

Revised: Feb. 16, 1968

All the quantities shown are original theoretical quantities.
For actual quantities, refer to project ledger and/or
computation book.

SHEET No. 5-1 OF 25 SHEETS

C.O.

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

DRAINAGE SUMMARY

Revised: Feb. 16, 1968

All the quantities shown are original theoretical quantities. For actual quantities, refer to project ledger and/or computation book.

SHEET No. 2-2 OF 26 SHEETS

C. O. S. 4

ORIGINAL PLAN	SURVEY PLOTTED BY DRAWN BY TRACED BY DESIGNED BY QUANTITIES BY CHECKED BY	DATE
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DRAINAGE SUMMARY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO	TOTAL SHEETS
HAWAII	HAW.	I-HI-131 Unit 1	1967	85	292

[illegible]

All the quantities shown are original theoretical quantities. For actual quantities, refer to project ledger and/or computation book.

SHEET No. 5-3 OF 26 SHEETS

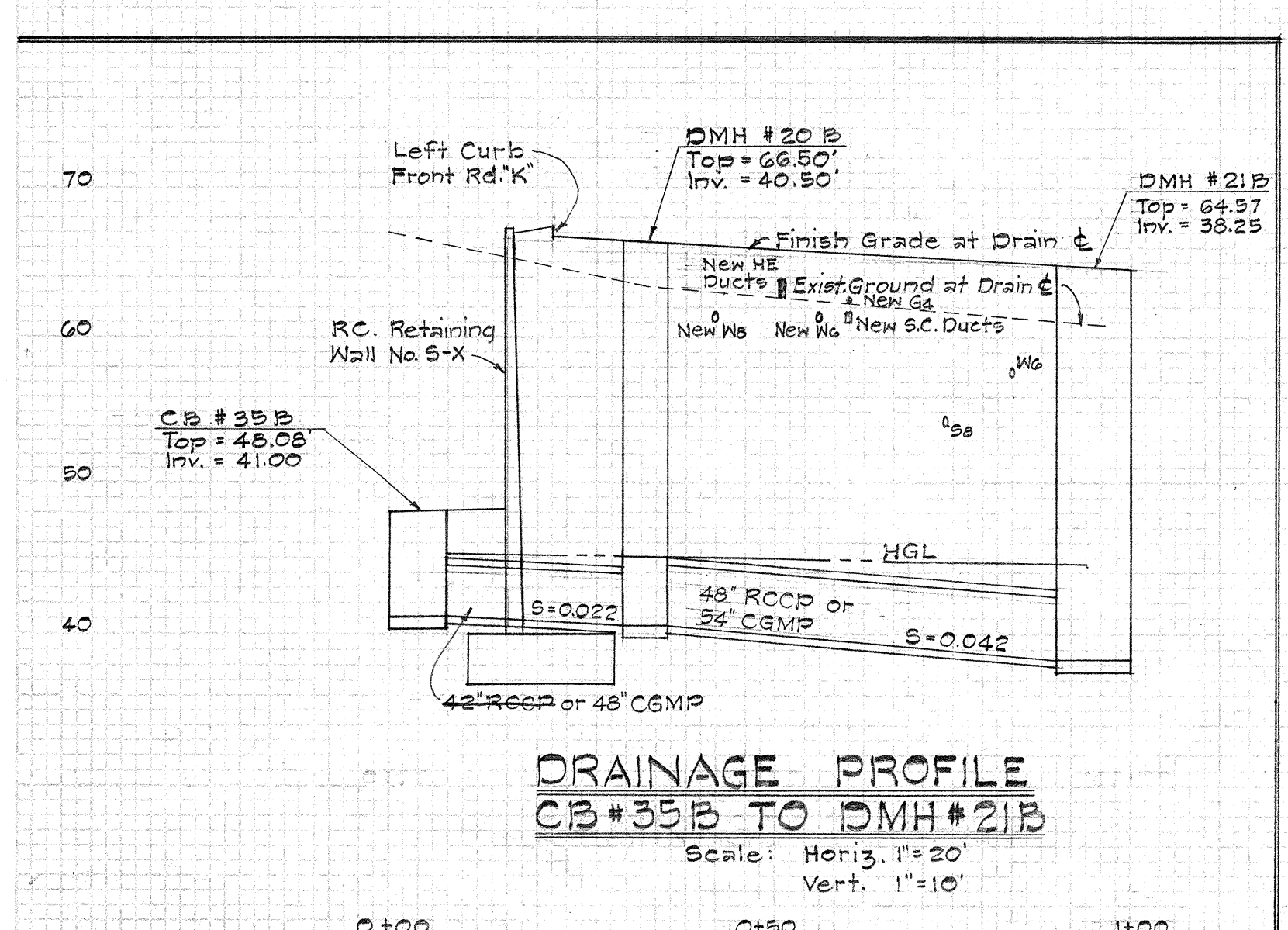
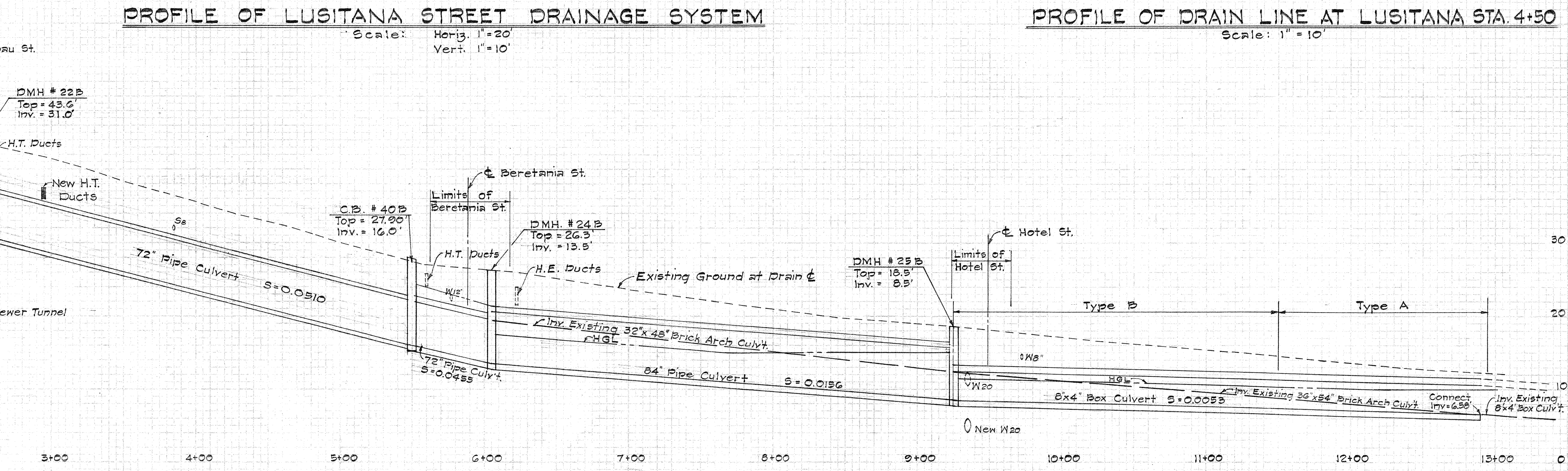
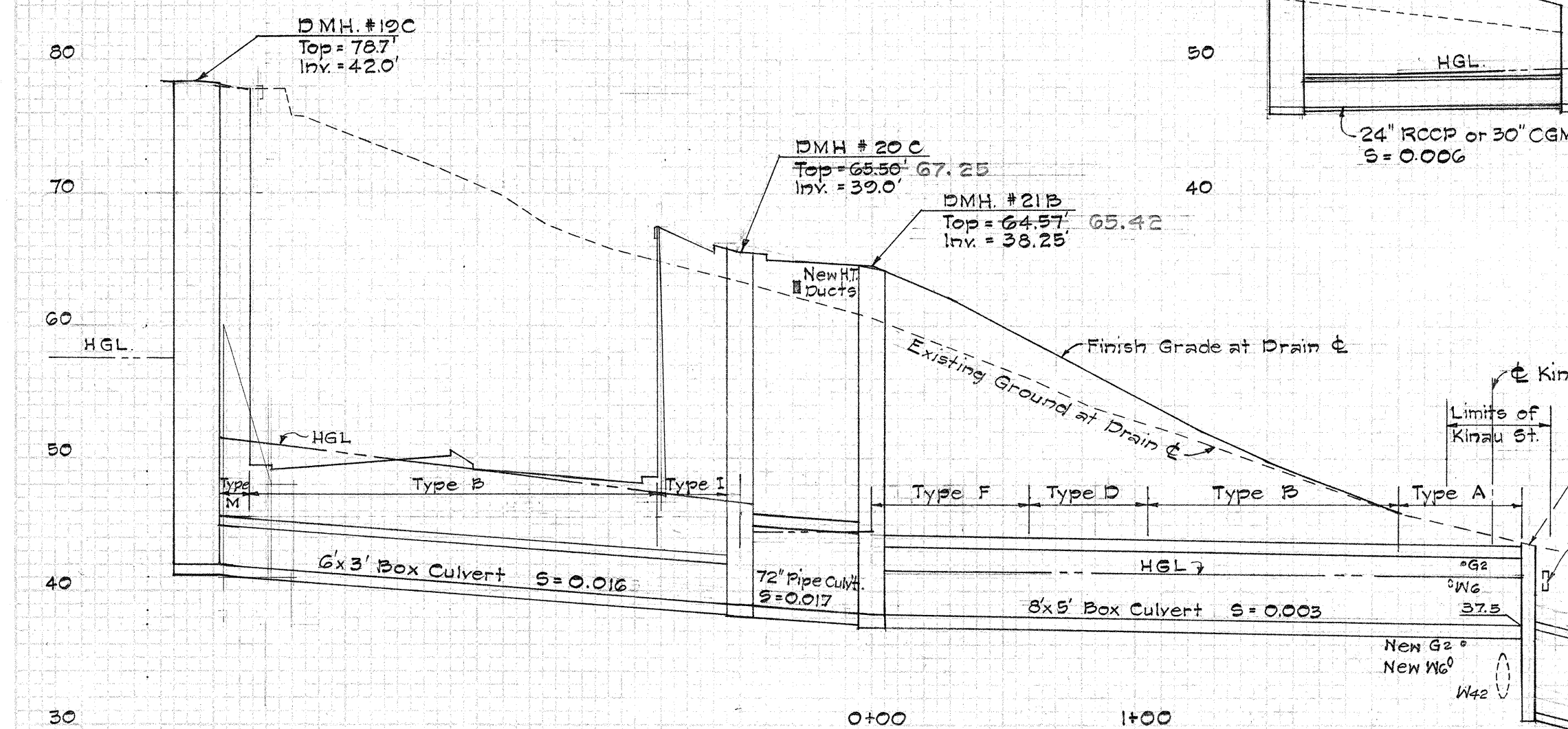
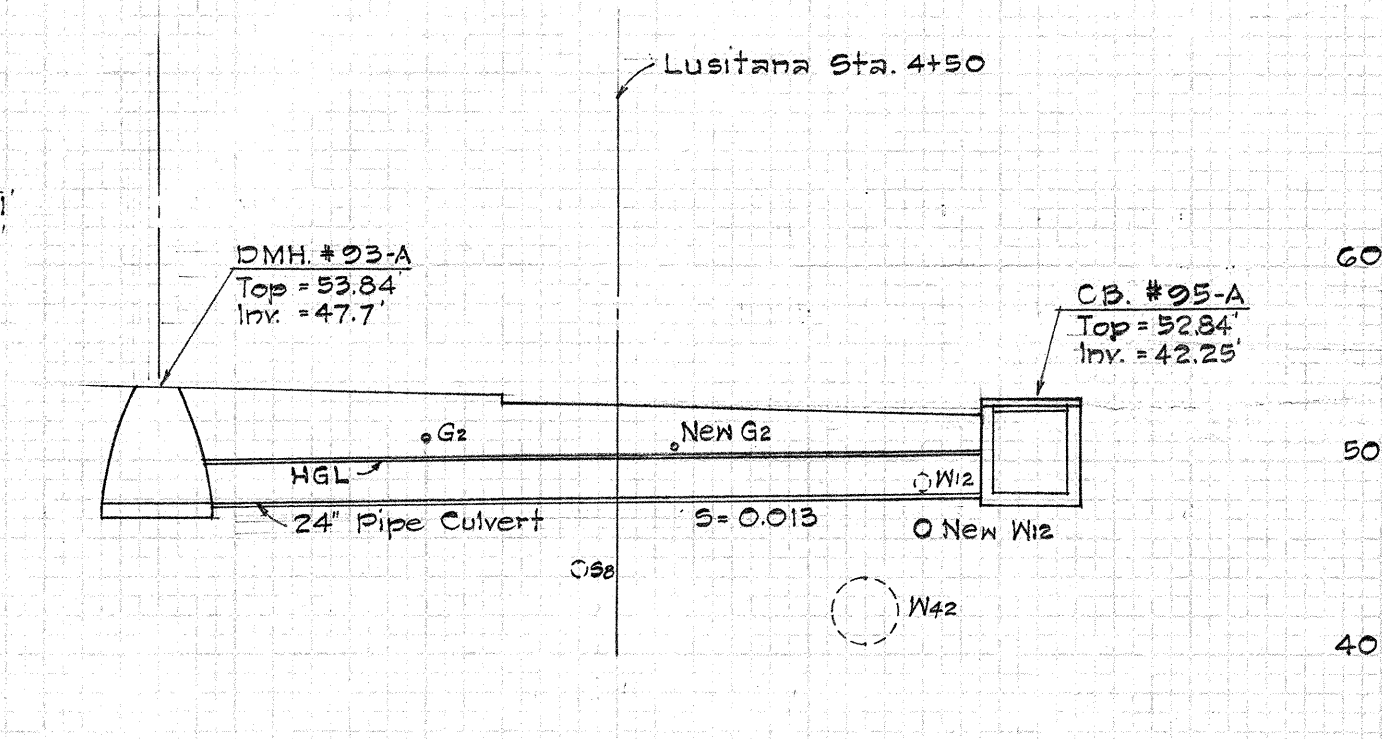
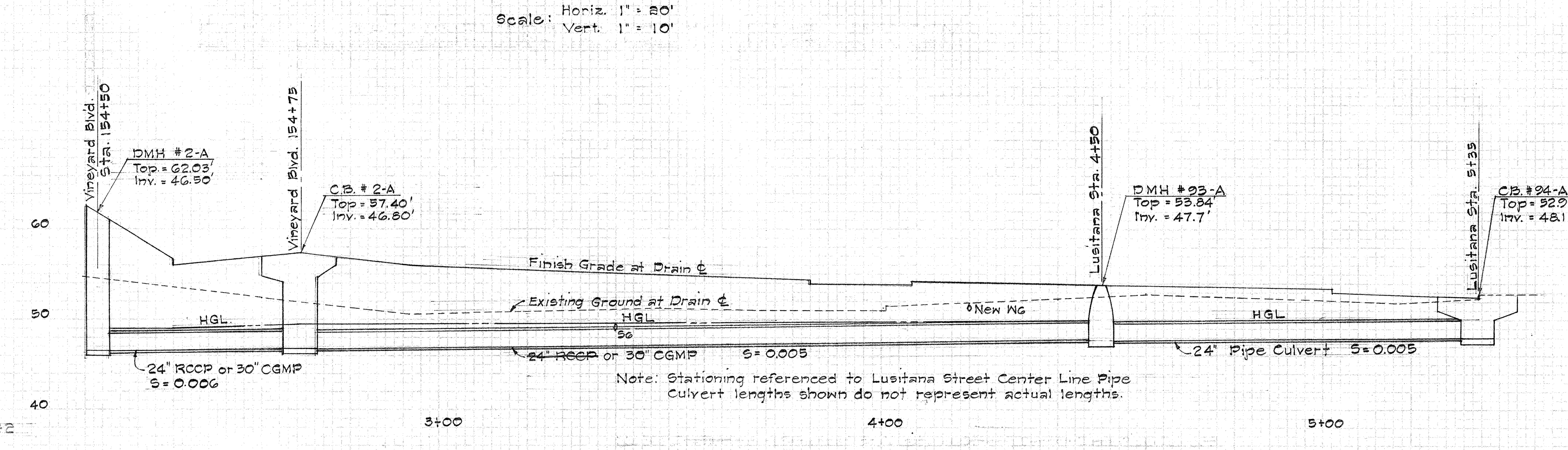
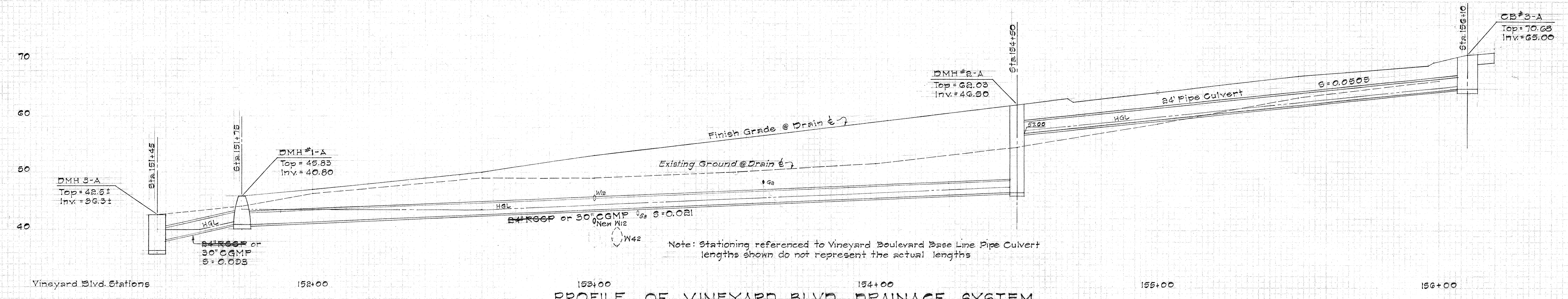
DRAINAGE SUMMARY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(31) Unit 1	1967	86	202

[illegible]

All the quantities shown are original theoretical quantities.
For actual quantities, refer to project ledger and/or
computation book.

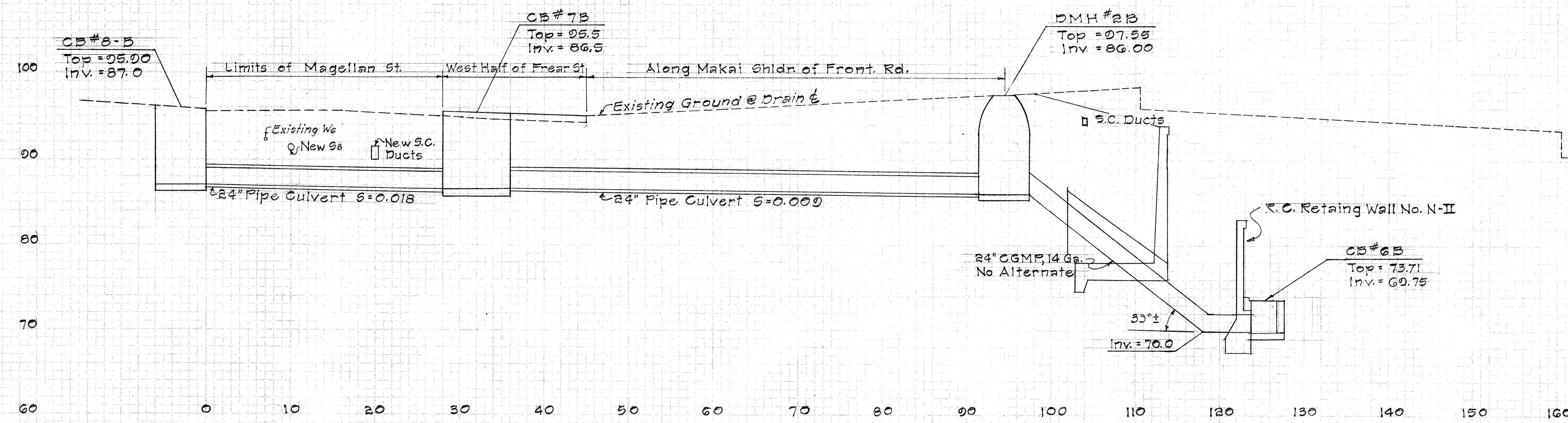
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	I-11(131) Unit 1	1967	87	202



STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

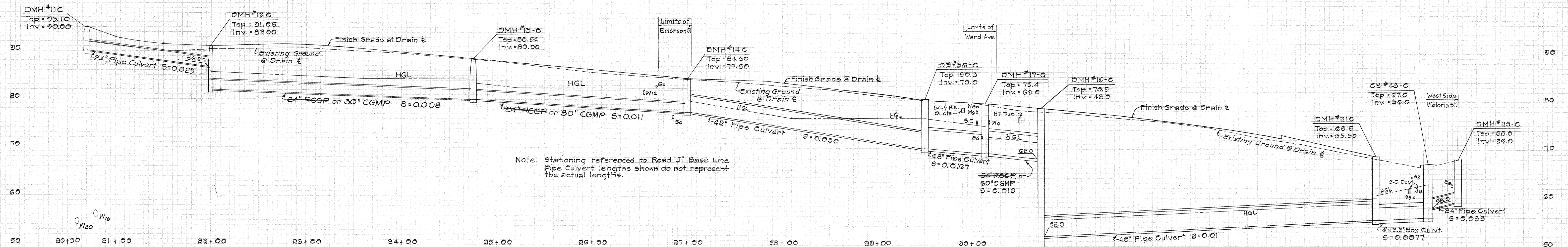
DRAINAGE SYSTEM PROFILES
 VINEYARD BOULEVARD
 LUSITANA STREET
 WARD AVENUE
 INTERSTATE ROUTE H-1
 (LUNALILO FREEWAY)
 FAI Proj. No. I-11(131), Unit 1
 SHEET No. D-5 OF 26 SHEETS Scale As Shown
 Date: June 1966

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	I-HI-1(31) Unit 1	1967	86	292



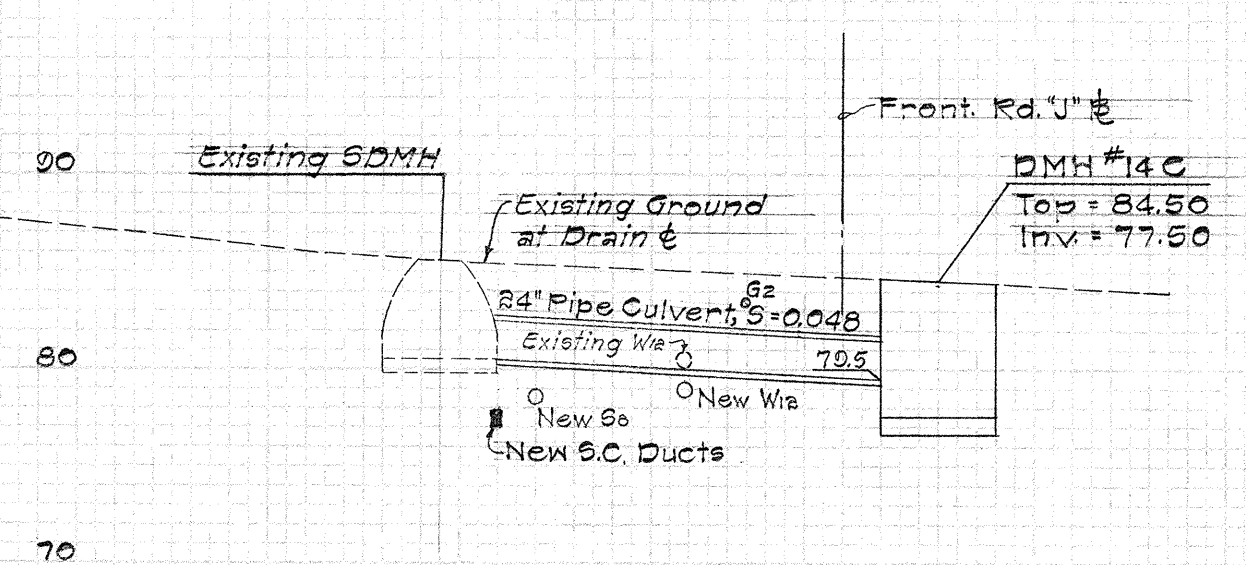
PROFILE OF DRAINAGE SYSTEM AT FREAR ST. & FRONTAGE RD. "J"

Scale: Horiz. 1" = 10'
Vert. 1" = 10'



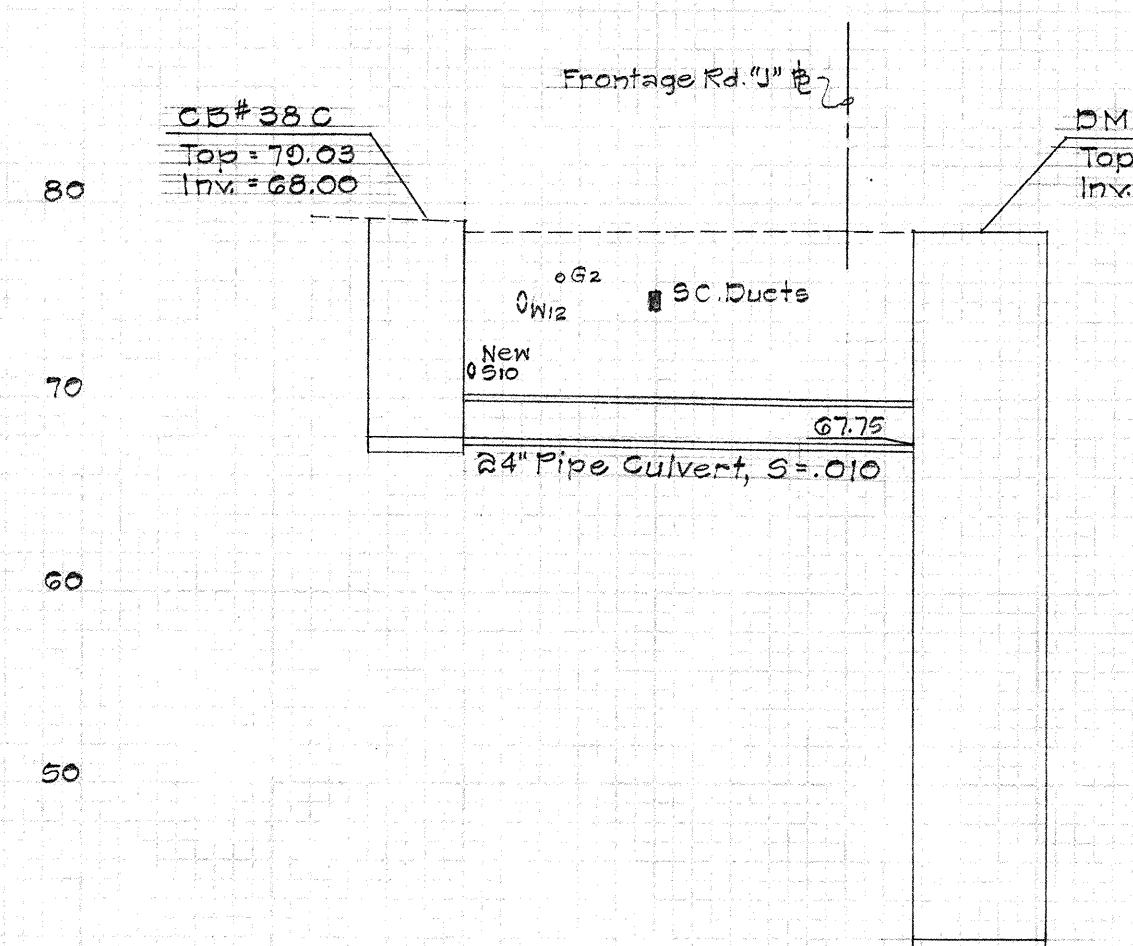
PROFILE OF ROAD "J" DRAINAGE SYSTEM

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



PROFILE OF DRAINAGE SYSTEM AT FRONTAGE RD. "J" STA. 27+00

Scale: Horiz. 1" = 10'
Vert. 1" = 10'



PROFILE OF DRAINAGE SYSTEM AT FRONTAGE RD. "J" STA. 30+74
CB#38C to DMH#10C

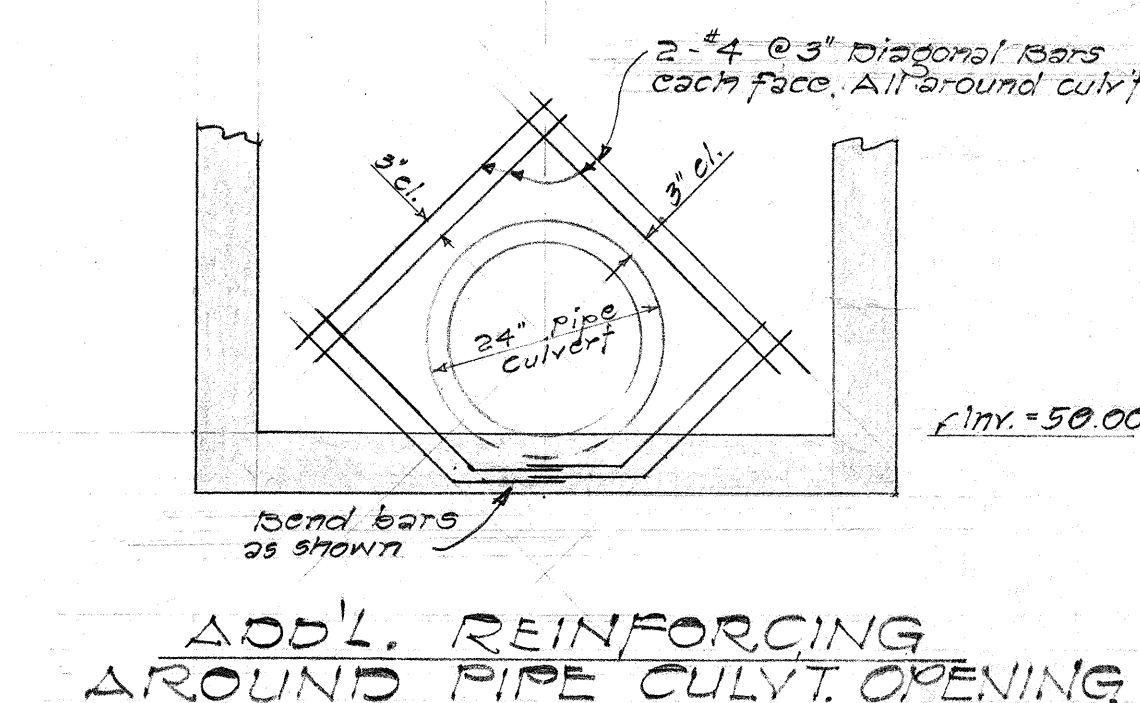
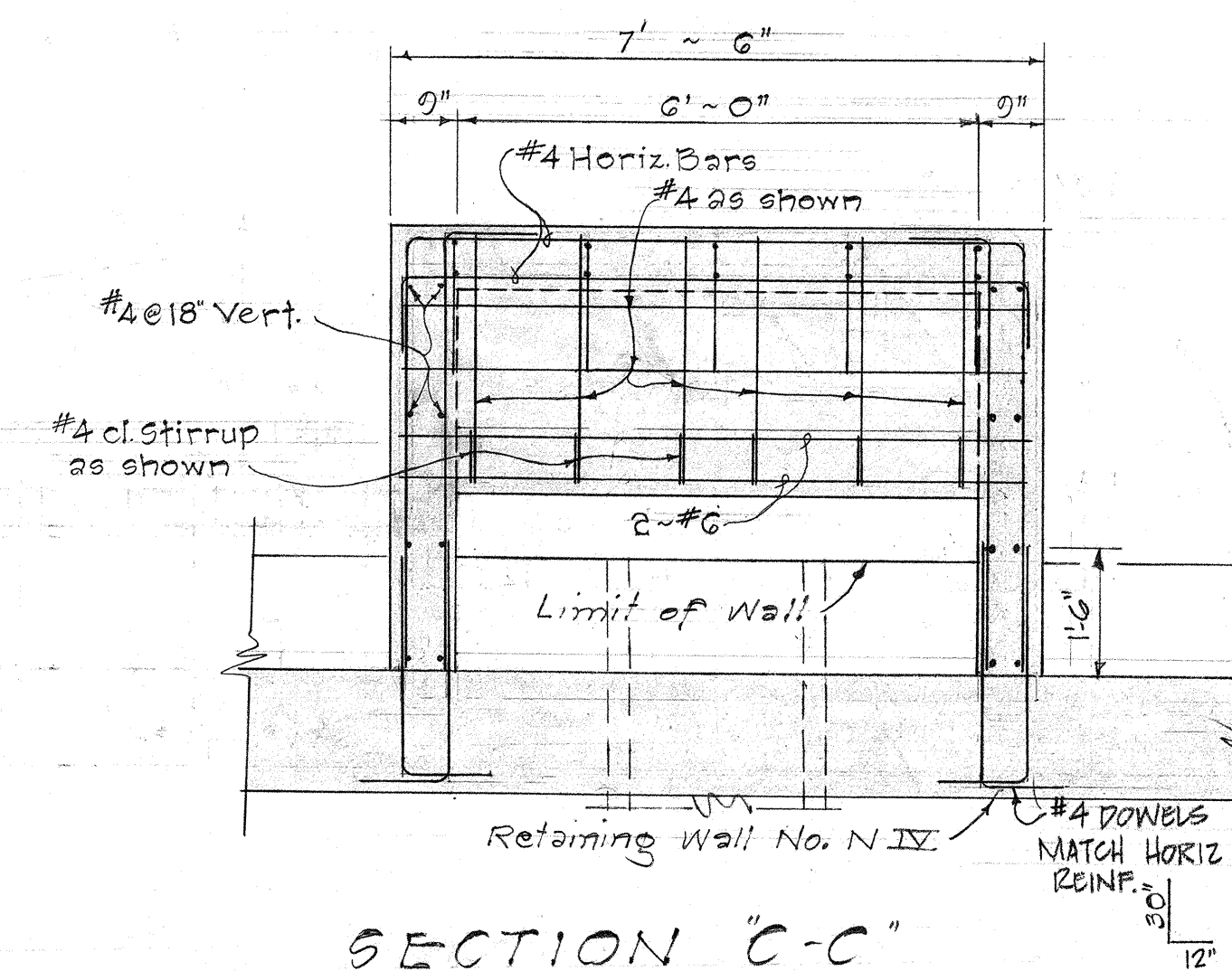
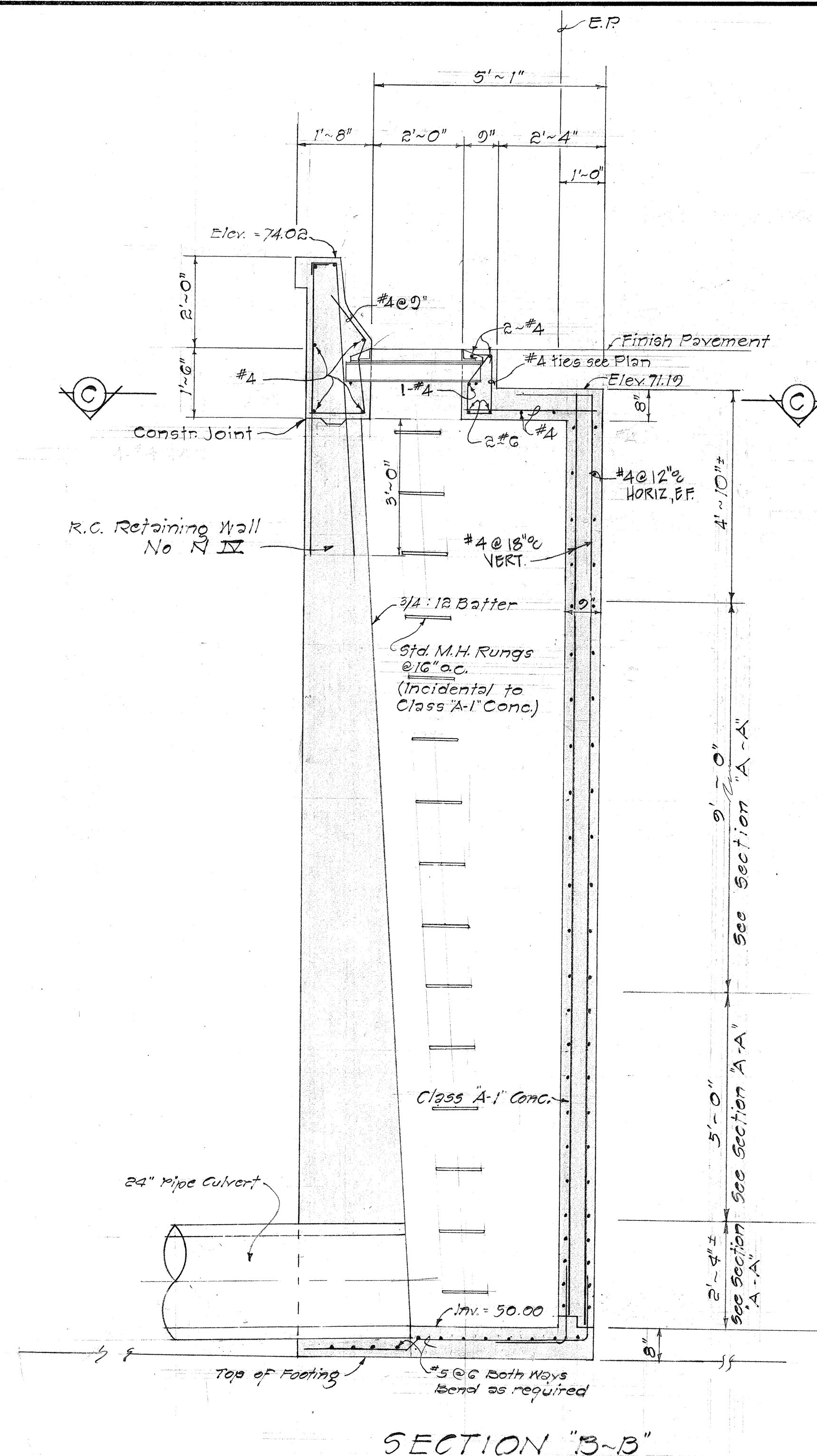
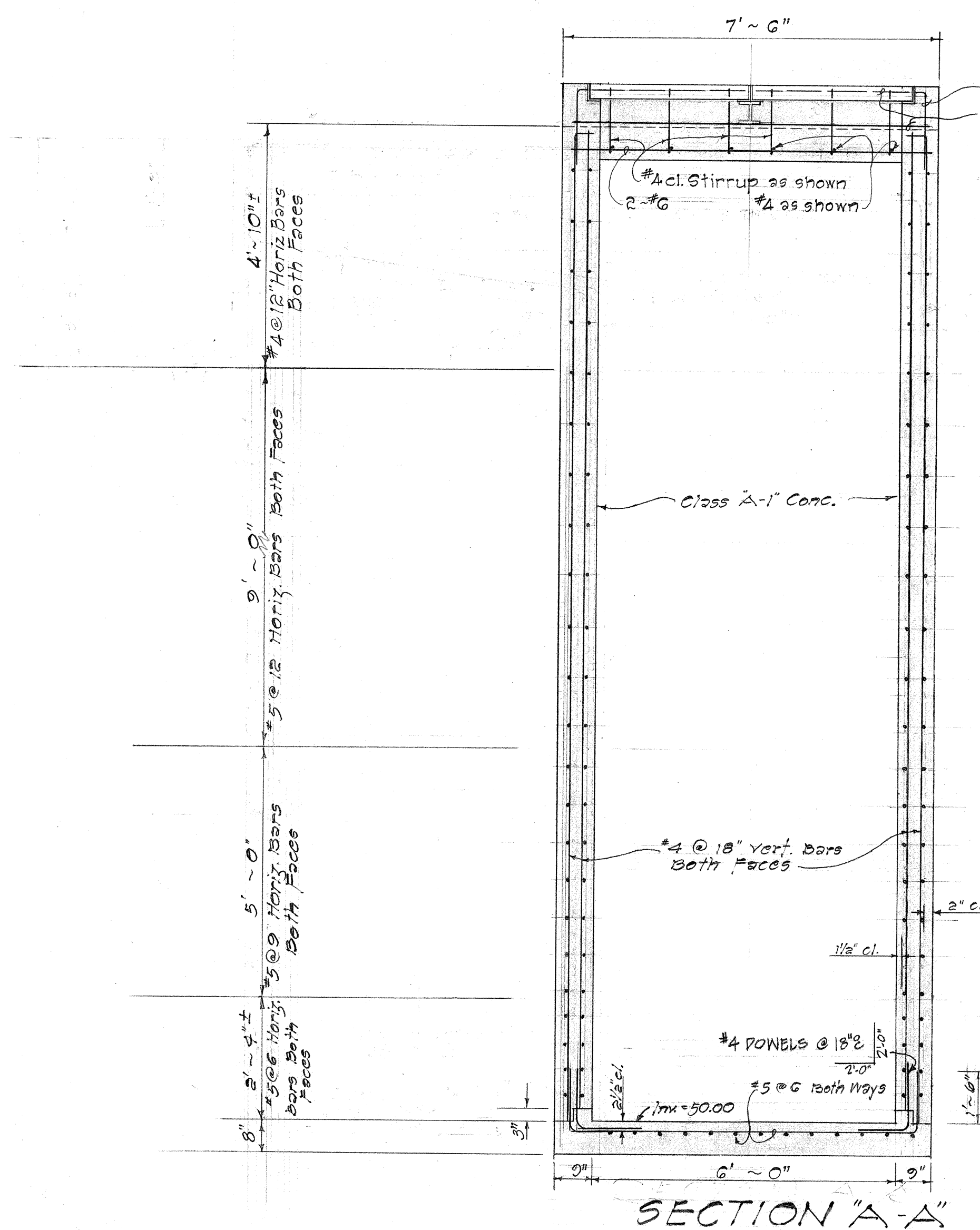
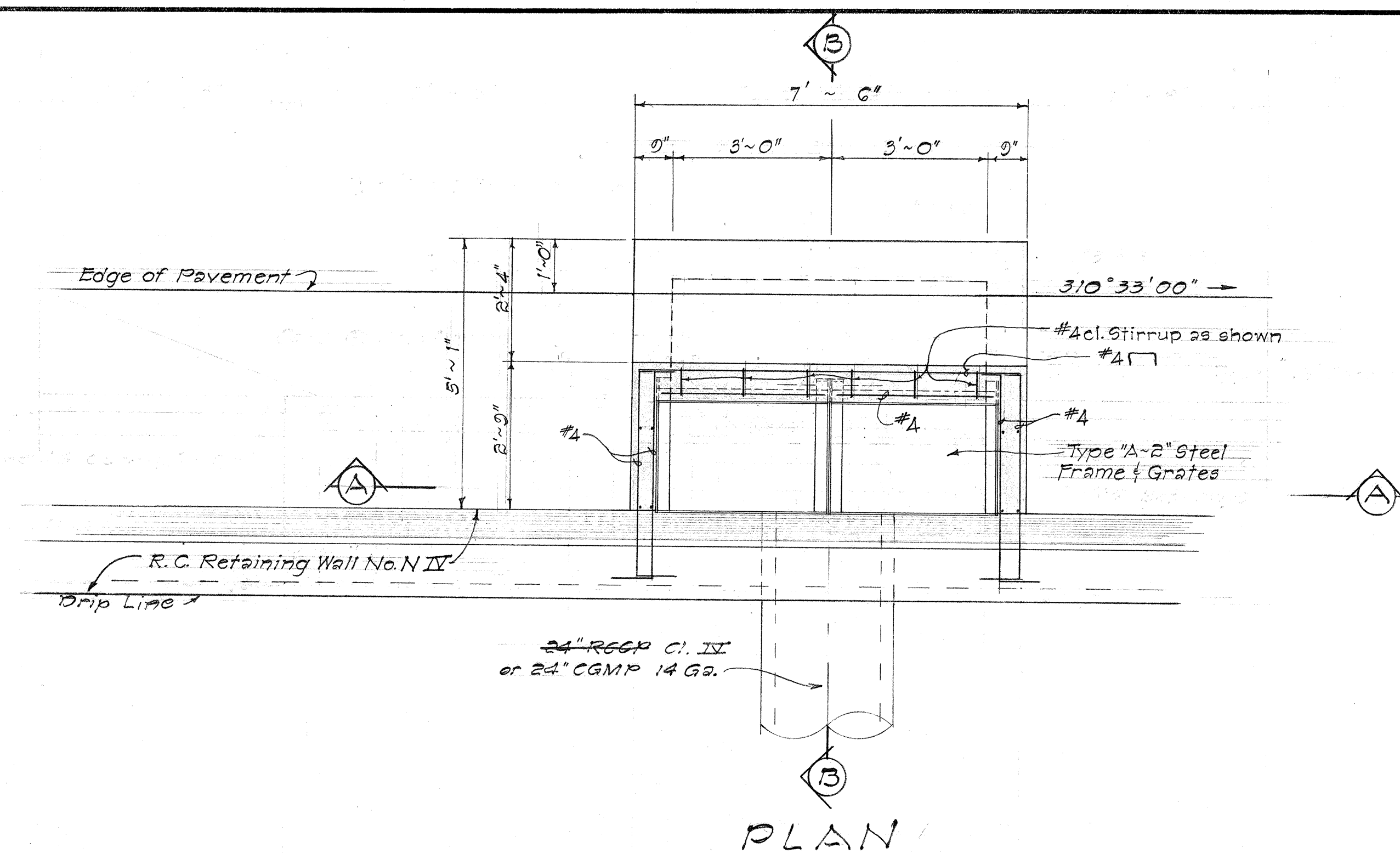
Scale: Horiz. 1" = 10'
Vert. 1" = 10'

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE SYSTEM PROFILES
FREAR ST. & FRONTAGE RD. "J"
FRONTAGE ROAD "J"
INTERSTATE ROUTE H-1
(LUNALILO FREEWAY)
F.A.I. Proj. No. I-HI-1(31), Unit 1

SHEET No. D-G OF 26 SHEETS Scale: As Shown

Date: June 1966

SS

Revised: Feb. 16, 1968

THIS SHEET SUPERSEDES
SHEET NO. 89

DETAILS OF MODIFIED CATCH BASIN #6
VINEYARD WEST BOUND STA. 164+10
SCALE: 1/2" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE STRUCTURE DETAILS
OF MODIFIED CATCH BASIN #C

INTERSTATE ROUTE HI
(LUNALILO FREEWAY)
F.A.I. Proj. No. I-HI-1 (31) UNIT 1

Scale: As Shown Date: June 1966

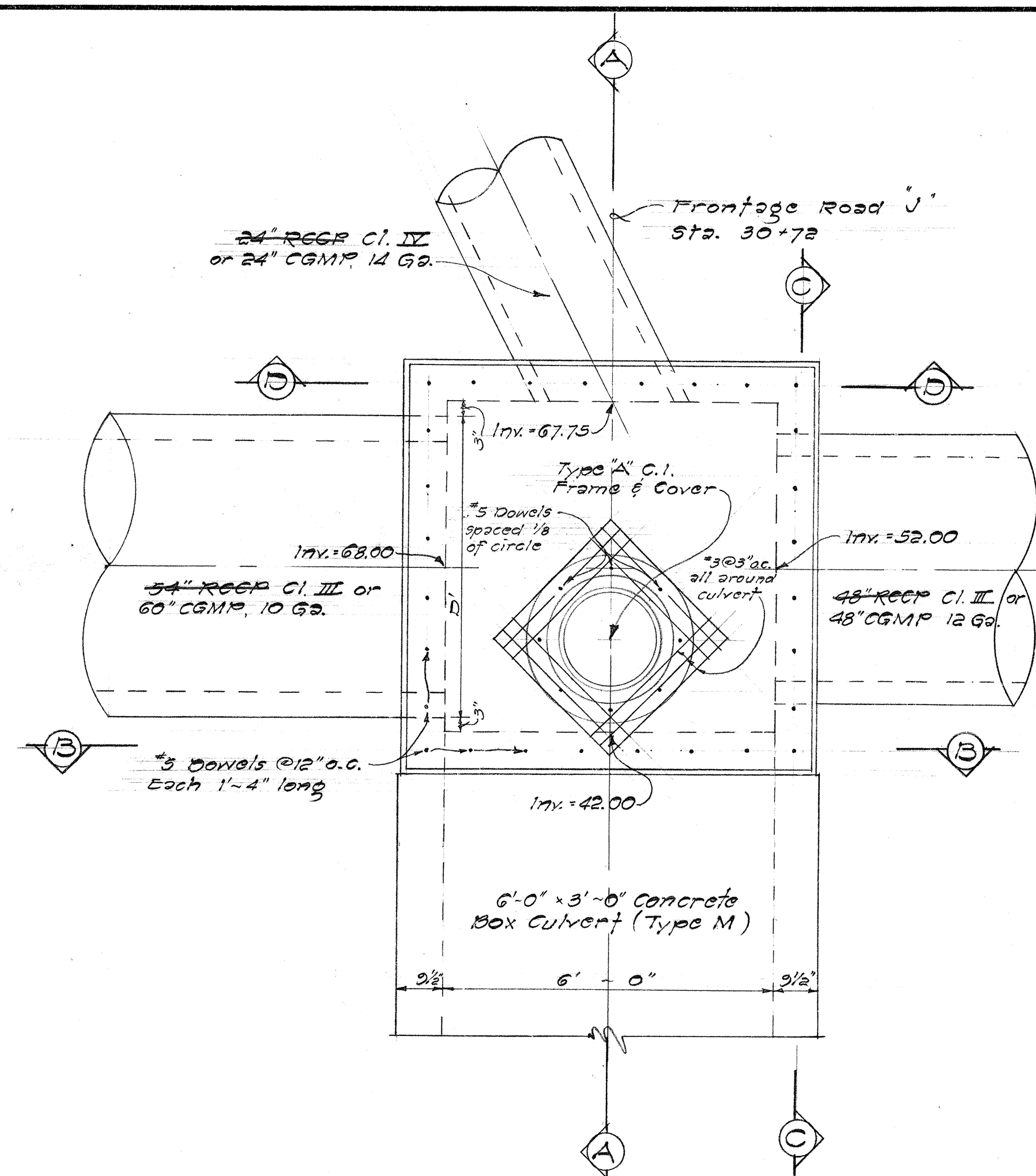
SHEET No. 7-7 OF 26 SHEETS

C. O. S. C.

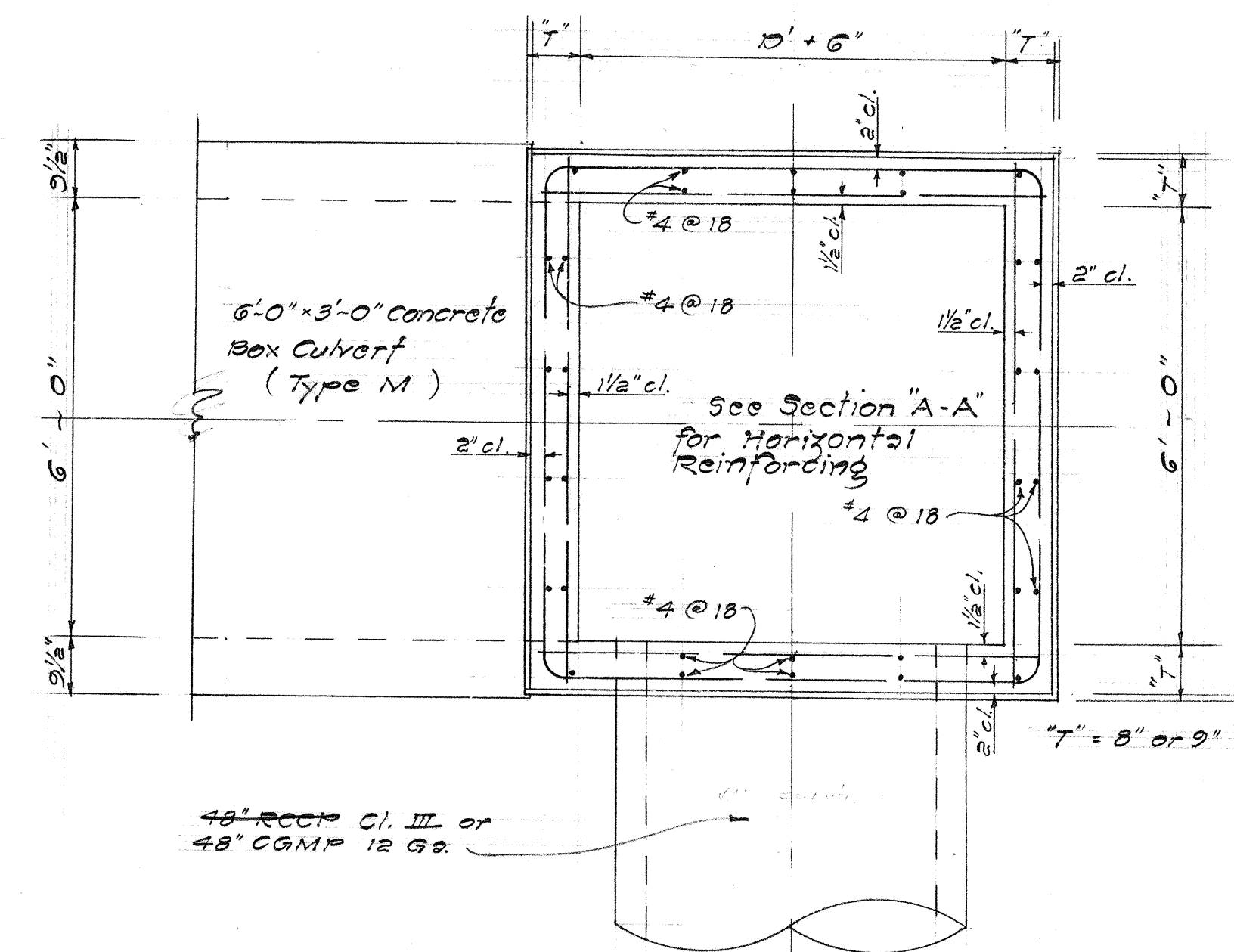
ORIGINAL PLAN	SURVEY PLOTTED BY.....	DATE.....
	DRAWN BY.....	".....
	TRACED BY.....	".....
NOTE BOOK	DESIGNED BY.....	".....
	QUANTITIES BY.....	".....
	CHECKED BY.....	".....
No.....		

PRINTED ON NO. 1000H CLEARBRIK

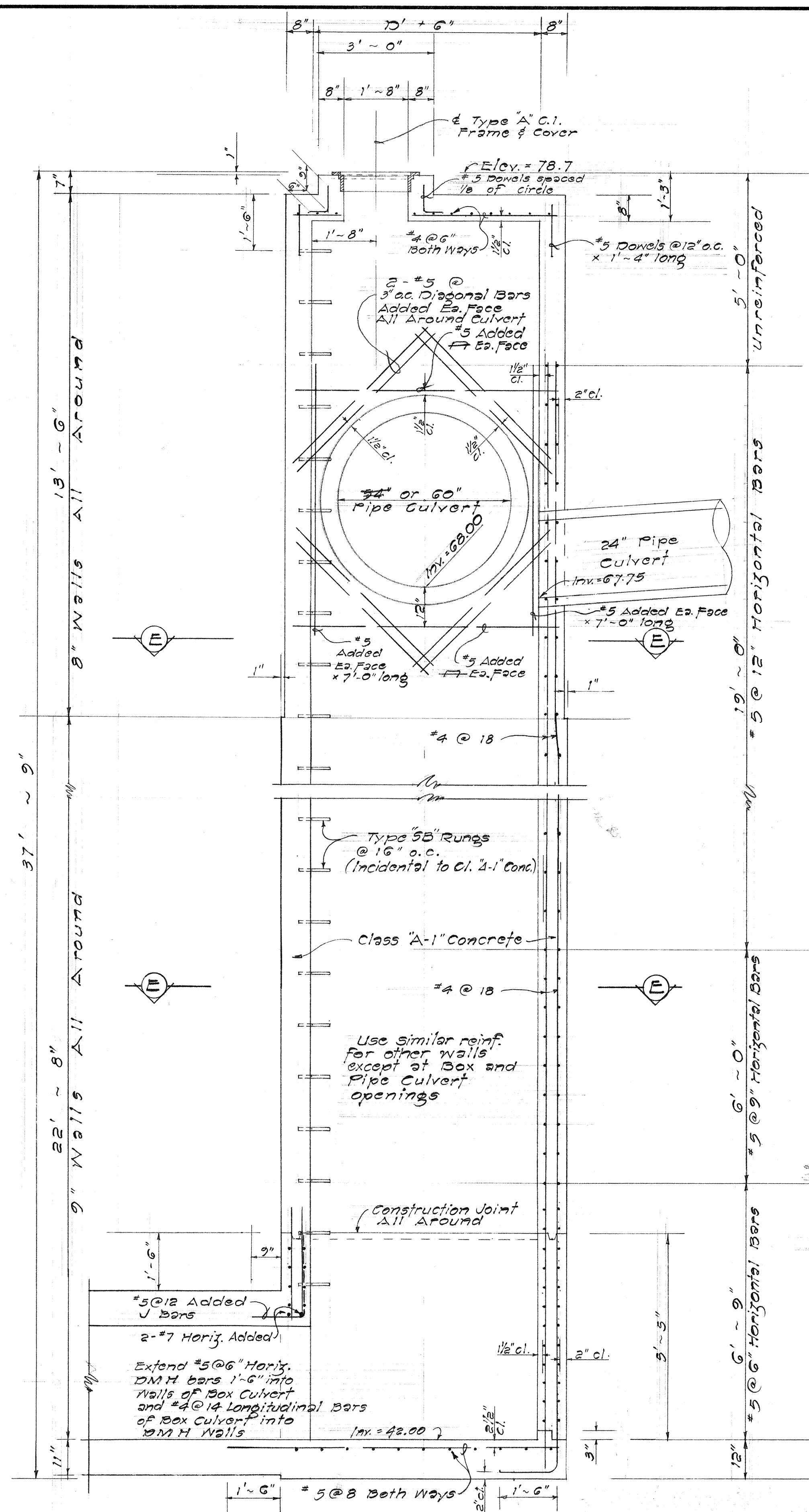
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(31) Unit 1	1967	91	292



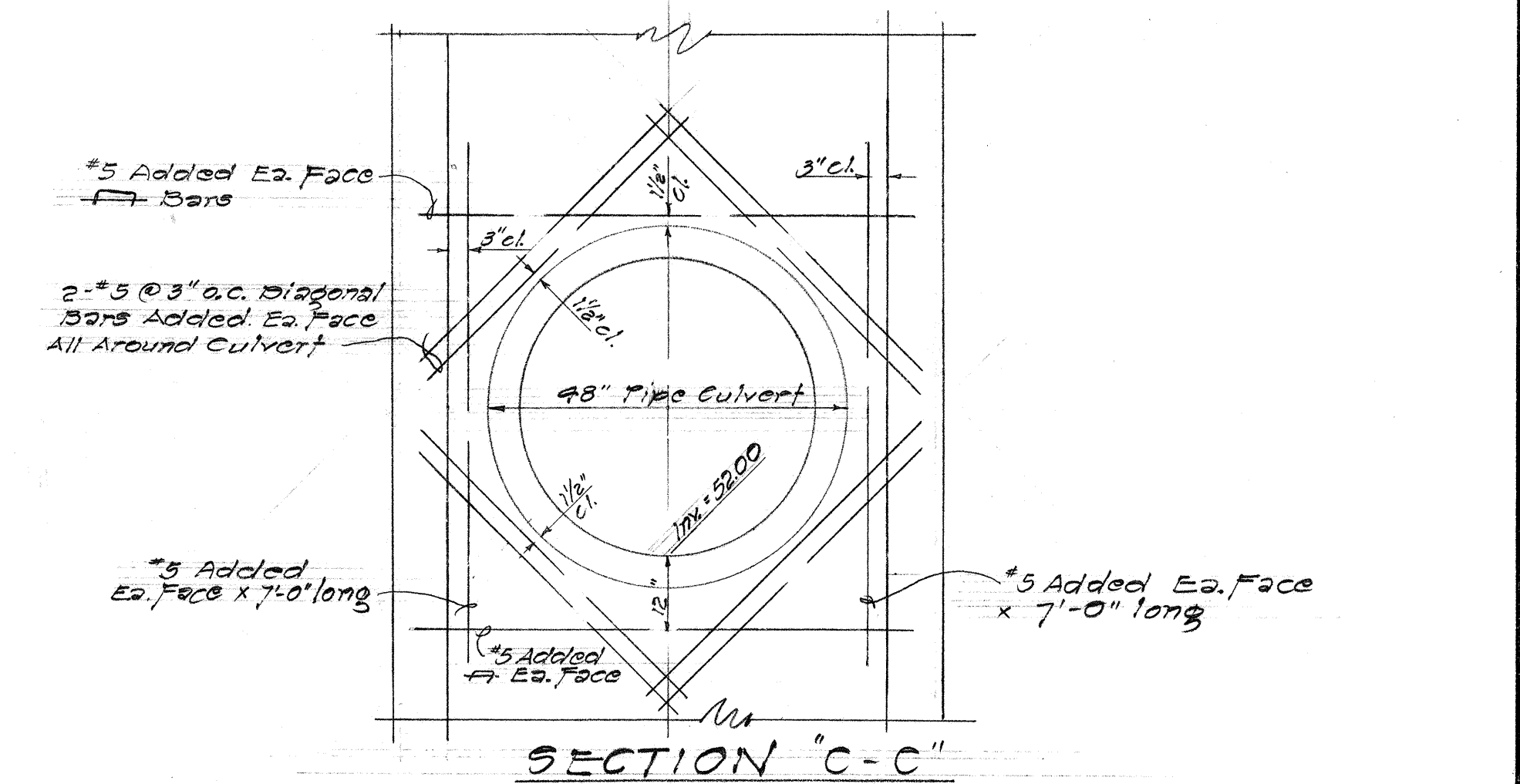
PLAN



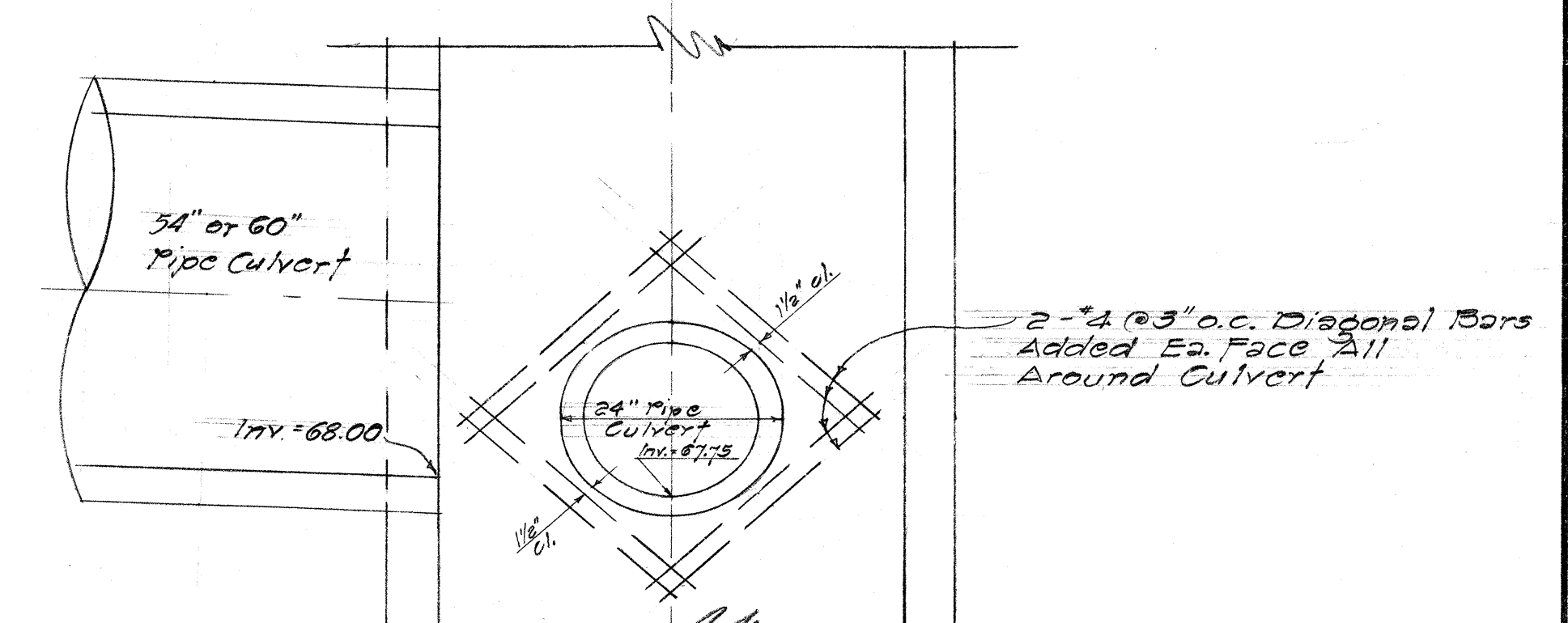
SECTION "E-E"



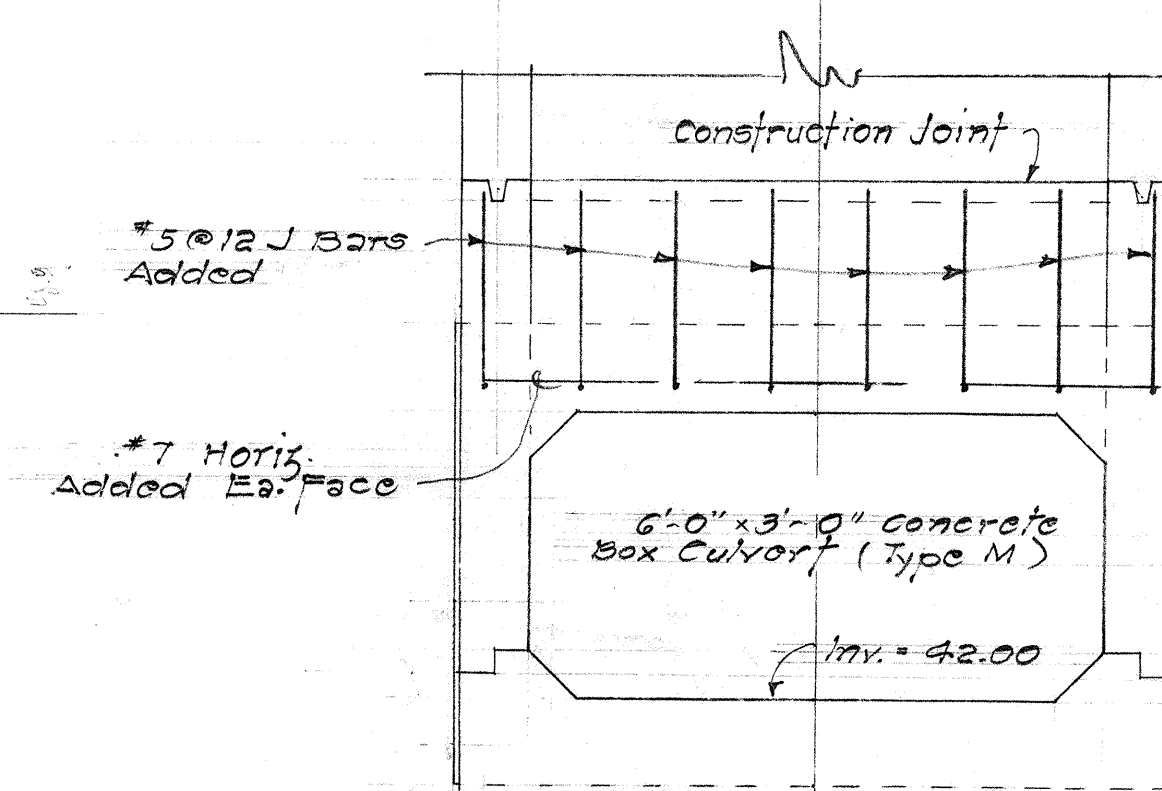
SECTION "A-A"



SECTION "C-C"



SECTION "D-D"



SECTION "B-B"

Note:
Sections "B-B", "C-C" and "D-D"
show only Added Reinforcing at Box
and Pipe Culverts.

**STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION**

DRAINAGE STRUCTURE DETAILS
OF DMH #19-C

INTERSTATE ROUTE HI
(LUNALILO FREEWAY)
F.A.T. Proj. No. I-HI-1 (31), UNIT 1
Scale: As Shown Date: June 1966
SHEET No. 9 OF 26 SHEETS

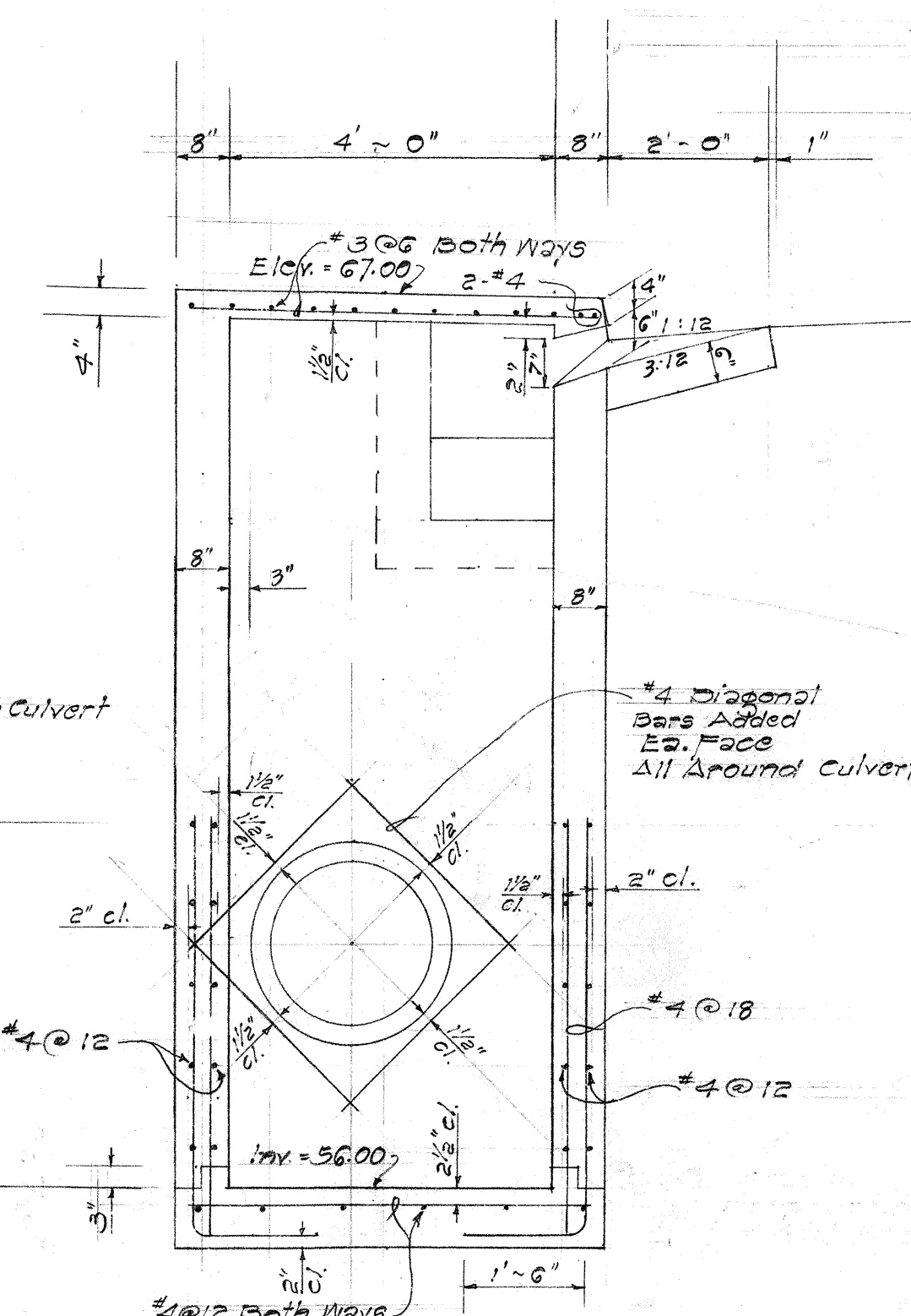
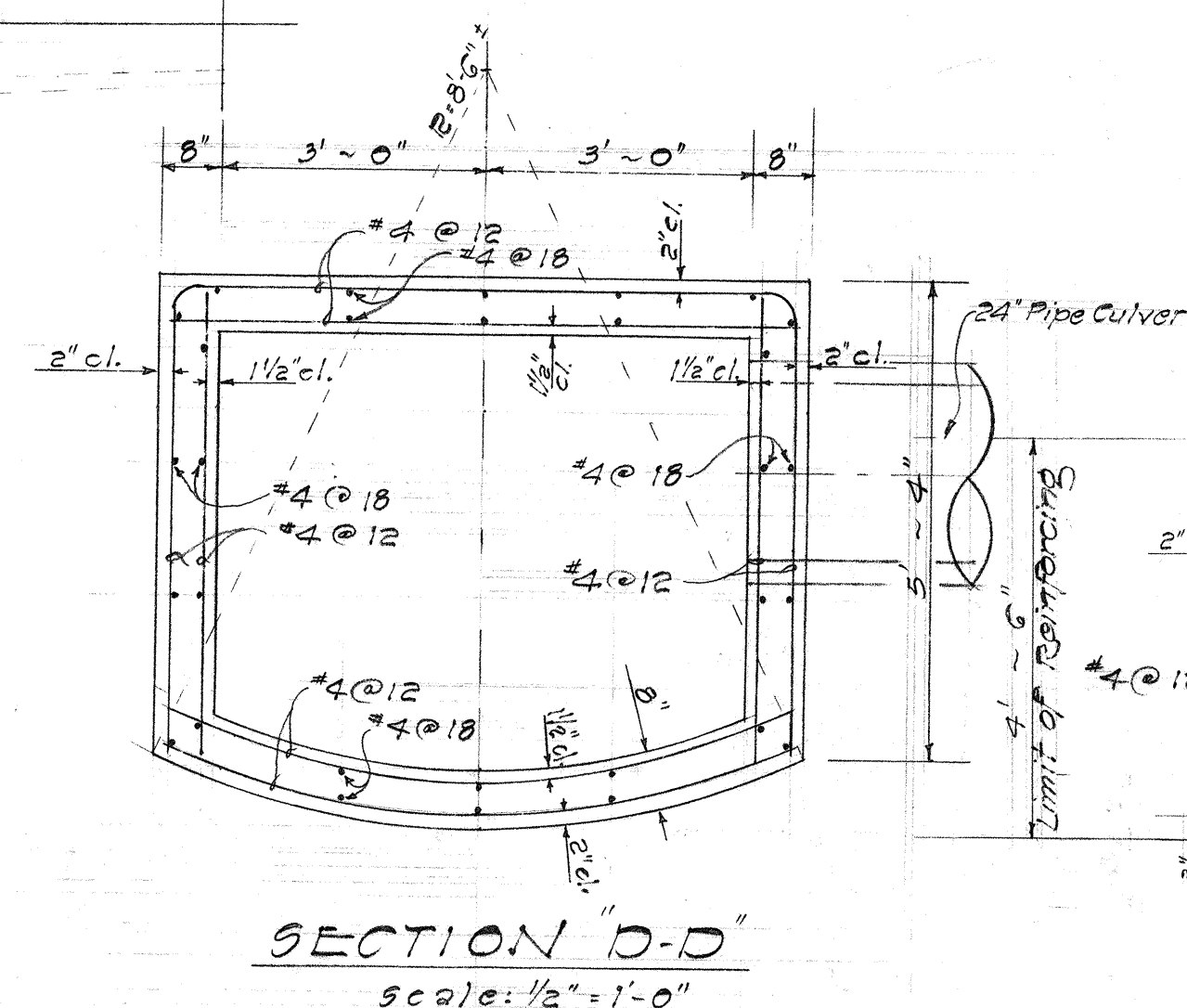
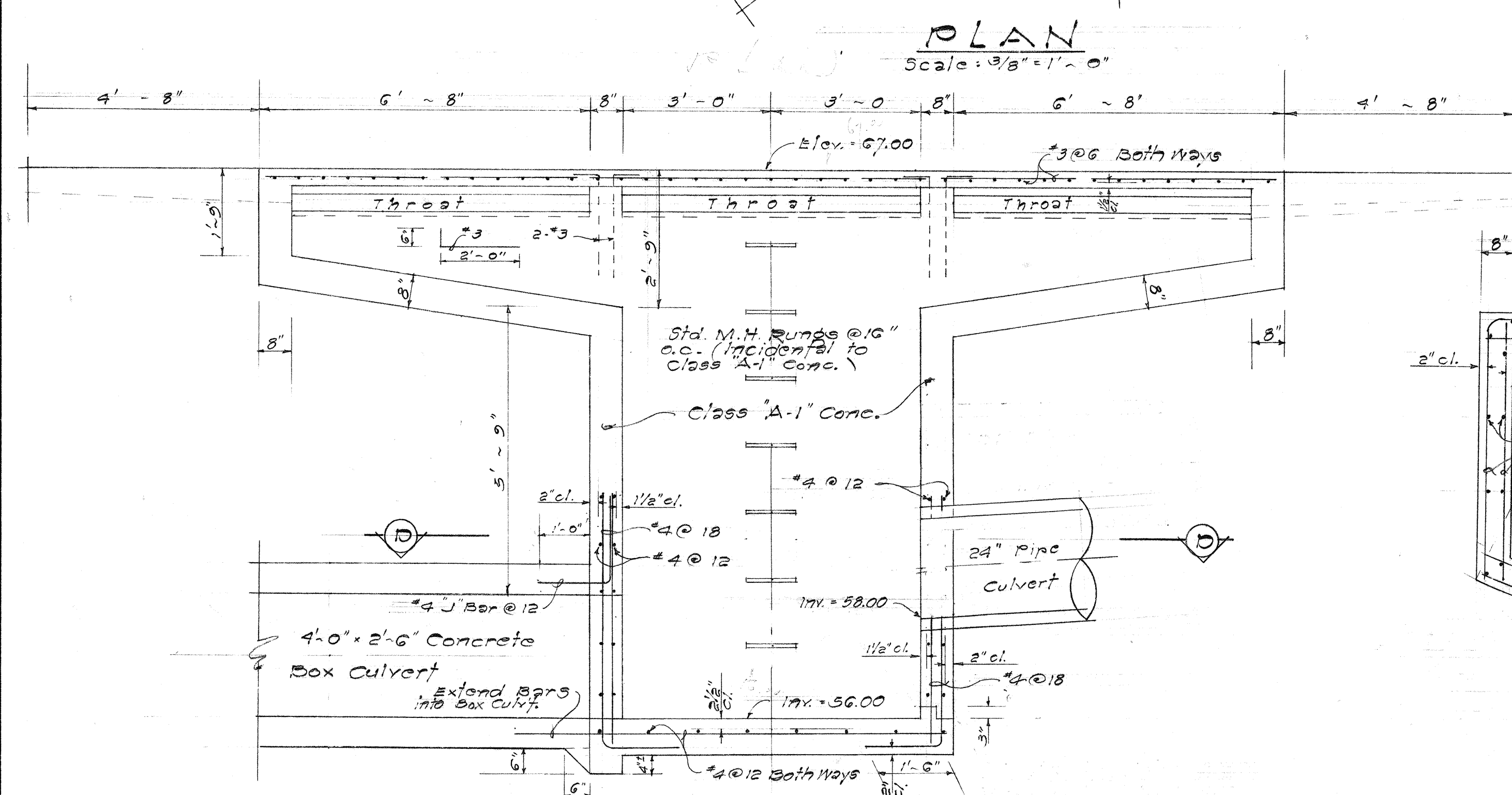
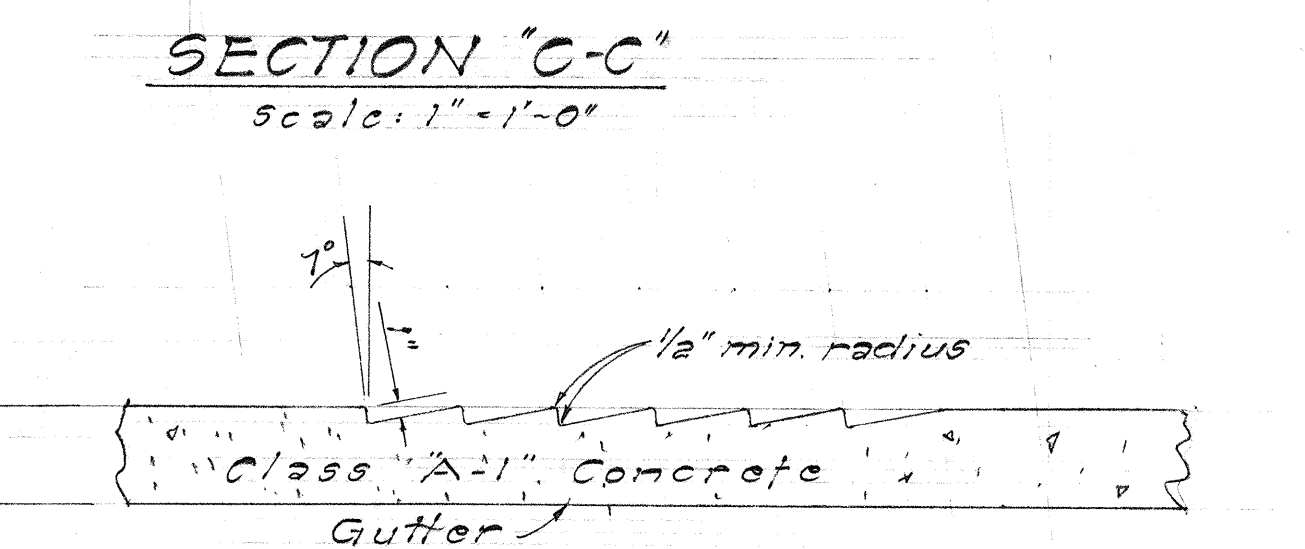
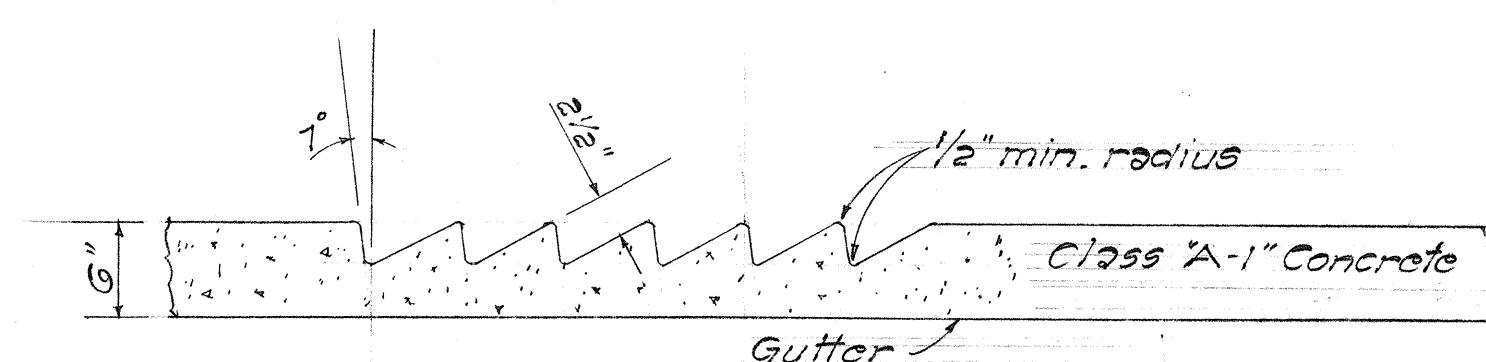
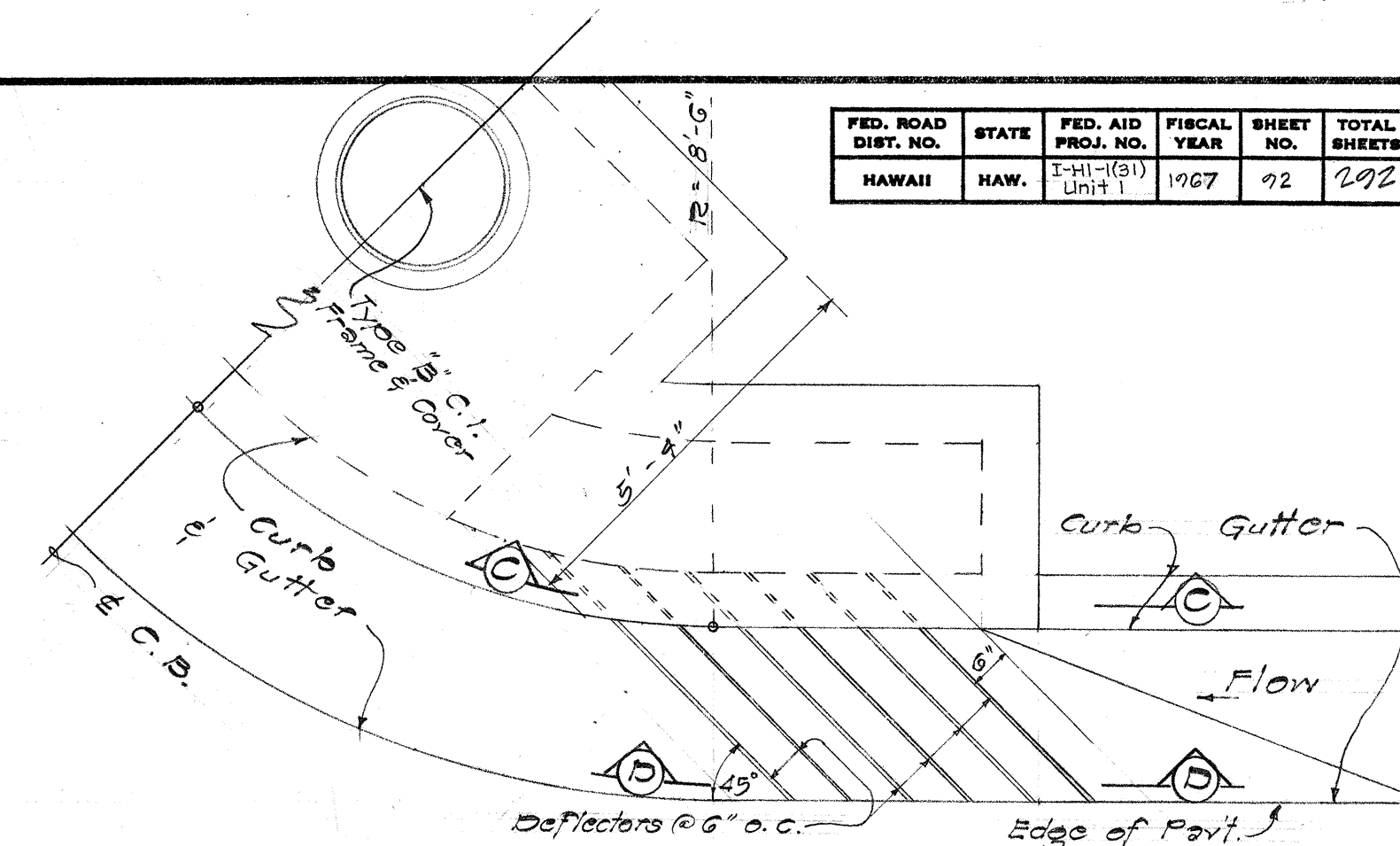
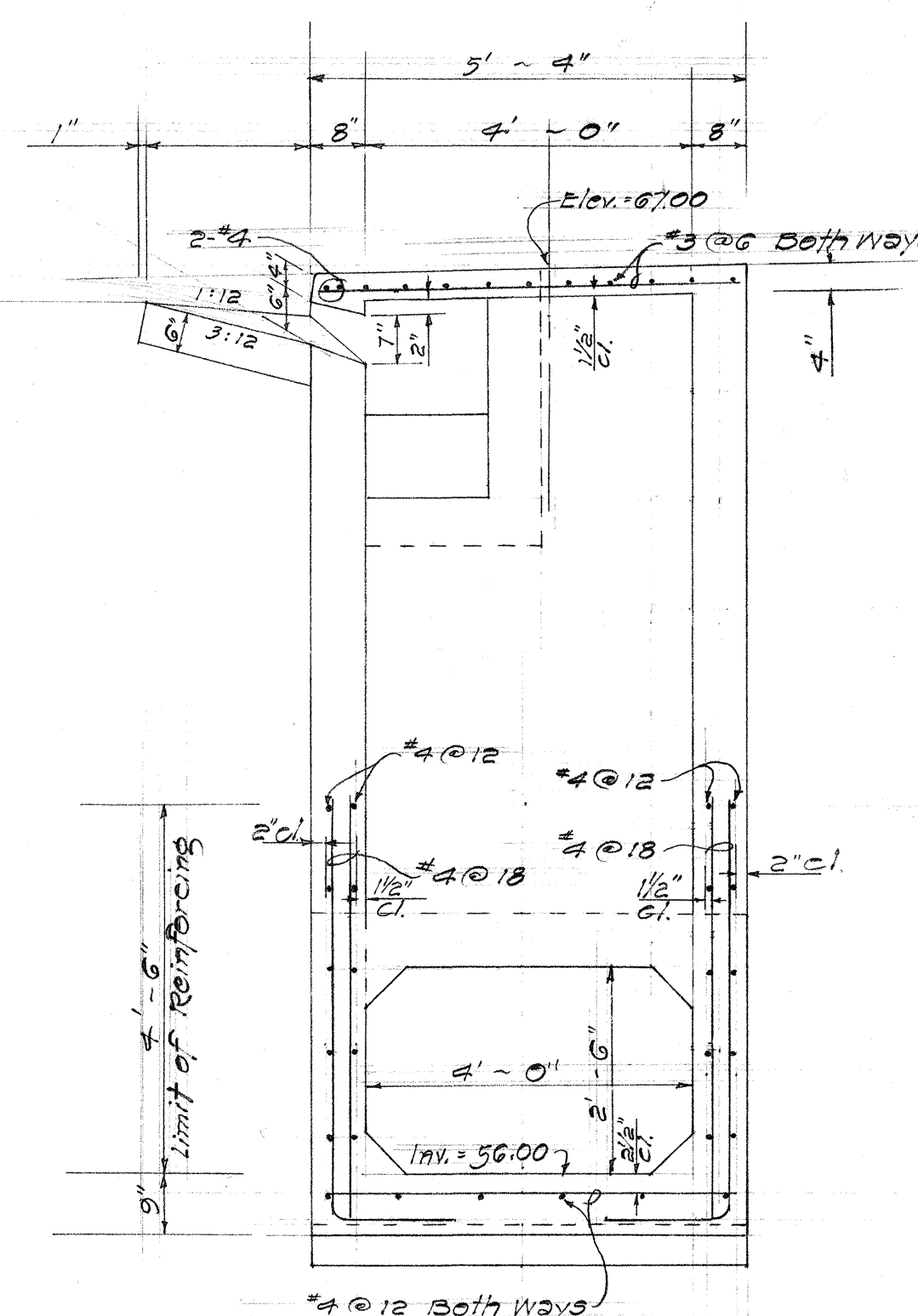
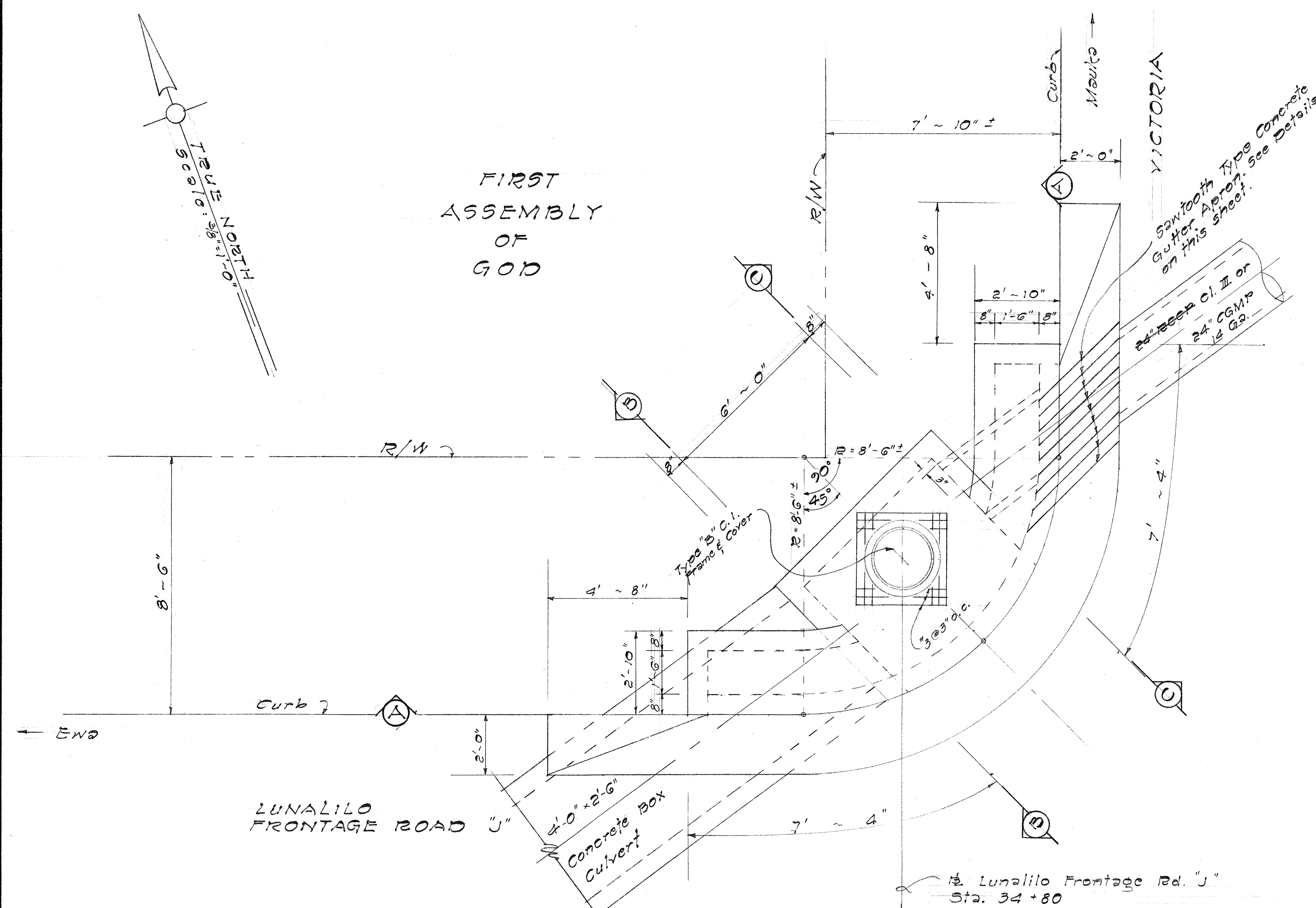
DETAILS OF DMH # 19-C AT FRONTAGE ROAD "J" STA. 30+72

scale: $1/2'' = 1' \sim 0''$

PRINTED ON NO. 1000H CLEARPRINT

91

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-41-1(31)	1967	92	192



DETAILS OF SANTOOTH TYPE CONC. GUTTER APRON

DATE	DESIGNED BY	CHECKED BY
PLAN	FRACED BY	QUANTITIES BY
NOTE BOOK	DESIGNED BY	CHECKED BY
No.		

DETAILS OF C.B.#43-C AT LUNALILO FRONTAGE RD. "J" STA. 34+80

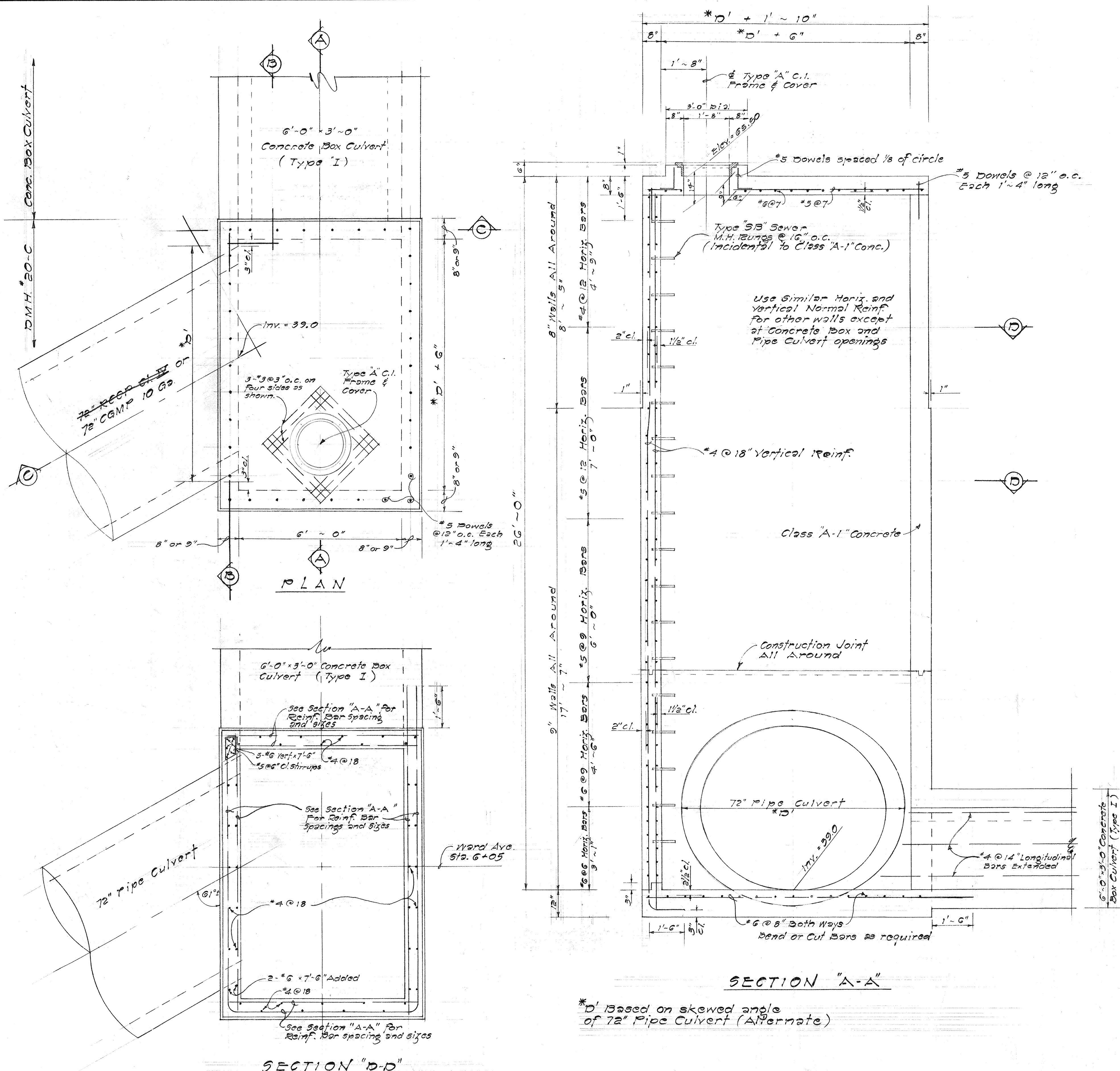
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE STRUCTURE DETAILS
OF C.B.#43-C AND SANTOOTH
TYPE CONC. GUTTER APRON

INTERSTATE ROUTE HI
(LUNALILO FREEWAY)
F.A.I. Proj. No. I-41-1(31), UNIT 1
Scale: As Shown Date: June 1966

SHEET No. 92 OF 92 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(31) Unit 1	1967	43	292



DETAILS OF DMH #20-C AT WARD AVE. STA. 6+05
Scale: 1/2" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE STRUCTURE DETAILS
OF DMH #20 C

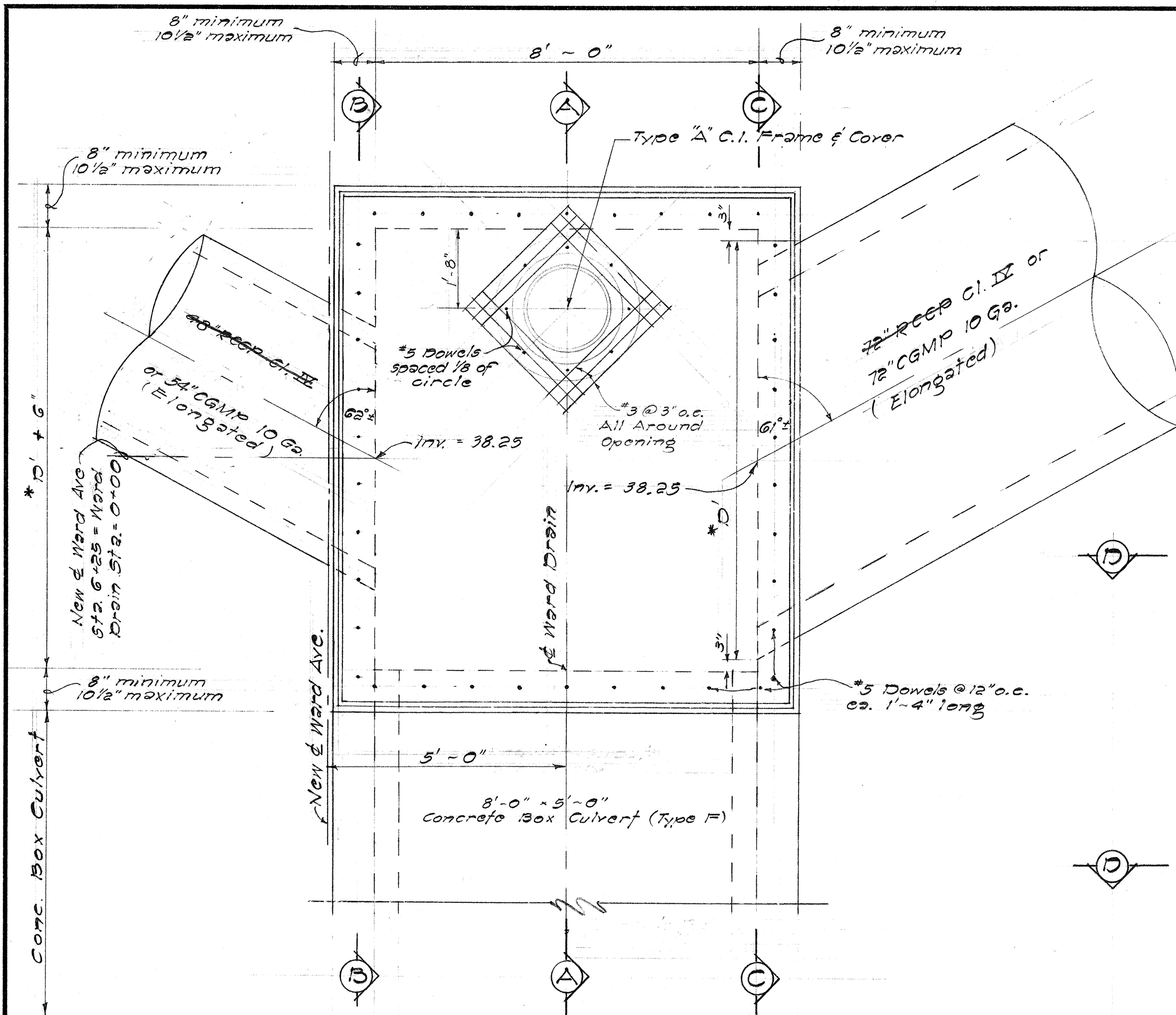
INTERSTATE ROUTE H1
(LUNALILO FREEWAY)
F.A.I. Proj. No. I-H-1(31), UNIT 1

Scale: As Shown Date: June 1966

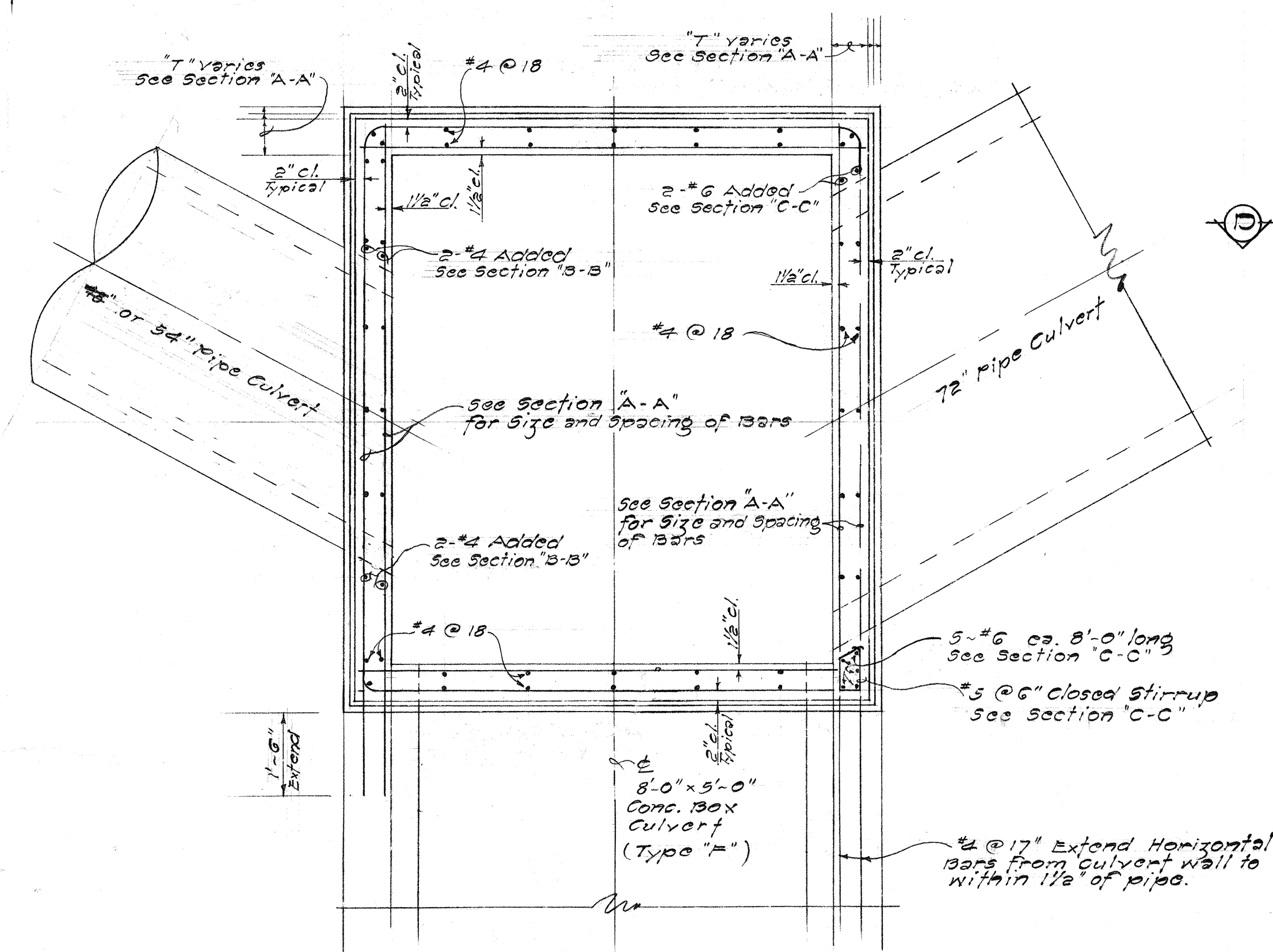
SHEET No. 411 OF 26 SHEETS

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

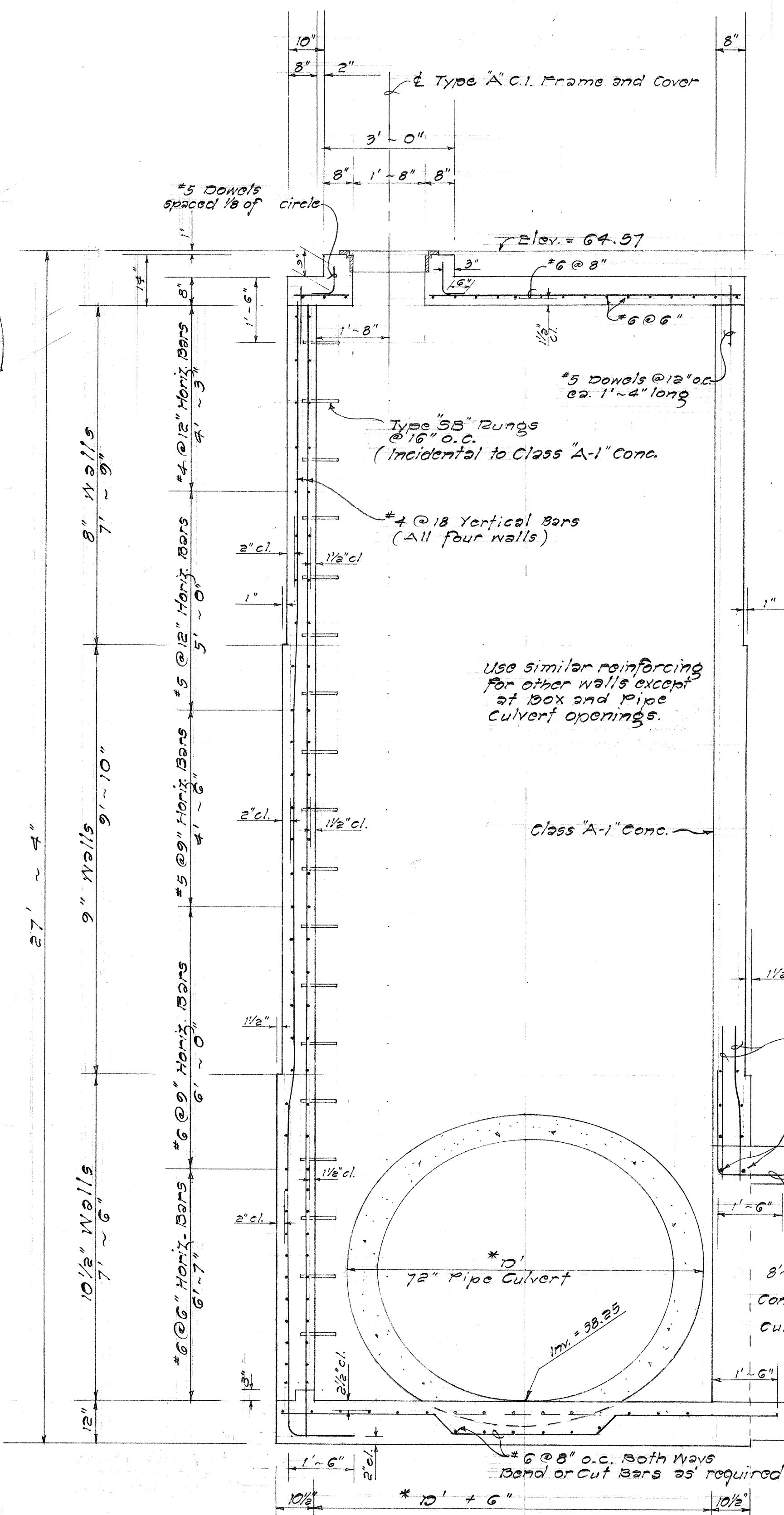
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1007	94	202	



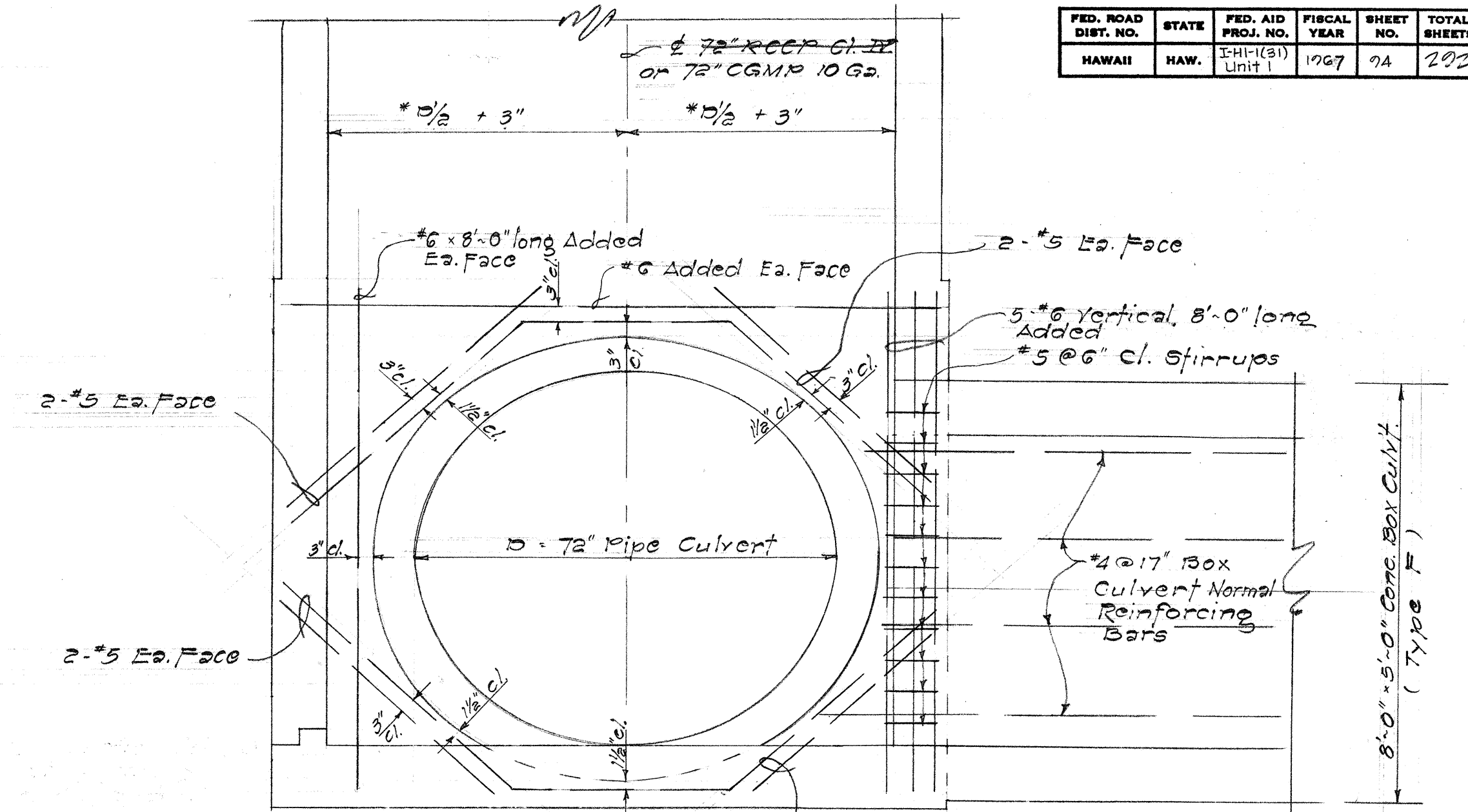
PLAN



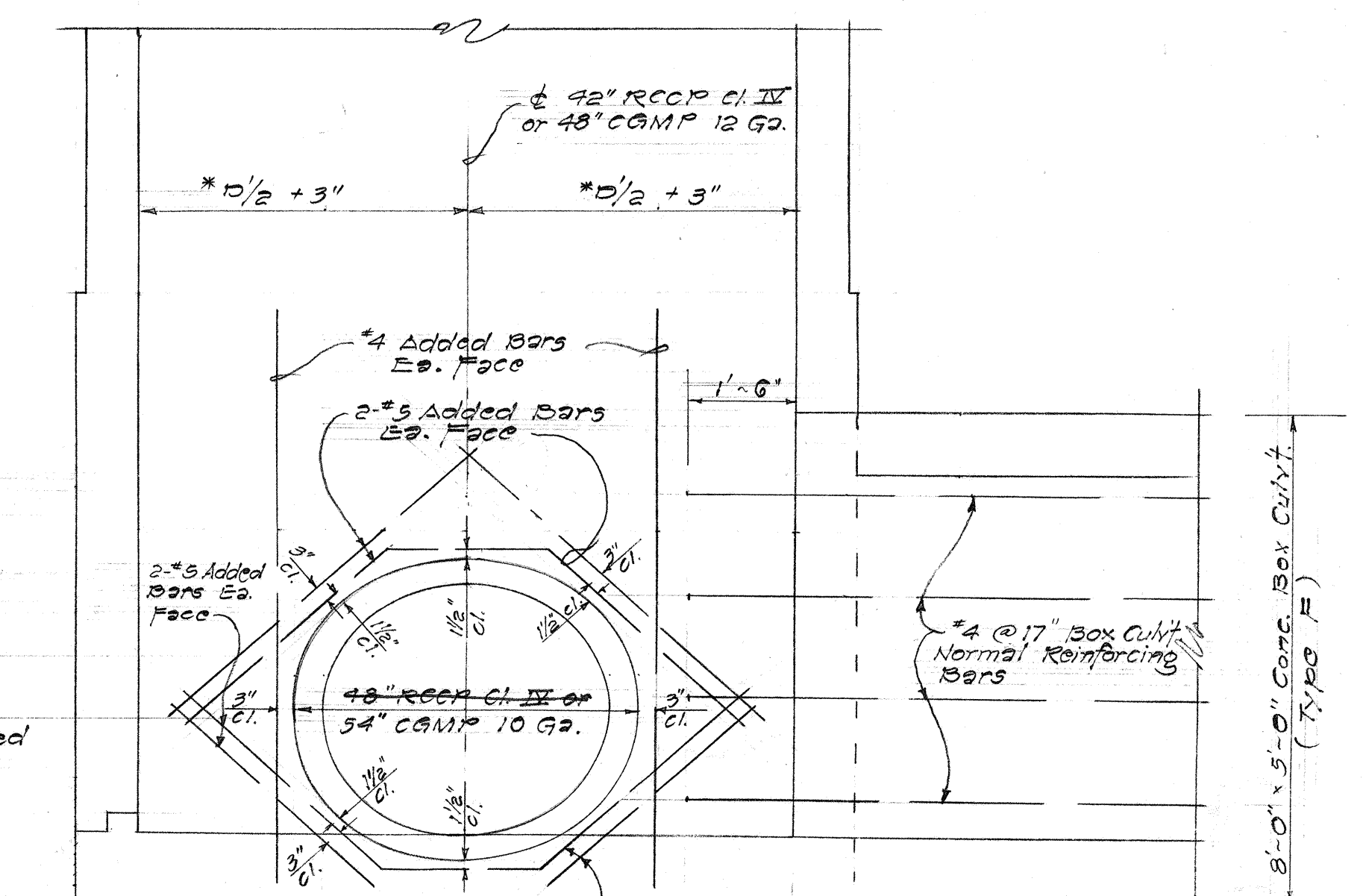
SECTION "D-D"



SECTION "A-A"



SECTION "C-C"



SECTION "B-B"

Note: Sections "B-B" and "C-C" show only added reinforcing at pipe culverts.

Note: * 10' shall be the maximum outside dimension of the pipe culvert at the DMH wall.

DETAILS OF DMH # 21 B AT WARD AVE. STA. 6+25

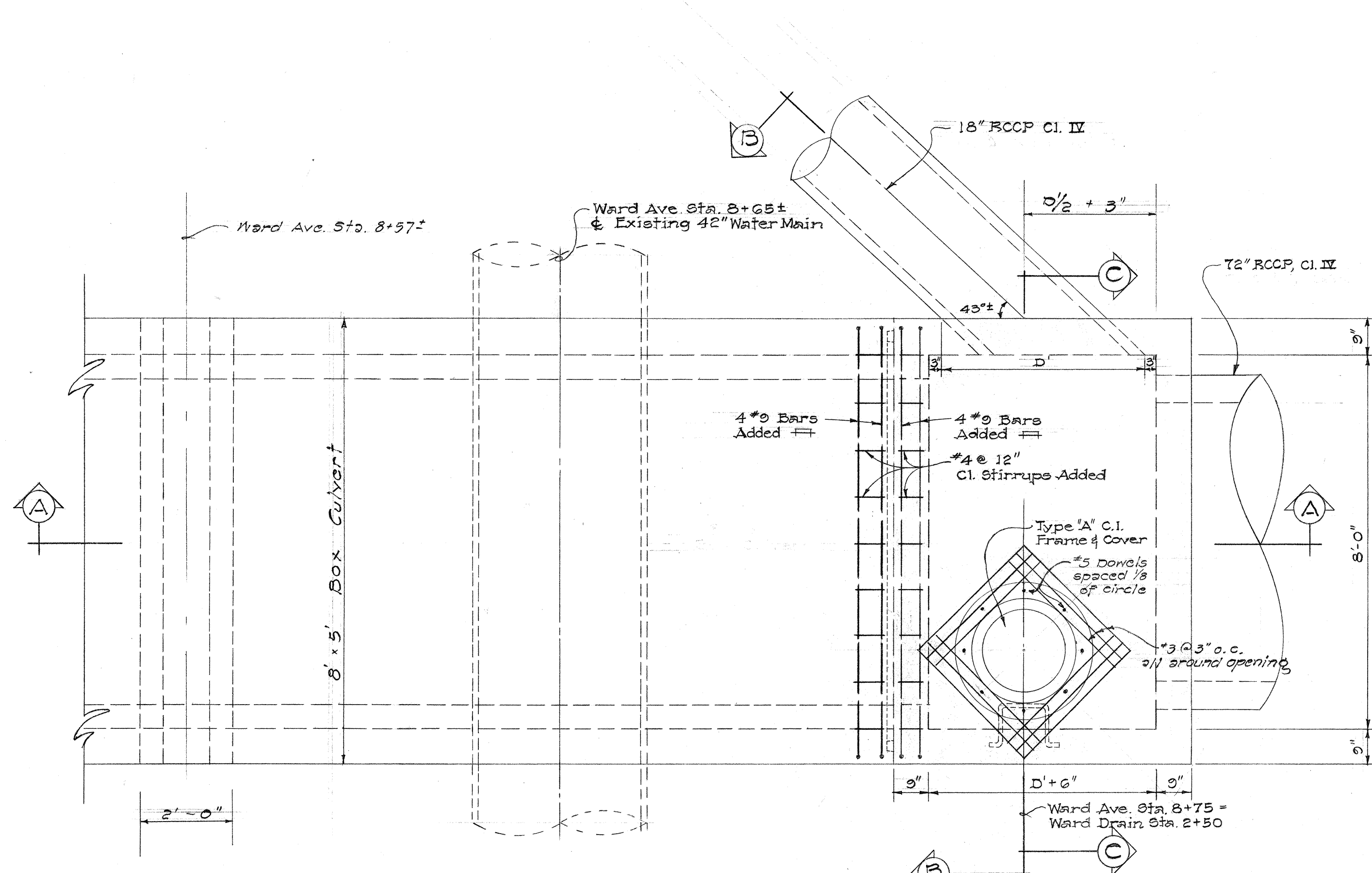
Scale: 1/2" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

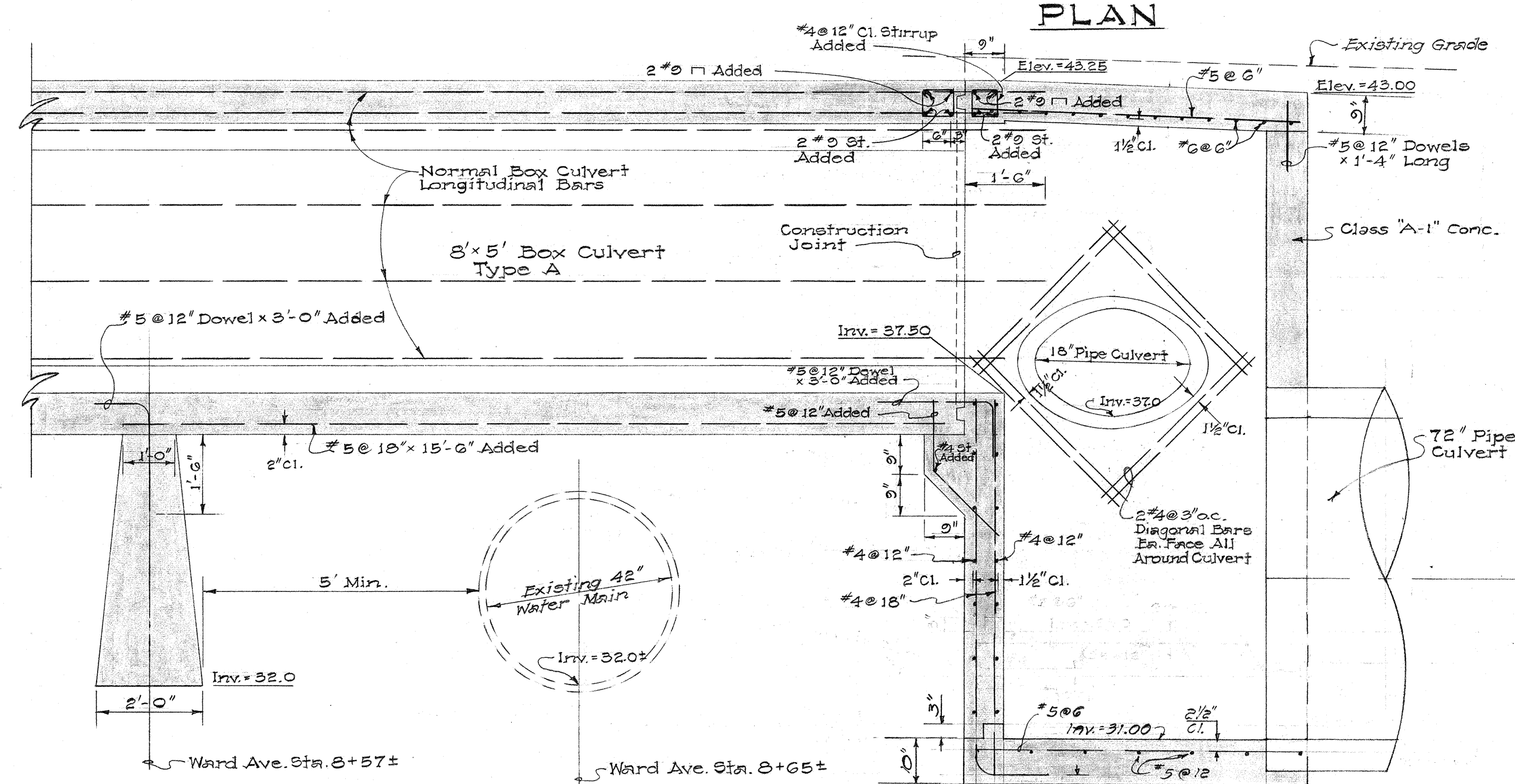
DRAINAGE STRUCTURE DETAILS
OF DMH # 21 B
INTERSTATE ROUTE H1
(LUNALILO FREEWAY)
F.A.I. Proj. No. I-H1-1(31), UNIT 1
Scale: As Shown Date: June 1996
SHEET No. 212 OF 26 SHEETS

DATE	DESIGNED BY	CHECKED BY
PLAN	TRACED BY	
NOTE BOOK	QUANTITIES BY	
	CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(31)	1967	95	202

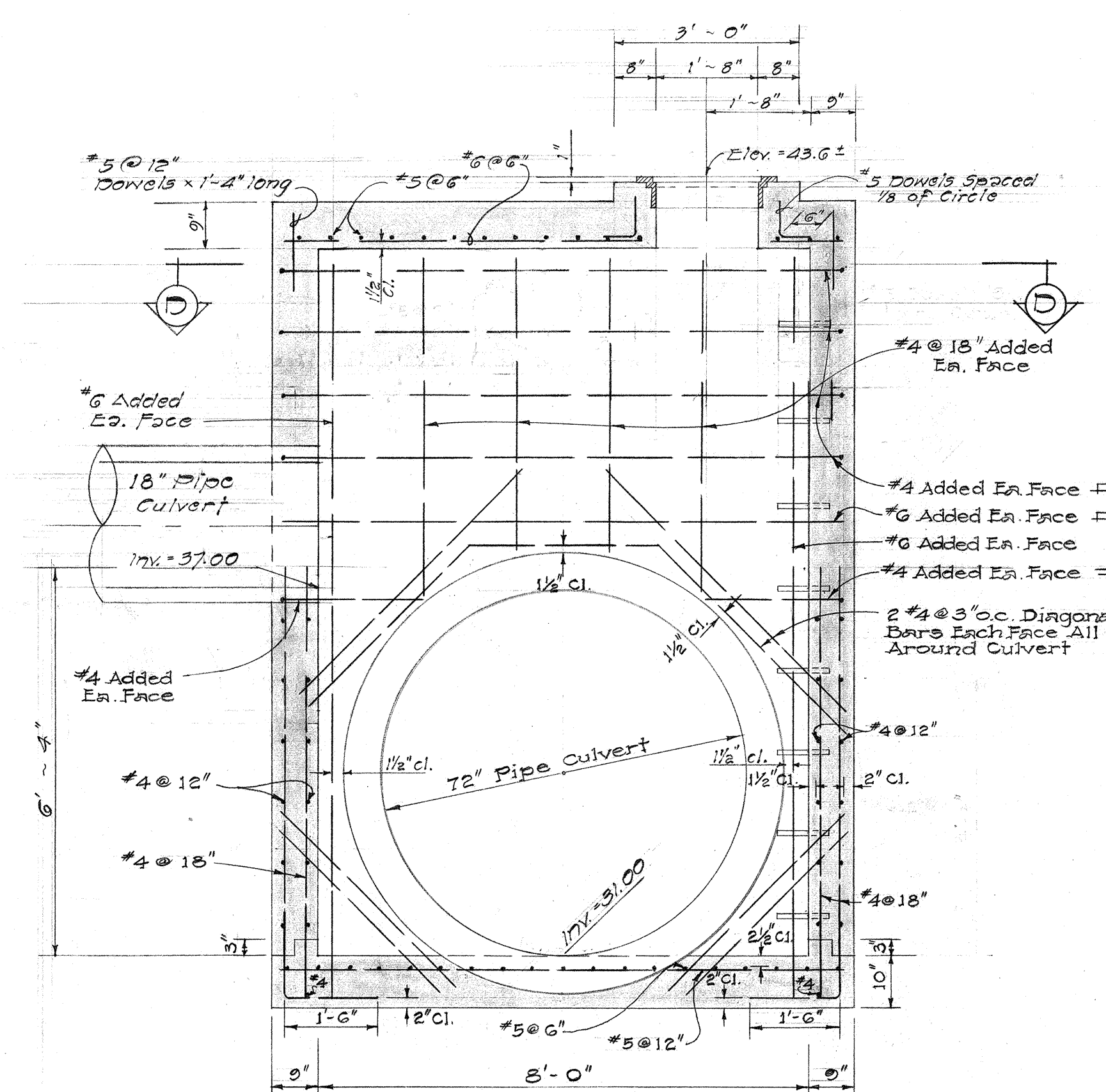


PLAN

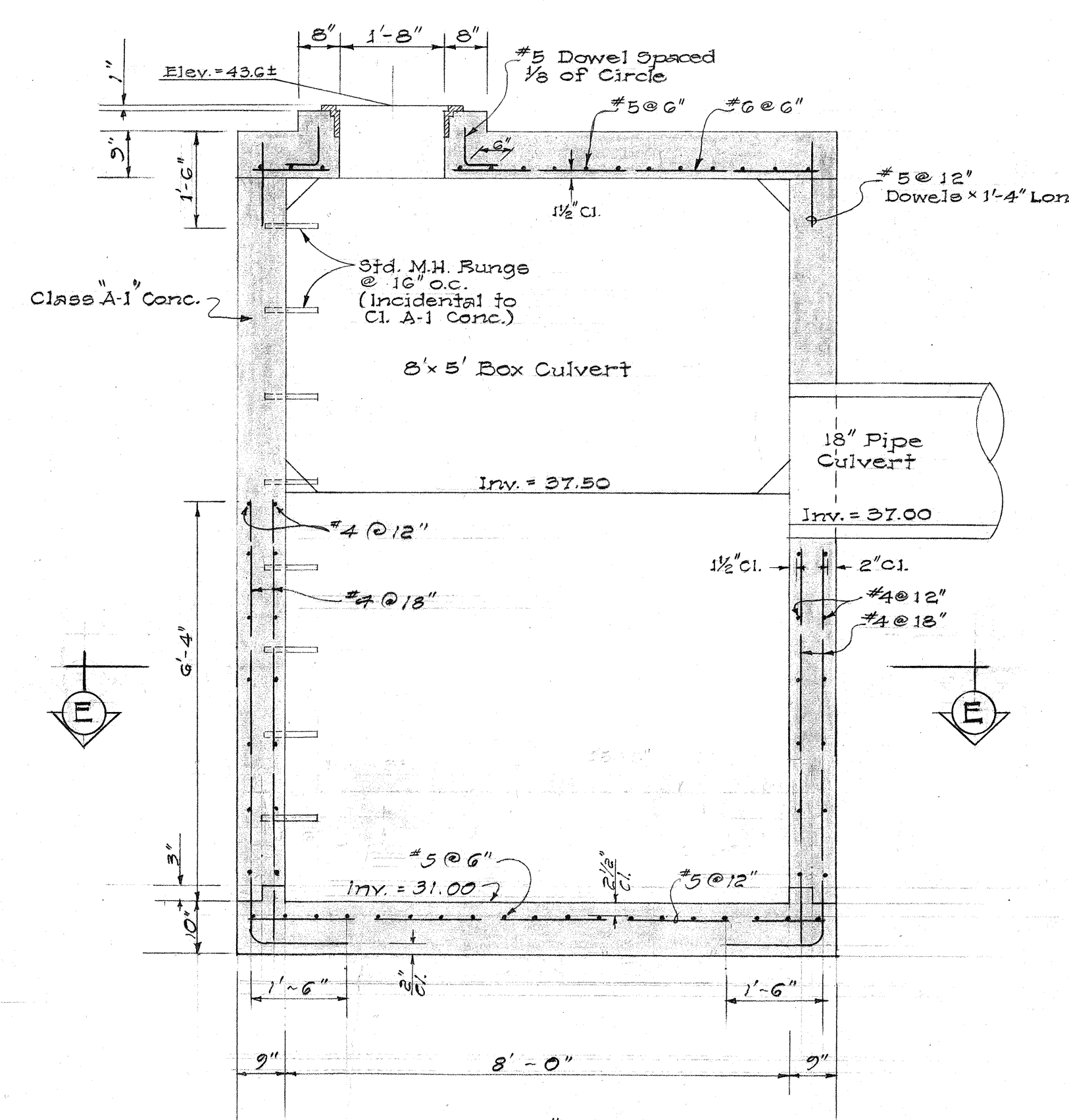


SECTION "A-A"

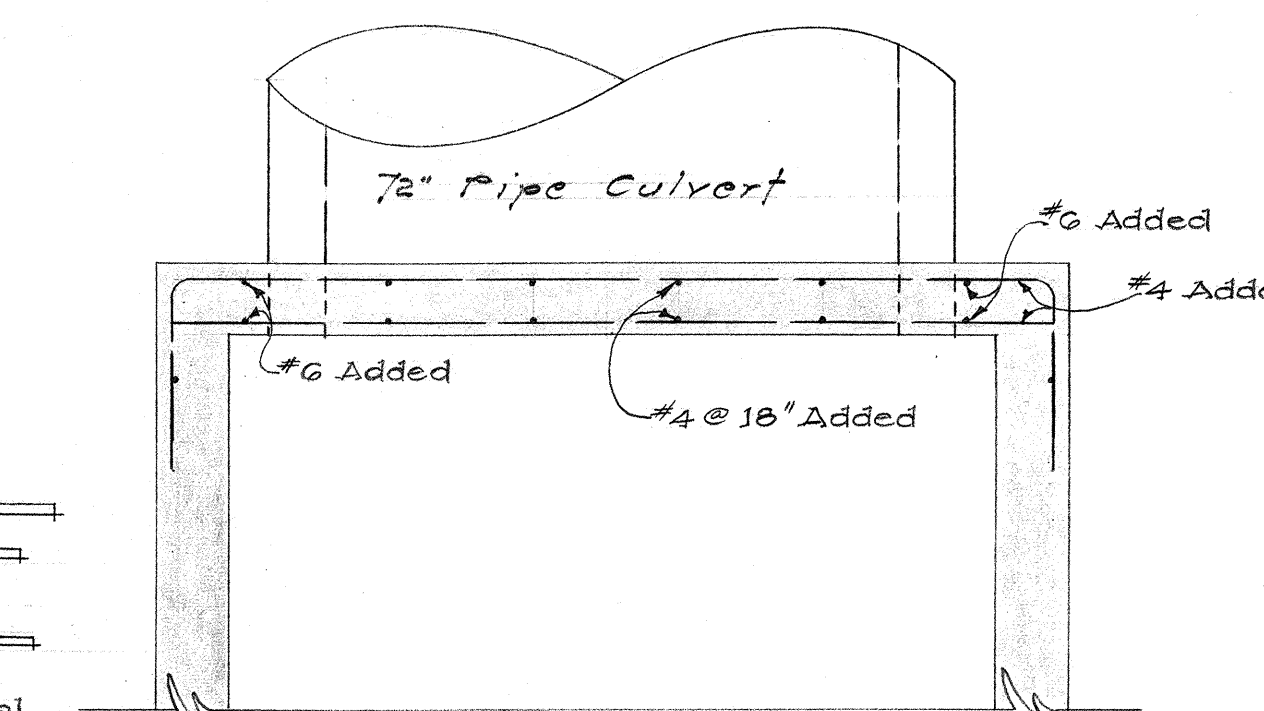
Note: D shall be the maximum outside dimension of the pipe culvert at the DMH Wall.



