FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(18) UNIT 2	1965	38	79

KUNIA STA. 97+65 to 99+60 RIGHT
Construct: Conc. Ditch. For Typical Section see sht. no. 41 For Profile see sht. no. 40

FINAL ESTIMATED QUANTITIES

Class "B-1" Conc.	29.8 ~~28.0~~	C.Y.
Reinf. Steel	332 ~~440~~	lbs.
Struct. Exc.	106.6 ~~90~~	C.Y.
Ditch & Channel Exc.	0 ~~5~~	C.Y.
CRM.	2.6 ~~2.5~~	C.Y.

KUNIA STA. 99+63 RIGHT
Construct: Type "A" C.D.I., For 42" Pipe Culvert Outlet Detail, see sht. no. 41
Install: 42" Cl. III RCCP. or 42" CGMP, 12 Gage

FINAL ESTIMATED QUANTITIES

Class "B-1" Conc.	3.3 ~~3.5~~	C.Y.
Struct. Exc.	106.5 ~~66~~	C.Y.
42" Pipe Culvert	94	L.F.
U.B. for Pipe Foundation	3	C.Y.

RAMP KC-1 STA. 20+40
Construct: Type "B" C.D.I.
Install: 24" Cl. III RCCP. or 24" CGMP, 14 Gage

FINAL ESTIMATED QUANTITIES

Class "B-1" Conc.	1.7	C.Y.
Struct. Exc.	126.7 ~~150~~	C.Y.
24" Pipe Culvert	140	L.F.
U.B. for Pipe Foundation	10.8	C.Y.

RAMP KC STA. 21+55
Construct: Type "A" C.D.I.
Install: 24" Cl. III RCCP or 24" CGMP, 14 Gage

FINAL ESTIMATED QUANTITIES

Class "B-1" Conc.	3.1 ~~2.9~~	C.Y.
Struct. Exc.	58.9 ~~66~~	C.Y.
24" Pipe Culvert	86 ~~88~~	L.F.

RAMP KB STA. 2+83
Construct: Type "A" C.D.I. Std. Conc. Headwall
Install: 24" Cl. III RCCP. or 24" CGMP, 14 Gage

FINAL ESTIMATED QUANTITIES

Class "B-1" Conc.	3.7 ~~3.3~~	C.Y.
Reinf. Steel	42	lbs.
Struct. Exc.	24.3 ~~32~~	C.Y.
24" Pipe Culvert	39.5 ~~42~~	L.F.

KUNIA STA. 105+73 RIGHT
Construct: Type "A" C.D.I.
Install: 24" Cl. III RCCP or 24" CGMP, 14 Gage

FINAL ESTIMATED QUANTITIES

Class "B-1" Conc.	1.9 ~~2.0~~	C.Y.
Struct. Exc.	40.8 ~~42~~	C.Y.
24" Pipe Culvert	35 ~~36~~	L.F.

KUNIA STA. 97+65 to 100+23 LEFT
Construct: Conc. Ditch. For Typical Section see sht. no. 41 For Profile, see sht. no. 40

FINAL ESTIMATED QUANTITIES

Class "B-1" Conc.	48.7 ~~45.2~~	C.Y.
Reinf. Steel	2877 ~~2,600~~	lbs
Struct. Exc.	173.3 ~~175~~	C.Y.
Ditch & Channel Exc.	0 ~~5~~	C.Y.
CRM	3.7 ~~2.5~~	C.Y.

KUNIA STA. 100+23 to 103+36 LEFT
Construct: Conc. Ditch. For Typical Section see sht. no. 41 For Profile see sht. no. 40

FINAL ESTIMATED QUANTITIES

Class "B-1" Conc.	80.1 ~~76.6~~	C.Y.
Reinf. Steel	3834 ~~5,400~~	lbs
Struct. Exc.	228.3 ~~250~~	C.Y.

KUNIA STA. 103+36 LEFT
Construct: Type "A" C.D.I., Std. Conc. Headwall
Install: 54" Cl. III RCCP or 54" CGMP, 10 Gage
1 ea. Grating (For Detail see sht. no. 42)

FINAL ESTIMATED QUANTITIES

Class "B-1" Conc.	5.7 ~~6.5~~	C.Y.
Reinf. Steel	226 ~~205~~	lbs.
Struct. Exc.	61.5 ~~80~~	C.Y.
54" Pipe Culvert	32.6 ~~32~~	L.F.
Grating for Type "A" C.D.I.	1	Ea.

KUNIA STA. 103+71 to 104+67 LEFT
Construct: Conc. Ditch. For Typical Section see sht. no. 41 For Profile, see sht. no. 40

FINAL ESTIMATED QUANTITIES

Class "B-1" Conc.	28.8 ~~26.0~~	C.Y.
Reinf. Steel	1882 ~~1,920~~	lbs.
Struct. Exc.	67.1 ~~65~~	C.Y.

KUNIA STA. 104+67 LEFT
Construct: Type "A" C.D.I.
Install: 54" Cl. III RCCP or 54" CGMP, 10 Gage
1 ea. Grating (For Detail see sht. no. 42)

FINAL ESTIMATED QUANTITIES

Class "B-1" Conc.	4.7 ~~5.4~~	C.Y.
Reinf. Steel	189 ~~260~~	lbs
Struct. Exc.	142.7 ~~220~~	C.Y.
54" Pipe Culvert	114.5 ~~112~~	L.F.
Grating for Type "A" C.D.I.	1	Ea.

KUNIA STA. 105+85 LEFT
Construct: Modified Type "C" SDMH.
For Detail see sht. no. 43
Install 54" Cl. III RCCP or 54" CGMP 10 Gage

FINAL ESTIMATED QUANTITIES

Class "A-1" Conc.	4.8 ~~5.0~~	C.Y.
Reinf. Steel	130 ~~132~~	lbs
Struc. Exc.	367.1 ~~430~~	C.Y.
54" Pipe Culvert	241.3 ~~242~~	L.F.
Type "A" C.I. Frame & Cover	1	Ea.

RAMP KD STA. 1+27 LEFT
Construct: Type "B" C.D.I.
Install: 24" Cl. III RCCP. or 24" CGMP, 14 Gage

FINAL ESTIMATED QUANTITIES

Class "B-1" Conc.	2.3 ~~2.4~~	C.Y.
Struct. Exc.	36.3 ~~54~~	C.Y.
24" Pipe Culvert	47.3 ~~46~~	L.F.

RAMP KD STA. 1+27 RIGHT
Construct: Type "B" C.D.I.
Install: 24" Cl. III RCCP. or 24" CGMP, 14 Gage

FINAL ESTIMATED QUANTITIES

Class "B-1" Conc.	2.1	C.Y.
Struct. Exc.	43.4 ~~55~~	C.Y.
24" Pipe Culvert	37.8 ~~60~~	L.F.

KUNIA STA. 102+92 RIGHT
Adjust 1 each M.H. Frame & Cover

FINAL ESTIMATED QUANTITIES

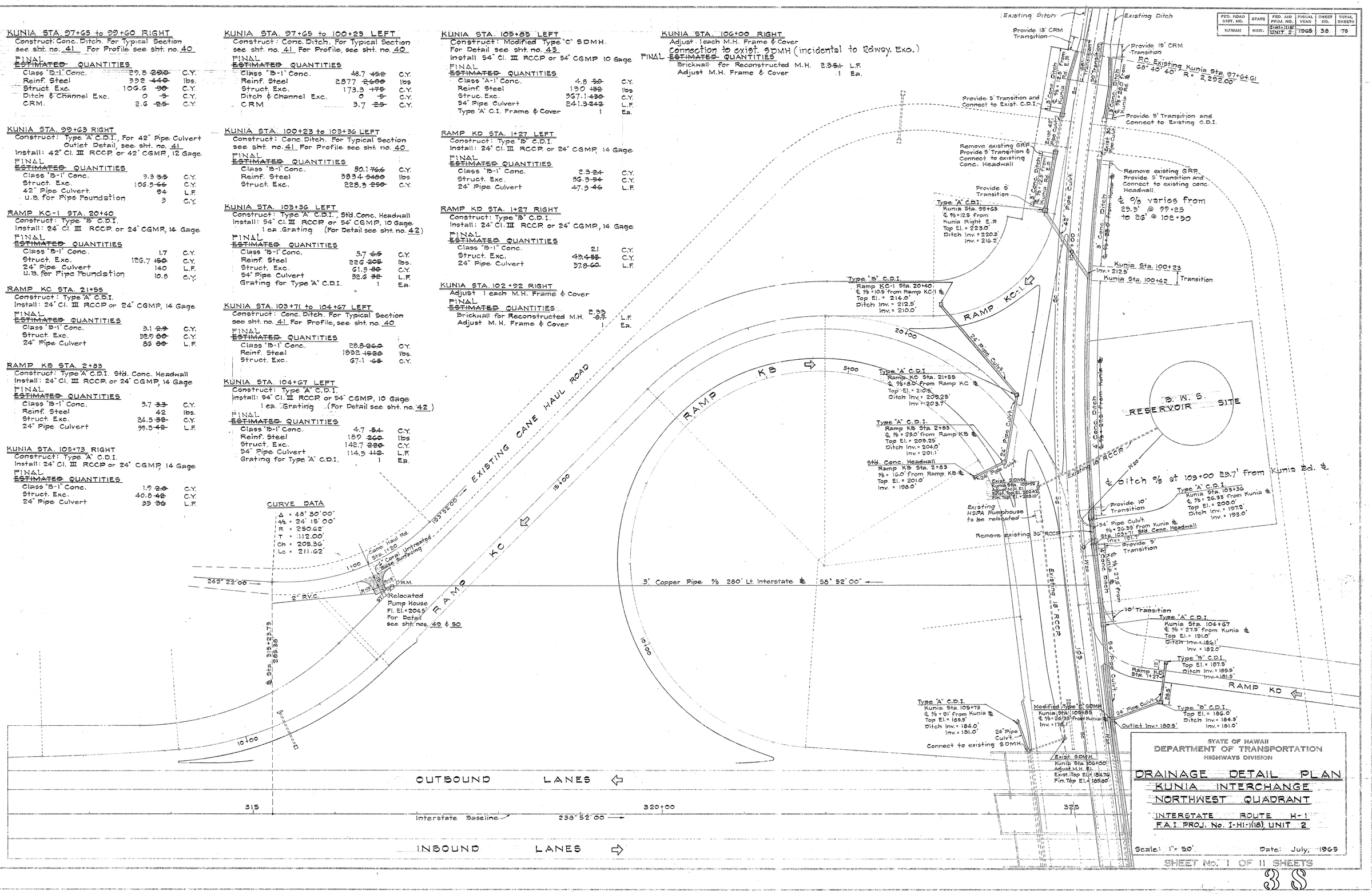
Brickwall for Reconstructed M.H.	2.33 ~~6.7~~	L.F.
Adjust M.H. Frame & Cover	1	Ea.

