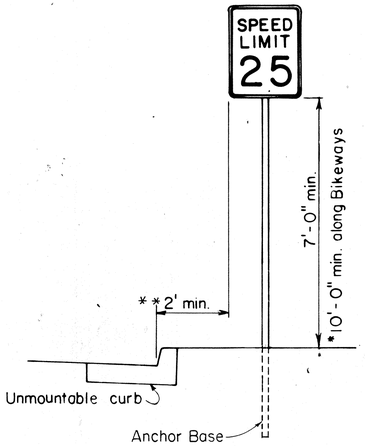
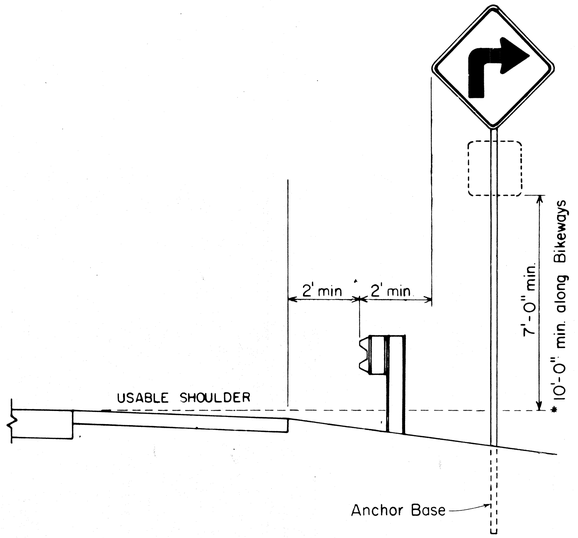
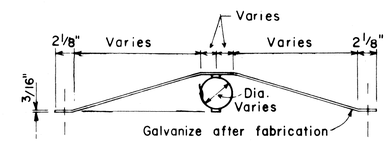
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-10(2)	1984	9	34

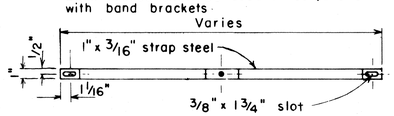






PLAN

Back braces shall be used in conjunction with band brackets



ELEVATION

BACK BRACE DETAILS FOR BALANCED SIGN INSTALLATION

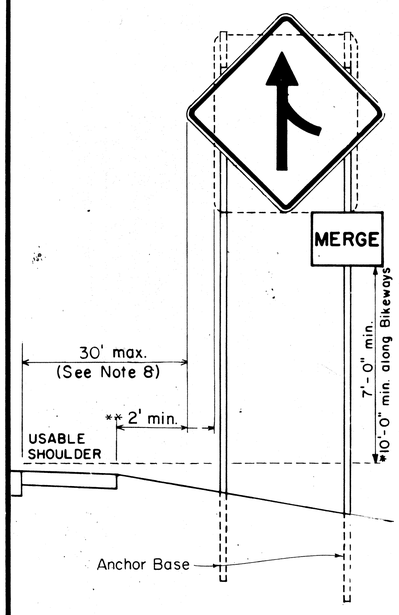
GENERAL NOTES

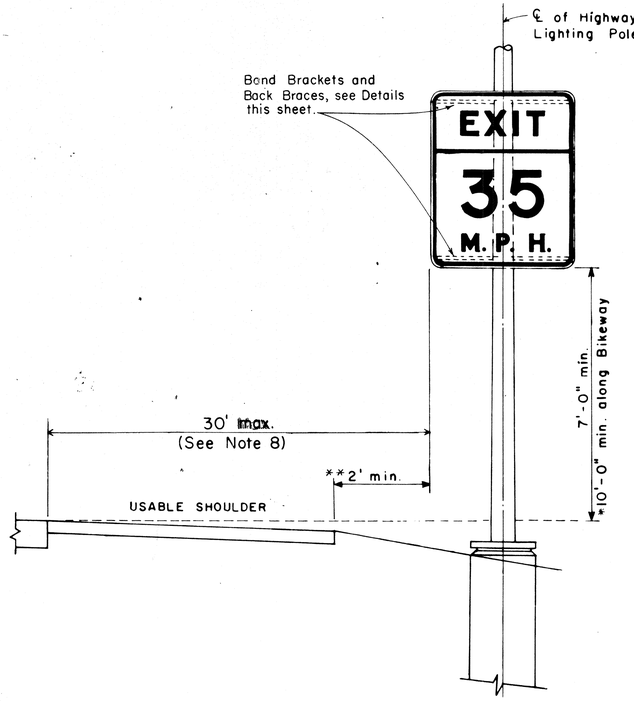
1. Signs shall be placed in conformance with positions shown and described in the "Manual on Uniform Traffic Control Devices for Streets and Highways", 1978, Part II, Section 2A-21, as amended, and as supplemented herein.
2. Signs 48" and wider or larger than 10 sq. ft. in area shall be mounted on two sign posts except as noted below.
3. Signs 48" and wider or larger than 10 sq. ft. in area may be mounted on other than two sign posts (i.e. on highway lighting poles) as follows:
   a. Signs larger than 10 sq. ft. and less than 28 sq. ft. in area shall be mounted with a minimum of two sets of band brackets and back braces.
   b. Signs larger than 28 sq. ft. in area shall be mounted with a minimum of three sets of band brackets and back braces.
4. All parking restriction signs with arrows shall be mounted 45° to the line of traffic flow.
5. Sign posts shall extend 3 1/2" above each sign, where required, for attachment of City and County street name signs.
6. (R) or (L) indicates right or left and shall be shown on the plans.

* 7. See plans for special details of signs along bikeways.

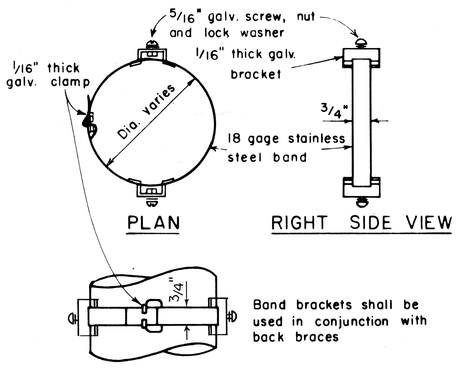
** 8. The minimum lateral distances shown are guidelines and shall be exceeded whenever possible. The Contractor shall place signs at the maximum practical lateral distance from the edge of the traveled way up to 30 feet and shall utilize protected locations whenever possible. Final locations of all signs shall be approved by the Engineer.

9. Signs in medians shall be placed at midpoint of median up to a maximum distance of 30 feet from the edge of traveled way. When appropriate, signs for opposing directions shall be placed back to back.
10. Anchor bases shall be installed for all signpost installations, unless otherwise shown or directed. See sheets DT 100A and DT 100B.





HEIGHT AND LATERAL LOCATION OF SIGNS TYPICAL INSTALLATION

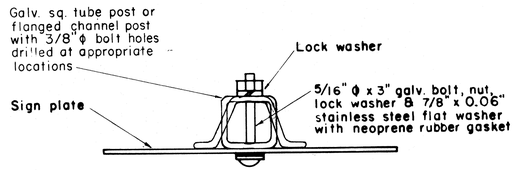


PLAN

RIGHT SIDE VIEW

LEFT SIDE VIEW

BAND BRACKET



GALVANIZED SQUARE TUBE OR FLANGED CHANNEL POST

TYPICAL MOUNTING DETAILS

NOT TO SCALE

NO.	REVISION	APPROVED BY	DATE
1	Supercedes Sht. DT-100 approved 12/30/69	H.T.	11/15/77
2	Revised depth of signpost	H.T.	5/8/79
3	Added Notes No. 8 & No. 9	H.T.	5/15/79
4	Revised Gen. Note #4 & Mounting Details	H.T.	4/23/80
5	Revised General Notes, Lateral Sign Locations and Mounting Details	H.T.	5/15/81
6	Added Note 10. Minor revisions to notes and details.	L.F.	7/22/82

APPROVAL RECOMMENDED:
Eiichi Tanaka — TRAFFIC ENGINEER — 11/10/77 DATE

APPROVED:
Richard S. Sakaishi — ASSISTANT CHIEF, ENGINEERING — 11/15/77 DATE

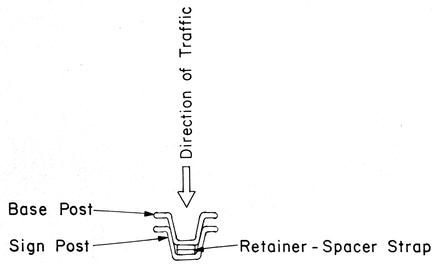
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
MISCELLANEOUS SIGN DETAILS

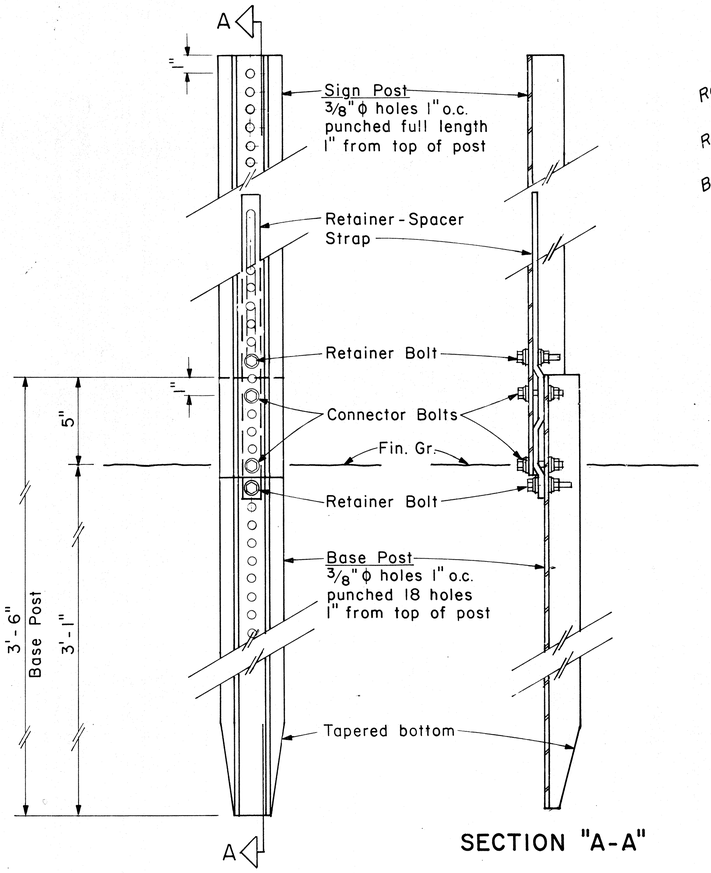
Not to scale — June, 1977

SHEET NO. OF SHEETS DT 100

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



TOP VIEW

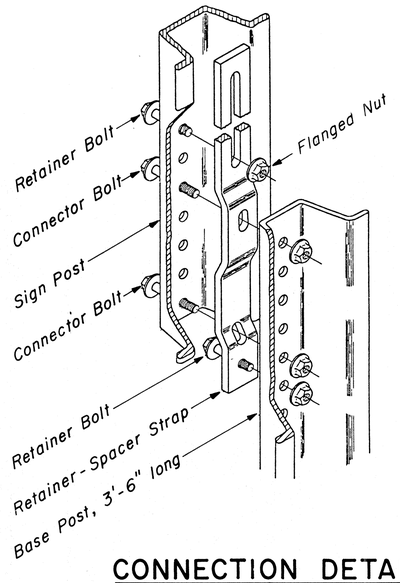


BACK VIEW

SECTION "A-A"

