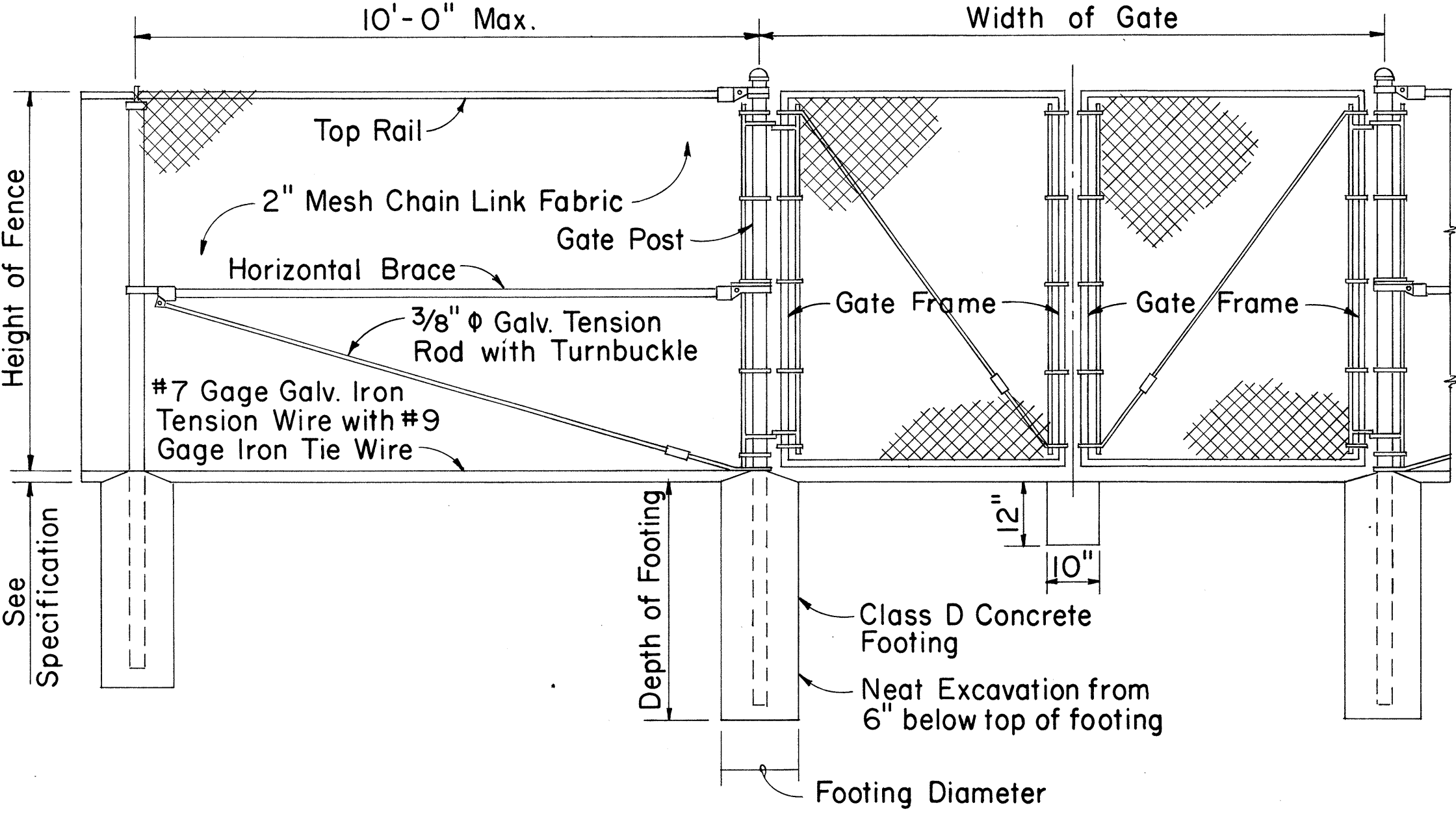


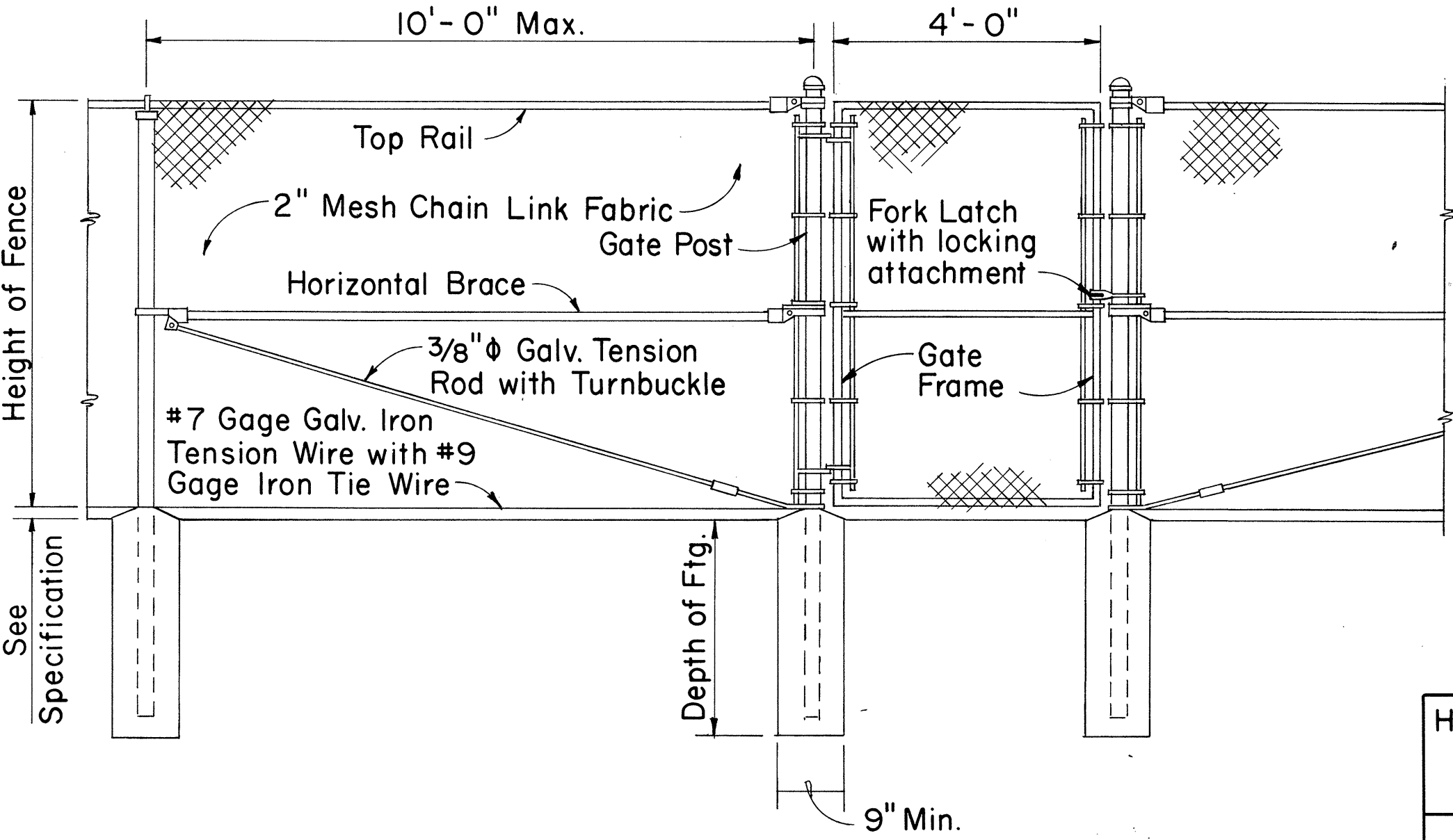
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	42	80



LINE POST GATE POST GATE POST

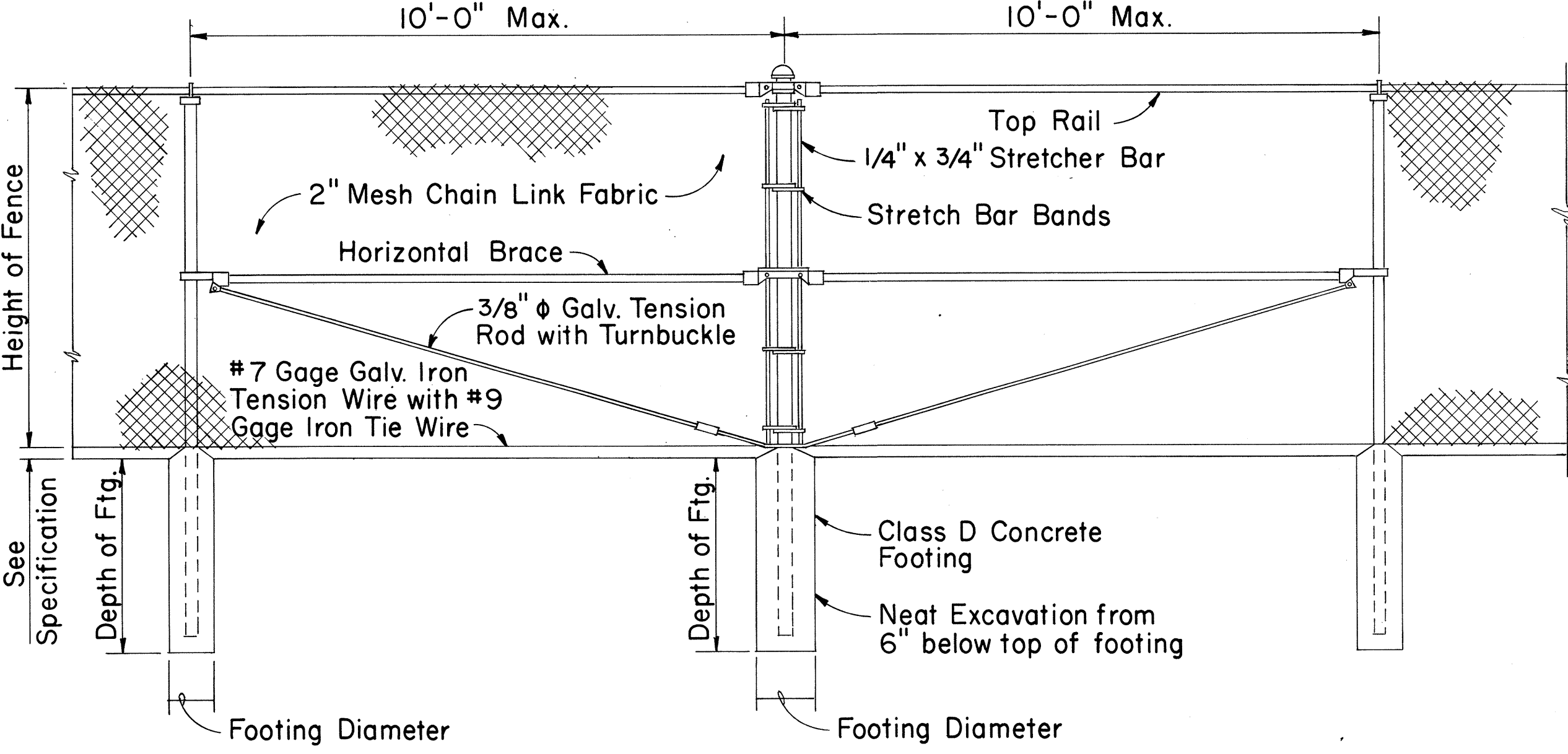
DETAIL OF CHAIN LINK GATE

- NOTE: 1. Gate fork latch and lock, flush plate and anchor, and plunger shall be installed with Gates, and shall be considered as incidental to Chain Link Fence Gate.
2. Gate frames shall be mitered and welded at corners.
3. Fence detail not shown shall be in accordance with the Standard Specifications.



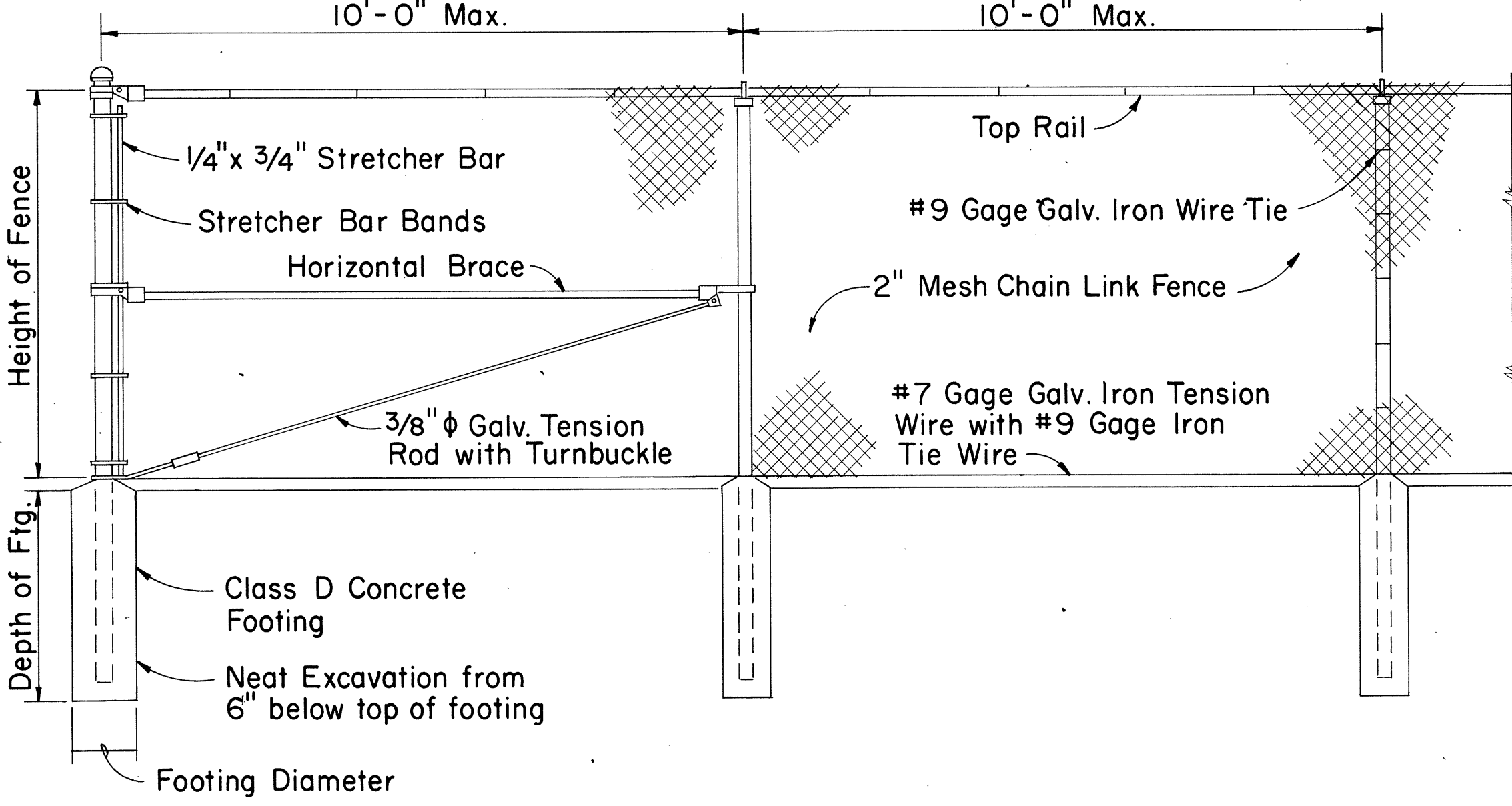
LINE POST GATE POST GATE POST

DETAIL OF 4 FT. CHAIN LINK GATE



LINE POST PULL POST LINE POST

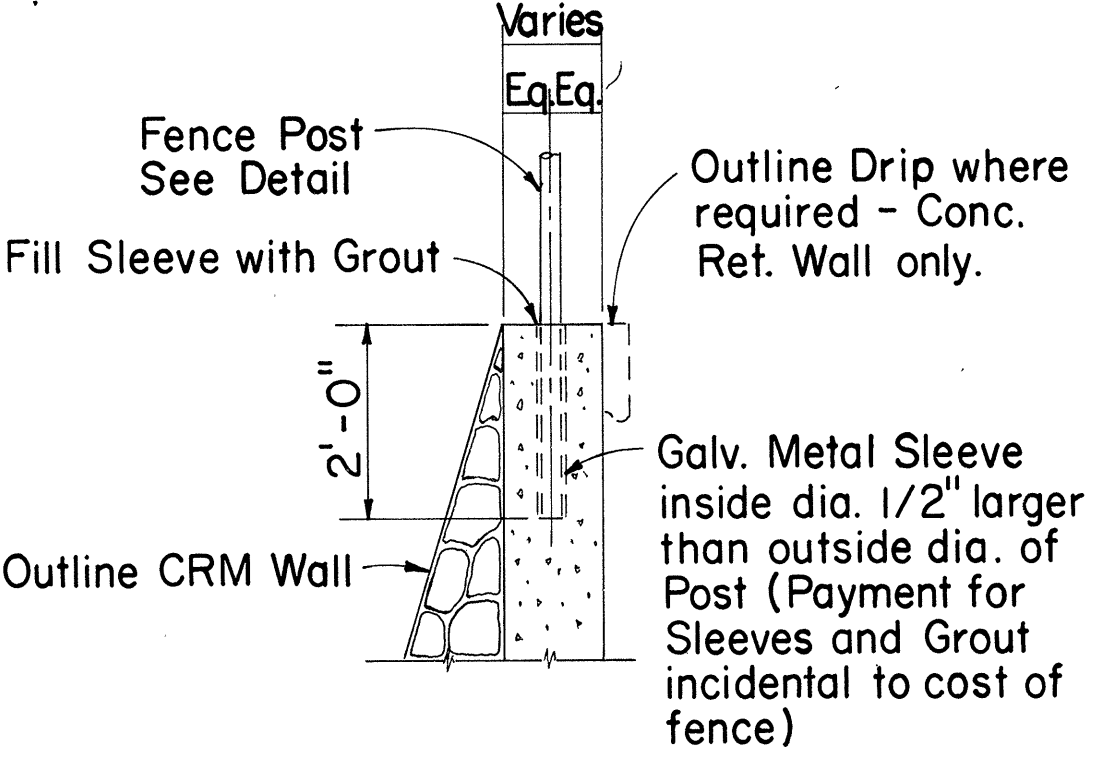
TYPICAL SECTION
(WITH CONCRETE FOOTING)



END POST LINE POST LINE POST

CHAIN LINK FENCE DETAILS

Height of Fence	Minimum Depth of Footing		Minimum Footing Diameter	
	Line Post	Corner, Pull, End and Gate Posts	Line Post	Corner, Pull and End Posts
3'	2'-0"	2'-6"	8"	8"
4'	2'-6"	2'-6"	8"	8"
5'	3'-0"	3'-0"	8"	8"
6'	3'-0"	3'-0"	8"	9"



TYPICAL SECTION
(ON CRM & CONC. RET. WALL)

APPROVAL RECOMMENDED: *M. F. Fagan* 12-4-69
HIGHWAY DESIGN ENGINEER DATE
APPROVED: *John B. B. B. B.* 12-10-69
ASSISTANT CHIEF, ENGINEERING DATE

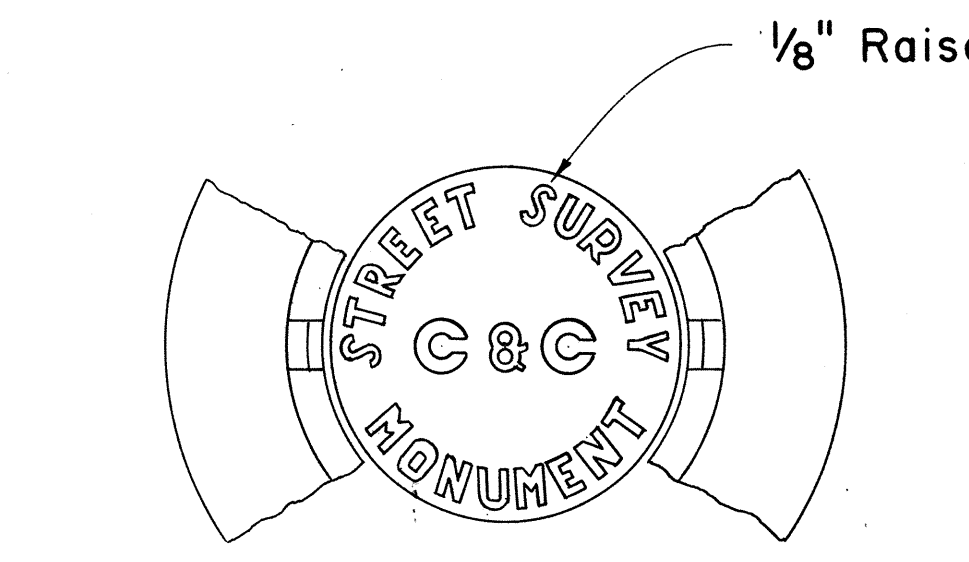
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

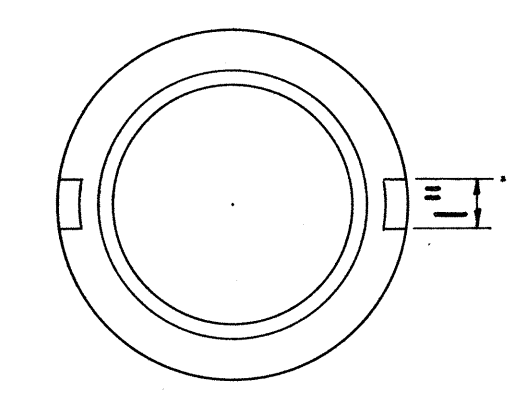
STANDARD DETAILS
CHAIN LINK FENCE
(WITH TOPRAIL)

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

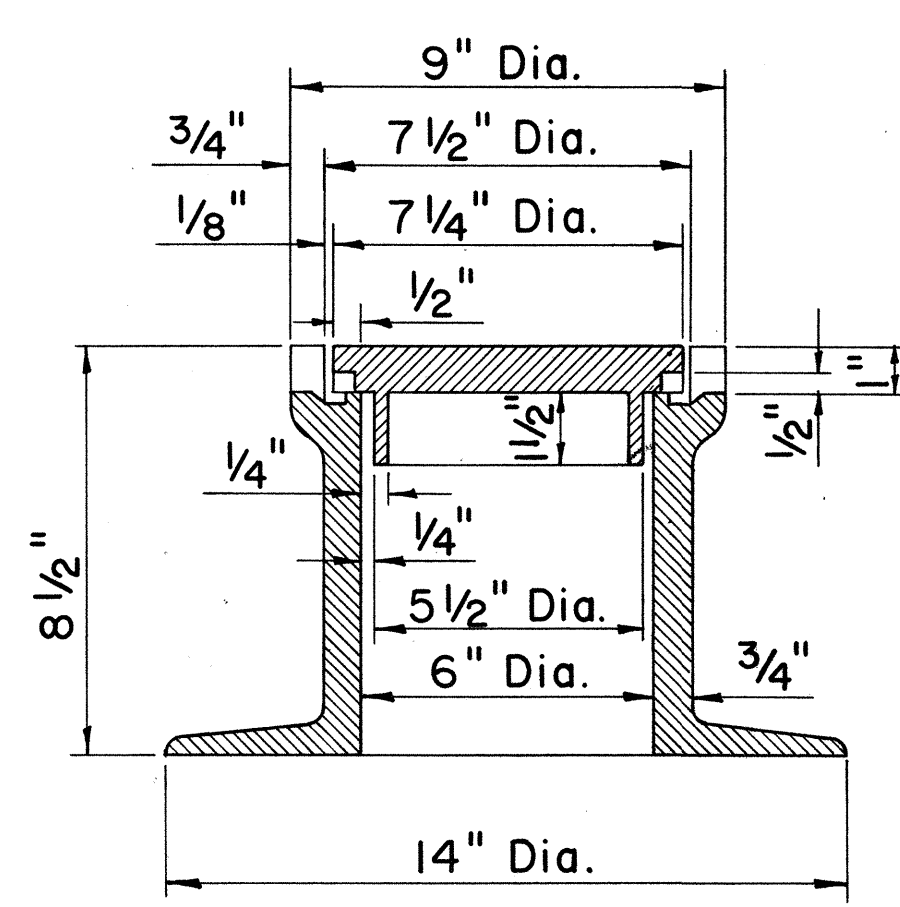
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	43	81



TOP VIEW OF COVER
AND PORTION OF FRAME



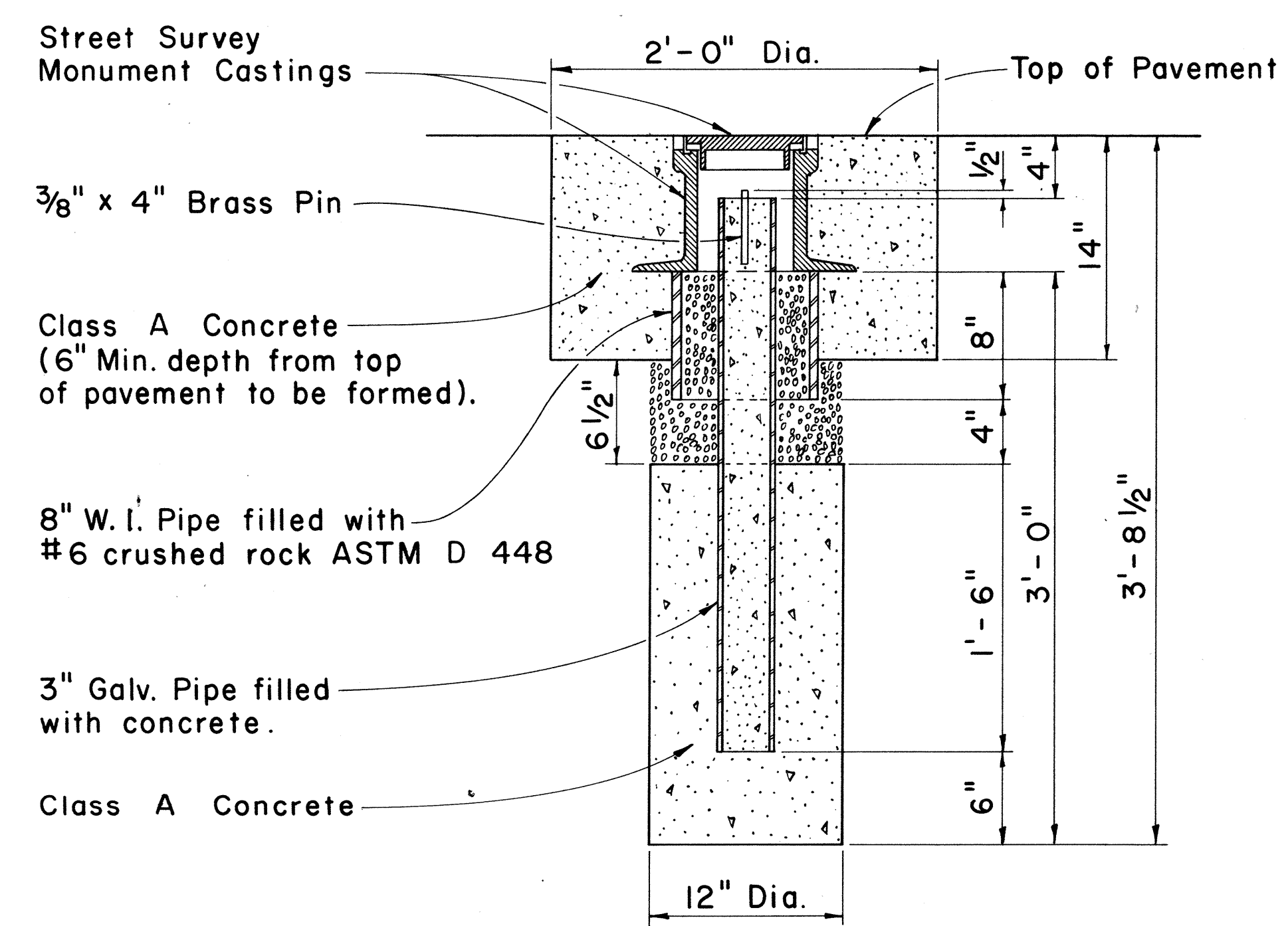
BOTTOM OF COVER



SECTIONAL VIEW OF
FRAME AND COVER

STREET SURVEY MONUMENT CASTINGS

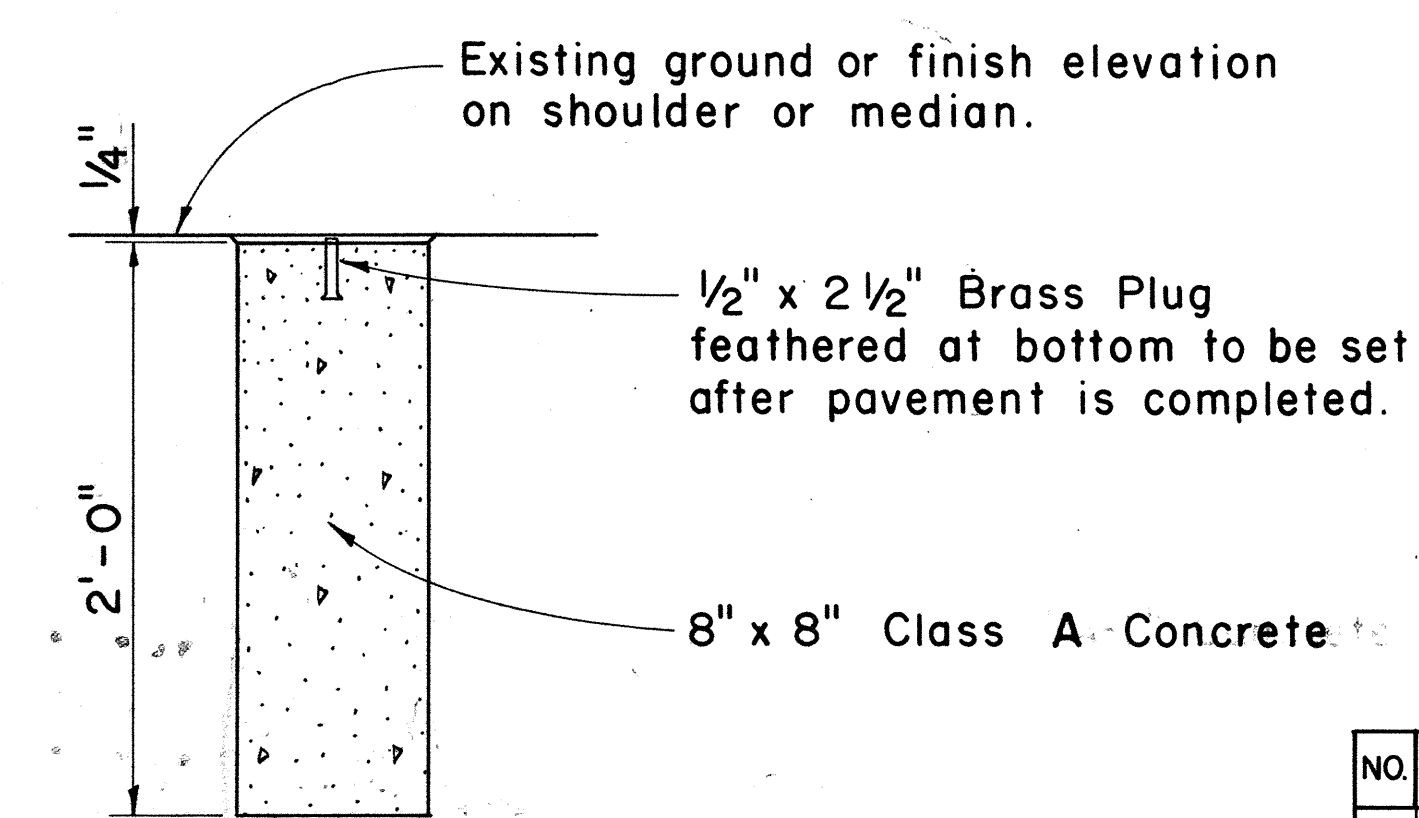
Scale: 3" = 1'-0"



NOTE:
Where the excavation extends into solid rock the depth may be decreased if approved by the Engineer.

STREET SURVEY MONUMENT

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



DETAIL FOR CENTERLINE AND REFERENCE SURVEY MONUMENT

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

SUPPLEMENT SHEET
ADDENDUM NO. 1
October 12, 1970

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

APPROVED:
M. Hironaka 12-10-69
ASSISTANT CHIEF, ENGINEERING DATE

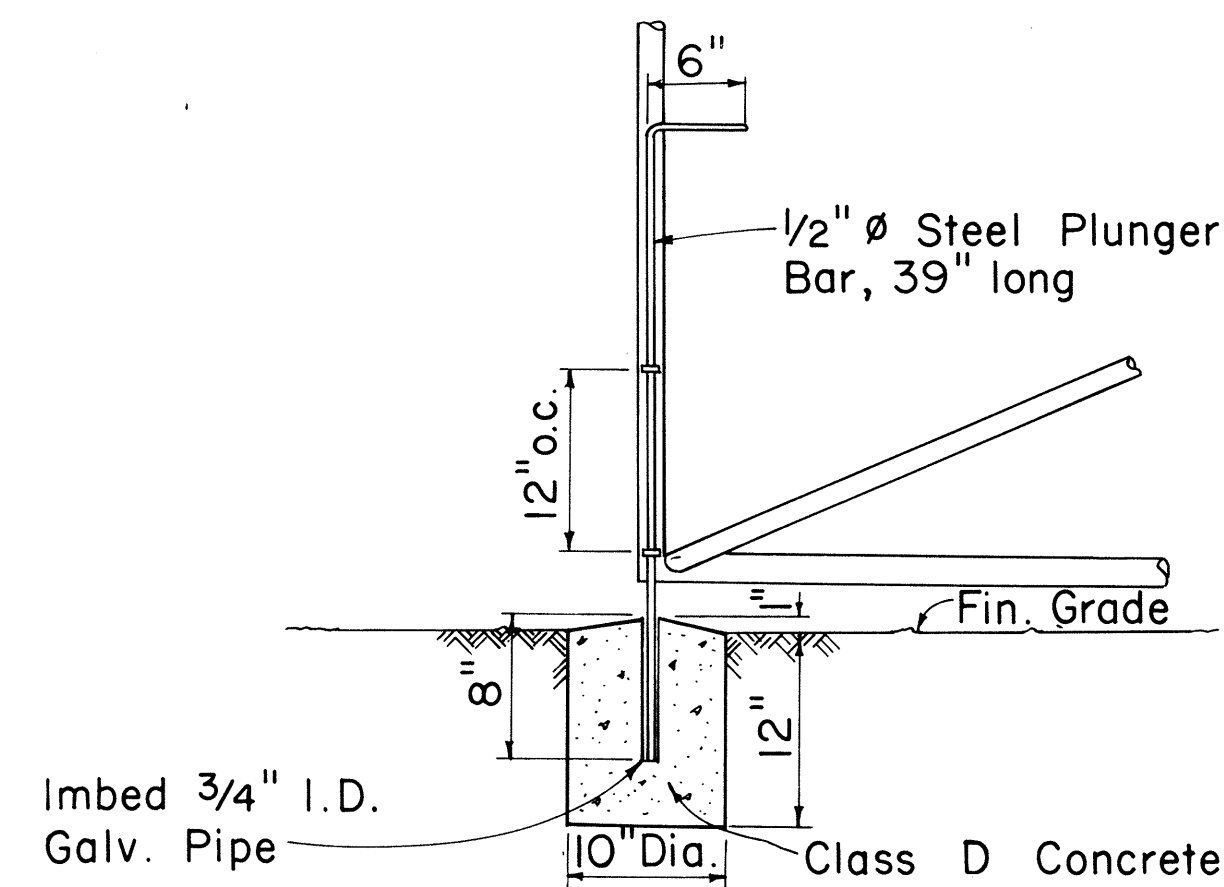
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

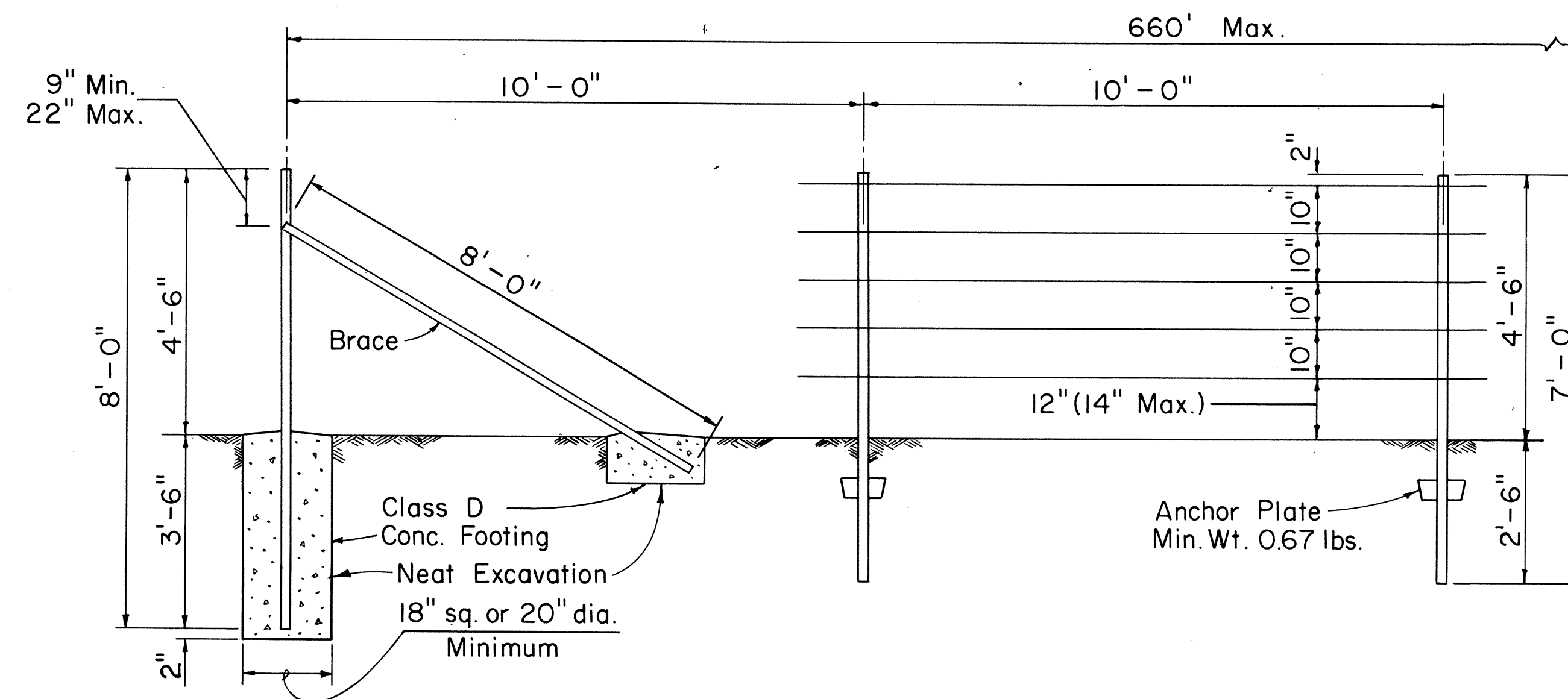
STANDARD DETAILS
CENTERLINE, REFERENCE SURVEY
AND C & C STREET SURVEY
MONUMENTS

Scale: As Shown

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	44	80

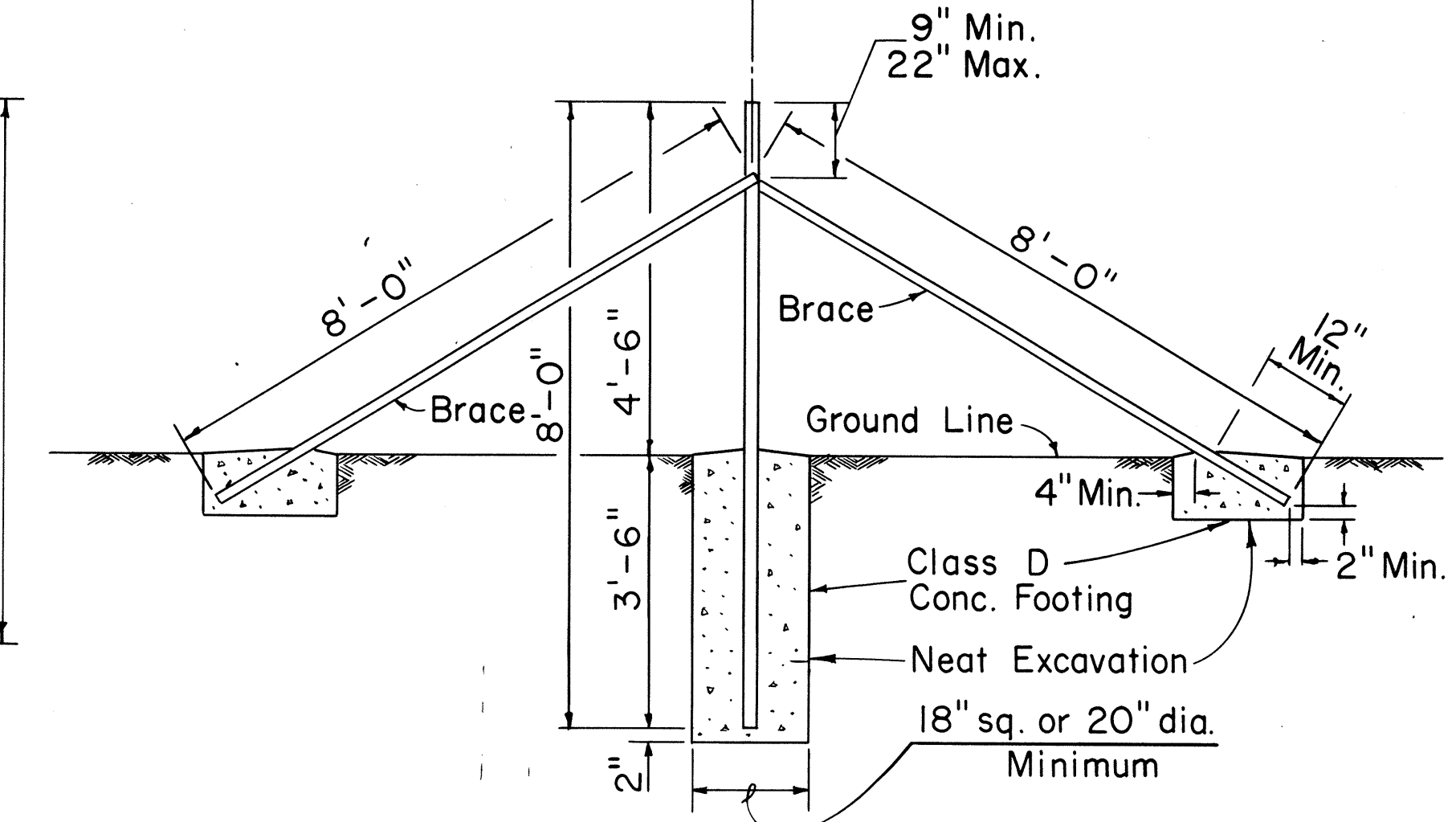


DETAIL B
Scale: 1" = 1'-0"

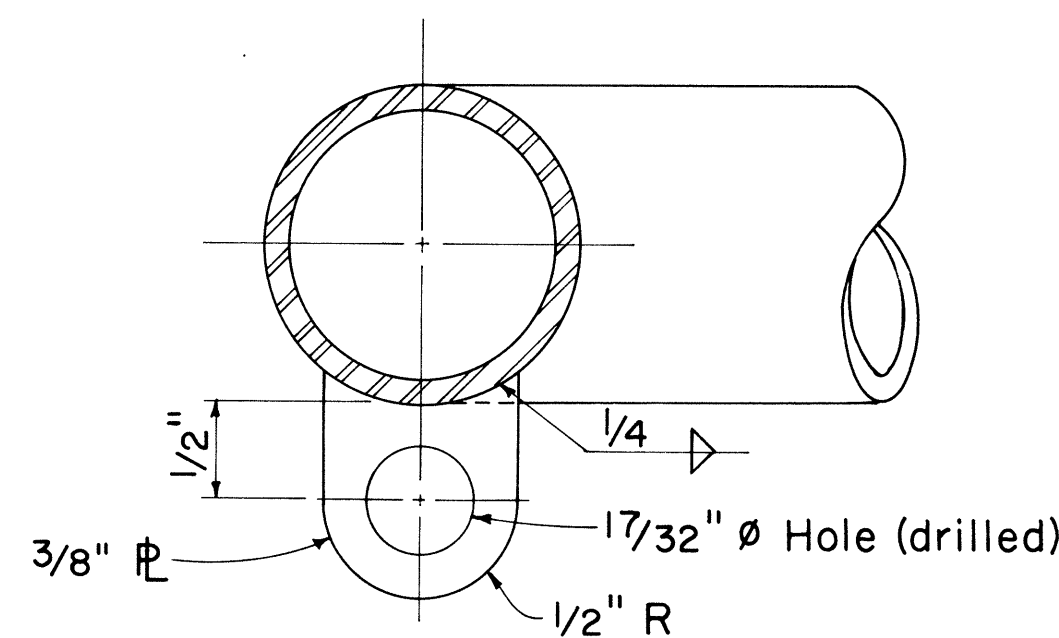


END OR CORNER POST
Scale: 1/2" = 1'-0"

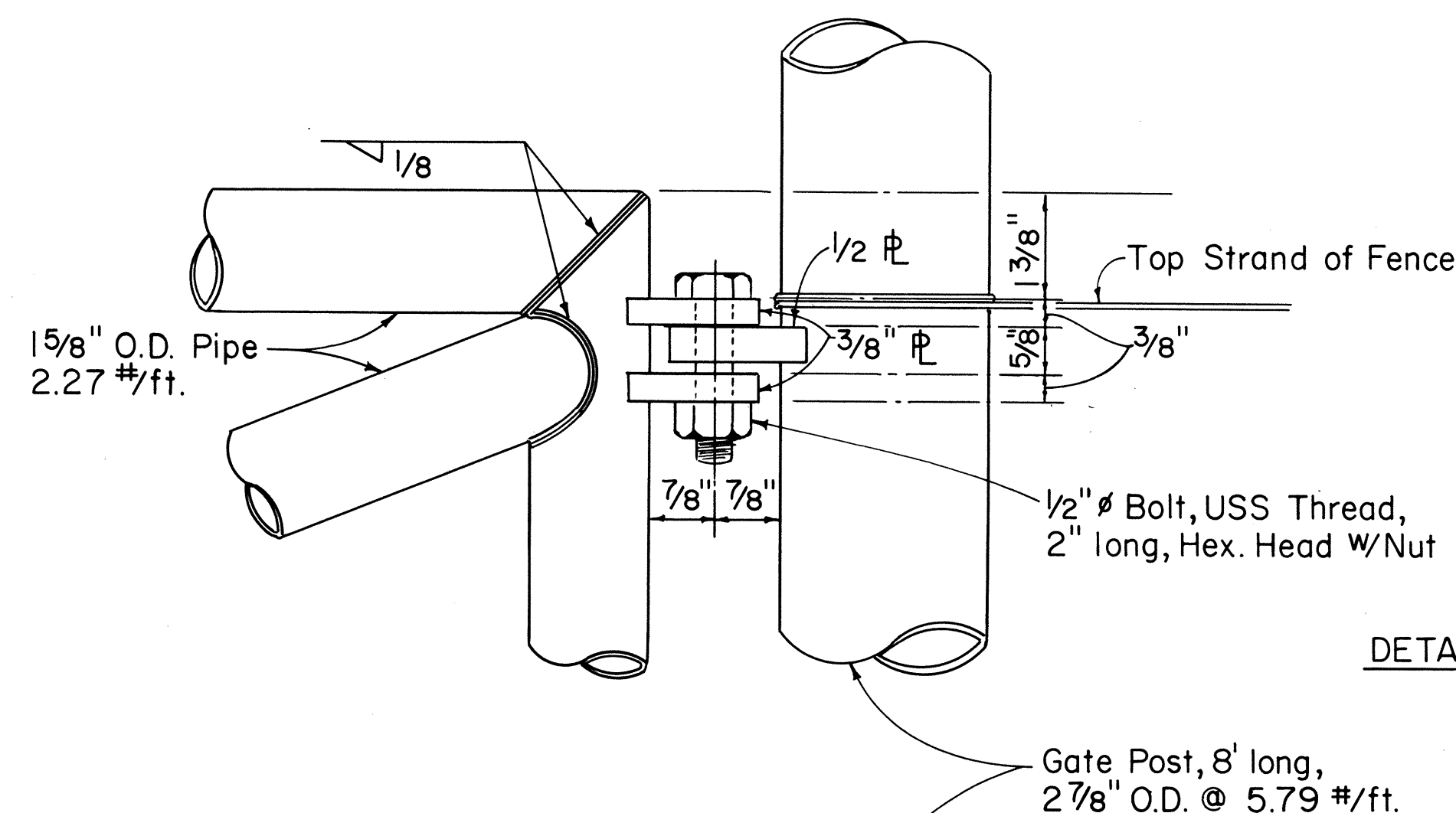
LINE POST
Scale: 1/2" = 1'-0"



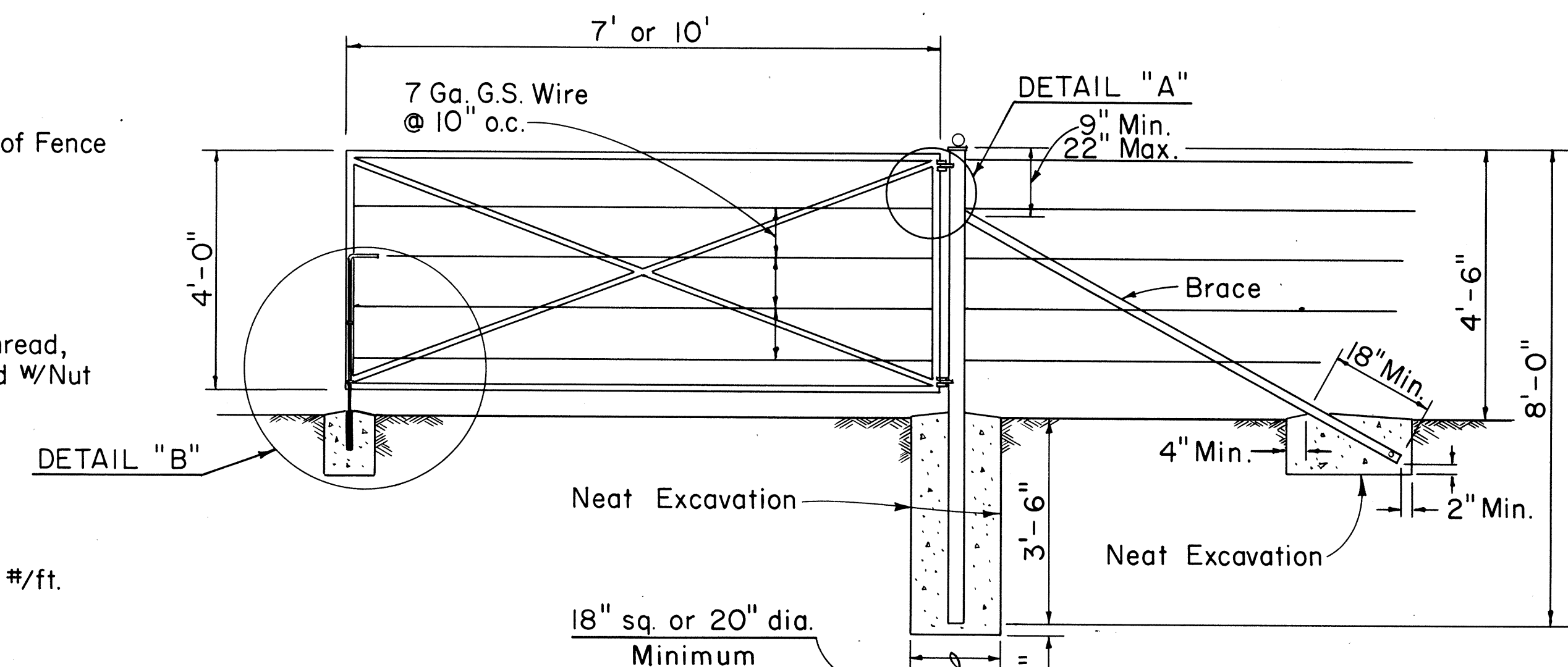
INTERMEDIATE ANCHOR POST
Scale: 1/2" = 1'-0"



GUIDE FOR PLUNGER BAR
Scale: Full Size



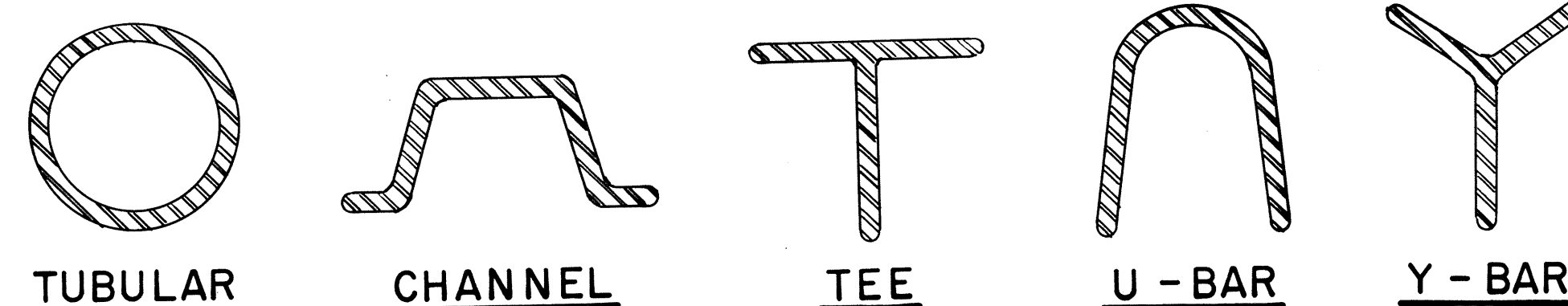
DETAIL A
Not To Scale



HALF-VIEW - DOUBLE HUNG GATES
Scale: 1/2" = 1'-0"

NOTES:

1. Gate Hinge Blades and Plunger bar guides shall be chamfered 1/32" all around and as required to prevent conflict between moving parts.
2. All parts of Gates shall be galvanized after fabrication.
3. All holes shall be reamed as necessary to admit hinge bolts or plunger bars.
4. Gate panels shall be strung with 7 ga. smooth fence wire spaced to conform to spacing of adjacent fence strands.
5. One plunger bar required per set of double-hung gates. None required for single-hung gate.



TYPICAL SECTIONS OF METAL POSTS
Not To Scale

NO.	REVISION	APPROVED BY	DATE

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

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

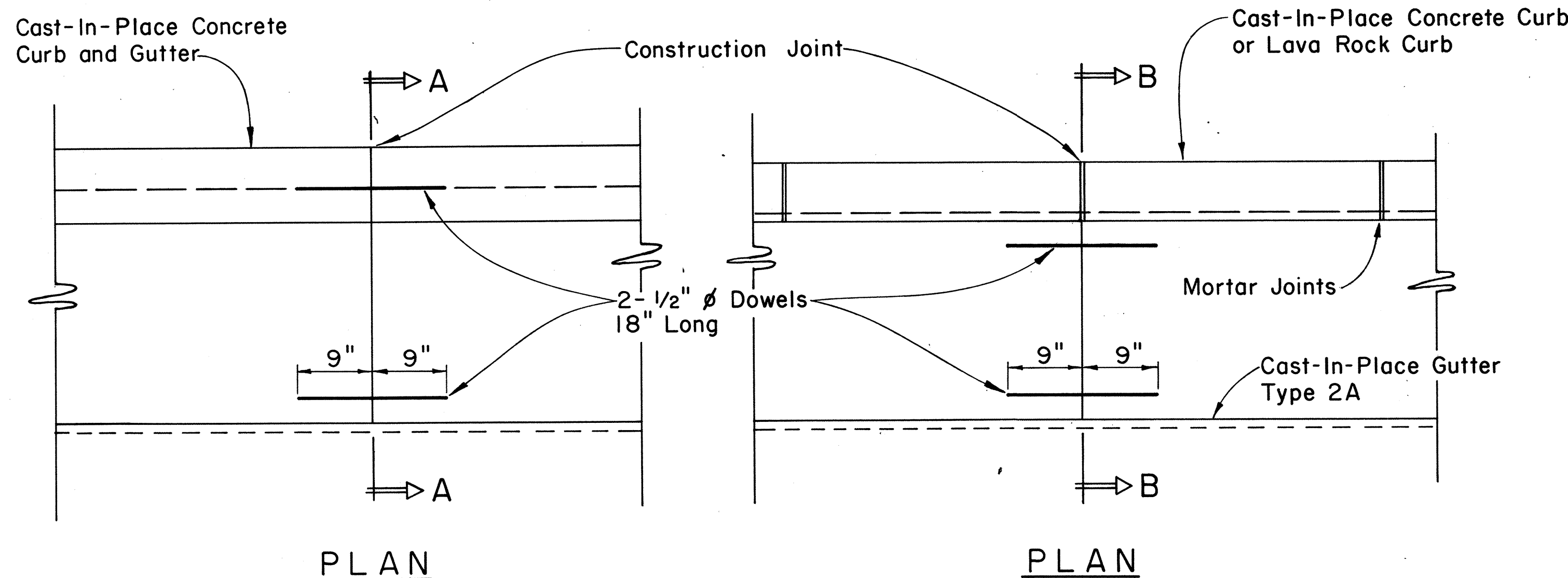
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

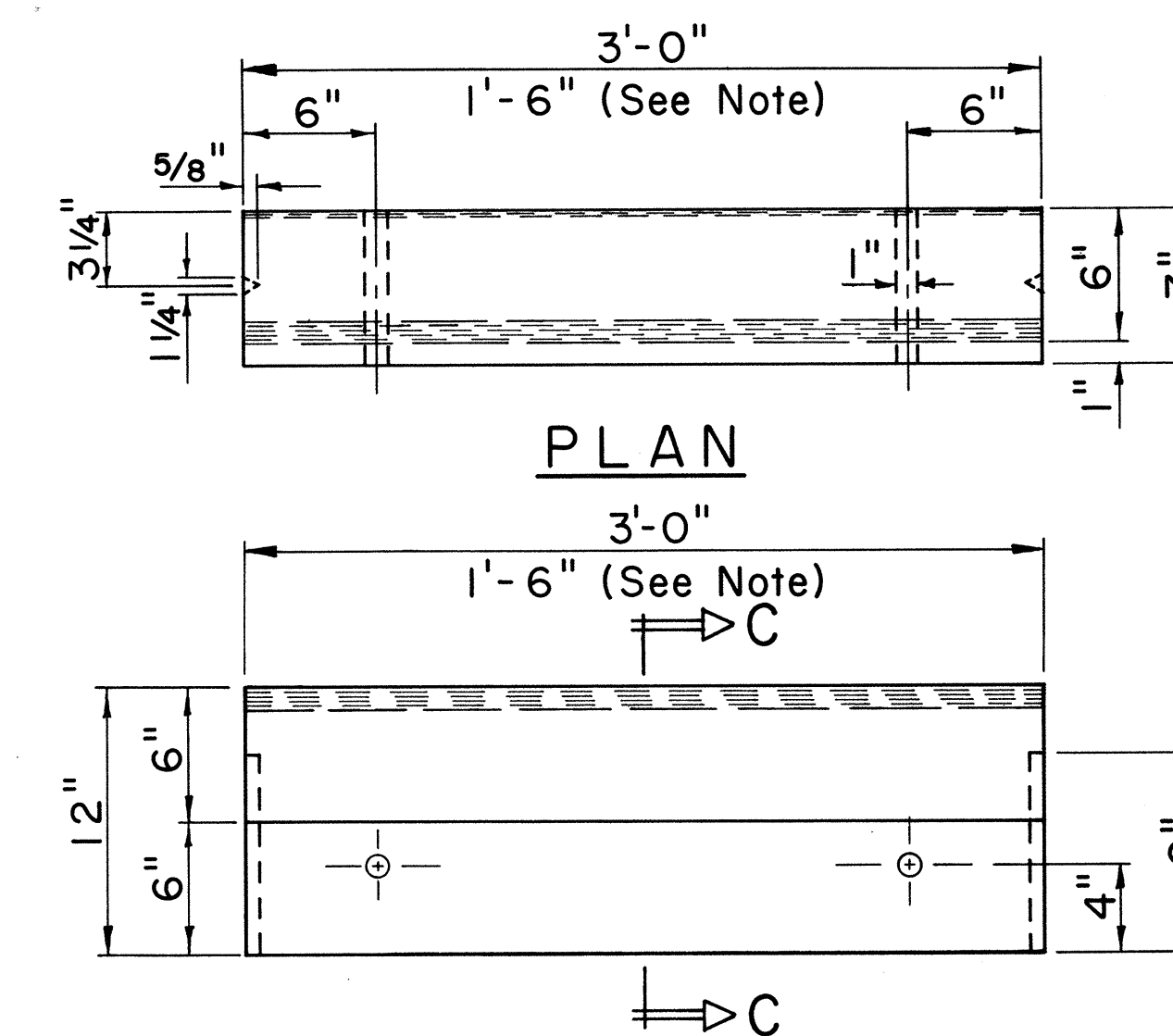
WIRE FENCE WITH METAL POSTS

Scale: As Noted

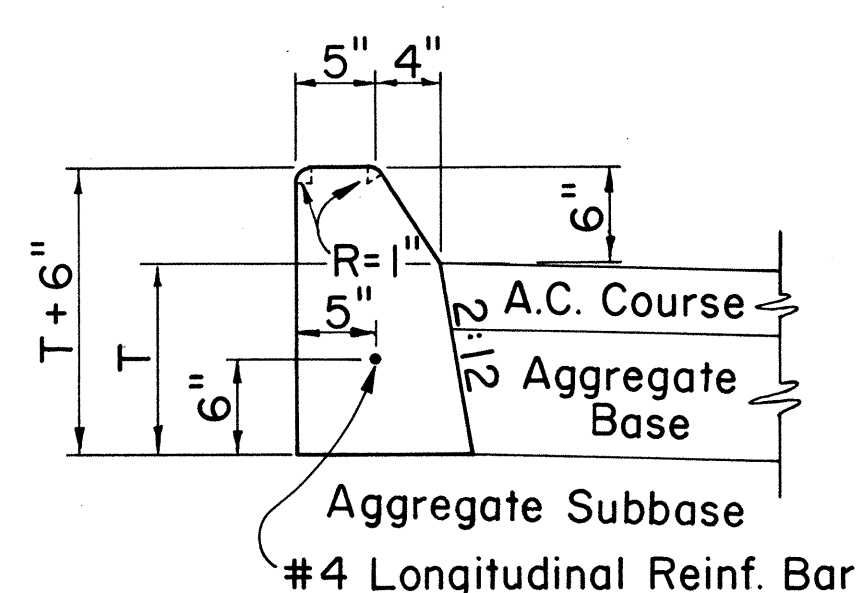
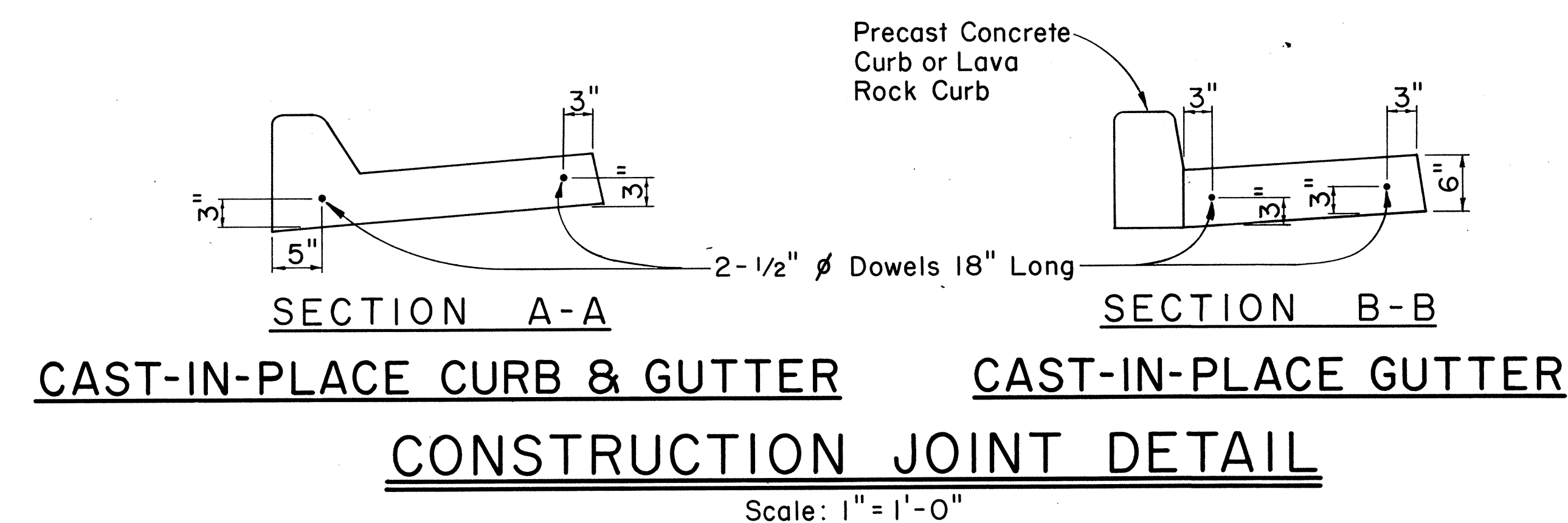
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	45	80



