

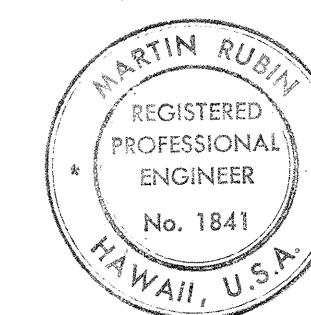
SUMMARY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(109)13	1975	36	130

[illegible]

* SEE DETAIL DRAWINGS FOR LUMP SUM ITEMS

28Apr75	Add quantities for retaining wall at North Halawa Stream
DATE	REVISION



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE ESTIMATED QUANTITIES

INTERSTATE ROUTE H-1
PROJ. NO. I-H1-1(109):13

DATE: DEC. 29, 1972

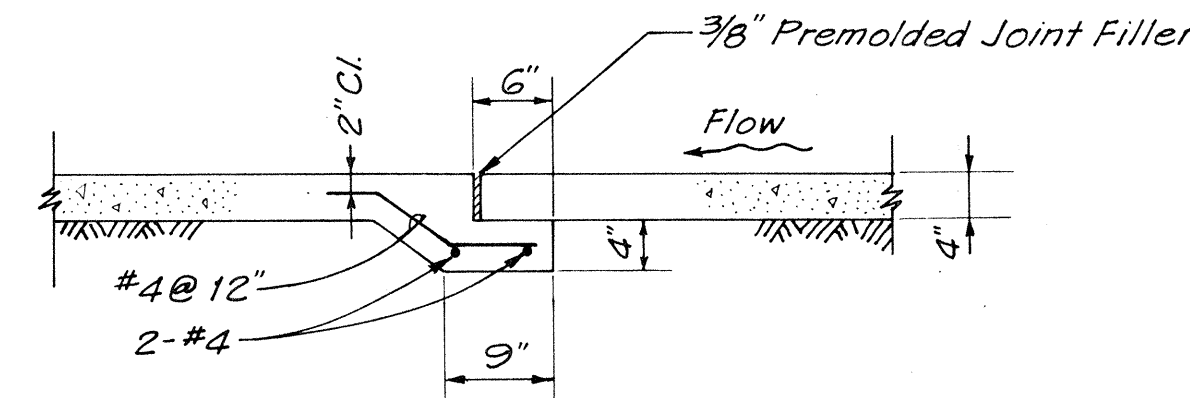
SHEET No. 1D OF 11 SHEETS

SCHEDULE OF ROADWAY LINED GUTTERS & DITCHES								
LOCATION	TYPE	BITUMINOUS GUTTER TYPE 7A	BITUMINOUS GUTTER TYPE 7B	BITUMINOUS GUTTER TYPE 7C	LINED DITCHES (VEE)	LINED DITCHES (TRAPEZOIDAL)	DITCH & CHANNEL EXCAVATION	
H-3 Sta. 298+00, 84' Lt. To M Sta. 14+50, 23' Rt.	7B		2100					
M Sta. 14+50, 23' Rt. To M Sta. 15+60, 37' Rt.	7B-12					110	145	
H-3 Sta. 298+00, 65' Rt. To H-3 Sta. 287+68, 77' Rt.	7A	1032						
H-3 Sta. 287+68, 77' Rt. To H-3 Sta. 287+32, 82' Rt.	7A *	36						
H-3 Sta. 287+32, 82' Rt. To SHS Sta. 23+20, 23' Lt.	8					60	16	
H-3 Sta. 266+32, 65' Lt. To H-3 Sta. 265+40, 65' Lt.	7A	92						
H-3 Sta. 271+37, 65' Lt. To H-3 Sta. 270+12, 65' Lt.	7A	125						
H-3 Sta. 270+12, 65' Lt. To H-3 Sta. 269+82, 78' Lt.	7D	30						
H-3 Sta. 269+82, 78' Lt. To NHS Sta. 9+76, 17.5' Rt.	I				20		2	
SHS Sta. 35+70, 60' Lt. To SHS Sta. 35+20, 15' Rt.	11					65	37	
H-3 Sta. 290+18, 127' Lt. To H-3 Sta. 289+85, 84' Lt.	13					40 60	38	
N Sta. 20+50, 8' Rt. To N Sta. 26+50, 8' Rt.	7C			790 600				
N Sta. 26+50, 8' Rt. To N Sta. 27+50, 8' Rt.	7F			100				
N Sta. 27+50, 8' Rt. To N Sta. 28+50, 8' Rt.	7C			100				
N Sta. 27+00, 12' Rt. To SHS Sta. 19+38, 23' Lt.	14				43		12	
H-3 Sta. 268+50, 62' Rt. To H-3 Sta. 265+53, 74' Rt.	7C			304				
M Sta. 19+45, 42' Rt. To M Sta. 15+60, 37' Rt.	12					390	514	
M Sta. 15+31, 24' Rt. To M Sta. 19+50, 24' Rt.	7C			419				
SHS Sta. 26+27, 42' Rt. To SHS Sta. 26+27, 16' Rt.	I				33			
TOTAL THIS SHEET		1315	2100	1773 1104	329 63	665 685	764	
	ITEM NO.	609.700	609.701	609.702	640.010	640.020	207.01	
		LF	LF	LF	LF	LF	CY	

TYPE	A	B	C	D	CONCRETE	REINFORCING	EXCAVATION
1	1	2	0	2	0.0607 CY/LF	1.0209 #/LF	0.1152 CY/LF
8	1.5	1.5	1.5	1.5			0.2735 CY/LF
11	2	4	2	4	0.1405 CY/LF	2.3630 #/LF	0.5761 CY/LF
12	3	6	4	6	0.2203 CY/LF	3.7053 #/LF	1.3168 CY/LF
13	2.5	5	1	5			0.6350 CY/LF
14	1	6	0	6			0.2890 CY/LF

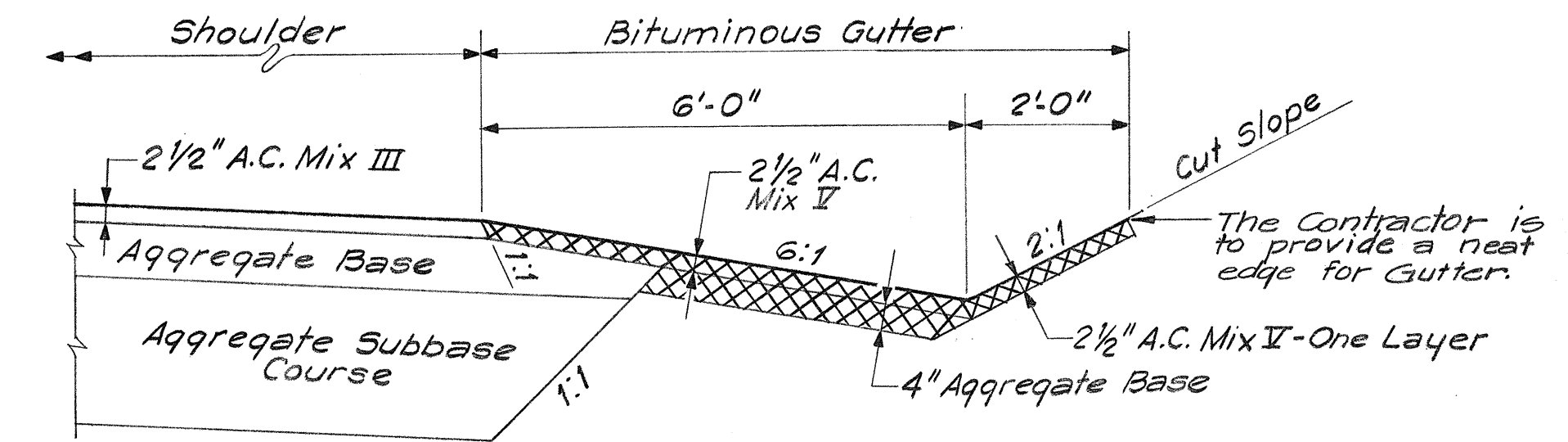
1. Provide Weepholes for Ditches with Depth A $\geq$ 2'-0" only.
2. Ditch Transitions shall be paid under the adjacent downstream Ditch Type.

TYPICAL CONSTRUCTION JOINT @ 30' o.c.
FOR LINED DITCHES
Scale: 3/4" = 1'-0"

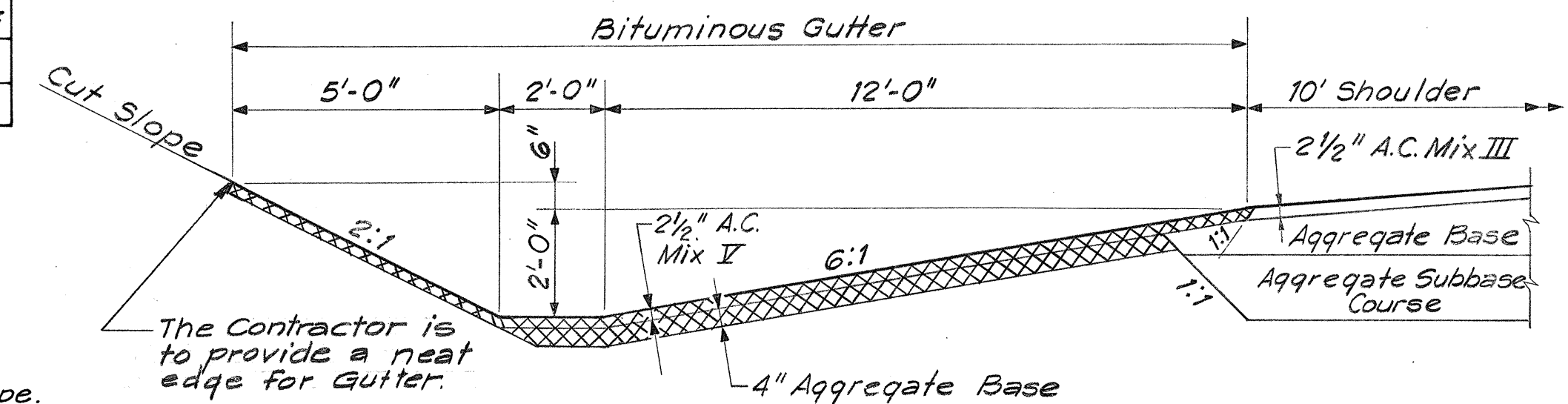


TYPICAL EXPANSION JOINT @ 90' O.C.
FOR LINED DITCHES
Scale: 3/4" = 1'-0"

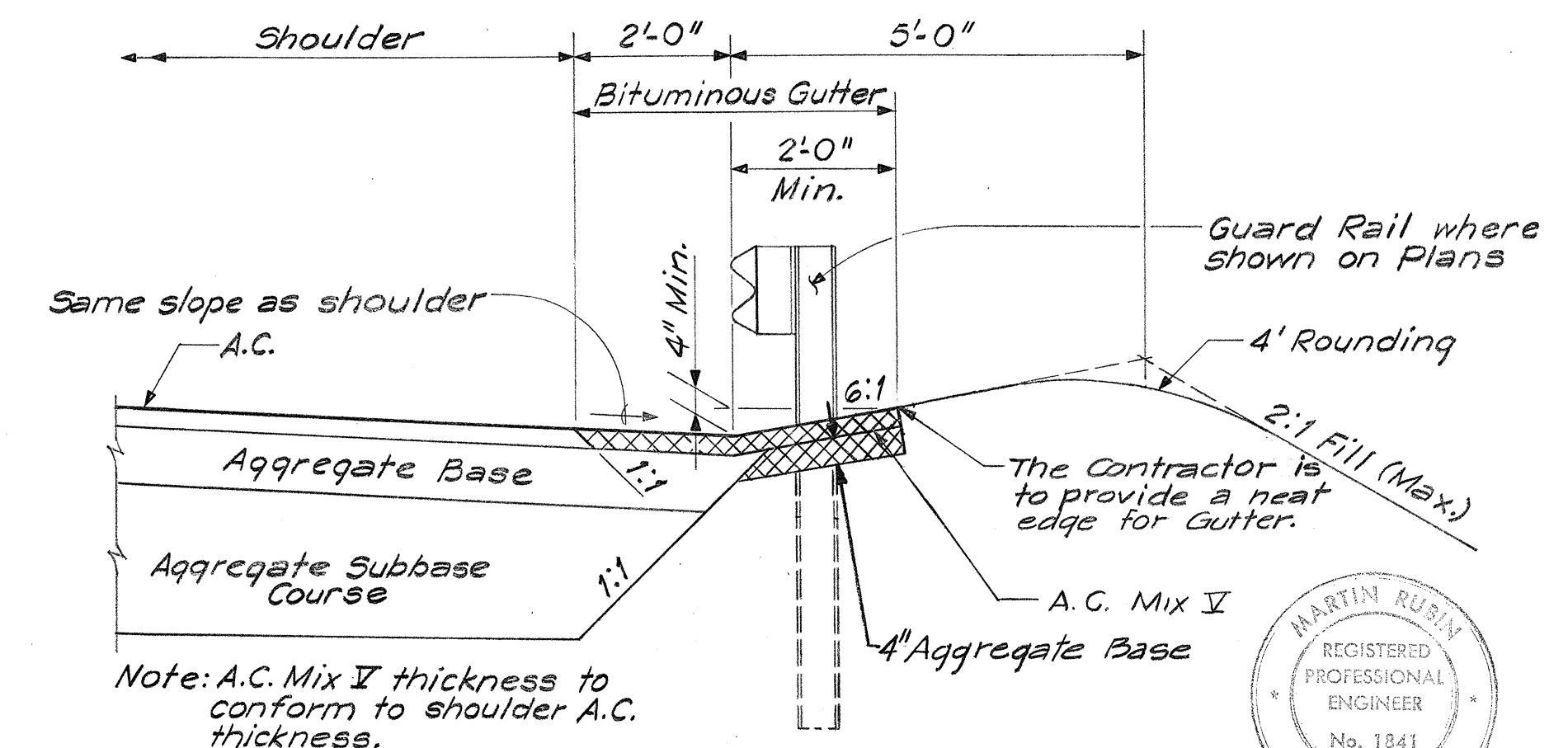
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(109):13	1975	37	130



BITUMINOUS GUTTER TYPE 7A
Scale: $\frac{1}{2}" = 1'-0"$



BITUMINOUS GUTTER TYPE 7B
Scale: $\frac{3}{8}" = 1'-0"$



BITUMINOUS GUTTER TYPE 7C
Scale: 1/2" = 1'-0"

1. Contractor may substitute ditches of other shapes & of greater capacities if approved by the Engineer. Payment will be on the original ditch as shown on Plans.
2. Expansion & construction joints are incidental to lined drainage ditches.
3. Type 7A * is a State standard spillway inlet.
4. See Sheet No. 8D for additional notes

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE ESTIMATED QUANTITIES

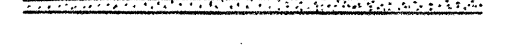
INTERSTATE ROUTE H-1
PROJ. NO. I-H1-1(109):13

Scale: As Shown Date: Dec. 29, 1972

SHEET No. 2D OF 11 SHEETS

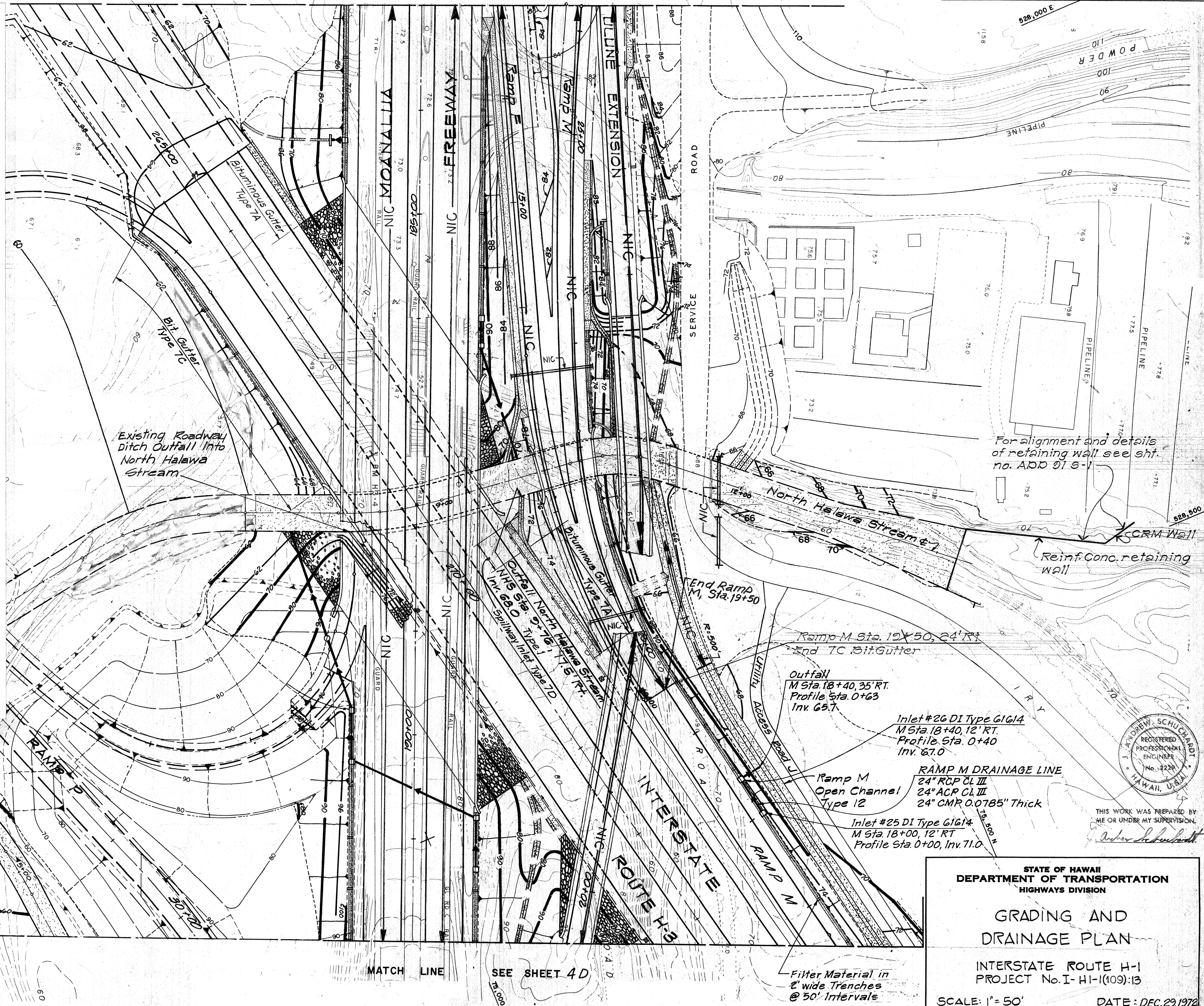
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(109)13	1975	38	130

GRADING & DRAINAGE LEGEND:

-  Storm Drain Pipe
-  Underdrain Pipe
-  Swales
-  Recently Adjusted Contours
-  Paved Ditches and Channels
-  Cleanouts
-  Grouted Rubble Pavement (9" Thick)
-  Conduit with Type "B" Pull Box at both ends for Sprinkler System Control Wiring.
-  Cast Iron Pipe, CI 150 or Copper Pipe, Type K within ACP or CMP, 0.064" thick Sleeve for Sprinkler System.

