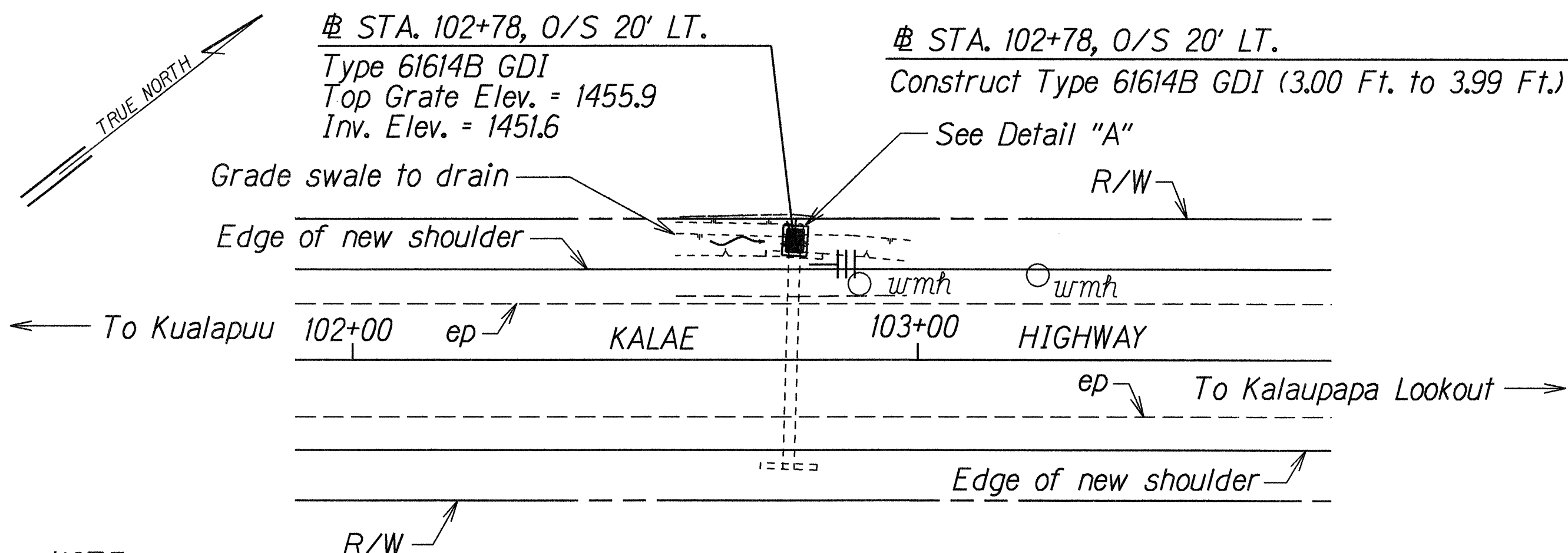


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0470(5)	2001	5	30

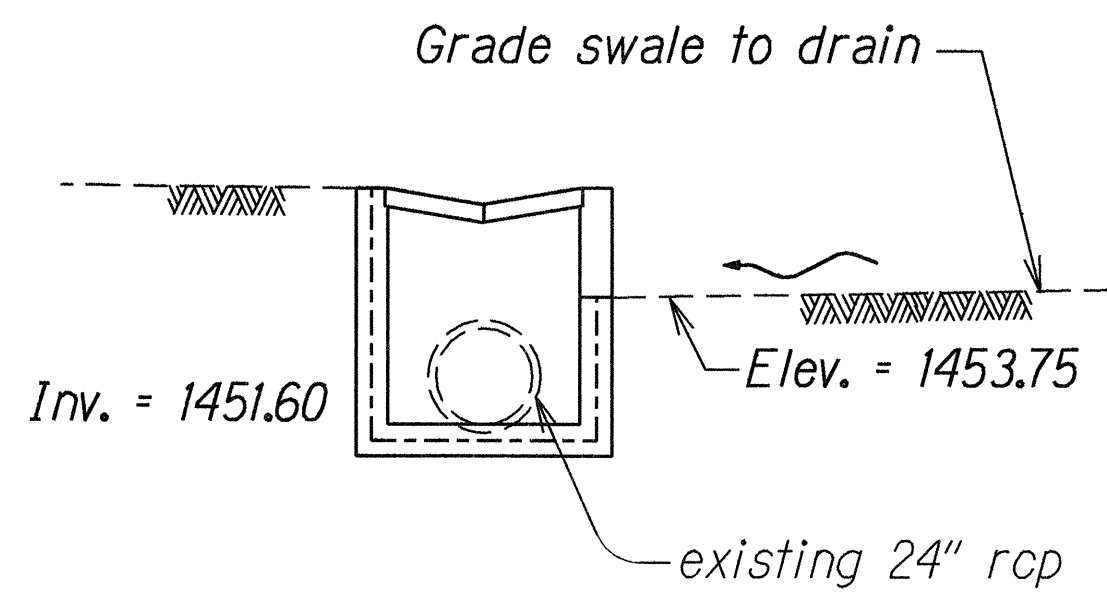
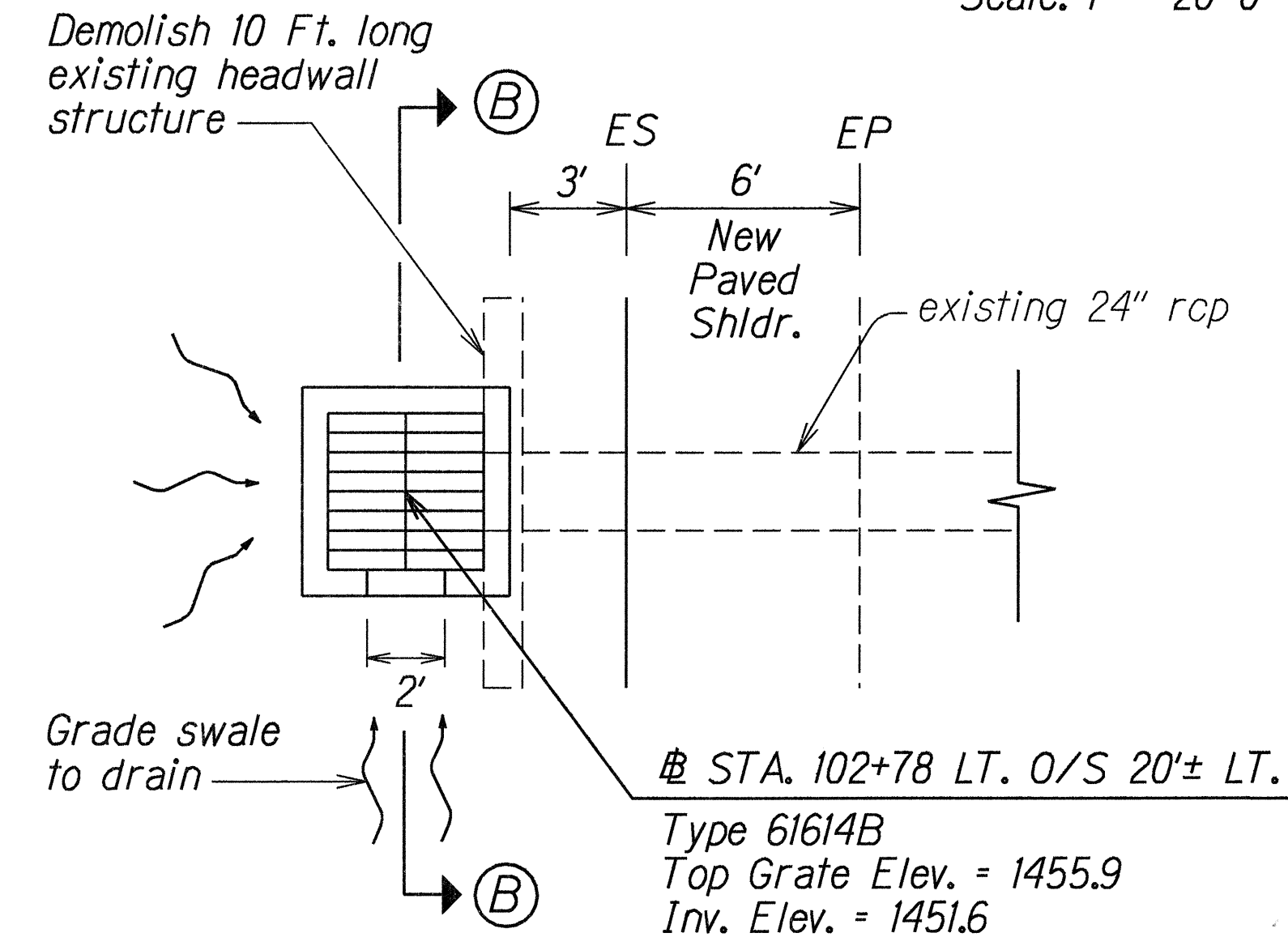


NOTE:
Demolition of existing headwall structures and backfilling shall be considered incidental to grated drop inlet pay items

ESTIMATED QUANTITIES

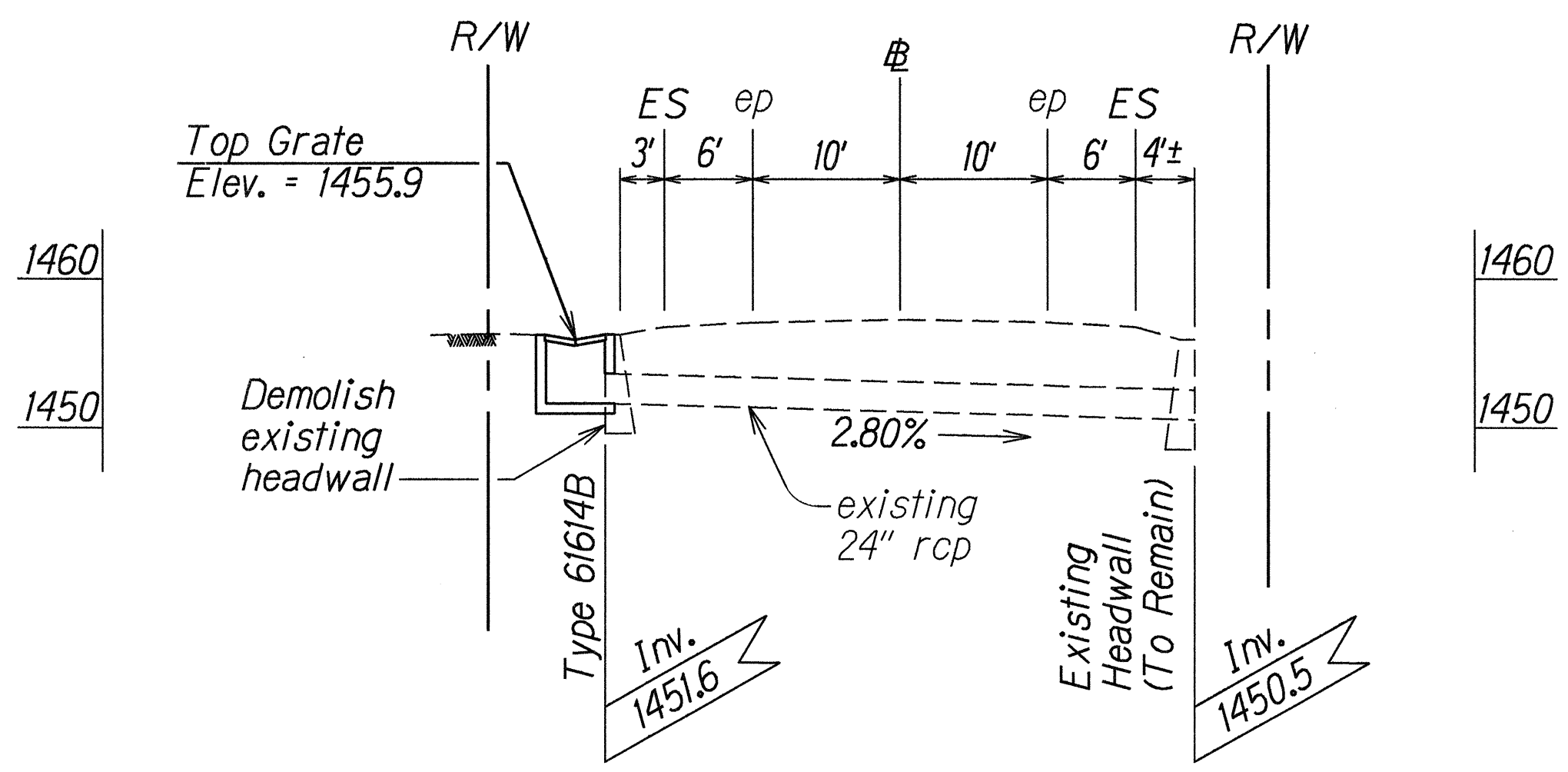
Type 61614B GDI, 3.0 Ft. to 3.99 Ft.	1 EA
Structure Excavation	1 CY

PLAN
Scale: 1" = 20'-0"



SECTION "B-B"
Scale: 1/4" = 1'-0"

