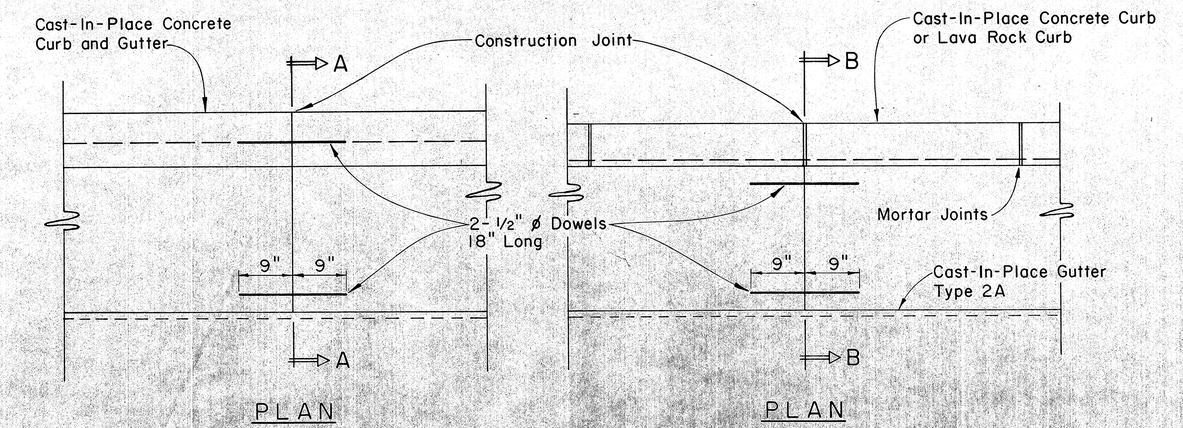
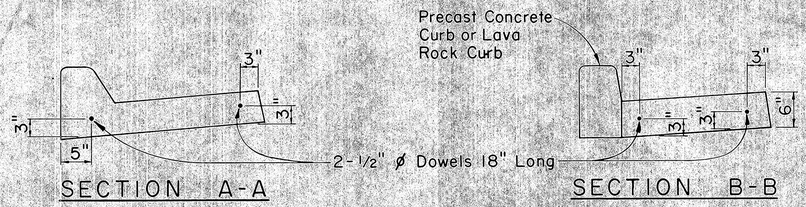
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(130):17	1976	13	174



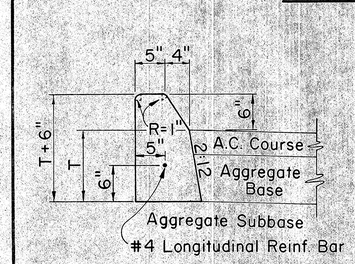


CAST-IN-PLACE CURB & GUTTER

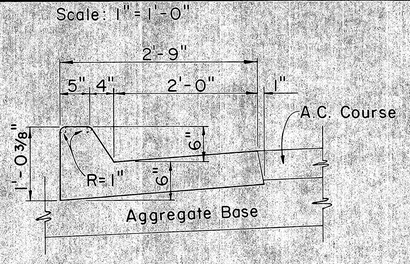
CAST-IN-PLACE GUTTER

CONSTRUCTION JOINT DETAIL

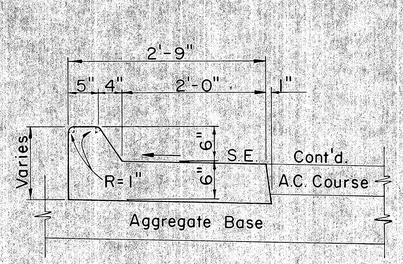
Scale: 1" = 1'-0"



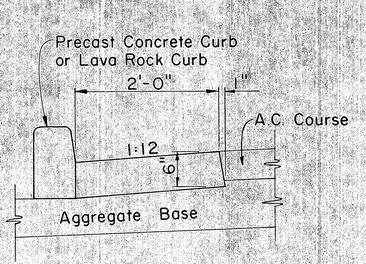
CURB, TYPE 2A



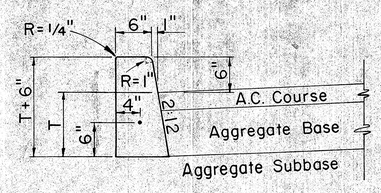
CURB & GUTTER, TYPE 2AG



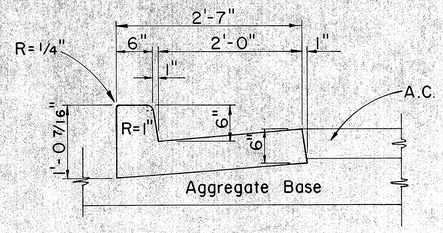
CURB & GUTTER, TYPE 2AGM



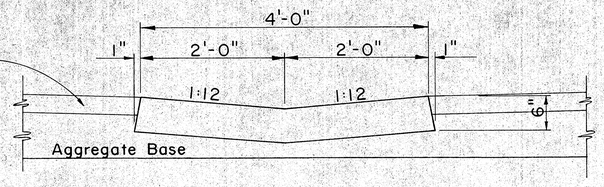
GUTTER, TYPE 2A



CURB, TYPE 2D



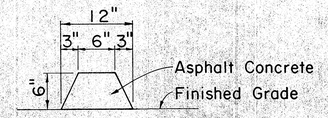
CURB & GUTTER, TYPE 2DG



GUTTER, TYPE 2G

CAST-IN-PLACE CONCRETE CURBS AND/OR GUTTERS

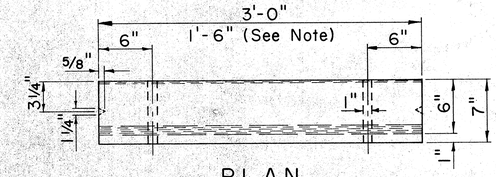
Scale: 1" = 1'-0"

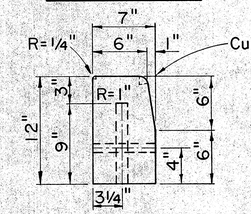


CURB, TYPE 6

BITUMINOUS CURB

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





NOTE:
For curb returns use 1'-6" pre-cast concrete curbs.

SECTION C-C

CURB, TYPE 3D

PRE-CAST CONC. CURB

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

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLAN
NOTE BOOK
No.

APPROVAL RECOMMENDED:
HIGHWAY DESIGN ENGINEER — DATE 12-4-69

APPROVED:
ASSISTANT CHIEF, ENGINEERING — DATE 12-10-69

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

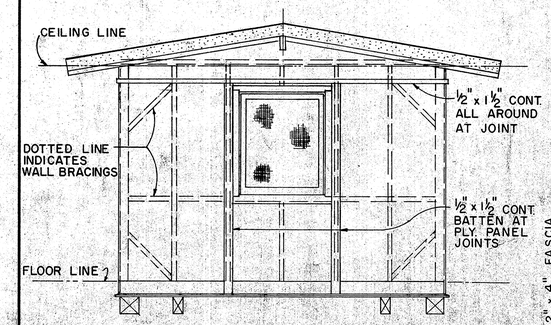
TYPICAL DETAILS OF CURB AND/OR GUTTERS

Scale: As Shown

SHEET No. 1 OF 22 SHEETS | DD 609.1

13

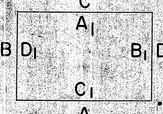
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(130)17	1976	14	174



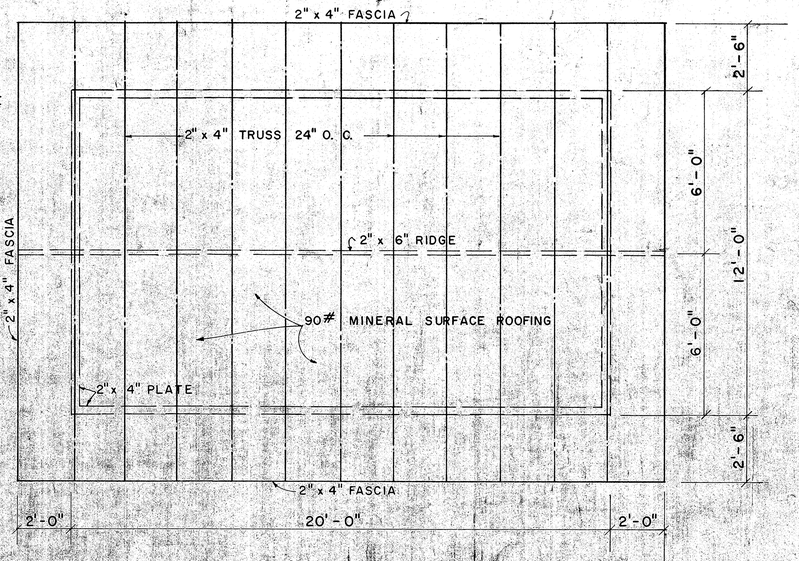
ELEVATION (B)

ELEVATION (D) SIMILAR

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

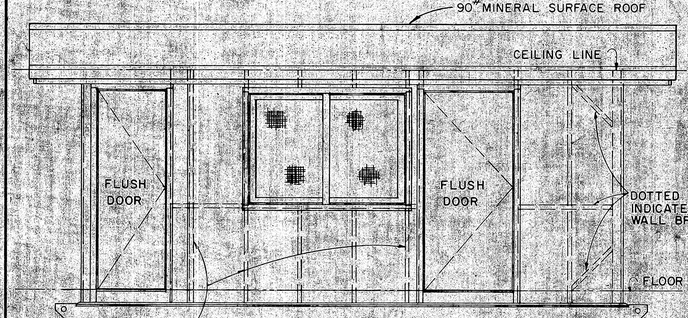


EXTERIOR & INTERIOR KEY



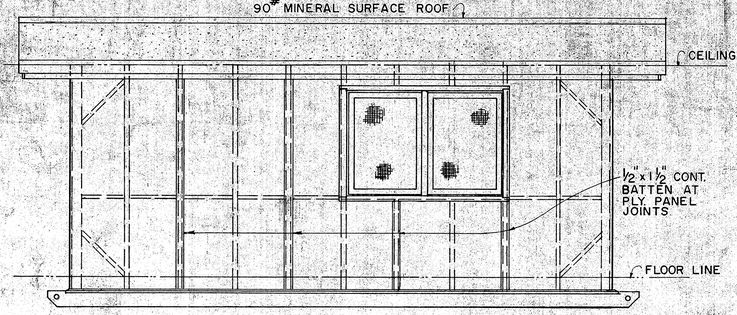
ROOF FRAMING PLAN

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



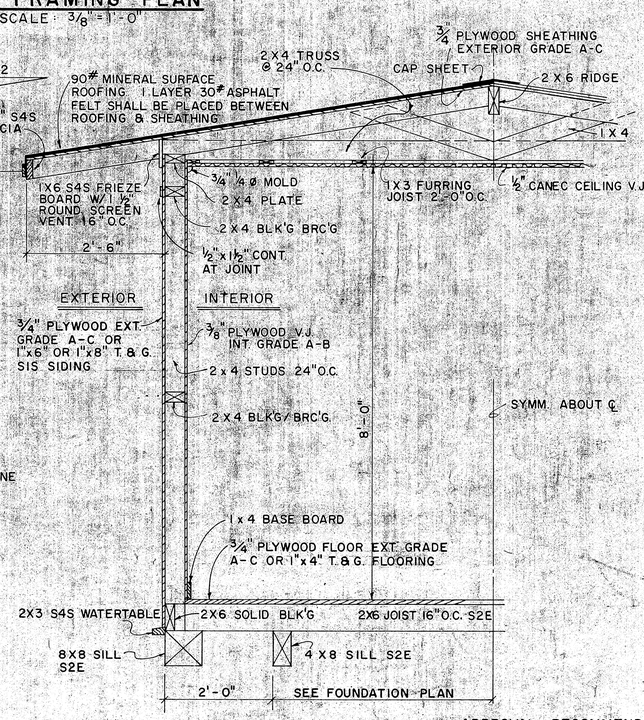
ELEVATION (A)

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



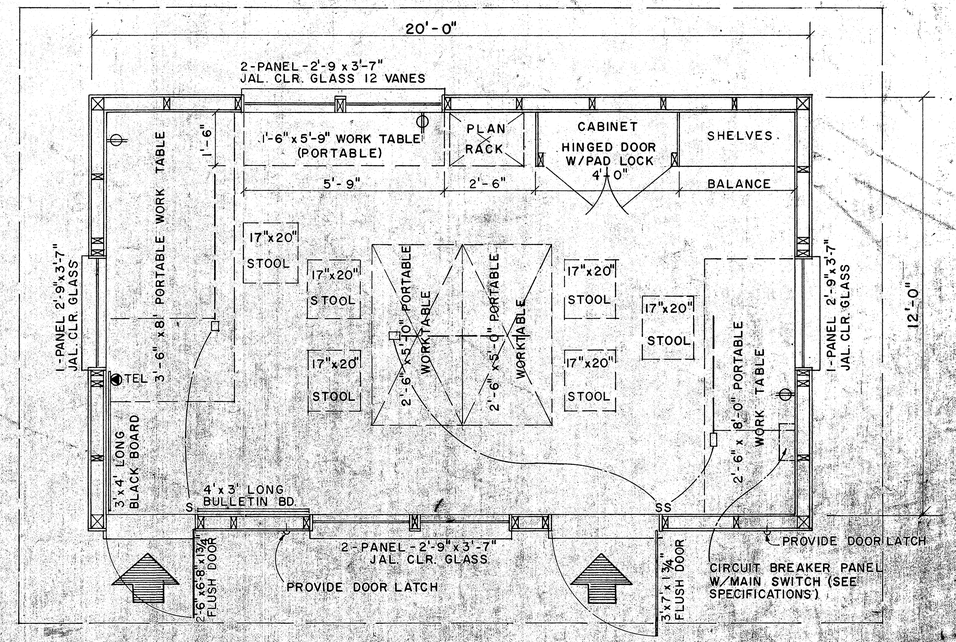
ELEVATION (C)

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



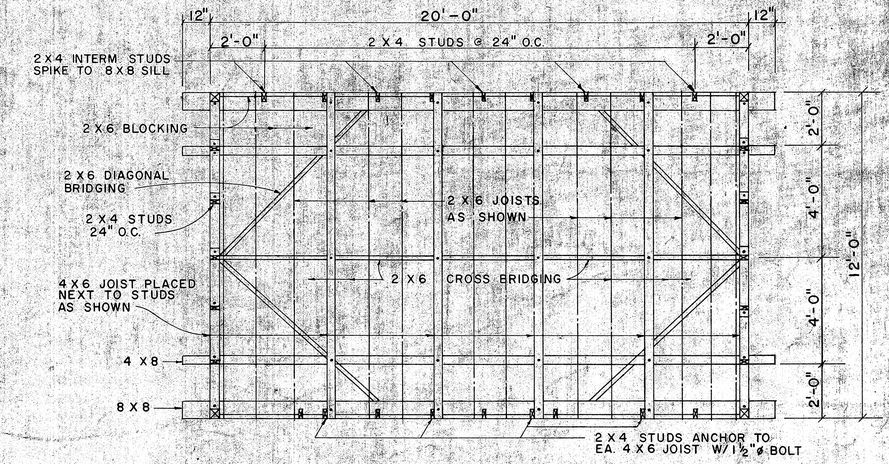
TYPICAL WALL SECTION

SCALE: ¾" = 1'-0"



FLOOR PLAN

SCALE: ½" = 1'-0"



FOUNDATION FRAMING PLAN

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

APPROVAL RECOMMENDED:

M. Hirozawa — HIGHWAY DESIGN ENGINEER — 12-4-69 DATE

APPROVED:

Stanley S. Sakahara — ASSISTANT CHIEF, ENGINEERING — 12-10-69 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION

FIELD OFFICE

Scale: As Noted

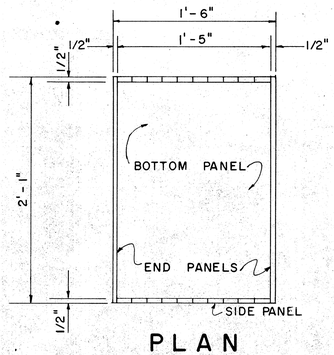
SHEET Nº 2 OF 22 SHEETS | DD 636 I

14

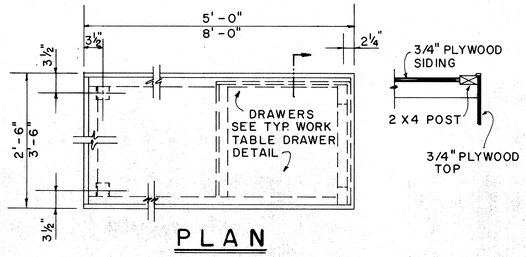
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

LIETZ 1103 ARKWRIGHT TRACING CLOTH 10-60 200P

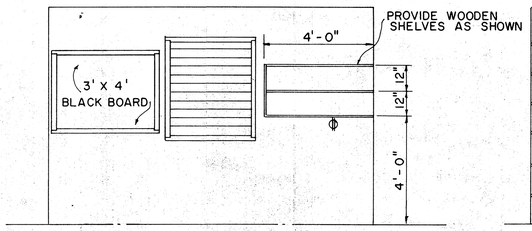
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	FH-1(130):17	1976	15	174



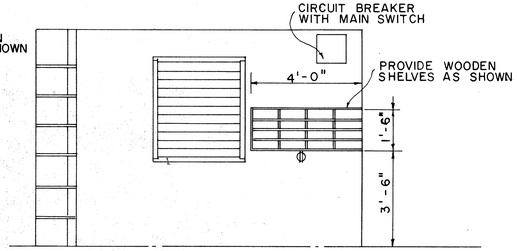
PLAN



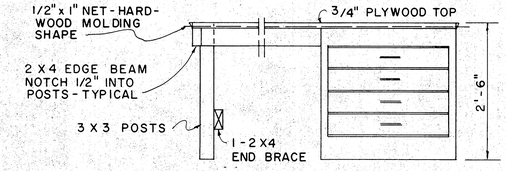
PLAN



ELEVATION (D1)
SCALE: 3/8" = 1'-0"



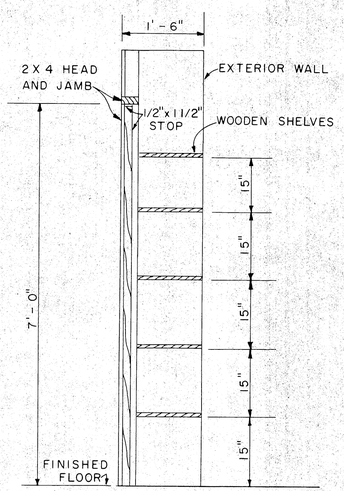
ELEVATION (B1)
SCALE: 3/8" = 1'-0"



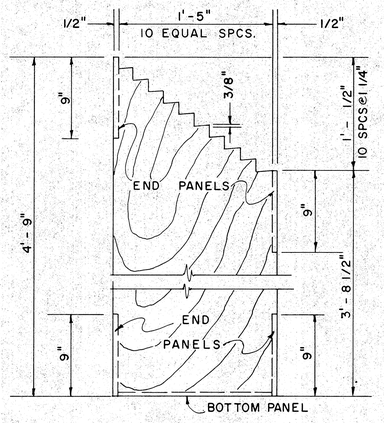
ELEVATION

2'-6" x 5'-0" 2 REQ'D.
3'-6" x 8'-0" 1 REQ'D
2'-6" x 8'-0" 1 REQ'D

PORTABLE WORK TABLE DETAIL
SCALE: 3/4" = 1'-0"

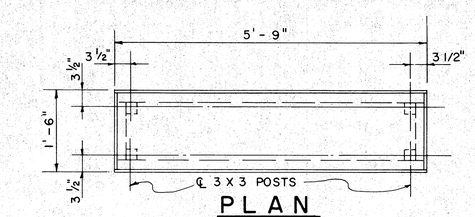


SECTION (G)
SCALE: 3/4" = 1'-0"

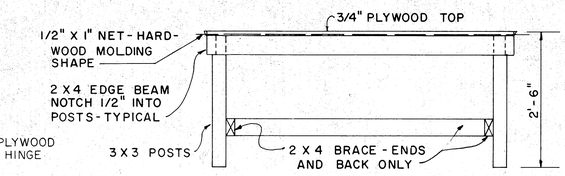


END ELEVATION

PLAN RACK DETAIL
SCALE: 1 1/2" = 1'-0"
(ONE REQUIRED)

