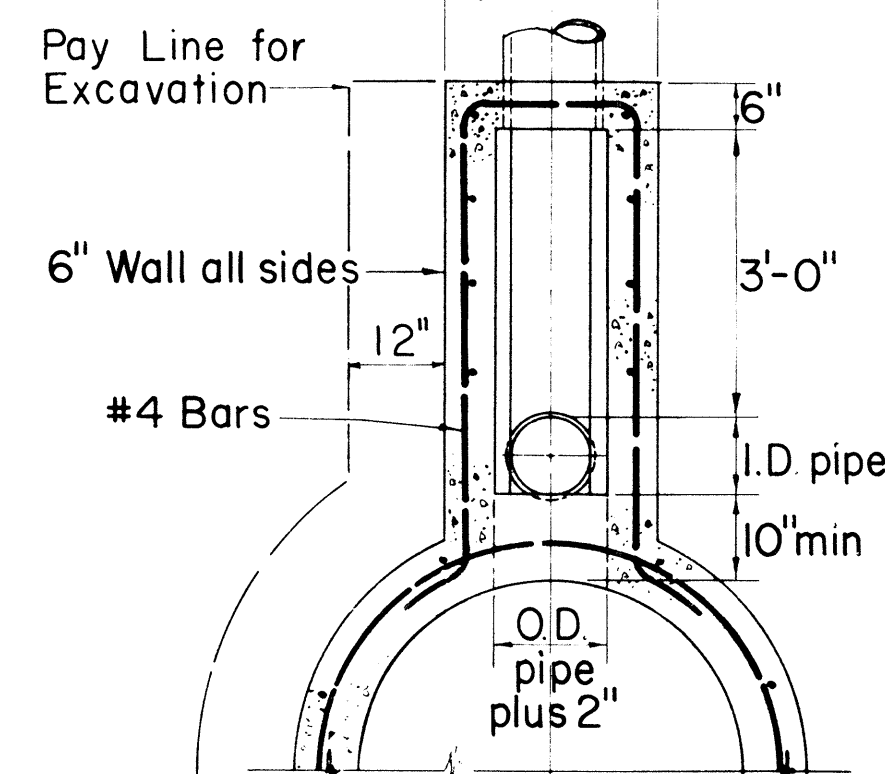
SECTION A-A
Scale: 1/2" = 1'-0"



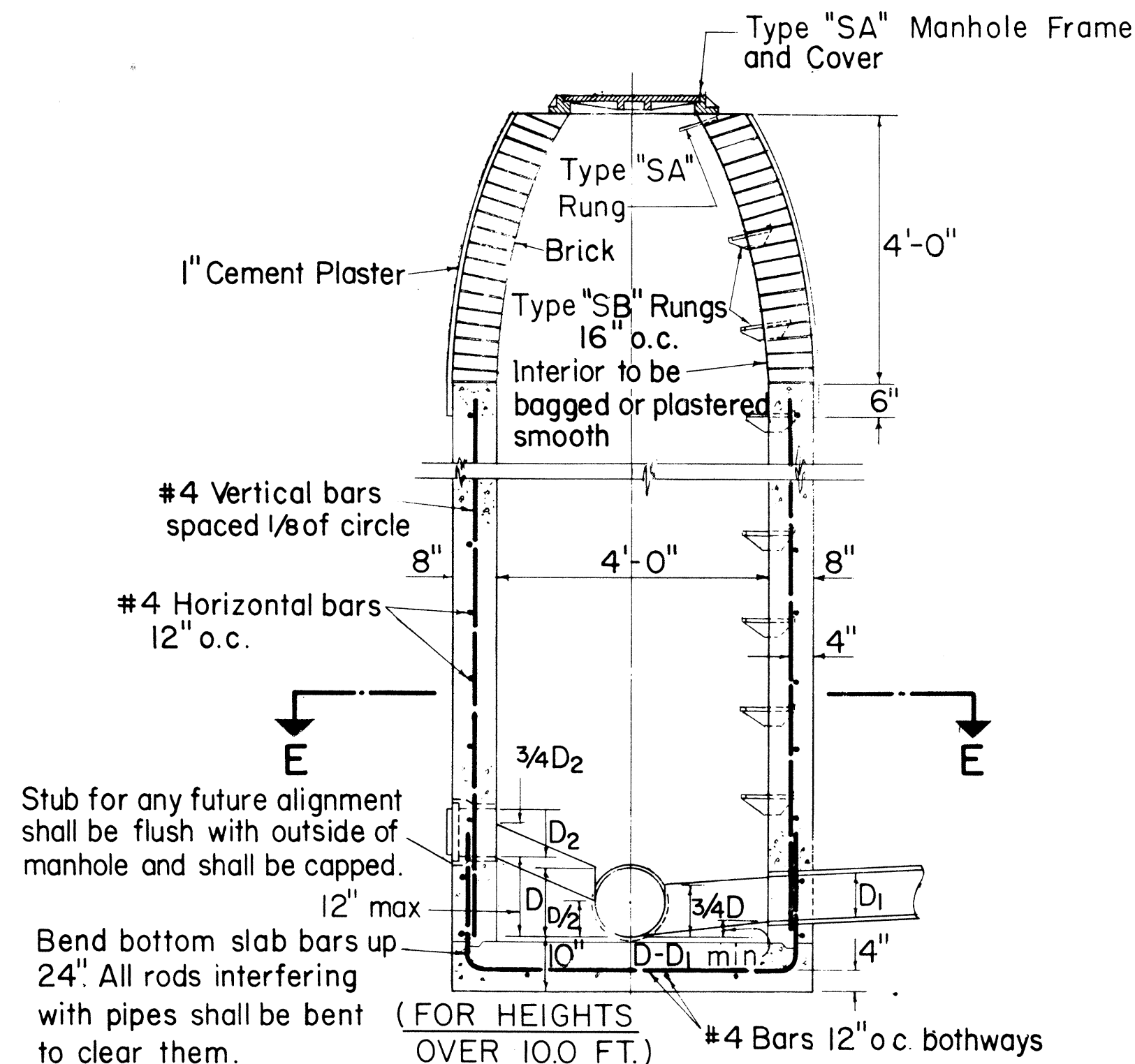
SECTION B-B
Scale: 1/2" = 1'-0"



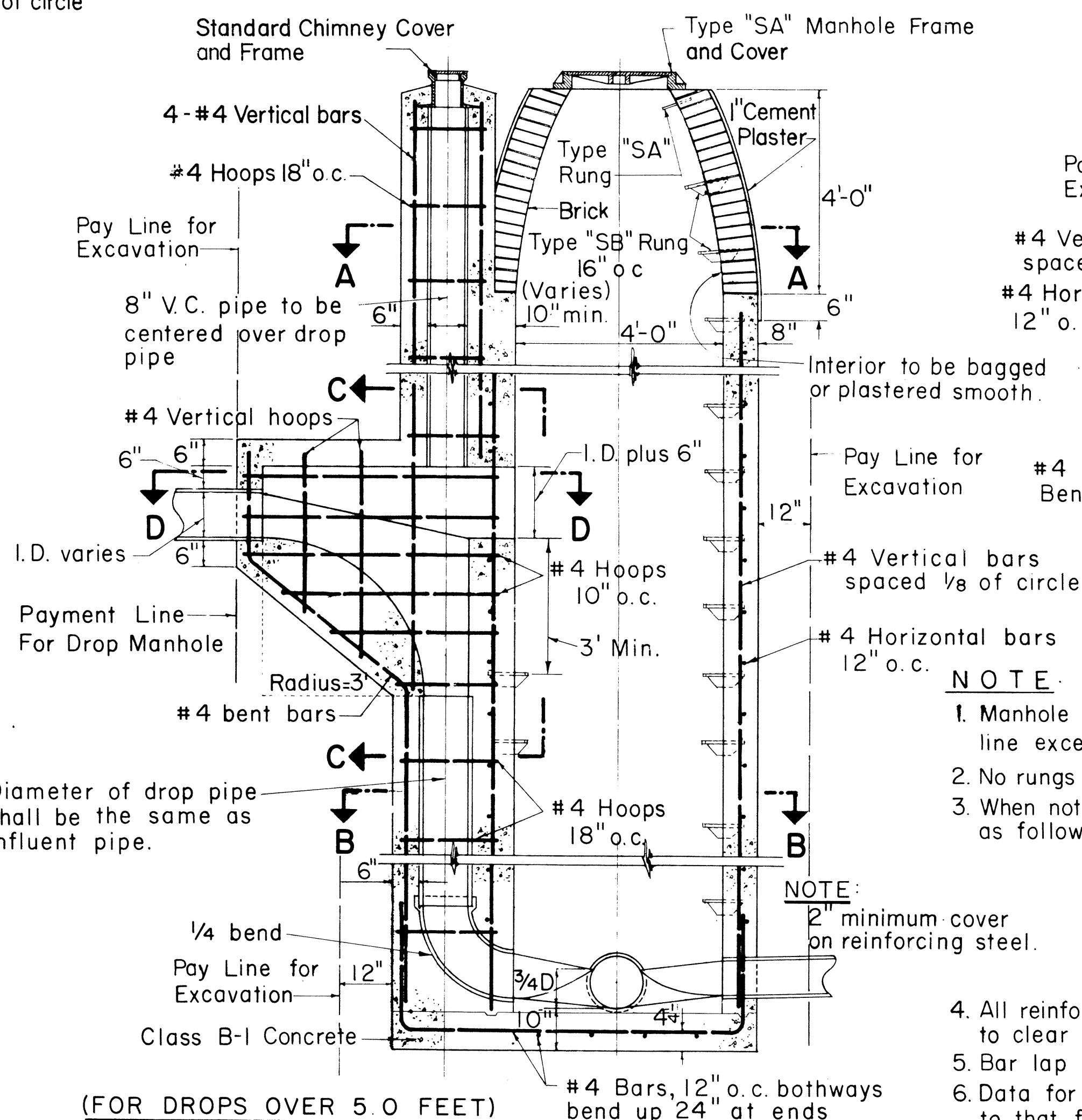
SECTION C-C
Scale: 1/2" = 1'-0"



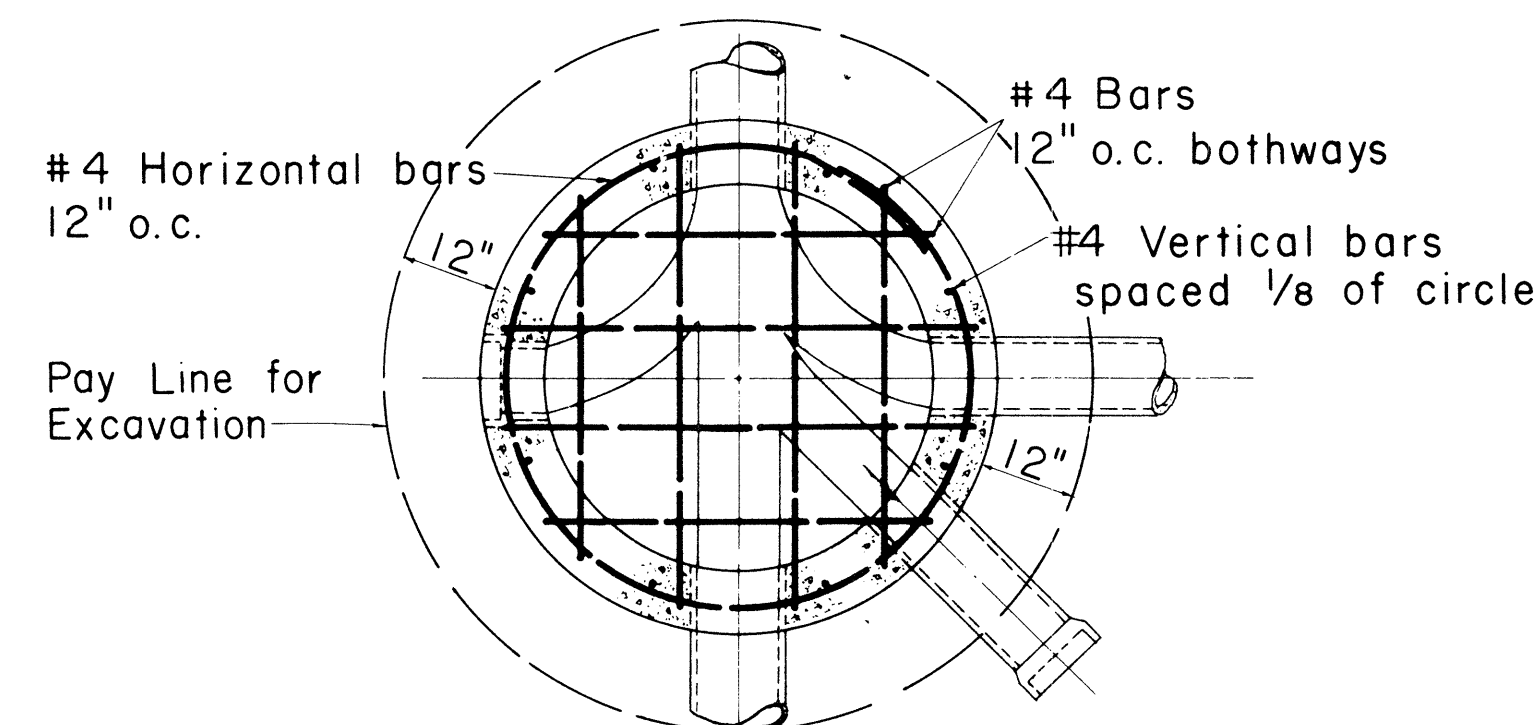
SECTION D-D
Scale: 1/2" = 1'-0"



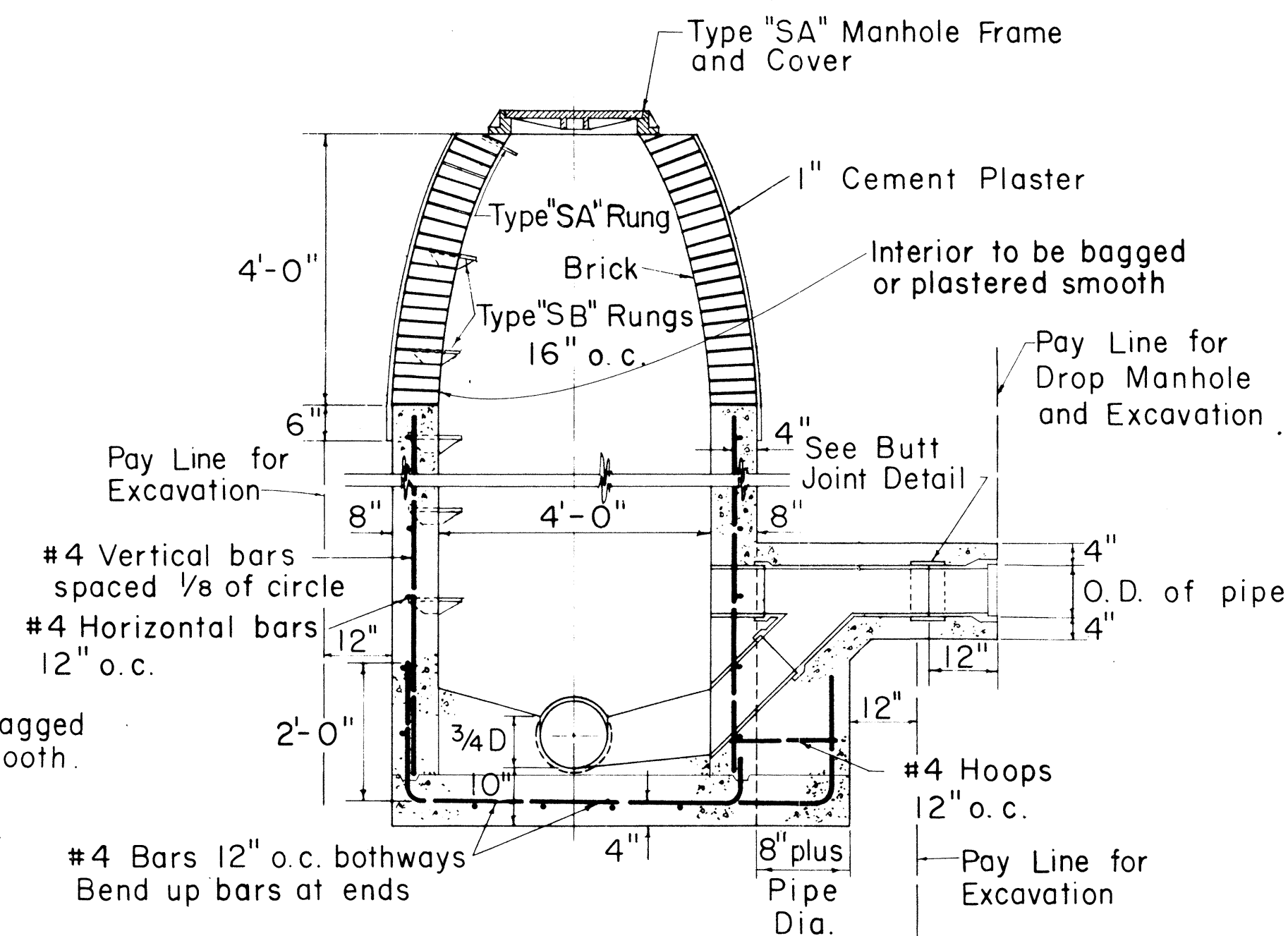
PLAIN MANHOLE
Scale: 1/2" = 1'-0"



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



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



SHALLOW DROP MANHOLE
Scale: 1/2" = 1'-0"

NOTE:

1. Manhole rungs shall not be aligned above any flow line except in drop manhole.
2. No rungs shall be installed in manholes less than 3' high.
3. When not otherwise noted, manhole stubs shall be sloped as follows:

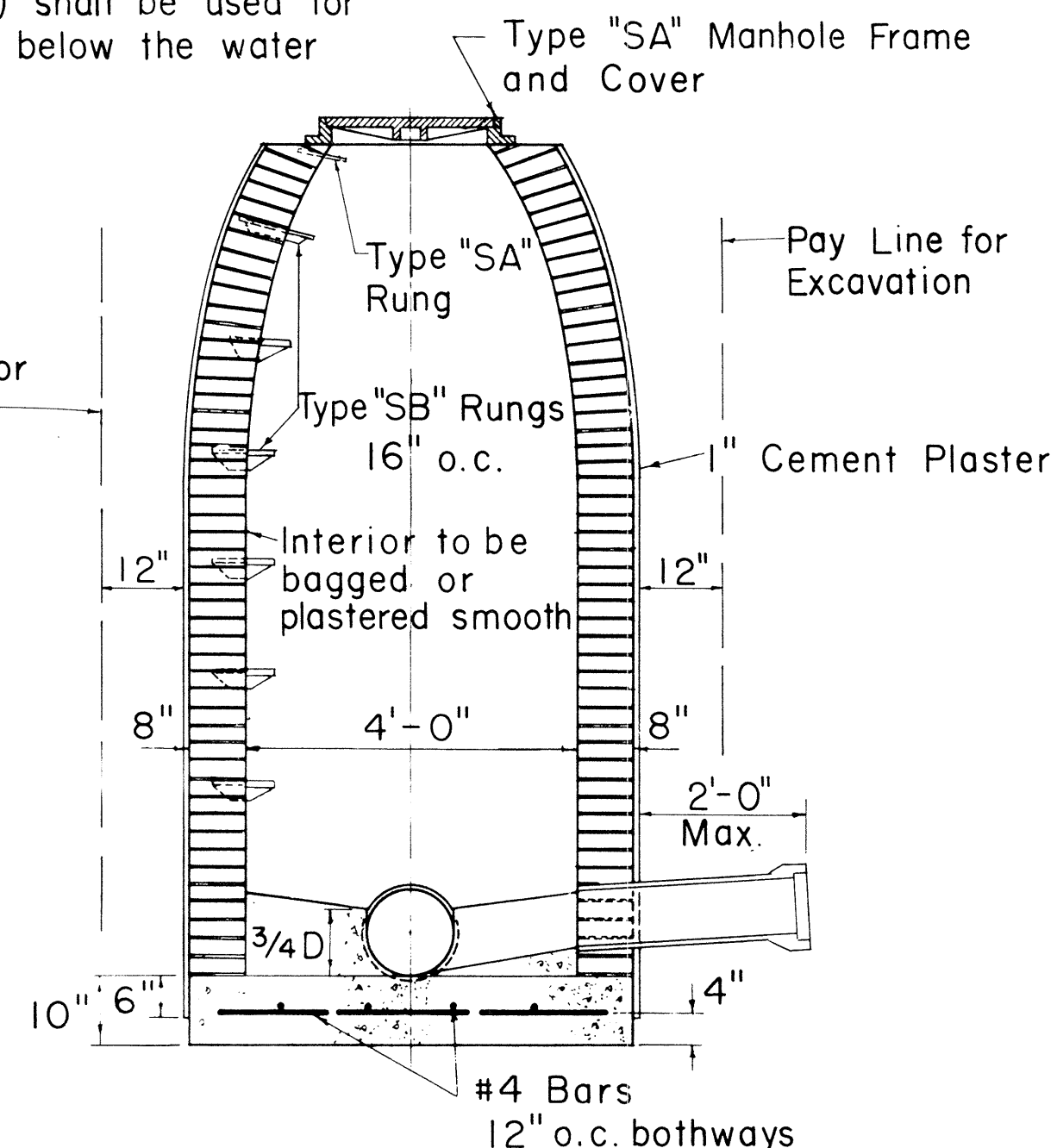
Pipe Size	Rise Per Foot
6"	1/8"
8"	3/32"
10"	1/16"
12"	1/16"

4. All reinforcing rods interfering with pipes shall be bent to clear them.
5. Bar lap to be 40 diameters in length.
6. Data for special manholes not shown shall be similar to that for plain manholes.
7. Size of drop pipe in all Drop Manholes shall be same as influent line.

APPROVED:

SEWER SYSTEM DIRECTOR,
DIVISION OF SEWERS

DATE



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

Payment for excavation for manholes shall be made under unit price for trench excavation and shall be measured to one foot outside of walls from original ground elevation to authorized bottom elevation.
Payment for manhole walls (brick, or cast-in-place concrete) shall include brick, mortar, concrete, reinforcing steel, cast-iron steps, galvanized wrought iron rungs, and plastering.

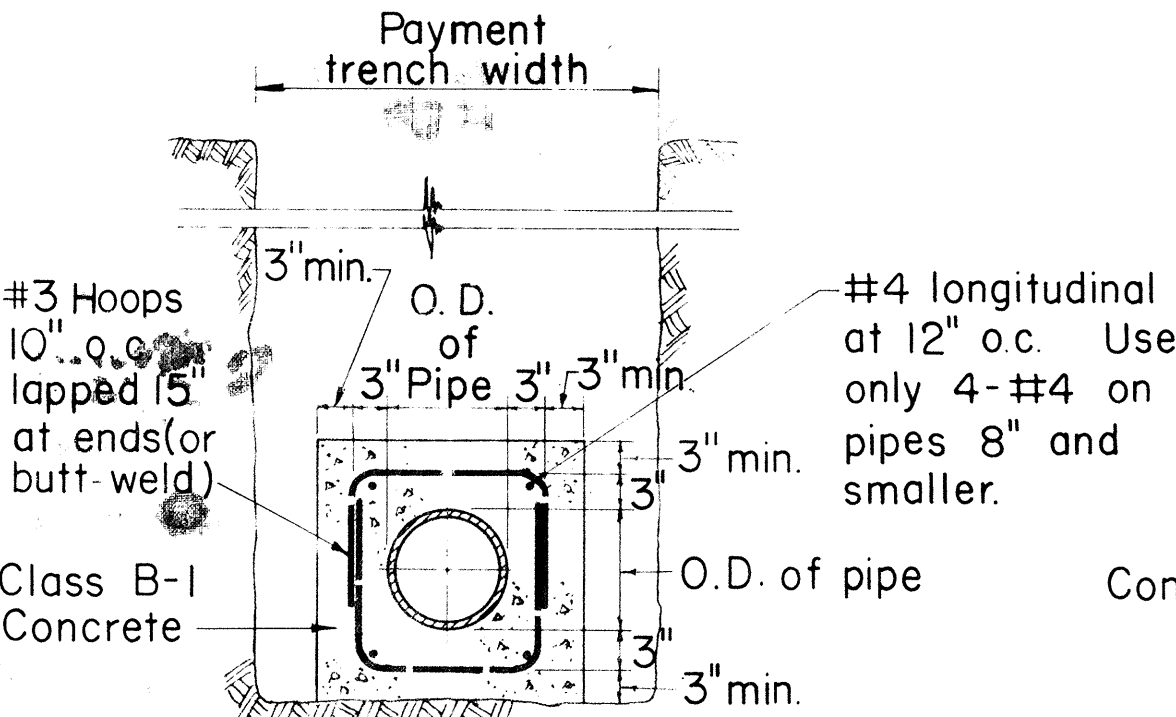
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DIVISION OF SEWERS
CITY & COUNTY OF HONOLULU

STANDARD DETAILS
SEWERS - DROP MANHOLE AND
BRICK MANHOLE DETAILS

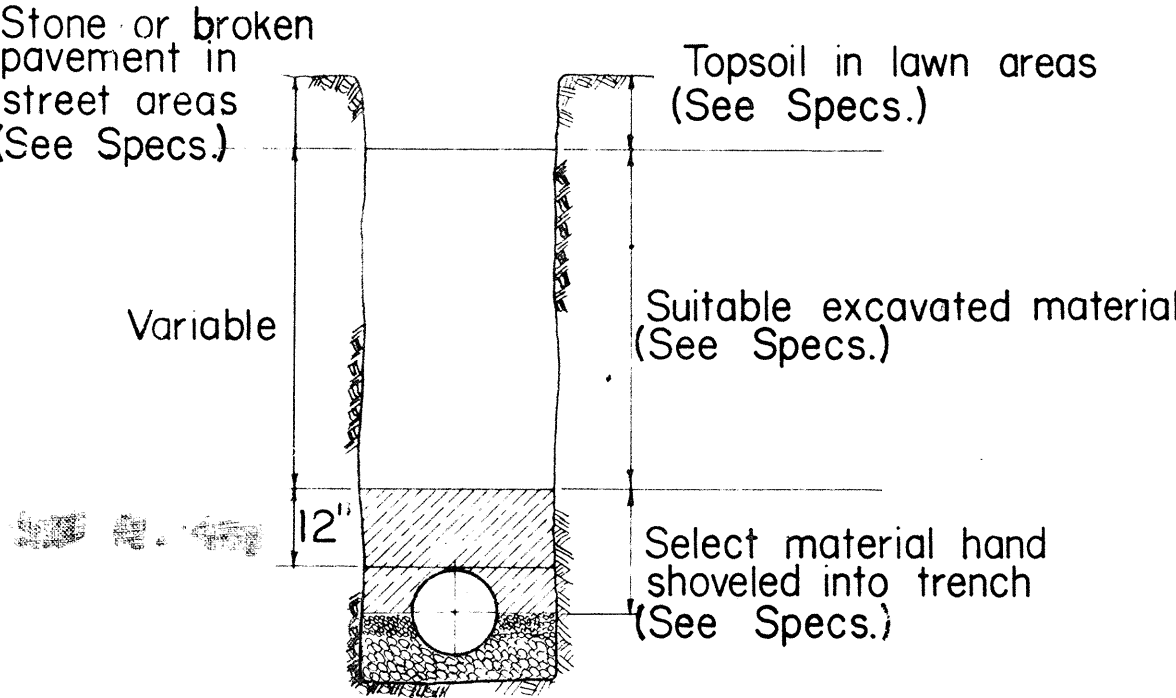
Scales: As Noted
Date:

SHEET NO. 10 OF 18 SHEETS

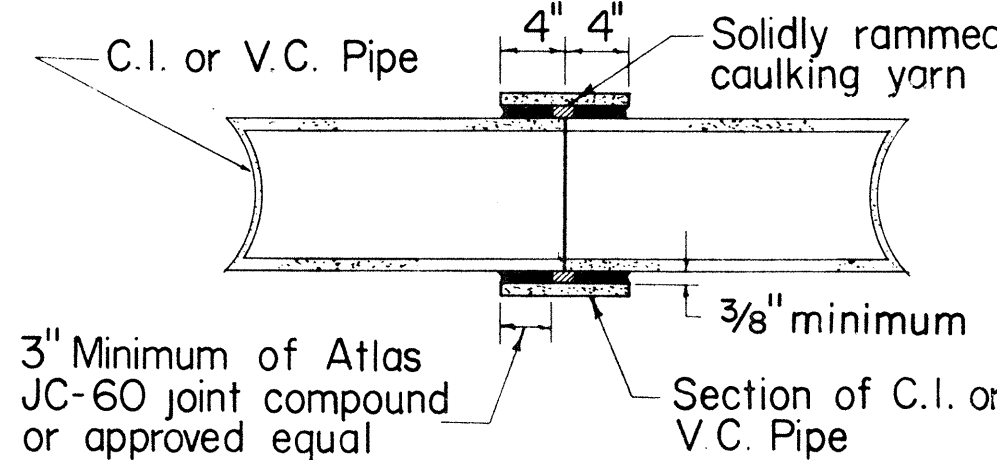
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	F-003-1(2) Unit 2	1967	36	83



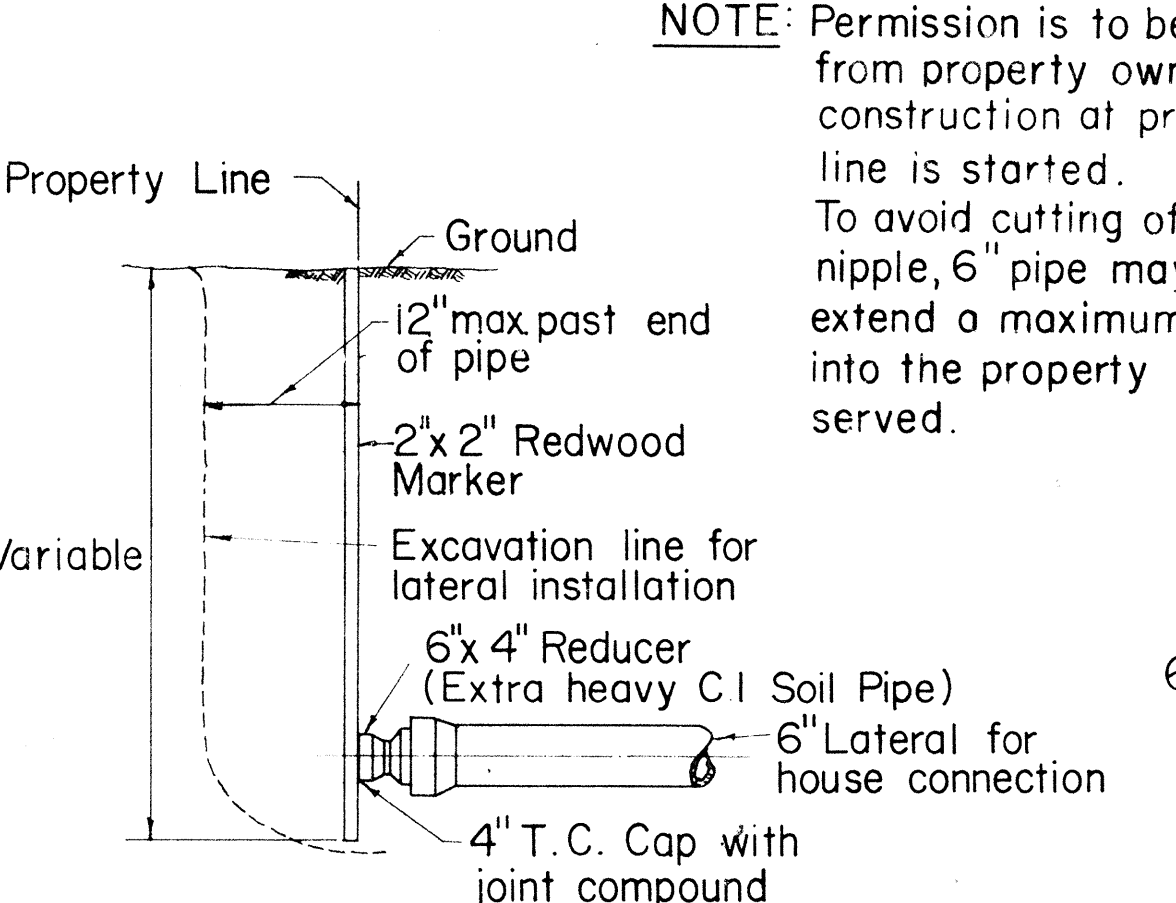
DETAIL OF CONCRETE JACKET
Scale: 3/4" = 1' - 0"



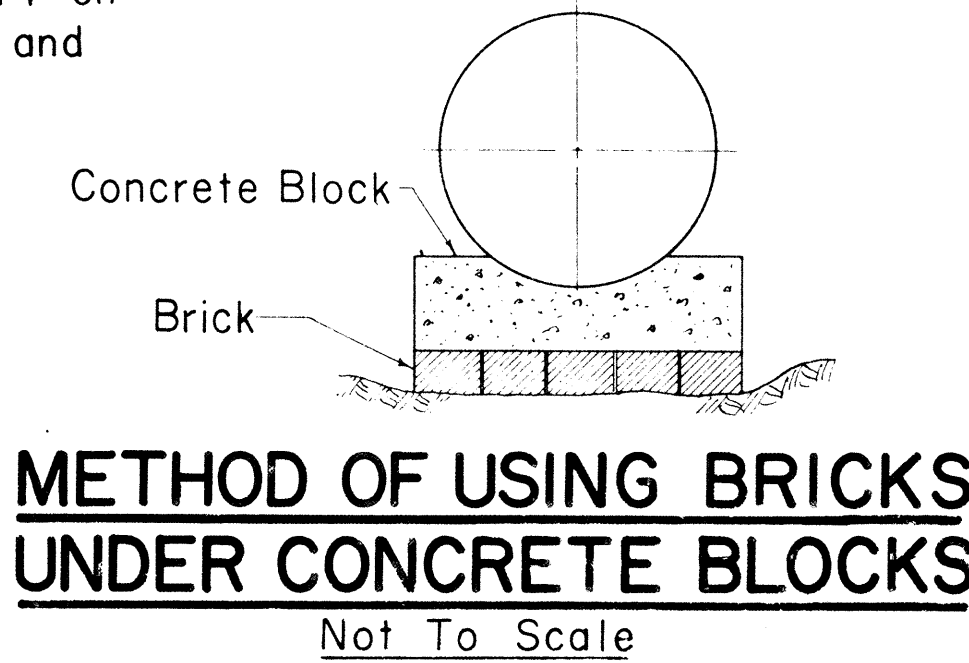
METHOD OF BACKFILL
Not To Scale



BUTT JOINT DETAIL
Scale: 1" = 1' - 0"

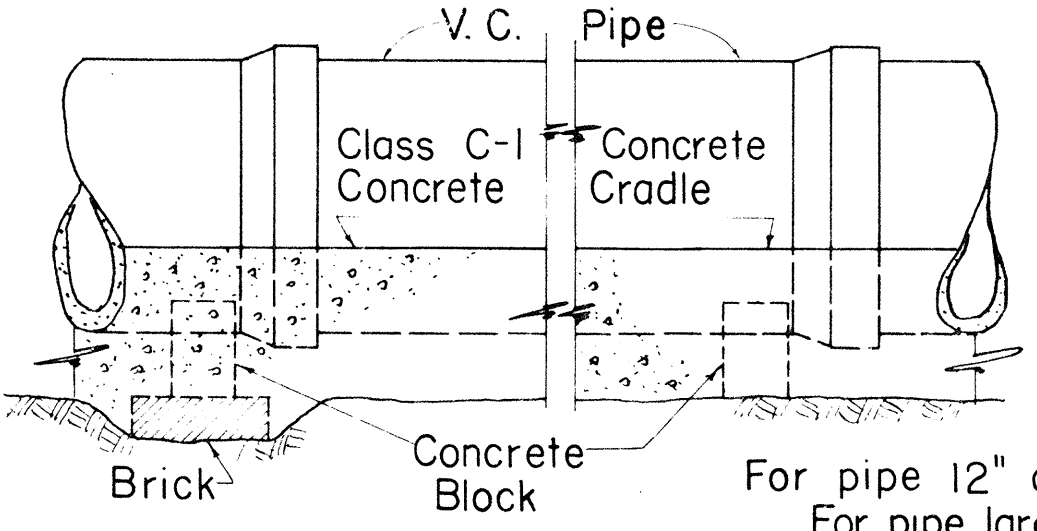


DETAIL AT PROPERTY LINE

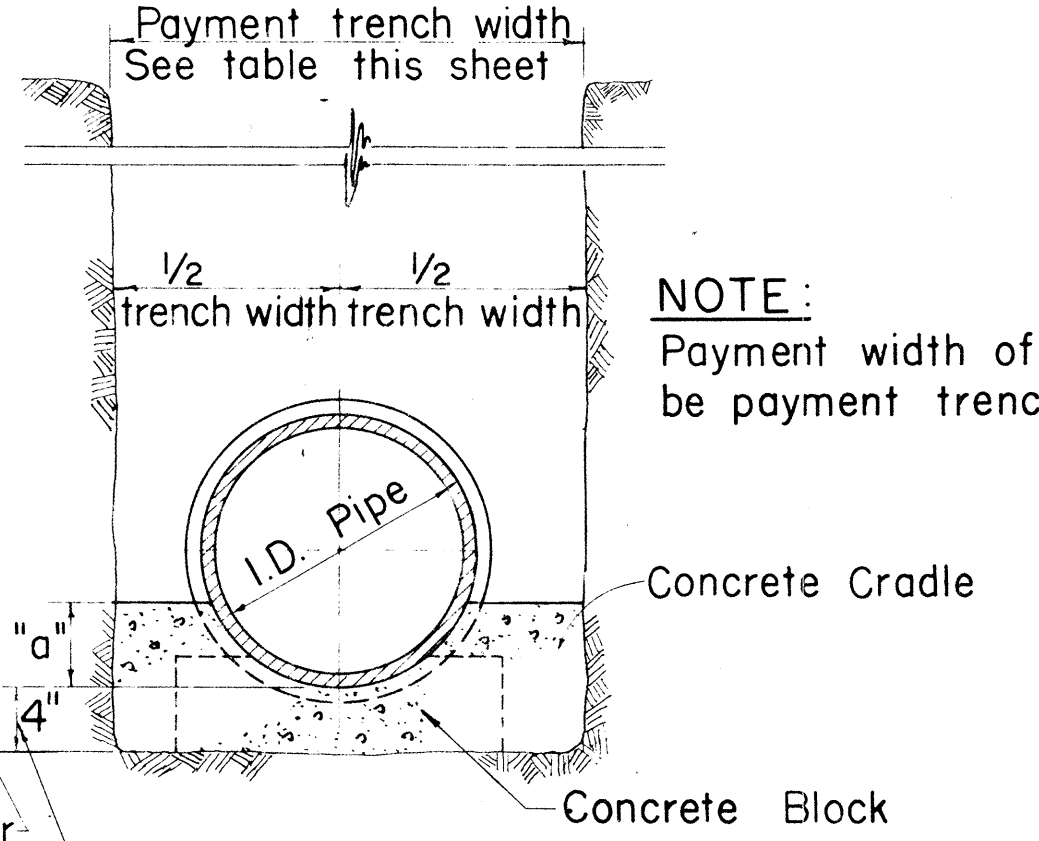


METHOD OF USING BRICKS UNDER CONCRETE BLOCKS
Not To Scale

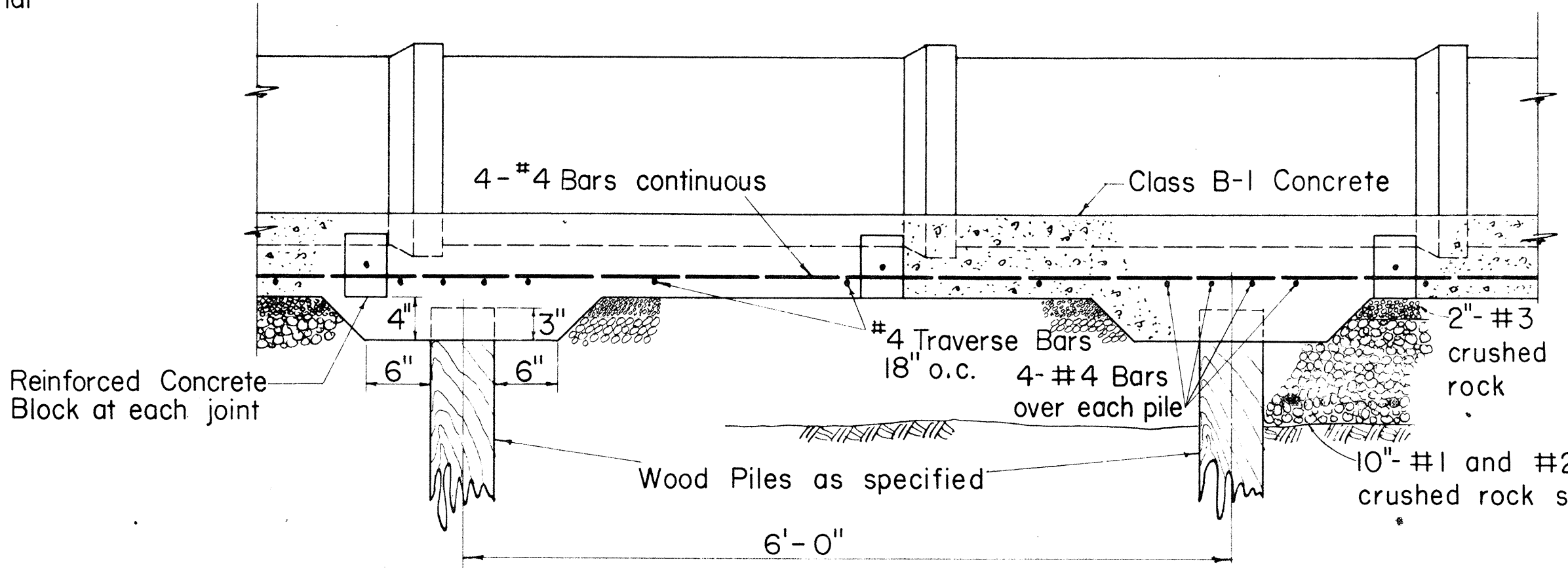
Contractor shall set Concrete Blocks on undisturbed ground. Where ground is too low, the contractor shall not heap up dirt under the Concrete Block but use Concrete Bricks to take up the deficiency, scraping away beneath Concrete Block to give sufficient room for Brick.



ELEVATION SHOWING METHOD OF LAYING PIPE
Not To Scale

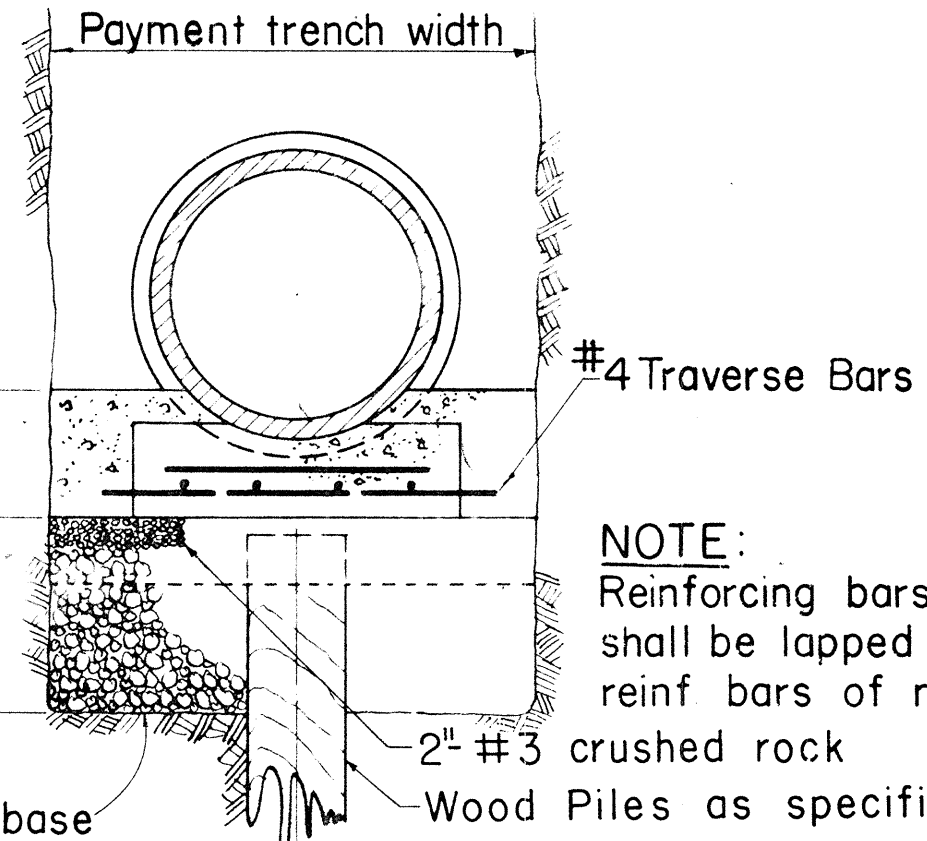


CONCRETE CRADLE FOR VITRIFIED CLAY PIPE
Not To Scale

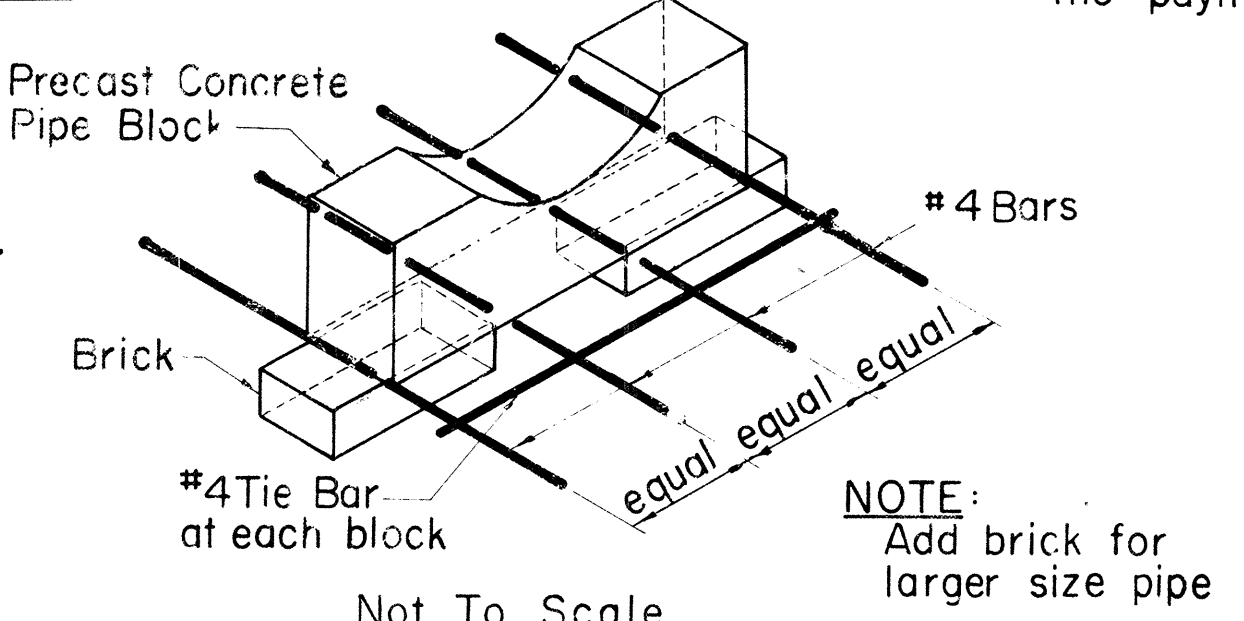


DETAIL OF REINFORCED CONCRETE CRADLE ON WOOD PILES (FOR 6, 8, 10 & 12 IN. V.C. PIPE)

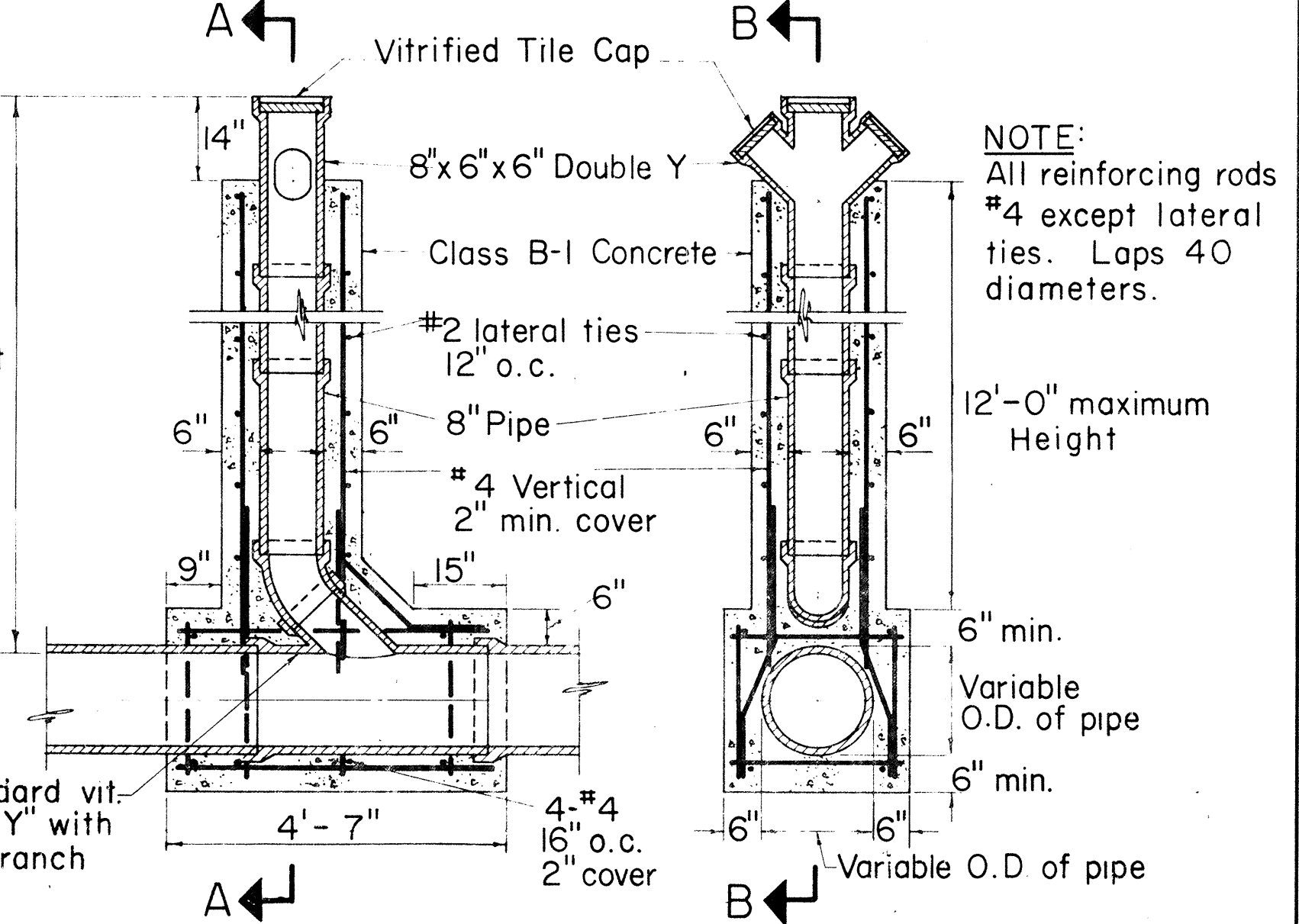
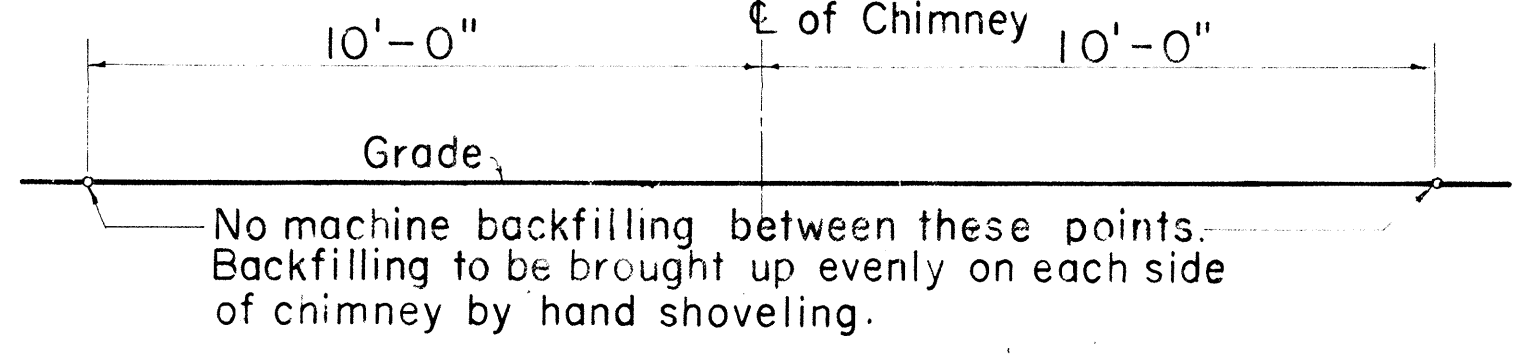
DETAIL OF REINFORCED CONCRETE CRADLE WITHOUT PILES SIMILAR EXCEPT FOR WOOD PILES AND PILE CAPS



SECTION



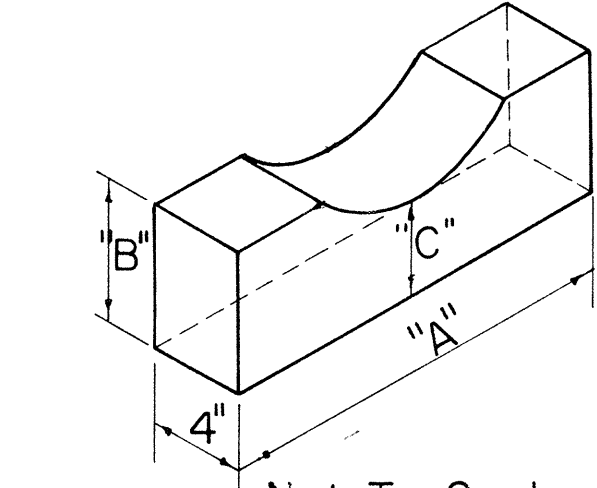
ALTERNATE DETAIL OF CONC. PIPE BLOCK FOR REINF. CRADLE



SECTION B-B SECTION A-A DETAILS OF CHIMNEY
Scale: 1/2" = 1' - 0"

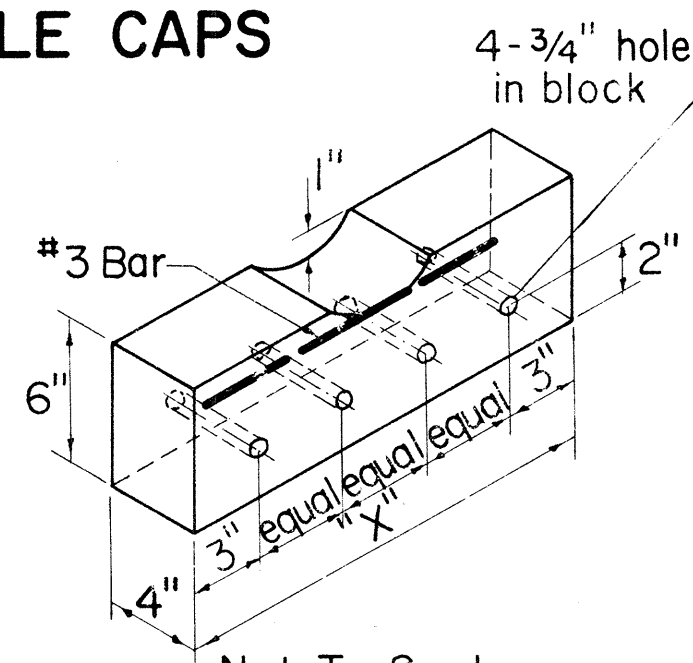
Payment quantities for trench excavation, crushed rock fill, crushed rock cradle, and crushed rock sub-base shall be computed using payment trench widths as shown in the table of "Trench Widths". No payment shall be made for excess quantities resulting from trench widths greater than the payment trench widths shown.

