FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	(FR-070(22))	1983	10	17

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"

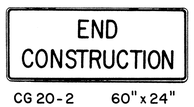
CW21-6 30"x30"

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 3/21/12
TRAFFIC ENGINEER DATE

APPROVED:
Walter Zaleski 3/23/12
ASSISTANT CHIEF, ENGINEERING DATE

NO.	REVISION	APPROVED BY	DATE
1	Supersedes Sht. DT 104 Approved 12-30-69	H.T.	3/23/12
2	Revised General Note 1	H.T.	10/16/14
3	Revised General Note 2	MF	9-16-15
4	Revised General Note 2 and sign CG20-1(5)	H.T.	9-14-16

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

CONSTRUCTION SIGNS

NOT TO SCALE

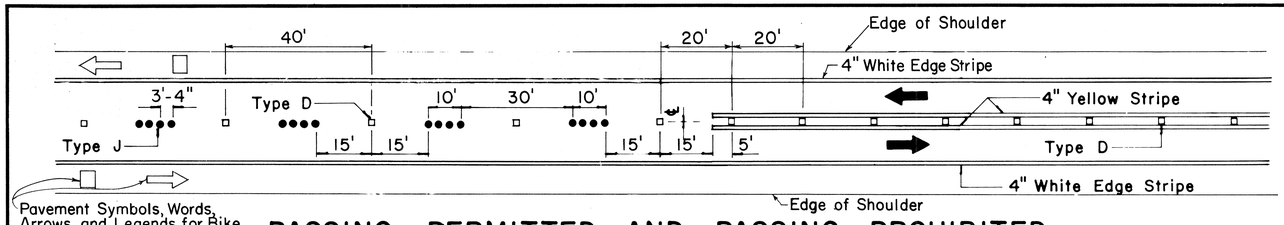
SHEET No. 1 OF 8 SHEETS DT 104

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

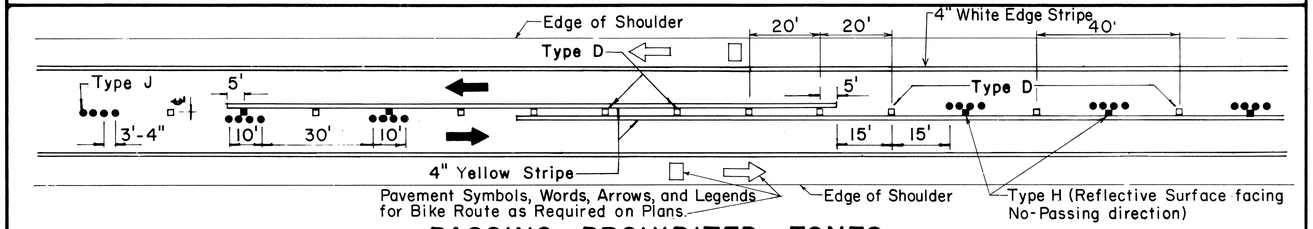
K-E IMPERIAL LA 3207

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FR-0700(22)	1983	11	17

TWO - LANE

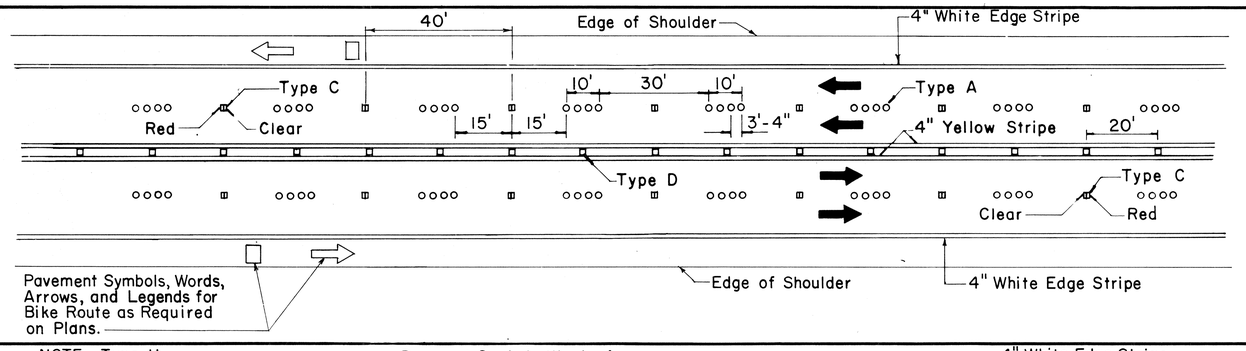


PASSING PERMITTED AND PASSING PROHIBITED

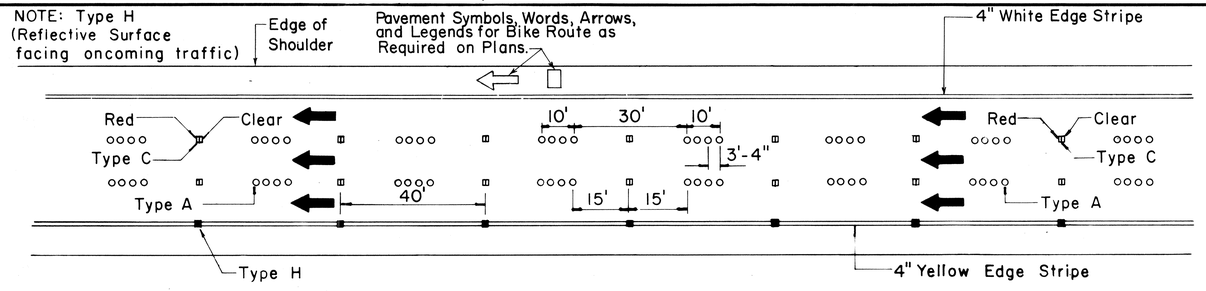


PASSING PROHIBITED ZONES

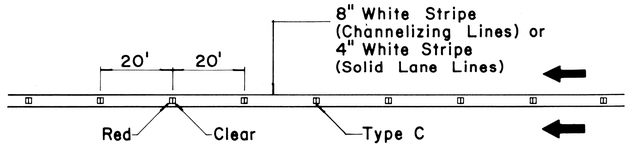
MULTI - LANE



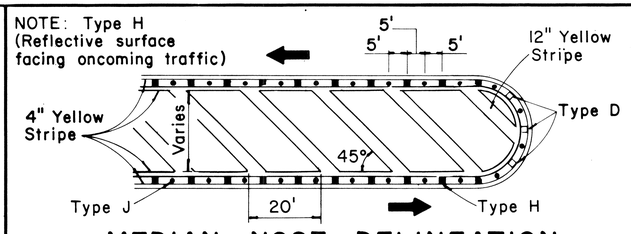
