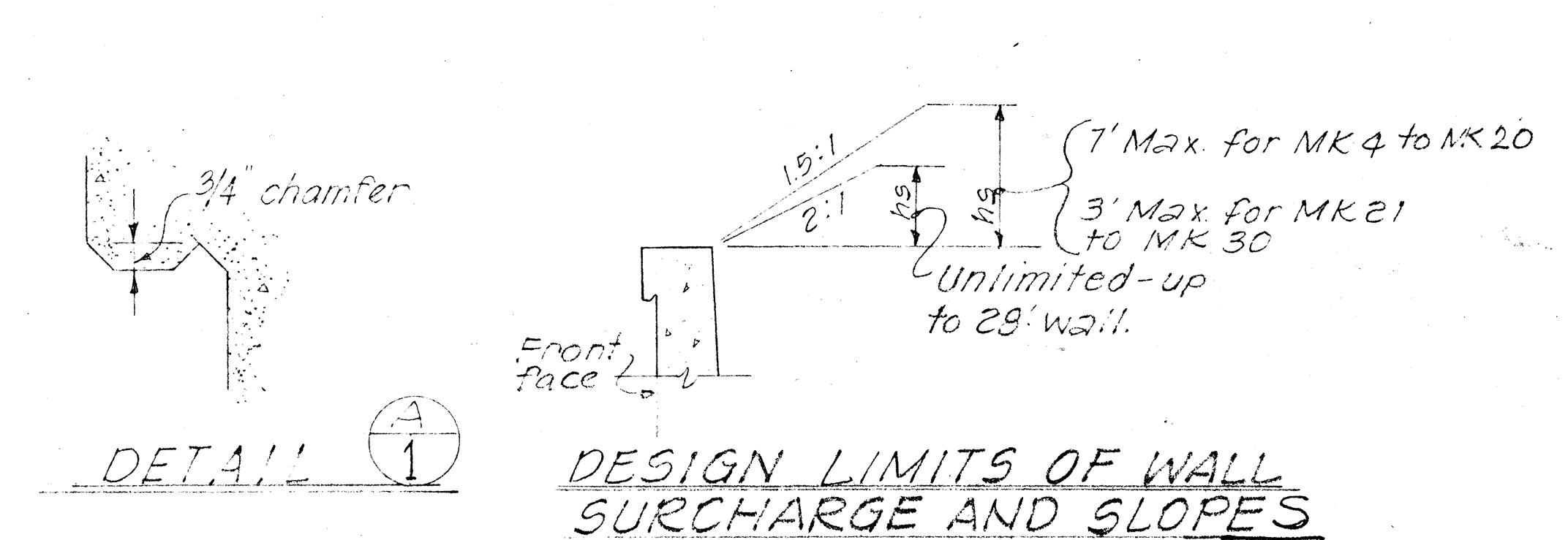
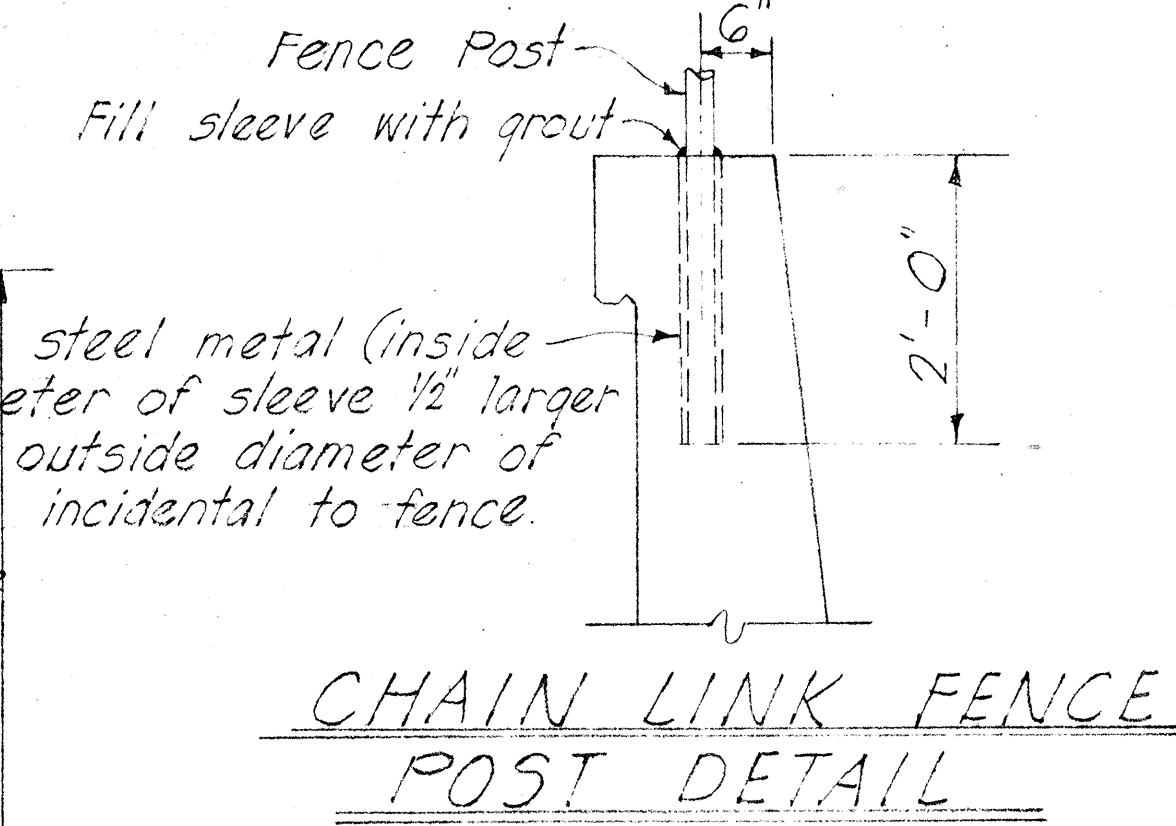
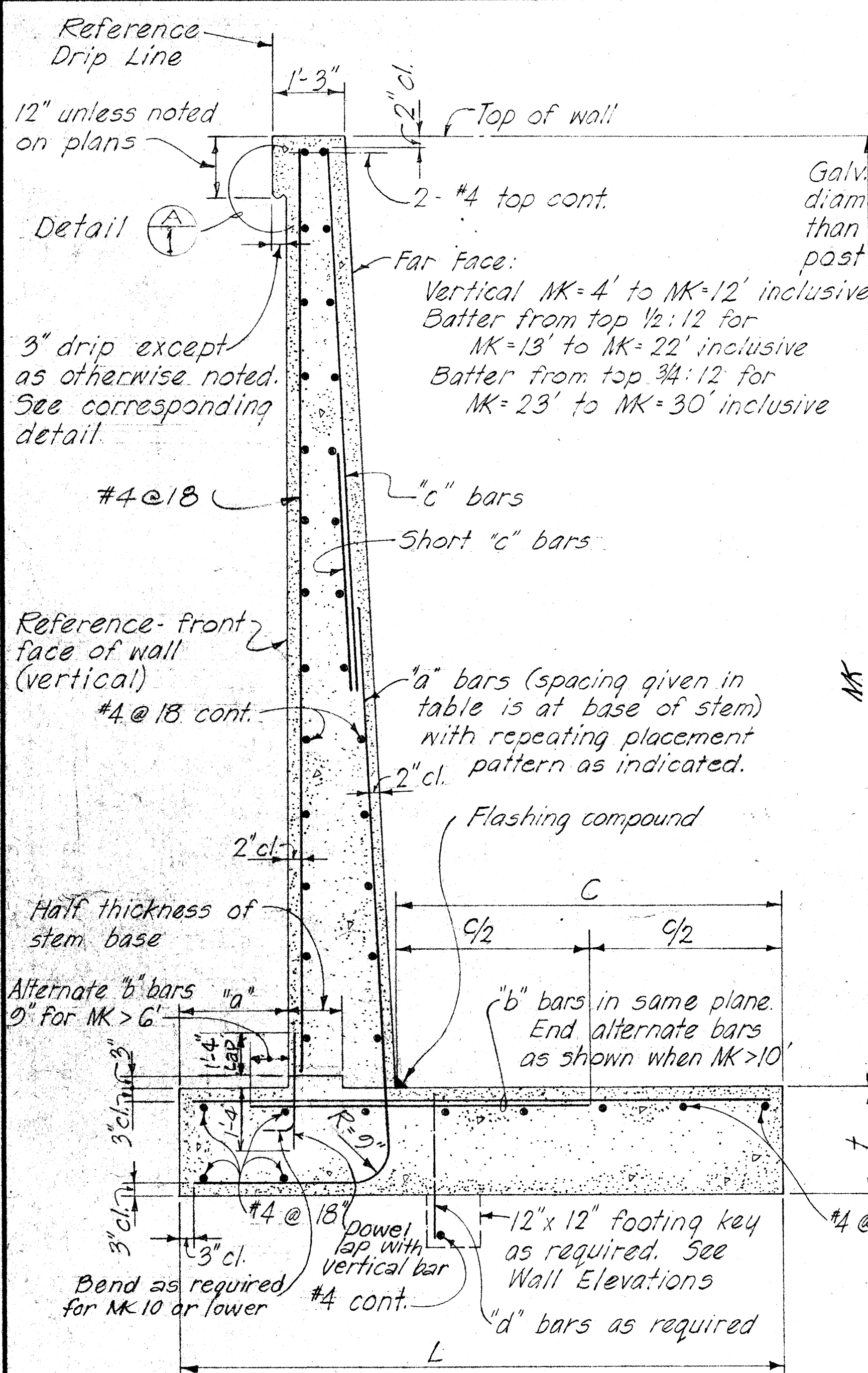
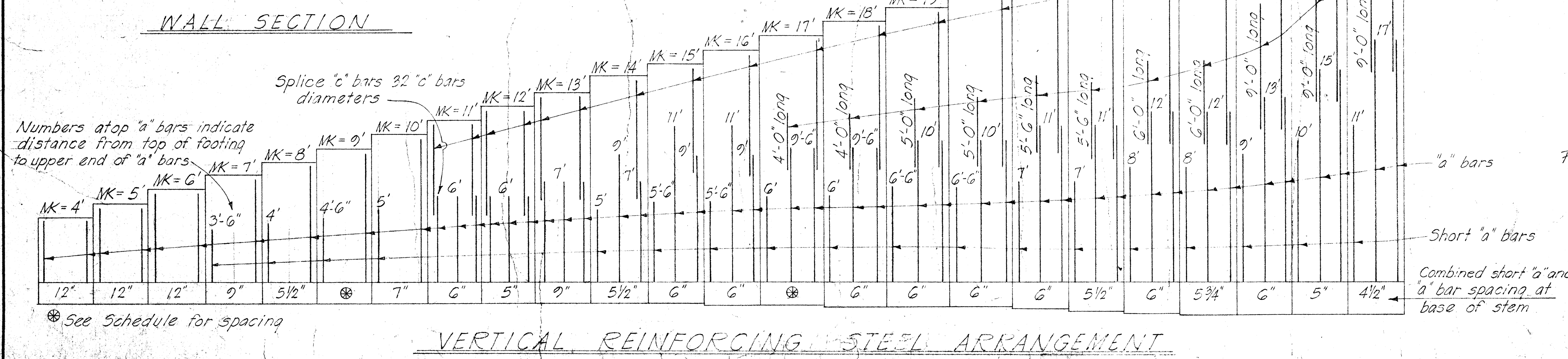




SCHEDULE OF DIMENSIONS AND REINFORCING STEEL																									
Wall on Earth	Maximum "NK"	4E	5E	6E	7E	8E	9E	10E	11E	12E	13E	14E	15E	16E	17E	18E	19E	20E	21E	22E	23E	24E	26E	28E	30E
	a	6"	6"	6"	12"	12"	12"	12"	12"	12"	15"	18"	21"	24"	24"	24"	24"	27"	30"	33"	36"	39"	54"	60"	72"
	t	14"	14"	14"	14"	14"	14"	14"	18"	18"	18"	18"	18"	21"	21"	24"	24"	24"	27"	30"	31"	33"	36"	39"	42"
	L	2.5'	3.0'	3.5'	4.0'	4.5'	5.0'	5.5'	6.0'	6.5'	7.0'	7.75'	8.25'	9.0'	9.75'	10.5'	11.5'	12.5'	13.5'	14.5'	15.25'	16.0'	18.0'	20.0'	21.0'
	"a" bars	#3@12"	#3@12"	#4@12"	#4@9"	#4@5½"	#5@7"	#6@7"	#6@6"	#6@5"	#7@9"	#6@5½"	#7@6"	#8@6"	#8@5¾"	#9@6"	#9@6"	#10@6"	#10@6"	#10@5½"	#10@6"	#10@5¾"	#11@6"	#11@5"	#11@4½"
	"b" bars	#3@12"	#3@12"	#3@12"	#3@9"	#4@11"	#4@7"	#5@7"	#5@6"	#5@5"	#7@9"	#6@5½"	#7@6"	#8@6"	#8@5¾"	#9@6"	#9@6"	#10@6"	#10@6"	#10@5½"	#10@6"	#10@5¾"	#11@6"	#11@5"	#11@4½"
	"c" bars								#4	#4	#4	#4	#4	#5	#5	#5	#6	#6	#6	#7	#7	#7	#7	#7	#7
	"d" bars	#3@12"	#3@12"	#3@12"	#3@12"	#4@18"	#4@15"	#4@15"	#4@12"	#4@11"	#4@9"	#5@12"	#5@12"	#5@10"	#5@9"	#5@9"	#5@8"	#6@10"	#6@9"	#7@12"	#7@11"	#7@10"	#7@	#7@	#7@6"

Wall on Rock	Maximum "MK"	4R	5R	6R	7R	8R	9R	10R	11R	12R	13R	14R	15R	16R	17R	18R	19R	20R	21R	22R	23R	24R	26R	28R	30R
	a	6"	6"	6"	12"	12"	12"	12"	12"	12"	12"	15"	18"	21"	21"	21"	21"	24"	24"	27"	30"	33"	39"	39"	51"
	F	14"	14"	14"	14"	14"	14"	14"	18"	18"	18"	18"	18"	18"	18"	21"	21"	21"	21"	24"	24"	27"	30"	36"	
	L	2.5'	3.0'	3.5'	4.0'	4.5'	5.0'	5.5'	6.0'	6.5'	6.75'	7.25'	7.75'	8.25'	8.75'	9.25'	9.75'	10.25'	10.5'	11.0'	11.5'	12.0'	13.0'	14.0'	15.0'
	"a" bars	#3 @ 12"	#3 @ 12"	#4 @ 12"	#4 @ 9"	#4 @ 5 1/2"	#5 @ 6"	#6 @ 7"	#6 @ 6"	#6 @ 5"	#7 @ 9"	#6 @ 5 1/2"	#7 @ 6"	#8 @ 6"	#8 @ 6"	#9 @ 6"	#9 @ 6"	#10 @ 6"	#10 @ 6"	#10 @ 5 1/2"	#10 @ 6"	#10 @ 5 3/4"	#11 @ 6"	#11 @ 5"	#11 @ 4 1/2"
	"b" bars	#3 @ 12"	#3 @ 12"	#3 @ 12"	#3 @ 9"	#4 @ 11"	#4 @ 6"	#5 @ 7"	#5 @ 6"	#5 @ 5"	#7 @ 9"	#6 @ 5 1/2"	#7 @ 6"	#8 @ 6"	#8 @ 6"	#9 @ 6"	#9 @ 6"	#10 @ 6"	#10 @ 6"	#10 @ 5 1/2"	#10 @ 6"	#10 @ 5 3/4"	#11 @ 6"	#11 @ 5"	#11 @ 4 1/2"
	"c" bars								#4	#4	#4	#4	#4	#5	#5	#5	#6	#6	#6	#7	#7	#7	#7	#7	#7
"d" bars	#3 @ 12"	#3 @ 12"	#3 @ 12"	#3 @ 12"	#4 @ 18"	#4 @ 15"	#4 @ 15"	#4 @ 12"	#4 @ 11"	#4 @ 9"	#5 @ 12"	#5 @ 12"	#5 @ 10"	#5 @ 9"	#5 @ 9"	#5 @ 8"	#6 @ 10"	#6 @ 9"	#7 @ 12"	#7 @ 11"	#7 @ 10"	#7 @ 10"	#7 @ 10"	#7 @ 10"	



NO.	REVISION	APPROVED BY	DATE

APPROVAL RECOMMENDED
Paul T. Yamashita 1-23-70
BRIDGE DESIGN ENGINEER DATE

APPROVED
Paul T. Yamashita 1-28-70
For ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
RETAINING WALL TYPE T-1
SCALE AS NOTED DATE
SHEET NO. 1 OF 2 SHEETS DB-207-1

ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY
DESIGNED BY
CHECKED BY
NO.

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	50CD-01-70	1974	38	49

GENERAL NOTES

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

Material	ASTM Designation
Structural Steel	A283, Grade D
Cast Steel	A27, Grade 65-35
Malleable Iron Casting	A47, Gr. No. 35018

GRATE BAR SPACING TABLE

TYPE	NO. BARS	CLEAR BAR SPACING - W	X
A-9	9	2"	$1\frac{9}{16}$ "
A-12	12	$1\frac{3}{8}$ "	$1\frac{1}{4}$ "

NOTE:

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

APPROVAL RECOMMENDED:

G. Palano 12-17-69
HYDRAULIC DESIGN ENGINEER DATE

APPROVED:

Shirley S. S. S. 12-17-69
ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

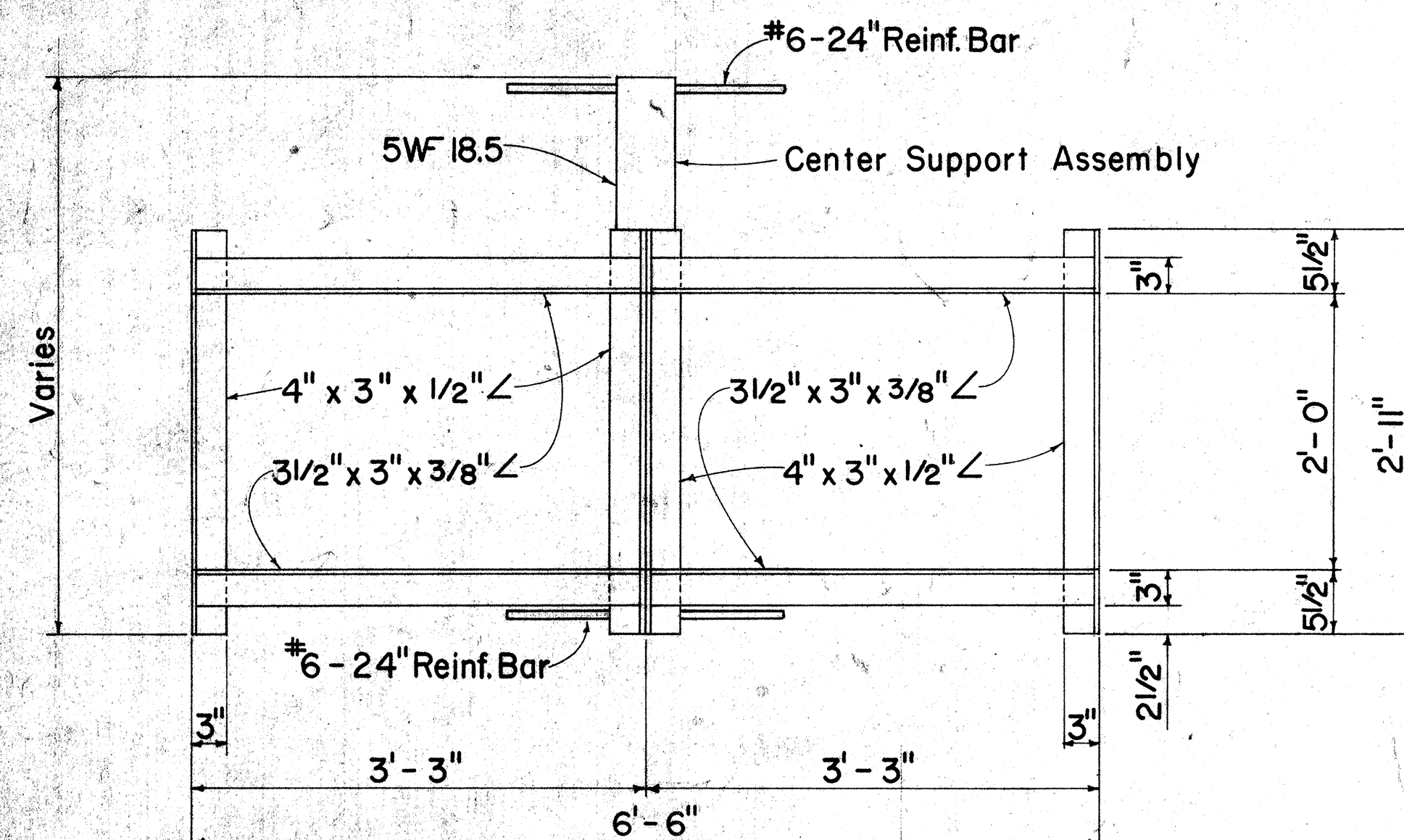
STANDARD DETAILS

TYPE A-9 AND A-12
FRAMES AND GRATES

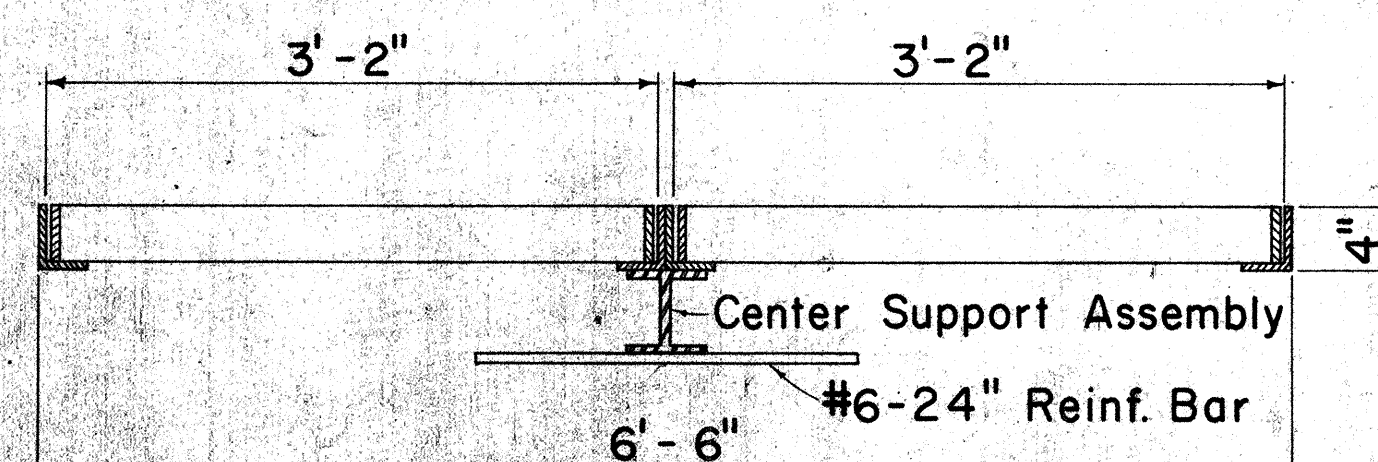
Scales: As Noted

Date: Aug. 1968

SHEET No. OF SHEETS DH 7



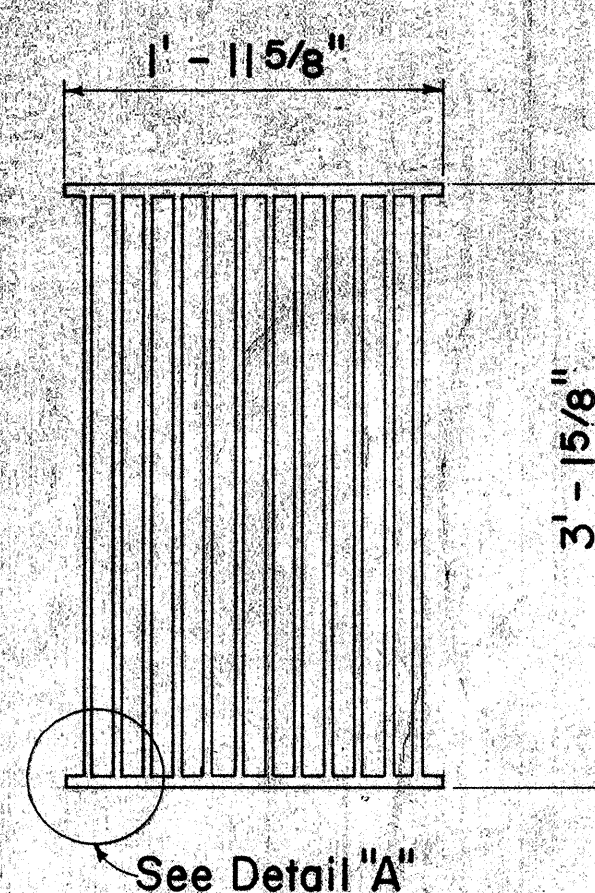
PLAN
(Two or More Grates)



LONGITUDINAL SECTION
(Thru Frame & Grate)

FRAME DETAILS

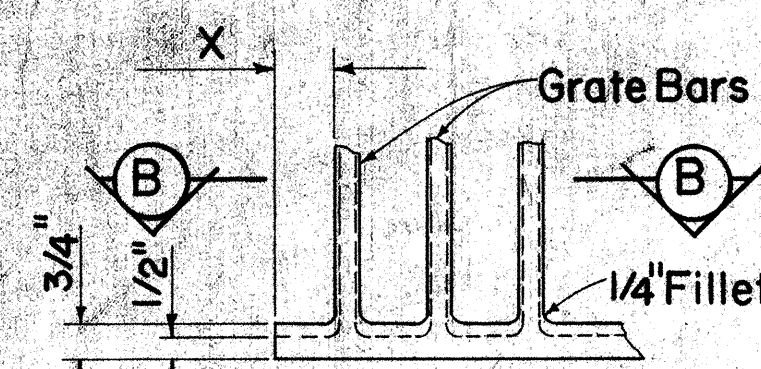
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PLAN

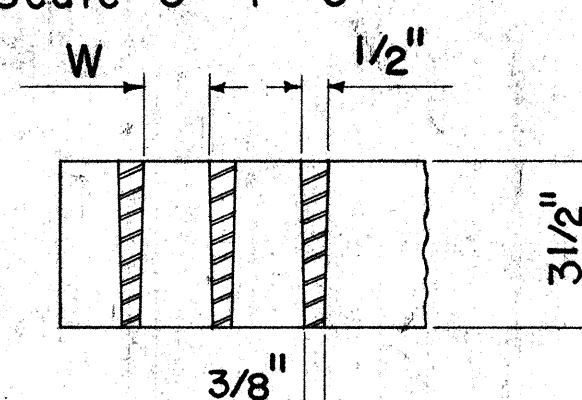
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ALTERNATIVE CAST MALLEABLE IRON OR CAST STEEL GRATE



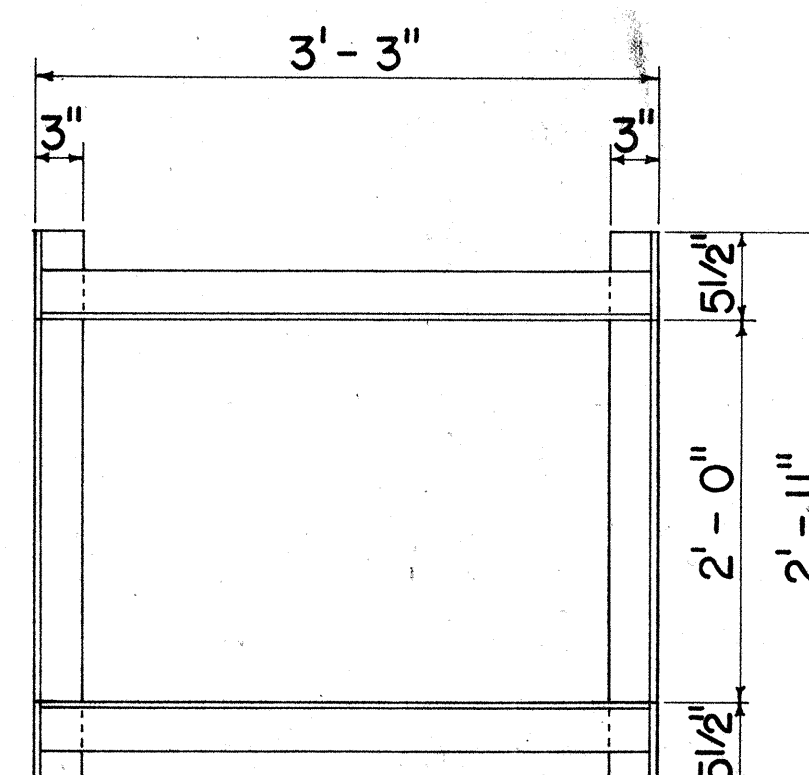
DETAIL "A"

Scale: 3" = 1' - 0"

