

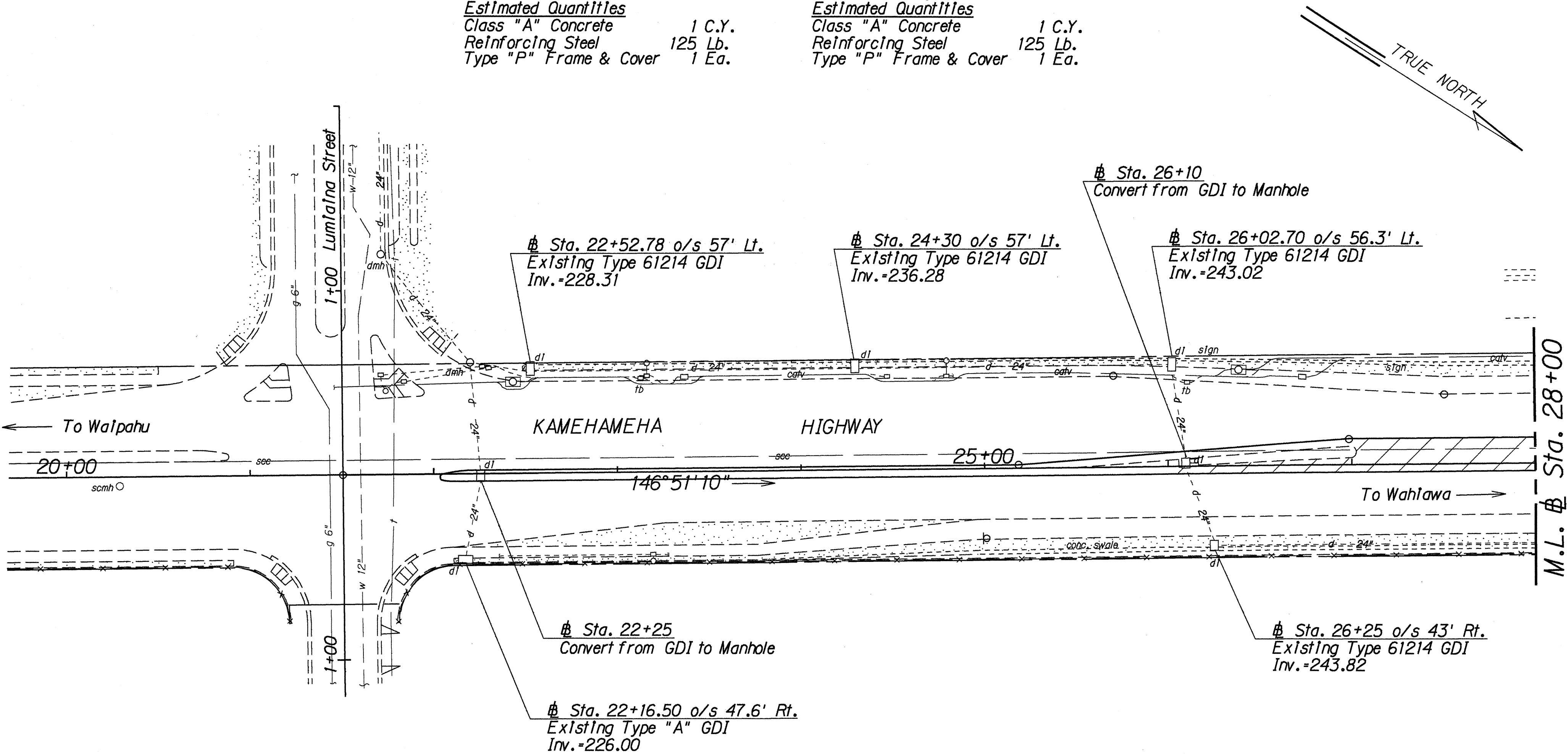
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-099-1(9)	1994	20	54

NOTES

- Existing drainage systems will be functional at all times during construction. The Contractor is to furnish materials, equipment, labor, tools and Incidentals necessary to maintain flow. The cost for this work shall be incidental to the various contract items.
- The Contractor shall verify the locations of all existing culverts and utilities in the field. Any existing culverts and utilities damaged during construction shall be repaired or replaced by the Contractor at his expense.
- Concrete shall be Class A unless otherwise noted.
- For added reinforcing around existing and new culverts, see Standard Plan H-04.
- Chamfer all exposed concrete edges 1".

Sta. 22+25
Reconstruct: Top of existing
Type 61614 GDI
Estimated Quantities
Class "A" Concrete 1 C.Y.
Reinforcing Steel 125 Lb.
Type "P" Frame & Cover 1 Ea.

Sta. 26+10
Reconstruct: Top of existing
Type 61614 GDI
Estimated Quantities
Class "A" Concrete 1 C.Y.
Reinforcing Steel 125 Lb.
Type "P" Frame & Cover 1 Ea.



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY A. Kama	9/92
DESIGNED BY R. Sakamoto	CHECKED BY	
QUANTITIES BY		
CHECKED BY		

APPROVED:

[Signature]
CHIEF, DIVISION OF PLANNING AND SERVICE CONTROL
DEPARTMENT OF WASTEWATER MANAGEMENT
(FOR SEWER WORK WITHIN PUBLIC R/W AND EASEMENT ONLY)

2/15/95

DATE

02/13/95 Add signature block.

DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN

KAMEHAMEHA HIGHWAY WIDENING
Lumalua St. to Waipahu Uka St.
F.A.P. No. NH-099-1(9)

Scale: 1" = 40' Date: Sept. 1992

SHEET No. 20 OF 6 SHEETS

Sta. 28+50 o/s 5' Lt.
Construct: Type "A" SDMH
Install: 24" RCP

Estimated Quantities
Structure Excavation 64 C.Y.
24" RCP, Cl. III 52 L.F.
Type "A" SDMH, 5.00 Ft. to 5.99 Ft. 1 Ea.