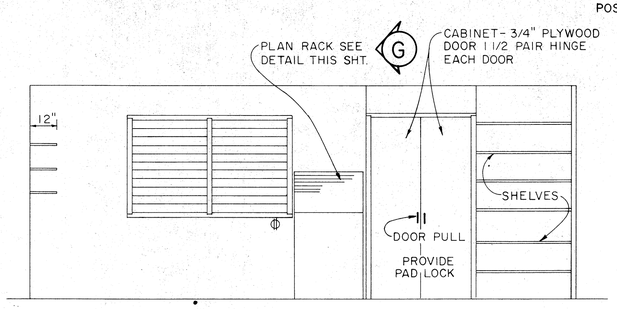


PLAN



ELEVATION

1'-6" x 5'-9" PORTABLE WORK TABLE DETAIL
SCALE: 3/4" = 1'-0"



ELEVATION (A1)
SCALE: 3/8" = 1'-0"

APPROVAL RECOMMENDED:
M. Hiozawa — HIGHWAY DESIGN ENGINEER — 12-4-69 DATE

APPROVED:
Walter S. Baldwin — ASSISTANT CHIEF, ENGINEERING — 12-10-69 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

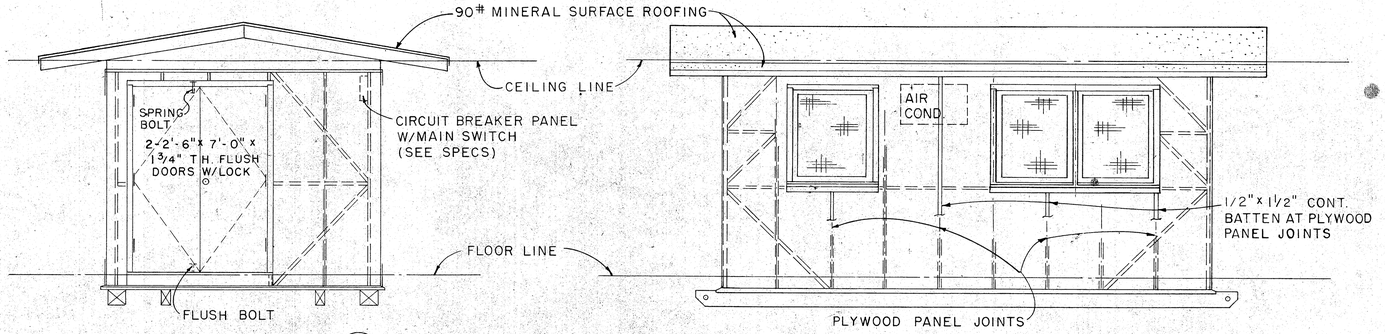
FIELD OFFICE

Scale: As Noted

SHEET No. 3 OF 22 SHEETS | DD 636.2

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IHF1(130):17	1976	16	174

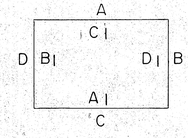


ELEVATION (B)

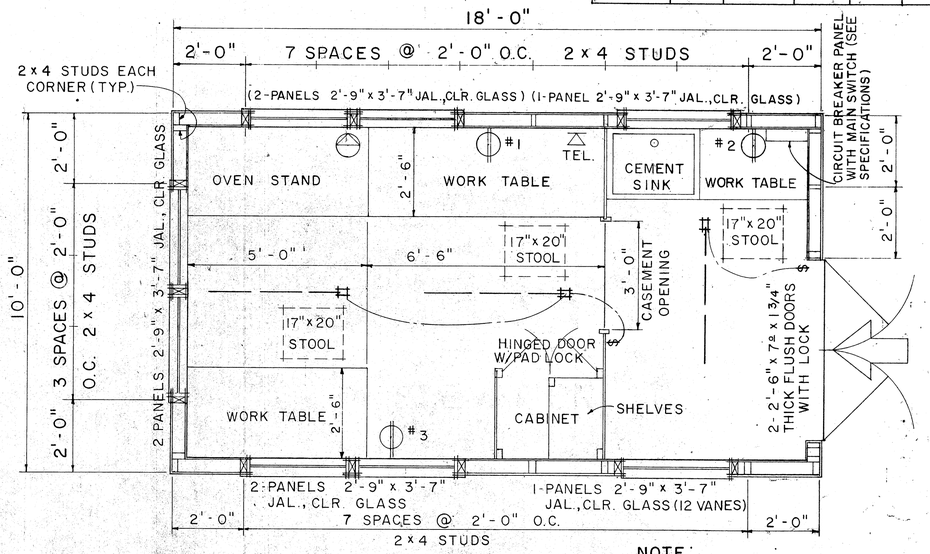
SCALE: 3/8" = 1'-0"

ELEVATION (A)

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



EXTERIOR & INTERIOR KEY



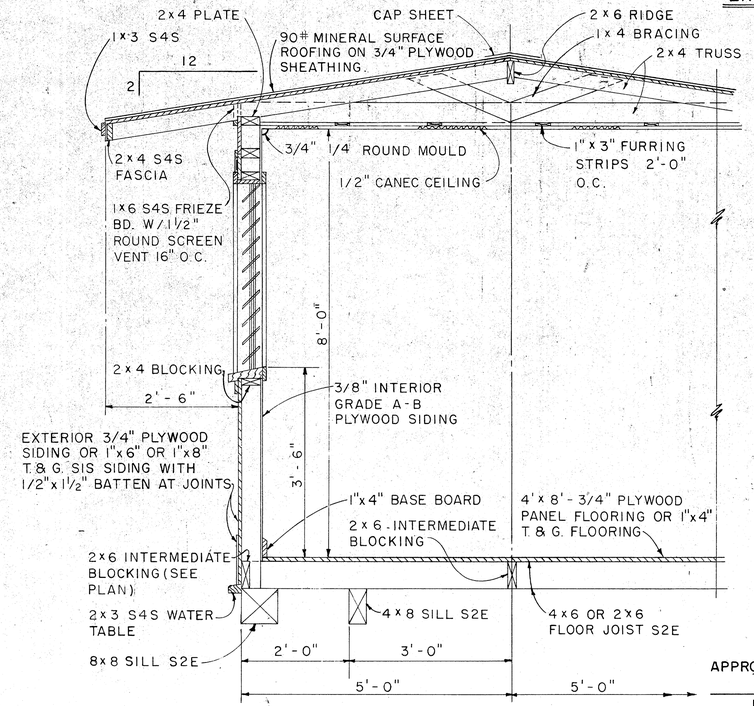
FLOOR PLAN

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

NOTE:

1. FLUORESCENT FIXTURE SHALL BE 48",2 LAMP, 40 WATT, RAPID START.
2. TELEPHONE AND WALL OUTLET 4'-0" ABOVE FLOOR.

1-LAYER 30# ASPHALT FELT SHALL BE PLACED BETWEEN ROOFING AND SHEATHING.

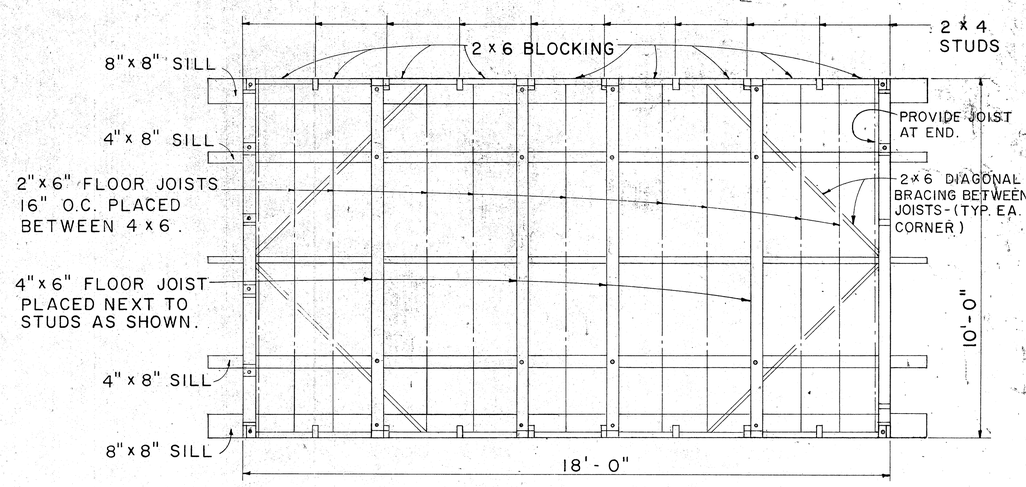


TYPICAL SECTION

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

NOTE:

ALL 3/4" PLYWOOD SHALL BE EXTERIOR GRADE A-C OR BETTER.



FLOOR FRAMING PLAN

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

APPROVAL RECOMMENDED:

HIGHWAY DESIGN ENGINEER — DATE 12-4-69

APPROVED:

ASSISTANT CHIEF, ENGINEERING — DATE 12-10-69

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

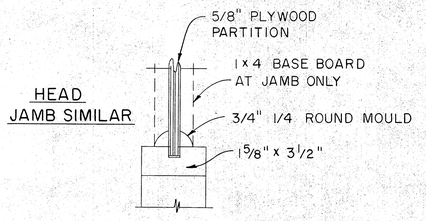
PROJECT SITE LABORATORY

Scale: As Noted

SHEET No. 4 OF 22 SHEETS | DD 636.3

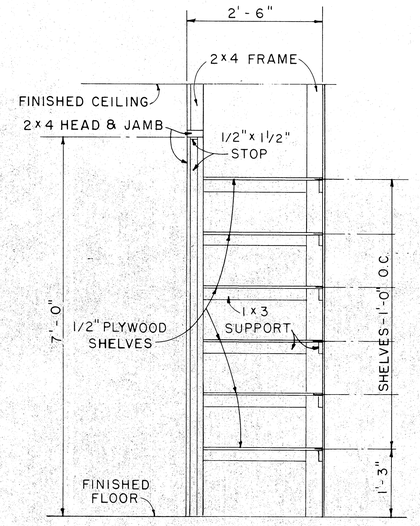
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
NOTE BOOK	TRACED BY	"
	DESIGNED BY	"
No.	QUANTITIES BY	"
	CHECKED BY	"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(130):17	1976	17	174



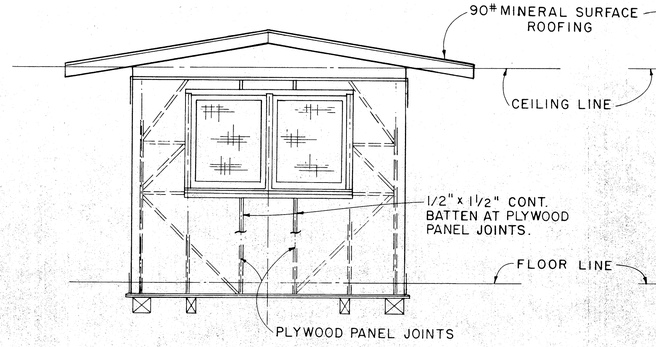
CASEMENT DETAIL

SCALE: 3" = 1'-0"



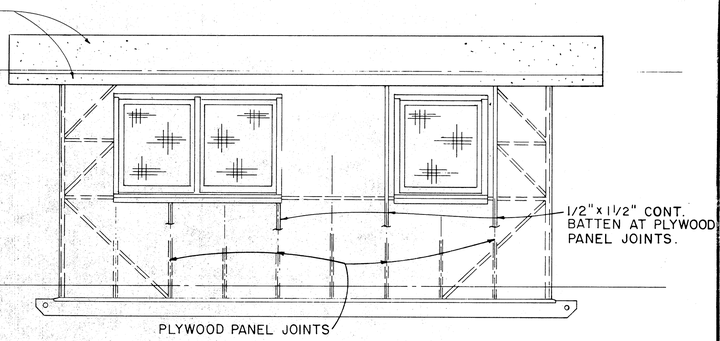
CABINET DETAIL

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



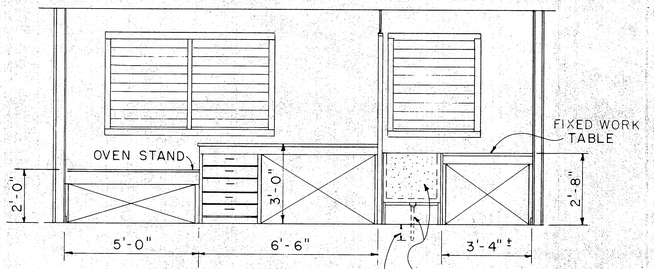
ELEVATION (D)

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



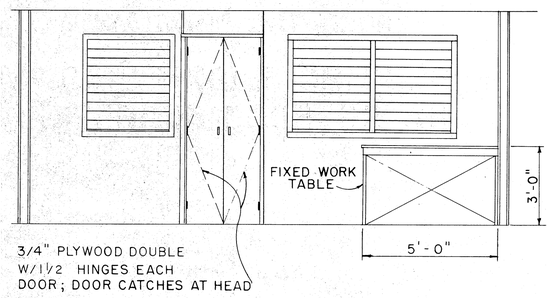
ELEVATION (C)

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



ELEVATION (C1)

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



ELEVATION (A1)

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

APPROVAL RECOMMENDED:

HIGHWAY DESIGN ENGINEER — DATE 12-4-69

APPROVED:

ASSISTANT CHIEF, ENGINEERING — DATE 12-10-69

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

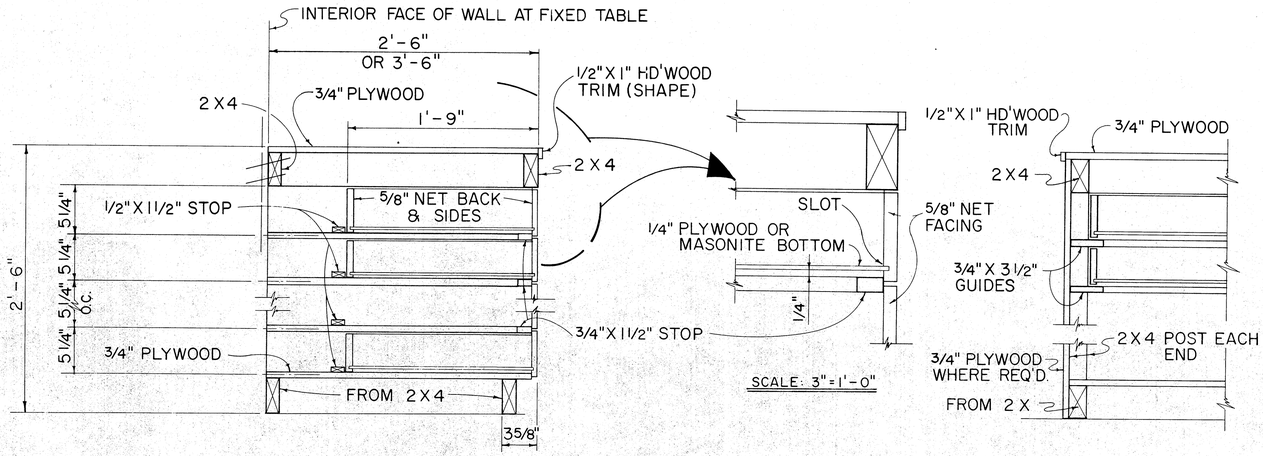
PROJECT SITE LABORATORY

Scale: As Noted

SHEET No. 5 OF 22 SHEETS | DD 636.4

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

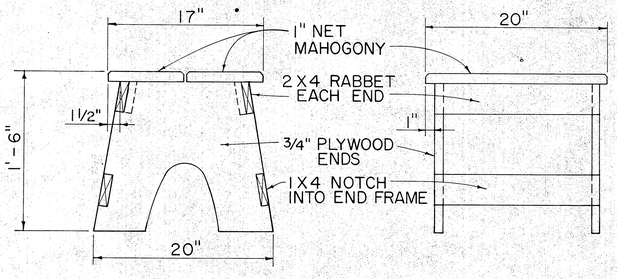
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	I-HI-1(130):17	1976	18	174



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

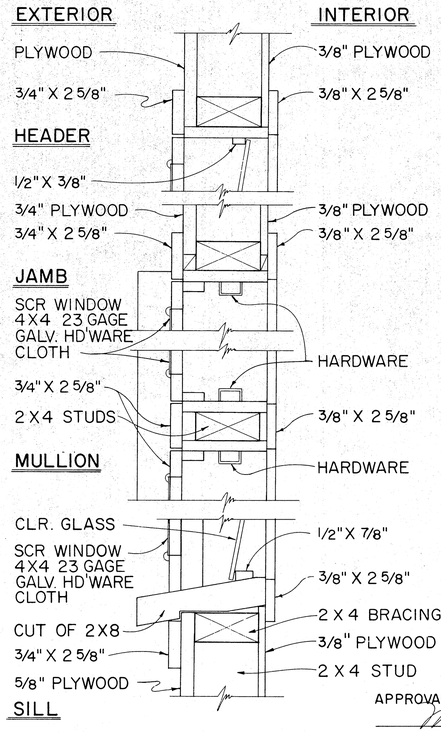
END SECTION
SCALE: 1 1/2" = 1'-0"

TYPICAL WORK TABLE DRAWER DETAIL

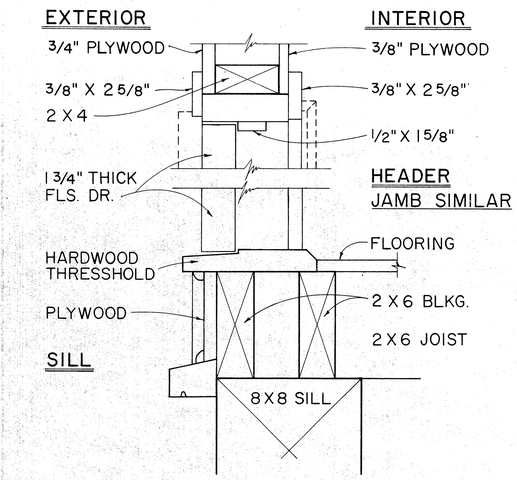


TYPICAL STOOL DETAIL
SCALE: 1 1/2" = 1'-0"

NOTE: CONTRACTOR MAY WITH THE APPROVAL OF THE ENGINEER FURNISH THE FIELD OFFICE OR PROJECT SITE LABORATORY WITH STOOLS OTHER THAN THE TYPE SHOWN IN THE DETAIL.

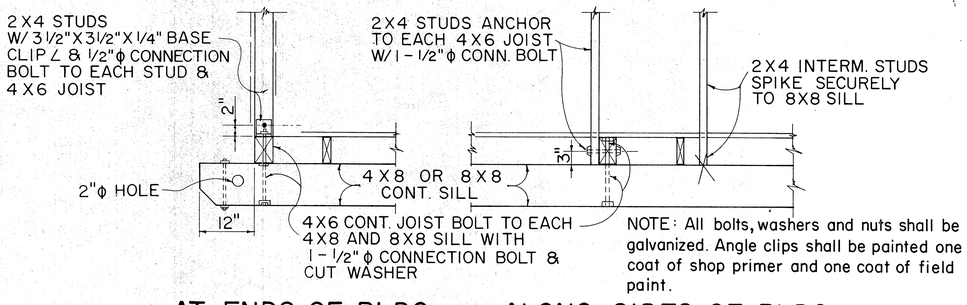


TYPICAL DETAIL JALOUSIES WINDOWS
SCALE: 3" = 1'-0"



TYP. SWING OUT DOOR

TYPICAL SINGLE OR DOUBLE EXTERIOR DOOR DETAIL



NOTE: All bolts, washers and nuts shall be galvanized. Angle clips shall be painted one coat of shop primer and one coat of field paint.

AT ENDS OF BLDG. ALONG SIDES OF BLDG.