KUNIA STA. 106+00 RIGHT
Adjust 1 each M.H. Frame & Cover
Connection to exist. SDMH (incidental to Rdway. Exc.)

FINAL ESTIMATED QUANTITIES

Brickwall for Reconstructed M.H.	2.3 ~~5.1~~	L.F.
Adjust M.H. Frame & Cover	1	Ea.

CURVE DATA
Δ = 48° 30' 00"
4d = 24° 15' 00"
R = 250.62'
T = 112.00'
Ch = 205.36'
Lc = 211.62'



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAIL PLAN
KUNIA INTERCHANGE
NORTHWEST QUADRANT
INTERSTATE ROUTE H-1
F.A.I. PROJ. No. I-HI-1(18), UNIT 2

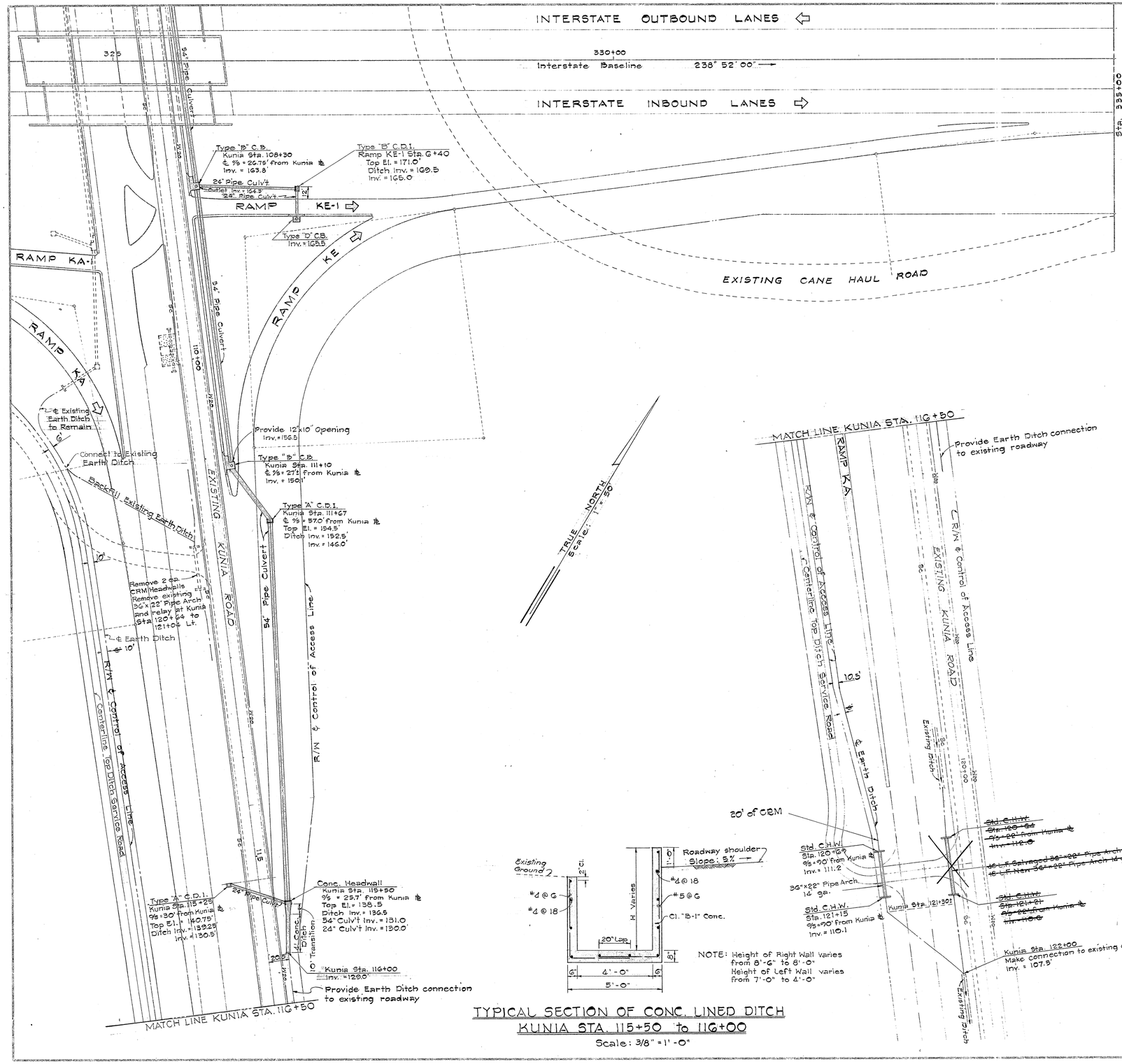
Scale: 1" = 50' Date: July, 1965

SHEET No. 1 OF 11 SHEETS

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

38

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
NAWAM	HAWAII	I-HI-1(18) UNIT 2	1965	39	75



TYPICAL SECTION OF CONC. LINED DITCH
KUNIA STA. 115+50 to 116+00
Scale: 3/8" = 1'-0"

RAMP KE-1 STA. 6+40 RIGHT
Construct: Type "D" C.B.
Install: 24" Cl. III RCCP or CGMP, 14 Gage
FINAL
~~ESTIMATED~~ QUANTITIES

Class "A-1" Conc.	3.4 ~~3.5~~	C.Y.
Reinf. Steel	77	lbs.
Struct. Exc.	21.7 ~~20~~	C.Y.
24" Pipe Culvert	25 ~~26~~	L.F.
Type "B" C.I. Frame & Cover	1	Ea.

RAMP KE-1 STA. 6+40 LEFT
Construct: Type "B" C.B.
Install: 24" Cl. III RCCP or CGMP, 14 Gage
FINAL
~~ESTIMATED~~ QUANTITIES

Class "B-1" Conc.	2.3 ~~2.5~~	C.Y.
Struct. Exc.	102.5 ~~114~~	C.Y.
24" Pipe Culvert	96.3 ~~98~~	L.F.

KUNIA STA. 108+30 LEFT
Construct: Type "B" C.B.
Install: 54" Cl. III RCCP or CGMP, 10 Gage
FINAL
~~ESTIMATED~~ QUANTITIES

Class "A-1" Conc.	8.7 ~~9.3~~	C.Y.
Reinf. Steel	126 ~~138~~	lbs.
Struct. Exc.	506.5 ~~540~~	C.Y.
54" Pipe Culvert	273.4 ~~276~~	L.F.
Type "B" C.I. Frame & Cover	1	Ea.

KUNIA STA. 111+10 LEFT
Construct: Type "B" C.B.
Install: 54" Cl. III RCCP or CGMP, 10 Gage
FINAL
~~ESTIMATED~~ QUANTITIES

Class A-1 Conc.	9.1 ~~9.3~~	C.Y.
Reinf. Steel	127 ~~130~~	lbs.
Struct. Exc.	128 ~~105~~	C.Y.
54" Pipe Culvert	64	L.F.
Type "B" C.I. Frame & Cover	1	Ea.

KUNIA STA. 111+67 LEFT
Construct: Type "A" C.D.I.
Install 54" Cl. III RCCP or CGMP, 10 Gage
FINAL
~~ESTIMATED~~ QUANTITIES

Class "B-1" Conc.	5.2 ~~5.7~~	C.Y.
Reinf. Steel	291 ~~275~~	lbs.
Struct. Exc.	678.3 ~~633~~	C.Y.
54" Pipe Culvert	384 ~~388~~	L.F.
Grating for Type "A" C.D.I.	1	Ea.

KUNIA STA. 115+50 RIGHT
Construct: Type "A" C.D.I.
Install: 24" Cl. III RCCP or CGMP, 14 Gage
FINAL
~~ESTIMATED~~ QUANTITIES

Class "B-1" Conc.	4.0 ~~4.1~~	C.Y.
Struct. Exc.	74.1 ~~85~~	C.Y.
24" Pipe Culvert	36.3 ~~36~~	L.F.

KUNIA STA. 115+50 to 116+00 LEFT
Construct: Special Conc. Headwall.
For detail see sht. no. 43
Conc. Ditch see typical section on this sht
FINAL
~~ESTIMATED~~ QUANTITIES

Class "B-1" Conc.	21.1 ~~23.1~~	C.Y.
Reinf. Steel	2378 ~~2,275~~	lbs.
Struct. Exc.	92.4 ~~100~~	C.Y.

KUNIA STA. 110+90 to 120+69 RIGHT
Construct: Earth Ditch, For typical section see sht. no. 41
FINAL
~~ESTIMATED~~ QUANTITIES

Ditch & Channel Exc.	292 ~~320~~	C.Y.

KUNIA STA. 120+69 to 121+15 RIGHT
Construct: 2 Std. Conc. Headwalls
Install: 36"x22" CGM Pipe Arch 14 Gage
FINAL
~~ESTIMATED~~ QUANTITIES

Class "B-1" Conc.	6.0 ~~3.8~~	C.Y.
Reinf. Steel	120	lbs.
Struct. Exc.	37.1 ~~37~~	C.Y.
36"x 22" CGM Pipe Arch	46.3 ~~46~~	L.F.

KUNIA STA. 120+64 to 121+21 RIGHT
Construct: 2 Std. Conc. Headwalls
Install: Salvaged 36"x22" CGM Pipe Arch, new 36"x22" CGM Pipe Arch 14 Gage
FINAL
~~ESTIMATED~~ QUANTITIES

Class "B-1" Conc.	0 ~~3.0~~	C.Y.
Reinf. Steel	0 ~~120~~	lbs.
Struct. Exc.	30.5 ~~32~~	C.Y.
Relay 36"x 22" CGM Pipe Arch	40	L.F.
New 36"x22" CGM Pipe Arch	18	L.F.

KUNIA STA. 121+15 to 122+00 RIGHT
Construct: Earth Ditch, For Typical Section see sht. no. 41
FINAL
~~ESTIMATED~~ QUANTITIES

Ditch & Channel Exc.	33 ~~35~~	C.Y.

KUNIA STA. 121+21 to 122+00 RIGHT
Construct: Earth Ditch, For Typical Section see sht. no. 41
FINAL
~~ESTIMATED~~ QUANTITIES

Ditch & Channel Exc.	3 ~~4.5~~	C.Y.