GENERAL NOTES:

- All Paved Ditch and Channel Excavation is limited to the width and depth of paved area.
- All Concrete Pipes existing Inlets are to be rounded. See Detail Sheet 8D.
- All Paved Ditches paralleling and adjacent to roadways are to be Bituminous Gutters. All other Ditches and Channels are to be Class B Concrete or Shotcrete.
- All Regraded Areas are to have slope control planting.
- The Pipes for the Sprinkler System shall be placed under proposed roadways at a minimum of 18" below subbase. All pipes shall be plugged. Plugs shall be approved by the Engineer and shall be incidental to the cost of the Pipe. Location of Pipes shall be marked in a fashion approved by the Engineer. Cast Iron and Copper Pipes shall be installed according to Section 624-Water System. PVC conduit to be installed according to Section 622-Highway Lighting System.
- Removal of existing Structure from S.H.S. Sta. 21+00 to S.H.S. Sta. 22+00 shall be incidental to the cost of South Halawa Stream Ditch and Channel excavation.
- All Grouted Rubble Pavement for Bridges is Existing.
- For existing Contours Indicating changes from previous contracts, see Roadway Construction Sheets 1B thru 4B.



DATE	REVISION
5 Feb 75	Change Legend note and General Note no. 5
3 Feb 75	Retaining wall at entrance of North Halawa Stream Lined Channel

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

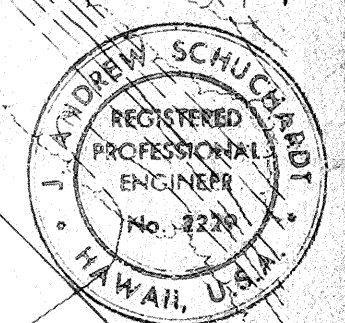
GRADING AND DRAINAGE PLAN

INTERSTATE ROUTE H-1
PROJECT No. I-HI-1(109)13

SCALE: 1" = 50' DATE: DEC. 29, 1972

SHEET No. 3 OF 11 SHEETS

ADD 38



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Andrew Schuchman

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-41-1(109):13	1975	39	130

2 of 10' wide Navy Av Gas easement

TRUE NORTH
Scale: 1"=50'

6" C.I. Pipe, Cl. 150 within 15"
CMP, 0.064" thick.
Type "B" Pull Box
2" PVC Pipe, Sch 40 for electrical
control wiring 120 V, A.C. conc. encase

4" C.I. Pipe, Cl. 150 within 12"
CMP, 0.064" thick.
Type "B" Pull Box
2" PVC Pipe, Sch 40 for electrical
control wiring 120 V, A.C. conc. encase

3" Copper pipe, Type K within
8" ACP, Cl. II sleeve
Type "B" Pull Box
2" PVC Pipe Sch 40 for
electrical control wiring

3-2-76 Extend Type TC Bit Gutter
@ Ramp N (Field Rev.)
2-22-75 Type TC Bit Gutter
Ramp N Sta. 15+51 to 19+50

DATE	REVISION
28 Apr 75	Add sprinkler pipe crossing at Ramp N Sta. 25+70+
5 Feb 75	Change notes for Sprinkler Pipes crossing roadway

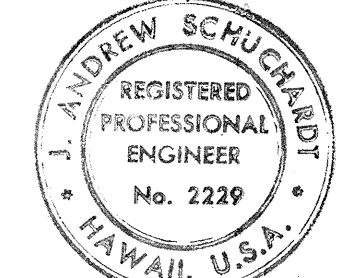
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GRADING AND
DRAINAGE PLAN

INTERSTATE ROUTE H-1
PROJECT No. I-41-1(109):13

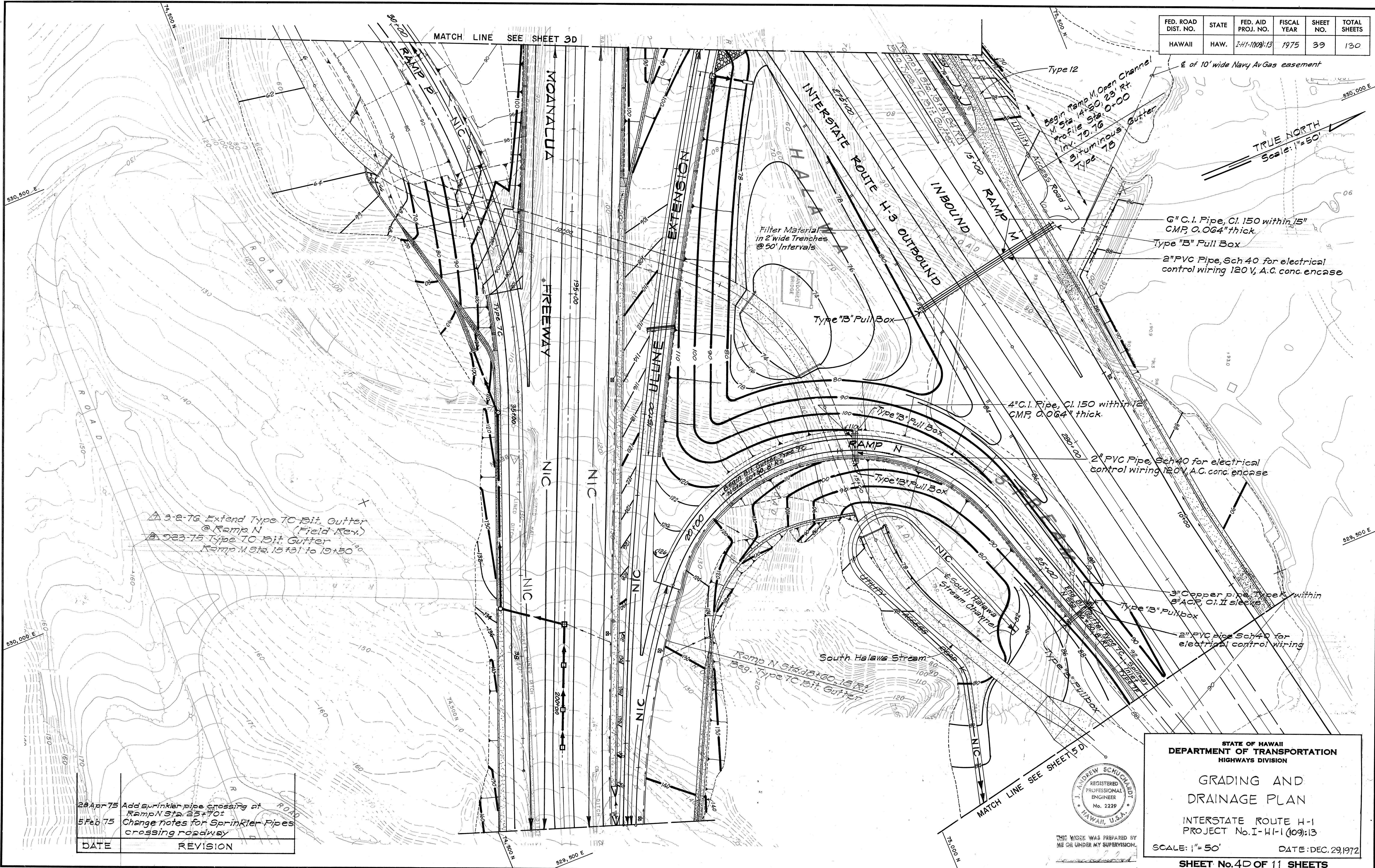
SCALE: 1"=50' DATE: DEC. 29, 1972

SHEET No. 4D OF 11 SHEETS



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CO ADD 3 9



ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DRAWN BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	
NO.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-41-103-13	1975	40	130

11-14-75 Add Type I Ditch @ SHS Sta. 26+27 Rt (Field Rev.)
12-17-75 Revise Quarantine Station Lateral (CCO #7)

TRUE NORTH
Scale: 1"=50'

Outlet #17 Headwall
H-3 Sta. 290+18, 137' LT.
Profile Sta. 0+10 0+22
Inv. 102.0
101.3

Existing D.I.
H-3 Sta. 290+18, 137' LT.
Profile Sta. 0+00
Inv. 102.3
101.6

QUARANTINE STATION LATERAL
For Profile See Sheet No. 7D
30" RCP CL III
30" ACP CL III
36" CMP, 0.1084 M. Thk.

Bituminous Gutter
Type 7B

Outfall
H-3 Sta. 289+85, 84' LT.
Profile Sta. 0+70
Inv. 100.5
0+62

Ramp N Spillway Inlet
Type 7F

Filter Material in
2' wide Trenches
@ 50' Intervals

Bit Gutter Type 7C

INTERSTATE ROUTE H-3
Type 8 Bituminous Gutter Type 7A

Type 7A*
H-3 Spillway
(State Std.)

South Halawa Stream

End Type I Ditch
SHS Sta. 26+27, 16' Rt
Inv. = 104.5

1949 Type I Ditch
SHS Sta. 26+27, 49' Rt
Inv. = 109.0

Exist. 10" Navy
Slope Line

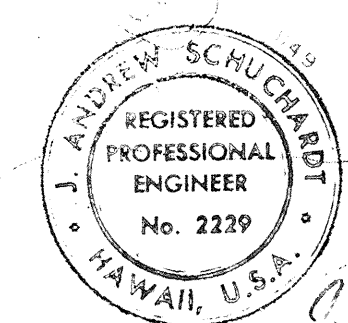
Existing Swale to
be Maintained

1' Vee Ditch Spillway
6:1 Side Slopes
Type 14

Outfall Ramp N Spillway
SHS Sta. 19+38, 23' LT.
Inv. 87.0

Outfall H-3 Spillway
SHS Sta. 23+20, 21' LT.
Inv. 95.0

UTILITY ACCESS RD K NIC



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HIGHWAYS DIVISION

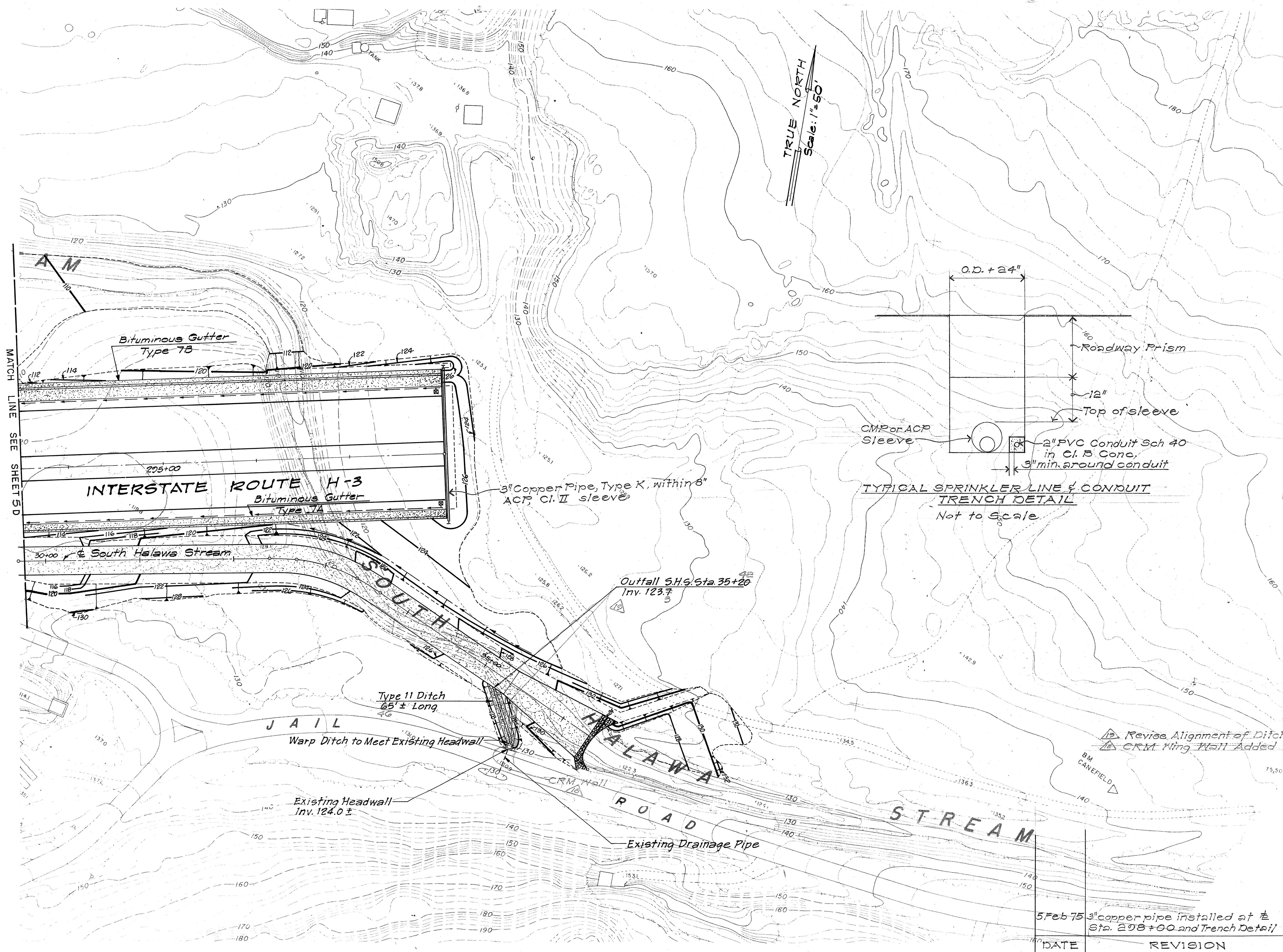
GRADING AND
DRAINAGE PLAN

INTERSTATE ROUTE H-1
PROJECT No. I-41-1 (03)-13

SCALE: 1"=50' DATE: DEC. 29, 1972

SHEET No. 5D OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(109):13	1975	41	130



