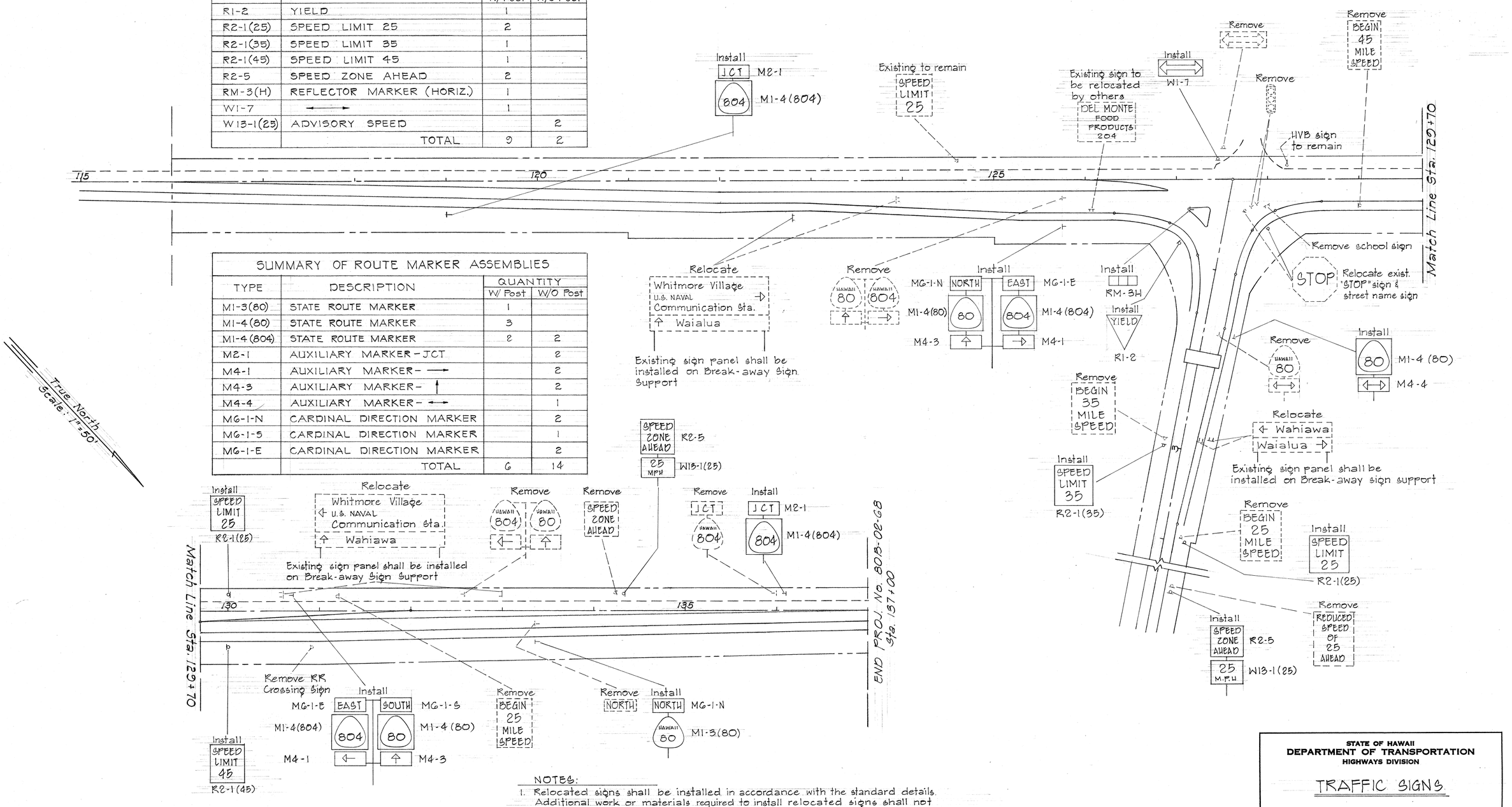
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	80B-02-68	1968	6	15

SUMMARY OF REGULATORY SIGNS, WARNING SIGNS AND REFLECTOR MARKERS

TYPE	DESCRIPTION	QUANTITY W/ Post	QUANTITY W/O Post
R1-2	YIELD	1	
R2-1(25)	SPEED LIMIT 25	2	
R2-1(35)	SPEED LIMIT 35	1	
R2-1(45)	SPEED LIMIT 45	1	
R2-5	SPEED ZONE AHEAD	2	
RM-3(H)	REFLECTOR MARKER (HORIZ.)	1	
W1-7	⟷	1	
W13-1(25)	ADVISORY SPEED		2
	TOTAL	9	2

