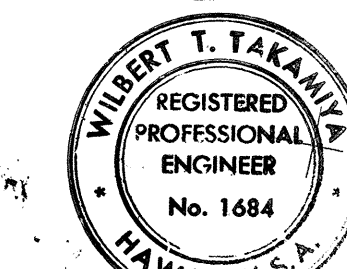
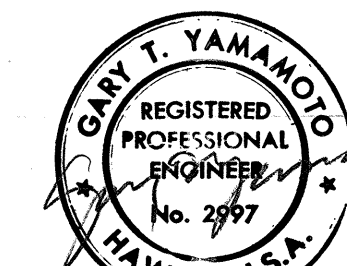
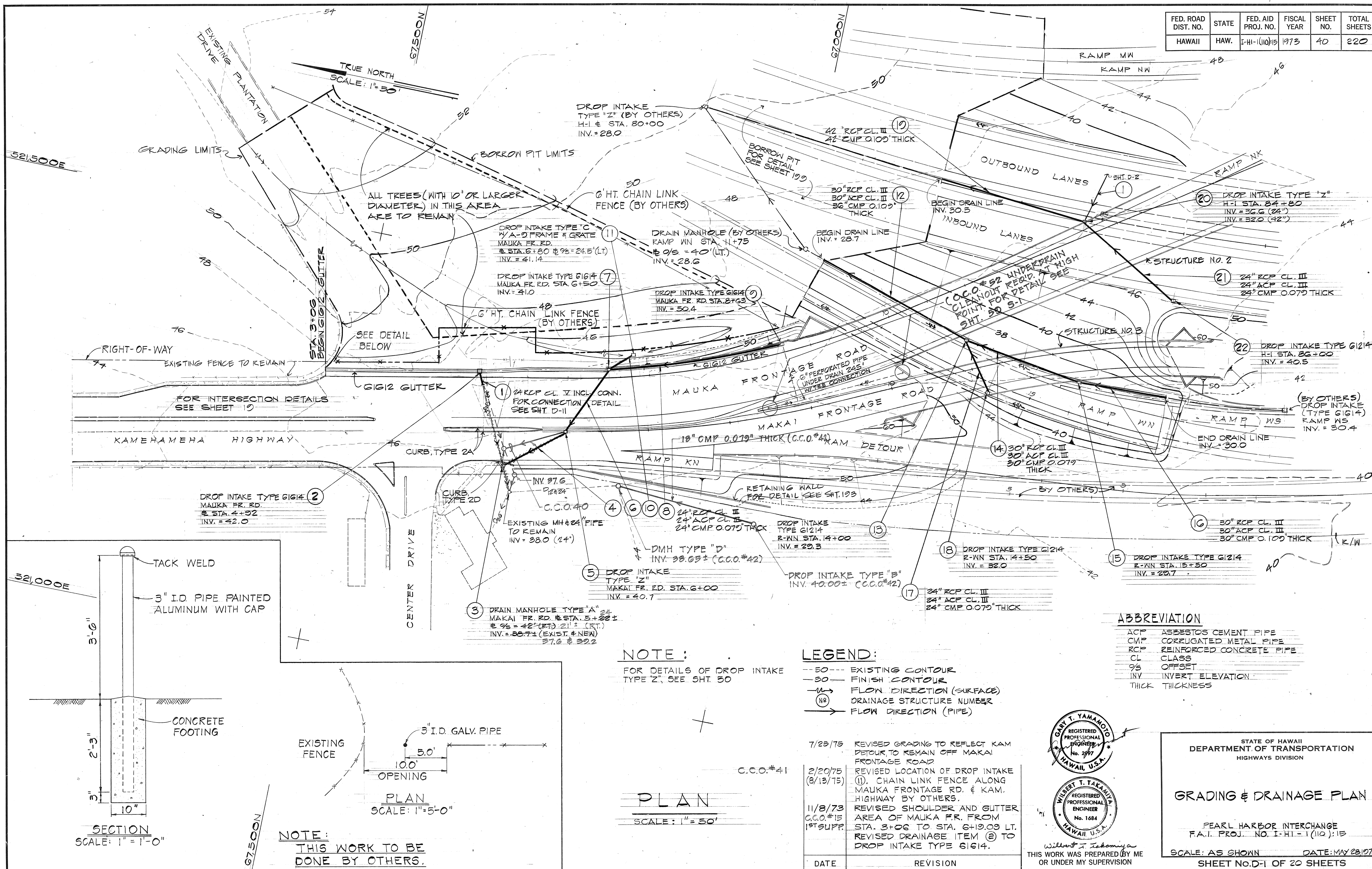


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(110)15	1973	40	220



Willbert T. Takamiya
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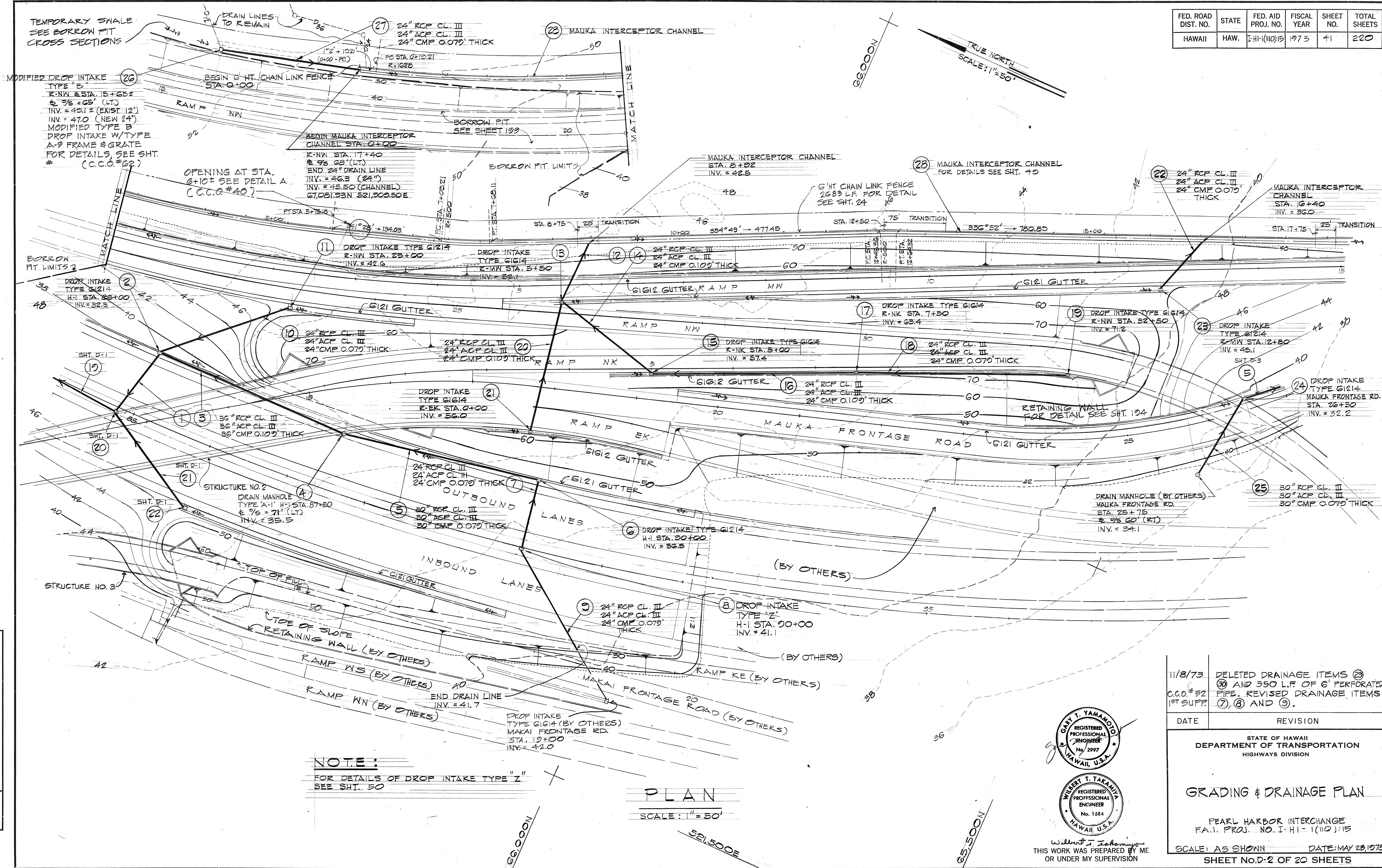
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

GRADING & DRAINAGE PLAN

PEARL HARBOR INTERCHANGE
 F.A.I. PROJ. NO. I-HI-1(110)15

SCALE: AS SHOWN DATE: MAY 23, 1973
 SHEET NO. 40 OF 20 SHEETS

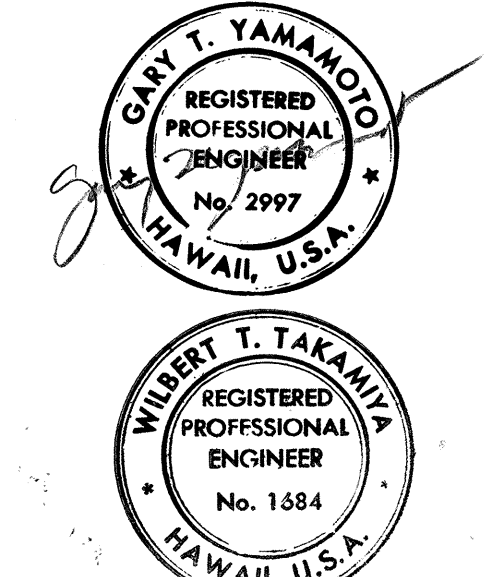
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(110)15	1973	41	220



ORIGINAL PLAN	DATE
DESIGNED BY	
TRACED BY	
NOTED BY	
CHECKED BY	

NOTE:
FOR DETAILS OF DROP INTAKE TYPE "Z"
SEE SHT. 50

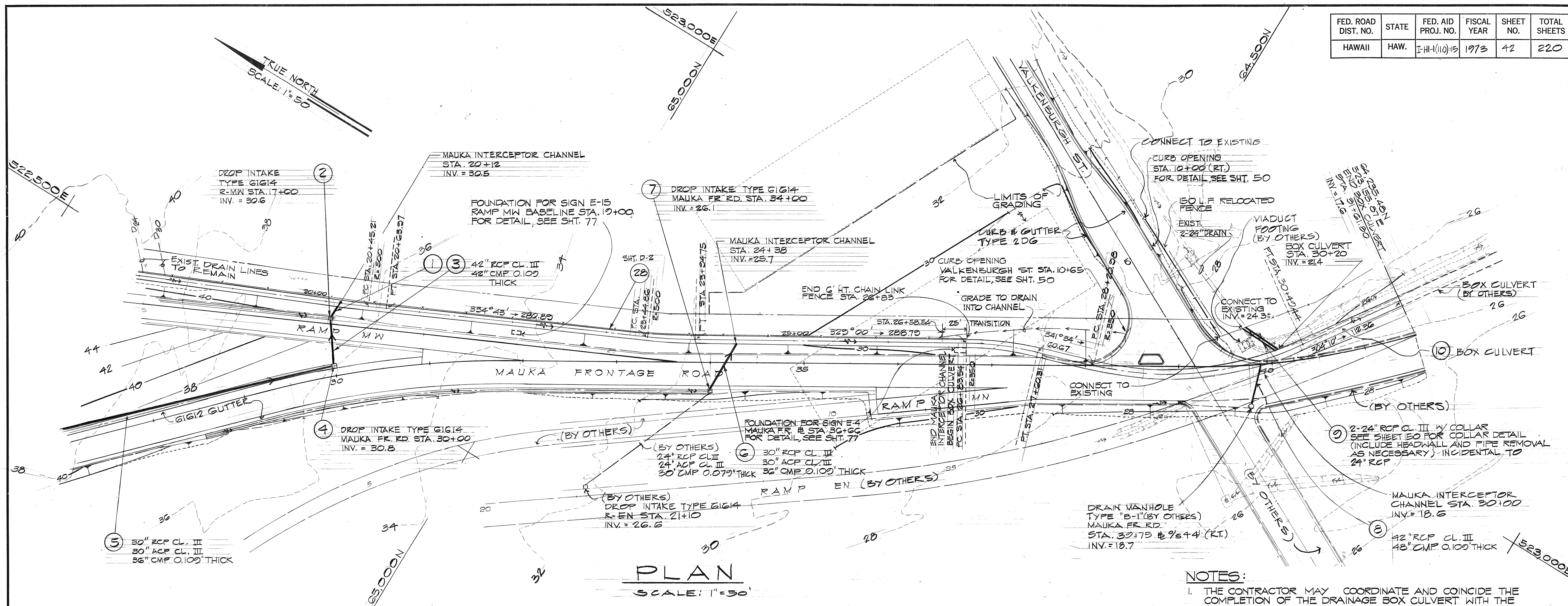
PLAN
SCALE: 1" = 50'



WILBERT T. TAKIMA
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11/8/73	DELETED DRAINAGE ITEMS ② ③ AND 550 L.F. OF 6" PERFORATED PIPE. REVISED DRAINAGE ITEMS ⑦, ⑧ AND ⑨.
C.C.O. #52	
1ST SUPP.	
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
GRADING & DRAINAGE PLAN	
PEARL HARBOR INTERCHANGE F.A.I. PROJ. NO. I-H-1-1(110)15	
SCALE: AS SHOWN DATE: MAY 28, 1973	
SHEET NO. D-2 OF 20 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(110):15	1973	42	220



SCHEDULE OF ROADWAY GUTTERS & CURBS

LOCATION	ITEM NO.					
	GUTTER GIZI CURB & TYPE ZOG	GUTTER GIZI CURB & TYPE ZOG	GUTTER GIZI CURB & TYPE ZOG	GUTTER GIZI CURB & TYPE ZOG	GUTTER GIZI CURB & TYPE ZOG	GUTTER GIZI CURB & TYPE ZOG
	L T	L T	L T	L T	L T	L T
MAUKA F.R. 3+06 LT. TO MAUKA F.R. 8+70 LT.		564				
R-WN 12+00 RT. TO R-WN 16+63 RT	468					
R-WN 12+00 LT. TO R-WN 16+63 LT	453					
H-1 INBD 86+00 RT. TO H-1 INBD 90+00 RT.	411					
H-1 OUTBD 83+00 LT. TO H-1 OUTBD 92+00 LT.	875					
MAUKA F.R. 17+15 RT. TO R-EK 14+70 RT.		220				
R-NK 4+50 RT. TO R-NW 32+60 RT.		570				
R-MW 5+50 RT. TO R-MW 8+00 RT.		250				
R-MW 8+00 RT. TO R-MW 8+50 RT.	50	TRANSITION				
R-MW 8+50 RT. TO R-MW 12+80 RT.	430					
R-NW 23+00 RT. TO R-NW 24+50 RT.	153					
R-MW 0+00 LT. TO R-MW 2+50 LT.	250					
R-MW 2+50 LT. TO R-MW 3+00 LT.	50	TRANSITION				
MAKA I.F.R. 4+03 RT. TO MAKAI F.R. 5+35 RT.			40			

MAUKA INTERCEPTOR CHANNEL
HYDRAULIC DATA $n = 0.015$

STATION	Q	V	d _n	d _c	S _o
□					
0+00 - 3+75	20 cfs	6.0 fps	2.6 ft.	2.2 ft.	0.0036
3+00 - 12+50	153	7.0	3.2	2.7	0.0036
13+25 - 15+50	153	13.0	1.3	2.7	0.0164
15+50 - 17+75	153	12.0	2.1	2.7	0.0108
18+00 - 24+00	420	15.0	3.4	4.5	0.0108
24+00 - 26+58.51	420	16.0	3.3	4.5	0.0135
□					
26+8351 - 31+51.20	510	13.0	3.0	4.4	0.0060

NOTES:

1. THE CONTRACTOR MAY COORDINATE AND COINCIDE THE COMPLETION OF THE DRAINAGE BOX CULVERT WITH THE CULVERT EXTENSION BY THE ADJACENT CONTRACTOR. PRIOR TO THE COMPLETION OF THE EXTENSION OF THE CULVERT, THE CONTRACTOR IS RESPONSIBLE FOR THE CONTINUOUS AND SATISFACTORY REMOVAL OF WATER FROM THE BOX CULVERT BY PUMPING, DIVERSION TO EXISTING SYSTEM OR OTHER MEANS WITHOUT DAMAGING OR PONDING OF EXISTING FACILITIES AND HIGHWAYS (SEE SP 104.05). THIS COST SHALL BE CONSIDERED INCIDENTAL TO THE VARIOUS CONTRACT ITEMS IN THE PROPOSAL.
2. ITEM ② 2'-24" RCP CL. III AND BOX CULVERT FROM STA. 26+85.54 TO STA. 31+61.80 WILL BE CONSTRUCTED AFTER VIADUCT FOOTING PLACEMENT BY OTHERS.

11/8/73 REVISED MAUKA F.R. GUTTER
C.C.O.#15 AND CURB SCHEDULE.

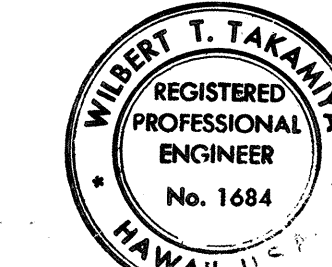
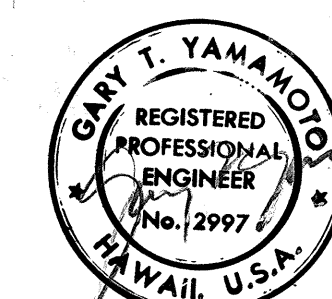
DATE	REVISION
------	----------

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GRADING & DRAINAGE PLAN

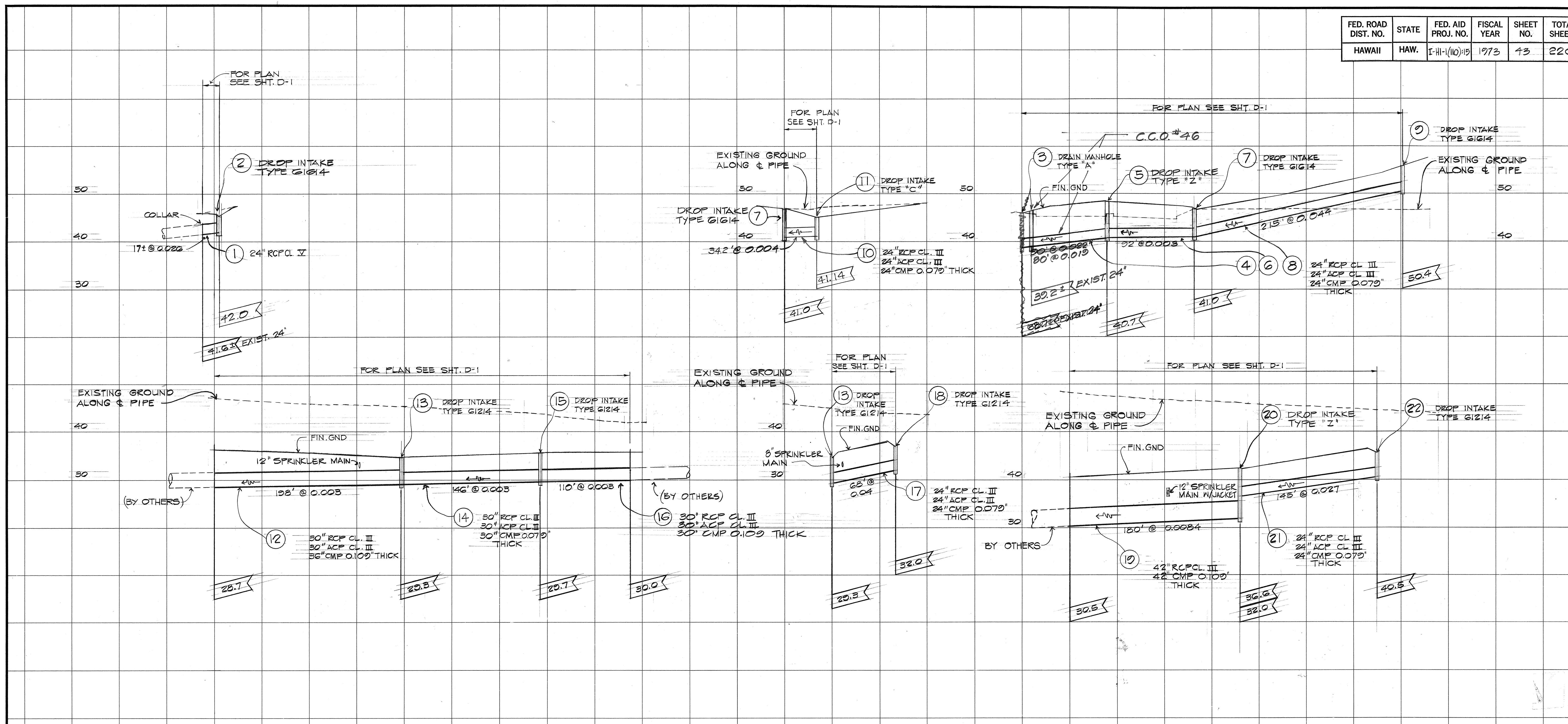
PEARL HARBOR INTERCHANGE
F.A.I. PROJ. NO. I-HI-1(110)115

SCALE: AS SHOWN DATE: MAY 28, 1973
SHEET No. D-3 OF 20 SHEETS



Wilbert T. Eskamyo
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(110)15	1973	43	220

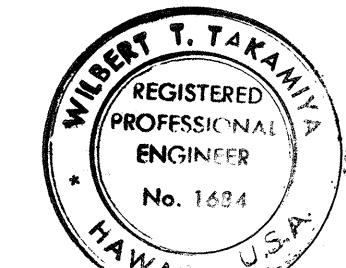


PROFILES
 SCALES: HORIZ. 1"=50'
 VERT. 1"=10'

NOTE:
 FOR PLAN SEE SHT. D-1

C.C.O. #15 1ST SUPPLEMENT C.C.O. #41 2/20/75 REVISED DRAINLINE ①
 11/8/73 REVISED DRAINAGE ITEMS ① AND ②

DATE	____
DESIGNED BY	____
CHECKED BY	____
NOTED BY	____
QUANTITIES BY	____
DESIGNED BY	____
CHECKED BY	____
NOTED BY	____
QUANTITIES BY	____



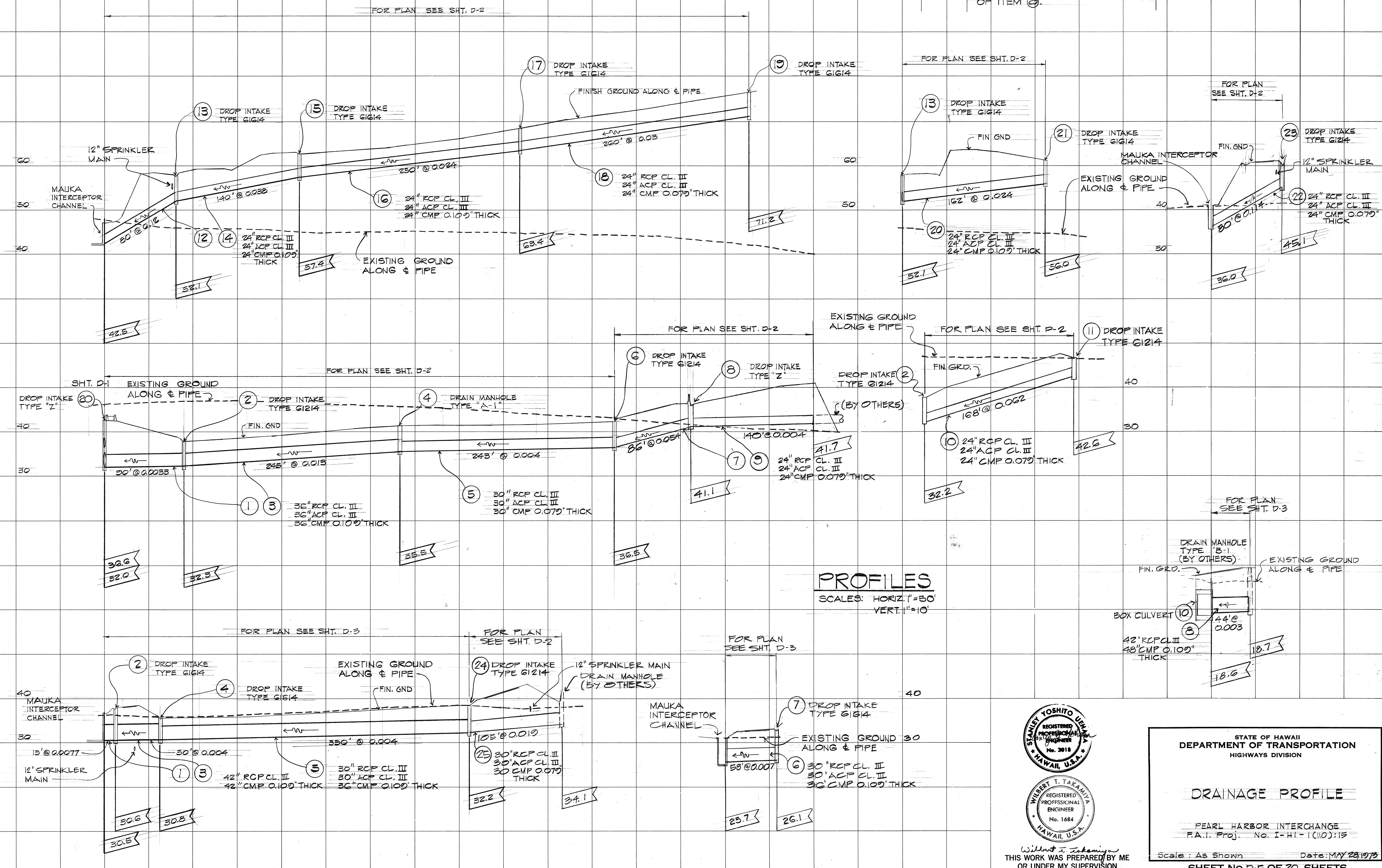
WILBERT T. TAKANAKA
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 OR UNDER MY SUPERVISION

DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
DRAINAGE PROFILE	
PEARL HARBOR INTERCHANGE F.A.I. Proj. No. I-HI-1(110)15	
Scale: As Shown	Date: MAY 28 1973
SHEET No. D-4 OF 20 SHEETS	

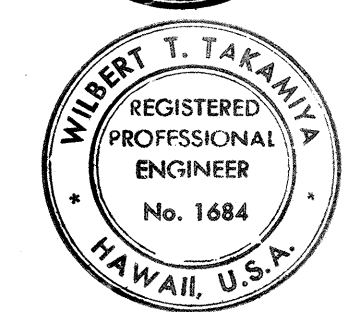
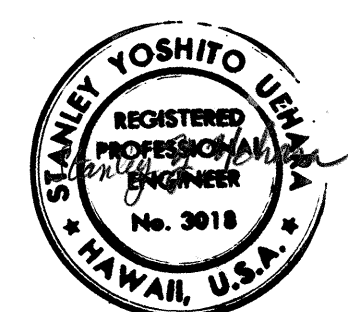
C.C.O.#15 1ST SUPPLEMENT

DATE	REVISION
11/8/73	REVISED DRAINAGE ITEMS ⑦, ⑧, AND ⑨. DELETED PROFILE OF ITEM ③.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(110)15	1973	44	220



PROFILES
 SCALES: HORIZ. 1"=50'
 VERT. 1"=10'



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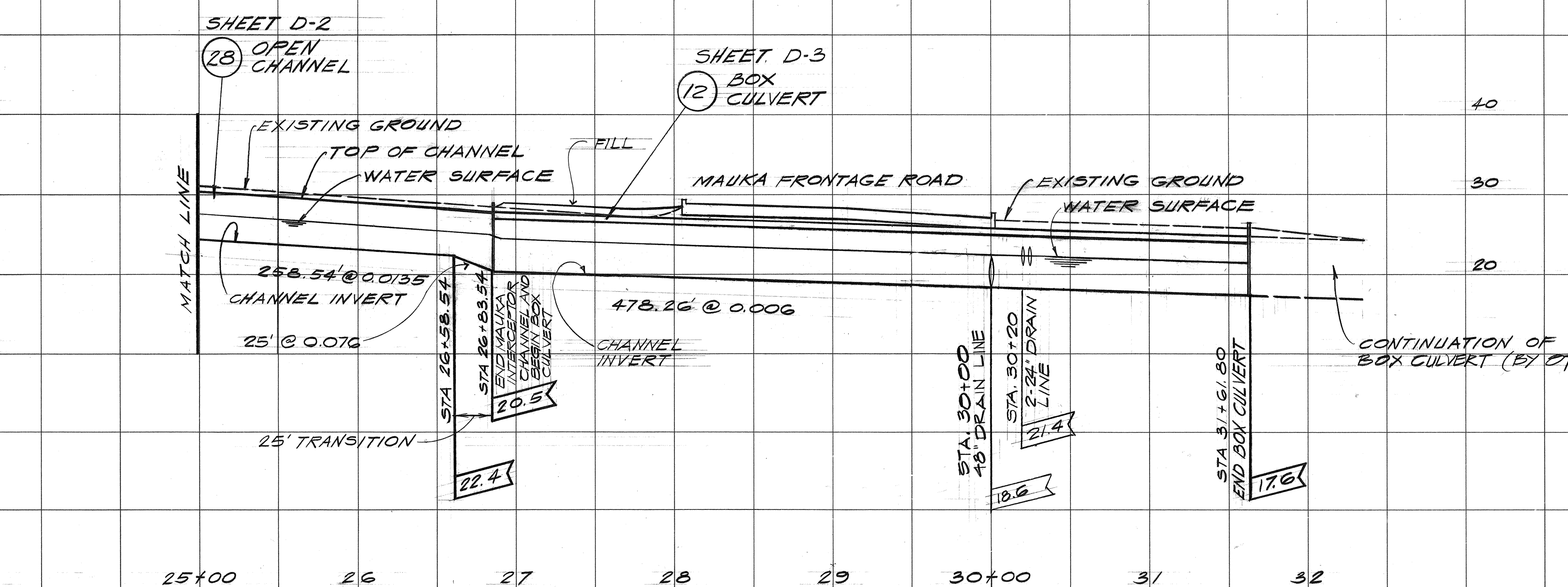
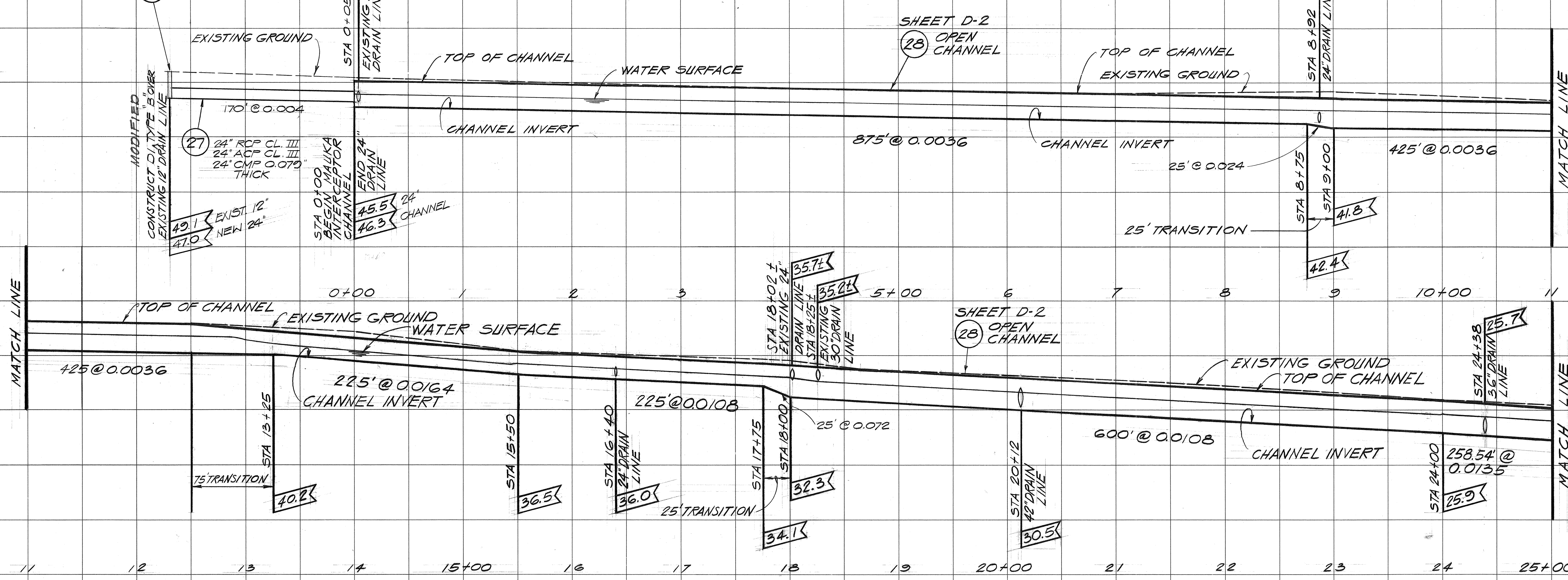
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

DRAINAGE PROFILE
 PEARL HARBOR INTERCHANGE
 F.A.I. Proj. No. I-H-1(110)15

Scale: As Shown Date: MAY 23, 1973
 SHEET No. D-5 OF 20 SHEETS

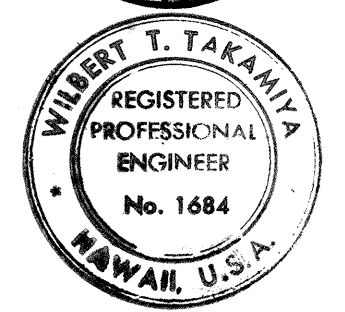
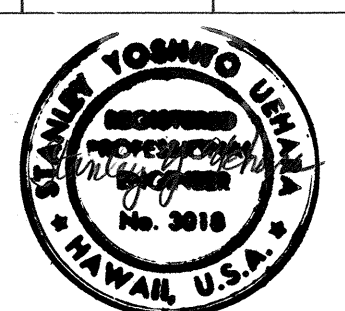
DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
DESIGNED BY	_____
QUANTITIES BY	_____
CHECKED BY	_____
ORIGINAL PLAN	_____
NOTE BOOK	_____
No.	_____

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(110)15	1973	45	220



NOTE:

- INTERCEPTED DRAIN LINES TO CHANNEL ARE SHOWN ON BOTH WALLS.
- CHANNEL PROFILE IS CENTERLINE PROFILE.