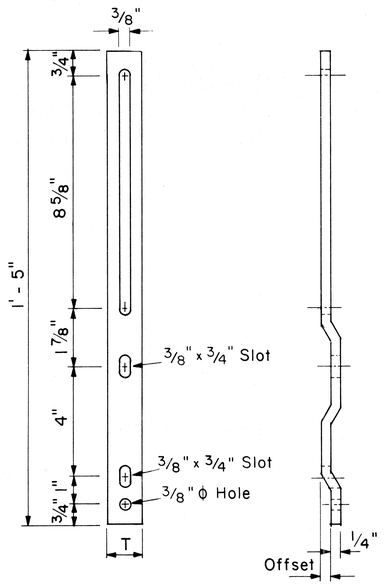
ANCHOR BASE DETAIL

Scale: 3" = 1'-0"



CONNECTION DETAIL

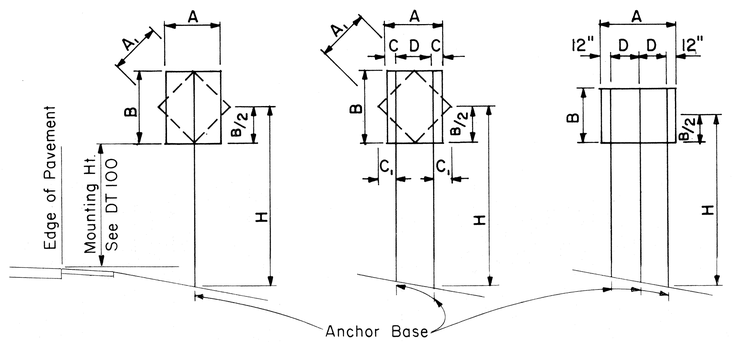
Not to Scale



RETAINER-SPACER STRAP

Not to Scale

RETAINER-SPACER STRAP		
Post Size	T	Offset
2.50 lbs./ft.	1.00"	0.145"
4.00 lbs./ft.	1.12"	0.280"



1-POST
Sign area 10 sq. ft. and less

2-POST
Sign area greater than 10 sq. ft. or A = 48" - 60"

3-POST
A = greater than 60"

TYPICAL INSTALLATION

Not to Scale

FLANGED CHANNEL: 1-POST INSTALLATION								
Post Size	A x B x H (Factor)	H = Ground Level to Midpoint (ft.)						A x B (Area, sq. ft.)
		7	8	9	10	11	12	
2.50 lbs./ft.	57	8.14	7.13	6.33	5.70	5.18	4.75	
4.00 lbs./ft.	112	–	–	–	–	–	9.33	

FLANGED CHANNEL: 2-POST INSTALLATION								
Post Size	A x B x H (Factor)	H = Ground Level to Midpoint (ft.)						A x B (Area, sq. ft.)
		7	8	9	10	11	12	
2.50 lbs./ft.	124	17.71	15.50	13.77	12.40	11.27	10.33	
4.00 lbs./ft.	241	34.43	30.13	26.78	24.10	21.91	20.08	

FLANGED CHANNEL: 3-POST INSTALLATION								
Post Size	A x B x H (Factor)	H = Ground Level to Midpoint (ft.)						A x B (Area, sq. ft.)
		7	8	9	10	11	12	
2.50 lbs./ft.	187	26.71	23.38	20.78	18.70	17.00	15.58	
4.00 lbs./ft.	362	51.71	45.25	40.22	36.20	32.91	30.17	

WINDLOAD CHARTS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-10(2)	1984	10	34

A or A1	C	C1
36"	6"	–
48"	9"	19"
60"	12"	24"

NOTE: Frame stiffeners are required when D is greater than 24". See Gen. Note 4.

GENERAL NOTES

1. Sign posts and base posts shall be flanged channel type structural steel conforming to ASTM A 499 and galvanized in accordance with ASTM A 123.
   NOMINAL DIMENSIONS :
   2.50 lbs./ft. - 3.125" x 1.562"
   4.00 lbs./ft. - 3.500" x 1.750"
2. Retainer - Spacer Strap shall be AISI 1020 steel and galvanized in accordance with ASTM A 123.
3. Retainer and Connector Bolts shall be 5/16 - 18 UNC x 1.75" long hex. head, integral flange conforming to ASTM A 354 Grade BC. Nuts shall be 5/16 - 18 UNC hex. head, integral flange conforming to ASTM A 563 Grade D. All bolts and nuts shall be cadmium plated per Federal spec. QQP 416 B, Class 2, Type 2.
4. All accessories, fittings and stiffener details (as required) shall be submitted to Engineer for approval 20 days prior to installation.
5. For additional details see sht. DT 100.
6. Basic formulas for use with the windload charts:
   Factor = A x B x H
   Therefore, if sign area (A x B) is known,
   Maximum H = $\frac{\text{Factor}}{\text{sign area (A x B)}}$
   and if H is known,
   Maximum sign area (A x B) = $\frac{\text{Factor}}{H}$

APPROVAL RECOMMENDED:

Eiichi Tanaka — 9/21/82
TRAFFIC ENGINEER — DATE

APPROVED:

ASSISTANT CHIEF, ENGINEERING — DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

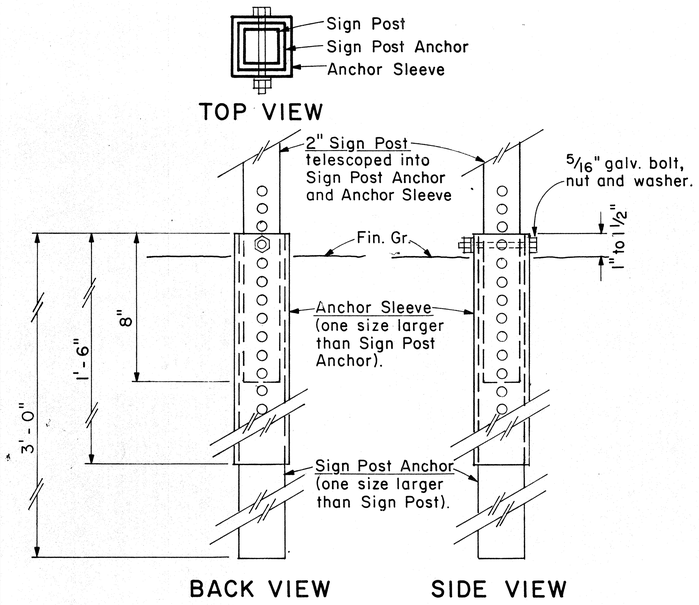
GALVANIZED FLANGED CHANNEL SIGN POST MOUNTING

Scale: As Shown — Date: Sept. 1982

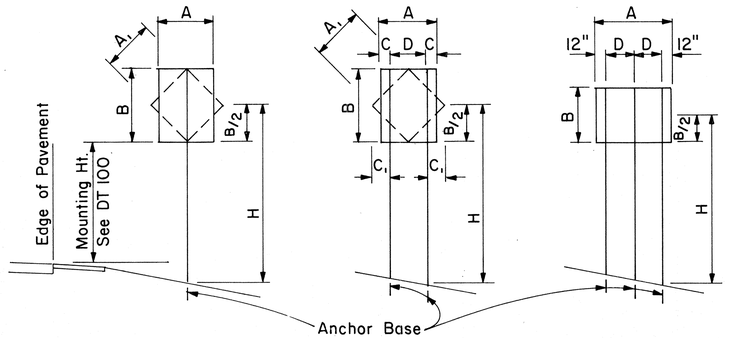
SHEET No. OF SHEETS DT 100A

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-10(2)	1984	11	34



2" SIGN POST INSTALLATION



1-POST
Sign area 10 sq. ft. and less

2-POST
Sign area greater than 10 sq. ft. or A = 48"- 60"

3-POST
A = greater than 60"

TYPICAL INSTALLATION

Not to Scale

A or A1	C	C1
36"	6"	-
48"	9"	19"
60"	12"	24"

NOTE: Frame stiffeners are required when D is greater than 24". See Gen. Note 2.

GENERAL NOTES

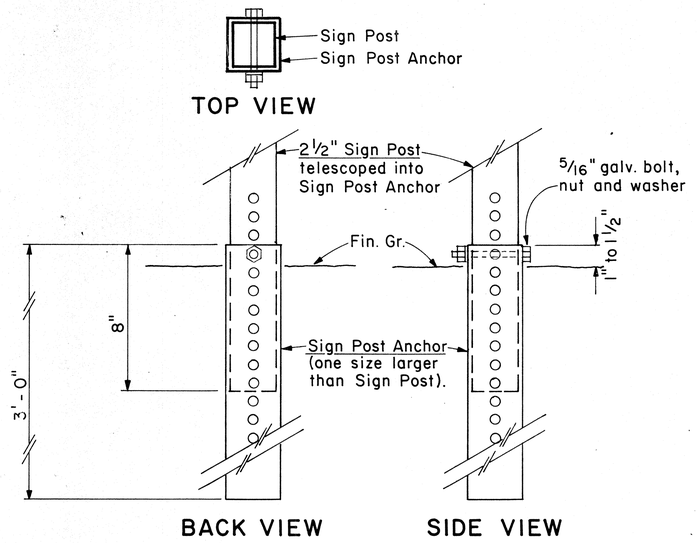
1. Square tube sign posts shall conform to Subsection 713.11(C) Square Tube Posts of the Specifications.
2. All accessories, fittings and stiffener details (as required) shall be submitted to Engineer for approval 20 days prior to installation.
3. Square tube posts shall be perforated with 7/16" ϕ holes, 1" o.c., 4 sides, along entire length of post.
4. All posts shall be 12 gage unless otherwise specified or shown on the plans.
5. For additional details see sht. DT 100.
6. Basic formulas for use with the windload charts:
   Factor = A x B x H
   Therefore, if sign area (A x B) is known,
   Maximum H = Factor / sign area (A x B)
   and if H is known,
   Maximum sign area (A x B) = Factor / H

SQUARE TUBE: 1-POST INSTALLATION								
Post Size	A x B x H (Factor)	H = Ground Level to Midpoint (ft.)						A x B (Area, sq. ft.)
		7	8	9	10	11	12	
2"	62	8.8	7.7	6.8	6.1	5.6	4.8	
2 1/2"	107	-	-	-	-	9.6	8.8	

SQUARE TUBE: 2-POST INSTALLATION								
Post Size	A x B x H (Factor)	H = Ground Level to Midpoint (ft.)						A x B (Area, sq. ft.)
		7	8	9	10	11	12	
2"	122	17.4	15.2	13.5	12.2	11.0	10.1	
2 1/2"	212	30.2	26.5	23.5	21.1	19.2	17.6	
2 1/2", 10 ga.	260	37.0	32.0	28.6	26.0	23.5	21.5	