SUMMARY OF ROUTE MARKER ASSEMBLIES

TYPE	DESCRIPTION	QUANTITY W/ Post	QUANTITY W/O Post
M1-3(80)	STATE ROUTE MARKER	1	
M1-4(80)	STATE ROUTE MARKER	3	
M1-4(804)	STATE ROUTE MARKER	2	2
M2-1	AUXILIARY MARKER - JCT		2
M4-1	AUXILIARY MARKER - →		2
M4-3	AUXILIARY MARKER - ↑		2
M4-4	AUXILIARY MARKER - ⟷		1
MG-1-N	CARDINAL DIRECTION MARKER		2
MG-1-S	CARDINAL DIRECTION MARKER		1
MG-1-E	CARDINAL DIRECTION MARKER		2
	TOTAL	6	14



NOTES:

1. Relocated signs shall be installed in accordance with the standard details. Additional work or materials required to install relocated signs shall not be paid for separately but shall be considered part of the various items of work.
2. All existing signs not incorporated in the system shall be removed and stockpiled as directed by the Engineer.
3. Hardware to mount Destination Sign panels shall be incidental to Item 111.31, Reset Destination Sign Panel.
4. Separate resetting sign panel from from new break-away sign post. Pay for break-away sign post separately under Item 107.88.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC SIGNS

