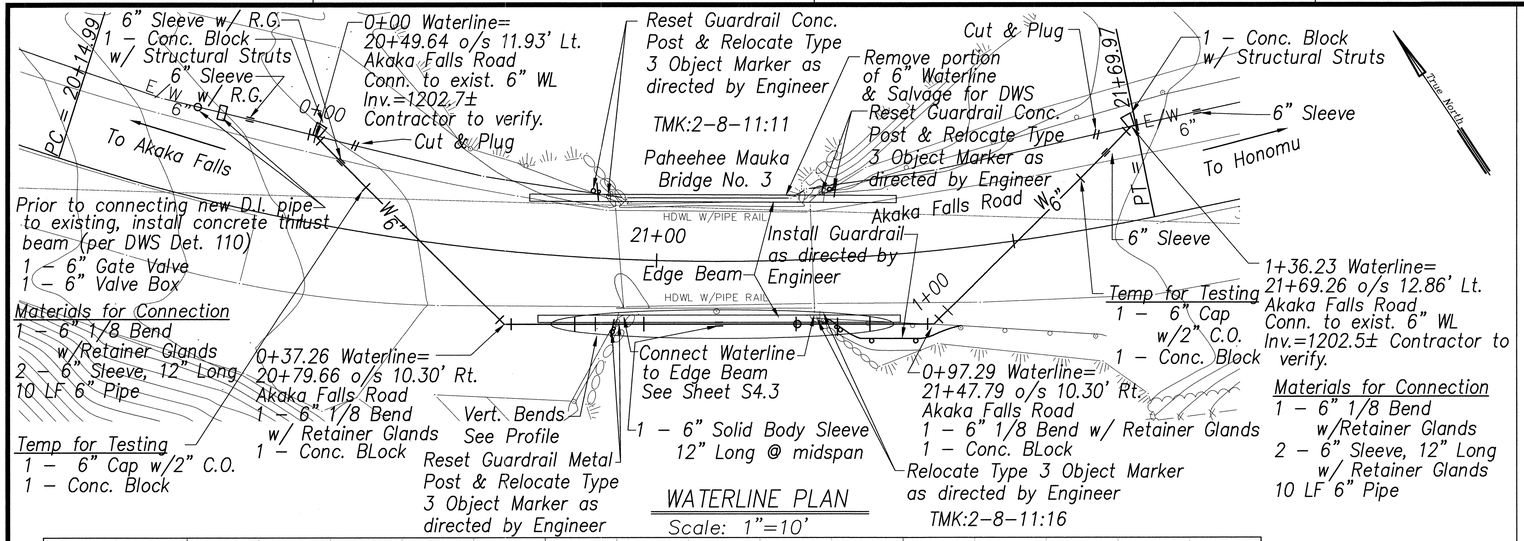
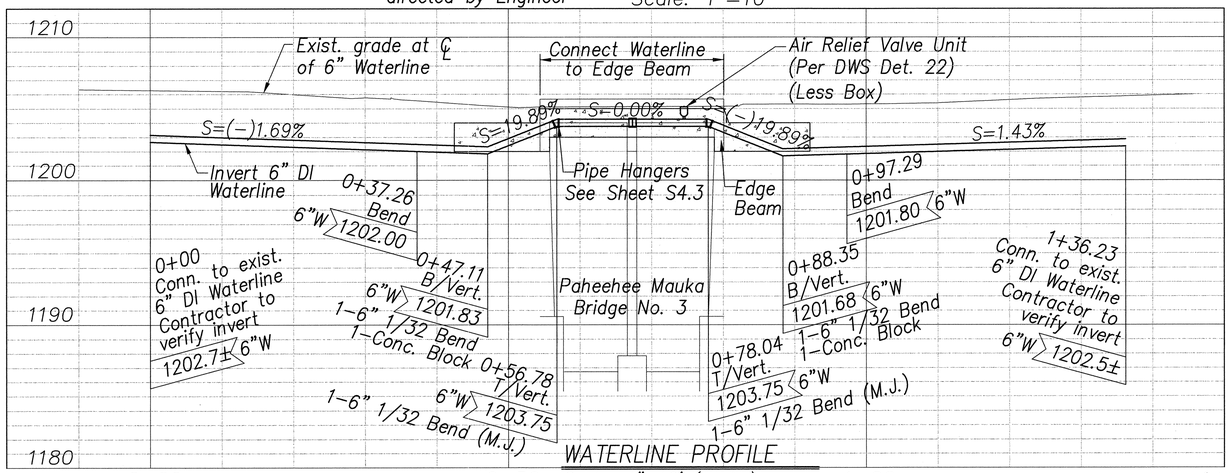
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-0100(57)	2000	8	88



WATERLINE PLAN

Scale: 1"=10'



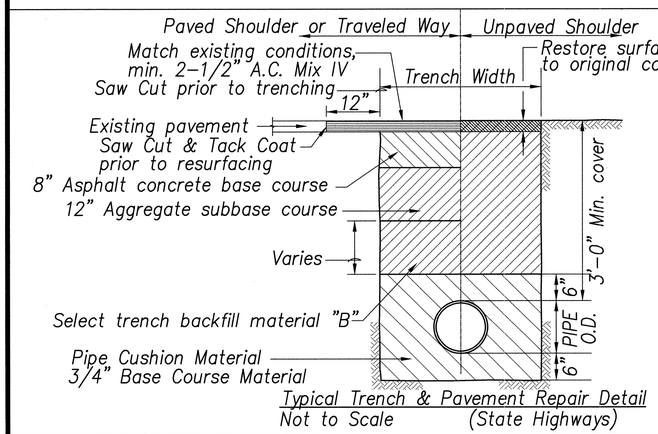
WATERLINE PROFILE

Scale: 1"=10' (Horiz.)
1"=5' (Vert.)

