

PM: JUN
OPER: LKH, LSA, MAM*, PT
REVISED: 4/23/01

DATE: 06/04/99
PLOT SCALE: 1" = 1'
FILE: PI-drainage notes.dwg
JOB NO: 9810b

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	CHECKED BY	
	QUANTITIES BY	
NOTEBOOK	DESIGNED BY	
	DRAWN BY	
	CHECKED BY	
	QUANTITIES BY	
No.		

LIMITS OF PERFORATED UNDERDRAIN			
LOCATION	STATION		LENGTH(FT.)
	FROM	TO	
Farrington Highway (at edge of A.C.)	3+39	4+29	99
Kalaeloa Blvd. (along island)	(-) 5+19	(-) 4+85	34
Kalaeloa Blvd. (left shoulder)	(-) 4+97	(-) 4+30	67
Kalaeloa Blvd. (center median)	(-) 4+30	(-) 0+99	331
Kalaeloa Blvd. (right shoulder)	(-) 5+19	(-) 1+50	369
Kalaeloa Blvd. (center median)	0+95	3+31	236
Kalaeloa Blvd. (right shoulder)	1+00	8+32	732
Kalaeloa Blvd. (left shoulder)	3+31	5+07	176
Ramp CI (crossing ramp)	3+94	4+20	49
Ramp CI (right shoulder)	1+00	11+16	1016
Off Ramp (left shoulder)	0+83	6+00	560
Palailai Weaving Lanes (left shoulder)	Ramp CI Sta. 13+13	Weaving Lanes Sta. 4+97	549
On Ramp (left shoulder)	0+00	8+00	803
On Ramp (right shoulder)	5+80	8+00	220
Ramp IF (right shoulder)	0+44	15+34	1490
Ramp IF (left shoulder)	2+50	14+19	1169

LOCATION OF CLEANOUTS					
LOCATION	STATION	OFFSET	LOCATION	STATION	OFFSET
Kalaeloa Blvd.	(-) 5+27	24' - Rt.	Ramp CI	09+30	10' - Rt.
Kalaeloa Blvd.	(-) 5+20	52' - Lt.	Ramp CI	11+30	10' - Rt.
Kalaeloa Blvd.	(-) 4+84	22' - Lt.	Off Ramp	00+82	14' - Lt.
Kalaeloa Blvd.	(-) 4+39	16' - Lt.	Off Ramp	00+84	9' - Rt.
Kalaeloa Blvd.	(-) 4+37	25' - Rt.	Off Ramp	02+75	27' - Lt.
Kalaeloa Blvd.	(-) 4+29	35' - Lt.	Off Ramp	04+87	35' - Lt.
Kalaeloa Blvd.	(-) 3+47	23' - Rt.	Off Ramp	04+87	12' - Lt.
Kalaeloa Blvd.	(-) 3+43	25' - Rt.	Palailai Weaving Lanes	01+25	34' - Lt.
Kalaeloa Blvd.	(-) 1+41	28' - Rt.	On Ramp	01+25	12' - Lt.
Kalaeloa Blvd.	(-) 1+02	4' - Lt.	On Ramp	03+72	11' - Lt.
Kalaeloa Blvd.	00+91	4' - Lt.	On Ramp	04+37	23' - Lt.
Kalaeloa Blvd.	00+99	28' - Rt.	On Ramp	05+80	10' - Rt.
Kalaeloa Blvd.	01+84	3' - Lt.	On Ramp	08+02	10' - Rt.
Kalaeloa Blvd.	02+14	25' - Rt.	On Ramp	08+02	9' - Lt.
Kalaeloa Blvd.	02+27	13' - Lt.	Ramp IF	00+42	9' - Rt.
Kalaeloa Blvd.	02+42	22' - Rt.	Ramp IF	02+50	30' - Lt.
Kalaeloa Blvd.	02+42	26' - Rt.	Ramp IF	03+72	9' - Rt.
Kalaeloa Blvd.	02+65	19' - Rt.	Ramp IF	03+76	8' - Rt.
Kalaeloa Blvd.	03+08	25' - Rt.	Ramp IF	06+50	9' - Rt.
Kalaeloa Blvd.	03+09	33' - Rt.	Ramp IF	06+50	9' - Lt.
Kalaeloa Blvd.	03+34	34' - Lt.	Ramp IF	08+96	9' - Rt.
Kalaeloa Blvd.	04+98	34' - Rt.	Ramp IF	09+00	9' - Rt.
Kalaeloa Blvd.	05+09	34' - Lt.	Ramp IF	09+00	23' - Lt.
Kalaeloa Blvd.	08+34	34' - Rt.	Ramp IF	11+50	22' - Lt.
Kalaeloa Blvd.	08+38	50' - Lt.	Ramp IF	11+50	9' - Rt.
Ramp CI	03+25	9' - Rt.	Ramp IF	14+05	9' - Rt.
Ramp CI	04+05	10' - Rt.	Ramp IF	14+12	9' - Rt.
Ramp CI	05+25	9' - Rt.	Ramp IF	14+20	22' - Lt.
Ramp CI	07+26	10' - Rt.	Ramp IF	15+36	9' - Rt.
Ramp CI	07+30	10' - Rt.			

PROPOSED GUTTER AND TRANSITION SECTIONS				
LOCATION	TYPE	STATION		LENGTH(FT.)
		FROM	TO	
Kalaeloa Blvd. (Along Median)	PCC Integral Curb	2+22	3+40	118
Kalaeloa Blvd. (Right Edge)	Type 2 Transition	4+50	5+00	50
Kalaeloa Blvd. (Right Edge)	Type 2 Gutter (61614)	5+00	8+60	360
Off Ramp (Left Edge)	2AG Curb & Gutter	4+89	5+02	13

DRAINAGE 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 accomplish maintenance of flow. The cost 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 own expense.
- Only non-pneumatic type of drill as approved by the Engineer will be permitted for drilling holes in concrete. Where indicated on Plans, the approximate diameter of drilled holes for installation of dowels shall be 3/4", and voids after installing dowels shall be filled with epoxy grout as directed by the Engineer.
- Demolishing, removing, and disposing portions of existing concrete drainage inlets and gratings shall not be paid for separately but shall be considered incidental to the various Contract Items.
- For added reinforcing around culverts at new drainage structures, see Standard Plan H-04.
- Concrete shall be Class A unless otherwise noted.
- Chamfer all exposed concrete edges 1".
- Contractor shall clean all existing drain lines.

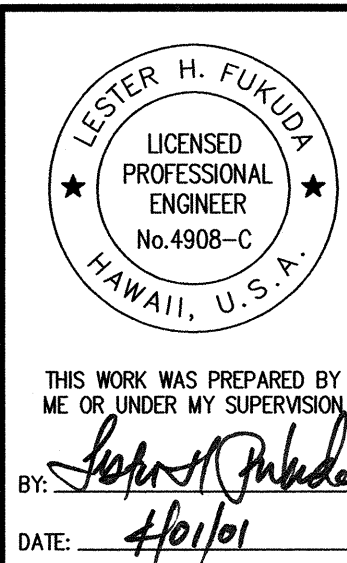
GRADING/DRAINAGE LEGEND

Existing	Proposed	
		Concrete Pavement
		A.C. Pavement
		Spot Elevations
		Top Curb Elevation
		Bottom Curb Elevation
		Contours
		Perforated Underdrain & Clean Out
		Non-perforated Underdrain
		Drain Line
		Grated Drain Inlet
		Storm Drain Manhole
		Catch Basin

