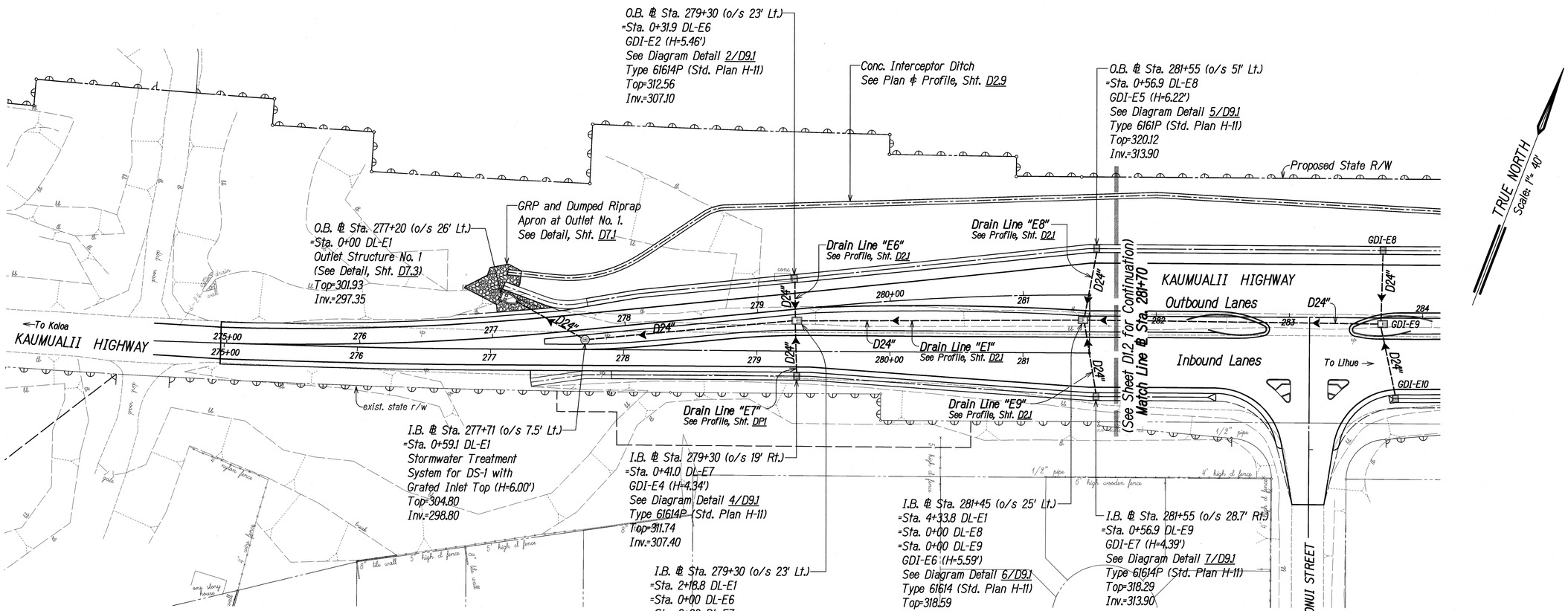
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	130	452



DRAINAGE PLAN

SCALE: 1" = 40'

Legend:

- Drain Structure, Type as noted
- D30" — Drain Line, Direction of flow; Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

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GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.

5-11-09

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Glenn K. Ikeda
Parsons, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

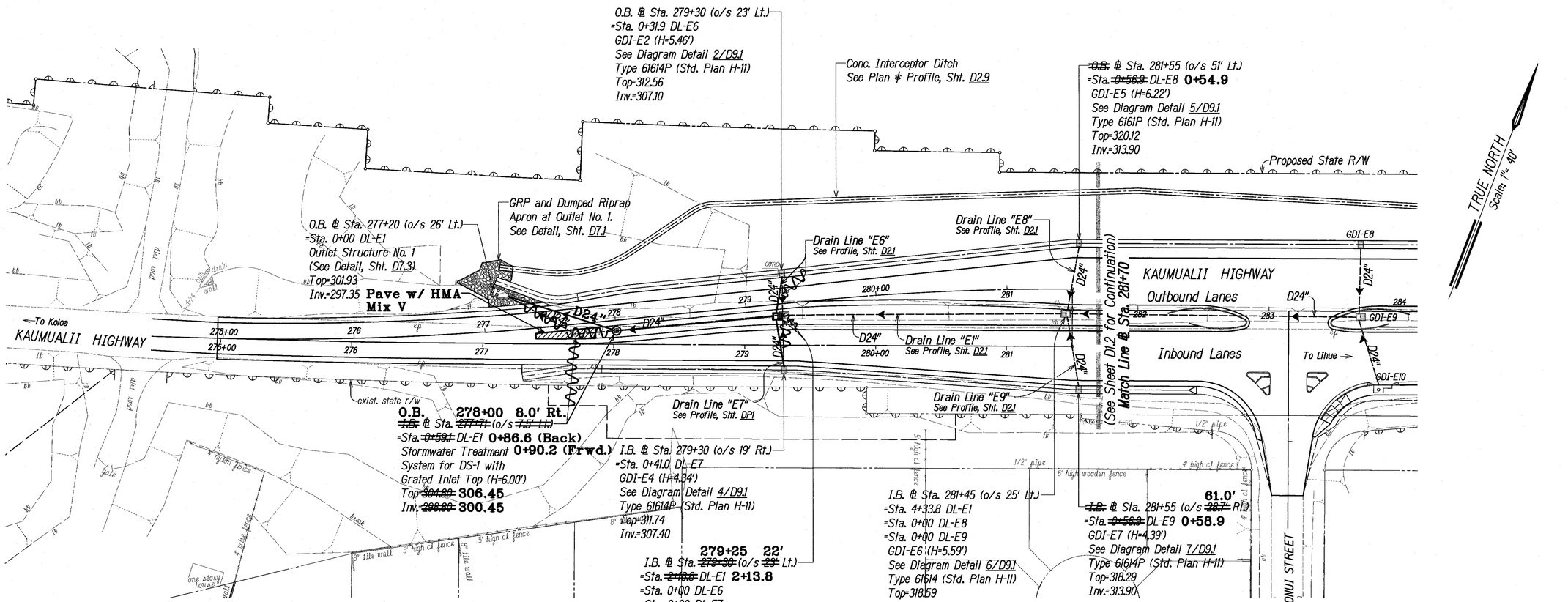
DRAINAGE PLAN
℄ STA. 274+96± TO ℄ STA. 281+70

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: MAY 2009

SHEET No. D1.1 OF D1.13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	130	452



DRAINAGE PLAN
SCALE: 1" = 40'

LEGEND FOR AS-BUILT POSTINGS

~~^^^^~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

Legend:

- Drain Structure, Type as noted
- D30" — Drain Line, Direction of flow; Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

ORIGINAL PLAN	DRAWN BY	TRACED BY	DESIGNED BY	QUANTITIES BY	CHECKED BY	DATE
NOTE BOOK						
No.						

GLENN K. IKEDA
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Parkin, Inc.
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LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

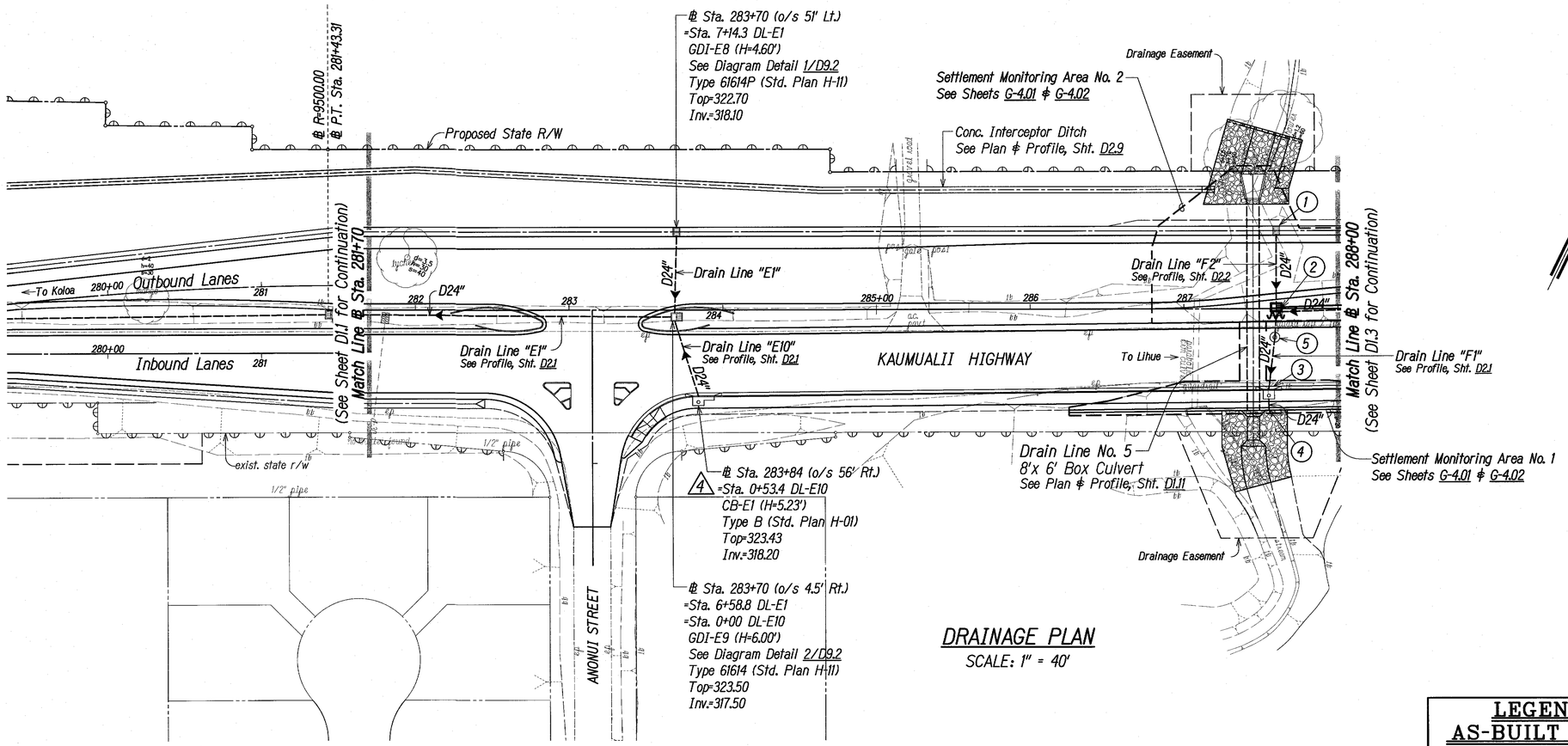
DRAINAGE PLAN
℄ STA. 274+96± TO ℄ STA. 281+70

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: JAN. 2010

SHEET No. D1.1 OF D1.13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.131	452



DRAINAGE PLAN

SCALE: 1" = 40'

LEGEND FOR AS-BUILT POSTINGS

~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

Legend:

- Drain Structure, Type as noted
- D30" → Drain Line, Direction of flow / Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

(1) ℄ Sta. 287+60 (o/s 51' Lt.) — 7
=Sta. ~~0+53.0~~ DL-F2 **0+50**
GDI-F1 (H=8.33')
See Diagram Detail 4/D9.2
Type 61614P (Std. Plan H-11)
Top=327.13
Inv.=318.80

(2) ℄ Sta. 287+60 (o/s ~~2' Rt.~~ **1' Lt.**) — 7
=Sta. ~~0+63.7~~ DL-F1 **0+66.7**
=Sta. 0+00 DL-F2
GDI-F2 (H=9.22')
See Diagram Detail 5/D9.2
Type 61614 (Std. Plan H-11)
Top=~~327.52~~ **327.80**
Inv.=319.40
Inv.=318.30

(3) ℄ Sta. 287+55 (o/s 52.45' Rt.) — 4, 7
=Sta. 0+13.0 DL-F1
CB-F2 (H=12.49)
Type D (Std. Plan H-01)
Top=328.09
Inv.=317.40
Inv.=315.60

(4) ℄ Sta. 287+55 (o/s 65.45' Rt.)
=Sta. 0+00 DL-F1
24" ø Pipe Outlet Through New Wall
Inv.=314.30

(5) ℄ Sta. 287+59 (o/s 18.4' Rt.) — 7
=Sta. 0+47.2 DL-F1
Stormwater Treatment
System for DS-2 (H=10.38')
Top=328.38
Inv.=318.00

DATE	REVISION
9/27/10	7 Revised Structures on Drain Lines "F1" and "F2".
2/01/10	4 Revised Drain Structures on Drain Lines "E10" and "F1".

GLENN K. IKEDA
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THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN
℄ STA. 281+70 TO ℄ STA. 288+00

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: JAN. 2010

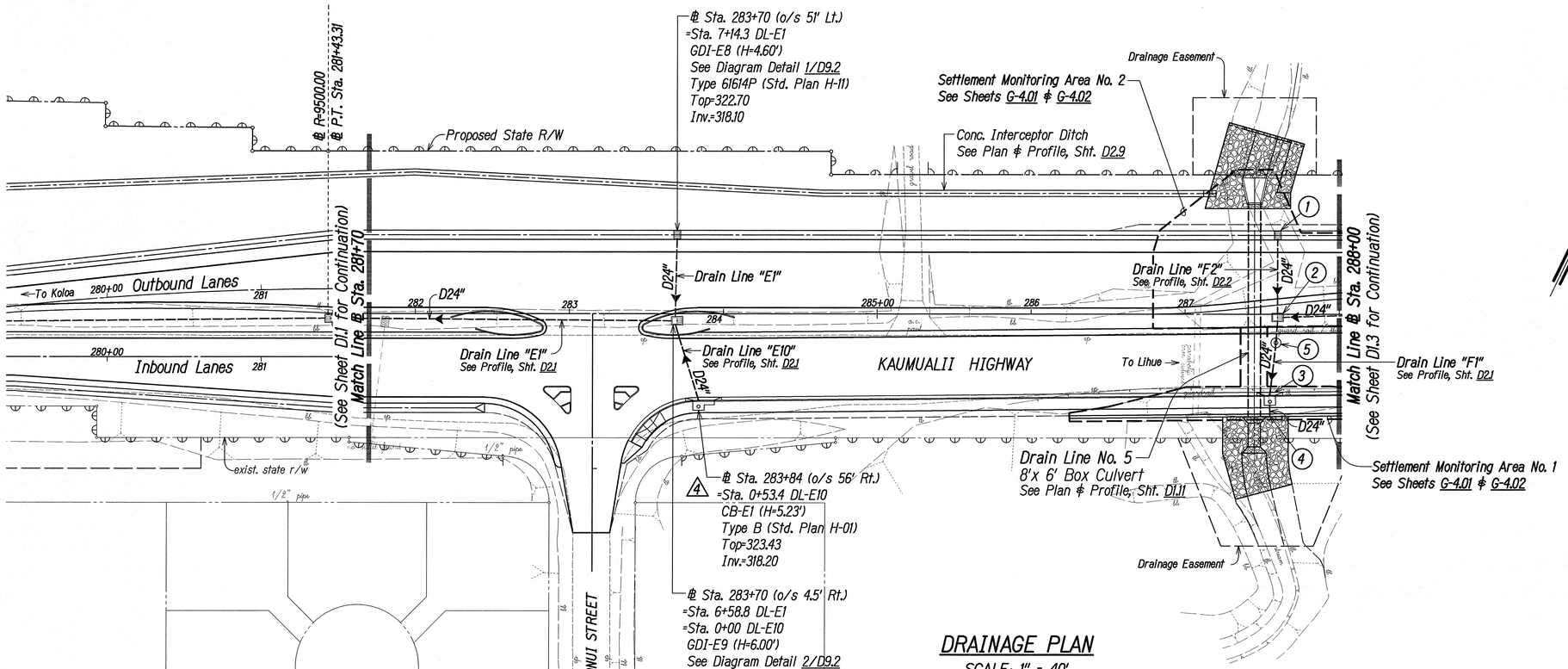
SHEET No. D1.2 OF D1.13 SHEETS

ORIGINAL PLAN	NOTE BOOK	No.	SURVEY PLOTTED BY	DRAWN BY	TRACED BY	DESIGNED BY	QUANTITIES BY	CHECKED BY	DATE

"AS-BUILT"

C.O. 131

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.131	452



DRAINAGE PLAN
SCALE: 1" = 40'

Legend:

- Drain Structure, Type as noted
- D30" → Drain Line, Direction of flow / Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- // Cut & Plug Exist. Drain Line

(1) ℄ Sta. 287+60 (o/s 51' Lt.)
=Sta. 0+53.0 DL-F2
GDI-F1 (H=4.33')
See Diagram Detail 4/D9.2
Type 6161 4P (Std. Plan H-11)
Top=327.13
Inv.=322.80

(2) ℄ Sta. 287+60 (o/s 2' Rt.)
=Sta. 0+63.7 DL-F1
=Sta. 0+00 DL-F2
GDI-F2 (H=8.12')
See Diagram Detail 5/D9.2
Type 61614 (Std. Plan H-11)
Top=327.52
Inv.=321.80
Inv.=319.40

(3) ℄ Sta. 287+55 (o/s 52.45' Rt.)
=Sta. 0+13.0 DL-F1
4 CB-F2 (H=12.49)
Type D (Std. Plan H-01)
Top=328.09
Inv.=318.50
Inv.=315.60

(4) ℄ Sta. 287+55 (o/s 65.45' Rt.)
=Sta. 0+00 DL-F1
24" Ø Pipe Outlet Through New Wall
Inv.=314.30

(5) ℄ Sta. 287+59 (o/s 18.4' Rt.)
=Sta. 0+47.2 DL-F1
Stormwater Treatment
System for DS-2 (H=9.28')
Top=328.38
Inv.=319.10

DATE	REVISION
2/01/10	4 Revised Drain Structures on Drain Lines "E10" and "F1".

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN
℄ STA. 281+70 TO ℄ STA. 288+00

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: JAN. 2010

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2-1-10
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

SHEET No. D1.2 OF D1.13 SHEETS

C.O. 131

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

U82: STATE\DOT\KAUMUALI-1\PHASE1A REVISION\PLANS\C01-01.02-PLN2.dwg 1/15/10

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	132	452

Kauai Community College

℄ Sta. 290+56 (o/s 11.5' Lt.)
Deflect 24" HDPE Drain
1-24" HDPE Coupling Adapter

℄ Sta. 292+~~94.22~~ **92.22** (o/s 96' Lt.)
=Sta. 1+46.5 DL-6
CB-6B (H=4.93')
Type C (Std. Plan H-01)
Top=334.10
Inv.=329.17

℄ Sta. 293+71.17 (o/s 97.28' Lt.)
=Sta. 0+69.5 DL-6
CB-6A (H=6.27')
Type C (Std. Plan H-01)
Top=334.67
Inv.=~~326.40~~ **328.70**

℄ Sta. 294+12 (o/s 56' Lt.)
=Sta. 7+66.6 DL-F1
CB-F4 (H=5.69')
Type C (Std. Plan H-01)
Top=335.89
Inv.=330.20

℄ Sta. 294+40.3 (o/s 90.3' Lt.)
=Sta. 0+00 DL-6
Cut & Plug Exist. 24" Conn.
Remove Exist. 24" Conn. & Replace w/ New 24" Drain Conn. at Same Invert.
Inv.=~~327.73~~ **328.35**

Settlement Monitoring Area No. 2
See Sheets G-4.01 & G-4.02

℄ Sta. 289+90 (o/s ~~5'~~ **8'** Lt.)
=Sta. ~~2+93.8~~ DL-F1 **2+96.8**
=Sta. 0+00 DL-F3
=Sta. 0+00 DL-F4
GDI-F5 (H=5.50')
See Diagram Detail 1/D9.3
Type 61614 (Std. Plan H-11)
Top=~~330.30~~ **330.54**
Inv.=324.80

℄ Sta. 289+90 (o/s 51' Lt.)
=Sta. ~~0+46~~ DL-F3 **0+43**
GDI-F4 (H=4.39')
See Diagram Detail 7/D9.2
Type 61614P (Std. Plan H-11)
Top=329.89
Inv.=325.50

℄ Sta. 291+80 (o/s 51' Lt.)
=Sta. 0+42 DL-F5
GFI-F8 (H=4.80')
See Diagram Detail 4/D9.3
Type 61614P (Std. Plan H-11)
Top=332.40
Inv.=327.60

℄ Sta. 292+58 (o/s 8' Lt.)
=Sta. 5+61.8 DL-F1
DMH-F1 (H=6.20')
See Diagram Detail 1/D9.7
Type A (Std. Plan H-05.)
Top=334.00
Inv.=327.80

℄ Sta. 291+80 (o/s 9' Lt.)
=Sta. ~~1+83.8~~ DL-F1 **4+86.8**
=Sta. 0+00 DL-F5
=Sta. 0+00 DL-F6
GDI-F6 (H=6.14')
See Diagram Detail 2/D9.3
Type 61614 (Std. Plan H-11)
Top=332.94
Inv.=326.80

℄ Sta. 291+80 (o/s 52' Rt.)
=Sta. 0+61.0 DL-F6
CB-F3 (H=5.69')
Type B (Std. Plan H-01)
Top=333.19
Inv.=327.50

℄ Sta. 290+00 (o/s 52' Rt.)
=Sta. ~~0+57.9~~ DL-F4 **0+60.9**
CB-F1 (H=5.63')
Type B (Std. Plan H-01)
Top=331.03
Inv.=325.40

℄ Sta. 294+~~08~~ **06** (o/s 52' Rt.)
=Sta. 0+47.9 DL-F7
CB-F5 (H=5.66')
Type B (Std. Plan H-01)
Top=335.86
Inv.=330.20

℄ Sta. 294+00 (o/s 5' Rt.)
=Sta. 7+04.4 DL-F1
=Sta. 0+00 DL-F7
GDI-F7 (H=6.57')
See Diagram Detail 3/D9.3
Type 61614 (Std. Plan H-11)
Top=336.07
Inv.=329.50

Settlement Monitoring Area No. 1
See Sheets G-4.01 & G-4.02

Settlement Monitoring Area No. 3
See Sheets G-4.01 & G-4.02

Drain Line "F3"
See Profile, Sht. D2.2

Drain Line "F5"
See Profile, Sht. D2.2

Drain Line "F1"
See Profile, Sht. D2.1

Drain Line "F4"
See Profile, Sht. D2.2

Drain Line "F6"
See Profile, Sht. D2.2

Drain Line "6"
See Profile, Sht. D2.8

Drain Line "F1"
See Profile, Sht. D2.1

Drain Line "F7"
See Profile, Sht. D2.2

D24"

To Koloa

To Lihue

exist. state r/w

Proposed State R/W

Outbound Lanes

KAUMUALII HIGHWAY

Inbound Lanes

(See Sheet D1.2 for Continuation)
Match Line ℄ Sta. 288+00

(See Sheet D1.4 for Continuation)
Match Line ℄ Sta. 298+00

℄ P.C. Sta. 296+59.04
℄ R = 6000.00

PUHI ROAD

TRUE NORTH
Scale: 1" = 40'

DRAINAGE PLAN
SCALE: 1" = 40'

Legend:
- Drain Structure, Type as noted
- D30" → Drain Line, Direction of flow / Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

LEGEND FOR AS-BUILT POSTINGS

~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

GLENN K. IKEDA
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ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

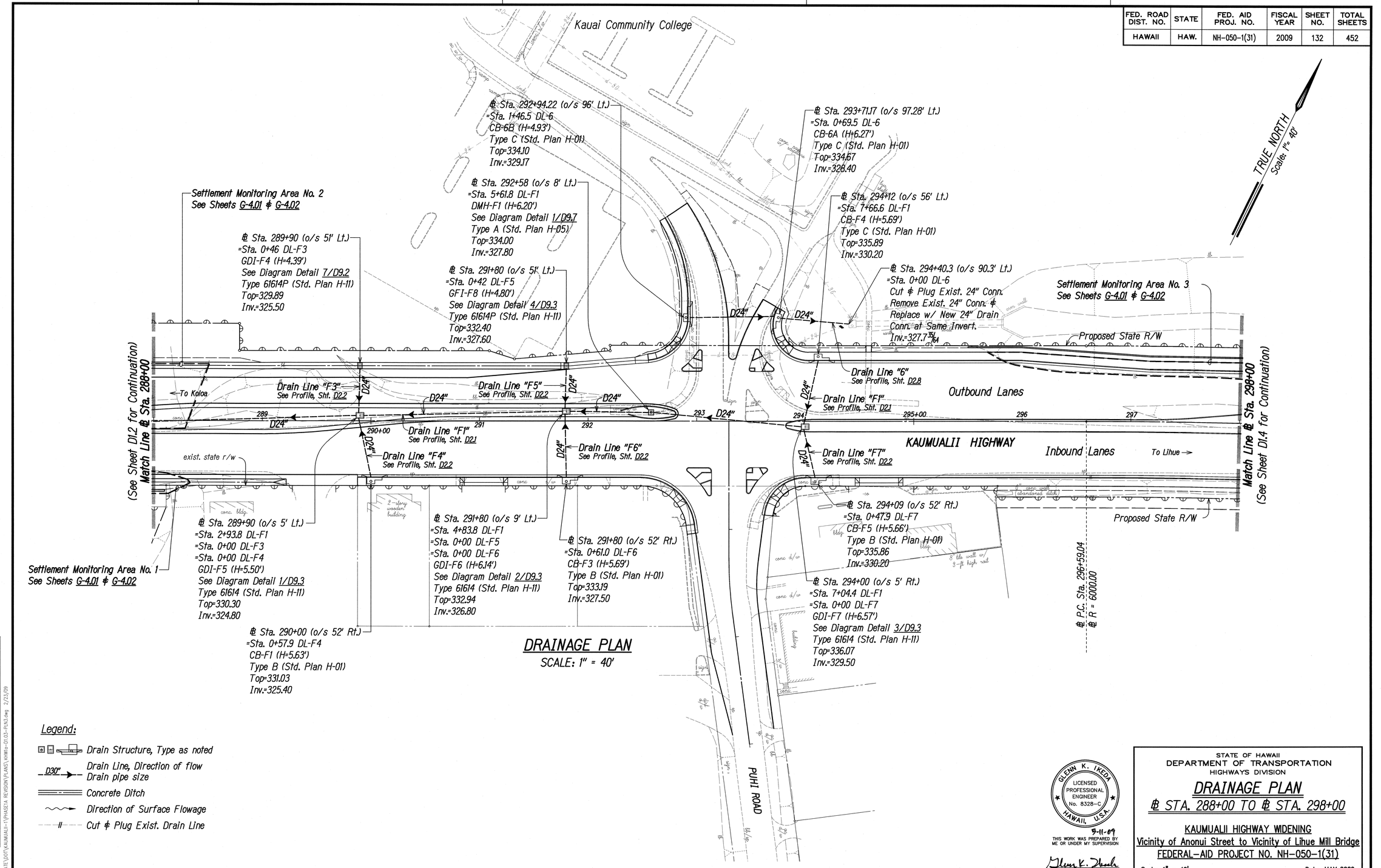
DRAINAGE PLAN
℄ STA. 288+00 TO ℄ STA. 298+00

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: JAN. 2010

SHEET No. D1.3 OF D1J3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	132	452



DRAINAGE PLAN
SCALE: 1" = 40'

Legend:

- Drain Structure, Type as noted
- D30" → Drain Line, Direction of flow / Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

ORIGINAL PLAN BY	SURVEY PLOTTED BY	DATE
DRAWN BY		
TRACED BY		
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

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9-11-09
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ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN
℄ STA. 288+00 TO ℄ STA. 298+00

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: MAY 2009

SHEET No. D1.3 OF D1.13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	133	452

TRUE NORTH
Scale: 1" = 40'

Settlement Monitoring Area No. 3
See Sheets G-4.01 & G-4.02

℄ Sta. 301+75 (o/s 2' Rt.)
=Sta. 8+88.0 DL-G1
DMH-G1 (H=5.87')
See Diagram Detail 2/D9.7
Type A (Std. Plan H-05)
Top=330.87
Inv.=325.00

℄ Sta. 303+74 (o/s 48' Lt.)
=Sta. 0+53 DL-G3
CB-G3 (H=5.03)
Type B (Std. Plan H-01)
Top=324.93
Inv.=319.90

℄ Sta. 303+74 (o/s 5' Rt.)
=Sta. 6+89.1 DL-G1
=Sta. 0+00 DL-G3
=Sta. 0+00 DL-G4
GDI-G2 (H=6.40')
See Diagram Detail 6/D9.3
Type 61614 (Std. Plan H-11)
Top=324.80
Inv.=319.30
Inv.=318.40

℄ Sta. 307+00 (o/s 48' Lt.)
=Sta. 0+53 DL-G5
CB-G5 (H=5.64')
Type B (Std. Plan H-01)
Top=315.44
Inv.=309.80

℄ Sta. 307+00 (o/s 5' Rt.)
=Sta. 3+63.1 DL-G1
=Sta. 0+00 DL-G5
=Sta. 0+00 DL-G6
GDI-G3 (H=6.43')
See Diagram Detail 7/D9.3
Type 61614 (Std. Plan H-11)
Top=315.63
Inv.=309.20

Drain Line No. 7
24" RCP, CL. IV
(See Plan & Profile, Sheet D1.12)

℄ Sta. 299+75 (o/s 48' Lt.)
=Sta. 0+47 DL-G2
CB-G1 (H=5.67')
Type B (Std. Plan H-01)
Top=334.37
Inv.=328.70

Drain Line "G2"
See Profile, Sht. D2.2

Drain Line "G3"
See Profile, Sht. D2.2

Drain Line "G5"
See Profile, Sht. D2.3

Match Line ℄ Sta. 298+00
(See Sheet D1.3 for Continuation)

Outbound Lanes

← To Koloa

KAUMUALII HIGHWAY

299 300+00 301 302 303 304 305+00 306 307 308

D24"

New Baseline

Inbound Lanes

Drain Line "G1"
See Profile, Sht. D2.2

Drain Line "G4"
See Profile, Sht. D2.2

Drain Line "G6"
See Profile, Sht. D2.3

To Lihue →

Match Line ℄ Sta. 308+00
(See Sheet D1.5 for Continuation)

Proposed State R/W

℄ Sta. 303+74 (o/s 52' Rt.)
=Sta. 0+47 DL-G4
CB-G4 (H=5.64')
Type C (Std. Plan H-01)
Top=324.64
Inv.=319.00

℄ R=6000.00
℄ P.T. Sta. 303+88.59

℄ Sta. 305+40
(o/s 2.0' Rt.)
=Sta. 5+23.1 DL-G1
DMH-G2 (H=6.47')
See Diagram Detail 3/D9.7
Type A (Std. Plan H-05)
Top=319.67
Inv.=313.20

Settlement Monitoring Area No. 4. See Sheets G-4.01 & G-4.02

Drain Line No. 7
4'x 4' Box Culvert
(For Plan & Profile, See Sheet D1.12)

℄ Sta. 307+00 (o/s 45.8' Rt.)
=Sta. 0+40.8 DL-G6
CB-G6 (H=5.60')
Type C (Std. Plan H-01)
Top=315.40
Inv.=309.80

WELAU STREET

NANI STREET

℄ Sta. 299+75 (o/s 1' Lt.)
=Sta. 10+88.0 DL-G1
=Sta. 0+00 DL-G2
GDI-G1 (H=5.83')
See Diagram Detail 5/D9.3
Type 61614 (Std. Plan H-11)
Top=333.83
Inv.=328.00

℄ Sta. 299+75 (o/s 52' Rt.)
=Sta. 11+41.0 DL-G1
CB-G2 (H=5.61')
Type C (Std. Plan H-01)
Top=334.21
Inv.=328.60

DRAINAGE PLAN
SCALE: 1" = 40'

Legend:

- Drain Structure, Type as noted
- D30" — Drain Line, Direction of flow; Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

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GLENN K. IKEDA
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No. 8328-C
HAWAII, U.S.A.

5-11-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Parks, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

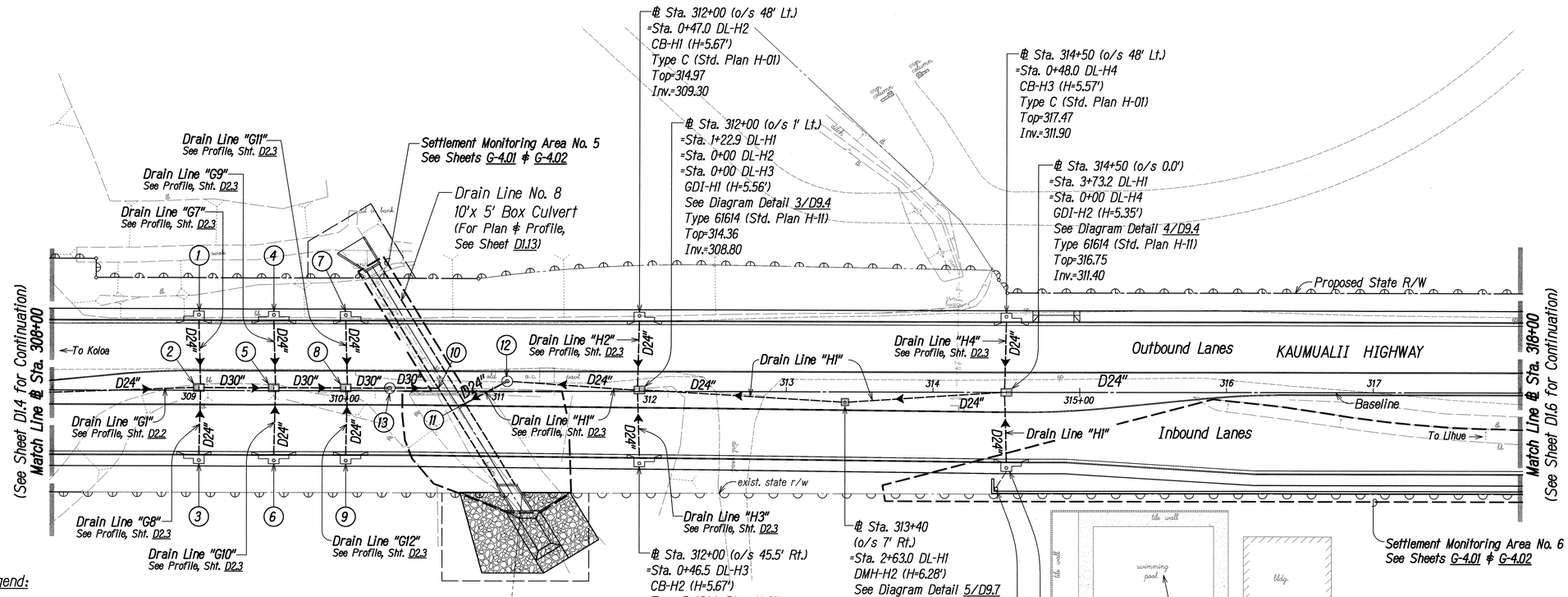
DRAINAGE PLAN
℄ STA. 298+00 TO ℄ STA. 308+00

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: MAY 2009

SHEET No. D1.4 OF D1.13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	134	452



Legend:

- Drain Structure, Type as noted
- D30" — Drain Line, Direction of flow / Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

DRAINAGE PLAN

SCALE: 1" = 40'

(1) ℄ Sta. 309+00 (o/s 48' Lt.)
=Sta. 0+46.0 DL-G7
CB-G7 (H=5.67')
Type B (Std. Plan H-01)
Top=313.27
Inv.=307.60

(2) ℄ Sta. 309+00 (o/s 2' Lt.)
=Sta. 1+63 DL-G1
=Sta. 0+00 DL-G7
=Sta. 0+00 DL-G8
GDI-G4 (H=5.64')
See Diagram Detail 8/D9.3
Type I (See Det., Sht. D8.4)
Top=312.74
Inv.=307.10

(3) ℄ Sta. 309+00 (o/s 44' Rt.)
=Sta. 0+46.0 DL-G8
CB-G8 (H=5.67')
Type C (Std. Plan H-01)
Top=313.27
Inv.=307.60

(4) ℄ Sta. 309+51 (o/s 48' Lt.)
=Sta. 0+46.0 DL-G9
CB-G9 (H=5.67')
Type A (Std. Plan H-01)
Top=313.17
Inv.=307.50

(5) ℄ Sta. 309+51 (o/s 2' Lt.)
=Sta. 1+12.0 DL-G1
=Sta. 0+00 DL-G9
=Sta. 0+00 DL-G10
GDI-G5 (H=6.14')
See Diagram Detail 1/D9.4
Type I (See Det., Sht. D8.4)
Top=312.64
Inv.=306.50

(6) ℄ Sta. 309+51 (o/s 44' Rt.)
=Sta. 0+46.0 DL-G10
CB-G10 (H=5.67')
Type A (Std. Plan H-01)
Top=313.17
Inv.=307.50

(7) ℄ Sta. 310+00 (o/s 48' Lt.)
=Sta. 0+46.0 DL-G11
CB-G11 (H=5.66')
Type C (Std. Plan H-01)
Top=313.26
Inv.=307.60

(8) ℄ Sta. 310+00 (o/s 2' Lt.)
=Sta. 0+63.0 DL-G1
=Sta. 0+00 DL-G11
=Sta. 0+00 DL-G12
GDI-G6 (H=6.73')
See Diagram Detail 2/D9.4
Type I (See Det., Sht. D8.4)
Top=312.73
Inv.=306.00

(9) ℄ Sta. 310+00 (o/s 44' Rt.)
=Sta. 0+46.0 DL-G1
CB-G12 (H=5.66')
Type B (Std. Plan H-01)
Top=313.26
Inv.=307.60

(10) ℄ Sta. 310+63.0 (o/s 2' Lt.)
=Sta. 0+00 DL-G1
=Sta. 0+78.6 DL-8
Conn. New 30" Drain to New
10'x5' Box Drain
Inv.=304.00

(11) ℄ Sta. 310+81.2 (o/s 8.5' Rt.)
=Sta. 0+00 DL-H1
=Sta. 0+63.3 DL-8
Conn. New 24" Drain to New
10'x5' Box Drain
Inv.=305.00

(12) ℄ Sta. 311+10 (o/s 7' Lt.)
=Sta. 0+32.7 DL-H1
Stormwater Treatment
System for DS-4 (H=7.83')
Top=314.23
Inv.=306.40

(13) ℄ Sta. 310+30 (o/s 2' Lt.)
=Sta. 0+33 DL-G1
Stormwater Treatment
System for DS-3 (H=7.77')
Top=312.87
Inv.=305.10

CAUTION (*):

Vibratory compaction equipment shall not be used within 300 feet of the existing YMCA swimming pool. Approximate limits of restriction are from ℄ Sta. 312+00 to ℄ Sta. 319+00.

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
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GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
5-11-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN
℄ STA. 308+00 TO ℄ STA. 318+00

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

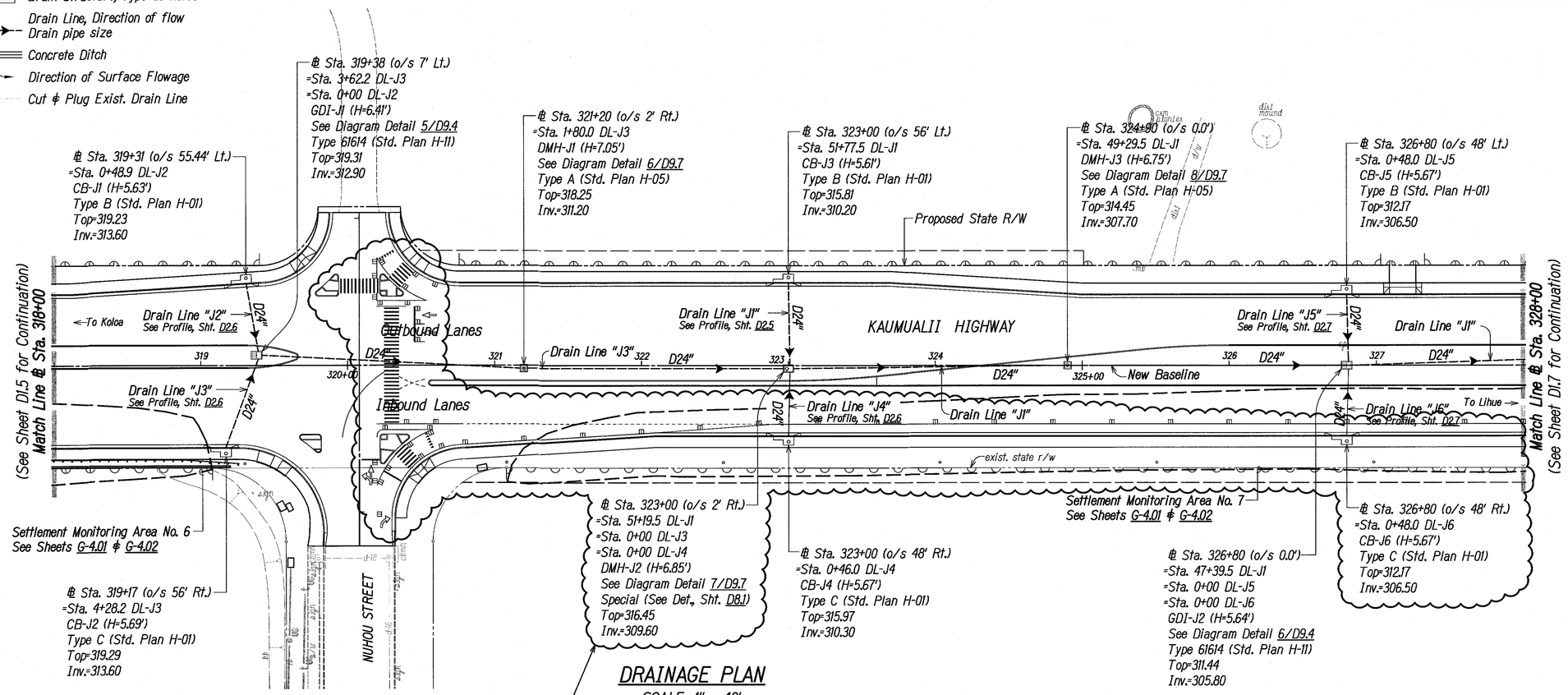
Scale: 1" = 40' Date: MAY 2009

SHEET No. D1.5 OF D1.13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	135	452

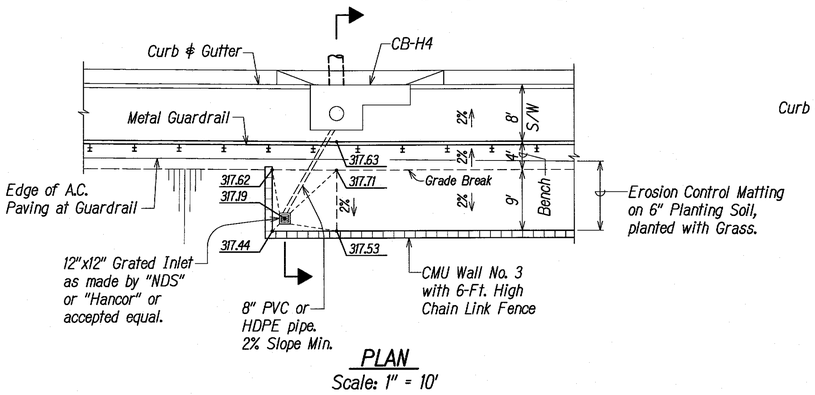
Legend:

- Drain Structure, Type as noted
- D30" — Drain Line, Direction of flow; Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

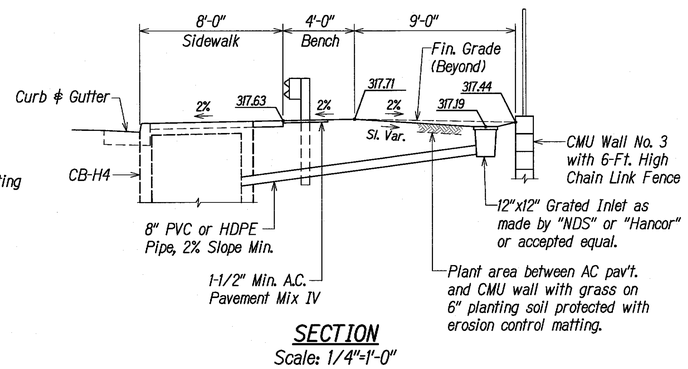


DRAINAGE PLAN
SCALE: 1" = 40'

Proposed improvements superseded by concurrently constructed project for Safeway, Inc., entitled "Kaumualii Highway Widening at Nuhou Street"



PLAN
Scale: 1" = 10'



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

12" x 12" GRATED INLET DETAIL
Scale: As Noted

1 | DI.5 | DI.6

LEGEND FOR AS-BUILT POSTINGS

~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
ORIGINAL PLAN
NOTE BOOK
No.