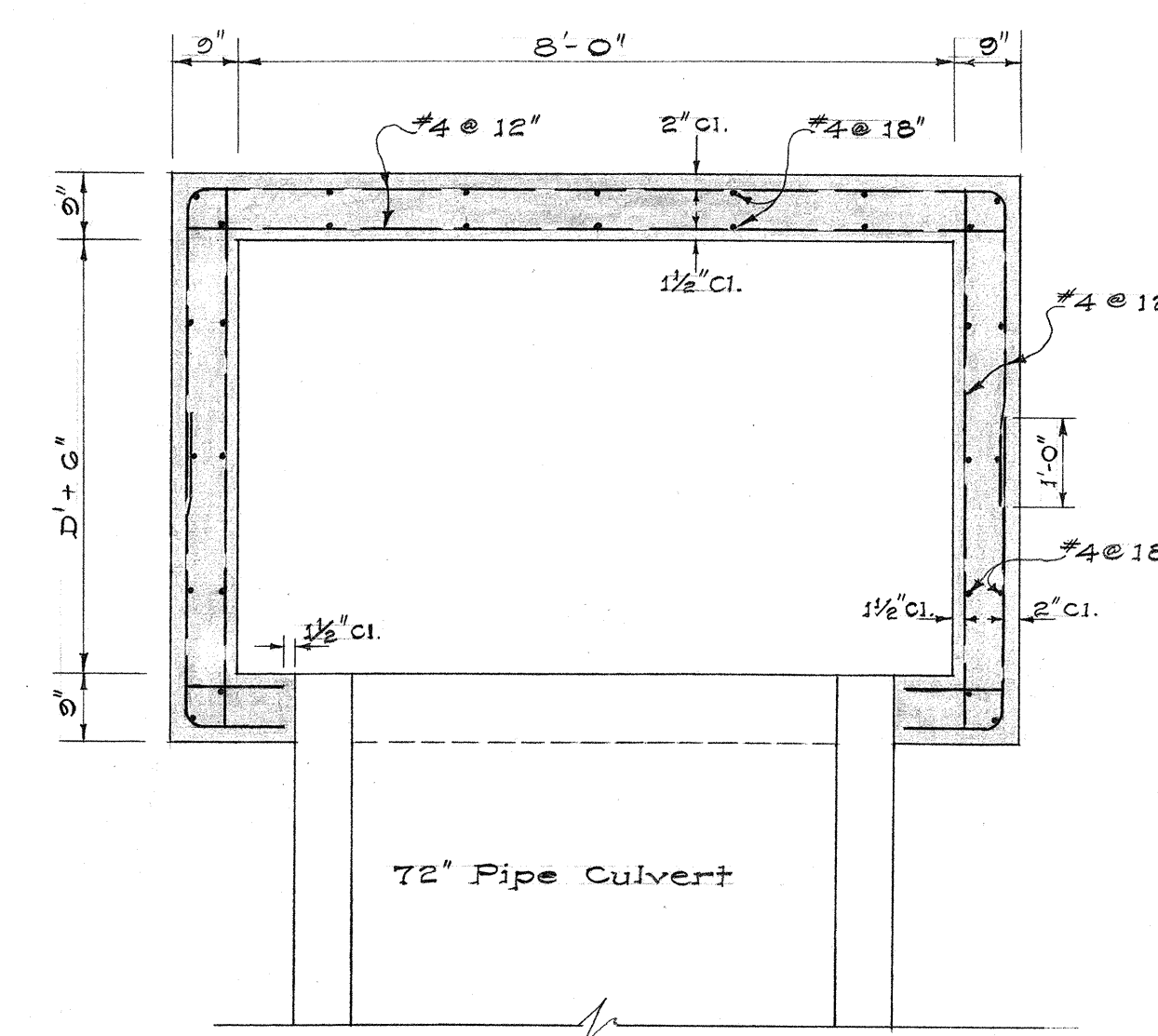
SECTION "C-C"



SECTION "B-B"



SECTION "D-D"



SECTION "E-E"

APPROVED
[Signature]
 ASSISTANT CHIEF ENGINEER B.W.S. DATE 4/16/66

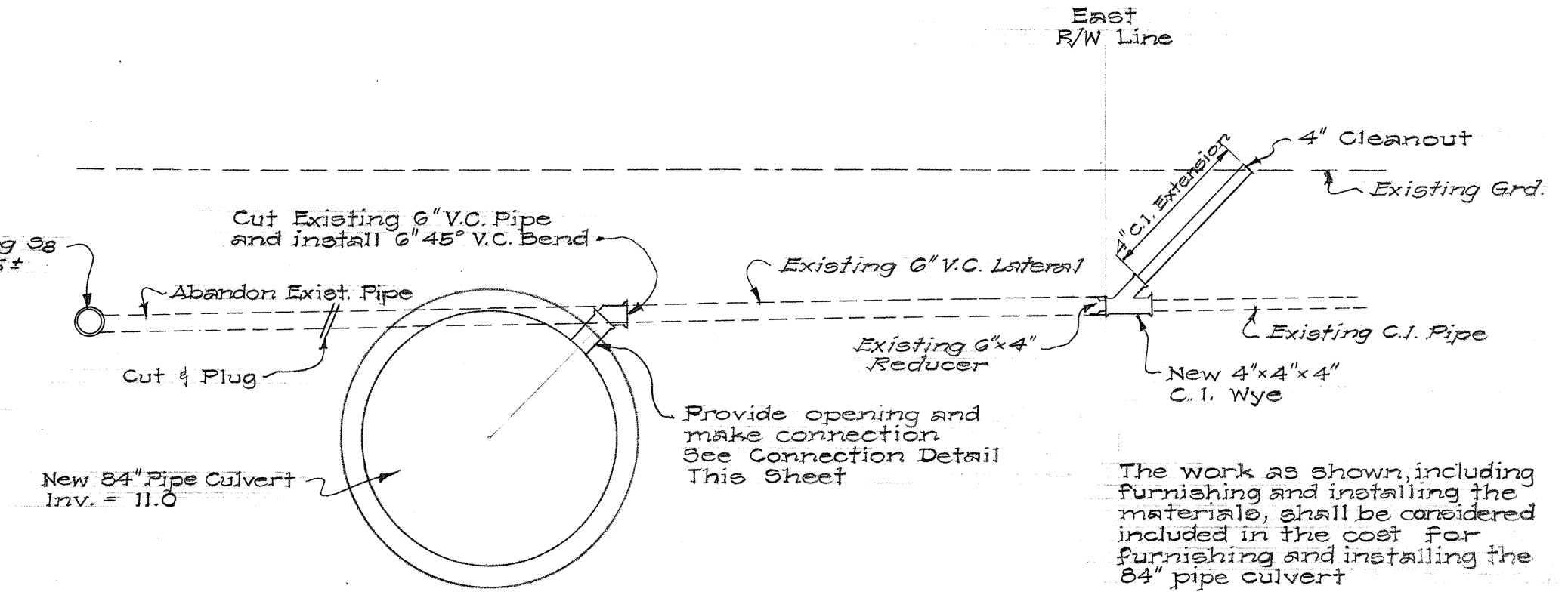
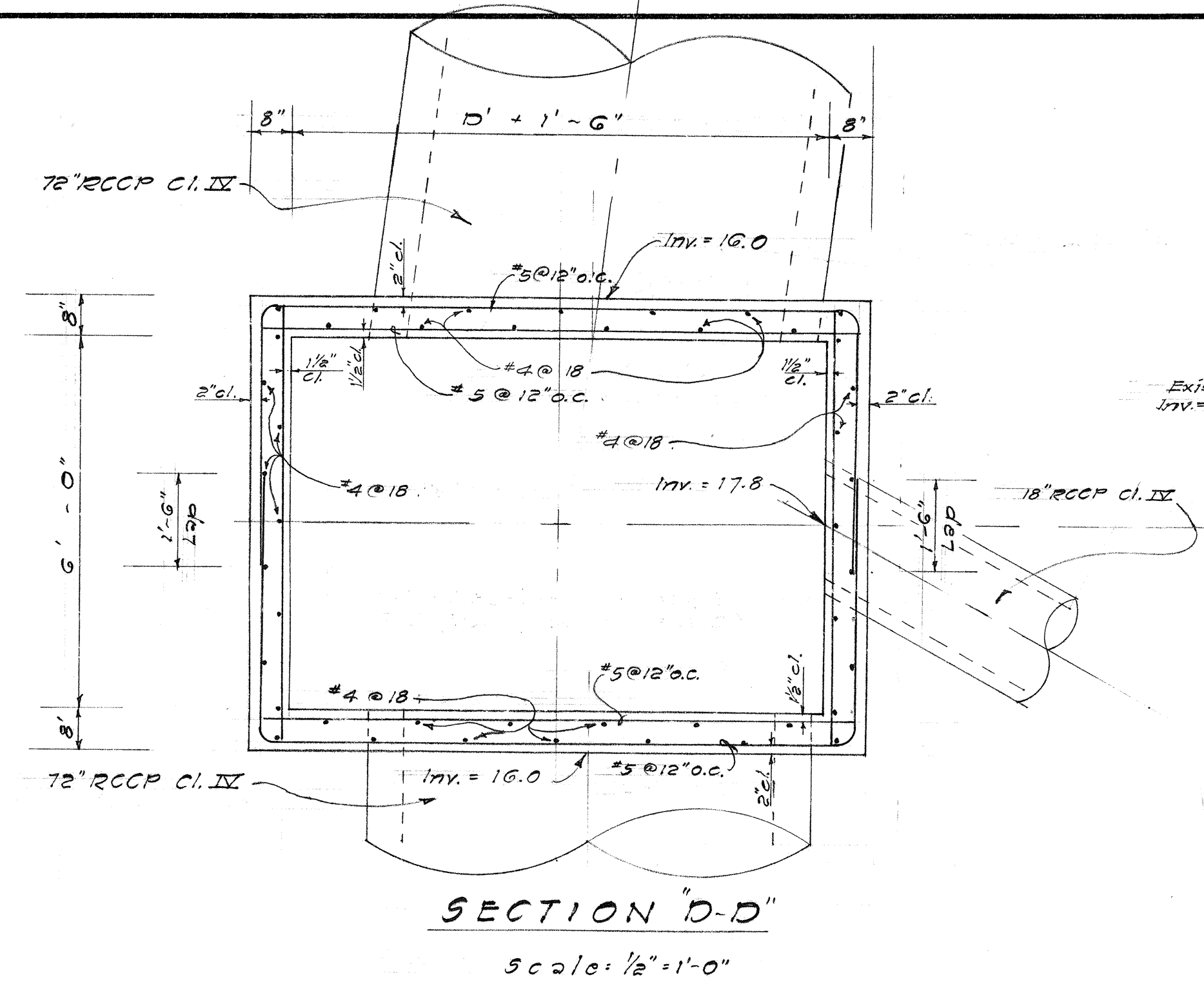
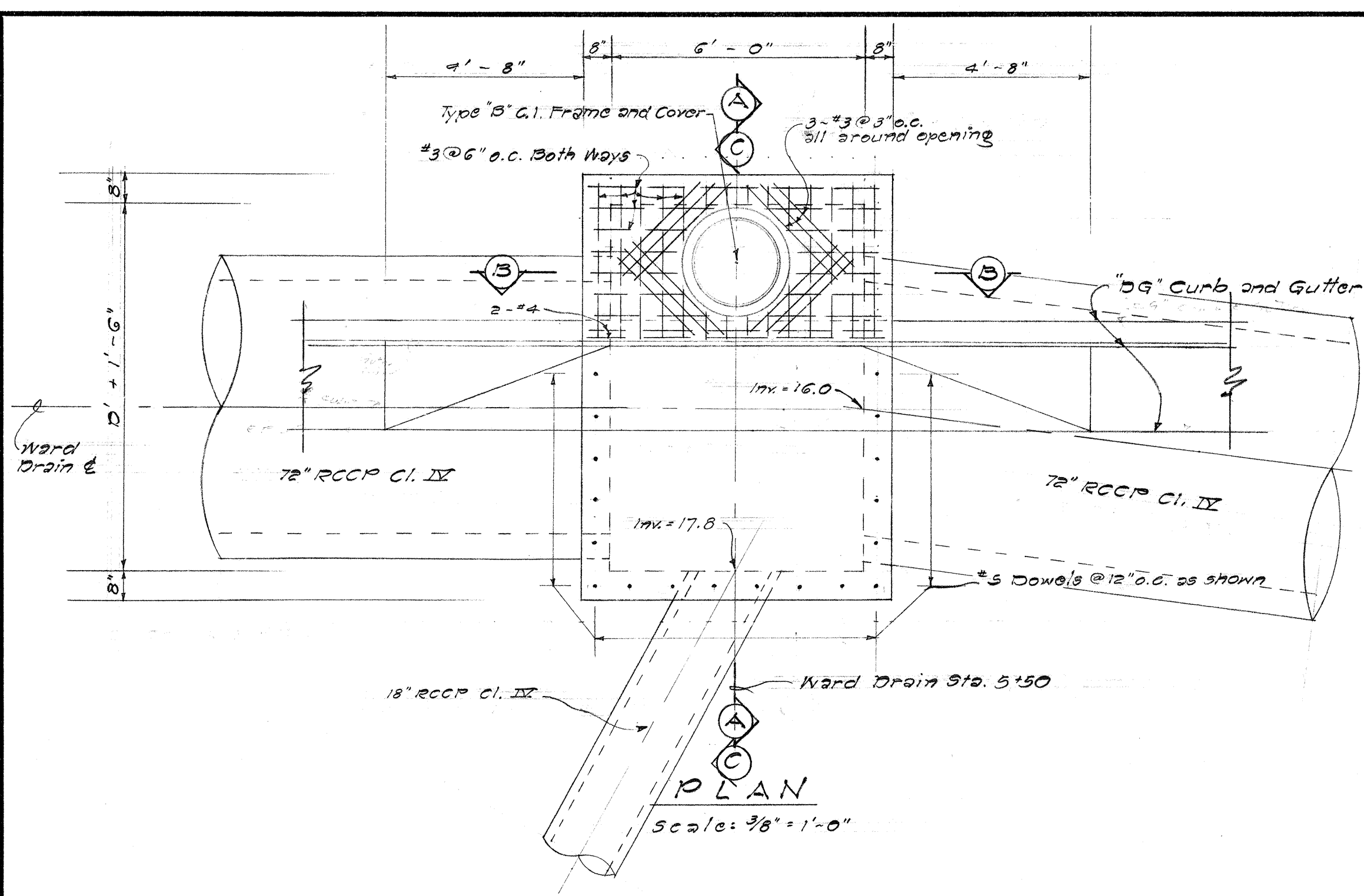
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
DRAINAGE STRUCTURE DETAILS
OF D.M.H. # 22 B AND
CONNECTION OF 8' x 5'
CONCRETE BOX CULVERT
 INTERSTATE ROUTE H-1
 (LUALILU FREEWAY)
 F.A.I. Proj. No. I-H-1(31), UNIT 1
 Scale: As Shown Date: May, 1966
SHEET No. 95 OF 20 SHEETS

DETAILS OF D.M.H. # 22 B
AT WARD AVE. STA. 8+75 = WARD DRAIN STA. 2+50

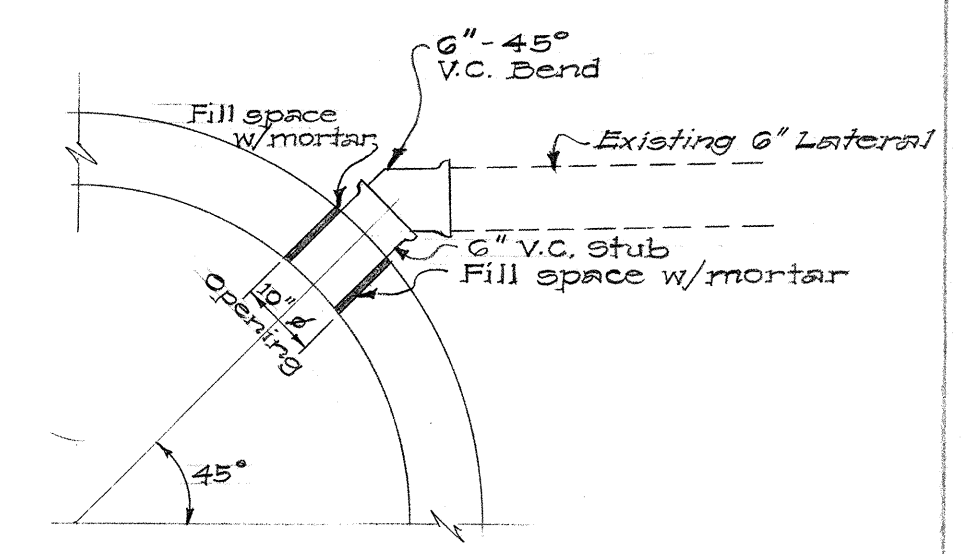
Scale: 1/2" = 1'-0"

ORIGINAL PLAN	DATE
DESIGNED BY	
NOTED BY	
CHECKED BY	

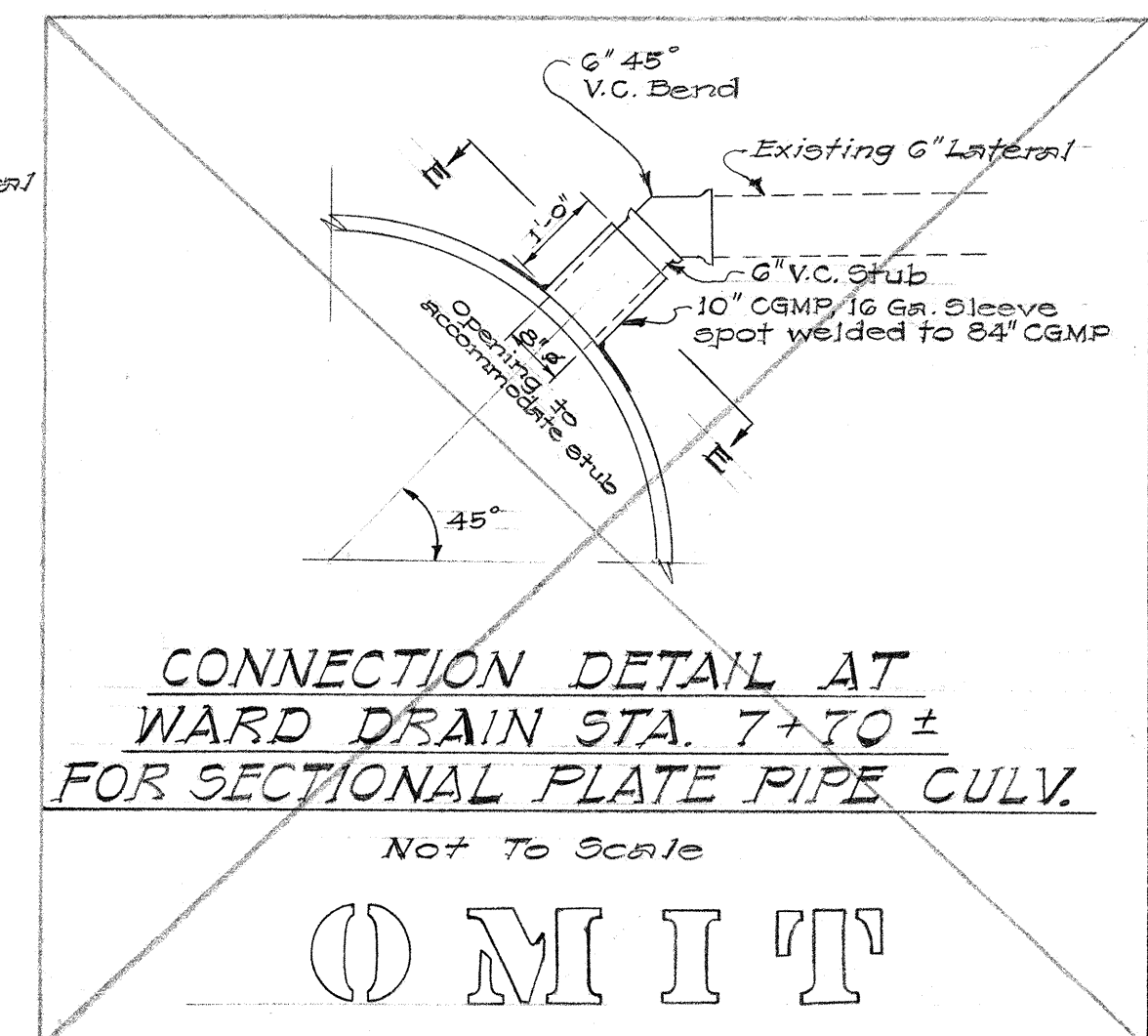
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11-1(31) Unit 1	1967	26	202



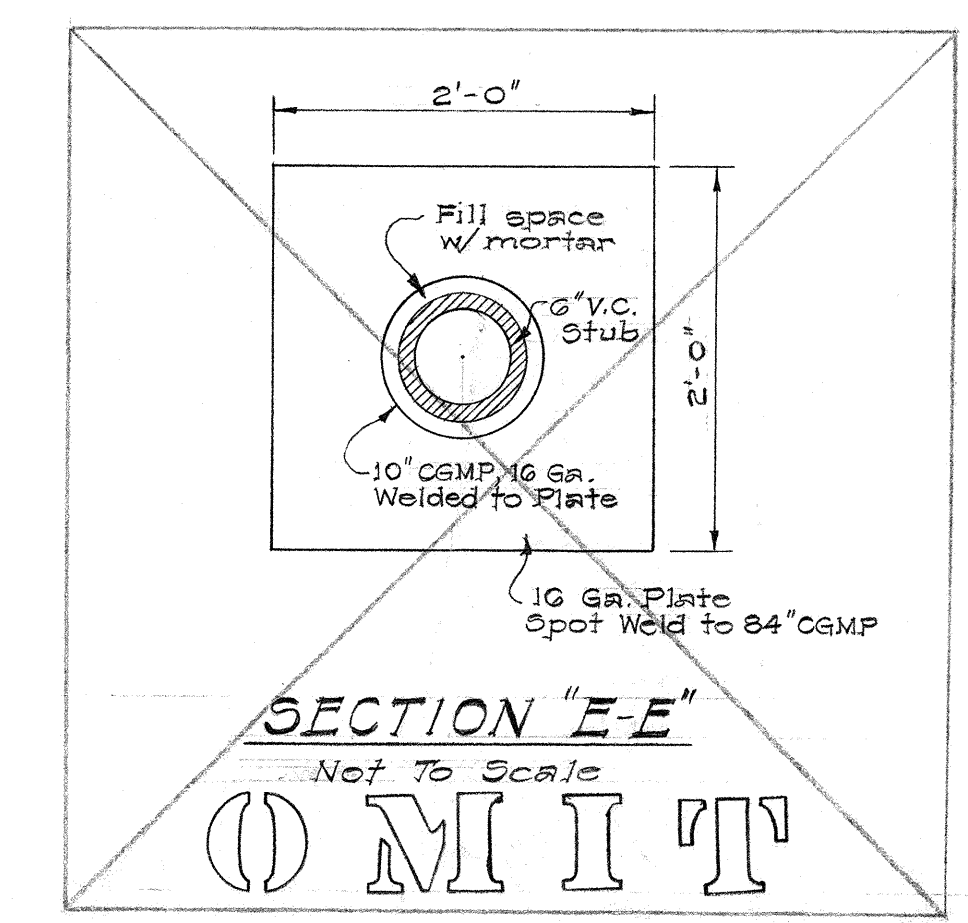
PROFILE OF LATERAL CONNECTION
AT WARD DRAIN STA. 7+70±
Not To Scale



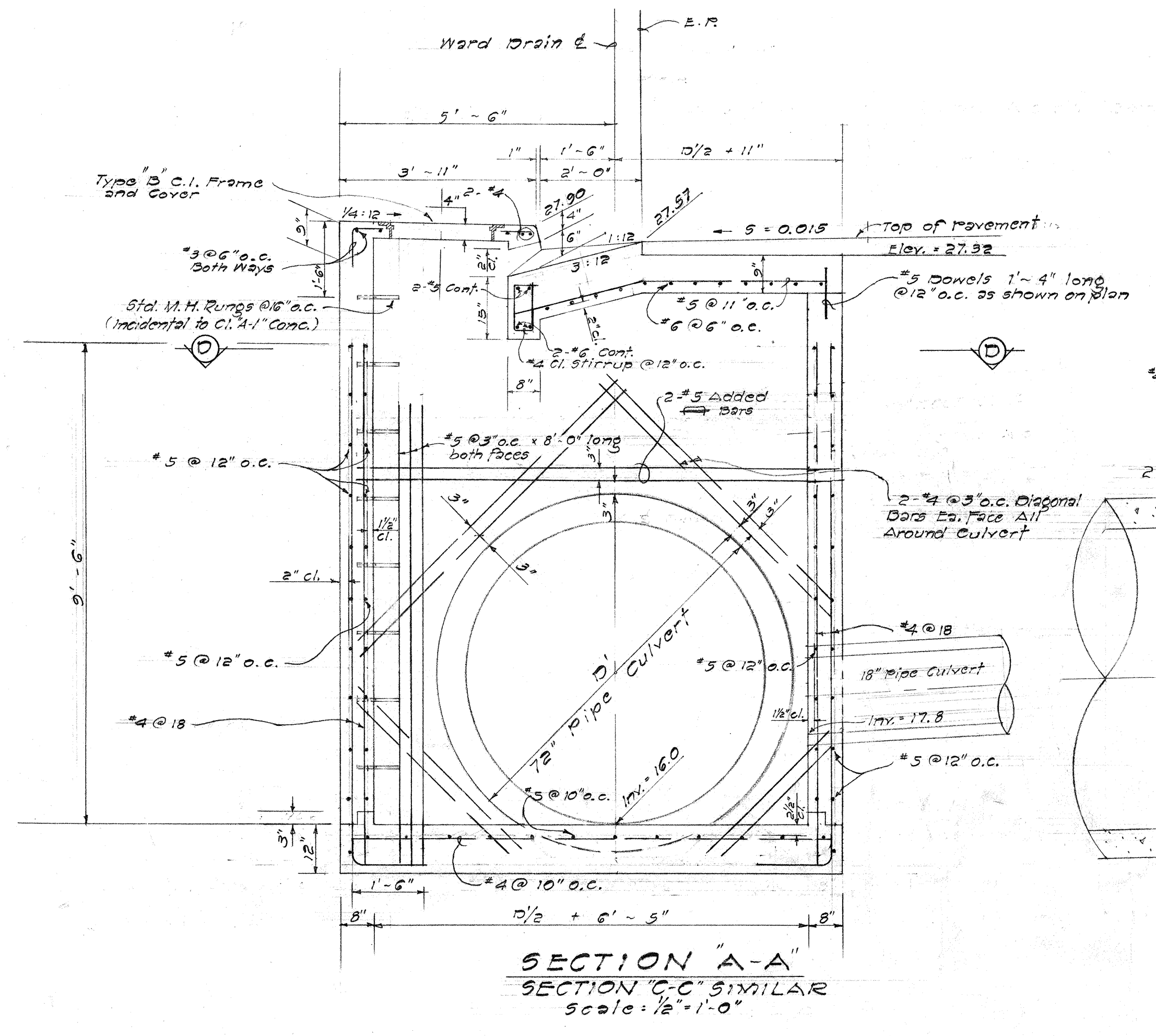
CONNECTION DETAIL AT
WARD DRAIN STA. 7+70±
FOR 84" RCCP
Not To Scale



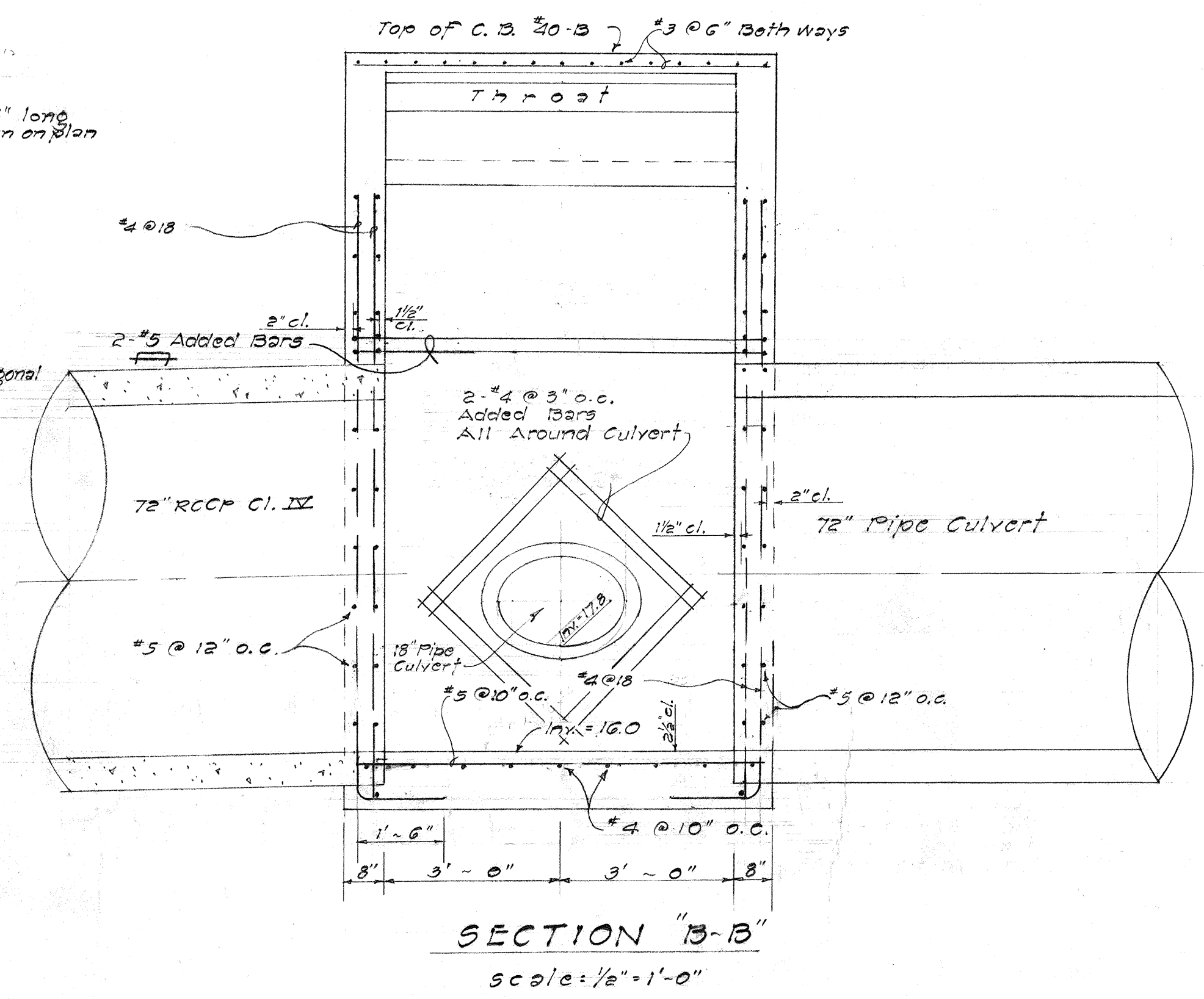
CONNECTION DETAIL AT
WARD DRAIN STA. 7+70±
FOR SECTIONAL PLATE PIPE CULV.
Not To Scale



SECTION "E-E"
Not To Scale
O M I T



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



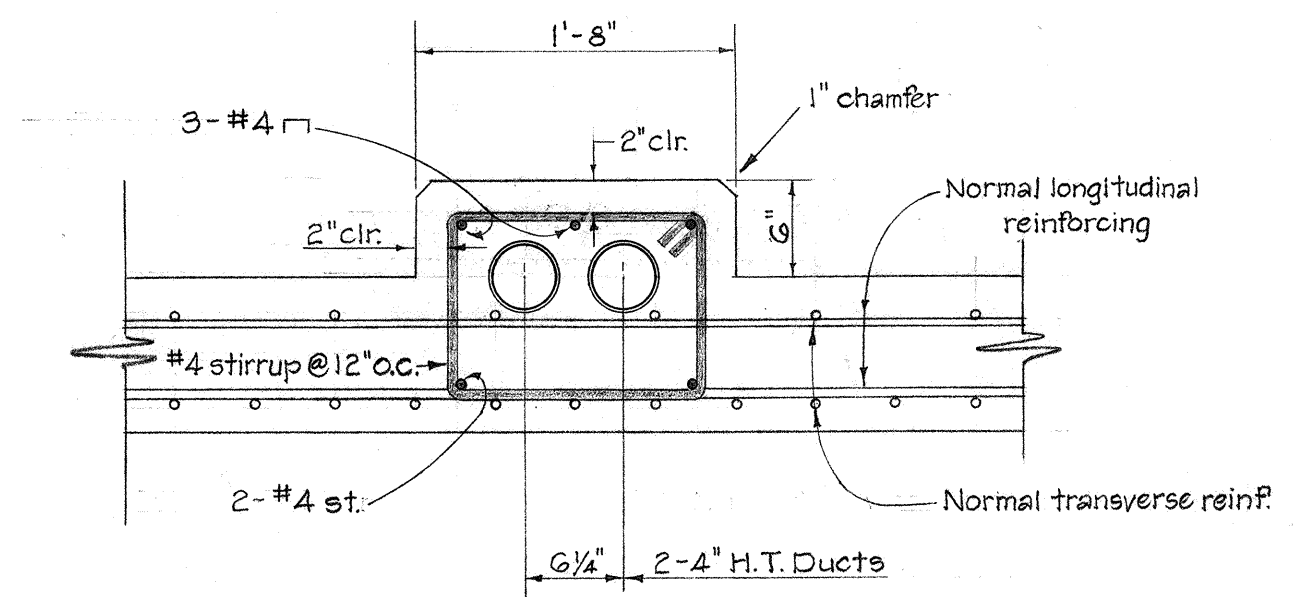
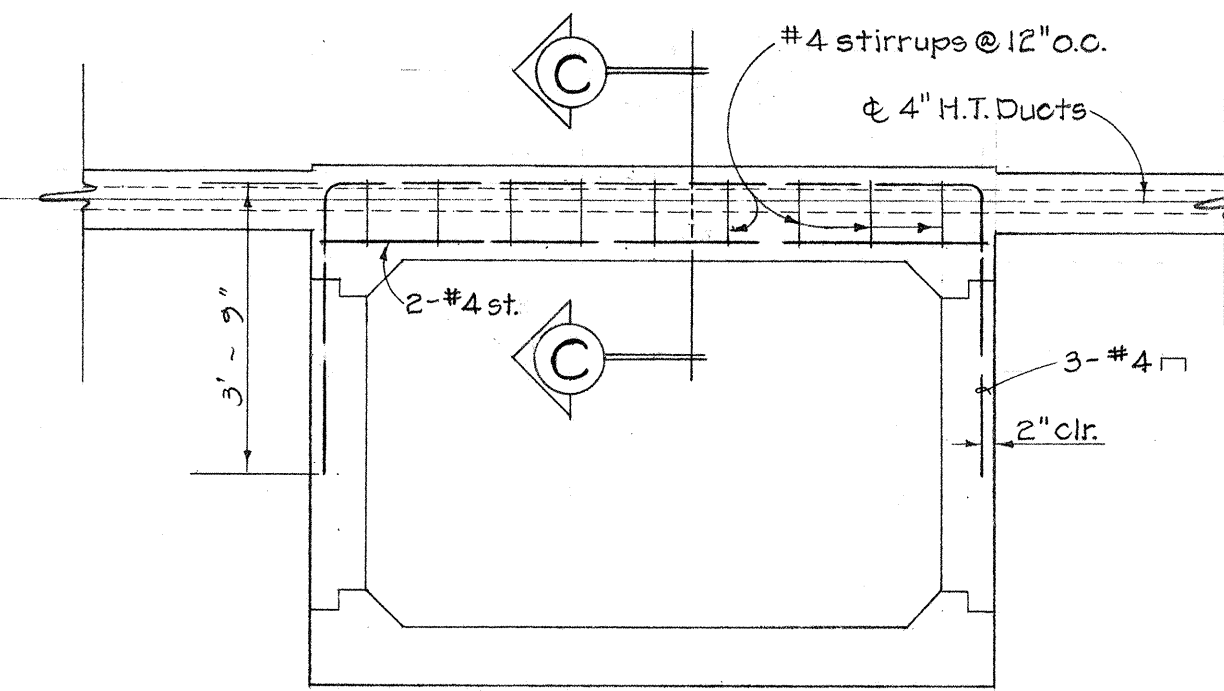
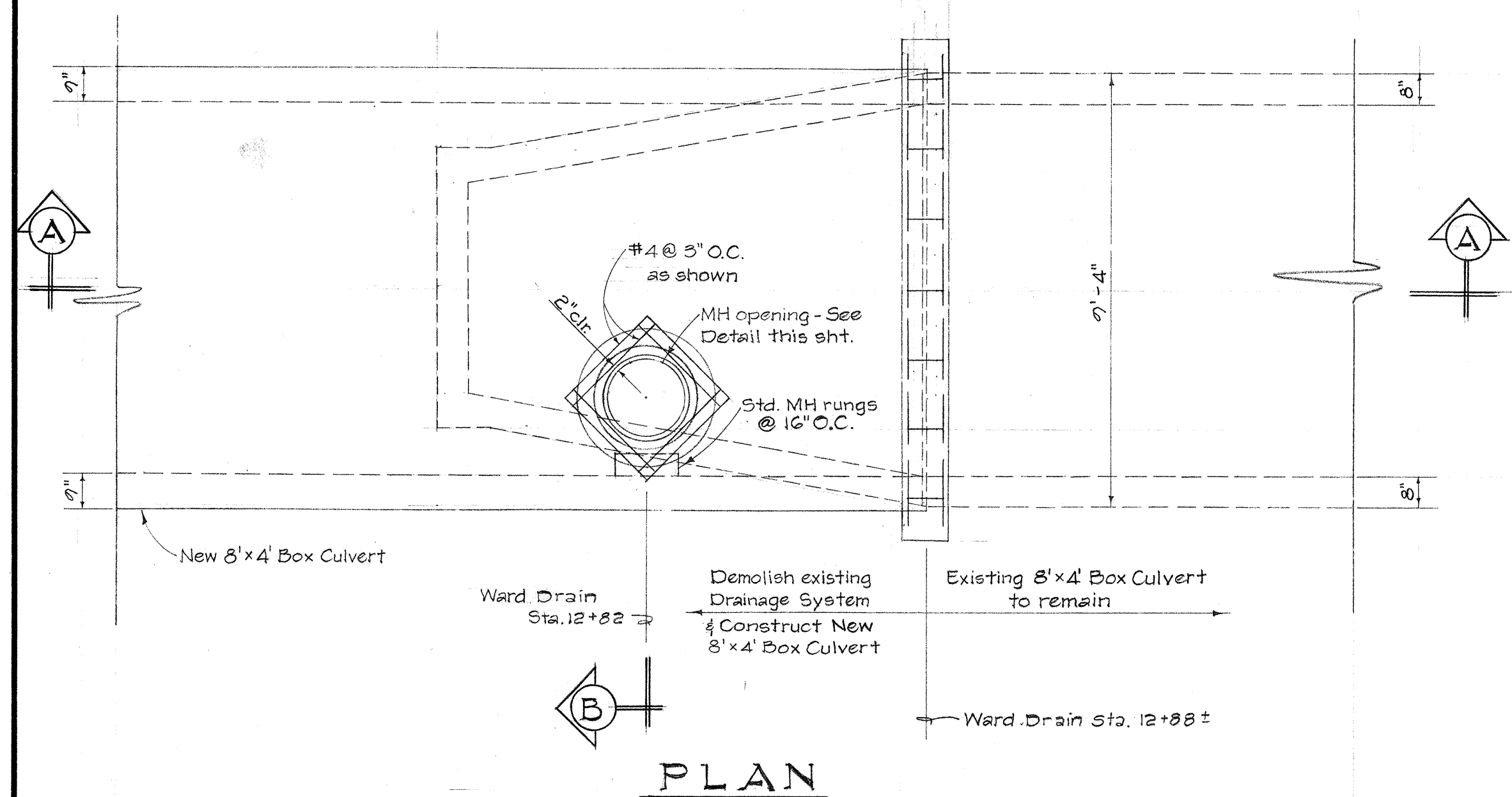
SECTION "B-B"
Scale: 1/2" = 1'-0"

DETAILS OF CATCH BASIN #40 B AT WARD DRAIN STA. 5+50

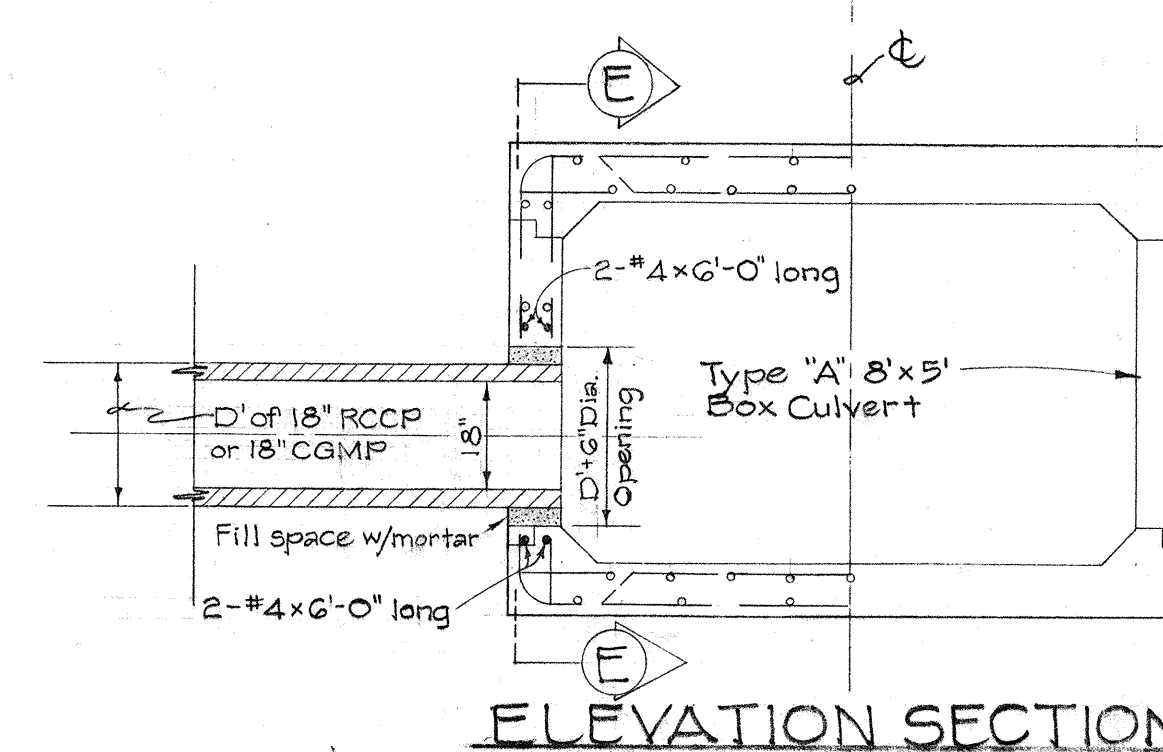
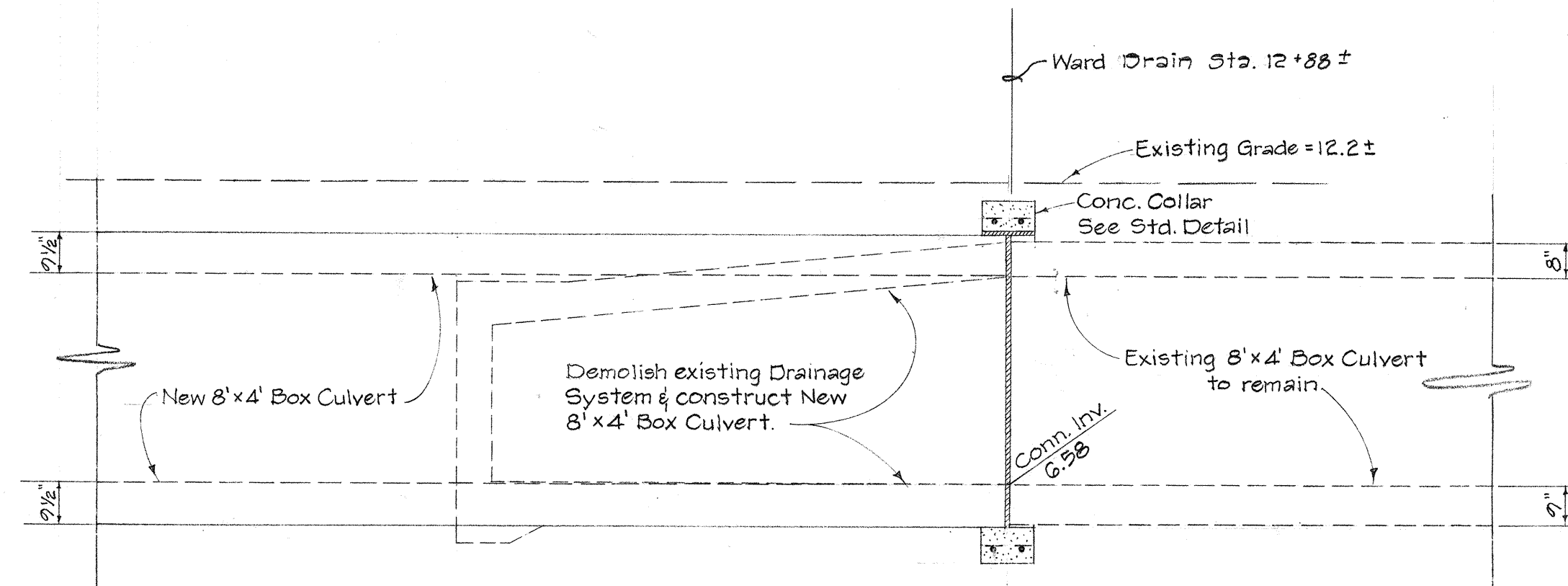
SURVEY PLOTTED BY	DATE
DESIGNED BY	
NOTED BY	
CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE STRUCTURE DETAILS
OF C.B. #40 B AND CONNECTION
DETAILS FOR EXISTING
6" V.C. LATERAL
INTERSTATE ROUTE H1
(LUNALILO FREEWAY)
F.A.I. Proj. No. I-11-1(31), UNIT 1
Scale: As Shown Date: June 1966
SHEET No. 2-14 OF 26 SHEETS

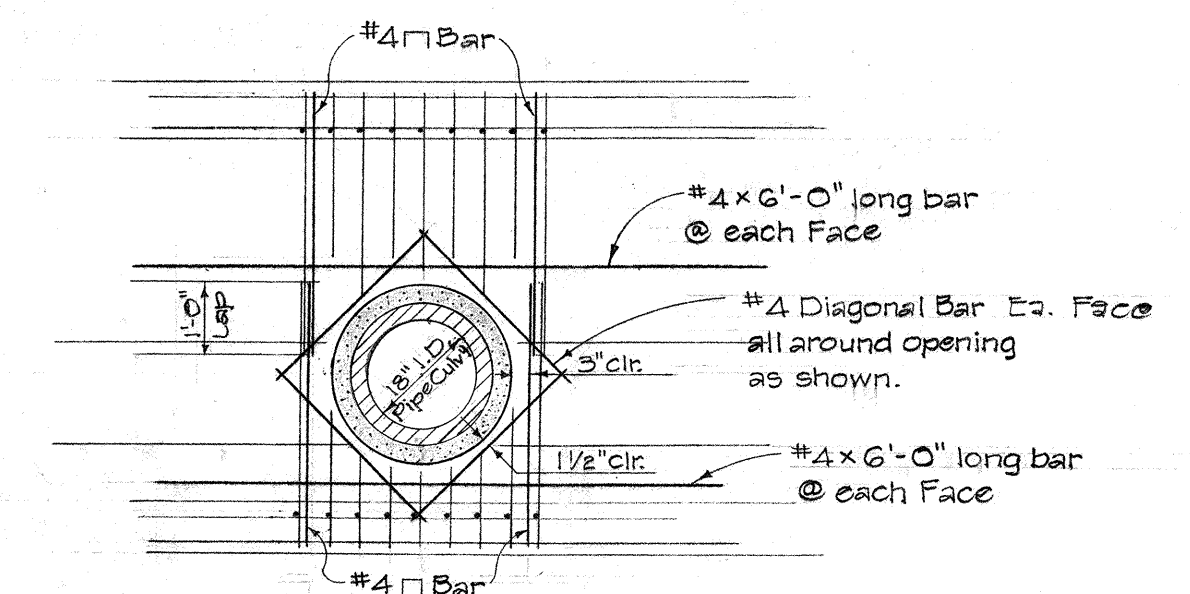
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(31) Unit 1	1967	77	202



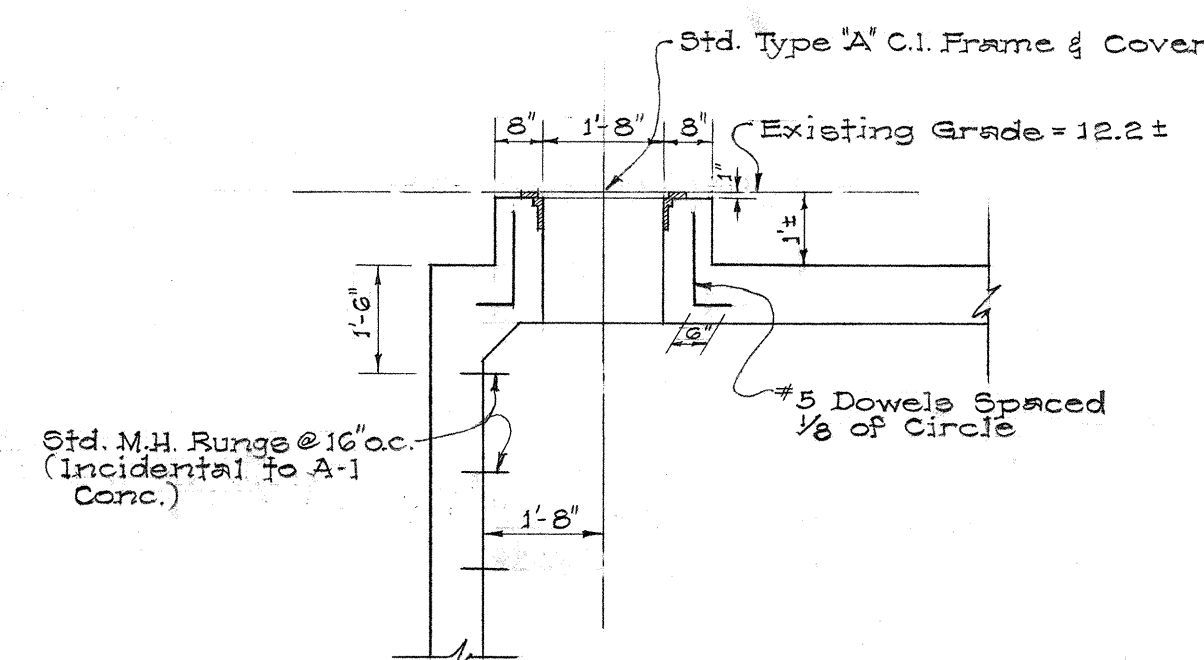
DETAIL OF DUCT IN TOP SLAB OF
8'x5' CONC. BOX CULVERT AT WARD AVE.
STA. 8+45 ±
Scale: As Noted



- Note:
1. Reinforcing steel shown but not noted are the normal reinforcing steel for Type 'A' 8'x5' Box Culvert. All reinforcing steel noted are additions.
 2. Cut normal reinforcing steel around opening as required.



DETAIL OF 18" PIPE CULVERT
CONNECTION AT WARD AVE. STA. 8+40 ±
Scale: 3/8" = 1'-0"

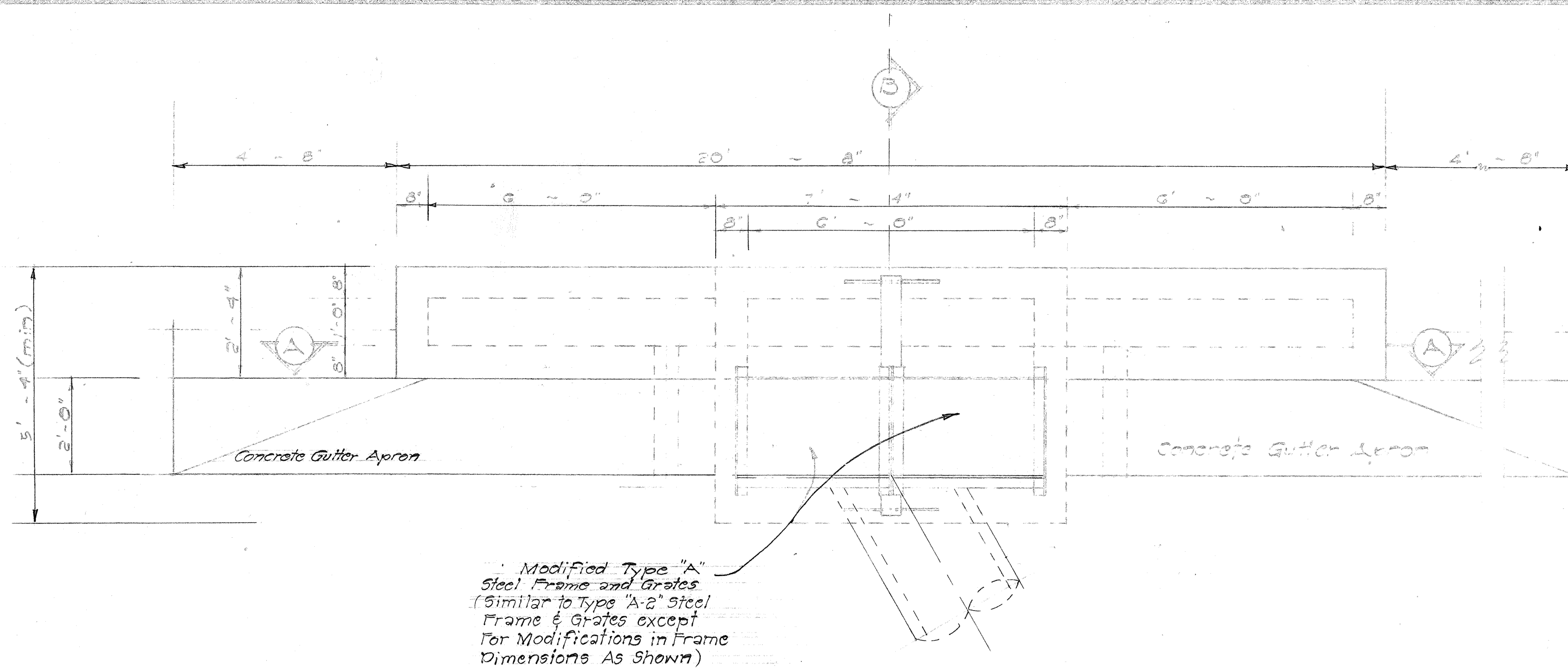


CONNECTION AND MANHOLE DETAILS
FOR 8'x4' BOX CULVERT
Scale: 3/8" = 1'-0"

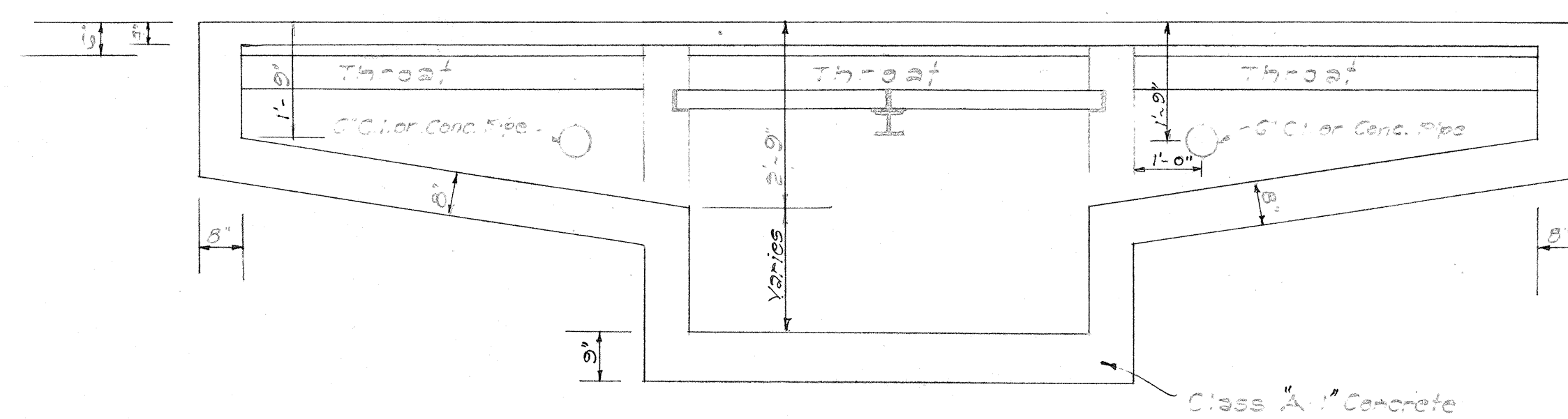
APPROVED:
[Signature]
OUTSIDE PLANT ENGINEER, H.T. Co., Ltd. DATE: 6/14/66

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE STRUCTURE DETAILS
OF CONNECTION AND MANHOLE
DETAILS FOR 8'x4' BOX CULVERT
INTERSTATE ROUTE H-1
(LUALILU FREEWAY)
F.A.I. Proj. No. I-HI-1(31), UNIT 1
Scale: As Shown Date: May 1966
SHEET No. 77 OF 202 SHEETS

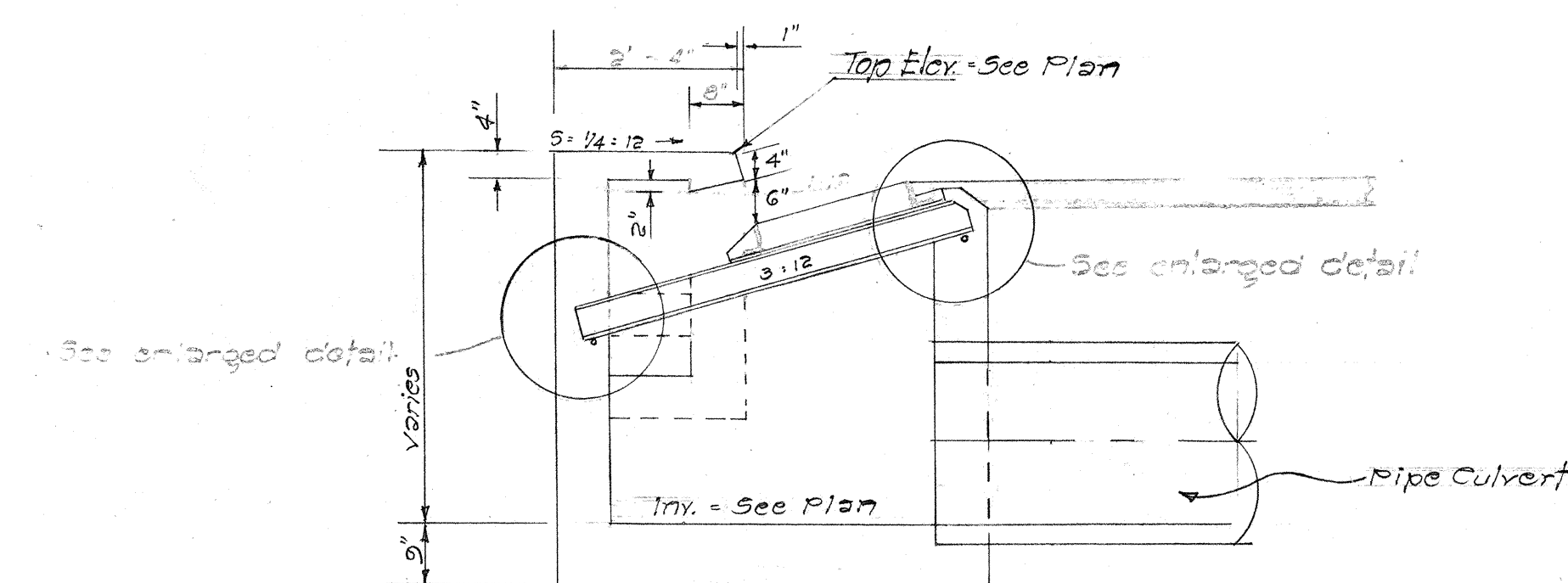
FED. RD. DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	I-H-1(31) Unit 1	1967	98	272



PLAN



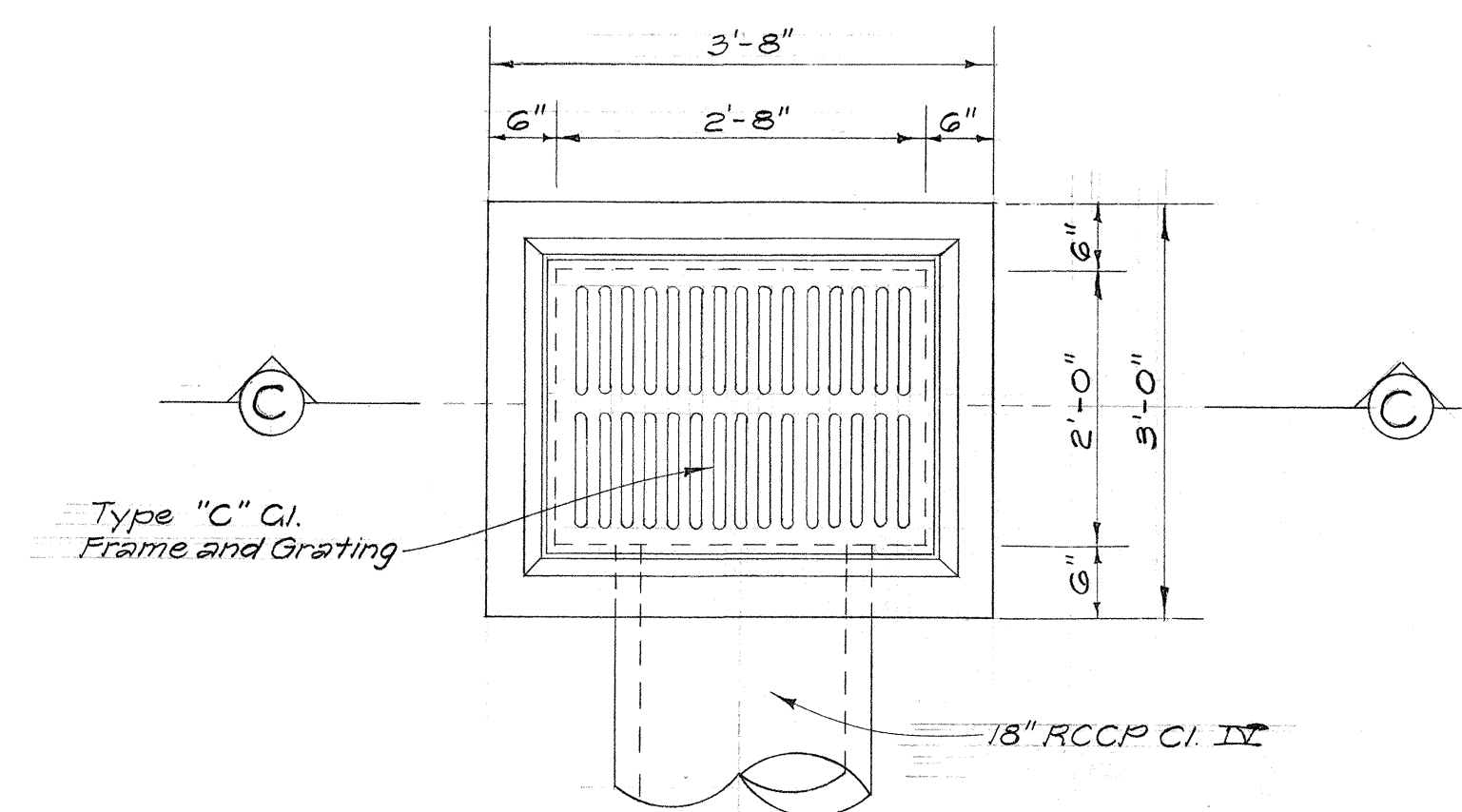
SECTION A-A



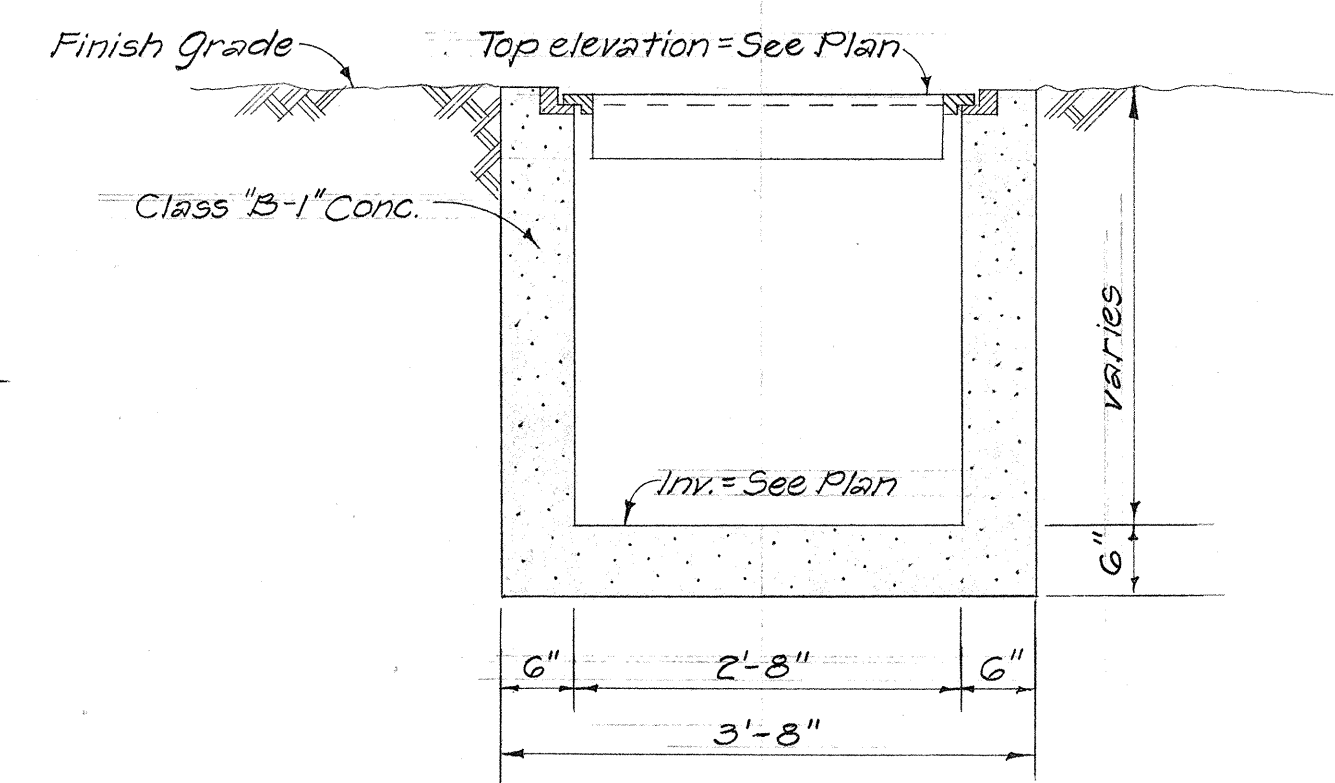
SECTION B-B

DETAILS OF MODIFIED TYPE 'A' CATCH BASIN

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



PLAN

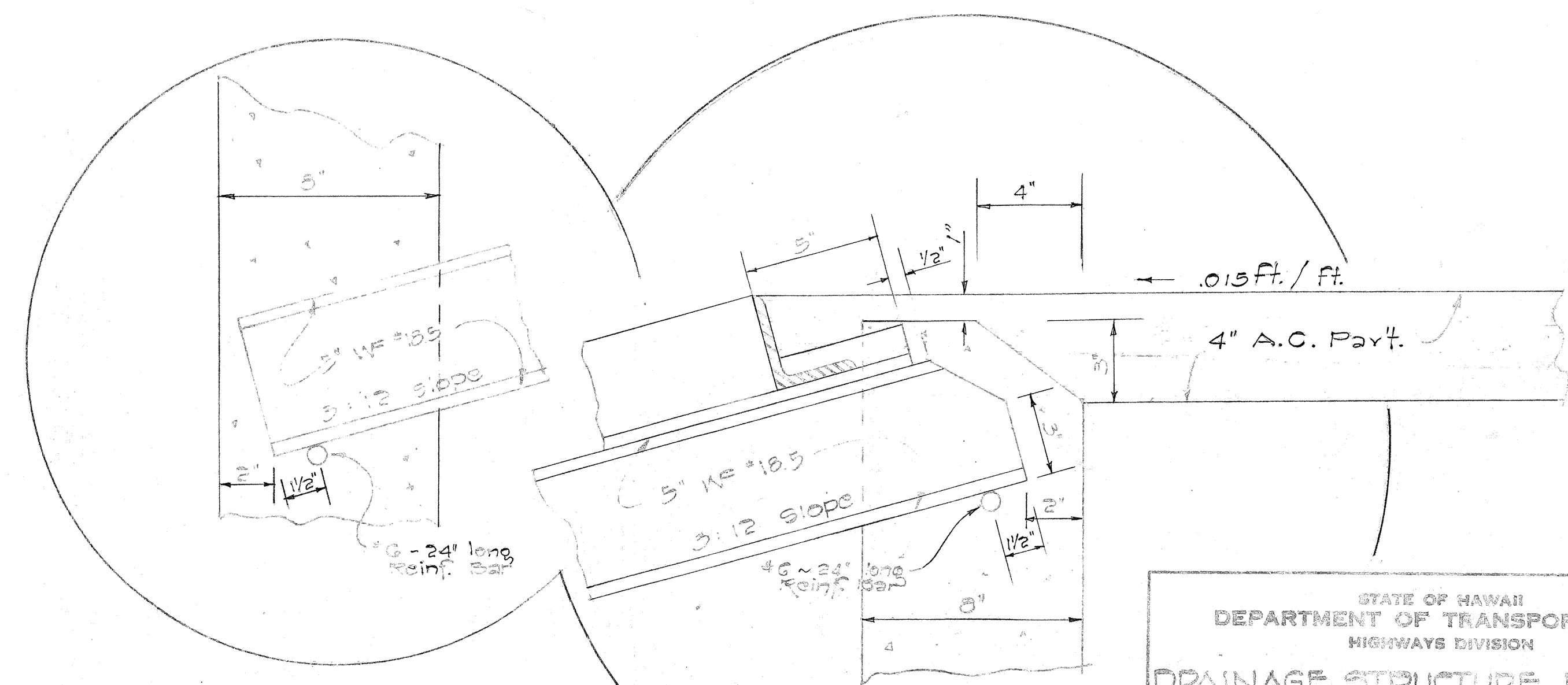


SECTION "C-C"

Note: Culvert shall leave C.D.I. from any position and in any direction indicated by plans or ordered by the Engineer.

DETAIL OF TYPE "C" GRATED CONC. DROP INTAKE

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

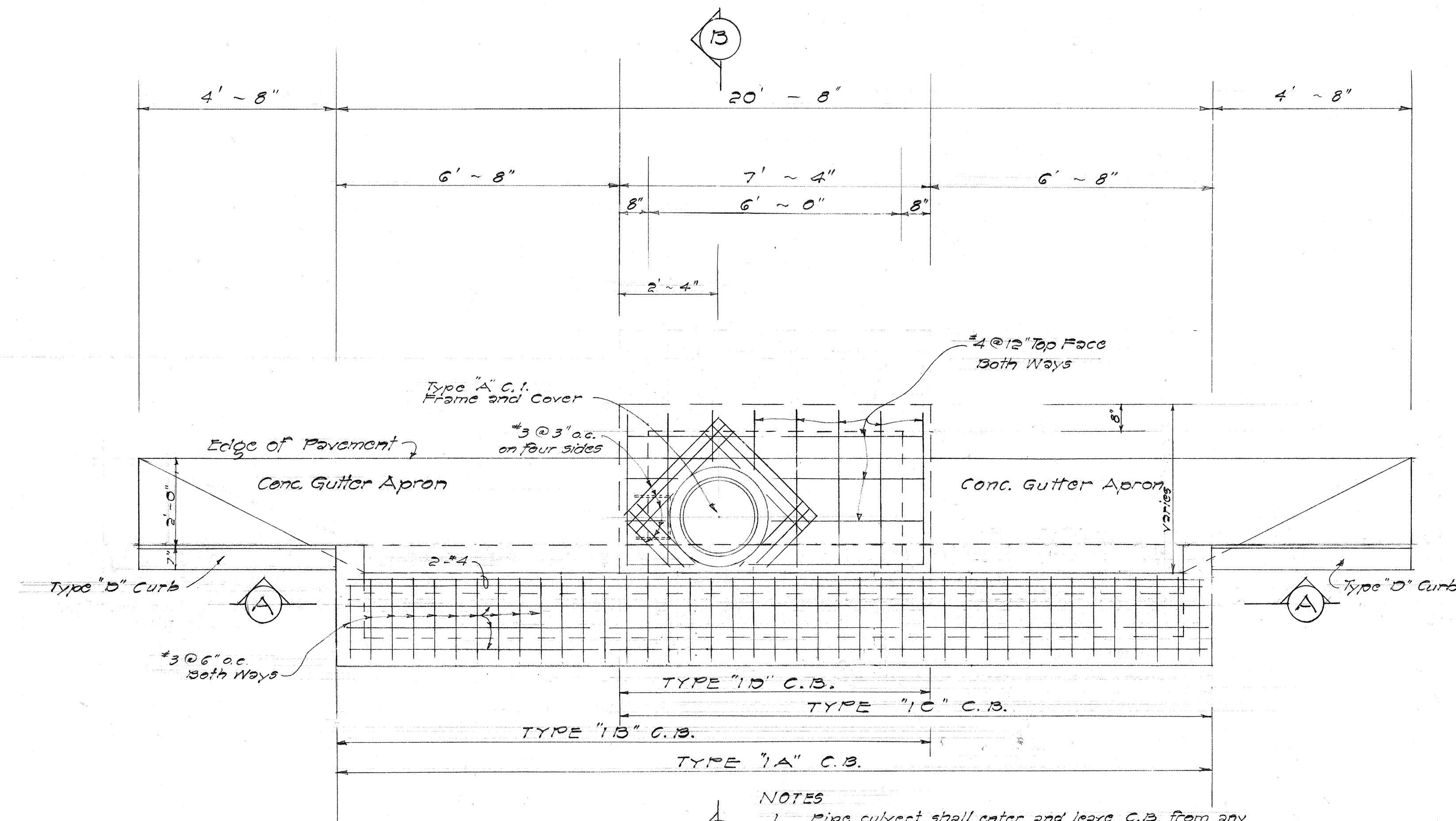


ENLARGED DETAILS

Scale: 3" = 1'-0"

STATE OF HAWAII	DEPARTMENT OF TRANSPORTATION	HIGHWAYS DIVISION
DRAINAGE STRUCTURE DETAILS	OF	MODIFIED TYPE "A" CATCH BASIN
AND TYPE "C" GRATED C.D.I.		INTERSTATE ROUTE H-1
(LUNALILO FREEWAY)		F.A.I. Proj. No. I-H-1(31), UNIT 1
Scale: As Shown	Date: June 1966	SHEET No. D-10 OF 26 SHEETS

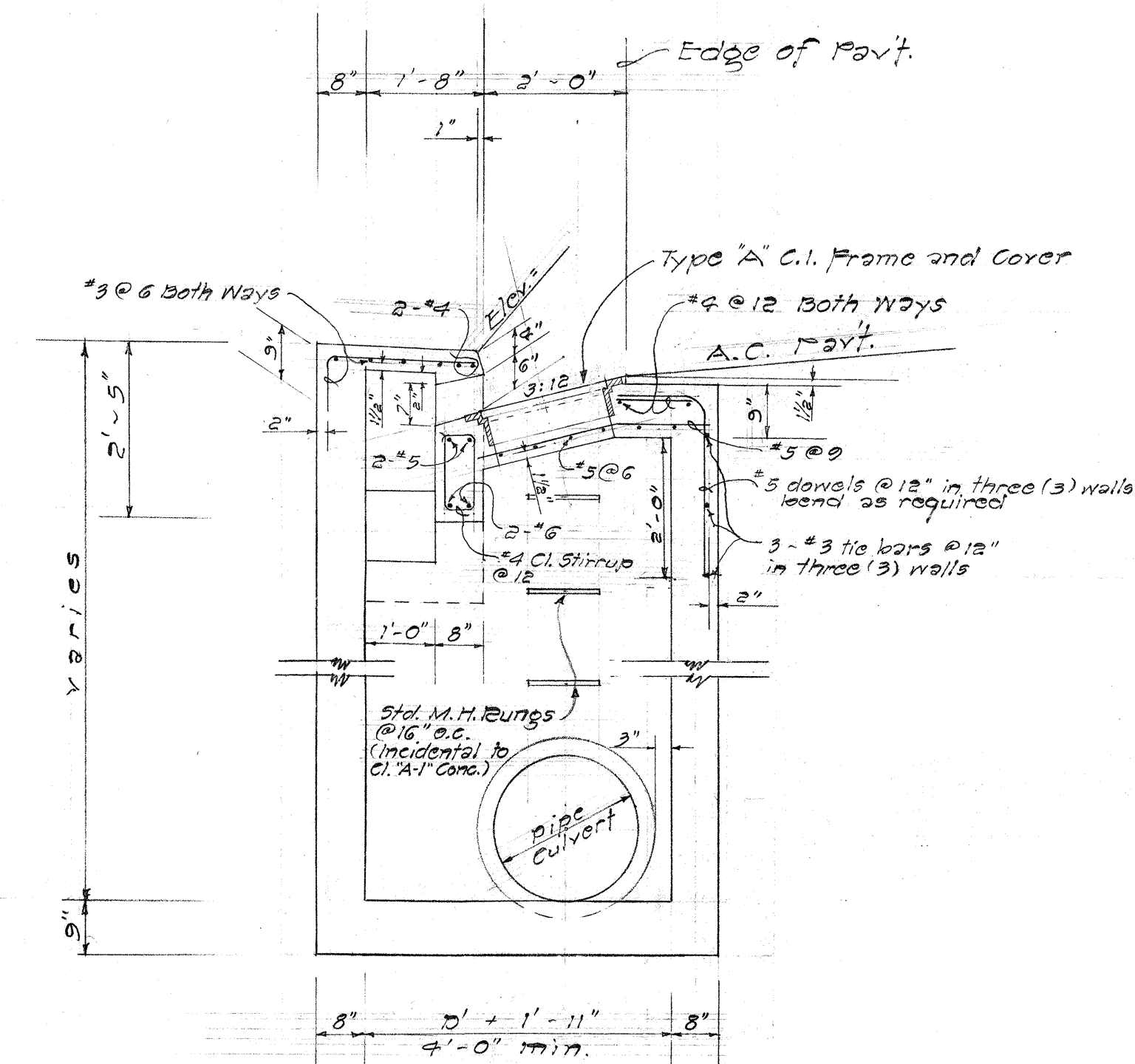
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-I(31) Unit 1	1967	99	292



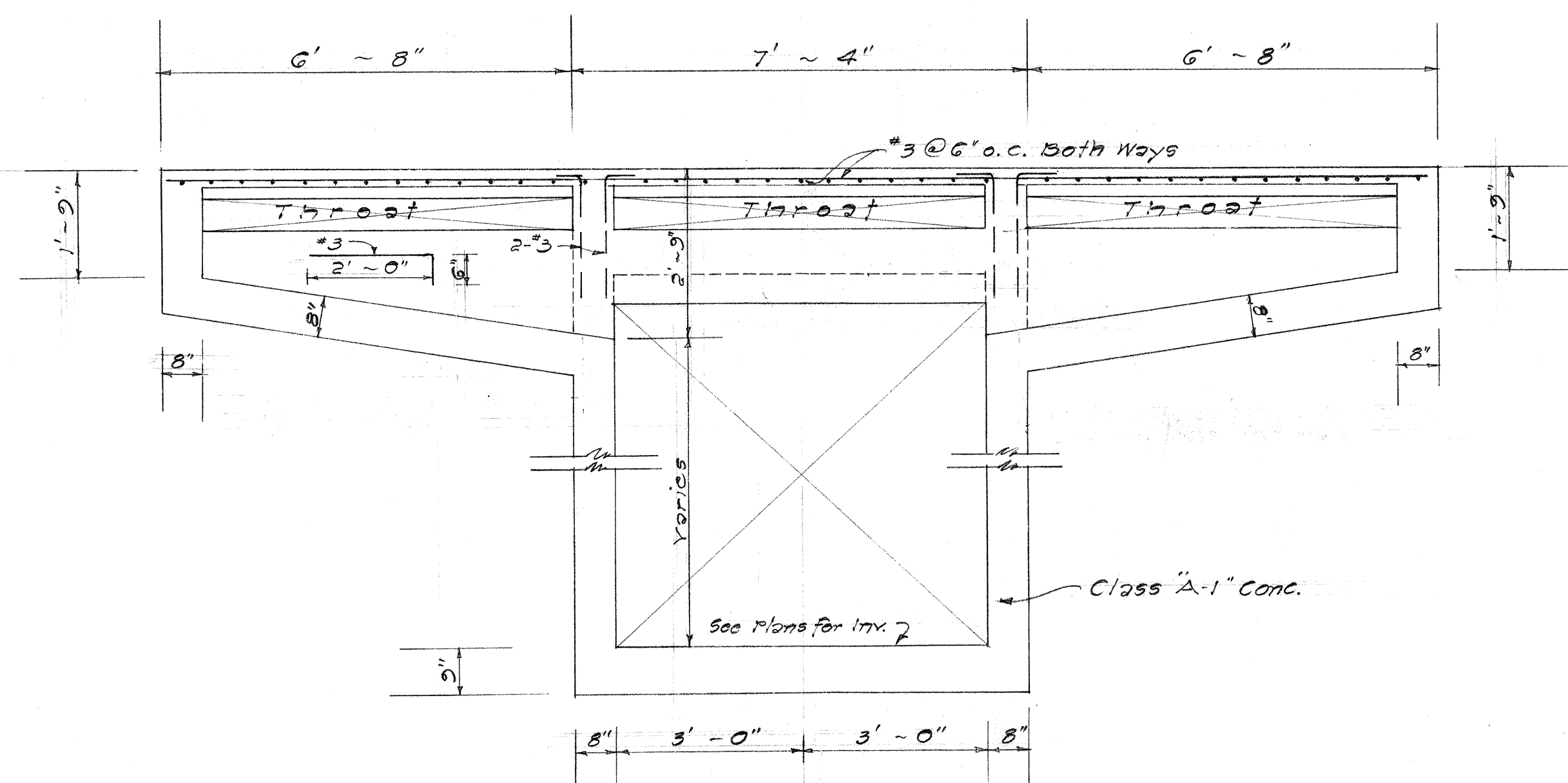
NOTES

1. Pipe culvert shall enter and leave, C.B. from any position and in the direction indicated by the plans or ordered by the Engineer.
2. It shall be the maximum outside dimension of the pipe culvert at the C.B. wall.