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CHANNEL PROFILE

PEARL HARBOR INTERCHANGE
F.A. Proj. No. I-H-1(110)15

Scale: As Shown Date: MAY 28, 1973

SHEET No. 45 OF 20 SHEETS

Wilbert T. Takamiya
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ORIGINAL	DATE
SURVEY PLOTTED BY	
DRAWN BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

SUMMARY

C.O. 46

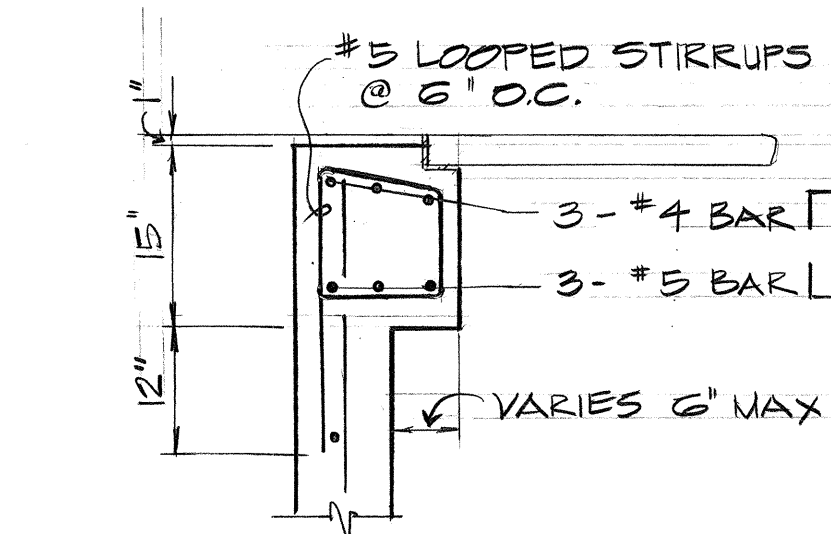
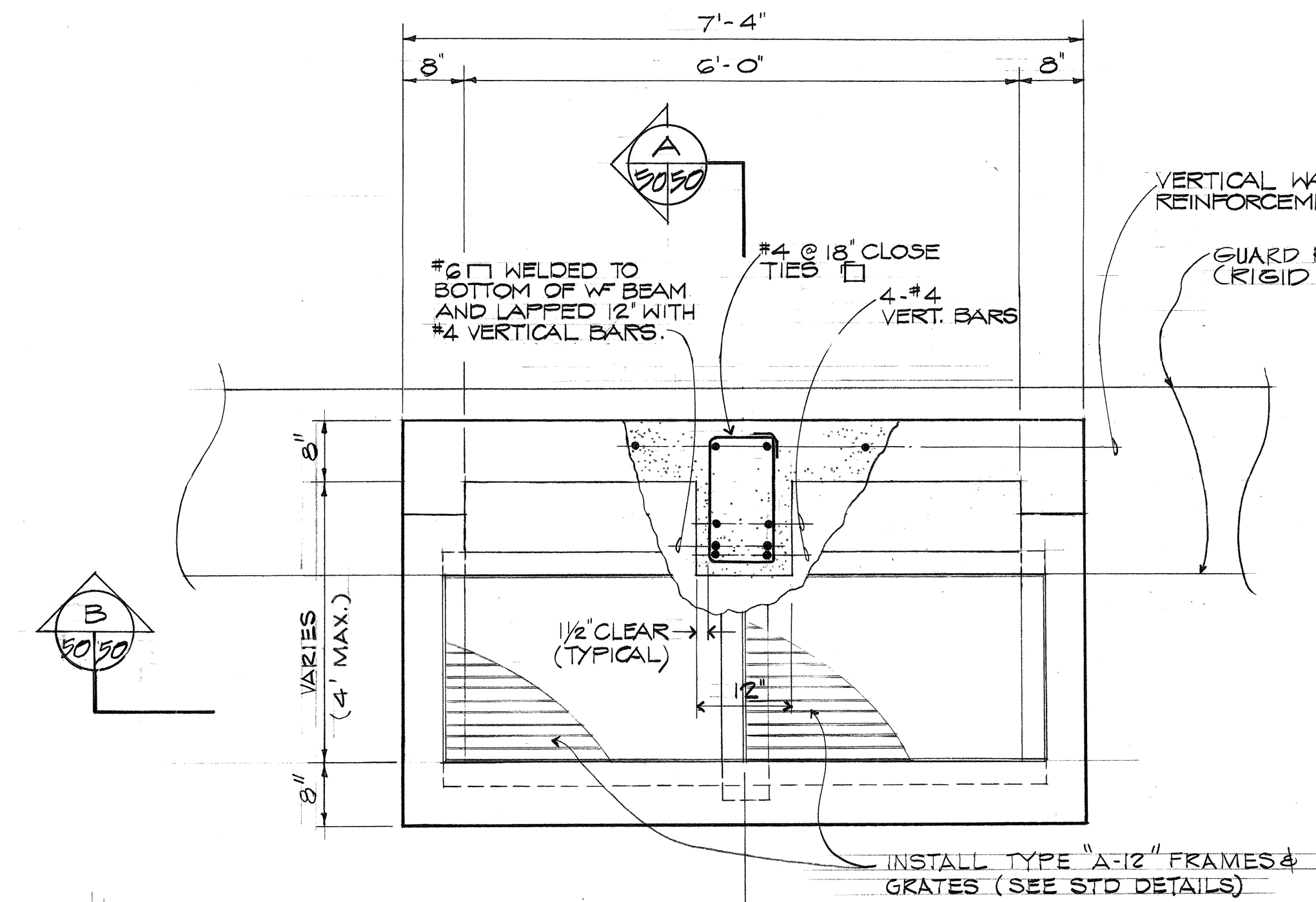
SUMMARY

C.O. 47

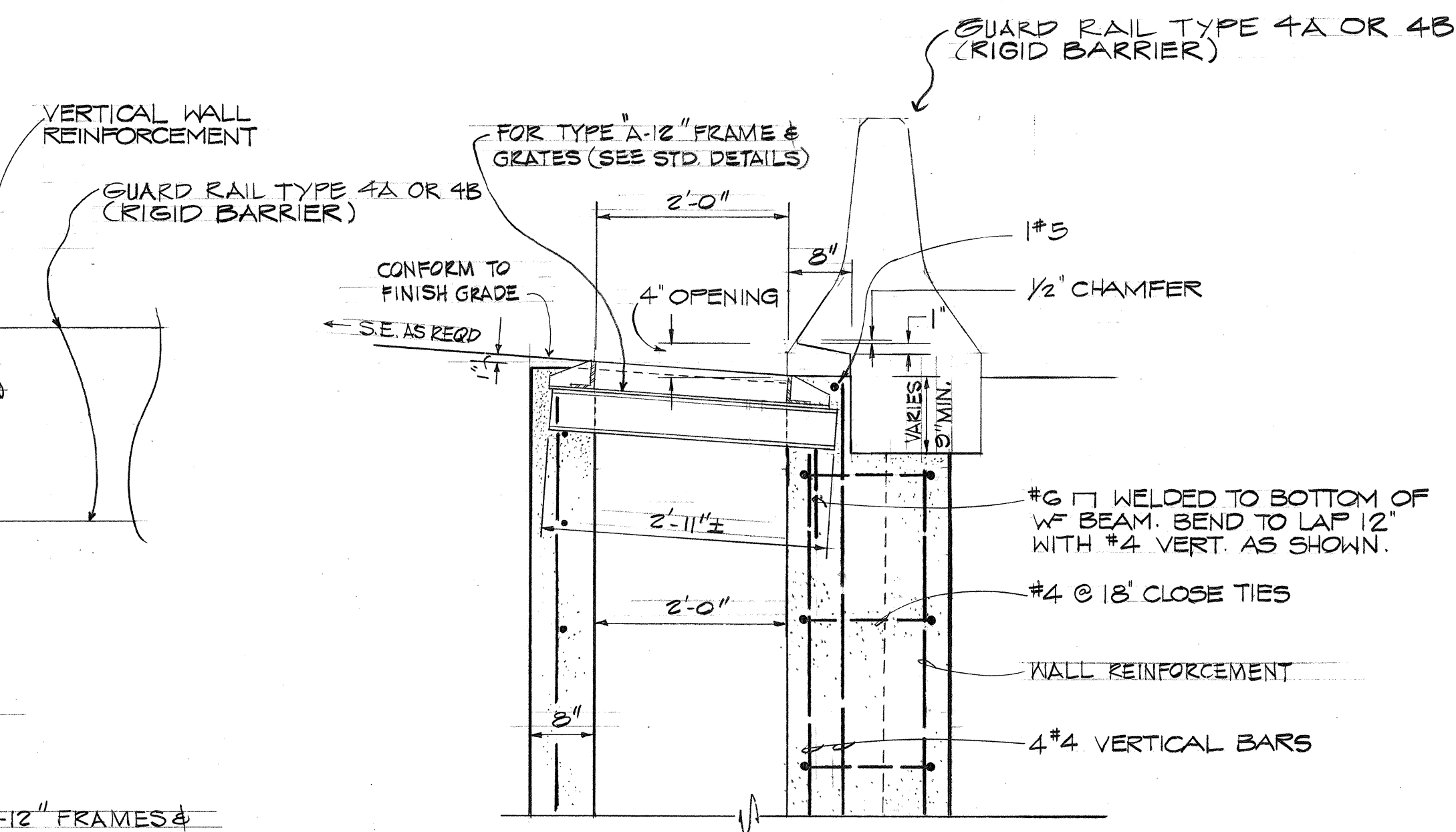
SUMMARY

C.O. 48

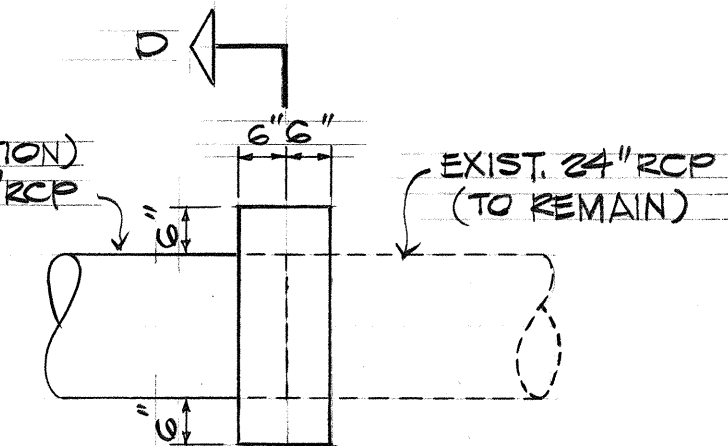
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	141-1(110)-15	1973	50	220



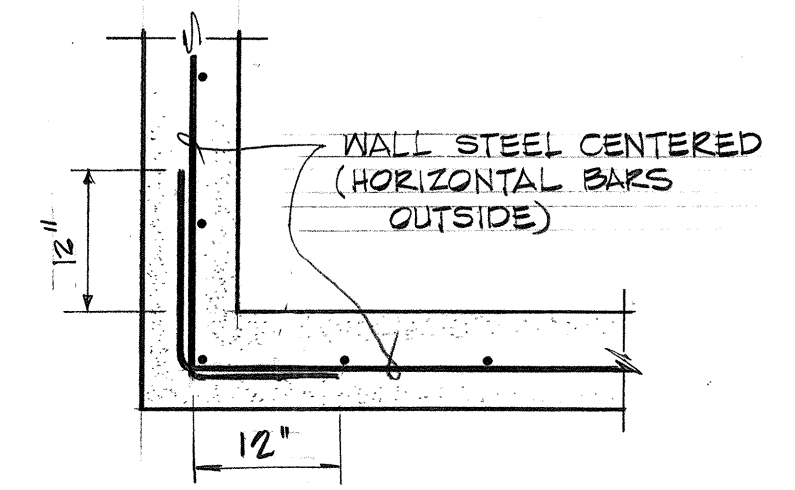
GRATE SUPPORT DETAIL
INTAKE (20) SHEET D-1



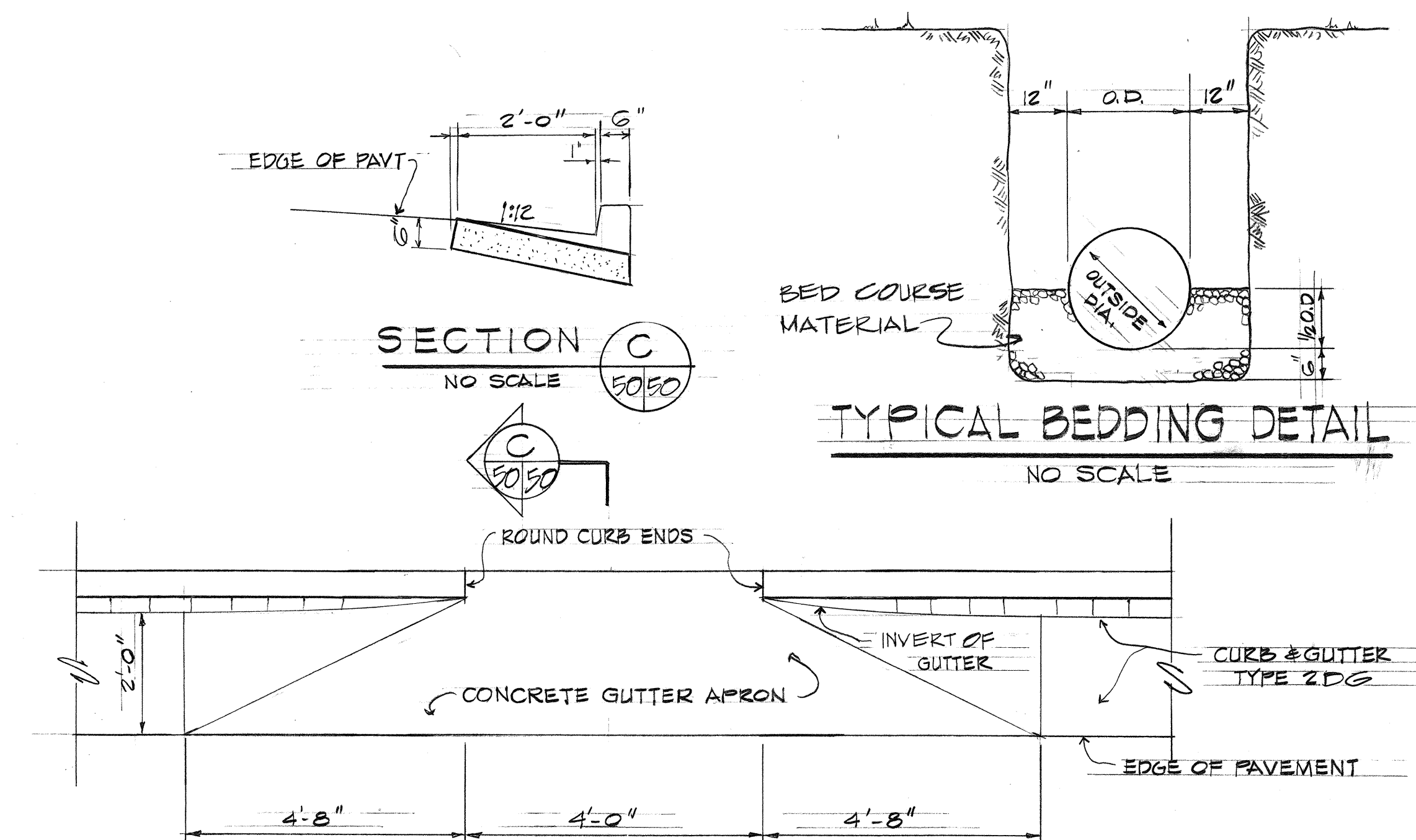
SECTION A
SCALE: 3/4" = 1'-0"



ELEVATION
DETAIL OF CAST-IN-PLACE
CONCRETE COLLAR
NO SCALE



PLAN OF TYPICAL WALL
CORNER REINFORCEMENT
SCALE: 3/4" = 1'-0"

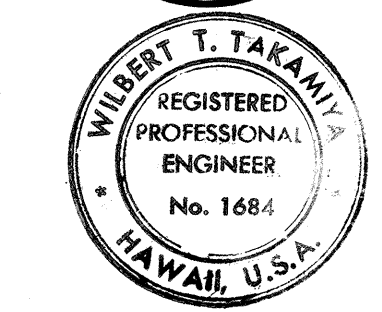
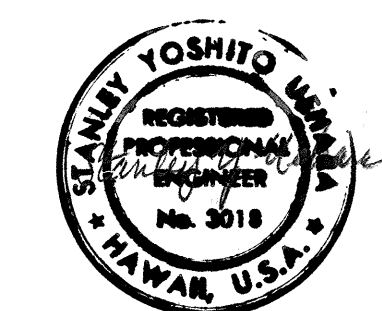


VALKENBURGH STREET
TYPICAL CURB OPENING
DRAINAGE DETAIL
NO SCALE

For Typical curb opening at Valkenburgh St. Sta. 6+55± R/L changed by C.C.O. #10 see sheet no. 50.9-1.

GENERAL NOTES:

- GENERAL NOTES AND APPLICABLE DETAILS FOR STANDARD DETAILS OF TYPES G1G14 AND G1214 DROP INTAKES WILL APPLY.
- REINFORCED CONCRETE DESIGN DATA: $f'_c = 3000$ psi (28 DAYS)
 $f_s = 20,000$ psi
DEFORMED BARS
- FOR SPLICES NOT DETAILED, OVERLAP BARS 24 BAR DIAMETER OR 12" MINIMUM; STAGGER ALL SPLICES AS APPROVED BY THE ENGINEER.
- REINFORCING STEEL FOR BEAMS ARE TO BE 1/2" CLEAR FROM FORMS.
- WALL REINFORCING BARS WILL BE #5 @ 12" O.C. BOTH DIRECTIONS. CENTERED IN SLAB AND BENT INTO TOP SLAB WHERE APPLICABLE.
- ALL VERTICAL WALL REINFORCING BARS TO BE BENT INTO TOP SLAB A MINIMUM OF 12".
- SHORT BARS IN WALL AND TOP SLAB TO BE OUTSIDE AND BELOW LONG BARS, RESPECTIVELY. SHORT BARS IN BOTTOM SLAB TO BE BELOW LONG BARS.
- BEND WALL REINFORCEMENT AROUND PIPE CULVERT WHERE NECESSARY.
- SLAB REINFORCEMENT TO BE CENTERED.
- UNLESS OTHERWISE SPECIFIED MINIMUM INSIDE WIDTH OF BOX 8'-0".
- INSIDE WALL WIDTH WHEN GREATER THAN MINIMUM TO BE THE PROJECTION OF THE EQUIVALENT CMP INSIDE DIAMETER OR RCP OUTSIDE DIAMETER OF WHICHEVER IS GREATER.
- ALL CONCRETE SHALL BE CLASS "A" UNLESS OTHERWISE NOTED.
- TOP OF INTAKE TO CONFORM TO FINISH GRADE.



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

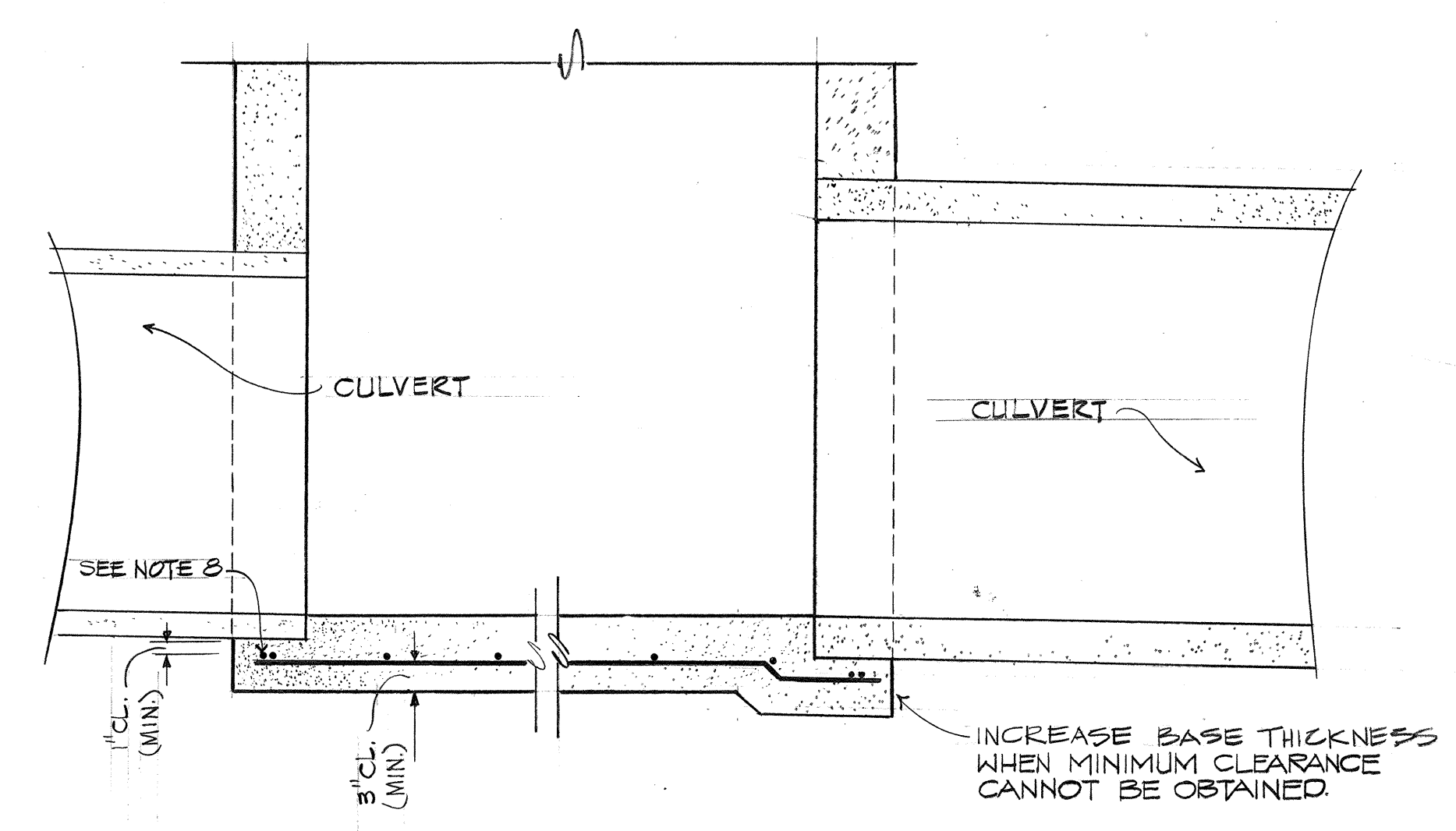
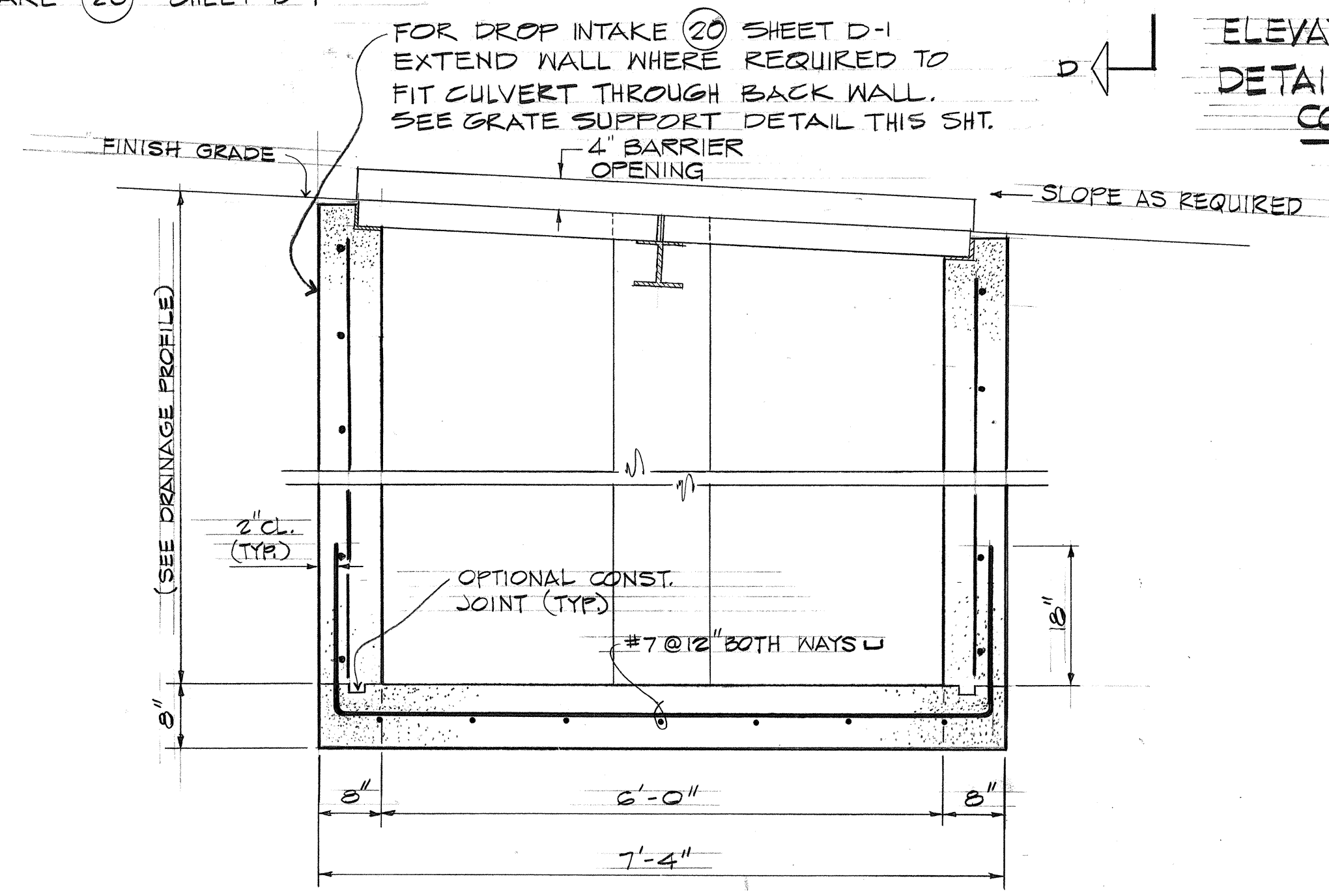
PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-41 - (110)-15

Scale: As Shown Date: MAY 28, 1973
SHEET NO. 50-11 OF 20 SHEETS

TYPICAL DETAIL FOR
MINIMUM INLET BASE THICKNESS
SCALE: 3/4" = 1'-0"

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

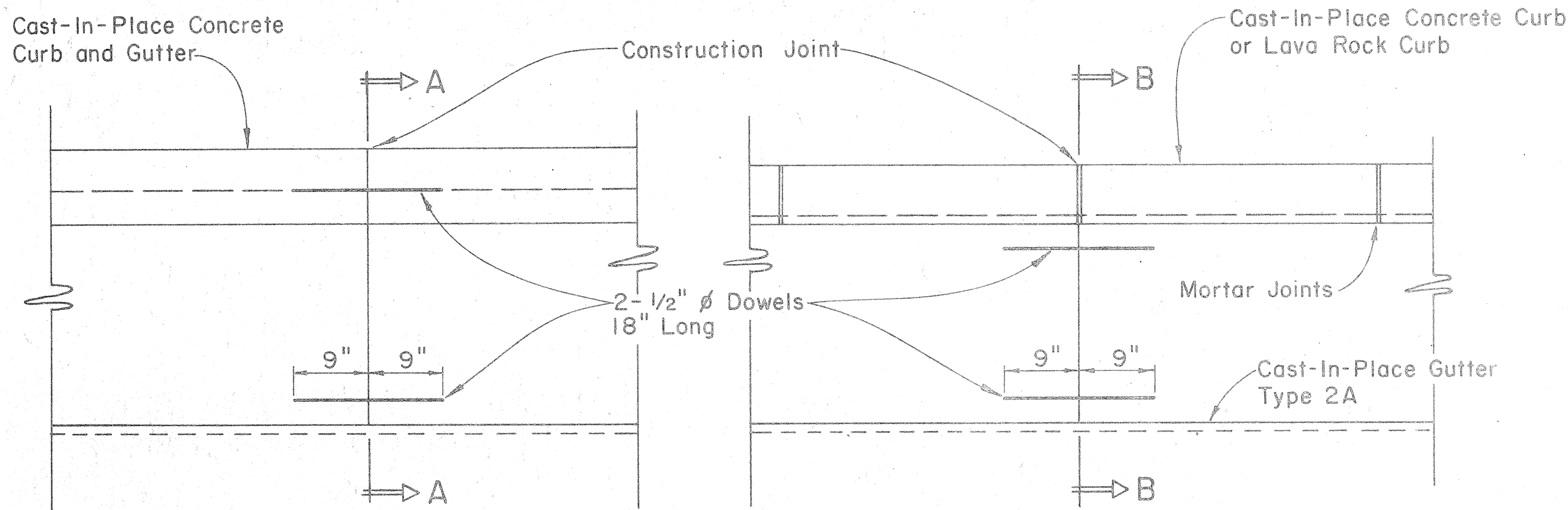
DETAILS OF INTAKE "Z"



DATE	REVISION
11/8/73	REVISED REFERENCE SHT. NO. 6 GRATE SUPPORT DETAIL. DELETED TYPE 4A (MODIFIED) GUARD RAIL FROM PLAN AND SECTION A.
6.00*15	
15 SUPP.	

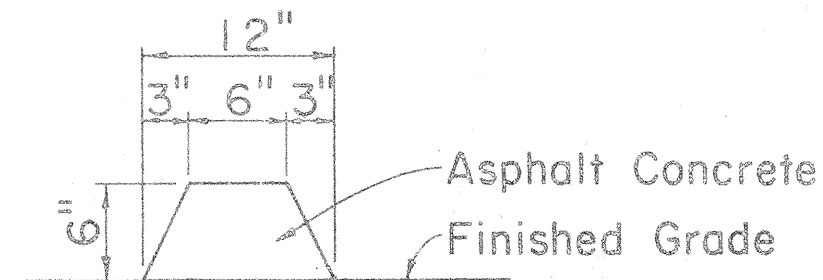
ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-H-1(10)15	1973	91	220

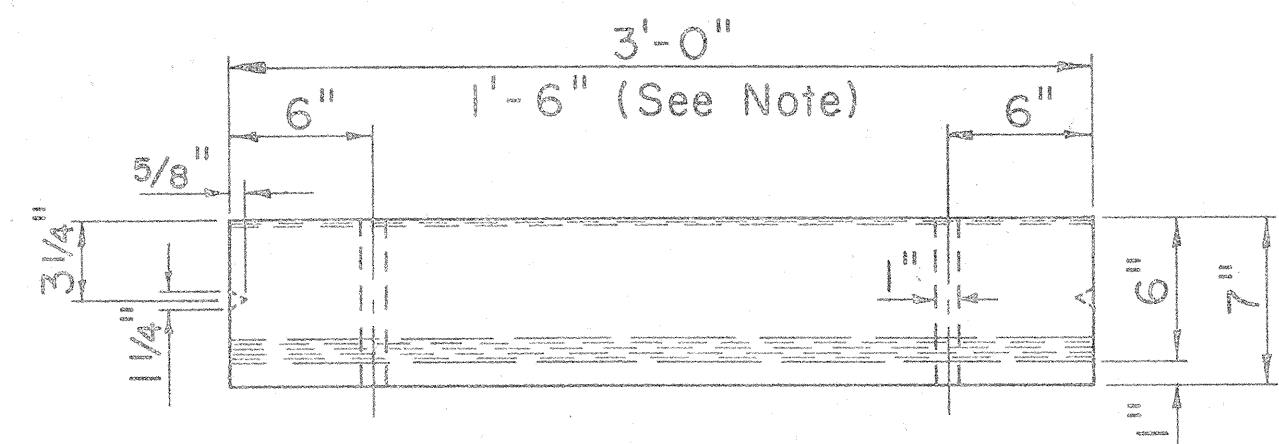


PLAN

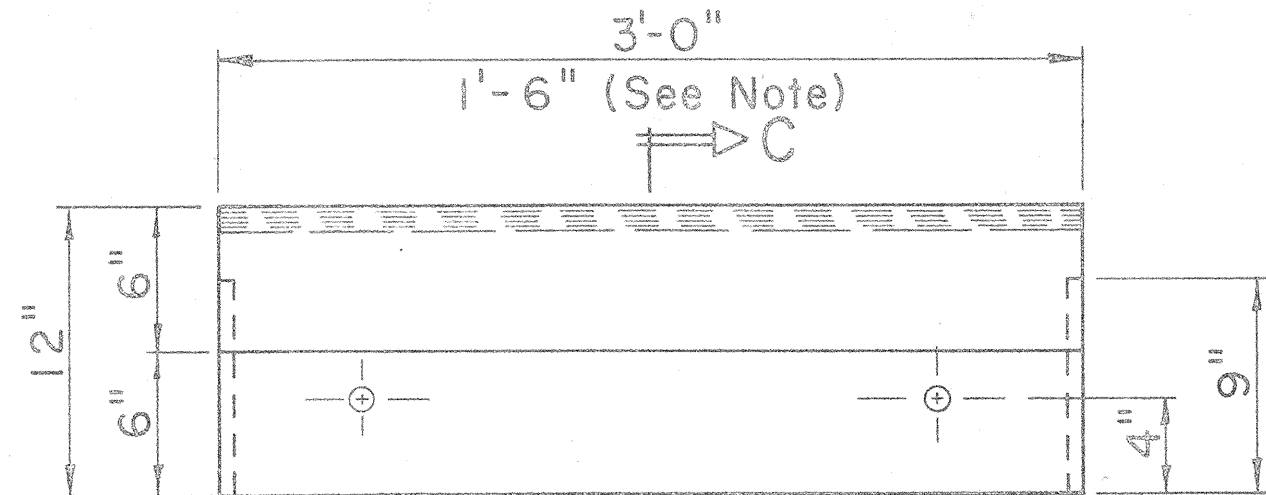
PLAN



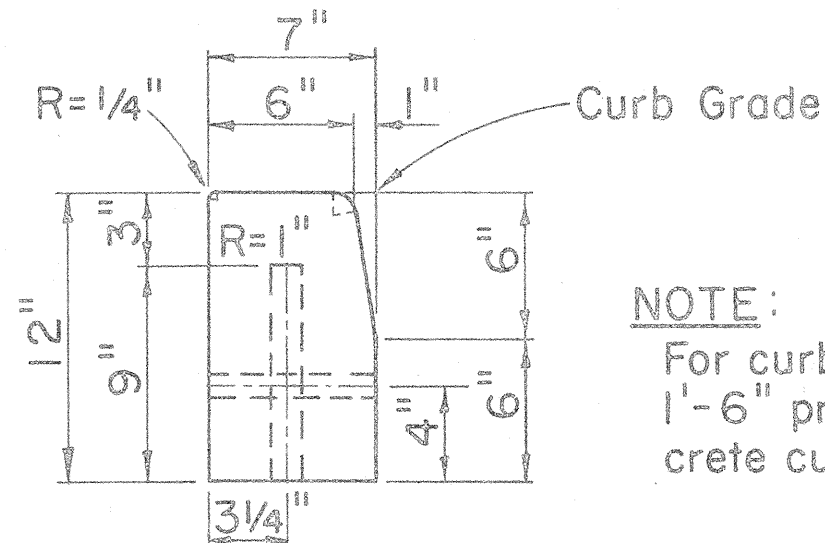
CURB, TYPE 6
BITUMINOUS CURB
Scale: 1 1/2" = 1'-0"



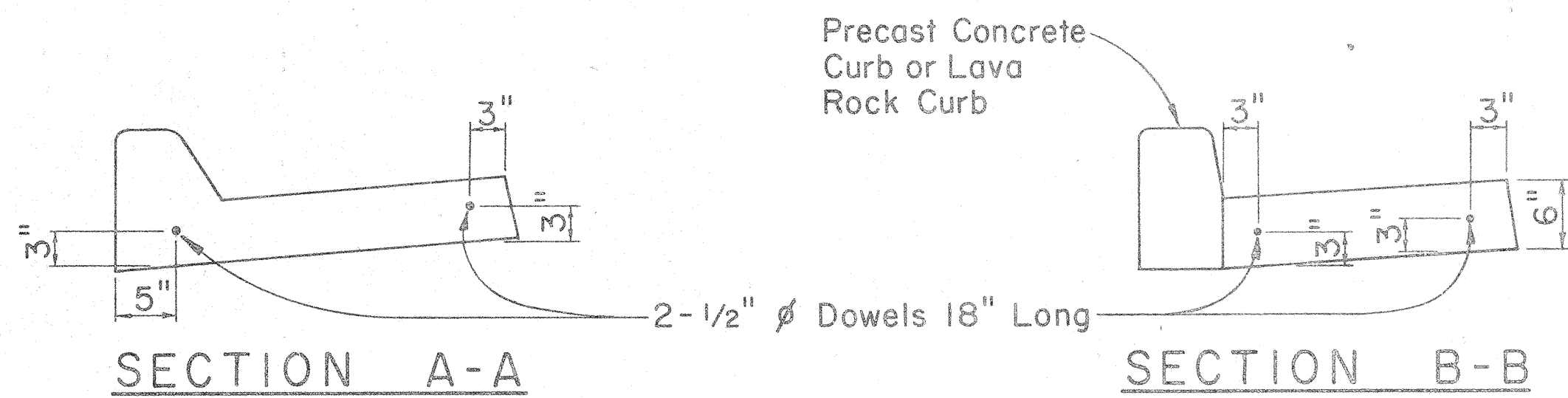
PLAN



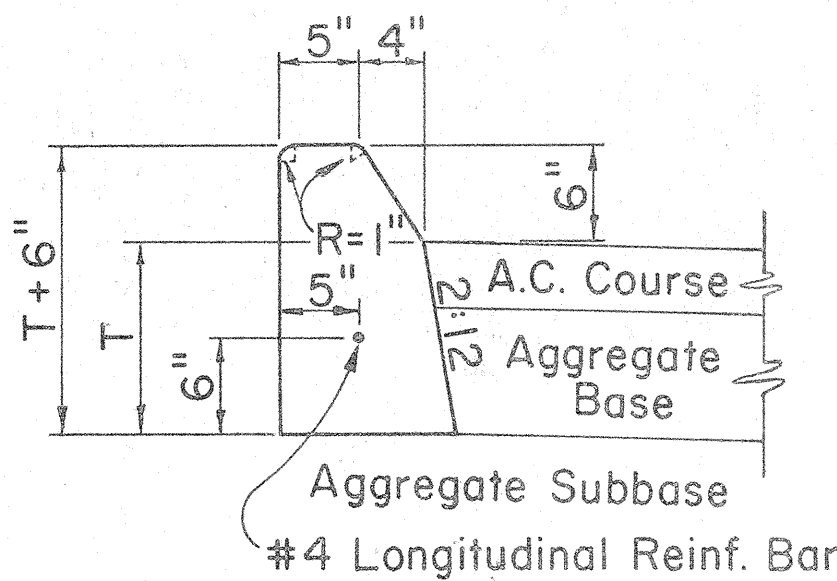
ELEVATION



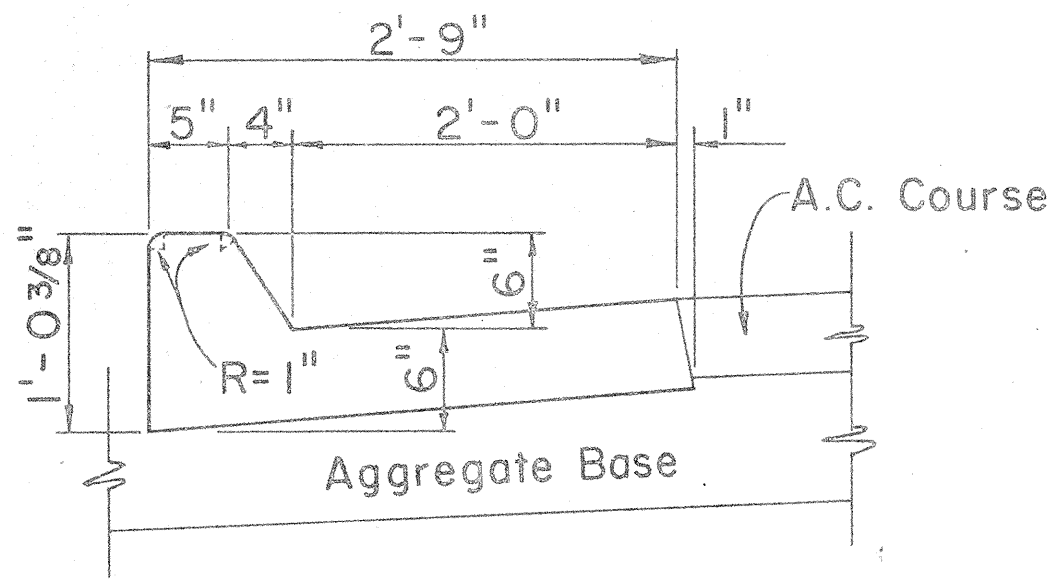
SECTION C-C
CURB, TYPE 3D
PRE-CAST CONC. CURB
Scale: 1 1/2" = 1'-0"