DIVIDED HIGHWAY AND FREEWAY



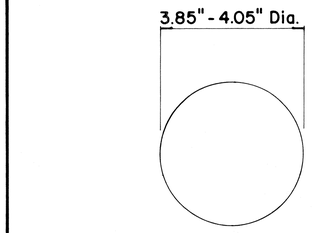
MISCELLANEOUS



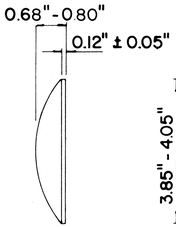
CHANNELIZING LINES OR SOLID LANE LINES

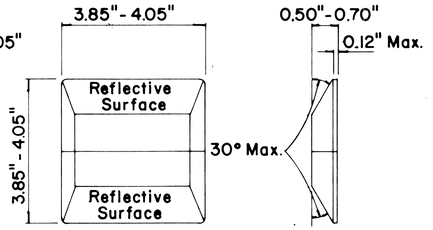


MEDIAN NOSE DELINEATION



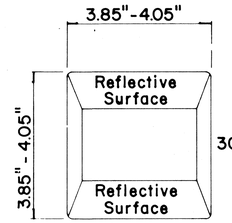
TYPE A
NON - REFLECTIVE WHITE MARKER

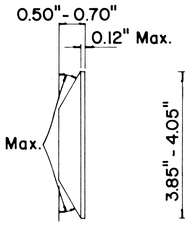




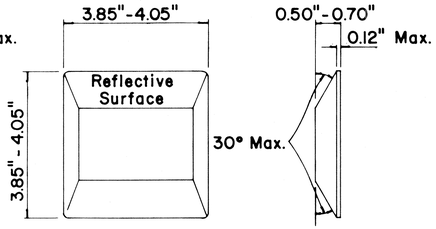
TYPE C
RED - CLEAR REFLECTIVE MARKER

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 J. Takeishi — 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

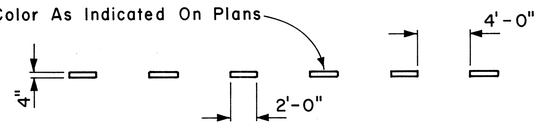
Not to Scale — July 1978

SHEET No. 2 OF 8 SHEETS DT 300

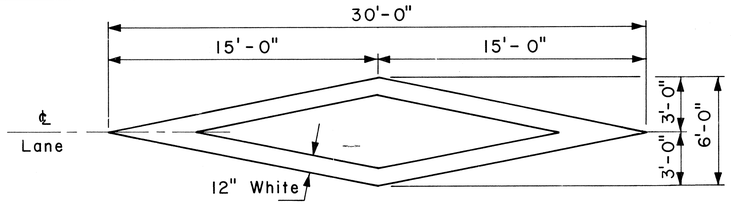
ORIGINAL PLAN	SURVEY PLOTTED BY	DRAWN BY	TRACED BY	DESIGNED BY	QUANTITIES BY	CHECKED BY	DATE
NOTE BOOK							
No.							

K+E IMPERIAL LA 1207

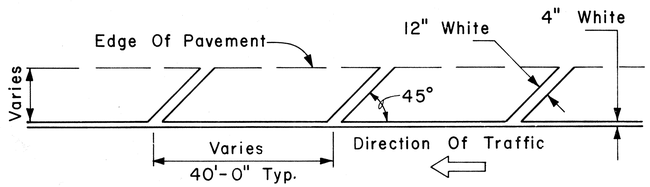
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FR-0700(22)	1983	12	17



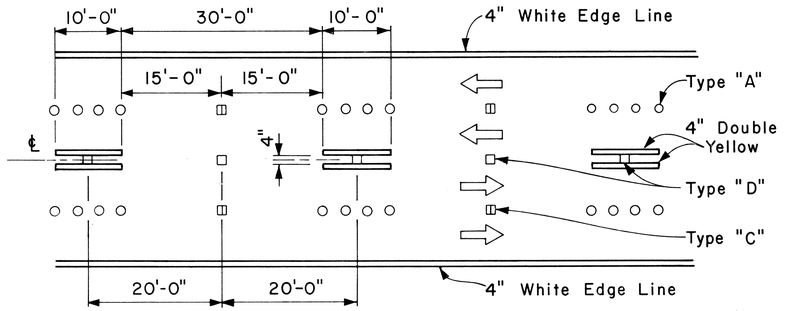
4" GUIDE LINE



PAVEMENT DIAMOND

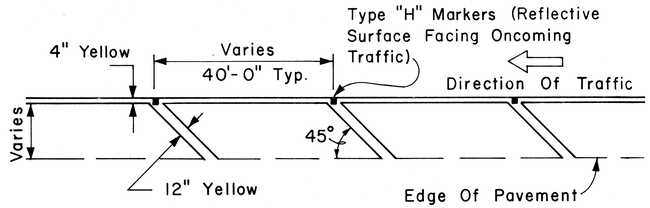


TRANSVERSE RIGHT SHOULDER MARKING

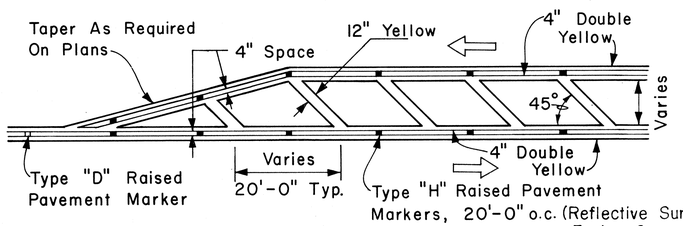


NOTE: Traffic Cone Usage Required.