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THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN
℄ STA. 318+00 TO ℄ STA. 328+00

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: JAN. 2010

SHEET No. DI.6 OF DI.13 SHEETS

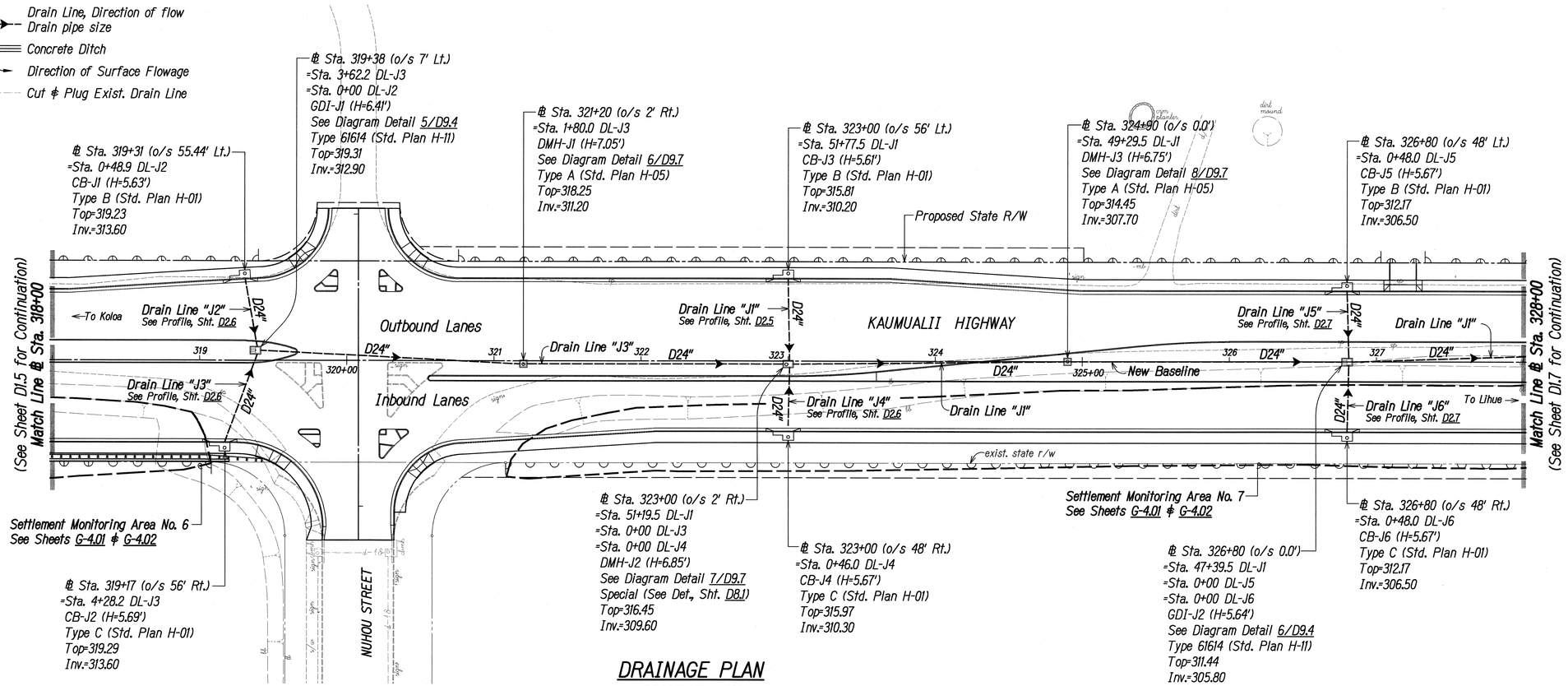
"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	135	452

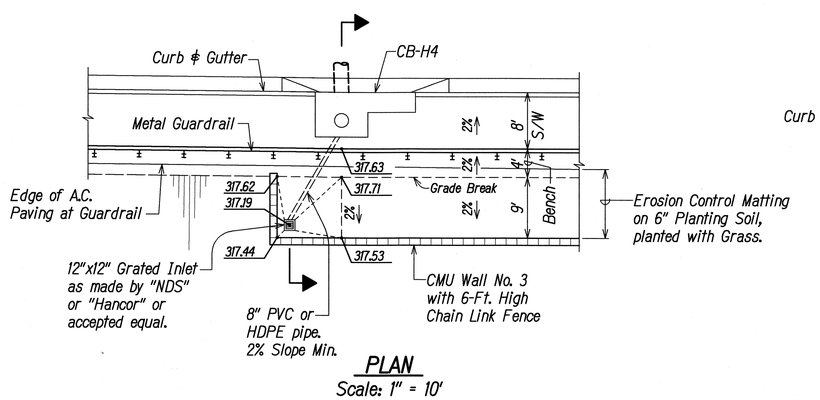
Legend:

- Drain Structure, Type as noted
- D30" → Drain Line, Direction of flow / Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

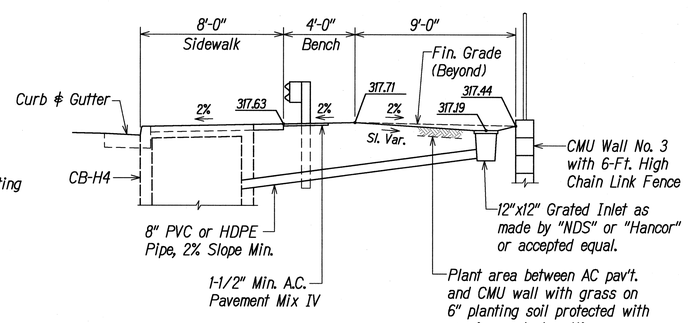
TRUE NORTH
Scale: 1"= 40'



DRAINAGE PLAN
SCALE: 1" = 40'



PLAN
Scale: 1" = 10'



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

12" x 12" GRATED INLET DETAIL
Scale: As Noted

1 / D1.5 | D1.6

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

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Glenn K. Ikeda
ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

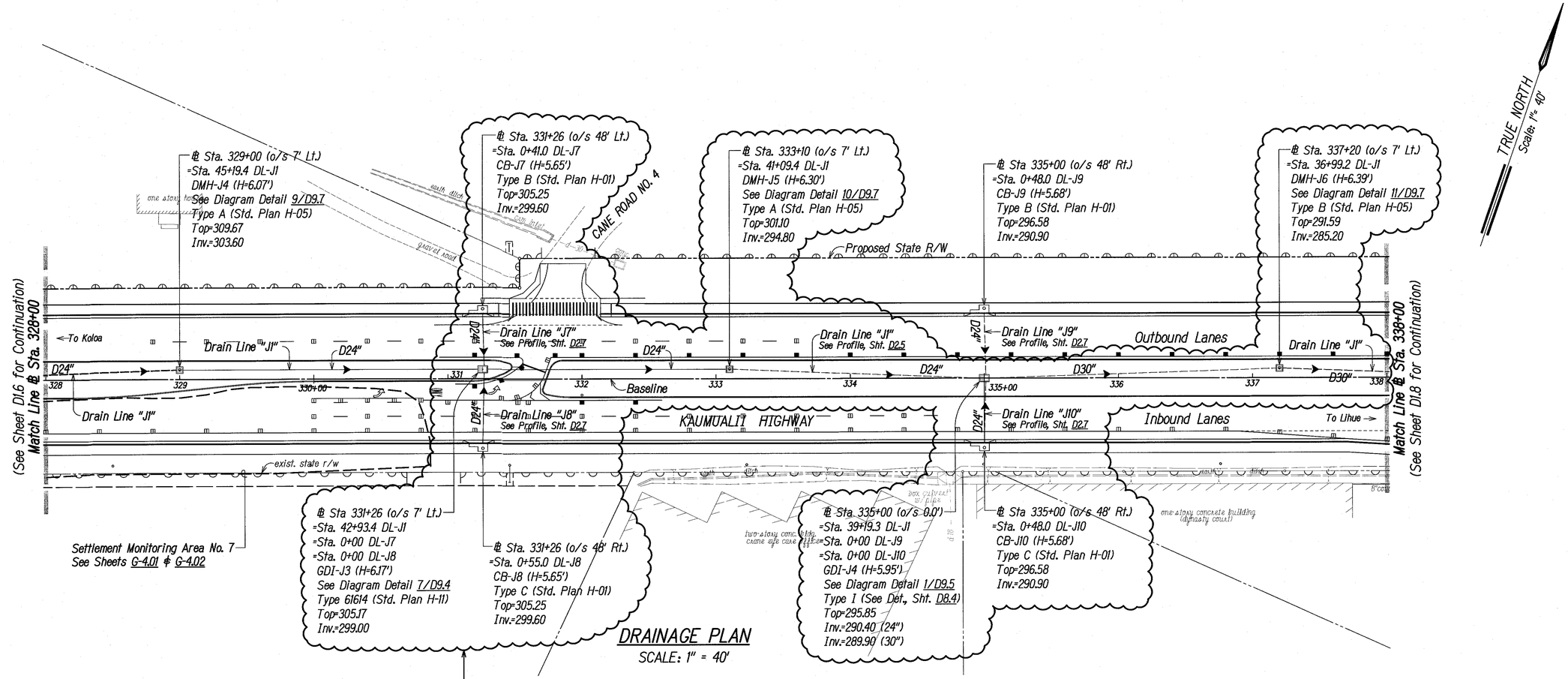
DRAINAGE PLAN
℄ STA. 318+00 TO ℄ STA. 328+00

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: MAY 2009

SHEET No. D1.6 OF D1.13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	136	452



DRAINAGE PLAN
SCALE: 1" = 40'

Proposed improvements superseded by concurrently constructed project for Safeway, Inc., entitled "Kaumualii Highway Widening at Nuhou Street"

Legend:

- Drain Structure, Type as noted
- D30" — Drain Line, Direction of flow; Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

LEGEND FOR AS-BUILT POSTINGS

~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

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ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN
℄ STA. 328+00 TO ℄ STA. 338+00

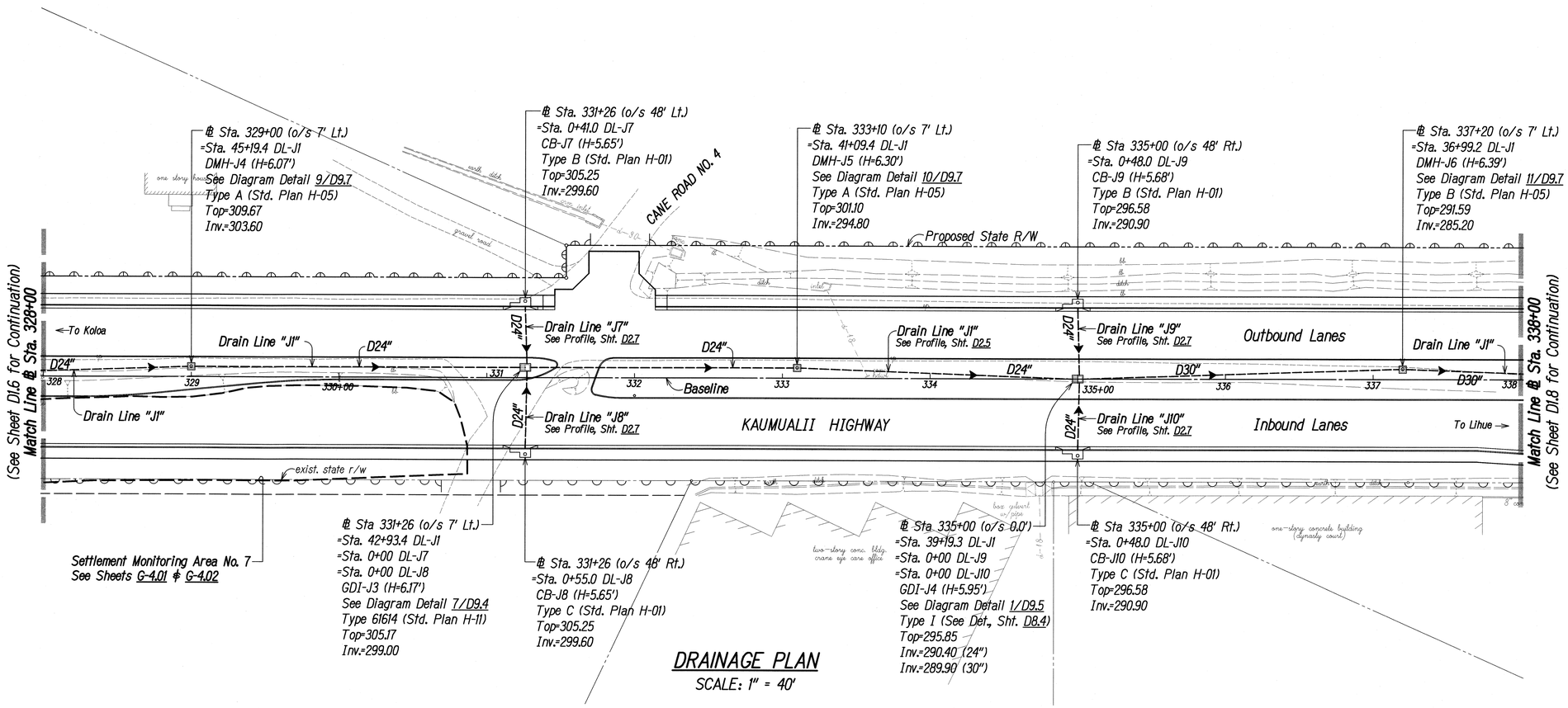
KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: JAN. 2010

SHEET No. D1.7 OF D1.13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	136	452

TRUE NORTH
Scale: 1" = 40'



DRAINAGE PLAN
SCALE: 1" = 40'

Legend:

- Drain Structure, Type as noted
- D30" → Drain Line, Direction of flow / Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
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	QUANTITIES BY	
No.	CHECKED BY	

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GLENN K. IKEDA
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Glenn K. Ikeda
PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

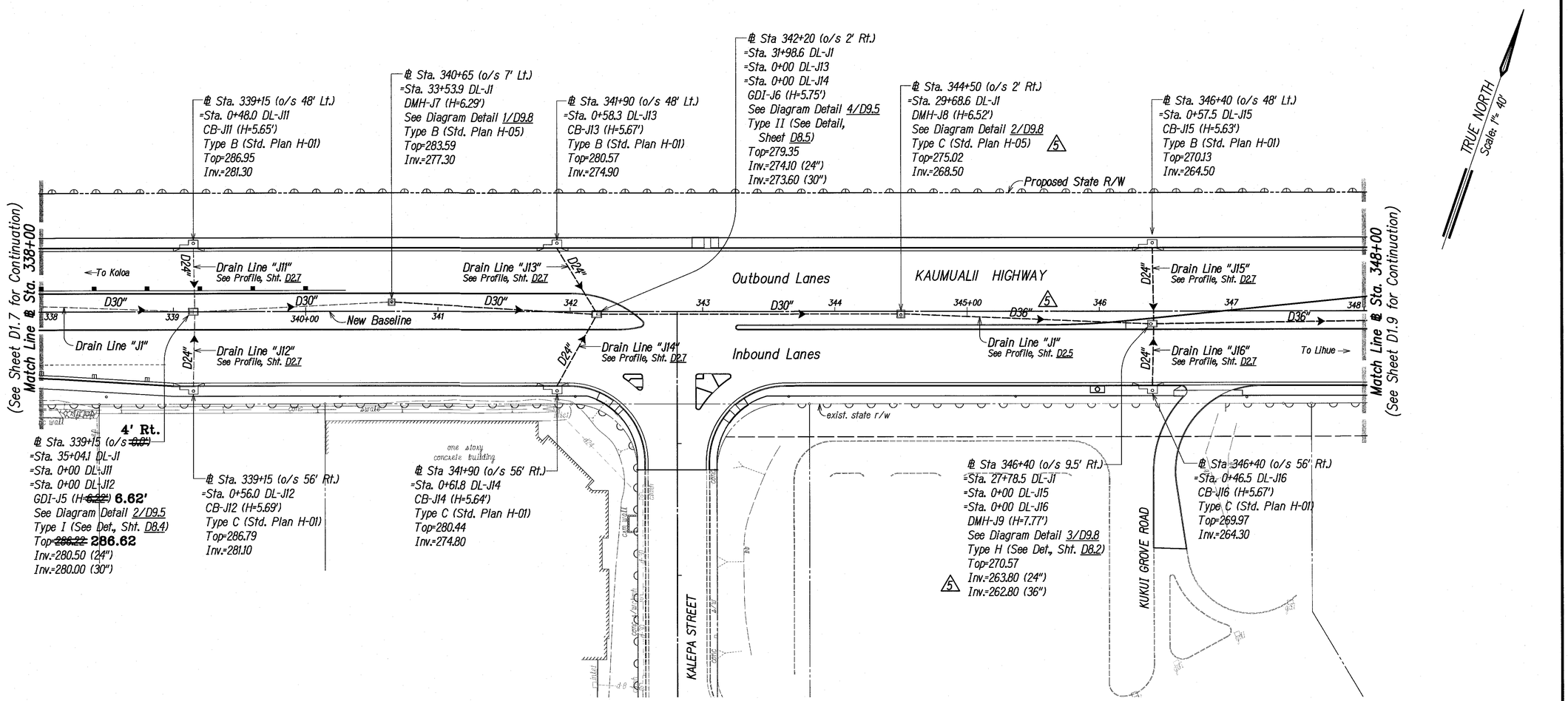
DRAINAGE PLAN
℄ STA. 328+00 TO ℄ STA. 338+00

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: MAY 2009

SHEET No. D1.7 OF D1.13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.137	452



DRAINAGE PLAN
SCALE: 1" = 40'

Legend:

- Drain Structure, Type as noted
- D30" → Drain Line, Direction of flow / Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut ℄ Plug Exist. Drain Line

LEGEND FOR AS-BUILT POSTINGS

~~Squiggly line~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

DATE	REVISION
3/09/10	5 Increased Pipe Size between DMH-J8 and CB-J15. Revised DMH-J8 Type. Revised invert at DMH-J9.

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN
℄ STA. 338+00 TO ℄ STA. 348+00

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: JAN. 2010

SHEET No. D1.8 OF D1.13 SHEETS

GLENN K. IKEDA
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HAWAII, U.S.A.

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Park, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-16

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	TRACED BY
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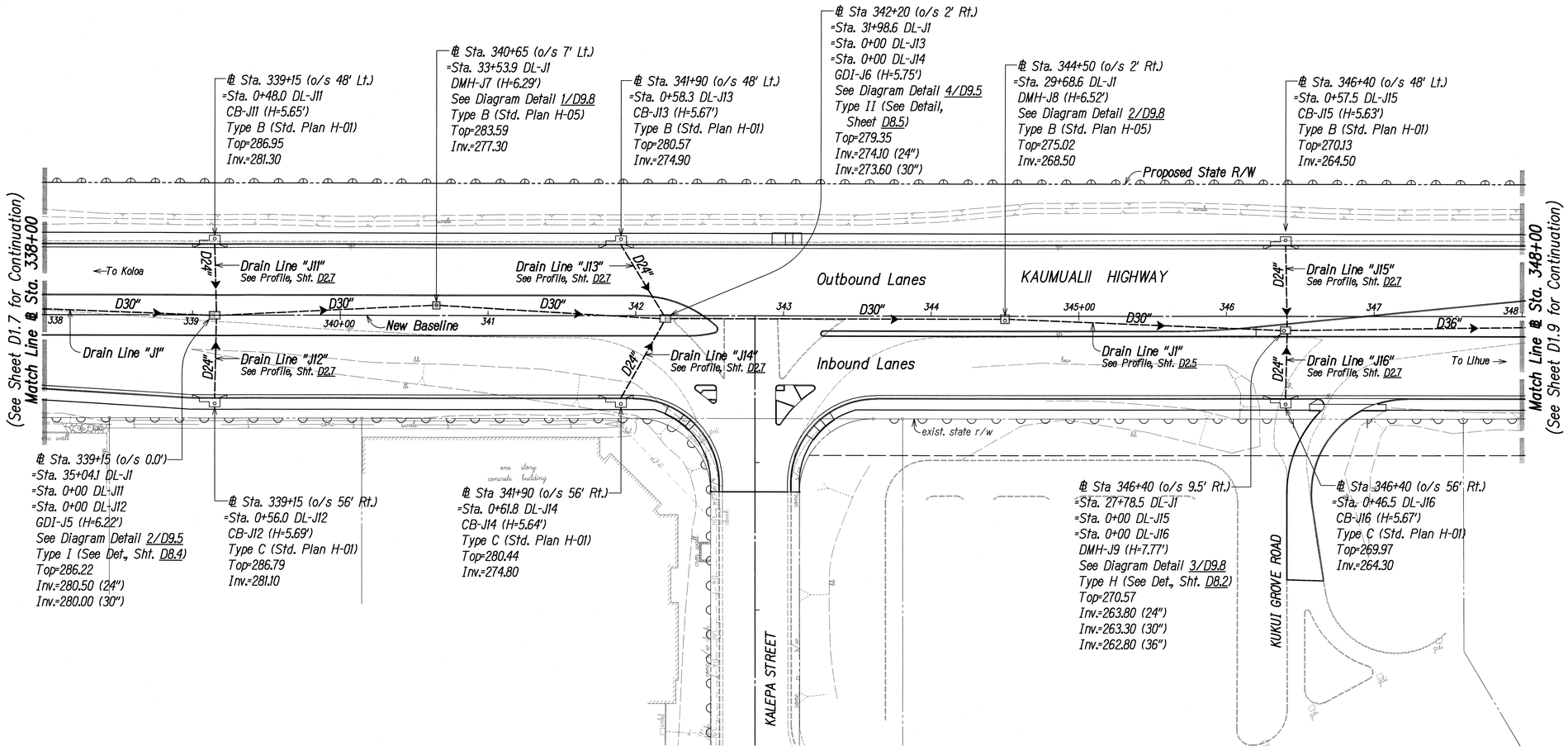
"AS-BUILT"

C.O. 137

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	137	452



DRAINAGE PLAN
SCALE: 1" = 40'

Legend:

- Drain Structure, Type as noted
- D30" — Drain Line, Direction of flow; Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

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GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
5-11-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN
℄ STA. 338+00 TO ℄ STA. 348+00

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: MAY 2009

SHEET No. D1.8 OF D13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	138	452

TRUE NORTH
Scale: 1" = 40'

℄ P.C. Sta. 346+11.57
℄ R = 5000.00

(See Sheet D1.8 for Continuation)
Match Line ℄ Sta. 348+00

To Koloa

℄ Sta. 348+40
(o/s 7' Rt.)
=Sta. 25+78.4 DL-J1
DMH-J10 (H=6.19')
See Diagram Det. 4/D9.8
Type C (Std. Plan H-05)
Top=265.59
Inv.=259.40

℄ Sta. 350+20 (o/s 48' Lt.)
=Sta. 0+58.7 DL-J17
CB-J17 (H=5.62')
Type B (Std. Plan H-01)
Top=261.32
Inv.=255.70

℄ Sta. 350+20 (o/s 56' Rt.)
=Sta. 0+61.4 DL-J18
CB-J18 (H=5.66')
Type C (Std. Plan H-01)
Top=261.16
Inv.=255.50

℄ Sta. 350+50 (o/s 2.5' Rt.)
=Sta. 23+68.2 DL-J1
=Sta. 0+00 DL-J17
=Sta. 0+00 DL-J18
GDI-J7 (H=6.36')
See Diagram Detail 5/D9.5
Type II (See Det., Sht. D8.5)
Top=260.16
Inv.=254.80 (24")
Inv.=253.80 (36")

Proposed State R/W

℄ Sta. 352+35 (o/s 4' Rt.)
=Sta. 21+83.1 DL-J1
DMH-J11 (H=6.56')
See Diagram Detail 5/D9.8
Type C (Std. Plan H-05)
Top=256.76
Inv.=250.20

℄ Sta. 354+20
(o/s 51.30' Lt.)
=Sta. 0+54.5 DL-J19
CB-J19 (H=5.16')
Type B
(Std. Plan H-01)
Top=251.96
Inv.=246.80

℄ Sta. 354+25
(o/s 3.0' Rt.)
=Sta. 19+93 DL-J1
=Sta. 0+00 DL-J17
=Sta. 0+00 DL-J18
DMH-J15 (H=7.92')
See Diagram Detail 6/D9.8
Type H (See Det., Sht. D8.2)
Top=252.37
Inv.=245.45 (24")
Inv.=244.45 (36")

℄ Sta. 354+25
(o/s 48' Rt.)
=Sta. 0+45.0 DL-J20
CB-J20 (H=5.61')
Type C (Std. Plan H-01)
Top=251.91
Inv.=246.30

℄ Sta. 355+90
(o/s 3.0' Lt.)
=Sta. 18+27.9 DL-J1
DMH-J12 (H=7.51')
See Diagram Det. 7/D9.8
Type C (Std. Plan H-05)
Top=248.41
Inv.=240.90

℄ Sta. 356+85 (o/s 76' Lt.)
=Sta. 8+08.6 DL-J21
GDI-J9 (H=4.50')
See Diagram Detail 3/D9.5
Type 61616 (Std. Plan H-12)
Top=243.50
Inv.=239.00

℄ Sta. 356+82 (o/s 56' Lt.)
=Sta. 7+88.4 DL-J21
CB-J21 (H=6.21')
Type BI (Std. Plan H-02)
Top=244.91
Inv.=238.70

℄ Sta. 356+95
(o/s 8.0' Lt.)
=Sta. 17+22.9 DL-J1
GDI-J10 (H=6.75')
See Diagram Det. 6/D9.5
Type I (See Detail,
Sheet D8.4)
Top=244.65
Inv.=237.90

℄ Sta. 357+00
(o/s 48' Rt.)
=Sta. 16+66.7 DL-J1
CB-J22 (H=7.97')
Type E1 (See Det., Sht. D8.3)
Top=244.47
Inv.=236.50

I.B. ℄ Sta. 358+90
(o/s 32' Rt.)
=Sta. 14+75.3 DL-J1
CB-J23 (H=7.07')
Type E1 (See Det. Sht. D8.3)
Top=237.07
Inv.=230.00

O.B. ℄ Sta. 358+80
(o/s 49' Lt.)
=Sta. 5+90.3 DL-J21
GDI-J11 (H=4.79')
See Diagram Detail 2/D9.6
Type 61614P (Std. Plan H-11)
Top=236.29
Inv.=231.50

℄ P.T. Sta. 358+51.50

(See Sheet D1.10 for Continuation)
Match Line ℄ Sta. 359+10

KAUMUALII HIGHWAY
Outbound Lanes

Inbound Lanes

Baseline

O.B. Baseline

I.B. Baseline

To Lihue

UAHI ROAD

NAWILIWILI ROAD

exist. state r/w

Drain Line "J17"
See Profile, Sht. D2.7

Drain Line "J18"
See Profile, Sht. D2.7

Drain Line "J1"
See Profile, Sht. D2.5

Drain Line "J19"
See Profile, Sht. D2.8

Drain Line "J20"
See Profile, Sht. D2.8

Drain Line "J21"
See Profile, Sht. D2.6

Drain Line "J1"
See Profile, Sht. D2.4

D24" D36" D42"

348 349 350+00 351 352 353 354 355+00 356 357 358 359

DRAINAGE PLAN
SCALE: 1" = 40'

Legend:

- Drain Structure, Type as noted
- D30" — Drain Line, Direction of flow; Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

U82: STATE\DOT\KAUMUALI-1\PHASE1A REVISION\PLANS\KHWY-D1.09-PLN9.dwg 5/11/09

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
5-11-09

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Glenn K. Ikeda
ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN
℄ STA. 348+00 TO ℄ STA. 359+10

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: MAY 2009

SHEET No. D1.9 OF D1.13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.139R	452

TRUE NORTH
Scale: 1"= 40'

(See Sheet D1.9 for Continuation)
Match Line ℄ Sta. 359+10

O.B. ℄ Sta. 360+80 (o/s 41.0' Lt.)
=Sta. 3+90.1 DL-J21
GDI-JI2 (H=4.79')
See Diagram Detail 3/D9.6
Type 61614P (Std. Plan H-11)
Top=226.69
Inv.=221.90

Concrete Interceptor Ditch
See Plan and Profile,
Sht. D2.10

Proposed State R/W

O.B. ℄ Sta. 362+90 (o/s 36.6' Lt.)
=Sta. 1+80.1 DL-J21
GDI-JI4 (H=4.83')
See Diagram Detail 4/D9.6
Type 61614P (Std. Plan H-11)
Top=214.23
Inv.=209.40

I.B. ℄ Sta. 362+85 (o/s 8' Lt.)
=Sta. 0+33.6 DL-J22
GDI-JI3 (H=5.50')
See Diagram Detail 5/D9.6
Type 61614 (Std. Plan H-11)
Top=215.80
Inv.=210.30

4 O.B. ℄ Sta. 364+18
(o/s 41.8' Lt.)
=Sta. 0+52 DL-J21
=Sta. 0+00 DL-J23
GDI-JI8 (H=6.33')
See Diagram Detail 7/D9.5
Type 61616 (Std. Plan H-12)
Top=205.63
Inv.=199.30

O.B. ℄ Sta. 364+15.86
(o/s 80.1' Lt.)
=Sta. 0+38.3 DL-J23
GDI-JI9 (H=6.33')
See Diagram Detail 8/D9.5
Type Special (See Detail 1/D8.8)
Top=207.00
Inv.=200.67

O.B. ℄ Sta. 364+58.48 (o/s 43.4' Lt.)
=Sta. 8+29.4 DL-J1
=Sta. 0+11.5 DL-J21
4 GDI-JI5 (H=11.68')
See Diagram Detail 6/D9.6
Type 61616 (Std. Plan H-12)
Top=203.18
Inv.=196.60 (36")
Inv.=191.50 (42",54")

Concrete Interceptor Ditch
See Plan and Profile,
Sht. D2.10

℄ Sta. 369+05 (o/s 56.7' Lt.)
=Sta. 3+84.9 DL-J1
GDI-JI7 (H=7.00')
See Diagram Detail 8/D9.6
Type 61616 (Std. Plan H-12)
Top=183.00
Inv.=176.00

O.B. ℄ Sta. 366+70 (o/s 51.9' Lt.)
=Sta. 6+17.7 DL-J1
GDI-JI6 (H=7.12')
See Diagram Detail 7/D9.6
Type 61616 (Std. Plan H-12)
Top=191.62
Inv.=184.50

℄ Sta. 369+50 (o/s 56.7' Lt.)
=Sta. 3+39.9 DL-J1
Outlet No. 5
(See Detail, Sht. D7.6)
Top=180.23
4 Inv.=173.23 (54")
Bot.=171.40

Drain Line "J23"
See Profile, Sht. D2.8

Drain Line "J21"
See Profile, Sht. D2.6

Drain Line "J1"
See Profile, Sht. D2.4

Drain Line "J22"
See Profile, Sht. D2.8

Drain Line "9"
See Profile, Sht. D2.8

To Kōloa

O.B. Baseline

I.B. Baseline

Outbound Lanes

Inbound Lanes

KAUMUALI'I HIGHWAY

To Līhu'e

D24" D30" D36" D42" D54"

360 361 362 363 364 365 366 367 368 369 370

6 State R/W

I.B. ℄ Sta. 360+90
(o/s 32' Rt.)
=Sta. 12+75.3 DL-J1
CB-J24 (H=7.00')
Type E1 (See
Detail, Sheet D8.3)
Top=227.20
Inv.=220.20

HALA ROAD

I.B. ℄ Sta. 363+10
(o/s 40' Rt.)
=Sta. 1+30.1 DL-9
DMH-9A (H=5.70')
See Diagram Det. 6/D9.8
Type B (Std. Plan H-05)
Top=210.20
Inv.=204.50

I.B. ℄ Sta. 363+10.77
(o/s 70.2' Rt.)
=Sta. 1+96.6 DL-9
GDI-9A (H=4.20')
See Diagram Detail 1/D9.6
Type 61616
(Std. Plan H-12)
Top=210.00
Inv.=205.80

I.B. ℄ Sta. 362+90 (o/s 25.2' Rt.)
=Sta. 10+75.2 DL-J1
CB-J25 (H=7.04')
Type E1 (See Det., Sht. D8.3)
Top=215.34
Inv.=209.60 (24")
Inv.=208.30 (42")

I.B. ℄ Sta. 365+00 (o/s 36' Rt.)
=Sta. 0+00 DL-9
Outlet No. 4
(See Detail, Sht. D7.4)
Top=200.2
Inv.=196.2

I.B. ℄ Sta. 364+60 (o/s 22' Rt.)
=Sta. 9+05.2 DL-J1
CB-J26 (H=10.87')
Type E1 (See Det., Sht. D8.3)
Top=204.37
Inv.=193.50

Proposed State R/W

28
℄ Sta. 369~~+15~~ (o/s 56.7' Lt.)
=Sta. 3+71.9 DL-J1
Stormwater Treatment System **w/ Bypass Vault**
for DS-5 (H=7.63')
Top=182.85
Inv.=175.22

Settlement Monitoring Area No. 8
See Sheets G-4.01 & G-4.02

Legend:

- Drain Structure, Type as noted
- D30" — Drain Line, Direction of flow / Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

DRAINAGE PLAN
SCALE: 1" = 40'

LEGEND FOR AS-BUILT POSTINGS

~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

DATE	REVISION
6/07/10	6 Added R/W Line at Hala Road.
2/01/10	4 Revised Data for GDI-JI5, GDI-JI8, and Outlet 5. Revised pipe sizes.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
ORIGINAL PLAN
NOTE BOOK
No.

GDI-D1.10-PLN10.dwg 7/5/10

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN
℄ STA. 359+10 TO ℄ STA. 369+50

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 40' Date: JAN. 2010

SHEET No. D1.10 OF D1.13 SHEETS

"AS-BUILT"

C.O. 139 R

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.0.139	452

TRUE NORTH
Scale: 1"= 40'

(See Sheet D1.9 for Continuation)
Match Line ℄ Sta. 359+10

O.B. ℄ Sta. 360+80 (o/s 41.0' Lt.)
=Sta. 3+90.1 DL-J21
GDI-J12 (H=4.79')
See Diagram Detail 3/D9.6
Type 61614P (Std. Plan H-11)
Top=226.69
Inv.=221.90

O.B. ℄ Sta. 362+90 (o/s 36.6' Lt.)
=Sta. 1+80.1 DL-J21
GDI-J14 (H=4.83')
See Diagram Detail 4/D9.6
Type 61614P (Std. Plan H-11)
Top=214.23
Inv.=209.40

I.B. ℄ Sta. 362+85 (o/s 8' Lt.)
=Sta. 0+33.6 DL-J22
GDI-J13 (H=5.50')
See Diagram Detail 5/D9.6
Type 61614 (Std. Plan H-11)
Top=215.80
Inv.=210.30

4 O.B. ℄ Sta. 364+18
(o/s 41.8' Lt.)
=Sta. 0+52 DL-J21
=Sta. 0+00 DL-J23
GDI-J18 (H=6.33')
See Diagram Detail 7/D9.5
Type 61616 (Std. Plan H-12)
Top=205.63
Inv.=199.30

O.B. ℄ Sta. 364+15.86
(o/s 80.1' Lt.)
=Sta. 0+38.3 DL-J23
GDI-J19 (H=6.33')
See Diagram Detail 8/D9.5
Type Special (See Detail 1/D8.8)
Top=207.00
Inv.=200.67

O.B. ℄ Sta. 364+58.48 (o/s 43.4' Lt.)
=Sta. 8+29.4 DL-J1
=Sta. 0+11.5 DL-J21
4 GDI-J15 (H=11.68')
See Diagram Detail 6/D9.6
Type 61616 (Std. Plan H-12)
Top=203.18
Inv.=196.60 (36")
Inv.=191.50 (42",54")

℄ Sta. 369+05 (o/s 56.7' Lt.)
=Sta. 3+84.9 DL-J1
GDI-J17 (H=7.00')
See Diagram Detail 8/D9.6
Type 61616 (Std. Plan H-12)
Top=183.00
Inv.=176.00

Concrete Interceptor Ditch
See Plan and Profile,
Sht. D2.10

Concrete Interceptor Ditch
See Plan and Profile,
Sht. D2.10

Proposed State R/W

O.B. ℄ Sta. 366+70 (o/s 51.9' Lt.)
=Sta. 6+17.7 DL-J1
GDI-J16 (H=7.12')
See Diagram Detail 7/D9.6
Type 61616 (Std. Plan H-12)
Top=191.62
Inv.=184.50

℄ Sta. 369+50 (o/s 56.7' Lt.)
=Sta. 3+39.9 DL-J1
Outlet No. 5
(See Detail, Sht. D7.6)
Top=180.23
4 Inv.=173.23 (54")
Bot.=171.40

D24" Drain Line "J21"
To Koloa
O.B. Baseline
Outbound Lanes
I.B. Baseline
Inbound Lanes
D42"
Drain Line "J1"
See Profile, Sht. D2.4
D24"
Drain Line "J23"
See Profile, Sht. D2.8
4 D30"
4 D36"
D24" Drain Line "J21"
See Profile, Sht. D2.6
Drain Line "J1"
See Profile, Sht. D2.4
D54"
D54"
D54"
Drain Line "J22"
See Profile, Sht. D2.8
D42"
D42"
D42"
KAUMUALII HIGHWAY
To Lihue
360 361 362 363 364 365 366 367 368 369 370

D24"
D24"
Drain Line "9"
See Profile, Sht. D2.8
Proposed State R/W

I.B. ℄ Sta. 360+90
(o/s 32' Rt.)
=Sta. 12+75.3 DL-J1
CB-J24 (H=7.00')
Type E1 (See
Detail, Sheet D8.3)
Top=227.20
Inv.=220.20

I.B. ℄ Sta. 363+70
(o/s 40' Rt.)
=Sta. 1+30.1 DL-9
DMH-9A (H=5.70')
See Diagram Det. 8/D9.8
Type B (Std. Plan H-05)
Top=210.20
Inv.=204.50

I.B. ℄ Sta. 365+00 (o/s 36' Rt.)
=Sta. 0+00 DL-9
Outlet No. 4
(See Detail, Sht. D7.4)
Top=200.2
Inv.=196.2

℄ Sta. 369+18 (o/s 56.7' Lt.)
=Sta. 3+71.9 DL-J1
Stormwater Treatment System
for DS-5 (H=7.63')
Top=182.85
Inv.=175.22

Settlement Monitoring Area No. 8
See Sheets G-4.01 & G-4.02

HALA ROAD

I.B. ℄ Sta. 364+60 (o/s 22' Rt.)
=Sta. 9+05.2 DL-J1
CB-J26 (H=10.87')
Type E1 (See Det., Sht. D8.3)
Top=204.37
Inv.=193.50

I.B. ℄ Sta. 363+10.77
(o/s 70.2' Rt.)
=Sta. 1+96.6 DL-9
GDI-9A (H=4.20')
See Diagram Detail 1/D9.6
Type 61616
(Std. Plan H-12)
Top=210.00
Inv.=205.80

I.B. ℄ Sta. 362+90 (o/s 25.2' Rt.)
=Sta. 10+75.2 DL-J1
CB-J25 (H=7.04')
Type E1 (See Det., Sht. D8.3)
Top=215.34
Inv.=209.60 (24")
Inv.=208.30 (42")

DRAINAGE PLAN
SCALE: 1" = 40'

Legend:
- Drain Structure, Type as noted
- D30" Drain Line, Direction of flow / Drain pipe size
- Concrete Ditch
- Direction of Surface Flowage
- Cut & Plug Exist. Drain Line

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DATA BY	"
No.	TRACED BY	"
	DESIGNED BY	"
	QUANTITIES BY	"
	CHECKED BY	"

U82: STATE\D01\KAUMUALII-1\PHASE1A REVISION\PLANS\C01-D1.10-PLN10.dwg 1/15/10

DATE	REVISION
2/01/10	4 Revised Data for GDI-J15, GDI-J18, and Outlet 5. Revised pipe sizes.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN
℄ STA. 359+10 TO ℄ STA. 369+50

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

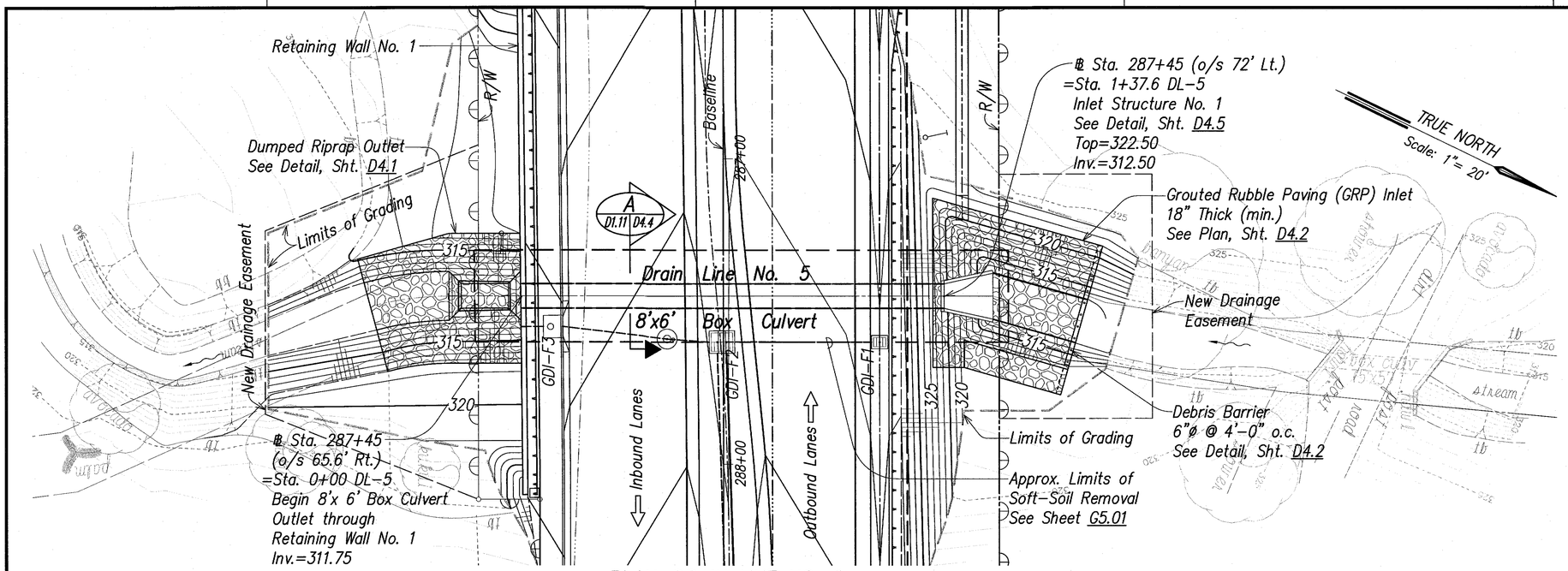
Scale: 1" = 40' Date: JAN. 2010

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
2-2-10
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
PanEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

SHEET No. D1.10 OF D1.13 SHEETS

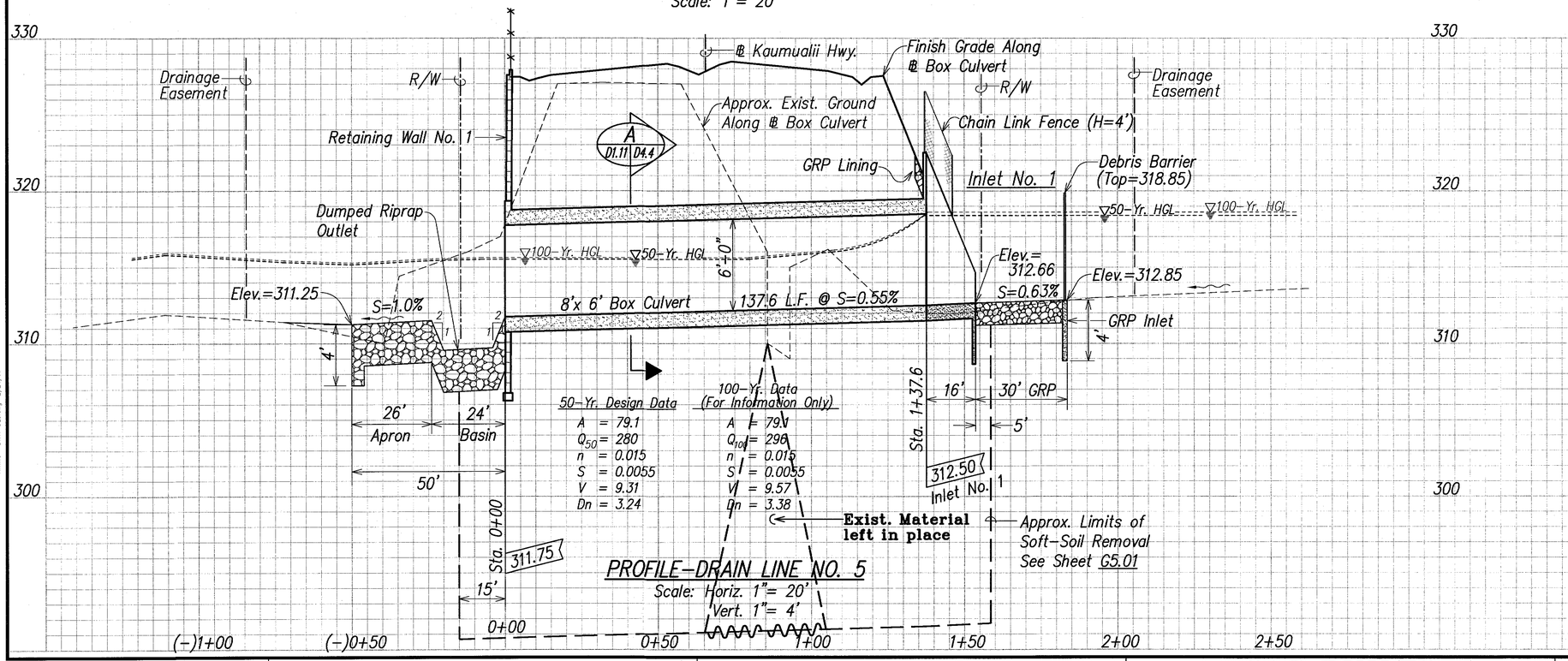
C.O. 139

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	140	452



PLAN-DRAIN LINE NO. 5

Scale: 1"= 20'



PROFILE-DRAIN LINE NO. 5

Scale: Horiz. 1"= 20'
Vert. 1"= 4'

LEGEND FOR AS-BUILT POSTINGS

~~^^^^~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE | NOTE BOOK | No.