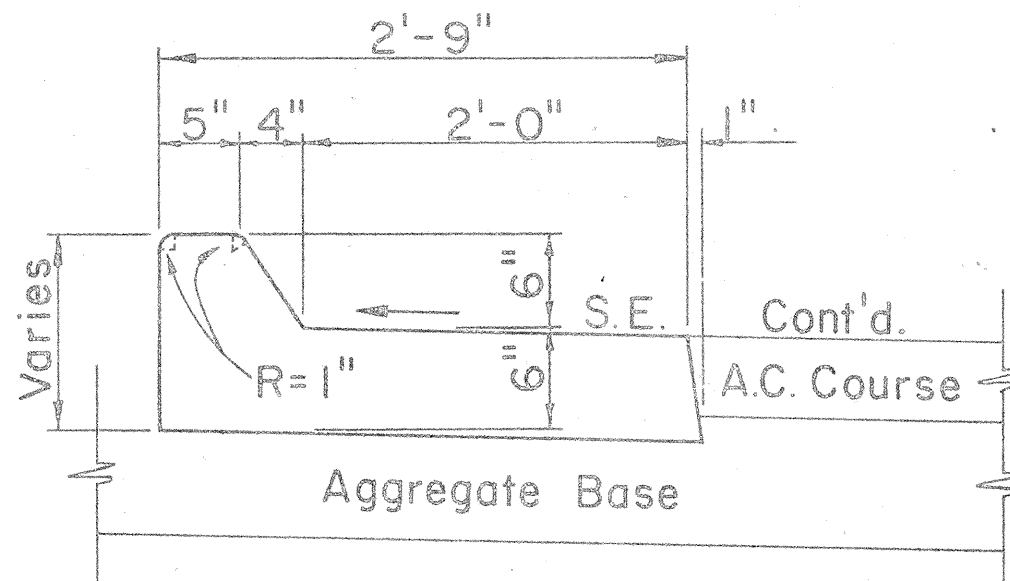
SECTION A-A
CAST-IN-PLACE CURB & GUTTER
SECTION B-B
CAST-IN-PLACE GUTTER
CONSTRUCTION JOINT DETAIL
Scale: 1" = 1'-0"



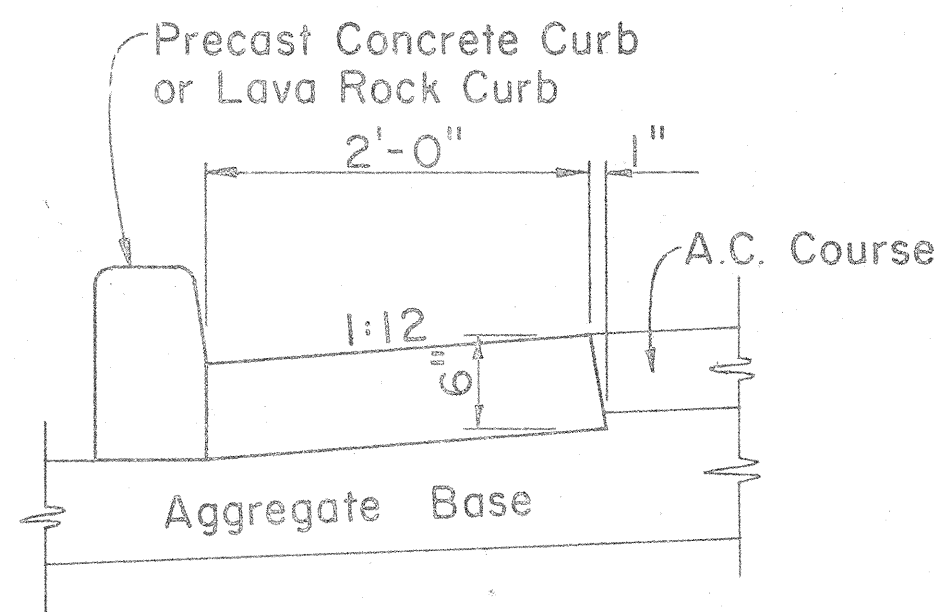
CURB, TYPE 2A



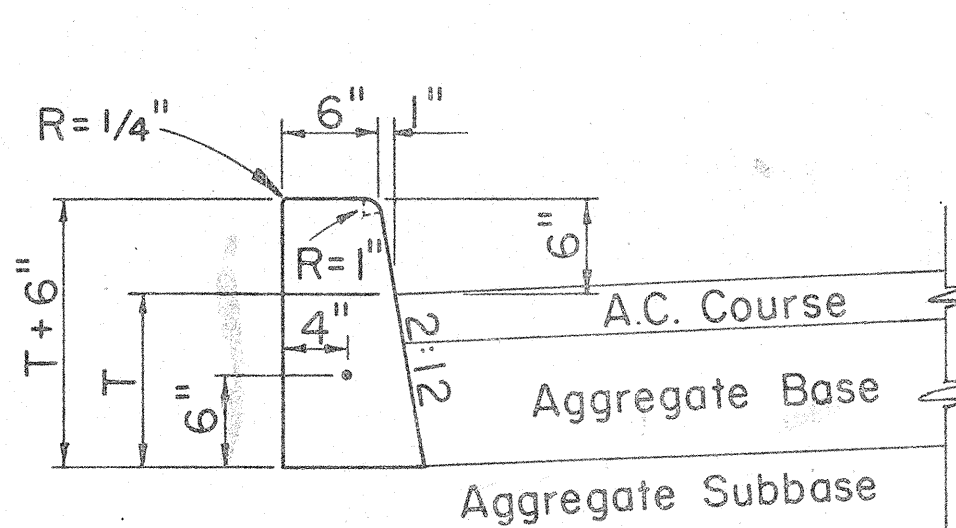
CURB & GUTTER, TYPE 2AG



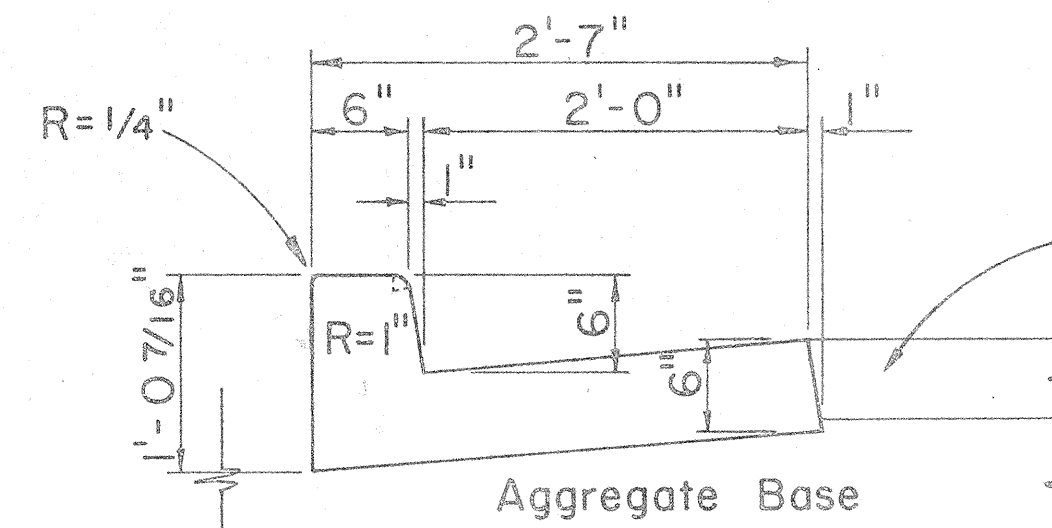
CURB & GUTTER, TYPE 2AGM



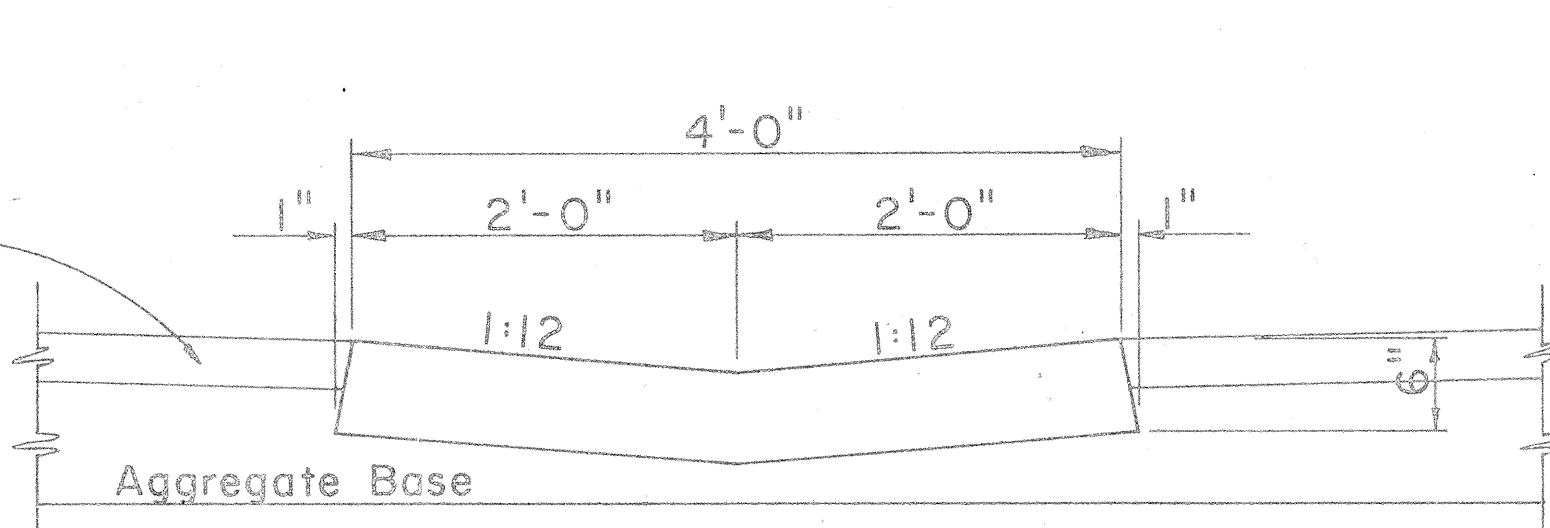
GUTTER, TYPE 2A



CURB, TYPE 2D



CURB & GUTTER, TYPE 2DG



GUTTER, TYPE 2G

CAST-IN-PLACE CONCRETE CURBS AND/OR GUTTERS
Scale: 1" = 1'-0"

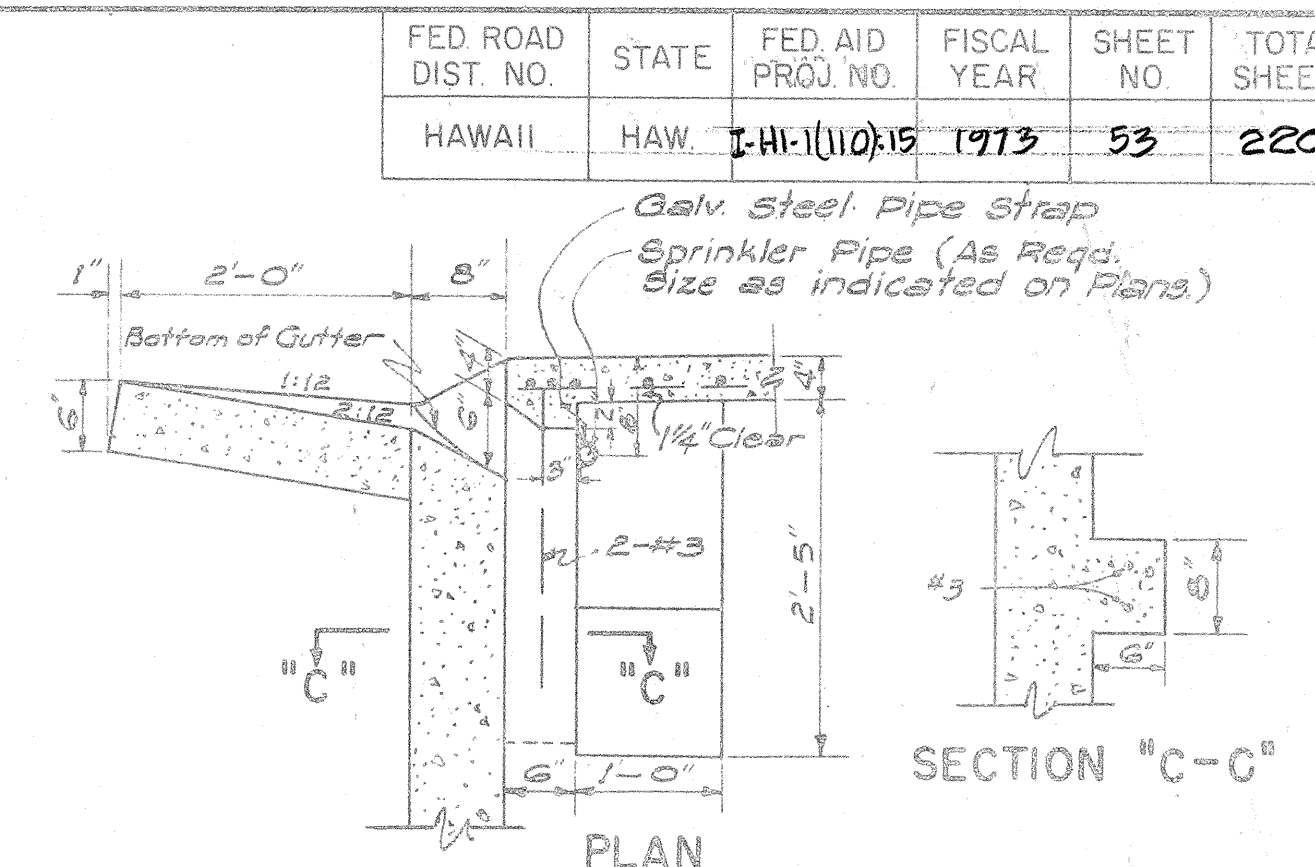
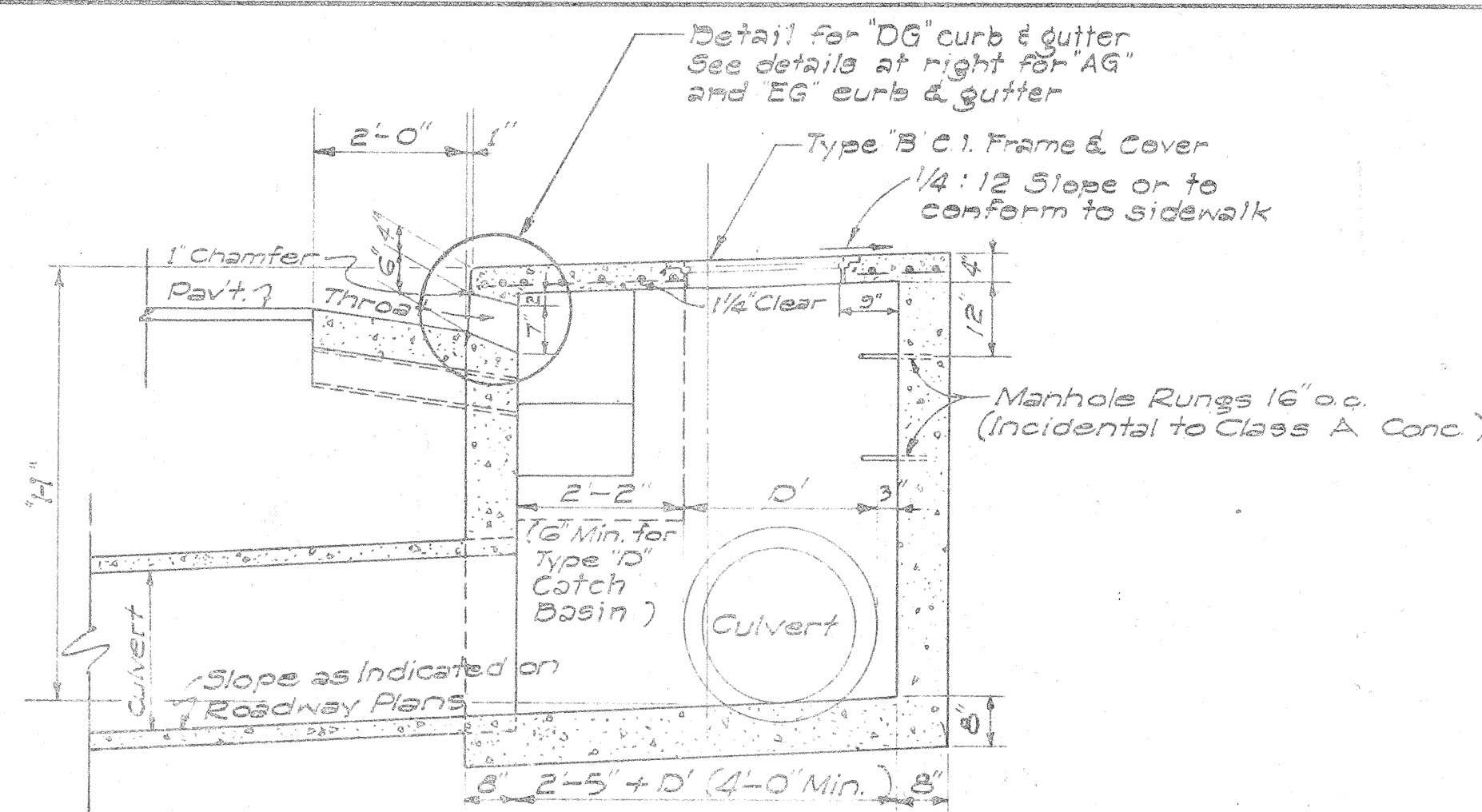
APPROVAL RECOMMENDED:
HIGHWAY DESIGN ENGINEER
DATE
APPROVED:
ASSISTANT CHIEF, ENGINEERING
DATE

NO.	REVISION	APPROVED BY	DATE

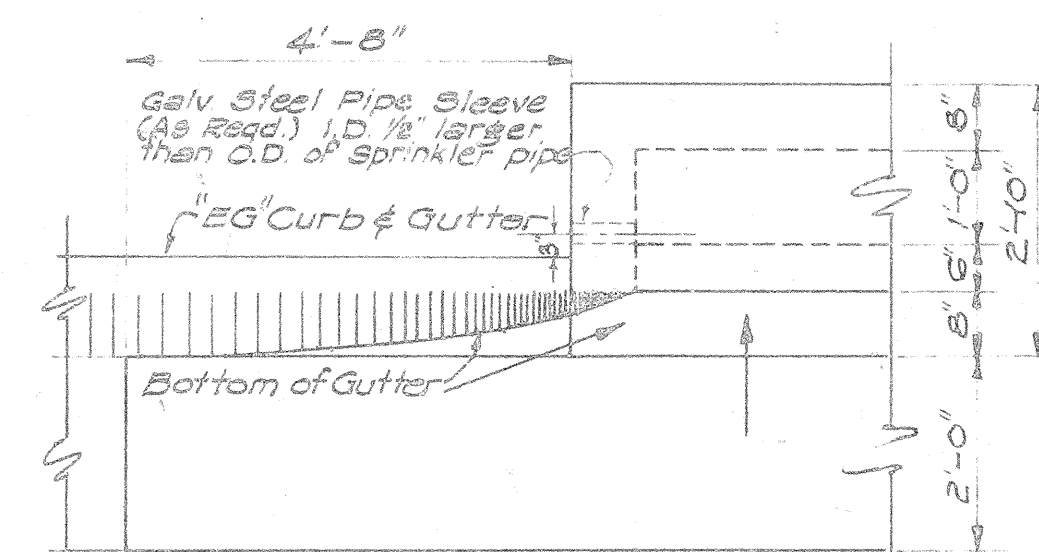
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
TYPICAL DETAILS OF CURB
AND/OR GUTTERS

Scale: As Shown
SHEET No. 012 OF 20 SHEETS DD 609.1

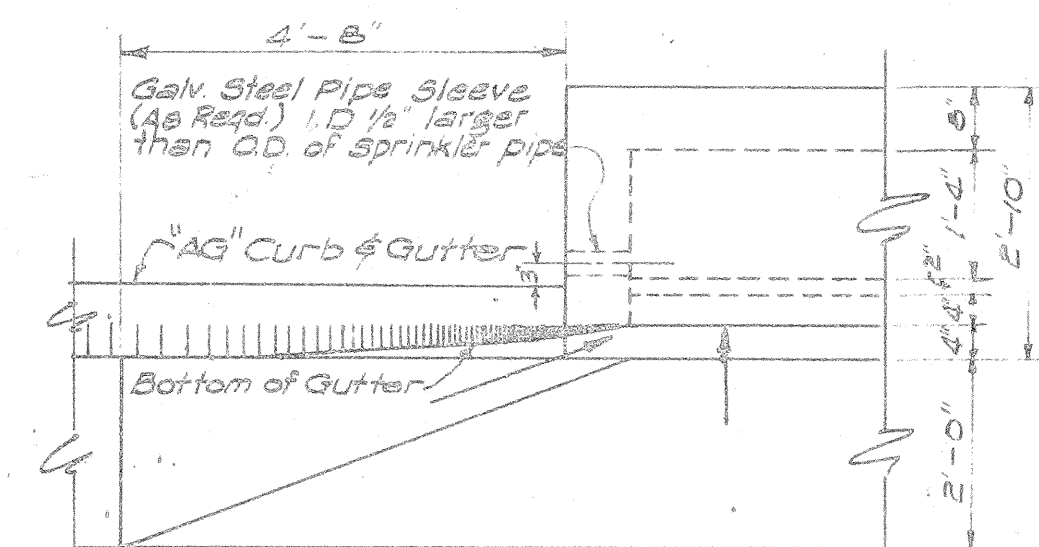
ORIGINAL PLAN	SURVEY PLOTTED BY <u>C. M.</u>	DATE <u>11/1/54</u>
	DESIGNED BY <u>C. M.</u>	
	DRAWN BY <u>J. Y.</u>	
NOTE BOOK	QUANTITIES BY <u> </u>	
	CHECKED BY <u> </u>	



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

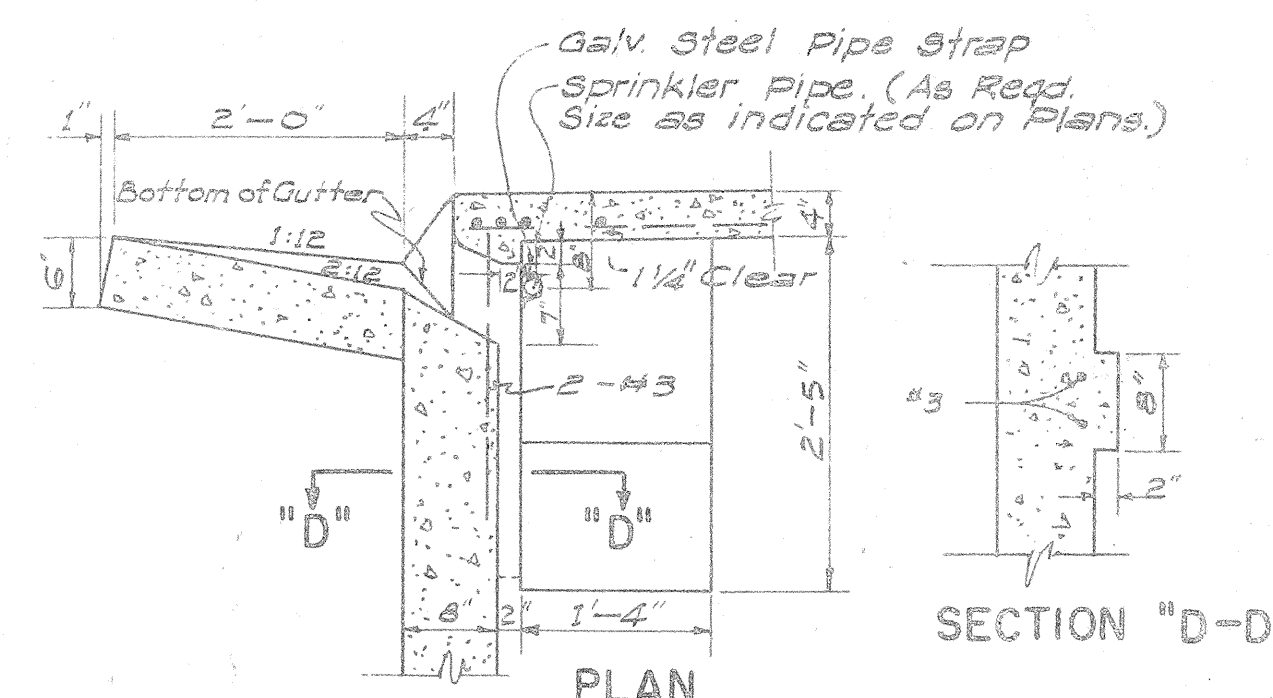


DETAIL OF CATCH BASIN WITH "EG" CURB & GUTTER



DETAIL OF CATCH BASIN WITH "AG" CURB & GUTTER

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



THROAT DETAIL FOR
"AG" CURB & GUTTER

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

GENERAL NOTES

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

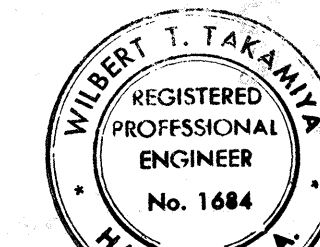
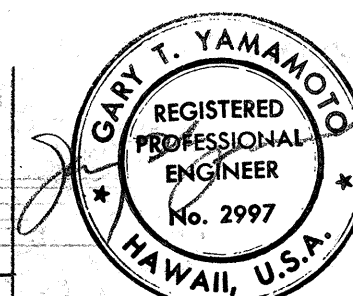
1. Quantities based on $d' = 5.75'$ and $D' = 30''$.
2. Quantities do not include Concrete for Gutter Apron.
3. The Contractor shall install two 6" Cast Iron or Concrete Pipes as incidental to Class A Concrete for Construction Drainage. The Engineer shall determine the exact location in the field.
4. 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.
5. The Contractor shall install Galvanized Steel Pipe Slices and Straps as incidental to Sprinkler System.
6. The type of curb and/or gutter (Type 1, 2, 3, etc.) shall conform to the type specified on the Roadway plans.
7. 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. Type "B" Cast Iron Frame and Cover and Manhole Rungs may be placed at any location as ordered by the Engineer.

8. For Pearl Harbor Interchange Project only.
See Sheet 50 General Concrete Notes and Details.

Type	Class A 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"	4.0 cy.	16.5 cy.	77 lb.	16' - 8"

* Reinforcing steel quantities are for top slab only.

11/8/73		DELETE THIS SHEET. 1 ST SUPP	
DATE		REVISION	
NO.	REVISION	APPROVED BY	DATE



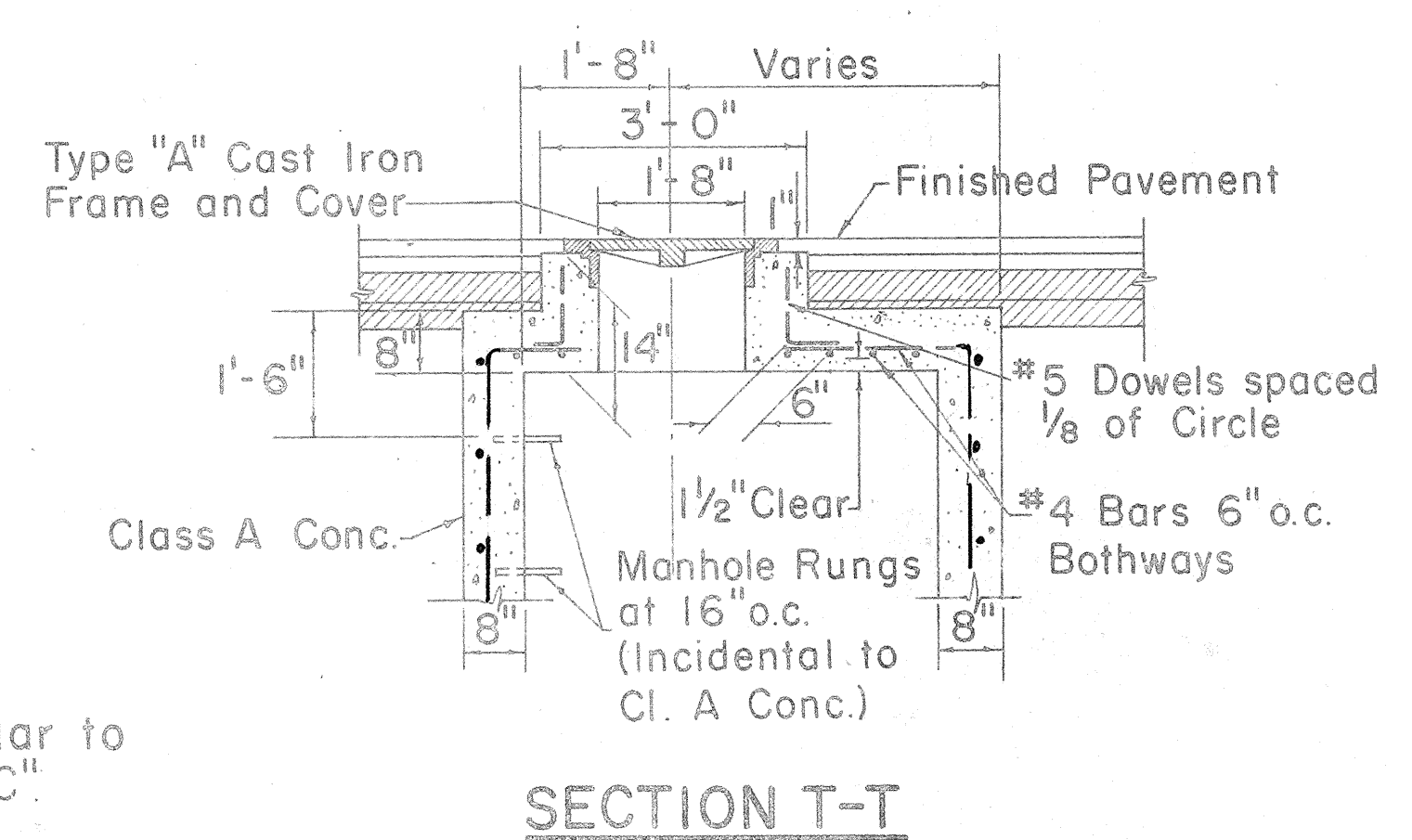
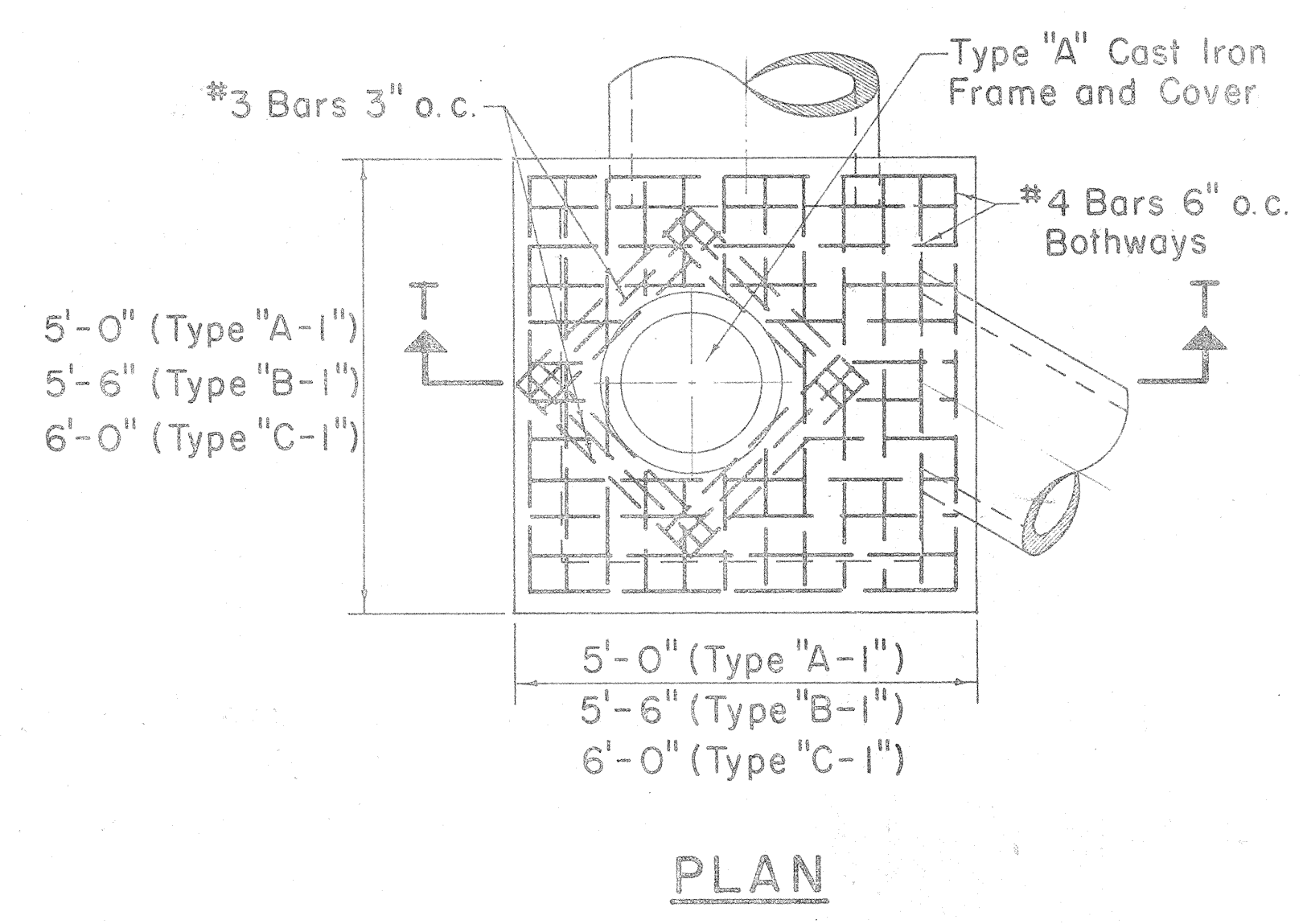
Wilbert T. Takamiya
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OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CATCH BASINS