SQUARE TUBE: 3-POST INSTALLATION								
Post Size	A x B x H (Factor)	H = Ground Level to Midpoint (ft.)						A x B (Area, sq. ft.)
		7	8	9	10	11	12	
2"	183	26.0	22.8	20.3	18.2	16.6	15.2	
2 1/2"	318	45.4	39.5	35.2	31.5	28.8	26.5	
2 1/2", 10 ga.	388	55.0	48.5	43.0	38.5	35.0	32.0	

WINDLOAD CHARTS



2 1/2" SIGN POST INSTALLATION

ANCHOR BASE DETAIL

Scale: 3" = 1'-0"

APPROVAL RECOMMENDED:

Eiichi Tanaka — 9/21/82
TRAFFIC ENGINEER — DATE

APPROVED:

Herbert R. Takeishi — 9/22/82
ASSISTANT CHIEF, ENGINEERING — DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

GALVANIZED SQUARE TUBE SIGN POST MOUNTING

Scale: As Shown — Date: Sept. 1982

SHEET No. OF SHEETS DT100B

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-10(2)	1984	12	34

R1-1 30"x30"
R1-1-A 36"x36"

R1-2 36"x36"x36"
R1-2-A 48"x48"x48"

R2-1(50) 24"x30"
R2-1(50)-A 48"x60"

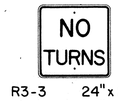
R2-2(40) 24"x24"
R2-2(40)-A 48"x48"

R2-4a(50/40) 24"x48"
R2-4a(50/40)-A 48"x96"

R2-5b(30) 24"x30"
R2-5b(30)-A 48"x60"

R3-1 24"x24"
24"x18"
R3-1-A 48"x48"
48"x36"

R3-2 24"x24"
24"x18"
R3-2-A 48"x48"
48"x36"



R3-3 24"x24"
R3-3-A 48"x48"

R3-4 24"x24"
24"x18"
R3-4-A 4:"x4F"
48"x36"

R3-5(L) 30"x36"
R3-5(L)-A 48"x60"


R3-6(L) 30"x36"
R3-6(L)-A 48"x60"

R3-7(R) 30"x30"
R3-7(R)-A 48"x48"

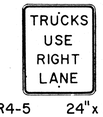
R3-8(L) 30"x30"
R3-8(L)-A 36"x36"
R3-8(L)-B 48"x48"

R3-9 24"x30"

R4-1 24"x30"

R4-2 24"x30"

R4-3 24"x30"
R4-3-A 48"x60"

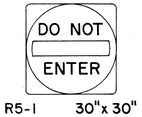


R4-5 24"x30"

R4-6(500) 24"x30"

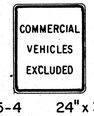
R4-7 24"x30"
24"x18"

R4-8 24"x30"
24"x18"



R5-1 30"x30"
R5-1-A 48"x48"

R5-2 24"x24"
24"x18"



R5-4 24"x30"

R5-6 24"x24"
24"x18"

R5-9 36"x24"

R6-1(R) 36"x12"

R6-2(R) 18"x24"

R7-1 12"x18"
R7-1-A 24"x30"

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

R7-1.7(R) 12"x18"

R7-108 12"x18"

R7-201 12"x6"
R7-201-A 24"x12"

R8-1 24"x30"

R8-2 24"x30"

R8-3 24"x30"

R8-4 30"x24"
R8-4-A 48"x36"

R8-5 24"x30"

R8-6 24"x30"

R8-7 30"x24"
R8 7-A 48"x36"

R9-1 18"x24"

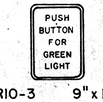
R9-2 12"x18"

R9-3 12"x18"

R9-4 18"x24"

R10-1 12"x18"

R10-2 12"x18"



R10-3 9"x12"

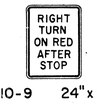
R10-4 9"x12"

R10-5 24"x30"

R10-6 24"x36"

R10-7 24"x30"

R10-8 24"x30"

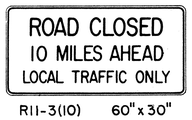


R10-9 24"x30"

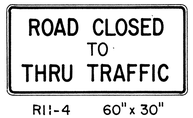
R10-10 24"x30"

R11-1 24"x30"

R11-2 48"x30"



R11-3(10) 60"x30"



R11-4 60"x30"

R12-1(10) 24"x30"

GENERAL NOTES

1. Sign details shall conform to the FHWA publications "Manual on Uniform Traffic Control Devices for Streets and Highways," 1971, and "Standard Highway Signs," 1972, and as amended.
2. All regulatory signs shall be reflectorized unless otherwise specified.
3. All regulatory signs shall have $\frac{3}{8}$" bolt holes drilled at appropriate locations.
4. Numerals in ( ) indicates numerals to be inserted for sign message. (R) or (L) indicates right or left.
5. All signs shall be erected without educational plaques unless called for in the plans.

APPROVAL RECOMMENDED:
Eiichi Tanaka 3/17/72
TRAFFIC ENGINEER DATE

APPROVED:
Hideo Sakai 3-20-72
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Supersedes Sht. DT 101 Approved 12-30-69	H.I.	3/20/72
2	Revised General Note 1.	H.I.	10/12/74
3	Added General Note 5	H.I.	8/3/78

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

REGULATORY SIGNS

NOT TO SCALE

SHEET No. OF SHEETS DT 101

12

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

K&E IMPERIAL LA 3207

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII *	HAW.	ER-10(2)	1984	13	34

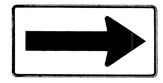
W1-1(R) 30"x30"
W1-1(R)-A 48"x48"

W1-2(R) 30"x30"
W1-2(R)-A 48"x48"

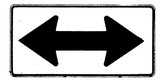
W1-3(R) 30"x30"
W1-3(R)-A 48"x48"

W1-4(R) 30"x30"
W1-4(R)-A 48"x48"

W1-5(R) 30"x30"
W1-5(R)-A 48"x48"



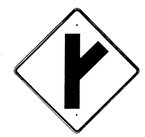
W1-6 48"x24"



W1-7 48"x24"

W2-1 30"x30"
W2-1-A 48"x48"

W2-2 30"x30"
W2-2-A 48"x48"



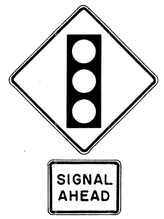
W2-3(R) 30"x30"
W2-3(R)-A 48"x48"

W2-4 30"x30"
W2-4-A 48"x48"

W2-5 30"x30"
W2-5-A 48"x48"

W3-1 30"x30"
W3-1-A 36"x36"

W3-2 30"x30"
W3-2-A 36"x36"



W3-3 36"x36"
24"x18"

W4-1(R) 30"x30"
24"x18"
W4-1(R)-A 48"x48"
24"x18"

W4-2(R) 36"x36"
W4-2(R)-A 48"x48"

W5-1 36"x36"

W5-2 30"x30"
W5-2-A 36"x36"

W5-3 36"x36"

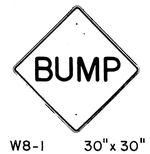
W6-1 36"x36"
24"x18"

W6-2 36"x36"
24"x18"

W6-3 30"x30"
24"x18"
W6-3-A 36"x36"
24"x18"
W6-3-B 48"x48"
24"x18"

W7-1 30"x30"
24"x18"
W7-1-A 36"x36"
24"x18"

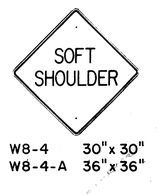
W7-2 24"x18"



W8-1 30"x30"
W8-1-A 36"x36"

W8-2 30"x30"
W8-2-A 36"x36"

W8-3 30"x30"
W8-3-A 36"x36"



W8-4 30"x30"
W8-4-A 36"x36"

W8-5 30"x30"
24"x18"
W8-5-A 36"x36"
24"x18"

W9-1(R) 30"x30"
W9-1(R)-A 36"x36"
W9-1(R)-B 48"x48"

W9-2(L) 36"x36"
W9-2(L)-A 48"x48"

W10-1 36" Diameter

W11-1 30"x30"
24"x18"
W11-1-A 36"x36"
24"x18"

W11-2 30"x30"
24"x18"
W11-2-A 36"x36"
24"x18"

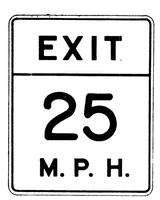
W11-4 30"x30"
24"x18"
W11-4-A 36"x36"
24"x18"

W11-5 30"x30"
24"x18"
W11-5-A 36"x36"
24"x18"

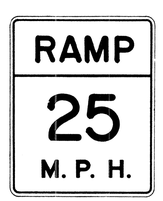
W12-1 24"x24"
W12-1-A 36"x36"
W12-1-B 48"x48"

W12-2(12'-6") 36"x36"
24"x18"

W13-1(25) 18"x18"
W13-1(25)-A 24"x24"



W13-2(25) 48"x60"



W13-3(25) 48"x60"

W14-1 30"x30"

W14-3 36"x48"x48"

NOTE

1. All signs shall be erected without educational plaques unless called for in the plans.

GENERAL NOTES

1. Sign details shall conform to the FHWA publications "Manual on Uniform Traffic Control Devices for Streets and Highways," 1971, and "Standard Highway Signs," 1972, and as amended.
2. All warning signs shall be reflectorized unless otherwise specified.
3. All warning signs shall have 3/8" bolt holes drilled at appropriate locations.
4. Numerals in ( ) indicates numerals to be inserted for sign message. (R) or (L) indicates right or left.
5. Signs prefixed with "CW" on the plans shall indicate orange and black construction signs, and shall be reflectorized.