℄ CURVE DATA
△ = 29°36'00"
△/2 = 14°48'00"
R = 300.00'
T = 79.26'
C = 153.27'
L = 154.99'

WATER NOTES

1. All work shall be done according to the "Water System Standards, State of Hawaii, Volumes 1 and 2", dated 1985, as amended.
2. The contractor shall inform the D.W.S. engineer 72 hours prior to the beginning of any waterline work and one week prior to any connection, chlorination, shut–off or relocation.
3. All work and material furnished by the D.W.S. shall be paid for by the contractor.
4. All existing waterline, waterline appurtenances and other utility locations shown on the plans are obtained from latest reliable sources. The contractor shall be responsible to verify the exact location of all utilities in the field and shall bear all costs for damages done unto them during the contract period.
5. All hook–ups to existing waterlines shall be done by the Department of Water Supply. The contractor shall provide all excavation, backfill, road repair, traffic control, etc.
6. Where water shut–off of more than 3–hours becomes necessary, the contractor, at his own cost, shall provide a temporary bypass line, size of which shall be determined by the D.W.S. engineer. The D.W.S. engineer also reserves the right to require bypass lines, regardless of the water shut–off period, if it is deemed necessary.
7. Minimum horizontal clearance between waterlines and other utilities shall be 8–feet, minimum vertical clearance between waterline and other utilities shall be 12–inches provided the other utility is concrete jacketed and 18–inches if no concrete jackets are used. In all applicable instances the waterlines shall be a grade higher than other utilities.
8. All fittings (Class 250) and all gate valves (Class 200) shall be cast iron, with mechanical joints unless otherwise specified.
9. The waterline shall be tested at a minimum of 225 p.s.i., at the low point under D.W.S. supervision just prior to paving the roadways.
10. The contractor shall be responsible for the chlorination of the water system and shall bear all cost. The persons engaged to do the chlorination work must be licensed by the State of Hawaii.
11. Pipe cushion for copper pipes shall be No. 4 fine, manufactured sand.
12. Solder and flux shall contain not more than 0.2 percent lead.
13. All pipe fittings (bends, sleeves) on the bridge's edge beam shall be mechanical joint w/retainer glands.
14. Retainer Glands (R.G.) shall be Mega–Lug or approved equal.
15. Chlorination/hydrotesting water shall not be discharged into the stream. If the Contractor chooses to discharge chlorination/hydrotesting water into the stream, he/she shall be responsible for obtaining NPDES permit from DOH Cleanwater Branch.



Typical Trench & Pavement Repair Detail
Not to Scale (State Highways)

NOTES:

- 6" BED COURSE
  1. Where utilities are within the water table, use size #67 (AASHTO M43)
  2. For all other areas, bed course material shall be Trench Backfill Material "A"
- TRENCH BACKFILL MATERIAL "A"
  1. Sand Equivalent (S.E.) ≥ 20
  2. 8" maximum lifts
  3. 95% compaction
- TRENCH BACKFILL MATERIAL "B"
  1. S.E. must not be less than the area being filled and in no case shall the S.E. be less than 2 regardless of where it is used
  2. 8" maximum lifts
  3. 95% compaction
- SUBBASE COURSE
  1. S.E. ≥ 25
  2. 8" maximum lifts
  3. 95% compaction

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES ON ORIGINAL PLAN

KENNETH O. NAGAI
LICENSED PROFESSIONAL ENGINEER
No. 3265–C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Approved: _____ Manager DWS 04/05/01 Date

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PAHEEHEE MAUKA BRIDGE NO. 3

6" WATERLINE RELOCATION PLAN

HAWAII BELT ROAD
SEISMIC RETROFIT OF VARIOUS BRIDGES
VICINITY OF PEPEEKEO, HAWAII – UNIT 1
FEDERAL AID PROJECT NO. BR–0100(57)