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-NH-H1-1(239)	2001	55	103

ABBREVIATIONS

A.C.	Asphalt Concrete	O.C.	On Center
ARV	Air Relief Valve	O/S	Offset
BC	Bottom of Curb	OH	Overhead
B.V.C.	Beginning of Vertical Curve	P.C.	Point of Curvature
BL	Baseline	P.C.C.	Point of Compound Curve
BLVD.	Boulevard	P.I.V.C.	Point of Intersection of Vertical Curve
BOT	Bottom	P.R.C.	Point of Reverse Curve
C&C	City And County	P.T.	Point of Tangency
C.M.P.	Corrugated Metal Pipe	PAVT	Pavement
CB	Catch Basin	PCC	Portland Cement Concrete
Ch	Chord Length	PL	Property Line
C.O.	Cleanout	PROJ.	Project
CONC.	Concrete	R	Radius
COND.	Conduit	RD.	Road
D	Diameter	RFL	Reflector
D	Drain	RT.	Right
DI	Drain Inlet	S	Sewer
DIST.	District	S.E.	Superelevation
DTS	Department of Transportation Services	SDMH	Storm Drain Manhole
E	East	SL	Street Light
E.V.C.	End of Vertical Curve	SLB	Street Light Box
EL	Elevation	SMH	Sewer Manhole
ELEC	Electric	SN	Sign
ELEV.	Elevation	STA.	Station
EOH	Electrical Overhead	T	Top
EP	Edge of Pavement	T	Tangent
EUG	Underground Electric	TC	Top of Curb
EXIST.	Existing	TP	Top
FED.	Federal	TS	Top Stem
FT.	Feet	TSL/TSLB	Traffic Signal Light/Traffic Signal Light Box
G	Gas	TUG	Underground Telephone
GW	Guy Wire	TW	Top of Wall
H	Height	TYP.	Typical
HAW.	Hawaii	UP	Utility Pole
HECO.	Hawaiian Electric Company	V.C.	Vertical Curve
HORIZ.	Horizontal	VERT.	Vertical
ICV	Irrigation Control Valve	W	Water
INV	Invert	W/	With
L.F.	Linear Feet	W/O	Without
Lc	Length of Curve	WMH	Water Manhole
LT.	Left	WV	Water Valve
MAX.	Maximum		
MH	Manhole		
MIN.	Minimum		
N	North		
NO.	Number		

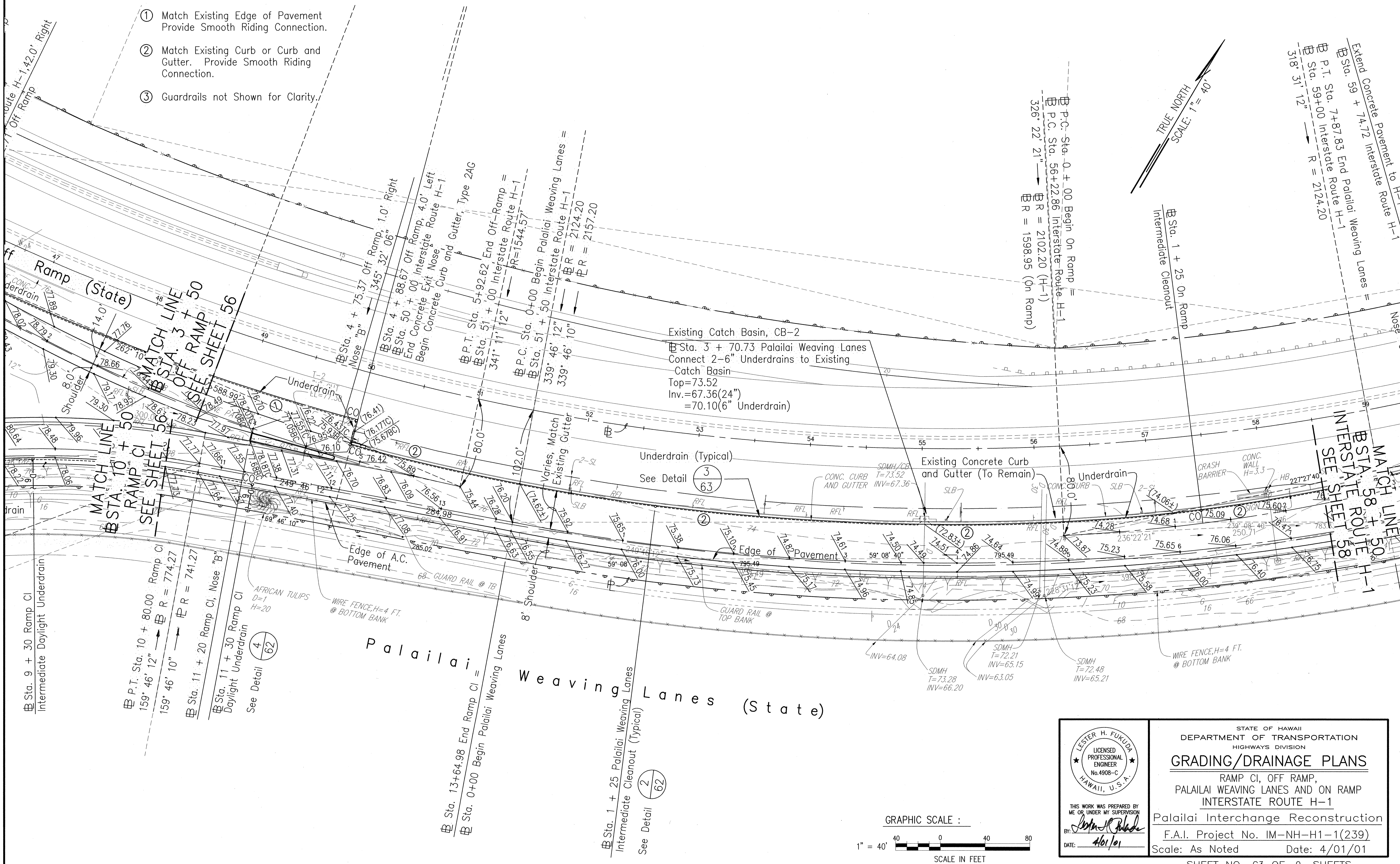


STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**GRADING/DRAINAGE NOTES,
LEGEND, AND ABBREVIATIONS**
INTERSTATE ROUTE H-1
Palailai Interchange Reconstruction
F.A.I. Project No. IM-NH-H1-1(239)
Scale: As Shown Date: 4/01/01
SHEET NO. G1 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-NH-H1-1(239)	2001	57	103

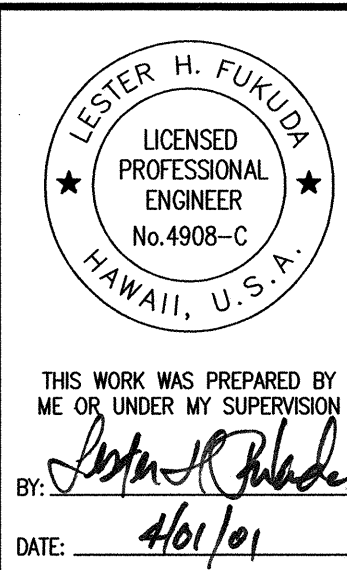
NOTES:

- ① Match Existing Edge of Pavement Provide Smooth Riding Connection.
- ② Match Existing Curb or Curb and Gutter. Provide Smooth Riding Connection.
- ③ Guardrails not Shown for Clarity.