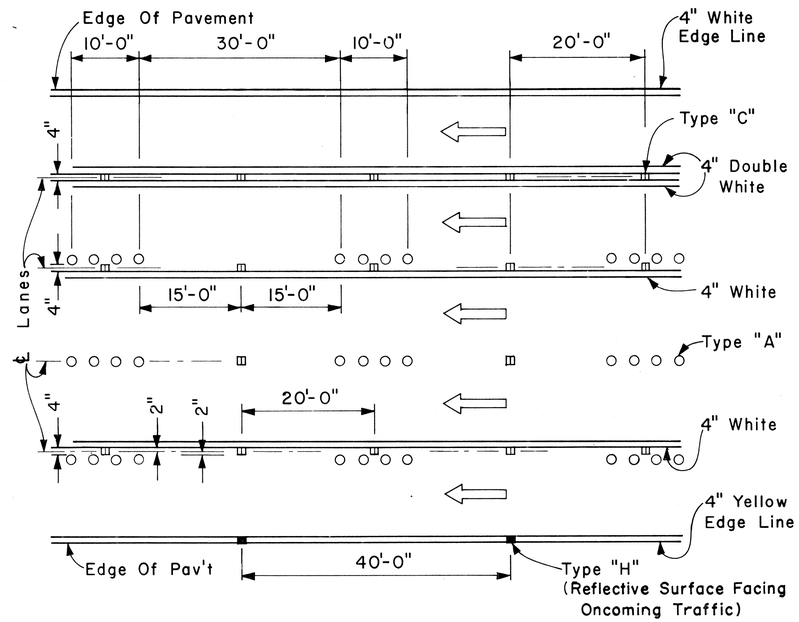
MULTI-LANE REVERSIBLE LANES



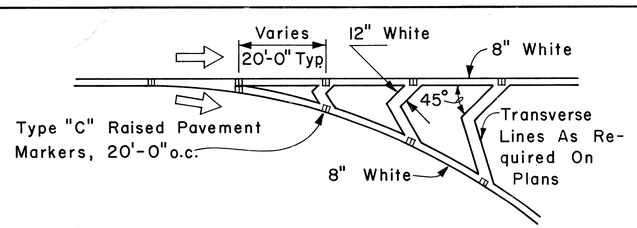
TRANSVERSE LEFT SHOULDER MARKING



TRANSVERSE MEDIAN MARKING



MULTI-LANE LANE CHANGE RESTRICTION ZONES



CHANNELIZING ISLAND

GENERAL NOTES:

1. Pavement marking and striping shall conform to the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways," by the FHWA, and as amended.
2. Layout of pavement markings and striping shall be done by the Contractor. The Contractor shall check layout of markings and striping with the Engineer prior to performing work.
3. For additional pavement marking details, see sheet DT 300.

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

APPROVED:
Herbert R. Takeuchi — ASSISTANT CHIEF, ENGINEERING — 5/3/78 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