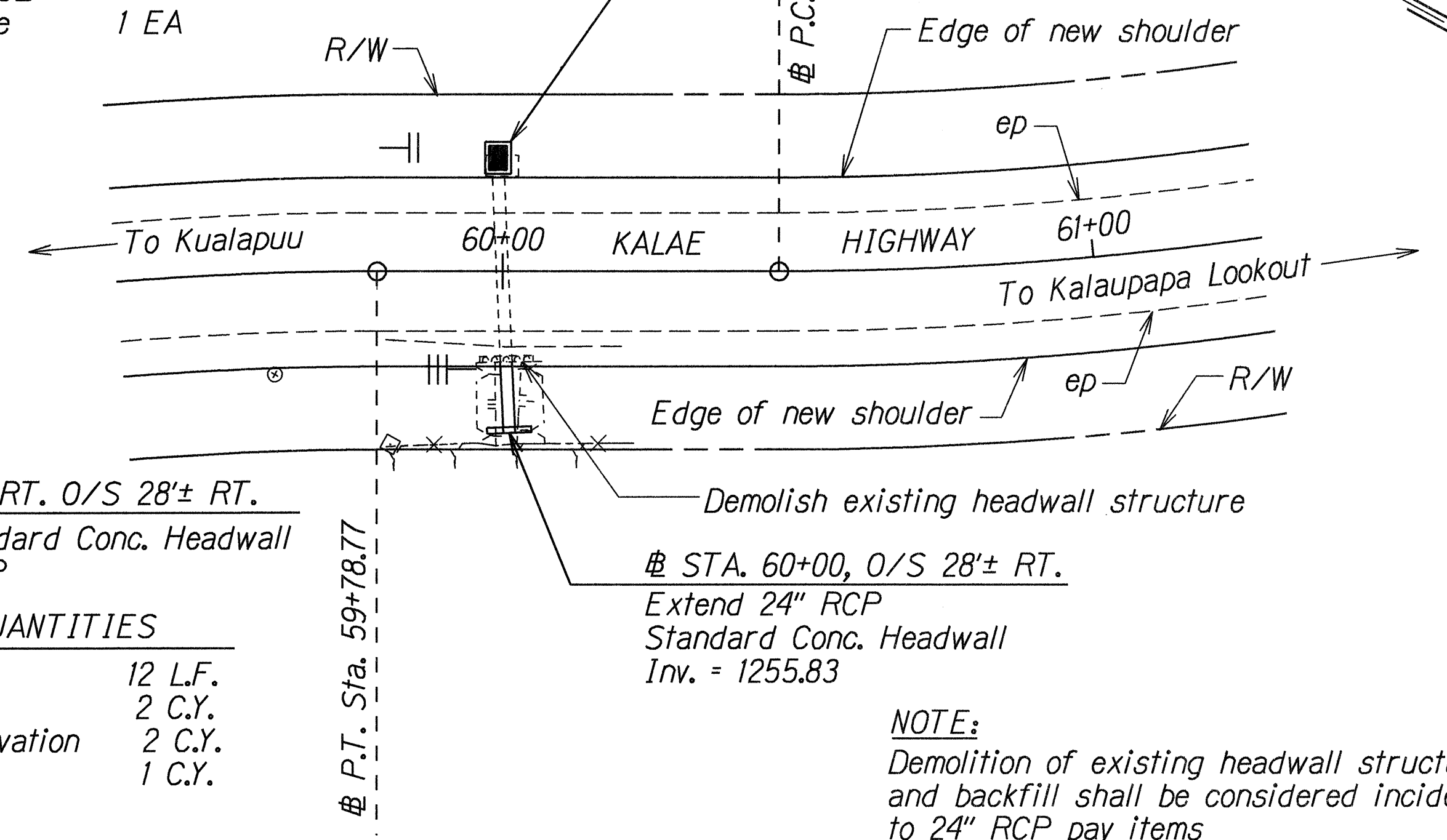
DETAIL "A"
Scale: 1/4" = 1'-0"



PROFILE - 24" RCP @ INLET # STA. 102+78 LT.
Scale: 1" = 10'-0"

STA. 60+00, 0/S 18± LT.
Install Modified Type 61613.5B Steel Frame & Grate
ESTIMATED QUANTITIES
Modified Type 61613.5B Steel Frame & Grate
1 EA

STA. 60+00, 0/S 18± LT.
Modified Type 61613.5B Steel Frame & Grate
Top = 1260.00
Inv. = 1257.30

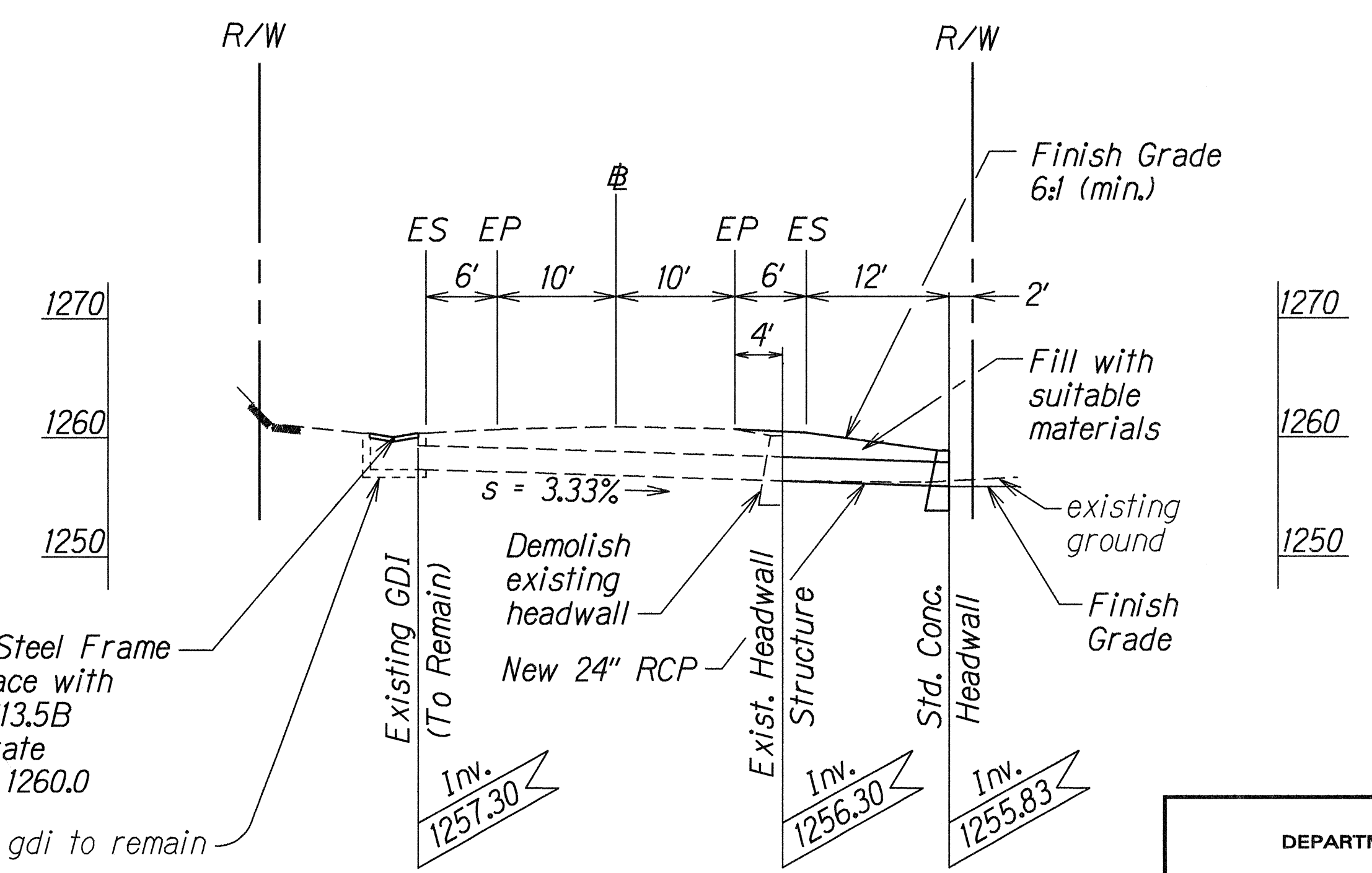


STA. 60+00 RT. 0/S 28± RT.
Construct Standard Conc. Headwall
Install 24" RCP
ESTIMATED QUANTITIES
24" RCP 12 L.F.
Class "A" Conc. 2 C.Y.
Structure Excavation 2 C.Y.
Bed Course 1 C.Y.

STA. 60+00, 0/S 28± RT.
Extend 24" RCP
Standard Conc. Headwall
Inv. = 1255.83

NOTE:
Demolition of existing headwall structure and backfill shall be considered incidental to 24" RCP pay items

PLAN
Scale: 1" = 20'-0"



Remove Existing Steel Frame & Grate and replace with Modified Type 61613.5B Steel Frame & Grate
Top Gate Elev. = 1260.0
existing gdi to remain

Note:
See Standard Plan H-13
Type 61614 revise dimensions
A=2' to A=1.75'

PROFILE - 24" RCP @ OUTLET # STA. 60+00 RT.
Scale: 1" = 10'-0"