Sta. 30+50 o/s 5' Lt.
Construct: Type "A" SDMH
Install: 24" RCP

Estimated Quantities
Structure Excavation 234 C.Y.
24" RCP, Cl. III 200 L.F.
Type "A" SDMH, 5.00 Ft. to 5.99 Ft. 1 Ea.

Sta. 32+50 o/s 5' Lt.
Construct: Type "A" SDMH
Install: 24" RCP

Estimated Quantities
Structure Excavation 244 C.Y.
24" RCP, Cl. III 200 L.F.
Type "A" SDMH, 6.00 Ft. to 6.99 Ft. 1 Ea.

Sta. 32+95 Lt.
Construct: Type 61214 GDI
Install: 24" RCP

Estimated Quantities
Structure Excavation 67 C.Y.
24" RCP, Cl. III 64 L.F.
Type 61214 GDI, 5.00 Ft. to 5.99 Ft. 1 Ea.

Sta. 34+75 Lt.
Construct: Type 61214 GDI
Install: 24" RCP

Estimated Quantities
Structure Excavation 194 C.Y.
24" RCP, Cl. III 107 L.F.
Type 61214 GDI, 5.00 Ft. to 5.99 Ft. 1 Ea.

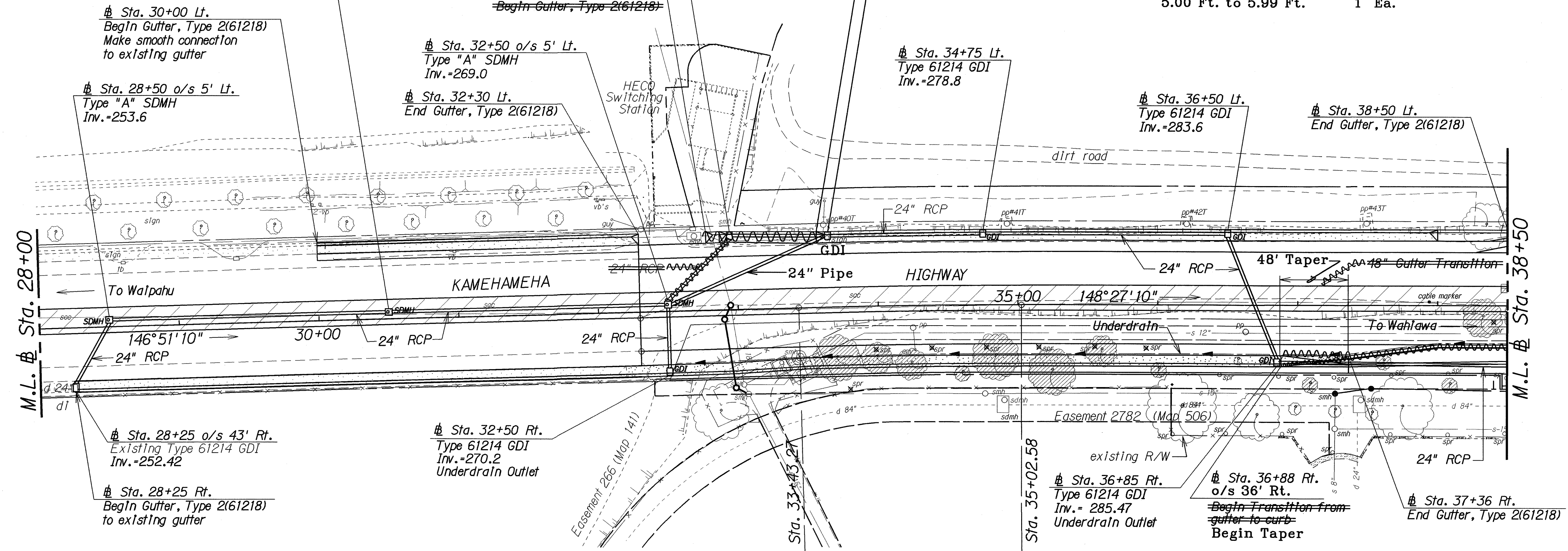
Sta. 36+50 Lt.
Construct: Type 61214 GDI
Install: 24" RCP

Estimated Quantities
Structure Excavation 290 C.Y.
24" RCP, Cl. III 285 L.F.
Type 61214 GDI, 5.00 Ft. to 5.99 Ft. 1 Ea.

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-099-1(9)	1994	C.O.21	54

Construct: Gutter, Type 2(61218)
(See Typical Roadway Section For Detail)
Sta. 30+00 Lt. to Sta. 32+30 Lt.
Sta. 33+57 Lt. to Sta. 38+50 Lt.
Sta. 28+25 Rt. to Sta. 37+36 Rt.

Estimated Quantities
Gutter, Type 2(61218) 1,639 L.F.



Sta. 30+00 Lt.
Begin Gutter, Type 2(61218)
Make smooth connection to existing gutter

Sta. 28+50 o/s 5' Lt.
Type "A" SDMH
Inv.=253.6

Sta. 30+50 o/s 5' Lt.
Type "A" SDMH
Inv.=262.2

Sta. 32+95 Lt.
Type 61214 GDI
Inv.=271.7

Sta. 32+50 o/s 5' Lt.
Type "A" SDMH
Inv.=269.0

Sta. 32+30 Lt.
End Gutter, Type 2(61218)

Sta. 33+57 Lt.
Begin Gutter, Type 2(61218)

Sta. 33+65 Lt.
Type 61214 GDI
Inv.=275.00

Sta. 34+75 Lt.
Type 61214 GDI
Inv.=278.8

Sta. 33+65 Lt.
Construct: Type 61214 GDI
Install: 24" RCP

Estimated Quantities
Structure Excavation 142 C.Y.
24" RCP, Cl. III 123 L.F.
Type 61214 GDI, 5.00 Ft. to 5.99 Ft. 1 Ea.