STANDARD DETAILS

MISCELLANEOUS PAVEMENT MARKINGS

Scale: Not to Scale Date: April, 1978

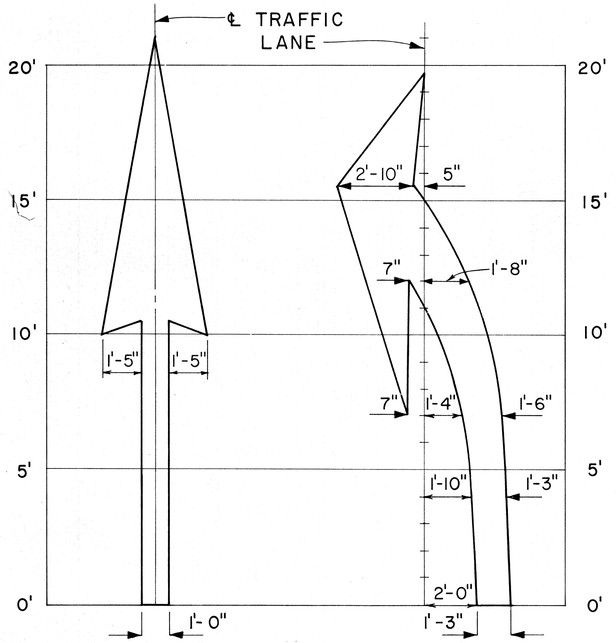
SHEET No. 3 OF 8 SHEETS DT 302

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

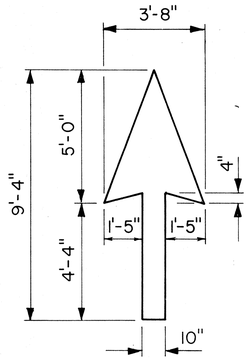
9

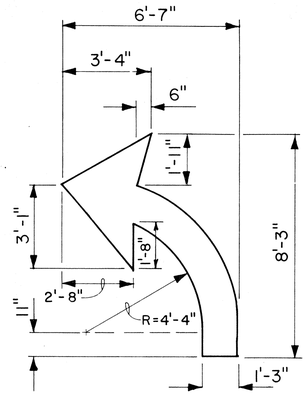
12

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FR-0700(22)	1983	13	17

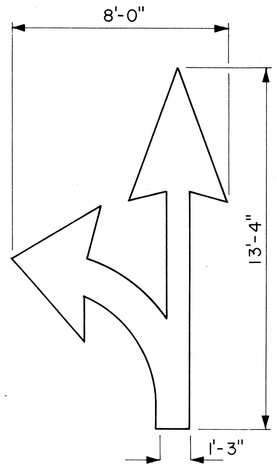


ELONGATED



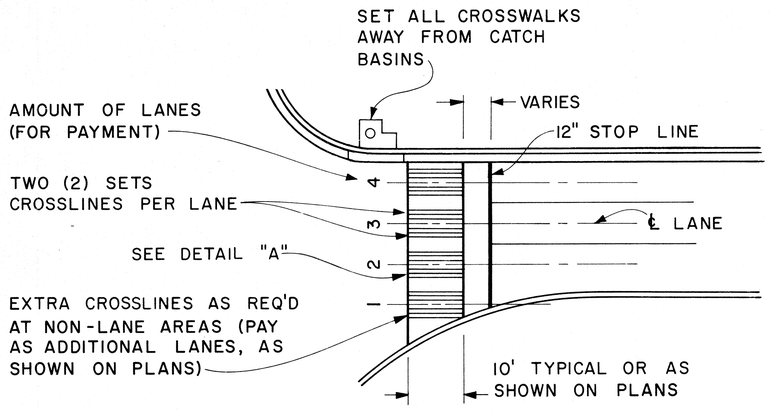


STANDARD

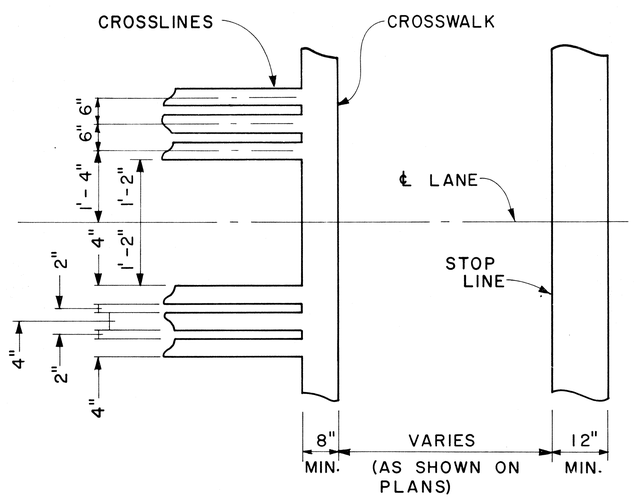


PAVEMENT ARROWS

Scale: 3/8" = 1'



PLAN



DETAIL "A"

CROSSWALK & STOP LINE

Scale: Not to Scale

GENERAL NOTES:

1. Pavement marking and striping shall conform to the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways," by the FHWA, and as amended.
2. Layout of pavement markings and striping shall be done by the Contractor. The Contractor shall check layout of markings and striping with the Engineer prior to performing work.
3. For additional pavement marking details, see sheet DT 300.

APPROVAL RECOMMENDED:
Eiichi Tanaka — TRAFFIC ENGINEER — 5/2/18 DATE

APPROVED:
Herbert S. Takiishi — ASSISTANT CHIEF, ENGINEERING — 5/3/18 DATE

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
LAND TRANSPORTATION FACILITIES DIVISION

STANDARD DETAILS

MISCELLANEOUS PAVEMENT MARKINGS

Scale: As Shown Date: March, 1978

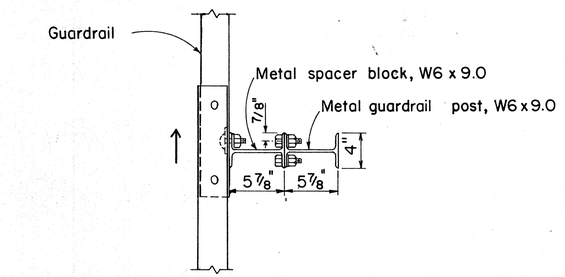
SHEET No. 4 OF 8 SHEETS DT 306

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

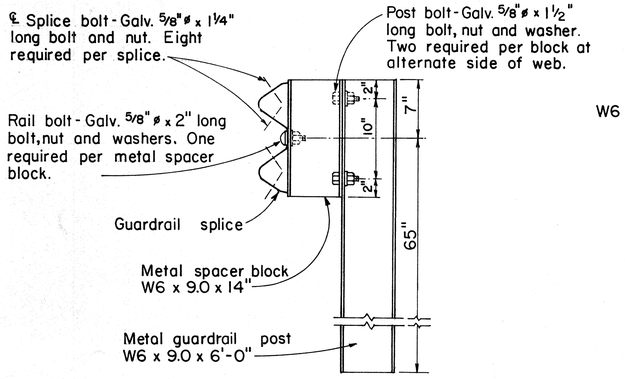
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FR-0700(22)	1983	14	17

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.



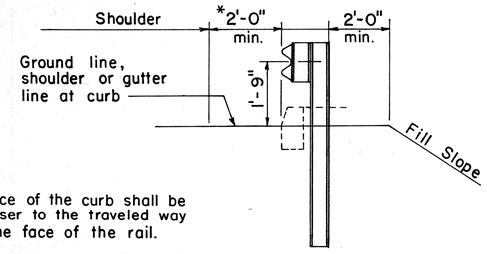
PLAN



ELEVATION

SINGLE METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK

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

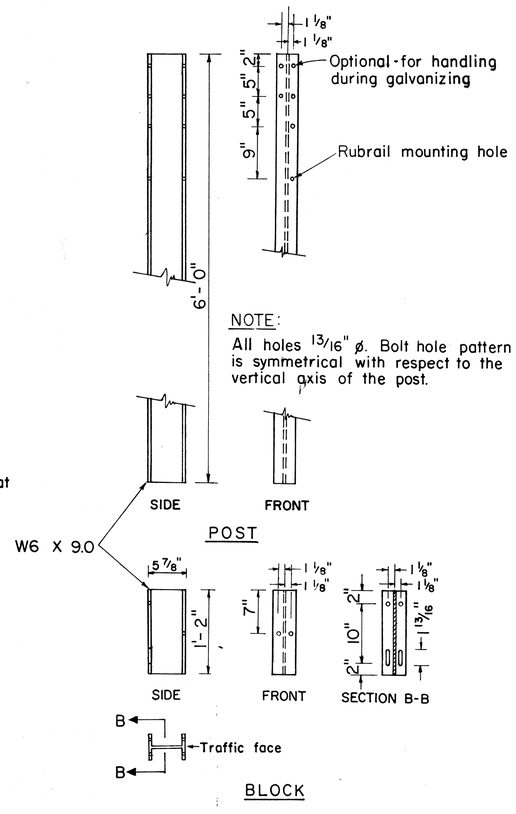


Note:
The face of the curb shall be no closer to the traveled way than the face of the rail.