Kmhb-3(11-03).dwg 2/24/09

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN AND PROFILE
DRAIN LINE NO. 5

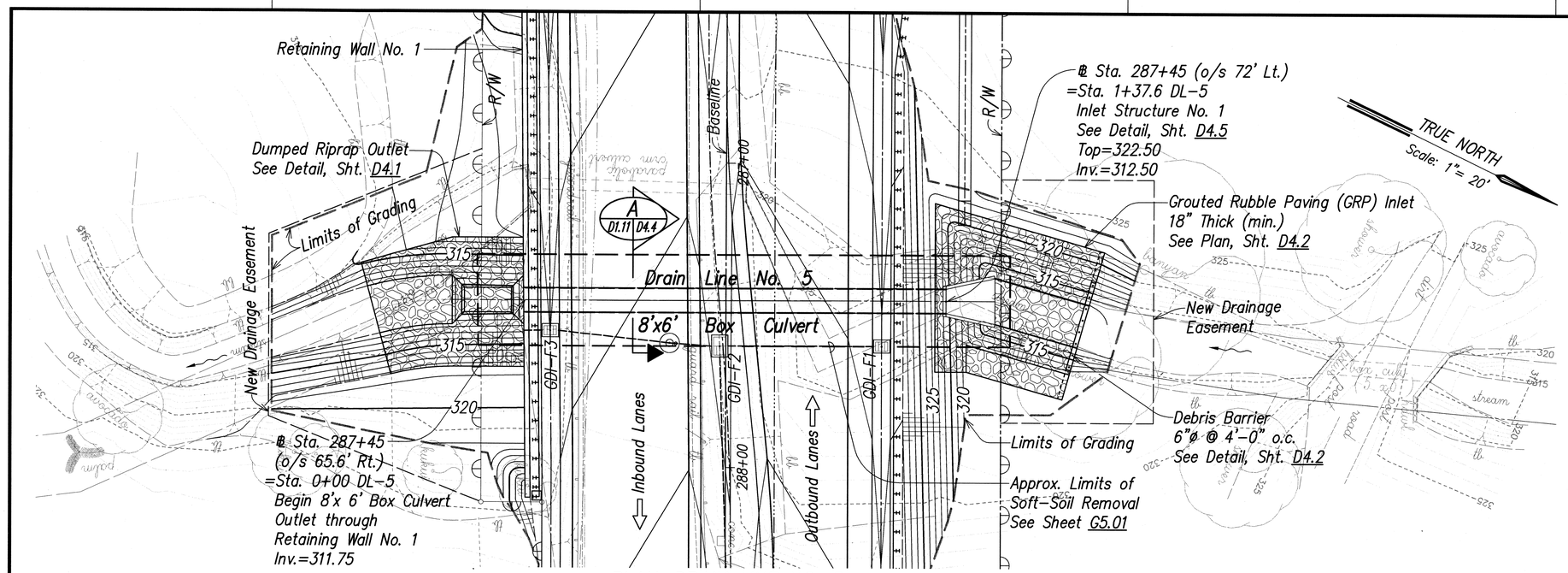
KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 20' Date: JAN. 2010

SHEET No. D1.11 OF D1.13 SHEETS

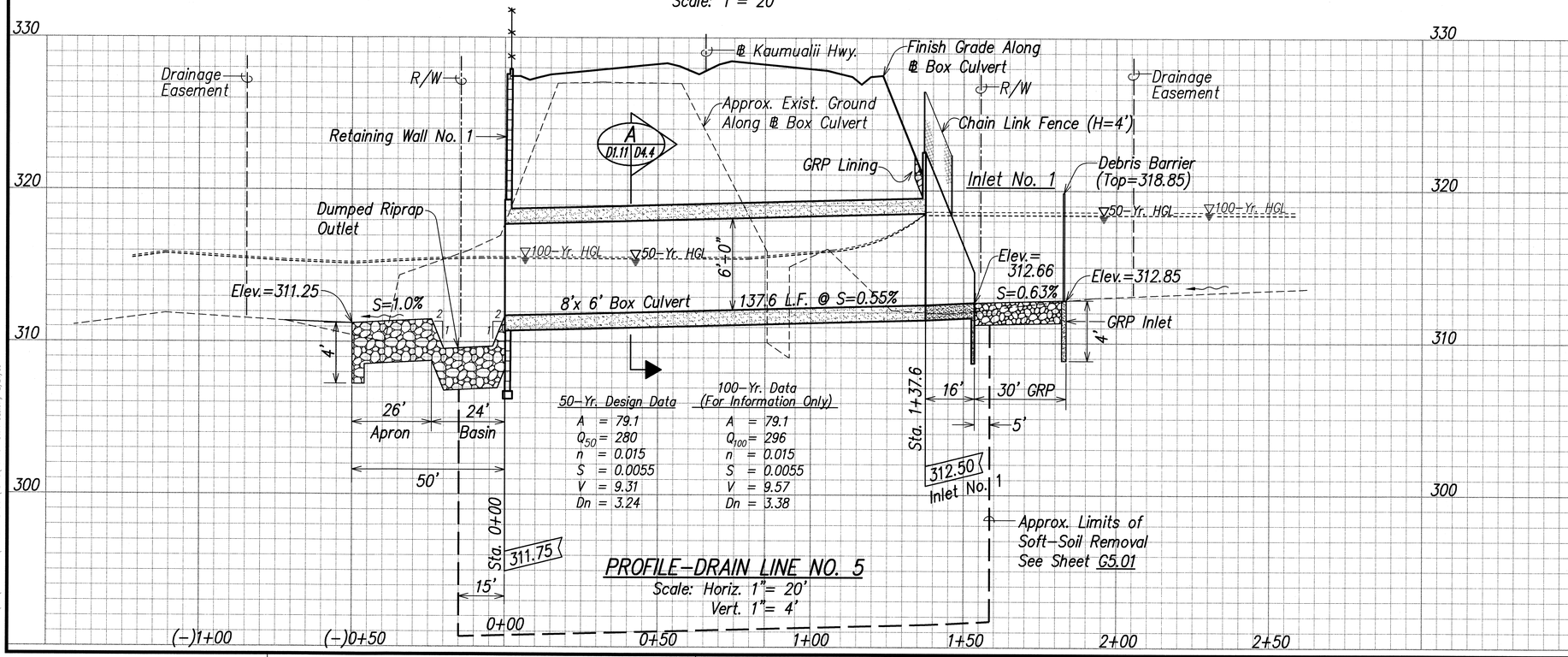
"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	140	452



PLAN-DRAIN LINE NO. 5

Scale: 1"= 20'



50-Yr. Design Data		100-Yr. Data (For Information Only)	
A	= 79.1	A	= 79.1
Q_{50}	= 280	Q_{100}	= 296
n	= 0.015	n	= 0.015
S	= 0.0055	S	= 0.0055
V	= 9.31	V	= 9.57
Dn	= 3.24	Dn	= 3.38

PROFILE-DRAIN LINE NO. 5

Scale: Horiz. 1"= 20'
Vert. 1"= 4'

ORIGINAL PLANS
SURVEY PLOTTED BY — DATE
DRAWN BY
TRACED BY
NOTE BOOK — DESIGNED BY
QUANTITIES BY
CHECKED BY
No.

I:\EC\ STATE\DOT\KAMUALII-1\PHASE A REVISION\PLANS\ HWKIG-D11-03.5.dwg 2/24/09

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
2-26-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

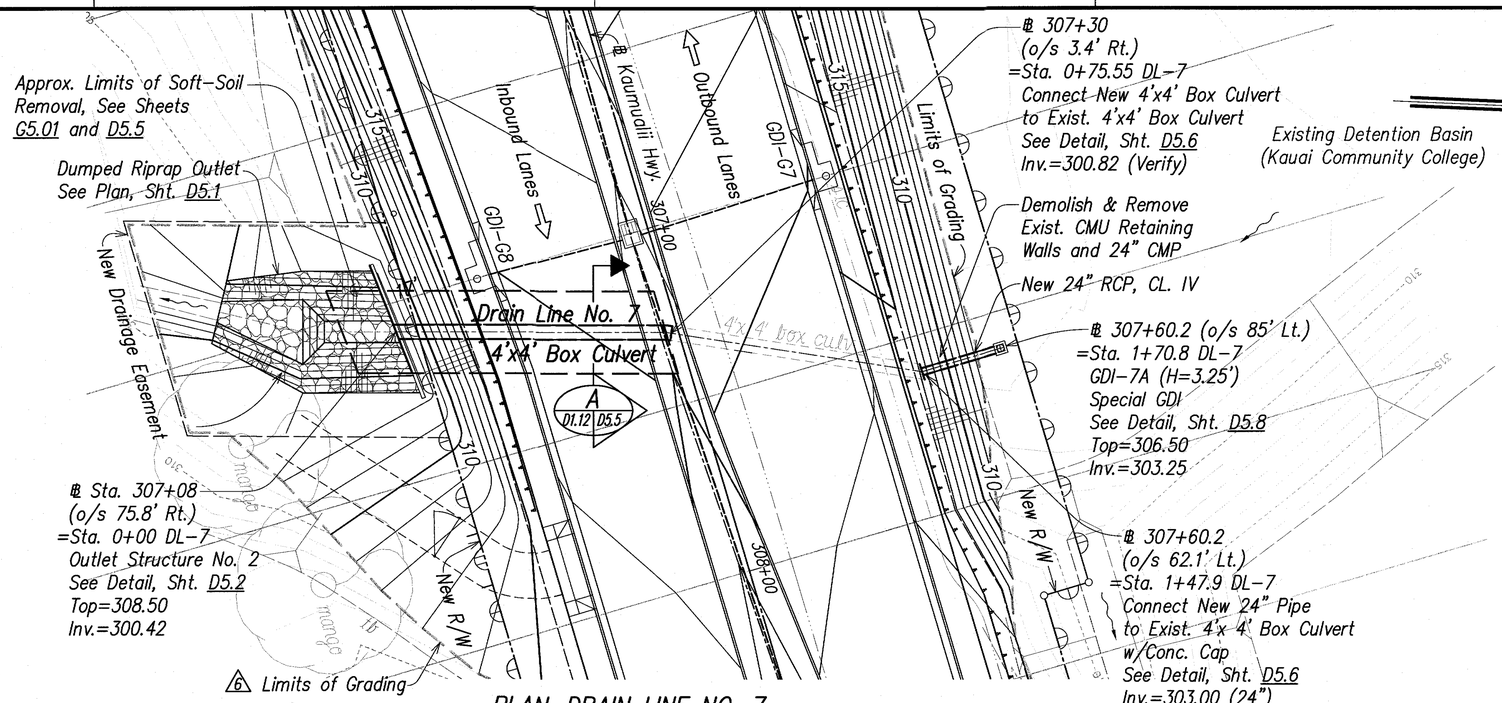
DRAINAGE PLAN AND PROFILE
DRAIN LINE NO. 5

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 20' Date: FEB. 2009

SHEET No. D1.11 OF D1.13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	141R	452

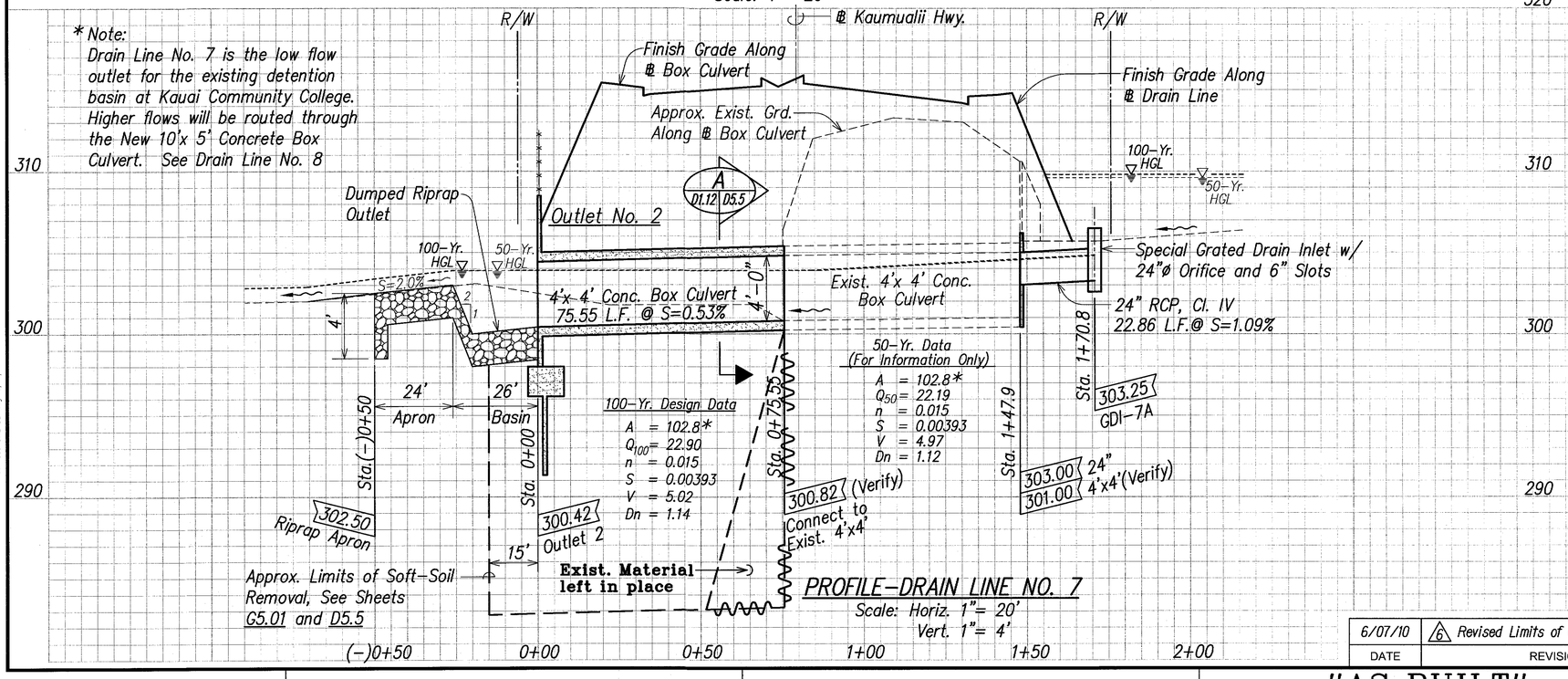


PLAN-DRAIN LINE NO. 7

Scale: 1"= 20'

LEGEND FOR AS-BUILT POSTINGS

~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**



PROFILE-DRAIN LINE NO. 7

Scale: Horiz. 1"= 20'
Vert. 1"= 4'

DATE	REVISION
6/07/10	6 Revised Limits of Grading label.

ORIGINAL PLAN | SURVEY PLOTTED BY ____ DATE | DRAWN BY ____ | TRACED BY ____ | DESIGNED BY ____ | QUANTITIES BY ____ | CHECKED BY ____ | NOTE BOOK ____ | No. ____

141-C03-012-D2.dwg 6/07/10

GLENN K. IKEDA LICENSED PROFESSIONAL ENGINEER No. 8328-C HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

PorEn, Inc. dba PARK ENGINEERING LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN AND PROFILE DRAIN LINE NO. 7

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

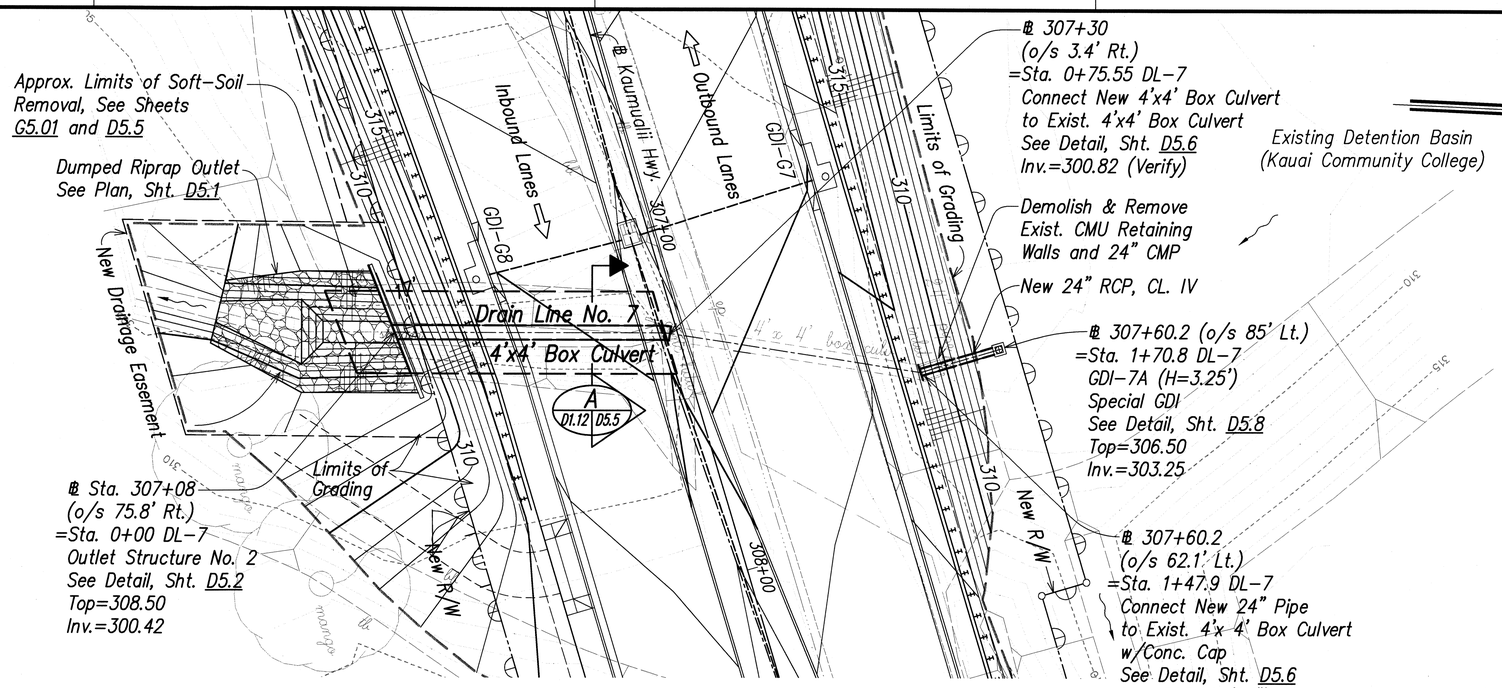
Scale: 1" = 20' Date: JAN. 2010

SHEET No. D1.12 OF D1.13 SHEETS

"AS-BUILT"

141 R

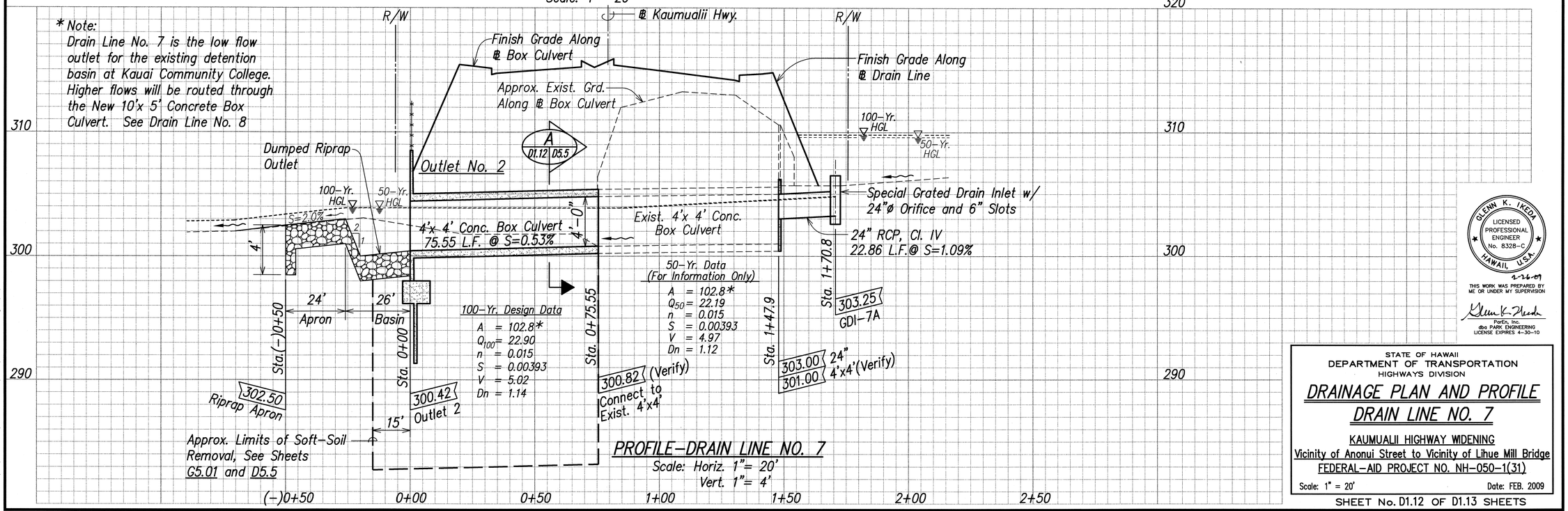
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	141	452



Note:
Clean, remove and dispose of all silt, trash, vegetation and debris from the existing 4'x4' concrete box culvert.

PLAN-DRAIN LINE NO. 7

Scale: 1"= 20'



PROFILE-DRAIN LINE NO. 7

Scale: Horiz. 1"= 20'
Vert. 1"= 4'

ORIGINAL PLANS	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

I:\SDD\STATE\OAHU\KAU-1\PH4\E1\A REVISION\PLANS\DWG\D12-D13.dwg 11/20/08

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
12-6-07
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Parsons, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

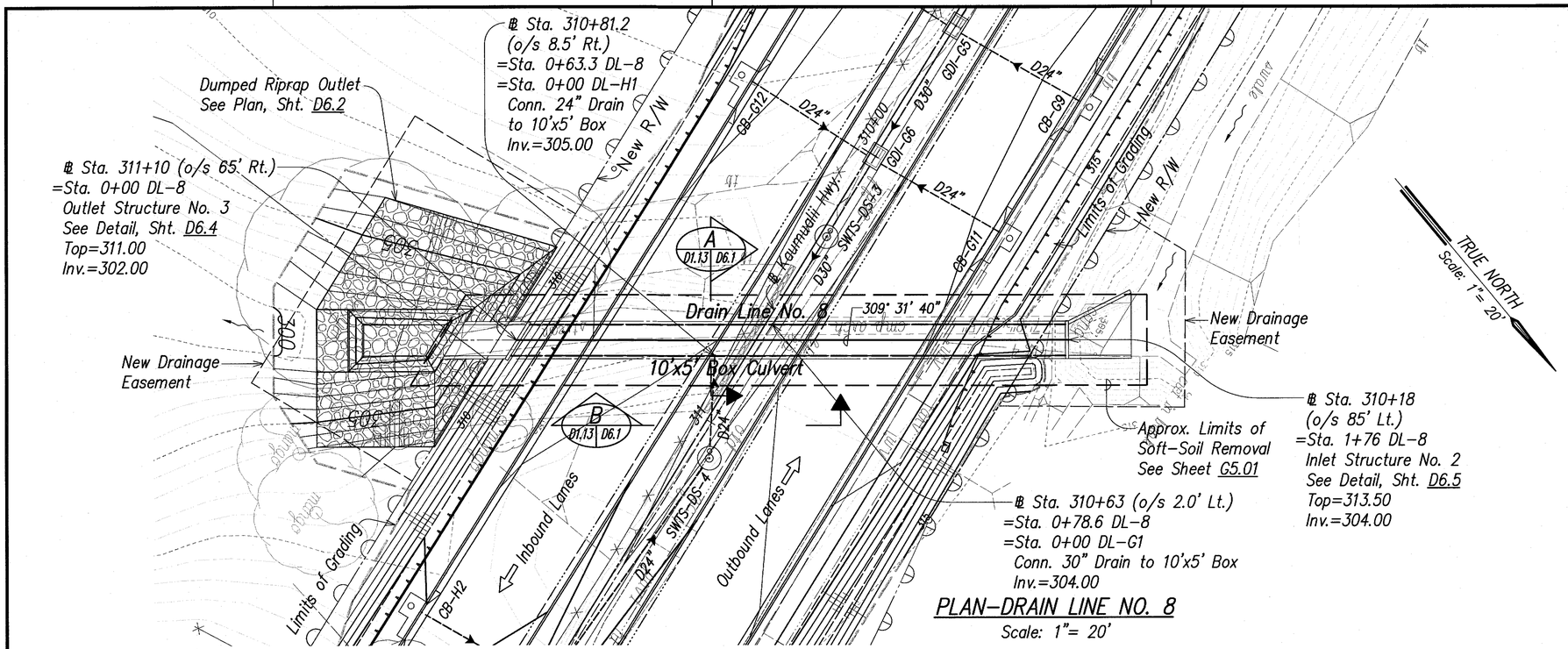
DRAINAGE PLAN AND PROFILE DRAIN LINE NO. 7

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 20' Date: FEB. 2009

SHEET No. D1.12 OF D1.13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	142	452

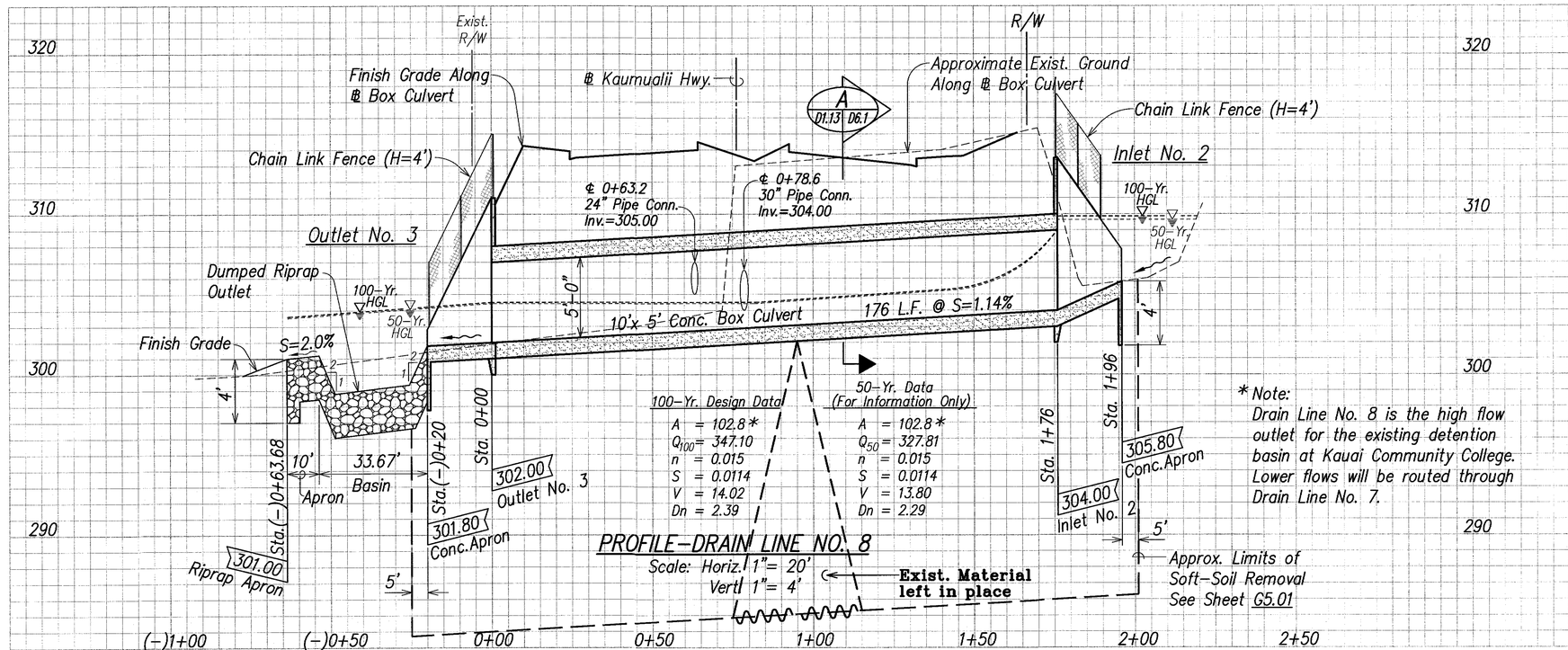


PLAN-DRAIN LINE NO. 8

Scale: 1"= 20'

LEGEND FOR AS-BUILT POSTINGS

~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting



PROFILE-DRAIN LINE NO. 8

Scale: Horiz. 1"= 20'
Vert 1"= 4'

* Note:
Drain Line No. 8 is the high flow outlet for the existing detention basin at Kauai Community College. Lower flows will be routed through Drain Line No. 7.

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE PLAN AND PROFILE
DRAIN LINE NO. 8

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

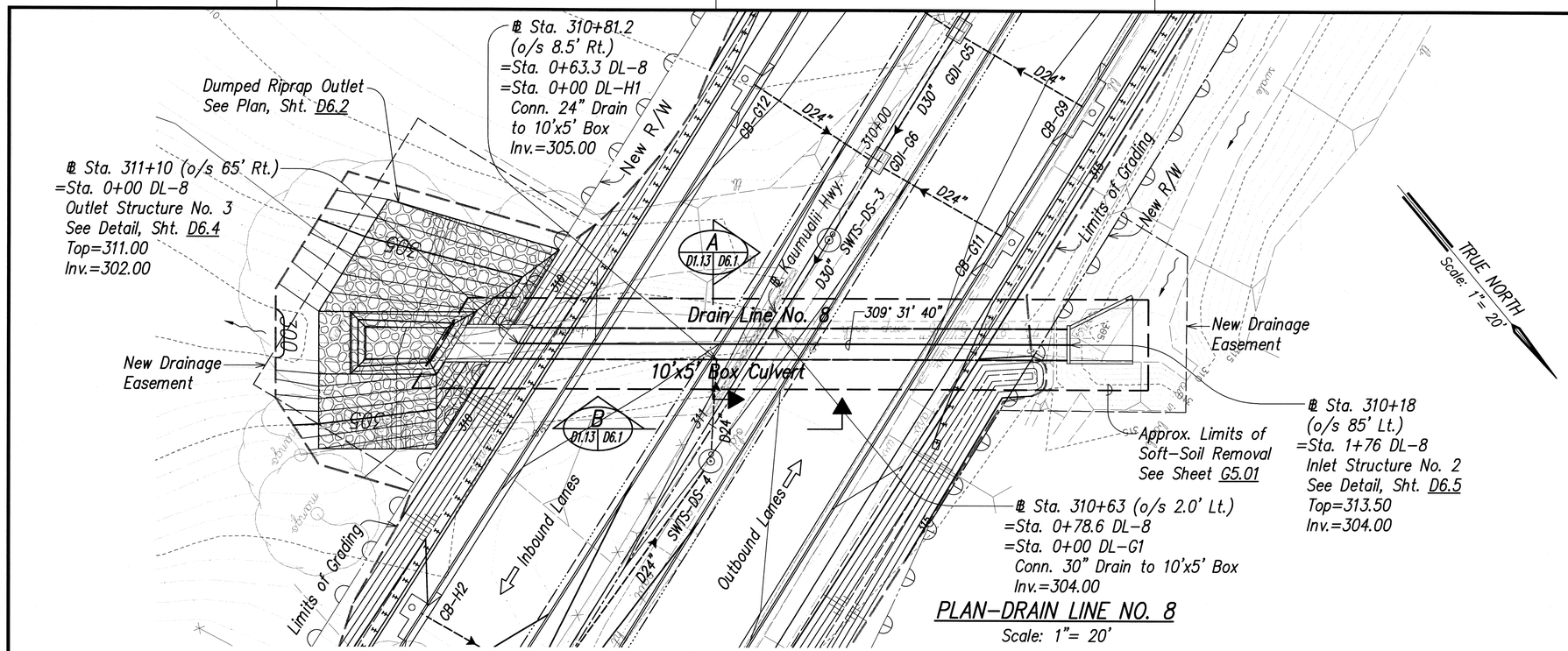
Scale: 1" = 20' Date: JAN. 2010

SHEET No. D1.13 OF D1.13 SHEETS

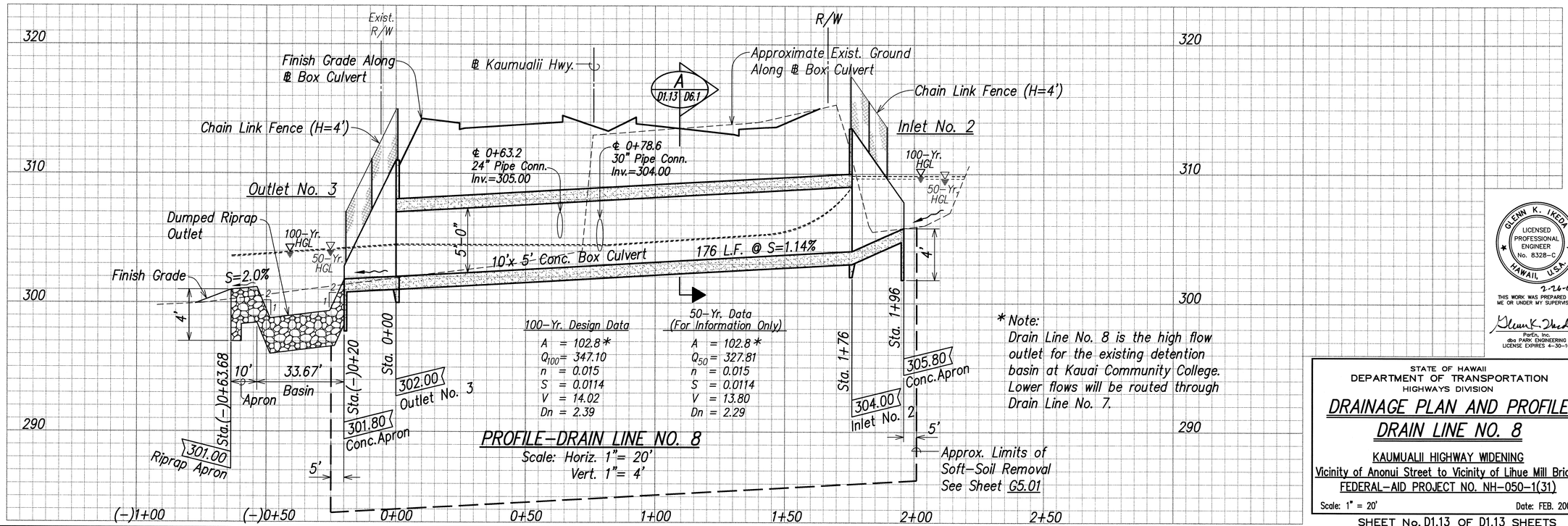
ORIGINAL PLAN
SURVEY PLOTTED BY ____ DATE
DRAWN BY ____ : :
TRACED BY ____ : :
DESIGNED BY ____ : :
NOTE BOOK QUANTITIES BY ____ : :
No. ____ CHECKED BY ____ : :
KiliHo-D1.13-D6.6.dwg 2/10/09

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	142	452



PLAN-DRAIN LINE NO. 8
Scale: 1"= 20'



100-Yr. Design Data
A = 102.8*
Q_{100} = 347.10
n = 0.015
S = 0.0114
V = 14.02
Dn = 2.39

50-Yr. Data (For Information Only)
A = 102.8*
Q_{50} = 327.81
n = 0.015
S = 0.0114
V = 13.80
Dn = 2.29

PROFILE-DRAIN LINE NO. 8
Scale: Horiz. 1"= 20'
Vert. 1"= 4'

*Note:
Drain Line No. 8 is the high flow outlet for the existing detention basin at Kauai Community College. Lower flows will be routed through Drain Line No. 7.

ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
NOTE BOOK
No.

H82: STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\HWY8-D1.13-D1.6.dwg 2/10/09

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII U.S.A.
2-26-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

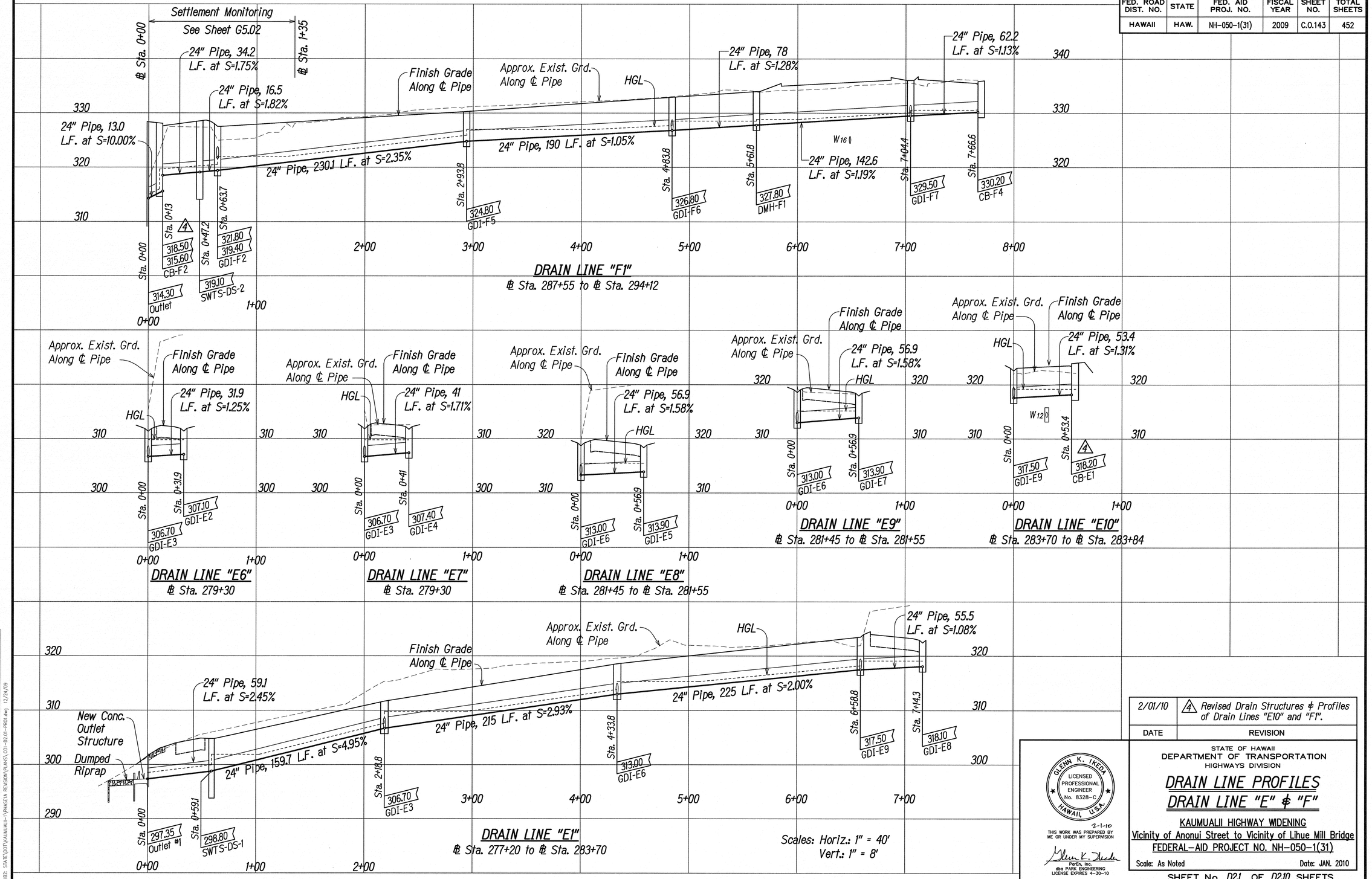
DRAINAGE PLAN AND PROFILE
DRAIN LINE NO. 8

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 20' Date: FEB. 2009

SHEET No. D1.13 OF D1.13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.143	452



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

U82: STATE\DOT\KAUMUALI-\PHASE1A REVISION\PLANS\C01-D2.01-PR01.dwg 12/24/09

2/01/10	4 Revised Drain Structures & Profiles of Drain Lines "E10" and "F1".
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAIN LINE PROFILES
DRAIN LINE "E" & "F"

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted Date: JAN. 2010

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.

