

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1M-1R-HI-K(216)	1994	C.O.22	32

GENERAL NOTES

DESIGN SPECIFICATIONS--AASHTO:

AASHTO Standard Specifications for Highway Bridges (15th edition), with subsequent Interim Specification 1992.

ALLOWABLE DESIGN STRESSES:

1. Reinforced concrete: $f_c = 0.40 f'_c$
2. Reinforced steel: $f_s = 20,000$ psi for Grade 40, 24,000 psi for Grade 60
3. Except as noted otherwise, all structural steel plates and members shall conform to ASTM A 36 and be hot-dip galvanized after fabrication.

MATERIALS:

1. Reinforced concrete: Class A
2. Reinforced steel: ASTM A 615, Grade 40 or Grade 60.
3. Admixture in concrete: See Special Provisions.
4. All expansion and premolded joint filler shall be incidental to concrete and will not be paid for separately.

CONSTRUCTION METHODS:

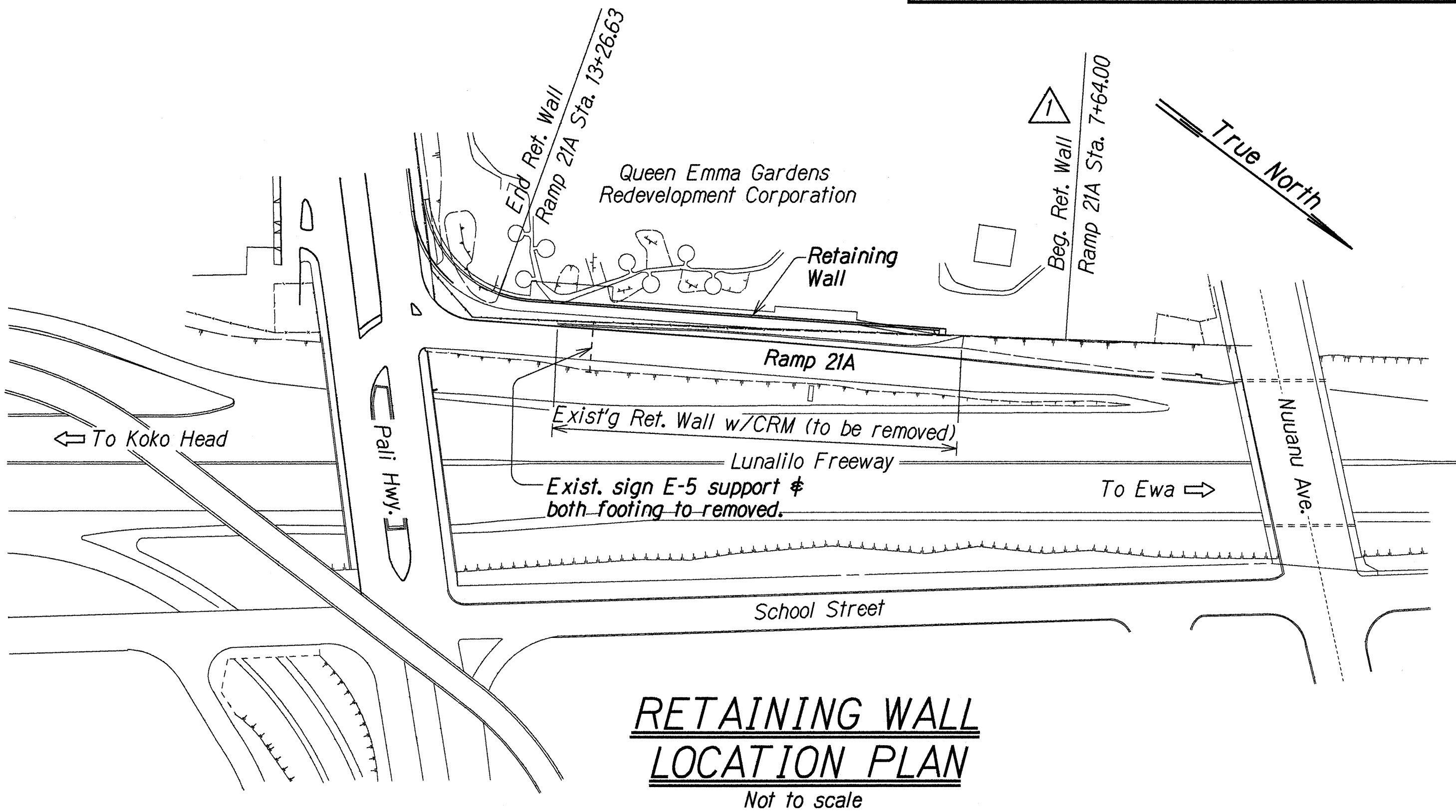
1. Refer to Standard Specifications for Road and Bridge Construction, 1985 Edition and Special Provisions.
2. Except as noted otherwise, all vertical dimensions are measured plumb.
3. For concrete finish, see Special Provisions.
4. Pneumatic or impacting type of equipment will not be permitted for drilling of holes.
5. Stagger all splices where possible.
6. Rebars shall be supported, bent and placed as per "Manual of Standard Practice for Detailing Concrete Structures" ACI 315 (latest)
7. For cast-in-place concrete, minimum reinforcement cover:
Concrete cast against earth: 3"
Retaining wall: 2"
8. At time concrete is placed, rebars shall be free from mud, oil, laitance or other coatings adversely affecting bond capacity.
9. Reinforcement, dowels and other embedded items shall be positively secured before pouring.
10. All footings shall bear on firm undisturbed natural soils or properly compacted structural fill.
11. Weepholes, 4 inches in diameter, shall be placed not more than 10 feet on center along walls. A 12 inch minimum thick filter gravel drain shall be placed along the entire length of wall connecting the weepholes. Weepholes shall be incidental to concrete in retaining walls.

REFERENCE:

1. Refer to Standard Plans for additional details and notes not covered by details and typical drawings.

GENERAL:

1. All items noted incidental will not be paid for separately.
2. The Contractor shall verify the locations of all existing utility lines and notify their respective owners before commencing with any work.
3. The Contractor shall verify all grades and dimensions in the field before commencing with any work.
4. The Contractor shall be solely responsible for the protection of adjacent property, utility and existing and new structures from damage due to construction and repair any damage at his own expense, to the satisfaction of the Engineer. He shall conduct his work in such a manner and provide such temporary shoring or other measures as may be necessary to insure the safety of all concerned and to protect existing structures.
5. Excavation for all footings and stems shall be accomplished by maintaining as near a vertical cut as possible.
6. In the event of over-excavation, the space between the footing and ground shall be filled with a minimum of Class D concrete at the Contractor's expense and as directed by the Engineer.
7. Unless noted otherwise, chamfer all exposed concrete edges three-quarters (3/4) of an inch.



SYMBOLS AND ABBREVIATIONS

Detail or section designation
Sheet number section is cut or detail location
Sheet number detail is drawn on

E.F. Each Face
F.F. Front Face
R.F. Rear Face
T.O.W. Top Of Wall
B.O.F. Bottom Of Footing
F.G.E. Finish Grade Elevation
T.O.G.R.P. Top Of Grouted Rubble Protection

ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITIES
202.0110	Removal of Structures and Obstructions	Lump Sum	(236 c.y.)
206.5000	Structural Excavation For Retaining Walls	Cu. Yd.	1,492
206.7250	Structural Backfill For Retaining Walls	Cu. Yd.	1,033
206.8300	Filter Material For Retaining Walls	Cu. Yd.	149
503.1050	Concrete In Retaining Walls	Lump Sum	(715 c.y.)
602.0050	Reinforcing Steel In Retaining Walls	Lump Sum	(50,000 lbs.)
612.0200	Grouted Rubble Slope Protection	Cu. Yd.	10