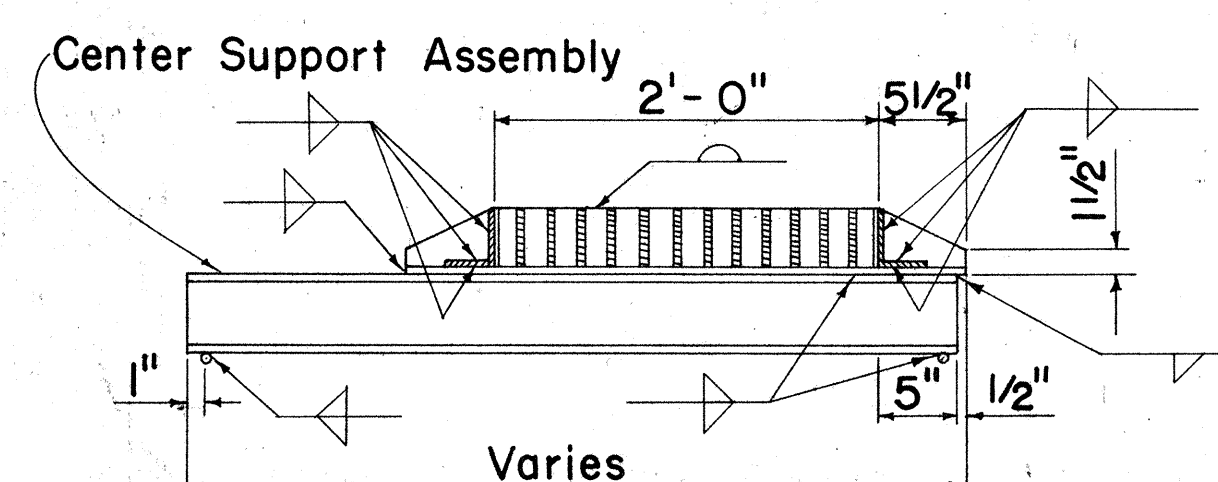


SECTION "B-B"

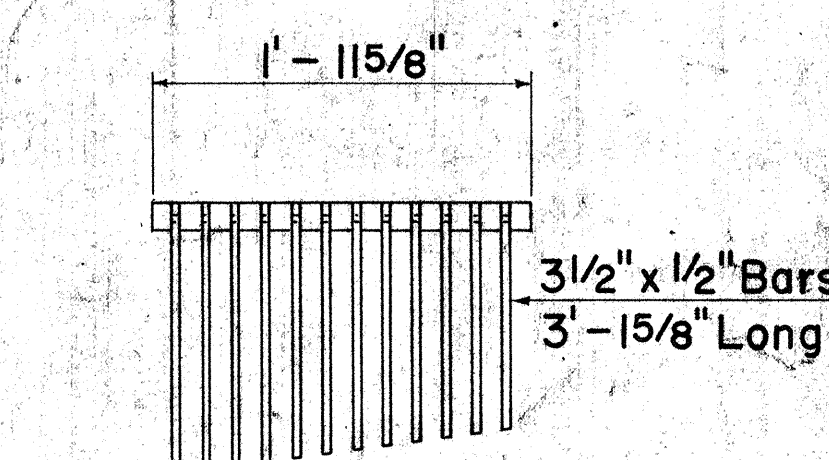
Scale: 3" = 1' - 0"



PLAN
(Single Grate)

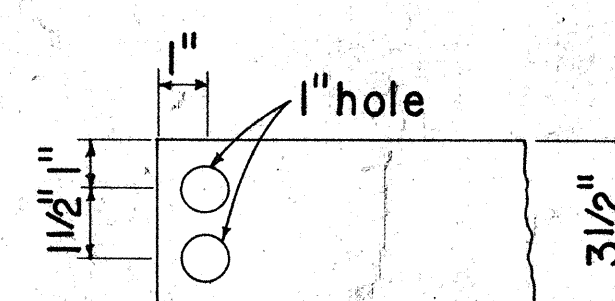


CROSS SECTION
(Thru Frame & Grate)



CAST END BLOCK

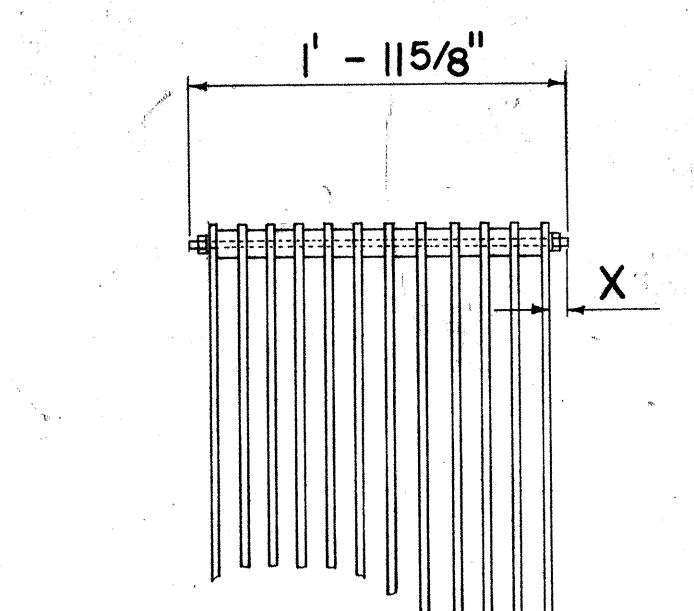
Scale: 1" = 1' - 0"



END OF BAR

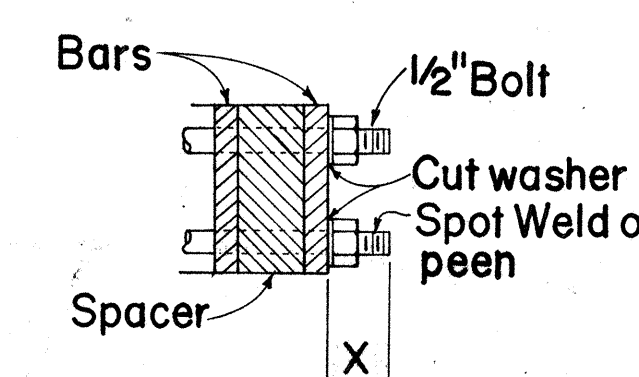
Scale: 3" = 1' - 0"

ALTERNATIVE CAST MALLEABLE IRON OR CAST STEEL END BLOCK GRATE



BOLTED END BLOCK

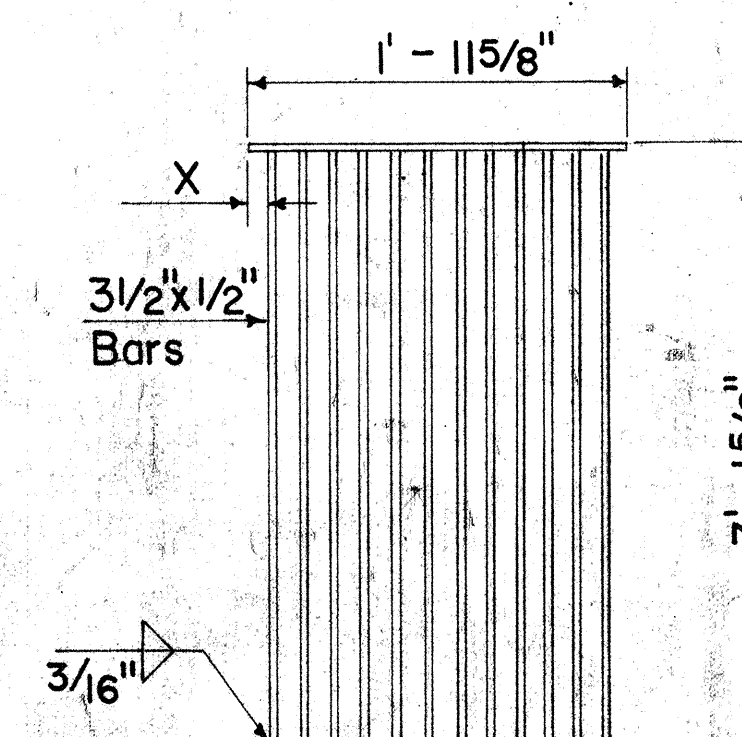
Scale: 1" = 1' - 0"



BOLTING DETAIL

Scale: 3" = 1' - 0"

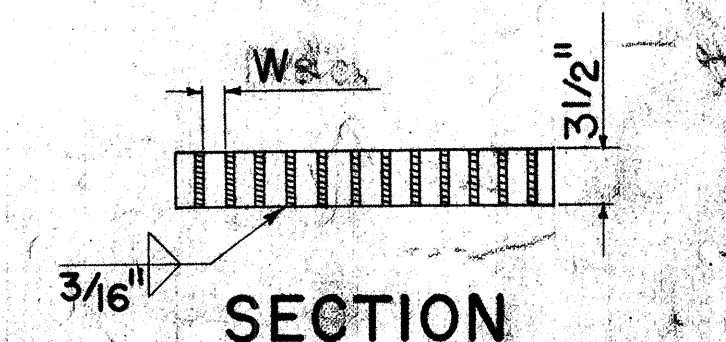
ALTERNATIVE BOLTED GRATE



PLAN

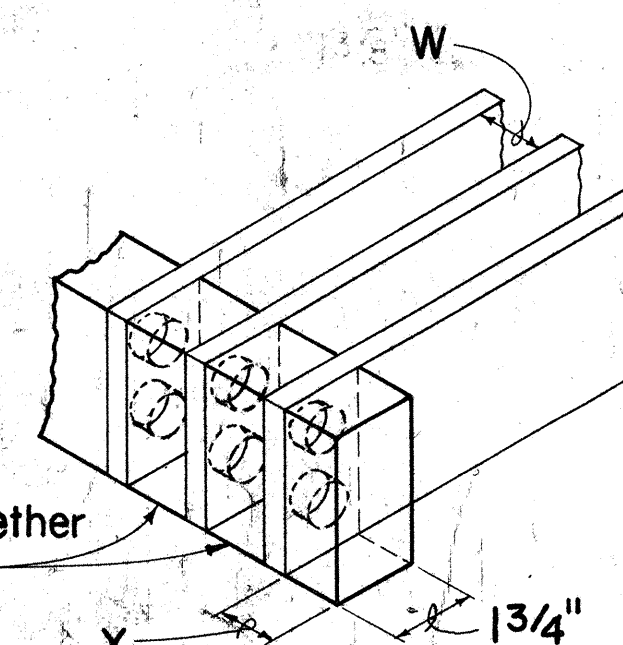
ALTERNATIVE WELDED GRATE

Scale: 1" = 1' - 0"



SECTION

Both ends held together
by solid casting

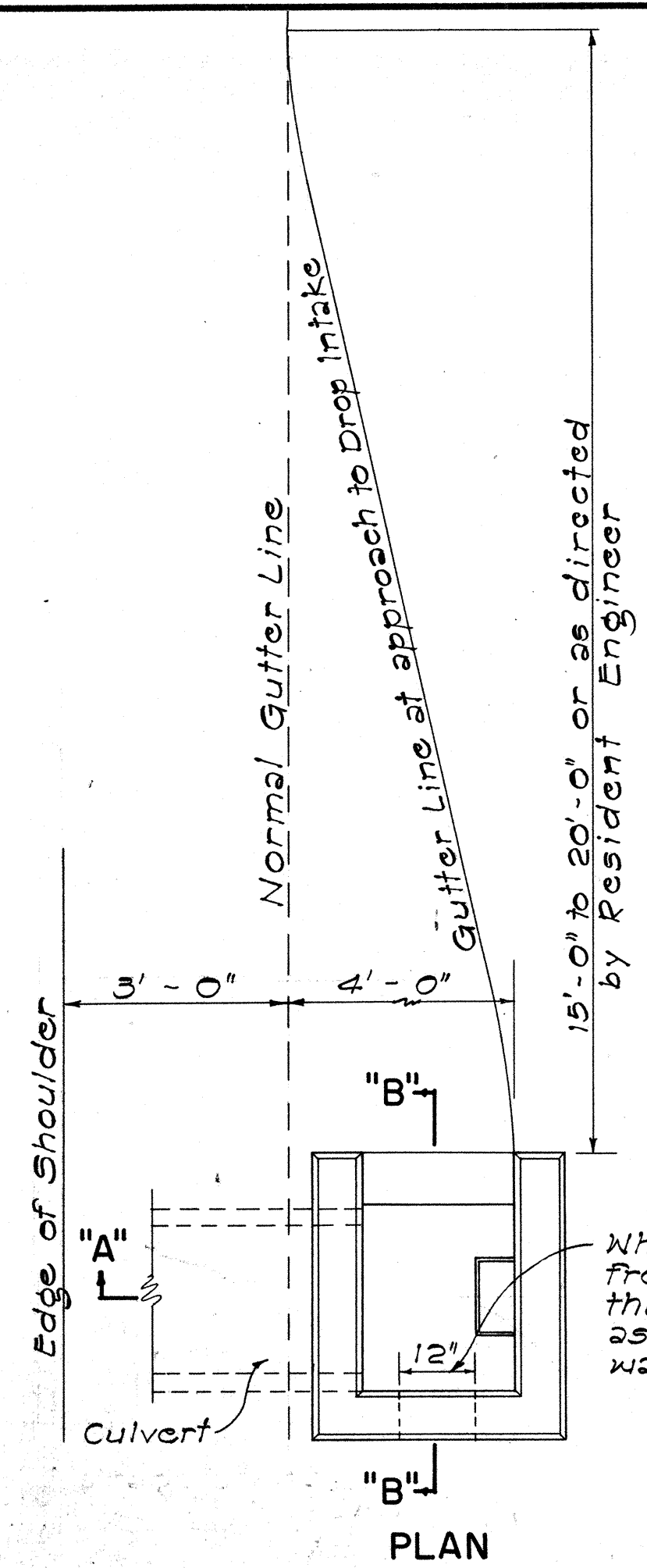


NO.	REVISION	APPROVED BY	DATE

Scale: 1" = 1' - 0"

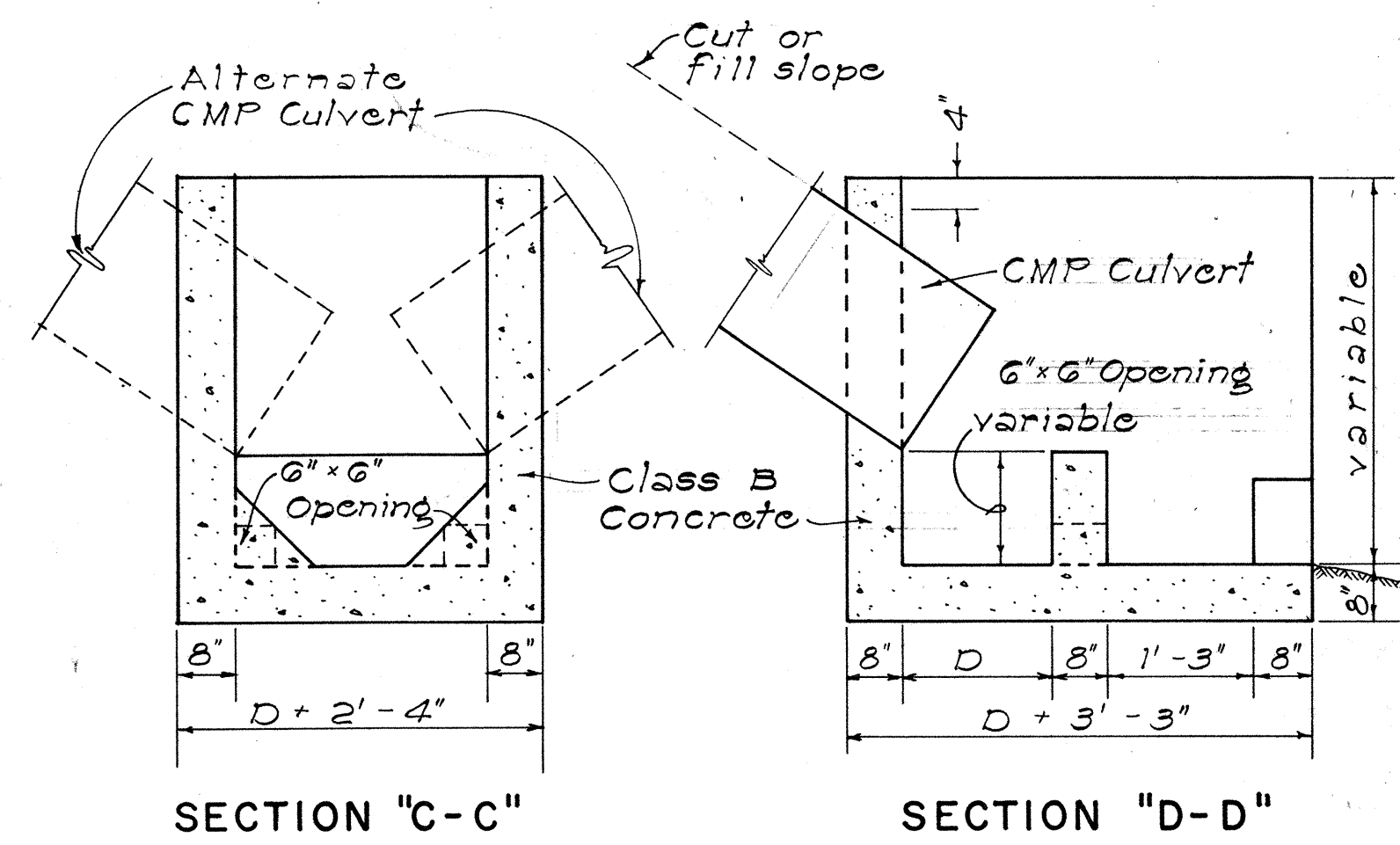
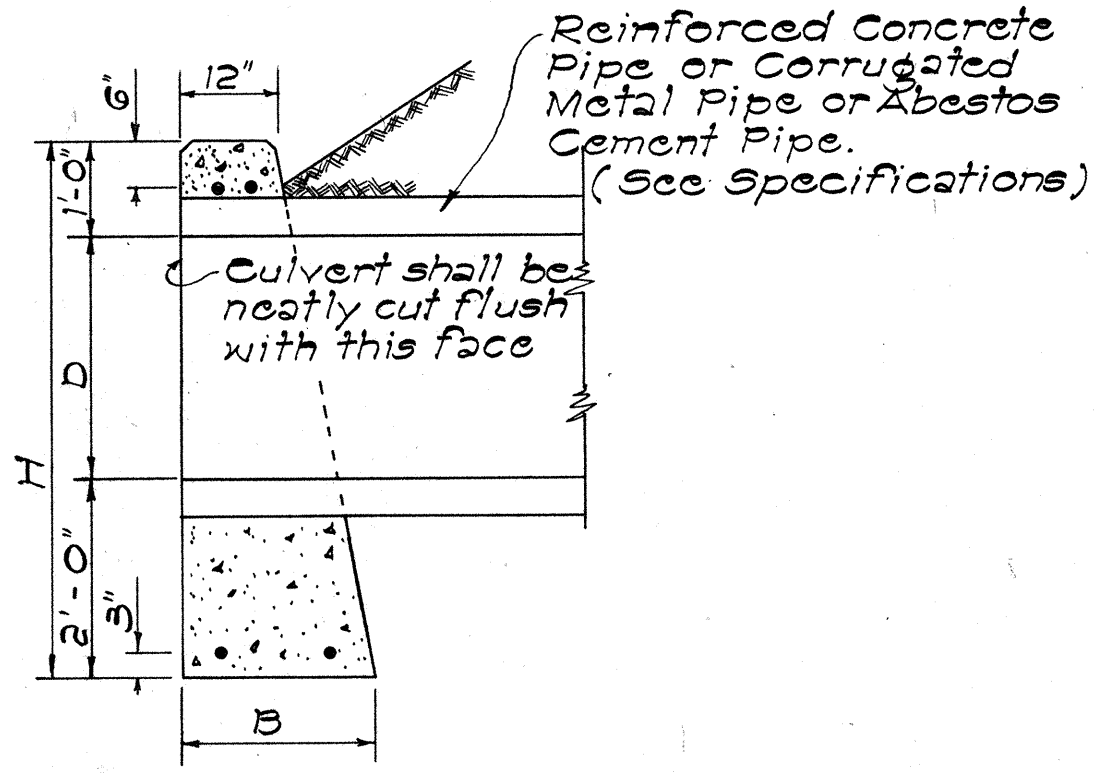
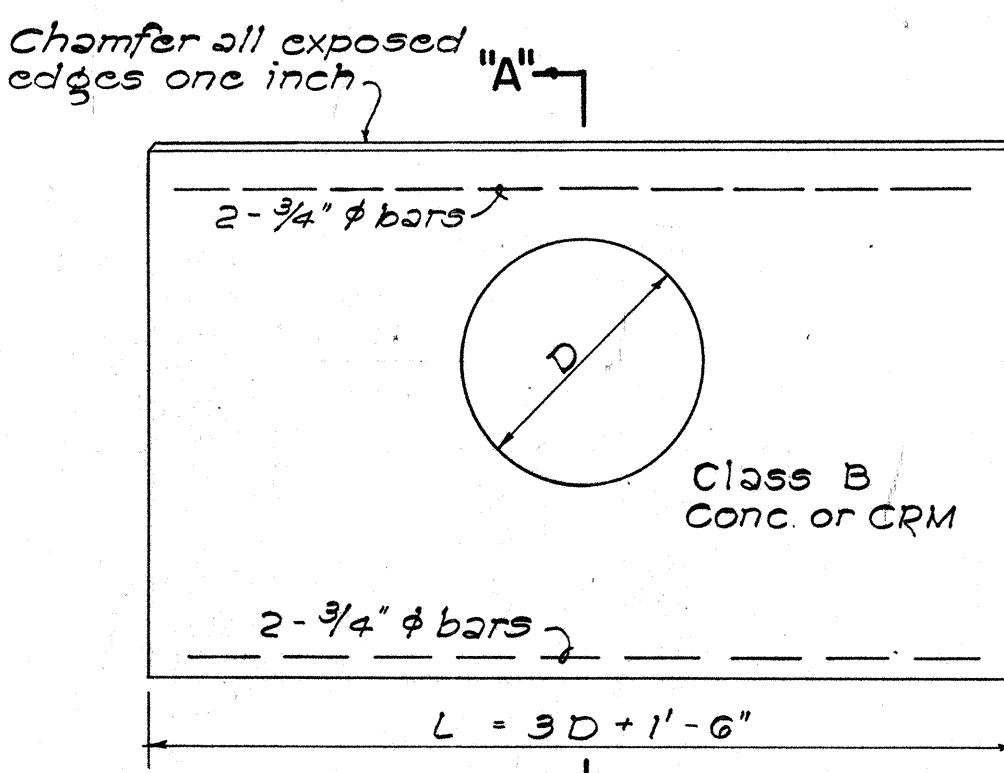
DESIGNED BY	DATE
DRAWN BY	7/68
CHECKED BY	7/68
NOTED BY	8/68
QUANTITIES BY	8/68
NO.	

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	50CD-01-70	1974	39	40



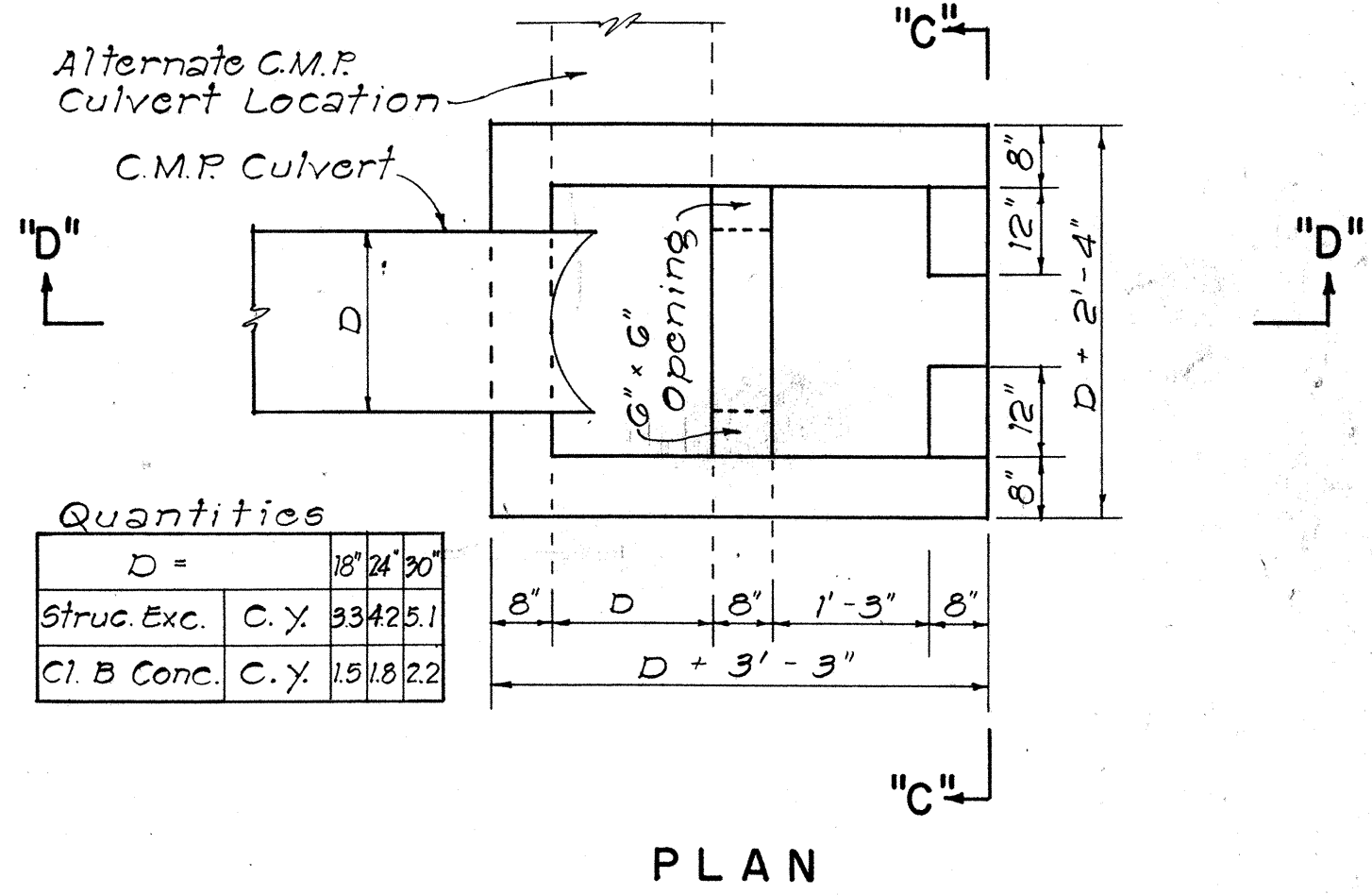
DATA - CONC. DROP INTAKE						Where Variable Equals
D'	D	L-D'+6"	S	Cu. Yds.		
23"	18"	2'-5"	8"	1.41		4'-6"
30"	24"	3'-0"	8"	1.72		5'-0"
37"	30"	3'-7"	9"	2.32		5'-6"
44"	36"	4'-2"	9"	2.73		6'-0"
51"	42"	4'-9"	10"	3.54		6'-6"
58"	48"	5'-4"	10"	4.01		7'-0"

