

S U M M A R Y

PROJECT: INTERSTATE ROUTE H 2 - KIPAPA GULCH TO
WAIAWA INTERCHANGE
PROJECT NO.: F. A. I. 1-H2-1 (12):0

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HA-1(12)-C	1973	54	171

[illegible]

S U M M A R Y

PROJECT: INTERSTATE ROUTE H 2 - KIPAPA GULCH TO
WAIAWA INTERCHANGE
PROJECT NO.: F.A.I. 1-H2-1(12):0

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HA-1(18)	1973	55	171

[illegible]

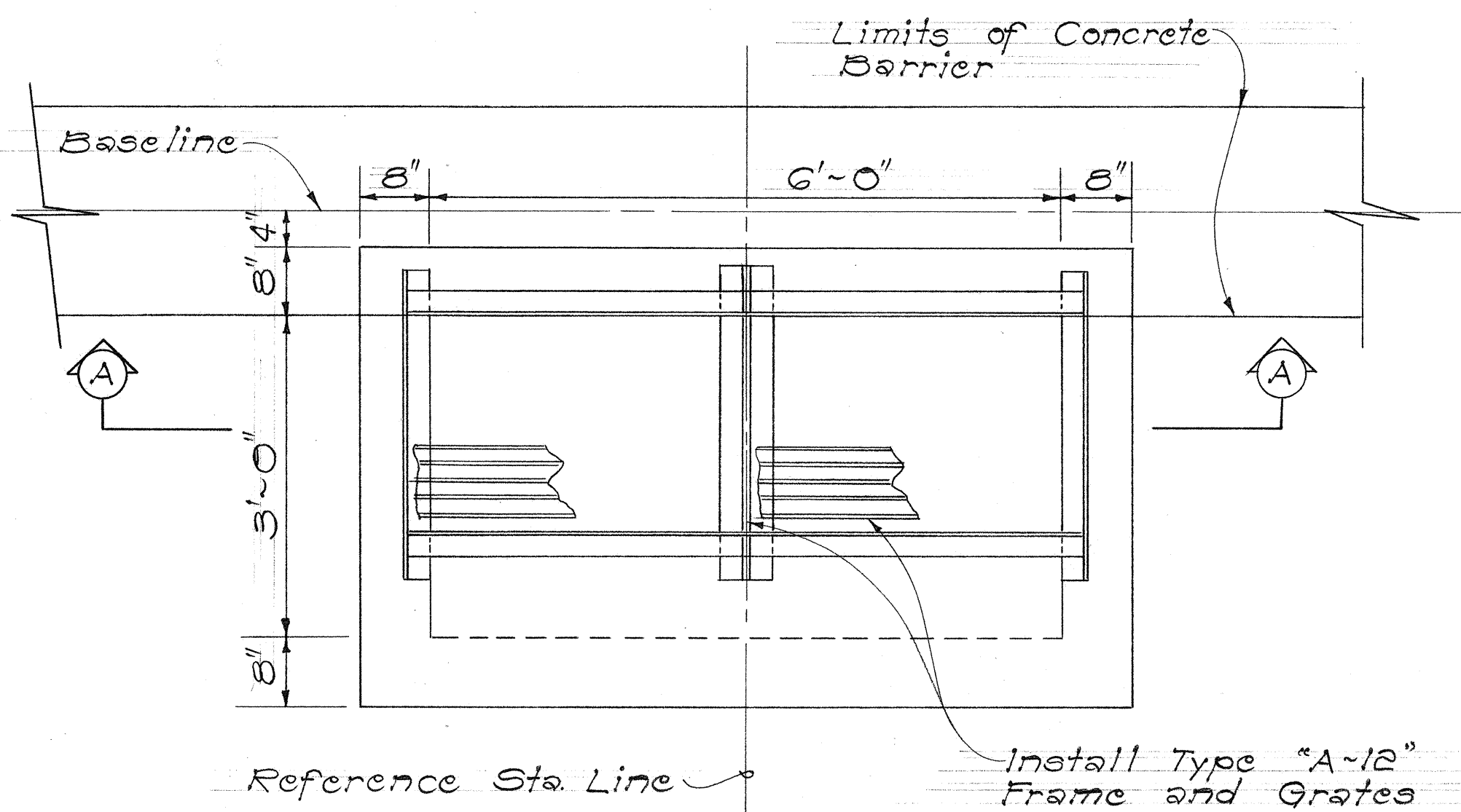
DRAINAGE SUMMARY

PROJECT: INTERSTATE ROUTE H 2 - KIPAPA GULCH TO
WAIWA INTERCHANGE
PROJECT NO.: F.A.I. 1-H2-1 (12):0

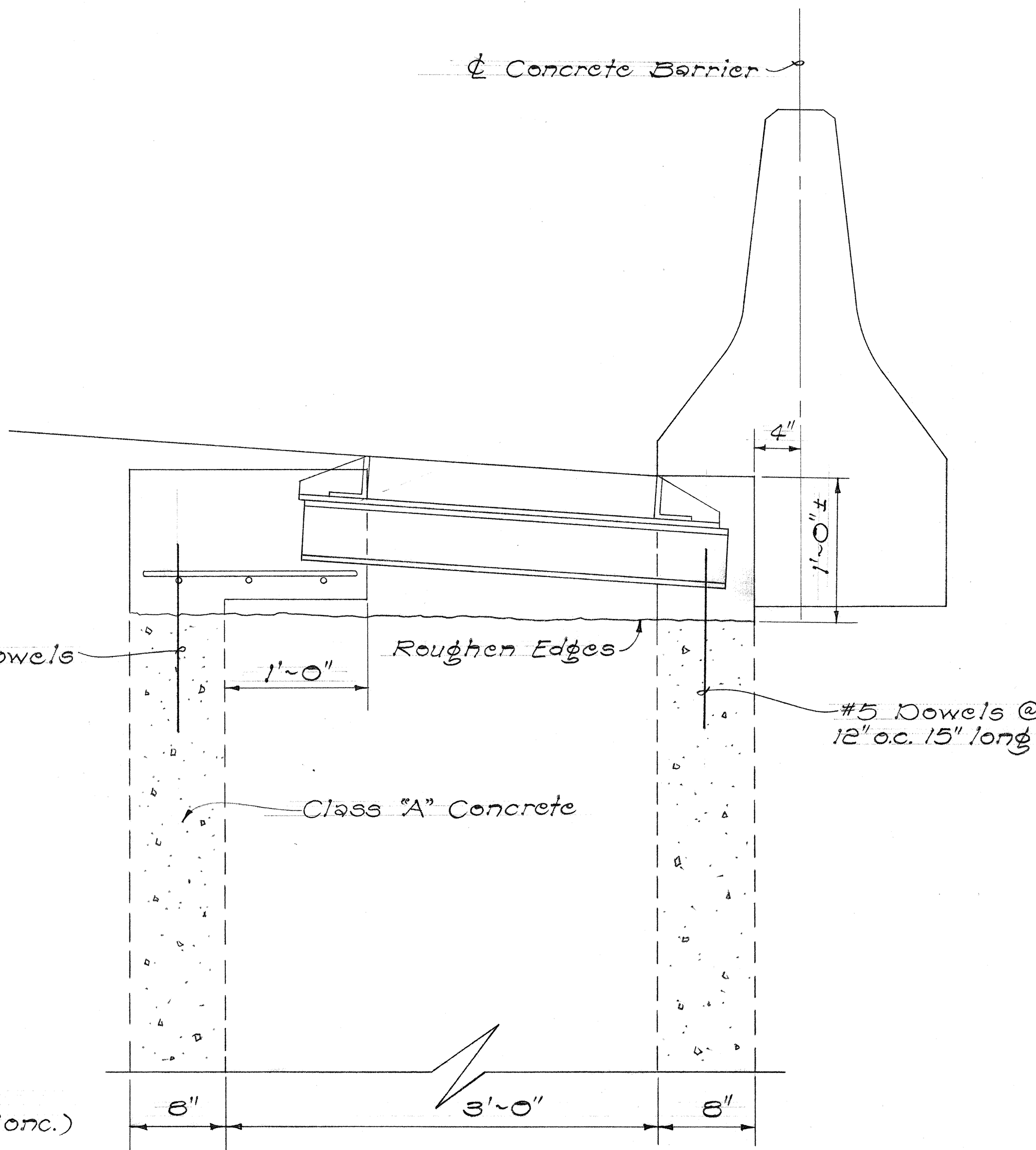
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HA-1(2)	1973	56	171

[illegible]

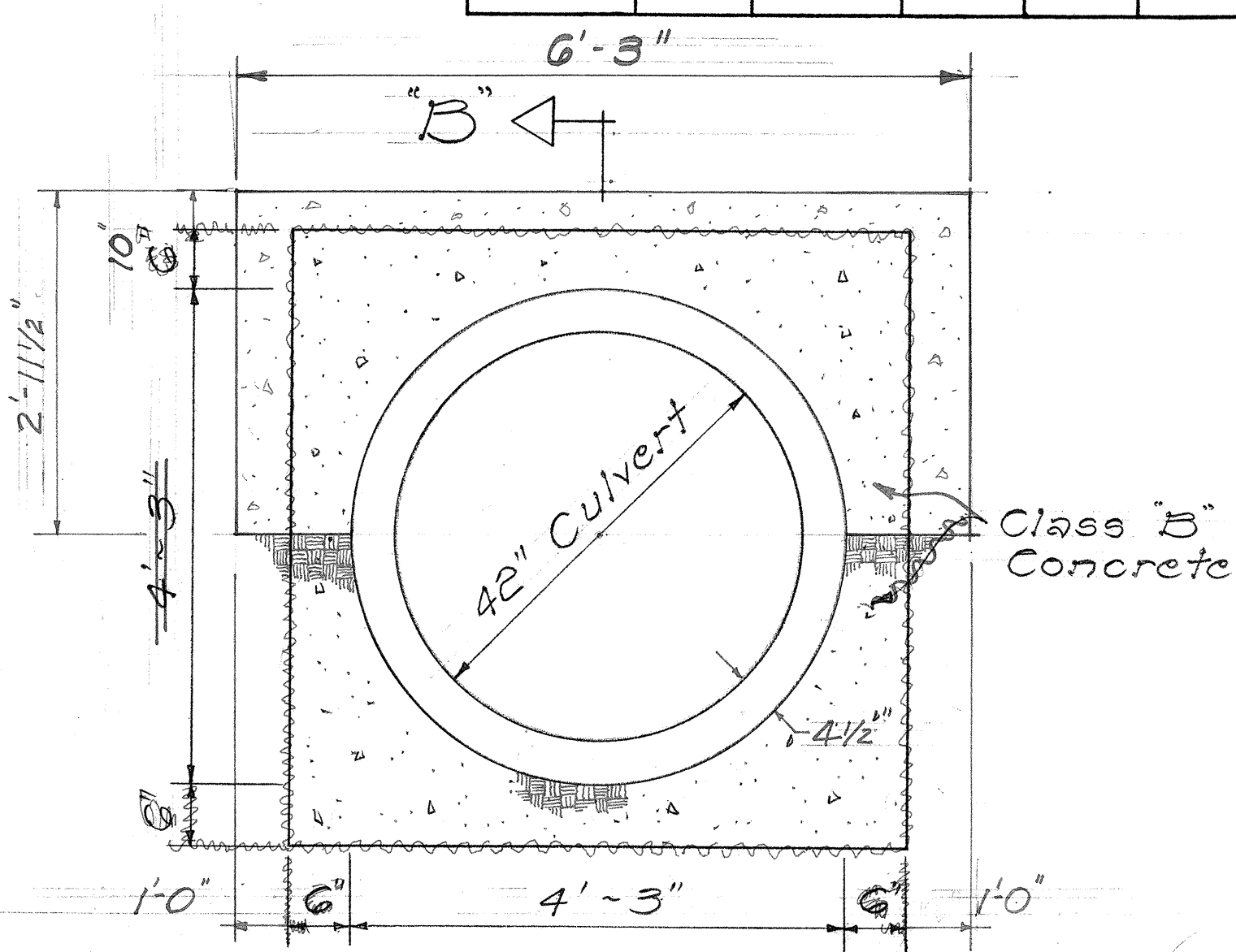
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HAWAII	HAW.	I-H2-1(12):0	1973	2057	171



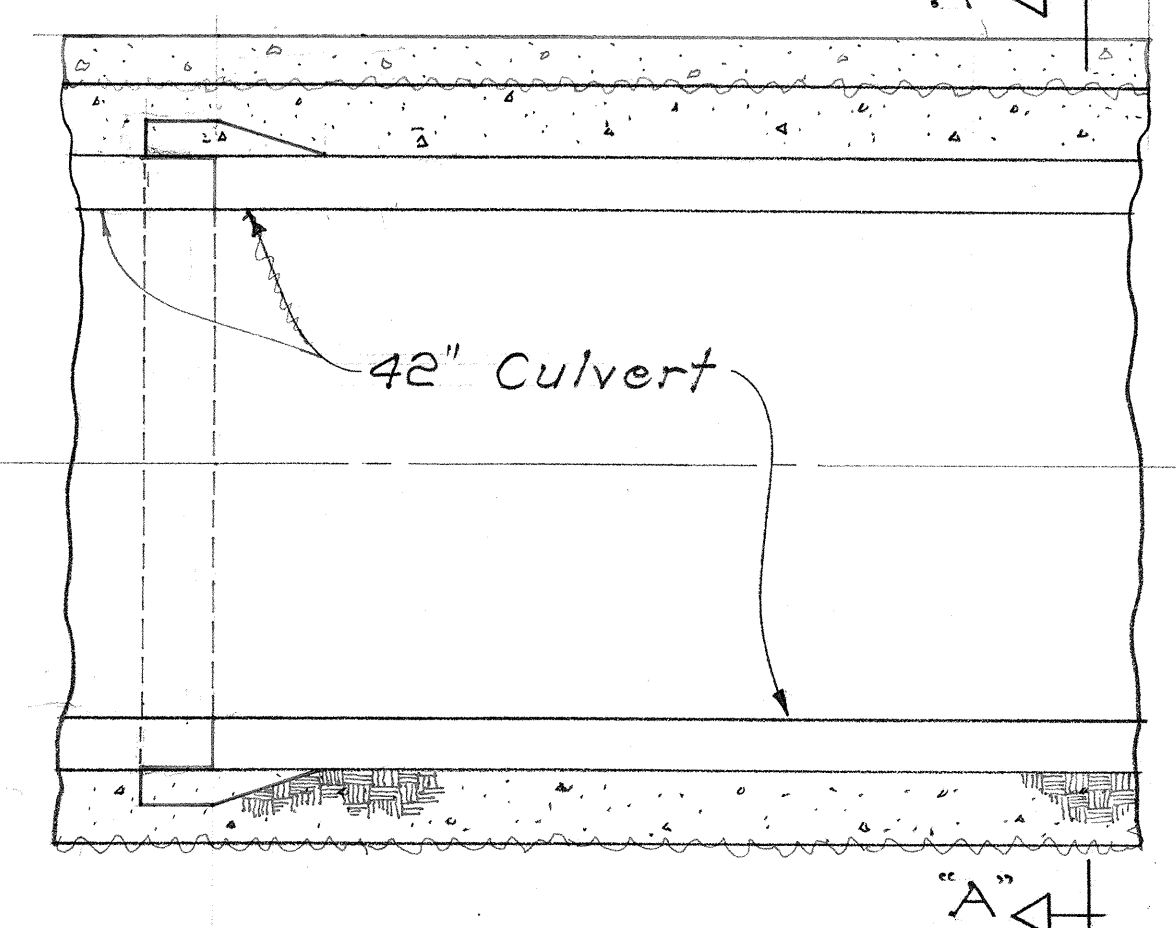
PLAN



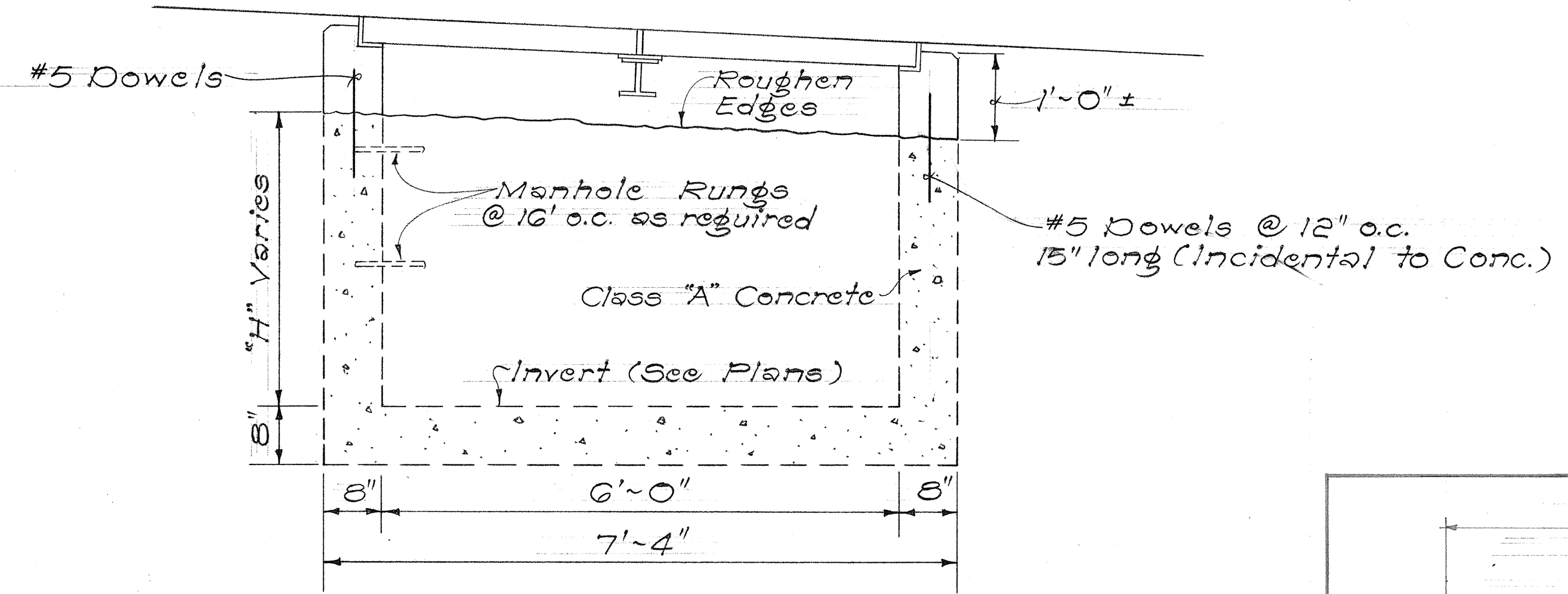
TYPICAL SECTION FOR
MEDIAN C.D.I.
Scale: 1 1/2" = 1'-0"