DATE: 10/06/99
PLOT SCALE: 1"=1'
FILE: PL-GRADE.DWG
JOB NO: 9810B

DATE	SURVEY PLOTTED BY
	LKH
DATE	DESIGNED BY
	LSA/LKH/PT/MAM*
DATE	CHECKED BY

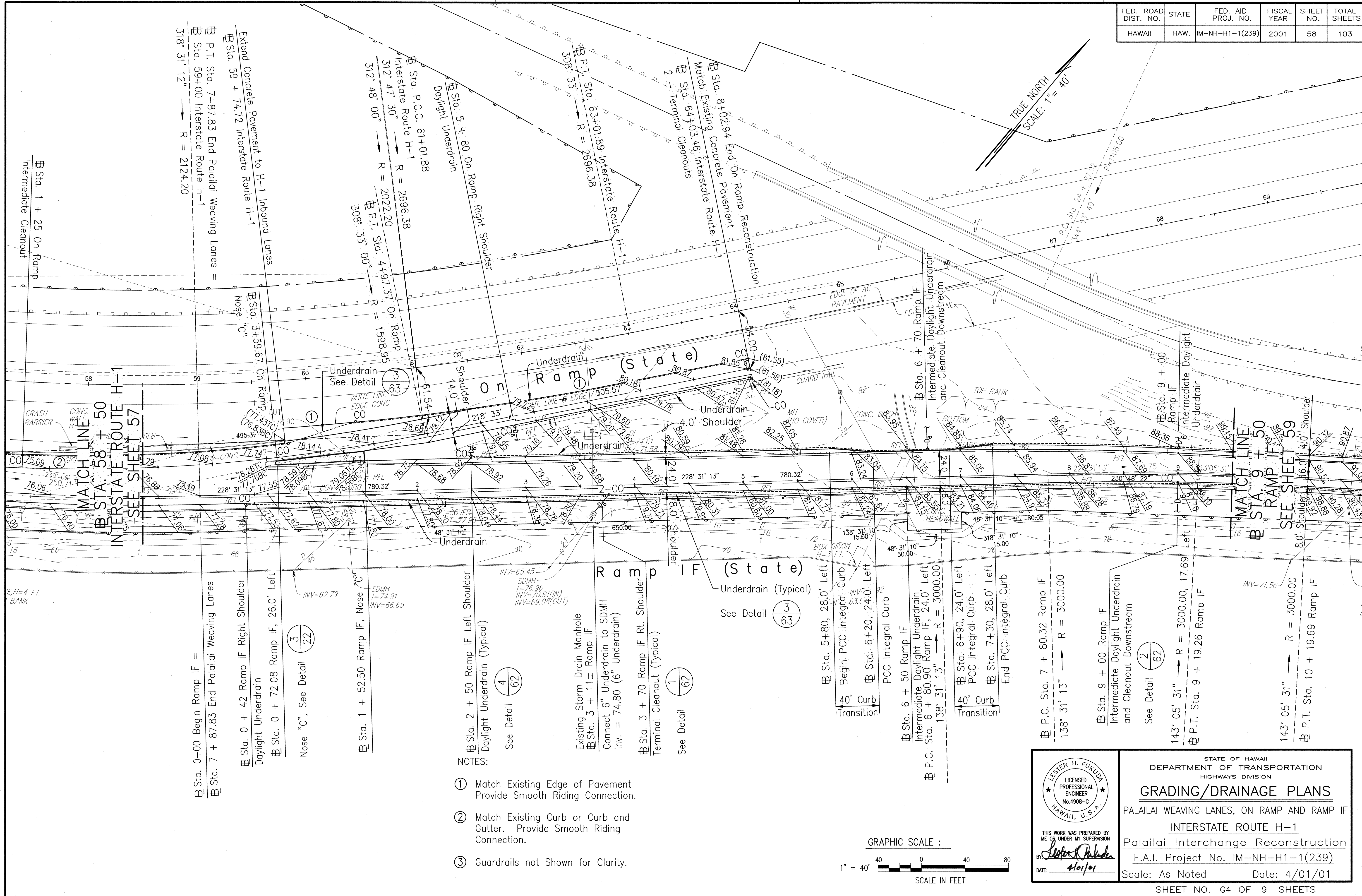


STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
GRADING/DRAINAGE PLANS
RAMP CI, OFF RAMP,
PALAILAI WEAVING LANES AND ON RAMP
INTERSTATE ROUTE H-1
Palailai Interchange Reconstruction
F.A.I. Project No. IM-NH-H1-1(239)
Scale: As Noted Date: 4/01/01
SHEET NO. 63 OF 9 SHEETS

ORIGINAL PLAN	DATE
DESIGNED BY	
TRACED BY	
QUANTITIES BY	
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DATE: 10/06/99
PLOT SCALE: 1"=1'
FILE: PI-GRADE.DWG
JOB NO. 9810B