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



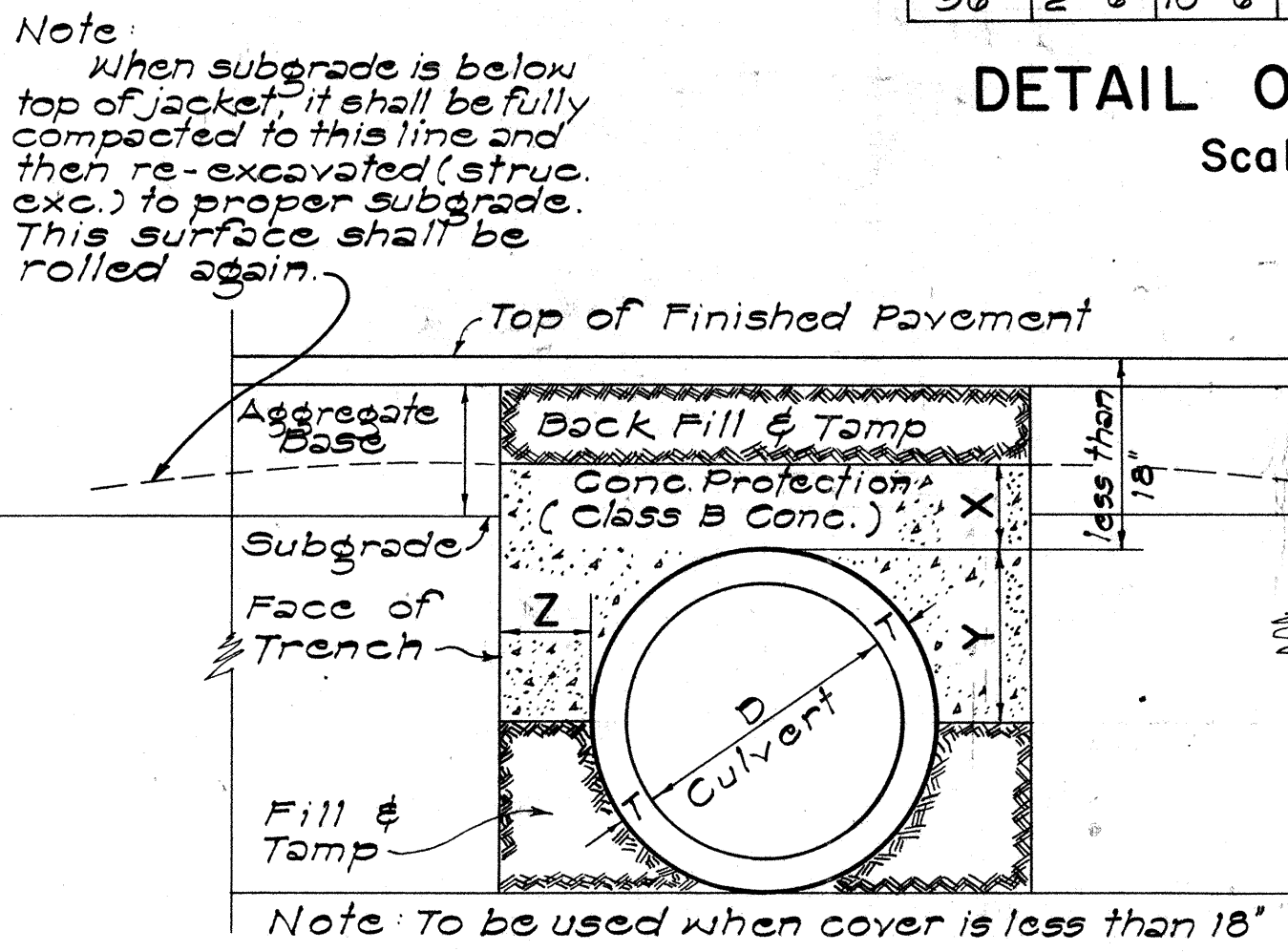
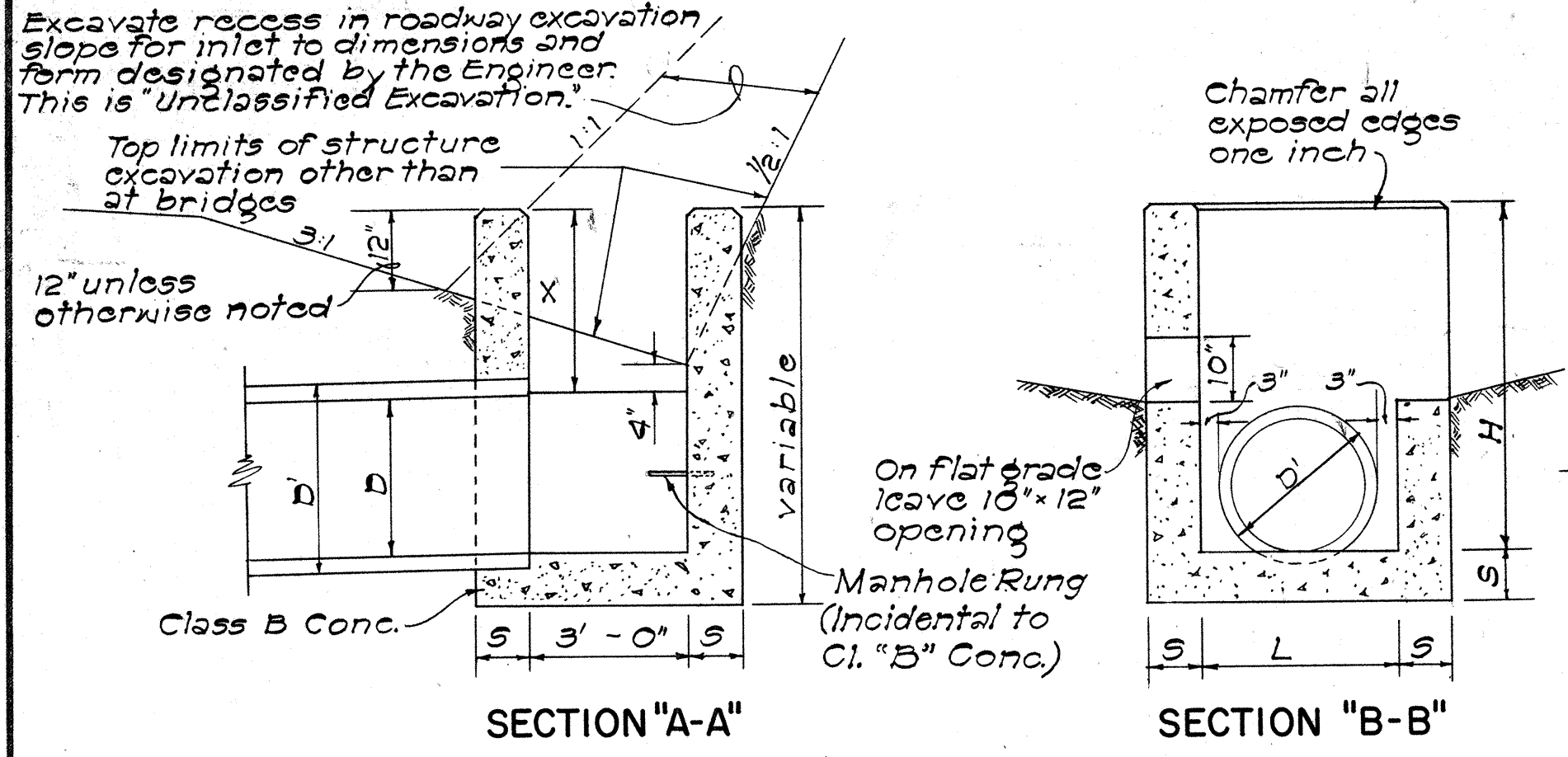
DATA FOR CONC. HEADWALL				CL. B CONC. FOR R.C.P.	CL. B CONC. FOR C.M.F.	Steel For One Headwall		
D	B	L	H	Cu. Yd.	Cu. Yd.	No. of Bars	Size	Length
18"	1'-6"	6'-0"	4'-6"	1.12	1.17	4	3/4"	5'-6"
24"	1'-6"	7'-6"	5'-0"	1.52	1.60	4	3/4"	7'-0"
30"	2'-0"	9'-0"	5'-6"	2.36	2.49	4	3/4"	8'-6"
36"	2'-0"	10'-6"	6'-0"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

DATA - MASONRY HEADWALL				CRM FOR R.C.P.	CRM FOR C.M.F.
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"	3.43	3.66



DETAILS OF CONC. DROP BOX AT OUTLET OF CULVERT PIPE

NOT TO SCALE



DETAIL OF CONCRETE DROP INTAKE

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

GENERAL NOTES

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

DATA FOR CONCRETE PROTECTION OVER CULVERTS		
X	Y	Z
6" for 18" D.	$\frac{D}{2} + T$	Z must be from pipe to face of trench
7" for 24" D.		Minimum = X
8" for 30" D.		Maximum pay quantity will be Z = 12"
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:

[Signature] 12-17-69
HYDRAULIC DESIGN ENGINEER DATE

APPROVED:

[Signature] 12-17-69
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

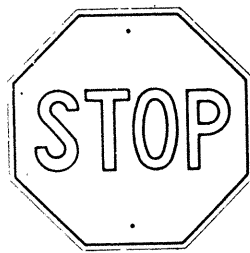
DROP INTAKE, HEADWALL & CONCRETE PROTECTION

Scale: As Noted Date: Aug. 1967

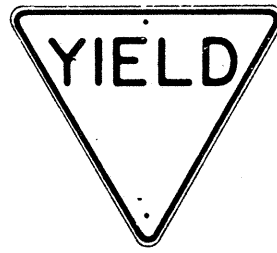
SHEET No. OF SHEETS DH.10

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

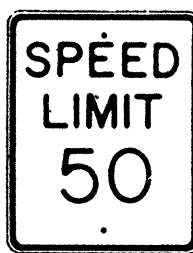
DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5000-01-10	1974	41	49



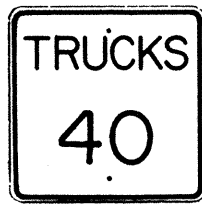
R1-1 30"x30"



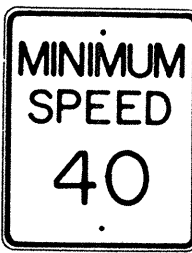
R1-2 36"x36"x36"
R1-2-E 48"x48"x48"
R1-2-I 60"x60"x60"



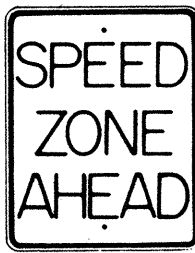
R2-1(50) 24"x30"
R2-1(50)-E 36"x48"
R2-1(50)-I 48"x60"



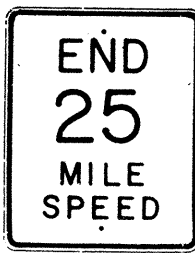
R2-2(40) 24"x24"
R2-2(40)-E 36"x36"
R2-2(40)-I 48"x48"



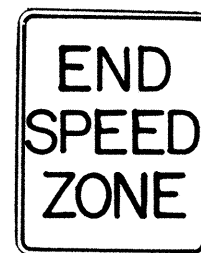
R2-4(40) 24"x30"
R2-4(40)-E 36"x48"
R2-4(40)-I 48"x60"



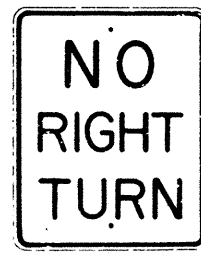
R2-5 24"x30"
R2-5-E 36"x48"
R2-5-I 48"x60"



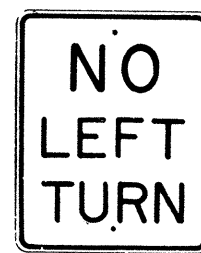
R2-6(25) 24"x30"
R2-6(25)-E 36"x48"
R2-6(25)-I 48"x60"



R2-7 24"x30"
R2-7-E 36"x48"
R2-7-I 48"x60"



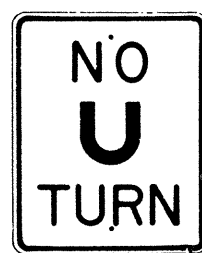
R3-1 24"x30"
R3-1-E 36"x48"



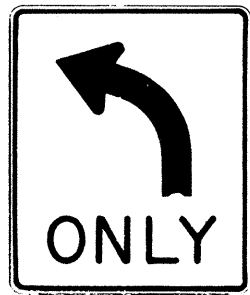
R3-2 24"x30"
R3-2-E 36"x48"



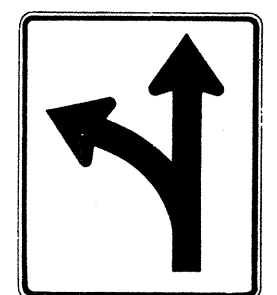
R3-3 24"x24"



R3-4 24"x30"
R3-4-E 36"x48"
R3-4-I 48"x60"



R3-5(L) 30"x36"



R3-6(L) 30"x36"



R3-7(R) 30"x30"



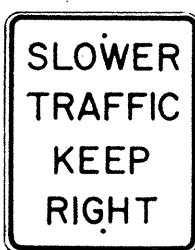
R3-8(L) 30"x30"



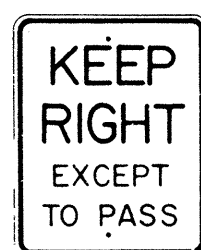
R4-1 24"x30"



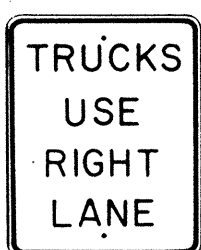
R4-2 24"x30"



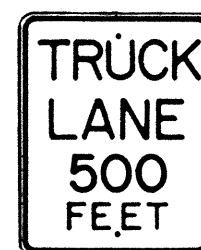
R4-3 24"x30"
R4-3-E 36"x48"
R4-3-I 48"x60"



R4-4 24"x30"
R4-4-E 36"x48"
R4-4-I 48"x60"



R4-5 24"x30"
R4-5-E 36"x48"



R4-6 24"x30"
R4-6-E 36"x48"



R4-7(R) 24"x30"
R4-7(R)-E 36"x48"



R5-1 24"x24"



R6-1(R) 36"x12"



R6-2(R) 18"x24"



R6-3 24"x30"



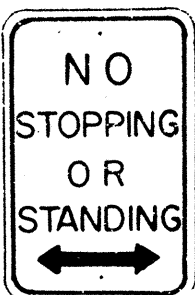
R6-4 24"x30"



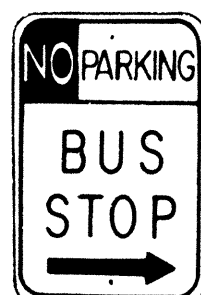
R6-5 24"x30"



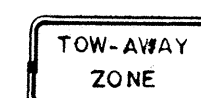
R7-1 12"x18"



R7-4 12"x18"
R7-4-E 24"x30"



R7-107(R) 12"x18"



R7-201 12"x6"



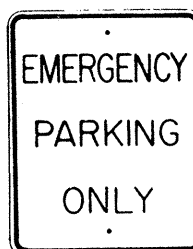
R8-1 24"x30"
R8-1-E 36"x48"
R8-1-I 48"x60"



R8-2 24"x30"
R8-2-E 36"x48"



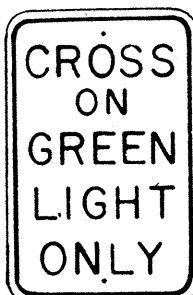
R8-3 24"x30"
R8-3-E 36"x48"



R8-4 24"x30"
R8-4-E 36"x48"
R8-4-I 48"x36"



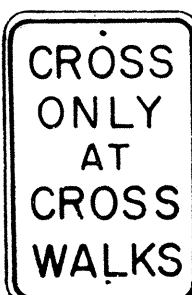
R9-1 18"x24"



R9-2 12"x18"



R9-3 12"x18"



R9-4 12"x18"



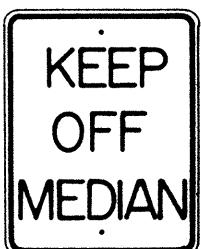
R9-5 12"x18"



R9-6 9"x12"



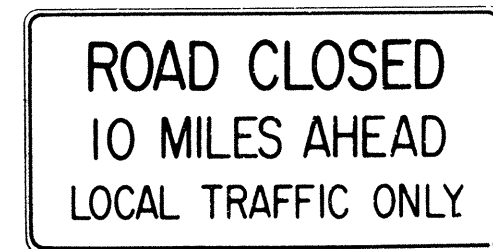
R9-7 9"x12"



R10-1 24"x30"
R10-1-E 36"x48"
R10-1-I 48"x60"



R10-2 48"x30"



R10-3(10) 60"x30"



R10-4(10) 18"x24"

NOTE:

- The shape, color, dimensions, symbols, wording, lettering and reflectorization of all signs shall be in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways," dated June 1961 and the BPR manual "Standard Highway Signs," dated September 1961 unless otherwise specified.
- All regulatory signs shall be reflectorized unless otherwise specified.
- All regulatory signs shall have $\frac{3}{8}$ " bolt holes drilled at appropriate locations unless otherwise noted.
- The suffix "E" denotes Expressway signs and "I" denotes Interstate signs.
- For R2 signs, number in () indicates speed and shall be as shown on the plans.
- (R) or (L) indicates right or left and shall be as shown on the plans.
- For R10-4 sign, number in () indicates weight and shall be as shown on the plan.

APPROVAL RECOMMENDED:
TRAFFIC ENGINEER

12/29/69
DATE

APPROVED:
ASSISTANT CHIEF, ENGINEERING

12-30-69
DATE

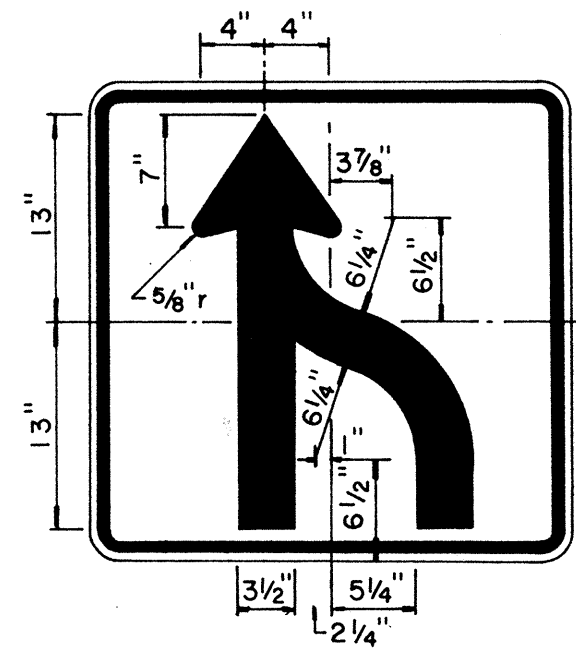
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
STANDARD DETAILS REGULATORY SIGNS
NOT TO SCALE

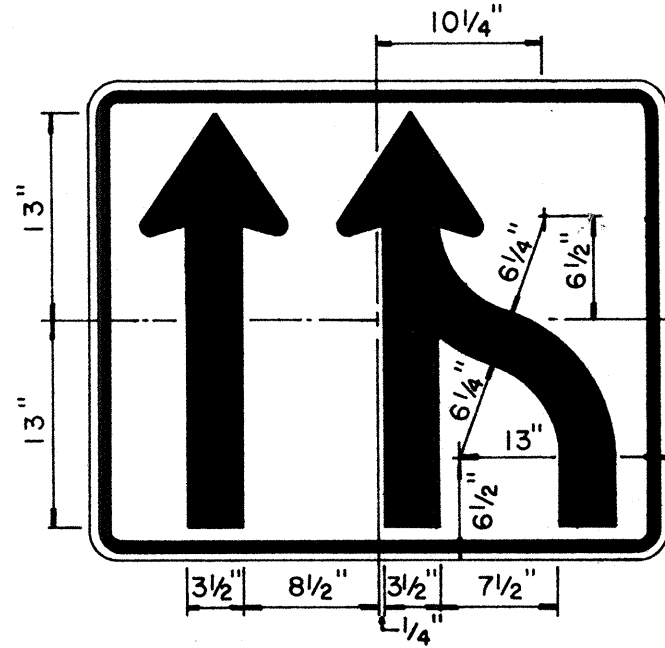
SHEET No. OF SHEETS DT 101

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

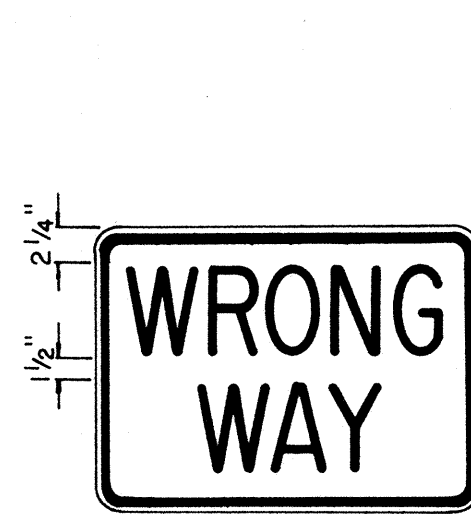
DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	50CD-01-10	1974	42	40



R3-9 30"x 30"

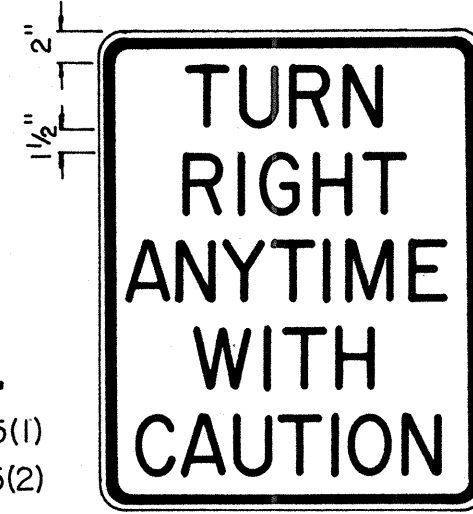


R3-10 36"x 30"

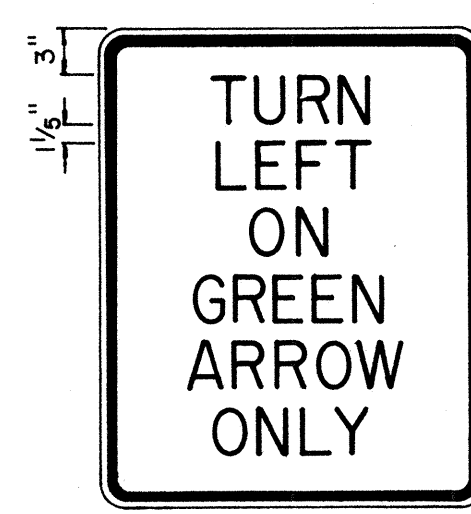


R5-5(1) 24" x 18"
R5-5(2) 36" x 24"

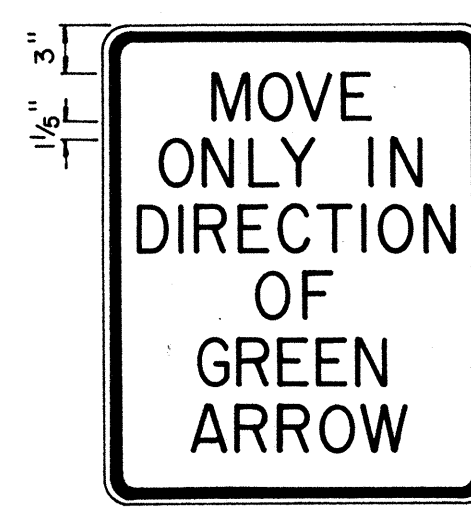
NOTE:
White legend and border
on Red background.



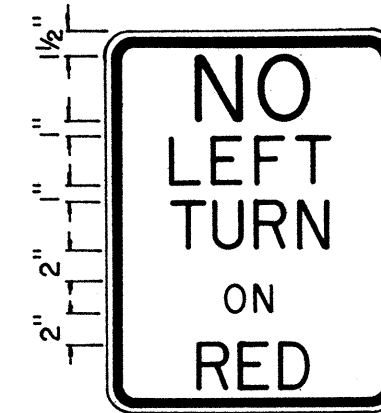
R15-1 24" x 30"



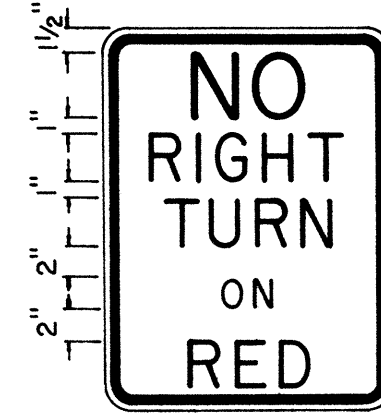
R16-1 24" x 30"



R16-2 24" x 30"



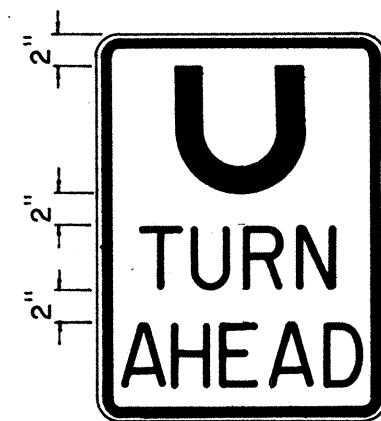
R17-1 18" x 24"



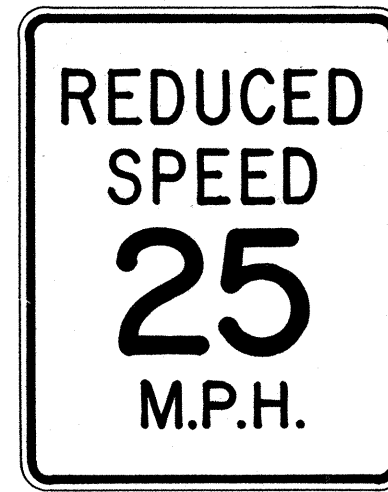
R17-2 18" x 24"



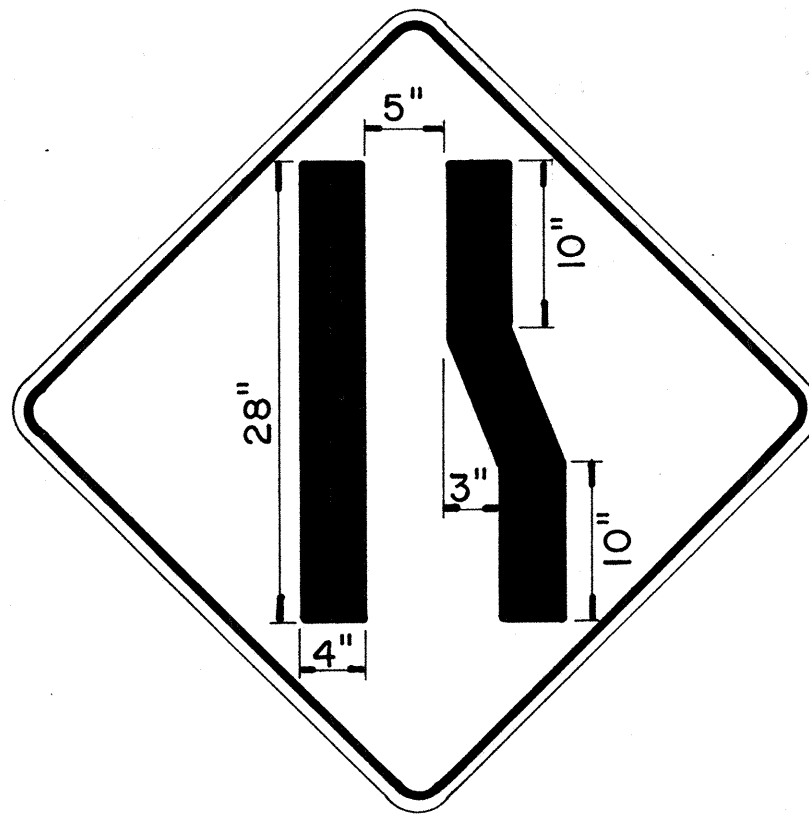
R18-1 36" x 30"



R19-1 18" x 24"



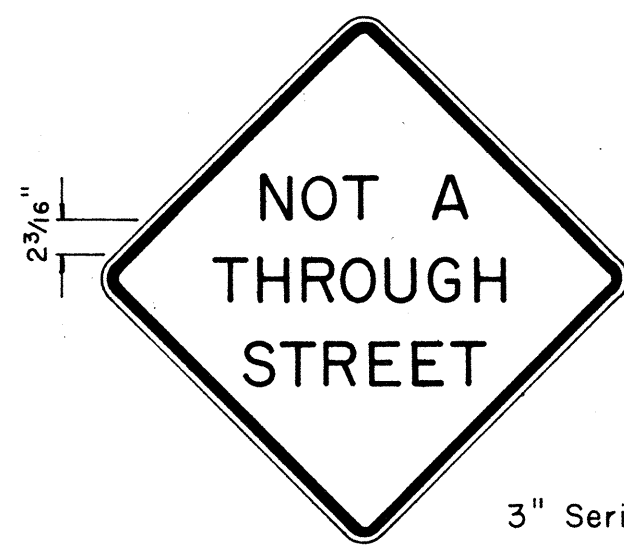
R2-5A(25) 24" x 30"



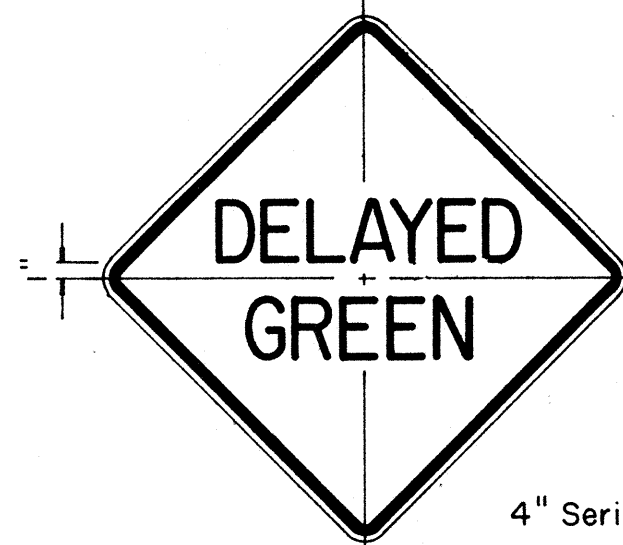
W4-2A(R) 36" x 36"



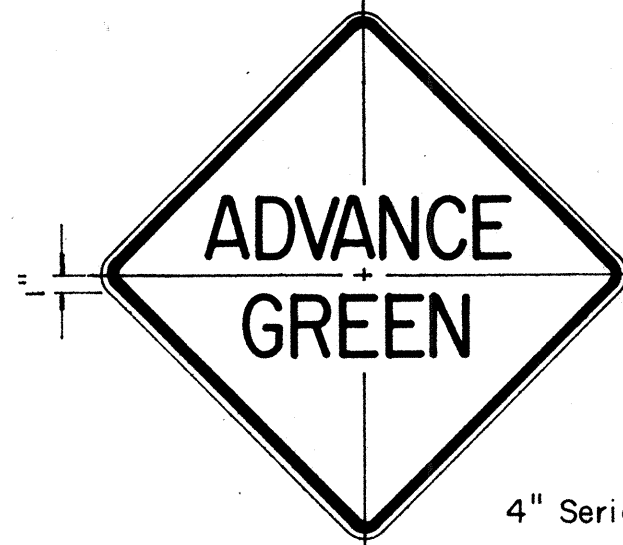
W4-2B(R) 36" x 36"



W13-4 24" x 24"



W15-1 24" x 24"



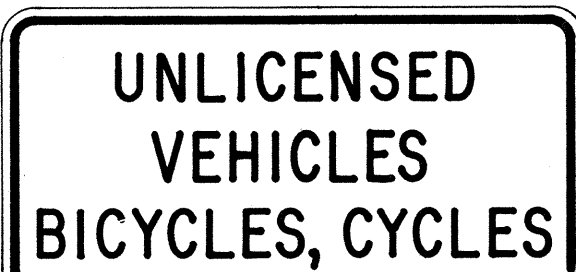
W15-2 24" x 24"



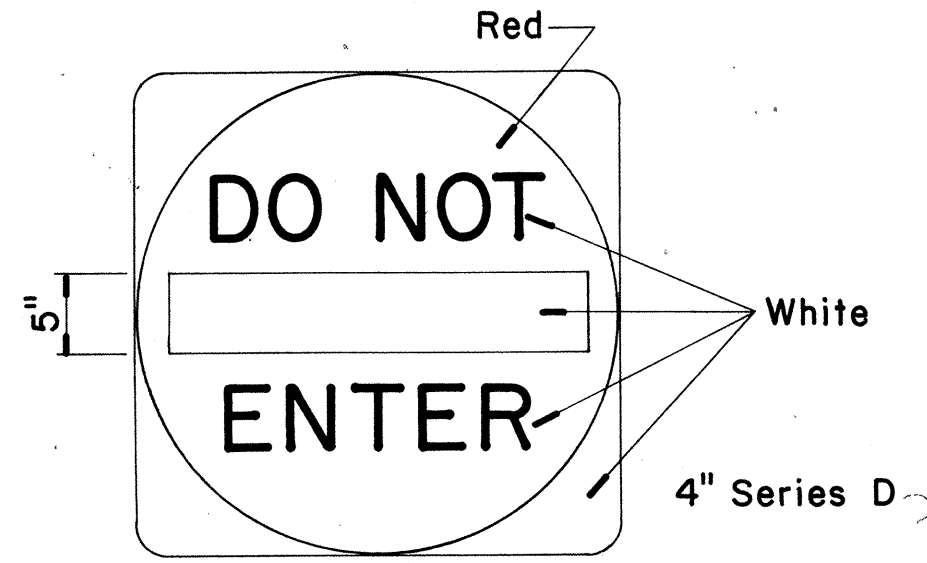
W4-2C(L) 36" x 36"



W13-4A 30" x 30"



SUPPLEMENTARY PLATE
R18-1A 17" x 36"



R5-1A 30" x 30"

- NOTE:
- The shape, color, plate details, lettering and reflectorization of Regulatory signs (Prefix R) and Warning signs (Prefix W) shall be in accordance with the "Manual on Uniform Traffic Control Devices for Streets and Highways," dated June 1961 and the BPR manual "Standard Highway Signs," dated September 1961 unless otherwise specified.
 - All regulatory and warning signs shall be reflectorized unless otherwise specified.
 - All regulatory and warning signs shall have 3/8" bolt holes drilled at appropriate locations unless otherwise specified.
 - For R2-5A sign, number in () indicates speed and shall be as shown on the plans.
 - (R) or (L) indicates Right or Left and shall be as shown on the plans.