VITRIFIED CLAY PIPE TABLE				
TRENCH WIDTHS		DIM. OF CONC. CRADLE		
PIPE SIZE	PAY. WIDTH	PIPE SIZE	"a"	WIDTH
6"	24"	6"	3"	24"
8"	24"	8"	3"	24"
10"	24"	10"	3"	24"
12"	30"	12"	3"	30"
15"	38"	15"	4"	38"
18"	41"	18"	5"	41"
21"	45"	21"	5"	45"
24"	50"	24"	6"	50"
27"	53"	27"	7"	53"
30"	57"	30"	7"	57"



DETAIL OF PRECAST CONC. PIPE BLOCK

CONCRETE BLOCK DIMENSIONS			
PIPE SIZE	"A"	"B"	"C"
6"	1' - 2"	6"	3"
8"	1' - 5"	6"	3"
10"	1' - 7"	6"	3"
12"	1' - 7"	6"	3"
15"	1' - 8"	6"	4"
18"	1' - 9"	6"	4"
21"	1' - 10"	6"	4"
24"	1' - 11"	6"	4"
27"	2' - 0"	6"	4"
30"	2' - 3"	6"	4"



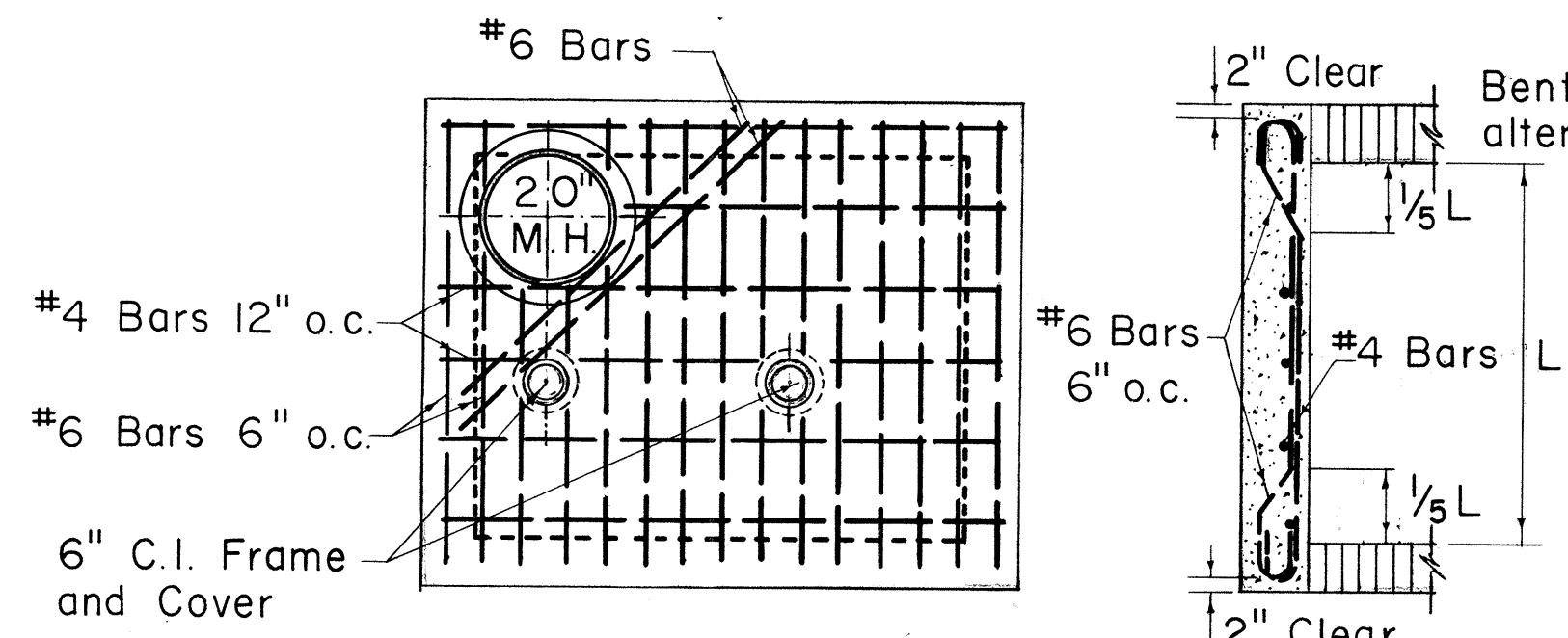
DETAIL OF CONC. PIPE BLOCK FOR REINF. CRADLE

DIM. OF REINF. CONC. BLOCK	
PIPE SIZE	"X"
6"	1' - 6"
8"	1' - 6"
10"	1' - 8"
12"	1' - 8"
15"	1' - 10"
18"	1' - 10"
21"	1' - 10"
24"	2' - 0"
27"	2' - 0"
30"	2' - 0"

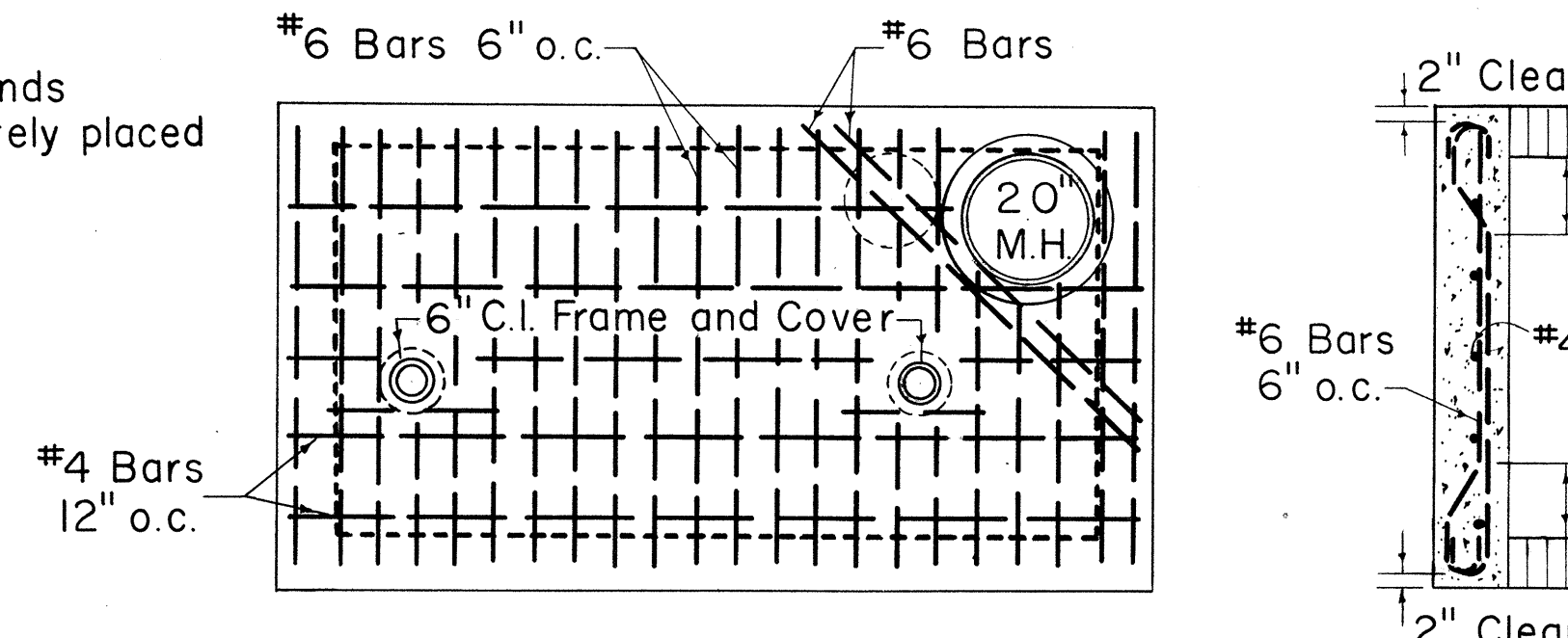
APPROVED:

SEWER SYSTEM DIRECTOR, DIVISION OF SEWERS
DATE: 10/10/67

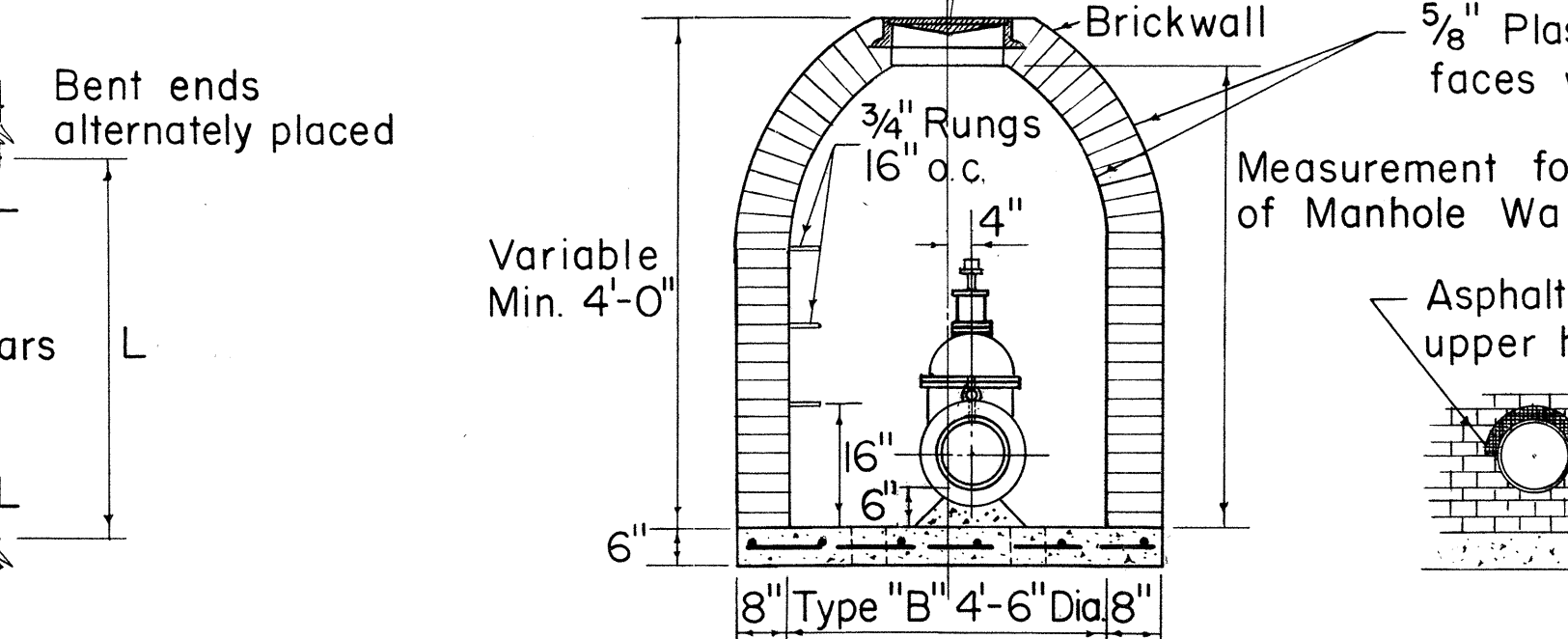
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DIVISION OF SEWERS
CITY & COUNTY OF HONOLULU
STANDARD DETAILS
SEWERS - CONCRETE JACKET & MISCELLANEOUS DETAILS
Scales: As Noted
Date:



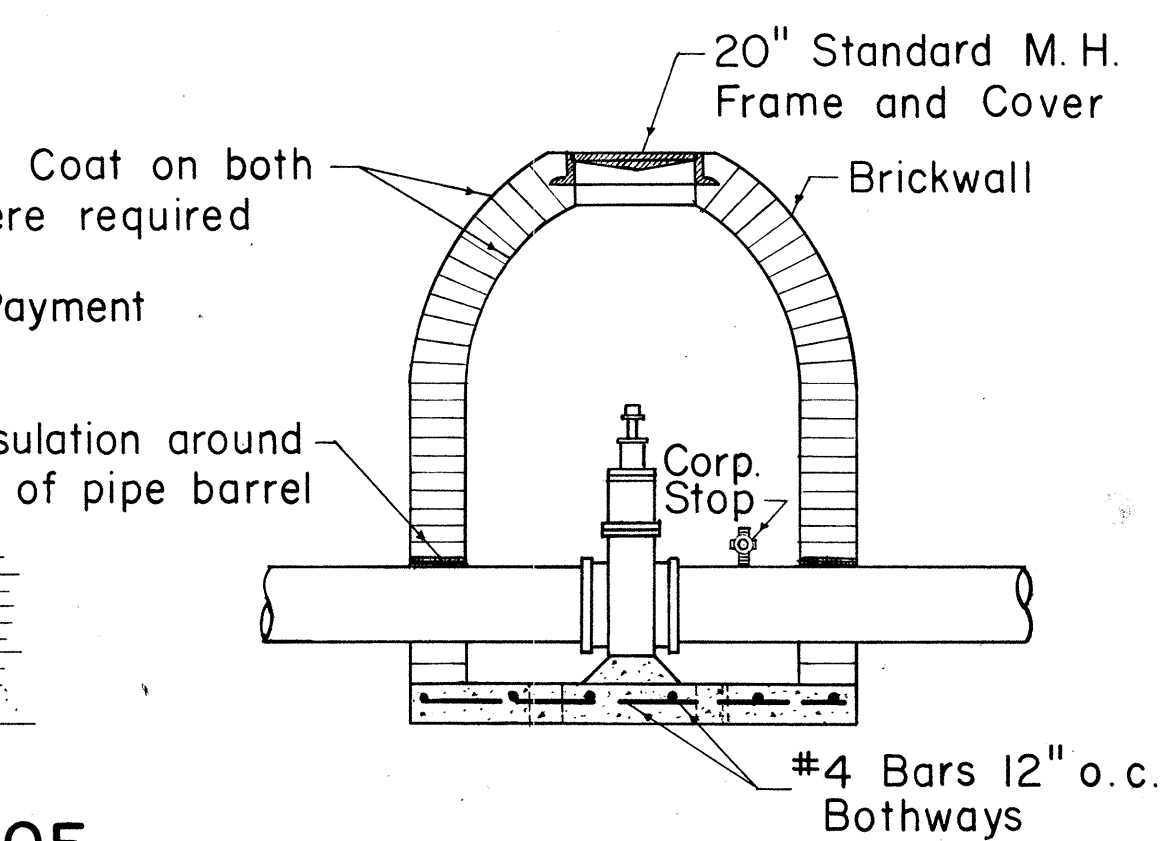
PLAN OF TOP SLAB



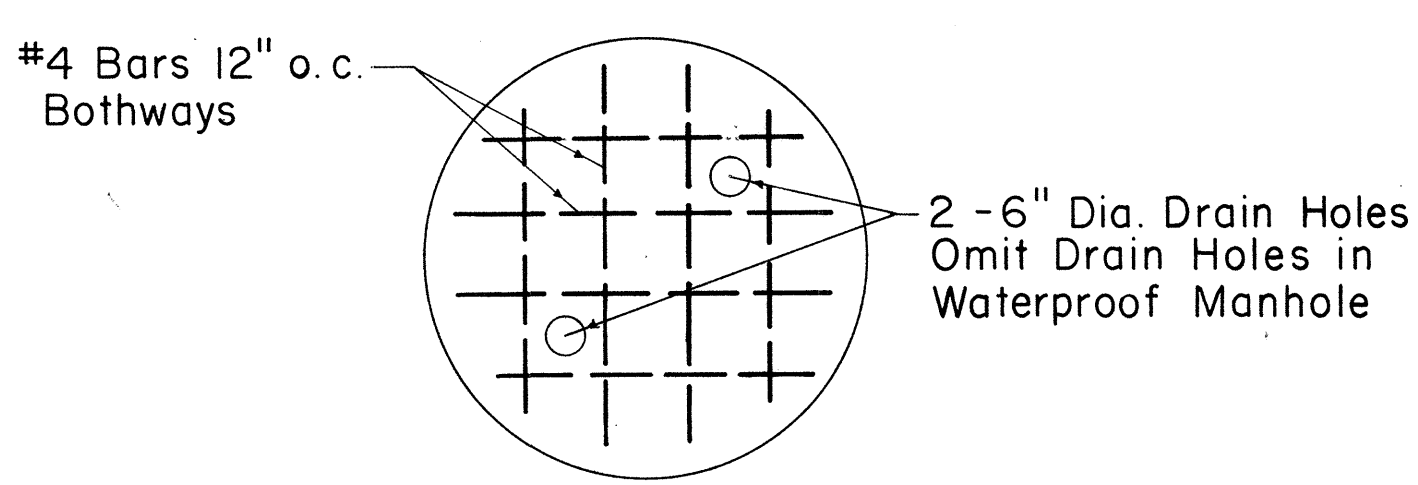
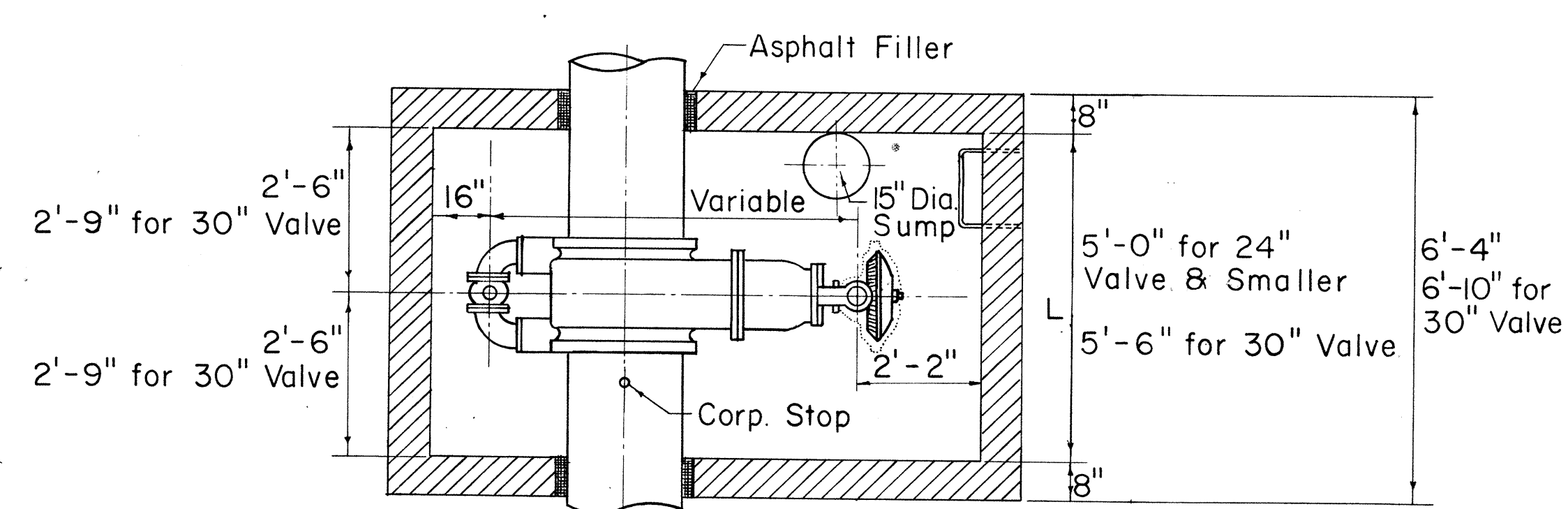
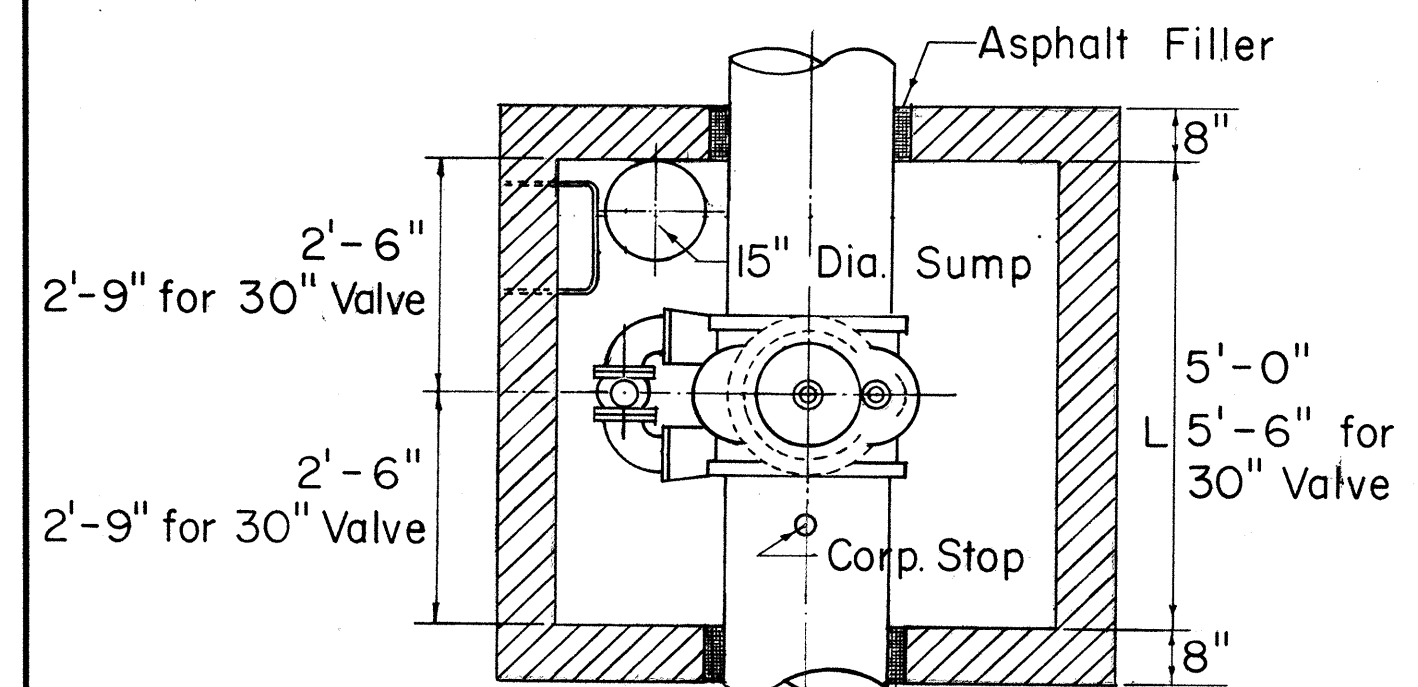
PLAN OF TOP SLAB



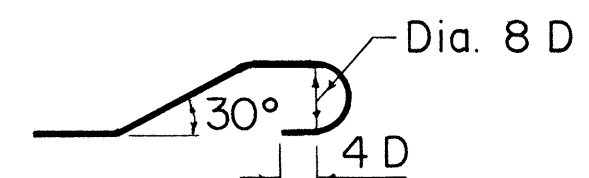
SECTION A-A



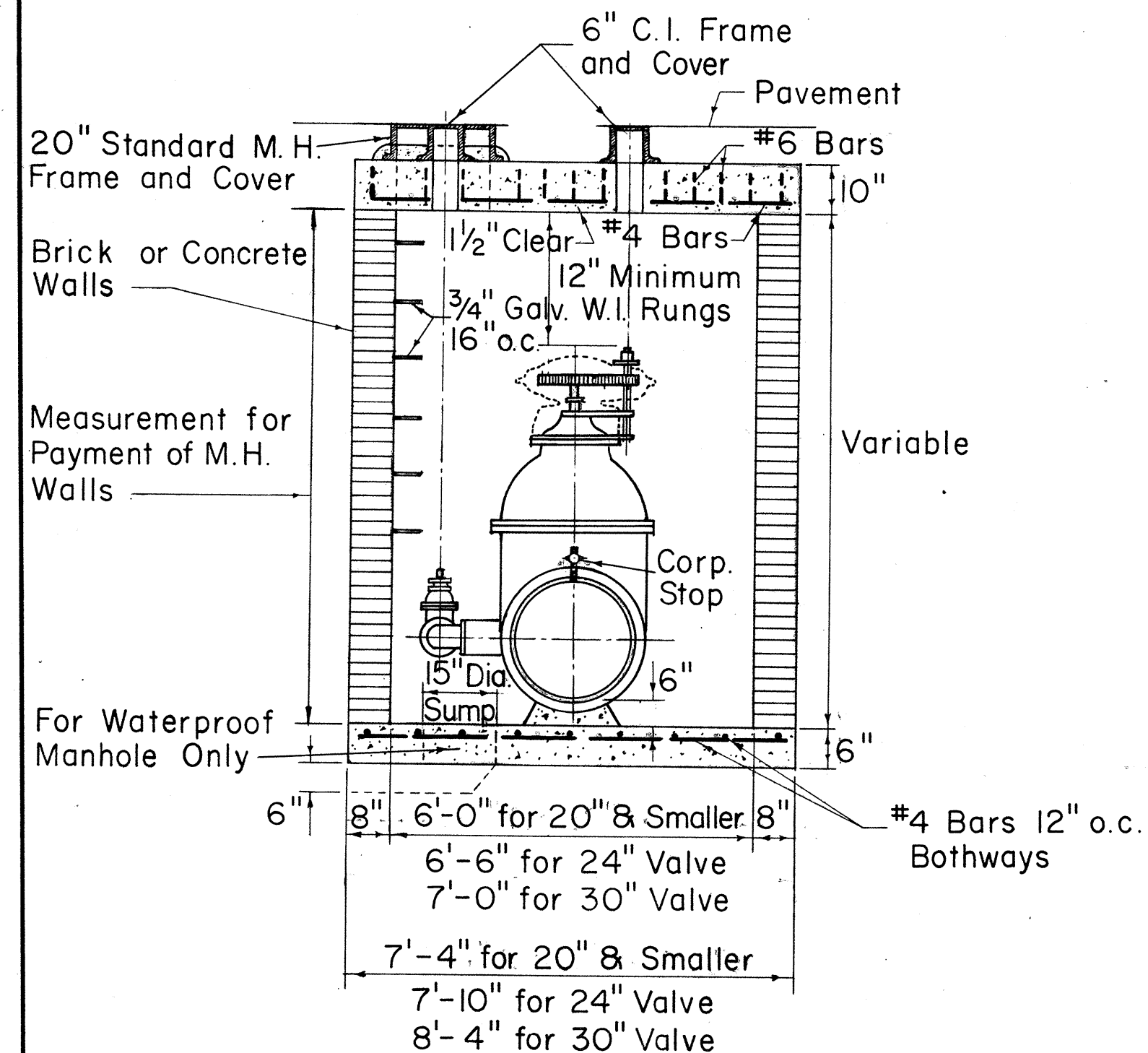
DETAIL OF ASPHALT FILLER



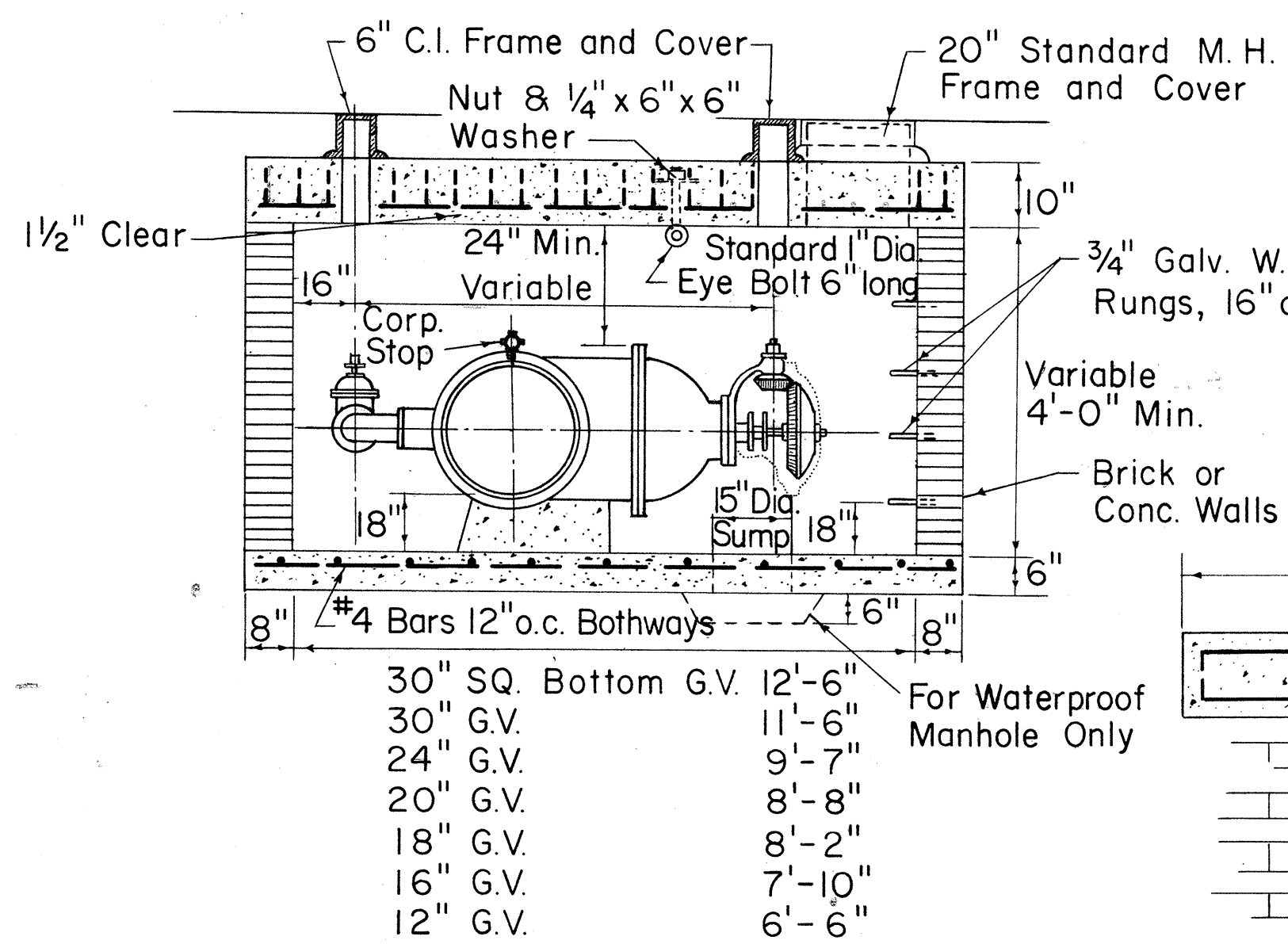
STEEL DETAIL IN BOTTOM SLAB



BAR BENDING DETAIL

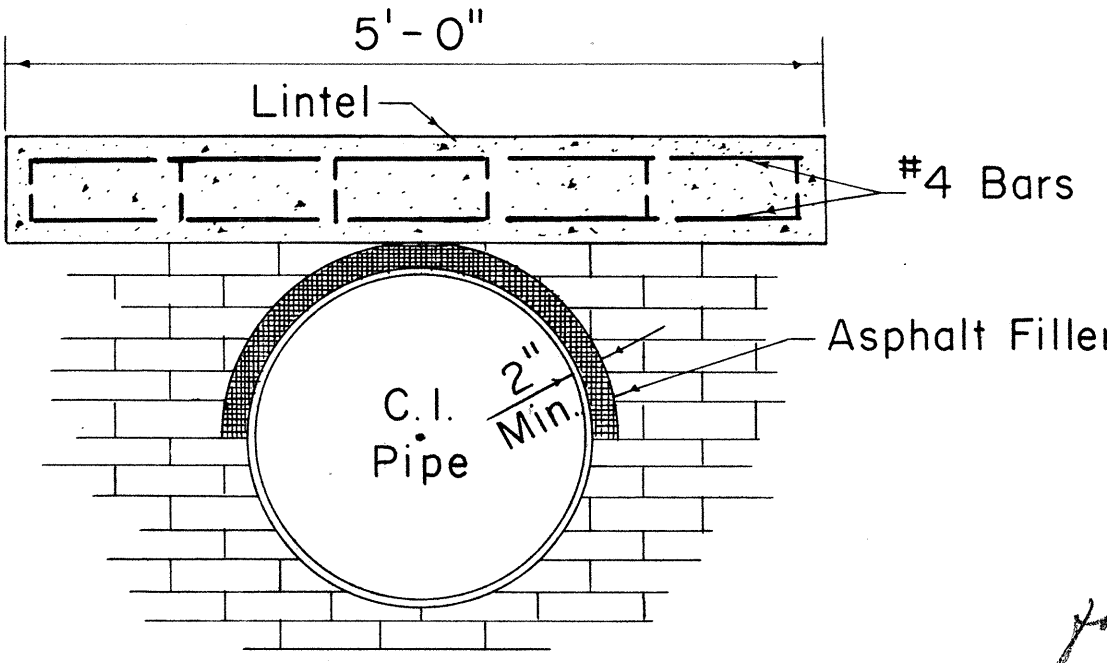


SECTION TYPE "A" MANHOLE FOR SPUR GEARED GATE VALVES

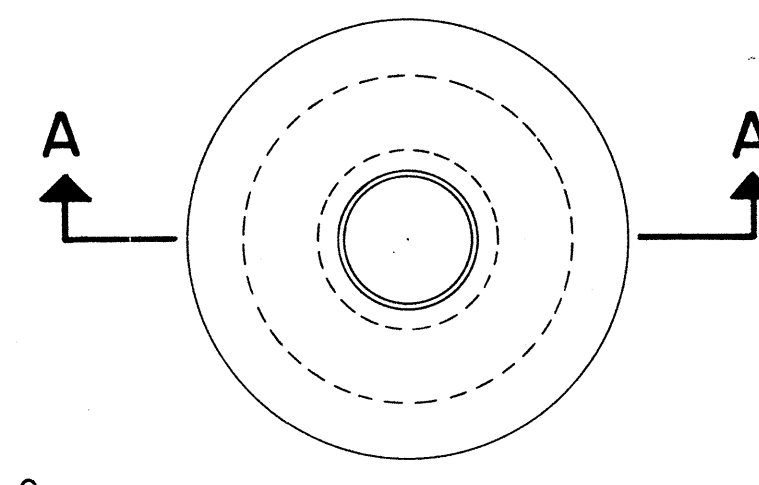


SECTION TYPE "A" MANHOLE FOR BEVEL GEARED GATE VALVES

SECTION THRU LINTEL



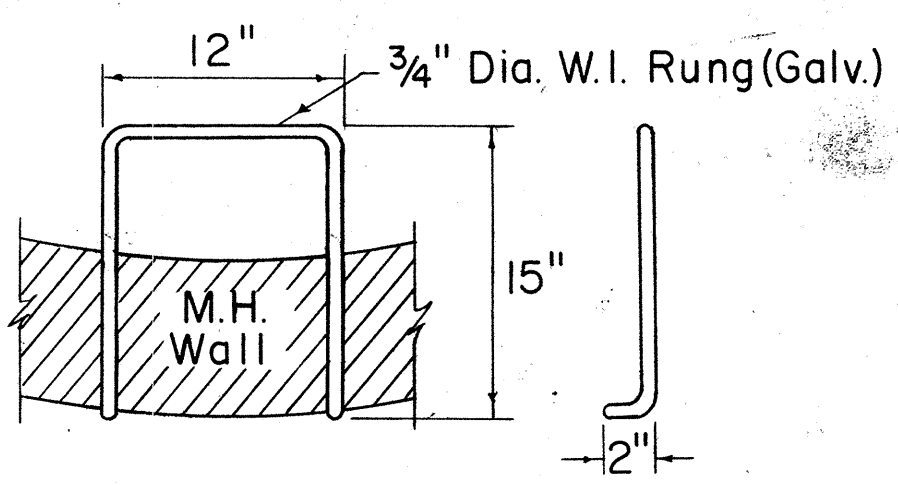
DETAIL OF LINTEL AND ASPHALT FILLER



PLAN

TABLE "A" REQUIRED CORPORATION STOP SIZES AT GATE VALVE

DIA. OF MAIN INCHES	SIZE OF CORP. STOP
4	1" x 1/4"
6	1" x 1/4"
8	1" x 1/4"
12	1" x 1/4"
16	1" x 1/4"
20	1" x 1/4"
24	1 1/2" x 2"
36	1 1/2" x 2"
42	1 1/2" x 2"



DETAIL OF RUNG

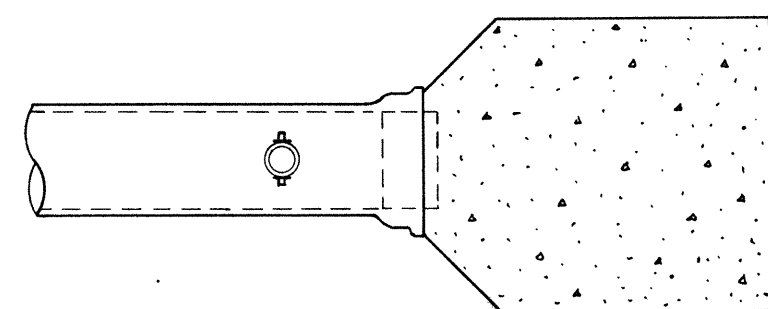
TYPE "B" AND "C" MANHOLES
TYPE "B" 4'-6" DIA. (FOR 12" G.V.)
TYPE "C" 4'-0" DIA. (FOR 6" & 8" G.V.)

APPROVED: *R. Nagato* 10/12/67
CHIEF, ENGINEERING DIVISION
BOARD OF WATER SUPPLY

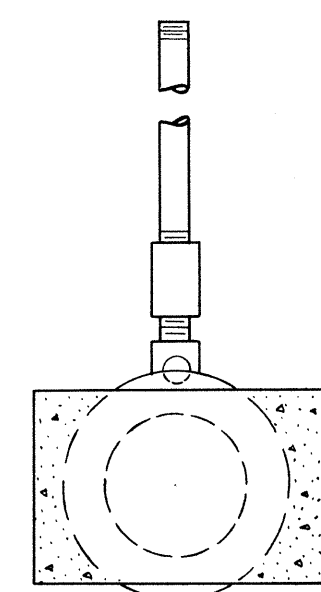
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
BOARD OF WATER SUPPLY
CITY & COUNTY OF HONOLULU
STANDARD DETAILS
WATER SYSTEM
Not to Scale Date
SHEET NO. 12 OF 18 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	F-083-1(2) Unit 2	1967	38	83

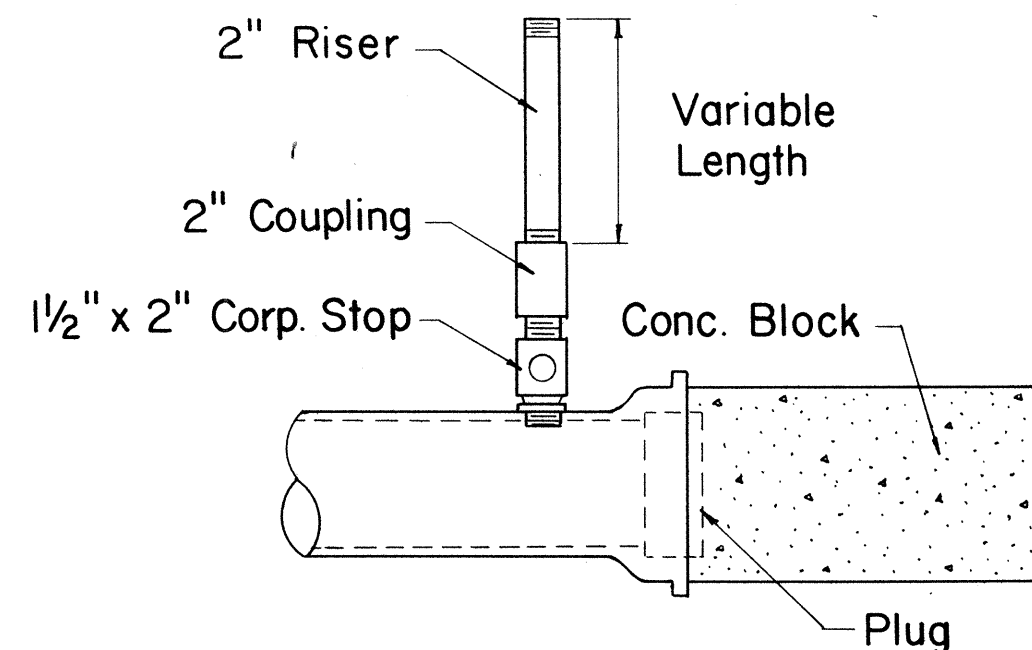
NOTE:
Contractor to furnish 1/2" brass plug (Tapered thread) to replace corporation stop upon completion of chlorination.



TOP VIEW

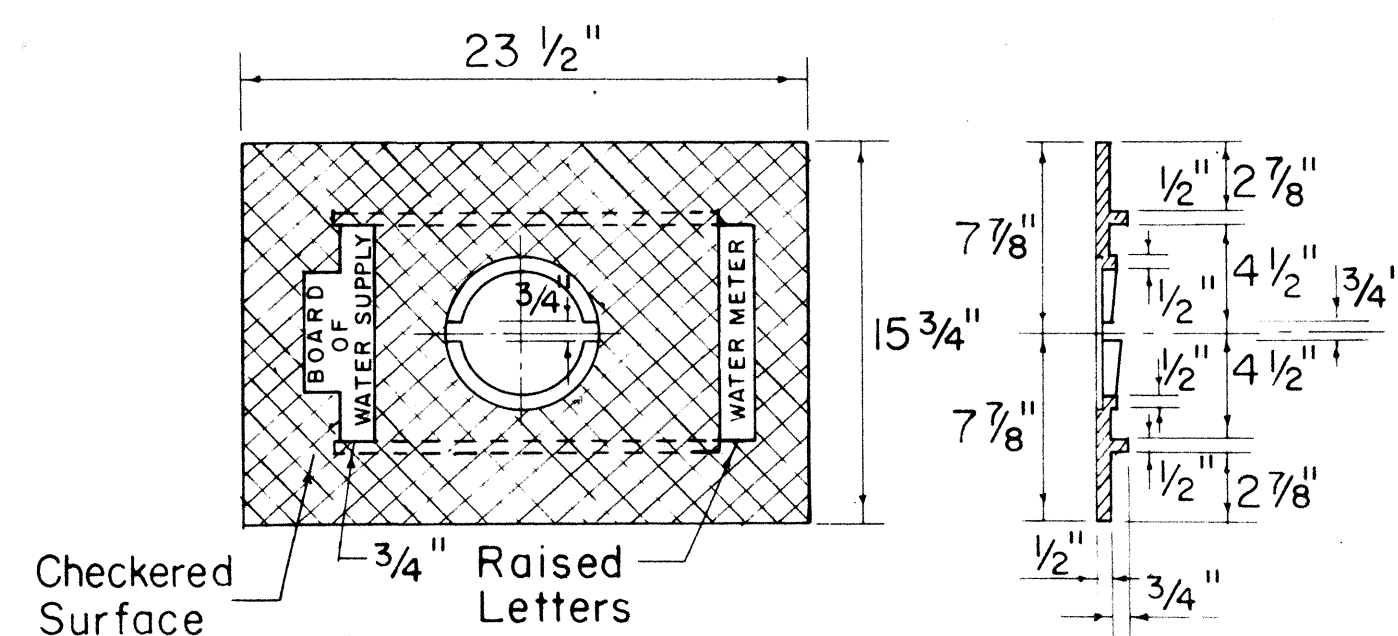


END VIEW

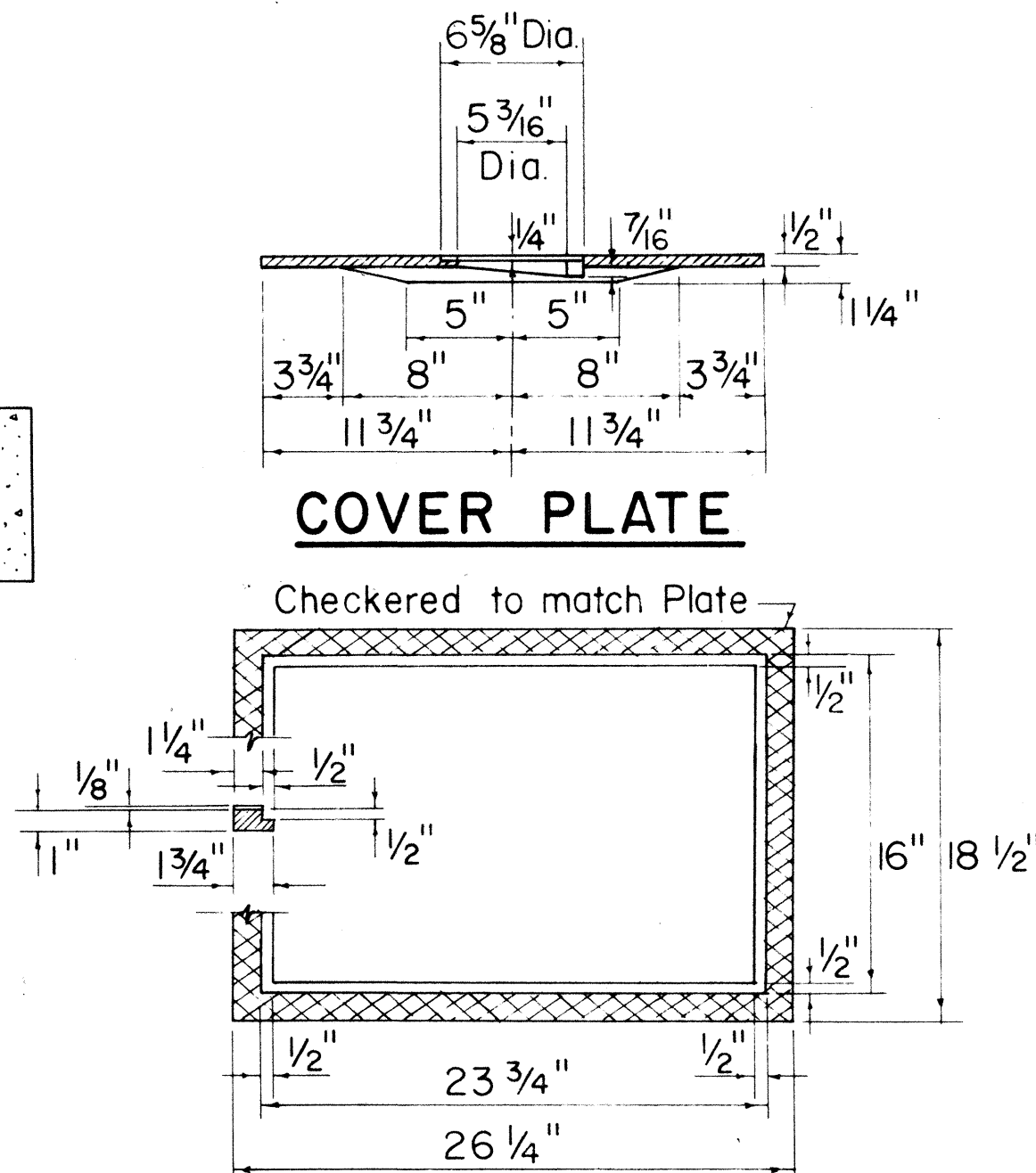


SIDE VIEW

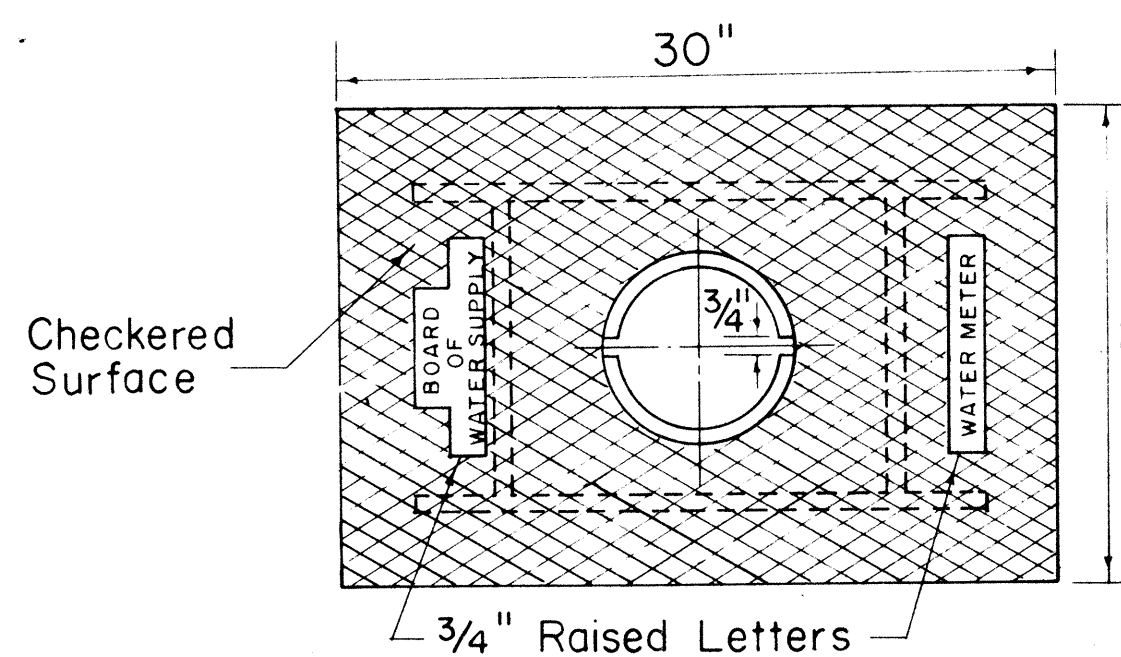
DETAIL OF
TEMPORARY 2" CLEANOUT
Not to Scale



COVER PLATE



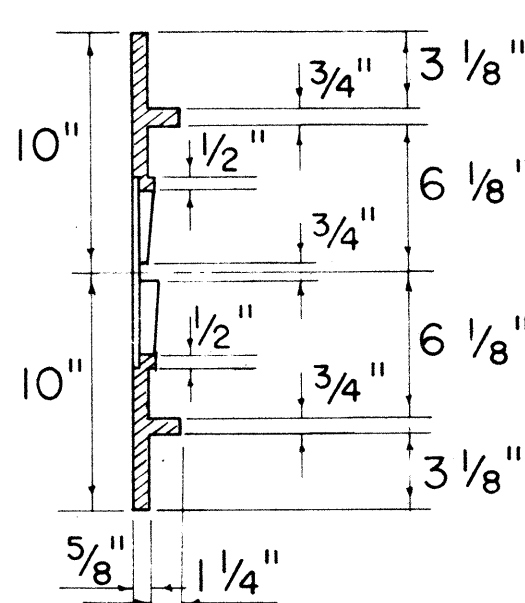
FRAME
CAST IRON FRAME AND PLATE
TYPE II
Scale: 1 1/2" = 1'-0"



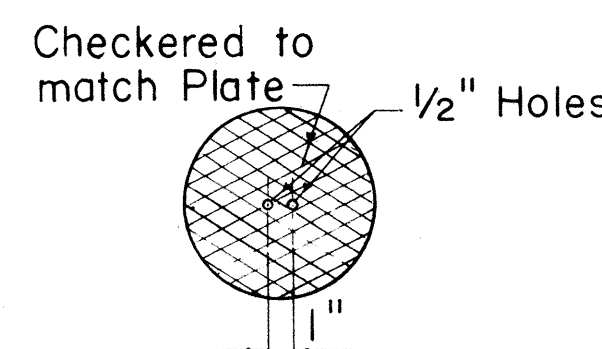
COVER PLATE

CAST IRON FRAME, PLATE AND COVER

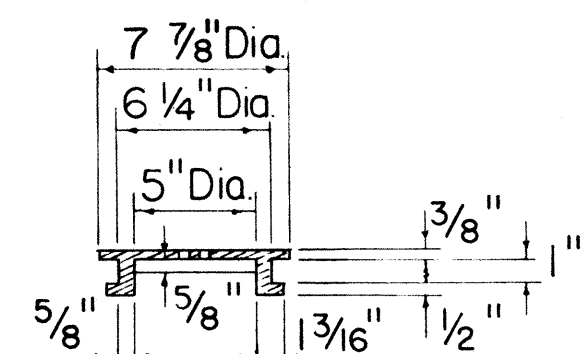
TYPE III
Scale: 1 1/2" = 1'-0"