PLAN



SECTION "B-B"



SECTION "A-A"

DETAILS OF TYPE "1A", "1B", "1C" AND "1D" CATCH BASINS

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE STRUCTURE DETAILS
OF "IA", "IB", "IC" AND "ID"
CATCH BASINS

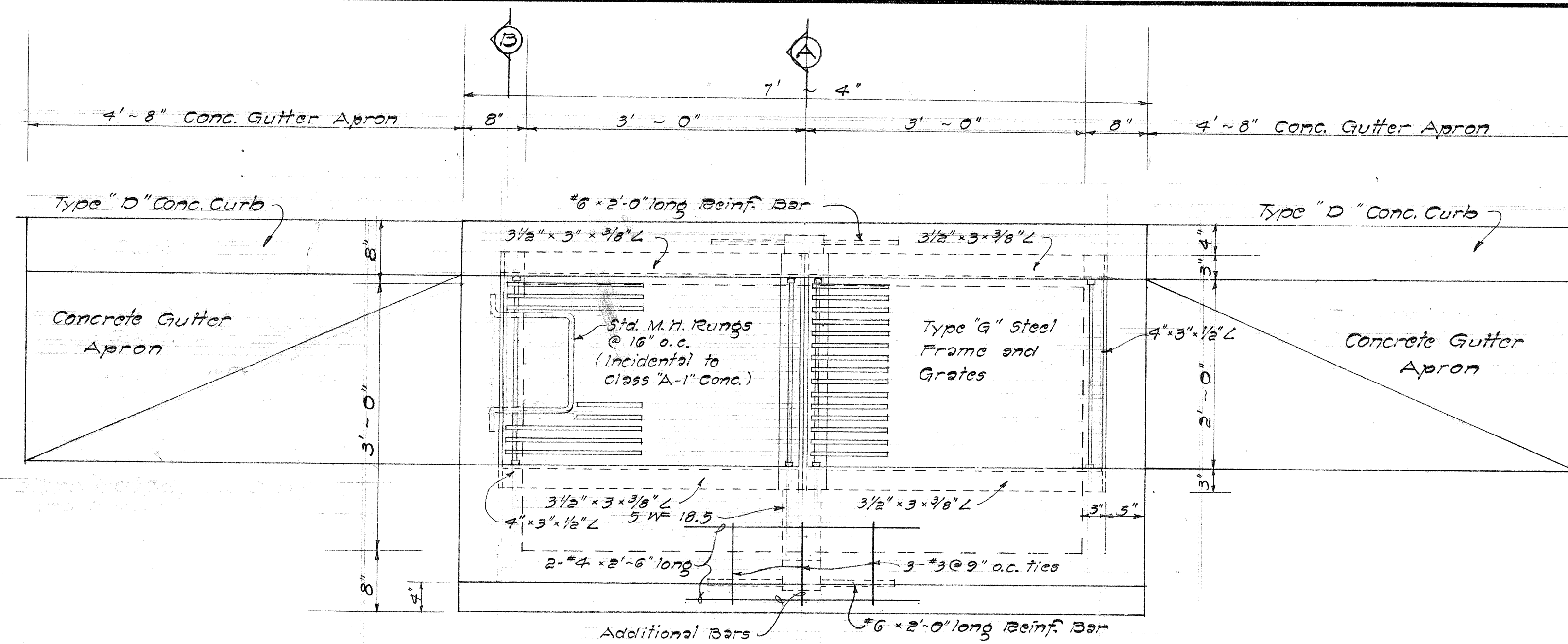
INTERSTATE ROUTE HI
(LUNALILO FREEWAY)
F.A.I. Proj. No. I-HI-1(31), UNIT 1
Scale: As Shown Date: June 1966

SHEET No. 17 OF 26 SHEETS

SHEET No. 17 OF 26 SHEETS

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

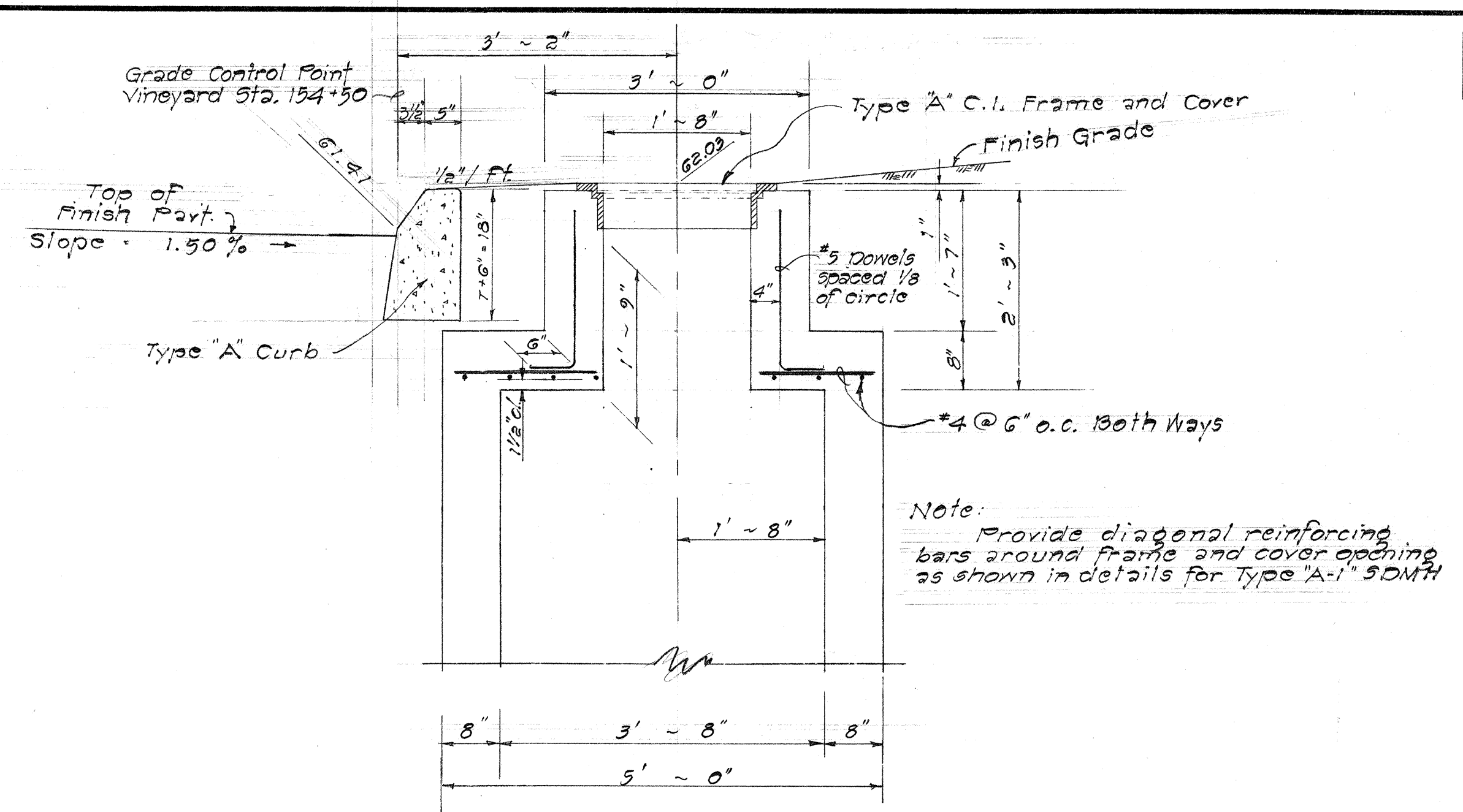
PRINTED ON NO. 1000H CLEARPRIN



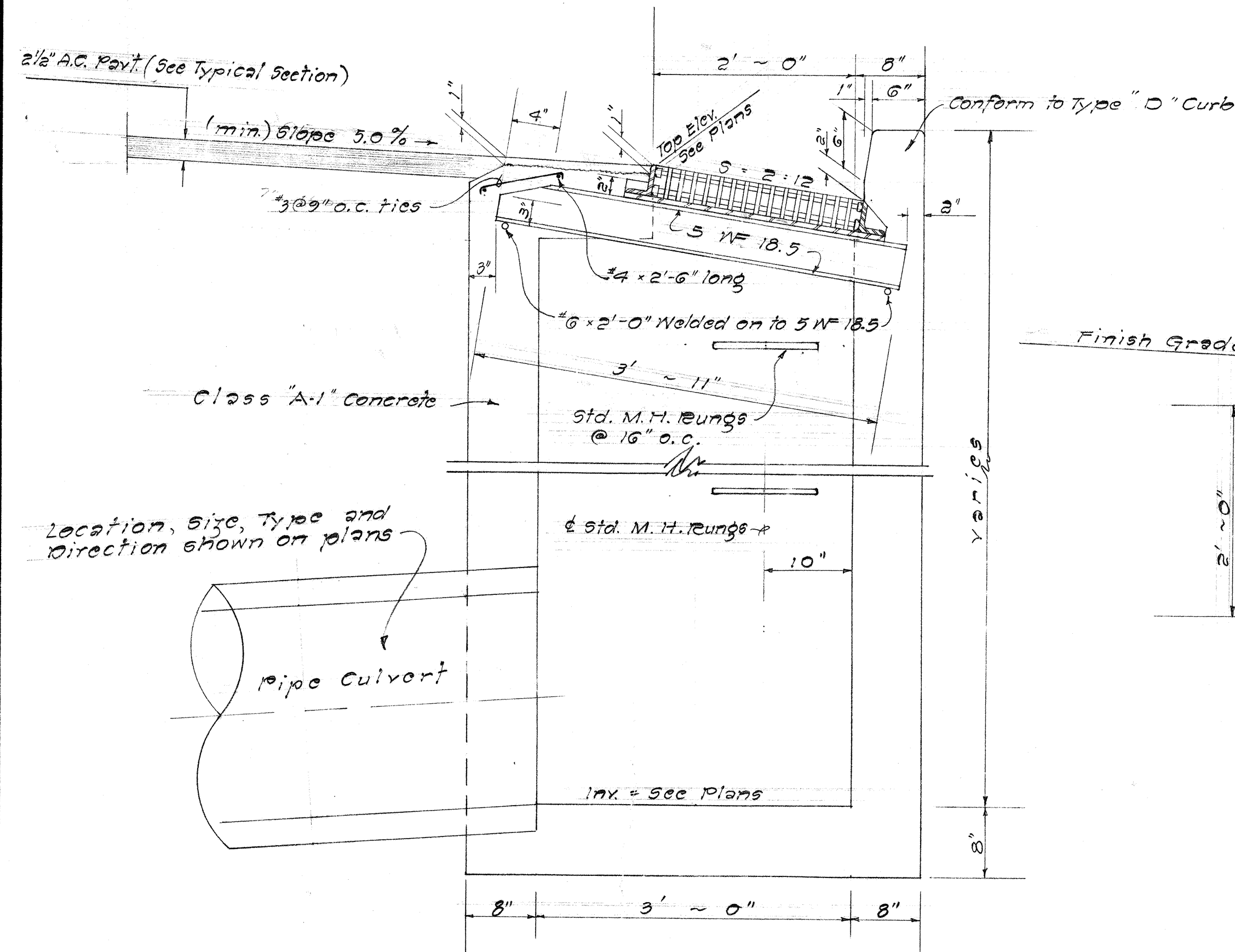
PLAN

NOTE:

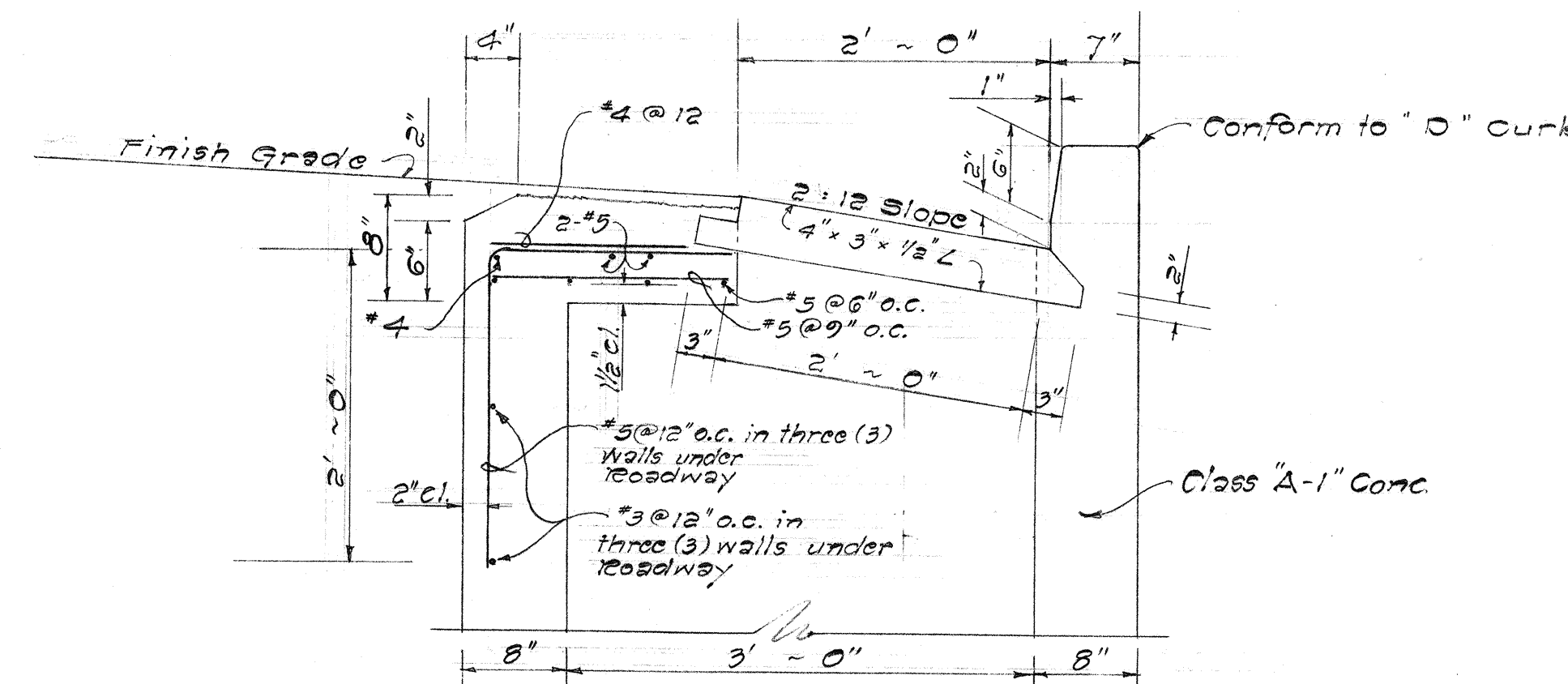
1. Location of Manhole Rungs to be determined by the Engineer.
2. Type 'G' Steel Frame and Grates similar to Type 'A-2' Steel Frame and Grates except for modifications in frame dimensions as shown.



TOP DETAIL OF DMH #2A-TYPE AA-1
AT VINEYARD STA. 154+50
(BOTTOM DETAIL SIMILAR TO TYPE A SDMH)
Scale: 3/4" = 1'-0"



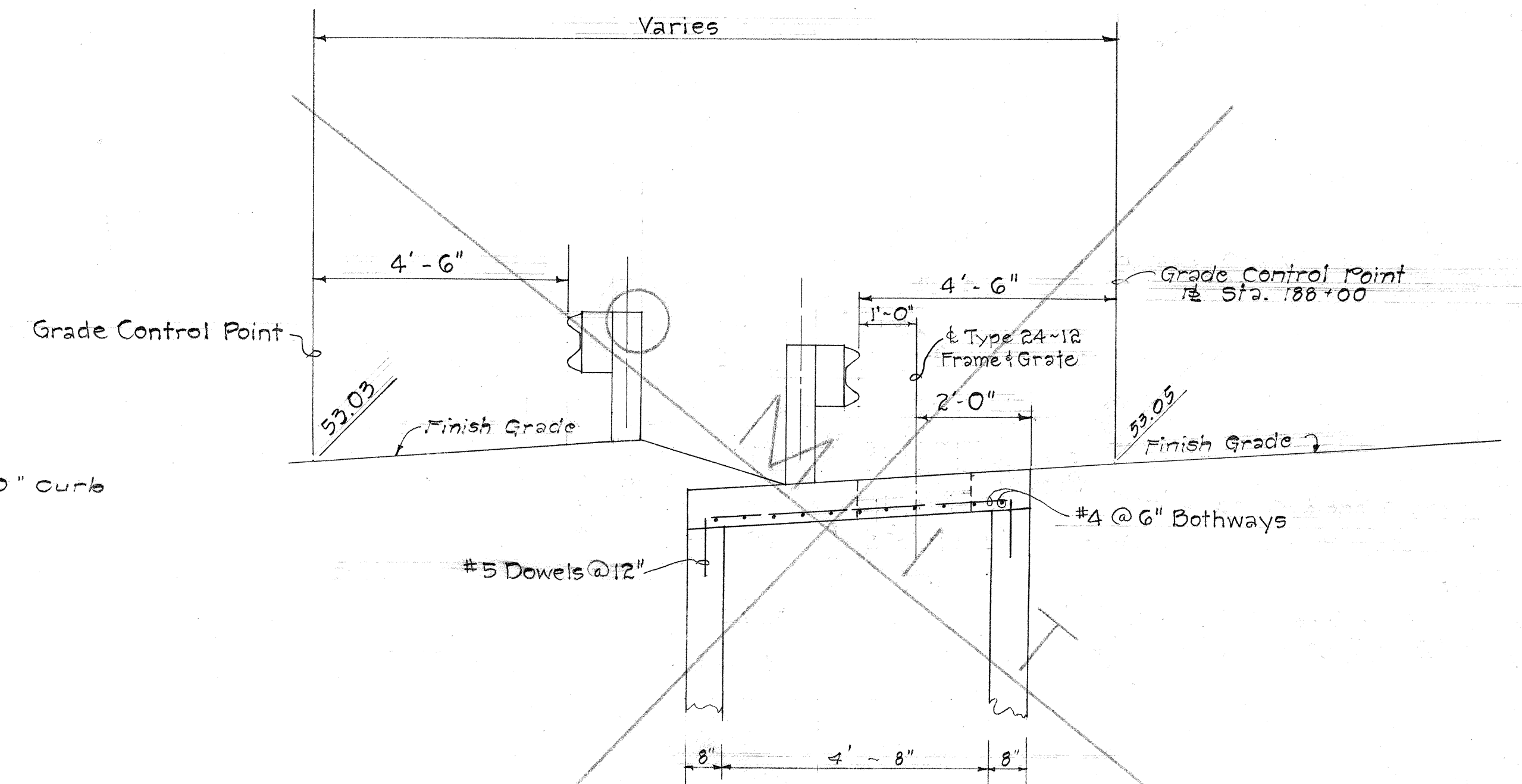
SECTION A-A



SECTION "B-B"

Note: Bottom View of Section "B-B" similar to Section "A-A". Reinforcing as shown is typical for entire longitudinal wall under the pavement, unless otherwise specified.

DETAILS OF TYPE "G" CATCH BASIN
Scale: 1" = 1'-0"



TOP DETAIL OF MODIFIED MEDIAN C.B. #10
AT STA. 188+00
(BOTTOM DETAIL SIMILAR TO TYPE C SDMH)
Scale: 1/2" = 1'-0"

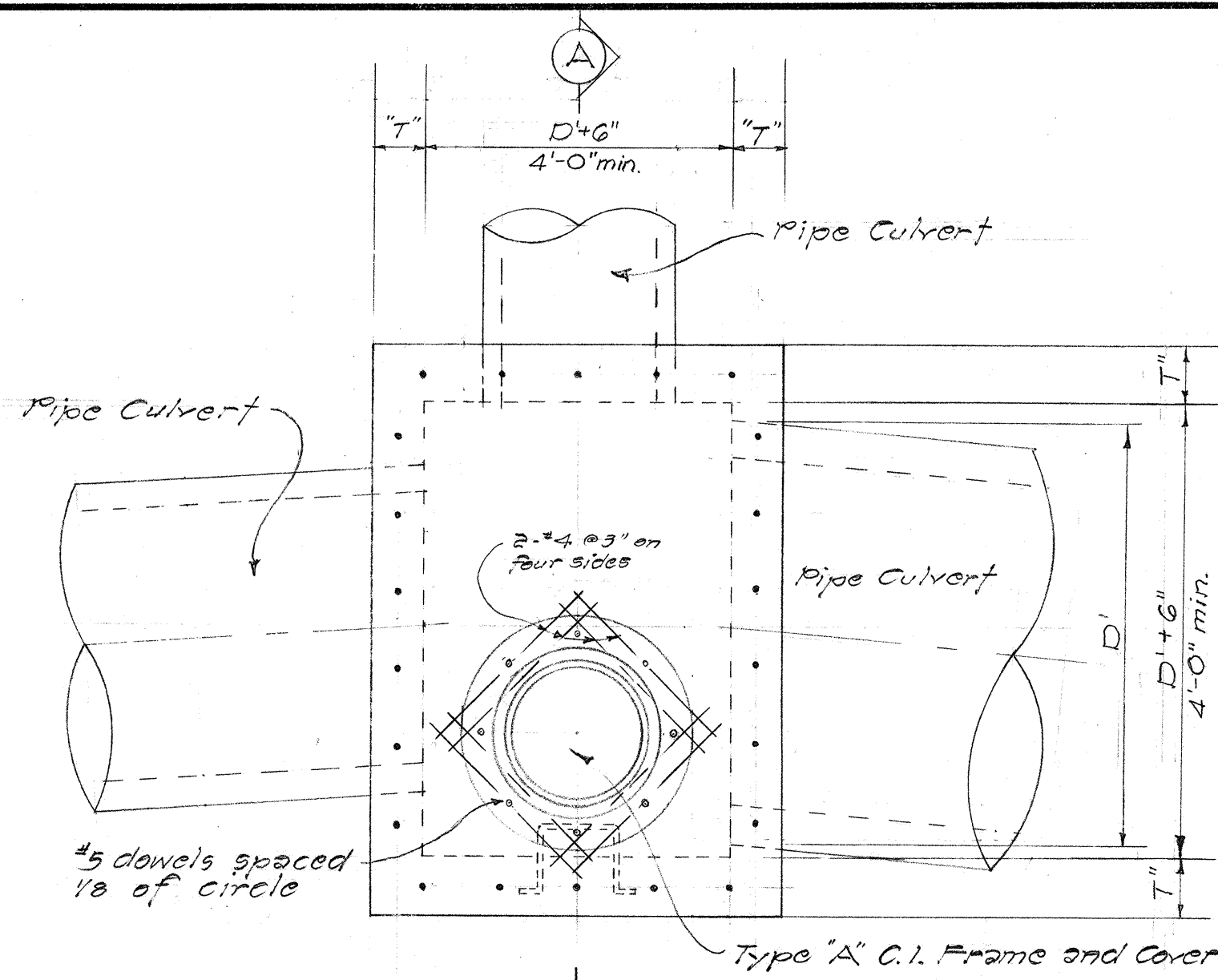
DATE	
SURVEY PLOTTED BY	
DRAWN BY	
TRACED BY	
NOTES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

THIS SHEET SUPERSEDES
SHEET NO. 100

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE STRUCTURE DETAILS
OF TYPE "G" CATCH BASIN &
TYPE AA-1 AND CC-1 DMH.
INTERSTATE ROUTE H1
(LUNALILO FREEWAY)
F.A.I. Proj. No. I-H-1(31), UNIT 1
Scale: As Shown Date: June 1966
SHEET No. 100 OF 20 SHEETS

C.O. 100

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11(31)	1967	101	202

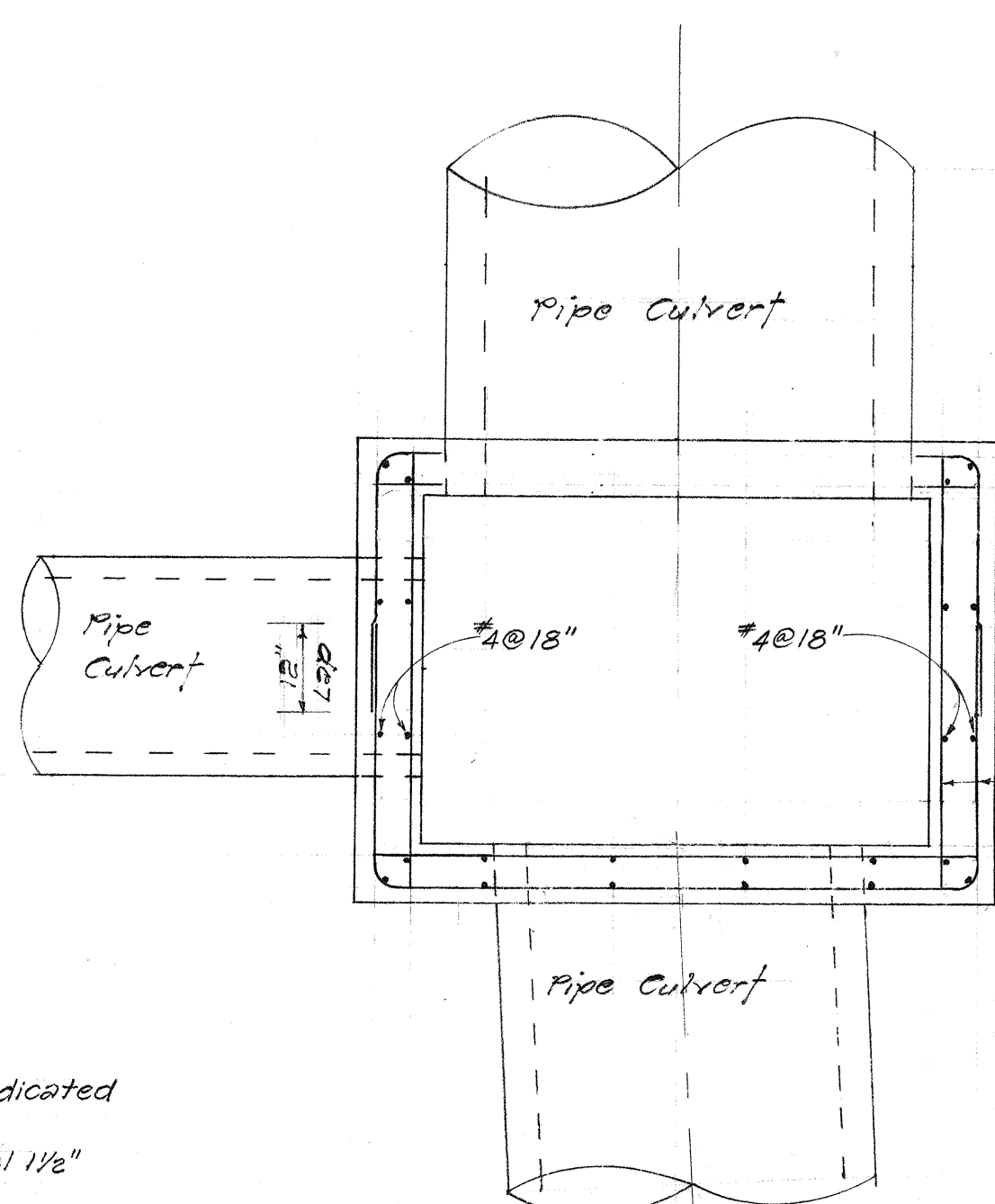


PLAN

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

NOTES:

1. Culverts shall enter and leave S.D.M.H. as indicated on the plans or ordered by the Engineer.
2. End horizontal and vertical reinforcing steel 1 1/2" from all pipe culverts.
3. Unless otherwise directed by the Engineer, bottom slab reinforcing steel shall be bent to clear the bottoms of pipes.
4. D' shall be the maximum outside dimension of the pipe culvert at the DMH wall.
5. When a box culvert enters or leaves the DMH, the inside dimension of DMH shall be either (D'+6") or the inside width of the box culvert, whichever is greater. The minimum inside dimension shall be 4 feet.

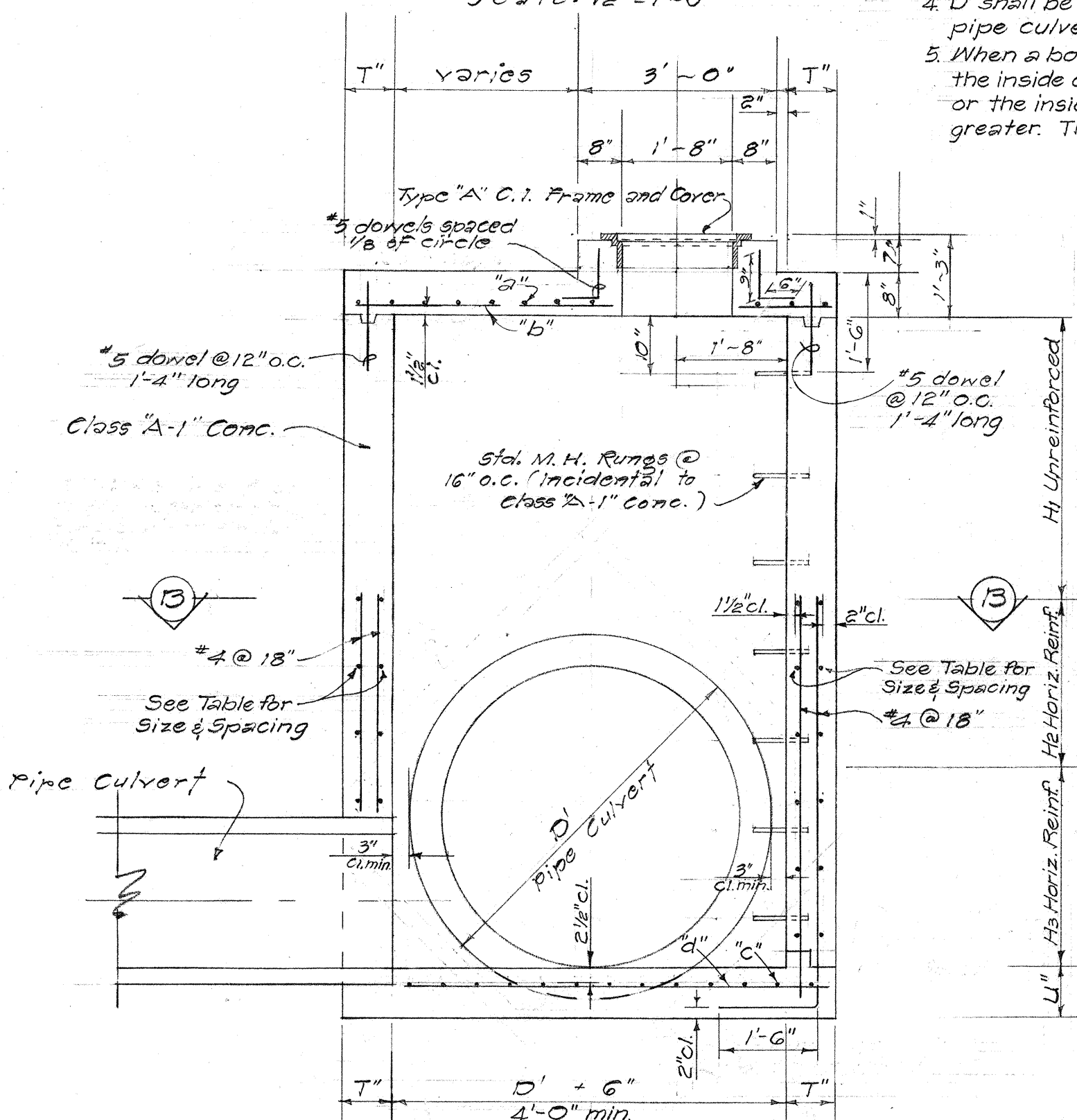


SECTION "B-B"

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

TABLE OF DIMENSIONS AND REINFORCING STEEL

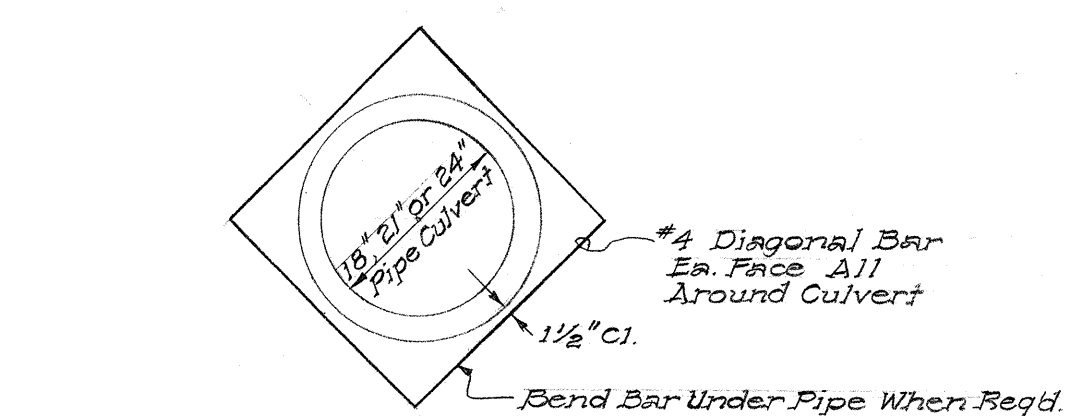
DMH No.	Sta.	Top El.	Inv.	Top Slab	Bottom Slab	Wall	H ₁	H ₂	H ₃
14-C	Rd "J" 27+00	84.90	77.50	#4 @10" 10"	#4 @12" 12"	#4 @12" 12"	8"	7'-0"	-
17-C	Rd "J" 30+13	79.40	67.00	#5 @8" 8"	#5 @12" 12"	#5 @12" 12"	8"	6'-11"	-
21-C	Rd "J" 34+25	66.5	55.5	#5 @8" 8"	#5 @12" 12"	#5 @12" 12"	8"	6'-0"	-
20-B	Rd "K" 6+54	66.5	40.50	#5 @10" 10"	#5 @12" 12"	#5 @12" 12"	8"	6'-0"	5'-0"
24-B	Ward Drain 6+05	26.3	13.5	#5 @8" 8"	#5 @12" 12"	#5 @12" 12"	7"	2'-3"	7'-4"
25-B	Ward Drain 9+25	18.5	8.5	#5 @8" 8"	#5 @12" 12"	#5 @12" 12"	7"	2'-3"	6'-6"
2-C	Victoria 6+65	31.30	58.25	#4 @12" 12"	#4 @12" 12"	#4 @12" 12"	8"	2'-9"	14'-0"



SECTION "A-A"

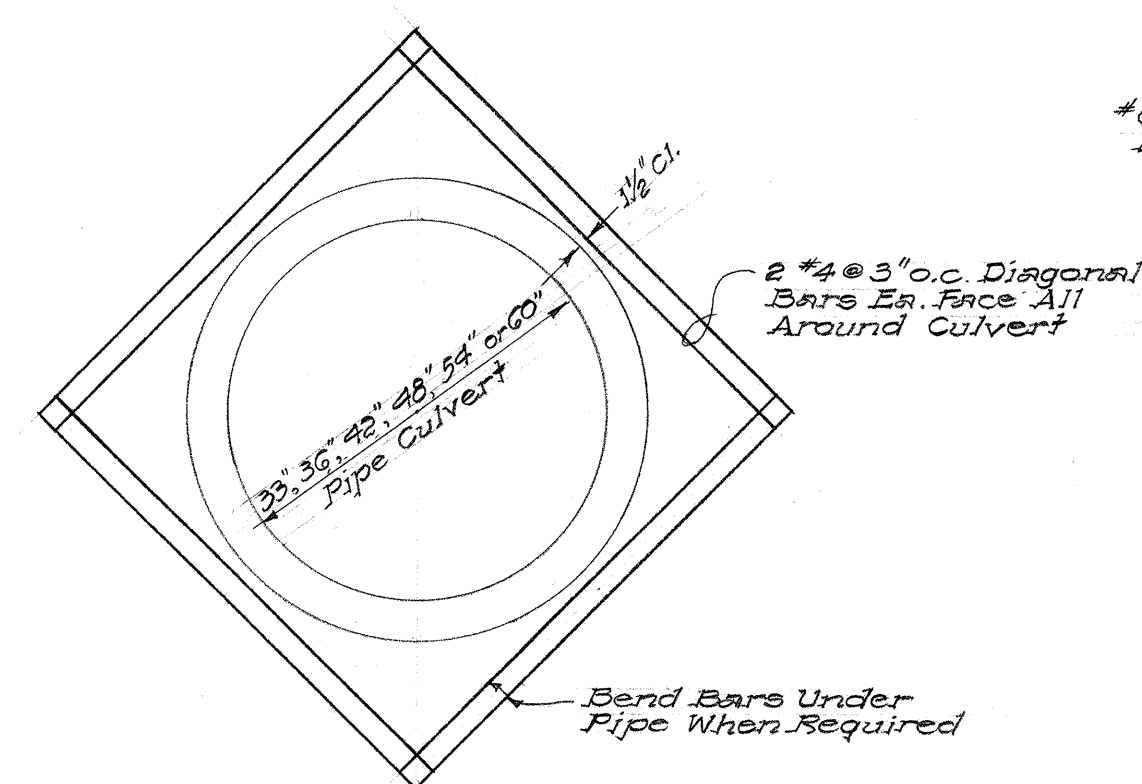
Scale: 1/2" = 1'-0"

DETAILS OF TYPE "F-1" D.M.H.



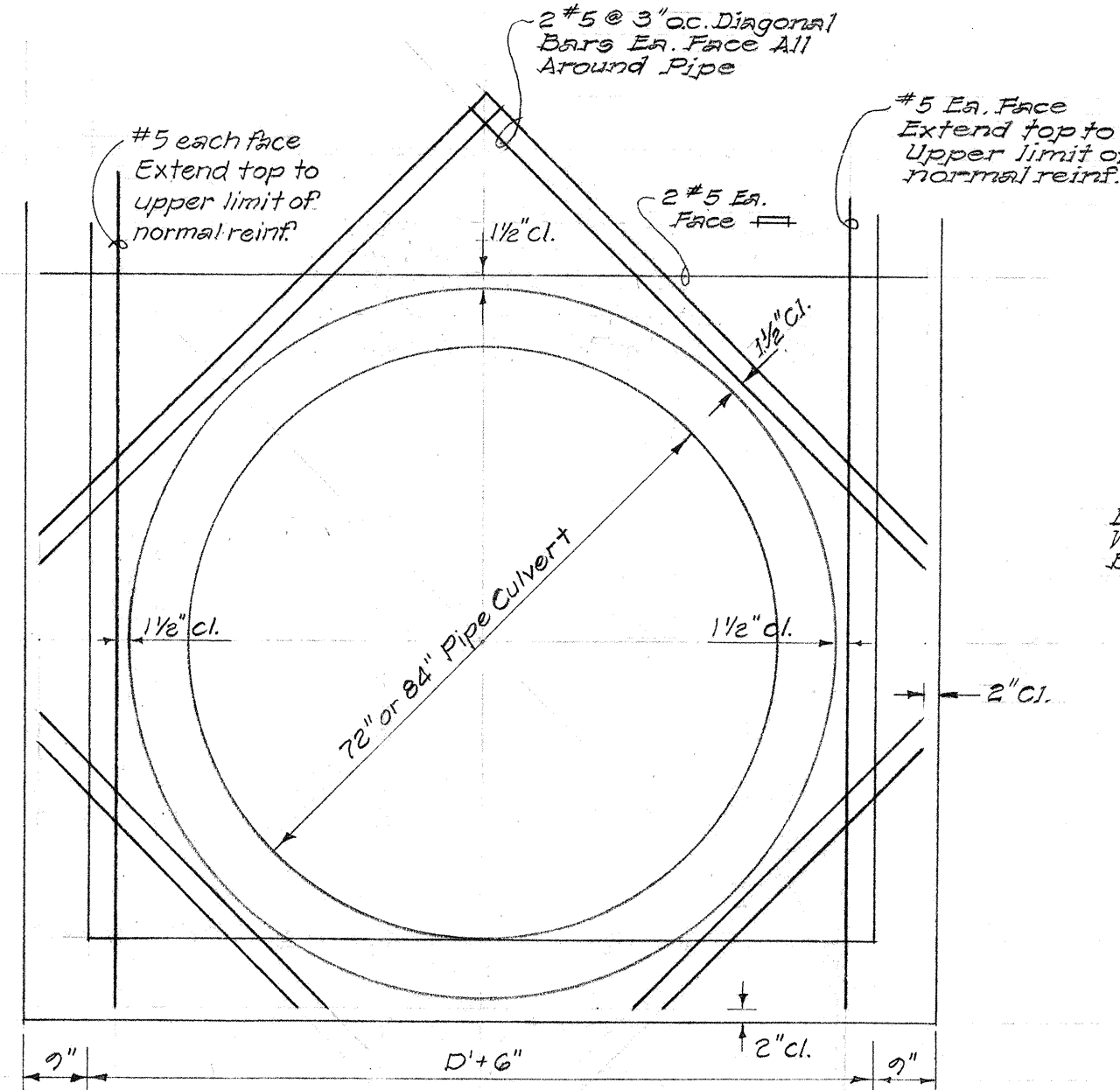
TYPICAL DETAIL OF ADDITIONAL REINFORCEMENT AROUND 18" TO 24" PIPE CULVERTS, INCLUSIVE

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



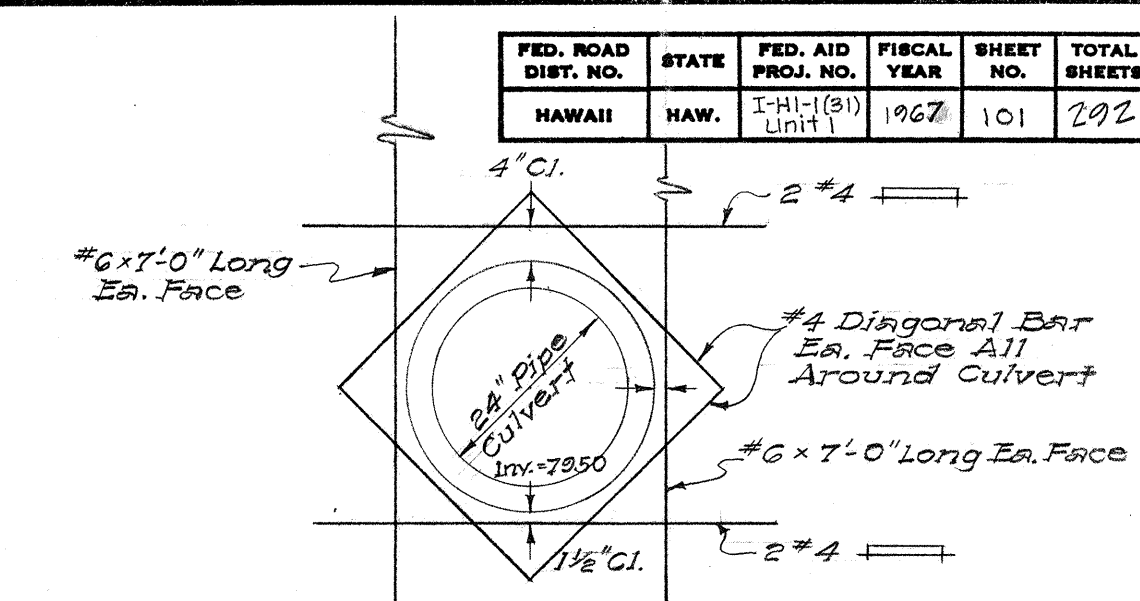
TYPICAL DETAIL OF ADDITIONAL REINFORCEMENT AROUND 33" TO 60" PIPE CULVERTS, INCLUSIVE

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



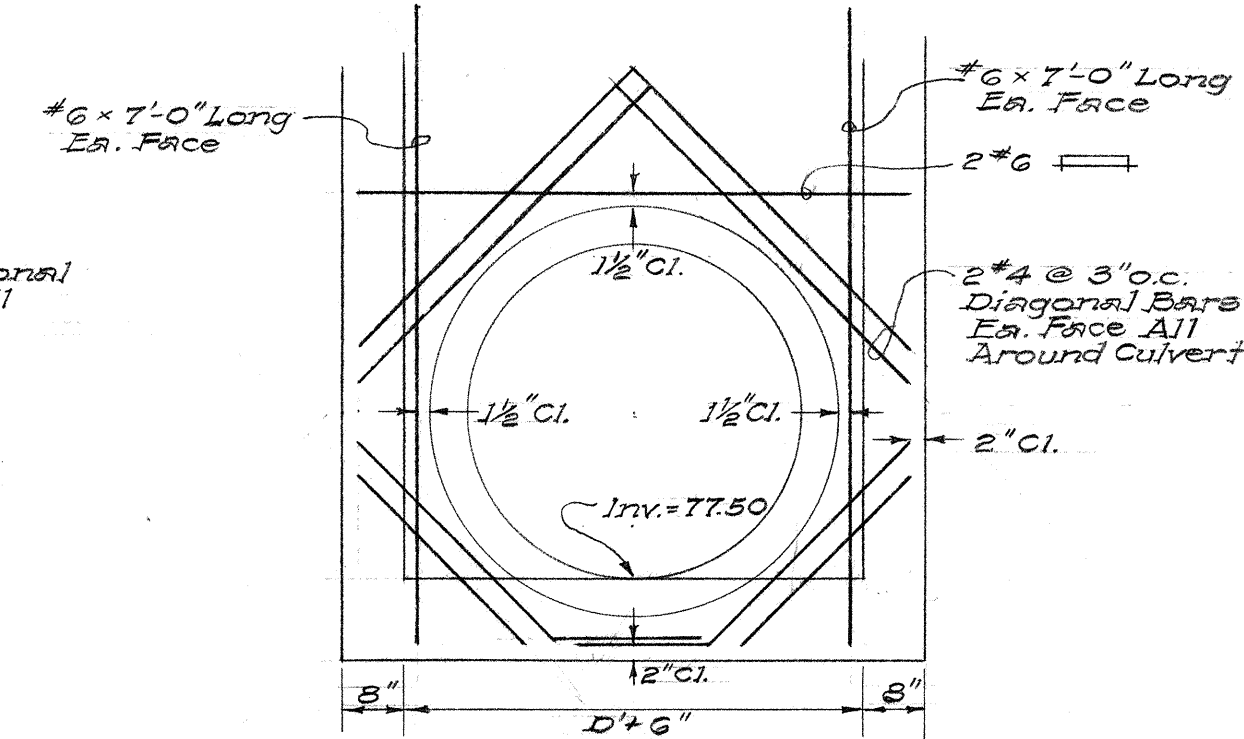
TYPICAL DETAIL OF ADDITIONAL REINFORCEMENT AROUND 72" & 84" PIPE CULVERTS

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



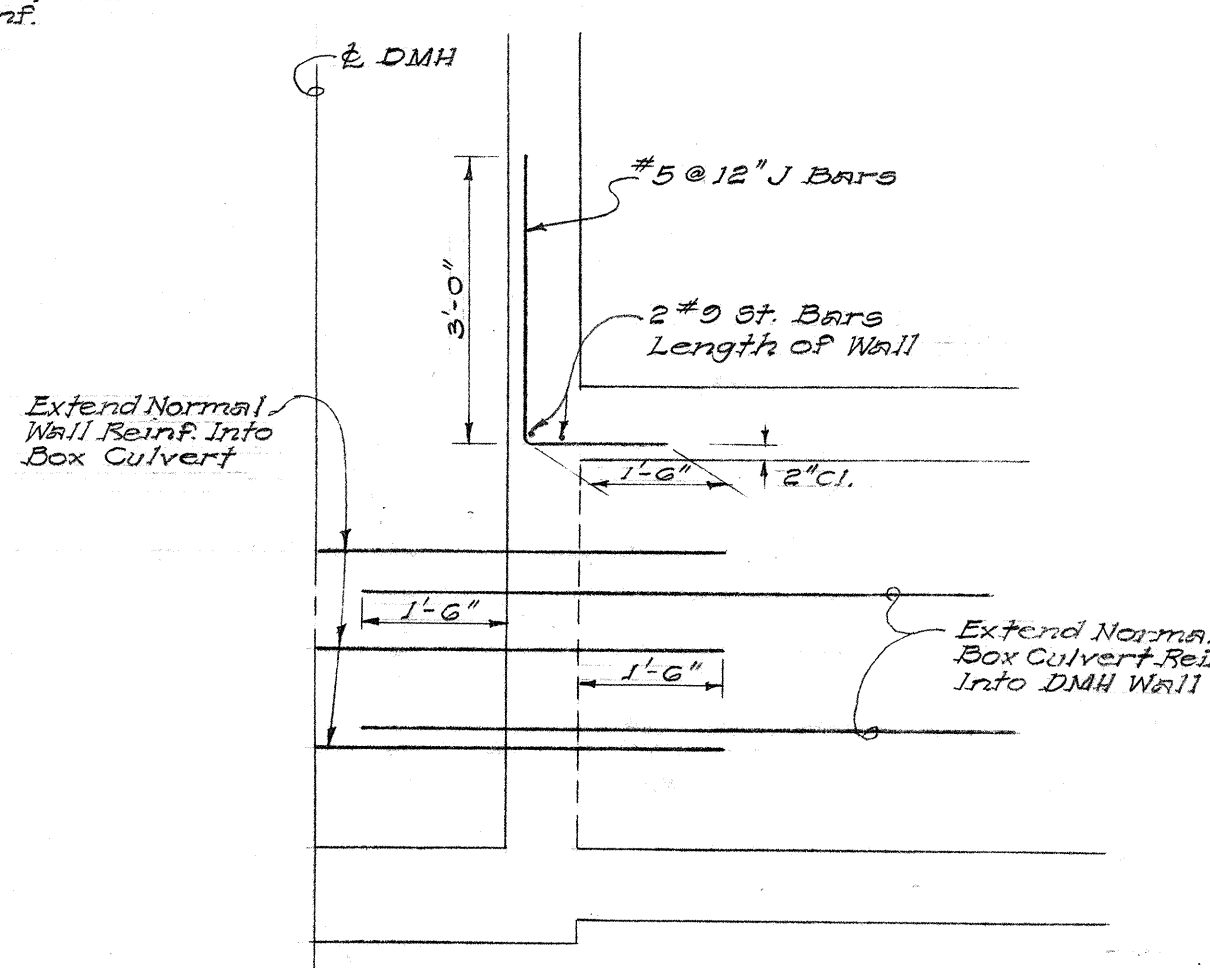
DETAIL OF ADDITIONAL REINFORCEMENT AROUND 24" PIPE CULVERT AT DMH #14-C

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



DETAIL OF ADDITIONAL REINFORCEMENT AROUND 42" PIPE CULVERT AT DMH #14-C

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



TYPICAL DETAIL OF ADDITIONAL REINFORCEMENT AROUND BOX CULVERT

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

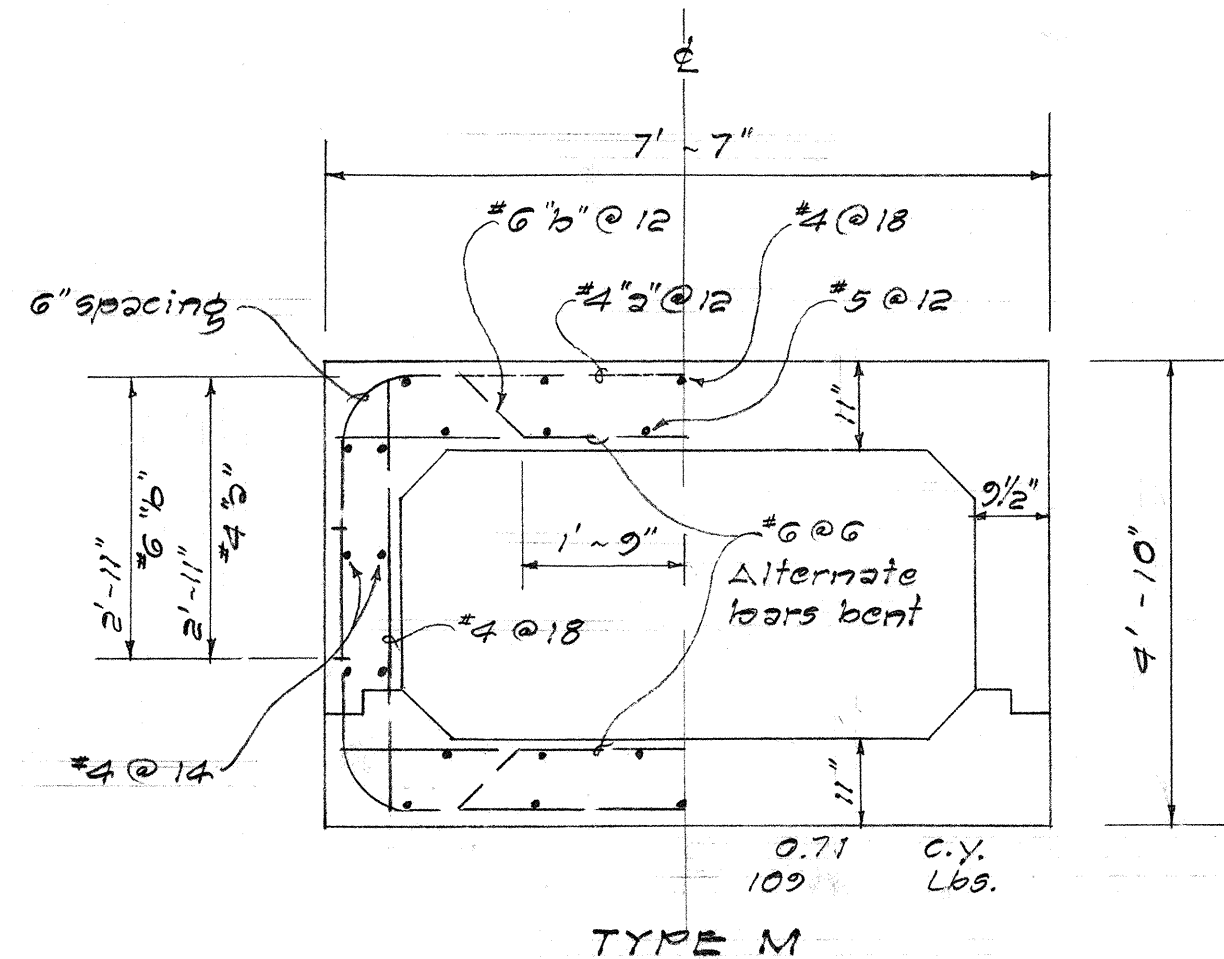
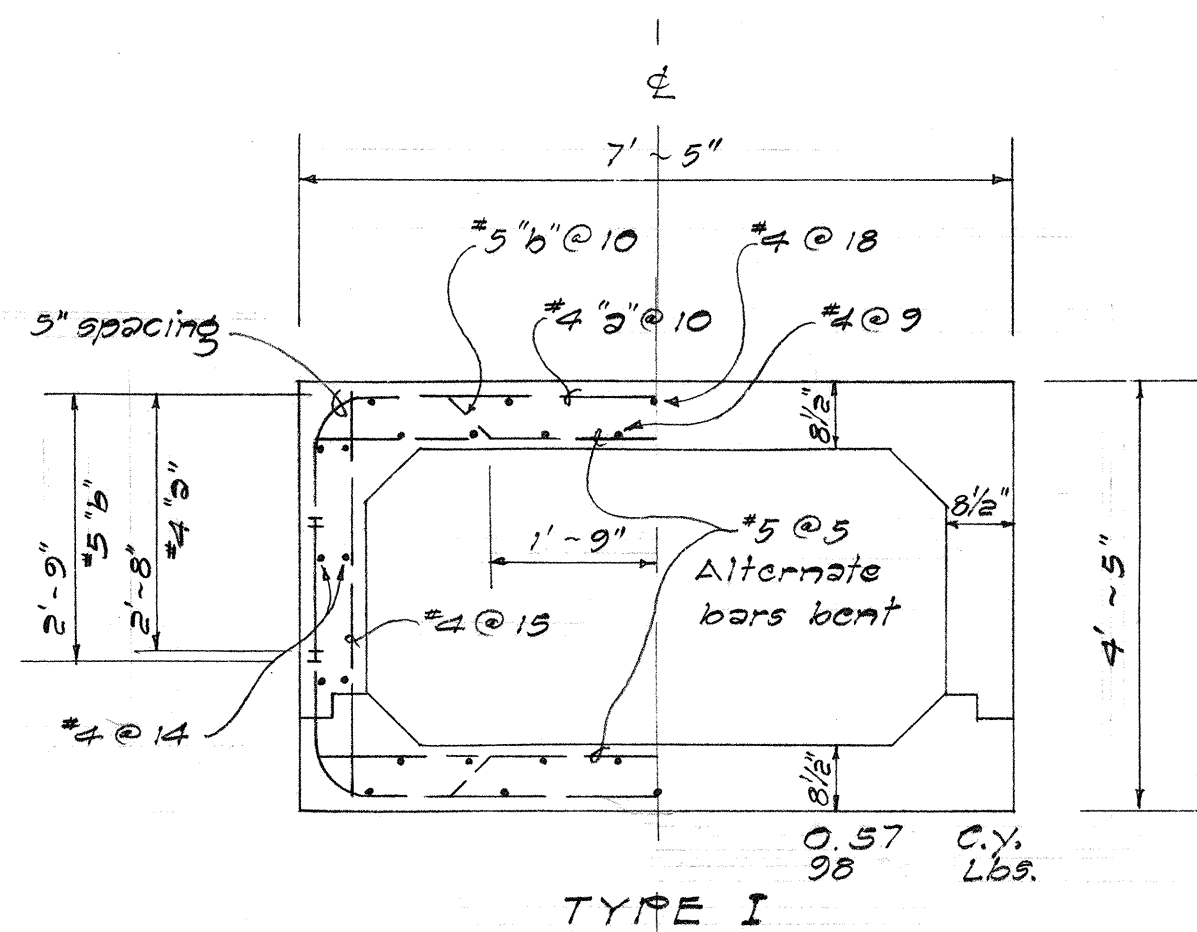
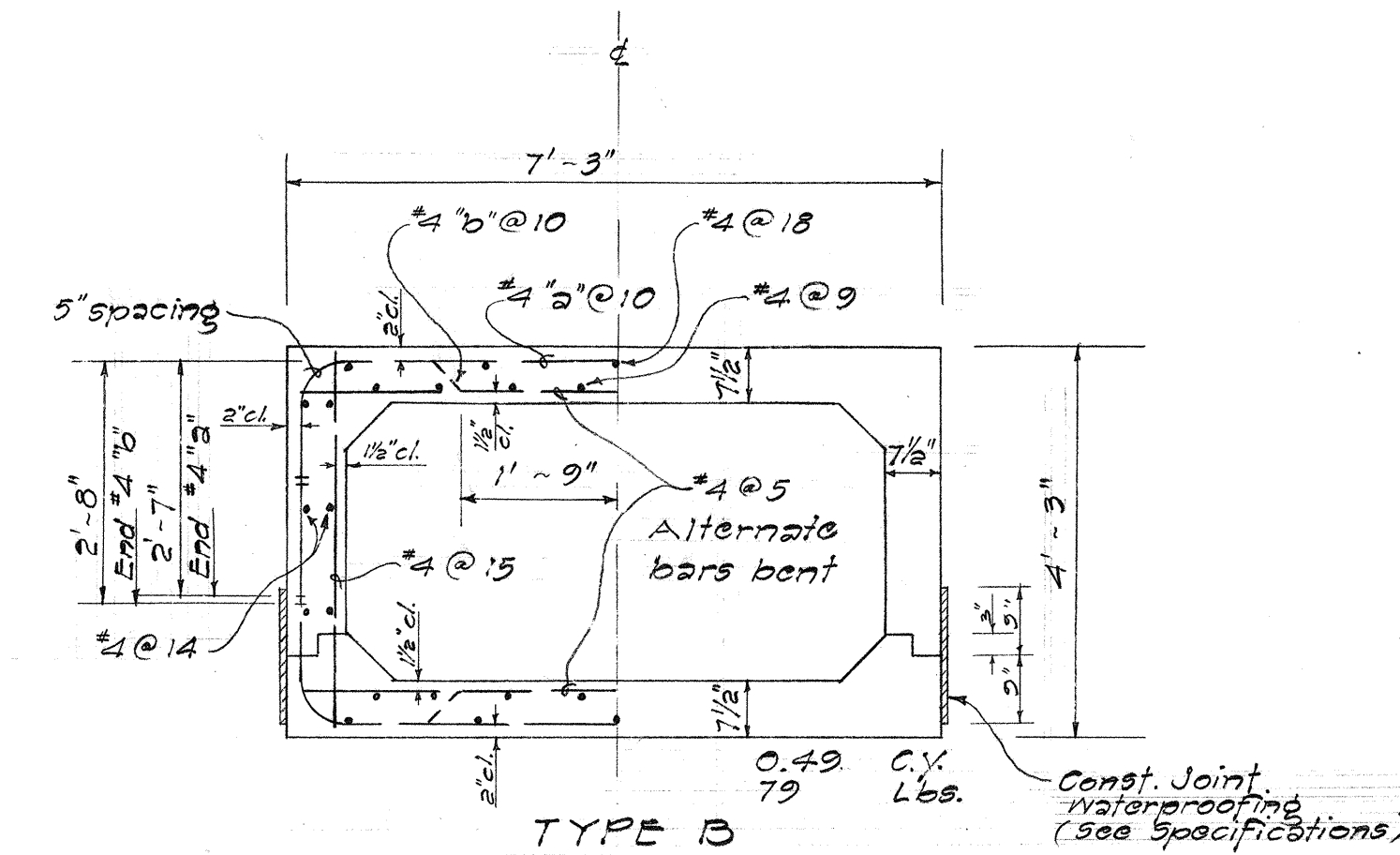
DRAINAGE STRUCTURE DETAILS
OF TYPE "F-1" D.M.H.

INTERSTATE ROUTE H-1
(LUNALILO FREEWAY)
F.A.I. Proj. No. I-H-1(31), UNIT 1

Scale: As Shown Date: JUNE 1966

SHEET No. 101 OF 20 SHEETS

DATE	_____
DESIGNED BY	_____
CHECKED BY	_____
NOTED BY	_____
QUANTITIES BY	_____
REVISIONS	_____



TYPICAL SECTIONS OF 6'-0" x 3'-0" CONCRETE BOX CULVERT

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

NOTES:

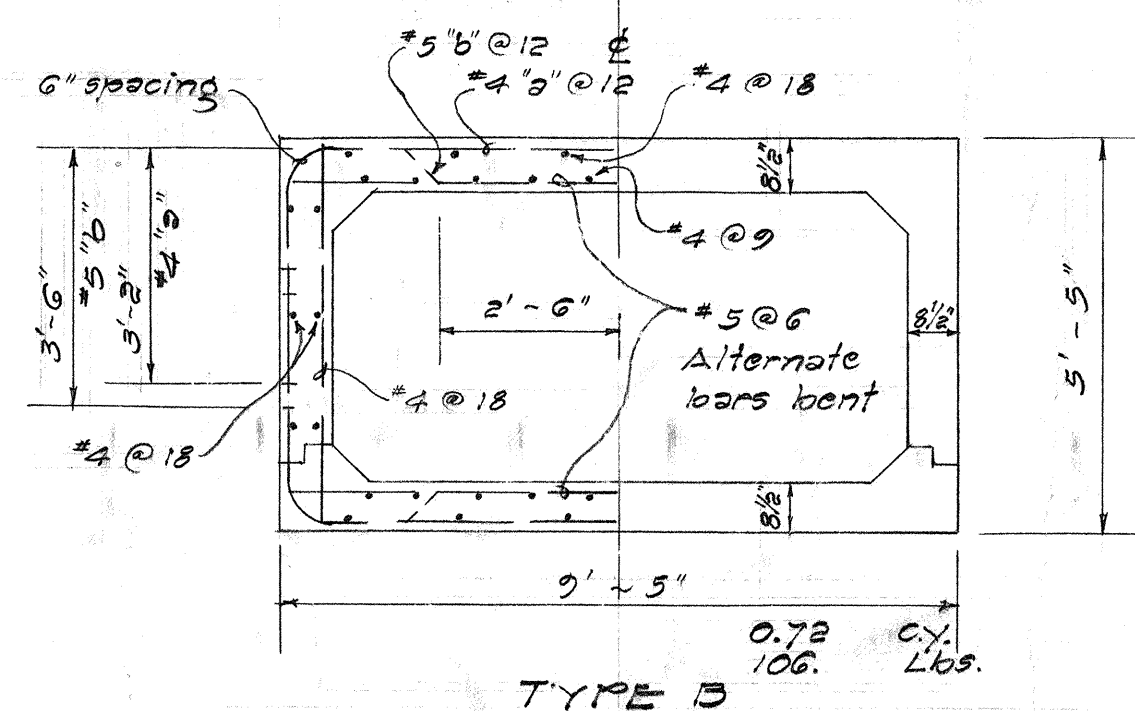
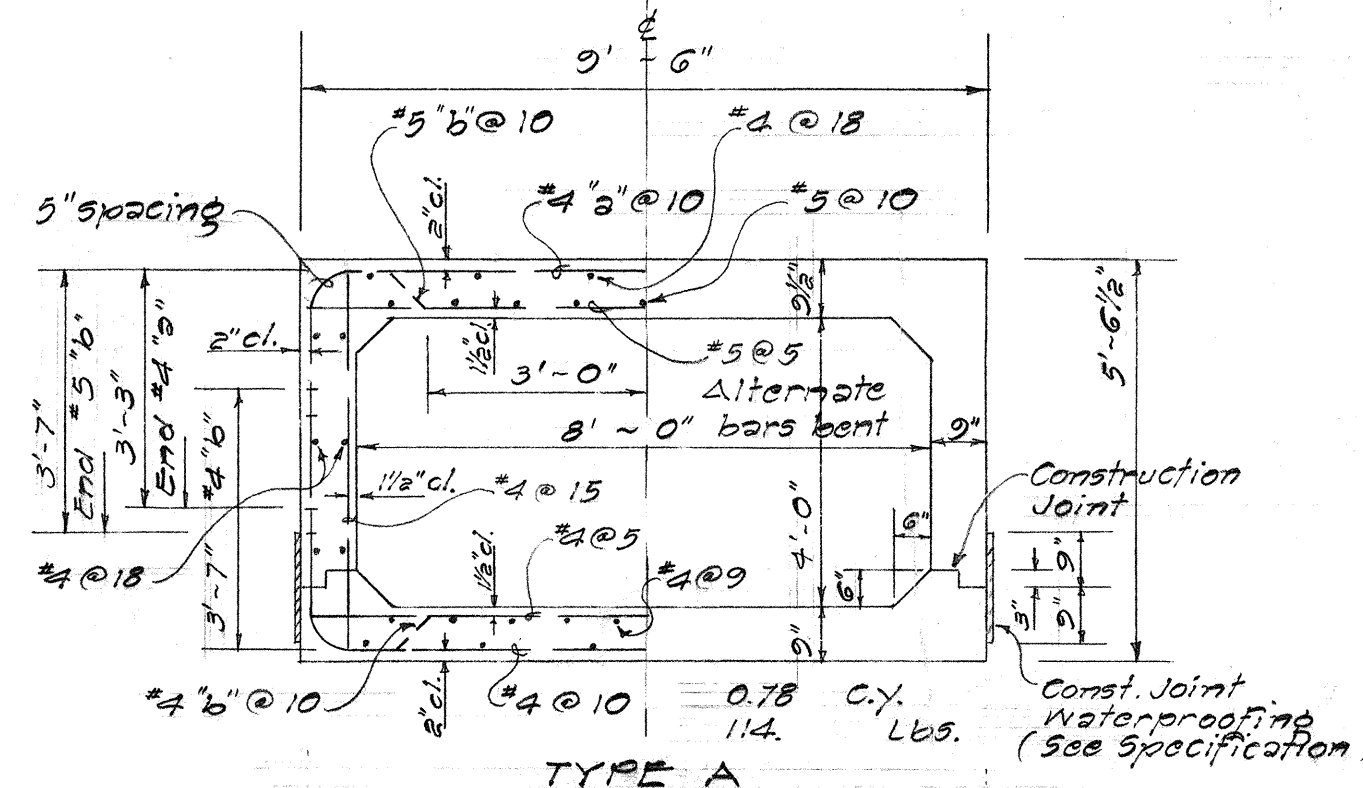
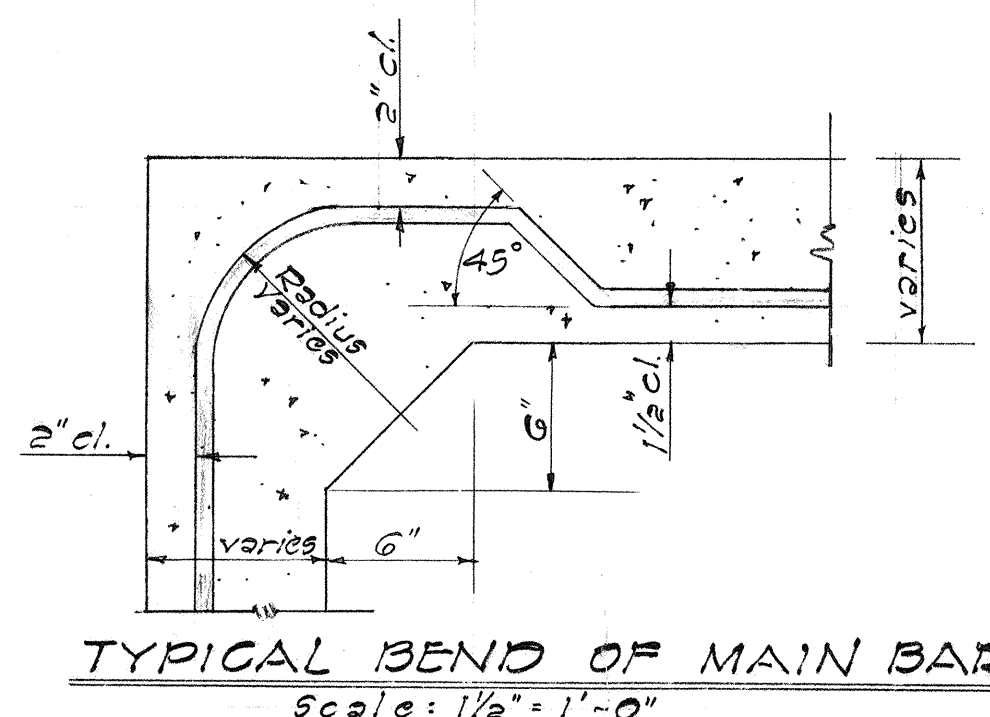
- Culvert details are symmetrical about the vertical & horizontal axis at center of culvert unless otherwise shown.
- Concrete shall be Class "A-1".
- Construction joints shall be provided at 30' ± a.c. intervals or as directed by the Engineer.
- Expansion joints shall be provided when required by the Engineer. Details for expansion joints shall be identical to Conc. Collar for Concrete Box Culvert of the Standard Details.
- All construction joints shall be made waterproof.
- Quantities shown under each section are for Class "A-1" Concrete and reinforcing steel per linear foot, respectively.