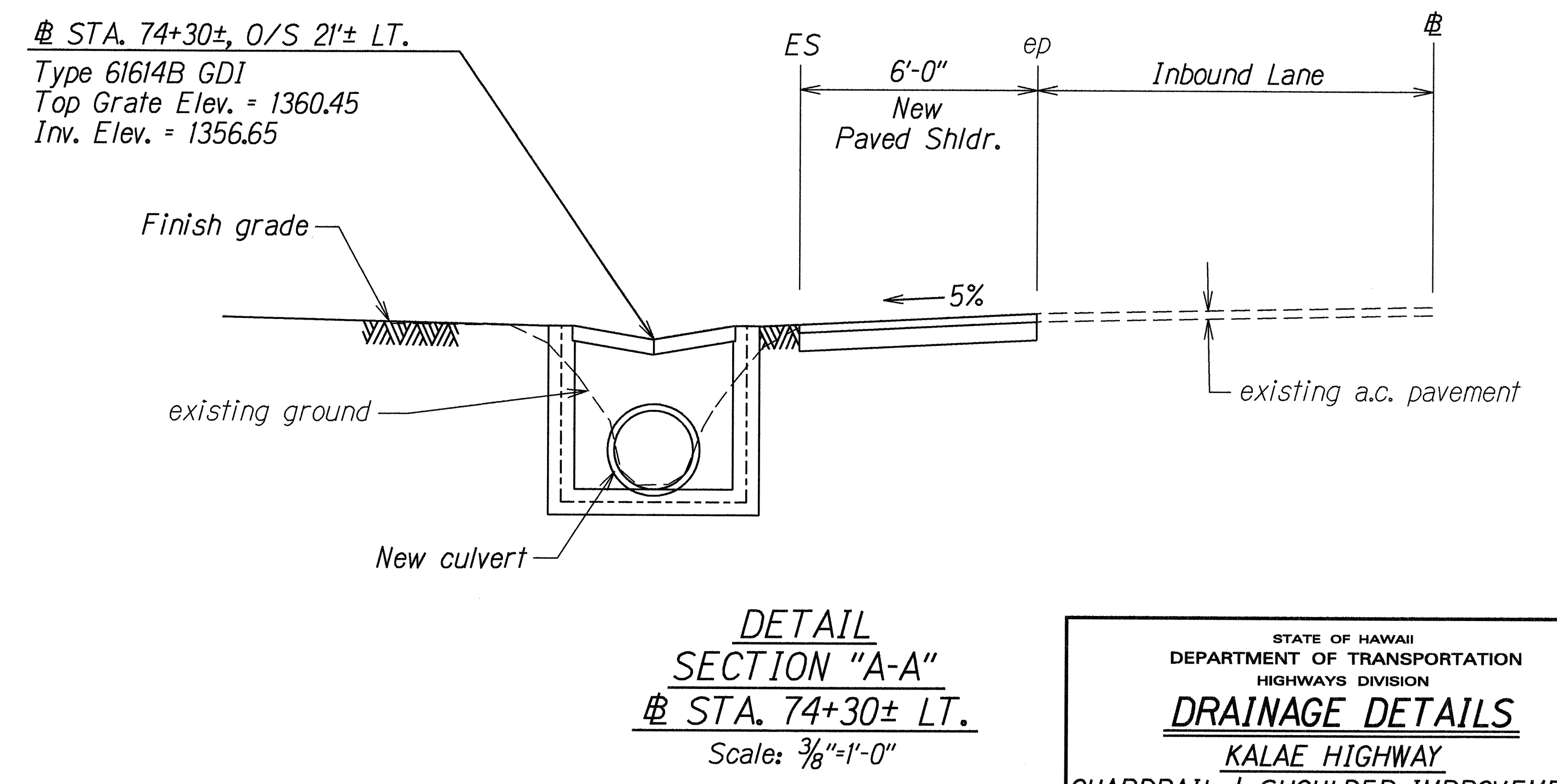
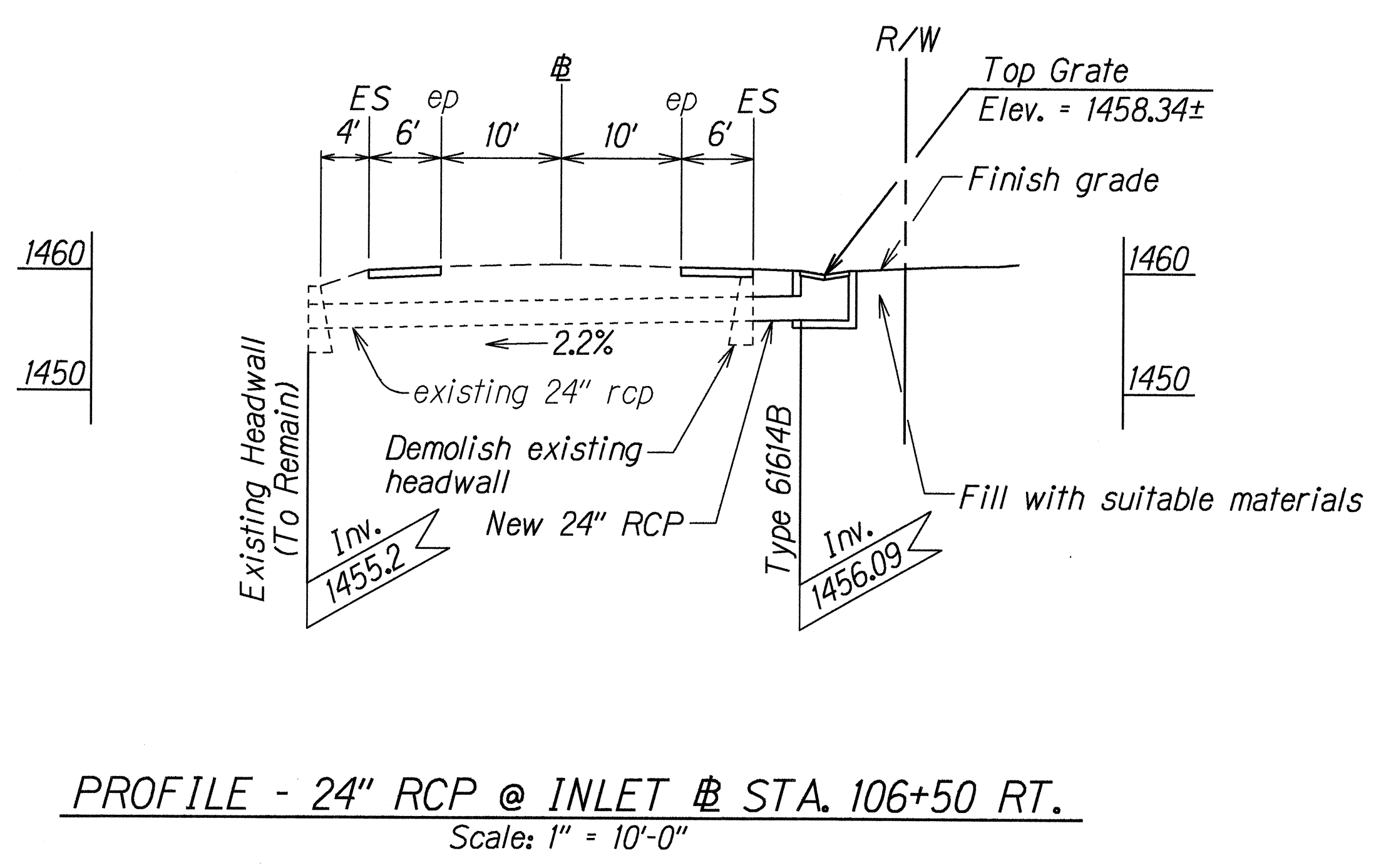
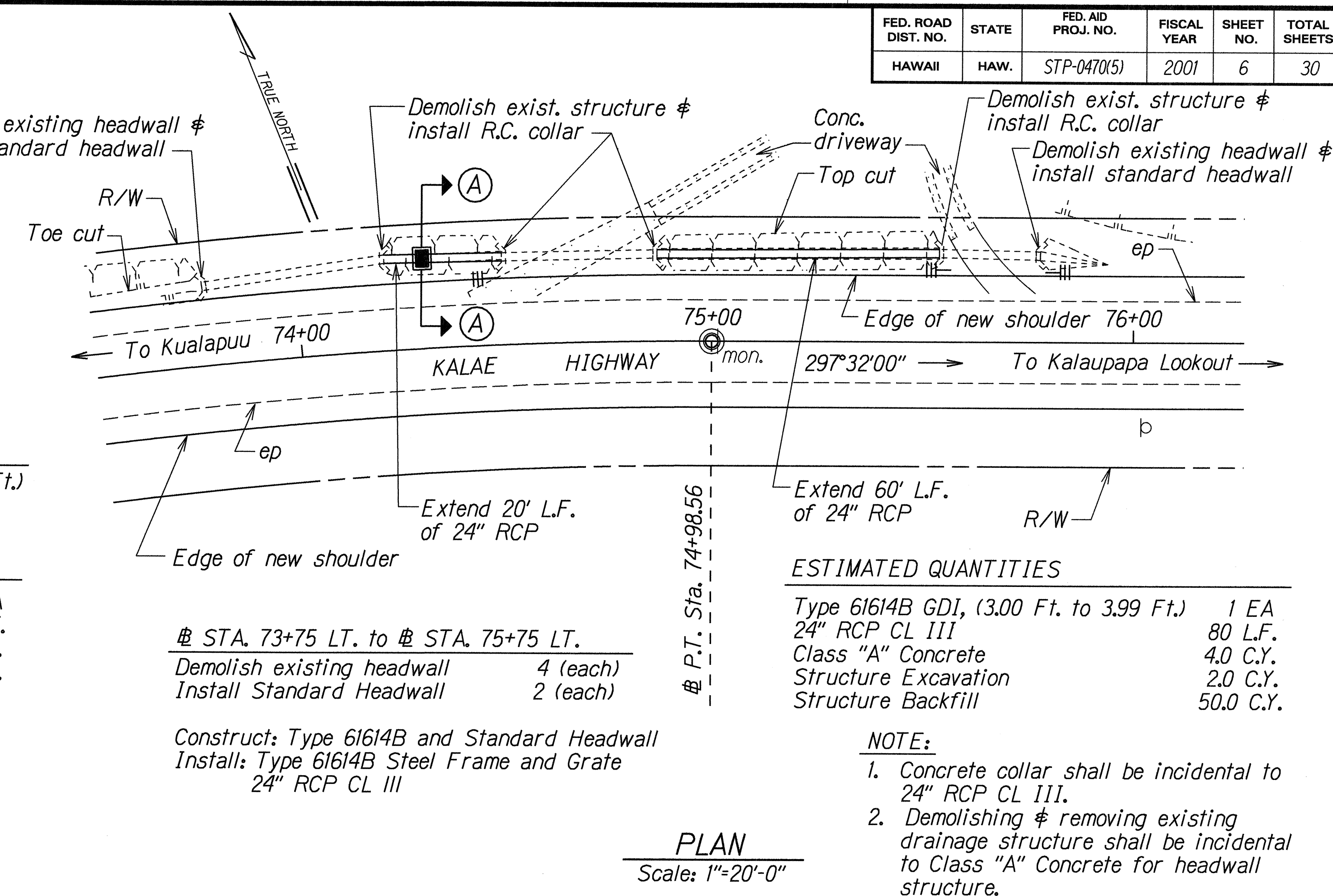
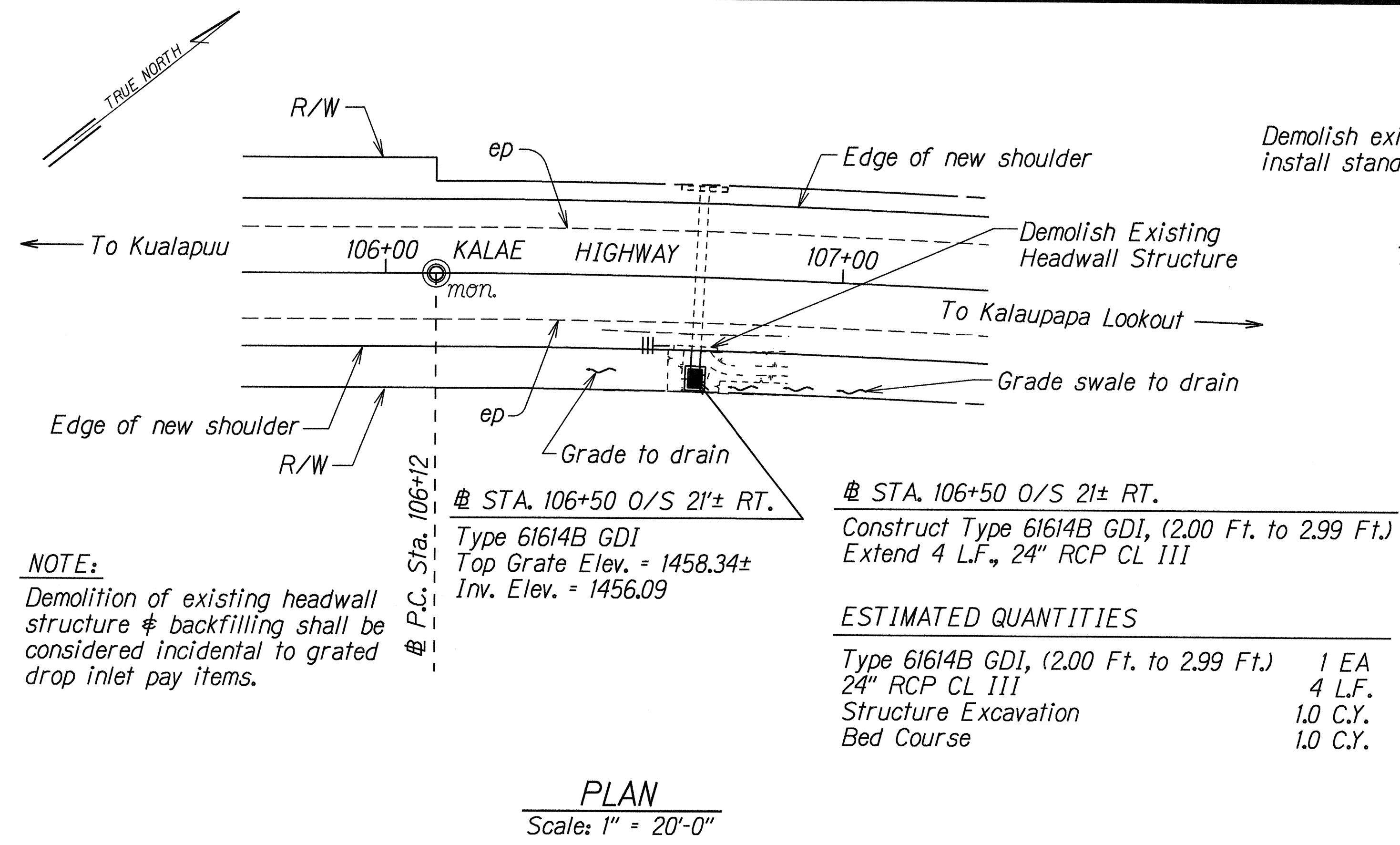
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
KALAE HIGHWAY
GUARDRAIL & SHOULDER IMPROVEMENTS
Maunaloa Highway to
Kalaupapa Lookout Parking Lot
Fed. Aid Project No. STP-0470(5)
Scale: As Shown Date: July, 2000

SHEET No. 1 OF 3 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	JULY 2000
TRACED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
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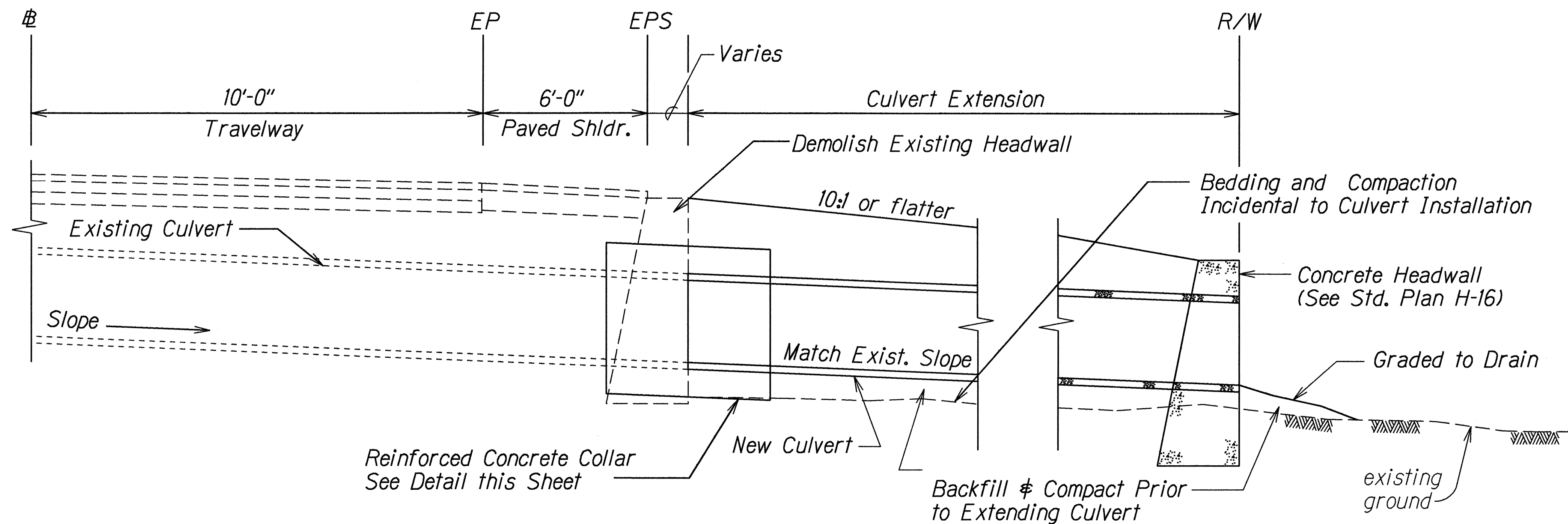
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0470(5)	2001	6	30



ORIGINAL PLAN	DATE	DESIGNED BY	CHECKED BY
STP-0470(5)	July 2000	STP-0470(5)	STP-0470(5)