APPROVAL RECOMMENDED:
Etsuki Tanaka 12/29/69
TRAFFIC ENGINEER DATE

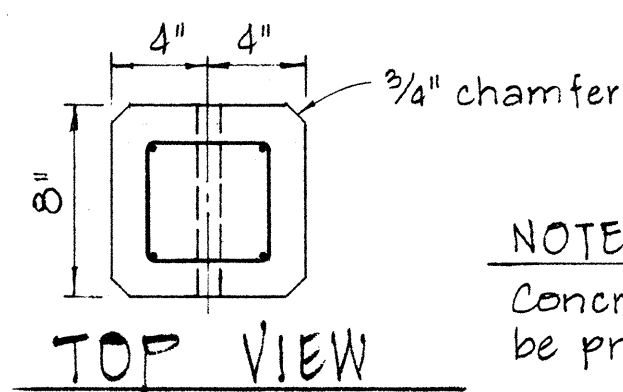
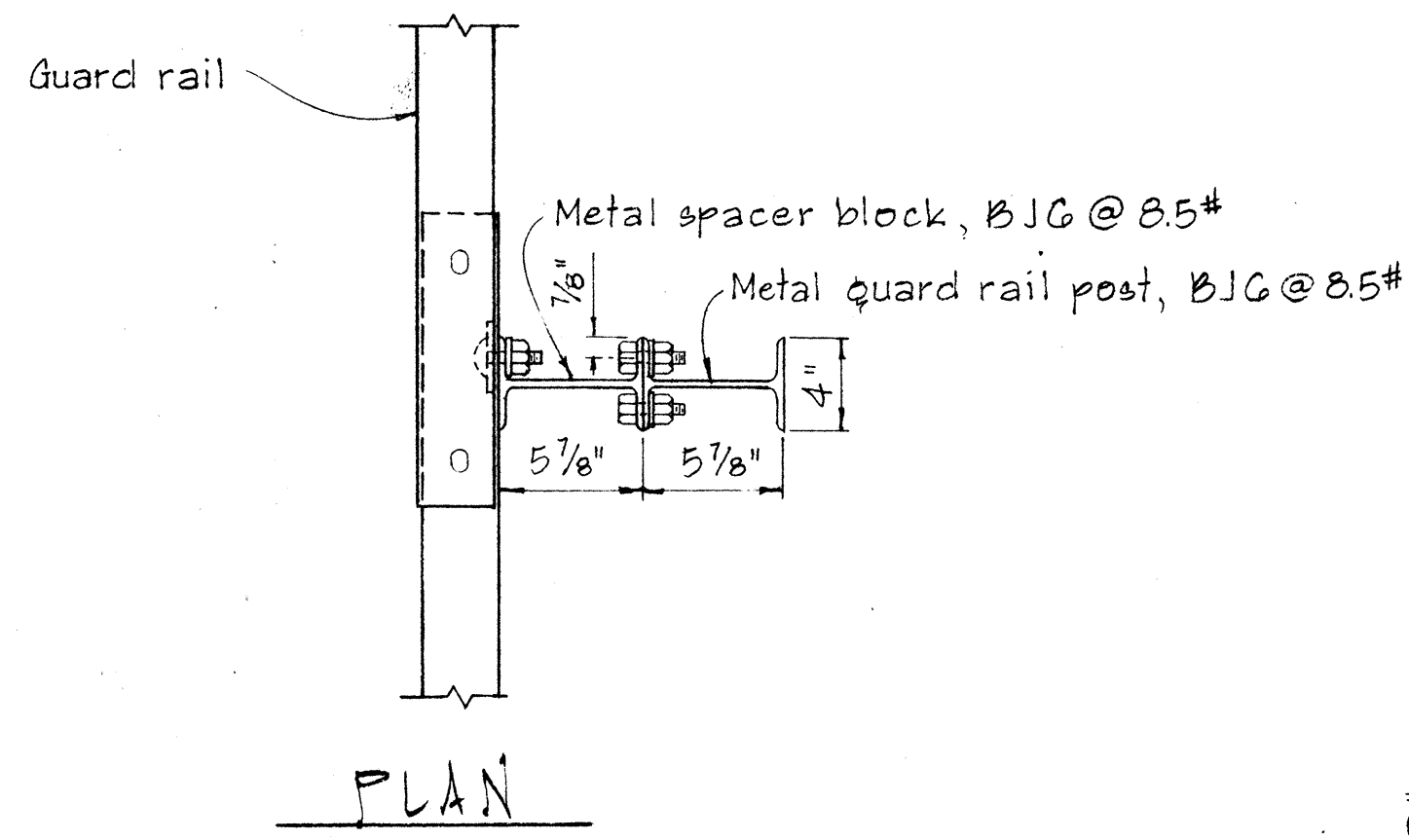
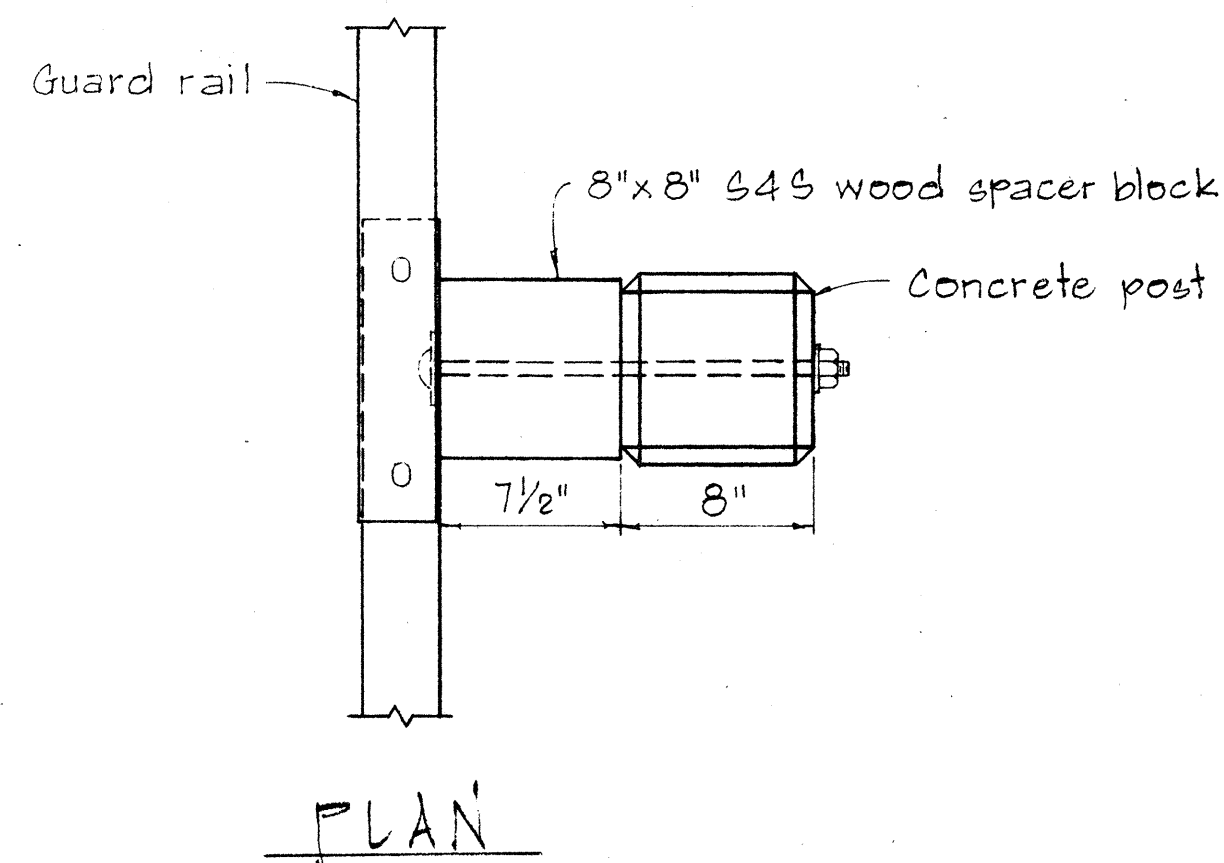
APPROVED:
William B. Sefton 12-30-69
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Added R2-5A(25), R5-1A, W4-2A(R), W4-2B(R), W4-2C(L), W13-4A, R18-1A, Notes 4 & 5	H.C.	5/21/71

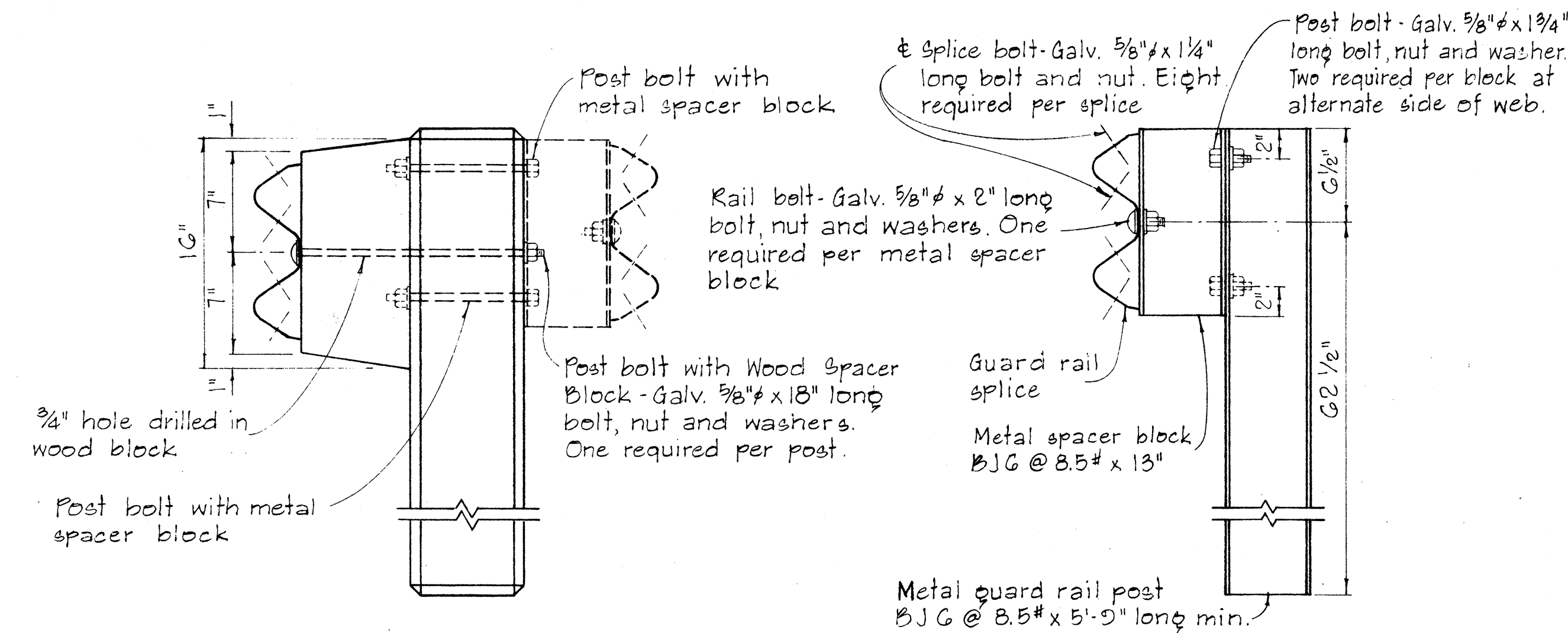
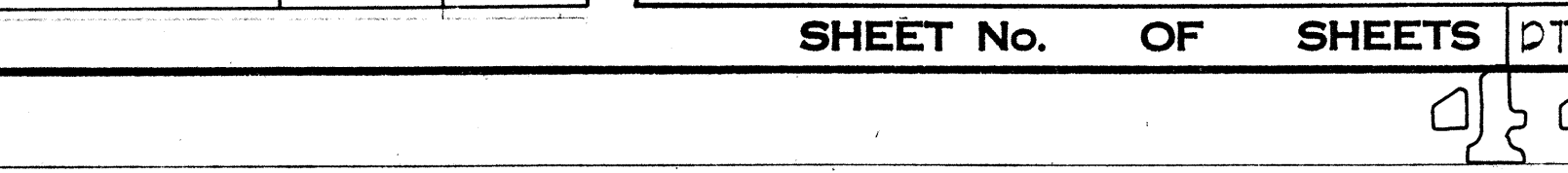
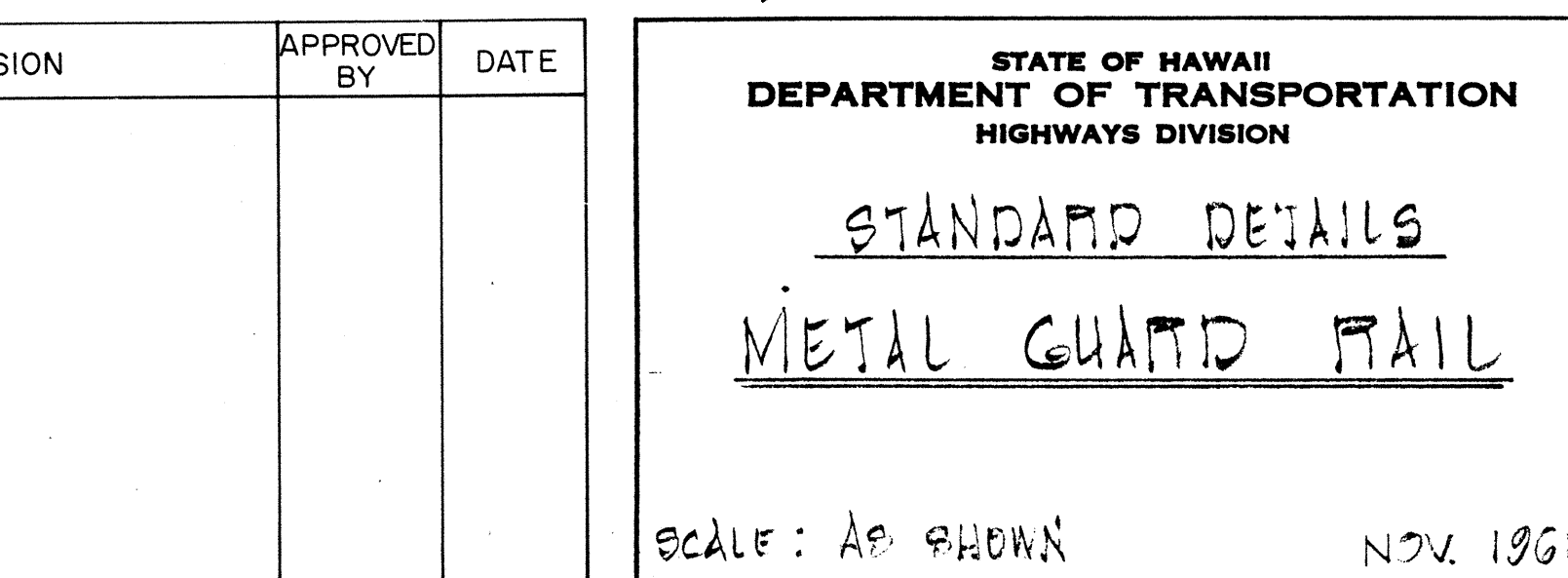
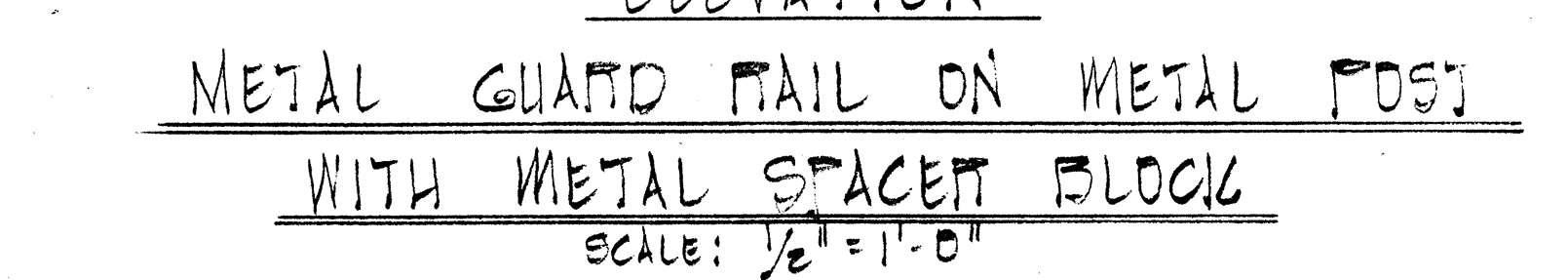
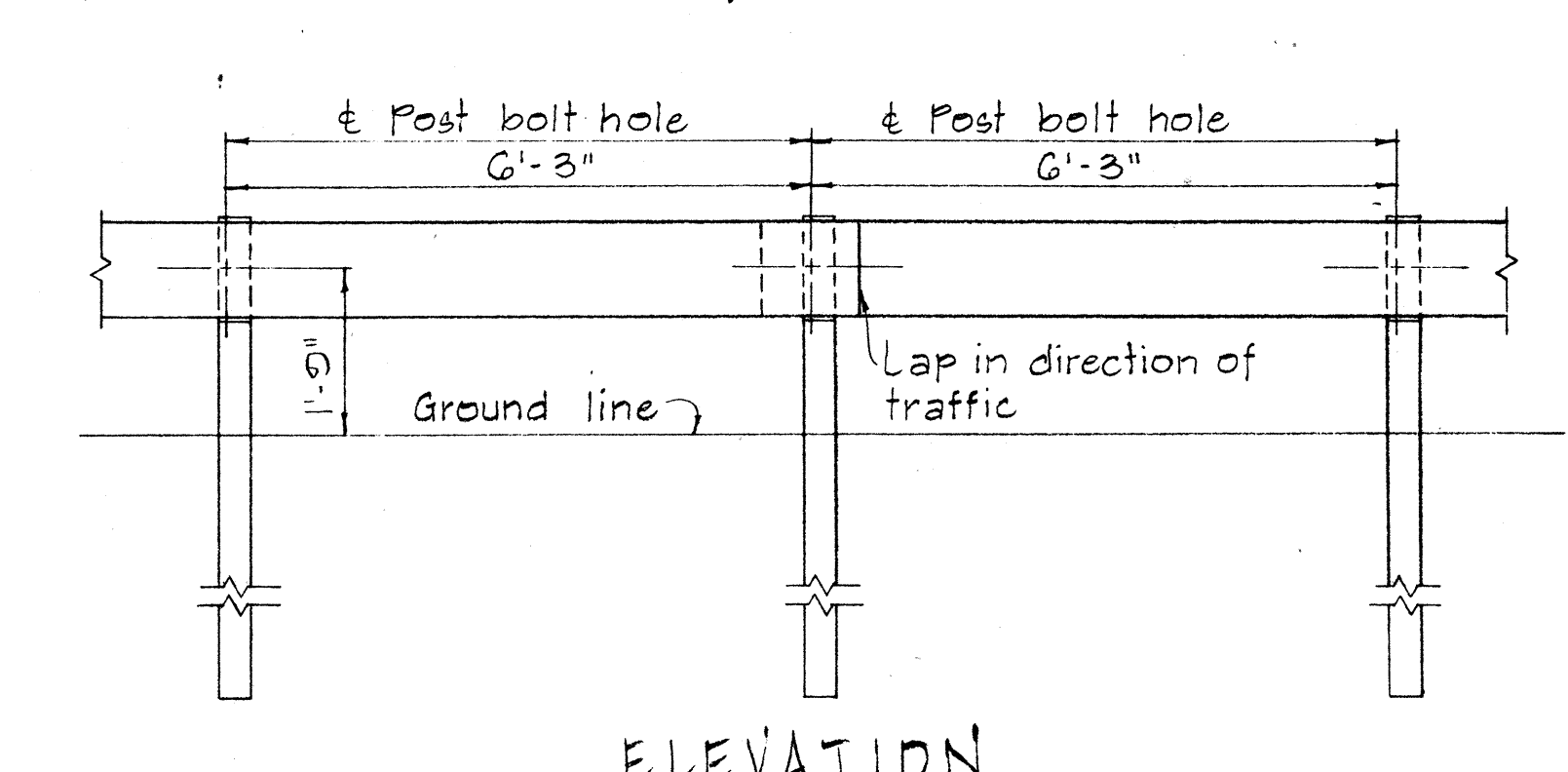
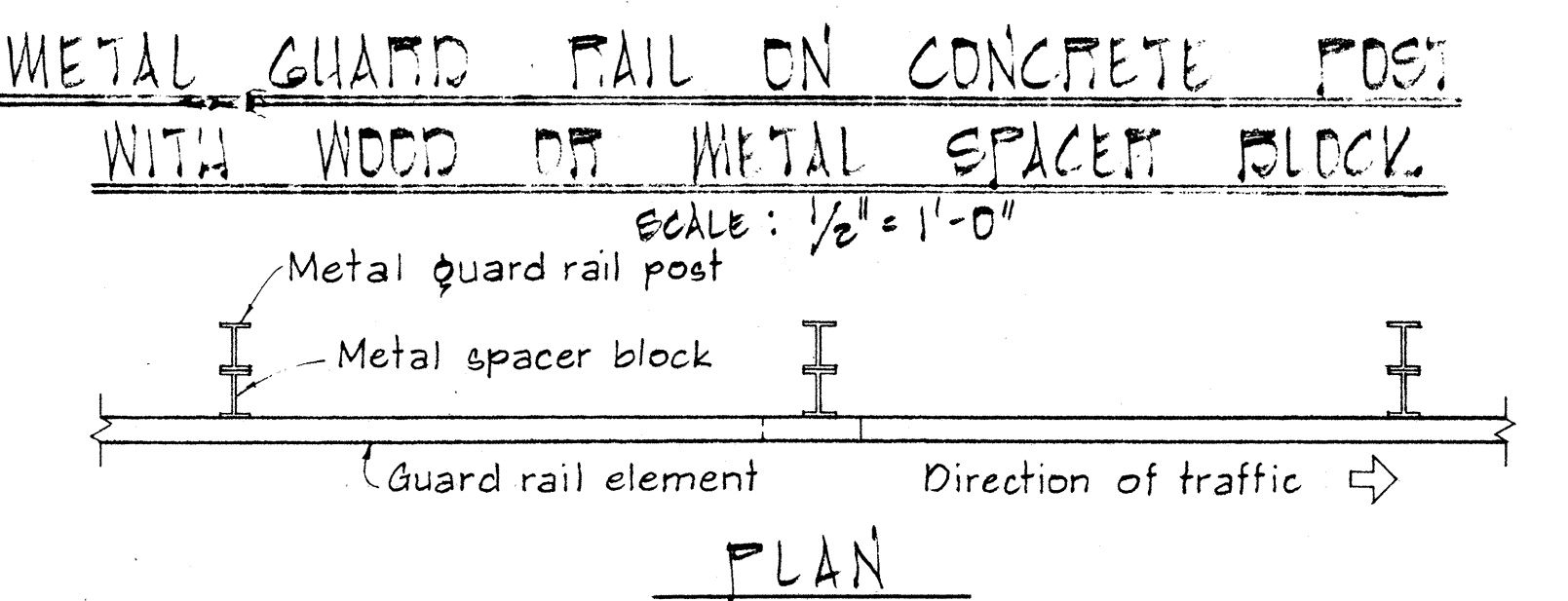
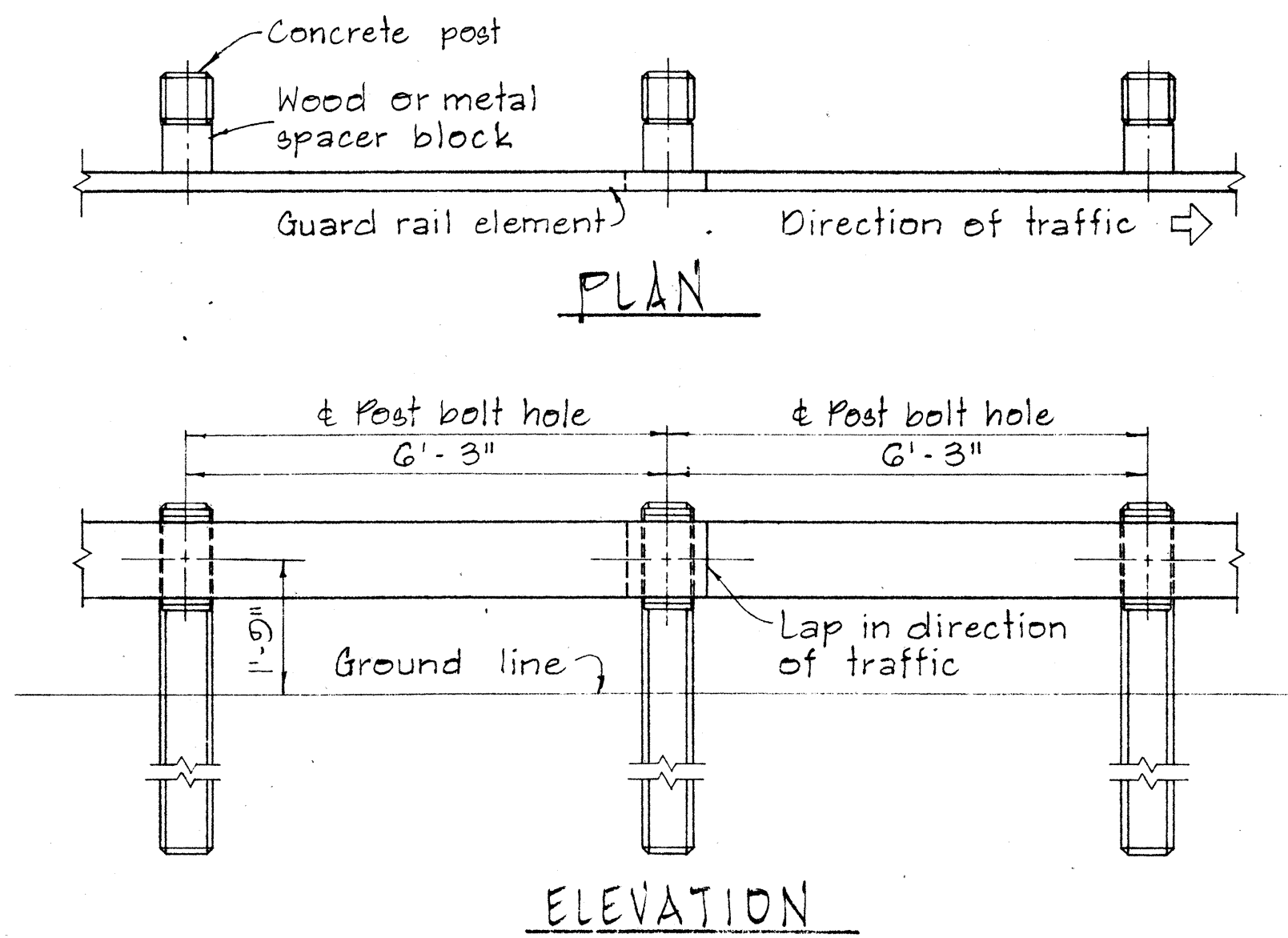
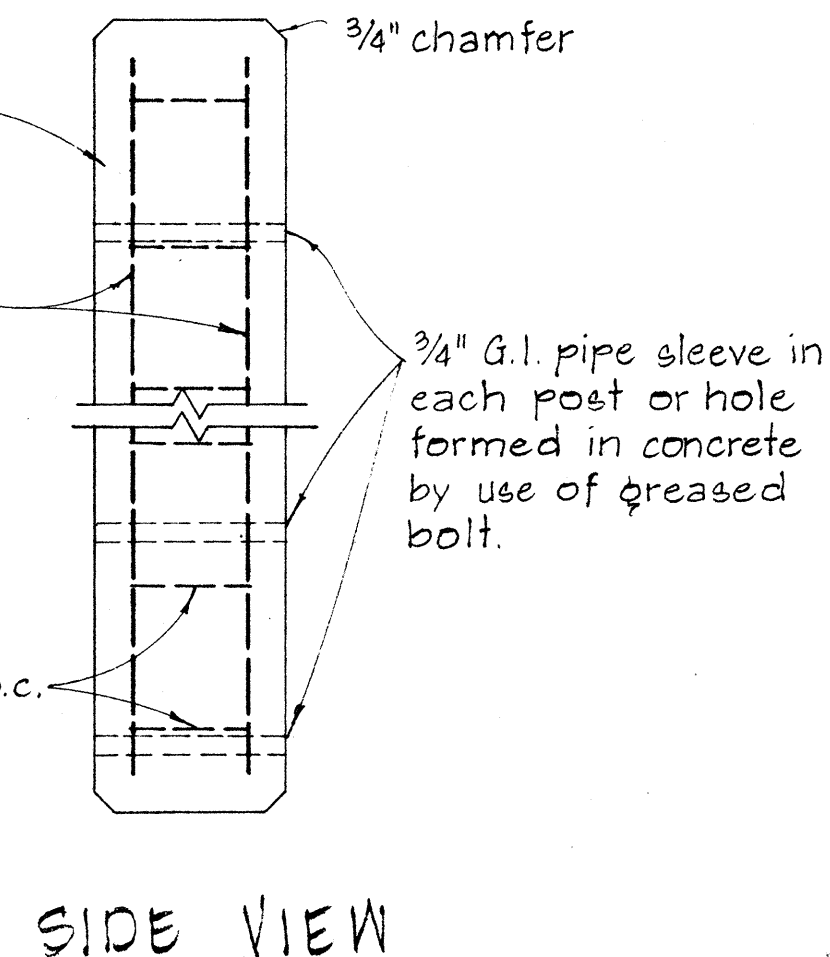
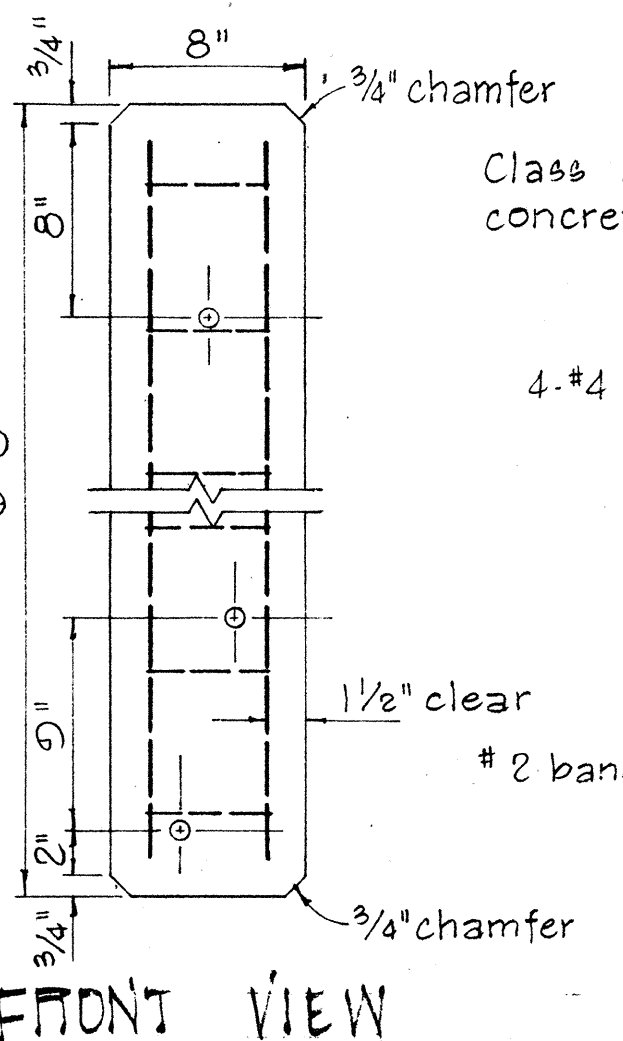
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION STANDARD DETAILS MISCELLANEOUS REGULATORY & WARNING SIGNS Scale: 1" = 1' - 0"	
---	--