Scale: As Noted Date: July, 1969
SHEET NO D-14 OF 20 SHEETS

C.O. 53

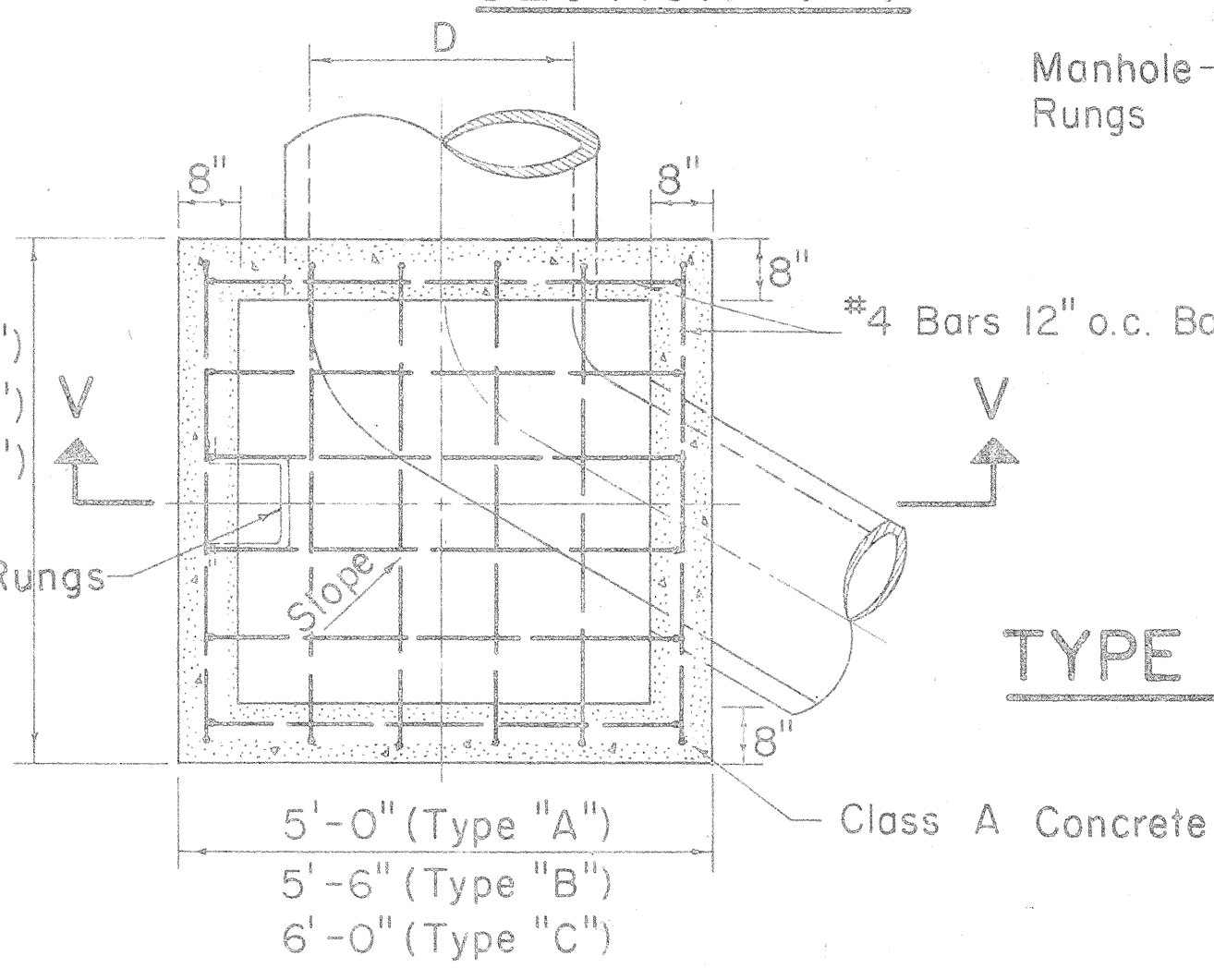
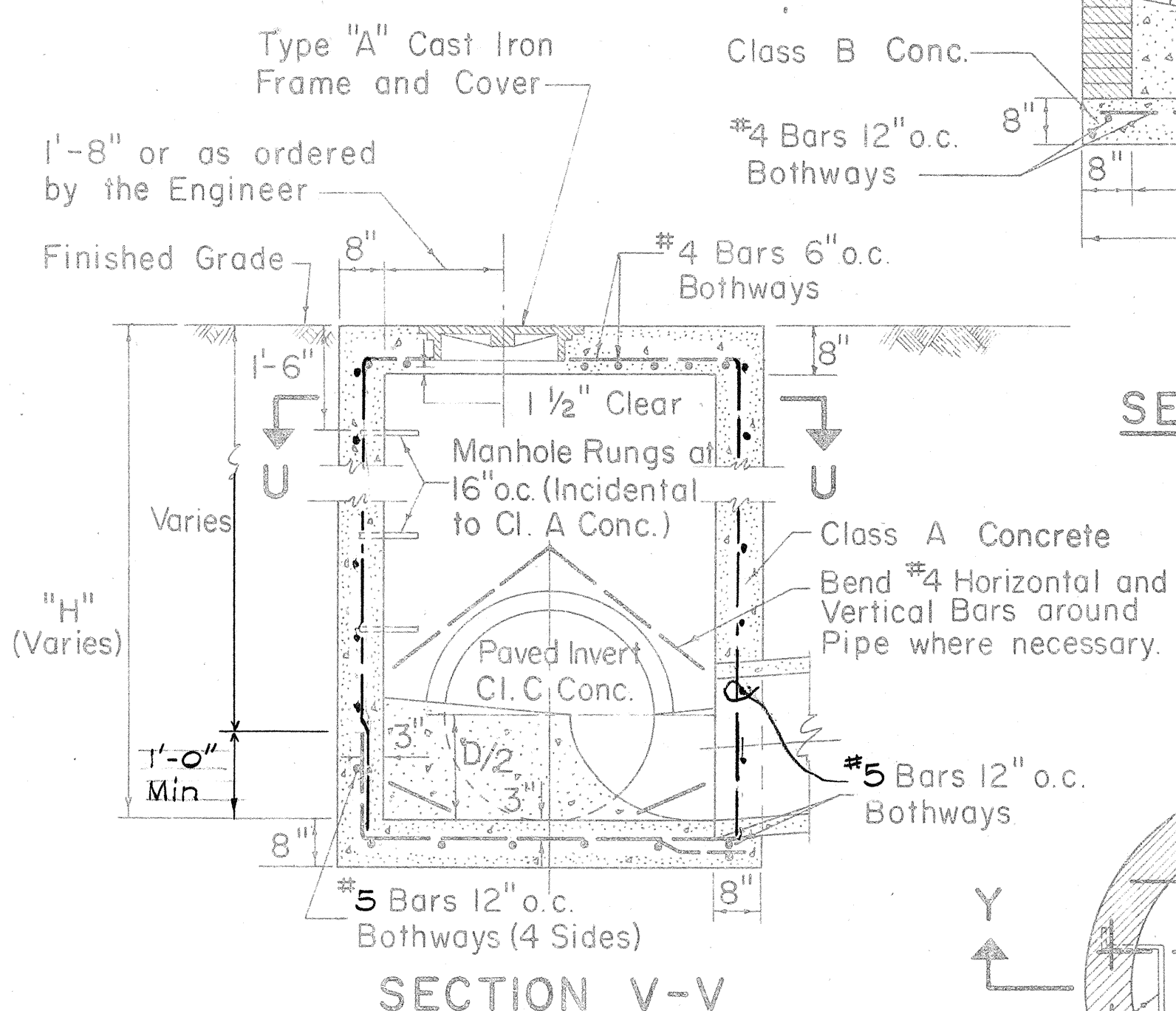


TYPE "A-I", "B-I", & "C-I"
STORM DRAIN MANHOLE
TOP DETAIL UNDER PAVEMENT
 Scale: 1/2" = 1'-0"

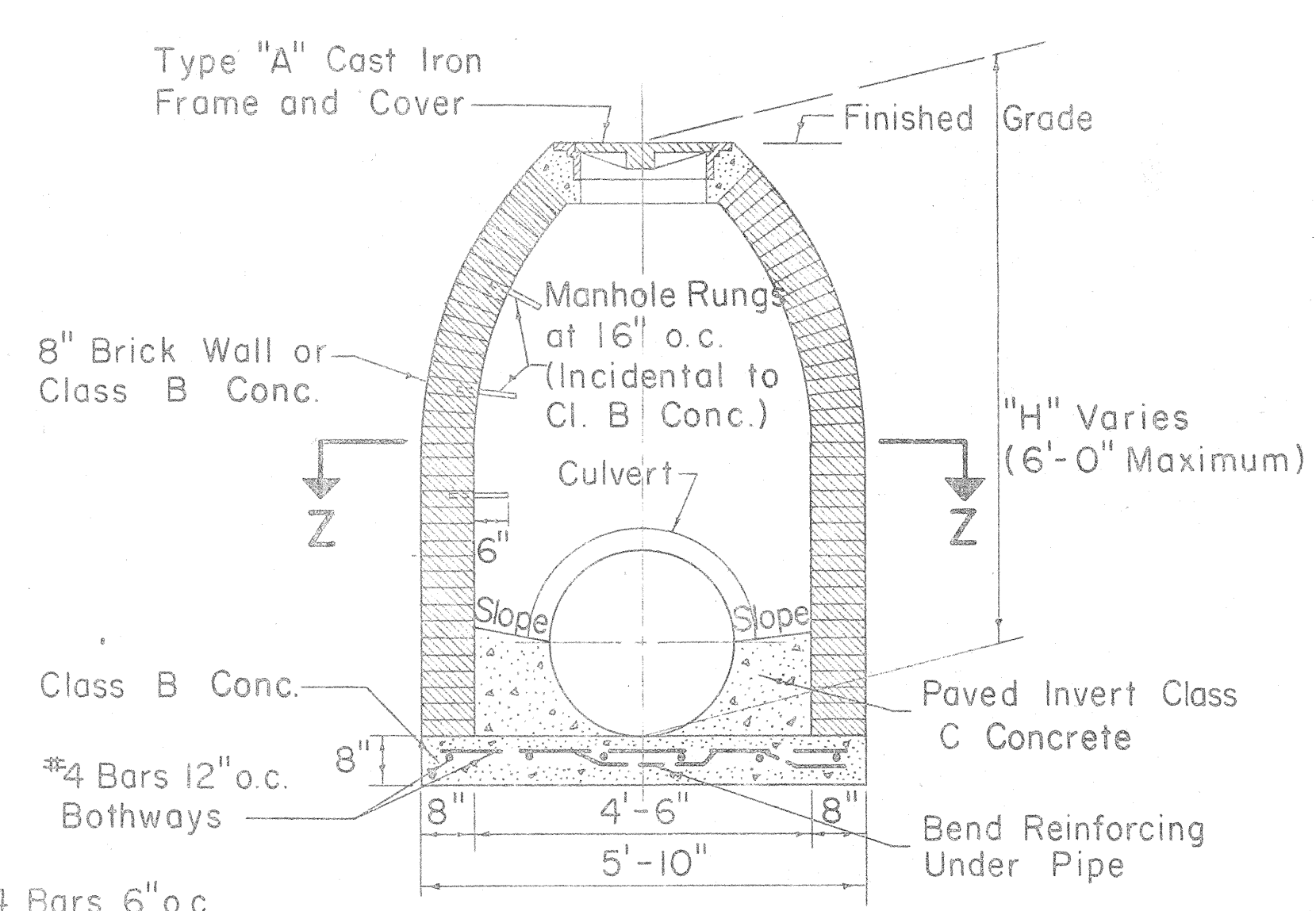
Note:
 Bottom detail similar to
 Type "A", "B", & "C"

GENERAL NOTES

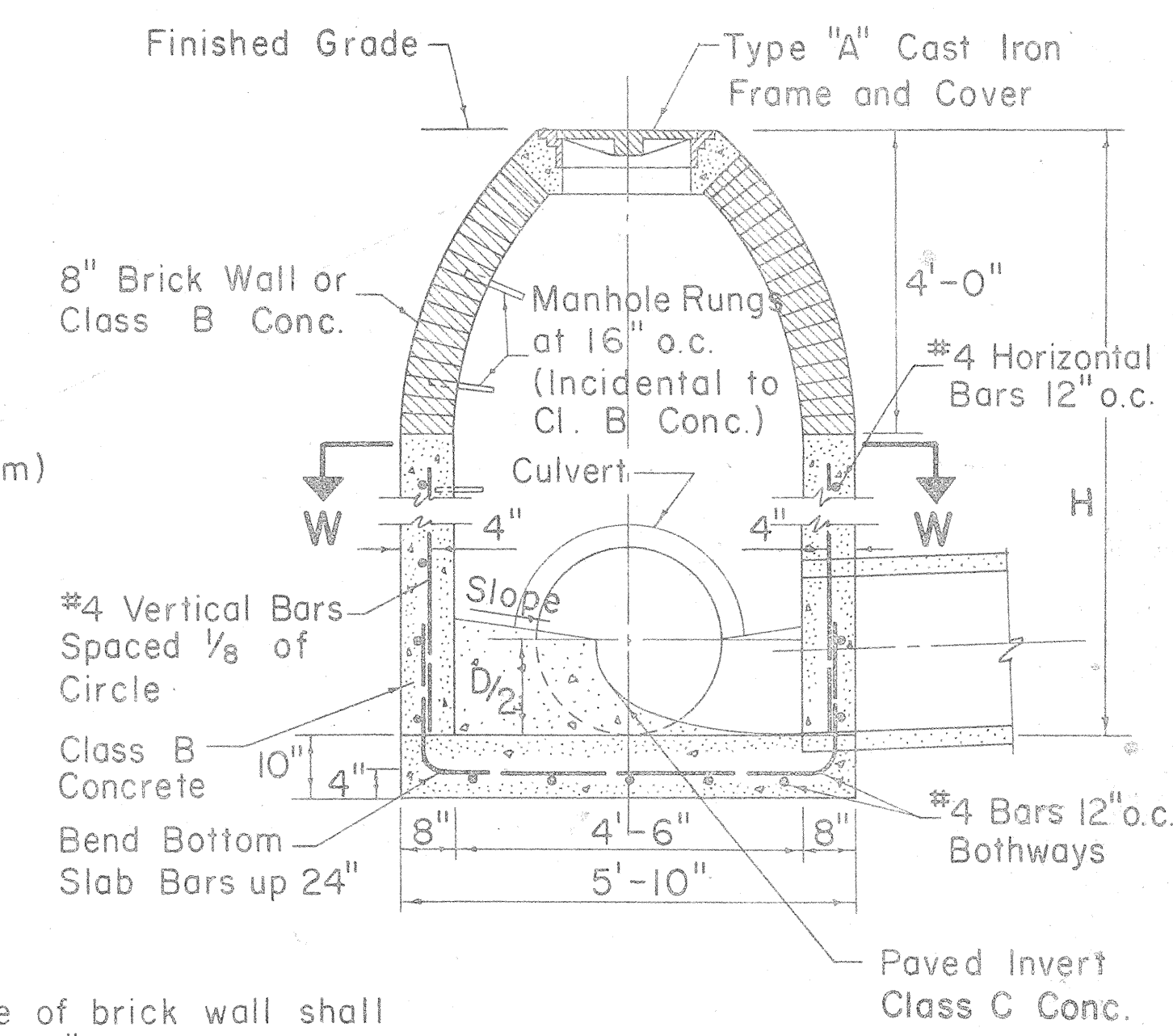
1. Culvert shall enter and leave S.D.M.H. from any position and in the direction indicated by the plans or ordered by the Engineer.
2. Manhole Rungs (16" o.c.) are required when "H" is greater than 4'-6". Only one rung (12" from the bottom) is required if "H" is 4'-6" or less. Type "A" C.I. Frame and Cover and Manhole Rungs may be placed at any location as ordered by the Engineer.
3. For Pearl Harbor Interchange Project only.
 See Sheet 50 for General Concrete Notes and Details.



TYPE "A", "B", & "C"
S.D.M.H.
 Scale: 1/2" = 1'-0"

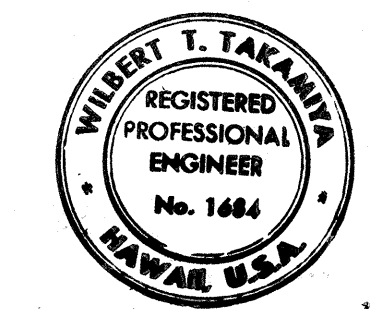
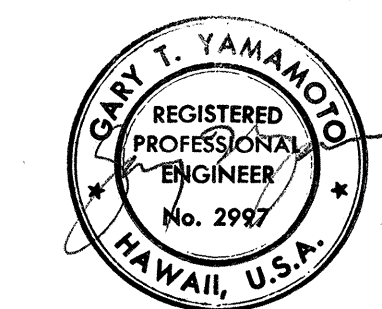


TYPE "D" STORM DRAIN MANHOLE
 Scale: 1/2" = 1'-0"



TYPE "E" STORM DRAIN MANHOLE
 Scale: 1/2" = 1'-0"

- NOTE:**
1. Exterior surface of brick wall shall be plastered with 1" thickness of 1:2 Cement Mortar.
 2. Number, size and direction of culvert at manhole to be as shown on plans.
 3. Paved invert not required at drop manholes.
 4. All Class C Concrete to be incidental to Class B Concrete.

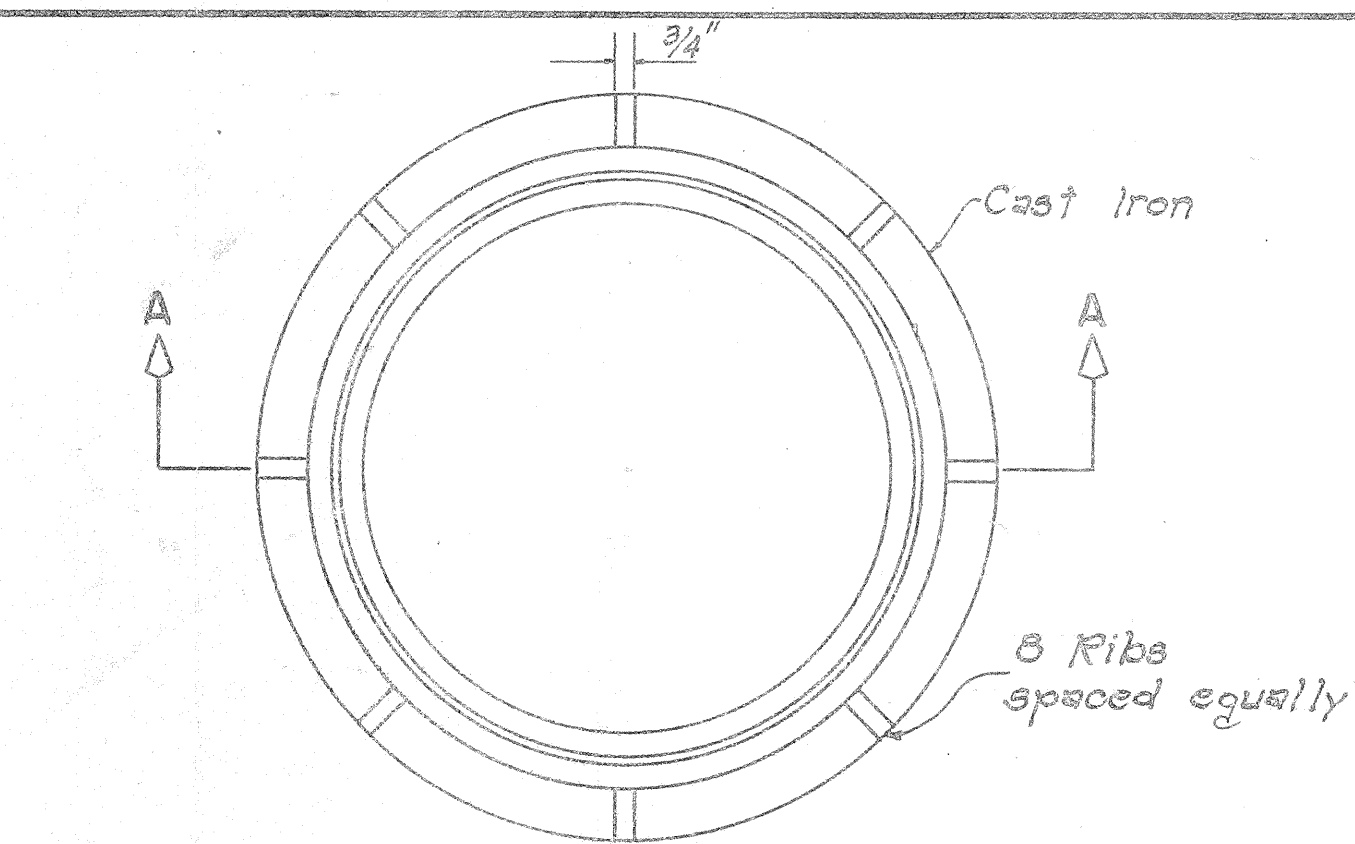


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 OR UNDER MY SUPERVISION

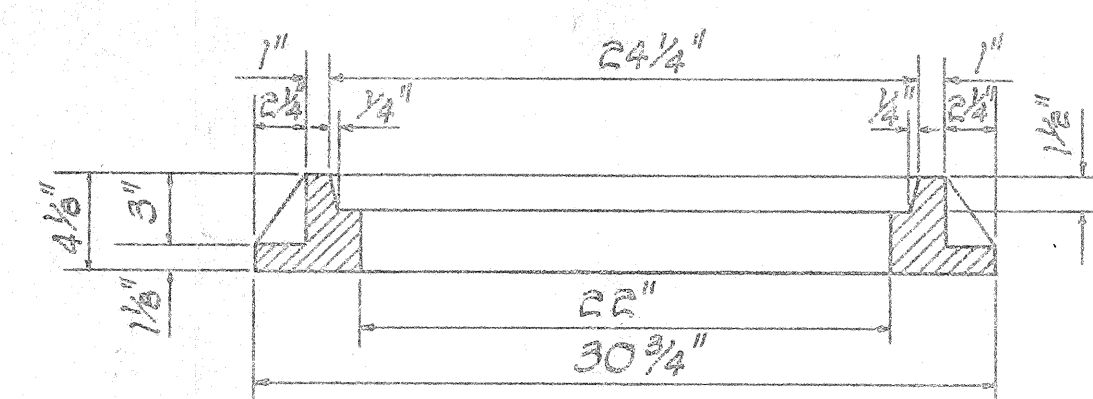
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
STORM DRAIN MANHOLES	
Scales: As Noted	Date: July, 1969

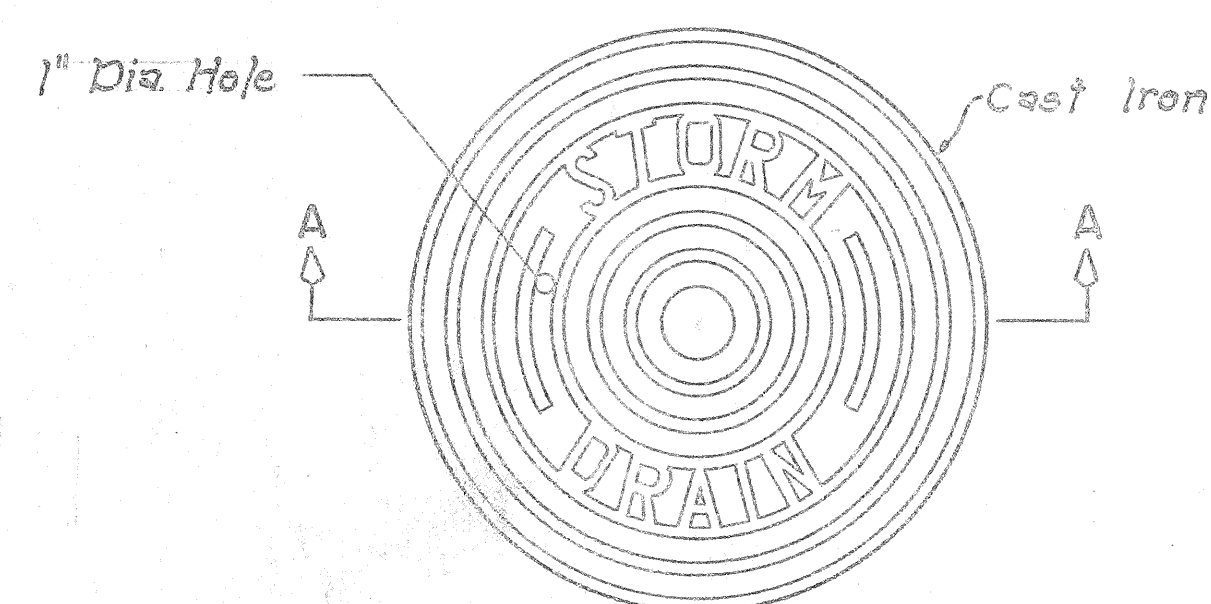
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	111(110)15	1973	55	220



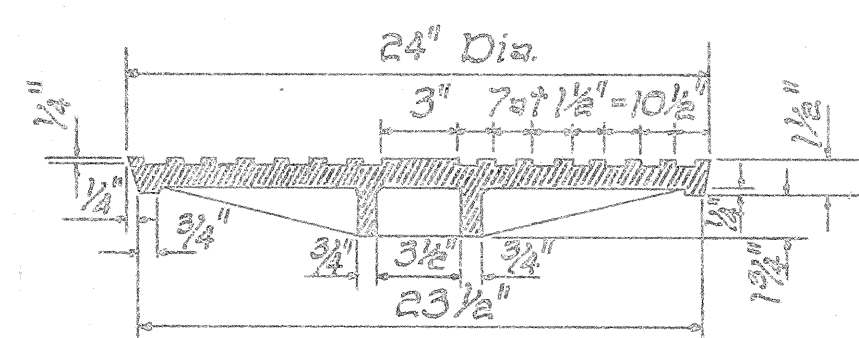
PLAN



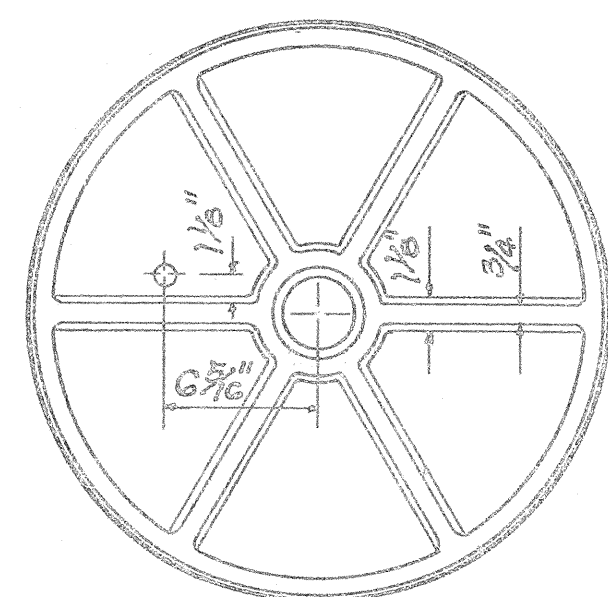
SECTION A-A



PLAN



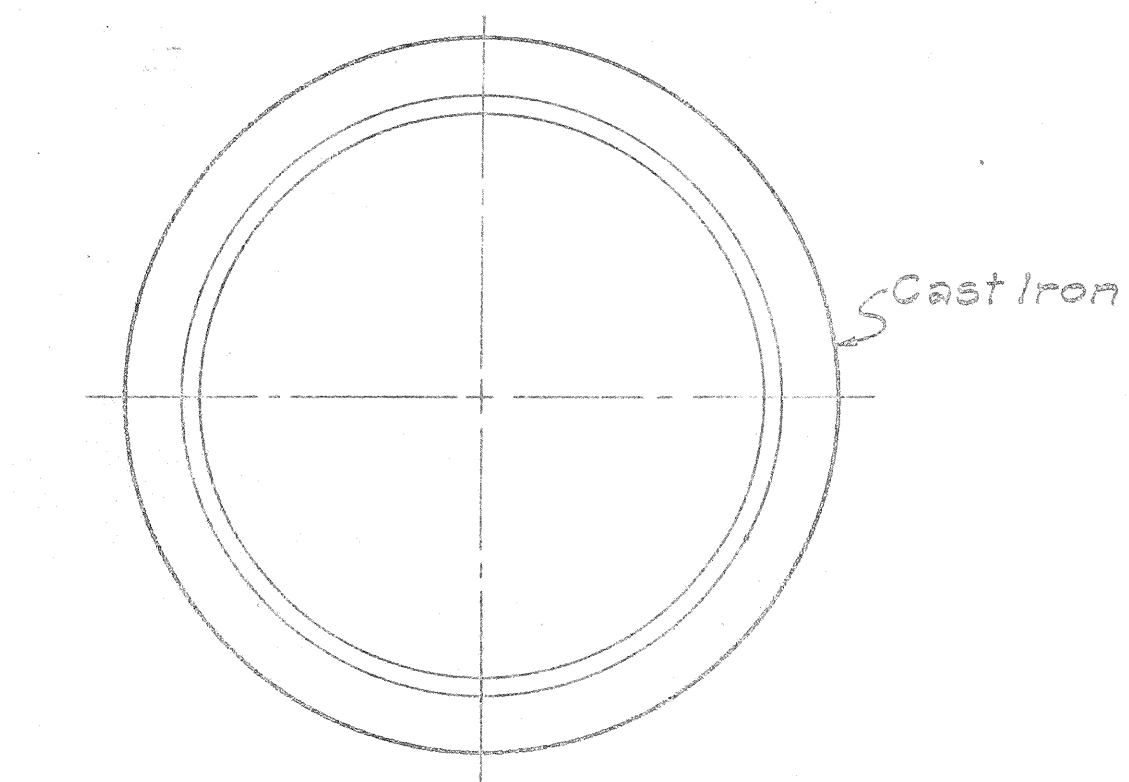
SECTION A-A



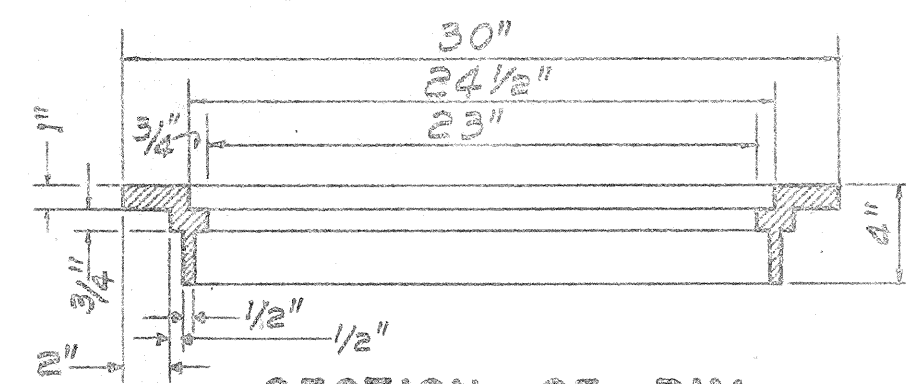
BOTTOM VIEW OF COVER

DETAILS OF TYPE "P"
CAST IRON FRAME AND COVER

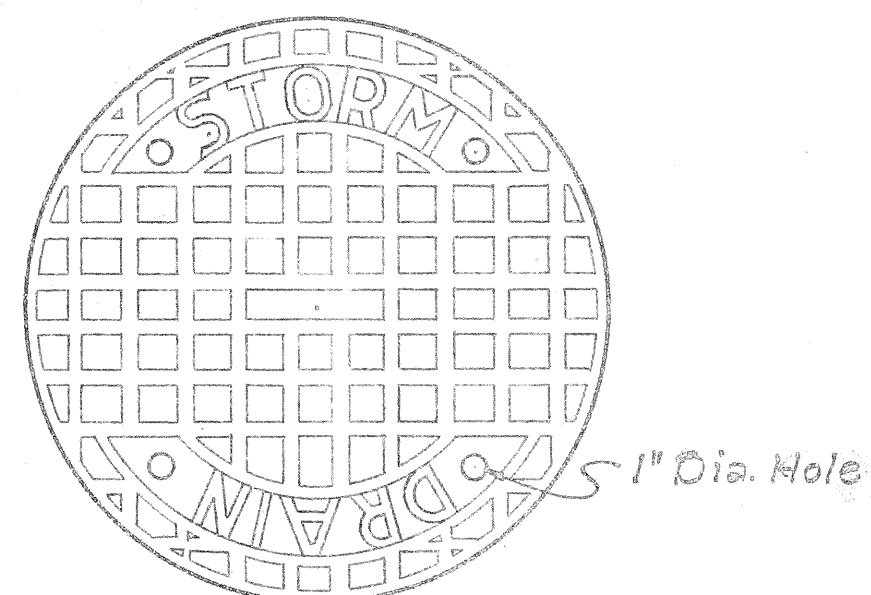
SCALE: 1-1/2" = 1'-0"



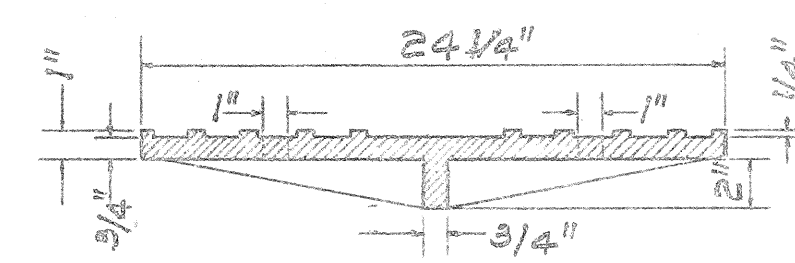
PLAN OF RIM



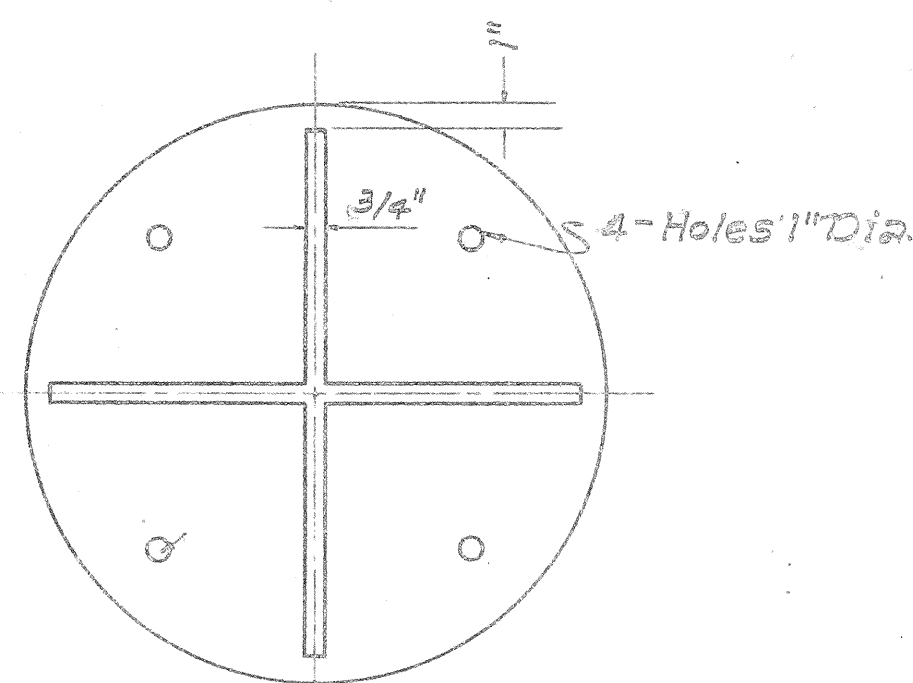
SECTION OF RIM



TOP VIEW OF COVER



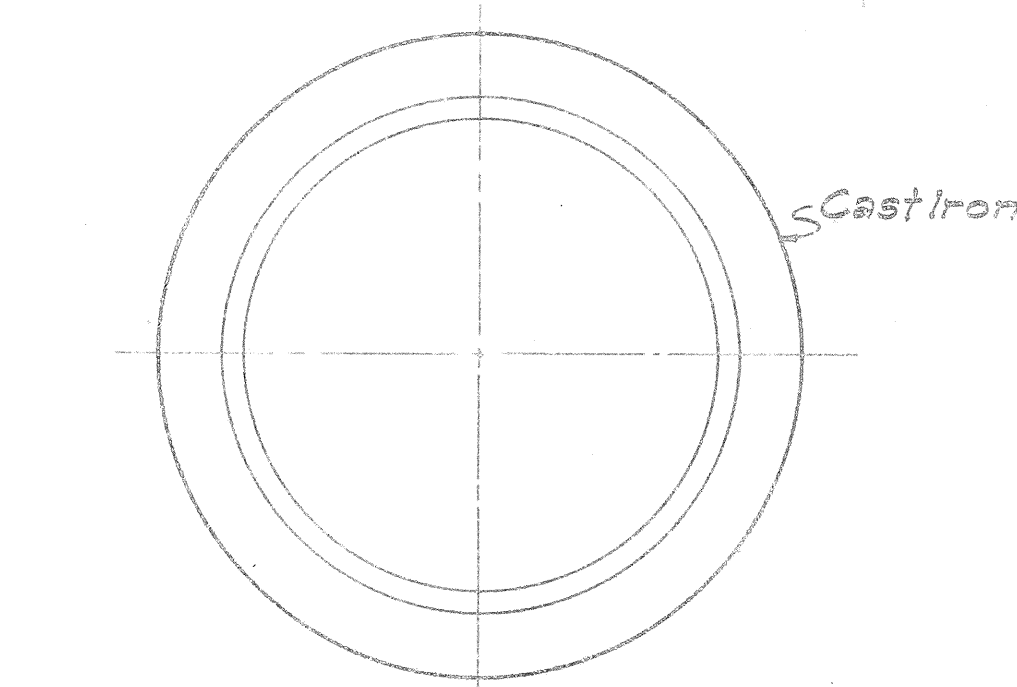
SECTION



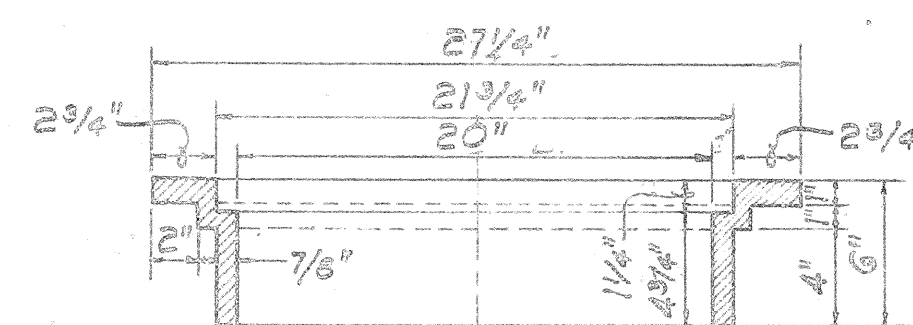
BOTTOM VIEW OF COVER

DETAILS OF TYPE "B"
CAST IRON FRAME AND COVER

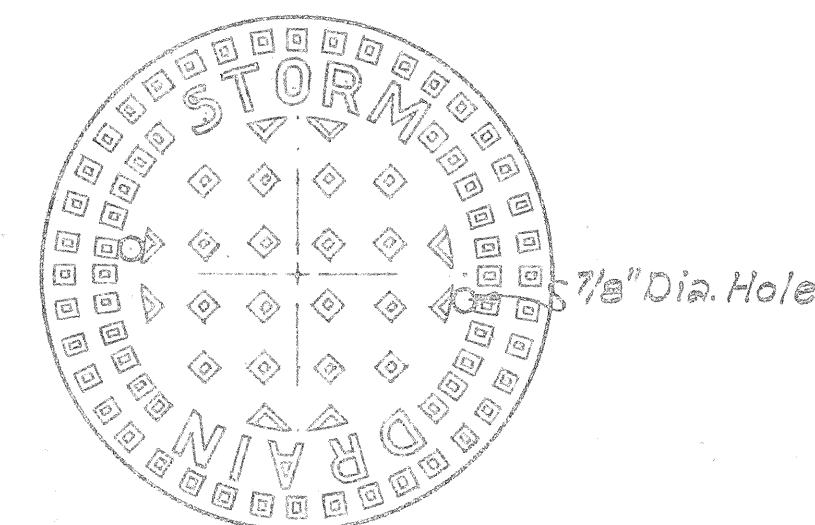
SCALE: 1-1/2" = 1'-0"