Sta. 36+50 Lt.
Type 61214 GDI
Inv.=283.6

Sta. 38+50 Lt.
End Gutter, Type 2(61218)

Sta. 28+25 o/s 43' Rt.
Existing Type 61214 GDI
Inv.=252.42

Sta. 28+25 Rt.
Begin Gutter, Type 2(61218)
to existing gutter

Sta. 32+50 Rt.
Type 61214 GDI
Inv.=270.2
Underdrain Outlet

Sta. 36+85 Rt.
Type 61214 GDI
Inv.= 285.47
Underdrain Outlet

Sta. 36+88 Rt.
o/s 36' Rt.
Begin Transition from gutter to curb
Begin Taper

Sta. 37+36 Rt.
End Gutter, Type 2(61218)

Sta. 28+25 Rt.
Begin Gutter, Type 2(61218)
Make smooth connection to existing gutter

Install: Underdrain
(See Typical Roadway Section For Detail)
Sta. 32+50 Rt. to Sta. 36+85 Rt.
Sta. 36+85 Rt. to Sta. 38+50 Rt.

Estimated Quantities
6" Perforated Pipe 600 L.F.
6" Nonperforated Pipe 15 L.F.
Underdrain 600 L.F.

Sta. 32+50 Rt.
Construct: Type 61214 GDI
Install: 24" RCP

Estimated Quantities
Structure Excavation 53 C.Y.
24" RCP, Cl. III 45 L.F.
Type 61214 GDI, 5.00 Ft. to 5.99 Ft. 1 Ea.

Sta. 36+85 Rt.
Construct: Type 61214 GDI
Install: 24" RCP

Estimated Quantities
Structure Excavation 98 C.Y.
24" RCP, Cl. III 96 L.F.
Type 61214 GDI, 4.00 Ft. to 4.99 Ft. 1 Ea.

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

03/31/95	Modified drainage system at Sta. 33+65 Lt.
02/13/95	Revised sewer line alignment and invert elevation of GDIs at Sta. 32+50 Rt. and Sta. 36+88 Rt. and add signature block.

DATE	REVISION
------	----------

APPROVED:
CHIEF, DIVISION OF PLANNING AND SERVICE CONTROL
DEPARTMENT OF WASTEWATER MANAGEMENT
(FOR SEWER WORK WITHIN PUBLIC R/W AND EASEMENT ONLY)
DATE 2/15/95

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN

KAMEHAMEHA HIGHWAY WIDENING
Lumiala St. to Waipio Uka St.
F.A.P. No. NH-099-1(9)

Scale: 1"= 40' Date: Sept. 1992

SHEET No. H2 OF 6 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	9/92
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
NOTED	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-099-1(9)	1994	C.O.22	54

Sta. 44+50 o/s 60' Lt.
Construct: Standard Concrete Headwall

ESTIMATED QUANTITIES		
Structure Excavation	6	C.Y.
Class "A" Concretel	1	C.Y.
Reinforcing Steel	43	Lb.

Sta. 45+50 o/s 60' Lt.
~~Construct: Standard Concrete Headwall~~

Estimated Quantities	
Structure Excavation	6 C.Y.
Class "A" Concrete	1 C.Y.
Reinforcing Steel	43 Lb.

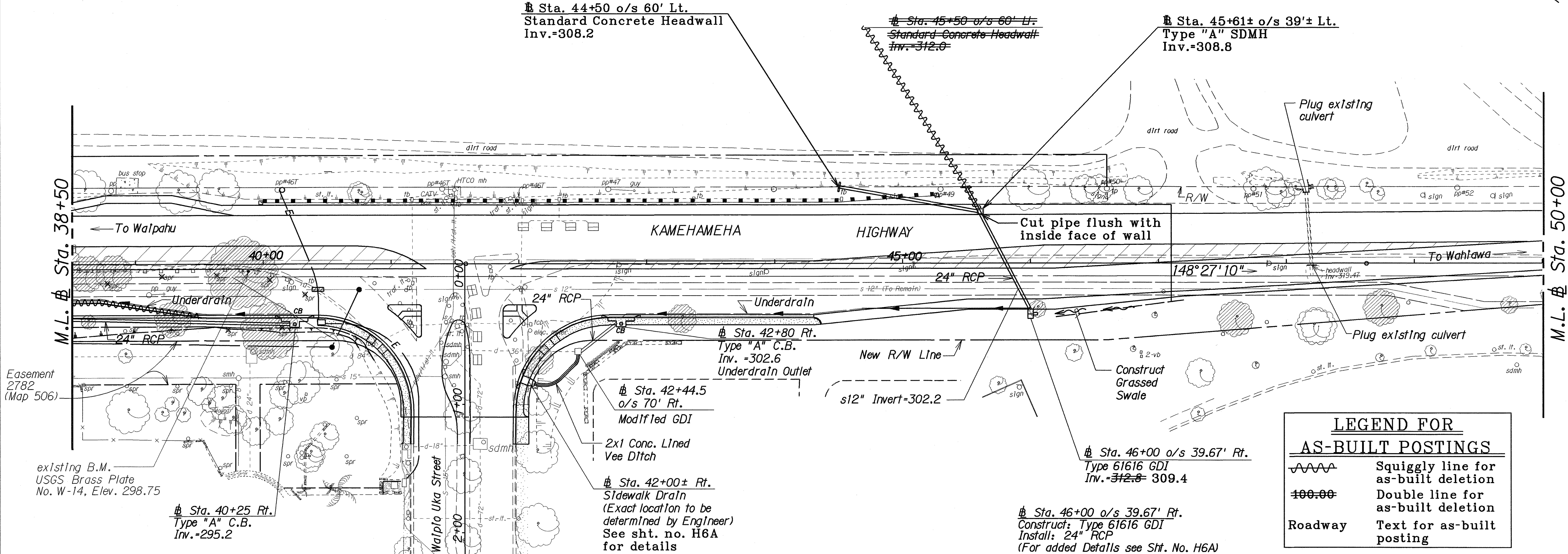
Sta. 45+61± o/s 39'± Lt.
Construct: Type "A" SDMH
Install: 24" RCP, Cl. III

ESTIMATED QUANTITIES		
Type "A" SDMH		
8.00 Ft. to 8.99 Ft.	1	Ea.
24" RCP, Cl. III	111	L.F.
Struct. Excavation	142	C.Y.