TYPICAL 2X4 STUD & 4X6 FLOOR JOIST BASE CONNECTION DETAILS

APPROVAL RECOMMENDED:
M. Hirosawa
HIGHWAY DESIGN ENGINEER — DATE 12-4-69

APPROVED:
Walter S. Takai
ASSISTANT CHIEF, ENGINEERING — DATE 12-10-69

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

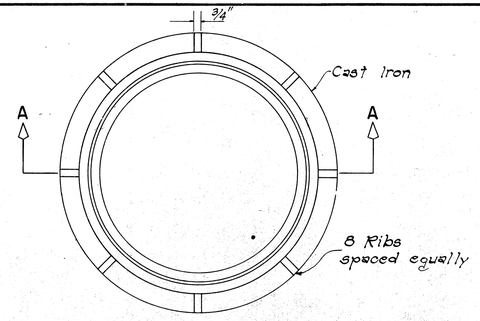
FIELD OFFICE
&
PROJECT SITE LABORATORY

Scale: As Noted

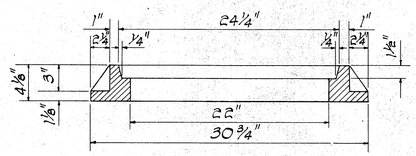
SHEET No. 6 OF 22 SHEETS | DD 636.5

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

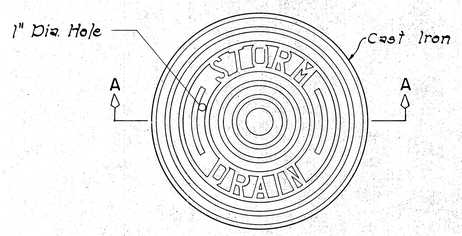
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(130)17	1976	19	174



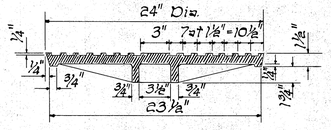
PLAN



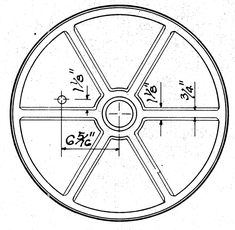
SECTION A-A



PLAN



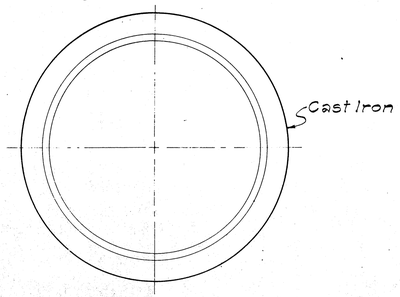
SECTION A-A



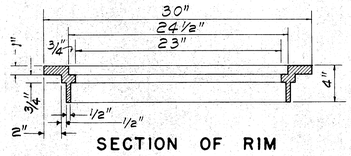
BOTTOM VIEW OF COVER

DETAILS OF TYPE "P" CAST IRON FRAME AND COVER

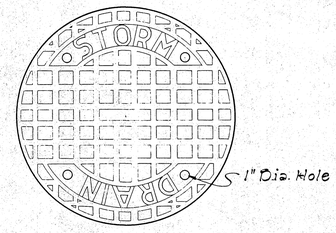
SCALE: 1-1/2" = 1'-0"



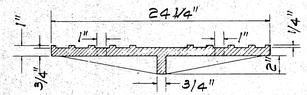
PLAN OF RIM



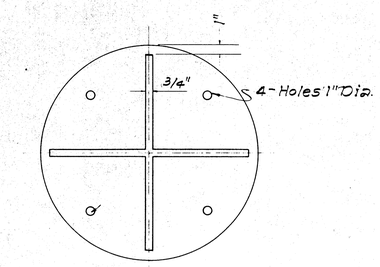
SECTION OF RIM



TOP VIEW OF COVER



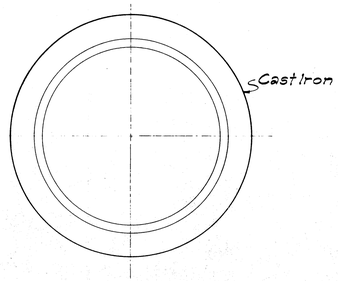
SECTION



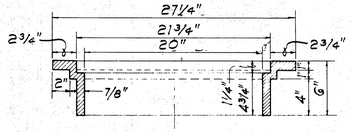
BOTTOM VIEW OF COVER

DETAILS OF TYPE "B" CAST IRON FRAME AND COVER

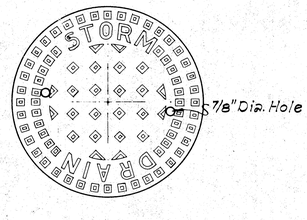
SCALE: 1-1/2" = 1'-0"



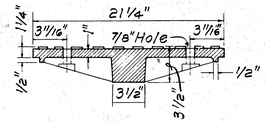
PLAN OF RIM



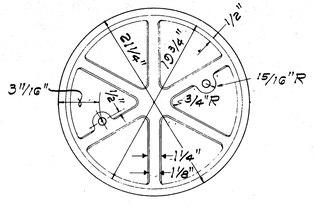
SECTION OF RIM



TOP VIEW OF COVER



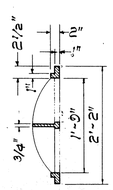
SECTION



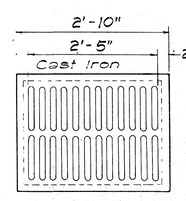
BOTTOM VIEW OF COVER

DETAILS OF TYPE "A" CAST IRON FRAME AND COVER

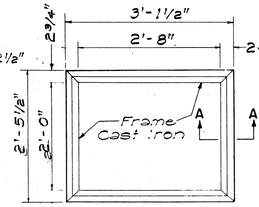
SCALE: 1-1/2" = 1'-0"



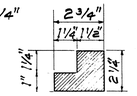
SECTION



TOP VIEW



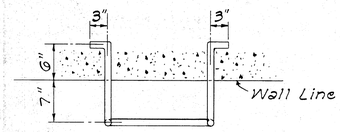
TOP VIEW



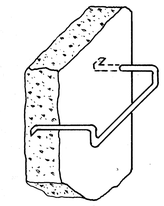
SECTION "A-A"
SCALE 3" = 1'-0"

TYPE C C.I. FRAME AND GRATE

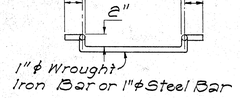
SCALE: 3/4" = 1'-0"



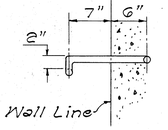
PLAN



PICTORIAL VIEW
NOT TO SCALE



FRONT VIEW



SIDE VIEW

DETAILS OF MANHOLE RUNG

SCALE: 1" = 1'-0"

APPROVAL RECOMMENDED:
G. Takano — HYDRAULIC DESIGN ENGINEER — 12-17-69 DATE

APPROVED:
Walter R. Rabin — ASSISTANT CHIEF, ENGINEERING — 12-17-69 DATE

NO.	REVISION	APPROVED BY	DATE
1.	Detail of Type "P" Cast Iron Frame and Cover	H.T.	1-6-71
2	Details of Manhole Rungs to conform to OSHA.	H.T.	1-21-75
3	Option for Manhole Rungs	H.T.	1-13-76

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

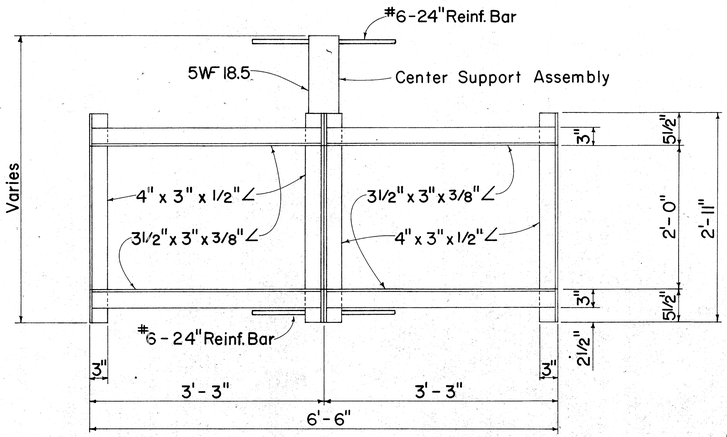
CATCH BASIN AND MANHOLE CASTINGS

Scale: As Noted — Date: July, 1969

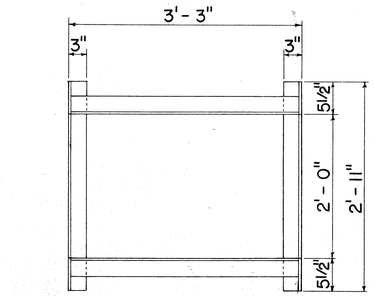
SHEET Nº 7 OF 22 SHEETS DH 6.

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

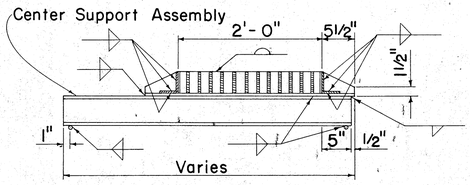
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(130)17	1976	20	174



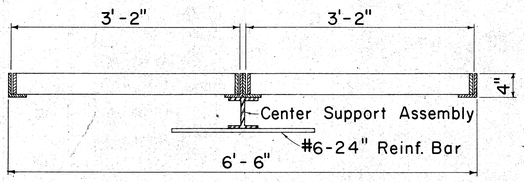
PLAN
(Two or More Grates)



PLAN
(Single Grate)



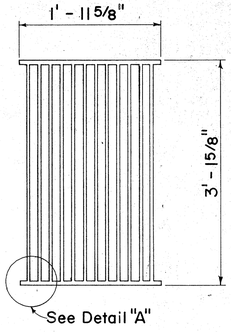
CROSS SECTION
(Thru Frame & Grate)



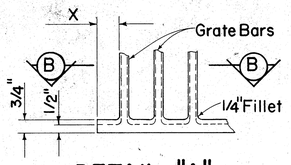
LONGITUDINAL SECTION
(Thru Frame & Grate)

FRAME DETAILS

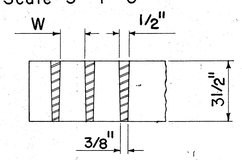
Scale: 1"= 1'-0"



PLAN
Scale: 1"= 1'-0"

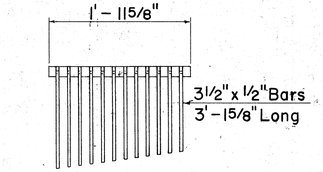


DETAIL "A"
Scale: 3"= 1'-0"

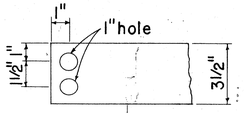


SECTION "B-B"
Scale: 3"= 1'-0"

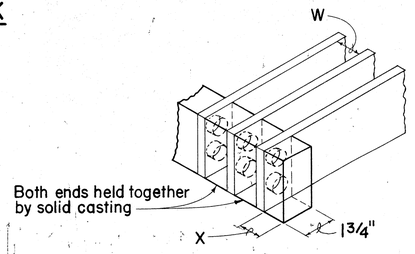
ALTERNATIVE CAST MALLEABLE IRON
OR CAST STEEL GRATE



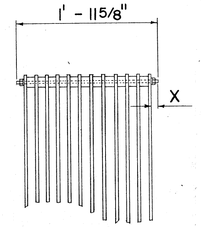
CAST END BLOCK
Scale: 1"= 1'-0"



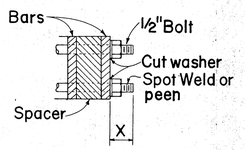
END OF BAR
Scale: 3"= 1'-0"



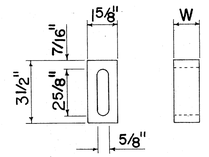
ALTERNATIVE CAST MALLEABLE IRON
OR CAST STEEL END BLOCK GRATE



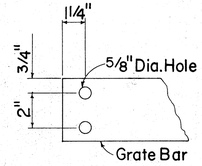
BOLTED END BLOCK
Scale: 1"= 1'-0"



BOLTING DETAIL
Scale: 3"= 1'-0"

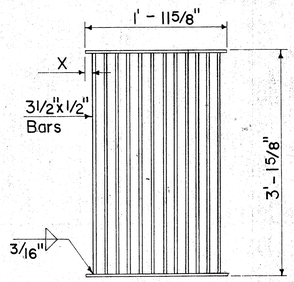


BAR SPACER
Scale: 3"= 1'-0"

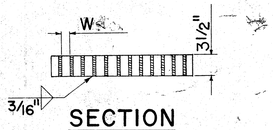


END OF BAR
Scale: 3"= 1'-0"

ALTERNATIVE BOLTED GRATE



PLAN



SECTION

ALTERNATIVE WELDED GRATE
Scale: 1"= 1'-0"

GENERAL NOTES

1. Contractor has the option of using cast malleable iron, cast steel, welded, bolted, cast malleable iron end block or cast steel end block grate.
2. Grates and Frames shall be hot dip galvanized after fabrication, see specifications.
3. All welds 3/8" unless otherwise noted.
4. Center support assembly shall be used when two or more grates are specified. Incidental to Types A-9 or A-12 Frame and Grates.
5. Refer to "Grate Bar Spacing Table" for Types A-9 and A-12 Grate dimensions.
6. 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	A47, 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:
1. Type A-9 – Use in locations off the roadbed on all types of highways.
2. Type A-12 – Use within the roadbed on all types of highways.

APPROVAL RECOMMENDED:
T. Takano 12-17-69
HYDRAULIC DESIGN ENGINEER — DATE

APPROVED:
Hideo S. Sakahara 12-17-69
ASSISTANT CHIEF, ENGINEERING — DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

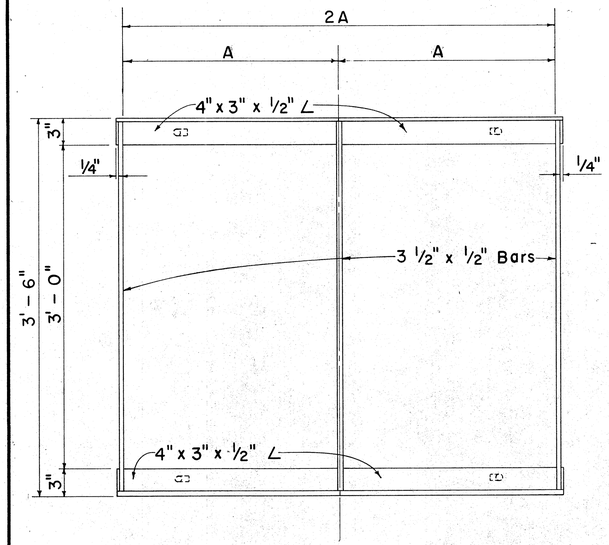
TYPE A-9 AND A-12
FRAMES AND GRATES

Scales: As Noted — Date: Aug. 1968

SHEET No. 8 OF 22 SHEETS DH 7

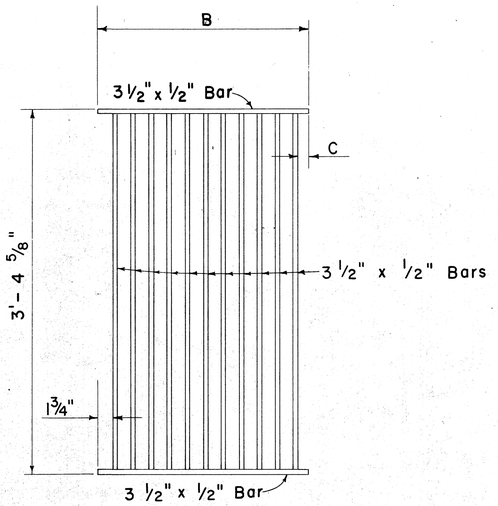
20

ORIGINAL PLAN		DATE
	SURVEY PLOTTED BY	7/68
	DRAWN BY E.C.L.M.	8/68
	TRACED BY E.C.L.M.	8/68
	DESIGN BY H.K.M.	
NOTE BOOK	QUANTITIES BY	
No.	CHECKED BY H.K.M.	8/68



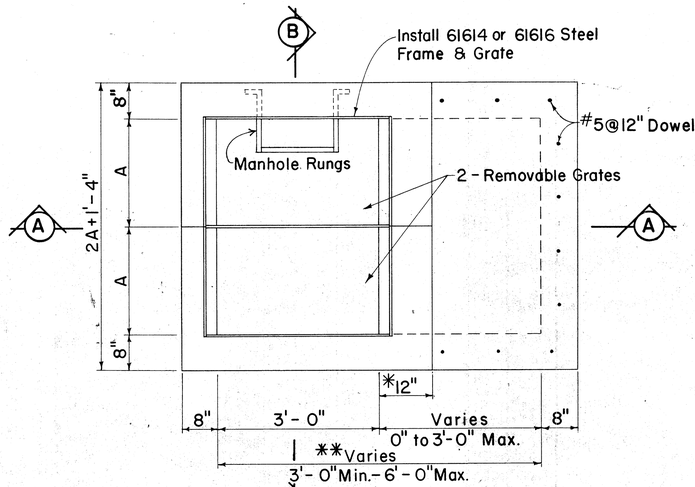
PLAN

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

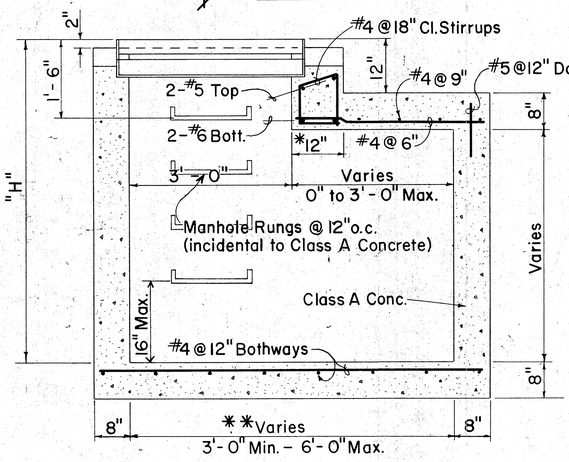


PLAN

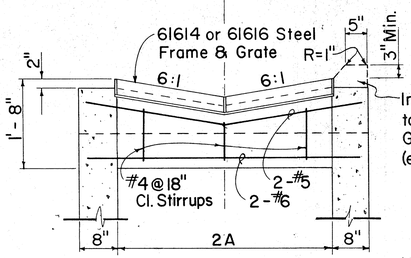
Scale: 1 1/2" = 1'-0"



PLAN



SECTION A-A



Install curb when Drop Intake is used to drain Top of Fill Gutters. Provide Gutter Transitions of 25 ft. (entering and leaving D.I.)

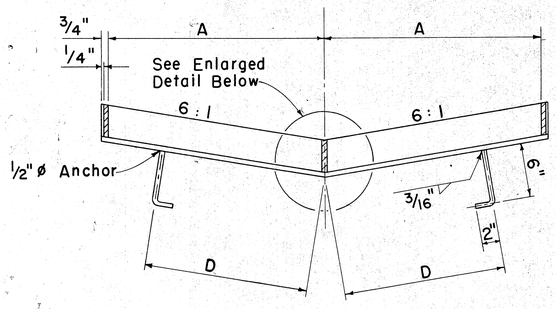
SECTION B-B

DETAILS OF 61614 OR 61616 DROP INTAKE

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

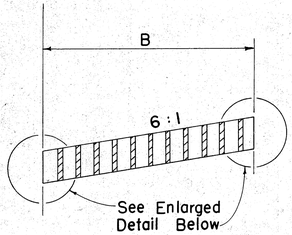
*For Minimum size box of 3'-0", use 8" and eliminate reinforcing steel shown in the top portion.

**For Culverts larger than 30", the minimum dimension shall be D'.



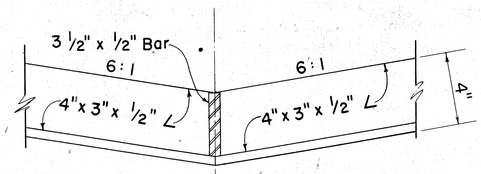
SECTION

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



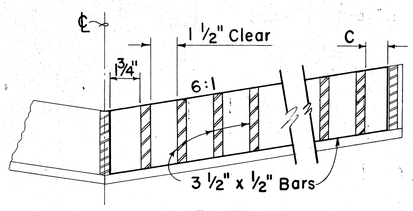
SECTION

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(130):17	1976	21	174

GENERAL NOTES

1. Grates and Frames shall be hot dip galvanized after fabrication, see specifications.
2. All welds 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 (12"o.c.) are required when "H" is greater than 4 feet 6 inches. Only one rung (16 inches from the bottom) is required if "H" is 4 feet 6 inches or less. Manhole Rungs may be placed at any location as ordered by the Engineer.