READING COVER

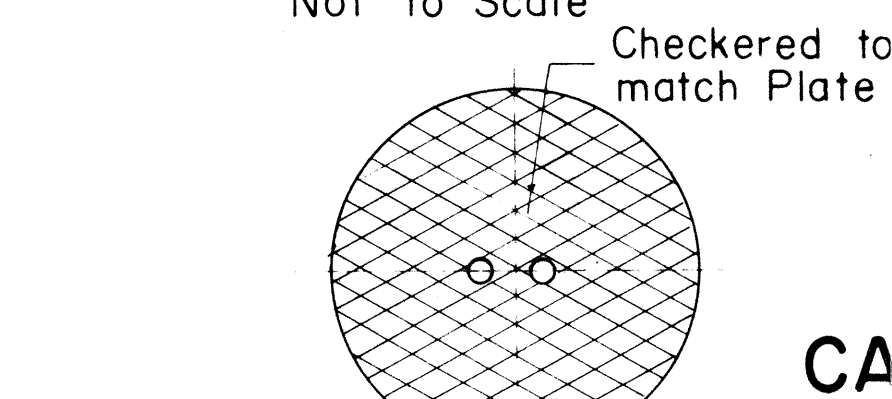
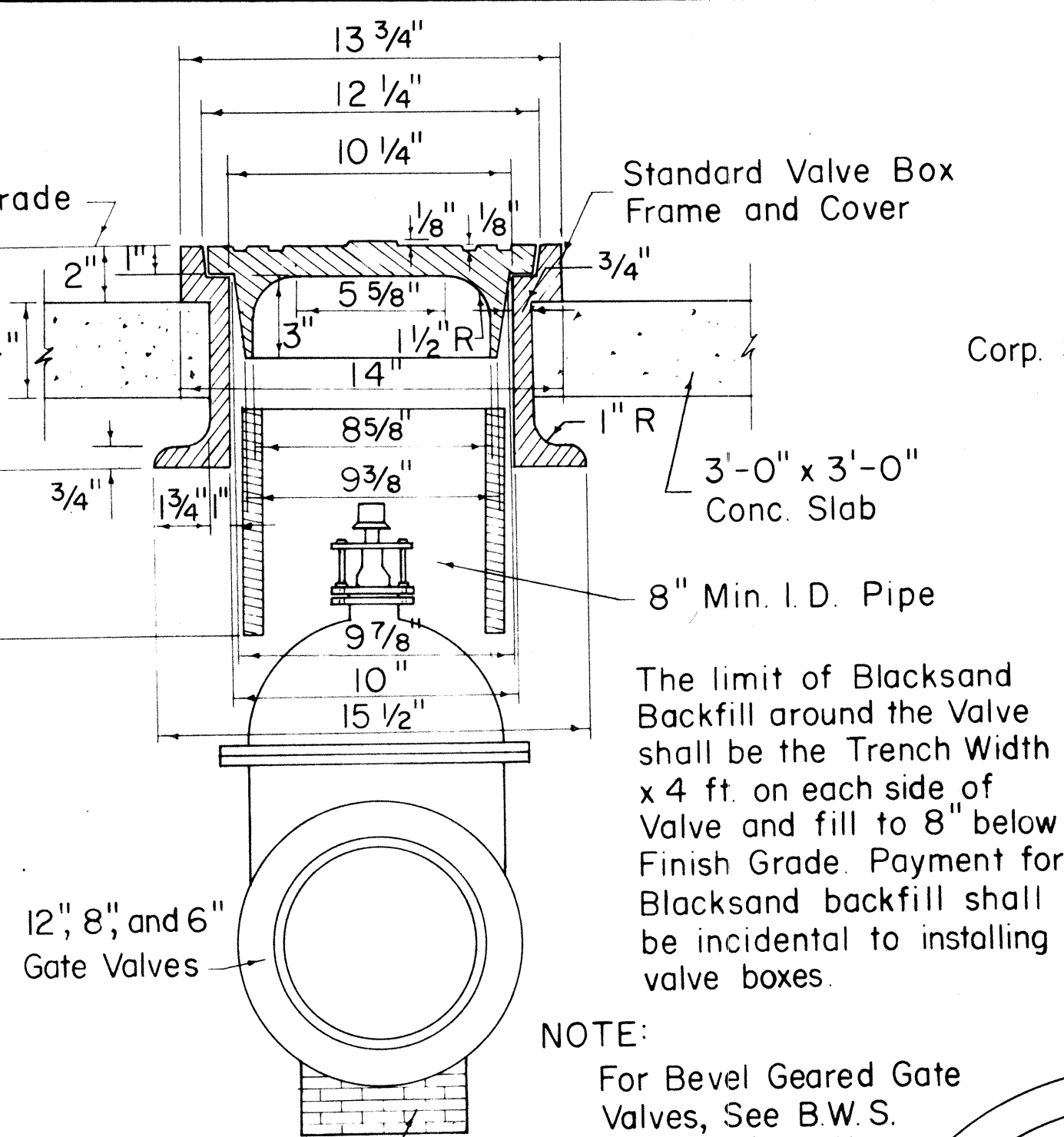


FRAME

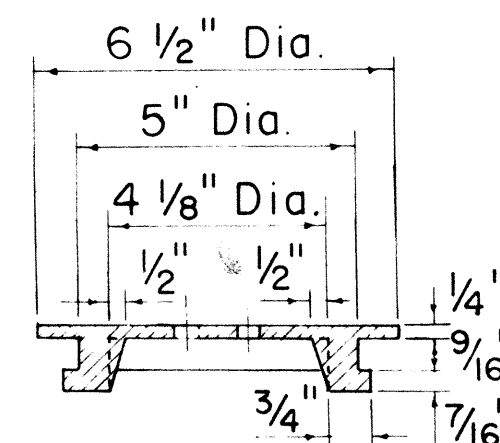


INSTALLATION OF VALVE
BOX FOR GATE VALVES
Not to Scale

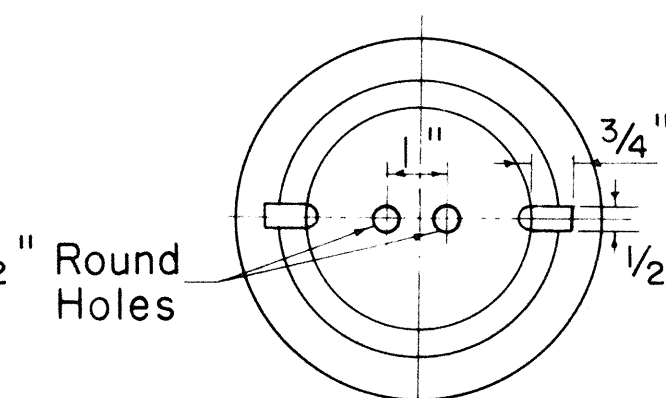
NOTE:
For Bevel Geared Gate Valves, See B.W.S. Standard (Detail Sheet filed in B.W.S. Engr. Division)



CAST IRON FRAME AND COVER
Scale: 3" = 1'-0"

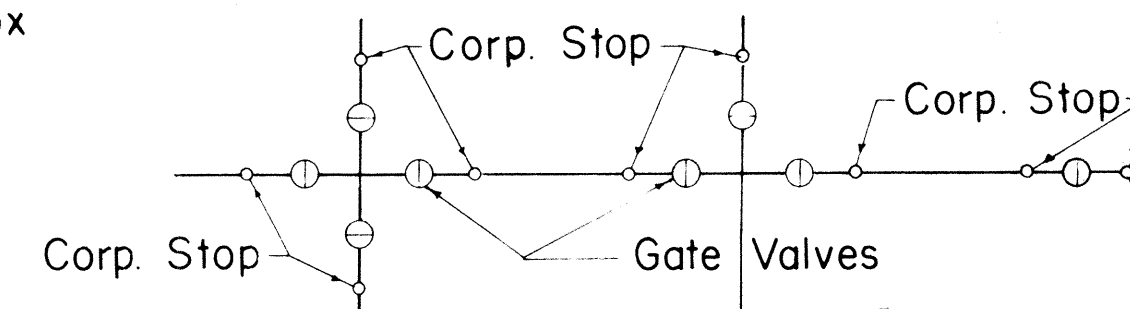


READING COVER

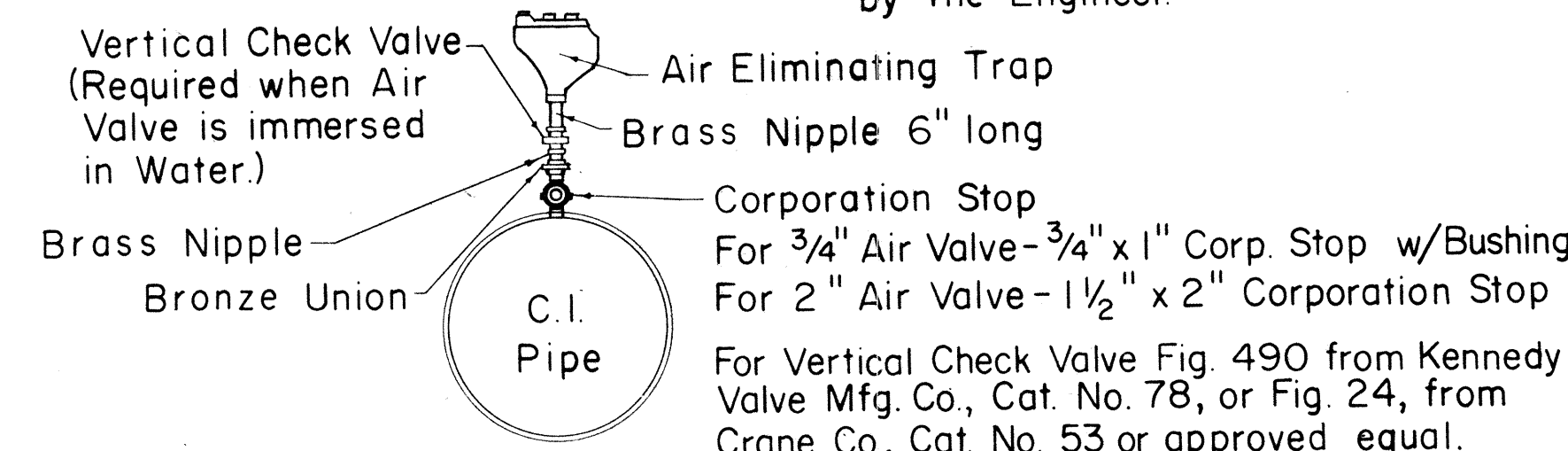


CHECKERED PATTERN

CAST IRON COVER FOR
TYPE II FRAME
Not to Scale



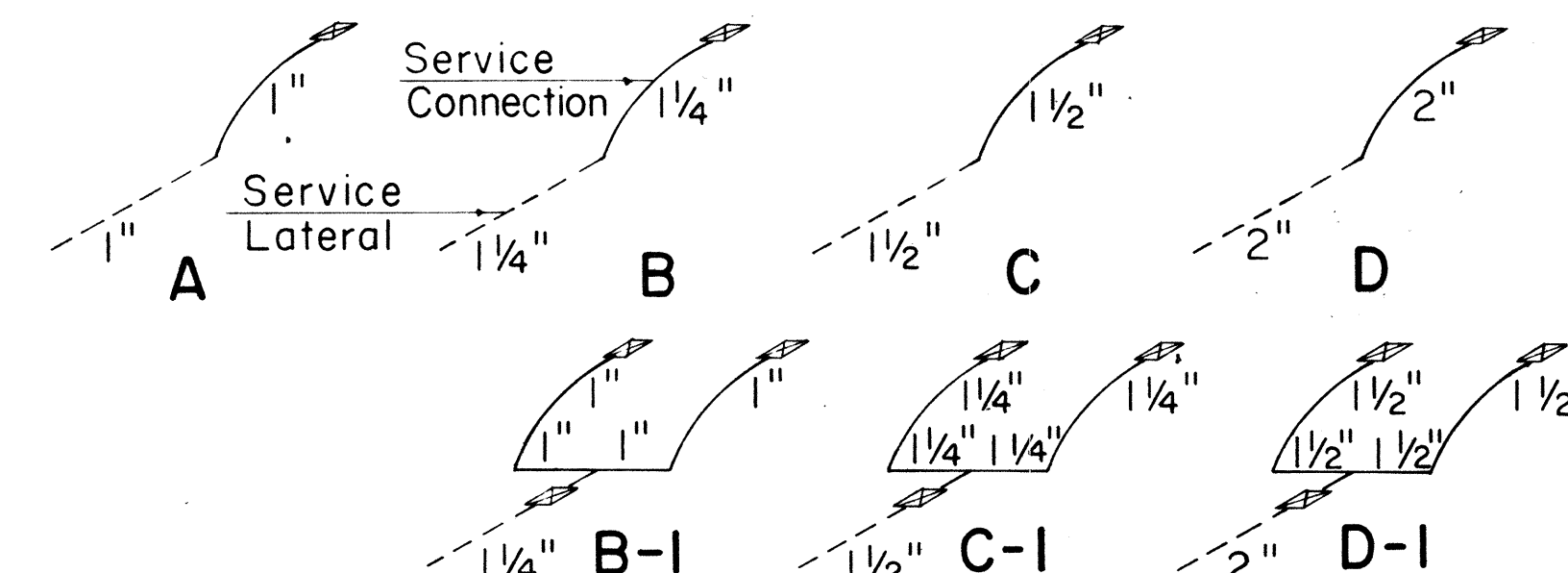
CORP. STOP LAYOUT
Not to Scale



DETAIL OF CONNECTION FOR
AIR ELIMINATING TRAP
Not to Scale

Offset word "WATER" 1 3/4" high, 1/8" deep

NOTE:
All castings shall be made accurately to the dimensions shown. Seat and Cover shall be ground where necessary to secure flat and true surfaces. The Cover shall not rattle in any position.
Minor changes in dimensions may be made to suit foundry conditions provided such changes are approved by the Board of Water Supply.



TYPICAL LAYOUT OF SERVICE
LATERALS AND CONNECTIONS
Not to Scale

APPROVED:

[Signature] 10/2/67
CHIEF, ENGINEERING DIVISION
BOARD OF WATER SUPPLY

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

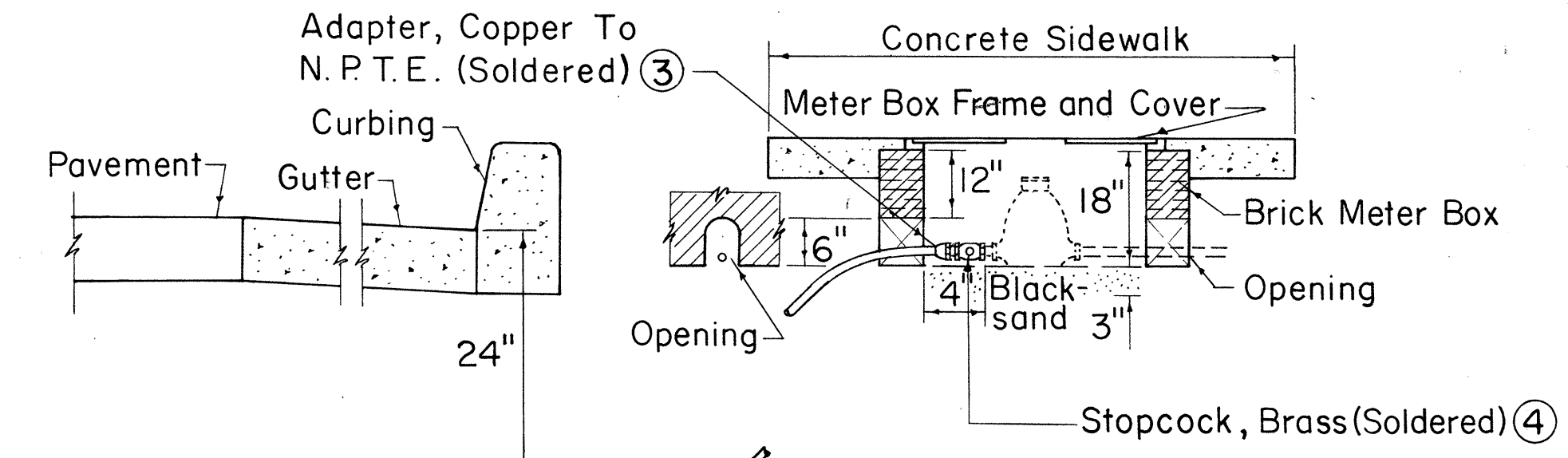
STANDARD DETAILS
WATER SYSTEM

Scale: As Noted Date
SHEET NO. 13 OF 18 SHEETS

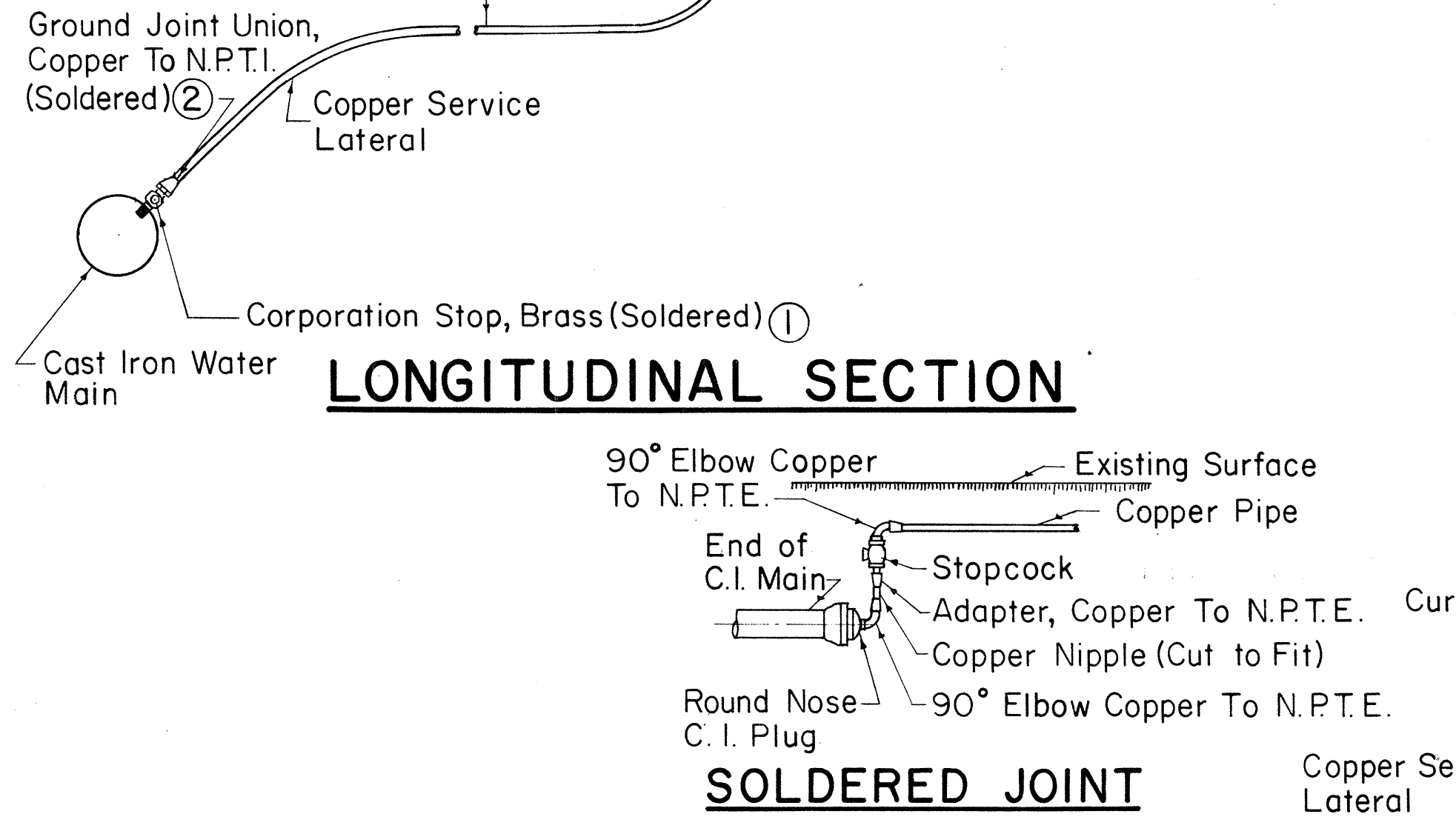
SCHEDULE OF COPPER FITTINGS
(SOLDERED JOINT)

ITEM NO.	DESCRIPTION	SINGLE SERVICE CONN.	MULTIPLE SERV. CONN.	
			TWO SERVICES	THREE SERVICES
1	Corporation Stop Brass (H-10003)	1	1	1
2	Ground Joint Union (Style Copper To N.P.T.E. No. C-109)	1	1	1
3	Adapter, Copper To N.P.T.E. (Style No. C-101)	2	1	1
4	Stopcock Brass (BWS Standard)	1	1	1
5	Fitting Adapter, (Style Fitting To N.P.T.E. No. C-104)	—	1	1
6	Tee, Copper To Copper To Copper (Style No. T-300)	—	1	1
7	Bushings, Fitting To Copper (Style No. C-103)	—	2	2
8	90° Elbow, Copper To Copper (Style No. C-200)	—	2	2
9	Adapter, Copper To N.P.T.E. (Style No. C-101)	1	2	3
10	Stopcock Brass (BWS Standard)	1	2	3
11	Reducing Tee, Copper To Copper To Copper (Substitute For Items Number 6 and 7). (Style No. T-300)	—	1	1
12	Tee, Copper To Copper To Copper (Style No. T-300)	—	—	1
13	Bushing, Fitting To Copper (Style No. C-103)	—	—	1
14	Reducing Tee, Copper To Copper To Copper (Substitute For Items Number 12 and 13) (Style No. T-300)	—	—	1

NOTE:
Reference Numbers shown thus (H-10003) are from Mueller Co. Catalog "H" and (Style No. T-300) are from Mueller Brass Co. "Streamline" Catalog S-354. Approved Equal may be used.

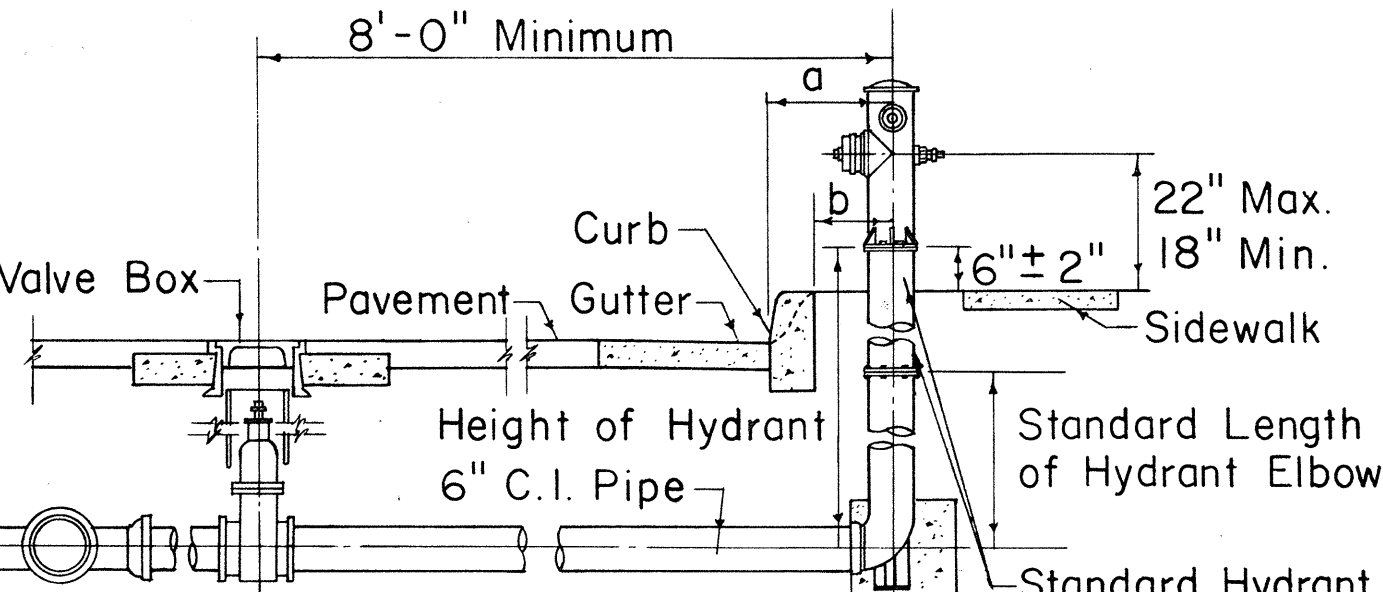


LONGITUDINAL SECTION



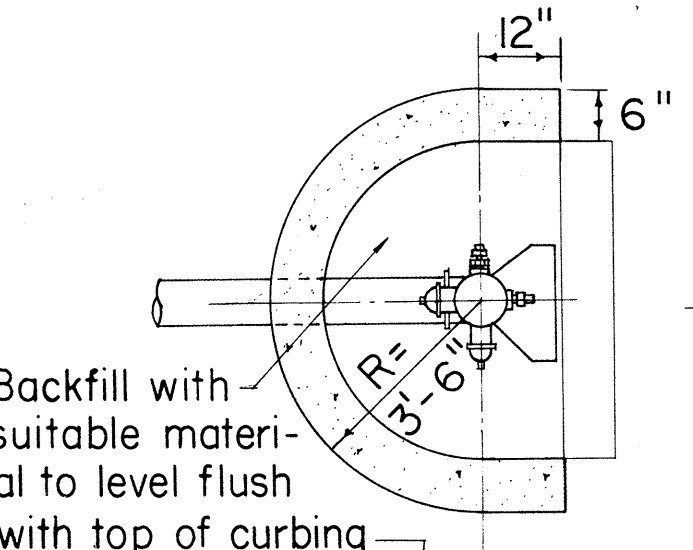
SOLDERED JOINT

SERVICE LATERAL CONNECTION AT END OF LINE

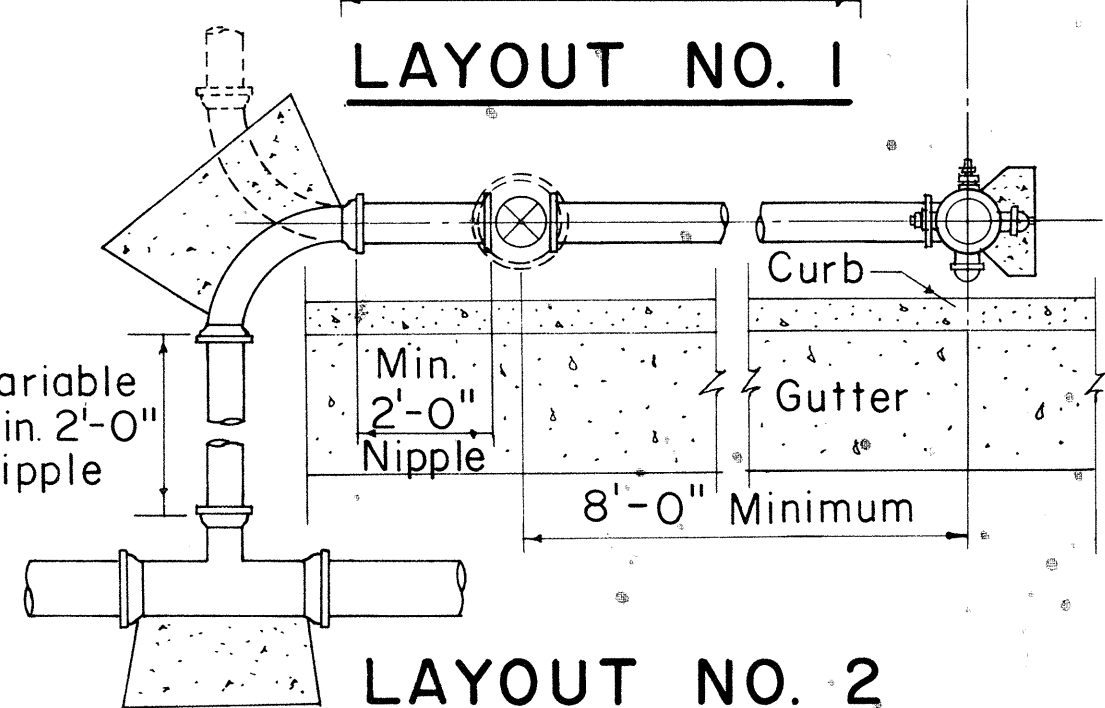


a	20" Min. (Standard Curb)
b	20" Min. (Roll Curb)

NOTE:
Gaskets for flanged joints shall be 1/16 inch duck-inserted rubber packing Garlock No. 19. Bolts shall be 5/8" diameter x 2 3/4" long steel machine bolts with cut threads, American Standard heavy hexagon heads, galvanized. Nuts shall be American Standard heavy cold punched hexagon nuts, galvanized.



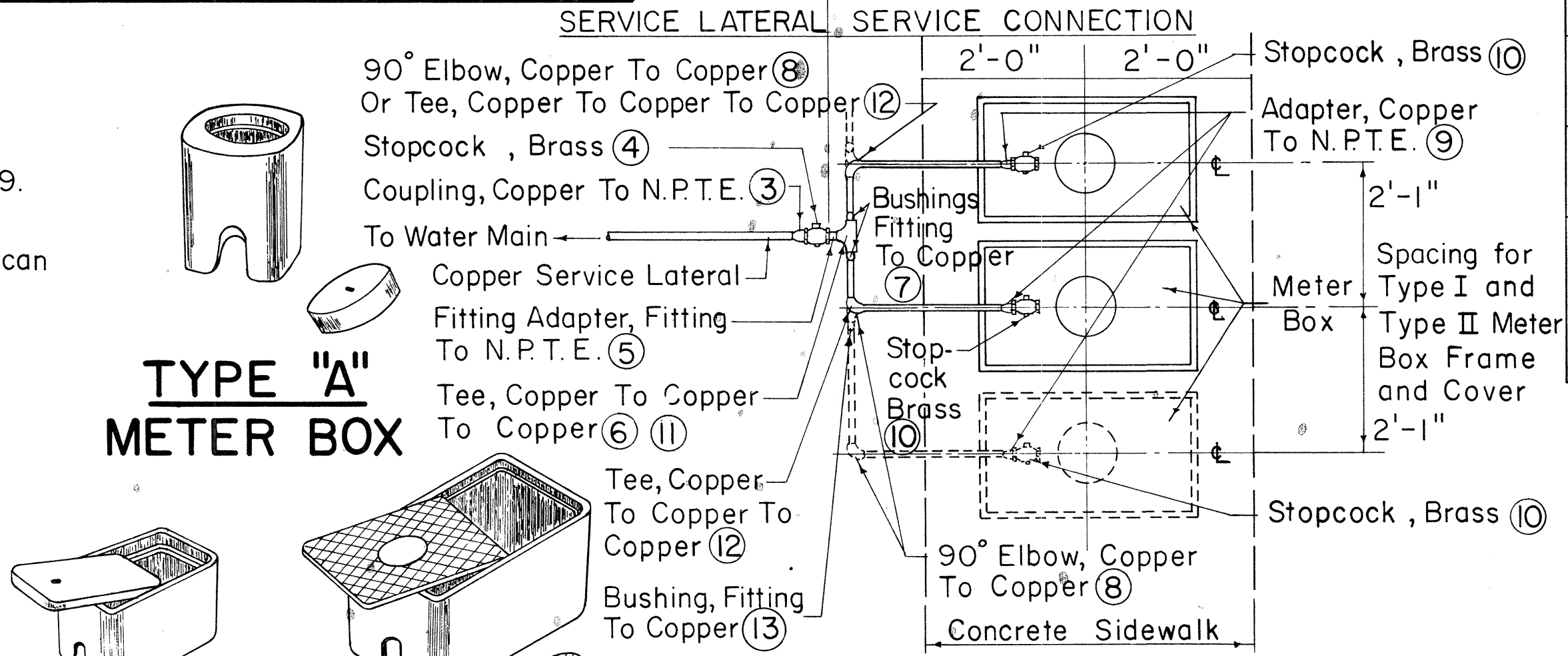
DETAIL OF CURBING
AT HYDRANT
WHERE REQUIRED



LAYOUT NO. 2

STANDARD FIRE HYDRANT LAYOUT

SINGLE SERVICE CONNECTION



TYPE "A"
METER BOX

TYPE "B"
METER BOX

TYPE "X"
METER BOX

MULTIPLE SERVICE CONNECTION
SOLDERED JOINTS

STANDARD LENGTHS FOR HYDRANT ELBOWS	
30"	
36"	
42"	
48"	

Standard Hydrant Extensions are available in the following Lengths:
6 to 30 inches long in increments of 6 inches

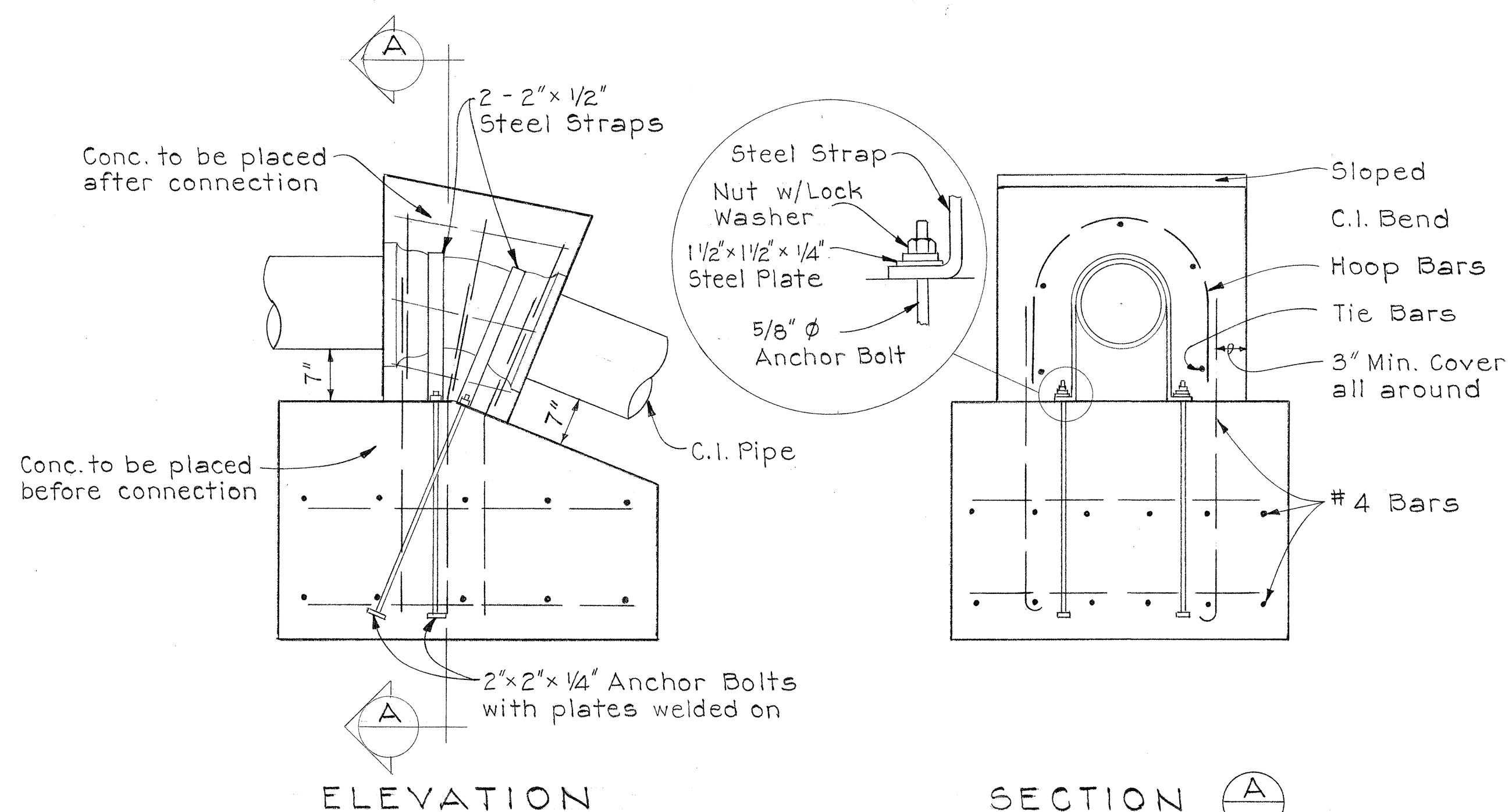
METER BOX DATA					
TYPE METER BOX	METER SIZES	OVERALL DIMENSIONS AT BOTTOM	OVERALL DIMENSIONS AT TOP	COMPLETE WEIGHT	OVERALL DIMENSIONS OF LID
A	5/8" or 3/4" Without Valve	7 1/4" x 7 1/4"	10" x 10"	45 lbs.	7 3/8" Dia.
B	5/8" or 3/4"	9 1/2" x 16"	12 1/4" x 18 3/8"	82 lbs.	8 3/4" x 14 1/2"
X		14 1/2" x 23 1/2"	16" x 25"	143 lbs.	13 1/8" x 22 1/8"

APPROVED:

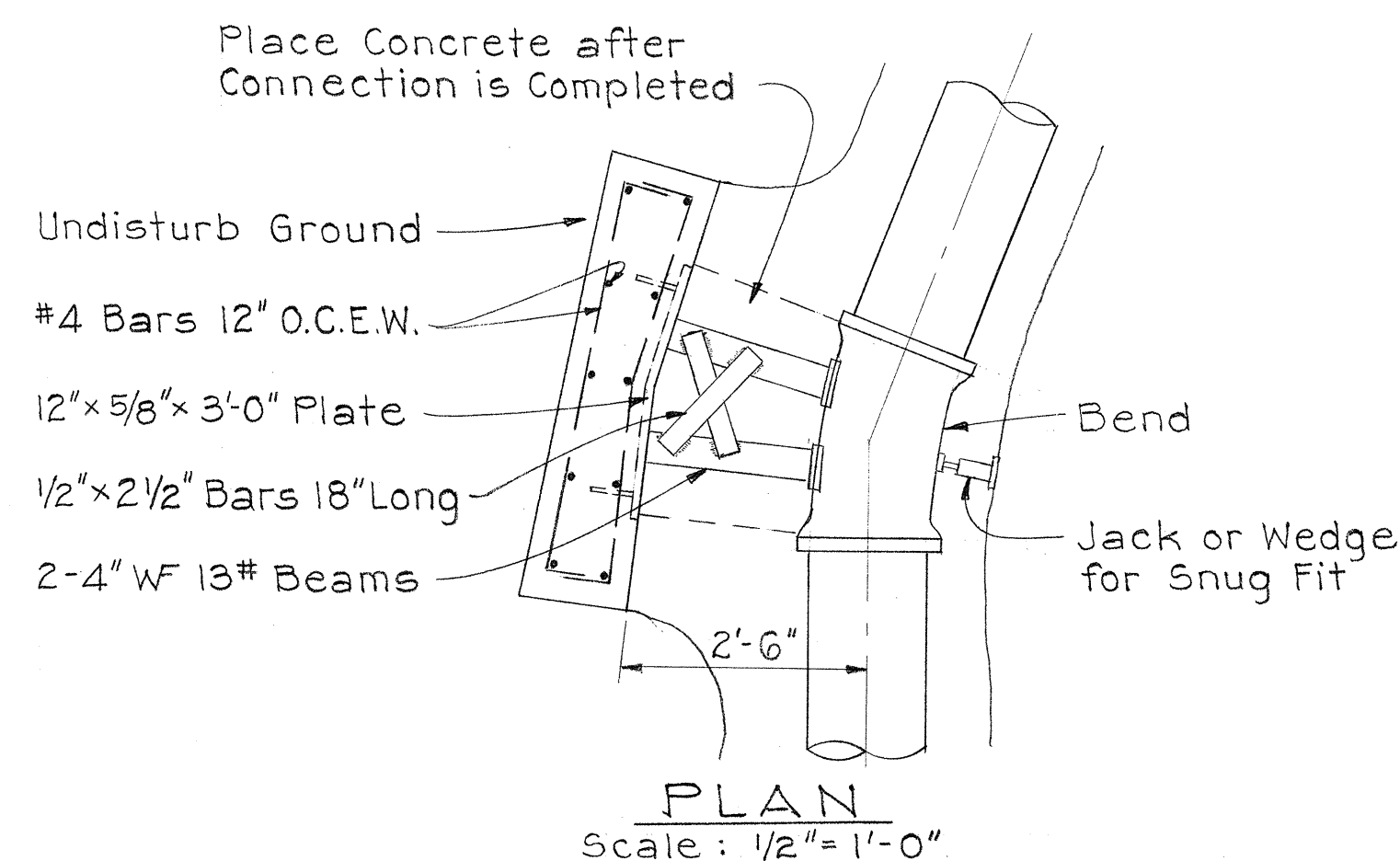
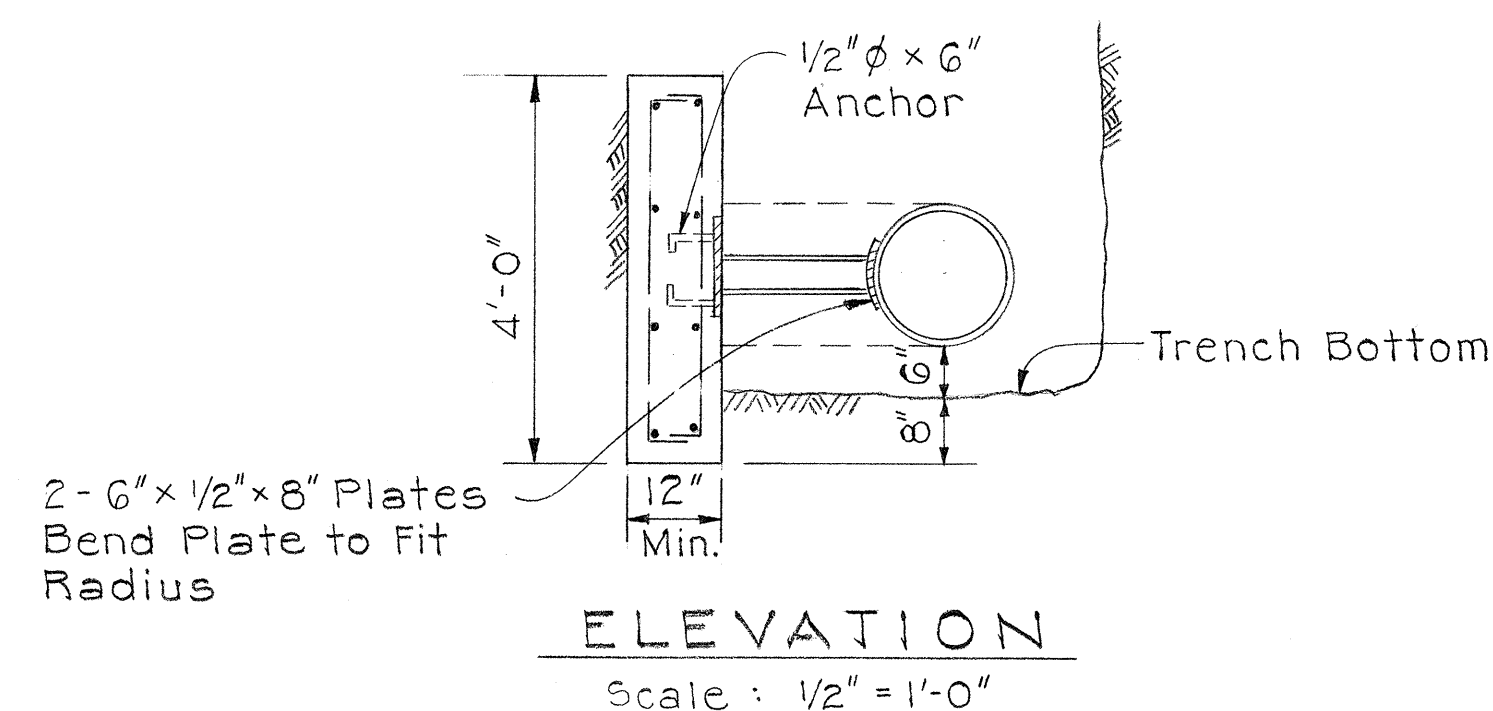
R. Nagato 10/12/67
CHIEF, ENGINEERING DIVISION
BOARD OF WATER SUPPLY

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
BOARD OF WATER SUPPLY
CITY & COUNTY OF HONOLULU
**STANDARD DETAILS
WATER SYSTEM**
Not to Scale Date
SHEET NO. 14 OF 18 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) Unit 2	1967	40	83

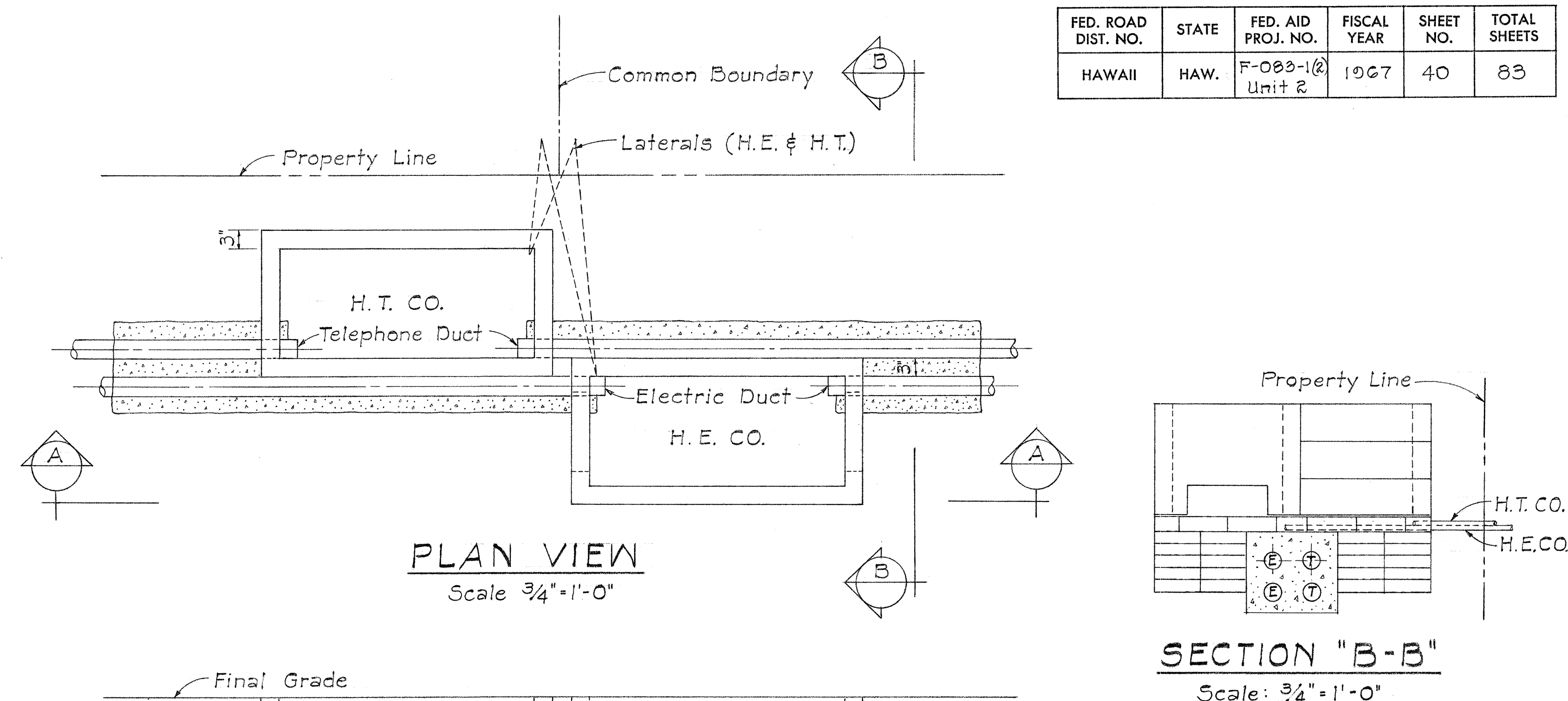


ELEVATION SECTION A-A
NOTE: Detail of actual block to be used shall be furnished during construction
DETAIL OF SPECIAL CONC. REACTION BLOCK

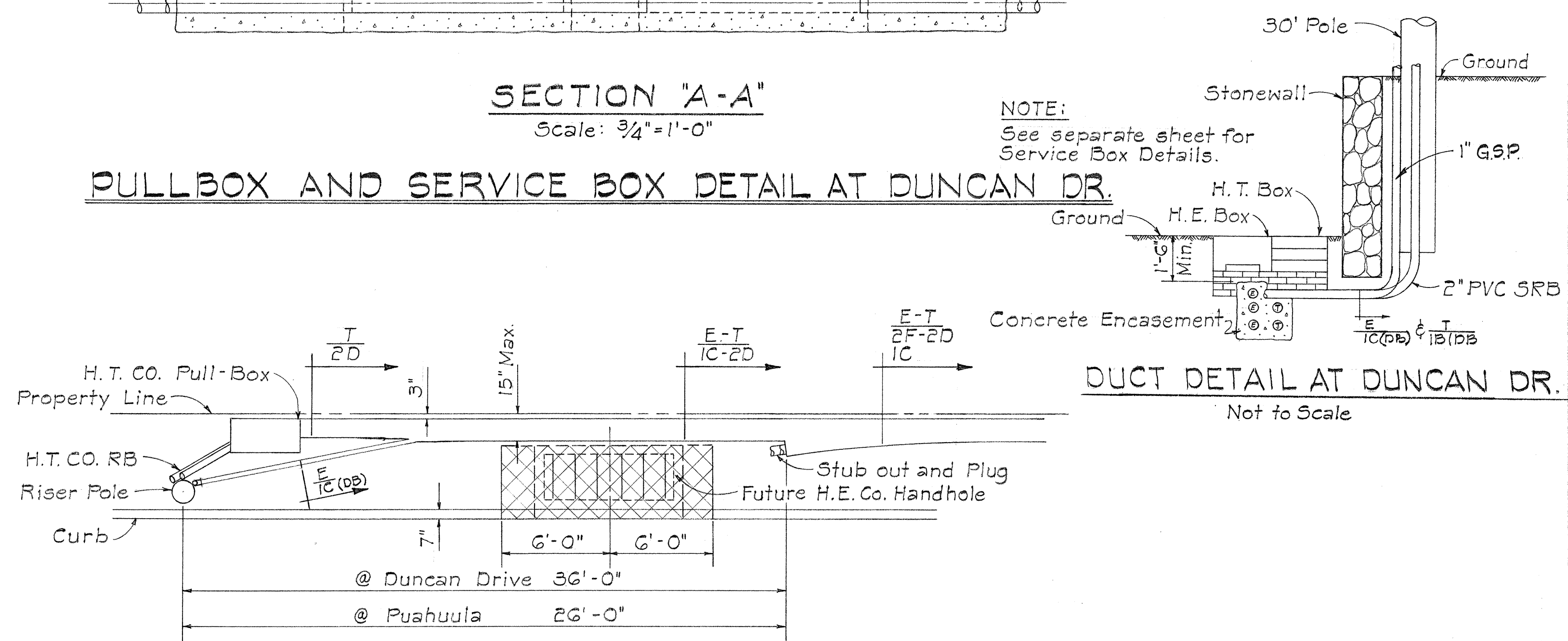


NOTE: Minimum cover over reinforcing shall be 3".
Dimensions of conc. blks. to be furnished during construction.
Steel plates, structural struts, straps, anchor bolts, nuts & washers will not be paid for directly but shall be considered incidental to the various contract item for the water system.

DETAILS OF CONC. BLK. WITH STRUCTURAL STRUT



PLAN VIEW Scale: 3/4" = 1'-0"
SECTION "A-A" Scale: 3/4" = 1'-0"
PULLBOX AND SERVICE BOX DETAIL AT DUNCAN DR.