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J. Andrew Schuchardt

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GRADING AND DRAINAGE PLAN

INTERSTATE ROUTE H-1
PROJECT No. I-HI-1(109):13

SCALE: 1" = 50' DATE: DEC. 23, 1972

SHEET No. 6D OF 11 SHEETS

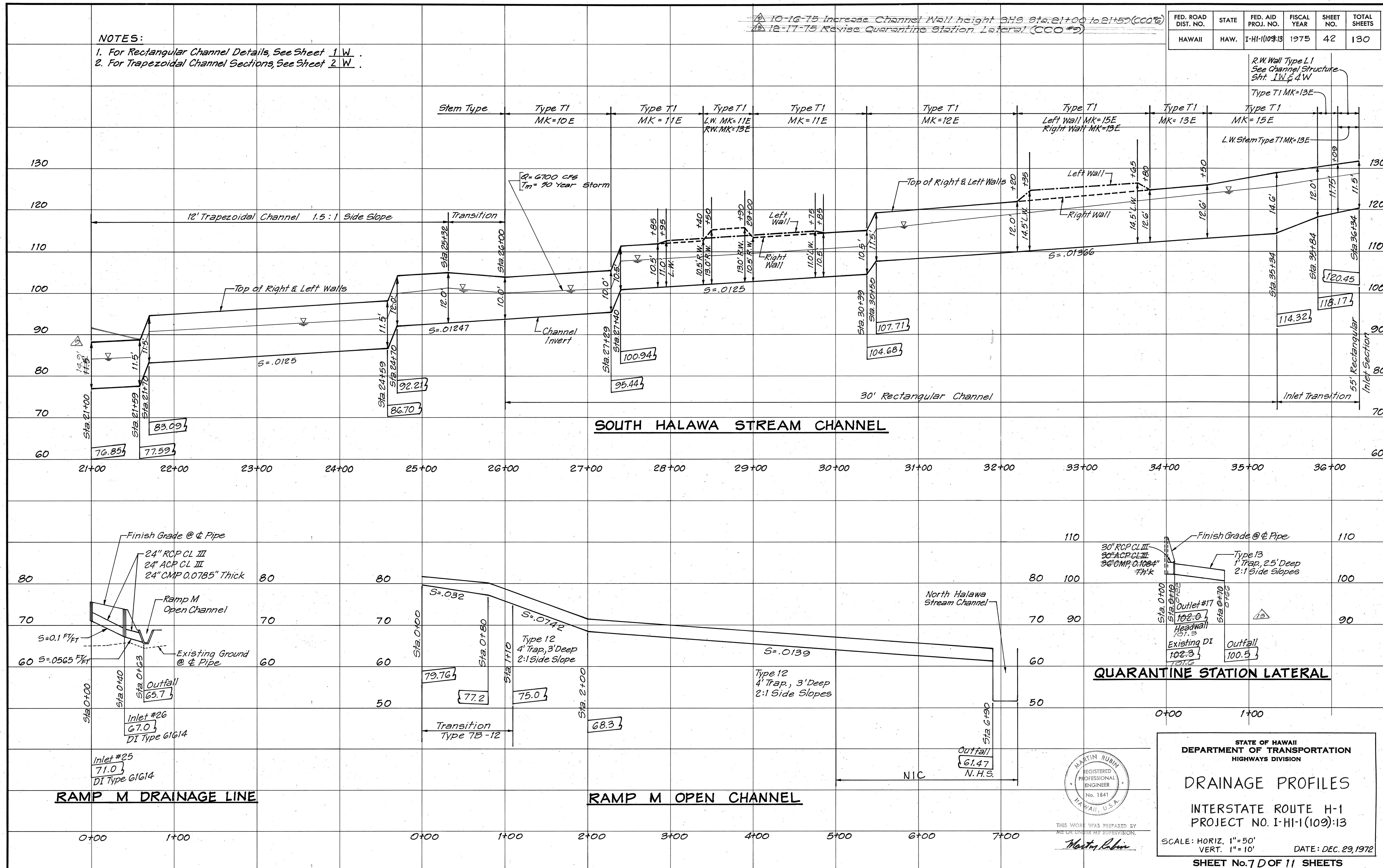
ADD 41

NOTES:

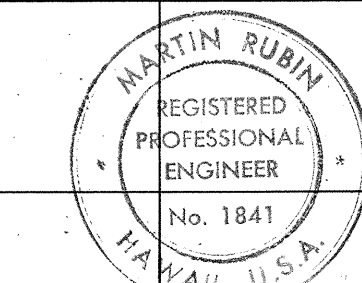
1. For Rectangular Channel Details, See Sheet 1 W.
2. For Trapezoidal Channel Sections, See Sheet 2 W.

10-16-75 Increase Channel Wall height SHS Sta. 21+00 to 21+50 (CCO #2)
12-17-75 Revise Quarantine Station Lateral (CCO #9)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(109)13	1975	42	130



DATE	_____
DESIGNED BY	_____
TRACED BY	_____
NOTED BY	_____
CHECKED BY	_____
ORIGINAL PLAN	_____
NOTE BOOK	_____
NO.	_____



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 Martin Rubin

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

DRAINAGE PROFILES

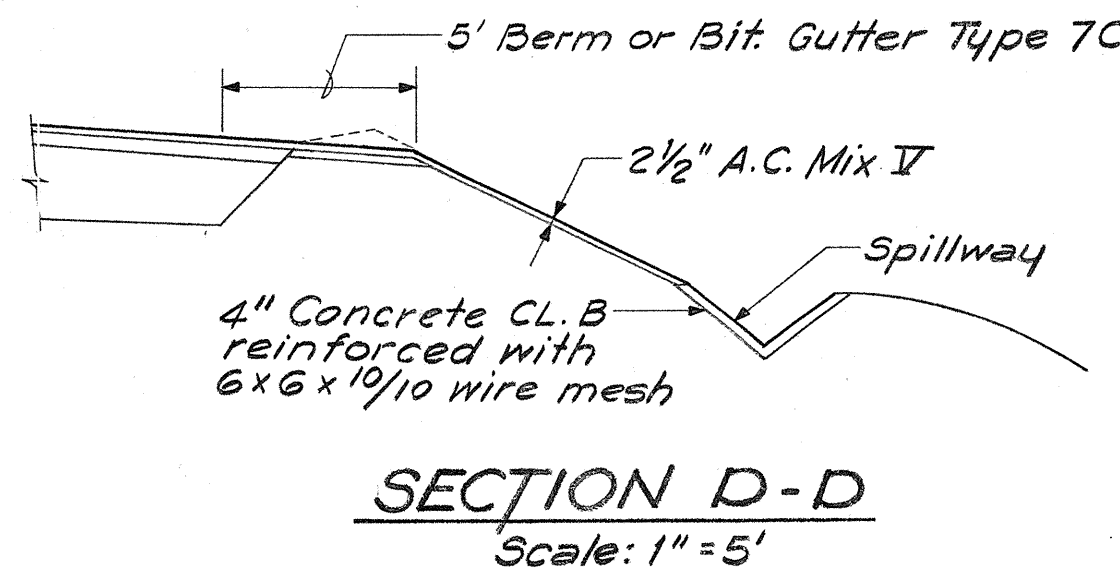
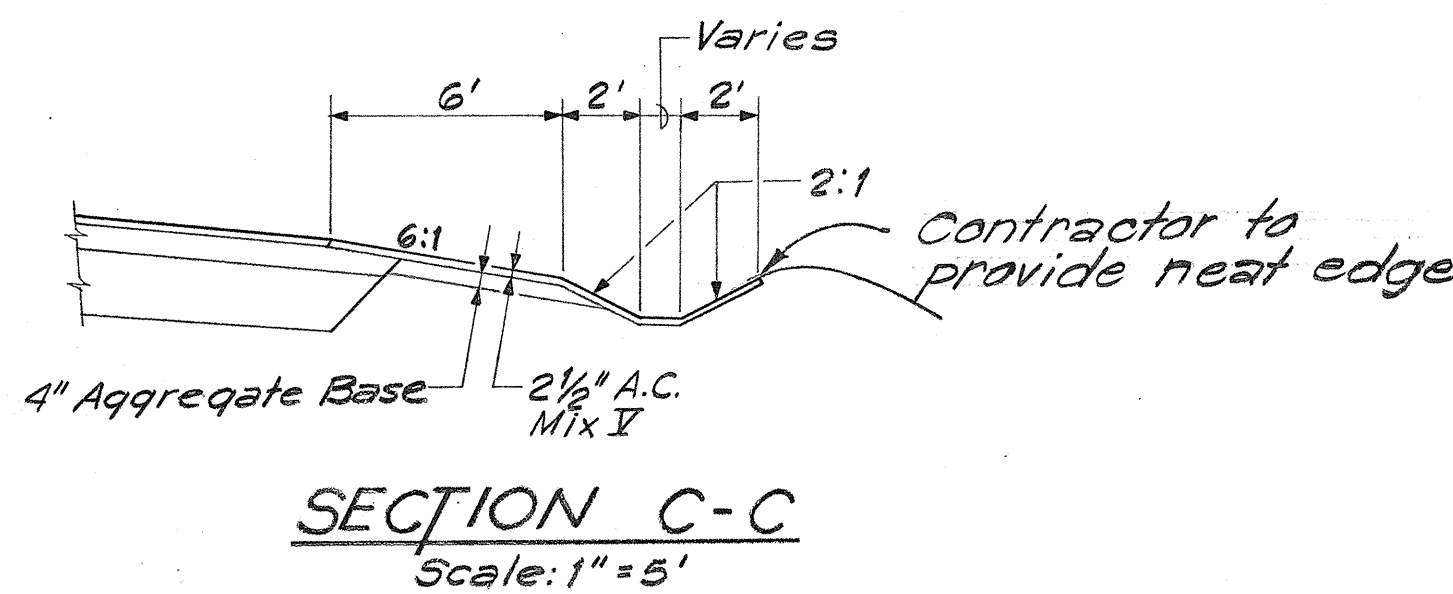
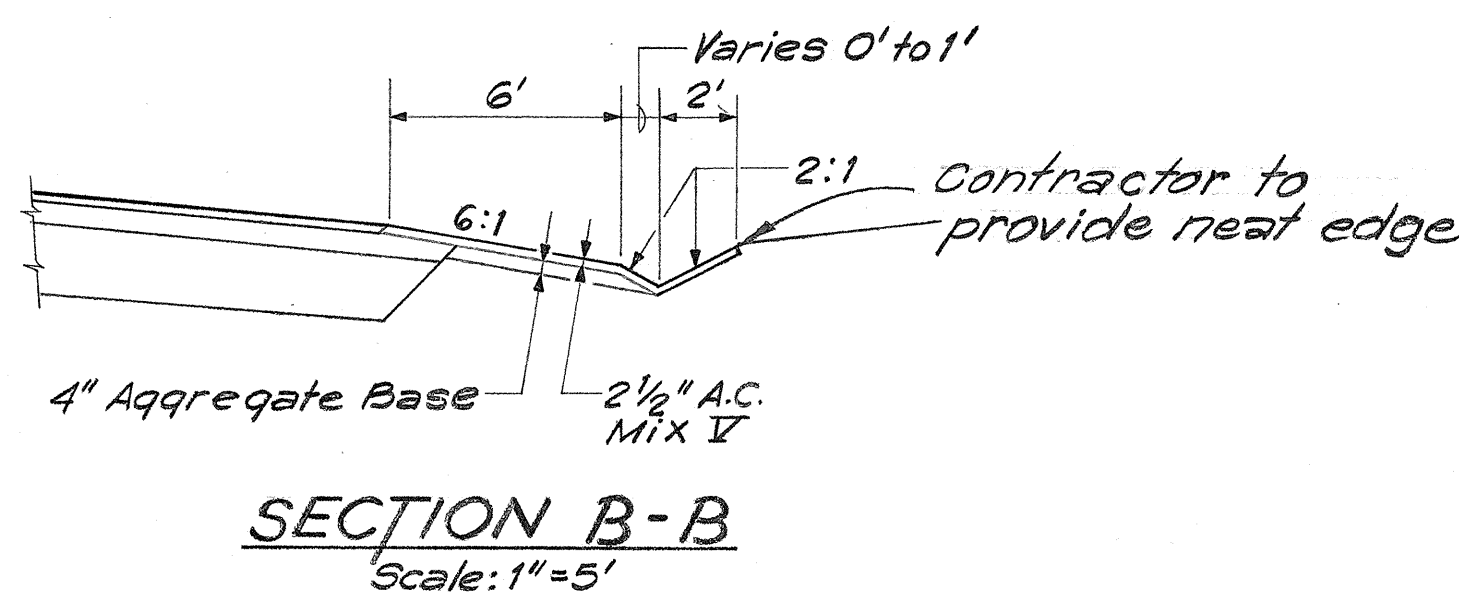
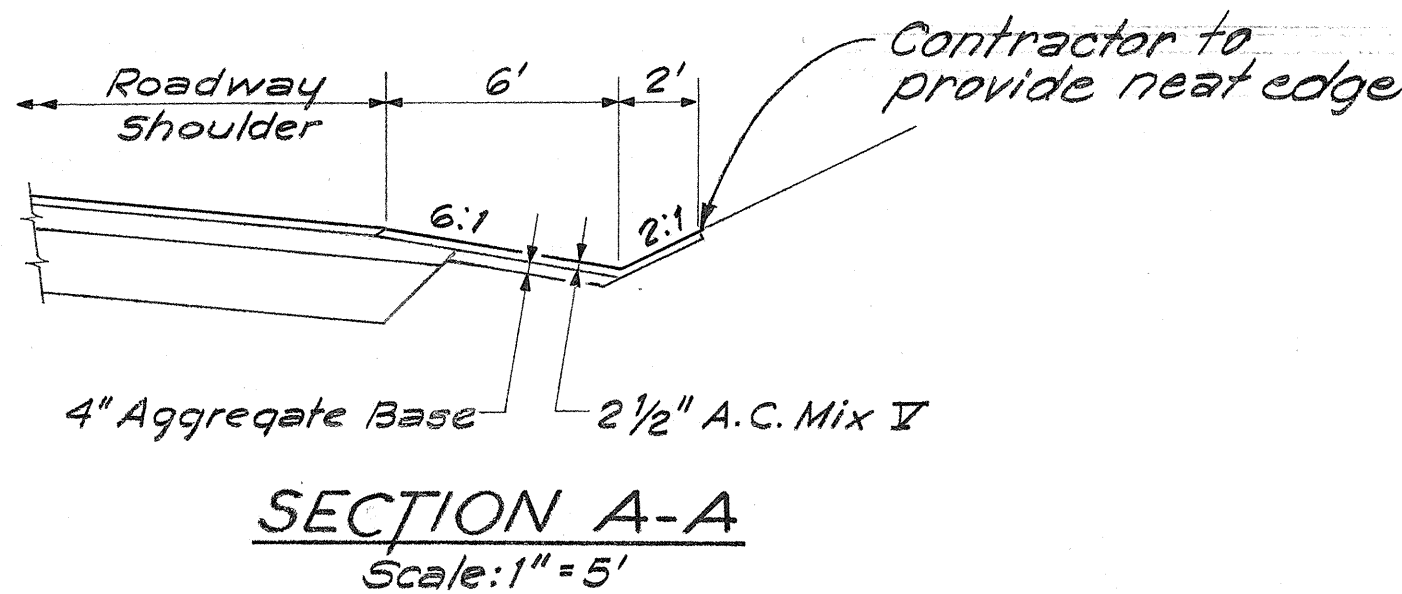
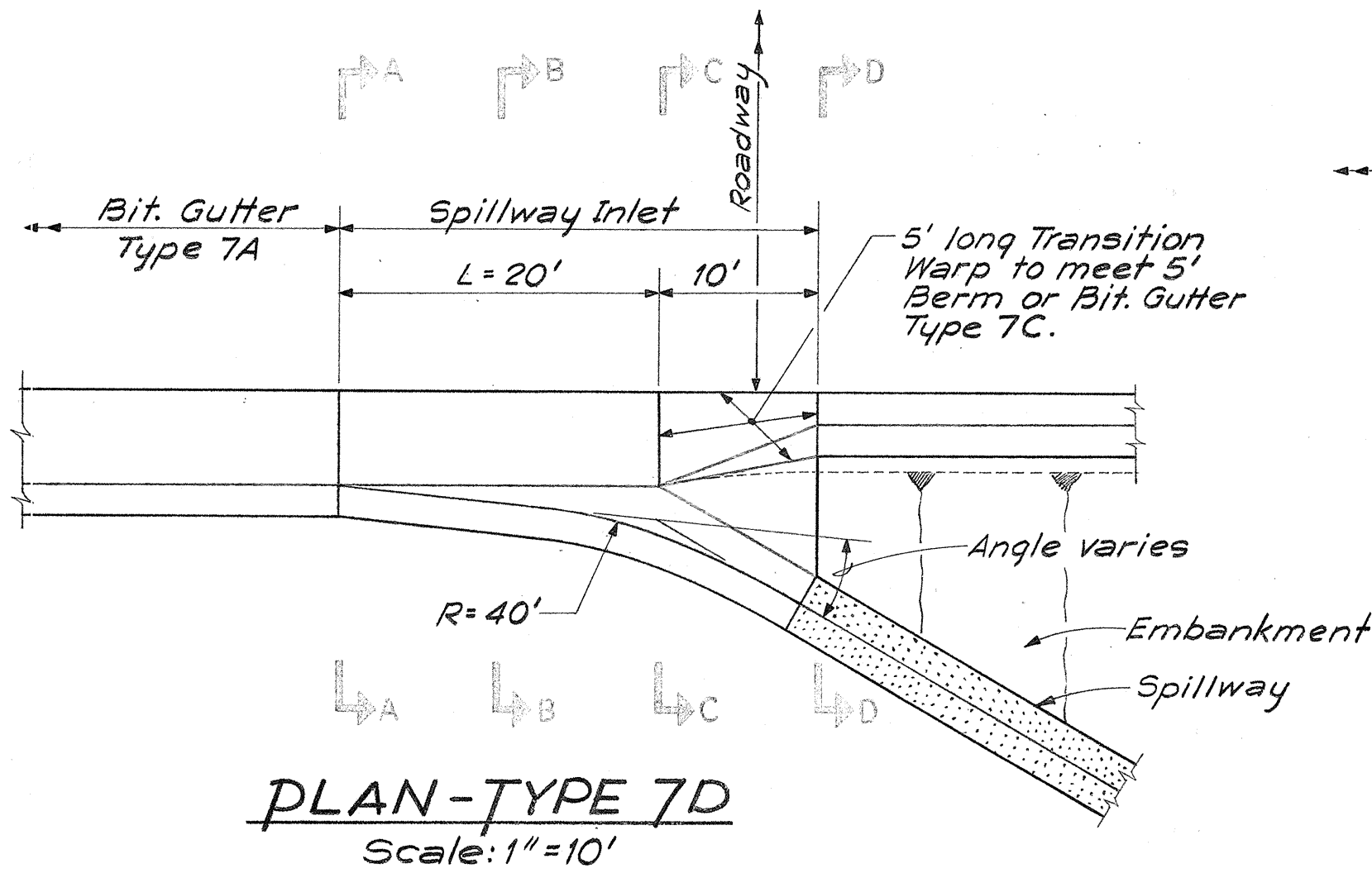
INTERSTATE ROUTE H-1
 PROJECT NO. I-HI-1(109)13