SCALE: AS NOTED DATE: March 2001

SHEET No. C1.1 OF 5 SHEETS

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

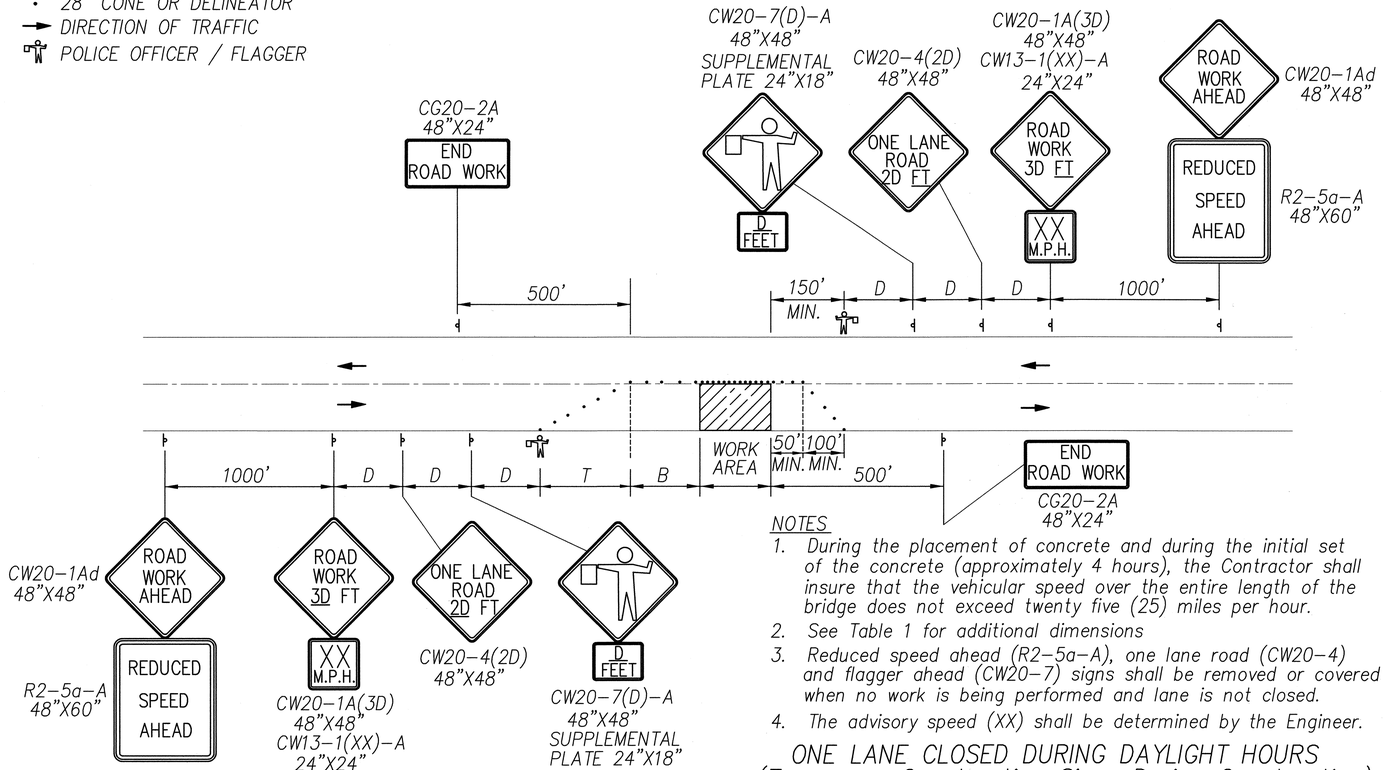
FILE: PLAN&PROF.dwg
PLOT: 1 = 1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-0100(57)	2000	9	88

GENERAL NOTES FOR TRAFFIC CONTROL PLAN

1. The contractor shall comply with Subsection 107.13 – Public Convenience and Safety of the Standard Specifications for Road, Bridge, and Public Works Construction regarding any traffic lane closure or slowdown of traffic.
2. The permittee shall make minor adjustments at intersections, driveways, bridges, structures, etc., to fit field conditions.
3. Cones or delineators shall be extended to a point where they are visible to approaching traffic.
4. Traffic control devices shall be installed such that the sign or device farthest from the work area shall be placed first. The others shall then be placed progressively toward the work area.
5. Regulatory and warning signs within the construction zone that are in conflict with the traffic control plans shall be removed or covered. All signs shall be restored upon completion of the work.
6. Flaggers and/or police officers shall be in sight of each other or in direct communication at all times.
7. Signs spacings (L), taper lengths (T) and spacings of cones or delineators shall be as shown in Table 1, unless otherwise noted on the traffic control plans.
8. All traffic lanes shall be a minimum of 10 feet wide.
9. All construction warning signs shall be promptly removed or covered whenever the message is not applicable or not in use.
10. The backs of all signs used for traffic control shall be appropriately covered to preclude the display of inapplicable sign messages (i.e., when signs have messages on both faces).
11. At the end of each day's work or as soon as the work is completed, the permittee shall remove all traffic control devices no longer needed to permit free and safe passage of public traffic. Removal shall be in the reverse order of installation.
12. Replace permanent pavement markings and traffic signs upon completion of each phase of work.