AT SHOULDER SECTION

TYPICAL METAL GUARDRAIL DETAIL

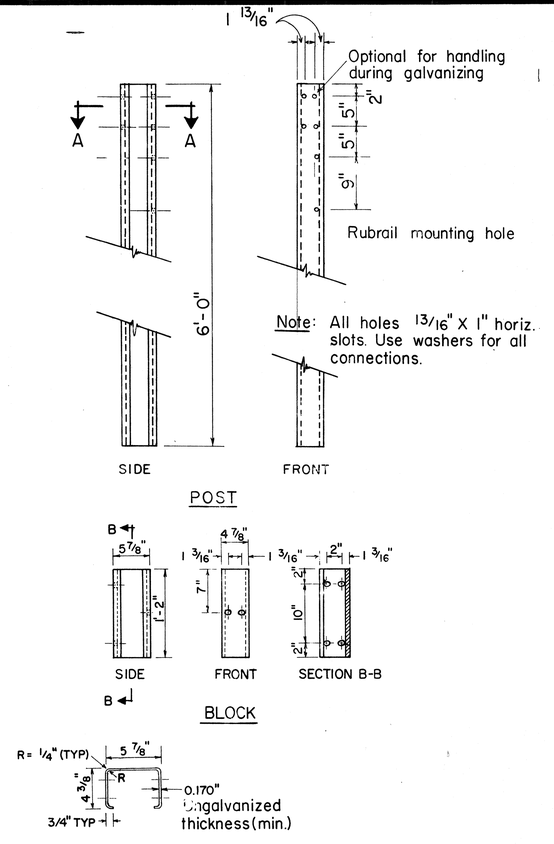
SCALE: 1/2" = 1'-0"



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"

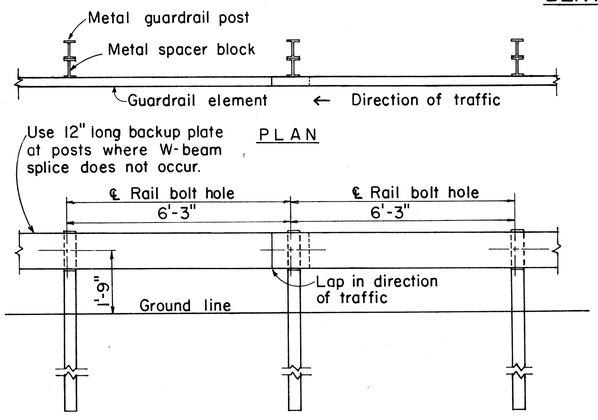


Note: All holes 13/16" X 1" horiz. slots. Use washers for all connections.

SECTION A-A
N.T.S.

BENT PLATE POST AND BLOCK

SCALE: 1" = 1'-0"



ELEVATION

METAL GUARDRAIL ON METAL POST WITH METAL SPACER BLOCK

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

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

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

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

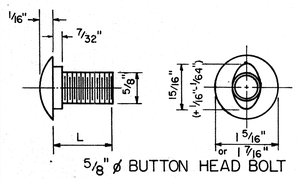
STANDARD DETAILS

METAL GUARDRAIL

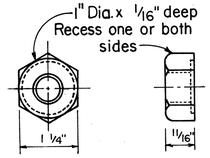
Scale: As Shown — July, 1982

SHEET No. 5 OF 8 SHEETS DT 500

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FR-0700(22)	1983	15	17



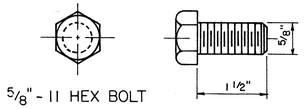
5/8" ø BUTTON HEAD BOLT



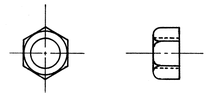
5/8" ø RECESS NUT

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

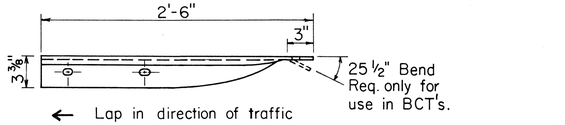


5/8"-11 HEX BOLT

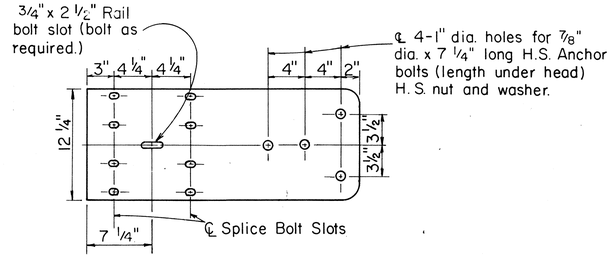


5/8"-11 HEX NUT

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

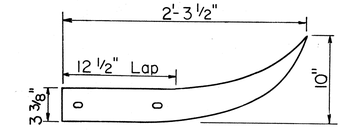


← Lap in direction of traffic

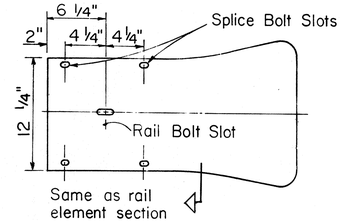


W BEAM TERMINAL CONNECTOR
Scale: 1 1/2" = 1'-0"

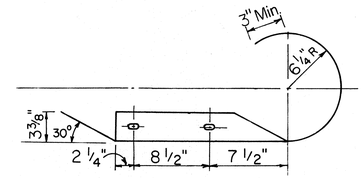
← Lap in direction of traffic



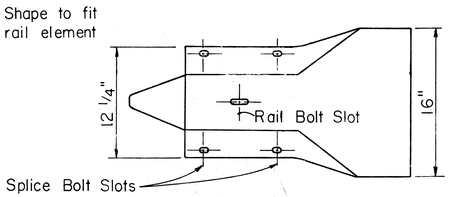
← Lap in direction of traffic



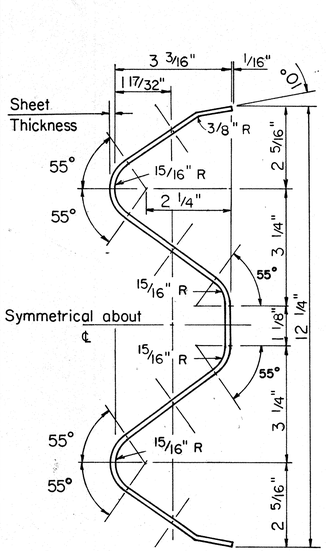
W BEAM END SECTION (FLARED)
Scale: 1 1/2" = 1'-0"



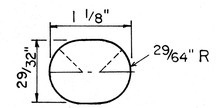
← Lap in direction of traffic



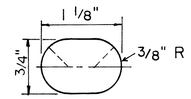
W BEAM END SECTION (ROUNDED)
Scale: 1 1/2" = 1'-0"