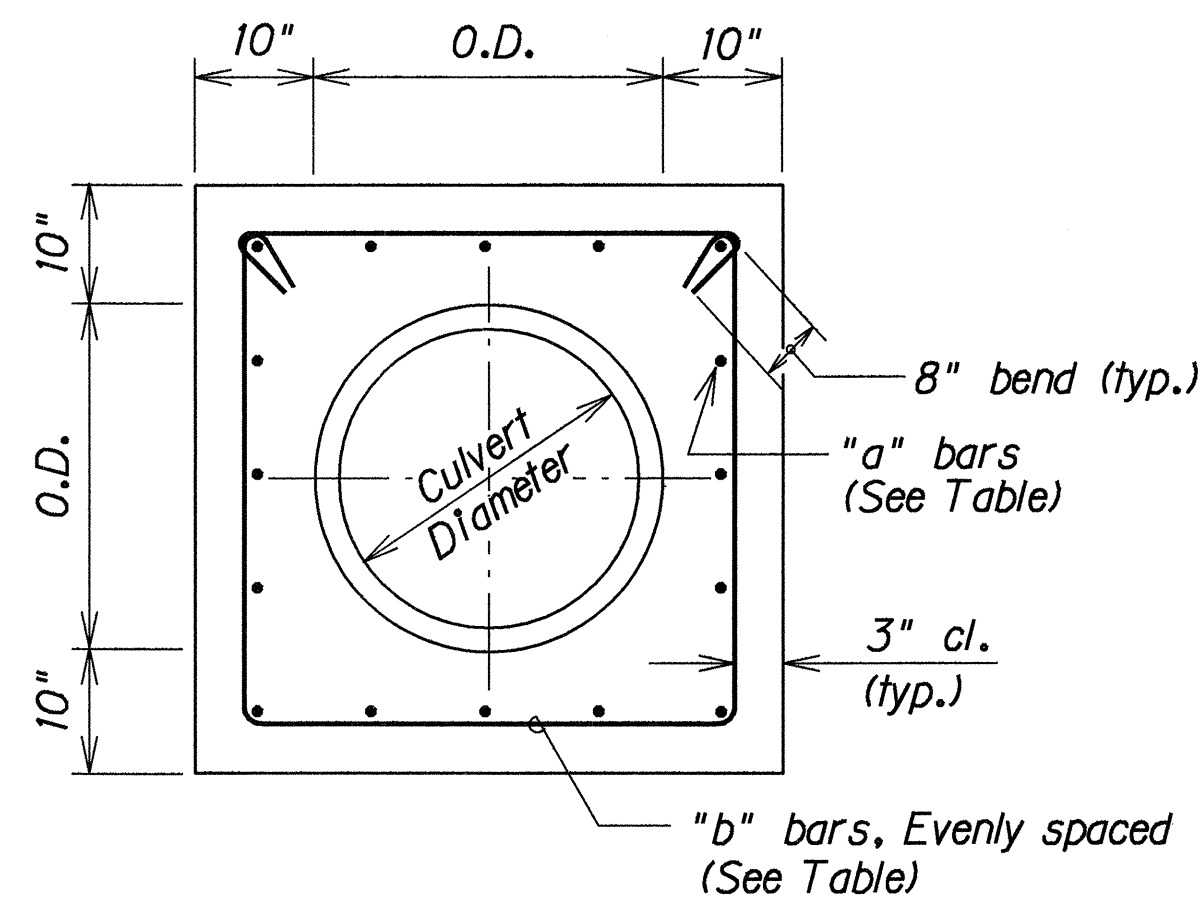
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE DETAILS
KALAE HIGHWAY
GUARDRAIL & SHOULDER IMPROVEMENTS
Maunaloa Highway to
Kalaupapa Lookout Parking Lot
Fed. Aid Project No. STP-0470(5)
Scale: As Shown Date: July, 2000

SHEET No. 2 OF 3 SHEETS

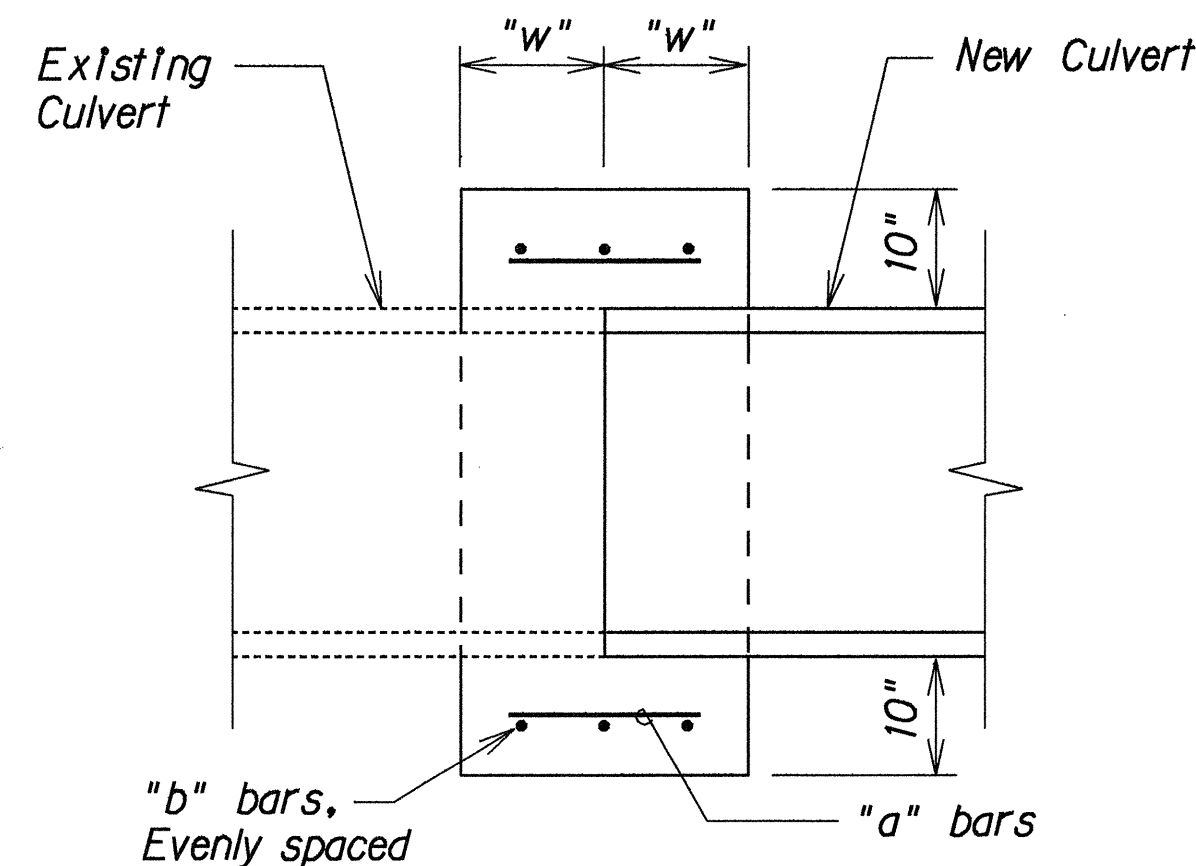


DETAIL - TYPICAL CULVERT EXTENSION DETAIL

Scale: 1/2"=1'-0"



ELEVATION



SECTION

Culvert Diameter	"a" bars	"b" bars	"w"
18" to 30"	#4 @ 9"	3- #4	12"
36" to 48"	#5 @ 9"	4- #4	15"

Note: Reinforcing Steel for Concrete Collar shall conform to the requirements of ASTM 615-Grade 60.

TYPICAL DETAILS OF REINFORCED CONCRETE COLLAR

MISCELLANEOUS DRAINAGE NOTES:

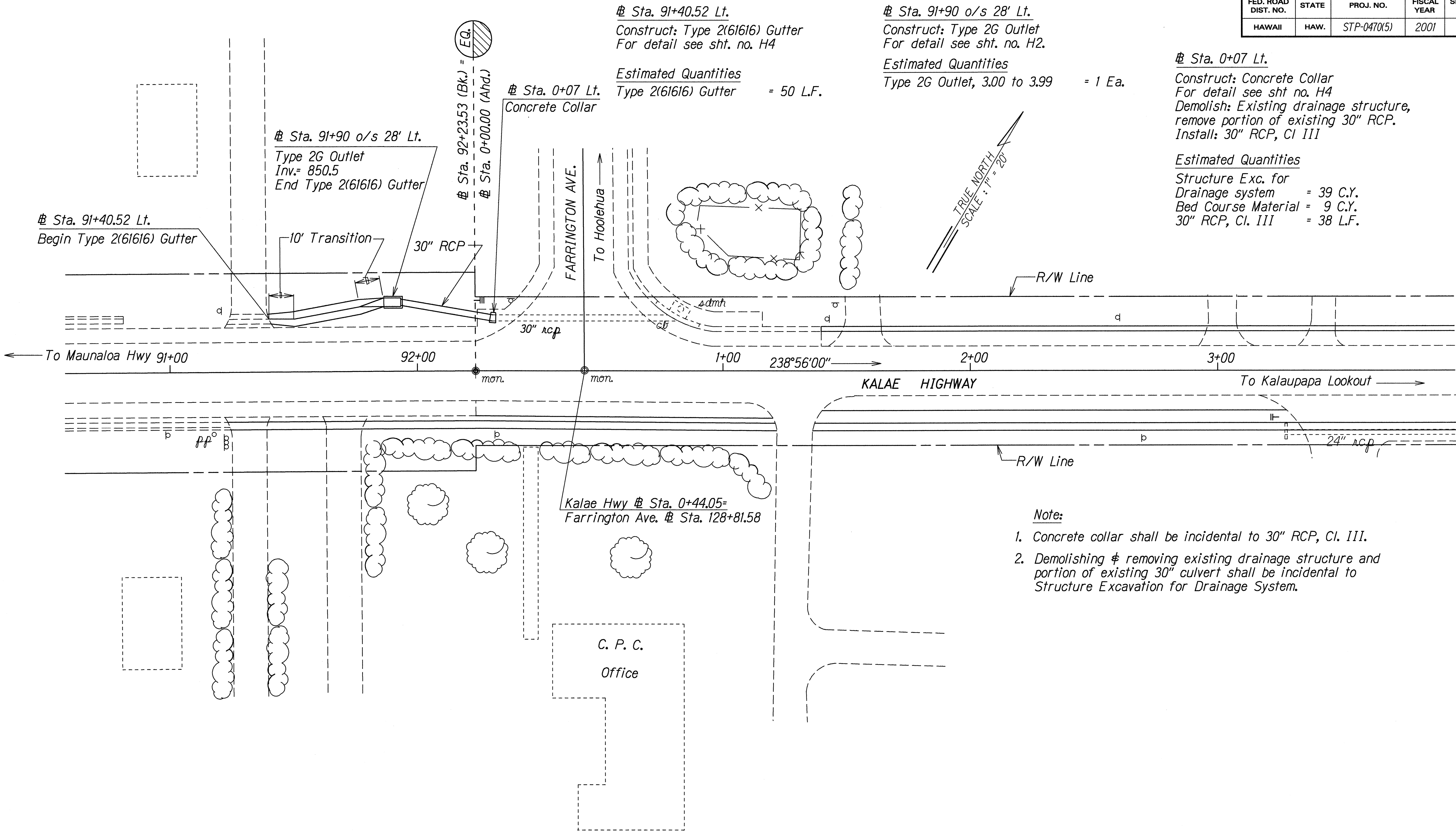
- Existing drainage system will be functional at all times during construction. Contractor is to furnish materials, equipment, labor, tools and incidentals necessary to accomplish maintenance of flow, the cost of which shall be incidental to the various contract items.
- Demolishing and/or removing a portion or the entire existing structure shall not be paid for separately, but shall be considered incidental to the various contract items.
- Culverts within the graded drop inlets shall be cut flush with the inside face of the wall. Above work shall be considered incidental to the various contract items.
- Contractor shall verify the locations of all culverts in the field. Any culvert damaged during construction shall be repaired or replaced by the Contractor at his expense.
- Concrete for graded drop inlets and other structures shall be Class "A".
- Inlet and Outlet conditions shall be cleaned and graded to permit free flow of run-off or as directed by the Engineer. Cleaning and grading shall be to the satisfaction of the Engineer. Above work shall be considered incidental to the various contract items.
- The Contractor shall provide bedding materials for culvert, Class "C" bedding. Payment for this work will not be paid for separately but will be considered incidental to the various contract items.
- Reinforcing Steel for Concrete Structures will not be paid for separately but shall be considered incidental to various contract items.
- Location and elevations of new structures must be laid out in the field for the Engineer's approval.
- Chamfer all exposed edges 1".
- Quantities are approximate only. Contractor shall conduct an independent survey of worksites to verify and validate pay quantities.
- Reinforced concrete collar will not be paid for separately but shall be considered incidental to installation of culverts.

SURVEY PLOTTED BY	DATE
DRAWN BY	July 2000
NOTED BY	
QUANTITIES BY	
CHECKED BY	

ORIGINAL PLAN	NOTE BOOK
1/10/00	1/10/00
1/10/00	1/10/00
1/10/00	1/10/00
1/10/00	1/10/00

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DRAINAGE DETAILS
KALAE HIGHWAY
GUARDRAIL & SHOULDER IMPROVEMENTS
Maunaloa Highway to
Kalaupapa Lookout Parking Lot
Fed. Aid Project No. STP-0470(5)
Scale: As Shown Date: July, 2000
SHEET No. 3 OF 3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0470(5)	2001	8	30



Sta. 91+40.52 Lt.
Construct: Type 2(61616) Gutter
For detail see sht. no. H4

Estimated Quantities
Type 2(61616) Gutter = 50 L.F.

Sta. 91+90 o/s 28' Lt.
Construct: Type 2G Outlet
For detail see sht. no. H2.

Estimated Quantities
Type 2G Outlet, 3.00 to 3.99 = 1 Ea.

Sta. 0+07 Lt.
Construct: Concrete Collar
For detail see sht no. H4
Demolish: Existing drainage structure,
remove portion of existing 30" RCP.
Install: 30" RCP, CI. III

Estimated Quantities
Structure Exc. for
Drainage system = 39 C.Y.
Bed Course Material = 9 C.Y.
30" RCP, CI. III = 38 L.F.