1

9/17/94

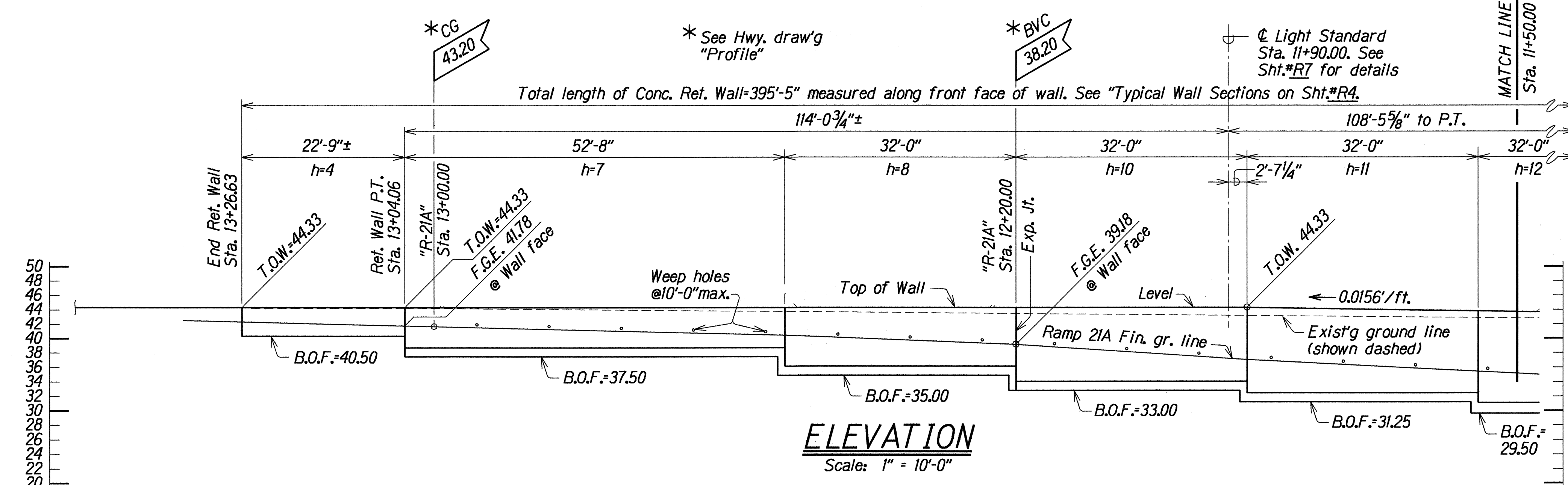
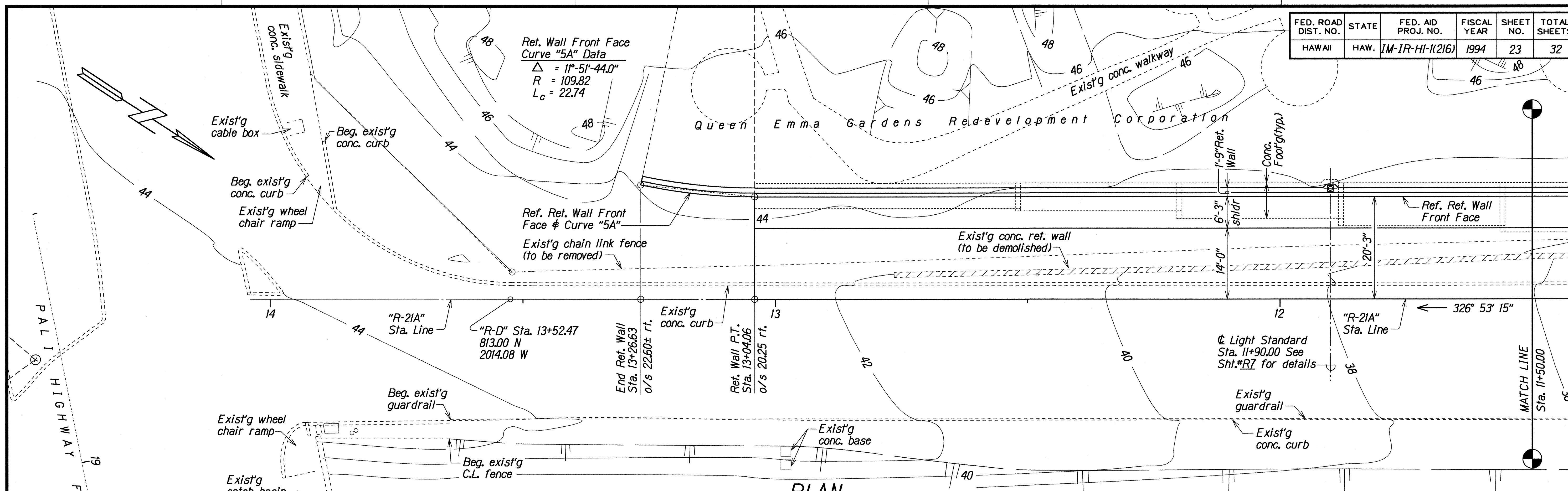
"Ref. Wall Location Plan" beg. ref. wall Sta. revised from 9+32 to 7+64.

Revised Estimated Quantities

DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION GENERAL NOTES, ESTIMATED QUANTITIES AND LOCATION PLAN INTERSTATE ROUTE H-1 Eastbound Off-Ramp Improvements at Pali Highway F.A. Project No. 1M-1R-HI-K(216) Scale: As Noted Date: May, 1994	
SHEET No. R1 OF 8 SHEETS	

SURVEY PLOTTED BY	DATE
CHM/LSG	MAY 1994
DESIGNED BY	
JEV/JS	MAY 1994
QUANTITIES BY	
JS	MAY 1994
CHECKED BY	
JS	MAY 1994
ORIGINAL PLAN	
NOTE BOOK	
NO. 1000210-1	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1M-1R-HI-1(216)	1994	23	32



ORIGINAL PLAN	DATE	BY
NOTE BOOK	MAY 1994	LM/KSG
QUANTITIES BY	MAY 1994	JFJ
CHECKED BY	MAY 1994	MSI

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

PLAN AND ELEVATION AT RAMP 21A
STA. LINE 11+50.00 TO 13+26.63
INTERSTATE ROUTE HI-1
Eastbound Off-Ramp Improvements at Pali Highway
F.A. Project No. 1M-1R-HI-1(216)

Scale: As Noted Date: May, 1994

SHEET No. R2 OF 8 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-IR-HI-1(216)	1995	C.O.24	32

Queen Emma Gardens Redevelopment Corporation

PLAN
Scale: 1" = 10'-0"

Ret. Wall Front Face Curve Data:
Δ = 1°-42'-23.0"
R = 2020.250
T = 30.09
C = 60.16
L_c = 60.17

Ramp 21A Sta. Line Curve Data:
Δ = 1°-42'-23.0"
R = 2000.000
T = 29.78
C = 59.56
L_c = 59.56

ELEVATION
Scale: 1" = 10'-0"

Total length of Conc. Ret. Wall=563'-5" measured along front face of wall. See "Typical Wall Sections on Sht.*R4 & *Modified Wall Sections" on Sht.*R5.

9/7/94
Construct additional retaining wall from Sta. Line 7+64.00 to 9+32.00. Raise top of wall from Sta. 9+32.00 to Sta. 9+53.52. Round off top of wall at Sta. 9+53.52, Sta. 9+75.00 and Sta. 11+24.00. Remove Note-End Taper at Sta. 10+10.00. Move G.R.P. to end of added retaining wall at Sta. 7+64.00. Revise h=12 to h=14 (Sta. 8+92 to 9+32)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
PLAN AND ELEVATION AT RAMP 21A
STA. LINE 9+32.00 TO 11+50.00
INTERSTATE ROUTE HI-1
Eastbound Off-Ramp Improvements at Pali Highway
F.A. Project No. IM-IR-HI-1(216)
Scale: As Noted
Date: Sept. 1994

DATE REVISION SHEET No. R3 OF 8 SHEETS

C.O.24

Queen Emma Gardens Redevelopment Corporation

40
38
36
34
32
30
28
26
24
22
20
18
16
14
12
10
8
6
4
2

Exist. CRM wall (to be demolished)

1'-9" Ref. Wall

6'-3"

14'-0"

Ref. Ref. Wall Front Face

Exist. Light Std. (to be relocated)

Exist. bott. bank

Exist. top bank

Exist. conc. curb

Exist. conc. gutter

"R-21A" Sta. Line 328°35'38" ← 548.58 P.T. to P.C.

End 60' Taper Sta. 8+20.00± o/s 14' Rt.

20'-9"± G.R.P.

Exist. guardrail

Exist. light std.

Exist. cable box

Exist. catch basin Inv.=15.20

Exist. Elec. Box

Exist. cor. Abut.

Exist. catch basin

324°57'10" 412

355°24'25" 231.47 to "Queen" (Hub)

15°11'16" → 795.38 to "Pali"

MATCH LINE Sta. 9+00.00

Beg. Ret. Wall Sta. 7+64.00 o/s 20.25 to Ref. Wall Front Face

Begin 60' Taper Sta. 7+60.00

Begin G.R.P. Sta. 7+56.00

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-IR-HI-1(216)	1995	C.024S-1	32

PLAN

Scale: 1" = 10'-0"

1/1/94

Trav. "Nuuanu" ("+" on sdwk Nuuanu Overpass)

1430.78 N

2348.16 W

*See Hwy. draw'g "Profile"

*EVC El. 23.20

C.G. El. 27.88

Total length of Conc. Ret. Wall=563'-5" measured along front face of wall. See "Typical Wall Sections on Sht.*R4

32'-0" h=15

40'-0" h=14

32'-0" h=13

32'-0" h=13

5'-0" 5'-0"

32'-0" h=12

32'-0" h=13

8'-0"

Sta. 9+32.00 Exp. Jt.