SIZES	TYPES	RADIUS INCHES
6'-0" x 3'-0"	B	6
8'-0" x 4'-0"	M	8
8'-0" x 5'-0"	A	7
8'-0" x 6'-0"	D	7
8'-0" x 7'-0"	E	7
8'-0" x 8'-0"	F	9
8'-0" x 9'-0"	G	9

RADIUS OF MAIN BAR

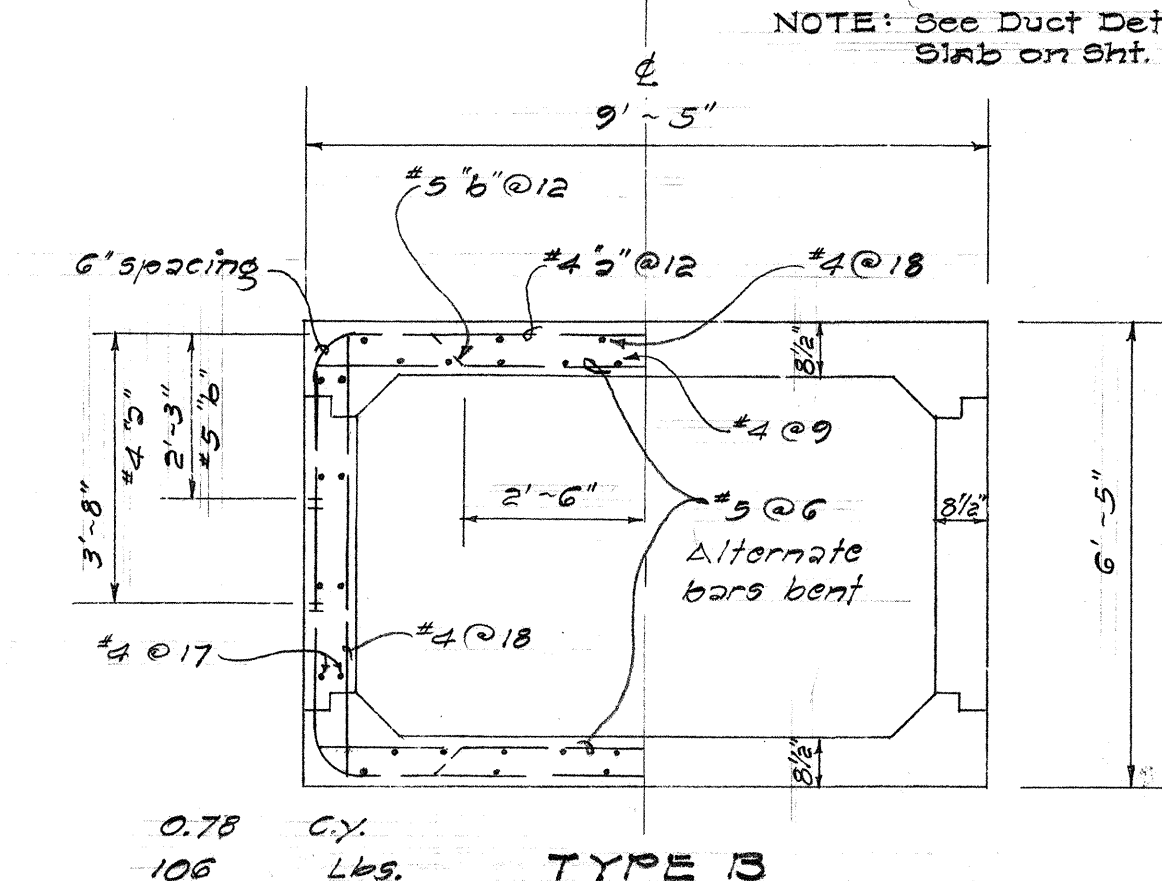
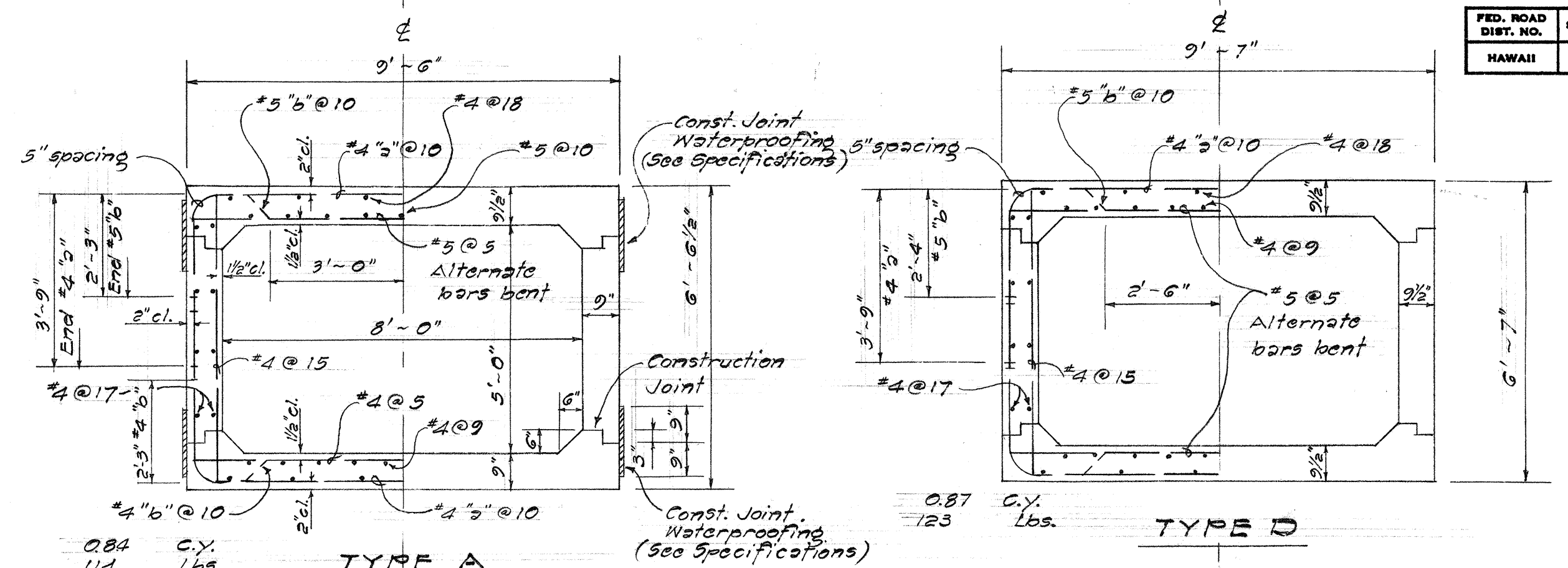


Not to Scale



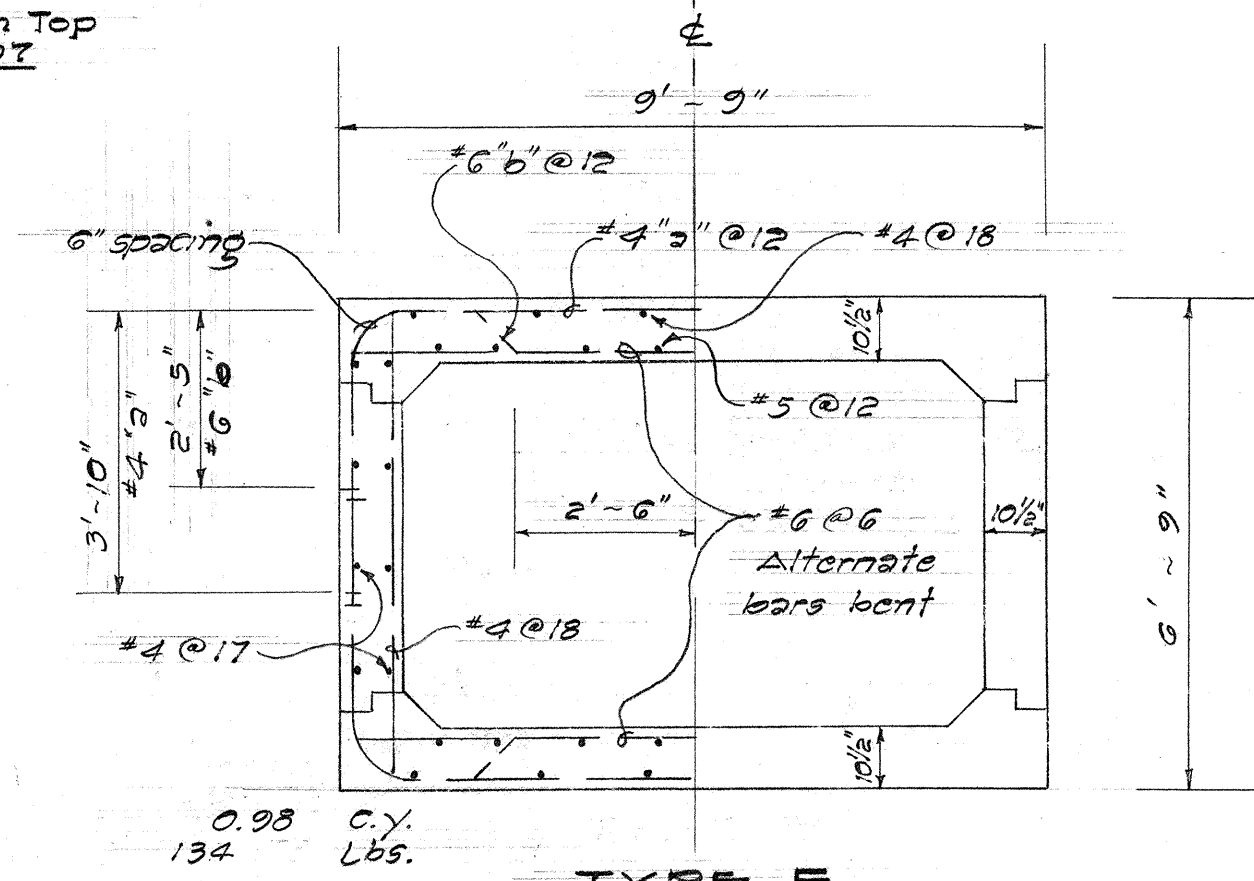
TYPICAL SECTIONS OF 8'-0" x 4'-0" CONCRETE BOX CULVERT

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



TYPICAL SECTIONS OF 8'-0" x 5'-0" CONCRETE BOX CULVERT

Scale: 3/8" = 1'-0"

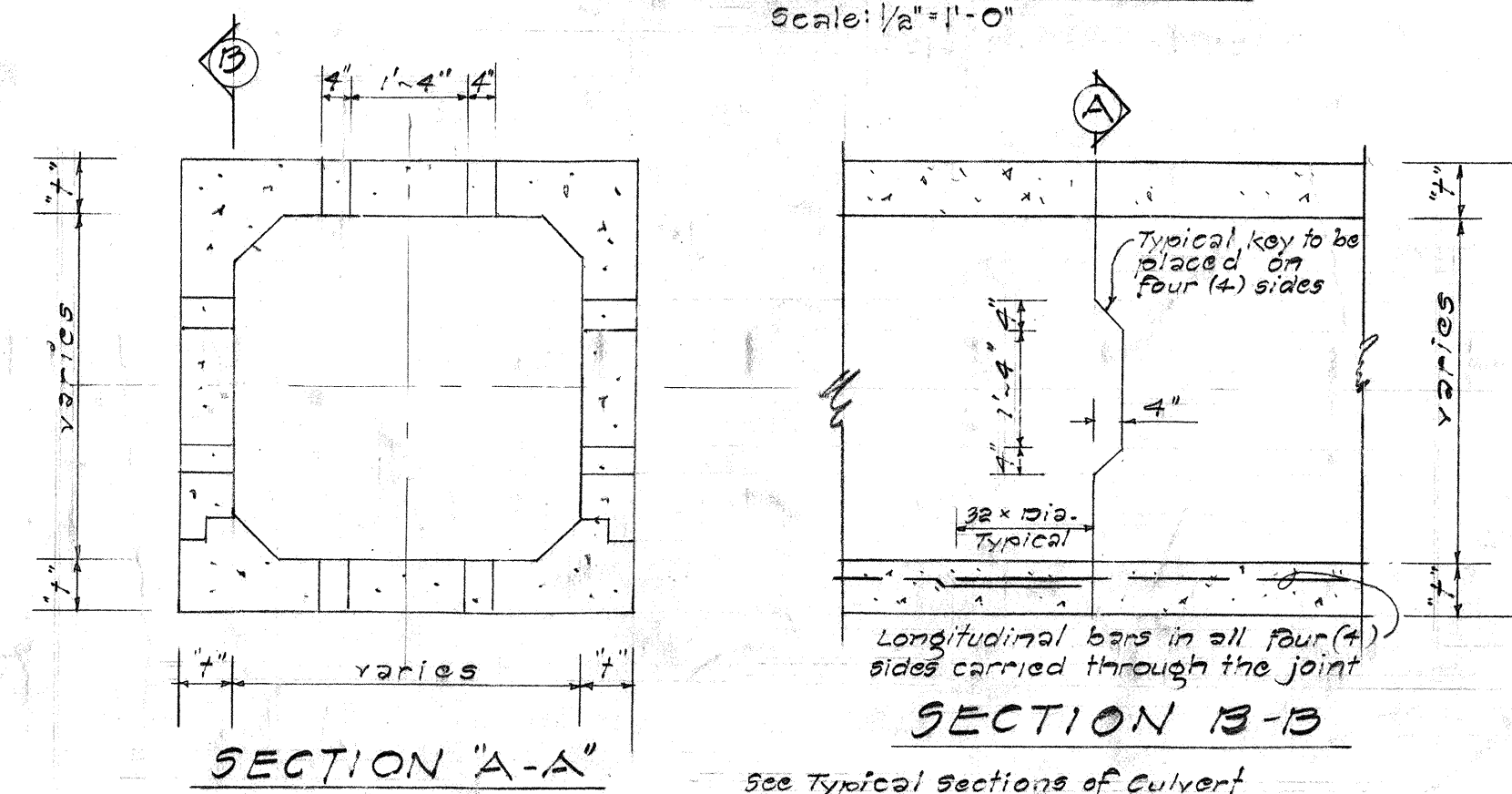


0.93 C.Y. Lbs.

TYPE F

TYPICAL SECTION OF 4'-0" x 2'-6" CONCRETE BOX CULVERT

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



CONSTRUCTION JOINTS FOR CONC. BOX CULVERTS

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**DRAINAGE STRUCTURE DETAILS
OF CONC. BOX CULVERTS**

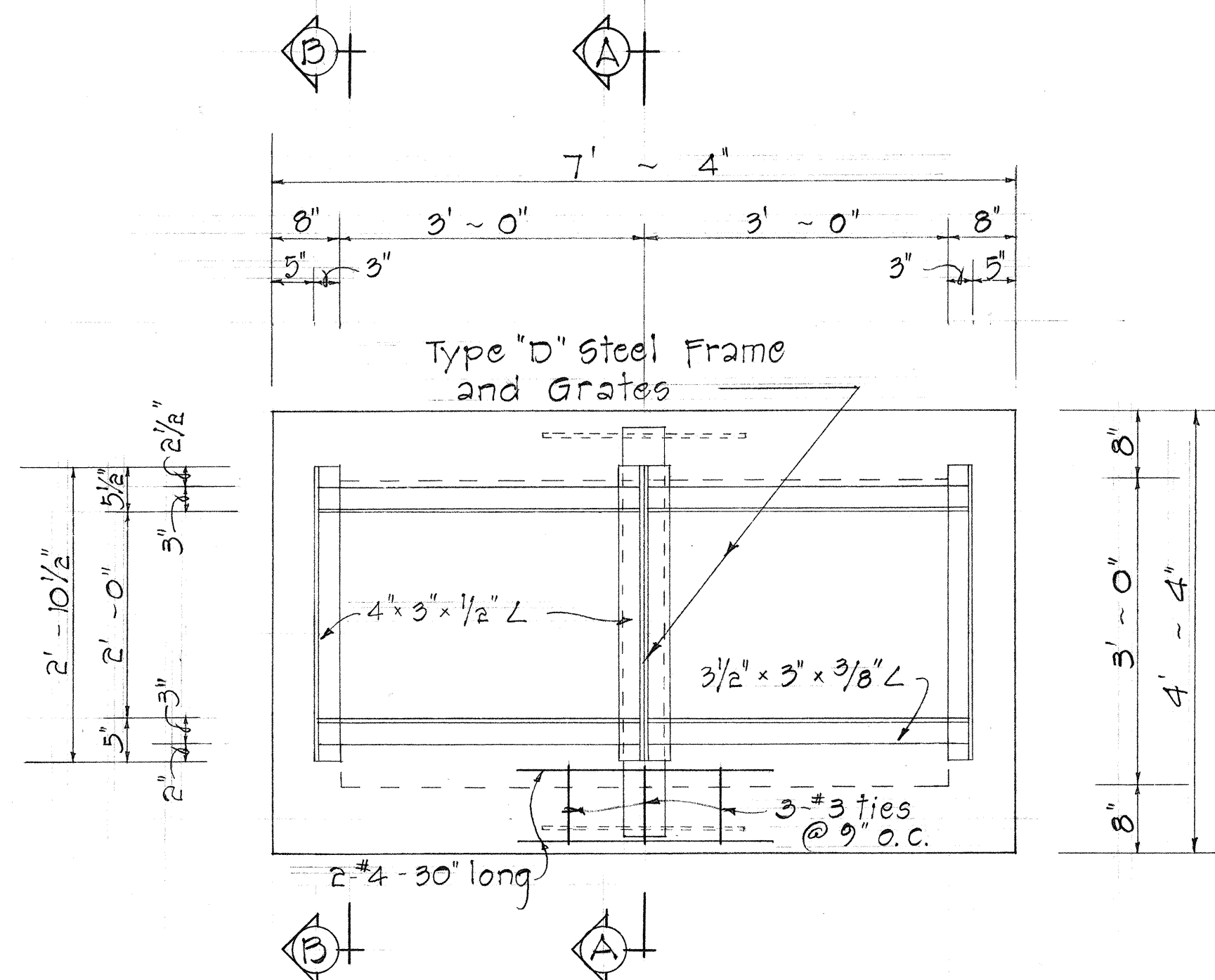
INTERSTATE ROUTE HI
(LUNALILO FREEWAY)
F.A.I. Proj. No. I-HI-1(31), UNIT 1

Scale: As Shown Date: JUNE 1966

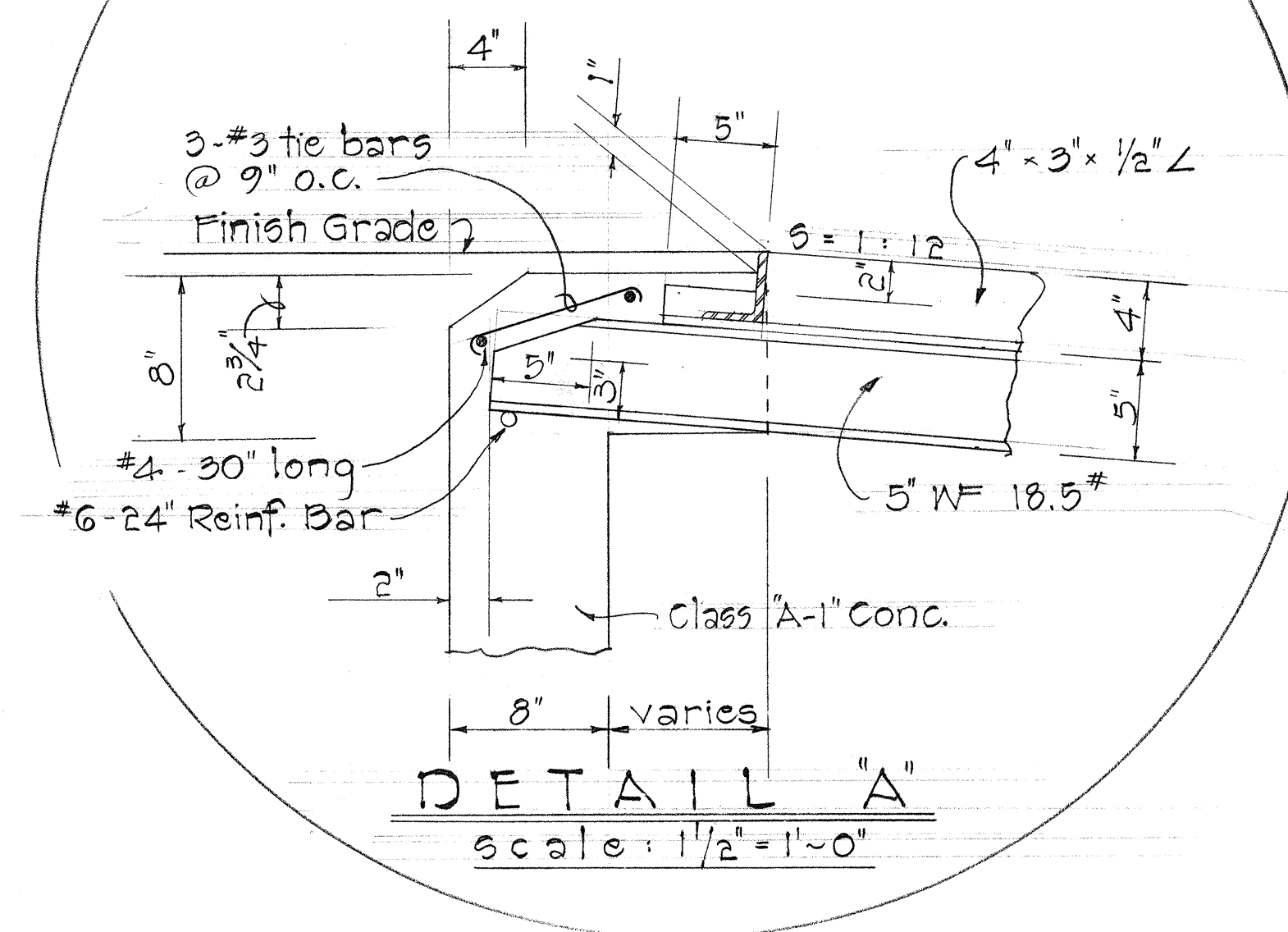
SHEET No. 102 OF 20 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(31) Unit 1	1967	CO102S(1)	292

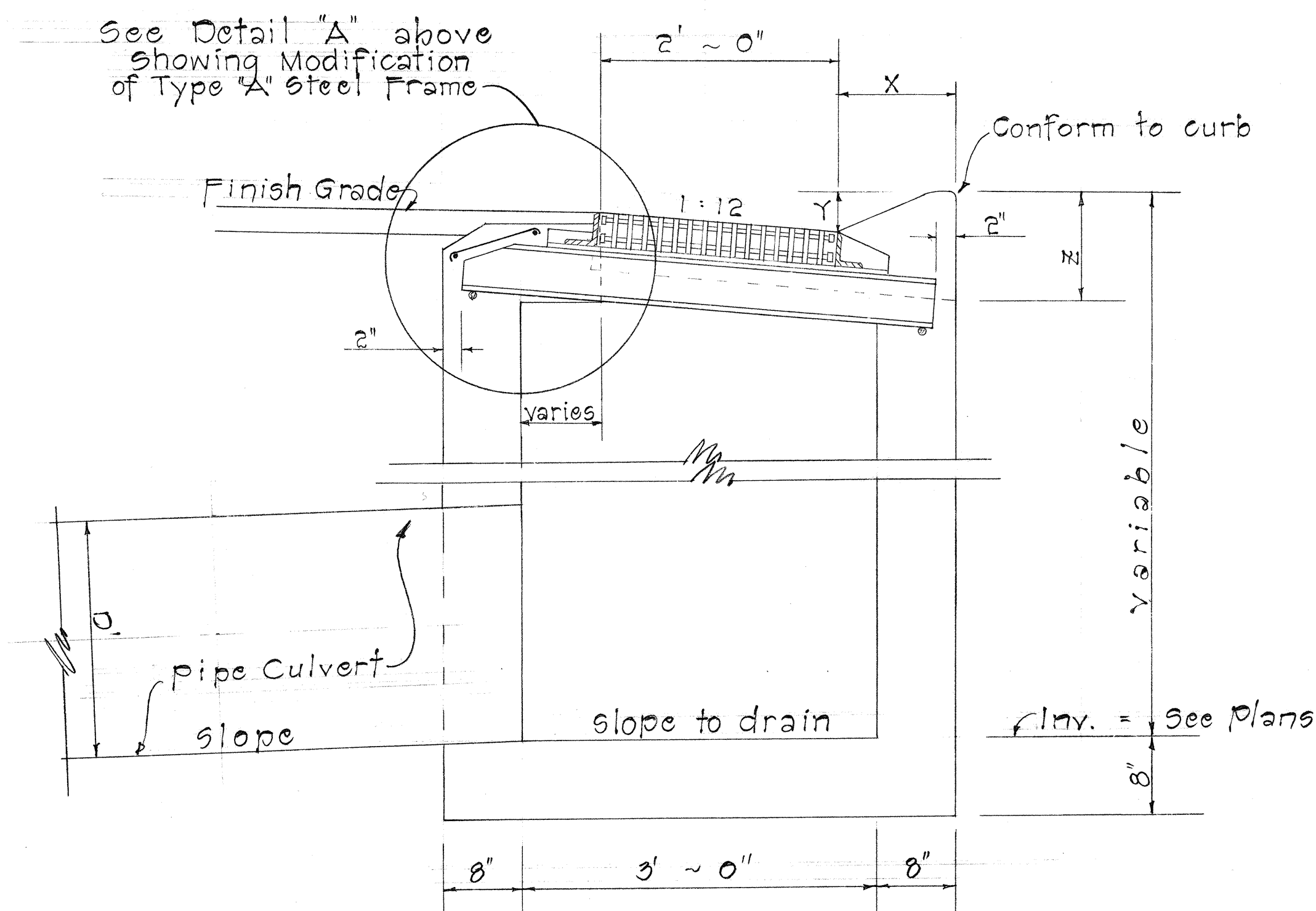
Feb. 16, 1968



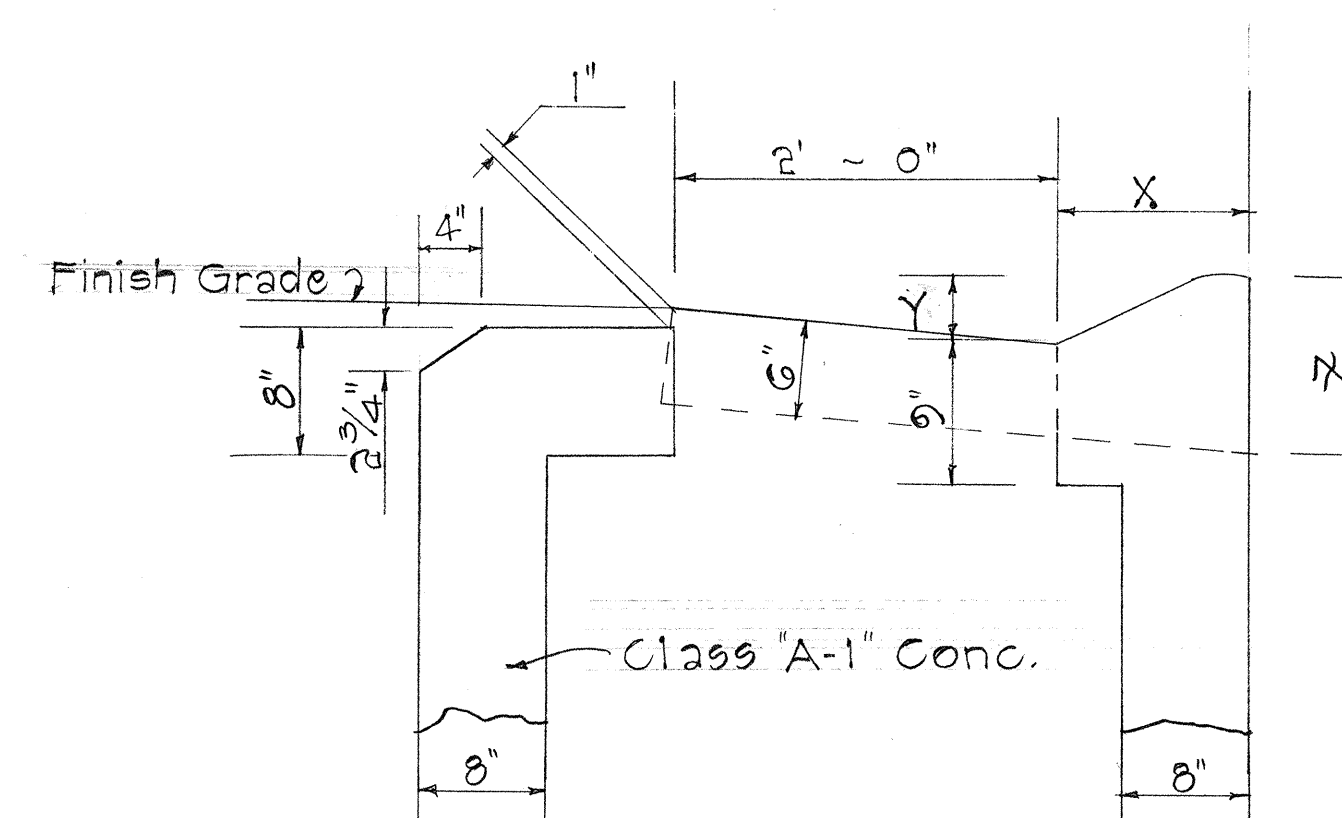
PLAN
Scale: 3/4" = 1' - 0"



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



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



END SECTION
SECTION "B-B"
Scale: 1" = 1' - 0"

CURB AND GUTTER		
	"AG"	"EG"
X	0' - 2"	1' - 0"
Y	0' - 6"	0' - 4"
Z	1' - 0 3/4"	0' - 11"

DETAILS OF "OG" CATCH BASIN

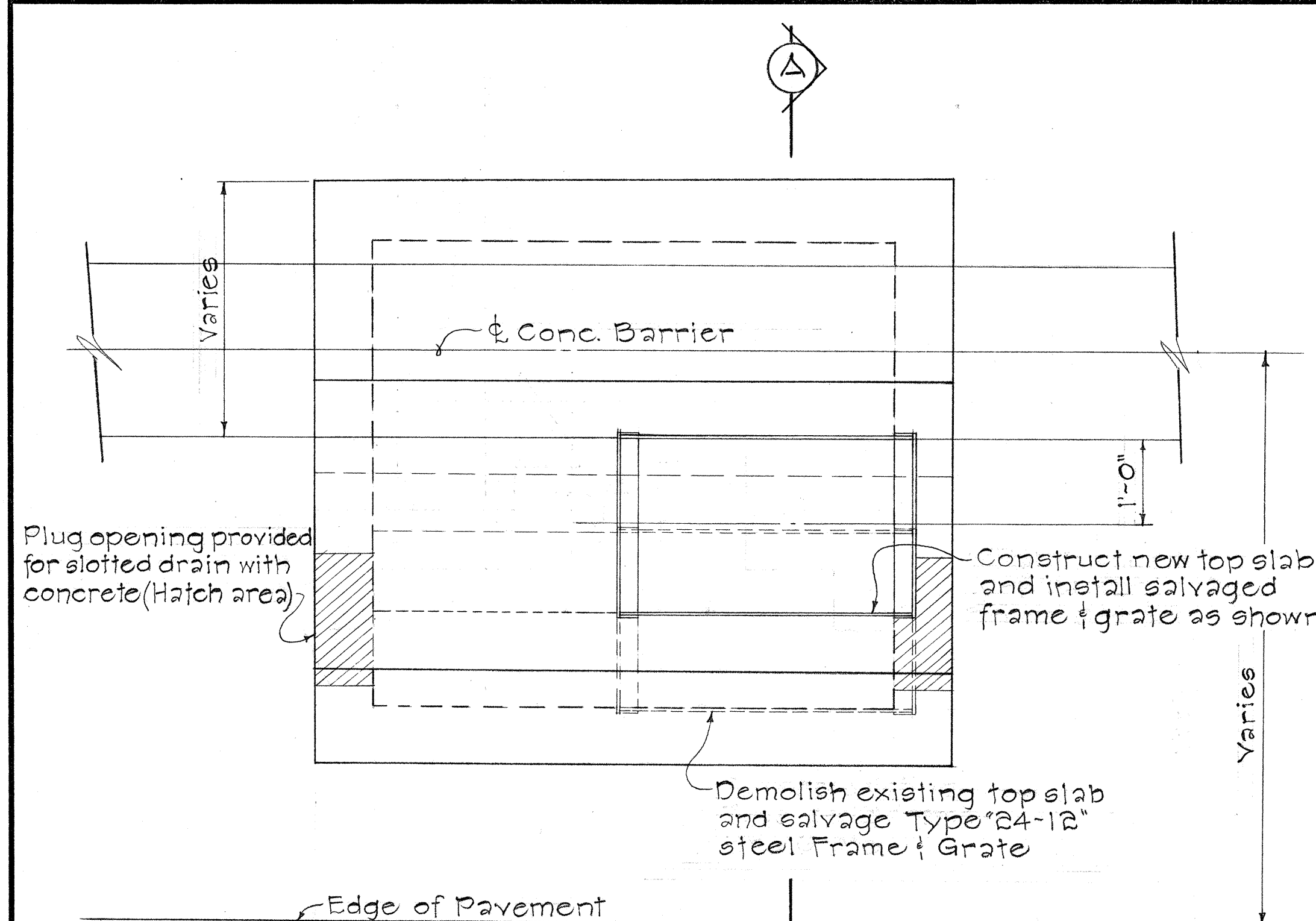
THIS SHEET IS A SUPPLEMENT
TO THE CONTRACT PLANS.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE DETAILS
TYPE "OG" CATCH BASIN
INTERSTATE ROUTE H-1
(LUNALILO FREEWAY)
Pele Street to Victoria Street
F.A.I. Proj. No. I-HI-1(31) Unit 1
Scale: As Shown Date: Nov. 1967
SHEET No. OF SHEETS

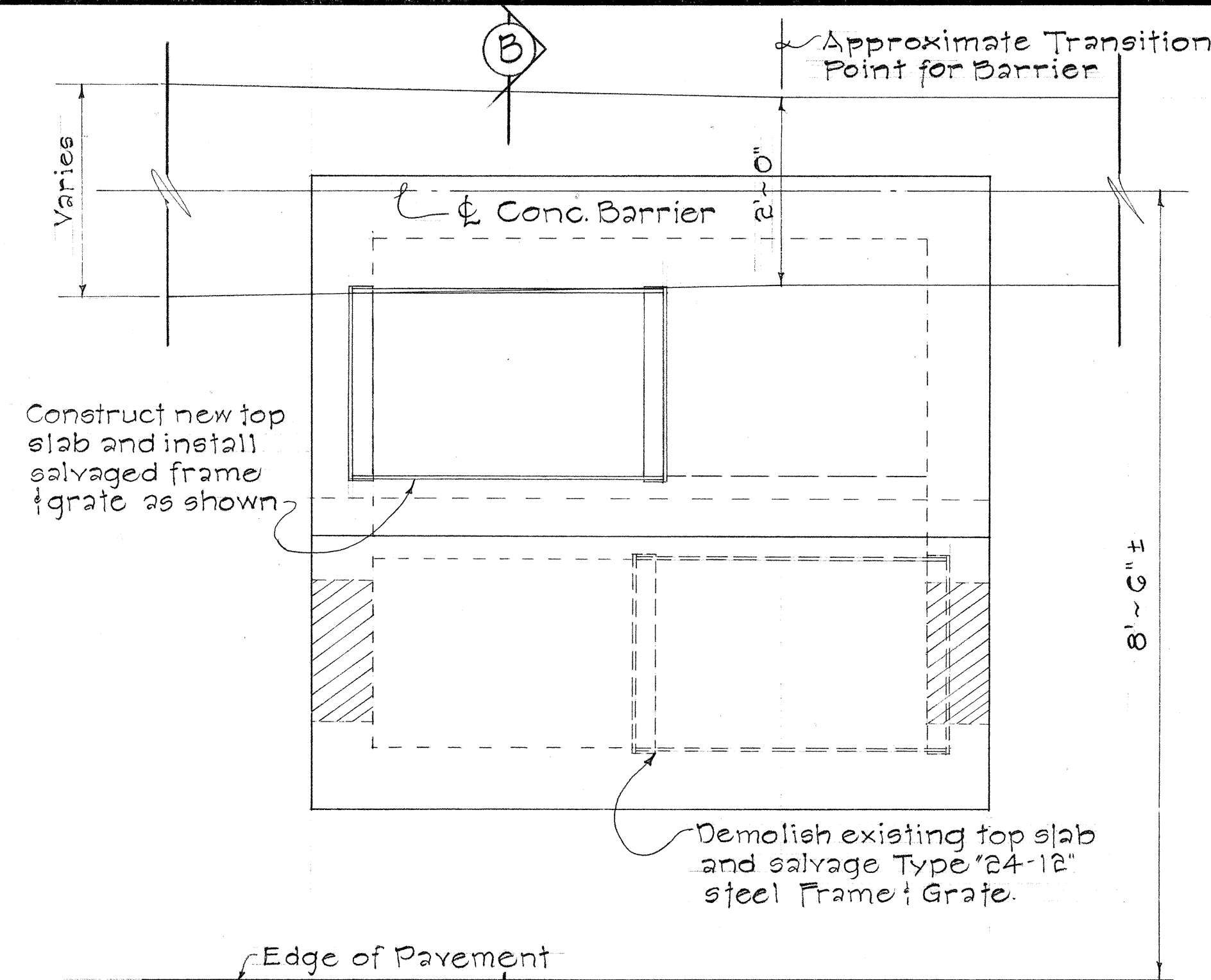
CO 102 S(1)

ORIGINAL	DATE
PLAN	
NOTE BOOK	
DESIGNED BY	
CHECKED BY	
QUANTITIES BY	
NO.	

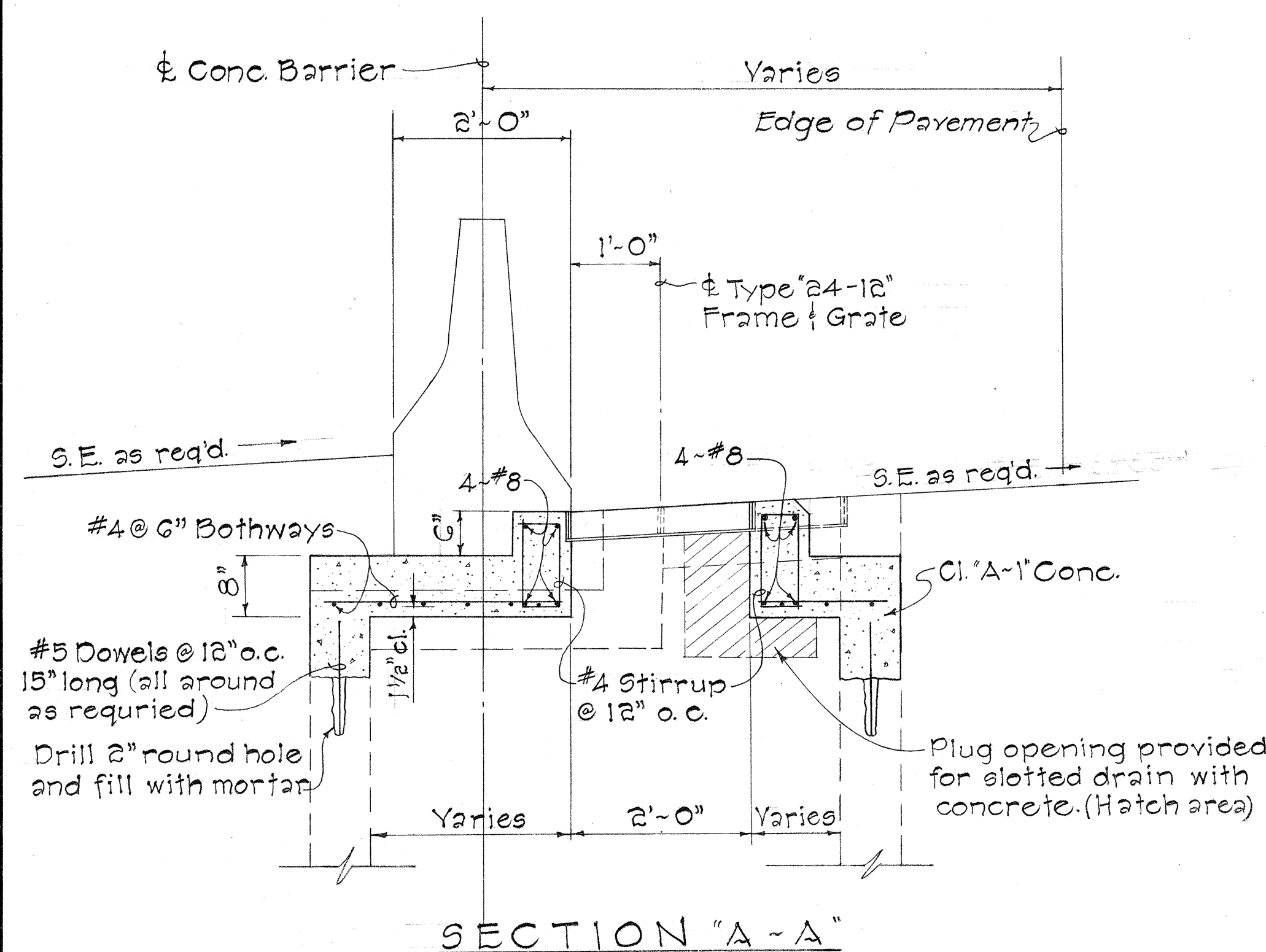
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(31) Unit I	1968	CO102S(2) 292	



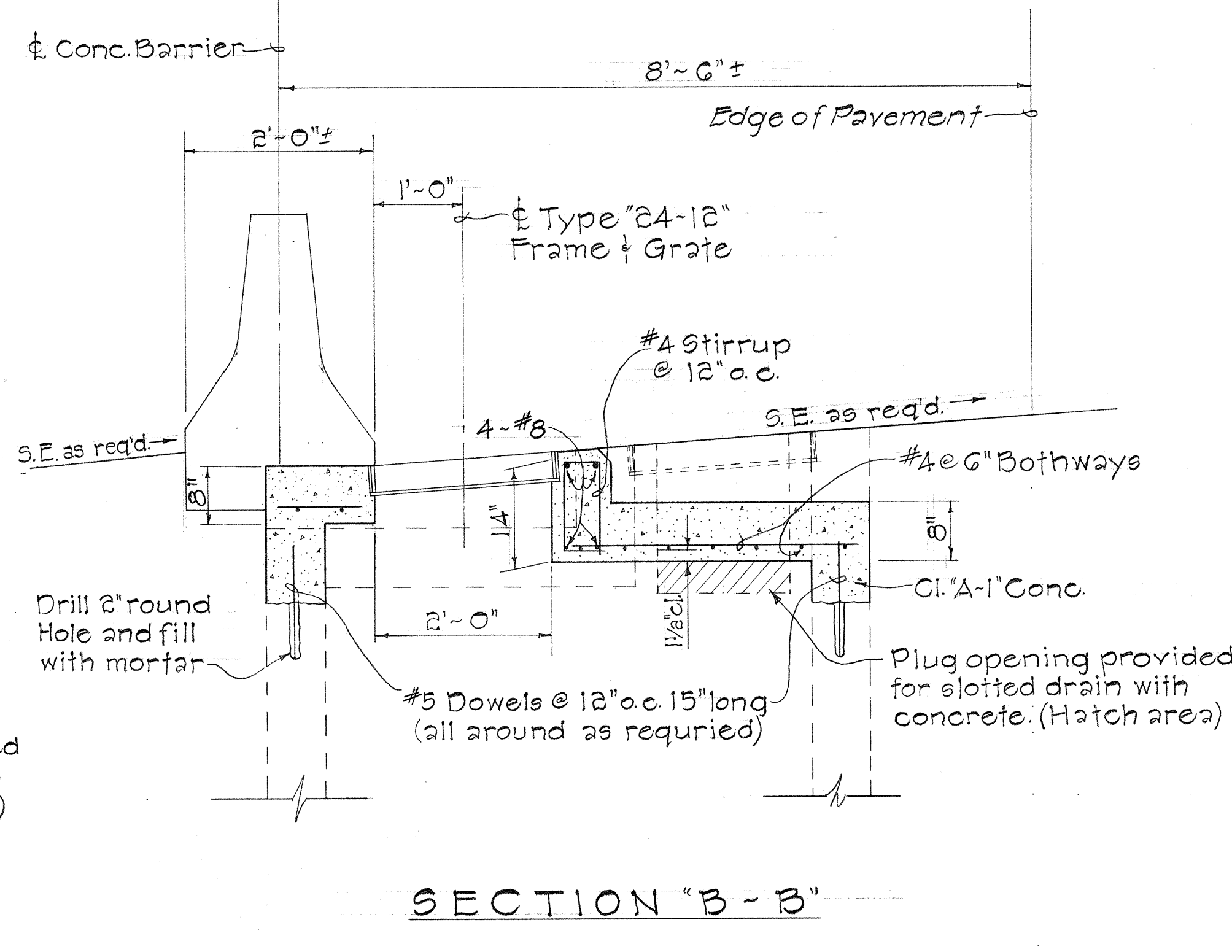
PLAN



PLAN



SECTION "A-A"



SECTION "B-B"

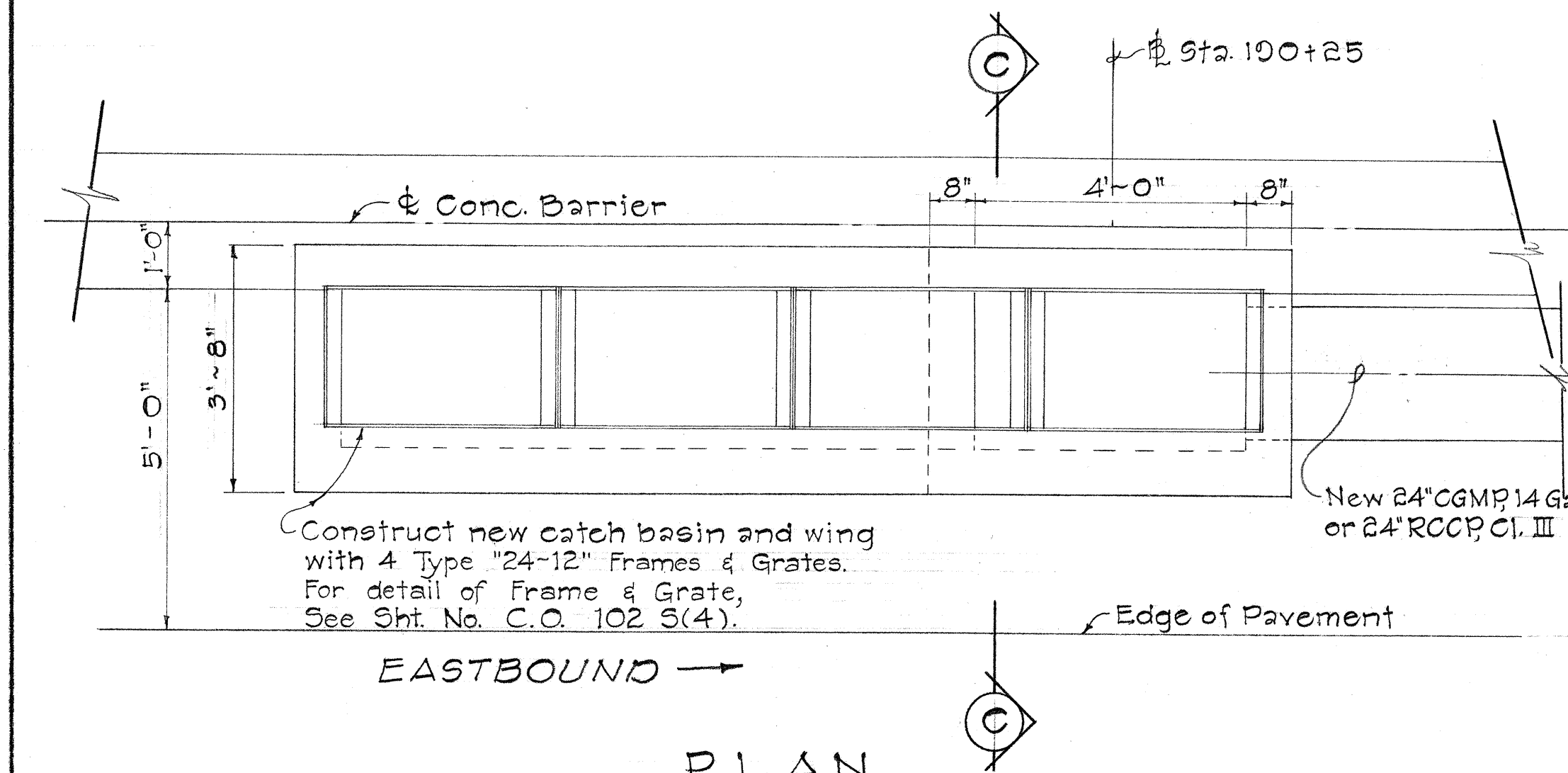
MODIFICATIONS TO MEDIAN CATCH BASINS AT STA. 170+30, 180+25, 186+00, 188+00 & 188+75

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

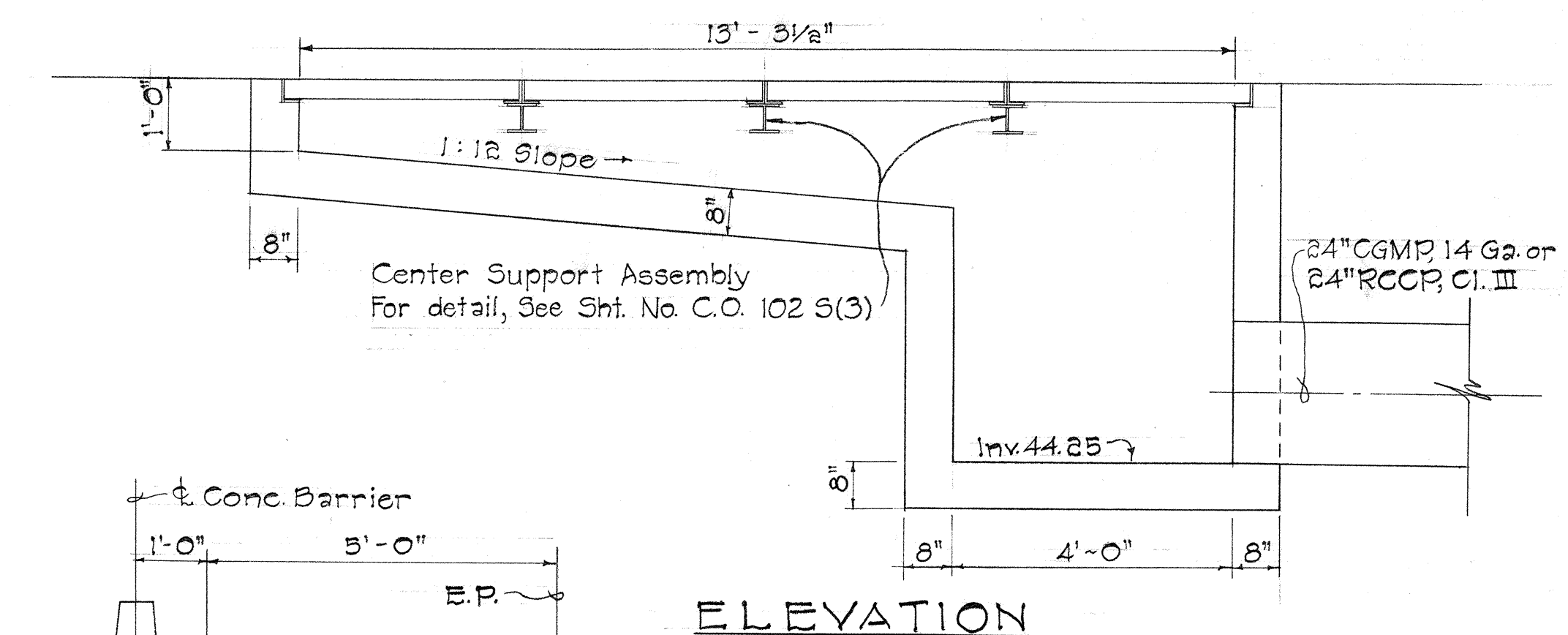
MODIFICATIONS TO MEDIAN CATCH BASIN AT STA. 183+50

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

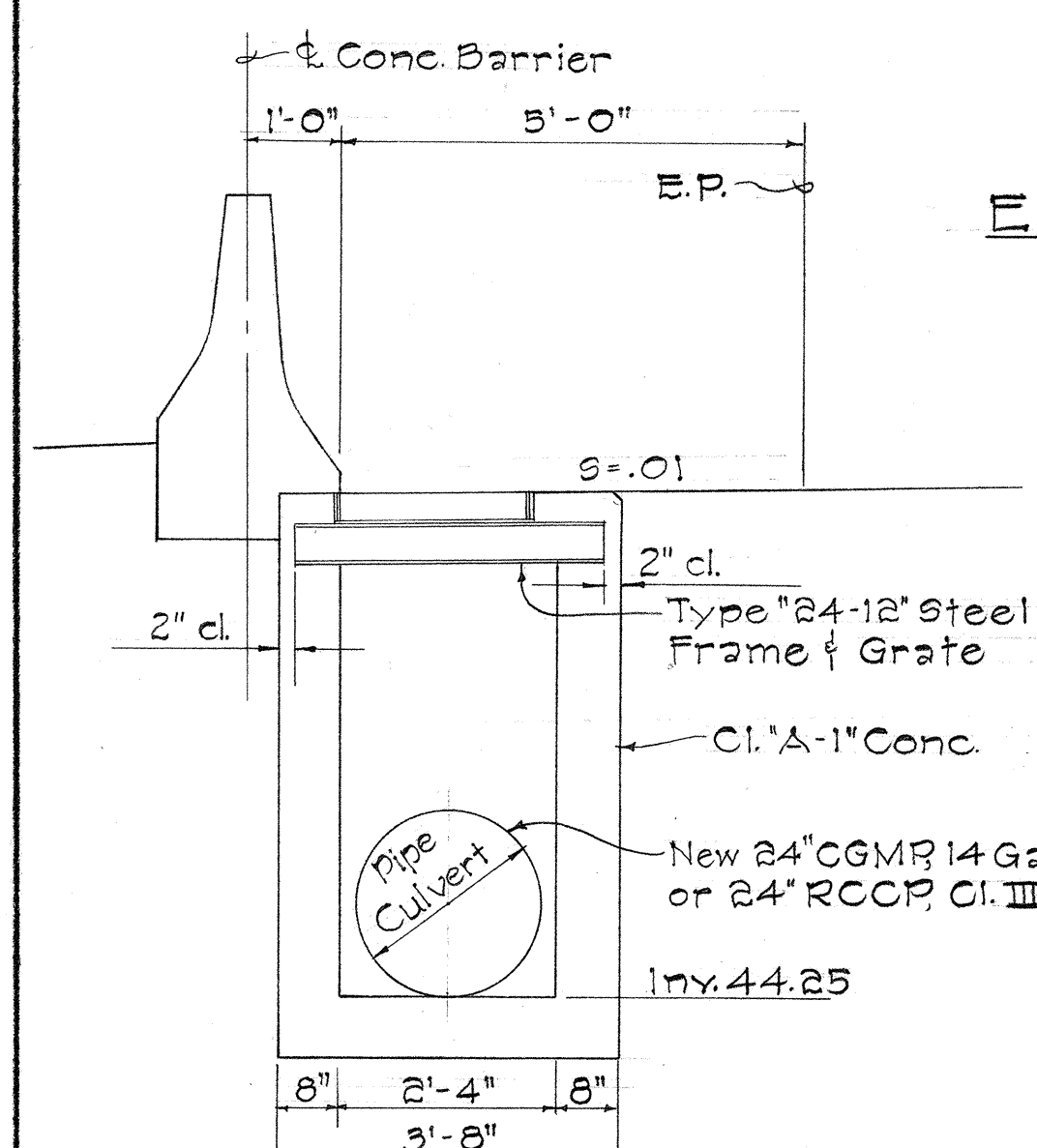
NOTE: Demolishing and Removing a portion or the entire existing structure shall not be paid for separately, but shall be considered incidental to the various contract items.



PLAN



ELEVATION



SECTION "C-C"