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

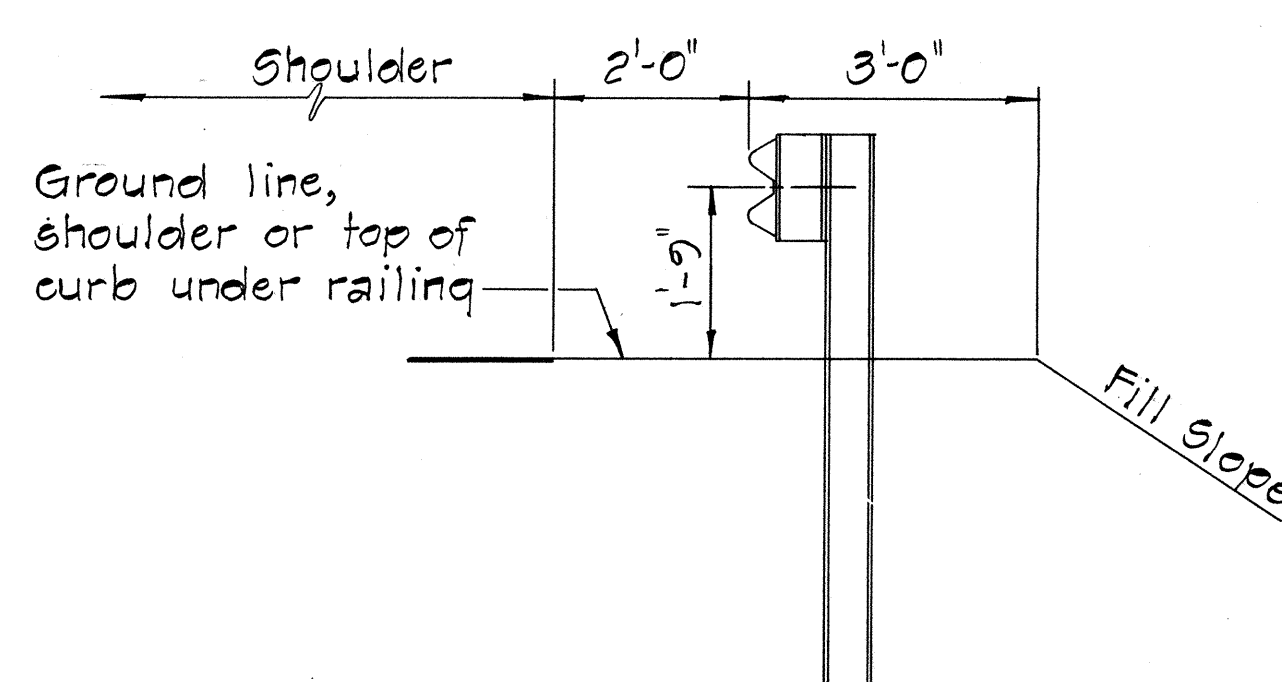
DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5000-01-10	1974	44	49



NOTE:
Concrete post shall be precast



SINGLE METAL GUARD RAIL ON METAL POST
WITH METAL SPACER BLOCK
SCALE: 1 1/2" = 1'-0"



TYPICAL METAL GUARD
RAIL DETAIL
SCALE: 1/2" = 1'-0"

APPROVAL RECOMMENDED:
Eugene Tanaka
TRAFFIC ENGINEER
12/29/62
DATE

APPROVED:
Arthur J. Delaney
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 SHOWN
NOV. 1968

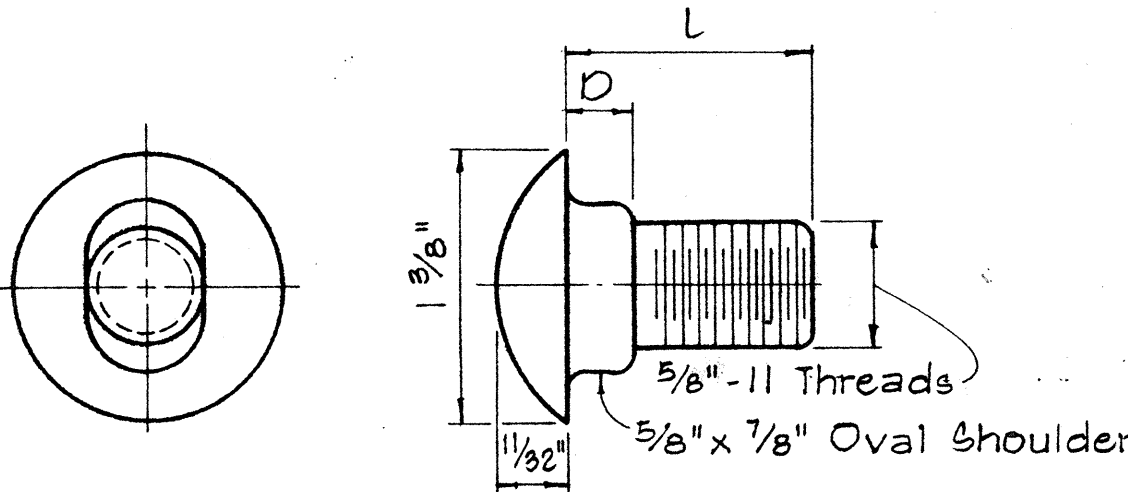
DATE	
SURVEY PLOTTED BY	
DRIVEN BY	
DESIGNED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
NO.	

SINGLE METAL GUARD RAIL ON PRECAST
CONCRETE POST WITH WOOD OR METAL SPACER BLOCK
SCALE: 1 1/2" = 1'-0"

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5000-01-70	1974	45	49

BOLT DIMENSIONS		
TYPE A BOLT		
	D	L
Splice Bolt	5/16"	1 1/4"
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"

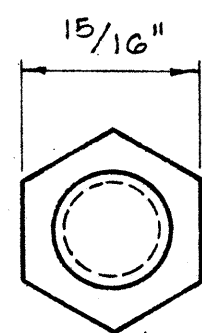
BOLT DIMENSIONS	
TYPE B BOLT	
	L
Post Bolt for Conc. Post w/ Metal Blocks	9 1/2"
Post Bolt for Metal Post w/ Metal Block	1 3/4"



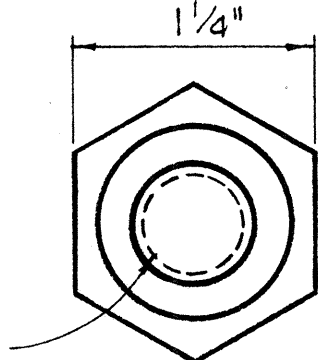
TYPE A BOLT

SPlice RAIL AND POST BOLTS

Scale: Full Size

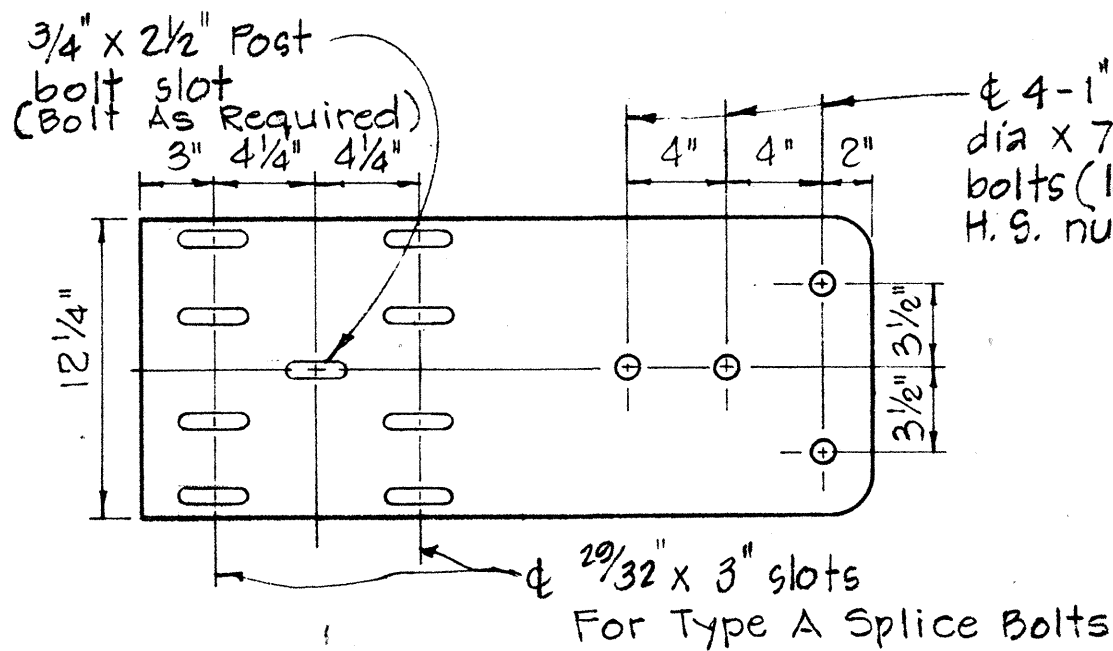
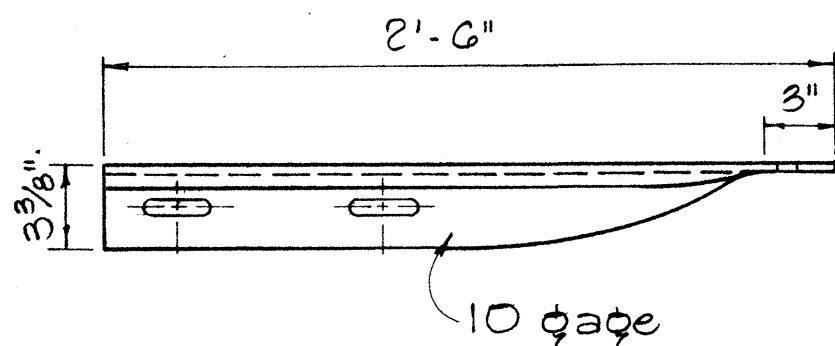
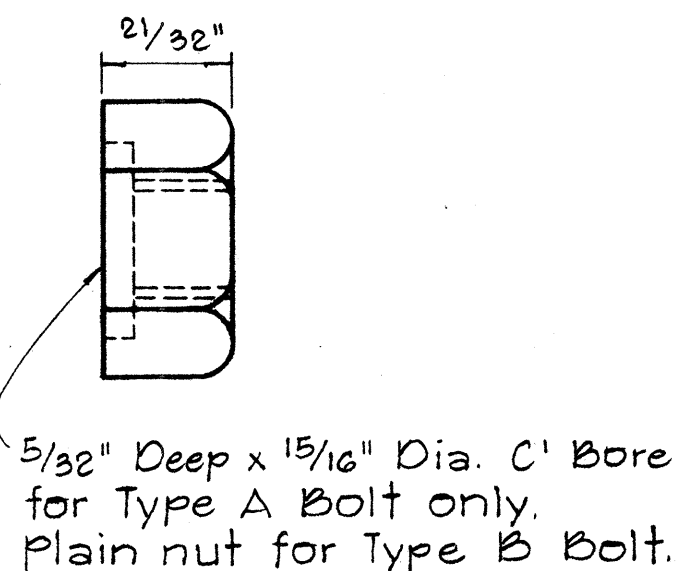


TYPE B BOLT



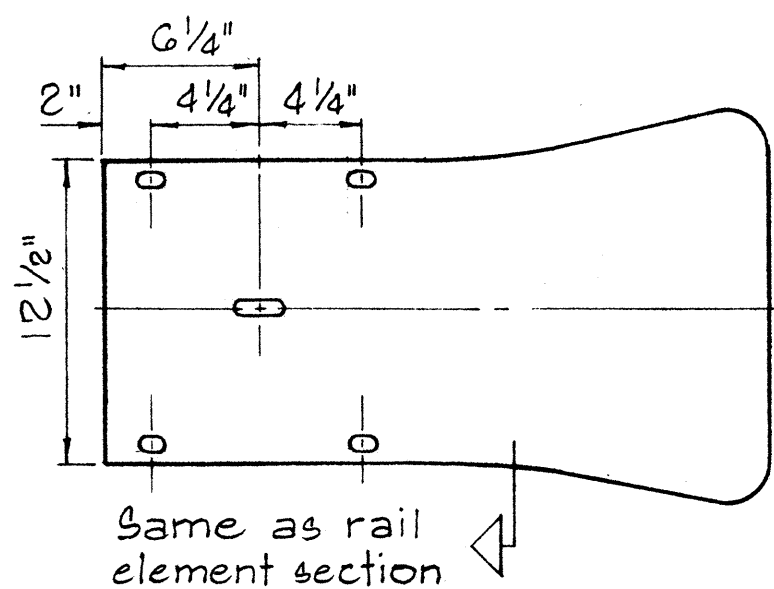
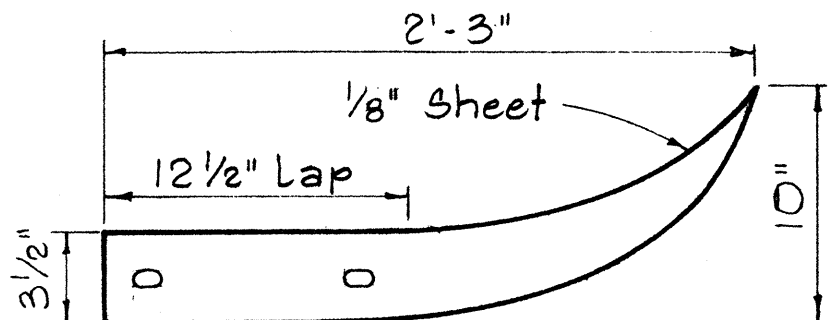
HEXAGON NUT

Scale: Full Size



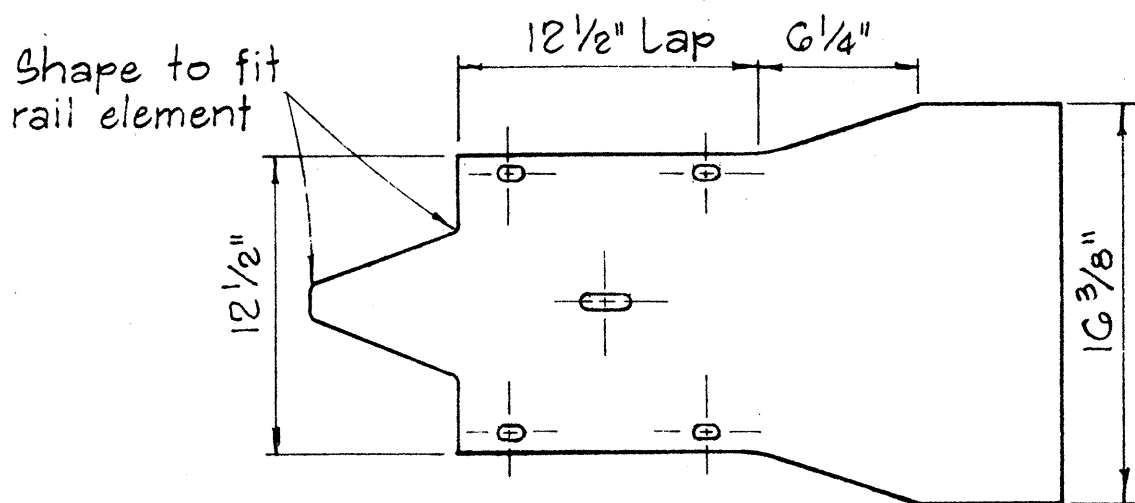
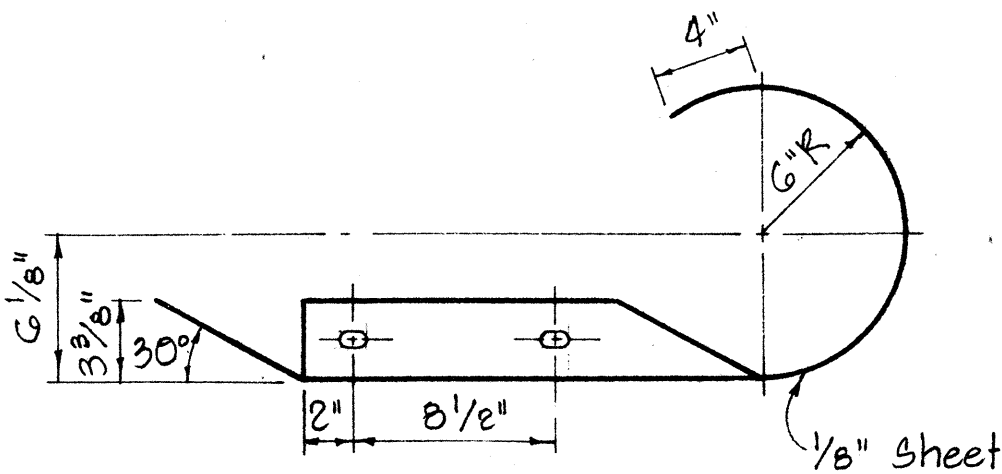
SPECIAL END SHOE

Scale: 1 1/2\"/>



FLARED END

Scale: 1 1/2\"/>



CURVED END

Scale: 1 1/2\"/>

APPROVAL RECOMMENDED:

TRAFFIC ENGINEER

APPROVED:

ASSISTANT CHIEF, ENGINEERING

12/29/69

DATE

12-20-69

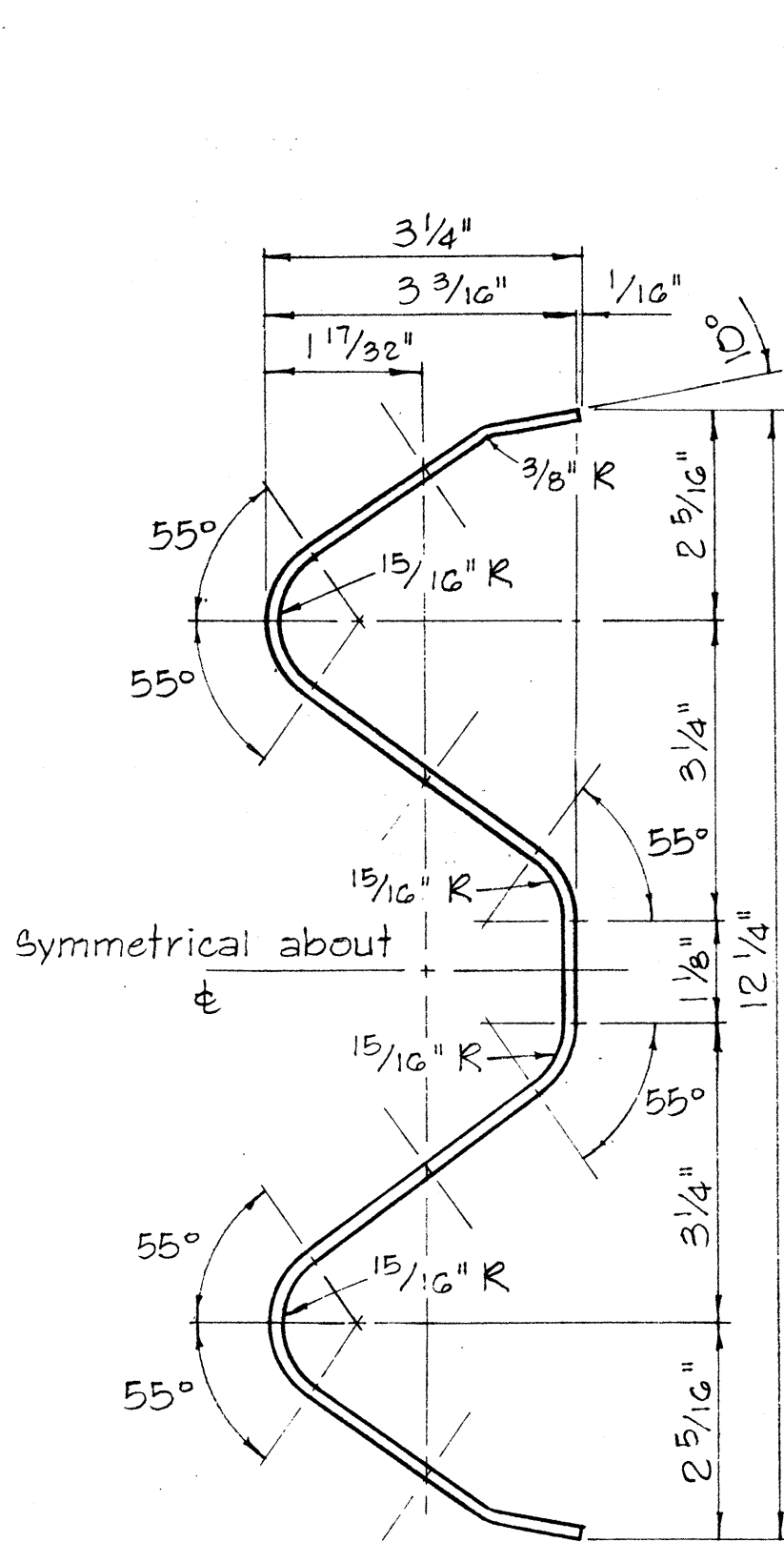
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS METAL GUARD RAIL