"R-21A" Sta. 9.00

⌀ (relocated) Light Std. at Sta. 8+97.50± See Sht.*R7 for details

Exist. ground line at back of Wall (shown dashed)

T.O.W.=31.33

Round-off top of wall

T.O.W.=28.15

Top of Ret. Wall

T.O.W.=27.88

T.O.W.=27.88

T.O.G.RP=27.55

0.0540'/ft.

Ramp 21A Fin. gr. line @ Control Grade

Weep holes @10'-0" max.

See Sht.*R6 for GRP Details

B.O.F.=19.50

B.O.F.=17.80

B.O.F.=16.37

B.O.F.=15.16

B.O.F.=14.16

B.O.F.=13.38

See Sht.*R6 for typical

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48

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44

42

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22

20

18

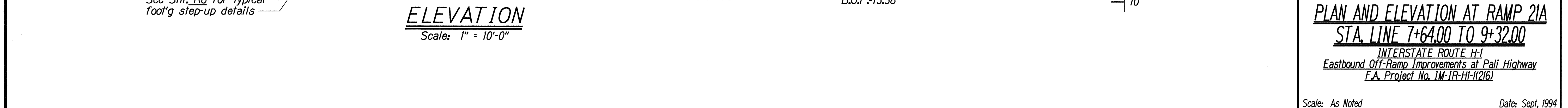
16

14

12

9/7/94	Sheet added to Contract Plan set for additional details
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	

Scale: 1" = 10'-0"



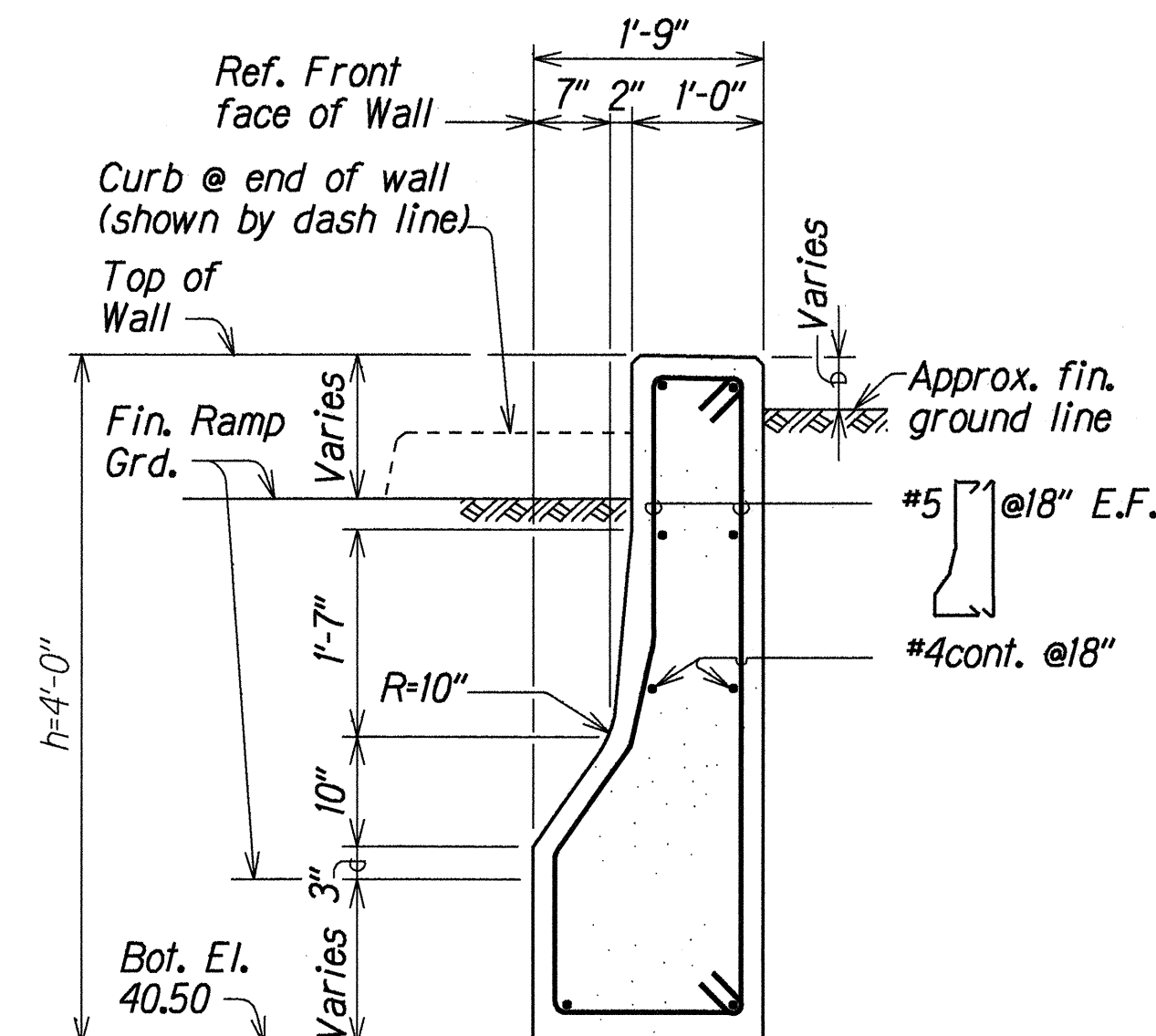
DATE	REVISION
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Scale: As Noted Date: Sept, 1994

C.O.24S-1

C.O.24S-1

 SCHEDULE OF DIMENSIONS AND REINFORCING STEEL FOR RETAINING WALL										
Maximum "h"	7'	8'	10'	11'	12'	13'	14'	15'	16'	16M
"a" bar	#5@18"	#5@18"	#5@12"	#6@12"	#7@11"	#7@11"	#7@10"	#8@9"	#8@7"	
"b" bar	#5@18"	#5@18"	#5@12"	#6@12"	#7@11"	#7@11"	#7@10"	#8@9"	#8@7"	See Sht. #B5
"c" bar	#5@18"	#5@18"	#5@12"	#6@12"	#5@11"	#5@11"	#5@10"	#6@9"	#6@7"	
d	1'-9"	2'-0"	2'-6"	2'-9"	2'-9"	3'-0"	3'-0"	3'-6"	3'-6"	
L	5'-0"	5'-6"	7'-0"	8'-6"	9'-9"	9'-9"	10'-3"	12'-0"	13'-3"	
t	15"	15"	15"	15"	18"	18"	18"	21"	24"	



- Hatched Area**
1. Hatched area shown thus  denotes limits of structure excavation.
 2. Hatched area shown thus  denotes limits of structure backfill.
- Impervious Material**
3. Impervious material as selected by the Engineer shall be incidental to structure backfill.
 4. When "y" is 2'-0" or less, all backfill below PVC weep hole level shall be impervious material.
 5. The subgrade upon which filter material is to be placed shall be made as impervious as possible by pneumatic tamping or other approved methods.

STRUCTURE EXCAVATION AND DRAINAGE DETAIL
Not to Scale

9/17/94 	Revised Schedule and Typical Wall Section.	<u>INTERSTATE ROUTE 4-1</u> <u>Eastbound Off-Ramp Improvements at Pali Highway</u> <u>F.A. Project No. 1M-1R-HI-11(216)</u>	
DATE	REVISION	Scale: As Noted	Date: Sept, 1994