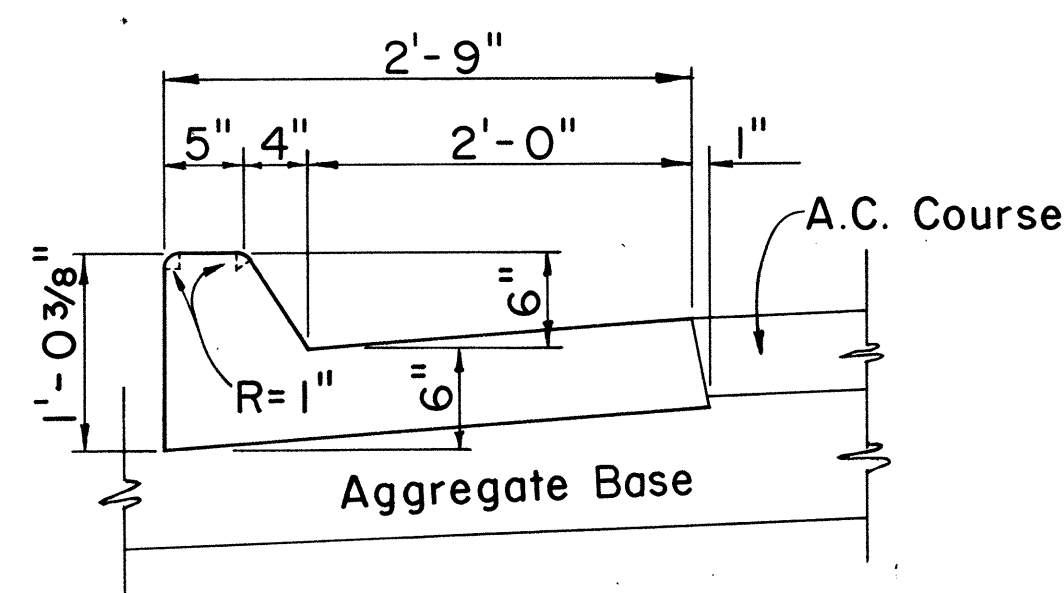
CURB, TYPE 6
BITUMINOUS CURB
Scale: 1 1/2" = 1'-0"



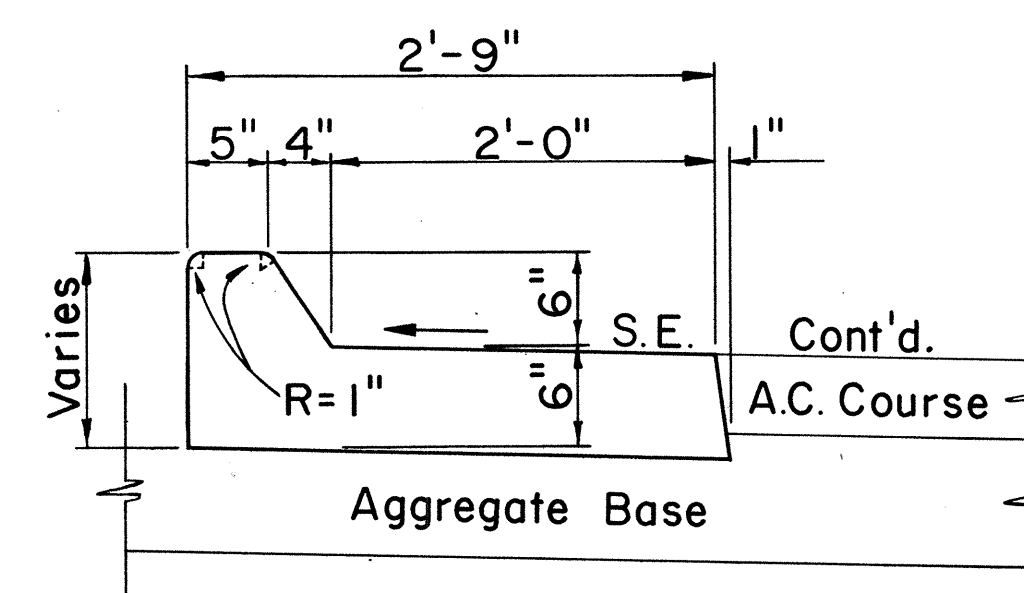
SECTION C-C
CURB, TYPE 3D
PRE-CAST CONC. CURB
Scale: 1 1/2" = 1'-0"



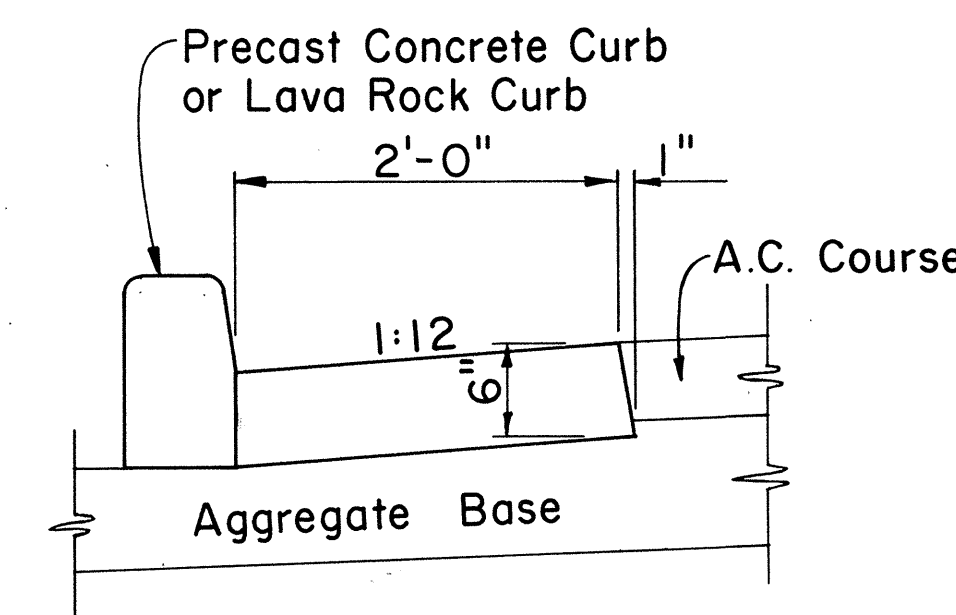
CURB, TYPE 2A



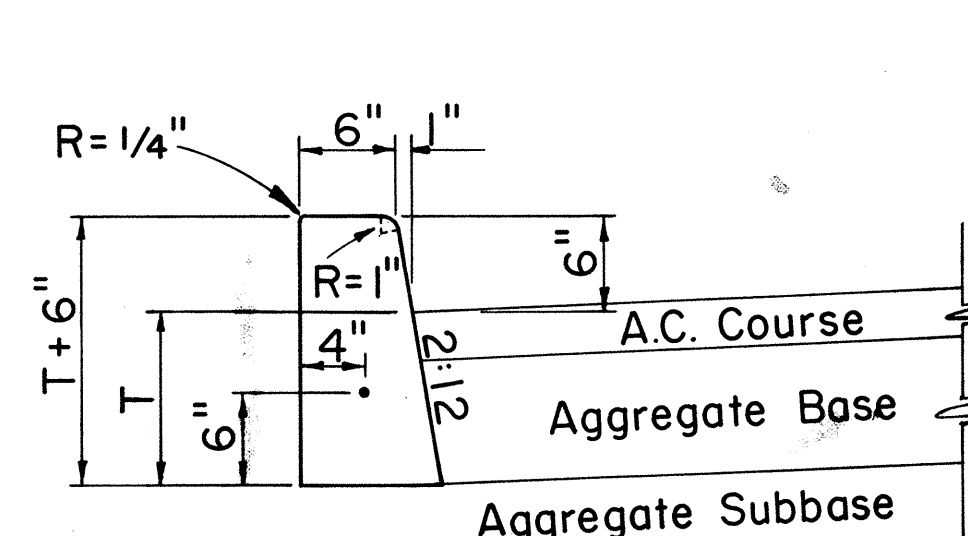
CURB & GUTTER, TYPE 2AG



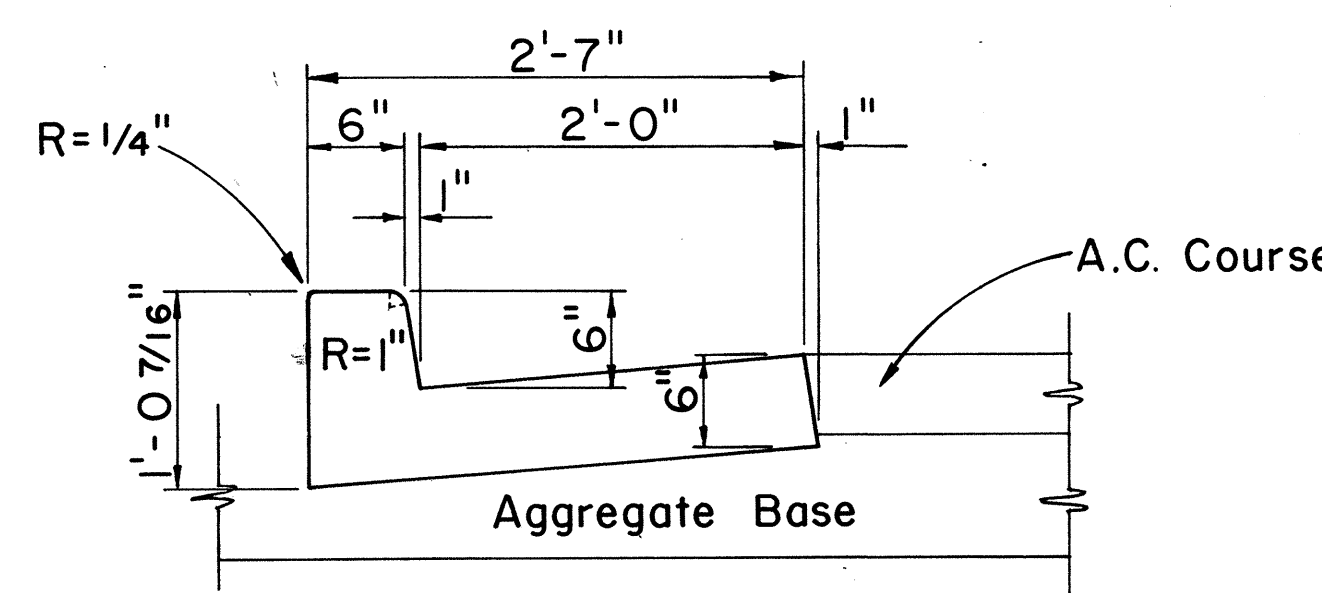
CURB & GUTTER, TYPE 2AGM



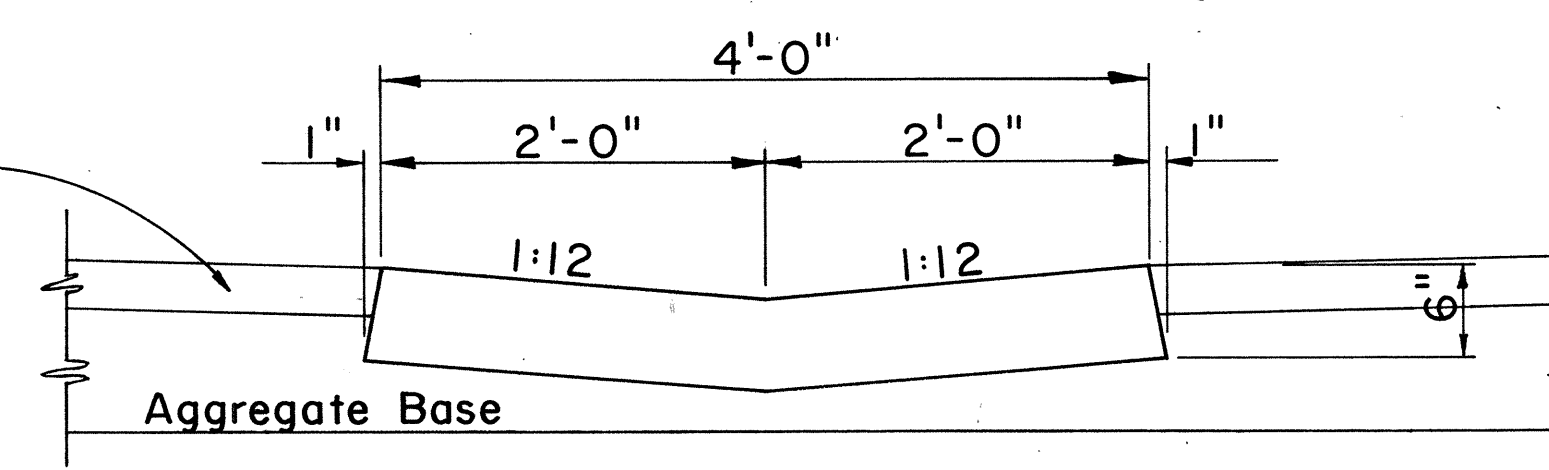
GUTTER, TYPE 2A



CURB, TYPE 2D



CURB & GUTTER, TYPE 2DG



GUTTER, TYPE 2G

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

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

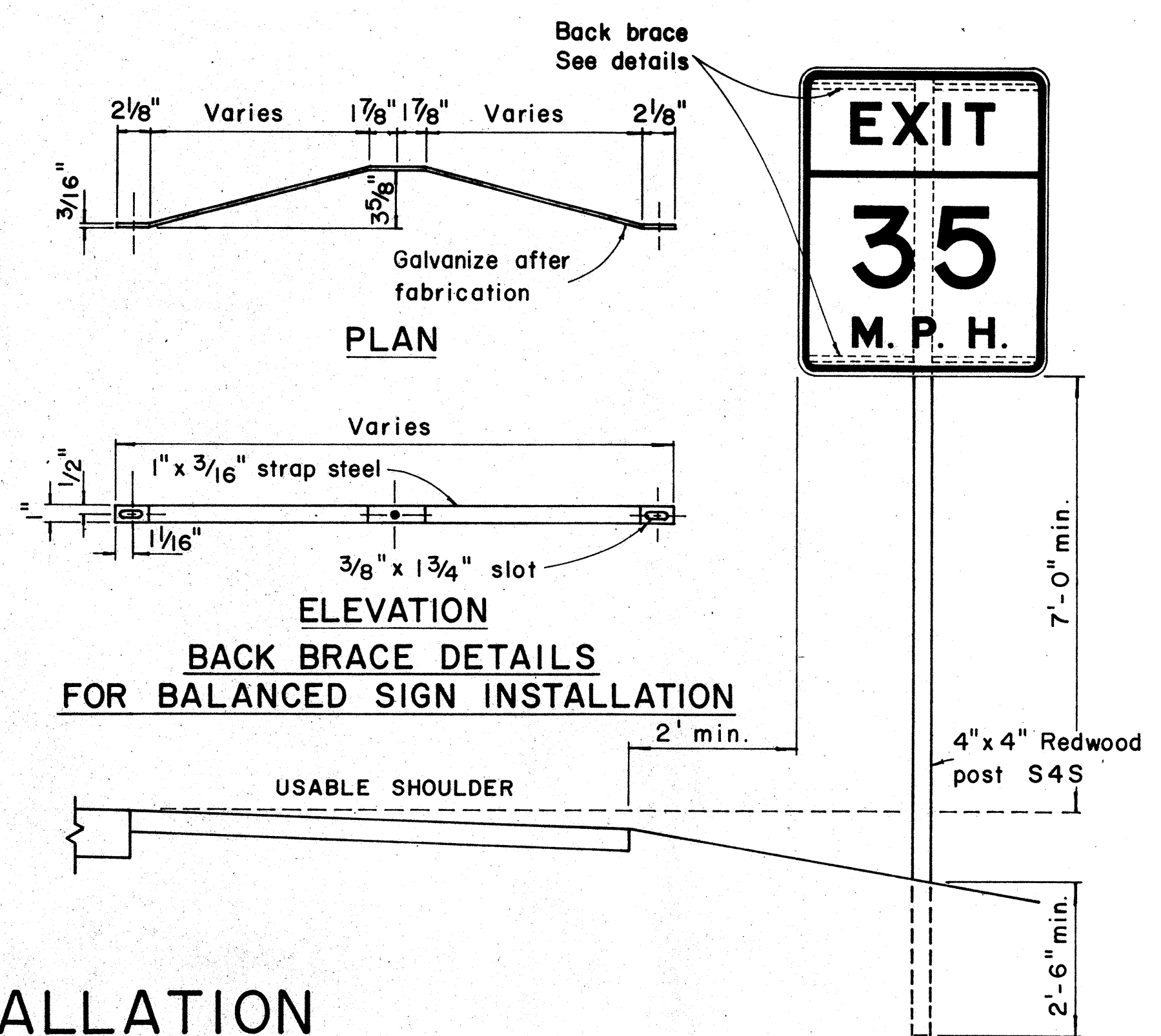
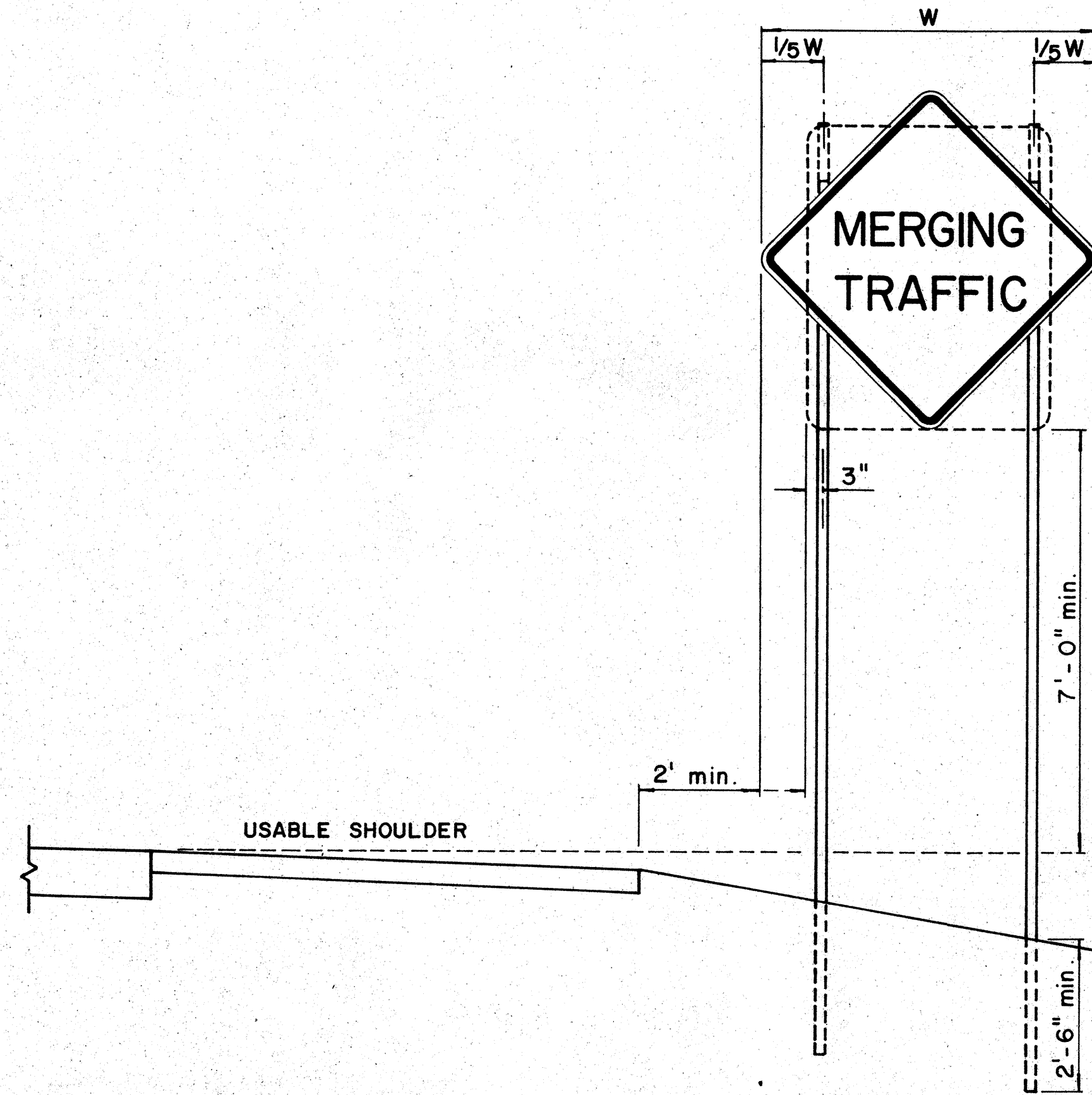
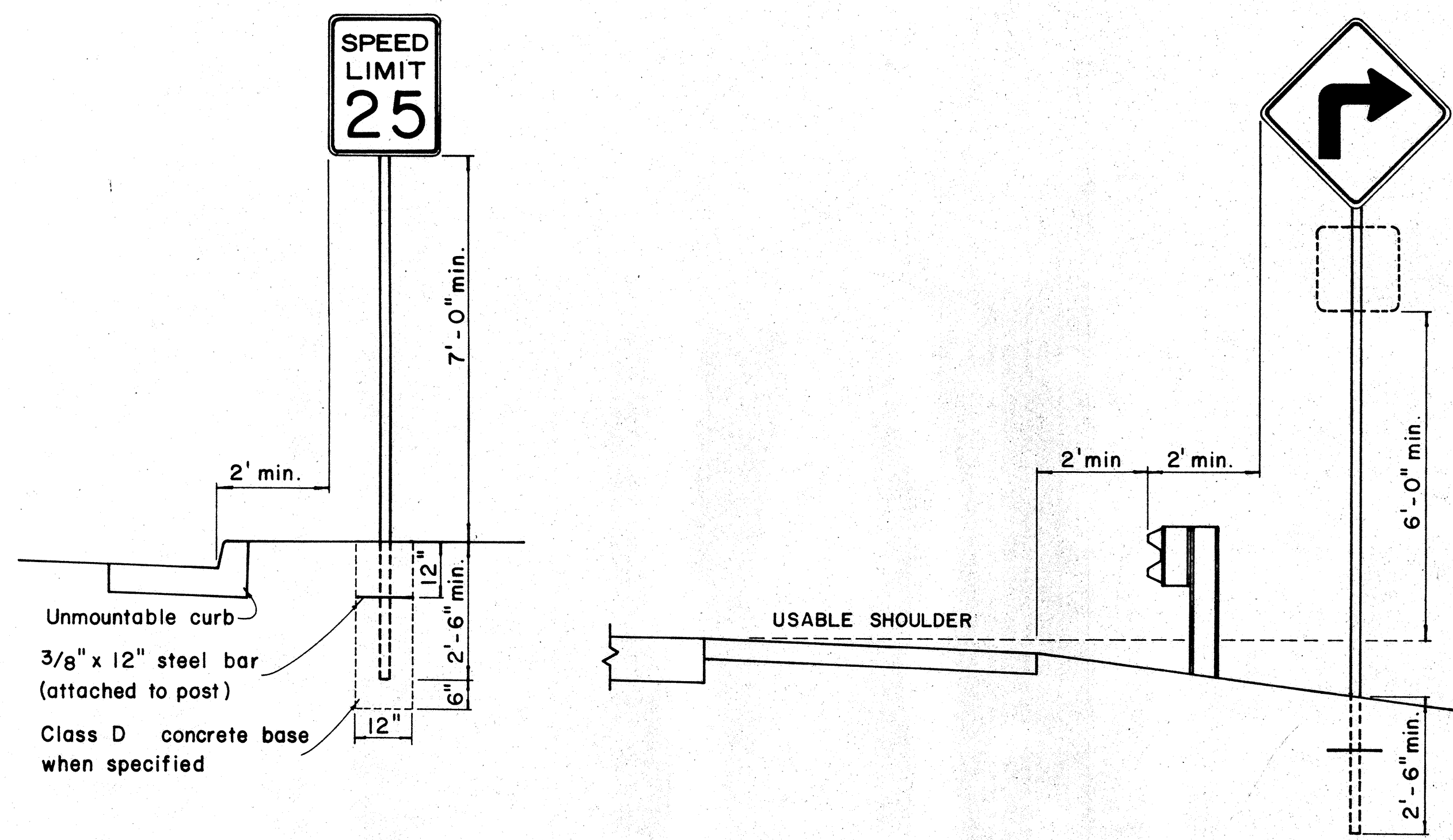
APPROVED:
R. J. J. J. 12-10-59
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

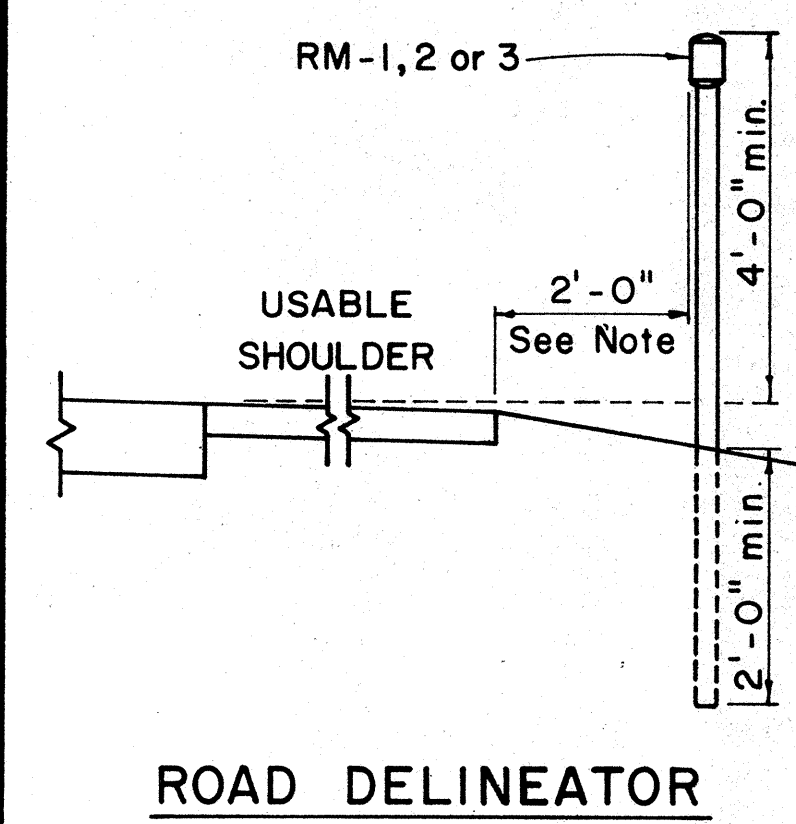
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
TYPICAL DETAILS OF CURB
AND/OR GUTTERS

Scale: As Shown
SHEET No. 3 OF 27 SHEETS DD 609.1

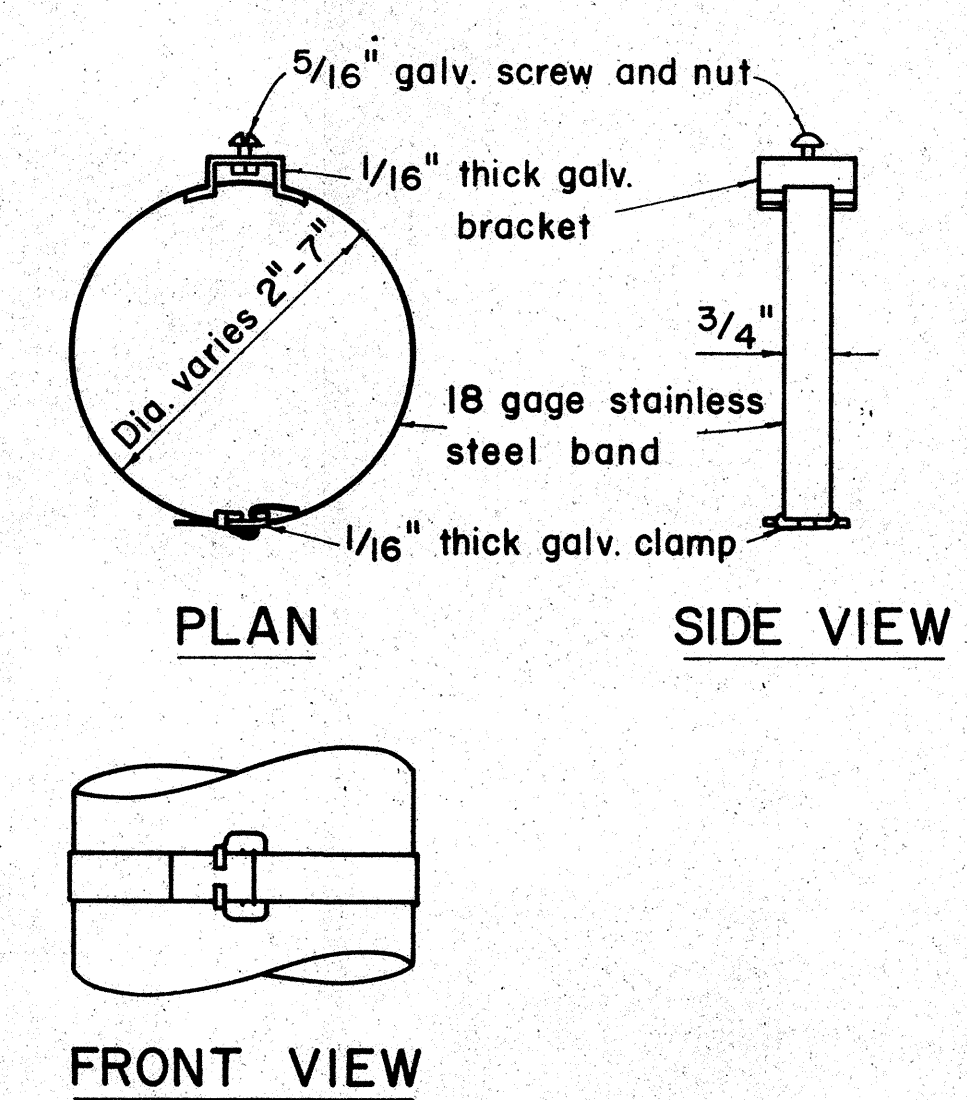
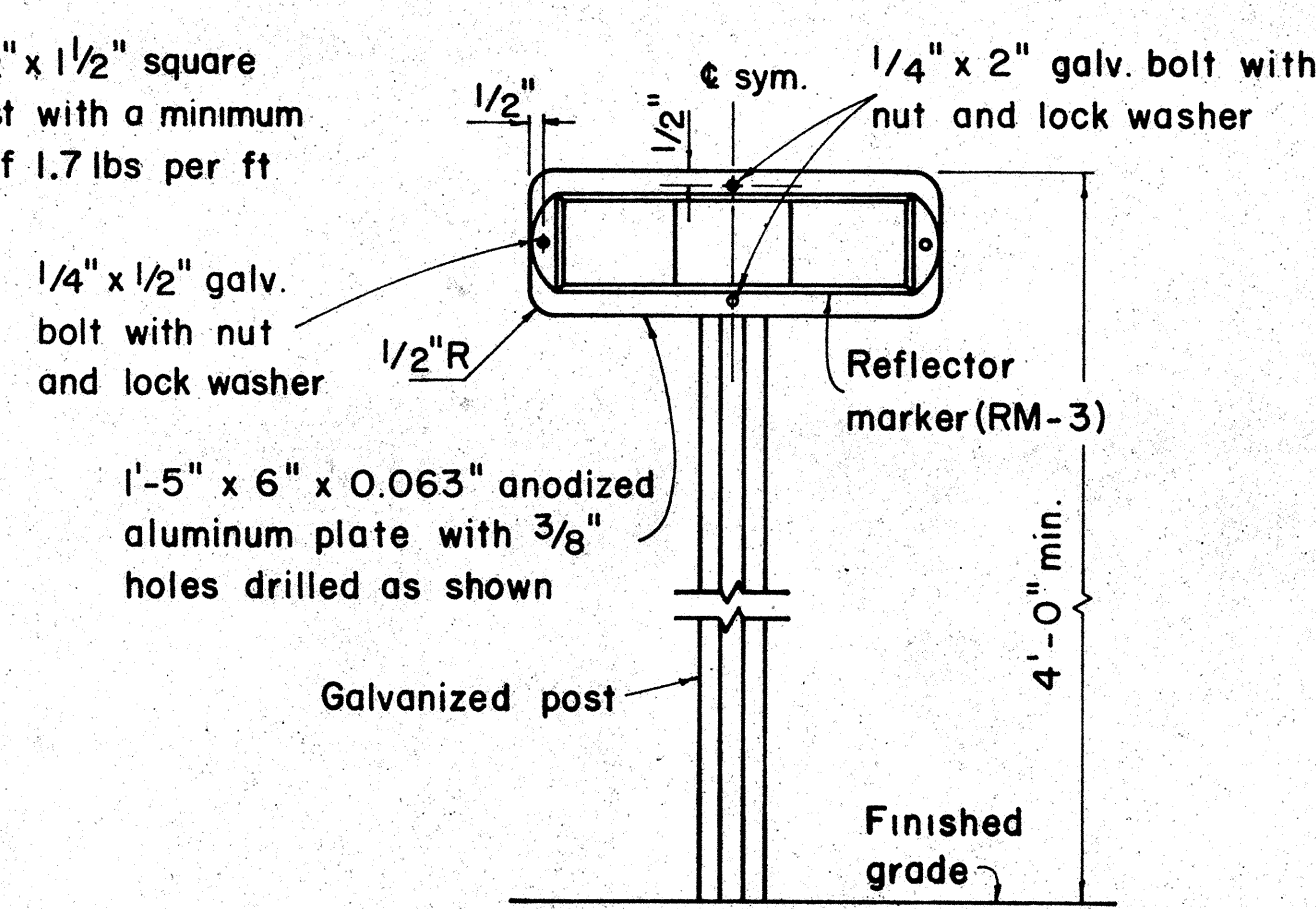
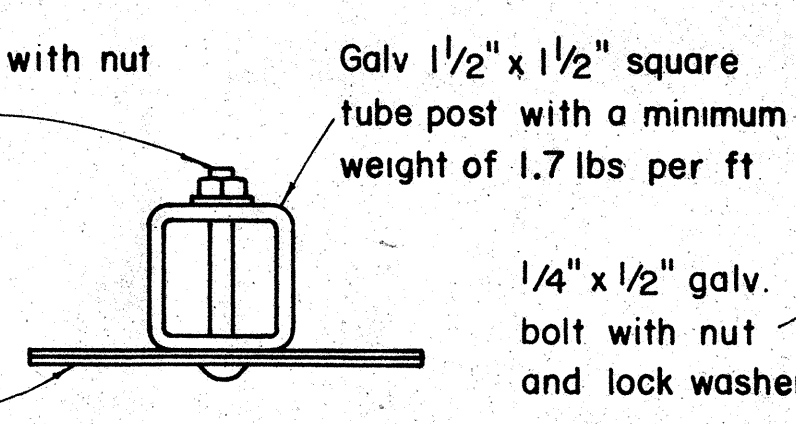
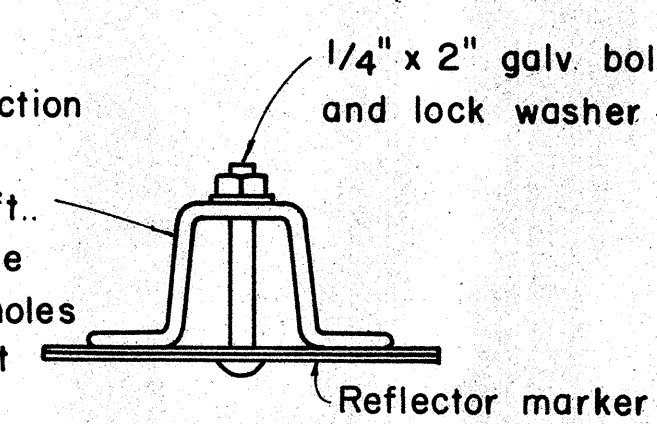
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	46	80



HEIGHT AND LATERAL LOCATION OF SIGNS - TYPICAL INSTALLATION



Galv. flanged channel
1/8" x 3 1/16" rolled section
post with a minimum
weight of 2 lbs. per ft.
Upper 2 ft. shall have
a single row of 3/8" holes
centered in the web at
1" o.c.



- ### GENERAL NOTES:
- Sign posts shall be 2" galv. standard pipe or 2" x 2" galv. sq. tube post.
 - Signs 48" and wider or larger than 10 sq. ft. in area shall be mounted on two 2" galv. standard pipe or two 2" x 2" galv. sq. tube post or 4" x 4" redwood post S4S.
 - Signs shall be attached to post with 5/16" galv. bolts with nuts and 7/8" x 0.06 stainless steel washers with neoprene rubber gasket.
 - Sign posts shall extend 3 1/2' above sign where required for City and County street name signs.
 - Reflector markers RM-1, 2, 3 shall be glass sphere reflector markers with 4" x 5" reflector units (as shown) or plastic prismatic reflector markers with 3" diameter reflector units.
 - Clearance markers (RM-3, RM-4) shall be installed with the edge of the marker in line with the inner edge of the obstruction.
 - (R) or (L) indicates right or left and shall be as shown on the plans.

APPROVAL RECOMMENDED:
E.ichi Tanaka 12/29/69
TRAFFIC ENGINEER DATE

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

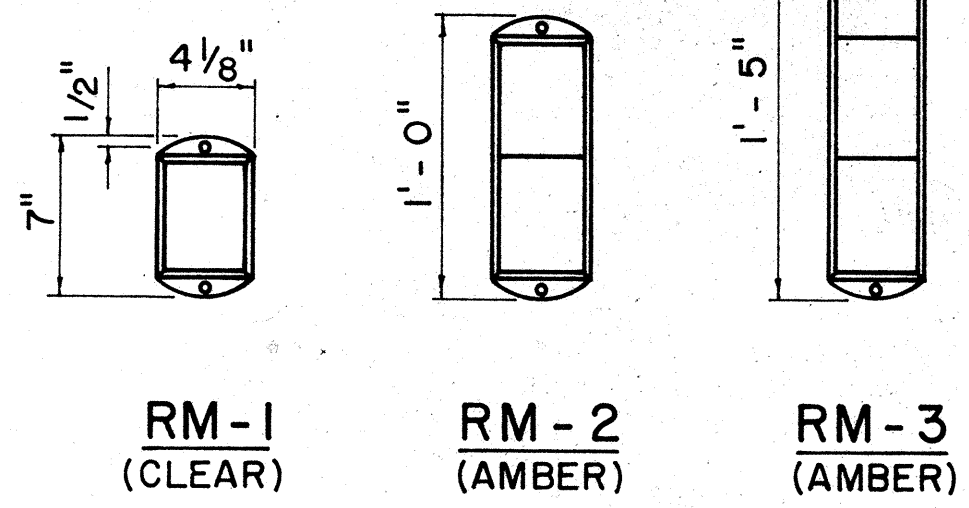
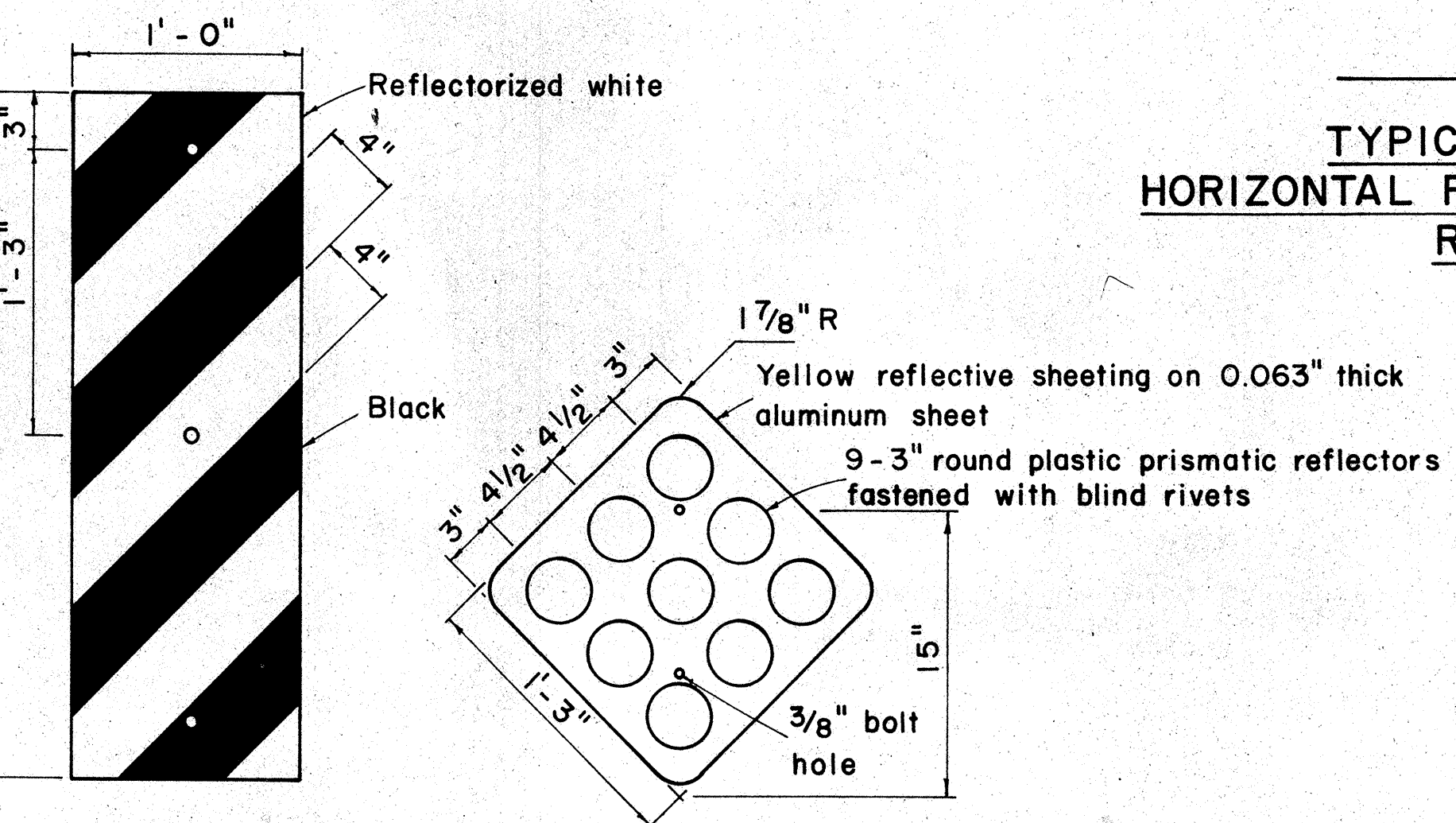
TYPICAL BAND BRACKET FOR MOUNTING TRAFFIC SIGNS

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

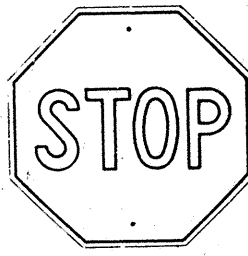
STANDARD DETAILS
MISCELLANEOUS SIGN DETAILS

Not to scale March, 1968

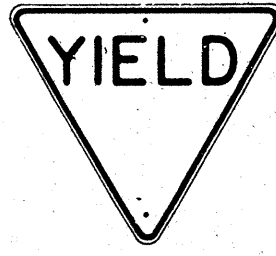


REFLECTOR MARKERS

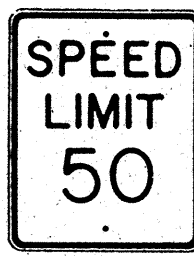
ORIGINAL PLAN	DATE
DESIGNED BY	
TRACED BY	
NOTED BY	
CHECKED BY	



R1-1 30"x 30"



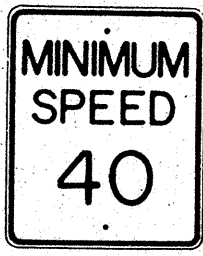
R1-2 36"x 36"x 36"
R1-2-E 48"x 48"x 48"
R1-2-I 60"x 60"x 60"



R2-1(50) 24"x 30"
R2-1(50)-E 36"x 48"
R2-1(50)-I 48"x 60"



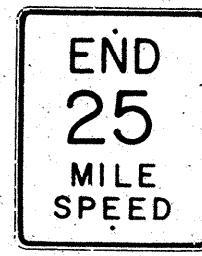
R2-2(40) 24"x 24"
R2-2(40)-E 36"x 36"
R2-2(40)-I 48"x 48"



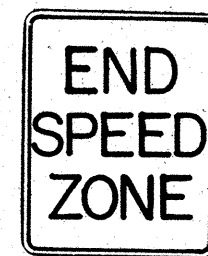
R2-4(40) 24"x 30"
R2-4(40)-E 36"x 48"
R2-4(40)-I 48"x 60"



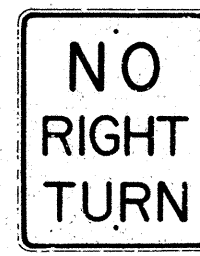
R2-5 24"x 30"
R2-5-E 36"x 48"
R2-5-I 48"x 60"



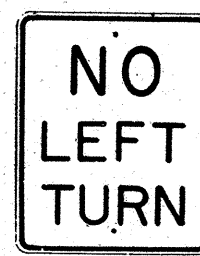
R2-6(25) 24"x 30"
R2-6(25)-E 36"x 48"
R2-6(25)-I 48"x 60"



R2-7 24"x 30"
R2-7-E 36"x 48"
R2-7-I 48"x 60"



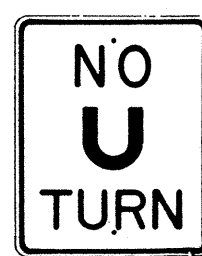
R3-1 24"x 30"
R3-1-E 36"x 48"



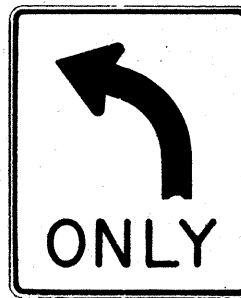
R3-2 24"x 30"
R3-2-E 36"x 48"



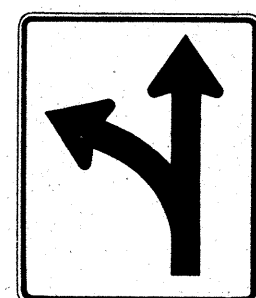
R3-3 24"x 24"



R3-4 24"x 30"
R3-4-E 36"x 48"
R3-4-I 48"x 60"



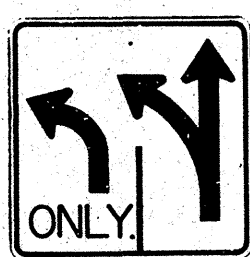
R3-5(L) 30"x 36"



R3-6(L) 30"x 36"



R3-7(R) 30"x 30"



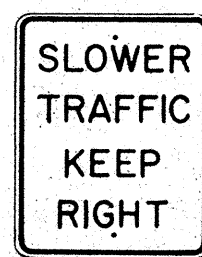
R3-8(L) 30"x 30"



R4-1 24"x 30"



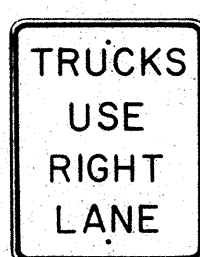
R4-2 24"x 30"



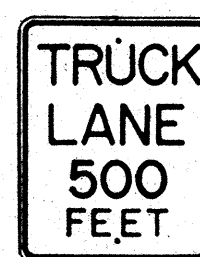
R4-3 24"x 30"
R4-3-E 36"x 48"
R4-3-I 48"x 60"



R4-4 24"x 30"
R4-4-E 36"x 48"
R4-4-I 48"x 60"



R4-5 24"x 30"
R4-5-E 36"x 48"



R4-6 24"x 30"
R4-6-E 36"x 48"



R4-7(R) 24"x 30"
R4-7(R)-E 36"x 48"



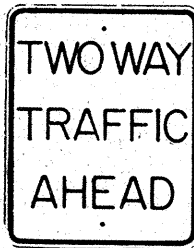
R5-1 24"x 24"



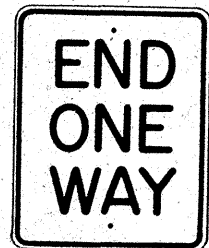
R6-1(R) 36"x 12"



R6-2(R) 18"x 24"



R6-3 24"x 30"



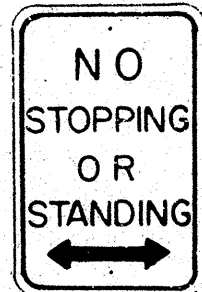
R6-4 24"x 30"



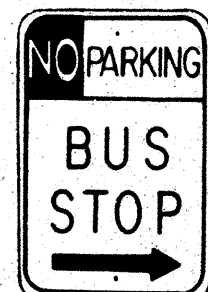
R6-5 24"x 30"



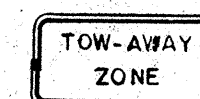
R7-1 12"x 18"



R7-4 12"x 18"
R7-4-E 24"x 30"



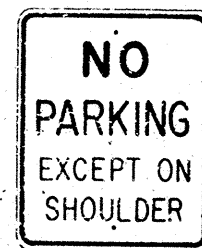
R7-107(R) 12"x 18"



R7-201 12"x 6"



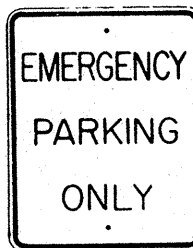
R8-1 24"x 30"
R8-1-E 36"x 48"
R8-1-I 48"x 60"



R8-2 24"x 30"
R8-2-E 36"x 48"



R8-3 24"x 30"
R8-3-E 36"x 48"



R8-4 24"x 30"
R8-4-E 36"x 48"
R8-4-I 48"x 36"



R9-1 18"x 24"



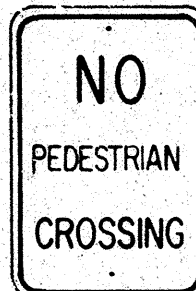
R9-2 12"x 18"



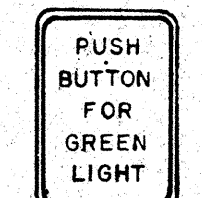
R9-3 12"x 18"



R9-4 12"x 18"



R9-5 12"x 18"



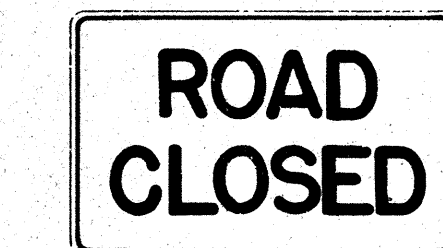
R9-6 9"x 12"



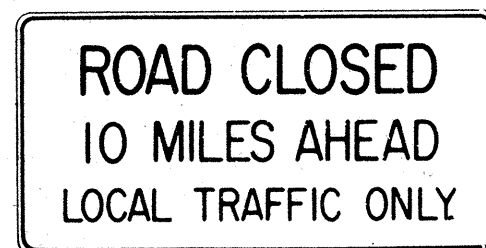
R9-7 9"x 12"



R10-1 24"x 30"
R10-1-E 36"x 48"
R10-1-I 48"x 60"



R10-2 48"x 30"



R10-3(10) 60"x 30"



R10-4(10) 18"x 24"

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 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

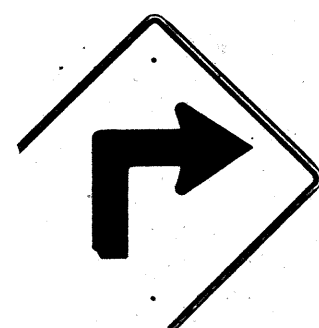
12-30-69
DATE

NO.	REVISION	APPROVED BY	DATE

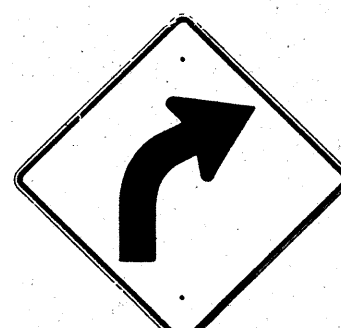
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
STANDARD DETAILS REGULATORY SIGNS
NOT TO SCALE

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

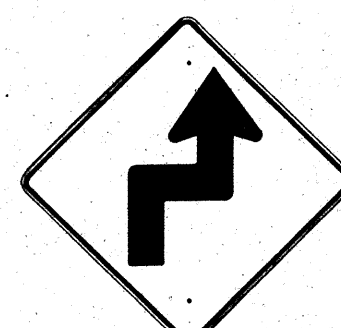
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	48	80



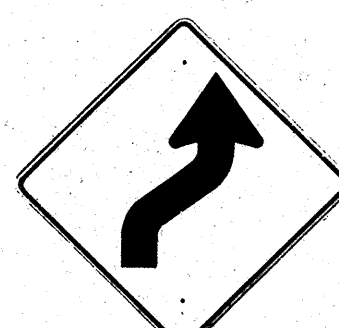
W1-1(R) 30" x 30"



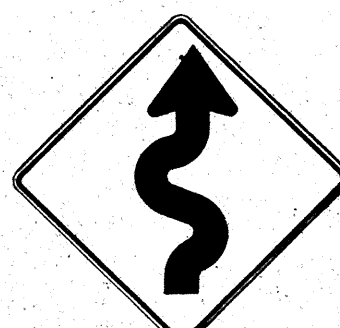
W1-2(R) 30" x 30"



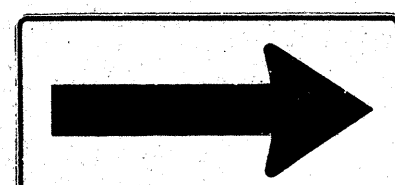
W1-3(R) 30" x 30"



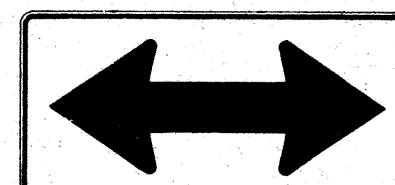
W1-4(R) 30" x 30"



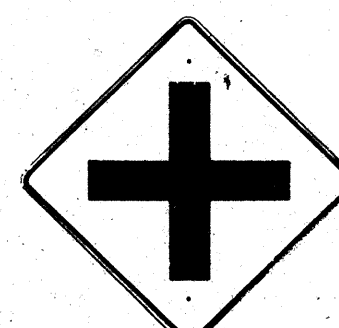
W1-5(R) 30" x 30"



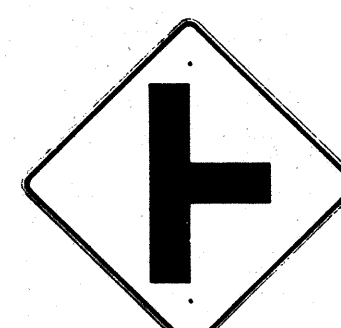
W1-6 48" x 24"



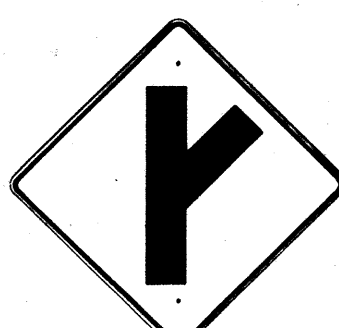
W1-7 48" x 24"



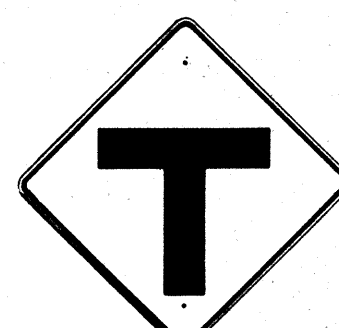
W2-1 30" x 30"



W2-2 30" x 30"



W2-3(R) 30" x 30"



W2-4 30" x 30"



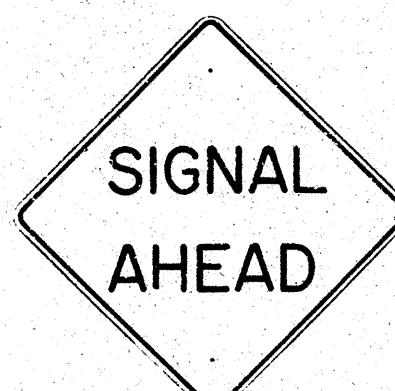
W2-5 30" x 30"



W3-1 30" x 30"



W3-2 30" x 30"



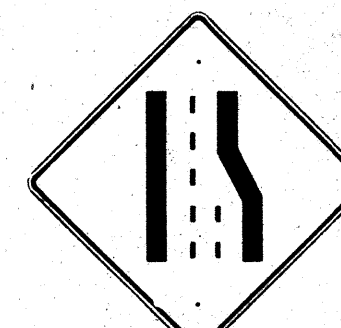
W3-3 36" x 36"



W4-1 30" x 30"

W4-1-E 36" x 36"

W4-1-I 48" x 48"



W4-2 30" x 30"

W4-2-E 36" x 36"



W5-1 30" x 30"

W5-1-E 36" x 36"



W5-2 30" x 30"



W5-3 30" x 30"



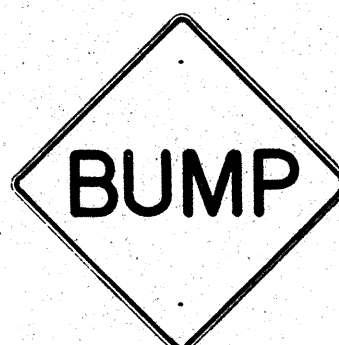
W6-1 36" x 36"



W6-2 36" x 36"



W7-1 30" x 30"



W8-1 30" x 30"



W8-2 30" x 30"



W8-3 30" x 30"



W8-4 30" x 30"



W8-5 30" x 30"



W9-1 30" x 30"



W9-2 30" x 30"



W10-1 36" DIAMETER



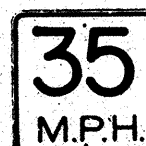
W11-1 30" x 30"



W11-5 30" x 30"



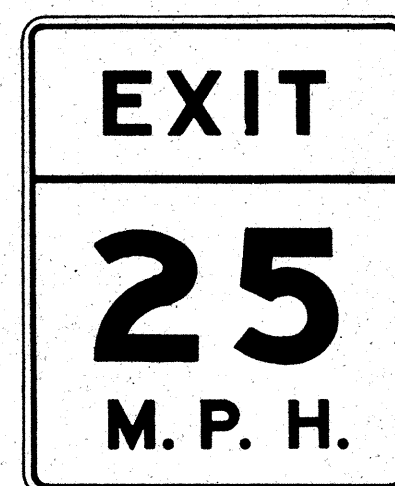
W12-2 36" x 36"



W13-1(35) 18" x 18"
W13-1(35)-E 24" x 24"



W13-2(25) 12" x 18"



W13-3(25) 48" x 60"

NOTE:

1. 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.
2. All warning signs shall be reflectorized unless otherwise specified.
3. All warning signs shall have 3/8" bolt holes drilled at appropriate locations unless otherwise noted.
4. (R) or (L) indicates right or left and shall be as shown on the plan.
5. The suffix "E" denotes Expressway signs and "I" denotes Interstate signs.
6. For W13 sign, number in () indicates speed and shall be as shown on the plans.

APPROVAL RECOMMENDED:

Eishi Tanaka
TRAFFIC ENGINEER

12/29/69
DATE

APPROVED:

John J. J. J.
ASSISTANT CHIEF, ENGINEERING

12-30-69
DATE

NO.	REVISION	APPROVED BY	DATE

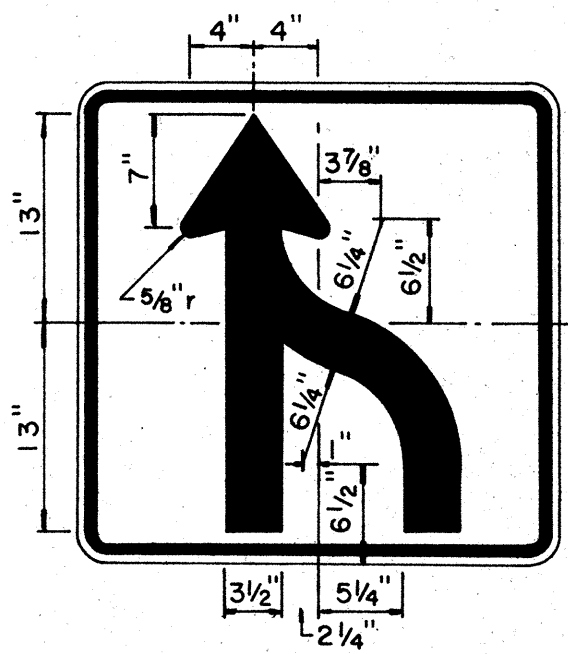
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
WARNING SIGNS

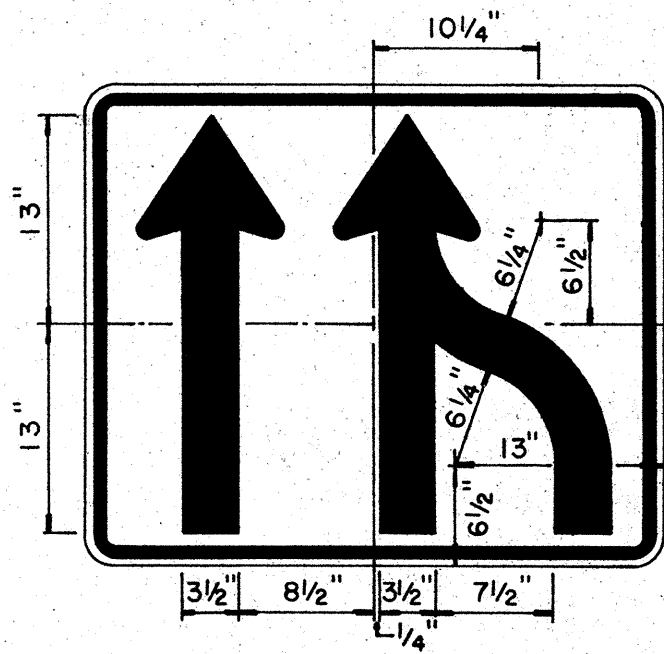
NOT TO SCALE

SHEET No. 6 OF 27 SHEETS DT 102

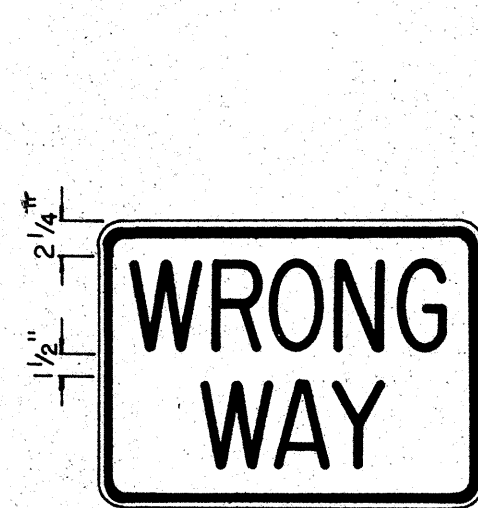
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	49	80



R3-9 30" x 30"



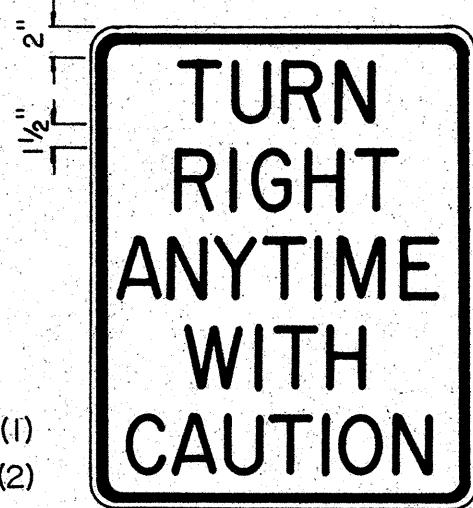
R3-10 36" x 30"



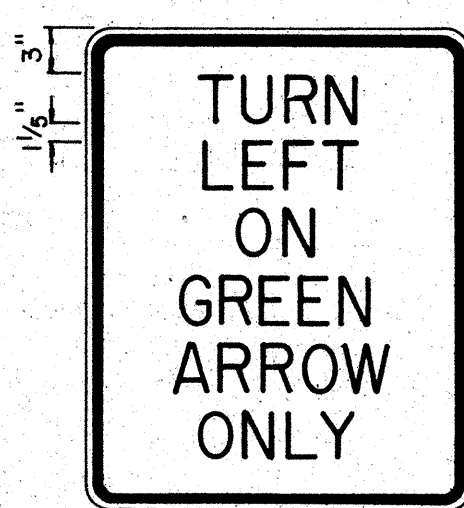
6" Series C: R5-5(1)
8" Series C: R5-5(2)

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

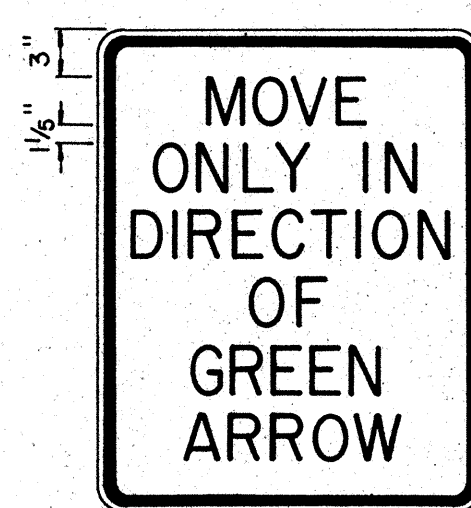
NOTE:
White legend and border
on Red background.