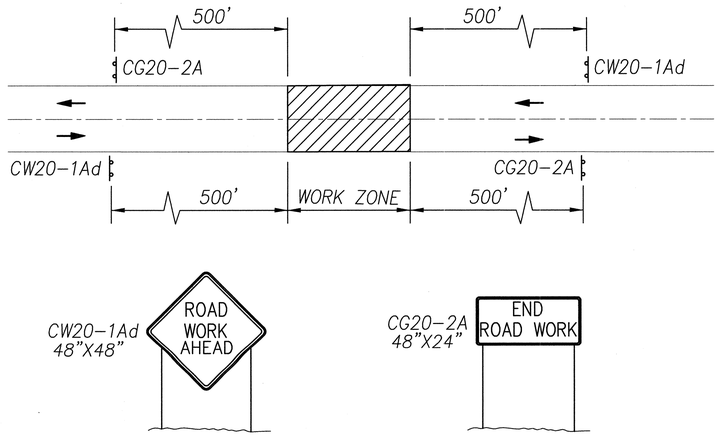
LEGEND
- SIGN
- 28" CONE OR DELINEATOR
- DIRECTION OF TRAFFIC
- POLICE OFFICER / FLAGGER



NOTES
1. During the placement of concrete and during the initial set of the concrete (approximately 4 hours), the Contractor shall insure that the vehicular speed over the entire length of the bridge does not exceed twenty five (25) miles per hour.
2. See Table 1 for additional dimensions
3. Reduced speed ahead (R2-5a-A), one lane road (CW20-4) and flagger ahead (CW20-7) signs shall be removed or covered when no work is being performed and lane is not closed.
4. The advisory speed (XX) shall be determined by the Engineer.

ONE LANE CLOSED DURING DAYLIGHT HOURS (Temporary Construction Signs During Construction)

Not to Scale



WORK ZONE PLAN – CONSTRUCTION SIGNS (Permanent Construction Signs During Construction)

Not to Scale

TABLE 1								
BRIDGE NAME	POSTED SPEED LIMIT (M.P.H.)	SIGN SPACING (D) (FEET)	TAPER LENGTH (T) (FEET)		LONGITUDINAL BUFFER SPACE (B) (FEET)	SPACING OF CONES OR DELINEATORS (FEET)		
			W=12' OR LESS	W=GREATER THAN 12'		TAPER	TANGENT	WORK AREA
HANAWI BRIDGE	55	1000	700		335	55	55	10
WAIAAMA BRIDGE	55	1000	700		335	55	55	10
PEPEEKEO PLANTATION ROAD OVERPASS	55	1000	700		335	55	55	10
PAHEEHEE MAUKA BRIDGE NO. 3	45	500	550		220	45	45	10
PAHEEHEE BRIDGE	55	1000	700		335	55	55	10

W=Width of lane

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

REDUCED PLAN (HALF SIZE)
0 1 2 3
3 INCHES ON ORIGINAL PLAN

KENNETH O. NAGAI
LICENSED PROFESSIONAL ENGINEER
No. 3265-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRAFFIC CONTROL PLAN

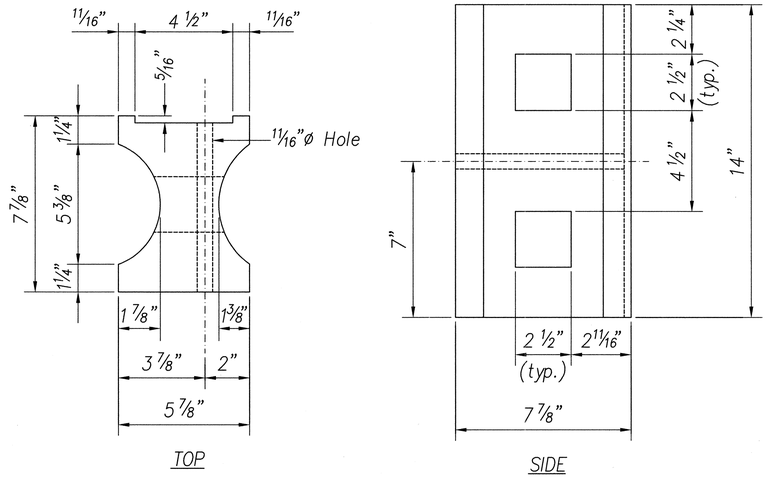
HAWAII BELT ROAD
SEISMIC RETROFIT OF VARIOUS BRIDGES
VICINITY OF PEPEEKEO, HAWAII – UNIT 1
FEDERAL AID PROJECT NO. BR-0100(57)

SCALE: AS NOTED DATE: March 2001

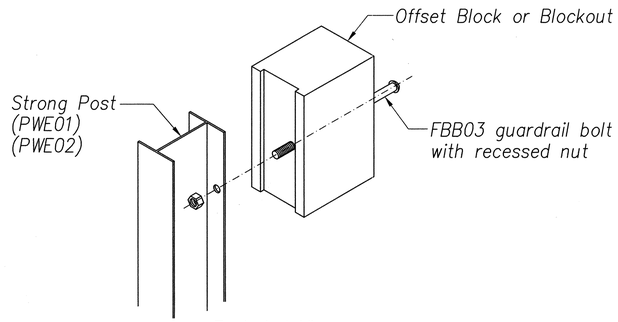
SHEET No. C2.1 OF 5 SHEETS

FILE: TRAFFIC.dwg
PLOT: 1 = 1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-0100(57)	2000	10	88