PM: LKH
LSA/LKH/PT*/MAM
OPER: LKH
REVISED: 04/16/01

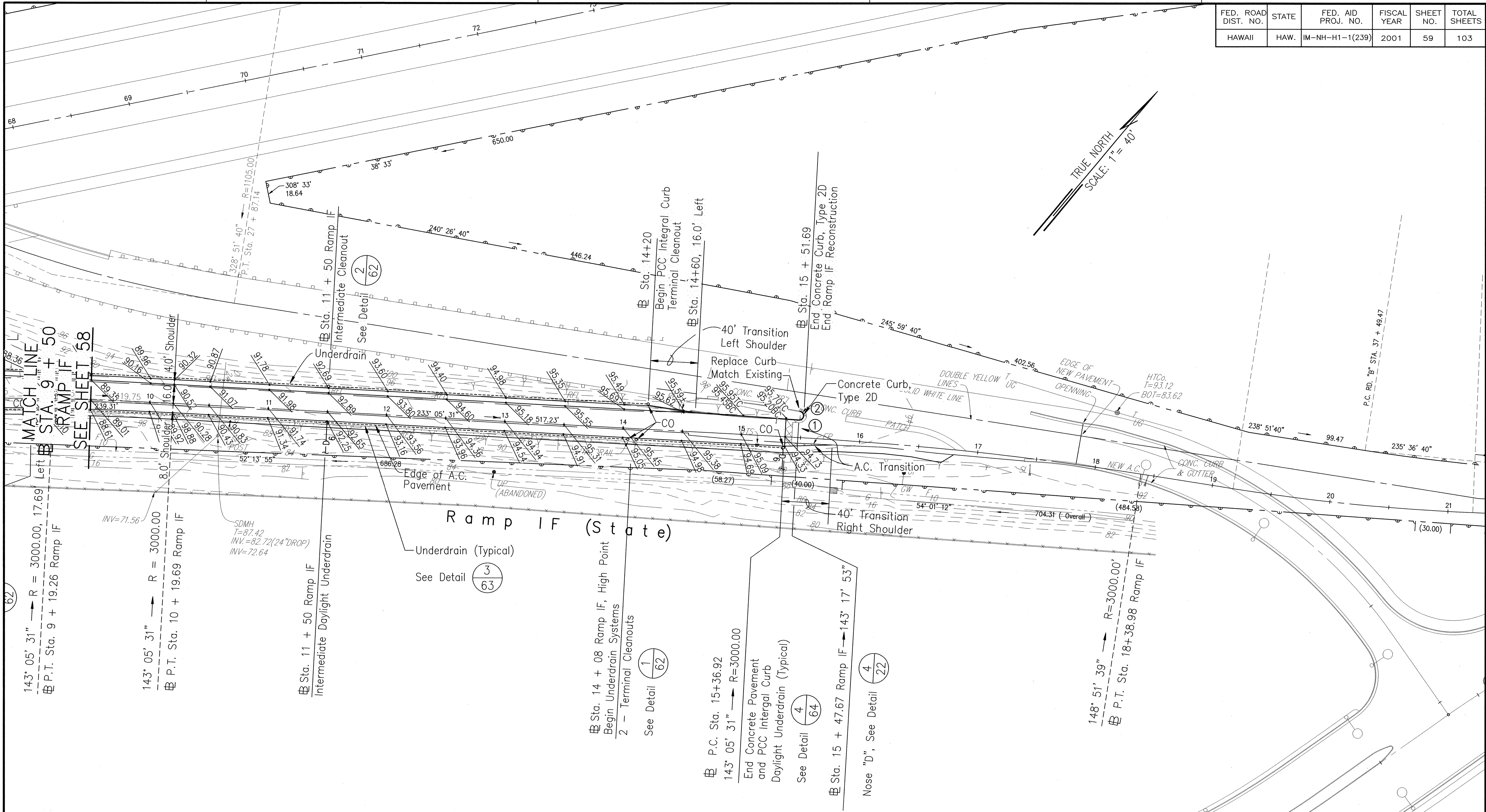


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-NH-H1-1(239)	2001	59	103

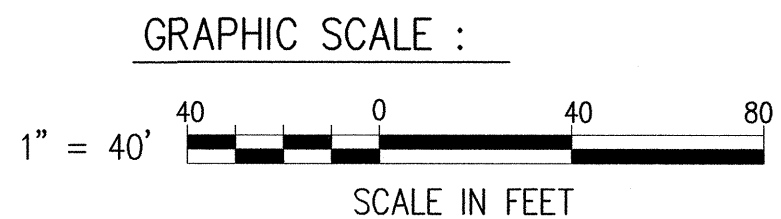
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 OPER: LSA/LKH/PT*/MAM
 FILE: PI-GRADE.DWG
 REVISED: 04/16/01
 JOB NO. 9810B

DATE: 10/06/99
 PM: LKH/LKH/PT*/MAM
 OPER: LSA/LKH/PT*/MAM
 FILE: PI-GRADE.DWG
 REVISED: 04/16/01
 JOB NO. 9810B

DATE	DATE
DESIGNED BY	DESIGNED BY
CHECKED BY	CHECKED BY
QUANTITIES BY	QUANTITIES BY
NOTED BY	NOTED BY
NO.	NO.



- NOTES:
- ① Match Existing Edge of Pavement Provide Smooth Riding Connection.
 - ② Match Existing Curb or Curb and Gutter. Provide Smooth Riding Connection.
 - ③ Guardrails not Shown for Clarity.



LESTER H. FUKUDA
 LICENSED PROFESSIONAL ENGINEER
 No. 4908-C
 HAWAII, U.S.A.

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

GRADING/DRAINAGE PLANS

RAMP IF

INTERSTATE ROUTE H-1

Palailai Interchange Reconstruction

F.A.I. Project No. IM-NH-H1-1(239)