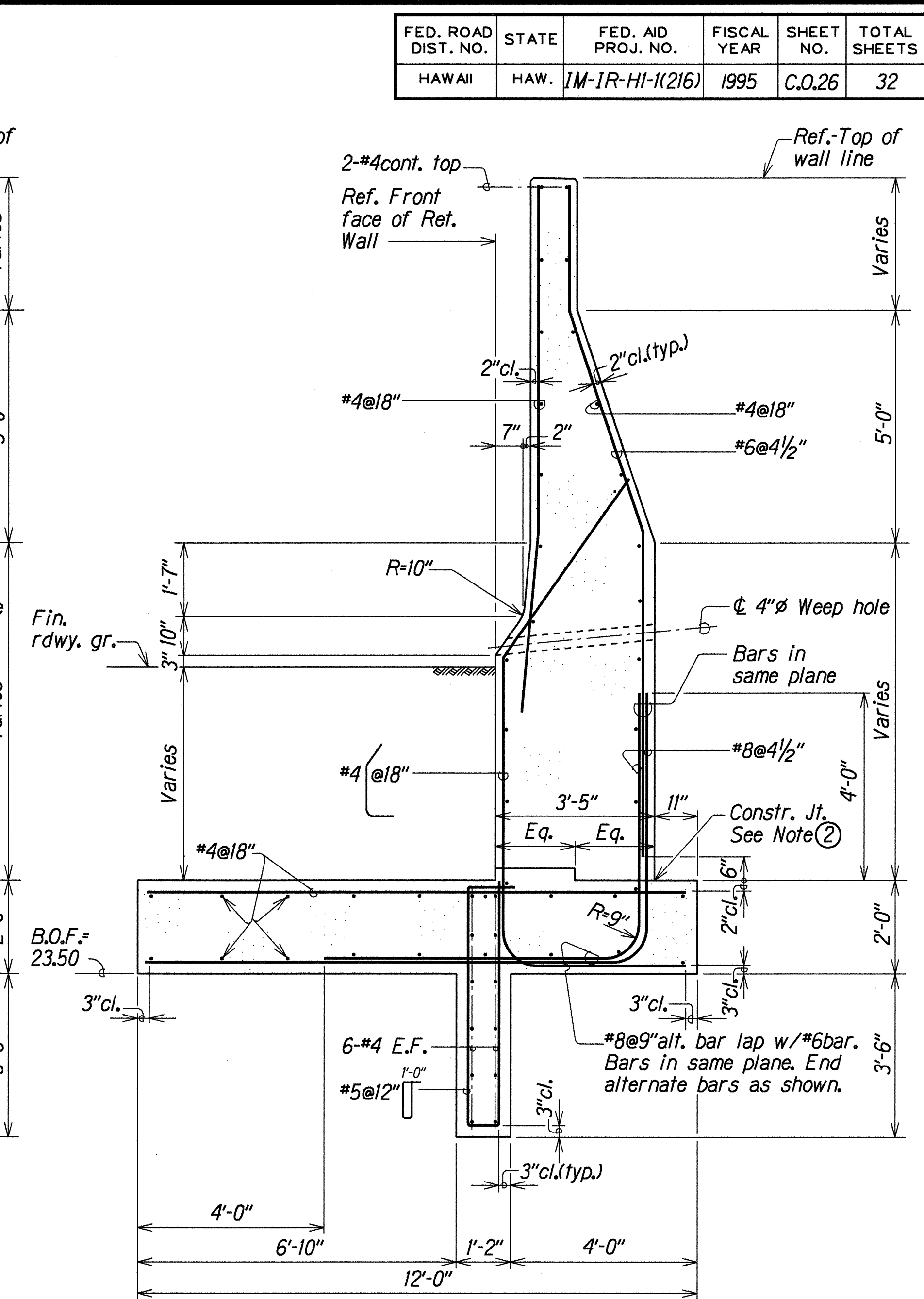
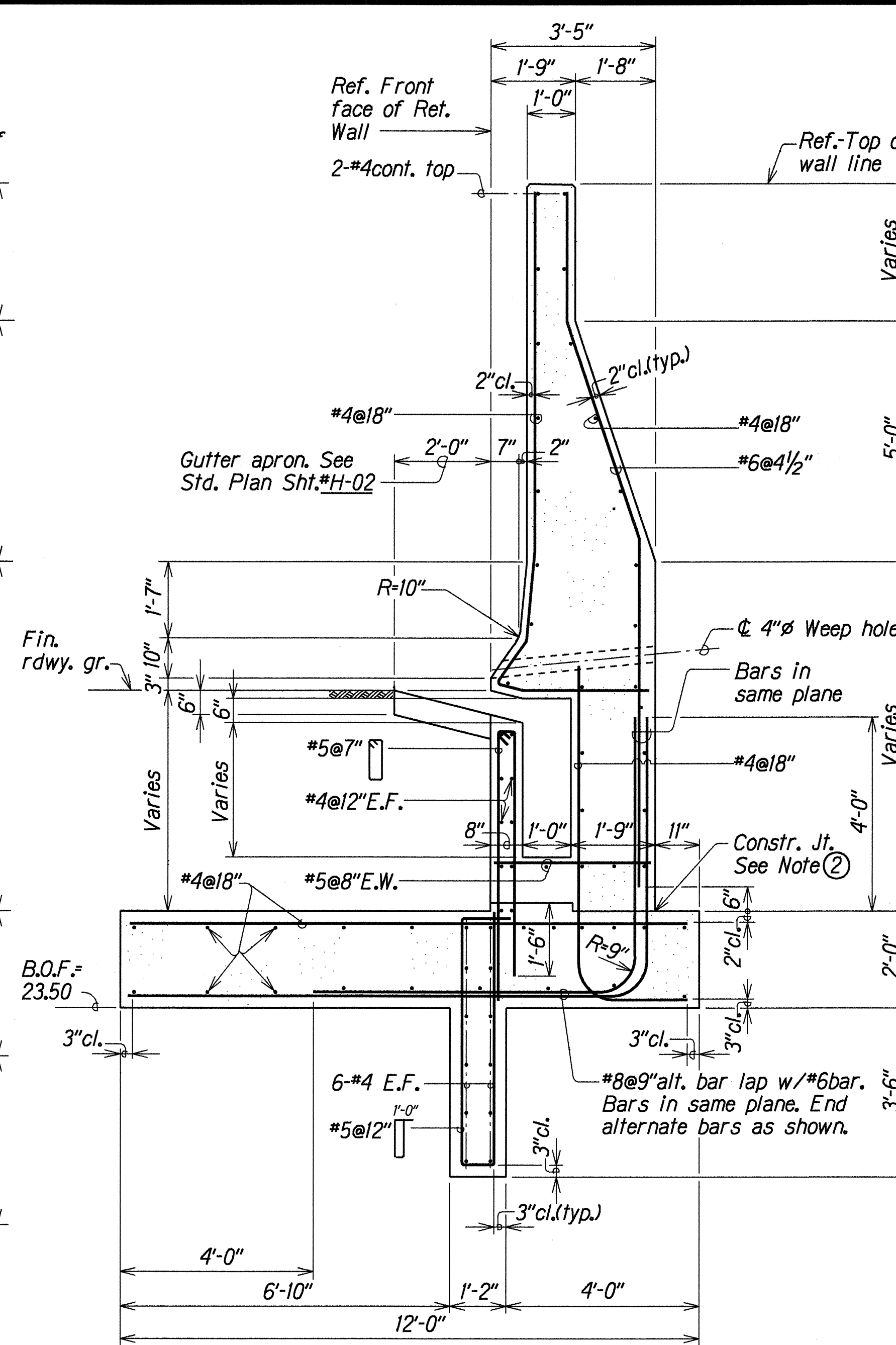
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

NOTES:

- For Manhole frame and cover see D.O.T. Standard Plan Sht.*H-08. For added reinforcement around pipe culvert and manhole opening see Standard Plan Sht.*H-04.
- Construction joint flashing compound. See Specifications and Standard Plan Sht.*B-01.

Dimensions and Reinforcement Details:

- Top Section:**
 - Ref. Front face of Ref. Wall
 - Slope down top of wall 1/4:12 toward rear face
 - 2-#4 cont. top
 - 3'-5"
 - 1'-9"
 - 1'-8"
 - 1'-0"
 - Approx. fin. ground line
 - Ref.-Top of wall line
 - Varies
- Manhole Frame and Cover:**
 - ¢ Type "A" C.I. Manhole Frame & Cover. See Note ①
 - 2-#5 @ 4" o.c. in 8" throat partition
 - R-10"
 - 3'-2"
 - 6"
 - 1'-4"
 - 8"
 - 1'-0"
 - 1'-9"
 - 11"
 - Eq.
 - Eq.
 - Constr. Jt. See Note ②
 - Varies
 - 4'-0"
 - 3'-0"
 - 3'-6"
- Reinforcement:**
 - #4@12" top and #5@5" bott. longit. bars. Cut bars @ open'g
 - #4@12"
 - #5@10" Manhole rungs@12"
 - #4@12" horiz.
 - #5@8" E.F.
 - #4@18"
 - #4@18"
 - 2-#6x7'-0"
 - #5@10"
 - Bars in same plane
 - 2-#8x7'-0"
 - #5x10'-4" lg. @8" Extend 1'-6" beyond C.B. at both ends
 - #8@9" alt. bar lap w/ #6bar. Bars in same plane. End alternate bars as shown.
 - 6-#4 E.F.
 - #5@12"
 - 3" cl.
 - 3" cl. (typ.)
 - 1'-2"
 - 4'-0"
 - 14'-0"
 - 8'-10"
 - 5'-0"
 - 3" cl.
 - End alt. bars
 - Crushed rock cradle varies
 - 1'-6"
 - B.O.F. = 22.50
 - 5 3/4" ± cl.
 - 10.69% Slope
 - ¢ 24" ¢ CMP Pipe
 - Inv. El.=25.50
 - Typ. 8" wall vert. reinf. #4 1'-0" @ 12" B.F. See Note ①
 - #4@12" top and #5@5" bott. longit. bars. Cut bars @ open'g
 - Fin. rdwy. gr.=30.05 @ Sta. 10+45.50



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

A
R5 R5

32'-0" h=16M

14'-3" 17'-9"

4'-7" 6'-0" 7'-4" 6'-0" 8'-1"

See Section C R5 R5 See Section B R5 R5 See Section A R5 R5 See Section B R5 R5 See Section C R5 R5

8" Partition 3'-0" 3'-0" 8" Partition

Throat Open'g 1'-8" 6"(typ)

Exp.