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

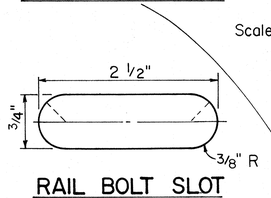


SPLICE BOLT SLOT

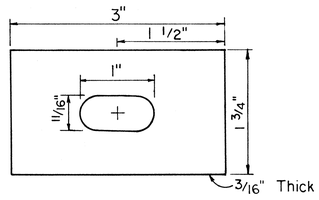


SPLICE BOLT SLOT FOR ALL ENDS

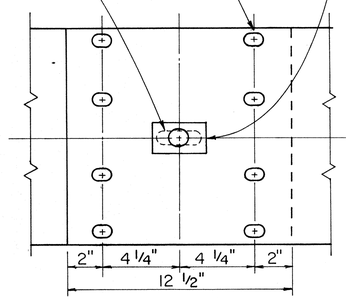
Scale: Full Size



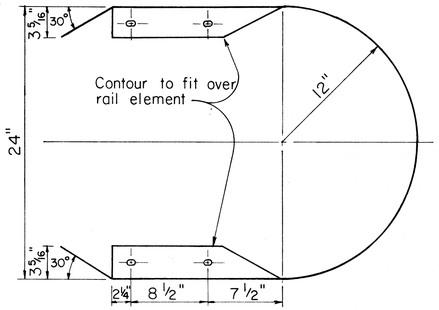
RAIL BOLT SLOT



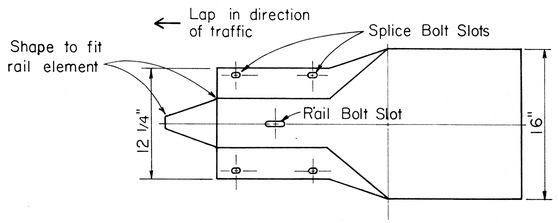
RAIL BOLT WASHER



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



← Lap in direction of traffic



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

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

APPROVED:
Herbert Ashishi — 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

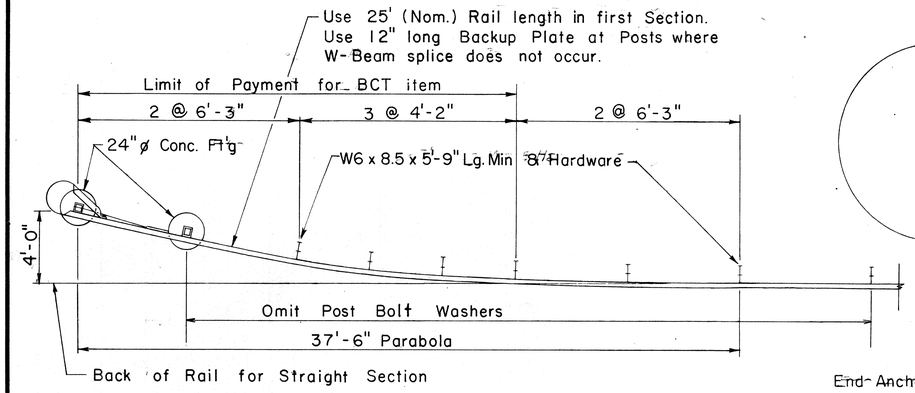
STANDARD DETAILS
METAL GUARDRAIL

Scale: As Noted — July, 1982

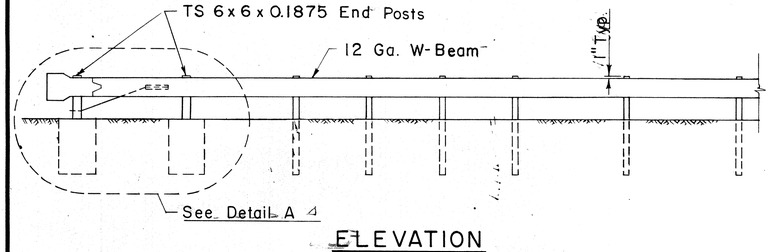
SHEET No. 6 OF 8 SHEETS DT 501

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

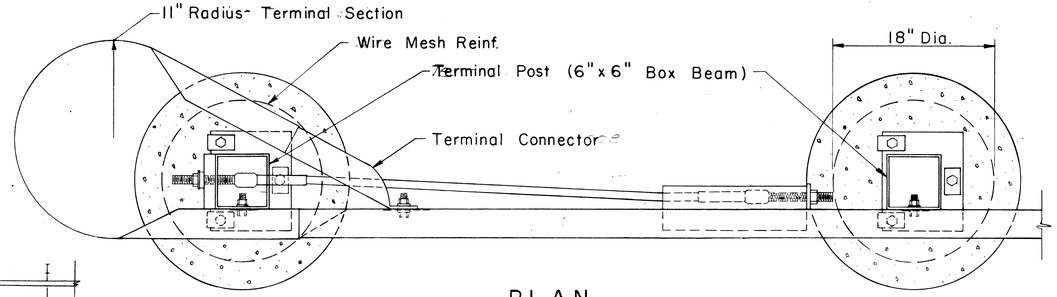
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FR-0700(22)	1983	16	17



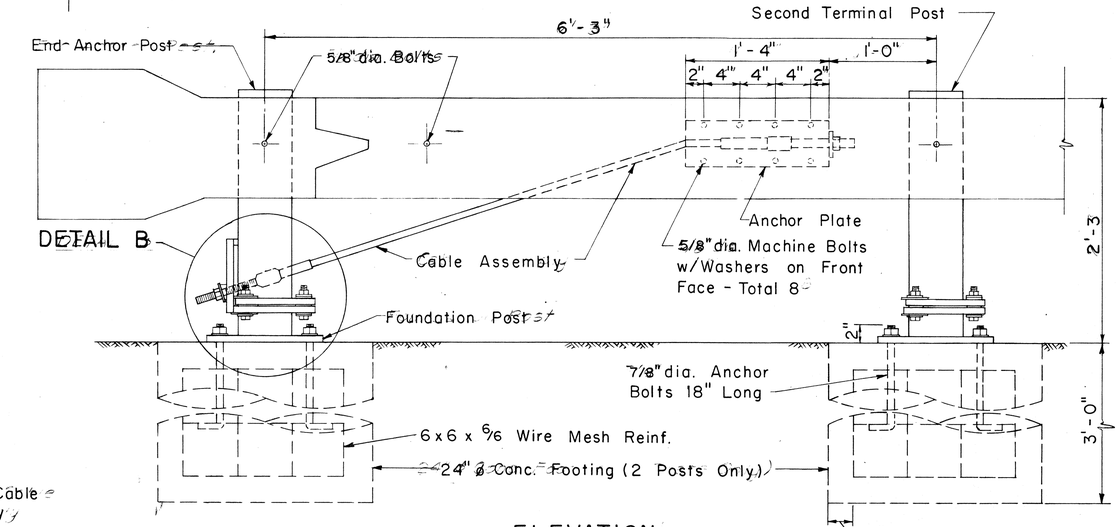
PLAN
Scale: 1/4" = 1'-0"