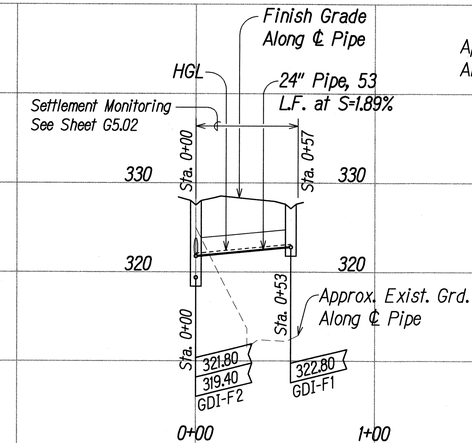
2-1-10
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

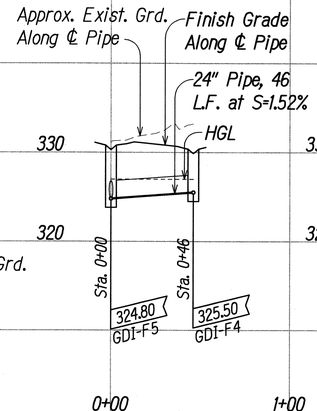
SHEET No. D2.1 OF D2.10 SHEETS

C.O. 143

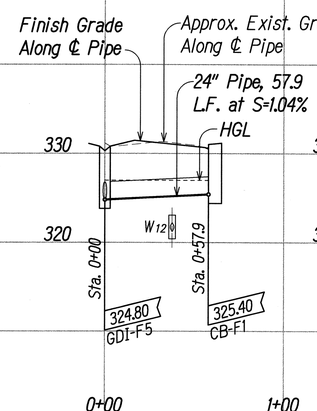
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	144	452



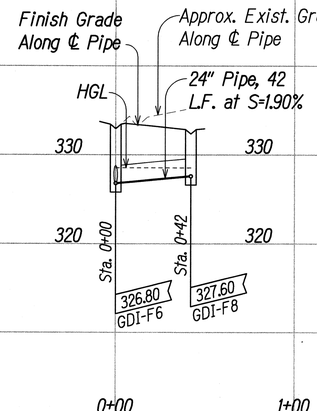
DRAIN LINE "F2"
℄ Sta. 287+60



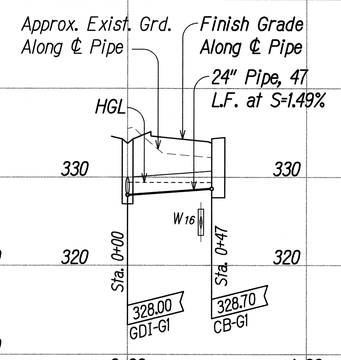
DRAIN LINE "F3"
℄ Sta. 289+90



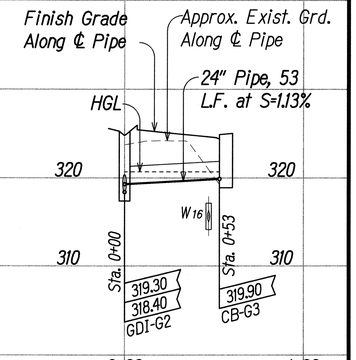
DRAIN LINE "F4"
℄ Sta. 289+90 to ℄ Sta. 290+00



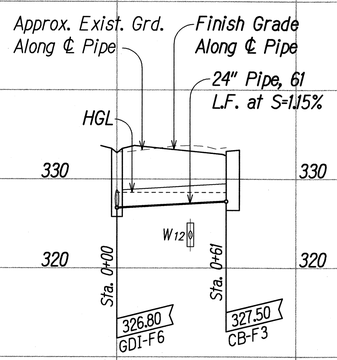
DRAIN LINE "F5"
℄ Sta. 291+80 to ℄ Sta. 291+84



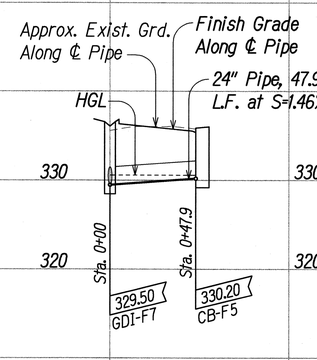
DRAIN LINE "G2"
℄ Sta. 299+75



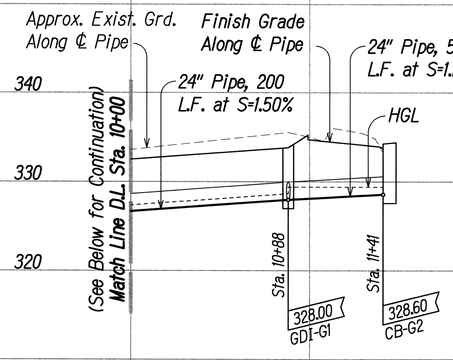
DRAIN LINE "G3"
℄ Sta. 303+74



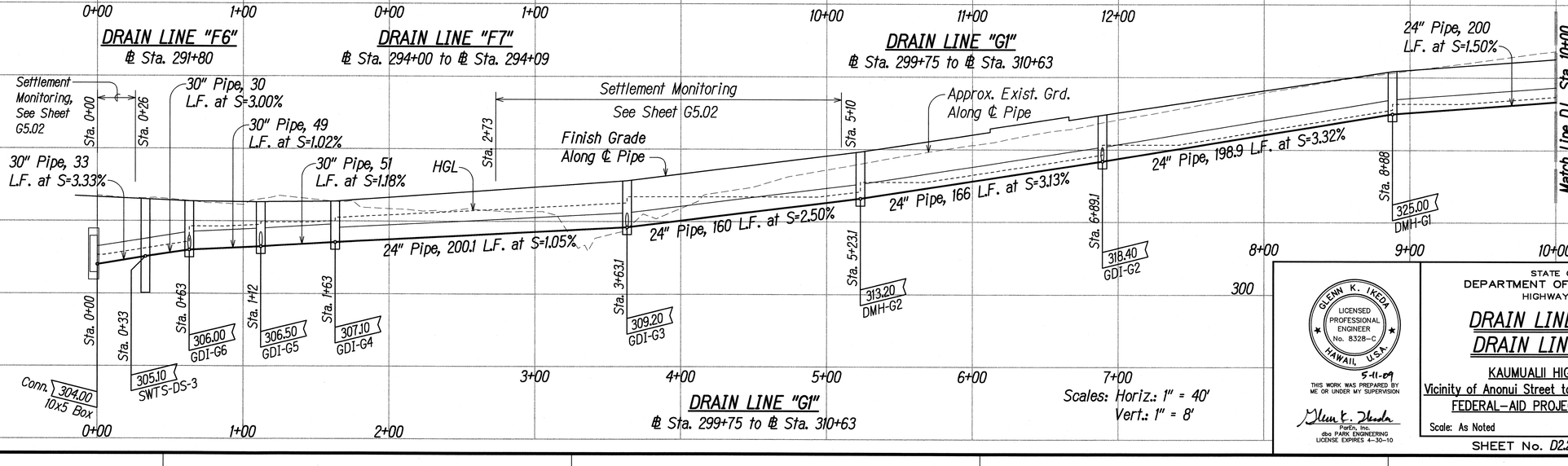
DRAIN LINE "F6"
℄ Sta. 291+80



DRAIN LINE "F7"
℄ Sta. 294+00 to ℄ Sta. 294+09



DRAIN LINE "G1"
℄ Sta. 299+75 to ℄ Sta. 310+63



DRAIN LINE "G1"
℄ Sta. 299+75 to ℄ Sta. 310+63

Scales: Horiz.: 1" = 40'
Vert.: 1" = 8'

ORIGINAL PLAN
SURVEY PLOTTED BY _____ DATE
DRAWN BY _____
TRACED BY _____
DESIGNED BY _____
QUANTITIES BY _____
CHECKED BY _____
NOTE BOOK
No. _____

U02: STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\ HWYG-D2202-PR02.dwg 5/11/09

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
5-11-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

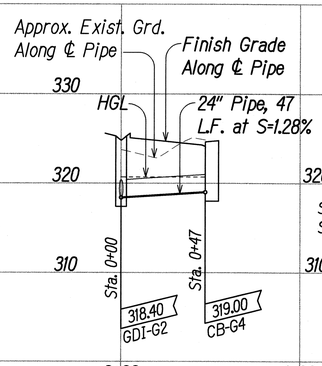
DRAIN LINE PROFILES
DRAIN LINE "F" & "G"

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

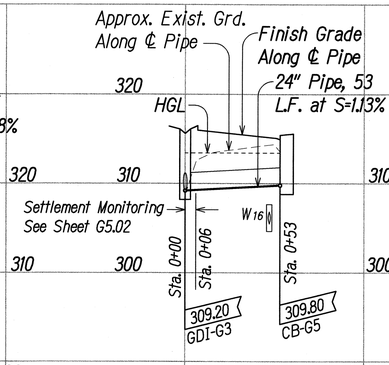
Scale: As Noted Date: MAY 2009

SHEET No. D2.2 OF D2.10 SHEETS

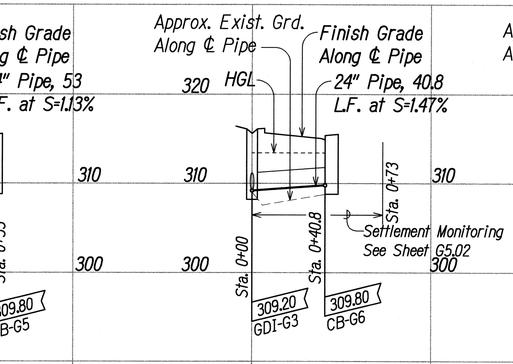
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	145	452



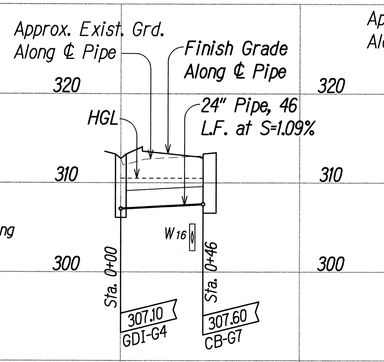
DRAIN LINE "G4"
℄ Sta. 303+74



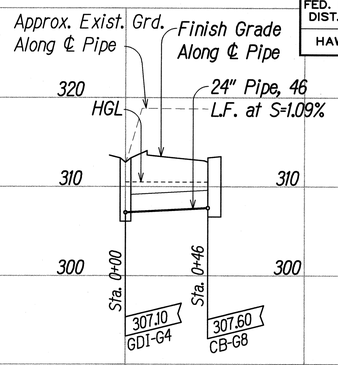
DRAIN LINE "G5"
℄ Sta. 307+00



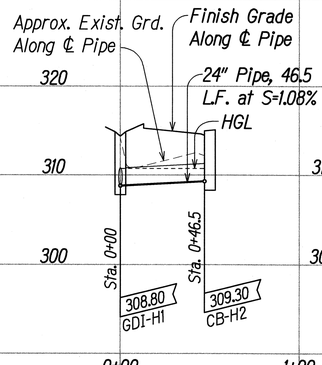
DRAIN LINE "G6"
℄ Sta. 307+00



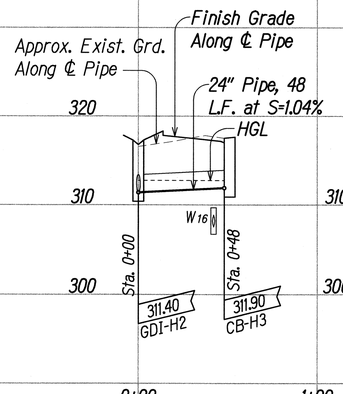
DRAIN LINE "G7"
℄ Sta. 309+00



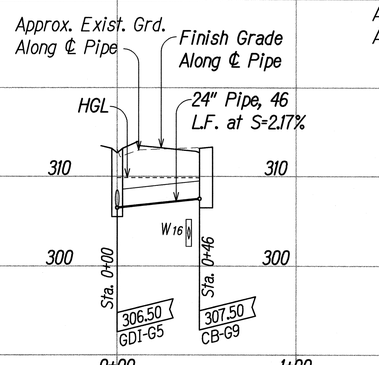
DRAIN LINE "G8"
℄ Sta. 309+00



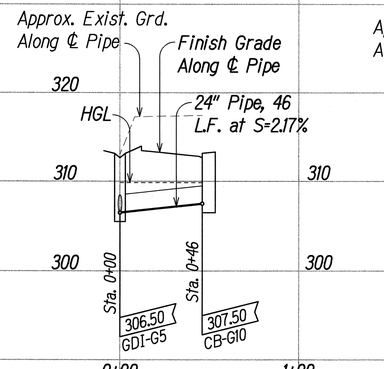
DRAIN LINE "H3"
℄ Sta. 312+00



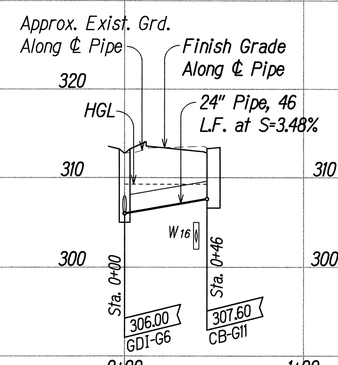
DRAIN LINE "H4"
℄ Sta. 314+50



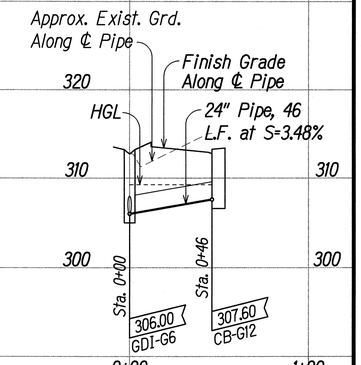
DRAIN LINE "G9"
℄ Sta. 309+51



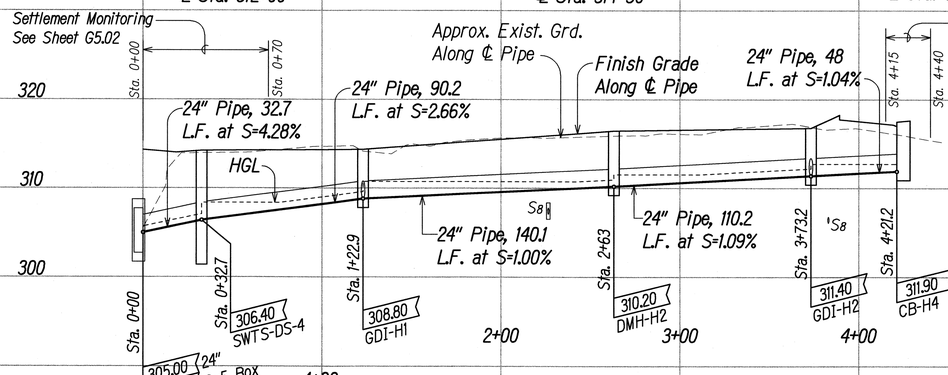
DRAIN LINE "G10"
℄ Sta. 309+51



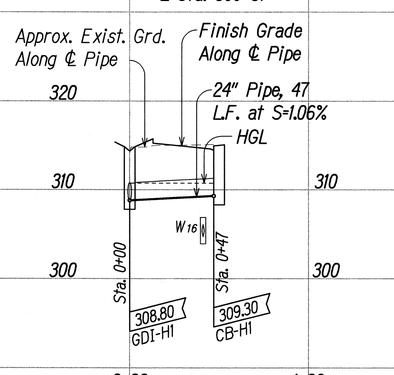
DRAIN LINE "G11"
℄ Sta. 310+00



DRAIN LINE "G12"
℄ Sta. 310+00



DRAIN LINE "H1"
℄ Sta. 310+81 to ℄ Sta. 314+75



DRAIN LINE "H2"
℄ Sta. 312+00

Scales: Horiz.: 1" = 40'
Vert.: 1" = 8'

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	
NOTE BOOK		
No.		

L:\B2- STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\Drains-02.03-PR03.dwg 5/11/09

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
5-11-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

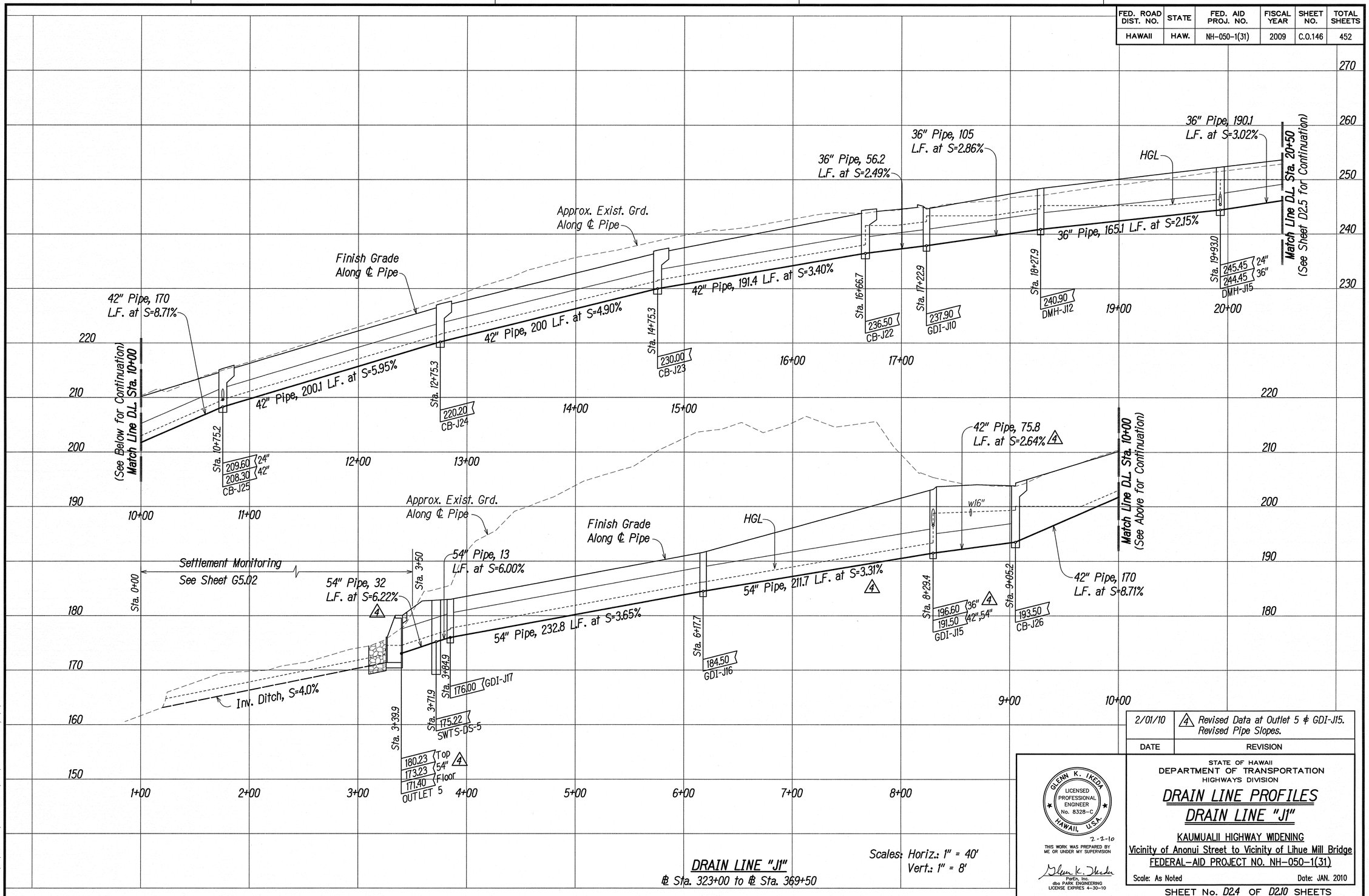
DRAIN LINE PROFILES
DRAIN LINE "G" & "H"

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted
Date: MAY 2009

SHEET No. D2.3 OF D2.10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.146	452



DATE	REVISION
2/01/10	4 Revised Data at Outlet 5 & GDI-J15. Revised Pipe Slopes.

ORIGINAL PLAN

NOTE BOOK	No.
SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

U82: STATE\DOT\KAUMUALI-1\PHASE1A REVISION\PLANS\ C01-02 04-PR04.dwg 1/13/10

GLENN K. IKEDA LICENSED PROFESSIONAL ENGINEER No. 8328-C HAWAII, U.S.A.
2-2-10
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
ParEn, Inc. dba PARK ENGINEERING LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAIN LINE PROFILES
DRAIN LINE "J1"

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted Date: JAN. 2010

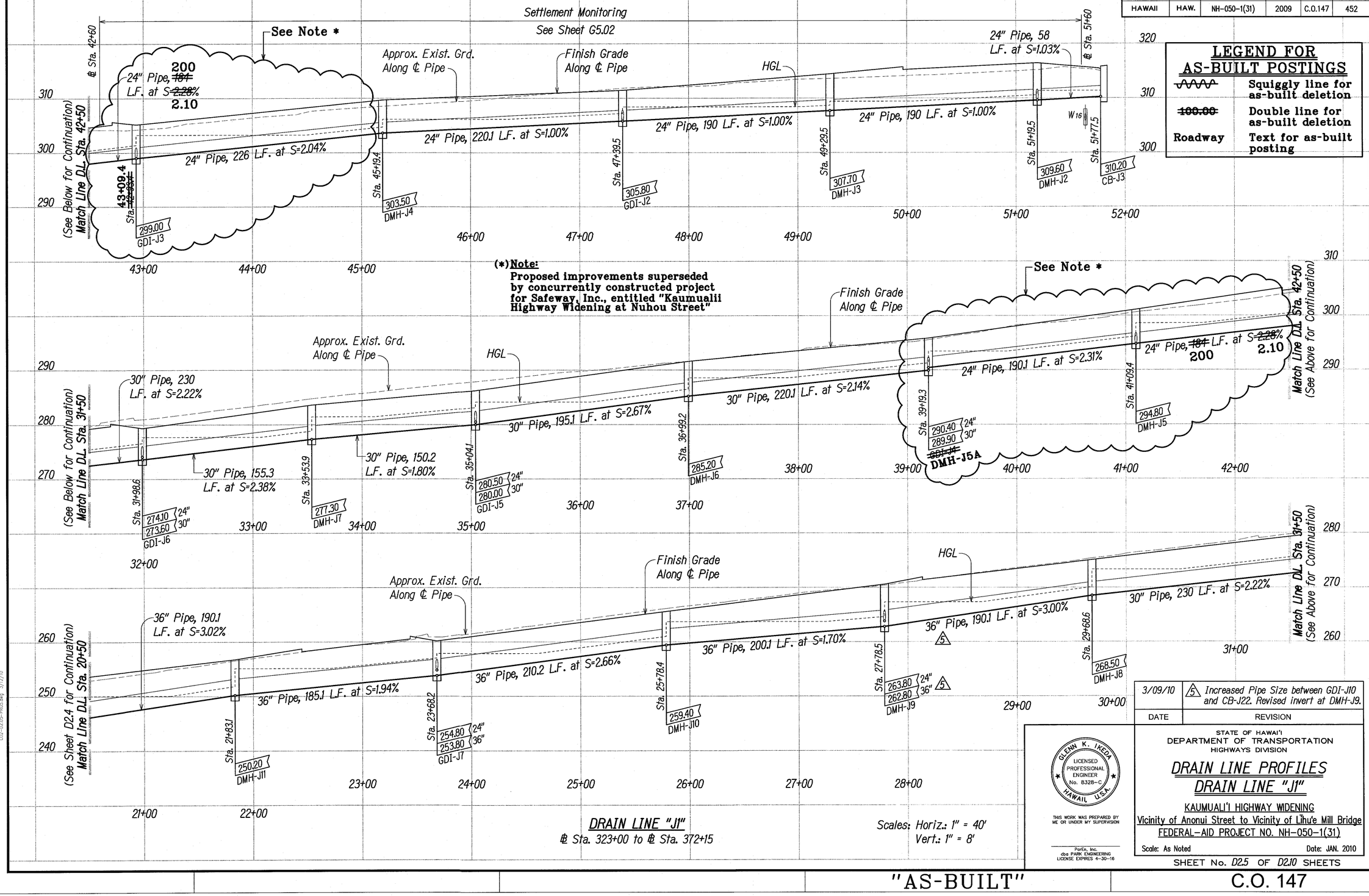
DRAIN LINE "J1"
℄ Sta. 323+00 to ℄ Sta. 369+50

Scales: Horiz.: 1" = 40'
Vert.: 1" = 8'

SHEET No. D2.4 OF D2.10 SHEETS

C.O. 146

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.147	452



LEGEND FOR AS-BUILT POSTINGS

~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

DATE	REVISION
3/09/10	/5 Increased Pipe Size between GDI-J10 and CB-J22. Revised invert at DMH-J9.

ORIGINAL PLAN | NOTE BOOK | No.

SURVEY PLOTTED BY | DATE
DATA KEY BY | "
TRACED BY | "
DESIGNED BY | "
QUANTITIES BY | "
CHECKED BY | "

C02-12.05-PR05.dwg 3/13/10

DRAIN LINE "J1"
℄ Sta. 323+00 to ℄ Sta. 372+15

Scales: Horiz.: 1" = 40'
Vert.: 1" = 8'

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAIN LINE PROFILES
DRAIN LINE "J1"

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted | Date: JAN. 2010

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

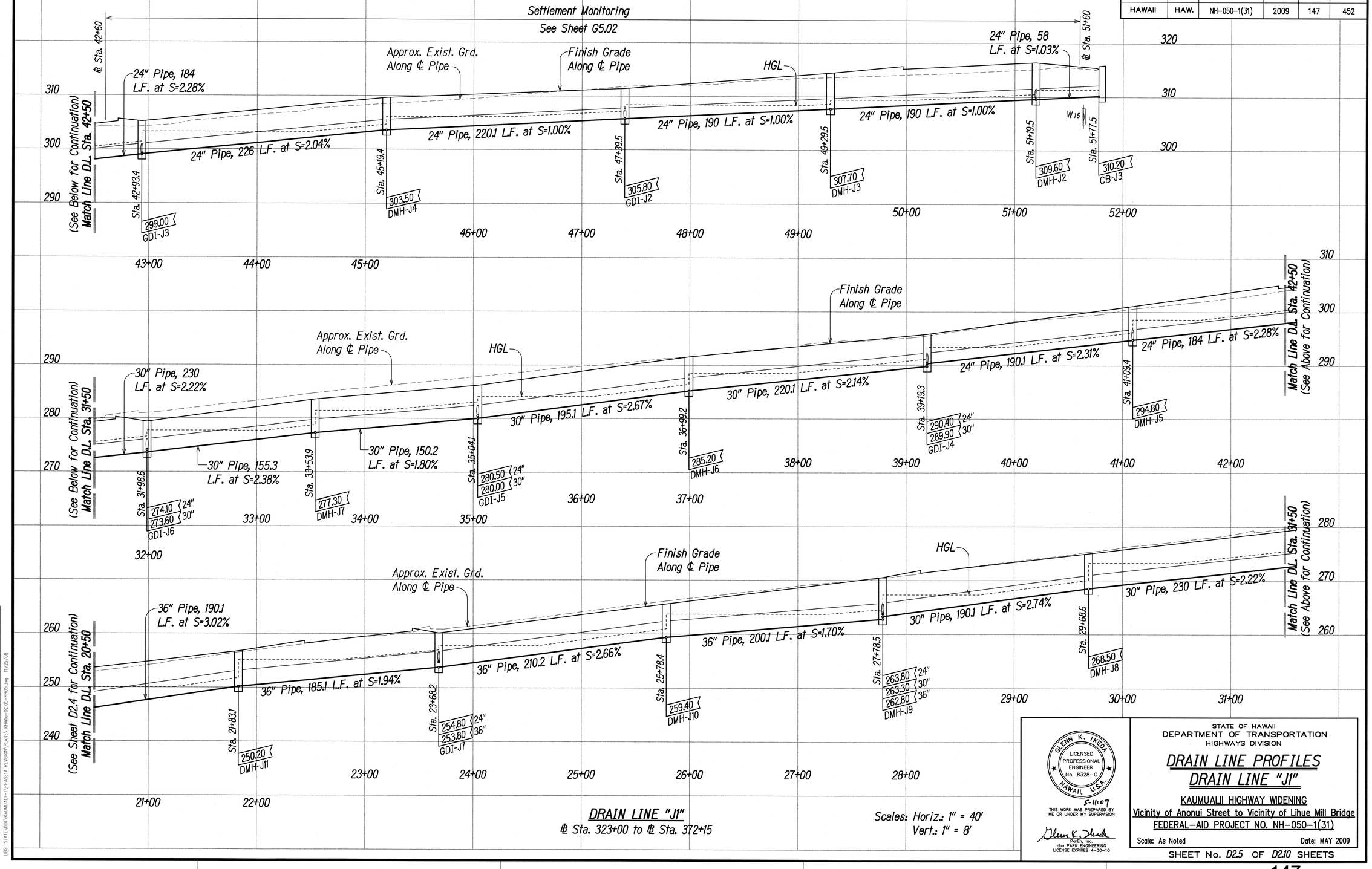
PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-16

SHEET No. D2.5 OF D2.10 SHEETS

"AS-BUILT"

C.O. 147

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	147	452



DRAIN LINE "J1"
℄ Sta. 323+00 to ℄ Sta. 372+15

Scales: Horiz.: 1" = 40'
Vert.: 1" = 8'

ORIGINAL PLAN — SURVEY PLOTTED BY — DRAWN BY — TRACED BY — DESIGNED BY — QUANTITIES BY — CHECKED BY — DATE
NOTE BOOK — No.

I:\82_STATE \DOT\KAUMUALI-I\PHASE1A REVISION\PLANS\ KHWY=02.05-PROS.dwg 11/25/08

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
5-11-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

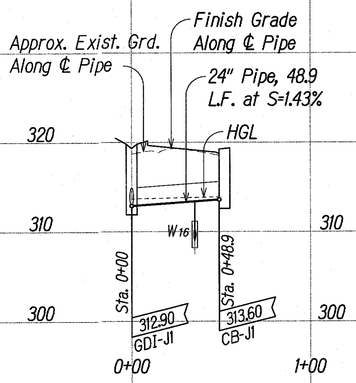
DRAIN LINE PROFILES
DRAIN LINE "J1"

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted — Date: MAY 2009

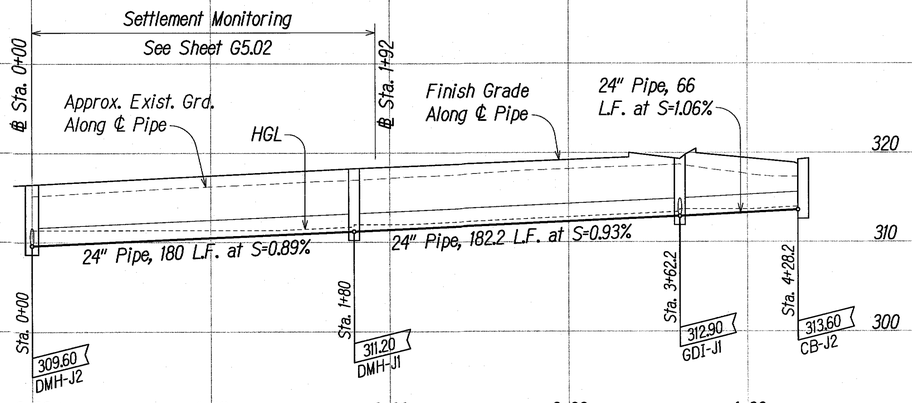
SHEET No. D2.5 OF D2.10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.148	452



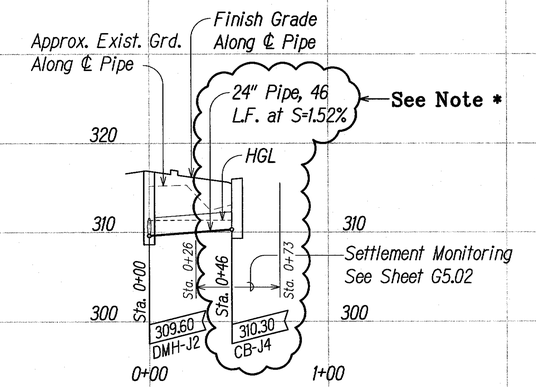
DRAIN LINE "J2"

℄ Sta. 319+31 to ℄ Sta. 319+38



DRAIN LINE "J3"

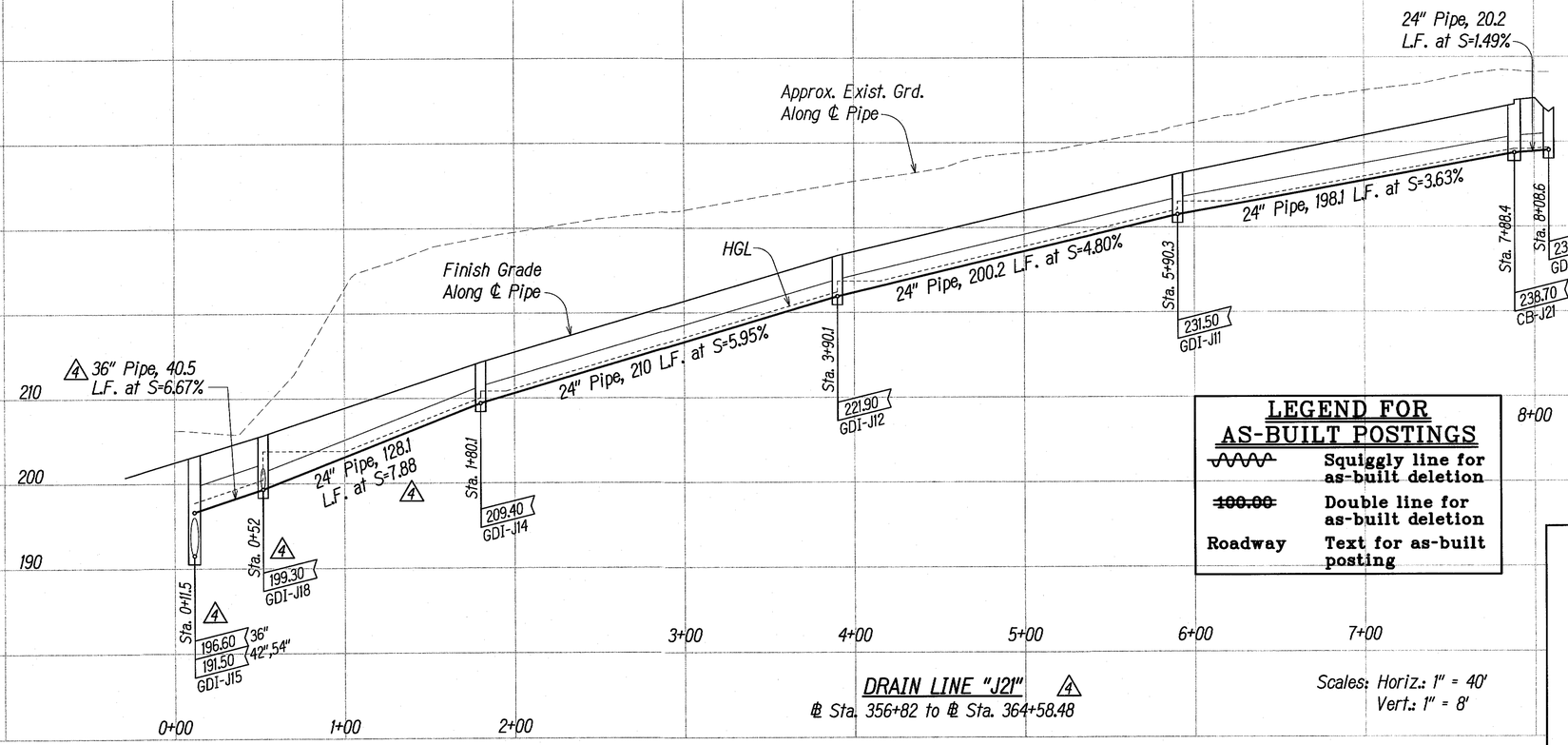
℄ Sta. 319+17 to ℄ Sta. 323+00



DRAIN LINE "J4"

℄ Sta. 323+00

(*) Note:
Proposed improvements superseded by concurrently constructed project for Safeway, Inc., entitled "Kaumualii Highway Widening at Nuhou Street"



DRAIN LINE "J21" 4

℄ Sta. 356+82 to ℄ Sta. 364+58.48

Scales: Horiz.: 1" = 40'
Vert.: 1" = 8'

LEGEND FOR AS-BUILT POSTINGS

~~^^^^~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

DATE	REVISION
2/01/10	4 Revised Profile & Pipe Size of D.L. "J21" from GDI-J15 to GDI-J14.

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ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAIN LINE PROFILES
DRAIN LINE "J"

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted Date: JAN. 2010

SHEET No. D2.6 OF D2.10 SHEETS

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

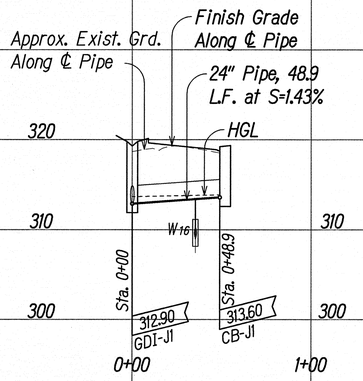
ORIGINAL PLAN
NOTE BOOK
No.

C01-D2.06-PR06.dwg 1/14/10

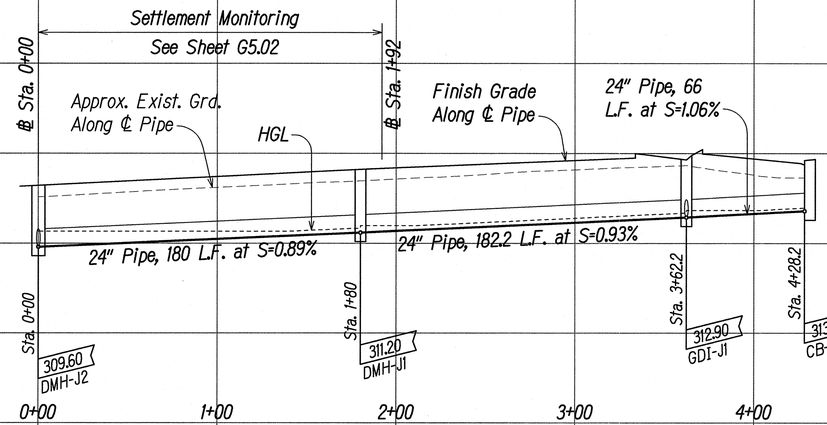
"AS-BUILT"

C.O. 148

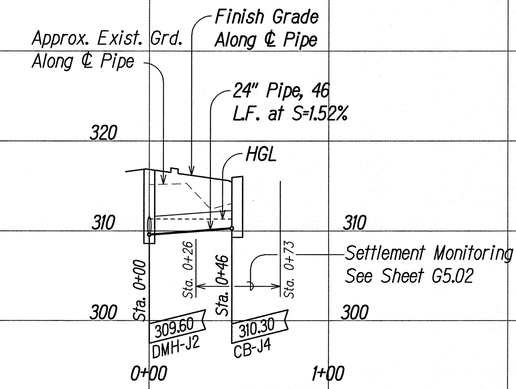
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.148	452



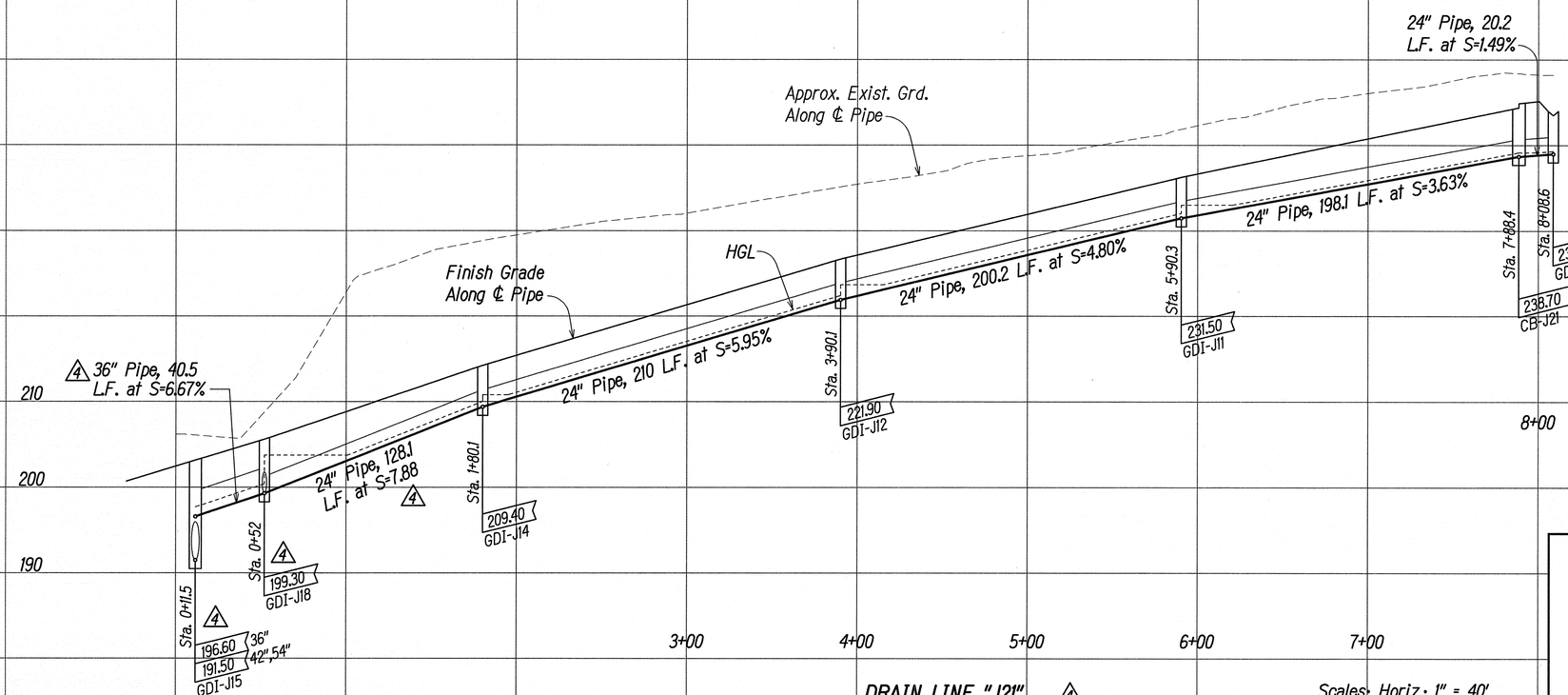
DRAIN LINE "J2"
℄ Sta. 319+31 to ℄ Sta. 319+38



DRAIN LINE "J3"
℄ Sta. 319+17 to ℄ Sta. 323+00



DRAIN LINE "J4"
℄ Sta. 323+00



DRAIN LINE "J21" 4
℄ Sta. 356+82 to ℄ Sta. 364+58.48

Scales: Horiz.: 1" = 40'
Vert.: 1" = 8'

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

L:\B2: STATE\DOT\KAUMUALI-1\PHASE1A REVISION\PLANS\C01-D2.06-PR06.dwg 1/14/10

DATE	REVISION
2/01/10	4 Revised Profile ℄ Pipe Size of D.L. "J21" from GDI-J15 to GDI-J14.

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
2-2-10
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
Park, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAIN LINE PROFILES
DRAIN LINE "J"

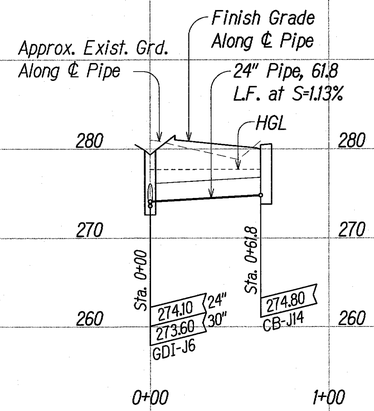
KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted Date: JAN. 2010

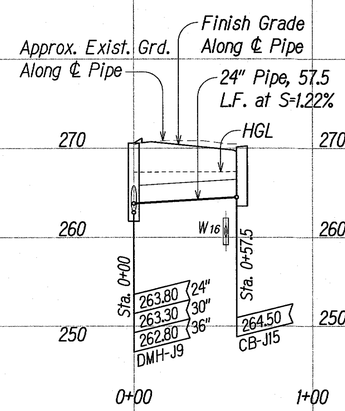
SHEET No. D2.6 OF D2.10 SHEETS

C.O. 148

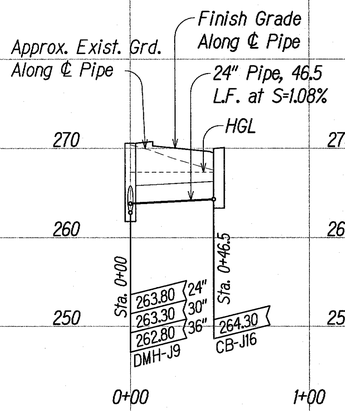
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.149	452



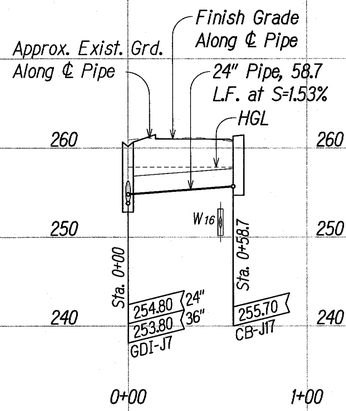
DRAIN LINE "J14"
℄ Sta. 341+90 to ℄ Sta. 342+20



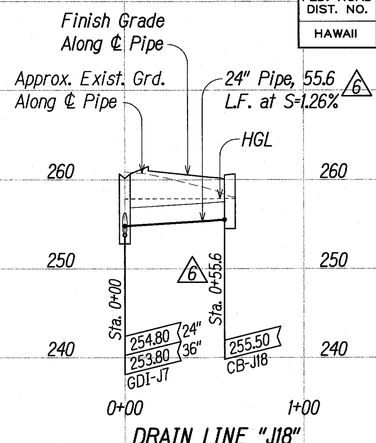
DRAIN LINE "J15"
℄ Sta. 364+40



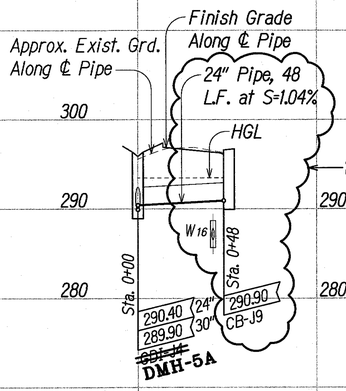
DRAIN LINE "J16"
℄ Sta. 364+40



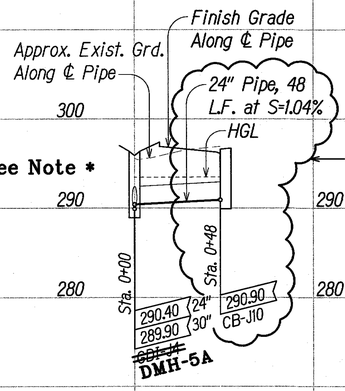
DRAIN LINE "J17"
℄ Sta. 350+20 to ℄ Sta. 350+50



DRAIN LINE "J18"
℄ Sta. 350+20 to ℄ Sta. 350+50



DRAIN LINE "J9"
℄ Sta. 335+00



DRAIN LINE "J10"
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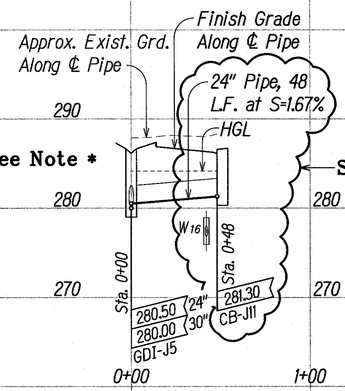
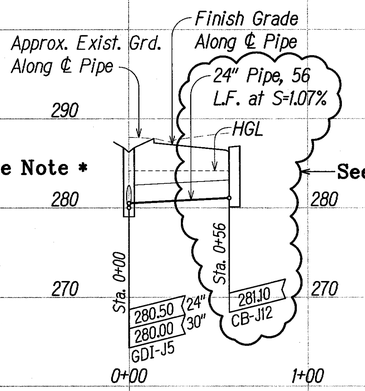
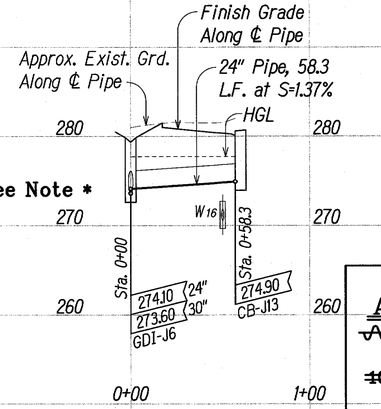


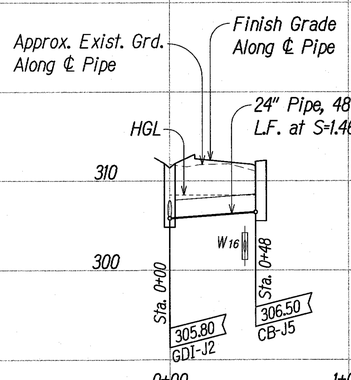
DRAIN LINE "J11"
℄ Sta. 339+15



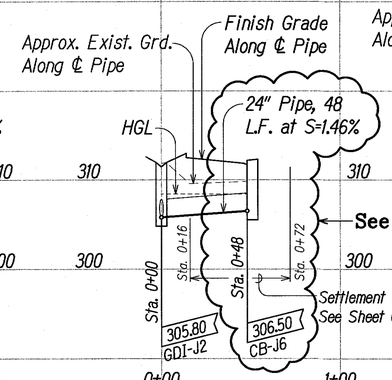
DRAIN LINE "J12"
℄ Sta. 339+15



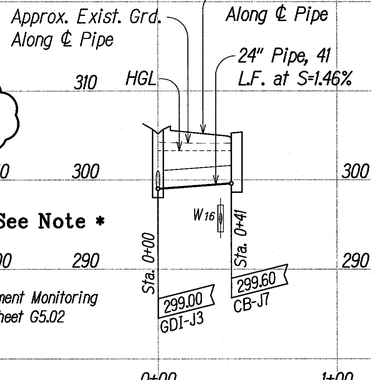
DRAIN LINE "J13"
℄ Sta. 341+90 to ℄ Sta. 342+20



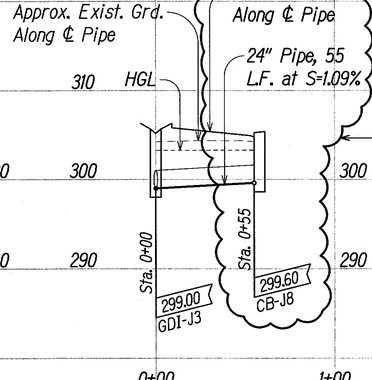
DRAIN LINE "J5"
℄ Sta. 326+80



DRAIN LINE "J6"
℄ Sta. 326+80



DRAIN LINE "J7"
℄ Sta. ~~331+26~~ 331+10.84
See Note *



DRAIN LINE "J8"
℄ Sta. ~~331+26~~ 330+78.9
See Note *

LEGEND FOR AS-BUILT POSTINGS

~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

(*) Note:
Proposed improvements superseded by concurrently constructed project for Safeway, Inc., entitled "Kaumualii Highway Widening at Nuhou Street"

Scales: Horiz.: 1" = 40'
Vert.: 1" = 8'

DATE	REVISION
9/27/10	6 Revised Drain Line J18 Profile.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAIN LINE PROFILES
DRAIN LINE "J"

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted Date: JAN. 2010

GLENN K. IKEDA
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No. 8328-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-16

SHEET No. D2.7 OF D2.10 SHEETS

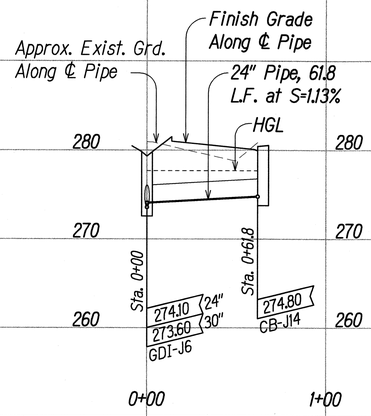
ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE
NOTE BOOK | No.