Fin. rdwy. Grd.

1'-9" 2'-9" 2'-9" 1'-9"

Varies

B.O.F.=23.50 B.O.F.=22.50 B.O.F.=23.50

1'-0" Limits of crushed rock 1'-0"

See "Typical Footing Step-up Detail on Sht.*R6 for reinforcing detail."

9/7/94 	Notes added and *8 bent reinforcement spacing revised from 4 1/2" to 9"
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION <u>MODIFIED RETAINING WALL AND</u> <u>TYPE AI CATCH BASIN DETAILS</u> <u>INTERSTATE ROUTE H-1</u> <u>Eastbound Off-Ramp Improvements at Pali Highway</u> <u>E.A. Project No. 1M-1R-H1-1(216)</u>	
Scale: As Noted	Date: Sept. 1994
SHEET No. R5 OF 8 SHEETS	

1- layer 45# composition roofing paper

Reference Front face of wall

12"

key

Flashing compound

Construction jt.

4"

1/2" premolded joint filler

13/4"x4" cont. key Similar as Section

top of wall

1- layer 45# composition roofing paper

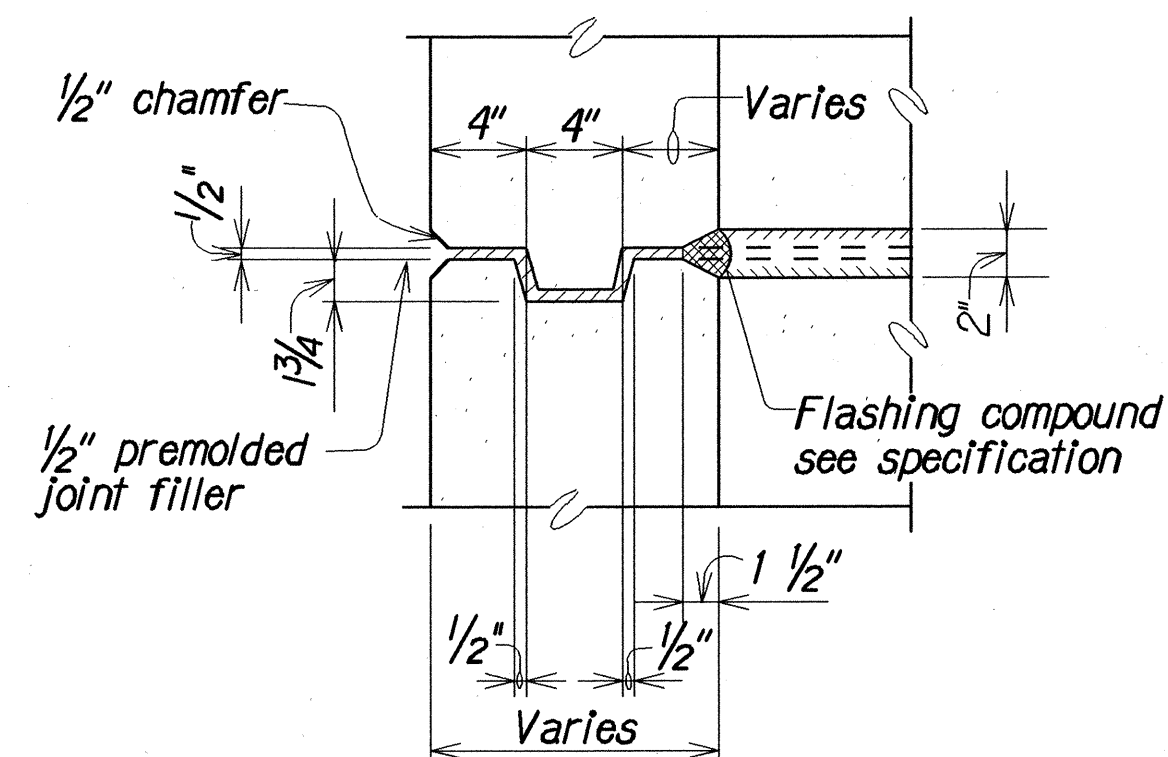
1/2" premolded joint filler (expansion jt.)

1- layer 45# comp. roofing paper (contraction jt.)

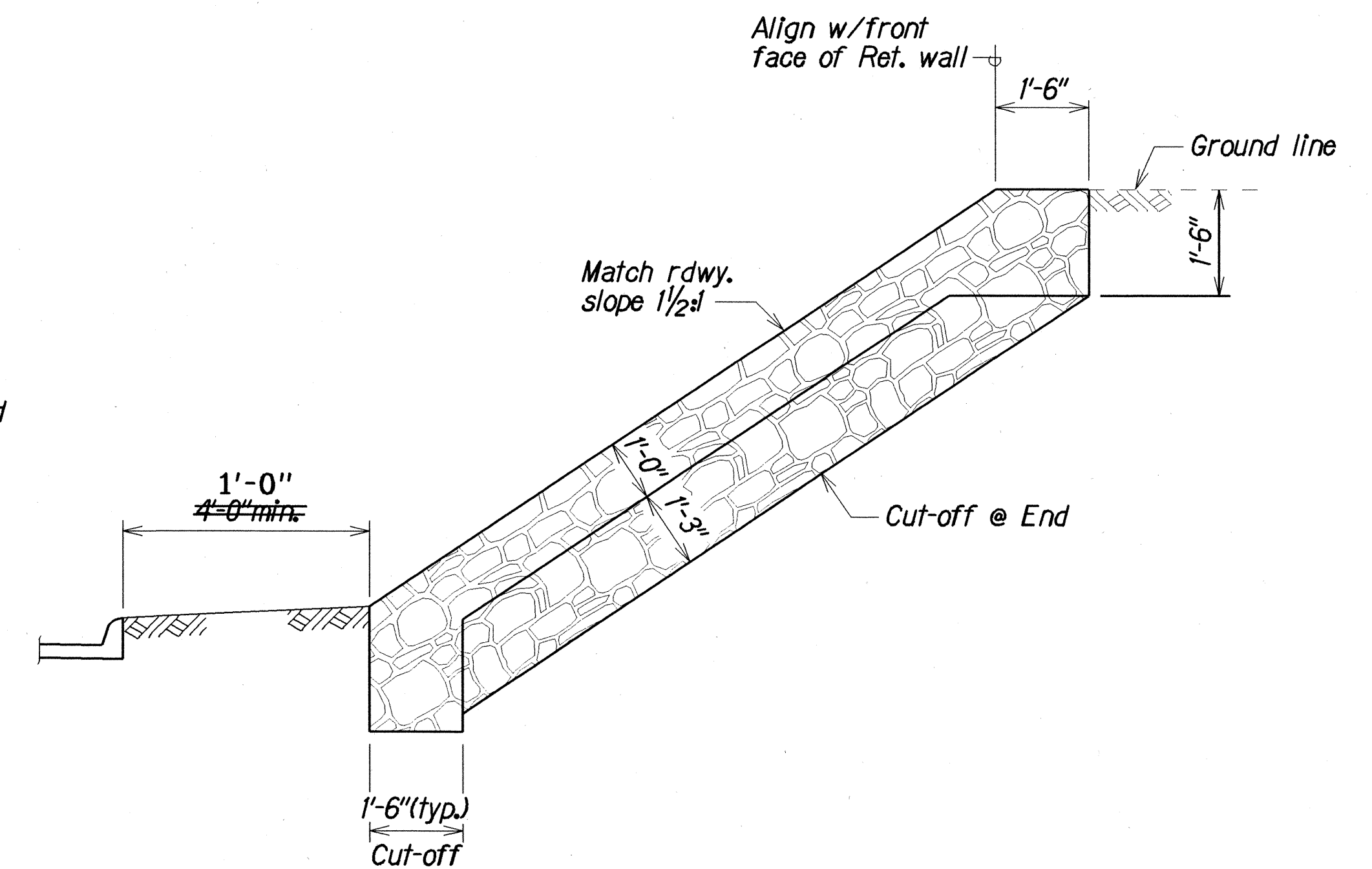
Premolded filler & key in footing at expansion joint only