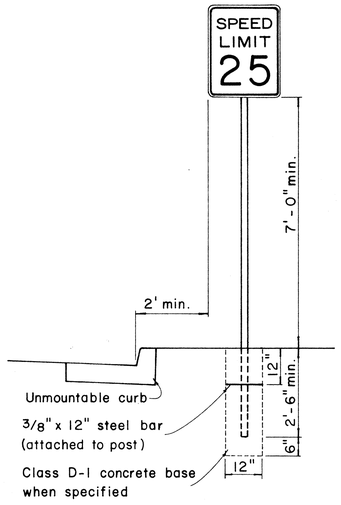
KAMEHAMEHA HIGHWAY
AT WITMORE AVENUE
PROJECT NO. 80B-02-68

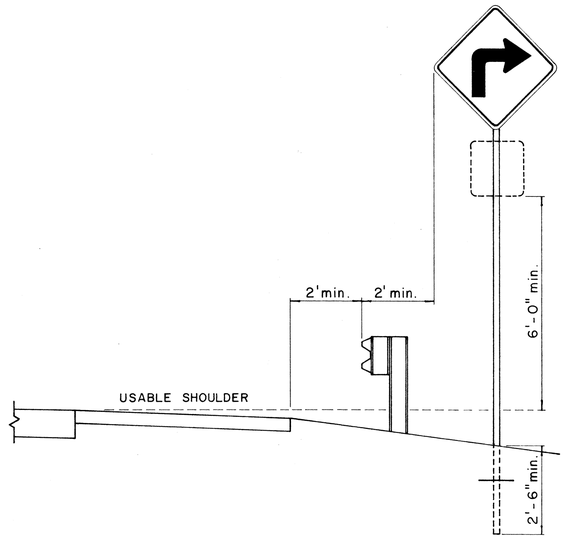
Scale: As shown Date: May 1968

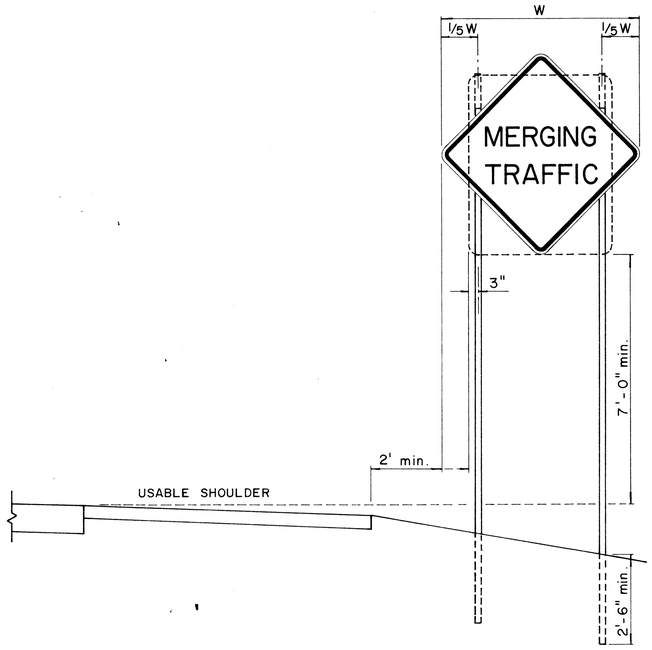
SHEET No. 1 OF 6 SHEETS

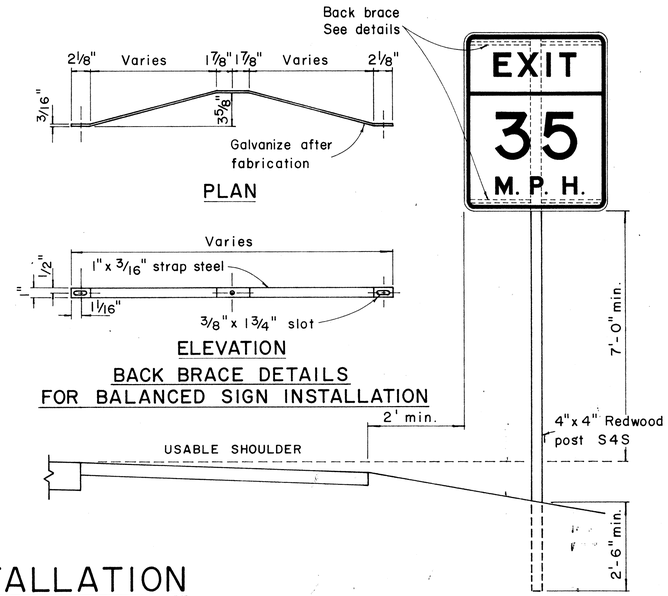
PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	808-02-68	1968	7	15

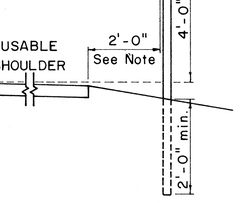




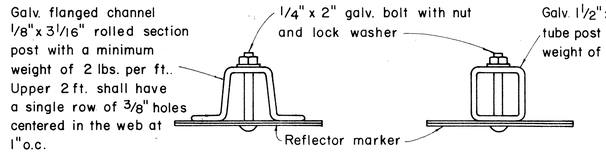




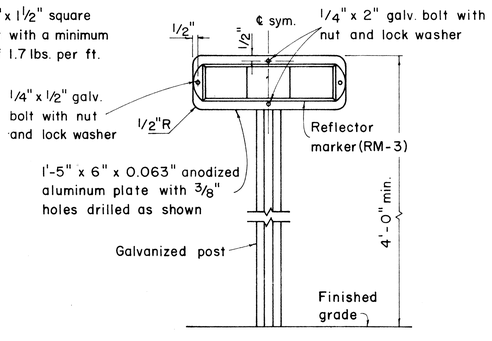
HEIGHT AND LATERAL LOCATION OF SIGNS - TYPICAL INSTALLATION



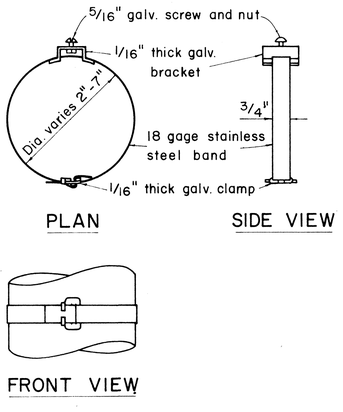
ROAD DELINEATOR



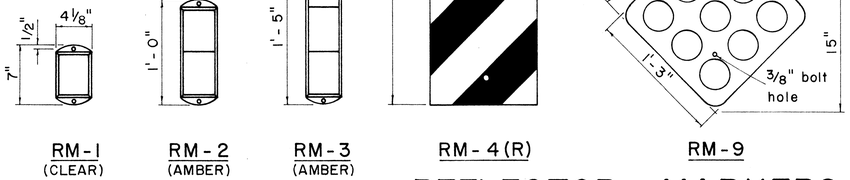
TYPICAL SECTION OF ROAD DELINEATOR



TYPICAL DETAIL
HORIZONTAL REFLECTOR MARKER
RM-3H



TYPICAL BAND BRACKET FOR
MOUNTING TRAFFIC SIGNS



REFLECTOR MARKERS

GENERAL NOTES:

1. Sign posts shall be 2" galv. standard pipe or 2" x 2" galv. sq. tube post.
2. 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..
3. 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.
4. Sign posts shall extend 3 1/2" above sign where required for City and County street name signs.
5. 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.
6. Clearance markers (RM-3, RM-4) shall be installed with the edge of the marker in line with the inner edge of the obstruction.
7. (R) or (L) indicates right or left and shall be as shown on the plans.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

MISCELLANEOUS SIGN DETAILS

Not to scale — March, 1968

SHEET No. 2 OF 6 SHEETS

PRINTED ON NO. 1000H CLEARPRINT

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BDB-02-G8	1968	8	15

R1-1 30"x 30"

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

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

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

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

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

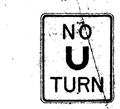
R2-6(25) 24"x30"
R2-6(25)-E 36"x48"
R2-6(25)-I 48"x60"

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

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

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

R3-3 24"x24"