ORIGINAL PLAN	SURVEY PLOTTED BY ____ DATE ____
	DRAWN BY ____ "
	TRACED BY ____ "
NOTE BOOK:	DESIGNED BY ____ "
	QUANTITIES BY ____ "
	CHECKED BY ____ "

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

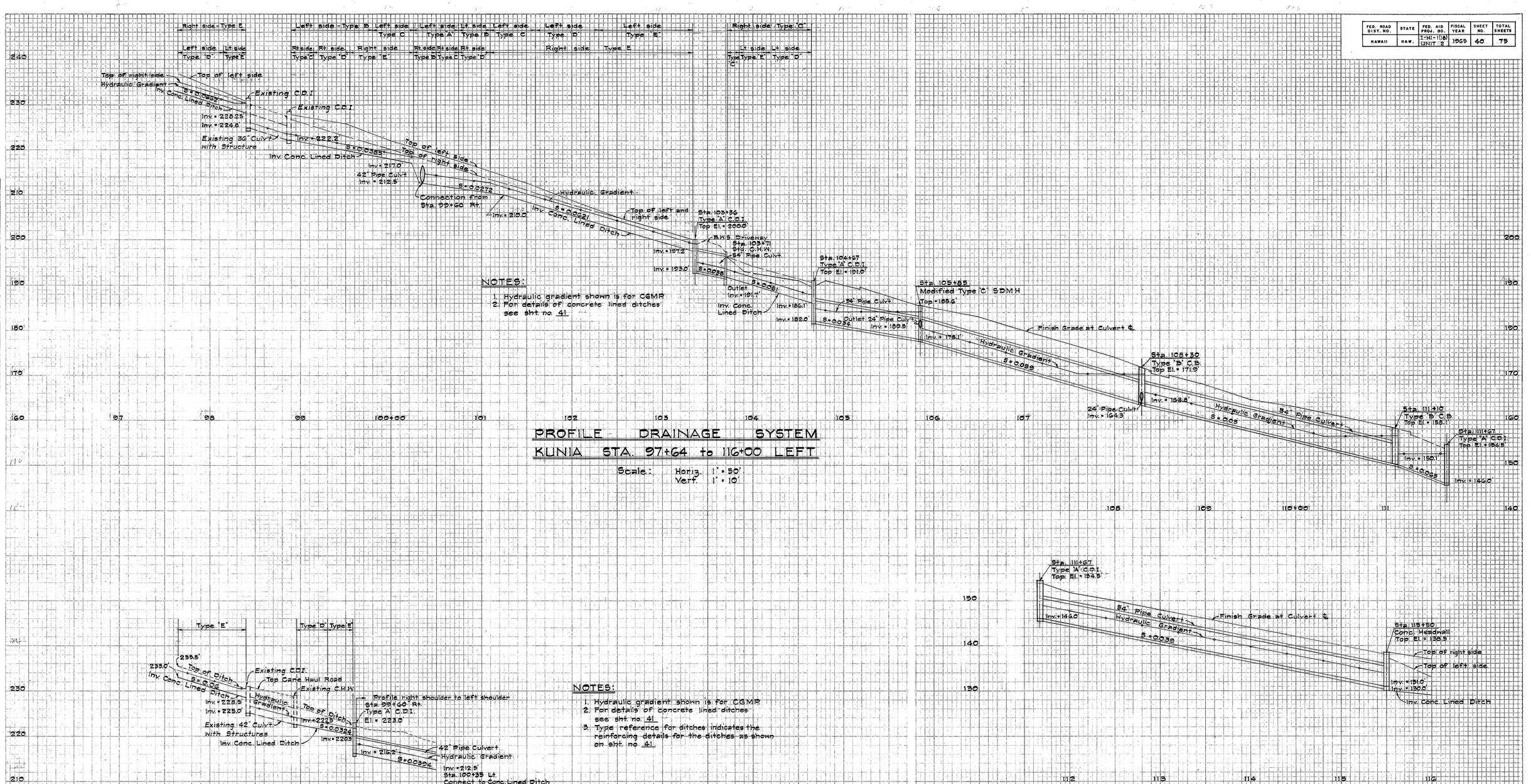
DRAINAGE DETAIL PLAN
KUNIA INTERCHANGE
SOUTHEAST QUADRANT
INTERSTATE ROUTE H-1
F.A.I. PROJ. No. I-HI-1(18), UNIT 2

Scale: 1" = 50' Date: July, 1965

SHEET No. 2 OF 11 SHEETS

39

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(18) UNIT 2	1965	40	75



NOTES:
1. Hydraulic gradient shown is for CGMP.
2. For details of concrete lined ditches see sht no. 41

PROFILE DRAINAGE SYSTEM
KUNIA STA. 97+64 to 116+00 LEFT

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

NOTES:
1. Hydraulic gradient shown is for CGMP.
2. For details of concrete lined ditches see sht no. 41
3. Type reference for ditches indicates the reinforcing details for the ditches as shown on sht. no 41

PROFILE DRAINAGE SYSTEM
KUNIA STA. 97+64 Rt to 100+35 Lt.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PROFILE OF DRAINAGE SYSTEM
KUNIA STA. 97+64 To 116+00 LEFT
KUNIA STA. 97+64 Rt. To 100+23 Lt.

INTERSTATE ROUTE H-1
F.A.I. PROJ. No. I-HI-1(18), UNIT 2

Scale: Horiz. 1" = 50'
Vert. 1" = 10'
Date: July 1965

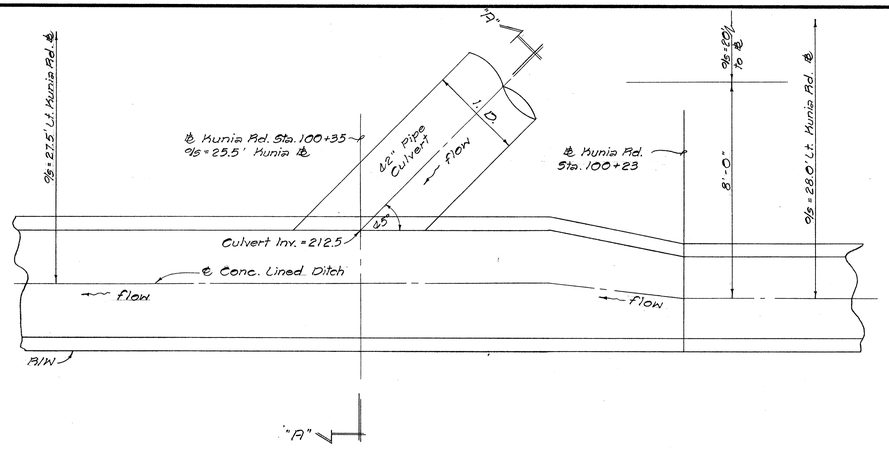
SHEET No. 3 OF 11 SHEETS

40

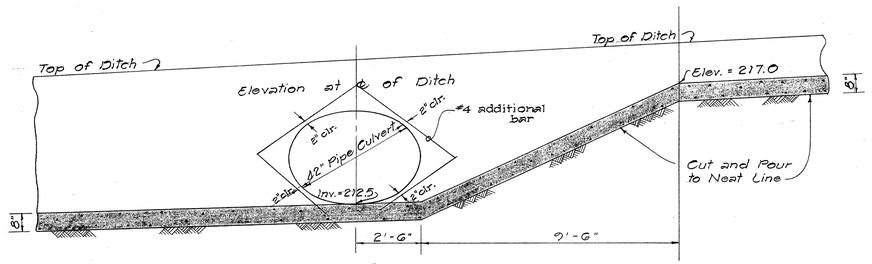
PLATE 3, CROSS SECTION
KEUFFEL & ESSER CO.

40 7060 IMPERIAL™ TRACING CLOTH

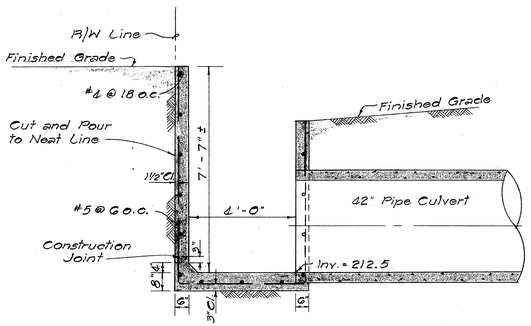
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(18) UNIT 2	1965	41	75



PLAN



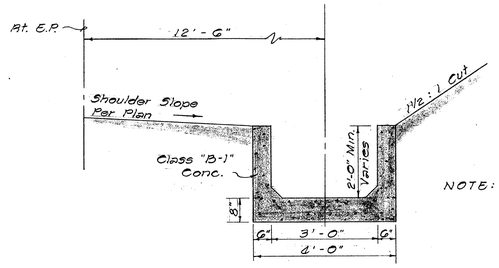
ELEVATION



SECTION "A-A"

DETAIL OF 42" PIPE CULVERT OUTLET AT KUNIA STA. 100+35 (LT.)

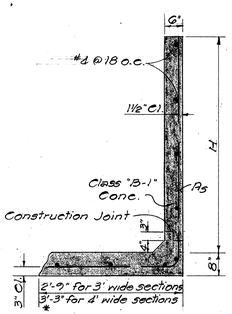
Scale: 3/8" = 1'-0"



NOTE:
1. Width of transition ditch shall vary from 3'-0 to 4'-9".
2. See profile for wall heights.
3. For reinforcing, see detail this sheet.
4. Tranverse construction joints spaced at 30' intervals. ~~Tranverse~~ ½" Transverse expansion joints spaced at 90' intervals.

DETAIL OF CONC. DITCH KUNIA STA. 97+65 to 99+60 Rt.

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



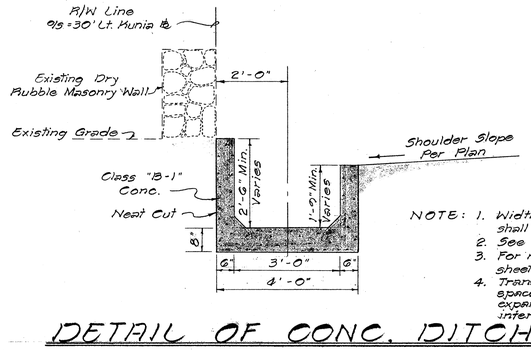
SCHEDULE

TYPE	H	As
A	6' to 8'	#5 @ 6
B	5' to 6'	#4 @ 6
C	4' to 5'	#4 @ 9
D	3' to 4'	#4 @ 15
E	3' & Under	Unreinforced Rathmix

* In transition sections, increase length to provide 20" lap with bar from other wall.

TYPICAL SECTION OF CONC. DITCH REINFORCING

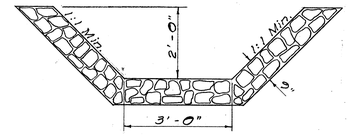
Scale: 1/2" = 1'-0"



NOTE:
1. Width of transition ditch shall vary from 3'-0" to 4'-2".
2. See profile for wall heights.
3. For reinforcing, see detail this sheet.
4. Transverse construction joints spaced at 30' intervals. ~~Tranverse~~ ½" Transverse expansion joints spaced at 90' intervals.