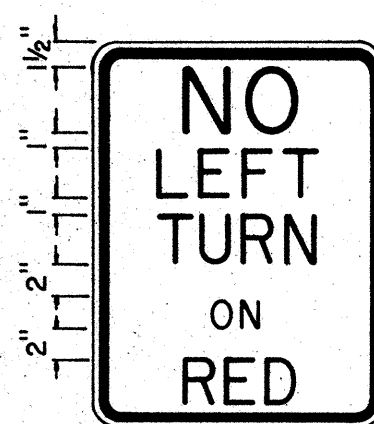
R15-1 24" x 30"



R16-1 24" x 30"

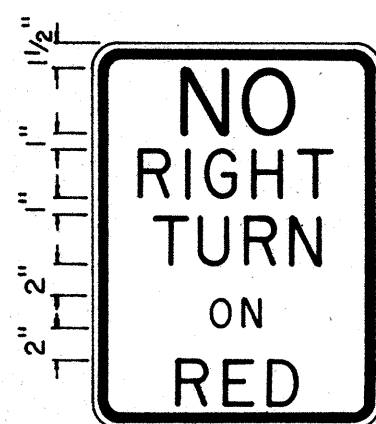


R16-2 24" x 30"



4" Series D
3" Series C
2" Series B

R17-1 18" x 24"



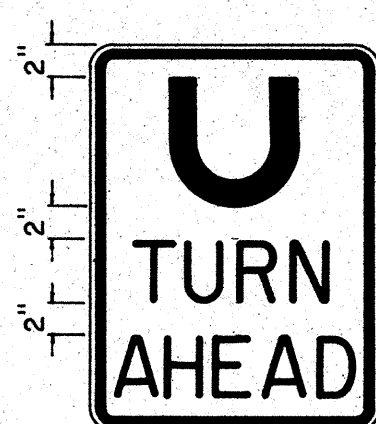
4" Series D
3" Series C
2" Series B

R17-2 18" x 24"



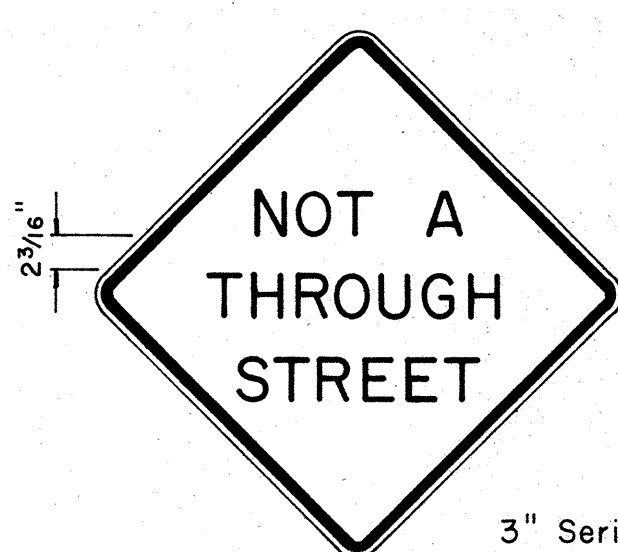
3" Series C
4" Series E

R18-1 36" x 30"



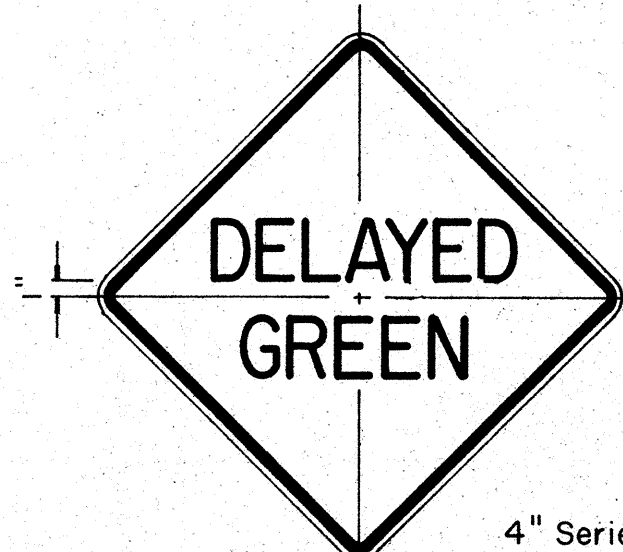
8" Series F
4" Series D

R19-1 18" x 24"



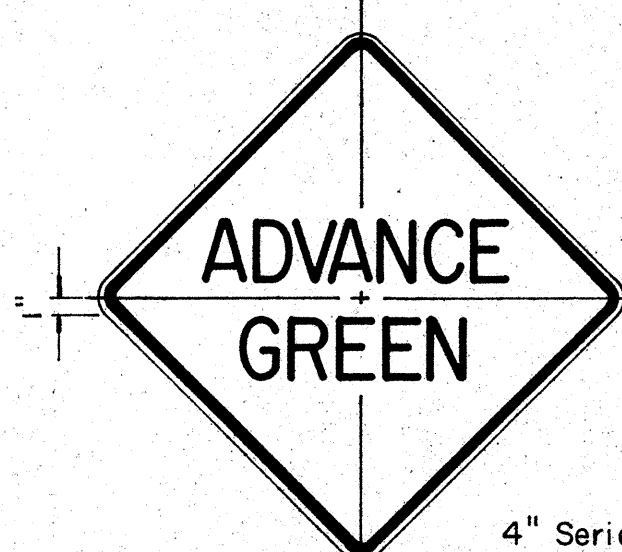
3" Series D

W13-4 24" x 24"



4" Series C

W15-1 24" x 24"



4" Series C

W15-2 24" x 24"

- NOTE:
1. 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.
 2. All regulatory and warning signs shall be reflectorized unless otherwise specified.
 3. All regulatory and warning signs shall have 3/8" bolt holes drilled at appropriate locations unless otherwise specified.

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

APPROVED:
John S. Sabel 12-30-69
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

MISCELLANEOUS
REGULATORY & WARNING SIGNS

Scale: 1" = 1' - 0"

SHEET NO. 7 OF 27 SHEETS DT 103

DATE	
DESIGNED BY	
TRACED 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.	5-0470(1) 5-0470(2)	1970	50	80



W 7-2 48"x 48"



W8-7 30"x 30"



W14-1 30"x 30"



W20-1a 48"x 48"



W20-2d 48"x 48"



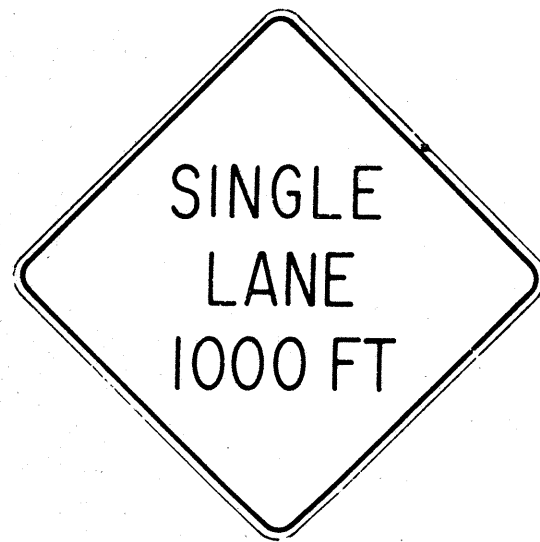
W20-3b 48"x 48"



W20-4d 48"x 48"



W20-5d(L) 48"x 48"



W20-6b 48" x 48"



W20-7c 48"x 48"



W21-1 30"x 30"



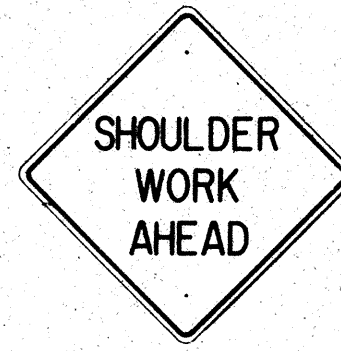
W21-2 24"x 24"



W21-3 36"x 36"



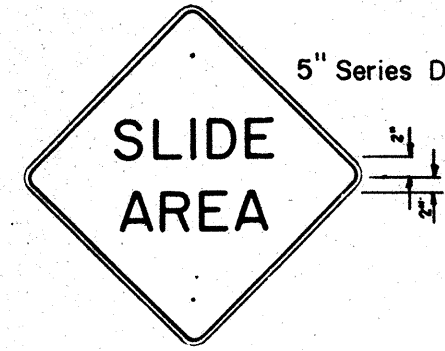
W21-4 30"x 30"



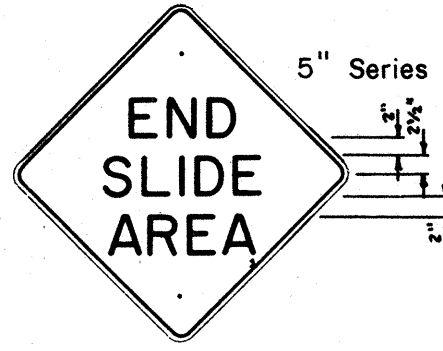
W21-5 30"x 30"



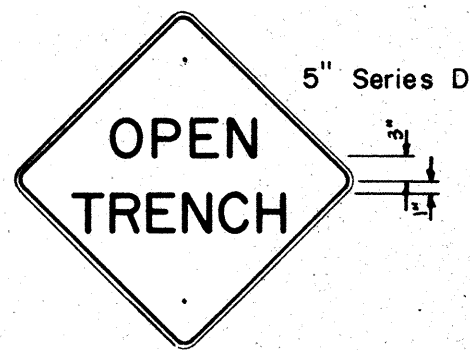
W21-6 30"x 30"



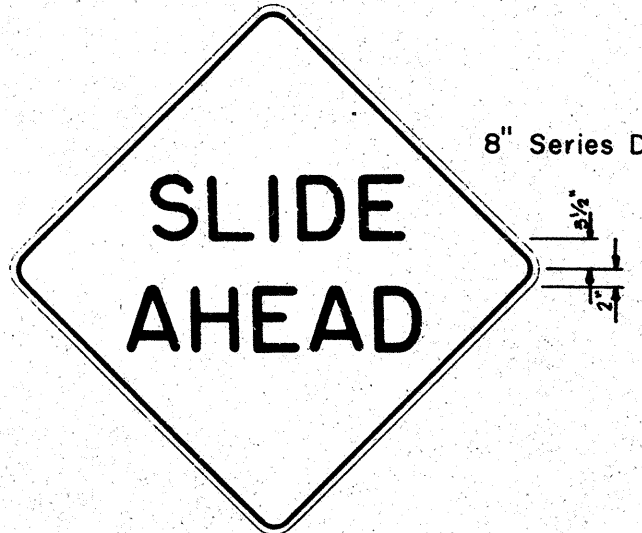
W22-1 30"x 30"



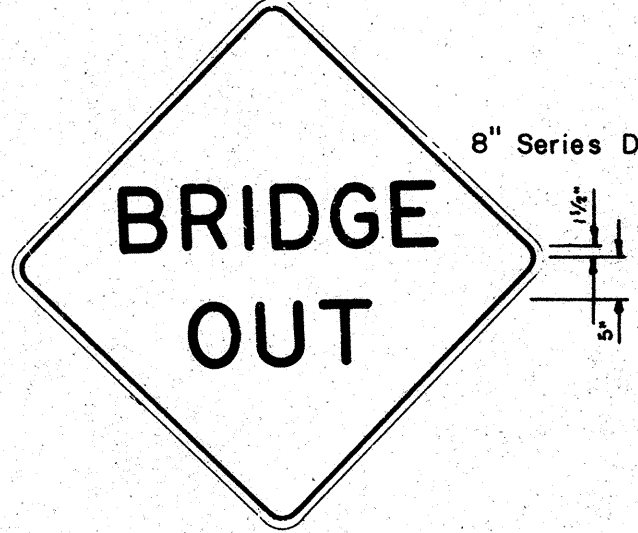
W22-2 30"x 30"



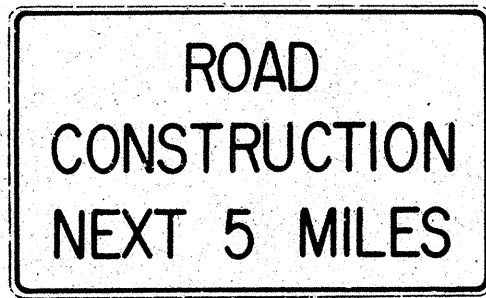
W22-3 30"x 30"



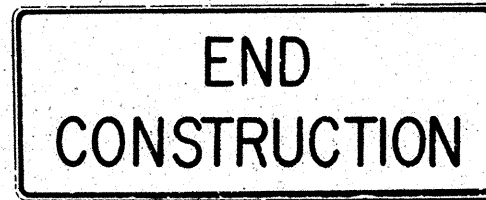
W22-4 48"x 48"



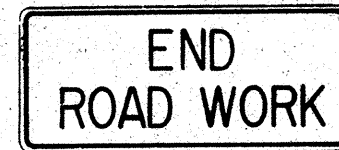
W22-5 48" x 48"



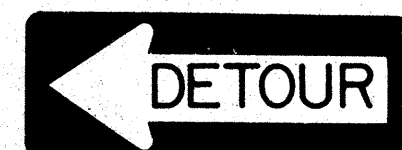
G20-1(5) 60"x 36"



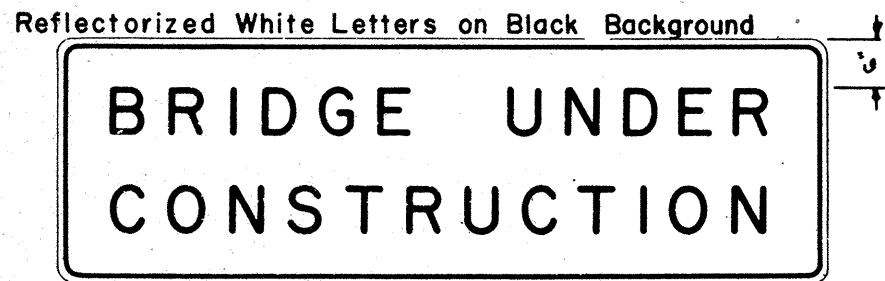
G20-2 60"x 24"



G20-3 42"x 18"



M5-7(L) 48"x 18"



CW-1 96" x 30"

NOTE:

1. 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.
2. All signs shall be reflectorized unless otherwise specified.
3. All signs shall have $\frac{3}{8}$ " bolt holes drilled at appropriate locations unless otherwise noted.
4. For W20 series signs, suffixes a,b,c and d are as follows a 1500 FT, b 1000 FT, c 500 FT and d AHEAD
5. (R) or (L) indicates right or left and shall be as shown on the plans.
6. Number in () indicates miles and shall be as shown on the plans.

SURV. PLOTTED BY	DATE
DRAWN BY	"
DESIGNED BY	"
CHECKED BY	"
NOTE BOOK	
No.	

APPROVAL RECOMMENDED:

Erich Tanaka
TRAFFIC ENGINEER

12/29/69
DATE

APPROVED:

Shub 2.2.2.2
ASSISTANT CHIEF, ENGINEERING

12-30-69
DATE

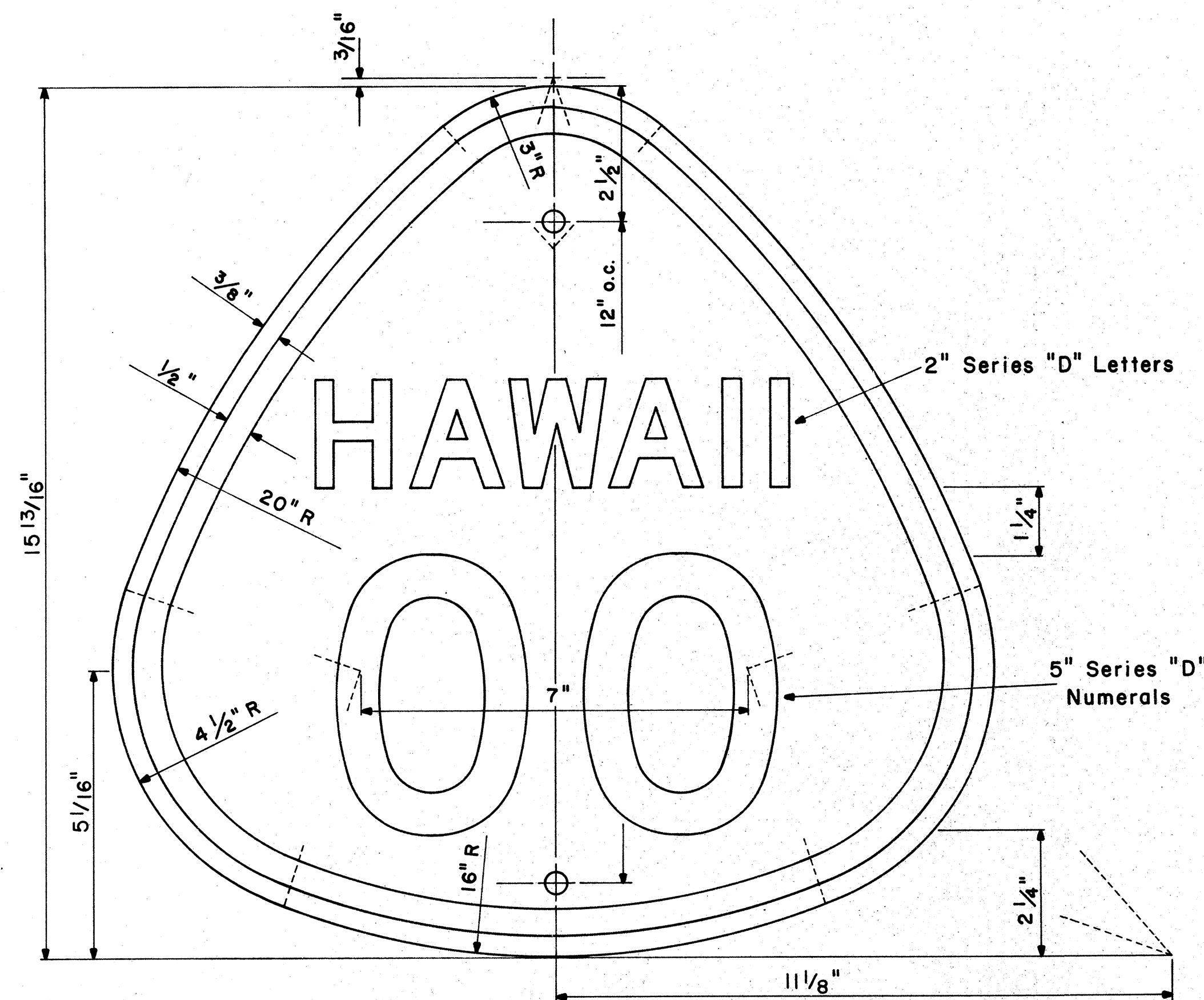
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CONSTRUCTION SIGNS

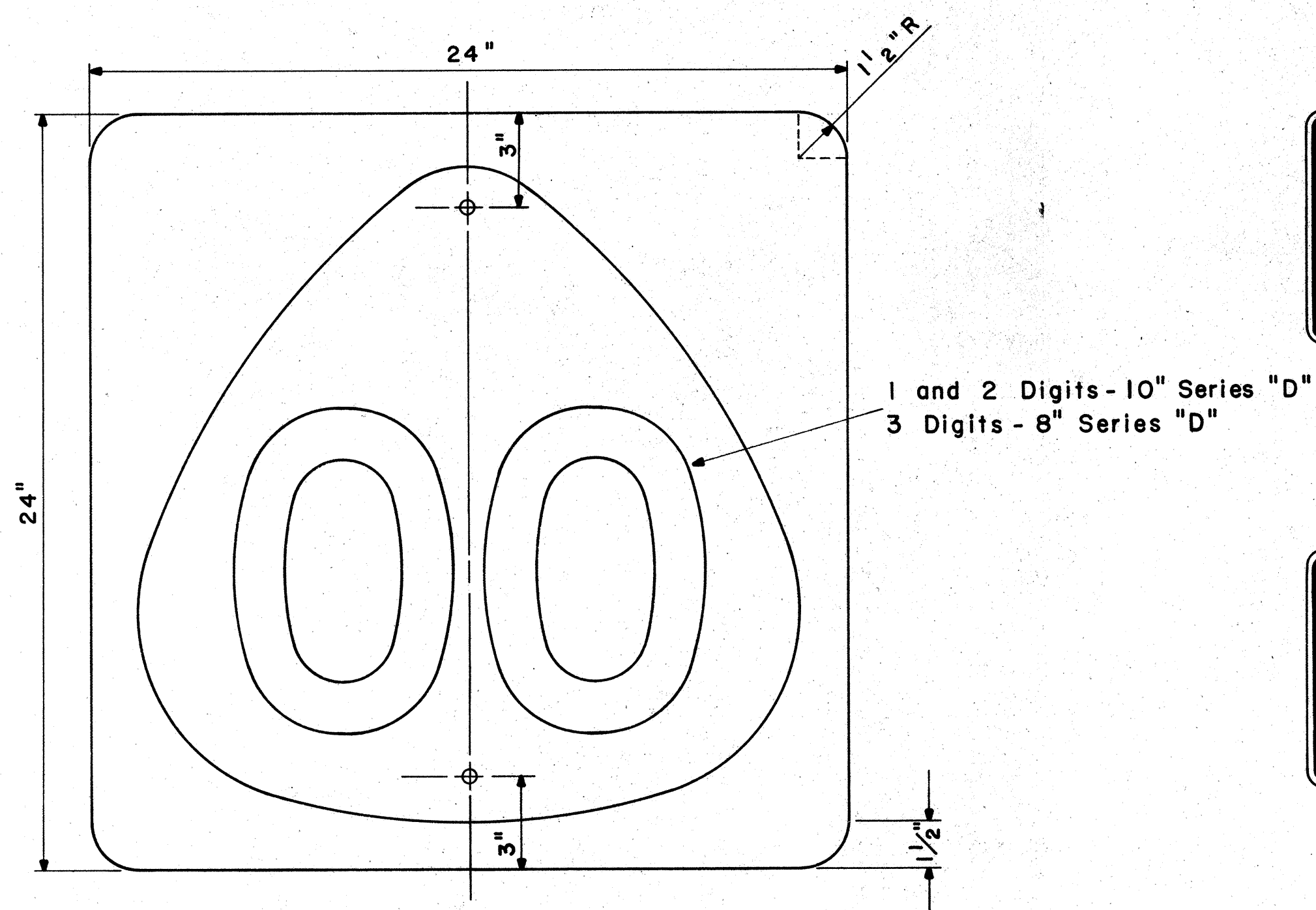
NOT TO SCALE

SHEET No. 8 OF 27 SHEETS DT 104



STATE ROUTE MARKER
MI-3(OO)

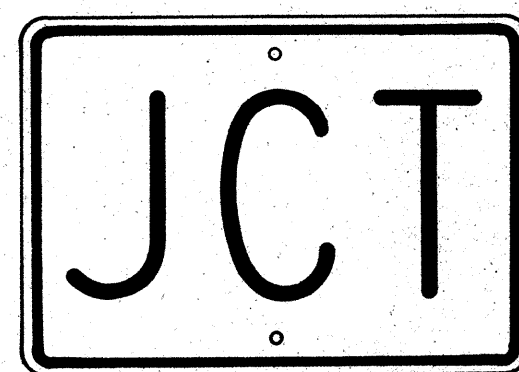
Scale: 1/2" = 1"



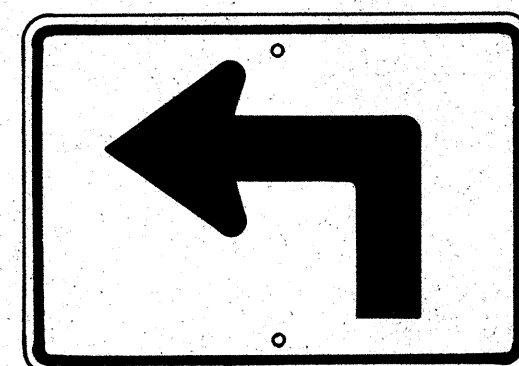
STATE ROUTE MARKER
MI-4(OO)

Scale: 1/4" = 1"

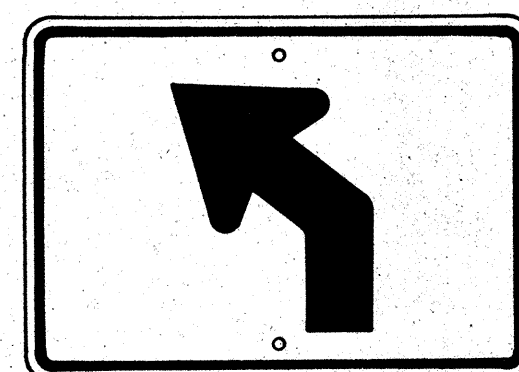
NOTE:
Multiply all dimensions of State Route Marker MI-3 by 1.3 for the dimensions of the shield for MI-4.



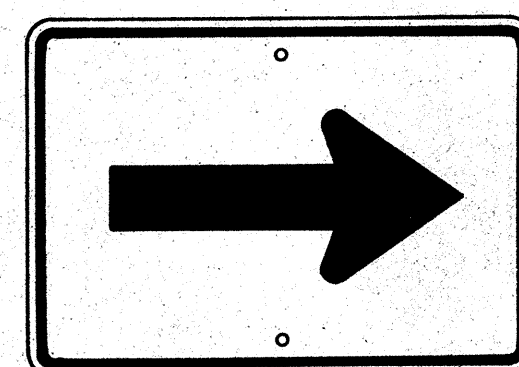
M2-1
21" x 15"



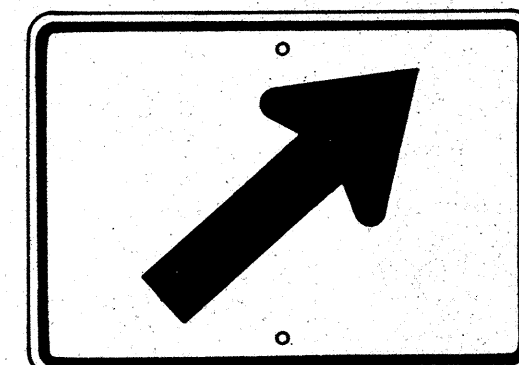
M3-1-L
* M3-1-R
21" x 15"



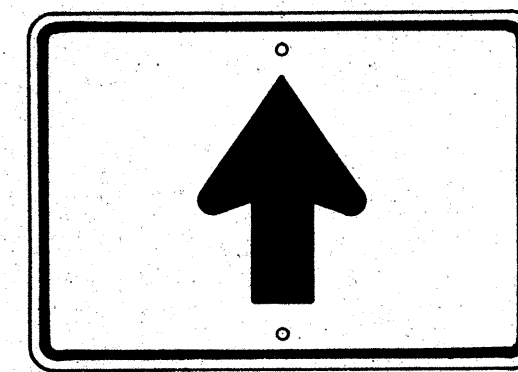
M3-2-L
* M3-2-R
21" x 15"



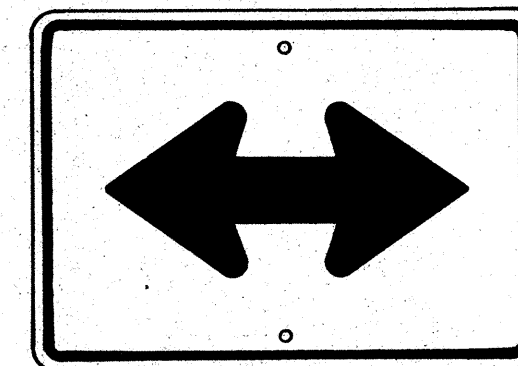
M4-1
21" x 15"



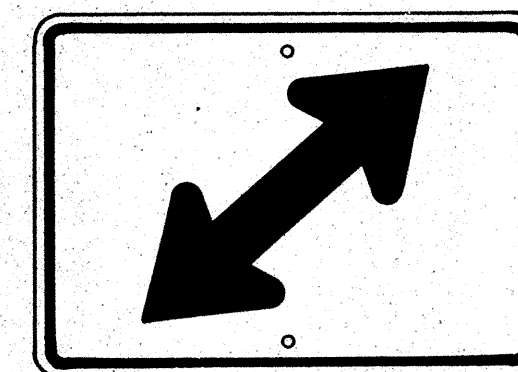
M4-2-R
* M4-2-L
21" x 15"



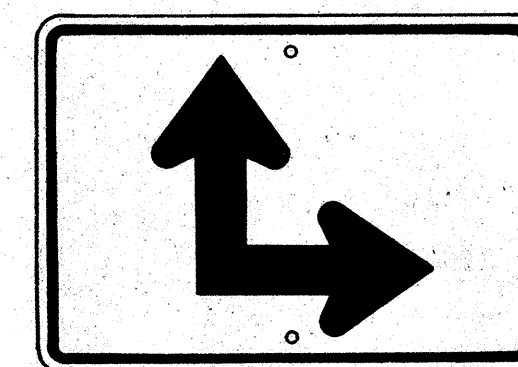
M4-3
21" x 15"



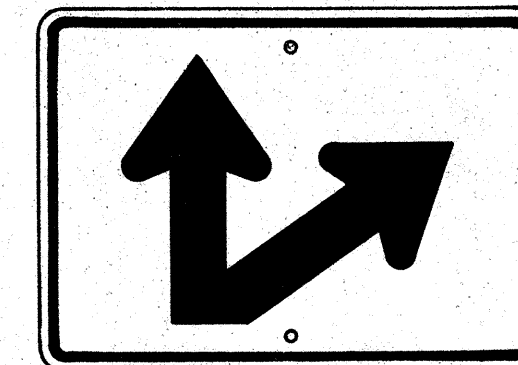
M4-4
21" x 15"



M4-5-R
* M4-5-L
21" x 15"



M4-6-R
* M4-6-L
21" x 15"

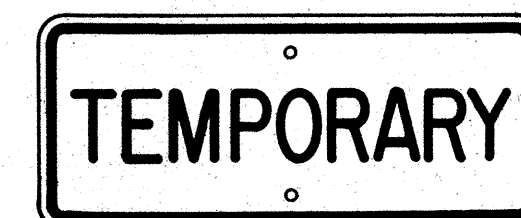


M4-7-R
* M4-7-L
21" x 15"

AUXILIARY MARKERS

Scale: 1/8" = 1"

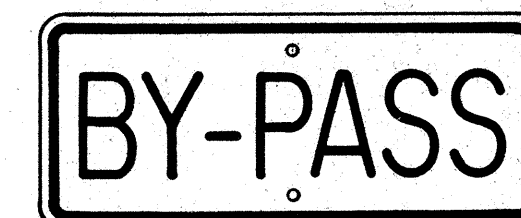
* NOTE:
Signs shall be similar but opposite in direction.



M5-1
21" x 9"



M5-2
21" x 9"



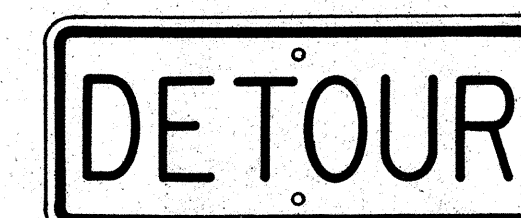
M5-3
21" x 9"



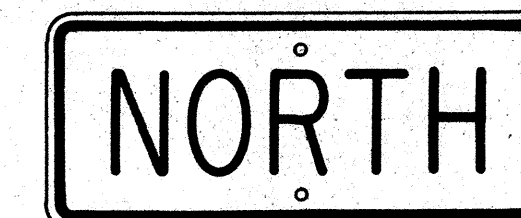
M5-4
21" x 9"



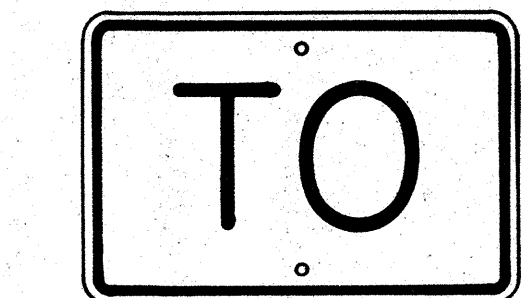
M5-5
21" x 9"



M5-6
21" x 9"



M6-1-N
21" x 9"
(See Note 6)



M7-1
18" x 12"

GENERAL NOTES

- The shape, color, dimensions, symbols, wording, lettering and reflectorizing 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 letters and figures shall conform to the manual "Standard Alphabets for Highway Signs," Dept. of Commerce, Bureau of Public Roads, 1966
- All markers shall be reflectorized unless otherwise specified.
- All markers shall have 3/8" bolt holes drilled at appropriate locations unless otherwise specified.
- All markers shall have a black legend on a white background unless otherwise specified.
- Sign message of Cardinal Direction Marker (M6-1) shall be denoted by the following suffixes:
M6-1-N : NORTH
M6-1-E : EAST
M6-1-S : SOUTH
M6-1-W : WEST
- Auxiliary markers denoted with the suffix "I": (M4-1-I) shall have a white legend on a blue background.
- Cardinal Direction Marker (M6-1) with suffix I(3) shall have a white legend on a blue background and shall be 30" x 15" in size.
- For MI-3 and MI-4 signs, number in () indicates route number and shall be as shown on the plan.

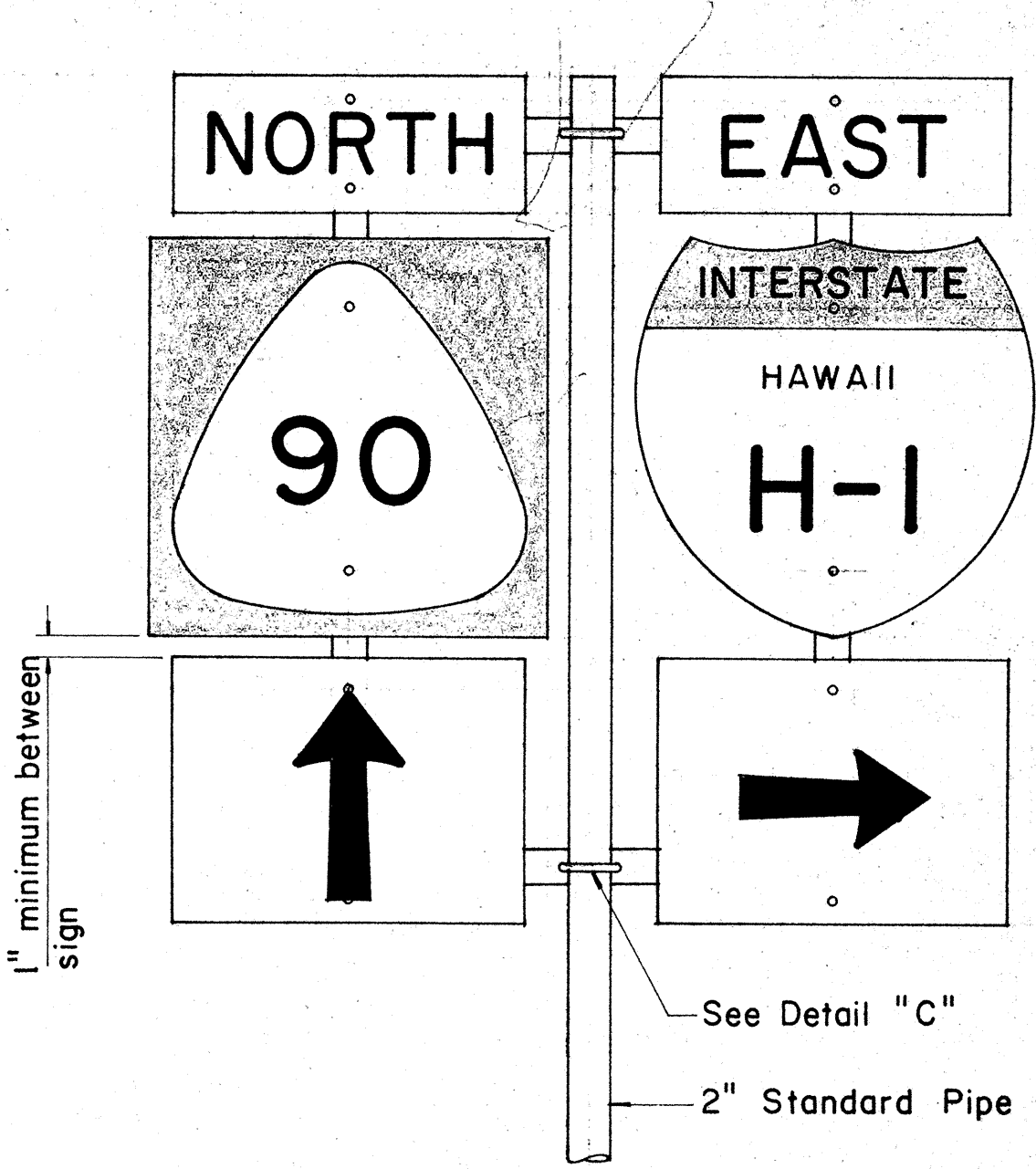
APPROVAL RECOMMENDED:
Eichi Tanaka 12/29/69
TRAFFIC ENGINEER DATE

APPROVED:
John S. Sato 12-30-69
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

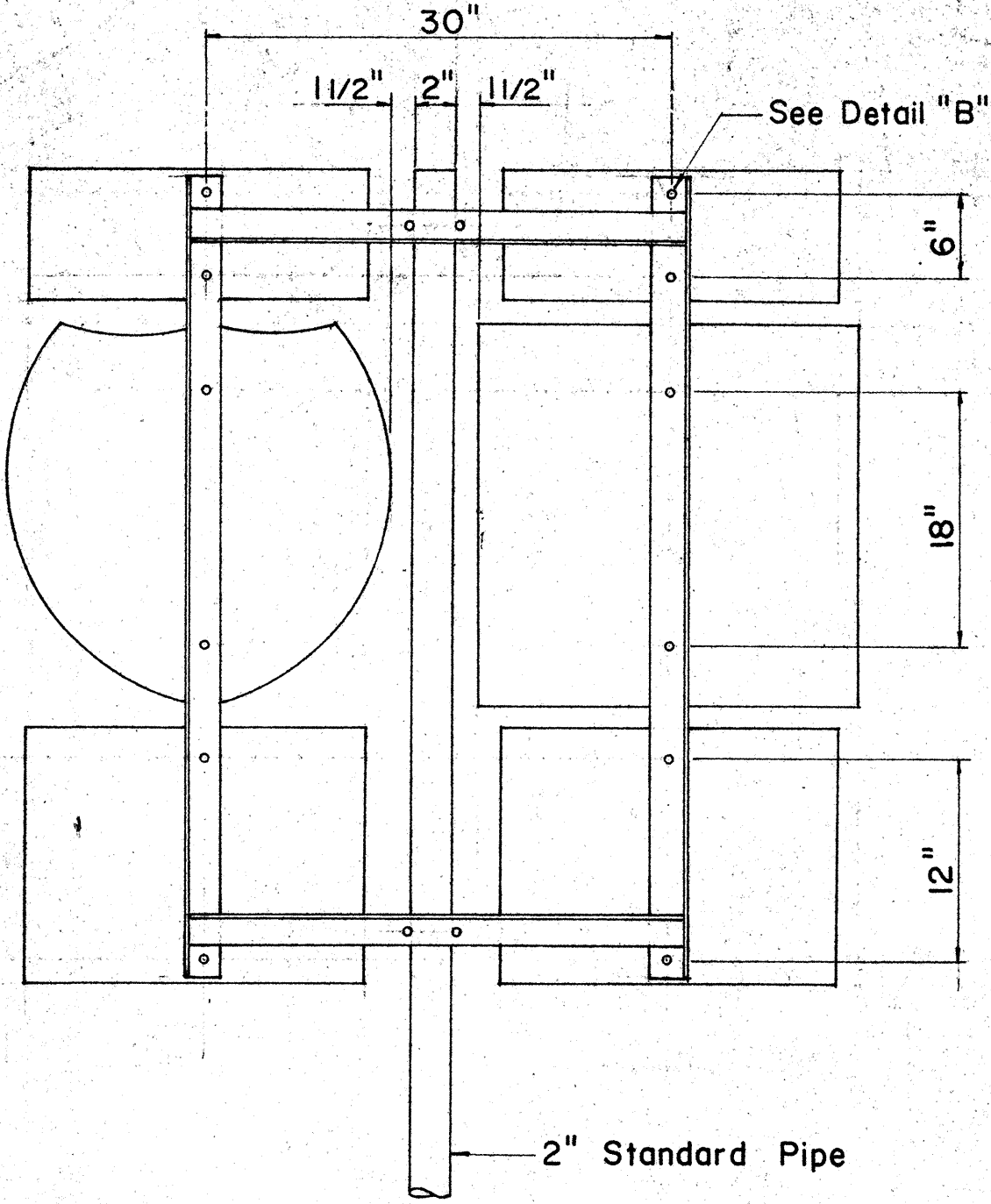
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
STATE ROUTE MARKERS
AND
AUXILIARY MARKERS
Scale: As Noted
SHEET NO. 51 OF 27 SHEETS DT 105

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	52	80



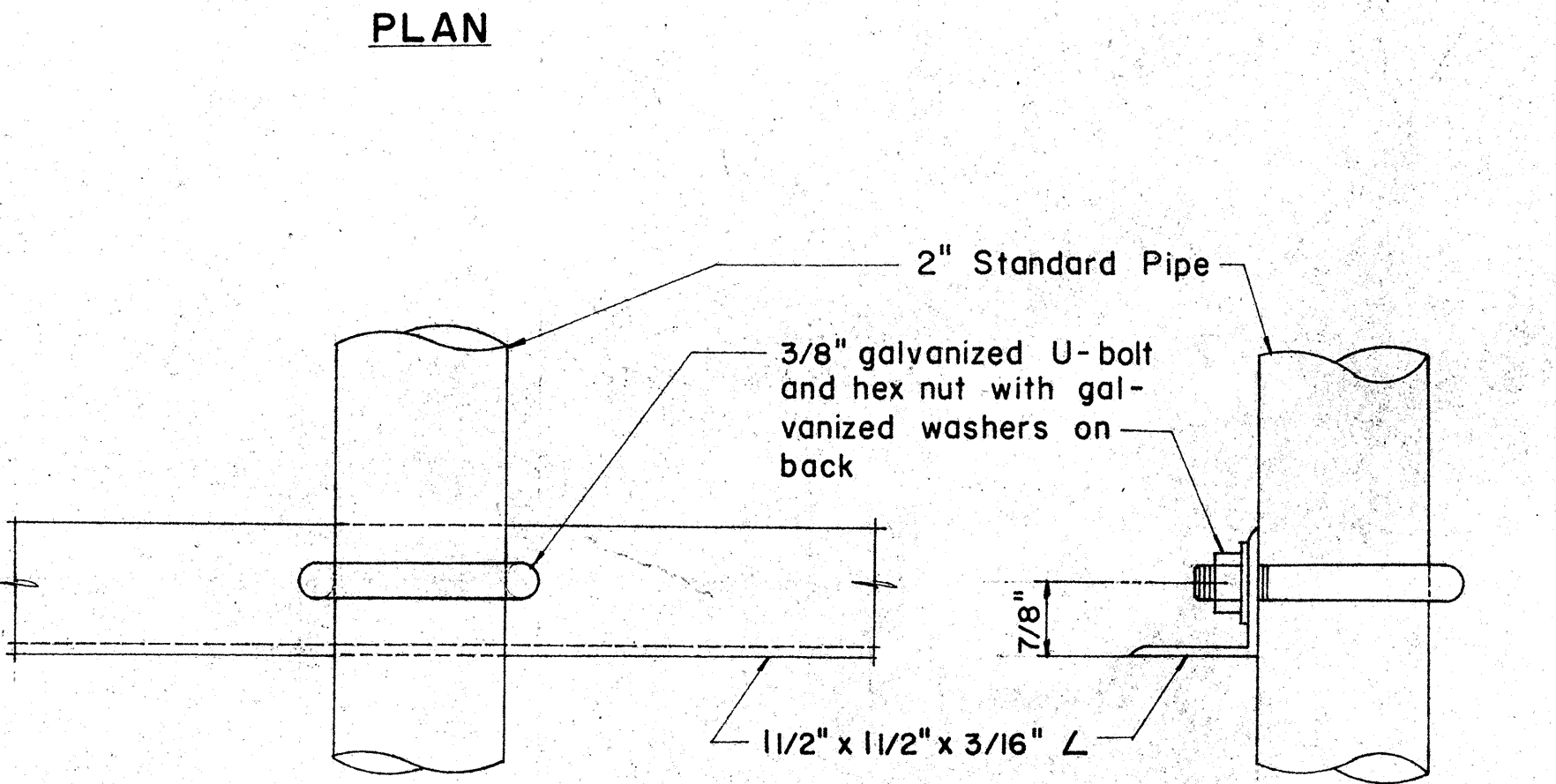
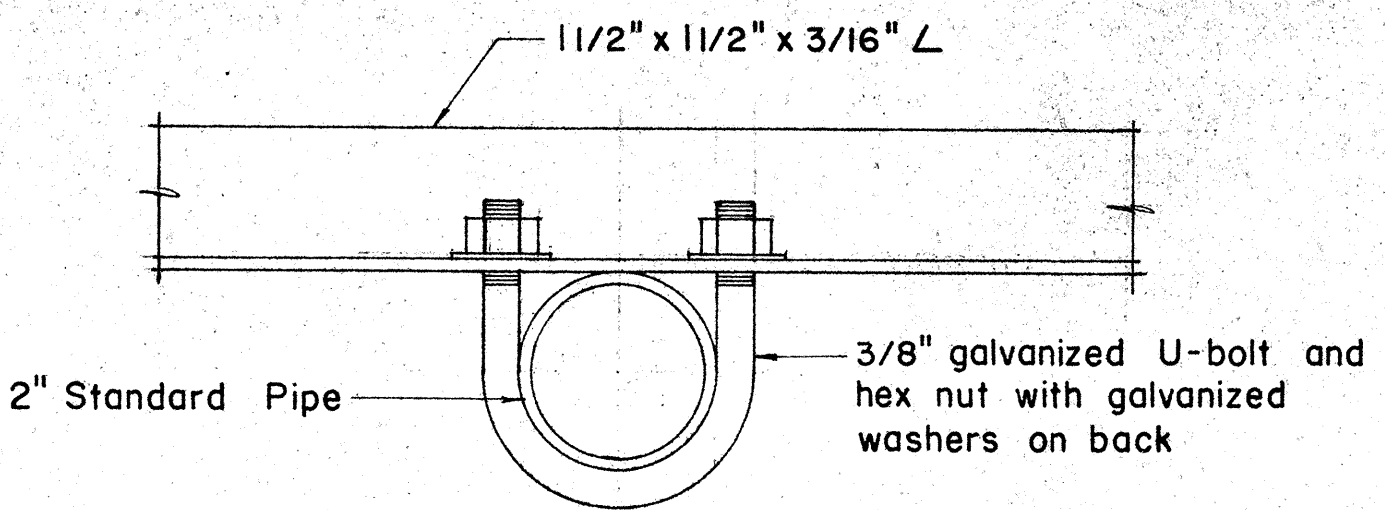
FRONT ELEVATION

TYPE "B" ASSEMBLY



REAR ELEVATION

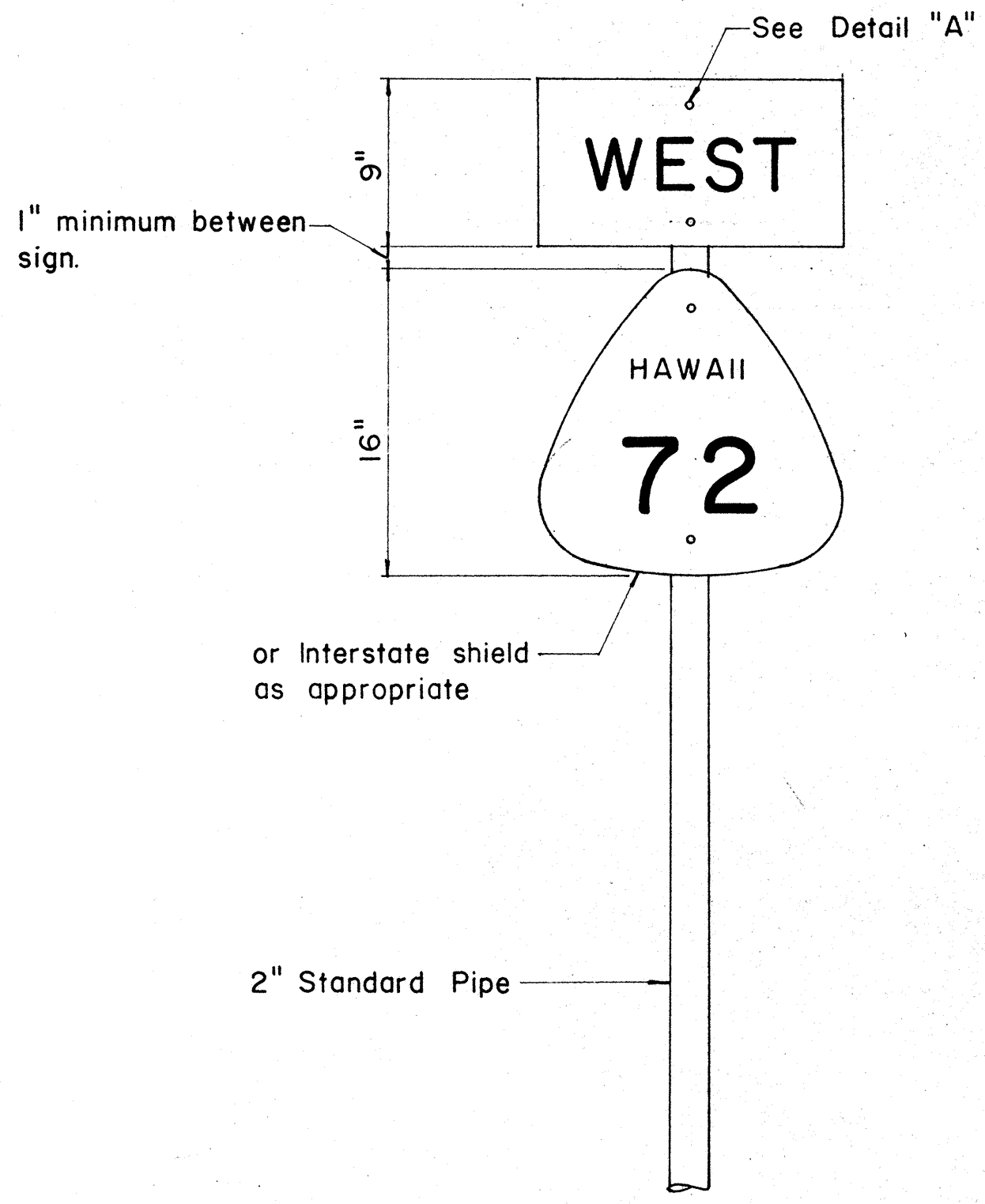
NOTE:
1. Minimum clearance between signs shall be one inch. (Larger clearances shall be in multiples of one inch.)
2. Pipe post for Type "A" & Type "B" Assembly shall be 2" Standard Pipe.



FRONT ELEVATION

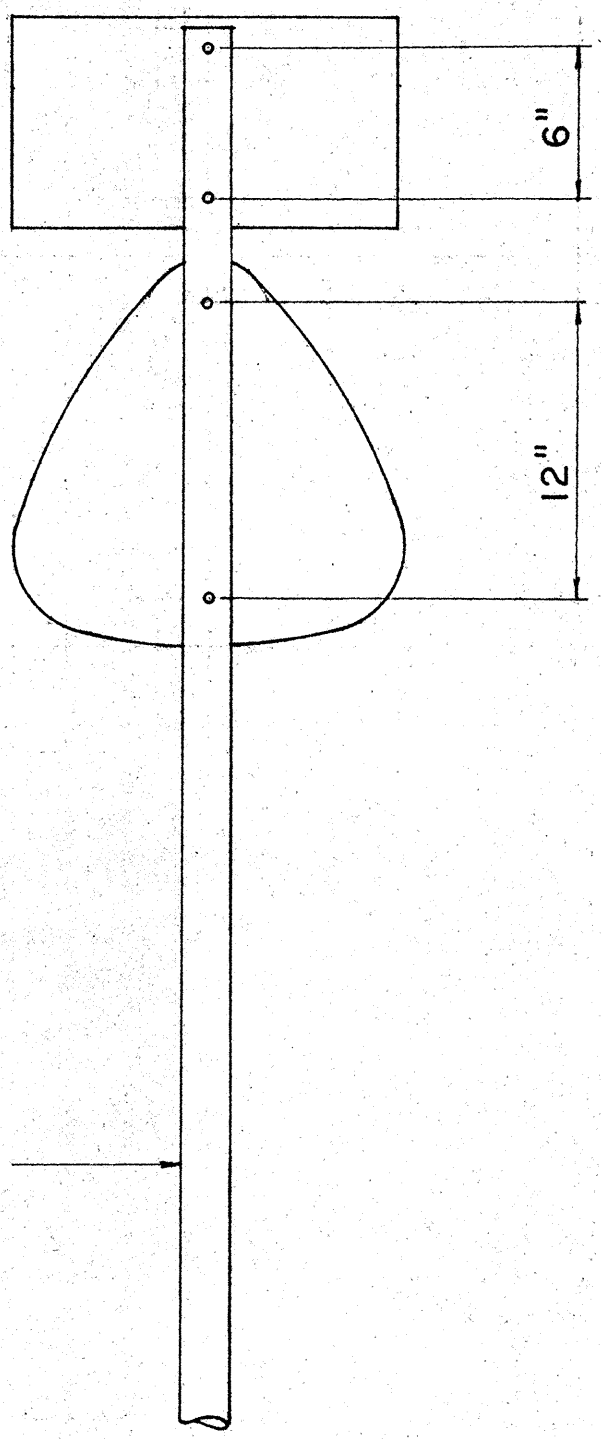
SIDE ELEVATION

DETAIL "C"



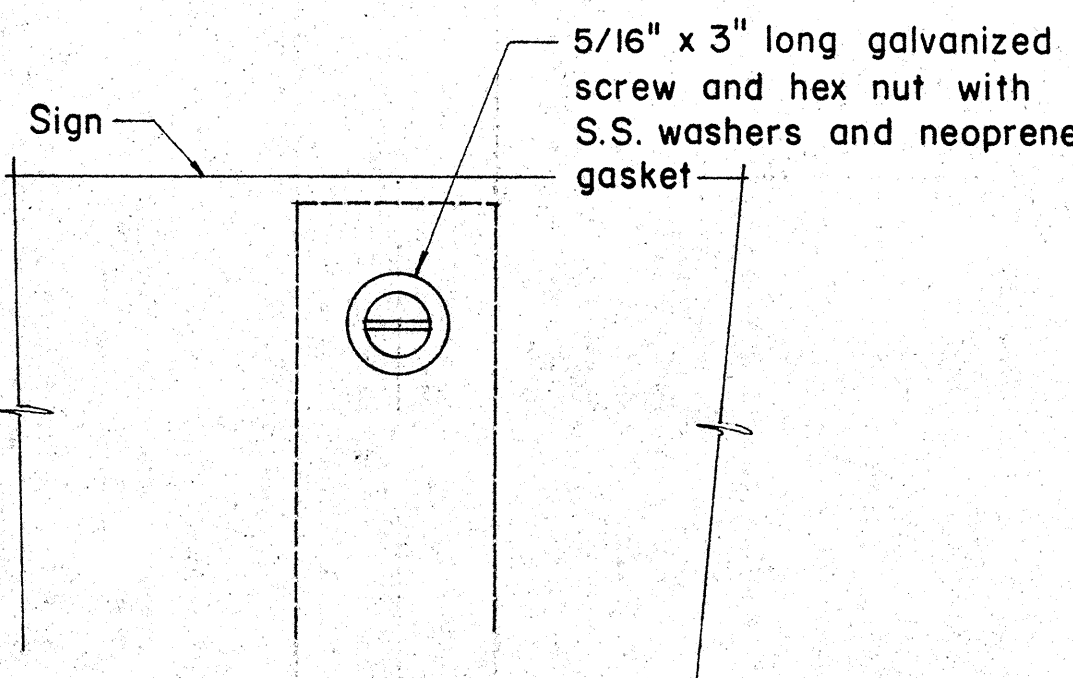
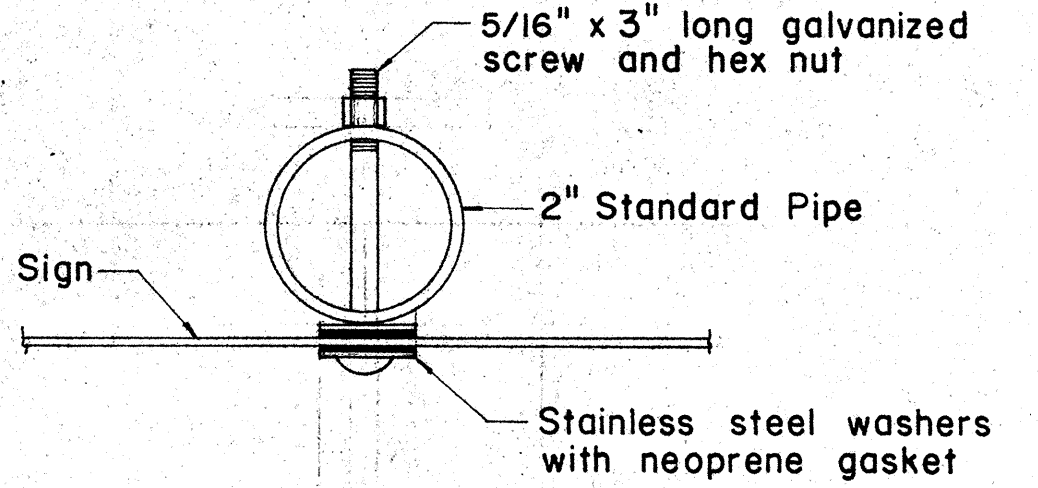
FRONT ELEVATION

TYPE "A" ASSEMBLY



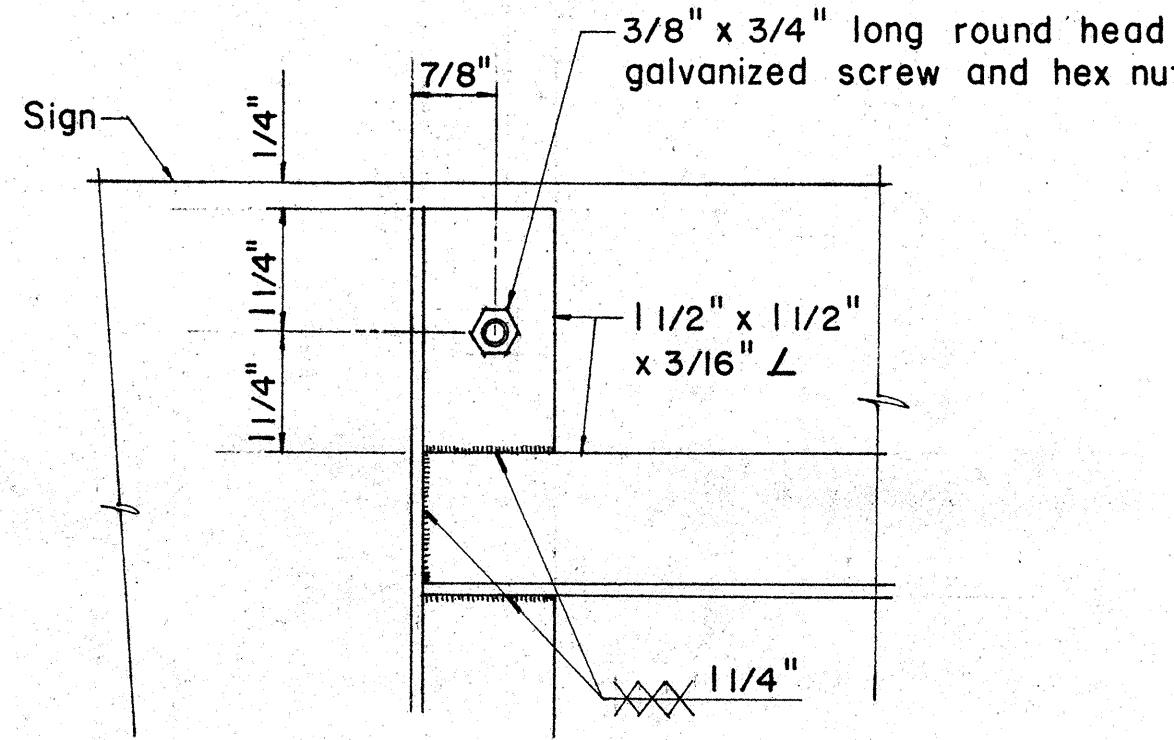
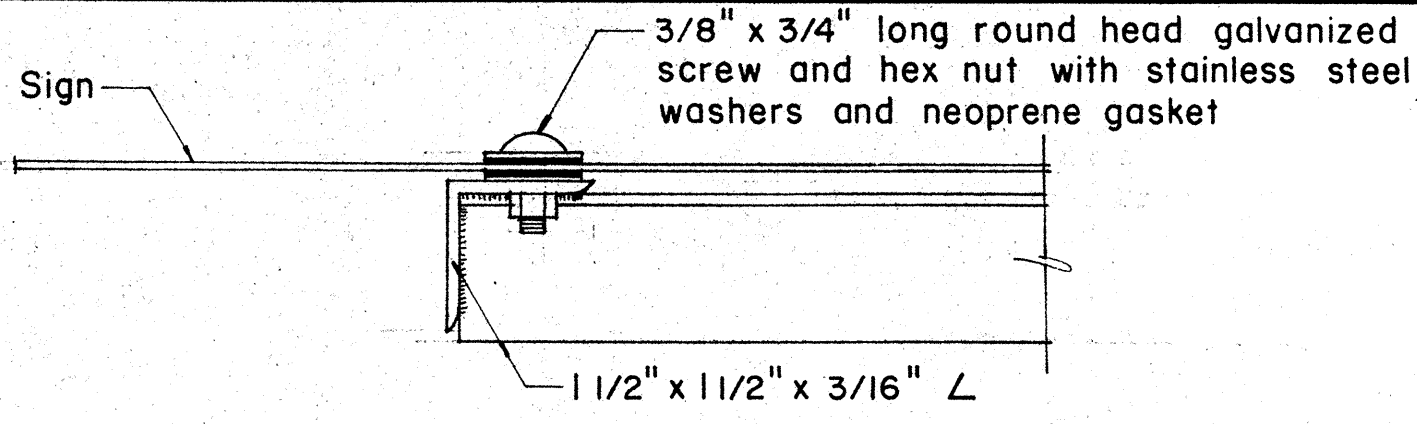
REAR ELEVATION

NOTE:
For height and lateral location of Route Marker Assembly, see plan sheet DT 100.