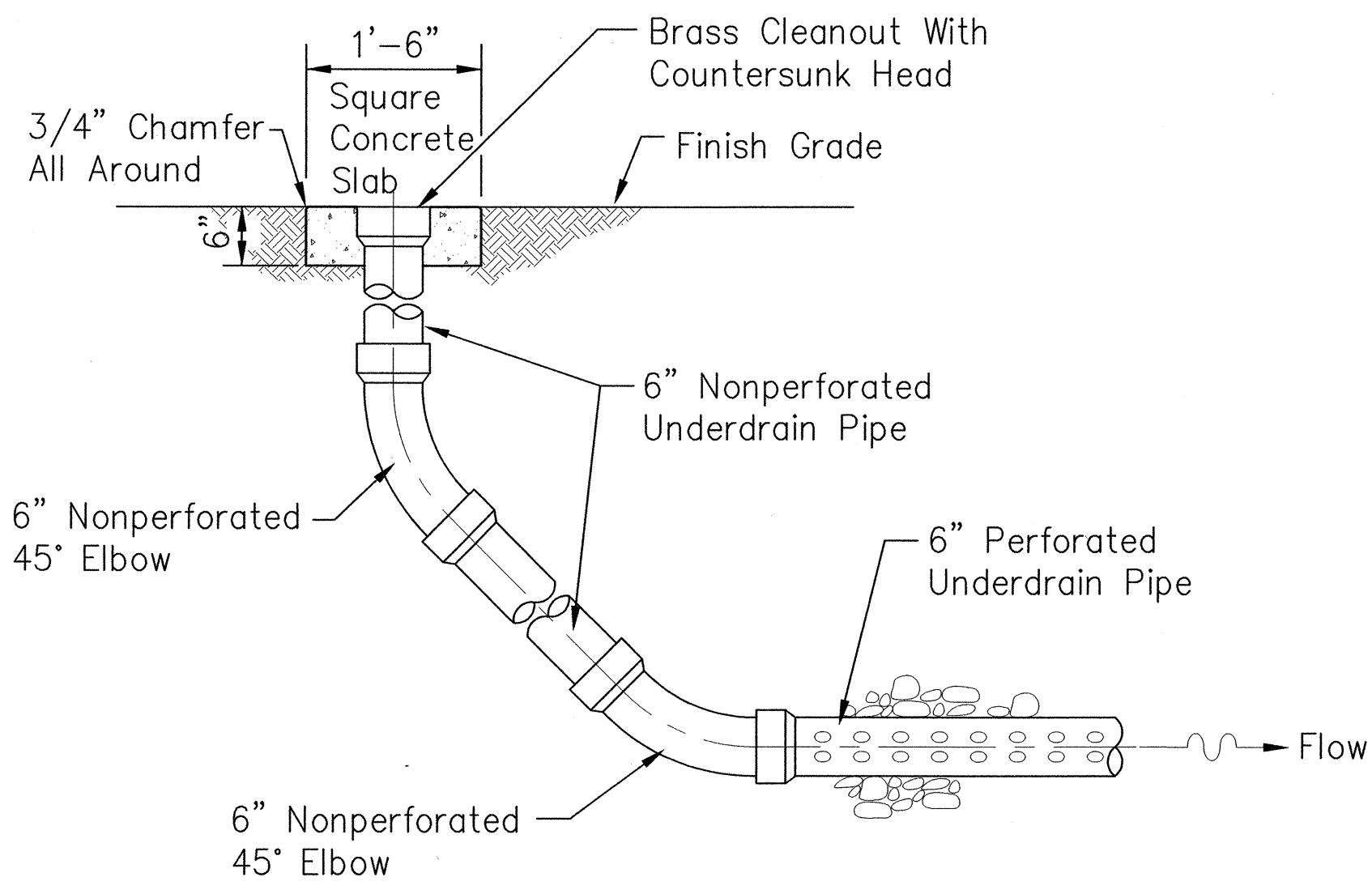
Scale: As Noted Date: 4/01/01

SHEET NO. 65 OF 9 SHEETS

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

DATE: 4/6/01

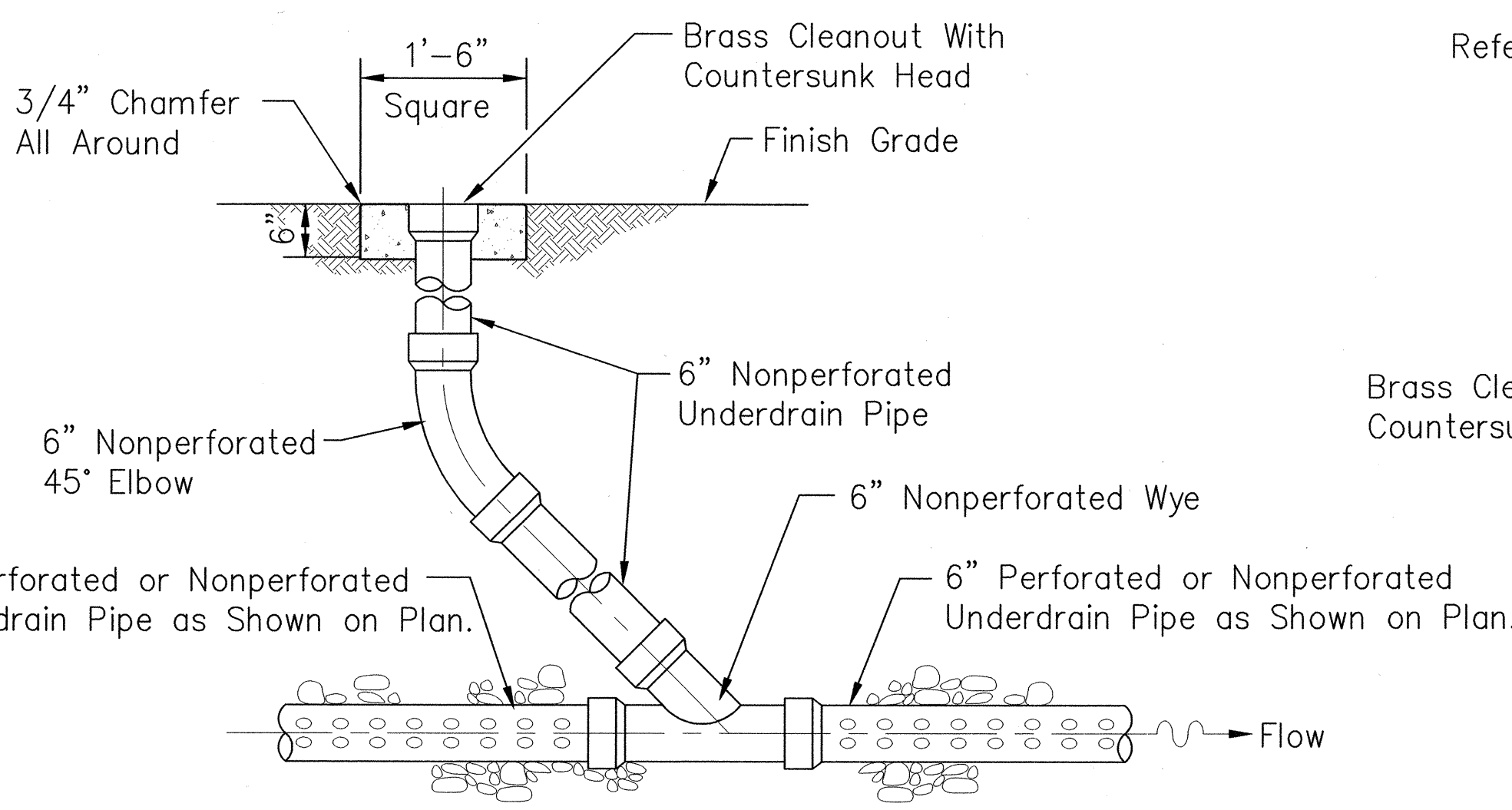
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-NH-H1-1(239)	2001	62	103



1
62

TERMINAL CLEANOUT

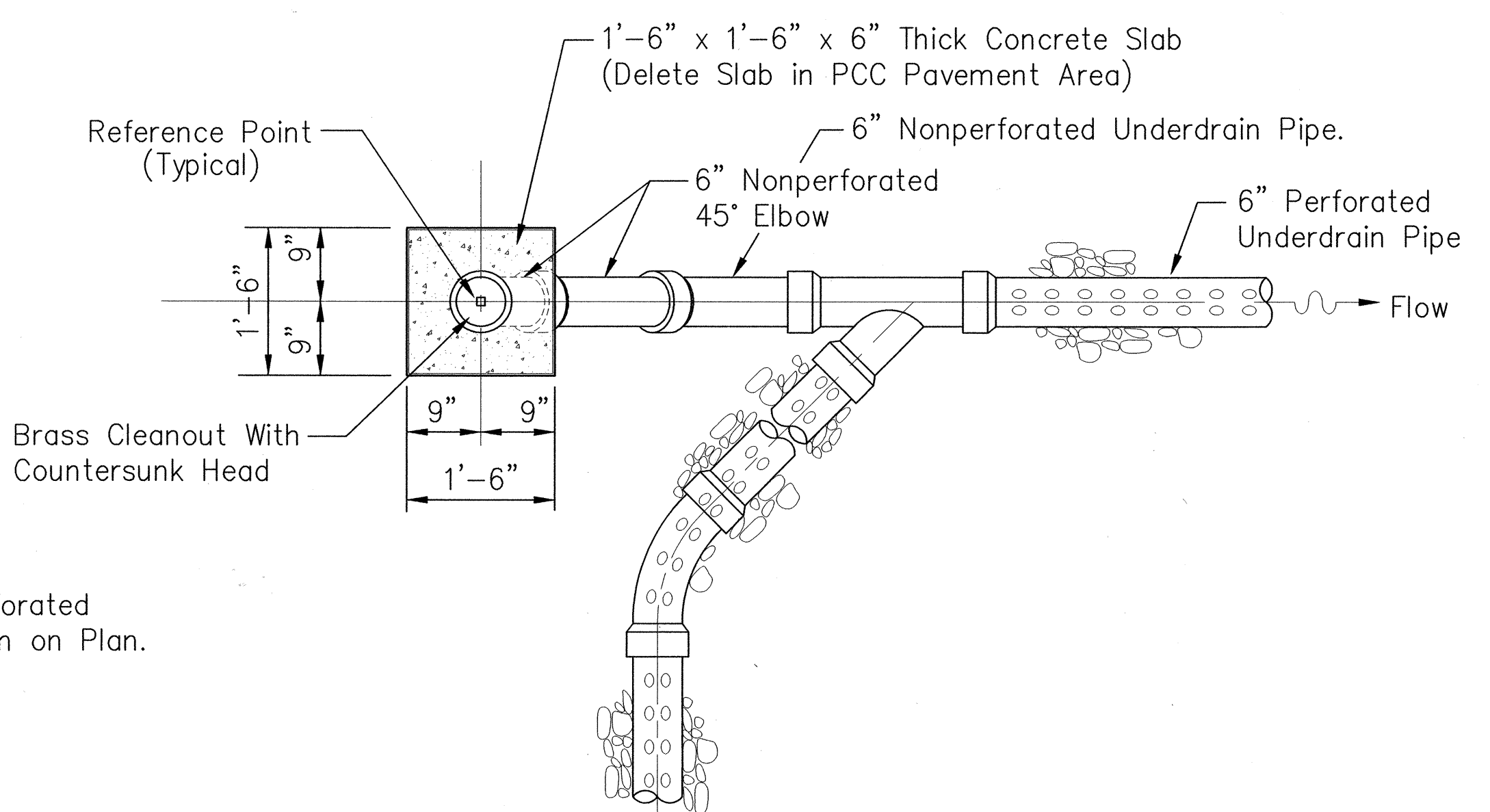
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2
62