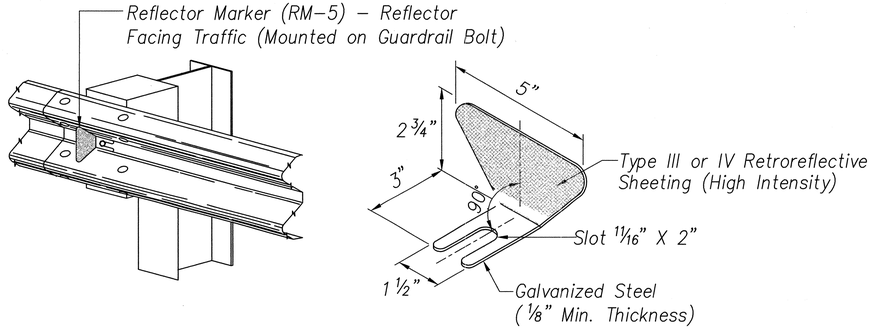
RECYCLED PLASTIC BLOCKOUT (TYPE I)



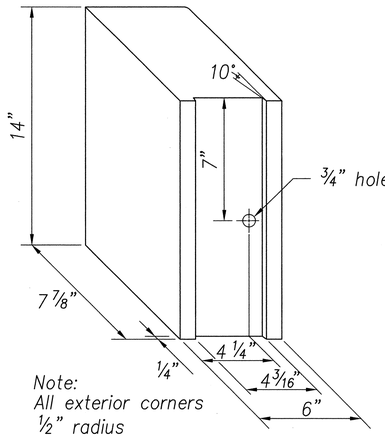
Exploded View

(Rail and washer not shown)

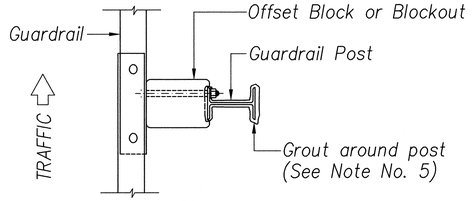
STEEL POST AND BLOCK DETAIL



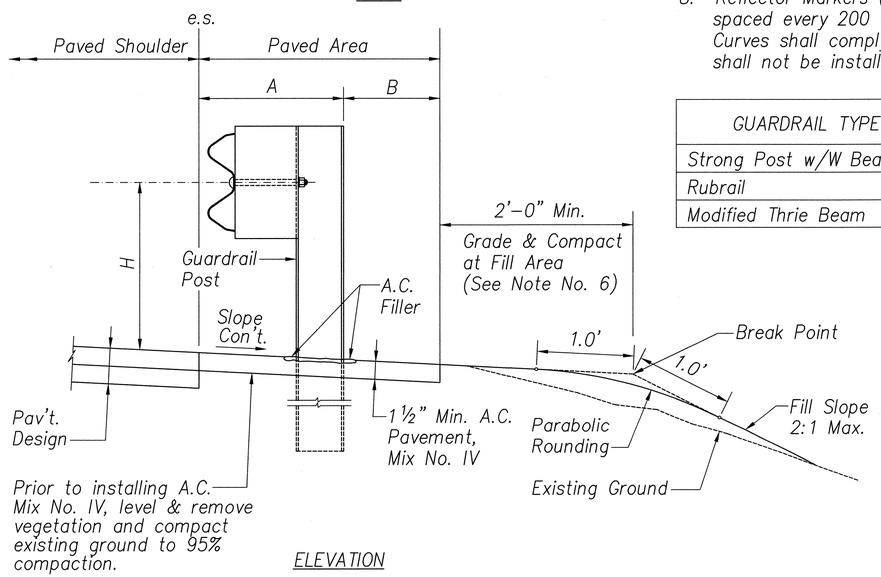
REFLECTOR MARKER (RM-5) DETAIL AND TYPICAL INSTALLATION



RECYCLED POLYETHYLENE OFFSET BLOCK (TYPE II)



PLAN



ELEVATION

TYPICAL GUARDRAIL INSTALLATION

GENERAL NOTES

1. All hardware, posts and fasteners shall be hot-dip zinc coated galvanized after fabrication. No punching, drilling or cutting will be permitted after galvanizing.
2. Where conditions require, special post lengths in increments of 6 inches may be specified.
3. All fasteners, posts, and rail elements (i.e. FBB03, PWE01, RWM02b, etc.) shall conform to the latest edition and amendments of "A Guide to Standardized Highway Barrier Rail Hardware", a report prepared and approved by the AASHTO-AGC-ARTBA Joint Cooperative Committee, Subcommittee On New Highway Materials, Task Force 13 Report. Dimensions of fasteners, posts and rail elements have been converted from metric units into their present form.
4. The Recycled Plastic Block or Offset Block shall be approved by the State.
5. After the guardrail posts are installed in the paved area, the Contractor shall grout around the guardrail post and seal all cracks in the paved area that was caused during the guardrail post installation. If required by the inspector/engineer, the Contractor shall tamper the paved area around the guardrail post prior to grouting. The cost for this work shall not be paid for separately, but shall be considered incidental to the various guardrail items.
6. When standards for the fill slope area cannot be met, a site specific, engineer approved design may be used.
7. New A.C. pavement at guardrails shall extend 6 feet longitudinally beyond terminal ends.
8. Reflector Markers (RM-5) mounted on guardrails shall be spaced every 200 feet. Spacing of RM-5's on Horizontal Curves shall comply with Table III-1 of the MUTCD. RM-5's shall not be installed on Terminal Sections.