Note:

1. Concrete collar shall be incidental to 30" RCP, CI. III.
2. Demolishing & removing existing drainage structure and portion of existing 30" culvert shall be incidental to Structure Excavation for Drainage System.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
log/jay	TRACED BY	
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	CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

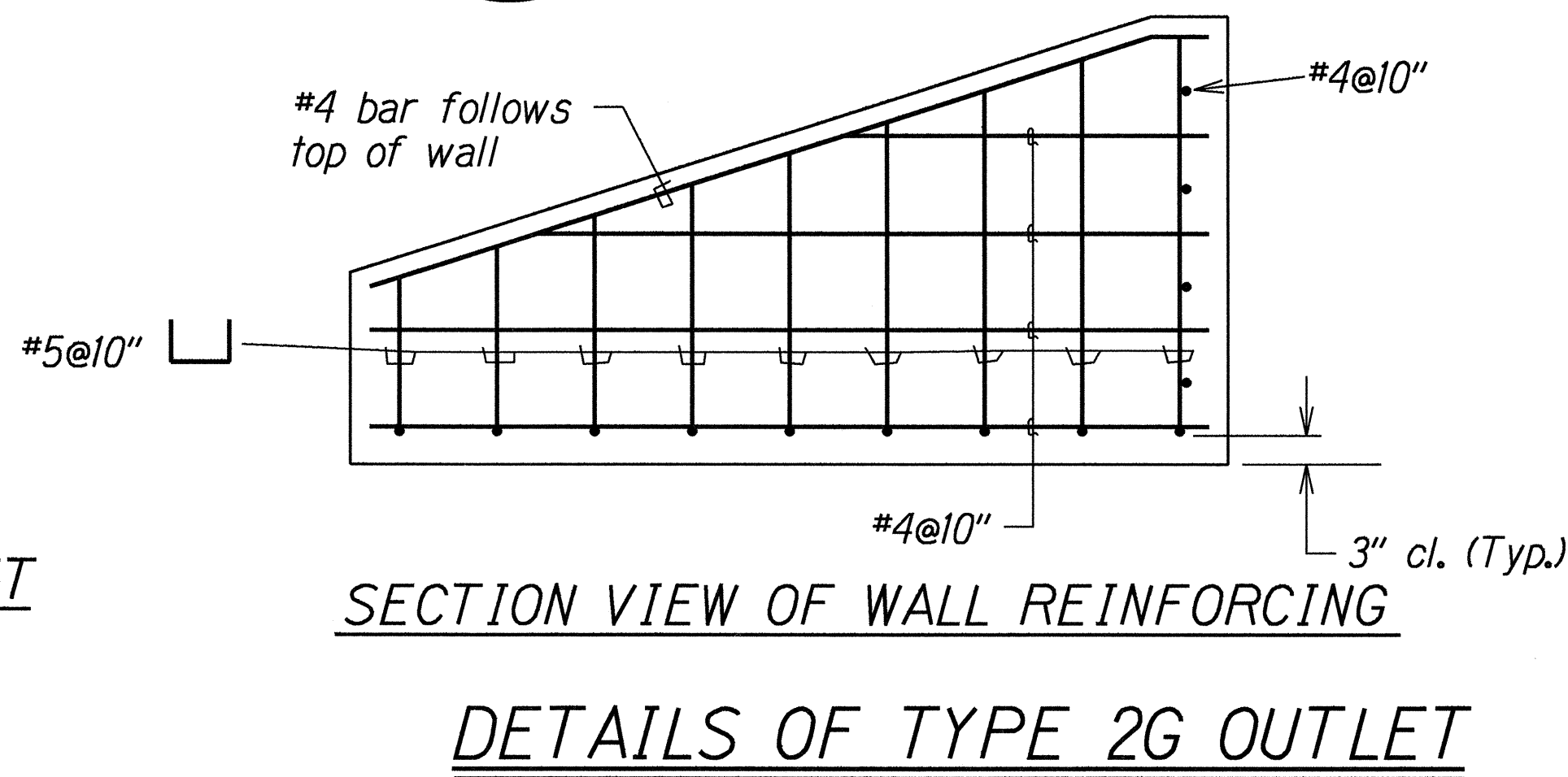
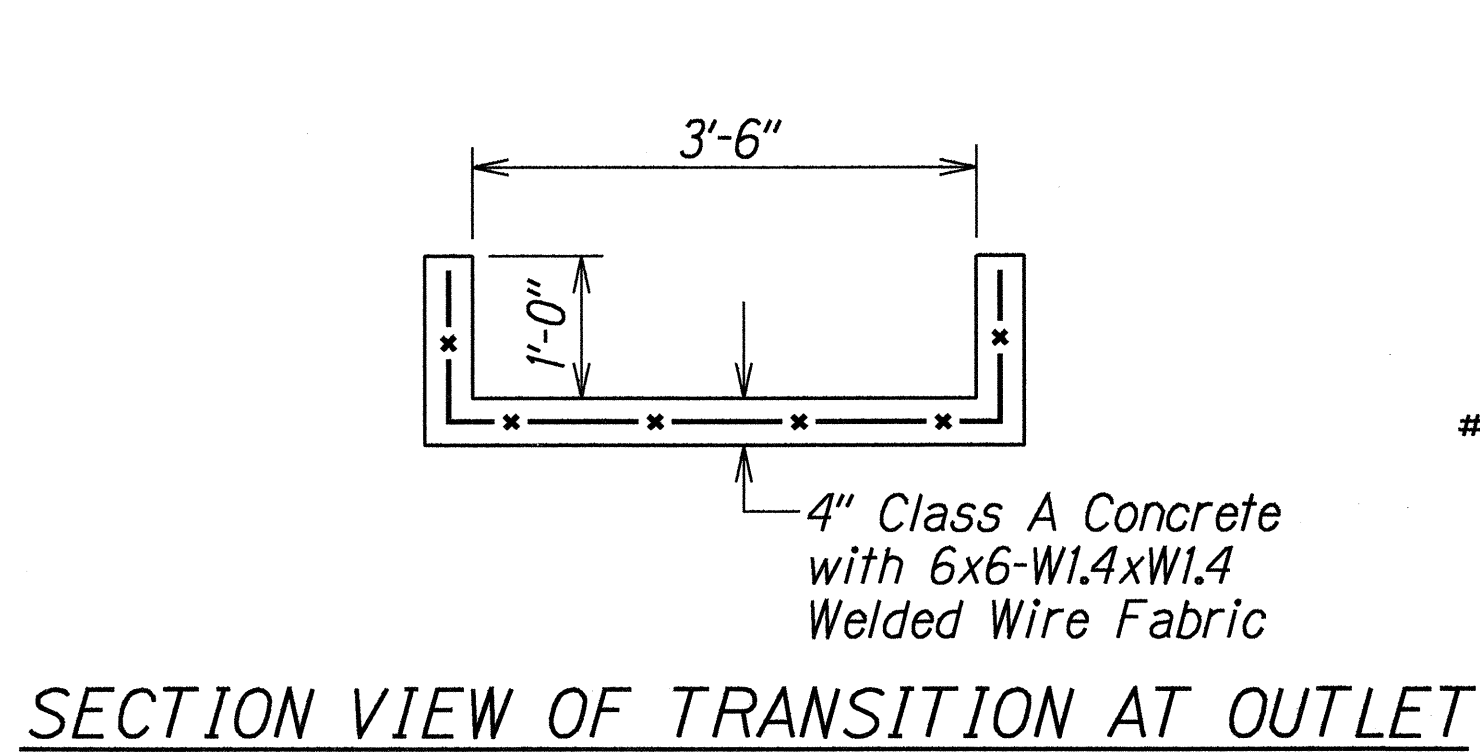
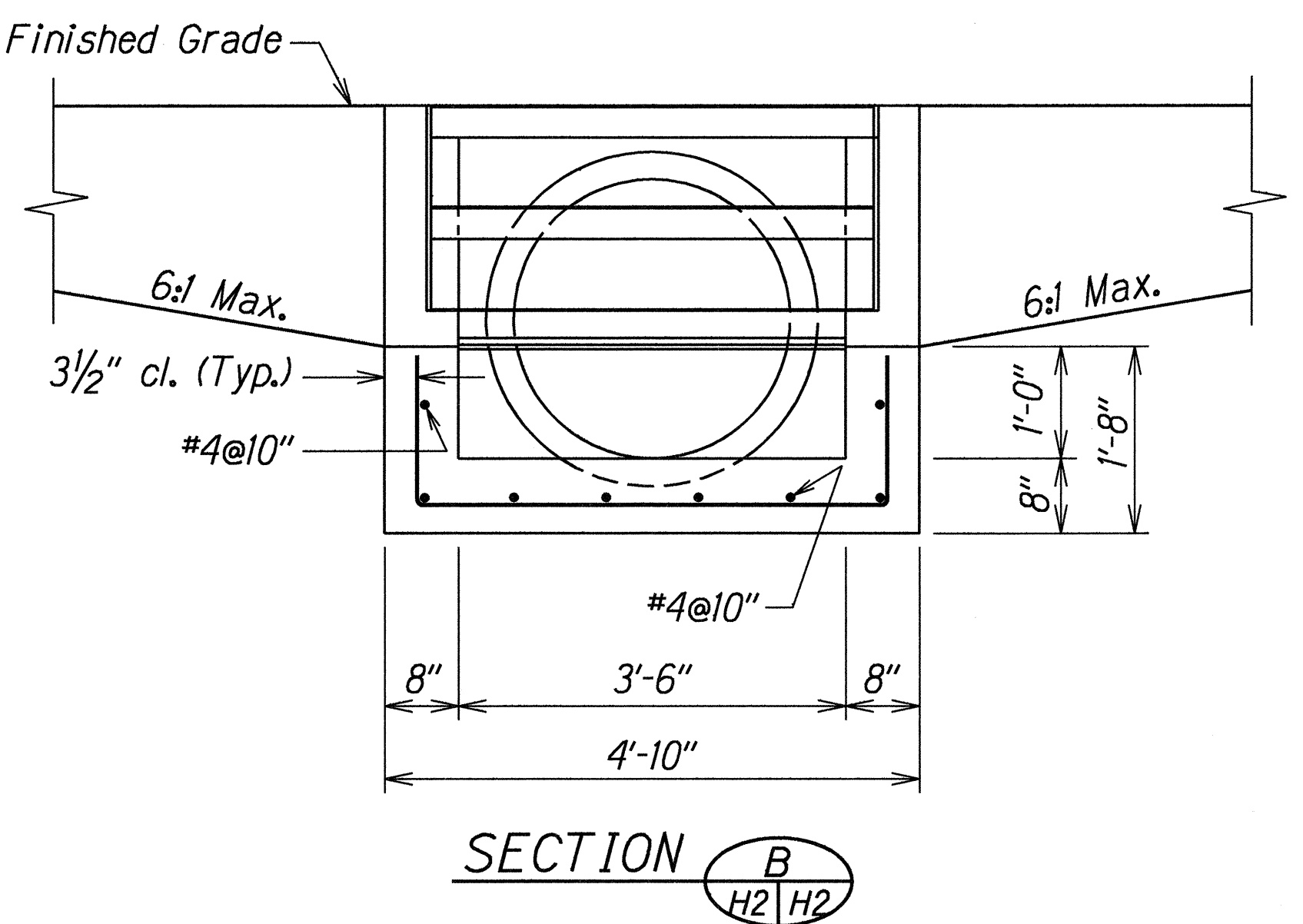
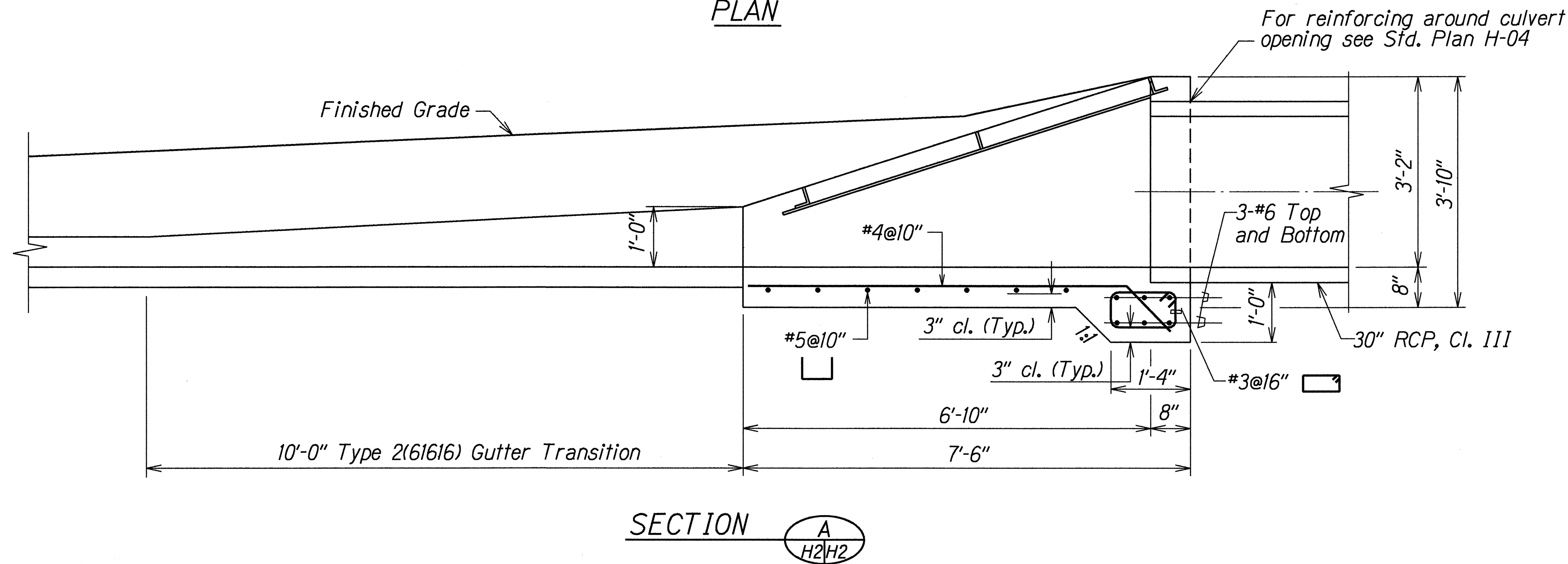
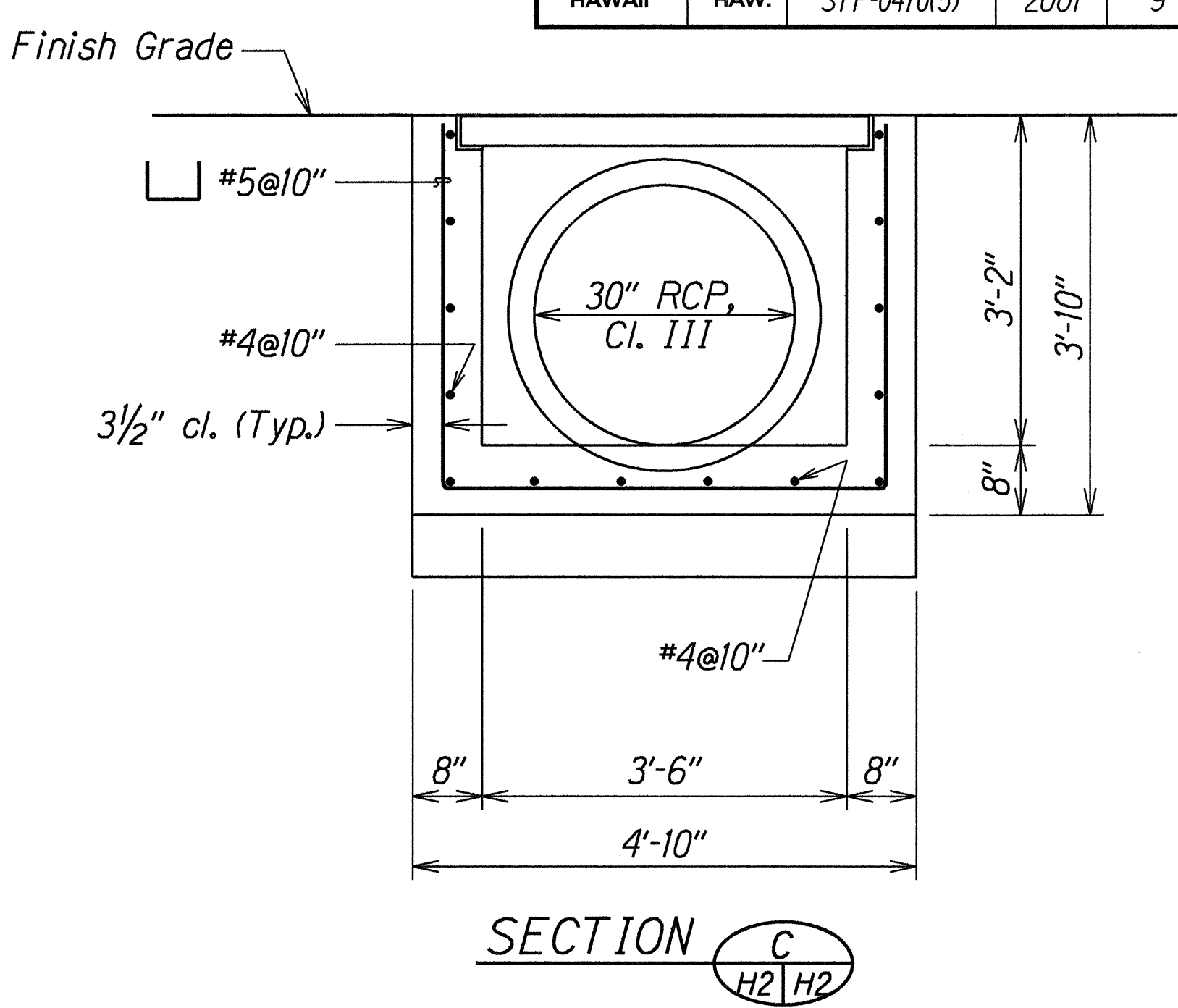
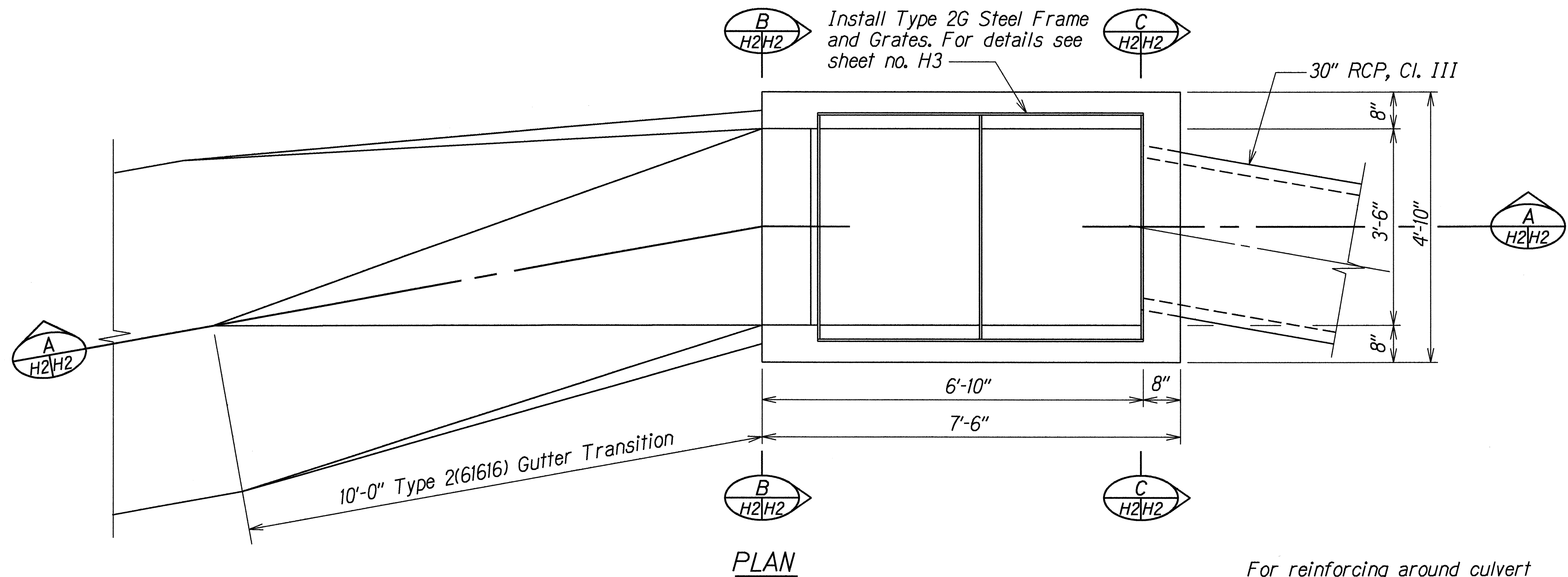
DRAINAGE PLAN