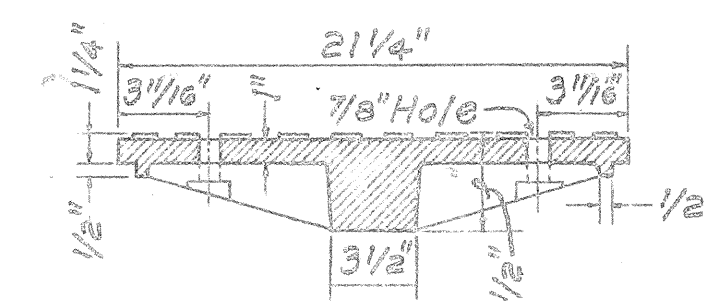
PLAN OF RIM



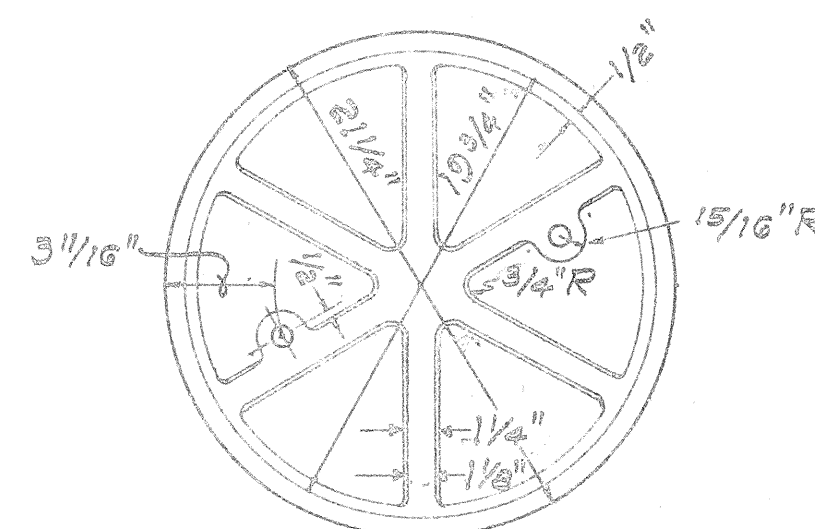
SECTION OF RIM



TOP VIEW OF COVER



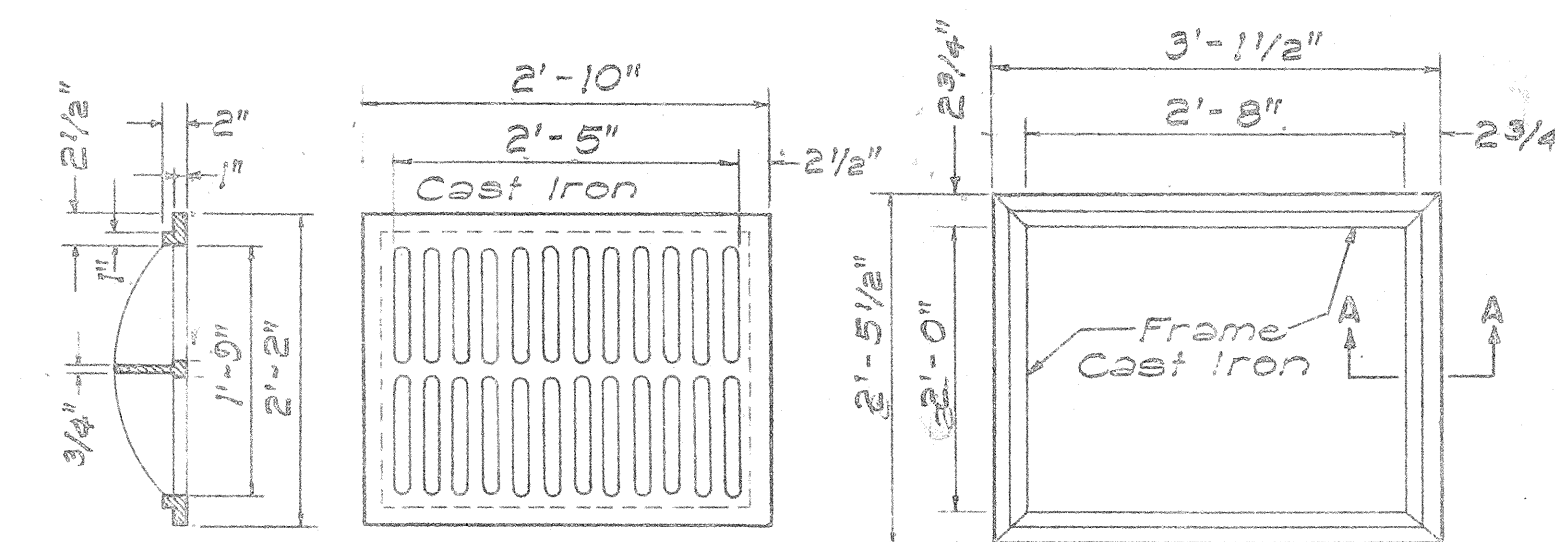
SECTION



BOTTOM VIEW OF COVER

DETAILS OF TYPE "A"
CAST IRON FRAME AND COVER

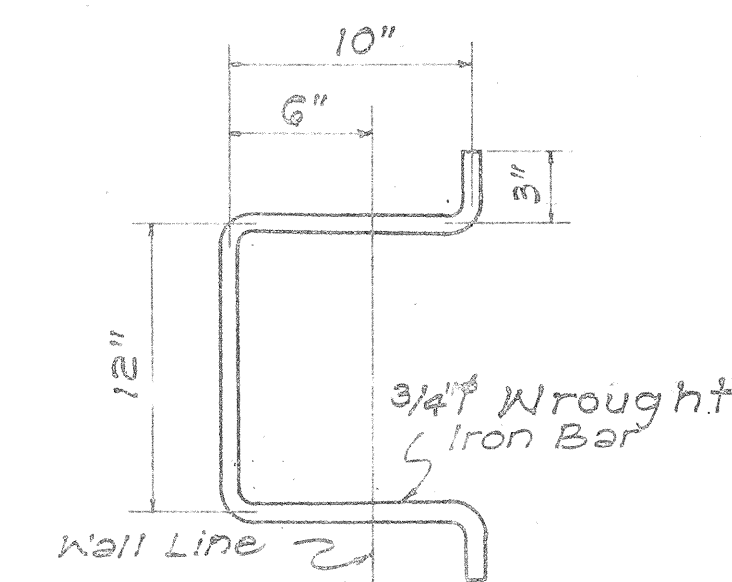
SCALE: 1-1/2" = 1'-0"



SECTION TOP VIEW TOP VIEW

TYPE C C.I. FRAME AND GRATE

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



MANHOLE RUNG

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

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

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

NO.	REVISION	APPROVED BY	DATE
1.	Detail of Type "P" Cast Iron Frame and Cover	H.T.	1-6-71

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
CATCH BASIN AND
MANHOLE CASTINGS
Scale: As Noted Date: July, 1969
SHEET NO. 55 OF 20 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11-1(10)35	1973	56	220

GENERAL NOTES

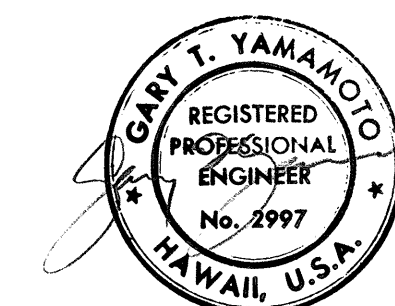
- Contractor has the option of using cast malleable iron, cast steel, welded, bolted, cast malleable iron end block or cast steel end block grate.
- Grates and Frames shall be hot dip galvanized after fabrication, see specifications.
- All welds $\frac{3}{8}$ " unless otherwise noted.
- Center support assembly shall be used when two or more grates are specified. Incidental to Types A-9 or A-12 Frame and Grates.
- Refer to "Grate Bar Spacing Table" for Types A-9 and A-12 Grate dimensions.
- The various materials shall conform to the specifications of ASTM as listed in the following tabulation and the Std. Specifications.

Material	ASTM Designation
Structural Steel	A283, Grade D
Cast Steel	A27, Grade 65-35
Malleable Iron Casting	A 47, Gr. No. 35018

GRATE BAR SPACING TABLE			
TYPE	NO. BARS	CLEAR BAR SPACING-W	X
A-9	9	2"	1 9/16"
A-12	12	1 3/8"	1 1/4"

NOTE:

- Type A-9 - Use in locations off the roadbed on all types of highways.
- Type A-12 - Use within the roadbed on all types of highways.



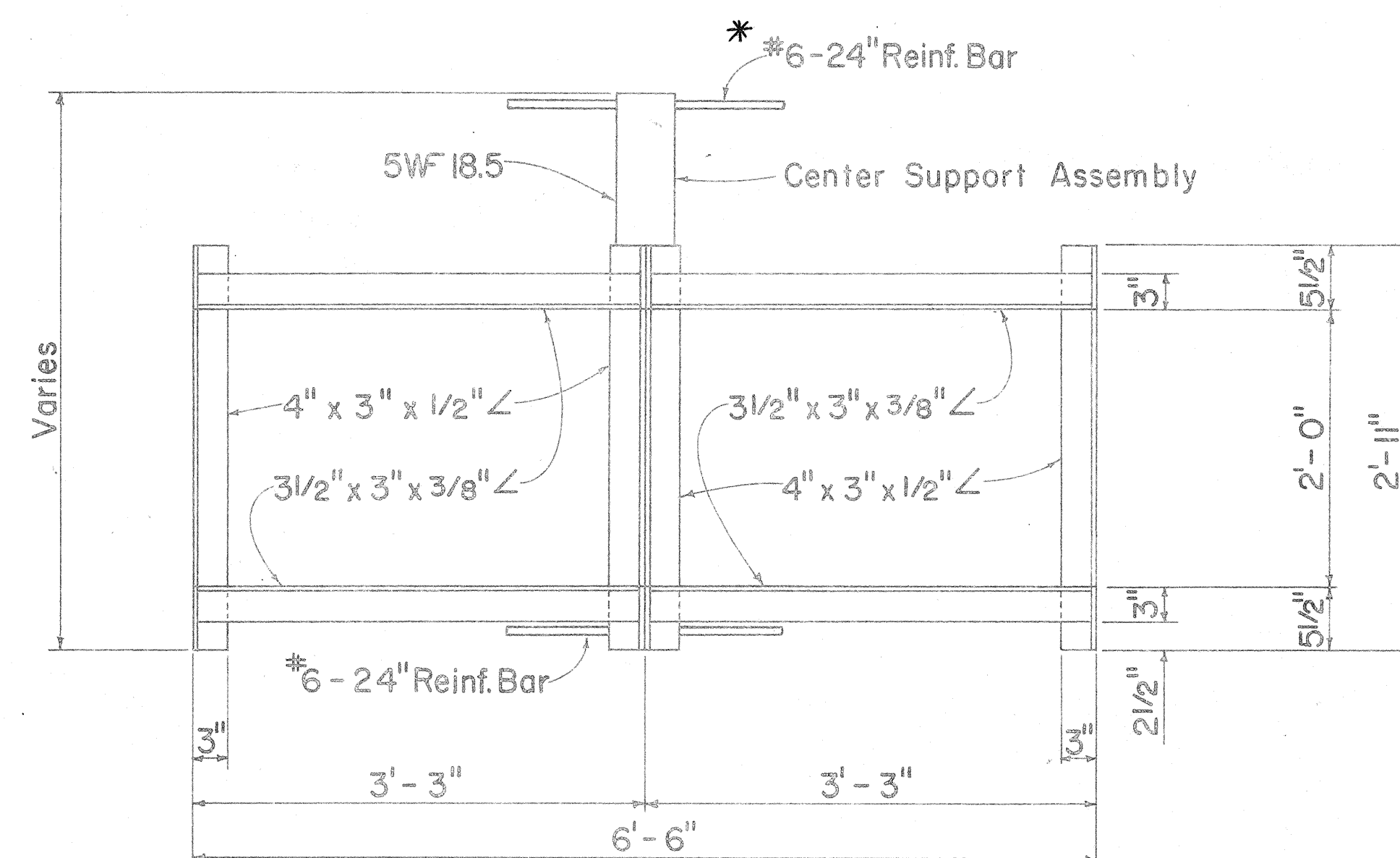
Without a Seal
THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

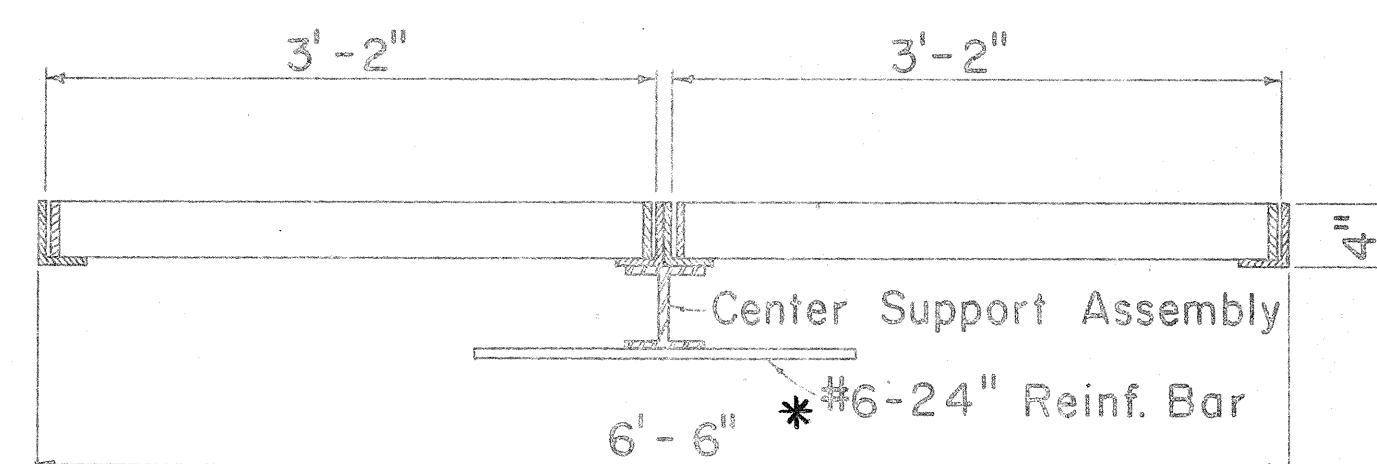
TYPE A-9 AND A-12
FRAMES AND GRATES

Scales: As Noted Date: Aug. 1968

SHEET No. 56 OF 20 SHEETS DH 7



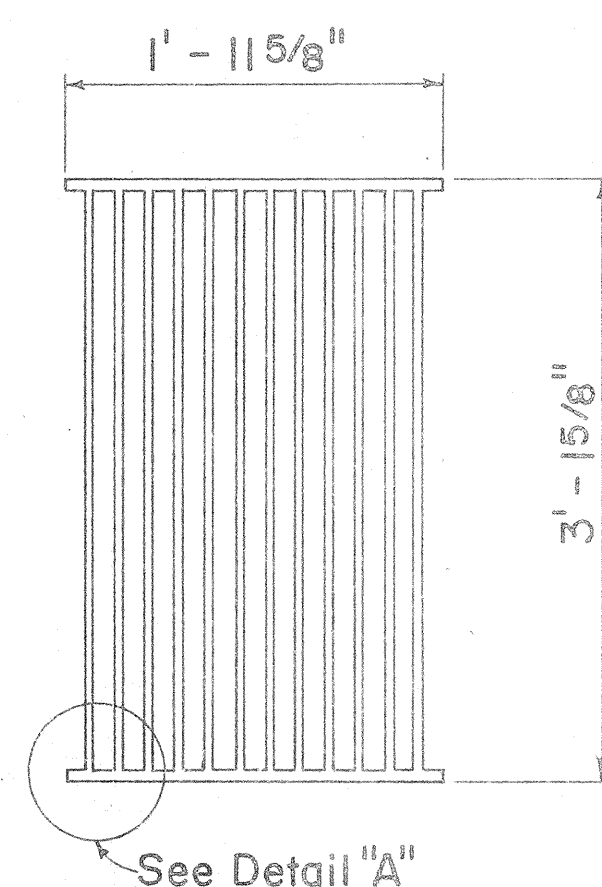
PLAN
(Two or More Grates)



LONGITUDINAL SECTION
(Thru Frame & Grate)

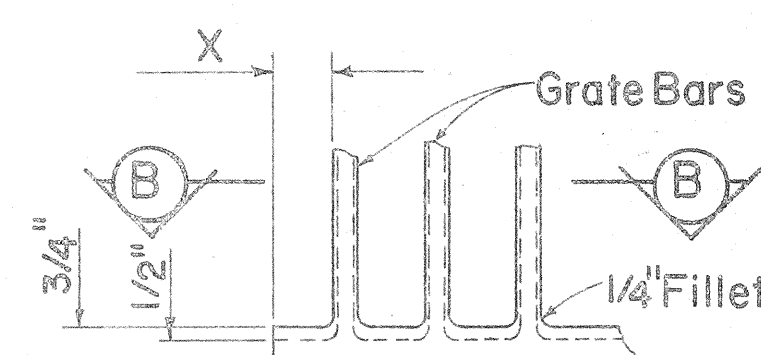
FRAME DETAILS

Scale: 1" = 1' - 0"



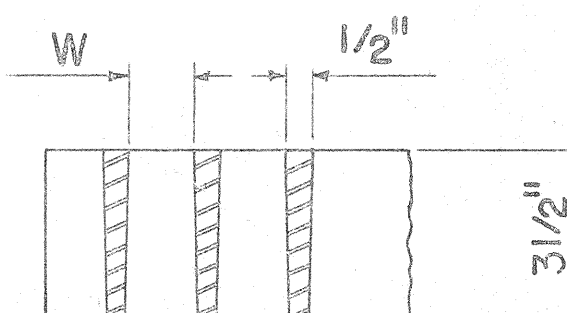
PLAN

Scale: 1" = 1' - 0"



DETAIL "A"

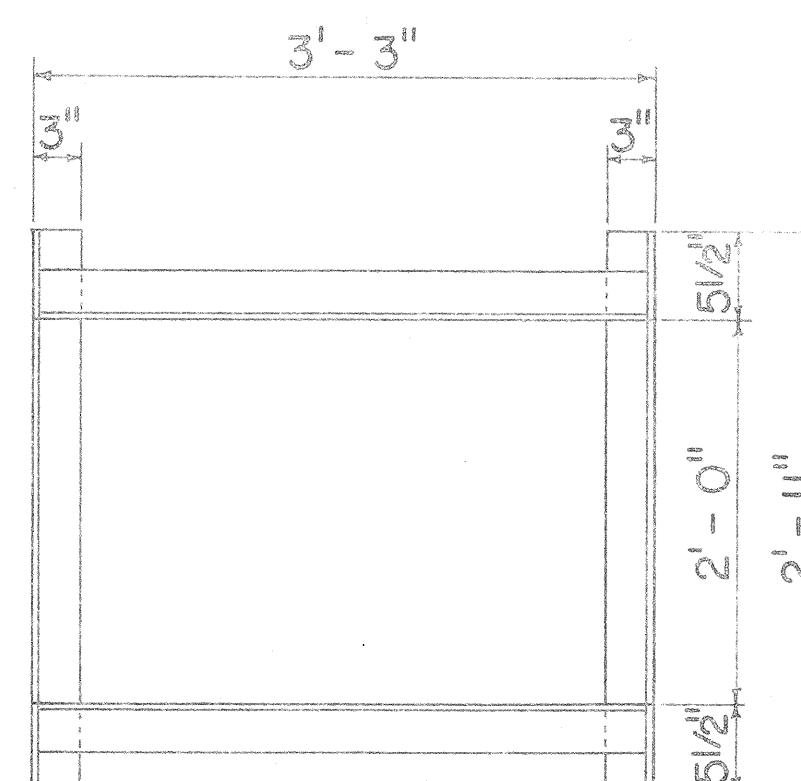
Scale: 3" = 1' - 0"



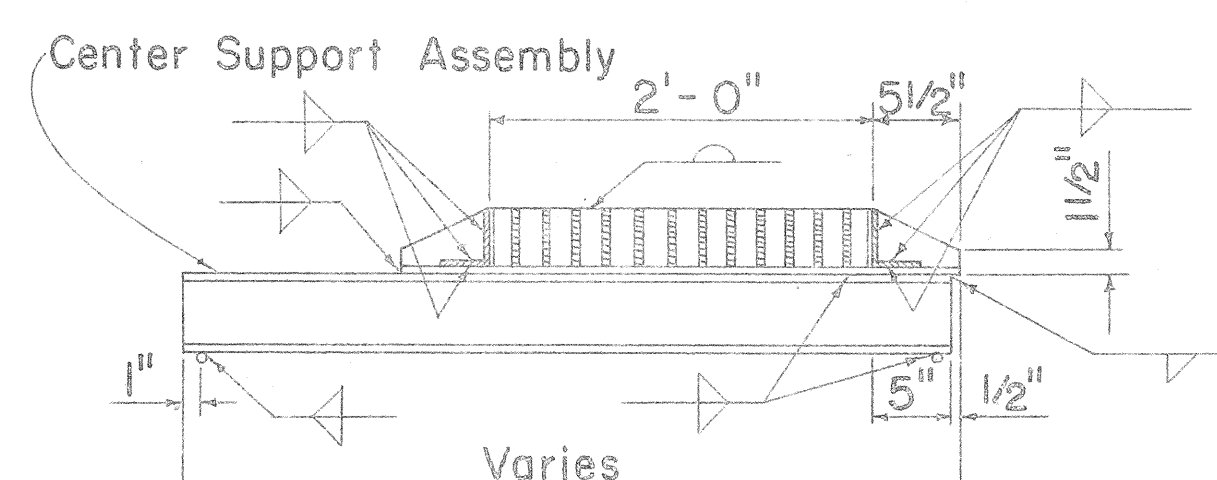
SECTION "B-B"

Scale: 3" = 1' - 0"

ALTERNATIVE CAST MALLEABLE IRON
OR CAST STEEL GRATE



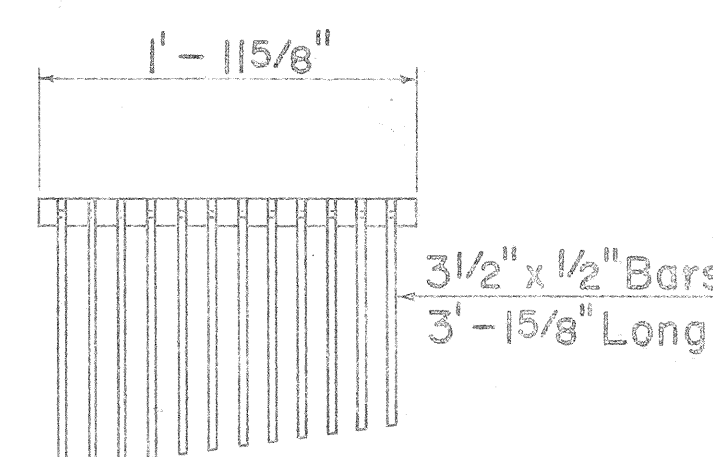
PLAN
(Single Grate)



CROSS SECTION
(Thru Frame & Grate)

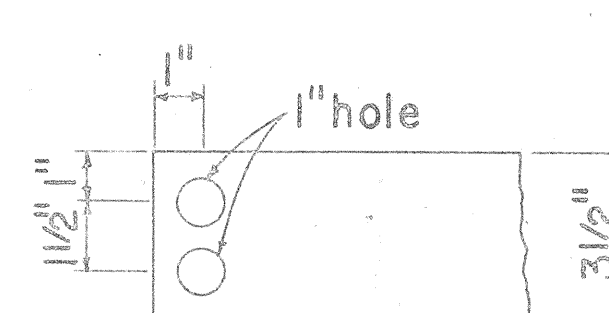
NOTE:

- * FOR PEARL HARBOR INTERCHANGE PROJECT ONLY, BEND #6 REINF. BAR SEE DETAIL SHT. 50



CAST END BLOCK

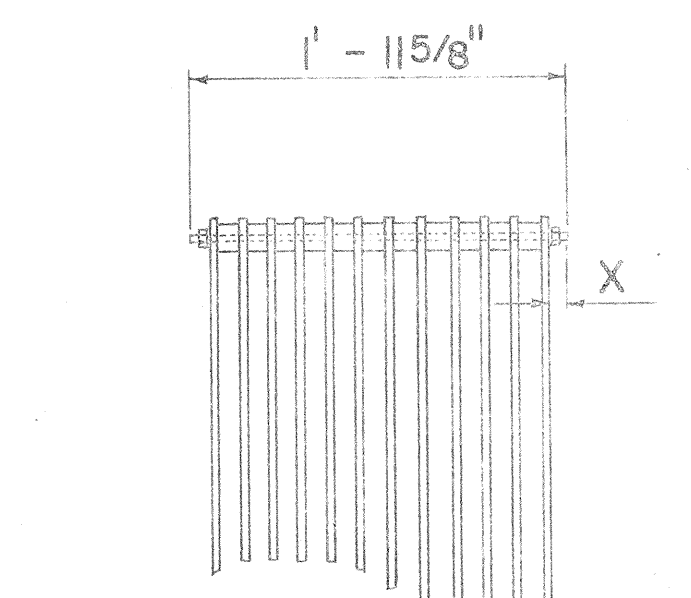
Scale: 1" = 1' - 0"



END OF BAR

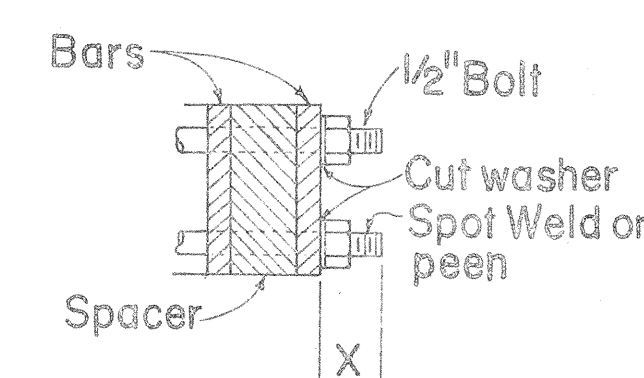
Scale: 3" = 1' - 0"

ALTERNATIVE CAST MALLEABLE IRON
OR CAST STEEL END BLOCK GRATE



BOLTED END BLOCK

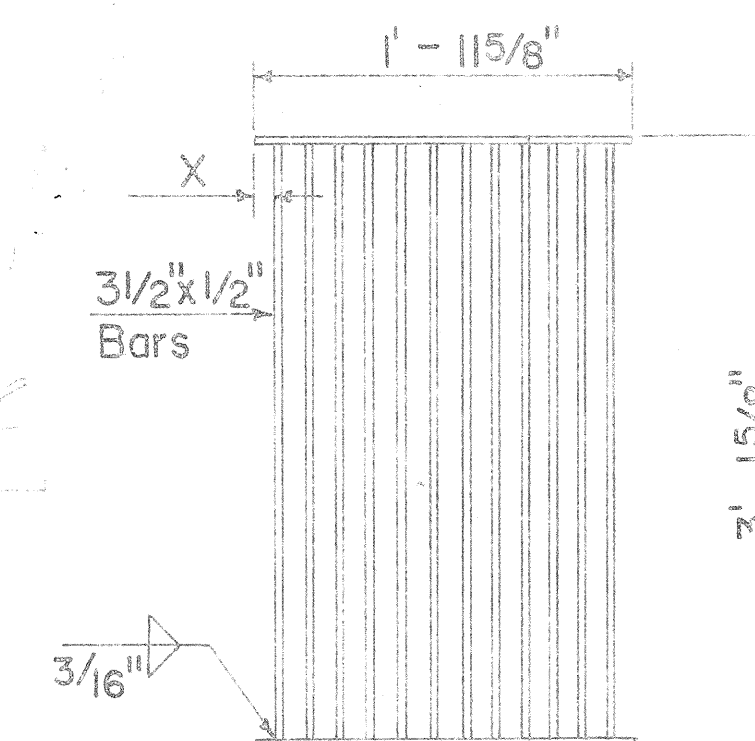
Scale: 1" = 1' - 0"



BOLTING DETAIL

Scale: 3" = 1' - 0"

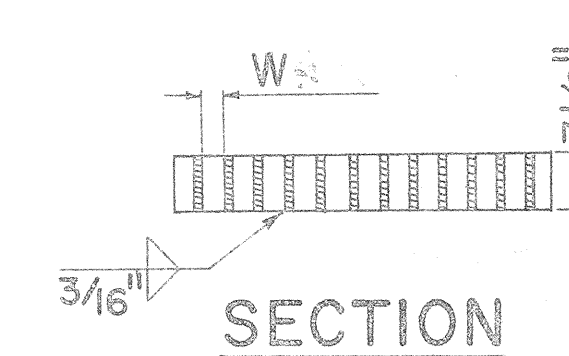
ALTERNATIVE BOLTED GRATE



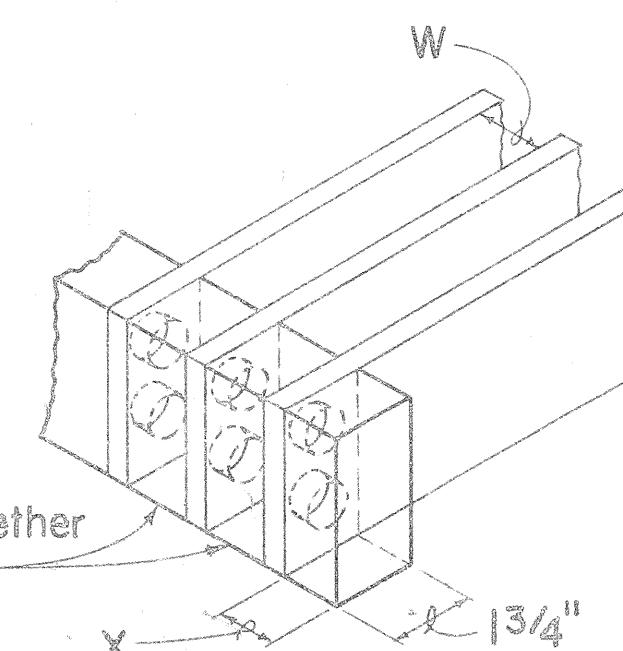
PLAN

ALTERNATIVE WELDED GRATE

Scale: 1" = 1' - 0"



SECTION



Both ends held together
by solid casting

SURVEY PLOTTED BY	DATE
DRAWN BY	7/68
DESIGNED BY	7/68
QUANTITIES BY	7/68
CHECKED BY	8/68
ORIGINAL	
PLAN	
NOTE BOOK	
No.	

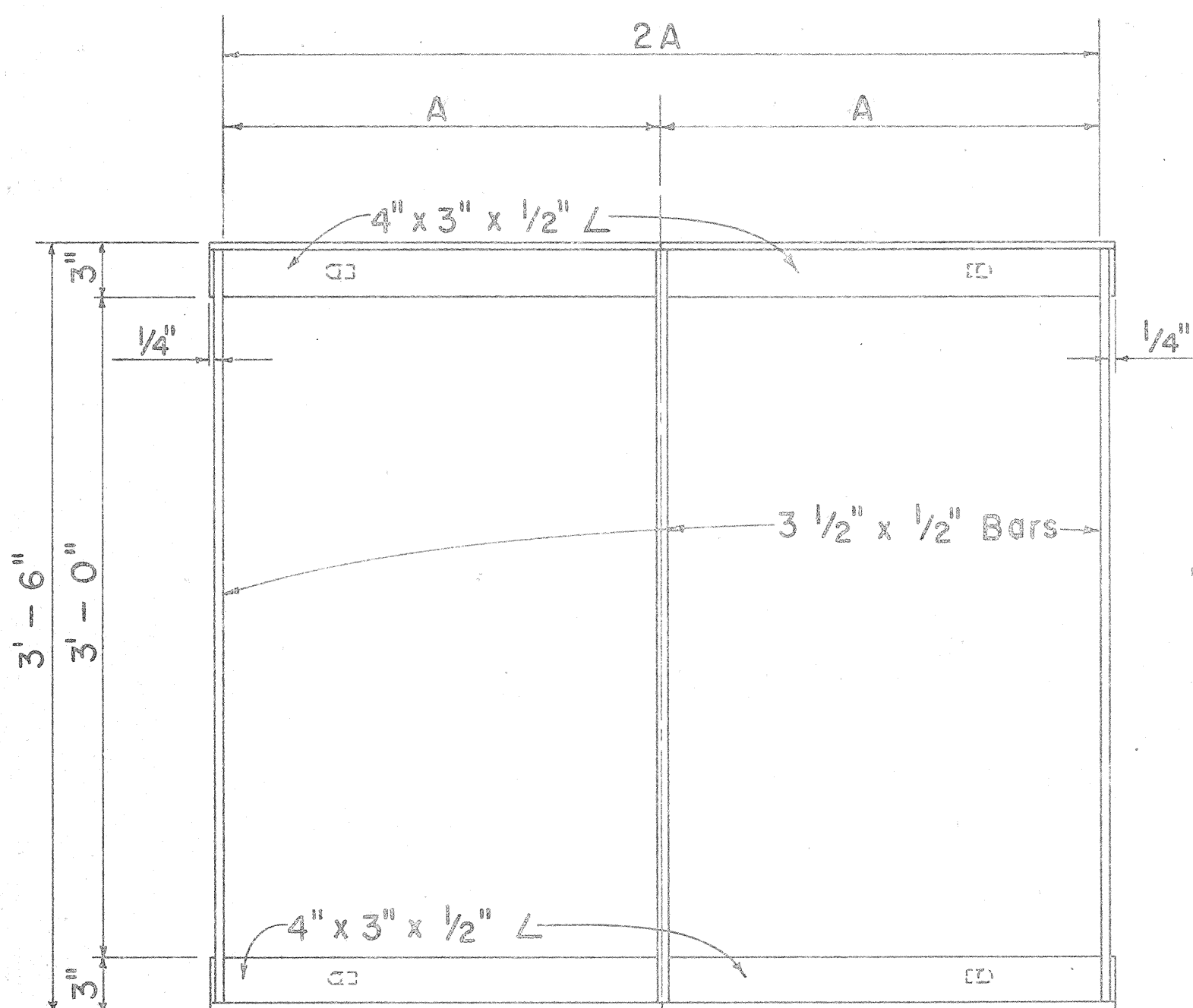
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1-11-1010-15	1973	57	220

GENERAL NOTES

1. Grates and Frames shall be hot dip galvanized after fabrication, see specifications.
2. All welds $\frac{3}{8}$ " unless otherwise noted.
3. Refer to "Spacing Table" for Types 61614 & 61616 Drop Intake and Frame & Grates dimensions.
4. The Frame & Grate materials shall conform to the specifications of ASTM Designation Structural Steel A283, Grade D and the Standard Specifications.
5. 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.
6. 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. Manhole Rungs may be placed at any location as ordered by the Engineer.