APPROVAL RECOMMENDED:
Eiichi Tanaka 3/17/82
TRAFFIC ENGINEER DATE

APPROVED:
Walter Takeshita 3-30-82
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Supersedes Sht. DT 102 Approved 12-30-69	H.T.	3/20/12
2	Revised General Note 1	H.T.	10/10/74
3	Revised General Note 5	MF	9-16-75
4	Revised General Note 5	H.T.	9-14-76
5	Added Note 1	H.T.	11-9-79

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

WARNING SIGNS

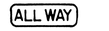
NOT TO SCALE

SHEET No. OF SHEETS DT 102

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

K&E IMPERIAL LA 320

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-10(2)	1984	14	34



R1-4 18"x 6"

R2-5d(35) 24" x 30"
R2-5d(35)-A 48" x 60"

4" Series D
4" Series C
3" Series D
5" Series C
R2-10 24"x 30"

R3-9b 24"x36"

R7-107(R) 12" x 24"

R7-8 12"x18"
R7-8-A 24"x30"

4" Series C
1½"
R8-3a 24" x 24"
24" x 18"
R8-3a-A 48"x 48"

R9-3a 18"x 18"
18"x 12"
R9-3a-A 24"x24"
24"x 18"

R9-3b(R) 18" x 12"

R9-3b(L) 18" x 12"

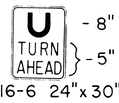
R10-11a 24"x 30"

4" Series C
R16-1 24"x30"

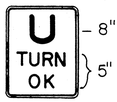
4" Series D
3" Series D
2" Series D
3" Series D
R16-3 18"x 24"

R16-4 18"x24"

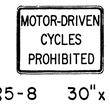
3" Series C
4" Series E
R16-5 36"x 42"



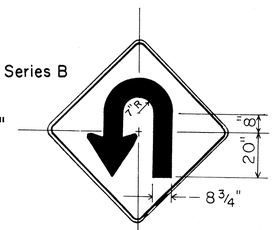
8" Series F
5" Series D
R16-6 24"x30"



8" Series F
5" Series D
R16-7 24"x30"



4" Series B
R5-8 30"x24"

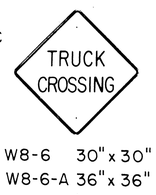


W17-1(L) 60"x 60"

W3-1a 36"x 36"
24 x 18"
W3-1a-A 48"x 48"
24"x 18"

W3-2a 36"x 36"
24"x 18"
W3-2a-A 48"x 48"
24"x 18"

6" Series C
W3-4 48"x 48"



W8-6 30"x 30"
W8-6-A 36"x 36"

6" Series E
W9-3(L) 48"x 48"

W11-7 36"x 36"
24"x 18"
W11-7-A 48"x 48"
24"x 18"

W11-8 36"x 36"
24"x 18"
W11-8-A 48"x 48"
24"x 18"


W11-9 36"x 36"
W11-9-A 48"x 48"

W14-4 36"x 36"
W14-4-A 48"x 48"

4" Series C
W15-1 24"x 24"

W15-2 24"x 24"

8" Series E
CW16-1(½) 60"x 60"

8" Series E
W18-1 48" x 60"

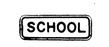

S1-1 36"x36"


S2-1 36"x36"

S3-1 30"x30"

S4-1 24"x10"

S4-2 24"x10"



S4-3 24"x8"

S4-4 24"x10"

7" Series D
CW23-4 48"x48"

4" Series C
R18-1 24"x18"

General Notes

1. Sign details shall conform to the latest editions of the following FHWA publications:
   a. "Standard Alphabets for Highway Signs," and as amended.
   b. "Standard Highway Signs," and as amended,
   c. "Manual on Uniform Traffic Control Devices for Streets and Highways," and as amended,
2. All signs shall be reflectorized with reflective sheeting, unless otherwise specified.
3. All signs shall have 3/8" bolt holes drilled at appropriate locations.
4. Numerals in ( ) indicate numerals to be inserted for sign message. (R) or (L) indicates right or left.
5. Signs prefixed with "CW" on the plans shall indicate orange and black construction signs, and shall be reflectorized with reflective sheeting.
6. All signs shall be erected without educational plaques unless called for in the plans.

APPROVAL RECOMMENDED:
Euichi Tanaka — TRAFFIC ENGINEER — 5/2/78 DATE

APPROVED:
Herbert S. Sakaihara — ASSISTANT CHIEF, ENGINEERING — 5/3/78 DATE

NO.	REVISION	APPROVED BY	DATE
1	Supersedes Sht. DT103 approved 3/20/72	H.F.	5/3/78
2	Added General Note 6	H.F.	11/9/78

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

MISCELLANEOUS SIGNS

NOT TO SCALE DATE: MAY, 1978

SHEET No. OF SHEETS DT 103

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-10(2)	1984	15	34

CW20-1a 48"x48"

CW20-2d 48"x48"

CW20-3b 48"x48"

CW20-4d 48"x48"

CW20-5d(L) 48"x48"

CW20-7c 48"x48"

CW21-1 30"x30"

CW21-2 30"x30"

CW21-3 36"x36"

CW21-4 36"x36"

CW21-5 30"x30"

CW21-6 30"x30"

CW22-1b 48"x48"

CW22-2 42"x36"

CW22-3 42"x36"

CG20-1(5) 60"x36"

CG20-2 60"x24"

CM4-9(R) 30"x24"

CM4-10(R) 48"x18"

CG20-4 36"x18"

CW23-1 36"x36"

CW23-2b 48"x48"

CW23-3(R) 48"x48"

GENERAL NOTES

1. Sign details shall conform to the FHWA publications "Manual on Uniform Traffic Control Devices for Streets and Highways," 1971, and "Standard Highway Signs,"1972, and as amended.
2. All construction signs shall be reflectorized.
3. All construction signs shall have $^{3}/_{8}$" bolt holes drilled at appropriate locations.
4. Numerals in ( ) indicates numerals to be inserted for sign message. (R) or (L) indicates right or left.
5. For "CW" series signs, suffixes a,b,c and d are as follows: a-1500 FT, b-1000 FT, c-500 FT and d-AHEAD.

APPROVAL RECOMMENDED:
Eiichi Tanaka — TRAFFIC ENGINEER — 3/21/72 DATE

APPROVED:
Walter Zalesky — ASSISTANT CHIEF, ENGINEERING — 3/23/72 DATE

NO.	REVISION	APPROVED BY	DATE
1	Supersedes Sht. DT 104 Approved 12-30-69	H.T.	3/23/72
2	Revised General Note 1	H.T.	10/10/74
3	Revised General Note 2	MH	9-16-75
4	Revised General Note 2 and sign CG20-1(5)	H.T.	9-14-76

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

CONSTRUCTION SIGNS

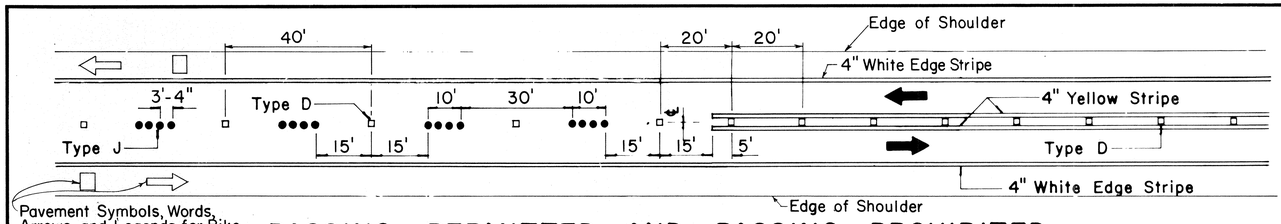
NOT TO SCALE

SHEET No. OF SHEETS DT 104

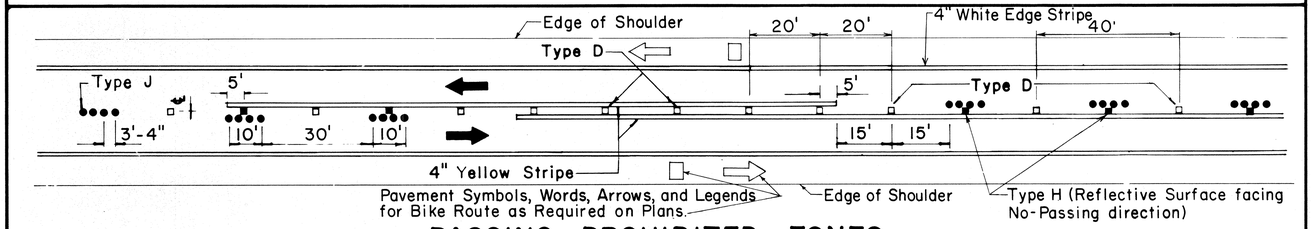
ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | NOTE BOOK | QUANTITIES BY | CHECKED BY | DATE | No.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-10(2)	1984	16	34

TWO - LANE

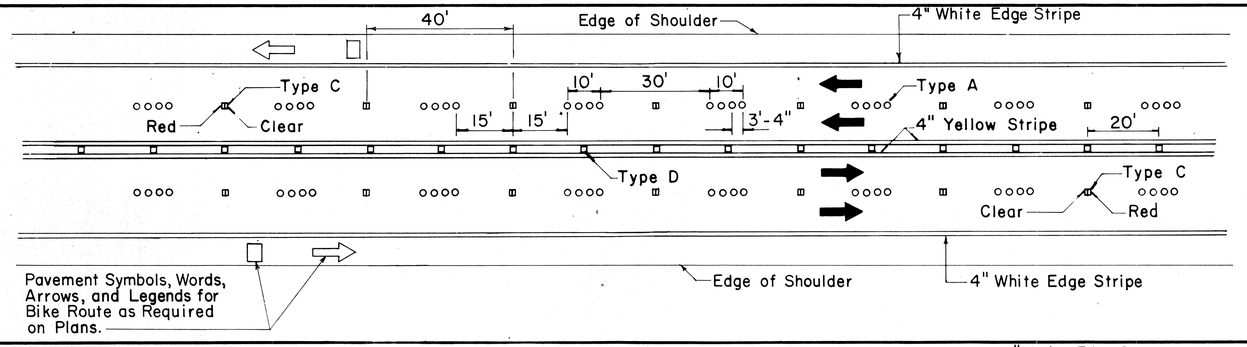


PASSING PERMITTED AND PASSING PROHIBITED

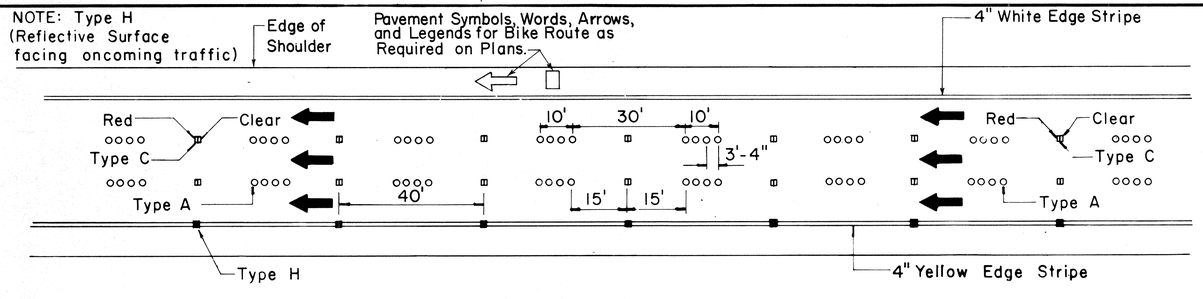


PASSING PROHIBITED ZONES

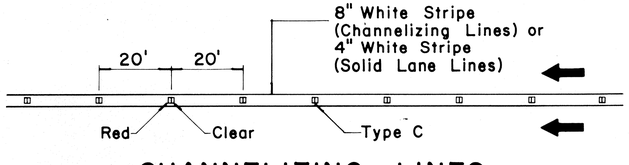
MULTI - LANE



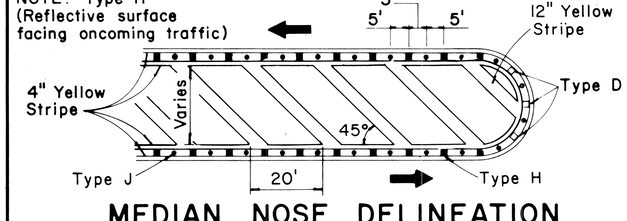
DIVIDED HIGHWAY AND FREEWAY



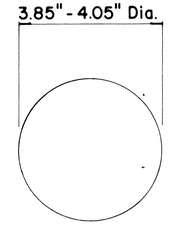
MISCELLANEOUS



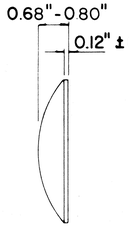
CHANNELIZING LINES OR SOLID LANE LINES

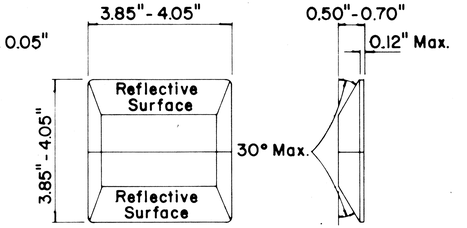


MEDIAN NOSE DELINEATION



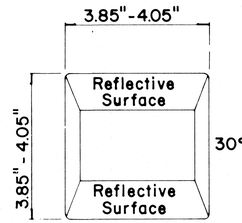
TYPE A
NON - REFLECTIVE WHITE MARKER



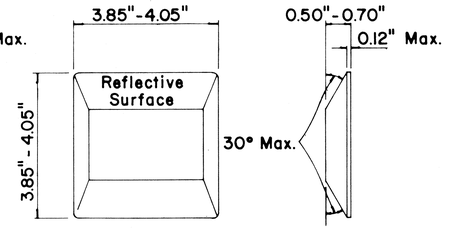


TYPE C
RED - CLEAR REFLECTIVE MARKER

TYPE J
NON - REFLECTIVE YELLOW MARKER



TYPE D
TWO - WAY YELLOW REFLECTIVE MARKER



TYPE H
ONE - WAY YELLOW REFLECTIVE MARKER

GENERAL NOTES

1. Pavement marking and striping shall conform to the latest "Manual on Uniform Traffic Control Devices for Streets and Highways," and as amended.