DETAIL OF CONC. DITCH KUNIA STA. 97+65 to 100+23 Lt.

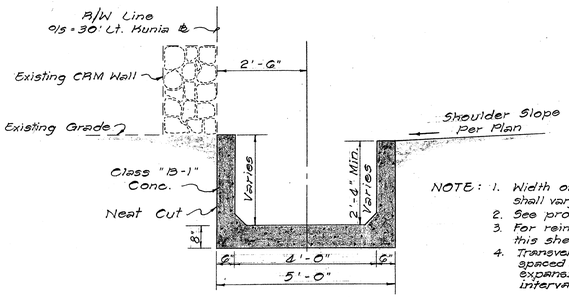
Scale: 1/2" = 1'-0"



NOTE: Vary side slope to match connecting ditches

DETAIL OF CRM TRANSITION DITCH AT KUNIA STA. 97+65

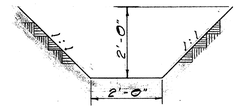
Scale: 1/2" = 1'-0"



NOTE:
1. Width of transition ditch shall vary from 4'-0" to 6'-0".
2. See profile for wall heights.
3. For reinforcing .see detail this sheet.
4. Transverse construction joints spaced at 30' intervals. ~~Tranverse~~ ½" Transverse expansion joints spaced at 90' intervals.

DETAIL OF CONC. DITCH KUNIA STA. 100+42 to 103+17 Lt. and KUNIA STA. 103+71 to 104+68 Lt.

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



DETAIL OF EARTH DITCH

Scale: ½" = 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETAILS OF DRAINAGE DITCHES AND OF 42" PIPE CULVERT OUTLET AT KUNIA STA. 100+35 LEFT

INTERSTATE ROUTE H-1
F.A.I. PROJ. No. I-HI-1(18), UNIT 2

Scale: As shown Date: July 1965

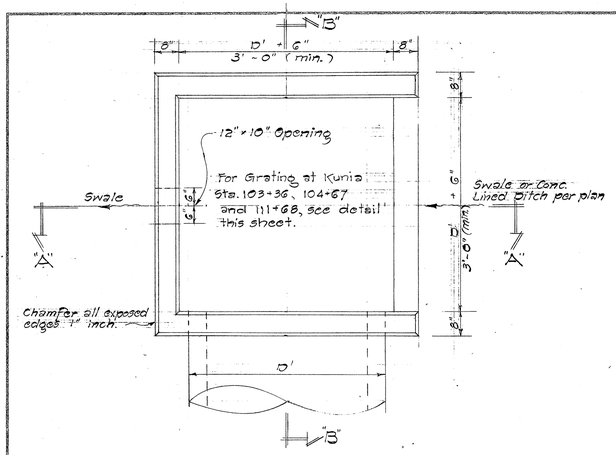
SHEET No. 4 OF 11 SHEETS

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

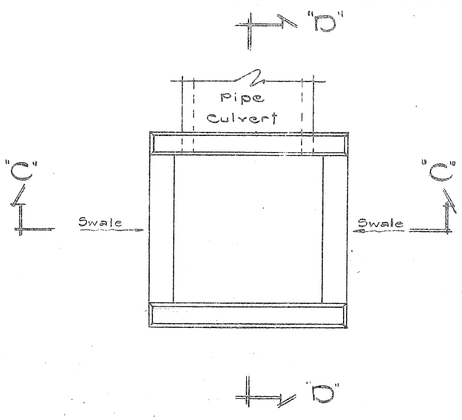
PRINTED ON NO. 1000H CLEARPRINT

4 11

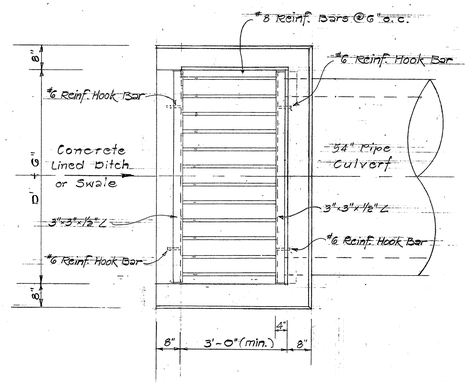
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(18) UNIT 2	1965	42	75



PLAN

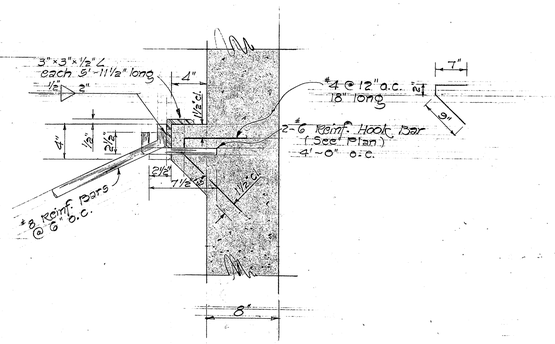


PLAN



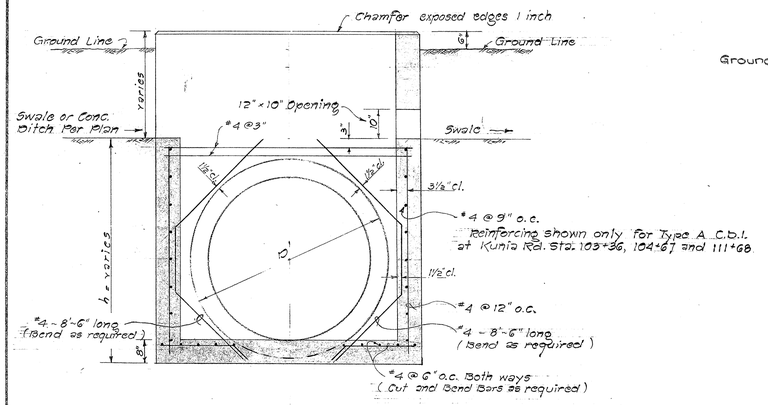
PLAN

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

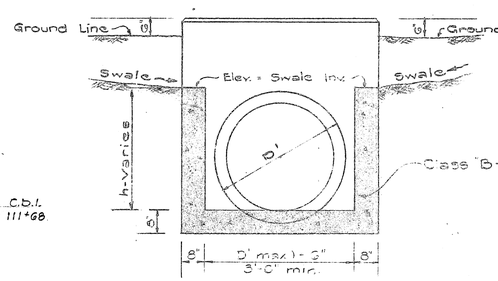


DETAIL A

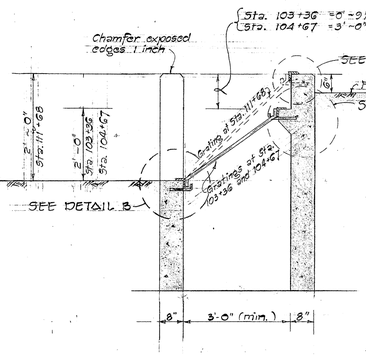
Scale: 1 1/2" = 1'-0"



SECTION "A-A"

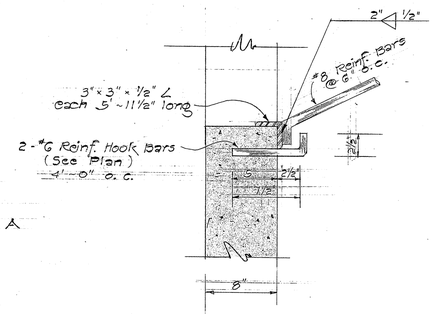


SECTION "C-C"



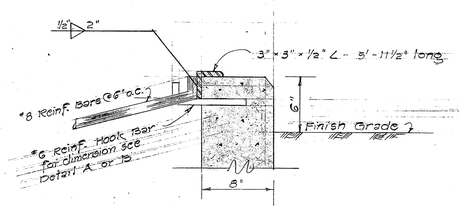
SECTION

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



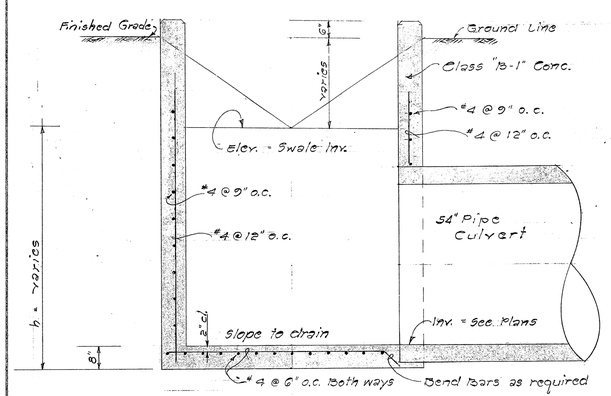
DETAIL B

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



DETAIL C

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

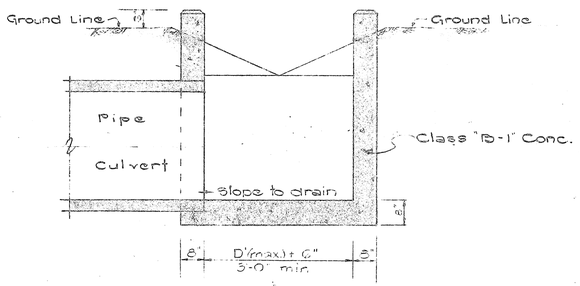


SECTION "B-B"

TYPE "A"

CONCRETE DROP INTAKE

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



SECTION "D-D"

TYPE "B"

CONCRETE DROP INTAKE

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

DETAILS OF GRATING FOR TYPE "A" C.D.I. AT KUNIA RD. STA. 103+36, 104+67 AND 111+68

Scale: As Shown

NOTE:

1. All Conc. Drop Intake unreinforced except for Type "A" Conc. Drop Intakes at Kunia Rd. Sta. 103+36, 104+67 and 111+68.
2. Grating only for Conc. Drop Intakes at Kunia Sta. 103+36, 104+67 and 111+68
3. 12"x10" opening in rear wall not required when Conc. Drop Intake is located at termination of Swale.
4. Standard Manhole Rungs @ 16" o.c. shall be provided for structures having "h" greater than 3'-0" and shall be incidental to Class A-1 or B-1 Concrete.
5. Ditch Inv. and Swale Inv. shall be identical.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETAILS OF CONCRETE DROP INTAKE TYPE "A", "B" AND DETAIL OF GRATING FOR TYPE "A" CDI