Sta. 44+50 o/s 60' Lt.
Standard Concrete Headwall
Inv.=308.2

Sta. 45+50 o/s 60' Lt.
~~Standard Concrete Headwall~~
~~Inv.=312.0~~

Sta. 45+61± o/s 39'± Lt.
Type "A" SDMH
Inv.=308.8



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

03/12/96	Modify Existing GDI at Sta. 42+44.5 o/s 70' Rt. and add 2x1 Conc. Lined Vee Ditch
08/21/95	Added Sidewalk Drain at Sta. 42+00± Rt.
02/13/95	Revised drainage system at Sta. 46+00 o/s 39.67' Rt. and add signature block.

DATE	REVISION
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE PLAN
KAMEHAMEHA HIGHWAY WIDENING
Lumiaina St. Waipio Uka St.
F.A.P. No. NH-099-1(9)

Scale: 1"= 40' Date: Sept. 1992

SHEET No. H3 OF 6 SHEETS

Install: Underdrain
(See Typical Roadway Section For Detail)
Sta. 38+50 Rt. to Sta. 40+25 Rt.
Sta. 42+80 Rt. to Sta. 46+00 Rt.

Estimated Quantities	
6" Perforated Pipe	495 L.F.
6" Nonperforated Pipe	10 L.F.
Underdrain	495 L.F.

Sta. 40+25 Rt.
Construct: Type "A" C.B.
Install: 24" RCP

Estimated Quantities	
Structure Excavation	346 C.Y.
24" RCP, Cl. III	340 L.F.
Type "A" C.B.,	
5.00 Ft. to 5.99 Ft.	1 Ea.

Sta. 42+00± Rt.
Construct: Sidewalk Drain
(For Details see Sht. No. H6A)
2x1 Concrete Lined Vee Ditch with
4" Thick concrete slab
(For Details see Sht. No. H6B & H6C)

Estimated Quantities	
Ditch and Channel Excavation	5 C.Y.
Sidewalk Drain	1 Ea.
2x1 Concrete Lined Vee Ditch	45 L.F.

Sta. 42+44.5 o/s 70' Rt.
Construct: Modified GDI
(For Details see Sht. No. H6C)

Estimated Quantities	
Imported Borrow	163 C.Y.
Modified GDI	1 Ea.
Hydro-mulch Seeding	3306 S.F.

Sta. 42+80 Rt.
Construct: Type "A" C.B.
Install: 24" RCP

Estimated Quantities	
Structure Excavation	41 C.Y.
24" RCP, Cl. III	40 L.F.
Type "A" C.B.,	
5.00 Ft. to 5.99 Ft.	1 Ea.

Sta. 46+00 o/s 39.67' Rt.
Construct: Type 61616 GDI
Install: 24" RCP
(For added Details see Sht. No. H6A)

Estimated Quantities	
Structure Excavation	11 C.Y.
24" RCP, Cl. III	109 L.F.
Type 61616 GDI	
4.00 Ft. to 4.99 Ft.	1 Ea.

ESTIMATED QUANTITIES		
Type 61616 GDI		
8.00 Ft. to 8.99 Ft.	1	Ea.
24" RCP, Cl. III	84	L.F.
Struct. Excavation	166	C.Y.

APPROVED:

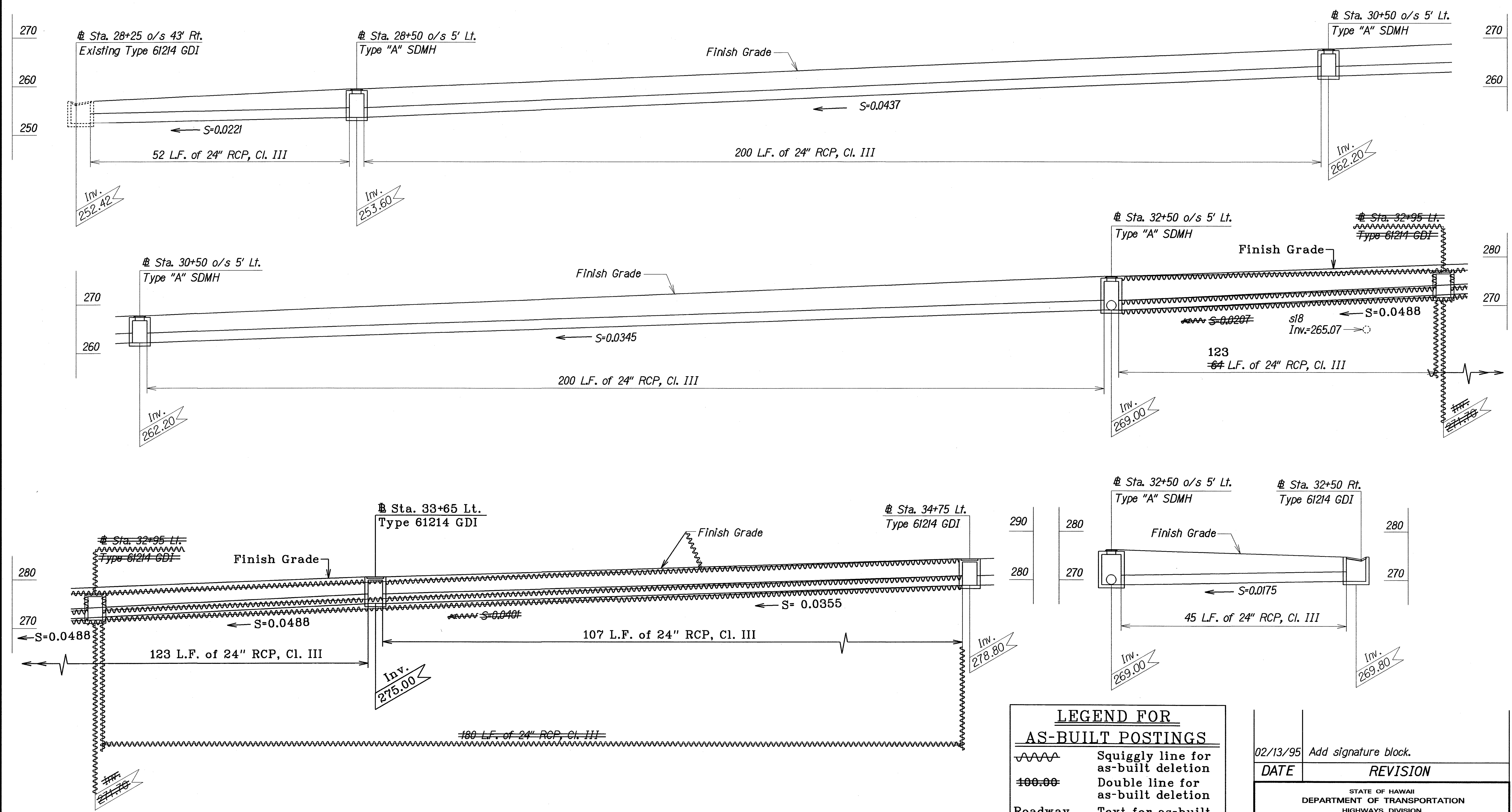
CHIEF, DIVISION OF PLANNING AND SERVICE CONTROL
DEPARTMENT OF WASTEWATER MANAGEMENT
(FOR SEWER WORK WITHIN PUBLIC R/W AND EASEMENT ONLY)
DATE 2/15/95