GUARDRAIL TYPE	DIMENSION		
	H	A	B
Strong Post w/W Beam	1'-9 5/8"	1'-6"	1'-0"
Rubrail	2'-0"	1'-6"	2'-0"
Modified Thrie Beam	2'-0"	2'-0"	1'-0"

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES ON ORIGINAL PLAN

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

GUARDRAIL DETAILS AND NOTES

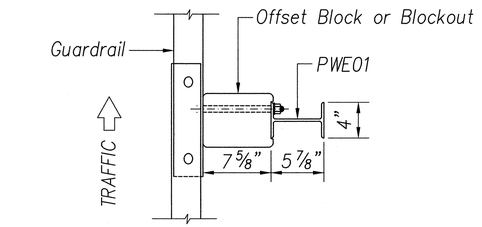
HAWAII BELT ROAD
SEISMIC RETROFIT OF VARIOUS BRIDGES
VICINITY OF PEPEEKEO, HAWAII – UNIT 1
FEDERAL AID PROJECT NO. BR-0100(57)

SCALE: NTS DATE: March 2001

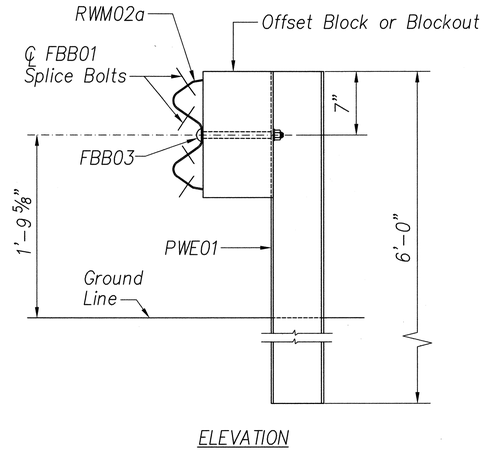
SHEET No. C3.1 OF 5 SHEETS

FILE: DETAILS.dwg
PLOT: 1 = 1

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-0100(57)	2000	11	88



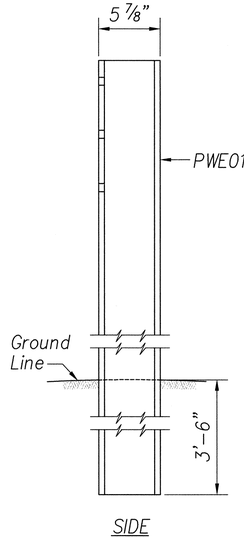
PLAN



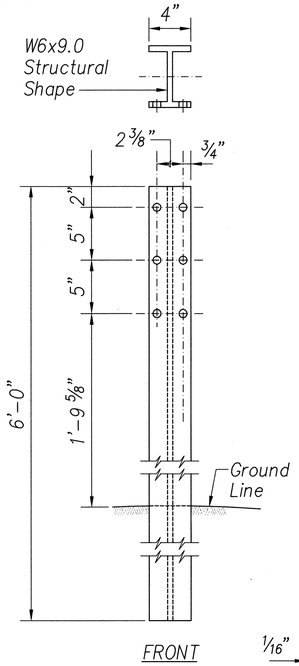
ELEVATION

STRONG POST W-BEAM GUARDRAIL (SGR04a)

Note: All Holes are ¾" Dia.

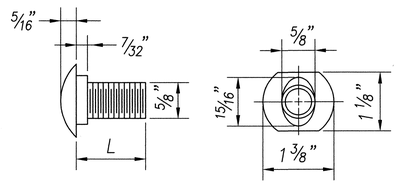


SIDE

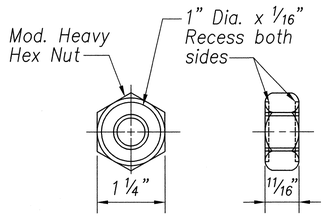


FRONT

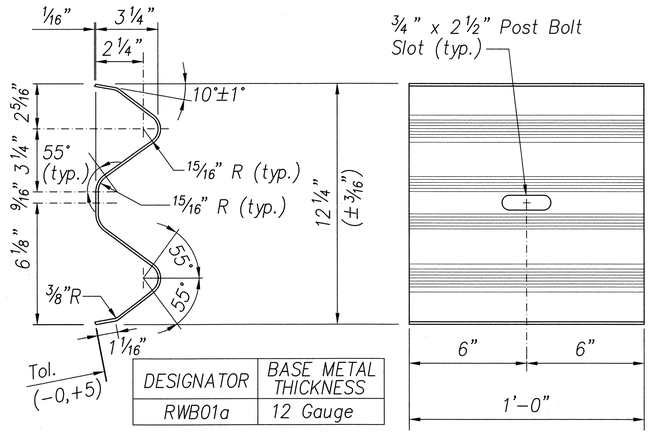
W-BEAM STRONG POST (PWE01)



DESIGNATOR	L
FBB01	1 3/8"
FBB02	2"
FBB03	10"