SCALE: HORIZ. 1"=50'
 VERT. 1"=10'

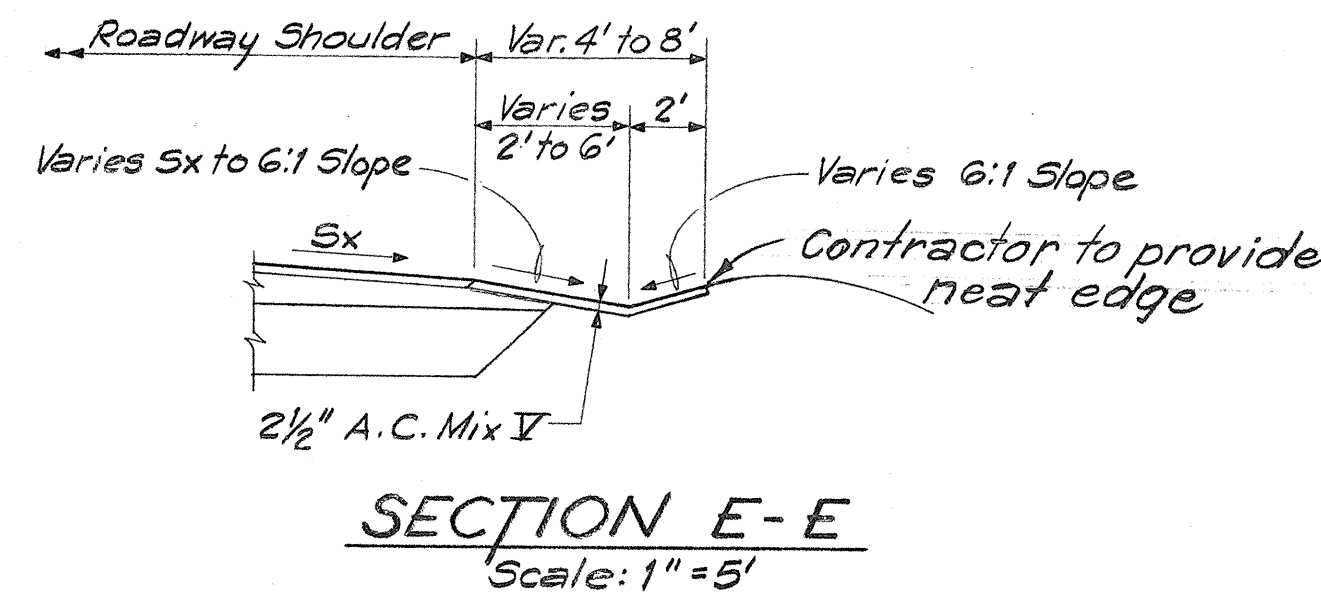
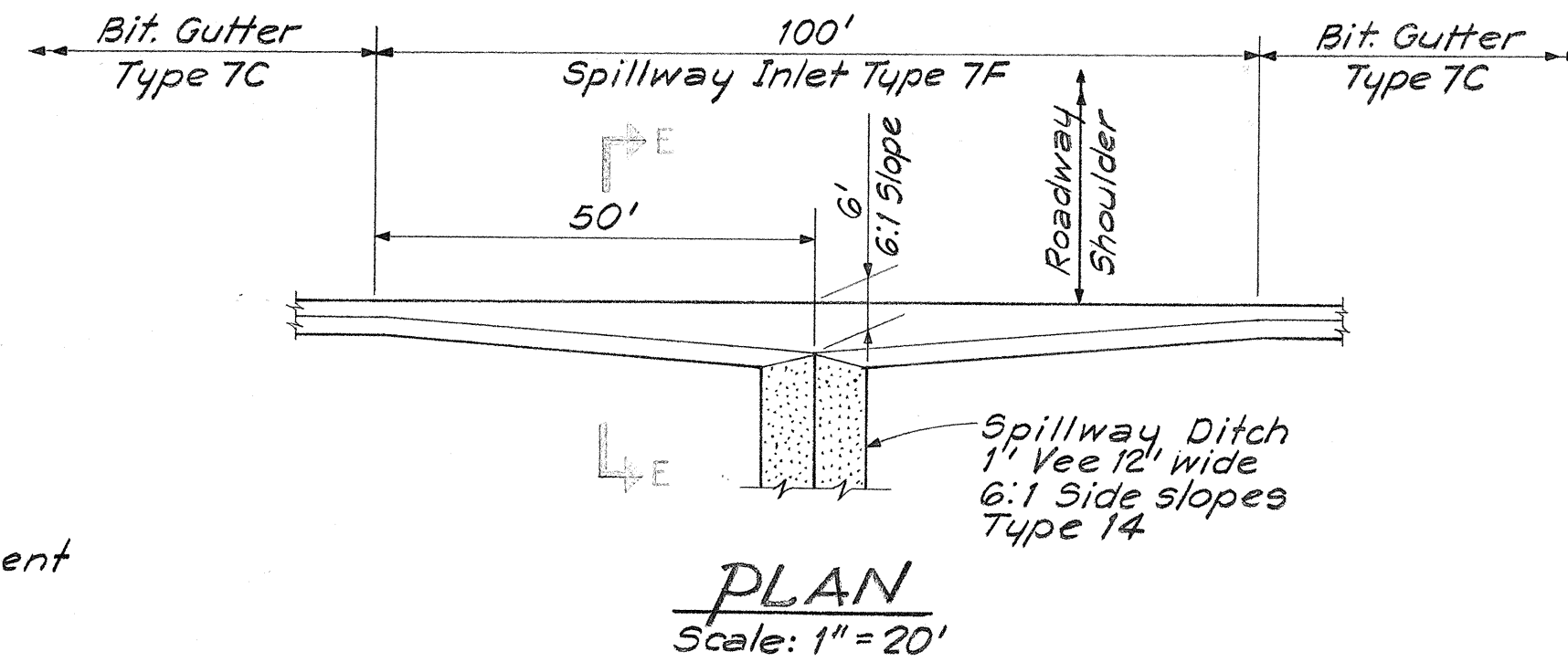
DATE: DEC. 29, 1972

SHEET No. 7 OF 11 SHEETS

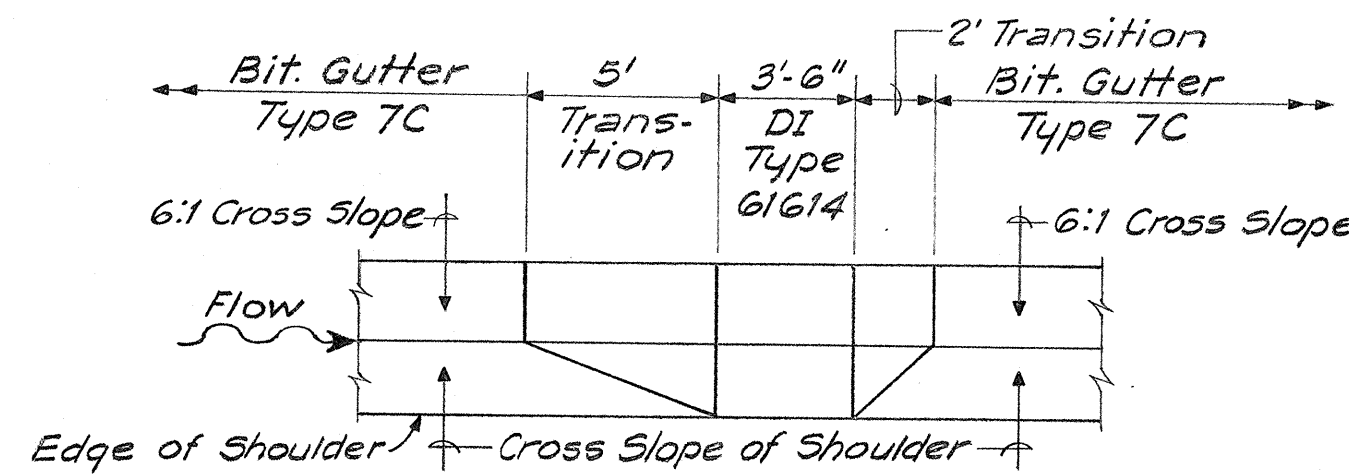
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(109)13	1975	43	130



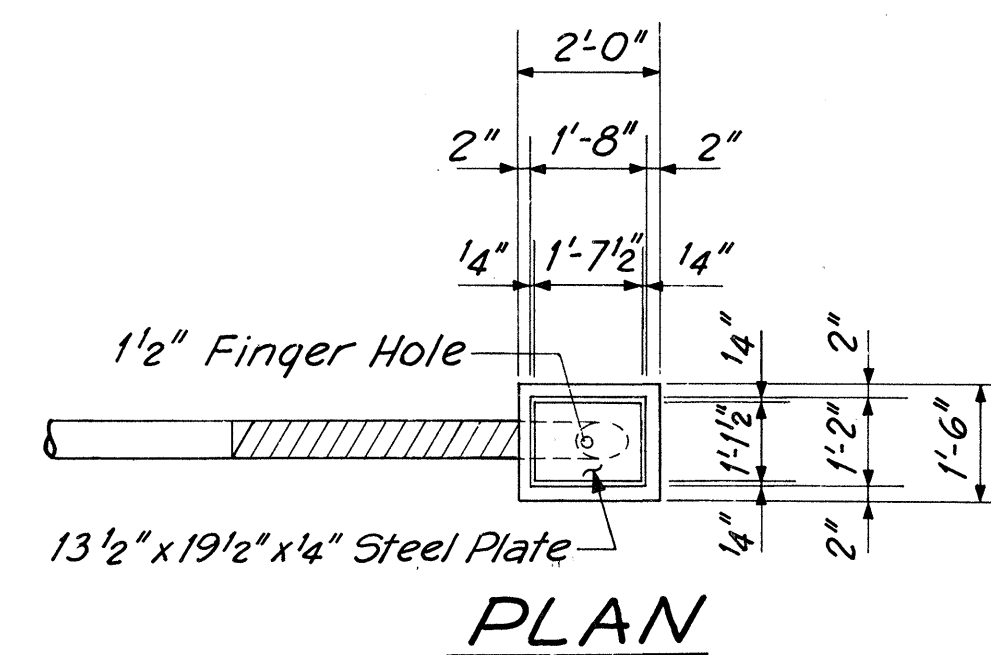
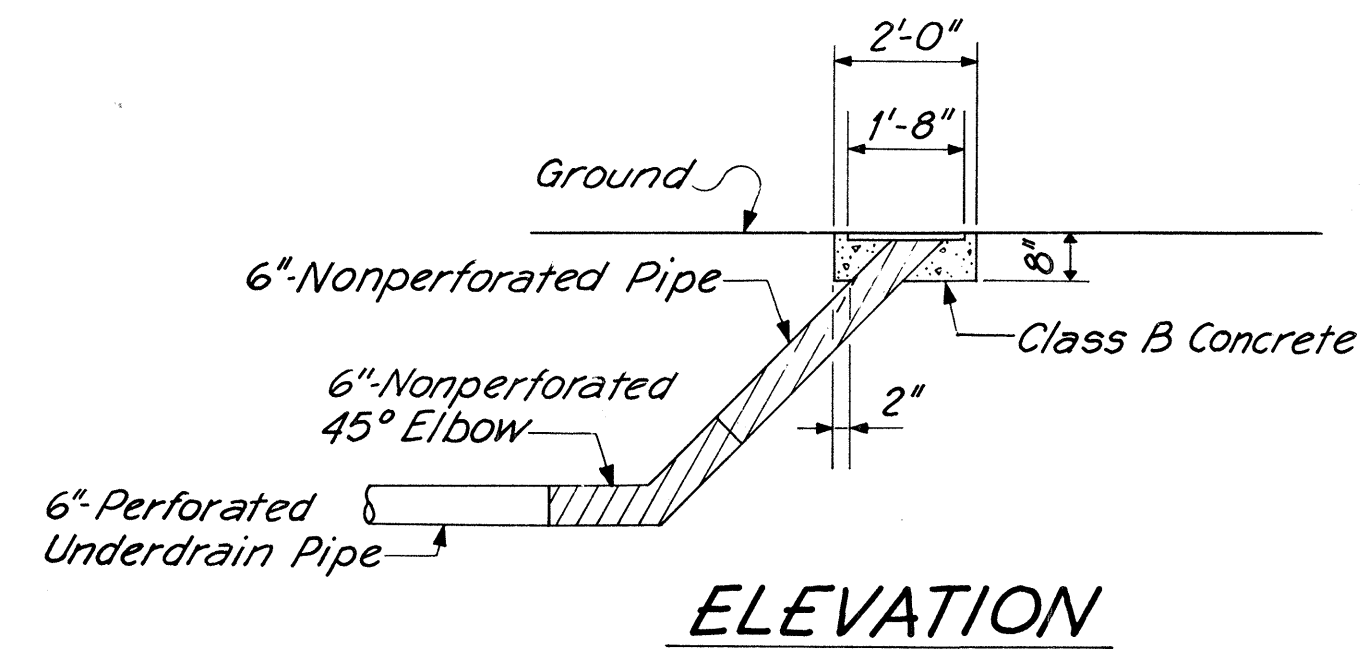
SPILLWAY INLET DETAILS
TYPE 7D



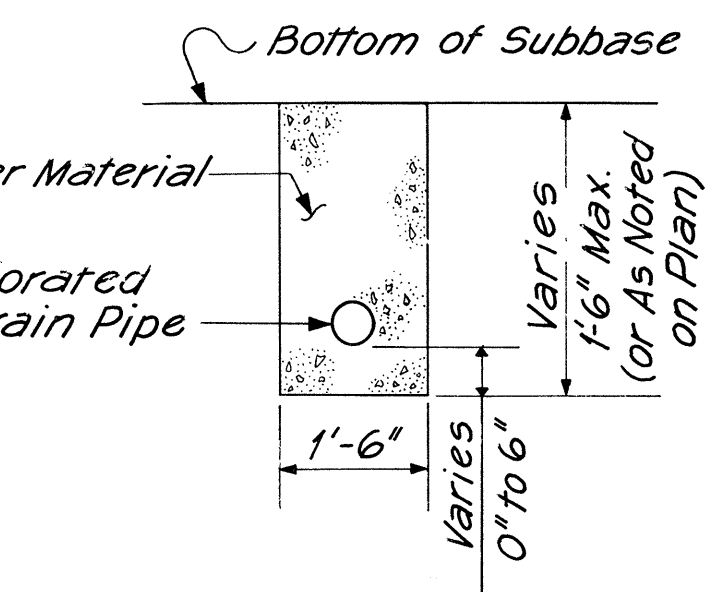
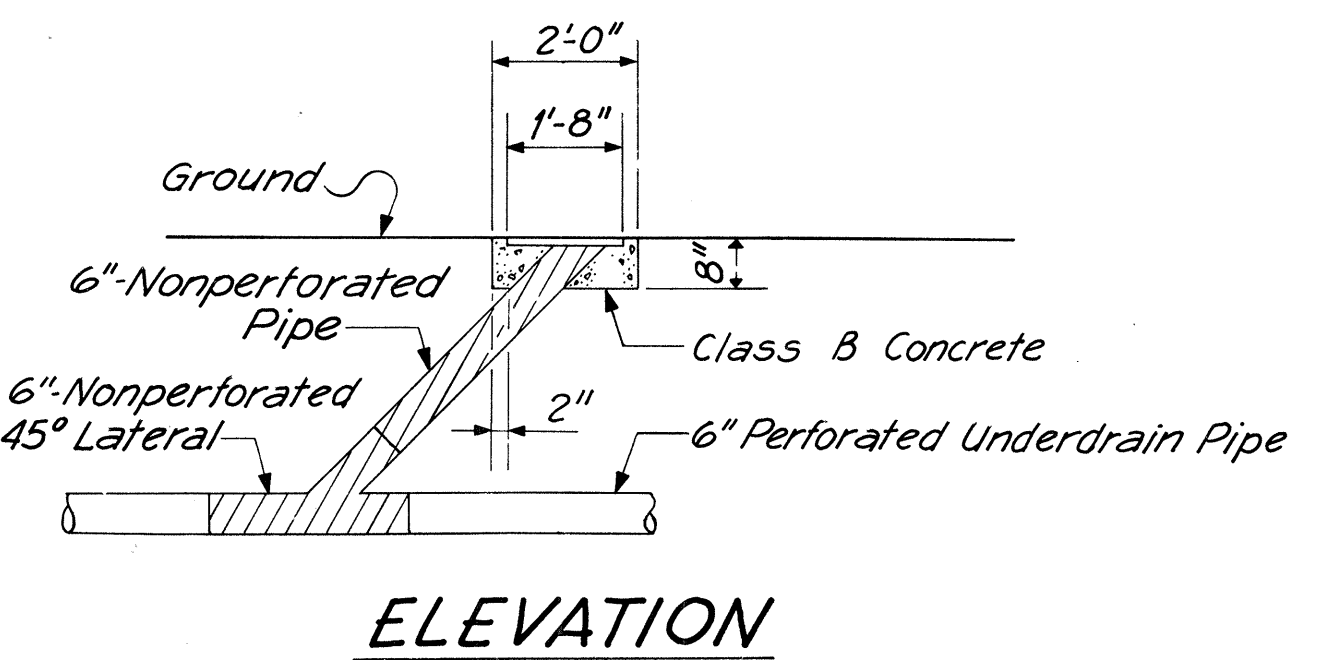
SPILLWAY INLET DETAILS
TYPE 7E