KALAE HIGHWAY
Guardrail and Shoulder Improvements
Maunaloa Hwy to Kalaupapa Lookout
Proj. No. STP-0470(5)

Scale: 1"=20'
Date: July, 2000

SHEET No. H1 OF 4 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0470(5)	2001	9	30



SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
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REVISIONS	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

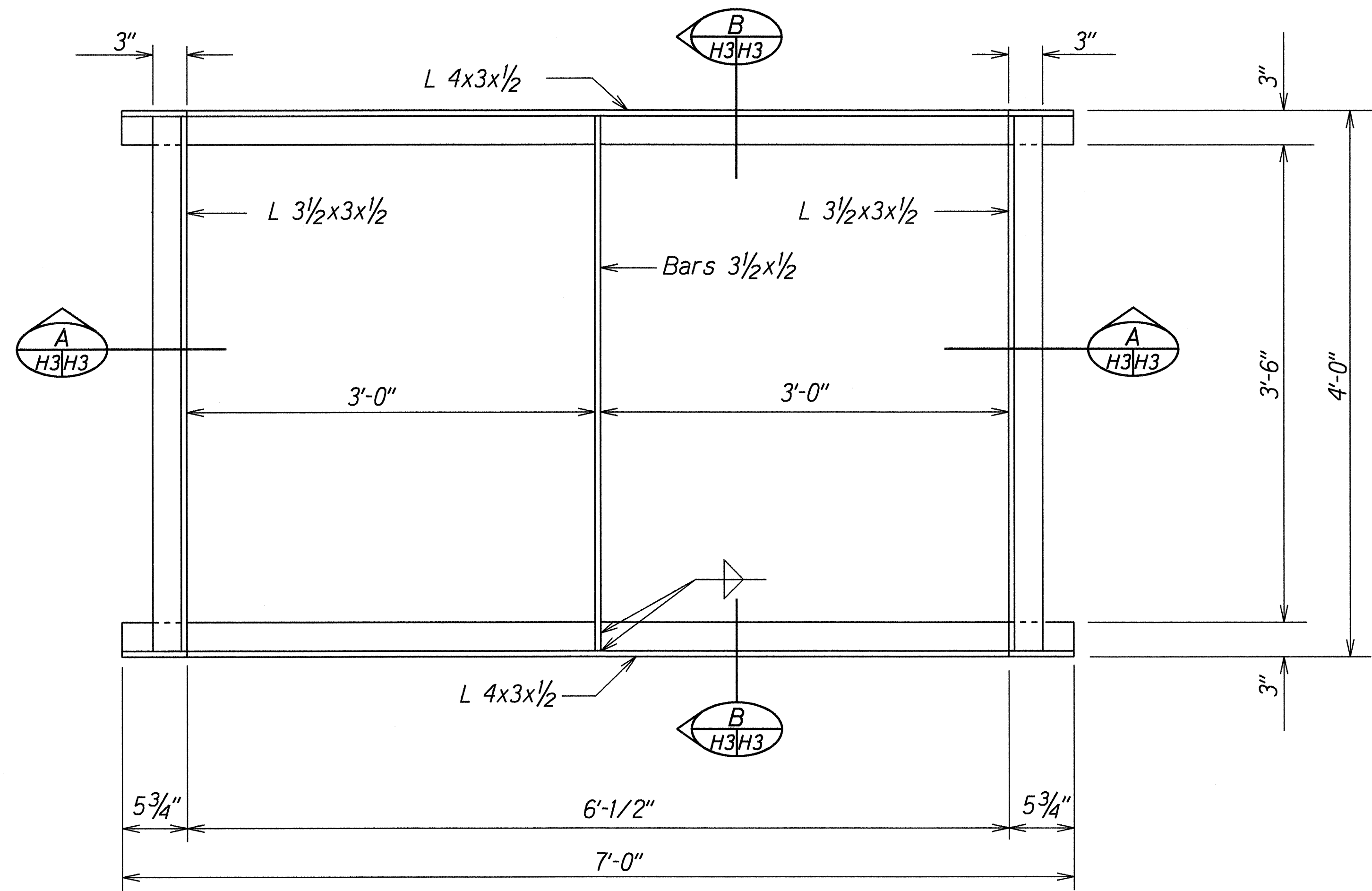
KALAE HIGHWAY

Guardrail and Shoulder Improvements
Maunaloa Hwy to Kalaupapa Lookout

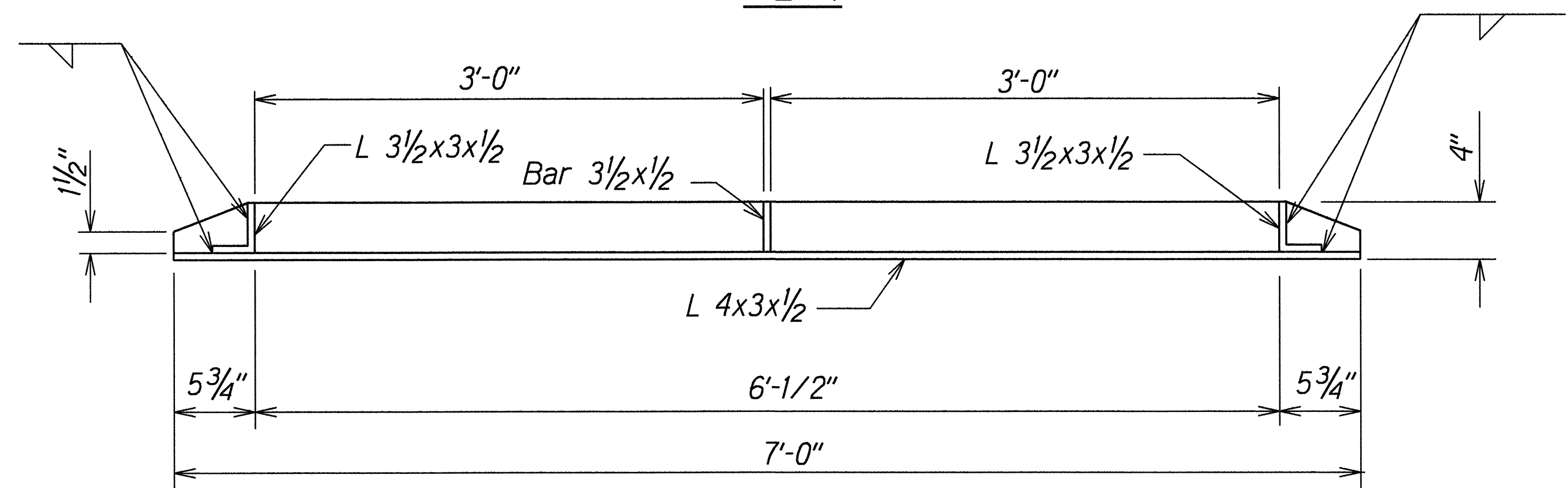
Proj. No. STP-0470(5)