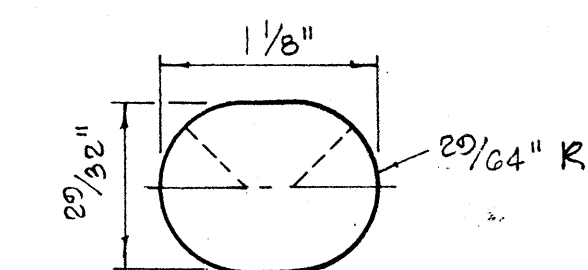
Scale: As Noted August, 1968

SHEET No. OF SHEETS DT 501



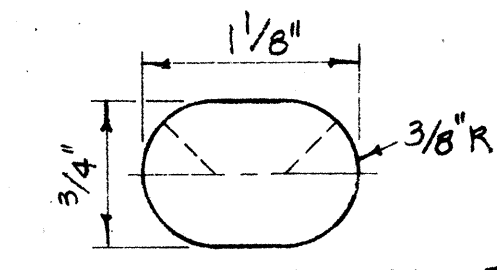
RAIL ELEMENT SECTION

Scale: 6\"/>

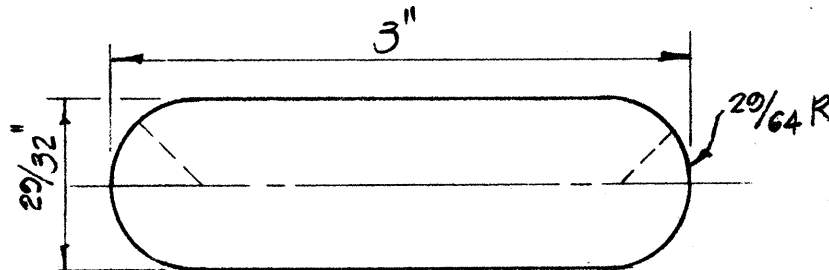


SPlice BOLT SLOT

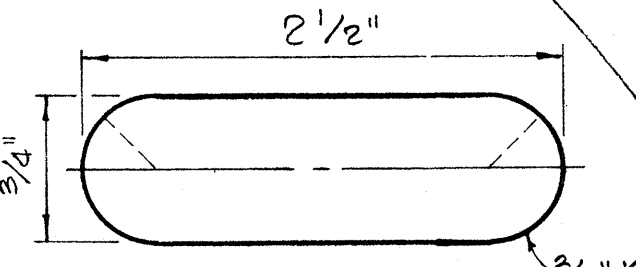
Scale: Full Size



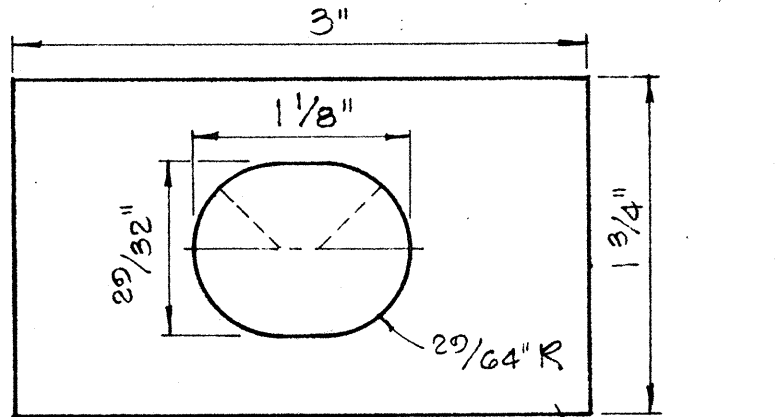
SPlice BOLT SLOT FOR ALL ENDS



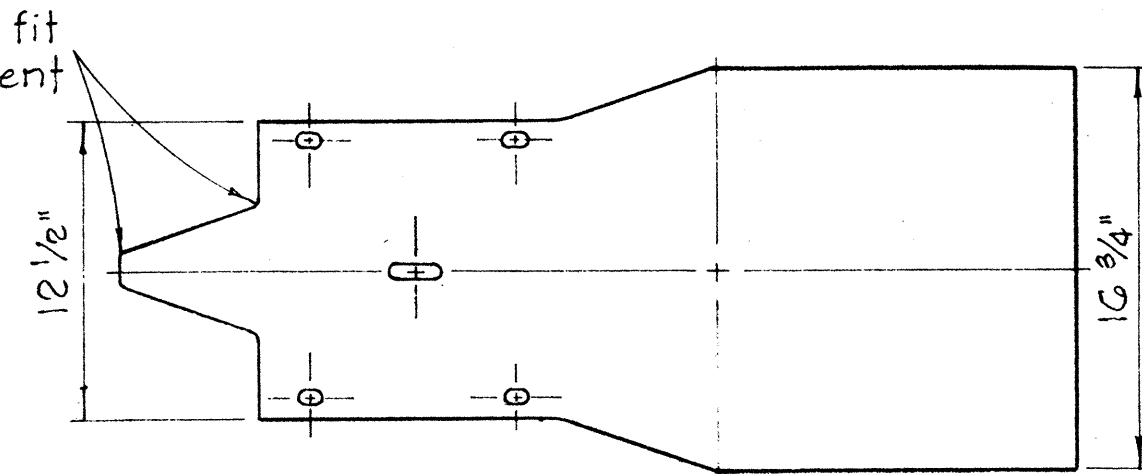
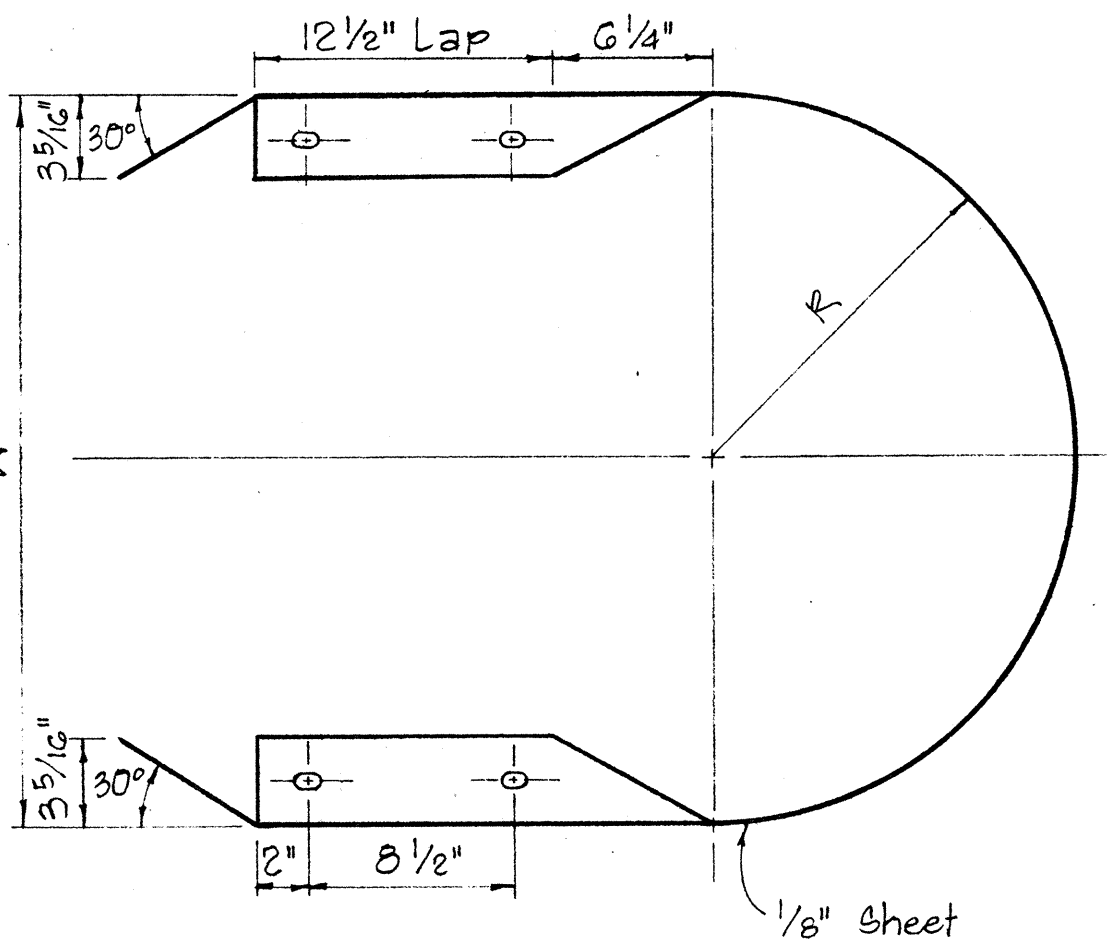
SPlice BOLT SLOT FOR SPECIAL END SHOE



POST BOLT SLOT



RAIL WASHER



MEDIAN END

Scale: 1 1/2\"/>

NOTES:

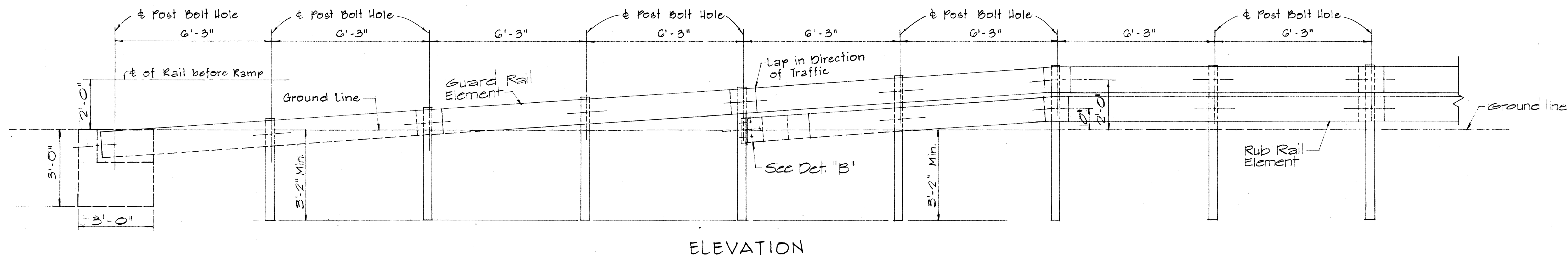
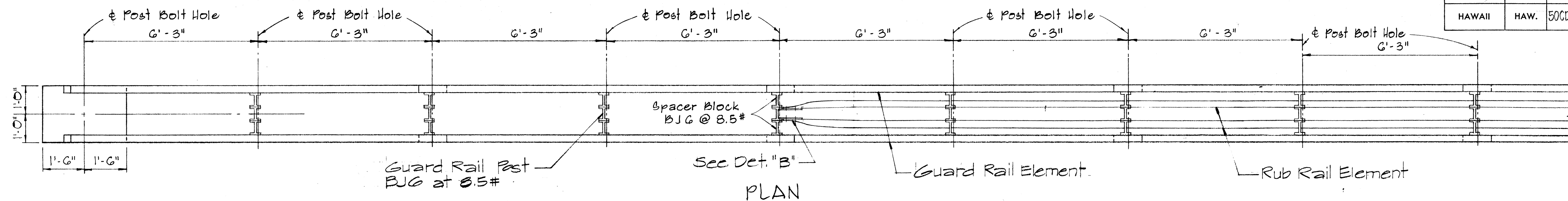
- H.S. Bolts shall conform to the requirements of ASTM A 325.
- Special End Shoe shall be fabricated from 10 Gage steel conforming to the requirements of AASHO 180.

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"	

NO.	REVISION	APPROVED BY	DATE

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

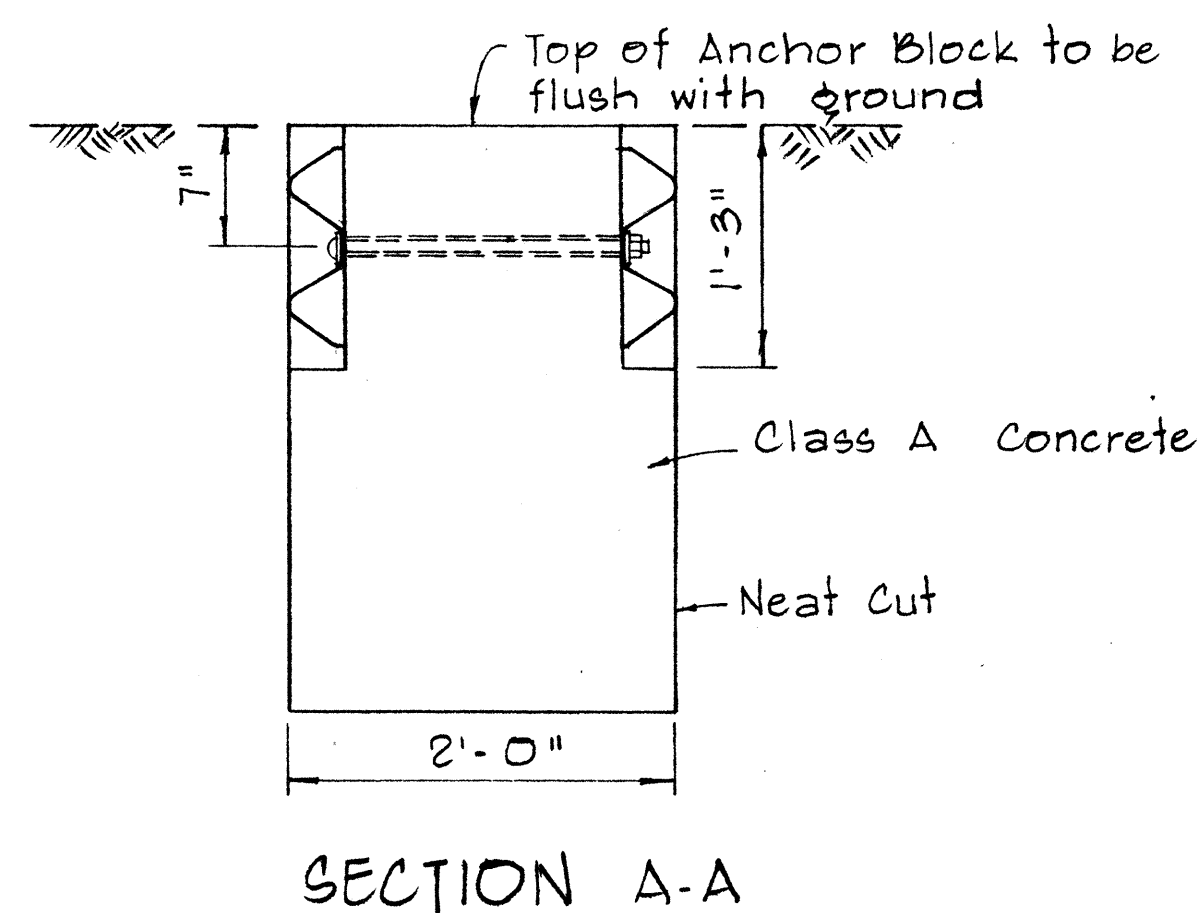
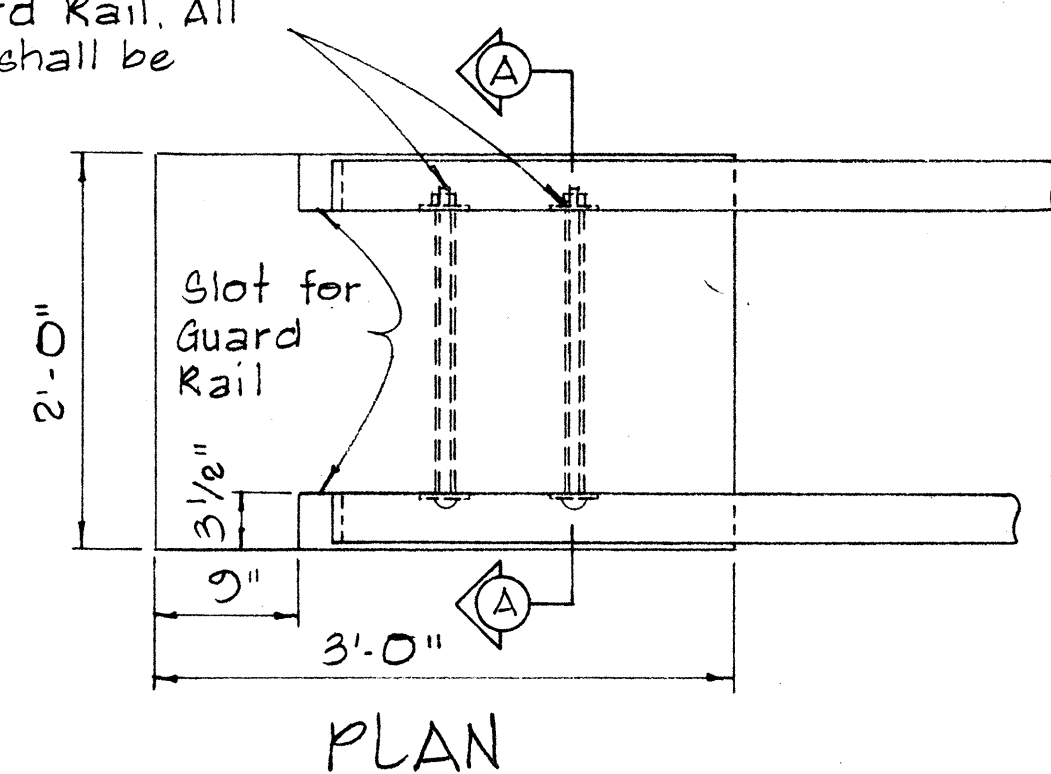
DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	500D-01-70	1974	46	49



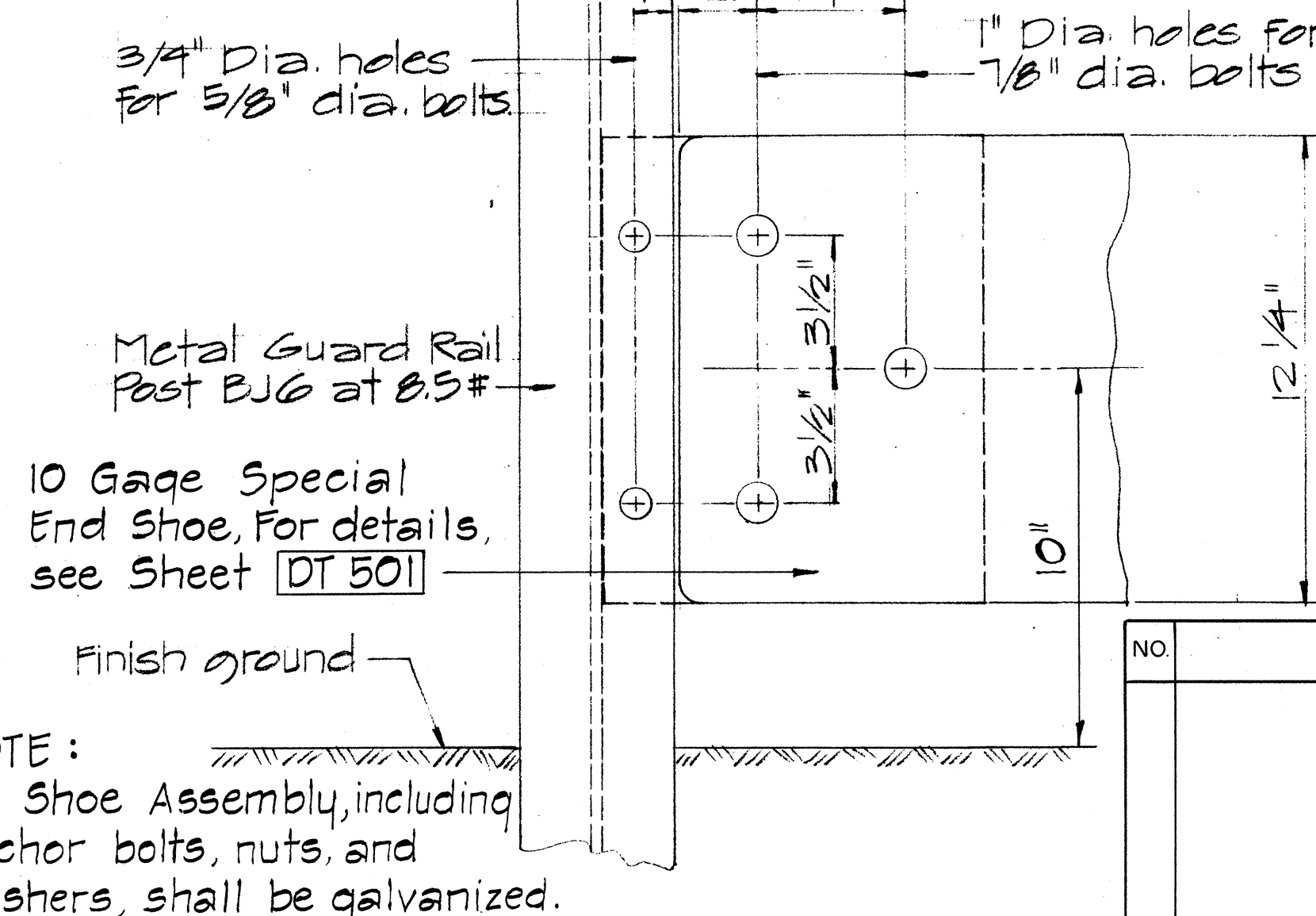
STRAIGHT APPROACH - RAMP END ANCHORAGE (MEDIAN)

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

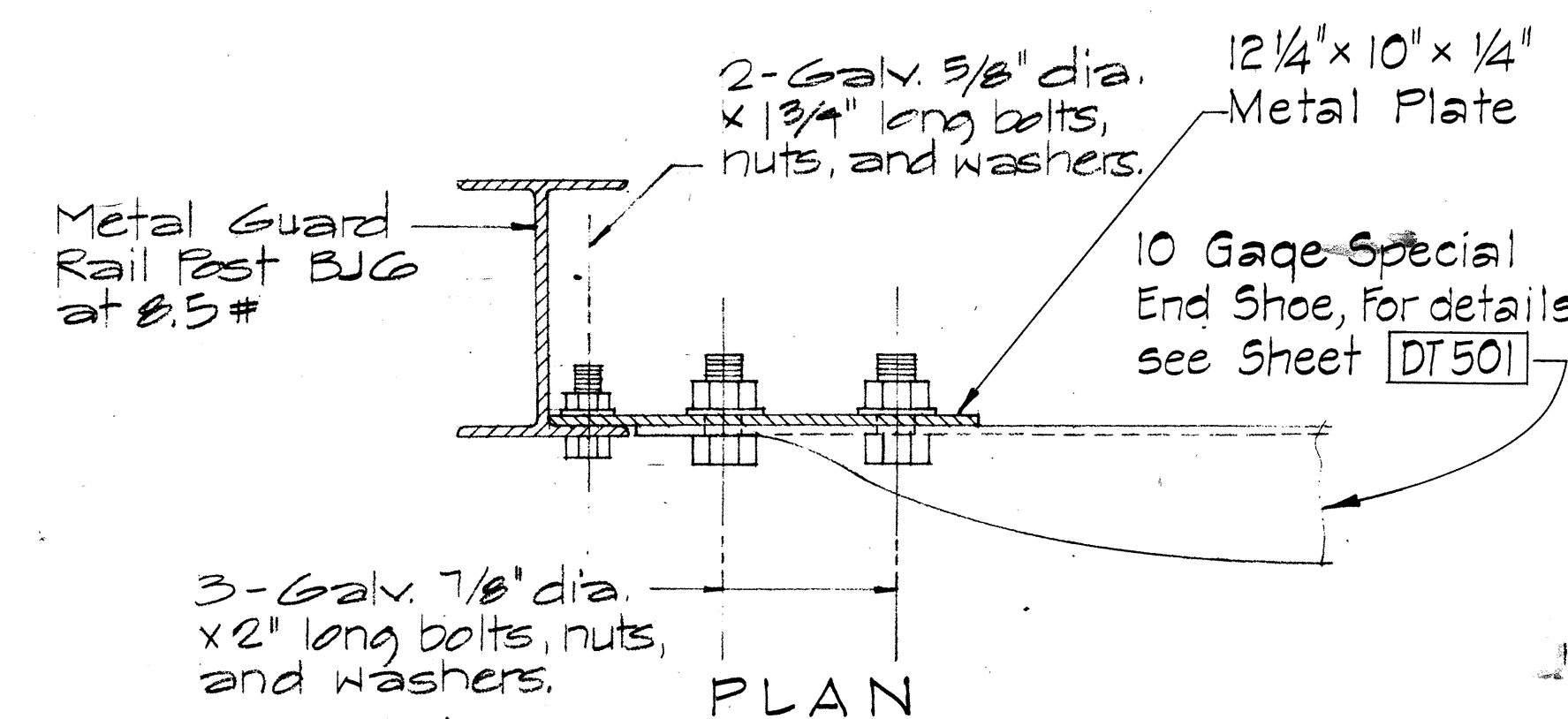
5/8" Bolts with 3/4" G.I. Pipe Sleeve in each hole. Incidental to Metal Guard Rail. All Metal Pieces shall be Galvanized.



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.