"AS-BUILT"

C.O. 22

ORIGINAL PLAN	DATE 2/15/95
DRAWN BY A. KAHUWA # R. Sato	
DESIGNED BY	
CHECKED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-099-1(9)	1994	C.O.23	54



SURVEY PLOTTED BY: DATE: Jun 93
 DRAWN BY: A. N. Sato
 DESIGNED BY: Roy Sakamoto
 CHECKED BY: K. M. Odo

PROFILE ALONG ϕ CULVERT

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

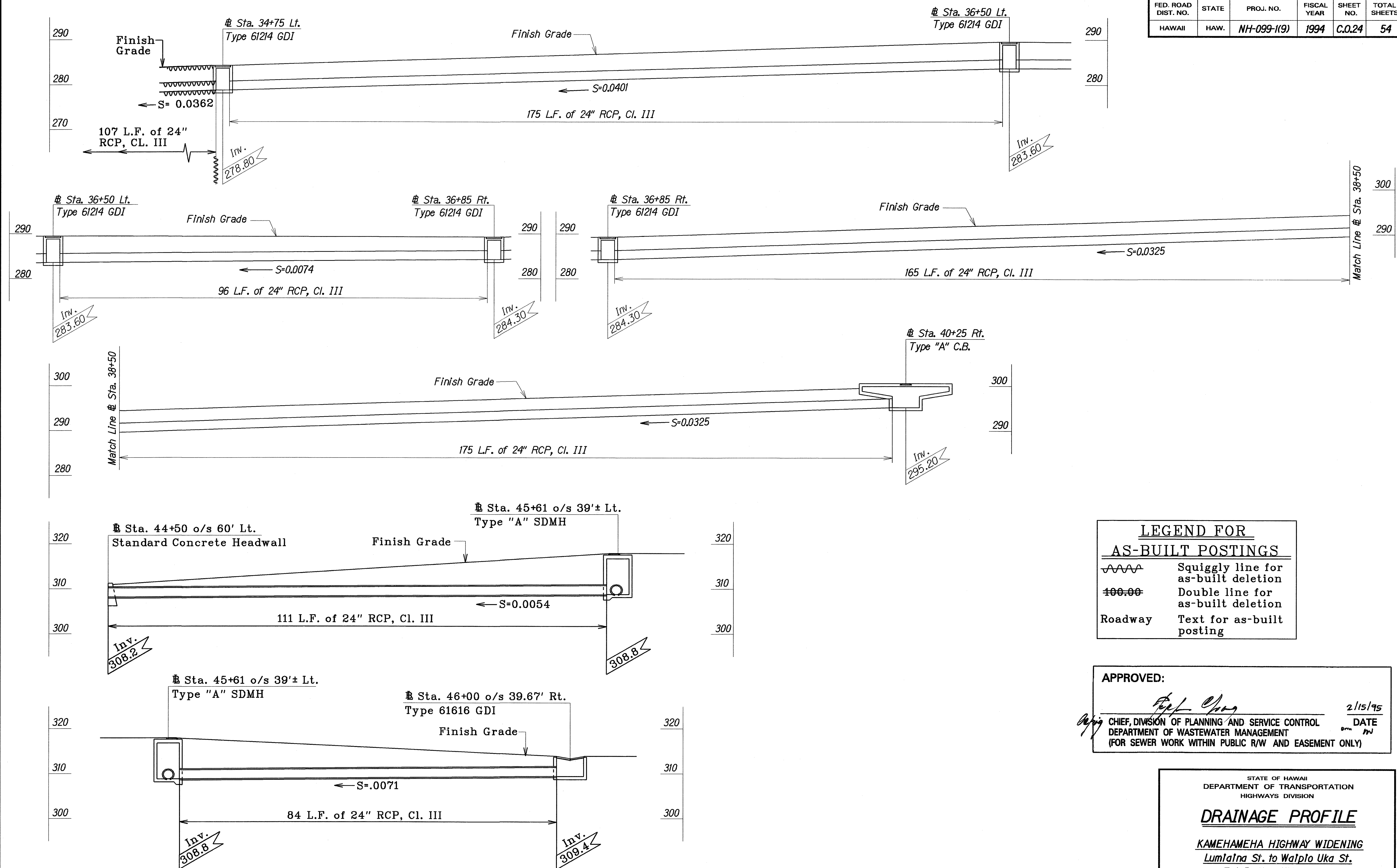
APPROVED:
 CHIEF, DIVISION OF PLANNING AND SERVICE CONTROL
 DEPARTMENT OF WASTEWATER MANAGEMENT
 (FOR SEWER WORK WITHIN PUBLIC R/W AND EASEMENT ONLY)
 DATE: 2/15/95

02/13/95 Add signature block.