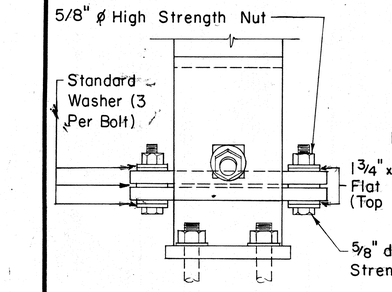
ELEVATION
Scale: 1/4" = 1'-0"



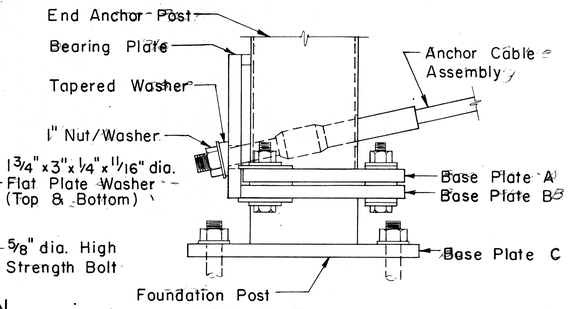
PLAN



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

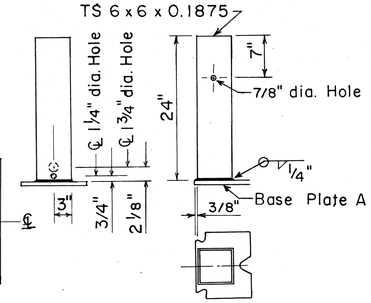


SIDE ELEVATION

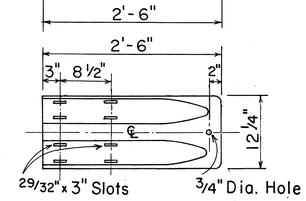


FRONT ELEVATION

FLAT PLATE WASHER
Scale: Full Size

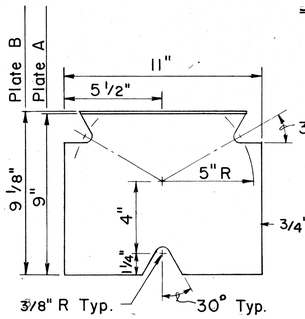


TERMINAL POST
Scale: 1" = 1'-0"

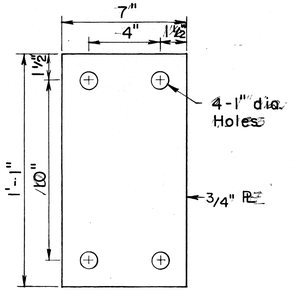


TERMINAL CONNECTOR
Scale: 1" = 1'-0"

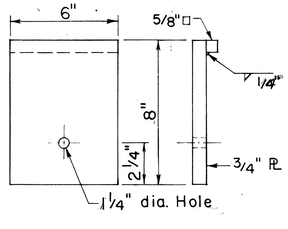
DETAIL B



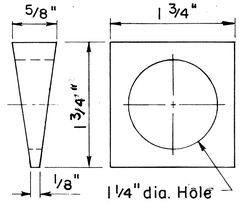
BASE PLATES A & B
Scale: 3" = 1'-0"



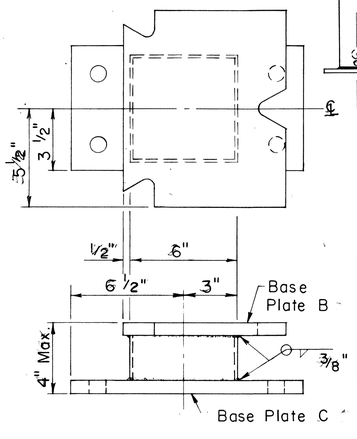
BASE PLATE C
Scale: 3" = 1'-0"



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



TAPERED WASHER
Scale: Full Size



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

NO.	REVISION	APPROVED BY	DATE
1	Supersedes Sht. DT 519 Approved 12/30/69	HH.	6/15/78
2	Added Note 6	HH.	12/11/80

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 Sakiahi
ASSISTANT CHIEF, ENGINEERING — 6/15/78 DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAIL

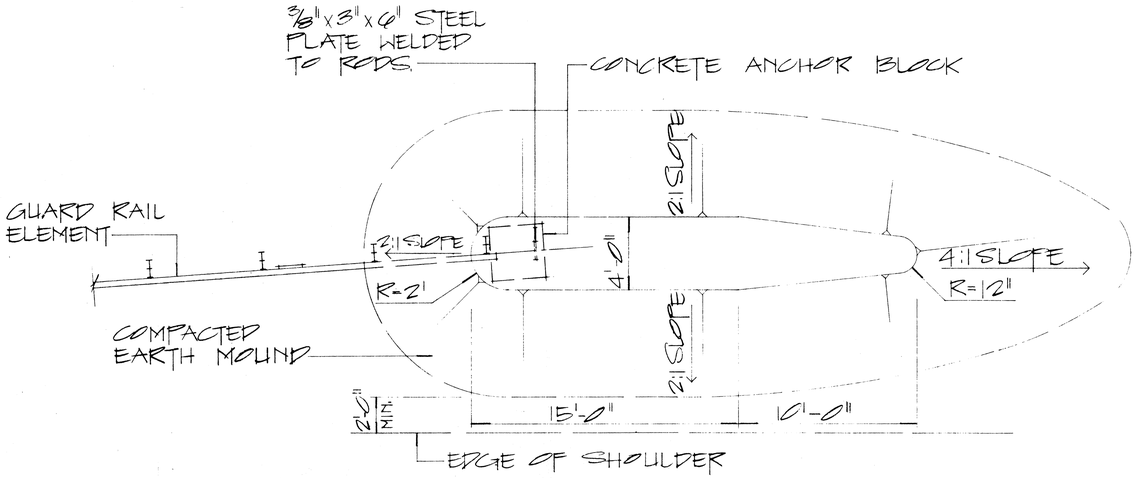
BREAKAWAY CABLE TERMINAL (BCT)