SECTION A
R6 | R6

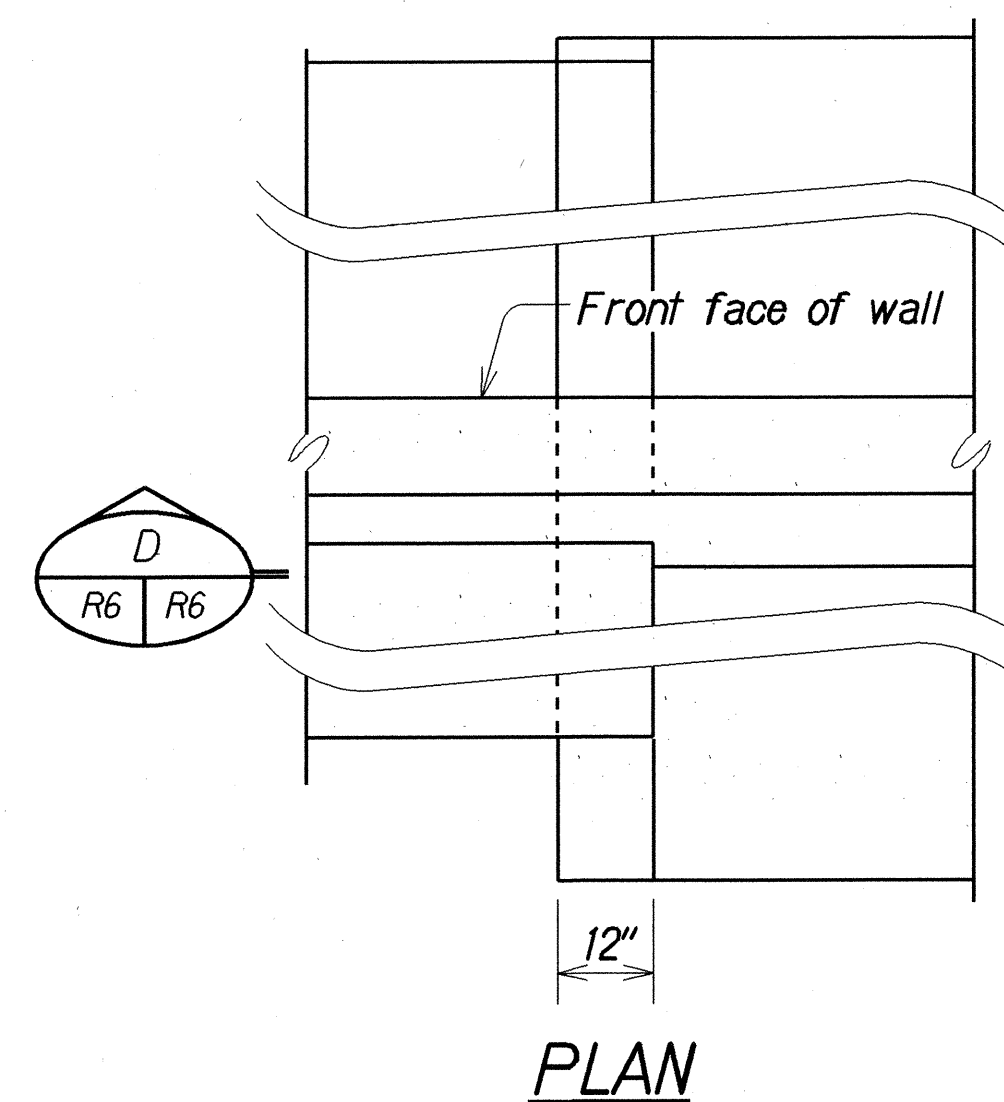
NOTE
Spacing of joints: Expansion = 96'-0" max.
Contraction = 32'-0" max.