SPACING TABLE

TYPE	NO. BARS	A	B	C	D
61614	11	2'-0"	1'-11 1/2"	1 1/4"	1'-6"
61616	17	3'-0"	2'-11 3/8"	1 1/8"	2'-0"

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

APPROVAL RECOMMENDED:

G. Takara — 12-17-69

HYDRAULIC DESIGN ENGINEER — DATE

APPROVED:

Shelby D. Stokes — 12-17-69

ASSISTANT CHIEF, ENGINEERING — DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

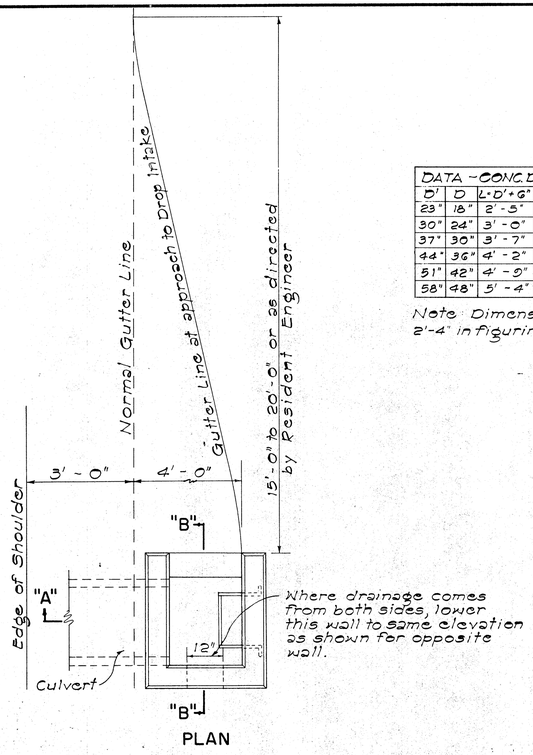
TYPE 61614 & 61616
GRATED DROP INTAKES

Scales: As Noted — Date: Feb. 1969

SHEET No. 9 OF 22 SHEETS DH. 8

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

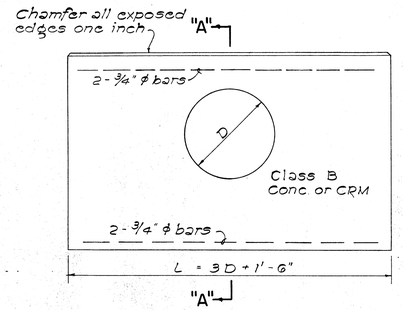
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(130):17	1976	22	174



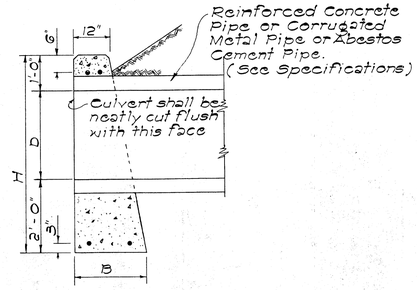
PLAN

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

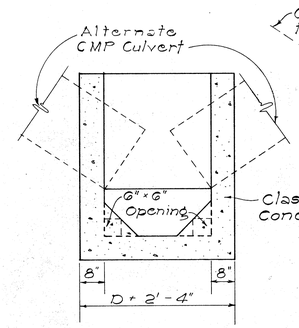
Note: Dimension "X" is assumed as 2'-4" in figuring the above quantities.



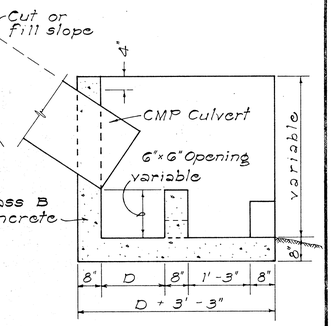
ELEVATION



SECTION "A-A"



SECTION "C-C"



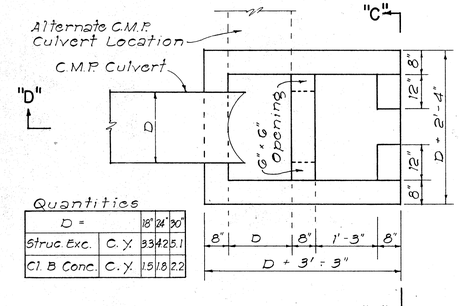
SECTION "D-D"

DATA FOR CONC. HEADWALL				Cl. B CONC. FOR R.C.P.	Cl. B CONC. FOR C.M.P.	Steel For One Headwall			
D	B	L	H	Cu. Yd.	Cu. Yd.	No. of Bars	Size	Length	Lbs.
18"	1'-6"	6'-0"	4'-6"	1.12	1.17	4	3/4" ϕ	5'-6"	33
24"	1'-6"	7'-6"	5'-0"	1.52	1.60	4	3/4" ϕ	7'-0"	42
30"	2'-0"	9'-0"	5'-6"	2.36	2.49	4	3/4" ϕ	8'-6"	51
36"	2'-0"	10'-6"	6'-0"	2.94	3.13	4	3/4" ϕ	10'-0"	60
42"	2'-6"	12'-0"	6'-6"	4.19	4.47	4	3/4" ϕ	11'-6"	69
48"	2'-6"	13'-6"	7'-0"	5.01	5.36	4	3/4" ϕ	13'-0"	78

DATA - MASONRY HEADWALL				CRM FOR R.C.P.	CRM FOR C.M.P.
D	B	L	H	Cu. Yd.	Cu. Yd.
18"	1'-9"	6'-0"	4'-6"	1.24	1.29
24"	2'-0"	7'-6"	5'-0"	1.83	1.92
30"	2'-3"	9'-0"	5'-6"	2.56	2.70
36"	2'-6"	10'-6"	6'-0"	3.45	3.66

DETAIL OF HEADWALL

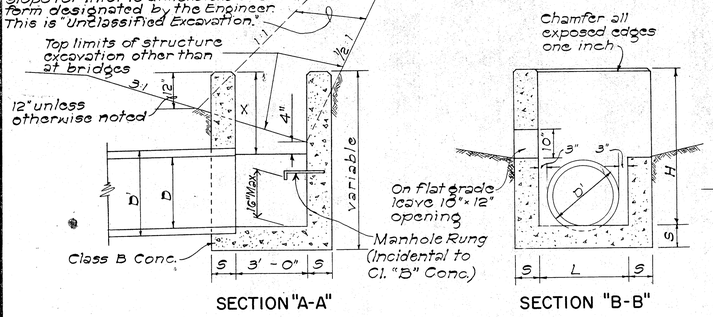
Scale: 1/2" = 1'-0"



Quantities				
D =		18"	24"	30"
Struc Exc.	C.Y.	3.3	4.2	5.1
Cl. B Conc.	C.Y.	1.5	1.8	2.2

PLAN

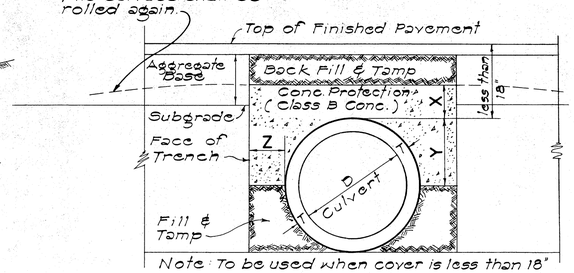
Excavate recess in roadway excavation slope for inlet to dimensions and form designated by the Engineer. This is "Unclassified Excavation."



SECTION "A-A"

SECTION "B-B"

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



Note: To be used when cover is less than 18"

DETAIL OF CONCRETE DROP INTAKE

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

GENERAL NOTES

1. Culvert shall enter and leave Drop Intake from any position and in the direction indicated by the plans or ordered by the Engineer.
2. 'D' shall be the maximum outside dimension of the culvert at the Drop Intake wall.
3. Manhole Rungs (12" o.c.) are required when "H" is greater than 4 feet 6 inches. Only one rung (16 inches from the bottom) is required if "H" is 4 feet 6 inches or less. Manhole Rungs maybe placed at any location as ordered by the Engineer.

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

SECT. OF CULVERT WITH CONC. PROTECTION

Scale: 1" = 1'-0"

APPROVAL RECOMMENDED:

G. Takamo — 12-17-69

HYDRAULIC DESIGN ENGINEER — DATE

APPROVED:

Kenneth Adachi — 12-17-69

ASSISTANT CHIEF, ENGINEERING — DATE

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

DROP INTAKE, HEADWALL & CONCRETE PROTECTION

Scale: As Noted — Date: Aug. 1967

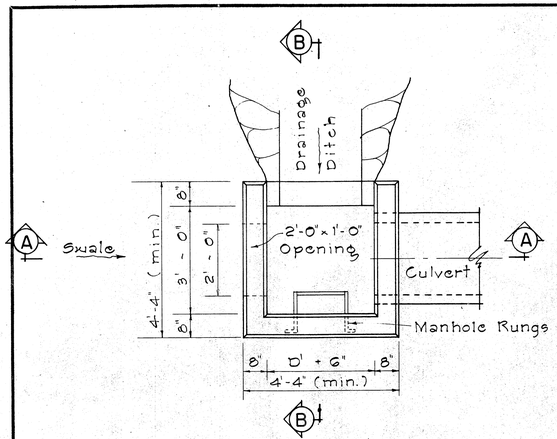
SHEET No. 10 OF 22 SHEETS DH 10

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

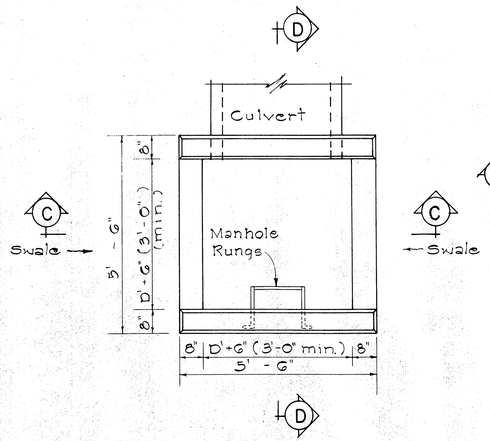
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(130)17	1976	23	174

GENERAL NOTES

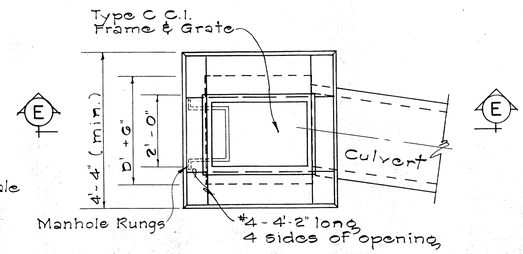
1. All concrete shall be Class "B" unless otherwise noted.
2. Exposed edges of all drainage structures shall be chamfered one inch.
3. Culvert shall enter and leave Drop Intake from any position and in the direction indicated by the plans or ordered by the Engineer.
4. Manhole Rungs (12"o.c.) are req'd. when "H" is greater than 4'-6". Only one rung (16 inches from the bottom) is required if "H" is 4'-6" or less. Manhole Rungs maybe placed at any location as ordered by the Engineer.



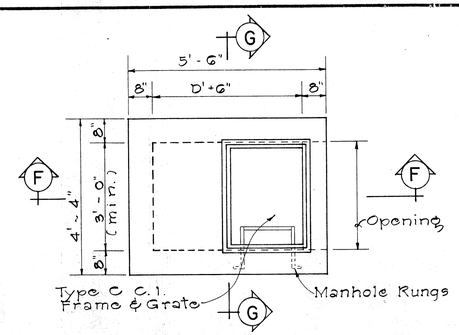
PLAN



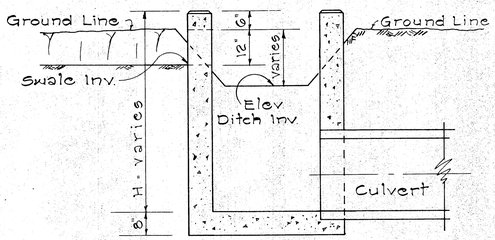
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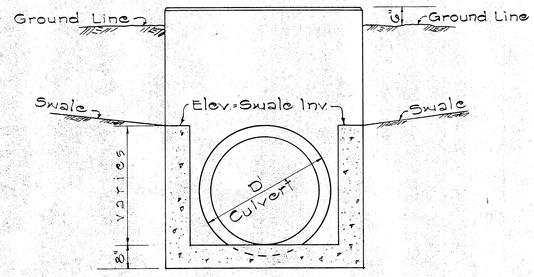
PLAN



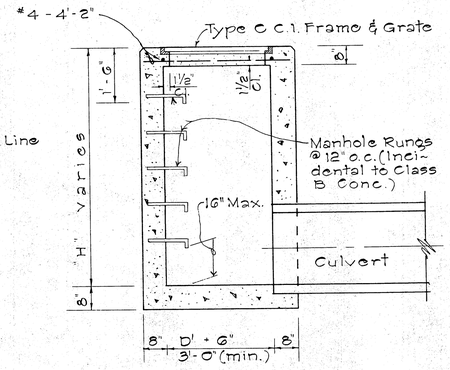
PLAN



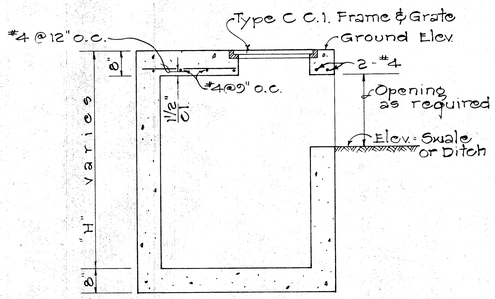
SECTION "A-A"



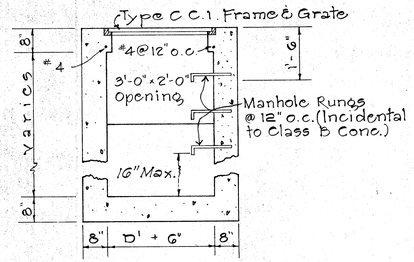
SECTION "C-C"



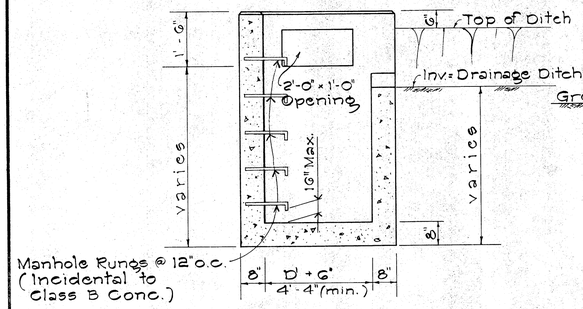
SECTION "E-E"



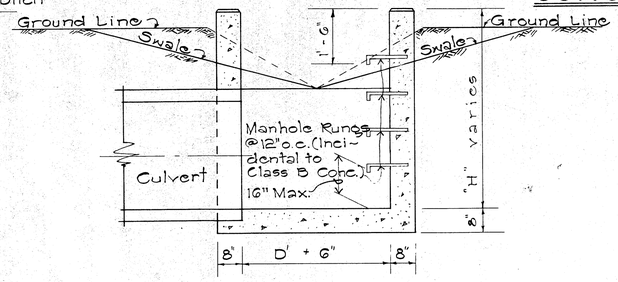
SECTION "F-F"



SECTION "G-G"



SECTION "B-B"



SECTION "D-D"

TYPE "A" CONCRETE DROP INTAKE

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

TYPE "B" CONCRETE DROP INTAKE

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

TYPE "C" GRATED CONCRETE DROP INTAKE

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

TYPE "D" GRATED CONCRETE DROP INTAKE

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

APPROVAL RECOMMENDED: B. Takamo — HYDRAULIC DESIGN ENGINEER — DATE 12-17-69

APPROVED: [signature] — ASSISTANT CHIEF, ENGINEERING — DATE 12-17-69

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

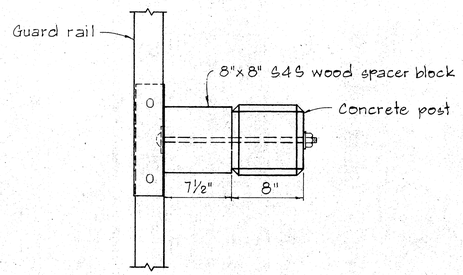
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
TYPE "A", "B", "C", AND "D" CONCRETE DROP INTAKE

Scale: As Noted — Date: July, 1969

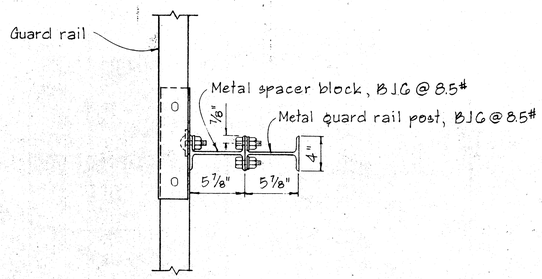
SHEET No. 11 OF 22 SHEETS DH19

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

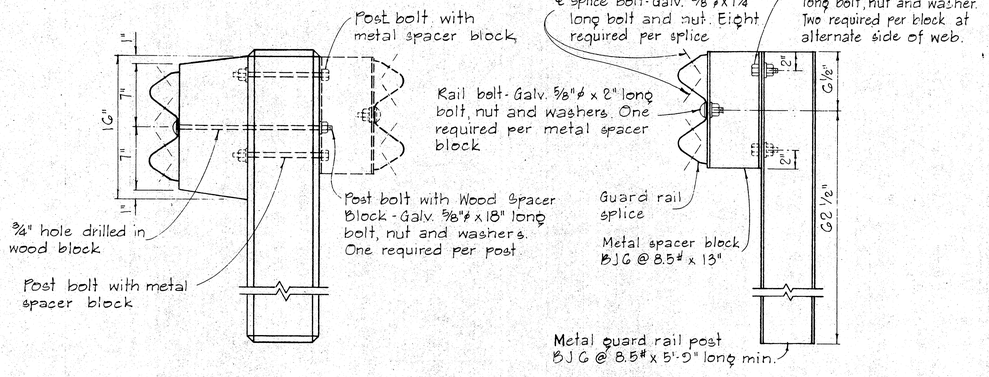
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(130)17	1976	24	174



PLAN

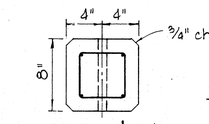


PLAN



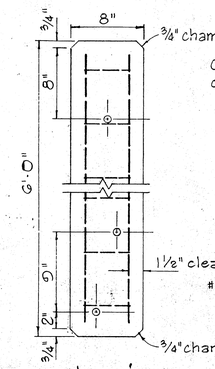
SINGLE METAL GUARD RAIL ON PRECAST CONCRETE POST WITH WOOD OR METAL SPACER BLOCK

SCALE: 1½" = 1'-0"

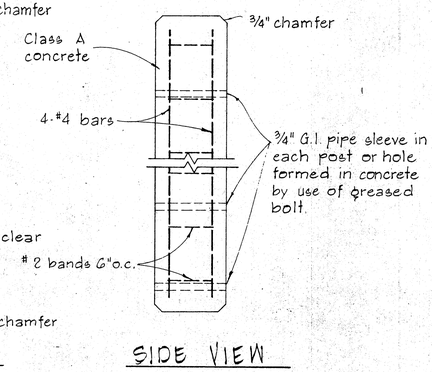


TOP VIEW

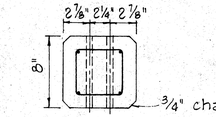
NOTE:
Concrete post shall be precast



FRONT VIEW



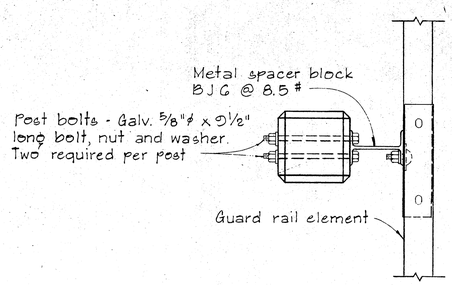
SIDE VIEW



BOTTOM VIEW

DETAIL OF CONCRETE POST

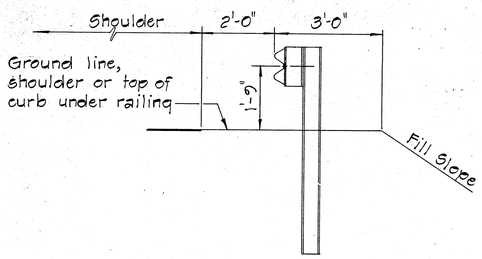
SCALE: 1½" = 1'-0"