2. Layout and installation of pavement marking and striping shall be done by the Contractor. The Contractor shall check the layouts with the Engineer prior to performing work.

LEGEND

- ○ Type A
- ⊞ Type C
- □ Type D
- ■ Type H
- ● Type J

APPROVAL RECOMMENDED:

Eiichi Tanaka — TRAFFIC ENGINEER — 7/21/78 DATE

APPROVED:

Herbert T. Matsuda — ASSISTANT CHIEF, ENGINEERING — 7/24/78 DATE

No.	REVISION	APPROVED BY	DATE
1	Supercedes DT 300 approved 11/18/71.	H.T.	7/24/78
2	Delete Type A Markers from Bike Route Delineation.	H.T.	10/15/79

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
RAISED PAVEMENT MARKERS AND STRIPING

Not to Scale — July 1978

SHEET No. OF SHEETS DT 300

16

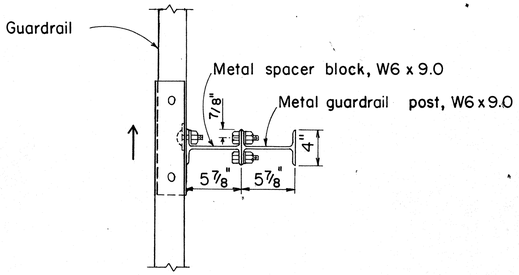
ORIGINAL PLAN	SURVEY PLOTTED BY	DRAWN BY	TRACED BY	DESIGNED BY	QUANTITIES BY	CHECKED BY	DATE
NOTE BOOK							
No.							

K+E IMPERIAL LA 1207

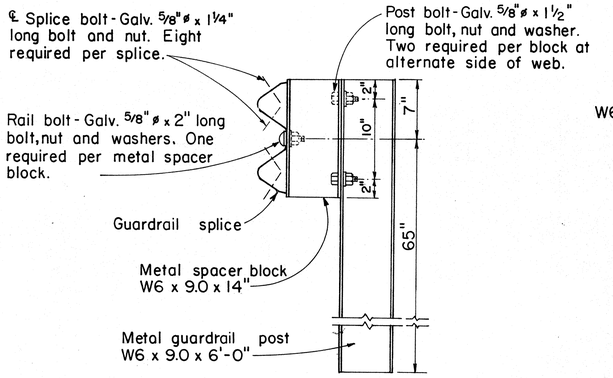
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-10(2)	1984	17	34

GENERAL NOTES

1. Both of the alternate type posts may be used on any one project however, only one type of post shall be used in any single run of guardrail.
2. All hardware, posts and blocks shall be galvanized. No punching, drilling or cutting will be permitted after galvanizing.
3. Connection details for bent plate post and block shall be similar to the details shown for structural shape post, and block.
4. Where conditions require, special post lengths in increments of 6 inches may be specified.
5. For details of rail elements, bolts and nuts, see sheet DT 501.



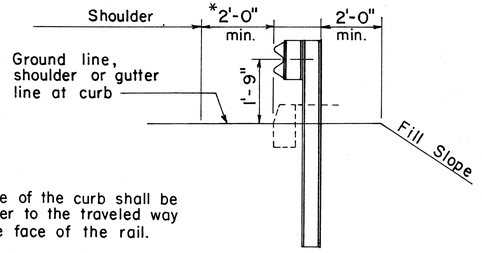
PLAN



ELEVATION

SINGLE METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK

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

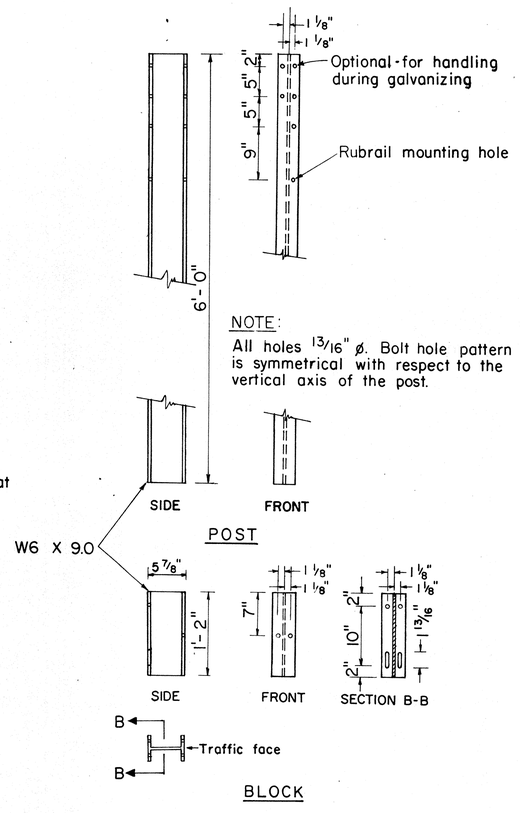


Note:
The face of the curb shall be no closer to the traveled way than the face of the rail.

AT SHOULDER SECTION

TYPICAL METAL GUARDRAIL DETAIL

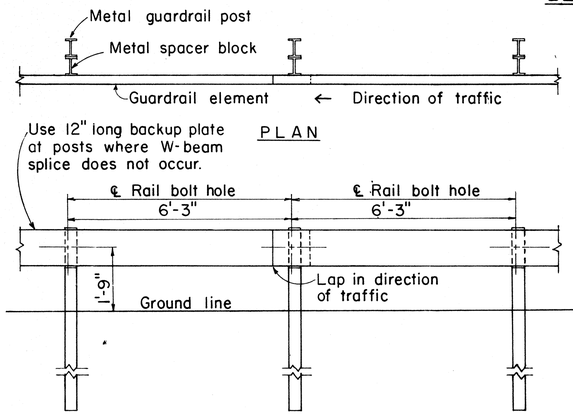
SCALE: 1/2" = 1'-0"



NOTE:
All holes 13/16" ø. Bolt hole pattern is symmetrical with respect to the vertical axis of the post.

STRUCTURAL SHAPE POST AND BLOCK

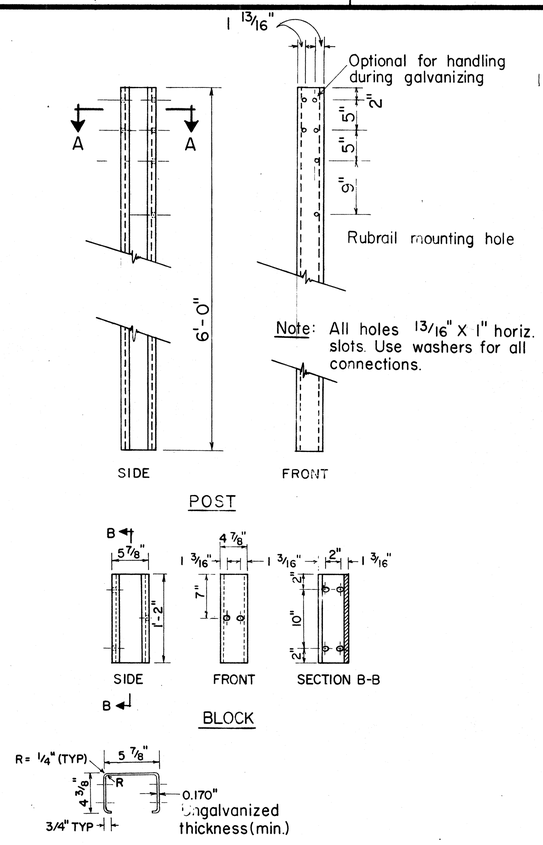
SCALE: 1" = 1'-0"



ELEVATION

METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK

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



Note: All holes 13/16" X 1" horiz. slots. Use washers for all connections.

SECTION A-A
N.T.S.

BENT PLATE POST AND BLOCK

SCALE: 1" = 1'-0"

APPROVAL RECOMMENDED:
Eiichi Tanaka — 9/7/82
TRAFFIC ENGINEER — DATE

APPROVED:
Richard Rafeish — 9/22/82
ASSISTANT CHIEF, ENGINEERING — DATE

NO.	REVISION	APPROVED BY	DATE
1	Supersedes sht. DT 500 approved 12/30/69.	H.F.	9/22/82

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

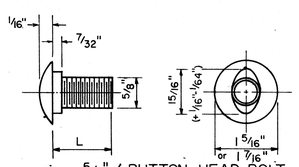
STANDARD DETAILS
METAL GUARDRAIL

Scale: As Shown — July, 1982

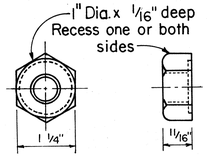
SHEET No. OF SHEETS DT 500

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-10(2)	1984	18	34



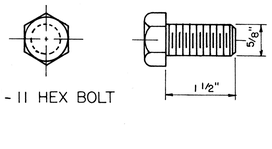
5/8" ø BUTTON HEAD BOLT



5/8" ø RECESS NUT

L	Thread Length	Intended Use
1 1/4"	Full length thread	Splice rail elements
2"	1 1/2" min. thread len.	Fasten rails to posts

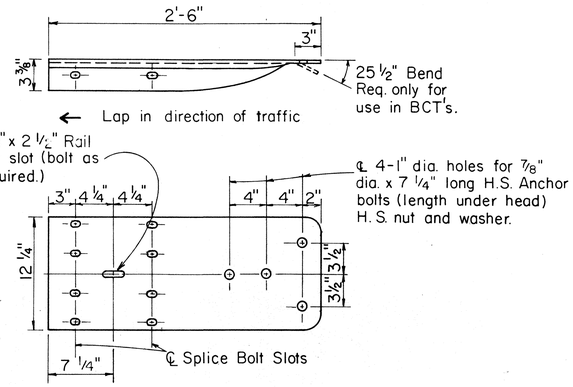
5/8" BUTTON HEAD BOLT AND RECESS NUT
Scale: NTS



5/8"-11 HEX BOLT

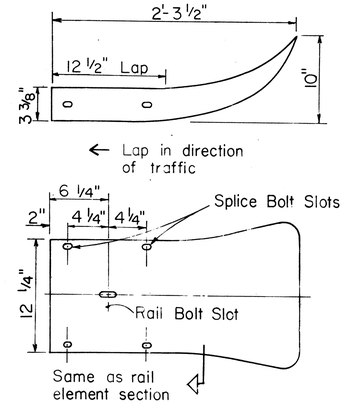
5/8"-11 HEX NUT

5/8" HEX POST BOLT AND NUT
Scale: N.T.S.