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

R3-5(L) 30"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"x30"

R7-107(R) 12"x 18"

R7-201 12"x 6"

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

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

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

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

R9-1 18"x24"

R9-2 12"x 18"

R9-3 12"x 18"

R9-4 12"x18"

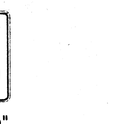
R9-5 12"x18"

R9-6 9"x 12"

R9-7 9"x 12"

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

R10-2 48"x30"



R10-3(10) 60"x 30"

R10-4(10) 18"x24"

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 regulatory signs shall be reflectorized unless otherwise specified.
3. All regulatory signs shall have 3/8" bolt holes drilled at appropriate locations unless otherwise noted.
4. The suffix "E" denotes Expressway signs and "I" denotes Interstate signs.
5. For R2 signs, number in ( ) indicates speed and shall be as shown on the plans.
6. (R) or (L) indicates right or left and shall be as shown on the plans.
7. For R10-4 sign, number in ( ) indicates weight and shall be as shown on the plan.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS

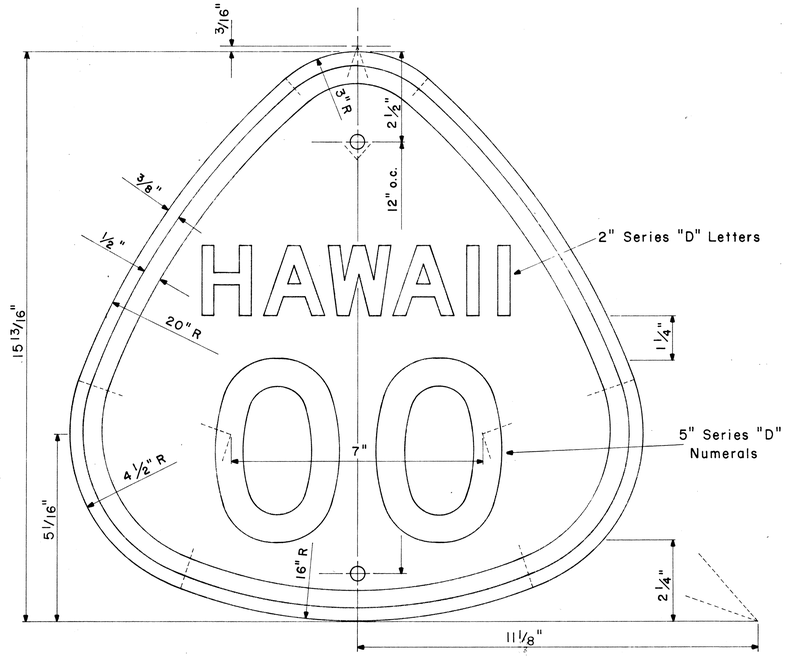
REGULATORY SIGNS

NOT TO SCALE

SHEET No. 3 OF 6 SHEETS

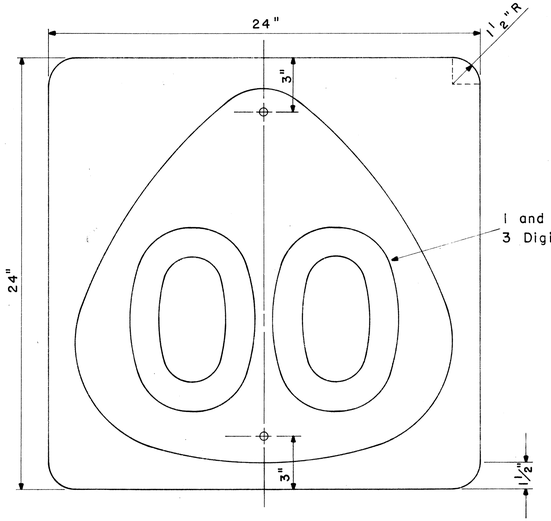
PRINTED ON CLEARPRINT 1000-H

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW	BOB-02-68	1968	9	15



STATE ROUTE MARKER
M1-3(00)

Scale: 1/2" = 1"

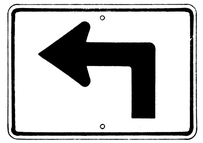


STATE ROUTE MARKER
M1-4(00)

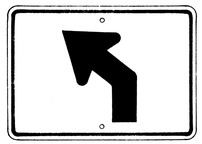
Scale: 1/4" = 1"

NOTE:
Multiply all dimensions of State Route Marker M1-3 by 1.3 for the dimensions of the shield for M1-4.