DETAIL OF MEDIAN CATCH BASIN @ STA. 100+25

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE DETAILS
MODIFICATIONS TO MEDIAN C.B.
FOR CONCRETE BARRIER

Pele St. to Victoria St.
F.A.I. Proj. No. I-H1-1(31) Unit I

THIS SHEET SUPERSEDES
AND REPLACES SHEET NO. C.O. 102 S(2)
Dated: Nov. 1967

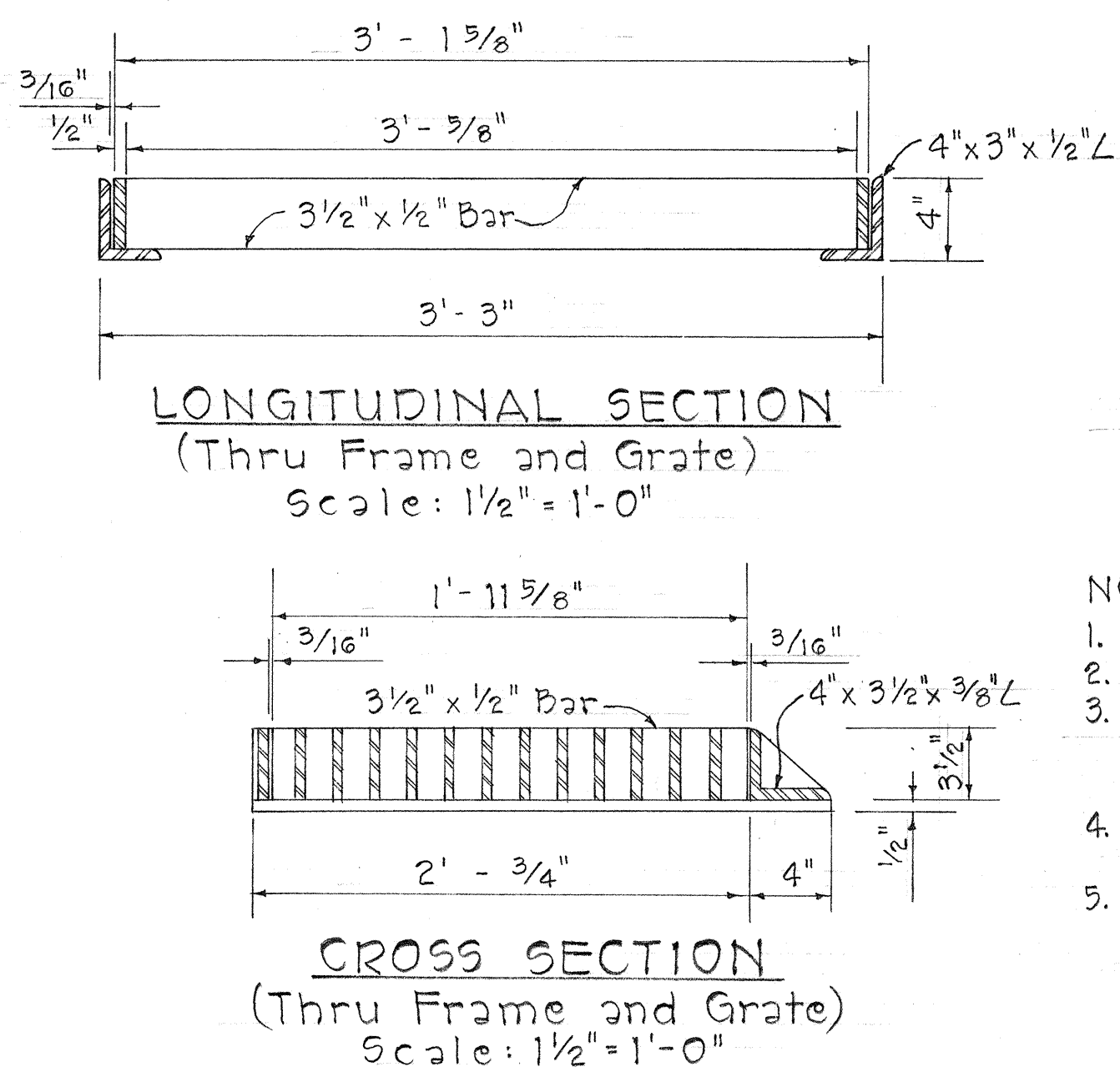
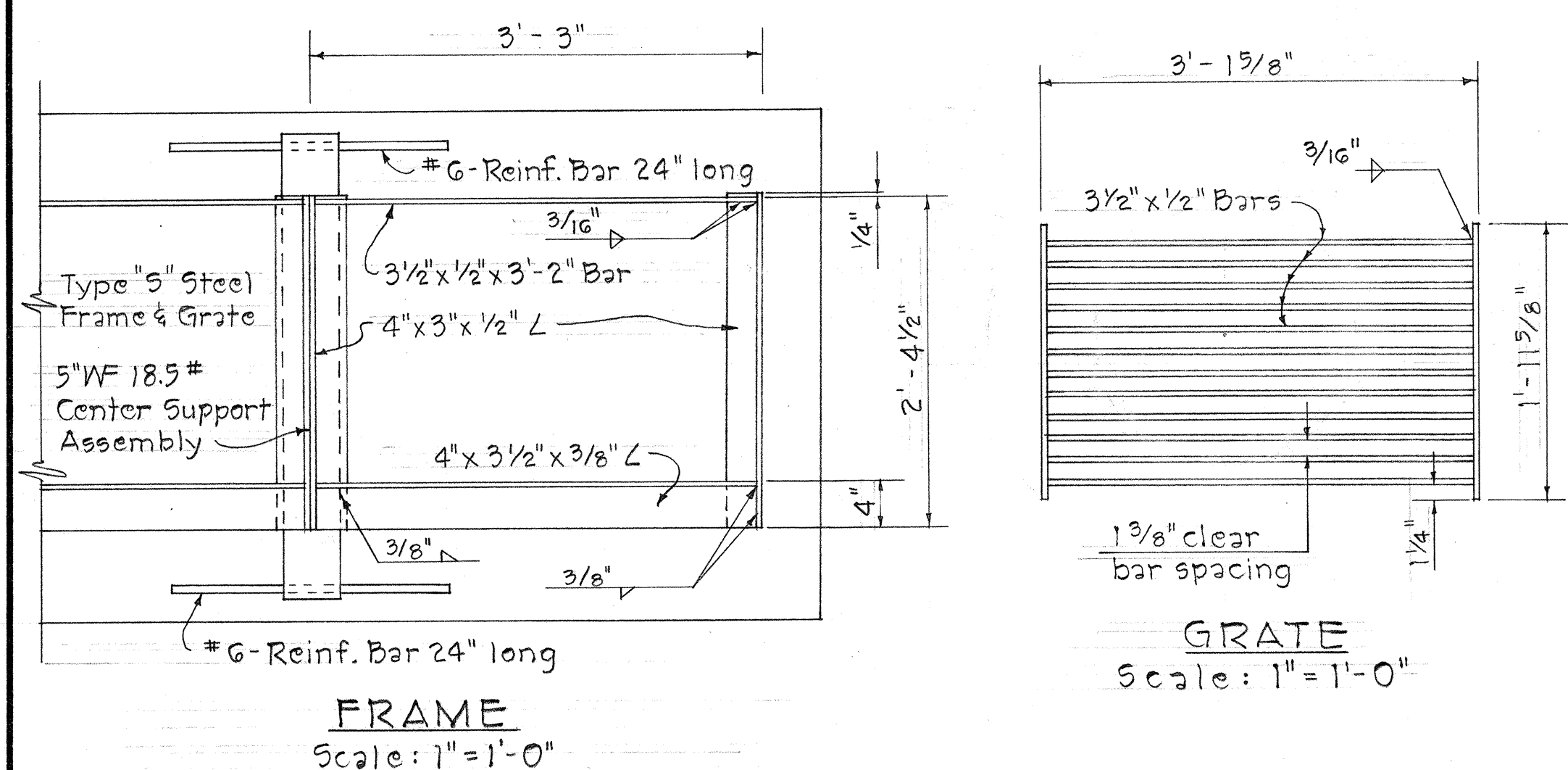
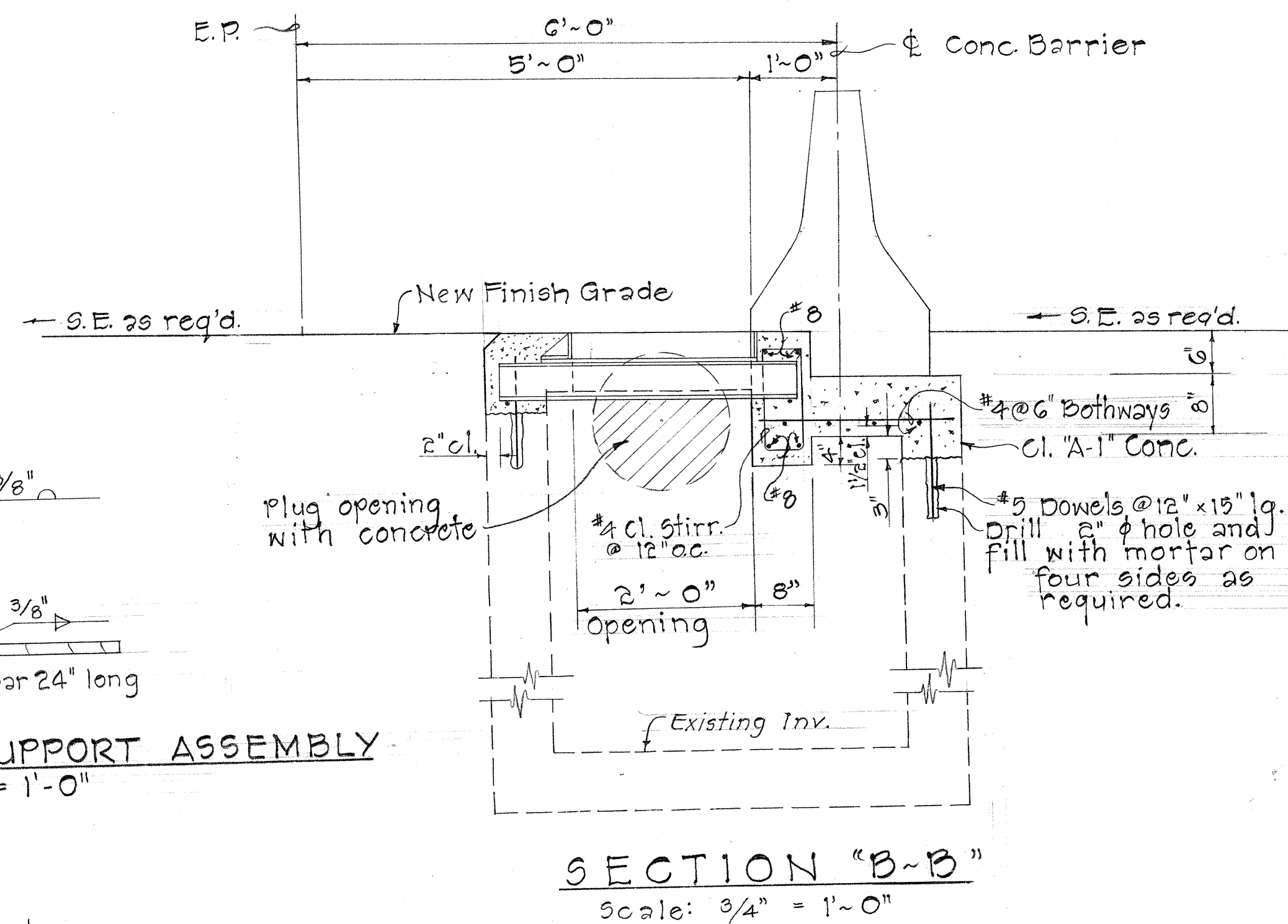
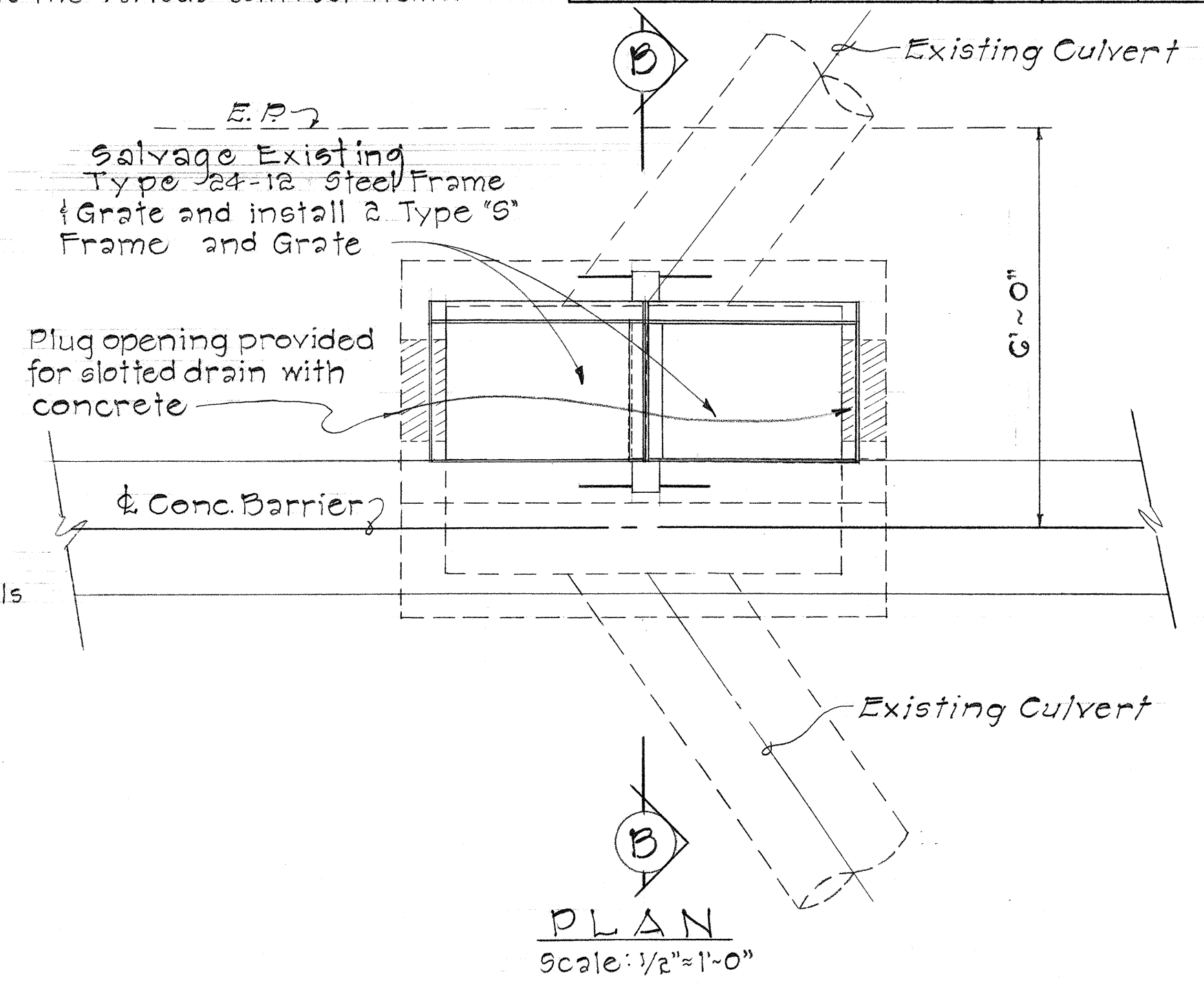
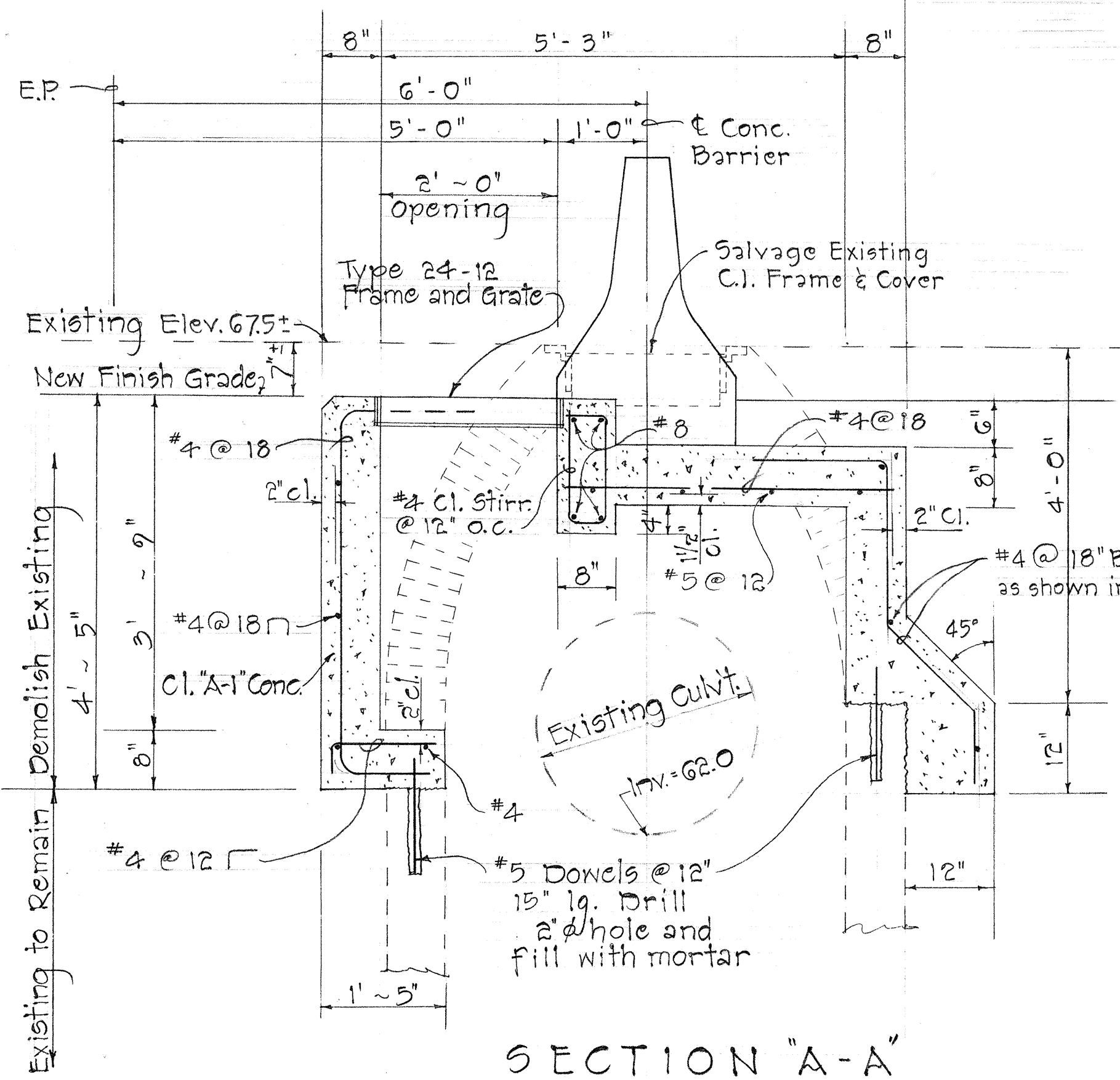
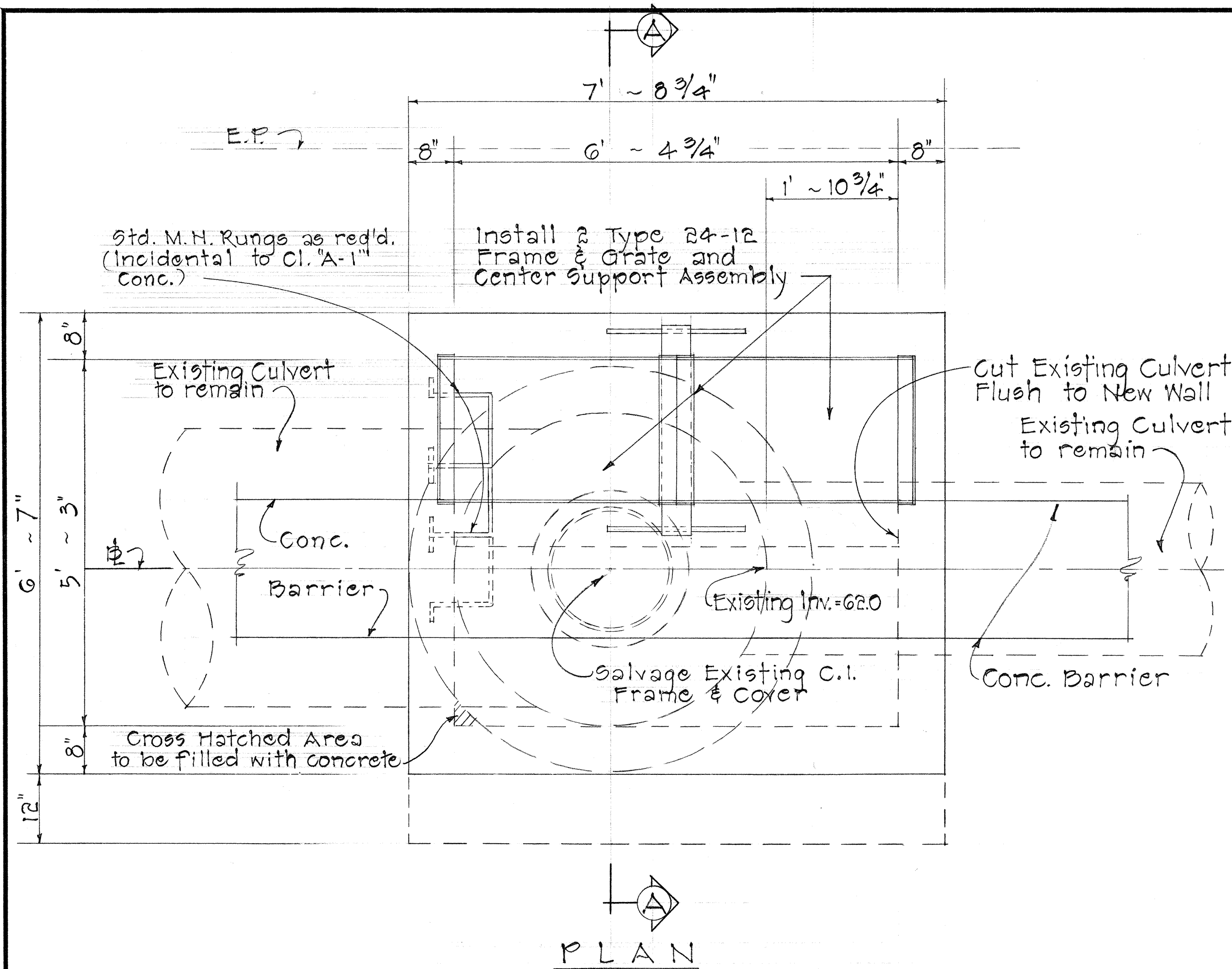
Scale: As Shown Date: Aug. 1968

SHEET No. OF SHEETS

CO 102 S (2)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(3) Unit 1	1968	CO 102 33	292

NOTE: Demolishing and Removing a portion or the entire existing structure shall not be paid for separately, but shall be considered incidental to the various contract items.



5" WF 18.5 # CENTER SUPPORT ASSEMBLY
Scale: 1 1/2" = 1'-0"

- NOTE:
1. All welds 3/8" unless otherwise noted.
 2. All steel shall be structural grade.
 3. Grate and Frame shall be hot dip galvanized after fabrication in accordance with Section 44(H) of the Standard Specifications.
 4. Center Support Assembly shall be used when two or more Gratings are specified.
 5. Center Support Assembly shall not be paid for separately, but shall be considered as incidental to the respective Steel Frame and Grate.

MODIFICATION TO EXISTING C.B. (#28-L) @ Sta. 166+00

DETAIL OF TYPE "S" STEEL FRAME & GRATE

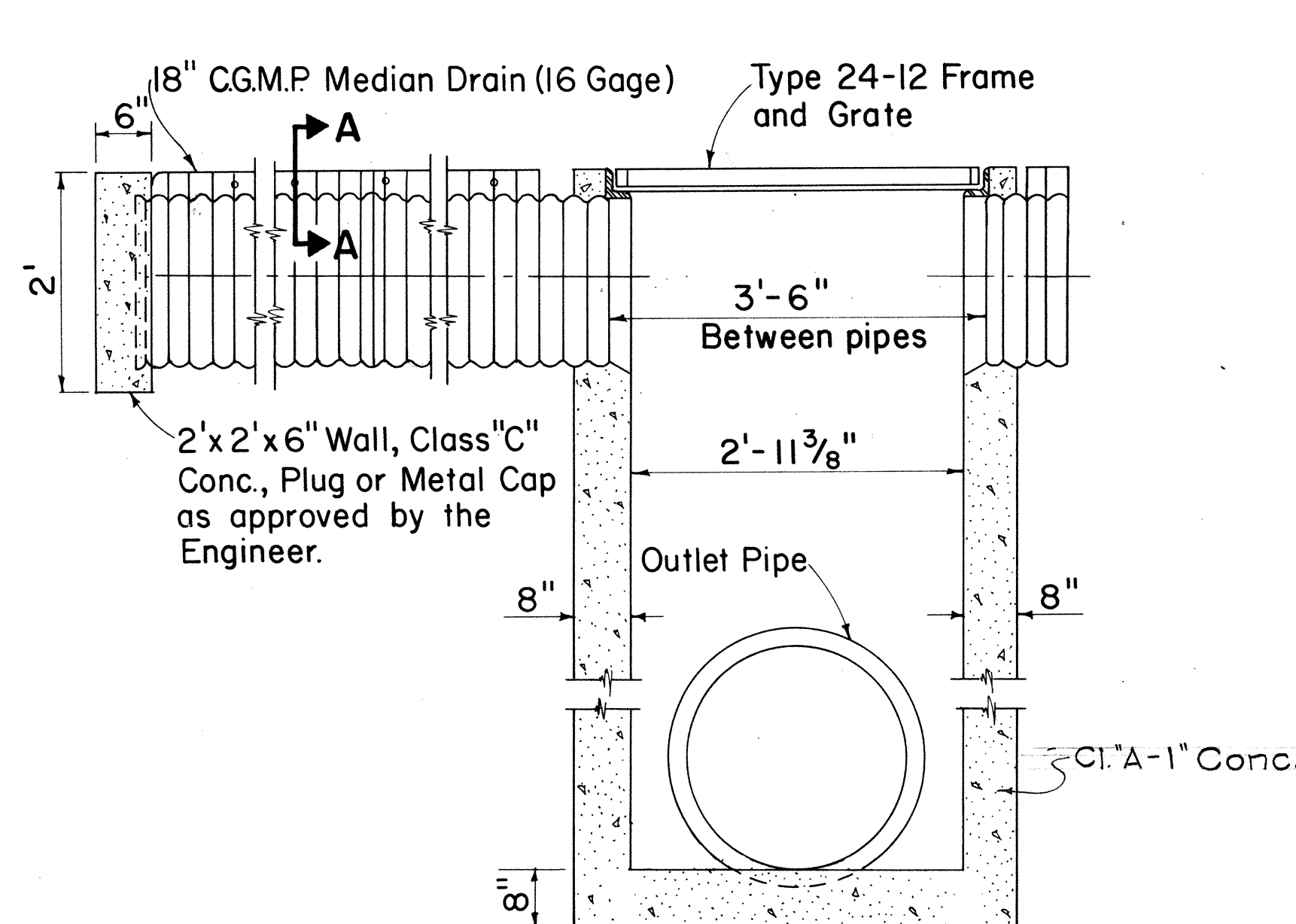
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE DETAILS
MODIFICATIONS TO DRAINAGE
STRUCTURES @ STA. 165+00 & 166+00
Pele Street to Victoria Street
F.A.I. Proj. No. I-HI-1(3), Unit 1

THIS SHEET SUPERSEDES
AND REPLACES SHEET NO. C.O. 102 3(3) Dated Nov. 1967
Scale: As Shown Date: Aug. 1968
SHEET No. OF SHEETS

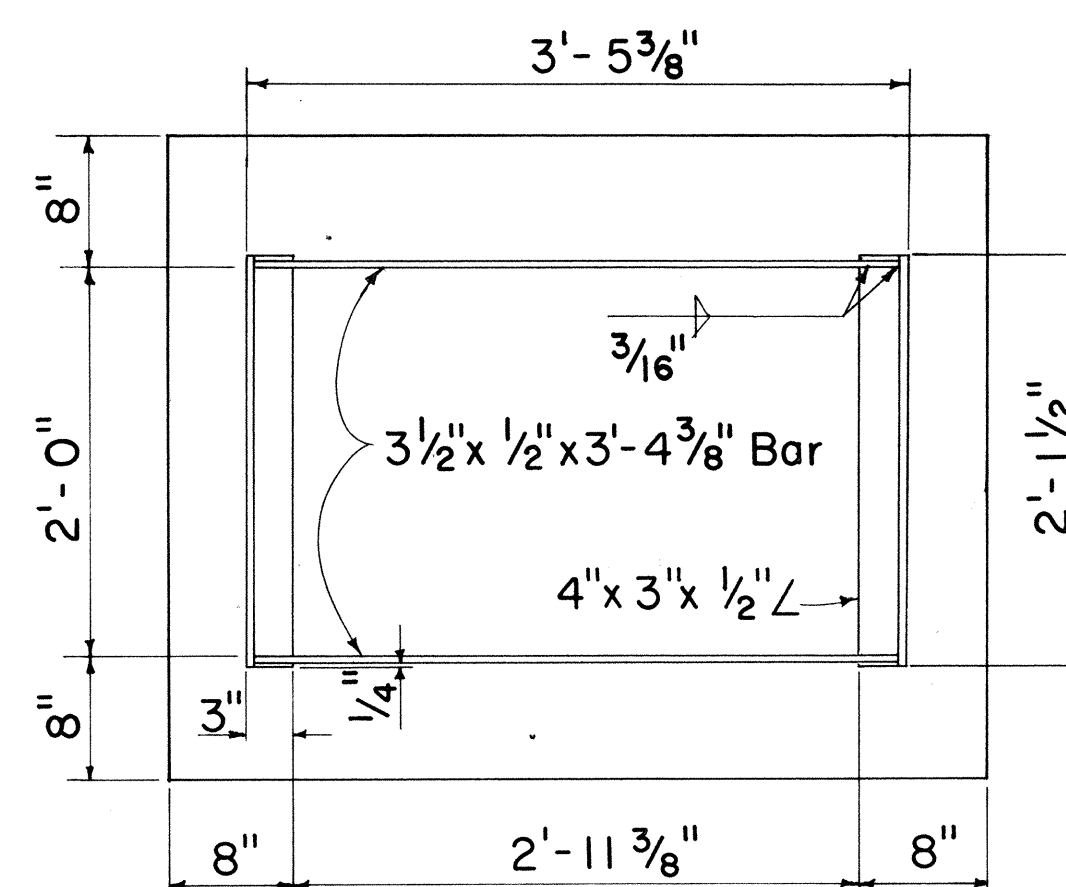
C O 102 S (3)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-41-1(31) Unit 1	1967	10254	292

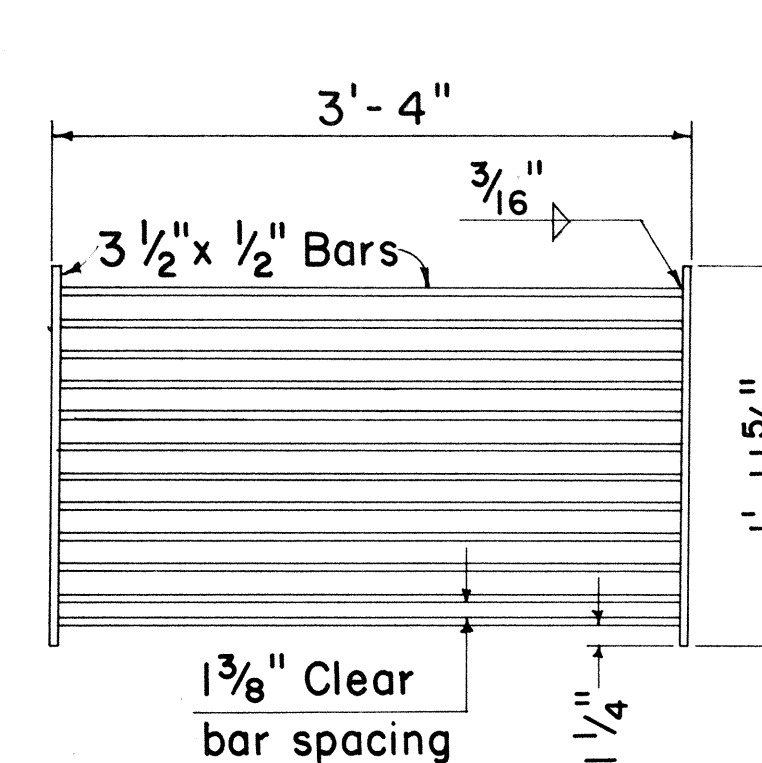
Feb. 16, 1968



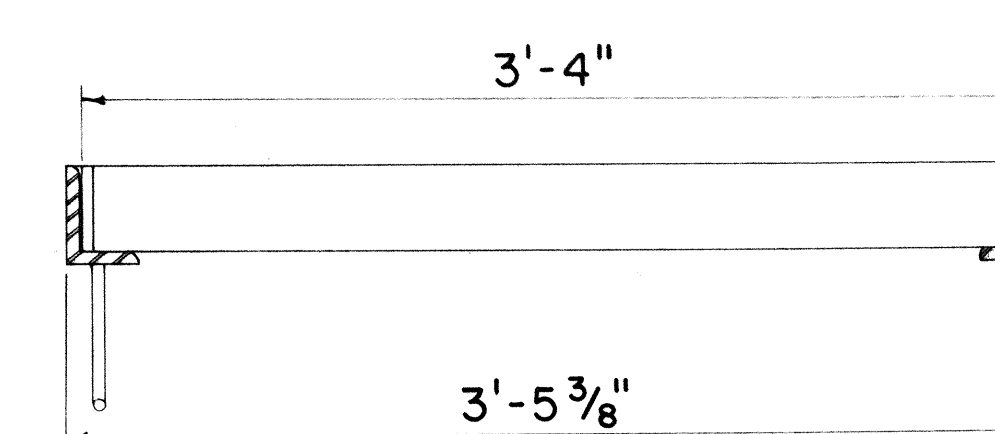
MEDIAN DRAIN INLET STRUCTURE



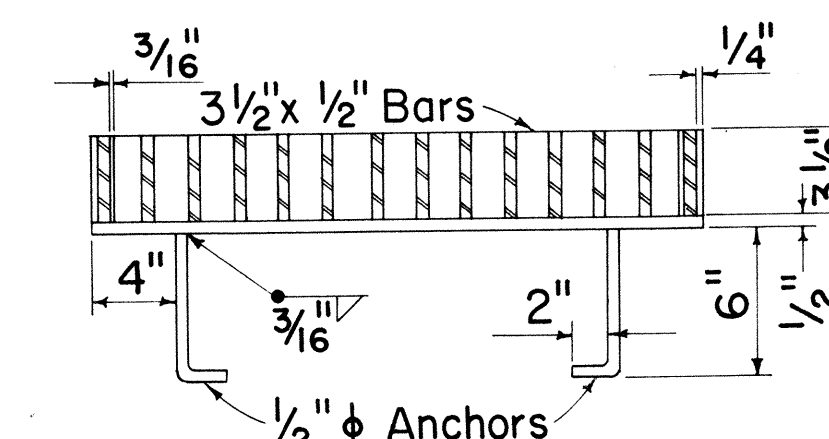
FRAME



GRATE



LONGITUDINAL SECTION
(Thru Frame and Grate)

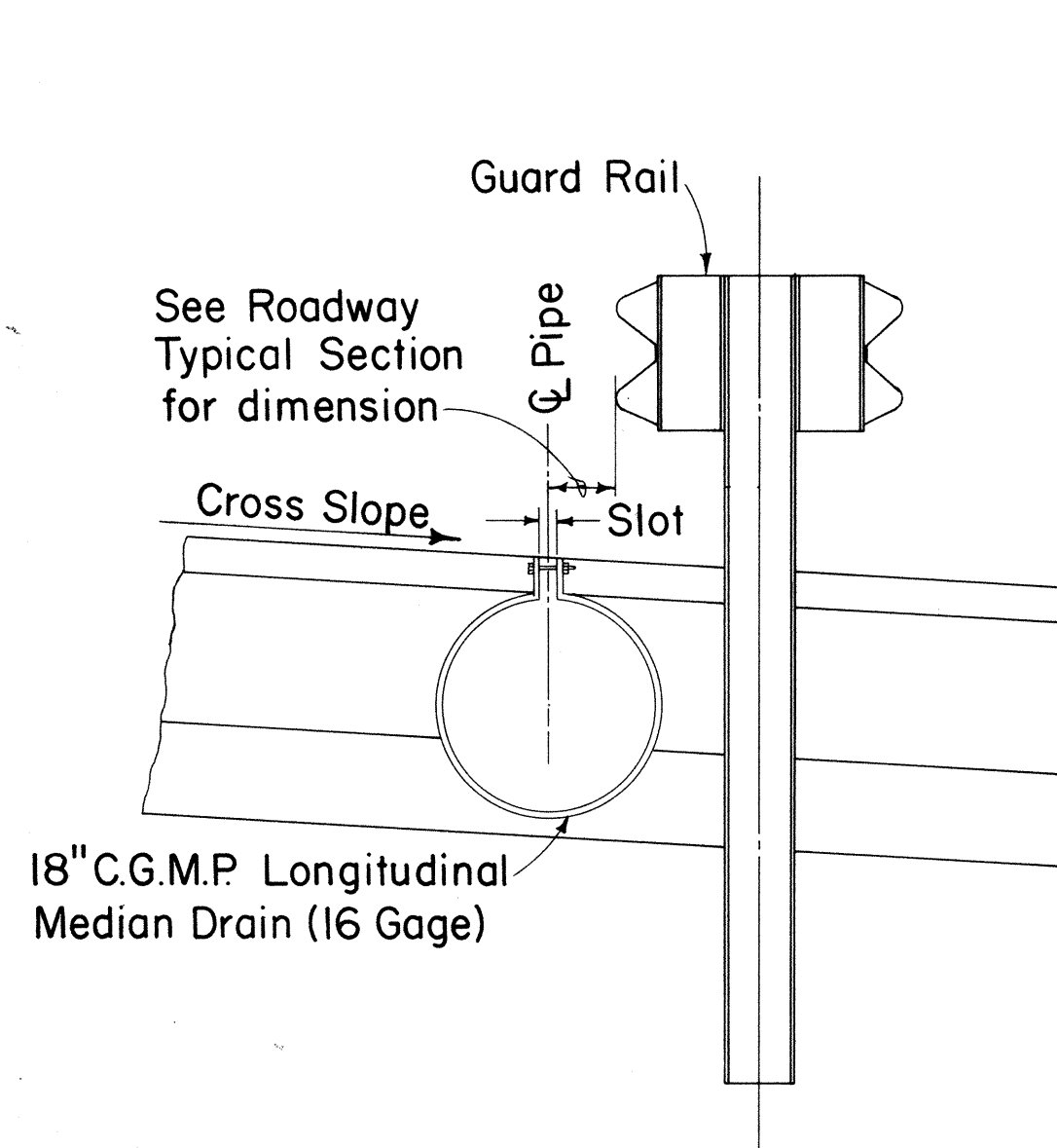


CROSS SECTION
(Thru Frame and Grate)

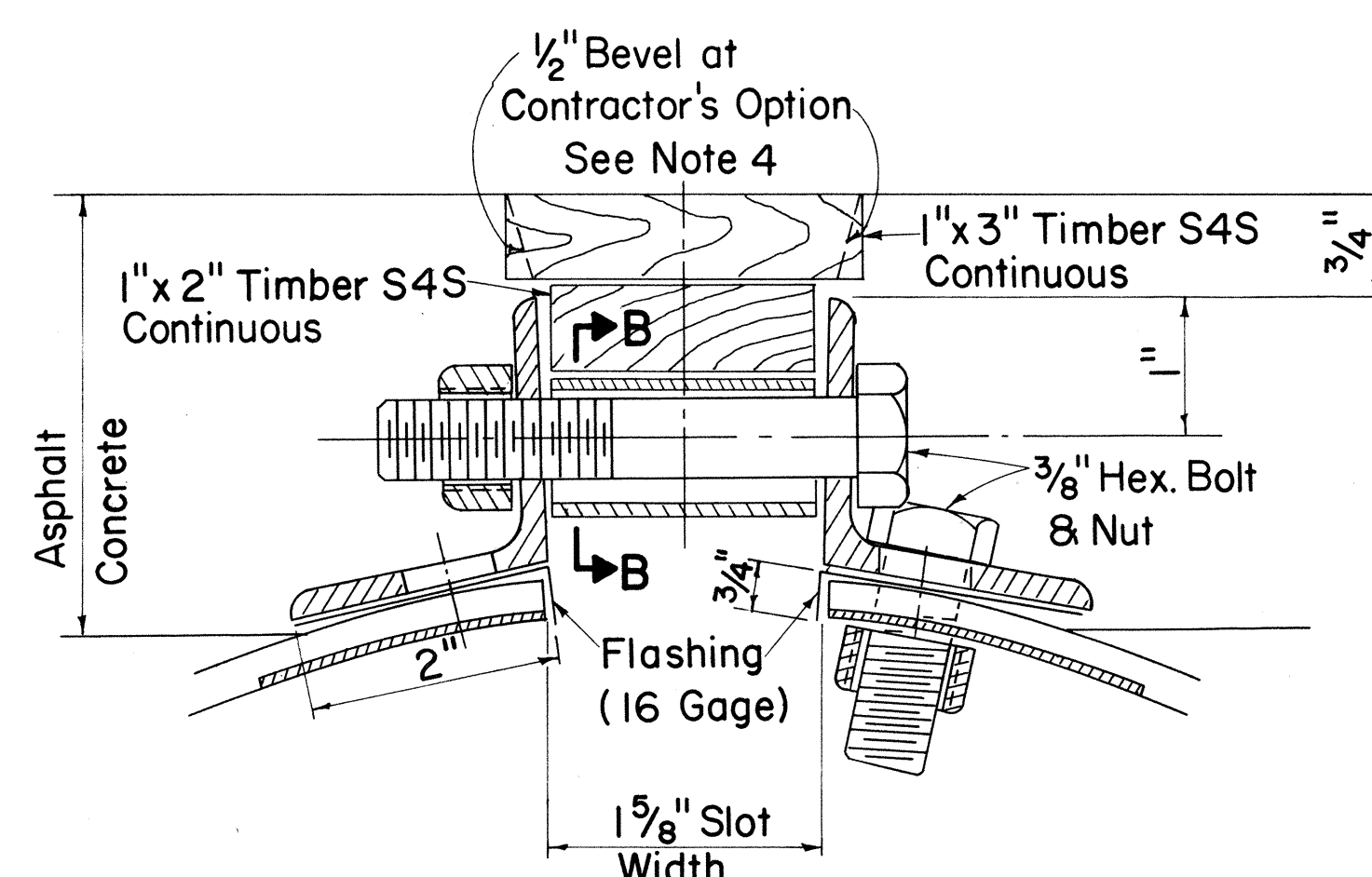
TYPE 24-12 FRAME AND GRATE

GENERAL NOTES

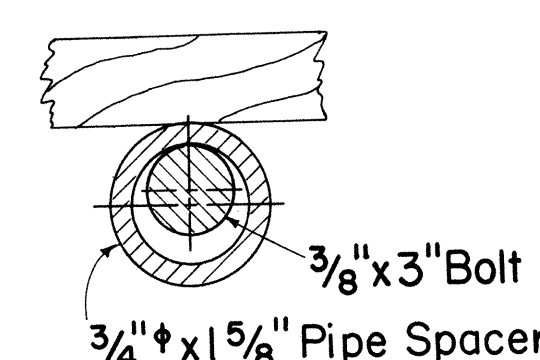
- All bolts, nuts, angles and pipe spacers to be galvanized.
- 1"x2" and 1"x3" S4S timber to remain in place until final clean-up operations are complete.
- Each drain section shall be assembled with flange slot coupling band and bolted thru drain section flange.
- If the Contractor elects to use bevel, a 1"x4" S4S timber shall be used in lieu of 1"x3" S4S timber.
- 20' units of 18" slotted CG.M.P. median drain shall be fabricated and all nuts and bolts tightened prior to beginning field installation.
- The Contractor shall take precaution to prevent adhesion between timber placed in the slotted median drain as shown on Section A-A and the asphalt concrete paving.
- The Contractor may elect to use either Angle Slot or Flanged Slot Drain.
- The slotted CG.M.P. shall not be installed until after the P.C.C. pavement adjacent to the median has been completed.



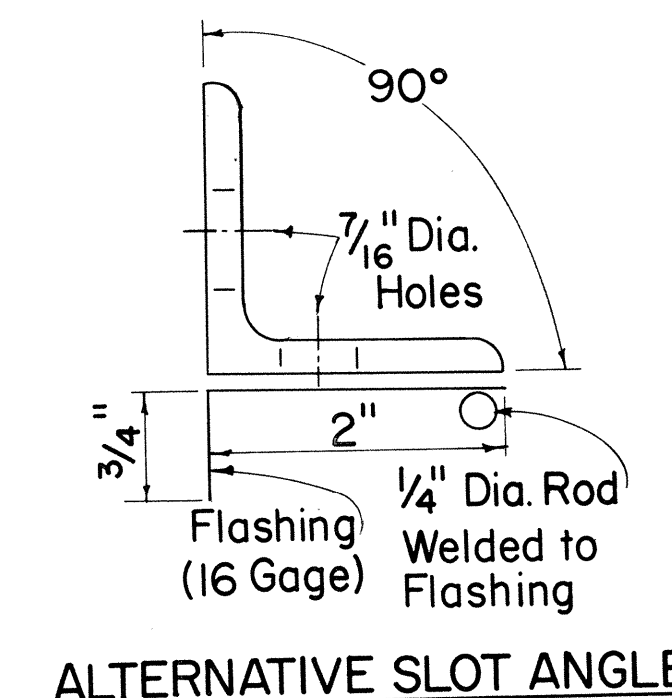
TYPICAL CROSS SECTION



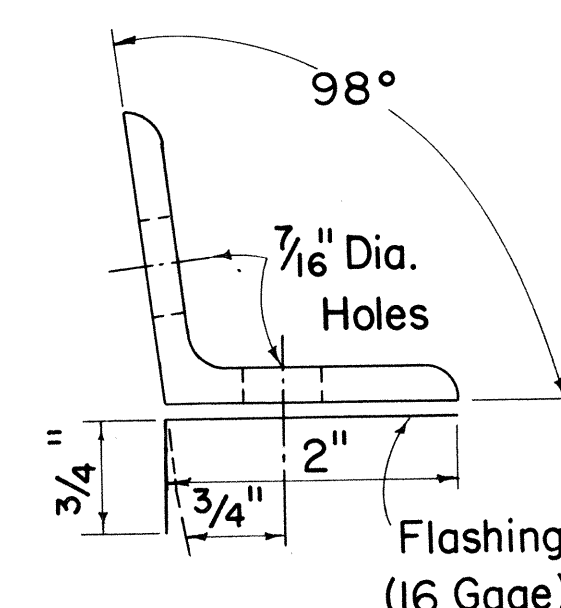
SECTION A-A
ANGLE SLOT DETAIL



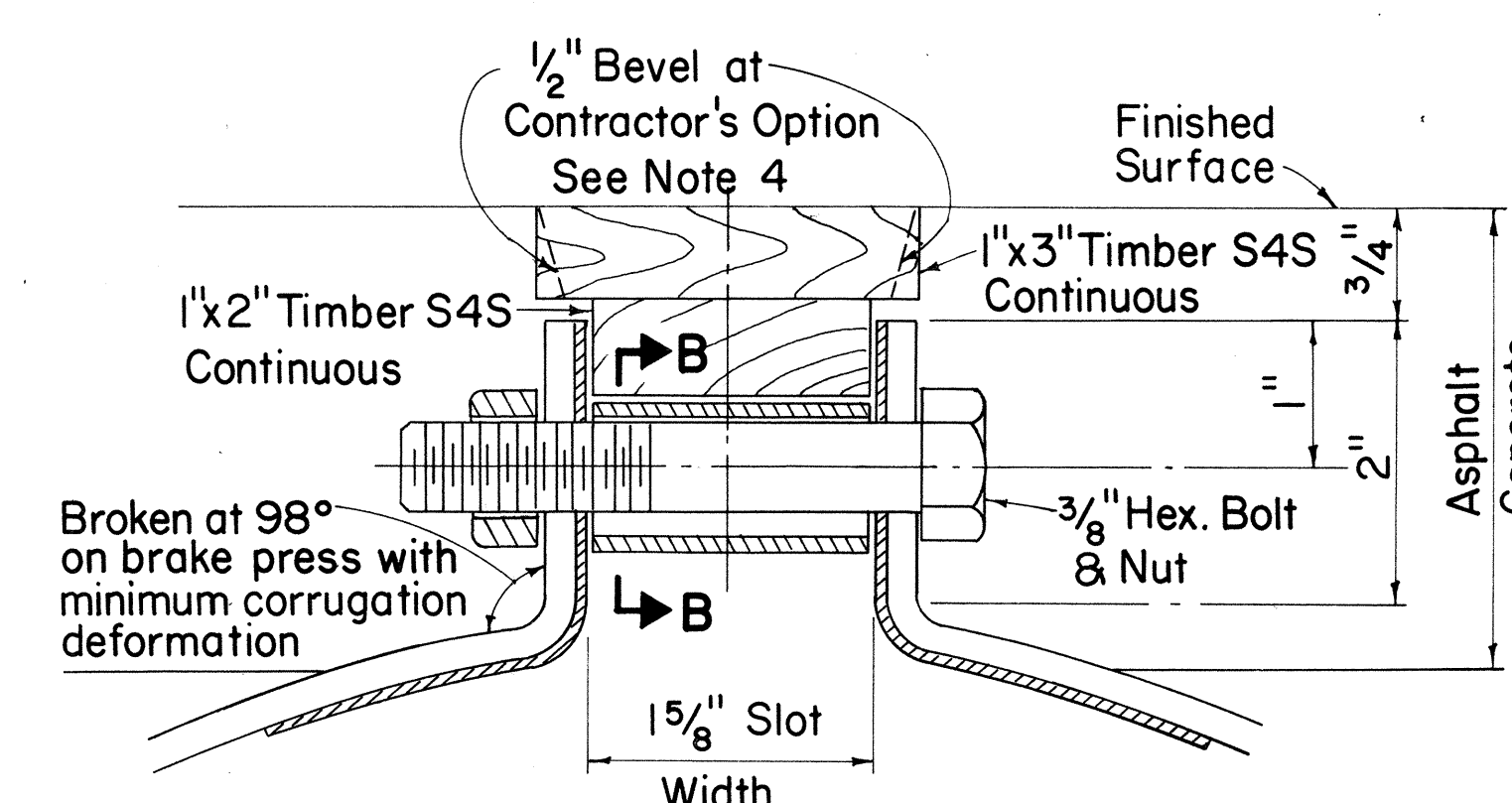
SECTION B-B



ALTERNATIVE SLOT ANGLE

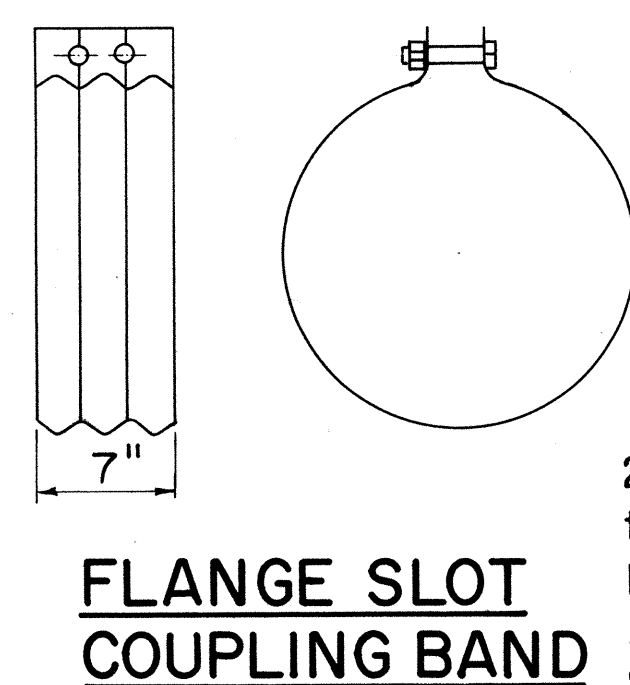


SLOT ANGLE
2"x2"x3/16" ANGLE
DETAILS



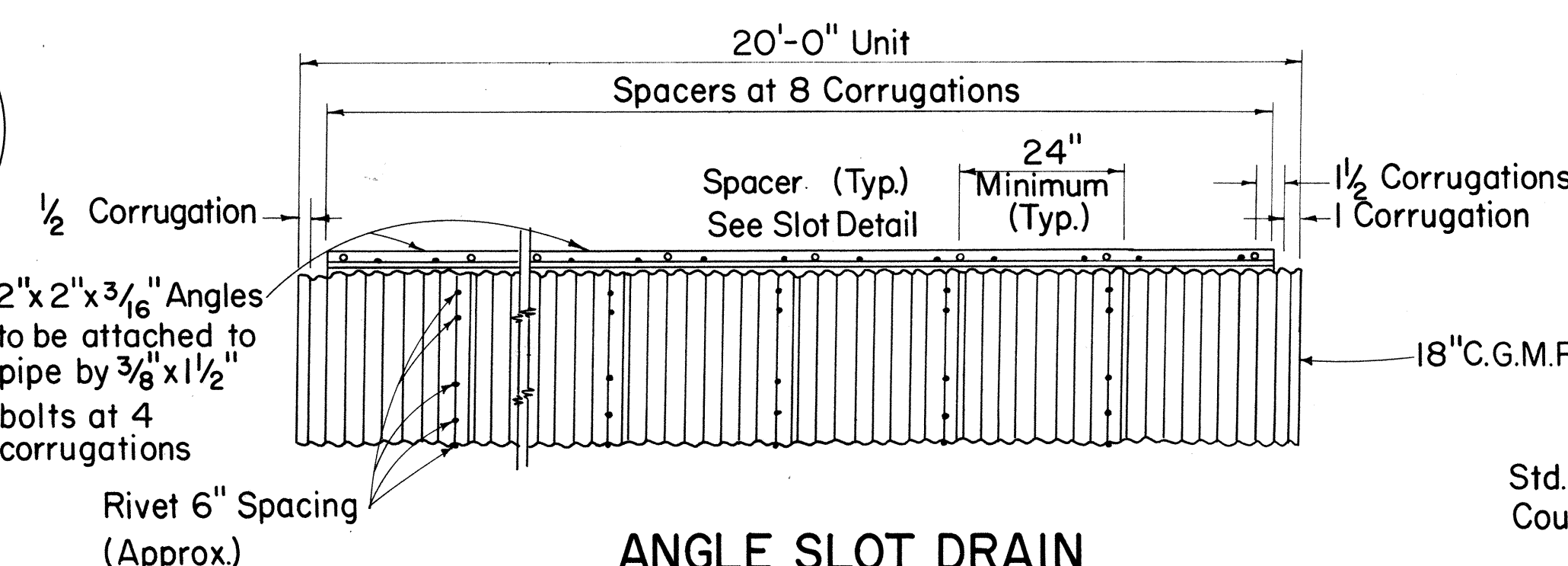
SECTION A-A
FLANGED SLOT DETAIL

THIS SHEET IS A SUPPLEMENT
TO THE CONTRACT PLANS.

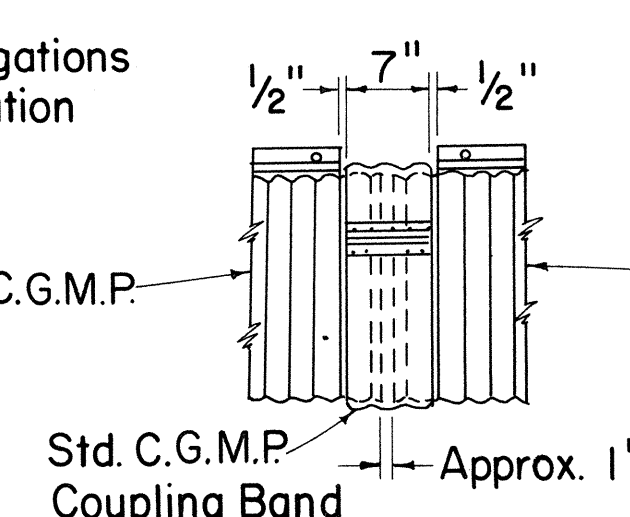


FLANGE SLOT
COUPLING BAND

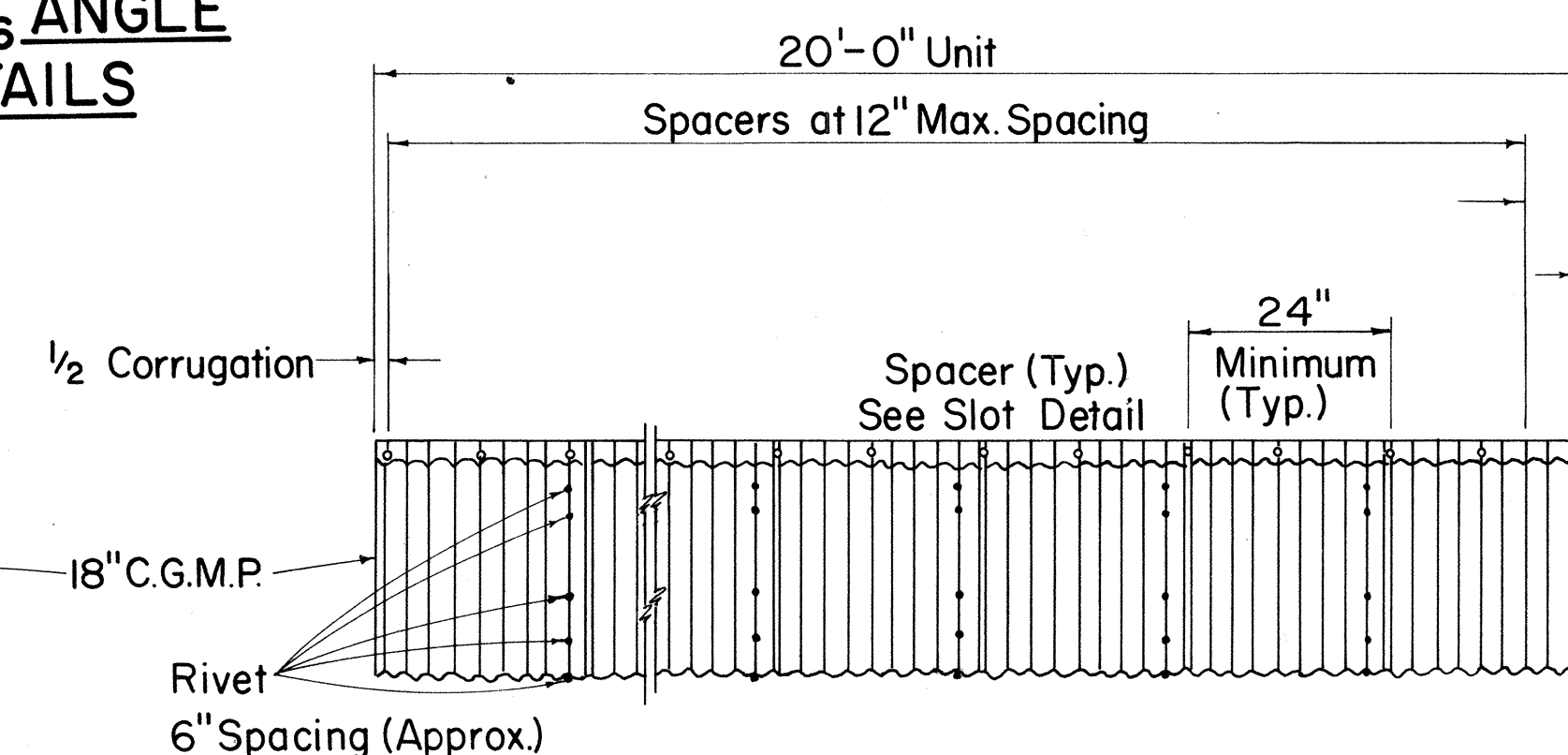
See Note 3



ANGLE SLOT DRAIN



JOINT DETAIL



FLANGED SLOT DRAIN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

INTERSTATE ROUTE H-1
(LUNALILO FREEWAY)
Pele Street to Victoria Street
F.A.I. Proj. No. I-41-1(31) Unit 1

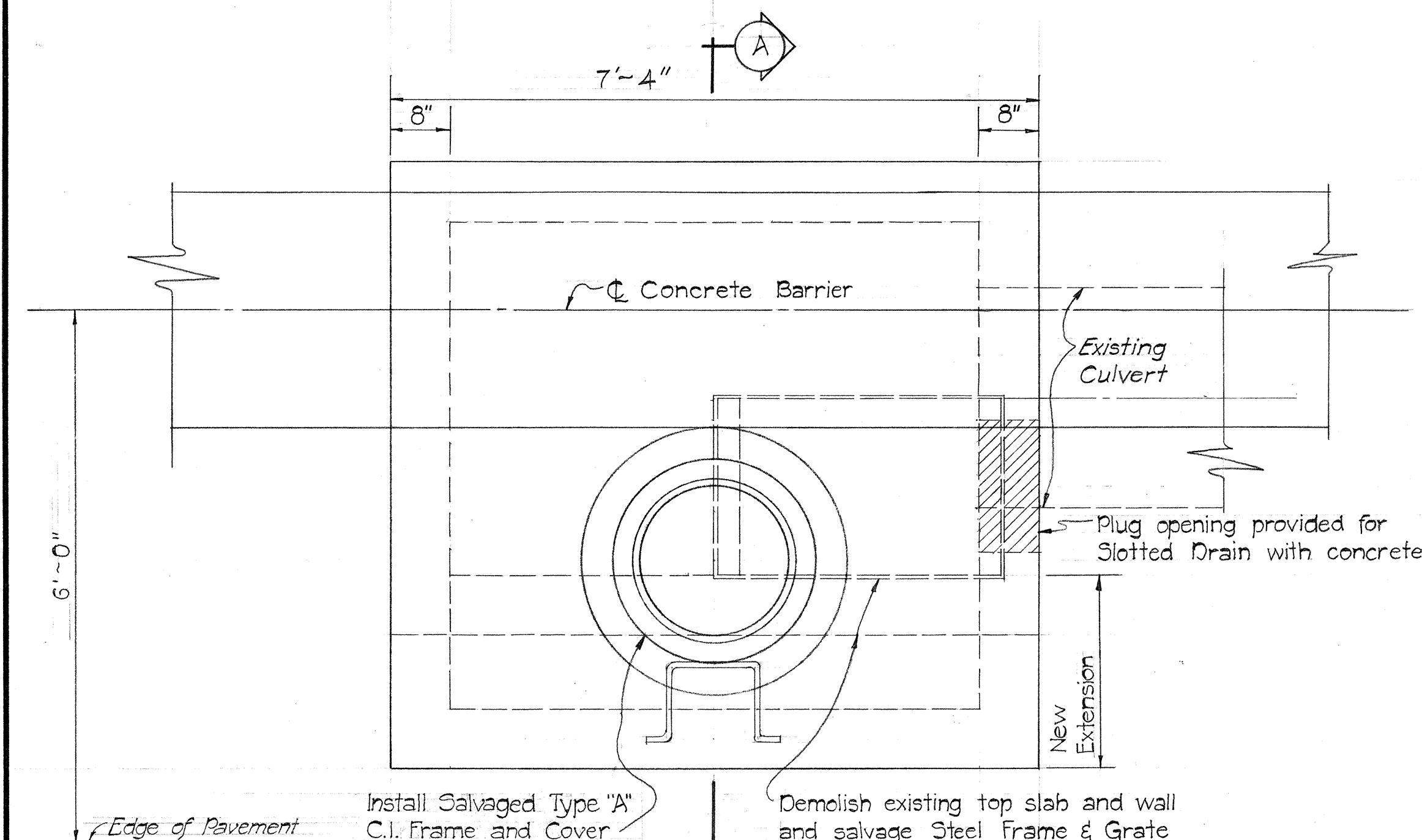
Scale: As Shown Date: Nov. 1967

SHEET No. OF SHEETS

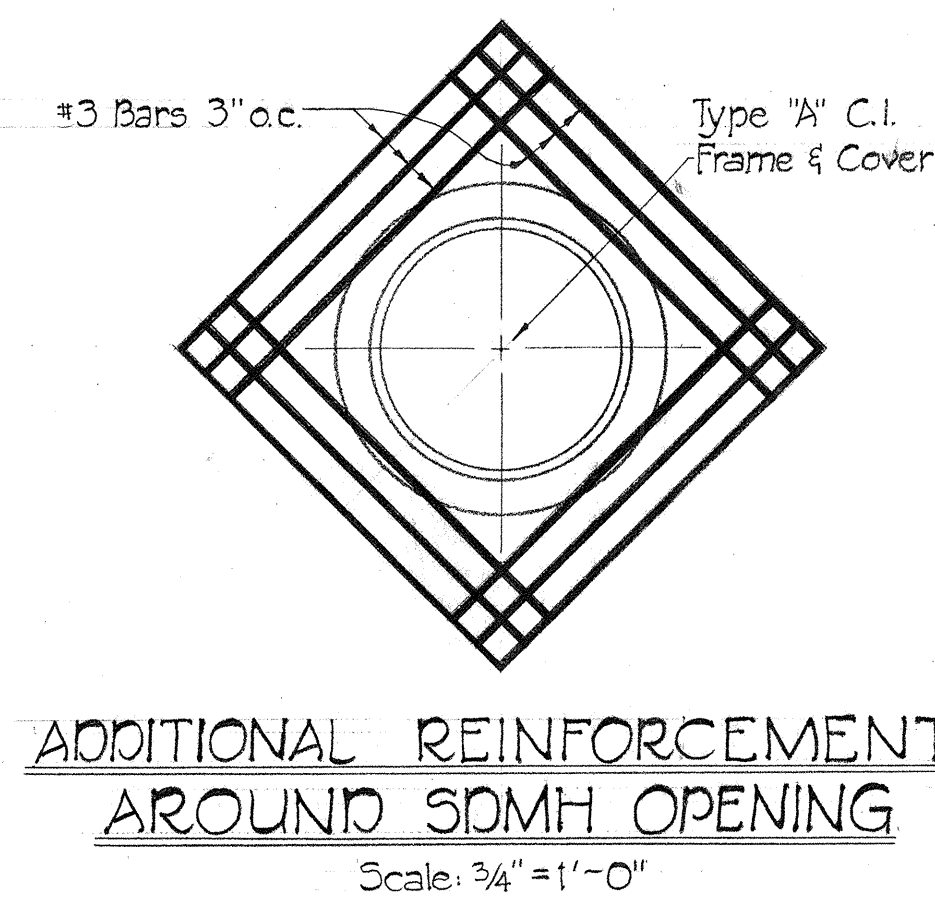
102 S(4)

DATE	DESIGNED BY	CHECKED BY
PLAN	DESIGNED BY	CHECKED BY
NOTE BOOK	DESIGNED BY	CHECKED BY
QUANTITIES BY	DESIGNED BY	CHECKED BY
NO.	DESIGNED BY	CHECKED BY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(31) Unit 1	1968	C010255	292

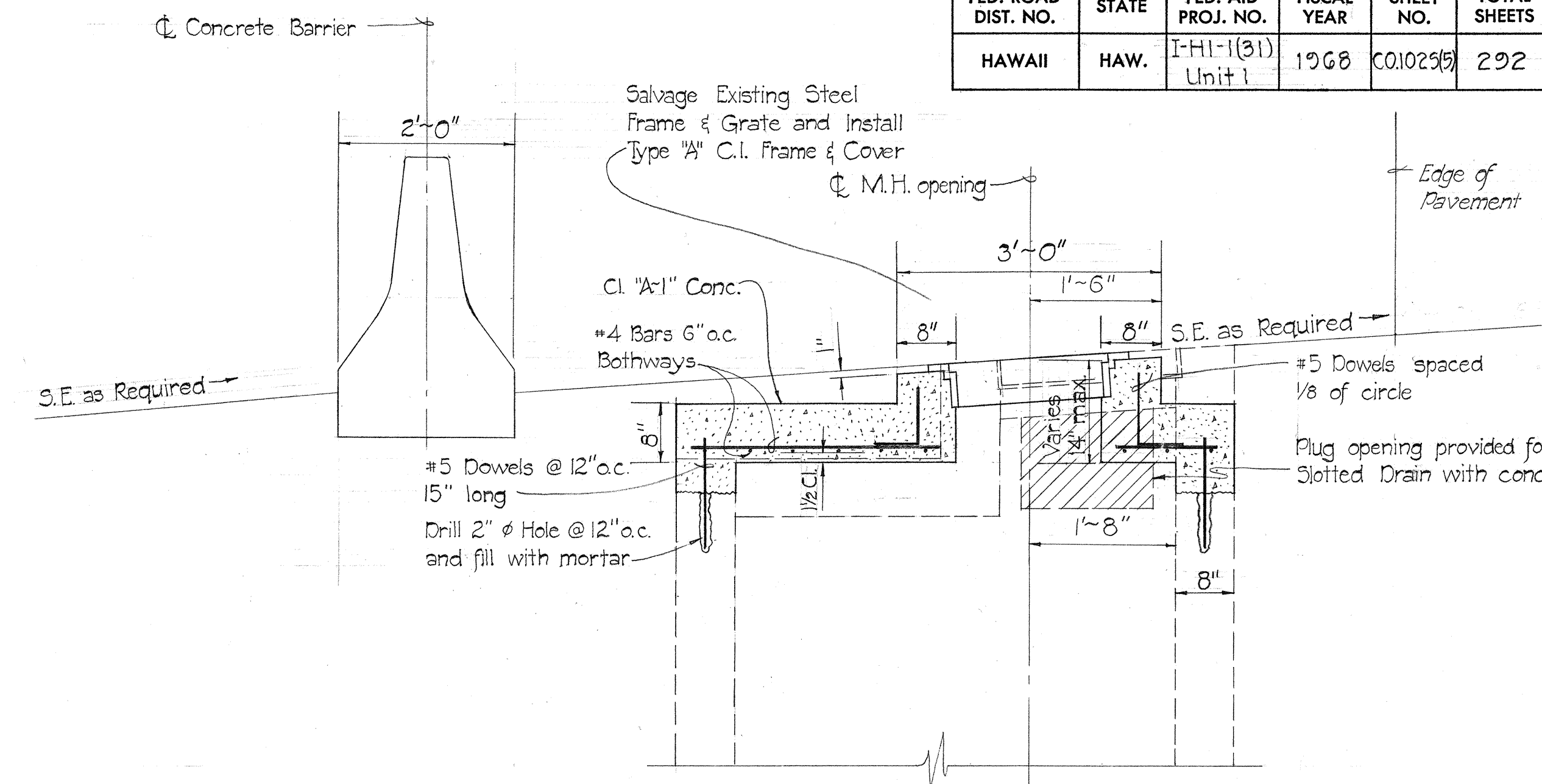


PLAN



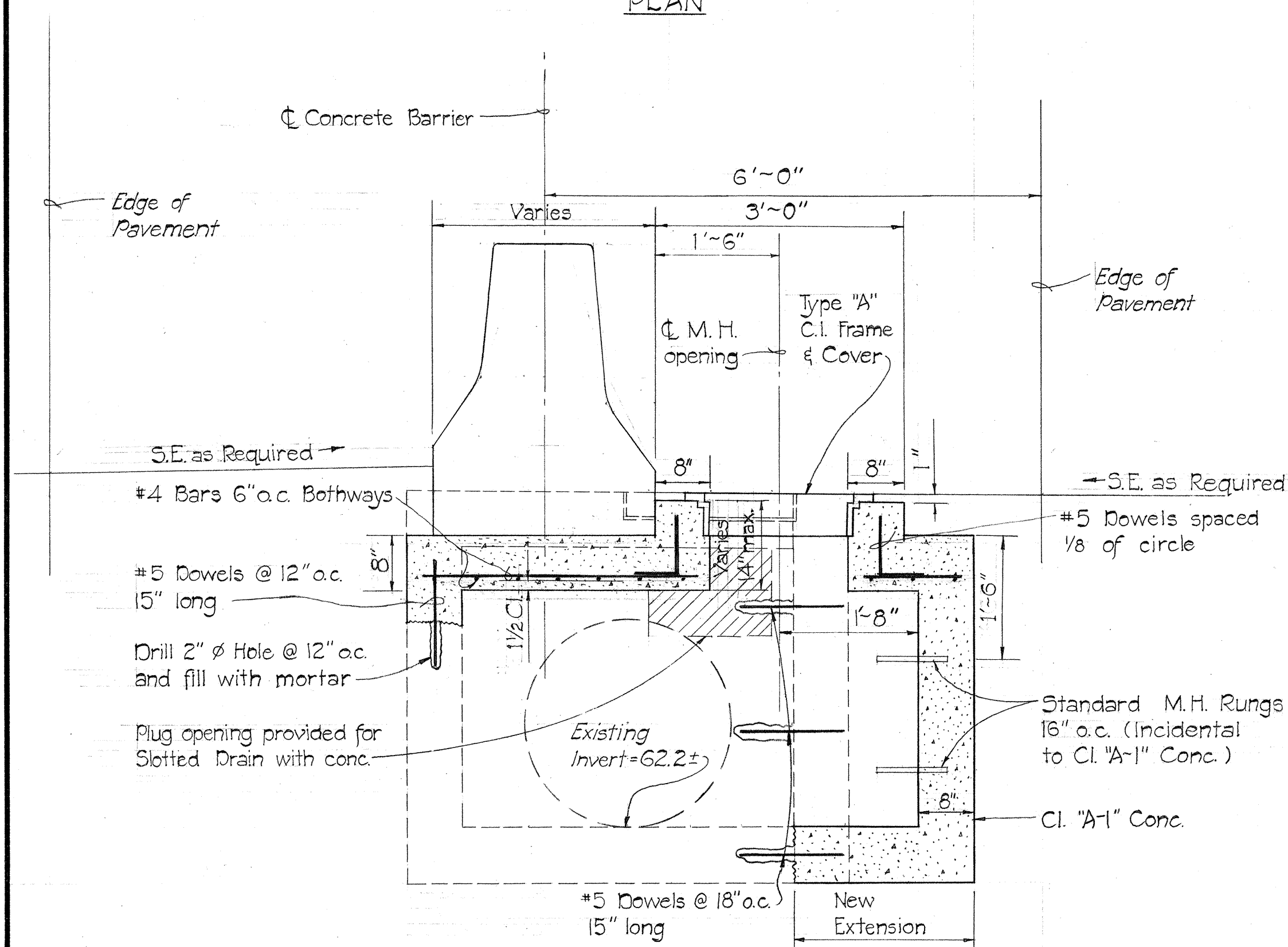
ADDITIONAL REINFORCEMENT AROUND SDM OPENING

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



MODIFICATIONS TO CONVERT MEDIAN CATCH BASIN TO SDM @ STA. 181+65

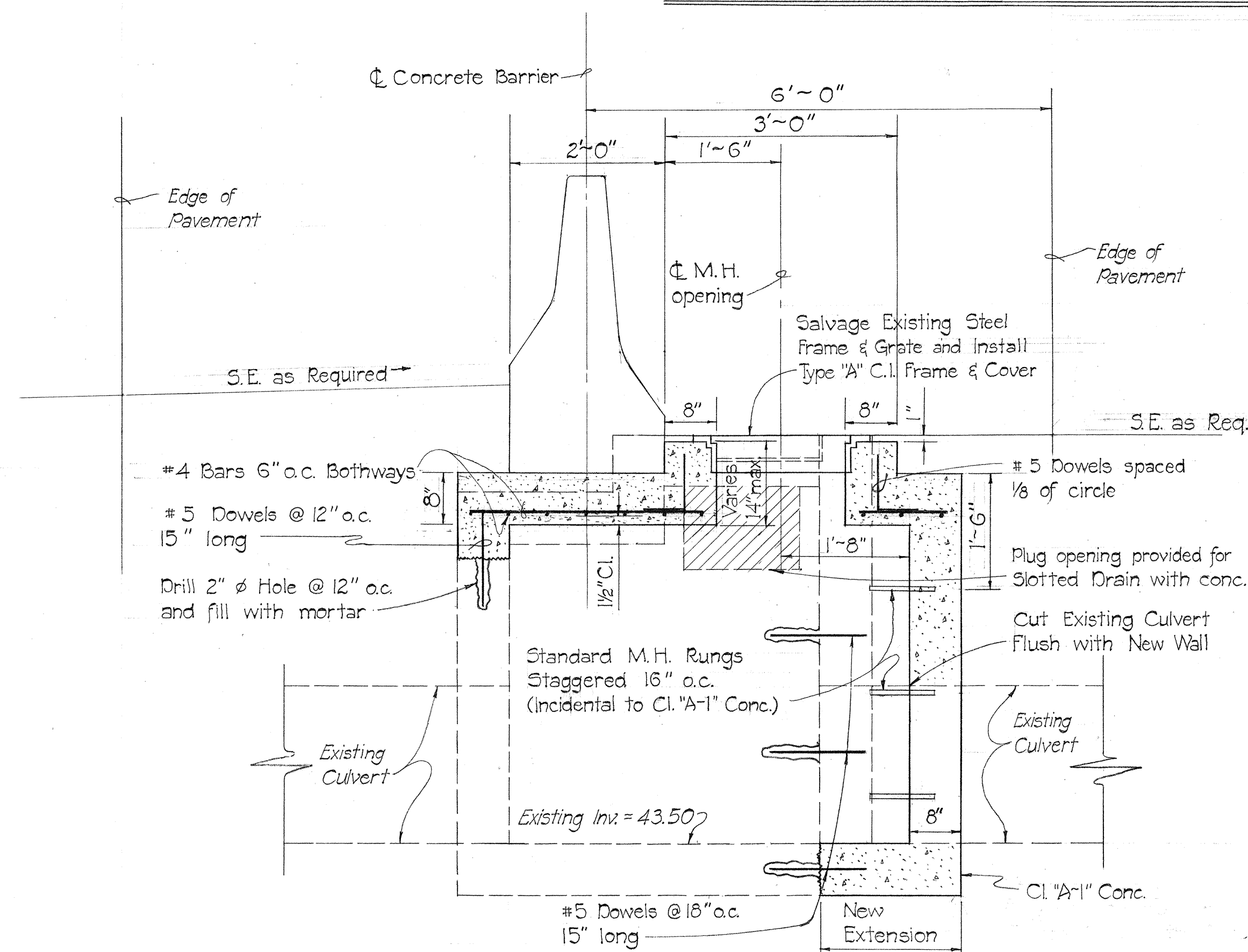
Scale: 3/4" = 1'-0"



SECTION A-A

MODIFICATIONS TO CONVERT MEDIAN CATCH BASIN TO SDM @ STA. 177+00

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



MODIFICATIONS TO CONVERT MEDIAN CATCH BASIN TO SDM @ STA. 190+50

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

DRAINAGE TABULATION

TYPE	STATION	STRUCTURE EXCAVATION	CL. 'A-1' CONCRETE	REINF. STEEL	TYPE 'A' FR. & COVER	TYPE '24-12" FR. & GRATE	TYPE '5" FR. & GRATE	24" CGMP, 14 Ga. or 24" RCCB, Cl. II		
Modified SDM	165+00	16	5.0	320		2				
Modified C.B.	166+60	4	2.0	159			2			
Modified SDM	177+00	8	3.0	153	1					
M.C.B. #2	179+30	6	2.0	316		1				
M.C.B. #3	180+25	6	2.0	316		1				
Modified SDM	181+65	4	1.5	133	1					
M.C.B. #5	183+50	6	2.0	245		1				
M.C.B. #7	186+00	6	2.0	316		1				
M.C.B. #10	188+00	6	2.0	316		1				
M.C.B. #11	188+75	6	2.0	316		1				
M.C.B. #13	190+25	30	4.5			4		22		
Modified SDM	190+50	8	3.0	146	1					