149-033-1200-PROF.dwg 9/27/10

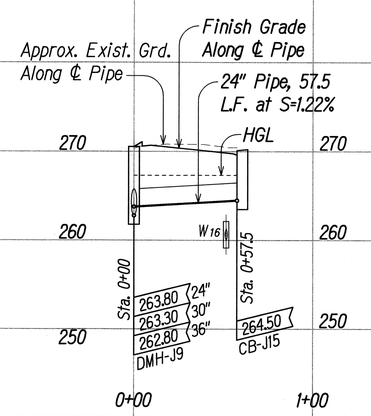
"AS-BUILT"

C.O. 149

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	149	452



DRAIN LINE "J14"
℄ Sta. 341+90 to ℄ Sta. 342+20



DRAIN LINE "J15"
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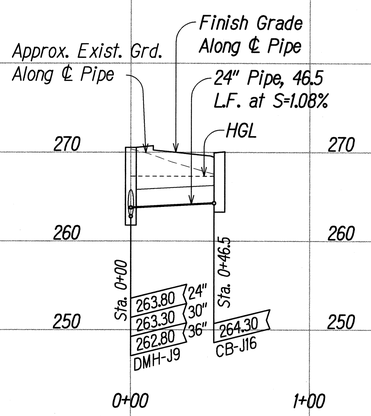

DRAIN LINE "J16"
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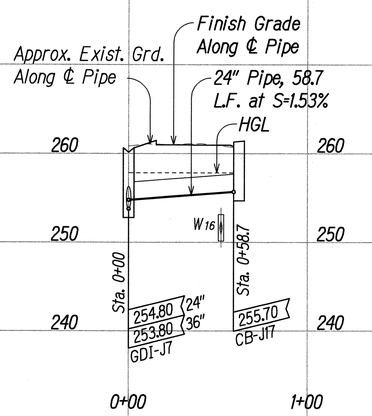
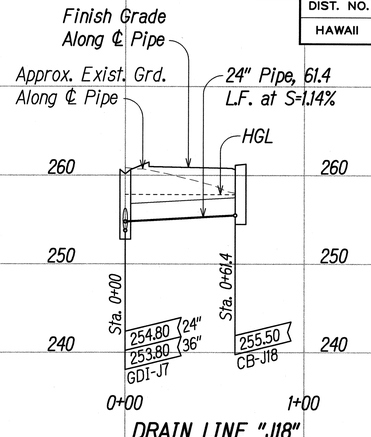
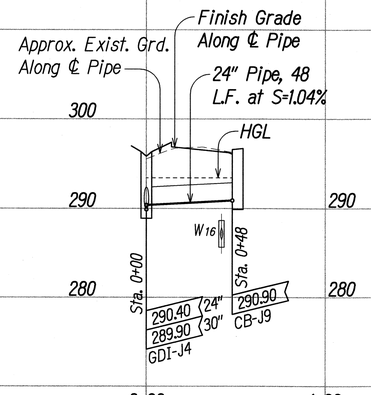


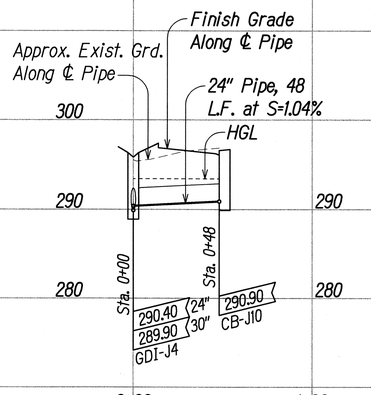
DRAIN LINE "J17"
℄ Sta. 350+20 to ℄ Sta. 350+50



DRAIN LINE "J18"
℄ Sta. 350+20 to ℄ Sta. 350+50



DRAIN LINE "J9"
℄ Sta. 335+00



DRAIN LINE "J10"
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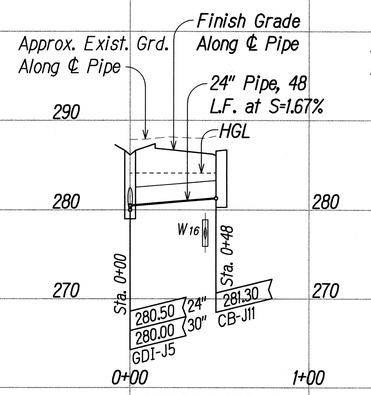
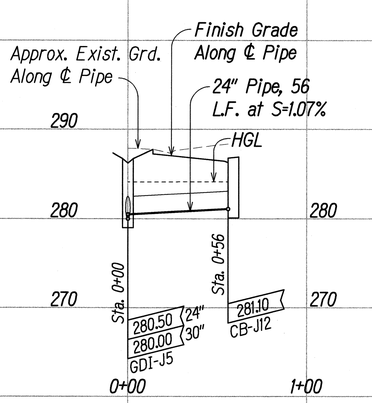
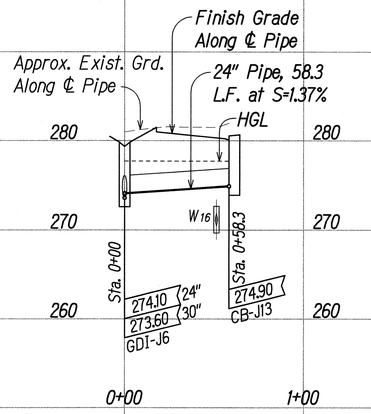


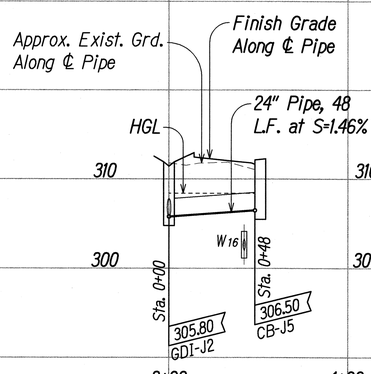
DRAIN LINE "J11"
℄ Sta. 339+15



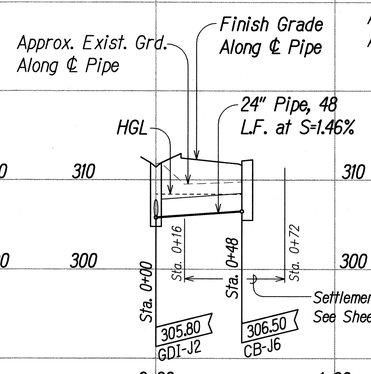
DRAIN LINE "J12"
℄ Sta. 339+15



DRAIN LINE "J13"
℄ Sta. 341+90 to ℄ Sta. 342+20



DRAIN LINE "J5"
℄ Sta. 326+80



DRAIN LINE "J6"
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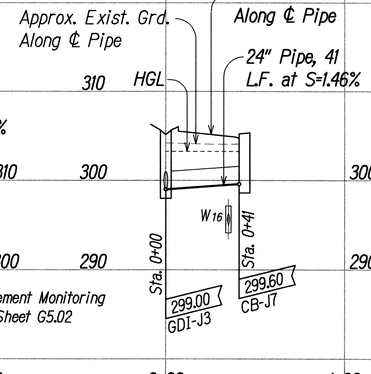
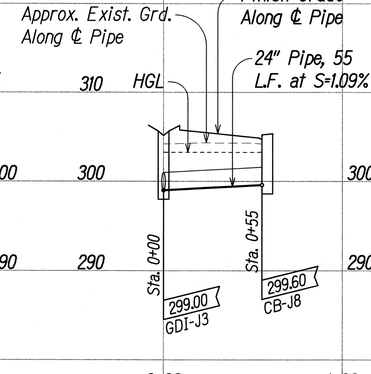


DRAIN LINE "J7"
℄ Sta. 331+26



DRAIN LINE "J8"
℄ Sta. 331+26

Scales: Horiz.: 1" = 40'
Vert.: 1" = 8'

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
	TRACED BY	"
NOTE BOOK	DESIGNED BY	"
No.	QUANTITIES BY	"
	CHECKED BY	"

L82: STATE OF HAWAII\KAUMUALII-1\PHASE1A REVISION\PLANS\KHWA-02.07-PR07.dwg 5/11/09

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No. 8328-C
HAWAII, U.S.A.
5-11-09

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Glenn K. Ikeda
ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

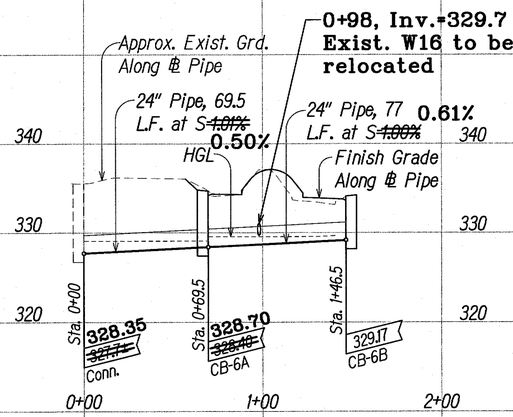
DRAIN LINE PROFILES
DRAIN LINE "J"

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted Date: MAY 2009

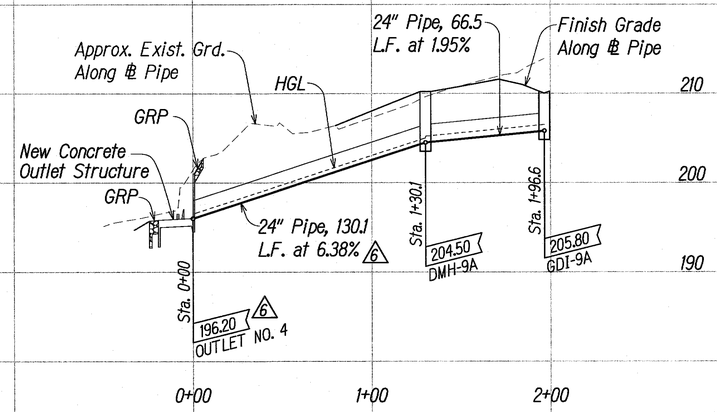
SHEET No. D2.7 OF D2.10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.150	452



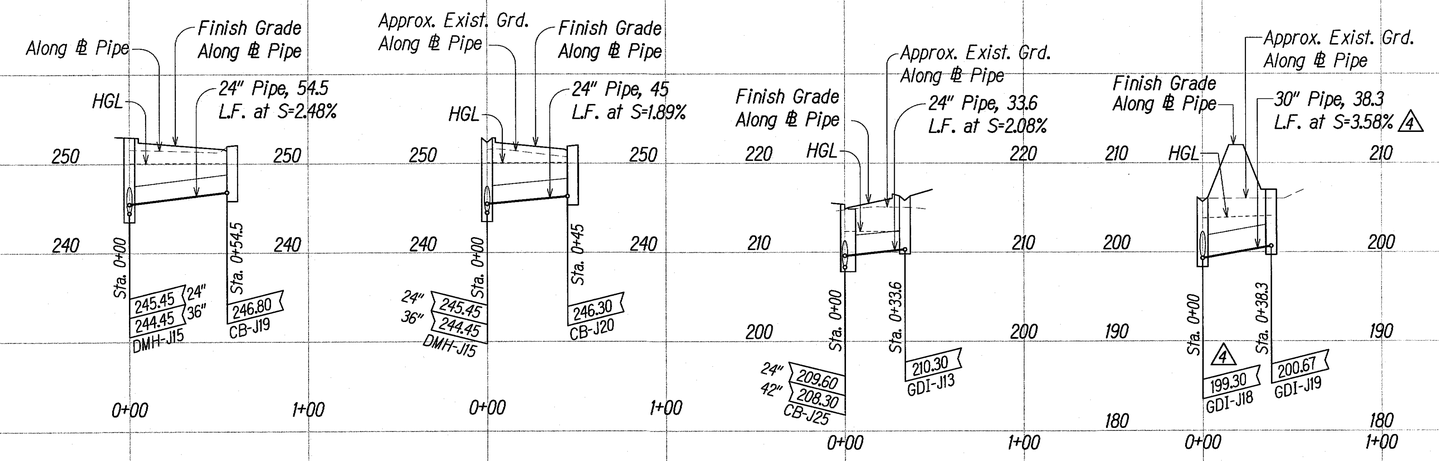
DRAIN LINE "6"

℄ Sta. 293+00 to ℄ Sta. 294+40



DRAIN LINE "9"

℄ Sta. 363+10 to ℄ Sta. 365+00



DRAIN LINE "J19"

℄ Sta. 354+20 to ℄ Sta. 354+25

DRAIN LINE "J20"

℄ Sta. 354+25

DRAIN LINE "J22"

℄ Sta. 362+85 to 362+90

DRAIN LINE "J23"

O.B. ℄ Sta. 364+18 to 364+48.58 4

LEGEND FOR AS-BUILT POSTINGS

~~^^^^~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

Scales: Horiz.: 1" = 40'
Vert.: 1" = 8'

DATE	REVISION
6/07/10	6 Revised Invert at Outlet No. 4.
2/01/10	4 Revised Profile & Pipe Size of D.L. "J23" and Invert at GDI-J18.

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLANS
NOTE BOOK
No.

150-003-02.08-PR08.dwg 4/26/10

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAIN LINE PROFILES
DRAIN LINE "J", "6" & "9"

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

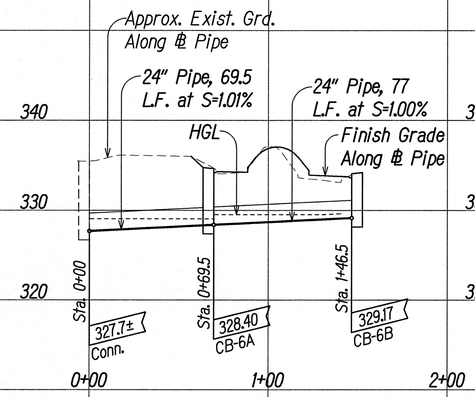
Scale: As Noted
Date: JAN. 2010

SHEET No. D2.8 OF D2.10 SHEETS

"AS-BUILT"

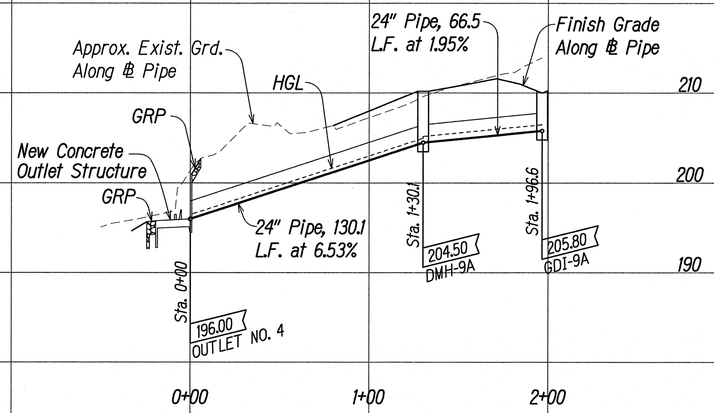
C.O. 150

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.150	452



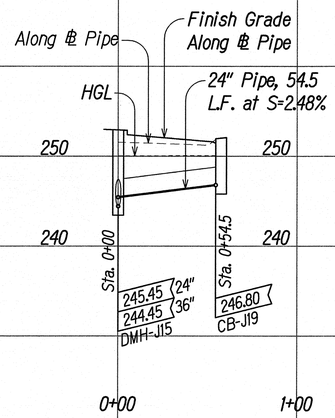
DRAIN LINE "6"

℄ Sta. 293+00 to ℄ Sta. 294+40



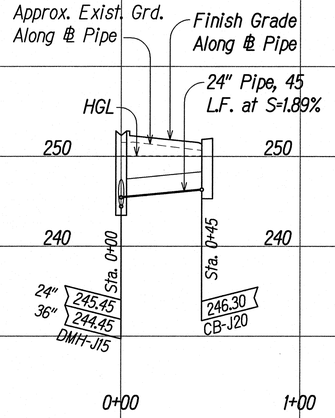
DRAIN LINE "9"

℄ Sta. 363+10 to ℄ Sta. 365+00



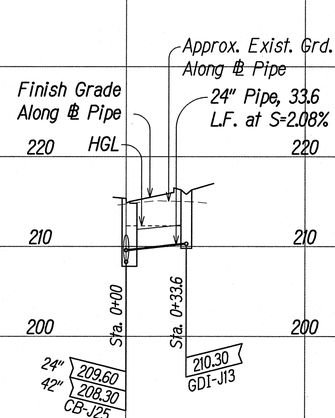
DRAIN LINE "J19"

℄ Sta. 354+20 to ℄ Sta. 354+25



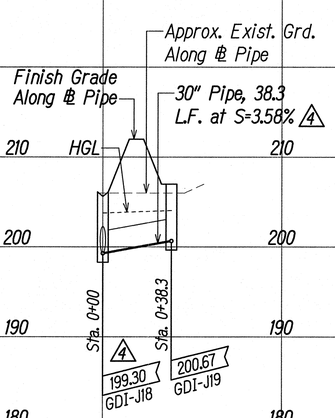
DRAIN LINE "J20"

℄ Sta. 354+25



DRAIN LINE "J22"

℄ Sta. 362+85 to 362+90



DRAIN LINE "J23"

O.B. ℄ Sta. 364+18 to 364+48.58 4

Scales: Horiz.: 1" = 40'
Vert.: 1" = 8'

DATE	REVISION
2/01/10	4 Revised Profile & Pipe Size of D.L. "J23" and Invert at GDI-J18.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAIN LINE PROFILES
DRAIN LINE "J", "6" & "9"

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted Date: JAN. 2010

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LICENSE EXPIRES 4-30-10

SHEET No. D2.8 OF D2.10 SHEETS

C.O. 150

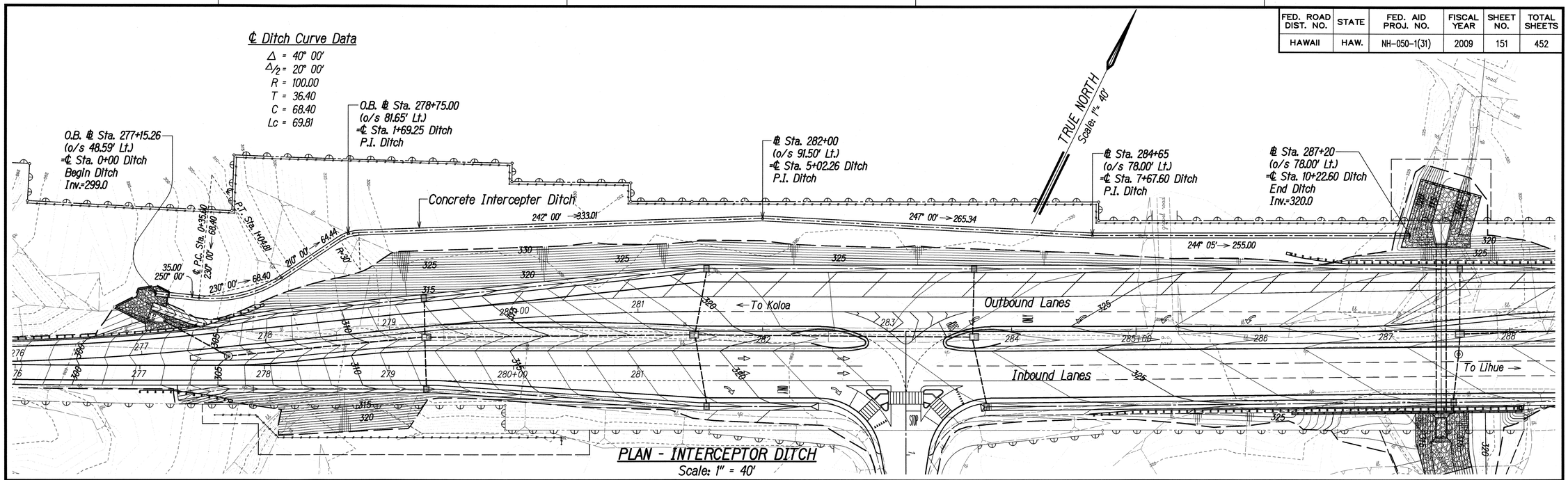
ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE
NOTE BOOK | No.

L:\B2: STATE\DOT\KAUMUALI-1\PHASE1A REVISION\PLANS\C01-02.08-PROB.dwg 1/14/10

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	151	452

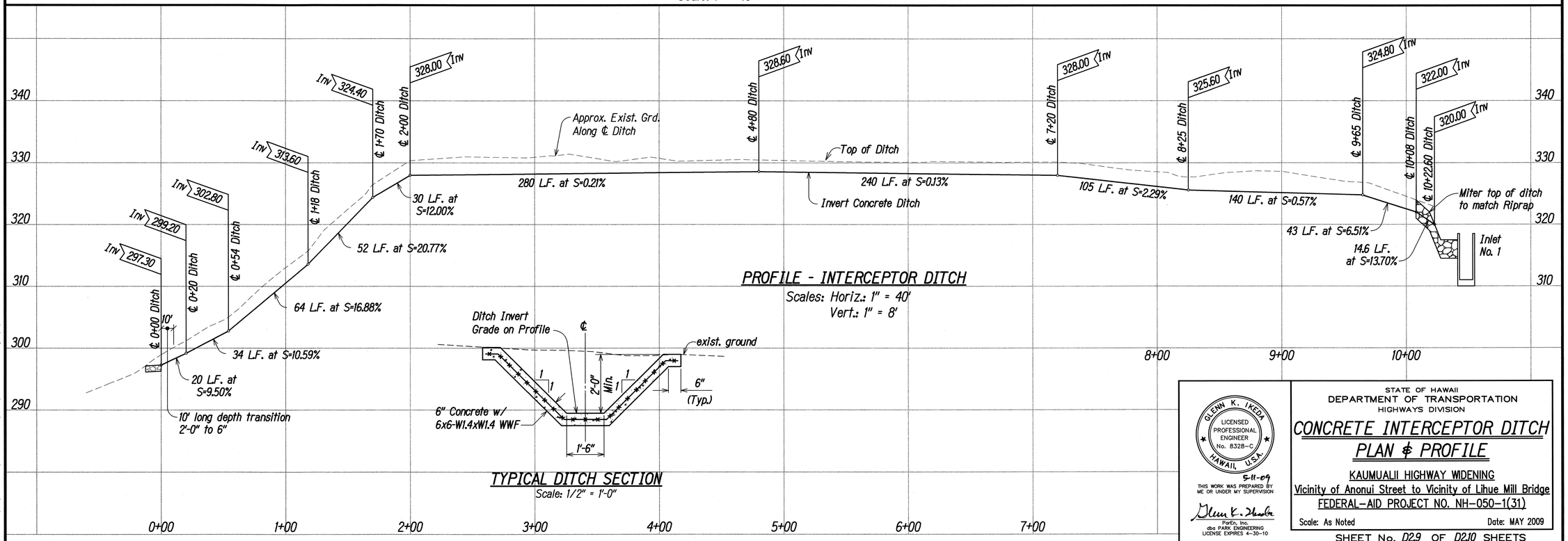
℄ Ditch Curve Data

Δ = 40° 00′
$\Delta/2$ = 20° 00′
R = 100.00
T = 36.40
C = 68.40
Lc = 69.81



PLAN - INTERCEPTOR DITCH

Scale: 1" = 40′



PROFILE - INTERCEPTOR DITCH

Scales: Horiz.: 1" = 40′
Vert.: 1" = 8′

TYPICAL DITCH SECTION

Scale: 1/2" = 1′-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

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LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

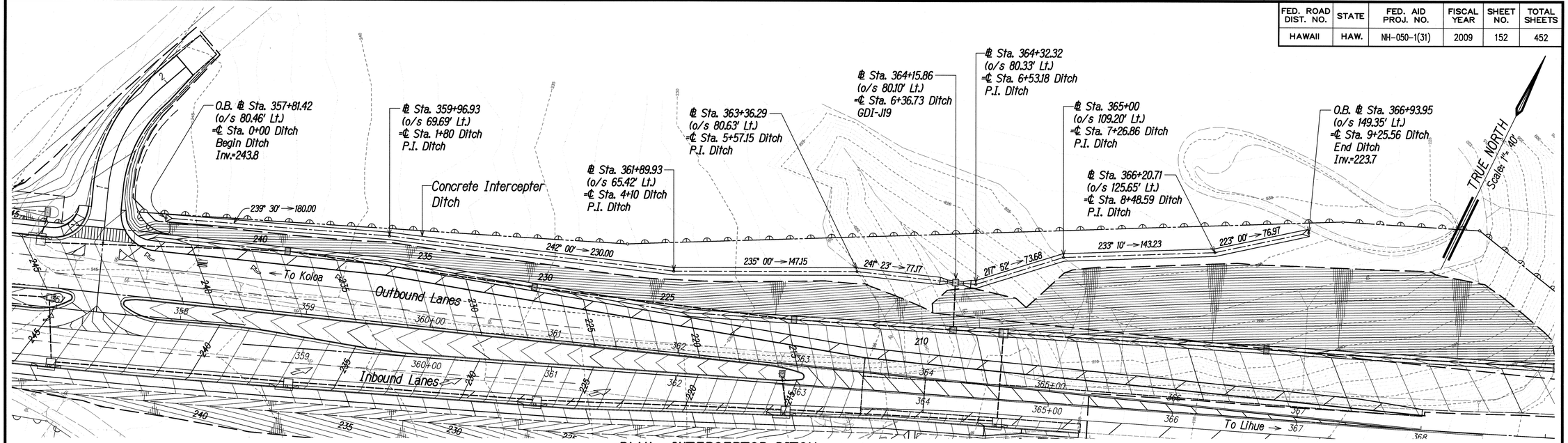
CONCRETE INTERCEPTOR DITCH
PLAN & PROFILE

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

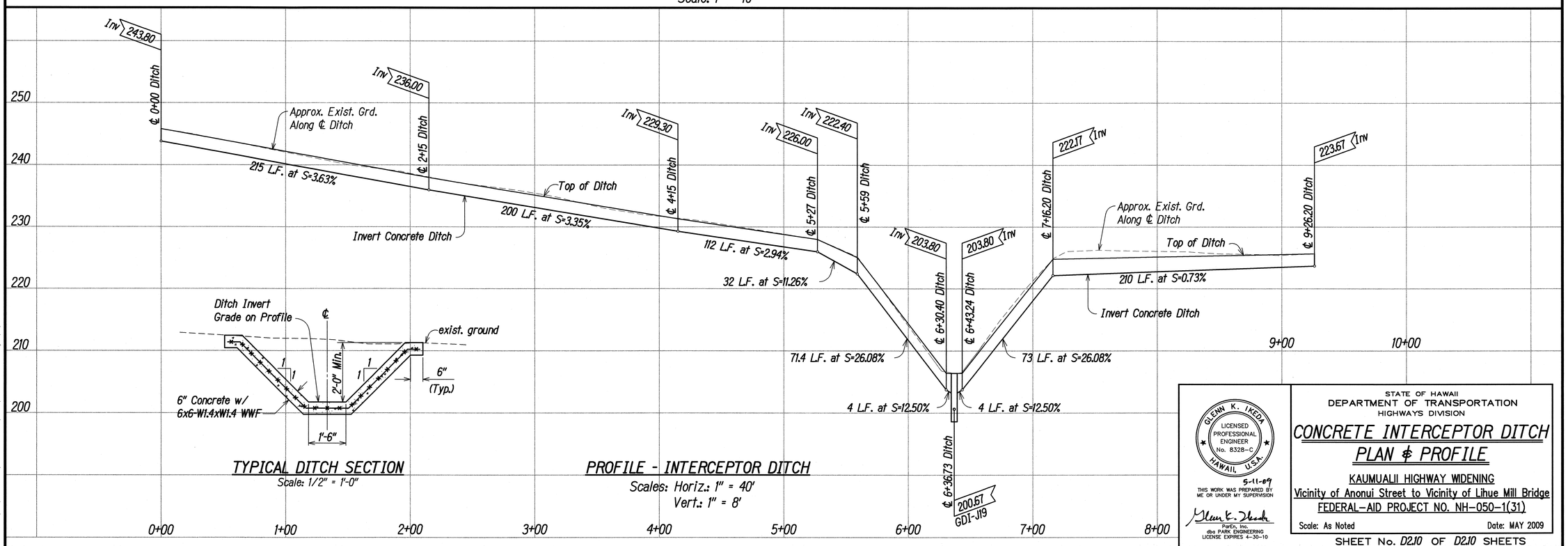
Scale: As Noted Date: MAY 2009

SHEET No. D2.9 OF D2.10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	152	452



PLAN - INTERCEPTOR DITCH
Scale: 1" = 40'



TYPICAL DITCH SECTION
Scale: 1/2" = 1'-0"

PROFILE - INTERCEPTOR DITCH
Scales: Horiz.: 1" = 40'
Vert.: 1" = 8'

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

L82: STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\HWY0-02.10-D12.dwg 5/11/09

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dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

CONCRETE INTERCEPTOR DITCH PLAN & PROFILE

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted — Date: MAY 2009

SHEET No. D2.10 OF D2.10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.153	452

604.1012	Type A Storm Drain Manhole, 5.00-feet to 5.99-feet (See Std. Plan H-05)	
DMH-G1	℄ Sta. 301+75	5.87'

604.1013	Type A Storm Drain Manhole, 6.00-feet to 6.99-feet (See Std. Plan H-05)	
DMH-F1	℄ Sta. 292+58	6.20'
DMH-G2	℄ Sta. 305+40	6.47'
DMH-H2	℄ Sta. 313+40	6.28'
DMH-J3	℄ Sta. 324+90	6.75'
DMH-J4	℄ Sta. 329+00	6.07'
DMH-J5	℄ Sta. 333+10	6.30'

604.1014	Type A Storm Drain Manhole, 7.00-feet to 7.99-feet (See Std. Plan H-05)	
DMH-J1	℄ Sta. 321+20	7.05'

604.1022	Type B Storm Drain Manhole, 5.00-feet to 5.99-feet (See Std. Plan H-05)	
DMH-9A	℄ Sta. 363+70 Rt.	5.70'

604.1023	Type B Storm Drain Manhole, 6.00-feet to 6.99-feet (See Std. Plan H-05)	
DMH-J6	℄ Sta. 337+20	6.39'
DMH-J7	℄ Sta. 340+65	6.29'
DMH-J8	℄ Sta. 344+50	6.52'

604.1033	Type C Storm Drain Manhole, 6.00-feet to 6.99-feet (See Std. Plan H-05)	
DMH-J10	℄ Sta. 348+40	6.19'
DMH-J11	℄ Sta. 352+35	6.56'

604.1034	Type C Storm Drain Manhole, 7.00-feet to 7.99-feet (See Std. Plan H-05)	
DMH-J12	℄ Sta. 355+90	7.51'

604.1043	Type H Storm Drain Manhole, 7.00-feet to 7.99-feet (See Plan Sheet D8.2)	
DMH-J9	℄ Sta. 346+40	7.77'
DMH-J15	℄ Sta. 354+25	7.92'

604.1052	Type Special Storm Drain Manhole, 6.00-feet to 6.99-feet (DMH-J2) (See Plan Sheet D8.1)	
DMH-J2	℄ Sta. 323+00	6.85'

604.2011	Type 61614 Grated Drop Inlet, 5.00-feet to 5.99-feet (See Std. Plan H-11)	
GDI-E3	℄ Sta. 279+30	5.00'
GDI-E6	℄ Sta. 281+45	5.59'
GDI-F5	℄ Sta. 289+90	5.50'
GDI-G1	℄ Sta. 299+75	5.83'
GDI-H1	℄ Sta. 312+00	5.56'
GDI-H2	℄ Sta. 314+50	5.35'
GDI-J2	℄ Sta. 326+80	5.64'
GDI-J13	℄ Sta. 362+85	5.50'

604.2012	Type 61614 Grated Drop Inlet, 6.00-feet to 6.99-feet (See Std. Plan H-11)	
GDI-E9	℄ Sta. 283+70	6.00'
GDI-F6	℄ Sta. 291+80	6.14'
GDI-F7	℄ Sta. 294+00	6.57'
GDI-G2	℄ Sta. 303+74	6.40'
GDI-G3	℄ Sta. 307+00	6.43'
GDI-J1	℄ Sta. 319+38	6.41'
GDI-J3	℄ Sta. 331+26	6.17'

604.2014	Type 61614 Grated Drop Inlet, 8.00-feet to 8.99-feet (See Std. Plan H-11)	
GDI-F2	℄ Sta. 287+60	8.12'

604.2020	Type 61614P Grated Drop Inlet, (*) 4.00-feet to 4.99-feet (See Std. Plan H-11)	
GDI-E4	℄ Sta. 279+30 Rt.	4.34'
GDI-E7	℄ Sta. 281+55 Rt.	4.39'
GDI-E8	℄ Sta. 283+70 Lt.	4.60'
~~GDI-E10~~ (4)	~~℄ Sta. 283+80 Rt. N.I.C.~~	~~4.26'~~
GDI-F1	℄ Sta. 287+60 Lt.	4.33'
GDI-F4	℄ Sta. 289+90 Lt.	4.39'
GDI-F8	℄ Sta. 291+80	4.80'
GDI-J11	℄ Sta. 358+80 Lt.	4.79'
GDI-J12	℄ Sta. 360+80 Lt.	4.79'
GDI-J14	℄ Sta. 362+90 Lt.	4.83'

604.2021	Type 61614P Grated Drop Inlet, (*) 5.00-feet to 5.99-feet (See Std. Plan H-11)	
GDI-E2	℄ Sta. 279+30 Lt.	5.46'

604.2022	Type 61614P Grated Drop Inlet, (*) 6.00-feet to 6.99-feet (See Std. Plan H-11)	
GDI-E5	℄ Sta. 281+55 Lt.	6.22'

604.2027	Type 61614P Grated Drop Inlet, (*) 11.00-feet to 11.99-feet (See Std. Plan H-11)	
(4) ~~GDI-F3~~	~~℄ Sta. 287+55 Rt. N.I.C.~~	~~11.89'~~

604.2031	Type I Grated Drop Inlet, 5.00-feet to 5.99-feet (See Plan Sheet D8.4)	
GDI-G4	℄ Sta. 309+00	5.64'
GDI-J4	℄ Sta. 335+00	5.95'

604.2032	Type I Grated Drop Inlet, 6.00-feet to 6.99-feet (See Plan Sheet D8.4)	
GDI-G5	℄ Sta. 309+51	6.14'
GDI-G6	℄ Sta. 310+00	6.73'
GDI-J5	℄ Sta. 339+15	6.22'
GDI-J10	℄ Sta. 356+95	6.75'

604.2041	Type II Grated Drop Inlet, 5.00-feet to 5.99-feet (See Plan Sheet D8.5)	
GDI-J6	℄ Sta. 342+20	5.75'

604.2042	Type II Grated Drop Inlet, 6.00-feet to 6.99-feet (See Plan Sheet D8.5)	
GDI-J7	℄ Sta. 350+50	6.36'

604.2061	Type Special Grated Drop Inlet, 5.00-feet to 5.99-feet (GDI-7A) (See Plan Sheet D5.8)	
GDI-7A	℄ Sta. 307+60 Lt.	3.25'

604.2062	Type Special Grated Drop Inlet, 6.00-feet to 6.99-feet (GDI-J19) (See Plan Sheet D8.8)	
GDI-J19	℄ Sta. 364+15.86 Lt.	6.33'

604.2220	Type 61616 Grated Drop Inlet, 4.00-feet to 4.99-feet (See Std. Plan H-12)	
GDI-J9	℄ Sta. 356+85 Lt.	4.50'
GDI-9A	℄ Sta. 363+10 Rt.	4.20'

604.2222 (4)	Type 61616 Grated Drop Inlet, 6.00-feet to 6.99-feet (See Std. Plan H-12)	
GDI-J18	℄ Sta. 364+18 Lt.	6.33'

604.2223	Type 61616 Grated Drop Inlet, 7.00-feet to 7.99-feet (See Std. Plan H-12)	
GDI-J16	℄ Sta. 366+70 Lt.	7.12'
GDI-J17	℄ Sta. 369+05 Lt.	7.00'

604.2226	Type 61616 Grated Drop Inlet, 11.00-feet to 11.99-feet (4) (See Std. Plan H-12)	
GDI-J15	℄ Sta. 364+58.48 Lt.	11.68' (4)

Note (*):
Type 61614P Grated Drain Inlets located in shoulder areas shall be provided with Type 61614P Steel Frame and Grate. See Sheet D8.6 for frame and grate details.