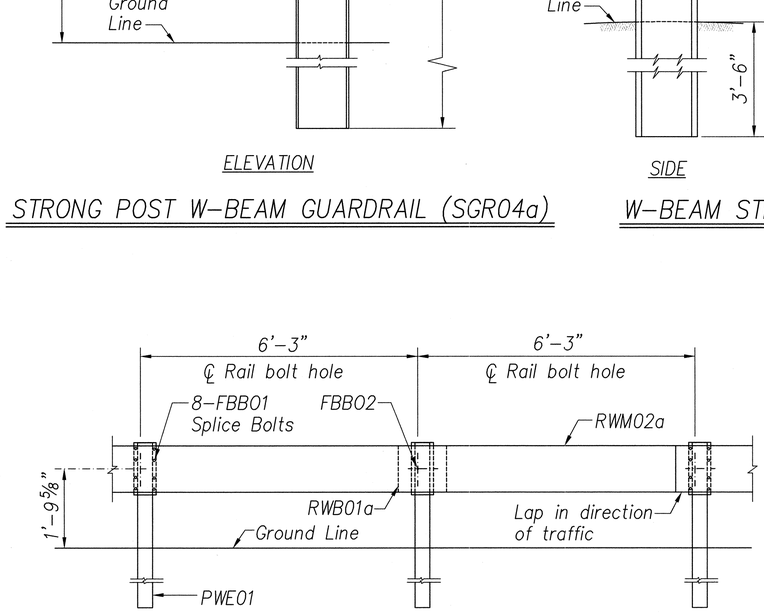


GUARDRAIL BOLTS AND RECESSED NUT



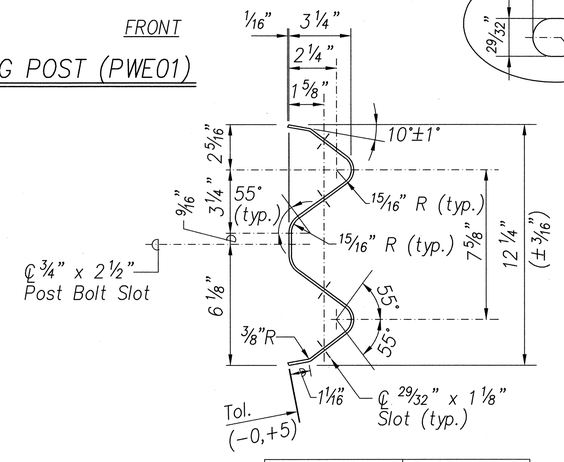
DESIGNATOR	BASE METAL THICKNESS
RWB01a	12 Gauge

W-BEAM BACK-UP-PLATE (RWB01a)

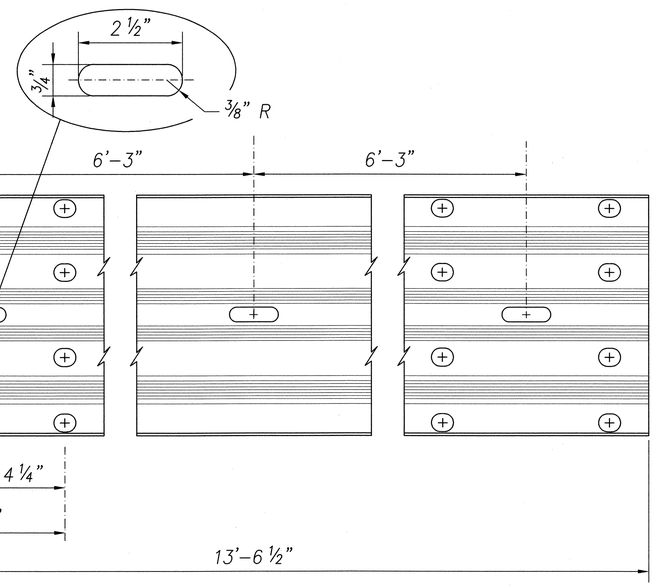


ELEVATION

STRONG POST W-BEAM GUARDRAIL WITH RECYCLED OFFSET BLOCK OR PLASTIC BLOCKOUT



DESIGNATOR	BASE METAL THICKNESS
RWM02a	12 Gauge



2 SPACE W-BEAM GUARDRAIL (RWM02a)

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES ON ORIGINAL PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRONG POST W-BEAM GUARDRAIL
(1 OF 2)

HAWAII BELT ROAD
SEISMIC RETROFIT OF VARIOUS BRIDGES
VICINITY OF PEPEEKEO, HAWAII - UNIT 1
FEDERAL AID PROJECT NO. BR-0100(57)