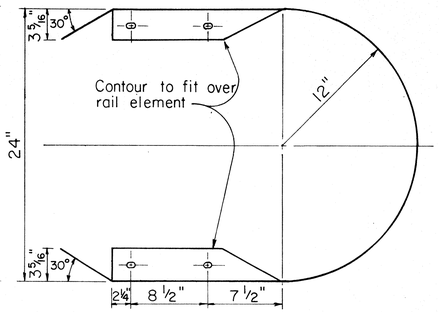
← Lap in direction of traffic

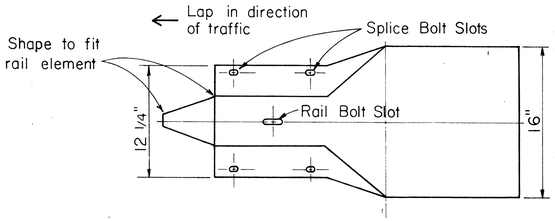
W BEAM TERMINAL CONNECTOR
Scale: 1 1/2" = 1'-0"



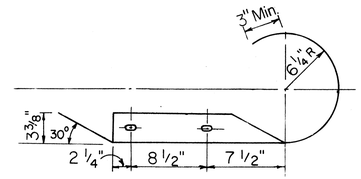
← Lap in direction of traffic

W BEAM END SECTION (FLARED)
Scale: 1 1/2" = 1'-0"

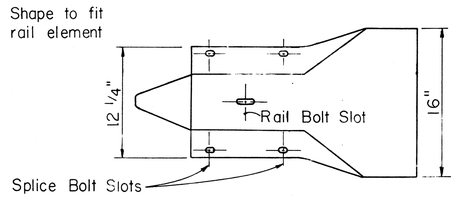




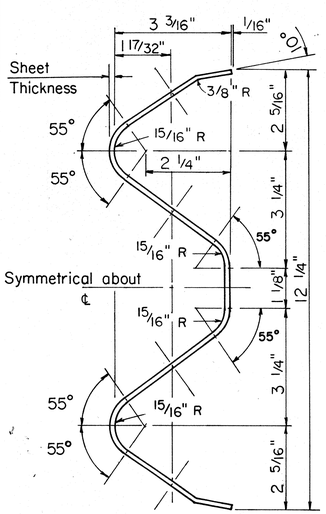
W BEAM END SECTION (BUFFER)
Scale: 1 1/2" = 1'-0"



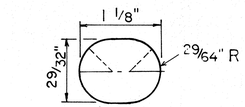
← Lap in direction of traffic



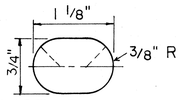
W BEAM END SECTION (ROUNDED)
Scale: 1 1/2" = 1'-0"



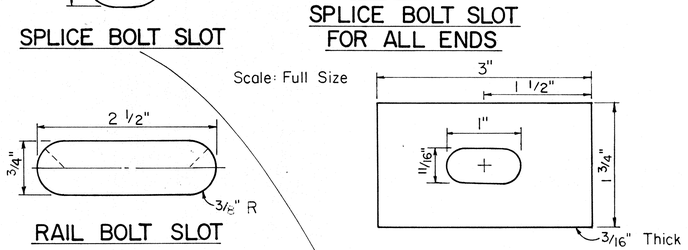
RAIL ELEMENT SECTION
Scale: 6" = 1'-0"



SPLICE BOLT SLOT

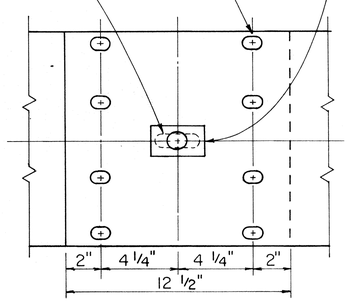


SPLICE BOLT SLOT FOR ALL ENDS



RAIL BOLT SLOT

RAIL BOLT WASHER



RAIL SPLICE
Scale: 3" = 1'-0"

APPROVAL RECOMMENDED:
Eiichi Tanaka — TRAFFIC ENGINEER — 9/20/82 DATE

APPROVED:
Herbert Matsushima — ASSISTANT CHIEF, ENGINEERING — 9/22/82 DATE

NO.	REVISION	APPROVED BY	DATE
1	Supersedes sht. DT 501 approved 12/30/69	H.F.	9/22/82

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

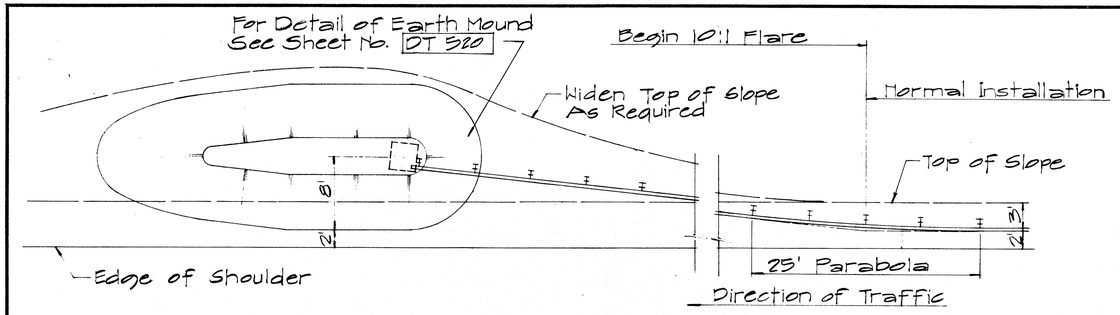
STANDARD DETAILS
METAL GUARDRAIL

Scale: As Noted — July, 1982

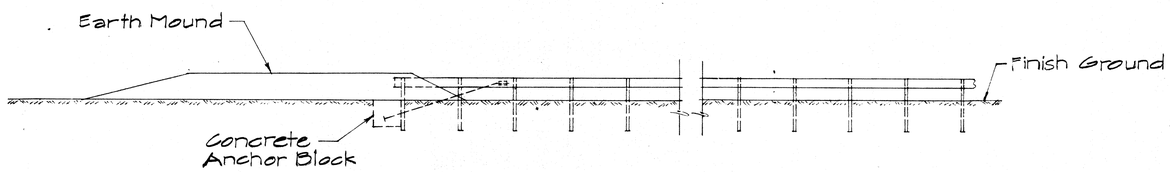
SHEET NO. OF SHEETS DT 501

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-10(2)	1984	19	34



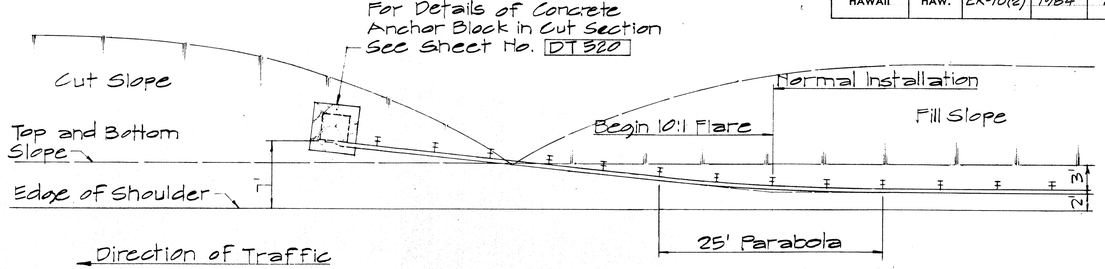
PLAN



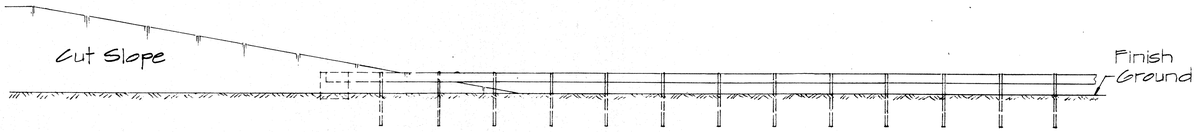
ELEVATION

TYPE "D" FLARE

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



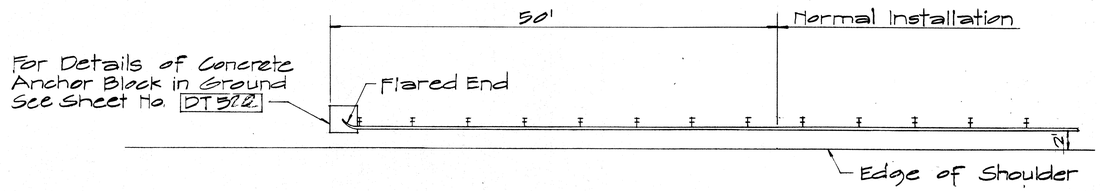
PLAN



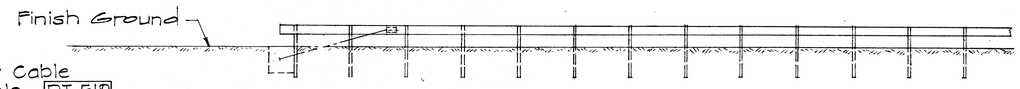
ELEVATION

TYPE "F" FLARE

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



PLAN

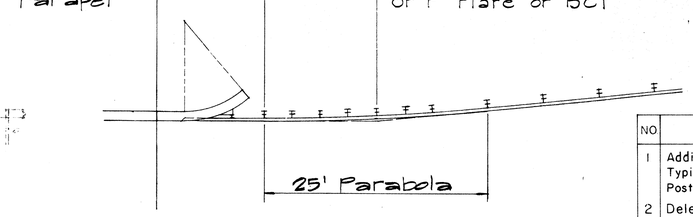


NOTE:
For detail of Breakaway Cable
Terminal (BCT) See Sheet No. DT 517

ELEVATION

TYPE "G" FLARE

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



TYPICAL LAYOUT PLAN OF
END POST CONNECTION

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

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

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

NO	REVISION	APPROVED BY	DATE
1	Additional Posts Added to Typical Layout Plan Of End Post Connection	H.C.	4-12-72
2	Delete Type "B" Flare and Type "E" Flare	H.C.	6-15-78

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS TRAILING END FLARE - ONE & TWO WAY ROADWAY