LEGEND FOR SUMMARY TABLES: (TYPICAL)

Item No.	Item Description	
Structure I.D.	Location	Height

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

L82: STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\ C01-D3.1-SUM.dwg 1/15/10

DATE	REVISION
2/01/10	(4) Deleted GDI-E10 and GDI-F3. Added New Item GDI-J18. Revised Height and Description of GDI-J15.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SUMMARY OF DRAINAGE STRUCTURES

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: None Date: JAN. 2010

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2-1-10
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.0.154	452

604.3011	Type A Catch Basin, 5.00-feet to 5.99-feet (See Std. Plan H-01)	
CB-G9	℄ Sta. 309+51 Lt.	5.67'
CB-G10	℄ Sta. 309+51 Rt.	5.67'

604.3021	Type B Catch Basin, 5.00-feet to 5.99-feet (See Std. Plan H-01)	
CB-F1	℄ Sta. 290+00 Rt.	5.63'
CB-F3	℄ Sta. 291+80 Rt.	5.69'
CB-F5	℄ Sta. 294+09 Rt.	5.66'
CB-G1	℄ Sta. 299+75 Lt.	5.67'
CB-G3	℄ Sta. 303+74 Lt.	5.03'
CB-G5	℄ Sta. 307+00 Lt.	5.64'
CB-G7	℄ Sta. 309+00 Lt.	5.67'
CB-G12	℄ Sta. 310+00 Rt.	5.66'
CB-H2	℄ Sta. 312+00 Rt.	5.67'
CB-H4	℄ Sta. 314+50 Rt.	5.57'
CB-J1	℄ Sta. 319+31 Lt.	5.63'
CB-J3	℄ Sta. 323+00 Lt.	5.61'
CB-J5	℄ Sta. 326+80 Lt.	5.67'
CB-J7	℄ Sta. 331+26 Lt.	5.65'
CB-J9	℄ Sta. 335+00 Lt.	5.68'
CB-J11	℄ Sta. 339+15 Lt.	5.65'
CB-J13	℄ Sta. 341+90 Lt.	5.67'
CB-J15	℄ Sta. 346+40 Lt.	5.63'
CB-J17	℄ Sta. 350+20 Lt.	5.62'
CB-J19	℄ Sta. 354+20 Lt.	5.16'
4 CB-E1	℄ Sta. 283+84 Rt.	5.23'

604.3032	Type B1 Catch Basin, 6.00-feet to 6.99-feet (See Std. Plan H-02)	
CB-J21	℄ Sta. 356+82 Lt.	6.21'

604.3040	Type C Catch Basin, 4.00-feet to 4.99-feet (See Std. Plan H-01)	
CB-6B	℄ Sta. 292+94 Lt.	4.93'

604.3041	Type C Catch Basin, 5.00-feet to 5.99-feet (See Std. Plan H-01)	
CB-F4	℄ Sta. 294+12 Lt.	5.69'
CB-G2	℄ Sta. 299+75 Rt.	5.61'
CB-G4	℄ Sta. 303+74 Rt.	5.64'
CB-G6	℄ Sta. 307+00 Rt.	5.60'
CB-G8	℄ Sta. 309+00 Rt.	5.67'
CB-G11	℄ Sta. 310+00 Lt.	5.66'
CB-H1	℄ Sta. 312+00 Lt.	5.67'
CB-H3	℄ Sta. 314+50 Lt.	5.57'
CB-J2	℄ Sta. 319+27 Rt.	5.64'
CB-J4	℄ Sta. 323+00 Rt.	5.67'
CB-J6	℄ Sta. 326+80 Rt.	5.67'
CB-J8	℄ Sta. 331+26 Rt.	5.65'
CB-J10	℄ Sta. 335+00 Rt.	5.68'
CB-J12	℄ Sta. 339+15 Rt.	5.69'
CB-J14	℄ Sta. 341+90 Rt.	5.64'
CB-J16	℄ Sta. 346+40 Rt.	5.67'
CB-J18	℄ Sta. 350+20 Rt.	5.66'
CB-J20	℄ Sta. 354+25 Rt.	5.61'

604.3042	Type C Catch Basin, 6.00-feet to 6.99-feet (See Std. Plan H-01)	
CB-6A	℄ Sta. 293+71 Lt.	6.27'

604.3057	Type D Catch Basin, 12.00-feet to 12.99-feet (See Std. Plan H-01)	
4 CB-F2	℄ Sta. 287+55 Rt.	12.49'

604.3063	Type E1 Catch Basin, 7.00-feet to 7.99-feet (See Plan Sheet D8.3)	
CB-J22	℄ Sta. 357+00 Rt.	7.97'
CB-J23	℄ Sta. 358+90 Rt.	7.07'
CB-J24	℄ Sta. 360+90 Rt.	7.00'
CB-J25	℄ Sta. 362+90 Rt.	7.04'

604.3066	Type E1 Catch Basin, 10.00-feet to 10.99-feet (See Plan Sheet D8.3)	
CB-J26	℄ Sta. 364+60 Rt.	10.87'

604.4011	Type Special Inlet Structure No. 1 (See Plan Sheet D4.5)	
Inlet No. 1	℄ Sta. 287+45 Lt.	10.00'

604.4012	Type Special Inlet Structure No. 2 Plan Sheet D6.5	
Inlet No. 2	℄ Sta. 310+18 Lt.	9.50'

604.4021	Type Special Outlet Structure No. 1 Plan Sheet D7.3	
Outlet No. 1	℄ Sta. 277+20 Lt.	2.80'

604.4022	Type Special Outlet Structure No. 2 Plan Sheet D5.2	
Outlet No. 2	℄ Sta. 307+08 Rt.	8.08'

604.4023	Type Special Outlet Structure No. 3 Plan Sheet D6.4	
Outlet No. 3	℄ Sta. 311+10 Rt.	9.00'

604.4024	Type Special Outlet Structure No. 4 Plan Sheet D7.5	
Outlet No. 4	℄ Sta. 365+00 Rt.	4.00'

604.4025	Type Special Outlet Structure No. 5 Plan Sheet D7.7	
Outlet No. 5	℄ Sta. 369+50 Lt.	8.83' 4

627.1010	Stormwater Treatment System DS-1	
SWTS-DS-1	℄ Sta. 277+71	6.00'

627.1020	Stormwater Treatment System DS-2	
SWTS-DS-2	℄ Sta. 287+59	9.28'

627.1030	Stormwater Treatment System DS-3	
SWTS-DS-3	℄ Sta. 310+30	7.77'

627.1040	Stormwater Treatment System DS-4	
SWTS-DS-4	℄ Sta. 311+10	7.83'

627.1050	Stormwater Treatment System DS-5	
SWTS-DS-5	℄ Sta. 369+18	7.63'

LEGEND FOR SUMMARY TABLES: (TYPICAL)

Item No.	Item Description	
Structure I.D.	Location	Height

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

U82 STATE\DOT\KAUMUALI-I\PHASE1A REVISION\PLANS\ C01-03.2-SUM.dwg 1/06/09

DATE	REVISION
2/01/10	4 Added New CB-E1 and CB-F2. Revised Height of Outlet 5.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

SUMMARY OF DRAINAGE STRUCTURES

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: None Date: JAN. 2010

GLENN K. IKEDA LICENSED PROFESSIONAL ENGINEER No. 8328-C HAWAII, U.S.A.
2-1-10

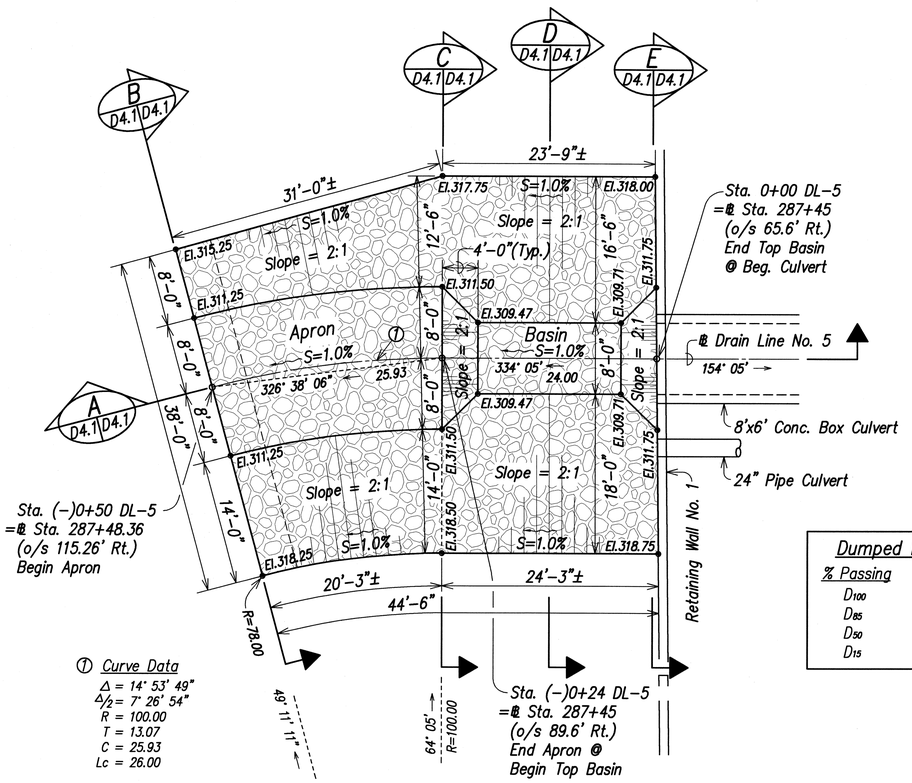
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Glenn K. Ikeda
ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

SHEET No. D3.2 OF D3.2 SHEETS

C.O. 154

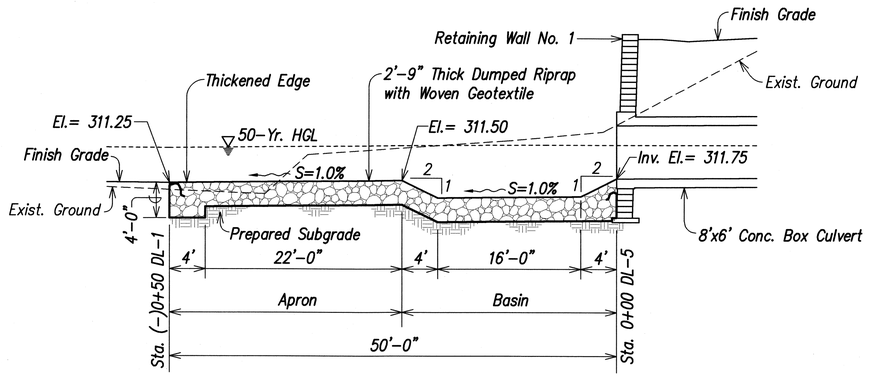
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	155	452



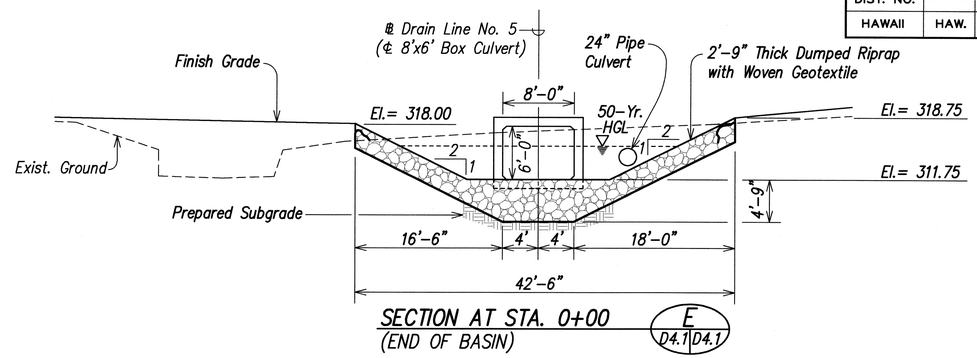
① Curve Data
Δ = 14° 53' 49"
Δ/2 = 7° 26' 54"
R = 100.00
T = 13.07
C = 25.93
Lc = 26.00

PLAN

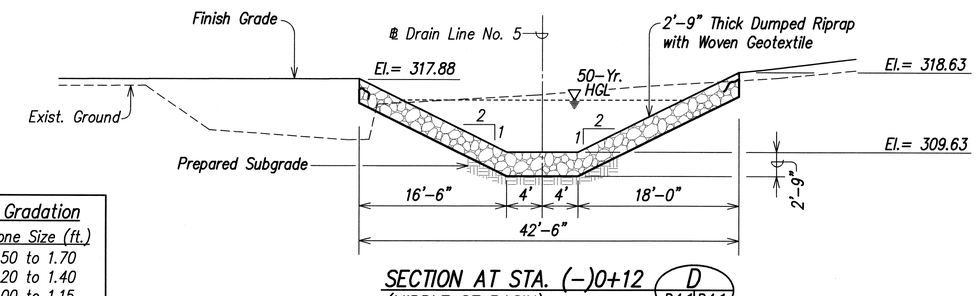
Dumped Riprap Gradation	
% Passing	Stone Size (ft.)
D_{100}	1.50 to 1.70
D_{85}	1.20 to 1.40
D_{50}	1.00 to 1.15
D_{15}	0.40 to 0.60



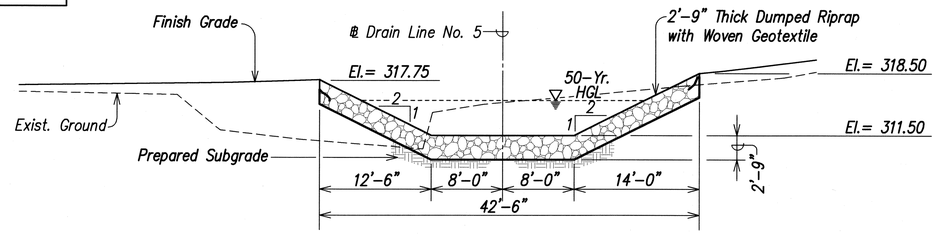
SECTION
(ALONG DL-5 BASELINE) A D4.1 D4.1



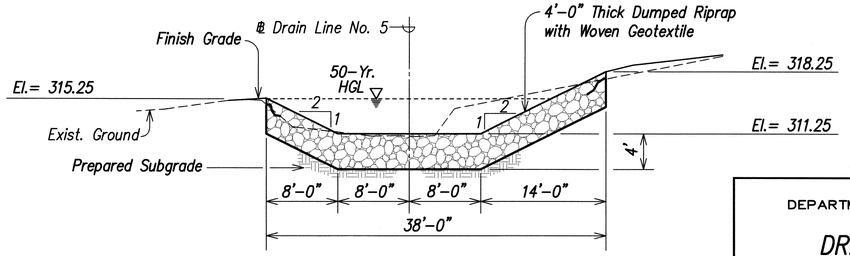
SECTION AT STA. 0+00
(END OF BASIN) E D4.1 D4.1



SECTION AT STA. (-)0+12
(MIDDLE OF BASIN) D D4.1 D4.1



SECTION AT STA. (-)0+24
(END APRON-BEGIN BASIN) C D4.1 D4.1



SECTION AT STA. (-)0+50
(BEGIN APRON) B D4.1 D4.1

DUMPED RIPRAP OUTLET (DRAIN LINE NO. 5) 1 D1.11 D4.1
Scale: 1/8 "=1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

L@2: STATEDOT\KAUMUALII-1\PHASE1A REVISION\PLANS\HWY10-D4.1-SOUT.dwg 11/25/08

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
2-26-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

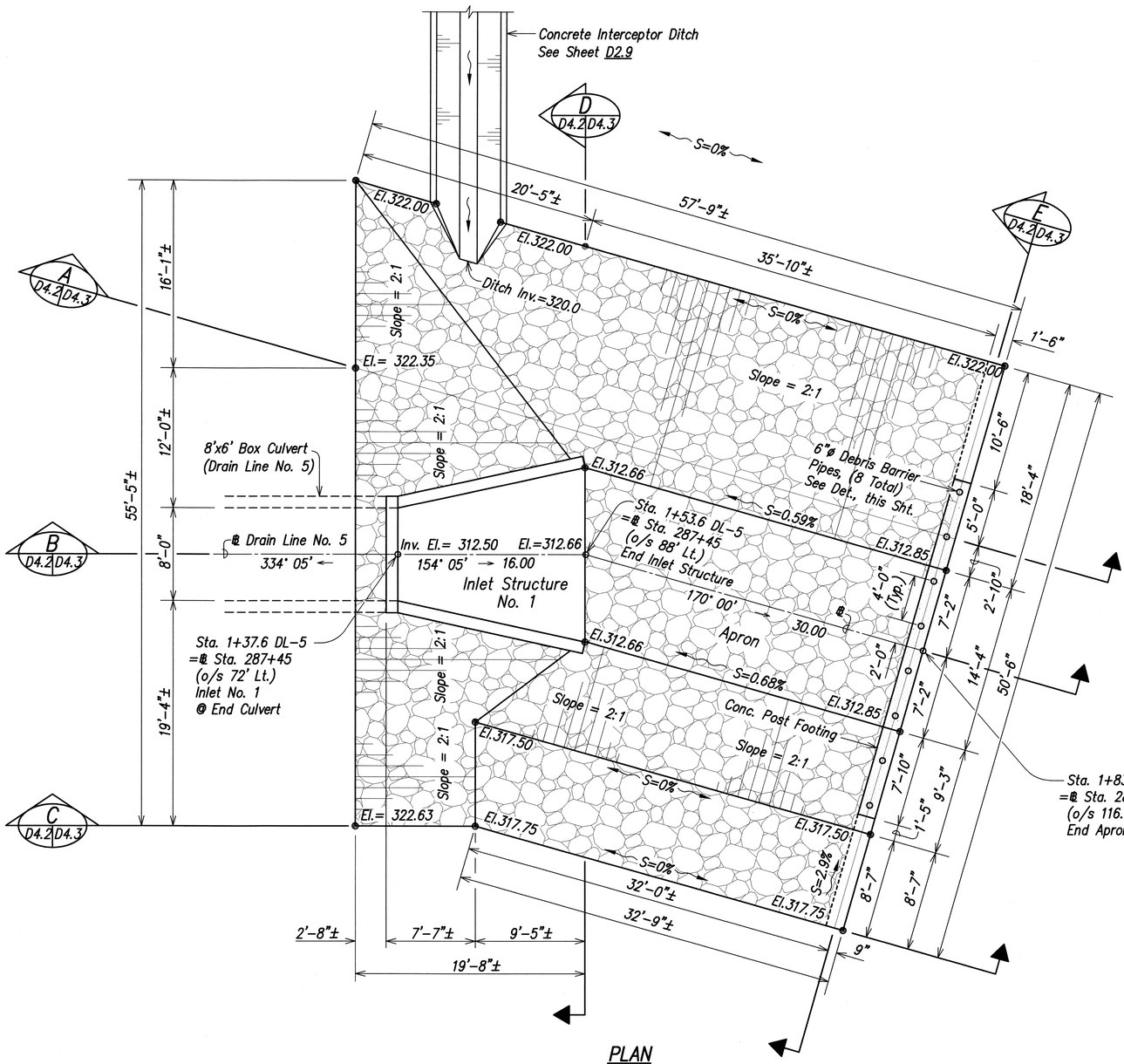
DRAINAGE DETAILS
DRAIN LINE NO. 5

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/8" = 1'-0" Date: FEB. 2009

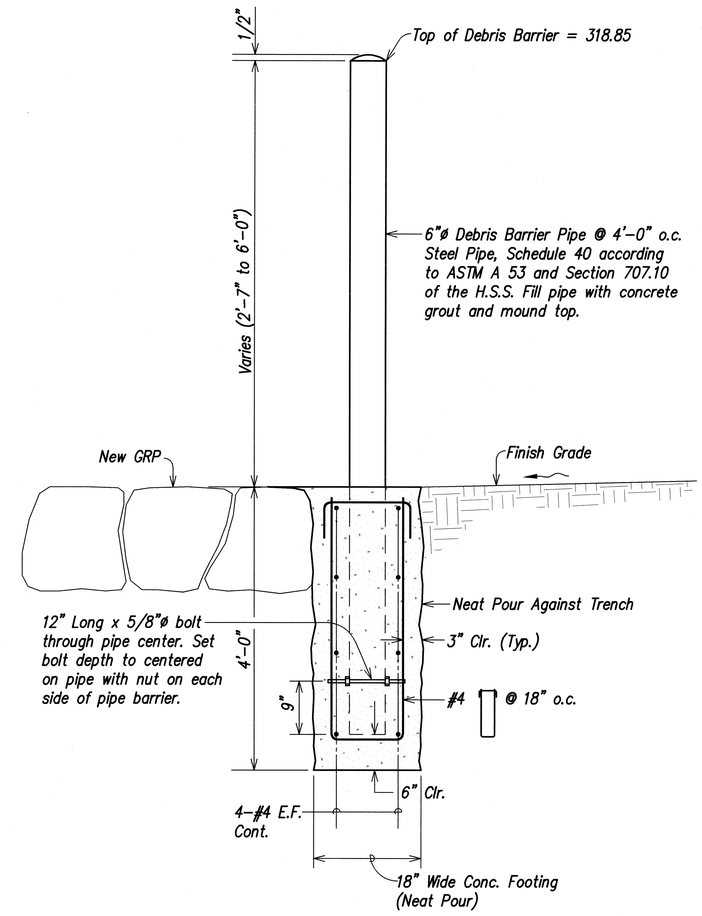
SHEET No. D4.1 OF D4.6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	156	452



PLAN

GROUTED RUBBLE PAVING (GRP) INLET (DRAIN LINE NO. 5) 1 D1.11 D4.2
Scale: 3/16 "=1'-0"



DEBRIS BARRIER DETAIL
Scale: 1"= 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

LIB2: STATE\DOT\KAUMUALI-I\PHASE1A REVISION\PLANS\KHWI1-04.2-SIN.dwg 2/10/09

GLENN K. IKEDA
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2-26-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
Park, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

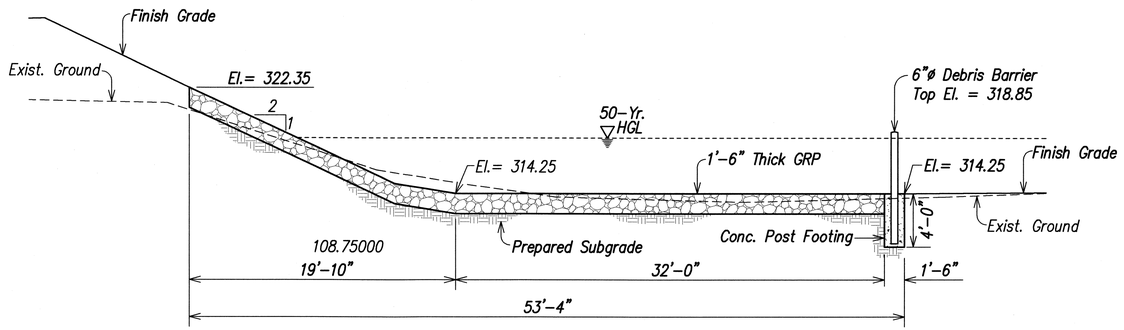
DRAINAGE DETAILS
DRAIN LINE NO. 5

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

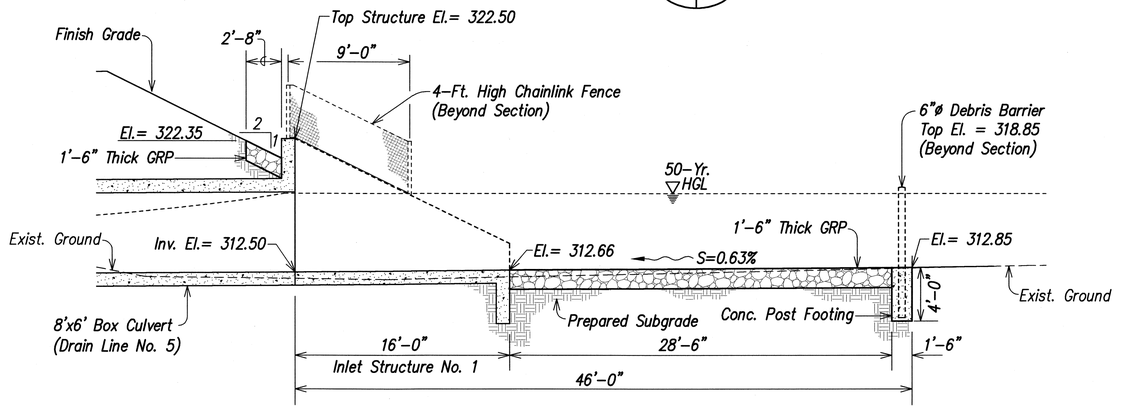
Scale: As Noted Date: FEB. 2009

SHEET No. D4.2 OF D4.6 SHEETS

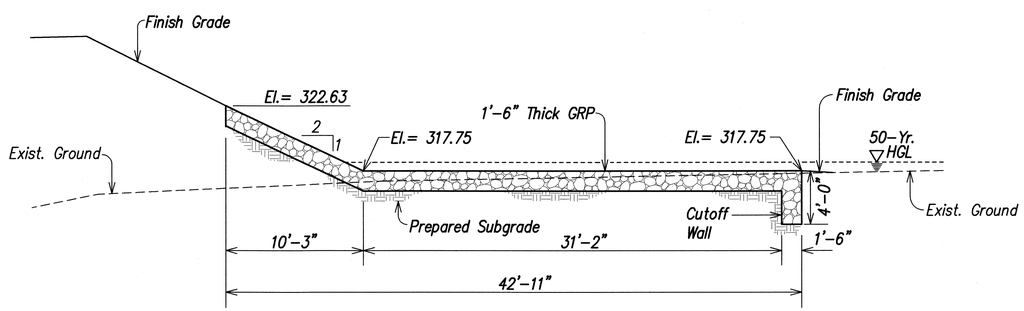
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	157	452



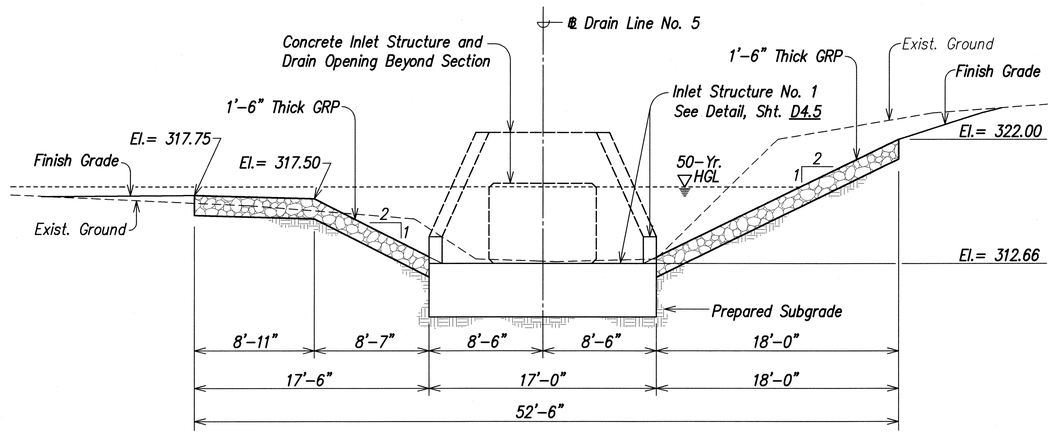
SECTION A (D4.2 D4.3)



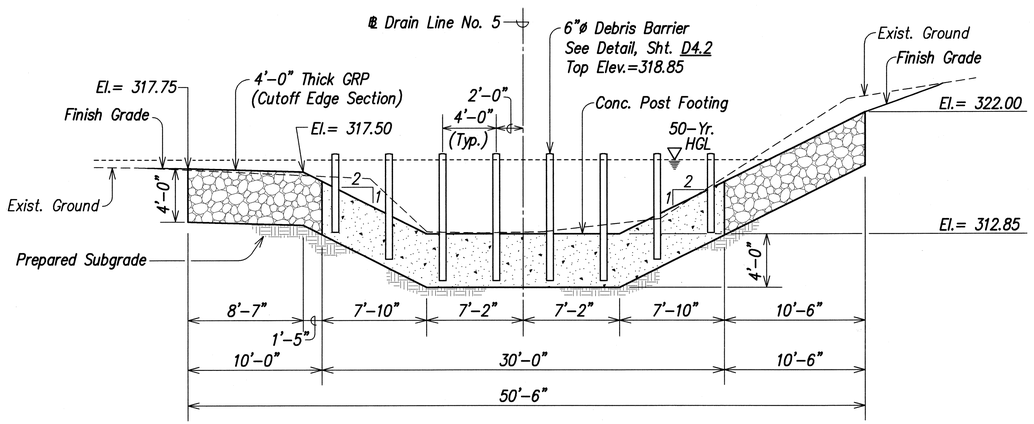
SECTION (ALONG DL-5 BASELINE) B (D4.2 D4.3)



SECTION C (D4.2 D4.3)



SECTION AT 1+53.6 D (D4.2 D4.3)



SECTION AT 1+82.9 E (D4.2 D4.3)

GROUTED RIPRAP PAVING (GRP) INLET (DRAIN LINE NO. 5) 3 (D4.2 D4.3)

Scale: 3/16" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

L:\B2_STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\HWY10-D4.3-SXS.dwg 11/25/08

LICENSED PROFESSIONAL ENGINEER No. 8328-C GLENN K. IKEDA HAWAII, U.S.A.

2-26-09

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Glenn K. Ikeda

ParEn, Inc. dba PARK ENGINEERING LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

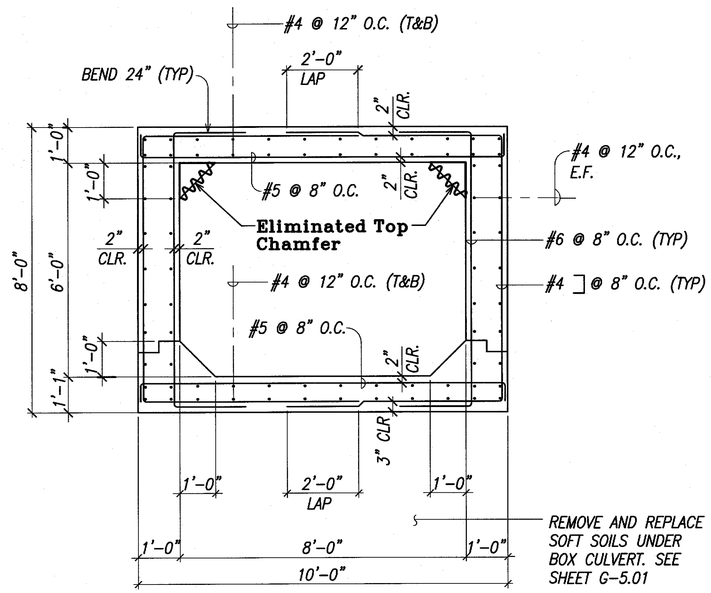
DRAINAGE DETAILS
DRAIN LINE NO. 5

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 3/16" = 1'-0" Date: FEB. 2009

SHEET No. D4.3 OF D4.6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	158	452



CROSS SECTION –
CONC. BOX CULVERT DRAIN LINE NO. 5 (A / D4.4)

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

D1.11, D4.5

ORIGINAL PLAT	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

KHWD-04.4-SBOX.dwg 2/23/09

LEGEND FOR AS-BUILT POSTINGS

∿∿∿	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

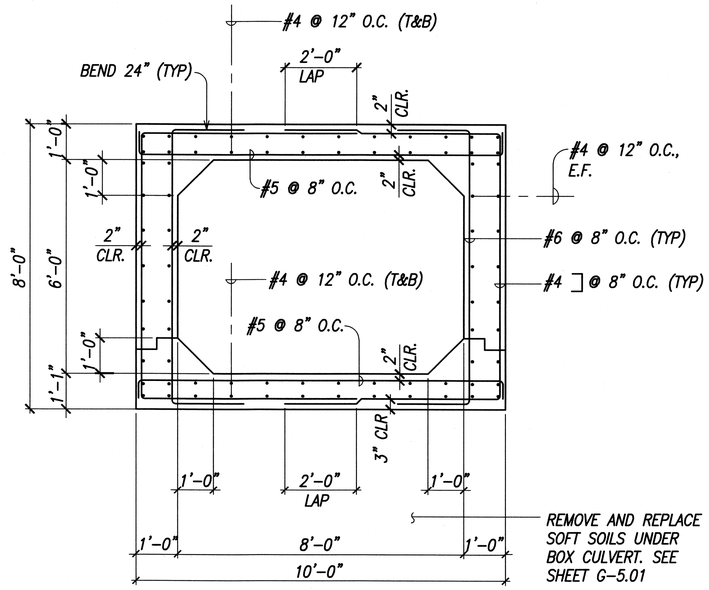
DRAINAGE DETAILS
DRAIN LINE NO. 5

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: JAN. 2010

SHEET No. D4.4 OF D4.6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	158	452



CROSS SECTION – CONC. BOX CULVERT DRAIN LINE NO. 5

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

A D4.4

D1.11, D4.5

ORIGINAL PLAN DRAWN BY — DATE
SURVEY PLOTTED BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
NOTE BOOK
No.

L:\823. STATE\007\KAUMUALII-1\PHASE1A REVISION\PLANS\KHWY-D4.4-SBOX.dwg 2/23/09

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

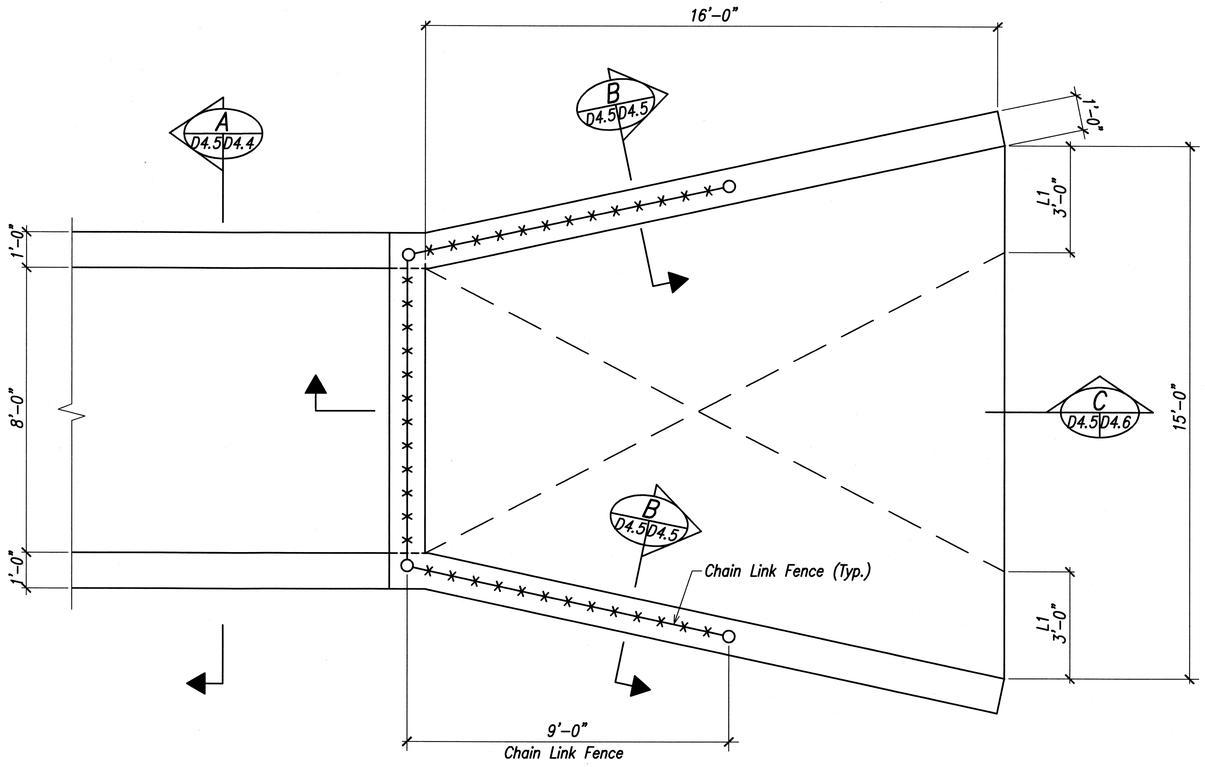
DRAINAGE DETAILS DRAIN LINE NO. 5

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

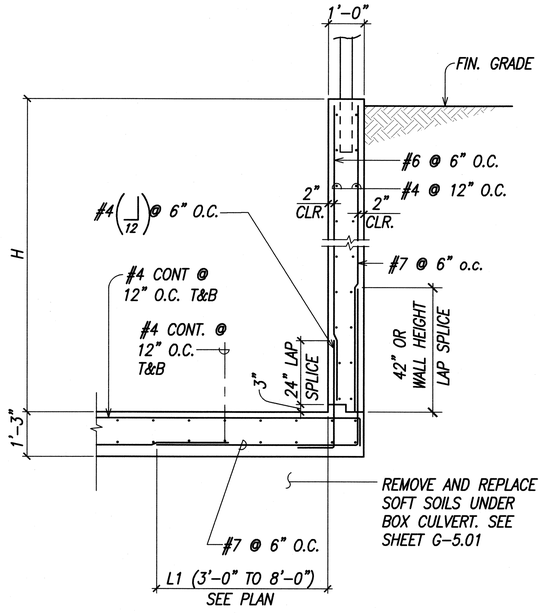
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D4.4 OF D4.6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	159	452



PLAN



SECTION B D4.5

D4.5, D4.6

INLET STRUCTURE NO. 1 PLAN
AT ℄ STA. 287+45

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

1 D1.11D4.5

ORIGINAL PLANS	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
NOTE BOOK	TRACED BY	"
No.	DESIGNED BY	"
	QUANTITIES BY	"
	CHECKED BY	"

L82: STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\UHWA-D4.5-IN1.dwg 2/25/09

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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Jong Namgung
MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

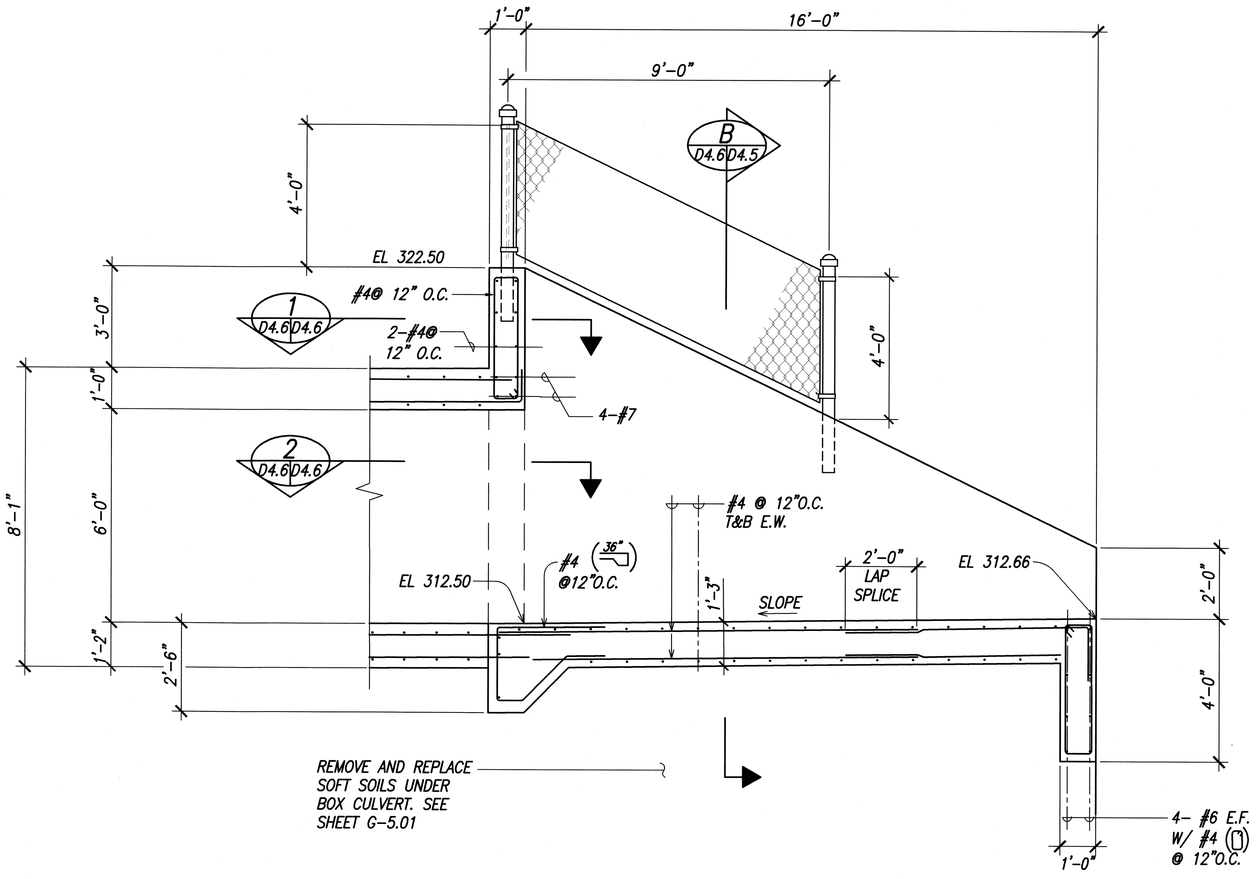
DRAINAGE DETAILS
INLET STRUCTURE NO. 1

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

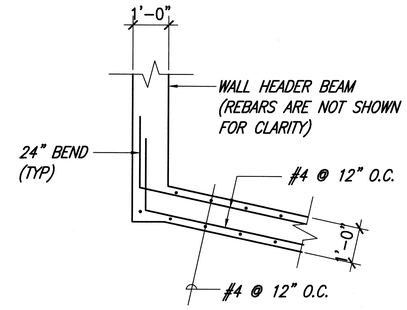
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D4.5 OF D4.6 SHEETS

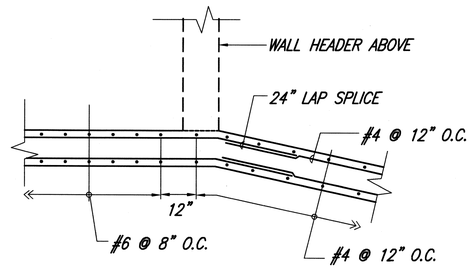
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	160	452



SECTION
Scale: 1/2" = 1'-0"
C
D4.5 D4.6



SECTION
Scale: 1/2" = 1'-0"
1
D4.6 D4.6



SECTION
Scale: 1/2" = 1'-0"
2
D4.6 D4.6

INLET STRUCTURE NO. 1 PLAN
AT ℄ STA. 287+45
Scale: 1/2" = 1'-0"

ORIGINAL PLAN
NOTE BOOK
No.
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

U:\2-STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\HWINC-D4.6-INI.dwg 2/25/09

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

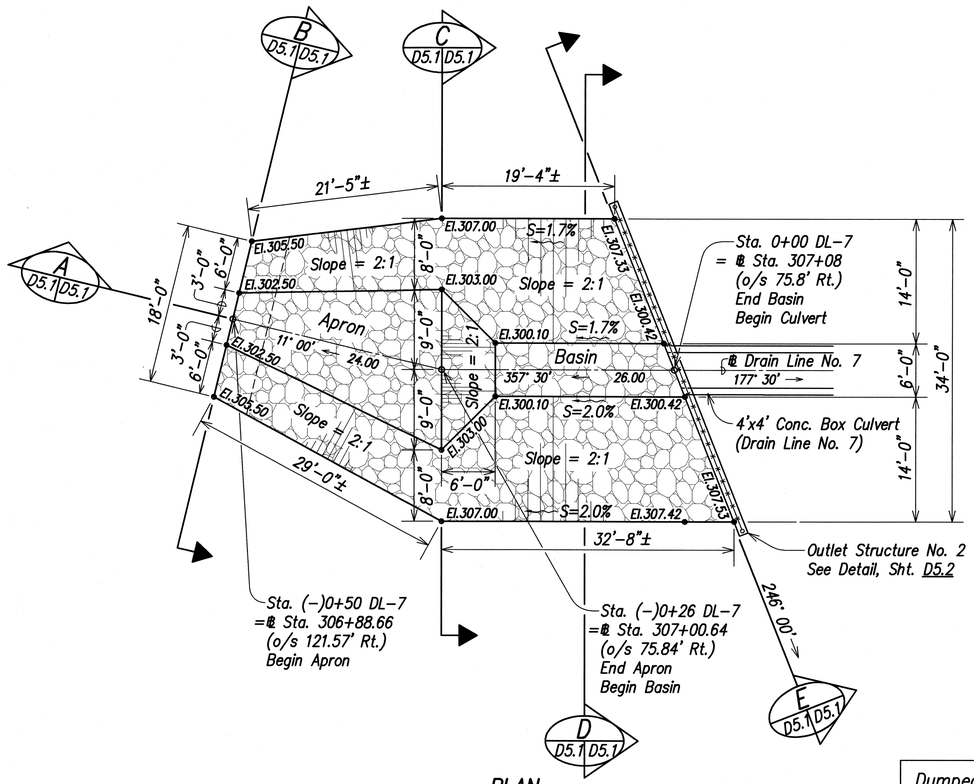
DRAINAGE DETAILS
INLET STRUCTURE NO. 1

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: FEB. 2009

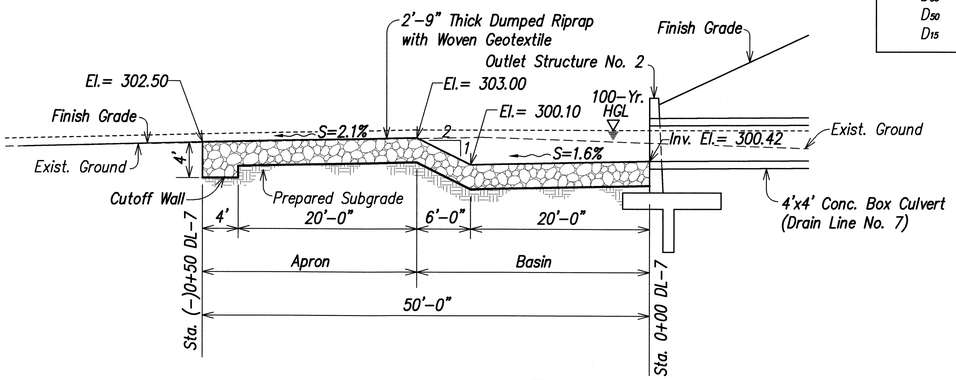
SHEET No. D4.6 OF D4.6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	161	452

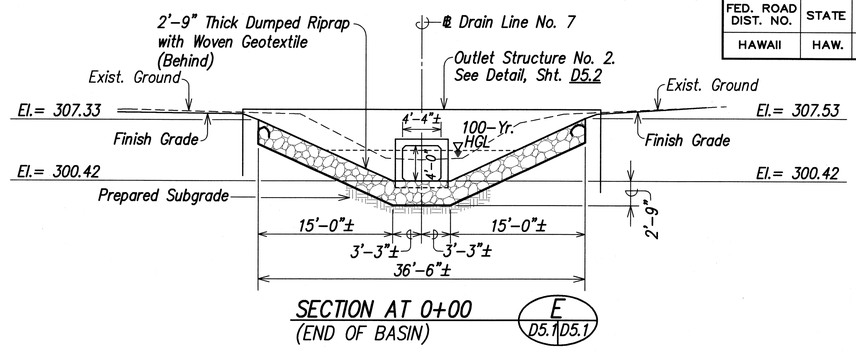


PLAN

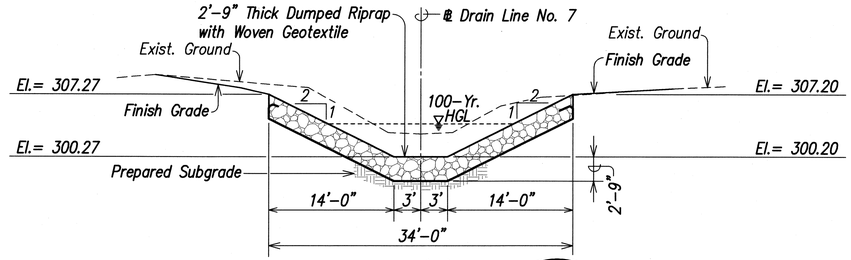
Dumped Riprap Gradation	
% Passing	Stone Size (ft.)
D_{100}	1.50 to 1.70
D_{85}	1.20 to 1.40
D_{50}	1.00 to 1.15
D_{15}	0.40 to 0.60



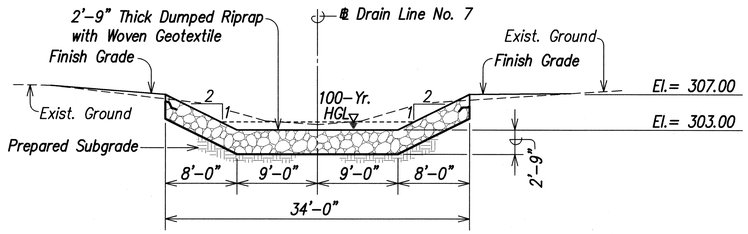
SECTION
(ALONG DL-7 BASELINE) A D5.1 D5.1



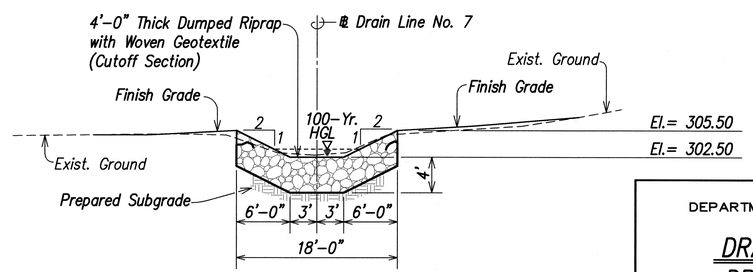
SECTION AT 0+00
(END OF BASIN) E D5.1 D5.1



SECTION AT (-)0+10
(MIDDLE OF BASIN) D D5.1 D5.1



SECTION AT (-)0+26
(END APRON-BEGIN BASIN) C D5.1 D5.1



SECTION AT (-)0+50
(BEGIN APRON) B D5.1 D5.1

DUMPED RIPRAP OUTLET (DRAIN LINE NO. 7) 1 D1.12 D5.1
Scale: 1/8 "=1'-0"

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
2-26-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
DRAIN LINE NO. 7

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/8" = 1'-0" Date: FEB. 2009

SHEET No. D5.1 OF D5.8 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

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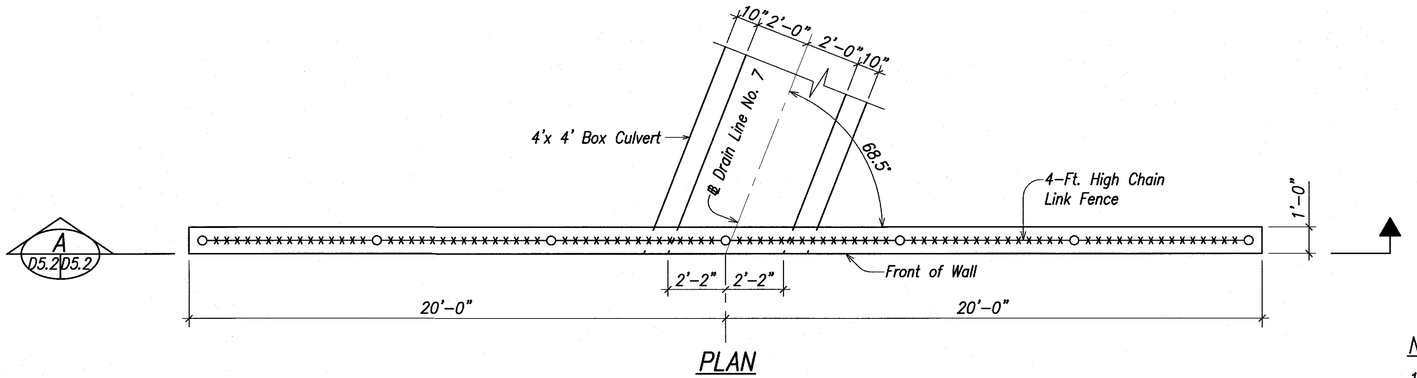
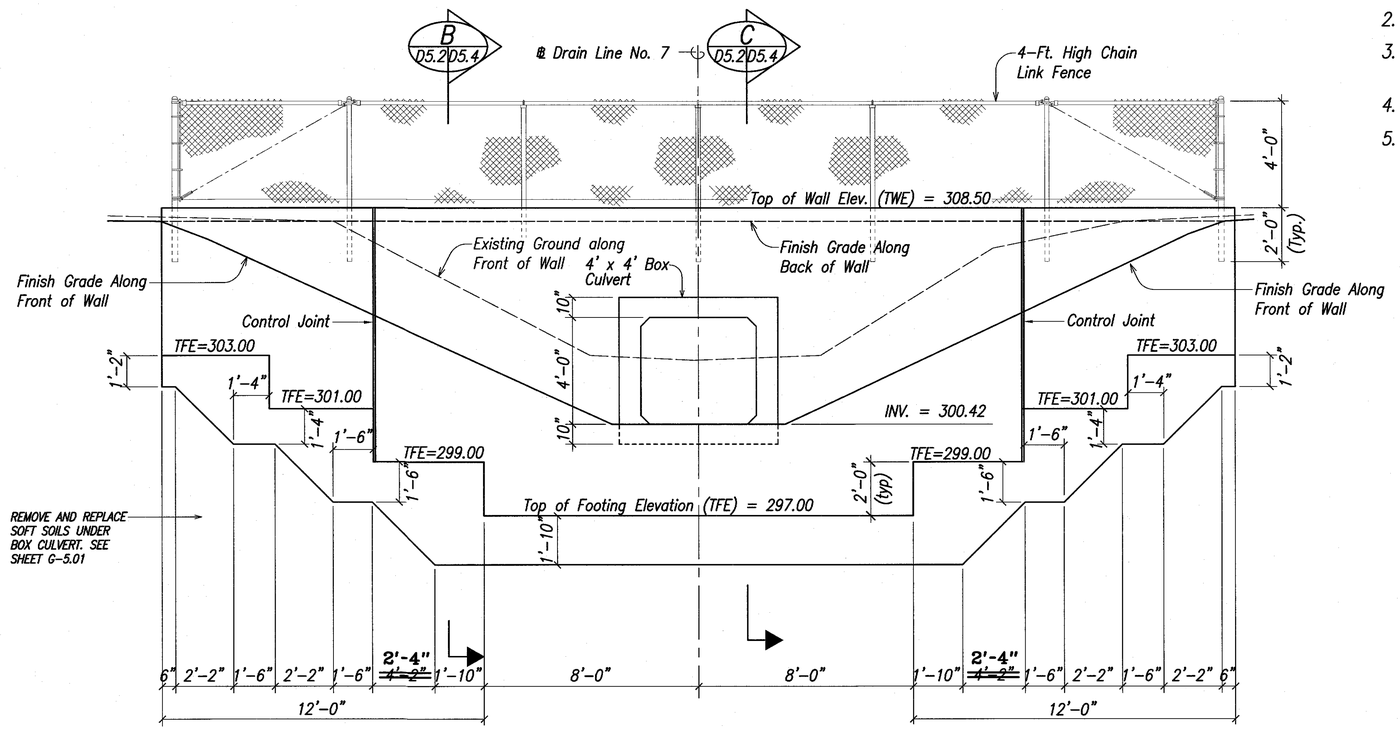
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	162	452



PLAN



ELEVATION A D5.2 D5.2

HEADWALL OUTLET STRUCTURE NO. 2 AT ℄ STA. 307+08

Scale: 3/8" = 1'-0"

1 D1.1 D5.2

NOTES FOR RETAINING WALL

1. See retaining wall schedule on Sheet S7 for reinforcing steel detail.
2. See Sheet S5 for shear key and joint details.
3. See Sheet D5.3 for Elevation showing reinforcing in footing and at culvert opening.
4. See Sheet S1 for Structural General Notes.
5. Slightly mound concrete around post, so water will not pond.