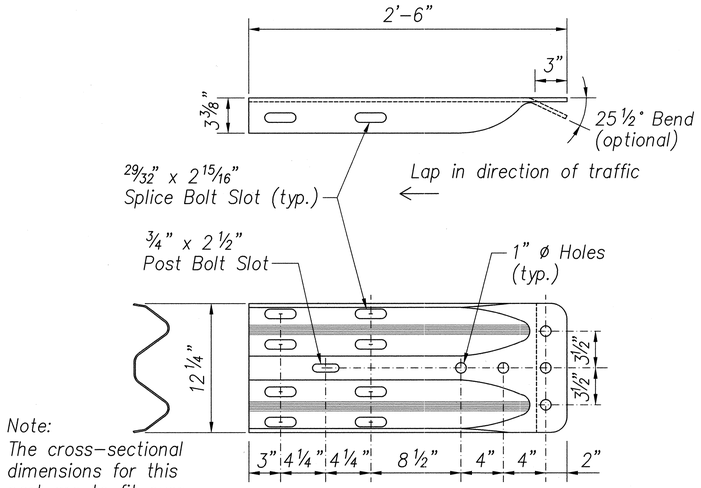
SCALE: NTS DATE: March 2001

SHEET No. C3.2 OF 5 SHEETS

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

FILE: DETAILS.dwg
PLOT: 1 = 1

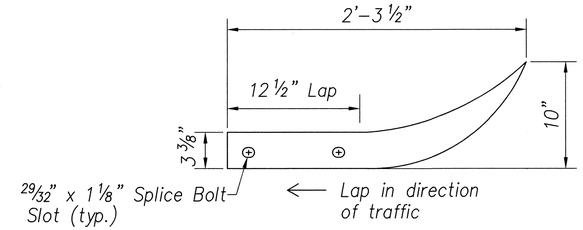
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-0100(57)	2000	12	88

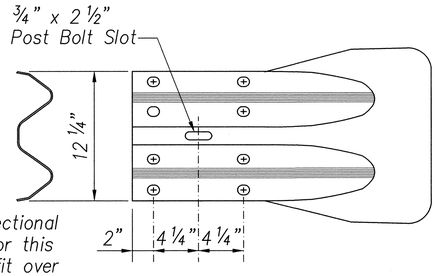


Note:
The cross-sectional dimensions for this part are to fit over part RWM02a on the approach end and under part RWM02a on the trailing end.

DESIGNATOR	BASE METAL THICKNESS
RWE02b	10 Gauge

W-BEAM TERMINAL CONNECTOR (RWE02b)

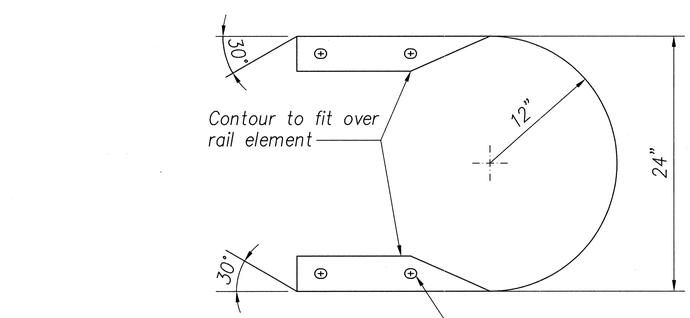




Note:
The cross-sectional dimensions for this part are to fit over part RWM02a on the approach end and under part RWM02a on the trailing end.

DESIGNATOR	BASE METAL THICKNESS
RWE01a	12 Gauge

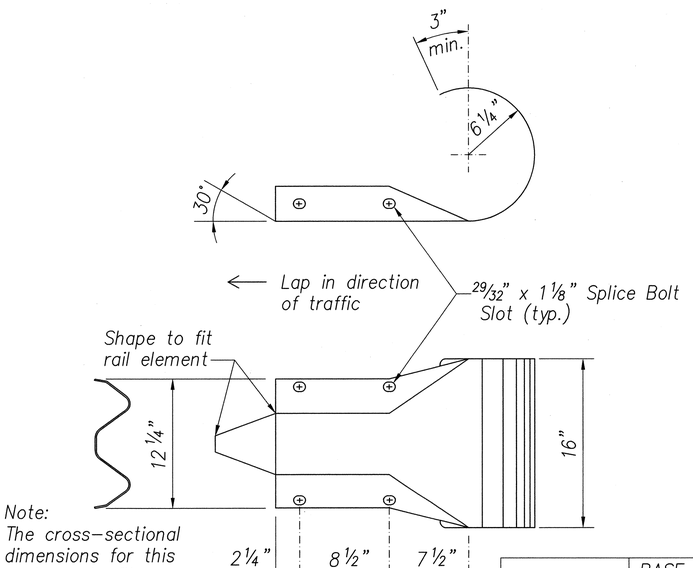
W-BEAM END SECTION (FLARED RWE01a)



Note:
The cross-sectional dimensions for this part are to fit over part RWM02a

DESIGNATOR	BASE METAL THICKNESS
RWE06a	12 Gauge

W-BEAM END SECTION (BUFFER RWE06a)



Note:
The cross-sectional dimensions for this part are to fit over part RWM02a

DESIGNATOR	BASE METAL THICKNESS
RWE03a	12 Gauge

W-BEAM END SECTION (ROUNDED RWE03a)

REDUCED PLAN
(HALF SIZE)
0 1 2 3
3 INCHES ON ORIGINAL PLAN

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

STRONG POST W-BEAM GUARDRAIL
(2 OF 2)
HAWAII BELT ROAD
SEISMIC RETROFIT OF VARIOUS BRIDGES
VICINITY OF PEPEEKEO, HAWAII – UNIT 1
FEDERAL AID PROJECT NO. BR-0100(57)

SCALE: NTS DATE: March 2001

SHEET No. C3.3 OF 5 SHEETS

12

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

FILE: DETAILS.dwg
PLOT: 1 = 1