FRONT ELEVATION

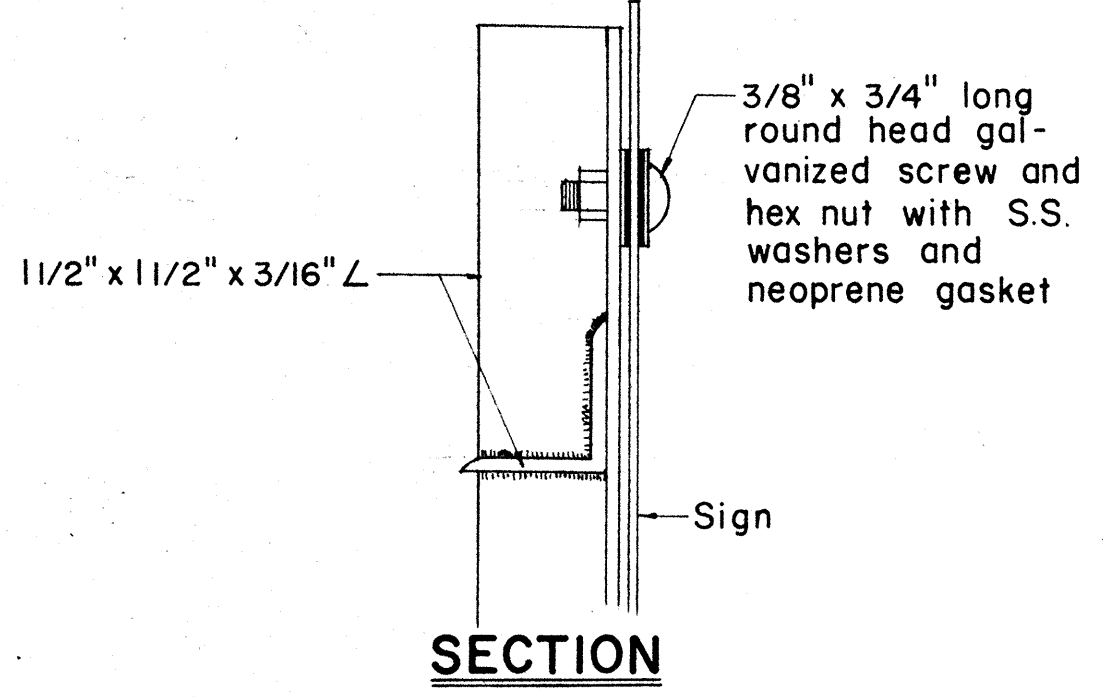
DETAIL "A"



ELEVATION

DETAIL "B"

NO.	REVISION	APPROVED BY	DATE



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

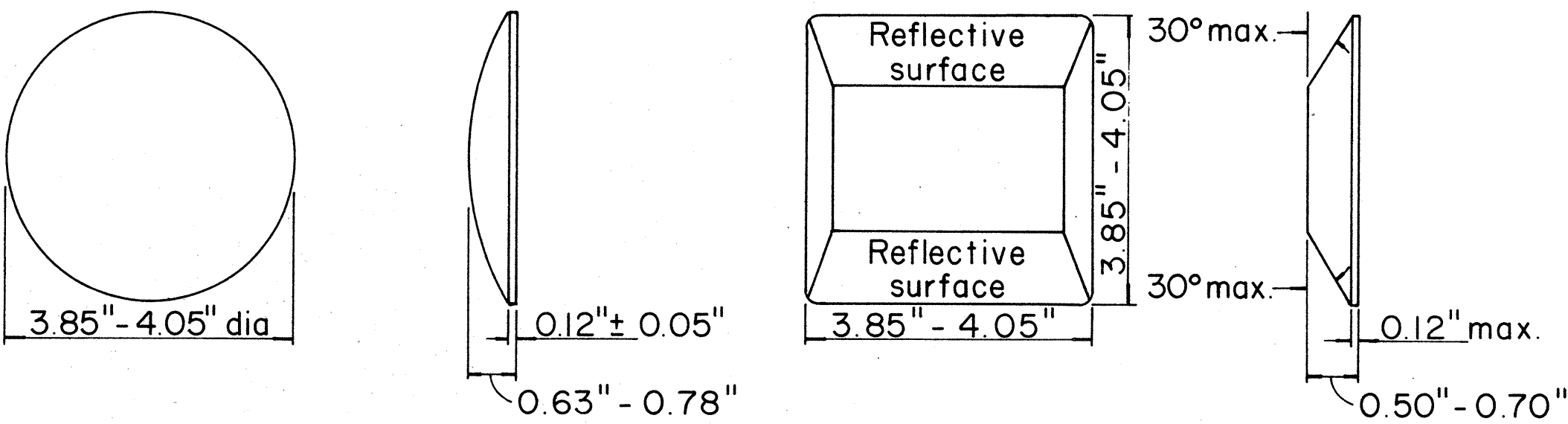
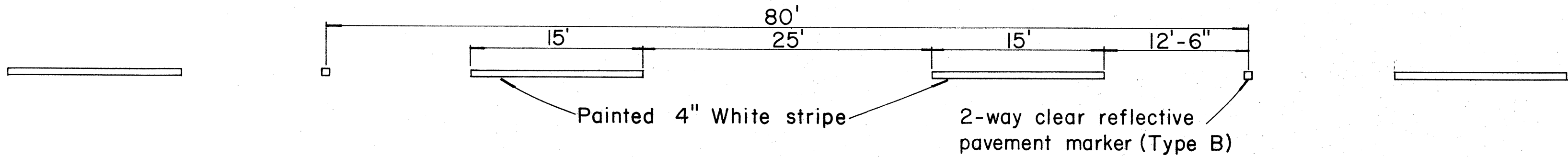
APPROVED:
John J. J. J. 12-30-69
ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

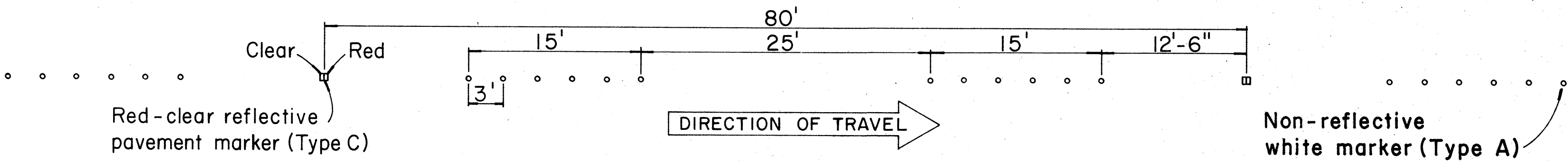
DETAILS
OF
ROUTE MARKER ASSEMBLY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	53	80

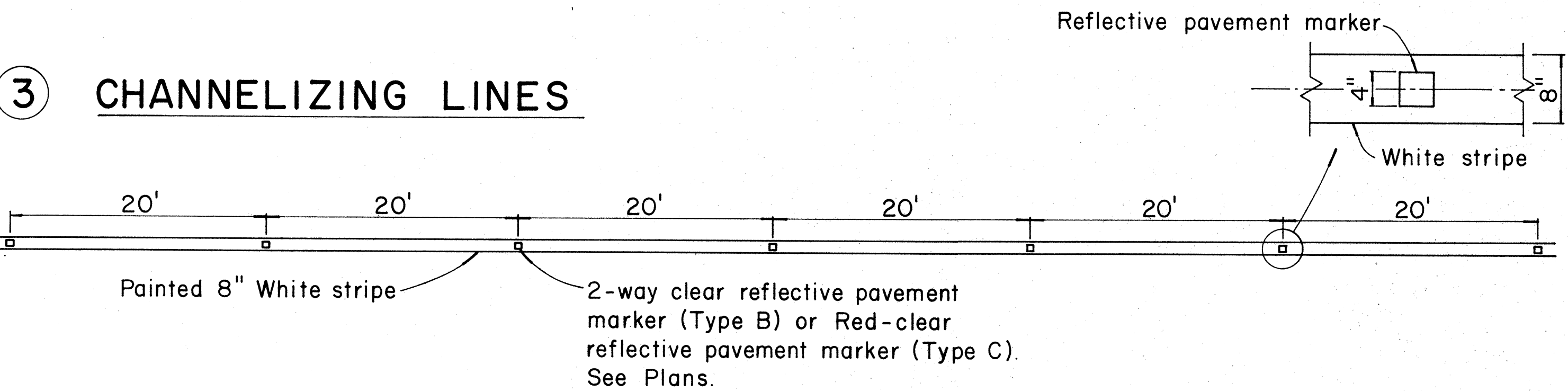
1 CENTER LINES ON TWO - LANE RURAL ROADS AND CITY STREETS



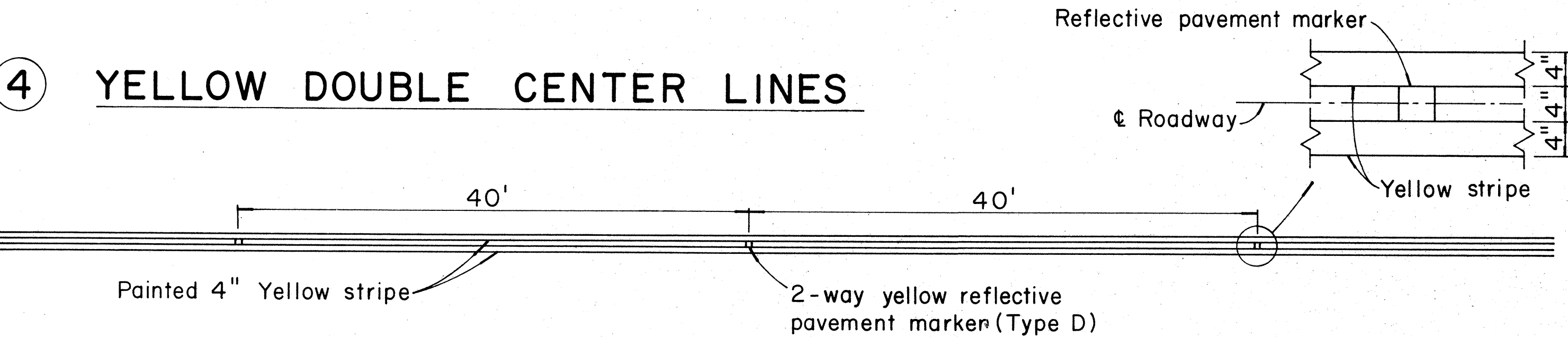
2 LANE LINES



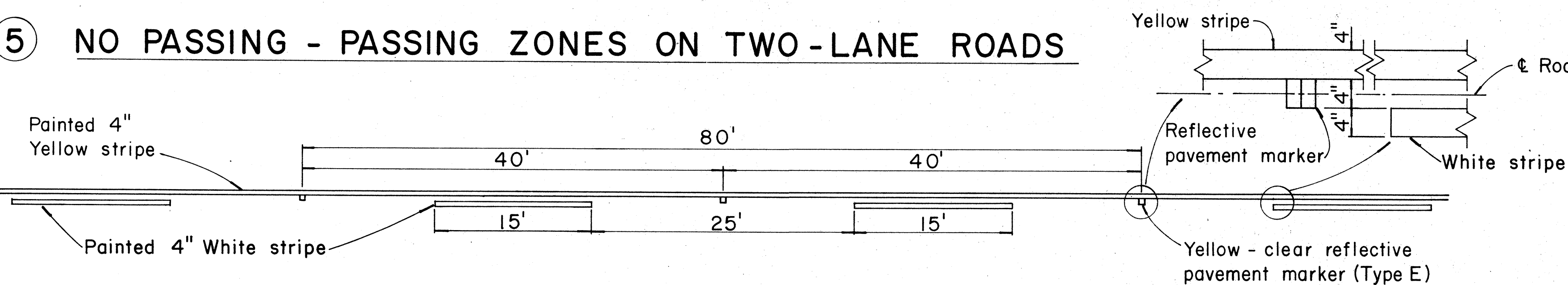
3 CHANNELIZING LINES



4 YELLOW DOUBLE CENTER LINES



5 NO PASSING - PASSING ZONES ON TWO-LANE ROADS

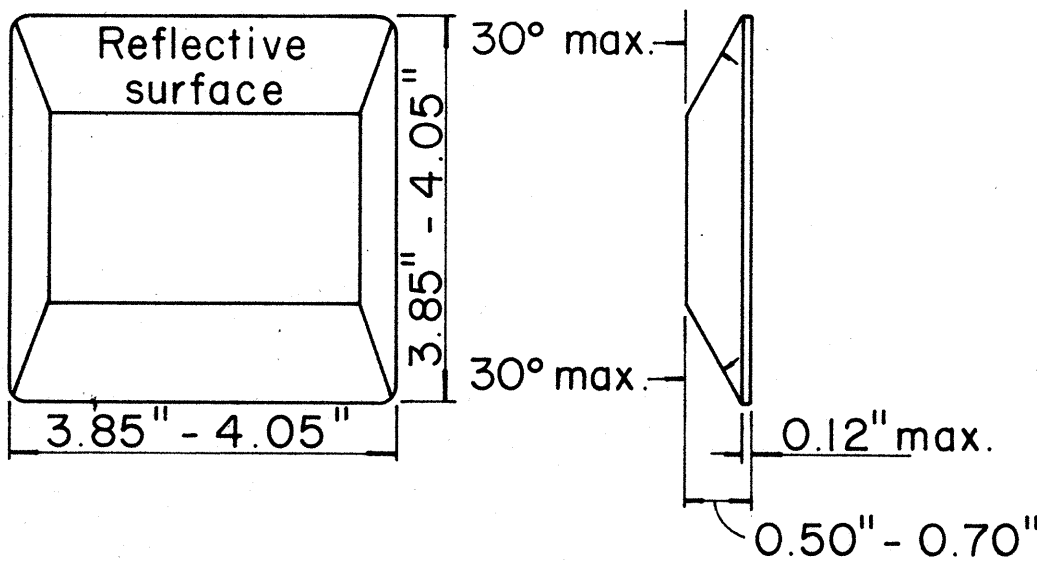
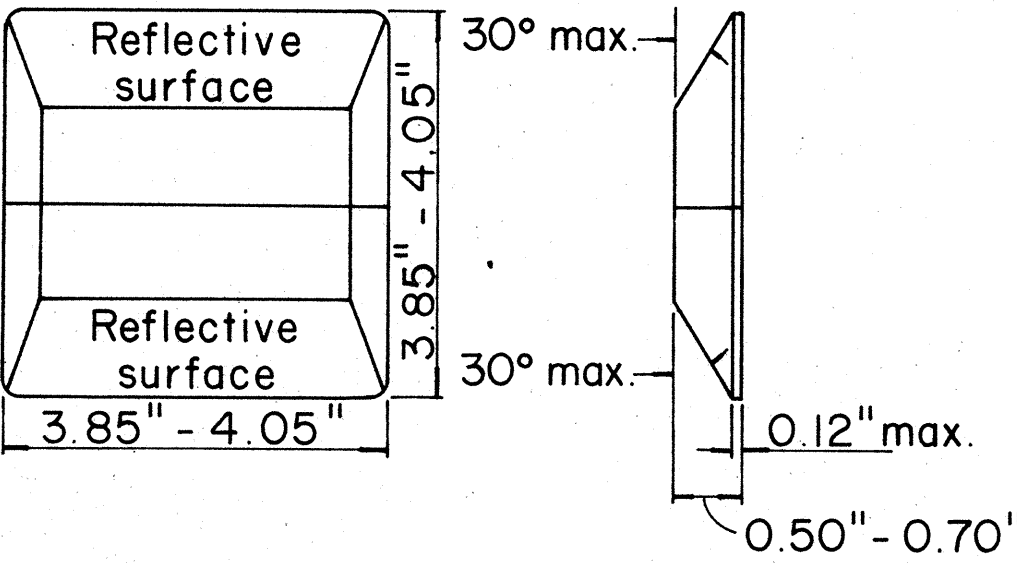


TYPE A
Non-reflective white marker

TYPE B
2-way clear reflective surface

TYPE J
Non-reflective yellow marker

TYPE D
2-way yellow reflective surface



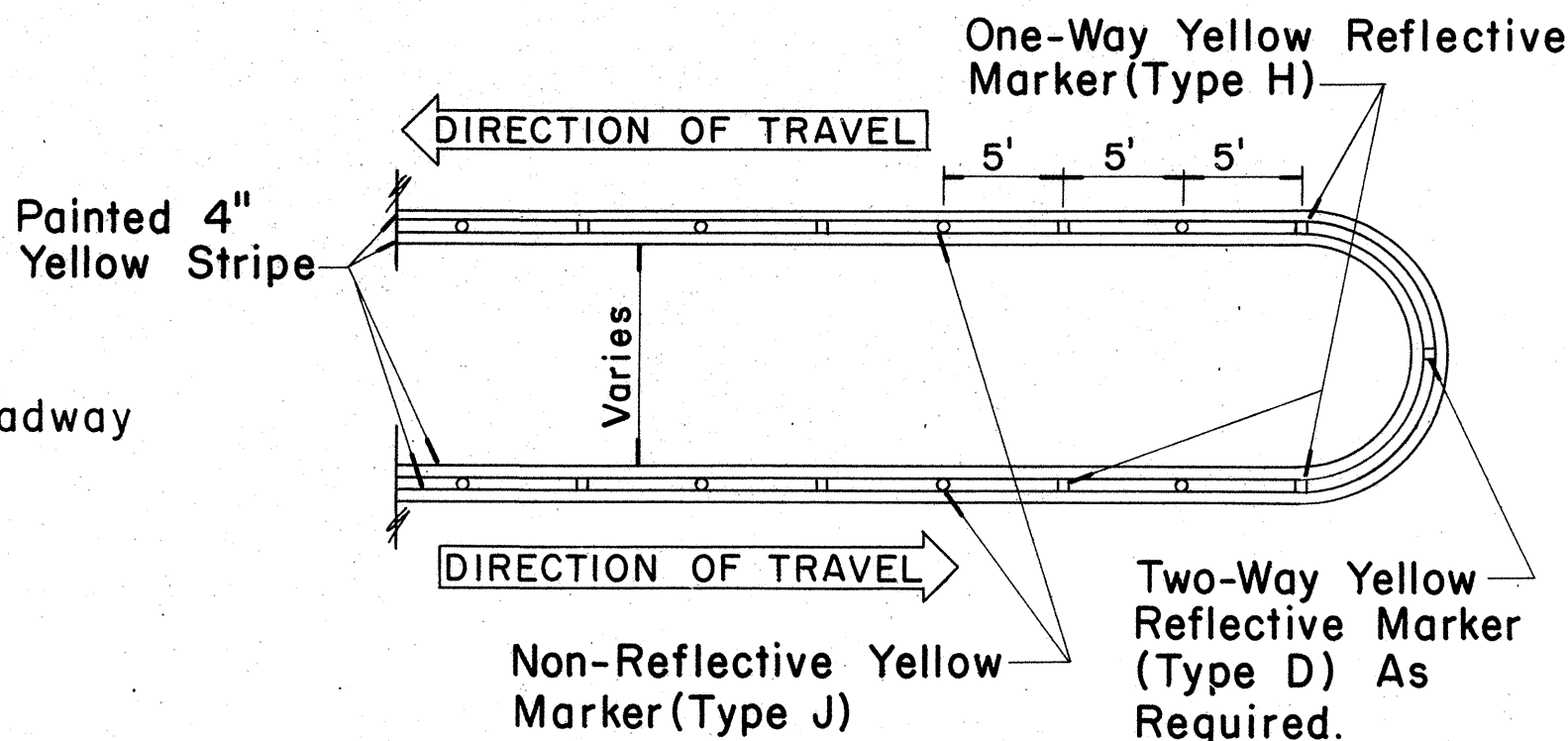
TYPE C
Red-clear reflective surface

TYPE H
One-way yellow reflective surface
APPROVAL RECOMMENDED:
Erich Tanaka 12/29/69
TRAFFIC ENGINEER DATE

TYPE E
Yellow-clear reflective surface

TYPE G
One-way clear reflective surface
APPROVED:
John J. Seiden 12-30-69
ASSISTANT CHIEF, ENGINEERING DATE

6 MEDIAN NOSE DELINEATION



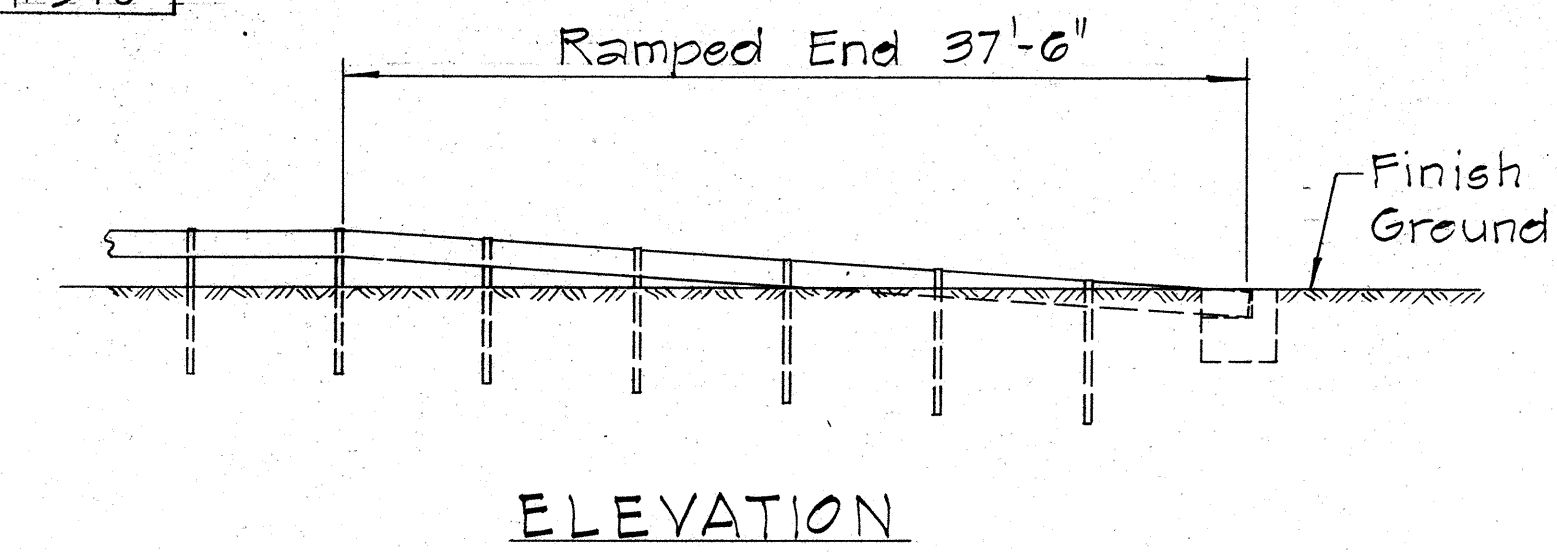
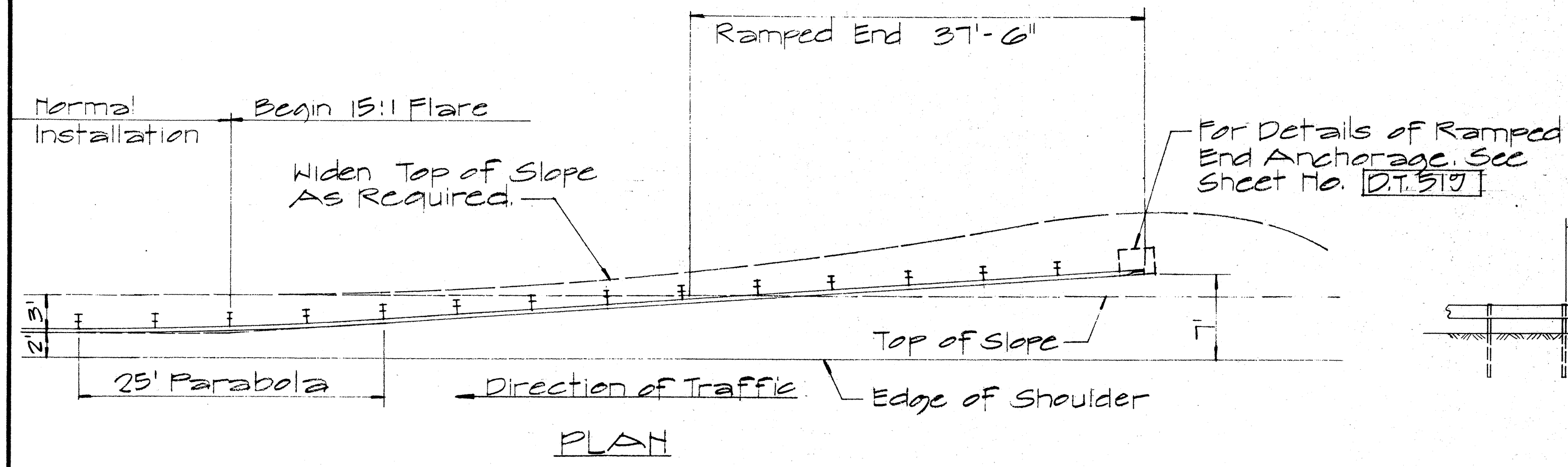
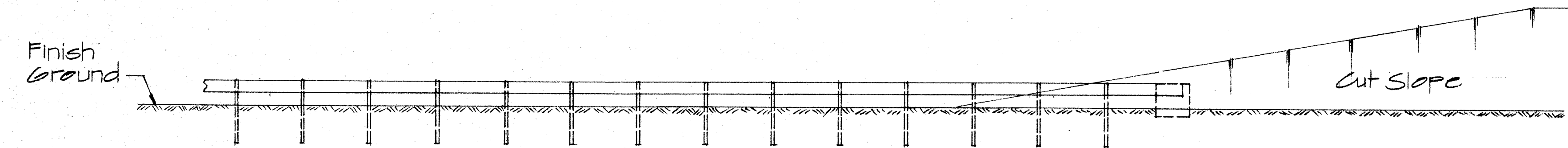
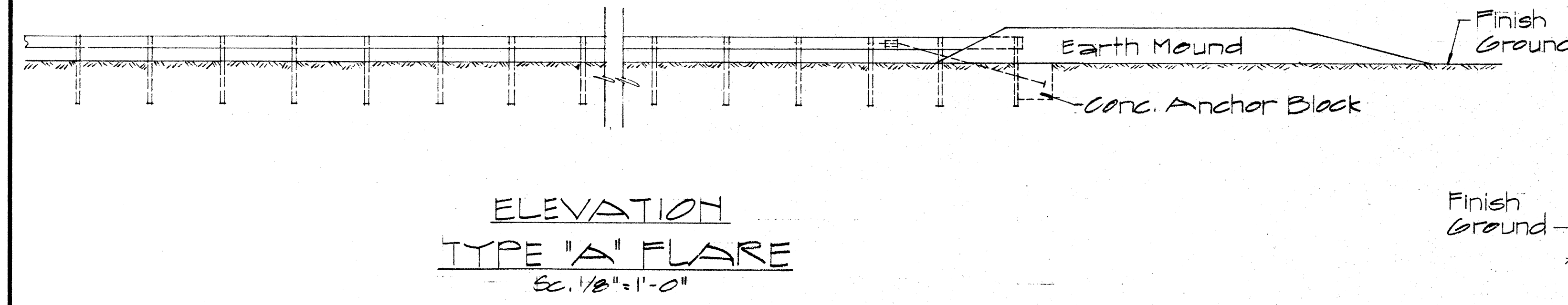
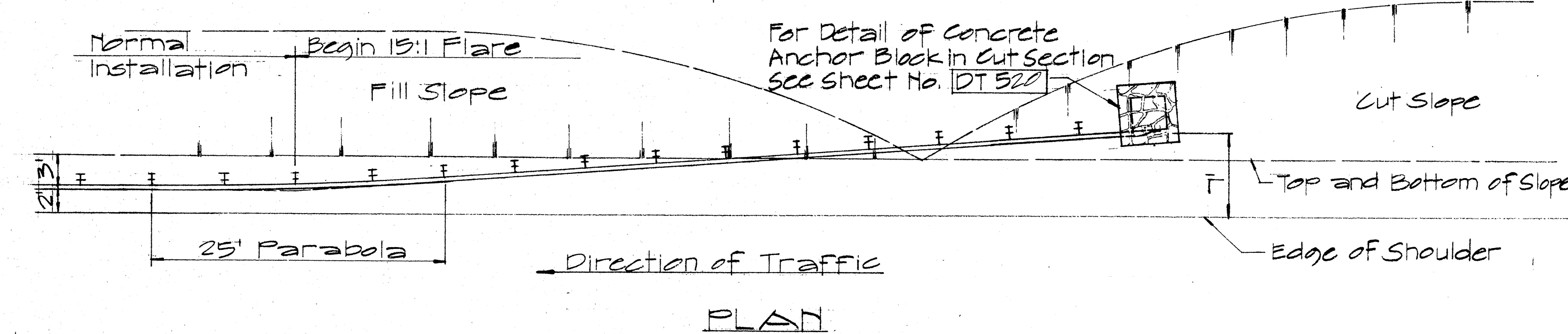
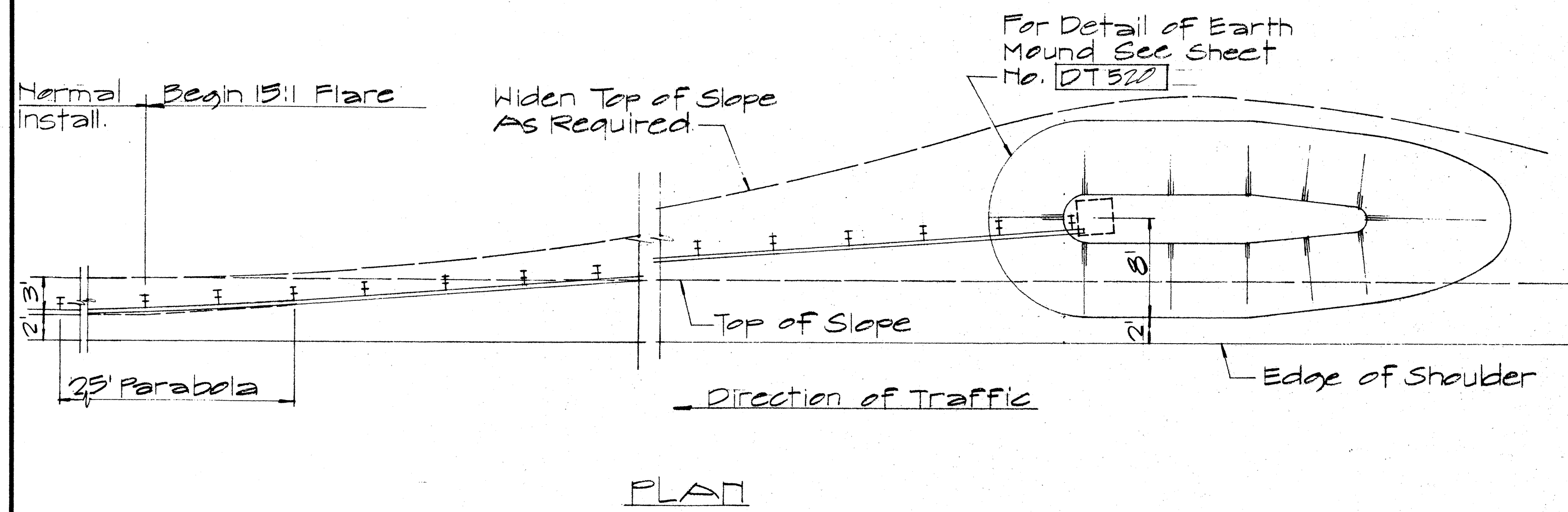
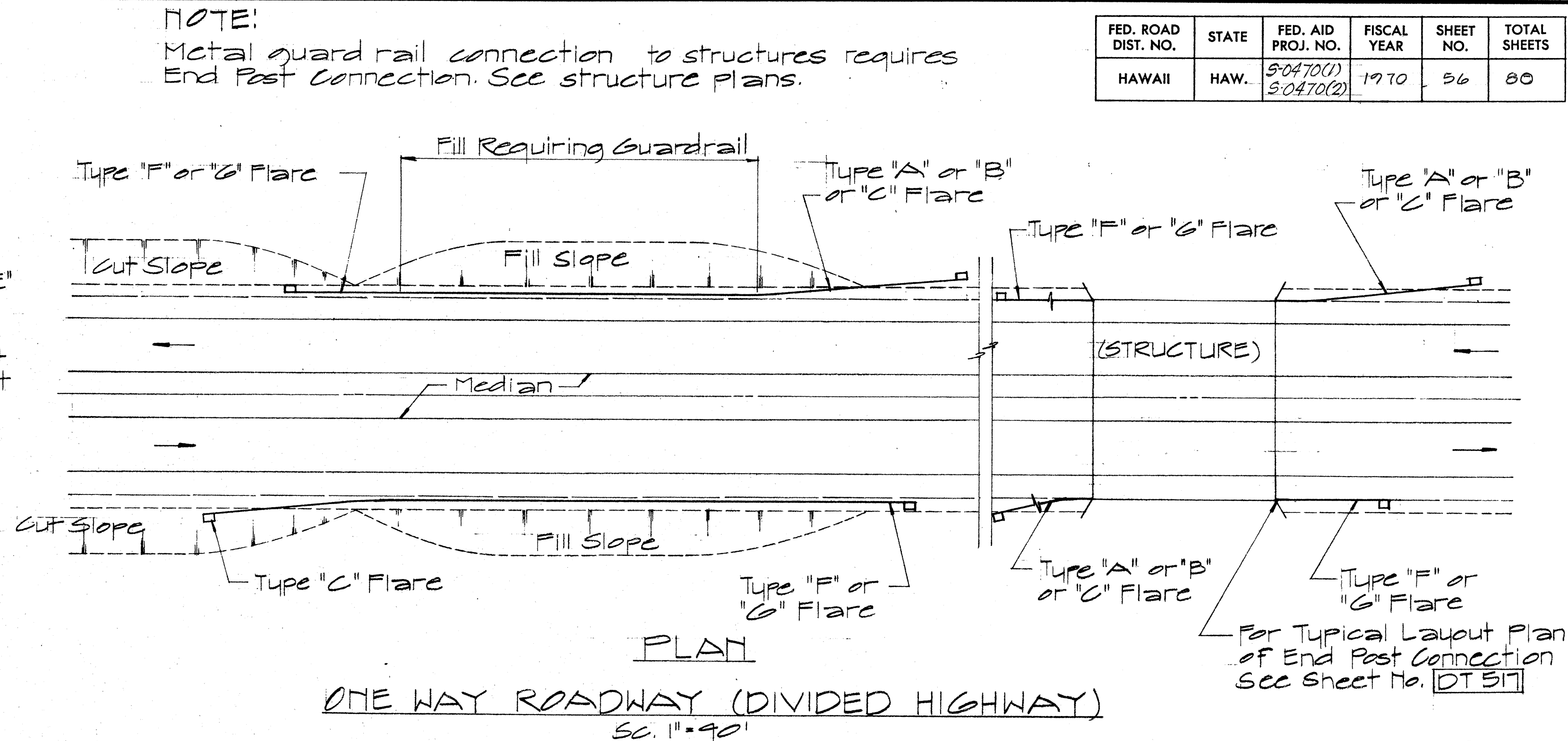
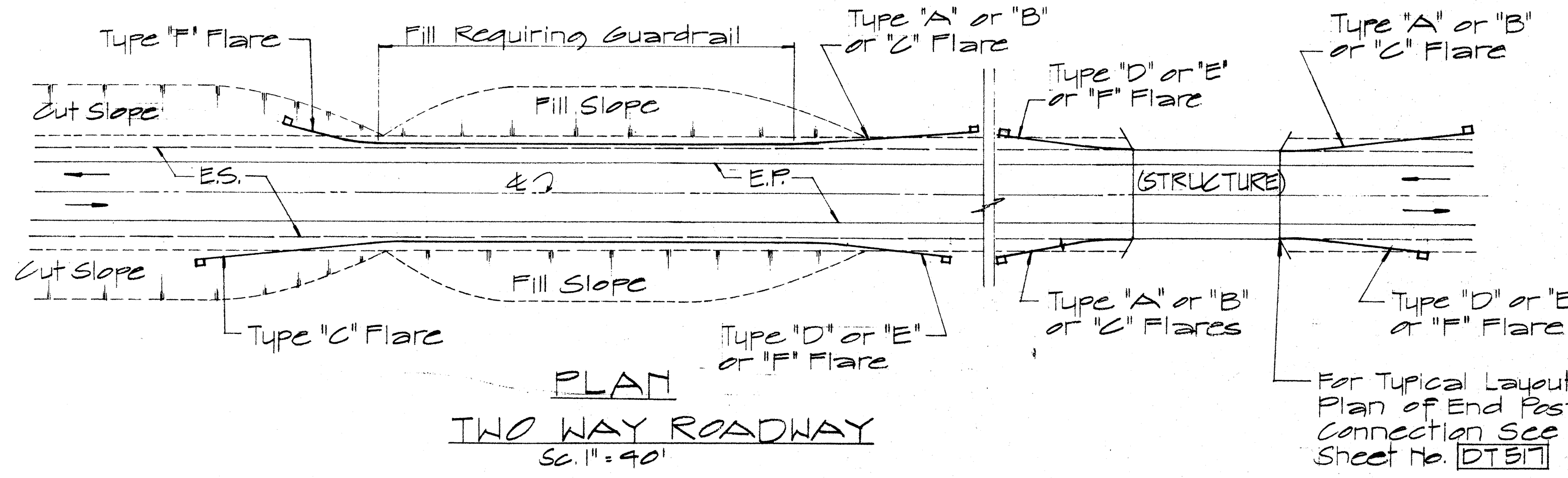
NOTE
Painted stripes to be done by State forces.

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
RAISED PAVEMENT MARKERS

Not to Scale Sept., 1967

SHEET No. 11 OF 27 SHEETS DT 300



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

NO.	REVISION	APPROVED BY	DATE

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

APPROVED:
W. B. B. B. 12-30-62
 ASSISTANT CHIEF, ENGINEERING DATE

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

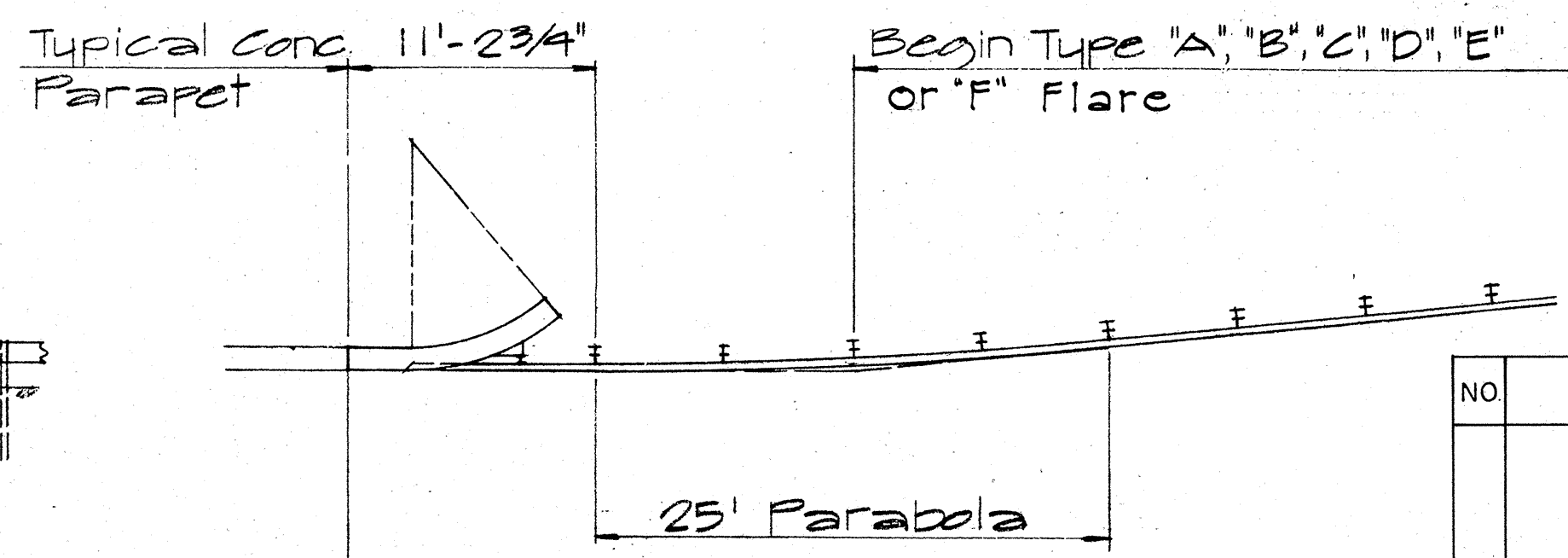
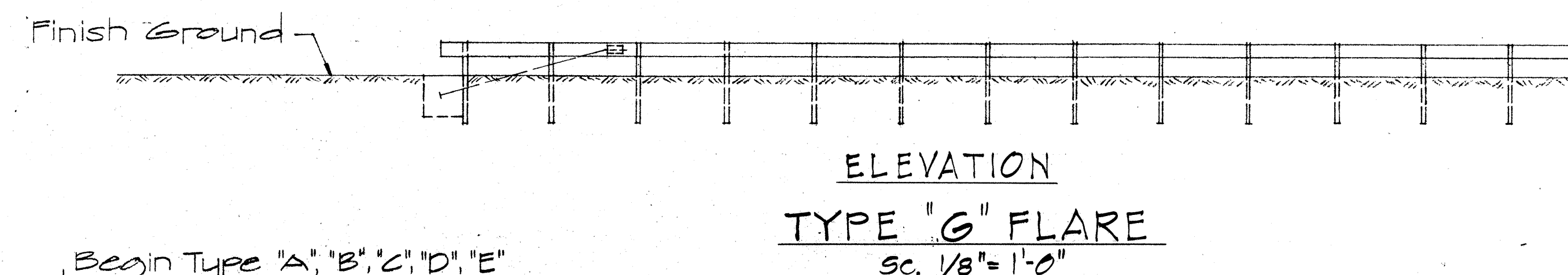
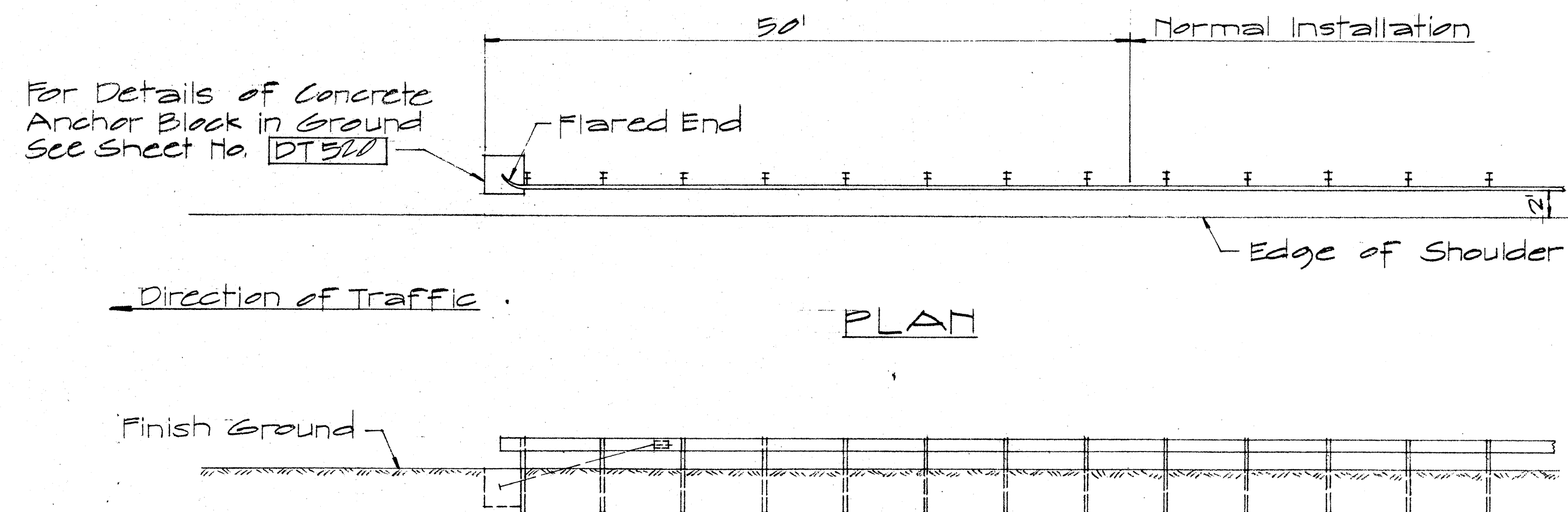
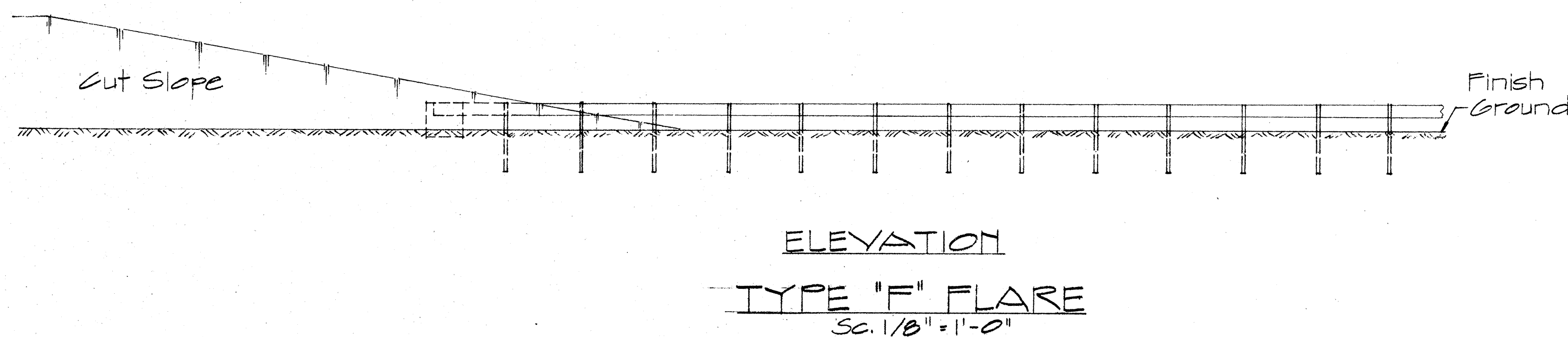
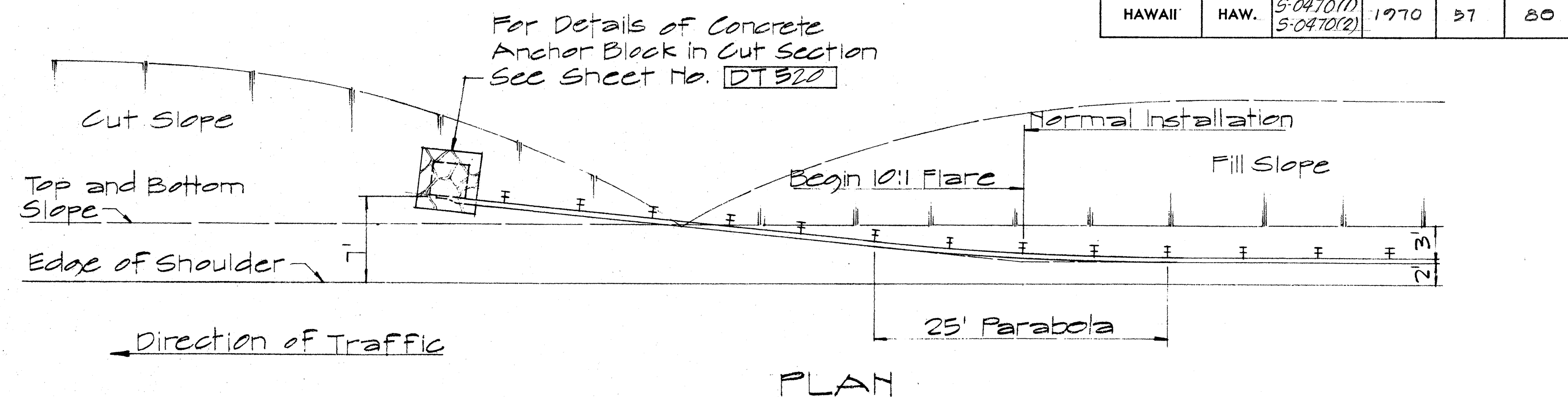
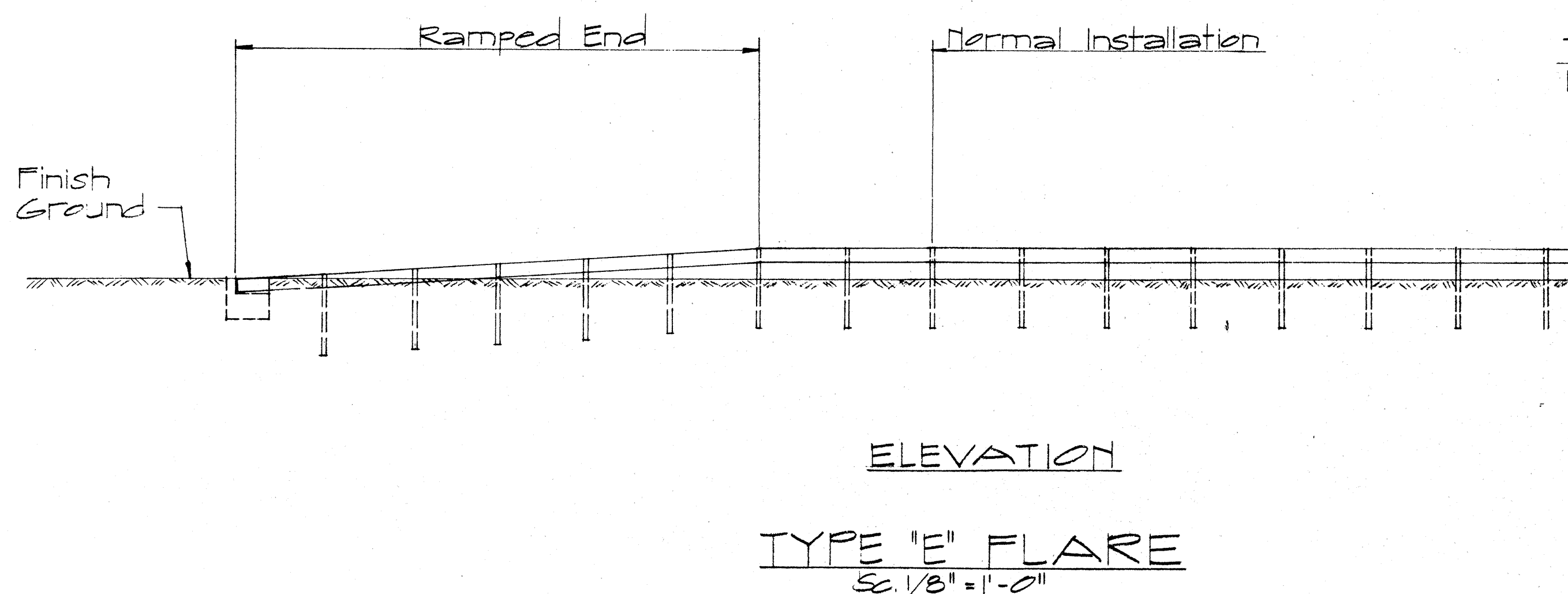
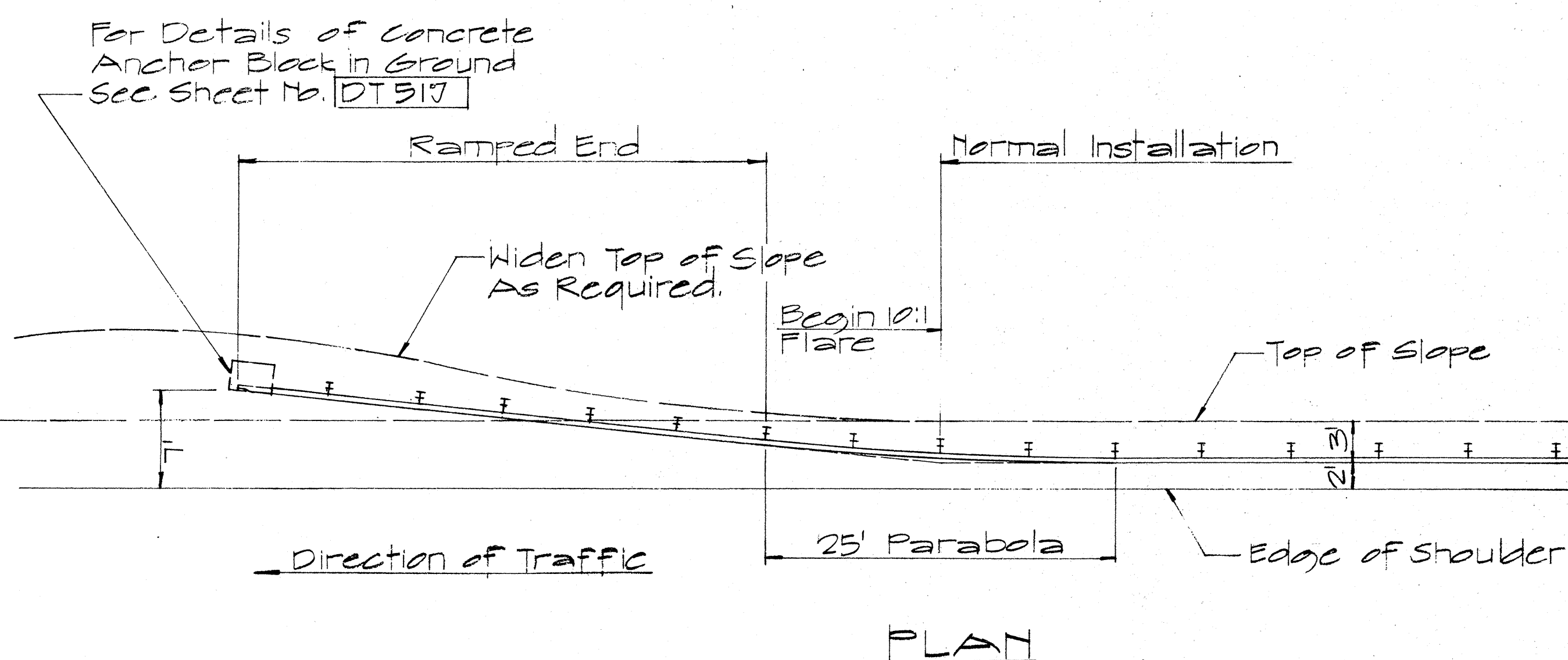
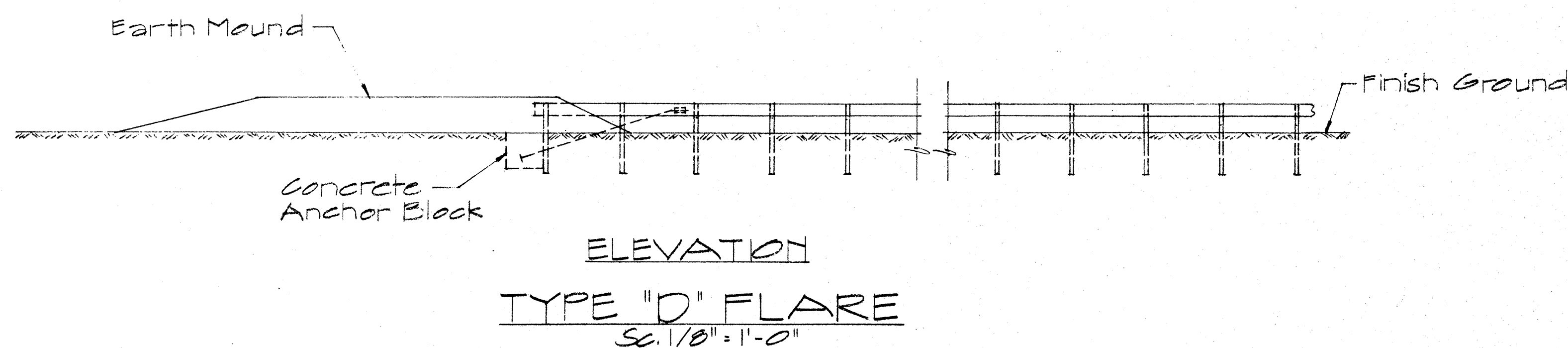
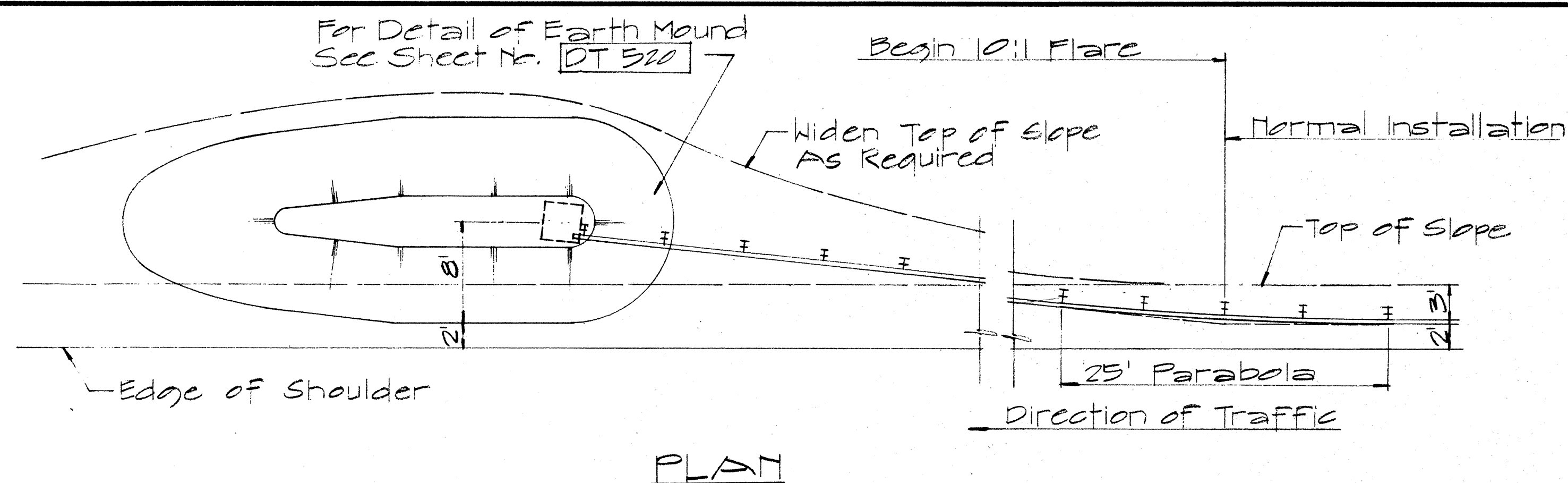
**STANDARD DETAILS
 OF APPROACH END
 FLARE - ONE & TWO
 WAY ROADWAY**

Sc. As Noted April 1967

SHEET No. 14 OF 27 SHEETS DT 516

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	37	80



TYPICAL LAYOUT PLAN OF
END POST CONNECTION

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

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

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

NO.	REVISION	APPROVED BY	DATE

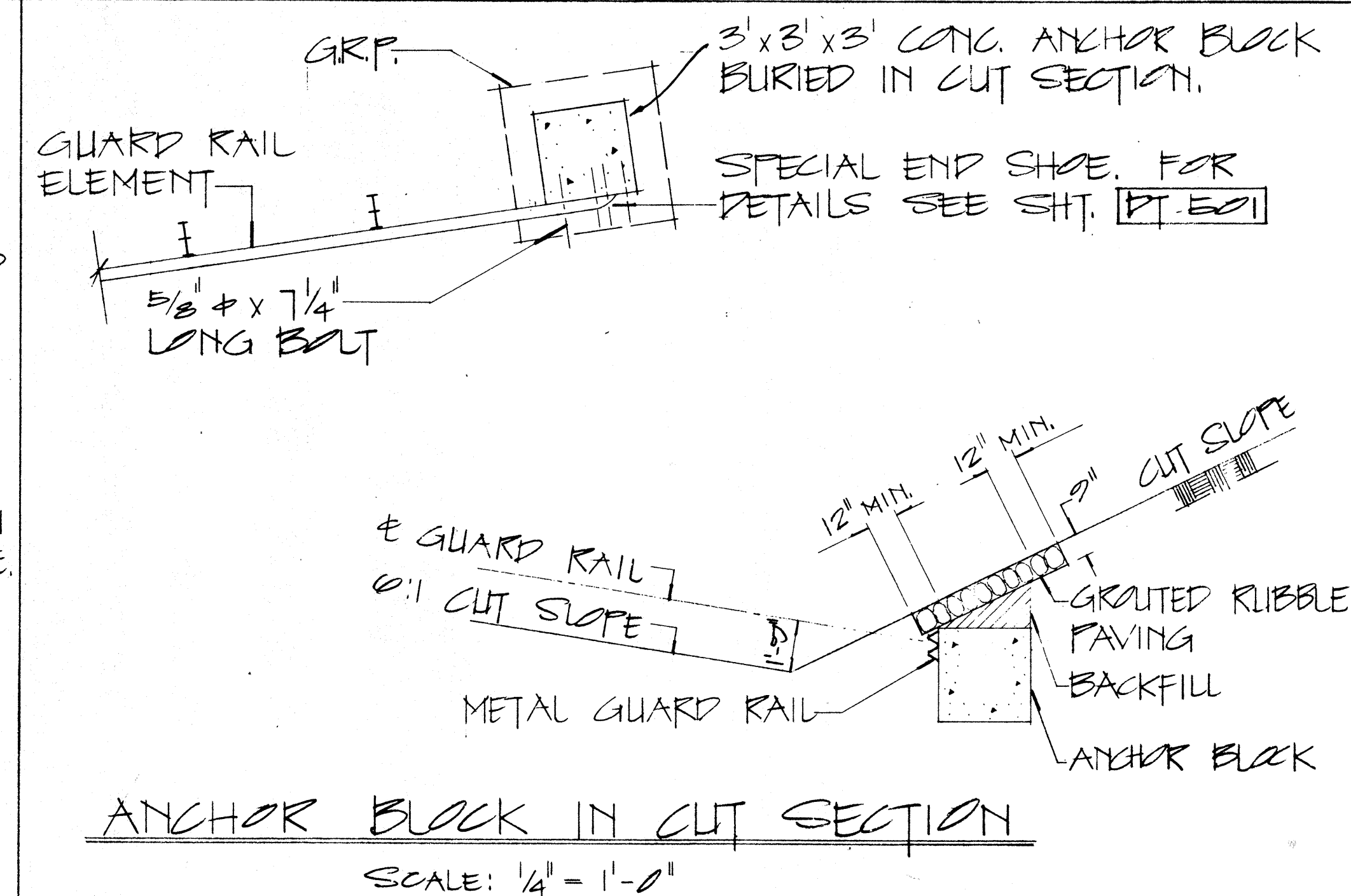
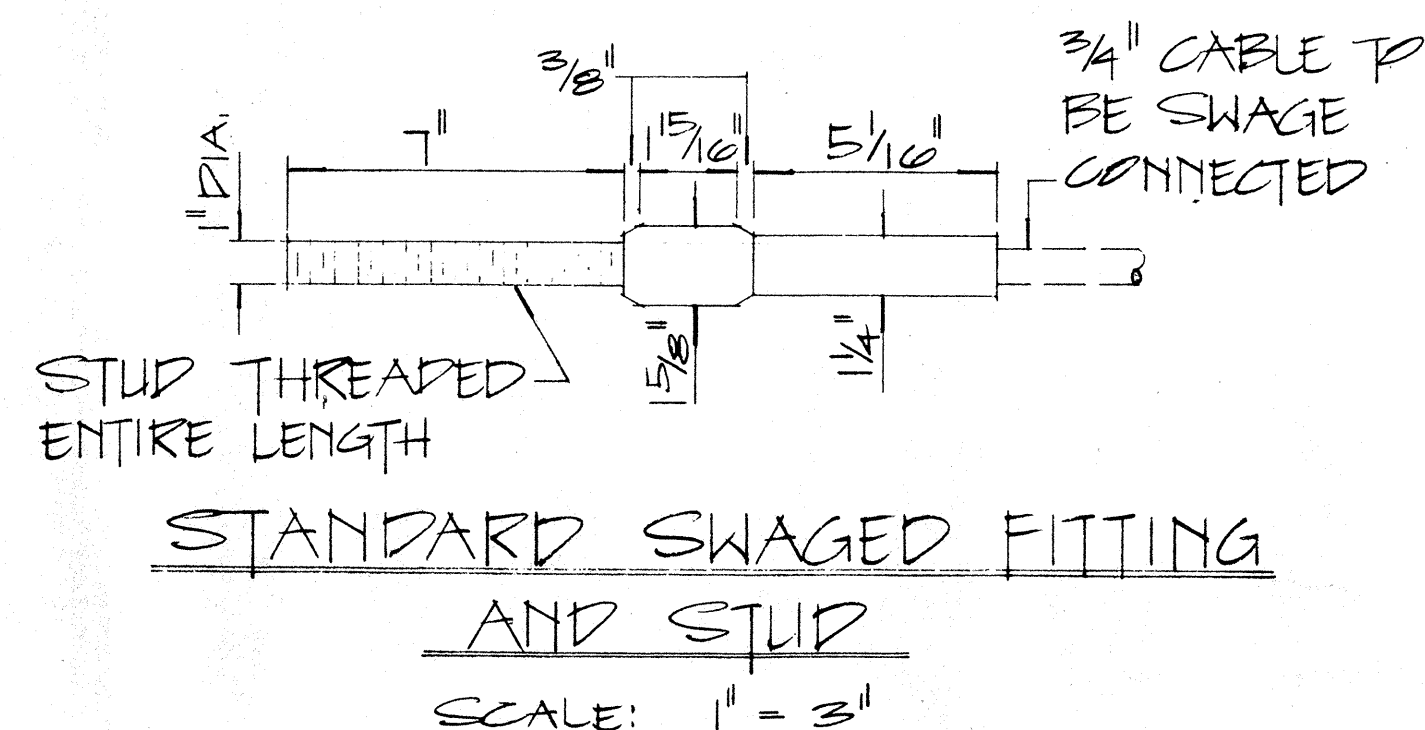
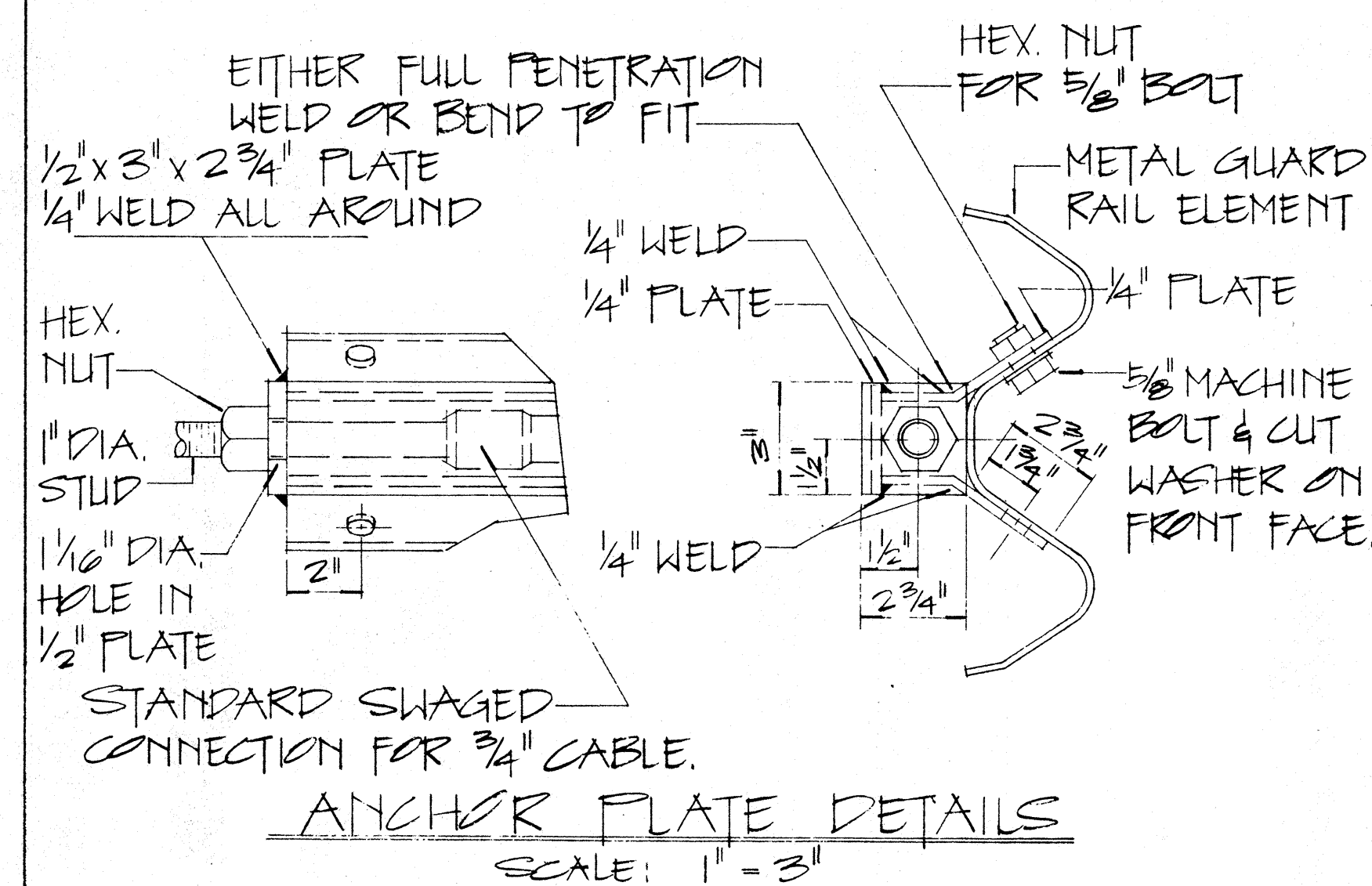
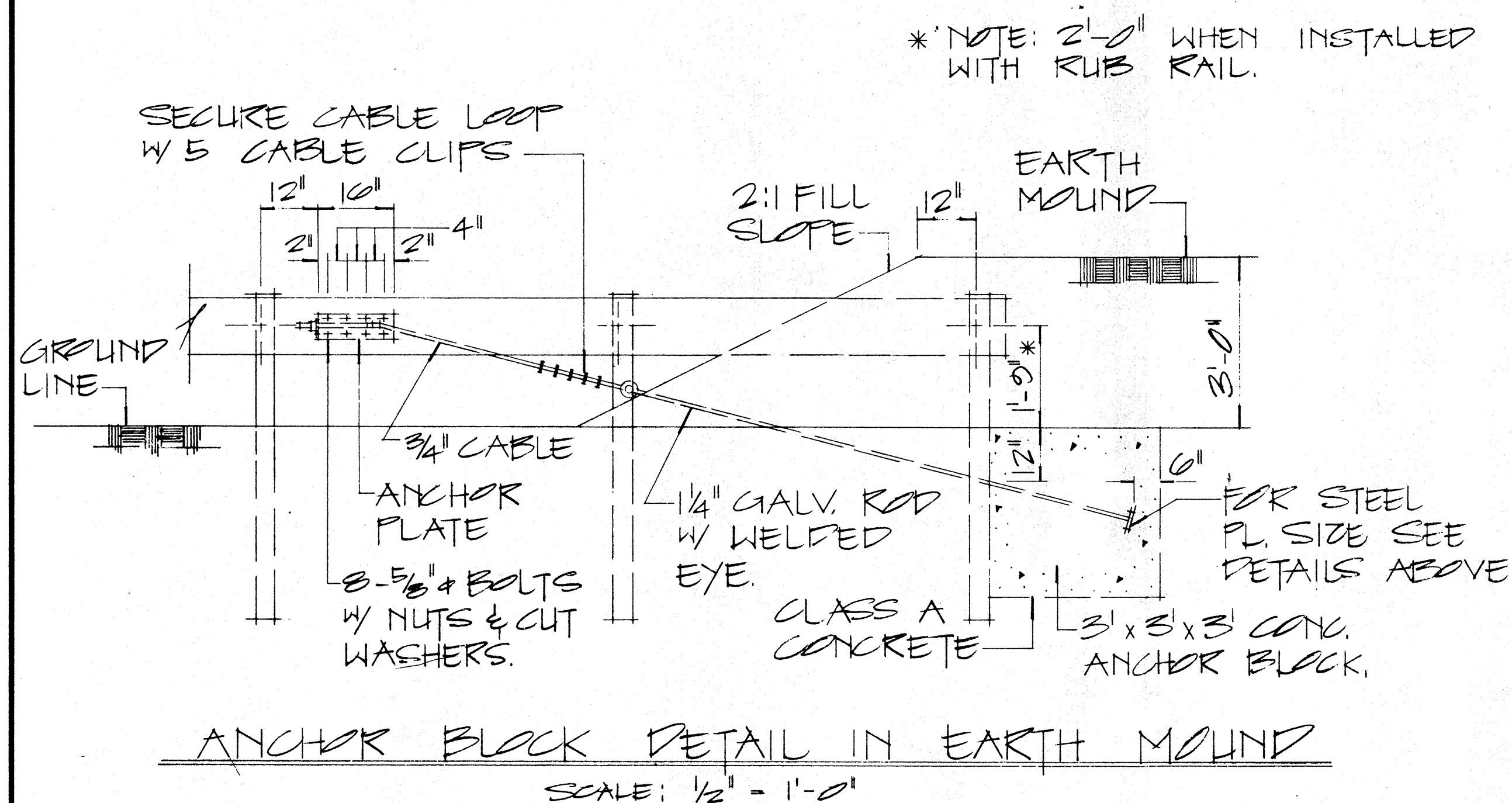
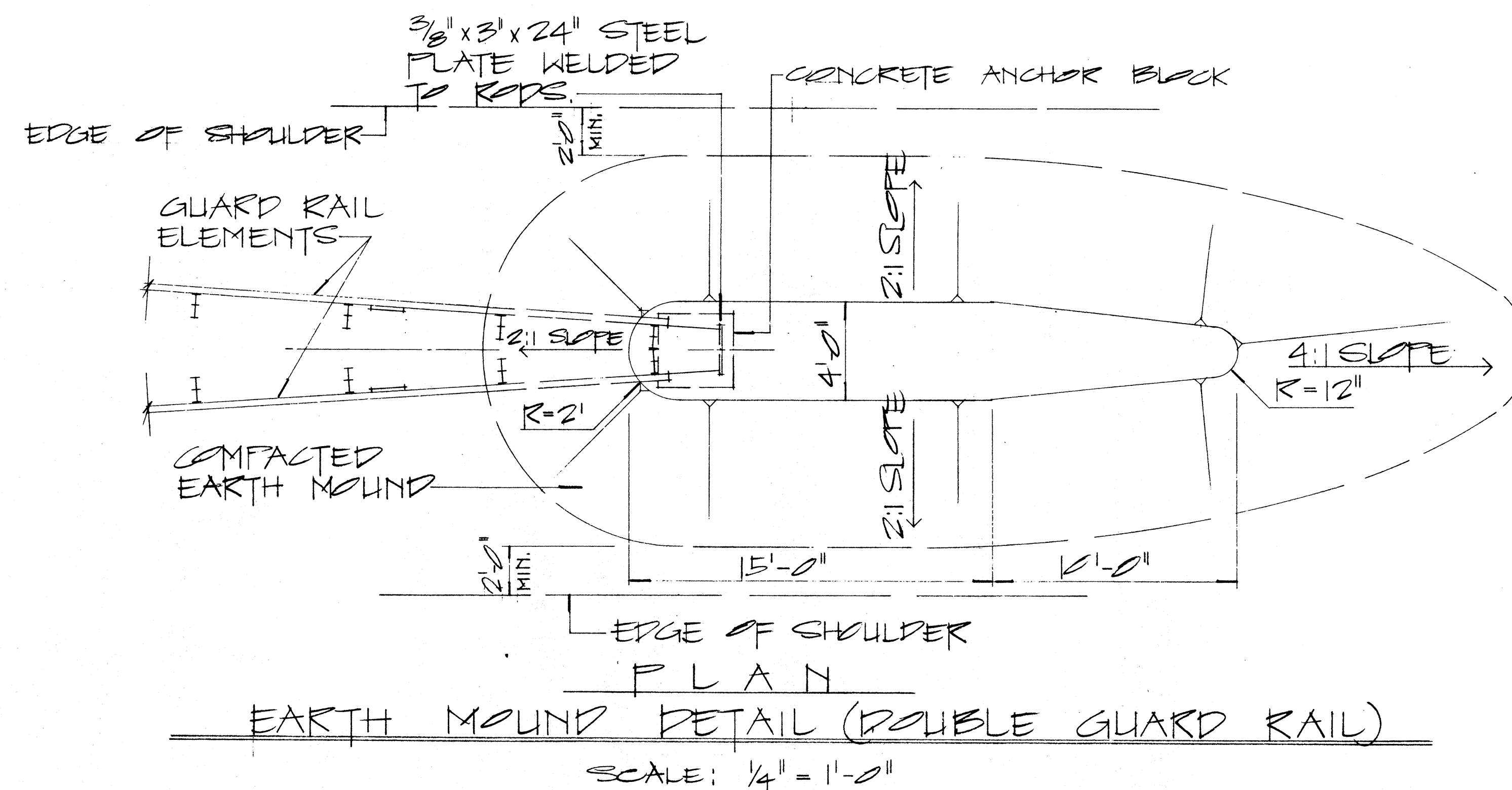
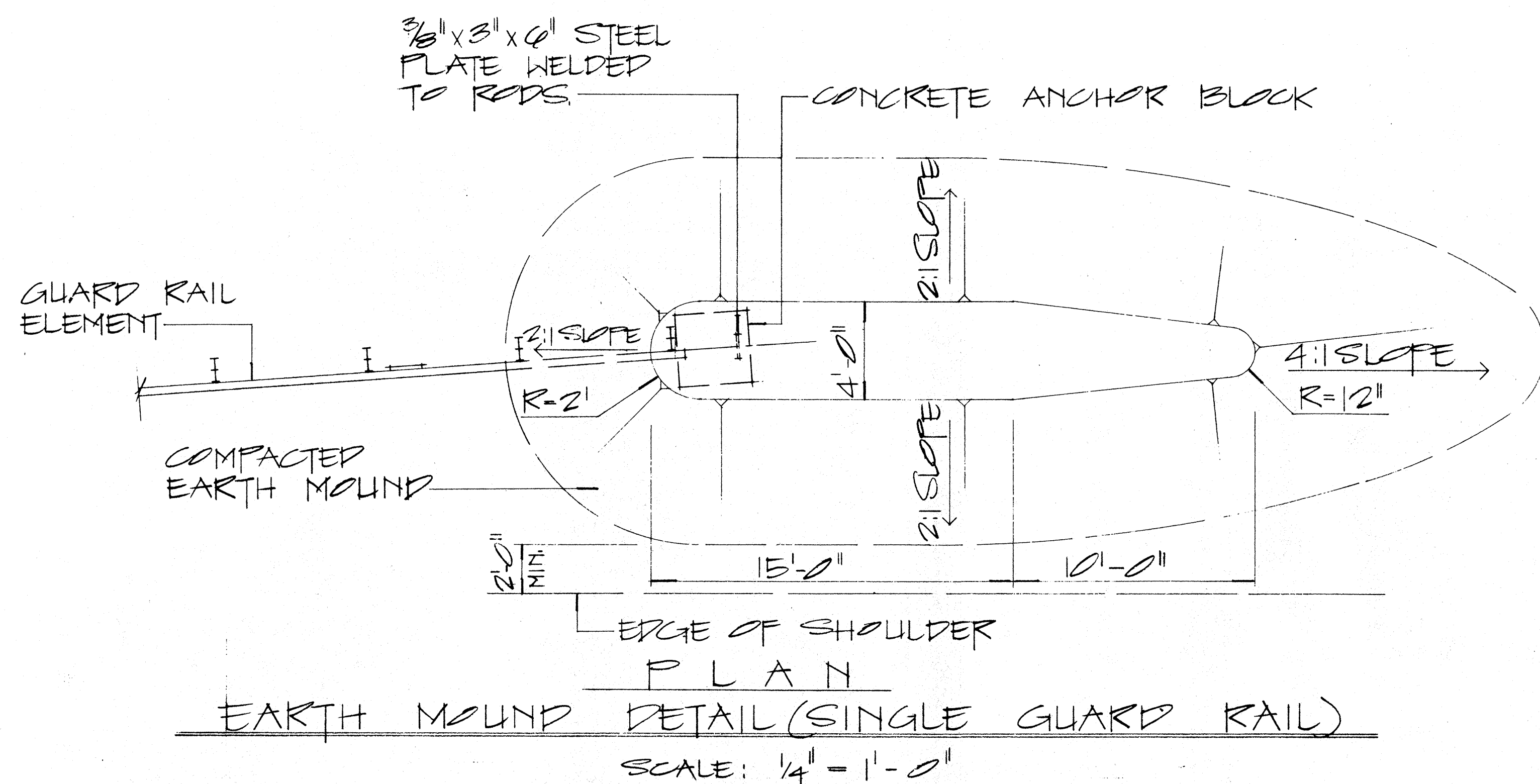
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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

Sc. As Noted April 1969

SHEET NO. 15 OF 27 SHEETS DT 517

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	58	80



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.

APPROVAL RECOMMENDED:

Ericki Tanaka 12/29/62

TRAFFIC ENGINEER DATE

APPROVED:

2/1/63 [Signature] 12-30-62

ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE

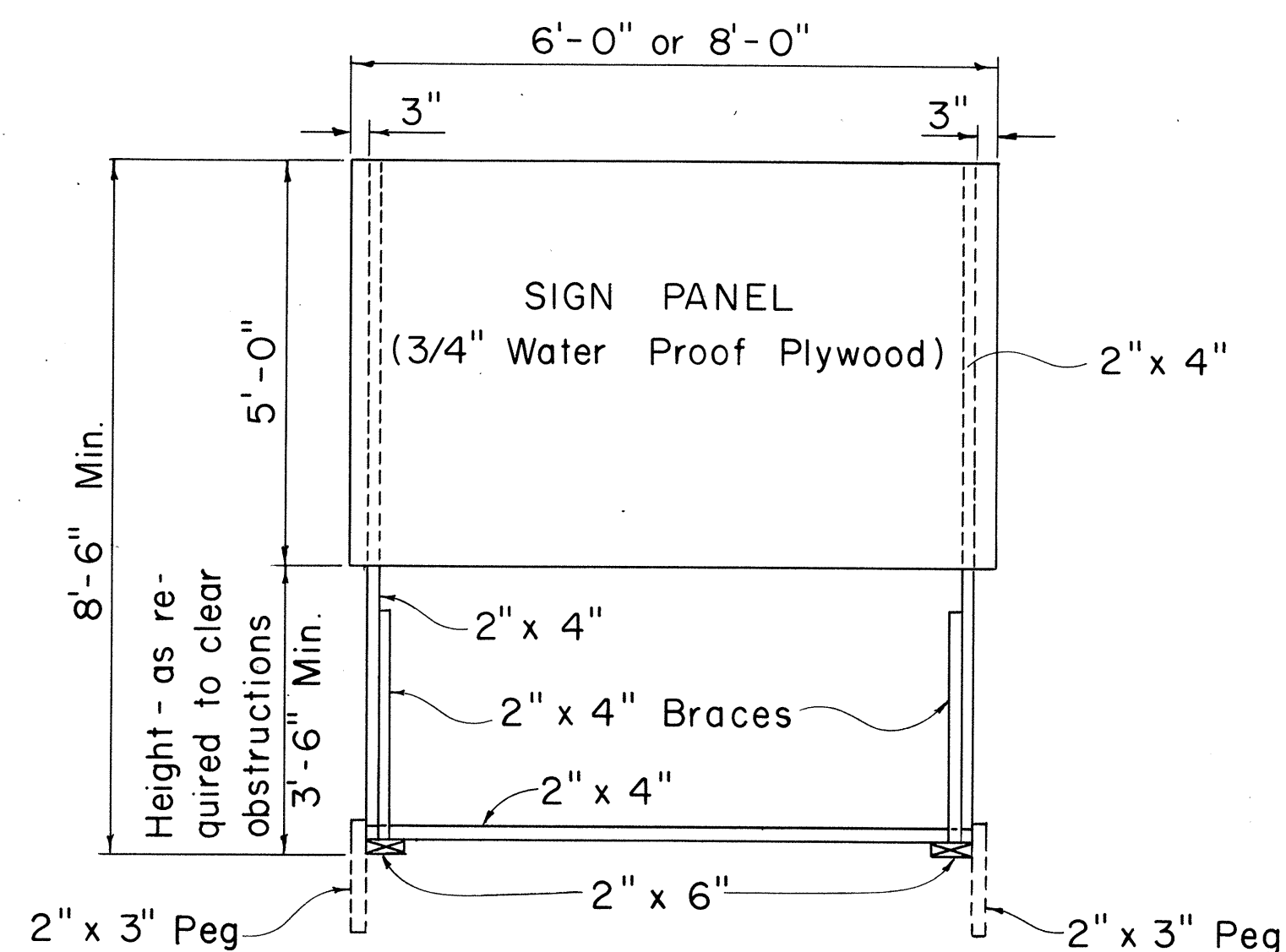
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
EARTH MOUND AND
ANCHOR BLOCK DETAILS

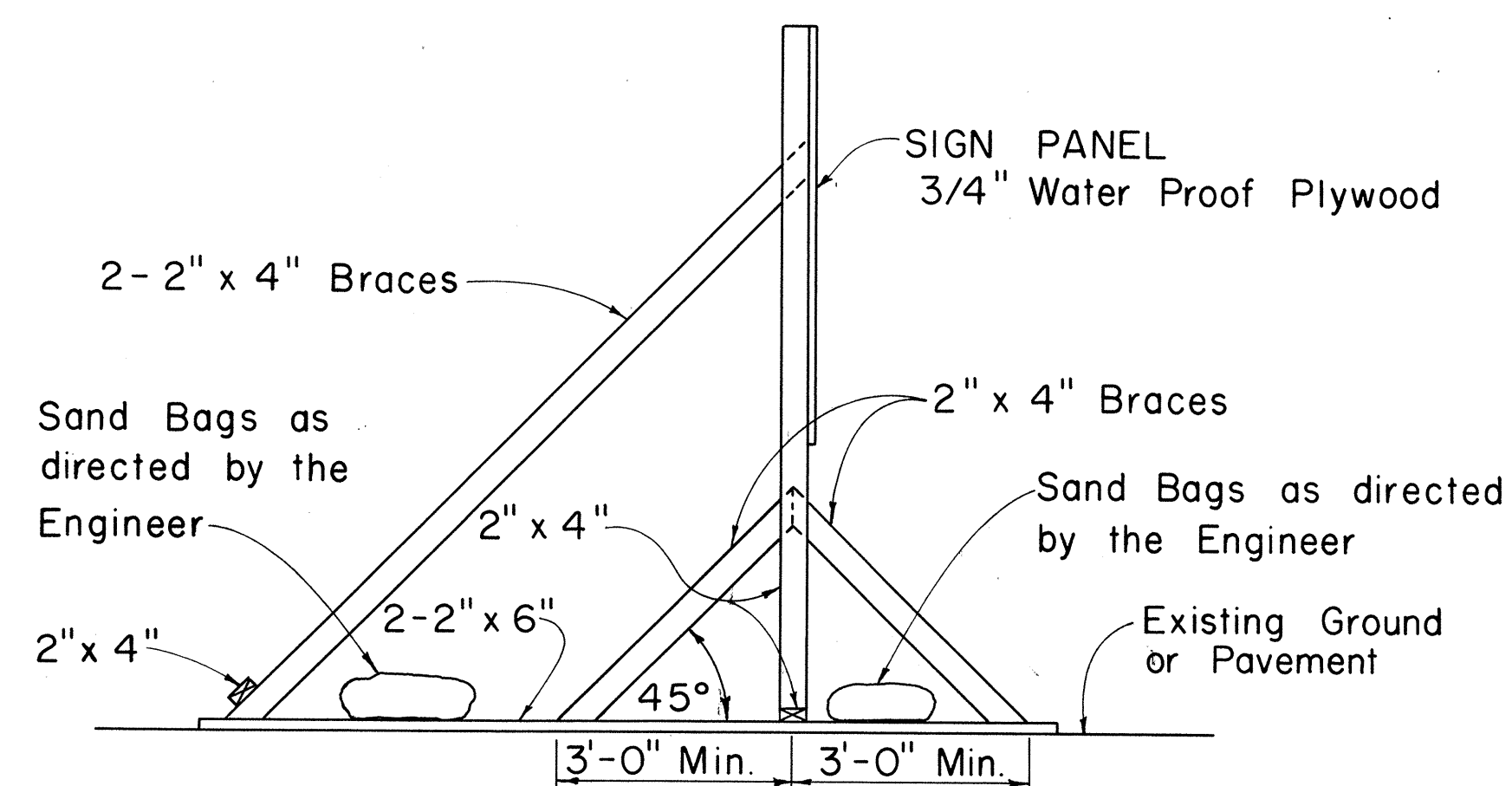
SCALE: AS SHOWN *at 1960*

SHEET No. 16 OF 27 SHEETS *of 52*

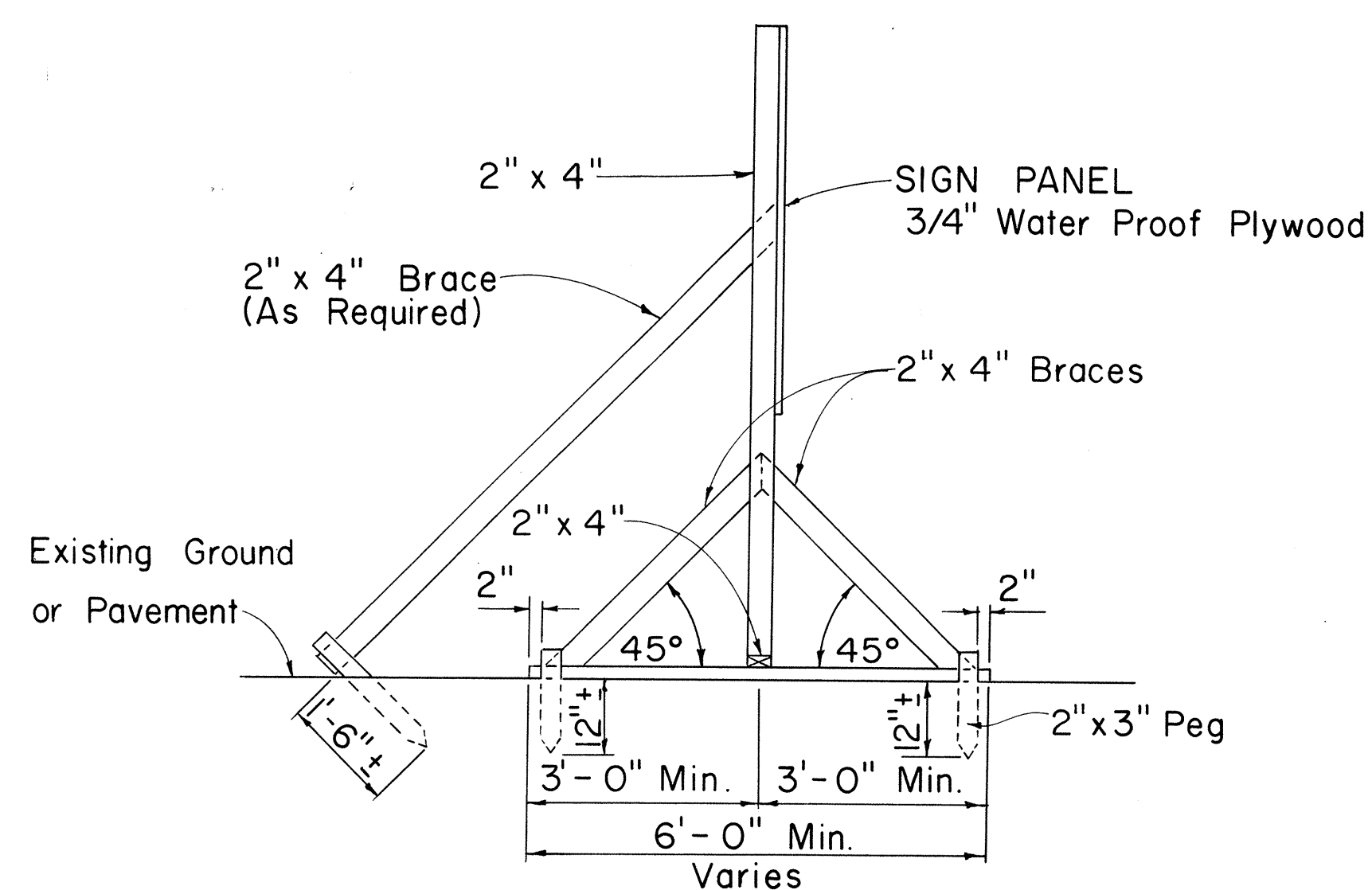
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	S-0470(1) S-0470(2)	1970	59	80



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

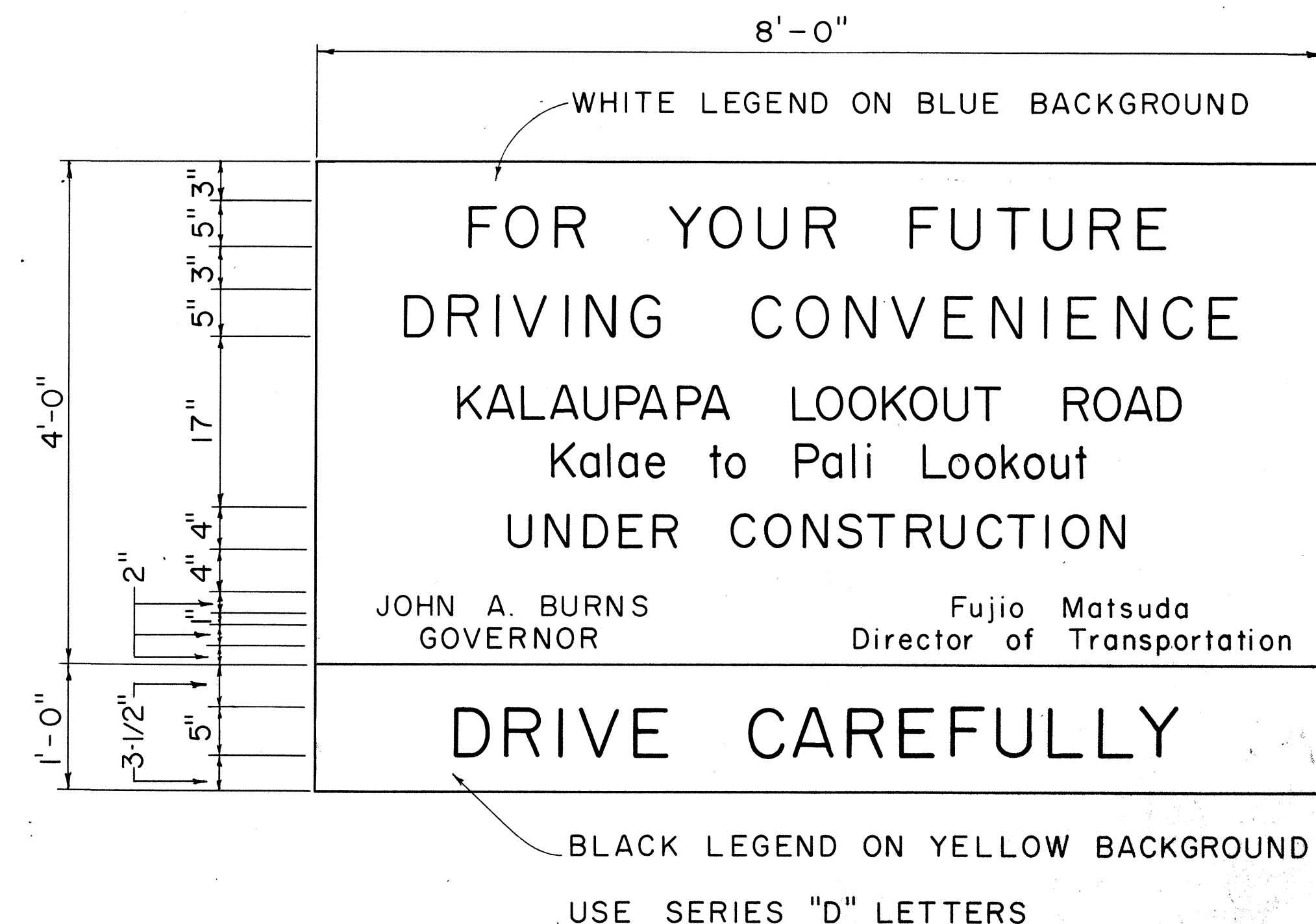


SIDE VIEW
(SIGN SUPPORT AND FRAME WEIGHTED DOWN)
Scale: 1/2" = 1'-0"



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

SIGN SUPPORT AND FRAME
Scale: As Shown



GENERAL NOTES

1. The sign panels will be constructed by the State and will be available for pick up by the Contractor from the State Highway Maintenance Yard.
2. The Contractor shall construct the sign supports and frames and install the sign panels at the locations shown on the plans and as ordered by the Engineer.
3. At the end of construction the Contractor shall remove the sign panels and return it to the State Highway Maintenance Yard. Sign supports and frames shall be removed and cleared from the project site.

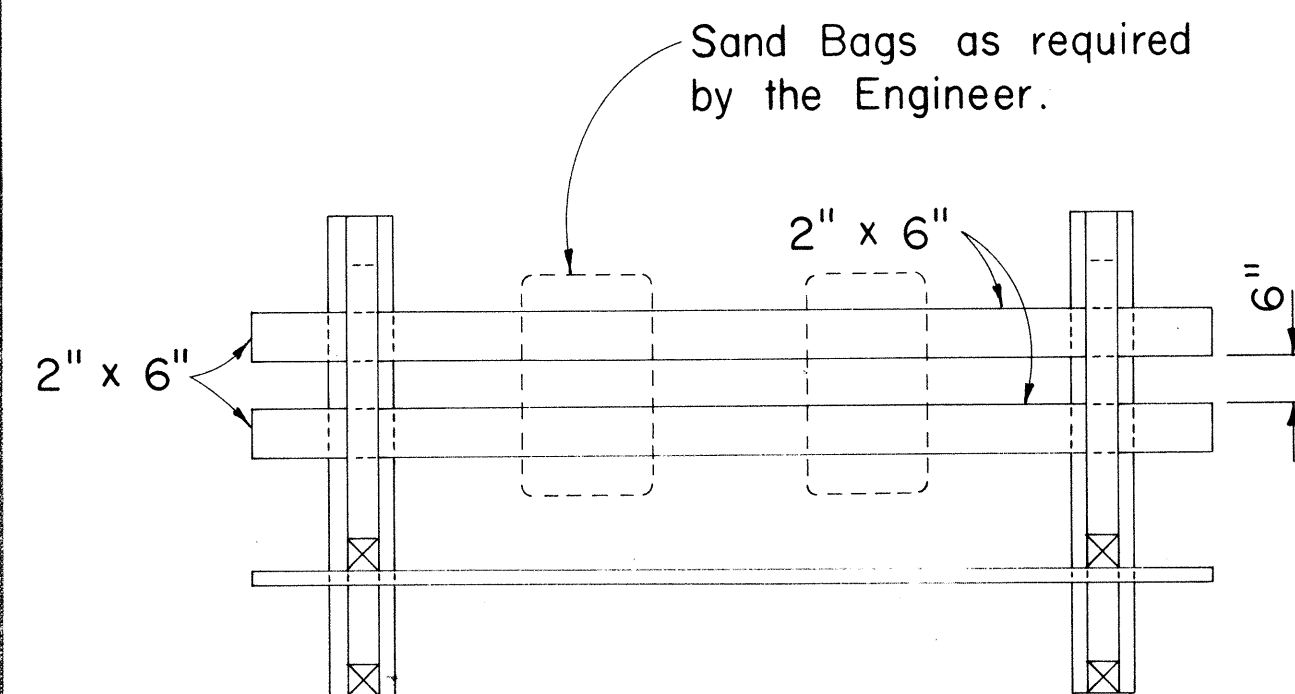
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
TYPICAL DETAILS

PROJECT INFORMATION SIGN

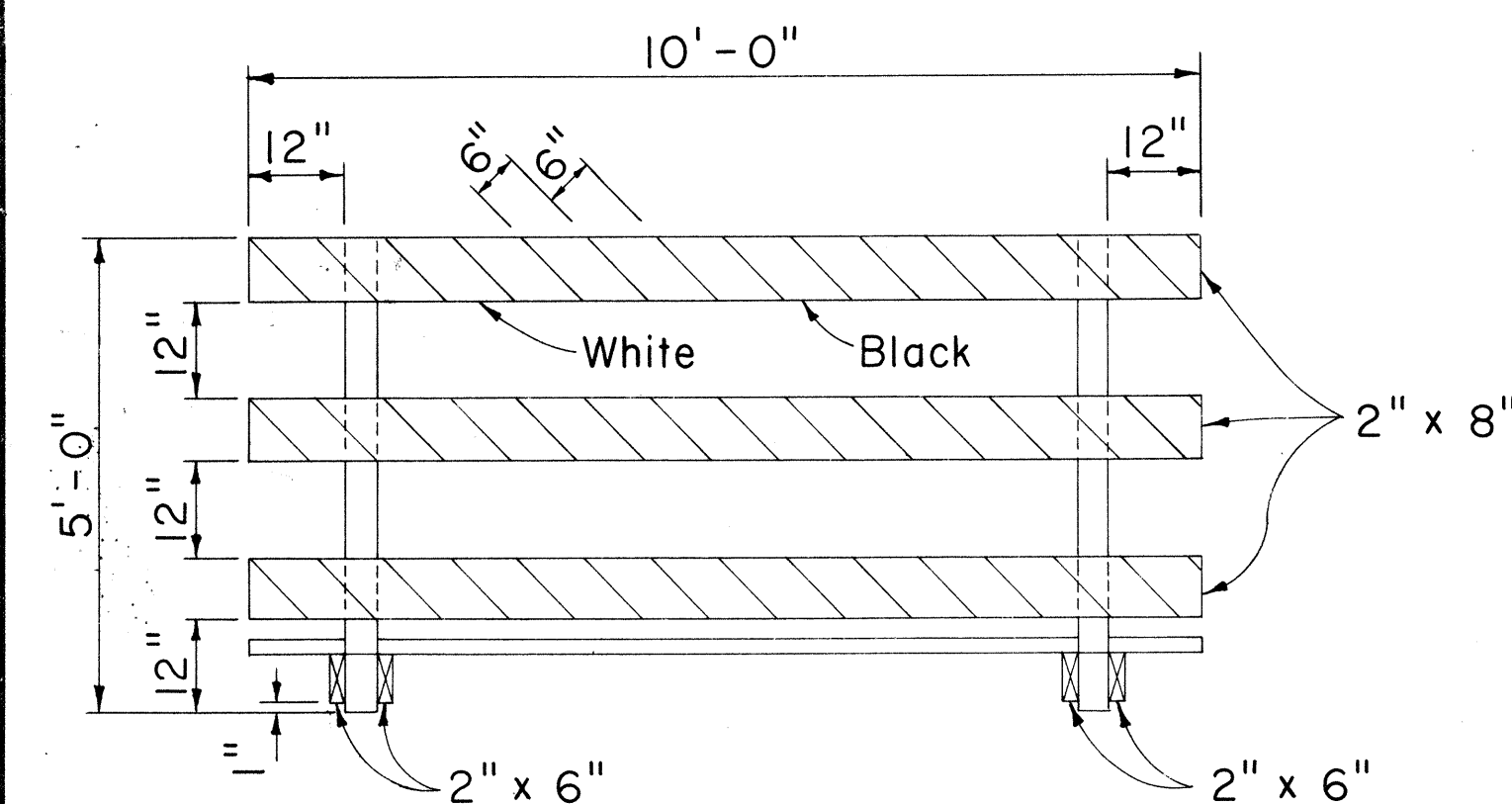
Scale: As Shown

SHEET No. 17 OF 27 SHEETS

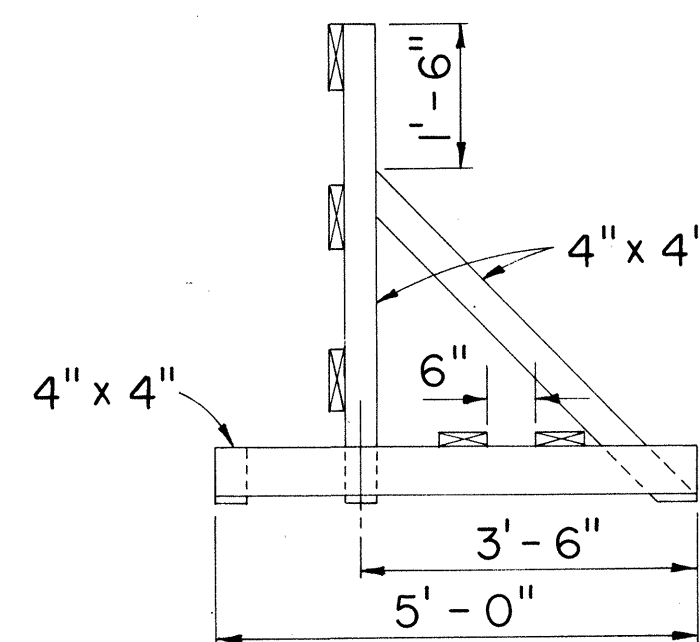
DATE	_____
DESIGNED BY	_____
CHECKED BY	_____
NOTED BY	_____
NO.	_____



PLAN VIEW



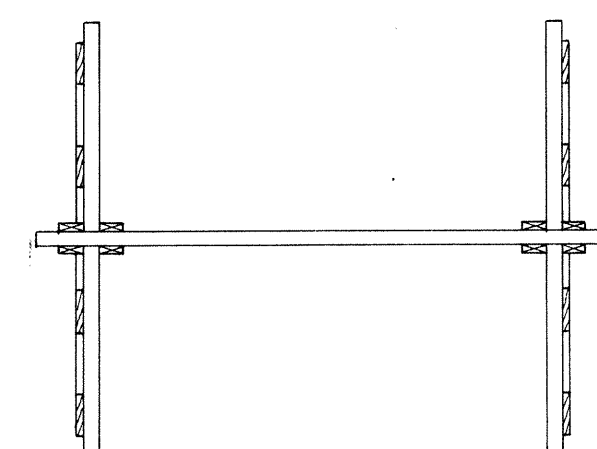
FRONT VIEW



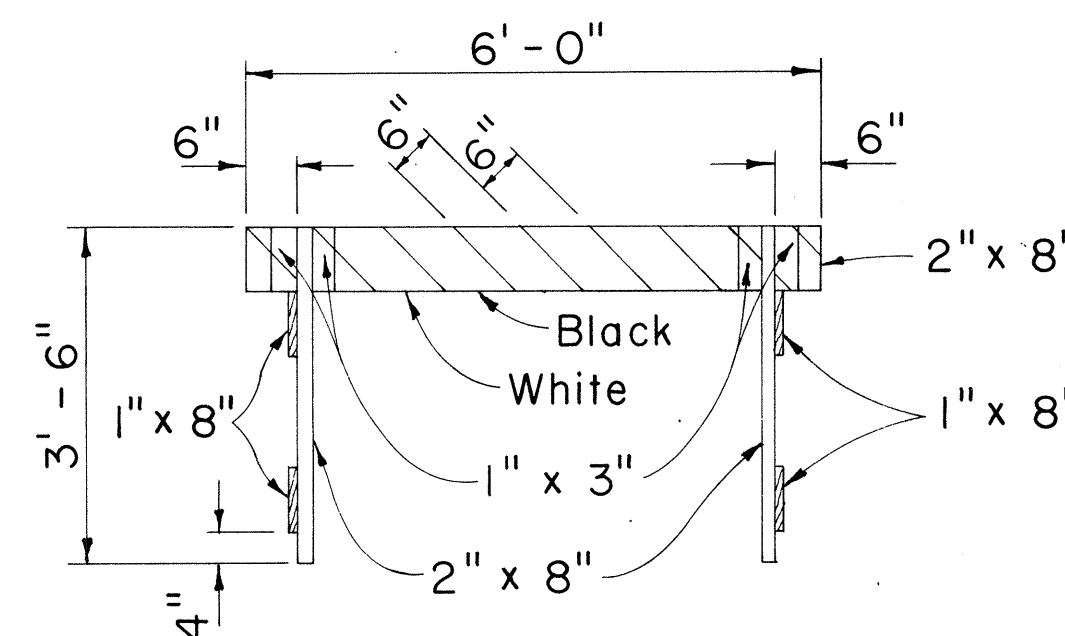
END VIEW

CLASS I BARRICADE

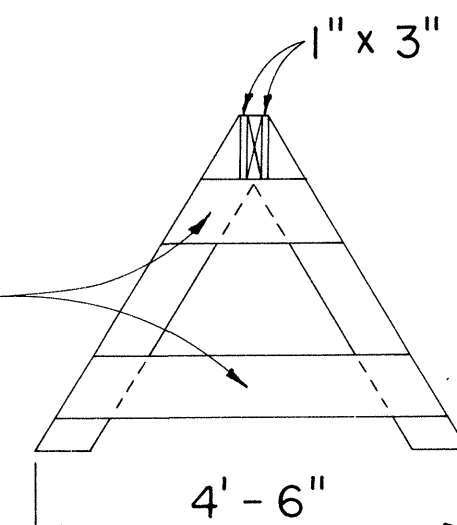
Scale: 1/2" = 1'-0"



PLAN VIEW



FRONT VIEW



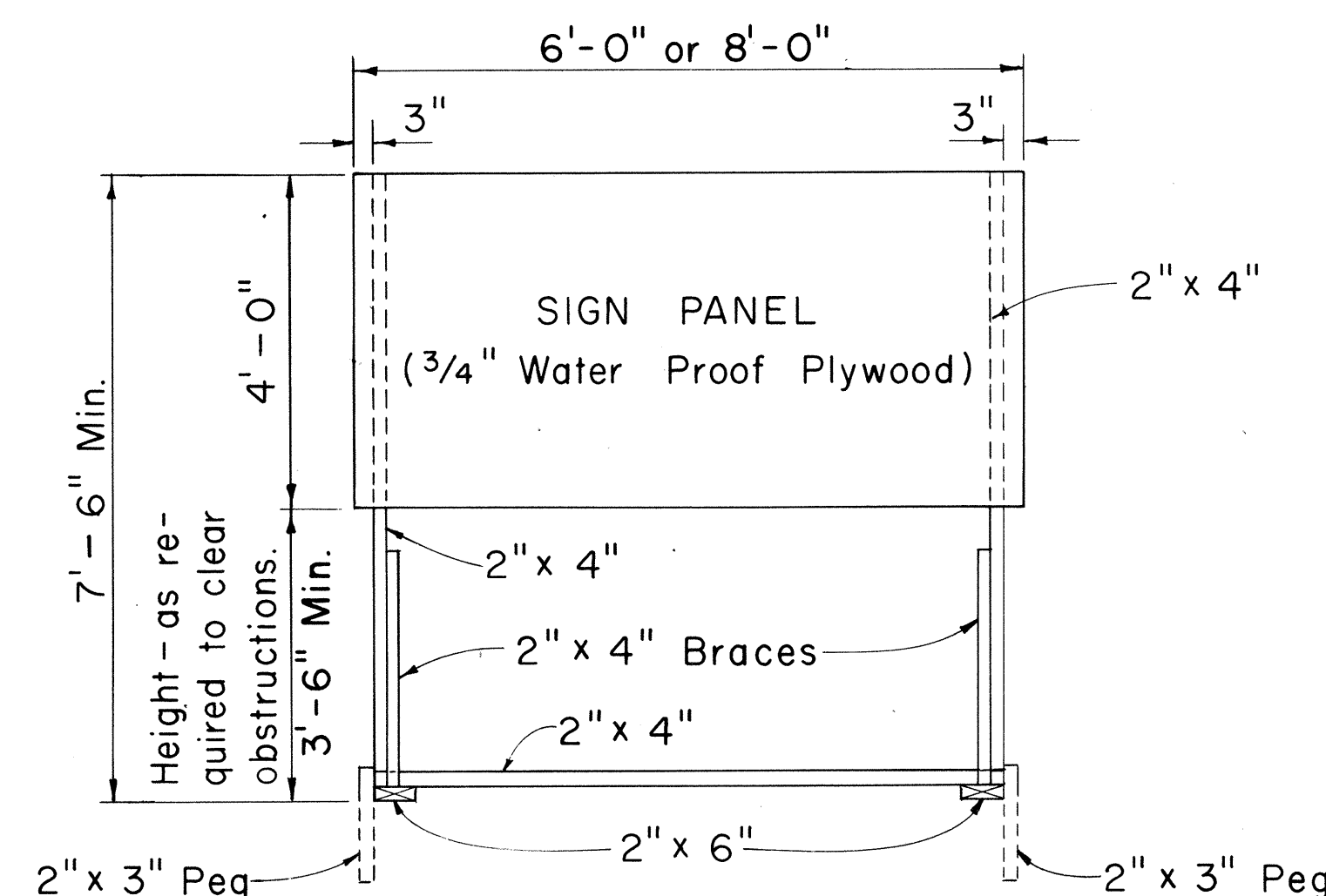
END VIEW

CLASS II BARRICADE

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

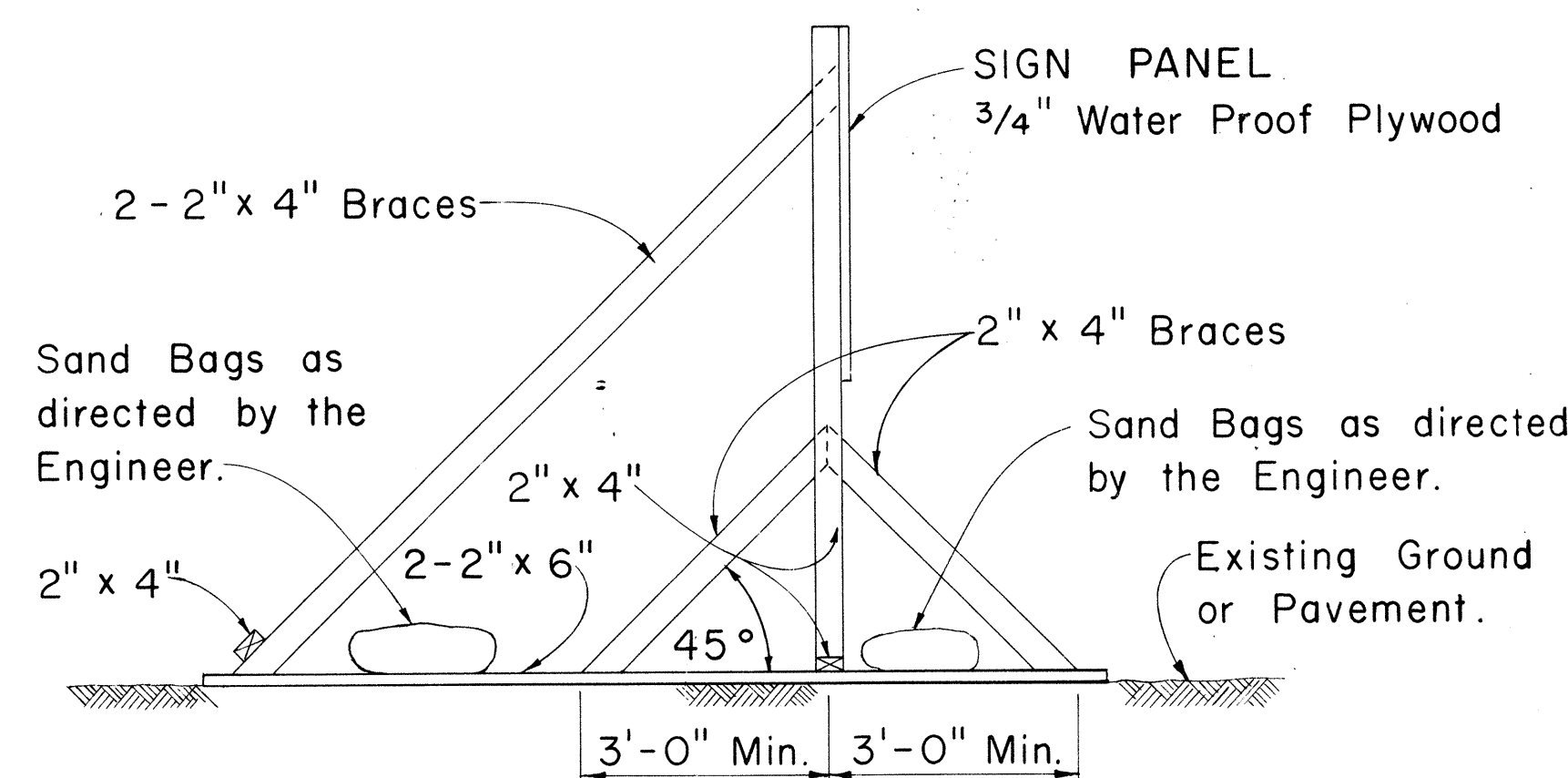
GENERAL NOTES

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.



FRONT VIEW

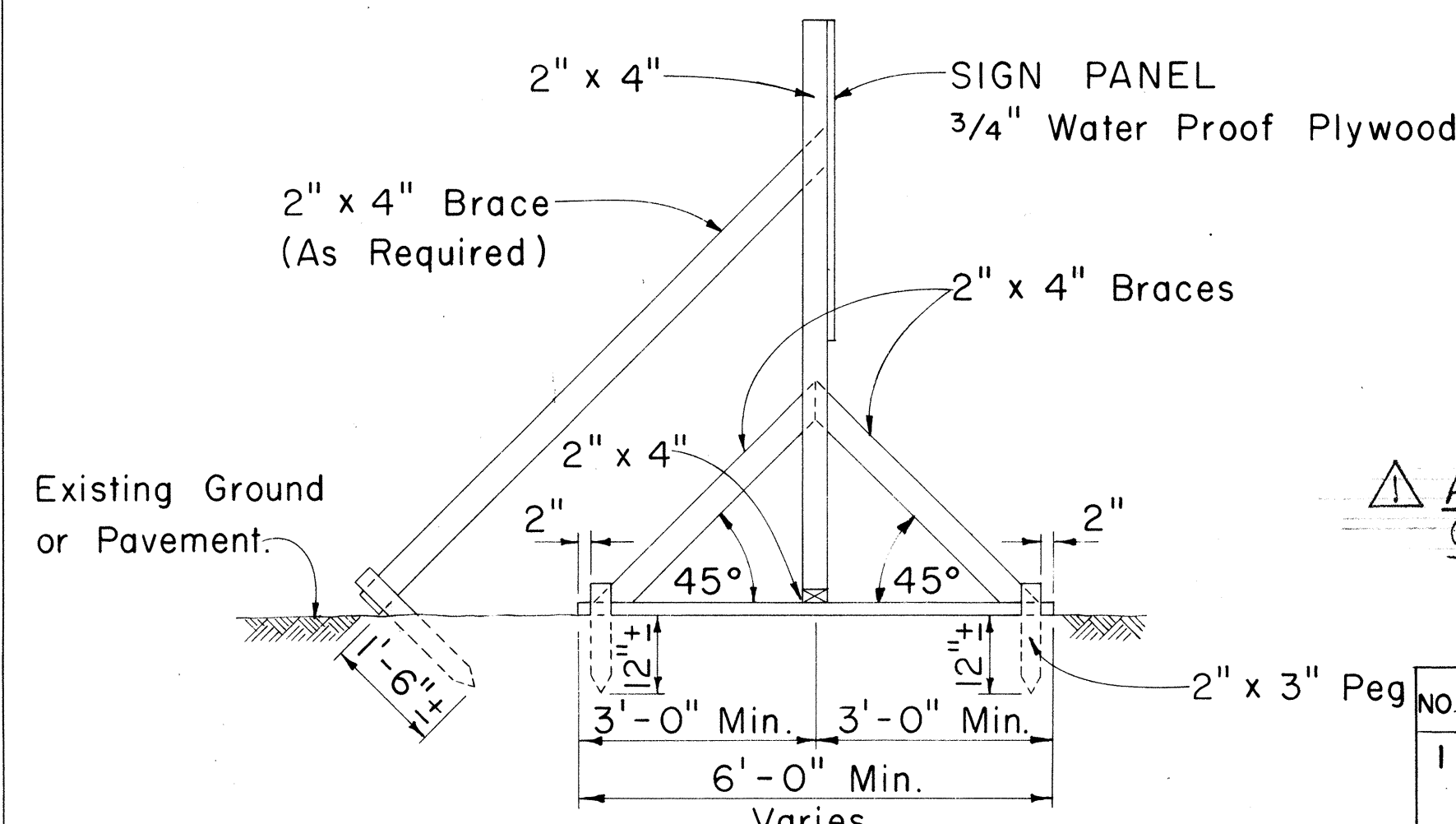
Scale: 1/2" = 1'-0"



SIDE VIEW

(SIGN FRAME WEIGHTED DOWN)

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



SIDE VIEW

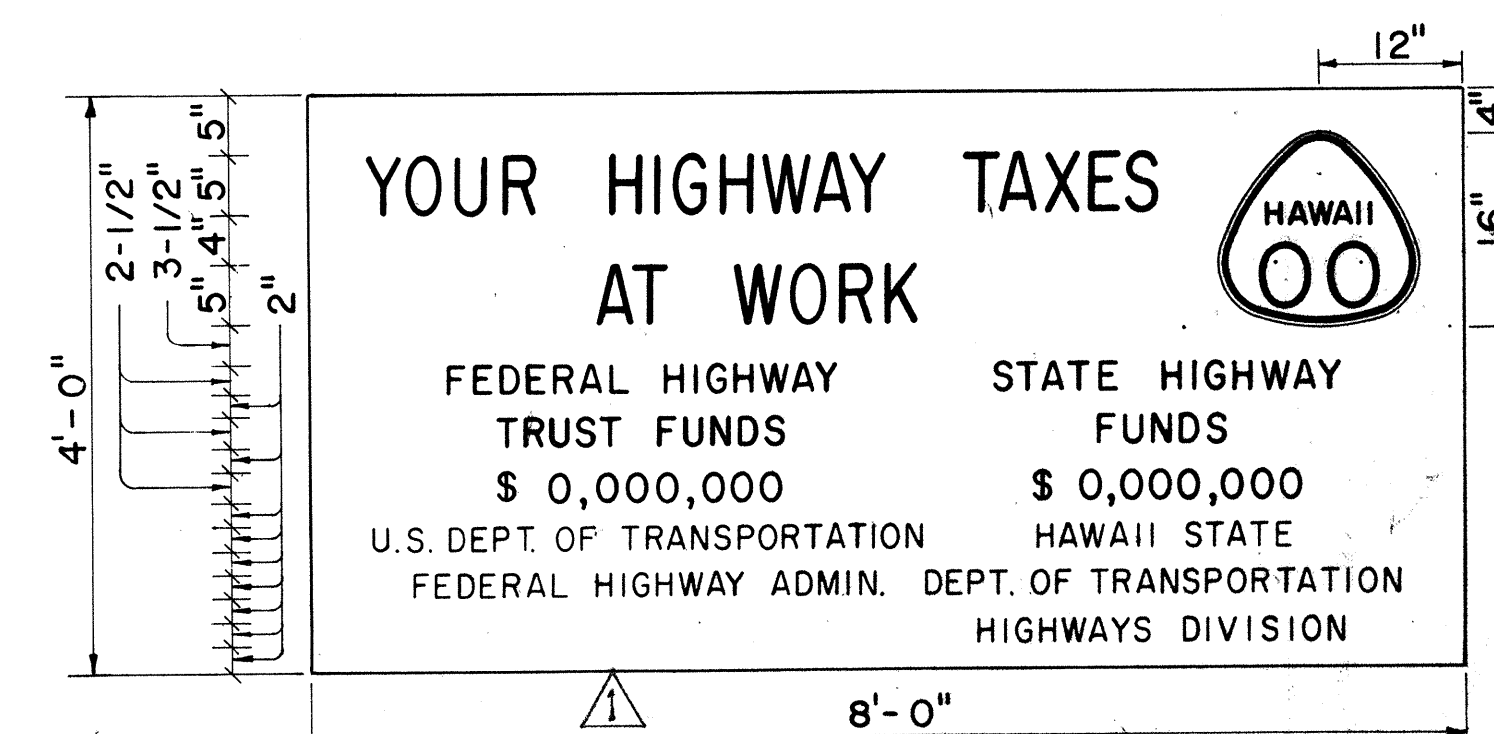
(SIGN FRAME ANCHORED IN GROUND)

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

CONSTRUCTION IDENTIFICATION SIGN

Scale: As Shown

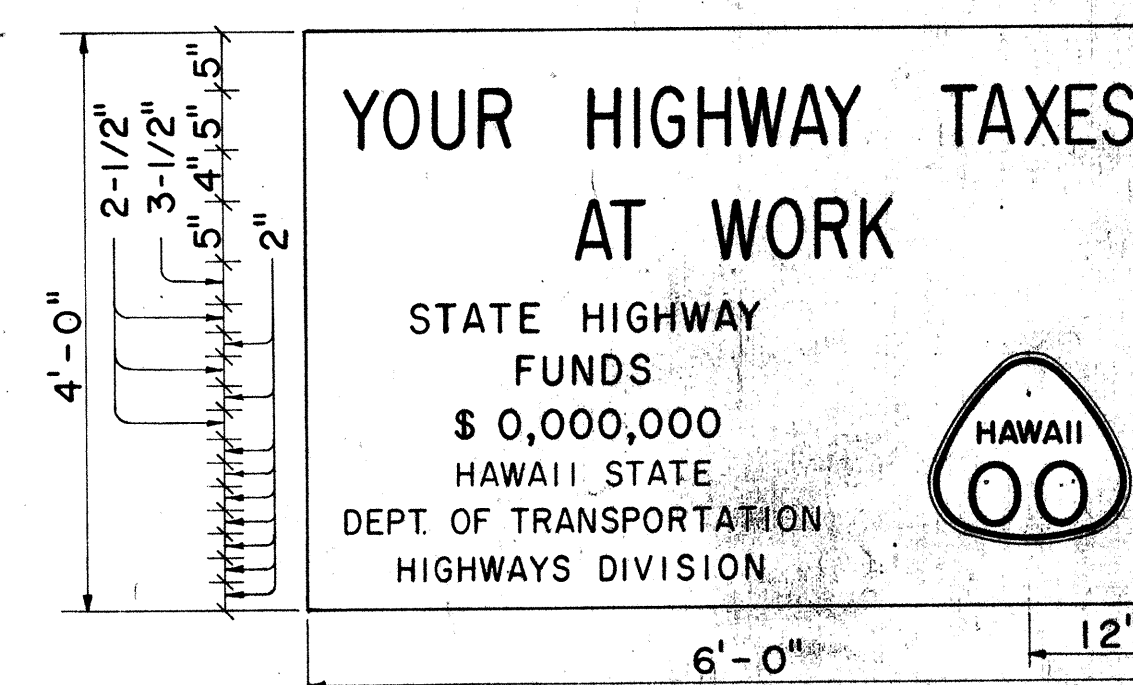
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	60	61



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:
TRAFFIC ENGINEER
12/29/69
DATE

APPROVED:
ASSISTANT CHIEF, ENGINEERING
12/30/69
DATE

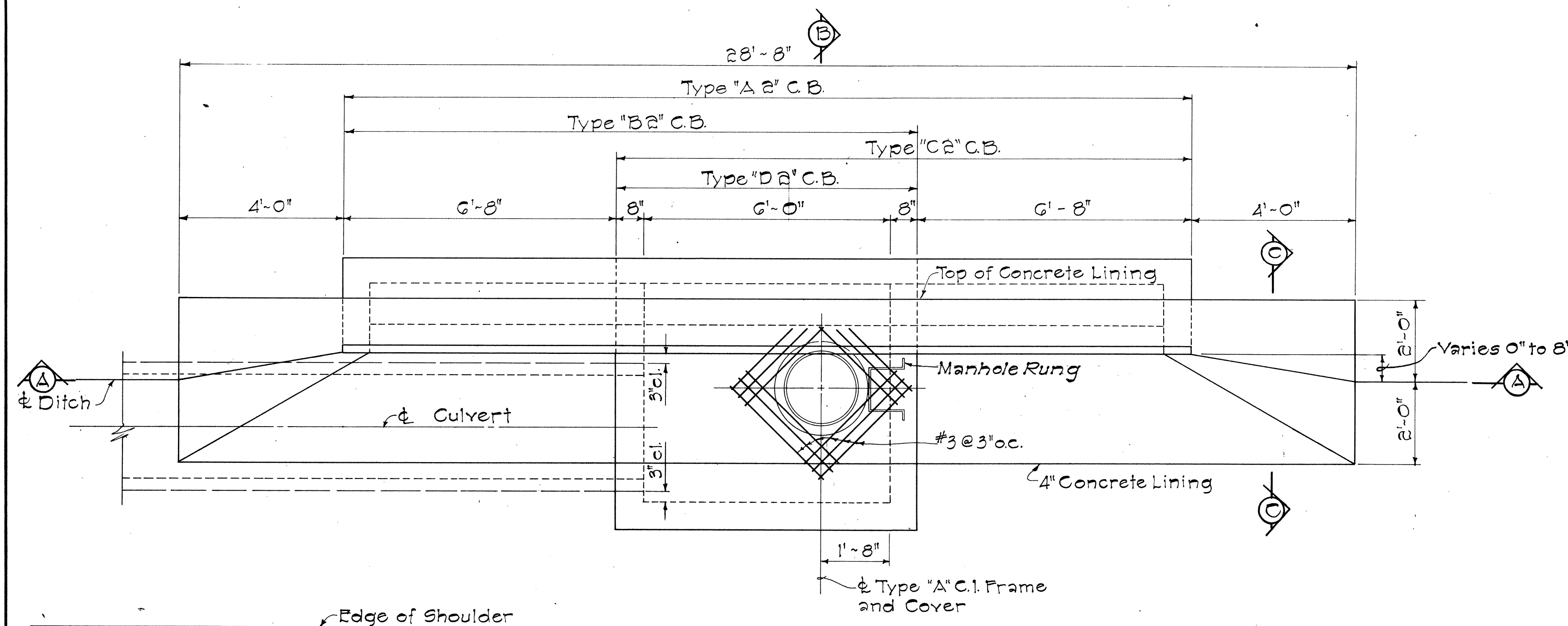
ADDENDUM NO. 1
October 12, 1970

NO.	REVISION	APPROVED BY	DATE
1	Delete "Bureau of Public Roads"	ft.	9-29-70

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

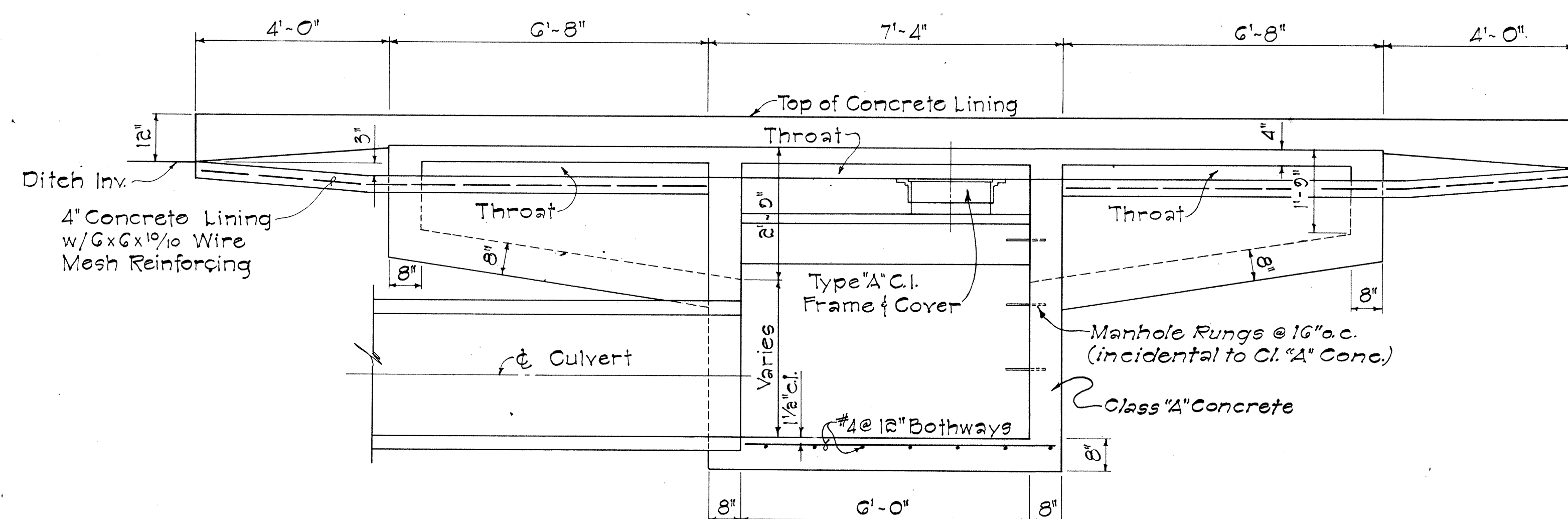
SHEET No. 18 OF 27 SHEETS DT 801

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	61	80



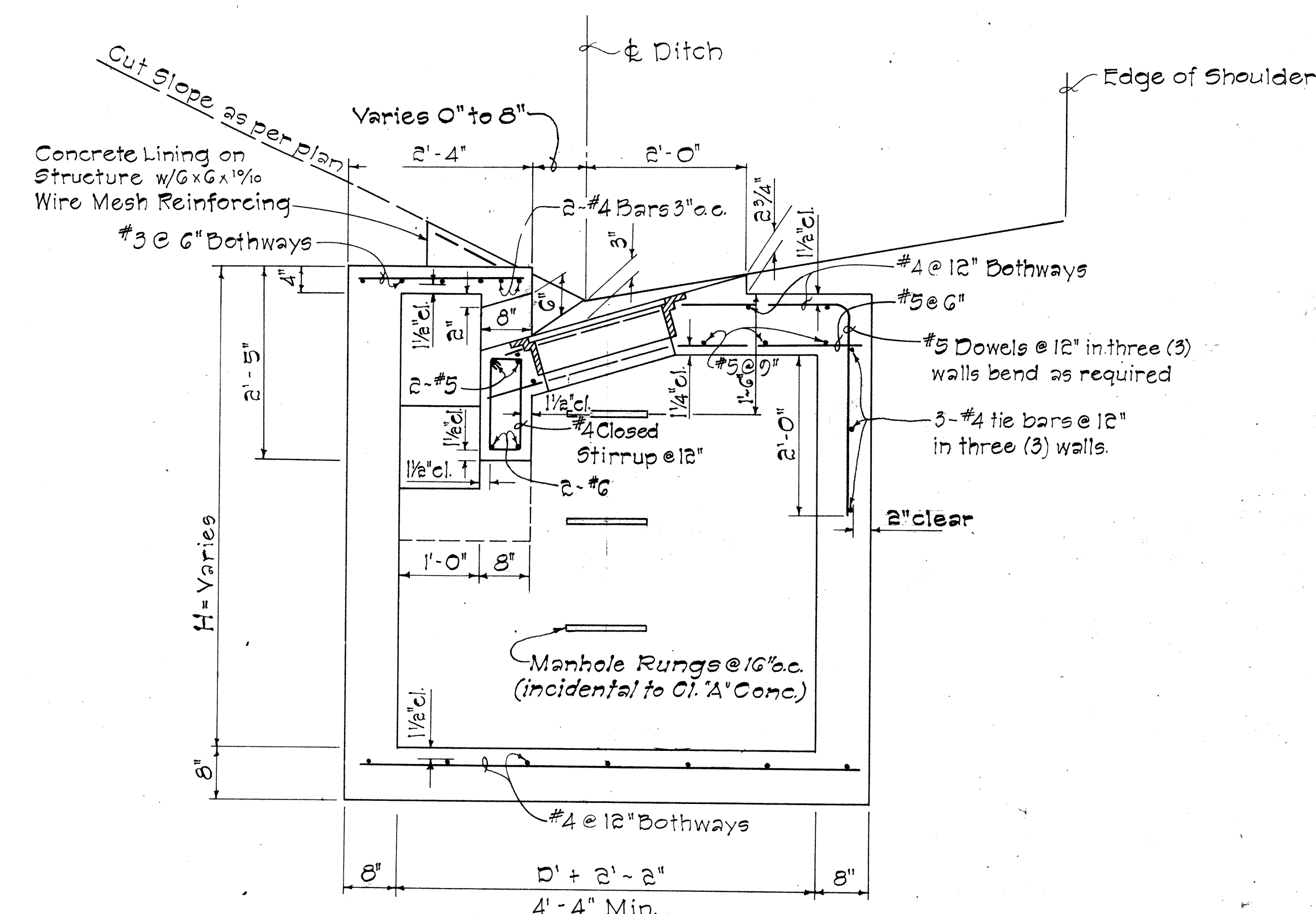
PLAN

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



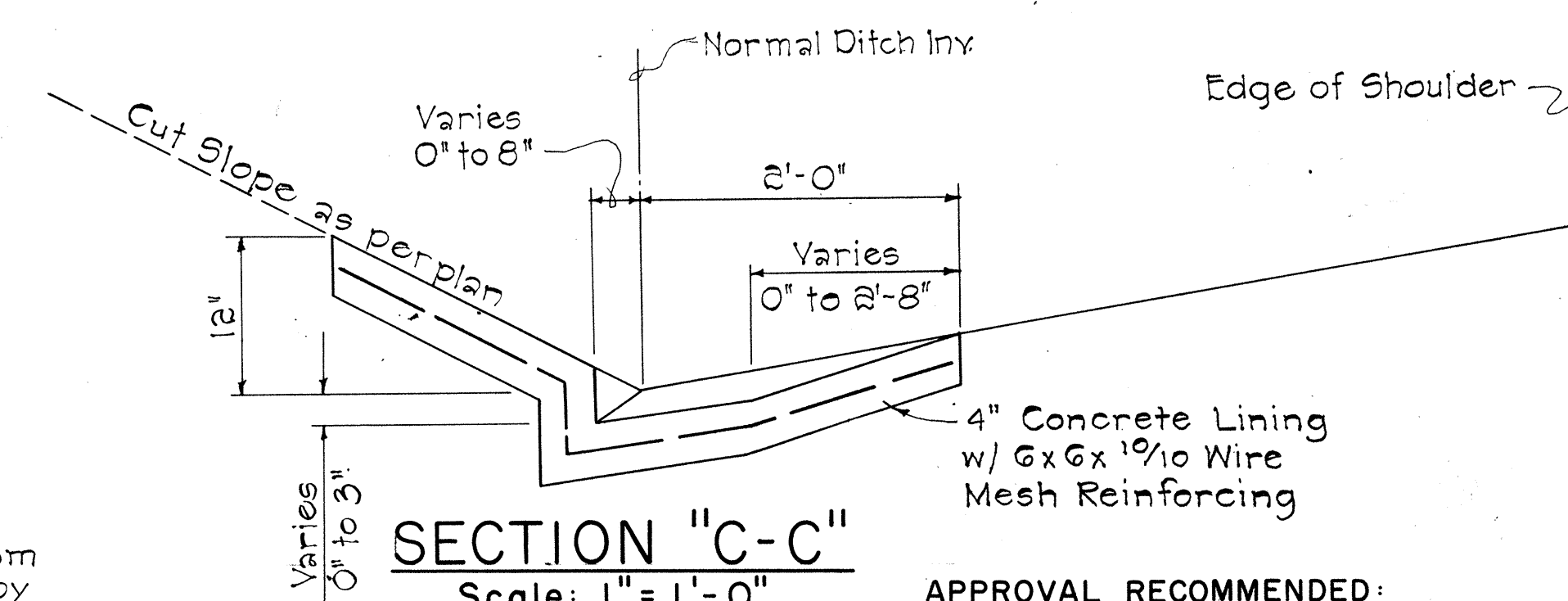
SECTION "A-A"

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



SECTION "B-B"

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



SECTION "C-C"

Scale: 1" = 1' - 0"

GENERAL NOTES

1. Culvert shall enter and leave C.B. 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 C.B. wall.
3. Manhole Rungs (16" oc.) 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.
4. Type "A" C.I. Frame & Cover and Manhole Rungs may be placed at any location as ordered by the Engineer.

APPROVAL RECOMMENDED:

HYDRAULIC DESIGN ENGINEER

12-17-69
DATE

APPROVED:

ASSISTANT CHIEF, ENGINEERING

12-17-69
DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
TYPE "A2", "B2", "C2", AND "D2"
CATCH BASINS

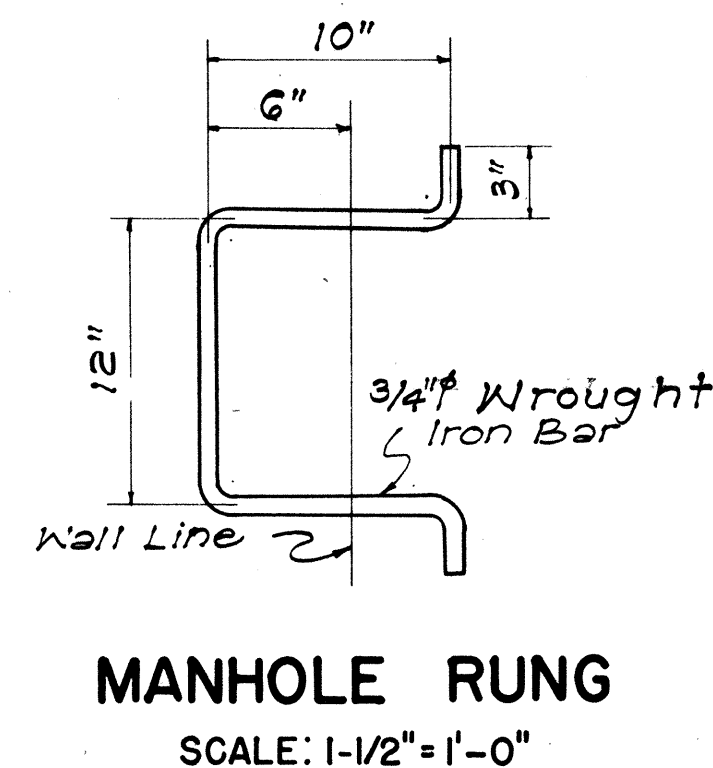
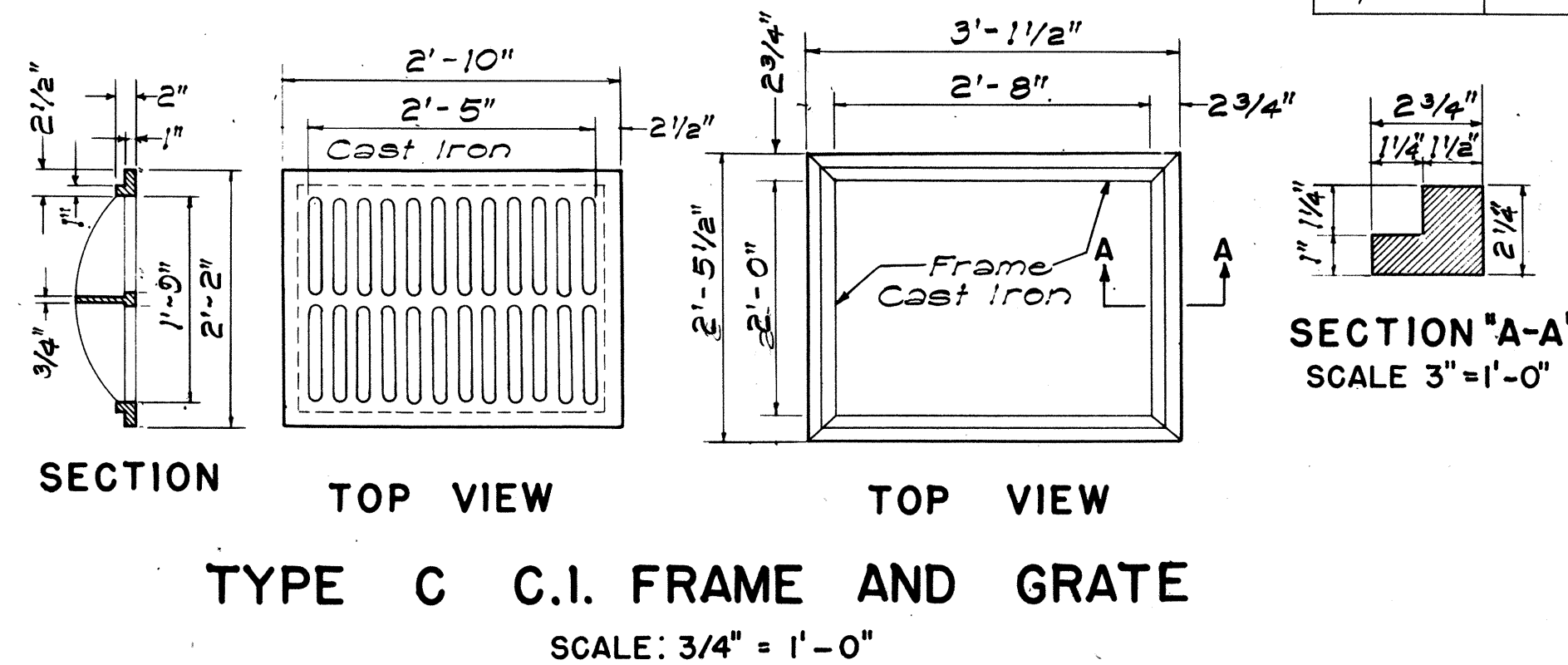
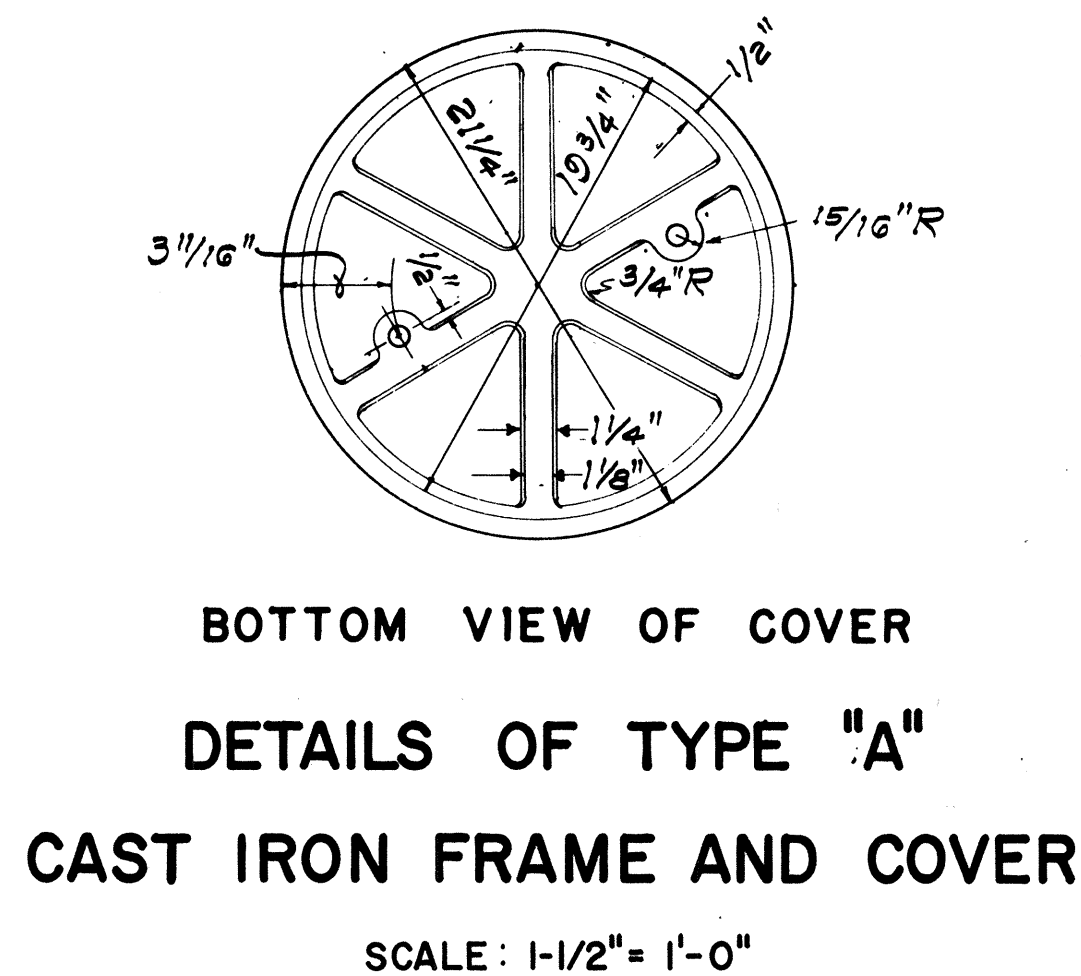
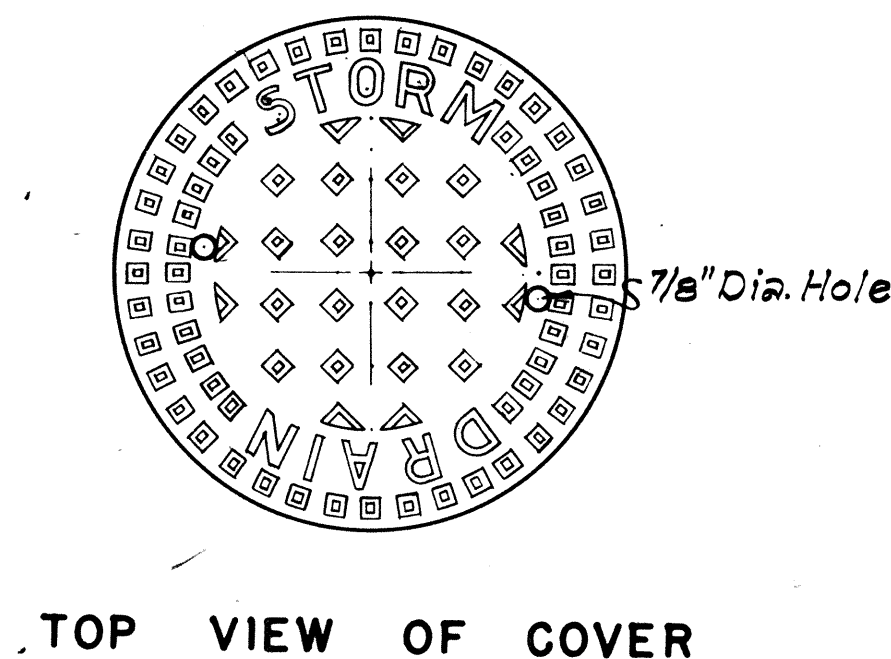
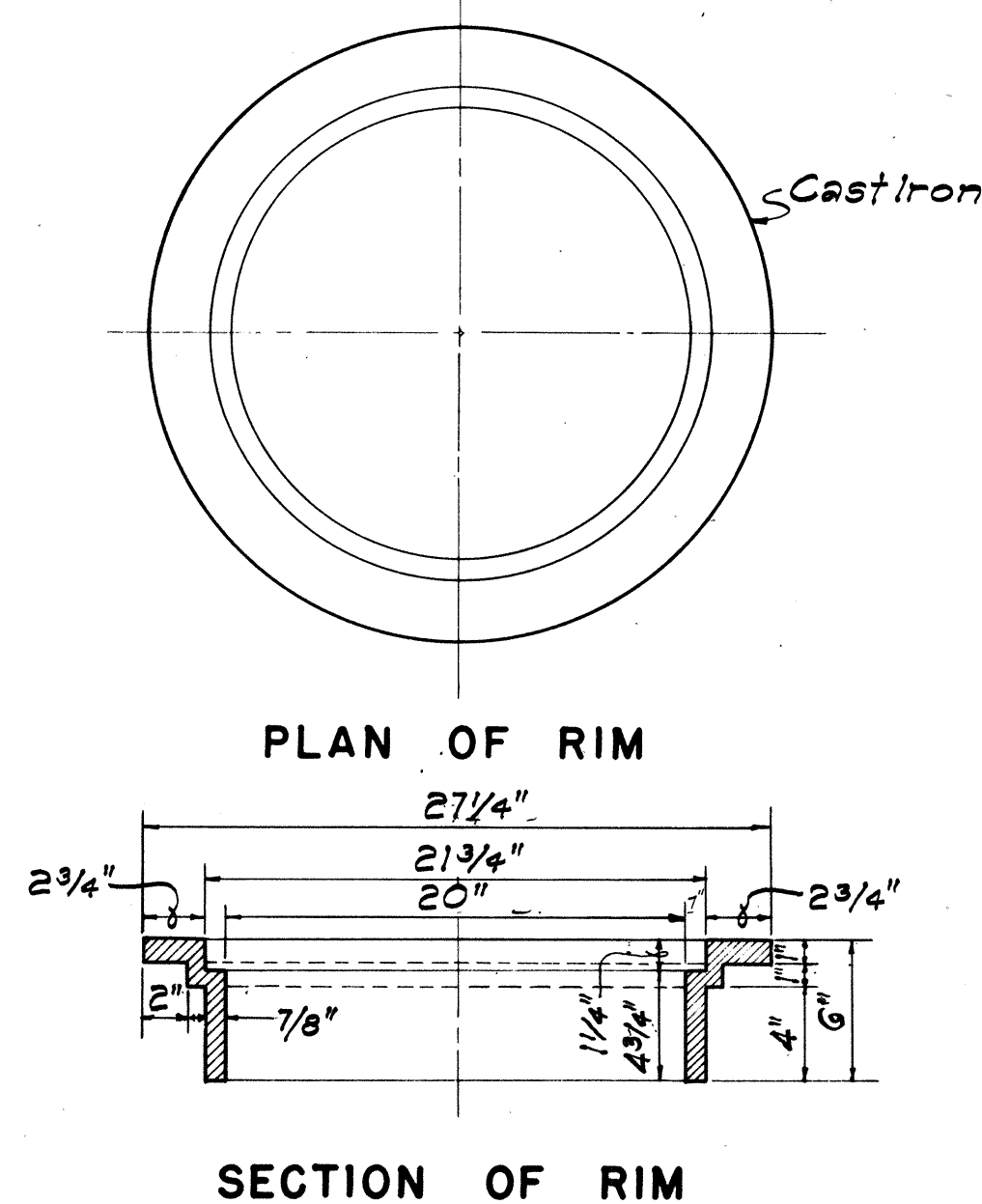
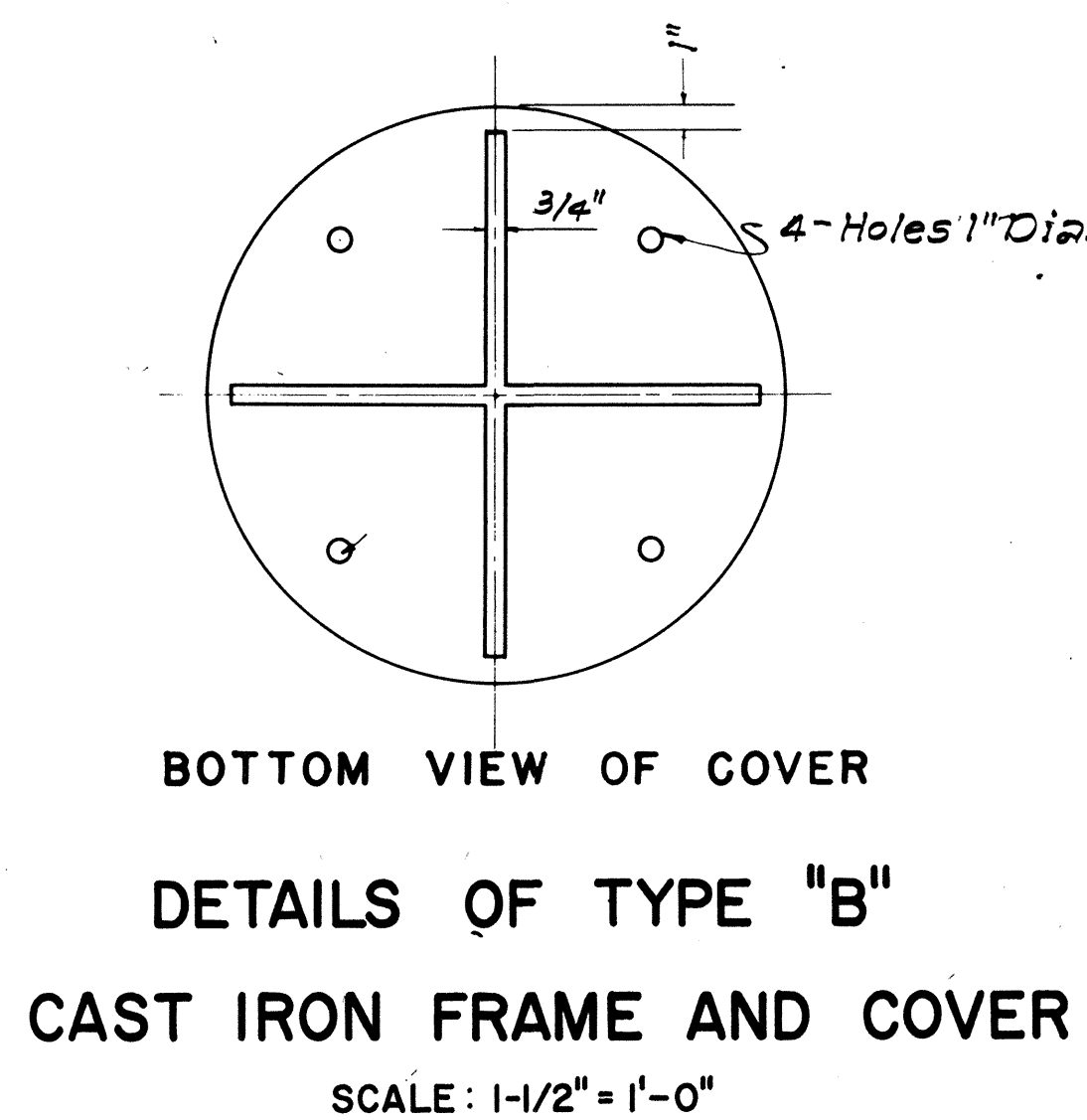
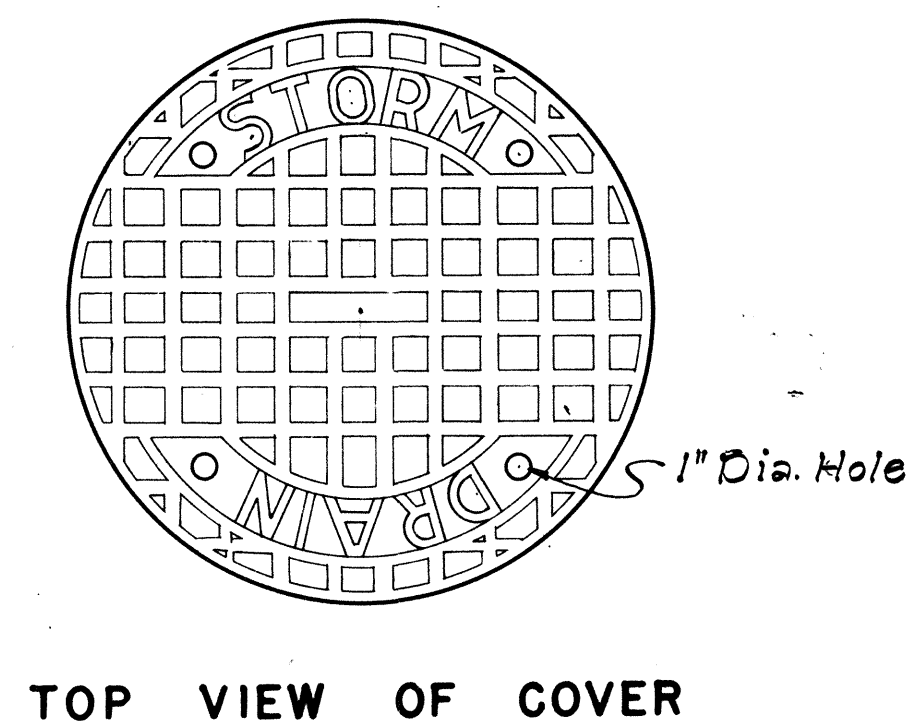
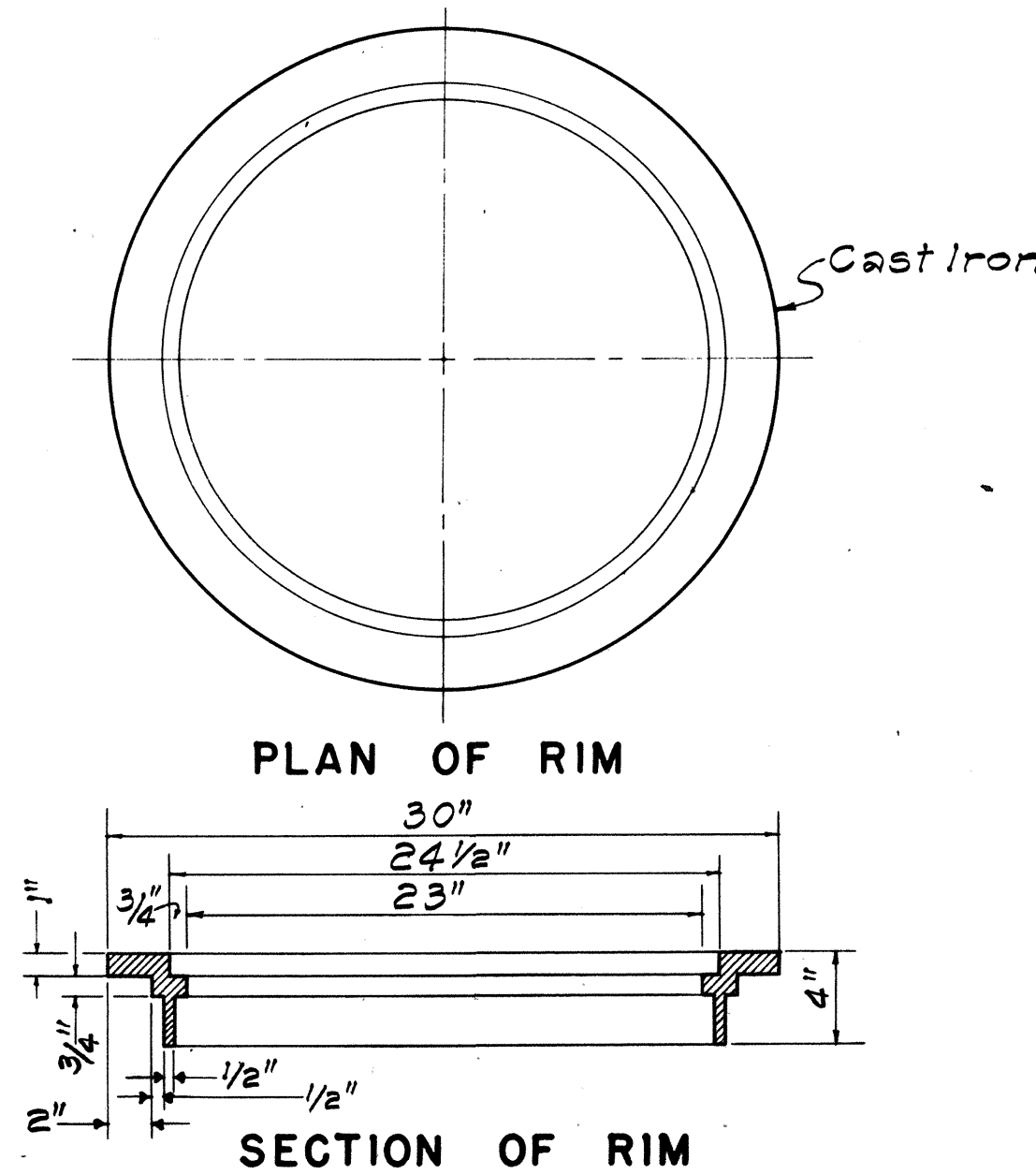
Scale: As Noted

Date: July, 1969

SHEET NO. 10 OF 27 SHEETS

DETAILS OF TYPE "A2", "B2", "C2" AND "D2" CATCH BASIN

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	62	80



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

APPROVED:
John Z. Zich 12-17-69
ASSISTANT CHIEF, ENGINEERING DATE

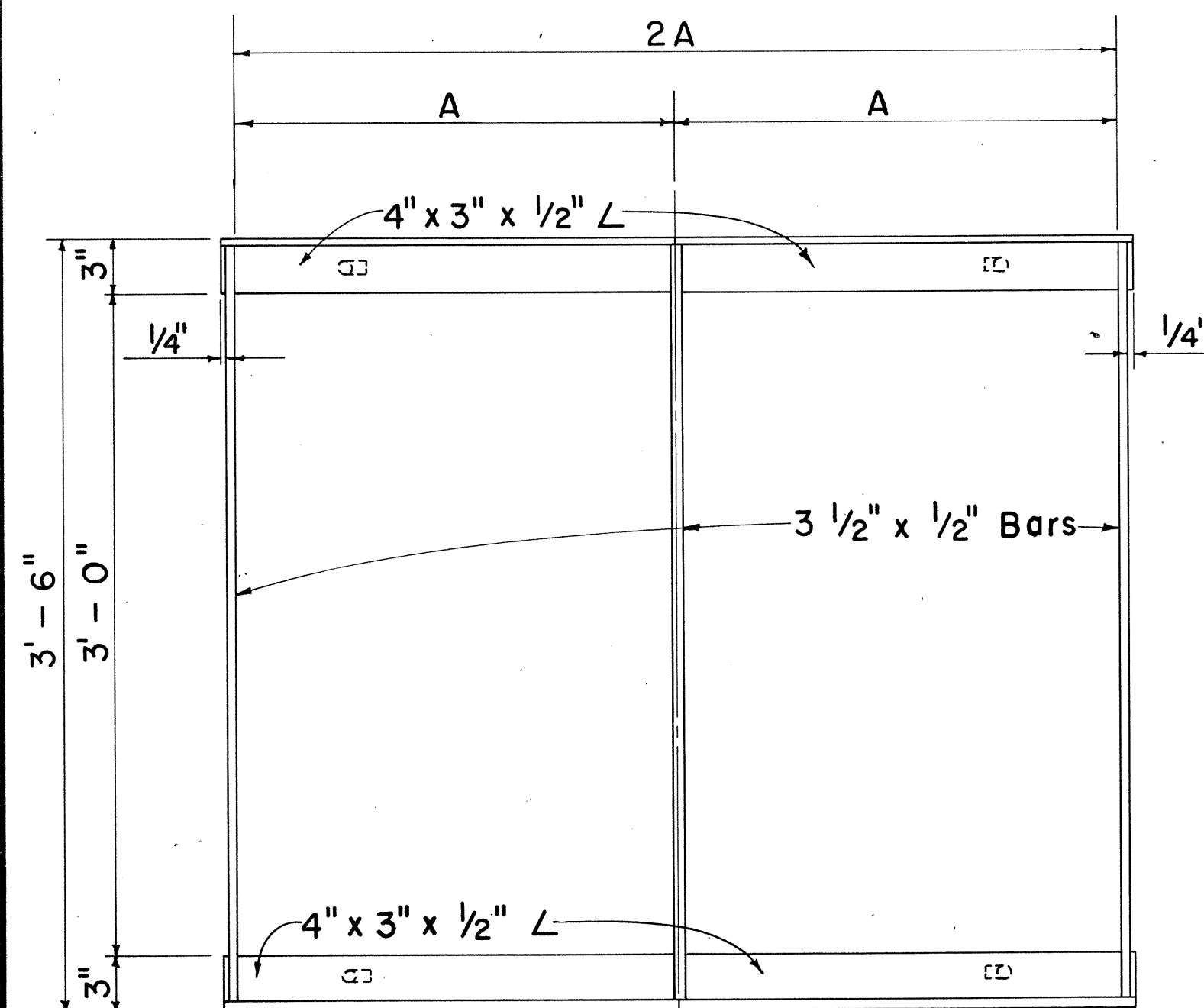
NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
CATCH BASIN AND
MANHOLE CASTINGS

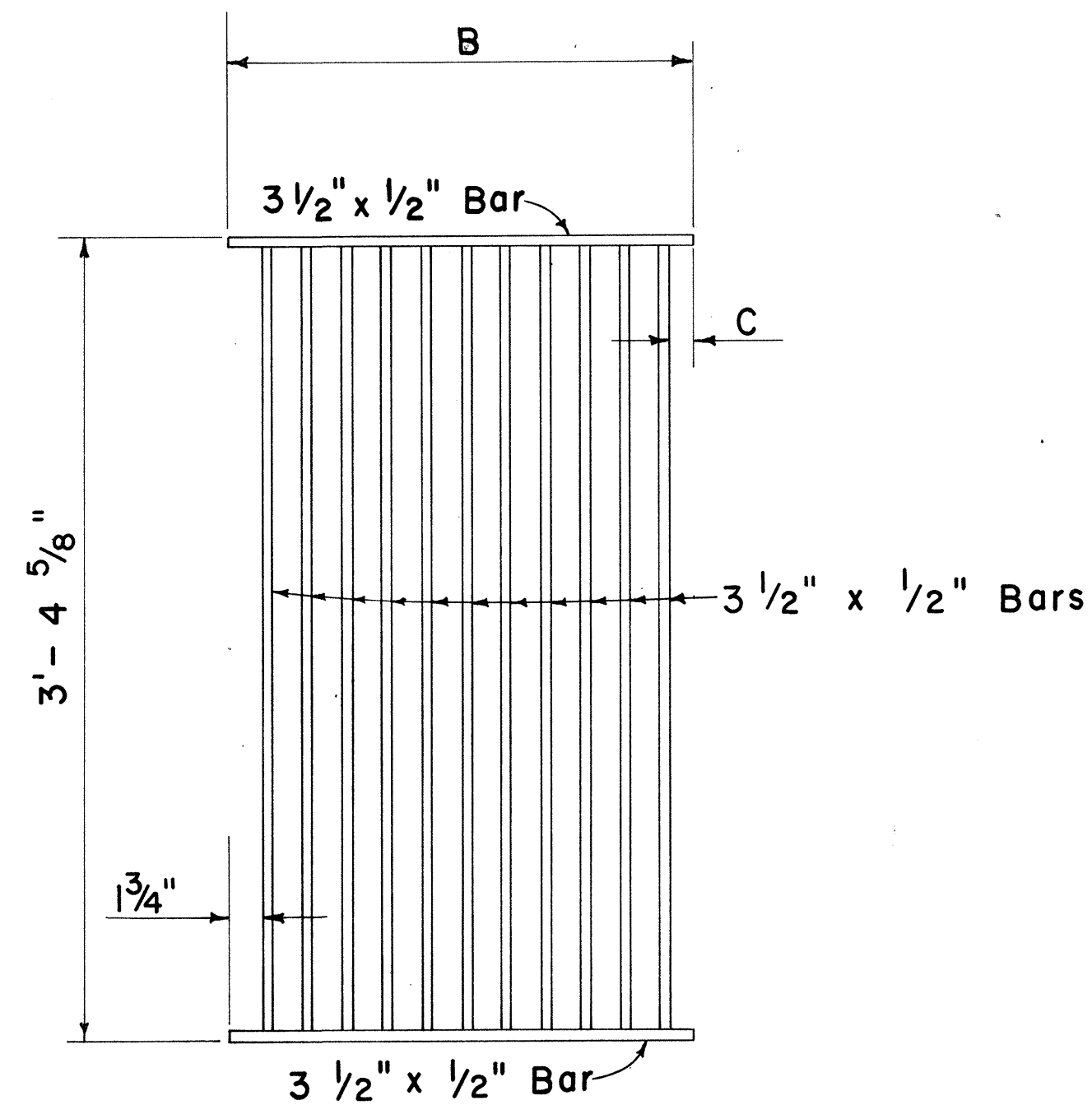
Scale: As Noted Date: July, 1969
SHEET No 20 OF 27 SHEETS DH 6

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



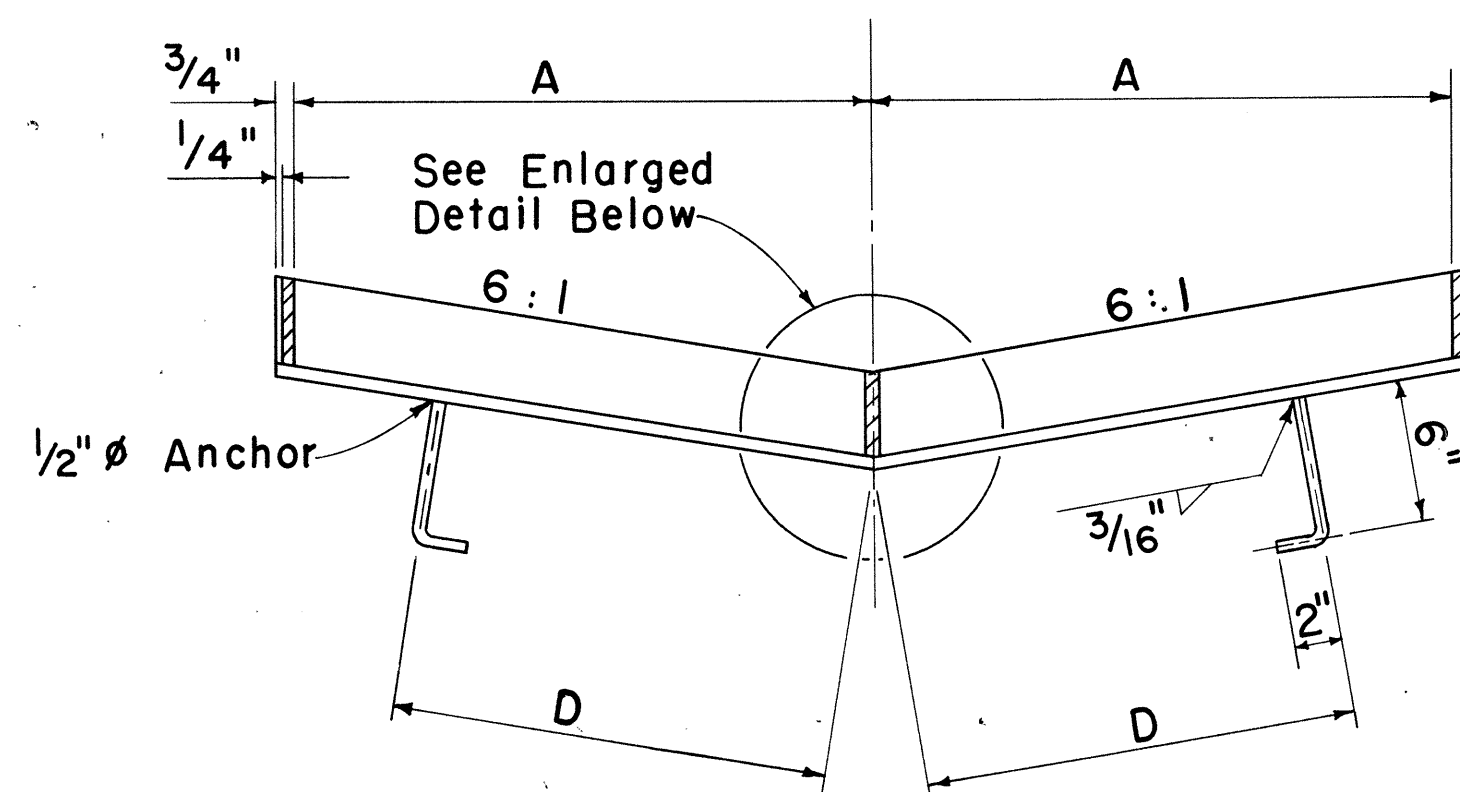
PLAN

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



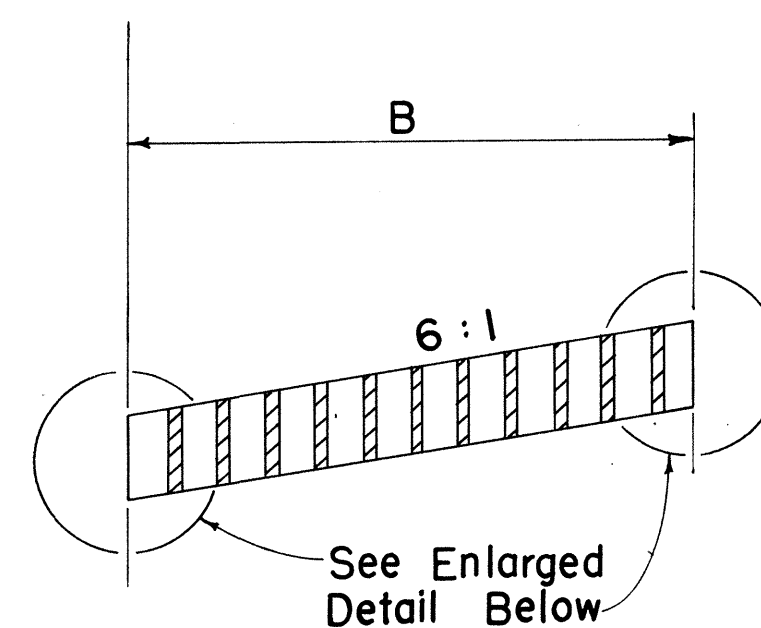
PLAN

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



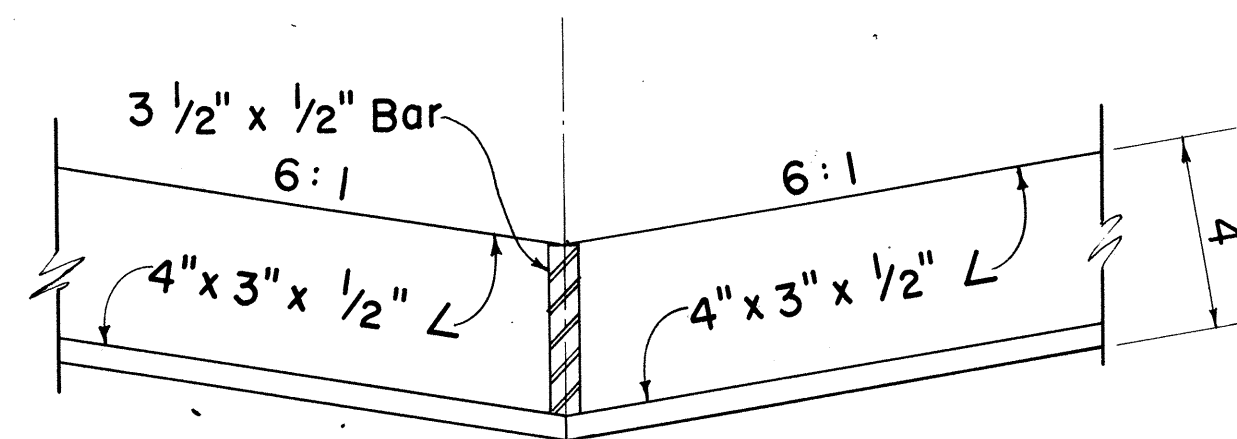
SECTION

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



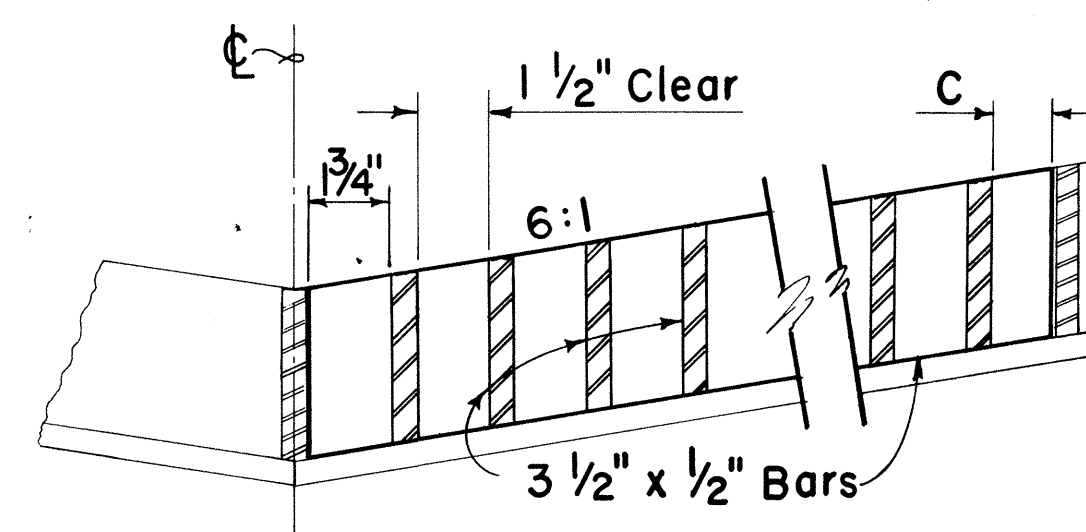
SECTION

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



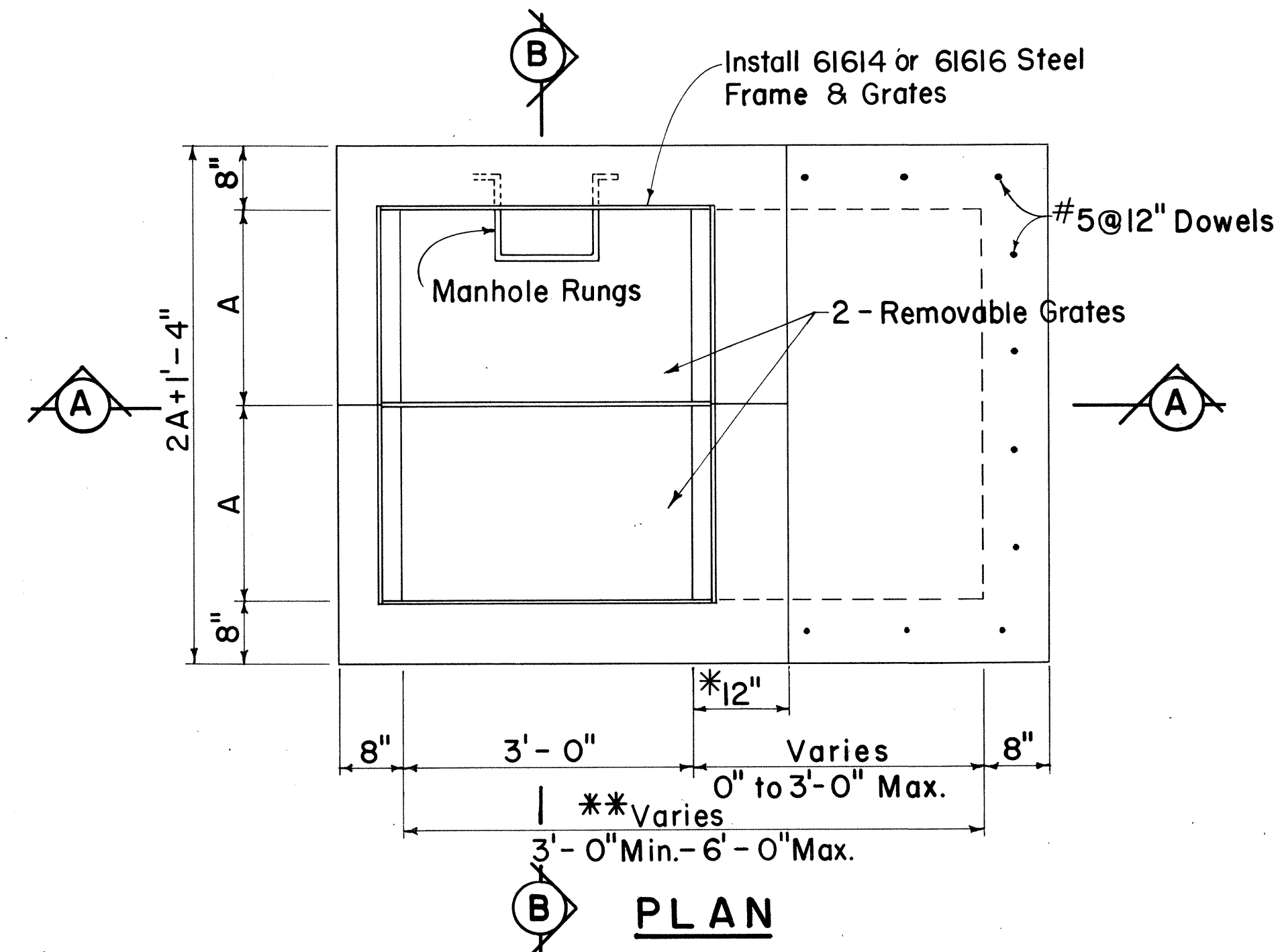
FRAME

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

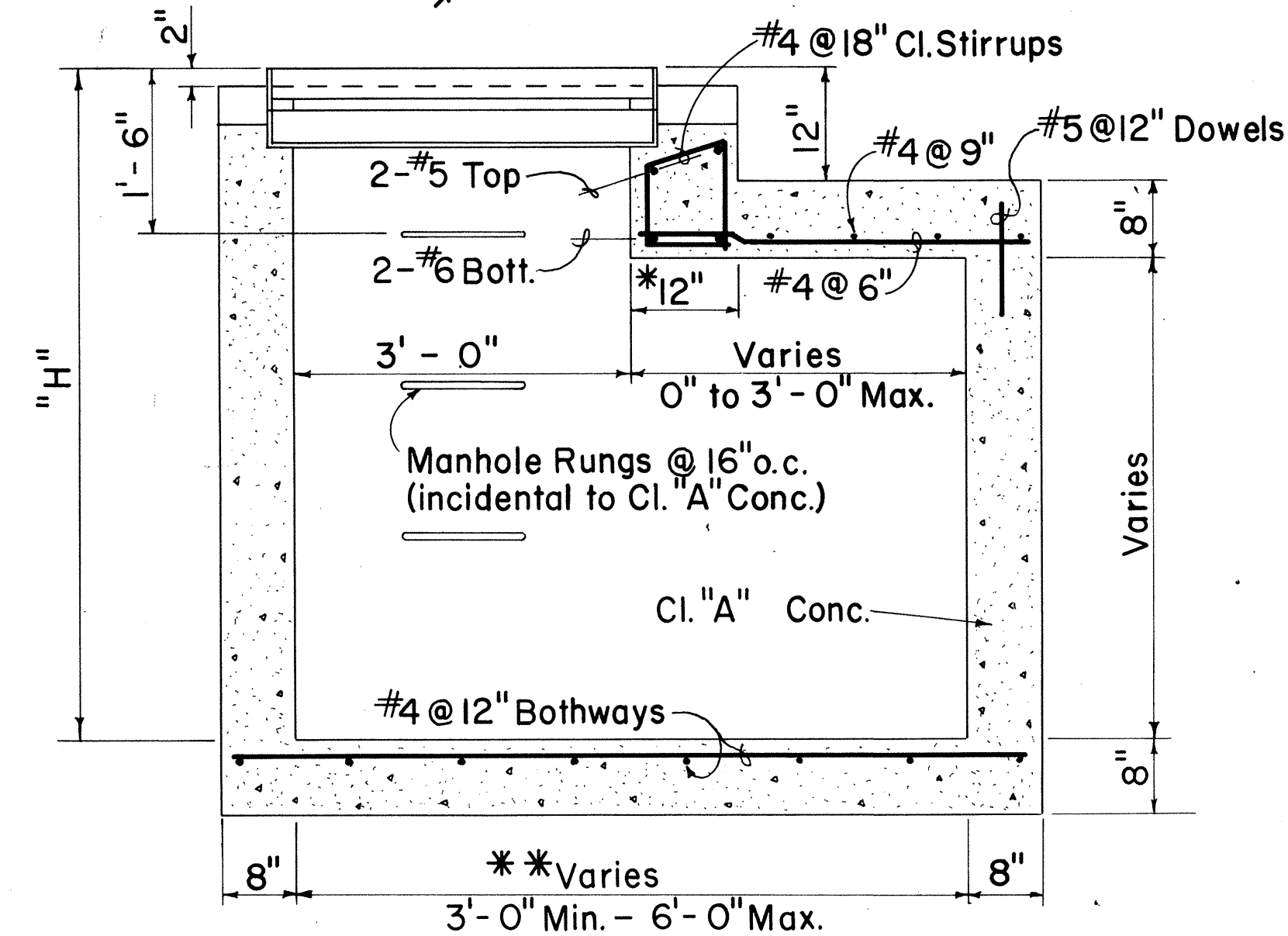


GRATE

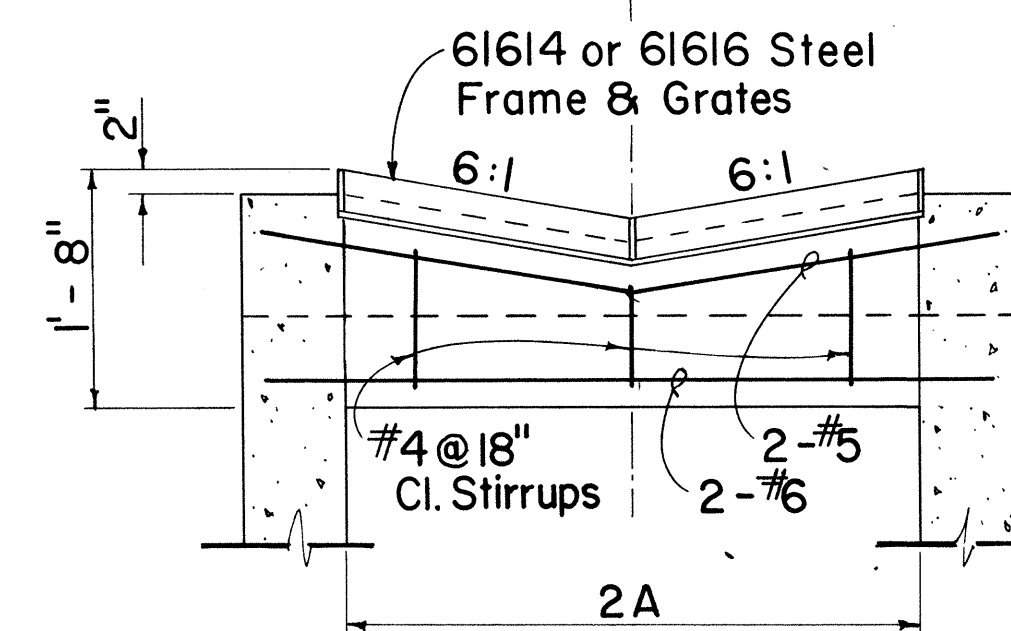
Scale: 3" = 1' - 0"



PLAN



SECTION A - A



SECTION B - B

DETAILS OF 61614 OR 61616 DROP INTAKE

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

*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'.

GENERAL NOTES

1. Grates and Frames shall be hot dip galvanized after fabrication, see specifications.
2. All welds $\frac{3}{8}$ " unless otherwise noted.
3. Refer to "Spacing Table" for Types 61614 & 61616 Drop Intake and Frame & Grates dimensions.
4. The Frame & Grate materials shall conform to the specifications of ASTM Designation Structural Steel A283, Grade D and the Standard Specifications.
5. Culvert shall leave Drop Intake from any position and any direction indicated by plans or ordered by the Engineer. Culverts may both enter and leave Drop Intake so that Drop Intake will act as manhole.
6. Manhole Rungs (16" o.c.) are required when "H" is greater than 4 feet 6 inches. Only one rung (12 inches from the bottom) is required if "H" is 4 feet 6 inches or less. Manhole Rungs may be placed at any location as ordered by the Engineer.