LEGEND FOR AS-BUILT POSTINGS

~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

KWM-D5.2-0012.dwg 2/25/09

JONG NAMGUNG LICENSED PROFESSIONAL ENGINEER No. 3513-S HAWAII, U.S.A.

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MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

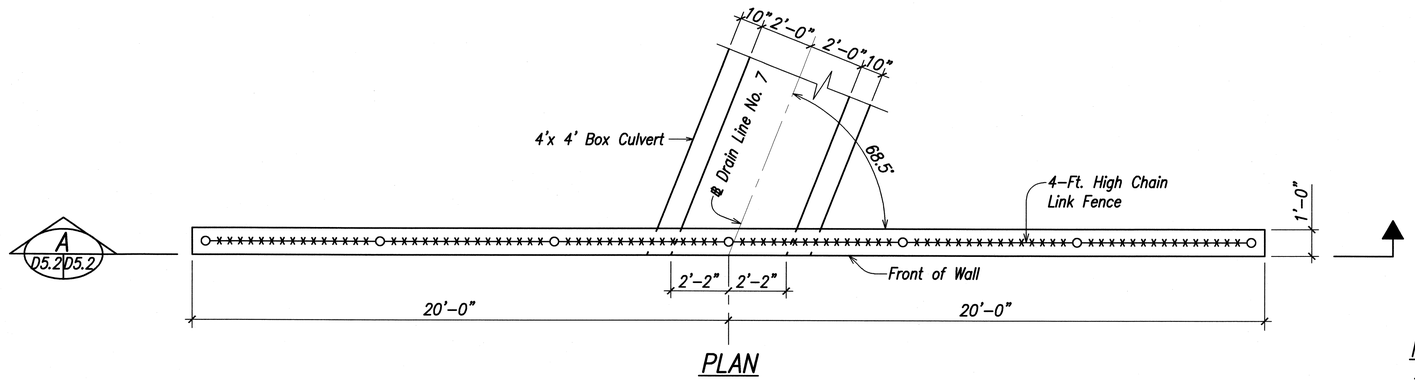
DRAINAGE DETAILS
OUTLET STRUCTURE NO. 2

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

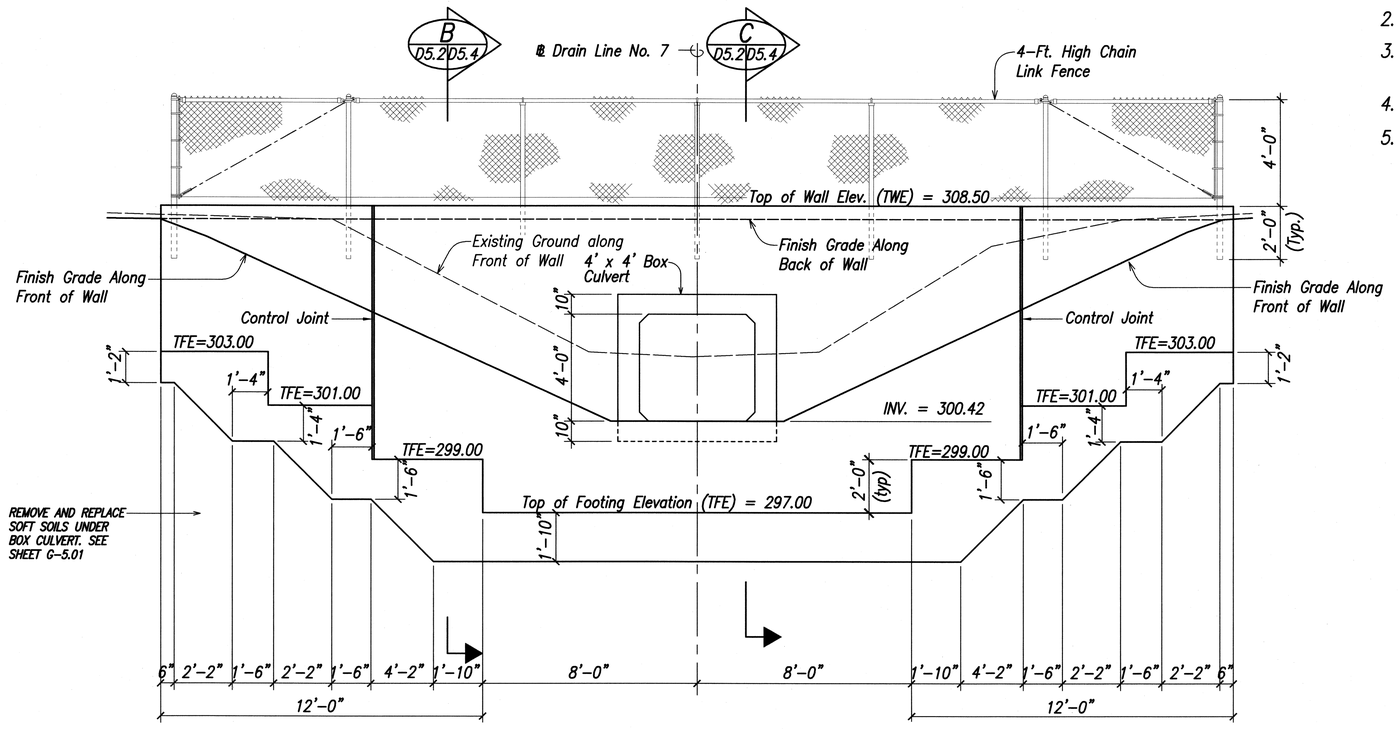
Scale: 3/8" = 1'-0" Date: JAN. 2010

SHEET No. D5.2 OF D5.8 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	162	452



PLAN



ELEVATION A (D5.2 D5.2)

HEADWALL OUTLET STRUCTURE NO. 2 AT ℄ STA. 307+08

1 (D1.12 D5.2)

Scale: 3/8" = 1'-0"

NOTES FOR RETAINING WALL

1. See retaining wall schedule on Sheet S7 for reinforcing steel detail.
2. See Sheet S5 for shear key and joint details.
3. See Sheet D5.3 for Elevation showing reinforcing in footing and at culvert opening.
4. See Sheet S1 for Structural General Notes.
5. Slightly mound concrete around post, so water will not pond.

ORIGINAL PLAN | NOTE BOOK No. | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

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LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

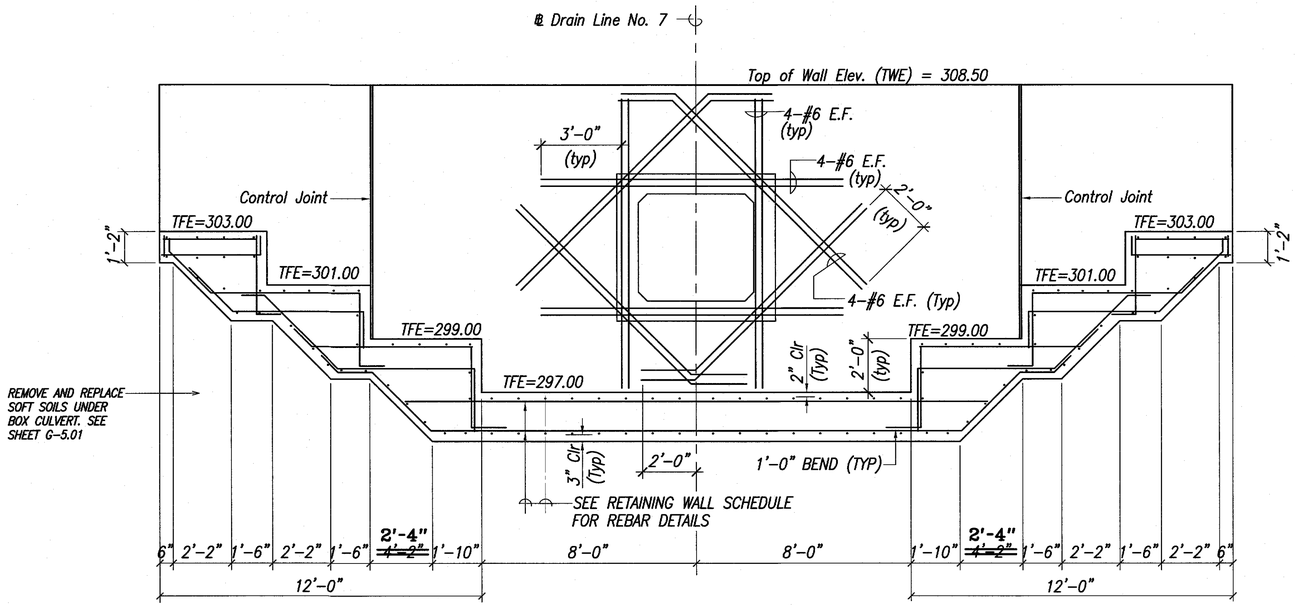
DRAINAGE DETAILS
OUTLET STRUCTURE NO. 2

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 3/8" = 1'-0" Date: FEB. 2009

SHEET No. D5.2 OF D5.8 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	163	452



ELEVATION

See Sheet D5.2 for additional footing dimensions not shown here for clarity.

REINFORCING DETAILS FOR OUTLET STRUCTURE NO. 2

Scale: 3/8" = 1'–0"

1 (D5.2 | D5.3)

LEGEND FOR AS-BUILT POSTINGS

~~^^^^~~	**Squiggly line for as-built deletion**
~~**100.00**~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE
NOTE BOOK | No.

KHWY-D5.3-OUTZ.dwg 2/25/09

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MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4–30–16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

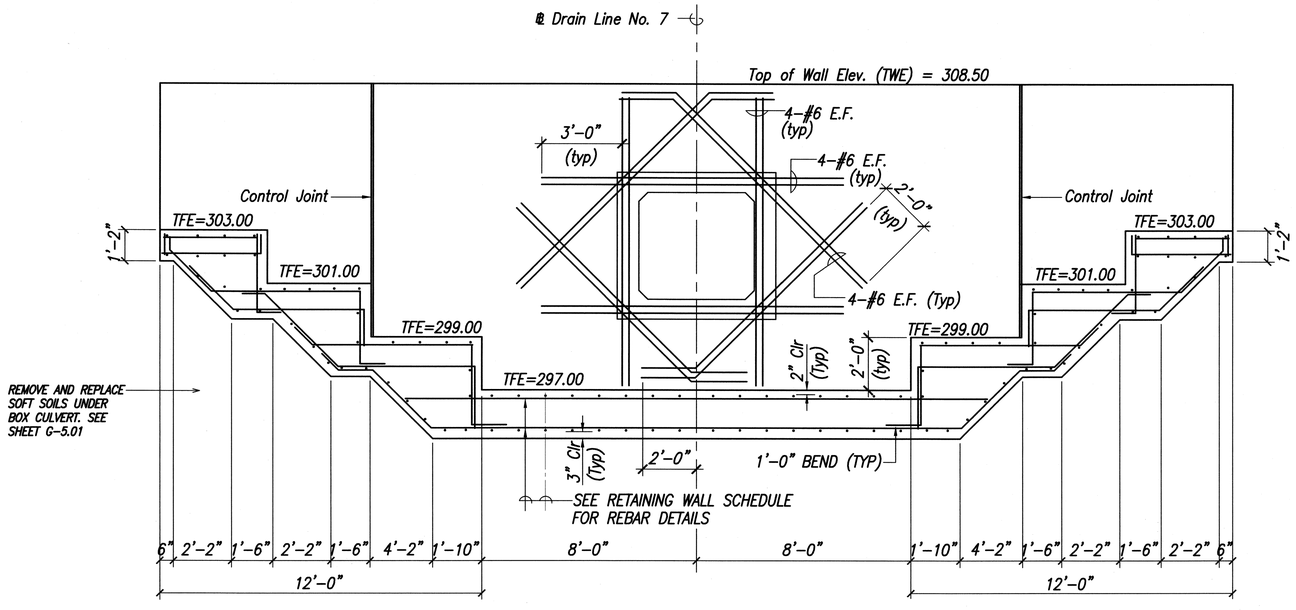
DRAINAGE DETAILS
OUTLET STRUCTURE NO. 2

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL–AID PROJECT NO. NH–050–1(31)

Scale: 3/8" = 1'–0" Date: JAN. 2010

SHEET No. D5.3 OF D5.8 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	163	452



ELEVATION

See Sheet D5.2 for additional footing dimensions not shown here for clarity.

REINFORCING DETAILS FOR OUTLET STRUCTURE NO. 2

Scale: 3/8" = 1'-0"

1 (D5.2 | D5.3)

ORIGINAL PLAN	SURVEY PLOTTED BY _____ DATE
	DRAWN BY "
NOTE BOOK	TRACED BY "
	DESIGNED BY "
	QUANTITIES BY "
No.	CHECKED BY "

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LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

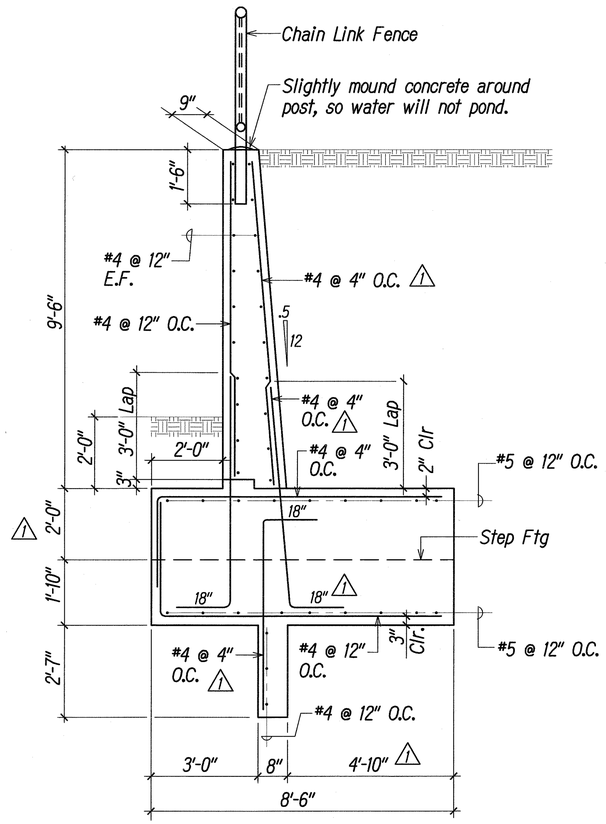
DRAINAGE DETAILS OUTLET STRUCTURE NO. 2

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

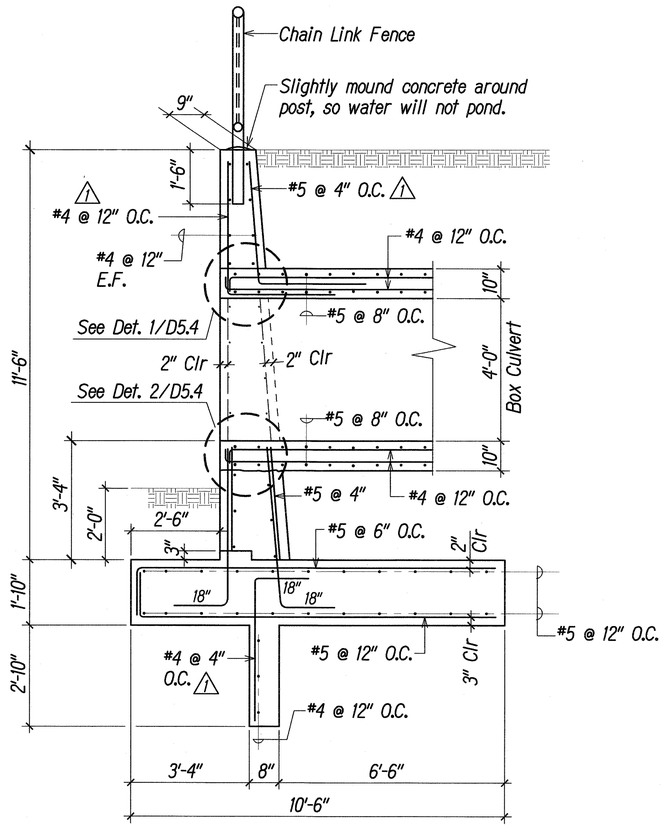
Scale: 3/8" = 1'-0" Date: FEB. 2009

SHEET No. D5.3 OF D5.8 SHEETS

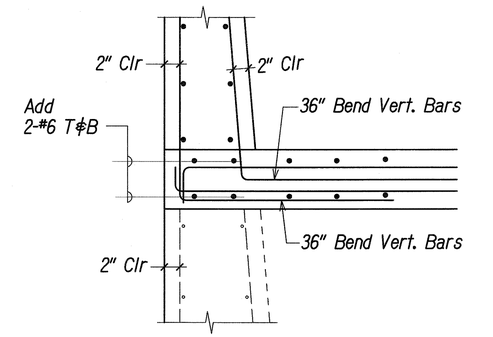
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	ADD.164	452



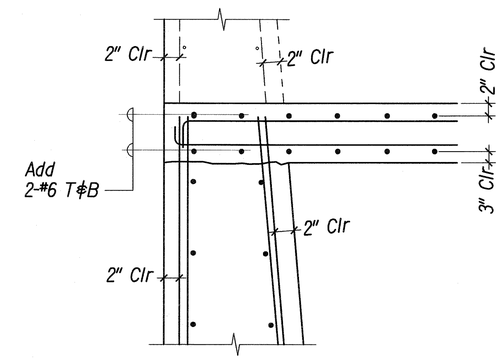
B D5.2 | D5.4 WALL SECTION
Scale: 1/2" = 1'-0"



C D5.2 | D5.4 WALL SECTION
Scale: 1/2" = 1'-0"



1 D5.4 | D5.4 DET SECTION
Scale: 1" = 1'-0"



2 D5.4 | D5.4 DET SECTION
Scale: 1" = 1'-0"

HEADWALL OUTLET STRUCTURE NO. 2 AT ℄ STA. 307+08 - SECTIONS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
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STEWART N. WILLIAMS LICENSED PROFESSIONAL ENGINEER No. 3908-S HAWAII, U.S.A.

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4-30-10
Mitsunaga & Associates, Inc.
Expiration Date of License

DATE	REVISION
7/13/09	⚠1 Revised Step Footing Dimension, Key Reinf., and Various Reinf. Calloffs.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
OUTLET STRUCTURE NO. 2

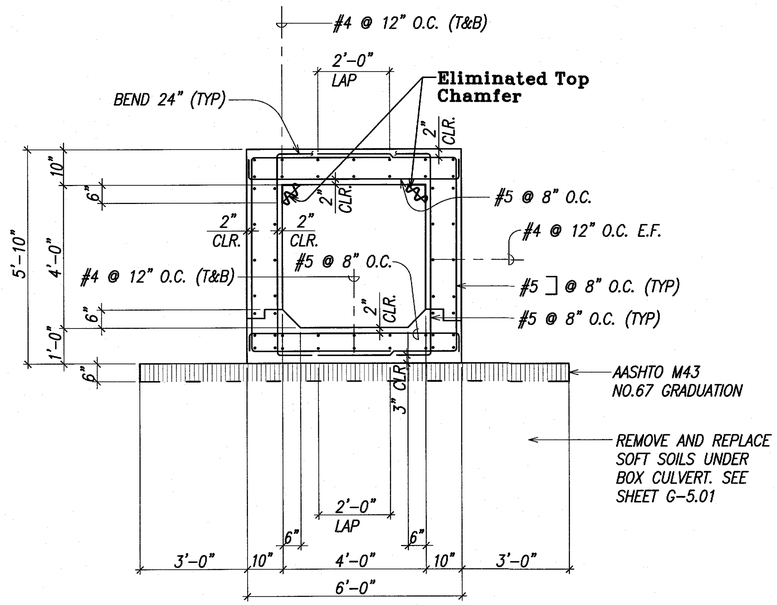
KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: JUNE 2009

SHEET No. D5.4 OF D5.8 SHEETS

ADD.164

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	165	452



CROSS SECTION – CONC. BOX CULVERT DRAIN LINE NO. 7

A D1.12 D5.5

STA. 307+08 TO STA. 307+30

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

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

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LEGEND FOR AS-BUILT POSTINGS

~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

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LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

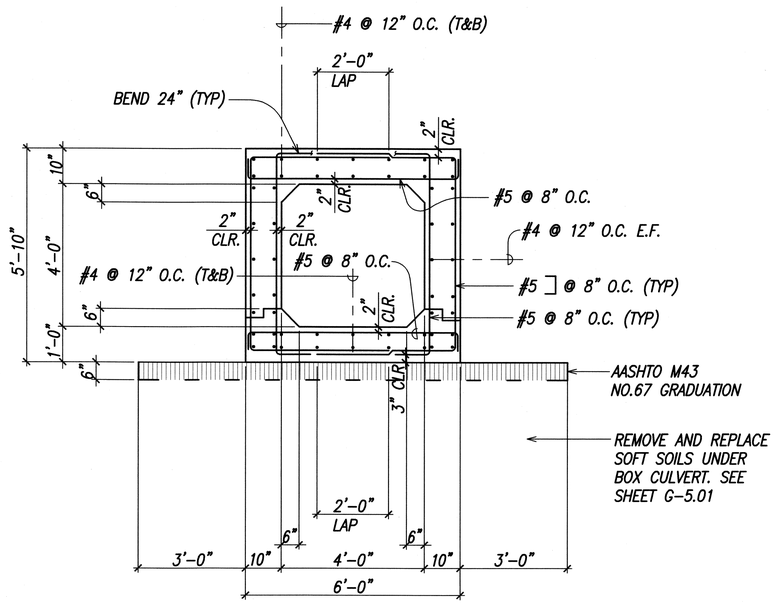
DRAINAGE DETAILS
DRAIN LINE NO. 7

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: JAN. 2010

SHEET No. D5.5 OF D5.8 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	165	452



CROSS SECTION – CONC. BOX CULVERT DRAIN LINE NO. 7 STA. 307+08 TO STA. 307+30

A D1.12 D5.5

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

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

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LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

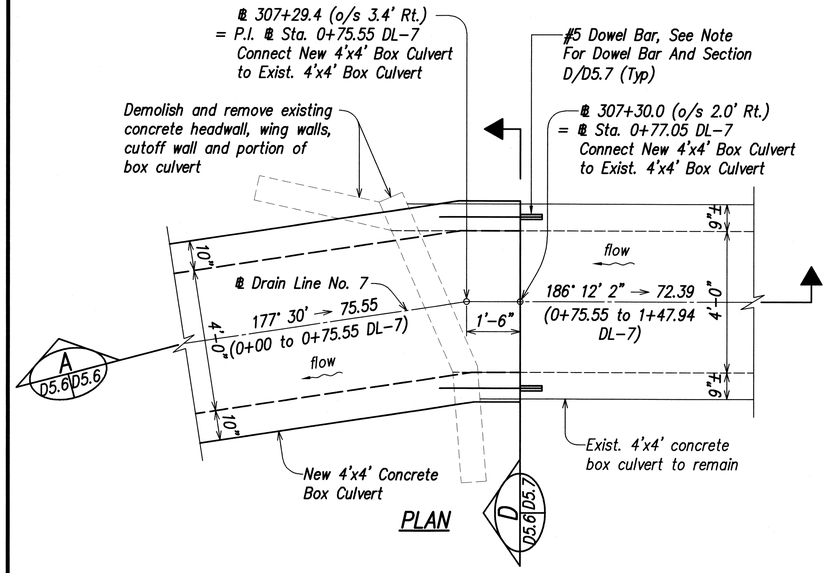
DRAINAGE DETAILS DRAIN LINE NO. 7

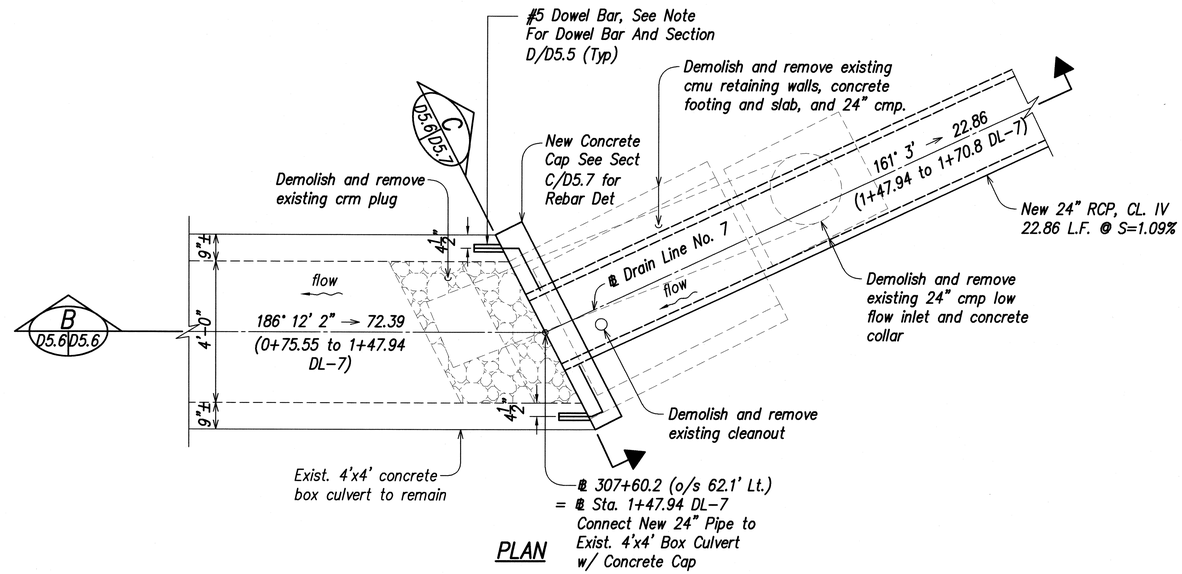
KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

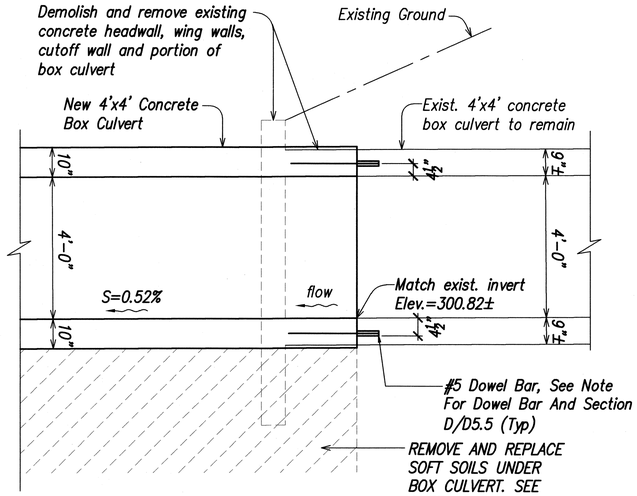
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D5.5 OF D5.8 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	166	452



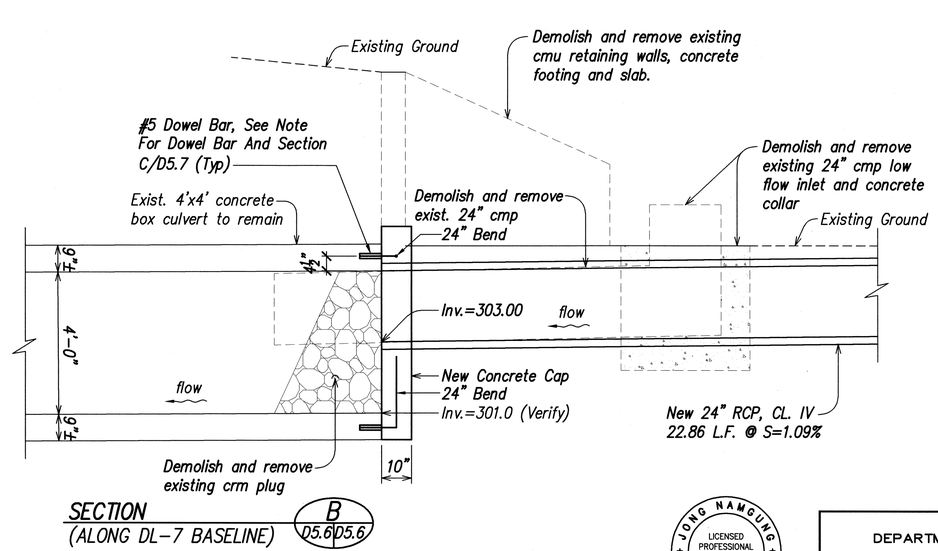




CONCRETE BOX CULVERT CONNECTION DETAIL AT ℄ STA. 307+30

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

1
D1.12
D5.6



CONCRETE BOX CULVERT CONNECTION DETAIL AT ℄ STA. 307+60

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

2
D1.12
D5.6

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

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JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

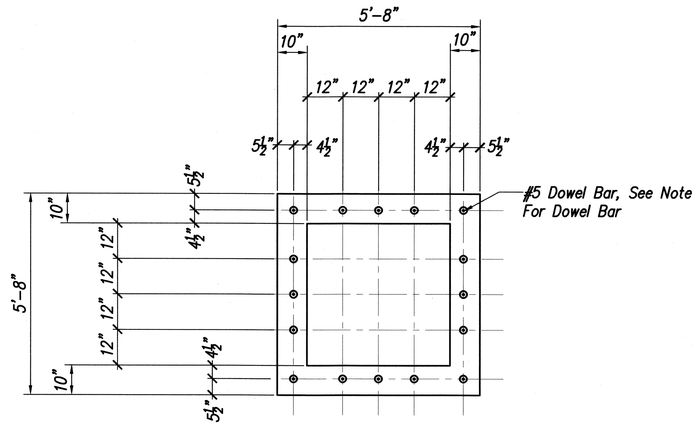
DRAINAGE DETAILS
DRAIN LINE NO. 7

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D5.6 OF D5.8 SHEETS

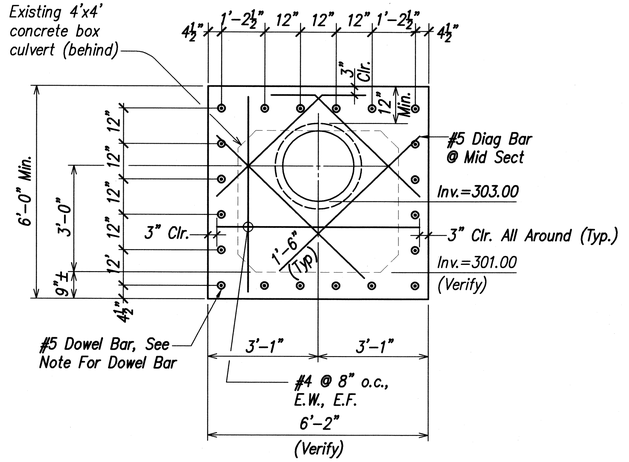
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	167	452



SECTION D
D5.6 D5.7

NOTE FOR DOWEL BAR

Drill 3/4"ø x 6" deep holes. Clean holes and fill with epoxy (Simpson Tie Type "set" Epoxy or accepted equal). Insert #5 x 2'-6" Long rebar. Cure epoxy for 3 days before imposing any forces on the rebar (Typ).



SECTION C
D5.6 D5.7

ORIGINAL PLAN
SURVEY PLOTTED BY _____ DATE
DRAWN BY "
TRACED BY "
NOTE BOOK DESIGNED BY "
QUANTITIES BY "
No. CHECKED BY "

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No. 3513-S
HAWAII, U.S.A.

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MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

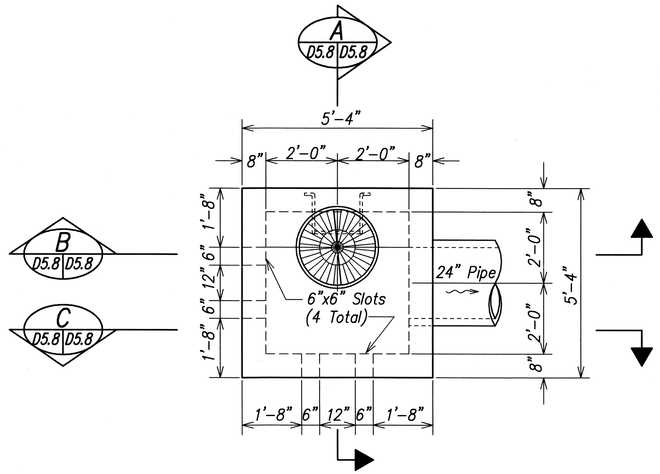
DRAINAGE DETAILS
DRAIN LINE NO. 7

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

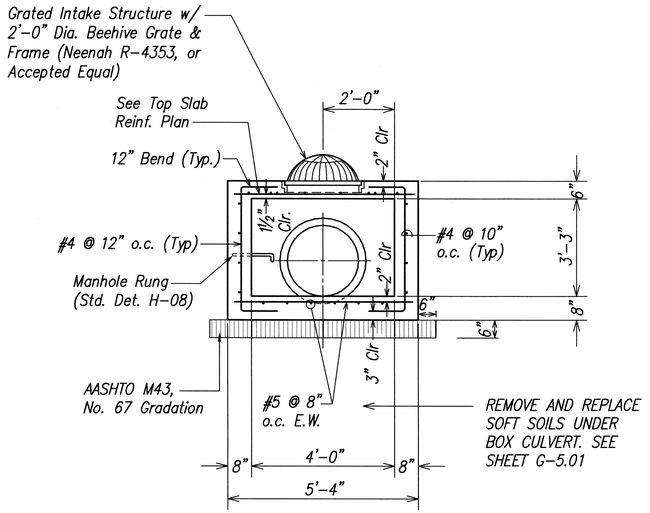
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D5.7 OF D5.8 SHEETS

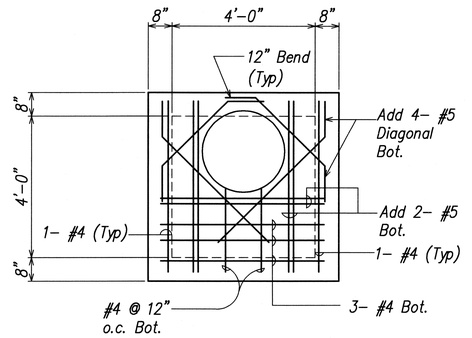
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	168	452



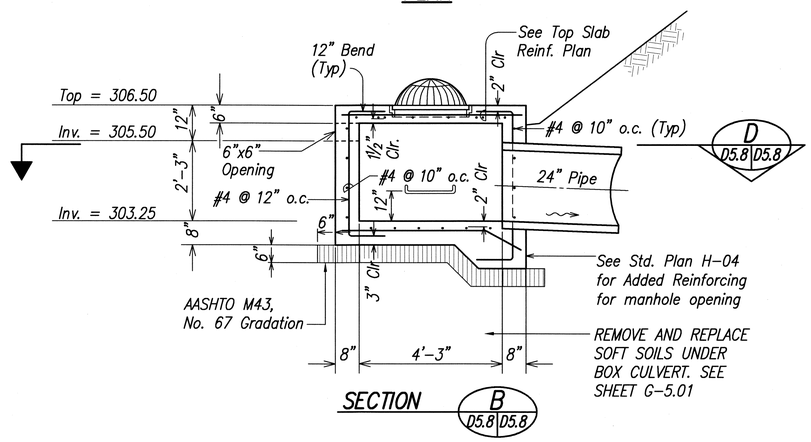
PLAN



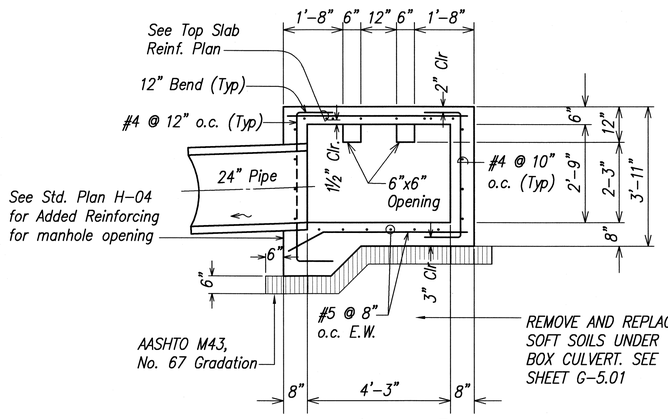
SECTION A D5.8 D5.8



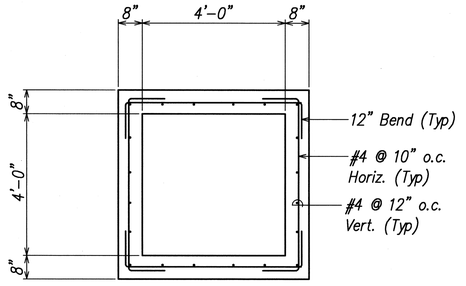
TOP SLAB REINFORCING PLAN



SECTION B D5.8 D5.8



SECTION C D5.8 D5.8



SECTION D D5.8 D5.8

GRATED DRAIN INLET NO. 7A
AT ℄ STA. 307+60.2
Scale: 1/2 "=1'-0"

1 D1.12 D5.8

ORIGINAL PLANS	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

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JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

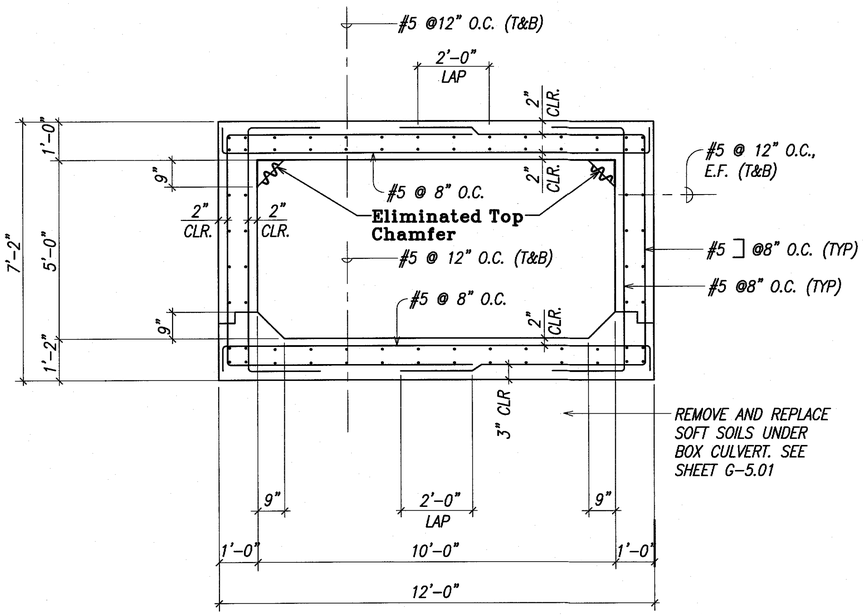
DRAINAGE DETAILS
GRATED DRAIN INLET NO. 7A

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

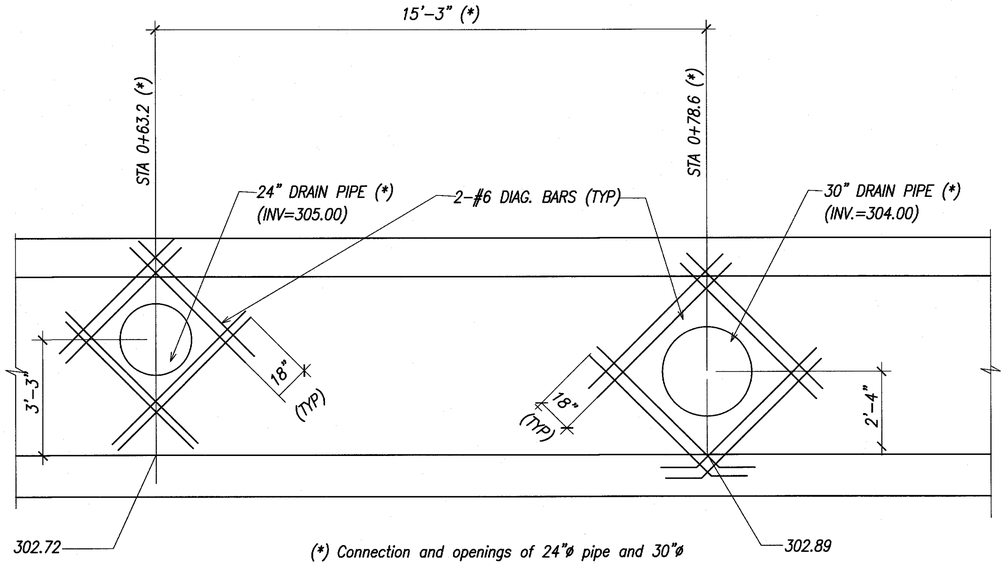
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D5.8 OF D5.8 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	169	452



CROSS SECTION
CONC. BOX CULVERT DRAIN LINE NO. 8 (A D1.13 | D6.1)
Scale: 1/2" = 1'-0"



(*) Connection and openings of 24"ø pipe and 30"ø pipe are on opposite walls from each other.