Scale: 3/4"=1'-0" Date: June, 2000

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-0470(5)	2001	10	30

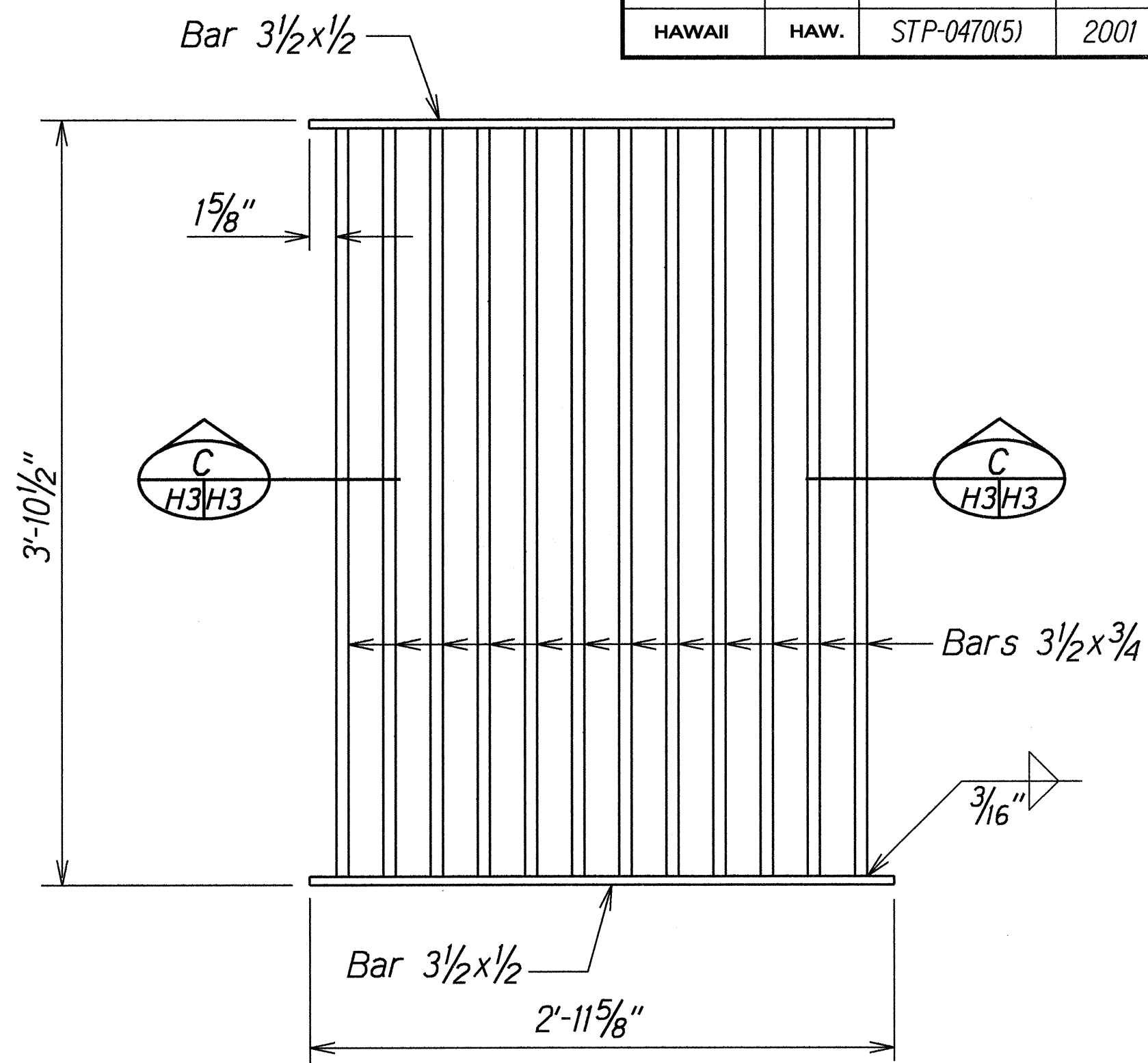


PLAN

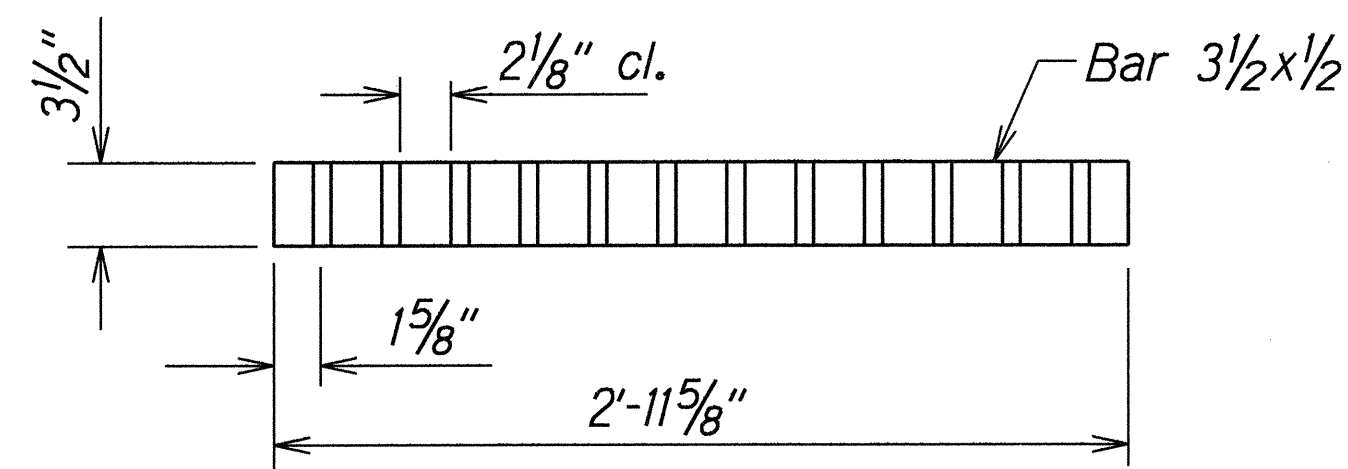


SECTION A
H3/H3

STEEL FRAME DETAILS

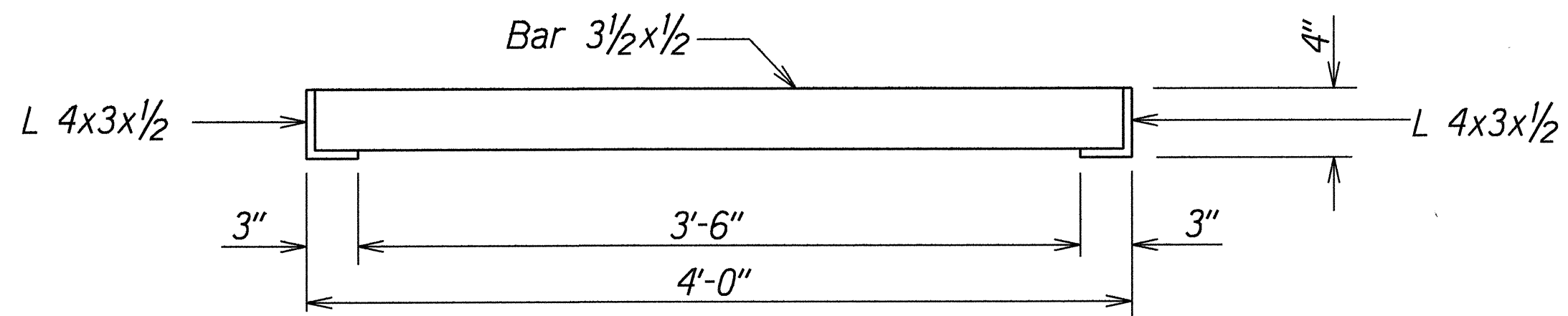


PLAN



SECTION C
H3/H3

STEEL GRATE DETAILS



SECTION B
H3/H3

GENERAL NOTES

1. All welds $\frac{5}{8}$ " unless otherwise noted.
2. Frame and Grates shall be hot dip galvanized after fabrication.
3. Steel shall be ASTM A572 Gr 50.