INTERMEDIATE CLEANOUT

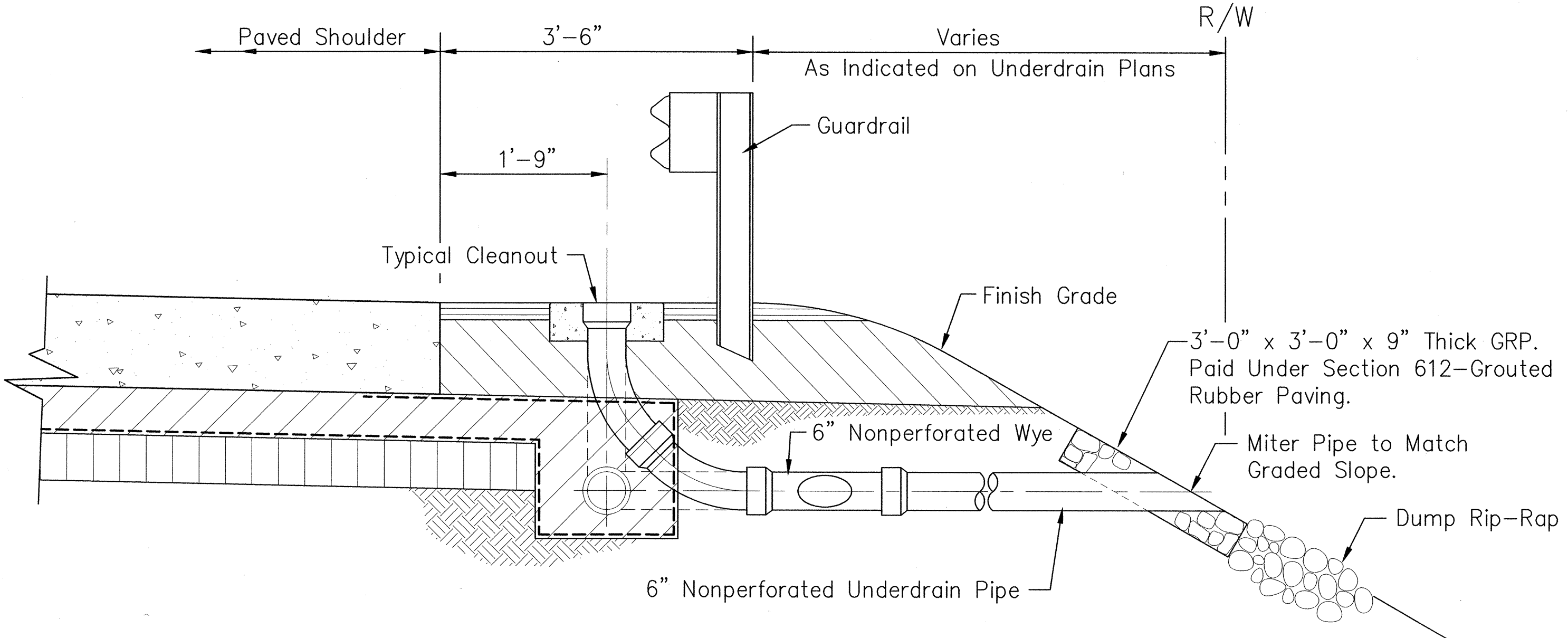
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3
62

TYPICAL CLEANOUT PLAN

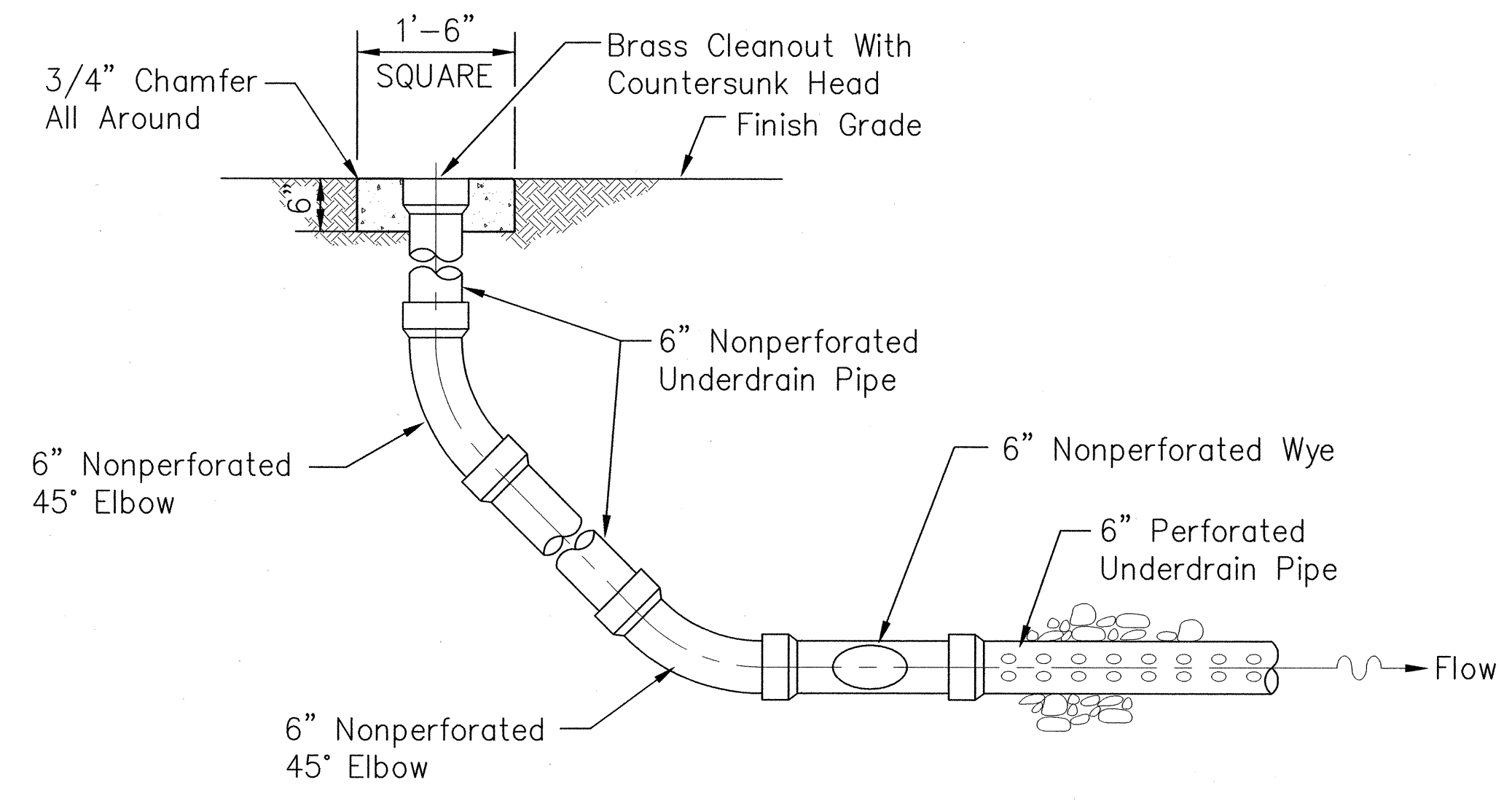
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4
62

DAYLIGHTING UNDERDRAIN IN GRADED AREAS

Not to Scale



5
62

CHANGE-IN-DIRECTION CLEANOUT

Not to Scale

DATE: 10/07/99
PLOT SCALE: 1" = 1'
FILE: PI-Dim-det-1.dwg
Job No: 9810B

DATE	SURVEY PLOTTED BY
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DATE	CHECKED BY