INTERSTATE ROUTE H-1
F.A.I. PROJ. No. I-HI-1(18), UNIT 2

Scale: As Shown | Date: July, 1965

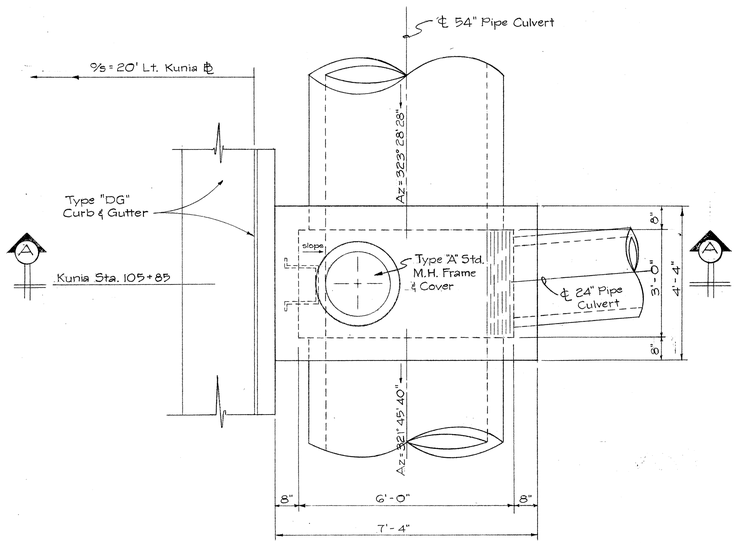
SHEET No. 5 OF 11 SHEETS

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

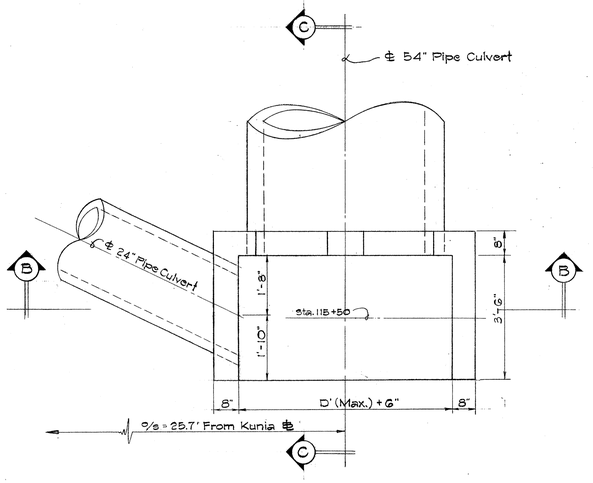
PRINTED ON CLEARPRINT 1000-H

42

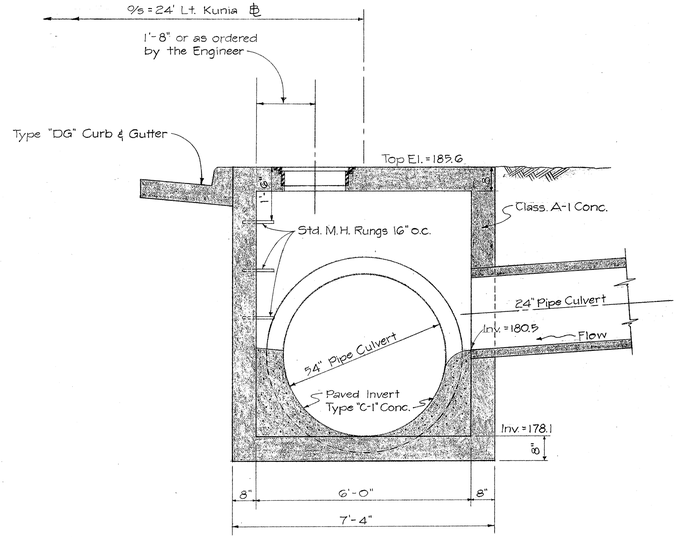
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(18) UNIT 2	1965	43	75



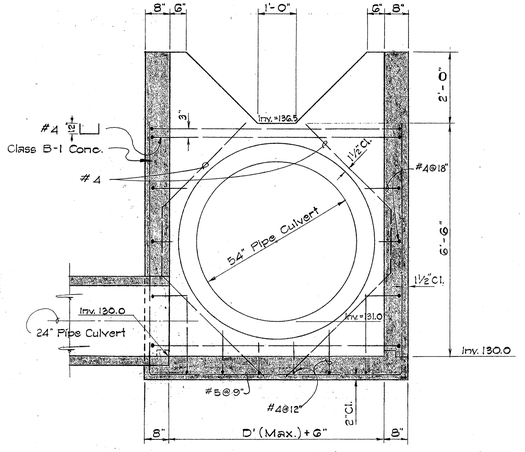
PLAN



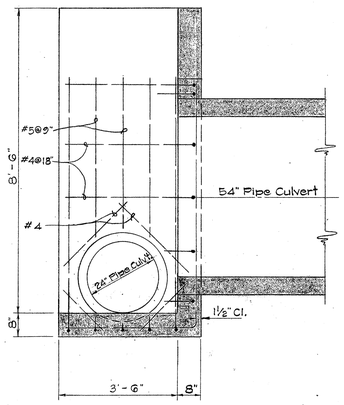
PLAN



SECTION "A-A"



SECTION "B-B"



SECTION "C-C"

NOTE:

1. Dimensions and reinforcing steel identical to Type "C" S.D.M.H. unless otherwise noted.
2. Class "C-1" concrete shall be incidental to class "A-1" Concrete.

MODIFIED TYPE "C" SDMH AT KUNIA STA. 105+85

Scale: ½" = 1'-0"

SPECIAL CONC. HEAD WALL AT KUNIA STA. 115+50

Scale: ½" = 1'-0"

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

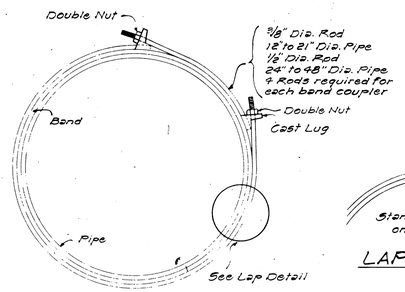
DRAINAGE DETAILS
MODIFIED TYPE "C" SDMH
AND CONCRETE HEADWALL

INTERSTATE ROUTE H-1
F.A.I. PROJ. No. I-HI-1(18), UNIT 2

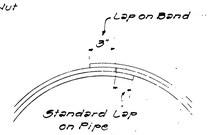
Scale: As shown Date: July 1965

SHEET No. 6 OF 11 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	I-HI-1(8) UNIT 2	1965	44	75

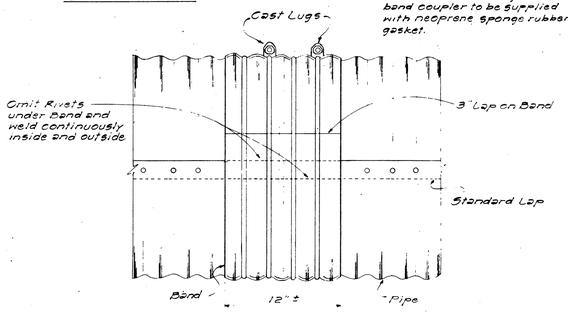


END VIEW



LAP DETAIL

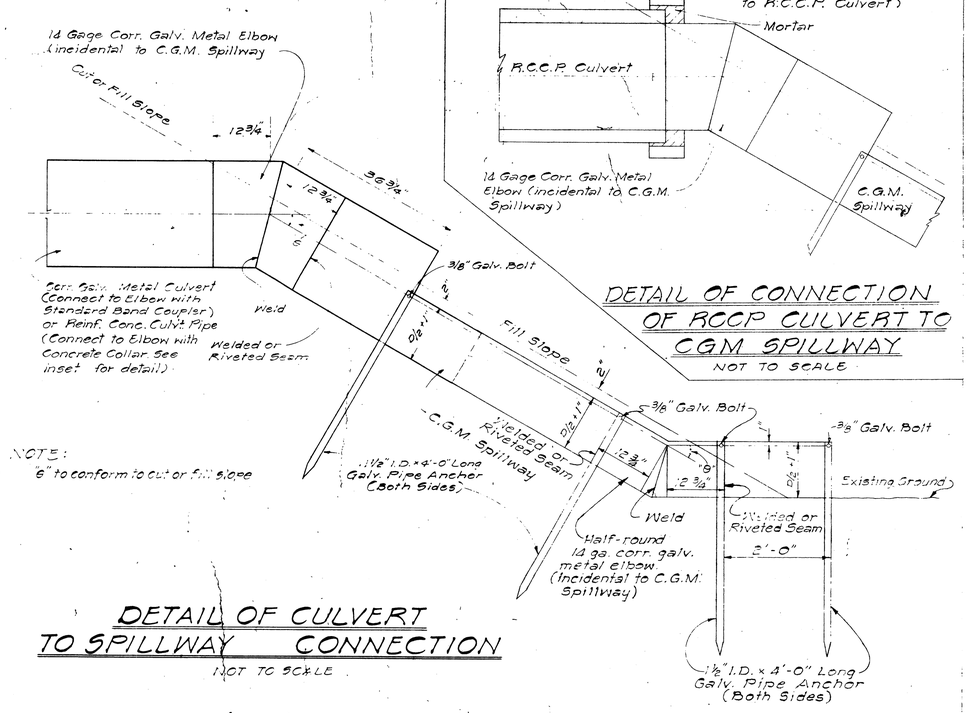
NOTE:
Each watertight band coupler to be supplied with neoprene sponge rubber gasket.