PLAN

SINGLE METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

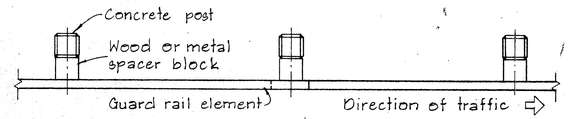
SCALE: 1½" = 1'-0"



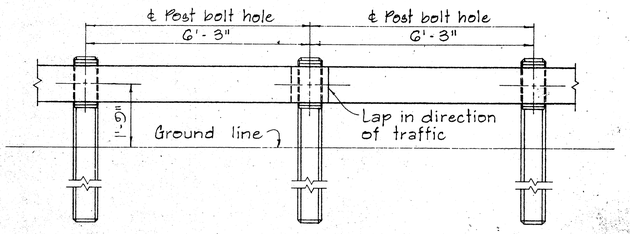
AT SHOULDER SECTION

TYPICAL METAL GUARD RAIL DETAIL

SCALE: ½" = 1'-0"



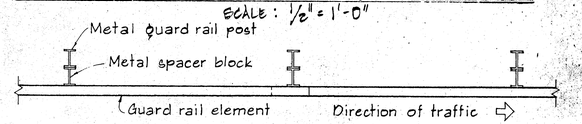
PLAN



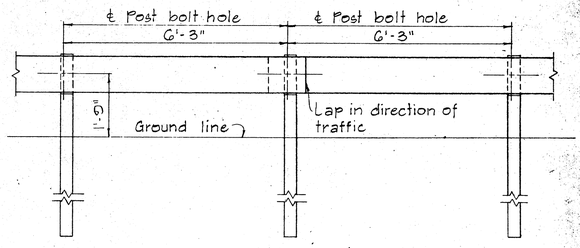
ELEVATION

METAL GUARD RAIL ON CONCRETE POST WITH WOOD OR METAL SPACER BLOCK

SCALE: ½" = 1'-0"



PLAN



ELEVATION

METAL GUARD RAIL ON METAL POST WITH METAL SPACER BLOCK

SCALE: ½" = 1'-0"

NO.	REVISION	APPROVED BY	DATE

APPROVAL RECOMMENDED:
Eiichi Tanaka — TRAFFIC ENGINEER — 12/29/69 DATE

APPROVED:
Herbert T. Matsuda — ASSISTANT CHIEF, ENGINEERING — 12-30-69 DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

METAL GUARD RAIL

SCALE: AS SHOWN — NOV. 1968

SHEET No. 12 OF 22 SHEETS | DT 500

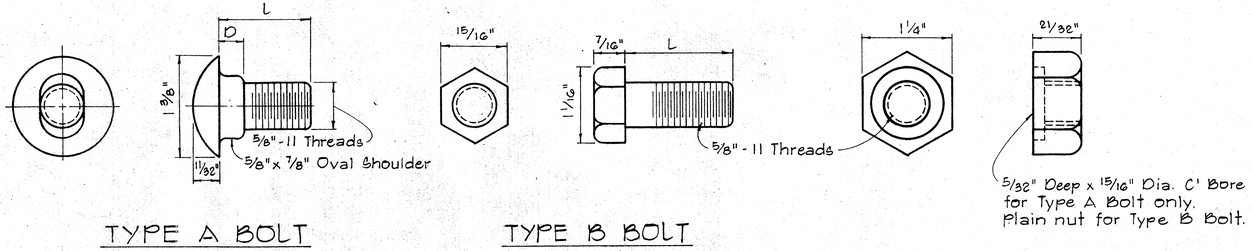
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(130)17	1976	25	174

BOLT DIMENSIONS		
TYPE A BOLT	D	L
Splice Bolt	5/16"	1 1/8"
Post Bolt for Conc. Post W/ Double Wood Blocks	3/32"	24"
Post Bolt for Conc. Post W/ Single Wood Block	3/32"	18"
Rail Bolt for Metal Block	3/32"	2"

BOLT DIMENSIONS	
TYPE B BOLT	L
Post Bolt for Conc. Post W/ Metal Blocks	9 1/2"
Post Bolt for Metal Post W/ Metal Block	1 3/4"



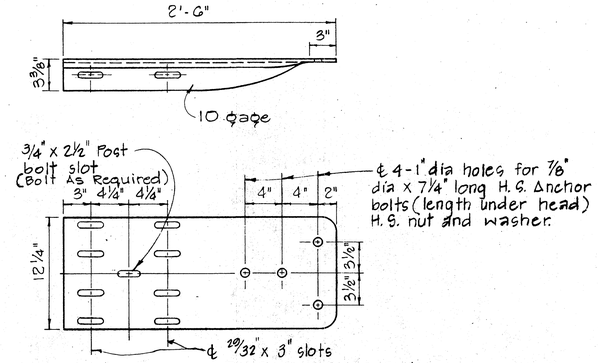
TYPE A BOLT TYPE B BOLT

SPLICE RAIL AND POST BOLTS

Scale : Full Size

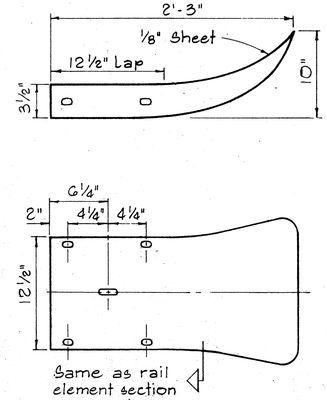
HEXAGON NUT

Scale: Full Size



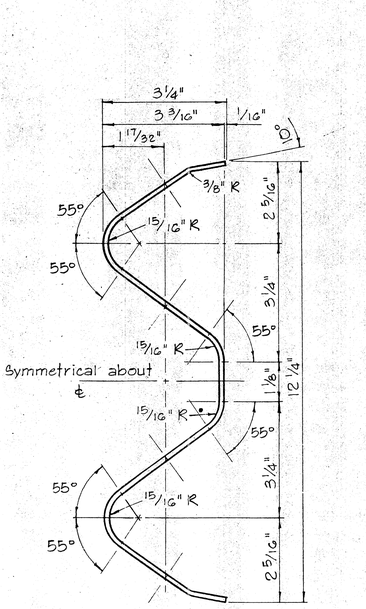
SPECIAL END SHOE

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



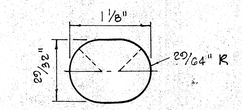
FLARED END

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

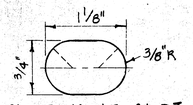


RAIL ELEMENT SECTION

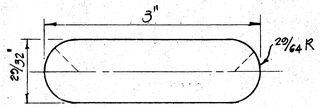
Scale: 6"=1'-0"



SPLICE BOLT SLOT

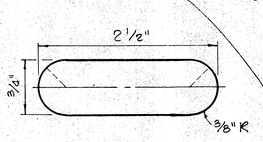


SPLICE BOLT SLOT FOR ALL ENDS

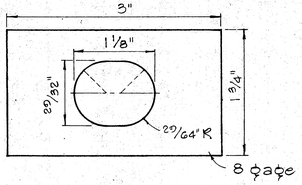


SPLICE BOLT SLOT FOR SPECIAL END SHOE

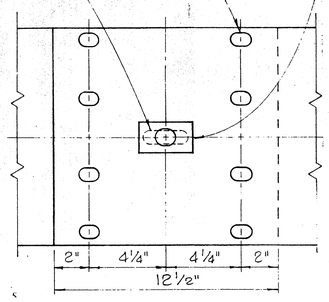
Scale: Full Size



POST BOLT SLOT



RAIL WASHER

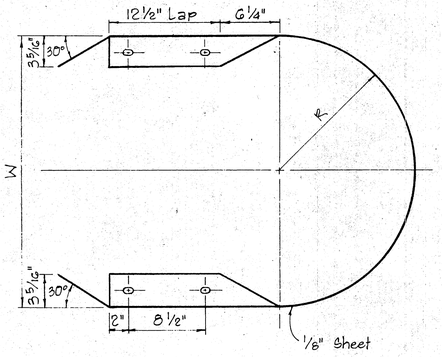


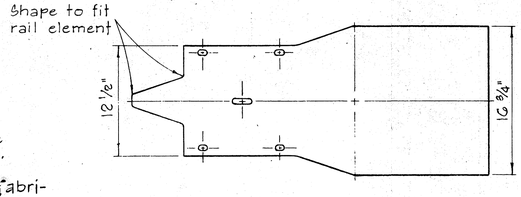
RAIL SPLICE

Scale: 3"=1'-0"

NOTES:

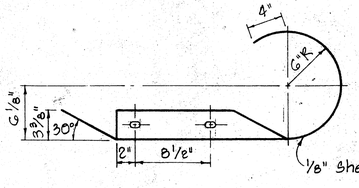
1. H.S. Bolts shall conform to the requirements of ASTM A 325.
2. Special End Shoe shall be fabricated from 10 Gage steel conforming to the requirements of AASHO M80.

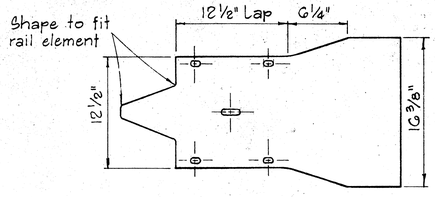




MEDIAN END

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





CURVED END

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

MEDIAN END DIMENSIONS		
TYPE OF POST AND BLOCK	W	R
Double Metal Guard Rail on Concrete Post with Wood Blocks	29 3/4"	14 7/8"
Double Metal Guard Rail on Concrete Post with Metal Blocks (BJG)	26 1/2"	13 1/4"
Double Metal Guard Rail on Metal Post with Metal Blocks (BJG)	24 3/8"	12 3/16"

APPROVAL RECOMMENDED:
Eiichi Tanaka — TRAFFIC ENGINEER — 12/28/69 DATE

APPROVED:
Hideo Sato — ASSISTANT CHIEF, ENGINEERING — 12-30-69 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
METAL GUARD RAIL

Scale: As Noted August, 1968

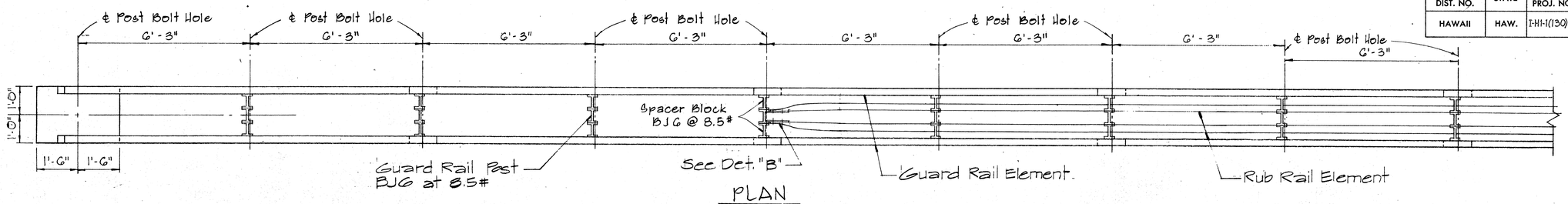
SHEET No. 13 OF 22 SHEETS | DT 501

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

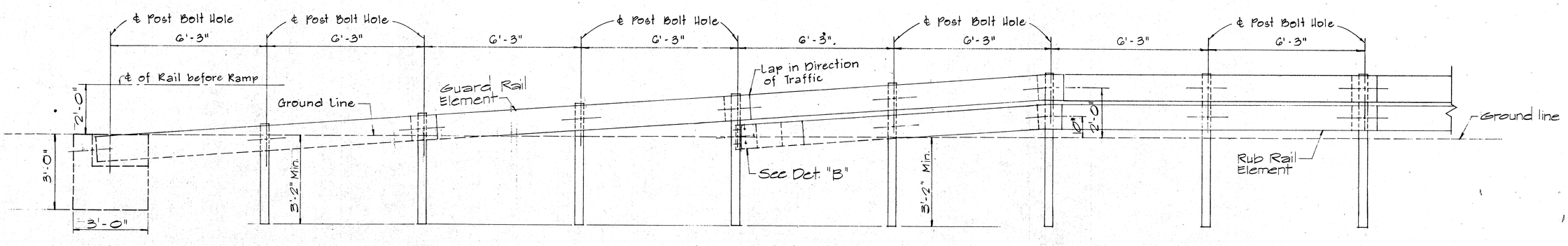
PRINTED ON NO. 1000H CLEARPRINT

25

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(130):17	1976	26	174



PLAN

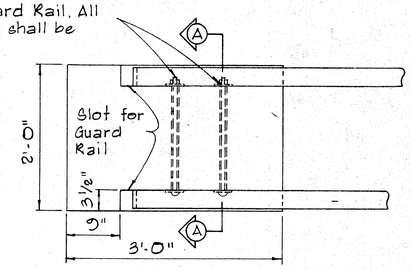


ELEVATION

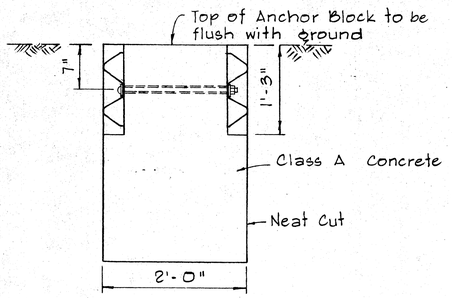
STRAIGHT APPROACH - RAMP END ANCHORAGE (MEDIAN)

Scale: ½"=1'-0"

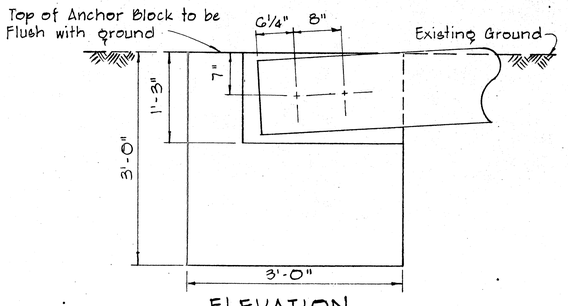
5/8"ø Bolts with ¾" G.I. Pipe Sleeve in each hole. Incidental to Metal Guard Rail. All Metal Pieces shall be Galvanized.



PLAN



SECTION A-A

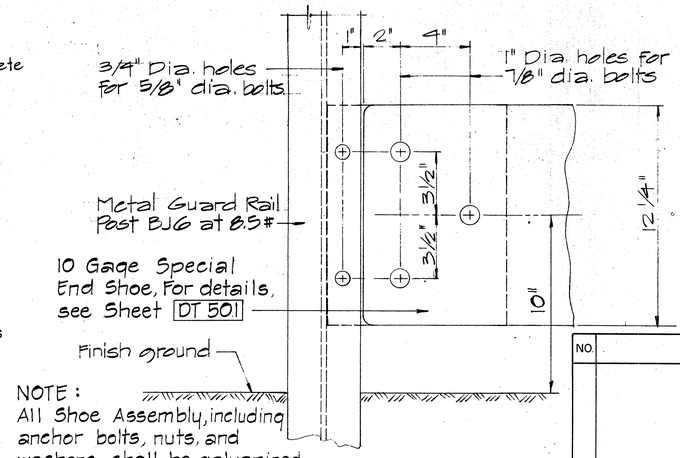


ELEVATION

CONCRETE ANCHOR BLOCK FOR RAMP END

Scale: 1"=1'-0"

NOTE:
Concrete, Excavation, and Miscellaneous Appurtenances necessary to anchor the Guard Rail Ends, Shall be incidental to the Metal Guard Rail.

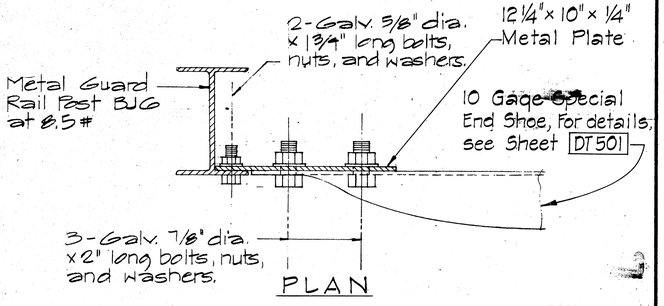


NOTE:
All Shoe Assembly, including anchor bolts, nuts, and washers, shall be galvanized.

ELEVATION

DETAIL "B"

Sc. 3"=1'-0"



PLAN

APPROVAL RECOMMENDED:
Eiichi Tanaka 12/27/68
TRAFFIC ENGINEER DATE

APPROVED:
Rulon G. Salati 12-30-68
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAIL
GUARD RAIL
RAMP END ANCHORAGE

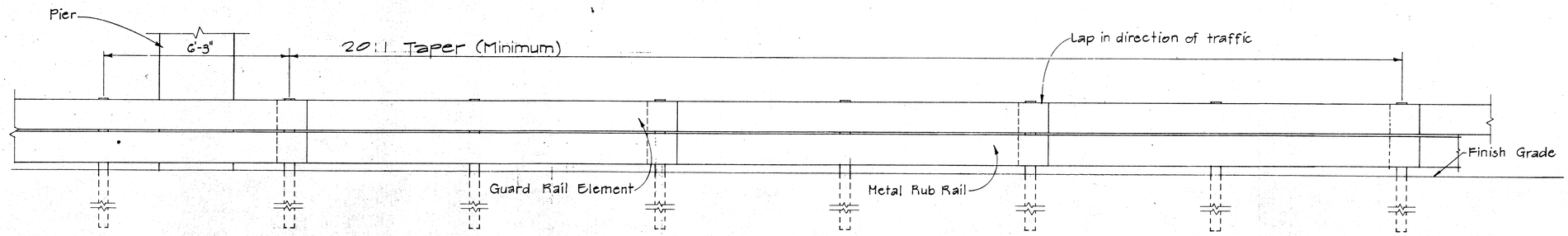
Scale: as Noted August, 1968

SHEET No. 14 OF 22 SHEETS | DT 502

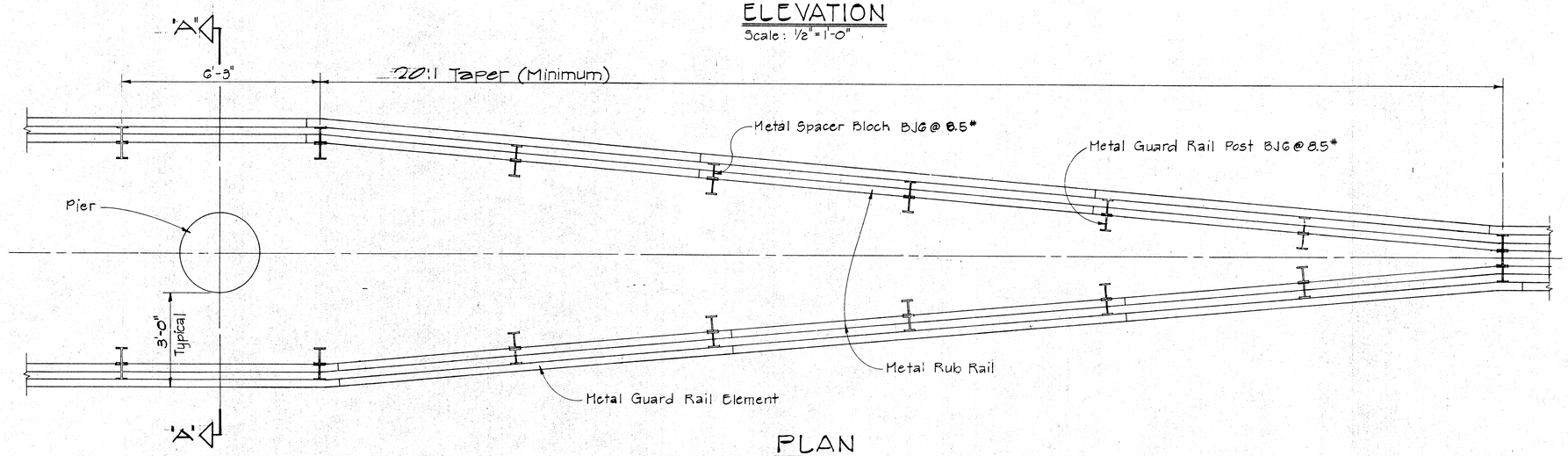
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

