FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(39)	1996	19	70

GENERAL NOTES

DESIGN SPECIFICATIONS--AASHTO:

AASHTO Standard Specifications for Highway Bridges (15th edition), with subsequent Interim Specification 1992.
AASHTO Standard Specifications for Seismic Design of Highway Bridges, Seismic Performance Category B, acceleration coefficient of 0.17.

ALLOWABLE DESIGN STRESSES:

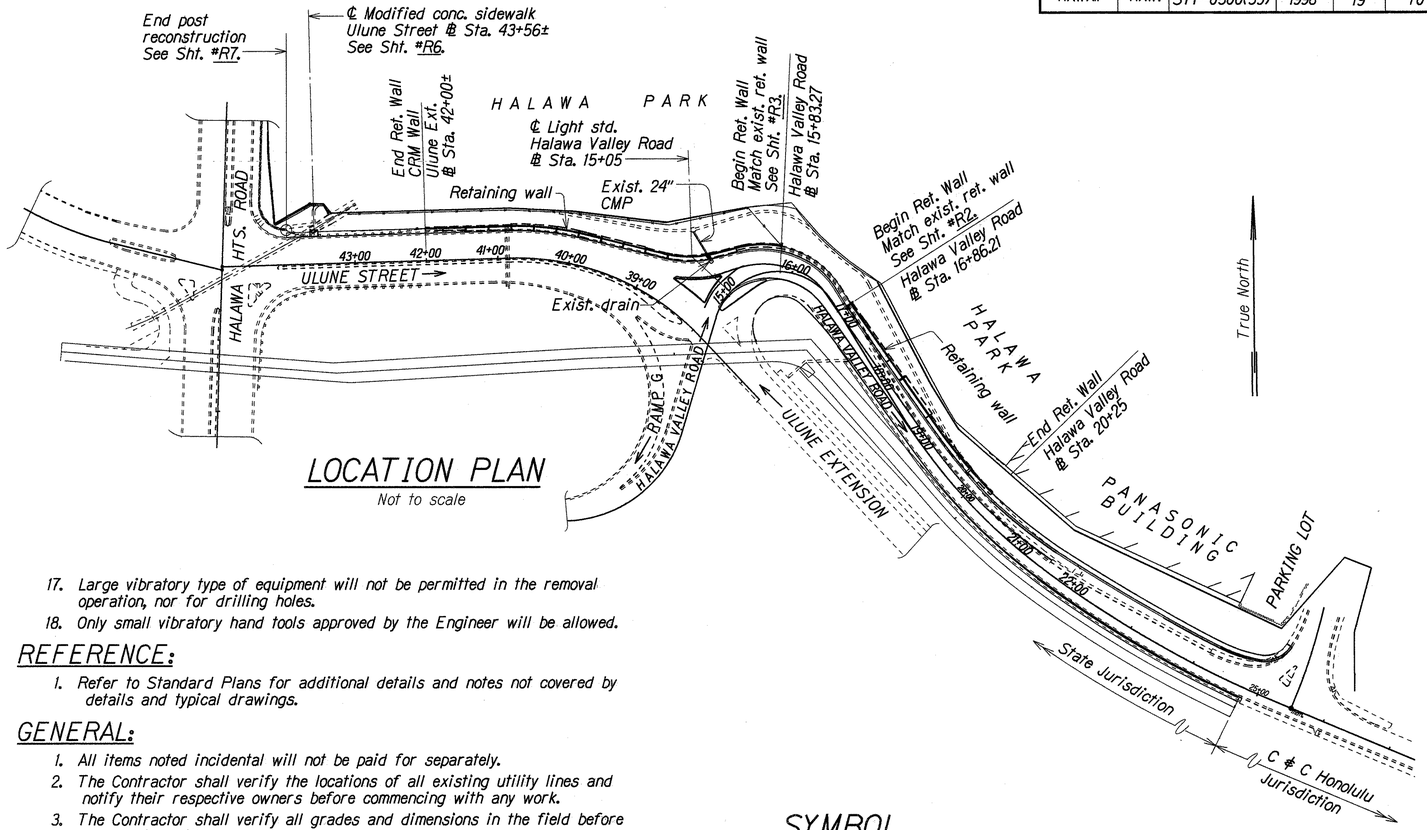
1. Reinforced concrete: $f^c = 0.40\ f'^c$
2. Reinforced steel: f^s = 20,000 psi for Grade 40, 24,000 psi for Grade 60

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.
5. All structural steel shall be ASTM A 36 hot-dip galvanized after fabrication.
6. All anchor bolts, washers and nuts shall be ASTM A 325, hot-dip galvanized after fabrication, unless noted otherwise.
7. All welding shall be in accordance with the current edition of Reinforcing Steel Welding Code AWS D 1.4.

CONSTRUCTION METHODS:

1. Refer to Hawaii Standard Specifications for Road, Bridge and Public Works Construction, 1994 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. For steel reinforcing, stagger all splices where possible.
6. Steel reinforcing shall be supported, bent and placed as per the ACI Detailing Manual, 1994.
7. For cast-in-place concrete, minimum reinforcement cover:
   Concrete cast against earth: 3"
   Retaining wall: 2"
8. At time concrete is placed, reinforcing 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.
12. Contraction joints shall be provided for the retaining walls as specified in Standard Plan B-01.
13. All existing reinforcing that cannot be incorporated in the new work shall be completely removed or removed to a minimum depth of 1½" inches below finish grade and the area patched with mortar.
14. All existing concrete faces receiving new concrete in the finish product, shall be roughened and cleaned prior to placement of new pour, unless indicated otherwise or as directed by the Engineer.
15. Saw cut 1" deep along cut line of existing structure.
16. Removal shall be done in such a manner as to preclude any damage to the existing structures.



LOCATION PLAN

Not to scale

17. Large vibratory type of equipment will not be permitted in the removal operation, nor for drilling holes.
18. Only small vibratory hand tools approved by the Engineer will be allowed.

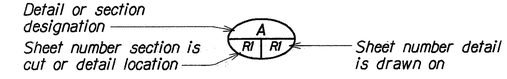
REFERENCE:

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, utilities and existing and new structures from damage due to construction. Repairing any damage shall be at the Contractor's 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 footing keys shall be accomplished by maintaining as near a vertical cut as possible.
6. In the event of over-excavation, the space between the footing or footing key 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 (¾) of an inch.

SYMBOL



ESTIMATED QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITIES
202.0110	Removal Of Structures And Obstructions	Lump Sum	(1.50 c.y.)
206.5000	Structural Excavation For Retaining Walls	Cu. Yd.	3,355
206.7250	Structural Backfill For Retaining Walls	Cu. Yd.	1,878
206.8300	Filter Material For Retaining Walls	Cu. Yd.	142
503.1050	Concrete In Retaining Walls	Lump Sum	(682 c.y.)
508.0100	Cement Rubble Masonry	Cu. Yd.	2.0
602.0050	Reinforcing Steel In Retaining Walls	Lump Sum	(69,325 lbs.)

ORIGINAL PLAN		DATE
	SURVEY PLOTTED BY	FEB 1996
	DRAWN BY KSG, LMA	
	TRACED BY	FEB 1996
NOTE BOOK	DESIGNED BY JFU	FEB 1996
	QUANTITIES BY JFU	FEB 1996
No. Incorporated	CHECKED BY DDO	

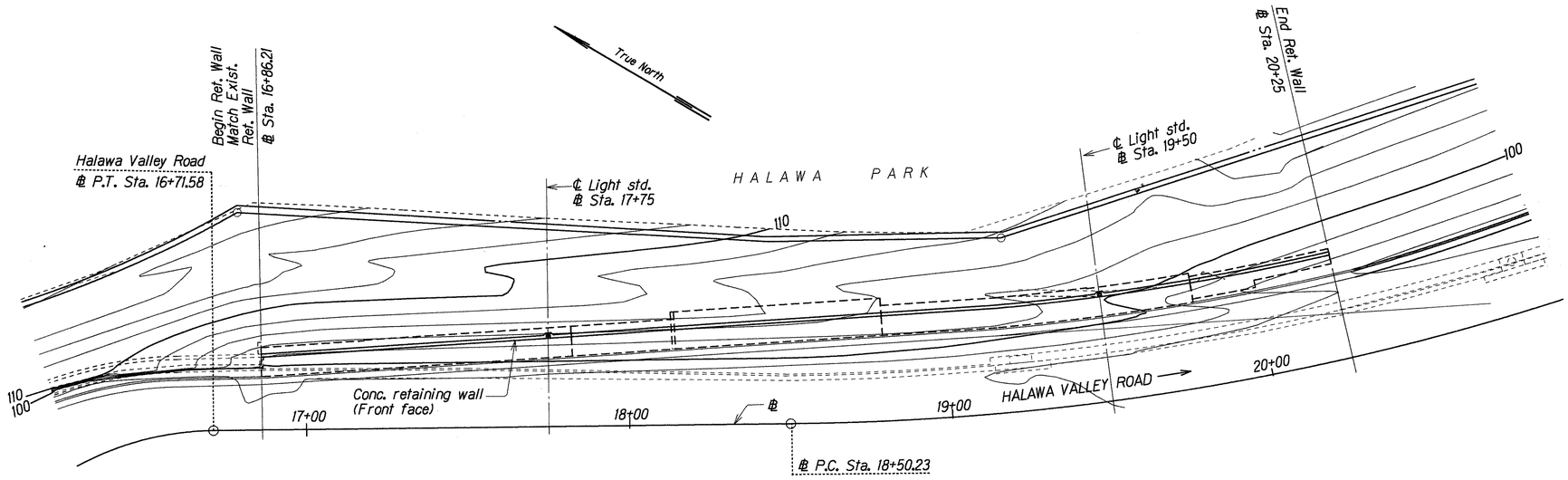
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALL
GENERAL NOTES, ESTIMATED QUANTITIES, AND LOCATION PLAN
Ulune Street And Halawa Valley Road Improvements
Halawa Heights Road To Halawa Valley Road
Ulune Street To Iwaiwa Street
Project No. STP-0300(39)

Scale: As Noted Date: Mar. 1996

SHEET No. R1 OF 9 SHEETS

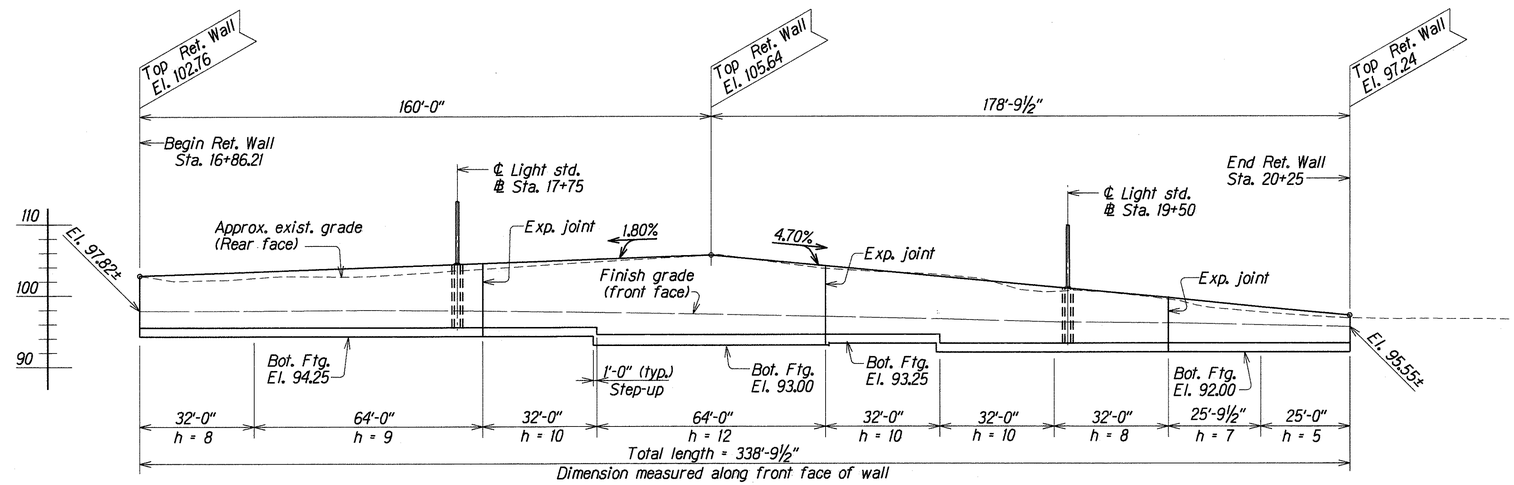
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(39)	1996	20	70



PLAN

STA. 16+86.21 TO STA. 20+25

Scale: 1" = 20'-0"



ELEVATION

STA. 16+86.21 TO STA. 20+25

Scale: Horiz. 1" = 20'-0"
Vert. 1" = 10'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	LMA	DATE FEB 1996
	DRAWN BY	LMA	FEB 1996
	TRACED BY	JFU	FEB 1996
NOTE BOOK	DESIGNED BY	JFU	FEB 1996
No. Incl'ed	QUANTITIES BY	JFU	FEB 1996
	CHECKED BY	DBD	FEB 1996

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

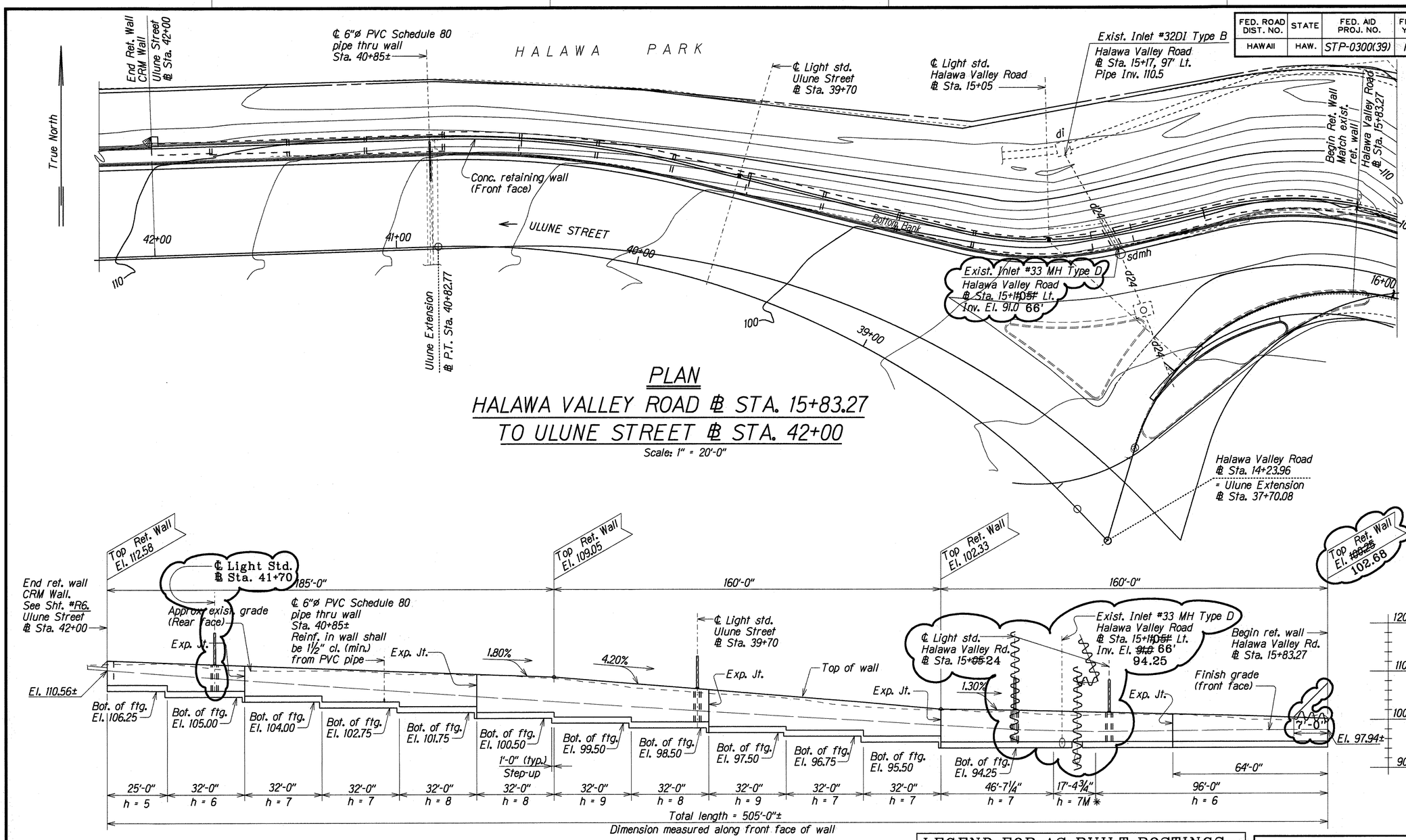
RETAINING WALL
PLAN AND ELEVATION
HALAWA VALLEY ROAD ℄ STA. 16+86.21 TO STA. 20+25

Ulune Street And Halawa Valley Road Improvements
Halawa Heights Road To Halawa Valley Road
Ulune Street To Iwaiwa Street
Project No. STP-0300(39)

Scale: As Noted Date: Mar. 1996

SHEET No. R2 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(39)	1996	21	70



PLAN
HALAWA VALLEY ROAD ℄ STA. 15+83.27 TO ULUNE STREET ℄ STA. 42+00

Scale: 1" = 20'-0"

Total length = 505'-0"±
Dimension measured along front face of wall

ELEVATION
HALAWA VALLEY ROAD ℄ STA. 15+83.27 TO ULUNE STREET ℄ STA. 42+00

Scale: Horiz. 1" = 20'-0"
Vert. 1" = 10'-0"

LEGEND FOR AS-BUILT POSTINGS	
~~^^^^~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

Note: This tracing prepared during "As-Built" posting.

ORIGINAL PLAN		DATE
SURVEY PLOTTED BY	LMA	FEB 1996
DRAWN BY		
TRACED BY	JFU	FEB 1996
NOTE BOOK		
DESIGNED BY	JFU	FEB 1996
QUANTITIES BY		
No. Modified	CKD	FEB 1996
CHECKED BY		

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

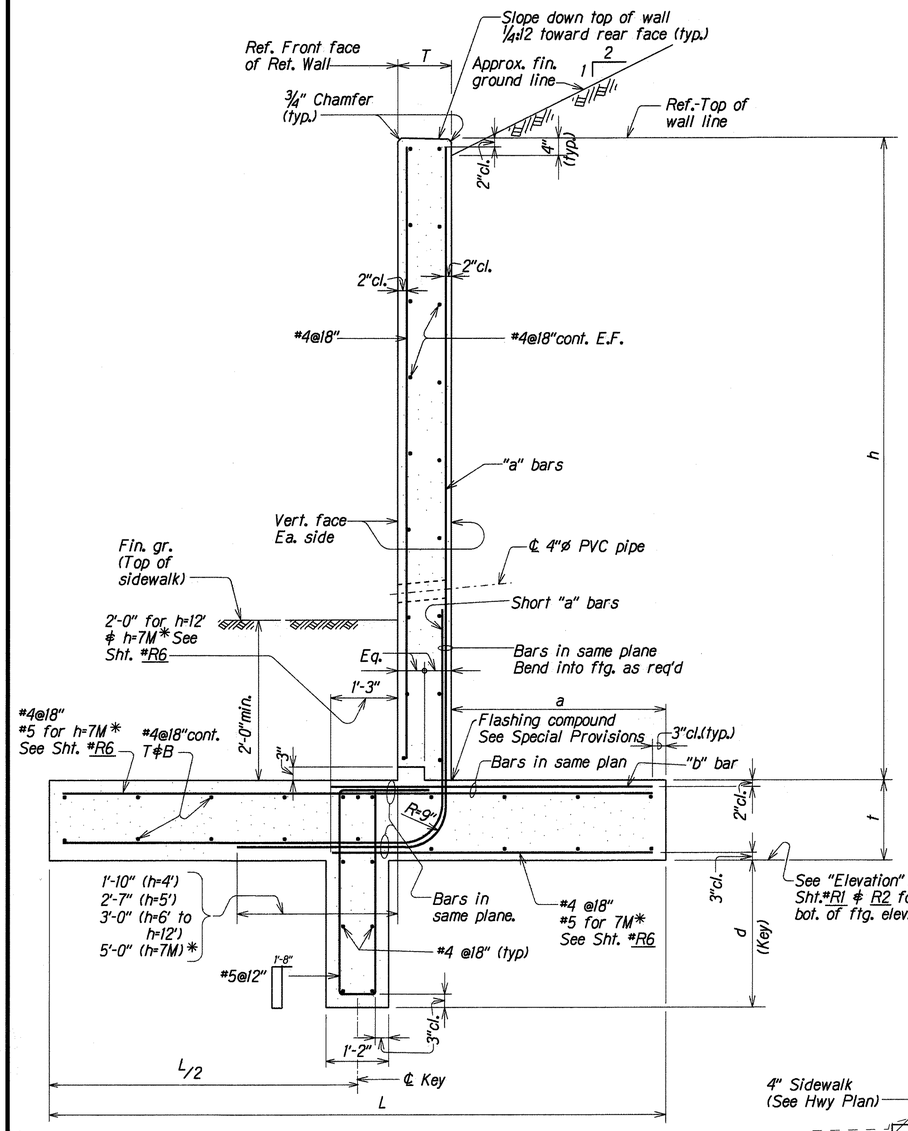
RETAINING WALL
PLAN AND ELEVATION
HALAWA VALLEY ROAD ℄ STA. 15+83.27 TO ULUNE STREET ℄ STA. 41+50

Ulune Street And Halawa Valley Road Improvements
Halawa Heights Road To Halawa Valley Road
Ulune Street To Iwaiwa Street

Scale: As Noted | Project No. STP-0300(39) | Date: Mar. 1996

SHEET No. R3 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(39)	1996	22	70



TYPICAL WALL SECTION

Not to Scale

NOTE:
Maximum bearing pressure on all wall footings = 3.0ksf

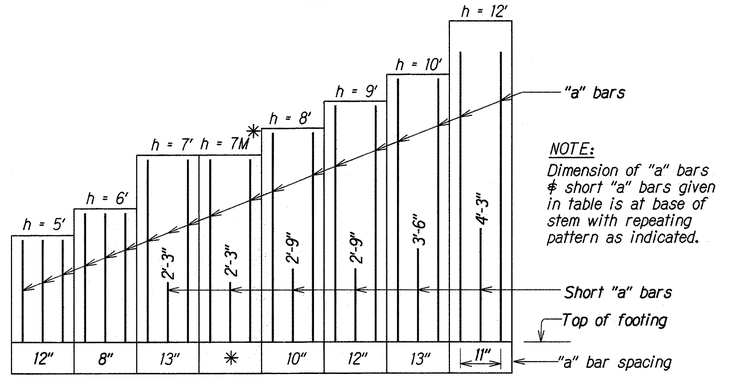
LEGEND FOR AS-BUILT POSTINGS	
~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

Note: This tracing prepared during "As-Built" posting.

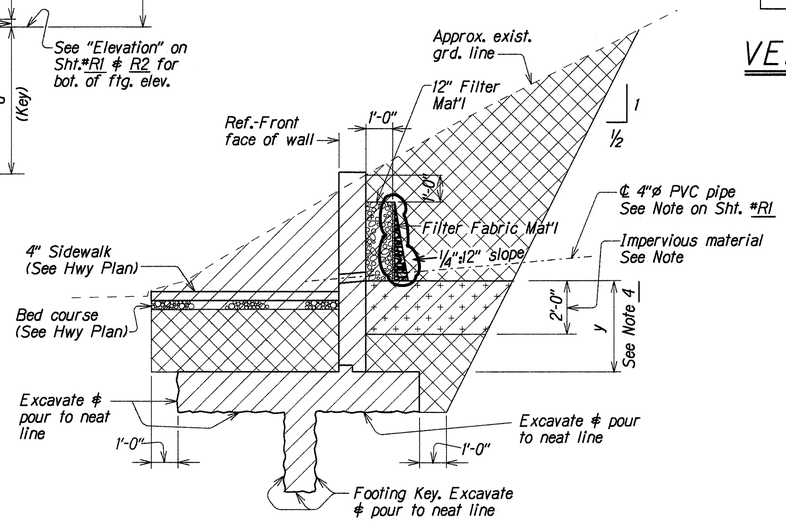
SCHEDULE OF DIMENSIONS AND REINFORCING STEEL FOR RETAINING WALL

Maximum "h"	5'	6'	7'	7M*	8'	9'	10'	12'
"a" bar	#5@12"	#5@8"	#6@13"	#7 *	#6@10"	#7@12"	#8@13"	#8@11"
Short "a" bar	-	-	#6@13"	-	#6@10"	#7@12"	#8@13"	#8@11"
"b" bar	-	-	-	-	#5@9"	#5@9"	#6@9"	#8@6"
T	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-3"	1'-3"	1'-6"
a	1'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-0"	2'-0"	4'-0"
L	4'-9"	5'-3"	7'-0"	8'-6"	9'-0"	9'-3"	9'-3"	11'-6"
d	1'-6"	1'-9"	2'-0"	3'-0"	2'-0"	2'-6"	3'-0"	3'-0"
t	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	1'-3"	1'-6"

* See details on sht. #R6



VERTICAL REINFORCING STEEL ARRANGEMENT



STRUCTURE EXCAVATION AND DRAINAGE DETAIL

Not to Scale

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 pipe 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.

ORIGINAL PLAN	SURVEY PLOTTED BY	LMA	DATE	FEB 1996
	DRAWN BY	LMA		FEB 1996
	TRACED BY	JFU		FEB 1996
NOTE BOOK	DESIGNED BY	JFU		FEB 1996
	QUANTITIES BY	JFU		FEB 1996
No. Width	CHECKED BY	JOO		FEB 1996

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

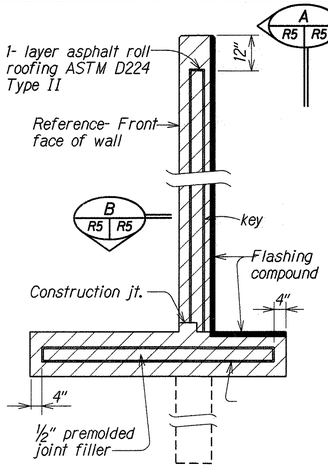
RETAINING WALL
TYPICAL SECTION, STRUCTURE EXCAVATION ♯ DRAINAGE DETAIL, SCHEDULES

Ulune Street And Halawa Valley Road Improvements
Halawa Heights Road To Halawa Valley Road
Ulune Street To Iwaiwa Street
Project No. STP-0300(39)

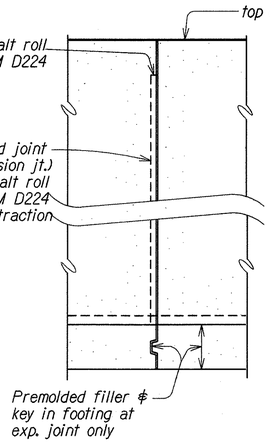
Scale: As Noted Date: Mar. 1996

SHEET No. R4 OF 9 SHEETS

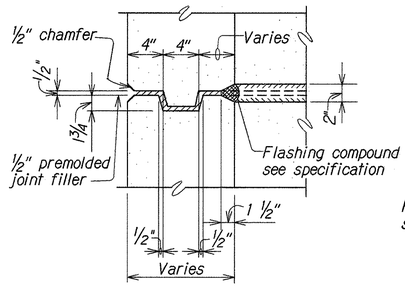
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0300(39)	1996	23	70



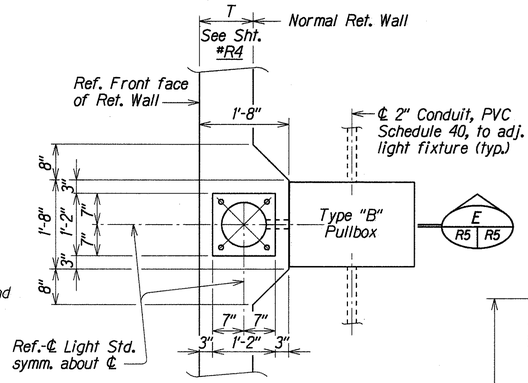
JOINT ELEVATION



SECTION A R5 R5



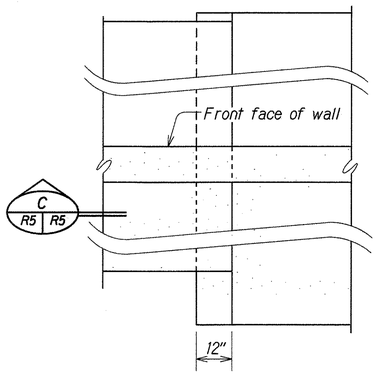
SECTION B R5 R5



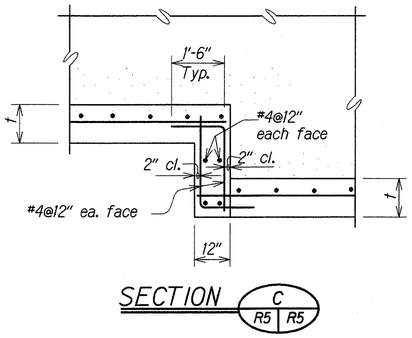
PLAN

TYPICAL EXPANSION JOINT DETAILS

Not to Scale

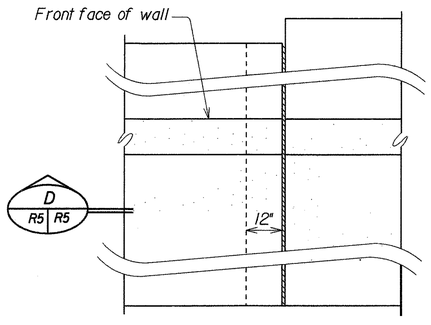


PLAN

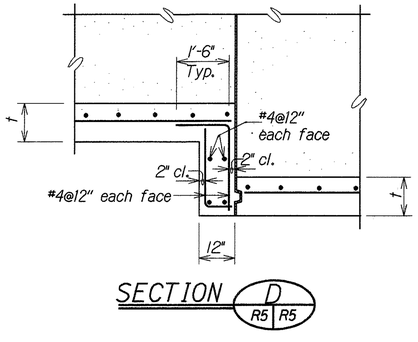


SECTION C R5 R5

AT CONTINUOUS FOOTING



PLAN

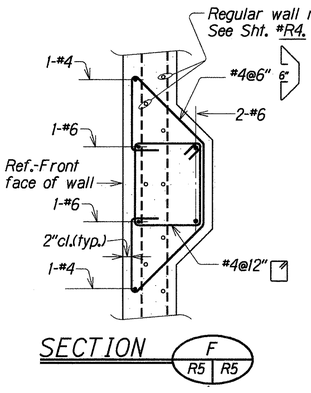


SECTION D R5 R5

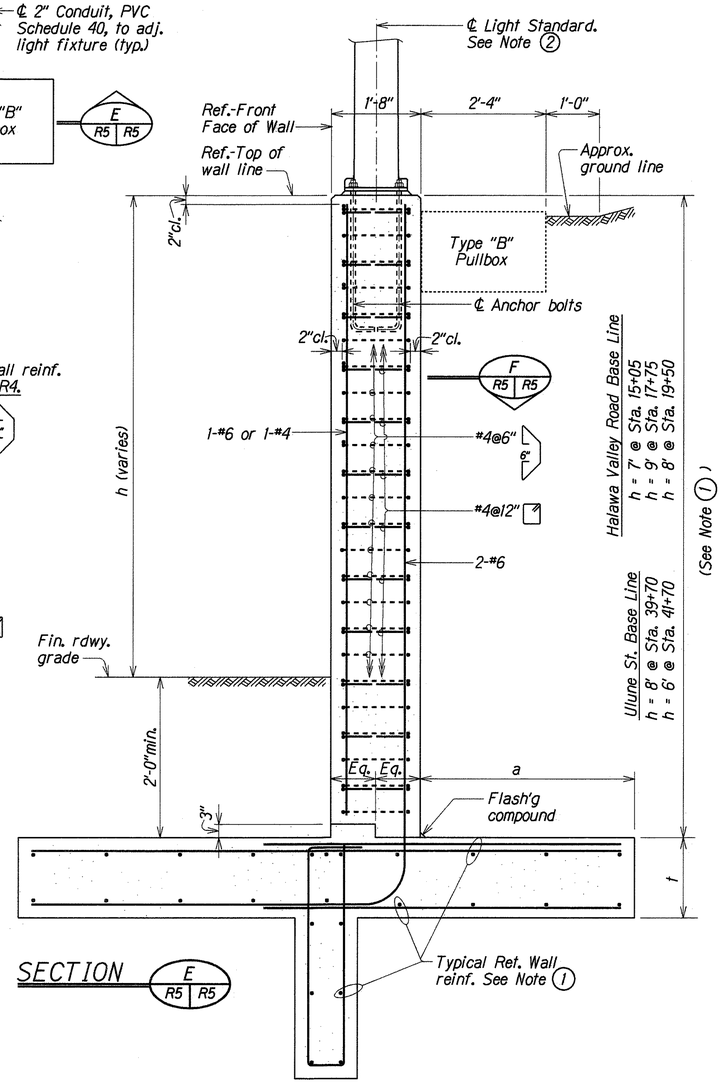
AT EXPANSION JOINT

TYPICAL FOOTING STEP-UP DETAILS

Not to Scale



SECTION F R5 R5



SECTION E R5 R5

NOTES:

1. For additional retaining wall information see "Typical Wall Section" on Sht. #R4.
2. Follow manufacturer's recommendations for materials and installation information.
3. Spacing of joints: Expansion = 96'-0" max. Contraction = 32'-0" max.

WALL DETAILS AT LIGHT STANDARD

Scale: ¾" = 1'-0"

ORIGINAL PLAN			
SURVEY PLOTTED BY	LMA, KSG	DATE	FEB. 1996
DRAWN BY			
TRACED BY			
NOTE BOOK	DESIGNED BY	JFU	FEB. 1996
	QUANTITIES BY	JFU	FEB. 1996
No. Inch'd'd	CHECKED BY	DRO	FEB. 1996

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING WALL
STEP-UP DETAILS, EXPANSION JOINT DETAILS
WALL DETAILS AT LIGHT STANDARD

Ulune Street And Halawa Valley Road Improvements
Halawa Heights Road To Halawa Valley Road
Ulune Street To Iwalwa Street
Project No. STP-0300(39)

Scale: As Noted Date: Mar. 1996

SHEET No. R5 OF 9 SHEETS