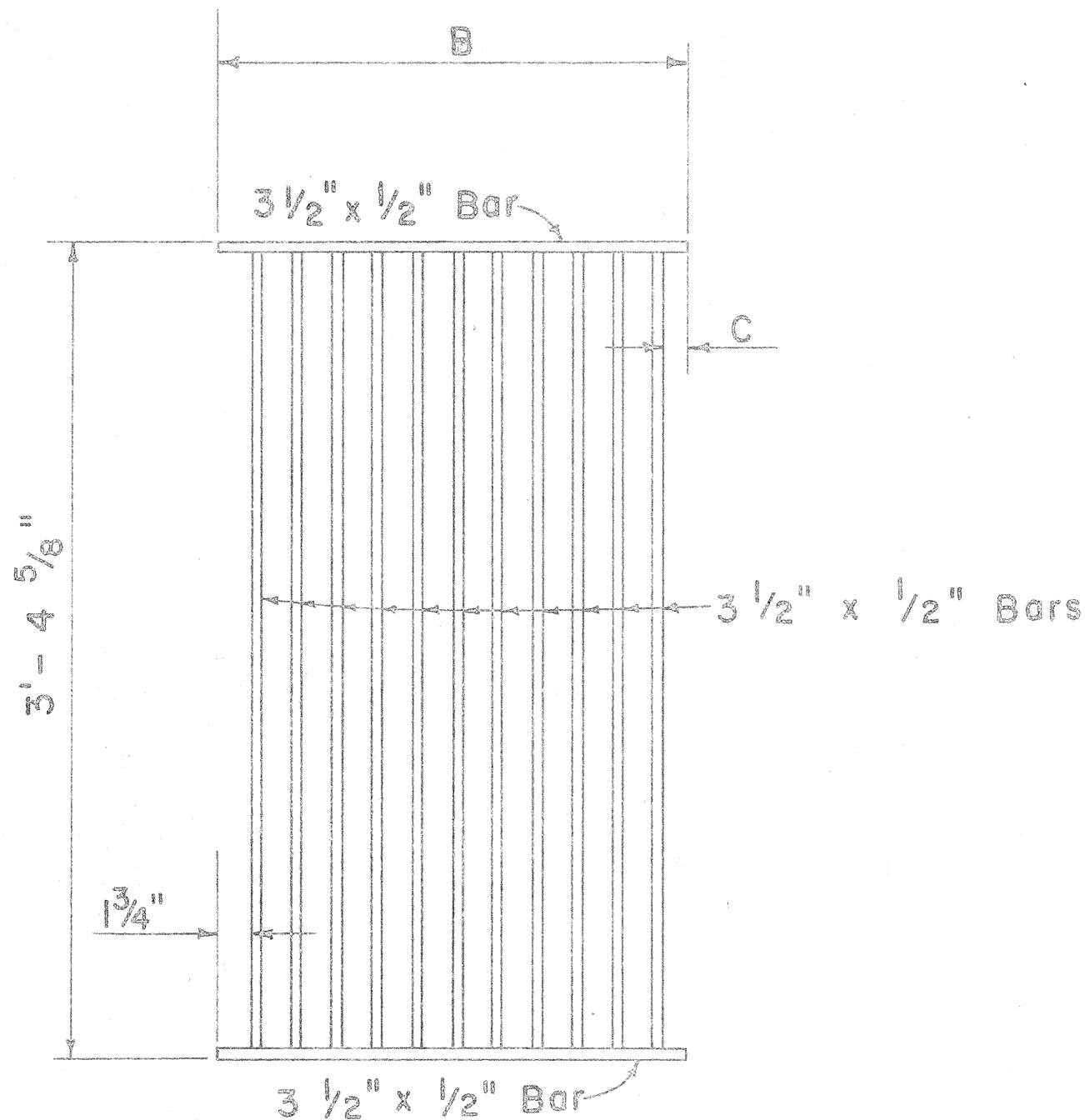
SPACING TABLE					
TYPE	NO. BARS	A	B	C	D
61614	11	2'-0"	1'-11 $\frac{1}{2}$ "	1 $\frac{1}{4}$ "	1'-6"
61616	17	3'-0"	2'-11 $\frac{3}{8}$ "	1 $\frac{1}{8}$ "	2'-0"

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



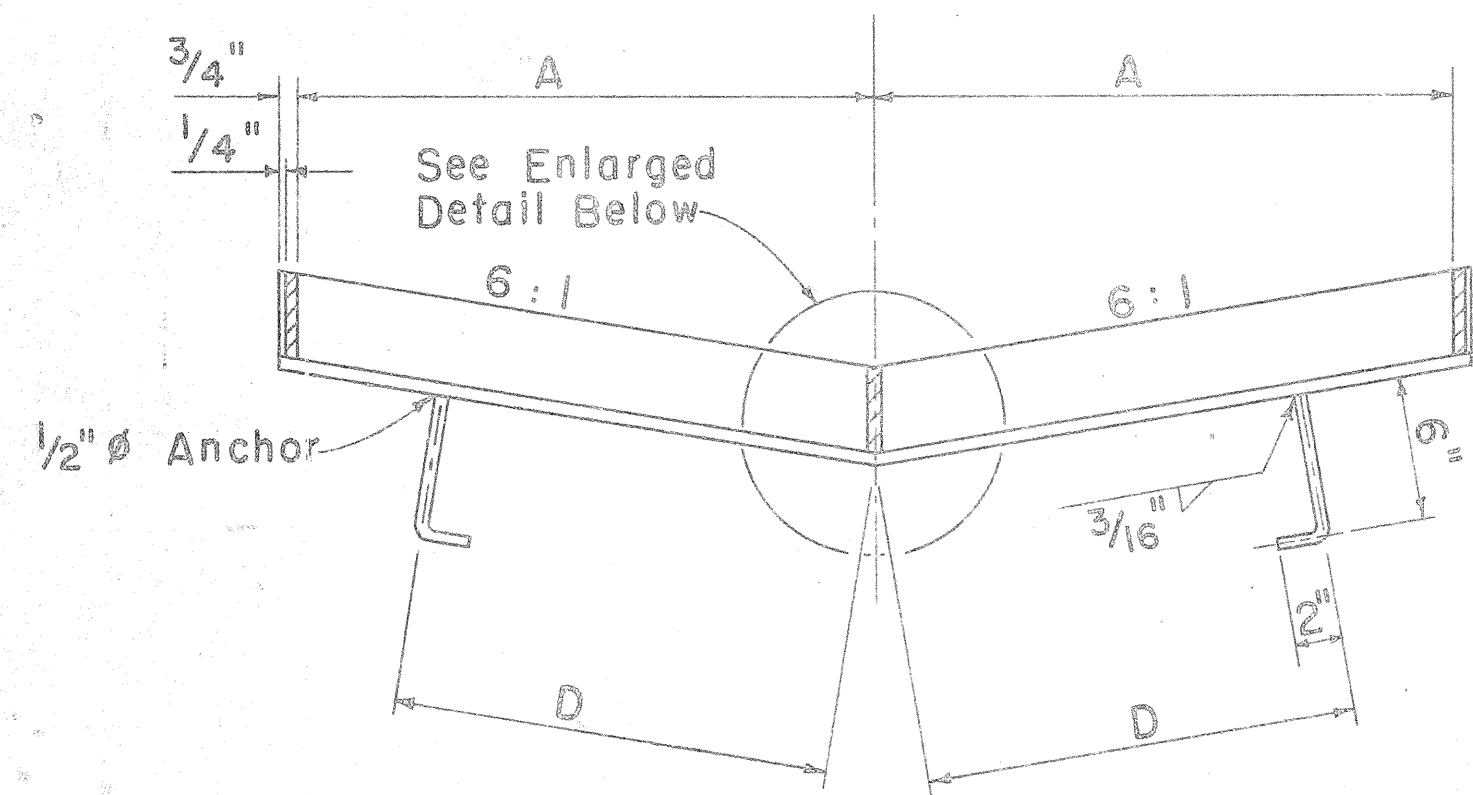
PLAN

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



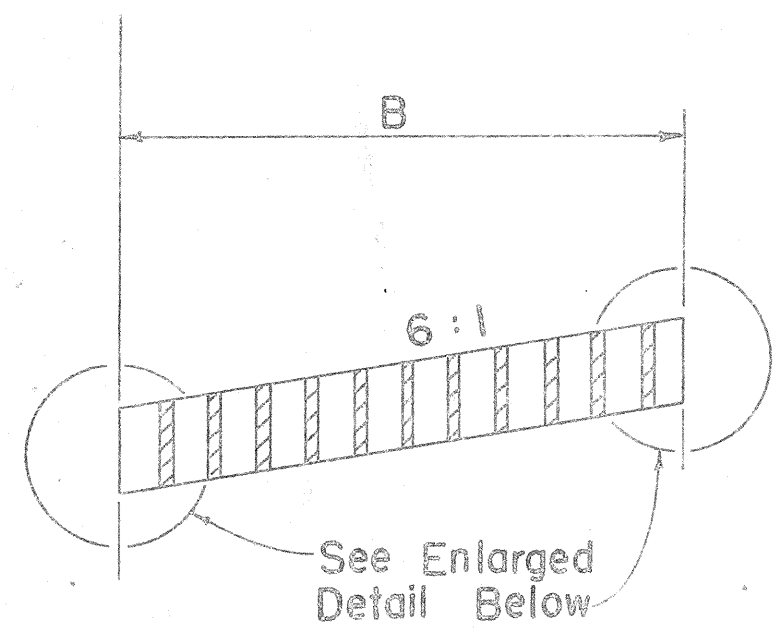
PLAN

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



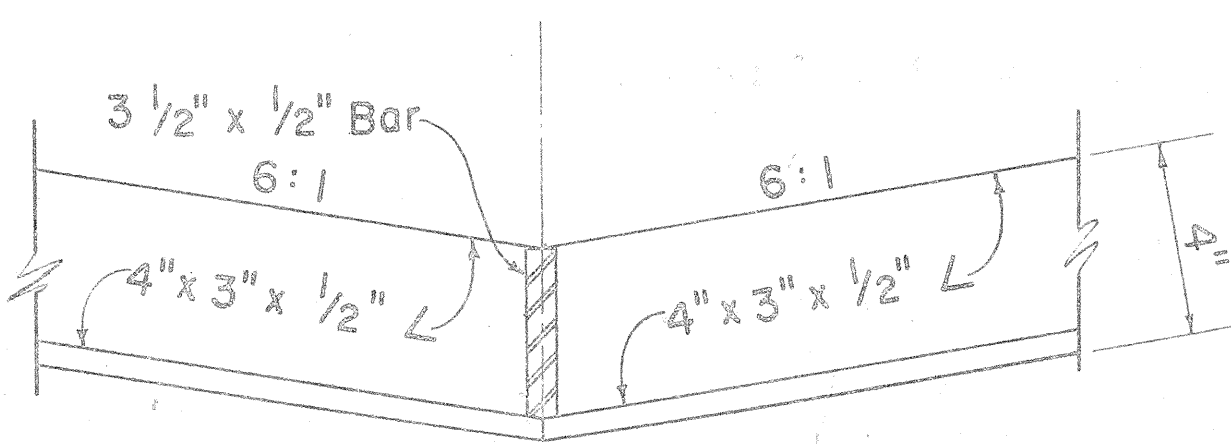
SECTION

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



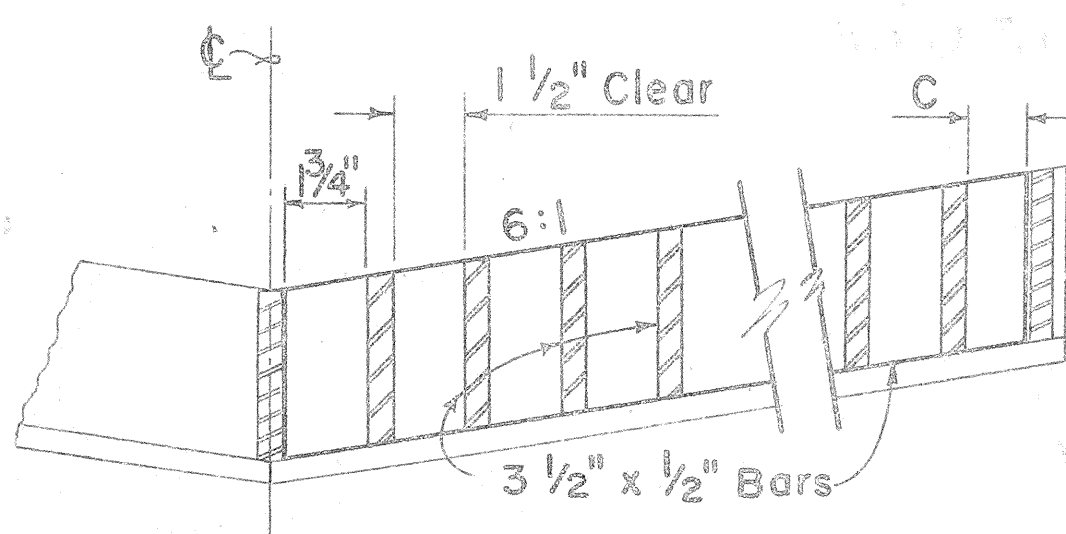
SECTION

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



FRAME

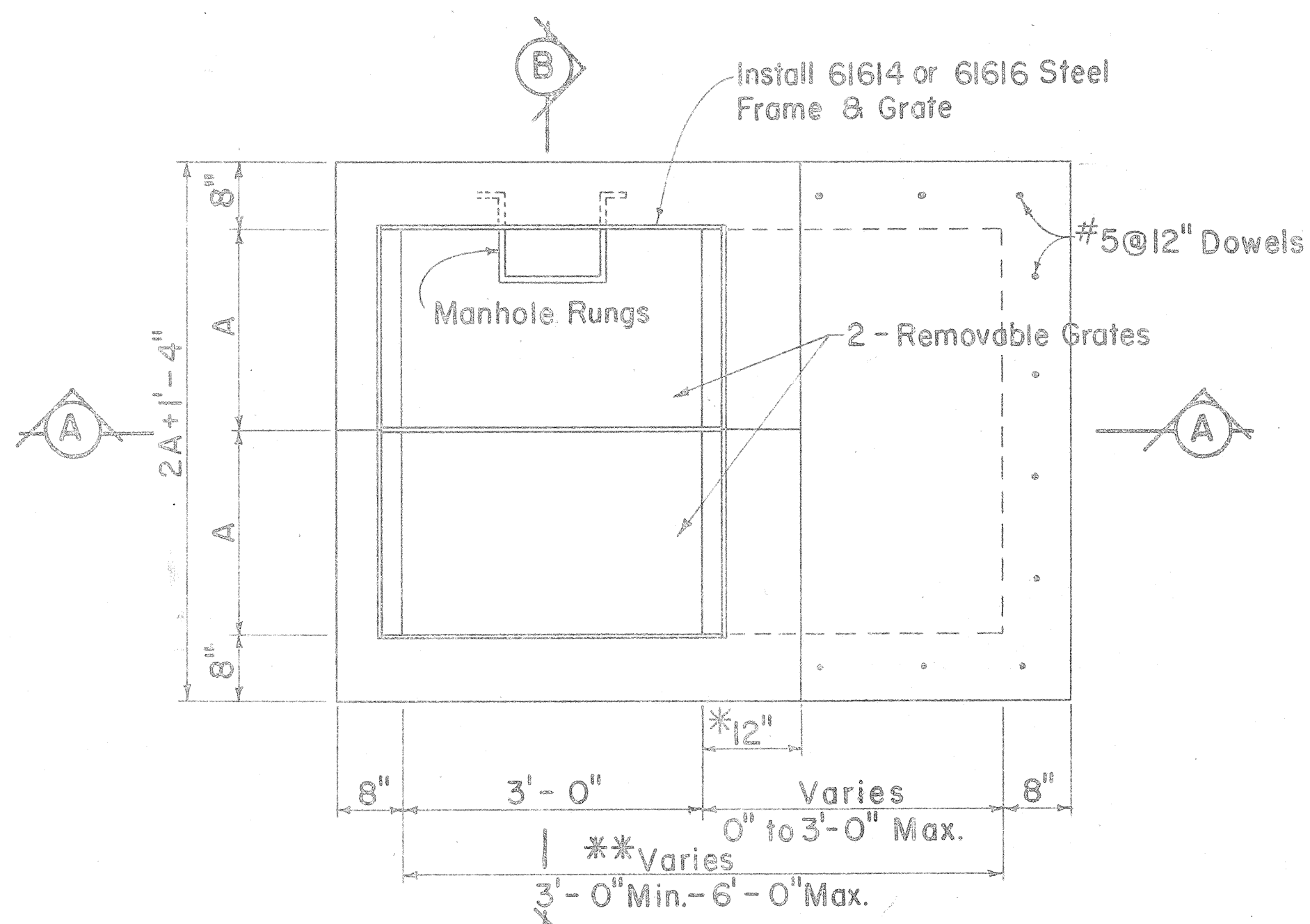
Scale: 3" = 1'-0"



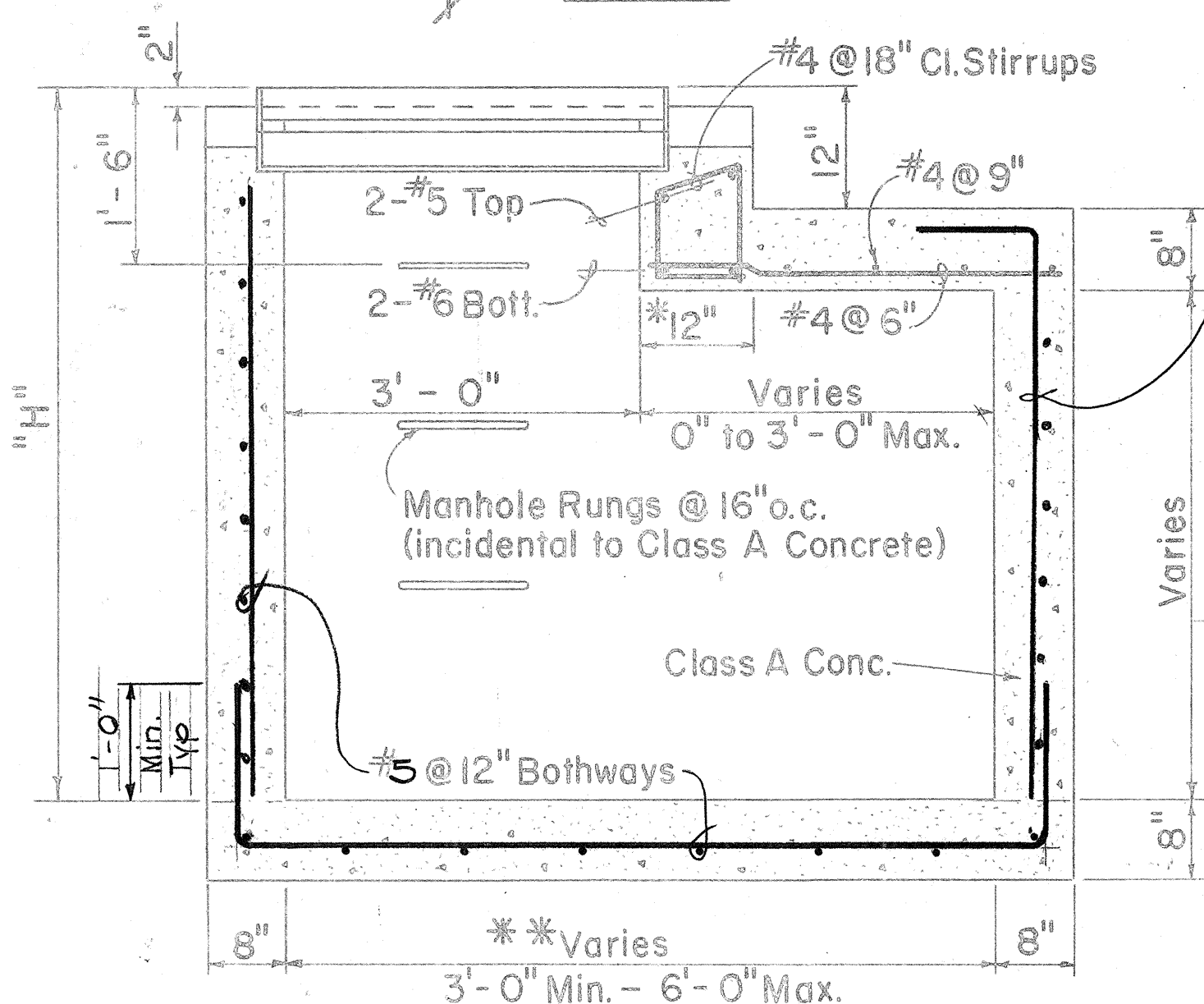
GRATE

Scale: 3" = 1'-0"

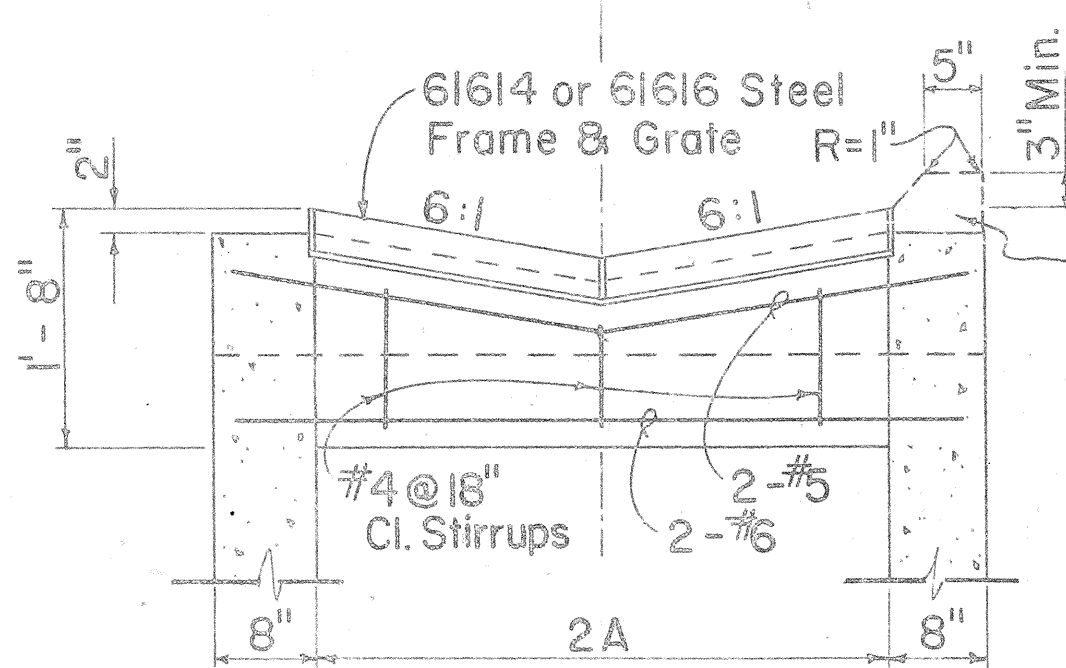
DETAILS OF TYPE 61614 OR 61616 STEEL FRAME AND GRATE



PLAN



SECTION A-A

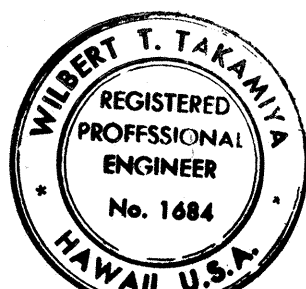
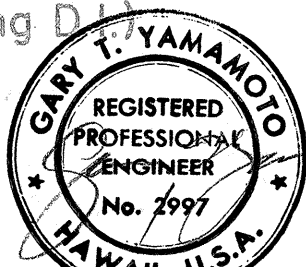


SECTION B-B

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.



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OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE 61614 & 61616 GRATED DROP INTAKES

Scales: As Noted

Date: Feb. 1969

SHEET NO. 57 OF 20 SHEETS DH 8

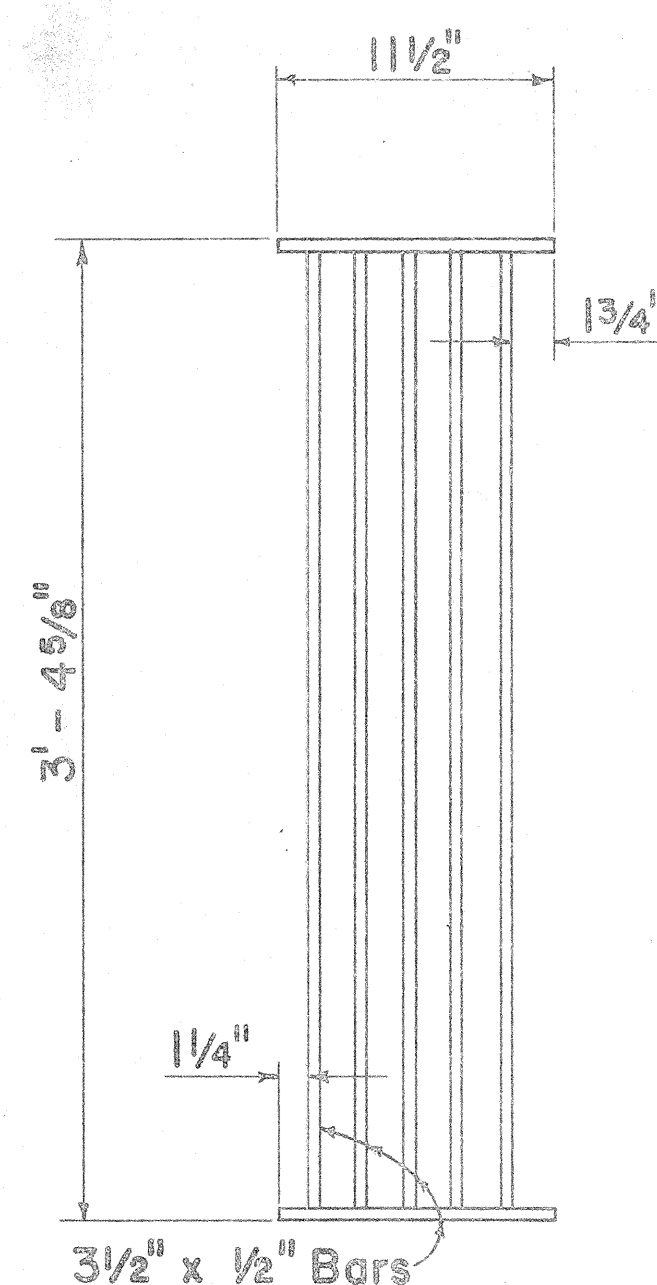
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-110-115	1973	50	220

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.

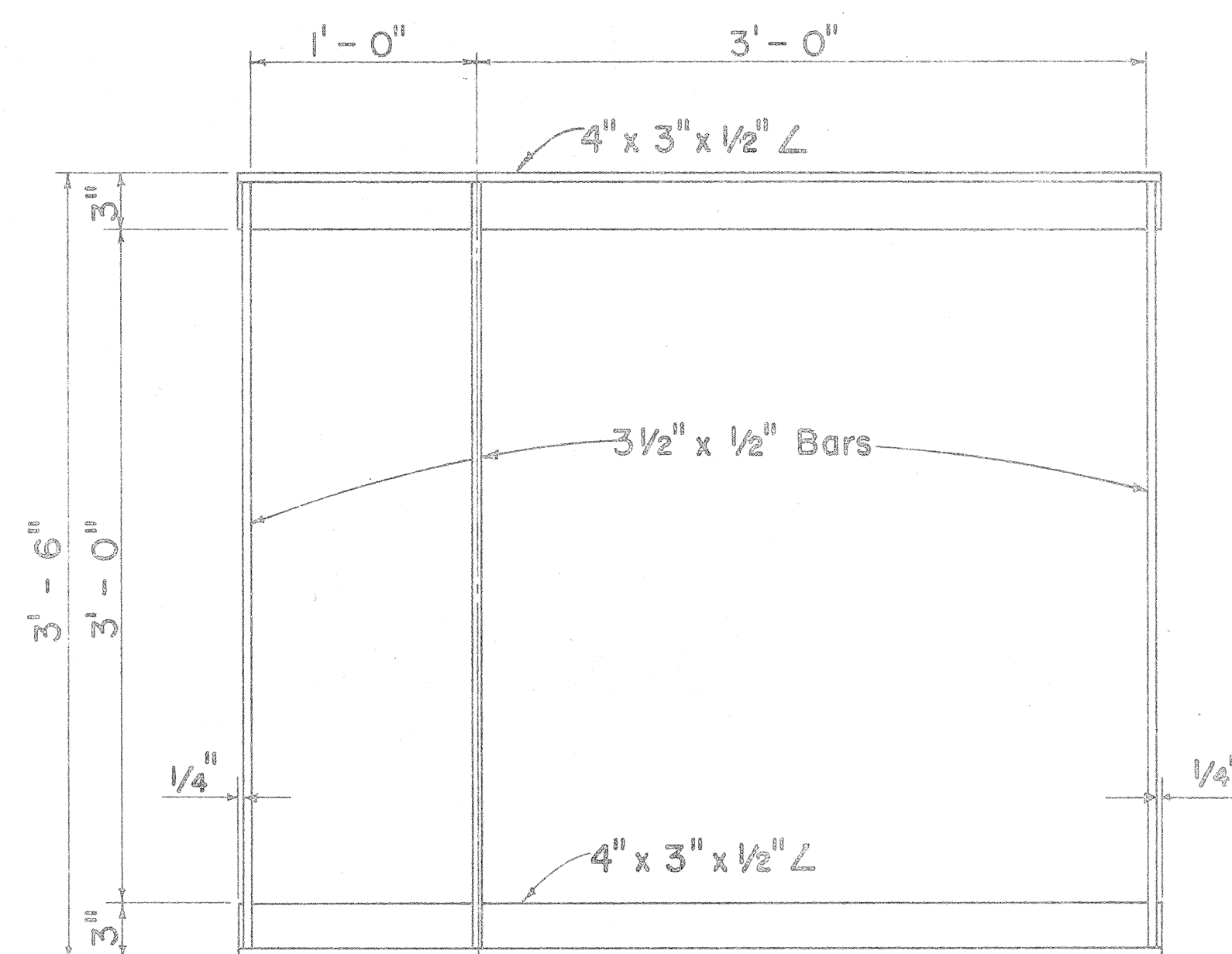
6. For Pearl Harbor Interchange Project only. See Sht. 50 for General Concrete Notes and Details