PRINTED ON NO. 1000H CLEARPRINT

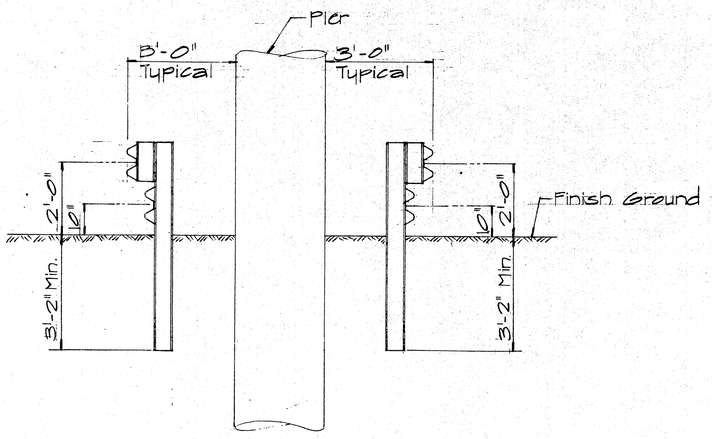
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(130):17	1976	27	174



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



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



SECTION "A"-"A"
Sc. 1/2" = 1'-0"

APPROVAL RECOMMENDED:
Eiichi Tanaka — TRAFFIC ENGINEER — 12/29/69 DATE

APPROVED:
[signature] — ASSISTANT CHIEF, ENGINEERING — 12/30/69 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRANSITION DETAIL OF METAL GUARD RAIL WITH RUB RAIL AT OBSTRUCTION

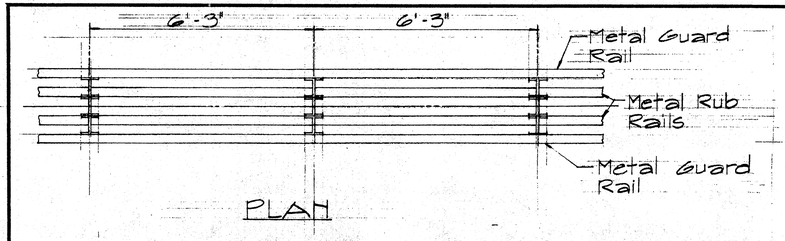
Scale: As Shown — Nov. 1968

SHEET No. 15 OF 22 SHEETS | DT 505

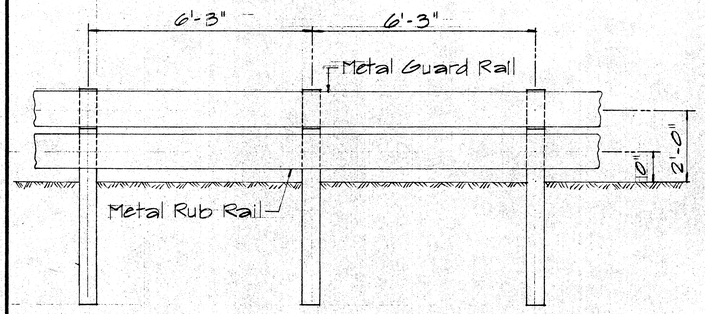
ORIGINAL PLAN
NOTE BOOK No.
SURVEY PLOTTED BY: DATE
DRAWN BY:
TRACED BY:
DESIGNED BY:
QUANTITIES BY:
CHECKED BY:

PRINTED ON NO. 1000H CLEARPRINT

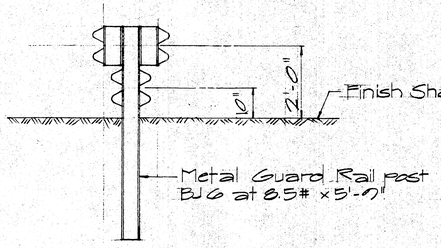
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(130):17	1976	28	174



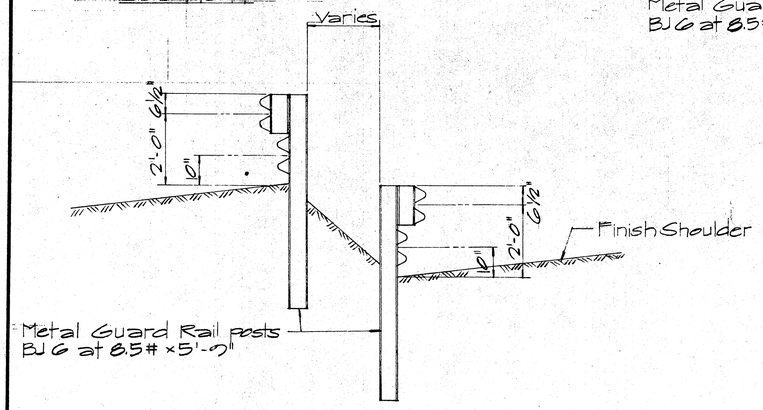
PLAN



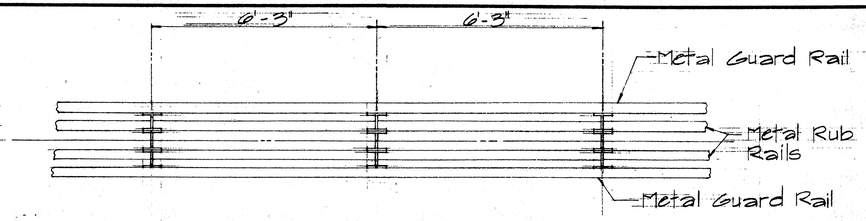
ELEVATION



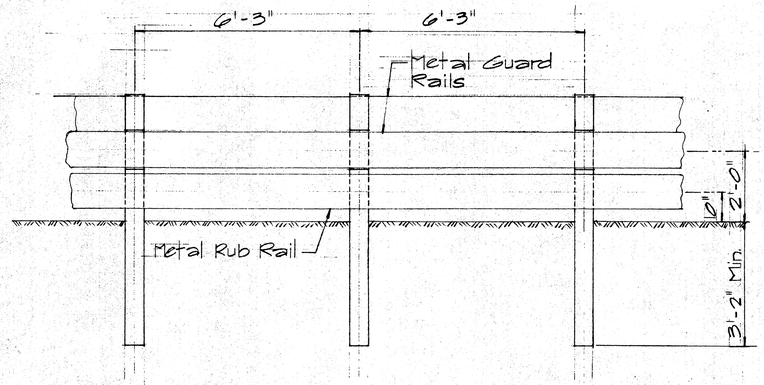
SECTION



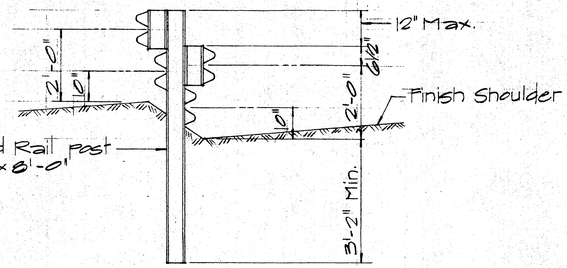
TYP. DOUBLE POST SEC.



PLAN

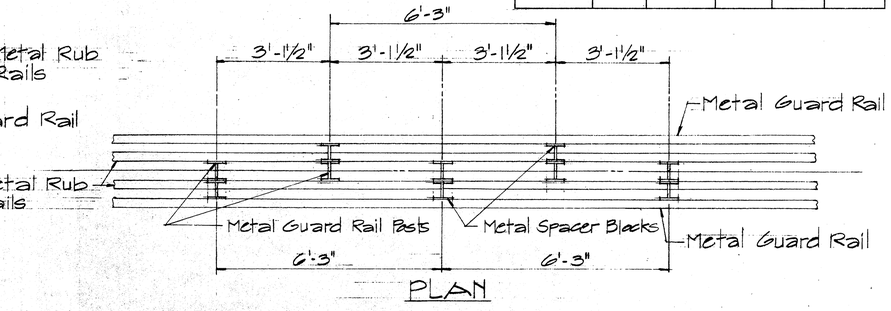


ELEVATION

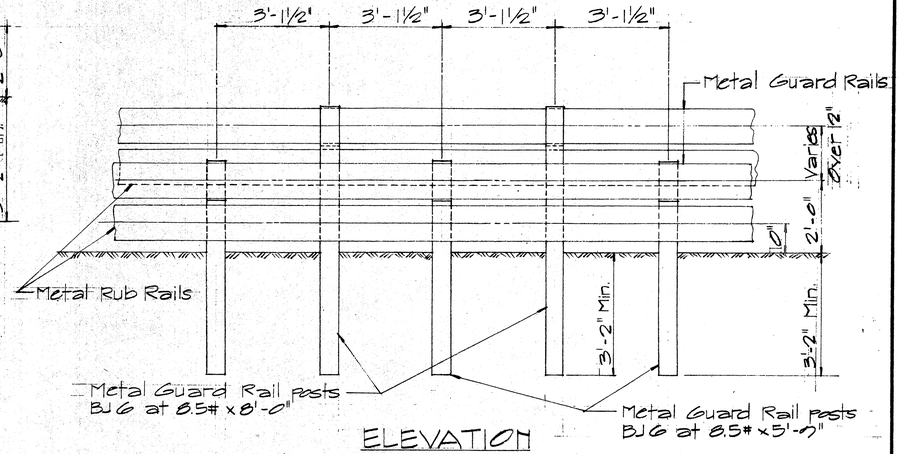


SECTION

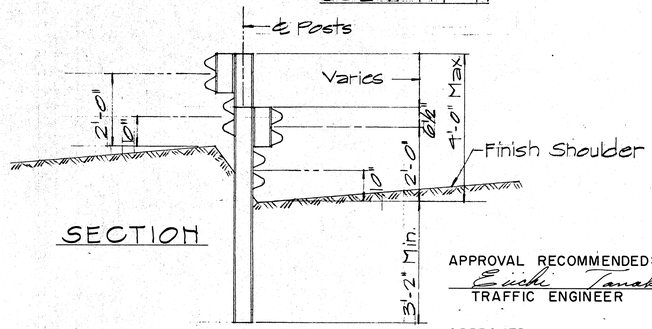
TYPICAL SAW TOOTH INSTALLATION
Sc. 1½" = 1'-0"



PLAN



ELEVATION



SECTION

TYPICAL STAGGERED INSTALLATION
Sc. ½" = 1'-0"

APPROVAL RECOMMENDED:
Eiichi Tanaka — TRAFFIC ENGINEER — 12/23/69 DATE

APPROVED:
Hideo Sadatomi — ASSISTANT CHIEF, ENGINEERING — 12-30-69 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAIL
METAL GUARD RAIL WITH RUB RAIL

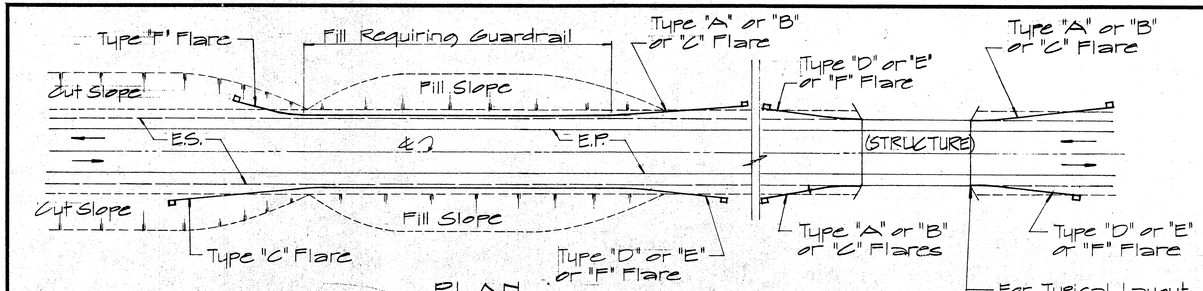
Scale: ½"=1'-0" Feb. 1969

SHEET No. 16 OF 22 SHEETS | DT 514

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

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HH(130)17	1976	29	174

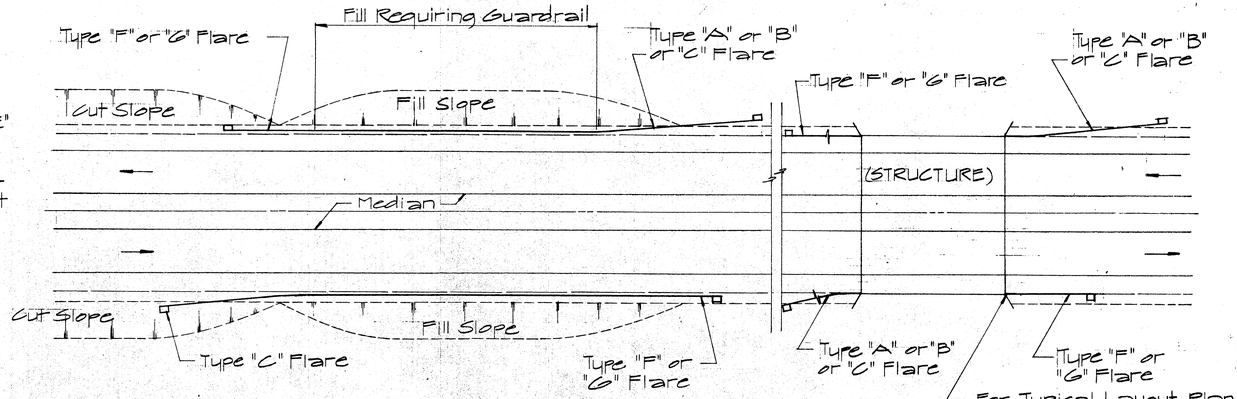


PLAN

TWO WAY ROADWAY

Sc. 1" = 40'

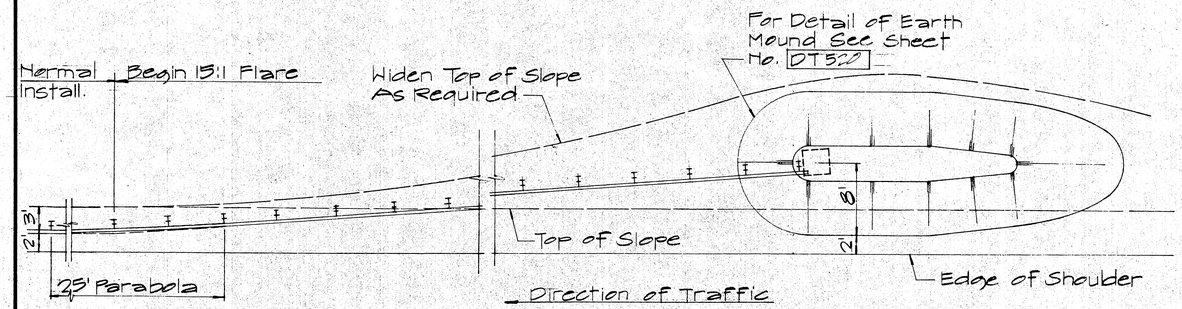
NOTE:
Metal guard rail connection to structures requires. End Post Connection. See structure plans.



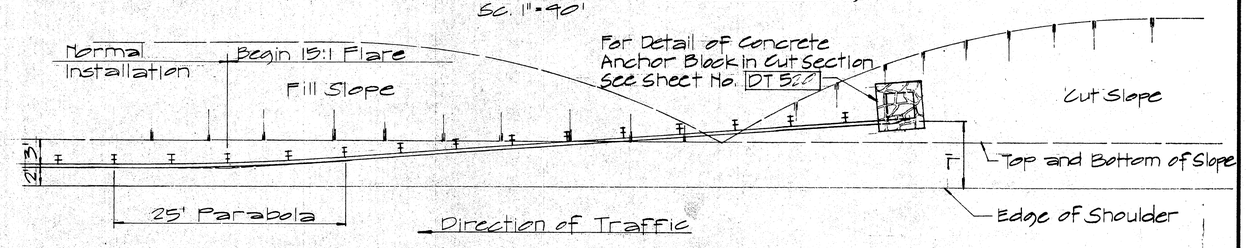
PLAN

ONE WAY ROADWAY (DIVIDED HIGHWAY)

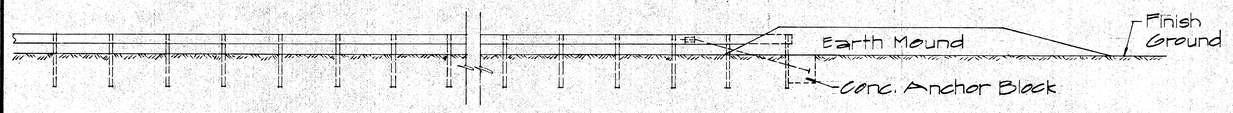
Sc. 1" = 40'



PLAN



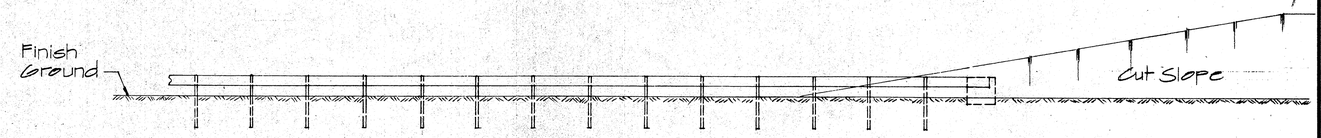
PLAN

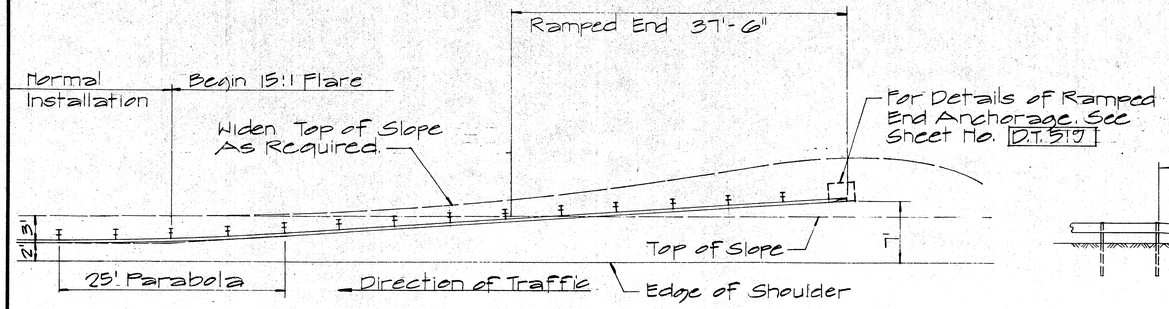


ELEVATION

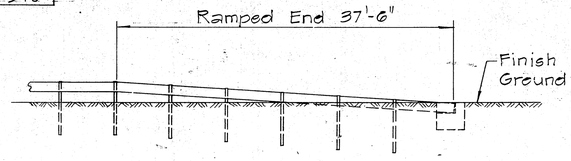
TYPE "A" FLARE

Sc. 1/8" = 1'-0"





PLAN



ELEVATION

ELEVATION

TYPE "C" FLARE

Sc. 1/8" = 1'-0"

TYPE "B" FLARE

Sc. 1/8" = 1'-0"

APPROVAL RECOMMENDED:
Eiichi Tanaka — TRAFFIC ENGINEER — 12/29/69 DATE

APPROVED:
— ASSISTANT CHIEF, ENGINEERING — 12-30-69 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS OF APPROACH END FLARE - ONE & TWO WAY ROADWAY

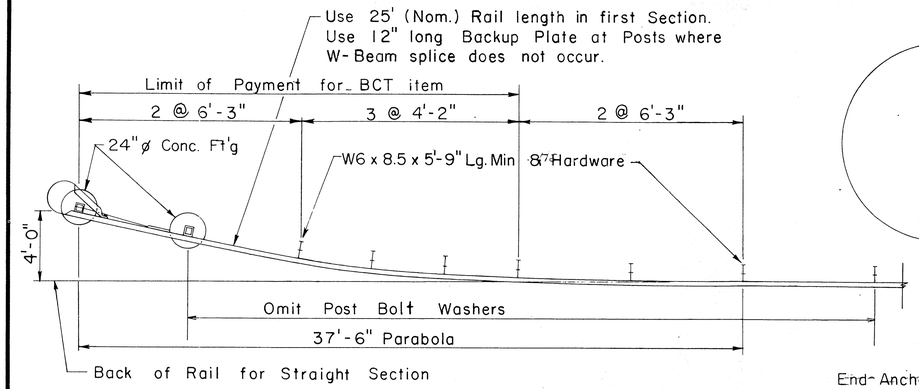
Sc. As Noted April 1960

SHEET No. 17 OF 22 SHEETS DT 516

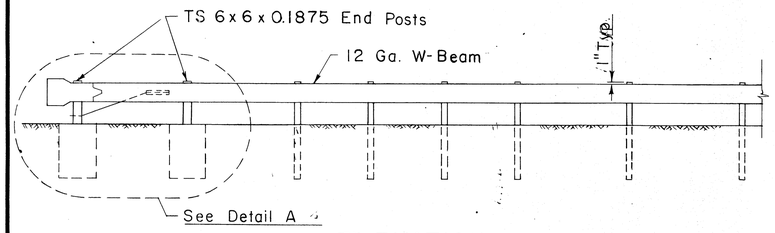
ORIGINAL PLAN | NOTE BOOK No. | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