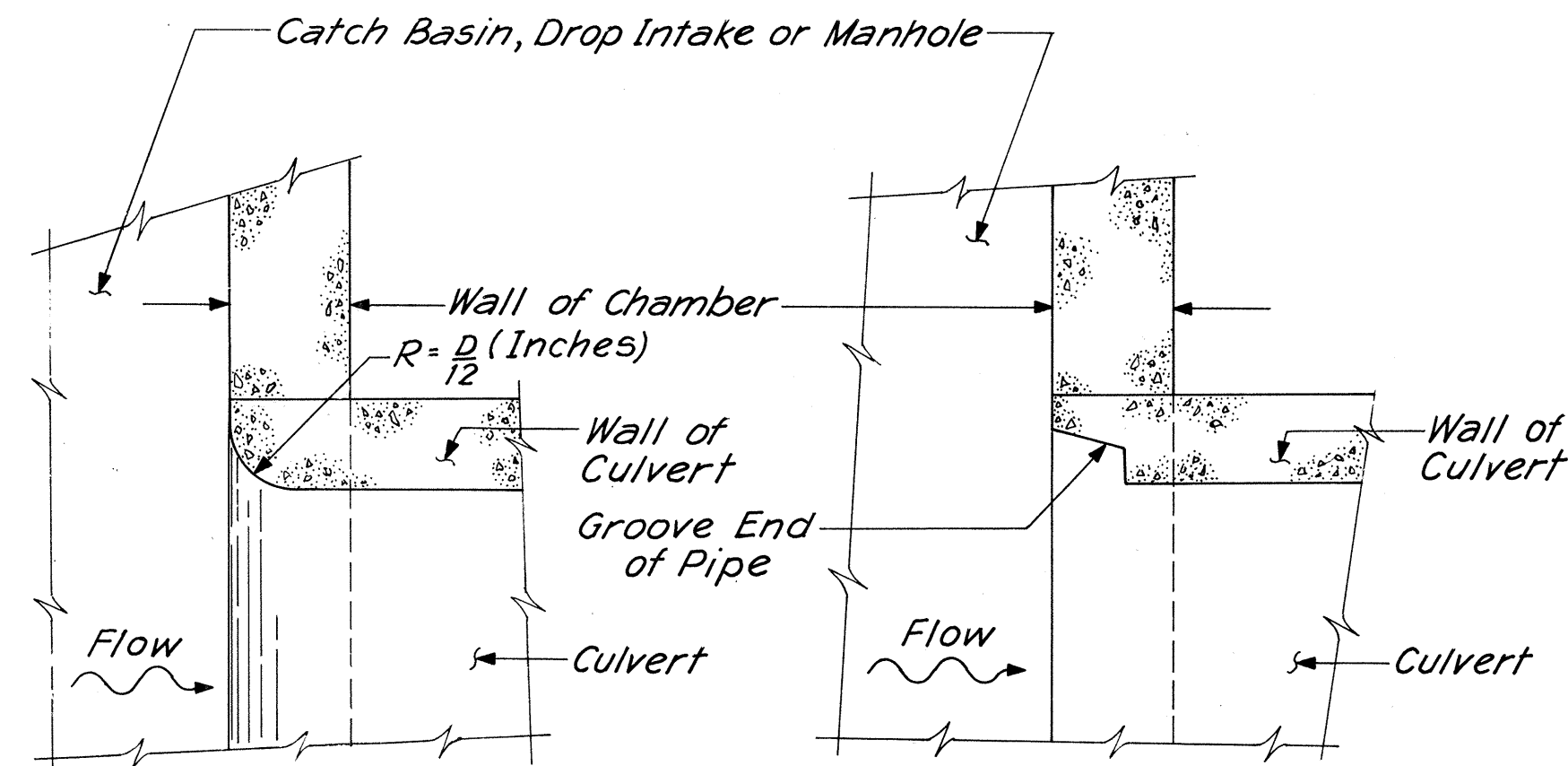
TYPICAL GUTTER TRANSITION
TO DI TYPE 61614



UNDERDRAIN CLEANOUT DETAILS
Scale: 3/8"=1'-0"



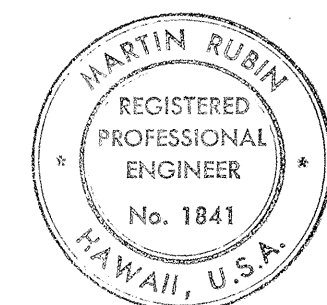
TYPICAL UNDERDRAIN SECTION
Scale: 1/2"=1'-0"



TYPICAL DETAILS FOR CULVERTS EXITING
A CATCH BASIN, DROP INTAKE OR MANHOLE
N.T.S.
(For Concrete Pipe Installation)

NOTES:

1. Spillway Inlets Type 7D are to be paid for under item Bituminous Gutter Type 7A.
2. Spillway Inlet Type 7E is to be paid for under item Bituminous Gutter Type 7C.



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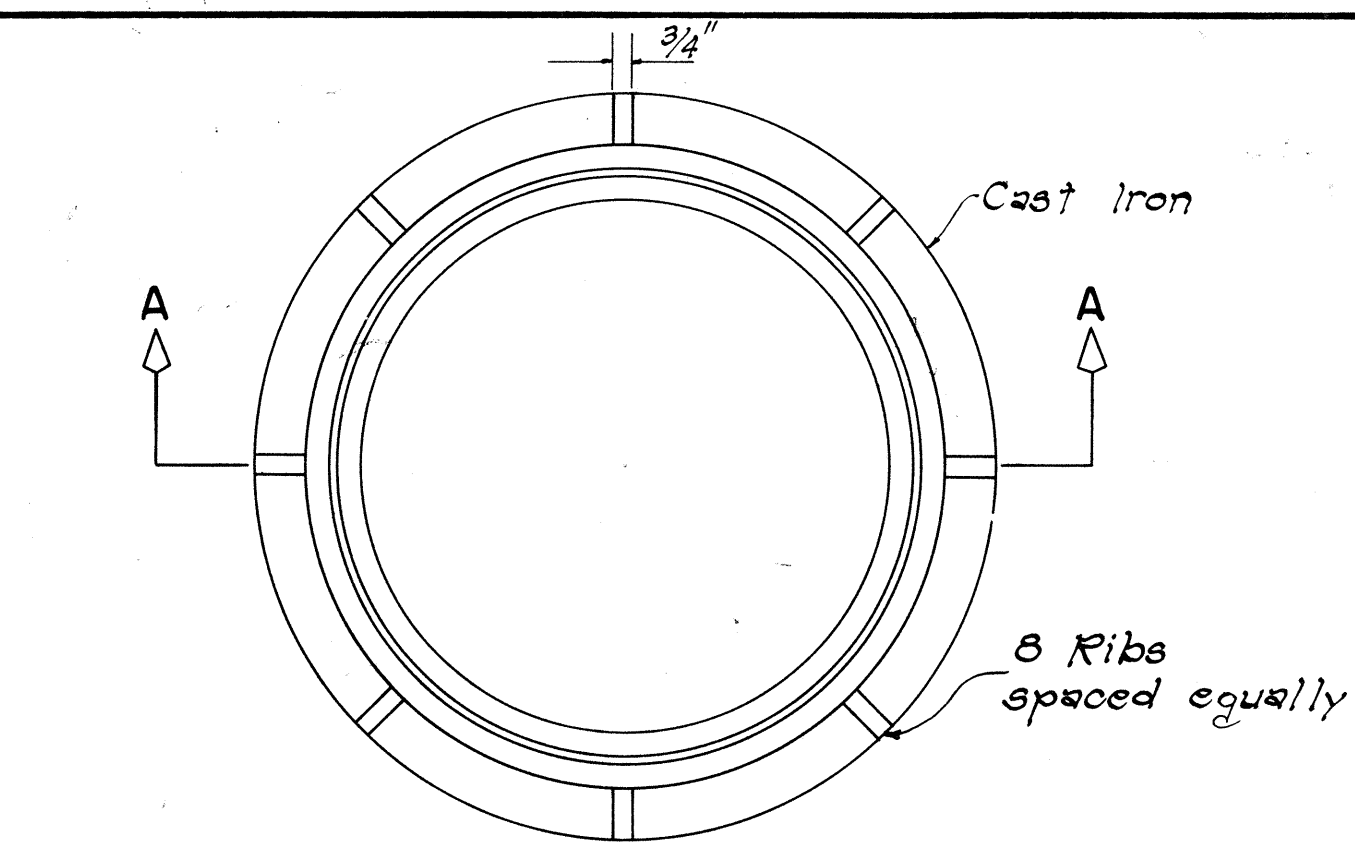
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

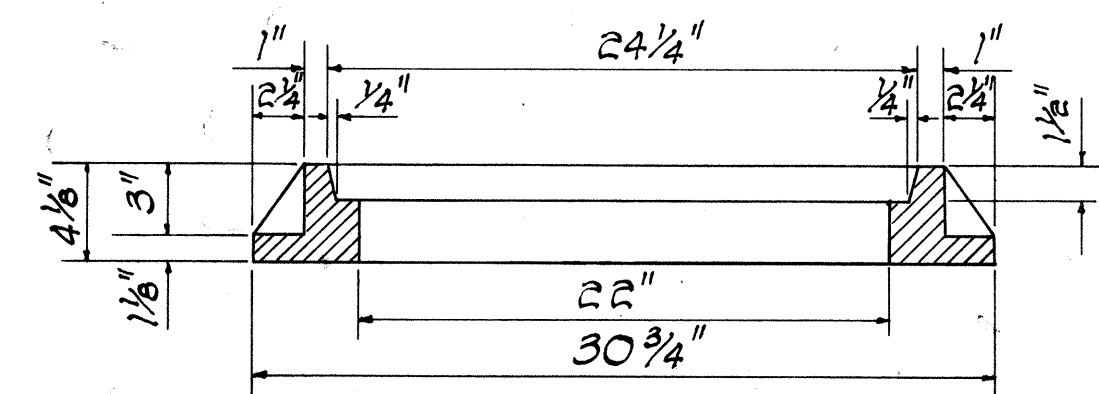
INTERSTATE ROUTE H-1
PROJ. NO. I-H-1(109)13

SCALE: AS SHOWN DATE: DEC. 29, 1972
SHEET No. 8 OF 11 SHEETS

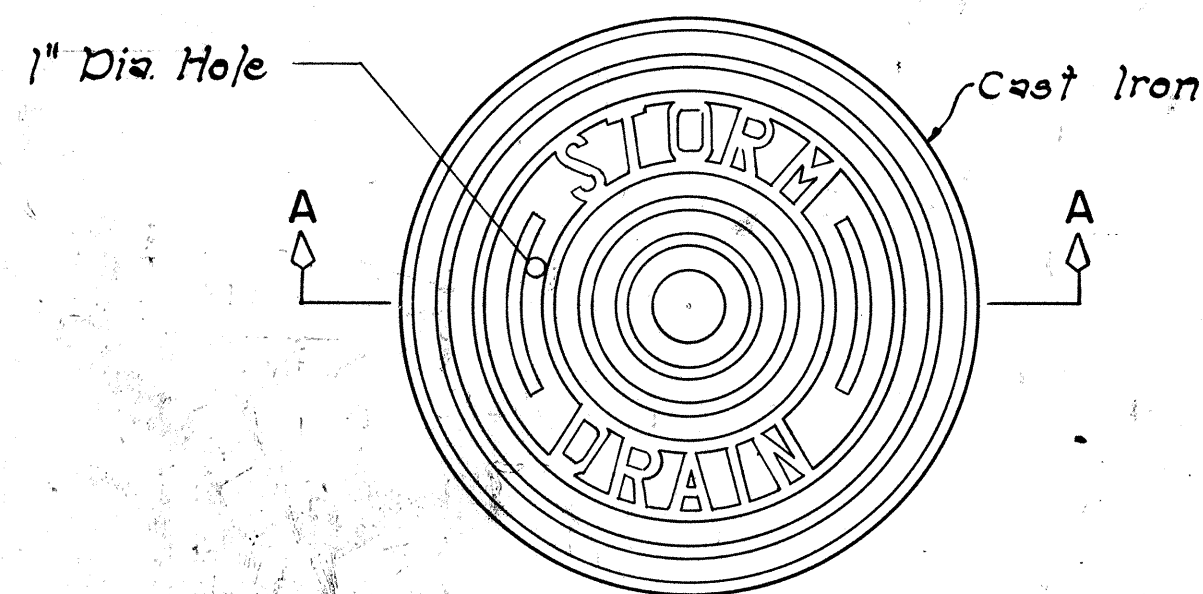
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(109)13	1975	ADD 43 S-1	130



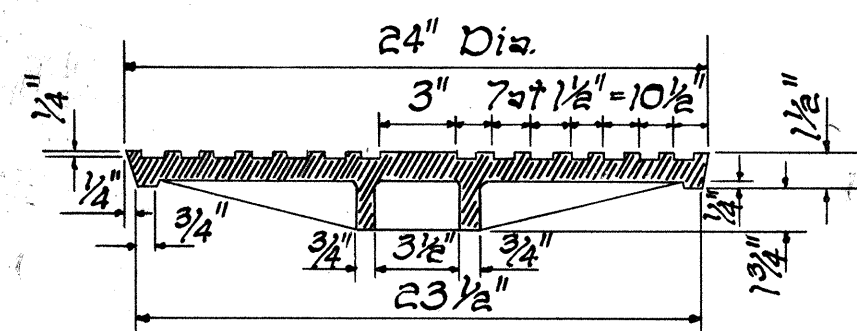
PLAN



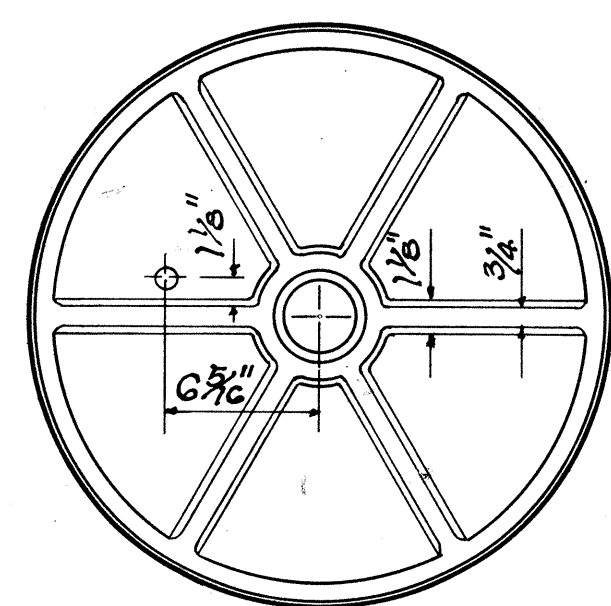
SECTION A-A



PLAN



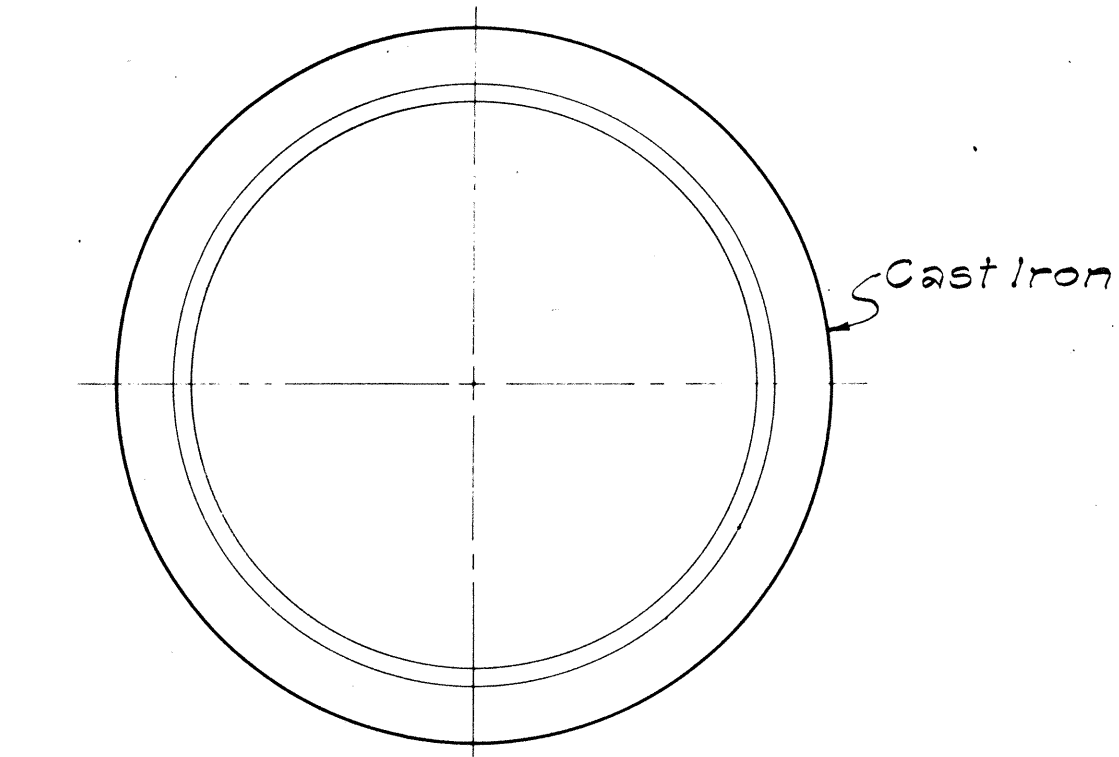
SECTION A-A



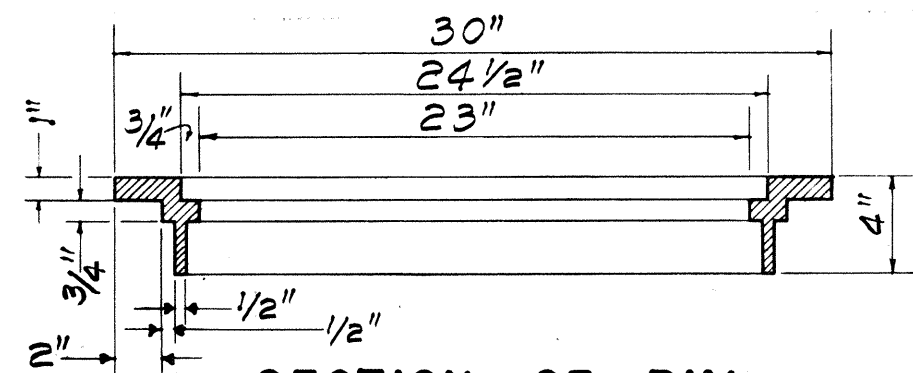
BOTTOM VIEW OF COVER

DETAILS OF TYPE "P"
CAST IRON FRAME AND COVER

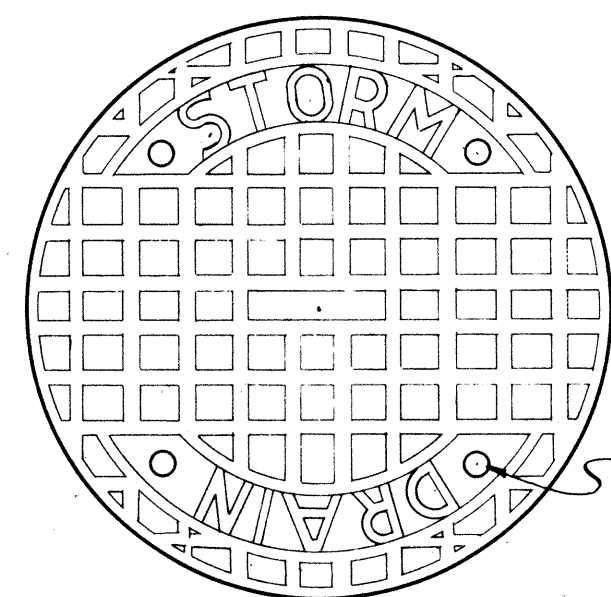
SCALE: 1-1/2" = 1'-0"



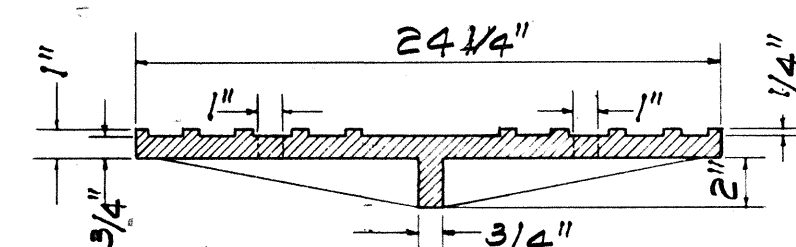
PLAN OF RIM



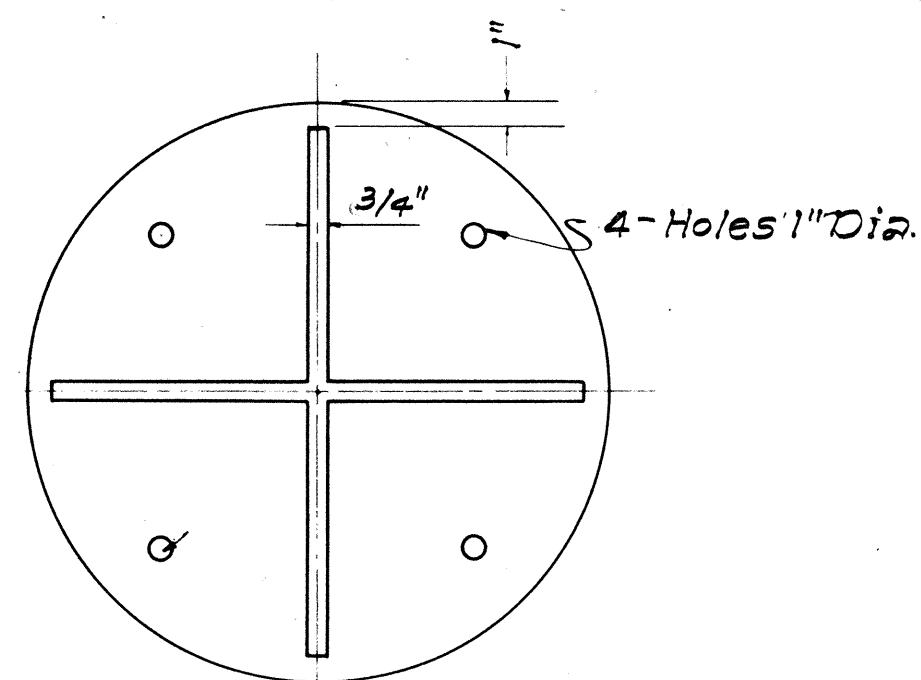
SECTION OF RIM



TOP VIEW OF COVER



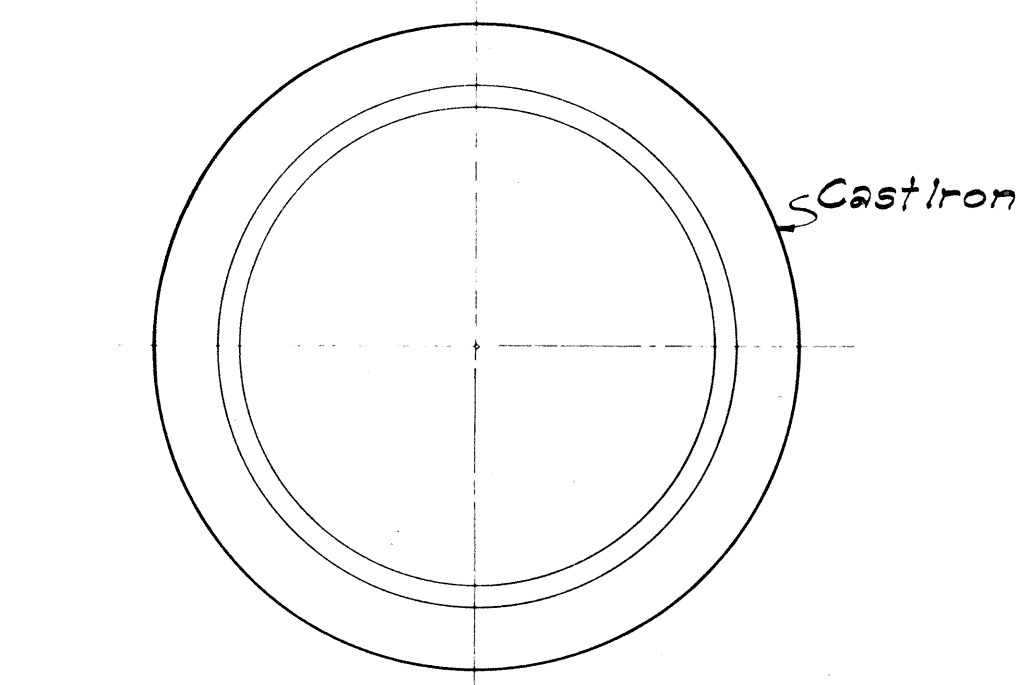
SECTION



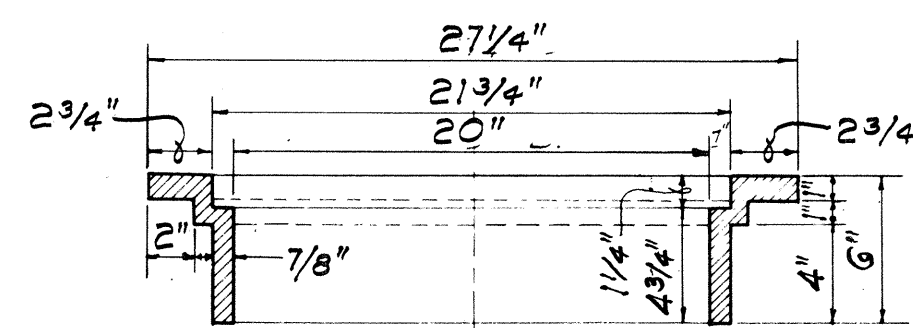
BOTTOM VIEW OF COVER

DETAILS OF TYPE "B"
CAST IRON FRAME AND COVER

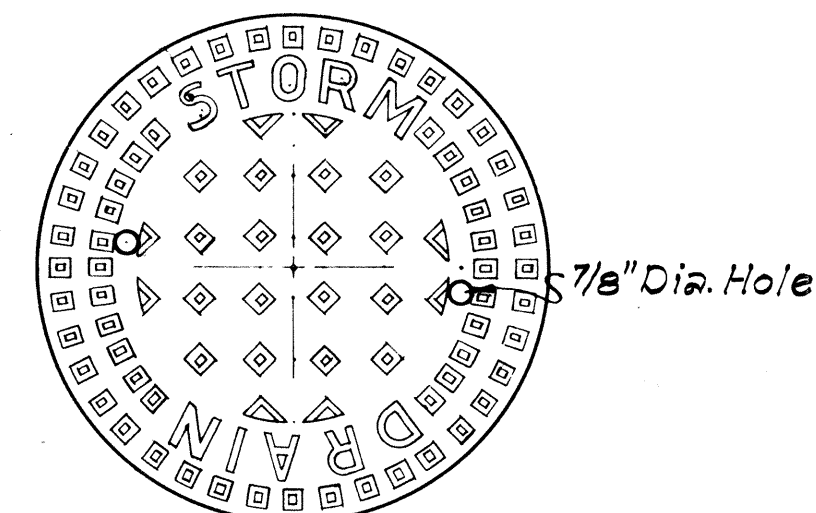
SCALE: 1-1/2" = 1'-0"



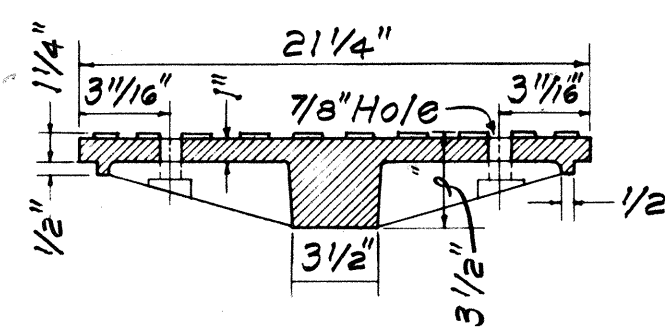
PLAN OF RIM



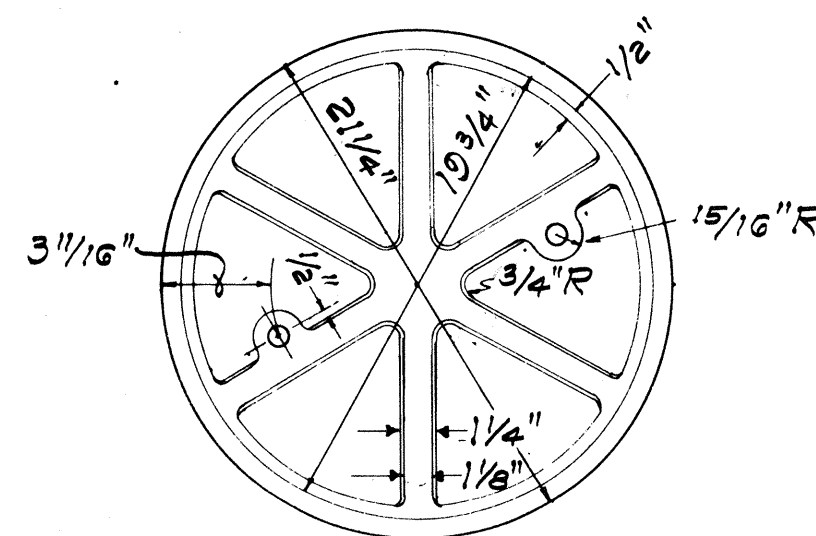
SECTION OF RIM



TOP VIEW OF COVER



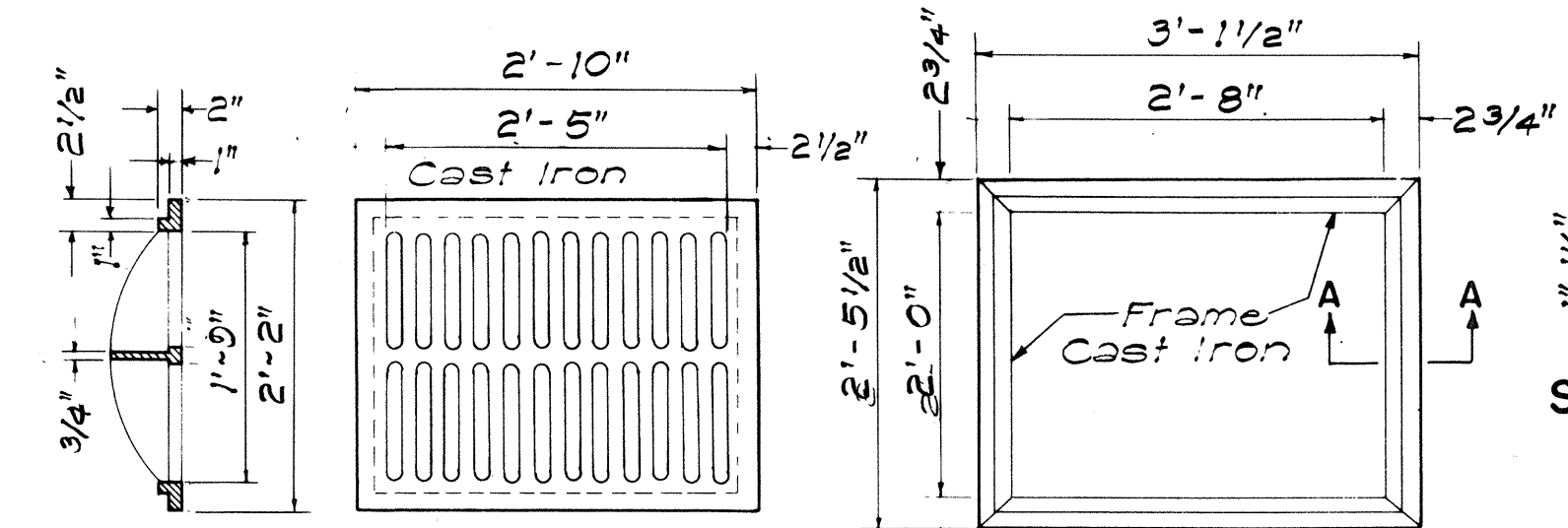
SECTION



BOTTOM VIEW OF COVER

DETAILS OF TYPE "A"
CAST IRON FRAME AND COVER

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



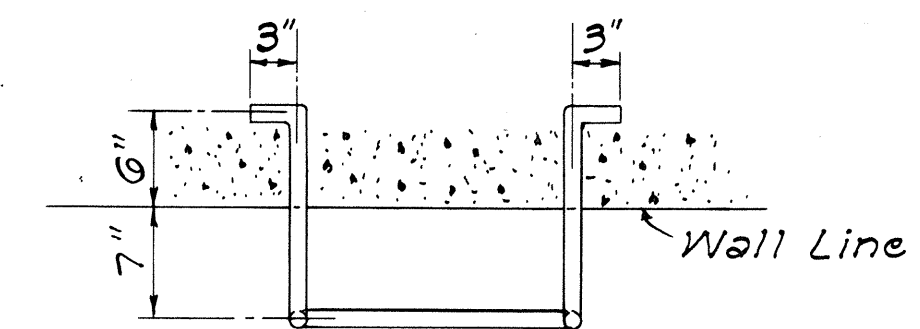
SECTION

TOP VIEW

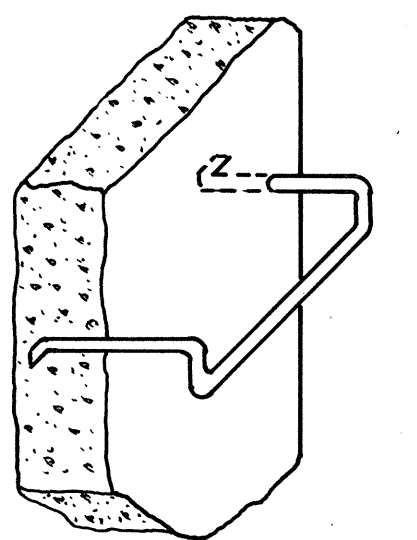
TOP VIEW

TYPE C C.I. FRAME AND GRATE

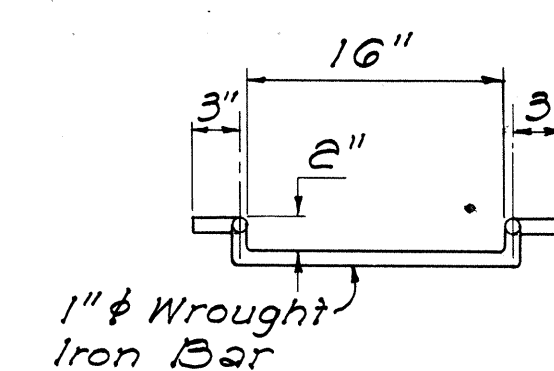
SCALE: 3/4" = 1'-0"



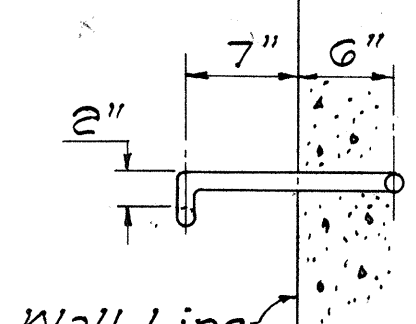
P L A N



PICTORIAL VIEW
NOT TO SCALE



FRONT VIEW



SIDE VIEW

DETAILS OF MANHOLE RUNG

SCALE: 1" = 1'-0"

APPROVAL RECOMMENDED:	12-17-69
HYDRAULIC DESIGN ENGINEER	DATE
APPROVED:	12-17-69
ASSISTANT CHIEF, ENGINEERING	DATE

NO.	REVISION	APPROVED BY	DATE
1.	Detail of Type "P" Cast Iron Frame and Cover	H.T.	1-6-71
2.	Details of Manhole Rungs to conform to OSHA.	H.T.	1-21-75

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
STANDARD DETAILS CATCH BASIN AND MANHOLE CASTINGS
Scale: As Noted Date: July, 1969
SHEET NO 80A OF 11 SHEETS DH 6

ORIGINAL PLAN	DATE
DESIGNED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	

ADD 43 S-1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H1-1(109)-13	1975	44	130

GENERAL NOTES

- Grates and Frames shall be hot dip galvanized after fabrication, see specifications.
- All welds $\frac{3}{8}$ " unless otherwise noted.
- Refer to "Spacing Table" for Types 61614 & 61616 Drop Intake and Frame & Grates dimensions.
- 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 (12" o.c.) are required when "H" is greater than 4 feet 6 inches. Only one rung (16 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.

SPACING TABLE					
TYPE	NO. BARS	A	B	C	D
61614	11	2'-0"	1'-11 $\frac{1}{2}$ "	$\frac{1}{4}$ "	1'-6"
61616	17	3'-0"	2'-11 $\frac{3}{8}$ "	$\frac{1}{8}$ "	2'-0"

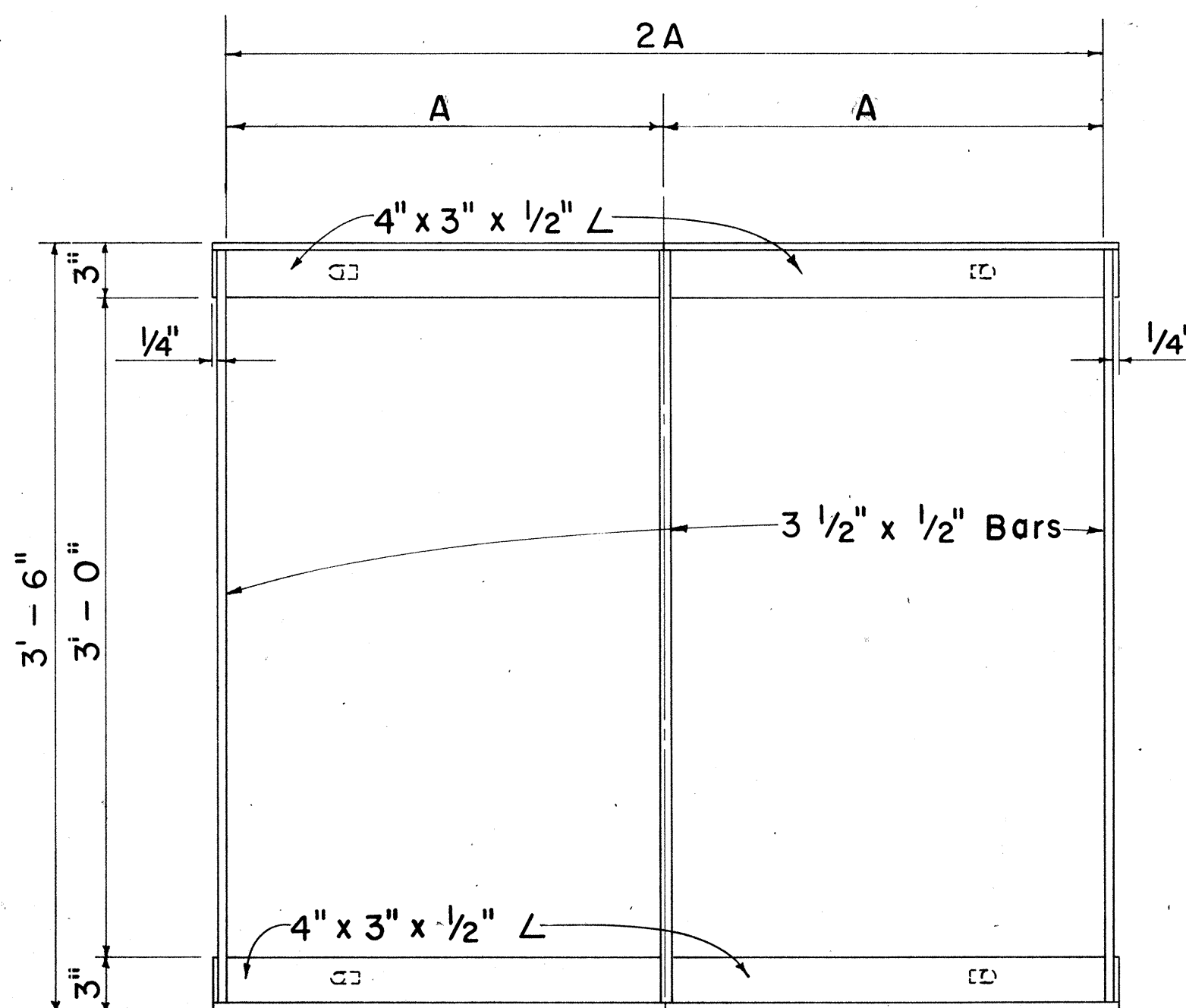
NO.	REVISION	APPROVED BY	DATE
1	Curb for Top of Fill Gutters.	H. J. J. J.	6-5-11
2	Spacing on manhole rungs to conform to OSHA.	H. J. J. J.	1-21-15

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

APPROVED:
 ASSISTANT CHIEF, ENGINEERING
 DATE 12-11-69

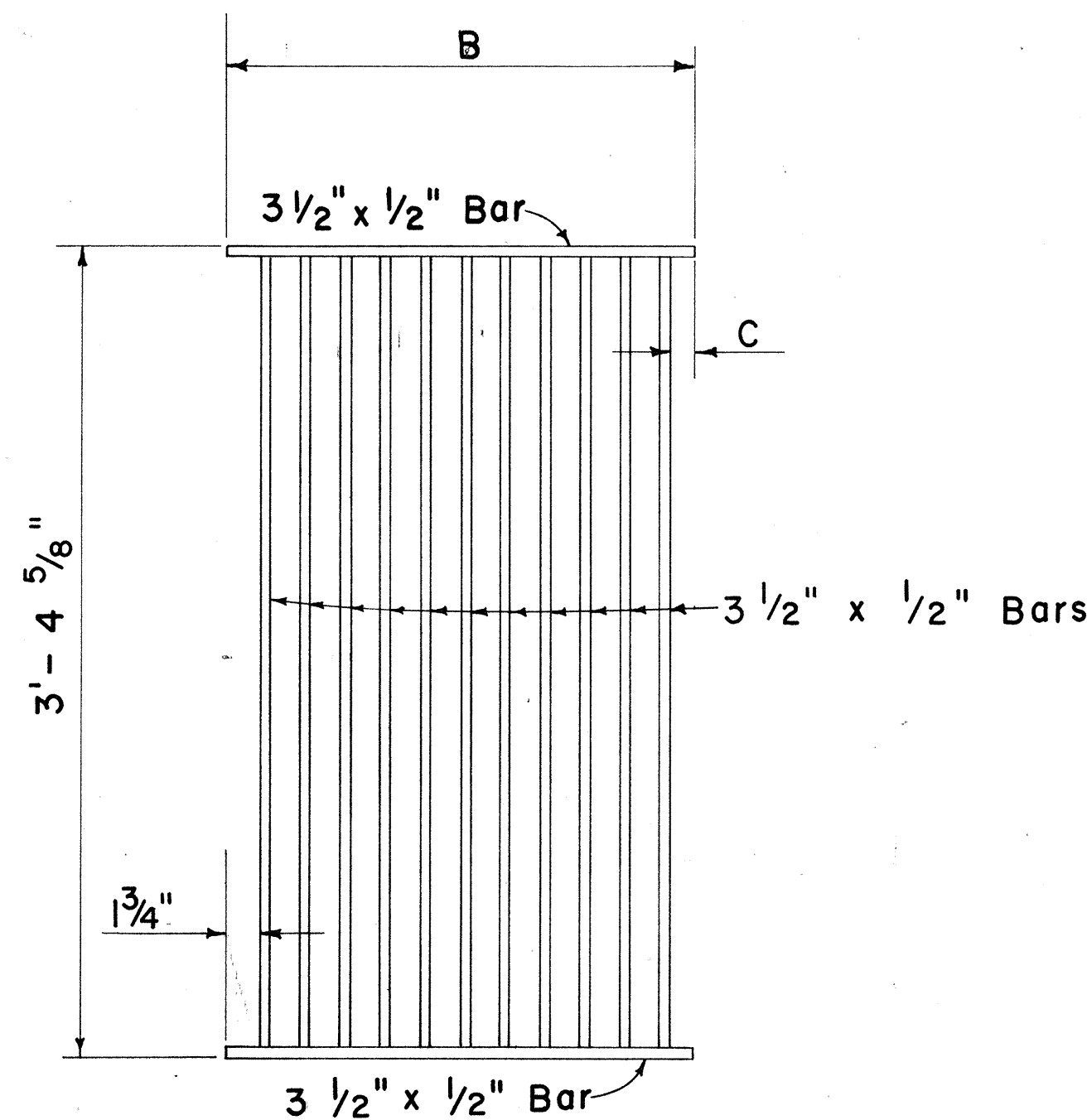
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
 STANDARD DETAILS
 TYPE 61614 & 61616
 GRATED DROP INTAKES