DATE	REVISION

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
DRAINAGE PROFILE
 KAMEHAMEHA HIGHWAY WIDENING
 Lumaina St. to Waipio Uka St.
 F.A.P. No. NH-099-1(9)
 Scale: 1"= 10' Date: June 1993
 SHEET No. H4 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-099-1(9)	1994	C.O.24	54



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

APPROVED:
 CHIEF, DIVISION OF PLANNING AND SERVICE CONTROL
 DEPARTMENT OF WASTEWATER MANAGEMENT
 (FOR SEWER WORK WITHIN PUBLIC R/W AND EASEMENT ONLY)
 DATE 2/15/95

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION
DRAINAGE PROFILE
 KAMEHAMEHA HIGHWAY WIDENING
 Lumiala St. to Walalo Uka St.
 F.A.P. No. NH-099-1(9)

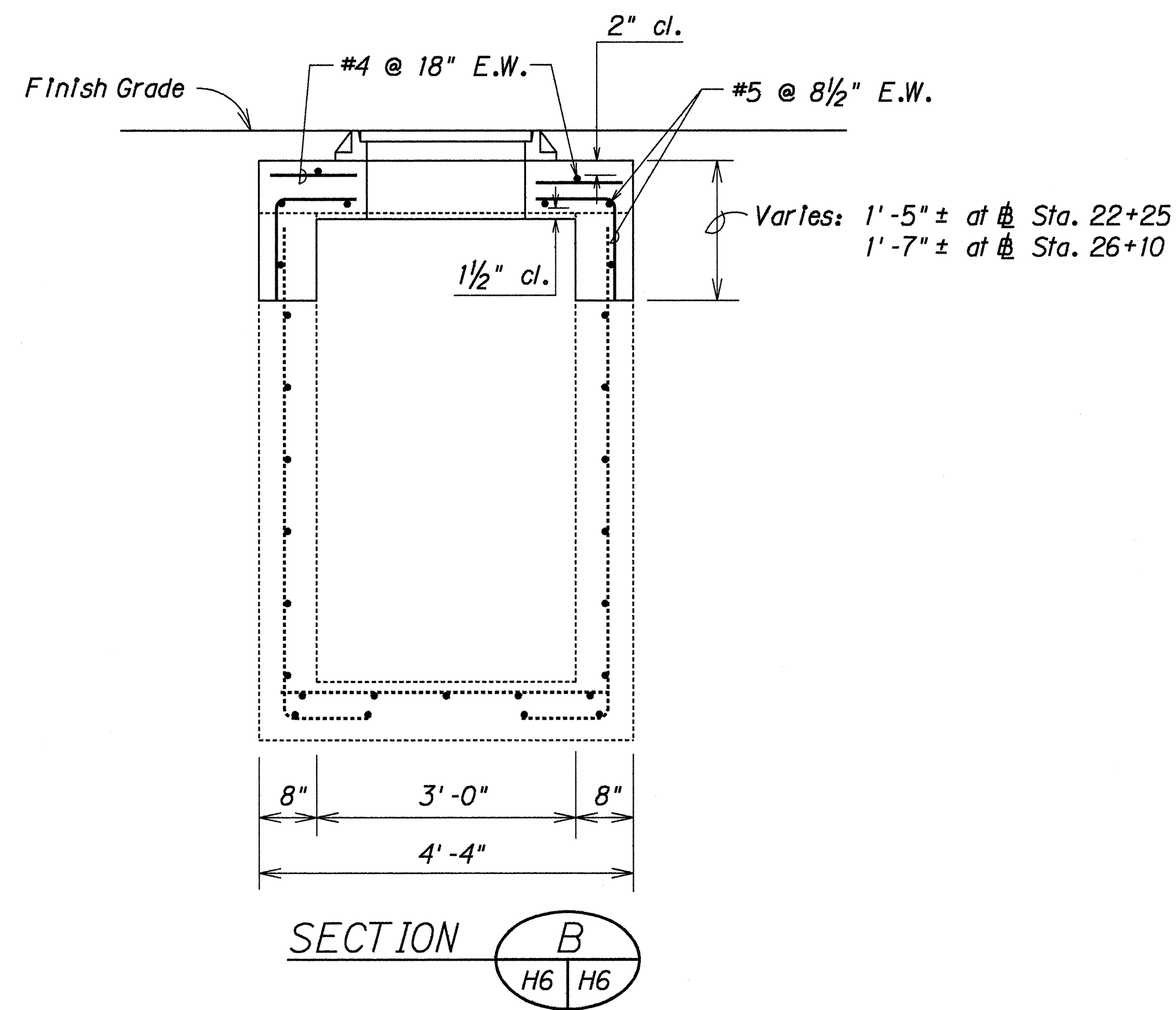
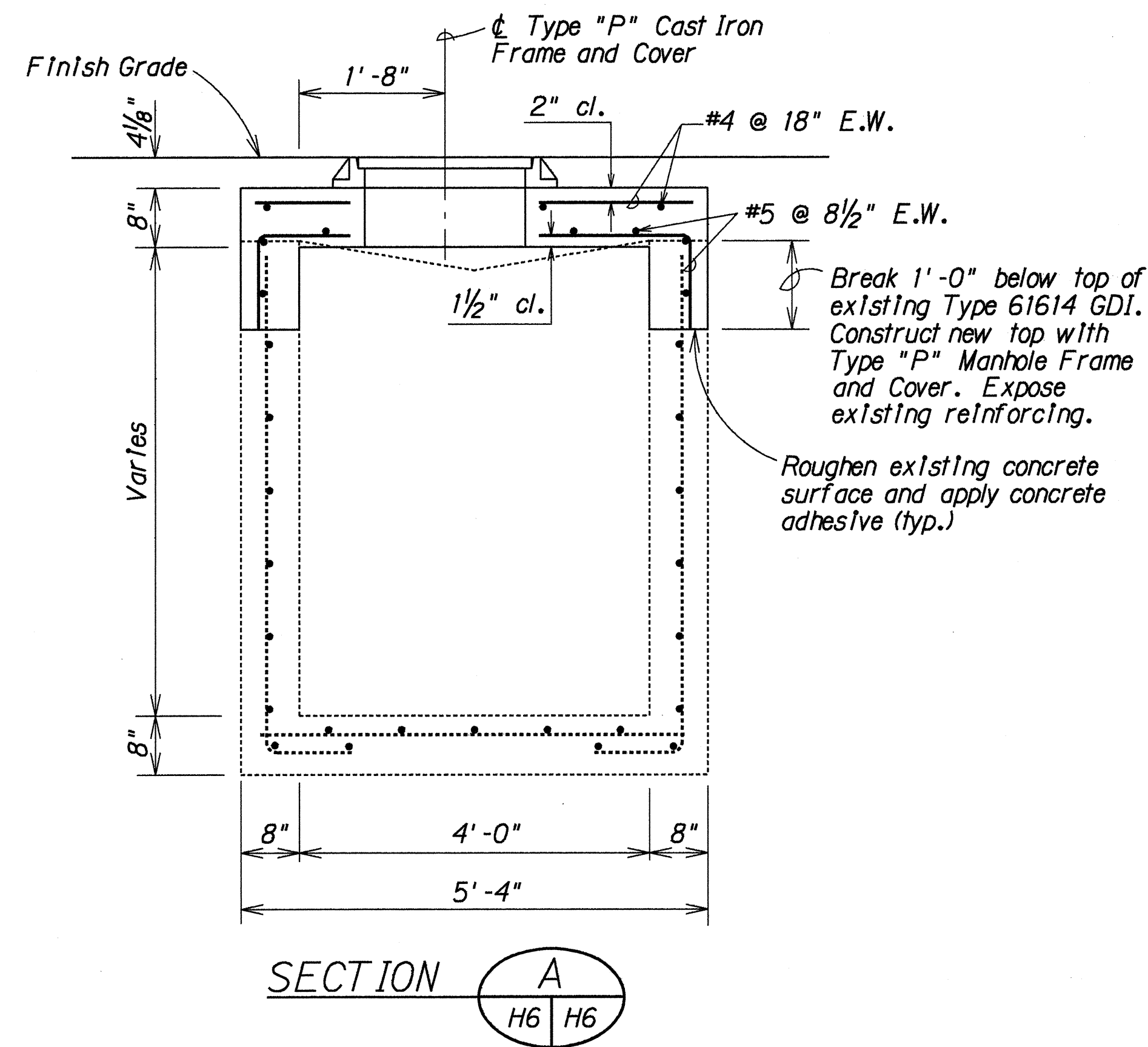
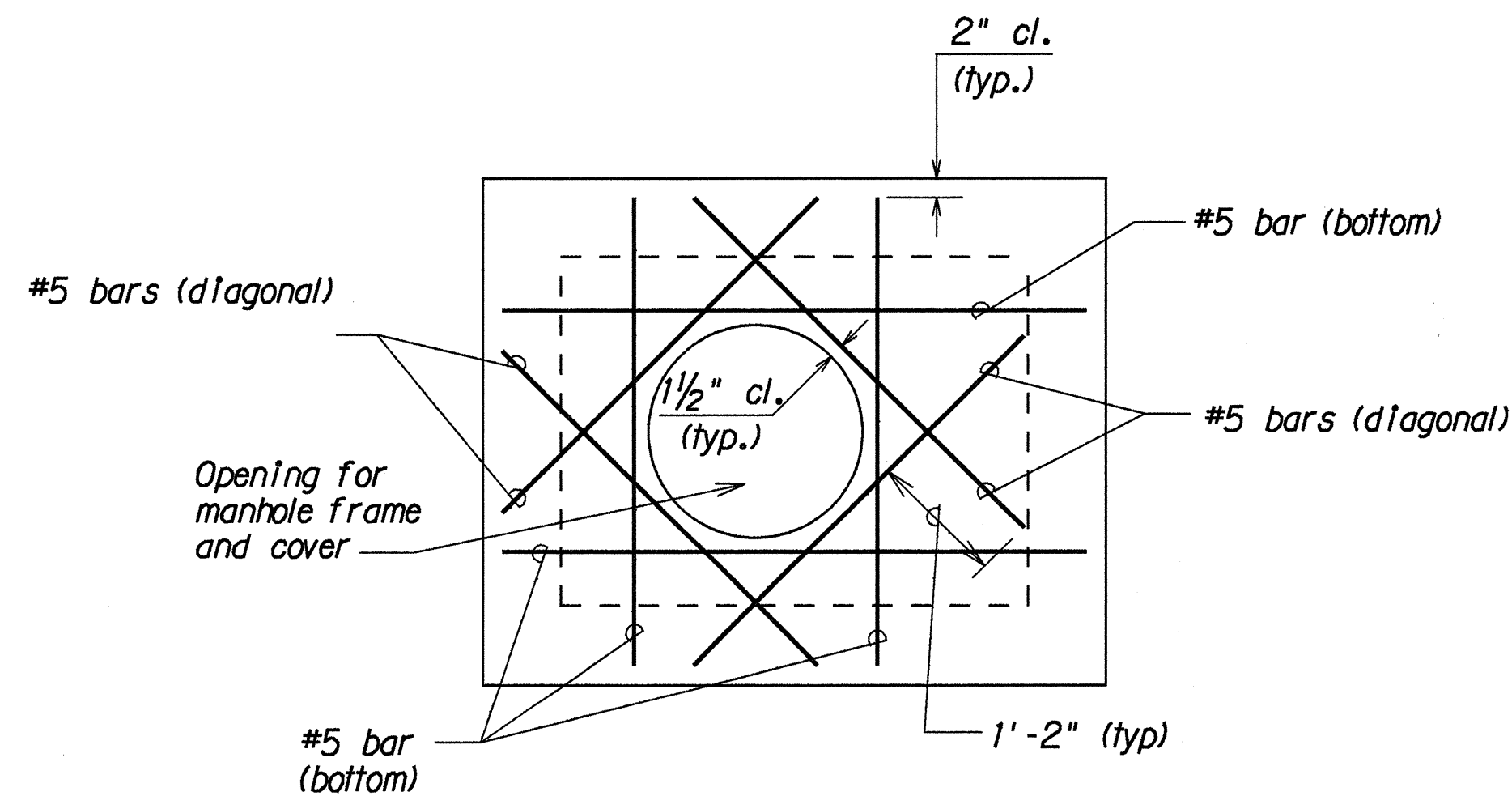
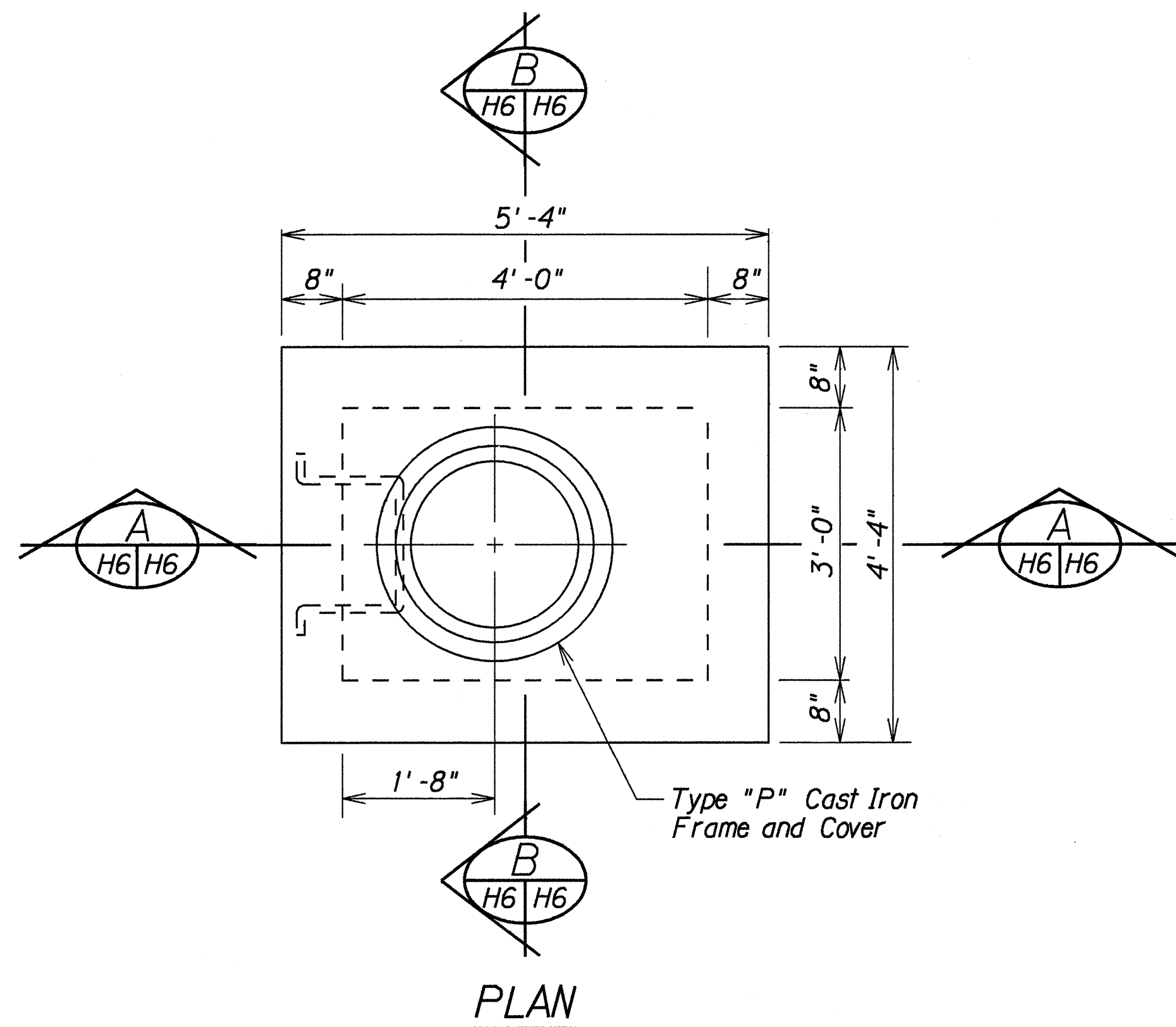
PROFILE ALONG & CULVERT