PULL BOX AND DUCTLINES WITH PROVISIONS FOR FUTURE HANDHOLE
Not to Scale

APPROVED: *R. H. H. H.* 10/12/67
CHIEF, ENGINEERING DIV. BWS Date

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

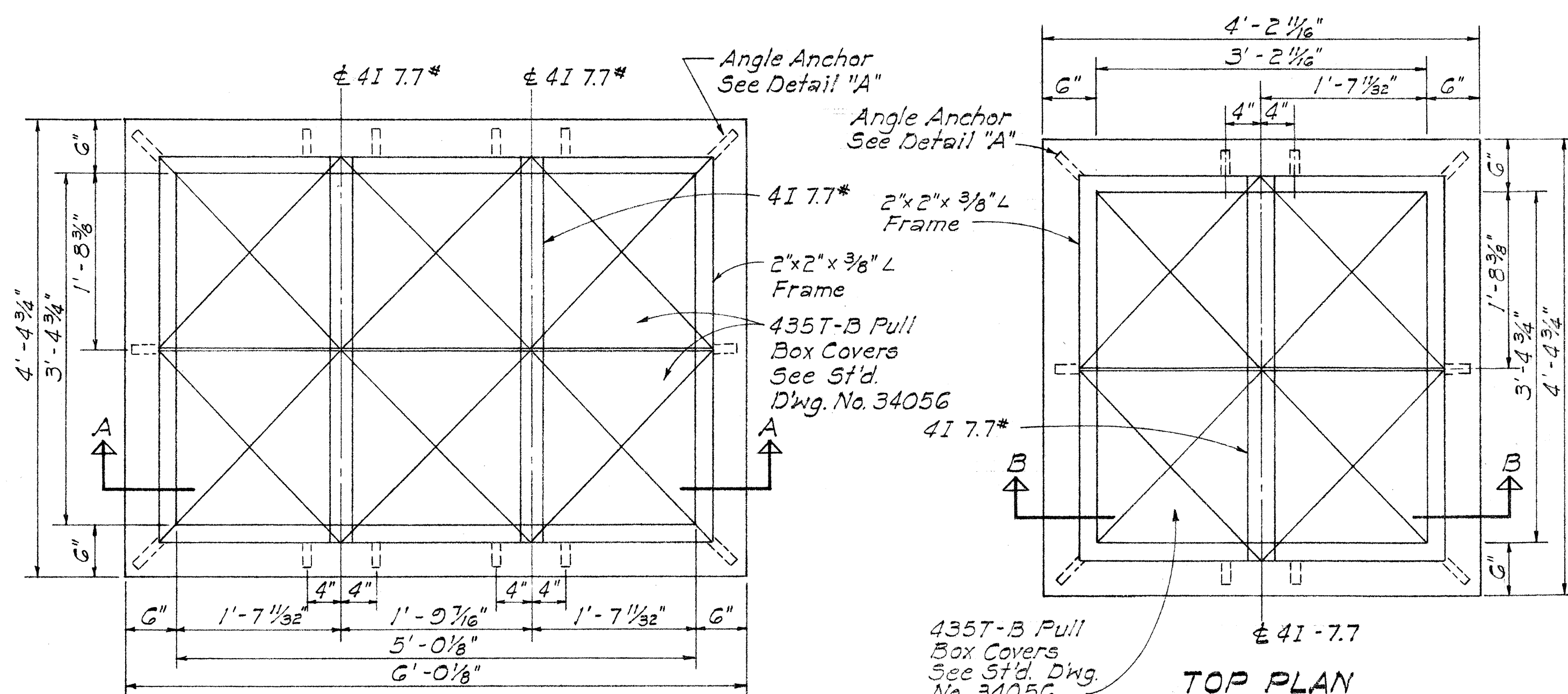
UTILITY SPECIAL DETAILS

WATER
KAMEHAMEHA HIGHWAY
F.A. Proj. No. F-083-1(2), Unit 2

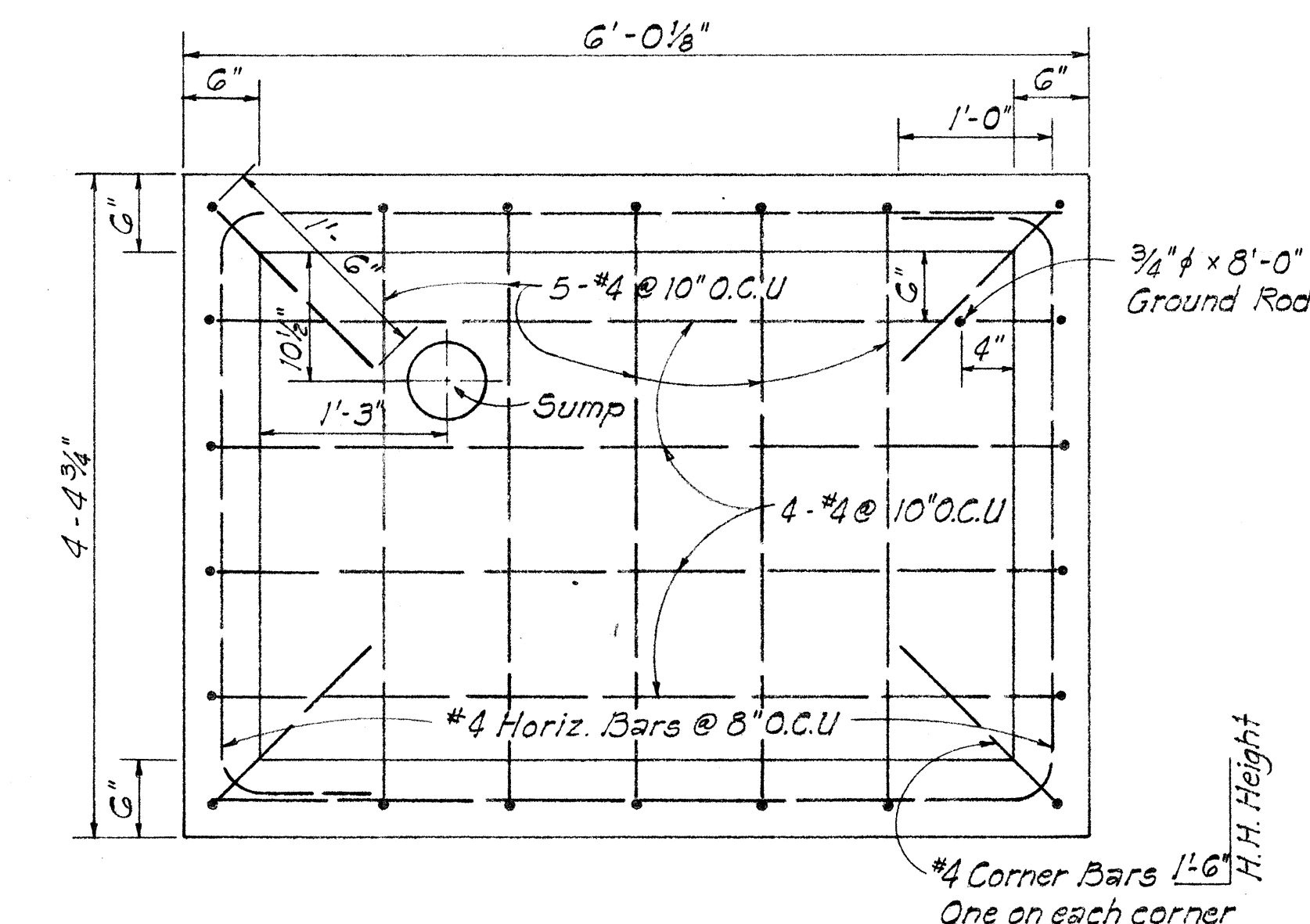
Scale: As Noted Date: Aug. 1967
SHEET No. 15 OF 18 SHEETS

(1) M I T

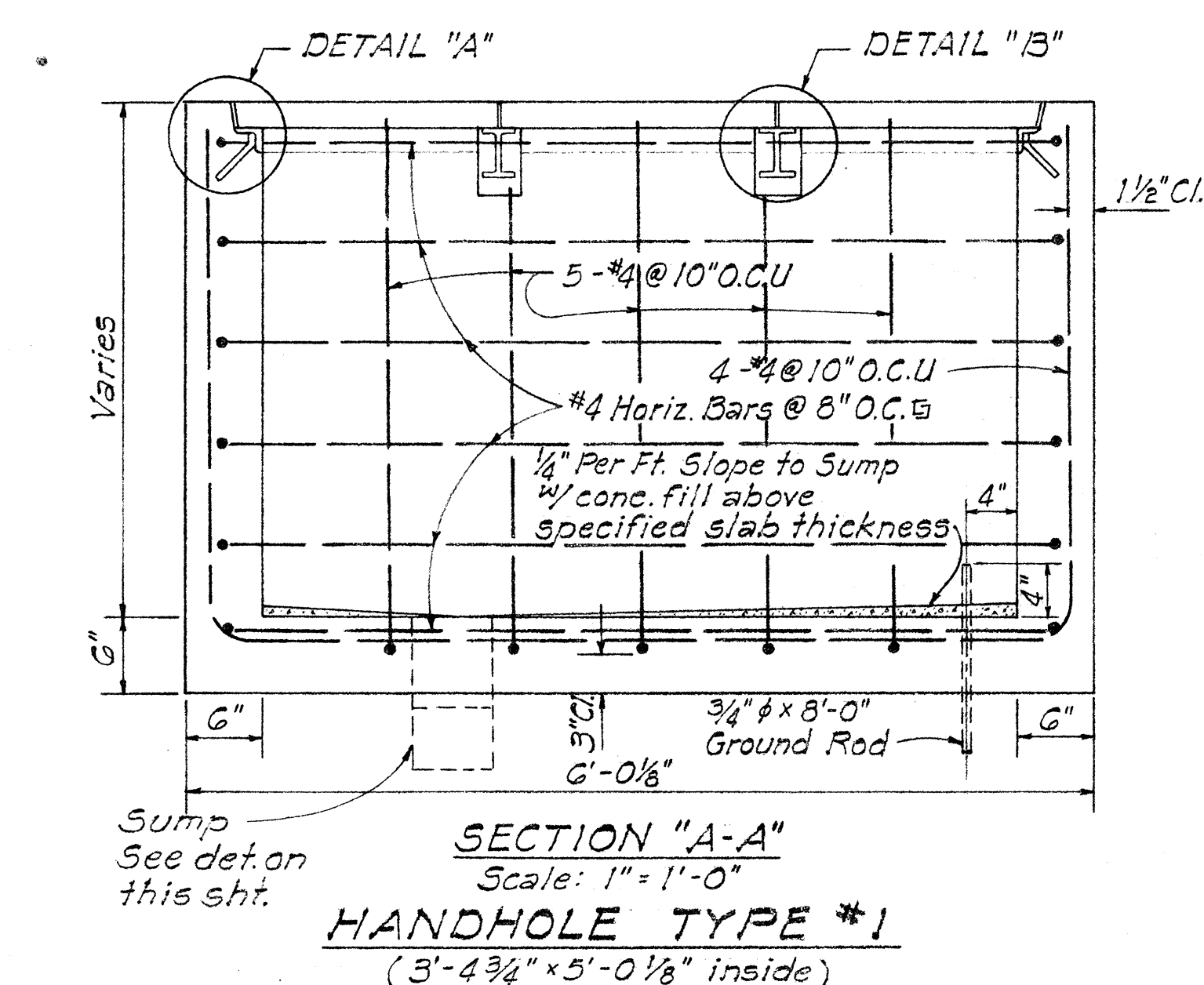
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-009-1(2) Unit 2	1967	41	83



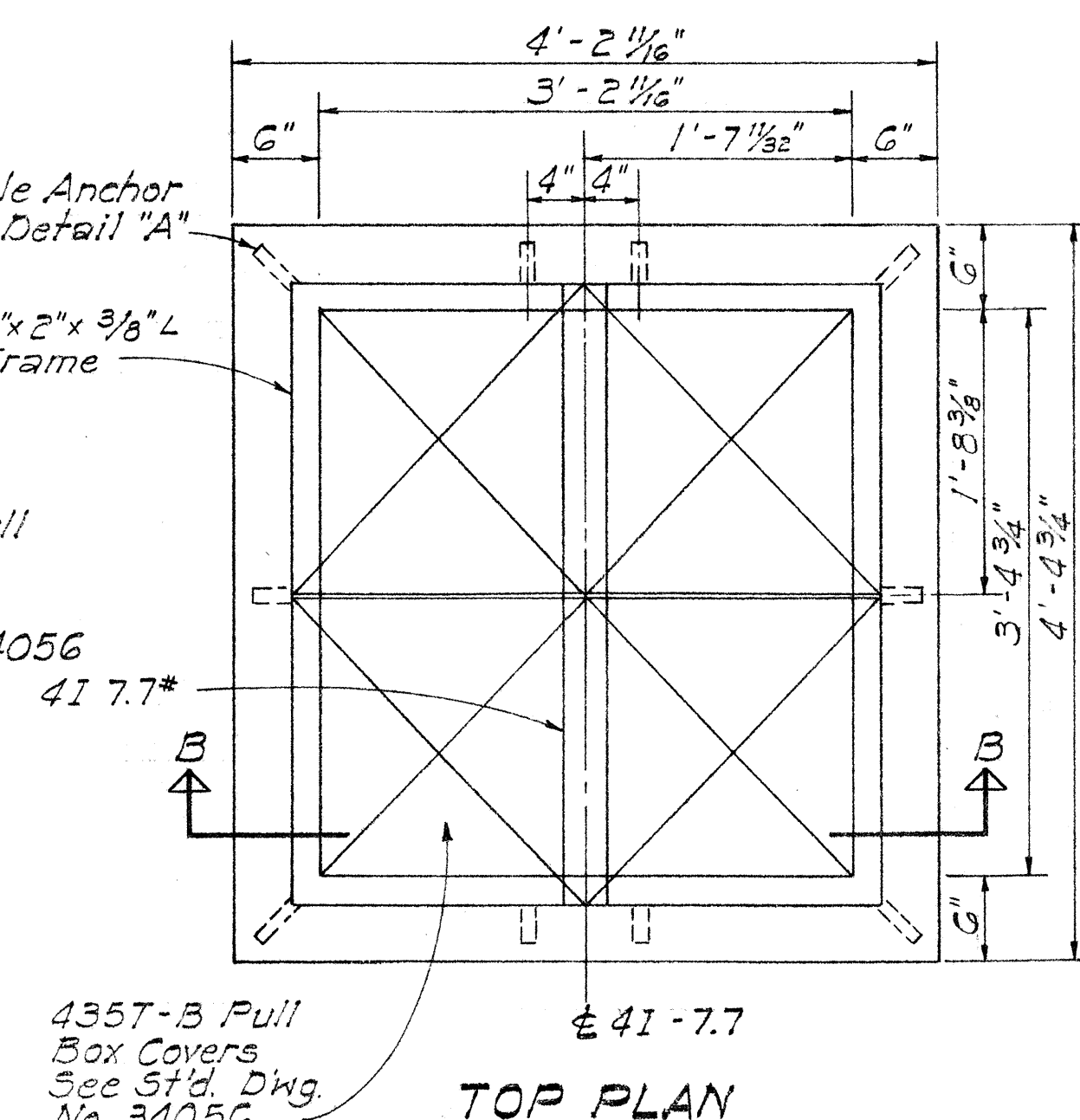
TOP PLAN
Scale: 1" = 1'-0"



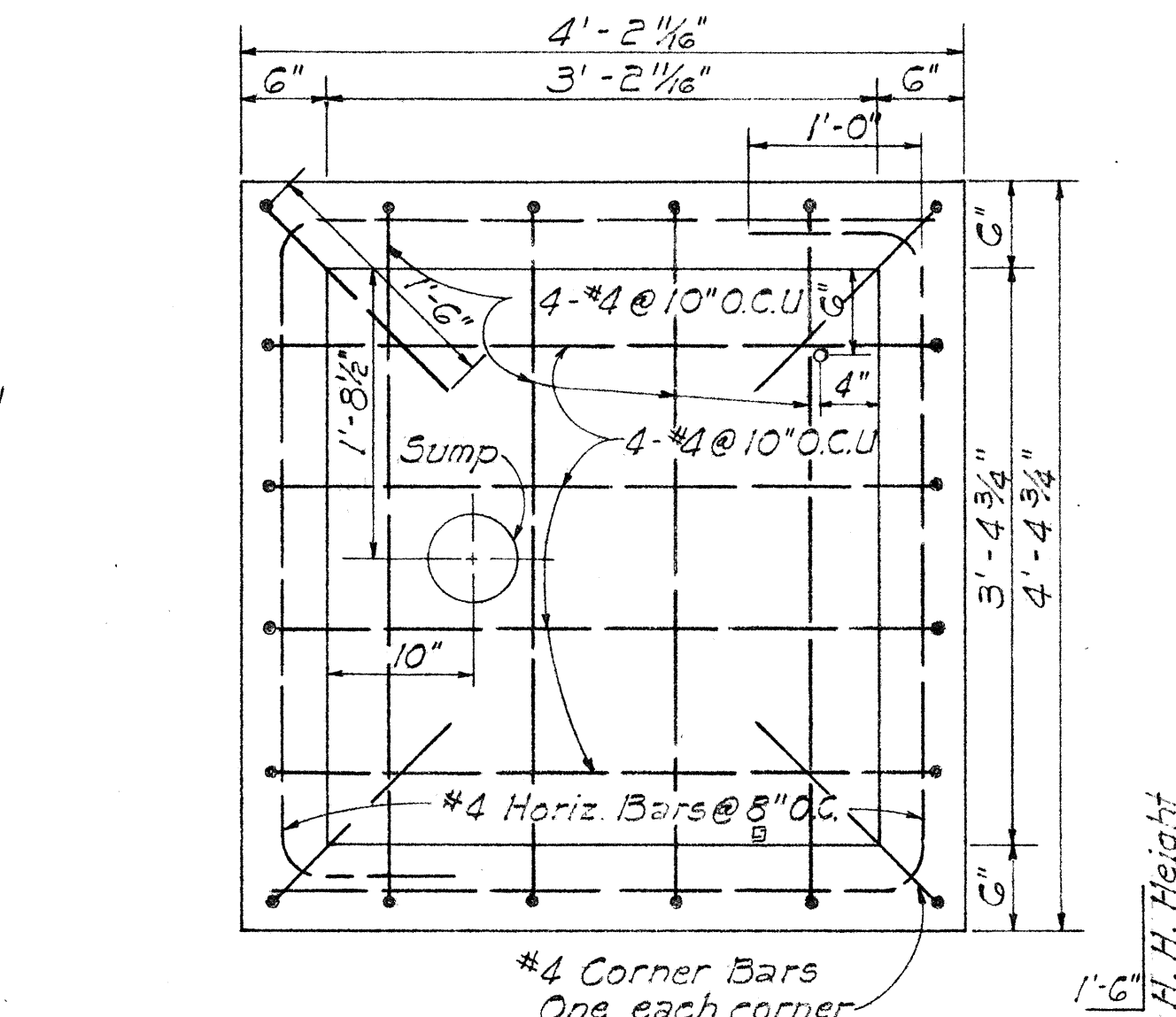
FLOOR PLAN
Scale: 1" = 1'-0"



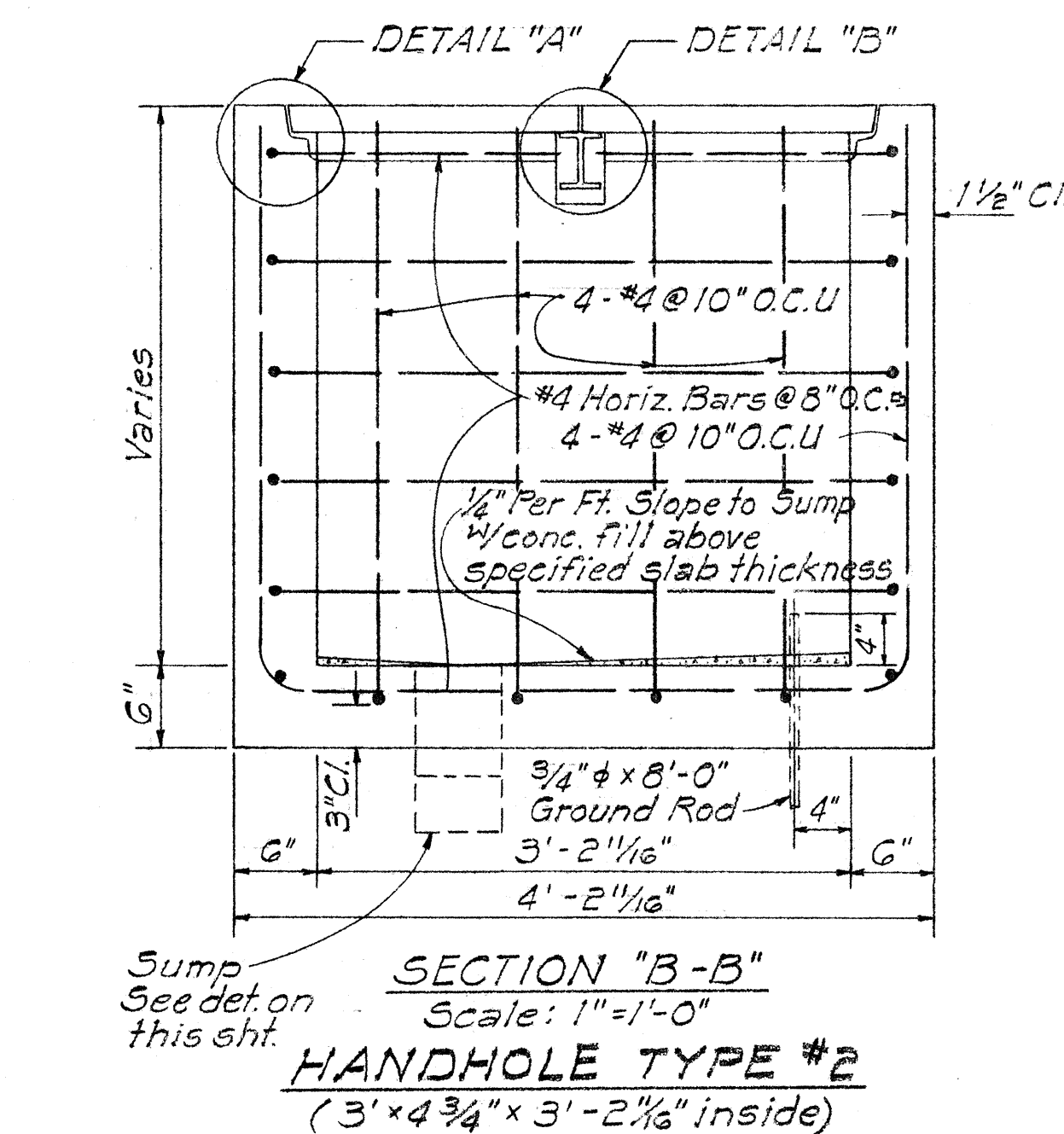
SECTION A-A
Scale: 1" = 1'-0"
HANDHOLE TYPE #1
(3'-4 3/4" x 3'-0 1/8" inside)



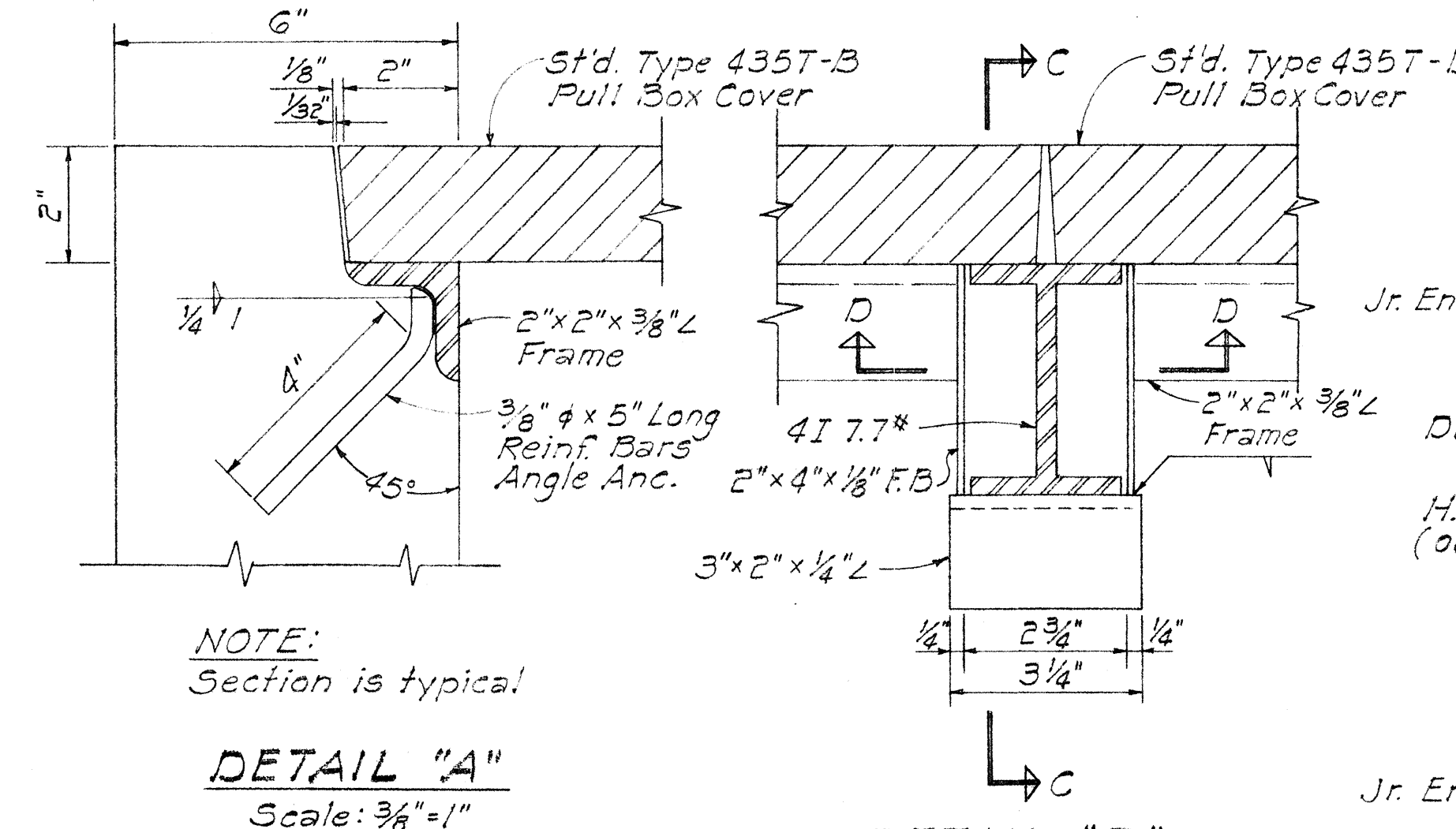
TOP PLAN
Scale: 1" = 1'-0"



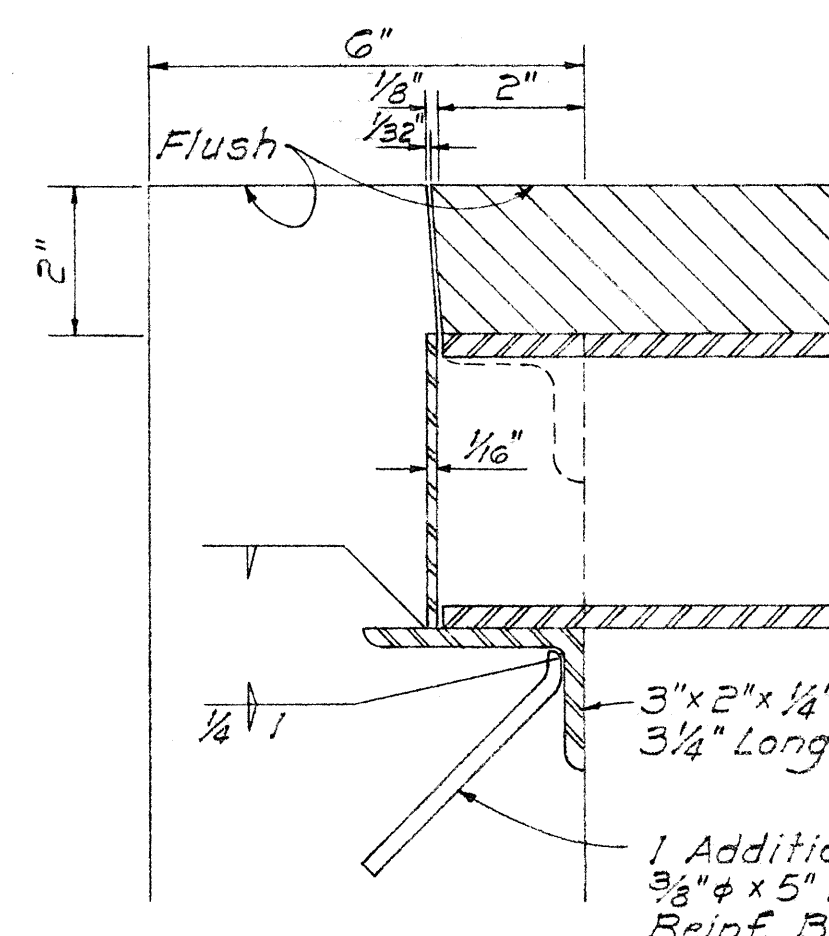
FLOOR PLAN
Scale: 1" = 1'-0"



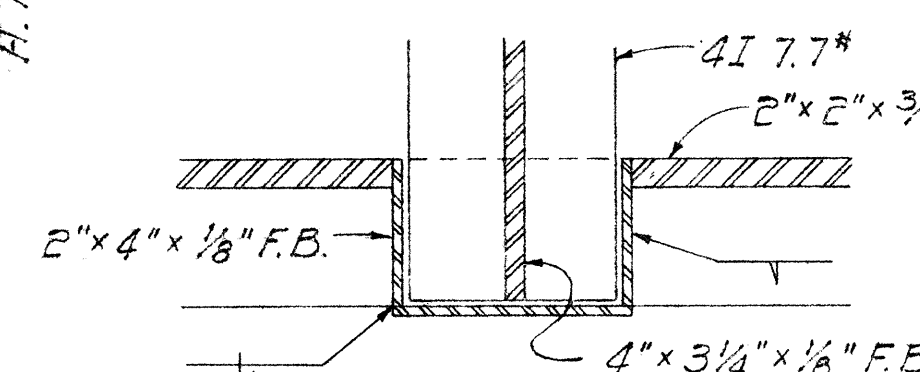
SECTION B-B
Scale: 1" = 1'-0"
HANDHOLE TYPE #2
(3'-4 3/4" x 3'-2 1/8" inside)



DETAIL "A"
Scale: 3/8" = 1"



SECTION "C-C"
Scale: 3/8" = 1"



SECTION "D-D"
Scale: 3/8" = 1"

GENERAL NOTES:

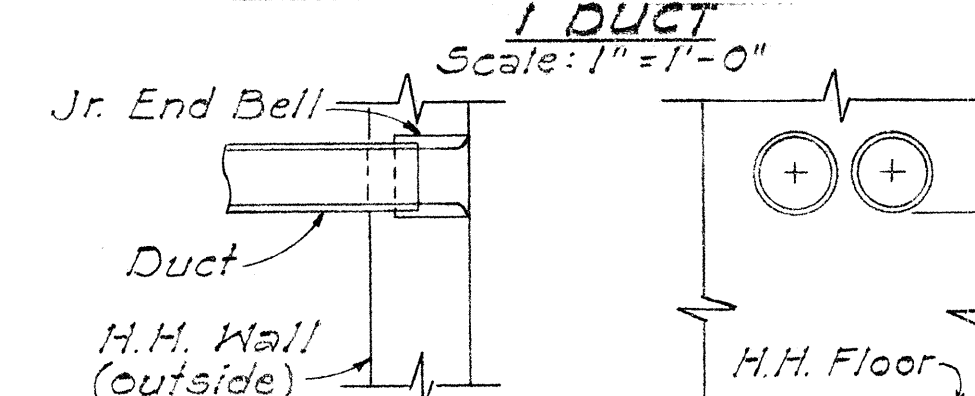
- Concrete finish: floors - wood floated finish - exposed wall surfaces and edges - smooth and free from defects.
- Concrete to develop compressive strength - 3000 p.s.i. in 28 days.
- Steel work all structural steel shall be hot dip galvanized after fabrication.
- For duct line construction standards, see sht. 42
- These handholes are designed for installation in areas other than roadways.

APPROVED:

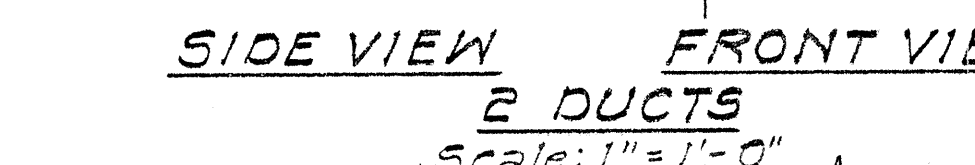
HAWAIIAN TELEPHONE CO., LTD.

10-11-67
DATE

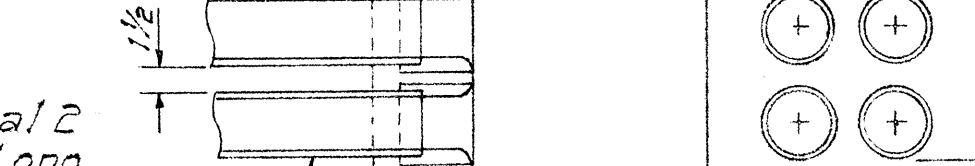
DETAIL "B"
Scale: 3/8" = 1"



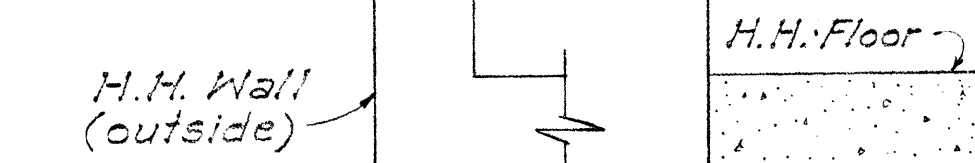
DETAIL "B"
Scale: 3/8" = 1"



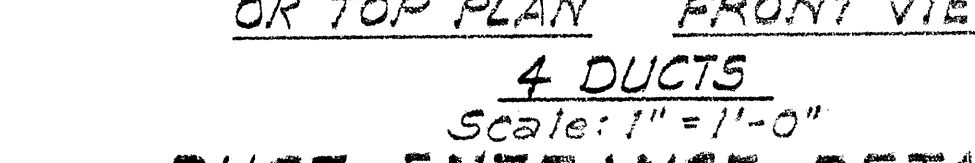
SIDE VIEW
Scale: 1" = 1'-0"



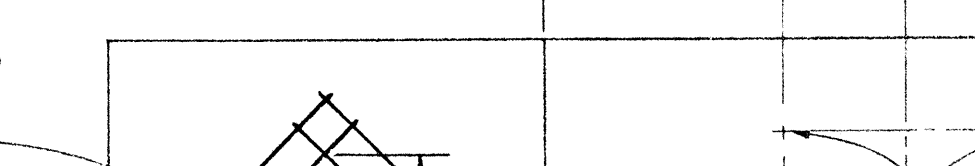
FRONT VIEW
Scale: 1" = 1'-0"



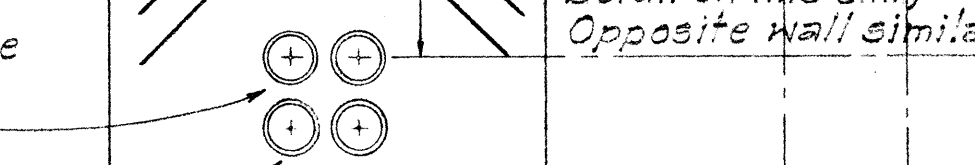
SIDE VIEW
Scale: 1" = 1'-0"



FRONT VIEW
Scale: 1" = 1'-0"



SIDE VIEW
Scale: 1" = 1'-0"



FRONT VIEW
Scale: 1" = 1'-0"



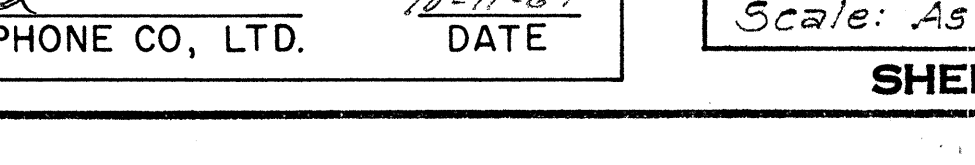
SIDE VIEW
Scale: 1" = 1'-0"



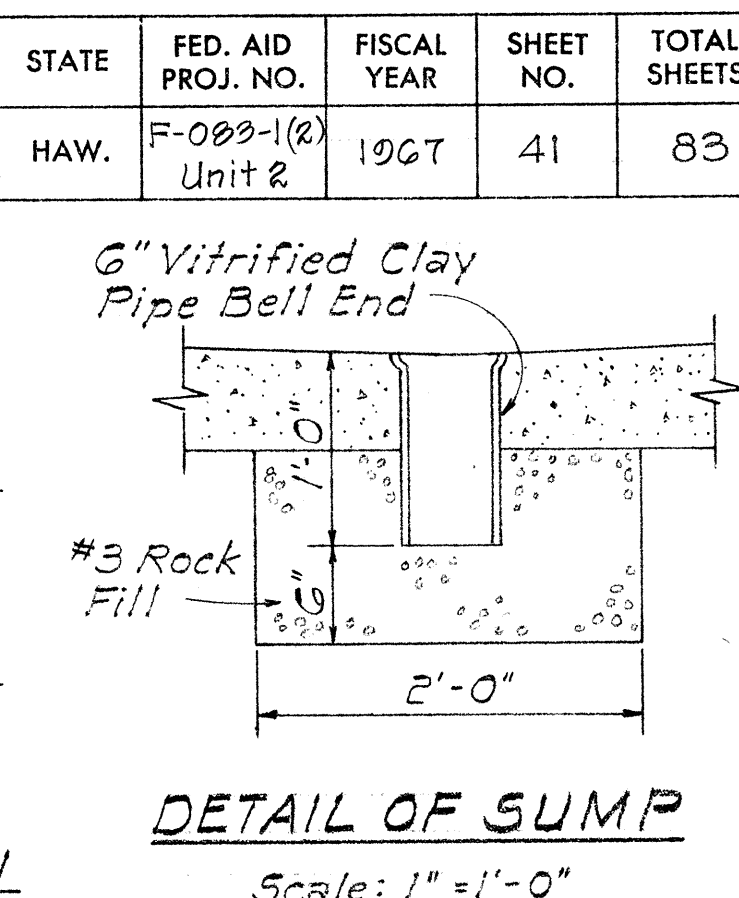
FRONT VIEW
Scale: 1" = 1'-0"



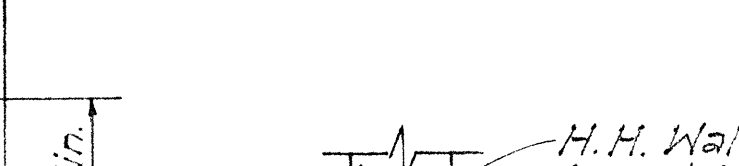
SIDE VIEW
Scale: 1" = 1'-0"



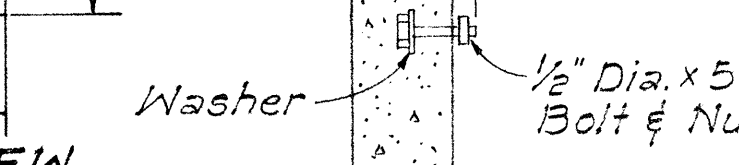
FRONT VIEW
Scale: 1" = 1'-0"



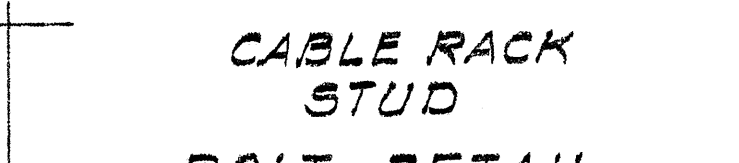
DETAIL OF SUMP
Scale: 1" = 1'-0"



SIDE VIEW
Scale: 1" = 1'-0"



FRONT VIEW
Scale: 1" = 1'-0"



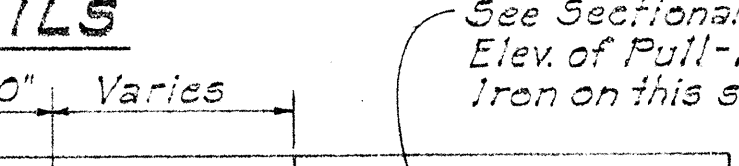
SIDE VIEW
Scale: 1" = 1'-0"



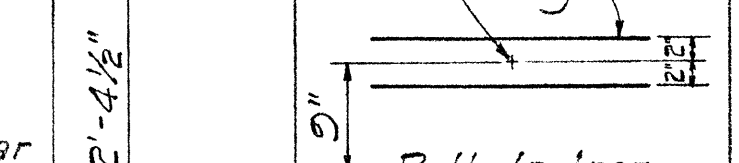
FRONT VIEW
Scale: 1" = 1'-0"



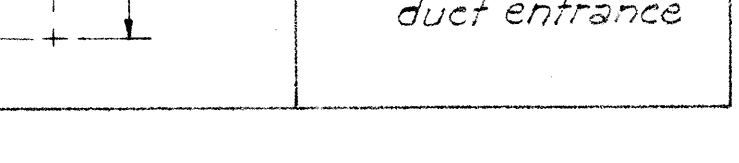
SIDE VIEW
Scale: 1" = 1'-0"



FRONT VIEW
Scale: 1" = 1'-0"



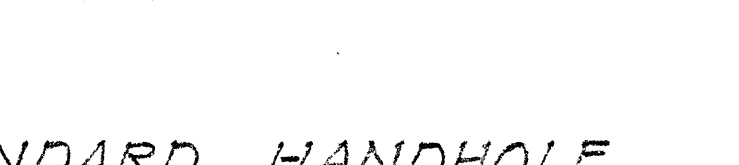
SIDE VIEW
Scale: 1" = 1'-0"



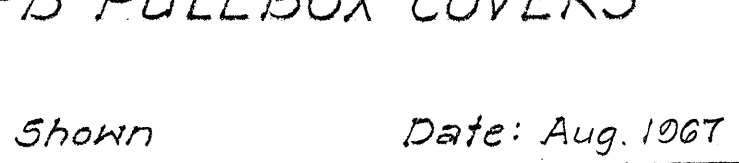
FRONT VIEW
Scale: 1" = 1'-0"



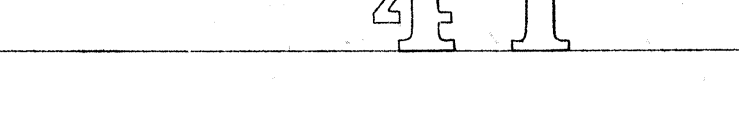
SIDE VIEW
Scale: 1" = 1'-0"



FRONT VIEW
Scale: 1" = 1'-0"



SIDE VIEW
Scale: 1" = 1'-0"



FRONT VIEW
Scale: 1" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

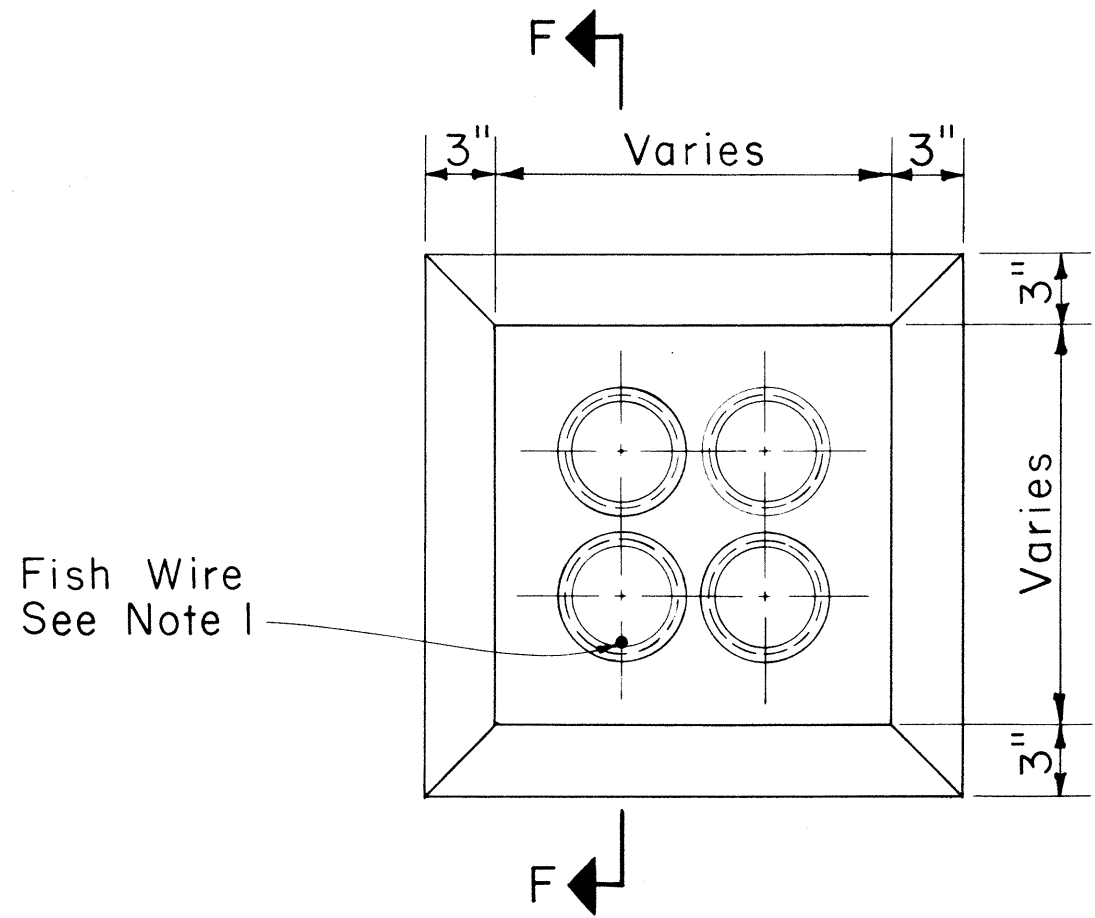
STANDARD HANDHOLE
TYPE #1 & 2 USING TYPE
435T-B PULLBOX COVERS

Scale: As Shown Date: Aug. 1967

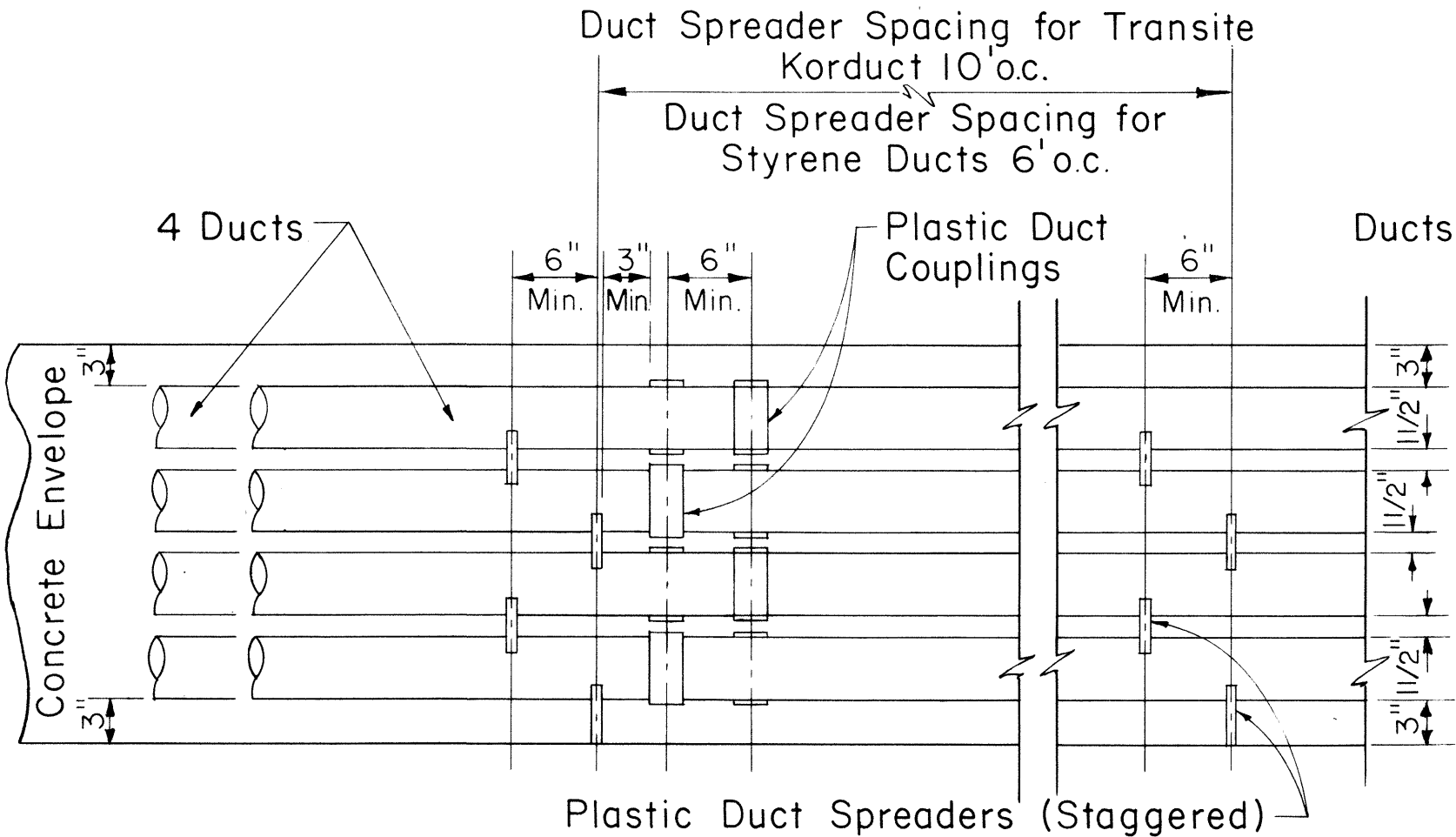
SHEET No. 16 OF 18 SHEETS

41 1

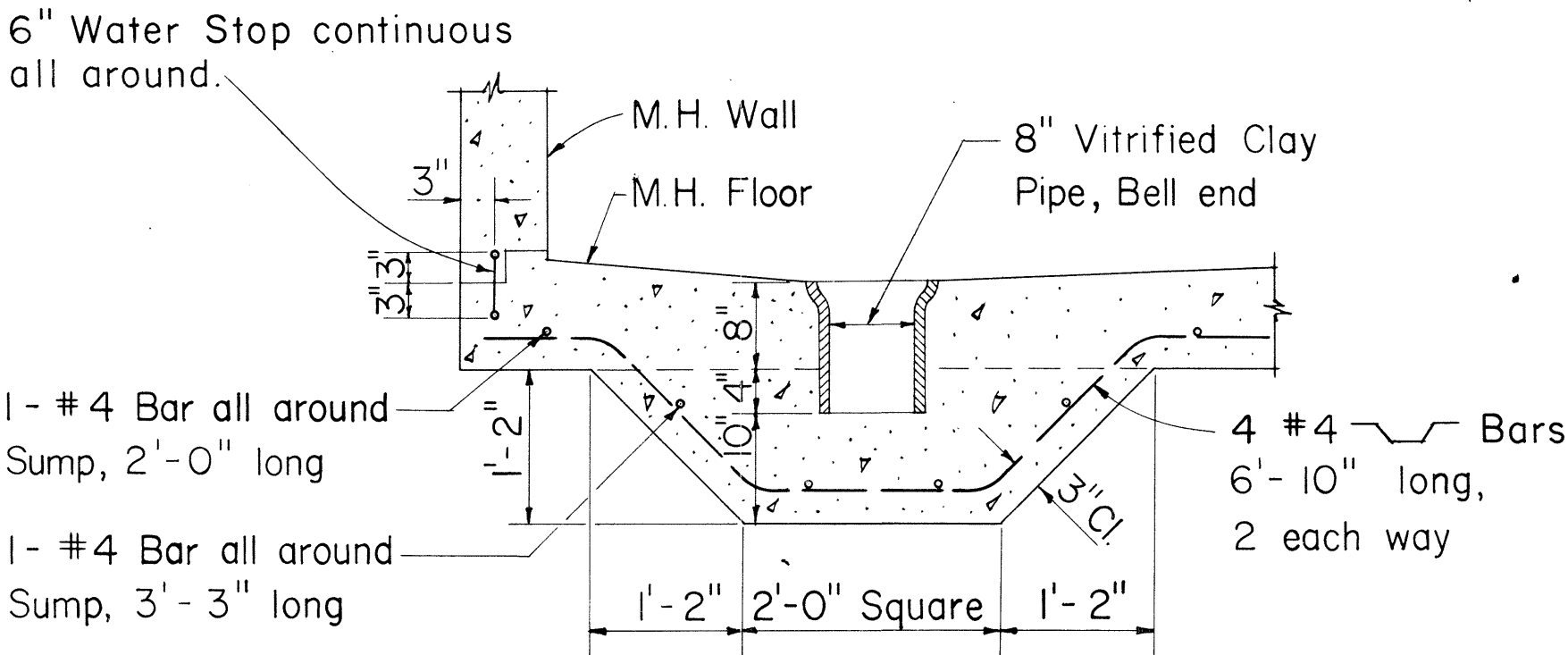
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	F-003-1(2) Unit 2	1967	42	83



TYPICAL MANHOLE DUCT WINDOW
Scale: 1 1/2" = 1'-0"

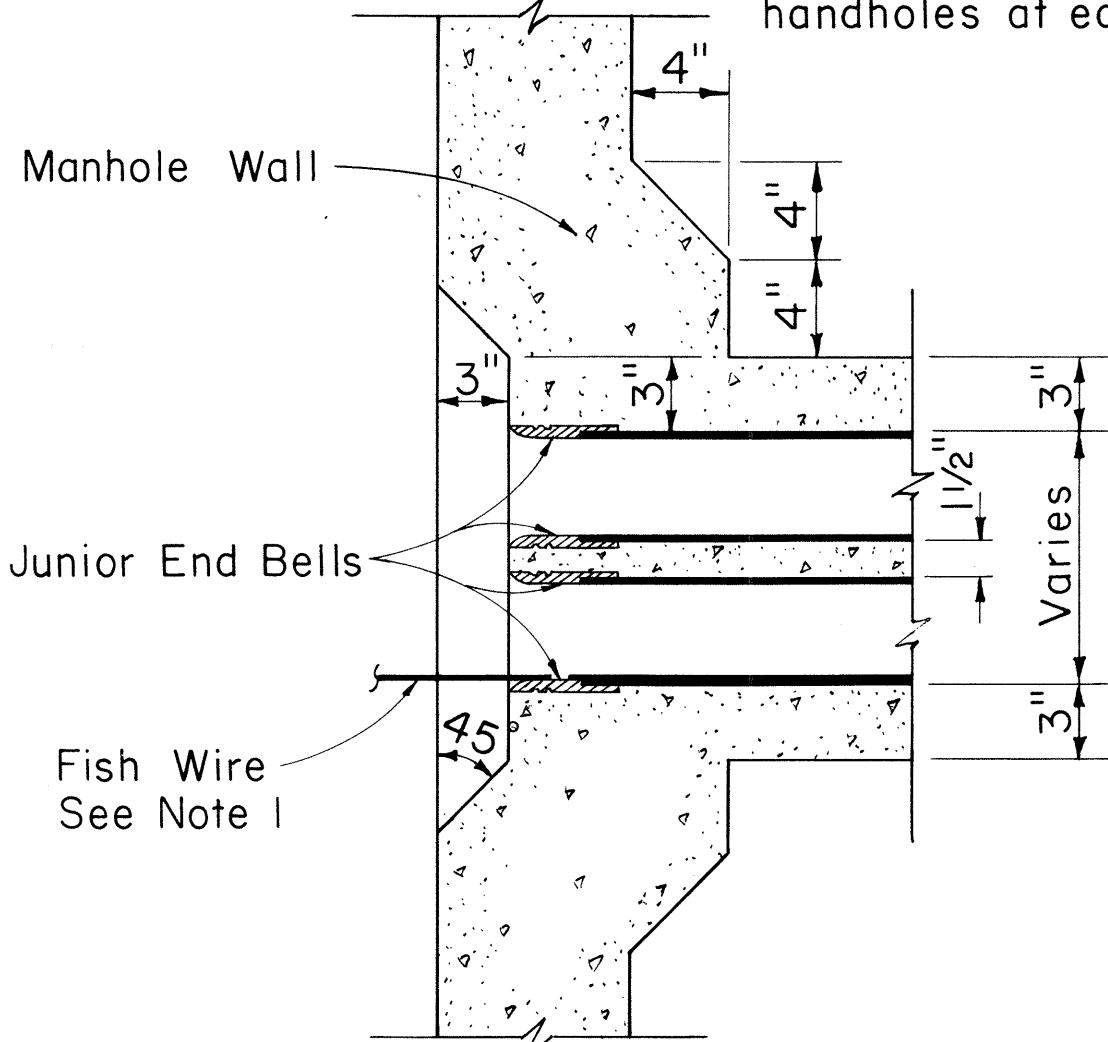


TYPICAL DUCT ENVELOPE ELEVATION
ARRANGEMENT OF COUPLING & PLASTIC SPACERS
Scale: 1" = 1'-0"

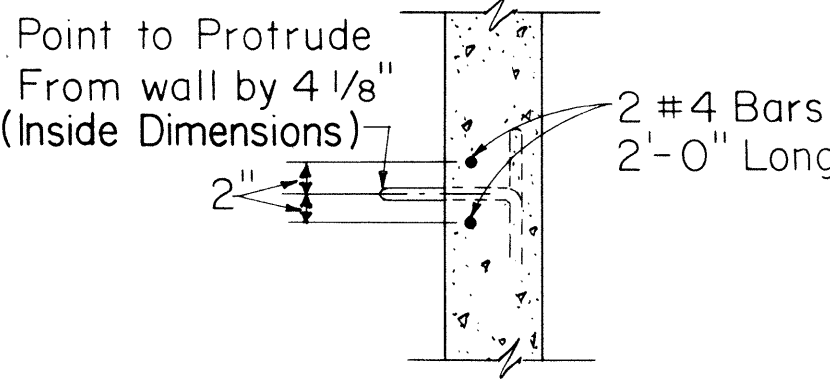
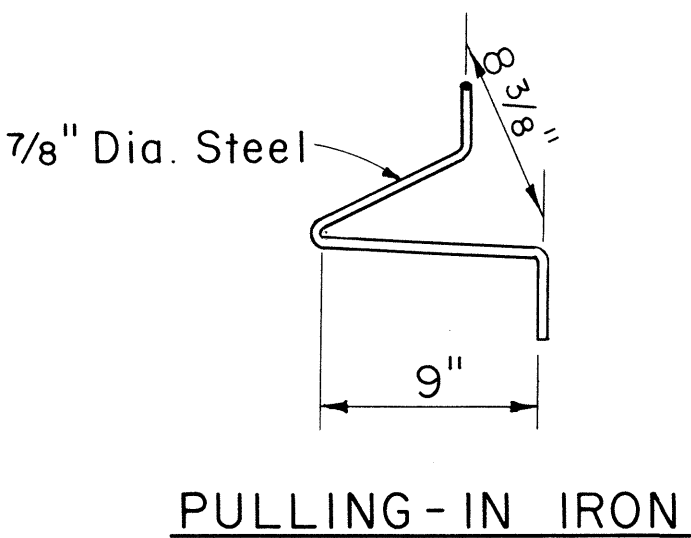


SECTION "E₁ - E₁"
MANHOLE SUMP DETAIL
Scale: 3/4" = 1'-0"

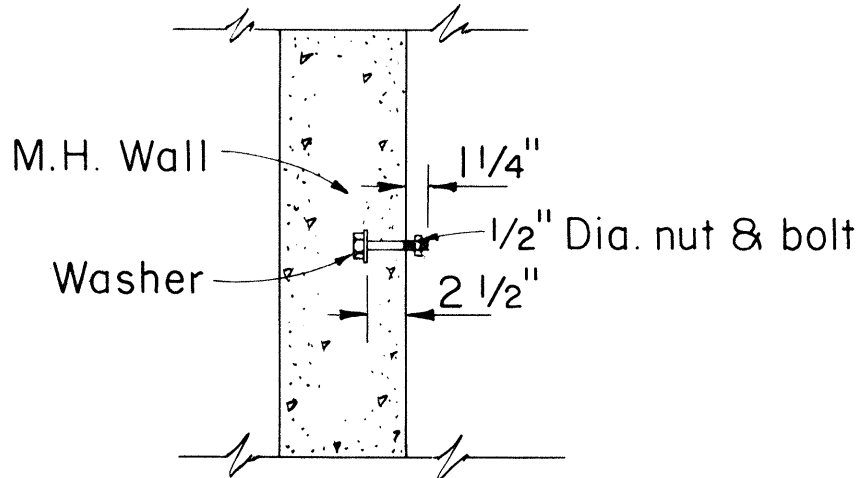
NOTE
1. The Contractor shall place #12 Fish Wire in designated duct throughout its entire length with protrusions of 2 feet in manholes & handholes at each end and 1 foot in pullboxes.