Scales: As Noted Date: Feb. 1969
 SHEET No. 11 OF 11 SHEETS DH 8



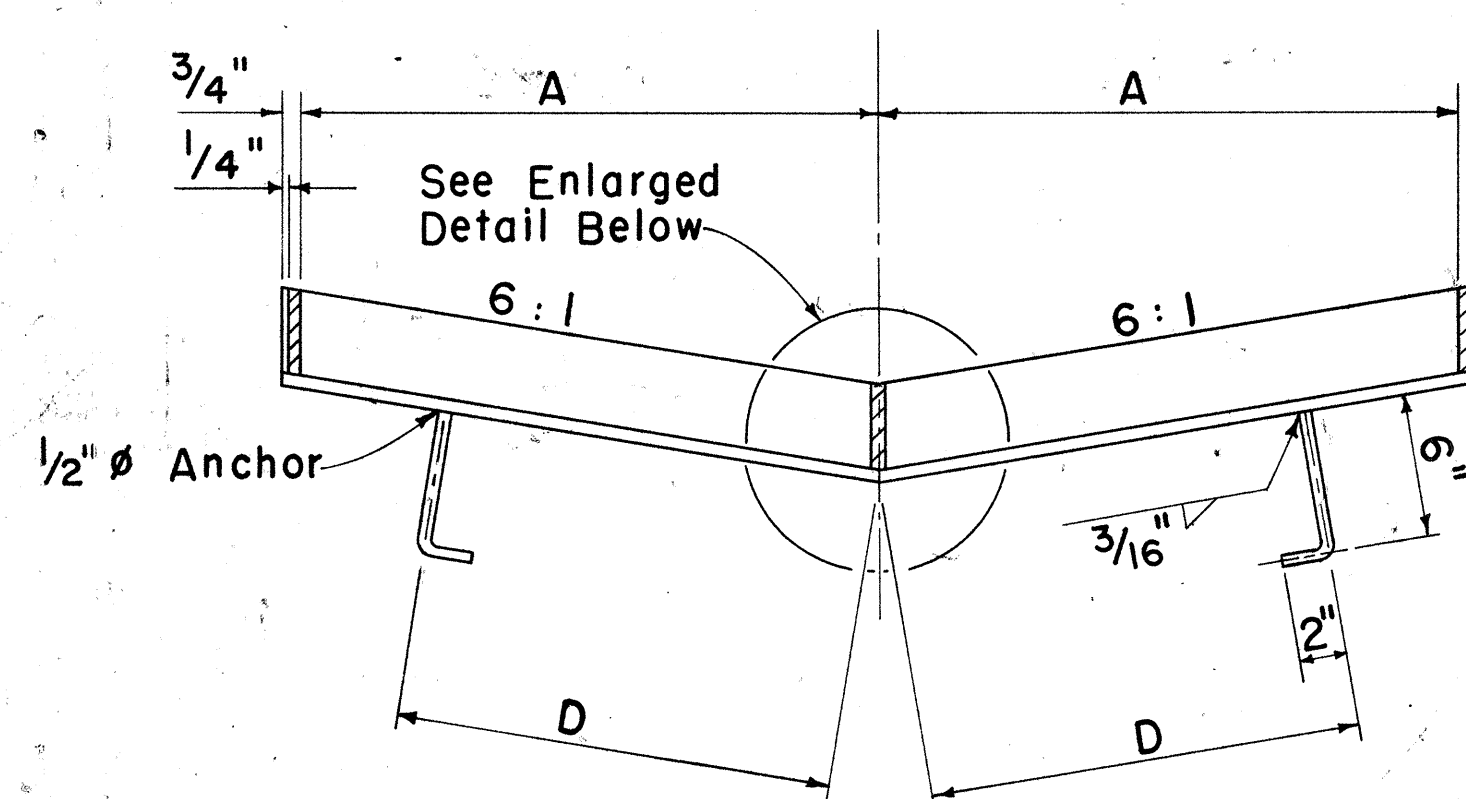
PLAN

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



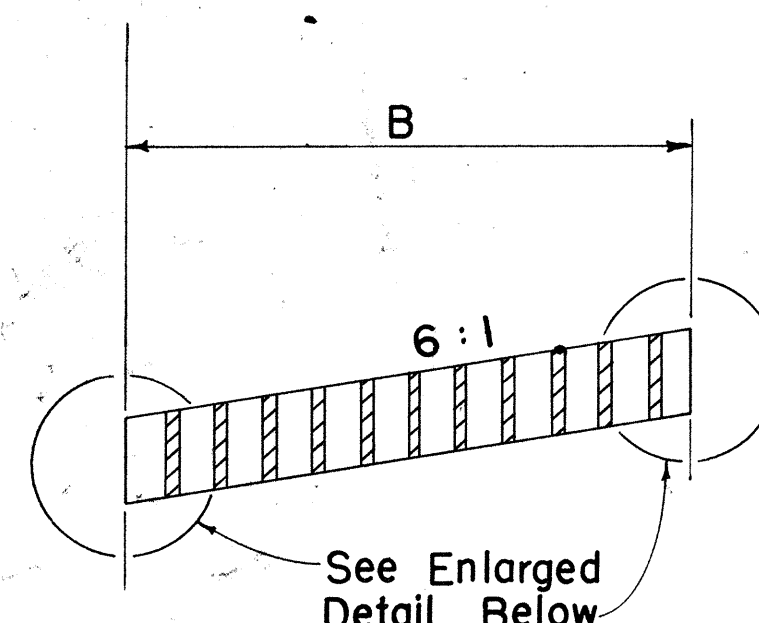
PLAN

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



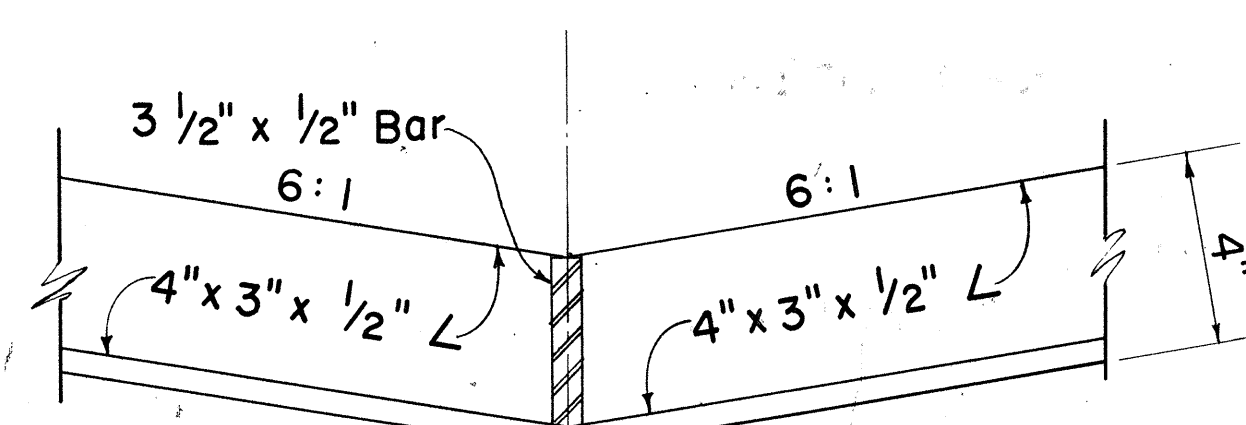
SECTION

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



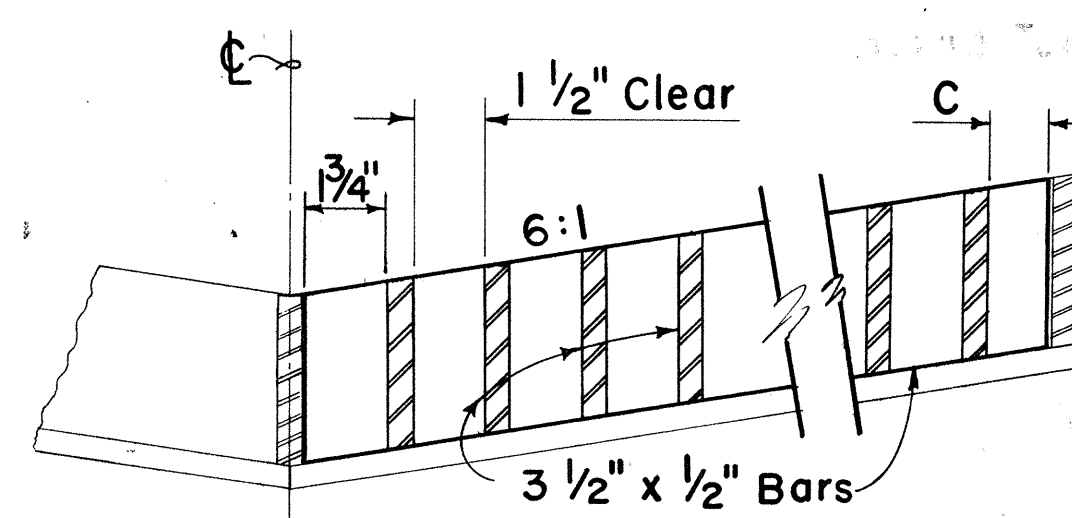
SECTION

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



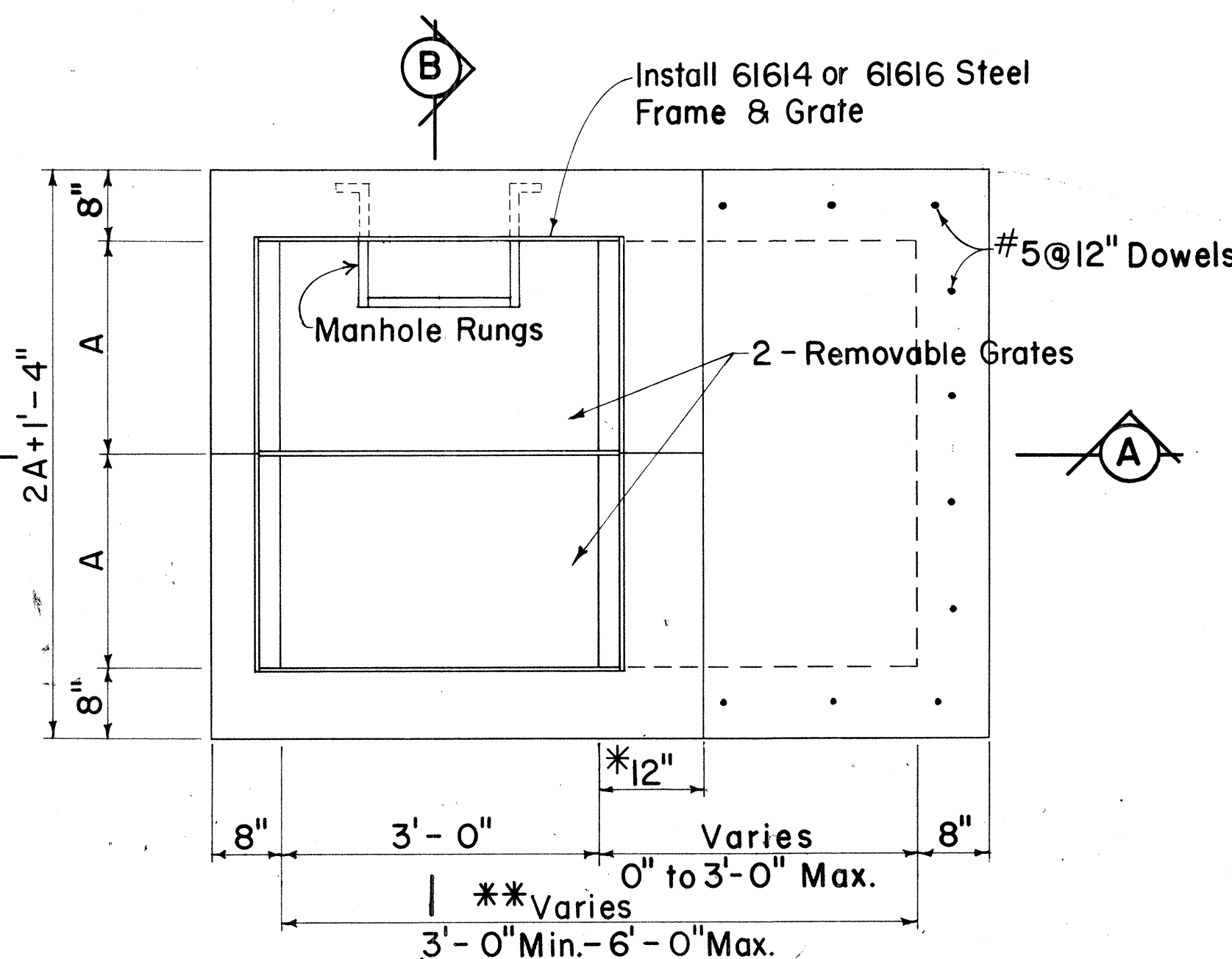
FRAME

Scale: 3" = 1'-0"

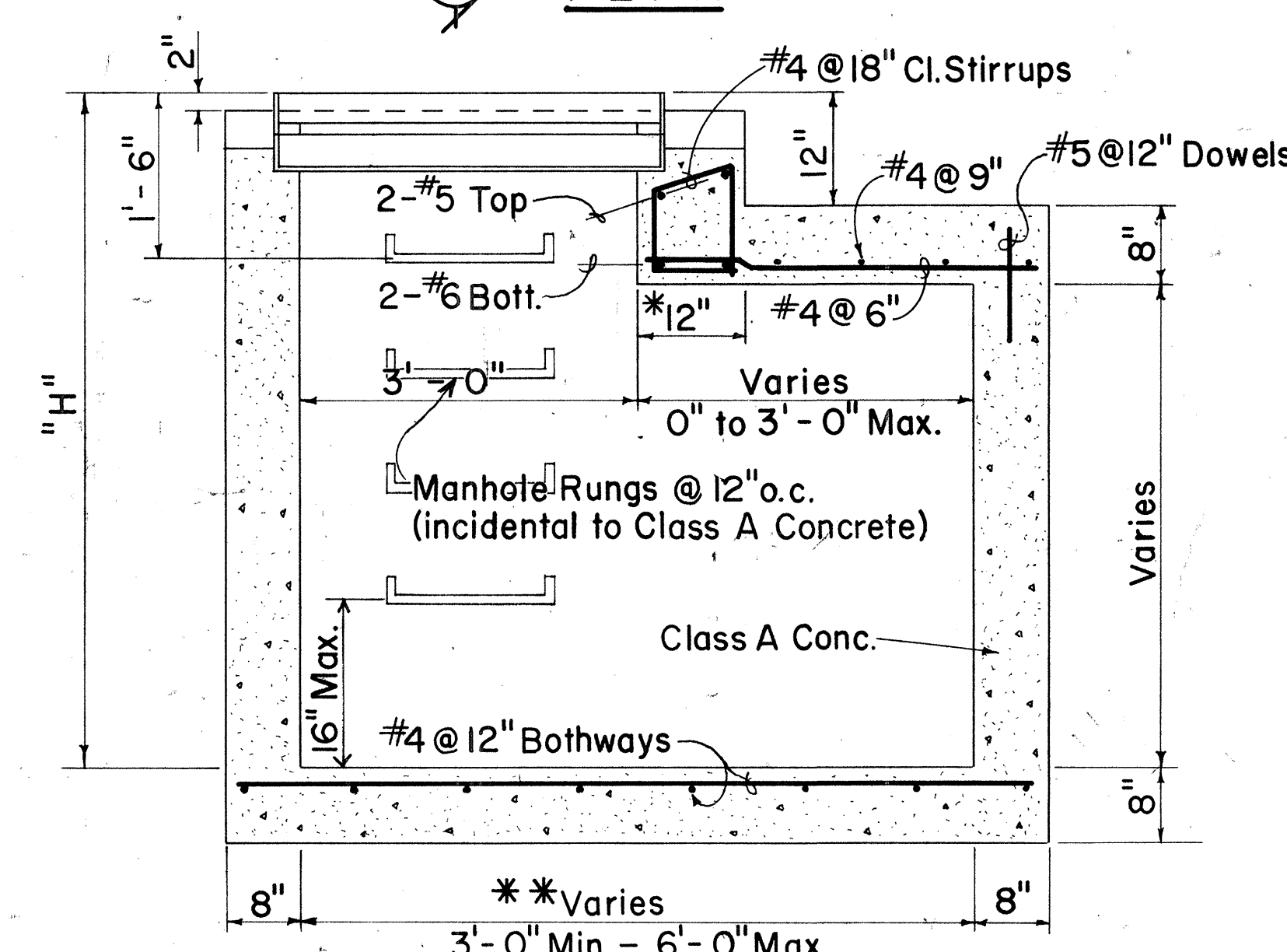


GRATE

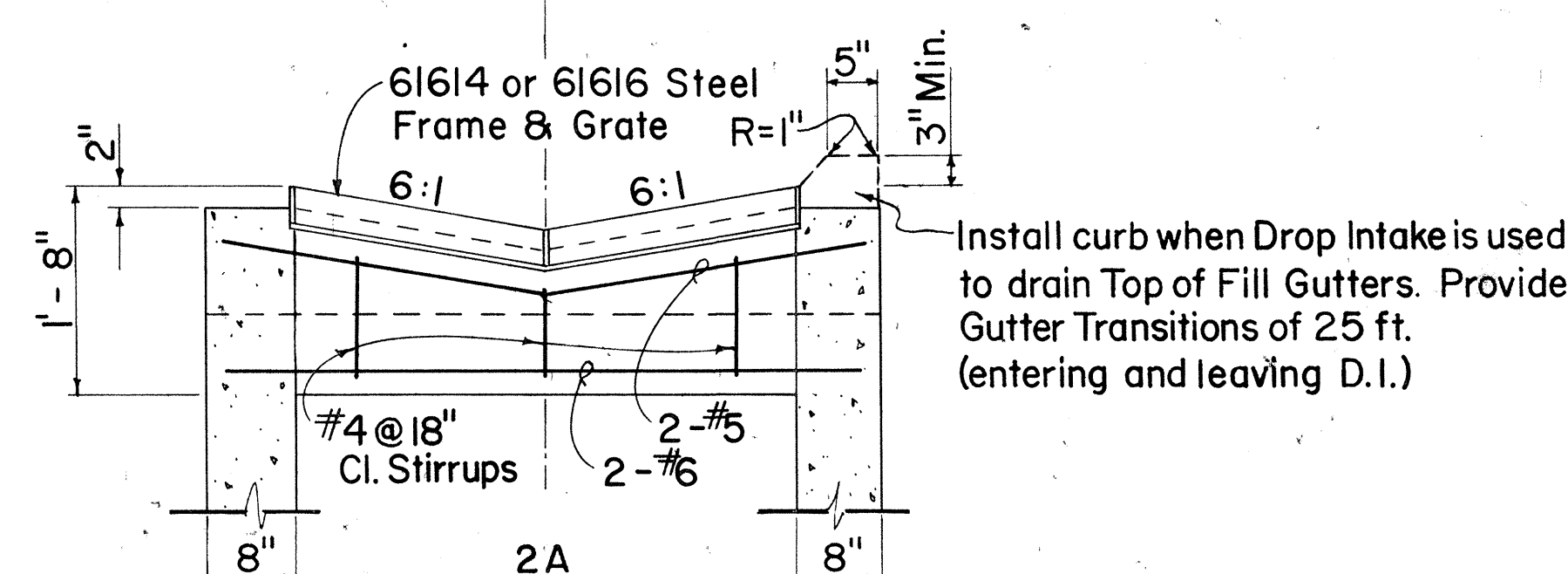
Scale: 3" = 1'-0"



PLAN



SECTION A - A



SECTION B - B

DETAILS OF 61614 OR 61616 DROP INTAKE

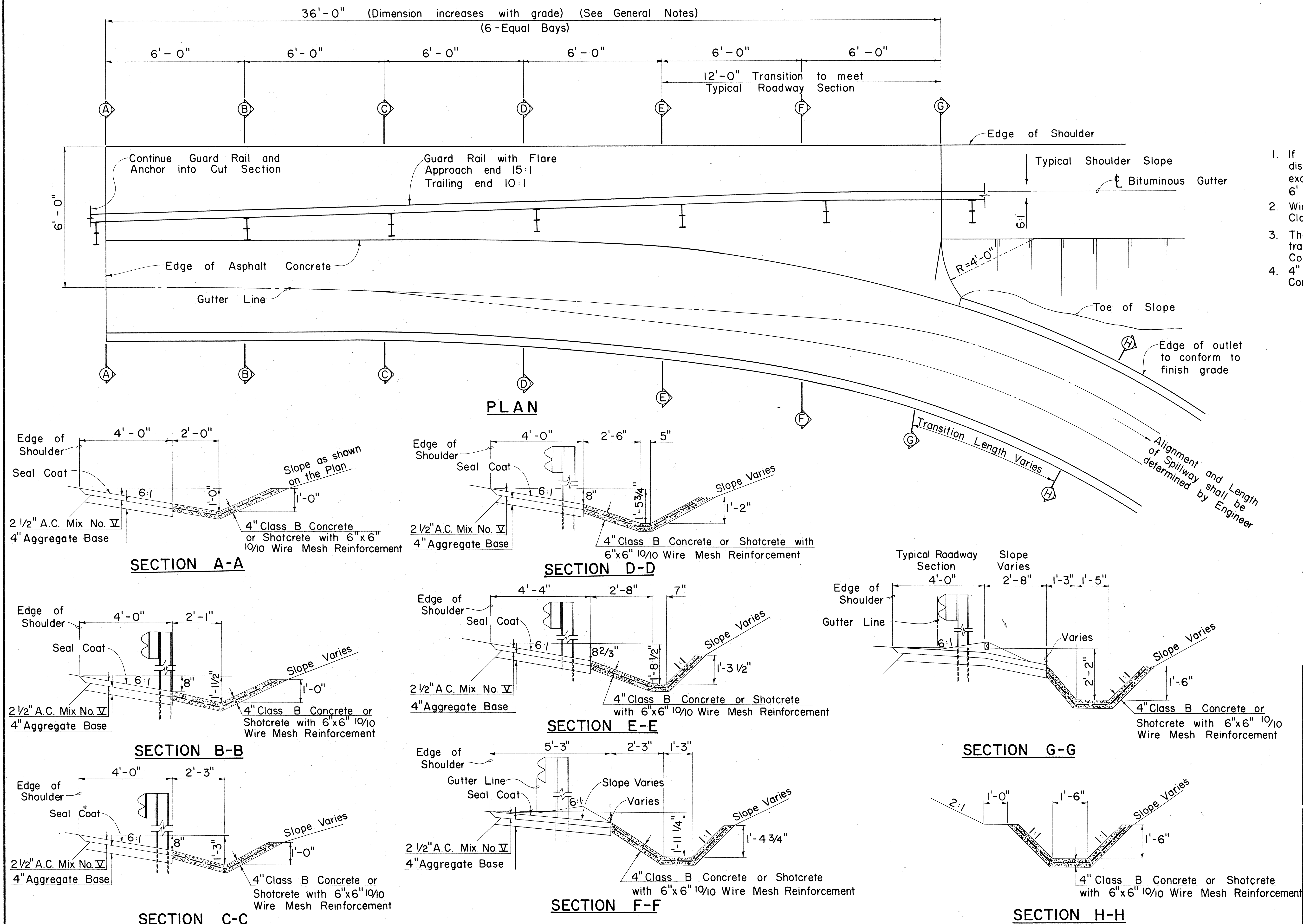
Scale: 3/4" = 1'-0"

- *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.	I-HI-1(109)13	1975	46	130

GENERAL NOTES

- 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.
- Wire Mesh Reinforcement to be incidental to Class B Concrete or Shotcrete.
- The gutter will be paid for at the contract unit price per linear foot for Asphalt Concrete Gutter, Type 7.
- 4" Aggregate Base to be incidental to Asphalt Concrete Gutter.



APPROVAL RECOMMENDED:

HYDRAULIC DESIGN ENGINEER

2-2-71
DATE

APPROVED:

ASSISTANT CHIEF, ENGINEERING

2-25-71
DATE

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. 11D OF 11 SHEETS DH 20