PRINTED ON NO. 1000H CLEARPRINT

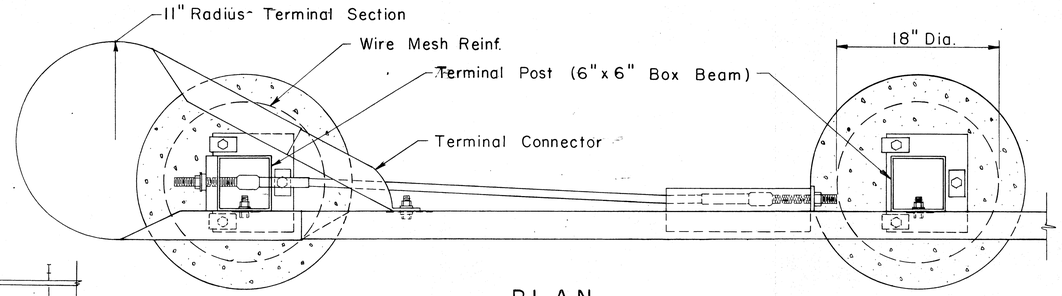
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FHI-1(19)ST	1976	C.0.29 S-1	174



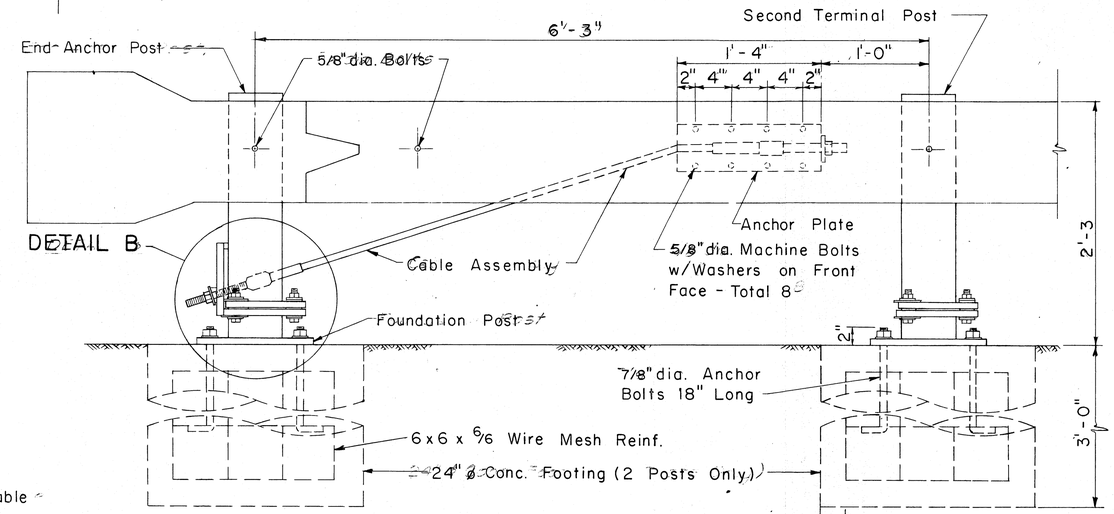
PLAN
Scale: 1/4" = 1'-0"



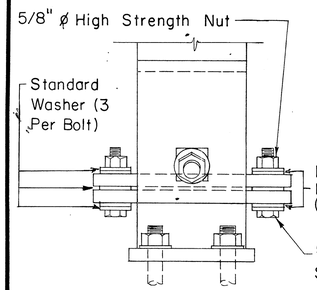
ELEVATION
Scale: 1/4" = 1'-0"



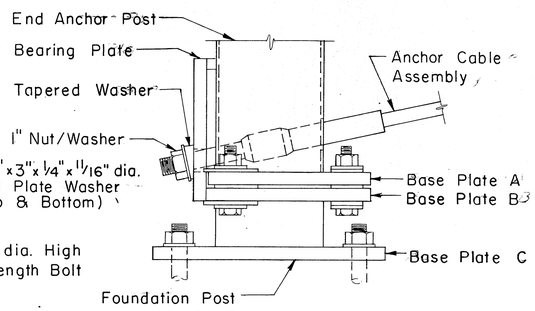
PLAN



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

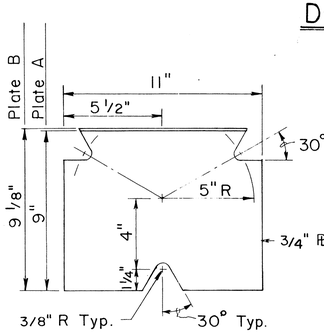


SIDE ELEVATION

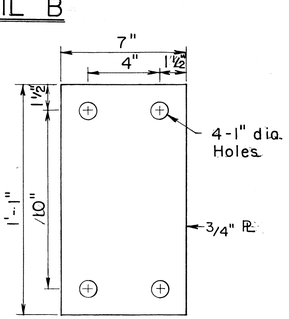


FRONT ELEVATION

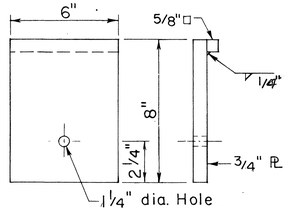
DETAIL B



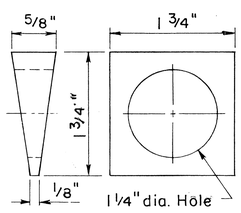
BASE PLATES A & B
Scale: 3" = 1'-0"



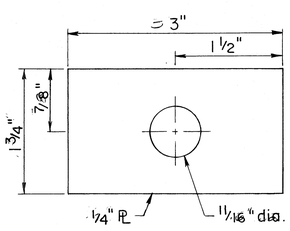
BASE PLATE C
Scale: 3" = 1'-0"



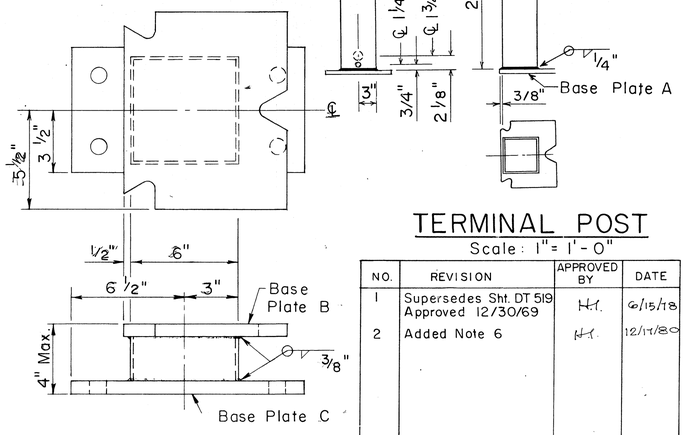
BEARING PLATE
Scale: 3" = 1'-0"



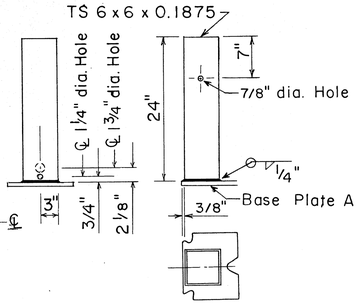
TAPERED WASHER
Scale: Full Size



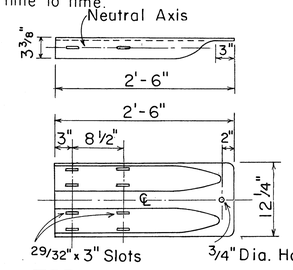
FLAT PLATE WASHER
Scale: Full Size



FOUNDATION POST
Scale: 3" = 1'-0"



TERMINAL POST
Scale: 1" = 1'-0"



TERMINAL CONNECTOR
Scale: 1" = 1'-0"

NOTES:

1. Anchor Plate and Anchor Cable Assembly (Standard Swaged Fitting and Stud). See Standard Detail Sheet No. DT 520.
2. Other Anchor Cable Assemblies may be used. Minimum breaking strength of assembly should be 40,000 lbs.
3. Second Terminal Post does not require holes to accomodate Anchor Cable.
4. Slip Base Load shall be controlled with a Calibrated Torque Wrench - Torque 155 - 170 ft. lbs.
5. Concrete shall be Class A.
6. B.C.T. Hardware has been superceded by "A Guide Standardized Highway Barrier Rail Hardware," A report prepared and approved by the AASHTO-AGC-ARTBA joint cooperation committee. All hardware shall conform to above mentioned publication and as revised from time to time.

Change Order #28

APPROVAL RECOMMENDED:

Eiichi Tanaka — TRAFFIC ENGINEER — 6/14/78 DATE

APPROVED:

Herbert Takeishi — ASSISTANT CHIEF, ENGINEERING — 6/15/78 DATE

NO.	REVISION	APPROVED BY	DATE
1	Supersedes Sht. DT 519 Approved 12/30/69	H.T.	6/15/78
2	Added Note 6	H.T.	12/17/80

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAIL

BREAKAWAY CABLE TERMINAL (BCT)

Scale: As Shown — Date: June 1978

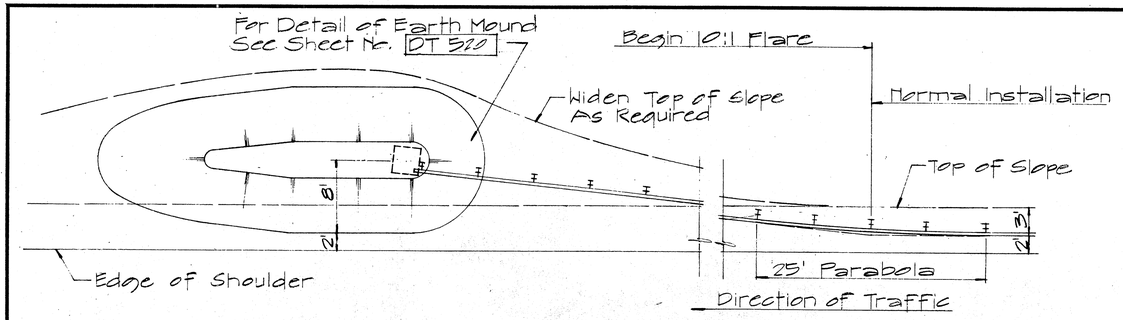
SHEET No. OF SHEETS DT 519

C.0.29 S-1

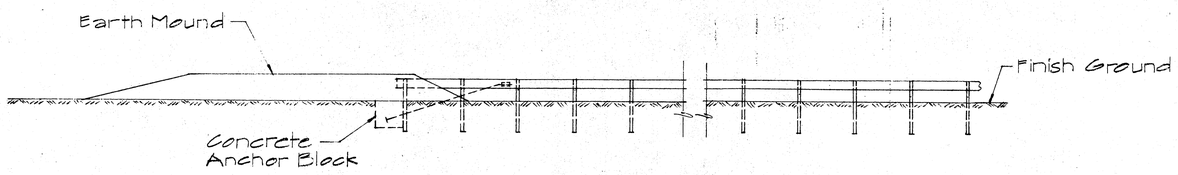
ORIGINAL PLAN

SURVEY PLOTTED BY	
DRAWN BY	
TRACED BY	
DESIGN BY	
QUANTITIES BY	
CHECKED BY	
NOTE BOOK	
No.	
DATE	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H1-1(130):17	1976	30	174



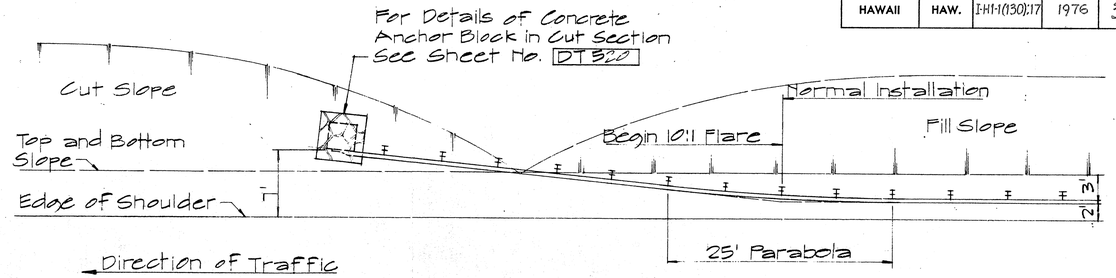
PLAN



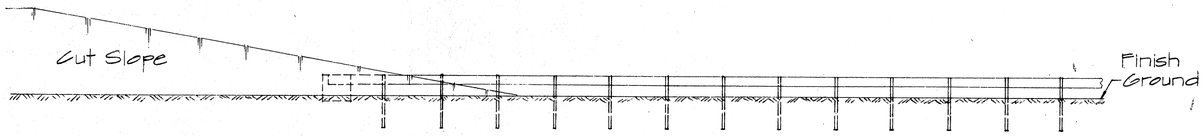
ELEVATION

TYPE "D" FLARE

Sc. 1/8" = 1'-0"



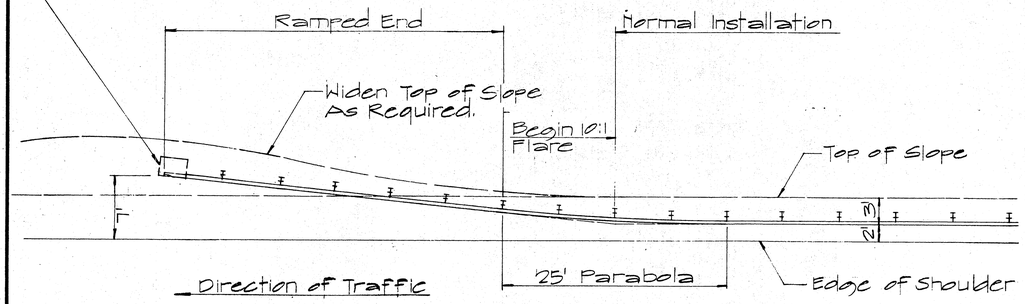
PLAN



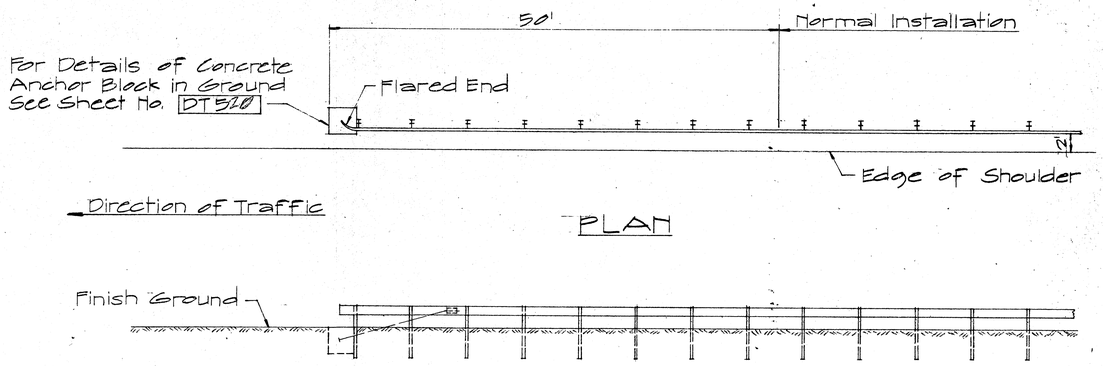
ELEVATION

TYPE "F" FLARE

Sc. 1/8" = 1'-0"



PLAN

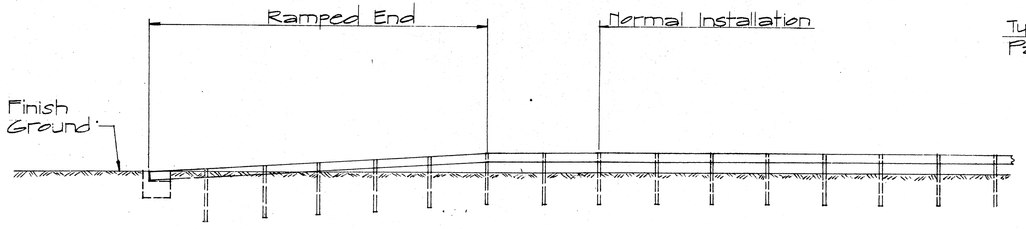


PLAN

ELEVATION

TYPE "G" FLARE

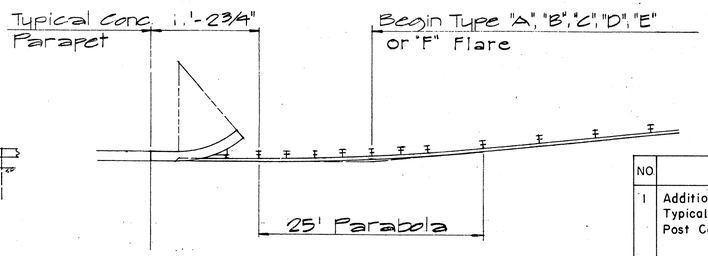
Sc. 1/8" = 1'-0"



ELEVATION

TYPE "E" FLARE

Sc. 1/8" = 1'-0"



TYPICAL LAYOUT PLAN OF END POST CONNECTION

Sc. 1/8" = 1'-0"

NO.	REVISION	APPROVED BY	DATE
1	Additional Posts Added to Typical Layout Plan Of End Post Connection	H.T.	4-12-72

APPROVAL RECOMMENDED:
Eiichi Tanaka — 12/29/69
TRAFFIC ENGINEER — DATE

APPROVED:
[signature] — 12-30-69
ASSISTANT CHIEF, ENGINEERING — DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS TRAILING END FLARE - ONE & TWO WAY ROADWAY

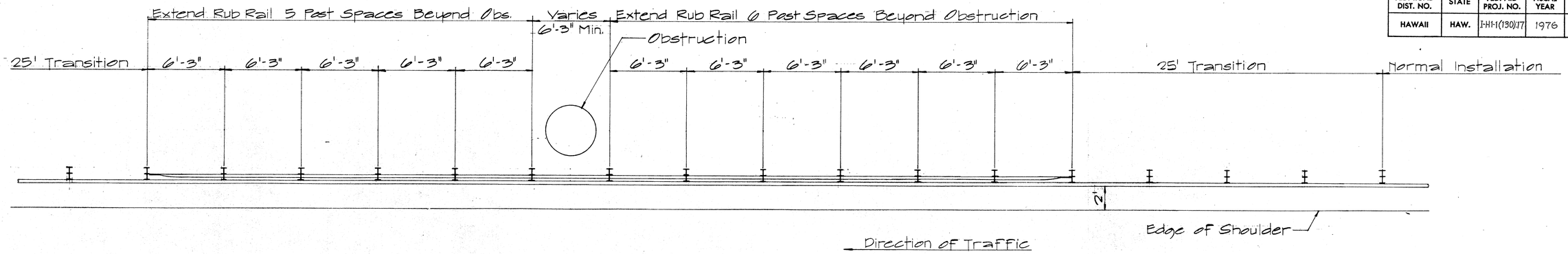
Scale: As Noted — April 1960

SHEET No. 18 OF 22 SHEETS | DT 517

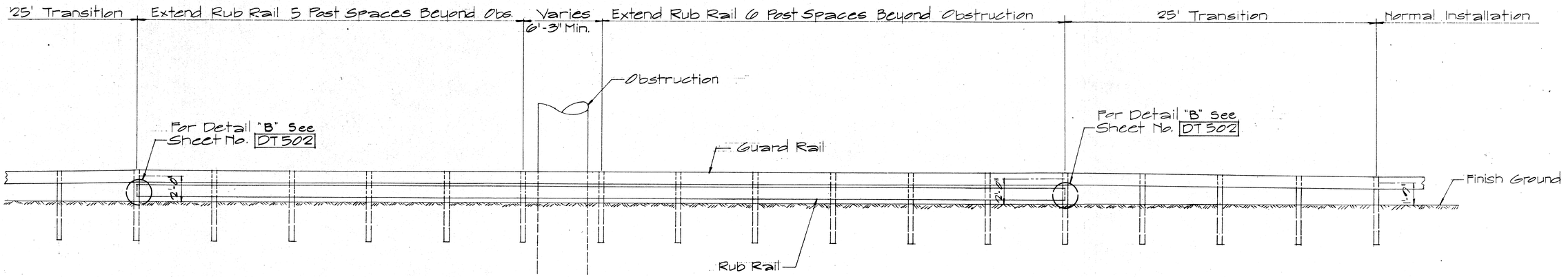
ORIGINAL PLAN | NOTE BOOK No. | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HI-1(130)17	1976	31	174