TYPE	NO. BARS	A	B	C	D
61614	11	2' - 0"	1' - 11½"	1¼"	1' - 6"
61616	17	3' - 0"	2' - 11⅝"	1⅝"	2' - 0"

NO.	REVISION	APPROVED BY	DATE

APPROVAL RECOMMENDED:

HYDRAULIC DESIGN ENGINEER

2-17-69
DATE

APPROVED:

ASSISTANT CHIEF, ENGINEERING

2-17-69
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

TYPE 61614 & 61616
GRATED DROP INTAKES

Scales: As Noted

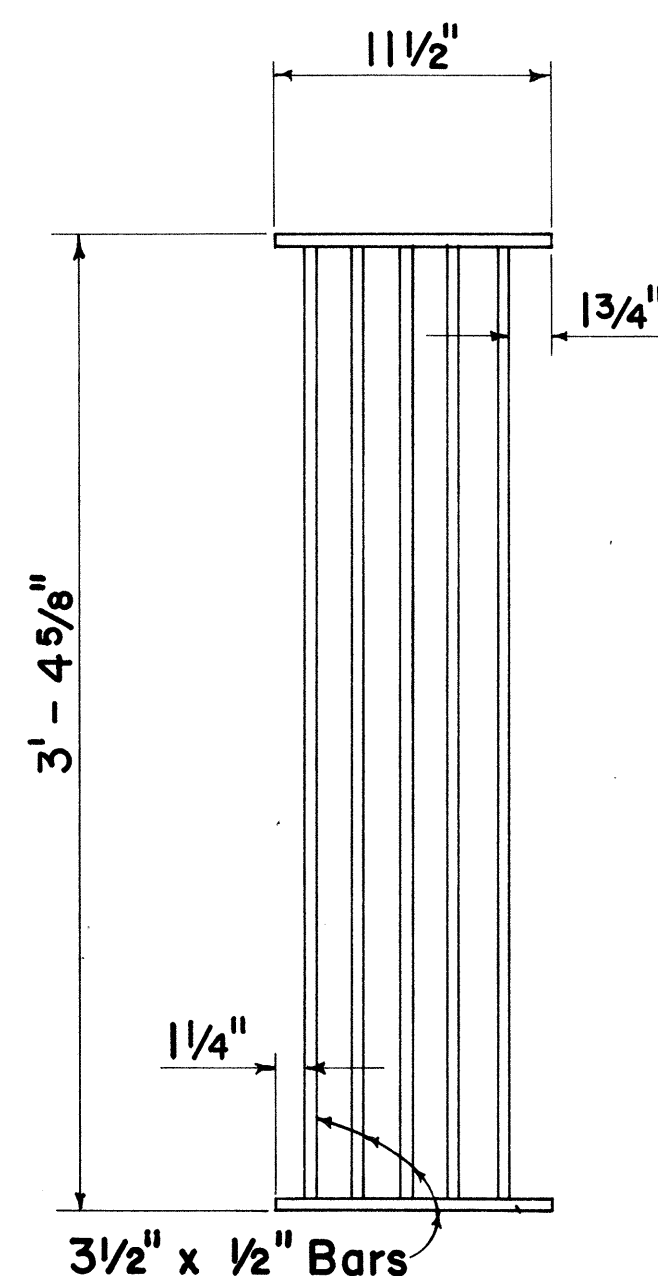
Date: Feb. 1969

SHEET No. 21 OF 27 SHEETS **DH 8**

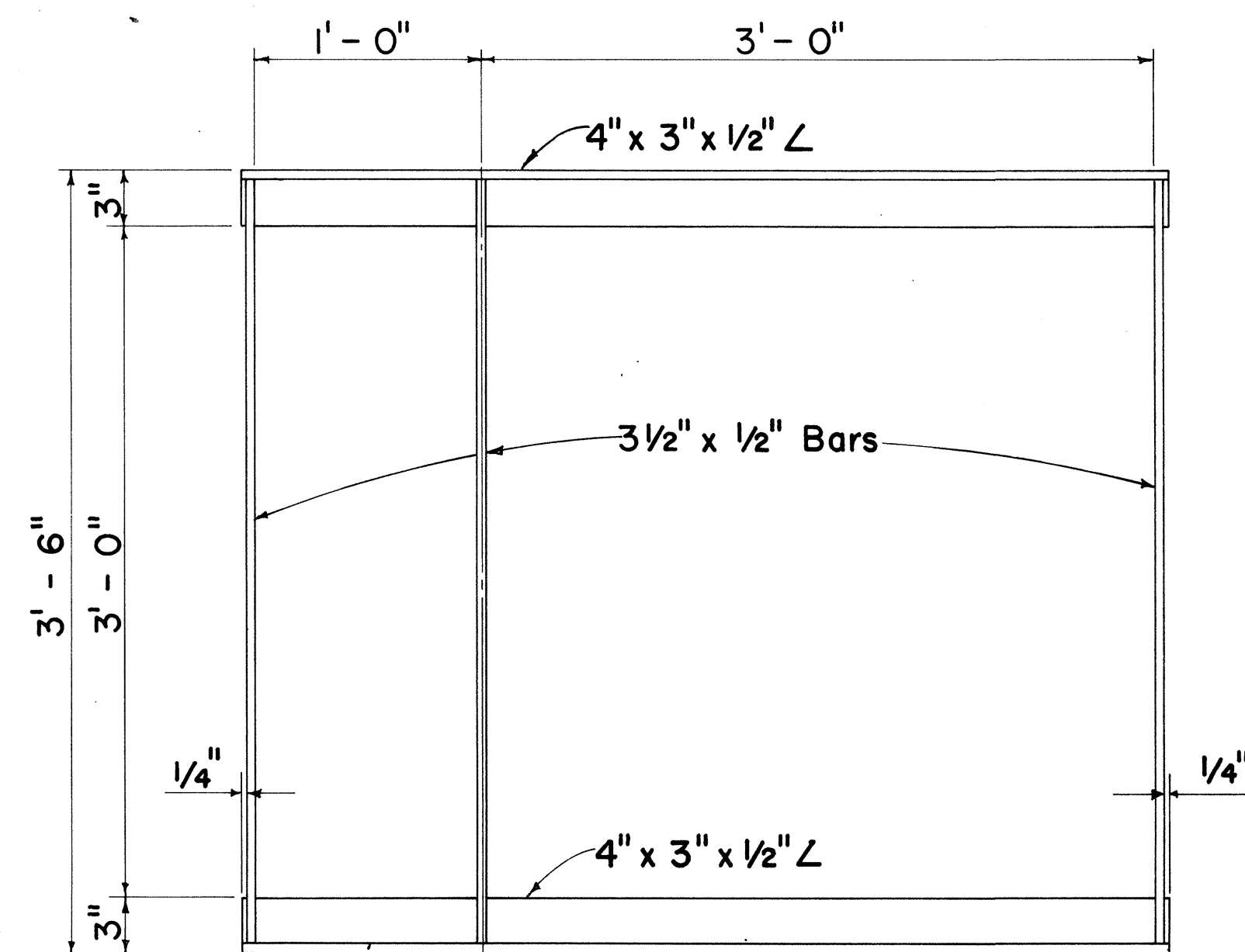
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	64	80

GENERAL NOTES

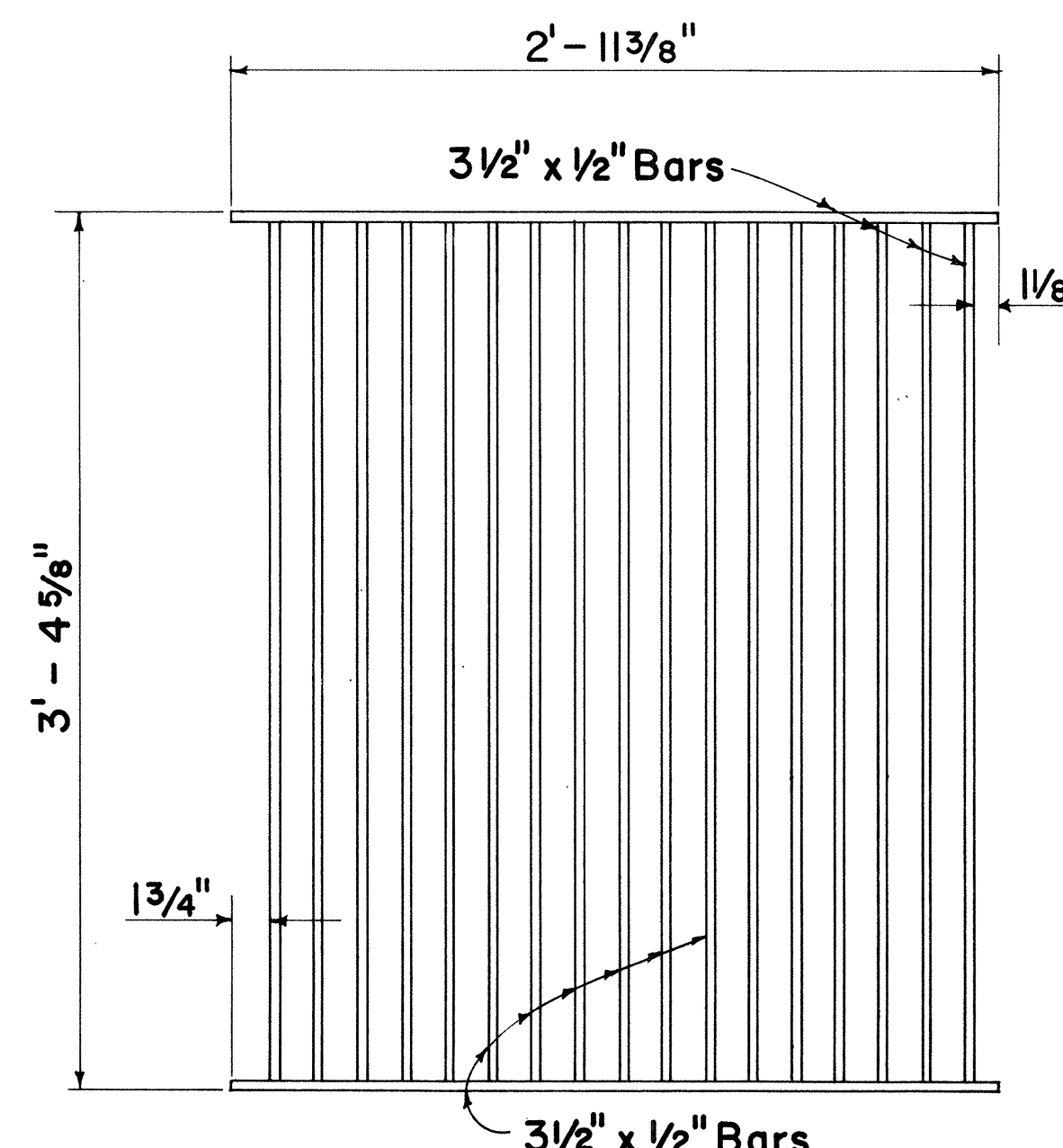
- Grates and Frames shall be hot dip galvanized after fabrication, see specifications.
- All welds $\frac{3}{8}$ " unless otherwise noted.
- The Frame & Grate materials shall conform to the specifications of ASTM Designation Structural Steel A283, Grade D and the Standard Specifications.
- Culvert shall leave Drop Intake from any position and any direction indicated by plans or ordered by the Engineer. Culverts may both enter and leave Drop Intake so that Drop Intake will act as manhole.
- Manhole Rungs (16" o.c.) are required when "H" is greater than 4 feet 6 inches. Only one rung (12 inches from the bottom) is required if "H" is 4 feet 6 inches or less. The Manhole Rungs may be placed at any location as ordered by the Engineer.



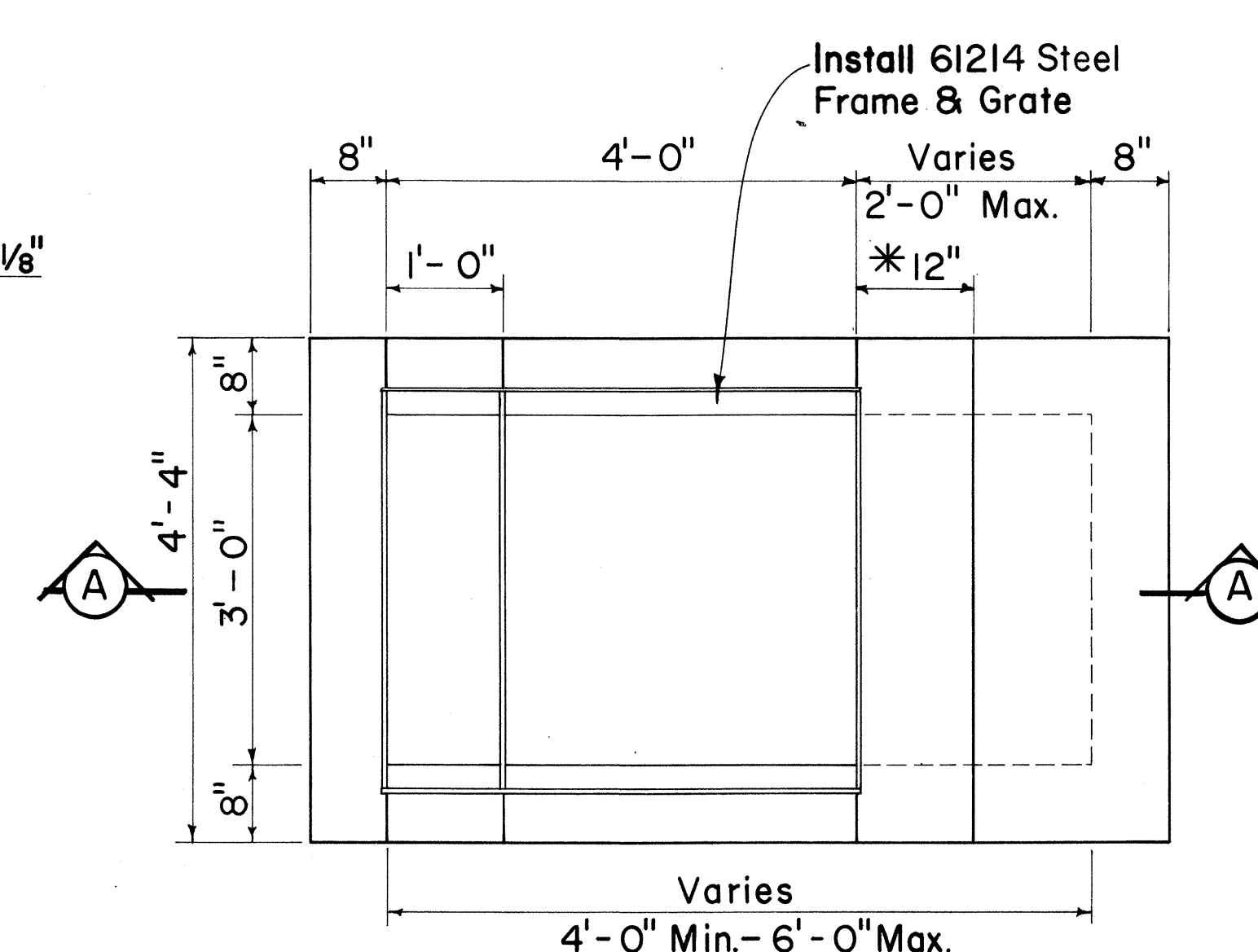
PLAN
Scale: $1\frac{1}{2}'' = 1' - 0''$



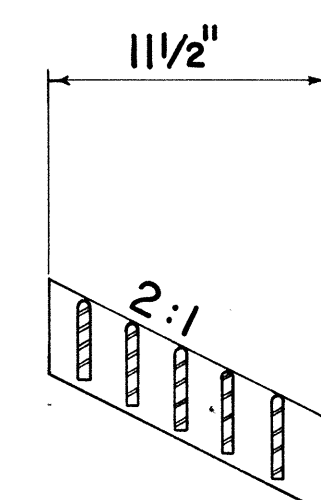
PLAN
Scale: $1\frac{1}{2}'' = 1' - 0''$



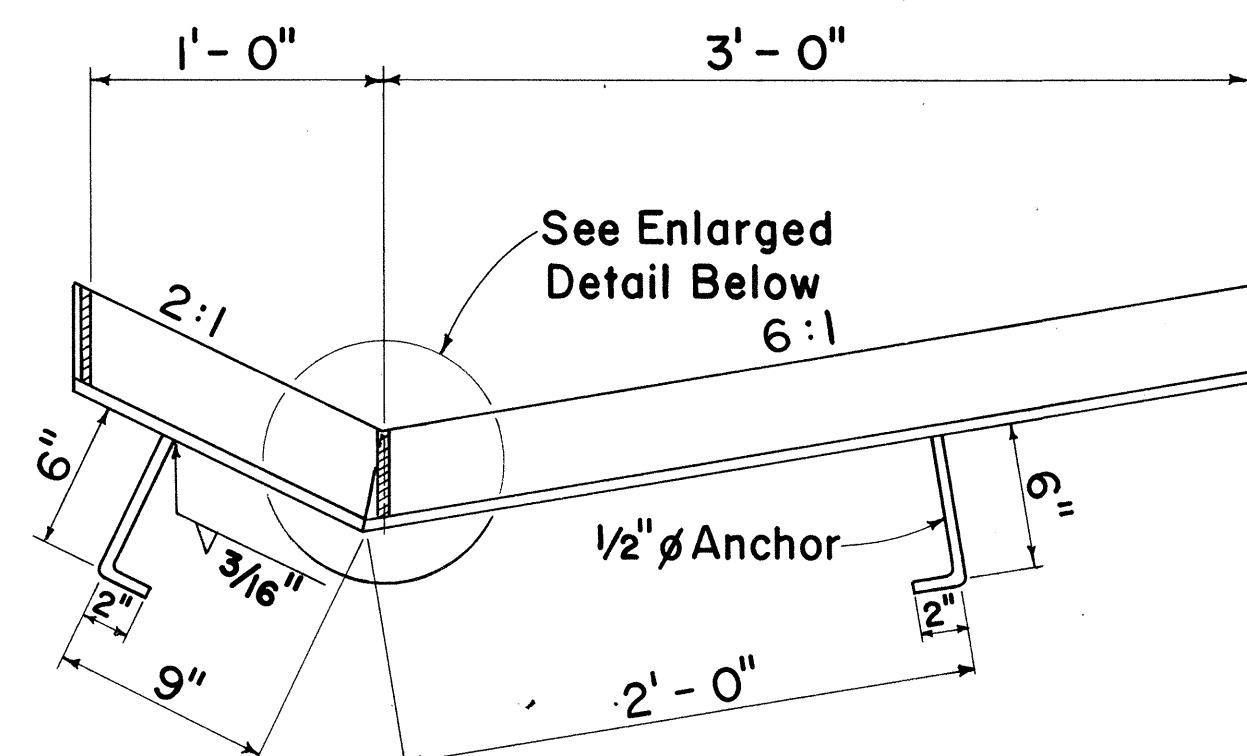
PLAN
Scale: $1\frac{1}{2}'' = 1' - 0''$



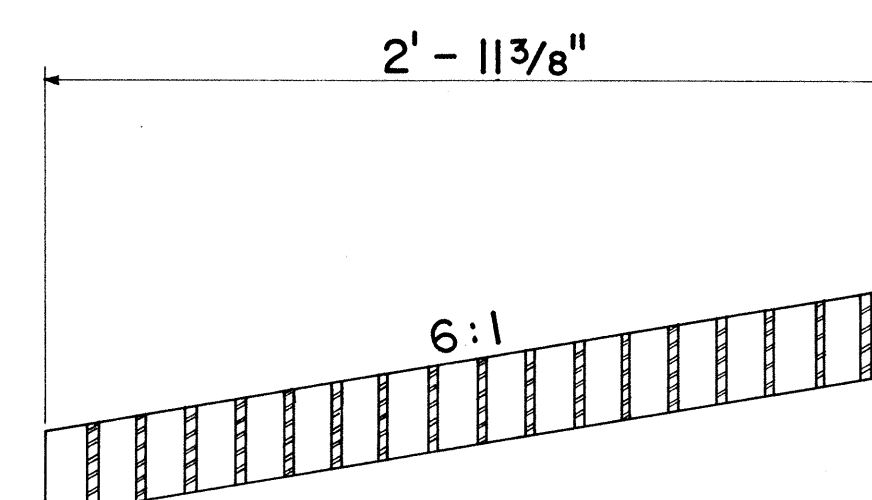
PLAN



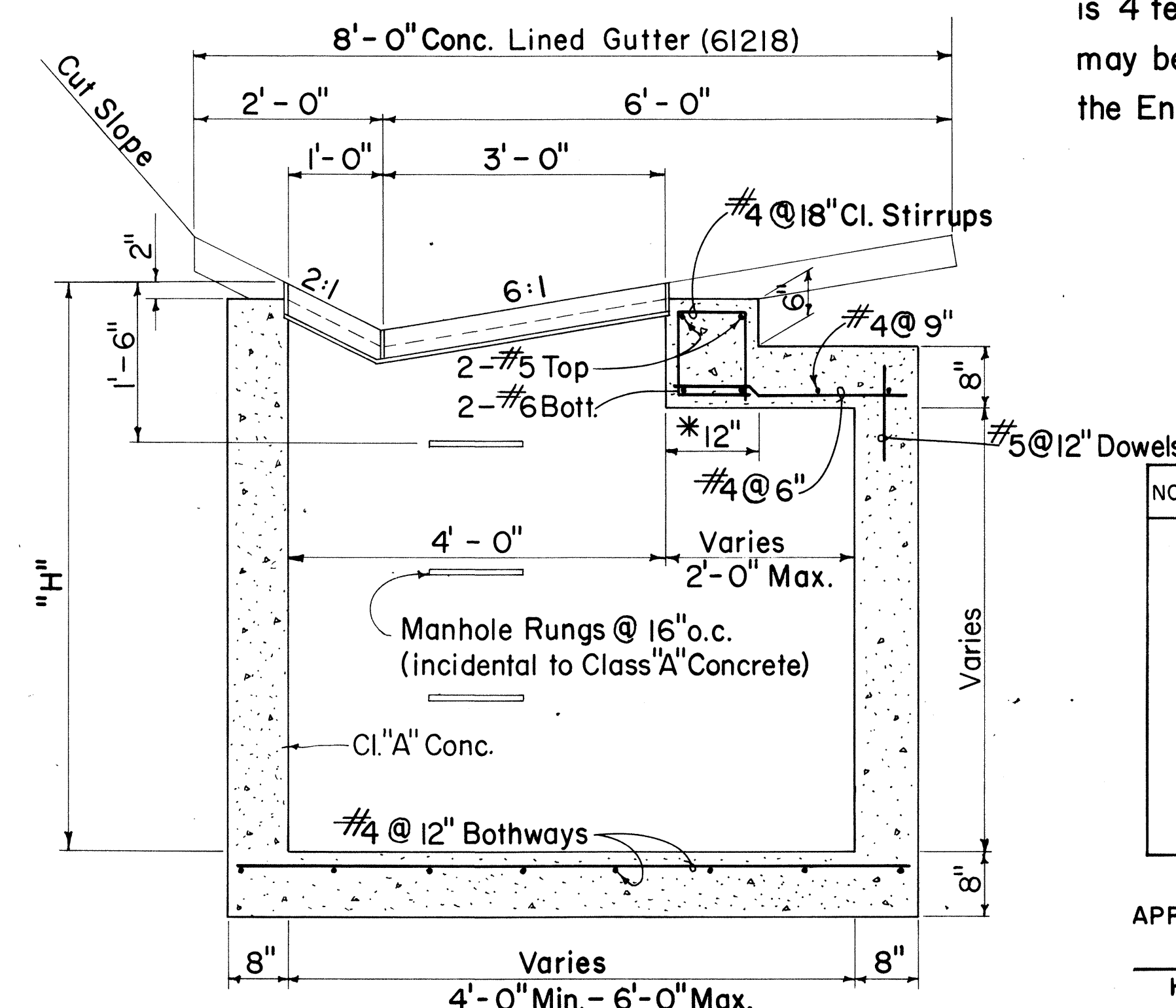
SECTION
Scale: $1\frac{1}{2}'' = 1' - 0''$



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



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



SECTION A - A

DETAIL OF 6'214 DROP INTAKE
Scale: $\frac{3}{4}'' = 1' - 0''$

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

NO.	REVISION	APPROVED BY	DATE

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

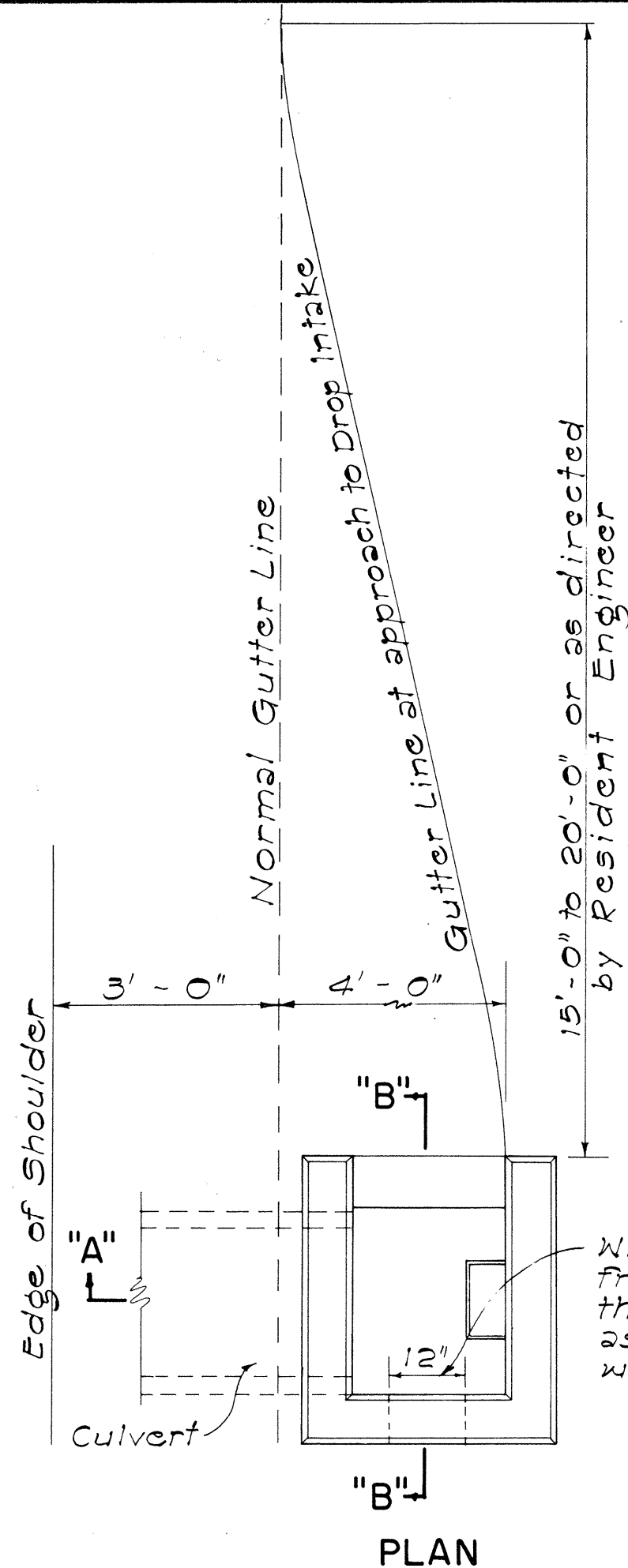
APPROVED:
ASSISTANT CHIEF, ENGINEERING 12-17-69
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
TYPE 6'214
GRATED DROP INTAKE

Scales: As Noted Date: July 1969

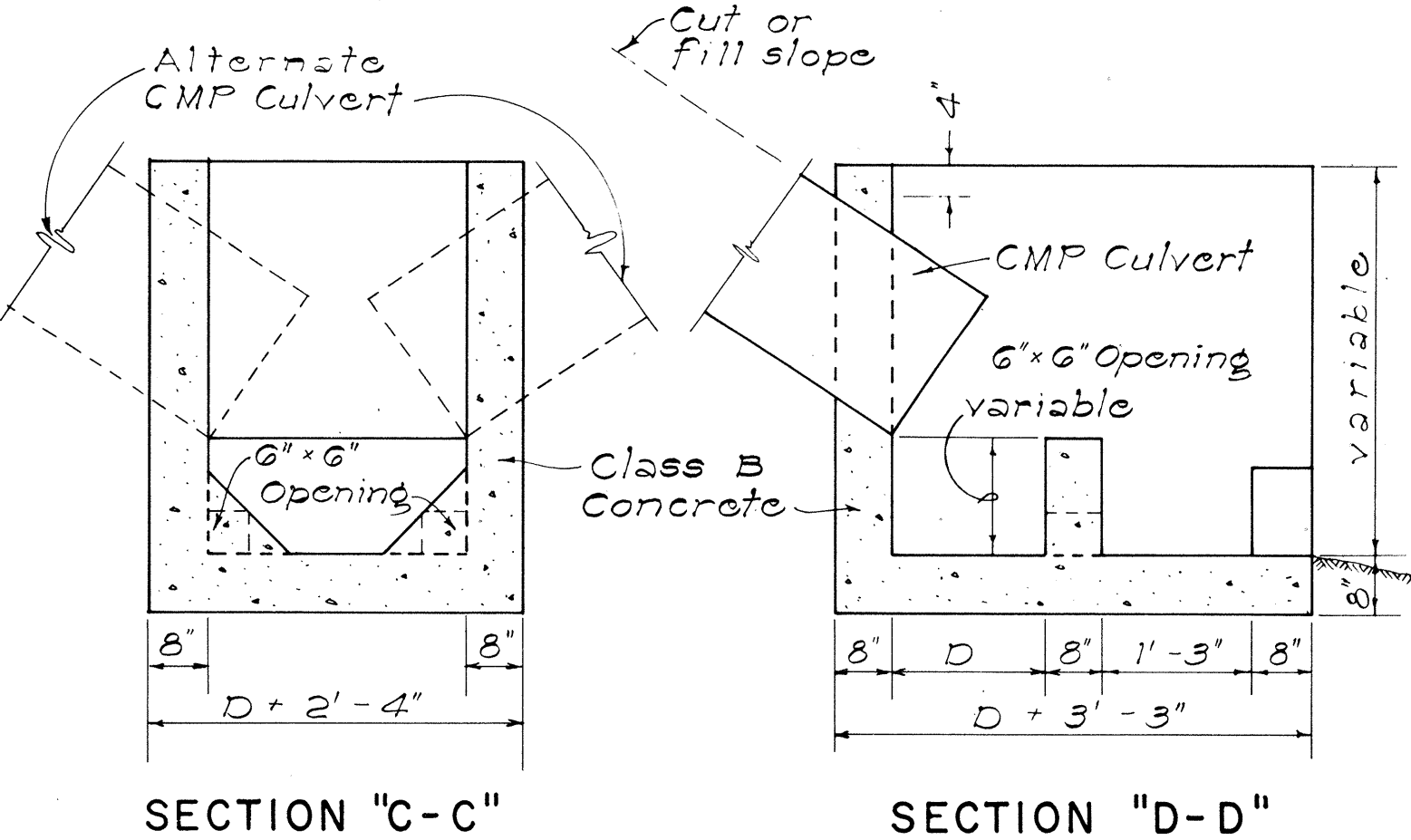
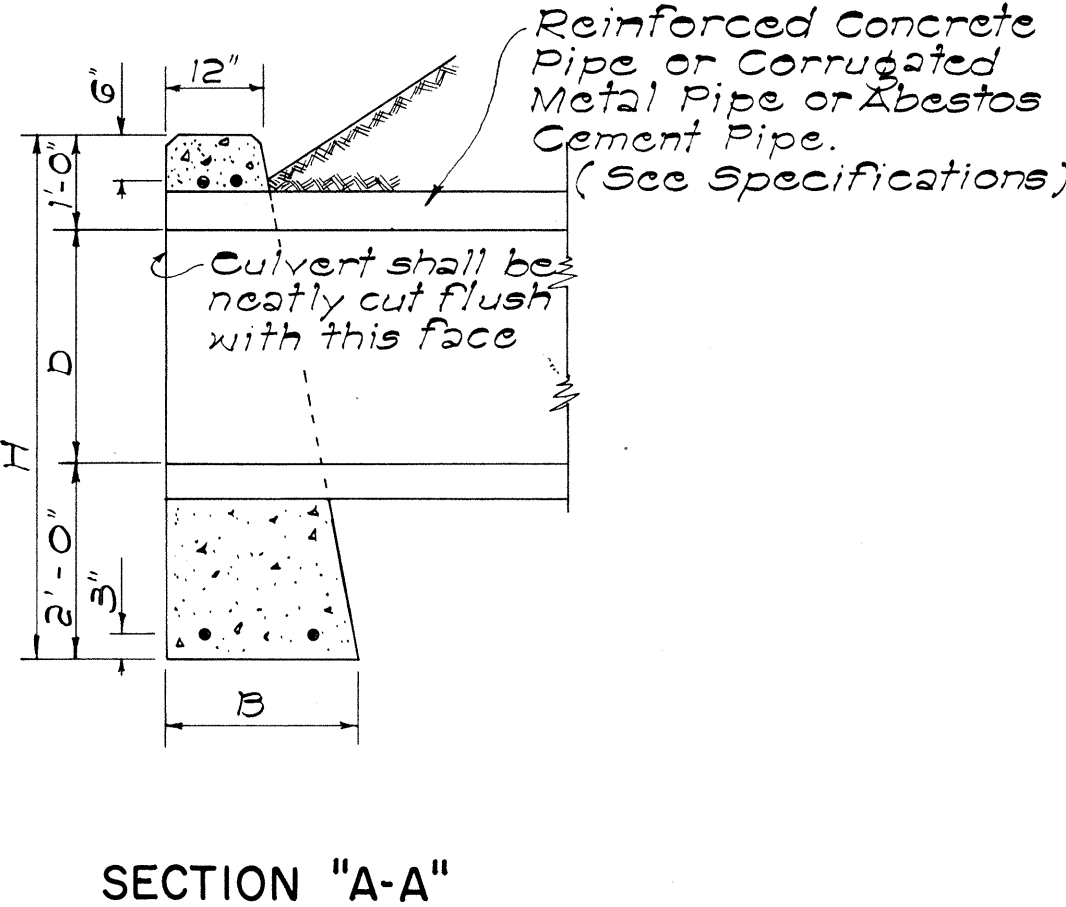
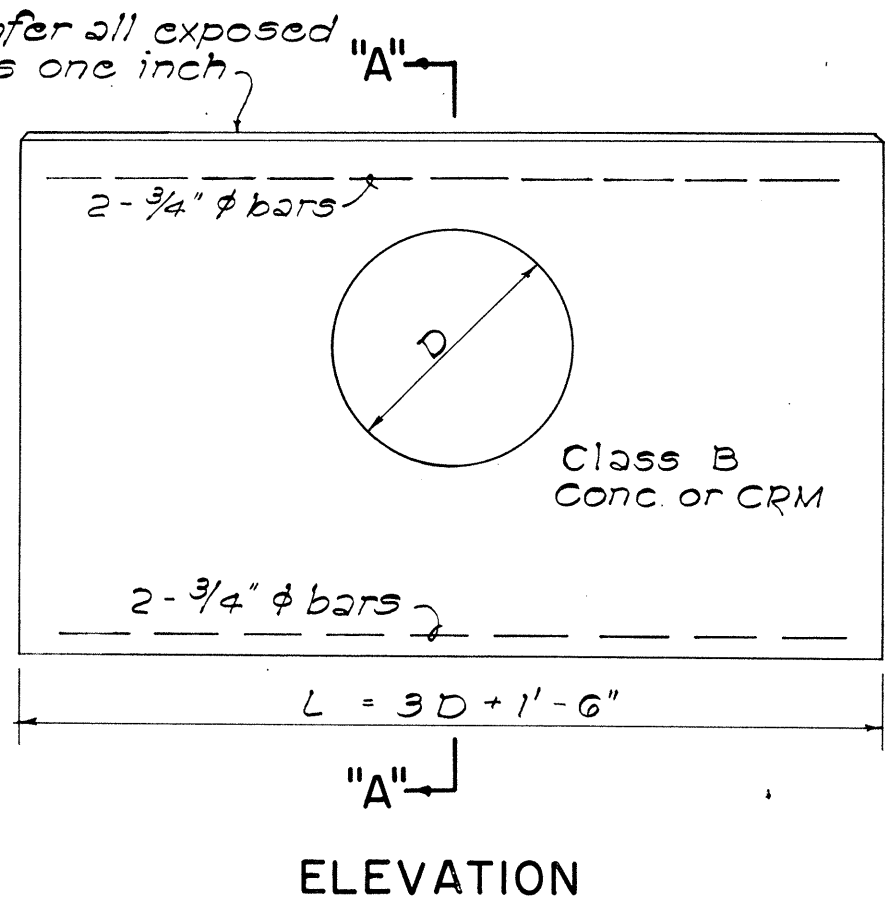
SHEET No. 22 OF 27 SHEETS DH 9

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	G4A	80



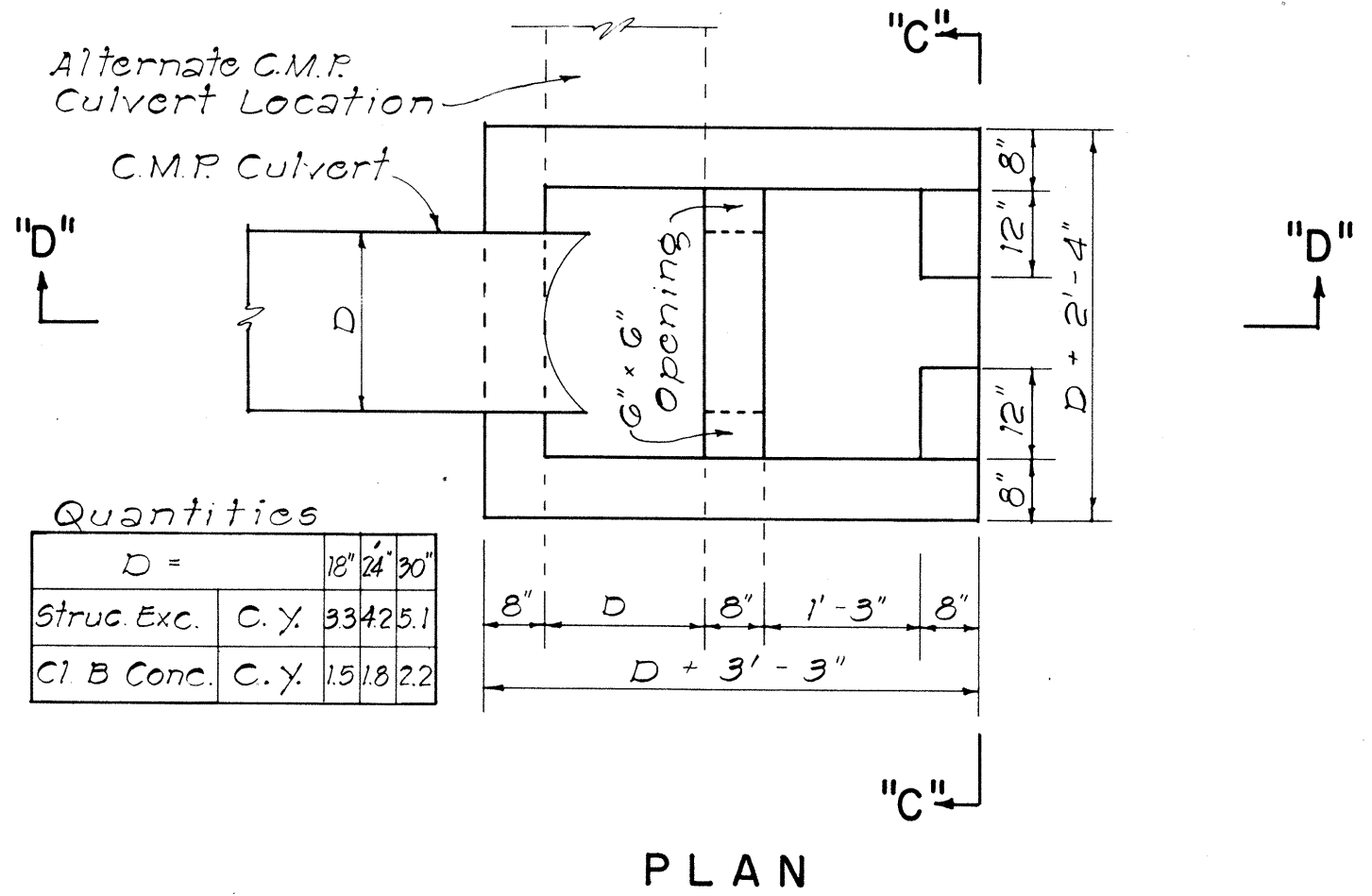
DATA - CONC. DROP INTAKE						where Variable Equals
D'	D	L-D'+6"	S	Cu. Yds.		
23"	18"	2'-5"	8"	1.41	4'-6"	
30"	24"	3'-0"	8"	1.72	5'-0"	
37"	30"	3'-7"	9"	2.32	5'-6"	
44"	36"	4'-2"	9"	2.73	6'-0"	
51"	42"	4'-9"	10"	3.54	6'-6"	
58"	48"	5'-4"	10"	4.01	7'-0"	

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

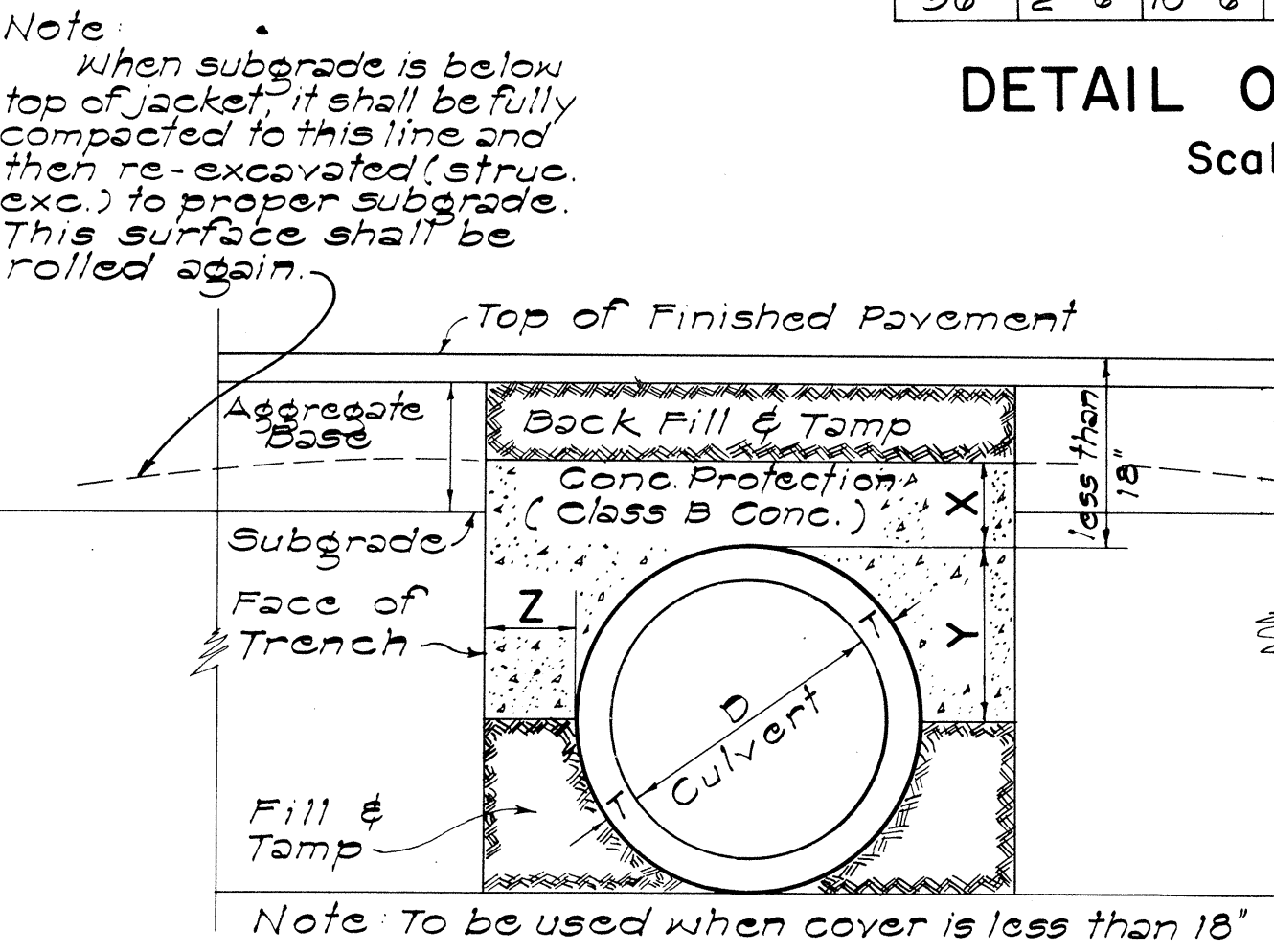
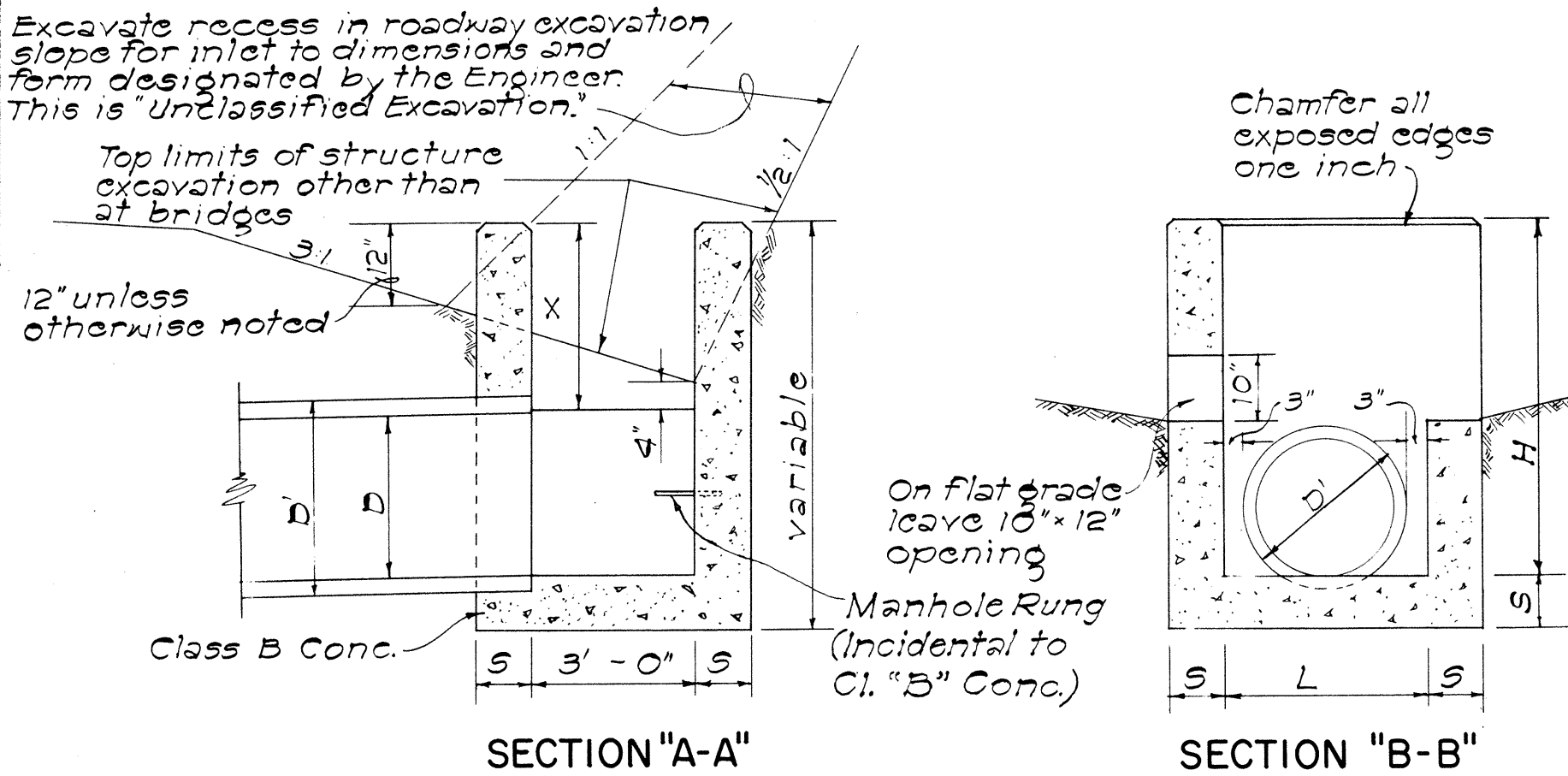


DATA FOR CONC. HEADWALL				CL. B CONC. FOR S.C.P.	CL. B CONC. FOR C.M.P.	Steel For One Headwall		
D	B	L	H	Cu. Yd.	Cu. Yd.	No. of Bars	Size	Length Lbs.
18"	1'-6"	6'-0"	4'-6"	1.12	1.17	4	3/4"	5'-6" 33
24"	1'-6"	7'-0"	5'-0"	1.52	1.60	4	3/4"	7'-0" 42
30"	2'-0"	9'-0"	5'-6"	2.32	2.40	4	3/4"	8'-6" 51
36"	2'-0"	10'-6"	6'-0"	2.94	3.13	4	3/4"	10'-0" 60
42"	2'-6"	12'-0"	6'-6"	4.19	4.47	4	3/4"	11'-6" 69
48"	2'-6"	13'-6"	7'-0"	5.01	5.36	4	3/4"	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



DETAILS OF CONC. DROP BOX AT OUTLET OF CULVERT PIPE
NOT TO SCALE



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

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:
T. Takami
HYDRAULIC DESIGN ENGINEER 12-17-67
DATE

APPROVED:
Shelton
ASSISTANT CHIEF, ENGINEERING 12-17-69
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. 23 OF 27 SHEETS DH 10

DATE	
DESIGNED BY	
CHECKED BY	
NOTED BY	

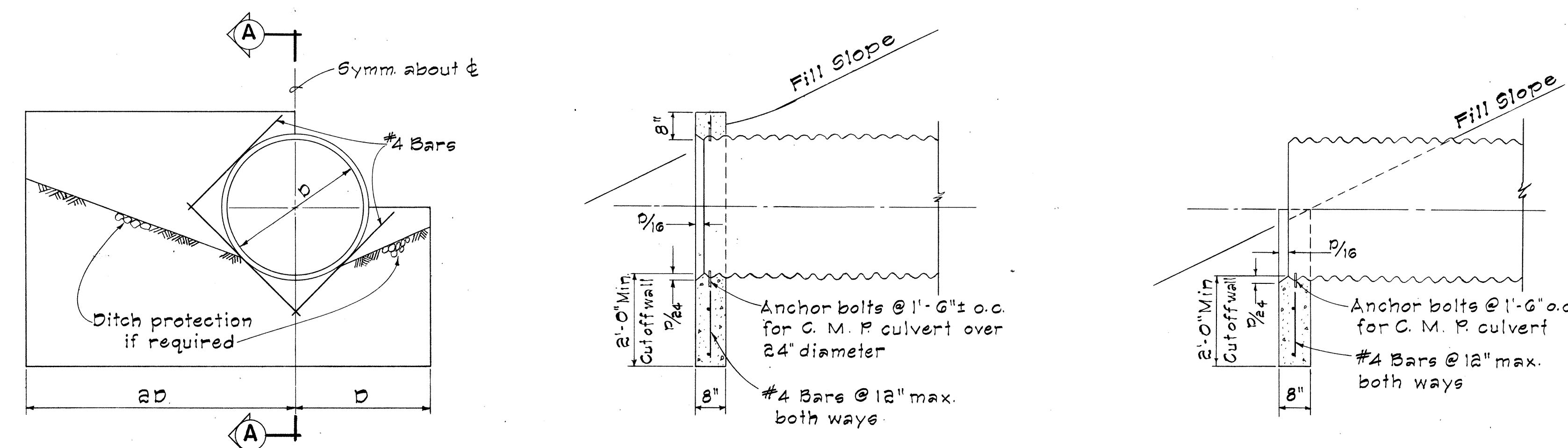
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	65	80

GENERAL NOTES

- Concrete: All concrete shall be Class A.
- Cutoff Wall: The depth of wall shown on the plan may be reduced if rock is encountered at a higher elevation.
- Multiple Pipe Installations: To permit careful placing and tamping of back fill material, clear spacing for multiple pipe installations shall be not less than one-half the diameter of the larger pipe between sides of adjacent pipes, but not required to exceed three feet, and in no case less than one foot.
- Anchor Bolts: Anchor bolts are not required for concrete pipe.

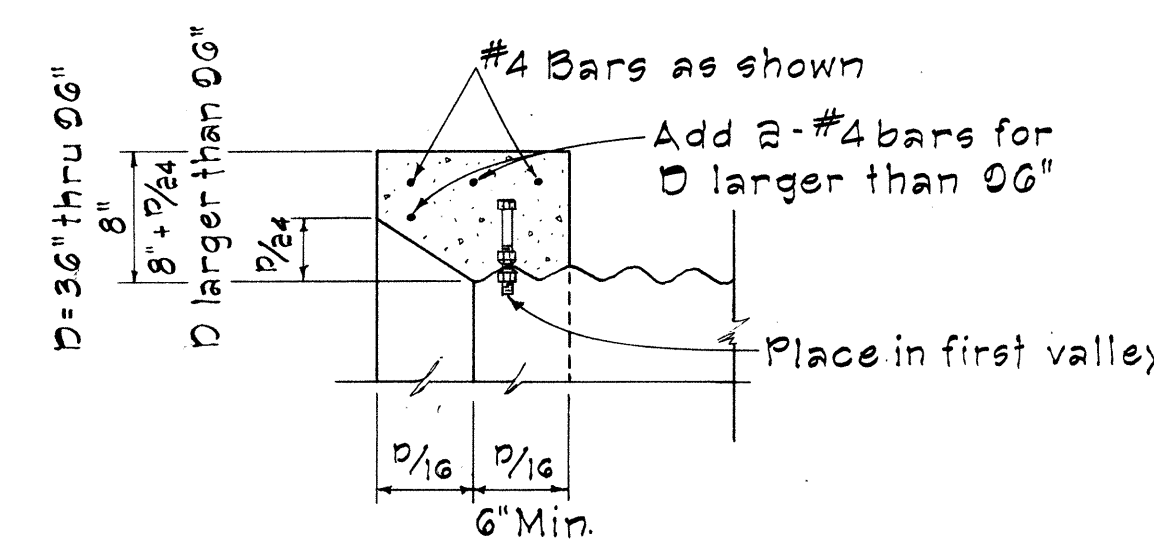
Culvert Dia. (inches)	Full Headwall		Half Headwall	
	Concrete (Cu. Yd.)	Reinf. Steel (Lbs.)	Concrete (Cu. Yd.)	Reinf. Steel (Lbs.)
18	0.57	45	0.18	15
24	0.85	65	0.26	20
30	1.15	85	0.34	25
36	1.50	115	0.43	35

Note: Quantities shown are for C.M.P. culvert.



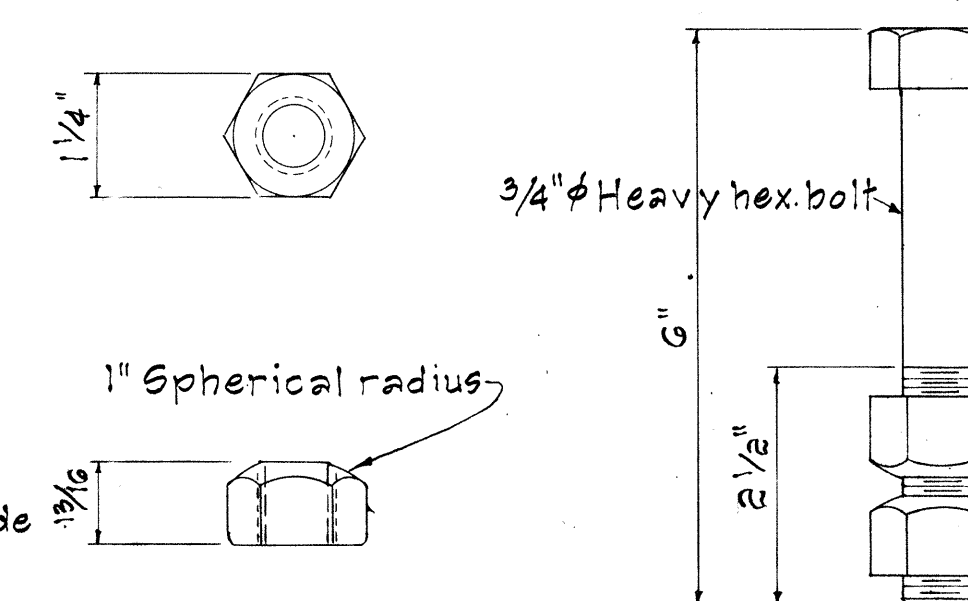
FULL HEADWALL HALF HEADWALL FULL HEADWALL HALF HEADWALL
SECTION A-A

INLET STRUCTURES FOR CULVERT SIZES 18 IN. TO 36 IN. DIAMETER



DETAIL C

Bolt and nut to be cleaned after galvanizing to provide a free running fit

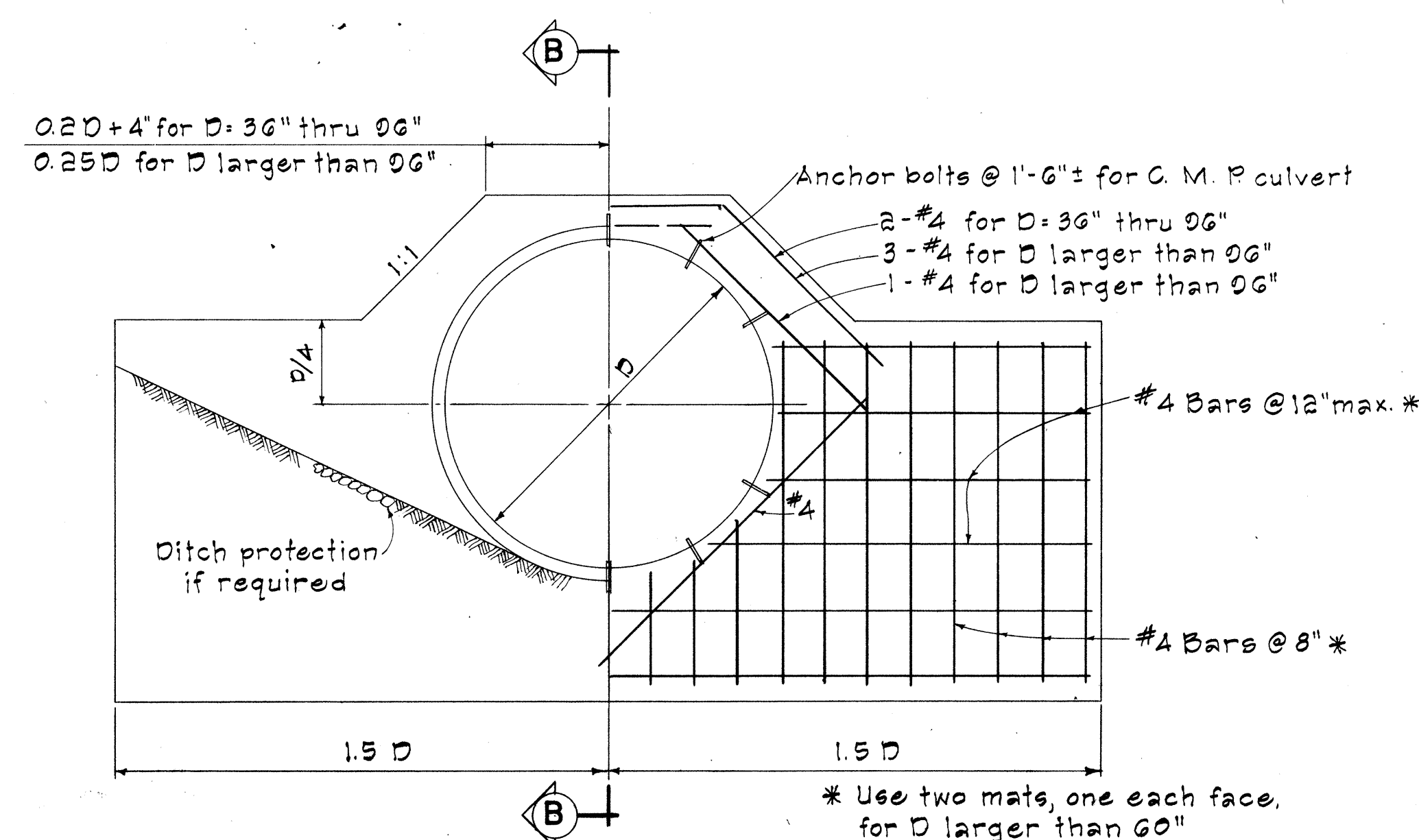


ANCHOR BOLT DETAIL

SUMMARY OF QUANTITIES		
Culvert Dia. (inches)	Concrete (Cu. Yd.)	Reinf. Steel (Lbs.)
36	1.0	75
42	1.3	90
48	1.5	105
54	2.0	125
60	2.4	145
72	4.1	435
84	5.6	535
96	6.8	640
108	9.8	795
120	12.4	955
144	20.1	1255
180	37.6	1820

Note: Quantities shown are for C.M.P. culvert.