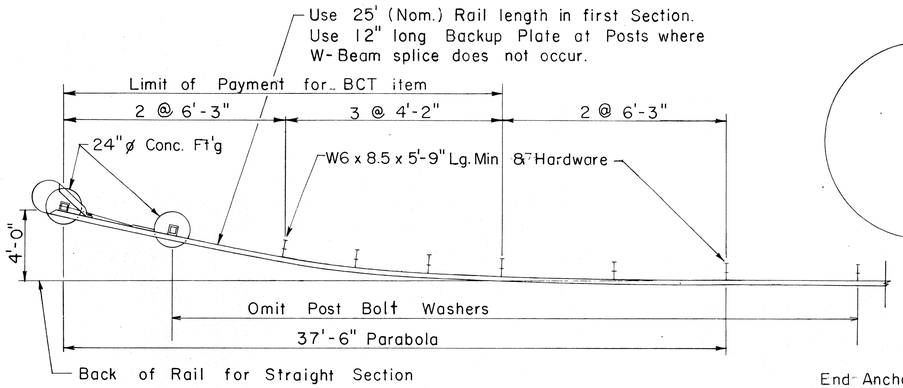
Scale: As Noted — April 1969

SHEET No. OF SHEETS | DT 517

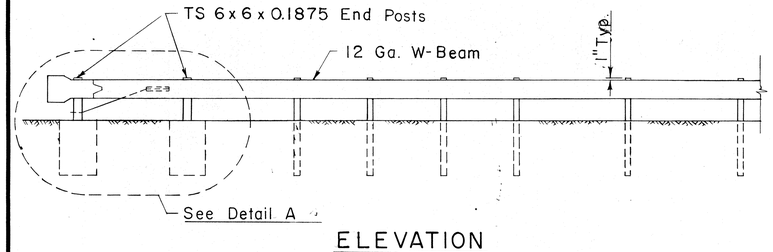
ORIGINAL PLAN		DATE
	SURVEY PLOTTED BY	
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

PRINTED ON NO. 1000H CLEARPRINT

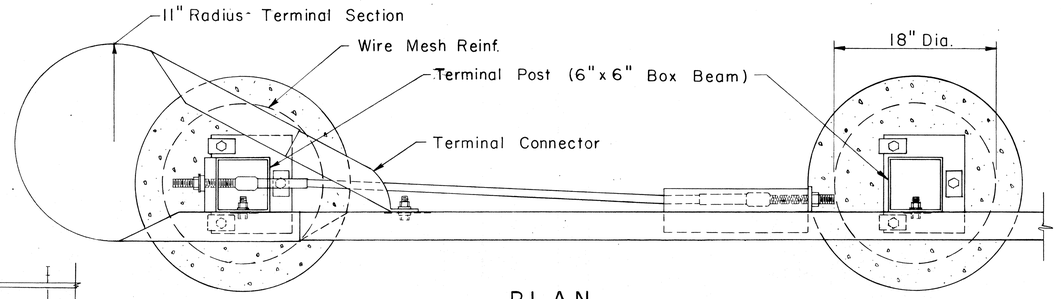
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-10(2)	1984	20	34



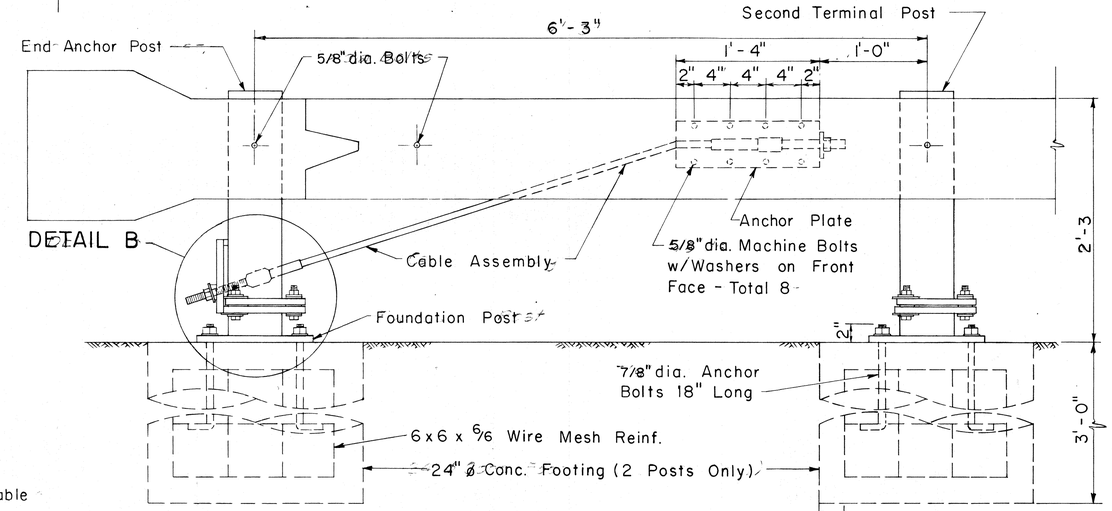
PLAN
Scale: 1/4" = 1'-0"



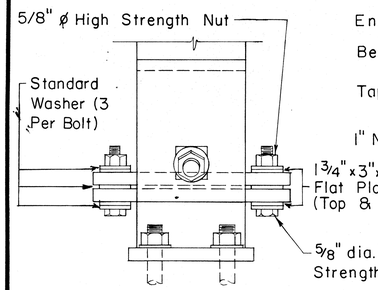
ELEVATION
Scale: 1/4" = 1'-0"



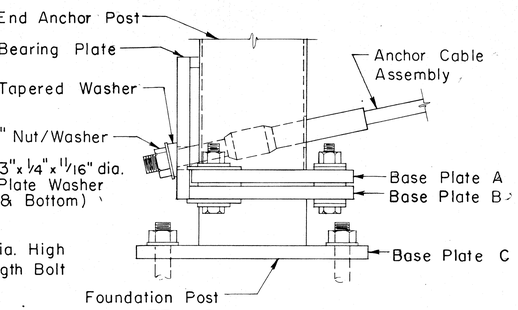
PLAN



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

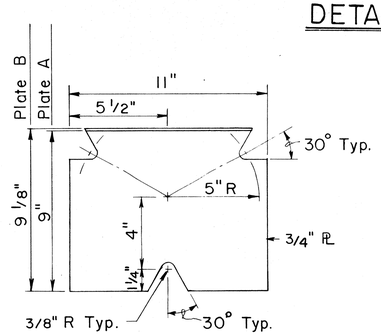


SIDE ELEVATION

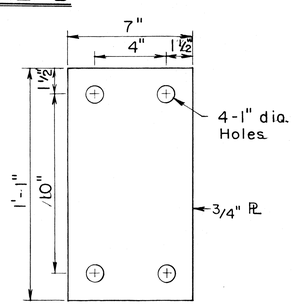


FRONT ELEVATION

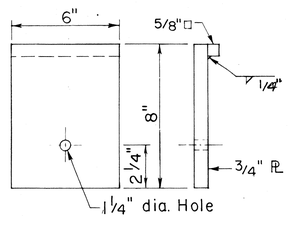
DETAIL B



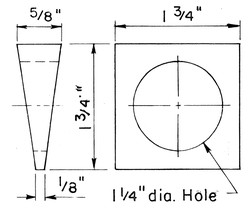
BASE PLATES A & B
Scale: 3" = 1'-0"



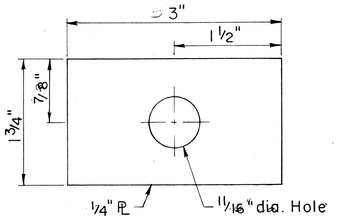
BASE PLATE C
Scale: 3" = 1'-0"



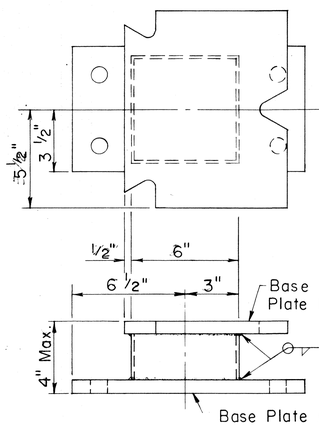
BEARING PLATE
Scale: 3" = 1'-0"



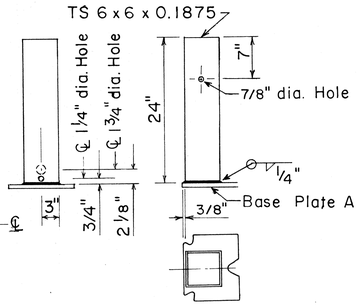
TAPERED WASHER
Scale: Full Size



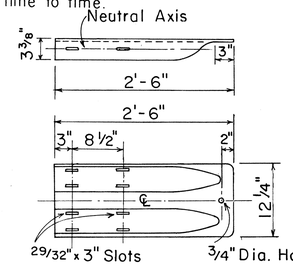
FLAT PLATE WASHER
Scale: Full Size



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



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



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

NOTES:

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

APPROVAL RECOMMENDED:

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

APPROVED:

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

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAIL

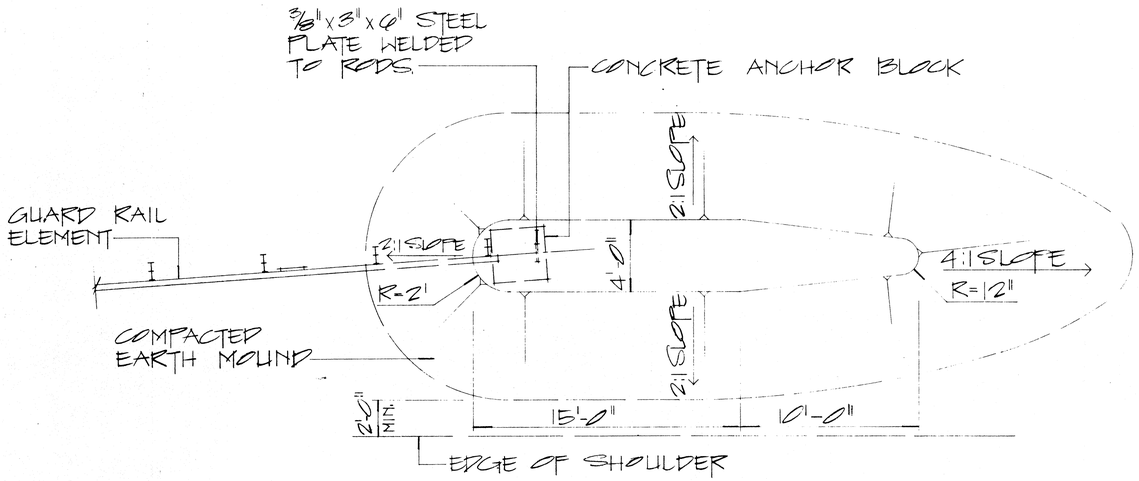
BREAKAWAY CABLE TERMINAL (BCT)