NO.	REVISION	APPROVED BY	DATE



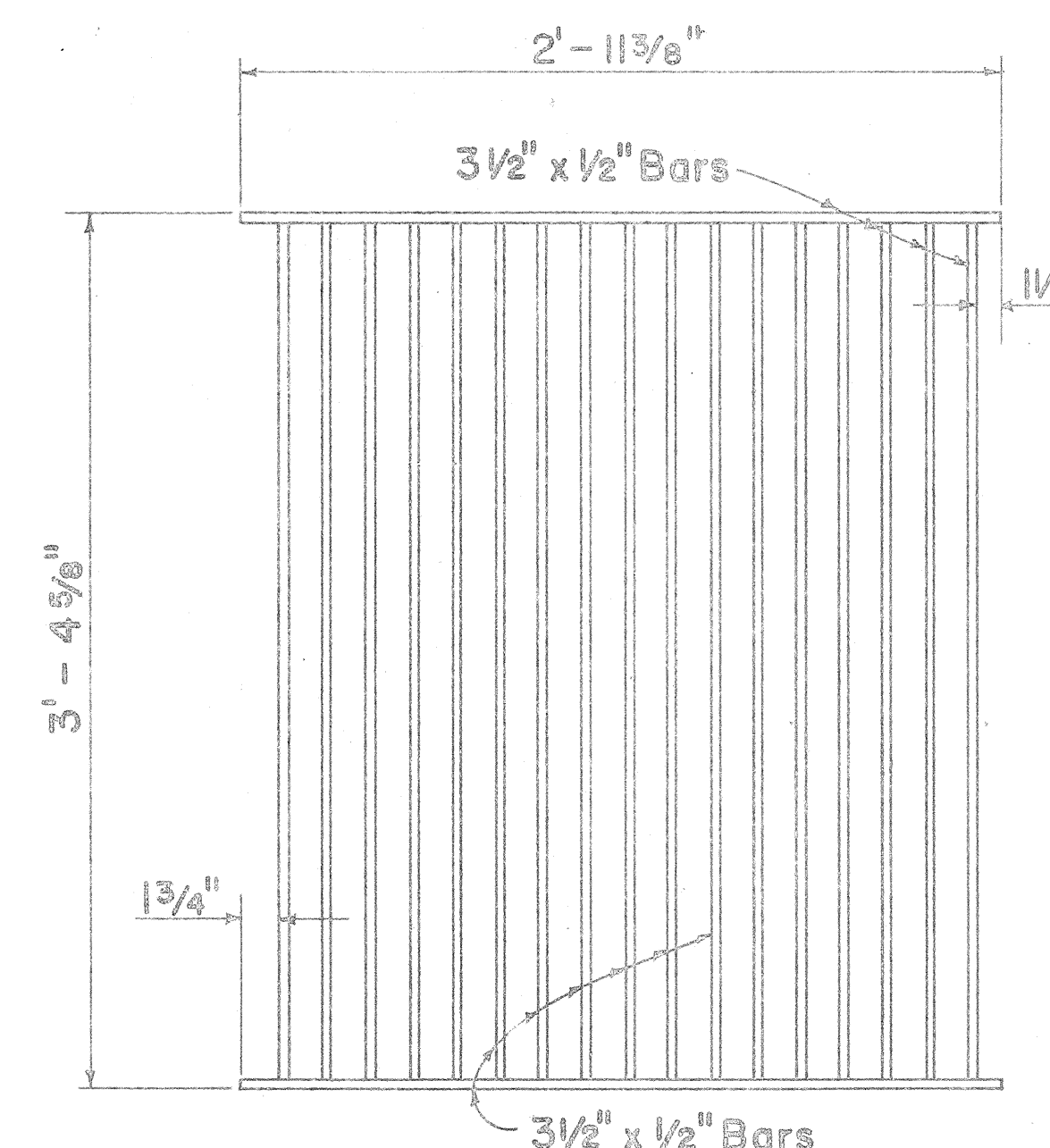
PLAN

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



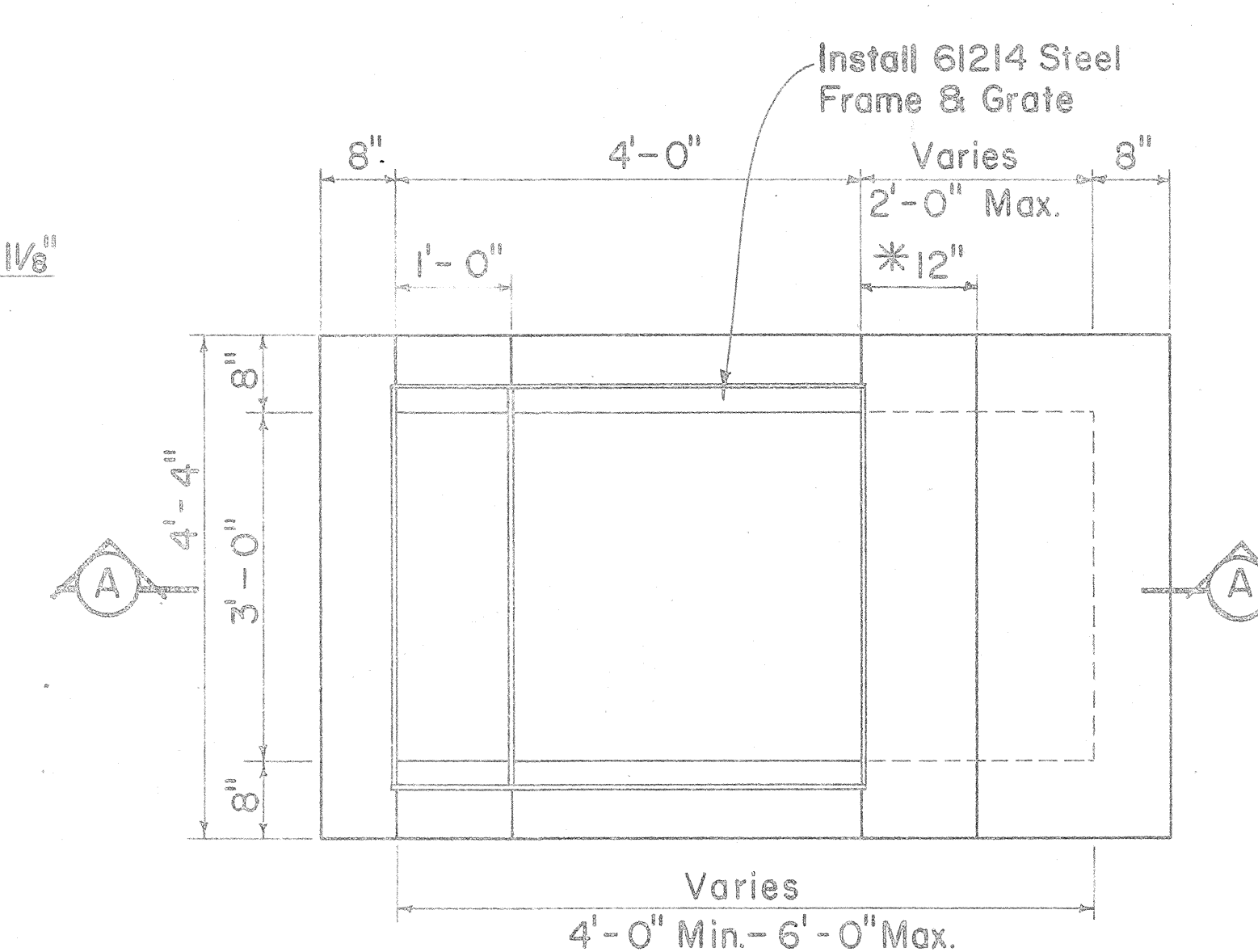
PLAN

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

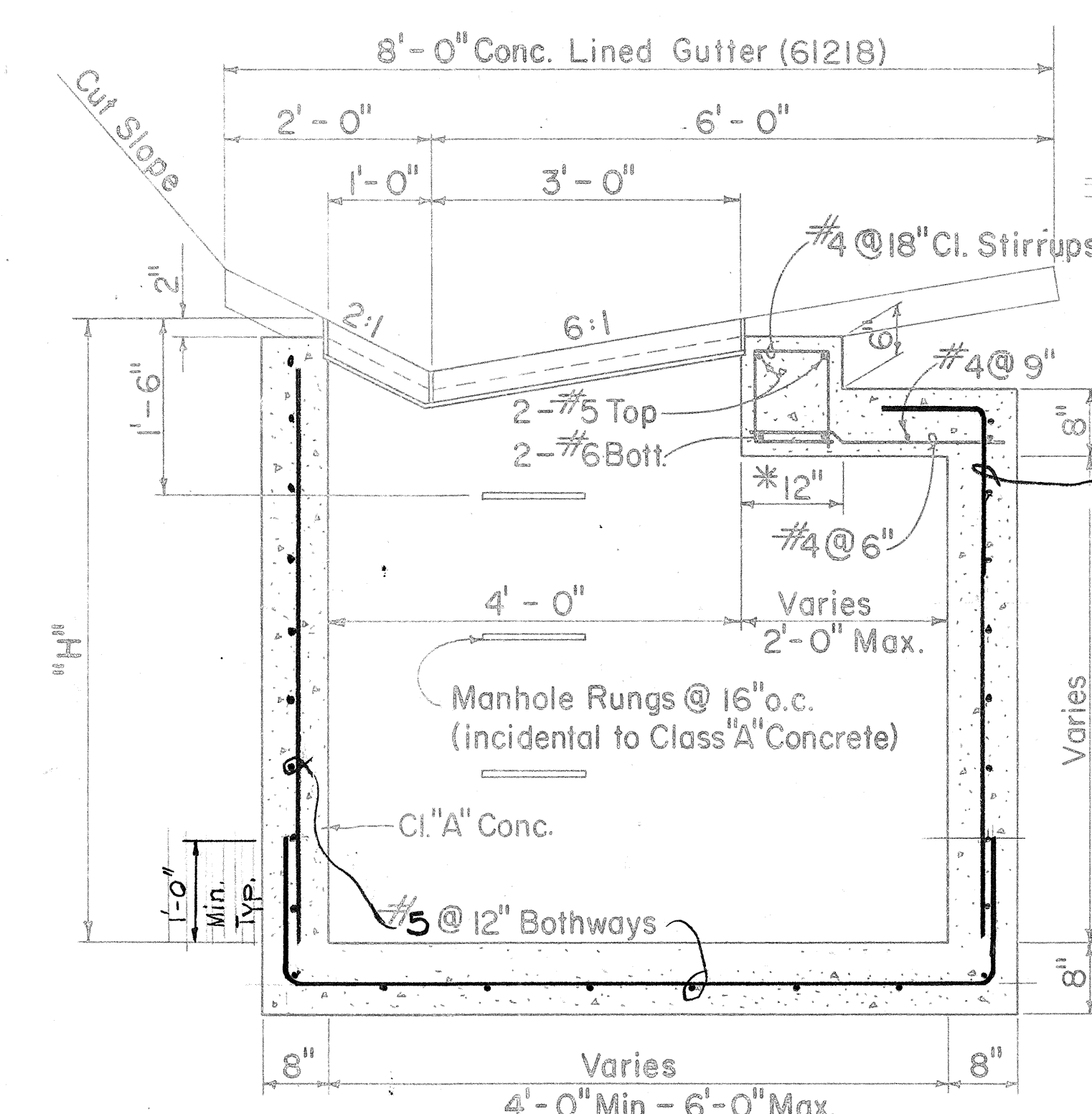


PLAN

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



PLAN

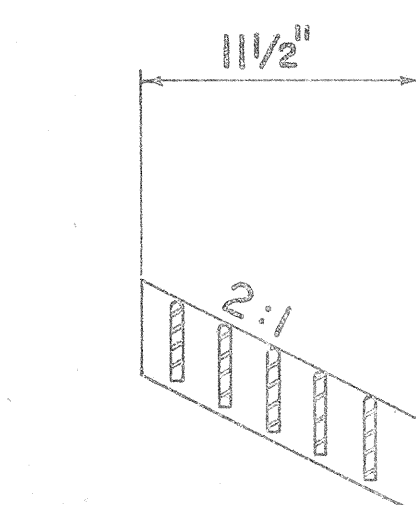


SECTION A - A

DETAIL OF 61214 DROP INTAKE

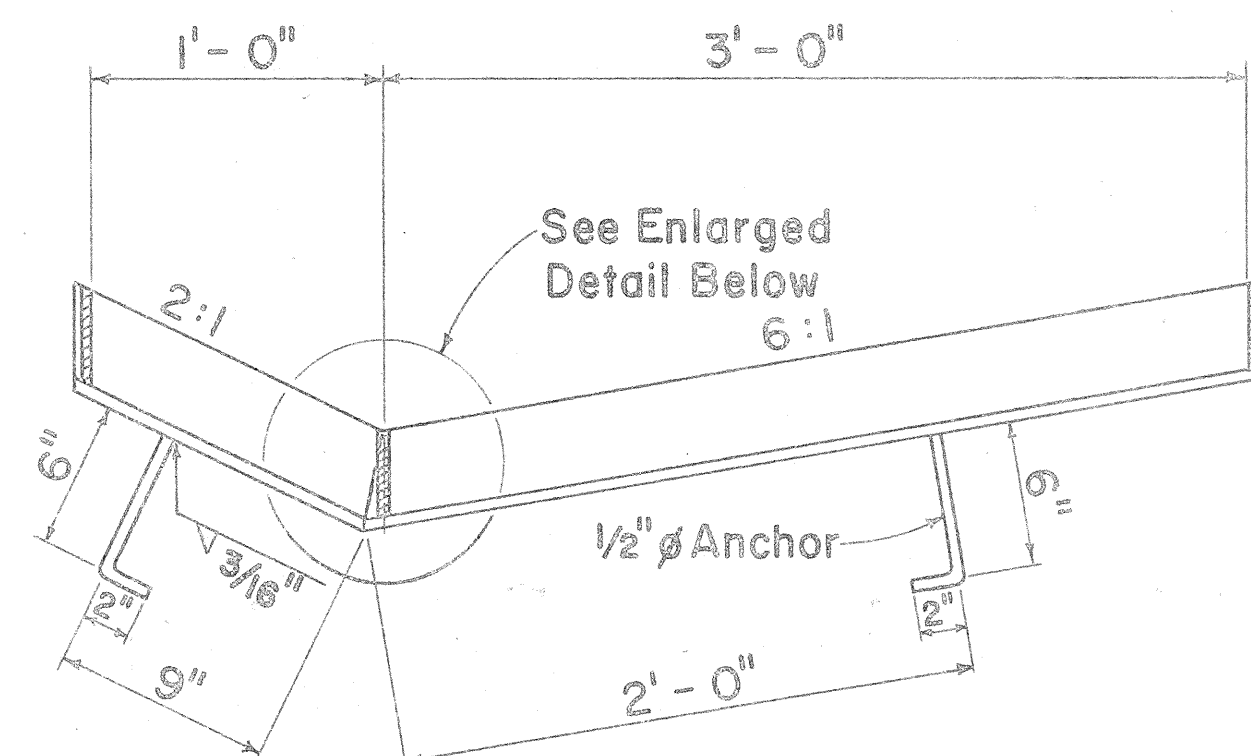
Scale: $\frac{3}{4}" = 1' - 0"$

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



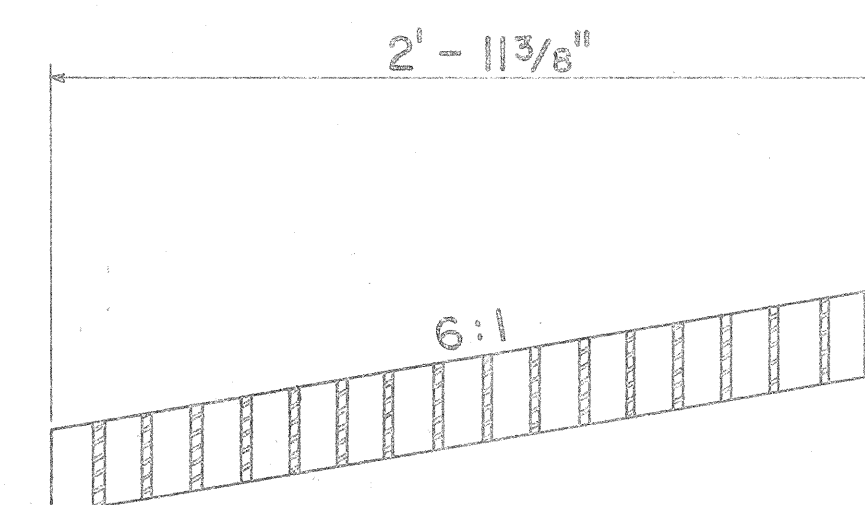
SECTION

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



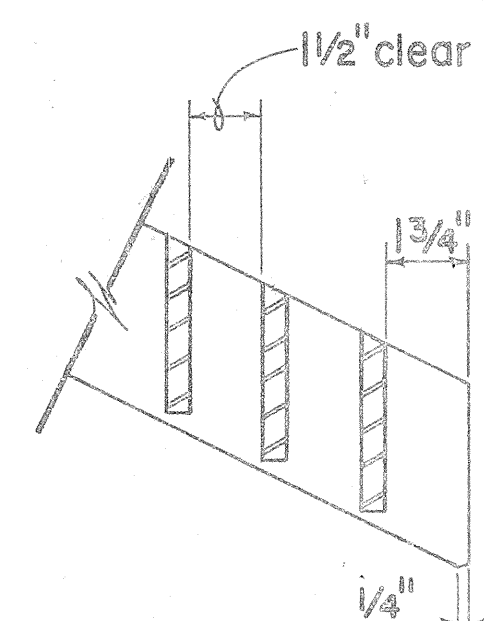
SECTION

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



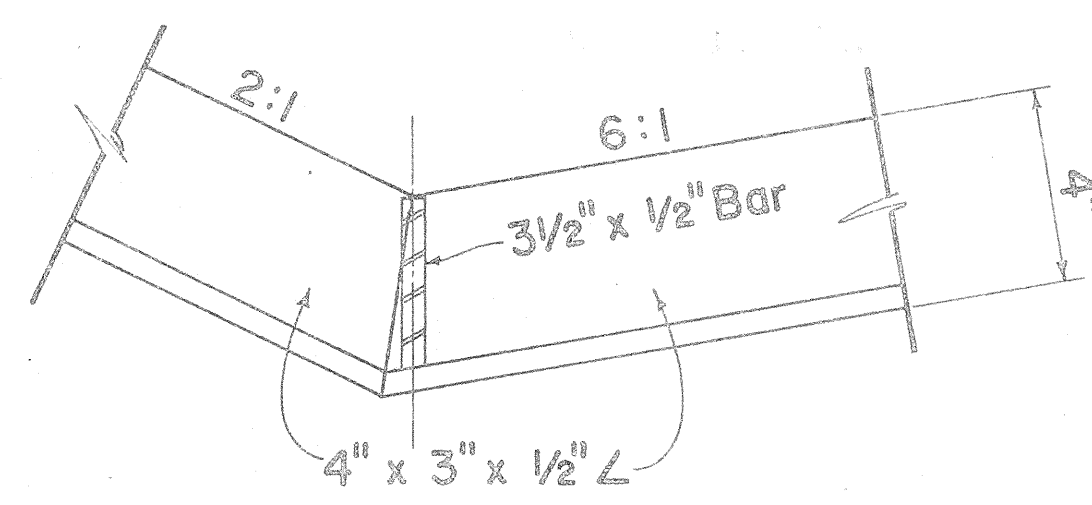
SECTION

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



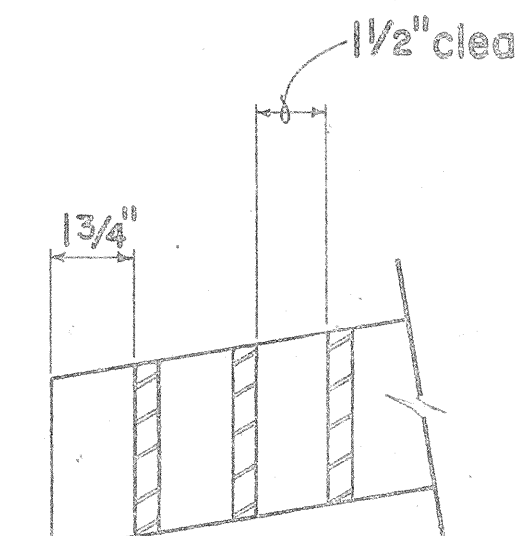
GRATE

Scale: $3" = 1' - 0"$



FRAME

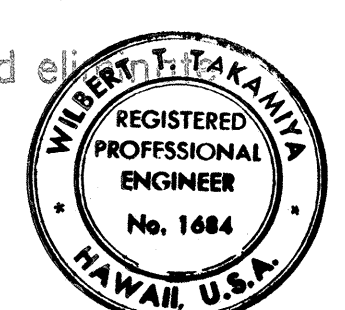
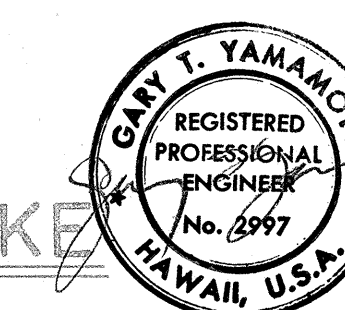
Scale: $3" = 1' - 0"$



GRATE

Scale: $3" = 1' - 0"$

DETAILS OF TYPE 61214 STEEL FRAME AND GRATES



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPE 61214
GRATED DROP INTAKE

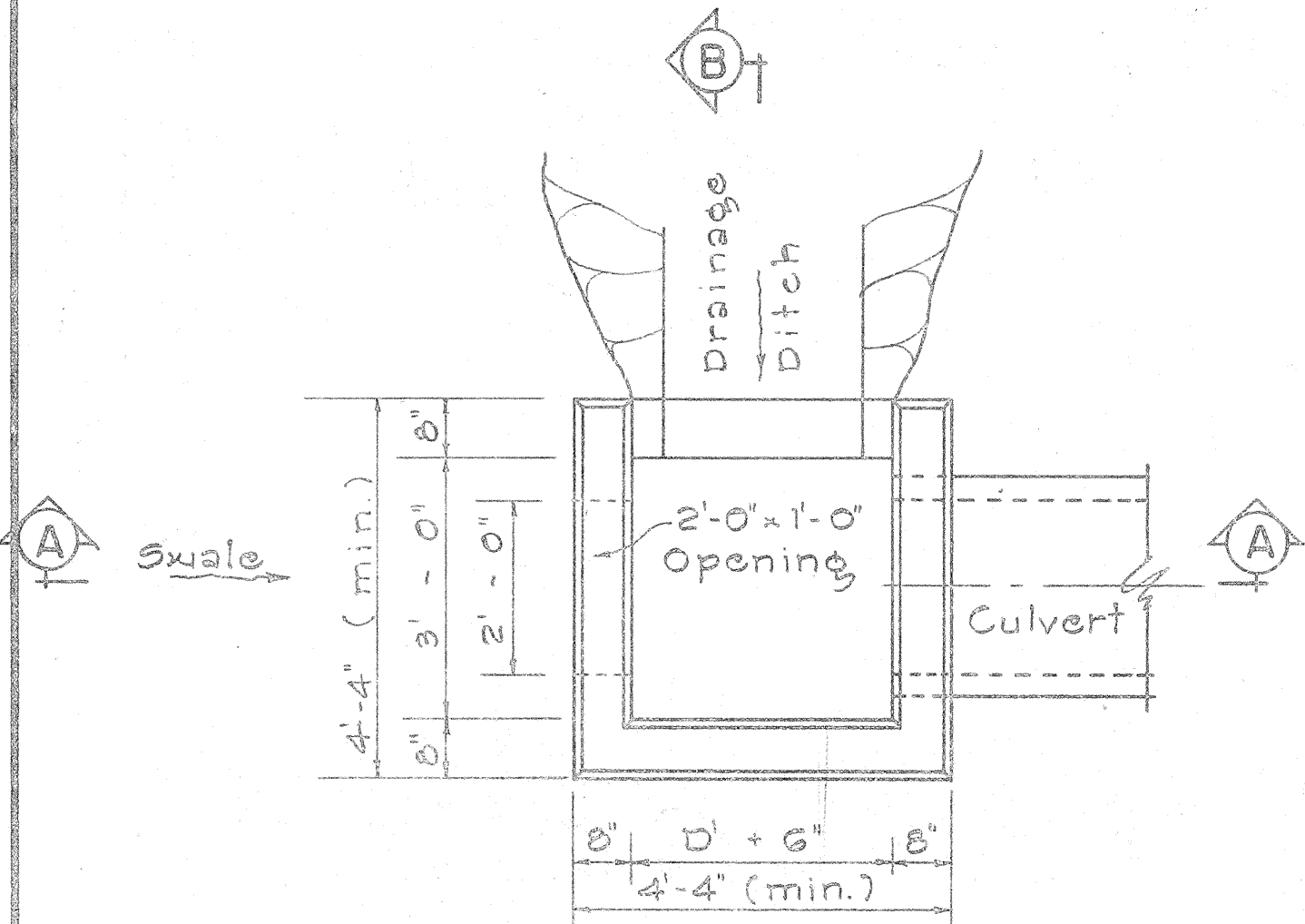
Scales: As Noted Date: July 1969

SHEET NO. 50 OF 20 SHEETS DH 9

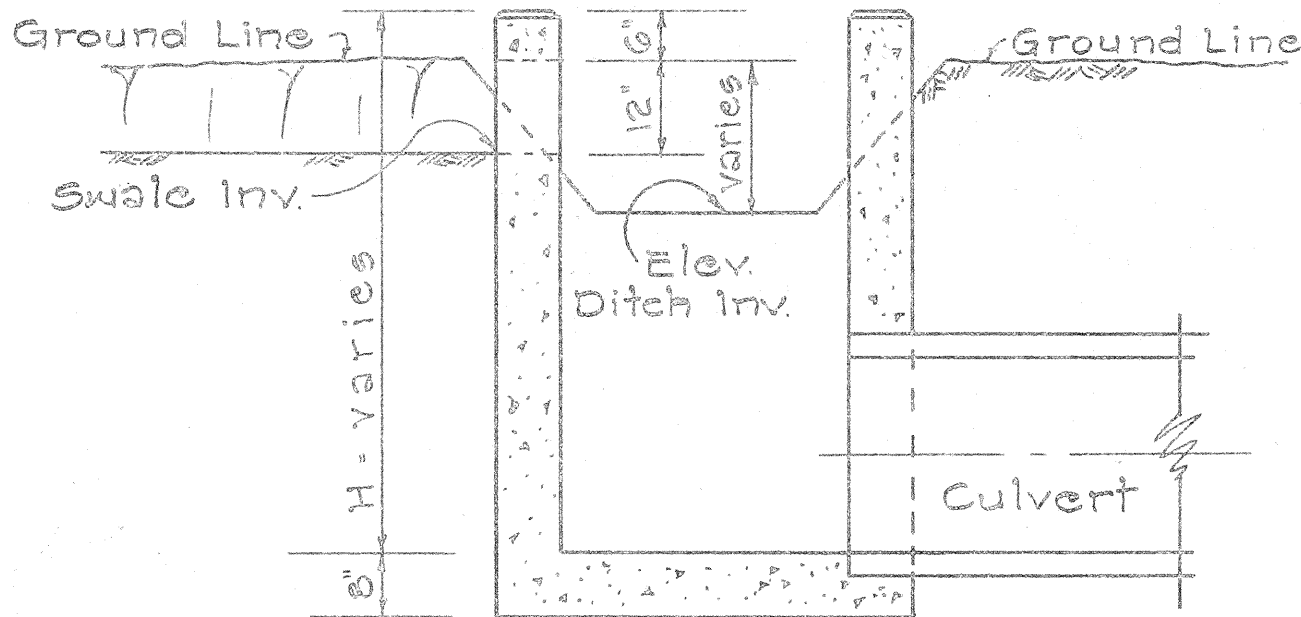
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-11-(110)-B	1973	59	220

GENERAL NOTES

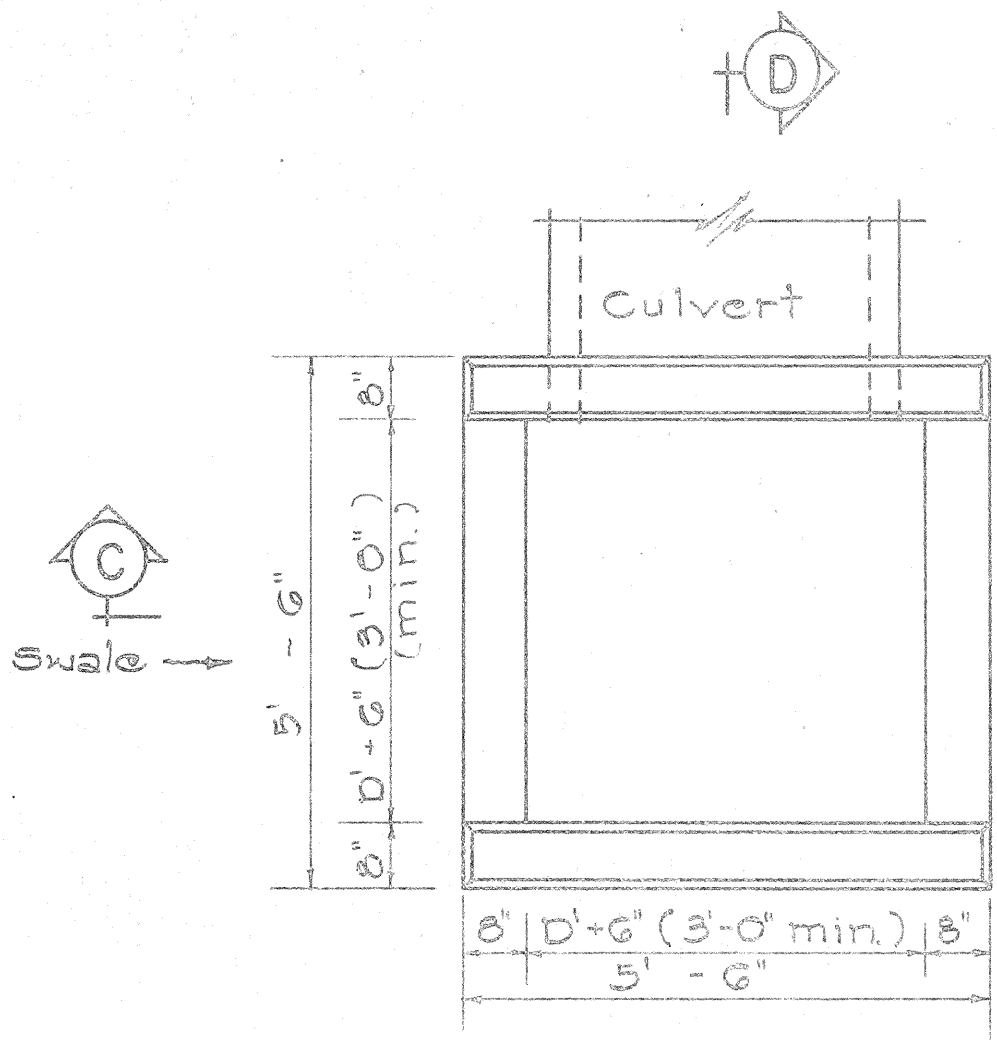
- All concrete shall be Class "B" unless otherwise noted.
- Exposed edges of all drainage structures shall be chamfered one inch.
- Culvert shall enter and leave Drop Intake from any position and in the direction indicated by the plans or ordered by the Engineer.
- Manhole Rungs (16" o.c.) are req'd. when "H" is greater than 4'-6". Only one rung (12 inches from the bottom) is required if "H" is 4'-6" or less. Manhole Rungs may be placed at any location as ordered by the Engineer.
- For Pearl Harbor Interchange Project only. See Sht. 50 for General Concrete Notes and Details.



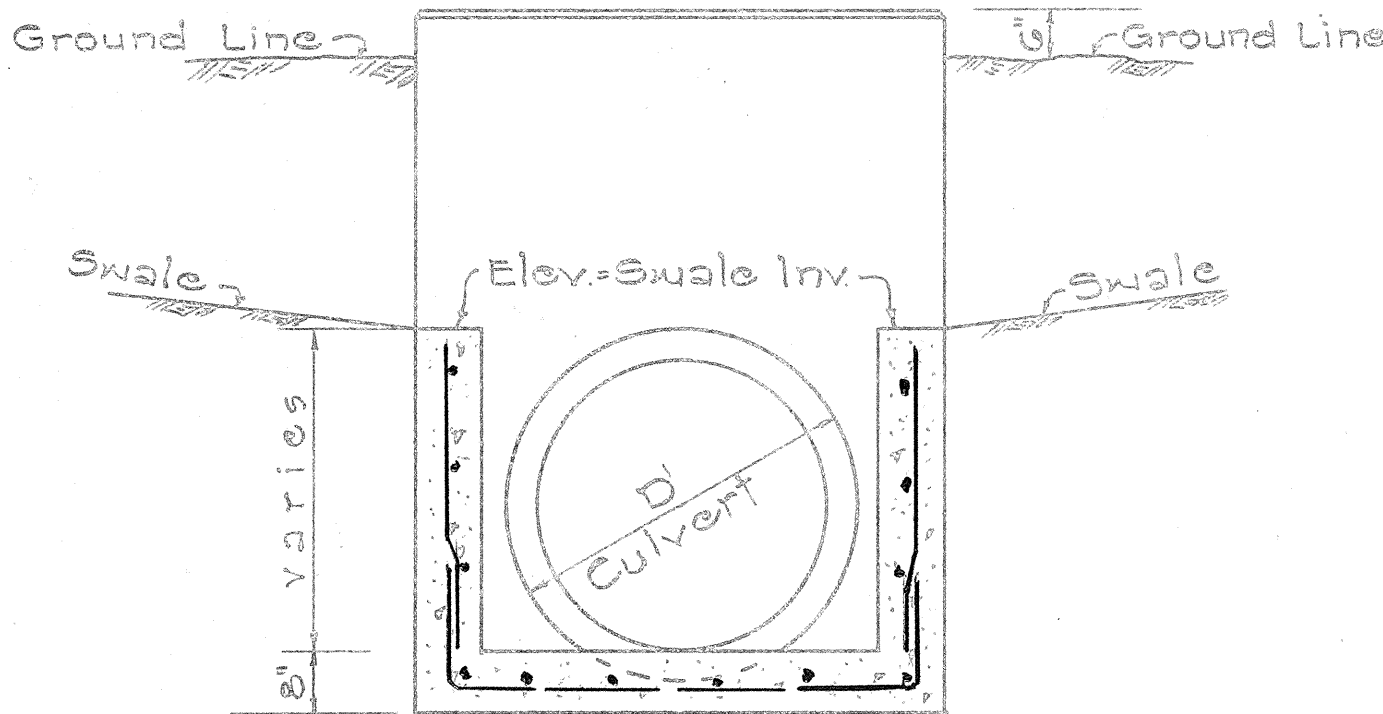
PLAN



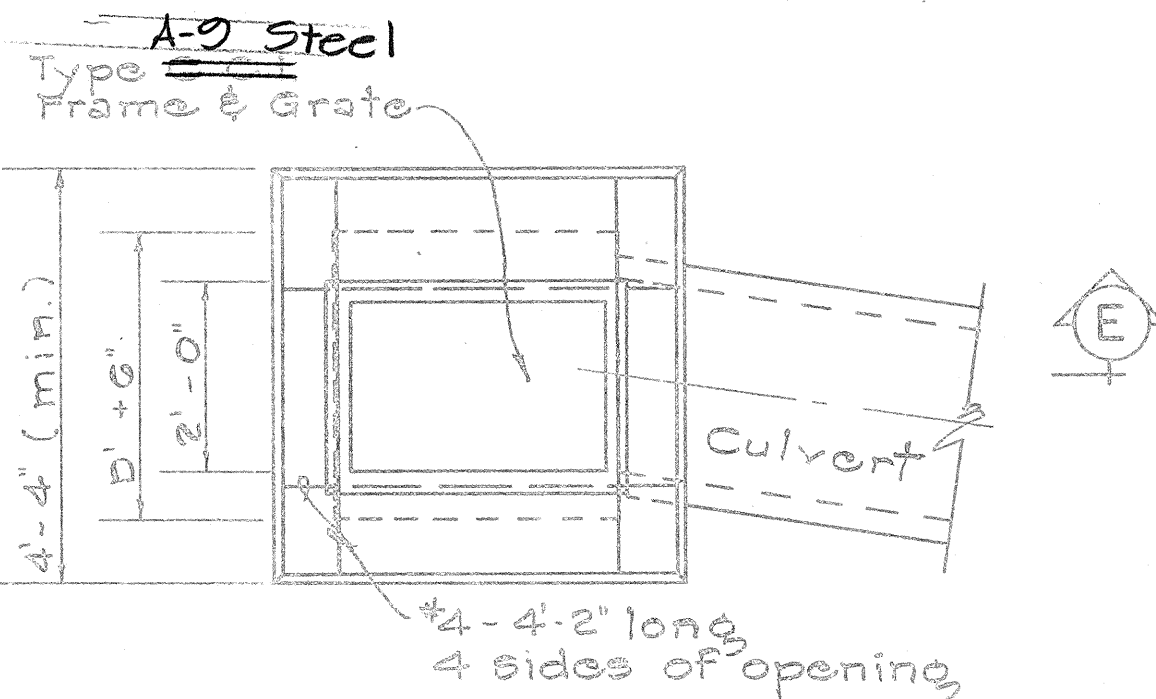
SECTION "A-A"



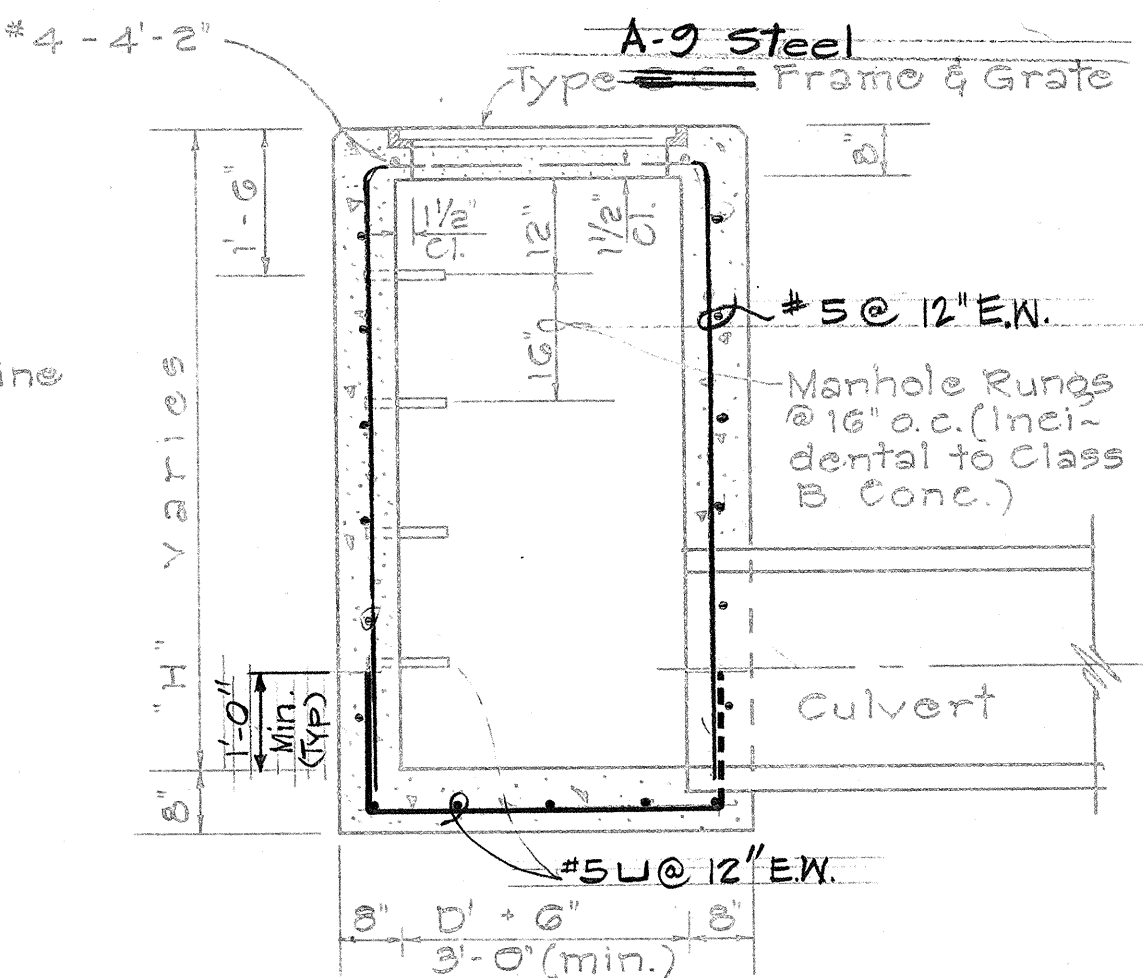
PLAN



SECTION "C-C"



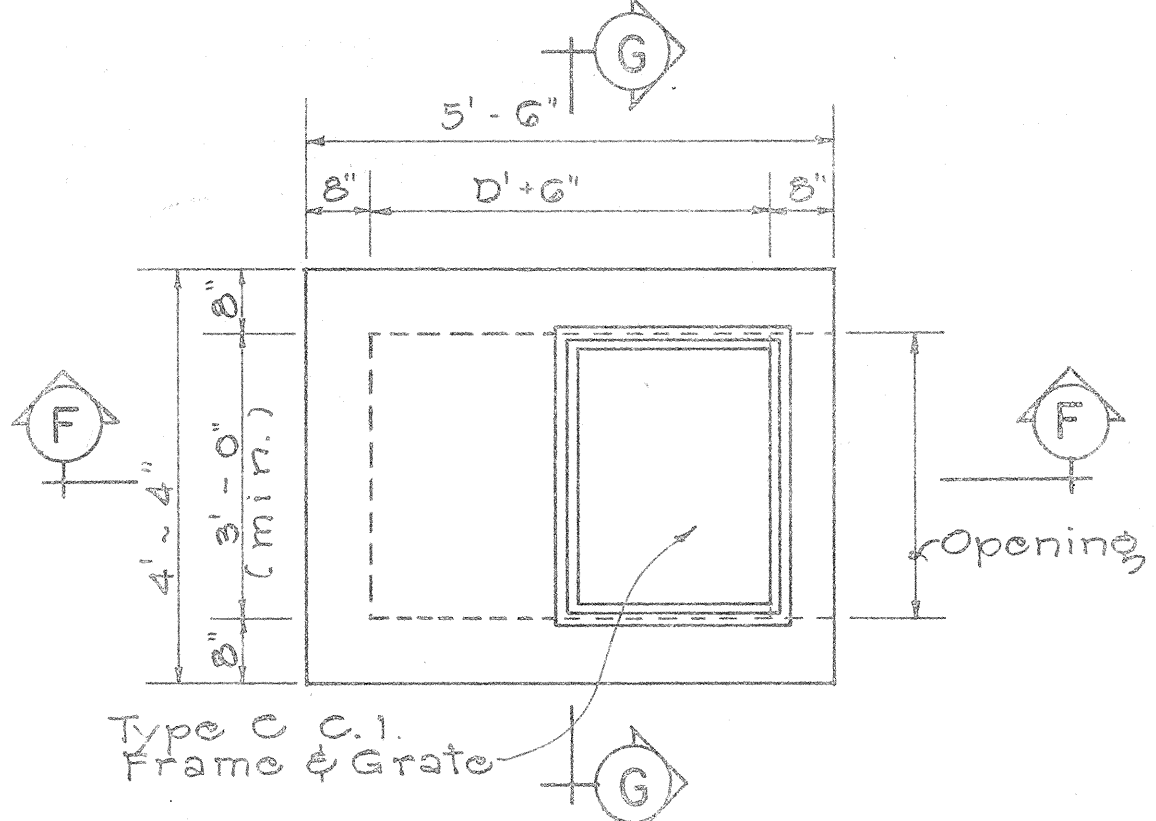
PLAN



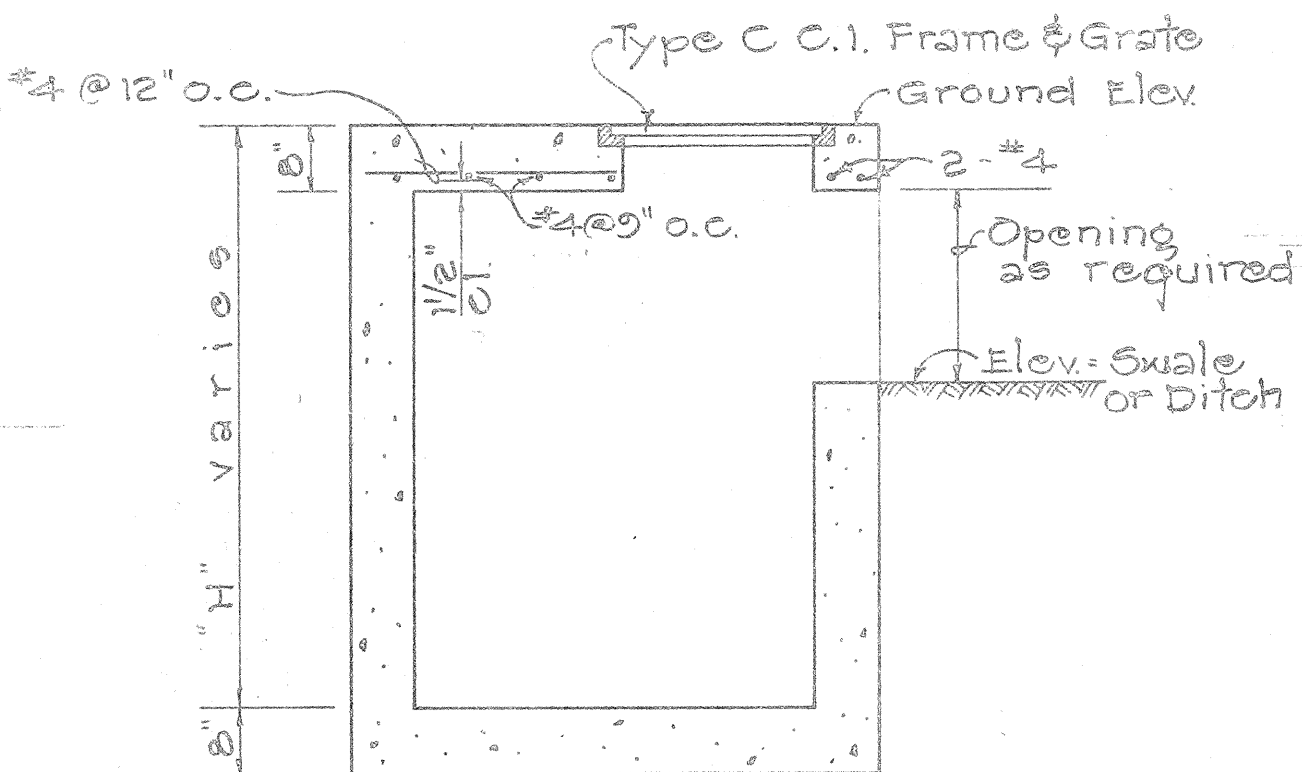
SECTION "E-E"

TYPE "C" GRATED CONCRETE DROP INTAKE

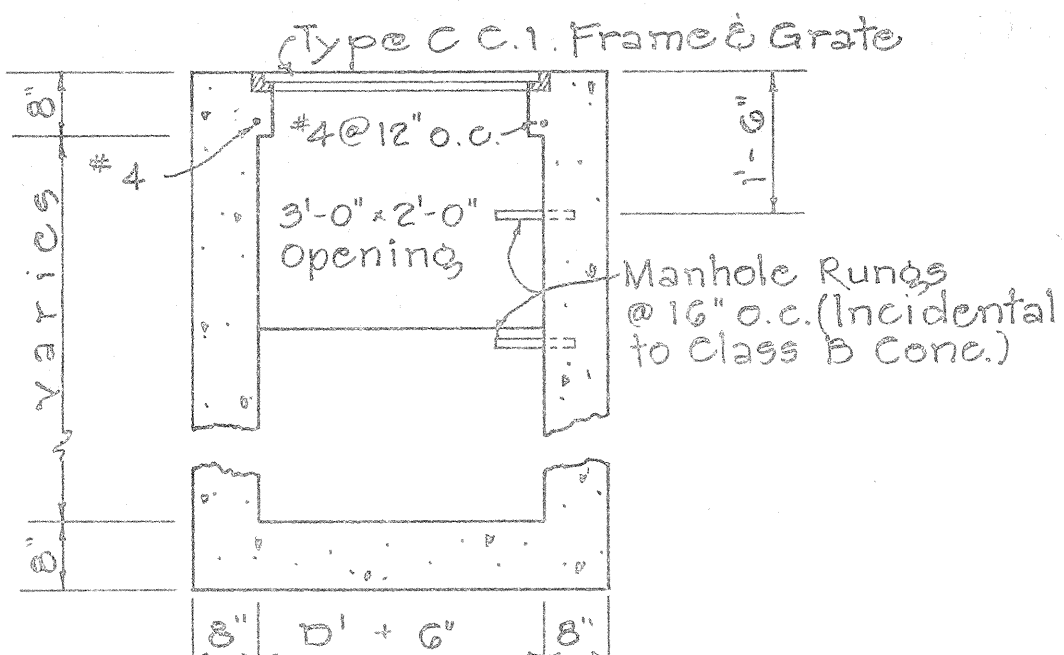
Scale: 1/2" = 1'-0"