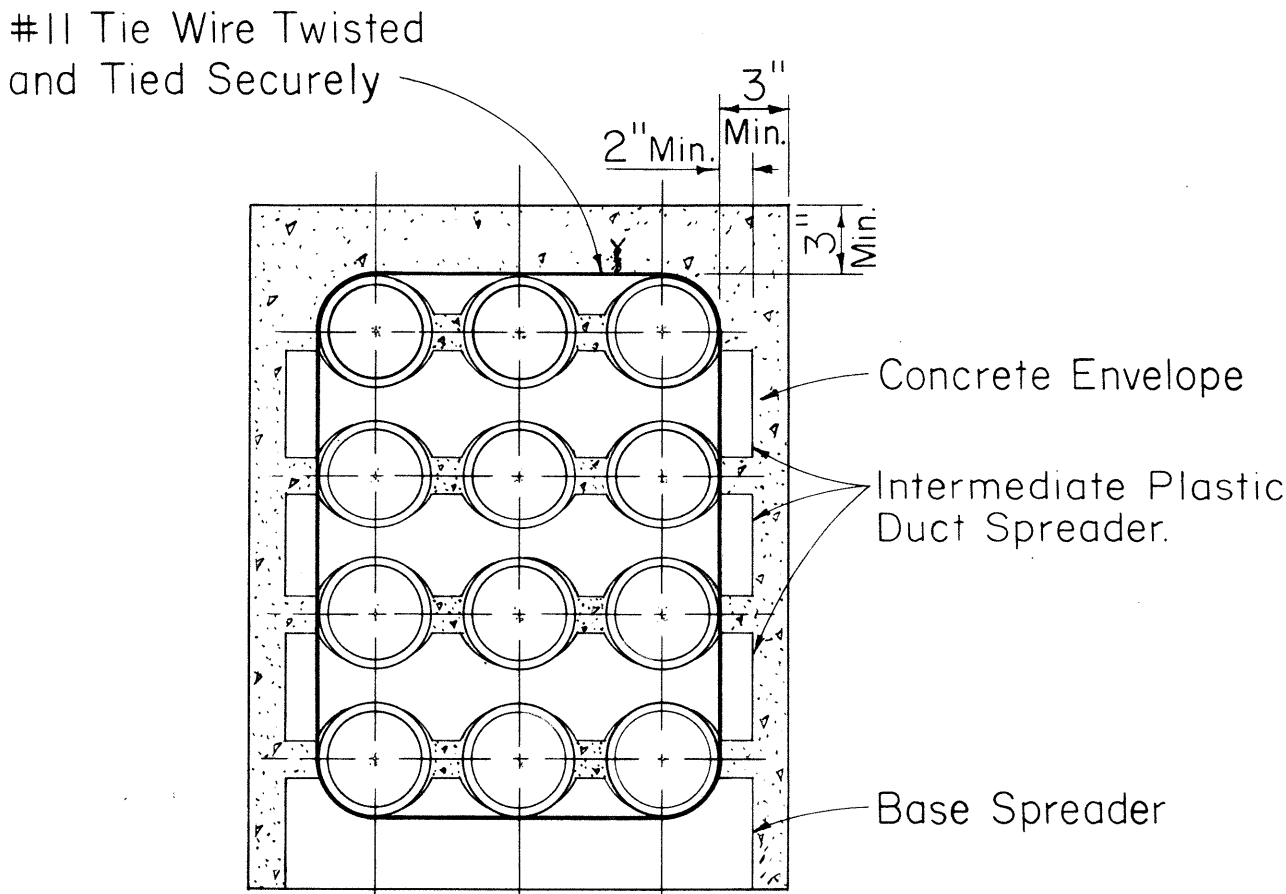
SECTION "F-F"
TYPICAL WINDOW DETAIL & JUNIOR END BELL
Scale: 1 1/2" = 1'-0"



SECTIONAL VIEW OF
PULLING-IN IRON
Scale: 3/4" = 1'-0"



CABLE RACK STUD
BOLT DETAIL
Scale: 1" = 1'-0"



SECTION SHOWING SPACERS

APPROVED:
[Signature]
HAWAIIAN TELEPHONE CO. DATE 10-11-67

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

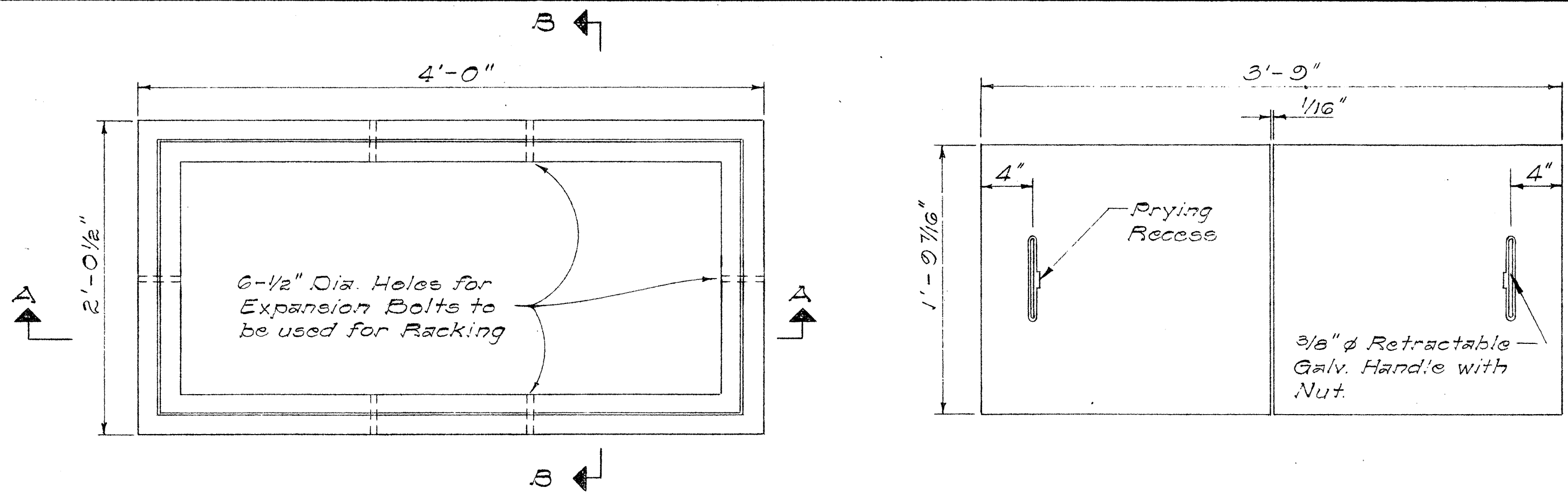
MISCELLANEOUS
TELEPHONE DETAILS

Scale: As Noted Date: Aug., 1967
SHEET No. 17 OF 18 SHEETS

DATE	BY
DESIGNED BY	
FRAMED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

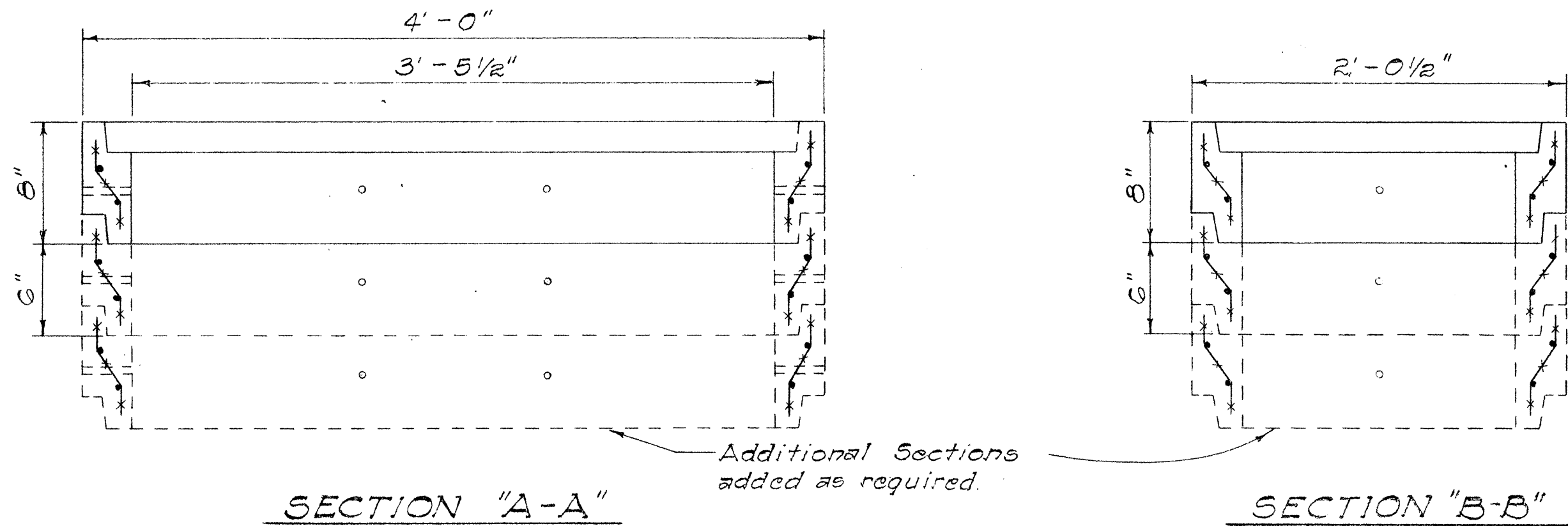
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2), Unit 2	1968	C043	83

REVISED: March, 1968



PLAN

PLAN OF COVER

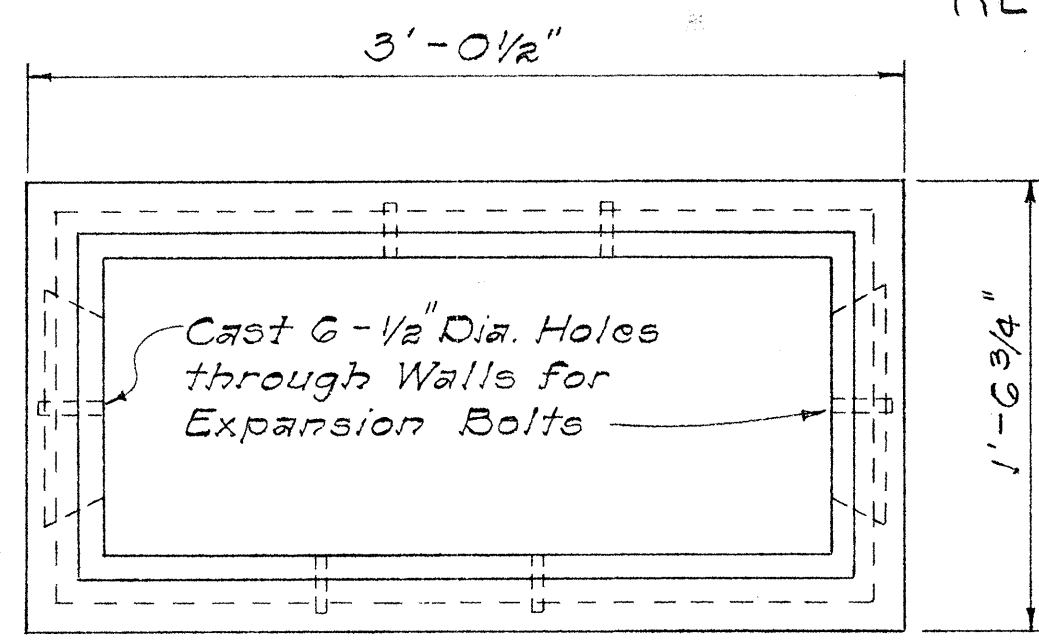


SECTION "A-A"

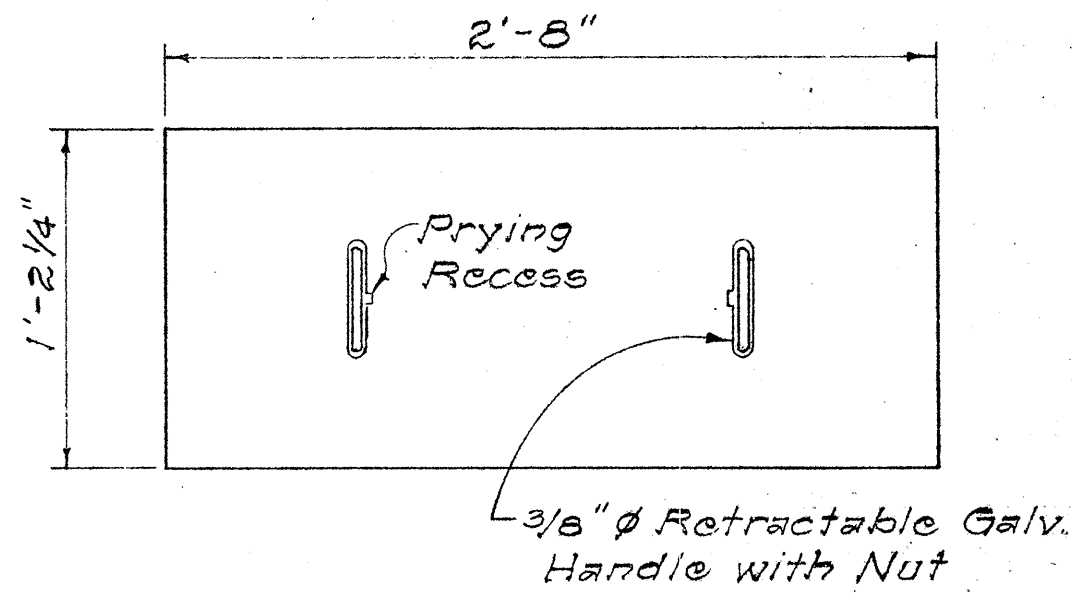
SECTION "B-B"

DETAIL OF LARGE PULL BOX No. 435T-B

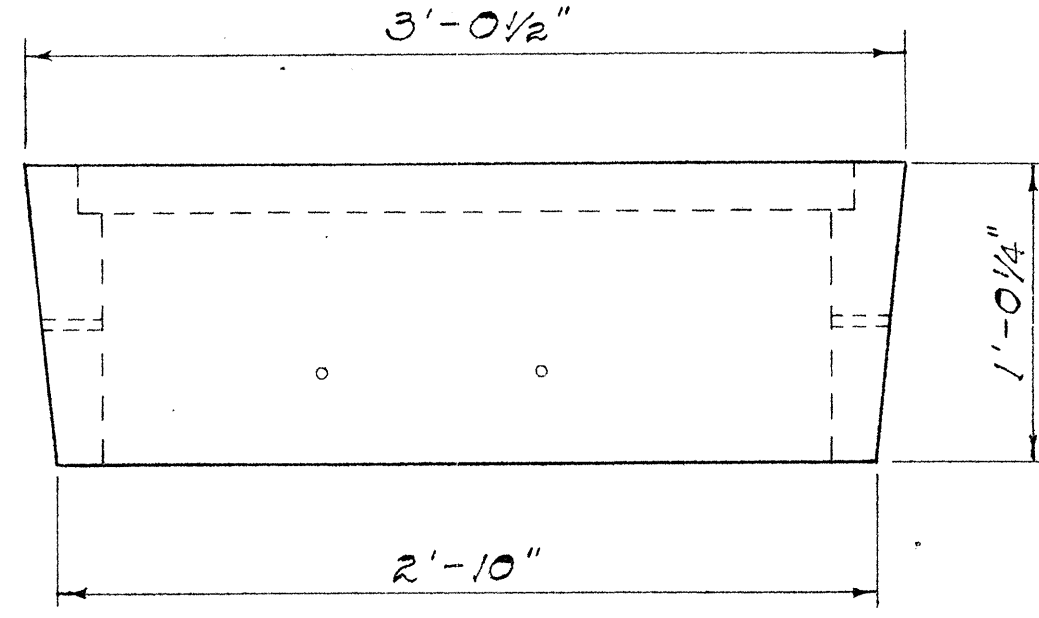
Scale: 1 1/2" = 1'-0"



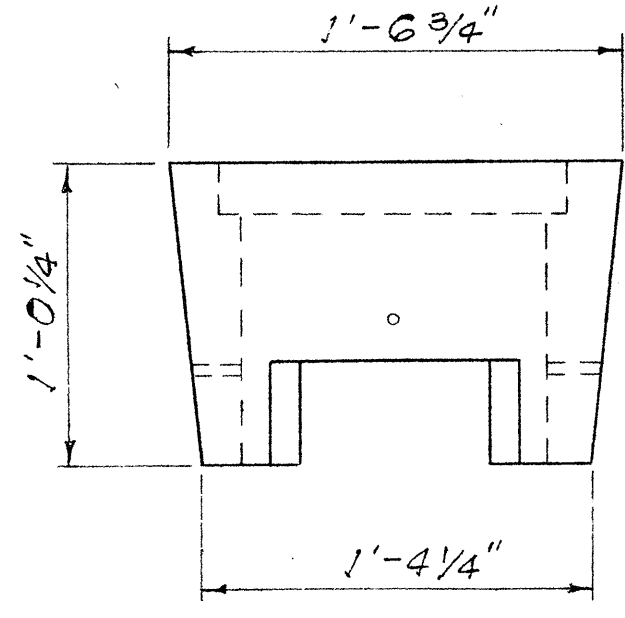
PLAN



PLAN OF COVER



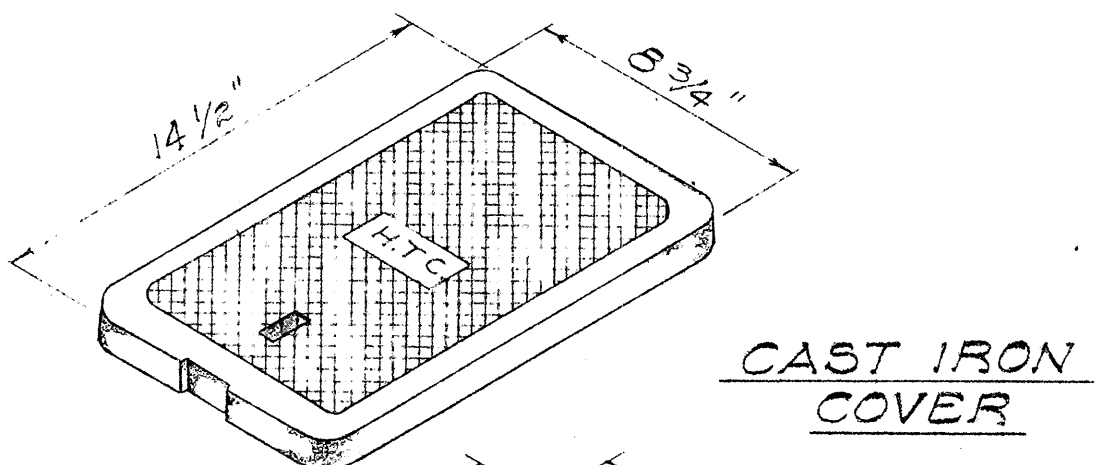
SIDE ELEVATION



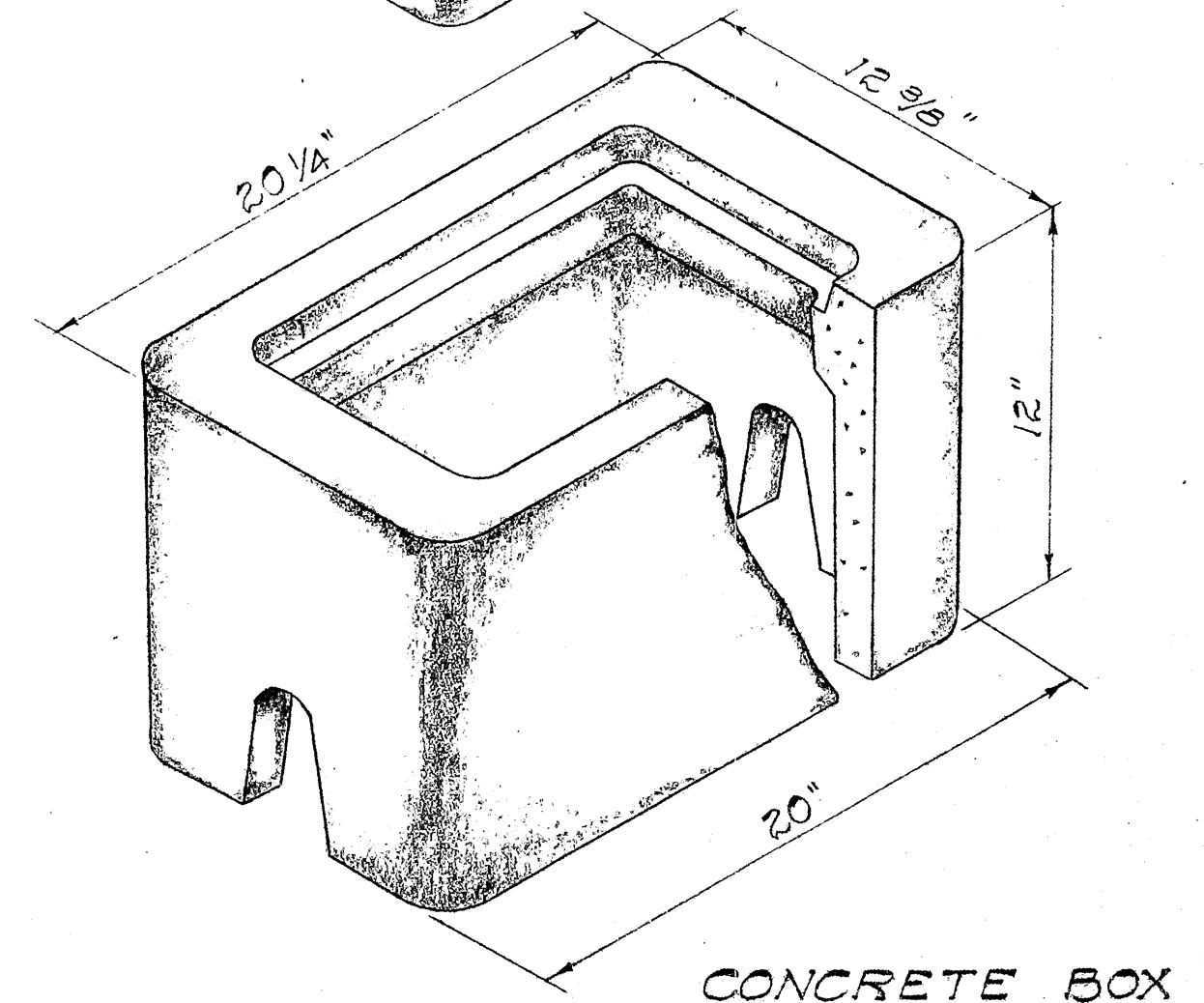
END ELEVATION

DETAIL OF SMALL PULL BOX No. 434T

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

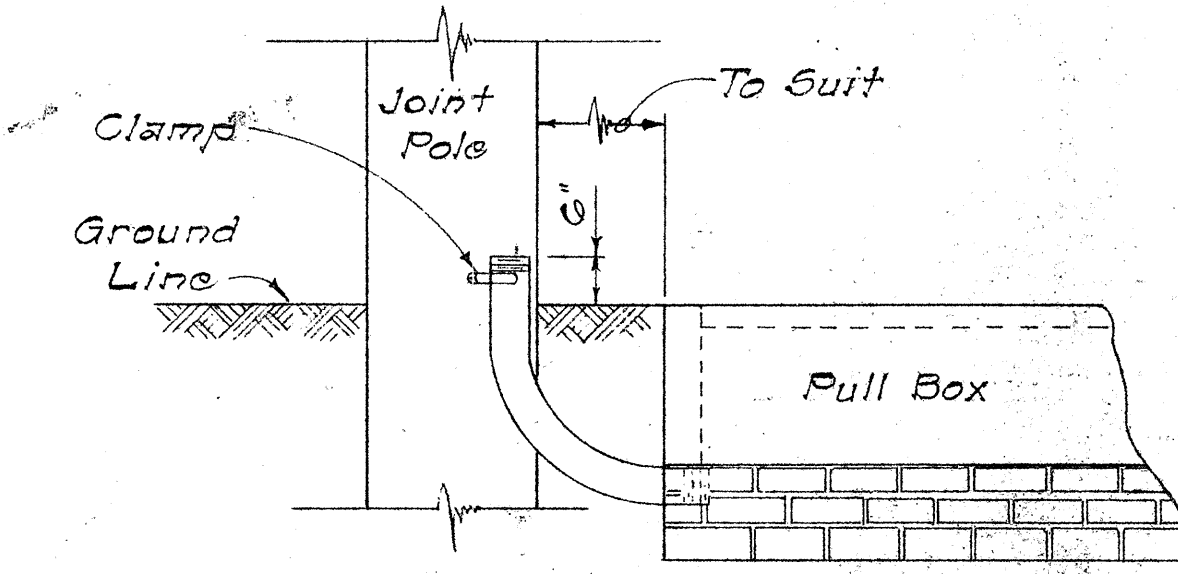


CAST IRON COVER



CONCRETE BOX

TYPE "B" METER BOX TYPE 436T



Field Side of Pole

TYPICAL 90° CONDUIT BEND TO POLE

Not To Scale

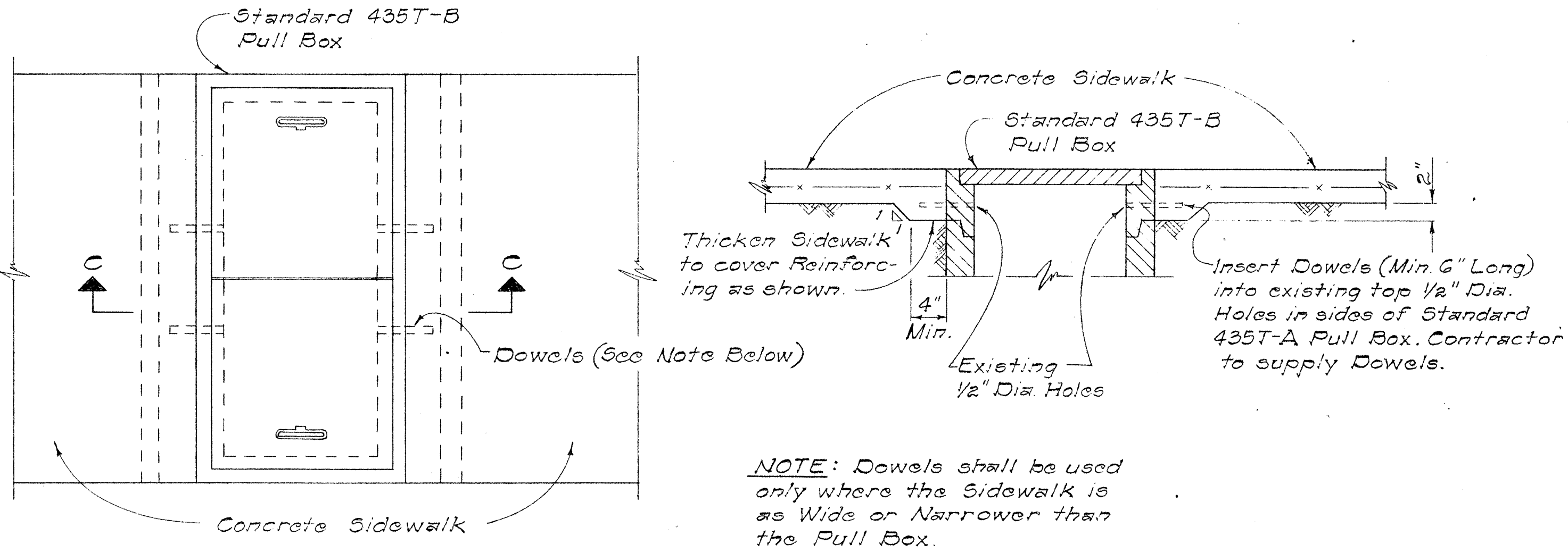
APPROVED:
William S. Young
HAWAIIAN TELEPHONE CO. DATE: 5-15-68

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
TELEPHONE PULL BOXES
Nos. 435T-B, 434T AND 436T

Scale: As Shown Date: March, 1968

SHEET No. 18 OF 18 SHEETS



PLAN

SECTION "C-C"

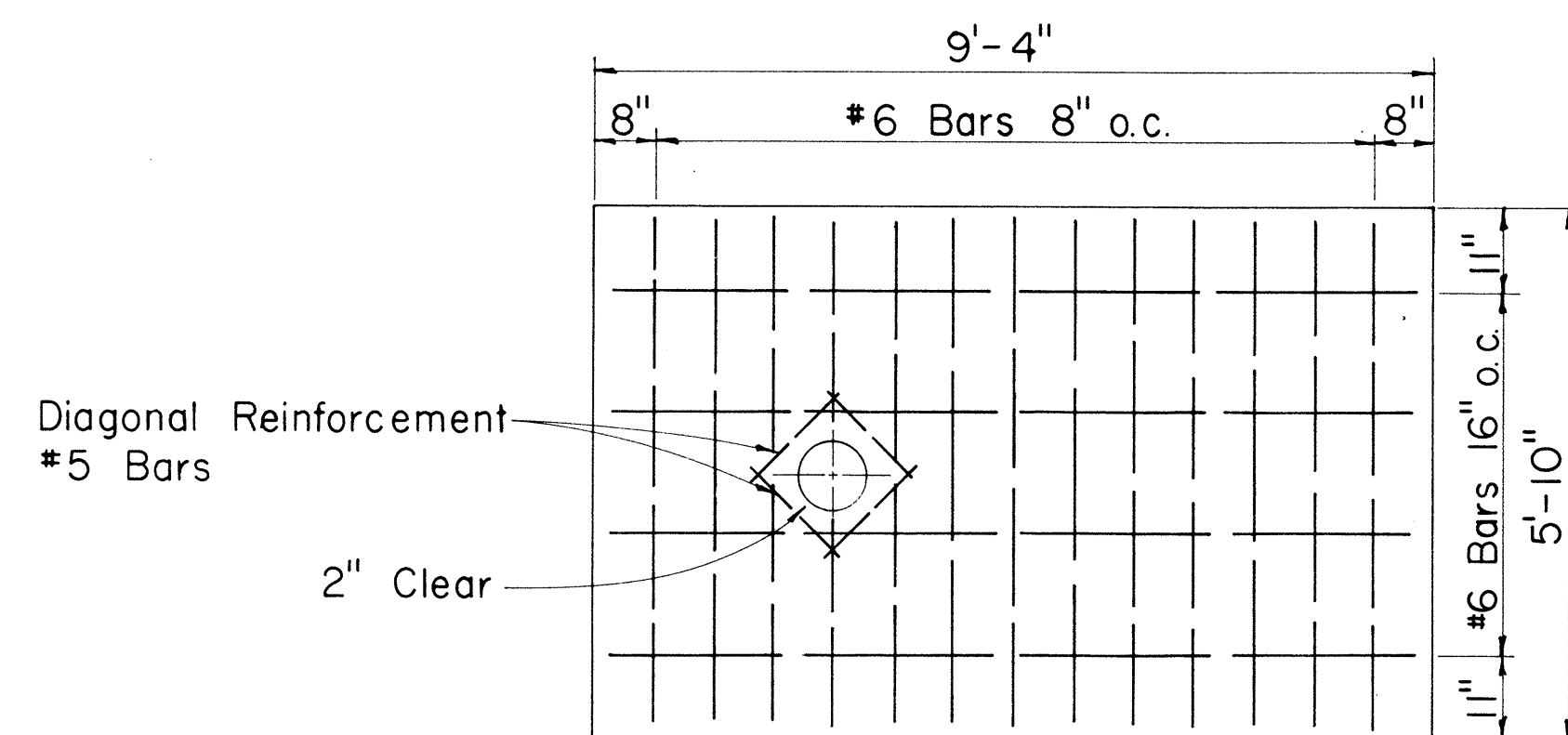
INSTALLATION DETAIL OF PULL BOX No. 435T-B IN SIDEWALK AREAS

Scale: 1" = 1'-0"

THIS SHEET SUPERSEDES AND
REPLACES SHEET No. 43

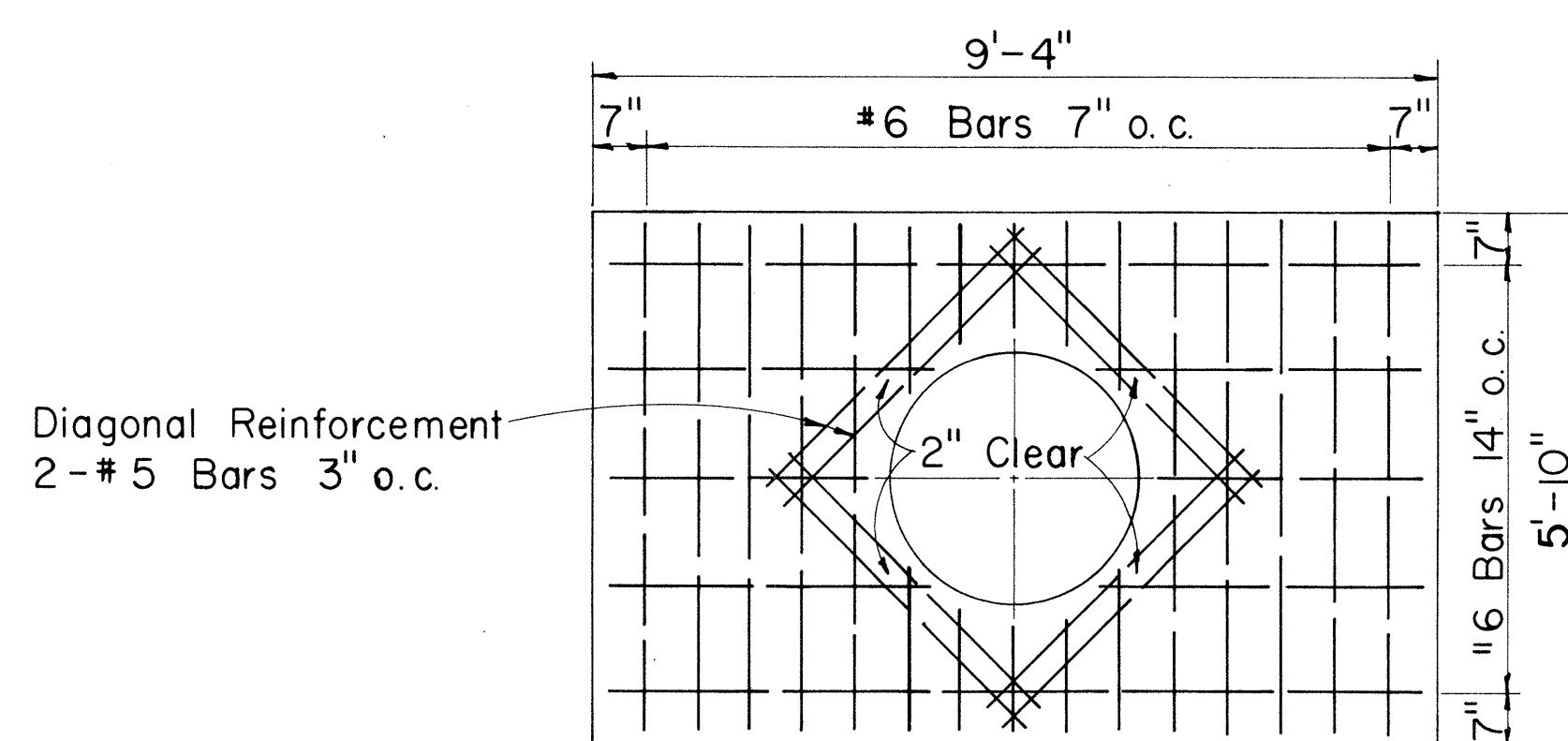
DATE	_____
SURVEY PLOTTED BY	_____
PLAN	_____
DESIGNED BY	_____
NOTE BOOK	_____
QUANTITIES BY	_____
CHECKED BY	_____
No.	_____

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F.083-1(2)	1968	00435(1)	83



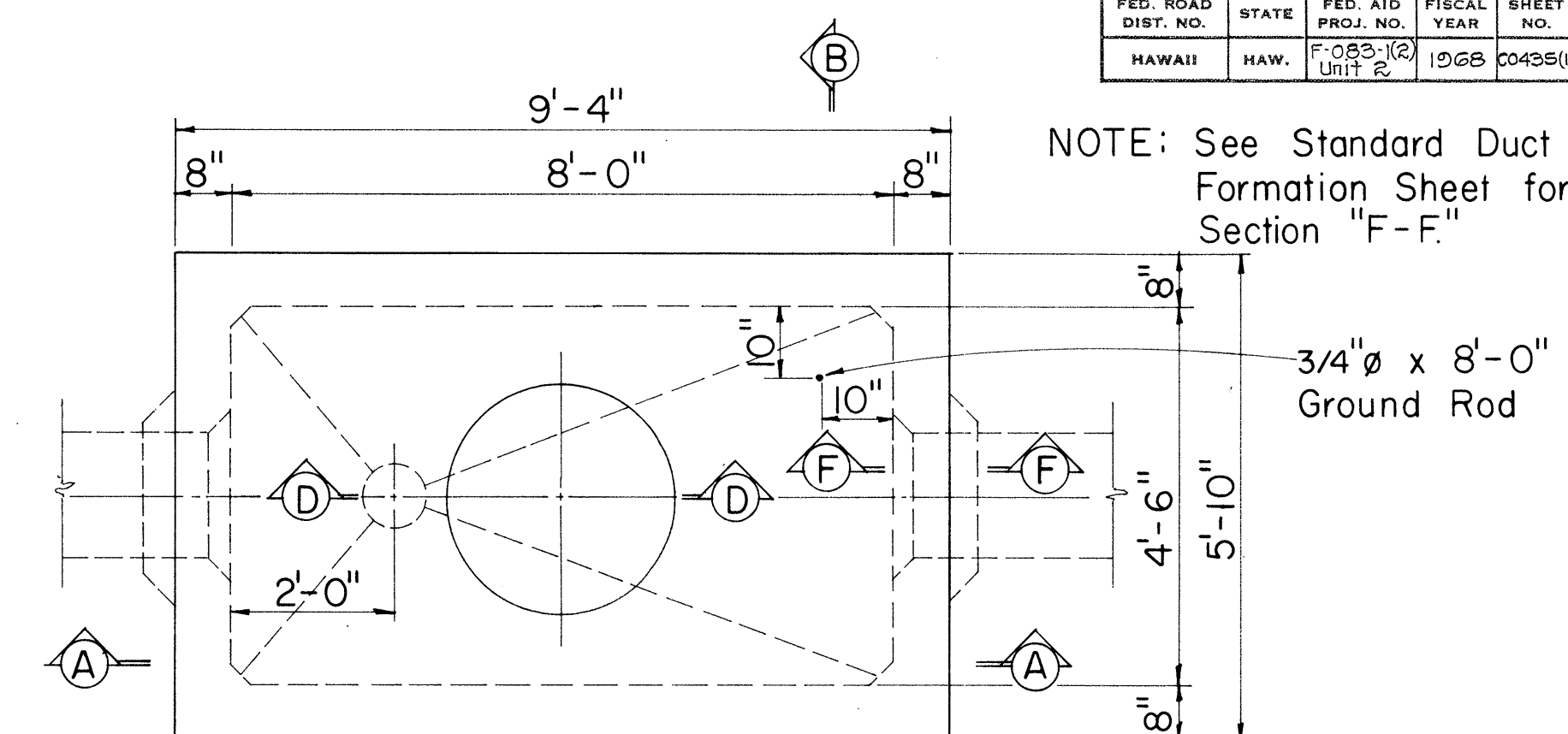
FLOOR SLAB REINF. PLAN

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



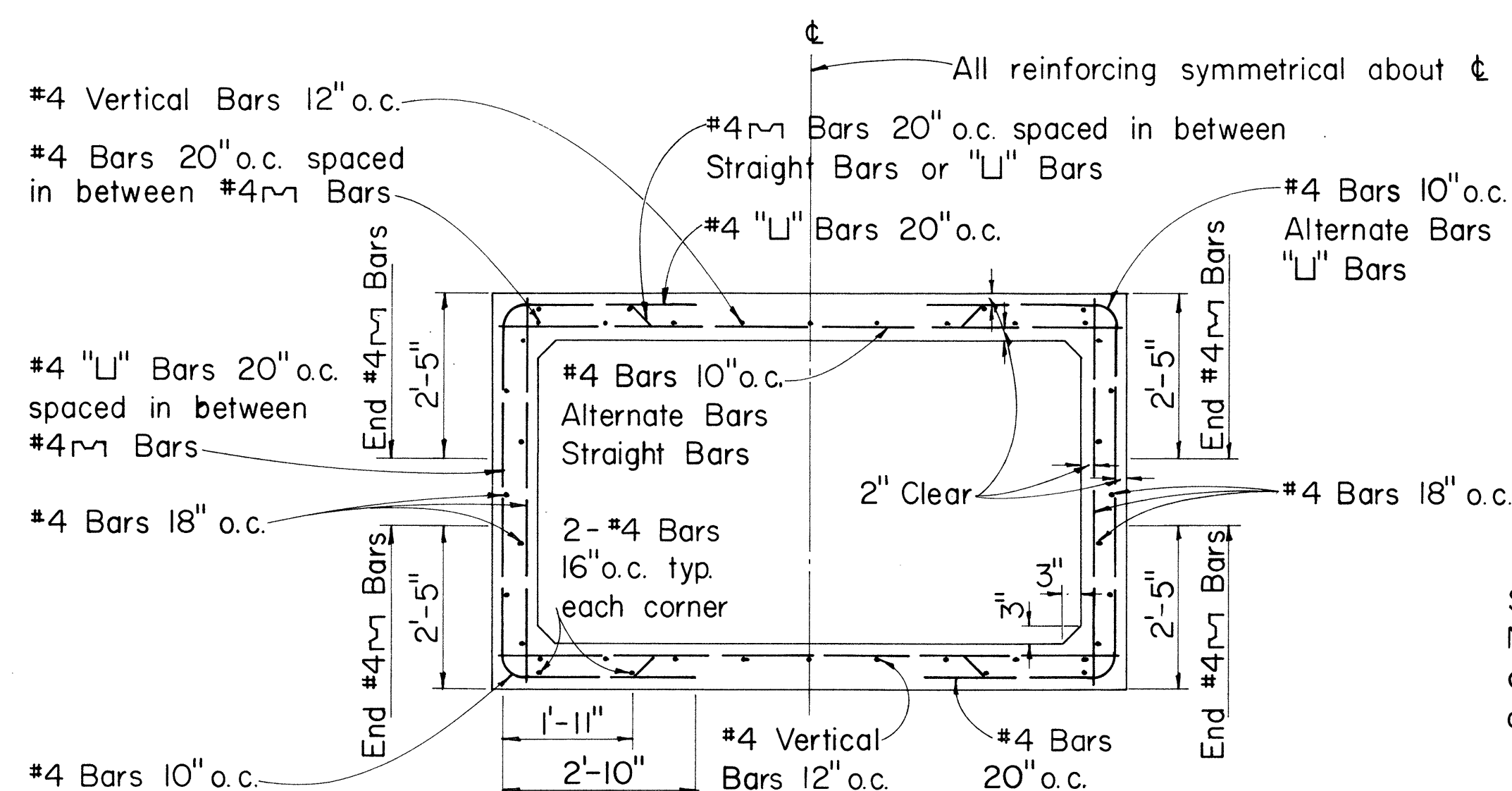
ROOF SLAB REINF. PLAN

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



PLAN M.H. TYPE "A-1"
FOR ROADWAY & SIDEWALK AREAS

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

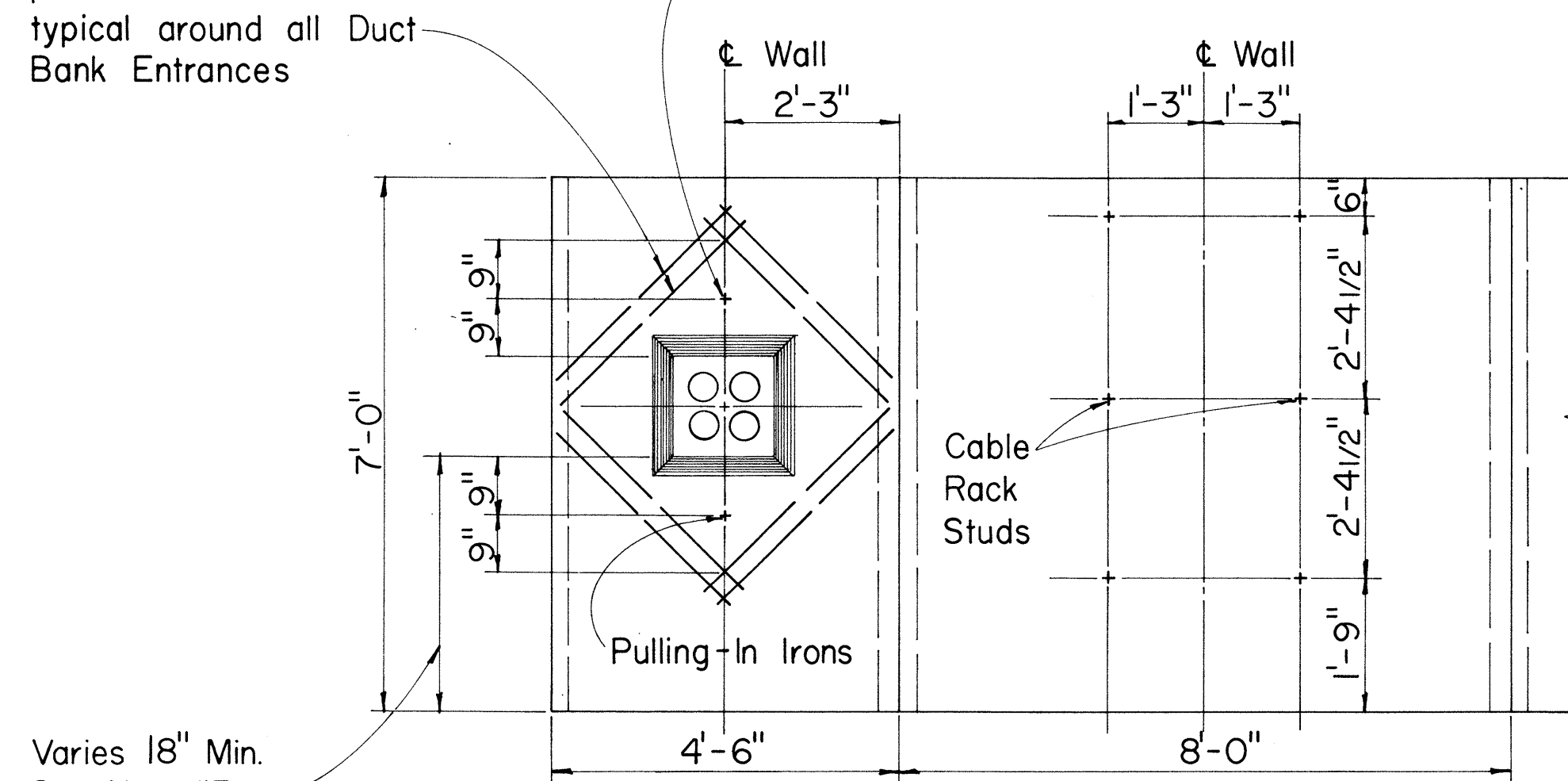


SECTION "C-C"

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

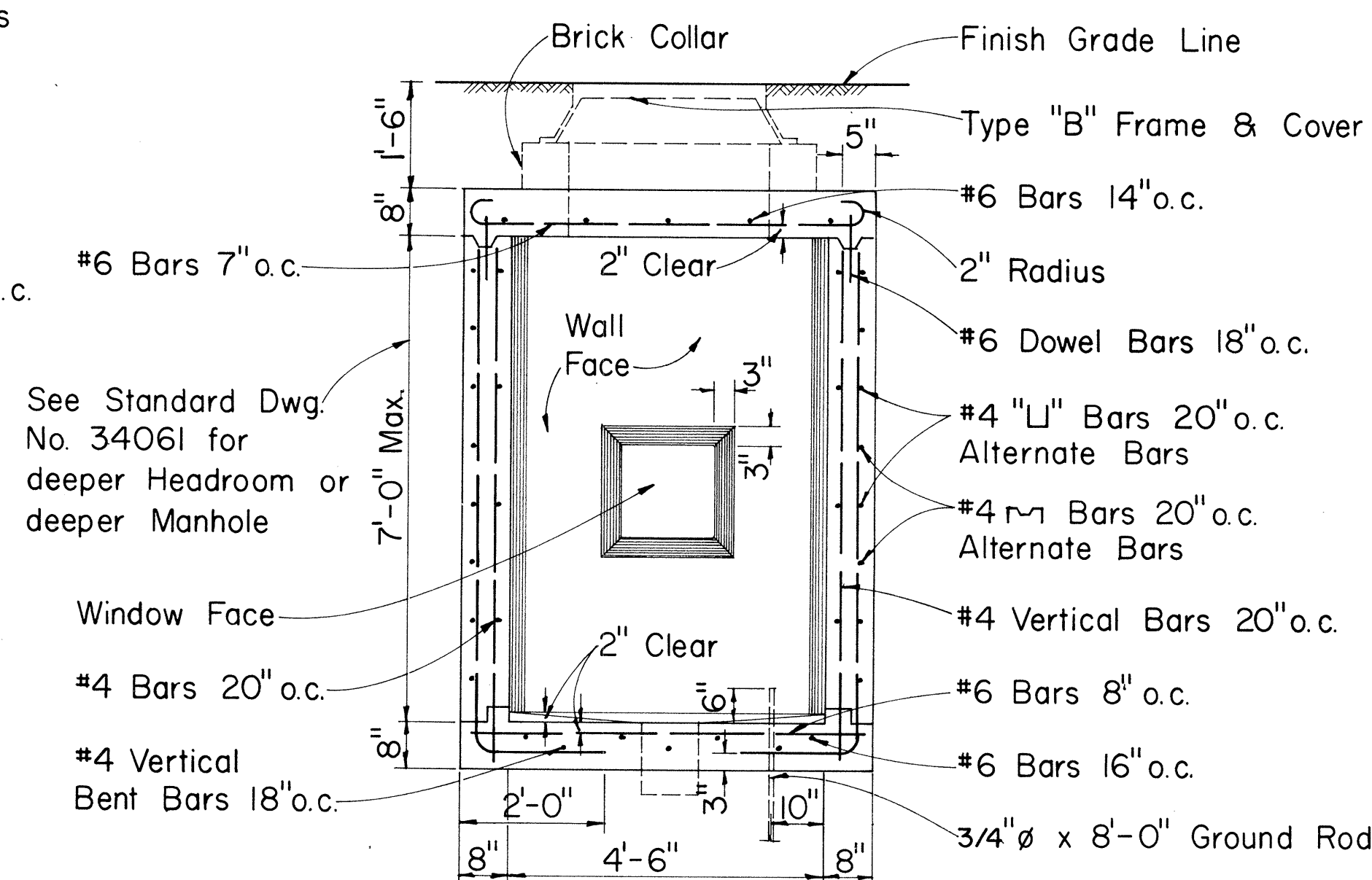
For Diagonal Reinforcement place 2-#5 Bars 3" o.c. typical around all Duct Bank Entrances

For location of Pulling-In Iron see Elevation of Manhole Walls.