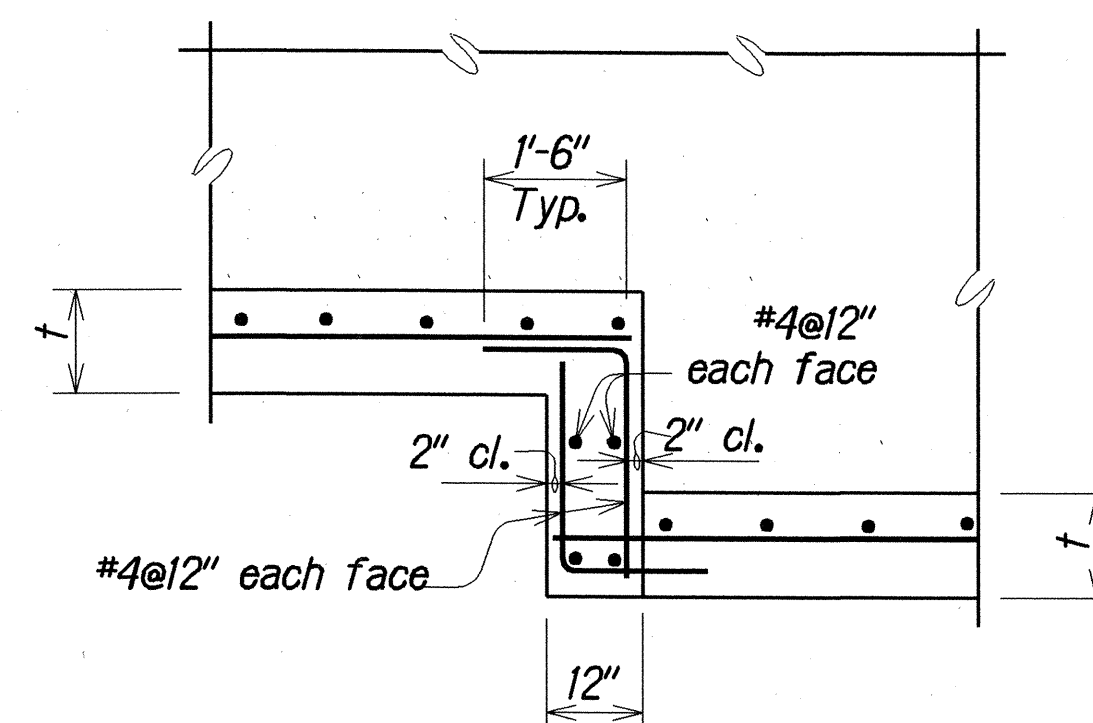
SECTION B



NORMAL G.R.P. SECTION
Scale: $\frac{1}{2}'' = 1'-0''$

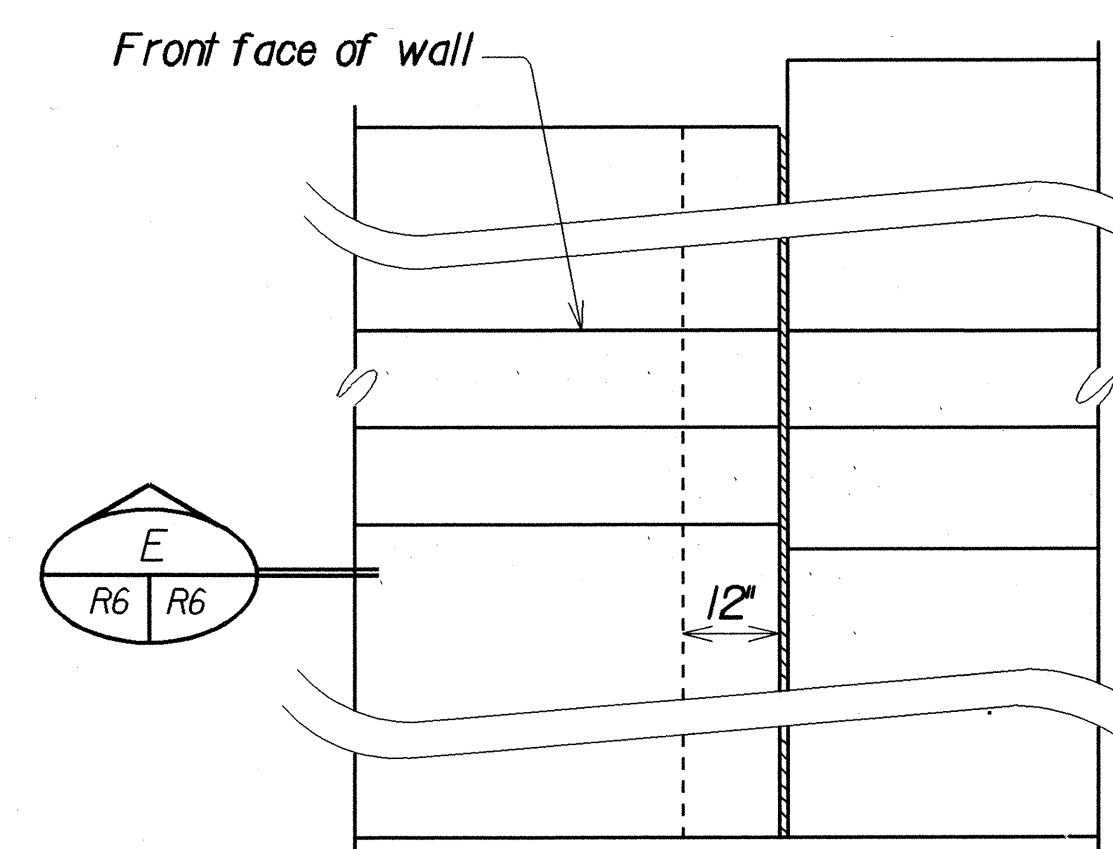


PLAN



SECTION D

AT CONTINUOUS FOOTING



PLAN

AT EXPANSION JOINT

TYPICAL FOOTING STEP-UP DETAILS

Not to Scale

9/7/94 	Add 4'-0" min. clearance
DATE	REVISION

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

EXPANSION JOINTS, G.R.P. AND

FOOTING STEP-UP DETAILS

INTERSTATE ROUTE H-1

Eastbound Off-Ramp Improvements at Pali Highway

E.A. Project No. 1M-1R-HI-1(216)

Scale: As Noted

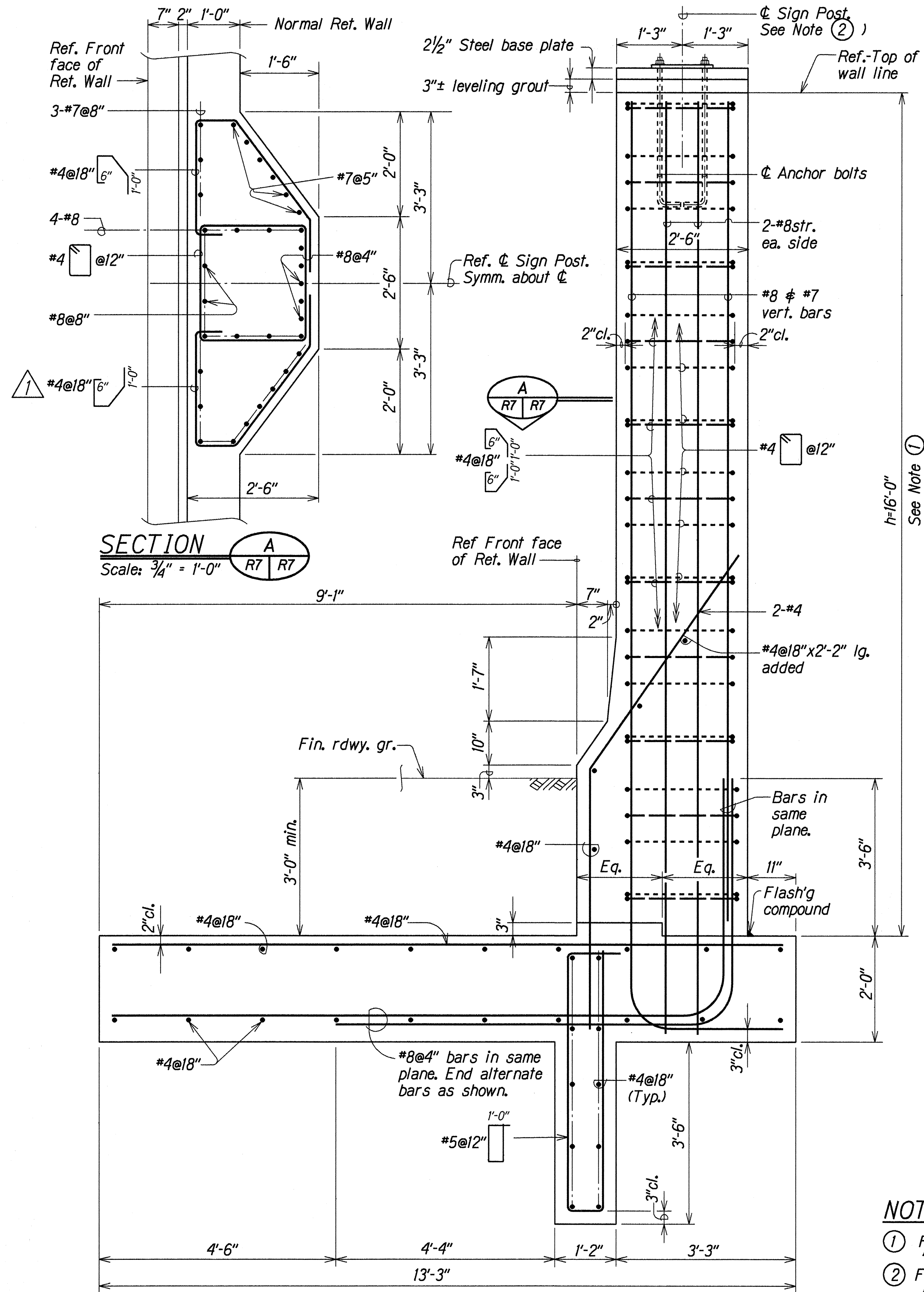
Date: Sept, 1994

SHEET No. R6 OF 8 SHEETS

"AS-BUILT"

C.O.27

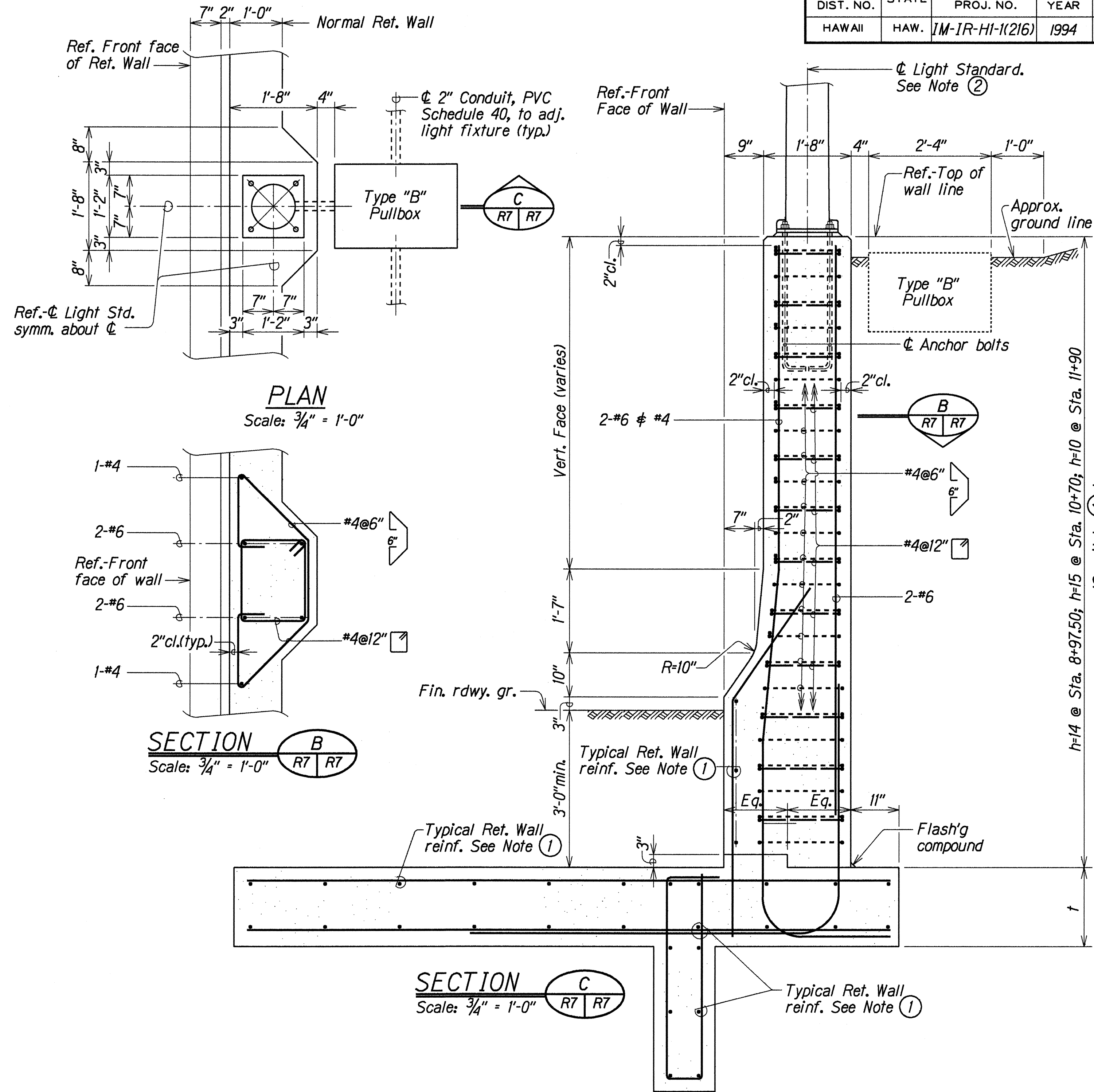
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	1M-1R-HI-1(216)	1994	C.O.28	32



WALL DETAIL AT SIGN E-5
STA. 10+18.50
 Scale: 3/4" = 1'-0"

NOTES:

- For additional retaining wall information see "Typical Retaining Wall Section" on Sht. #R4.
- Follow manufacturer's recommendations for materials and installation information.



WALL DETAILS AT LIGHT STANDARD
 AT STA. 8+97.50, STA. 10+70.00 AND STA. 11+90.00
 Scale: 3/4" = 1'-0"

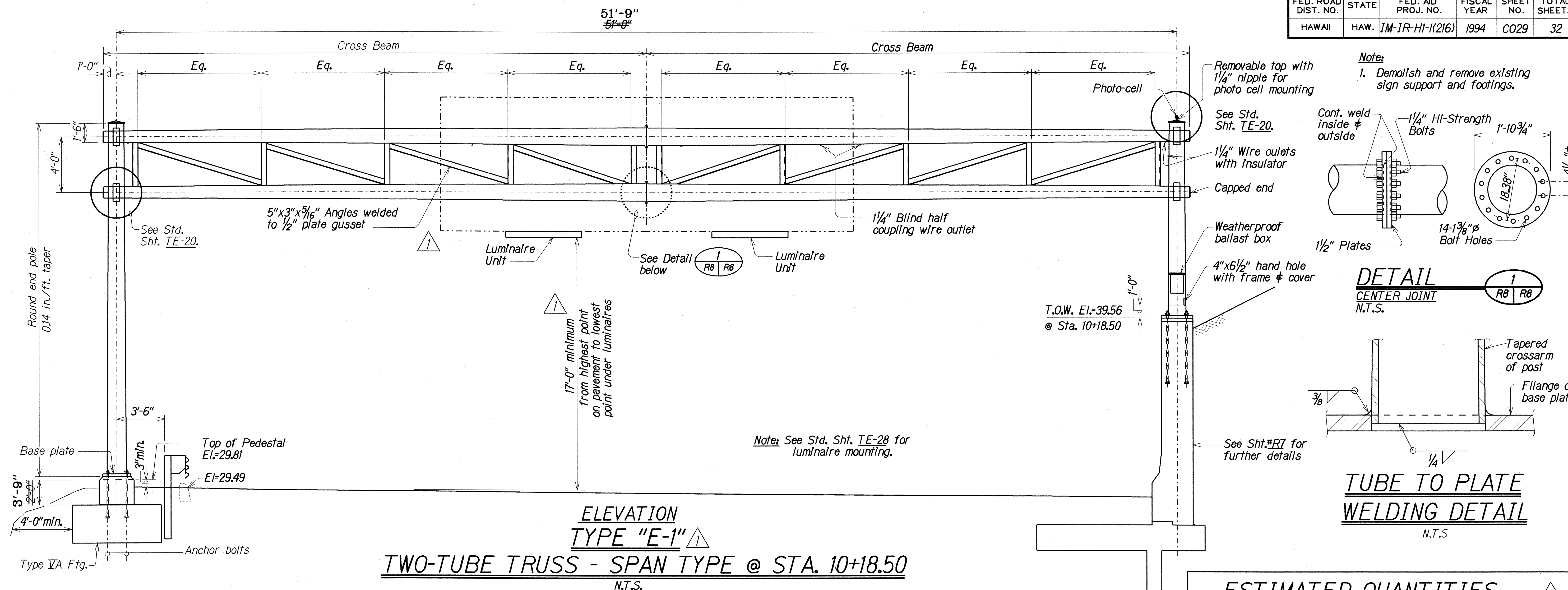
DATE	REVISION
9/19/94	Revised Spacing of Rebars. Added Sta. 8+97.50.

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
WALL DETAILS AT SIGN E-5 AND
LIGHT STANDARD
 INTERSTATE ROUTE H-1
 Eastbound Off-Ramp Improvements at Pali Highway
 F.A. Project No. 1M-1R-HI-1(216)

Scale: As Noted Date: May, 1994
 SHEET No. R7 OF 8 SHEETS

ORIGINAL PLAN	DATE
SURVEY PLOTTED BY	MAY 1994
DESIGNED BY	LM/LSG
TRACED BY	LM/LSG
QUANTITIES BY	LM/LSG
CHECKED BY	LM/LSG

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-IR-HI-1(216)	1994	CO29	32



ELEVATION
TYPE "E-1"
TWO-TUBE TRUSS - SPAN TYPE @ STA. 10+18.50
N.T.S.

BASE PLATE SCHEDULE								
B	C	F	H	P	R	S	T	Bolt Dia.
27 9/16"	35"	19 1/2"	2 1/8"	4 3/4"	3"	26 1/2"	2"	2"

NOTE: Bolts to be galvanized ASTM A 307. For further detail, see Standard Sht. TE-22.

FOUNDATION SCHEDULE FOR SIGN E-1 (L) AT STA. 10+18.50									
Type	Dimension		Depth	Bot. Reinf.		Top Reinf.		Pedestal	
	A	B		L.W.	S.W.	L.W.	S.W.	Size	Vert. Reinf.
IA	16'-6"	6'-0"	2'-0"	#6@7"	#6@11"	#5@12"	#4@12"	2'-9"	10-#11

NOTE: For further details, see Standard Sht. TE-22.

TYPE "E-1": TWO-TUBE TRUSS				
I.B. STATION	CROSS BEAMS	POST LEFT & RIGHT	BASE PLATE	
E-1	10+18.50	3E ga. 14" O.D.	3E ga. 16.5" O.D. (L) 3E ga. 15.11" O.D. (R)	26 1/2"x26 1/2"x2"

DESIGN SPECIFICATIONS

AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals 1985 as amended.
AASHTO Standard Specification for Highway Bridges (15th edition) including interim specifications: 1992.

MATERIALS:

1. Tapered arms and post ASTM A 570 Grade 40; ASTM A 611 Grade D
2. All steel components to be hot-dip galvanized after fabrication according to the requirements of ASTM A 123 and ASTM A 153 as applicable.
3. All aluminum to steel connectors to be stainless steel (300 series).
4. All sign support and bracket components shall be painted with dark green enamel paint.
5. Grout under base plate shall be non-metallic non-shrink grout.
6. Aluminum tees or angles used to brace the sign panel as shown in Standard Plan TE-25 shall conform to ASTM B 308.

CONSTRUCTION REQUIREMENTS:

1. Demolish and remove existing sign support and footings.
2. Shift footing reinforcement when it interferes with vertical column reinforcement.
3. For details of aluminum mountings, see Standard Plan TE-25.
4. All aluminum in contact with steel or concrete shall be properly protected to prevent corrosion by means of insulating materials, such as elastomeric pads.
5. Spread footing shall be excavated and poured to neat lines as called for on the plans by maintaining as near a vertical cut as possible and it shall be the Contractor's responsibility to maintain the stability of the existing roadway prism throughout the course of work.

GENERAL:

1. For General Notes, see sheet #22.

ESTIMATED QUANTITIES

DESCRIPTION	UNIT	SIGN E-1
Structural Steel for Sign Supports	Lb.	9,262
Class A Concrete in Footings & Pedestals	Cu. Yd.	9
Reinforcing Steel for Footing & Pedestal	Lb.	900
Structural Excavation	Cu. Yd.	14

LEGEND FOR AS-BUILT POSTINGS

	Squiggly line for as-built deletion
	Double line for as-built deletion
Roadway	Text for as-built posting

DATE	REVISION
1/3/95	Changed from 2 sign panels to 1 sign panel. Changed sign type from "E-5" to "E-1".
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
SIGN E-1 OVERHEAD SIGN SUPPORT TYPE "E"	
INTERSTATE ROUTE HI Eastbound Off-Ramp Improvements at Pali Highway F.A. Project No. IM-IR-HI-1(216)	
Scale: As Noted	Date: May, 1994

SHEET No. R8 OF 8 SHEETS

"AS-BUILT"

CO29

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-IR-HI-1(216)	1994	30	32