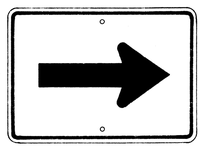
M2-1
21" x 15"



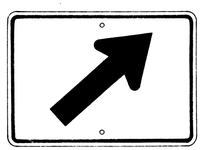
M3-1-L
* M3-1-R
21" x 15"



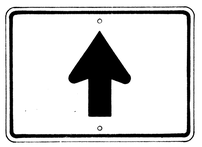
M3-2-L
* M3-2-R
21" x 15"



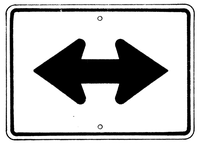
M4-1
21" x 15"



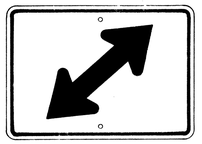
M4-2-R
* M4-2-L
21" x 15"



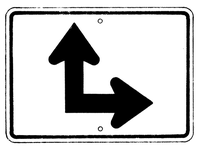
M4-3
21" x 15"



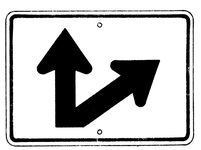
M4-4
21" x 15"



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.

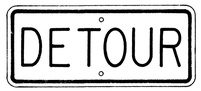
M5-1
21" x 9"

M5-2
21" x 9"

M5-3
21" x 9"

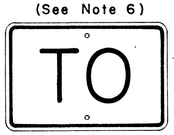
M5-4
21" x 9"

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

1. 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.
2. All letters and figures shall conform to the manual "Standard Alphabets for Highway Signs," Dept. of Commerce, Bureau of Public Roads, 1952.
3. All markers shall be reflectorized unless otherwise specified.
4. All markers shall have 3/8" bolt holes drilled at appropriate locations unless otherwise specified.
5. All markers shall have a black legend on a white background unless otherwise specified.
6. 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
7. Auxiliary markers denoted with the suffix "I": (M4-1-I) shall have a white legend on a blue background.
8. 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.
9. For M1-3 and M1-4 signs, number in ( ) indicates route number and shall be as shown on the plan.

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

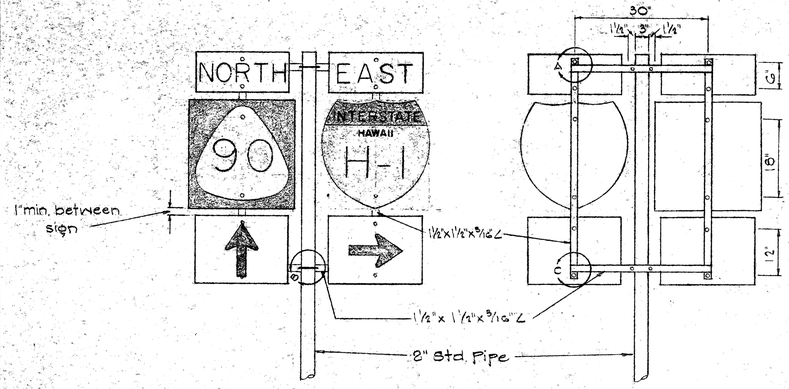
STANDARD DETAILS
STATE ROUTE MARKERS AND AUXILIARY MARKERS

Scale: As Noted

SHEET NO. 4 OF 6 SHEETS

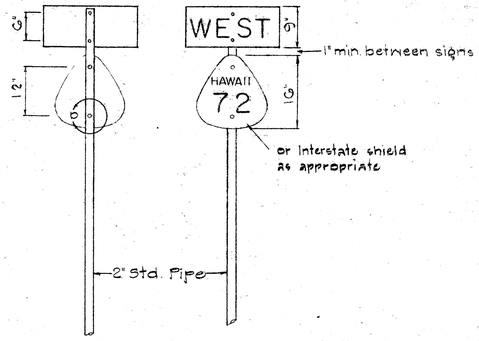
LIETZ 1103 ARKWRIGHT TRACING CLOTH 10-60 200P