Scale: As Shown — Date: June 1978

SHEET No. 20 OF SHEETS DT 519

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

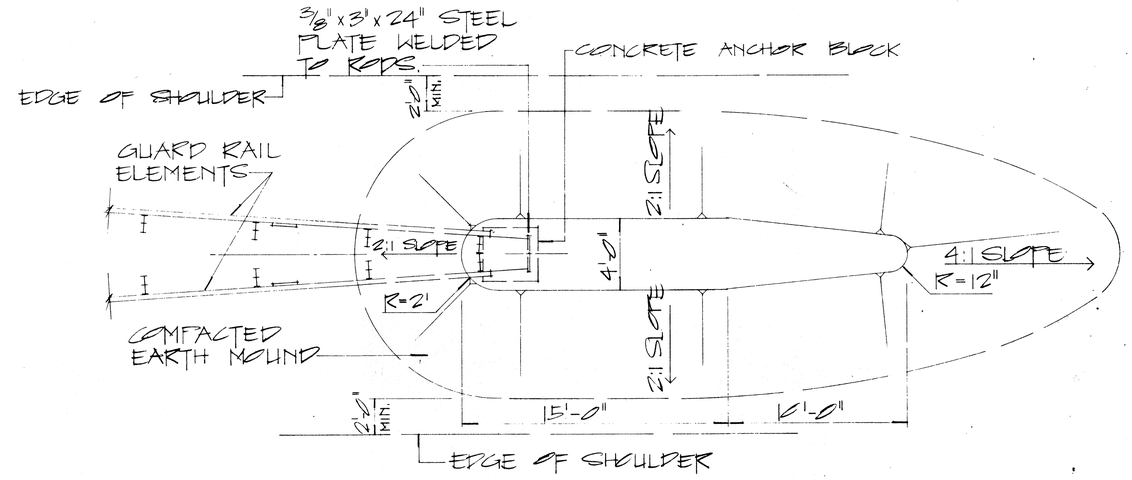
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-10(2)	1984	21	34



PLAN

EARTH MOUND DETAIL (SINGLE GUARD RAIL)

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

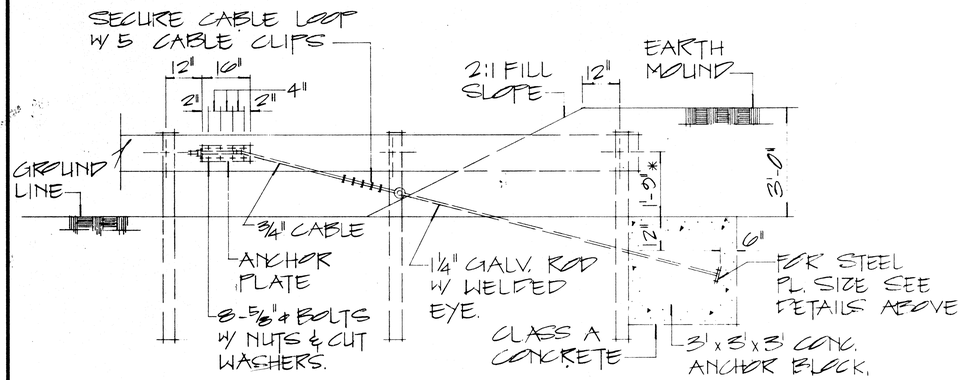


PLAN

EARTH MOUND DETAIL (DOUBLE GUARD RAIL)

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

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

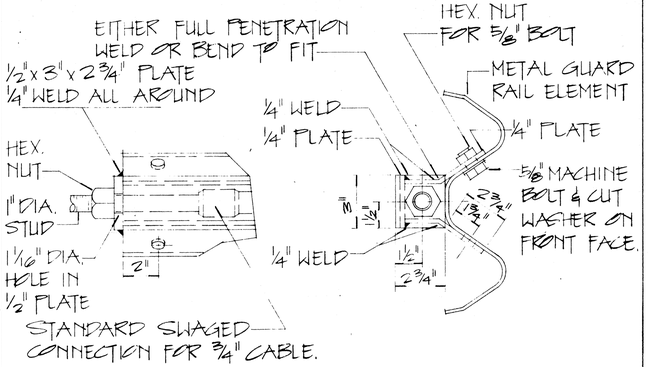


ANCHOR BLOCK DETAIL IN EARTH MOUND

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

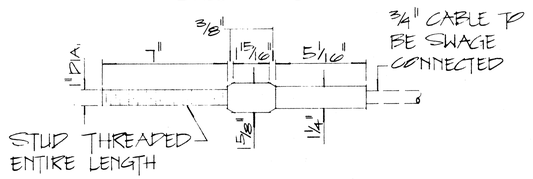
NOTE:

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



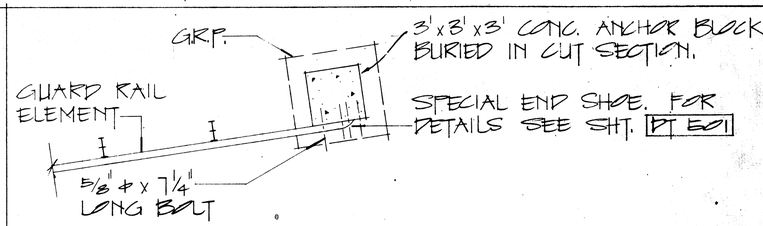
ANCHOR PLATE DETAILS

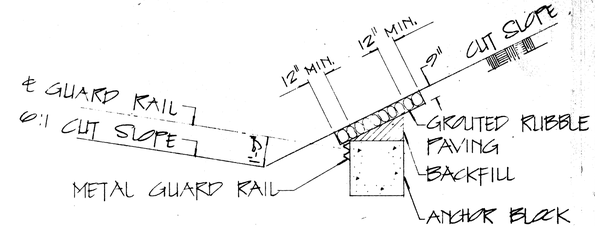
SCALE: 1" = 3"



STANDARD SWAGED FITTING AND STUD

SCALE: 1" = 3"





ANCHOR BLOCK IN CUT SECTION

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

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

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

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

EARTH MOUND AND ANCHOR BLOCK DETAILS

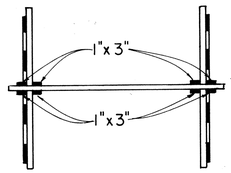
SCALE: AS SHOWN OCT 1969

SHEET No. OF SHEETS PT520

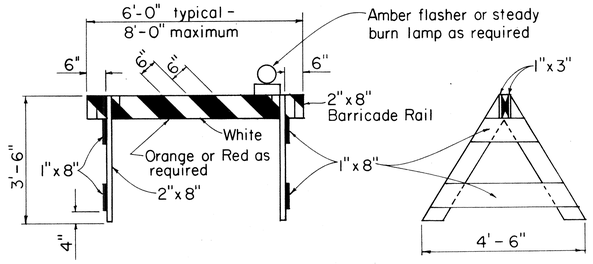
ORIGINAL PLAN	SURVEY PLOTTED BY	DRAWN BY	TRACED BY	DESIGN BY	NOTE BOOK	QUANTITIES BY	CHECKED BY	DATE

K+E CRYSTALENE® LA 2920 TRACING PAPER

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	ER-10(2)	1984	22	34



PLAN VIEW

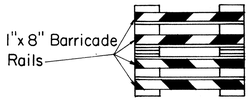


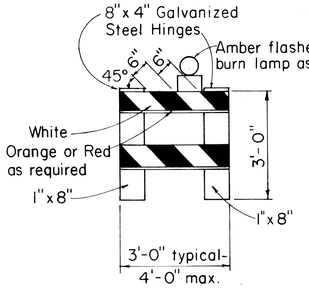
FRONT VIEW

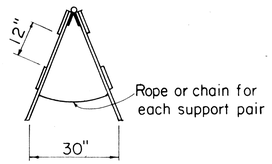
END VIEW

TYPE I BARRICADE

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







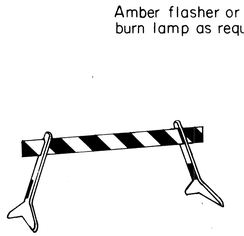
PLAN VIEW

FRONT VIEW

END VIEW

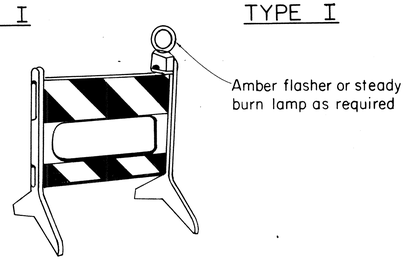
TYPE II BARRICADE

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



TYPE I

TYPE I

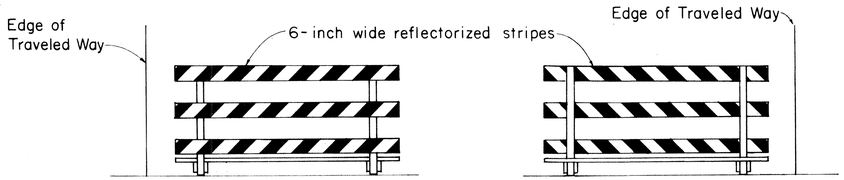


TYPE II

PLASTIC MOLDED BARRICADE OPTIONS*

Not to Scale

* Shop Drawings must be submitted for approval.

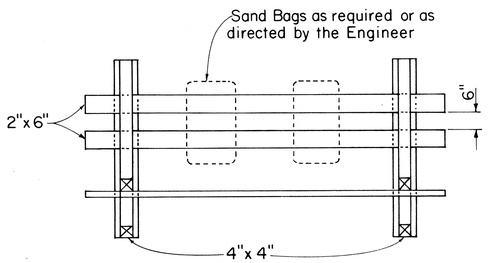


FRONT FACE

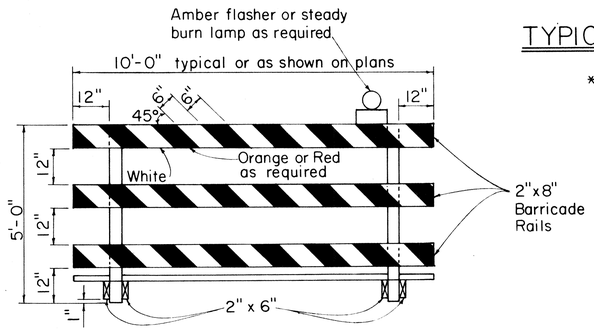
BACK FACE

GENERAL NOTES

1. The front and back faces of each barricade rail shall be reflectorized with stripes sloping downward toward the same side (traveled way) of each barricade.
2. Contractor may submit alternate barricade designs for approval.
3. Sandbags or other approved weights shall not be placed on top of any striped rail.
4. The Contractor is directed to Section 626.



PLAN VIEW



FRONT VIEW

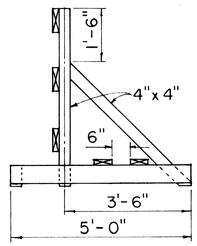
TYPE III BARRICADE

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

TYPICAL BARRICADE STRIPING DETAILS**

Not to Scale

** Similar for Types I & II



END VIEW

APPROVAL RECOMMENDED:

Eiichi Tanaka — TRAFFIC ENGINEER — 10/21/81 DATE

APPROVED:

Herbert S. Matsuishi — ASSISTANT CHIEF, ENGINEERING — 10/23/81 DATE

NO.	REVISION	APPROVED BY	DATE
1	Supercedes DT 800 Approved 12/30/69	H.T.	10/23/81

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

BARRICADES

SCALE: As Shown

SHEET No. OF SHEETS DT 800

22

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