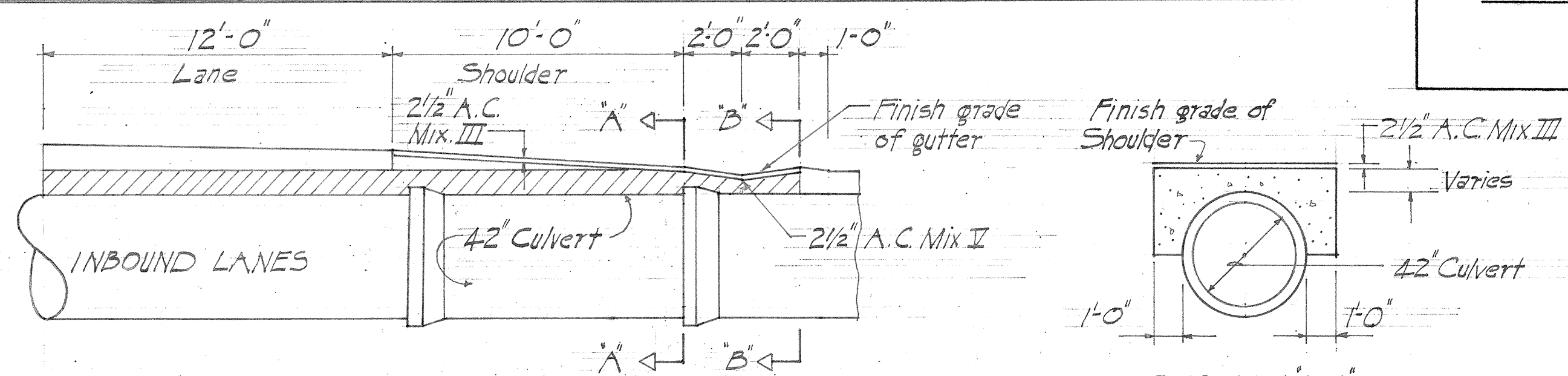
SECTION A-A



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

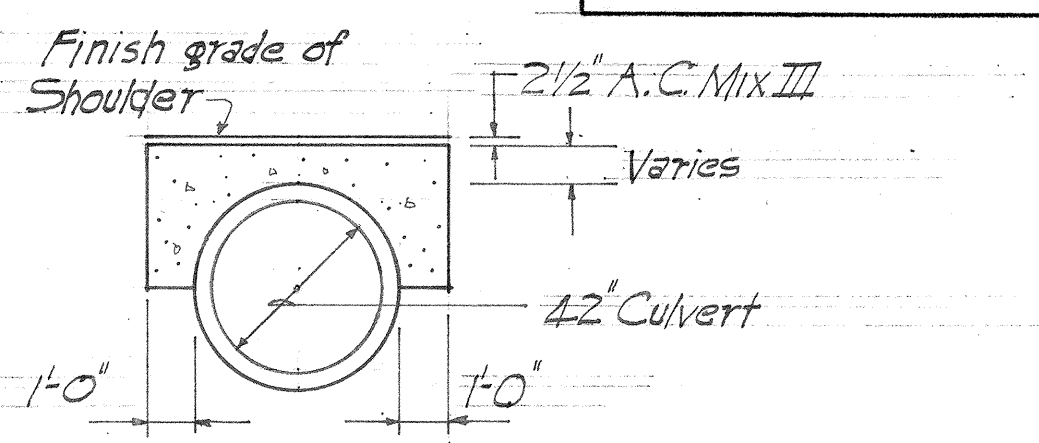


SECTION A-A
DETAIL OF MEDIAN C.D.I.
WITH TWO (2) GRATES
Scale: 3/4" = 1'-0"

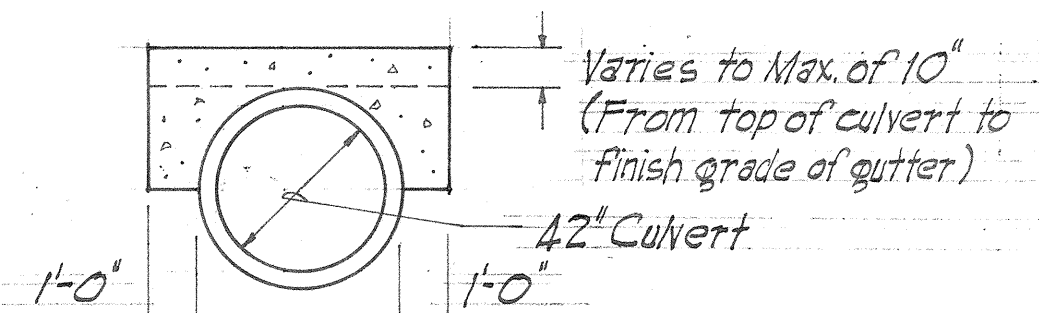


PROFILE

DETAIL OF CONCRETE JACKET FOR
42" CULVERT AT IB STA. 328+85
Scale: 1/4" = 1'-0"
///// Indicates limits of Concrete Jacket



SECTION A-A



SECTION B-B

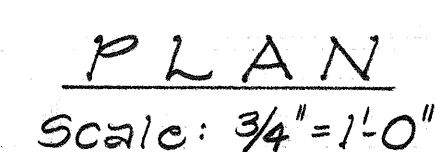
Contract Change Order No 2
Sept. 4, 1973

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
INTERSTATE ROUTE H-2
Kipapa Gulch to Waiawa Inter.
F.A.I. Proj. No. I-H2-1(12): 0
Scale: As Noted Date: Feb. 1973
SHEET No. 4 OF 10 SHEETS

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

NO. OF GRATES	L	L'
3	10' - 7"	3' - 3"
4	13' - 10"	6' - 6"
6	20' - 4"	18' - 0"



1'-0"±

"H" varies

8'

8"

6'-0"

8"

M.H. Rungs @ 16" o.c. as req'd.

Slope 1:1 1/2

8"

1'-0"±

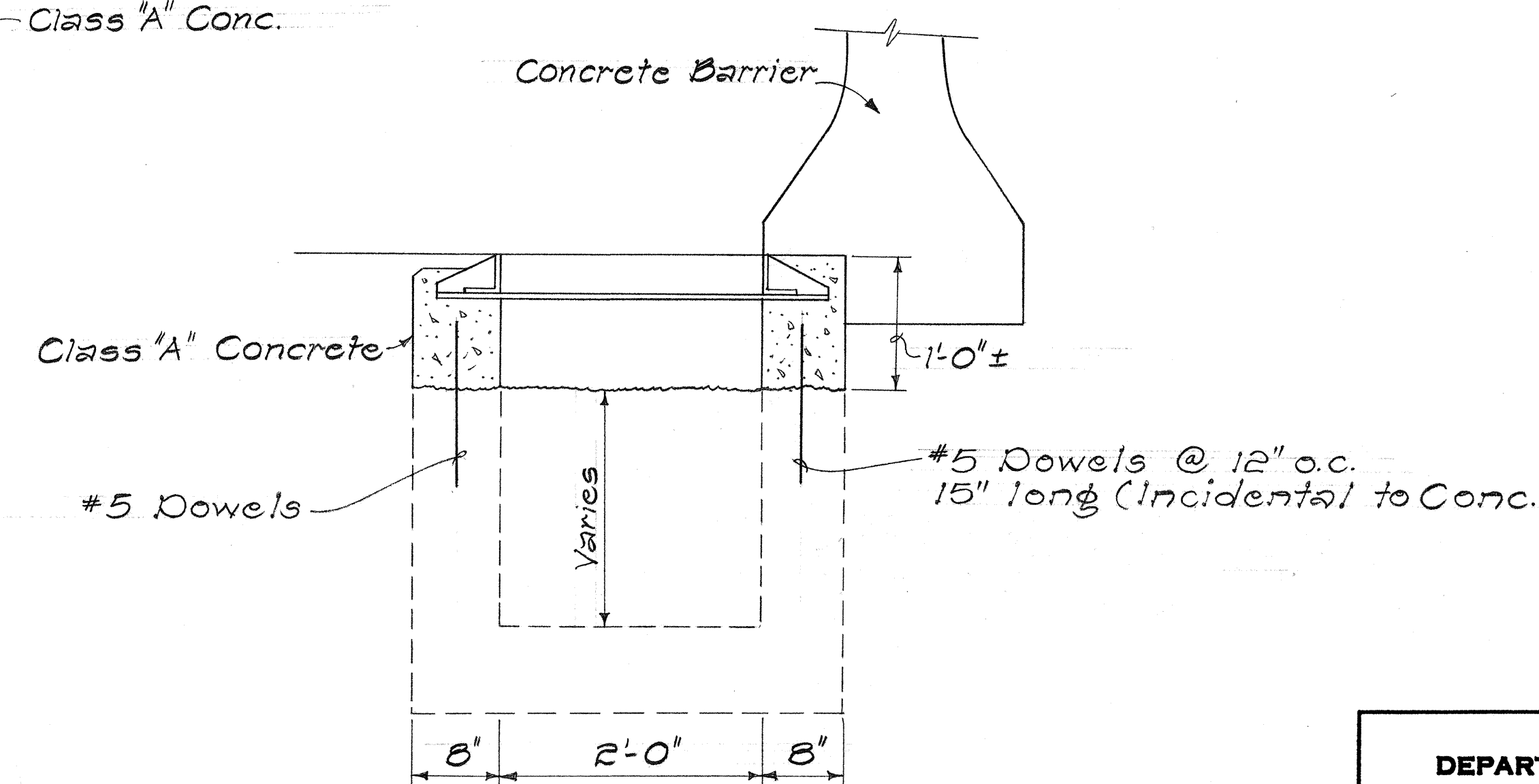
Class "A" Conc.

Class "A" Conc.

#5 Dowel

NOTE:
Use also for Med. Drop Intake at
O.B. Sta. 402+00 Rt. which is
completely new. (Dowels are not required.)

NOTE:
Use also for Med. Drop Intake at
O.B. Sta. 402+00 Rt. which is
completely new. (Dowels are not required.)



TYPICAL-DETAILS FOR MEDIAN C.D.I.
WITH THREE (3) OR MORE GRATES

TYPICAL SECTION FOR WING
PORTION FOR MEDIAN C.D.I.

Scale: 1" = 1'-0"

SHEET No. 5 OF 10 SHEETS

GENERAL NOTES

- ## SPACING TABLE

NO.	REVISION	APPROVED BY	DATE
1	Curb for Top of Fill Gutters	H.P.	6-5-11

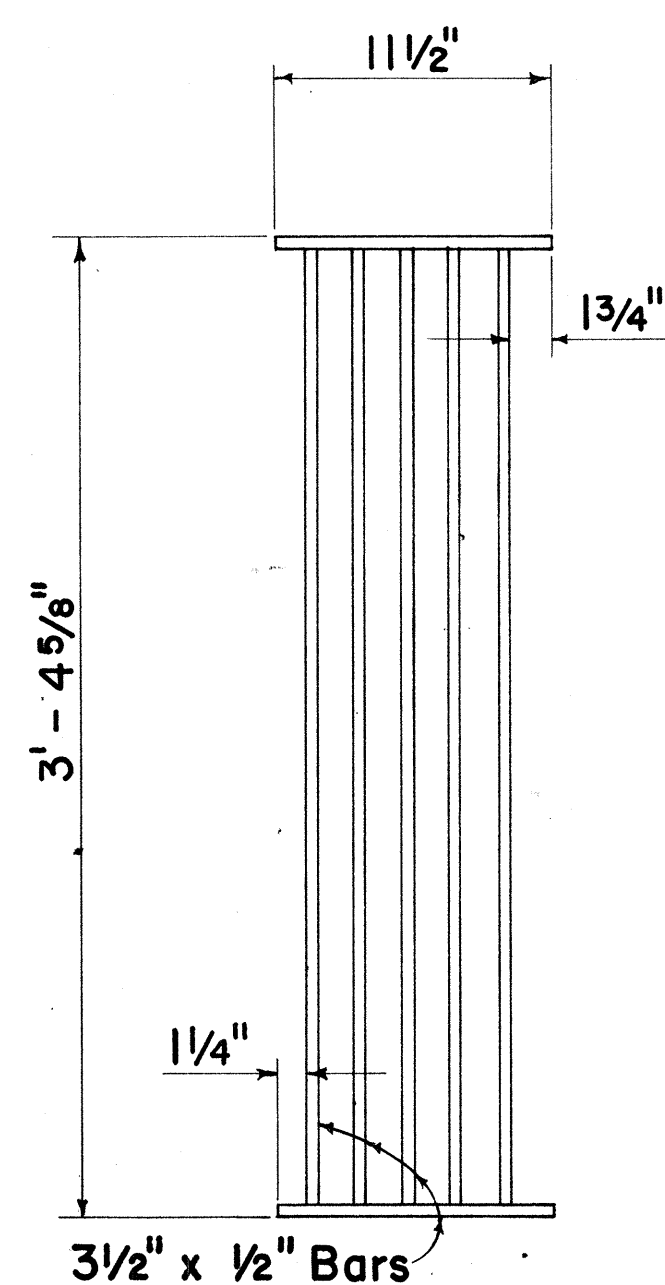
SHEET No. 7 OF 10 SHEETS DH 8

- * For Minimum size box of 3'-0", use 8" and eliminate reinforcing steel shown in the top portion.
- ** For Culverts larger than 30', the minimum dimension shall be D'.