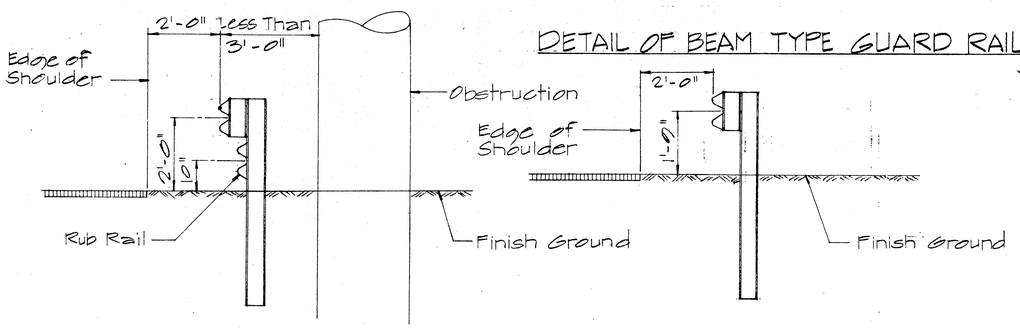
PLAN



ELEVATION

DETAIL OF BEAM TYPE GUARD RAIL WITH RUB RAIL AT OBSTRUCTION

Sc. 1/4" = 1'-0"



TYP. SEC. AT OBSTRUCTION

TYP. SEC. AT NORMAL INSTALLATION

TYP. GUARD RAIL SECTIONS

Sc. 1/2" = 1'-0"

APPROVAL RECOMMENDED:
Eiichi Tanaka — TRAFFIC ENGINEER — 12/23/69 DATE

APPROVED:
Hiroshi Nakata — ASSISTANT CHIEF, ENGINEERING — 12-30-69 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAIL

BEAM TYPE GUARD RAIL WITH RUB RAIL AT OBSTRUCTION (SHOULDER INSTALL)

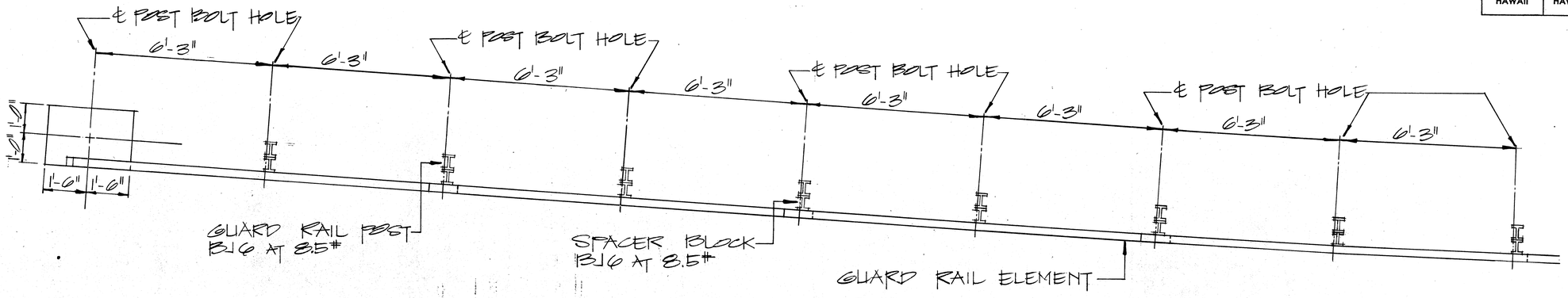
Sc. AS SHOWN — DATE: JUNE 1960

SHEET No. 19 OF 22 SHEETS DT 518

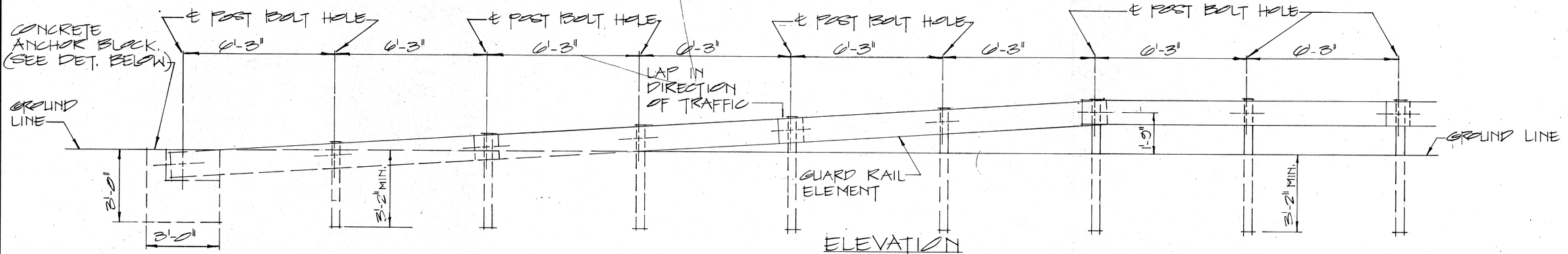
ORIGINAL PLAT — NOTE BOOK No. — SHEET PLOTTED BY — DRAWN BY — TRACED BY — DESIGNED BY — QUANTITIES BY — CHECKED BY — DATE

K+E CRYSTALENE® LA 2920 TRACING PAPER

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IHF-1(130):17	1976	32	174



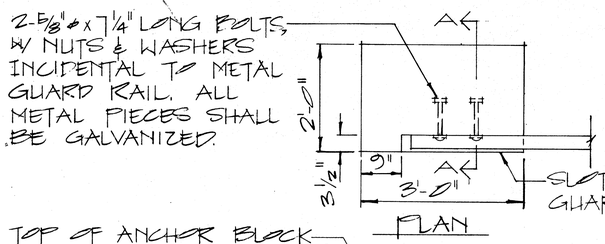
PLAN



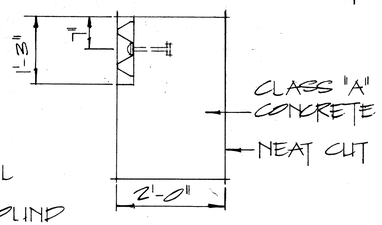
ELEVATION

RAMP END ANCHORAGE

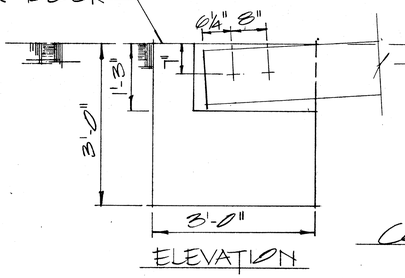
SCALE: 1/2" = 1'-0"



PLAN



SECTION "A-A"



ELEVATION

NOTE:
CONCRETE, EXCAVATION AND MISCELLANEOUS APPURTENANCES NECESSARY TO ANCHOR THE GUARD RAIL ENDS, SHALL BE INCIDENTAL TO THE METAL GUARD RAIL.

CONCRETE ANCHOR BLOCK

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

APPROVAL RECOMMENDED:
Eiichi Tanaka — TRAFFIC ENGINEER — 12/23/69 DATE

APPROVED:
[signature] — ASSISTANT CHIEF, ENGINEERING — 12-30-69 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

GUARD RAIL, TYPE 3
RAMP END ANCHORAGE

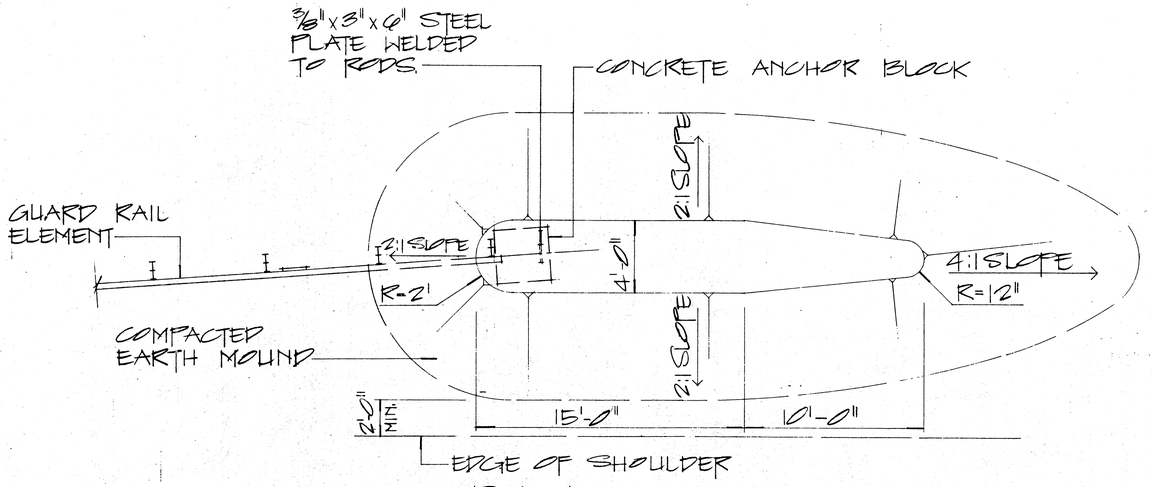
SCALE: AS SHOWN

SHEET No. 20 OF 22 SHEETS | DT-512

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

K+E CRYSTALENE® LA 2920 TRACING PAPER

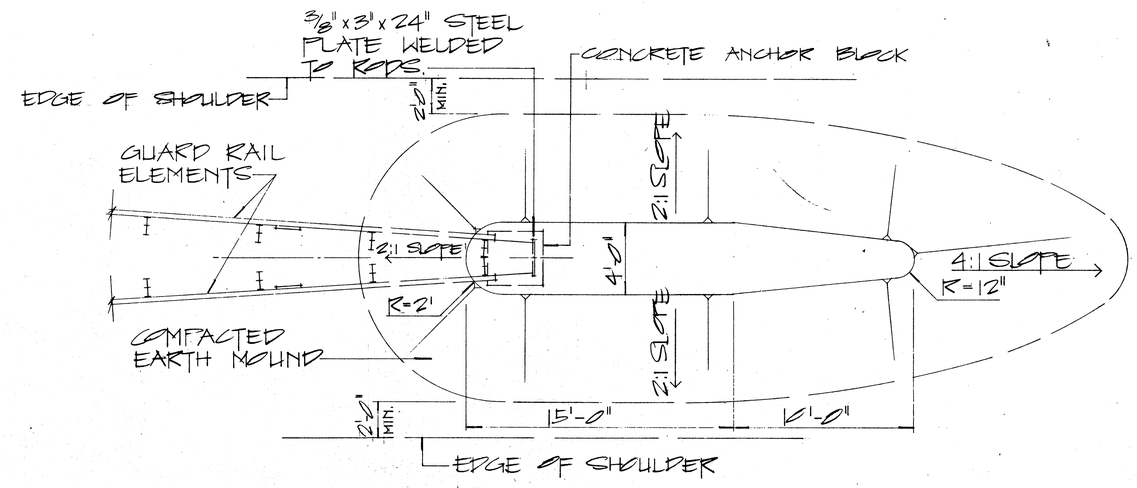
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(130):17	1976	33	174



PLAN

EARTH MOUND DETAIL (SINGLE GUARD RAIL)

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

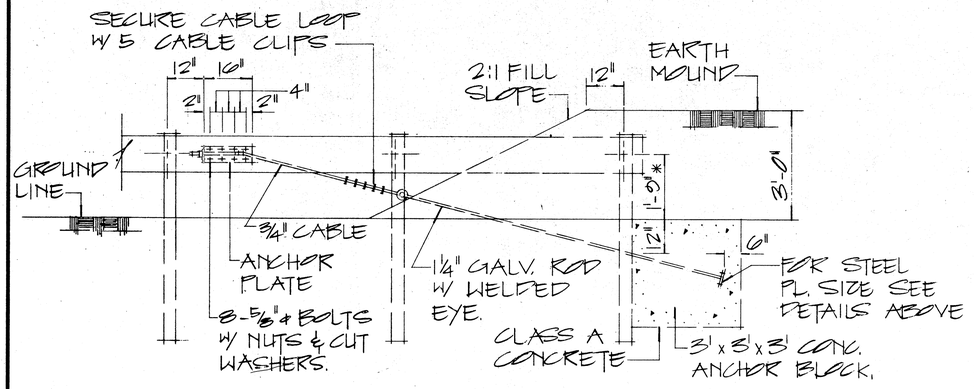


PLAN

EARTH MOUND DETAIL (DOUBLE GUARD RAIL)

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

*NOTE: 2'-0" WHEN INSTALLED WITH RUB RAIL.

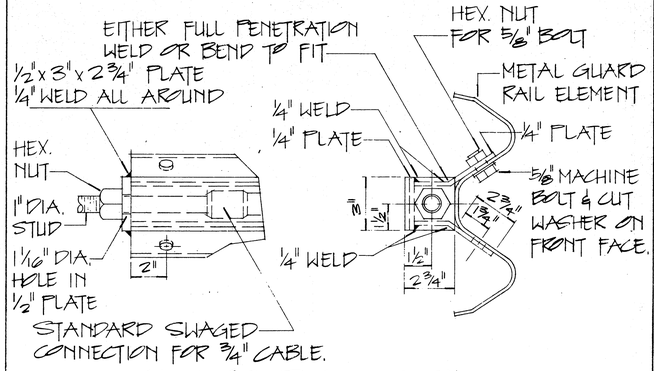


ANCHOR BLOCK DETAIL IN EARTH MOUND

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

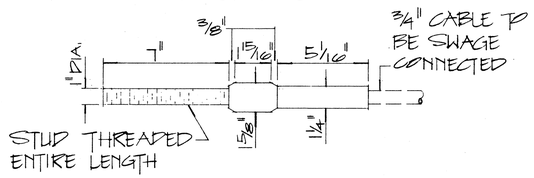
NOTE:

1. GALVANIZED ANCHOR ROD, METAL GUARD RAIL AND POST BURIED IN GROUND SHALL BE COVERED WITH a Min. 20-Mil thickness of Coal TAR ENAMEL. Conforming to AWWA Standard: C 203
2. CONCRETE, GRP, EXCAVATION, EARTH MOUND, ANCHOR RODS AND MISCELLANEOUS APPURTENANCES NECESSARY TO ANCHOR THE GUARD RAIL ENDS SHALL BE INCIDENTAL TO THE METAL GUARD RAIL.



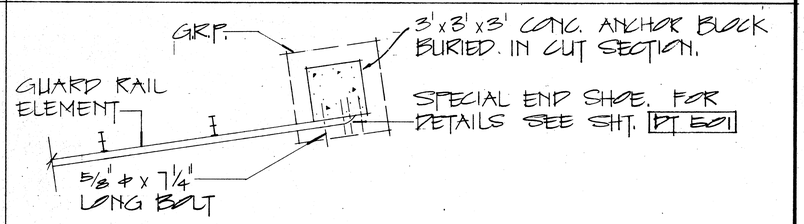
ANCHOR PLATE DETAILS

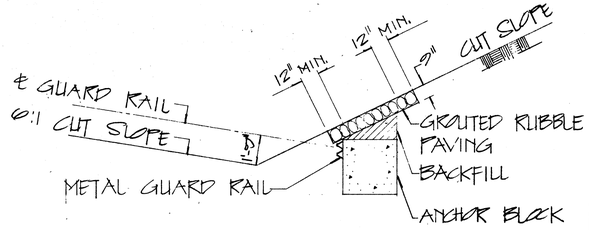
SCALE: 1" = 3"



STANDARD SWAGED FITTING AND STUD

SCALE: 1" = 3"





ANCHOR BLOCK IN CUT SECTION

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

APPROVAL RECOMMENDED:
Evelyn Tanaka — 12/23/69
TRAFFIC ENGINEER — DATE

APPROVED:
[signature] — 12-30-69
ASSISTANT CHIEF, ENGINEERING — DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

EARTH MOUND AND ANCHOR BLOCK DETAILS

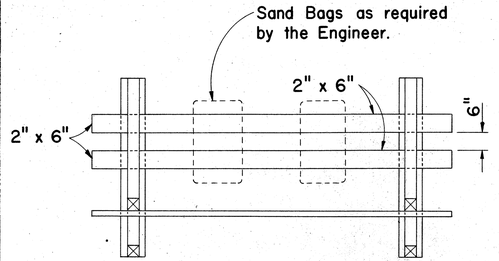
SCALE: AS SHOWN OCT 1969

SHEET No. 21 OF 22 SHEETS PT 520

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

K+E CRYSTALENE® LA 2920 TRACING PAPER

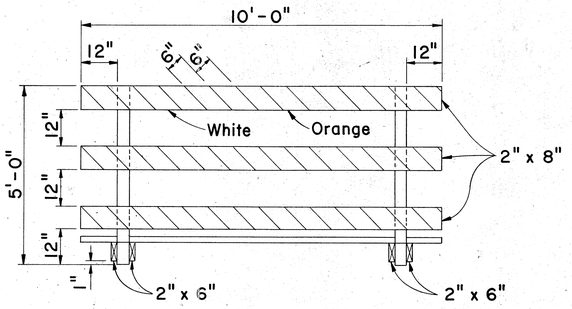
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(130):17	1976	34	174



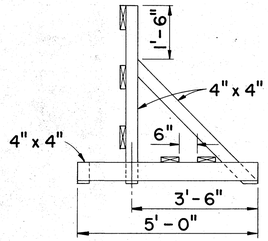
PLAN VIEW

GENERAL NOTES

1. The Contractor shall construct, install and maintain the wood barricades at the locations shown on the Plans.
2. The permanent wood barricades shall be left in place or relocated upon completion of the project as ordered by the Engineer and are to become State property.
3. The orange and white stripes shall slant downward toward the side on which traffic is to pass and shall be reflectorized with high intensity reflective sheeting.



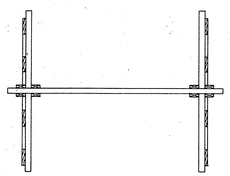
FRONT VIEW



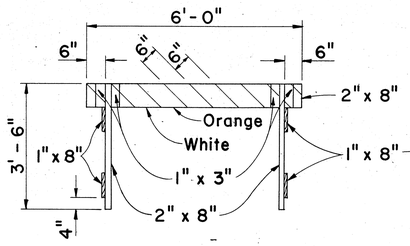
END VIEW

CLASS I BARRICADE

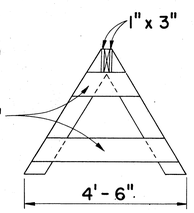
Scale: 1/2" = 1'-0"



PLAN VIEW



FRONT VIEW



END VIEW

CLASS II BARRICADE

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

APPROVAL RECOMMENDED:

Eiichi Tanaka — TRAFFIC ENGINEER — 12/29/69 DATE

APPROVED:

Andrew S. Sakai — ASSISTANT CHIEF, ENGINEERING — 12-30-69 DATE

NO.	REVISION	APPROVED BY	DATE
1	Reduce sign width to 12'-0"	HT.	9-3-70
2	Delete "Bureau of Public Roads"	HT.	9-29-70
3	Add Note No. 3 for Barricades	HT.	5-4-71
4	Revise stripe color for Barricades	HT.	10-27-72

NO.	REVISION	APPROVED BY	DATE
5	Revise General Note 3 for Barricades. Delete details of Construction Identification Sign.	MF	9-16-75

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TYPICAL DETAILS

CONSTRUCTION IDENTIFICATION SIGN AND WOOD BARRICADES

SCALE : As Shown DATE:

SHEET No. 22 OF 22 SHEETS DT 800

ORIGINAL PLAN
NOTE BOOK
No.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE