

GENERAL NOTES

DESIGN SPECIFICATIONS:

CUT RETAINING WALLS

1. AASHTO LRFD Bridge Design Specifications, 1998, with 1999 and 2000 Interim Revisions.

CMU WALLS

1. AASHTO Guide Specifications for Structural Design of Sound Barriers, 1989

2. Uniform Building Code (UBC), 1997

3. Reinforced Masonry Engineering Handbook, MIA 1998

MATERIALS:

- Reinforced Concrete: f'c = 4,000 psi
- Reinforcing Steel: ASTM A 615, Grade 60
- Admixture in Concrete: See Special Provisions
- All expansion joints, control joints, premolded joint filler and flashing material shall be incidental to concrete and will not be paid for separately.
- Masonry units shall be 8"x8"x16" or 8"x8"x8" concrete hollow block, brick red colored (see Specifications), Grade N-II, Specified Compressive Strength, f'm shall be 2,500 psi. No special inspection. Mortar shall be Type S and reinforcing bars for walls shall be Grade 60. New CMU wall shall be solid grouted (all cells grouted).
- All CMU control joints shall be incidental to CMU Walls and will not be paid for separately.

CONSTRUCTION METHODS:

- Refer to Hawaii Standard Specifications for Road, Bridge and Public Works Construction, 1994 Edition and Special Provisions.
- Except as noted otherwise, all dimensions are measured plumb.
- All footings shall bear on firm undisturbed natural soils or properly compacted embankment fill.
- Excavation for all footings and footing keys shall be accomplished by maintaining as near a vertical cut as possible. 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 no cost to the State and as directed by the Engineer.
- Steel reinforcing shall be supported, bent and placed as per the ACI Detailing Manual, 1994.
- The minimum cover measured from the surface of the concrete to the face of any reinforcing bars shall be as follows, except as noted otherwise:
A. Concrete cast or finished to a smooth surface: 2"
B. Concrete cast against and permanently exposed to earth: 3"
- At time concrete is placed, reinforcing shall be free from mud, oil, laitance or other coatings adversely affecting bond capacity.
- Reinforcement, dowels and other embedded items shall be positively secured before pouring.
- All dimensions relating to reinforcing bars (e.g. spacing of bars, etc.) are to centers of bars unless noted otherwise.
- For steel reinforcing, stagger all splices where possible.
- For concrete finish, see Special Provisions.

- For CMU Walls, provide control joints at 30'-0" maximum spacing, unless noted otherwise.
- Unless noted otherwise, all CMU Walls shall be laid in running bond.
- Provide horizontal bond beams with continuous reinforcing as indicated. Discontinue all horizontal reinforcing at control joints.

REFERENCE:

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

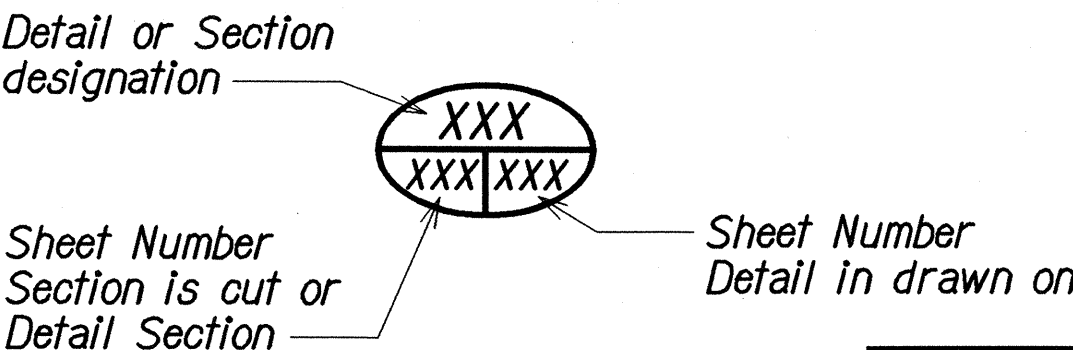
GENERAL:

- All items noted incidental will not be paid for separately.
- The Contractor shall verify the locations of all existing utility lines and notify their respective owners before commencing with any work.
- The Contractor shall verify all grades and dimensions in the field before commencing with any work.
- 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 other measures as may be necessary to insure the safety of all concerned and to protect existing structures.
- The Contractor, at his own expense, shall keep the project area free from dust nuisance. The work shall be in conformance with the air pollution control standards and regulations of the Sate of Hawaii Department of Health.
- Structural excavation and structural backfill for CMU Walls and concrete footings for CMU Walls shall be considered incidental to Item No. 513.4000, Type L2 CMU Wall and Item No. 513.5000, Type L1 CMU Wall; and will not be paid for separately.
- Unless noted otherwise, chamfer all exposed concrete edges three-quarters (¾) of an inch.
- 4" PVC drains shall be provided in retaining walls at eight feet on-center maximum spacing. PVC drains and slotted underdrains shall be considered incidental to concrete in retaining walls.
- Demolition and removal of existing test cyl. wall, 6" tile wall, chain link fence and footing foundation shall be considered incidental to Concrete in Footings for CMU Walls and will not be paid for separately.
- For soil design parameters, see Reference Report by Soils Engineering and Pavement Design Section, Materials Testing and Research Branch.
- Contract items will be paid for in units indicated in the Estimated Quantities.
- Clearing and grubbing necessary for the construction of the retaining walls shall be considered incidental to Structural Excavation for retaining walls. Clearing and grubbing necessary for the construction of Type L2 CMU Wall and Type L1 CMU Wall shall be considered incidental.
- The Contractor is to note that the telephone poles and water lines are to be relocated and installed prior to any work on retaining walls. The Contractor shall coordinate his work to avoid damage to the relocated utilities and shall be solely responsible for protecting the relocated utilities against damage.
- The Contractor shall restore the areas disturbed by the retaining walls and CMU walls construction to the existing grade and condition unless otherwise shown on the plans and specifications. All work to restore disturbed areas shall be incidental to Item Nos. 206.7002 and 503.1310.

ABBREVIATIONS

AB	Anchor Bolt	Jt.	Joint
Abut.	Abutment	I	Length
Adj.	Adjacent	LC	Length of Curve
Alum.	Aluminum	Lg.	Long
Approx.	Approximate	Longit.	Longitudinal
⌀	Baseline	Lt.	Left
B.F.	Back Face	Max., max.	Maximum
BFE	Bottom Footing Elevation	Min., min.	Minimum
Bal.	Balance	No., #	Number
Beg.	Begin, Beginning	NIC	Not In Contract
Bm.	Beam	N.T.S.	Not To Scale
Bot.	Bottom	o/c	On Center
Brg., Brgs.	Bearing, Bearings	OB	Outbound
¢	Center Line	OD	Outside Dimension
CBC	Concrete Box Culvert	o/s	Offset
C.L.	Chain Link	Opp.	Opposite
CMU	Concrete Masonry Unit	PL	Plate
C.J.	Control Joint	psi	Pounds per Square Inch
CR	Corrosion Resistant	P.T.	Point of Tangency
C.Y., Cu. Yd.	Cubic Yard	PVC	Polyvinylchloride
cdi	Conc. Drop Intake (exist.)	R, Rad.	Radius
cl.	Clear	Rdwy.	Roadway
Col.	Column	Ref.	Reference
Conc.	Concrete	Req'd	Required
Cont.	Continuous	Reinf.	Reinforcement, Reinforcing
Def.	Detail	ret., Ret.	Retaining
Desig.	Designation	R/W	Right-of-Way
Dia., ø	Diameter	Rt.	Right
Diag.	Diagonal	S.Y.	Square Yard
Dr.	Drive	sdmh	Storm Drain Manhole (exist.)
Ea.	Each	Sect.	Section
E.F.	Each Face	Shld.	Shoulder
EP	Edge of Pavement	Sht.	Sheet
Elev.	Elevation	Spes.	Spaces
Eq.	Equal	Spog.	Spacing
Exist.	Existing	Specs.	Specifications
Exp.	Expansion	Sta.	Station
f, Ftg.	Footing	Std.	Standard
F.F.	Front Face	Struct.	Structural
Fin.	Finish	Str.	Structure
Flash'g	Flashing	Strm.	Stream
Ft.	Feet	T#B	Top and Bottom
Ga.	Gauge	t, thk.	Thick, Thickness
Galv.	Galvanized	T.O.F.	Top of Footing
gdi	Exist. Grated Drop Intake	T.O.W.	Top of Wall
Gr.	Grade	TS	Tubular Steel
h, Ht.	Height	typ., Typ.	Typical
Horiz.	Horizontal	Vert.	Vertical
HS	High Strength	w/	With
IB	Inbound		

SYMBOLS



INDEX TO DRAWINGS

SHEET NO.	DESCRIPTION
S1	General Notes, Index to Drawings, Estimated Quantities, Abbreviations and Symbols
S2	Retaining Cut Wall "CU" (Mauka) Layout Plan and Developed Elevation
S3	Retaining Fill Wall "FA" (Makai) Layout Plan and Developed Elevation
S4	Retaining Fill Wall "FU" (Mauka) Layout Plan and Developed Elevation
S5	Typical Cut Wall Section, Reinforcement Schedule, and Structural Excavation and Backfill Limits
S6	Typical Fill Wall Section, Reinforcement Schedule, and Structural Excavation and Backfill Limits
S7	Retaining Fill Walls "FA" and "FU" Return Wall Details
S8	Retaining Wall Joint Details and Footing Step-Up Details
S9	CMU Wall Layout Plans and Developed Elevations
S10	CMU Wall Details, Footing Step-Up Details and Structural Excavation and Backfill Limits
S11	Boring Log
S12	Partial Plan - Existing Contours

ESTIMATED QUANTITIES

ITEM. NO.	DESCRIPTION	UNITS	QUANTITY
206.7001	Structural Excavation for Retaining Walls	C.Y.	2,146
206.7002	Structural Backfill for Retaining Walls	C.Y.	1,629
206.7003	Filter Material for Retaining Walls	C.Y.	98
503.1310	Concrete in Footings for CMU Walls	Lump Sum	(38 CY)
503.2010	Concrete in Retaining Walls	Lump Sum	(554 CY)
513.4000	Type L2 CMU Wall	S.Y.	150
513.5000	Type L1 CMU Wall	S.Y.	96
602.1002	Reinforcing Steel in Retaining Walls	Lump Sum	(136,023 lbs.)
602.1003	Reinforcing Steel in CMU Walls & Concrete Footings	Lump Sum	(12,573 lbs.)

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

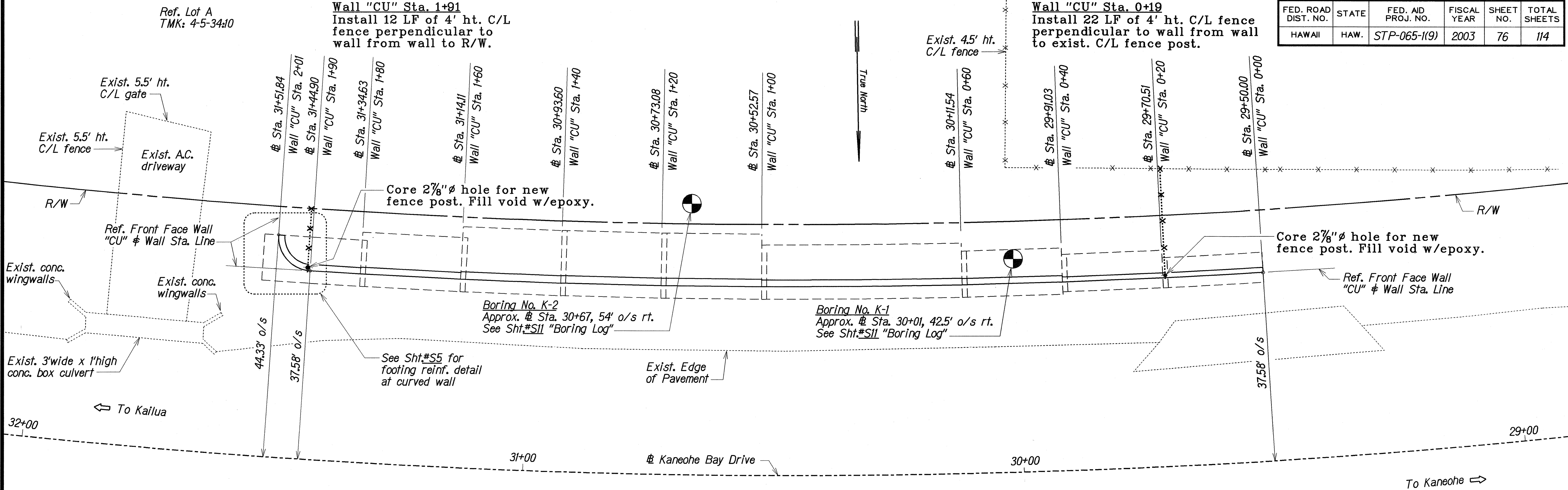
GEN. NOTES, INDEX to DWGS., ESTIM. QUANT'S, ABBREVIATIONS and SYMBOLS

KANEHOE BAY DRIVE IMPROVEMENTS
Vicinity of Puohala Street to Kawa Bridge
Fed. Aid Proj. No. STP-065-1(19)

Scale: As Noted Date: Jul. 2002

SHEET No. S1 OF 12 SHEETS

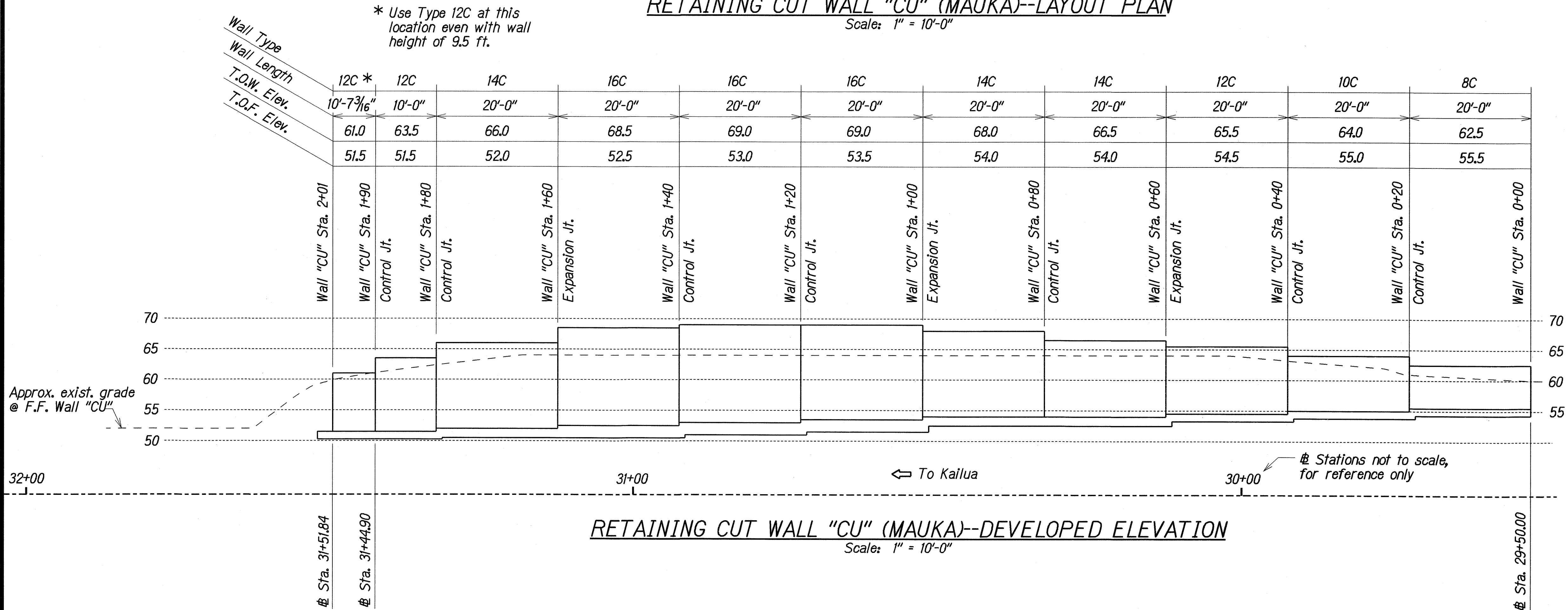
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HAWAII	HAW.	STP-065-1(9)	2003	76	114



RETAINING CUT WALL "CU" (MAUKA)--LAYOUT PLAN
Scale: 1" = 10'-0"

LEGEND FOR AS-BUILT POSTINGS

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



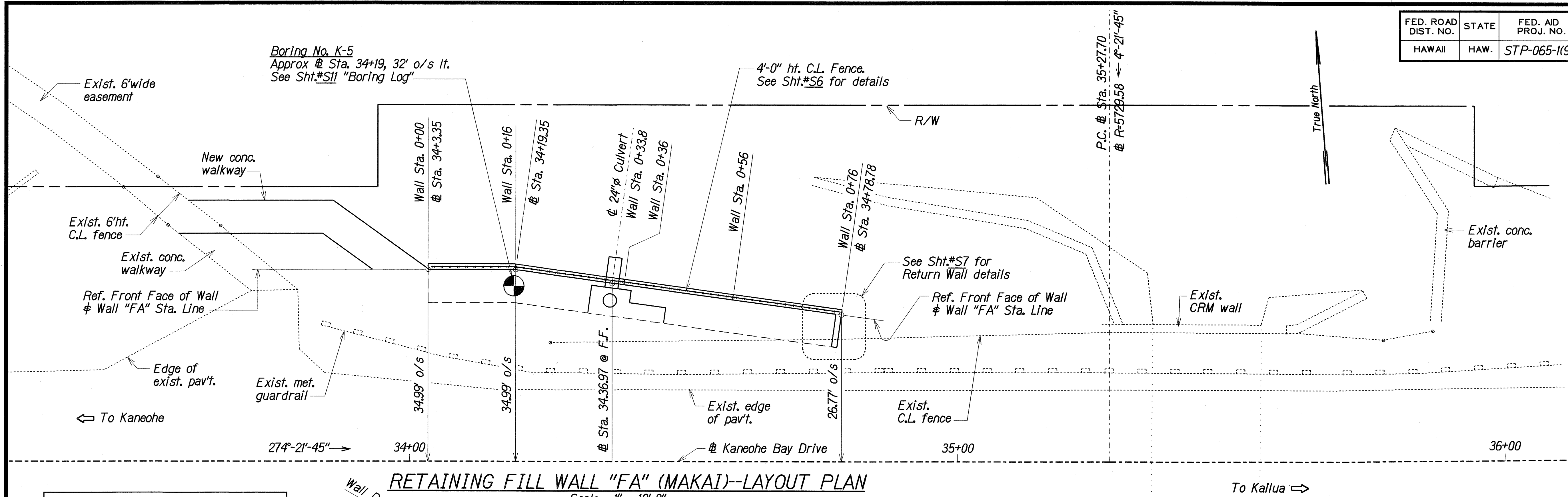
RETAINING CUT WALL "CU" (MAUKA)--DEVELOPED ELEVATION
Scale: 1" = 10'-0"

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

RETAINING CUT WALL "CU" (MAUKA)
LAYOUT PLAN and DEVELOPED ELEVATION
KANEOHE BAY DRIVE IMPROVEMENTS
Vicinity of Puuhala Street to Kawa Bridge
Fed. Aid Proj. No. STP-065-1(9)

Scale: As Noted Date: Jul, 2002

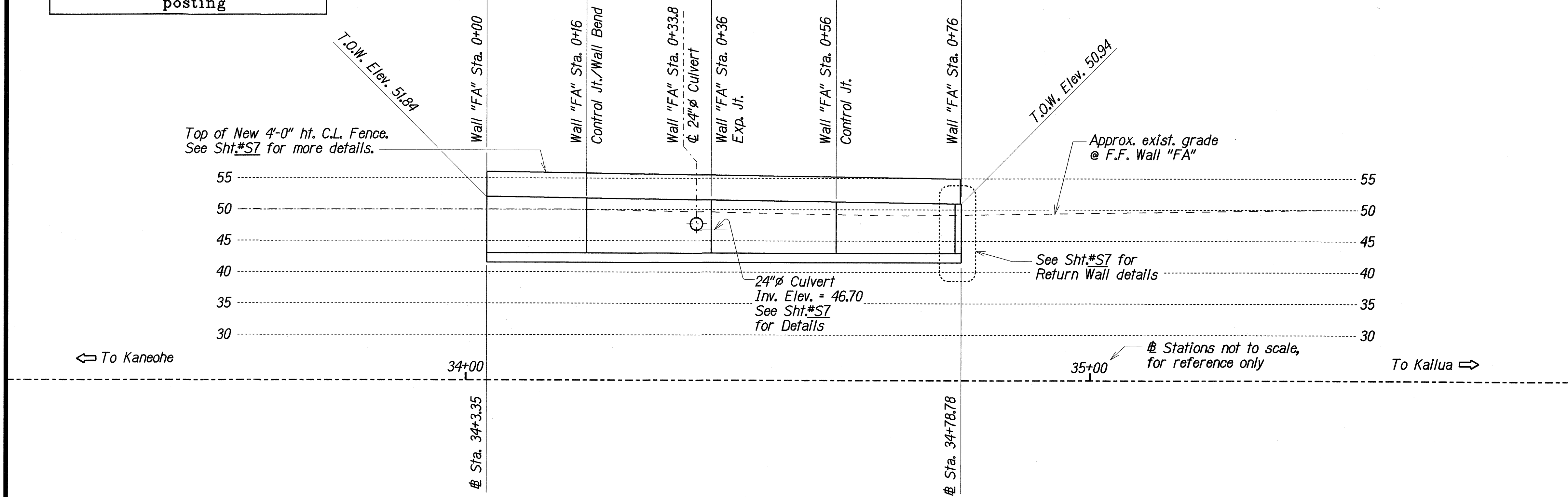
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-119	2003	77	114



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

RETAINING FILL WALL "FA" (MAKAI)--LAYOUT PLAN
Scale: 1" = 10'-0"

Wall Desig.	FA-1	FA-2	FA-3	FA-4
Wall Type	9F	9F	9F	9F
T.O.W. Elev.	51.84	51.64	51.50	51.22
T.O.F. Elev.	43.0	43.0	43.0	43.0
Wall Length	16'-0"	20'-0"	20'-0"	20'-0"



RETAINING FILL WALL "FA" (MAKAI)--DEVELOPED ELEVATION
Scale: 1" = 10'-0"

SURVEY PLANNED BY	KSG	DATE	APR 2002
DRAWN BY	DT	DATE	APR 2002
DESIGNED BY	DT	DATE	APR 2002
CHECKED BY	PTS	DATE	APR 2002

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

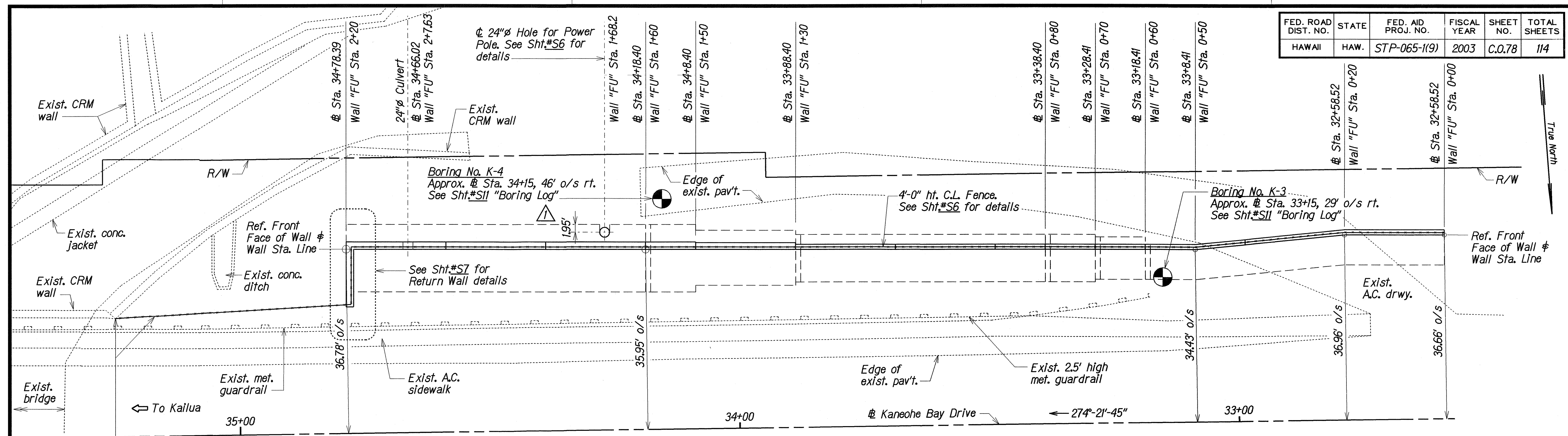
RETAINING FILL WALL "FA" (MAKAI)
LAYOUT PLAN and DEVELOPED ELEVATION
Kaneohe Bay Drive Improvements
Vicinity of Puohala Street to Kawa Bridge
Fed. Aid Proj. No. STP-065-119

Scale: As Noted Date: July, 2002

SHEET No. S3 OF 12 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-065-1(9)	2003	C.O.78	114



RETAINING FILL WALL "FU" (MAUKA)--LAYOUT PLAN
Scale: 1" = 10'-0"

Wall Type	Wall Length	T.O.W. Elev.	T.O.F. Elev.	Wall 'FU' Sta. 2+20	Wall 'FU' Sta. 2+763	24" Culvert	Wall 'FU' Sta. 2+00	Control Jt.	Wall 'FU' Sta. 1+80	Control Jt.	Wall 'FU' Sta. 1+60	Exp. Jt.	Wall 'FU' Sta. 1+50	Control Jt.	Wall 'FU' Sta. 1+30	Control Jt.	Wall 'FU' Sta. 1+10	Exp. Jt.	Wall 'FU' Sta. 0+90	Control Jt.	Wall 'FU' Sta. 0+80	Control Jt.	Wall 'FU' Sta. 0+70	Control Jt.	Wall 'FU' Sta. 0+60	Exp. Jt.	Wall 'FU' Sta. 0+50	Wall Bend	Wall 'FU' Sta. 0+40	Control Jt.	Wall 'FU' Sta. 0+20	Wall Bend/Control Jt.	Wall 'FU' Sta. 0+00
16F *	20'-0"	50.5	37.0																														
16F *	20'-0"	50.7	37.0																														
16F *	20'-0"	50.9	37.0																														
16F *	10'-0"	51.0	37.5																														
14F	20'-0"	51.2	37.5																														
12F	20'-0"	51.4	40.0																														
12F	20'-0"	51.6	40.0																														
12F	10'-0"	51.7	40.0																														
12F *	10'-0"	51.8	42.0																														
10F *	10'-0"	51.9	44.0																														
9F	20'-0"±	52.1	46.5																														
9F	20'-0"±	52.3	46.5																														
9F	20'-0"	52.5	46.5																														

LEGEND FOR AS-BUILT POSTINGS

~~~~~ Squiggly line for as-built deletion

==== Double line for as-built deletion

Roadway Text for as-built posting

RETAINING FILL WALL "FU" (MAUKA)--DEVELOPED ELEVATION  
Scale: 1" = 10'-0"

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**RETAINING FILL WALL "FU" (MAUKA)**  
**LAYOUT PLAN and DEVELOPED ELEVATION**  
**KANEOHE BAY DRIVE IMPROVEMENTS**  
Vicinity of Puohala Street to Kawa Bridge  
Fed. Aid Proj. No. STP-065-1(9)

Scale: As Noted Date: Jul, 2002

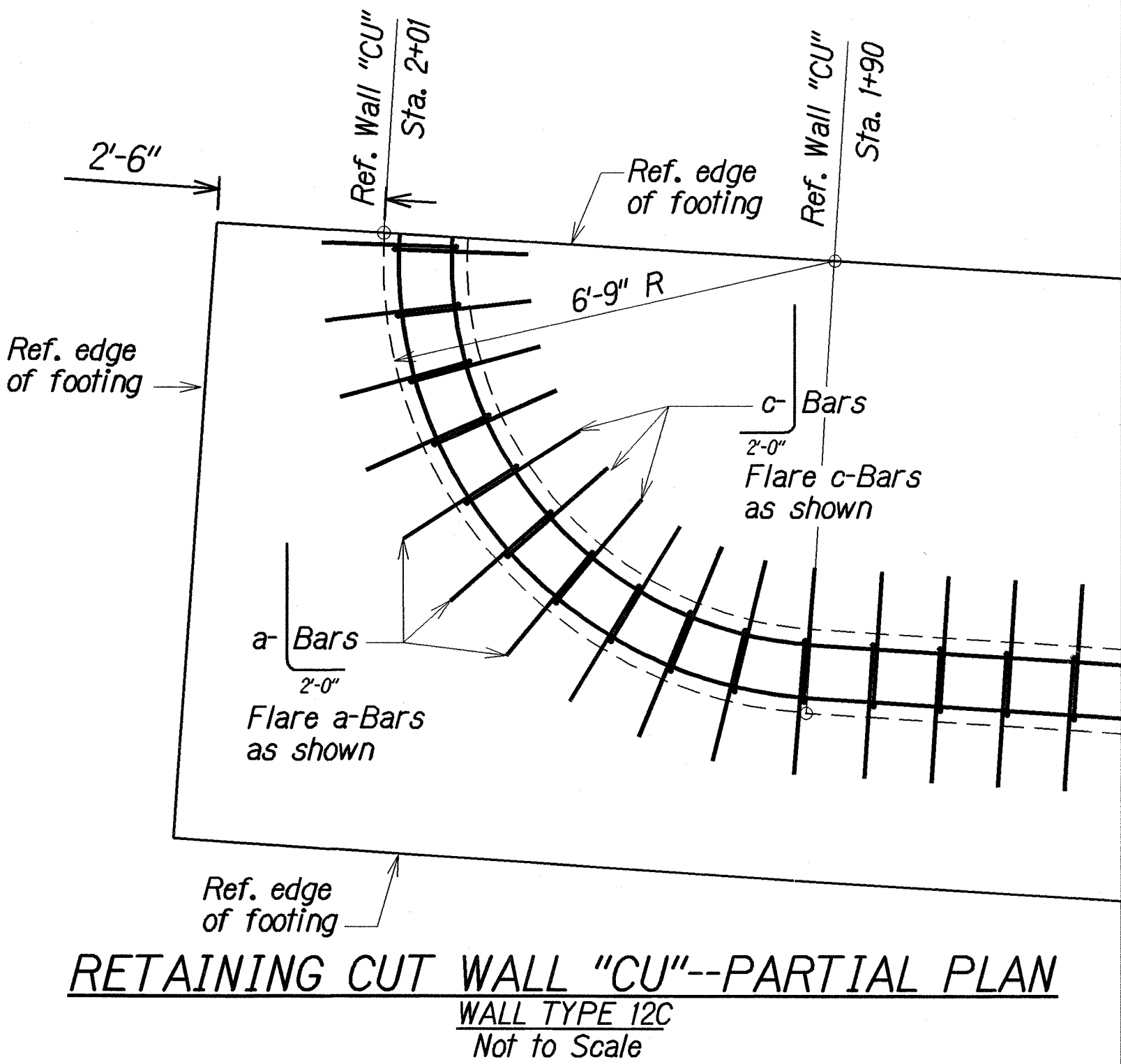
SHEET No. S4 OF 12 SHEETS

|               |          |    |
|---------------|----------|----|
| ORIGINAL PLAN | DATE     | BY |
| NOTED         | JUL 2002 | KS |
| DESIGNED BY   | JUL 2002 | KS |
| CHECKED BY    | JUL 2002 | KS |
| APPROVED BY   | JUL 2002 | KS |

| DATE    | REVISION                          |
|---------|-----------------------------------|
| 9-30-03 | 24" Hole for Power Pole relocated |



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | STP-065-1(9)       | 2003        | 79        | 114          |



- NOTES:
- Concrete used for retaining wall portions above the footing shall be colored "Davis Color Brick Red 160" or equal.
  - All exposed wall faces shall have Striated texture "PCI/APA Texture 506" or equal using form liners and as approved by the Engineer.

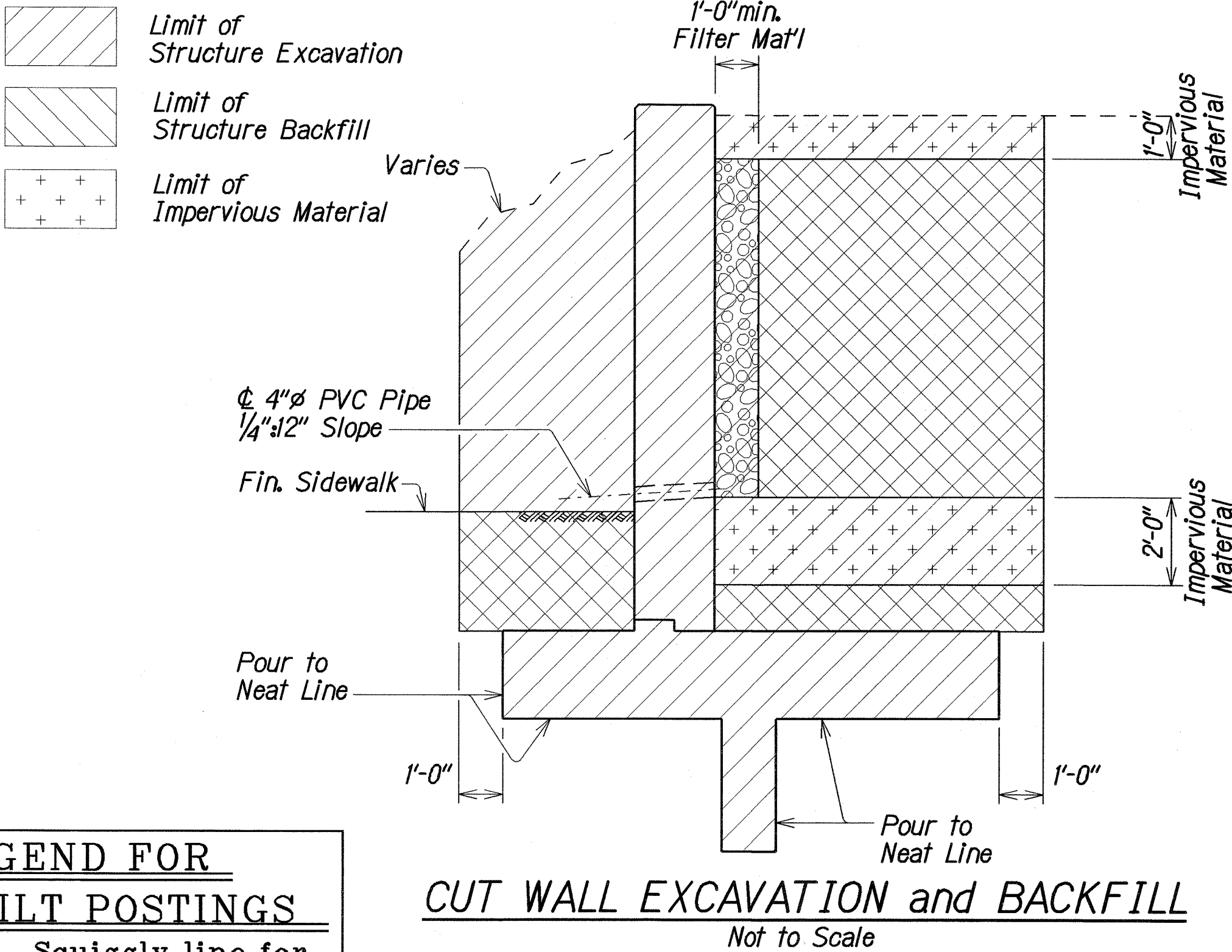
| Wall Type | Splice Location | Splice Bar | Splice Length |
|-----------|-----------------|------------|---------------|
| 12C       | 4'-6"           | #6@12"     | 30"           |
| 14C       | 6'-9"           | #6@12"     | 30"           |
| 16C       | 9'-3"           | #6@12"     | 30"           |
| 12F       | 6'-0"           | #6@12"     | 30"           |
| 14F       | 6'-6"           | #6@12"     | 30"           |
| 16F       | 9'-0"           | #6@12"     | 30"           |

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION  
**TYP. CUT WALL SECTION, REINF. SCHEDULE,  
STRUCTURAL EXCAVATION & BACKFILL LIMITS**  
KANEHOE BAY DRIVE IMPROVEMENTS  
Vicinity of Puuhala Street to Kawa Bridge  
Fed. Aid Proj. No. STP-065-1(9)

Scale: As Noted Date: Jul, 2002  
SHEET No. S5 OF 12 SHEETS

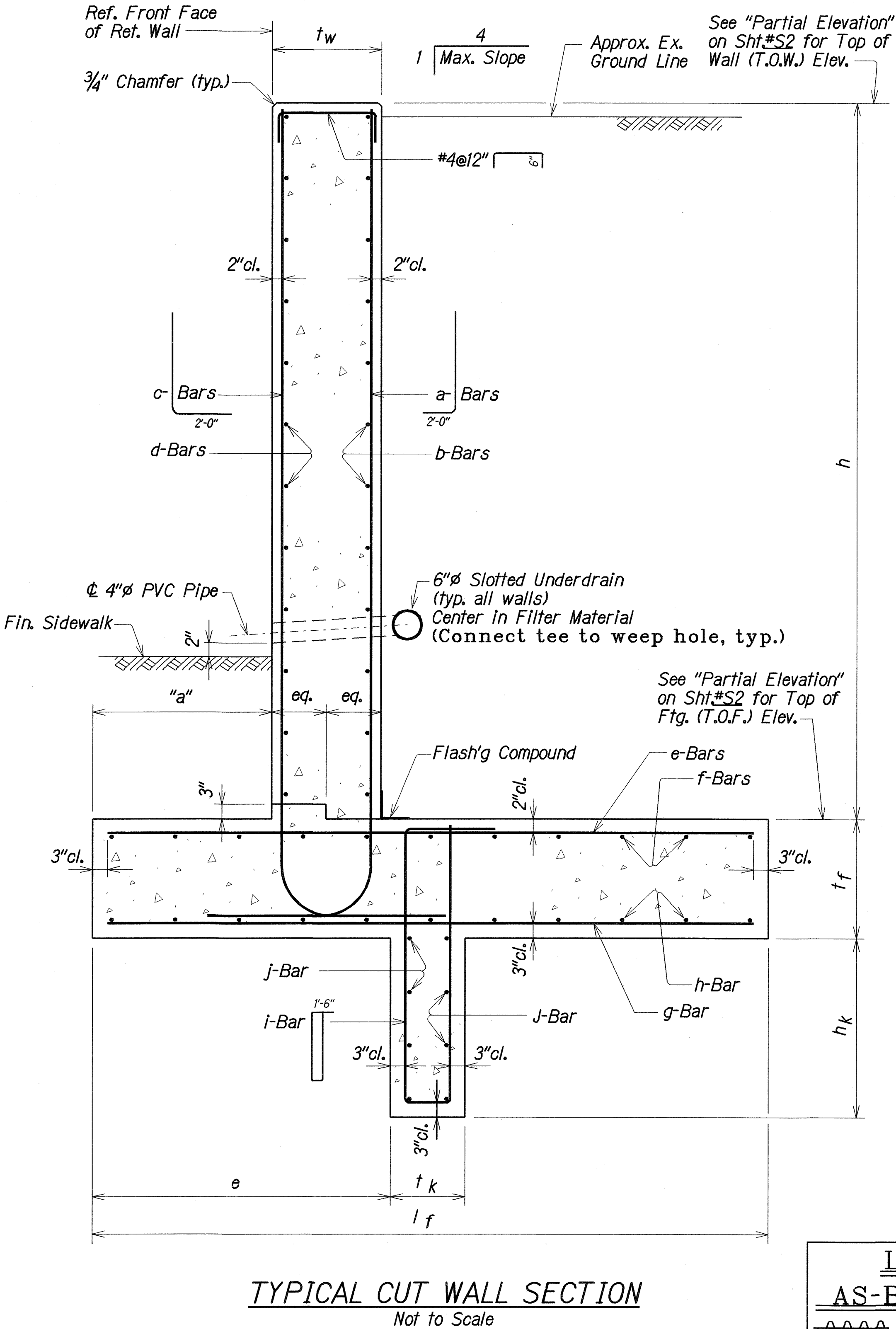
| DIMEN.         | DESCRIPTION             | UNITS  | WALL TYPE |        |        |        |        |
|----------------|-------------------------|--------|-----------|--------|--------|--------|--------|
|                |                         |        | 16C       | 14C    | 12C    | 10C    | 8C     |
| h              | Wall Height (max.)      | Feet   | 16        | 14     | 12     | 10     | 8      |
| l <sub>f</sub> | Footing Length          | Feet   | 13.00     | 10.83  | 9.25   | 7.50   | 6.00   |
| t <sub>f</sub> | Footing Thickness       | Inches | 24        | 18     | 16     | 16     | 15     |
| e              | Key Location            | Feet   | 3.50      | 3.33   | 3.25   | 2.50   | 2.50   |
| "a"            | Toe Length              | Inches | 30        | 30     | 30     | 24     | 24     |
| t <sub>w</sub> | Wall Thickness          | Inches | 18        | 16     | 15     | 12     | 12     |
| h <sub>k</sub> | Key Height              | Feet   | 2.5       | 2.0    | 2.0    | 2.0    | 2.0    |
| t <sub>k</sub> | Key Thickness           | Inches | 12        | 12     | 12     | 12     | 12     |
| a-Bar          | Main Wall Steel         | --     | #8@6"     | #7@6"  | #6@6"  | #5@6"  | #5@12" |
| b-Bar          | Main Wall Distribution  | --     | #5@12"    | #5@12" | #5@12" | #5@12" | #5@12" |
| c-Bar          | Front Wall Steel        | --     | #5@12"    | #5@12" | #5@12" | #5@12" | #5@12" |
| d-Bar          | Front Wall Distribution | --     | #5@12"    | #5@12" | #5@12" | #5@12" | #5@12" |
| e-Bar          | Main Heel Steel         | --     | #10@6"    | #7@6"  | #6@6"  | #6@12" | #6@12" |
| f-Bar          | Heel Distribution       | --     | #5@12"    | #5@12" | #5@12" | #5@12" | #5@12" |
| g-Bar          | Toe Steel               | --     | #8@6"     | #7@6"  | #6@6"  | #5@6"  | #5@12" |
| h-Bar          | Toe Distribution        | --     | #5@12"    | #5@12" | #5@12" | #5@12" | #5@12" |
| i-Bar          | Key Steel               | --     | #5@12"    | #5@12" | #5@12" | #5@12" | #5@12" |
| j-Bar          | Key Distribution        | --     | #4@12"    | #4@12" | #4@12" | #4@12" | #4@12" |

TABLE C-1 CUT WALLS



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

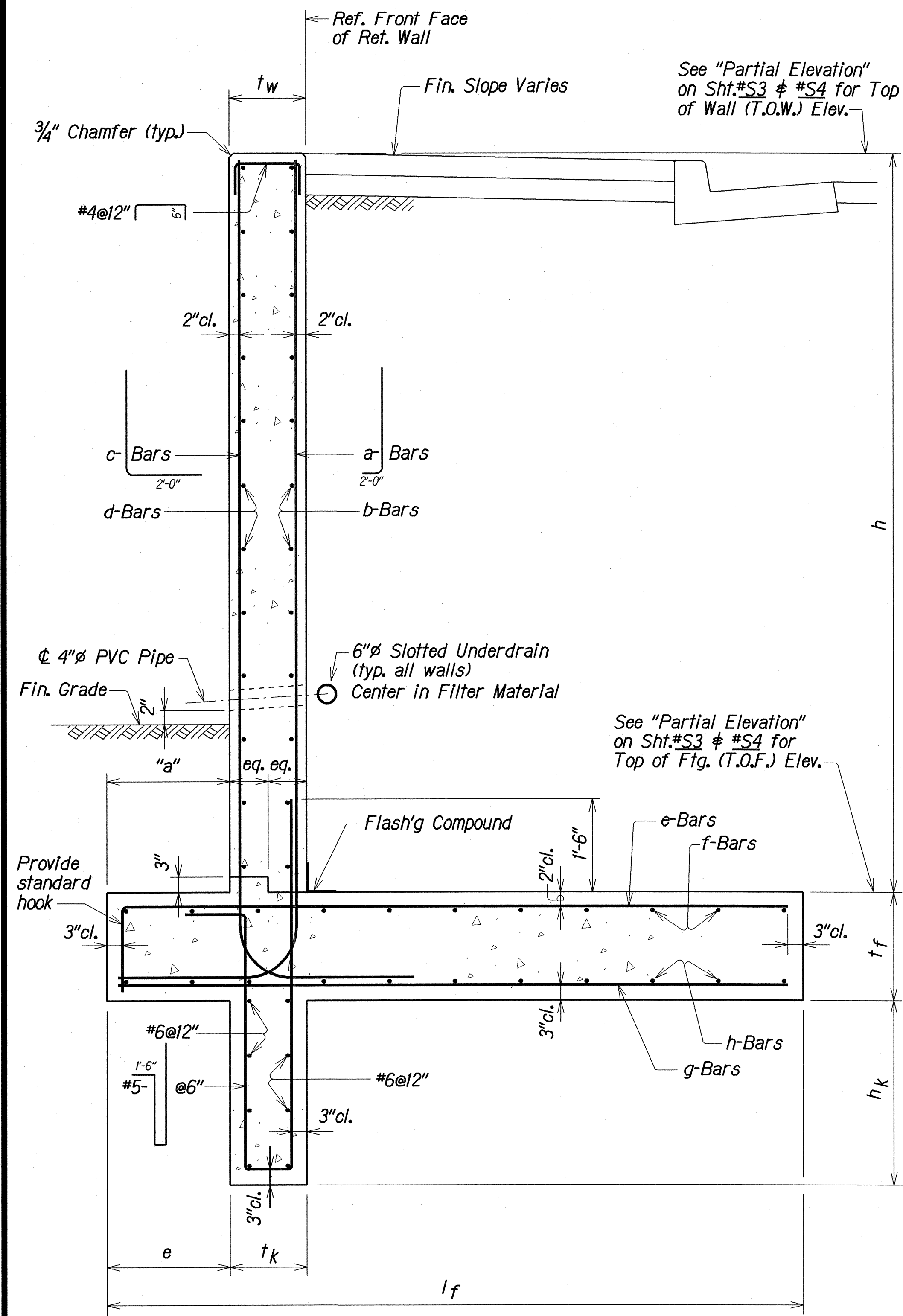
### RETAINING CUT WALL DETAILS



|                        |                  |
|------------------------|------------------|
| SURVEY PLOTTED BY: KSG | DATE: JUN 2002   |
| DRAWN BY: DPT          | DESIGNED BY: DPT |
| CHECKED BY: PJS        | DATE: JUN 2002   |
| NOTE BOOK              | DATE: JUN 2002   |
| ORIGINAL PLAN          | DATE: JUN 2002   |

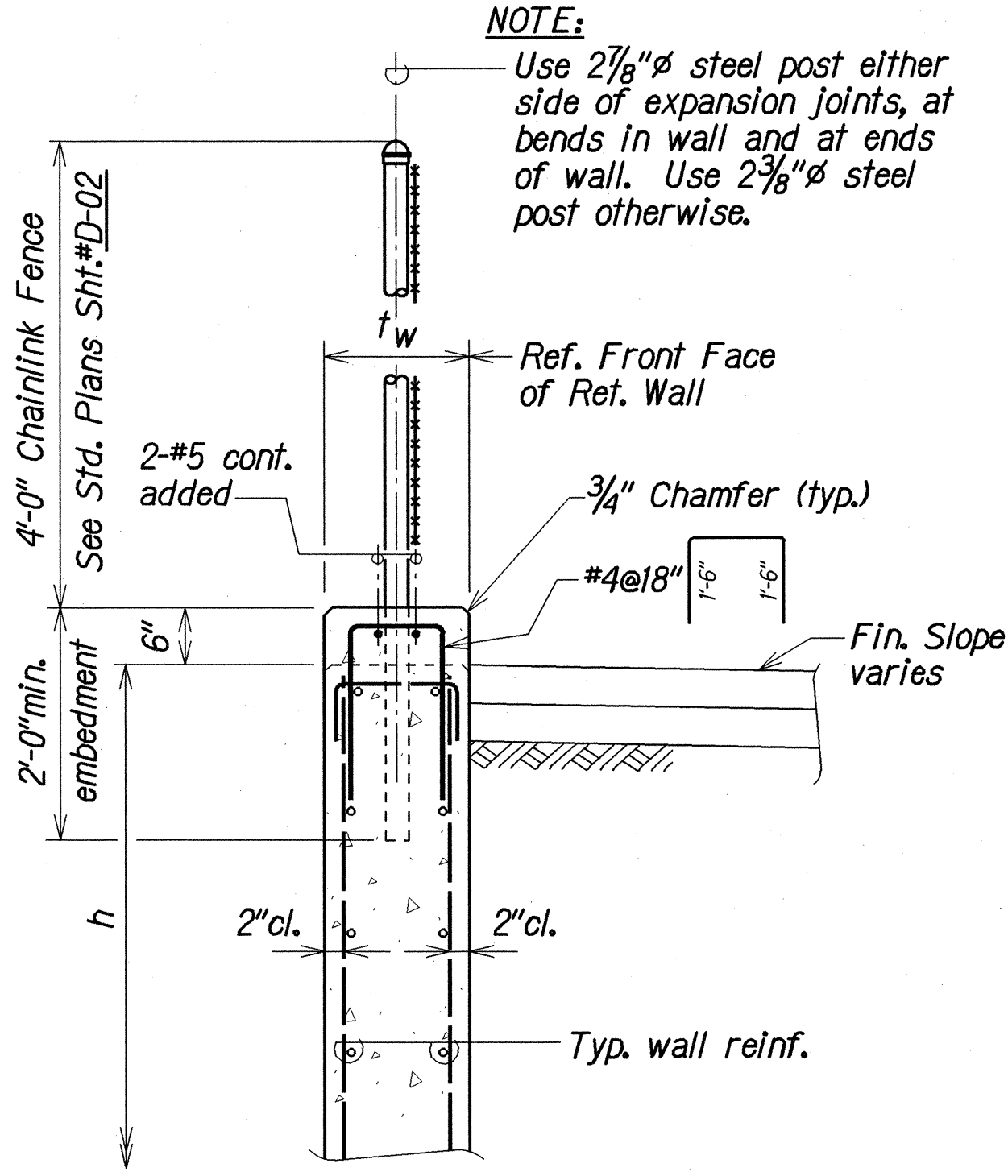


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | STP-065-1(9)       | 2003        | C.O.80    | 114          |

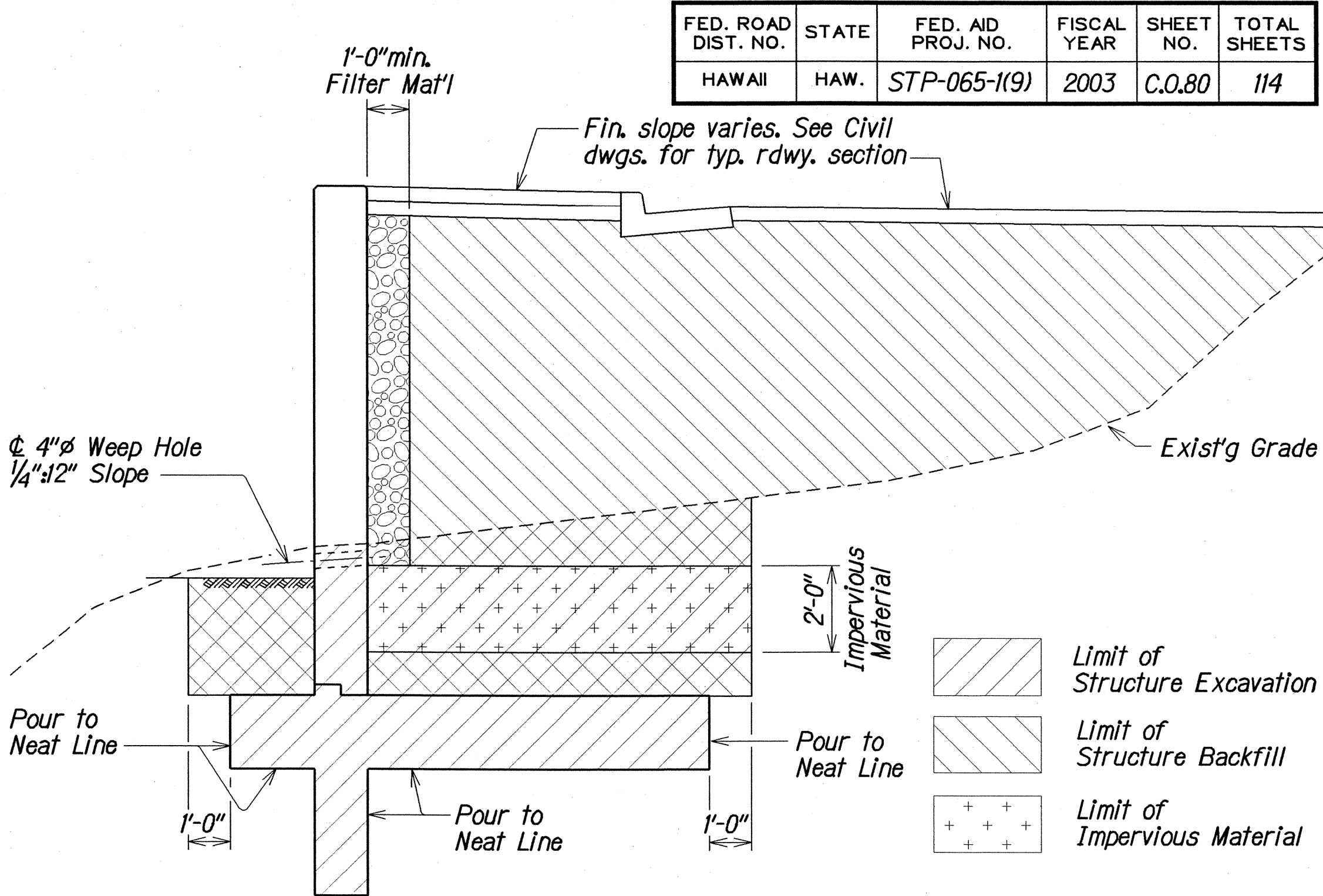


TYPICAL FILL WALL SECTION  
Not to Scale

- NOTES:
- Concrete used for retaining wall portions above the footing shall be colored "Davis Color Brick Red 160" or equal.
  - All exposed wall faces shall have Striated texture "PC1/APA Texture 506" or equal using form liners and as approved by the Engineer.



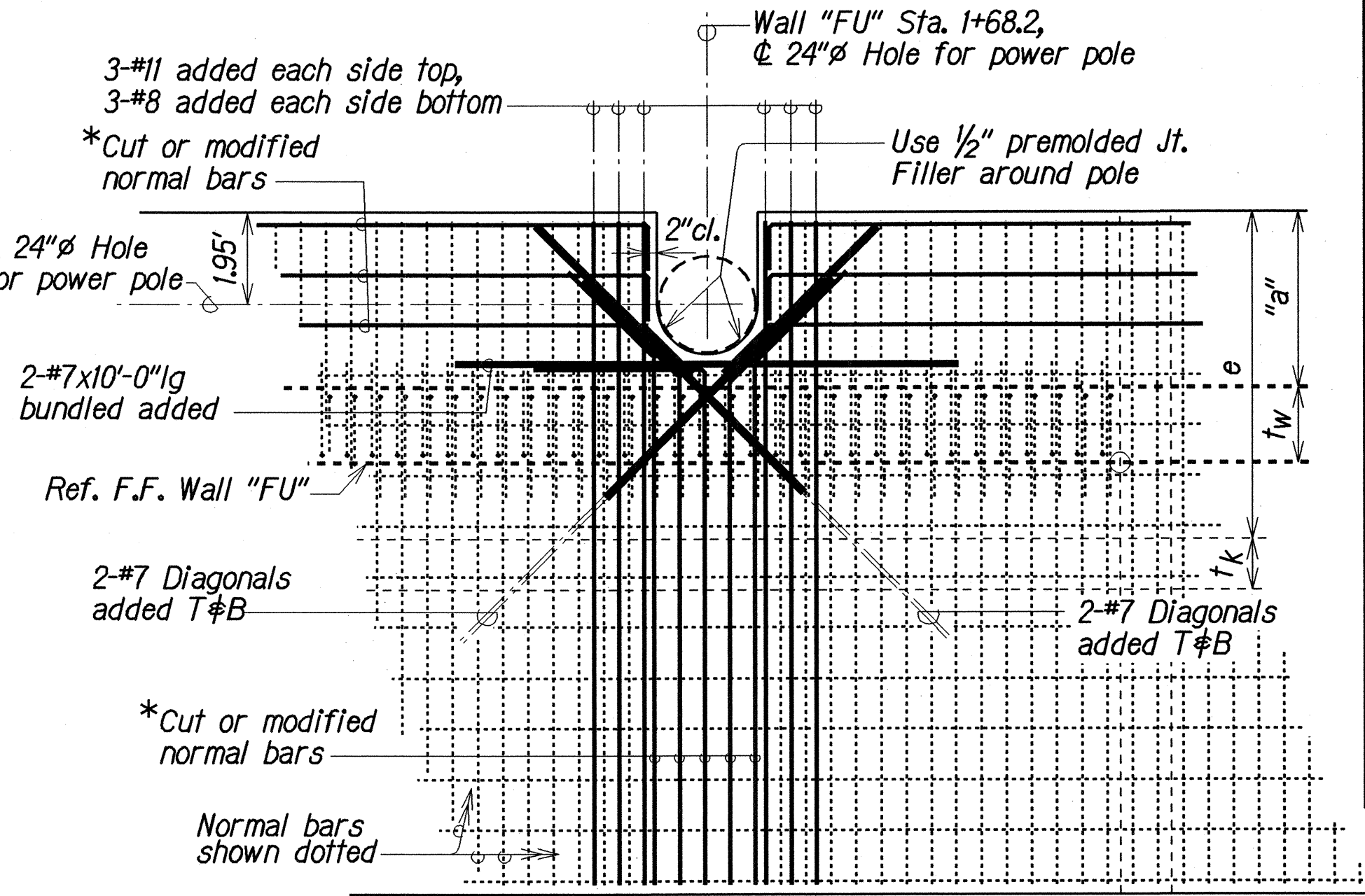
FILL WALL DETAIL at CHAIN-LINK POST  
# STA. 32+09 TO # STA. 34+78  
Not to Scale



FILL WALL EXCAVATION and BACKFILL  
Not to Scale

| DIMEN. | DESCRIPTION             | UNITS  | WALL TYPE |        |        |        |        |
|--------|-------------------------|--------|-----------|--------|--------|--------|--------|
|        |                         |        | 16F       | 14F    | 12F    | 10F    | 9F     |
| h      | Wall Height (max.)      | Feet   | 16        | 14     | 12     | 10     | 9      |
| lf     | Footing Length          | Feet   | 13.5      | 11.0   | 9.5    | 8.5    | 7.0    |
| tf     | Footing Thickness       | Inches | 18        | 18     | 18     | 16     | 16     |
| e      | Key Location            | Feet   | 6.50      | 5.33   | 4.50   | 4.00   | 2.50   |
| "a"    | Toe Length              | Inches | 42        | 30     | 24     | 18     | 0      |
| tw     | Wall Thickness          | Inches | 18        | 16     | 12     | 12     | 12     |
| hk     | Key Height              | Feet   | 3.0       | 2.5    | 2.0    | 2.0    | 2.0    |
| tk     | Key Thickness           | Inches | 12        | 12     | 12     | 12     | 12     |
| a-Bar  | Main Wall Steel         | --     | #8@6"     | #7@6"  | #7@6"  | #5@6"  | #5@6"  |
| b-Bar  | Main Wall Distribution  | --     | #6@12"    | #6@12" | #6@12" | #6@12" | #6@12" |
| c-Bar  | Front Wall Steel        | --     | #6@12"    | #6@12" | #6@12" | #6@12" | #6@12" |
| d-Bar  | Front Wall Distribution | --     | #6@12"    | #6@12" | #6@12" | #6@12" | #6@12" |
| e-Bar  | Main Heel Steel         | --     | #11@6"    | #11@6" | #9@6"  | #7@6"  | #6@6"  |
| f-Bar  | Heel Distribution       | --     | #7@12"    | #7@12" | #7@12" | #7@12" | #7@12" |
| g-Bar  | Toe Steel               | --     | #8@12"    | #7@12" | #7@12" | #5@6"  | #5@12" |
| h-Bar  | Toe Distribution        | --     | #7@12"    | #7@12" | #7@12" | #7@12" | #7@12" |

TABLE F-1 FILL WALLS



- \* Do not cut a-Bars or c-Bars.  
Flare as needed to fit around opening.

PARTIAL PLAN  
HOLE DETAIL for POWER POLE at  
WALL "FU" STA. 1+68.2  
Not to Scale

## RETAINING FILL WALL DETAILS

|                |          |             |            |
|----------------|----------|-------------|------------|
| ORIGINAL PLAN  | DATE     | DESIGNED BY | CHECKED BY |
| NOTE BOOK      | 7/1/2002 | DESIGNED BY | CHECKED BY |
| SA-4100506.001 | 7/1/2002 | DESIGNED BY | CHECKED BY |

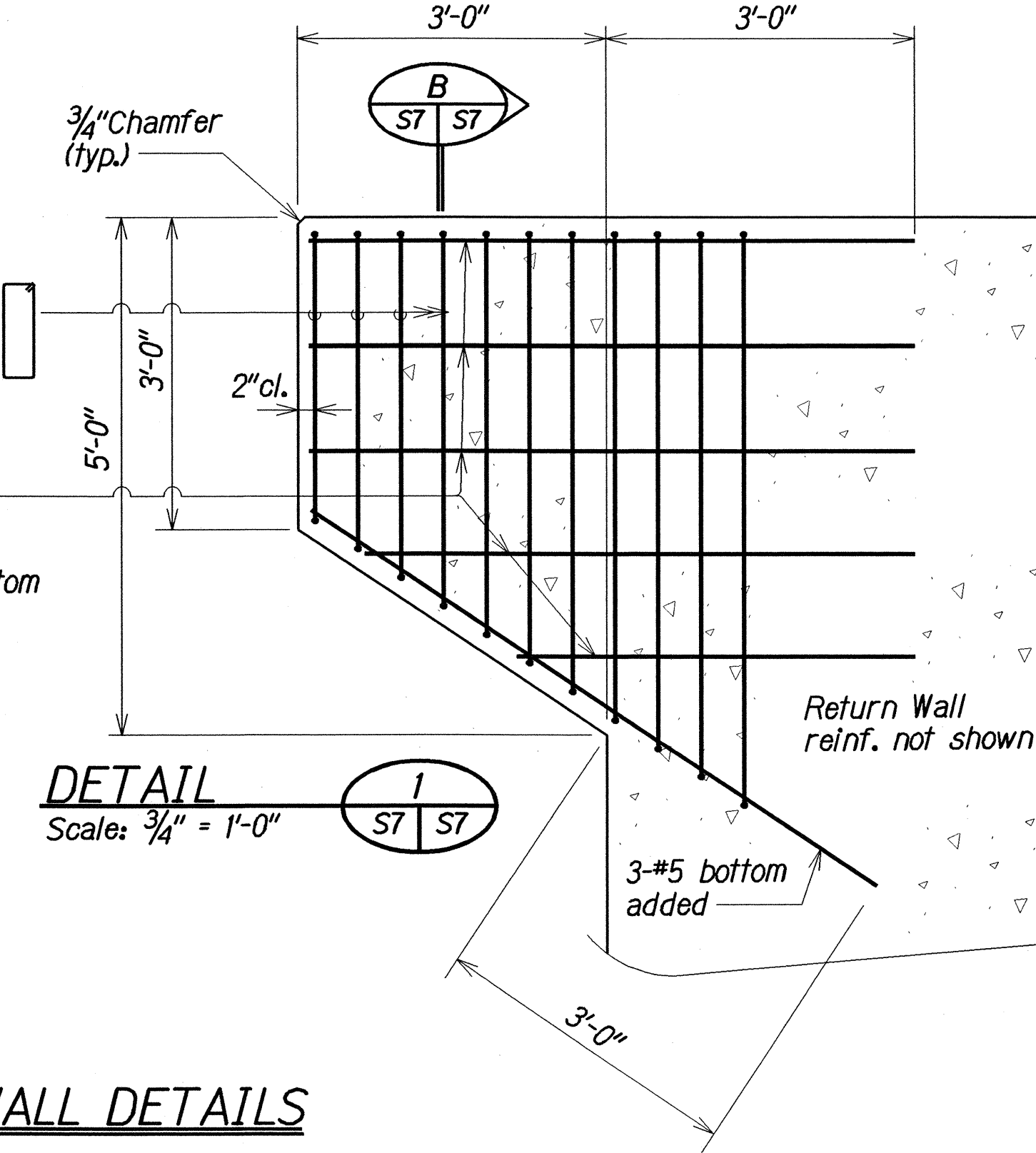
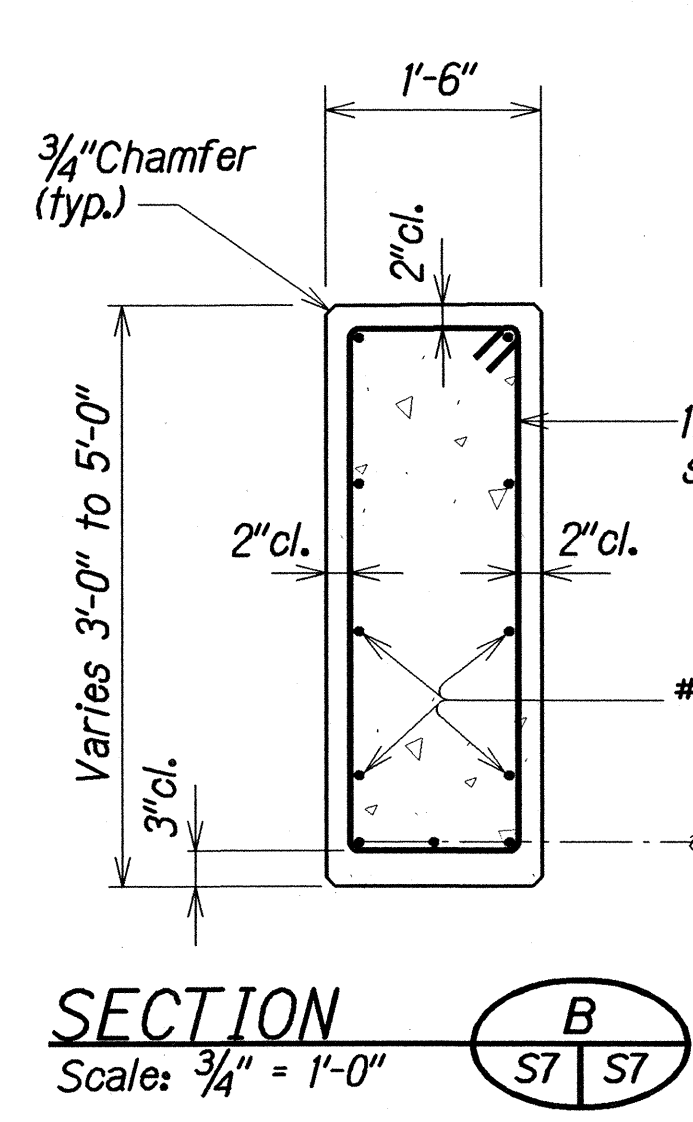
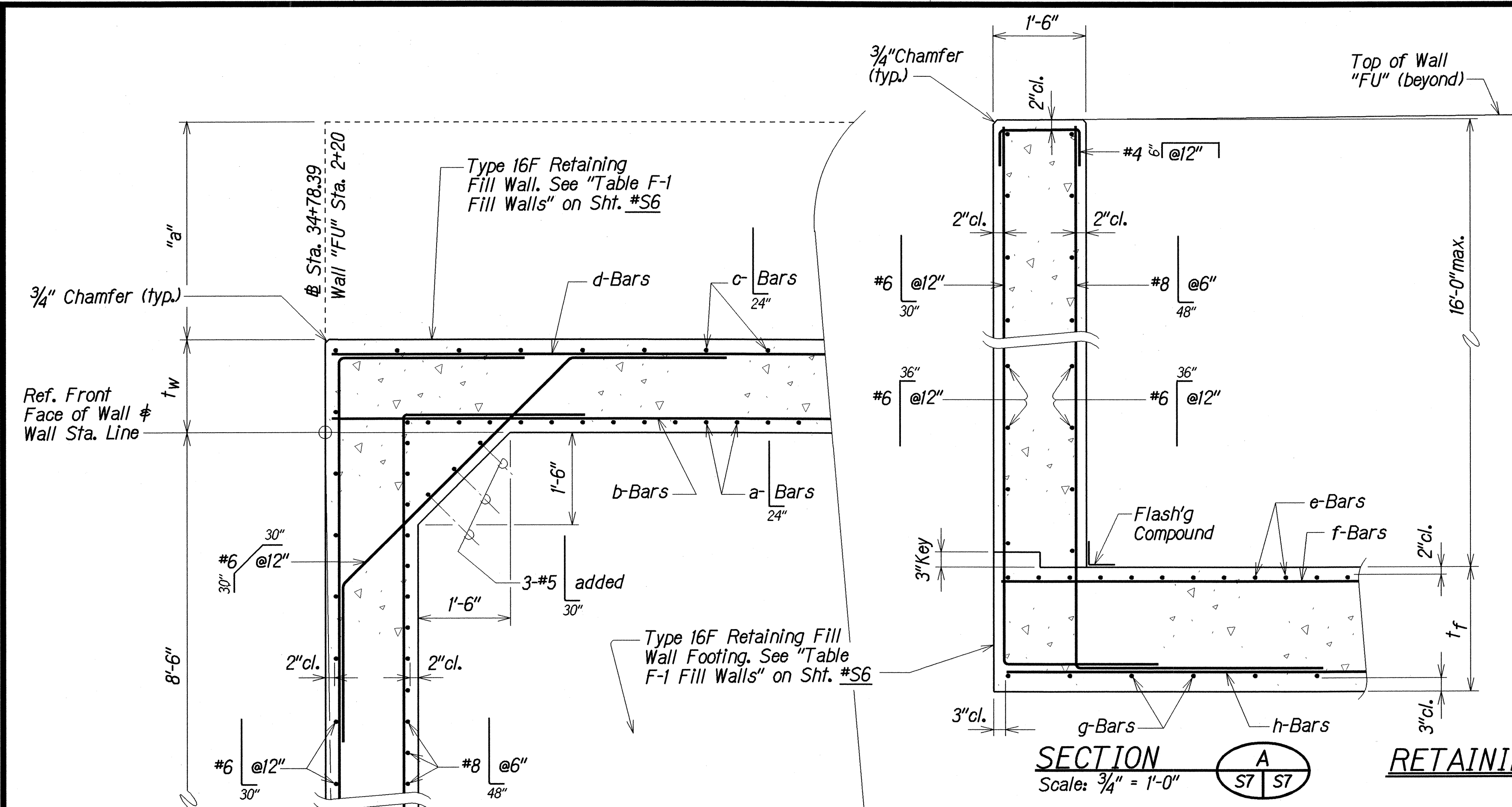
9-30-03  
Hole for 24" Power Pole relocated,  
Hole Detail revised

DATE REVISION

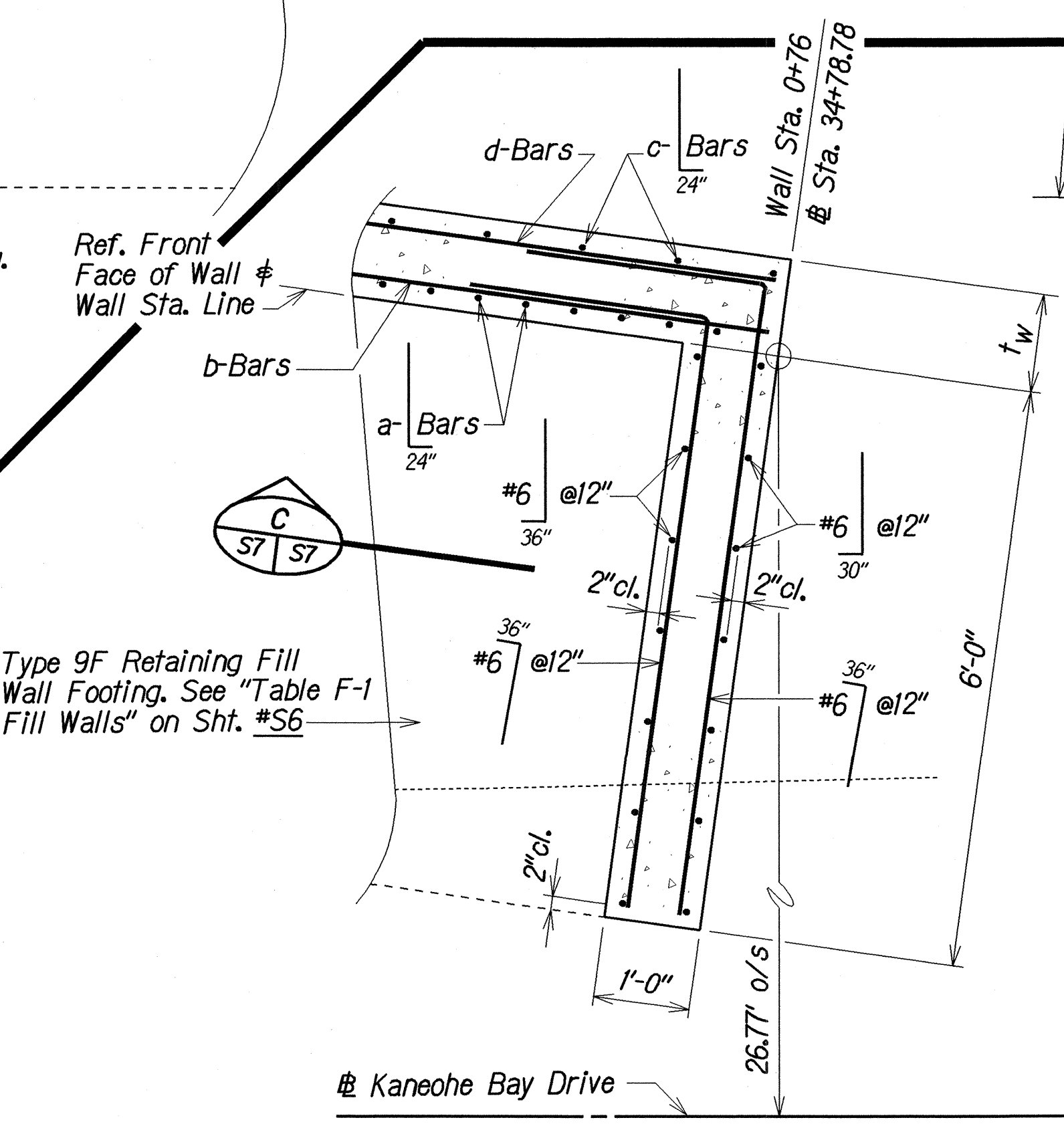
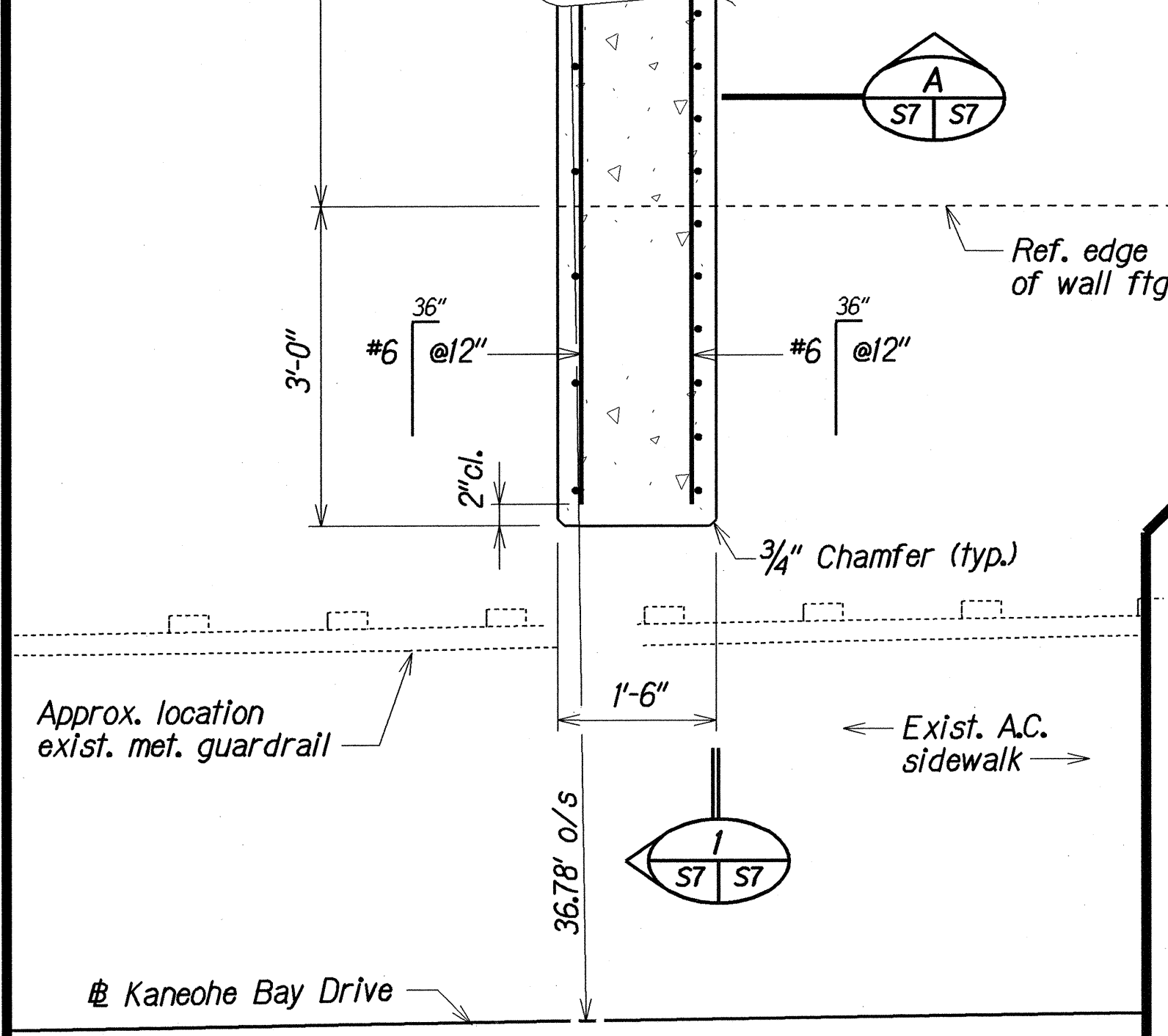
|                                                                                                                |
|----------------------------------------------------------------------------------------------------------------|
| STATE OF HAWAII<br>DEPARTMENT OF TRANSPORTATION<br>HIGHWAYS DIVISION                                           |
| TYP. FILL WALL SECTION, REINF. SCHEDULE,<br>STRUCTURAL EXCAVATION & BACKFILL LIMITS                            |
| KANEHOE BAY DRIVE IMPROVEMENTS<br>Vicinity of Puuhala Street to Kawa Bridge<br>Fed. Aid Proj. No. STP-065-1(9) |
| Scale: As Noted Date: Jul, 2002                                                                                |
| SHEET No. 56 OF 12 SHEETS                                                                                      |



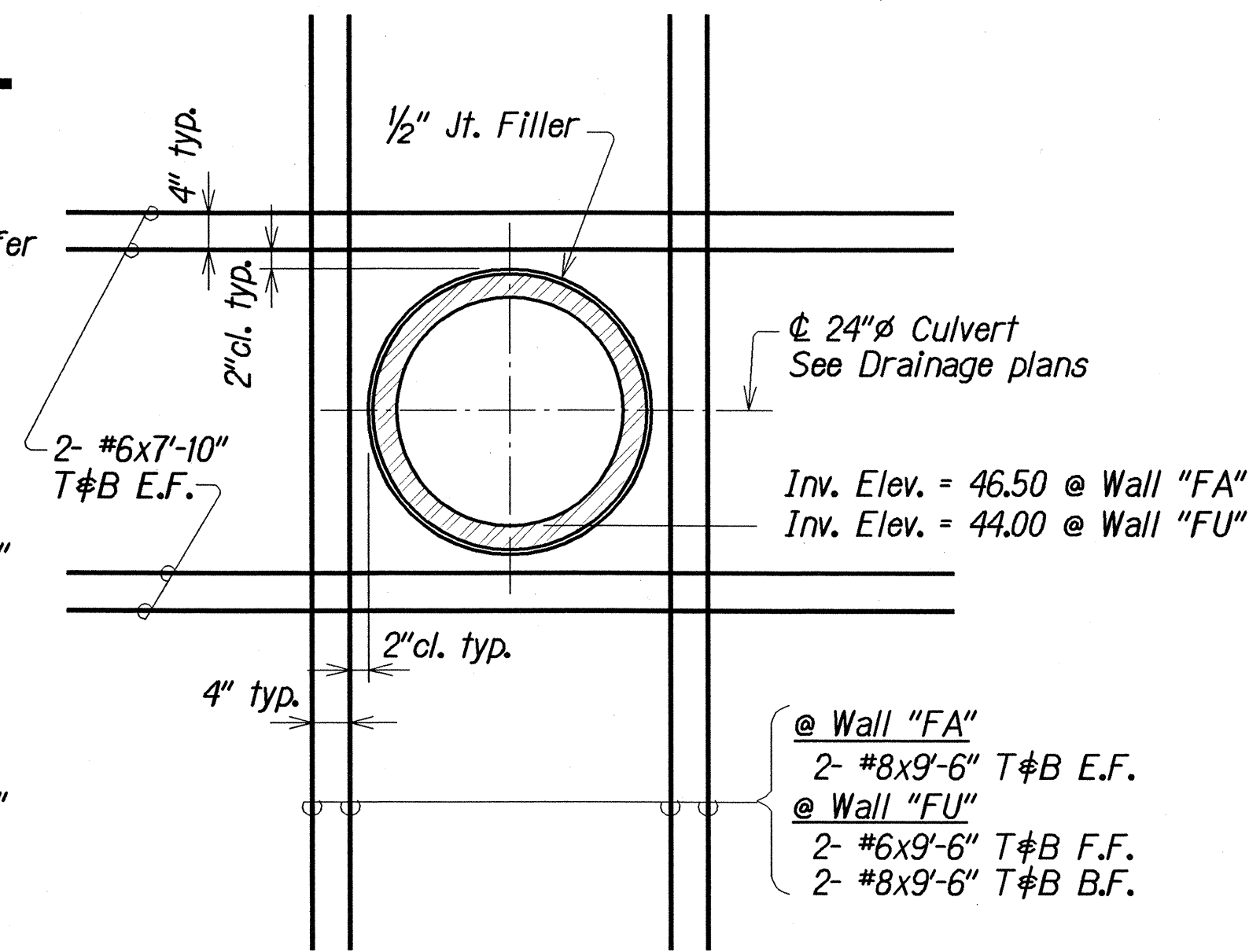
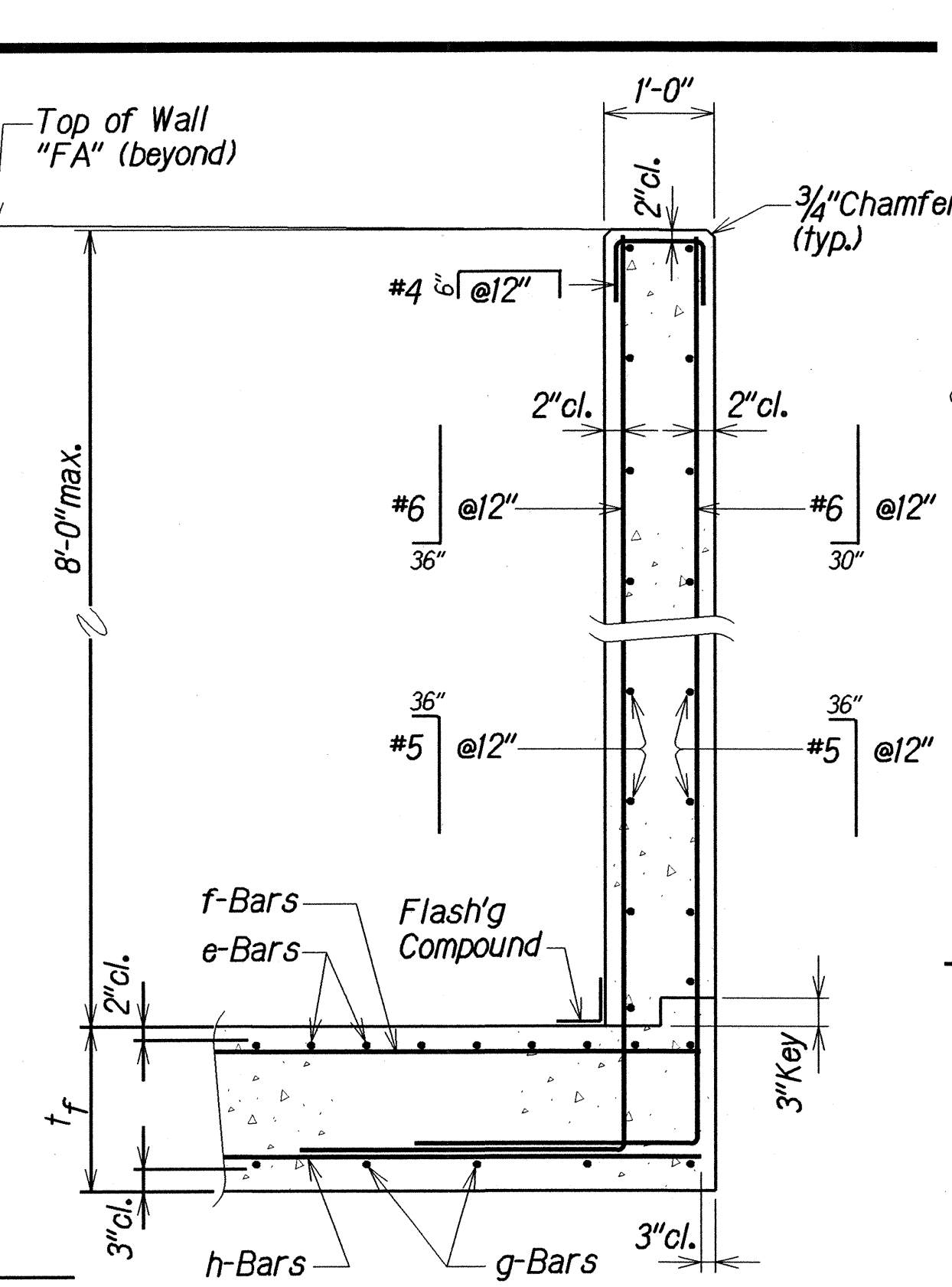
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | STP-065-1(9)       | 2003        | 81        | 114          |



RETAINING FILL WALL "FU" RETURN WALL DETAILS



RETAINING FILL WALL "FA" RETURN WALL DETAILS



24" CULVERT at WALL "FA" STA. 0+33.8, at WALL "FU" STA. 2+7.63

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**RETAINING FILL WALLS "FA" and "FU"**  
**RETURN WALL DETAILS**  
KANEHOE BAY DRIVE IMPROVEMENTS  
Vicinity of Puohala Street to Kawa Bridge  
Fed. Aid Proj. No. STP-065-1(9)

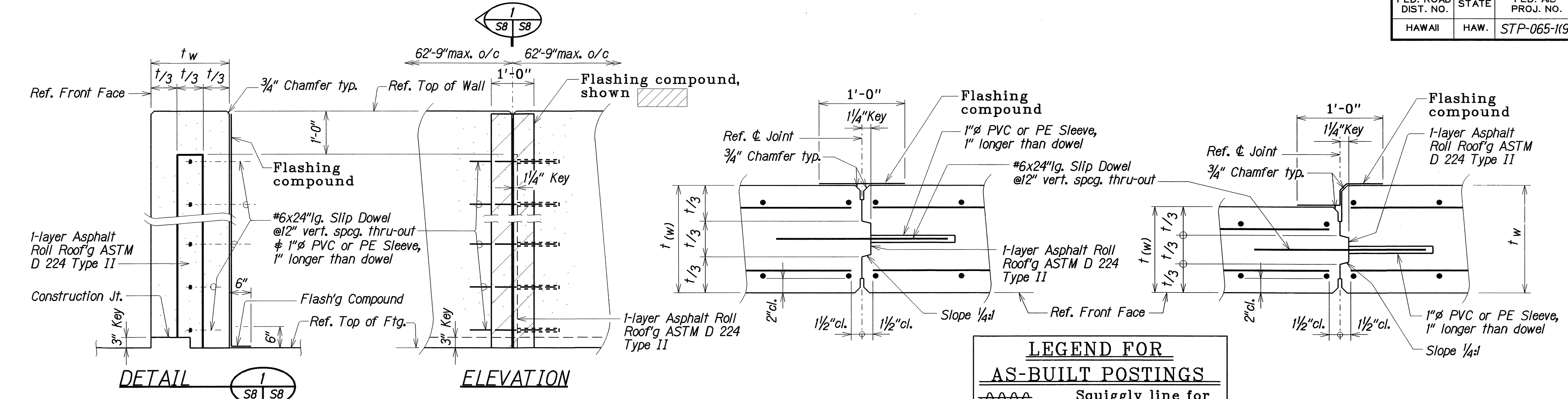
Scale: As Noted Date: Jul, 2002

SHEET No. S7 OF 12 SHEETS

|               |          |     |
|---------------|----------|-----|
| ORIGINAL PLAN | DATE     | BY  |
| NOTED         | JUL 2002 | KSG |
| DESIGNED BY   | JUL 2002 | DKT |
| CHECKED BY    | JUL 2002 | DKT |
| QUANTITIES BY | JUL 2002 | DKT |
| CHECKED BY    | JUL 2002 | DKT |

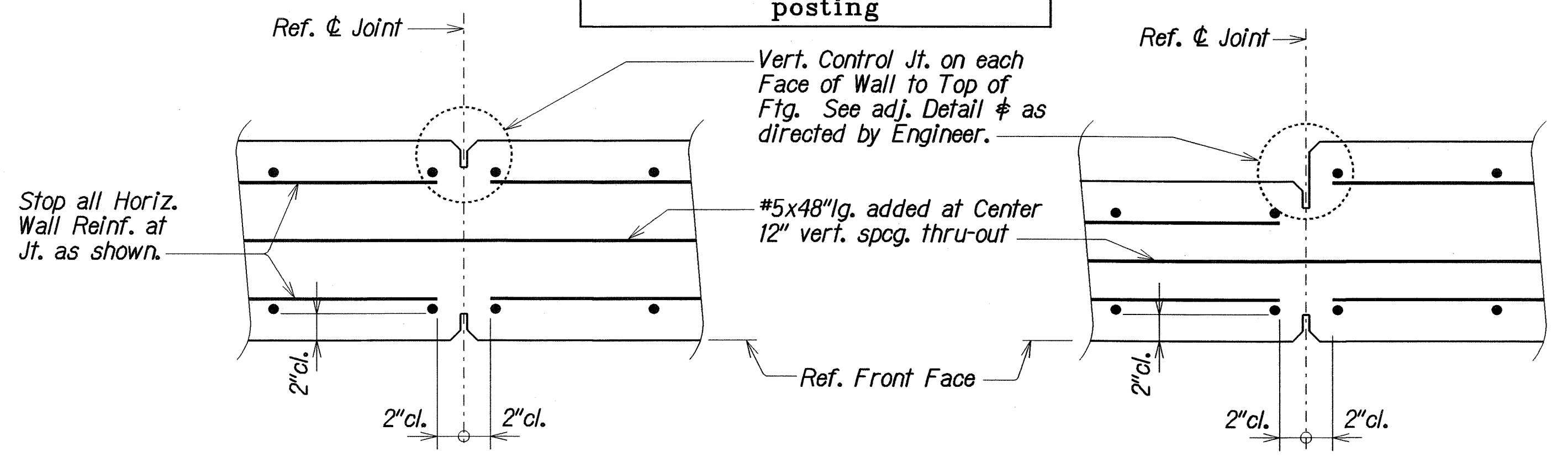


| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | STP-065-1(9)       | 2003        | 82        | 114          |



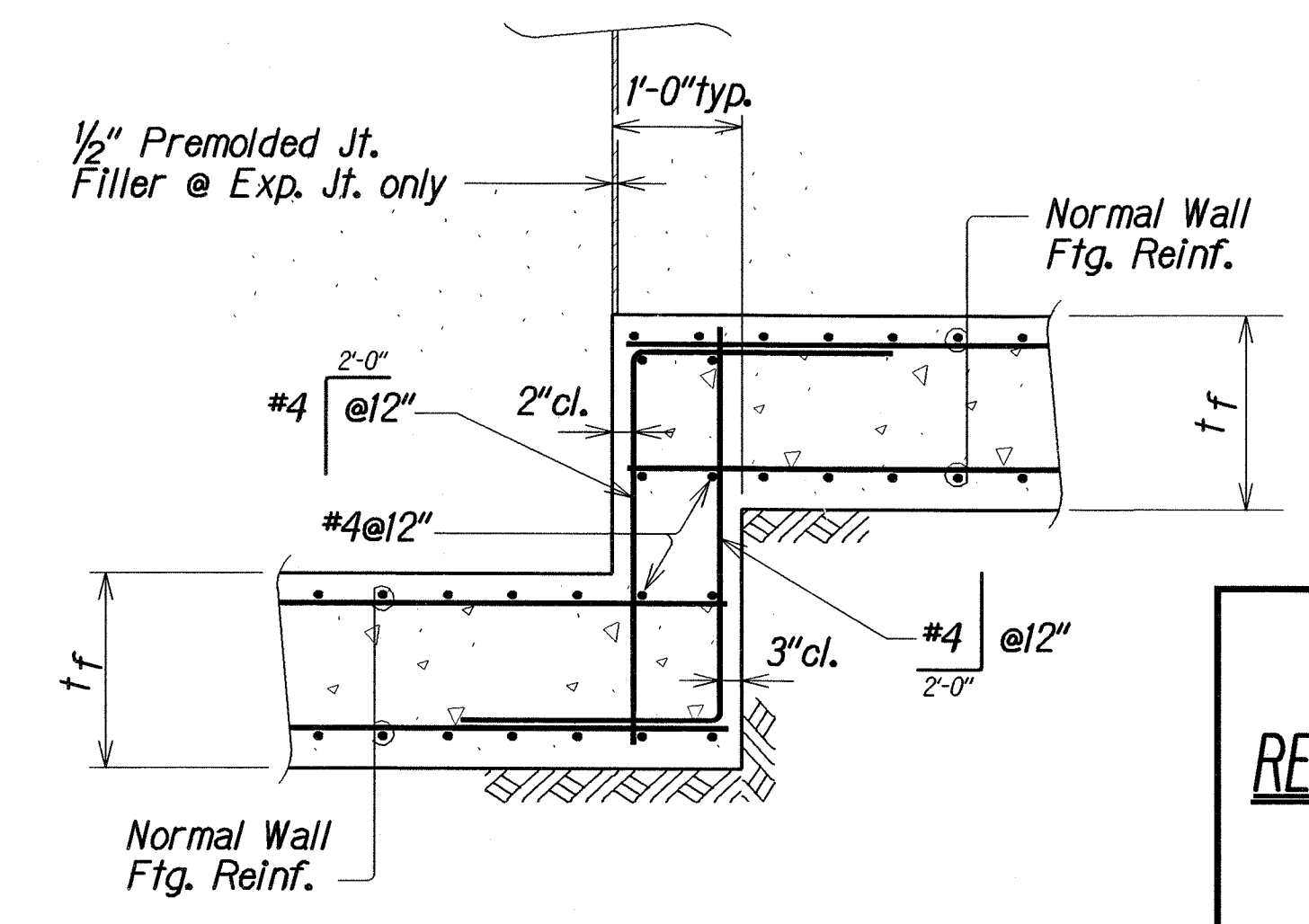
### EXPANSION JOINT DETAILS

Not to Scale



### CONTROL JOINT DETAILS

Not to Scale



TYPICAL WALL FOOTING STEP DETAIL  
Scale: 3/4" = 1'-0"

## RETAINING WALL JOINT DETAILS

"AS-BUILT"

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

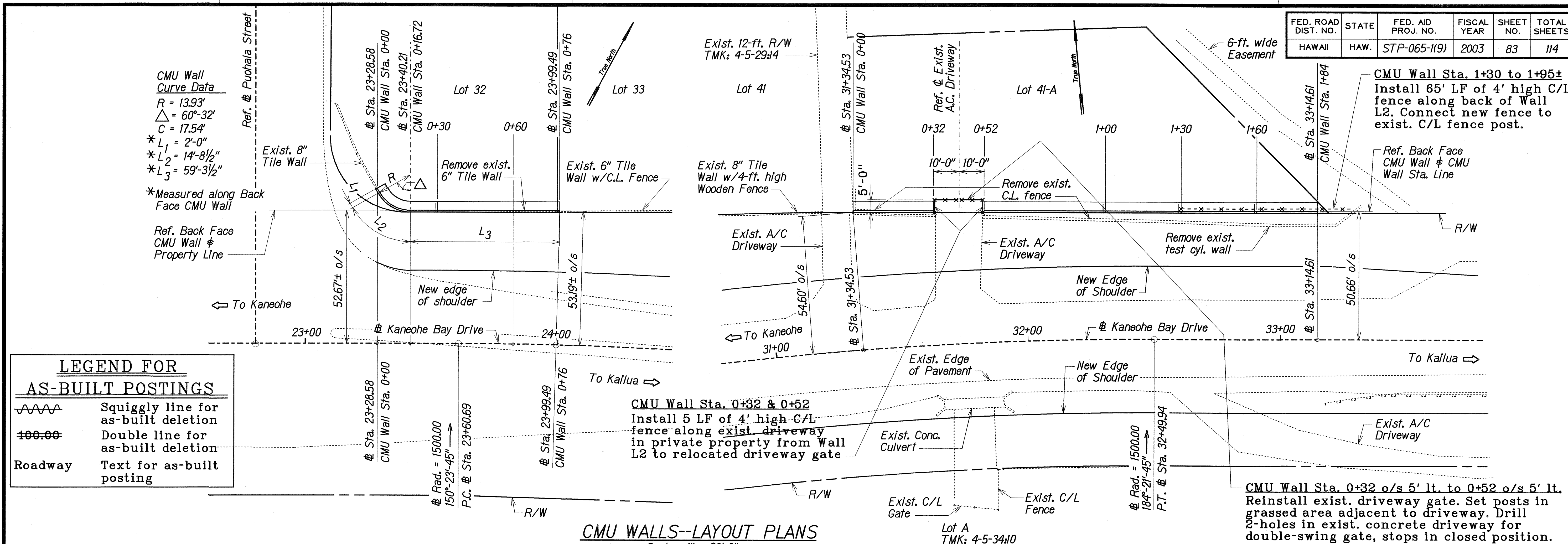
RETAINING WALL JOINT DETAILS and  
FOOTING STEP-UP DETAILS  
KANEHOE BAY DRIVE IMPROVEMENTS  
Vicinity of Puuhala Street to Kawa Bridge  
Fed. Aid Proj. No. STP-065-1(9)

Scale: As Noted
Date: Jul, 2002

SHEET No. 82 OF 12 SHEETS



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | STP-065-1(9)       | 2003        | 83        | 114          |



**LEGEND FOR AS-BUILT POSTINGS**

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

**CMU WALLS--LAYOUT PLANS**  
Scale: 1" = 20'-0"

| CMU Wall Design | LI-1                           | LI-2   | LI-3   |  | CMU Wall Design | L2-1                | L2-2                | L2-3                           | L2-4                           | L2-5                           |
|-----------------|--------------------------------|--------|--------|--|-----------------|---------------------|---------------------|--------------------------------|--------------------------------|--------------------------------|
| CMU Wall Type   | LI                             | LI     | LI     |  | CMU Wall Type   | L2                  | L2                  | L2                             | L2                             | L2                             |
| T.O.W. Elev.    | 83.33                          | 82.67  | 82.00  |  | T.O.W. Elev.    | 64.0                | 62.92               | 62.25                          | 61.58                          | 60.91                          |
| T.O.F. Elev.    | 72.00                          | 71.33  | 71.33  |  | T.O.F. Elev.    | 56.0                | 54.92               | 54.25                          | 52.92                          | 52.25                          |
| CMU Wall Length | 30'-0"                         | 30'-0" | 16'-0" |  | CMU Wall Length | 32'-0"              | 48'-0"              | 30'-0"                         | 30'-0"                         | 24'-0"                         |
|                 | CMU Wall Sta. 0+30 Control Jt. |        |        |  |                 | CMU Wall Sta. 0+32  | CMU Wall Sta. 0+52  | CMU Wall Sta. 0+70 Control Jt. | CMU Wall Sta. 1+00 Control Jt. | CMU Wall Sta. 1+30 Control Jt. |
|                 | CMU Wall Sta. 0+60 Control Jt. |        |        |  |                 | CMU Wall Sta. 31+50 | CMU Wall Sta. 32+00 | CMU Wall Sta. 32+50            | CMU Wall Sta. 33+00            | CMU Wall Sta. 33+14.61         |
|                 | CMU Wall Sta. 0+76             |        |        |  |                 | CMU Wall Sta. 31+50 | CMU Wall Sta. 32+00 | CMU Wall Sta. 32+50            | CMU Wall Sta. 33+00            | CMU Wall Sta. 33+14.61         |

**CMU WALLS--DEVELOPED ELEVATIONS**  
Scale: 1" = 20'-0"

See Sht #S10 for Details

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**CMU WALL LAYOUT PLANS  
and DEVELOPED ELEVATIONS**  
**KANEOHE BAY DRIVE IMPROVEMENTS**  
Vicinity of Puuhala Street to Kawa Bridge  
Fed. Aid Proj. No. STP-065-1(9)

Scale: As Noted Date: Jul, 2002

SHEET No. 59 OF 12 SHEETS

|                   |          |
|-------------------|----------|
| SURVEY PLOTTED BY | DATE     |
| DRAWN BY          | JUN 2002 |
| DESIGNED BY       | JUN 2002 |
| CHECKED BY        | JUN 2002 |
| NOTED BY          | JUN 2002 |

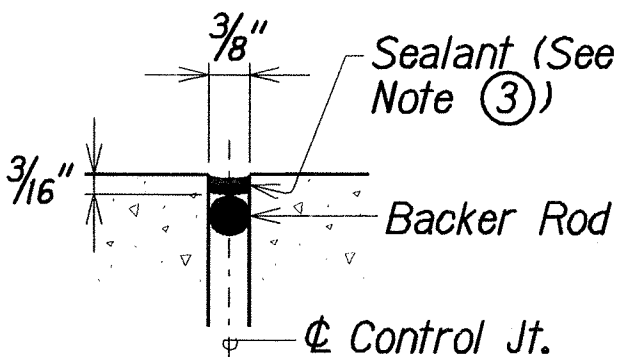
"AS-BUILT"



| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| HAWAII              | HAW.  | STP-065-1(9)       | 2003        | 84        | 114          |

# NOTES:

- Dowels shall conform to ASTM A 615 and be hot-dip galvanized.
- Dowels on grease end shall not be tied to any adjacent rebars.
- Single component polyurethane sealant shall conform to ASTM C 920, Type S, Grade NS, Class 25, Use NT and M with a minimum ASTM D 2240 Type A Shore Durometer Hardness of 40, plus or minus 5.
- CMU and mortar shall be colored Brick Red as per Special Provisions Section 513.
- Mortar shall be Type S.
- CMU shall be 2-Core Vee Three Flute Split Face type, both face. End blocks to match.
- Reinforcing steel in Type L1, Type L2 CMU Walls and CMU Wall footings shall be paid under Item No. 6021003.
- PVC Drain shall be Schedule 80.

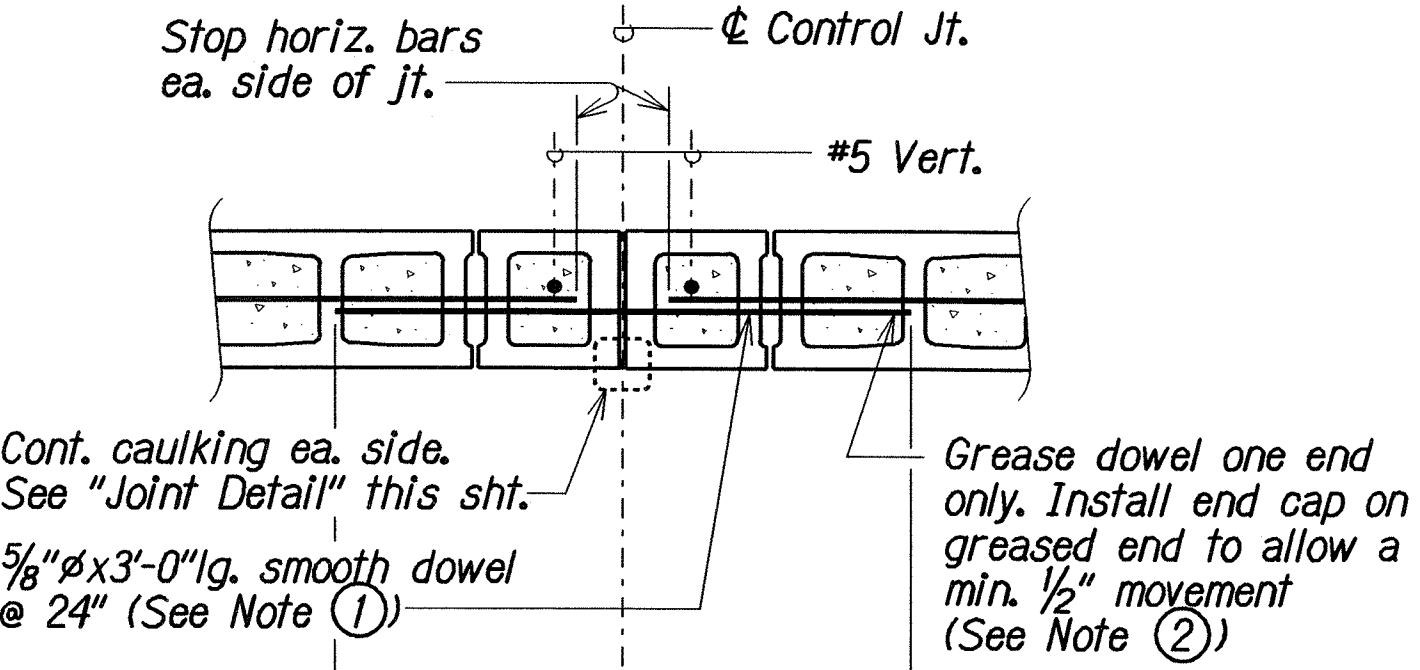


JOINT DETAIL  
Not to Scale

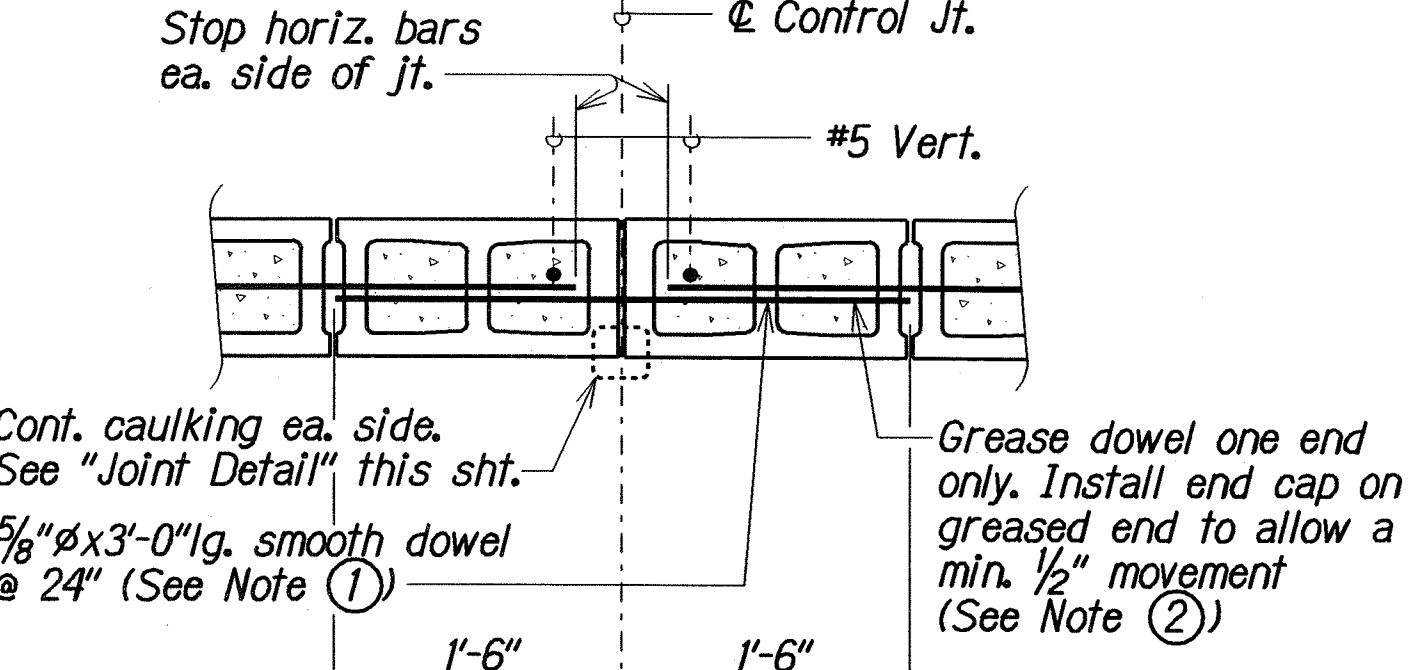
| LEGEND FOR AS-BUILT POSTINGS |                                     |
|------------------------------|-------------------------------------|
|                              | Squiggly line for as-built deletion |
|                              | Double line for as-built deletion   |
| Roadway       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

| DIMEN.         | DESCRIPTION            | UNITS  | CMU WALL TYPE L1 | L2       |
|----------------|------------------------|--------|------------------|----------|
| h              | CMU Wall Height (max.) | Feet   | 12               | 10       |
| l <sub>f</sub> | Footing Length         | Feet   | 4.25             | 4.25     |
| t <sub>w</sub> | CMU Wall Thickness     | Inches | 8                | 8        |
| a-Bar          | Vert. CMU Wall Steel   | --     | #6@16"           | #5@16"   |
| b-Bar          | Horiz. CMU Wall Steel  | --     | #4@24"           | #4@24"   |
| c-Bar          | Longit. Foot'g Steel   | --     | 4-#4 T#B         | 4-#4 T#B |

TABLE 1 CMU WALLS

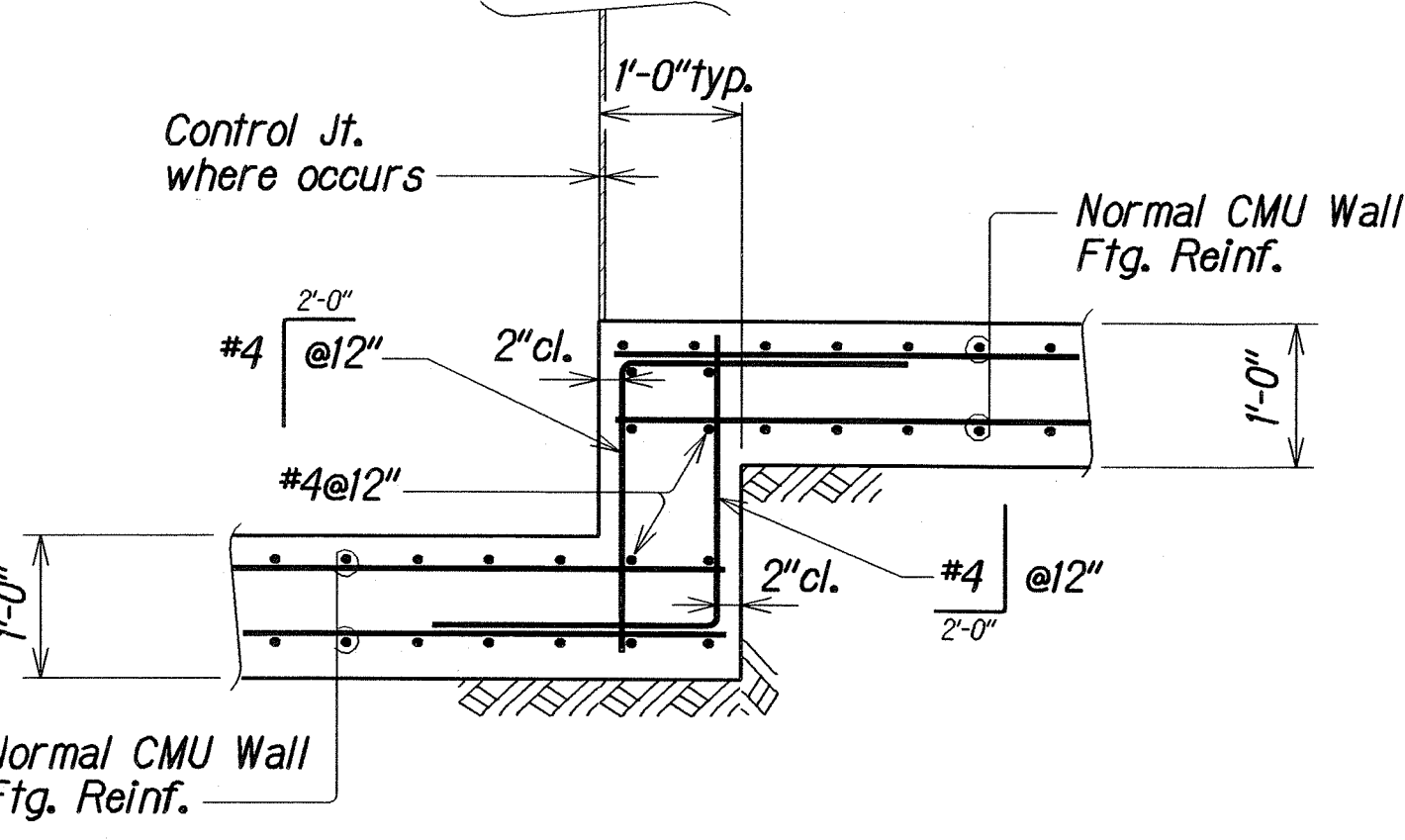


@ ADJACENT "HALF" CMU UNITS

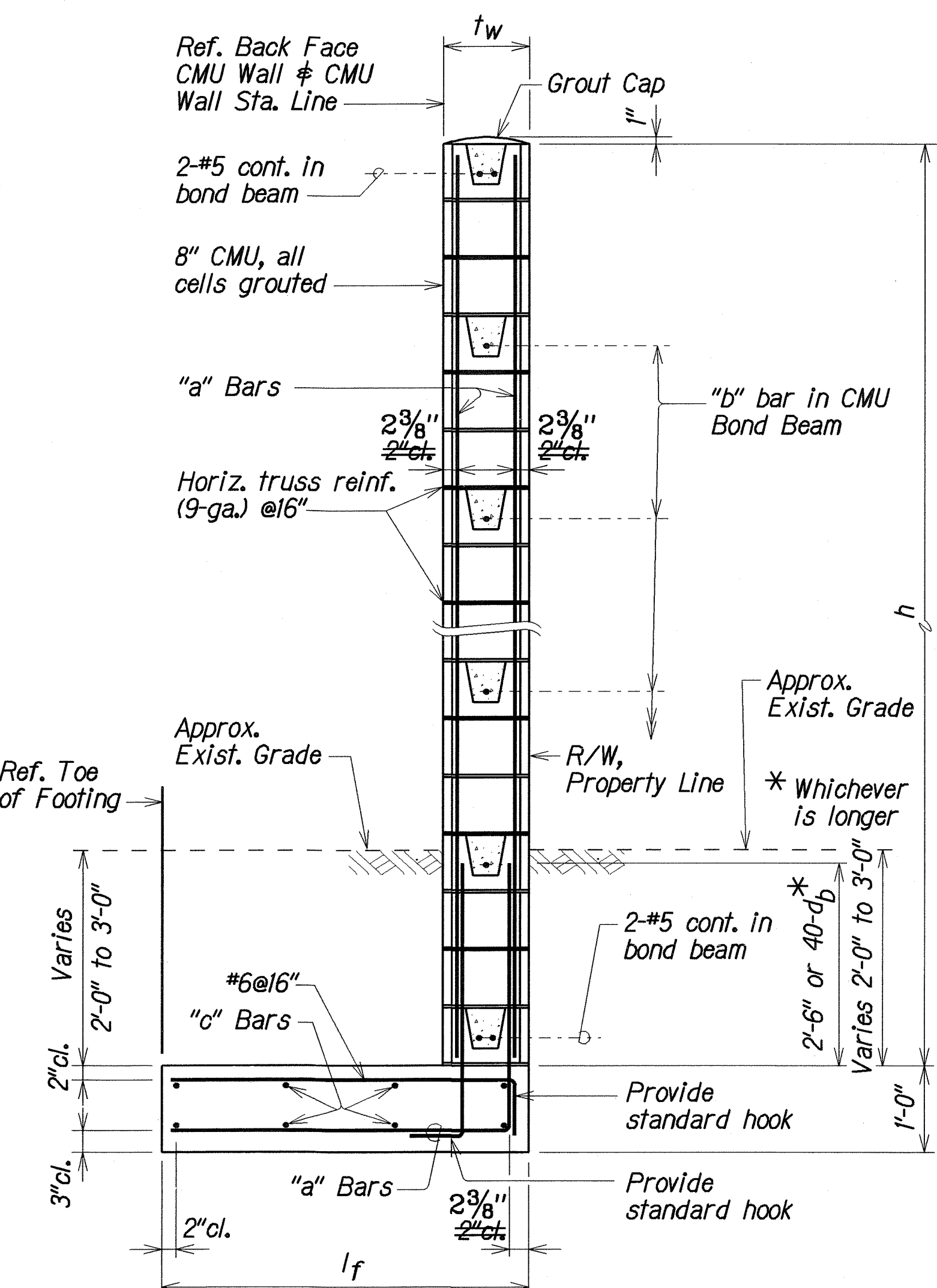


@ ADJACENT "WHOLE" CMU UNITS

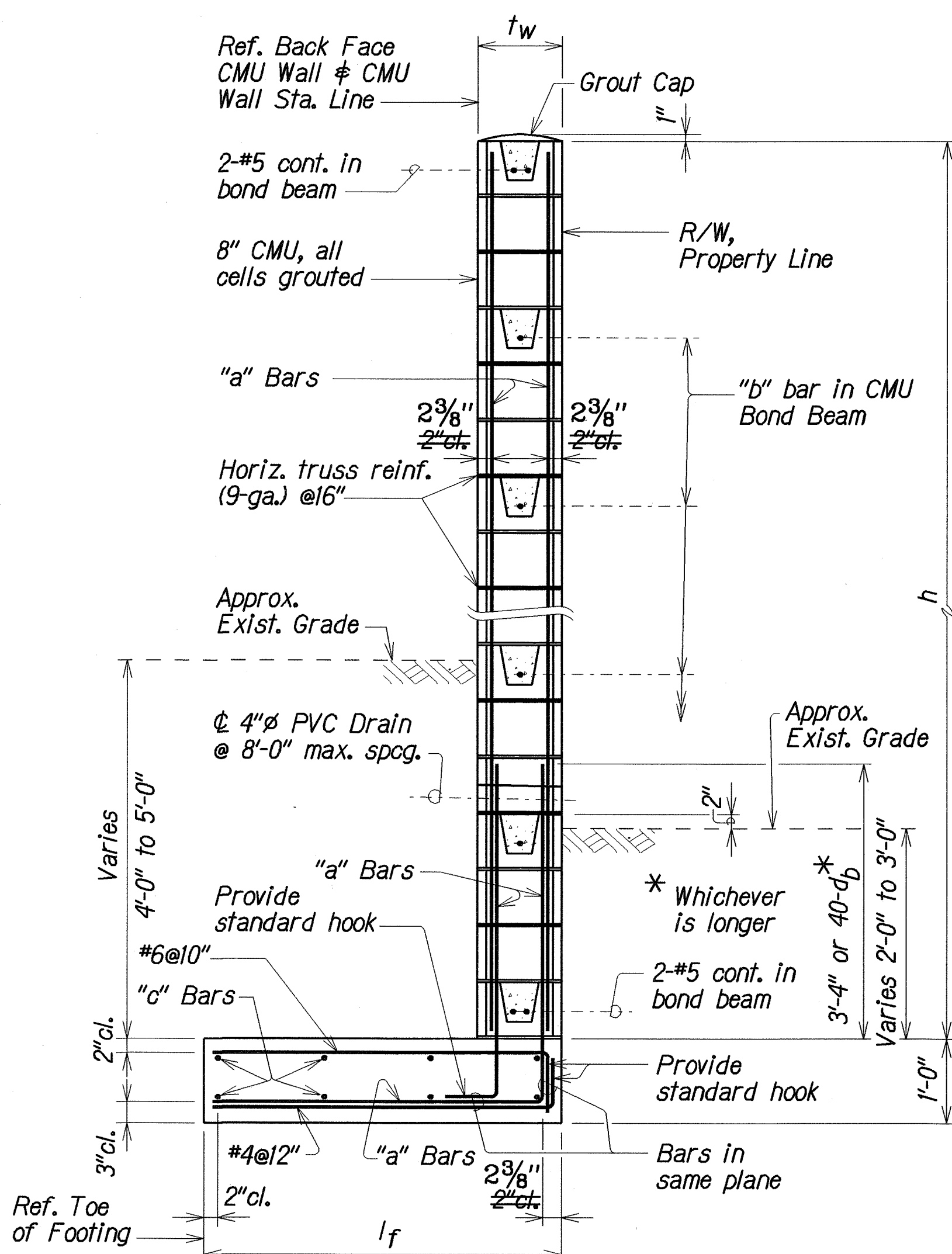
CMU CONTROL JOINT DETAIL  
Not to Scale



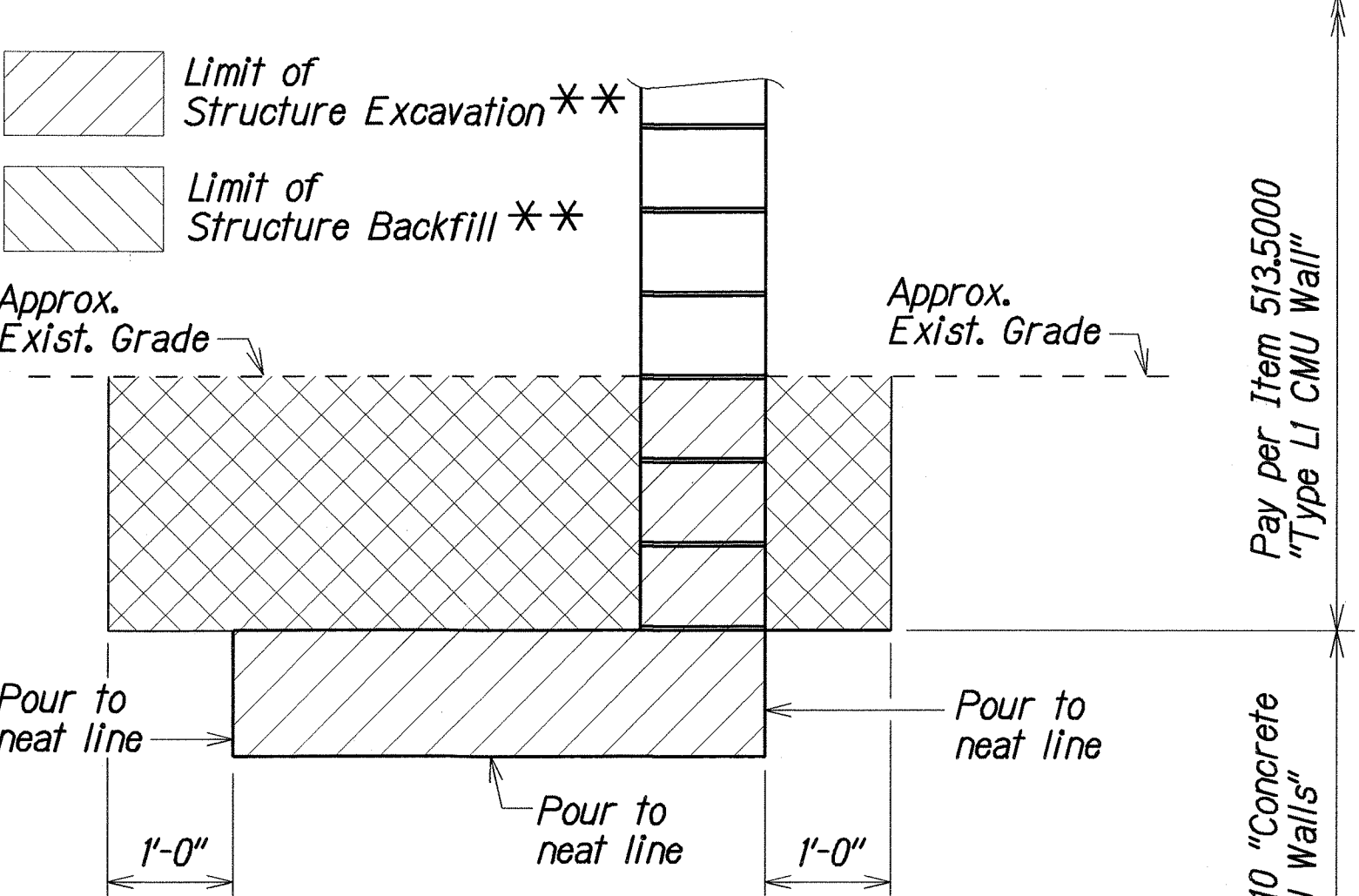
CMU WALL FOOTING STEP-TYPICAL DETAIL  
Scale: 3/4" = 1'-0"



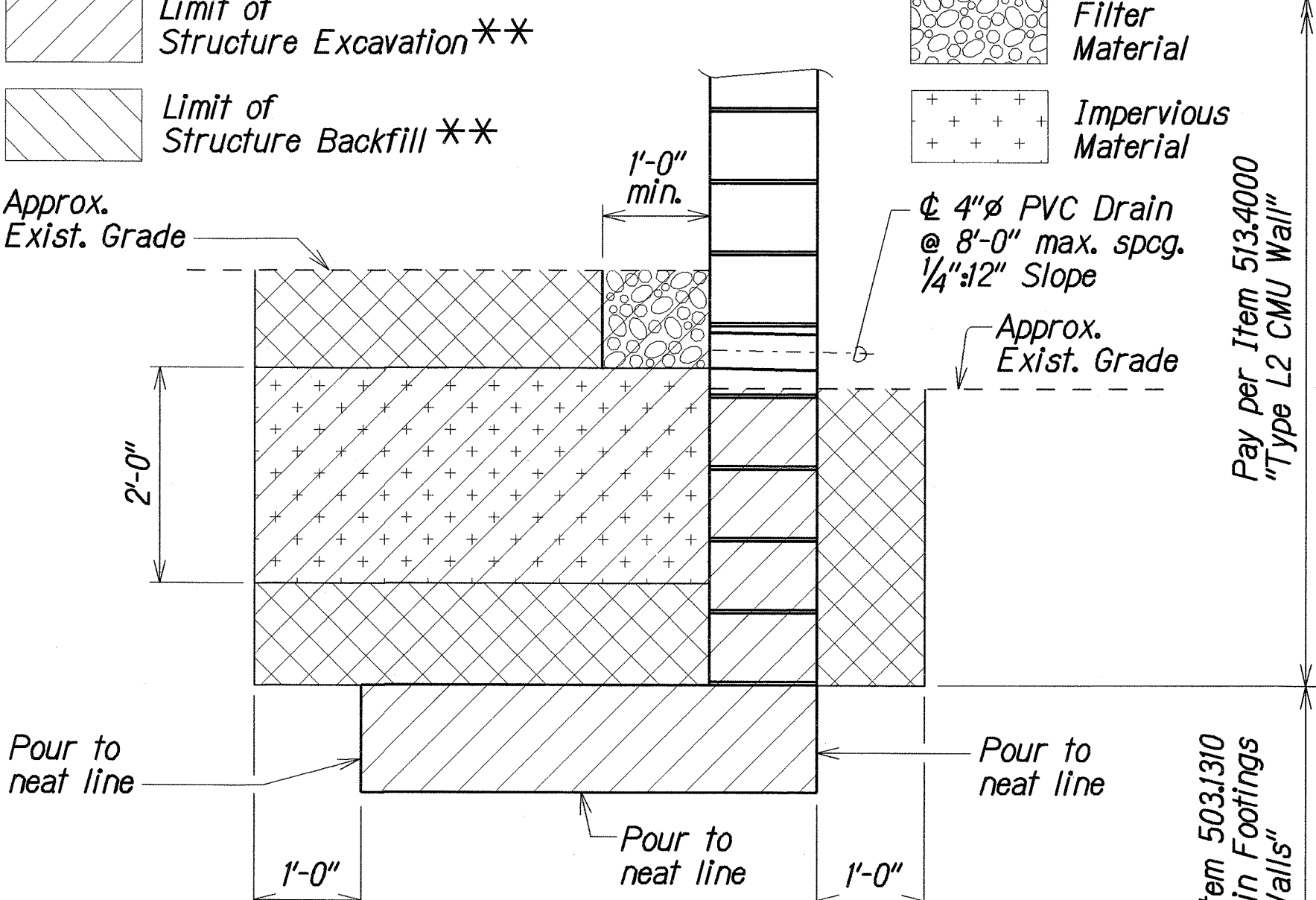
TYPE L1 CMU WALL--TYPICAL SECTION  
Scale: 3/4" = 1'-0"



TYPE L2 CMU WALL--TYPICAL SECTION  
Scale: 3/4" = 1'-0"



TYPE L1 CMU WALL--STRUCTURE EXCAVATION and BACKFILL  
Not to Scale



TYPE L2 CMU WALL--STRUCTURE EXCAVATION and BACKFILL  
Not to Scale

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

CMU WALL DETAILS, FOOTING STEP-UP DETAILS,  
STRUCTURAL EXCAVATION & BACKFILL LIMITS  
KANEHOE BAY DRIVE IMPROVEMENTS  
Vicinity of Puuhala Street to Kawa Bridge  
Fed. Aid Proj. No. STP-065-1(9)

Scale: As Noted Date: Jul, 2002

SHEET No. 510 OF 12 SHEETS



|                     |       |                    |             |           |              |
|---------------------|-------|--------------------|-------------|-----------|--------------|
| FED. ROAD DIST. NO. | STATE | FED. AID PROJ. NO. | FISCAL YEAR | SHEET NO. | TOTAL SHEETS |
| HAWAII              | HAW.  | STP-065-1(9)       | 2003        | 85        | 114          |

| BORING NO. K-1<br>Approx. @ Sta. 30+01, 42.5' o/s rt.<br>Elev. Top of Hole ± 64' MSL |                          |                 |                     |                                                      |                                                                                   | BORING NO. K-2<br>Approx. @ Sta. 30+67, 54' o/s rt.<br>Elev. Top of Hole ± 69' MSL |                          |                 |                     |                                                      |                                                                                   | BORING NO. K-3<br>Approx. @ Sta. 33+15, 29' o/s rt.<br>Elev. Top of Hole ± 50.9' MSL |                          |                 |                     |                                                           |                                                                                   | BORING NO. K-4<br>Approx. @ Sta. 34+15, 46' o/s rt.<br>Elev. Top of Hole ± 38' MSL |                          |                 |                                        |                                                                      |                                                                                   | BORING NO. K-5<br>Approx. @ Sta. 34+19, 32' o/s lt.<br>Elev. Top of Hole ± 50' MSL |                          |                 |                             |                                                                          |                                                                                   |
|--------------------------------------------------------------------------------------|--------------------------|-----------------|---------------------|------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------|-----------------|---------------------|------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------|-----------------|---------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------|-----------------|----------------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------|-----------------|-----------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| DEPTH<br>(Feet)                                                                      | SAMPLE<br>NO.<br>(DEPTH) | Moisture<br>(%) | N,<br>% REC,<br>RQD | DESCRIPTION OF MATERIALS                             | REMARKS<br>(Drilling water loss,<br>depth of weathering,<br>etc., if significant) | DEPTH<br>(Feet)                                                                    | SAMPLE<br>NO.<br>(DEPTH) | Moisture<br>(%) | N,<br>% REC,<br>RQD | DESCRIPTION OF MATERIALS                             | REMARKS<br>(Drilling water loss,<br>depth of weathering,<br>etc., if significant) | DEPTH<br>(Feet)                                                                      | SAMPLE<br>NO.<br>(DEPTH) | Moisture<br>(%) | N,<br>% REC,<br>RQD | DESCRIPTION OF MATERIALS                                  | REMARKS<br>(Drilling water loss,<br>depth of weathering,<br>etc., if significant) | DEPTH<br>(Feet)                                                                    | SAMPLE<br>NO.<br>(DEPTH) | Moisture<br>(%) | N,<br>% REC,<br>RQD                    | DESCRIPTION OF MATERIALS                                             | REMARKS<br>(Drilling water loss,<br>depth of weathering,<br>etc., if significant) | DEPTH<br>(Feet)                                                                    | SAMPLE<br>NO.<br>(DEPTH) | Moisture<br>(%) | N,<br>% REC,<br>RQD         | DESCRIPTION OF MATERIALS                                                 | REMARKS<br>(Drilling water loss,<br>depth of weathering,<br>etc., if significant) |
| 0 -                                                                                  |                          |                 |                     | Brown clayey SILT (MH/ML), hard to very stiff, moist | Groundwater level not encountered                                                 | 0 -                                                                                |                          |                 |                     | Brown clayey SILT (MH/ML), hard to very stiff, moist | Groundwater level not encountered                                                 | 0 -                                                                                  |                          |                 |                     | Light brown clayey SILT (MH/ML) with gravel, stiff, moist | Groundwater level not encountered                                                 | 0 -                                                                                |                          |                 |                                        | Brown clayey SILT (MH/ML) with highly weathered gravel, stiff, moist | Groundwater level not encountered                                                 | 0 -                                                                                |                          |                 |                             | Light brown clayey SILT (MH/ML) with trace of coral gravel, stiff, moist | Groundwater level not encountered                                                 |
| -                                                                                    | RS1                      | 39              | 191 *               |                                                      |                                                                                   | -                                                                                  | RS1                      |                 | 140 *               |                                                      |                                                                                   | -                                                                                    | RS1                      | 36              | 36 *                |                                                           |                                                                                   | -                                                                                  | RS1                      | 36              | 15 *                                   |                                                                      |                                                                                   | -                                                                                  | RS1                      |                 | 37 *                        |                                                                          |                                                                                   |
| -                                                                                    | SS2                      | 36              | 71                  |                                                      |                                                                                   | -                                                                                  | SS2                      | 36              | 29                  |                                                      |                                                                                   | -                                                                                    | SS2                      | 34              | 16                  |                                                           |                                                                                   | -                                                                                  | SS2                      | 34              | 9                                      |                                                                      |                                                                                   | -                                                                                  | SS2                      |                 | 16                          |                                                                          |                                                                                   |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  |                          |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| 5 -                                                                                  |                          | 38              | 51 *                | Grades to stiff to medium stiff                      |                                                                                   | 5 -                                                                                |                          | 35              | 111 *               | Grades to stiff to medium stiff                      |                                                                                   | 5 -                                                                                  |                          |                 | 81 *                | Grades to brown clayey silt, very stiff                   |                                                                                   | 5 -                                                                                |                          | 32              | 50/6" *<br>REC-<br>100%<br>RQD-<br>77% | Gray BASALT, slightly weathered, hard                                |                                                                                   | 5 -                                                                                |                          | 36              | 31 *                        | Grades with boulders                                                     | Augered through boulders                                                          |
| -                                                                                    | RS3                      | 32              | 40                  |                                                      |                                                                                   | -                                                                                  | RS3                      | 33              | 24                  |                                                      |                                                                                   | -                                                                                    | RS3                      | 30              | 45                  |                                                           |                                                                                   | -                                                                                  | RS3                      |                 |                                        |                                                                      |                                                                                   | -                                                                                  | RS3                      | 33              | 27                          |                                                                          |                                                                                   |
| -                                                                                    | SS4                      |                 |                     |                                                      |                                                                                   | -                                                                                  | SS4                      |                 |                     |                                                      |                                                                                   | -                                                                                    | SS4                      |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  | SS4                      |                 |                             |                                                                          |                                                                                   |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  |                          |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  | RUN #1                   |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| 10 -                                                                                 |                          | 44              | 41 *                | Grades to stiff to medium stiff                      |                                                                                   | 10 -                                                                               |                          | 36              | 62 *                | Grades to stiff to medium stiff                      |                                                                                   | 10 -                                                                                 |                          | 33              | 129 *               | Grades to brown clayey silt, very stiff                   |                                                                                   | 10 -                                                                               |                          |                 | REC-<br>100%<br>RQD-<br>68%            | Bottom of Hole at 16 feet                                            |                                                                                   | 10 -                                                                               |                          |                 | 71/4" *                     | Grades with boulders                                                     | Augered through boulders                                                          |
| -                                                                                    | RS5                      |                 |                     |                                                      |                                                                                   | -                                                                                  | RS5                      | 38              | 12                  |                                                      |                                                                                   | -                                                                                    | RS5                      | 35              | 19                  |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  | RS5                      |                 |                             |                                                                          |                                                                                   |
| -                                                                                    | SS6                      |                 |                     |                                                      |                                                                                   | -                                                                                  | SS6                      |                 |                     |                                                      |                                                                                   | -                                                                                    | SS6                      |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  |                          |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  | RUN #2                   |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| 15 -                                                                                 |                          | 48              | 12                  | Grades to stiff to medium stiff                      |                                                                                   | 15 -                                                                               |                          |                 | 25 *                | Grades to stiff to medium stiff                      |                                                                                   | 15 -                                                                                 |                          | 25              | 77 *                | Grades to brown clayey silt, very stiff                   |                                                                                   | 15 -                                                                               |                          |                 |                                        | Bottom of Hole at 16 feet                                            |                                                                                   | 15 -                                                                               |                          |                 | 100/6" *<br>48/2"           | Grades with boulders                                                     | Augered through boulders                                                          |
| -                                                                                    | SS7                      |                 |                     |                                                      |                                                                                   | -                                                                                  | RS7                      | 32              | 12                  |                                                      |                                                                                   | -                                                                                    | RS7                      | 41              | 55                  |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  | RS6                      |                 |                             |                                                                          |                                                                                   |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  | RS8                      |                 |                     |                                                      |                                                                                   | -                                                                                    | SS8                      |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  |                          |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  | SS7                      |                 |                             |                                                                          |                                                                                   |
| 20 -                                                                                 |                          | 55              | 27 *                | Bottom of Hole at 21.5 feet                          |                                                                                   | 20 -                                                                               |                          |                 | 48 *                | Grades to stiff to medium stiff                      |                                                                                   | 20 -                                                                                 |                          |                 |                     | Grades to brown clayey silt, very stiff                   |                                                                                   | 20 -                                                                               |                          |                 | REC-<br>80%<br>RQD-<br>17%             | Bottom of Hole at 16 feet                                            |                                                                                   | 20 -                                                                               |                          |                 | REC-<br>100%<br>RQD-<br>47% | Grades with boulders                                                     | Augered through boulders                                                          |
| -                                                                                    | RS8                      |                 |                     |                                                      |                                                                                   | -                                                                                  | RS9                      |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  |                          |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  | RUN #1                   |                 |                             |                                                                          |                                                                                   |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  |                          |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| 25 -                                                                                 |                          |                 |                     | Grades with mottled black                            |                                                                                   | 25 -                                                                               |                          | 45              | 13                  | Grades with mottled black                            |                                                                                   | 25 -                                                                                 |                          |                 |                     | Grades to brown clayey silt, very stiff                   |                                                                                   | 25 -                                                                               |                          |                 |                                        | Bottom of Hole at 16 feet                                            |                                                                                   | 25 -                                                                               |                          |                 |                             | Grades with boulders                                                     | Augered through boulders                                                          |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  | SS10                     |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  |                          |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  |                          |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  | RUN #2                   |                 |                             |                                                                          |                                                                                   |
| 30 -                                                                                 |                          |                 |                     | Bottom of Hole at 31.5 feet                          |                                                                                   | 30 -                                                                               |                          | 49              | 30                  | Bottom of Hole at 31.5 feet                          |                                                                                   | 30 -                                                                                 |                          |                 |                     | Grades to brown clayey silt, very stiff                   |                                                                                   | 30 -                                                                               |                          |                 |                                        | Bottom of Hole at 16 feet                                            |                                                                                   | 30 -                                                                               |                          |                 |                             | Grades with boulders                                                     | Augered through boulders                                                          |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  | SS11                     |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  |                          |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  |                          |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| 35 -                                                                                 |                          |                 |                     | Bottom of Hole at 31.5 feet                          |                                                                                   | 35 -                                                                               |                          |                 |                     | Bottom of Hole at 31.5 feet                          |                                                                                   | 35 -                                                                                 |                          |                 |                     | Grades to brown clayey silt, very stiff                   |                                                                                   | 35 -                                                                               |                          |                 |                                        | Bottom of Hole at 16 feet                                            |                                                                                   | 35 -                                                                               |                          |                 |                             | Grades with boulders                                                     | Augered through boulders                                                          |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  |                          |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  |                          |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |
| -                                                                                    |                          |                 |                     |                                                      |                                                                                   | -                                                                                  |                          |                 |                     |                                                      |                                                                                   | -                                                                                    |                          |                 |                     |                                                           |                                                                                   | -                                                                                  |                          |                 |                                        |                                                                      |                                                                                   | -                                                                                  |                          |                 |                             |                                                                          |                                                                                   |

N = Blow counts per foot by driving a 2-inch OD standard penetration sampler  
\* = Blow counts per foot by driving a 3-inch OD split barrel sampler lined with rings

BORING LOG

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

BORING LOG  
KANEHOE BAY DRIVE IMPROVEMENTS  
Vicinity of Puohala Street to Kawa Bridge  
Fed. Aid Proj. No. STP-065-1(9)

Scale: As Noted      Date: Jul, 2002

SHEET No. 81 OF 12 SHEETS