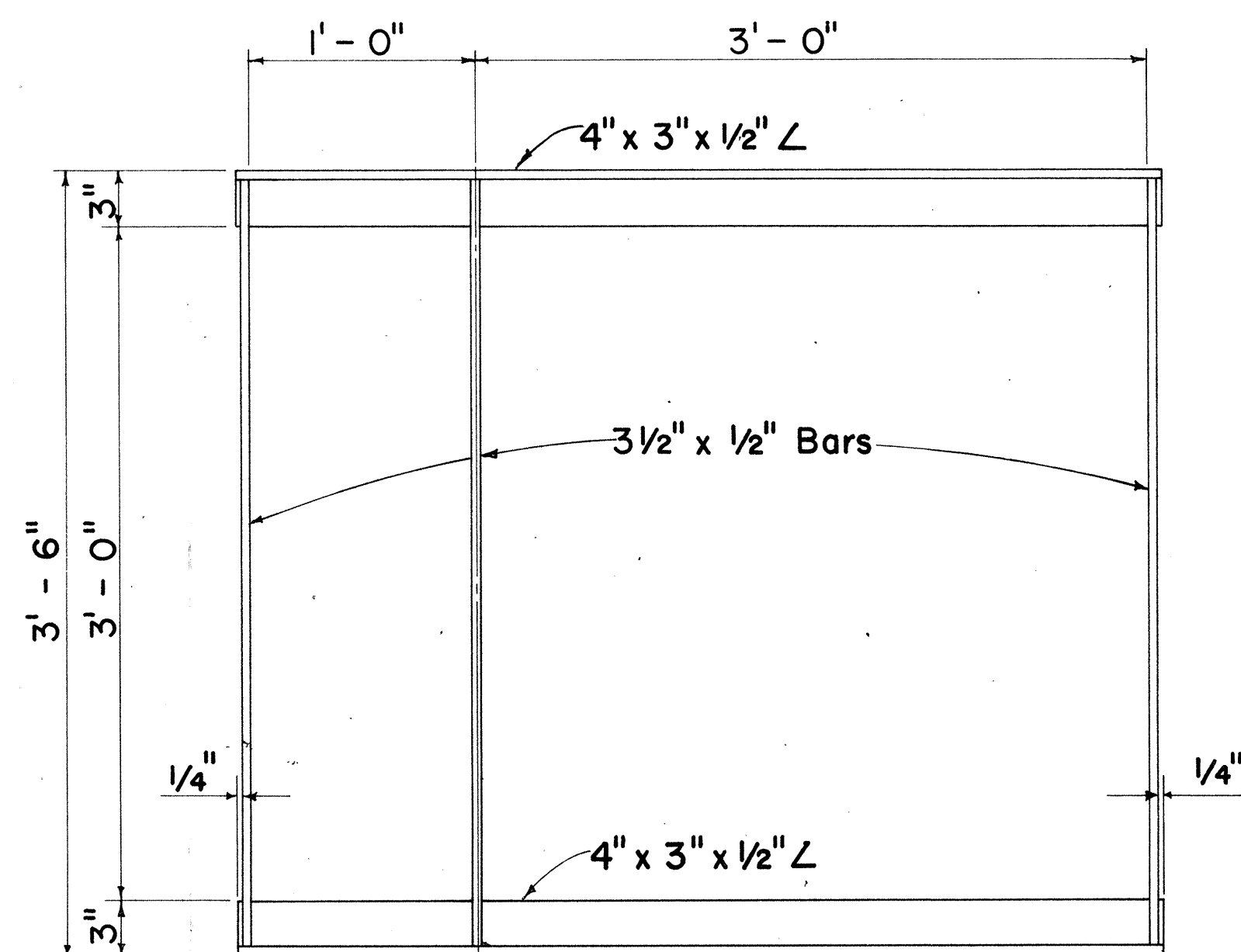
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H21(2)-0	1973	61	171

GENERAL NOTES

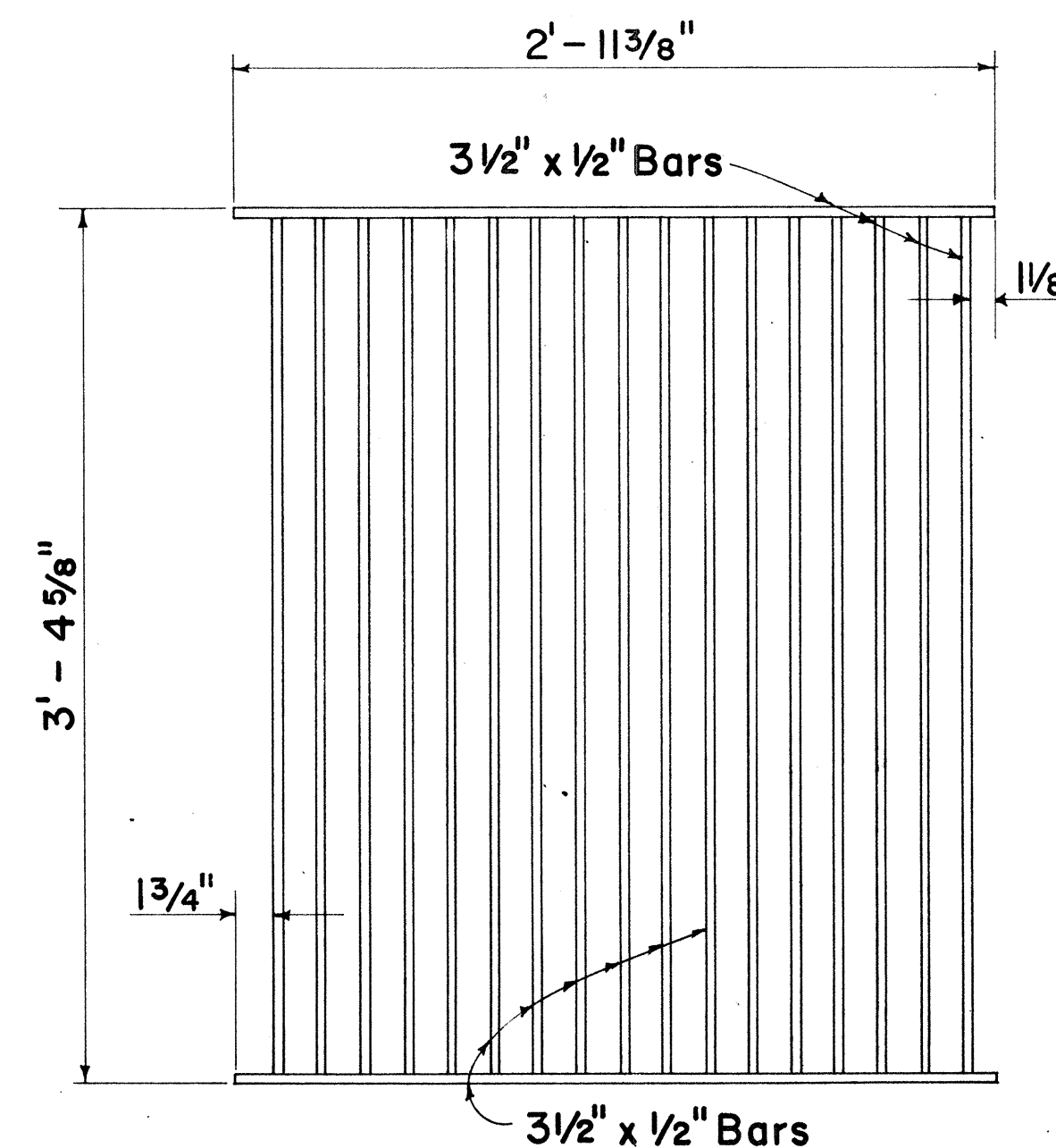
- Grates and Frames shall be hot dip galvanized after fabrication, see specifications.
- All welds $\frac{3}{8}$ " unless otherwise noted.
- The Frame & Grate materials shall conform to the specifications of ASTM Designation Structural Steel A283, Grade D and the Standard Specifications.
- Culvert shall leave Drop Intake from any position and any direction indicated by plans or ordered by the Engineer. Culverts may both enter and leave Drop Intake so that Drop Intake will act as manhole.
- Manhole Rungs (16" o.c.) are required when "H" is greater than 4 feet 6 inches. Only one rung (12 inches from the bottom) is required if "H" is 4 feet 6 inches or less. The Manhole Rungs may be placed at any location as ordered by the Engineer.



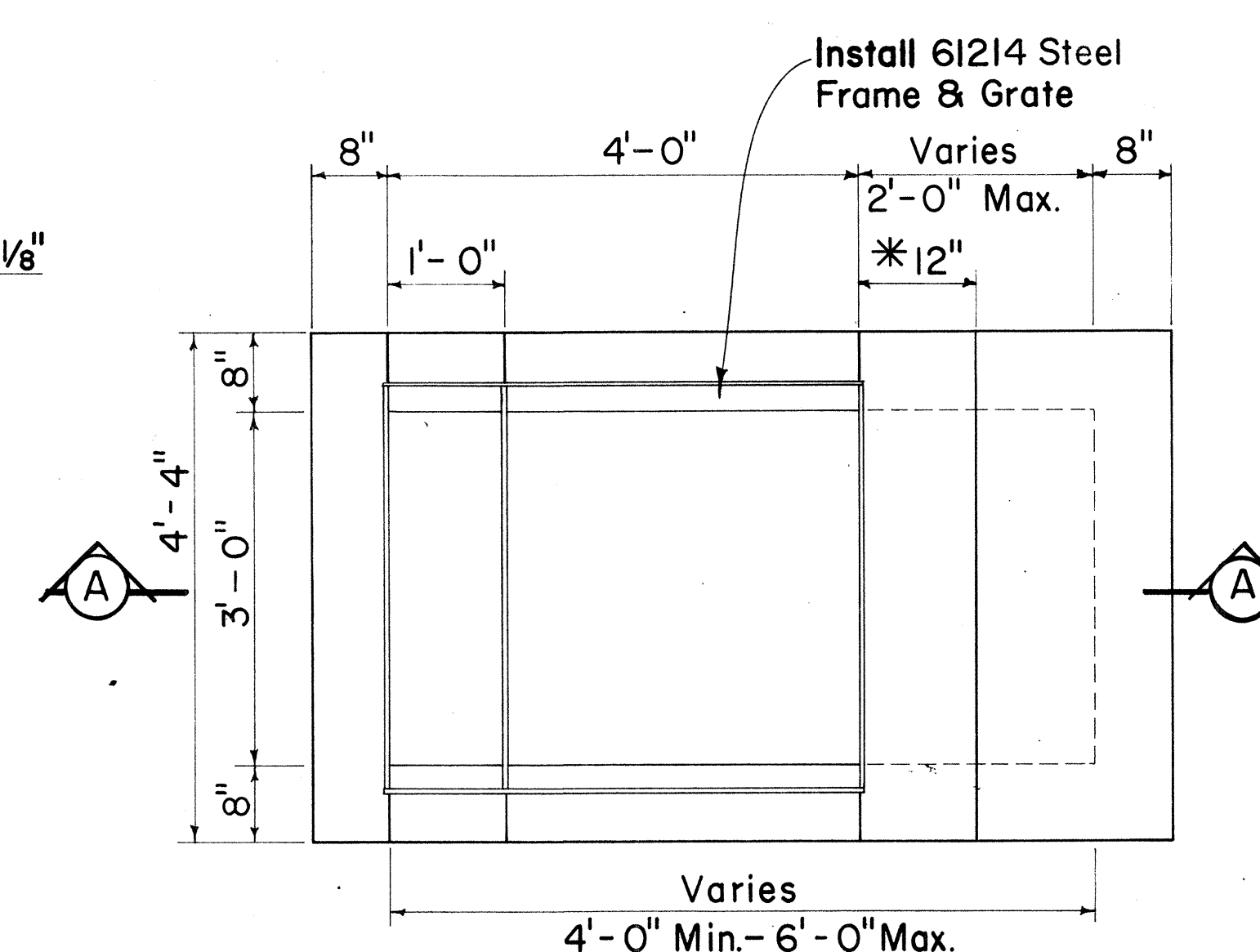
PLAN
Scale: 1 1/2" = 1' - 0"



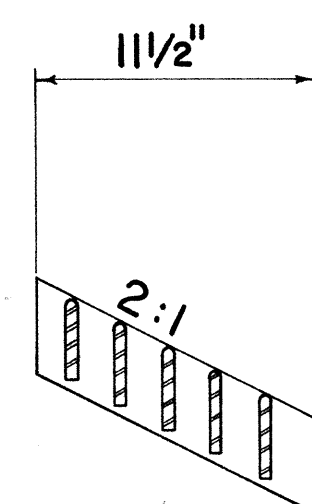
PLAN
Scale: 1 1/2" = 1' - 0"



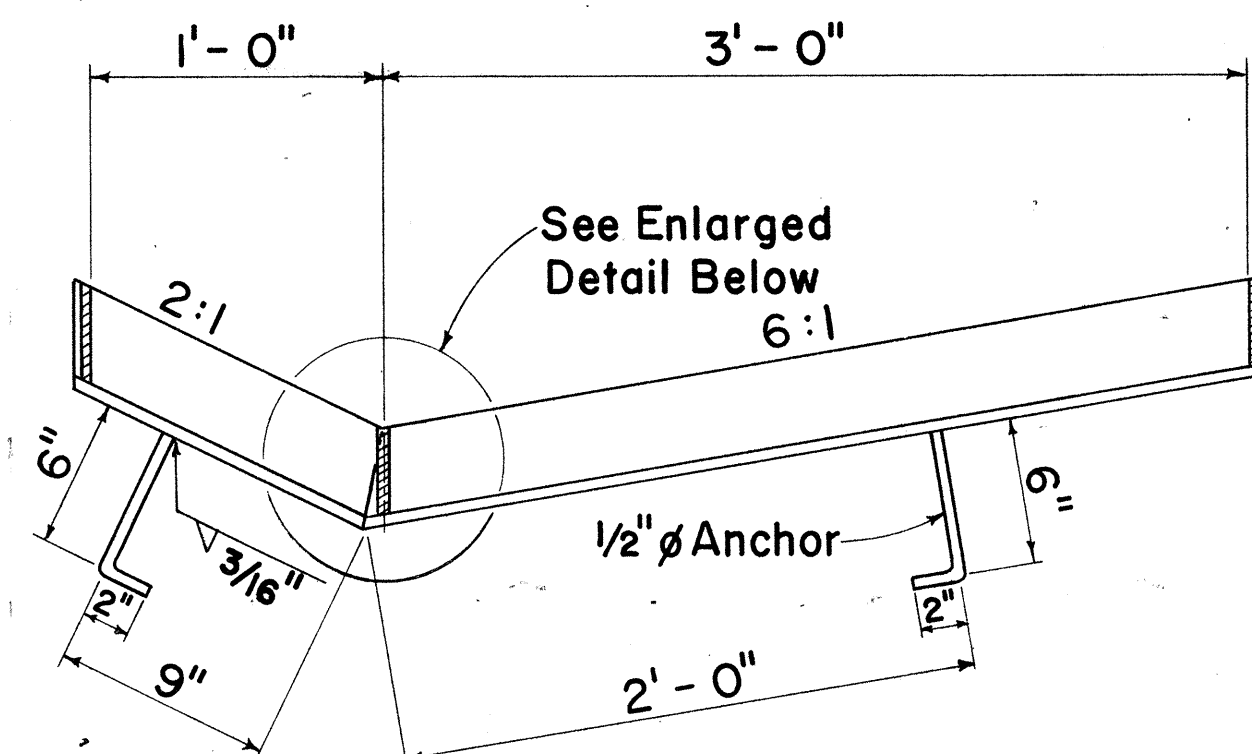
PLAN
Scale: 1 1/2" = 1' - 0"



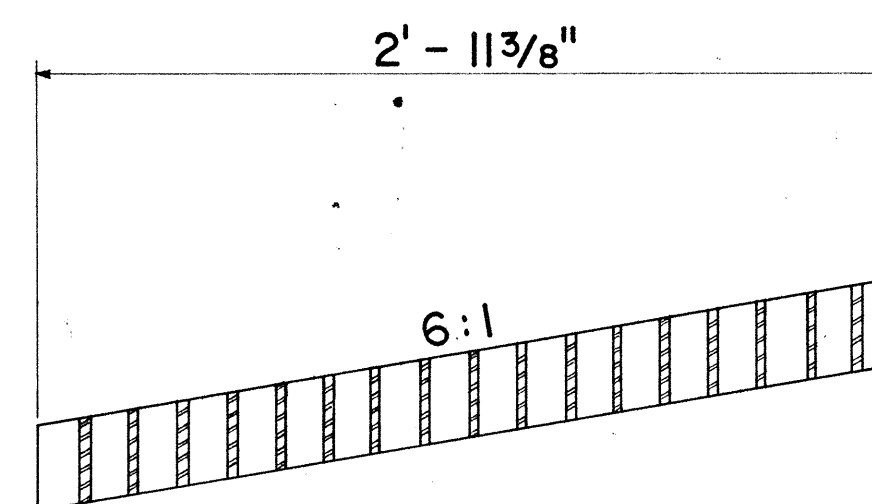
PLAN



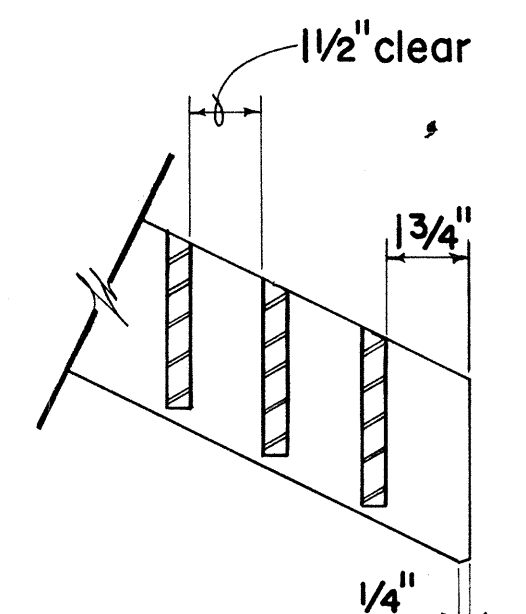
SECTION
Scale: 1 1/2" = 1' - 0"



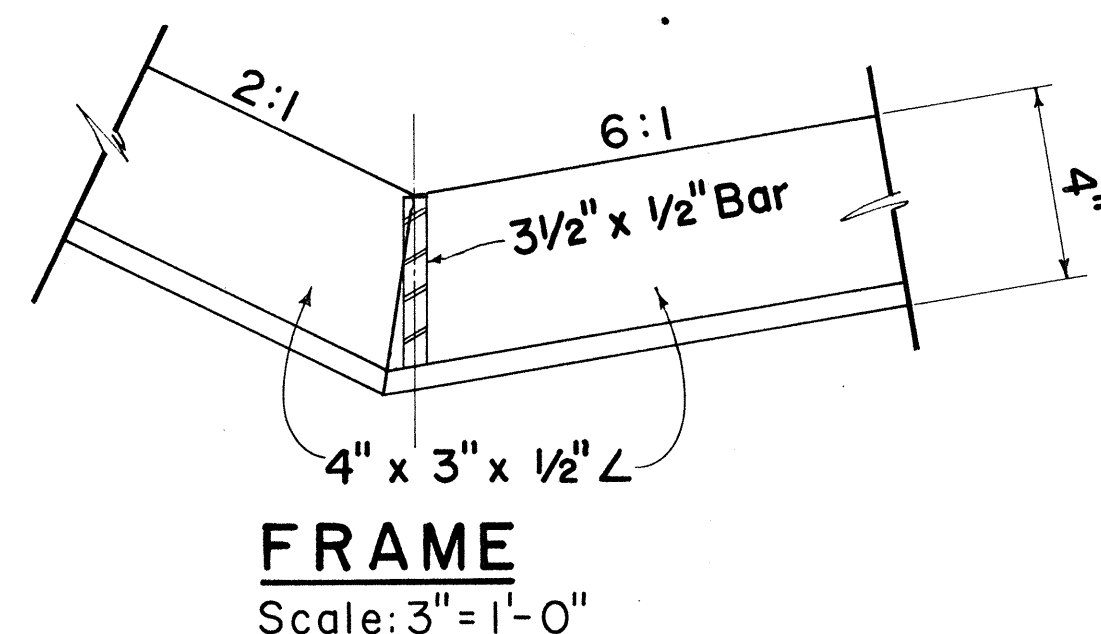
SECTION
Scale: 1 1/2" = 1' - 0"



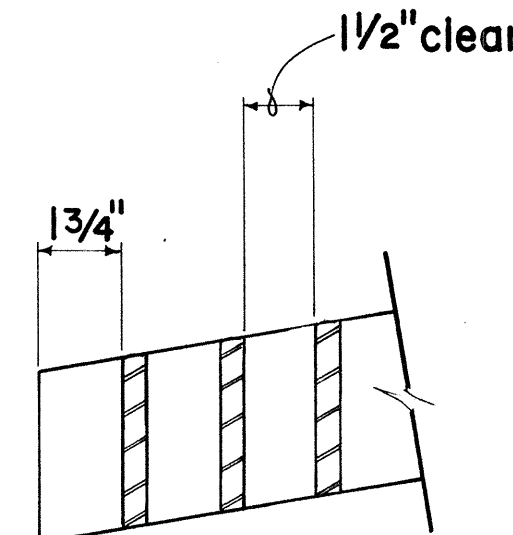
SECTION
Scale: 1 1/2" = 1' - 0"



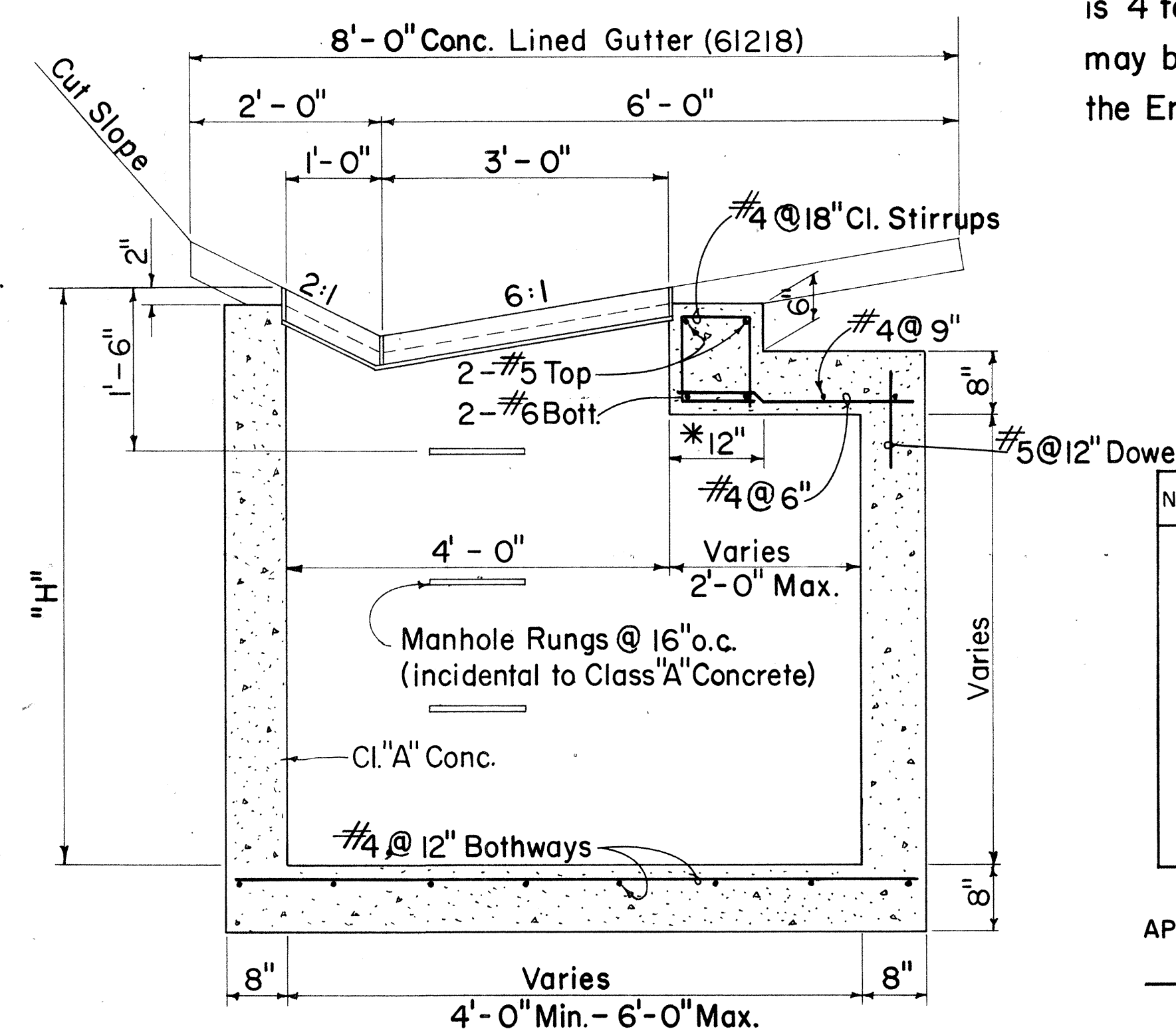
GRATE
Scale: 3" = 1' - 0"



FRAME
Scale: 3" = 1' - 0"



GRATE
Scale: 3" = 1' - 0"



SECTION A - A

DETAIL OF 61214 DROP INTAKE
Scale: 3/4" = 1' - 0"

*For Minimum size box of 4'-0" only, use 8" and eliminate reinforcing steel shown in top portion.

NO.	REVISION	APPROVED BY	DATE

APPROVAL RECOMMENDED:
HYDRAULIC DESIGN ENGINEER 12-17-69
DATE

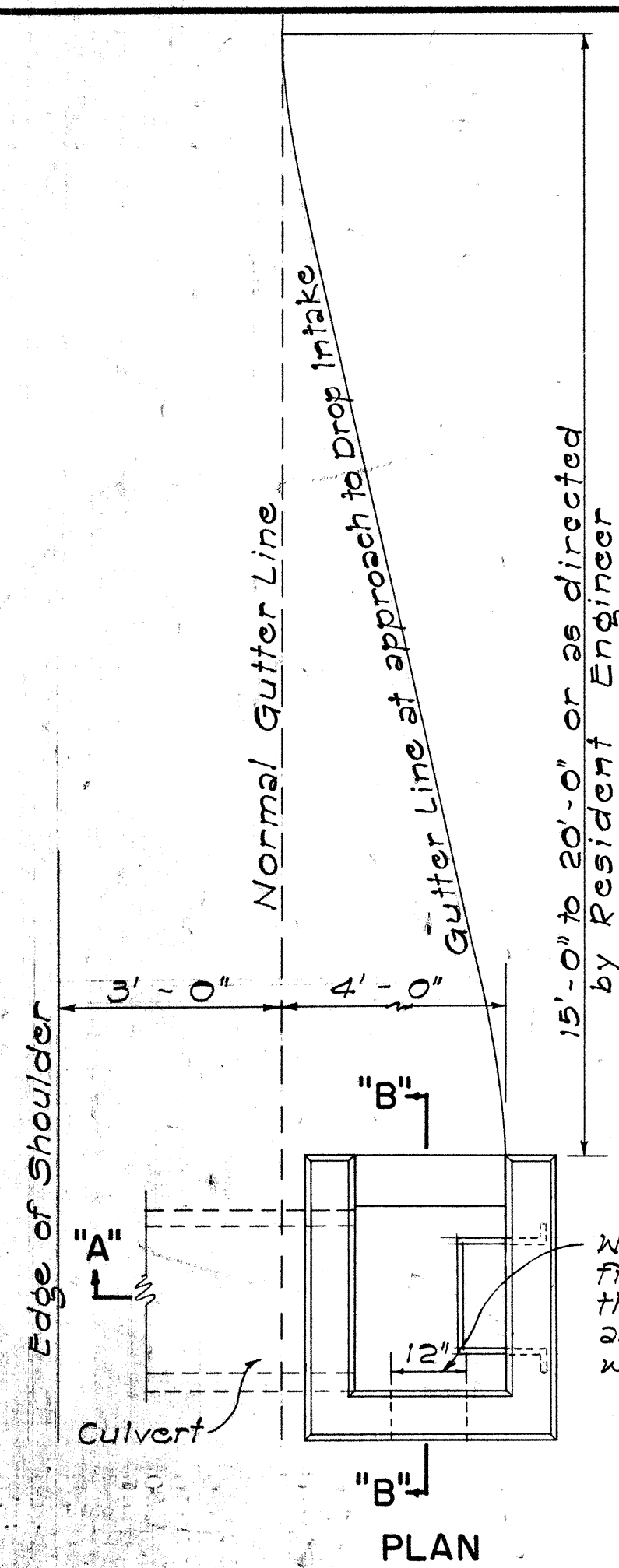
APPROVED:
ASSISTANT CHIEF, ENGINEERING 12-17-69
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
TYPE 61214
GRATED DROP INTAKE

Scales: As Noted Date: July 1969

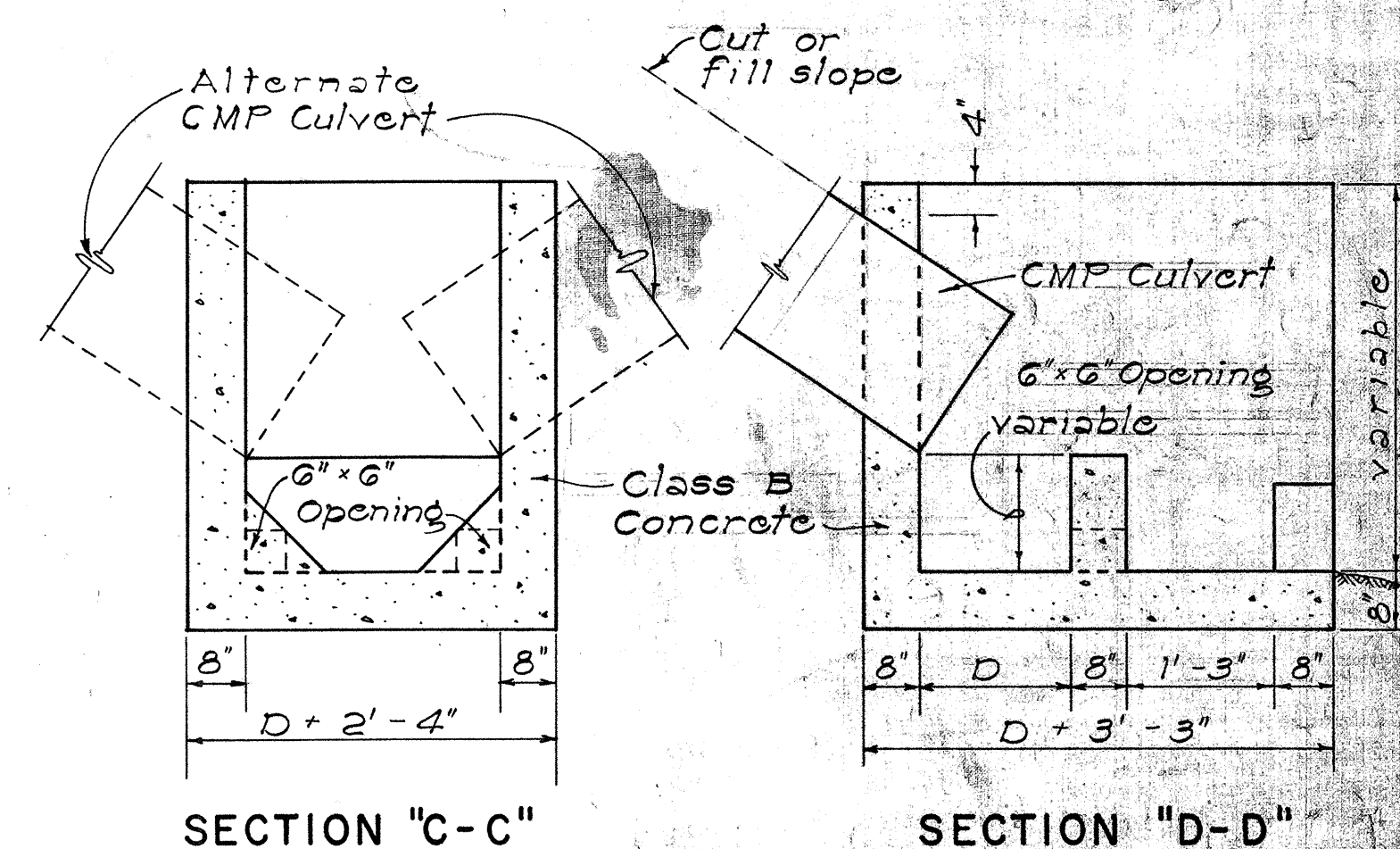
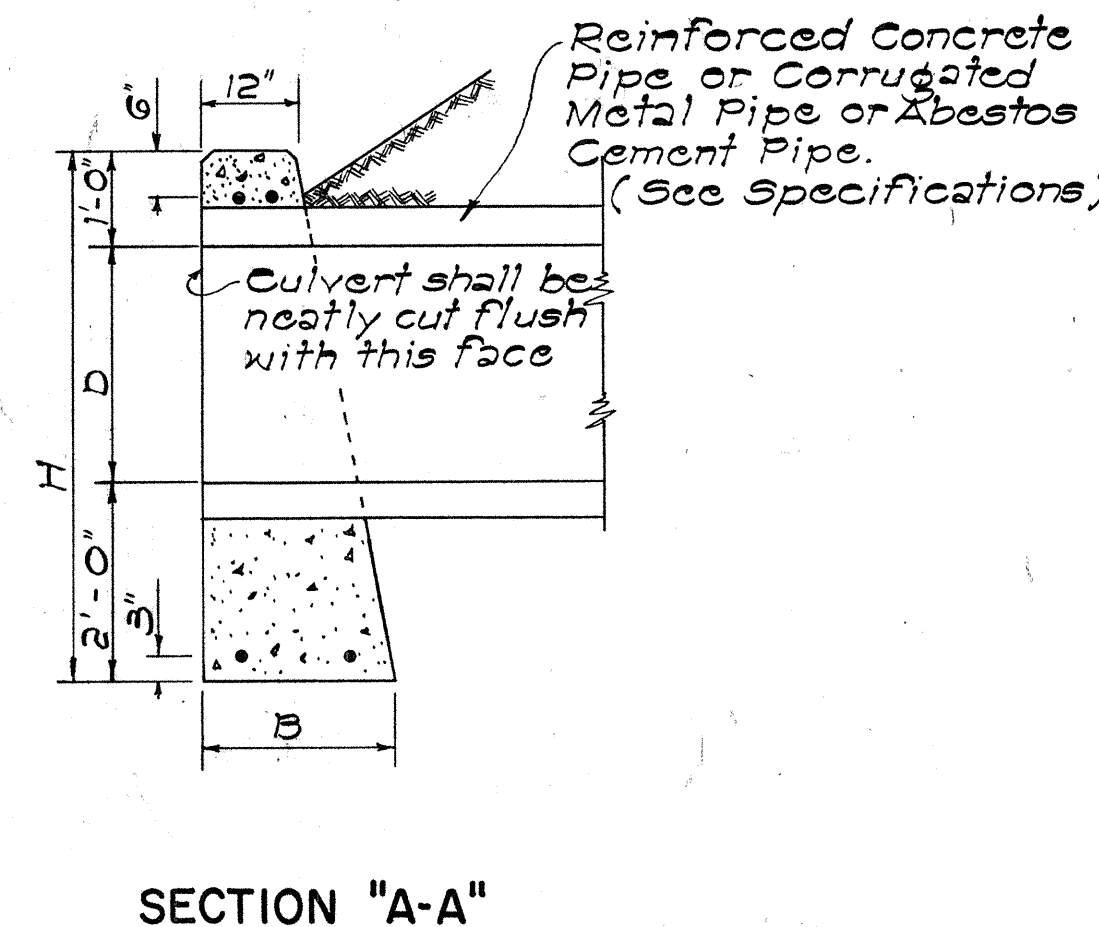
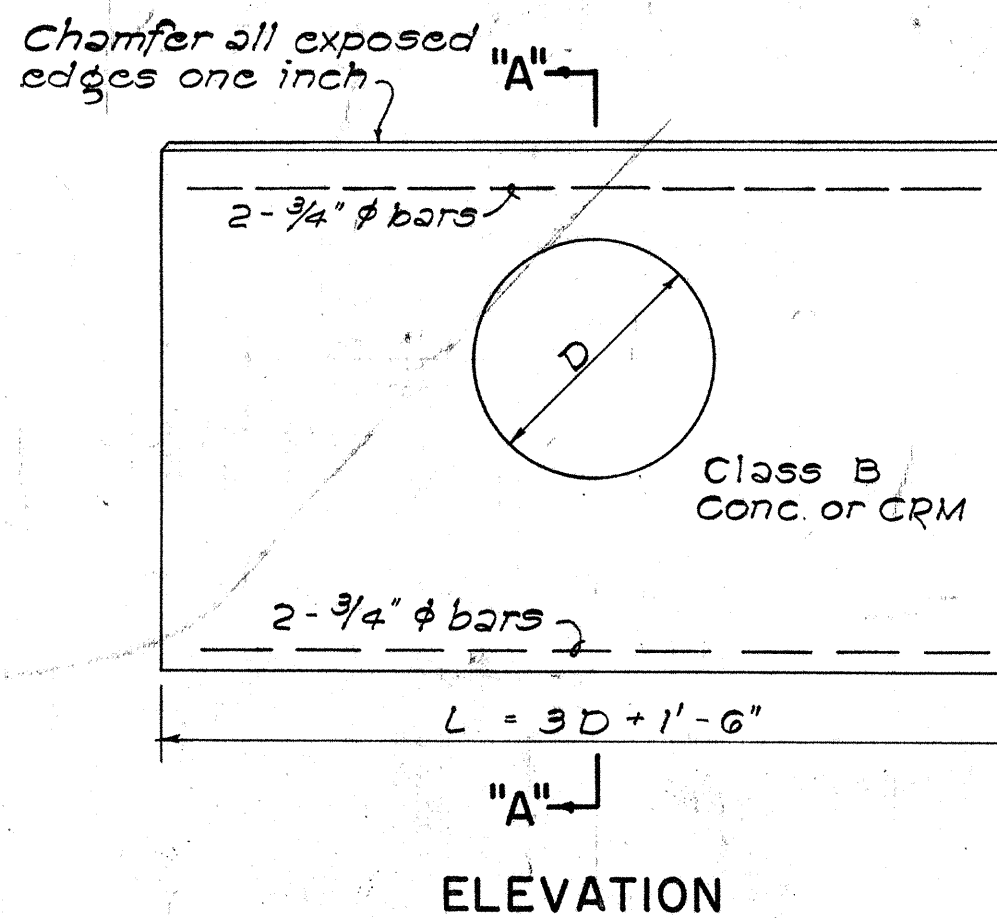
SHEET No. 8 OF 10 SHEETS DH 9

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-12-102-0	1973	615	171



DATA - CONC. DROP INTAKE						Where Variable Equals
D'	D	L-D'+6"	S	Cu. Yds.		
23"	18"	2'-5"	8"	1.41	4'-6"	
30"	24"	3'-0"	8"	1.72	5'-0"	
37"	30"	3'-7"	9"	2.32	5'-6"	
44"	36"	4'-2"	9"	2.73	6'-0"	
51"	42"	4'-9"	10"	3.54	6'-6"	
58"	48"	5'-4"	10"	4.01	7'-0"	

Note: Dimension "X" is assumed as 2'-4" in figuring the above quantities.

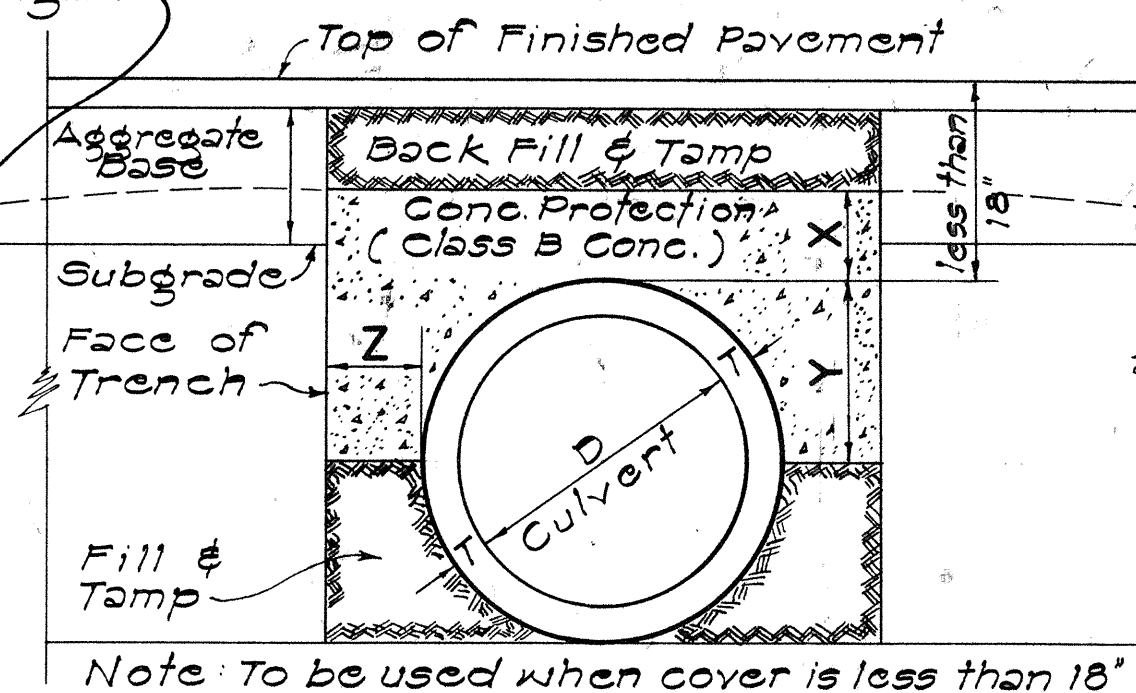


DATA FOR CONC. HEADWALL				Cl. B CONC. FOR R.C.P.	Cl. B CONC. FOR C.M.P.	Steel For One Headwall		
D	B	L	H	Cu. Yd.	Cu. Yd.	No. of Bars	Size	Length
18"	1'-6"	6'-0"	4'-6"	1.12	1.17	4	3/4"	5'-6"
24"	1'-6"	7'-6"	5'-0"	1.52	1.60	4	3/4"	7'-0"
30"	2'-0"	9'-0"	5'-6"	2.36	2.49	4	3/4"	8'-6"
36"	2'-0"	10'-6"	6'-0"	2.94	3.13	4	3/4"	10'-0"
42"	2'-6"	12'-0"	6'-6"	4.19	4.47	4	3/4"	11'-6"
48"	2'-6"	13'-6"	7'-0"	5.01	5.36	4	3/4"	13'-0"

DATA - MASONRY HEADWALL				CRM FOR R.C.P.	CRM FOR C.M.P.
D	B	L	H	Cu. Yd.	Cu. Yd.
18"	1'-9"	6'-0"	4'-6"	1.24	1.29
24"	2'-0"	7'-6"	5'-0"	1.83	1.92
30"	2'-3"	9'-0"	5'-6"	2.56	2.70
36"	2'-6"	10'-6"	6'-0"	3.43	3.66

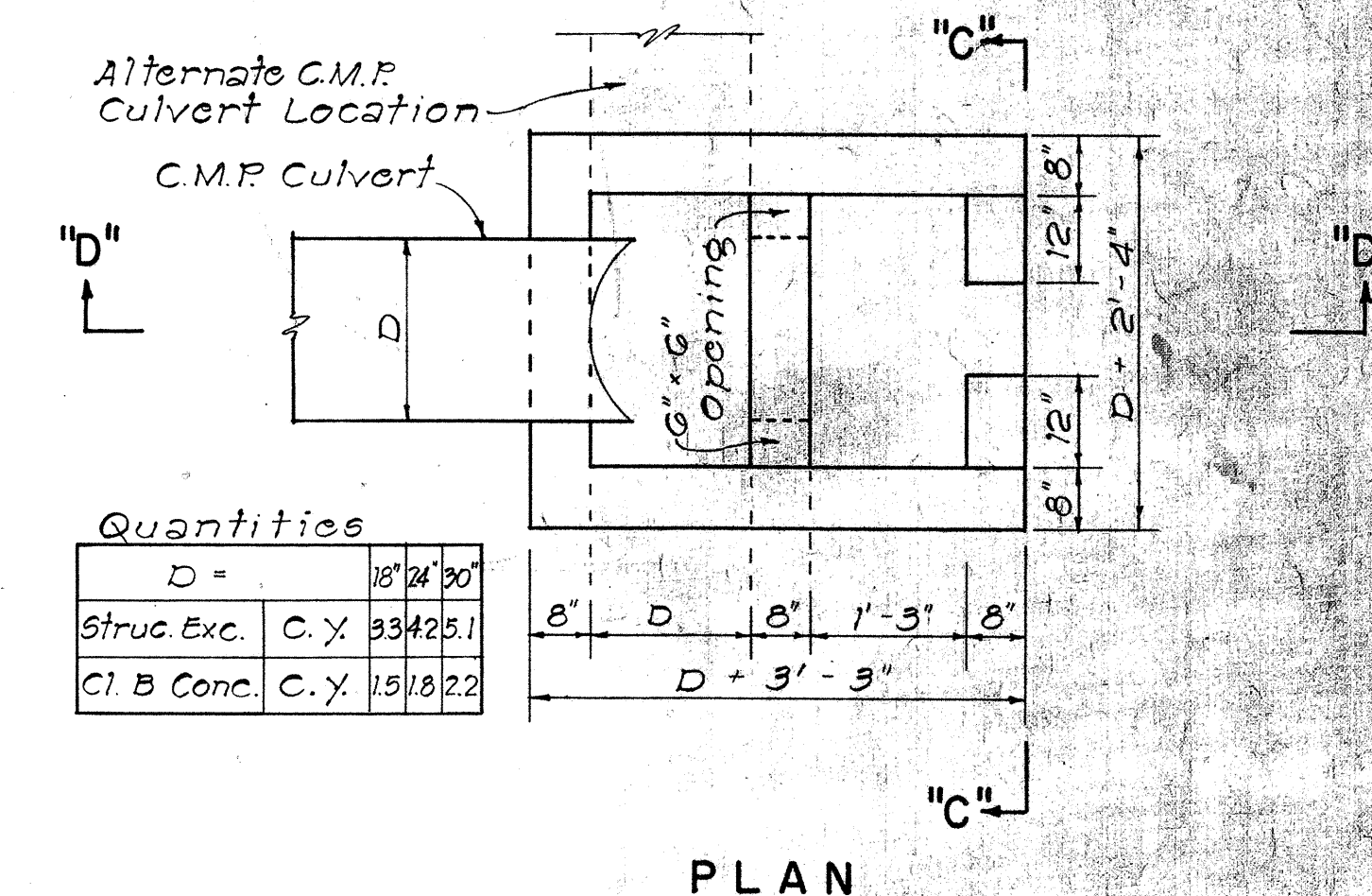
DETAIL OF HEADWALL
Scale: 1/2" = 1'-0"

Note: When subgrade is below top of jacket, it shall be fully compacted to this line and then re-excavated (struc. exc.) to proper subgrade. This surface shall be rolled again.



DATA FOR CONCRETE PROTECTION OVER CULVERTS		
X	Y	Z
6" for 18" D.	D 2 + T	Z must be from pipe to face of trench
7" for 24" D		Minimum = X
8" for 30" D		Maximum pay quantity will be Z = 12"
9" for 36" D		
10" for 42" D		
11" for 48" D		
12 for 54" D		

SECT. OF CULVERT WITH CONC. PROTECTION
Scale: 1" = 1'-0"



DETAILS OF CONC. DROP BOX AT OUTLET OF CULVERT PIPE
NOT TO SCALE

APPROVAL RECOMMENDED:
HYDRAULIC DESIGN ENGINEER
12-17-69
DATE

APPROVED:
ASSISTANT CHIEF, ENGINEERING
12-17-69
DATE

NO.	REVISION	APPROVED BY	DATE
1	Spacing on Manhole Rungs to conform to OSHA.	H.S.	1-21-75

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

DROP INTAKE, HEADWALL & CONCRETE PROTECTION

Scale: As Noted. Date: Aug. 1967

SHEET No. OF SHEETS

DATE	12-17-69
SURVEY PLOTTED BY	
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	

DETAIL OF CONCRETE DROP INTAKE
Scale: 1/2" = 1'-0"

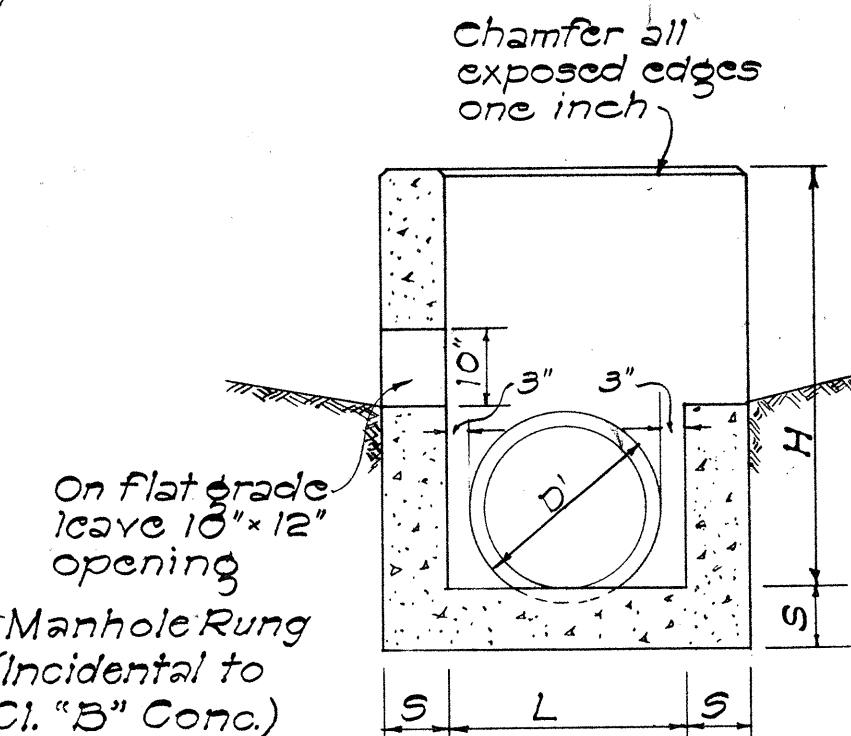
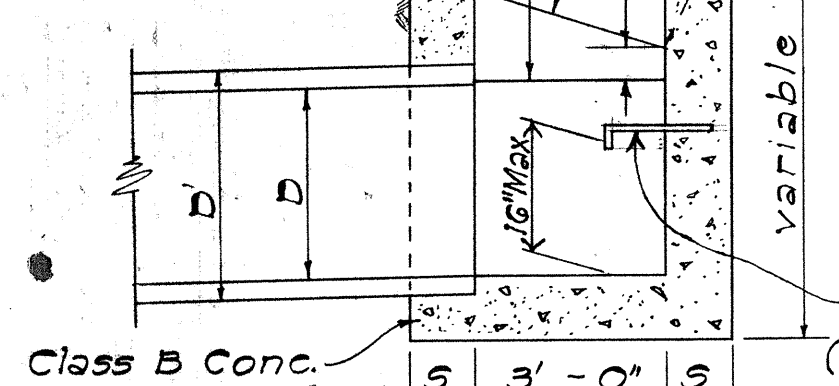
GENERAL NOTES

- Culvert shall enter and leave Drop Intake from any position and in the direction indicated by the plans or ordered by the Engineer.
- D' shall be the maximum outside dimension of the culvert at the Drop Intake wall.
- Manhole Rungs (12" o.c.) are required when "H" is greater than 4 feet 6 inches. Only one rung (10 inches from the bottom) is required if "H" is 4 feet 6 inches or less. Manhole Rungs may be placed at any location as ordered by the Engineer.

Excavate recess in roadway excavation slope for inlet to dimensions and form designated by the Engineer. This is "Unclassified Excavation."

Top limits of structure excavation other than at bridges

12" unless otherwise noted



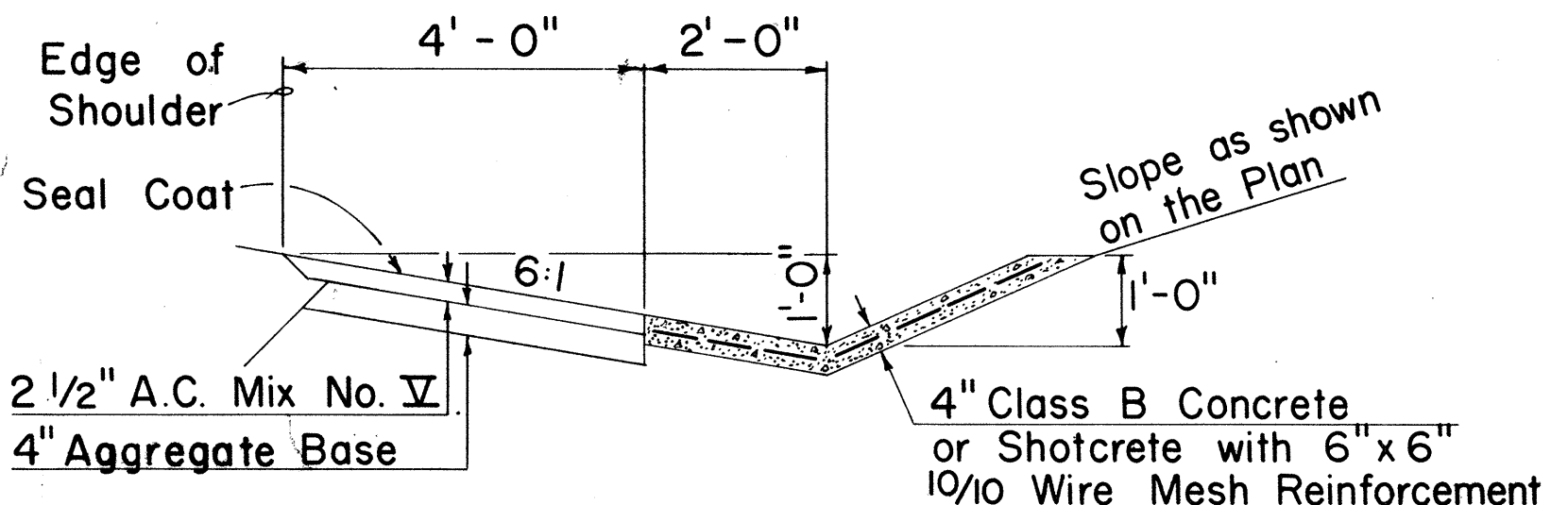
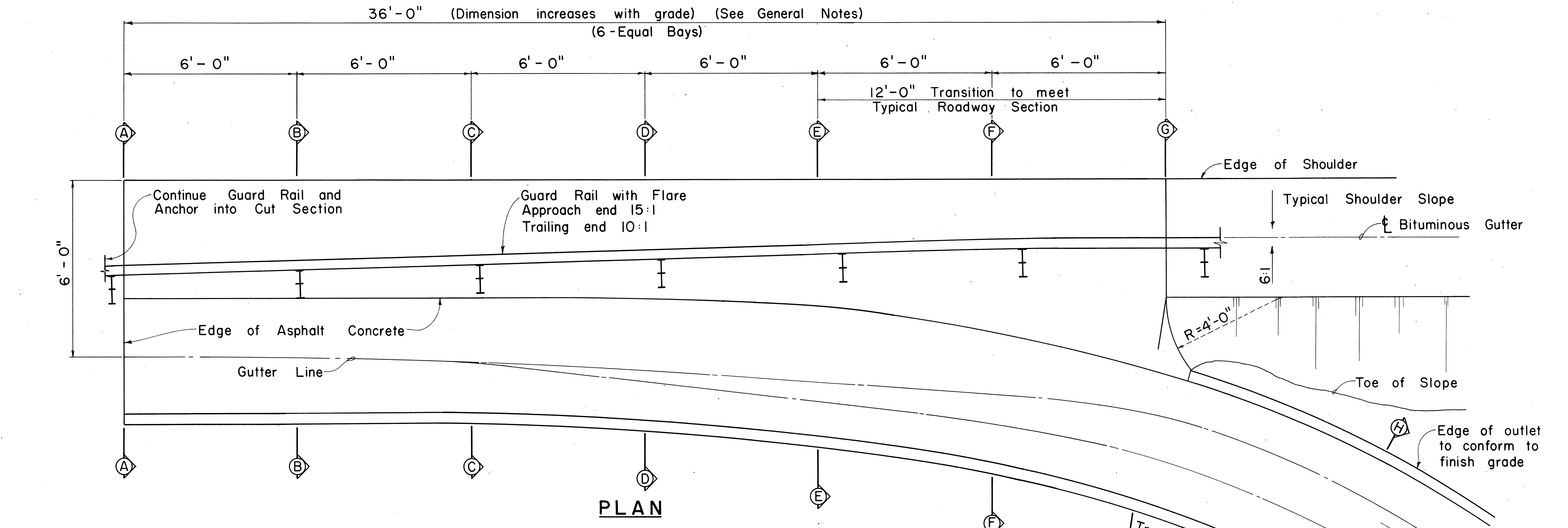
On flat grade leave 10"x12" opening

Manhole Rung (Incidental to Cl. "B" Conc.)

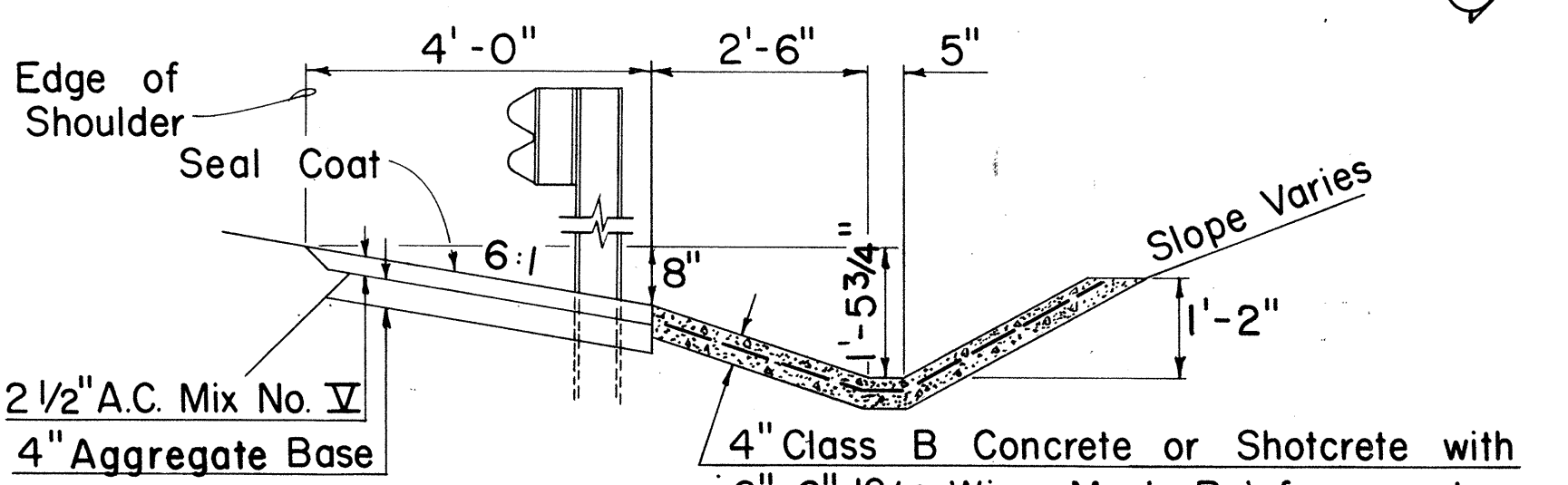
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-11(12)0	1973	62	171

GENERAL NOTES

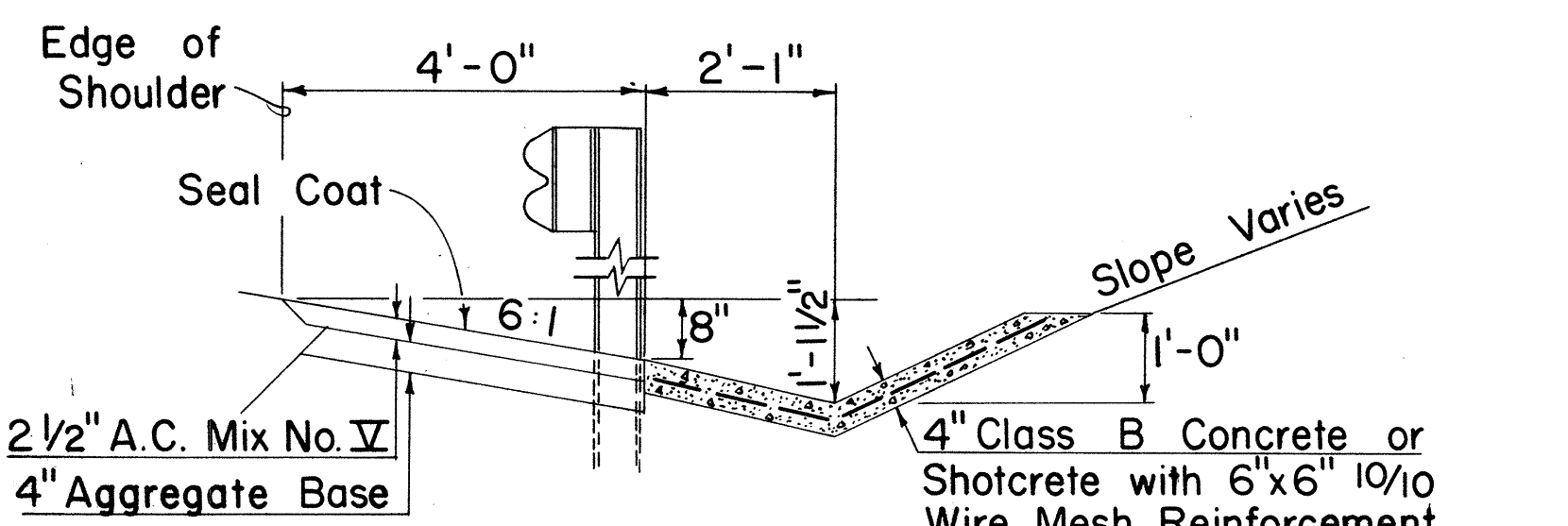
1. If the average grade of pavement for the distance from Section A-A to Section G-G exceeds 2% this distance shall be increased 6' for each 1% increase in grade.
2. Wire Mesh Reinforcement to be incidental to Class B Concrete or Shotcrete.
3. The gutter will be paid for at the contract unit price per linear foot for Asphalt Concrete Gutter, Type 7.
4. 4" Aggregate Base to be incidental to Asphalt Concrete Gutter.



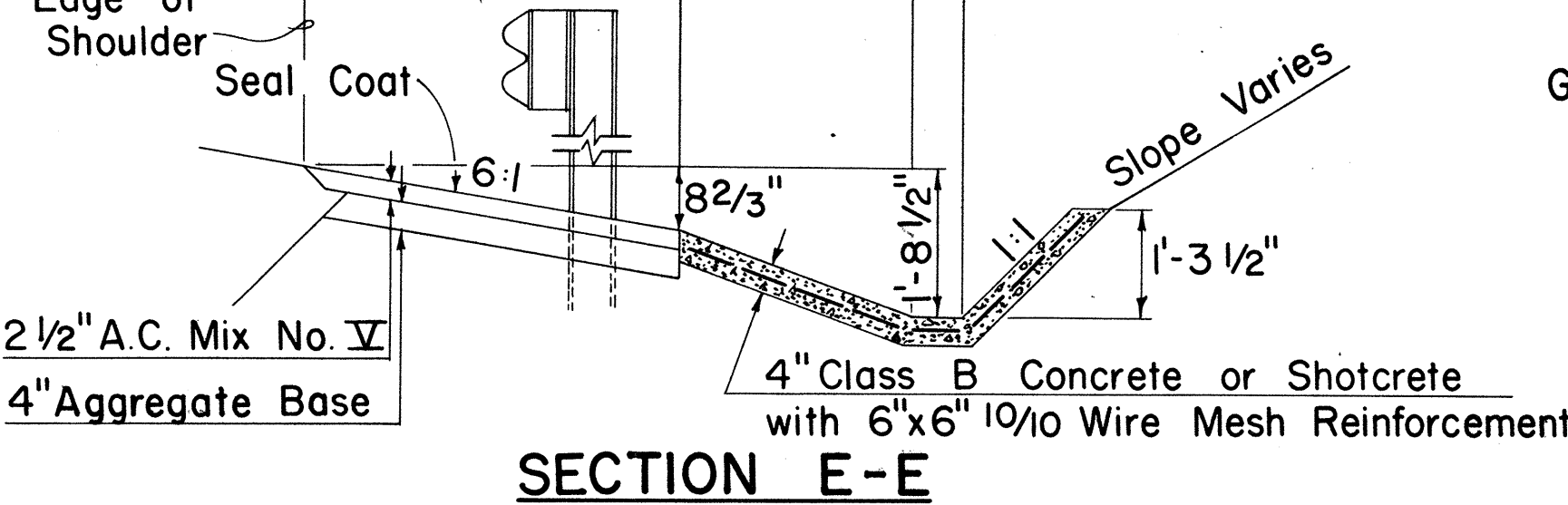
SECTION A-A



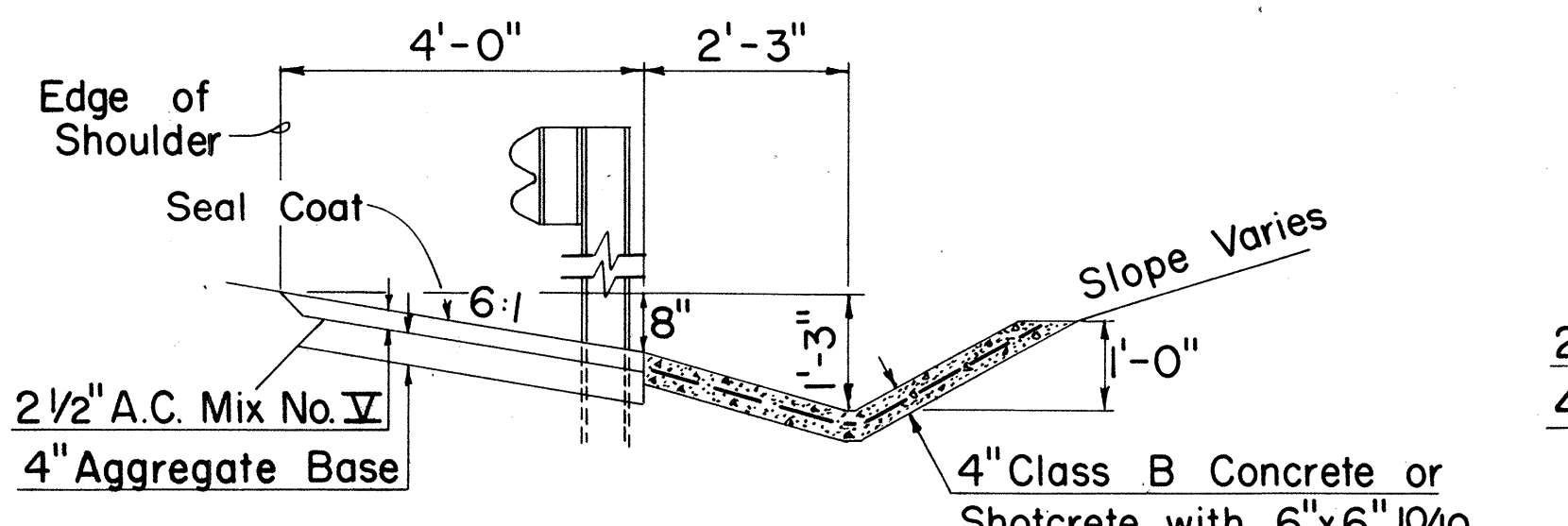
SECTION D-D



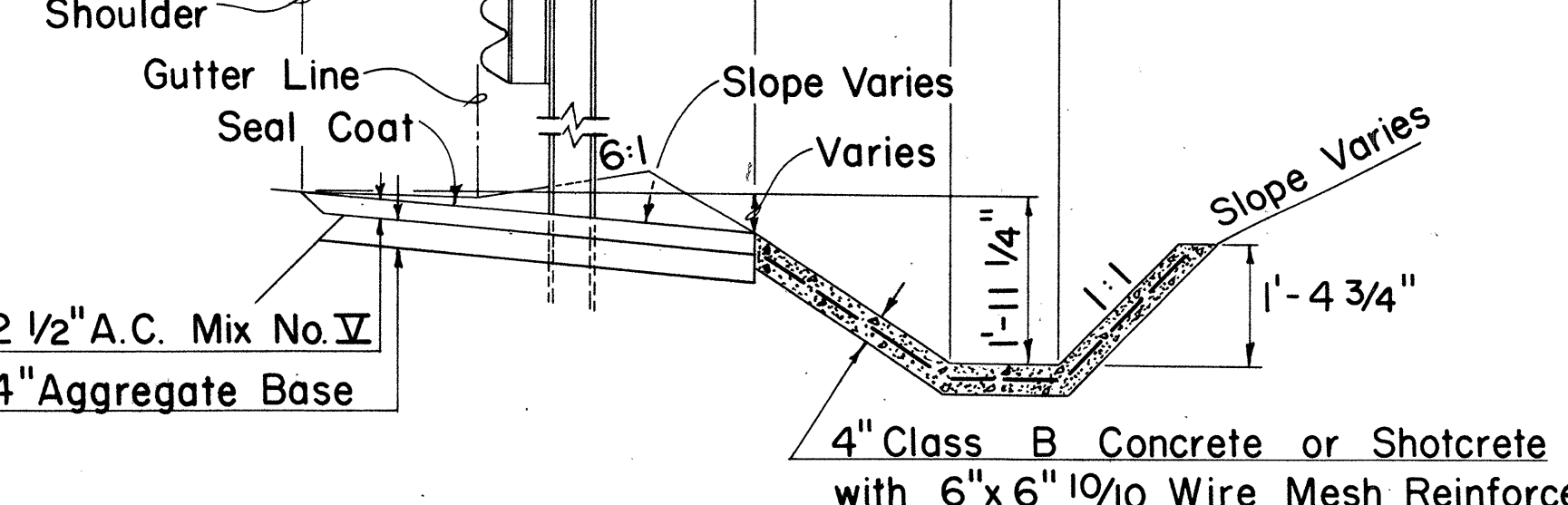
SECTION B-B



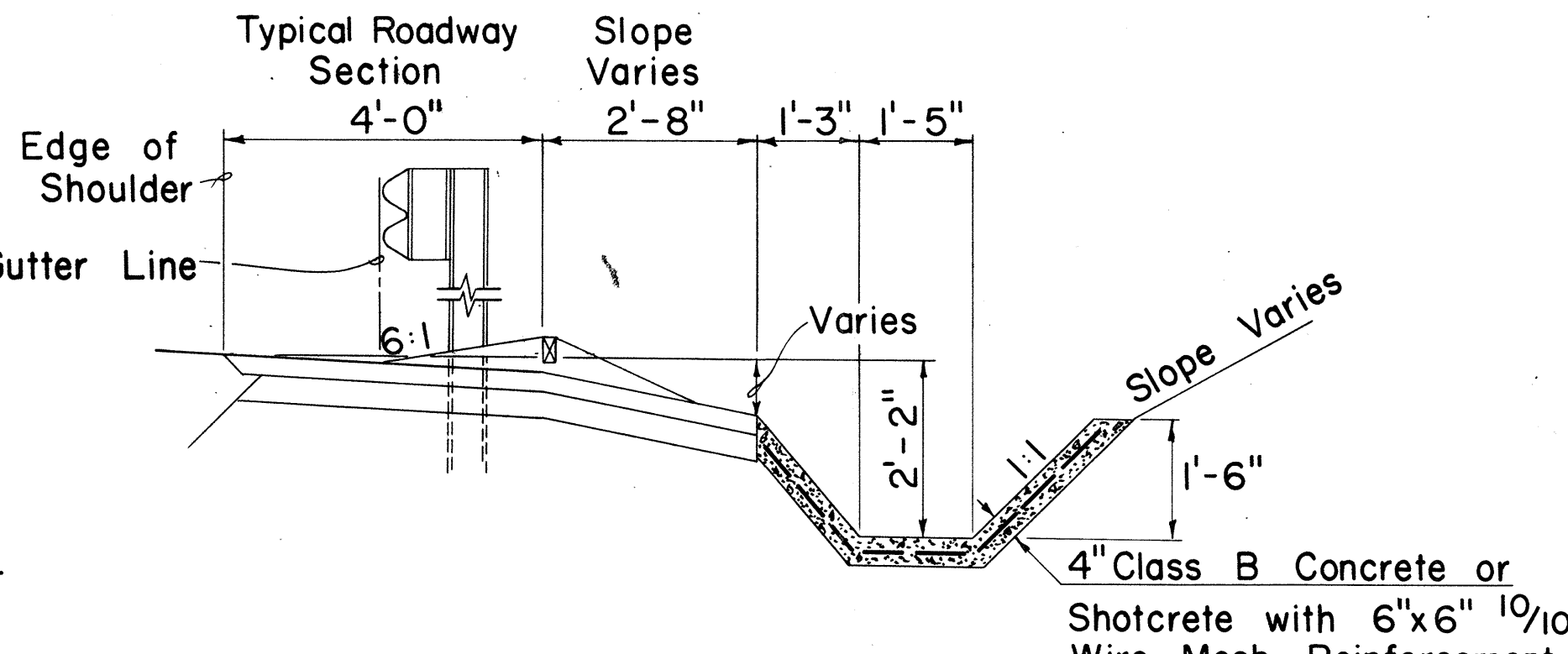
SECTION E-E



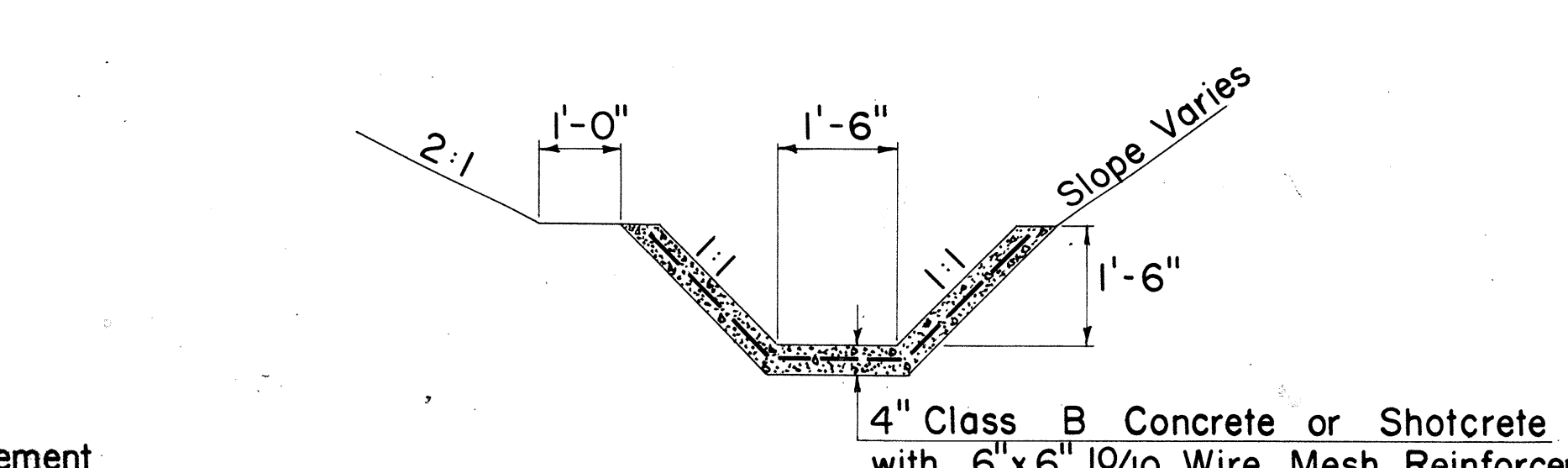
SECTION C-C



SECTION F-F



SECTION G-G



SECTION H-H

APPROVAL RECOMMENDED:
 HYDRAULIC DESIGN ENGINEER
 DATE 2-2-71

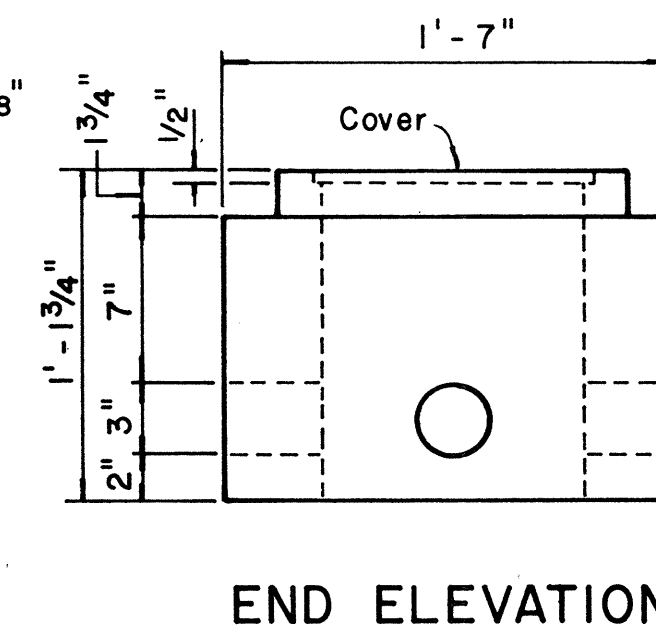
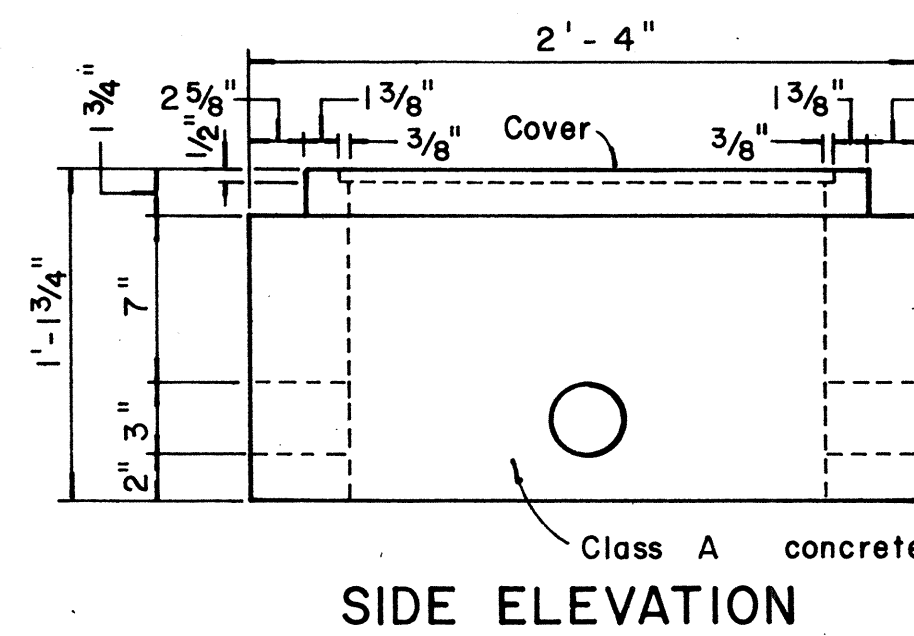
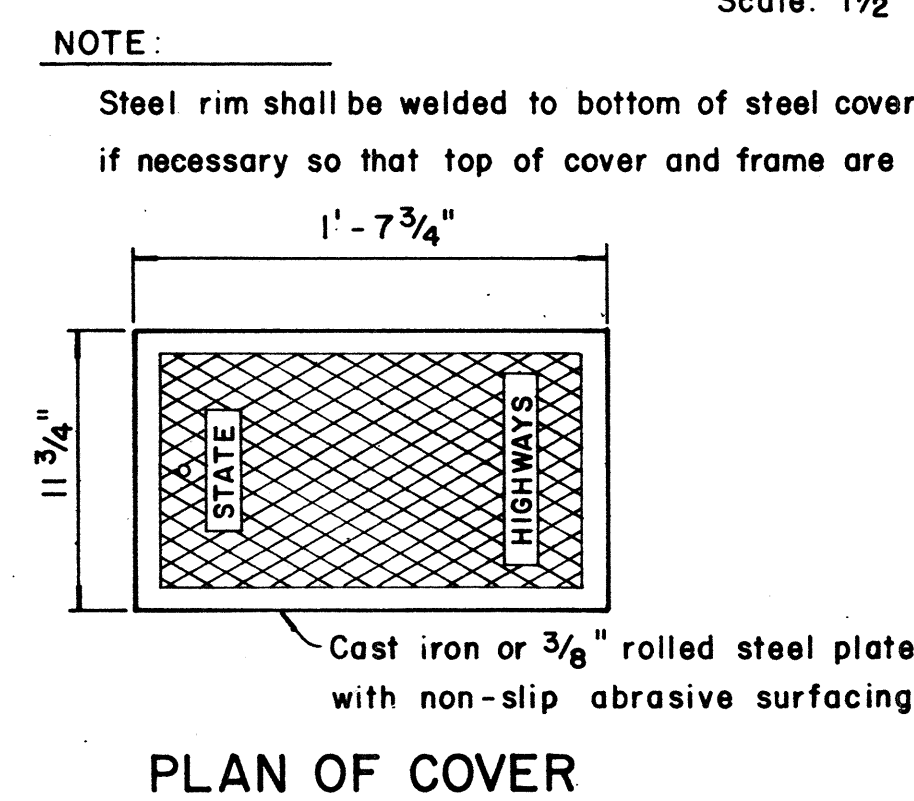
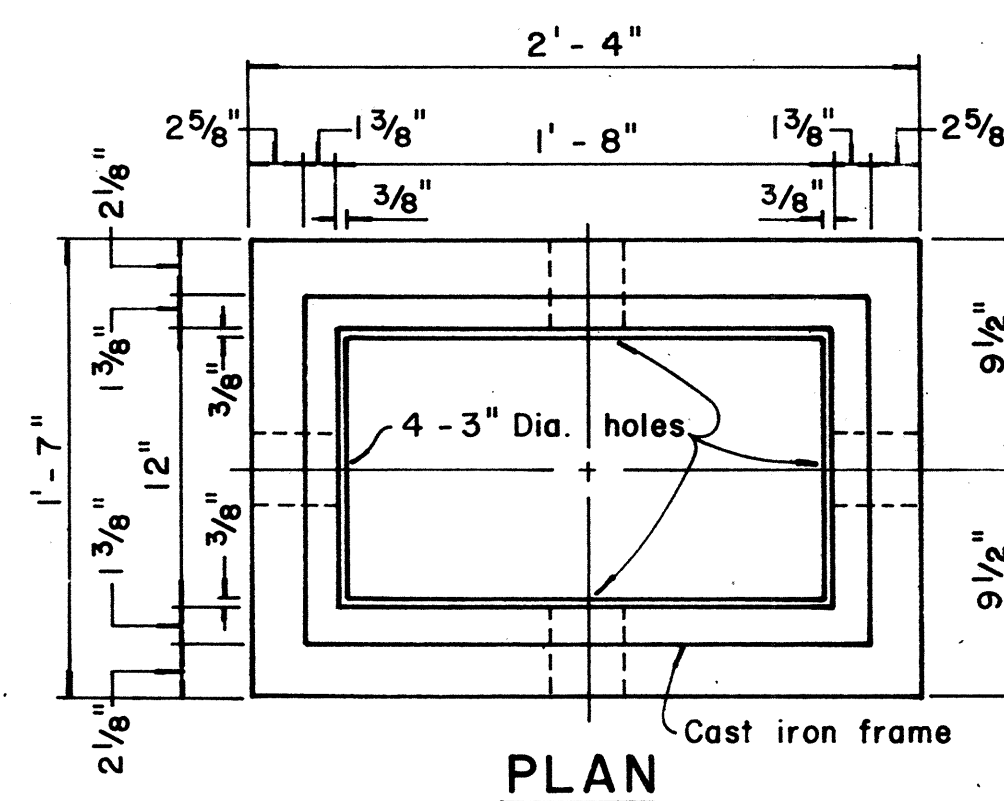
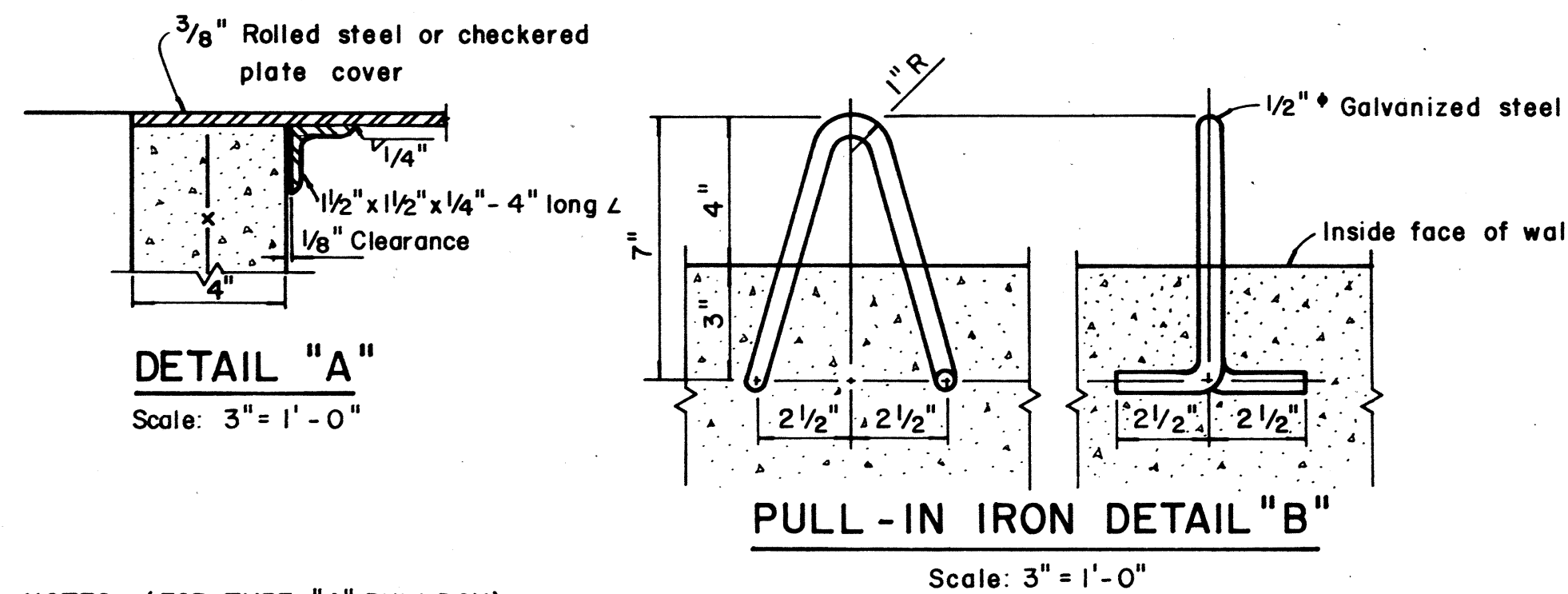
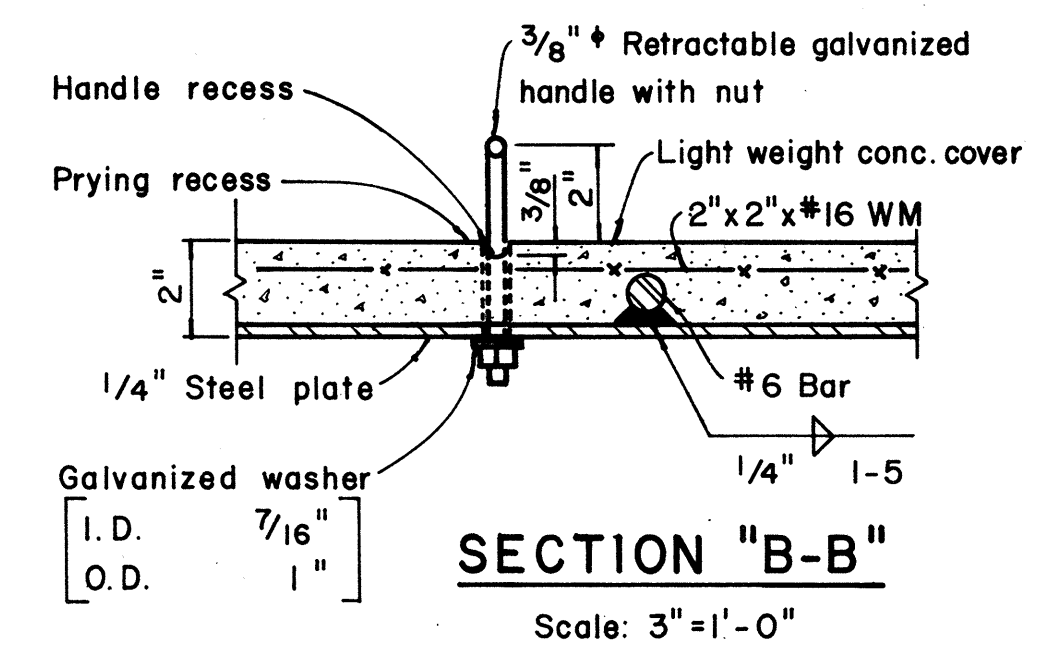
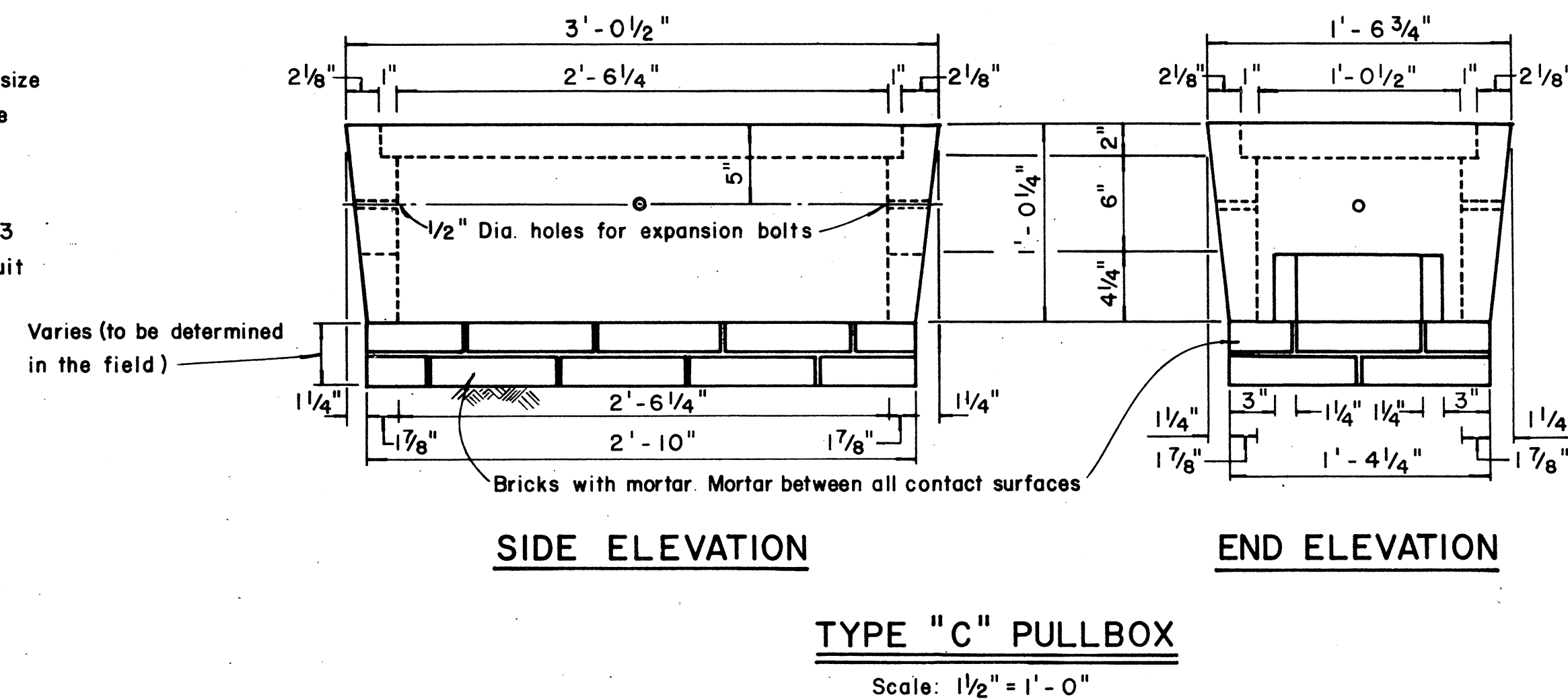
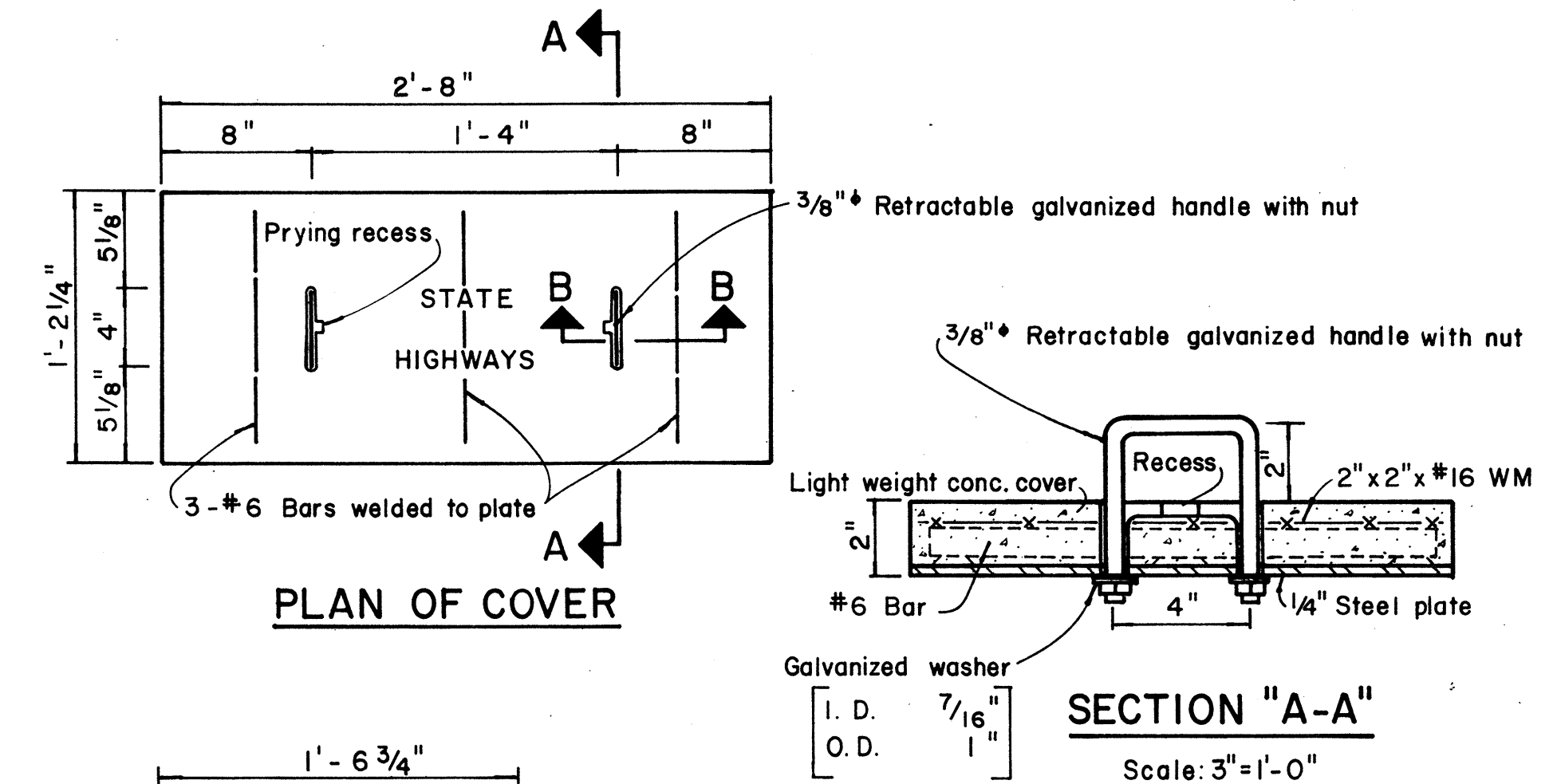
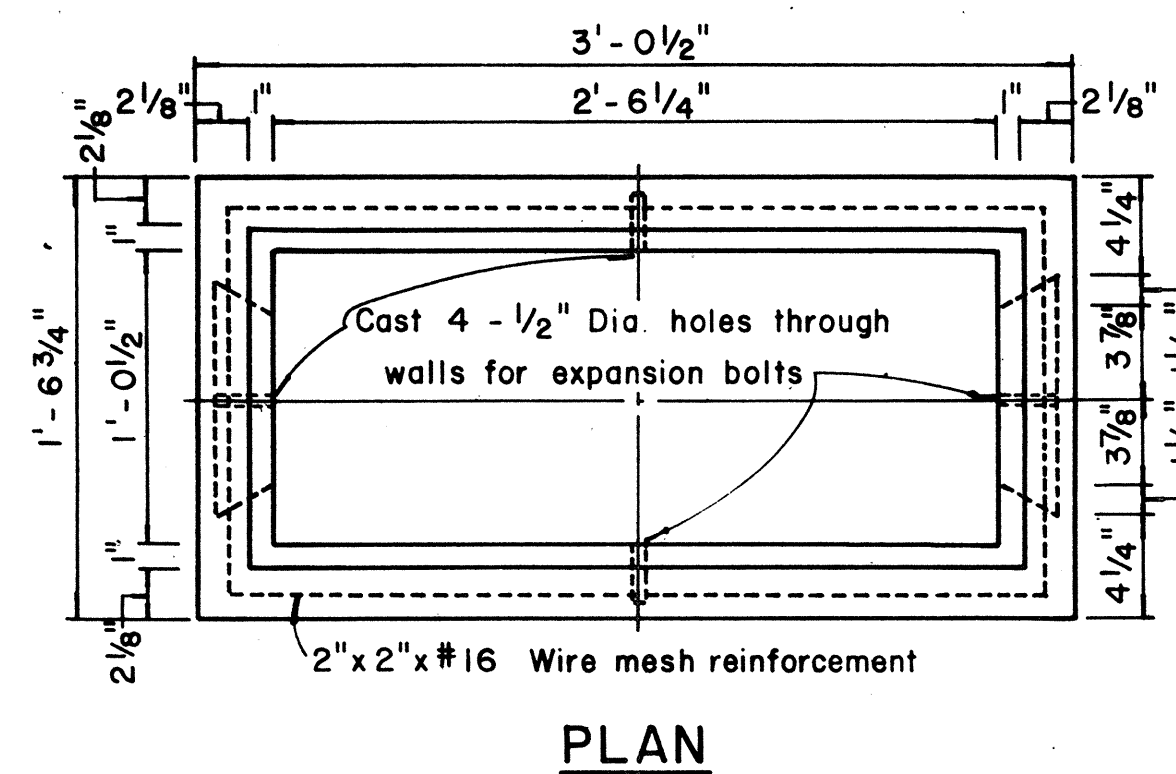
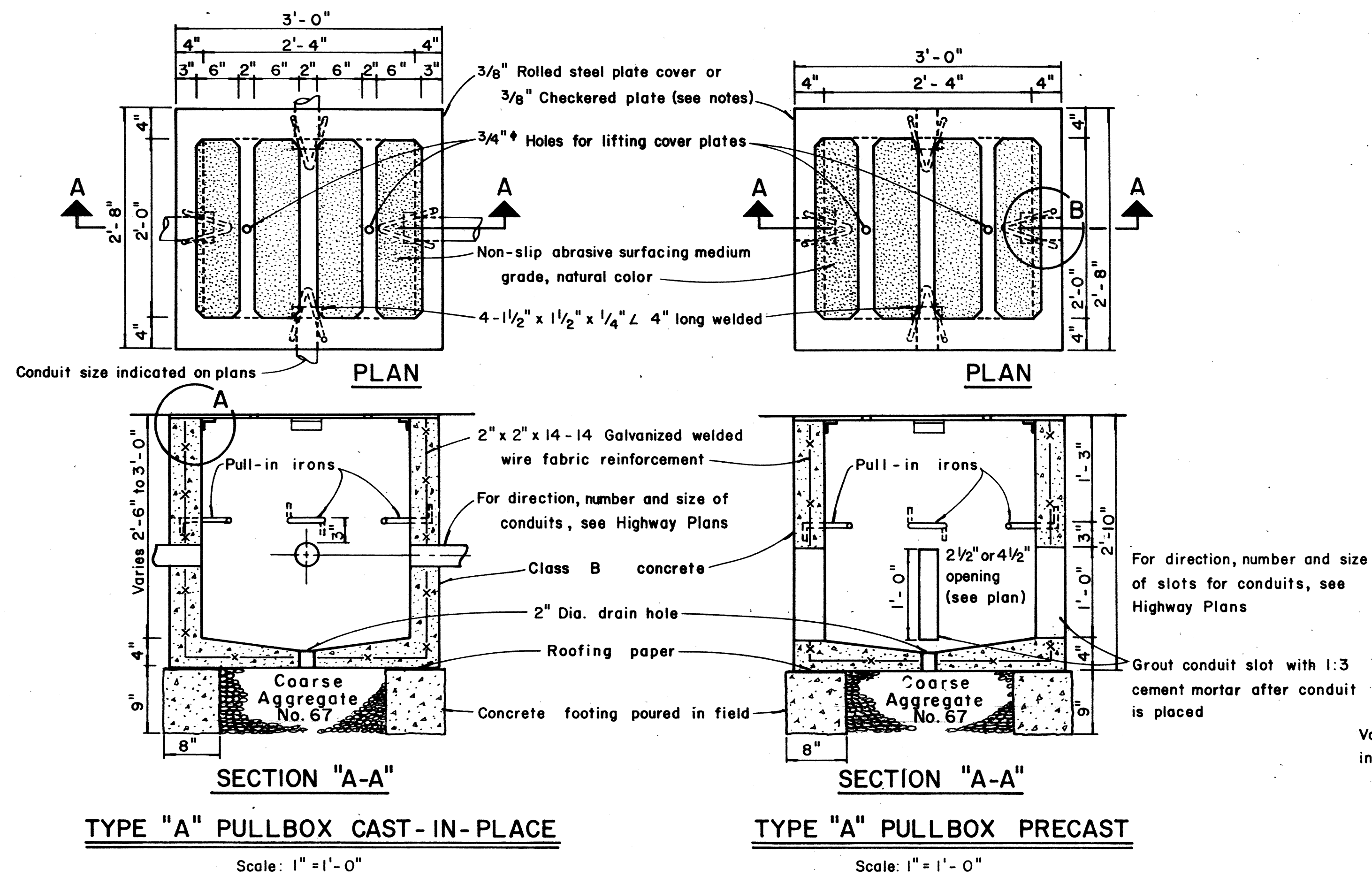
APPROVED:
 ASSISTANT CHIEF, ENGINEERING
 DATE 2-25-71

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION STANDARD DETAILS CONCRETE SPILLWAY INLET

Scale: 1/2" = 1'-0"
 Date: January, 1971
 SHEET No. OF SHEETS DH 20

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H2-1(12)-0	1973	63	171



NOTE:

Steel rim shall be welded to bottom of steel cover if necessary so that top of cover and frame are flush

NOTES: (FOR TYPE "A" PULLBOX)

1. $\frac{3}{8}$ " Rolled steel plate cover with non-slip abrasive surfacing medium grade, natural color shall be used on all pullboxes located on sidewalk areas where pedestrians are walking.
2. $\frac{3}{8}$ " Checkered plate cover shall be used on all pullboxes located in median areas and other locations where there are no pedestrians walking.
3. Pull irons shall be placed opposite each conduit slot.
4. Covers on all pullboxes located in sidewalk areas shall be set flush with the concrete sidewalk.
5. Each pullbox shall have a pair of pull irons opposite each other for lifting purposes.

APPROVAL RECOMMENDED: Erich Tanaka 12/29/22
TRAFFIC ENGINEER DATE

APPROVED: 2/1/11 22 Feb 12-30-69
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
PULLBOXES

Scale as noted Date: _____

SHEET No. 10 OF 10 SHEETS DT 401