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

DATE: 4/01/01

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

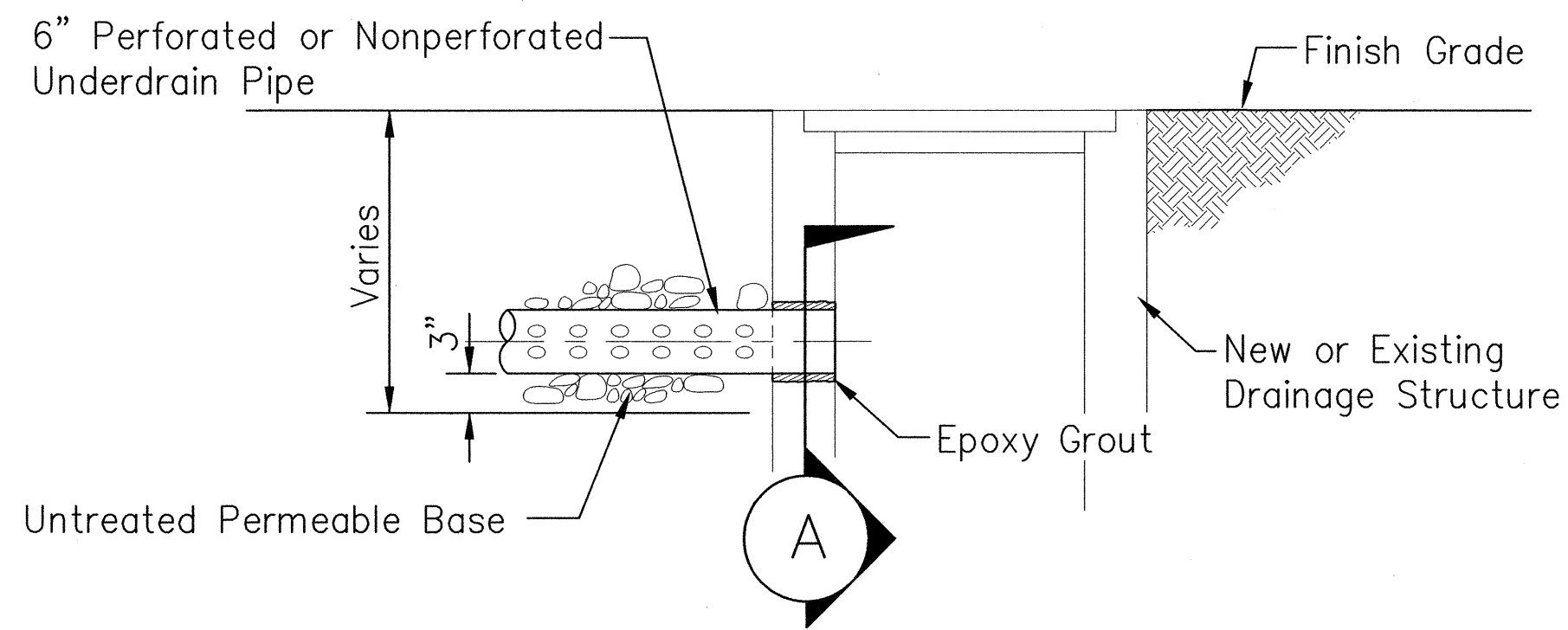
UNDERDRAIN DETAILS

INTERSTATE ROUTE H-1
Palailai Interchange Reconstruction
F.A.I. Project No. IM-NH-H1-1(239)

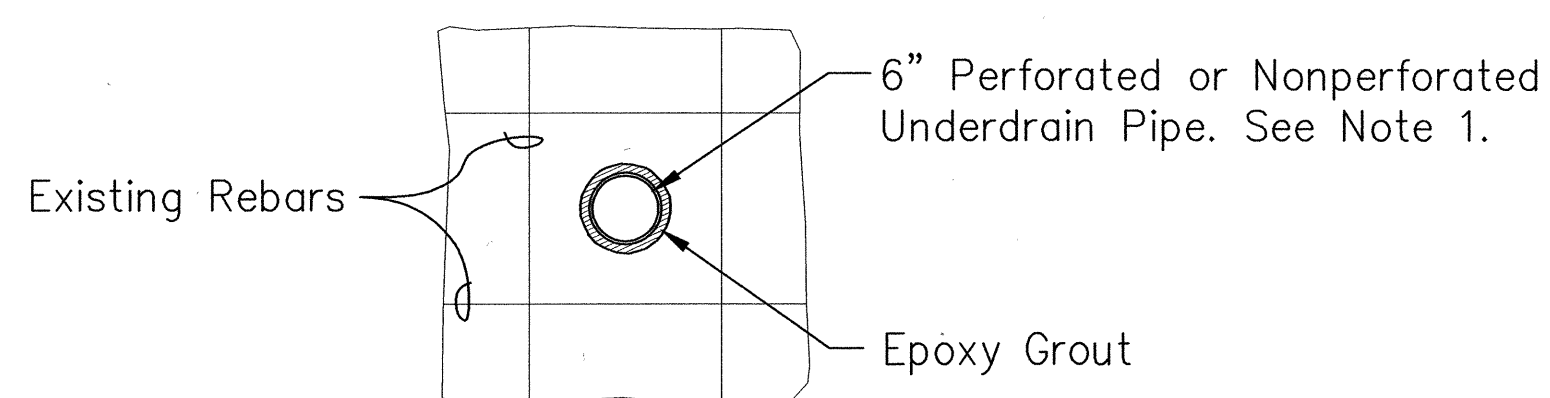
Scale: As Shown Date: 4/01/01

SHEET NO. 08 OF 9 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-NH-H1-1(239)	2001	63	103



ELEVATION



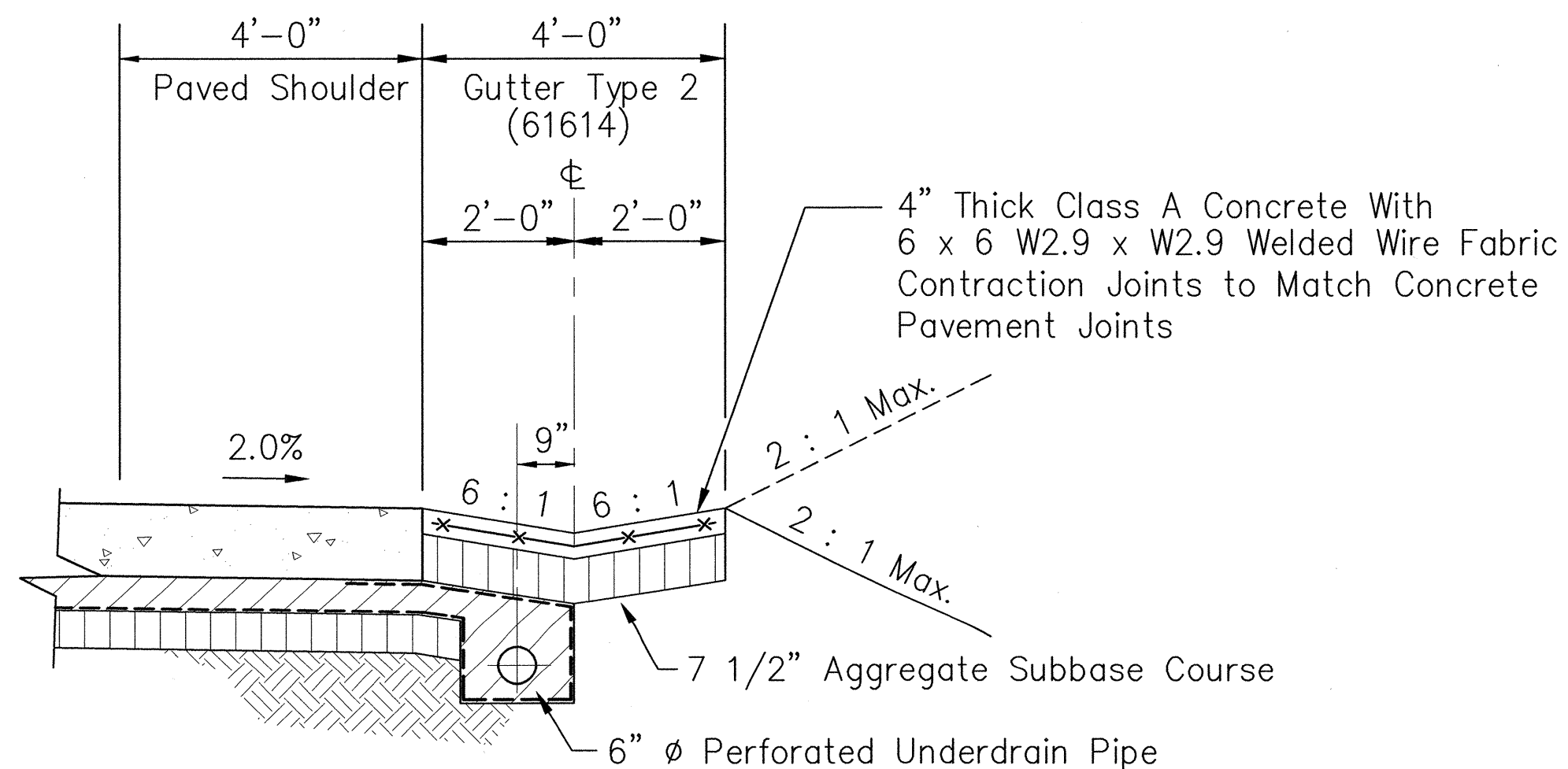
NOTE

1. The Contractor Shall Avoid Cutting The Existing Rebars. In Case The Pipe Opening Interferes With The Existing Rebars, The Opening Shall Be Enlarged And The Location Of The Pipe Shall Be Adjusted To Pass Between The Existing Rebars As Shown. The Enlarged Hole Shall Be Patched With Epoxy Grout.