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	808-02-68	1968	10	15



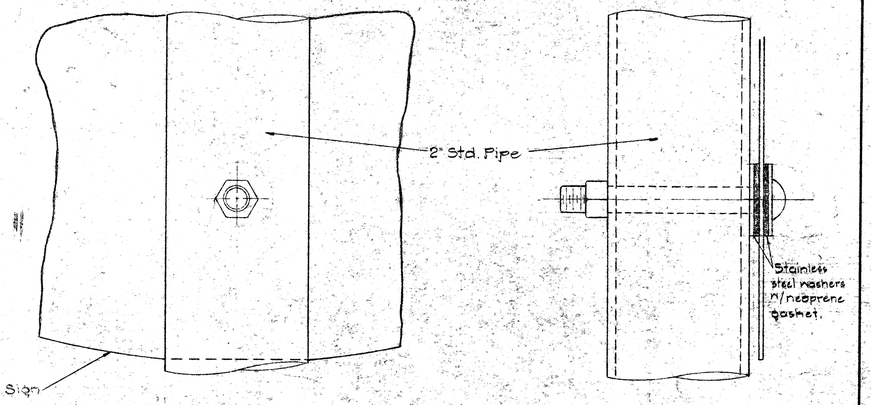
TYPE "B" ASSEMBLY

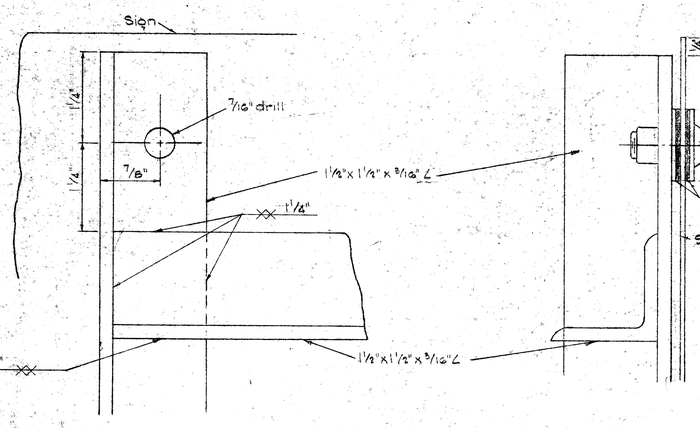
NOTE:
Minimum clearance between signs shall be 1 inch. (Larger clearances shall be in multiples of 1 inch.)



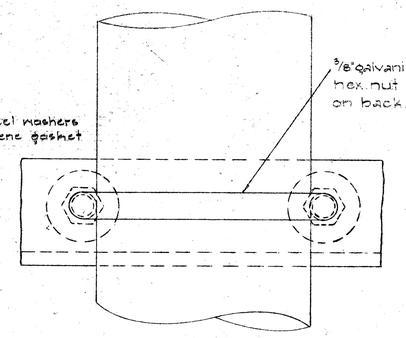
TYPE "A" ASSEMBLY

NOTE:
Use 2" Standard Pipe for Type "A" assembly.
Use 2" Standard Pipe for Type "B" assembly.





DETAIL "A"



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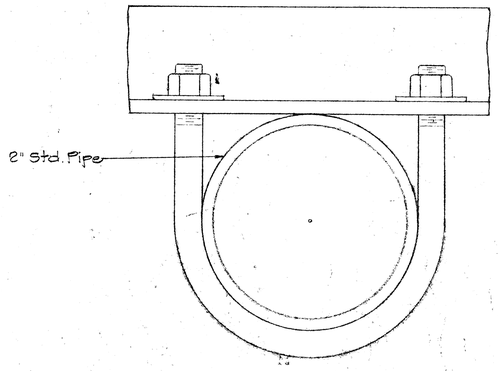
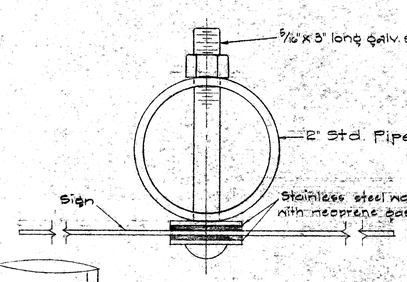
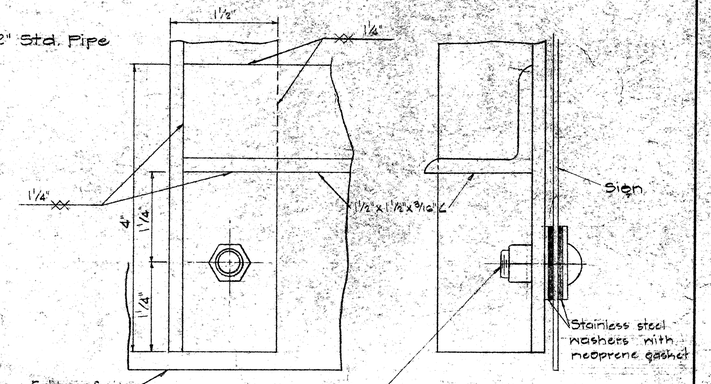




DETAIL "D"
FULL SCALE



DETAIL "C"

NOTE:
For height and lateral location of Route Marker Assembly, see Sheet No 7

REVISED: JULY 9, 1968

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DETAILS OF ROUTE MARKER ASSEMBLY