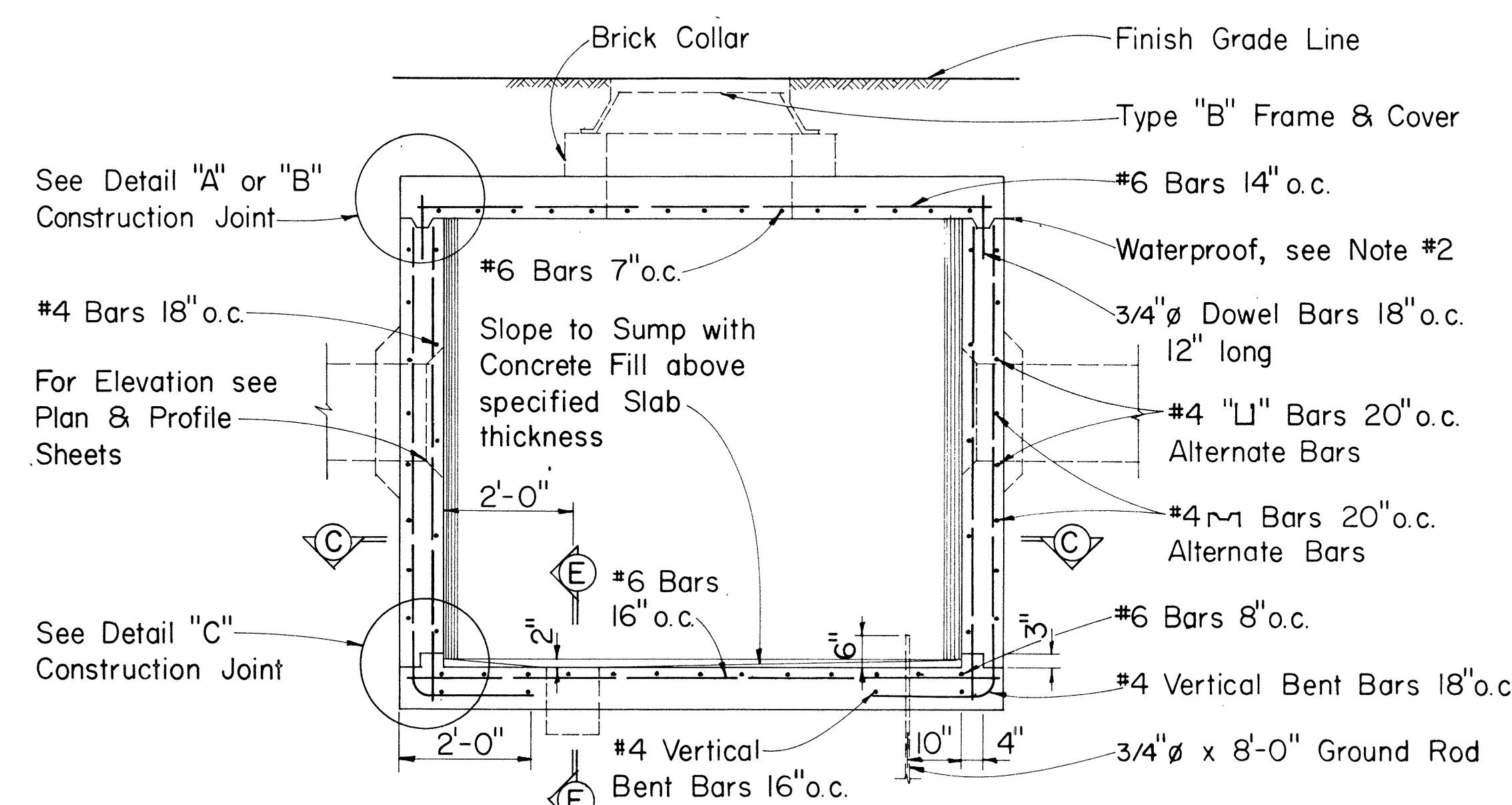
ELEVATION OF M.H. WALLS
(OPPOSITE FACES SIMILAR)

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



SECTION "B-B"

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

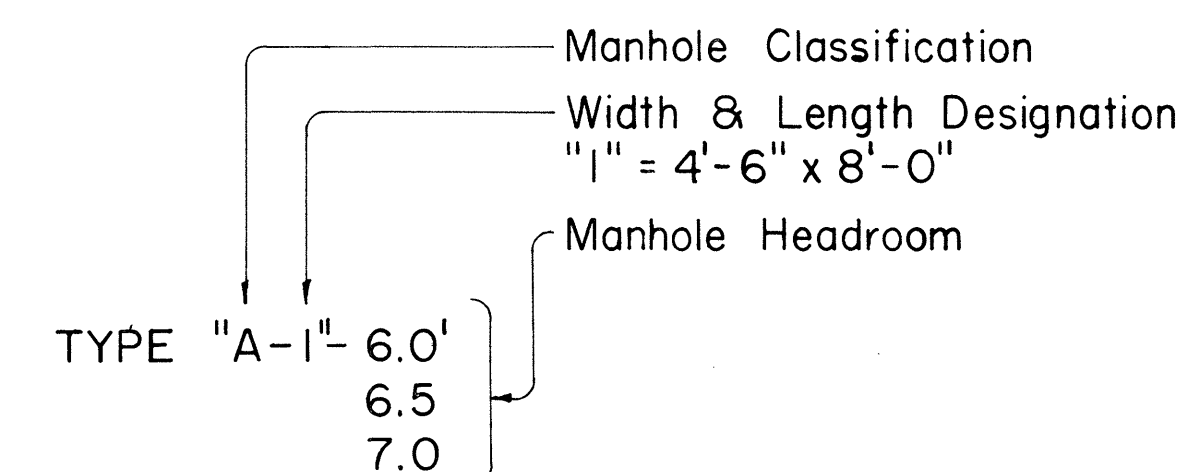


SECTION "A-A"

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

GENERAL NOTES

- Design Data:
 $f_s = 20,000$ psi, $f_c' = 3,000$ psi, $f_c = 1,350$ psi, $n = 10$
 $w =$ Equivalent Fluid Pressure: 30#/FT^2
- 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.

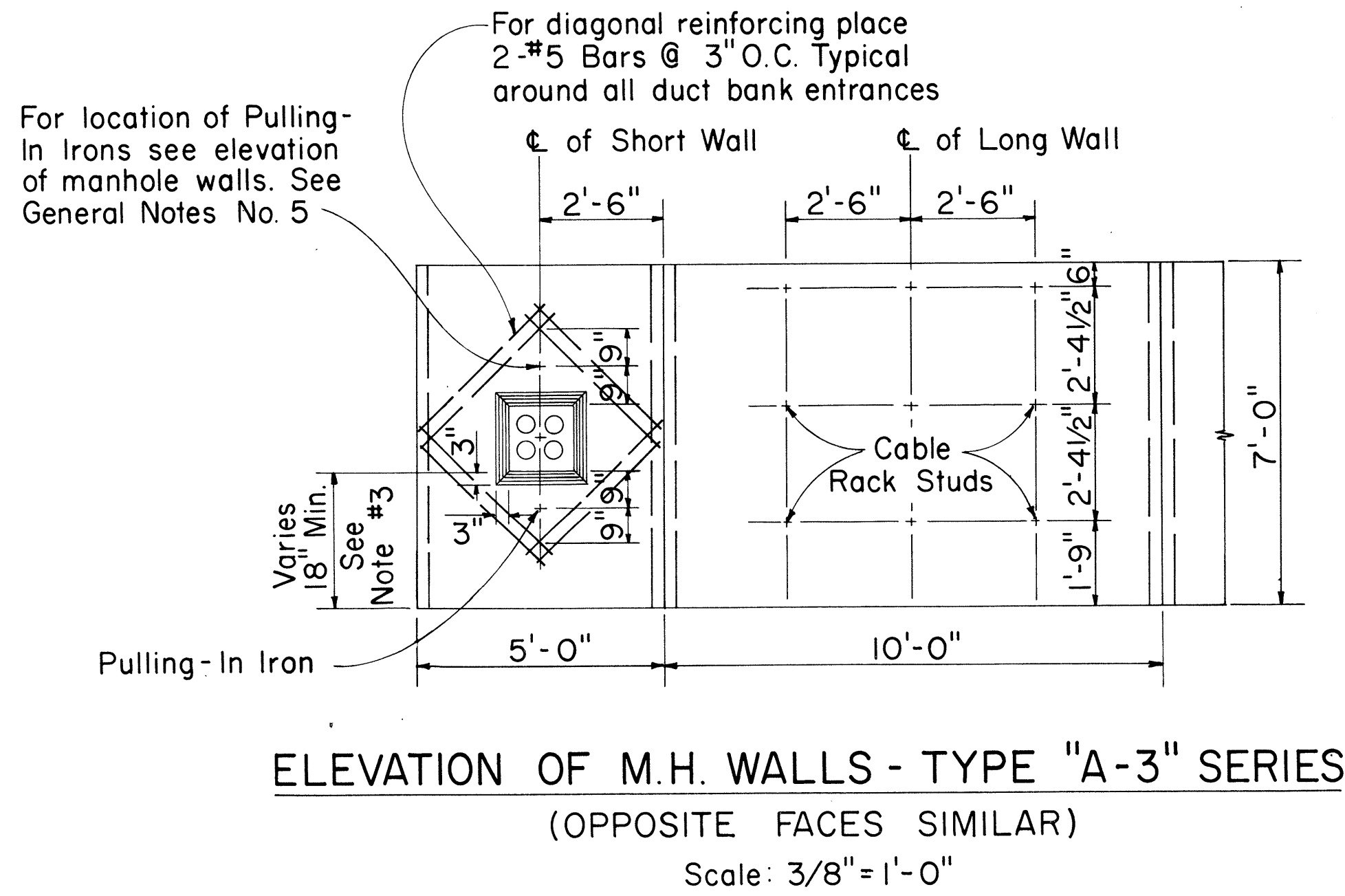
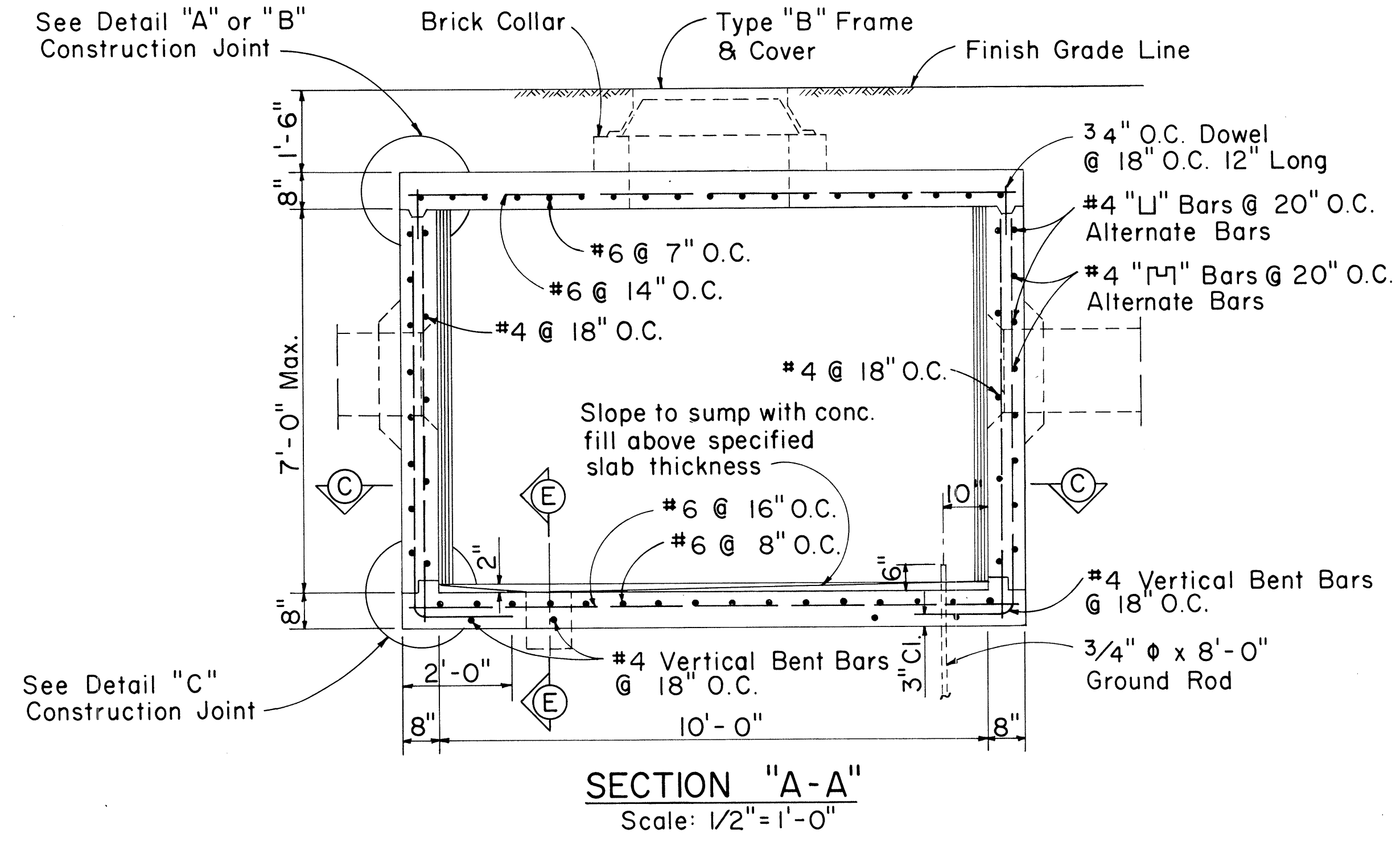
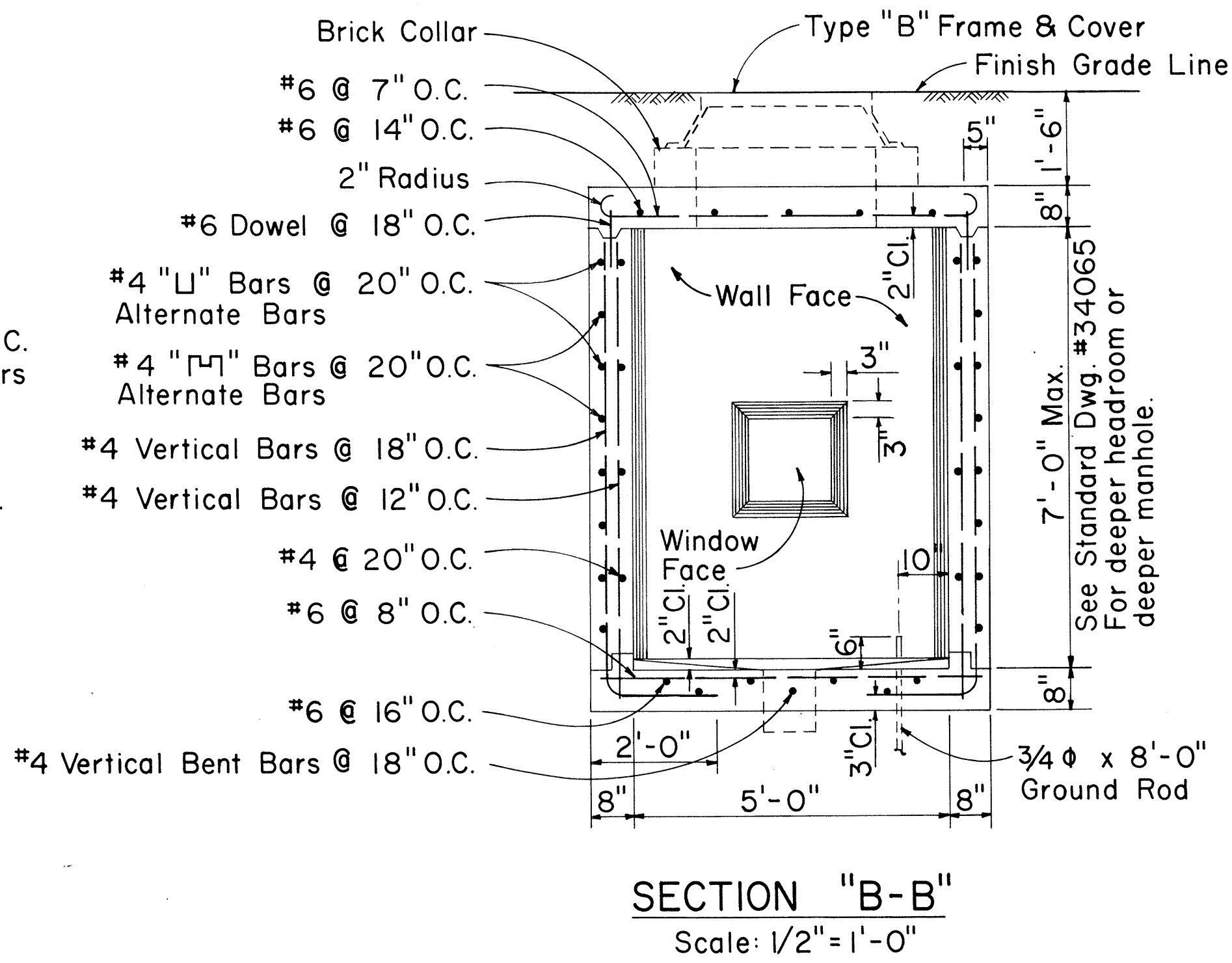
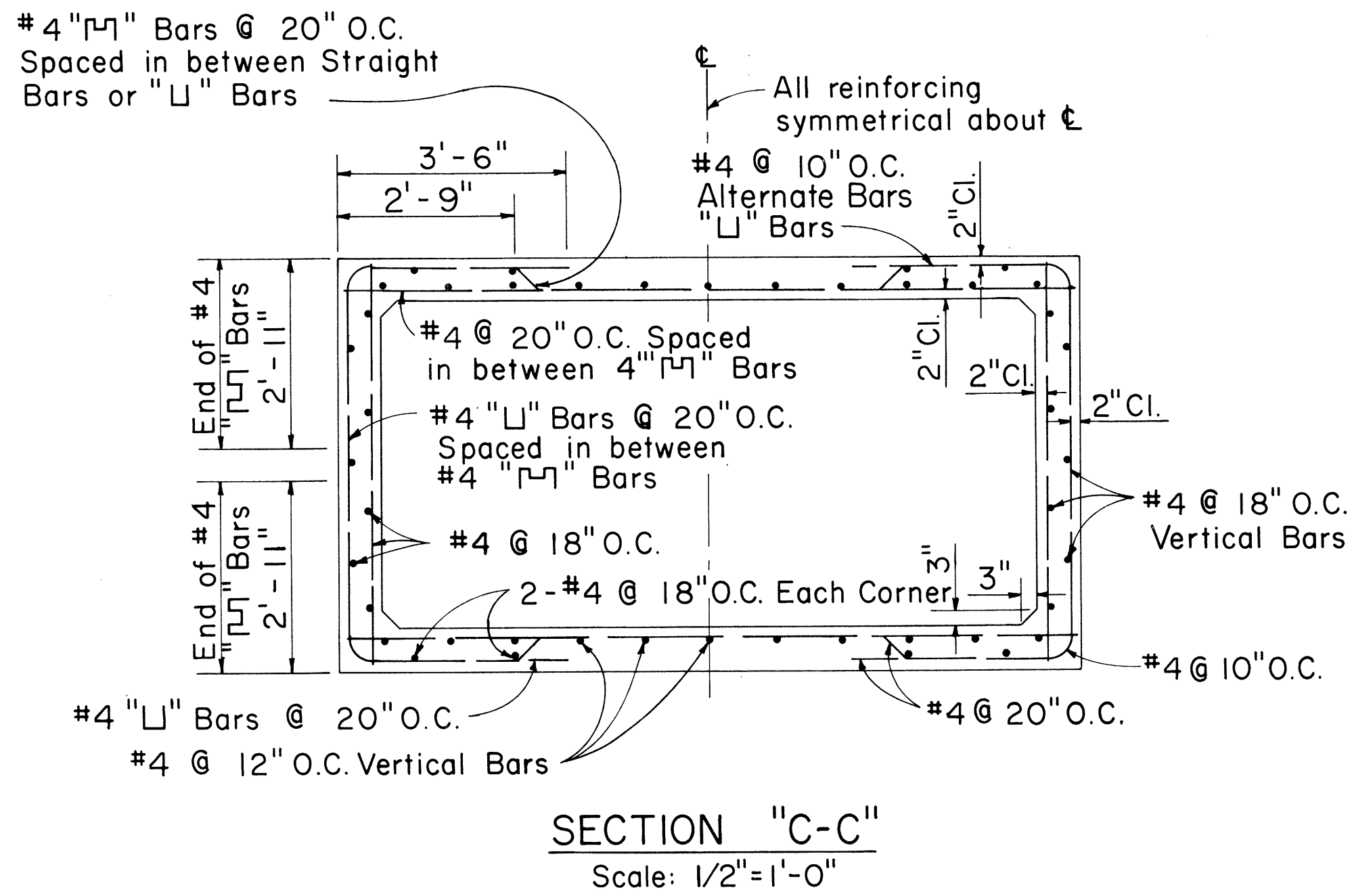
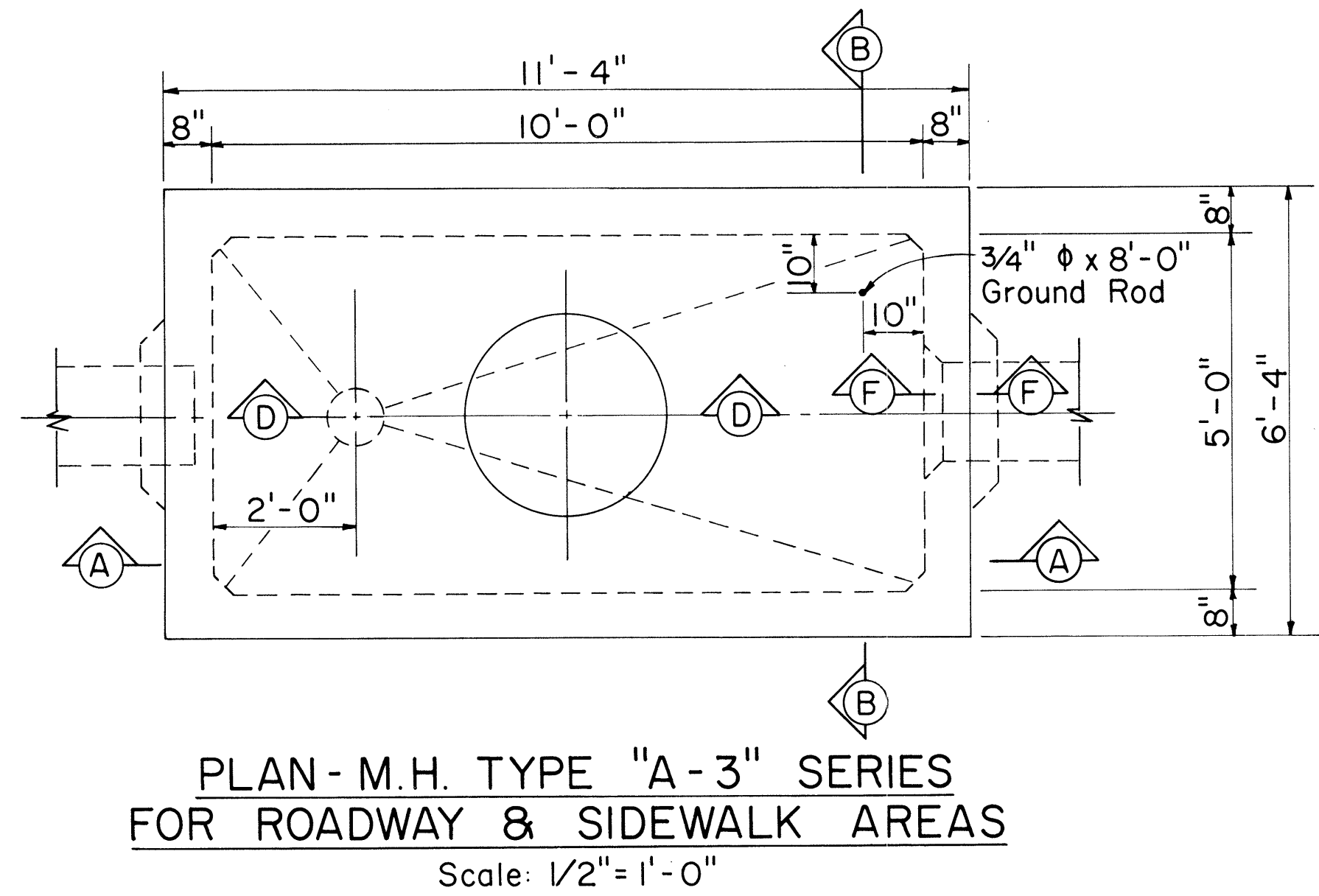
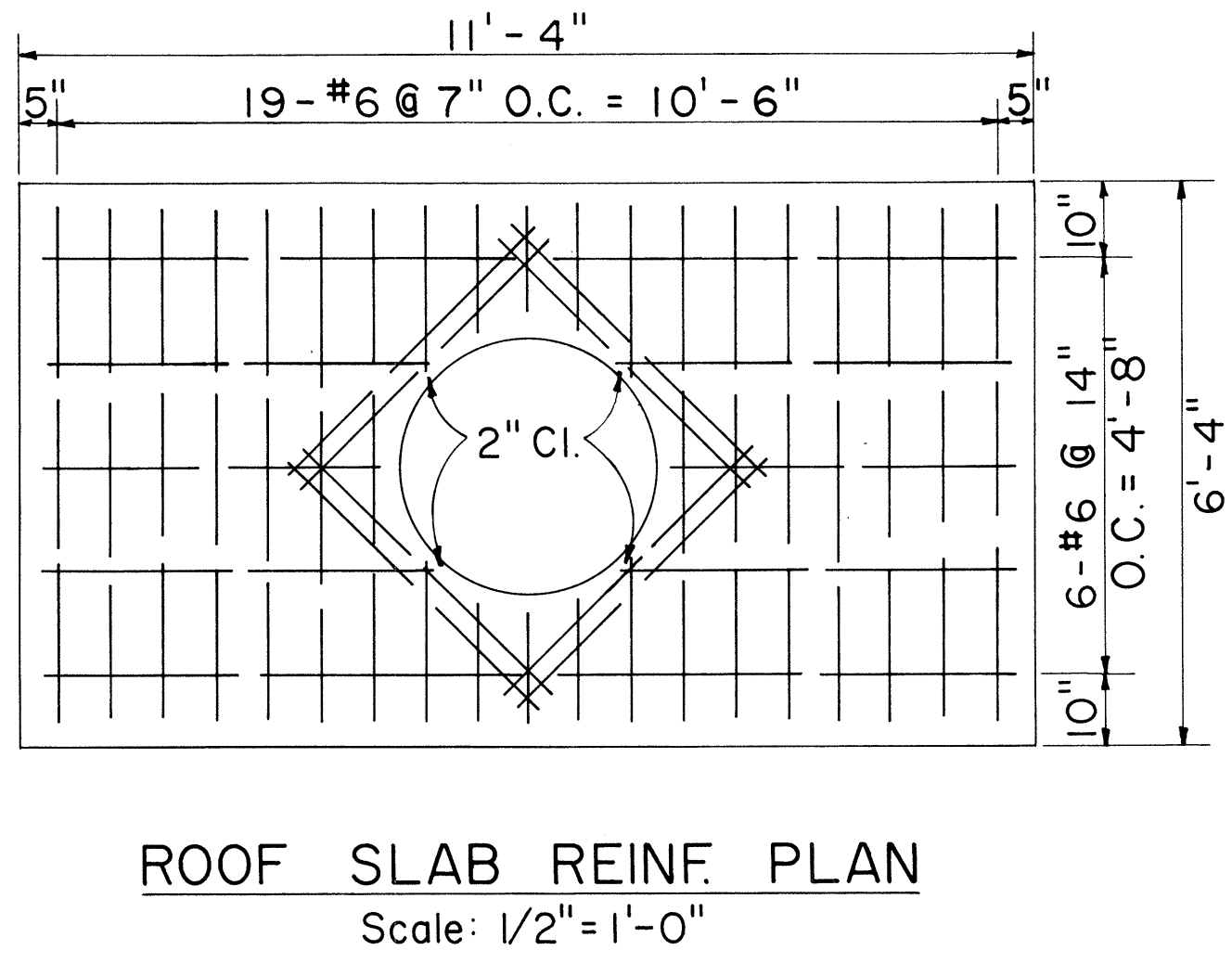
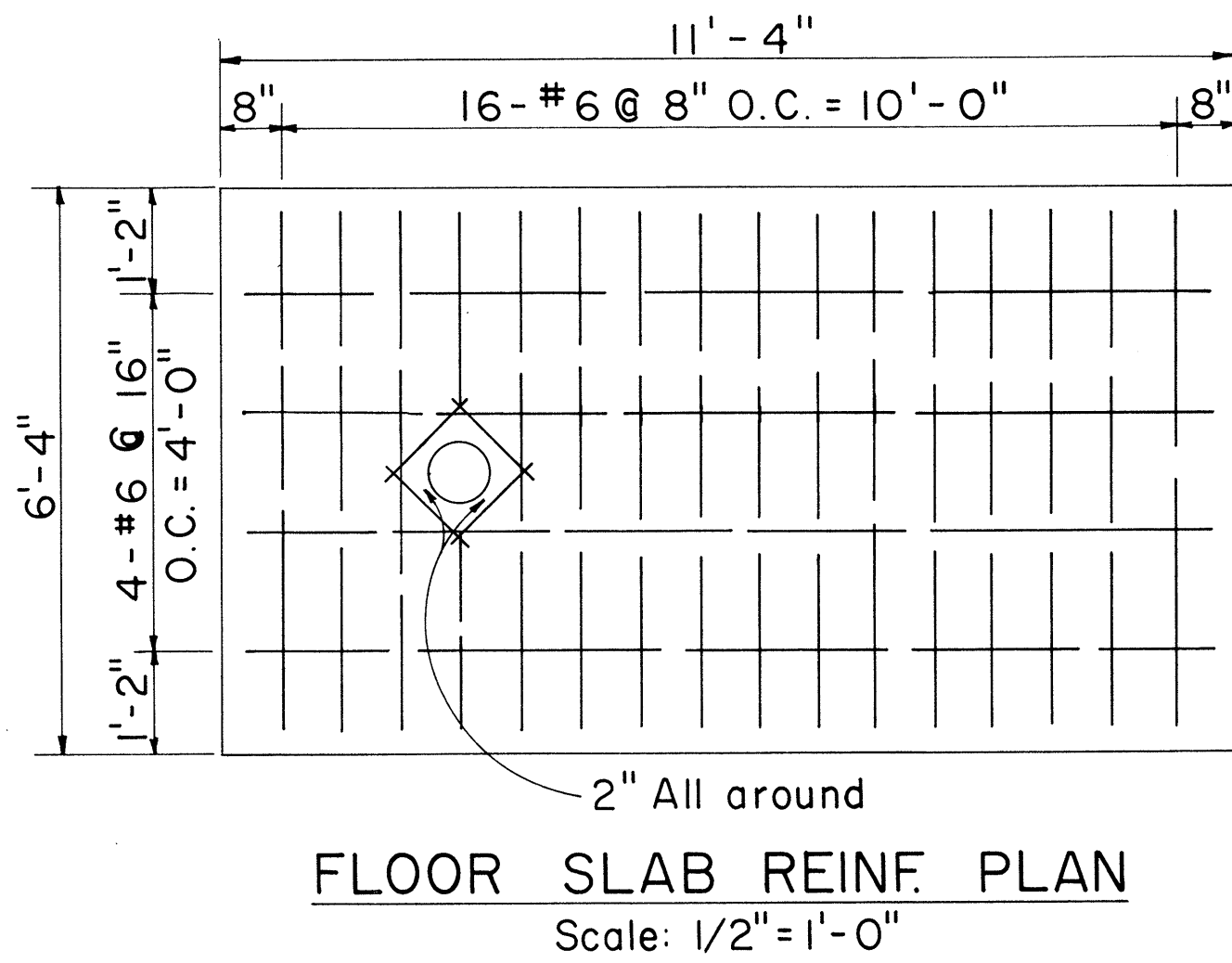


APPROVED:	
<i>William L. Young</i>	5-15-68
Hawaiian Telephone Co., Ltd.	Date
H. T. Co., Ltd.	Drawing No. 34060
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
TYPE "A-1" MANHOLES FOR 6.0' TO 7.0' HEADROOM	
Scale: As Noted	Date: May, 1968
SHEET No. 18A OF 18 SHEETS	

THIS SHEET IS A SUPPLEMENT TO THE CONTRACT PLANS

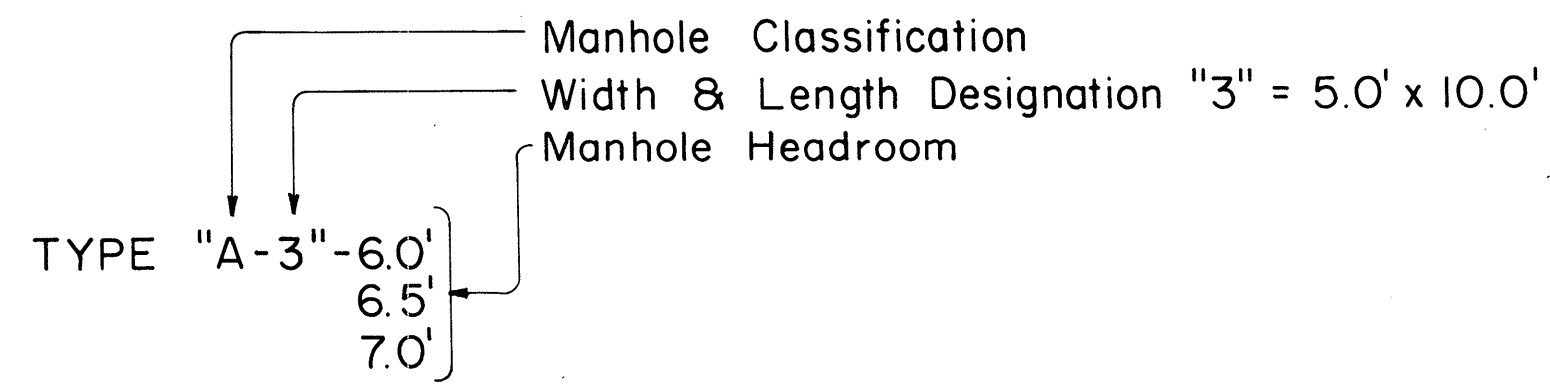
C 0 4 3 S (1)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) Unit 2	1968	C0435(2)	83



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.

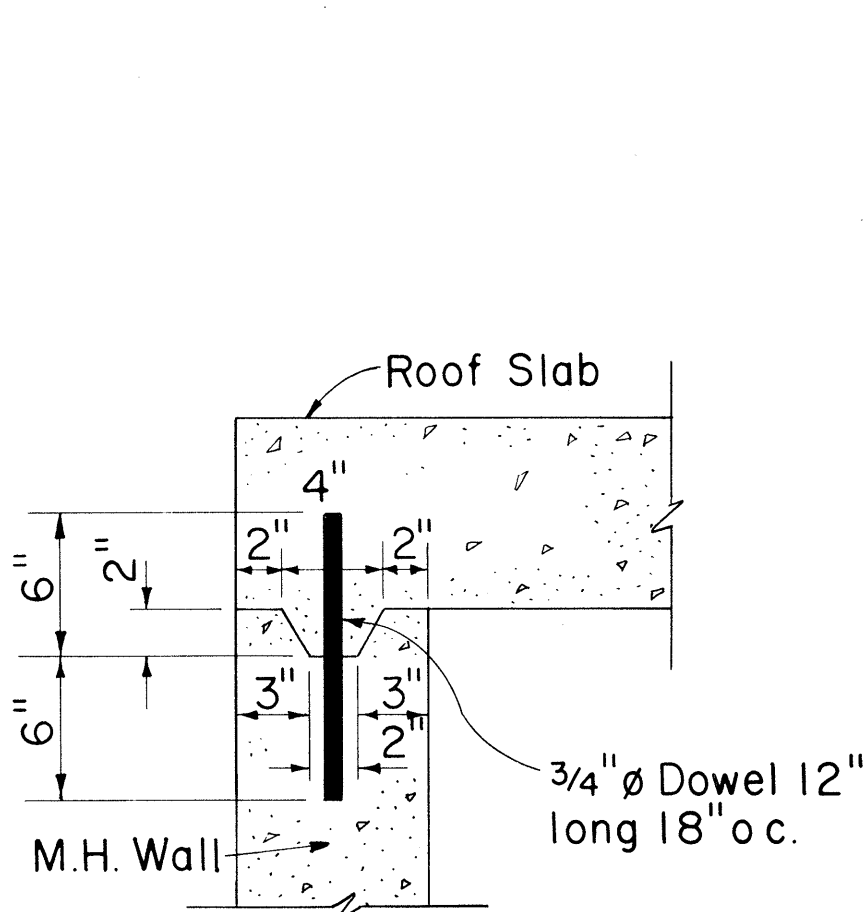


APPROVED:	
<i>Richard L. Young</i>	5-15-68
Hawaiian Telephone Co., Ltd.	Date
H.T. Co., Ltd.	Drawing No. 34064
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
TYPE "A-3" MANHOLES FOR 6.0' TO 7.0' HEADROOM	
Scale: As Noted	Date: May, 1968
SHEET No. 18 OF 18 SHEETS	

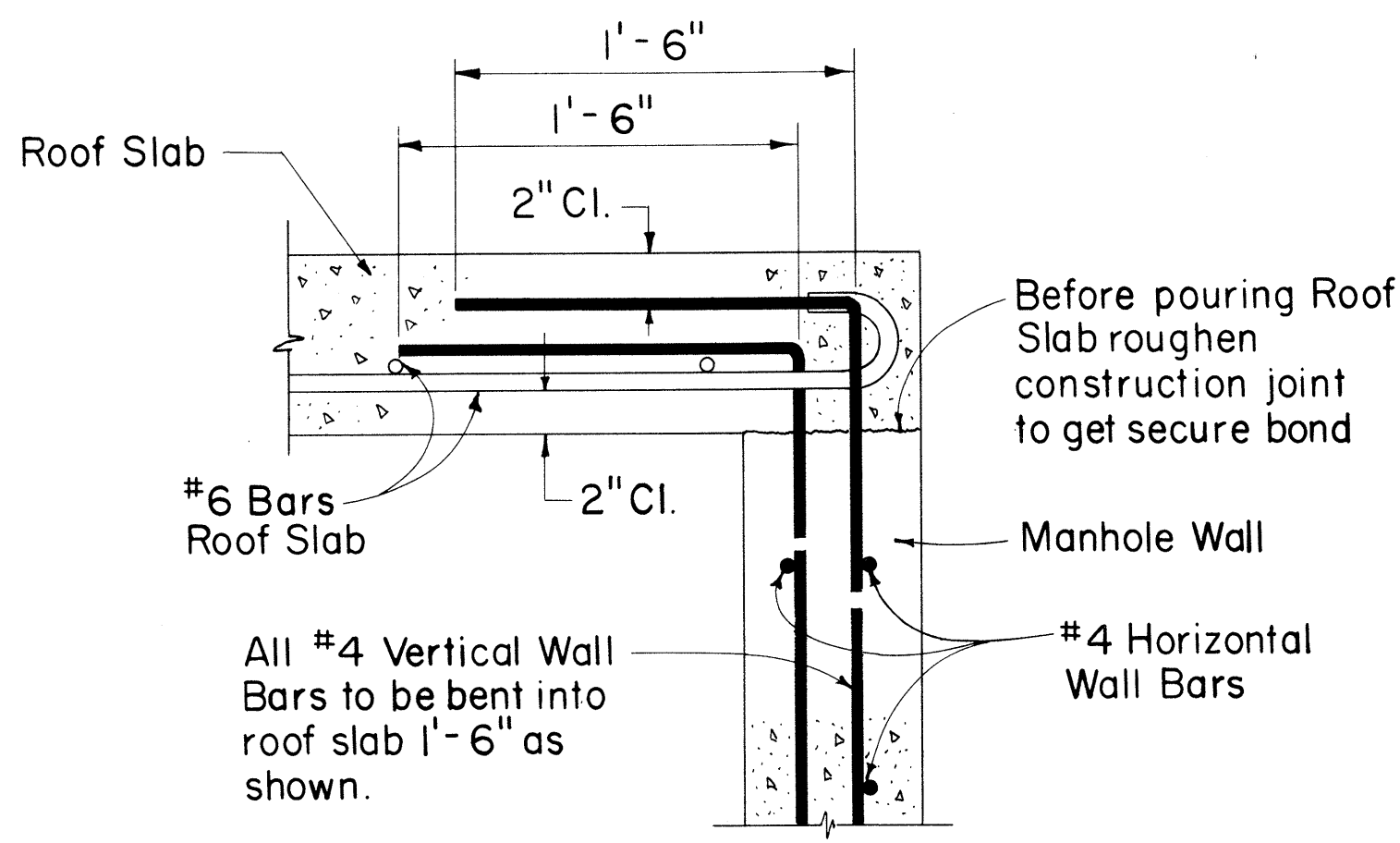
THIS SHEET IS A SUPPLEMENT TO THE CONTRACT PLANS

C0435(2)

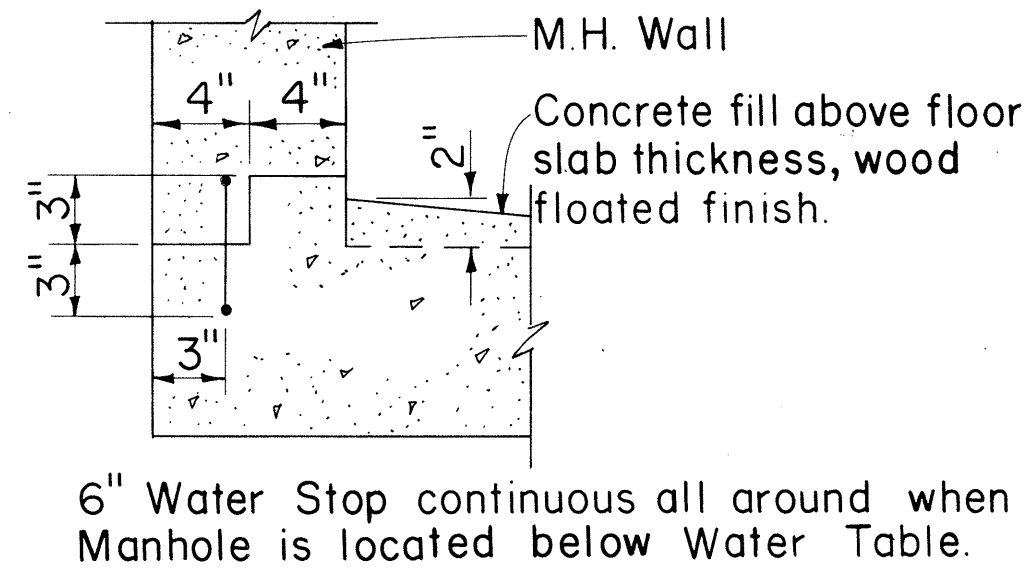
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) Unit 2	1968	00435(3)	83



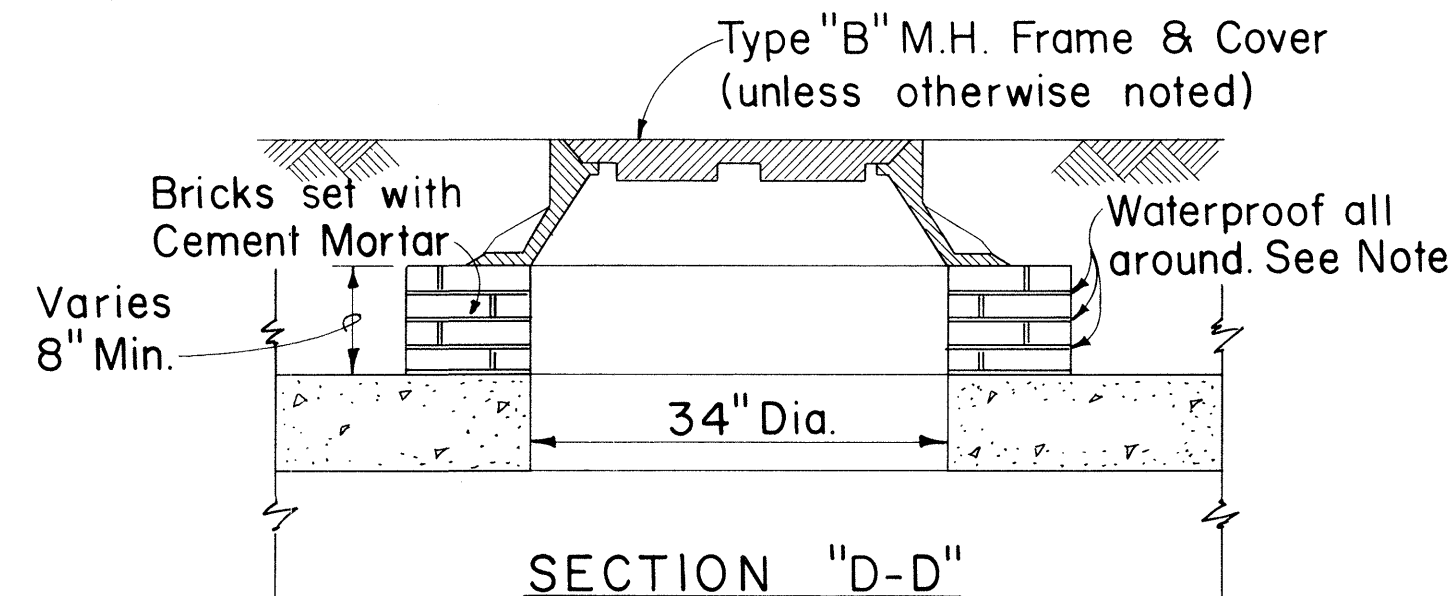
DETAIL "A"
TOP CONSTRUCTION JOINT
Scale: 1 1/2" = 1'-0"
(Optional for cast-in-place construction)
(Required for precast construction)



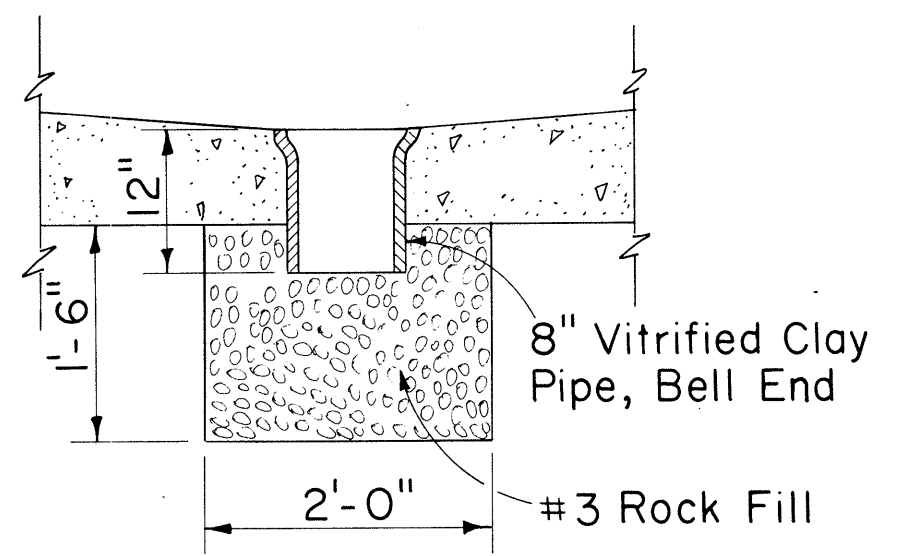
DETAIL "B"
(USED FOR CAST-IN-PLACE CONSTRUCTION)
Scale: 1 1/2" = 1'-0"



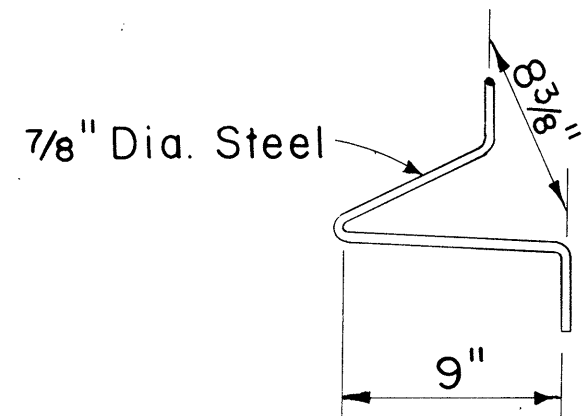
DETAIL "C"
BOTTOM CONSTRUCTION JOINT
Scale: 1 1/2" = 1'-0"



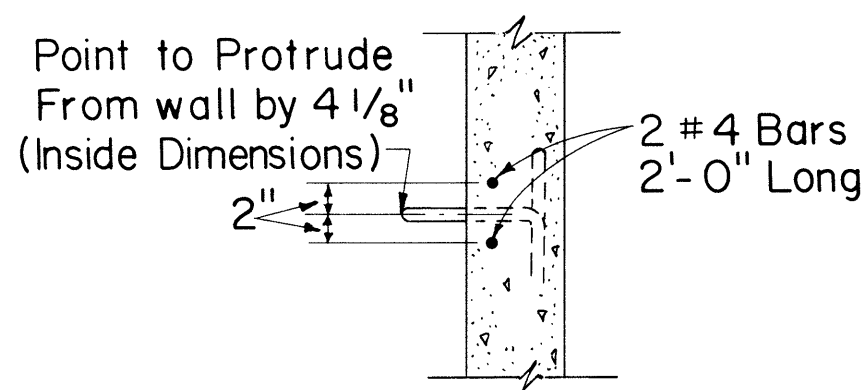
SECTION "D-D"
M.H. COVER DETAIL
Scale: 3/4" = 1'-0"



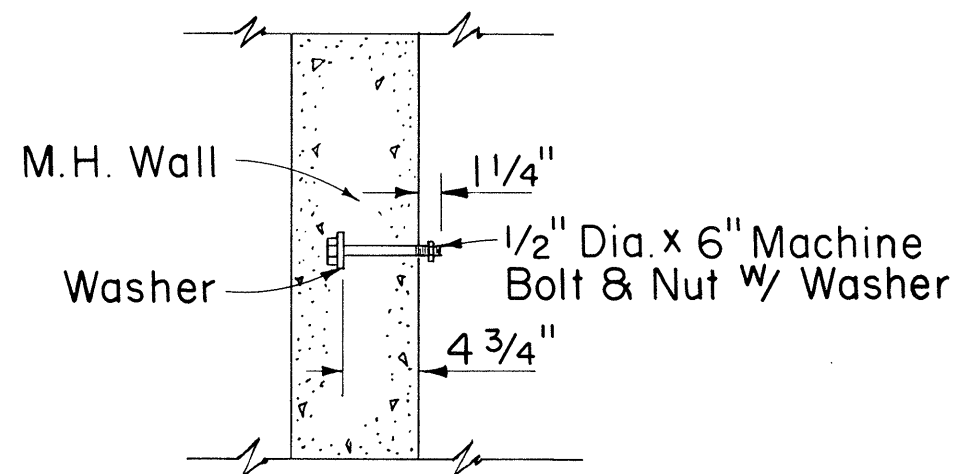
SECTION "E-E"
M.H. SUMP DETAIL
Scale: 3/4" = 1'-0"
Note: See Section "E₁-E₁" Below



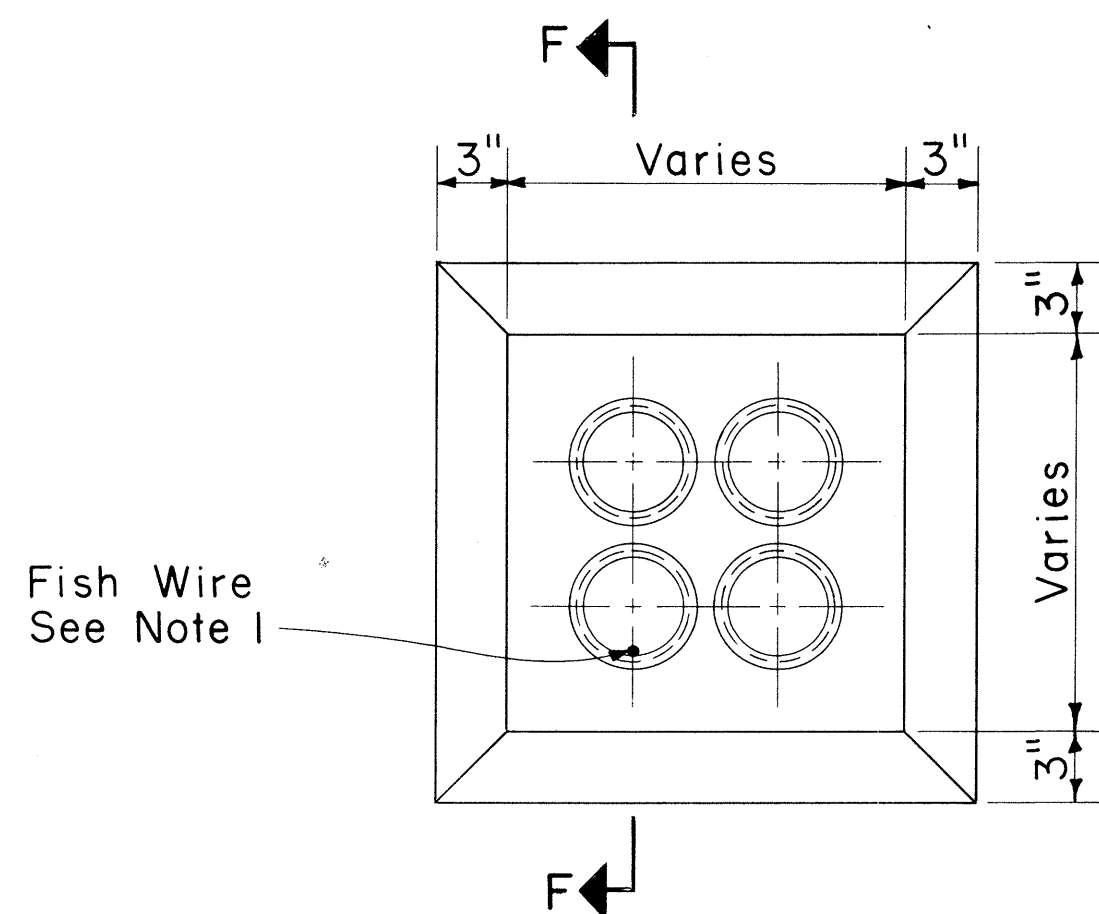
PULLING-IN IRON



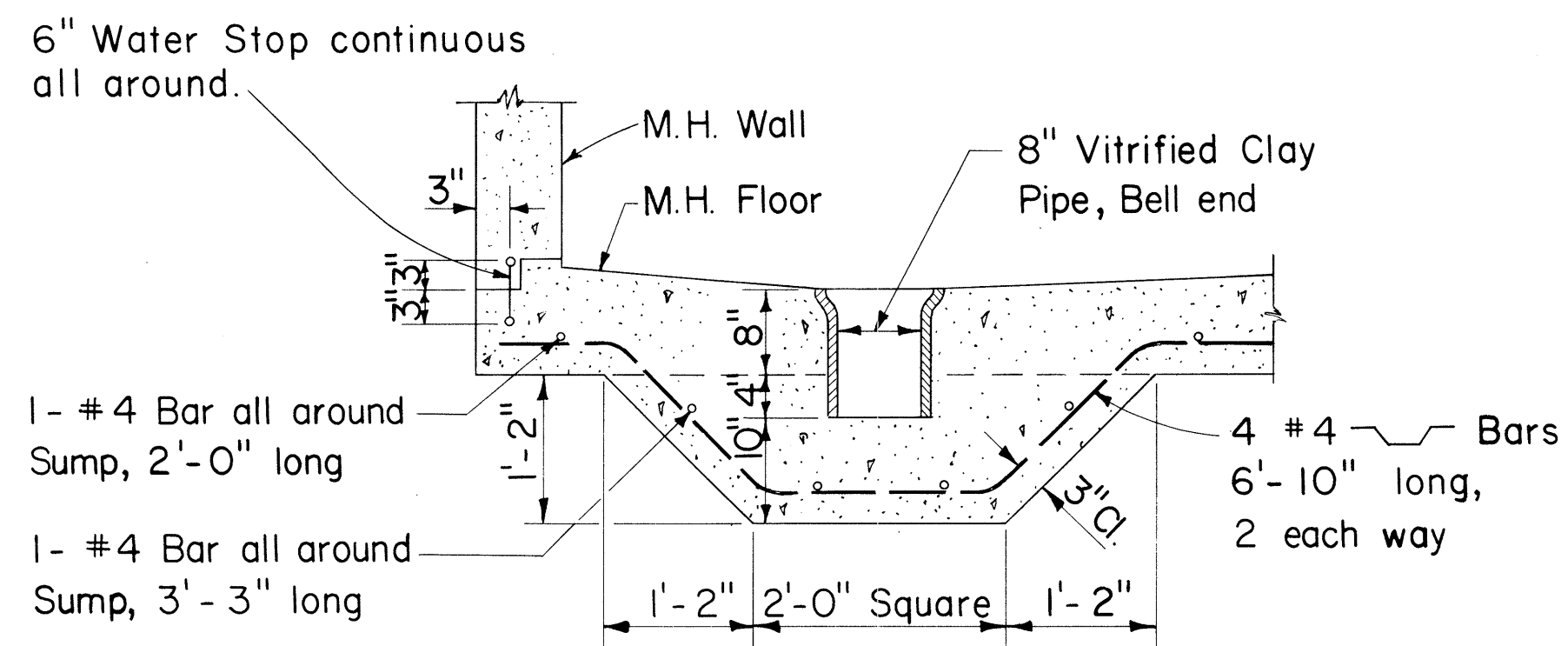
SECTIONAL VIEW OF PULLING-IN IRON
Scale: 3/4" = 1'-0"