Scale: As Shown — Date: June 1978

SHEET No. 7 OF 8 SHEETS DT 519

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

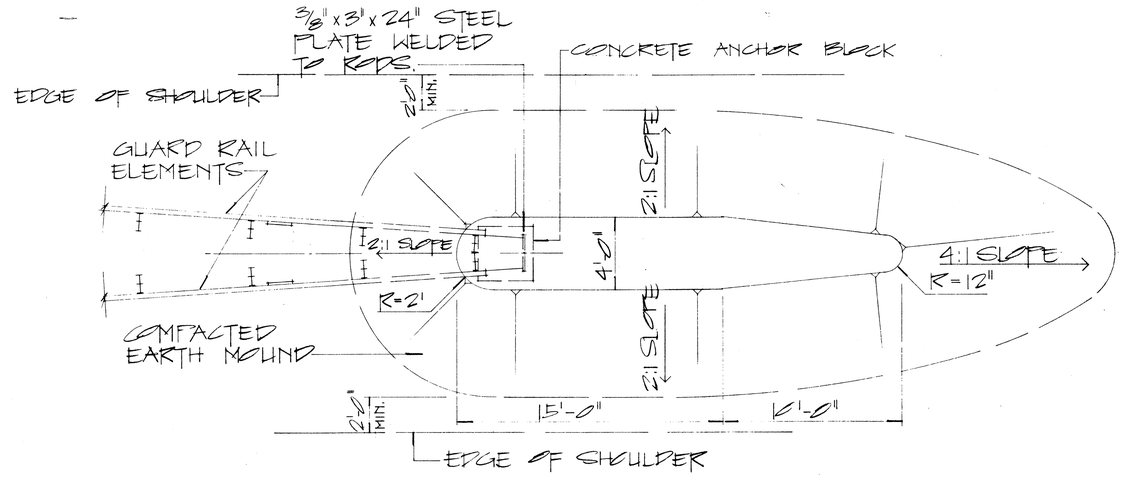
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	FR-0700(22)	1983	17	17



PLAN

EARTH MOUND DETAIL (SINGLE GUARD RAIL)

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

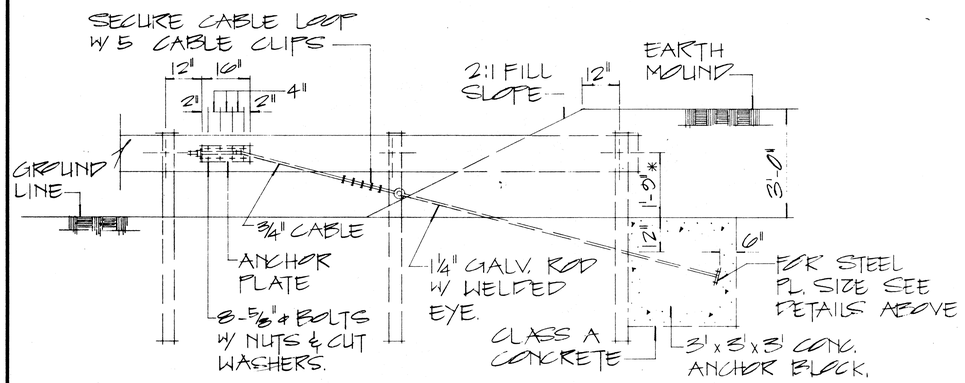


PLAN

EARTH MOUND DETAIL (DOUBLE GUARD RAIL)

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

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

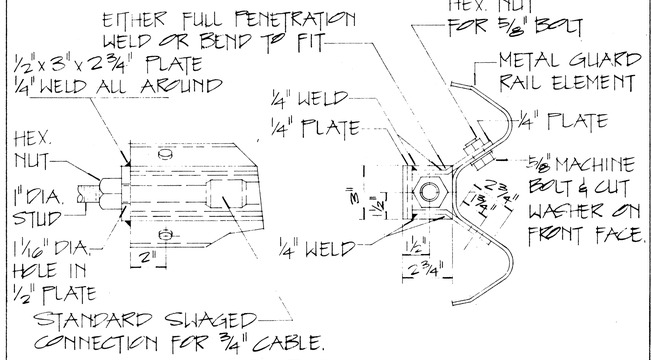


ANCHOR BLOCK DETAIL IN EARTH MOUND

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

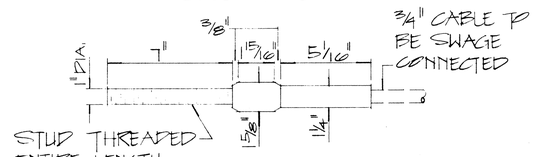
NOTE:

1. GALVANIZED ANCHOR ROD, METAL GUARD RAIL AND POST BURIED IN GROUND SHALL BE COVERED WITH 2 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.



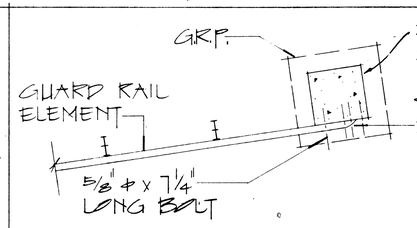
ANCHOR PLATE DETAILS

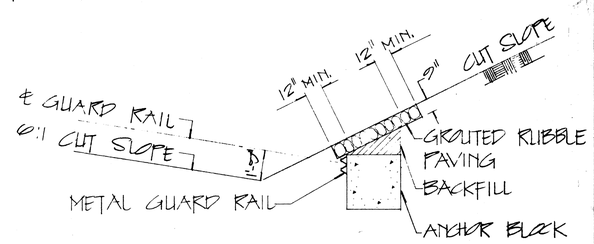
SCALE: 1" = 3"



STANDARD SWAGED FITTING AND STUD

SCALE: 1" = 3"





ANCHOR BLOCK IN CUT SECTION

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

APPROVAL RECOMMENDED:

Euichi Tanaka — TRAFFIC ENGINEER — 12/23/69 DATE

APPROVED:

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

NO.	REVISION	APPROVED BY	DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

EARTH MOUND AND ANCHOR BLOCK DETAILS

SCALE: AS SHOWN OCT 1969

SHEET No. 8 OF 8 SHEETS PT 520

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

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