Not to Scale

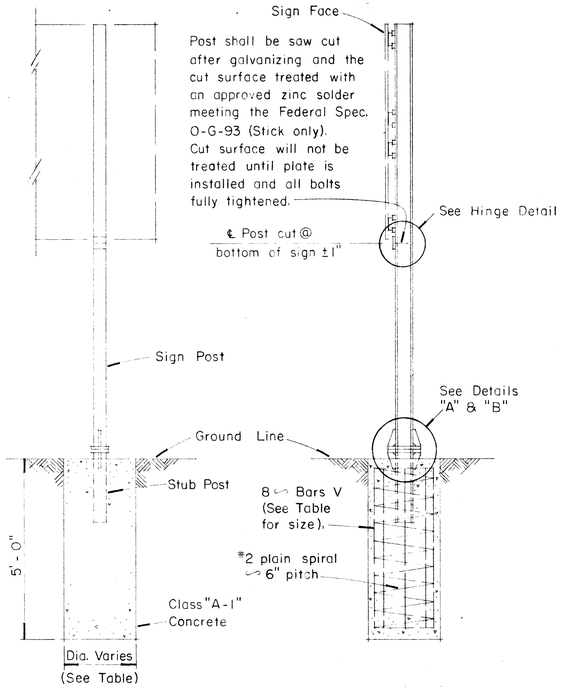
SHEET No. 5 OF 6 SHEETS

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

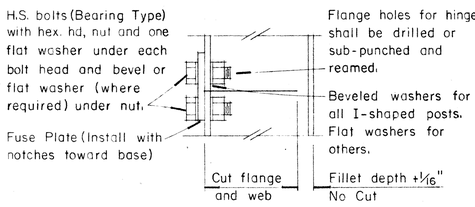
PRINTED ON CLEARPRINT 1000-H

10

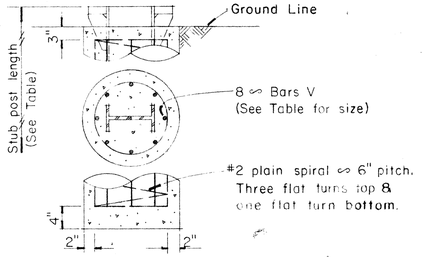
	BASE CONNECTION DATA TABLE										FUSE PLATE DATA TABLE										FOUNDATION DATA			
Post Size	Bolt Size & Torque	A	B	C	D	E	t1	t2	W	R	F	G	H	J	K	L	N	d1	t3	Bolt Dia.	Wt. of each Fuse ℔	Stub Length	Stub Projection	Footing Diameter	Bars V Size
6 B 8.5											3⅝"	2"	1⅛"	4"	2¼"	⅞"	½"	9/16"	¼"	½"ø	1.09#	2'-0"	3"	2'-0"	#5
6 B 12	⅝"ø x 2¾"										3¾"	2"	1⅛"	4"	2¼"	⅞"	⅝"	11/16"	⅜"	⅝"ø	1.60#	2'-0"	3"	2'-0"	#5
6 B 15.5	Torque = 450"#	5"	2"	1¼"	2¾"	1⅛"	¾"	½"	¼"	1/32"	4½"	2½"	1¼"	6"	3½"	1¼"	¾"	13/16"	½"	¾"ø	3.75#	2'-6"	3"	2'-0"	#6
8 WF 17											4½"	2½"	1¼"	5¼"	2¾"	1¼"	¾"	13/16"	½"	¾"ø	3.27#	2'-6"	3"	2'-0"	#7
8 WF 20											4⅞"	2½"	1½"	5¼"	2¾"	1¼"	⅞"	15/16"	9/16"	⅞"ø	3.93#	3'-0"	2½"	2'-0"	#8
10 WF 21	¾"ø x 3½"										5⅜"	3"	1½"	5¾"	2¾"	1½"	⅞"	15/16"	9/16"	⅞"ø	4.75#	3'-0"	2½"	2'-0"	#9
10 WF 25	Torque = 750"#	6"	2¼"	1⅜"	3½"	1¼"	1"	¾"	5/16"	13/32"	5⅜"	3"	1½"	5¾"	2¾"	1½"	⅞"	15/16"	9/16"	⅞"ø	4.79#	3'-0"	2½"	2'-0"	#10
12 WF 27											5⅜"	3"	1½"	6½"	3½"	1½"	⅞"	15/16"	9/16"	⅞"ø	5.42#	3'-0"	2½"	2'-0"	#11
3 I 5.7	½"ø x 2½"	SEE DETAIL "A"									3⅛"	1½"	1⅛"	2⅝"	1½"	9/16"	½"	9/16"	¼"	½"ø	0.64#	1'-6"	3½"	1'-6"	#5
4 I 7.7	Torque = 200"#										3⅛"	1½"	1⅛"	2⅝"	1½"	9/16"	½"	9/16"	¼"	½"ø	0.64#	1'-6"	3½"	1'-6"	#5



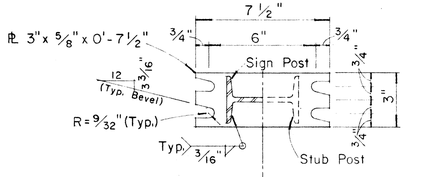
FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	80B-02-68	1968	11	15