SECTION "A"

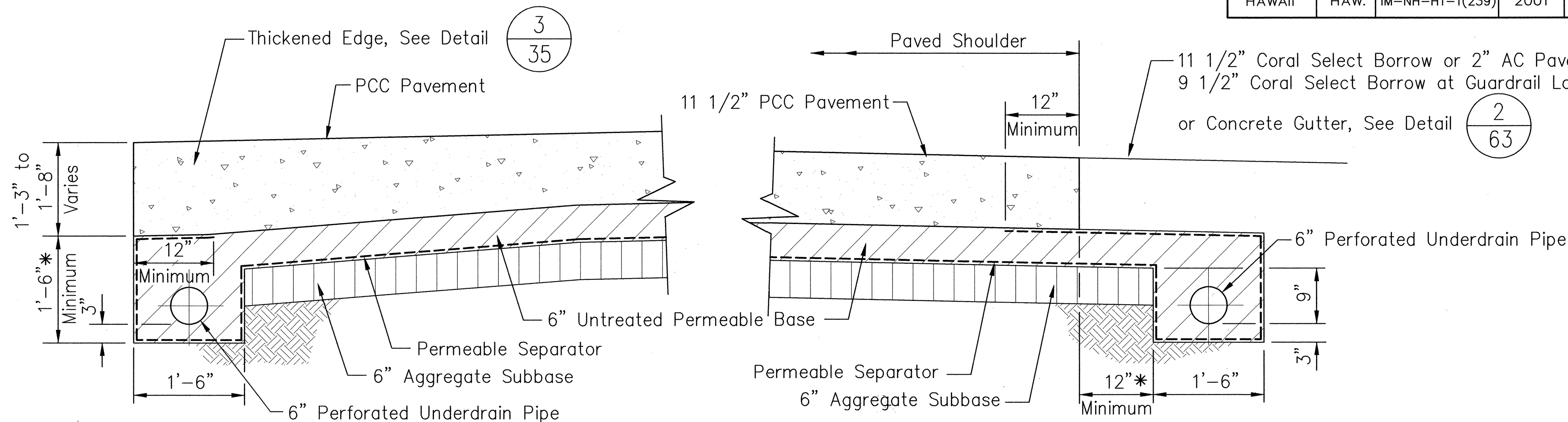
1 CONNECTION DETAIL AT DRAINAGE STRUCTURES

NOT TO SCALE



2 GUTTER, TYPE 2 (61614) DETAIL

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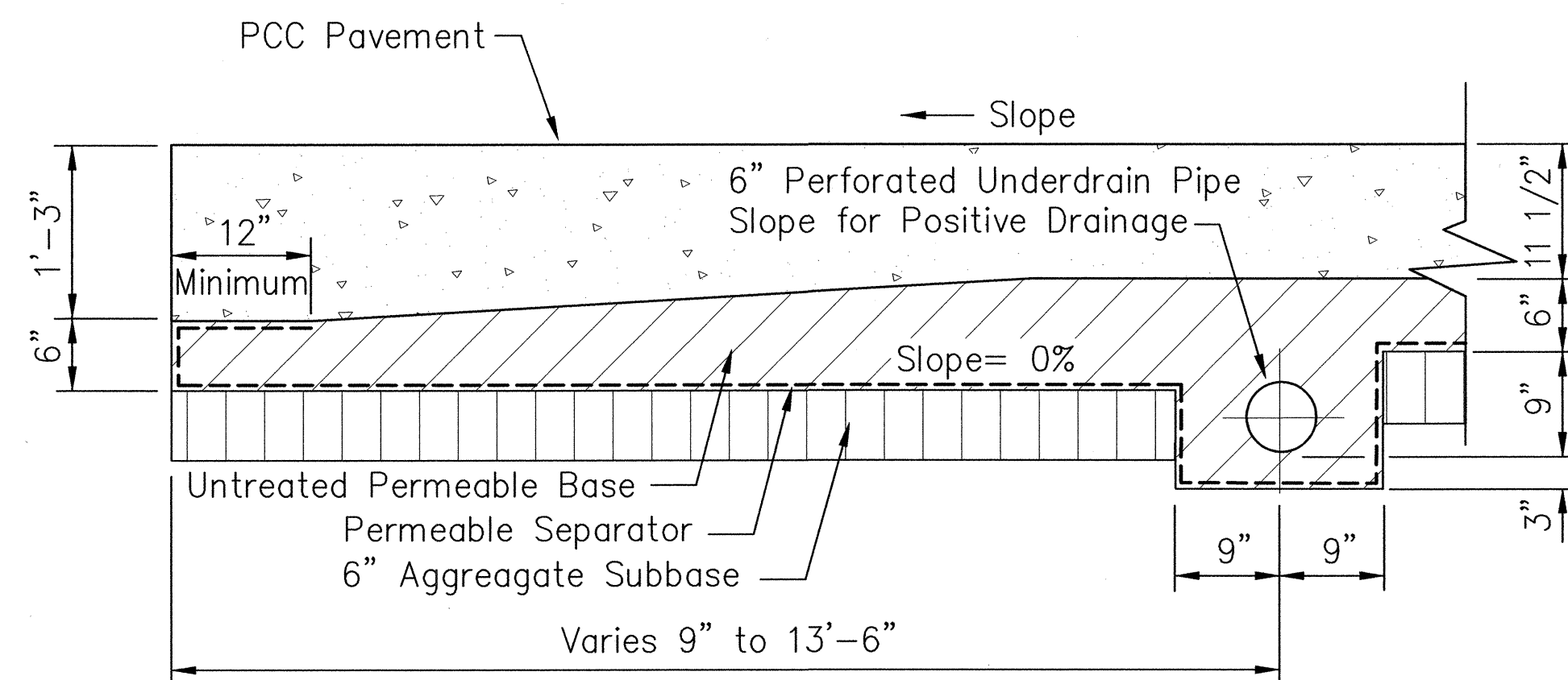


* Provide positive slope on pipe to drain at exit nose at Off-Ramp.

AT CONNECTION TO EXISTING PAVEMENT

* Extend untreated permeable base and permeable separator. Locate underdrain under low point of concrete gutter.

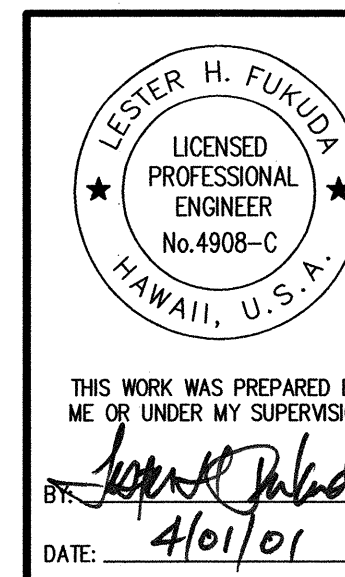
AT EDGE OF PAVED SHOULDER



AT ON-RAMP CONNECTION TO EXISTING PAVEMENT

3 UNDERDRAIN DETAIL

Not to Scale



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

UNDERDRAIN DETAILS

INTERSTATE ROUTE H-1
Palailai Interchange Reconstruction
F.A.I. Project No. IM-NH-H1-1(239)

Scale: As Shown Date: 4/01/01

SHEET NO. G9 OF 9 SHEETS