SIDE VIEW

DETAIL OF WATERTIGHT BAND COUPLER

NOT TO SCALE

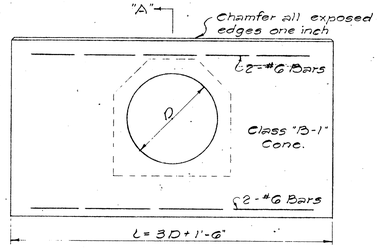


DETAIL OF CULVERT TO SPILLWAY CONNECTION

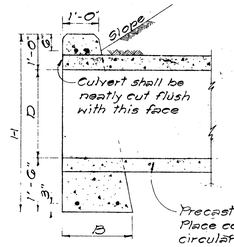
NOT TO SCALE

DETAIL OF CONNECTION OF RCCP CULVERT TO CGM SPILLWAY

NOT TO SCALE



ELEVATION

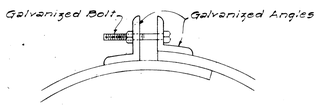


SECTION "A-A"

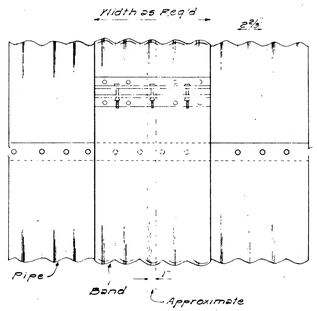
DATA FOR CONC. HEADWALL				Cast-in-Place Conc. Culvert	Conc. Pipe Culvert	Steel For One Headwall			
D	B	L	H	Cu. Yd.	Cu. Yd.	No. of Bars	Size	Length	Lbs.
18"	1'-6"	6'-0"	4'-0"	0.92	1.00	4	#6	5'-6"	33
24"	1'-6"	7'-6"	4'-6"	1.25	1.38	4	#6	7'-0"	42
30"	2'-0"	9'-0"	5'-0"	1.95	2.17	4	#6	8'-6"	51
36"	2'-0"	10'-6"	5'-6"	2.45	2.74	4	#6	10'-0"	60
42"	2'-6"	12'-0"	6'-0"		3.87	4	#6	11'-6"	69
48"	2'-6"	13'-6"	6'-6"		4.66	4	#6	13'-0"	78
54"	3'-0"	7'-0"	7'-0"		2.45	4	#6	6'-6"	36

DETAIL OF STD. CONC. HEADWALL

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



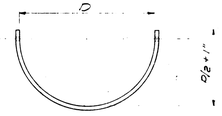
BAND DETAIL



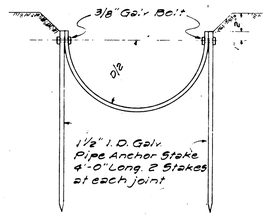
SIDE VIEW

DETAIL OF STANDARD BAND COUPLER

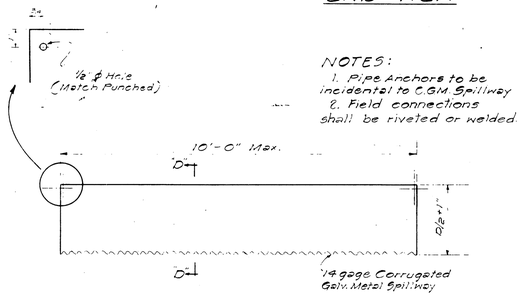
NOT TO SCALE



SECTION "D-D"



END VIEW



SIDE VIEW

STD. C G.M. SPILLWAY

NOT TO SCALE

ORIGINAL PLANS	SURVEY PLOTTED BY	DATE
	DRAWN BY R.Y.	5-24-65
	TRACED BY	
NOTE BOOK	DESIGNED BY O.M.	5-24-65
	QUANTITIES BY	
No.	CHECK'D BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

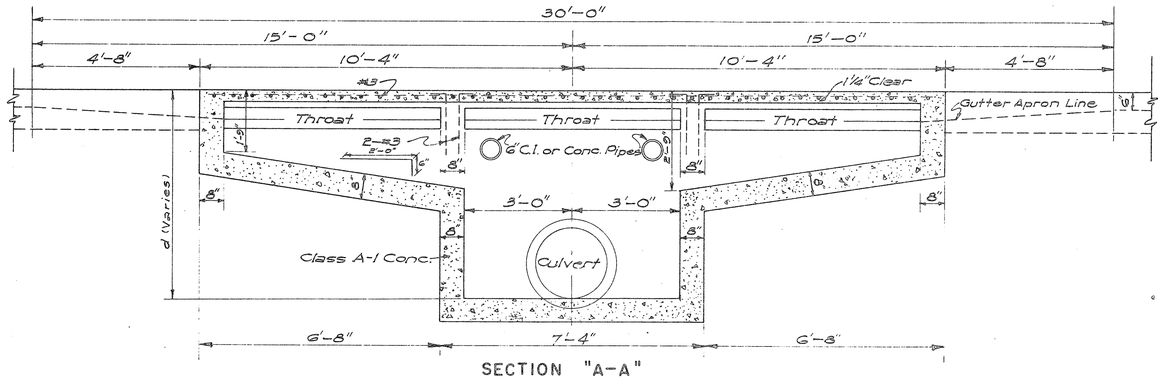
DETAILS OF
CGMP COUPLERS, CGM SPILLWAYS
AND STD. CONCRETE HEADWALLS

INTERSTATE ROUTE H-1
F.A.I. PROJ. No. I-HI-1(18), UNIT 2

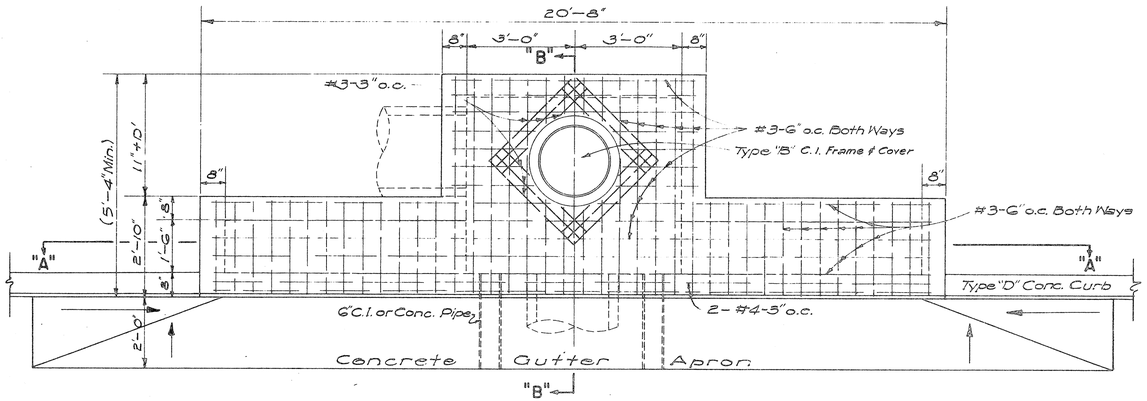
Scale: As Shown Date: July 1965

SHEET No. 7 OF 11 SHEETS

2/17/59



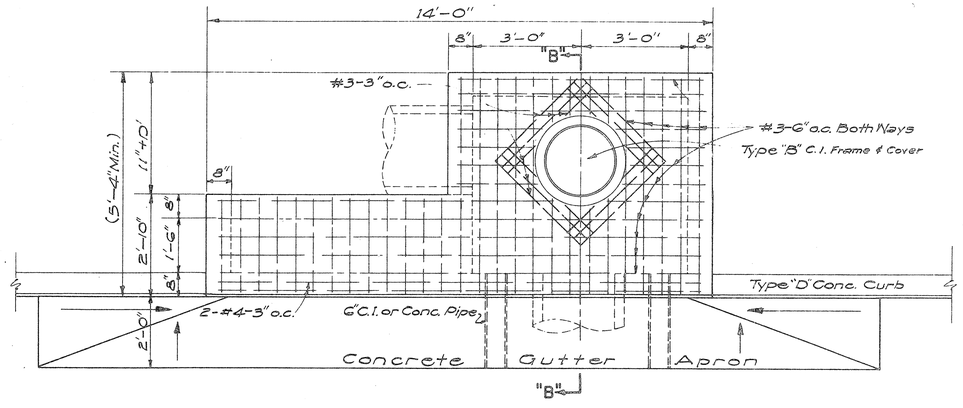
SECTION "A-A"



PLAN

DETAIL OF TYPE "A" CATCH BASIN

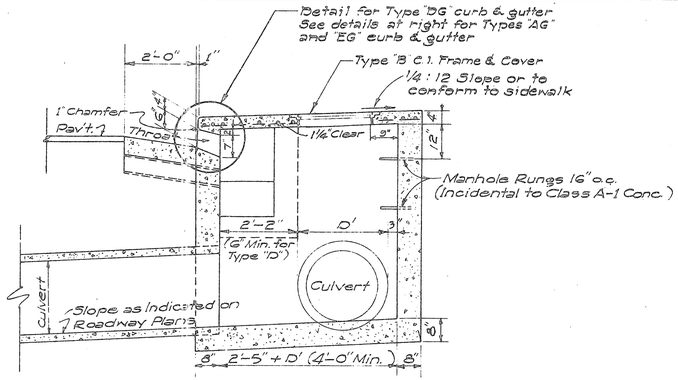
SCALE: 1/2" = 1'-0"



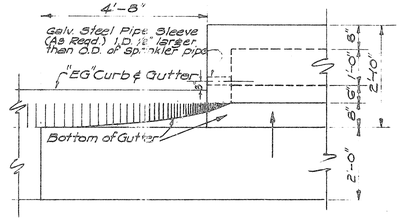
DETAIL OF TYPE "B" CATCH BASIN

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

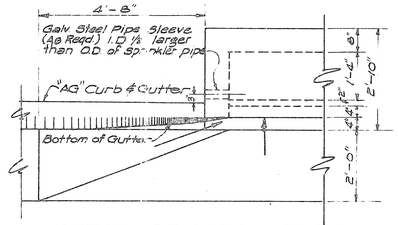
NOTE: TYPE "C" C.B. SIMILAR BUT OPPOSITE HAND



SECTION "B-B"

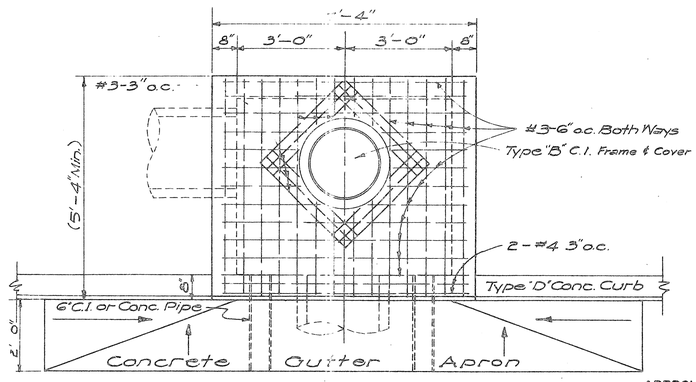


DETAIL OF CATCH BASIN WITH TYPE "EG" CURB & GUTTER



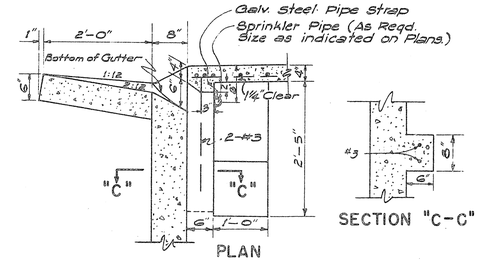
DETAIL OF CATCH BASIN WITH TYPE "AG" CURB & GUTTER

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



DETAIL OF TYPE "D" CATCH BASIN

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

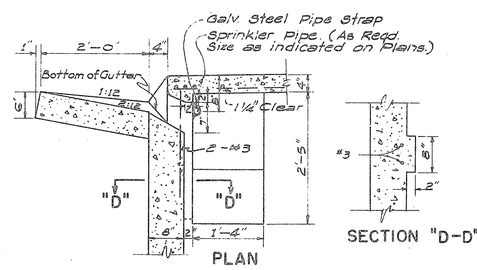


PLAN

SECTION "C-C"

THROAT DETAIL FOR TYPE "EG" CURB & GUTTER

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



PLAN

SECTION "D-D"

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 c.y.	24.7 c.y.	145 lb.	30'-0"
"B"	6.0 c.y.	21.5 c.y.	108 lb.	23'-4"
"C"	6.0 c.y.	21.5 c.y.	108 lb.	23'-4"
"D"	4.0 c.y.	16.5 c.y.	77 lb.	16'-8"

NOTES:

1. Quantities based on d = 5.75' and D' = 3.0"
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-1 Concrete for Construction Drainage.
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 Sleeves and Straps as incidental to Sprinkler System.