APPROVAL RECOMMENDED:
Eiichi Tanaka
TRAFFIC ENGINEER

12/29/69
DATE

APPROVED:
Richard J. Delat
ASSISTANT CHIEF, ENGINEERING

12-20-69
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

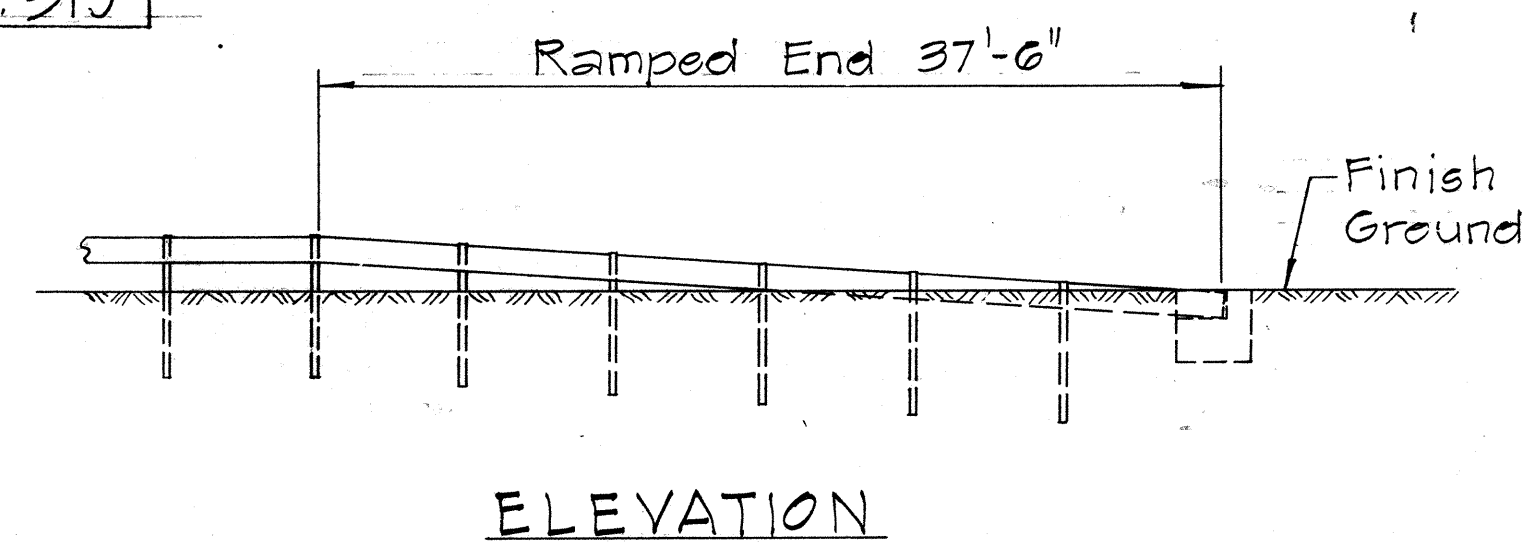
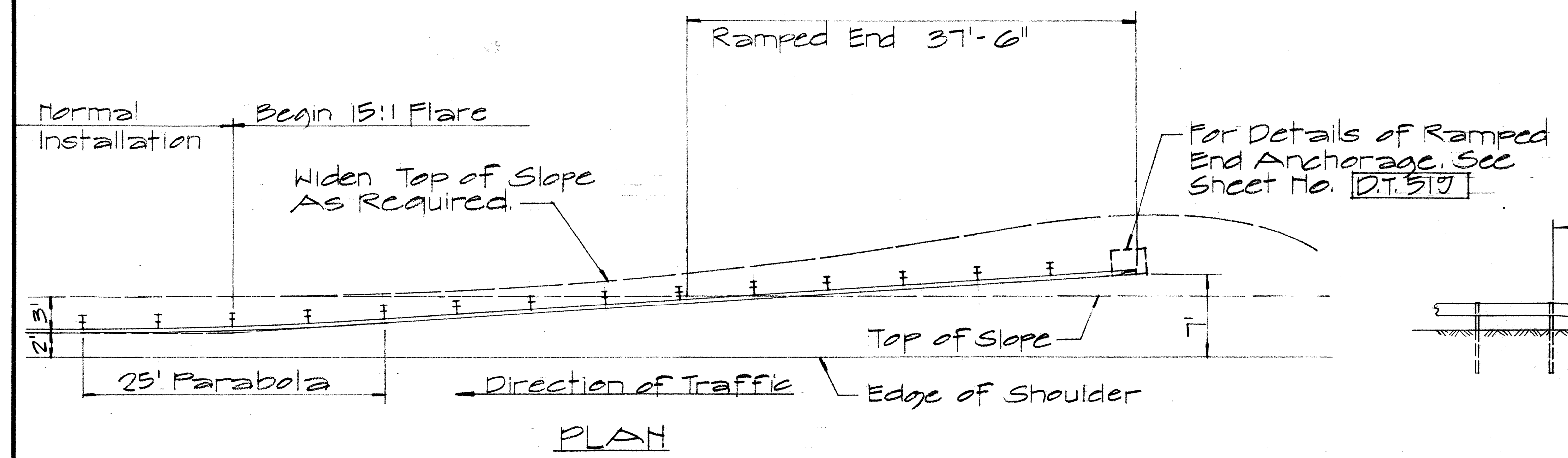
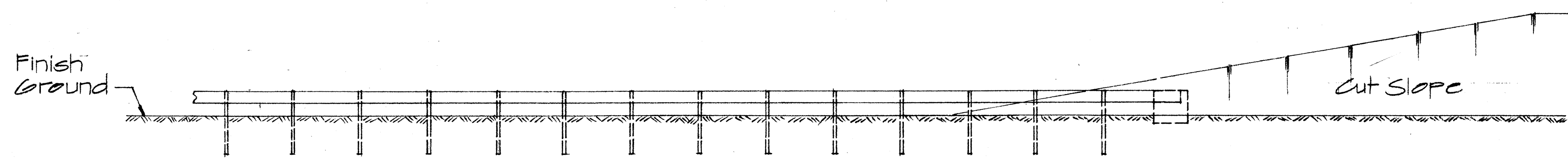
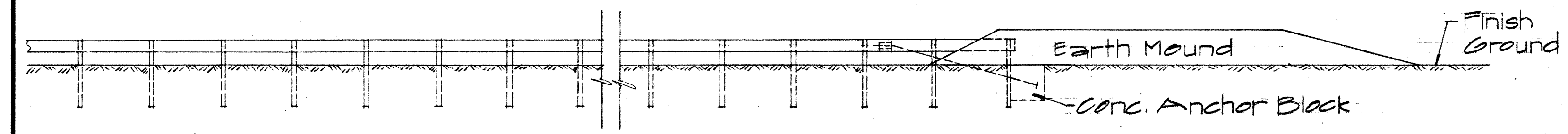
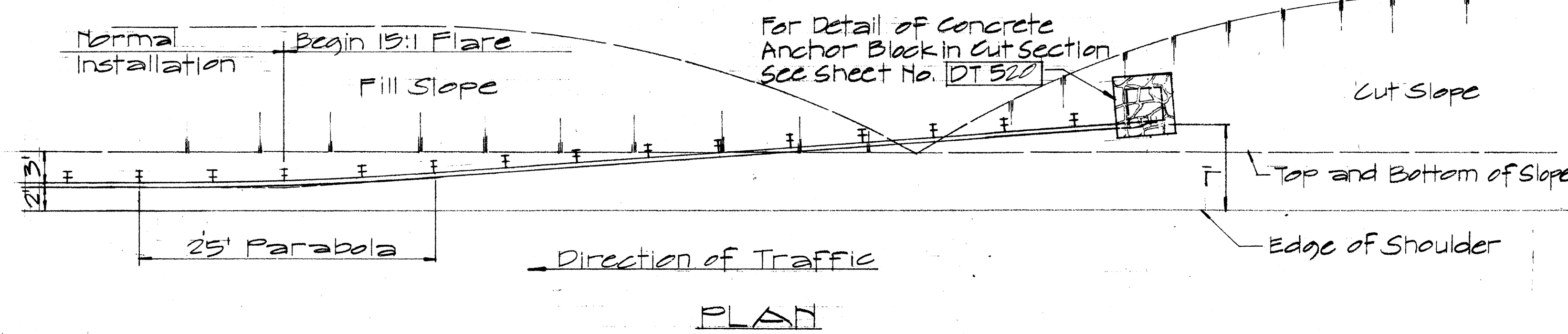
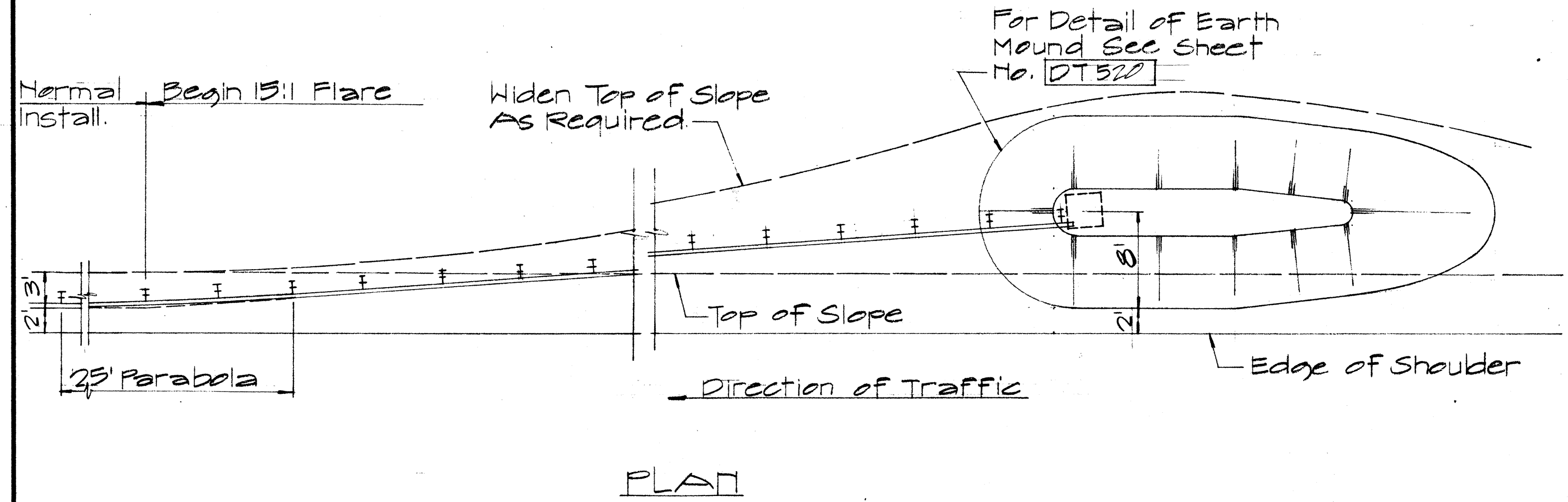
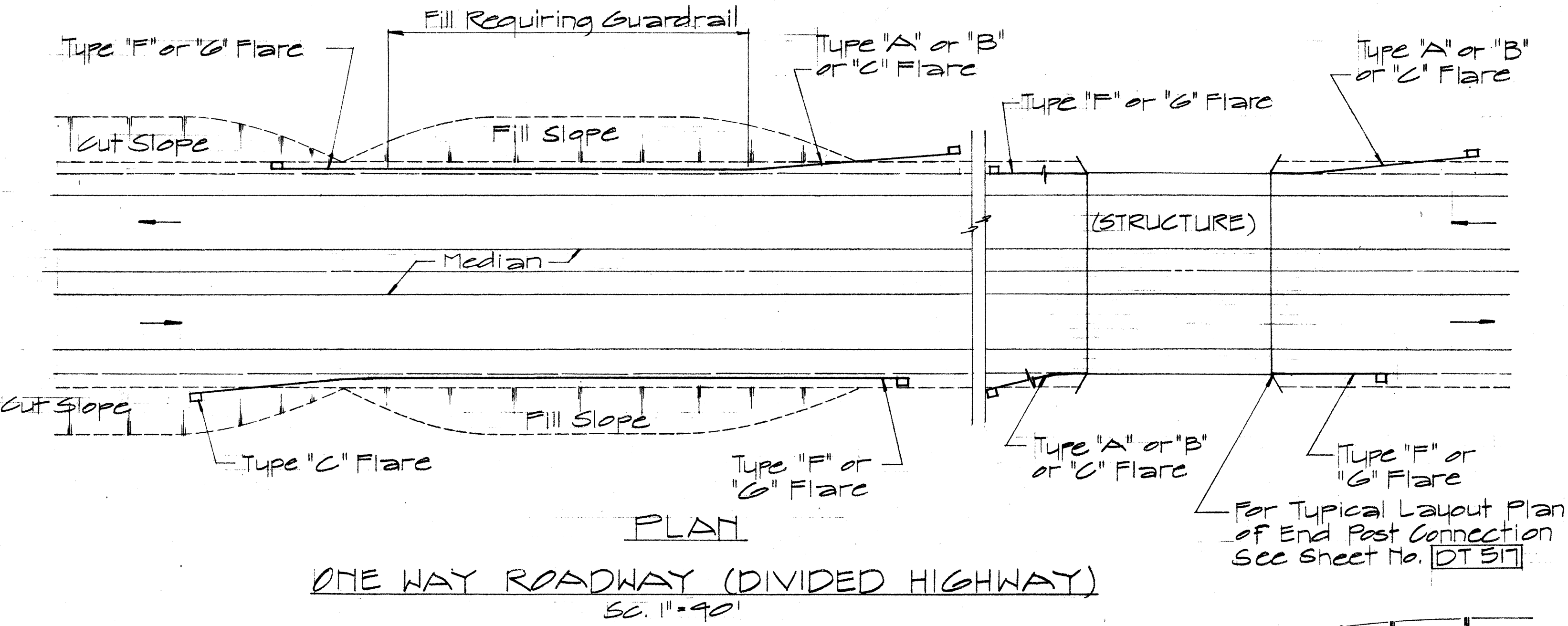
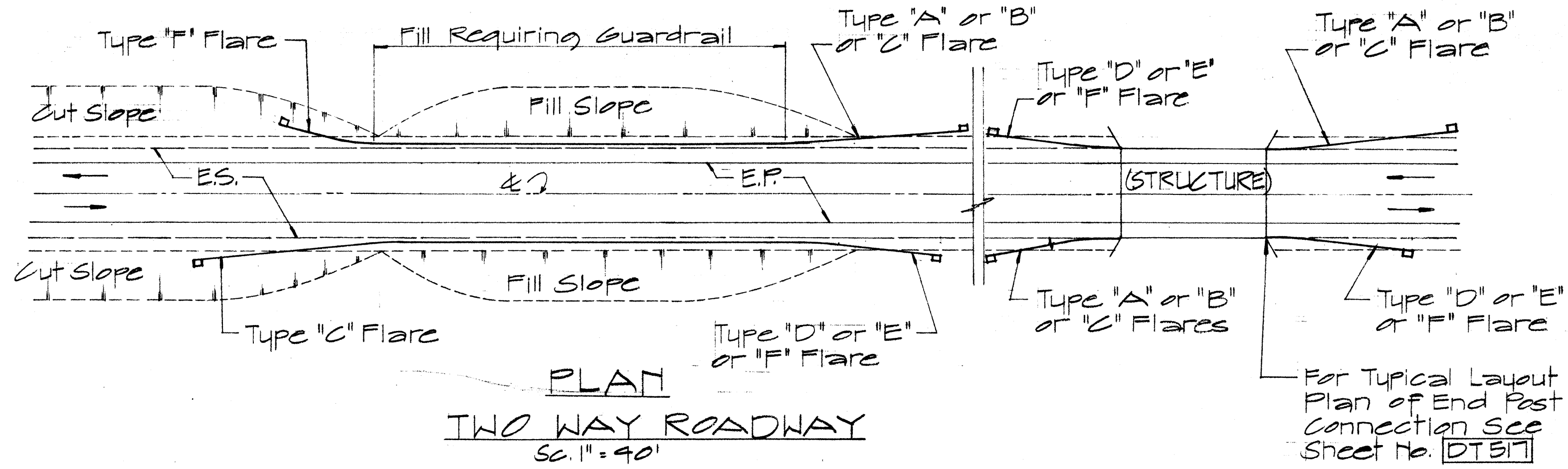
SHEET No. OF SHEETS DT 502

CONCRETE ANCHOR BLOCK FOR RAMP END

Scale: 1" = 1'-0"

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	50CD-01-10	1974	47	49

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



ELEVATION
TYPE 'C' FLARE
Scale: 1/8" = 1'-0"

NO.	REVISION	APPROVED BY	DATE

APPROVAL RECOMMENDED:
Erich Tanaka 12/23/62
TRAFFIC ENGINEER DATE

APPROVED:
W. B. B. B. 12-30-69
ASSISTANT CHIEF, ENGINEERING DATE

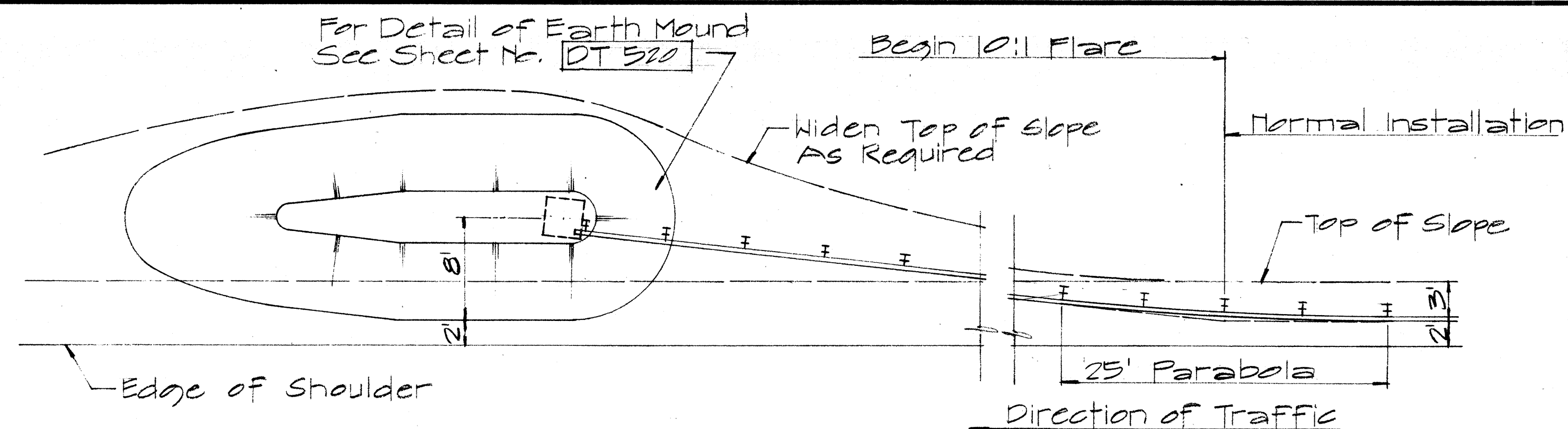
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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

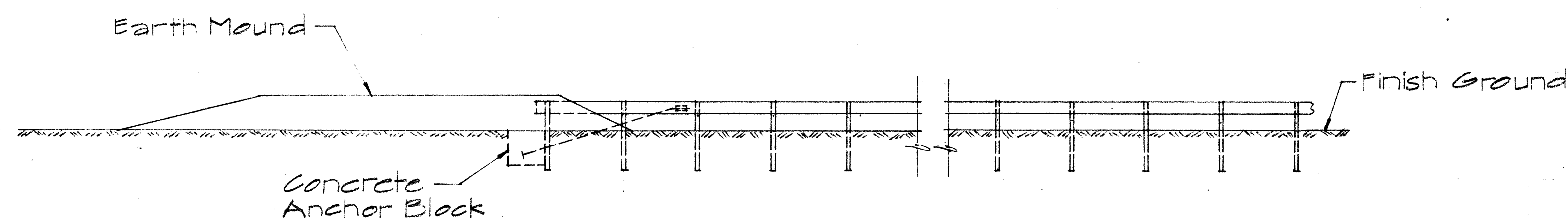
Scale: As Noted April 1969

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

DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5000-01-10	1974	48	49

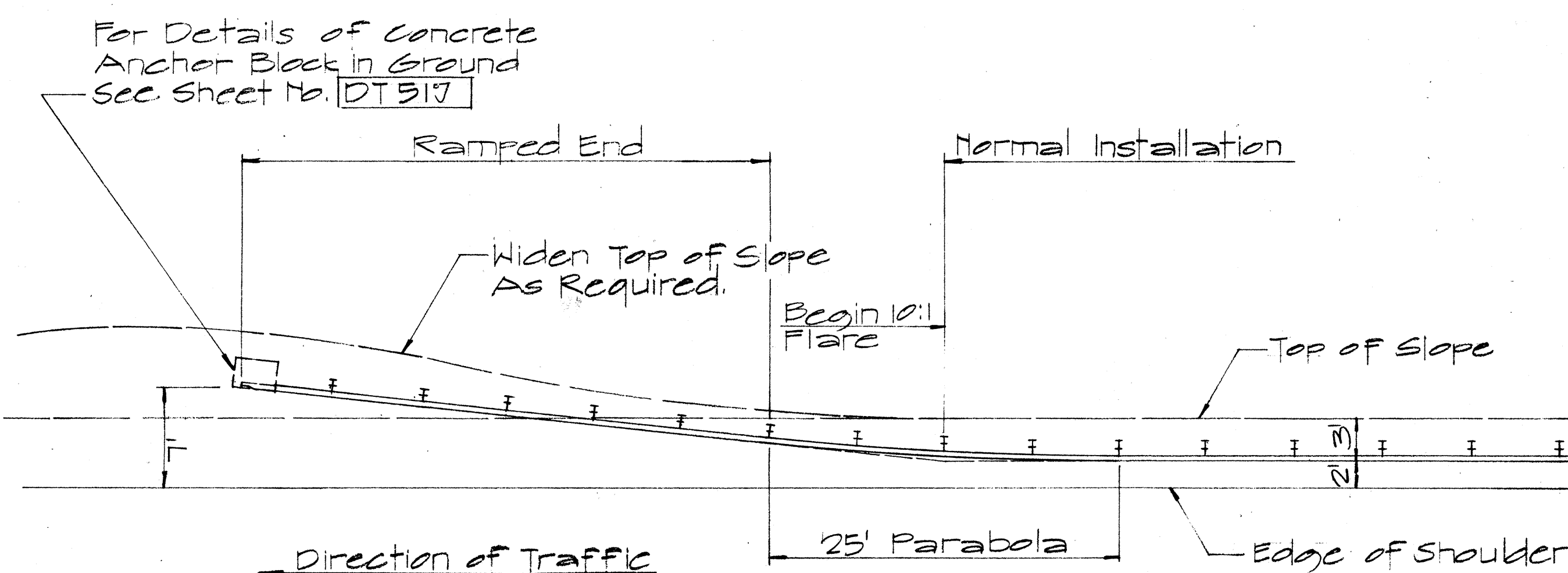


PLAN

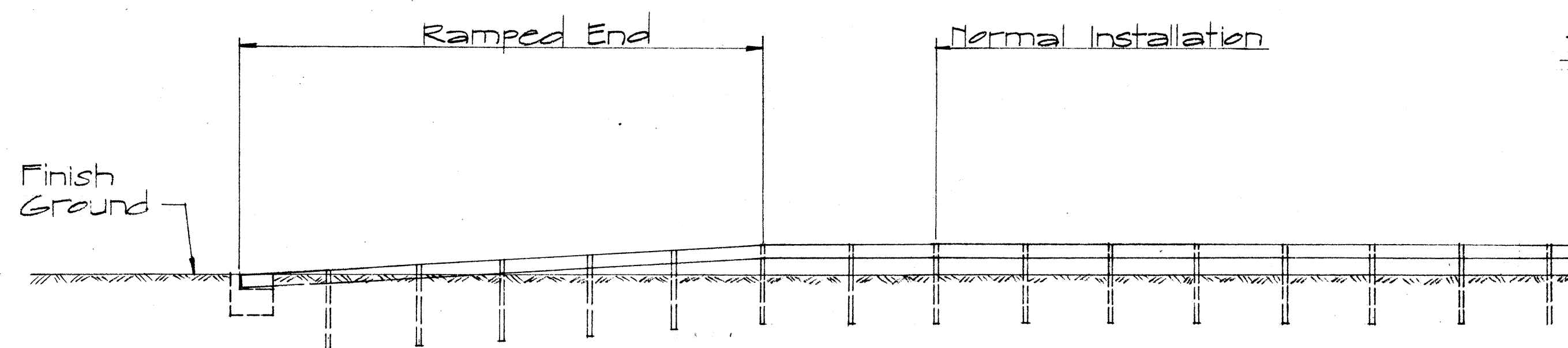


ELEVATION

TYPE "D" FLARE
Sc. 1/8" = 1'-0"

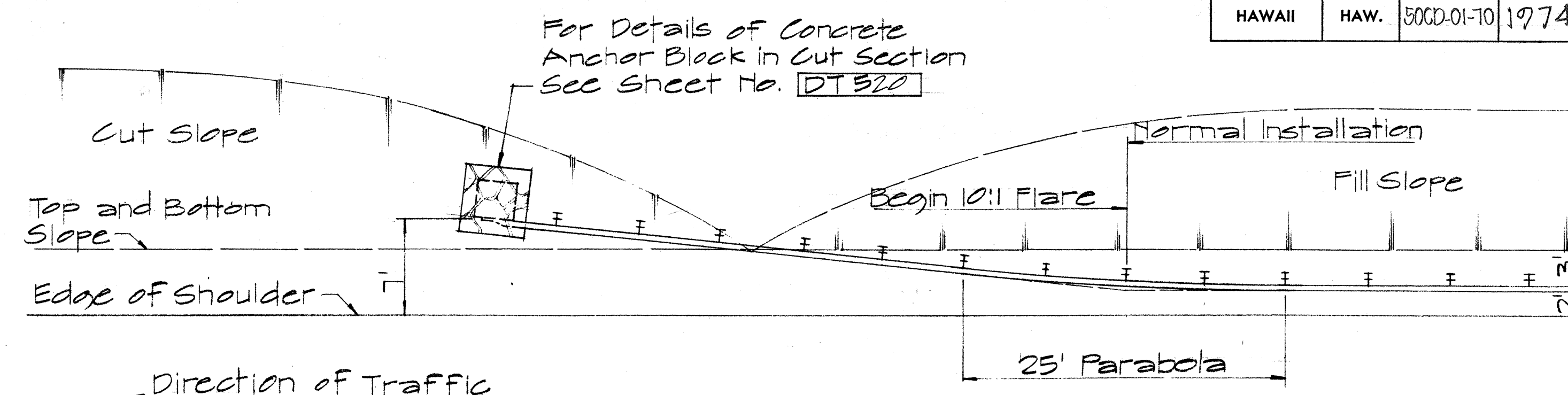


PLAN

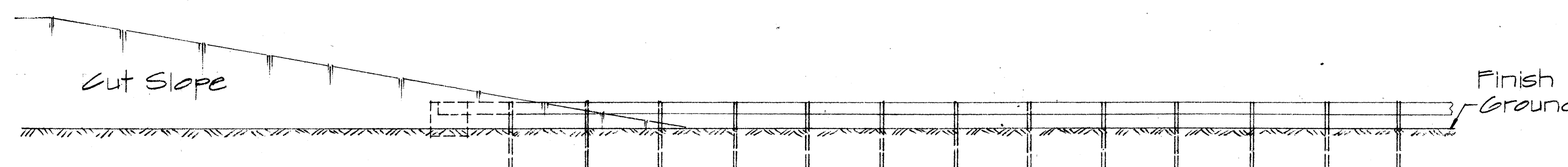


ELEVATION

TYPE "E" FLARE
Sc. 1/8" = 1'-0"

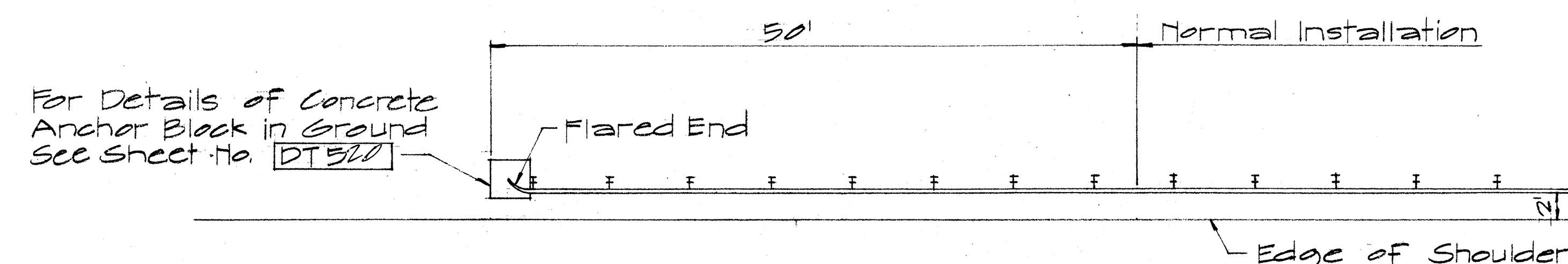


PLAN

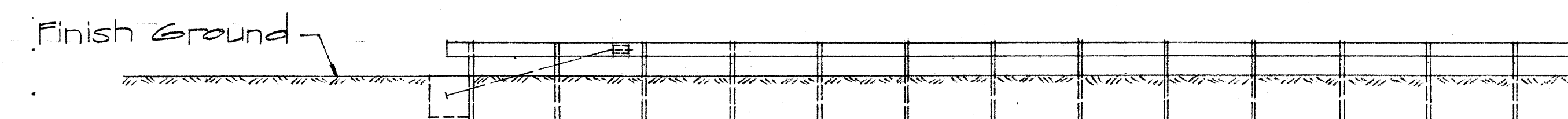


ELEVATION

TYPE "F" FLARE
Sc. 1/8" = 1'-0"

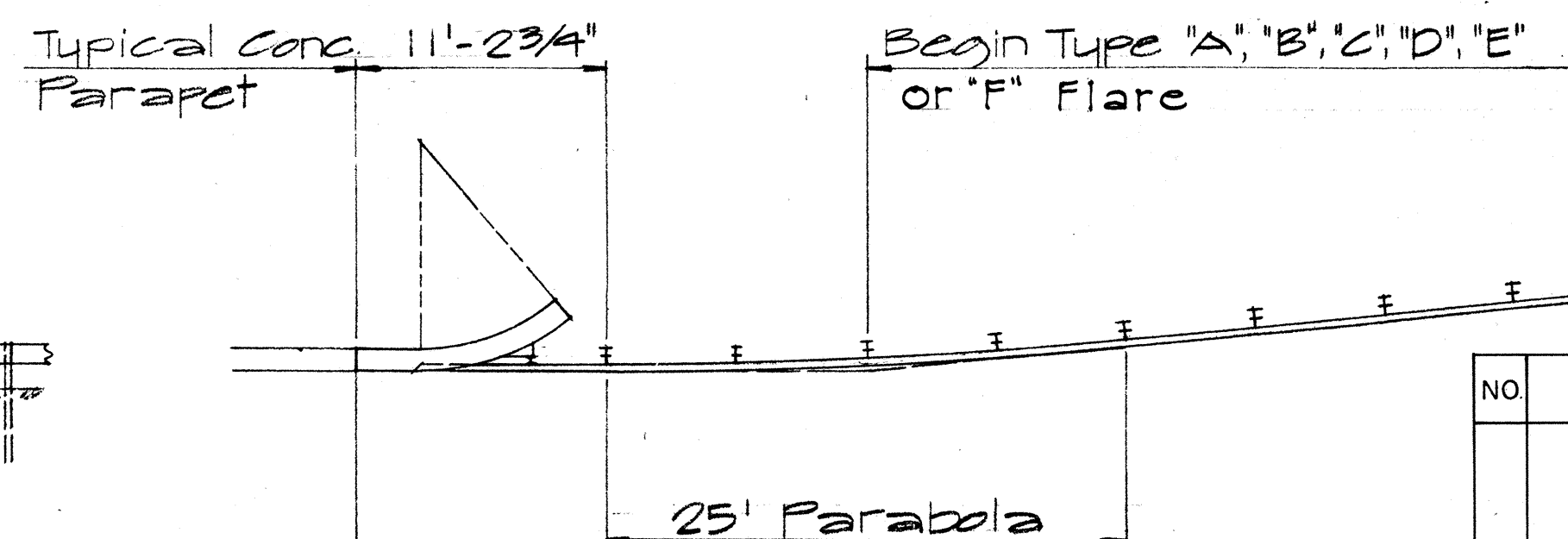


PLAN



ELEVATION

TYPE "G" FLARE
Sc. 1/8" = 1'-0"



TYPICAL LAYOUT PLAN OF
END POST CONNECTION
Sc. 1/8" = 1'-0"

APPROVAL RECOMMENDED:
Euske Tanaka 12/29/69
TRAFFIC ENGINEER DATE

APPROVED:
Wm. J. Sal. 12-30-69
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

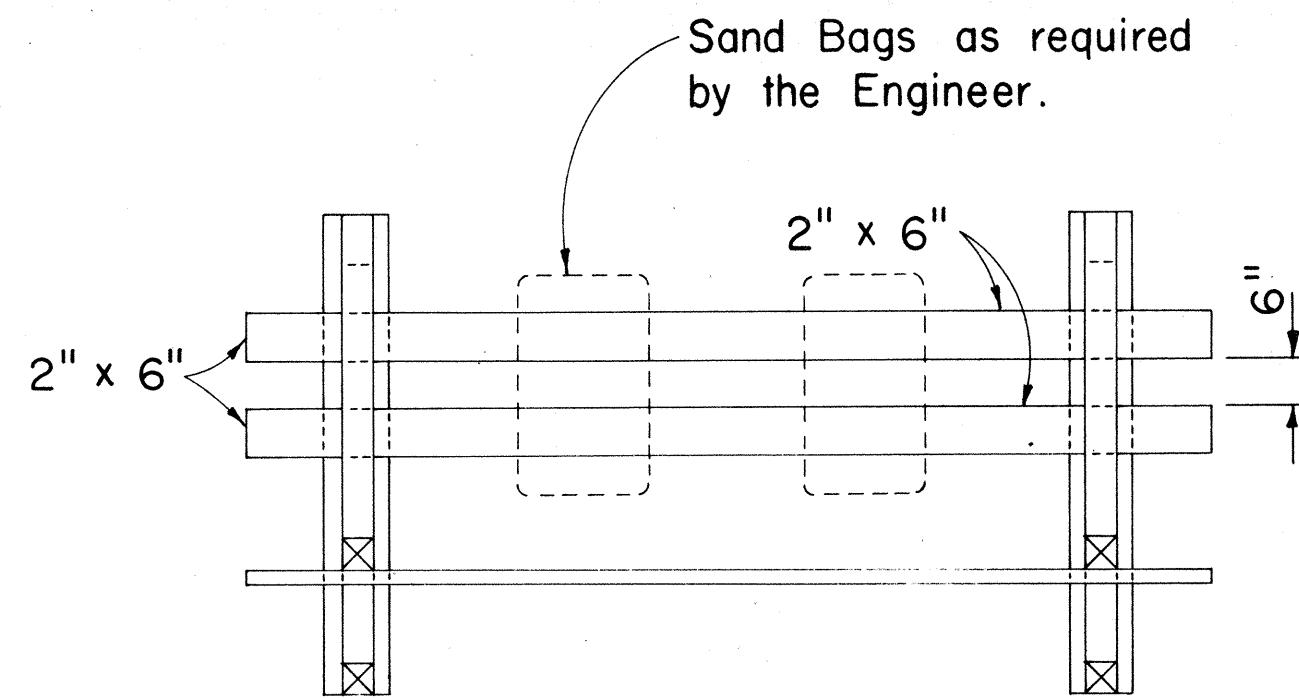
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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