PLAN



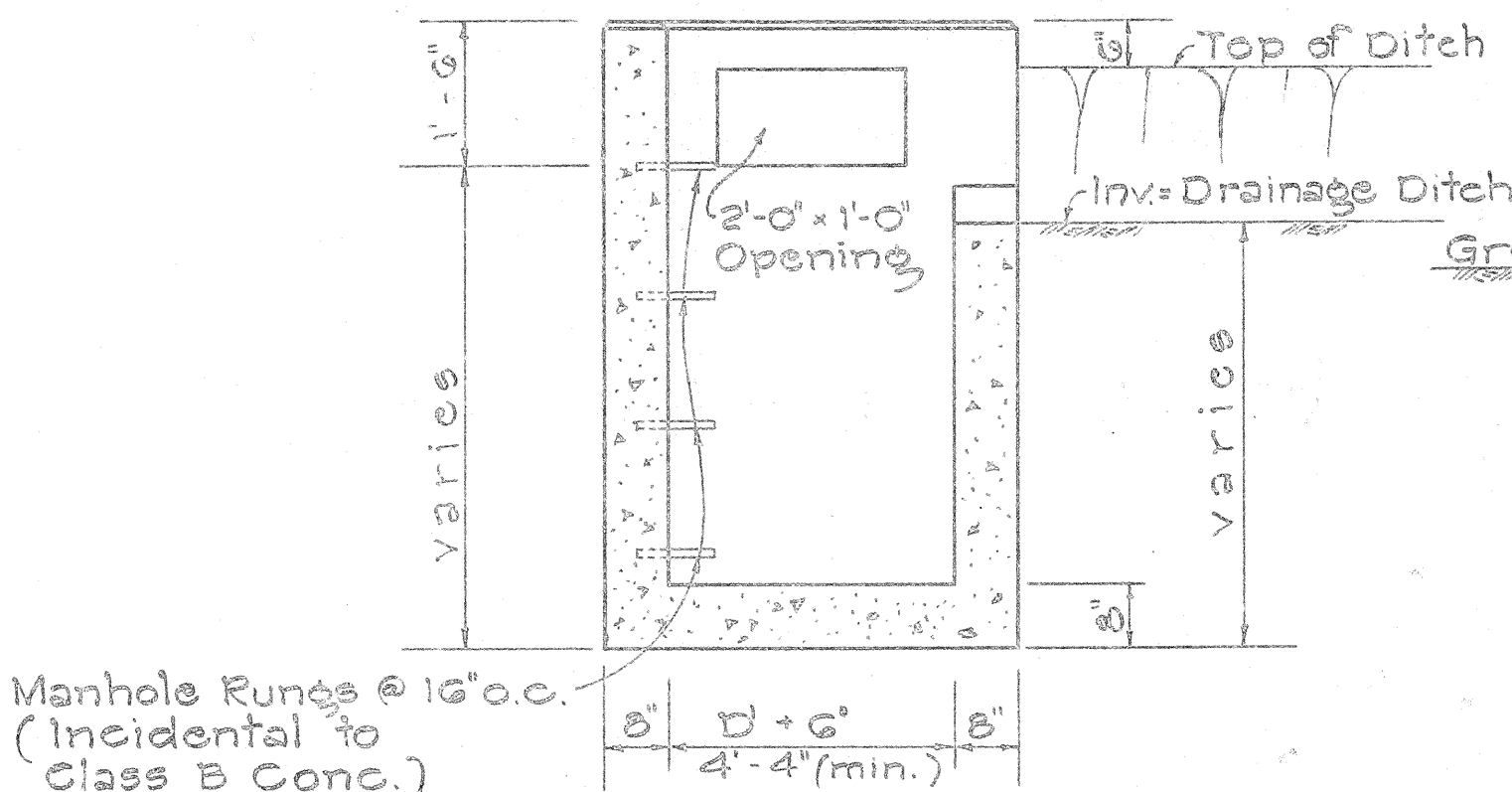
SECTION "F-F"



SECTION "G-G"

TYPE "D" GRATED CONCRETE DROP INTAKE

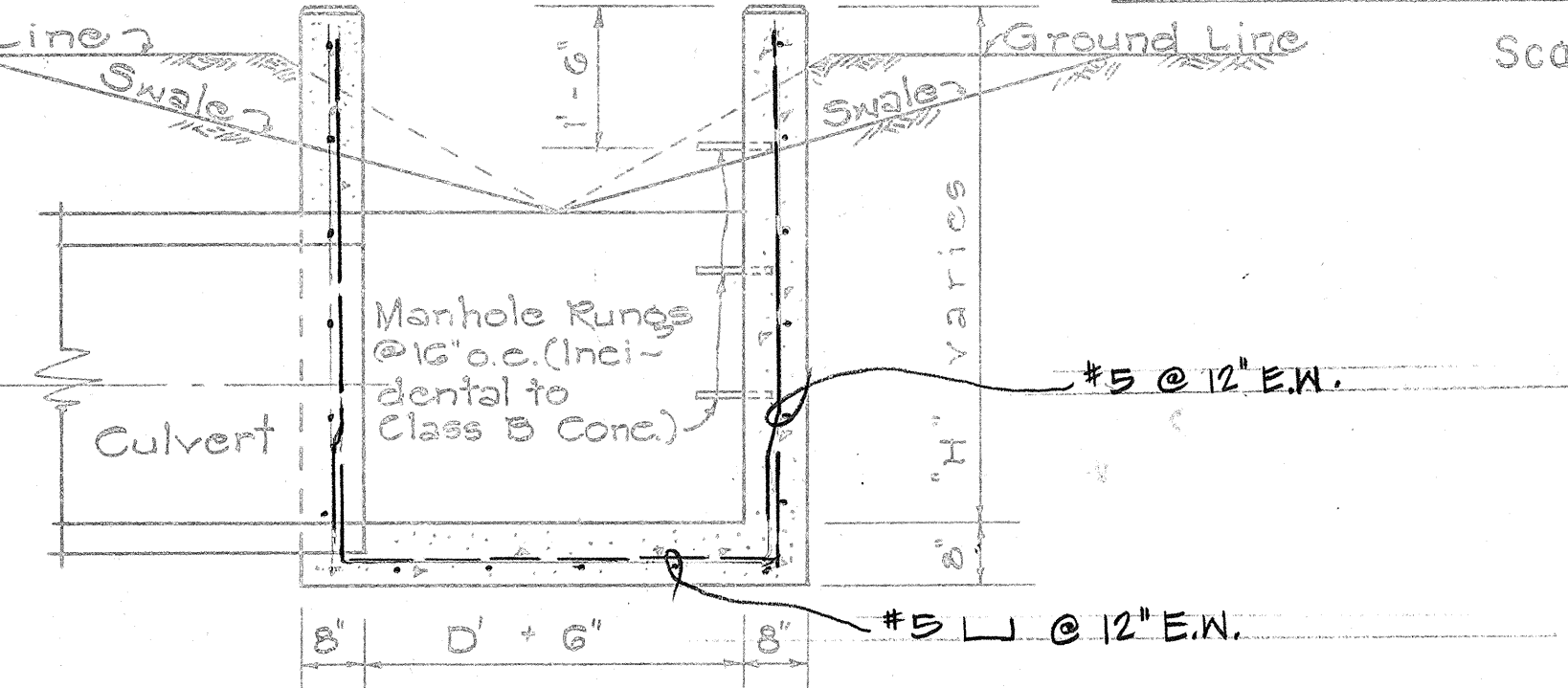
Scale: 1/2" = 1'-0"



SECTION "B-B"

TYPE "A" CONCRETE DROP INTAKE

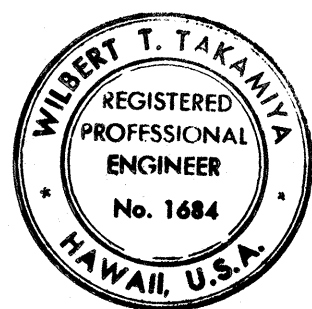
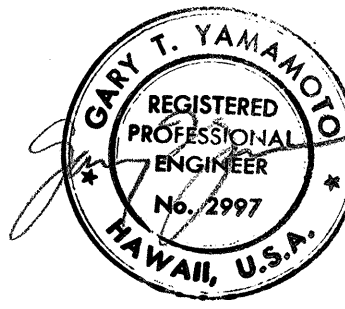
Scale: 1/2" = 1'-0"



SECTION "D-D"

TYPE "B" CONCRETE DROP INTAKE

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



Wilbert T. Takamizawa
THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.

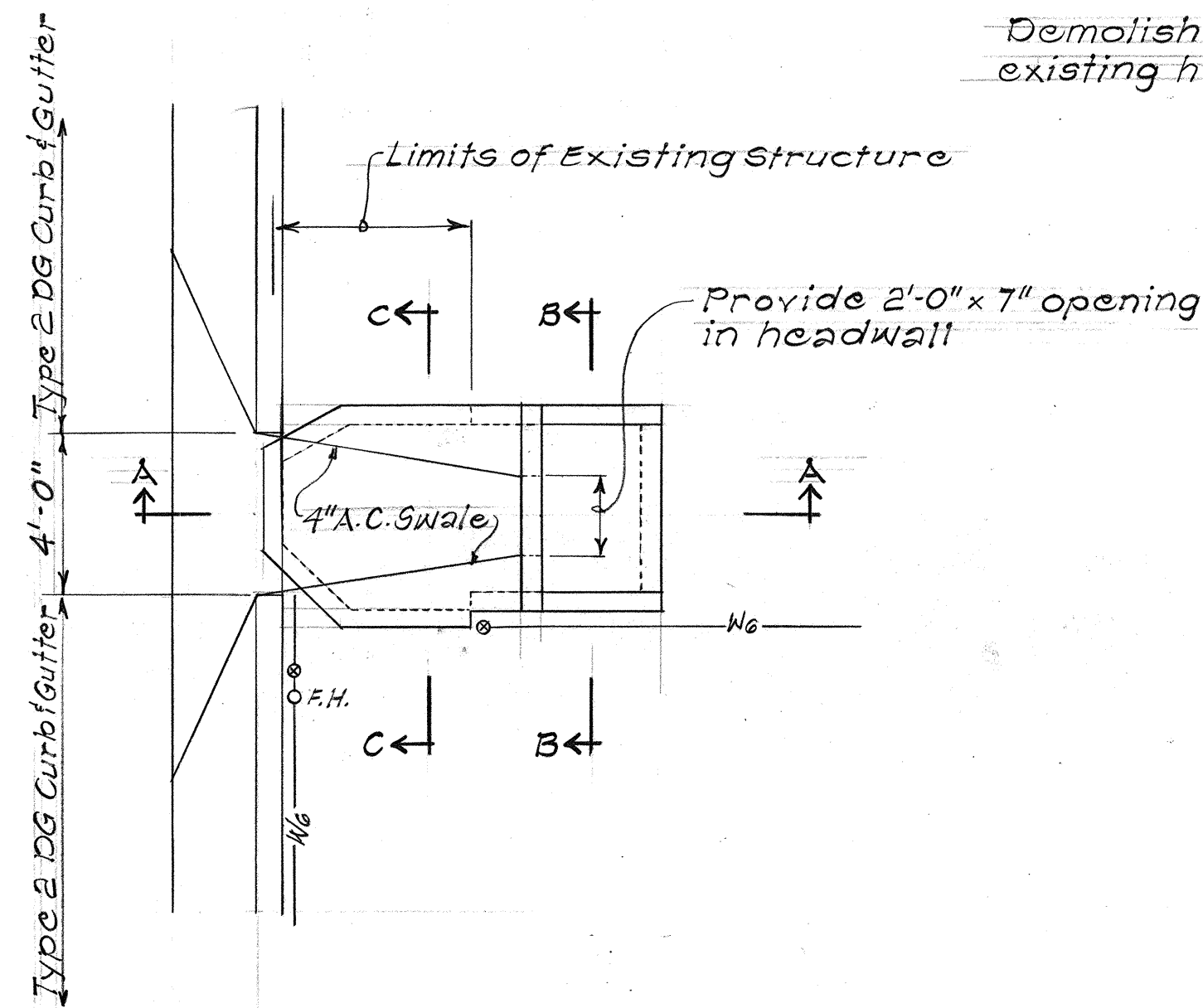
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

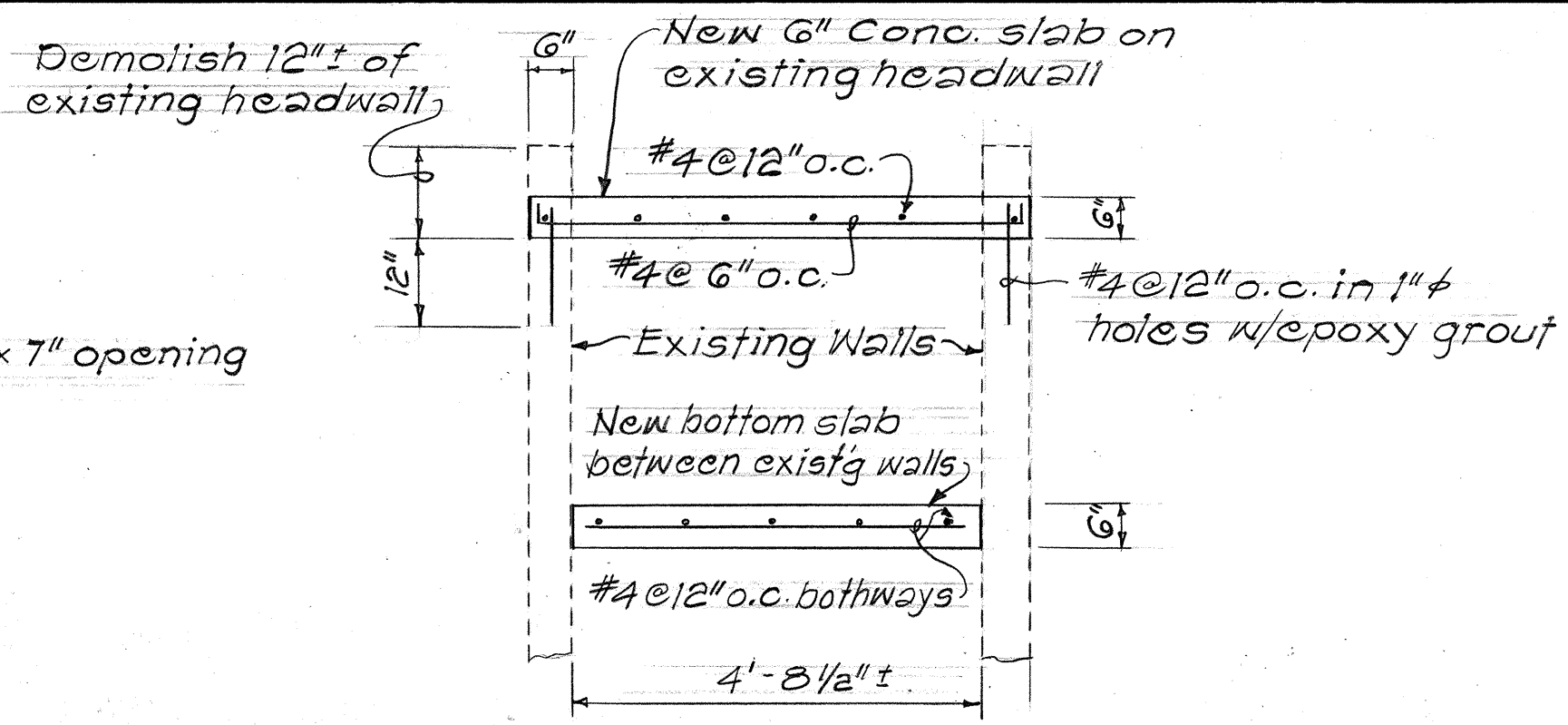
TYPE "A", "B", "C", AND "D" CONCRETE DROP INTAKE

Scale: As Noted Date: July, 1969
SHEET No. 59 OF 20 SHEETS DH19

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

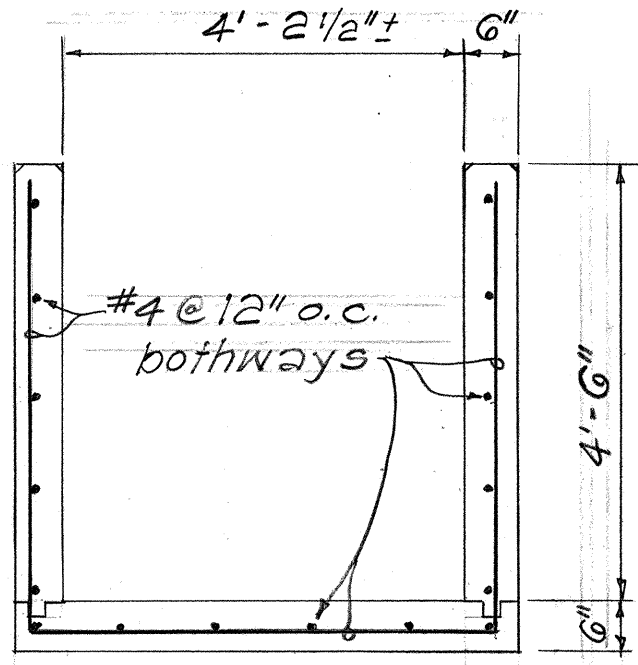


PLAN
Scale: 1/4" = 1'-0"



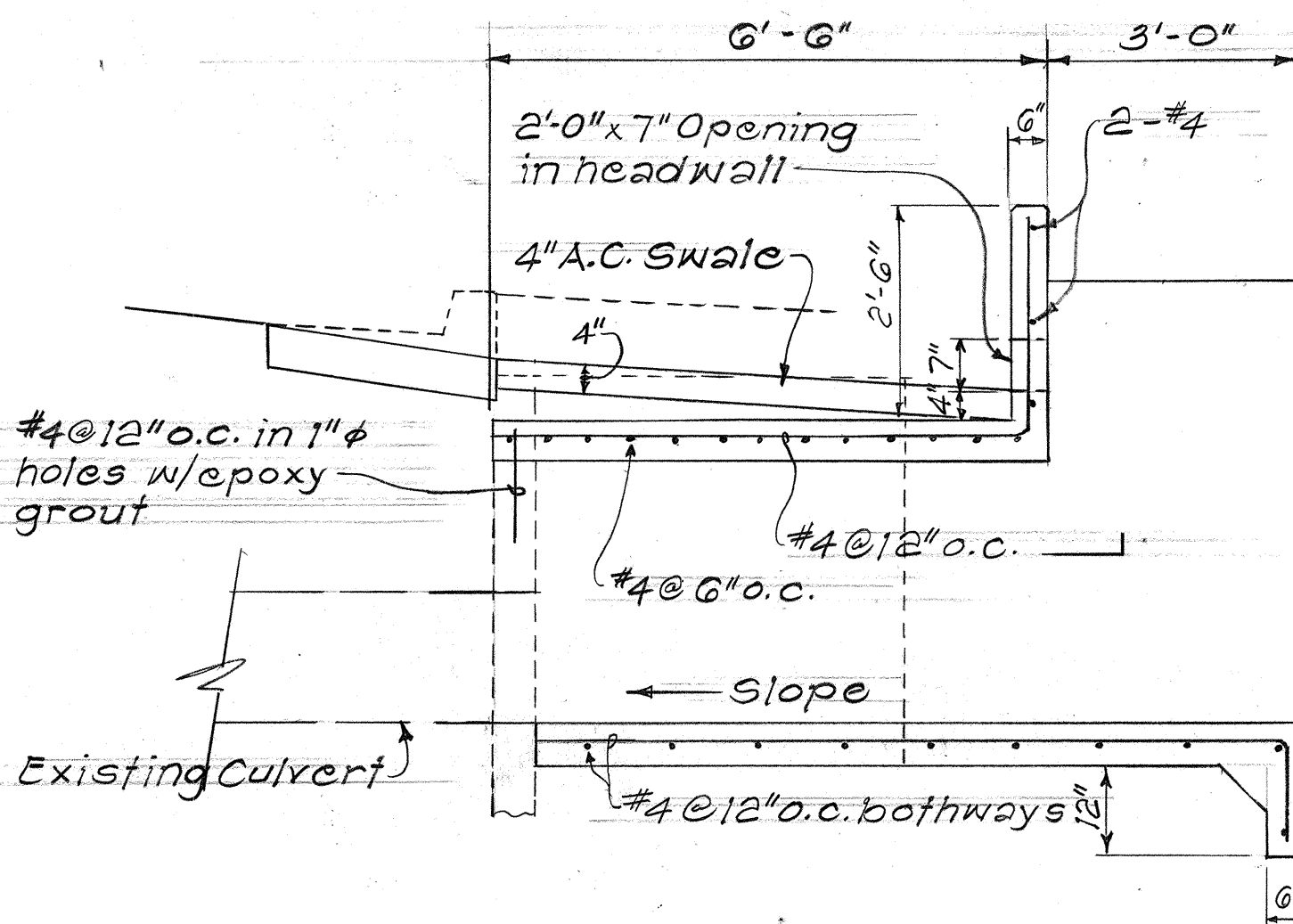
SECTION C-C
AT EXISTING HEADWALL

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



SECTION B-B

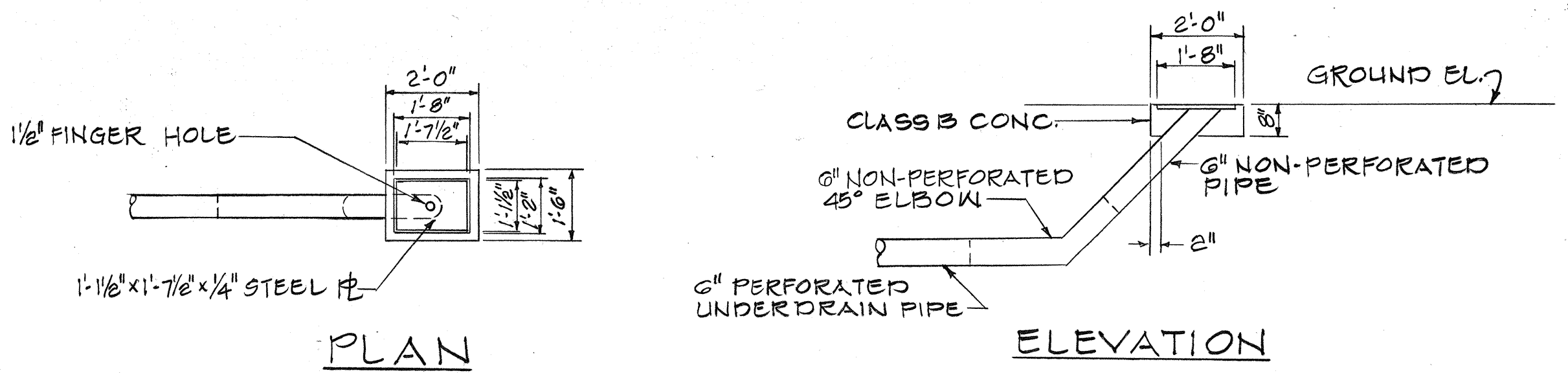
Scale: 1/2" = 1'-0"



SECTION A-A

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

RECONSTRUCTED INLET STRUCTURE VALKENBURGH ST. STA G+55± RT
C.C.O. #19



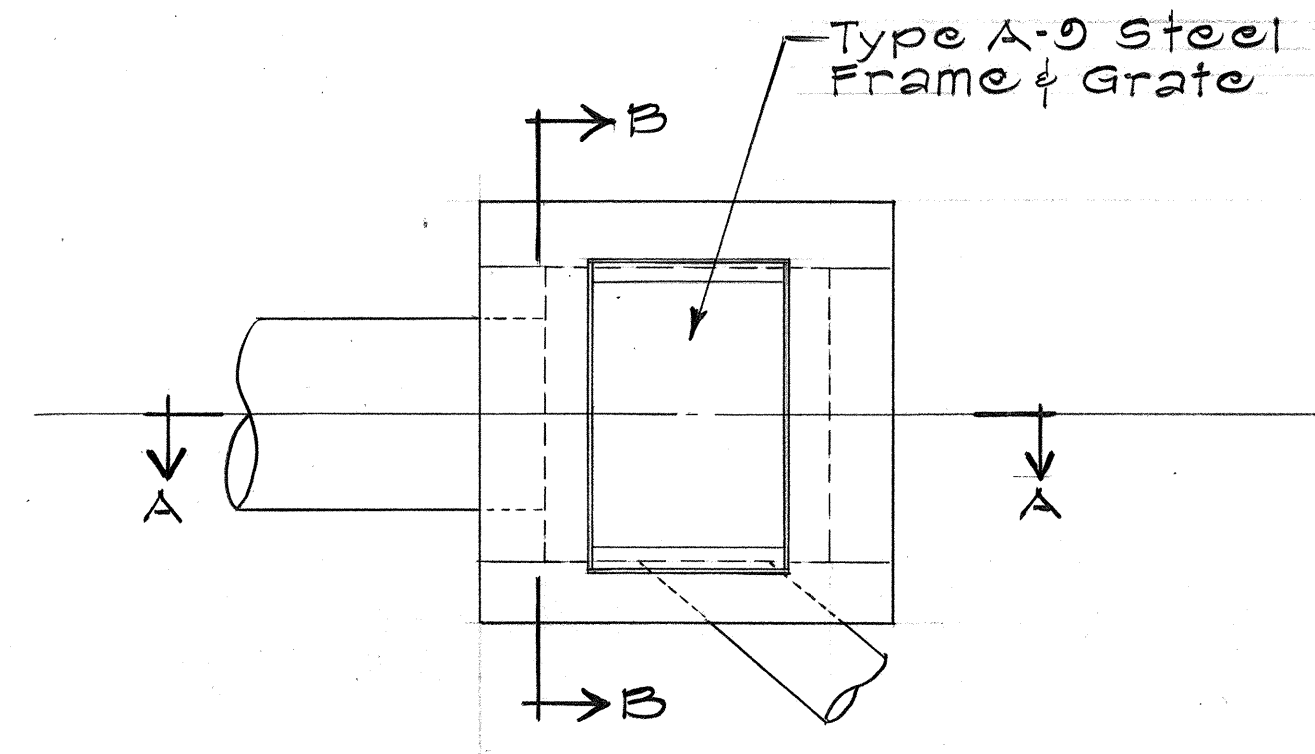
PLAN

ELEVATION

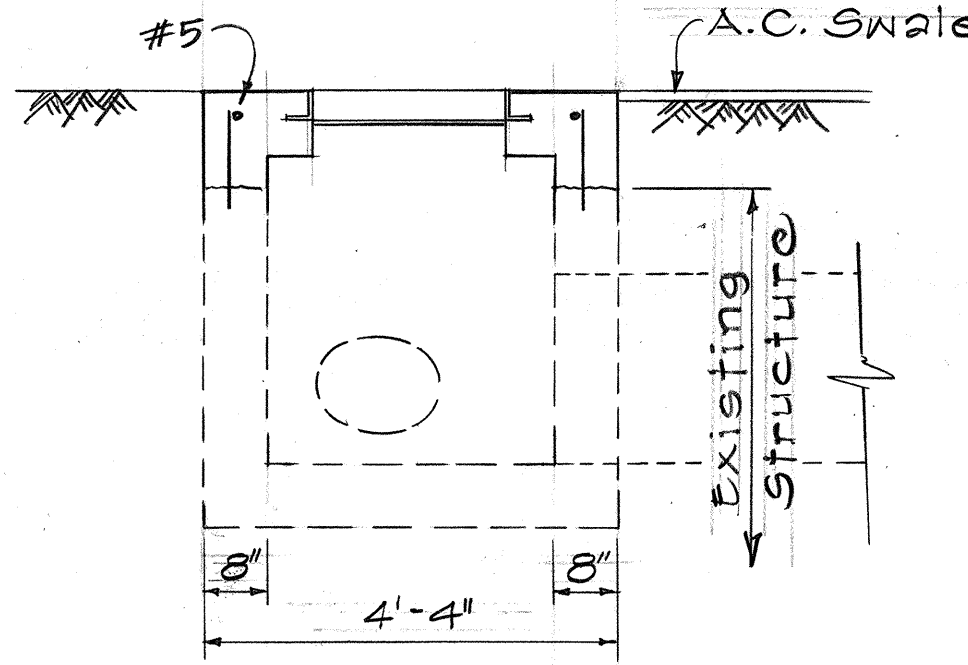
UNDERDRAIN CLEANOUT DETAILS

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

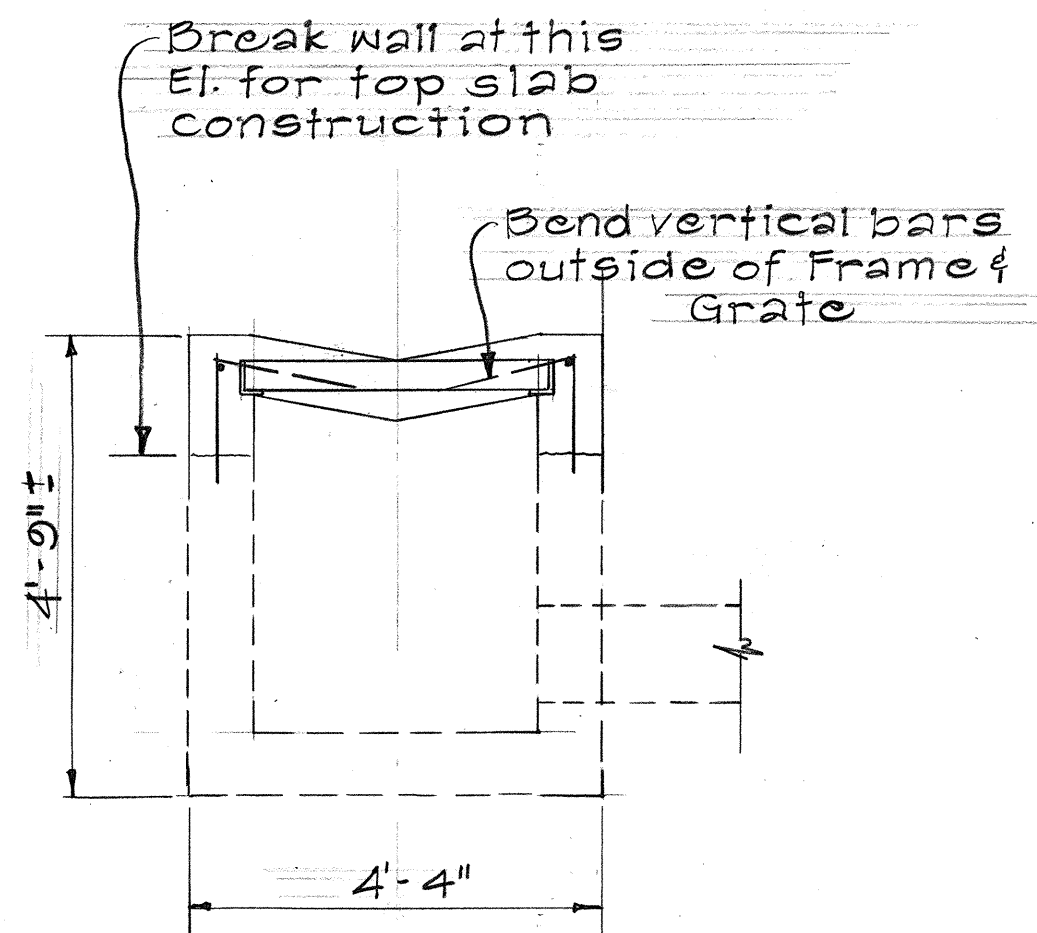
C.C.O. #52



PLAN



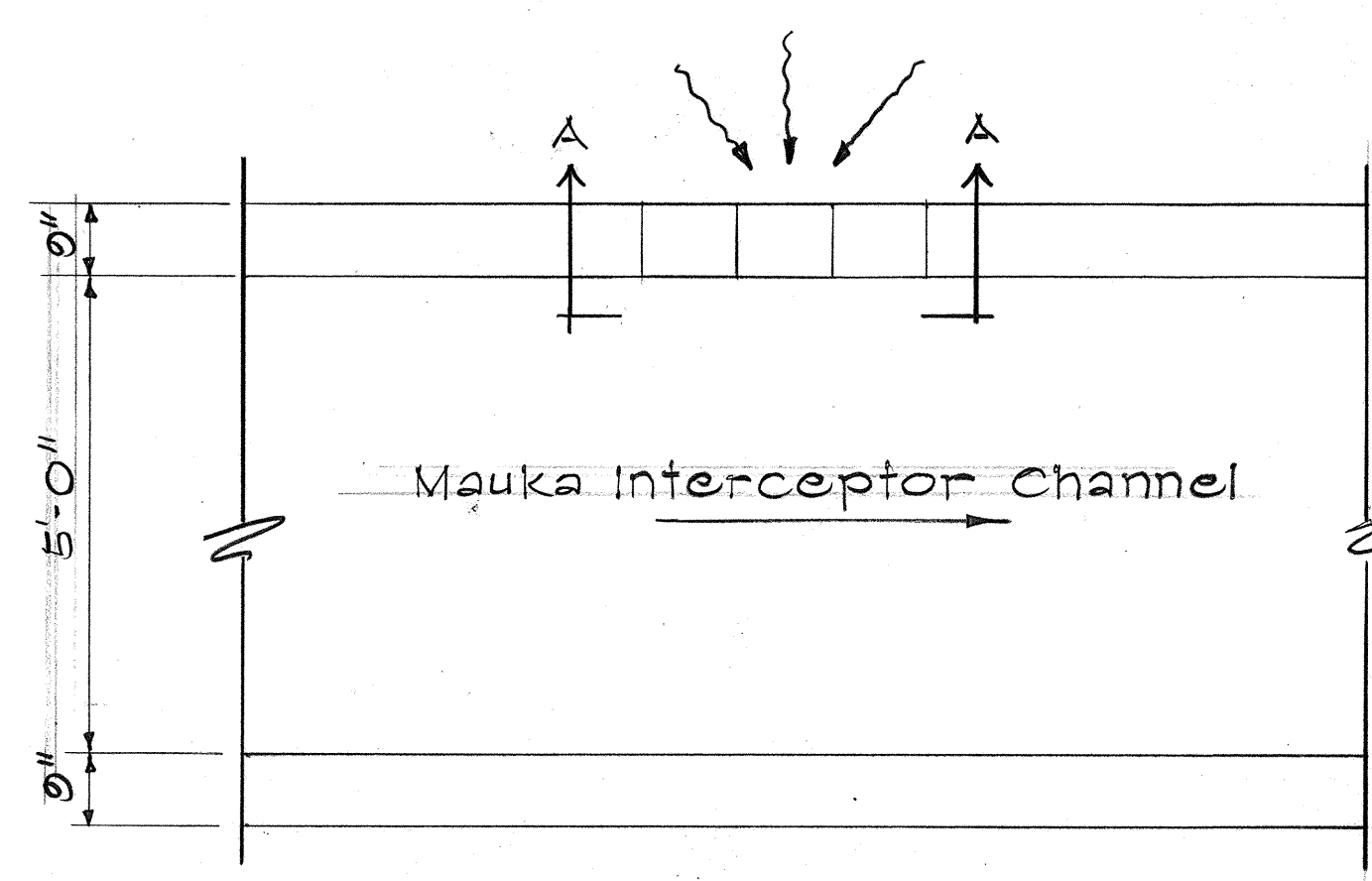
SECTION AA



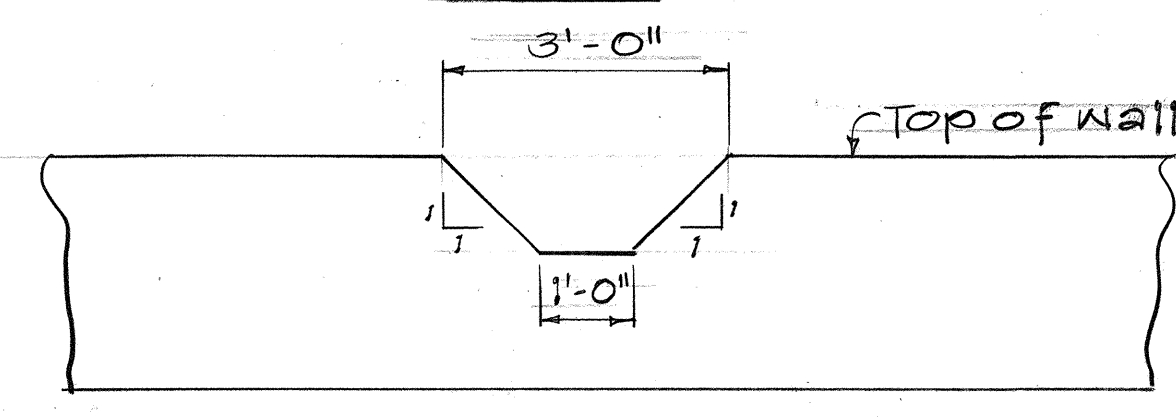
SECTION B-B

MODIFIED TYPE B DROP INTAKE C.C.O. #62

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



PLAN



SECTION AA

DETAIL 'A' @ STA G+10± C.C.O. #40

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

DRAINAGE DETAILS

PEARL HARBOR INTERCHANGE
F.A.I. Proj. No. I-HI-1(110):15

Scale: As Shown Date: Mar 6, 1978
SHEET NO. OF SHEETS