APPROVED: DATE Aug. 30, 1950

STATE HIGHWAY ENGINEER

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS

CATCH BASINS

SCALES AS NOTED

SHEET Nº 8 OF 11 SHEETS

45

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	S-HI-1(18) UNIT 2	1965	45	75

ORIGINAL PLAN
NOTE BOOK
No.

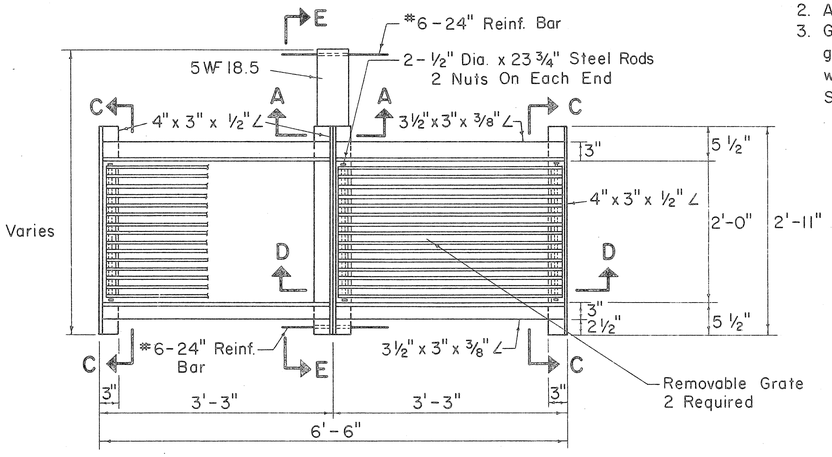
SURVEY PLOTTED BY:
DESIGNED BY: C.M.
DRAWN BY: C.Y.
TRACED BY:
QUANTITIES BY:
CHECKED BY:
DATE:

3

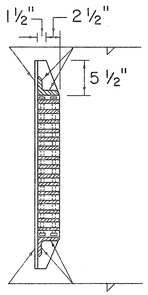
K+E 155 ARKWRIGHT MADE IN U.S.A. 10400

FED. AID DIST. NO.	STATE	FED. AID. PROJECT	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(18) UNIT 2	1965	46	75

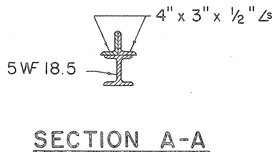
NOTE:
1. All welds $\frac{3}{8}$" unless otherwise noted.
2. All steel shall be structural grade.
3. Grates and Frame shall be hot dip galvanized after fabrication in accordance with Section 44(H) of the Standard Specifications.



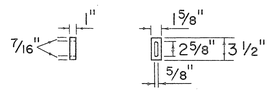
PLAN



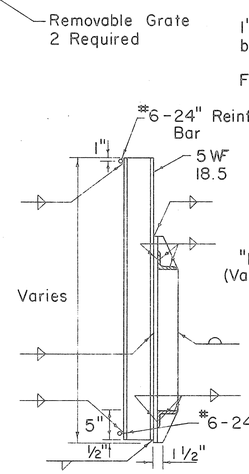
SECTION C-C



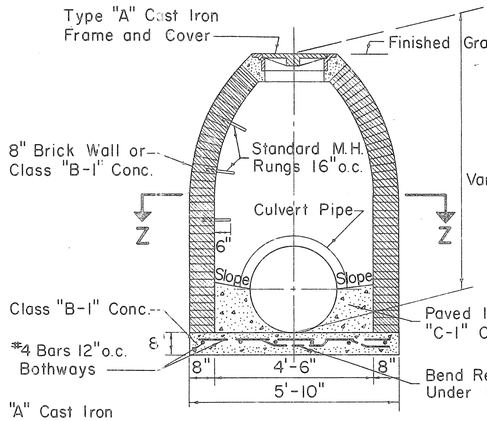
SECTION A-A



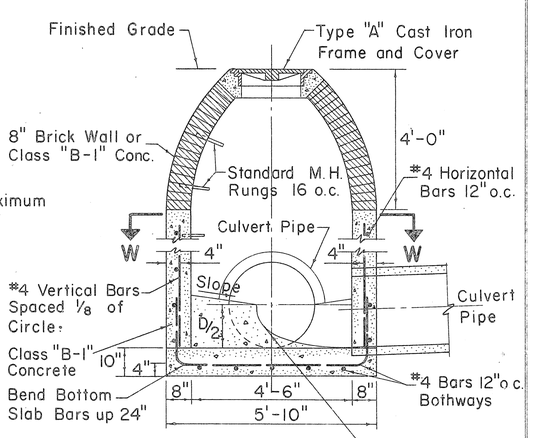
END SPACER



SECTION V-V

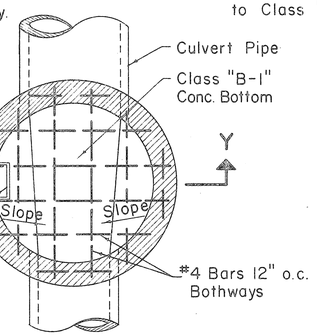


SECTION Y-Y



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 pipes at manhole to be as shown on plans.
3. Paved invert not required at drop manholes.
4. All Class "C-1" Concrete to be incidental to Class "B-1" Concrete.

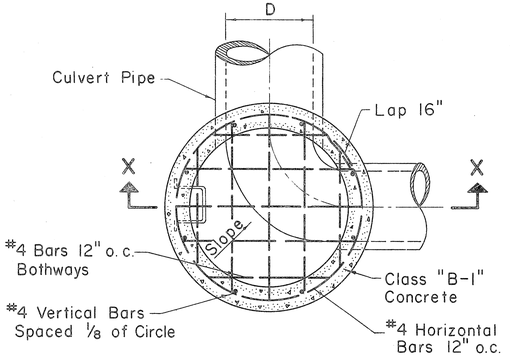
SECTION X-X



SECTION Z-Z

TYPE "D" STORM DRAIN MANHOLE

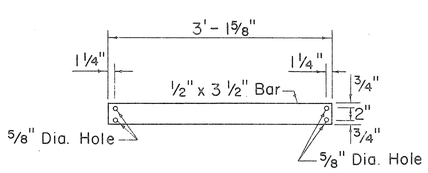
Scale: ½"= 1'-0"



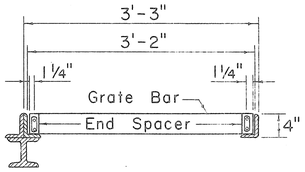
SECTION W-W

TYPE "E" STORM DRAIN MANHOLE

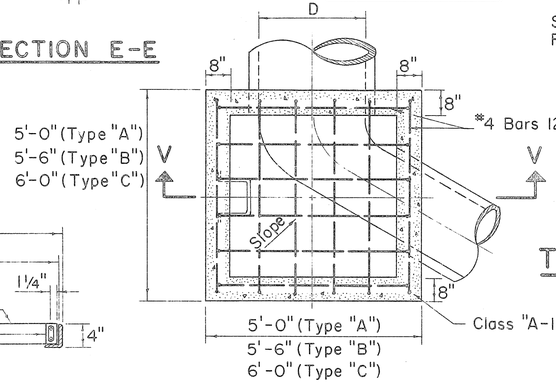
Scale: ½"= 1'-0"



GRATE BARS



SECTION D-D



SECTION U-U

TYPE "A", "B", & "C" S.D.M.H.

Scale: ½"= 1'-0"

DETAIL OF TYPE "A" STEEL FRAME AND GRATES

Scale: 1"= 1'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

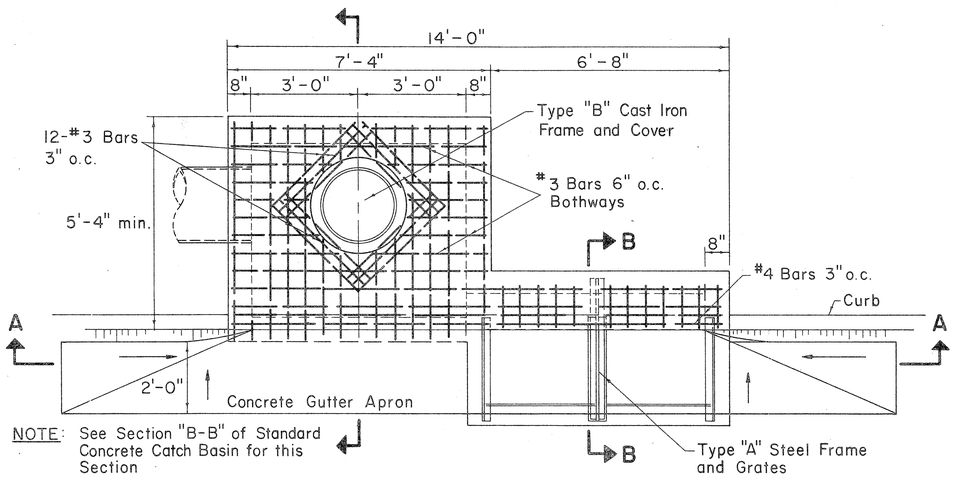
STEEL FRAME AND GRATES AND STORM DRAIN MANHOLES

Scales: As Noted — Date July, 1965

SHEET NO. 9 OF 11 SHEETS

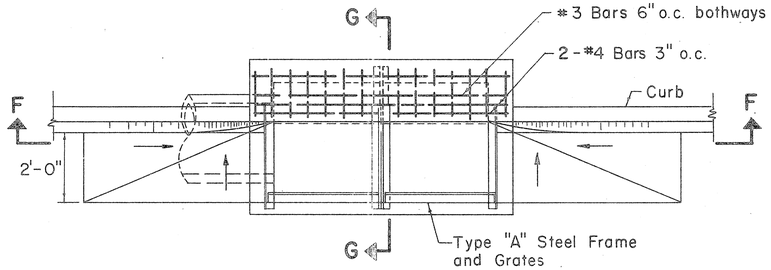
46

FED. AID DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(18) UNIT 2	1965	47	75