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS MODIFICATIONS TO MEDIAN SDM FOR CONCRETE BARRIER

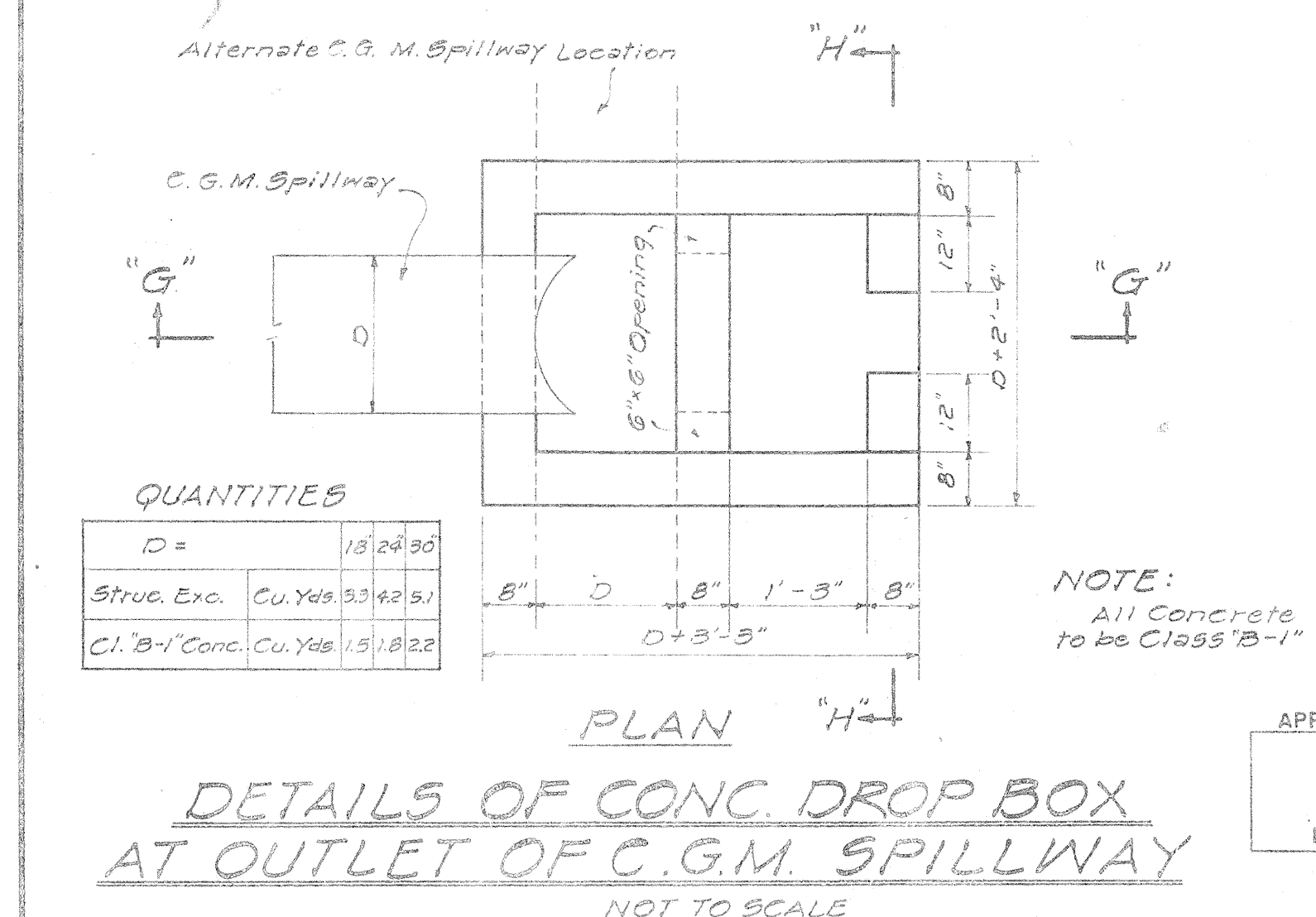
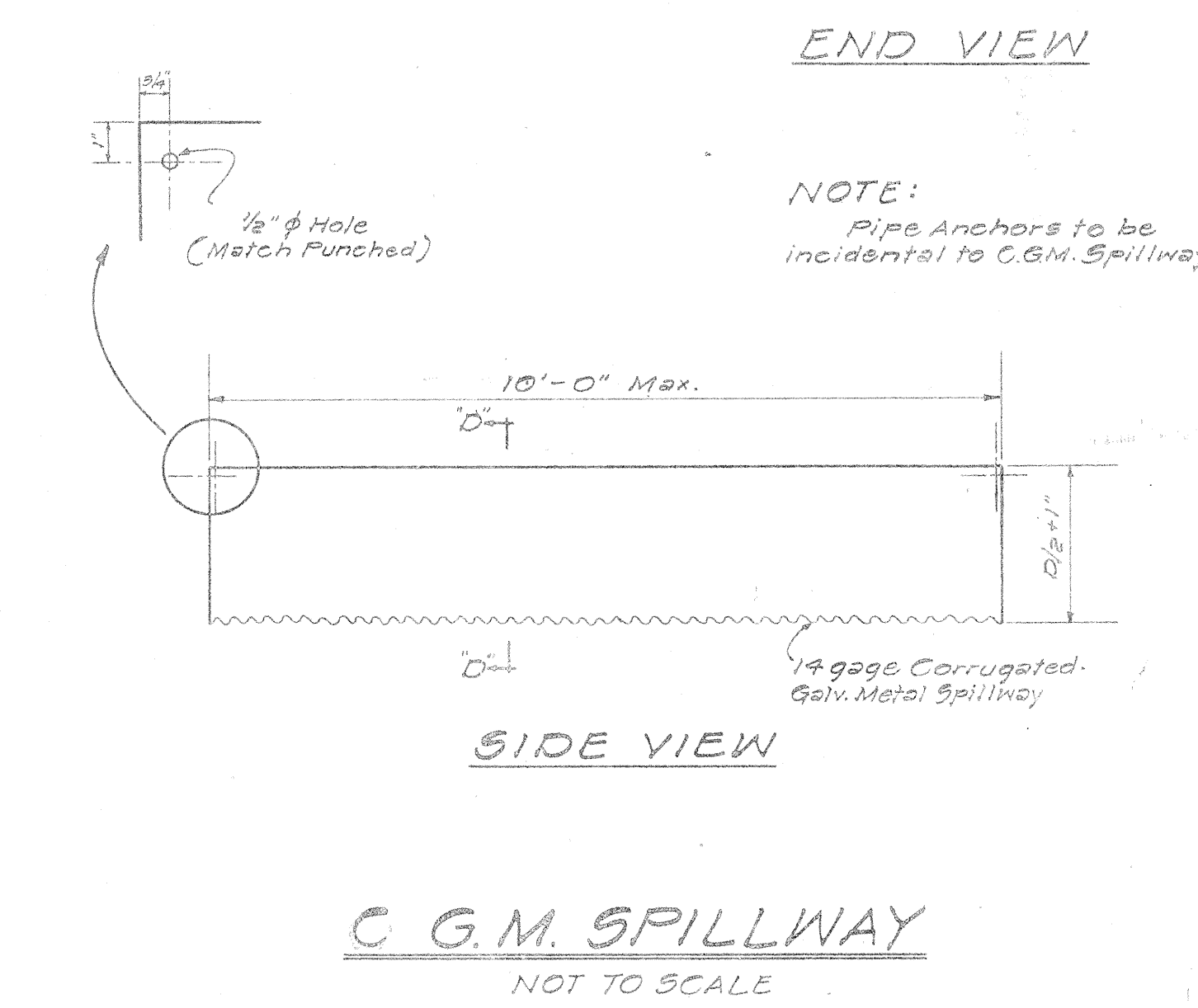
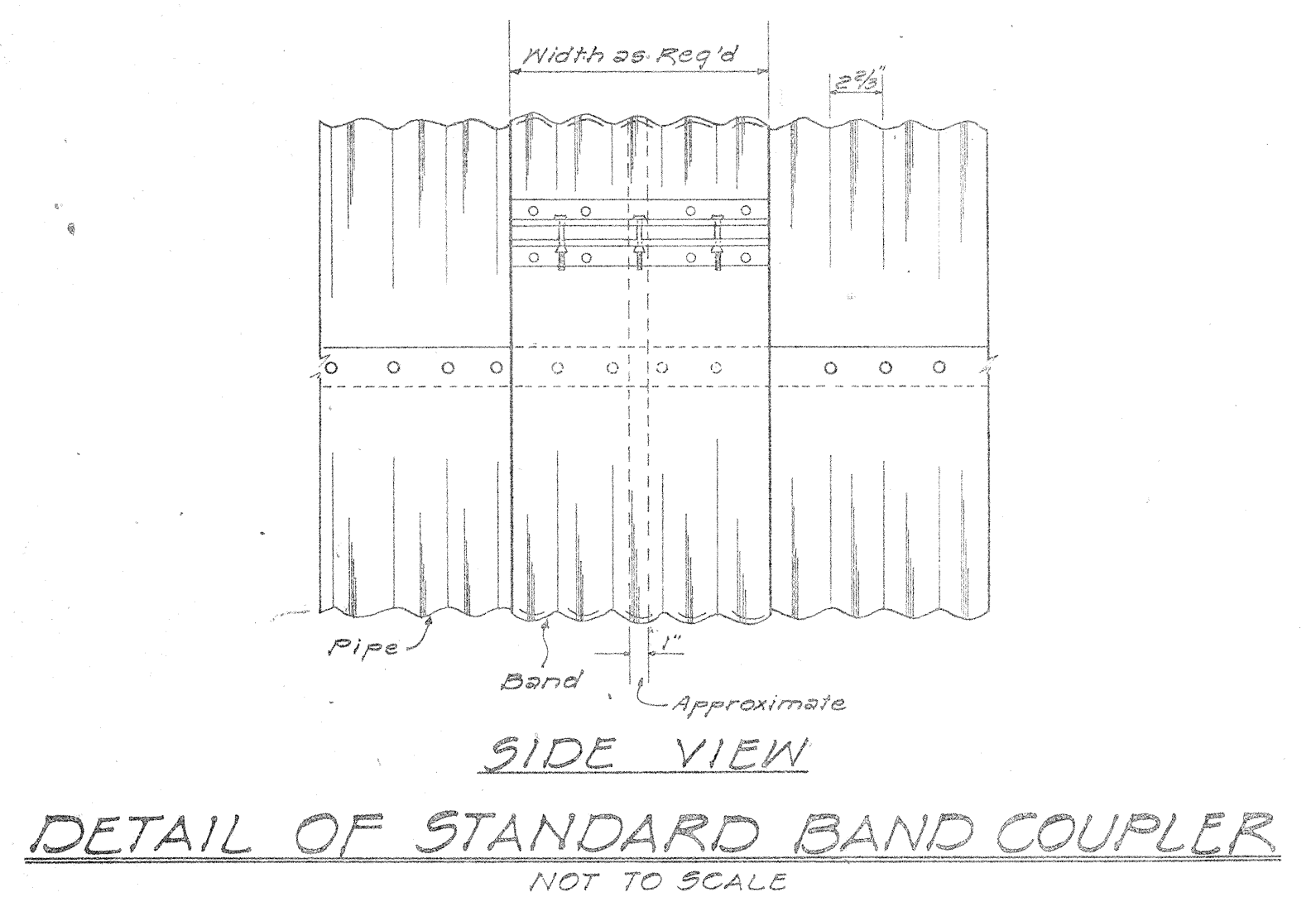
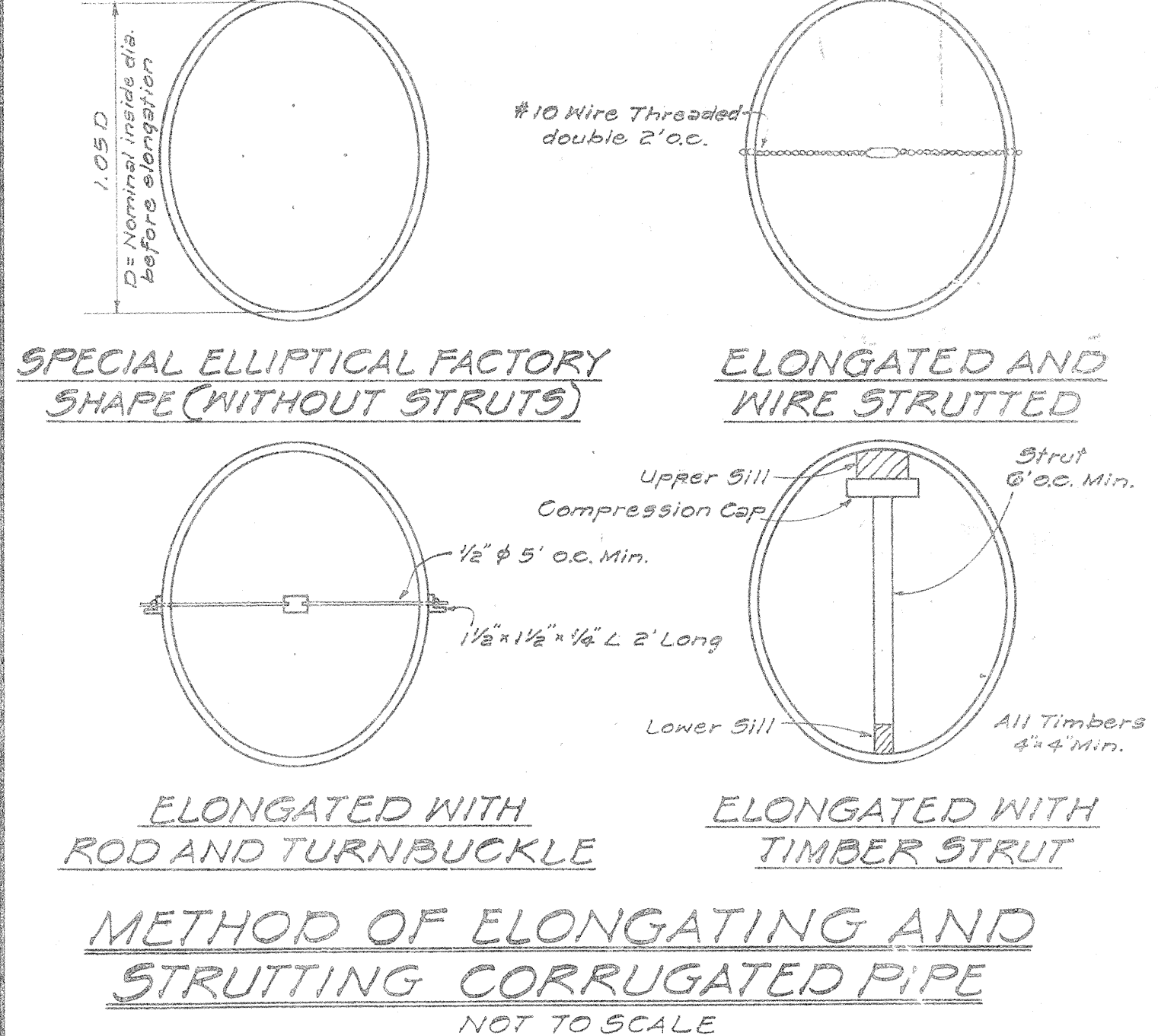
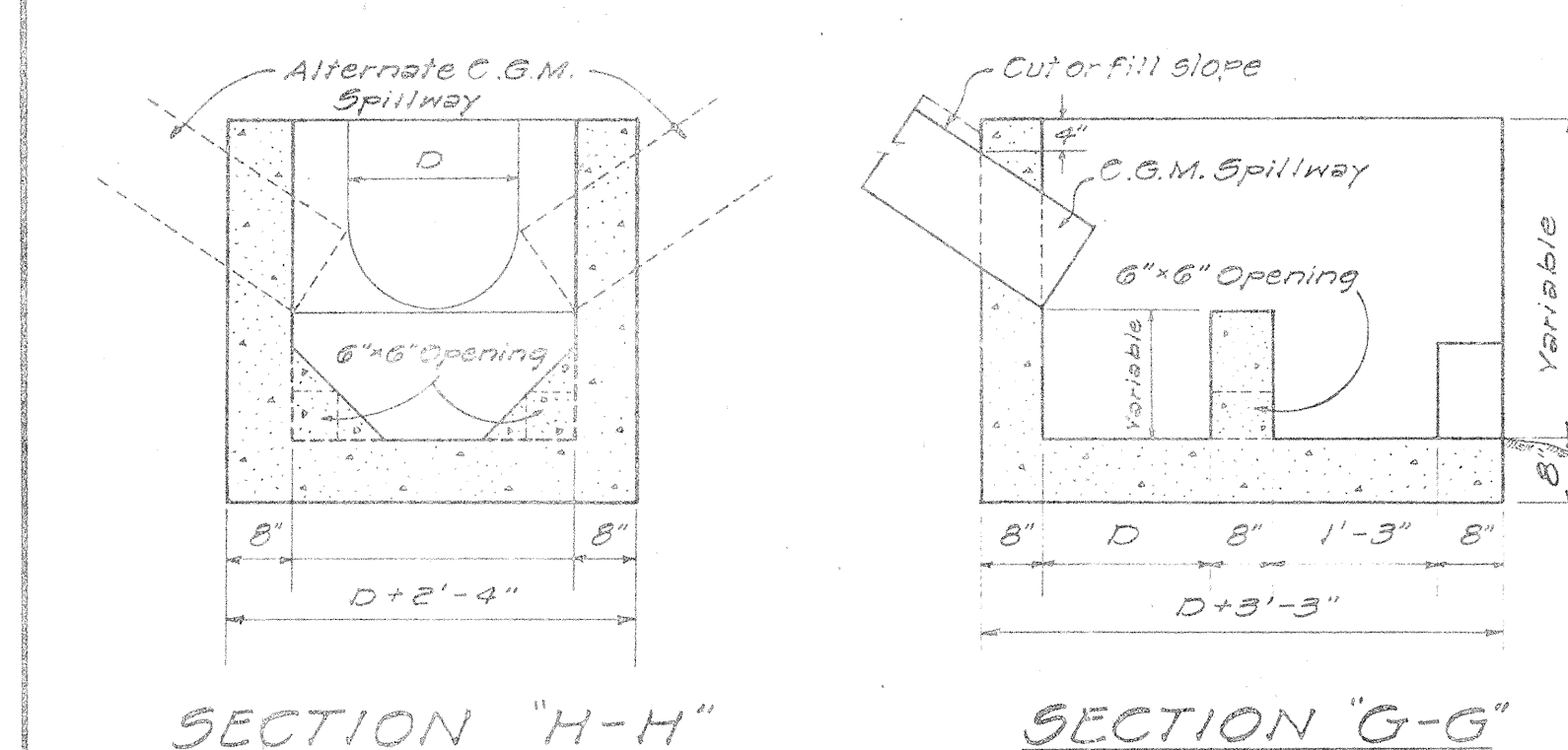
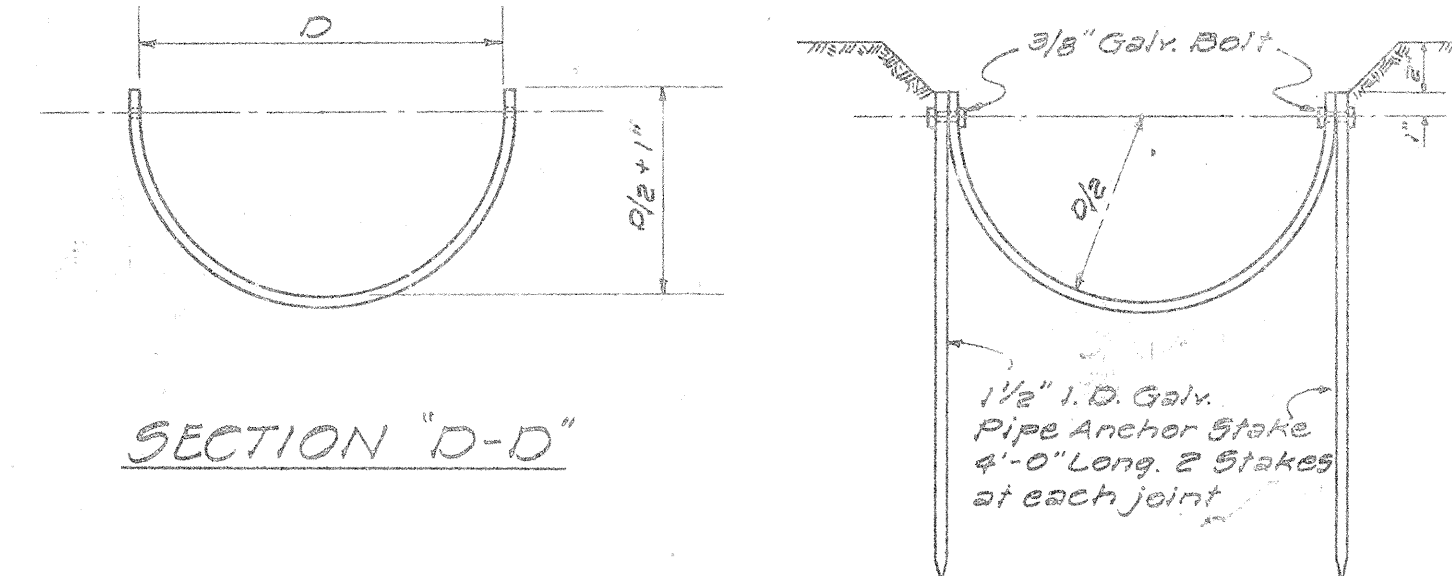
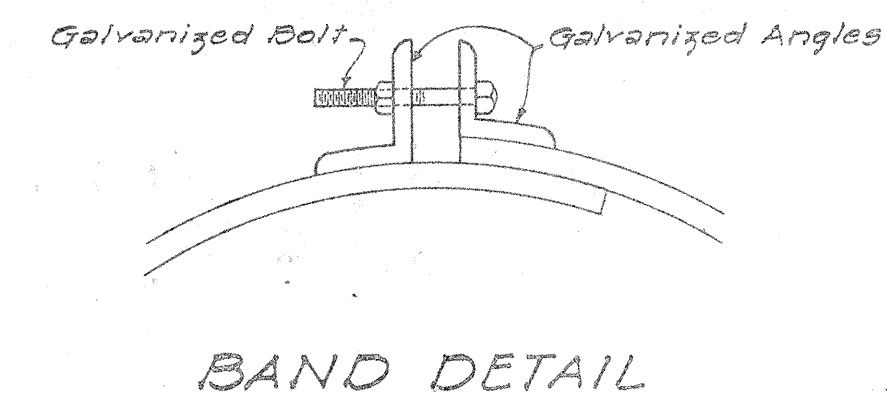
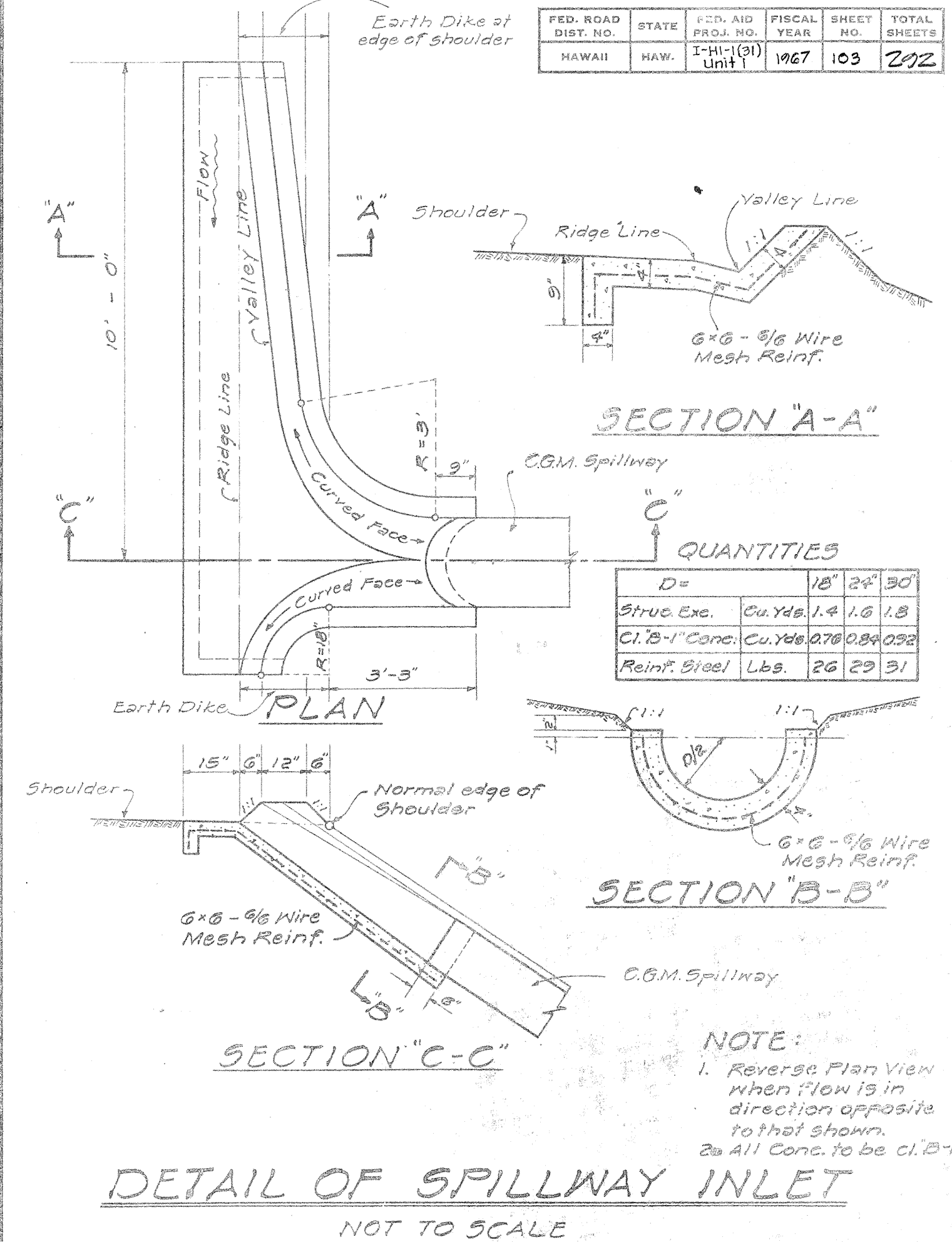
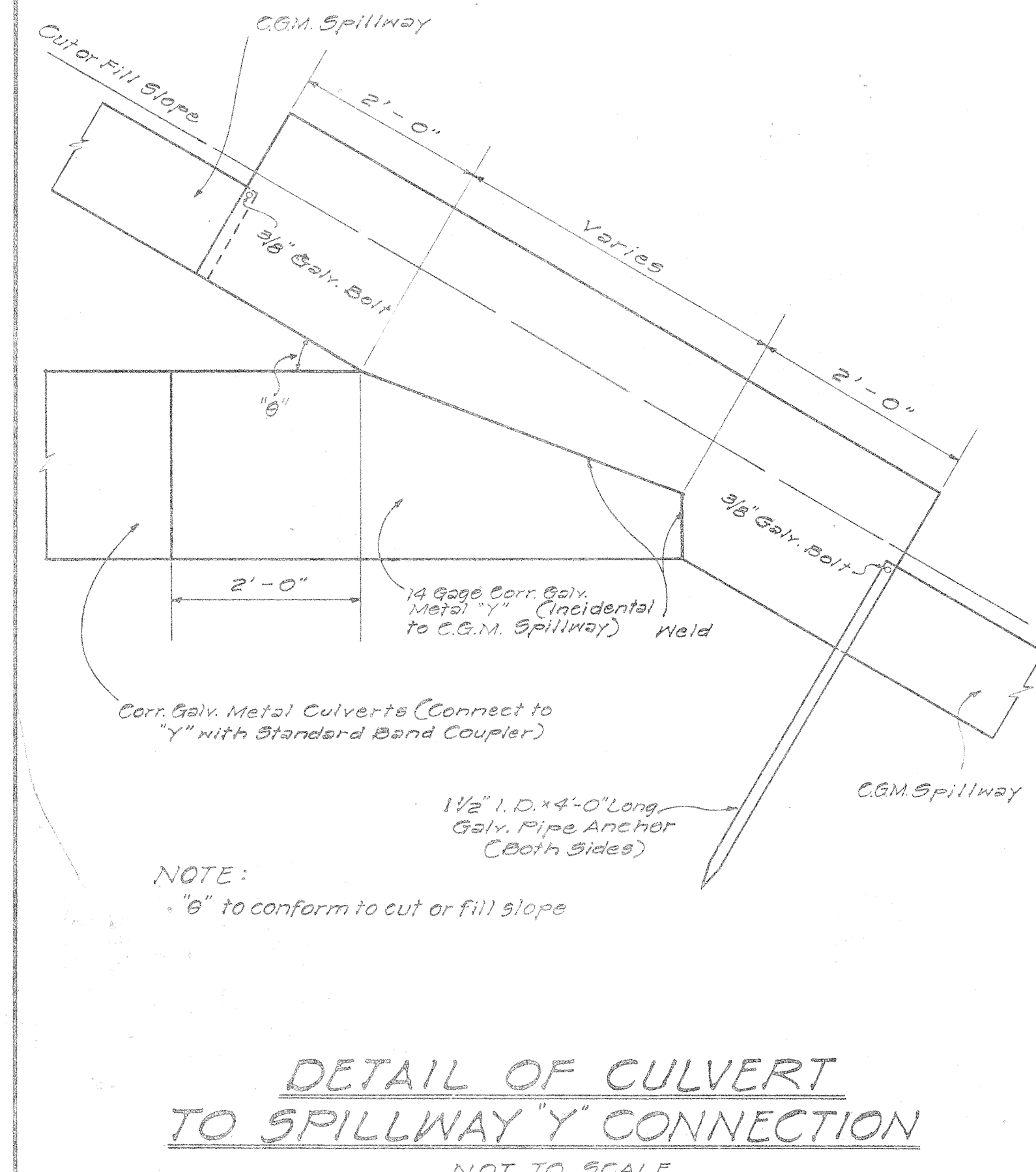
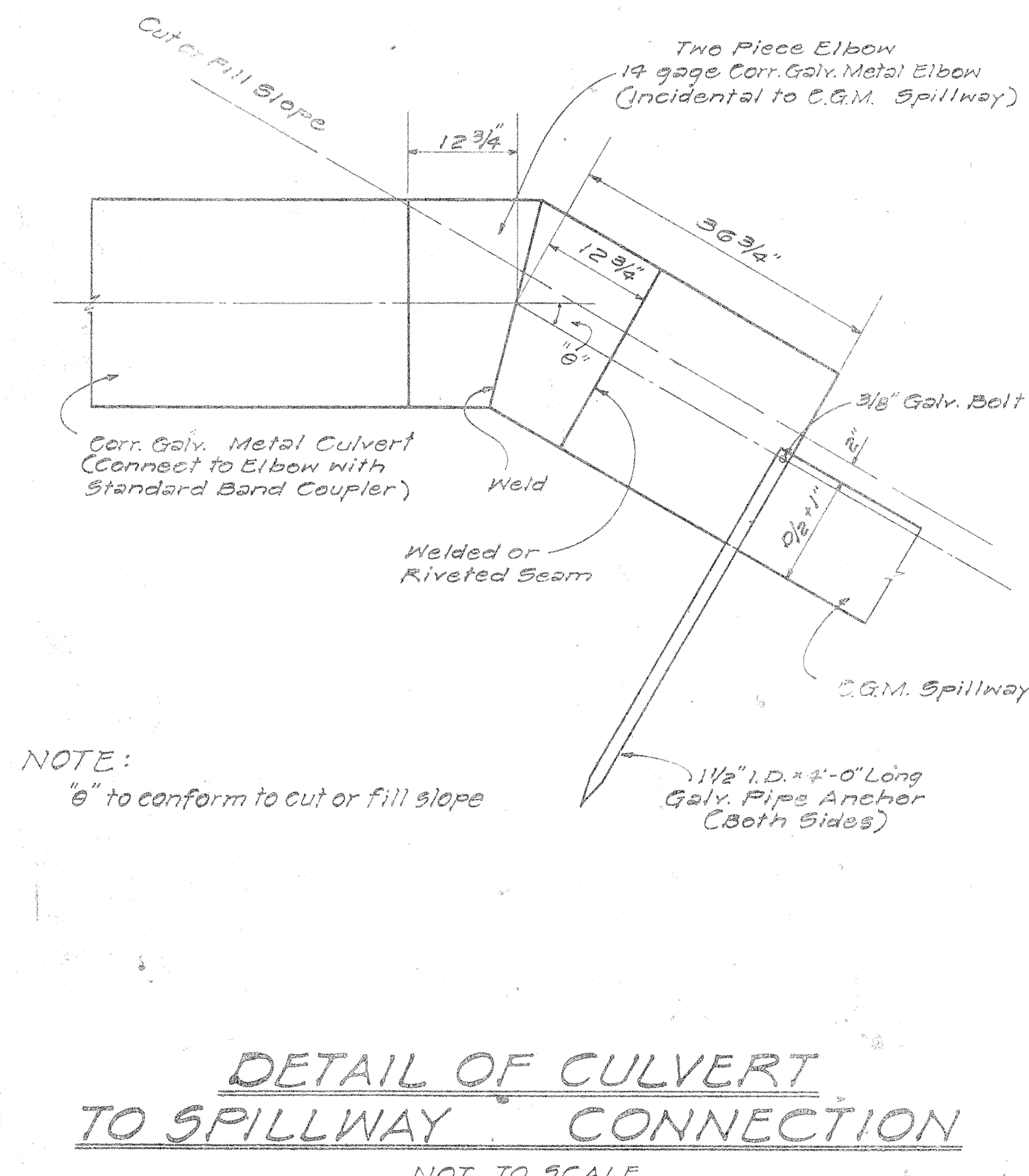
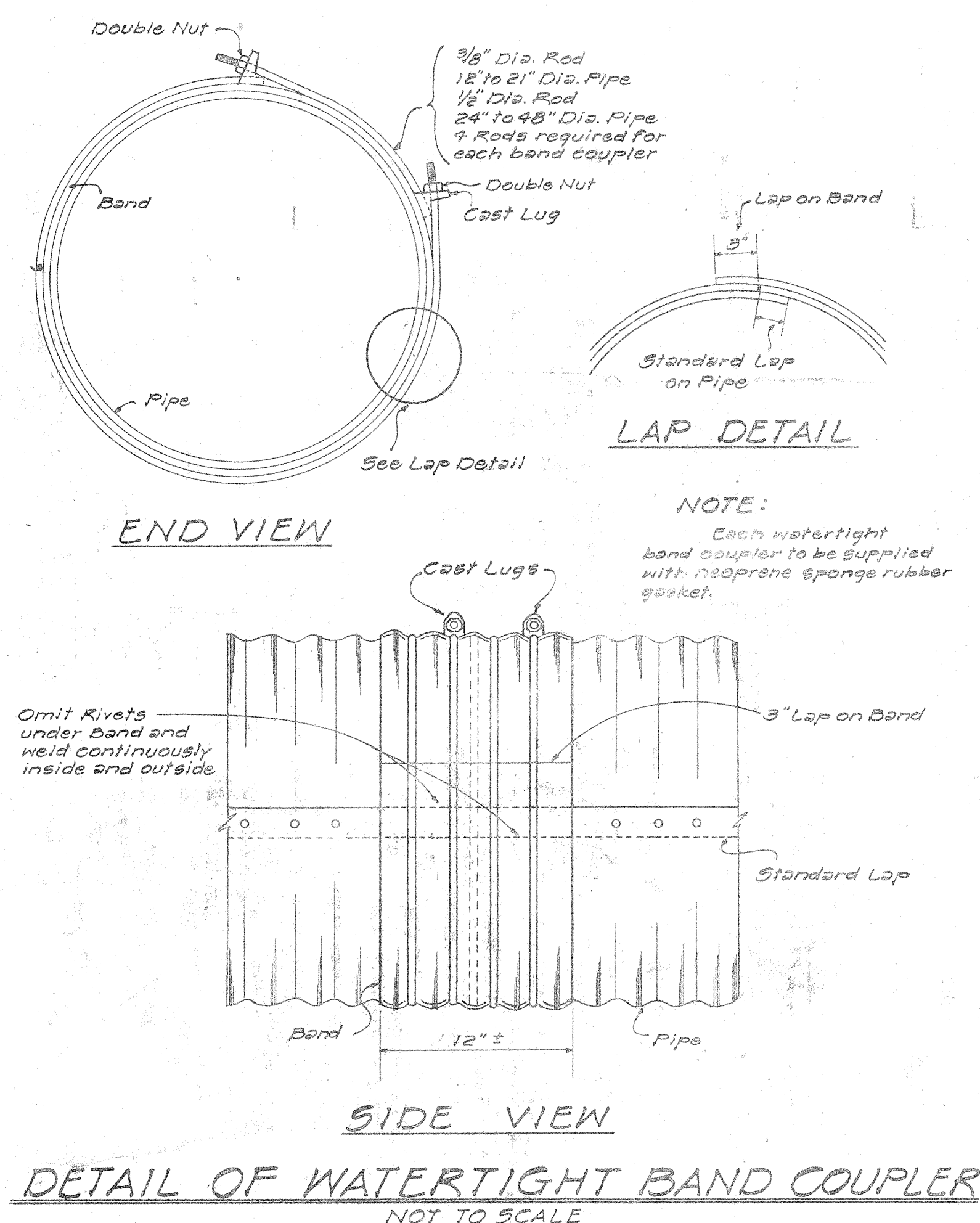
Pele Street to Victoria Street
F.A.I. Proj. No. I-H1-1(31), Unit 1

Scale: As Shown Date: Aug. 1968

SHEET No. OF SHEETS

THIS SHEET IS A SUPPLEMENT
TO THE CONTRACT PLANS.

NOTE: 1- Demolishing and removing a portion or the entire existing structure shall not be paid for separately, but shall be considered incidental to the various contract items.
2- For additional reinforcing around Storm Drain Manhole Opening, see this sheet.



APPROVED: DATE: 8-14-61
DIRECTOR OF TRANSPORTATION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
CORRUGATED GALVANIZED METAL
CULVERTS, SPILLWAYS, AND
SPECIAL DETAILS
SCALES AS NOTED
SHEET NO. D-210F OF 26 SHEETS

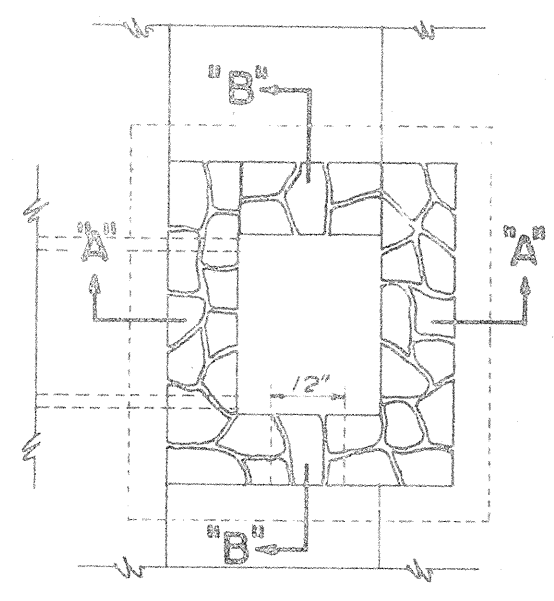
SURVEY PLOTTED BY: DATE: 5-24-61
DRAWN BY: R.Y.
TRACED BY: O.M.
QUANTITIES BY:
CHECKED BY:
ORIGINAL PLAN
NOTE BOOK
No.

D	W	H	T=H+H
18"	24"	2'-0"	4'-0"
24"	30"	2'-0"	4'-6"
30"	30"	2'-6"	5'-0"
36"	36"	3'-0"	6'-0"

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

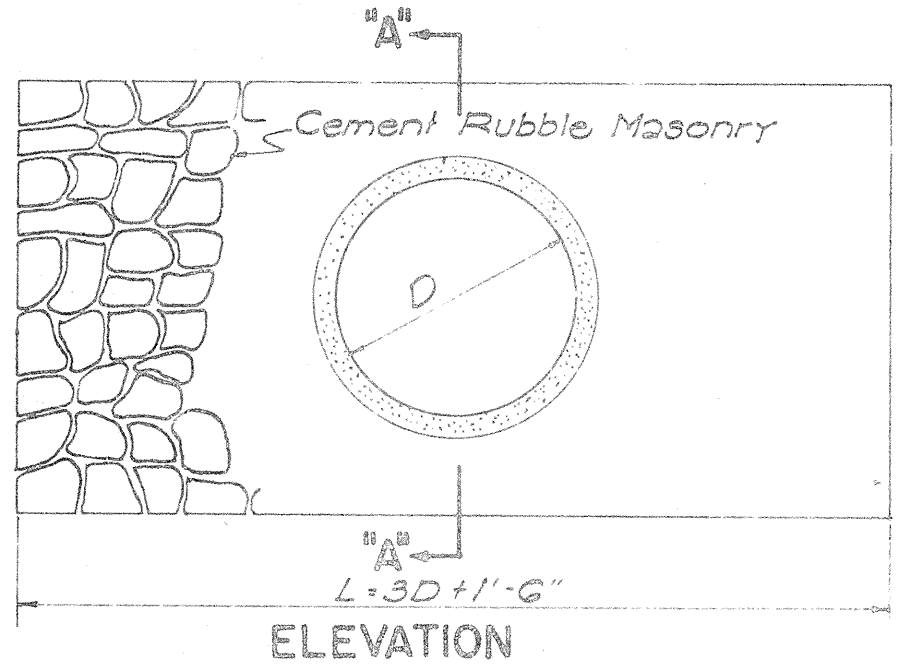
D'	D	L=D+G	Cu Yds.	Where Variables Equal
23"	18"	2'-5"	3.02	4'-6"
30"	24"	3'-0"	3.61	5'-0"
37"	30"	3'-7"	4.21	5'-6"
44"	36"	4'-2"	4.85	6'-0"

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

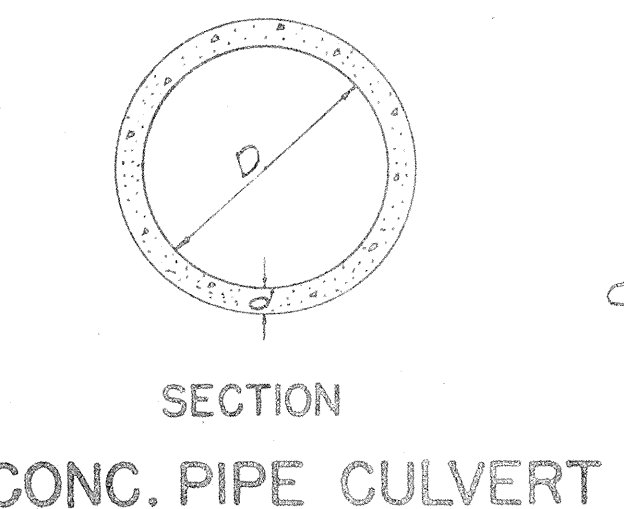


DETAIL OF MASONRY DROP INTAKE
Scale: 3/8" = 1'-0"

D	H	B	L	Cast-in-Place Conc. Culvert Cu Yds.	Conc. Pipe Culvert Cu Yds.	Corrugated Pipe Culvert Cu Yds.
18"	3'-6"	1'-0"	6'-0"	0.85	0.05	0.03
24"	4'-0"	2'-0"	7'-6"	1.28	1.49	1.41
30"	4'-6"	2'-6"	9'-0"	1.83	2.06	2.00
36"	5'-0"	3'-0"	10'-6"	2.49	2.84	2.72



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



CONC. PIPE CULVERT

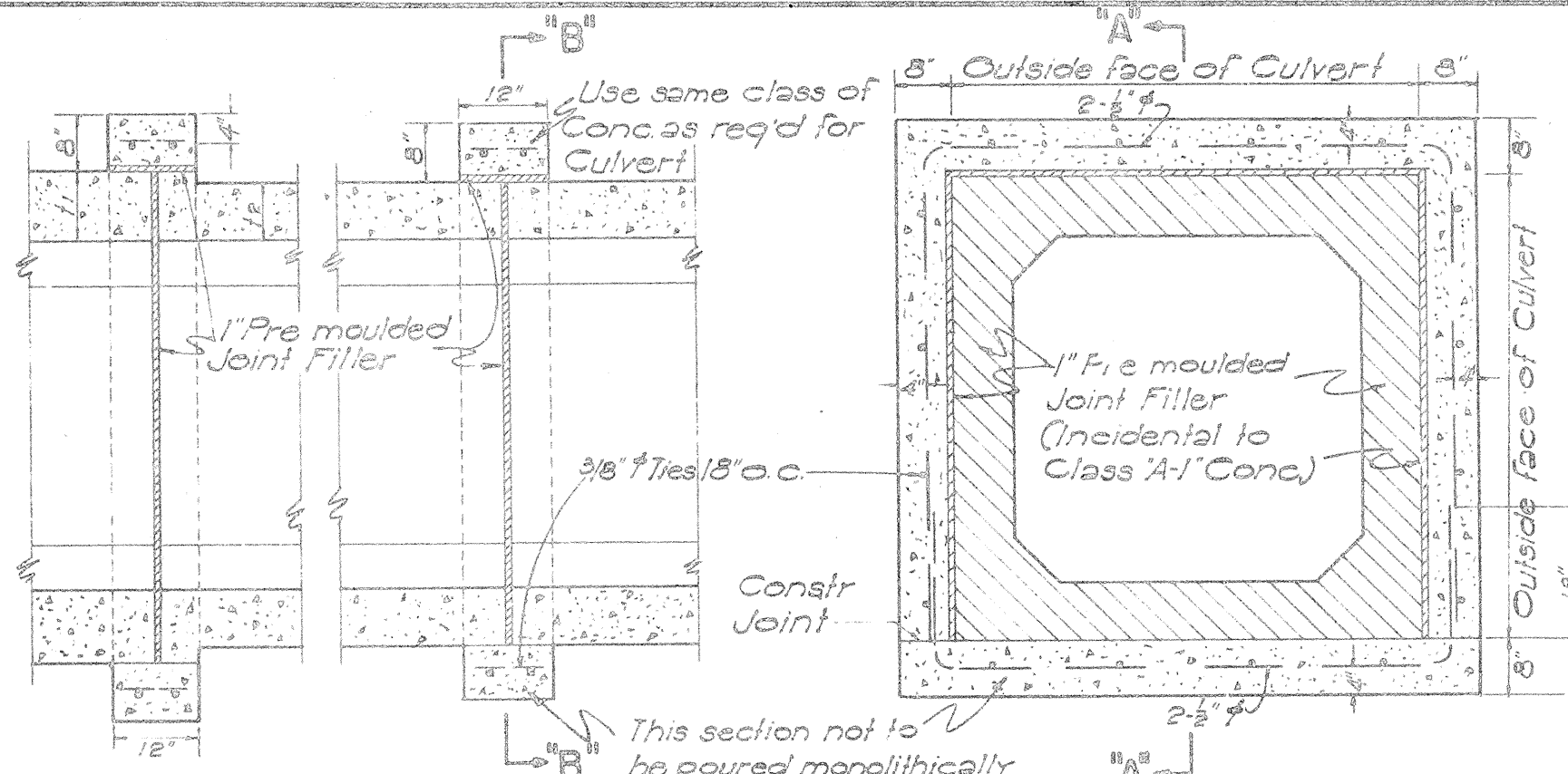
NOTE: Thickness 'd', reinforcing, and concrete used, are to conform with the approved design as provided by the Specifications.

D	d	W	Cu Yds. per ft.
18"	4"	2'-2"	0.11
24"	4 1/2"	2'-2"	0.14
30"	5"	3'-4"	0.19
36"	5 1/2"	3'-11"	0.26

CAST-IN-PLACE CONC. CULVERT

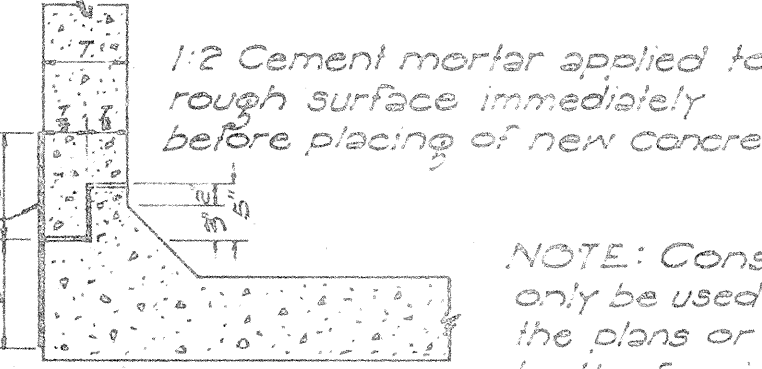
D	B	L	H	Cast-in-Place Conc. Culvert Cu Yds.	Conc. Pipe Culvert Cu Yds.	Steel for One Headwall
18"	1'-0"	6'-0"	4'-0"	0.82	1.00	4 #4 @ 2'-0"
24"	1'-6"	7'-6"	4'-0"	1.25	1.53	4 #4 @ 2'-0"
30"	2'-0"	9'-0"	5'-0"	1.85	2.17	4 #4 @ 2'-0"
36"	2'-6"	10'-6"	5'-6"	2.45	2.74	4 #4 @ 2'-0"
42"	3'-0"	12'-0"	6'-0"	3.07	3.87	4 #4 @ 2'-0"
48"	3'-6"	13'-6"	6'-6"	3.72	4.66	4 #4 @ 2'-0"

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

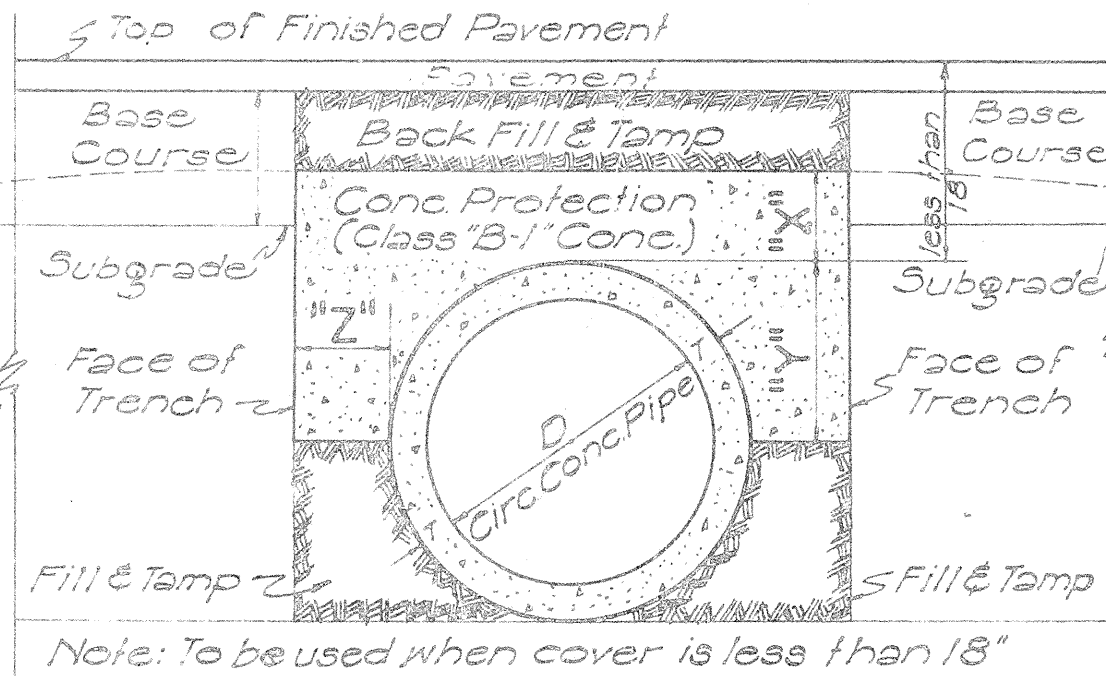


SECTION "A-A" SECTION "B-B"
CONC. COLLAR FOR CONC. BOX CULVERT
Scale: 1/2" = 1'-0"

REINFORCING BARS
All reinforcing bars for concrete shall be Billet Steel bars, ASTM A15, intermediate grade. Steel shall be made by the open-hearth process. All bars shall be deformed type conforming to ASTM A-305.

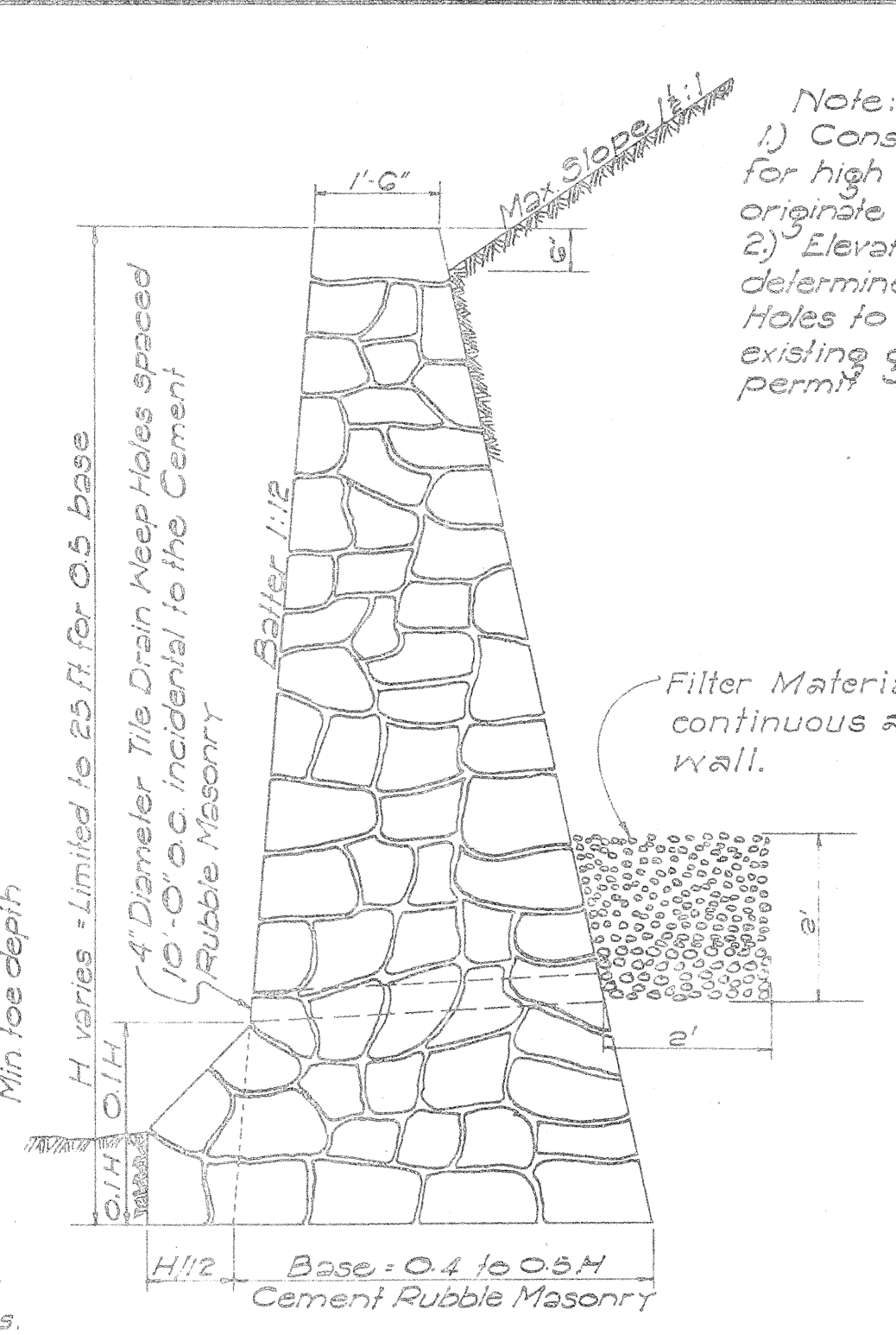


CONSTR. JOINT DETAILS

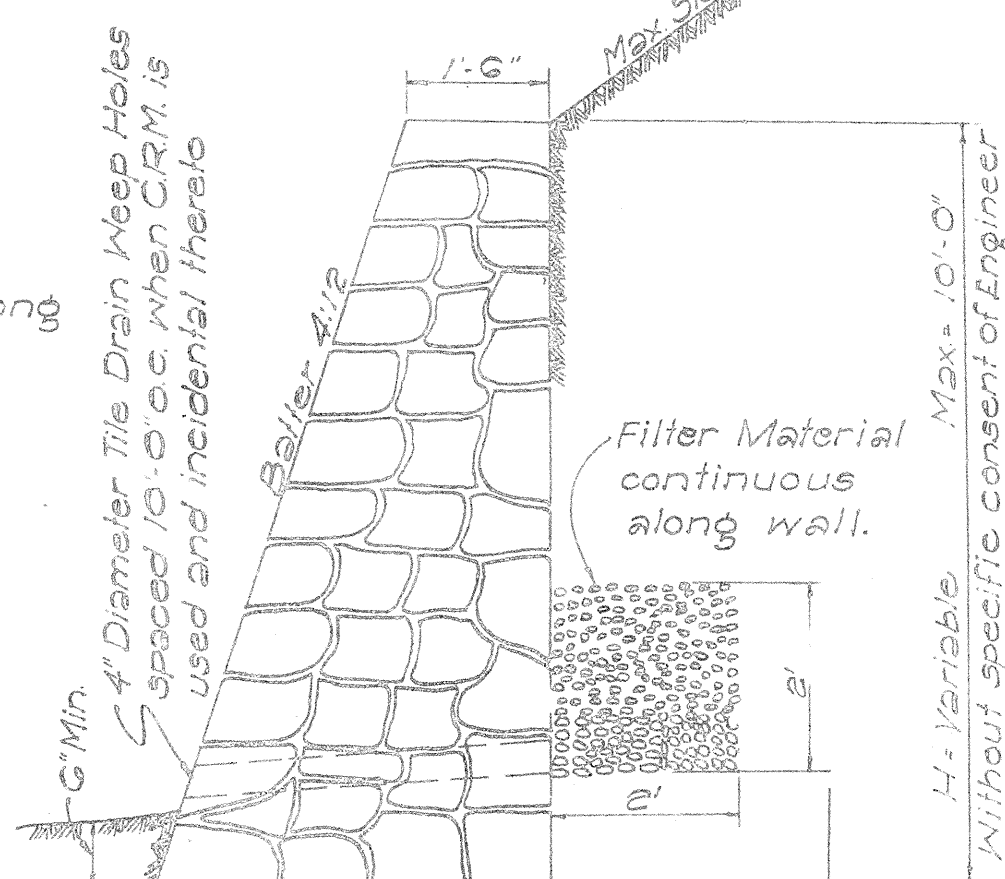


X	Y	Z
6" for 18"D		Z must be from pipe to face of trench
7" " 24"D		
8" " 30"D		
9" " 36"D		
10" " 42"D		
11" " 48"D		
12" " 54"D		

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



SECTION OF HIGH CEMENT RUBBLE MASONRY RETAINING WALL OR SEAWALL

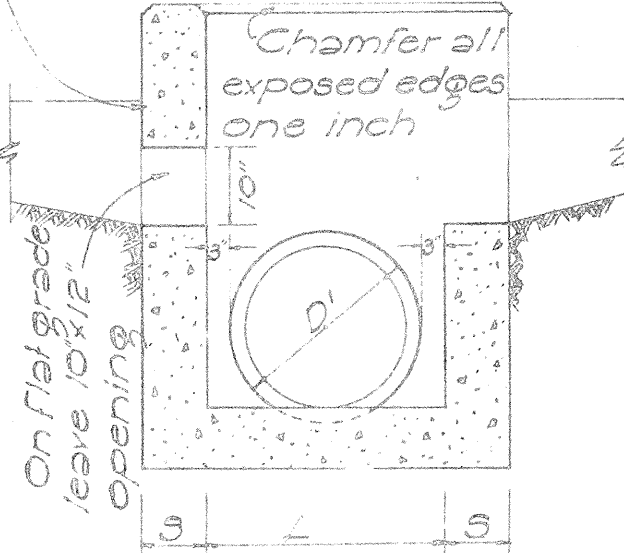


SECTION OF LOW MASONRY RETAINING WALL OR SEAWALL

D	D'	L=D+G	S	Cu Yds.	Where Variables Equal
23"	18"	2'-5"	8	1.41	4'-6"
30"	24"	3'-0"	8	1.72	5'-0"
37"	30"	3'-7"	8	2.32	5'-6"
44"	36"	4'-2"	8	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.

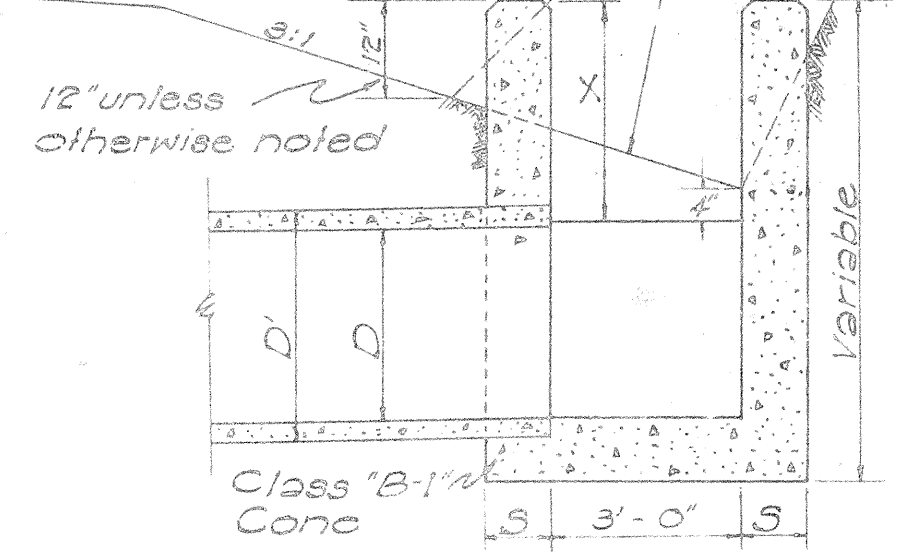
Note: This type of structure shall also be used for the Drop Intakes of Syphons connected with Irrigation Ditches or Flumes with appropriate changes to dimensions. In this case all joints must be made water tight.



SECTION "B-B"

Where drainage comes from both sides lower this wall to same elevation as shown for opposite wall.

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



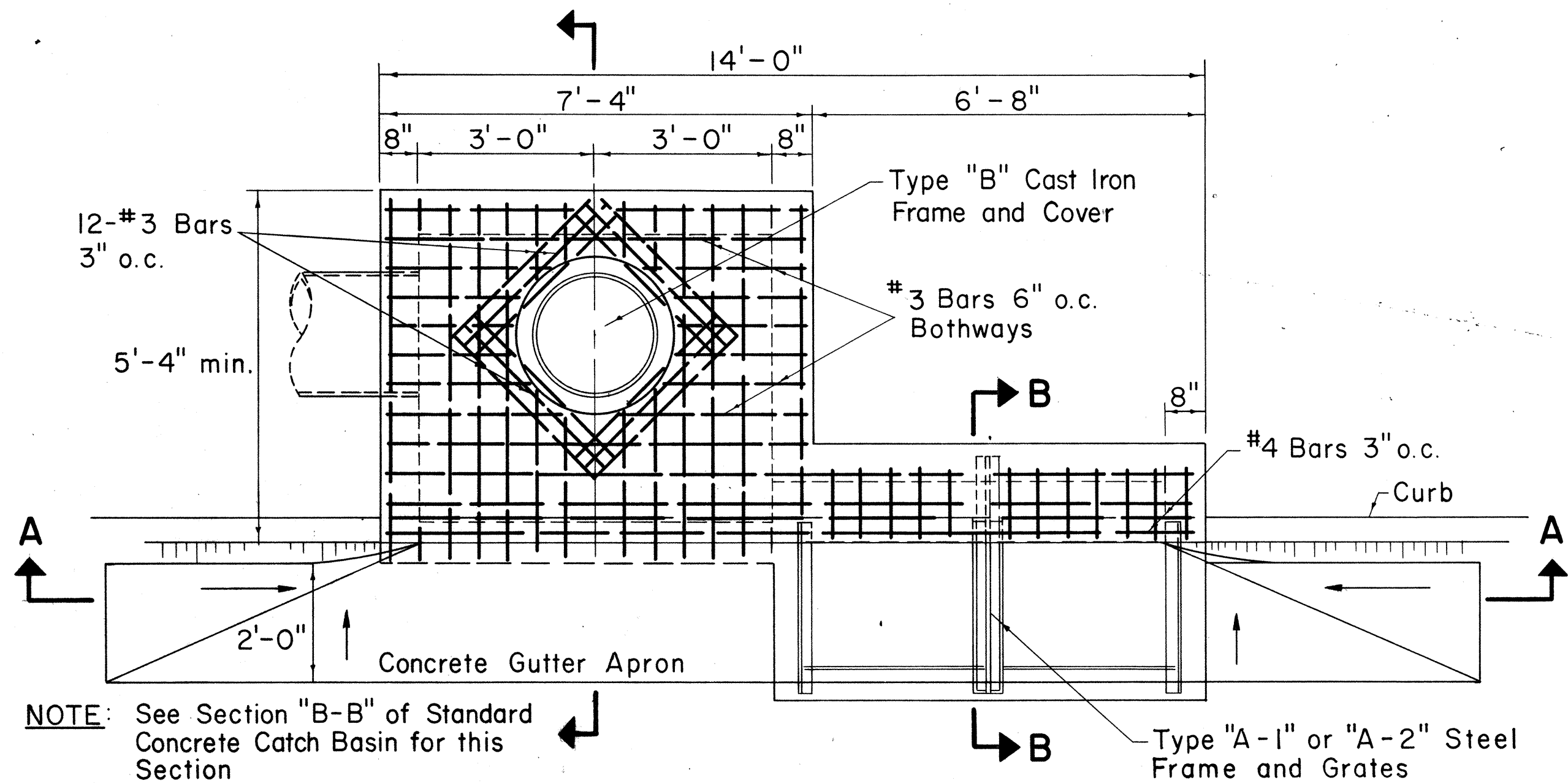
SECTION "A-A"

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

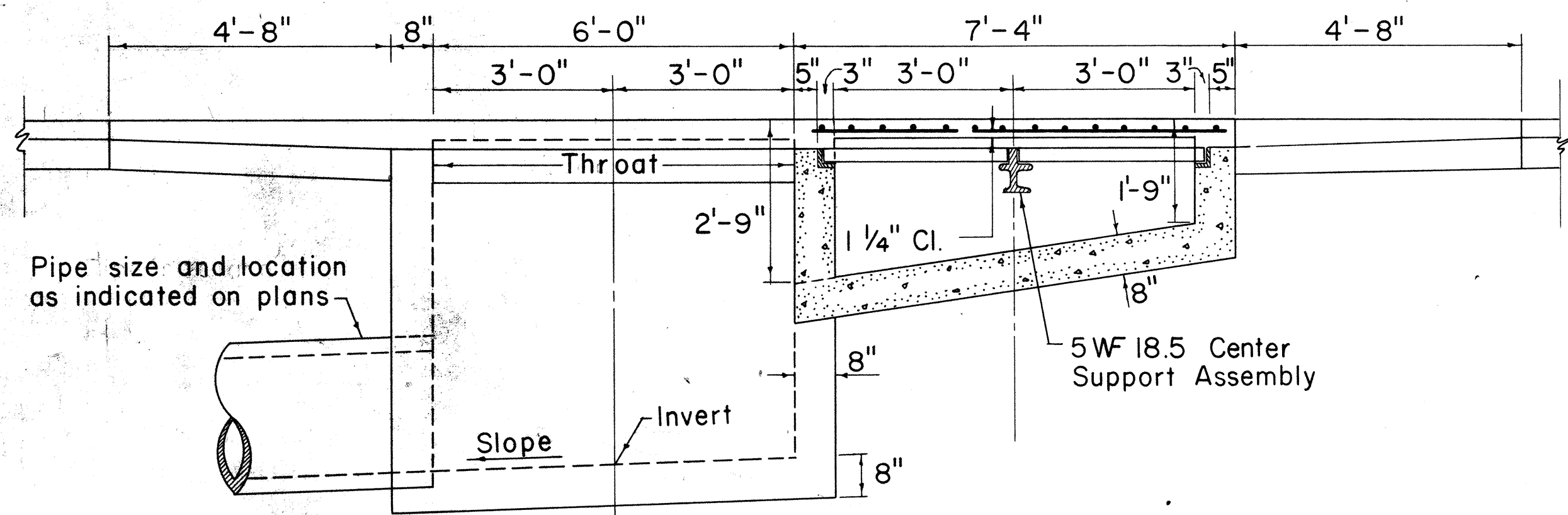
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
DROP INTAKES, RETAINING WALLS, HEADWALLS, CONSTRUCTION JOINTS
SCALES AS NOTED

FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	E-HI-1(91), Unit 1	1967	106	292