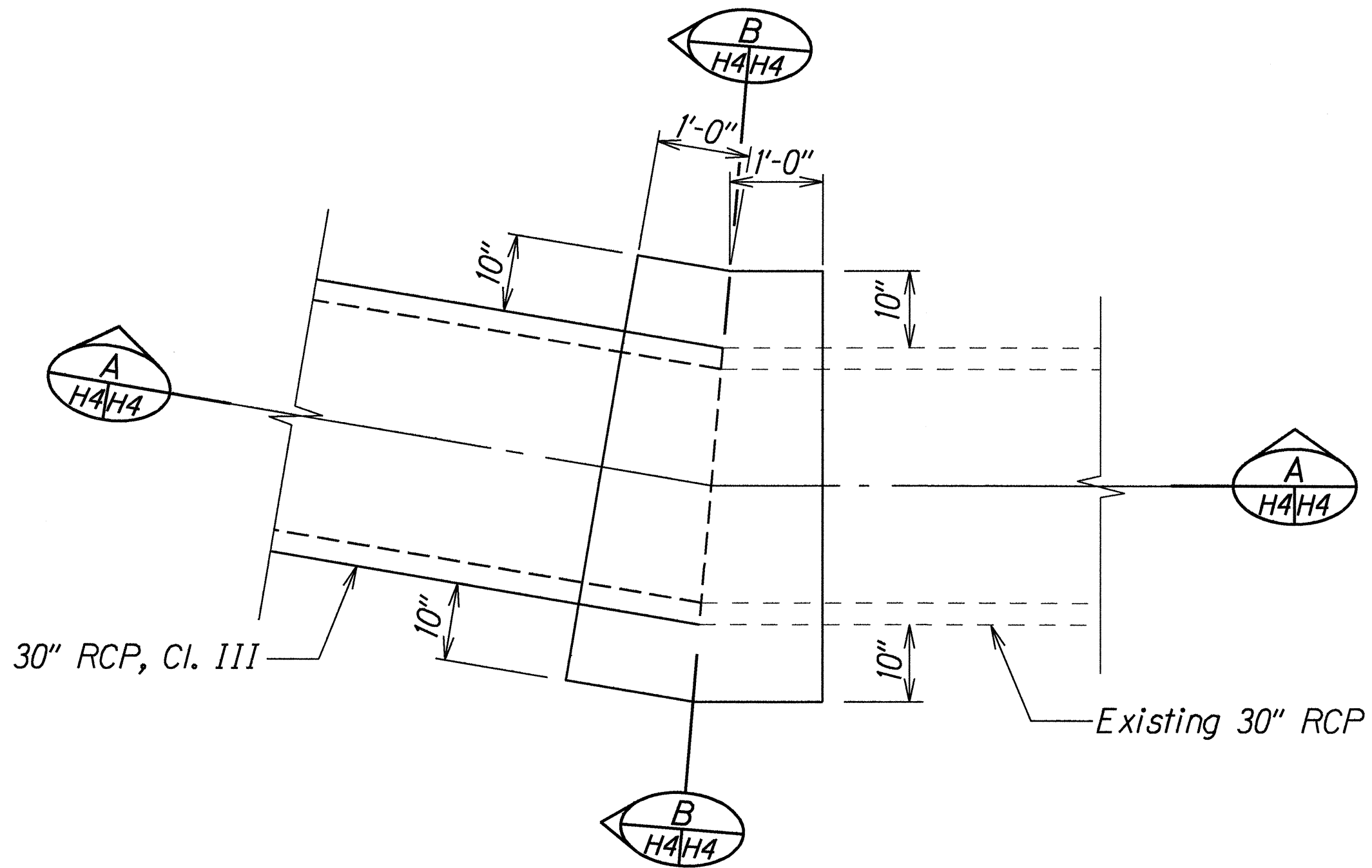
DETAILS OF TYPE 2G STEEL FRAME AND GRATES

SURVEY PLOTTED BY	DATE
DRAWN BY LEC	X
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NOTE BOOK	
dh3:ry/dkls	
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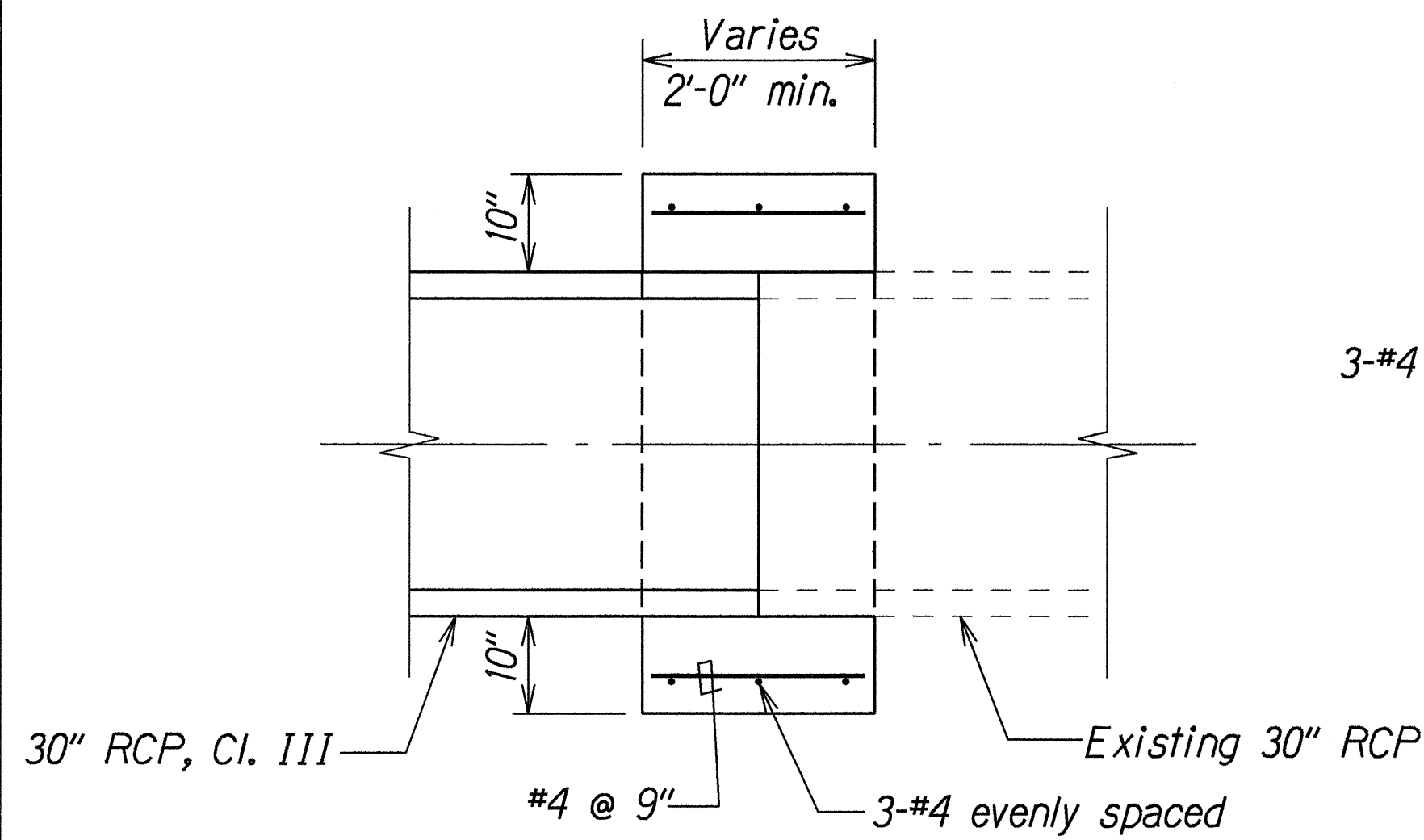
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
KALAE HIGHWAY
Guardrail and Shoulder Improvements
Maunaloa Hwy to Kalaupapa Lookout
Proj. No. STP-0470(5)
Scale: 1/2"=1'-0" Date: June, 2000
SHEET No. H3 OF 4 SHEETS

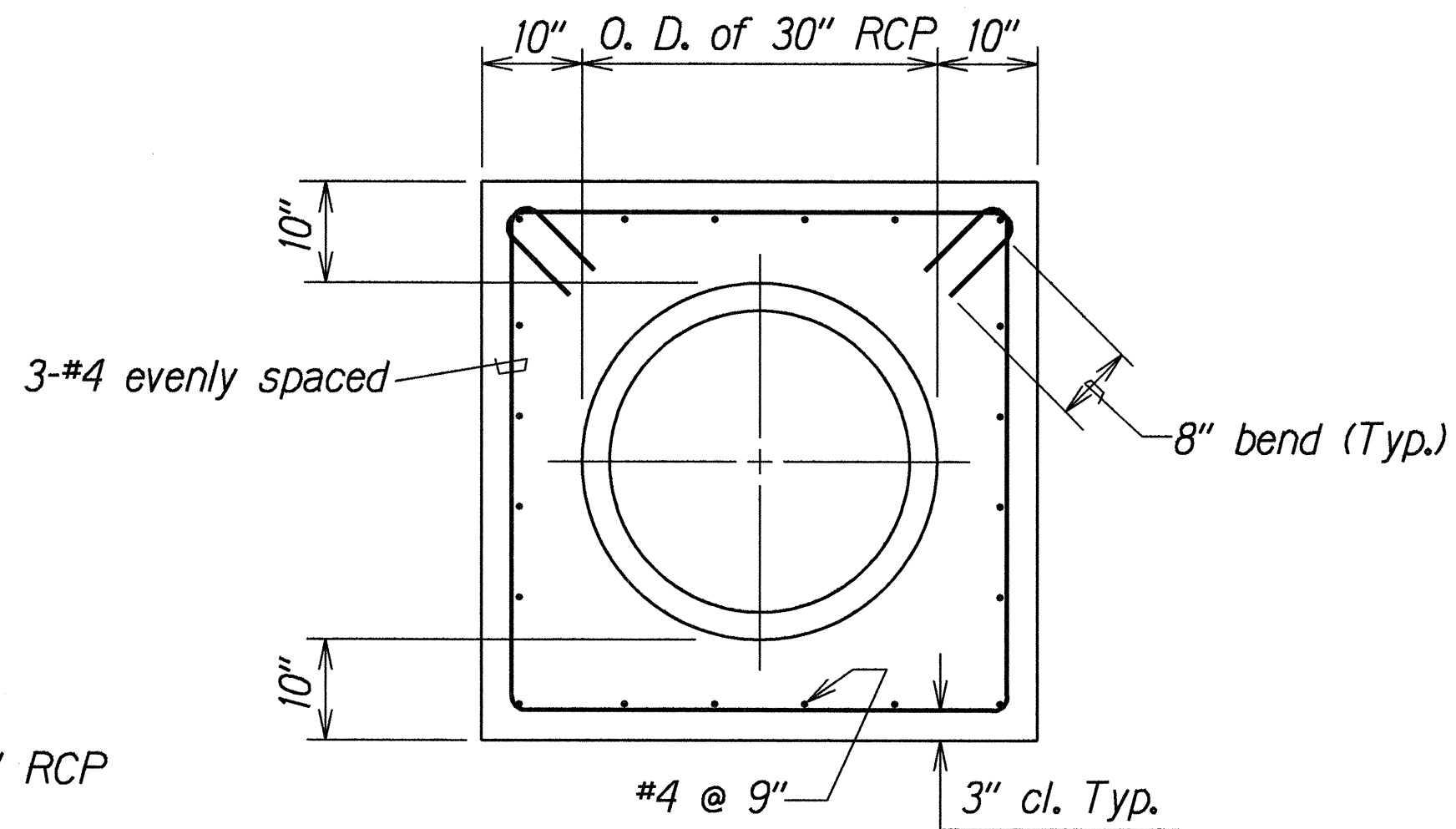
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HAWAII	HAW.	STP-0470(5)	2001	11	30



PLAN

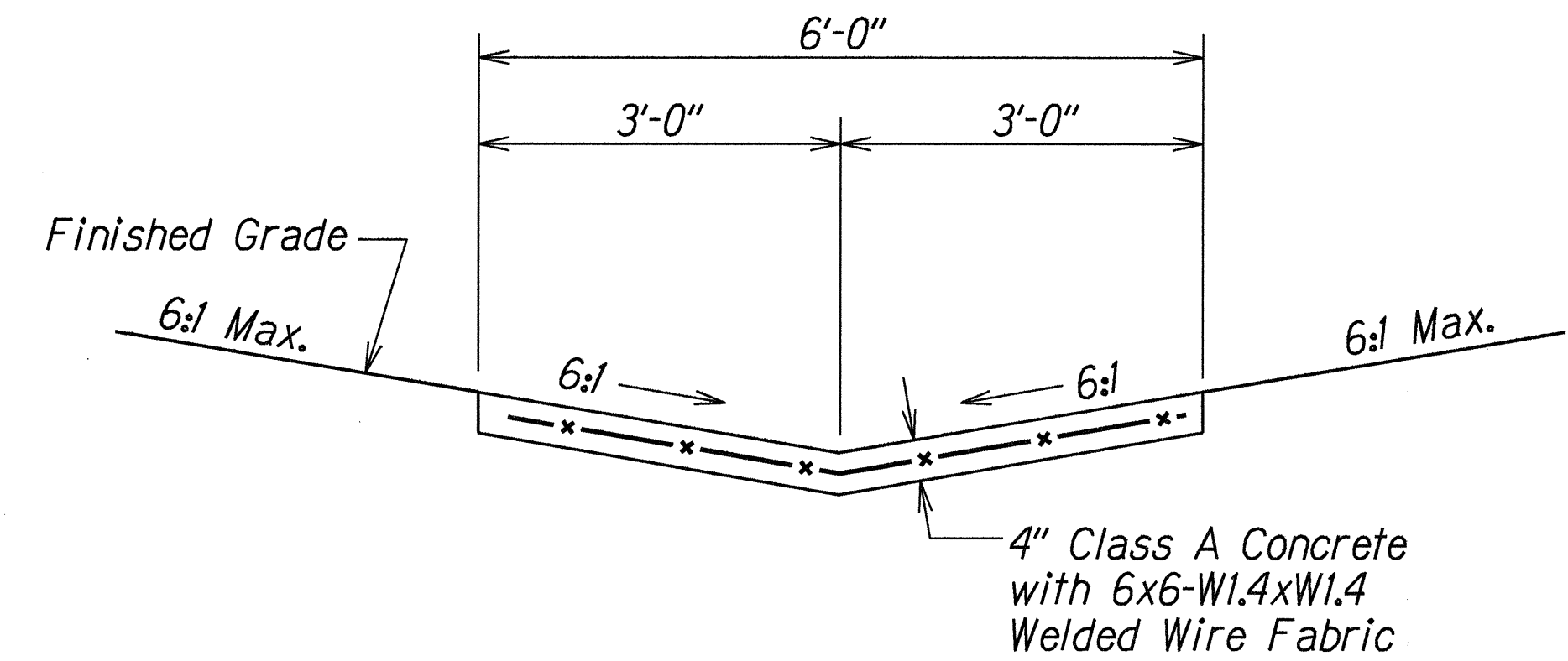


SECTION A
H4/H4

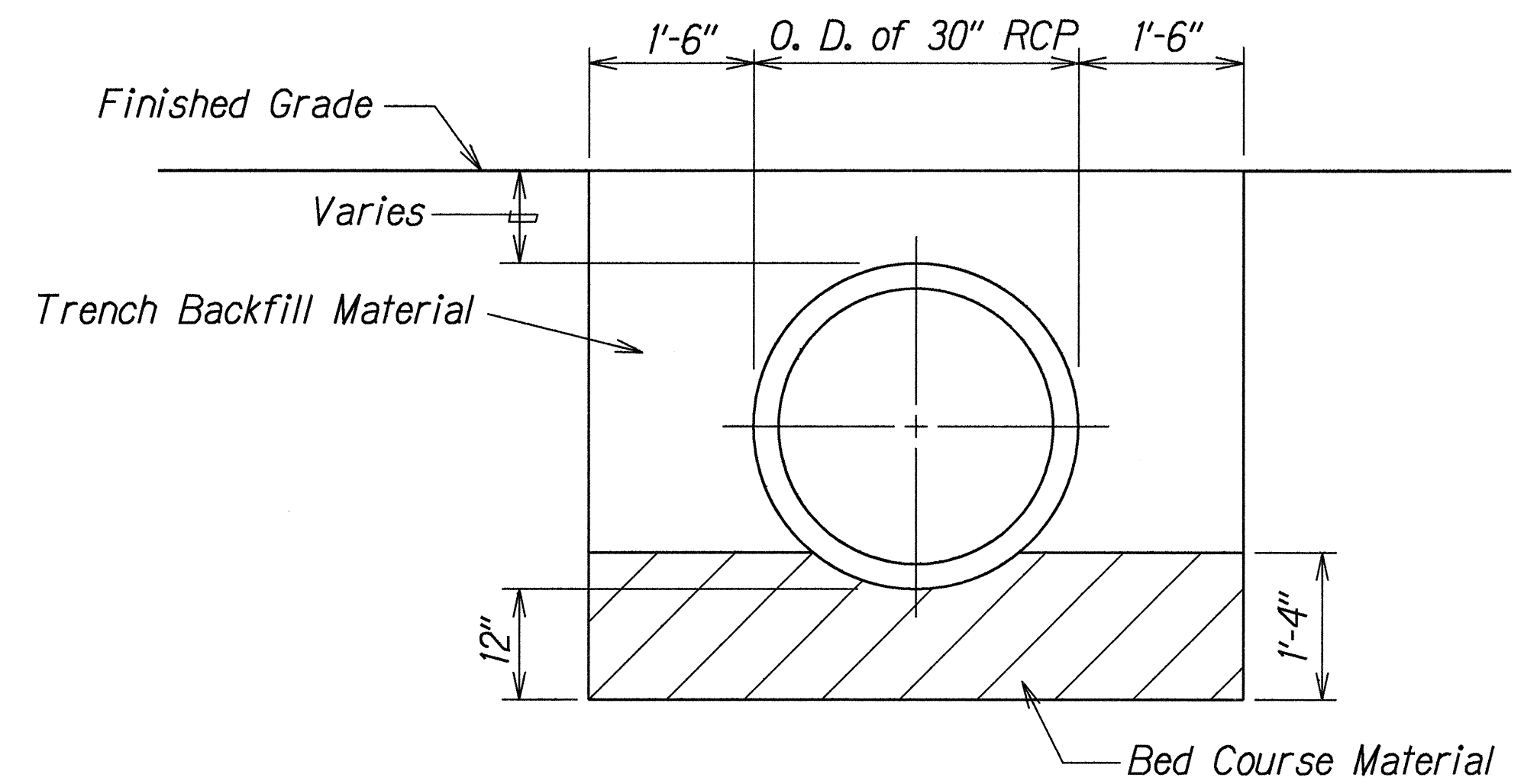


SECTION B
H4/H4

DETAIL OF CONCRETE COLLAR AT STA. 0+07 LT.



DETAIL OF TYPE 2(61616) GUTTER



TRENCH DETAIL

SURVEY PLOTTED BY	DATE
DRAWN BY JEC	7/19/01
CHECKED BY	
NOTE BOOK	
QUANTITIES BY	
CHECKED BY	

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
KALAE HIGHWAY
Guardrail and Shoulder Improvements
Maunaloa Hwy to Kalaupapa Lookout
Proj. No. STP-0470(5)

Scale: 3/4"=1'-0" Date: July, 2000

SHEET No. H4 OF 4 SHEETS