CABLE RACK STUD BOLT DETAIL
Scale: 1" = 1'-0"

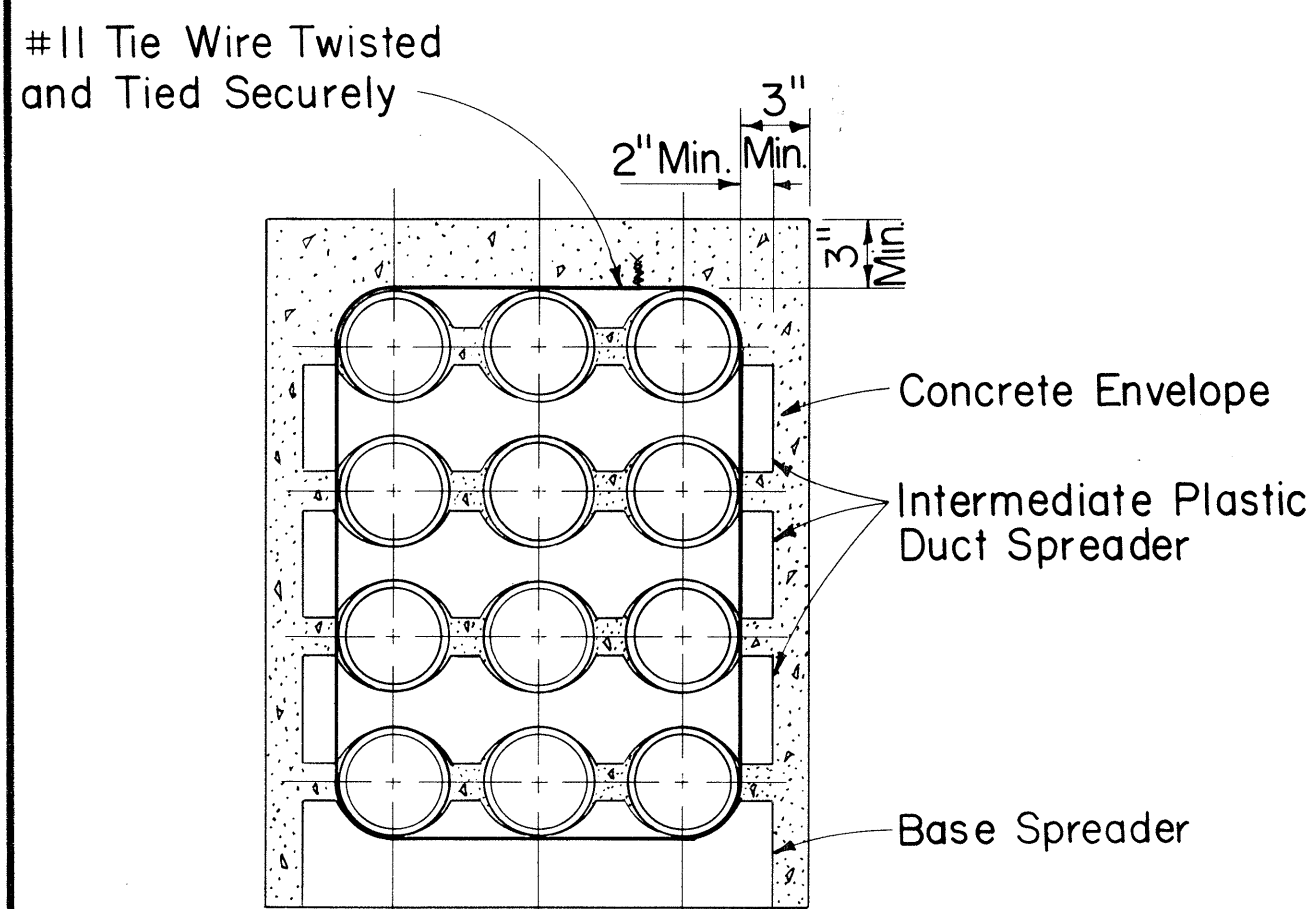


TYPICAL MANHOLE DUCT WINDOW
Scale: 1 1/2" = 1'-0"

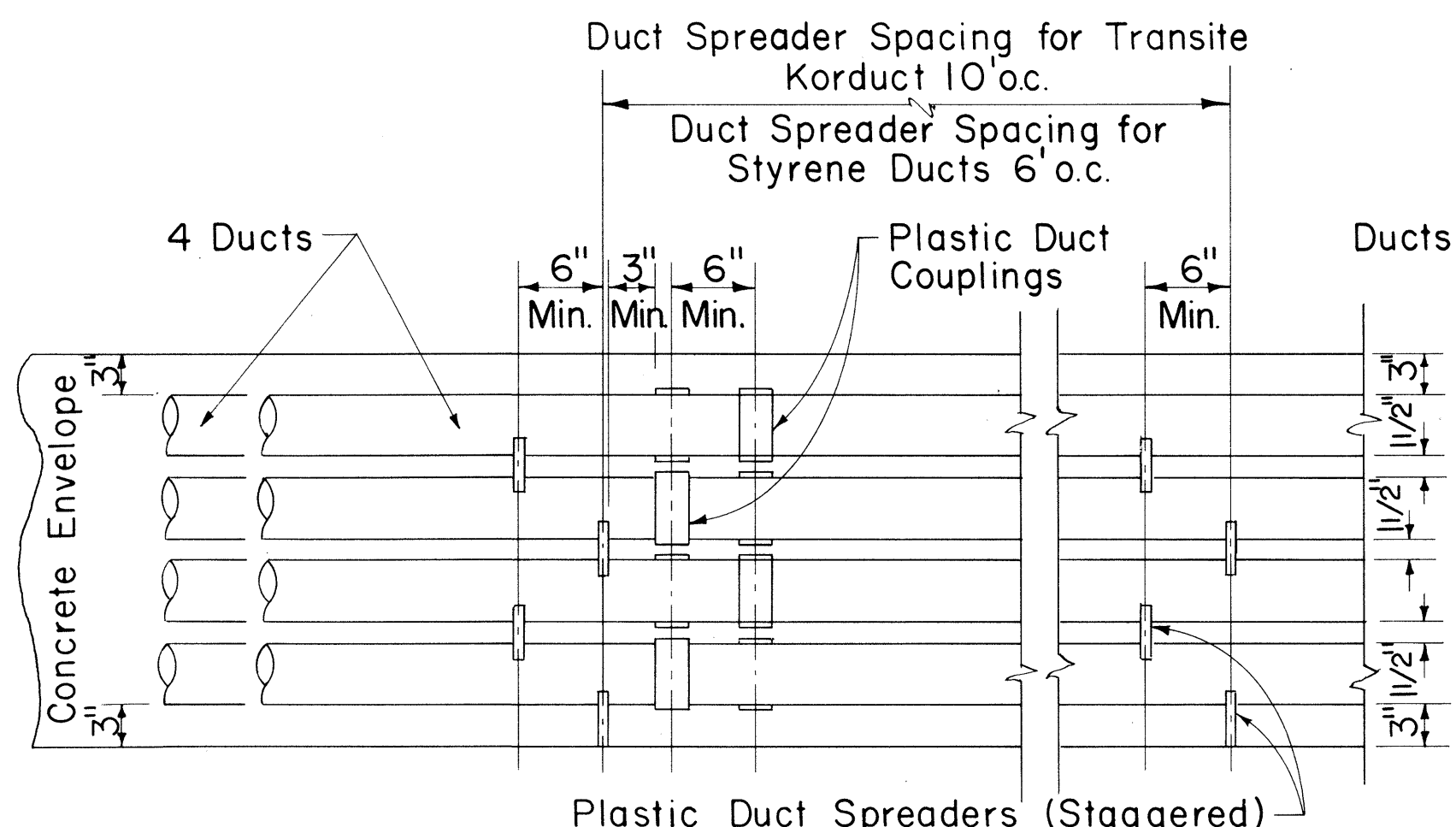


Note: Only for manholes located below water table

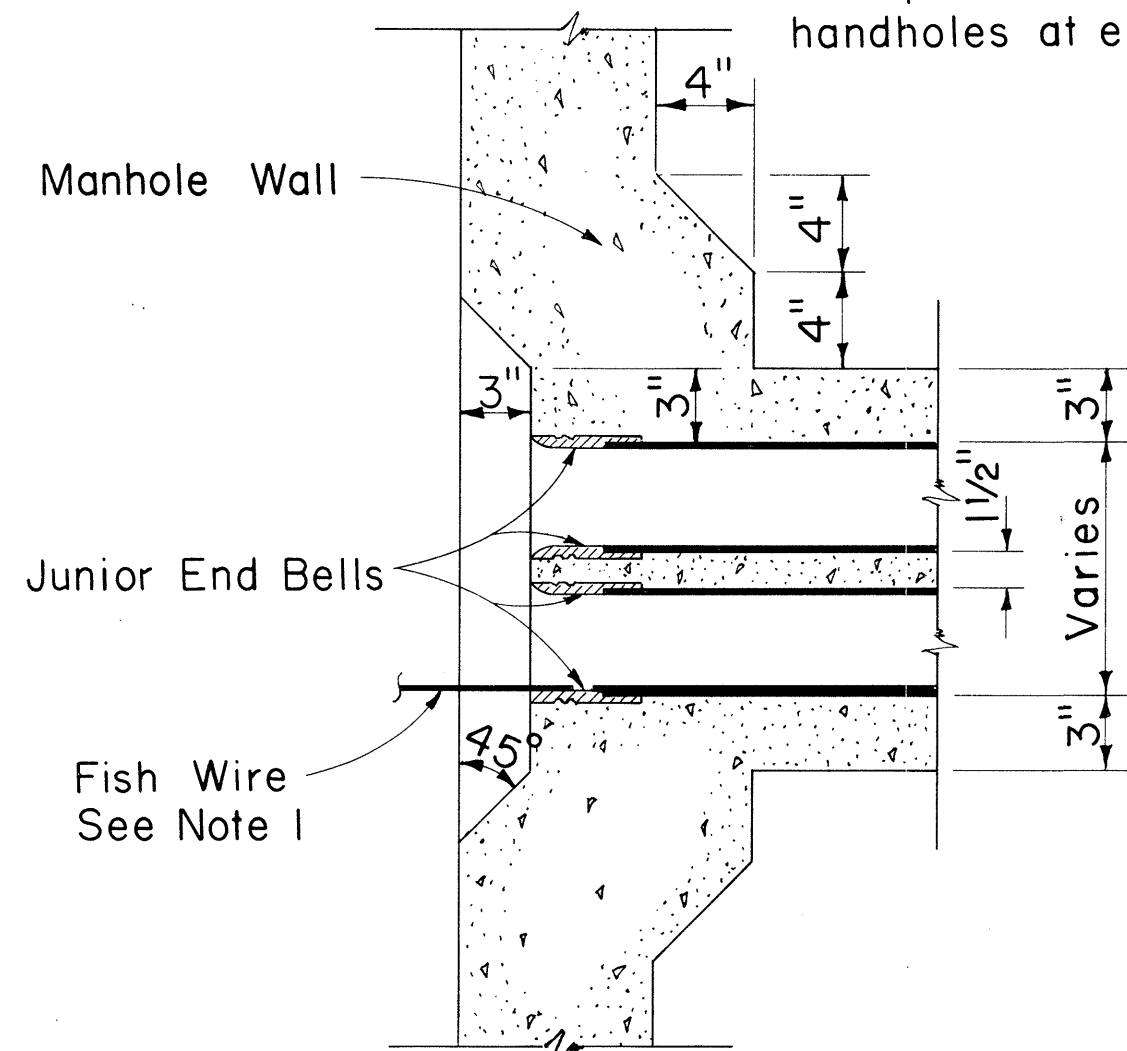
SECTION "E₁-E₁"
MANHOLE SUMP DETAIL
Scale: 3/4" = 1'-0"



SECTION SHOWING SPACERS



TYPICAL DUCT ENVELOPE ELEVATION
ARRANGEMENT OF COUPLING & PLASTIC SPACERS
Scale: 1" = 1'-0"



SECTION "F-F"
TYPICAL WINDOW DETAIL & JUNIOR END BELL
Scale: 1 1/2" = 1'-0"

NOTE

- The Contractor shall place #12 Fish Wire in designated duct throughout its entire length with protrusions of 2 feet in manholes & handholes at each end and 1 foot in pullboxes.

Supplement Sheet to Type "A-1" (Drawing Nos. 34060 & 34061), Type "A-2" (Drwg. Nos. 34062 & 34063) and Type "A-3" (Drwg. Nos. 34064 & 34065) Telephone M.H.

APPROVED:

Prokhar Singh 5-15-68
Hawaiian Telephone Co., Ltd. Date

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
TYPE "A" MANHOLE
AND MISCELLANEOUS
TELEPHONE DETAILS

Scale: As Noted Date: May, 1968

SHEET No. 13C OF 18 SHEETS

C 0 4 3 S (3)

THIS SHEET IS A SUPPLEMENT TO THE CONTRACT PLANS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	F-003-1(2) Unit 2	1968	00435(4)	83

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		TOTAL DISTANCE POLE TO HOLE
		18" D.M.	24" D.M.	
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	QTY.
617	5/8" x 8'-0" Steel	8,000	518	18	2320	4" x 4" x 3/16"	2
615	5/8" x 8'-0" Cu Cov Stl	9,250	518	18	**	3" x 3" x 1/8"	2
618	3/4" x 8'-0" Steel	11,500	518	18	2330	6" x 6" x 3/8"	1
619	1" x 8'-0" Steel	18,000	524	24	2331	6" x 6" x 1/2"	1
616	1" x 8'-0" Cu Cov Stl	22,500	524	24	**	4" x 4" x 3/16"	2
613	1 1/4" x 10'-0" Steel	29,000	524	24	2330	6" x 6" x 3/8"	2

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

ANCHORING DATA

THIS SHEET IS A SUPPLEMENT TO THE CONTRACT PLANS

APPROVED :

[Signature]
HAWAIIAN ELECTRIC Co., Inc.

[Signature]
DATE

[Signature]
HAWAIIAN TELEPHONE Co.

[Signature]
DATE

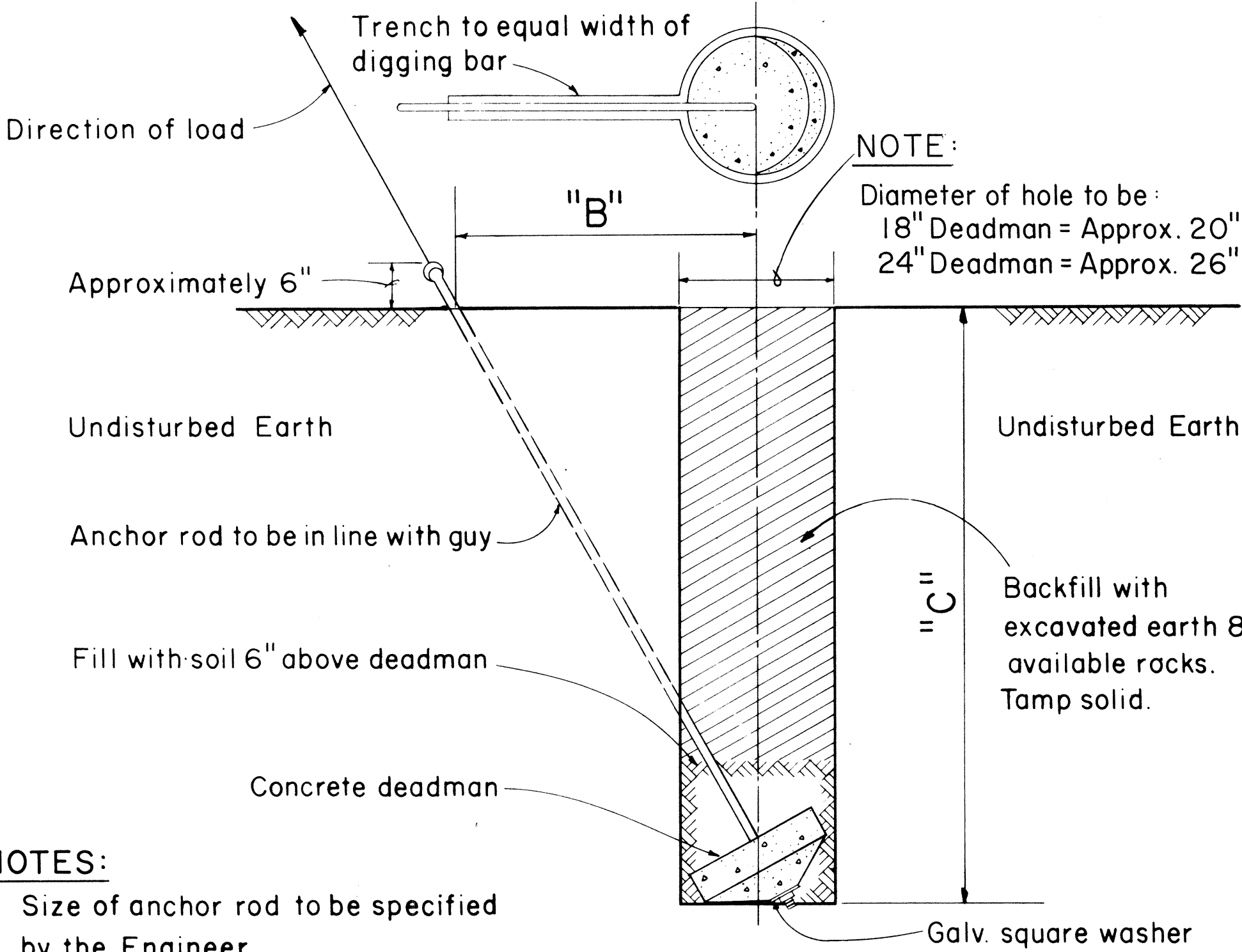
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
H.E. Co. AND H.T. Co.
ANCHOR DETAILS AND
ANCHORING DATA

Scales: As Noted

Date: March, 1968

SHEET No. 18D OF 18 SHEETS

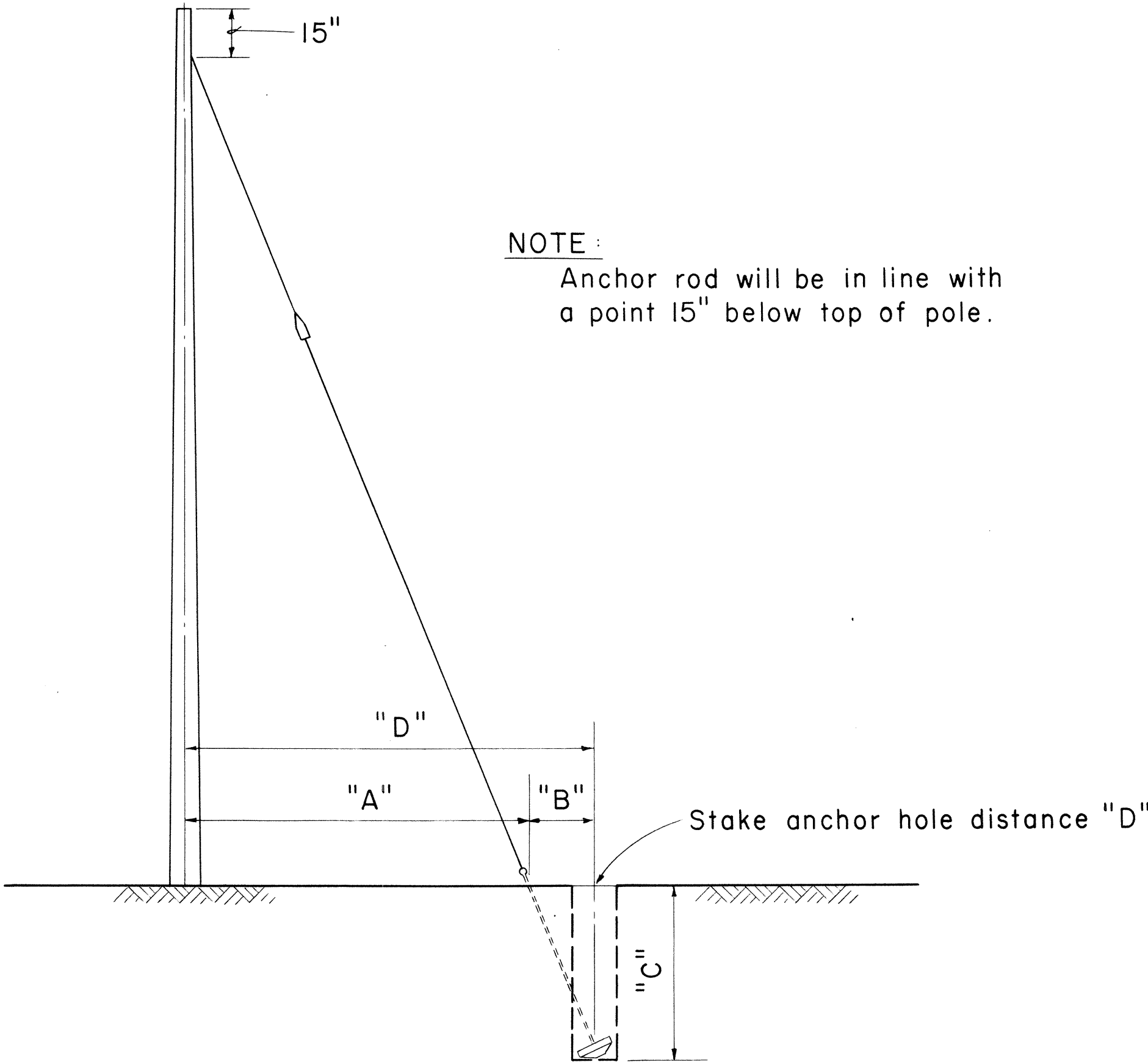
C O 4 3 S (4)



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

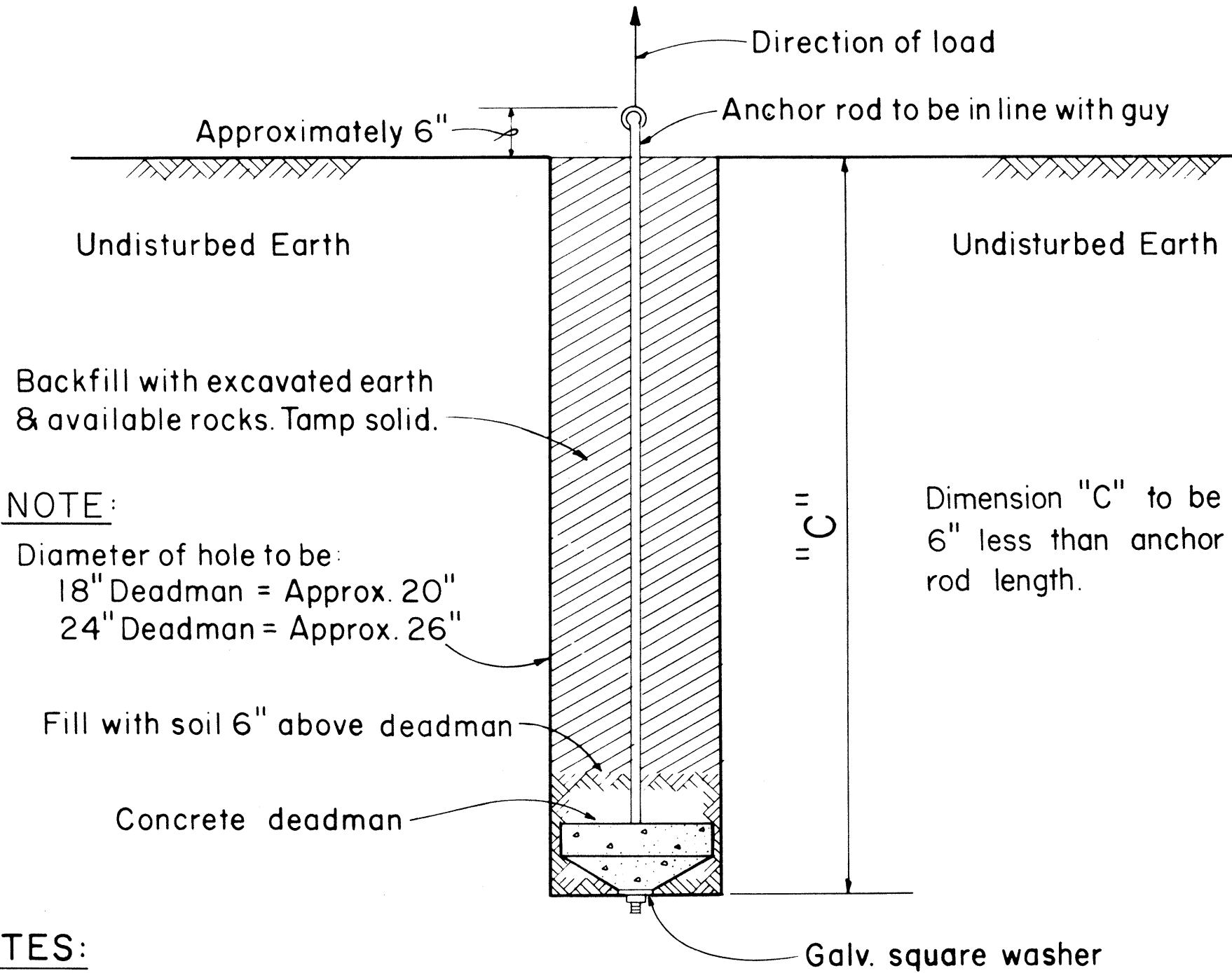
GUY ANCHOR DEADMAN

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



- NOTE:
- Anchor rod will be in line with a point 15" below top of pole.

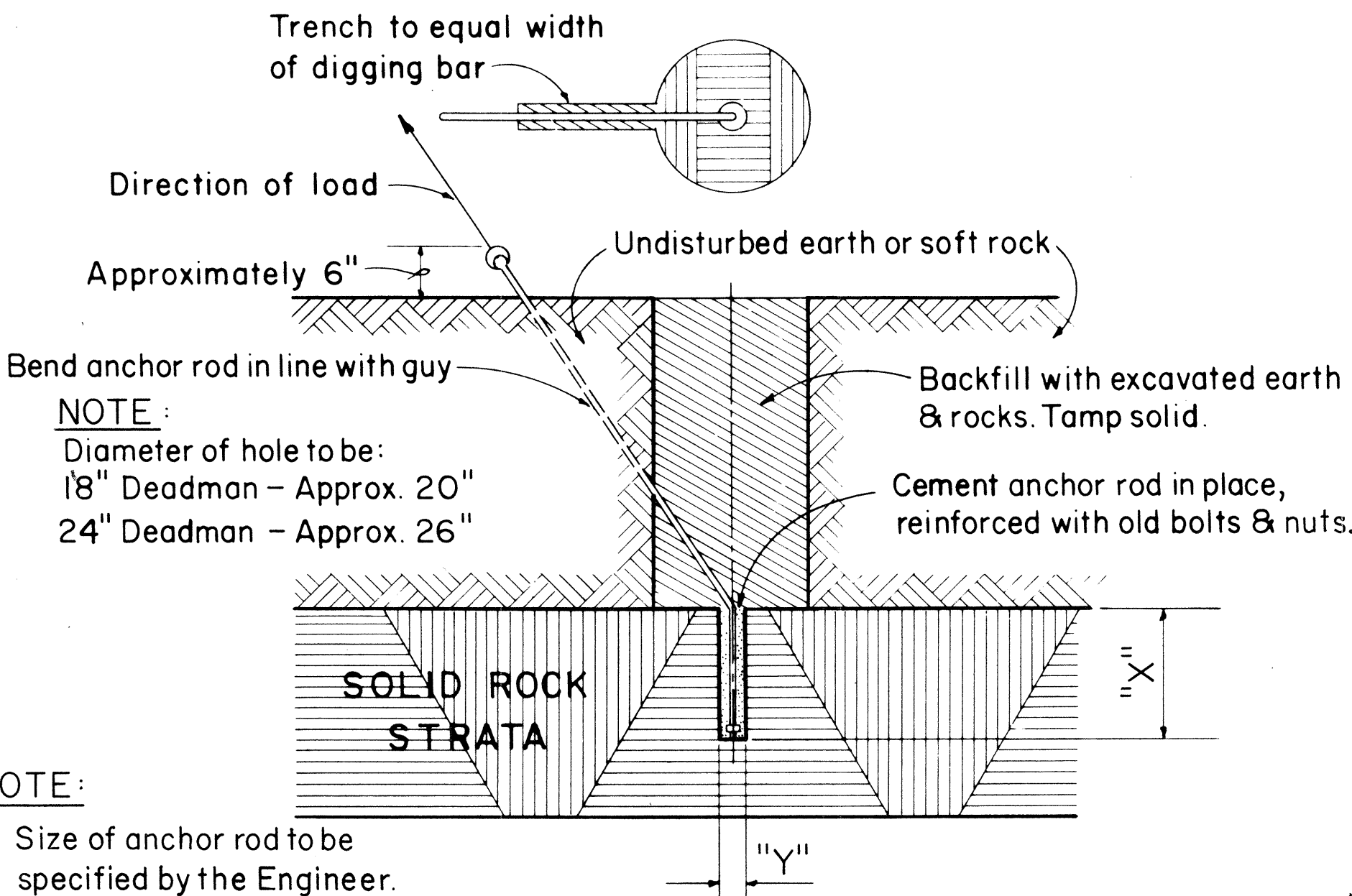
Not to Scale



- NOTE:
- Diameter of hole to be:
18" Deadman = Approx. 20"
24" Deadman = Approx. 26"
- Dimension "C" to be 6" less than anchor rod length.
- Fill with soil 6" above deadman
- Concrete deadman
- Galv. square washer
- NOTES:
- Size of anchor rod to be specified by the Engineer.
 - Use Anchoring Data.

SIDE - WALK ANCHOR

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

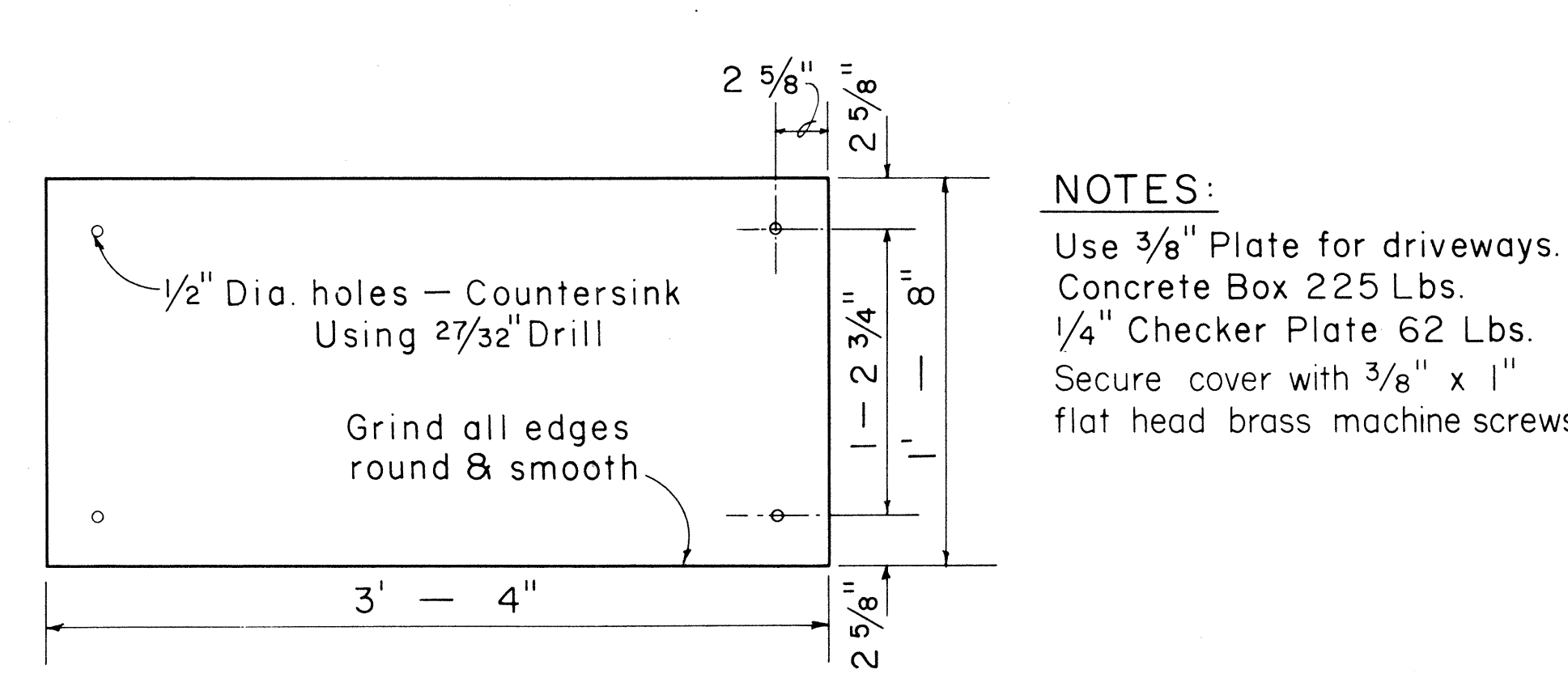
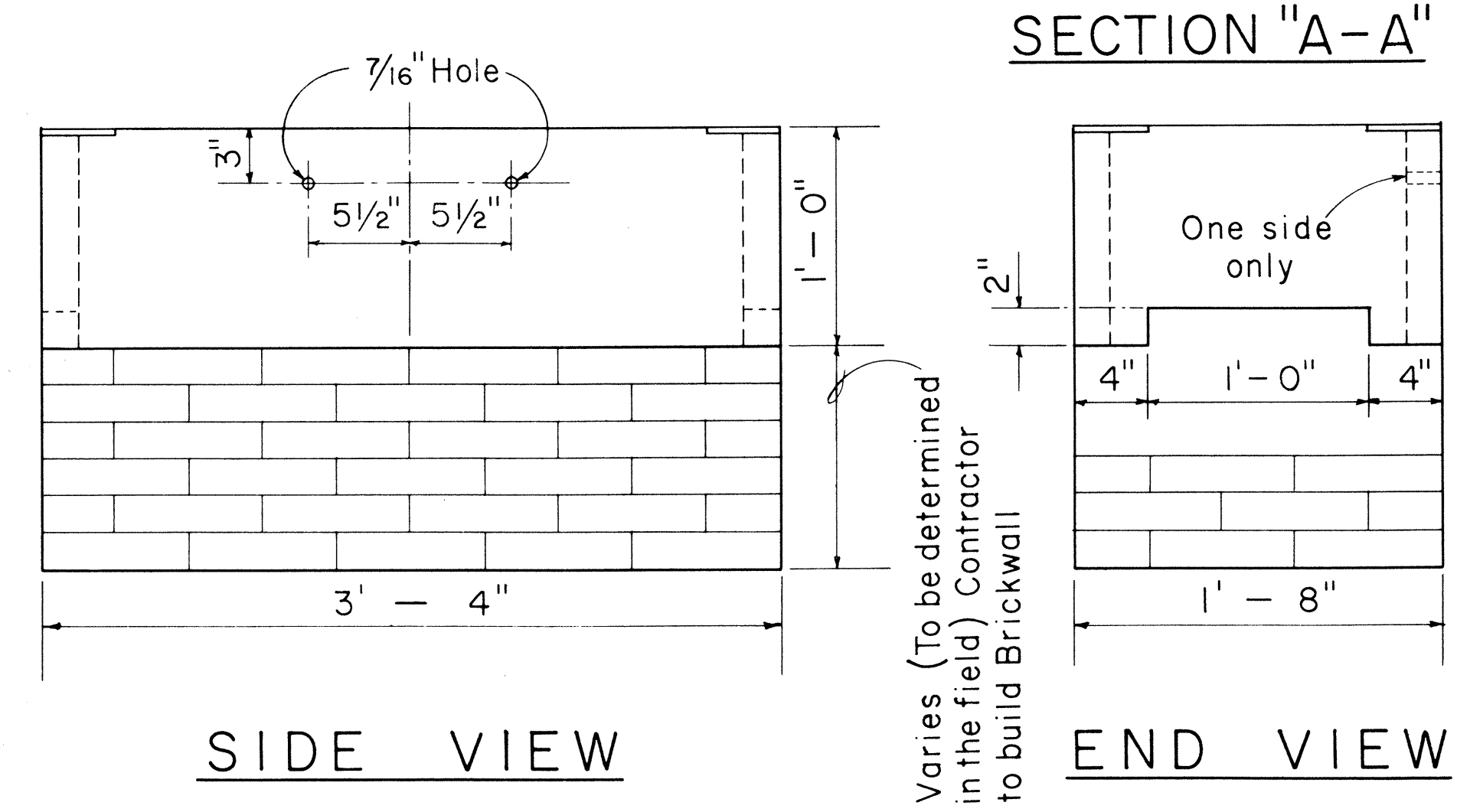
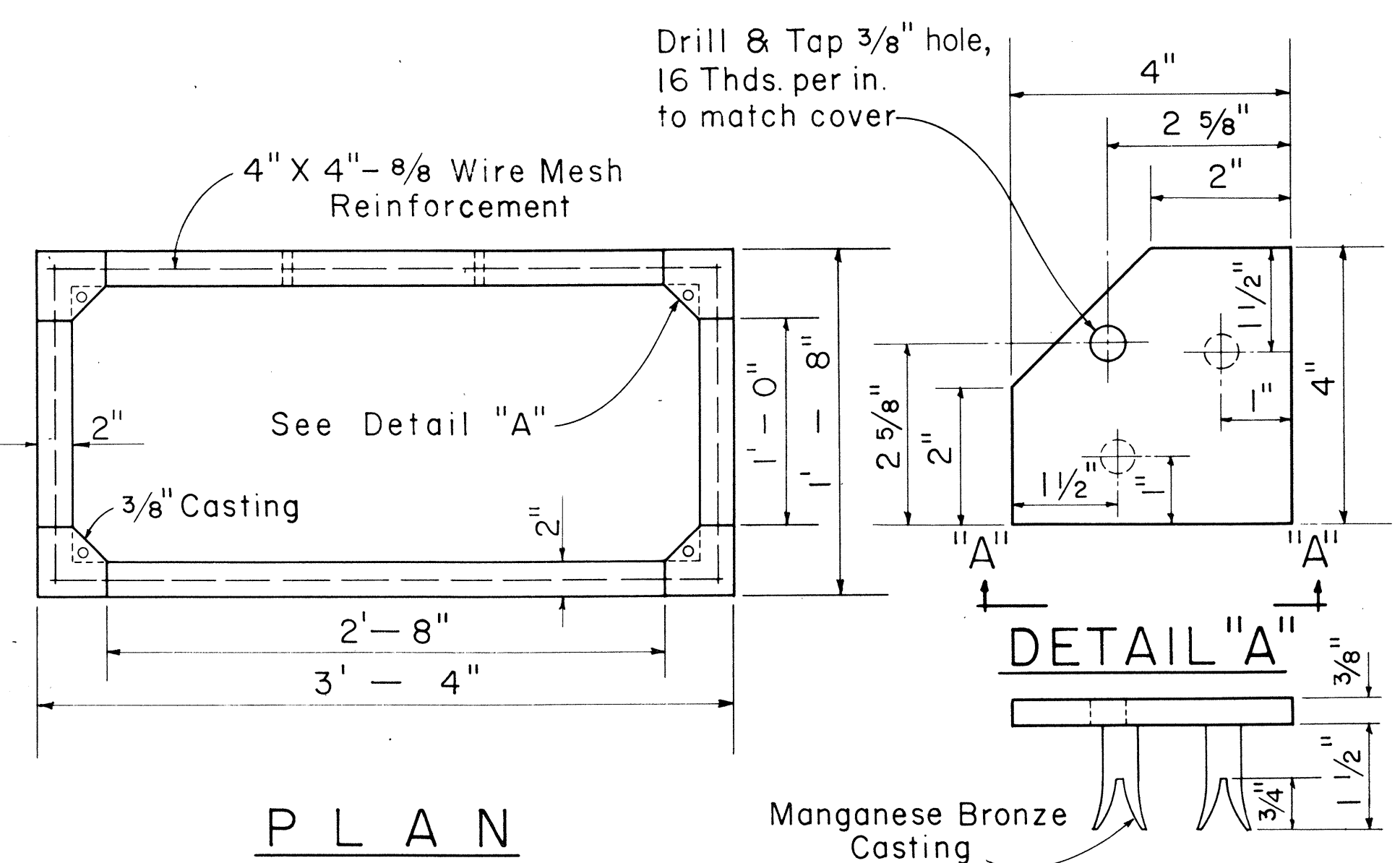


- NOTE:
- Size of anchor rod to be specified by the Engineer.
 - "X" Should not be less than 24". If "X" is less than 24" complete hole & install anchor.
 - "Y" 5/8" Anchor rod drill 2" hole
3/4" Anchor rod drill 2" hole
1" Anchor rod drill 2 1/2" hole
1 1/4" Anchor rod drill 3" hole
 - Use Anchoring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

ROCK ANCHOR

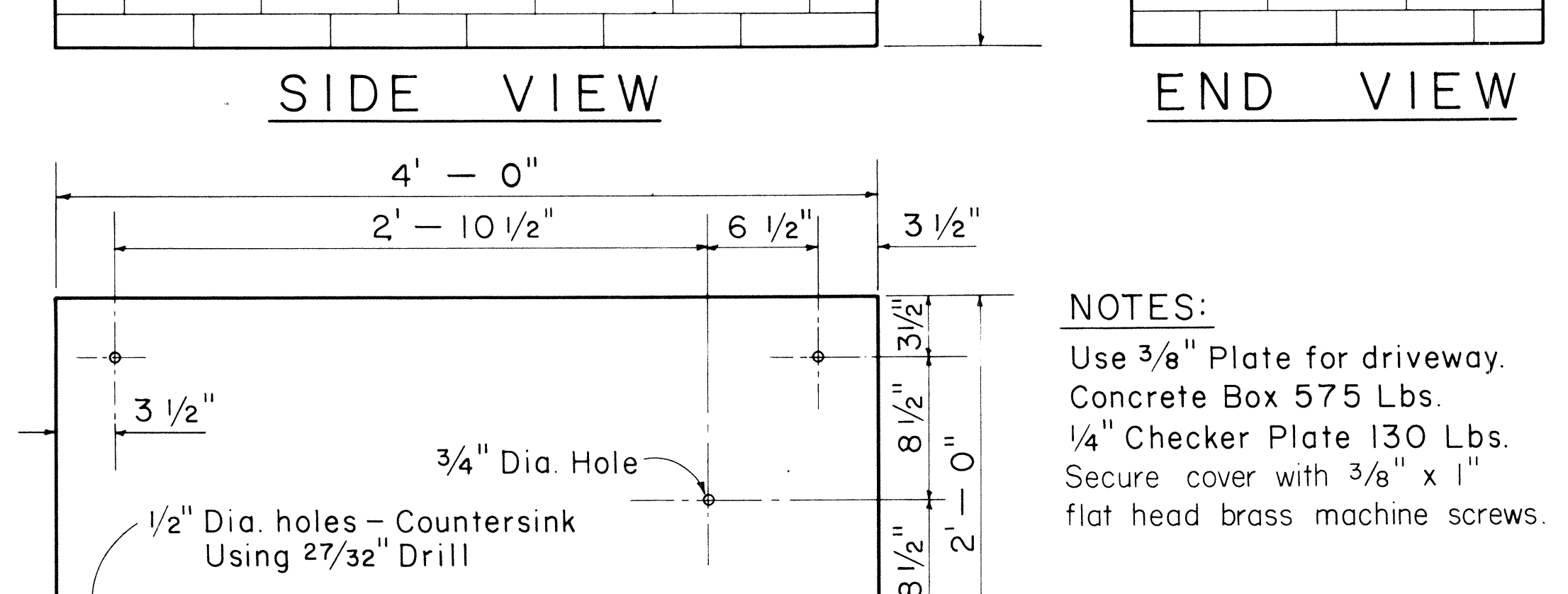
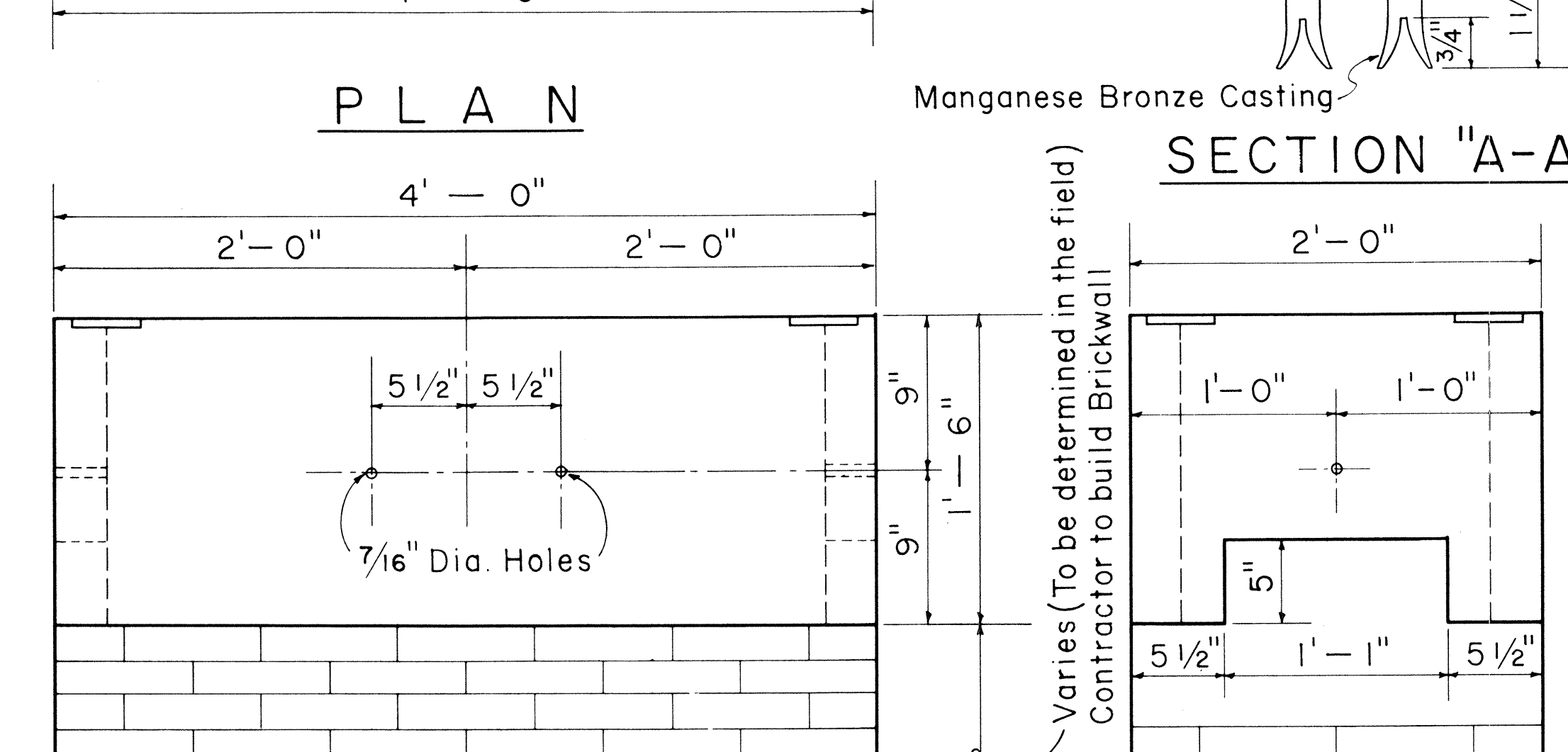
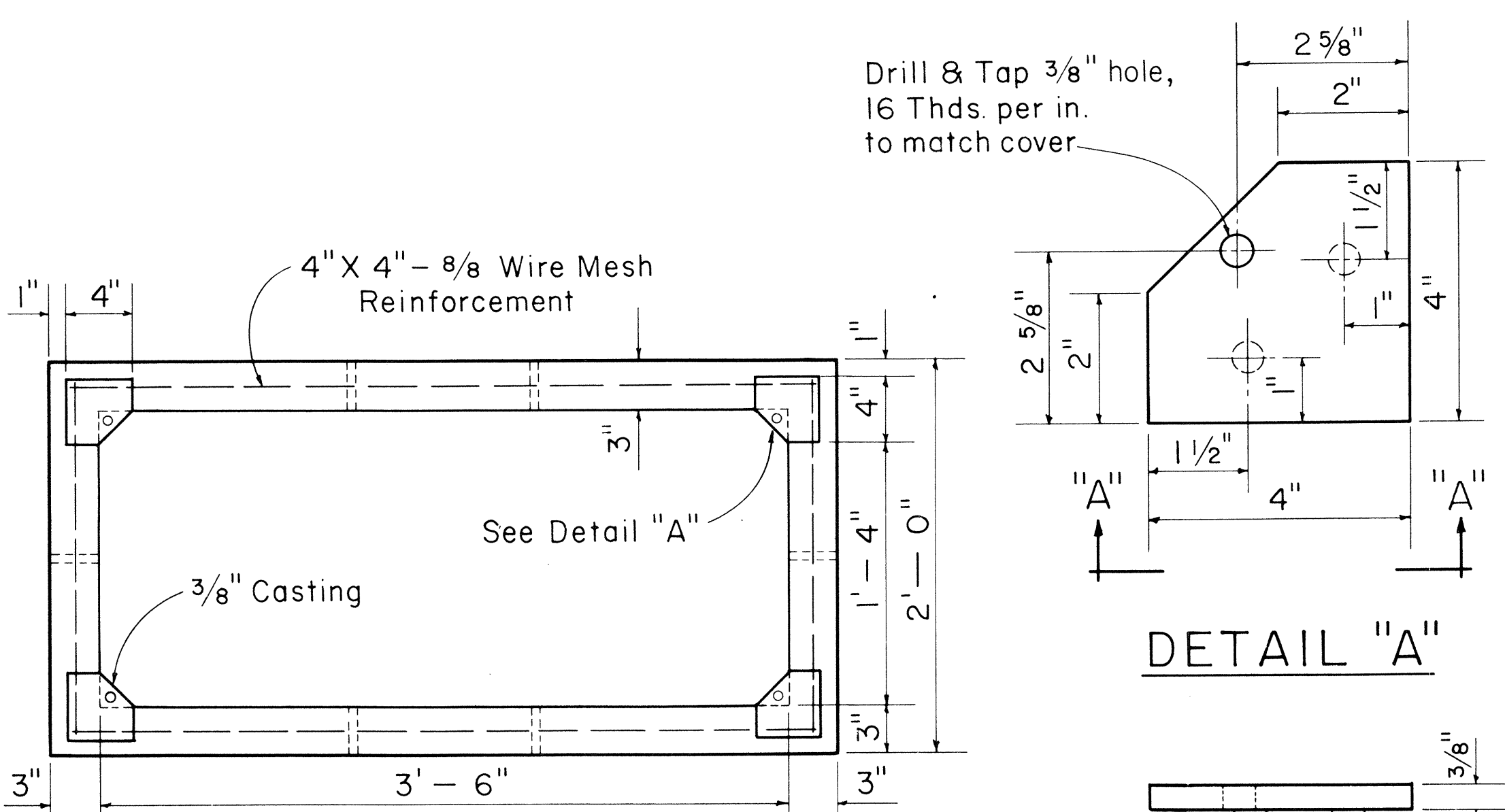
Not to Scale

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	F-083-1(2) Unit 2	1968	00435(5)	83



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"
OII250



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"
OII255

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 05.4-1941, 05.6-1945.
Standard Handbook for Electrical Engineers, Eighth Edition
H. E. Co. Specification for Poles.