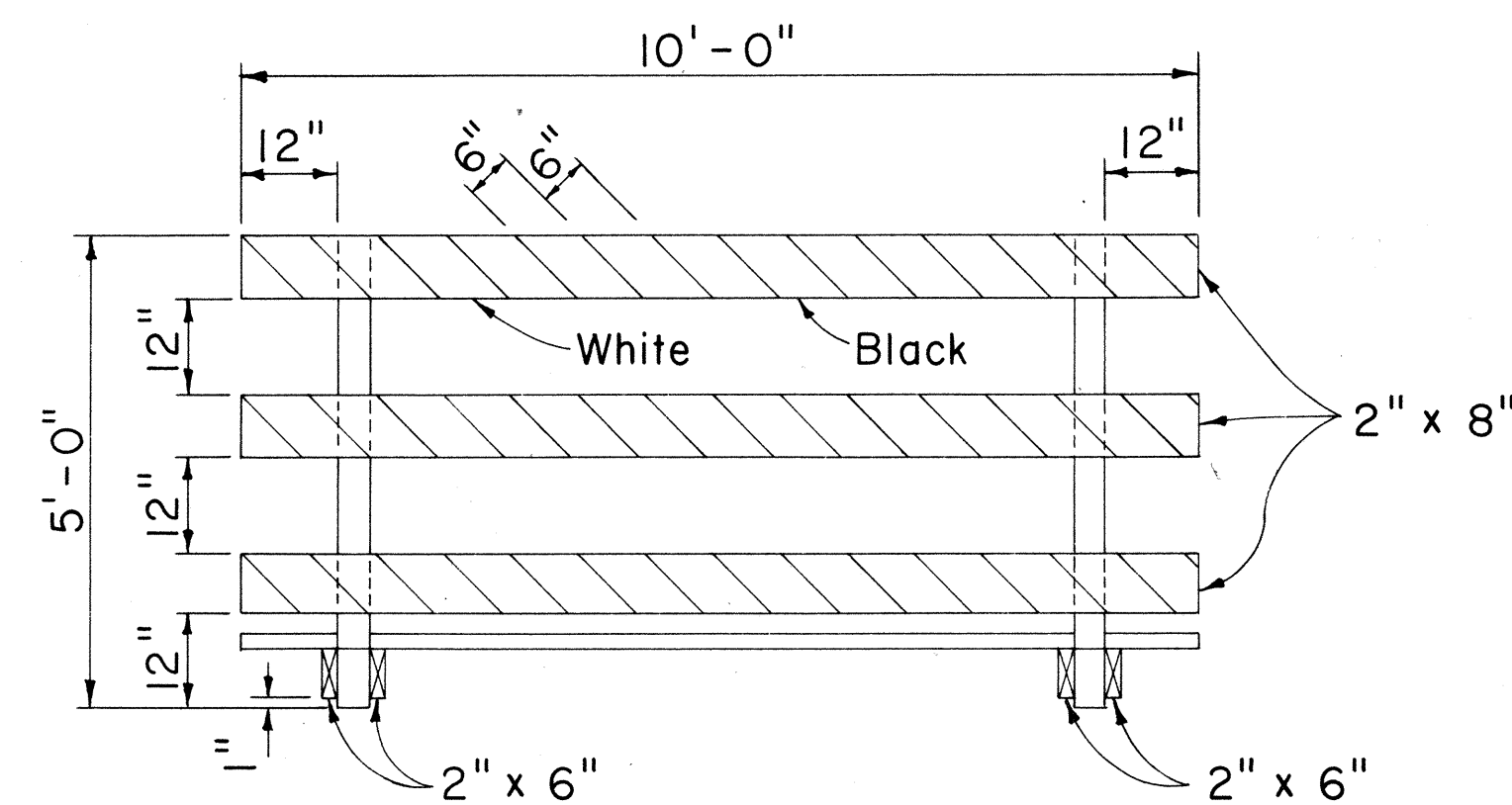
Sc. As Noted April 1969

SHEET No. OF SHEETS DT 517

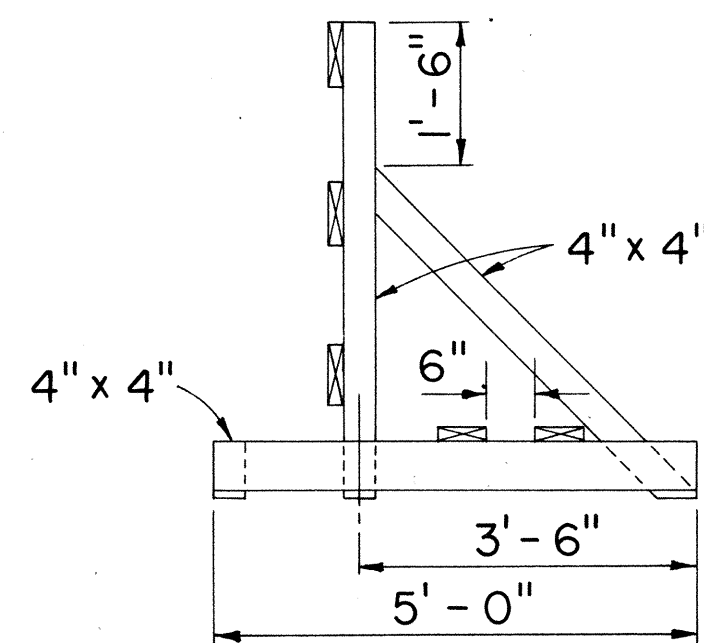
DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5000-01-70	1974	49	49



PLAN VIEW

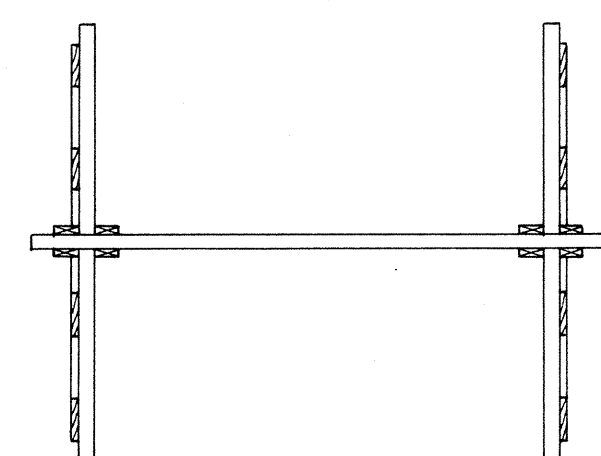


FRONT VIEW

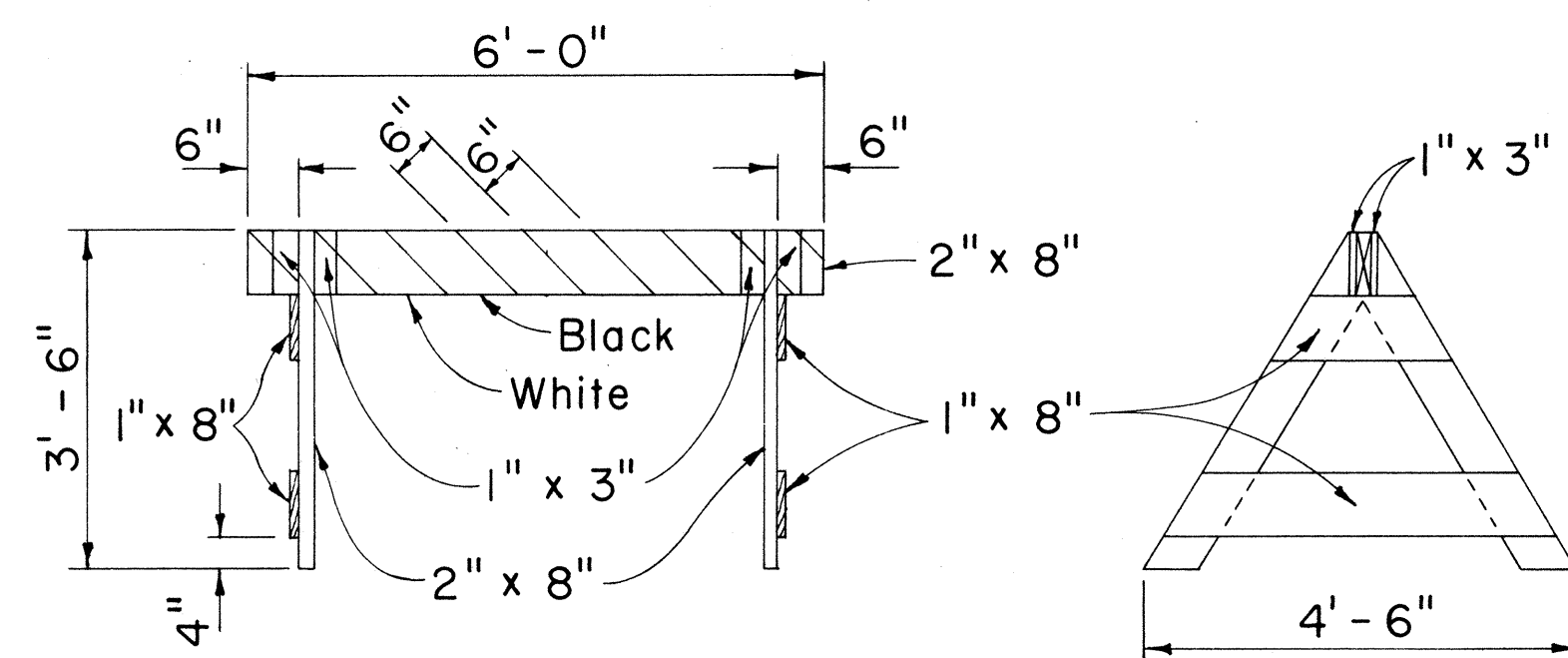


END VIEW

CLASS I BARRICADE
Scale: 1/2" = 1'-0"



PLAN VIEW



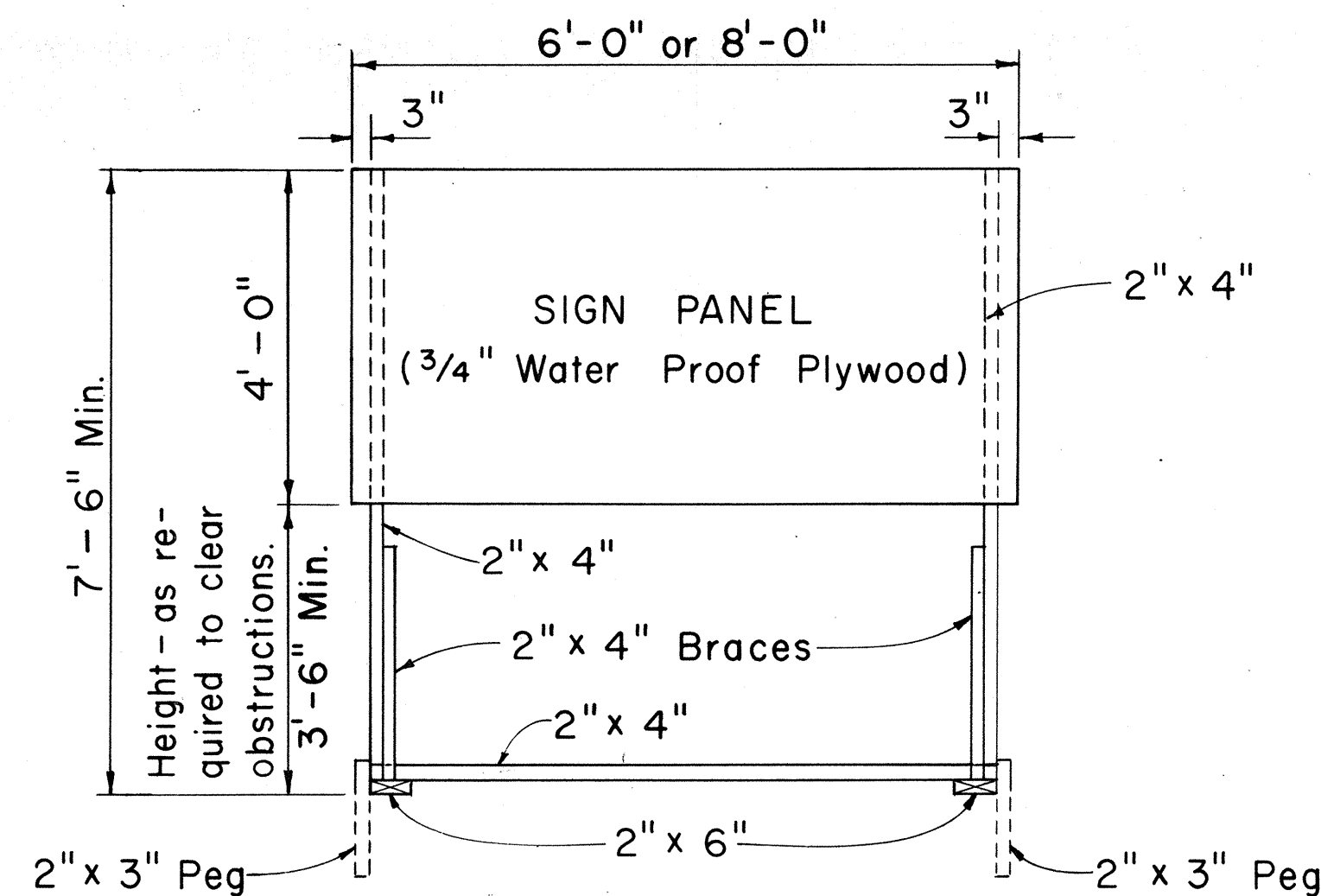
FRONT VIEW

END VIEW

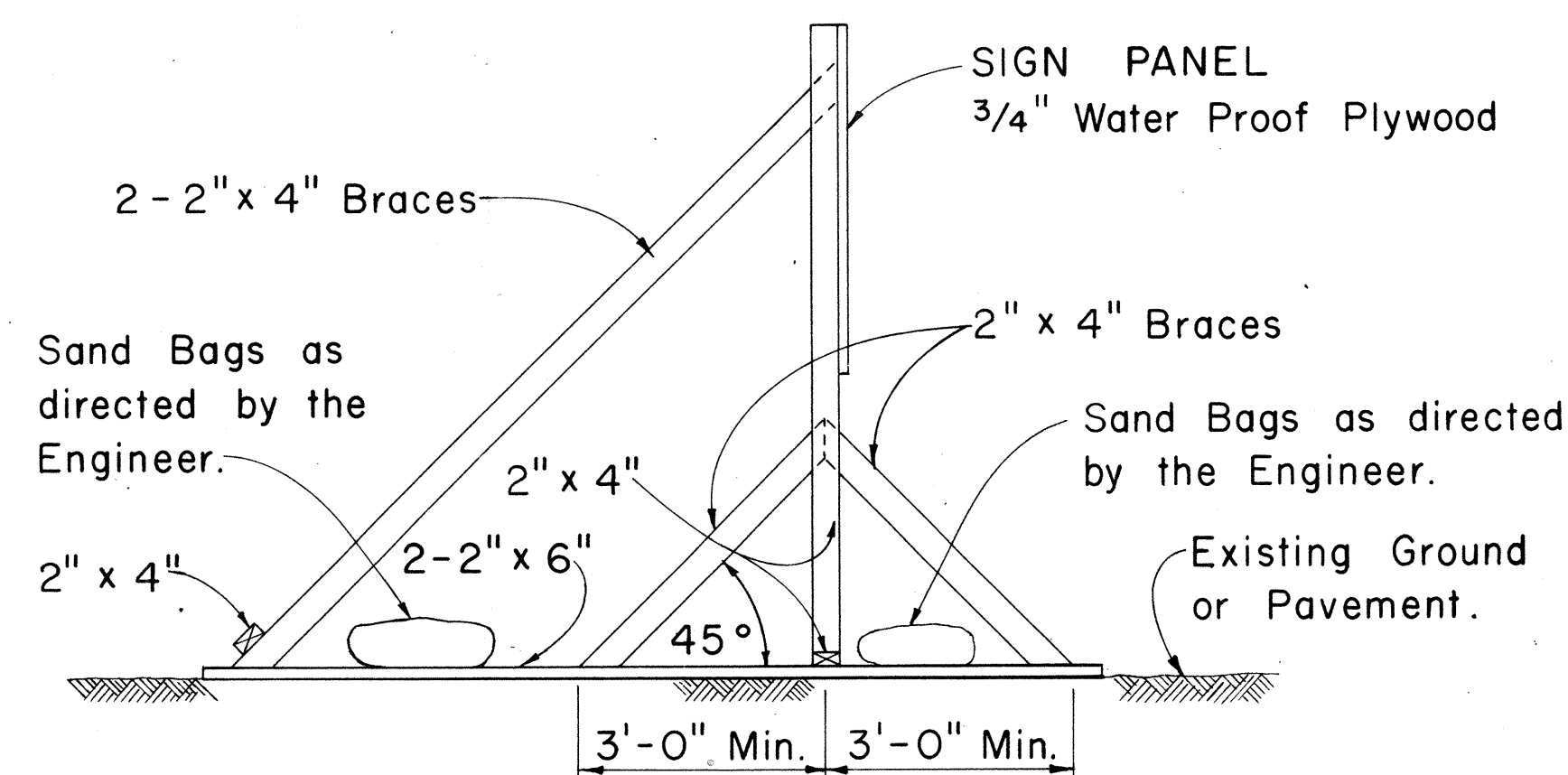
CLASS II BARRICADE
Scale: 1/2" = 1'-0"

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 black and white stripes shall slant downward toward the side on which traffic is to pass.

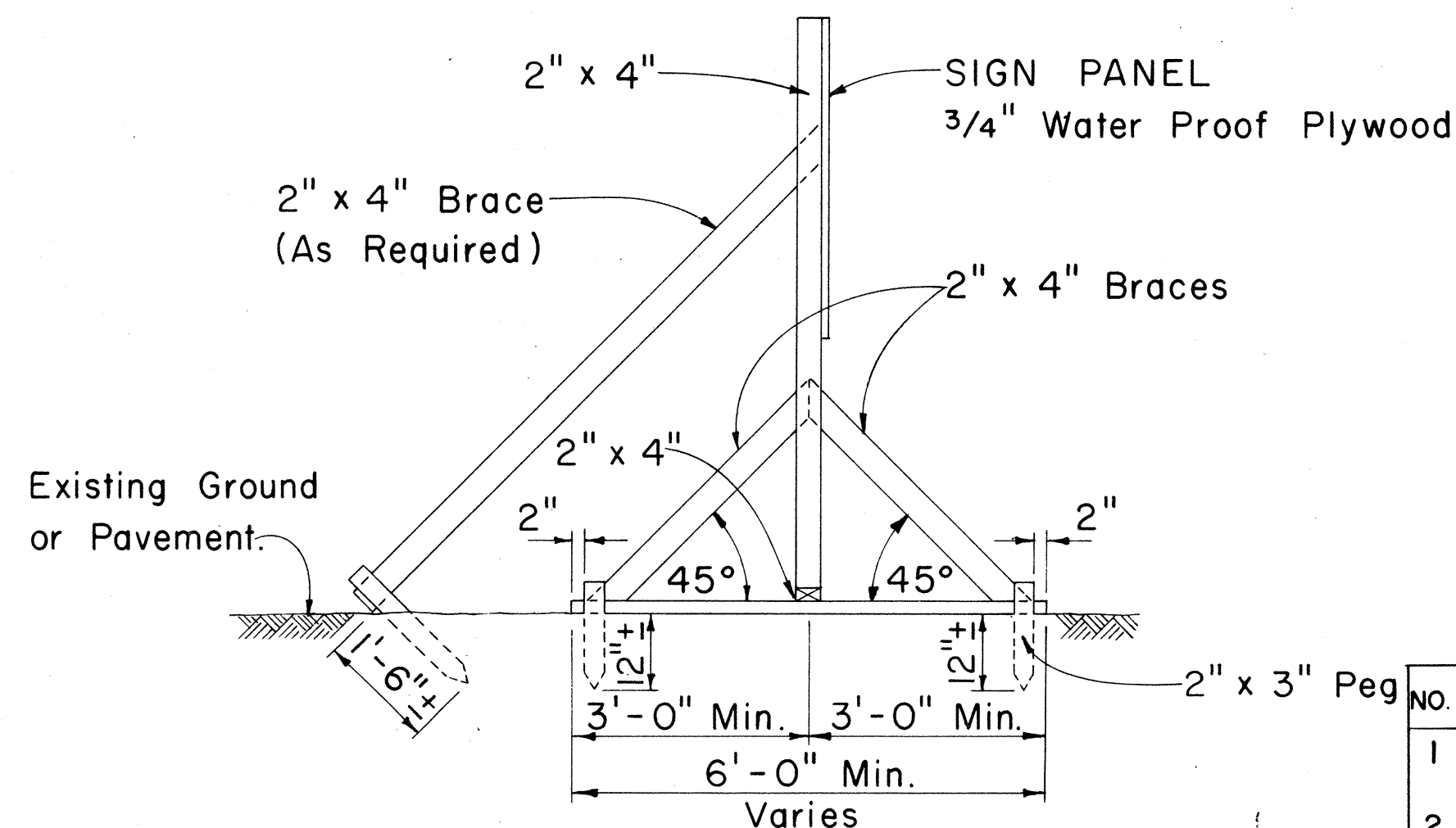


FRONT VIEW
Scale: 1/2" = 1'-0"



SIDE VIEW

(SIGN FRAME WEIGHTED DOWN)
Scale: 1/2" = 1'-0"

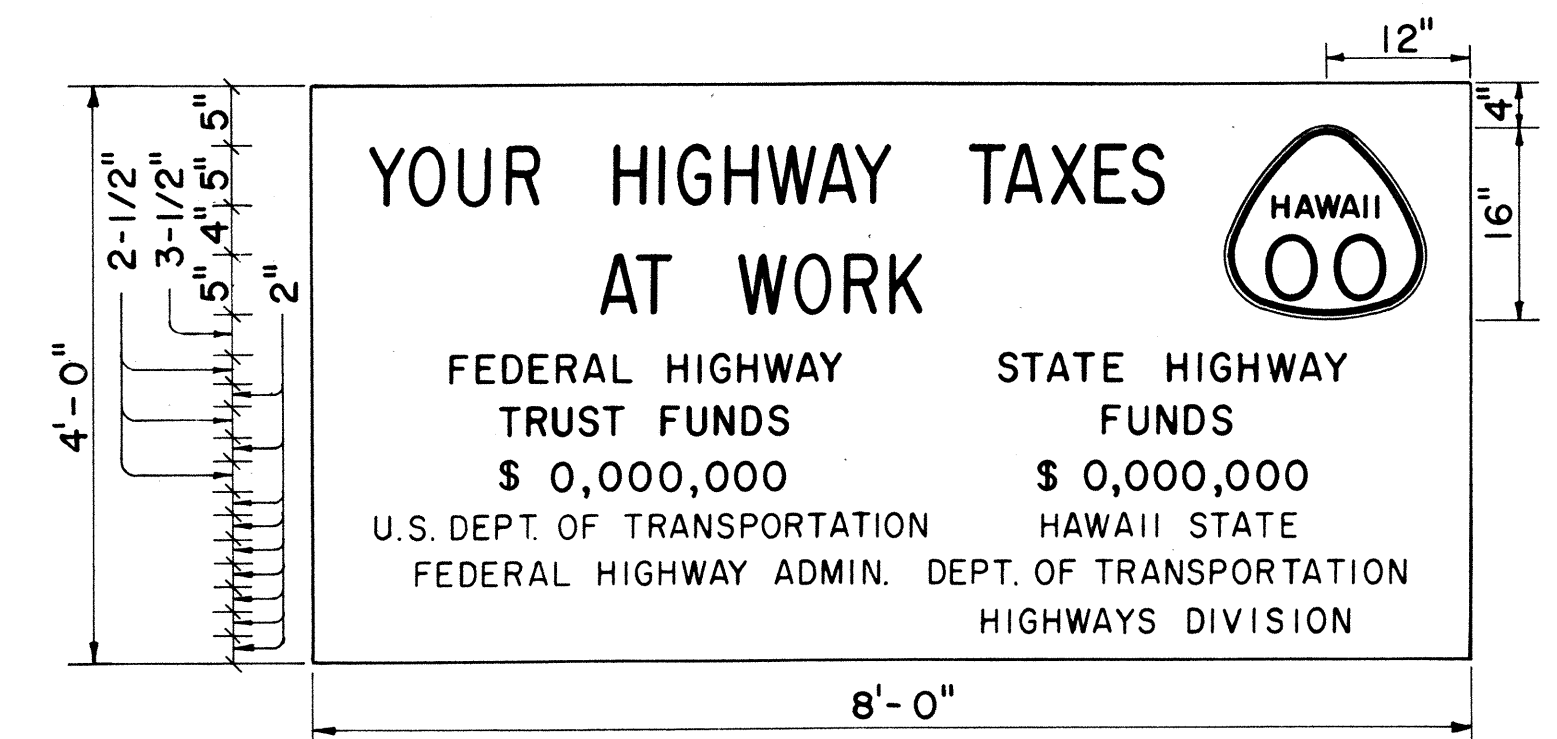


SIDE VIEW

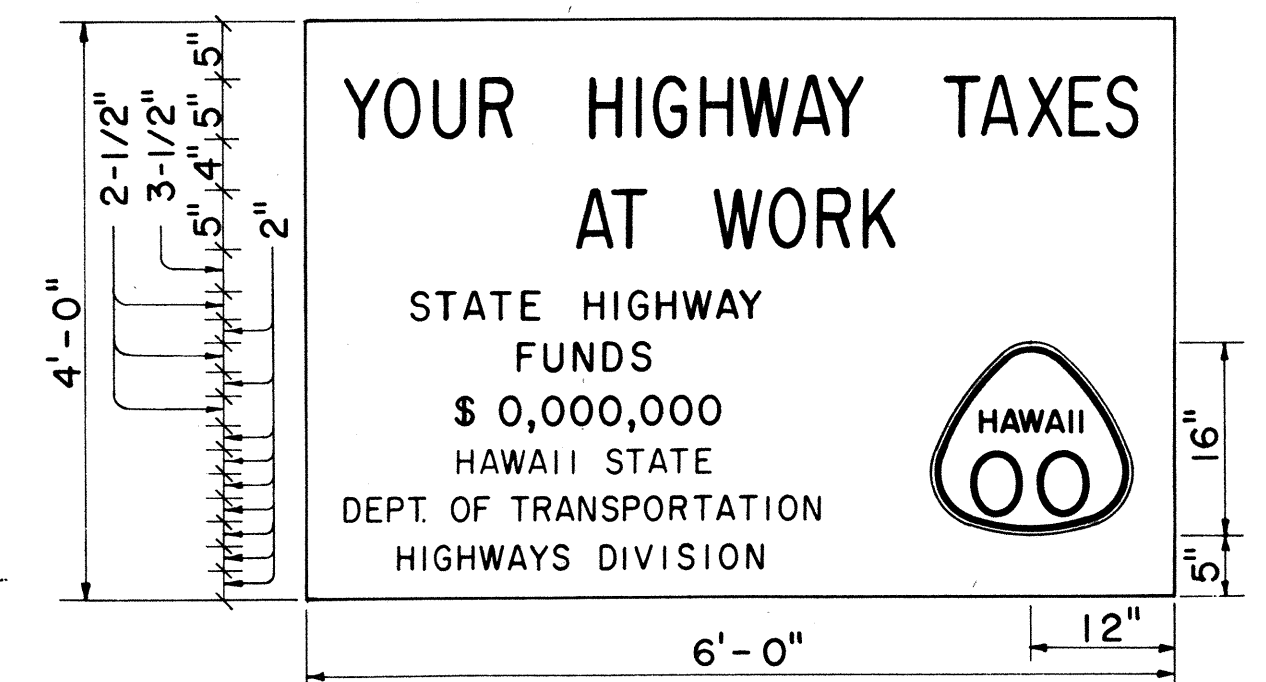
(SIGN FRAME ANCHORED IN GROUND)
Scale: 1/2" = 1'-0"

CONSTRUCTION IDENTIFICATION SIGN

Scale: As Shown



SIGN PANEL
PRIMARY AND SECONDARY SYSTEMS
Scale: 3/4" = 1'-0"



SIGN PANEL
NON-FEDERAL AID PROJECT
Scale: 3/4" = 1'-0"

GENERAL NOTES

1. The sign legend shall be black on white background.
2. The Contractor shall construct, install and maintain the project signs at the locations shown on the plans and as ordered by the Engineer.
3. Letters shall be Series "C" of the sizes shown on the plan and shall conform with the "Standard Alphabet for Highway Signs", Bureau of Public Roads, 1966
4. The Contractor shall fill in the proper numerals in place of ciphers as ordered by the Engineer.

APPROVAL RECOMMENDED:
Eishi Tanaka 12/29/69
TRAFFIC ENGINEER DATE

APPROVED:
John J. Zedler 12/30/69
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Delete "Bureau of Public Roads"	H.I.	4-29-70
2	Add Note No.3 for Barricades	H.I.	5-4-71

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
TYPICAL DETAILS CONSTRUCTION IDENTIFICATION SIGN AND WOOD BARRICADES
Scale: As Shown Date:

SHEET No. OF SHEETS DT 801