02/13/95 Add signature block.
 DATE REVISION
 Scale: 1" = 10' Date: June 1993
 SHEET No. H5 OF 6 SHEETS

"AS-BUILT" C.O. 24

ORIGINAL PLAN
 SURVEY PLOTTED BY
 DRAWN BY A. Nomura & R. Sato
 CHECKED BY
 DATE
 NOTE BOOK
 CHIEF, DIVISION OF PLANNING AND SERVICE CONTROL
 DEPARTMENT OF WASTEWATER MANAGEMENT
 (FOR SEWER WORK WITHIN PUBLIC R/W AND EASEMENT ONLY)

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-099-1(9)	1994	25	54



RECONSTRUCT TOP OF EXISTING TYPE 61614 GDI
AT STA. 22+25 AND STA. 26+10

02/13/95 Removed concrete collar detail.

DATE REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

KAMEHAMEHA HIGHWAY WIDENING
Lumiala St. to Waipio Uka St.
F.A.P. No. NH-099-1(9)

Scale: 3/4" = 1'-0" Date: Oct. 1992

SHEET No. H6 OF 6 SHEETS

CO. 25

ORIGINAL PLAN	DATE
DESIGNED BY	10/92
CHECKED BY	
NOTED BY	
QUANTITIES BY	
CHECKED BY	

C.O.ADD.25S-1