WOOD POLE DATA

APPROVED: *[Signature]* 5/15/68
HAWAIIAN ELECTRIC Co., Inc. DATE

[Signature] 5-15-68
HAWAIIAN TELEPHONE Co. DATE

THIS SHEET IS A SUPPLEMENT TO THE CONTRACT PLANS

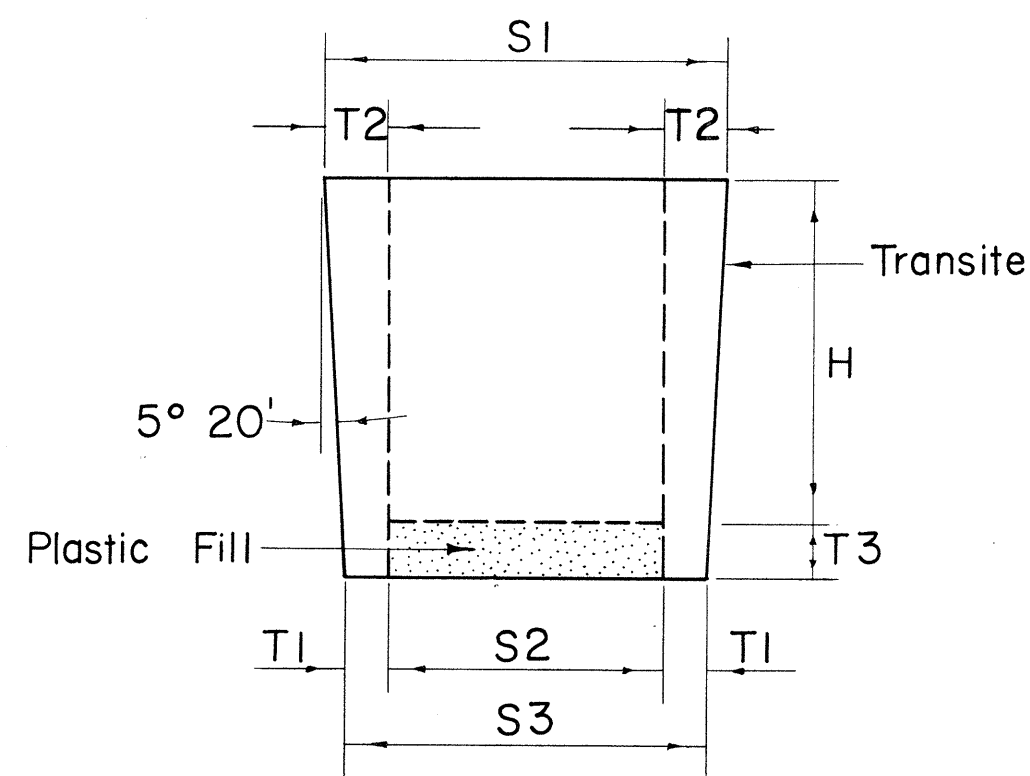
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
H.E. Co. AND H.T. Co.
SERVICE BOX DETAILS
AND WOOD POLE DATA

Scales: As Noted Date: March, 1968

SHEET NO. 18 OF 18 SHEETS

C 0 4 3 5 (5)

SURVEY PLOTTED BY: _____ DATE: _____
DRAWN BY: _____
CHECKED BY: _____
NOTE BOOK
QUANTITIES BY: _____
CHECKED BY: _____
No. _____



PLUGS FOR TRANSITE KORDUCTS

Not to Scale

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

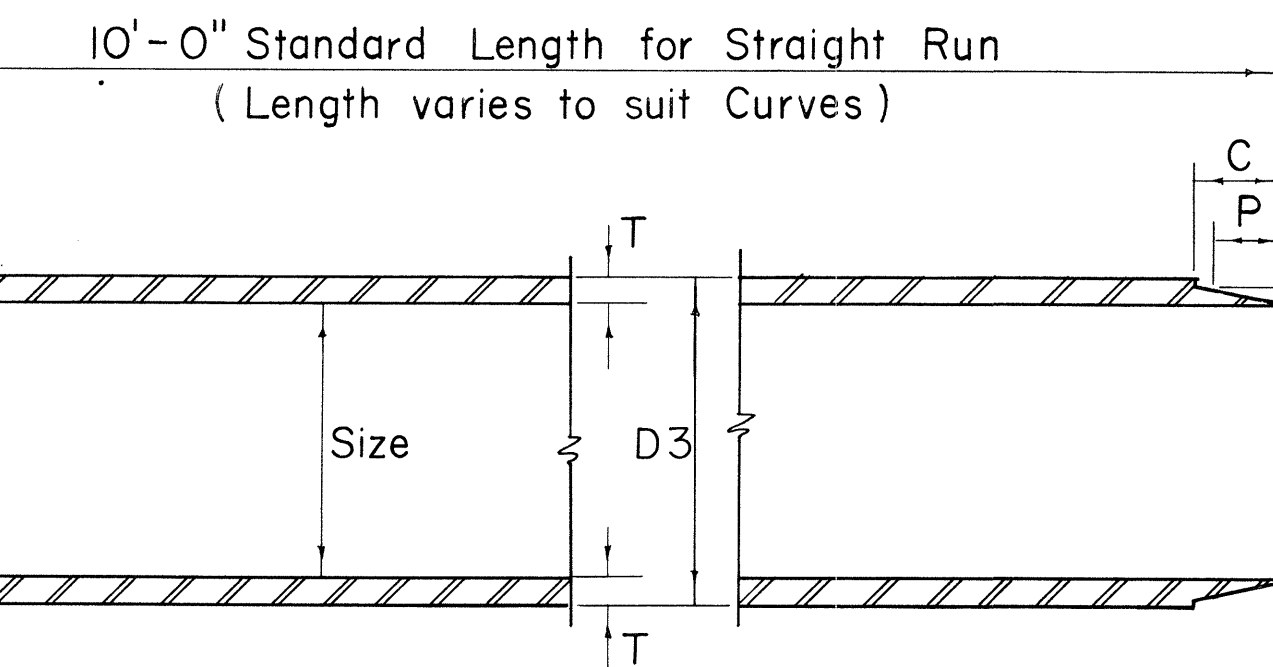
JUNIOR END BELLS

Not to Scale

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"

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.



TRANSITE KORDUCTS

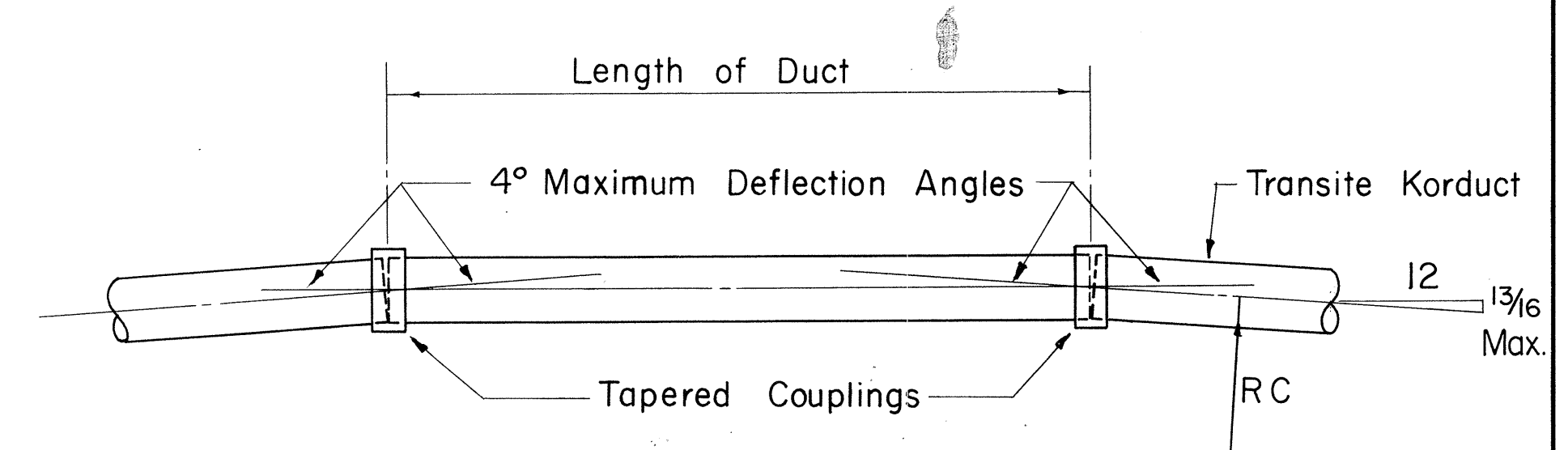
Not to Scale

SIZE	D1	D3	C	P	T
3"	3 25/64"	3 35/64"	1 1/8"	7 7/8"	17 1/64"
4"	4 25/64"	4 35/64"	1 1/4"	1"	17 1/64"
4 1/2"	4 57/64"	5 3/64"	1 1/4"	1"	17 1/64"
5"	5 29/64"	5 39/64"	1 1/8"	1 1/8"	19 1/64"

TAPERED COUPLINGS

Not to Scale

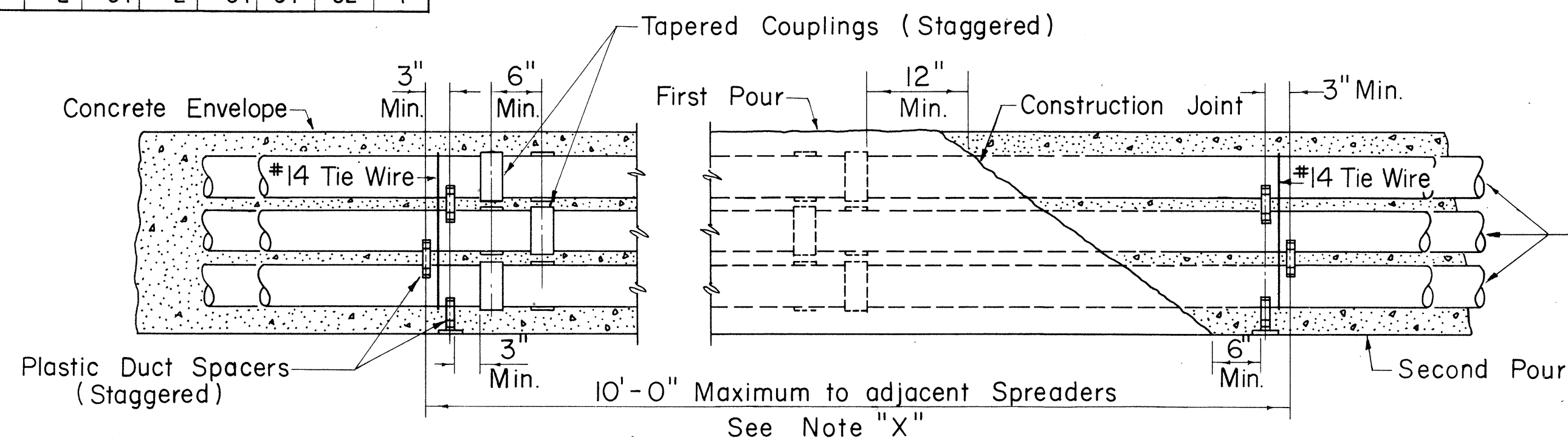
SIZE	D1	D2	L
3"	3 25/32"	4 11/64"	2 1/4"
4"	4 25/64"	5 3/16"	2 1/2"
4 1/2"	4 57/64"	5 49/64"	2 1/2"
5"	5 29/64"	6 21/64"	2 3/4"



METHOD OF FORMING CURVES

Not to Scale

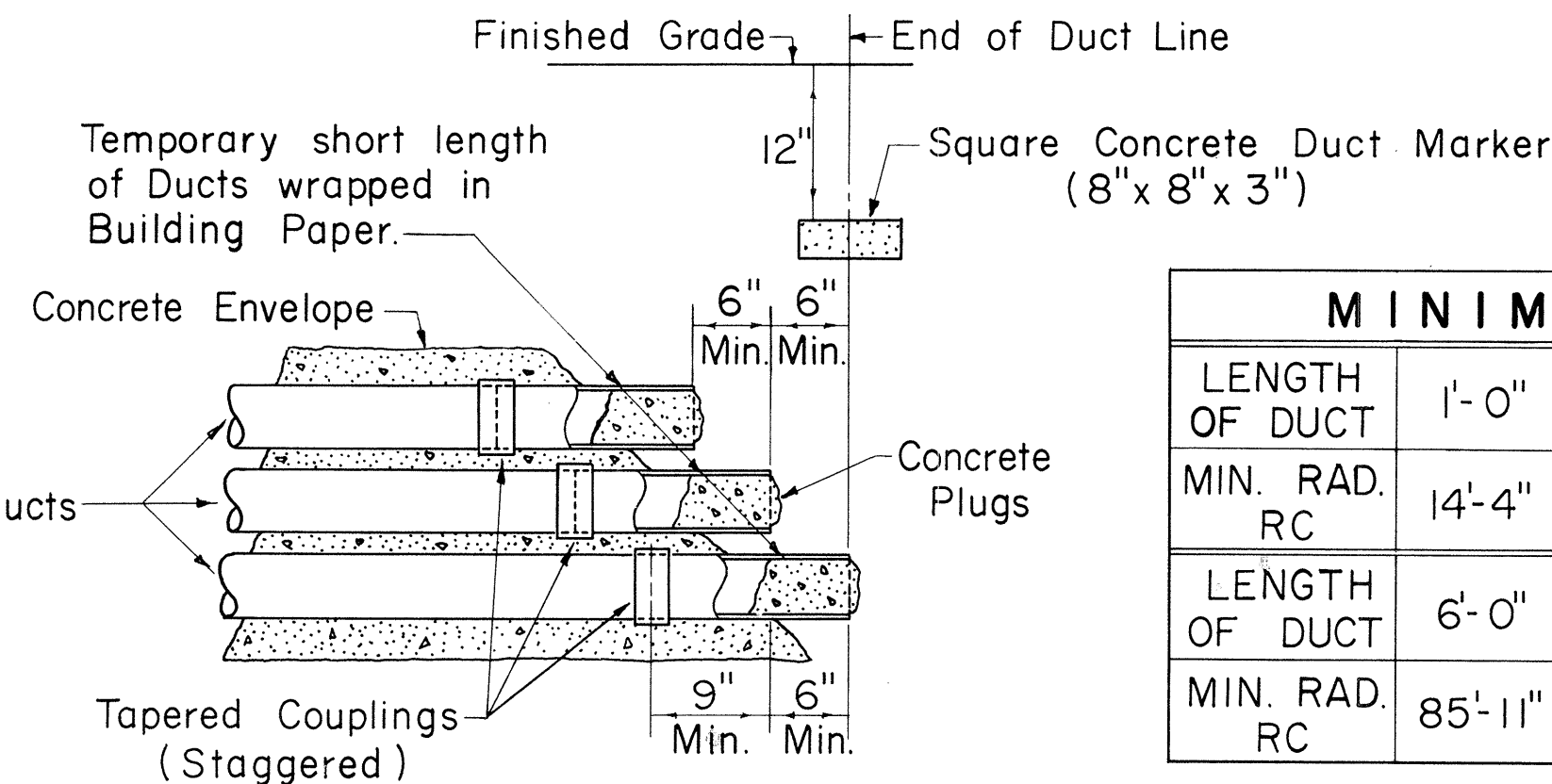
	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"
LENGTH OF DUCT	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	4'-0"	4'-6"	5'-0"	5'-6"
MIN. RAD. RC	14'-4"	21'-6"	28'-8"	35'-10"	42'-11"	50'-1"	57'-3"	64'-5"	71'-7"	78'-9"
LENGTH OF DUCT	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	
MIN. RAD.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



TYPICAL DUCT ENVELOPE ELEVATION

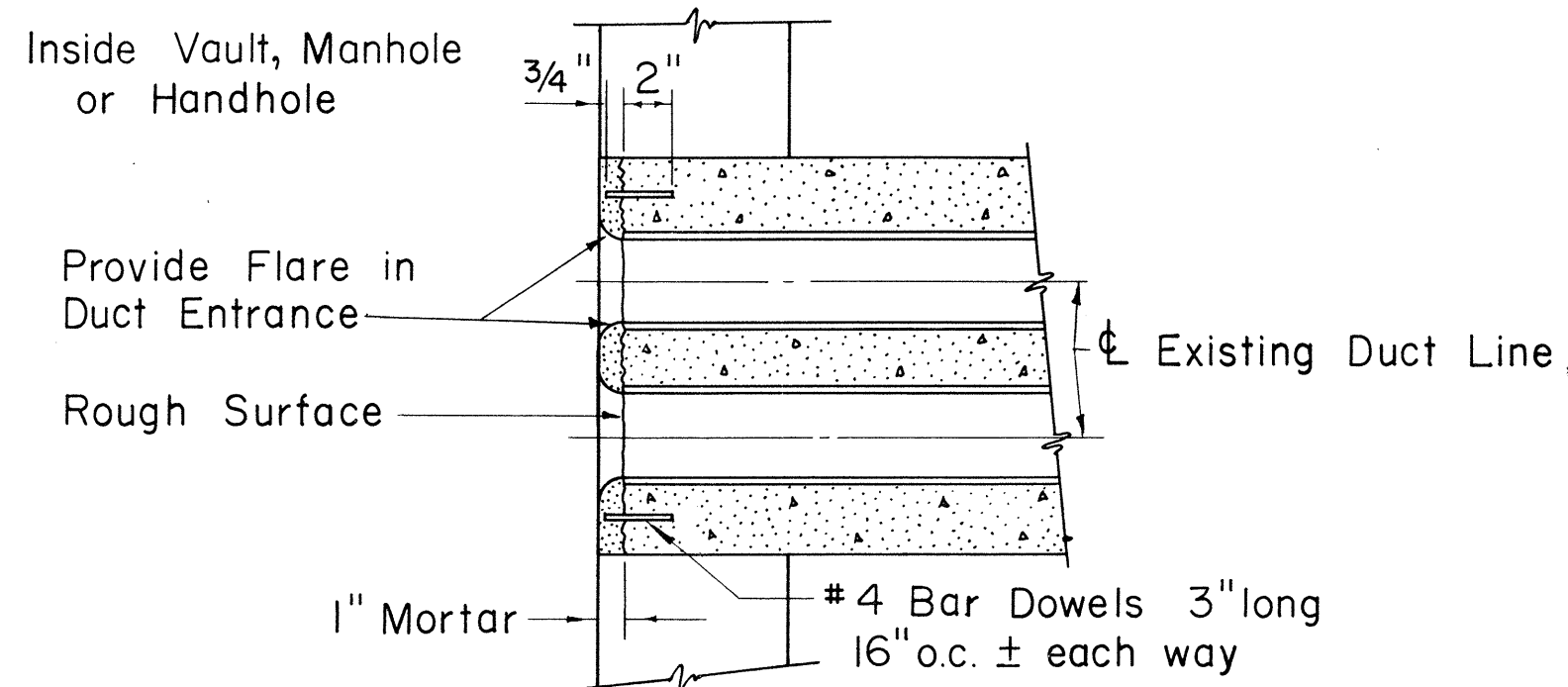
(6 WAY DUCT LINE SHOWN)

Not to Scale



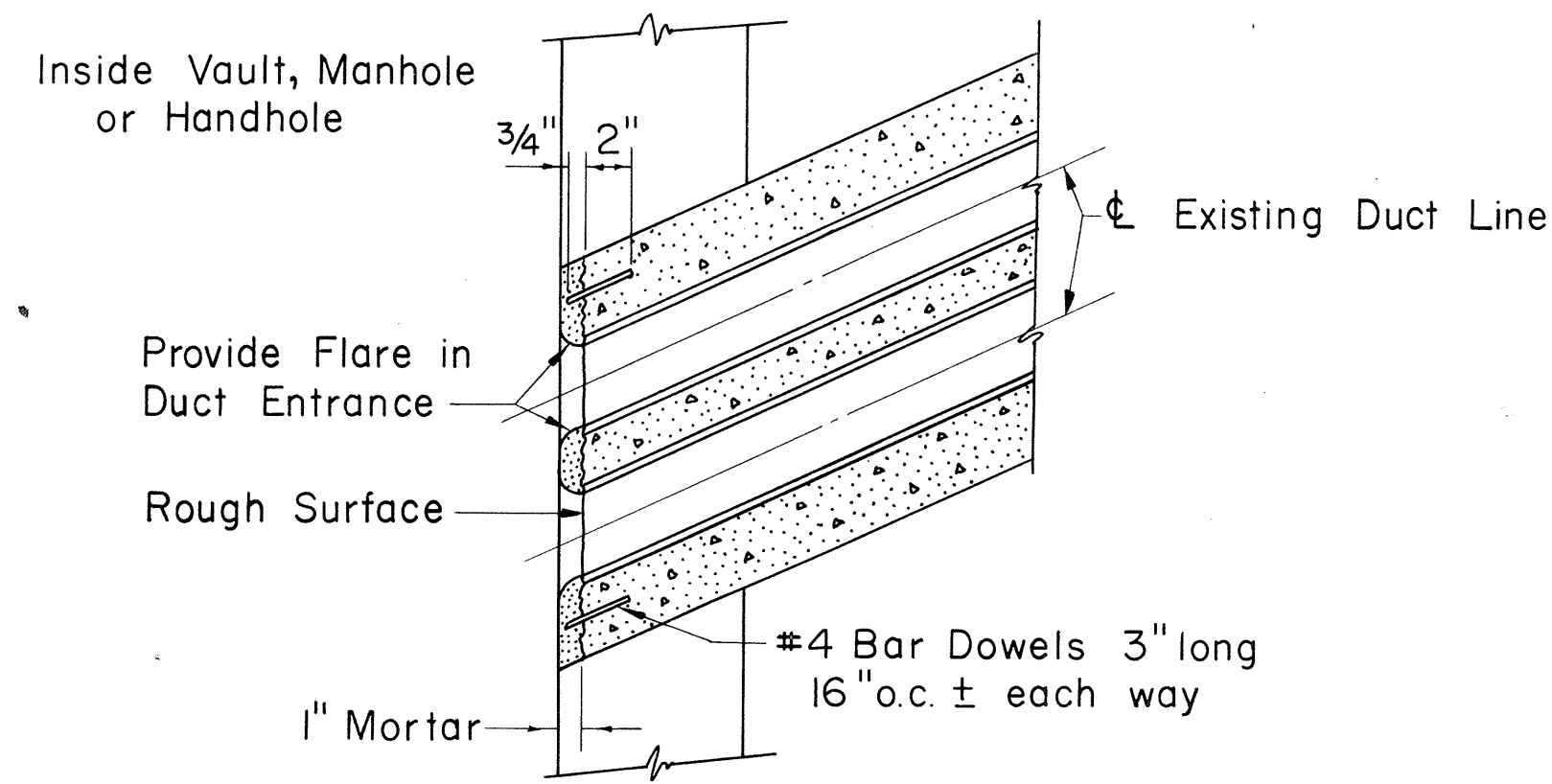
TYPICAL STUB OUT DETAIL

Not to Scale



DUCT LINE ENTRANCE AT EXISTING DUCT LINE

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



DUCT LINE DIAGONAL ENTRANCE

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

APPROVED:

[Signature]
HAWAIIAN ELECTRIC CO., INC. DATE

THIS SHEET IS A SUPPLEMENT TO THE CONTRACT PLANS

HECo., Inc. Drawing Number	
18585	SHEET No. 2 OF 2 SHEETS
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
STANDARD DETAILS	
CONSTRUCTION STANDARDS TRANSITE KORDUCTS UNDERGROUND DUCT LINES	
Scales: As Noted	Date: March, 1968

SHEET NO. 18 GOF 18 SHEETS

C 0 4 3 S (7)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	F-083-1(2) Unit 2	1968	C0435(8)	83

GENERAL NOTES

HANDHOLE FABRICATION

- CONCRETE STRENGTH:**
Concrete to develop compressive cylinder strength of 3,000psi. in 28 days.
- CONCRETE FINISH:**
Top of handhole wood floated (sidewalk finish) according to Division of Highways, State of Hawaii or Division of Engineering, City & County of Honolulu specification whichever governs unless otherwise directed.
Round all exposed edges to $\frac{3}{8}$ " radius.
- REINFORCING:**
Round deformed bars, new billet stock, intermediate grade ASTM A15.
- FINISH STEEL WORK:**
Angle iron frames, lifting devices for removable concrete slabs and pulling eye attachments shall be Hot-Dip Galvanized After Fabrication.
- All materials shall be new and manufactured in the United States of America.

HANDHOLE INSTALLATION

- EXCAVATION:**
Excavate for handhole to accurate alignment, grades and dimensions as shown on drawings. All excavation must be approved by the Engineering Dept., Hawaiian Electric Co. Inc. before installing precast handhole.
- INSTALLATION:**
Place handhole on 3" thick #3 fine lava rock. Top of handhole to be level and 1" above finished grade except in sidewalk areas where top is to match top of sidewalk.
- BACKFILL:**
Remove all debris before backfilling. Backfill in accordance with latest specifications of and subject to approval of Division of Highways, State of Hawaii or Division of Engineering, City & County of Honolulu whichever governs unless otherwise directed.

WEIGHT PER REMOVABLE COVER

Reinf. & Angle Frames	=	38.0 Lb.
Concrete	=	115.0 Lb.
Total	=	153.0 Lb.

WEIGHT OF MATERIAL PER UNIT (EXCLUDING COVERS)

Concrete	=	1,675 Lb. (.42 cu. yd.)
Reinf. Steel	=	59 Lb. (157 L.F. of #3)
Total	=	1,734 Lb.

NOTE "X" - IMPORTANT

Maximum clearances between removable concrete cover slabs and concrete opening at the supports must be kept. Concrete Contractor shall measure cover slab steel frame after fabrication to obtain proper clearances. Any variation in clearances shall be corrected to the satisfaction of the Engineer at Contractors expense.

THIS SHEET IS A SUPPLEMENT
TO THE CONTRACT PLANS

FOR USE IN AREAS NOT SUB-
JECT TO VEHICULAR TRAFFIC.

APPROVED:

HAWAIIAN ELECTRIC Co., Inc.

DATE

HECo., Inc. Drawing Number

15501

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

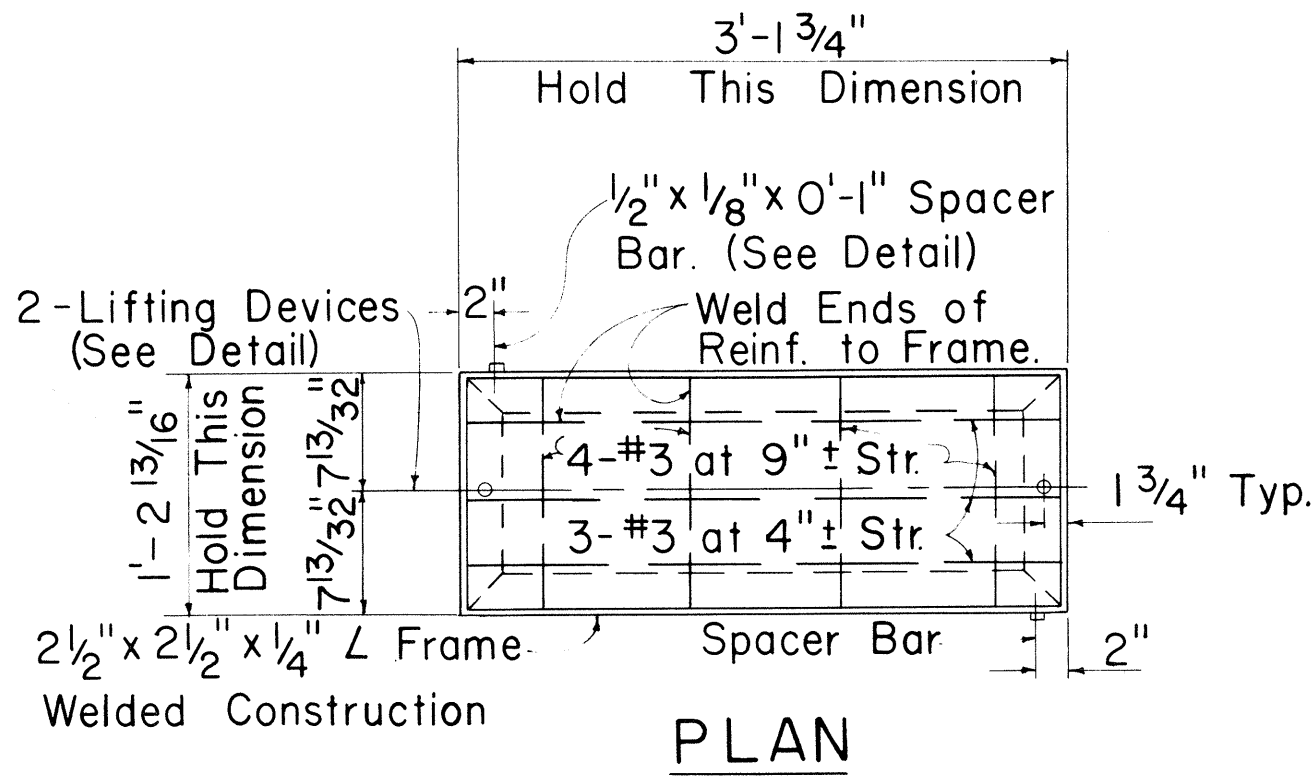
STANDARD DETAILS
PRECAST HANDHOLE
(3'-0" x 5'-0")
UNDERGROUND STANDARDS

Scales: As Noted

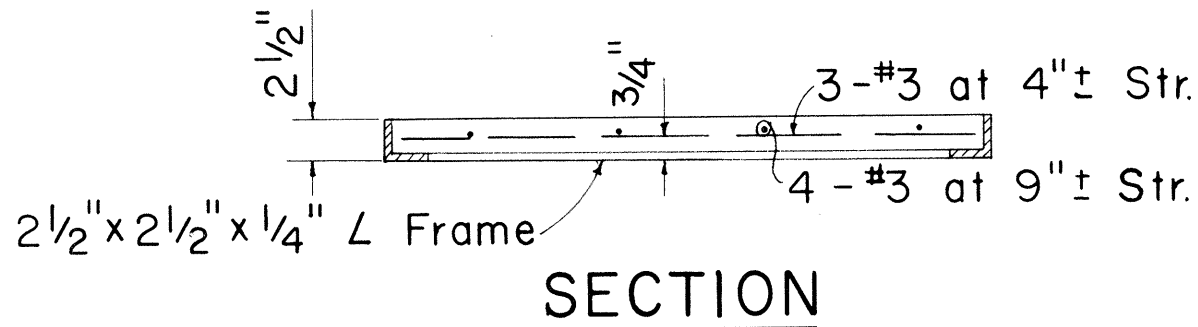
Date: March, 1968

SHEET No. 18 OF 18 SHEETS

C0435(8)



PLAN

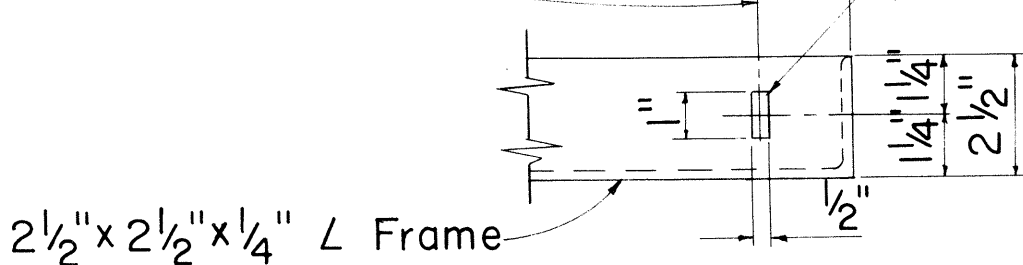


SECTION

REMOVABLE CONCRETE SLAB

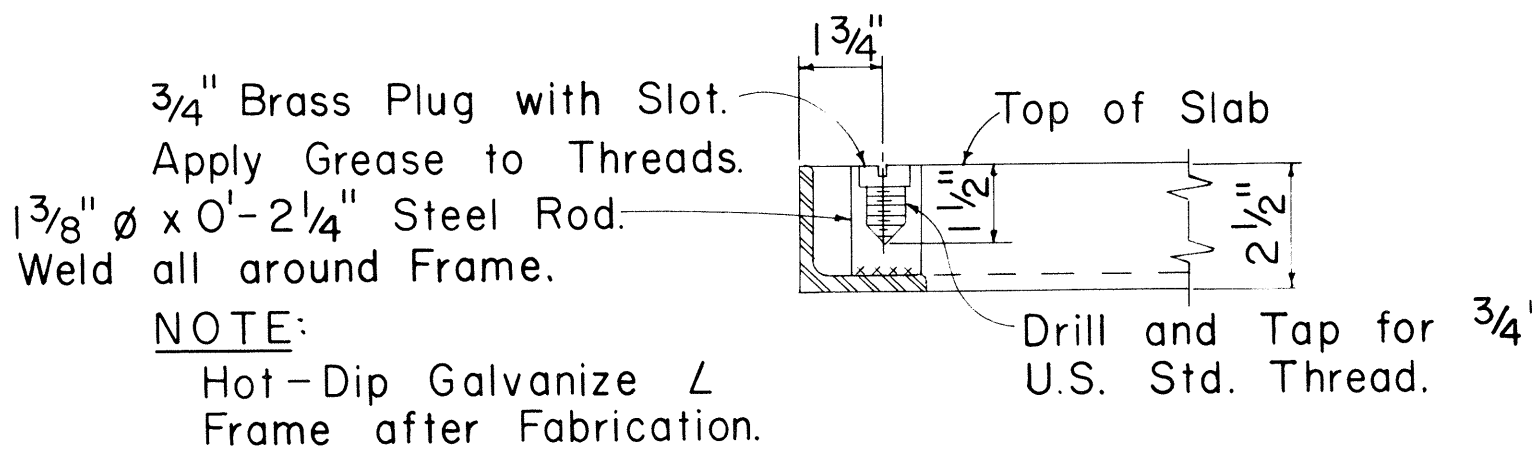
1" = 1'-0"

Spacer Bar $\frac{1}{2}$ " x $\frac{1}{8}$ " x 0'-1"
See Top Plan of Rem. Conc.
Slab for Location.



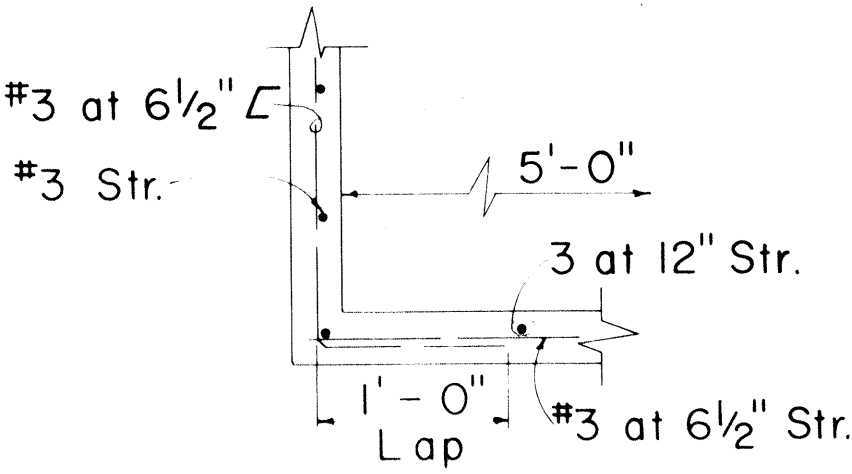
PART ELEVATION SPACER BAR DETAIL

3" = 1'-0"



LIFTING DEVICE DETAIL

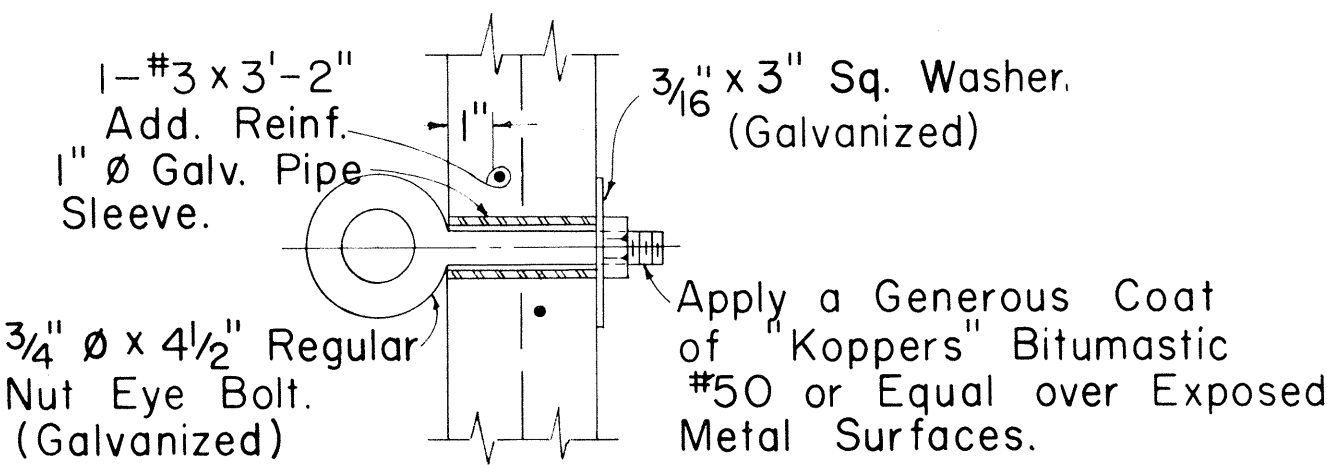
3" = 1'-0"



PLAN

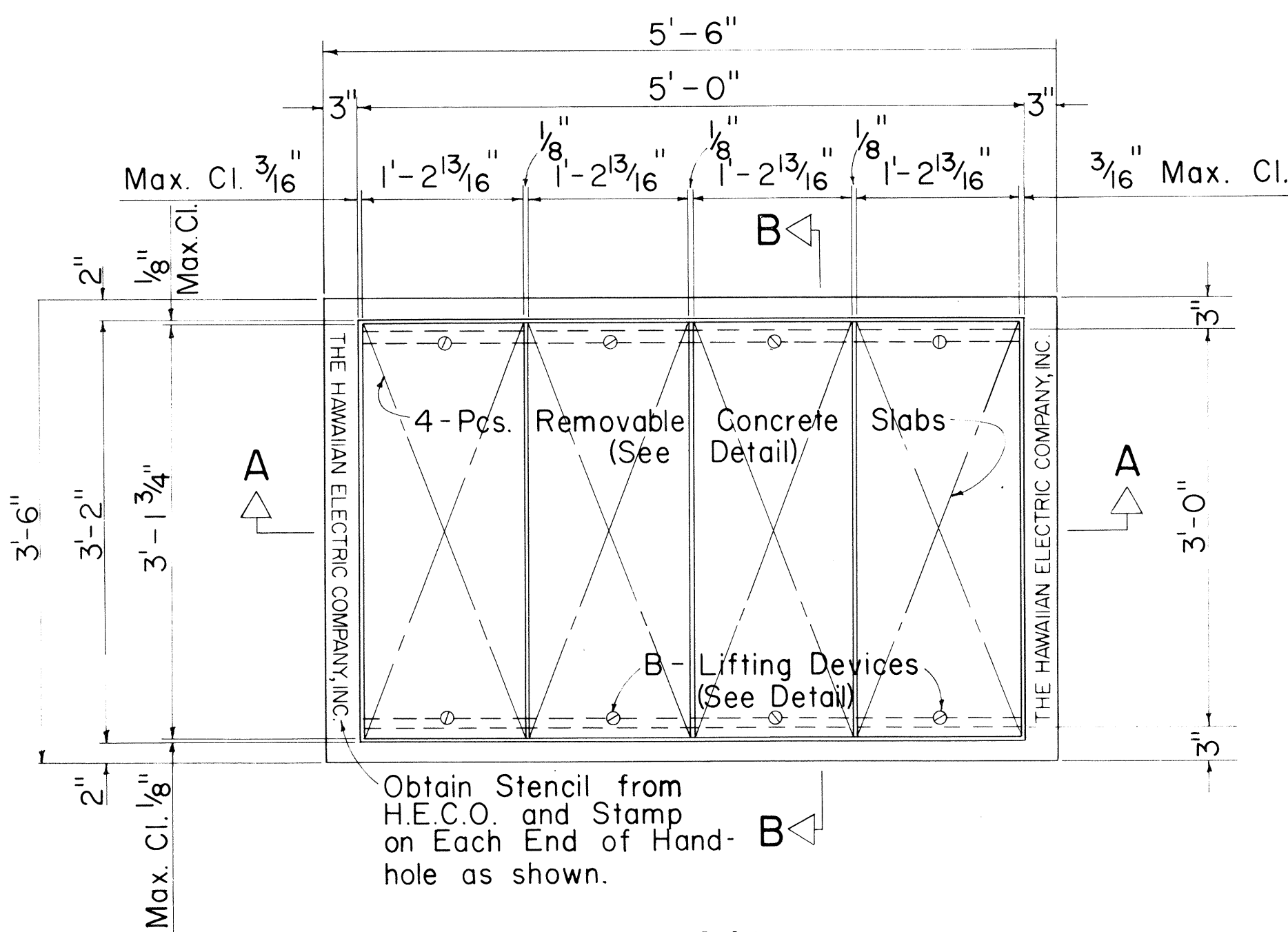
CORNER REINF.

1" = 1'-0"



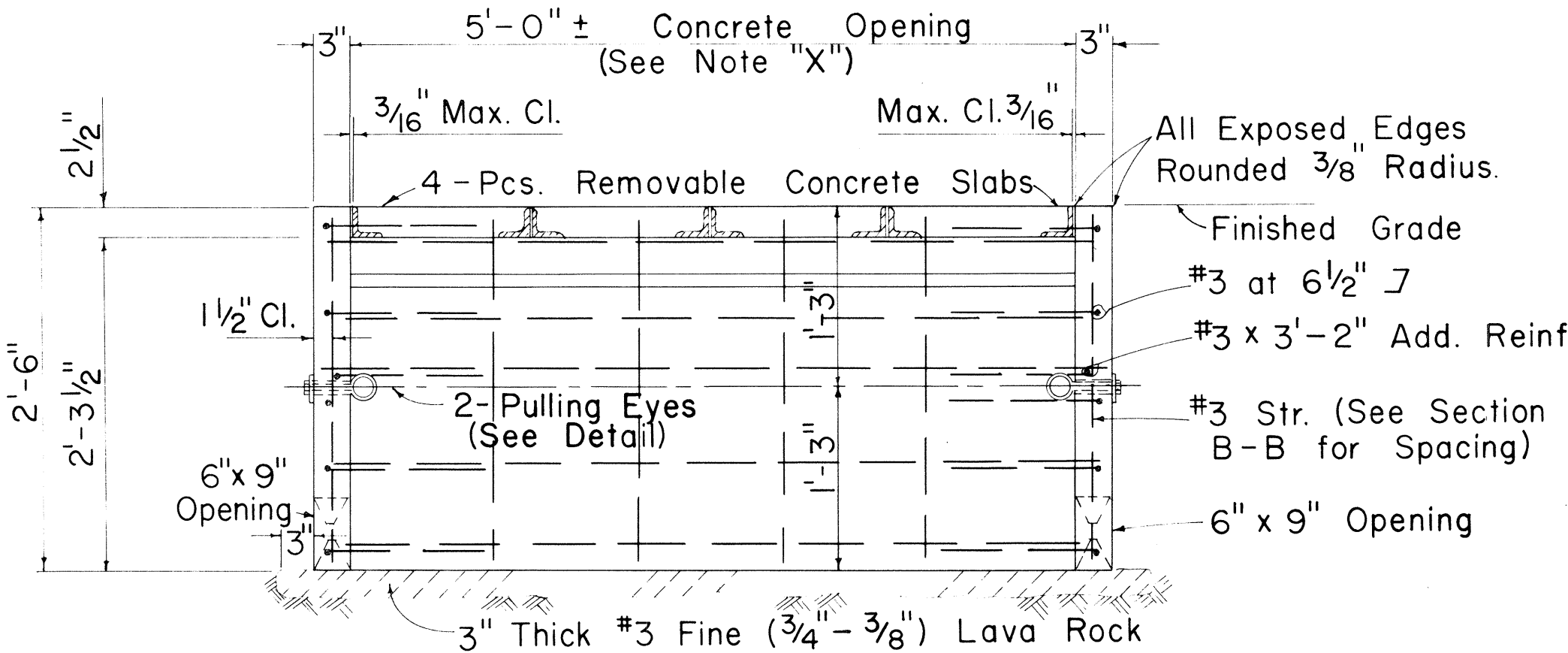
PULLING EYE DETAIL

3" = 1'-0"



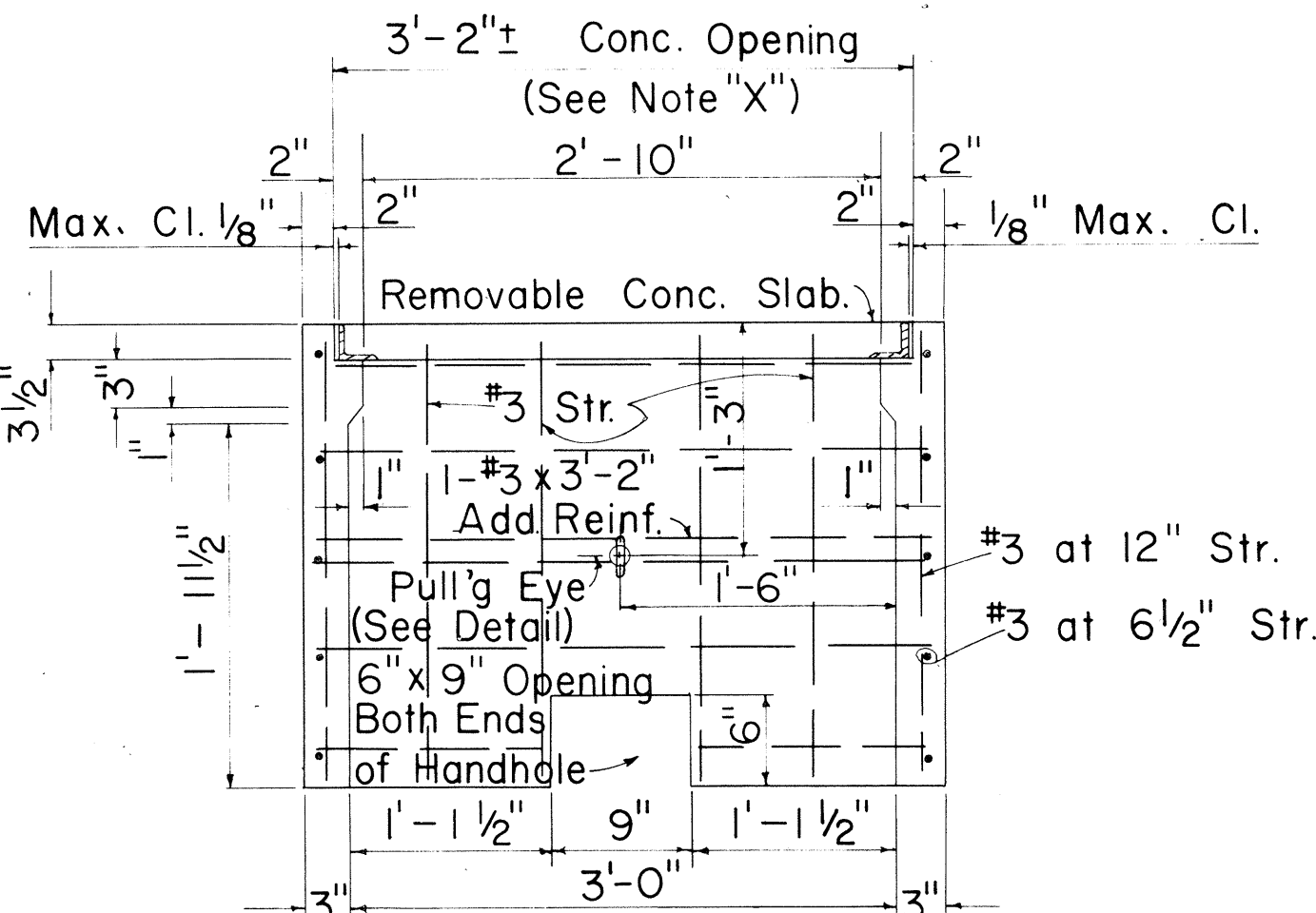
PLAN

1" = 1'-0"



SECTION A-A

1" = 1'-0"



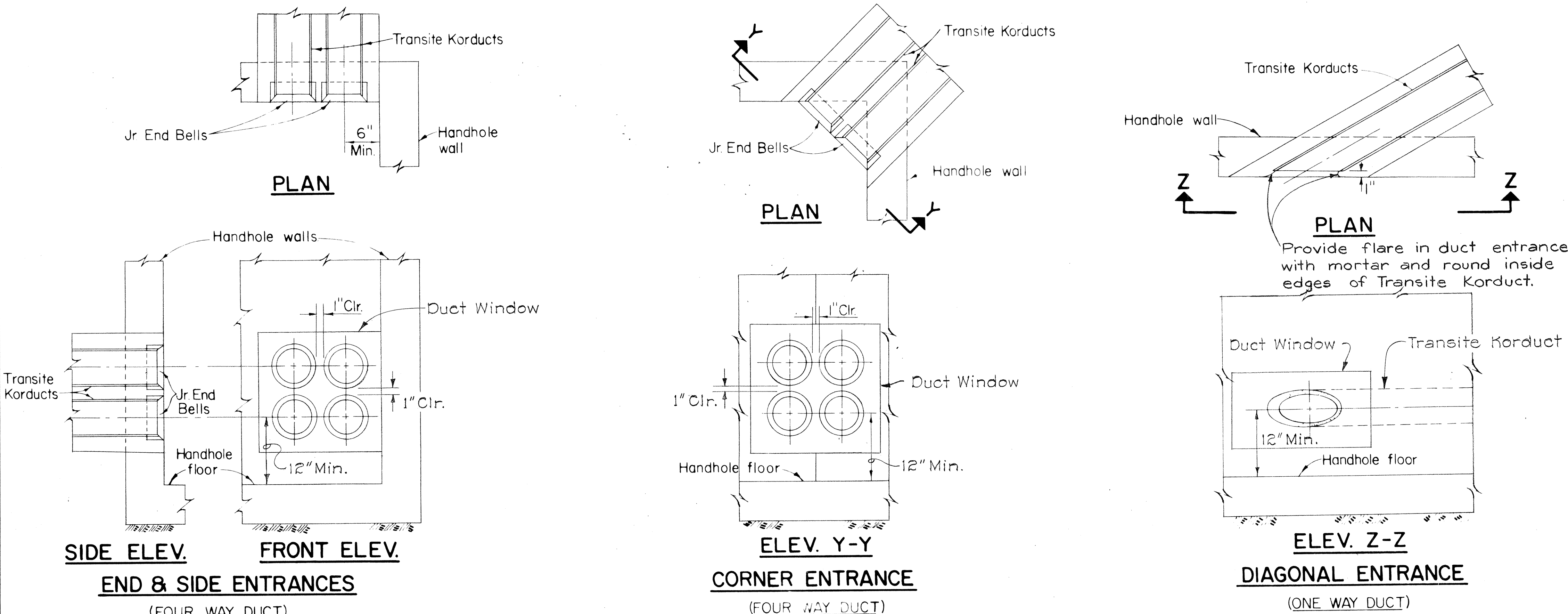
SECTION B-B

1" = 1'-0"

FED AID DIST. NO.	STATE	FED AID PROJECT	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	F-083-1(2) Unit 2	1968	C0435(10)	83

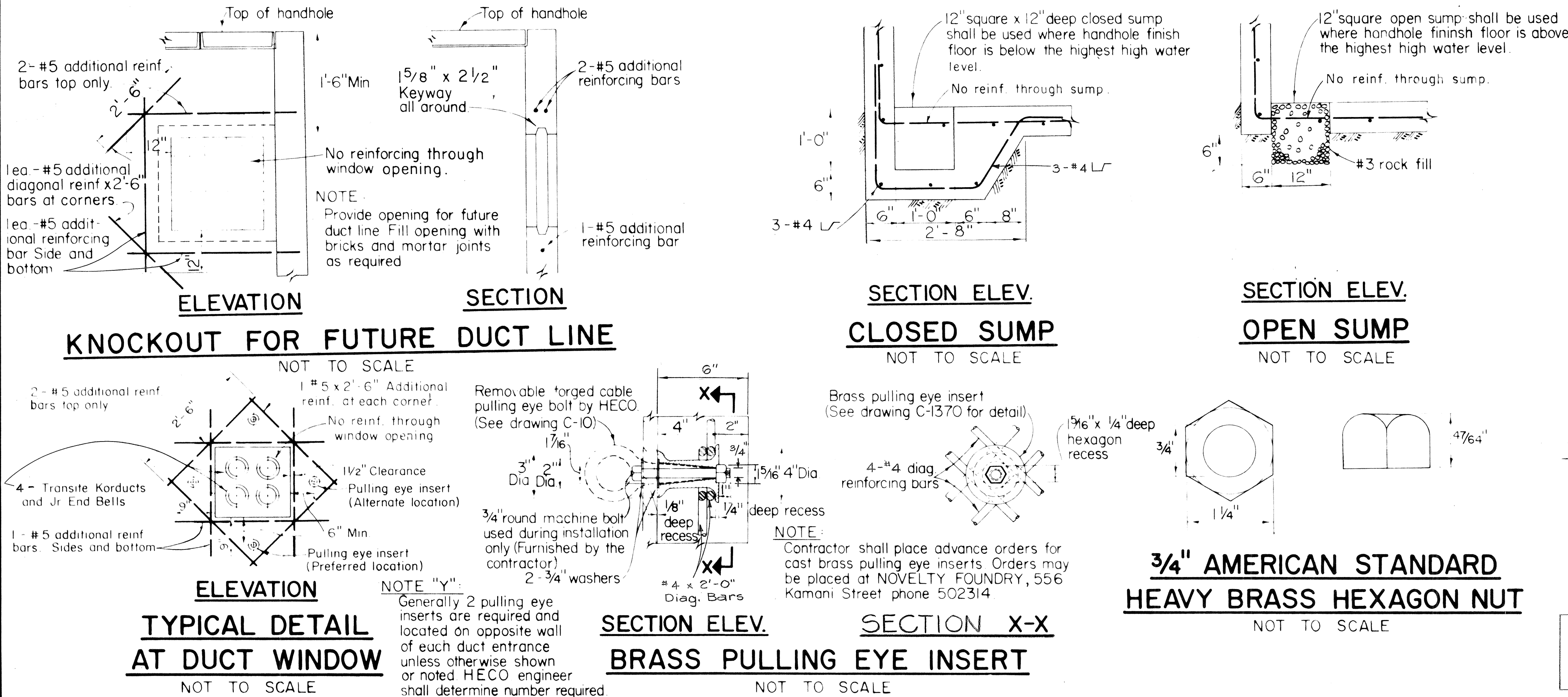
GENERAL NOTES

- Concrete to develop compressive cylinder strength of 3000 PSI in 28 days
- CONCRETE FINISH:
 - Top of Handhole - Woodfloated (sidewalk finish) according to State Highway or City and County of Honolulu specifications whichever Agency has authority over the work.
 - Floor - Smooth metal trowelled.
 - Exposed Wall Surfaces, and Edges - Smooth and free from defects.
- CONCRETE POURING:
 - Notify the Hawaiian Electric Co. Contracting & Inspection Div., 24 hours before pouring any concrete All concrete pouring shall be done in the presence of an H.E.CO. Engineer or Inspector. (Phone 574971, Local 294)
- REINFORCING: round deformed bars, new billet stock intermediate grade ASTM A15. All hooked bars shall have ACI Std. hook unless otherwise shown.
- FORMS: form handhole to size and shape as shown. Exterior face of handhole wall shall be formed except:
 - A) Excavation in solid material such as coral or rock, neat cut, no forms required.
 - B) Excavation in solid material other than coral or rock-lining such as salvaged corrugated iron, canec etc. may be used.
- PULLING EYE INSERTS:
 - For location and number required, see duct entrance plan of project concerned.
- DRAINAGE: Slope floor down 1/2" to sump.
- Slope top of handhole to match existing grade.
- FINISH STEEL WORK:
 - Angle iron frames & lifting devices for removable concrete slabs shall be HOT DIP GALVANIZED AFTER FABRICATION.
- EXCAVATION:
 - Excavate for handhole to accurate alignment grades and dimensions as shown on drawing. All excavation must be approved by the Engineering Department, the Hawaiian Electric Co., Inc., before any concrete is poured. All excess cut shall be backfilled with concrete or rock.
- BACKFILL:
 - Remove all debris before backfilling. Backfill in accordance with latest specifications of and subject to approval of State Highway or City and County of Honolulu whichever Agency has authority over the work.
- For duct line construction standards, see H.E.CO. Dwg. 18585, and specifications sheet 18585A.
- DUCTS: For number, size, and exact location of duct entrances, refer to project drawings.
- ALL MATERIALS SHALL BE NEW AND SHALL BE MANUFACTURED IN THE UNITED STATES OF AMERICA



TYPICAL DUCT LINE ENTRANCE DETAILS

NOT TO SCALE



THIS SHEET IS A SUPPLEMENT
TO THE CONTRACT PLANS

FOR USE IN AREAS NOT
SUBJECT TO VEHICULAR
TRAFFIC.

APPROVED:

HAWAIIAN ELECTRIC Co., Inc.

DATE

HECo., Inc. Drawing Number

18846 SHEET No. 2
OF 2 SHEETS

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
HANDHOLE TYPE 35
(3'-0 x 5'-0)
UNDERGROUND STANDARDS

Scales As Noted

Date: March, 1968

SHEET NO. 18 OF 18 SHEETS

C 0 4 3 5 (1 0)
E-4-B 18846