HINGE DETAIL

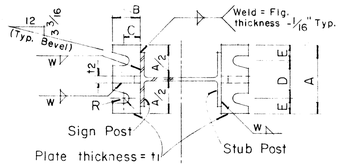


FOUNDATION DETAIL

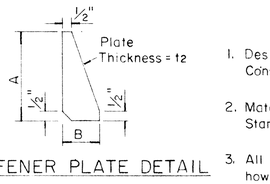


SECTION "A-A" SECTION "B-B"

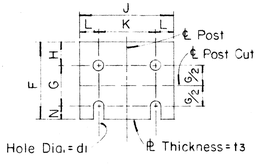
NOTE:
Sections shown are for installations on right shoulder and in gore. Reverse plate slot bevels for installations on left shoulder.



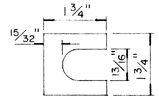
SECTION "C-C" SECTION "D-D"



STIFFENER PLATE DETAIL



FUSE PLATE DETAIL



SHIM DETAIL

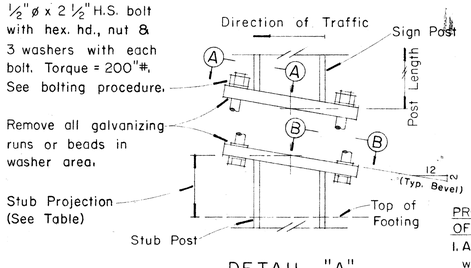
Furnish 2 ∽ .012" ± thick and 2 ∽ .032" ± thick shims per post. Shims shall be fabricated from brass shim stock or strip conforming to A.S.T.M. - B 36.

GENERAL NOTES

1. Design conforms with AASHO Specifications for the design and Construction of Structural Supports for Highway Signs.
2. Materials and Fabrication shall conform to the requirements of the Standard Specifications and Special Provisions.
3. All holes shall be drilled. All plate cuts shall preferably be saw cuts, however; flame cutting will be permitted provided all edges are ground. Metal projecting beyond the plane of the plate face will not be tolerated.
4. Tighten the high strength bolts in the base connection only to the torque shown, do not overtighten. All bolts other than high strength bolts shall conform to ASTM-A307, Class A.
5. All structural steel, bolts, nuts and washers shall be galvanized as per the Standard Specifications and Special Provisions. Structural steel to be galvanized after fabrication except as noted.
6. Structural steel shall conform with with the requirements of ASTM Specification A441.
7. Galvanizing of all posts shall be projection above concrete plus 6" minimum.
8. All friction fuse bolts shall be tightened in the shop following a method approved by the Engineer. Tightening shall be to such a degree as to obtain the following minimum residual tension in each bolt:

Bolt Size	Min. Tension	Bolt Size	Min. Tension
½"ø	12050 Lbs.	¾"ø	28400 Lbs.
⅝"ø	19200 Lbs.	⅞"ø	36050 Lbs.

½"ø x 2½" H.S. bolt with hex. hd., nut & 3 washers with each bolt. Torque = 200"#, See bolting procedure.



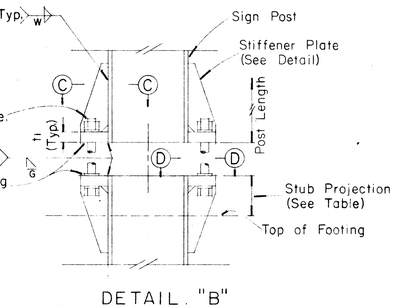
DETAIL "A"
SIGN POST & STUB POST
(For 4 I 7.7 and 3 I 5.7 Shapes)

PROCEDURE FOR ASSEMBLY OF BASE CONNECTION:

1. Assemble post to stub with bolts and with one flat washer on each bolt between plates.
2. Shim as required to plumb post.
3. Tighten all bolts the max. possible with 12" to 15" wrench to bed washers & shims and to clean bolt threads then loosen each bolt in turn & retighten bolts in systematic order to prescribed torque. (See Table)
4. Burr threads at junction with nut using a center punch to prevent nut loosening.

⅝"ø x 2¾" H.S. bolt with hex. hd., nut & 3 washers with each bolt. Torque = 450"# See bolting procedure.

Remove all galvanizing runs or beads in washer area.



DETAIL "B"
SIGN POST & STUB POST
(For WF and B Shapes)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STANDARD DETAILS
BREAK-AWAY SIGN SUPPORTS FOR GROUND MOUNTED GUIDE SIGNS

Not to Scale

SHEET No. 6 OF 6 SHEETS

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

PRINTED ON NO. 1000H CLEARPRINT