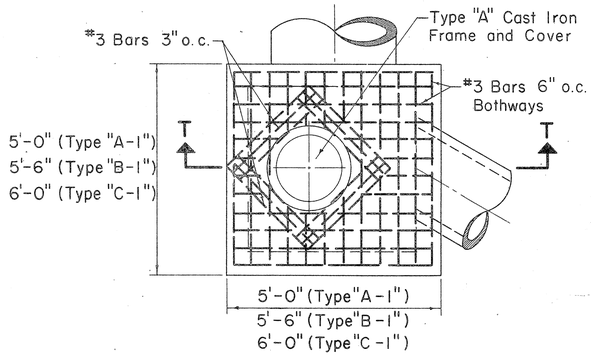


NOTE: See Section "B-B" of Standard Concrete Catch Basin for this Section

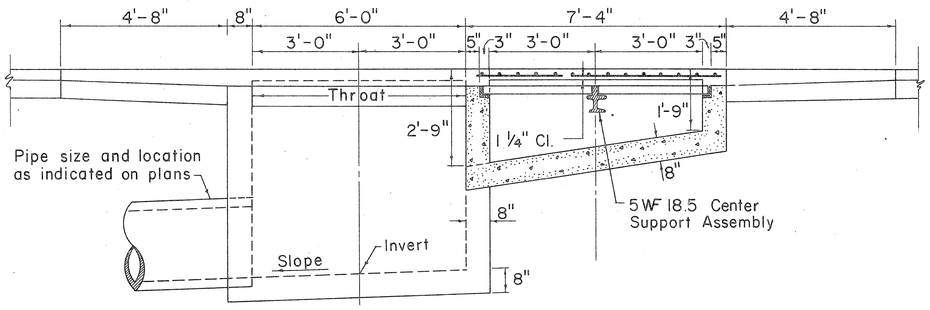
PLAN



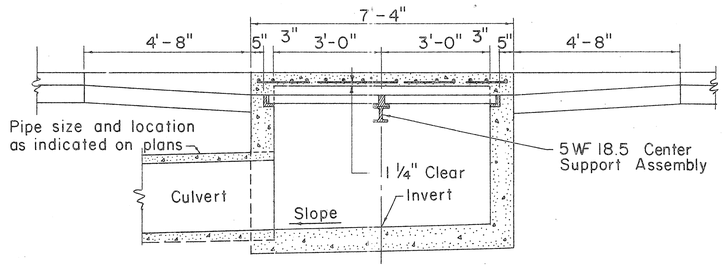
PLAN



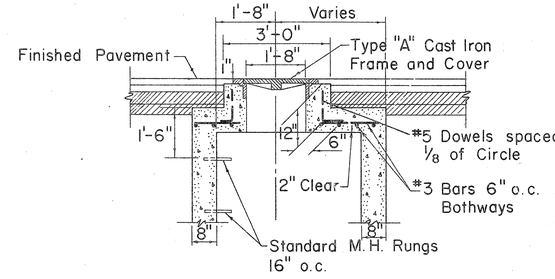
PLAN



SECTION A-A



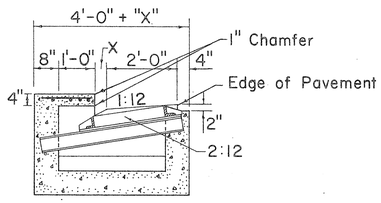
SECTION F-F



SECTION T-T

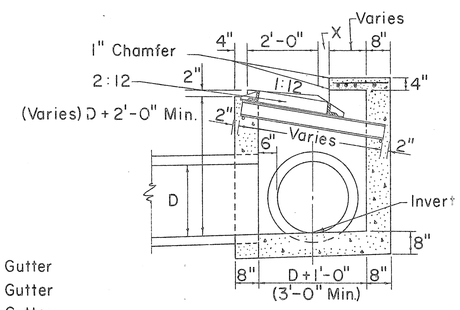
TYPE "A-1", "B-1", & "C-1"
STORM DRAIN MANHOLE
TOP DETAIL UNDER PAVEMENT
(BOTTOM DETAIL SIMILAR TO TYPE "A", "B", & "C")

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



SECTION B-B

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



SECTION G-G

DETAIL OF TYPE "CG" CATCH BASIN

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

DETAIL OF TYPE "DG" CATCH BASIN

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

CATCH BASINS AND STORM DRAIN MANHOLES

Scales: As Noted Date July, 1965

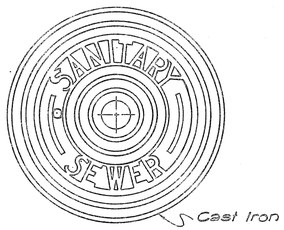
SHEET NO. 10 OF 11 SHEETS

47 75

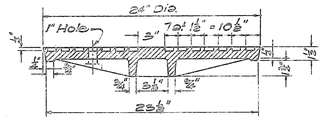
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1087 UNIT 2	1965	48	75

August 1957

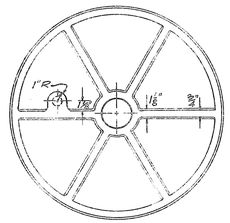
NOTE: Stock Pattern From Novelty Foundry ~ Honolulu



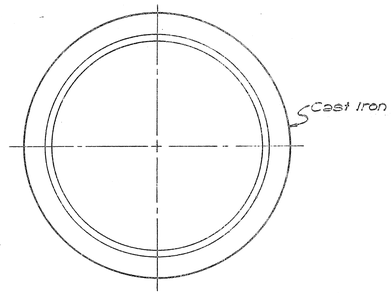
TOP VIEW OF COVER



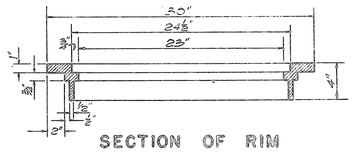
SECTION



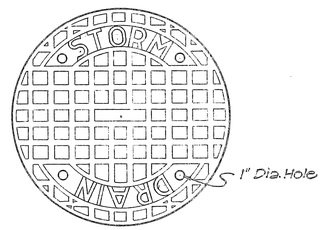
BOTTOM VIEW OF COVER



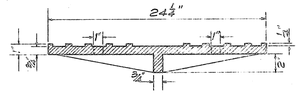
PLAN OF RIM



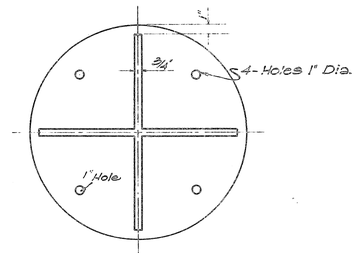
SECTION OF RIM



TOP VIEW OF COVER

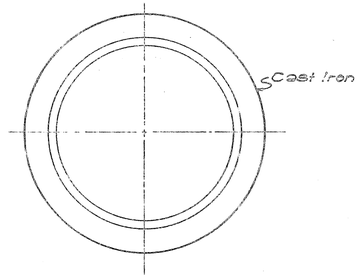


SECTION

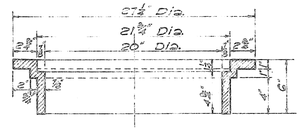


BOTTOM VIEW OF COVER

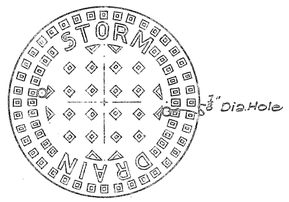
DETAILS OF TYPE "B"
CAST IRON FRAME AND COVER
SCALE: 1-1/2" = 1'-0"



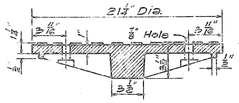
PLAN OF RIM



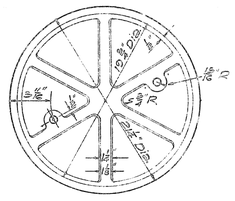
SECTION OF RIM



TOP VIEW OF COVER

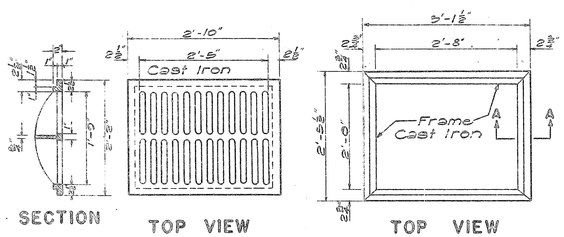


SECTION



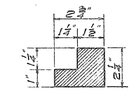
BOTTOM VIEW OF COVER

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

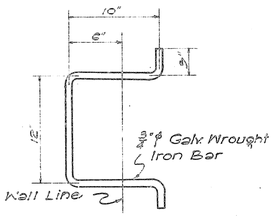


SECTION TOP VIEW TOP VIEW

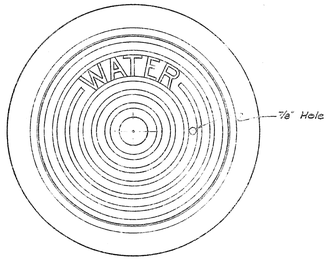
TYPE C C.I. FRAME AND GRATING
SCALE: 3/4" = 1'-0"



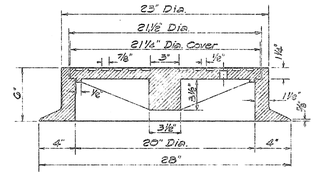
SECTION "A-A"
SCALE 3" = 1'-0"



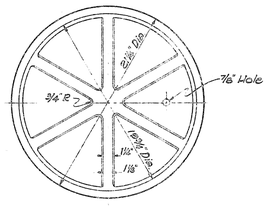
MANHOLE RUNG
SCALE: 1-1/2" = 1'-0"



PLAN OF FRAME AND COVER

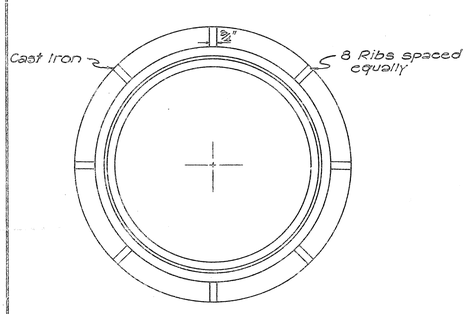


SECTION OF FRAME AND COVER

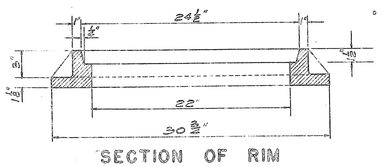


BOTTOM VIEW OF COVER

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



PLAN OF RIM



SECTION OF RIM

DETAILS OF TYPE "S"
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 11 OF 11 SHEETS

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

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