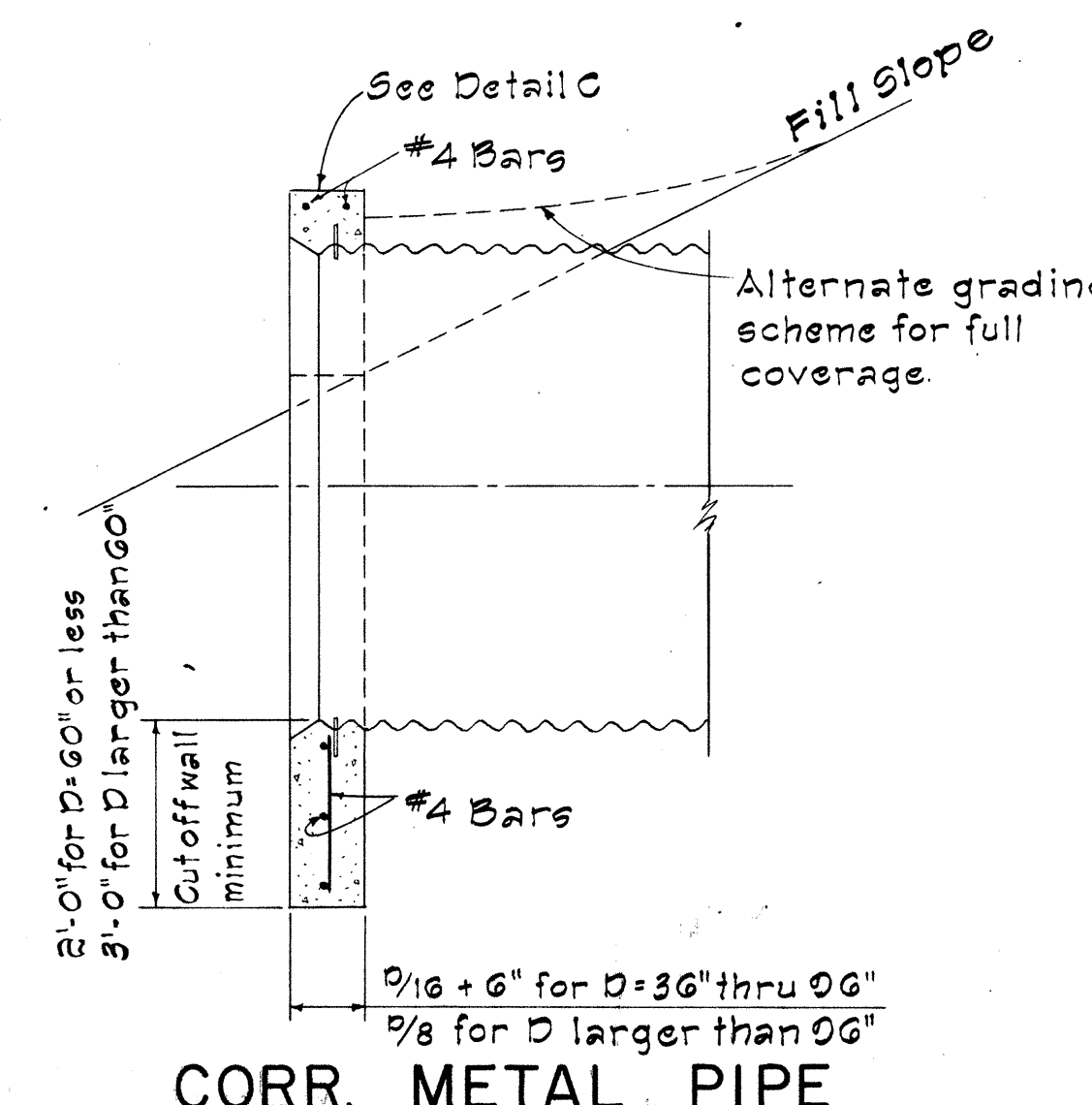
NO.	REVISION	APPROVED BY	DATE



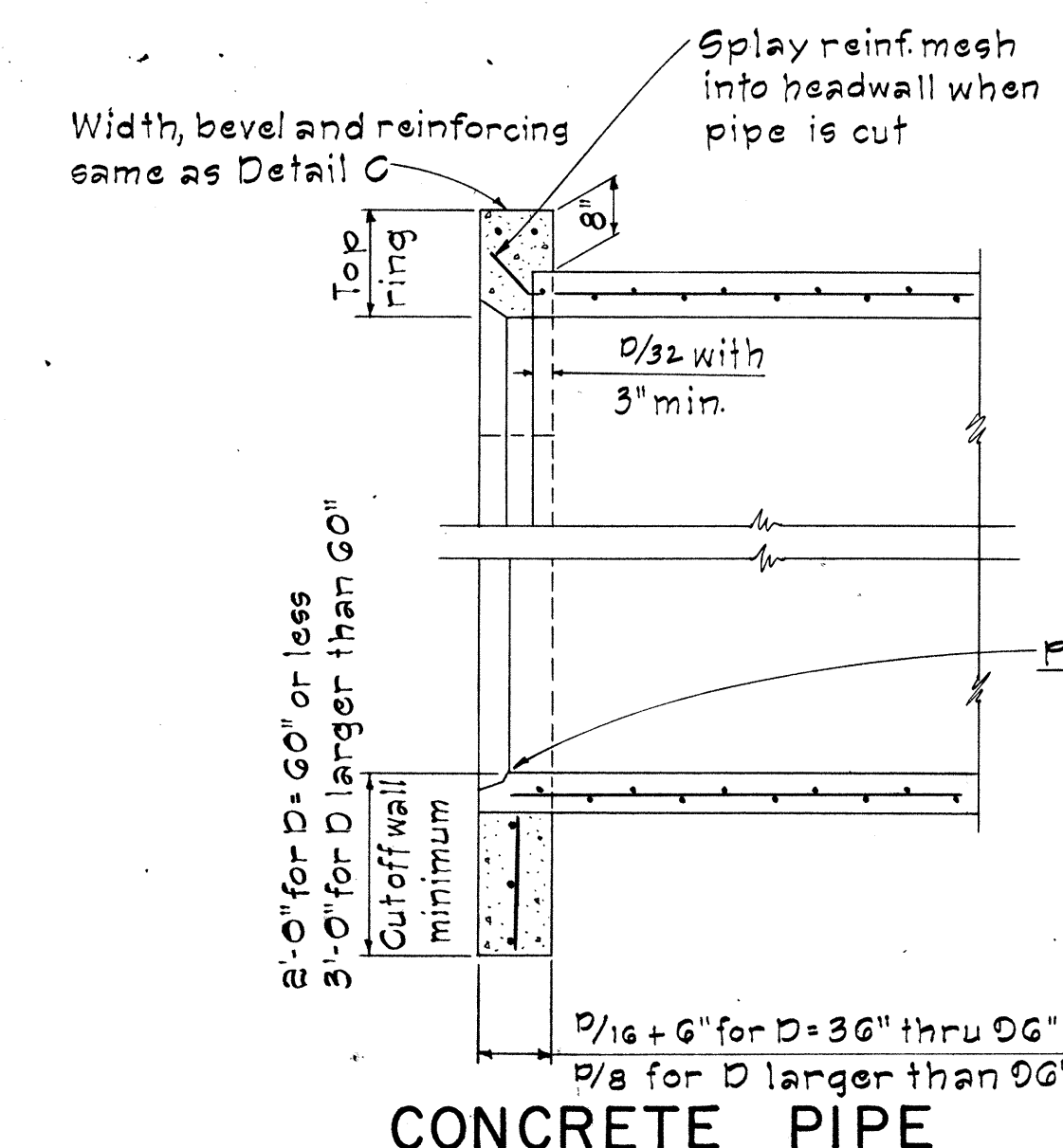
HALF ELEVATION

HALF SECTION

* Use two mats, one each face, for D larger than 60"



CORR. METAL PIPE



CONCRETE PIPE

APPROVAL, RECOMMENDED:
HYDRAULIC DESIGN ENGINEER
APPROVED:
ASSISTANT CHIEF, ENGINEERING

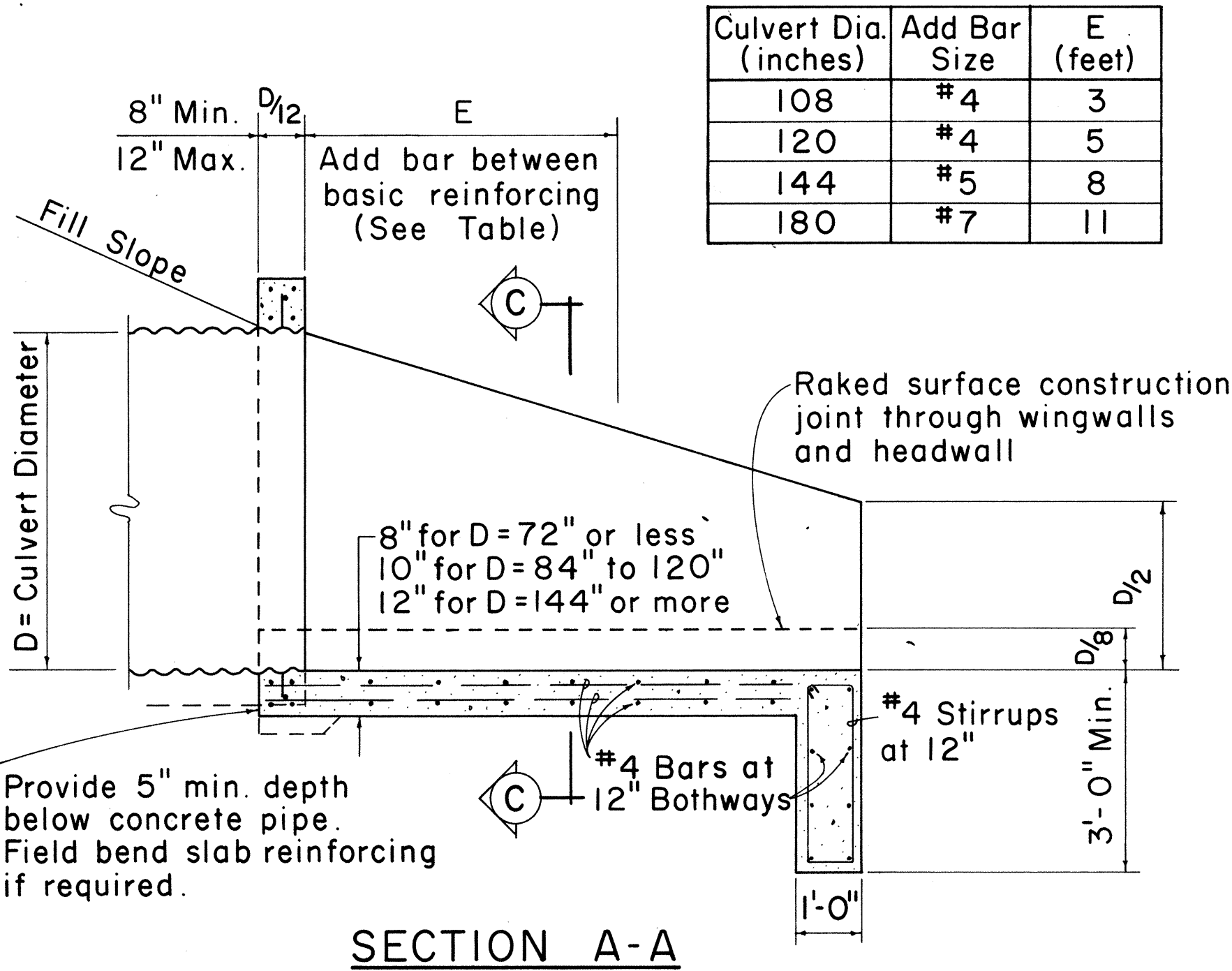
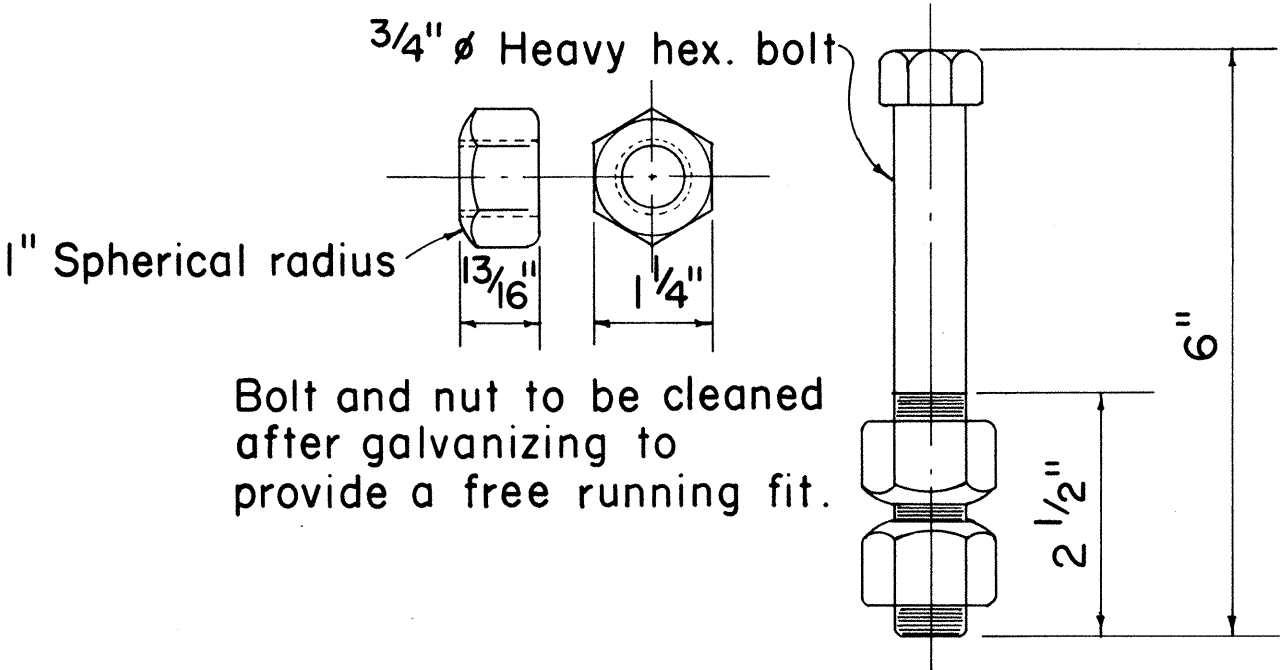
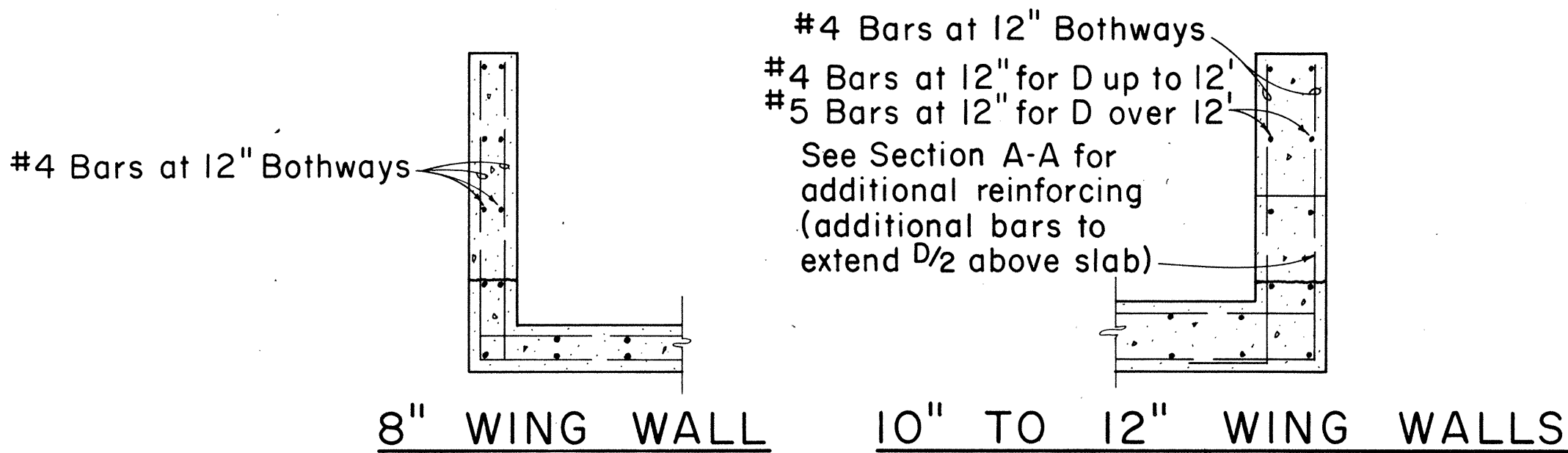
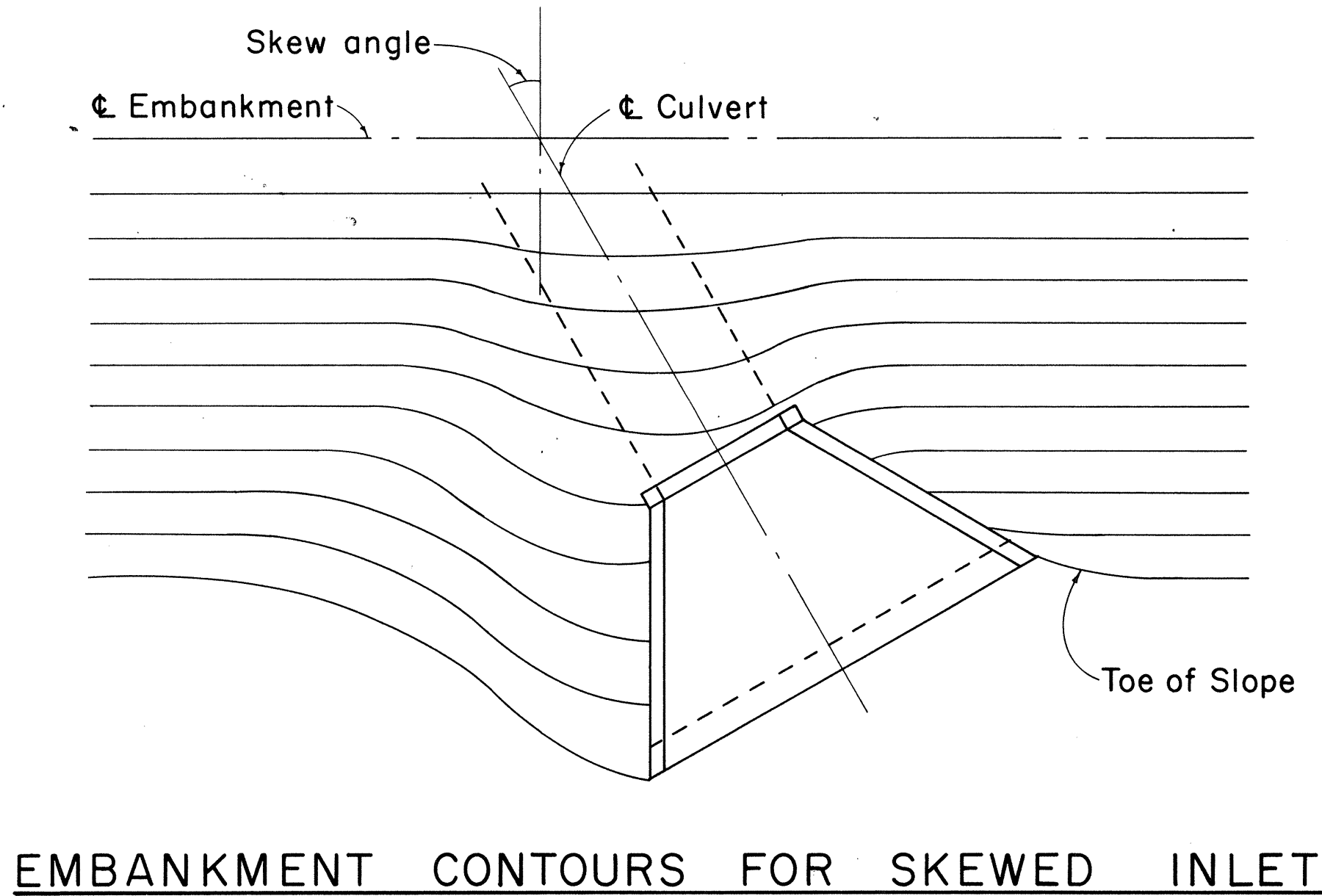
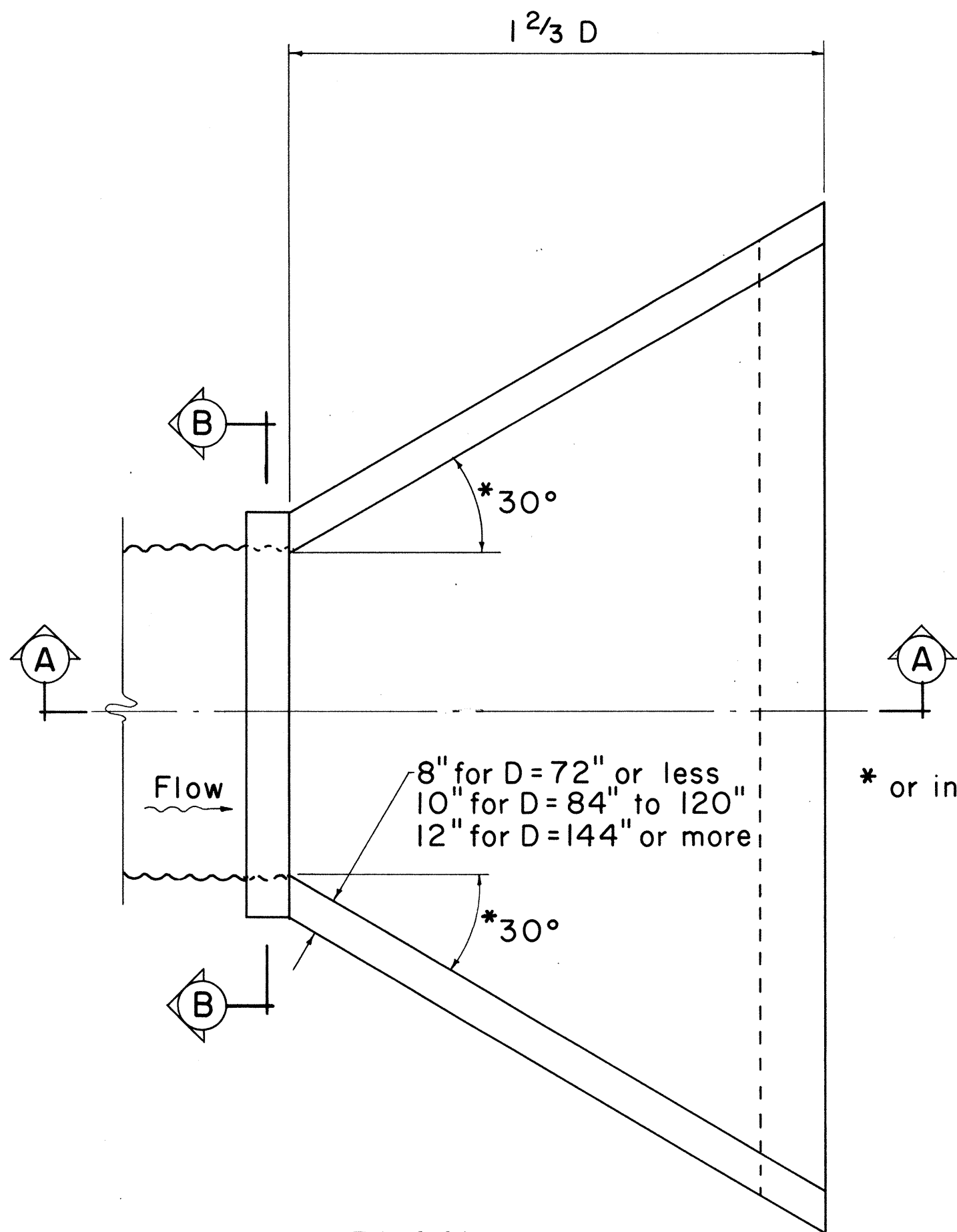
Preferred: Incorporate groove end of pipe into headwall and omit top ring.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
INLET STRUCTURES
Not To Scale
Date: July, 1969
SHEET No. 24 OF 27 SHEETS
DH II

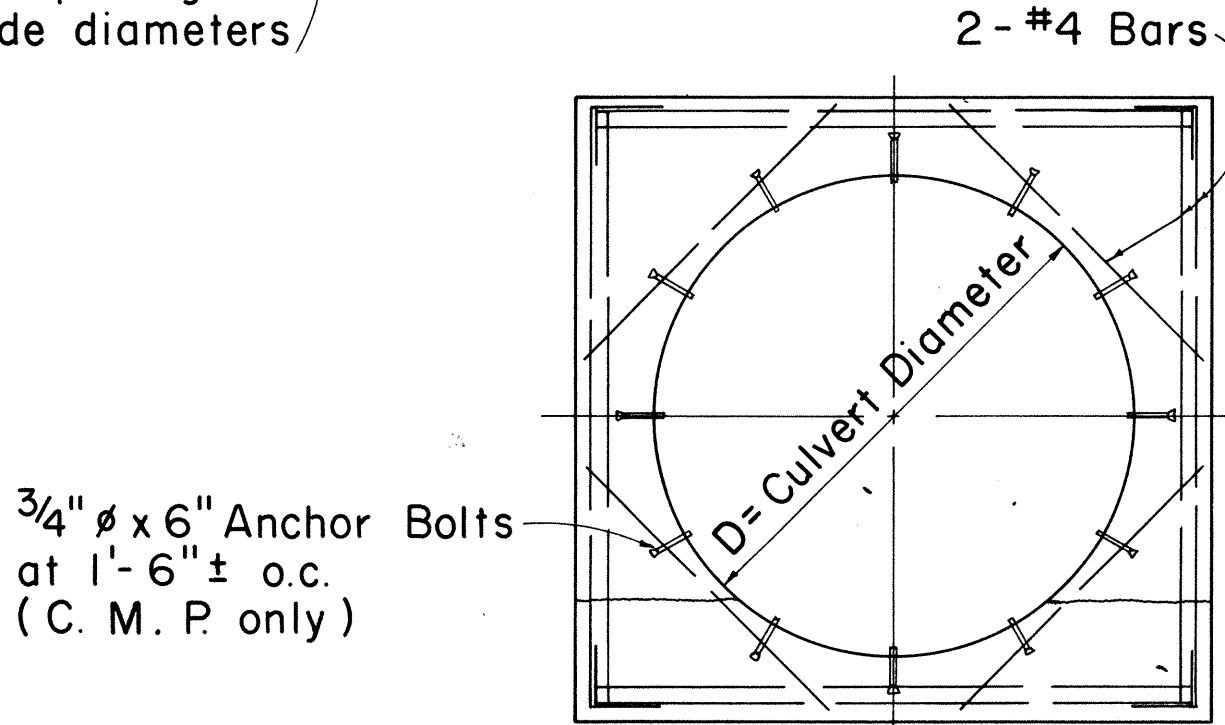
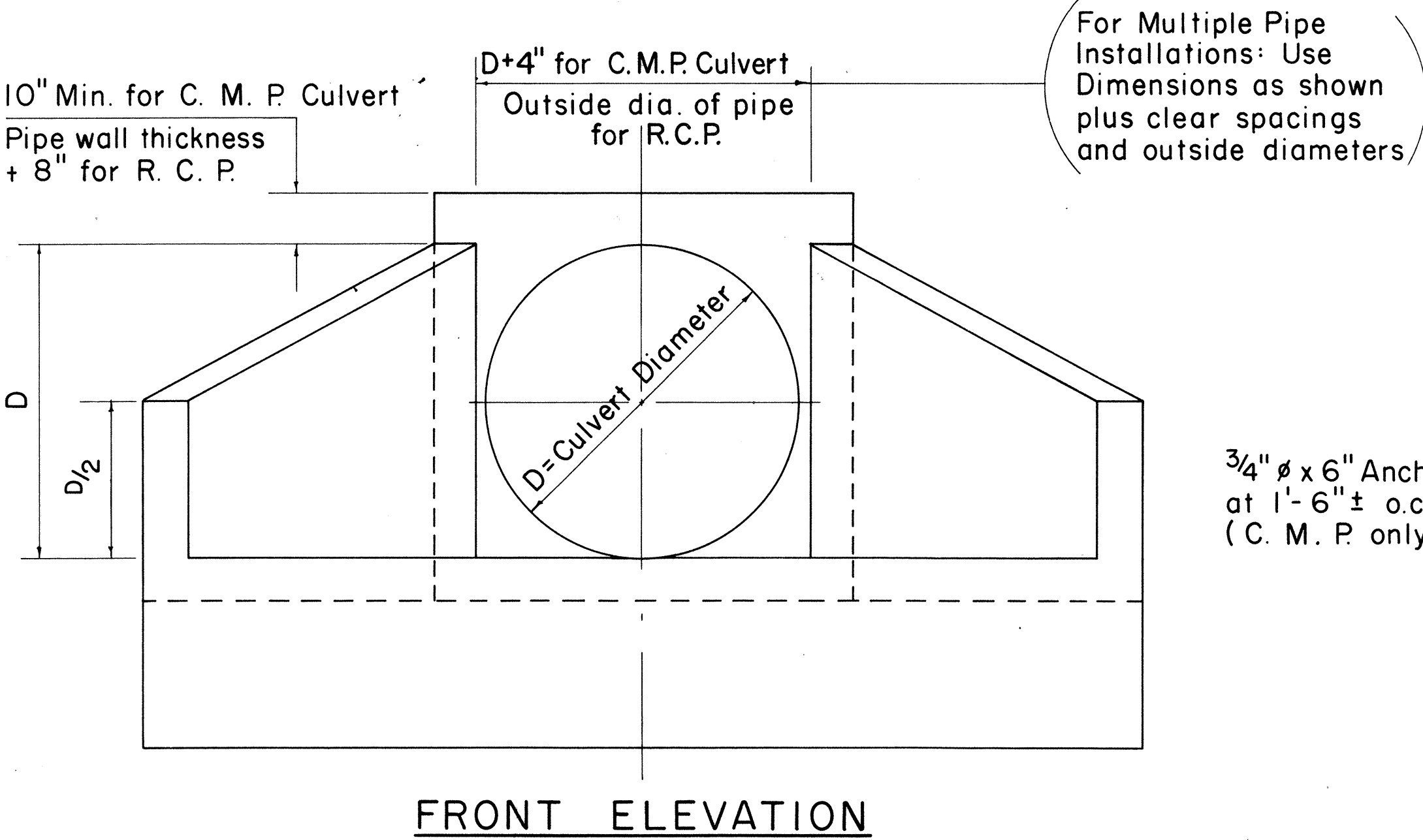
FED ROAD DIST. NO.	STATE	FED AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	66	80

GENERAL NOTES

1. Concrete: All concrete shall be Class A.
2. Cut-off Wall: The depth of wall shown on the plan may be reduced if rock is encountered at a higher elevation.
3. Multiple Pipe Installations: To permit careful placing and tamping of backfill material, clear spacing for multiple pipe installations shall be not less than one-half the diameter of the larger pipe between sides of adjacent pipes, but not required to exceed three feet.
4. Anchor Bolts: Anchor bolts are not required for concrete pipe.



Culvert Dia. (inches)	Add Bar Size	E (feet)
108	#4	3
120	#4	5
144	#5	8
180	#7	11



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
INLET STRUCTURES

Not to Scale Date: July, 1969

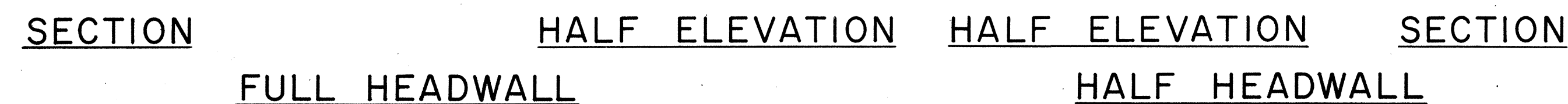
SHEET No. 25 OF 27 SHEETS DH 13

SURVEY PLOTTED BY	DATE
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

INLET STRUCTURE FOR CULVERT SIZES 48 IN. TO 180 IN. DIAMETER

GENERAL NOTES

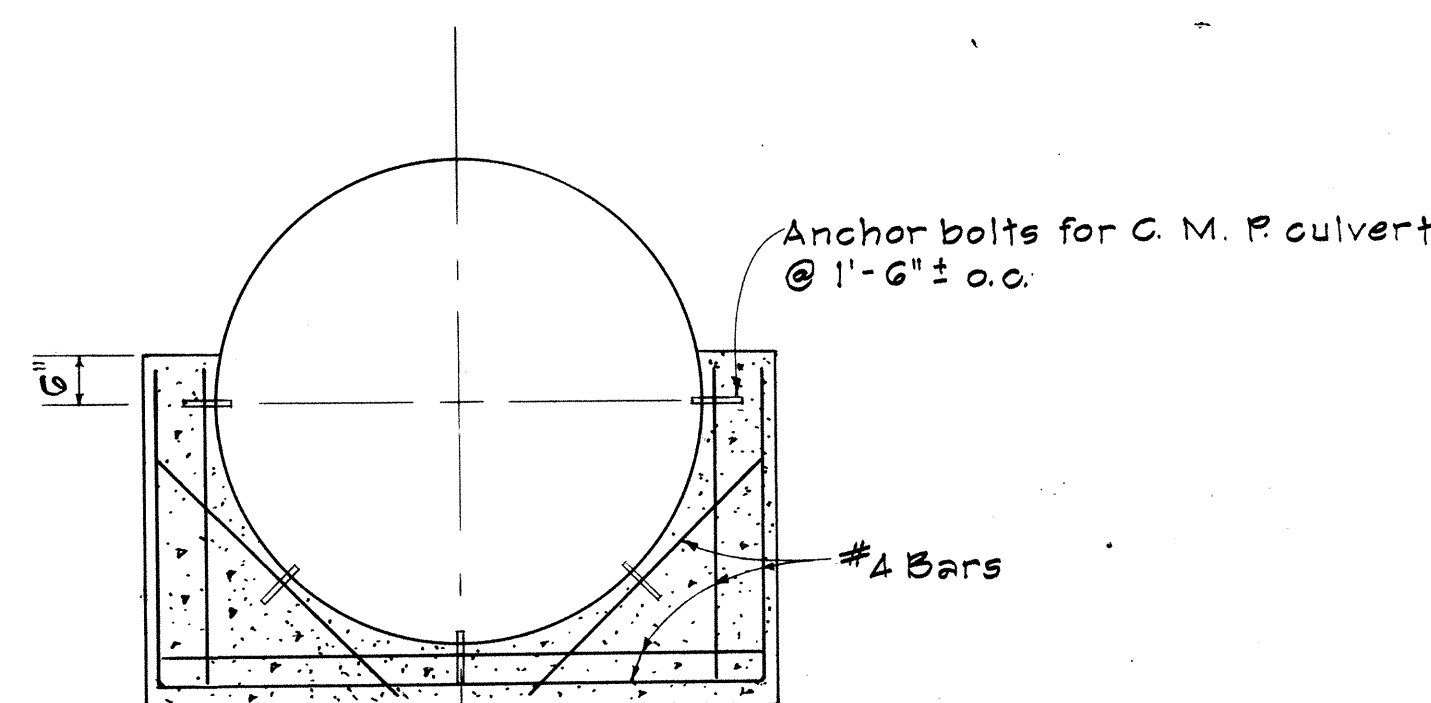
- Bolt and nut to be
cleaned after galvanizing
to provide a free running fit



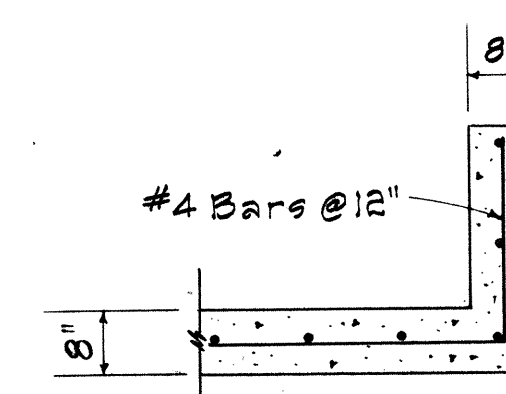
Note: Quantities shown are for
C.M.P. 'culvert.

The diagram shows a trapezoidal roof plan with a central vertical axis of symmetry. The top edge is a dashed line, and the bottom edge is a solid line. The width at the bottom is labeled D , and the width at the top is labeled d . The height of the trapezoid is labeled H . The roof is divided into four sections by a central vertical line and two side lines. The sections are labeled with circled letters: 'B' on the left and right sides, and 'C' on the right side. The roof is supported by a structure indicated by a dashed line at the top, with a break symbol in the center. The roof is shown with a break symbol in the center of the top edge.

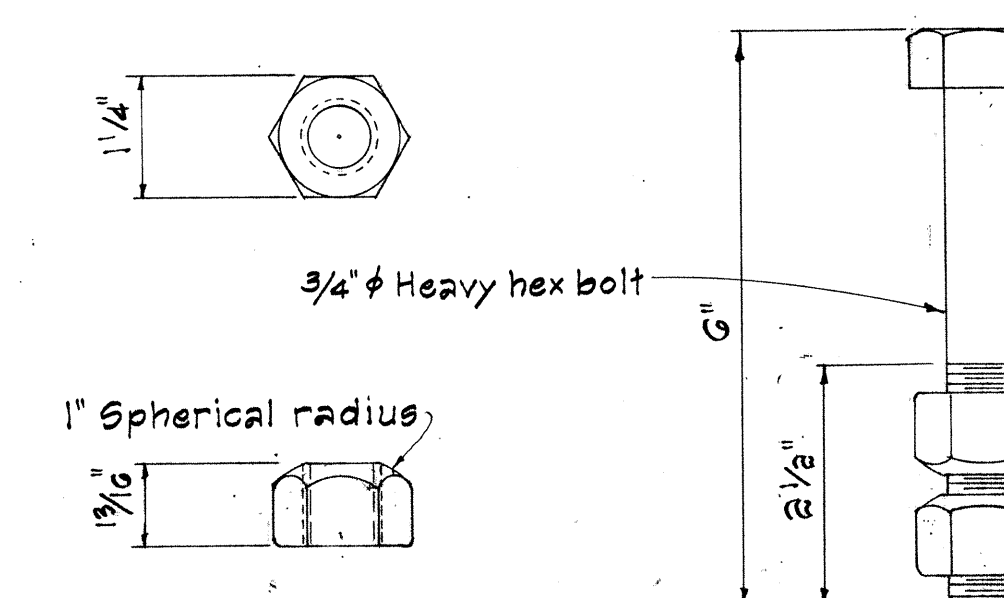
PLAN



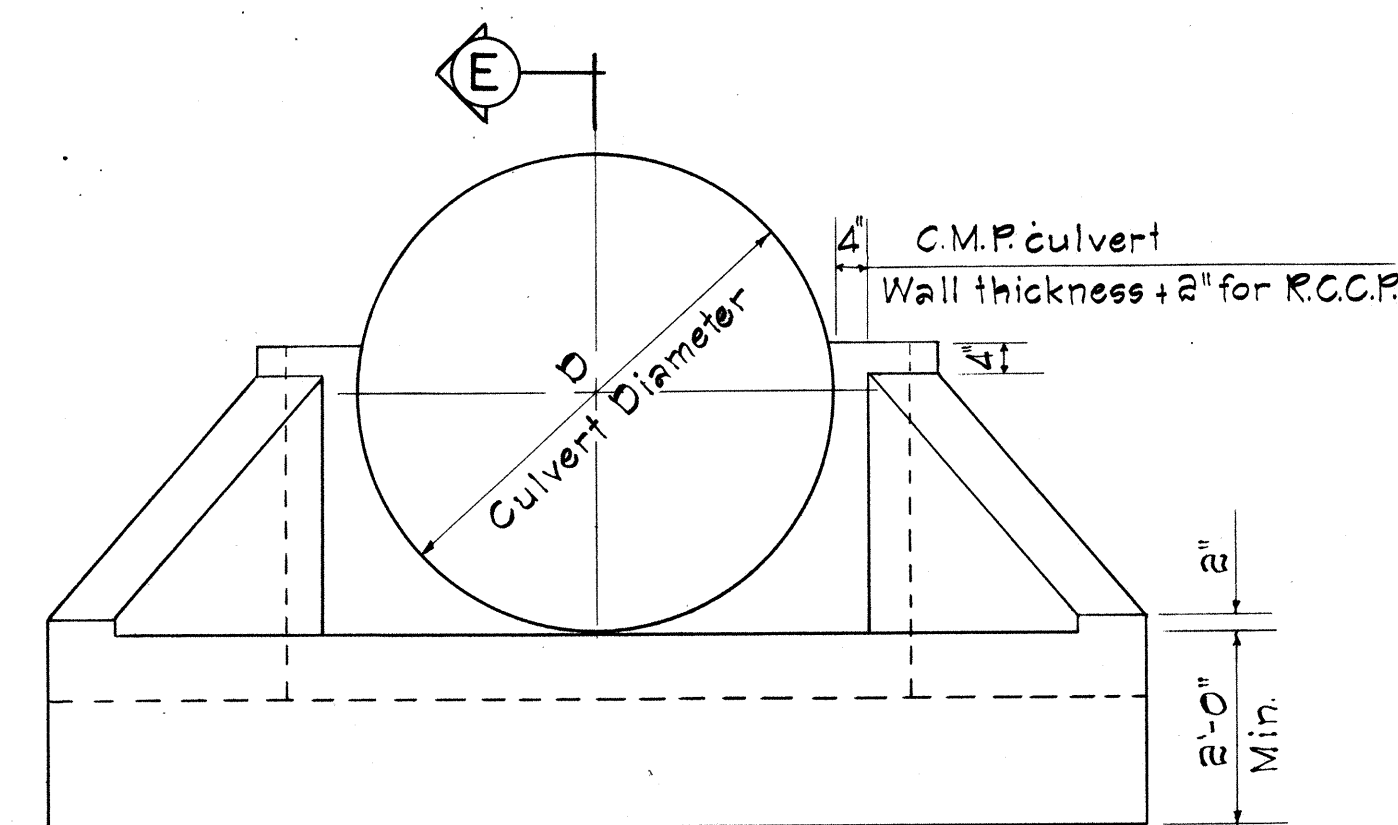
SECTION B-B



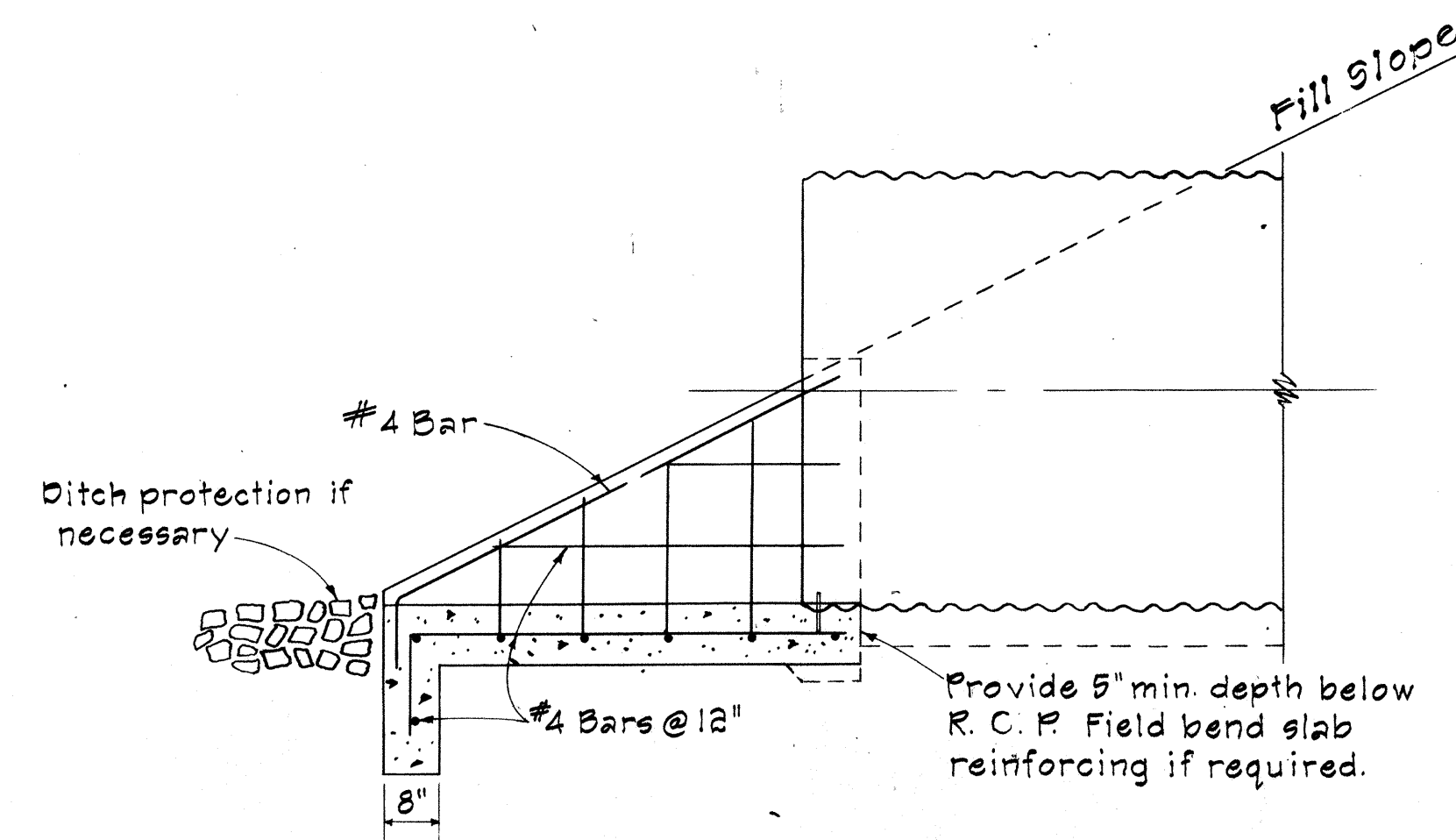
PARTIAL SECTION C



ANCHOR BOLT DETAIL



ELEVATION



SECTION E-E

Note: Quantities shown are for
C.M.E. culvert.

HYDRAULIC DESIGN ENGINEER

12-17-69
DATE

ASSISTANT CHIEF, ENGINEERING

12-17-69
DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
OUTLET STRUCTURES

Not To Scale

Date: July, 1969

SHEET No. 26 OF 27 SHEETS DH 14

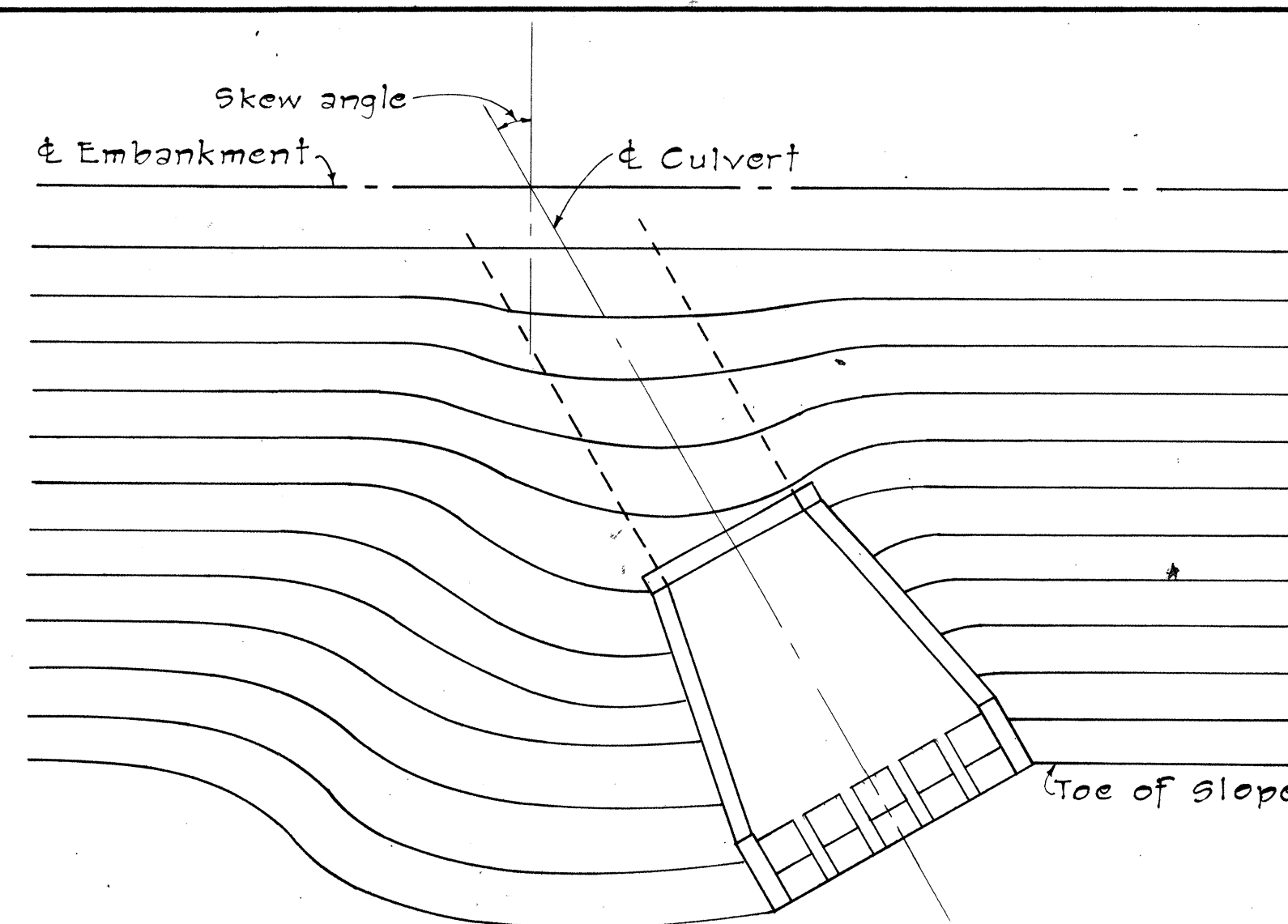
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	5-0470(1) 5-0470(2)	1970	68	80

GENERAL NOTES

- Concrete: All concrete shall be Class A.
- Cutoff Wall: The depth of wall shown on the plan may be reduced if rock is encountered at a higher elevation.
- Multiple Pipe Installations: To permit careful placing and tamping of back fill material, clear spacing for multiple pipe installations shall be not less than one-half the diameter of the larger pipe between sides of adjacent pipes, but not required to exceed three feet.
- Anchor Bolts: Anchor bolts are not required for concrete pipe.

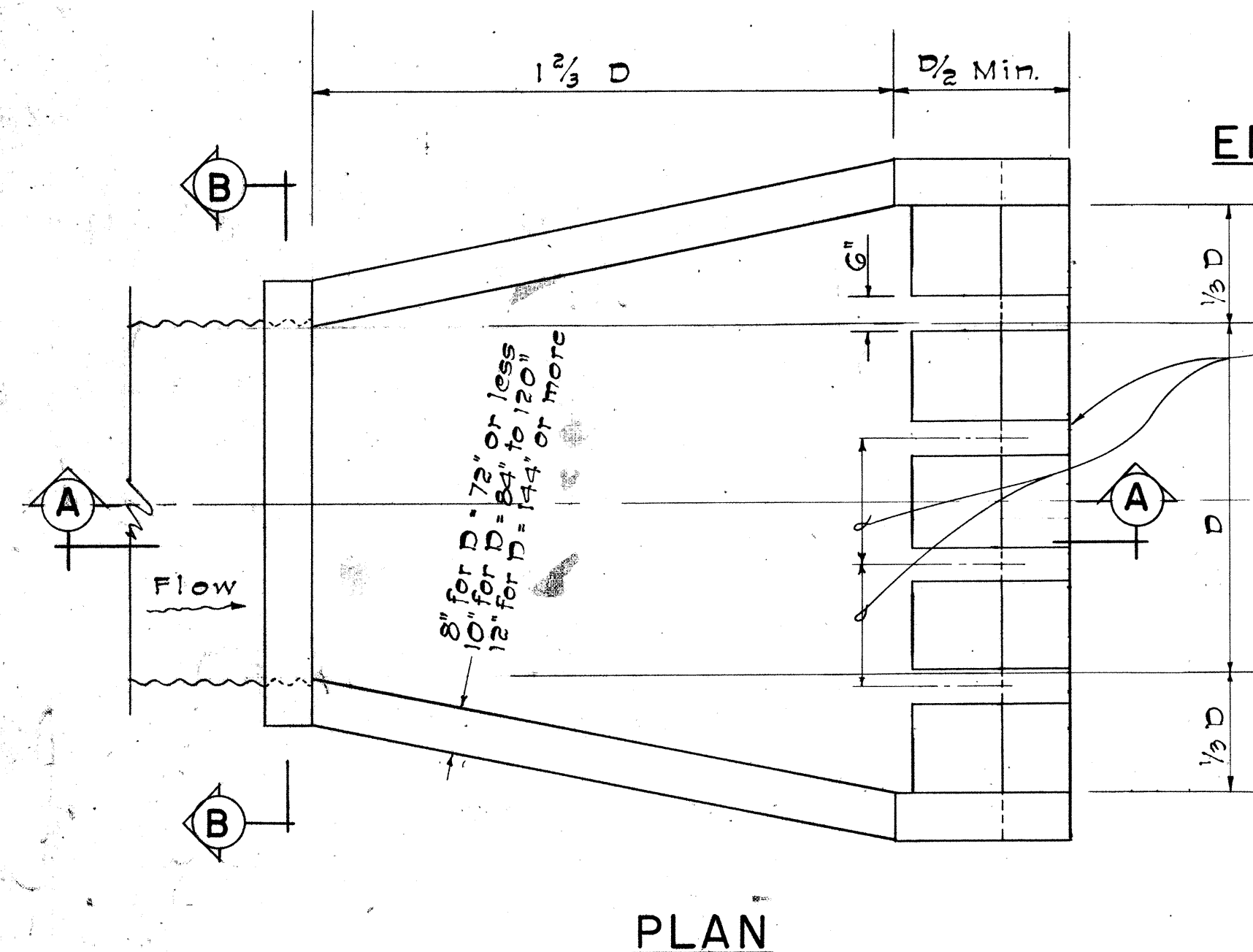
Culvert Dia. (inches)	Concrete (Cu. Yd.)	Reinf. Steel (Lbs.)
48		
54		
60		
72		
84	12.7	1270
96	16.2	1970
108	20.3	2010
120	24.8	2460
144	41.8	3610
180	63.8	7090

Note: Quantities shown are for C.M.P. culvert.

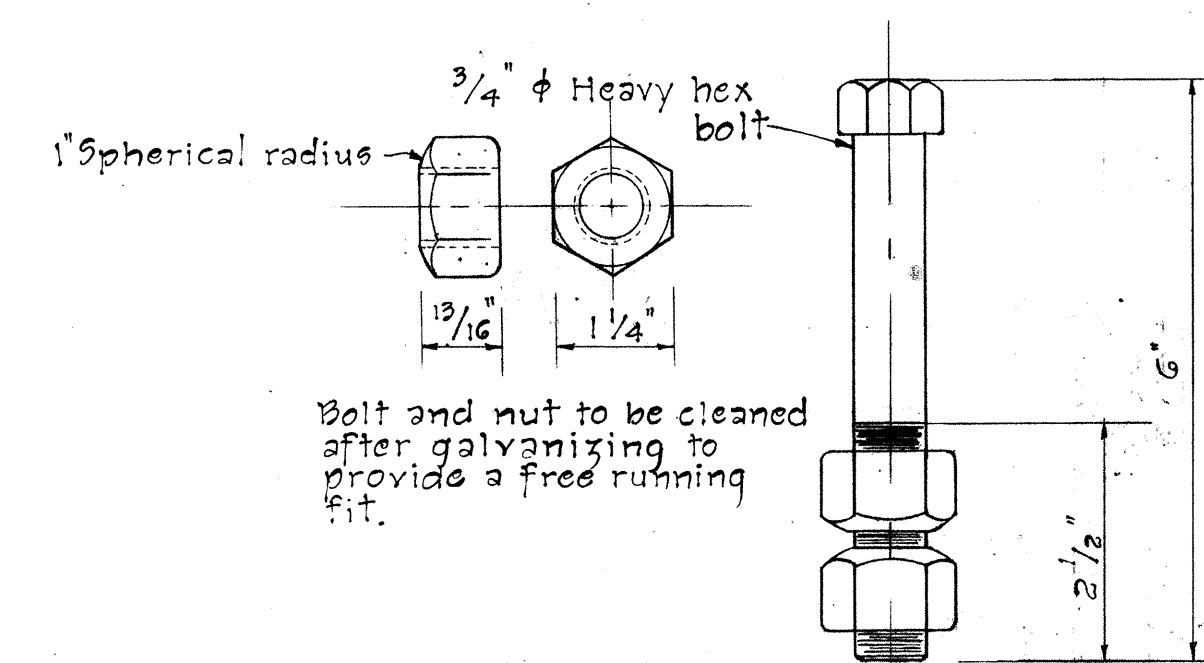


EMBANKMENT CONTOURS FOR SKEWED OUTLET

When outlet is skewed to embankment slope, the embankment may be contoured to cover the exposed section of wall and pipe.



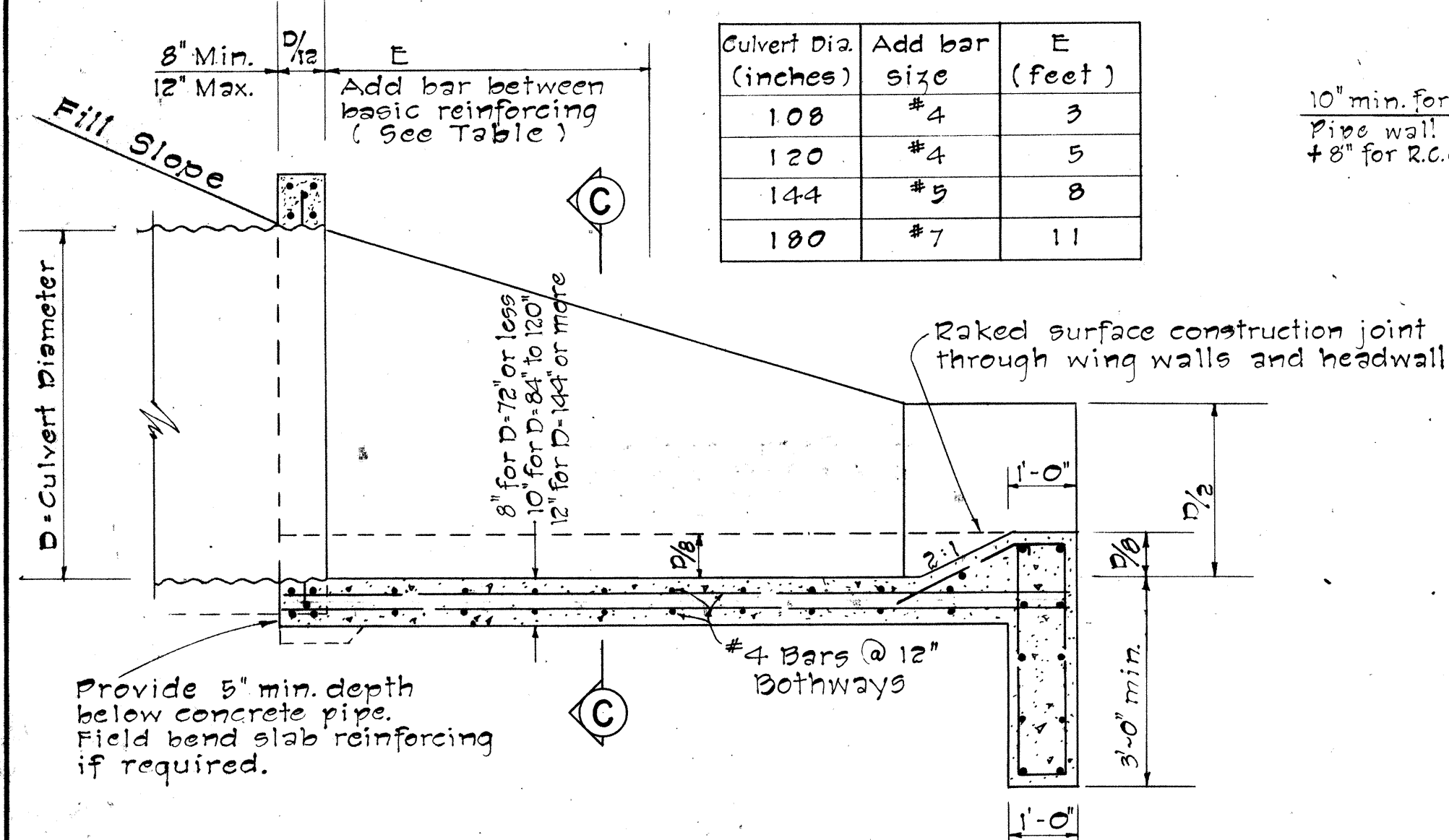
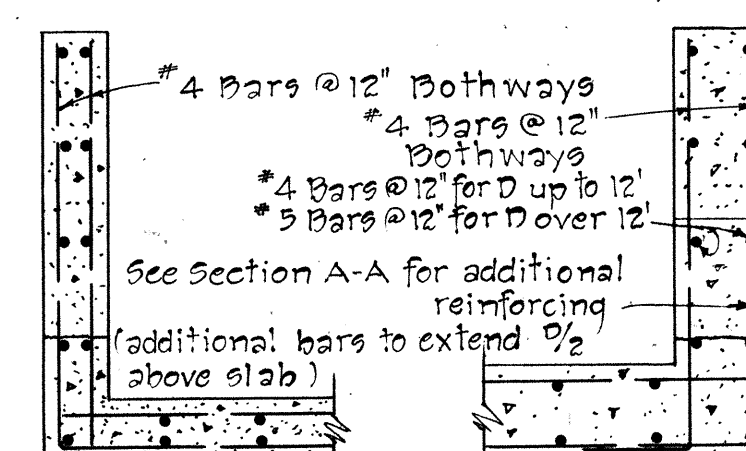
PLAN



ANCHOR BOLT DETAIL

8" WING WALL 10" TO 12" WING WALLS

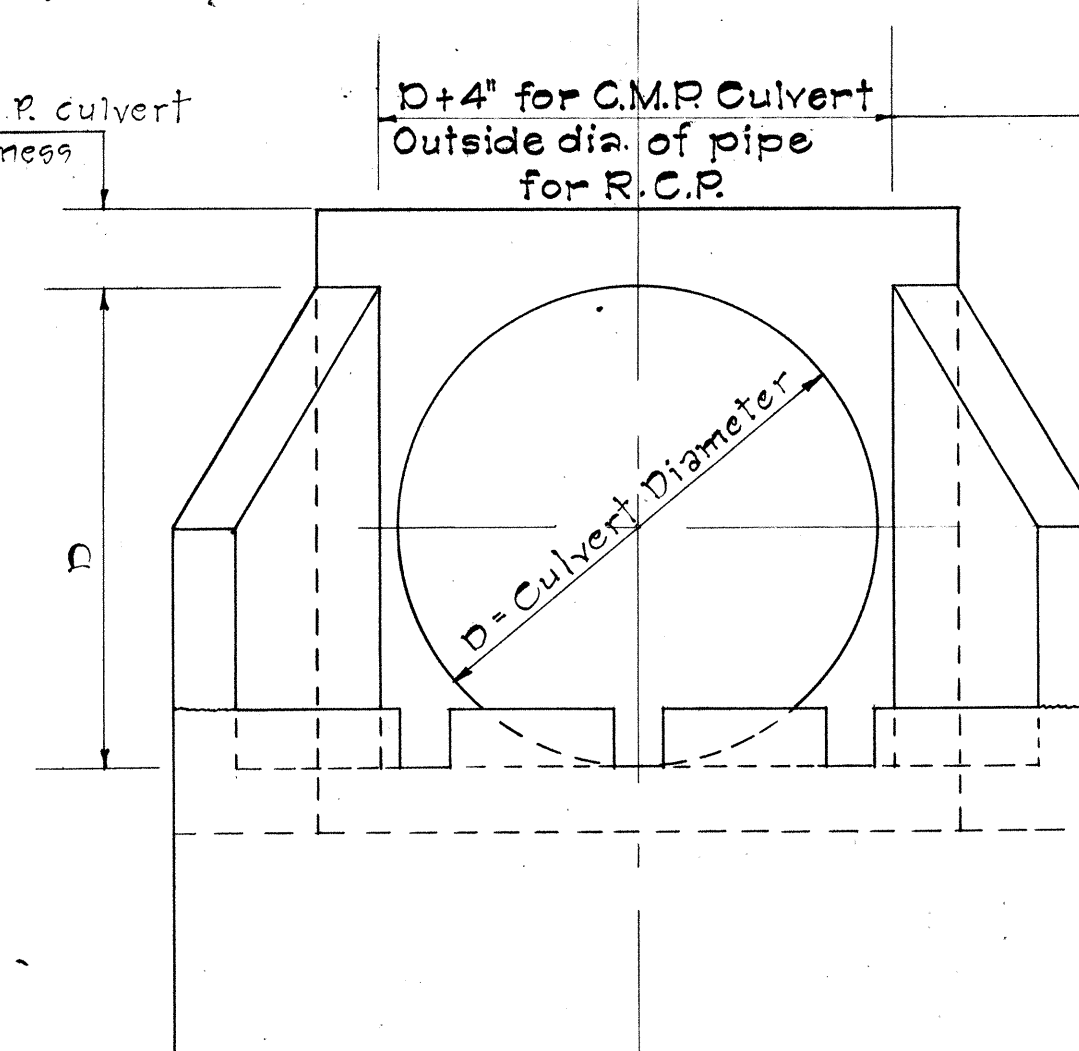
SECTION C-C



SECTION A-A

OUTLET STRUCTURE FOR CULVERT SIZES 48 IN. TO 180 IN. DIAMETER

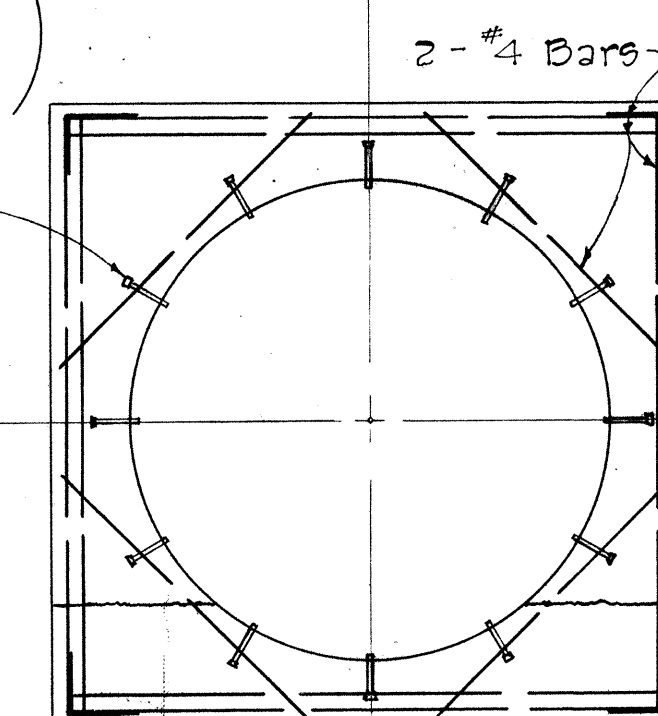
10" min. for C.M.P. culvert
Pipe wall thickness
+ 8" for R.C.P.



FRONT ELEVATION

For Multiple Pipe Installations: Use Dimensions as shown plus clear spacings and outside diameters.

3/4 inch x 6 inch Anchor Bolts @ 1'-6 inch o.c. (C.M.P. only)



SECTION B-B

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
STANDARD DETAILS
OUTLET STRUCTURES

APPROVAL RECOMMENDED:

HYDRAULIC DESIGN ENGINEER

12-17-69
DATE

APPROVED:

ASSISTANT CHIEF, ENGINEERING

12-17-69
DATE

Not To Scale

Date: July, 1969

SHEET No. 27 OF 27 SHEETS DH 15