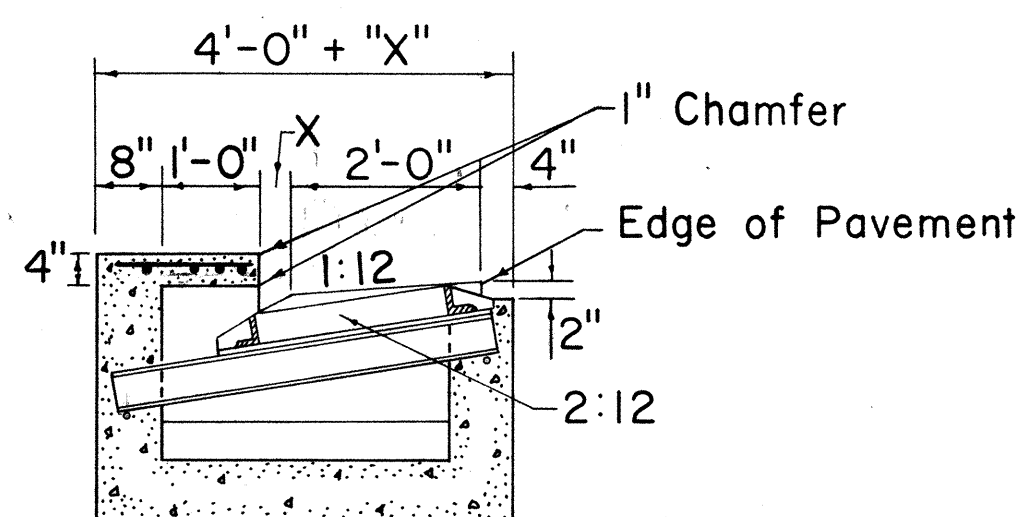
Revised: Jan. 25, 1967



PLAN



SECTION A-A

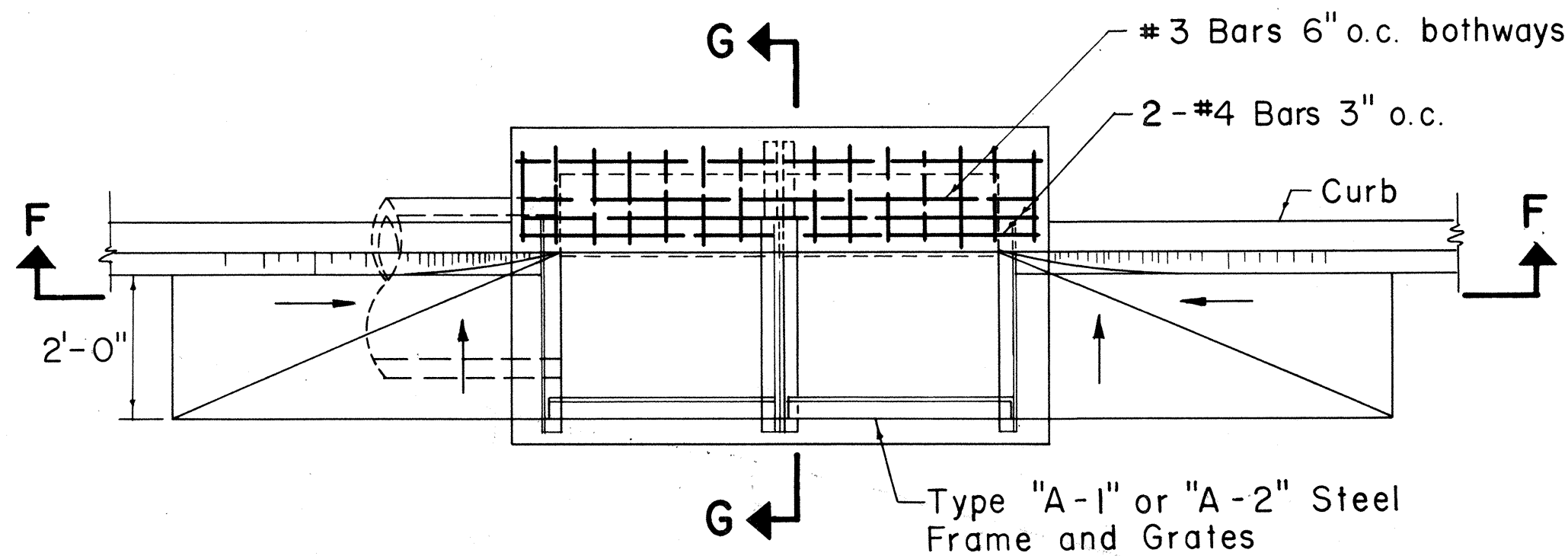


SECTION B-B

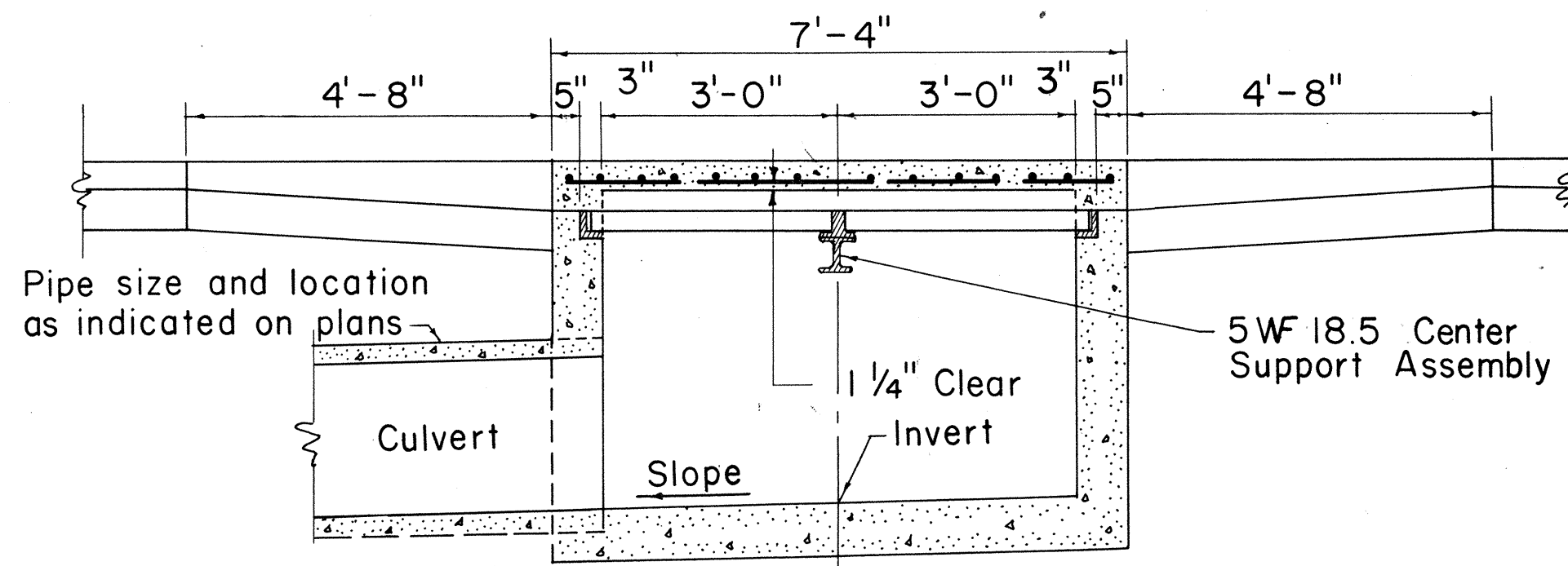
DETAIL OF TYPE "CG" CATCH BASIN

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

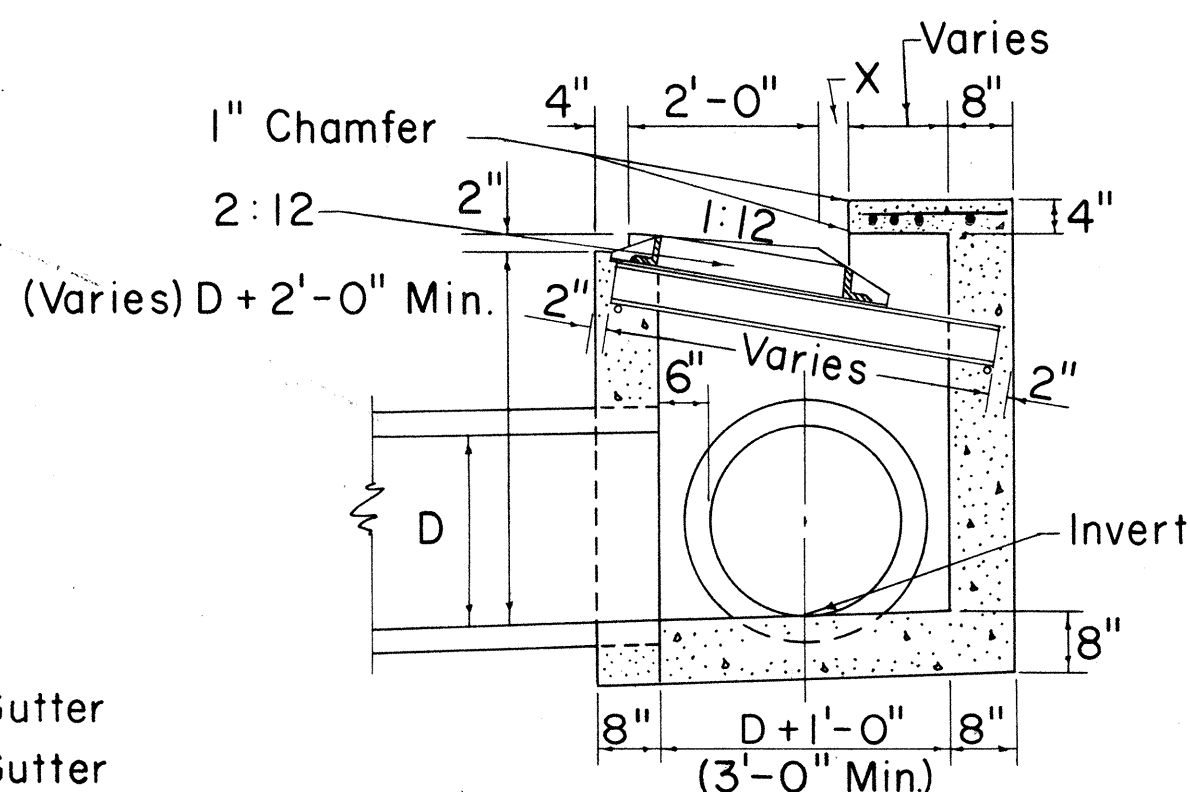
NOTE:
X = 4" For Type "AG" Curb and Gutter
X = 9" For Type "EG" Curb and Gutter
X = 1" For Type "DG" Curb and Gutter



PLAN



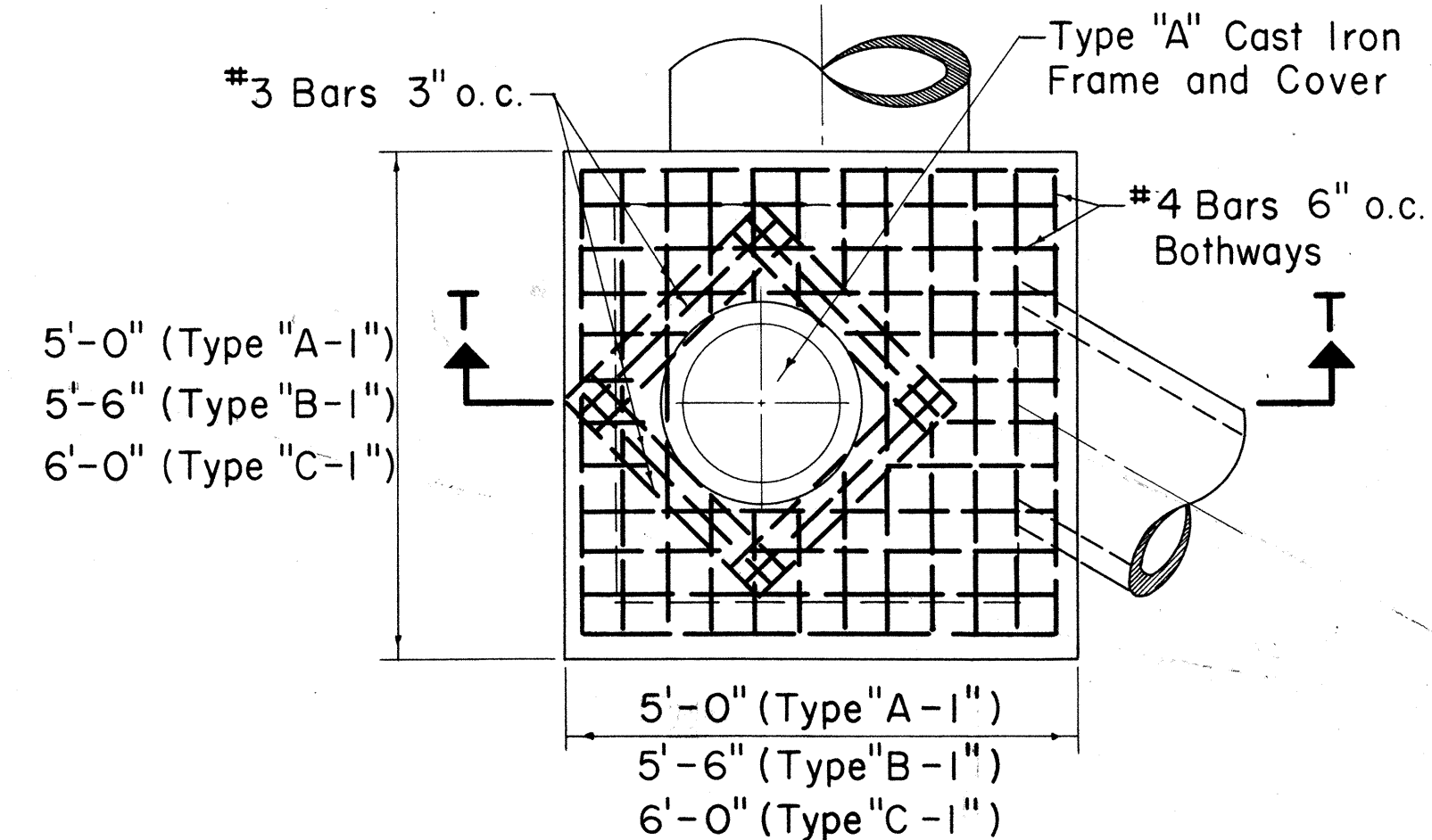
SECTION F-F



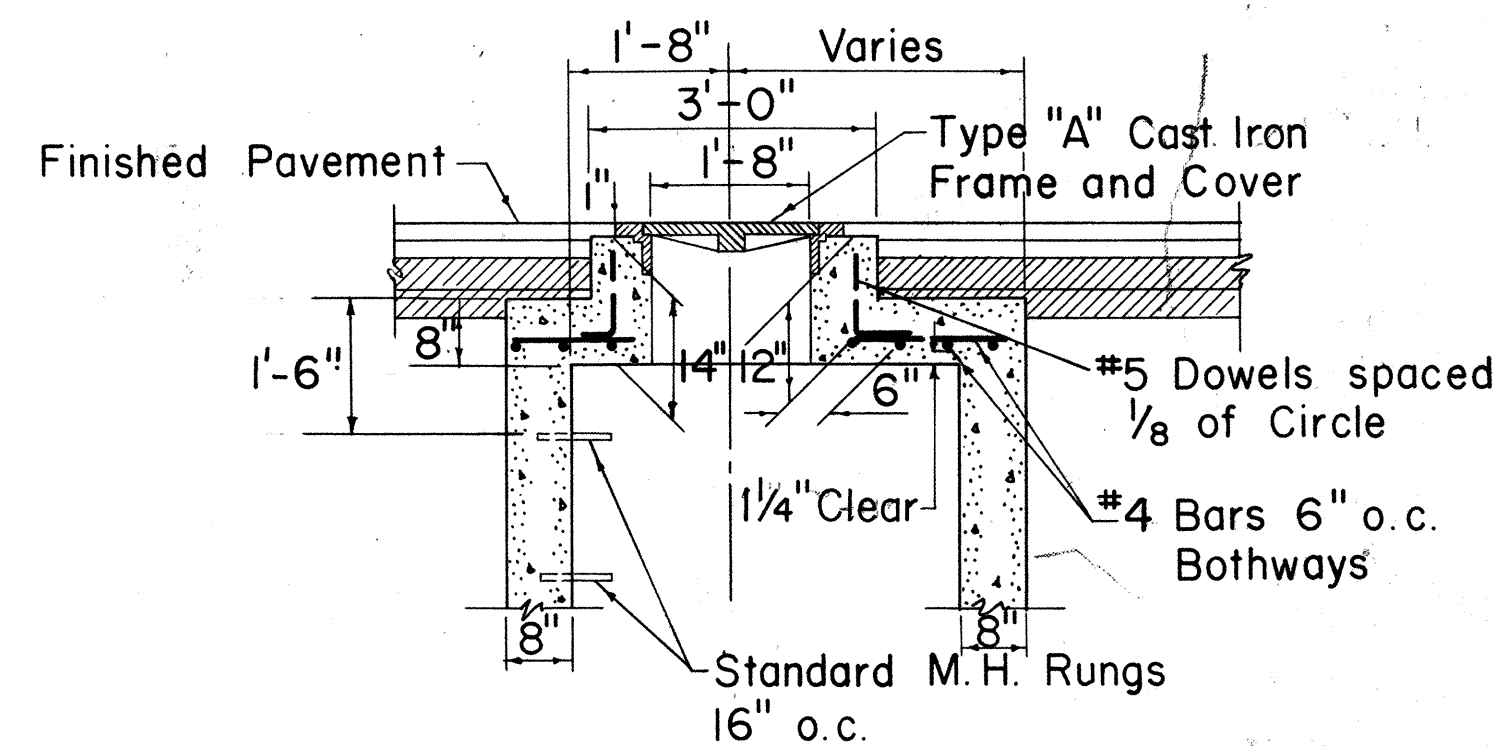
SECTION G-G

DETAIL OF TYPE "DG" CATCH BASIN

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



PLAN



SECTION T-T

TYPE "A-I," "B-I," & "C-I"
STORM DRAIN MANHOLE
TOP DETAIL UNDER PAVEMENT
(BOTTOM DETAIL SIMILAR TO TYPE "A," "B," & "C")

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

APPROVED:

DIRECTOR OF TRANSPORTATION DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

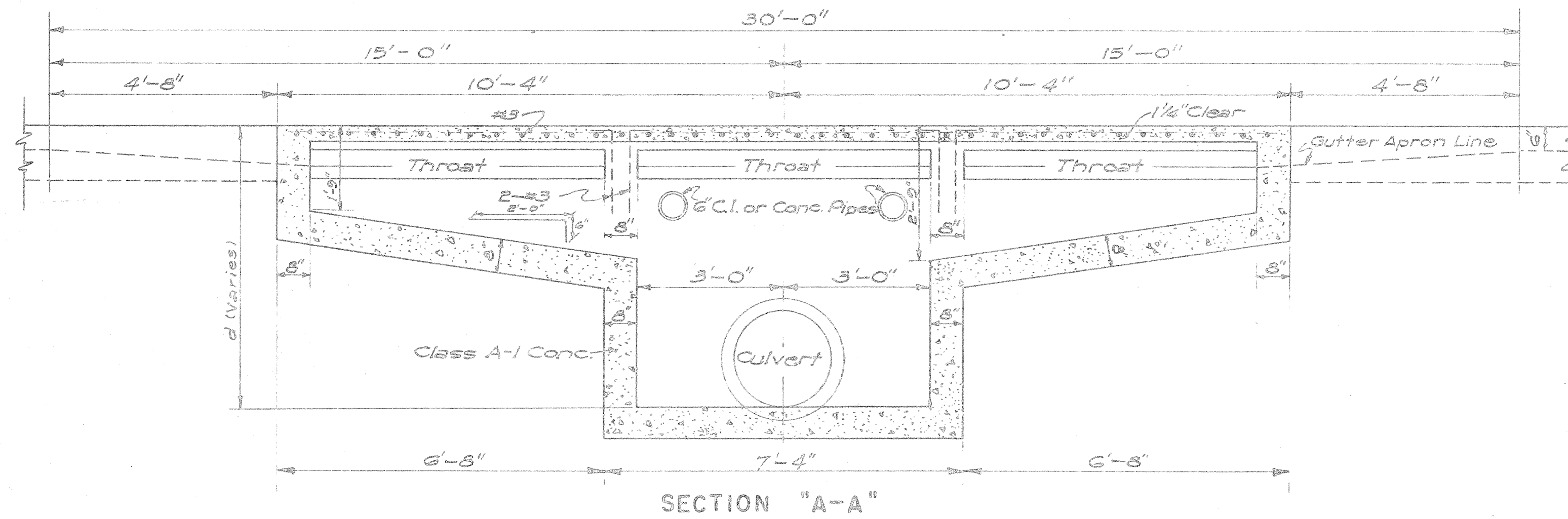
CATCH BASINS AND
STORM DRAIN MANHOLES

Scales: As Noted Date

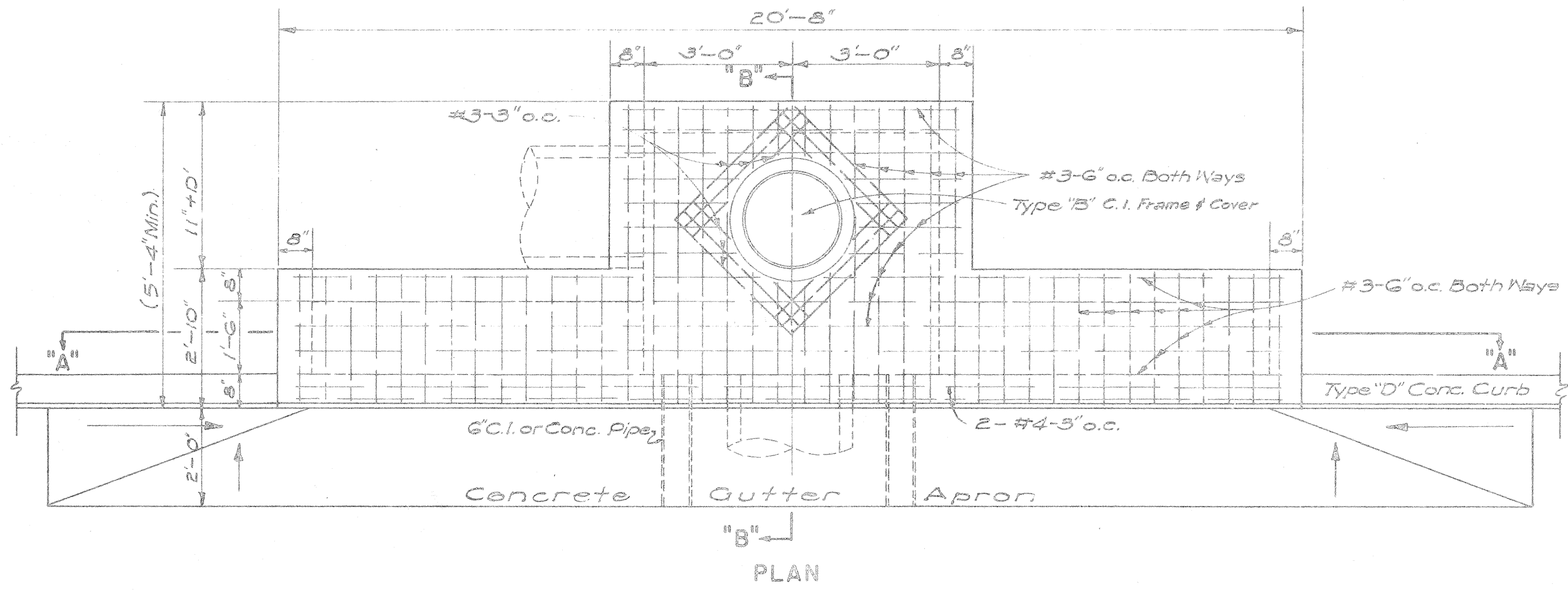
SHEET NO. 106 OF 292 SHEETS

2/17/99

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		CHI-181	1997	107	292

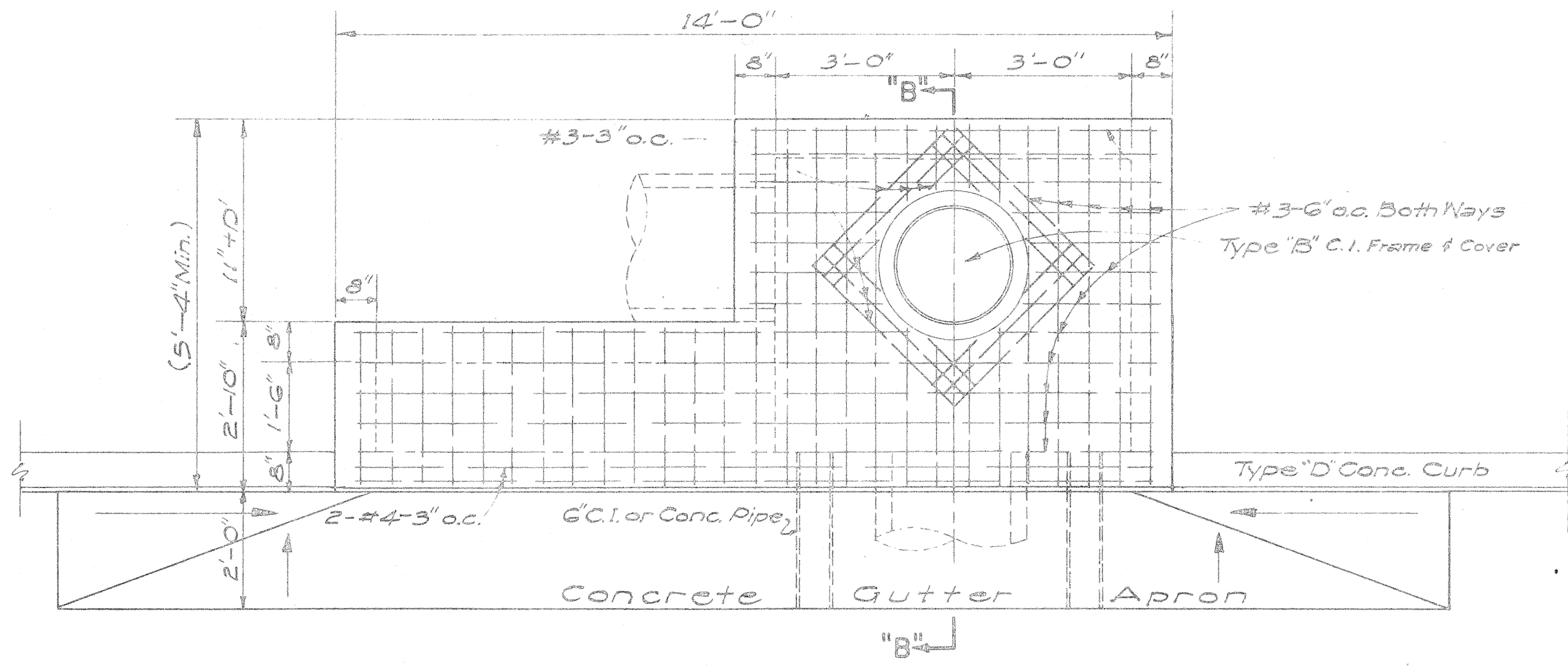


SECTION "A-A"



PLAN

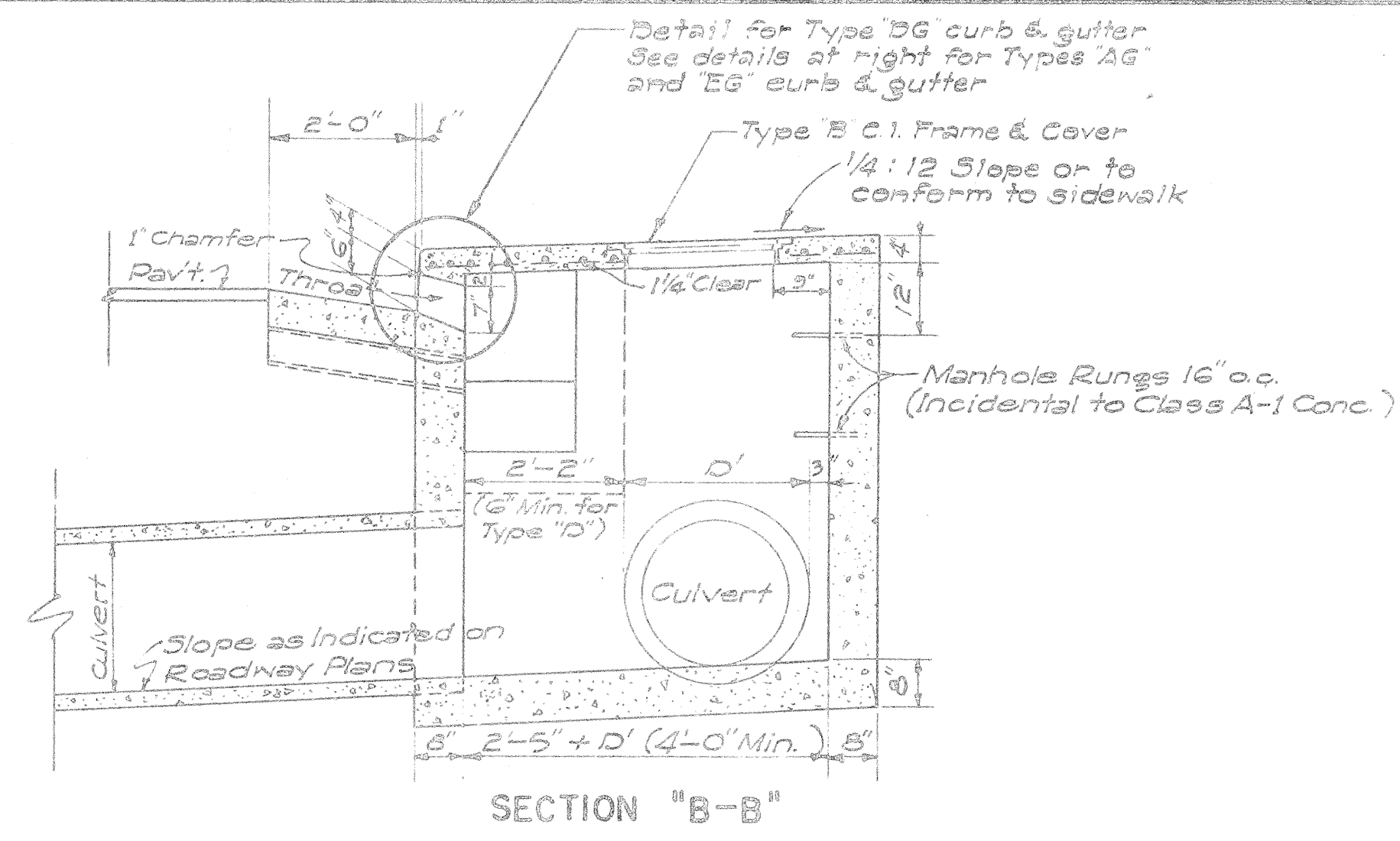
DETAIL OF TYPE "A" CATCH BASIN
SCALE: 1/2" = 1'-0"



PLAN

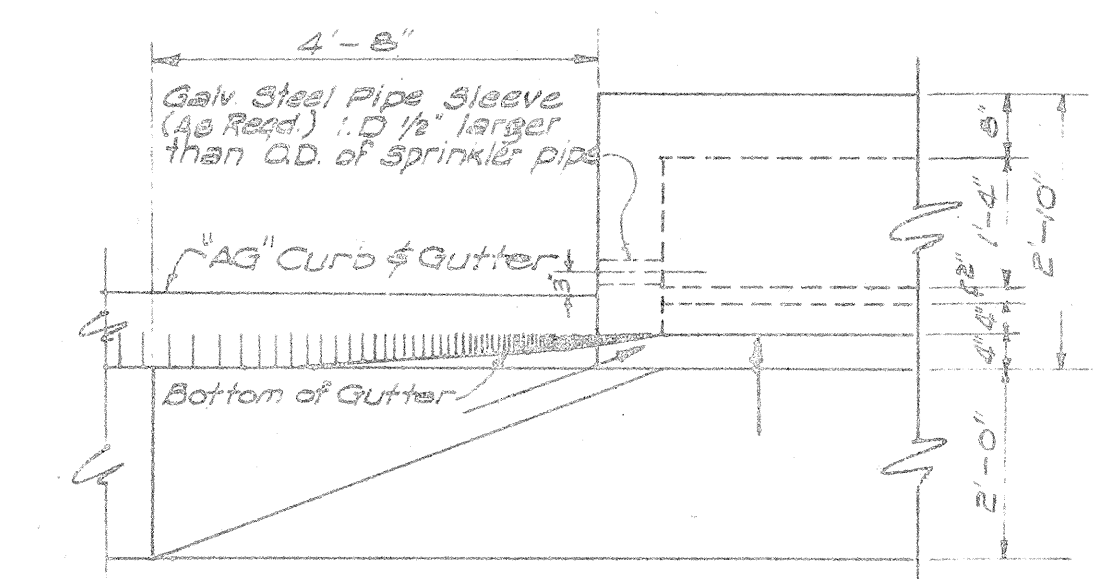
DETAIL OF TYPE "B" CATCH BASIN
SCALE: 1/2" = 1'-0"

NOTE: TYPE "C" C.B. SIMILAR BUT OPPOSITE HAND

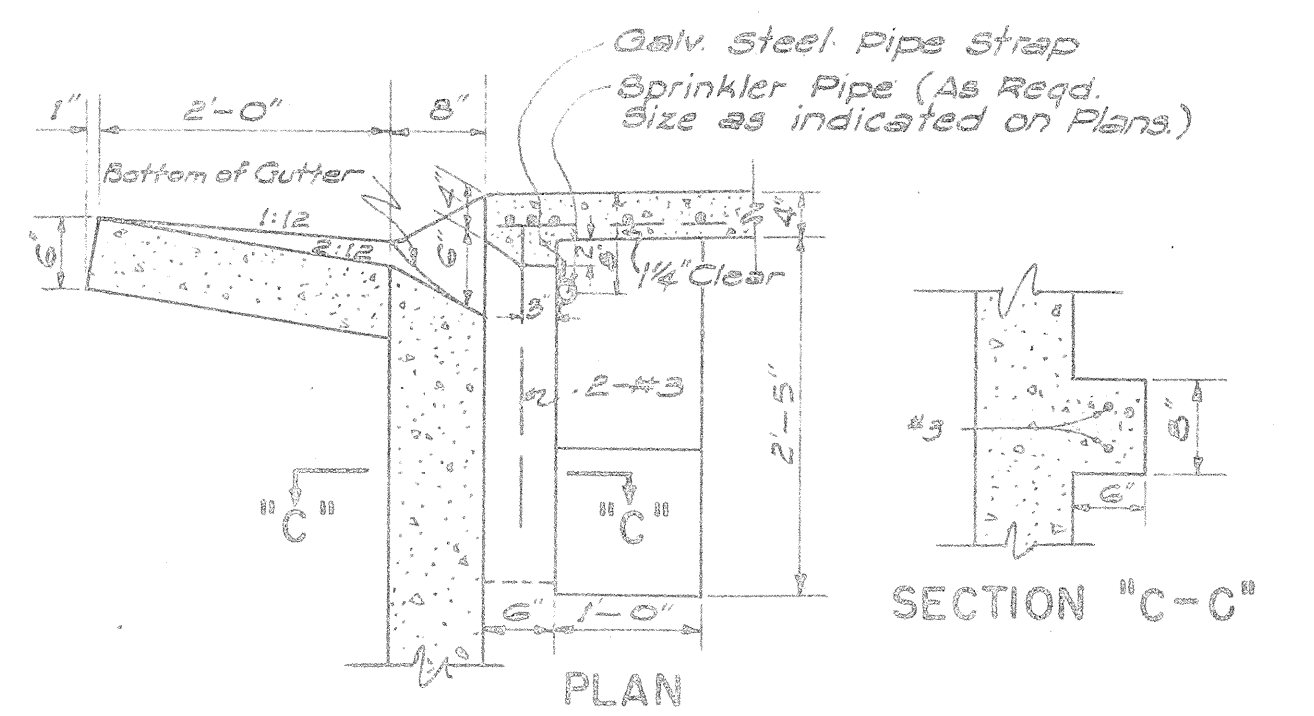


SECTION "B-B"

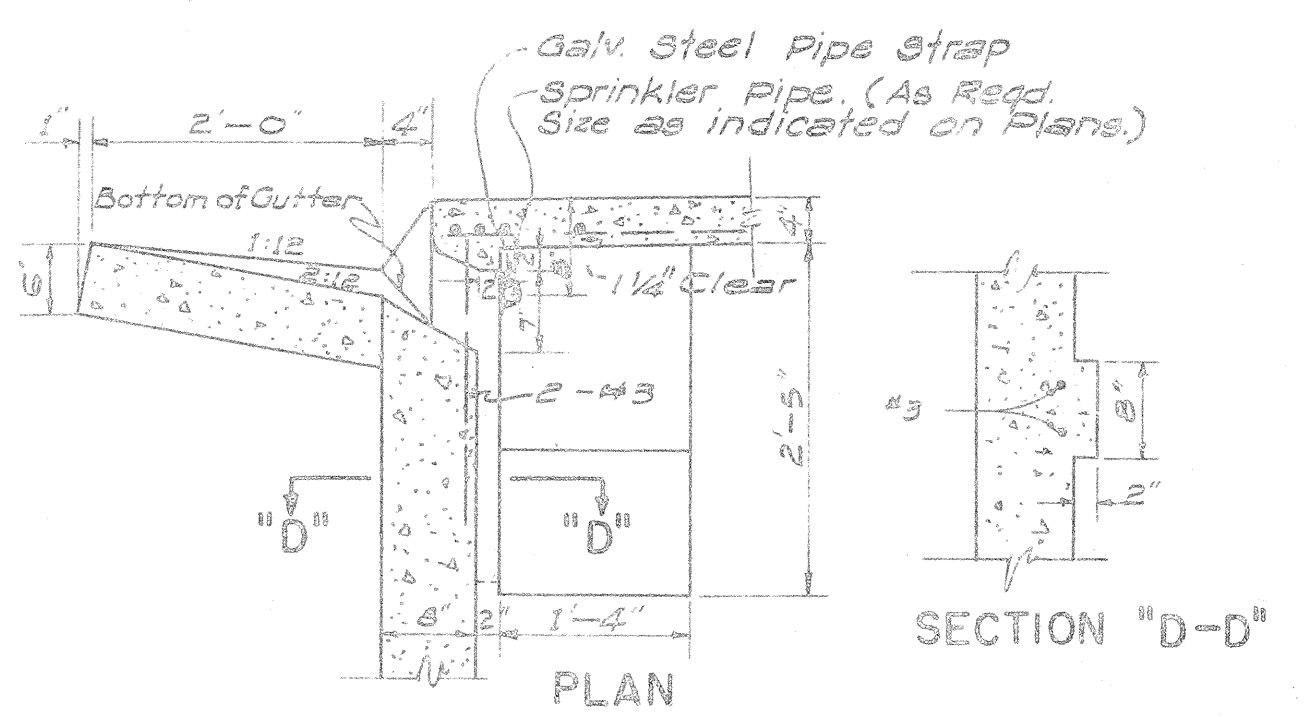
DETAIL OF CATCH BASIN WITH TYPE "EG" CURB & GUTTER



DETAIL OF CATCH BASIN WITH TYPE "AG" CURB & GUTTER
SCALE: 1/2" = 1'-0"



THROAT DETAIL FOR TYPE "EG" CURB & GUTTER
SCALE: 3/4" = 1'-0"



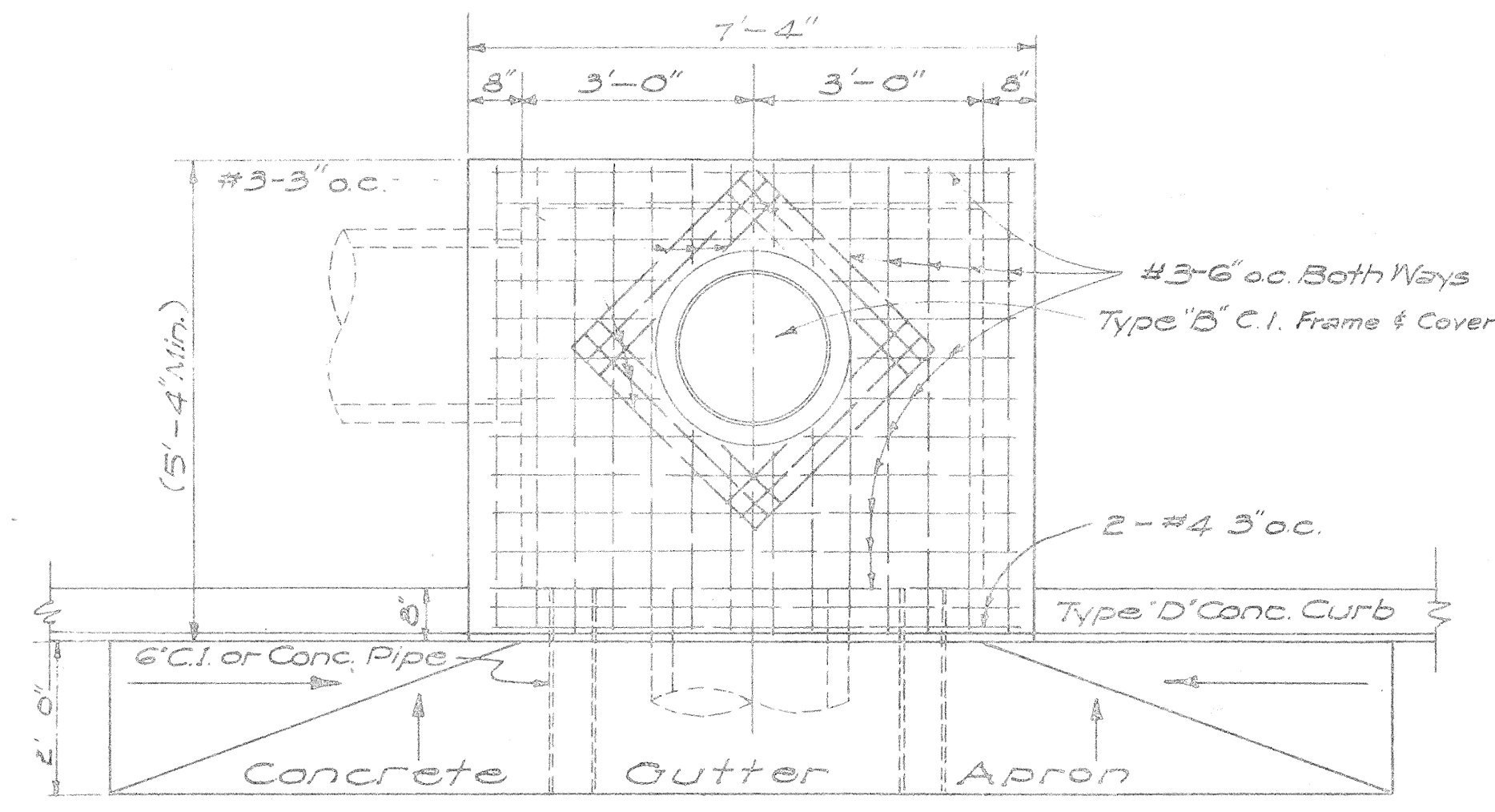
THROAT DETAIL FOR TYPE "AG" CURB & GUTTER
SCALE: 3/4" = 1'-0"

ESTIMATED QUANTITIES

Type	Class A-1 Conc.	Struct. Exc.	Reinf. Steel	Gutter Length
"A"	7.5 cy	24.7 cy	145 lb.	30'-0"
"B"	6.0 cy	21.5 cy	108 lb.	23'-4"
"C"	6.0 cy	21.5 cy	108 lb.	23'-4"
"D"	4.9 cy	16.5 cy	77 lb.	16'-8"

NOTES:

- Quantities based on d = 5.75' and D = 30"
- Quantities do not include concrete for Gutter Apron.
- The Contractor shall install two 6" Cast Iron or Concrete Pipes as incidental to Class A-1 Concrete for Construction Drainage.
- Culvert shall leave C.B. from any position and any direction indicated by plans or ordered by the Engineer. Culvert may both enter and leave C.B. so that C.B. will also act as Manhole.
- The Contractor shall install Galvanized Steel Pipe Sleeves and Straps as incidental to Sprinkler System.



DETAIL OF TYPE "D" CATCH BASIN
SCALE: 1/2" = 1'-0"

APPROVED: DATE: Aug 26, 1999
STATE HIGHWAY ENGINEER

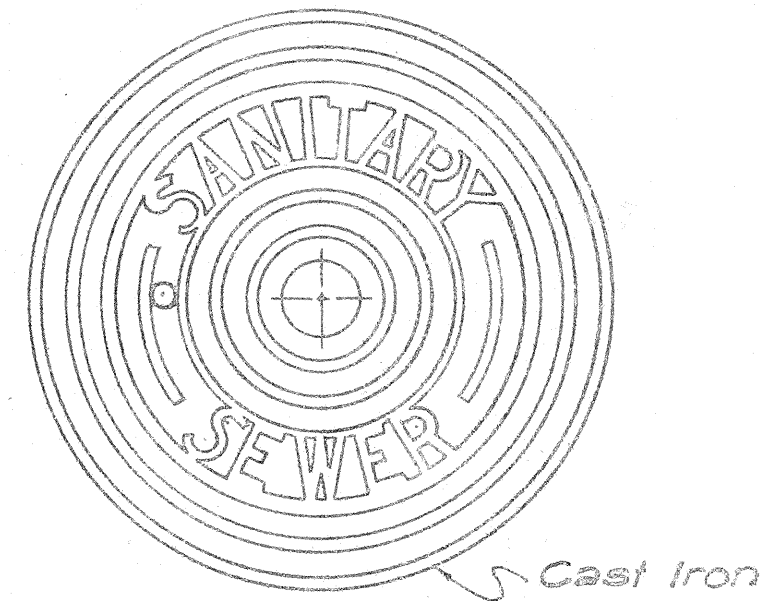
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
CATCH BASINS
SCALES AS NOTED
SHEET NO. 250 OF 260 SHEETS

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

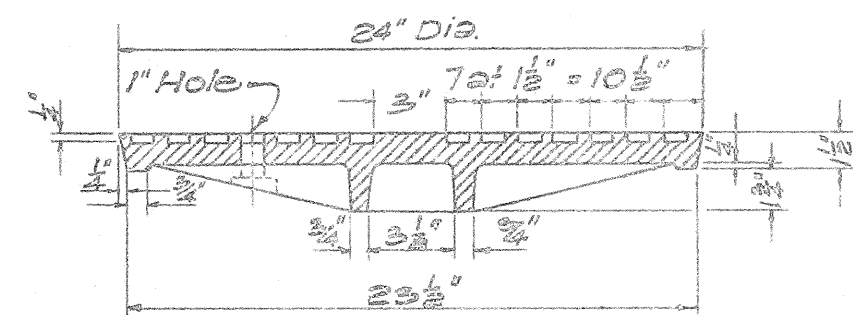
2/17/57
8/4/50

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		I-H-1(90) UNIT 1	1967	108	292
August 1957					

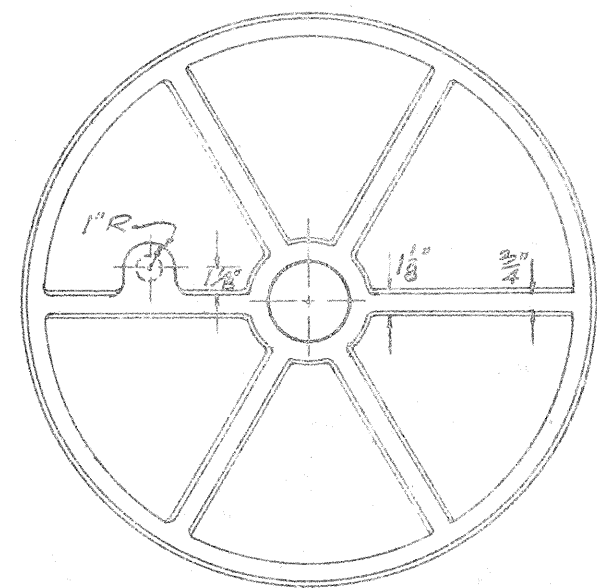
NOTE: Stock Pattern From Novelty Foundry ~ Honolulu



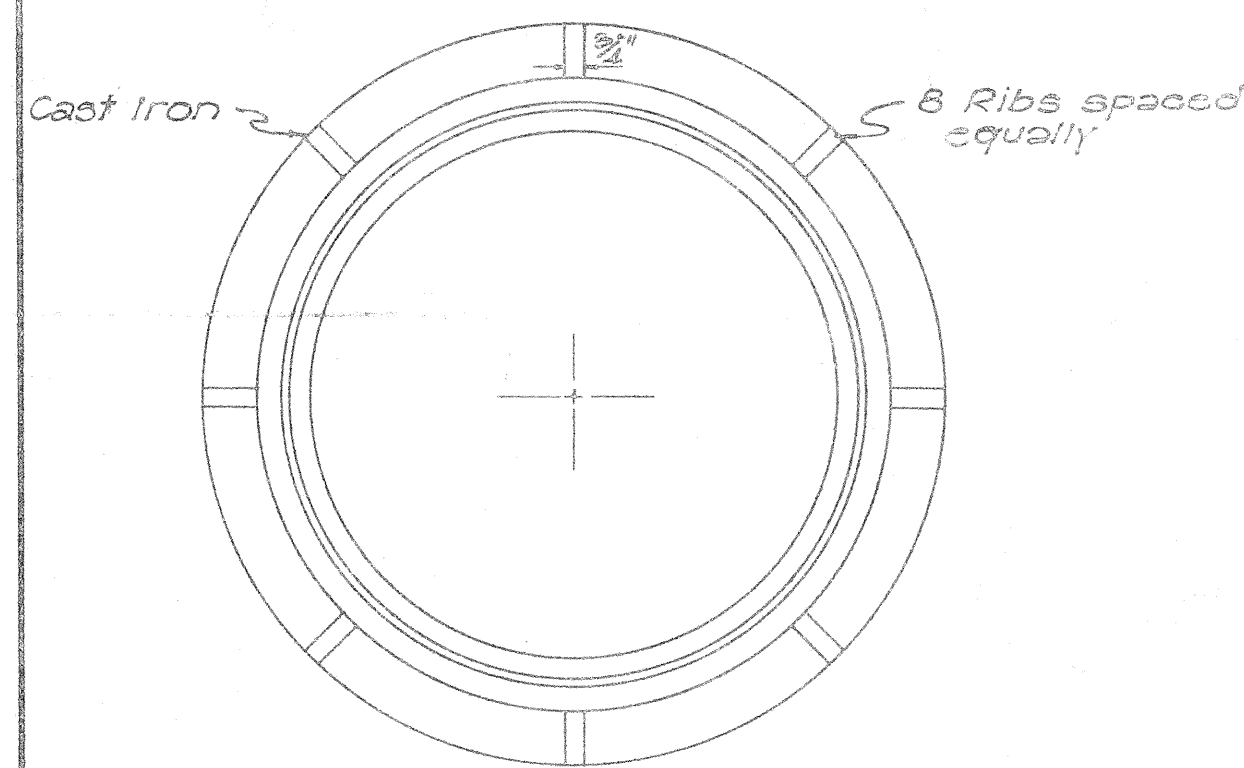
TOP VIEW OF COVER



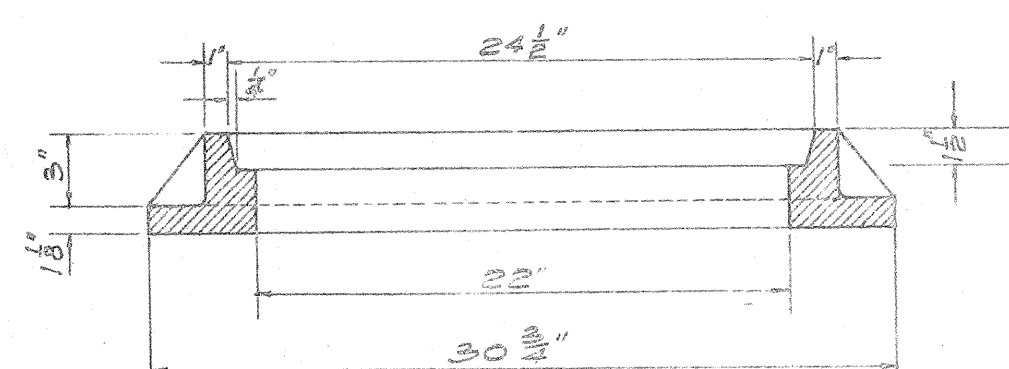
SECTION



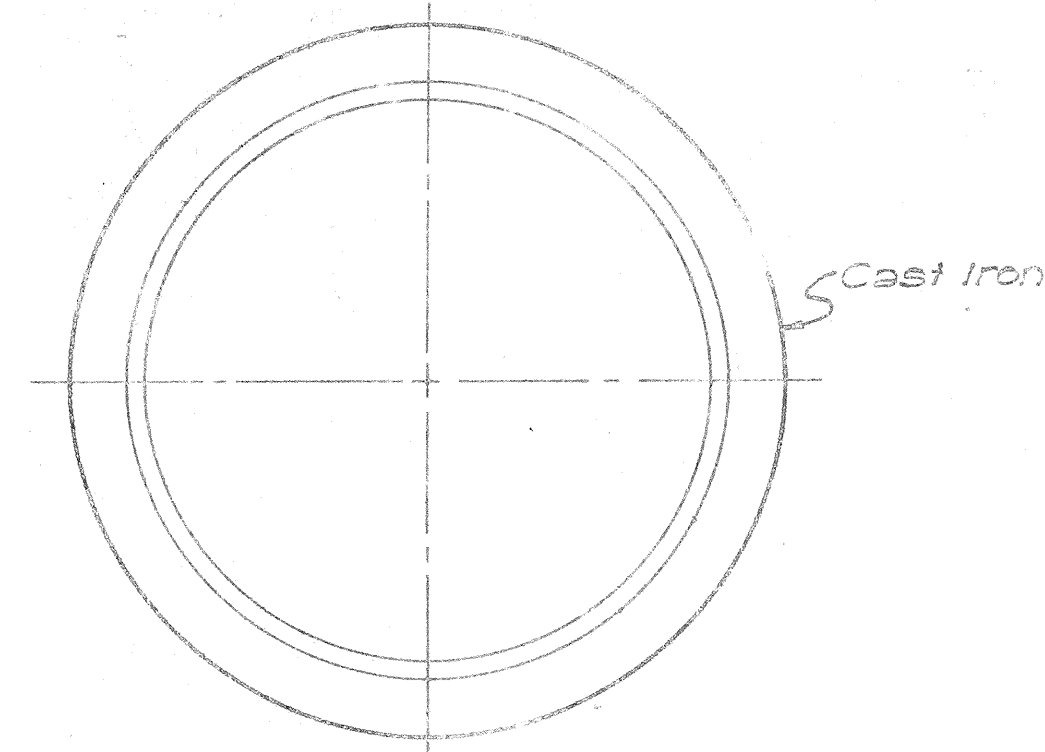
BOTTOM VIEW OF COVER



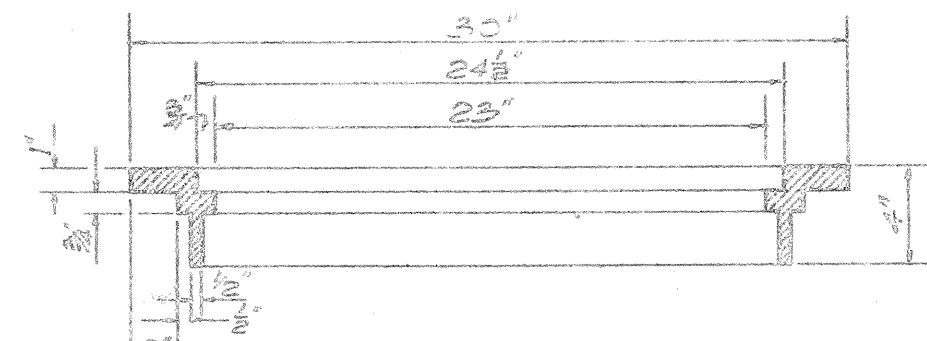
PLAN OF RIM



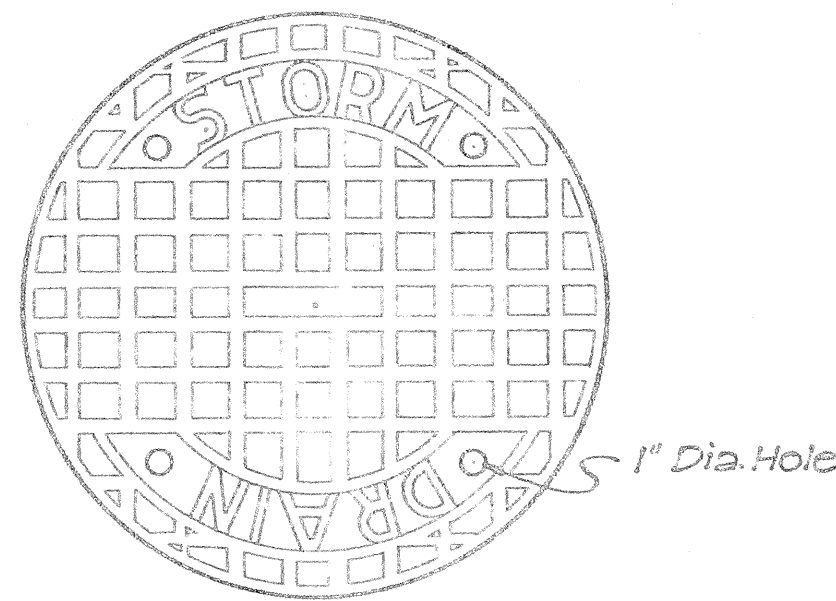
SECTION OF RIM
DETAILS OF TYPE "S"
CAST IRON FRAME AND COVER
SCALE: 1-1/2" = 1'-0"



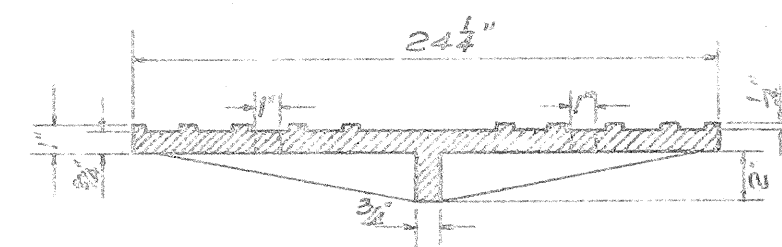
PLAN OF RIM



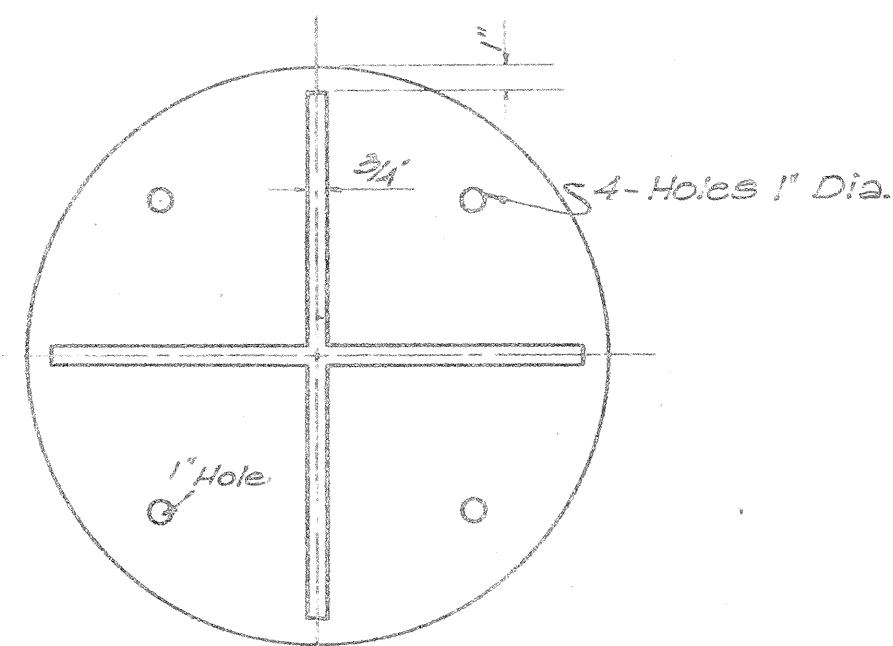
SECTION OF RIM



TOP VIEW OF COVER

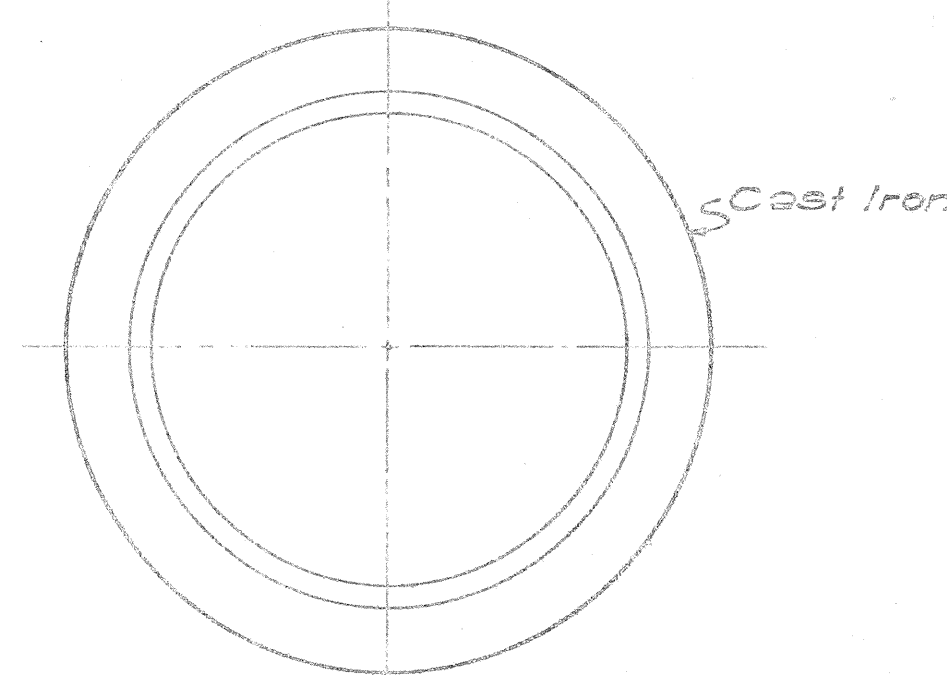


SECTION

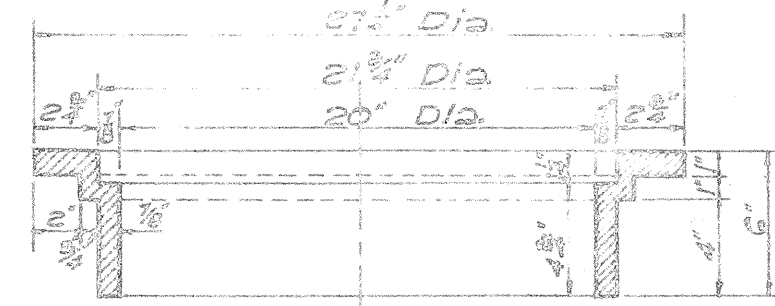


BOTTOM VIEW OF COVER

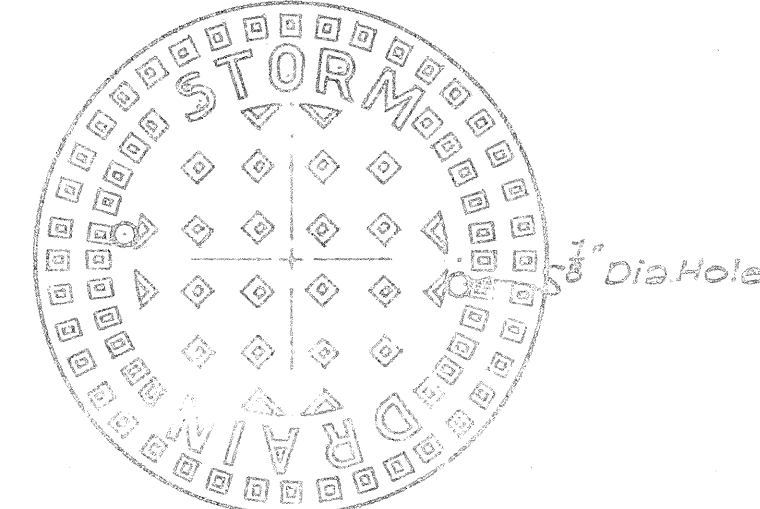
DETAILS OF TYPE "B"
CAST IRON FRAME AND COVER
SCALE: 1-1/2" = 1'-0"



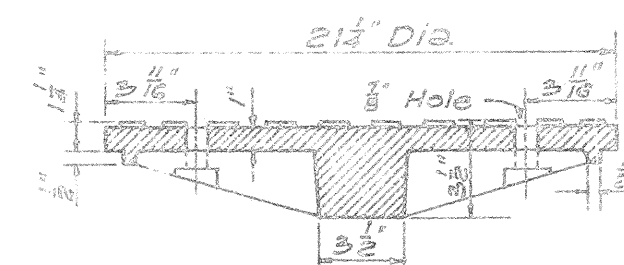
PLAN OF RIM



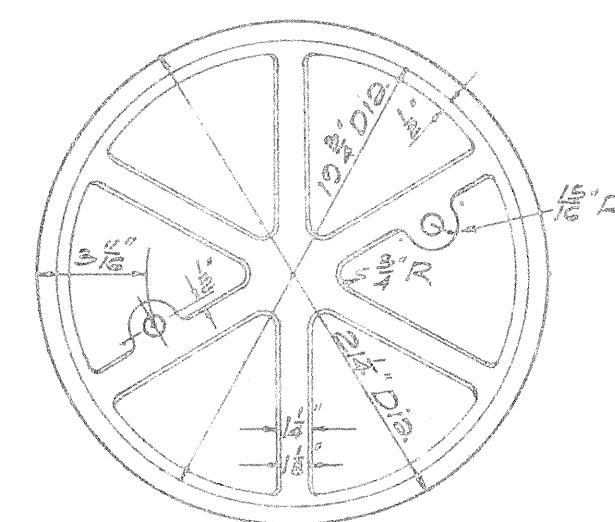
SECTION OF RIM



TOP VIEW OF COVER

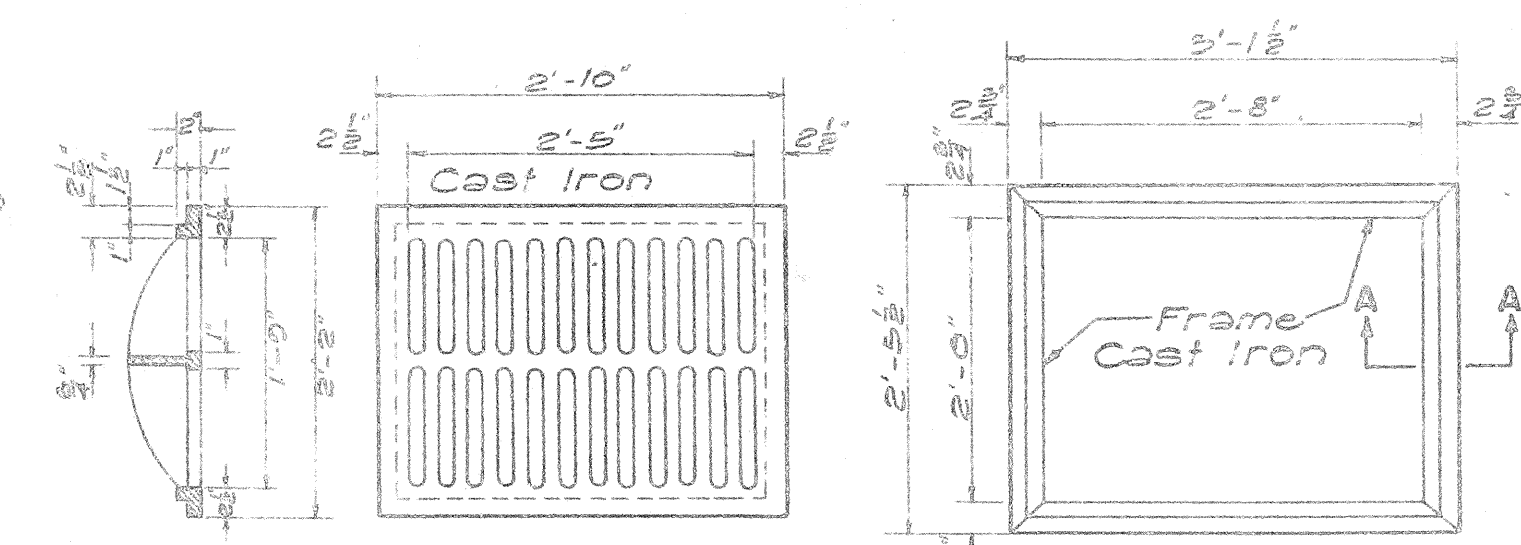


SECTION

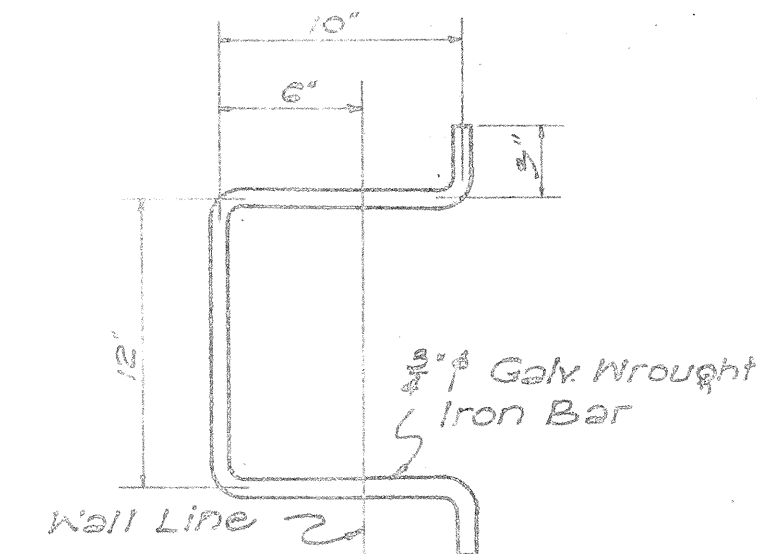


BOTTOM VIEW OF COVER

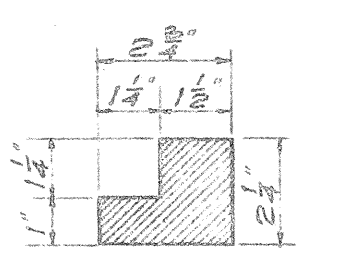
DETAILS OF TYPE "A"
CAST IRON FRAME AND COVER
SCALE: 1-1/2" = 1'-0"



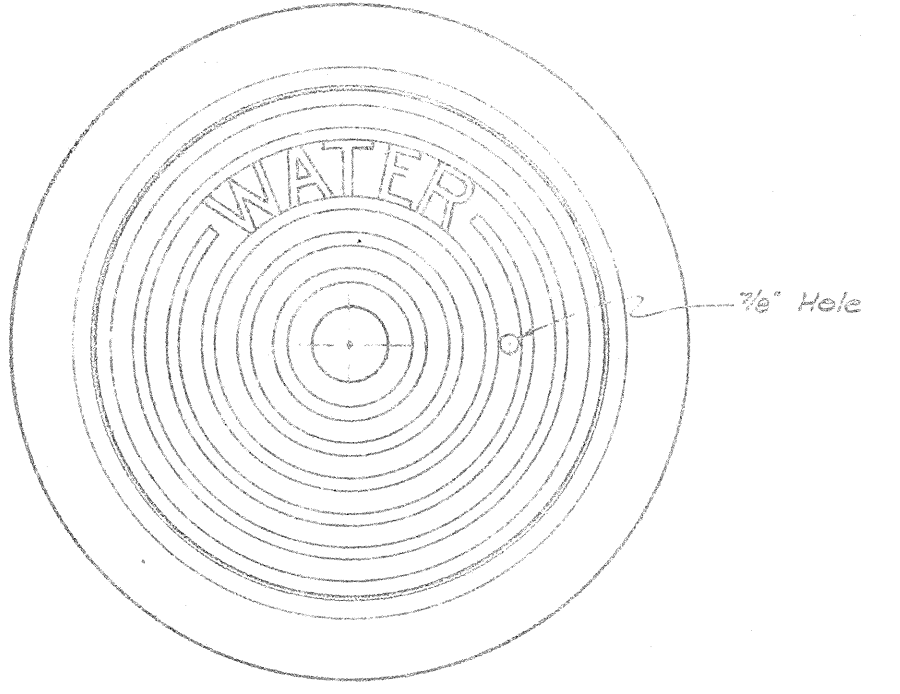
SECTION TOP VIEW TOP VIEW
TYPE C C.I. FRAME AND GRATING
SCALE: 3/4" = 1'-0"



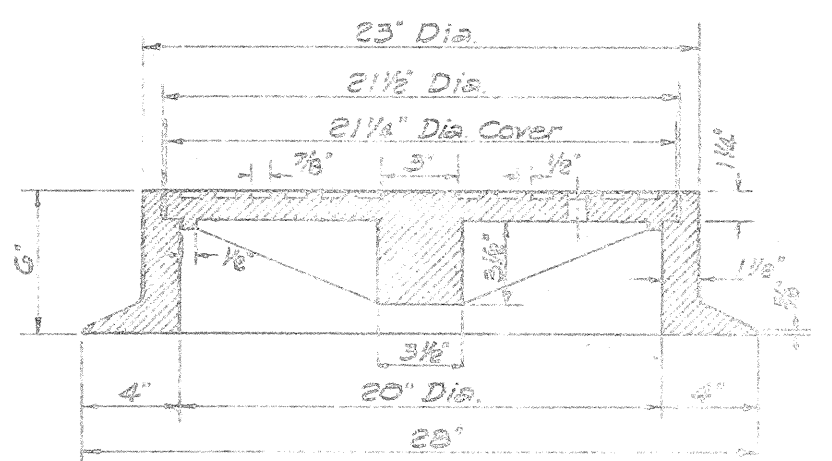
MANHOLE RUNG
SCALE: 1-1/2" = 1'-0"



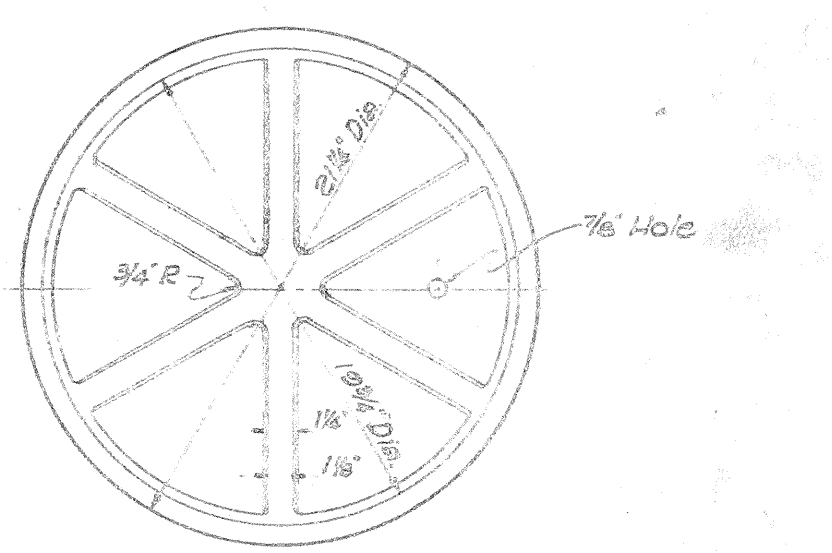
SECTION "A-A"
SCALE 3" = 1'-0"



PLAN OF FRAME AND COVER



SECTION OF FRAME AND COVER



BOTTOM VIEW OF COVER

DETAILS OF TYPE "W"
CAST IRON FRAME AND COVER
SCALE: 1-1/2" = 1'-0"

NOTE:

THE TYPE "S" CAST IRON FRAME AND COVER SHOWN ON THIS SHEET IS EQUIVALENT TO THE CITY AND COUNTY OF HONOLULU, DIVISION OF SEWERS' TYPE "A" CAST IRON MANHOLE FRAME AND COVER.

THE TYPE "W" CAST IRON FRAME AND COVER SHOWN ON THIS SHEET IS EQUIVALENT TO THE CITY AND COUNTY OF HONOLULU, BOARD OF WATER SUPPLY'S CAST IRON MANHOLE FRAME AND COVER, 20" SIZE.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CATCH BASIN AND
MANHOLE CASTINGS
SCALES AS NOTED

SHEET NO. 108 OF 292 SHEETS

108

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