DRAIN PIPE CONNECTION ELEV/CONN DETAIL (B D1.13 | D6.1)
Scale: 1/2" = 1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

KMHs-D6.1-8604.dwg 1/26/09

LEGEND FOR AS-BUILT POSTINGS

~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

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LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

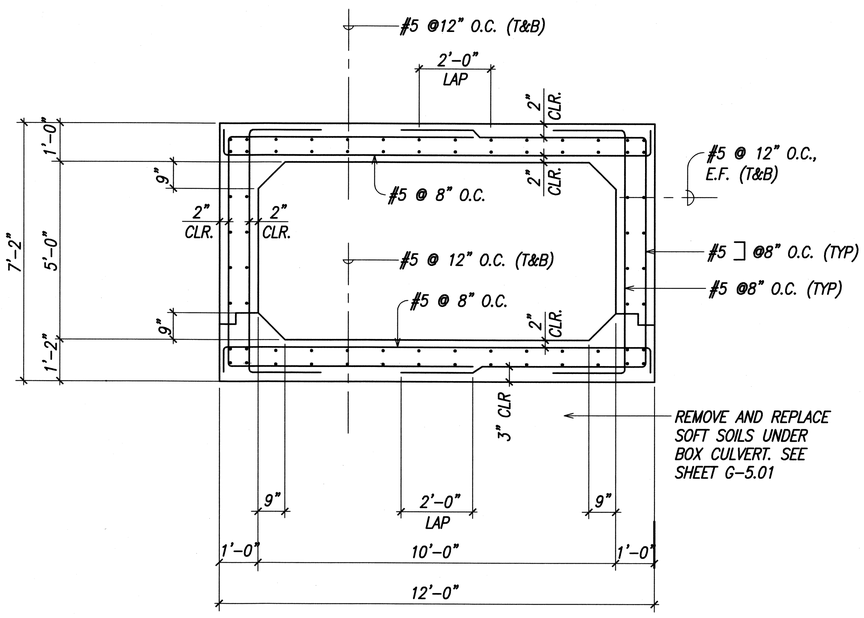
DRAINAGE DETAILS
DRAIN LINE NO. 8

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: JAN. 2010

SHEET No. D6.1 OF D6.5 SHEETS

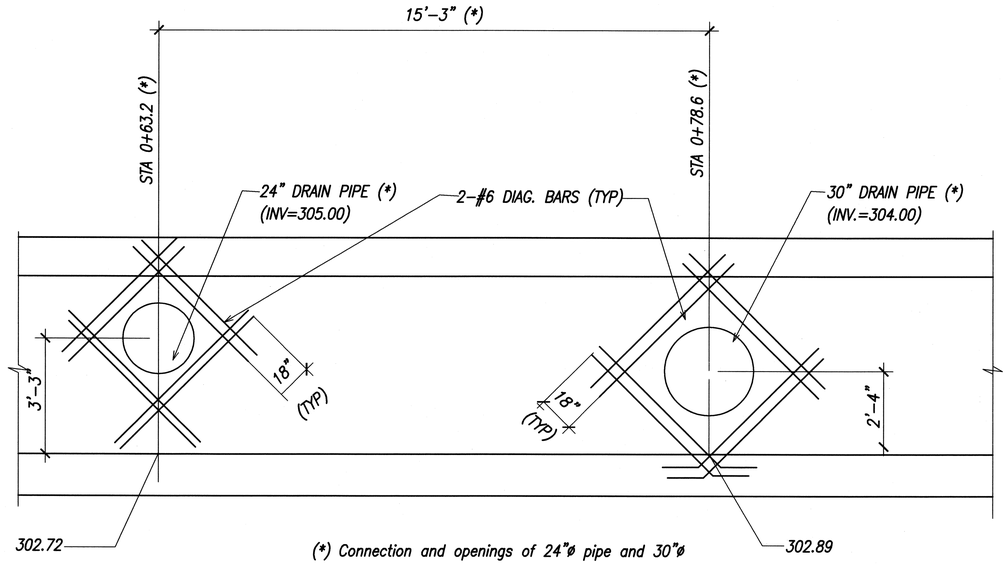
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	169	452



CROSS SECTION
CONC. BOX CULVERT DRAIN LINE NO. 8

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

A D1.13 D6.1



(*) Connection and openings of 24"ø pipe and 30"ø pipe are on opposite walls from each other.

DRAIN PIPE CONNECTION ELEV/CONN DETAIL

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

B D1.13 D6.1

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE
NOTE BOOK | No.

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MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

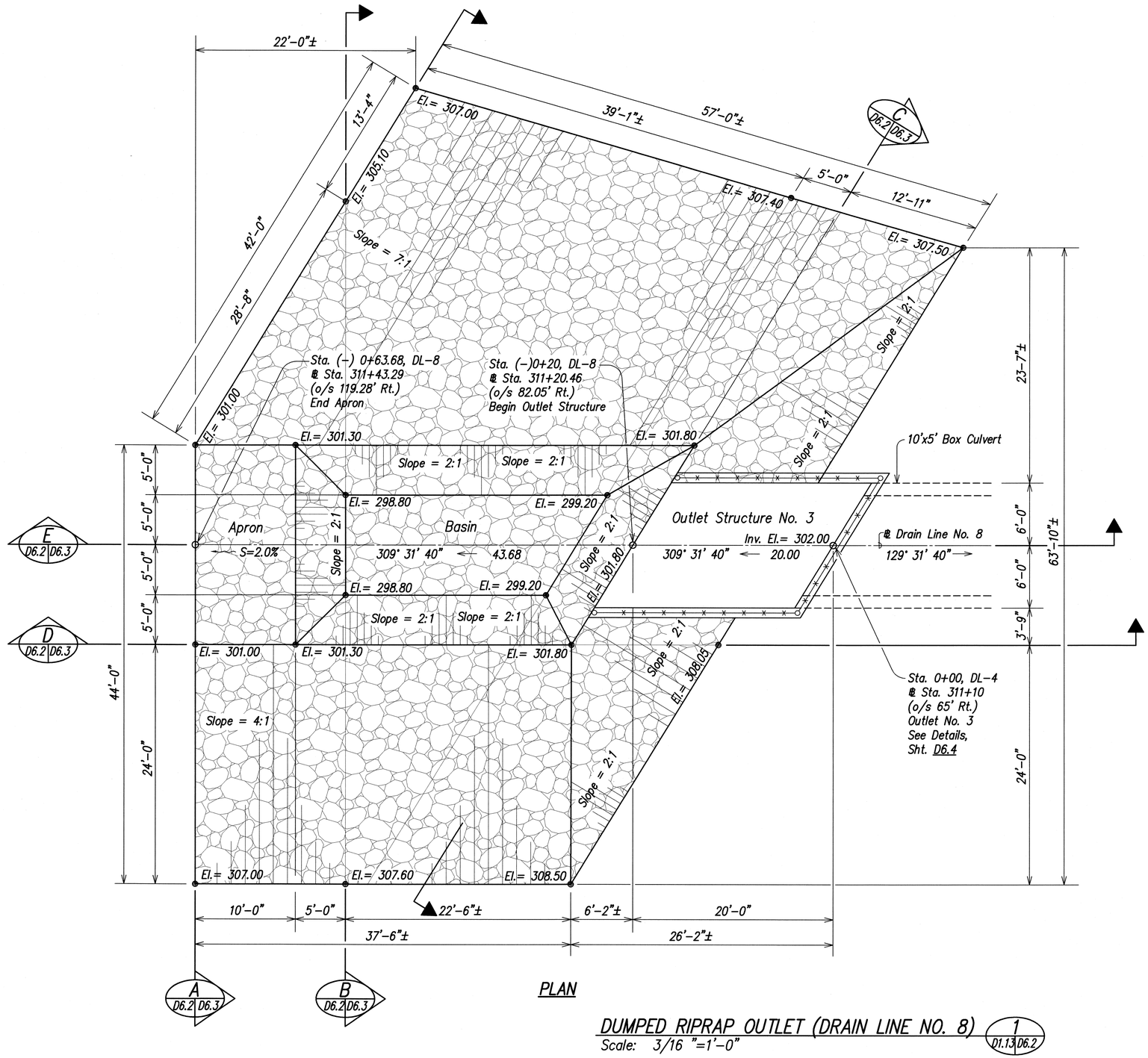
DRAINAGE DETAILS
DRAIN LINE NO. 8

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D6.1 OF D6.5 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	170	452



PLAN

DUMPED RIPRAP OUTLET (DRAIN LINE NO. 8) 1 D1.13 D6.2

Scale: 3/16 "=1'-0"

Dumped Riprap Gradation	
% Passing	Stone Size (ft.)
D_{100}	1.50 to 1.70
D_{85}	1.20 to 1.40
D_{50}	1.00 to 1.15
D_{15}	0.40 to 0.60

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

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GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.

2-26-09

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Glenn K. Ikeda

PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

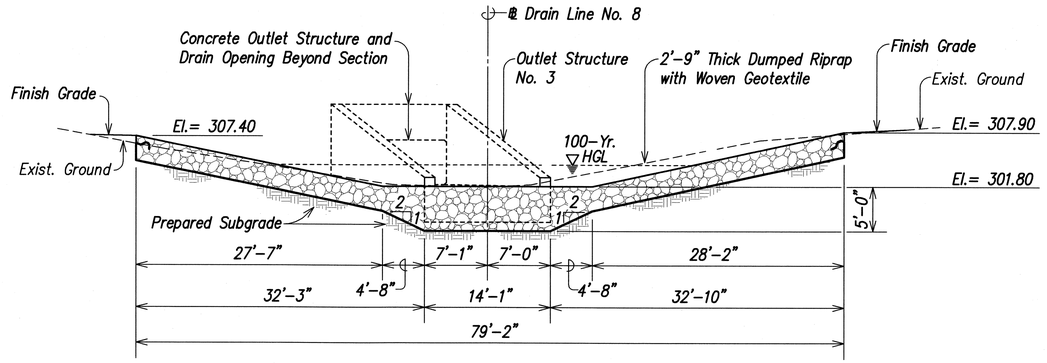
DRAINAGE DETAILS
DRAIN LINE NO. 8

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

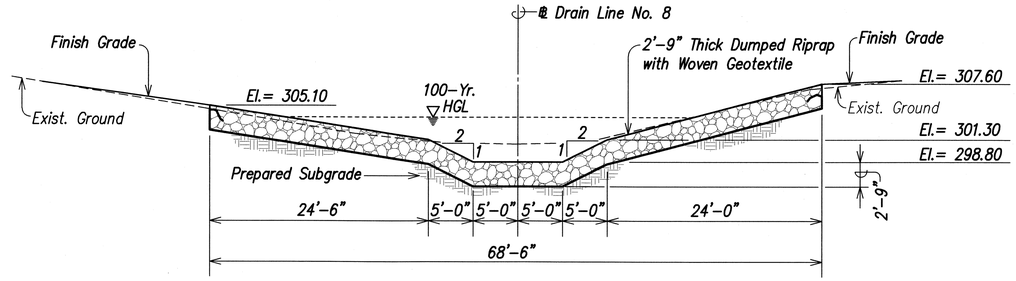
Scale: 3/16" = 1'-0" Date: FEB. 2009

SHEET No. D6.2 OF D6.5 SHEETS

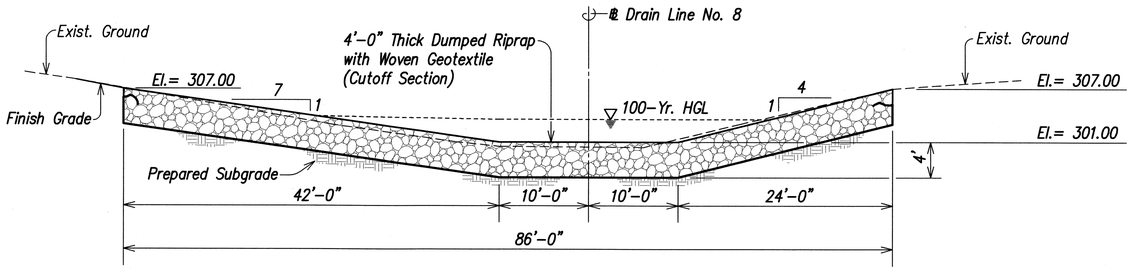
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	171	452



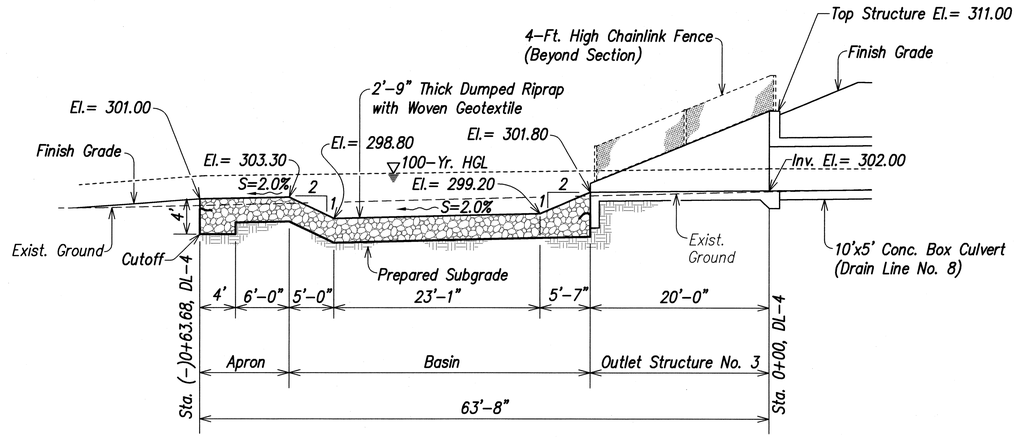
SECTION AT (−)0+20 (END BASIN) — C — D6.2 | D6.3



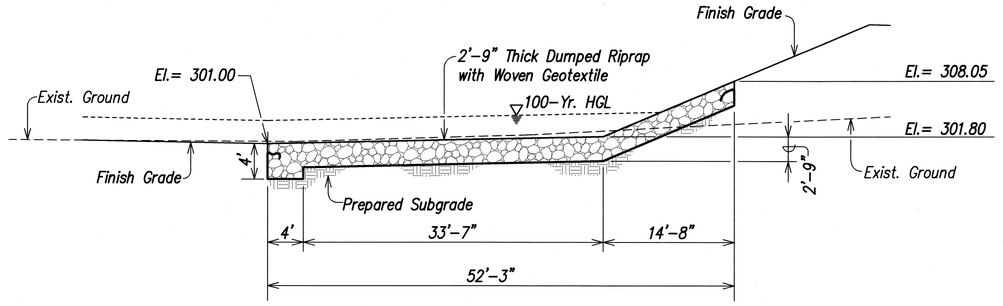
SECTION AT (−)0+48.68 (BEGIN BOTTOM BASIN) — B — D6.2 | D6.3



SECTION AT (−)0+63.68 (BEGIN APRON) — A — D6.2 | D6.3



SECTION (ALONG DL-8 BASELINE) — E — D6.2 | D6.3



SECTION — D — D6.2 | D6.3

DUMPED RIPRAP OUTLET (DRAIN LINE NO. 8) — 1 — D6.2 | D6.3
Scale: 1/8 "=1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

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GLENN K. IKEDA — LICENSED PROFESSIONAL ENGINEER — No. 8328-C — HAWAII, U.S.A.
2.16.09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
ParEn, Inc. dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

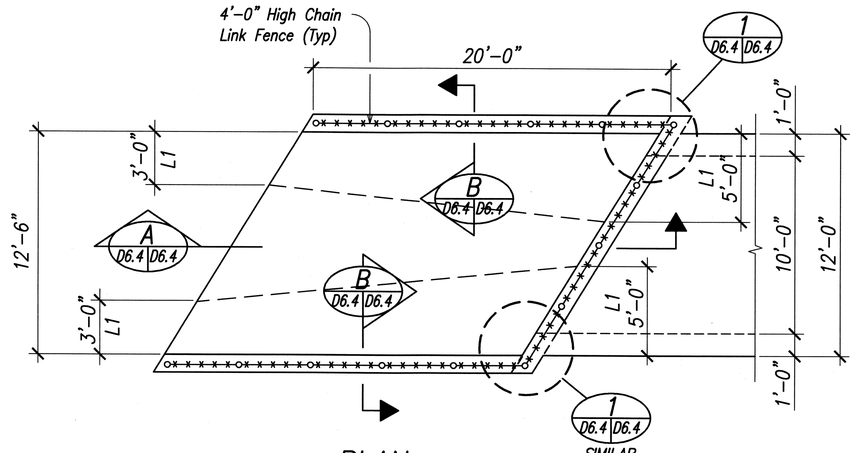
DRAINAGE DETAILS
DRAIN LINE NO. 8

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

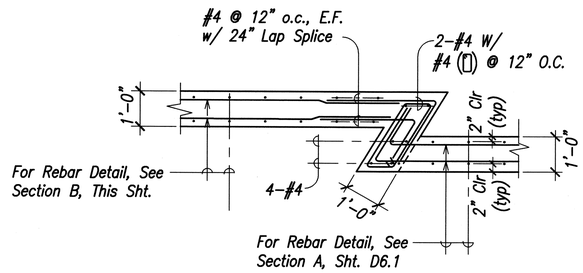
Scale: 1/8" = 1'-0" Date: FEB. 2009

SHEET No. D6.3 OF D6.5 SHEETS

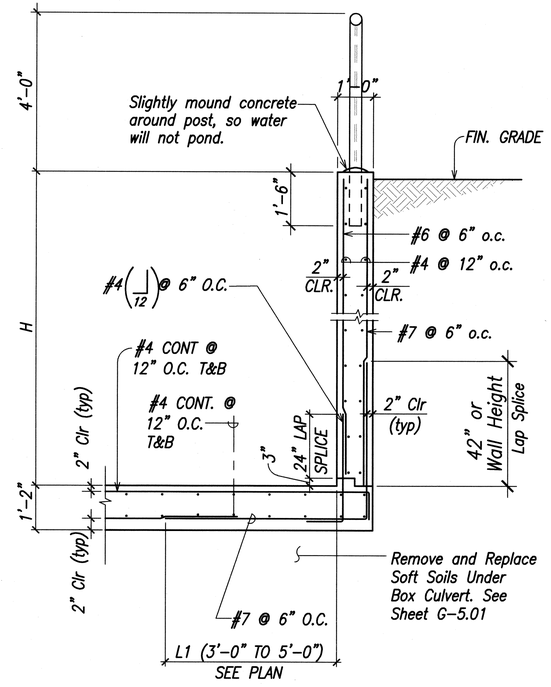
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	172	452



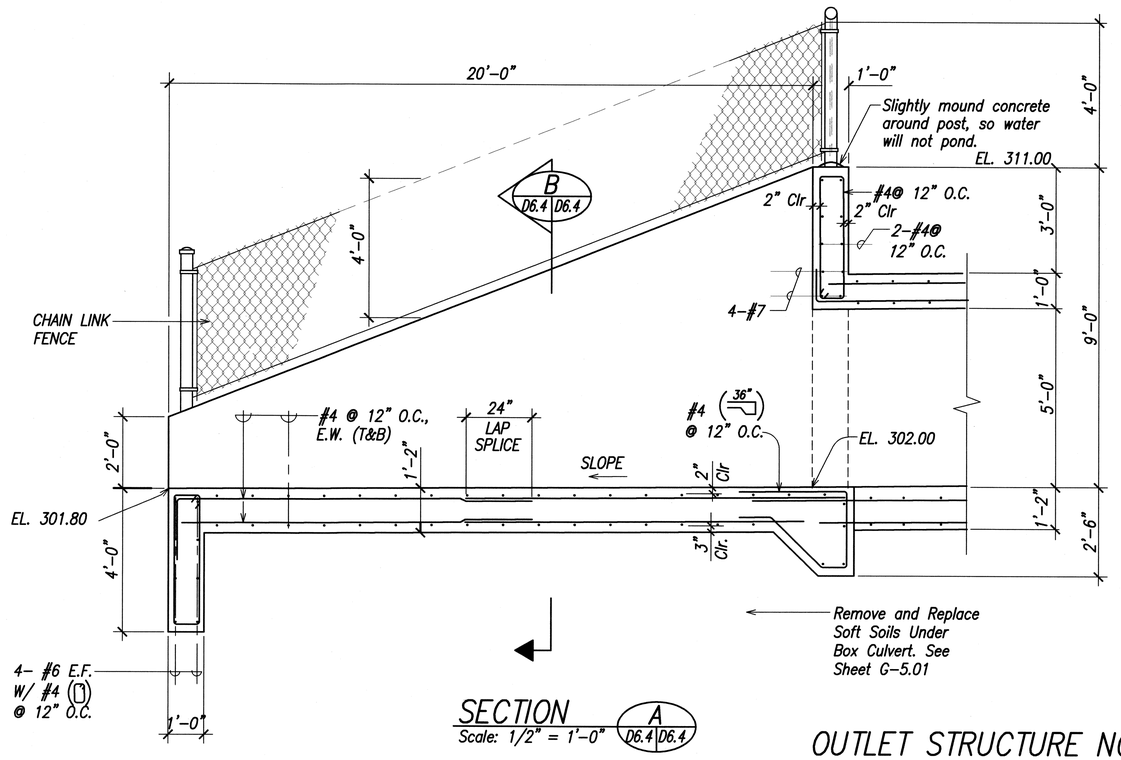
PLAN
Scale: 1/4" = 1'-0"



CORNER DETAIL 1 D6.4 D6.4
Scale: 1/2" = 1'-0"



SECTION B D6.4 D6.4
Scale: 1/2" = 1'-0"



SECTION A D6.4 D6.4
Scale: 1/2" = 1'-0"

OUTLET STRUCTURE NO. 3
AT ℄ STA. 311+10 1 D6.2 D6.4
SCALE AS NOTED

ORIGINAL PLAN
NOTE BOOK
No.
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CHECKED BY
DATE

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JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

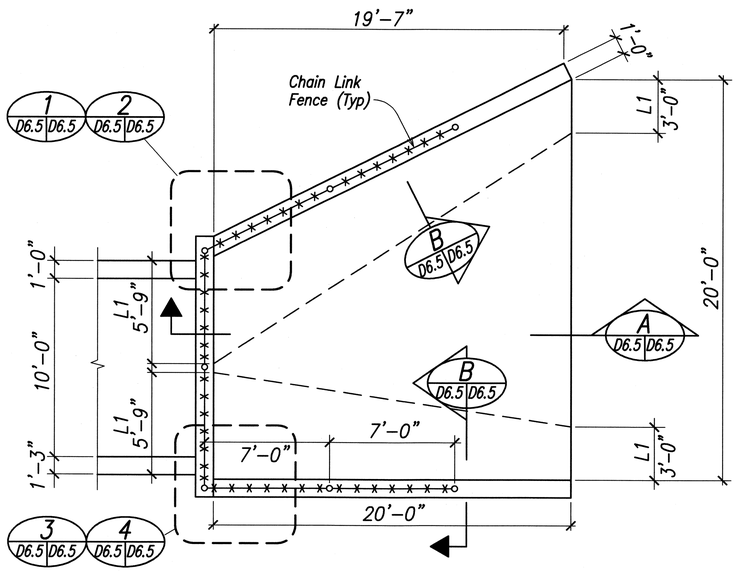
DRAINAGE DETAILS
OUTLET STRUCTURE NO. 3

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

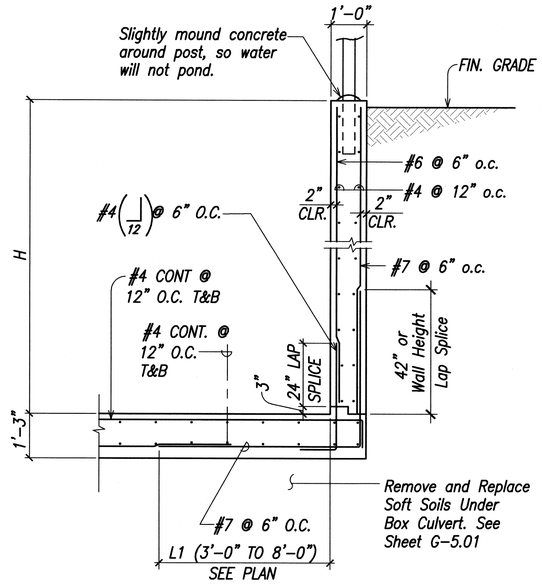
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D6.4 OF D6.5 SHEETS

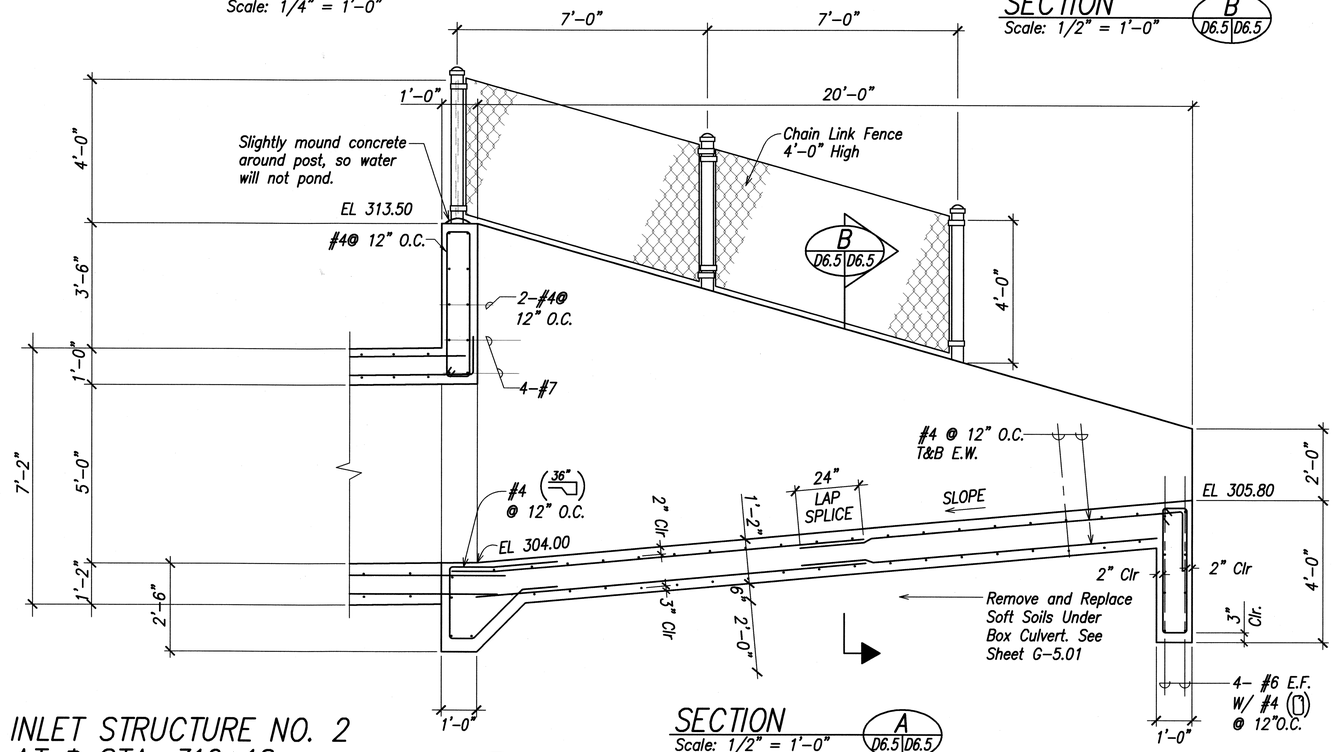
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	173	452



PLAN
Scale: 1/4" = 1'-0"

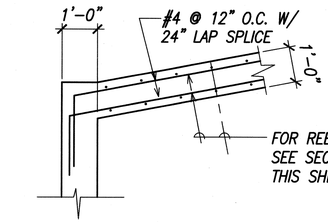


SECTION B
Scale: 1/2" = 1'-0"
D6.5 D6.5

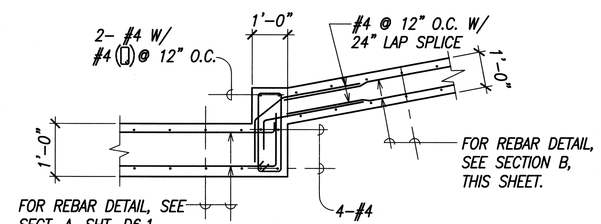


INLET STRUCTURE NO. 2 AT ℄ STA. 310+18
SCALE AS NOTED
1 D1.13 D6.5

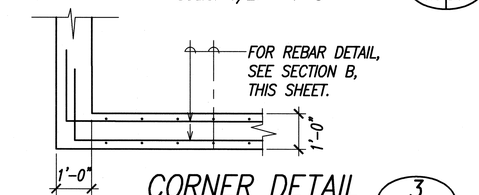
SECTION A
Scale: 1/2" = 1'-0"
D6.5 D6.5



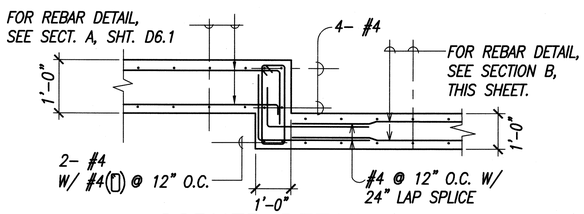
CORNER DETAIL 1
Scale: 1/2" = 1'-0"
D6.5 D6.5



CORNER DETAIL 2
Scale: 1/2" = 1'-0"
D6.5 D6.5



CORNER DETAIL 3
Scale: 1/2" = 1'-0"
D6.5 D6.5



CORNER DETAIL 4
Scale: 1/2" = 1'-0"
D6.5 D6.5

ORIGINAL PLAN
SURVEY PLOTTED BY
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TRACED BY
DESIGNED BY
QUANTITIES BY
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DATE
NOTE BOOK
No.

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LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
INLET STRUCTURE NO. 2

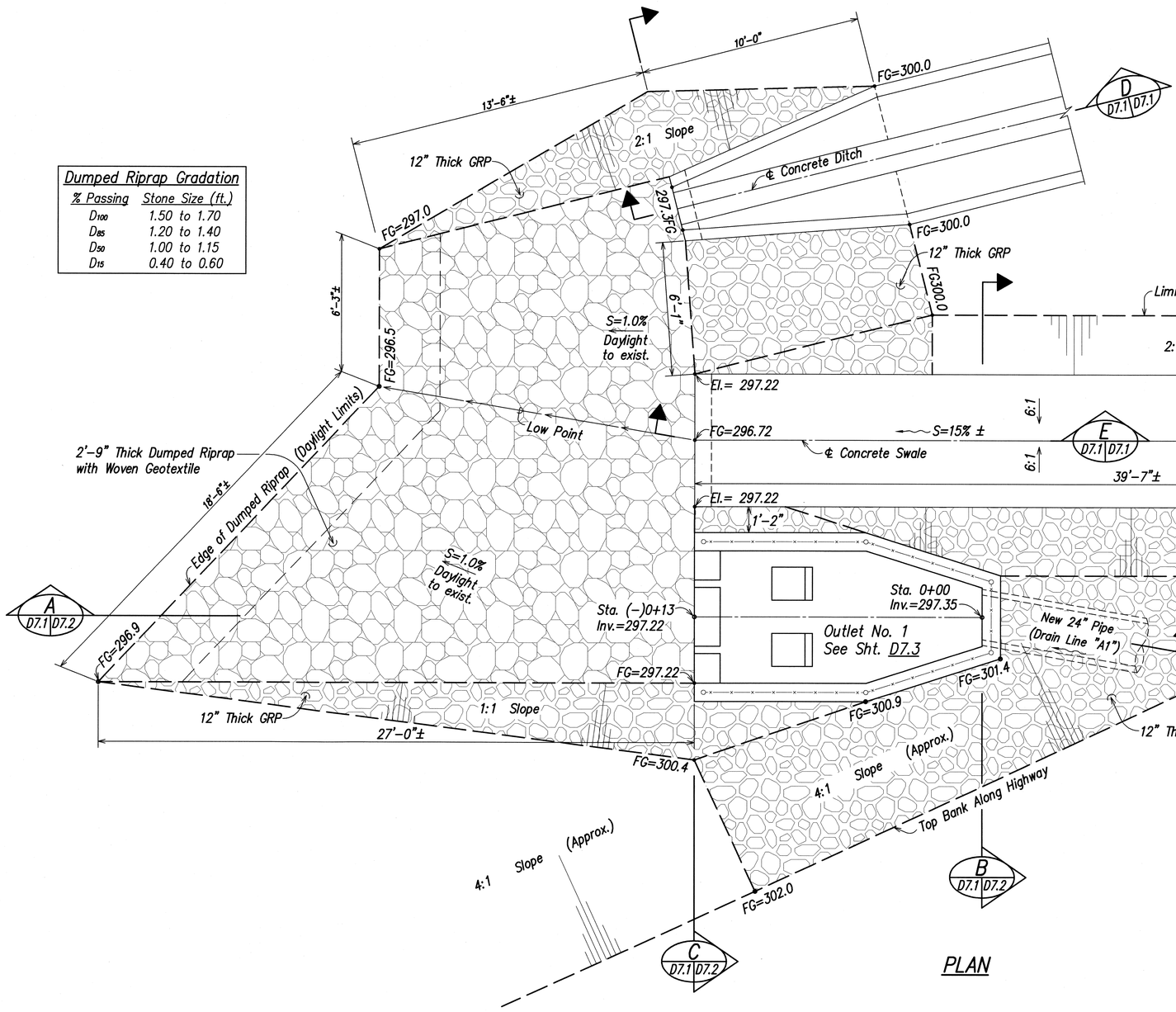
KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D6.5 OF D6.5 SHEETS

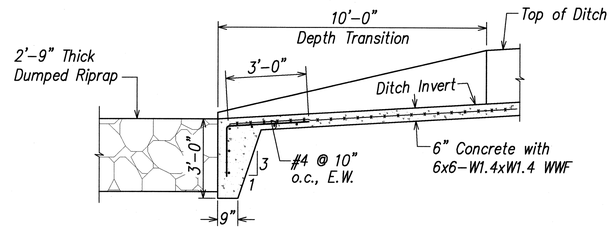
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	174	452

Dumped Riprap Gradation	
% Passing	Stone Size (ft.)
D_{100}	1.50 to 1.70
D_{85}	1.20 to 1.40
D_{50}	1.00 to 1.15
D_{15}	0.40 to 0.60

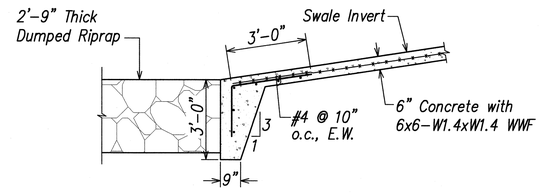


PLAN

DUMPED RIPRAP APRON – OUTLET NO. 1
AT ℄ STA. 277+00±
Scale: 3/8 "=1'-0"
1 D7.1 D7.1



THICKENED EDGE
(AT END OF CONC. DITCH)
D D7.1 D7.1



THICKENED EDGE
(AT END OF CONC. SWALE)
E D7.1 D7.1

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

LB2: STATE\DOT\KAUMUALI-1\PHASE1A REVISION\PLANS\KHWio-D71-OUT1.dwg 11/24/08

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
2-26-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

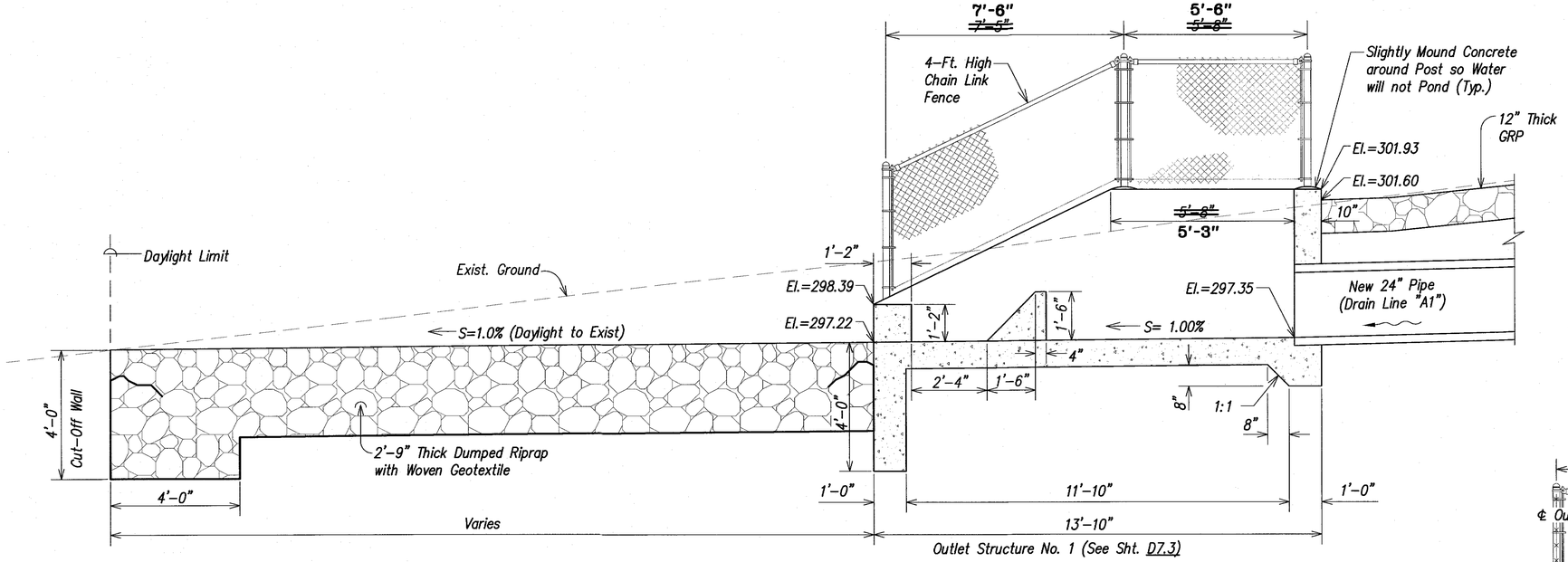
DRAINAGE DETAILS
OUTLET STRUCTURE NO. 1

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

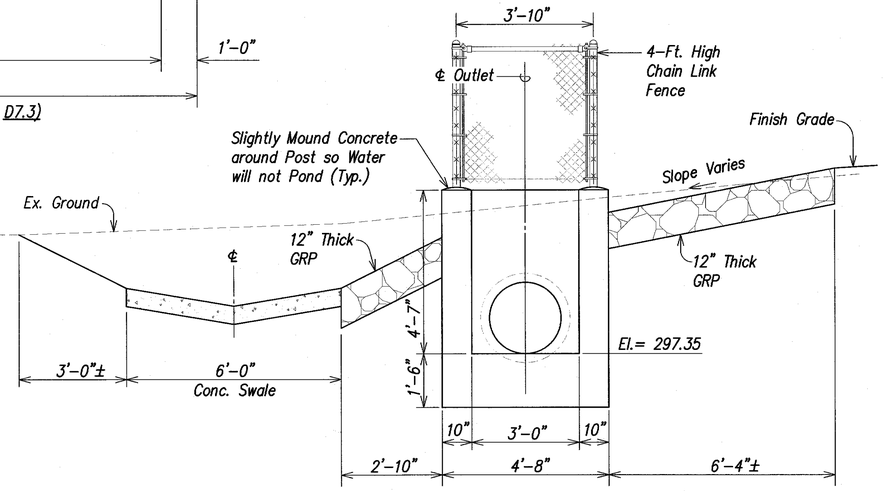
Scale: Date: FEB. 2009

SHEET No. D7.1 OF D7.8 SHEETS

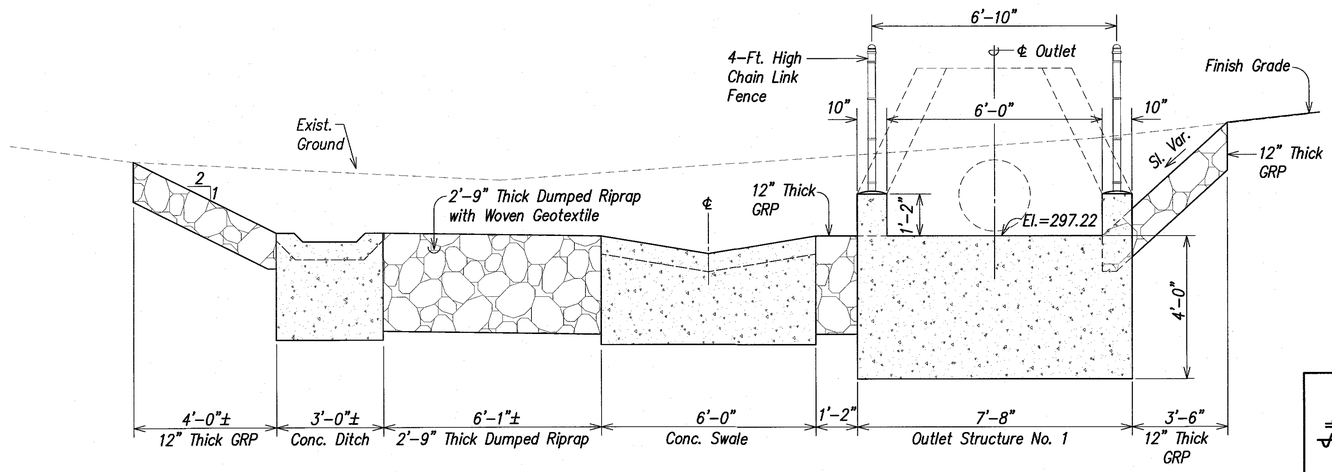
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	175	452



SECTION (ALONG ℄ OUTLET STRUCTURE) — A — D7.1 | D7.2



SECTION AT STA. 0+00 (BEGIN GRP APRON) — B — D7.1 | D7.2



SECTION AT STA. (-)0+13 (END GRP APRON) — C — D7.1 | D7.2

GRP APRON–OUTLET NO. 1 — 1 — D7.1 | D7.2
Scale: 1/2 "=1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

khlhs-d72-0211.dwg 2/10/09

LEGEND FOR AS-BUILT POSTINGS

~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

GLENN K. IKEDA — LICENSED PROFESSIONAL ENGINEER — No. 8328-C — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

ParEn, Inc. dba PARK ENGINEERING LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
OUTLET STRUCTURE NO. 1

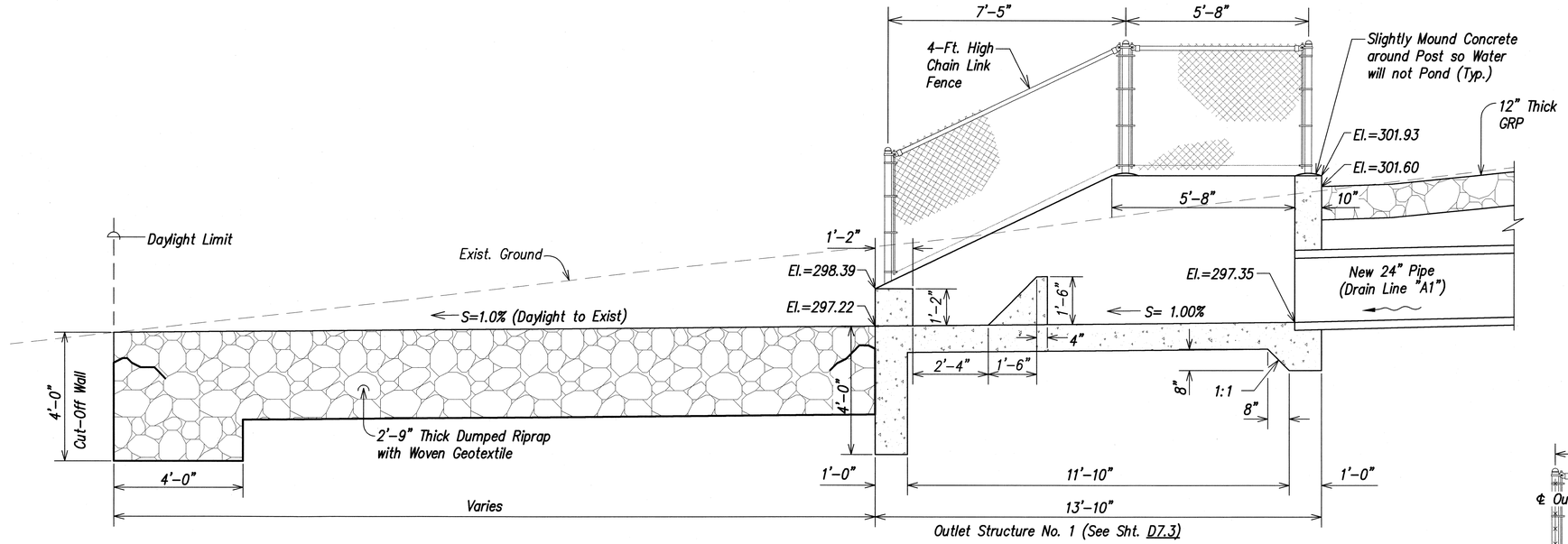
KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" — Date: JAN. 2010

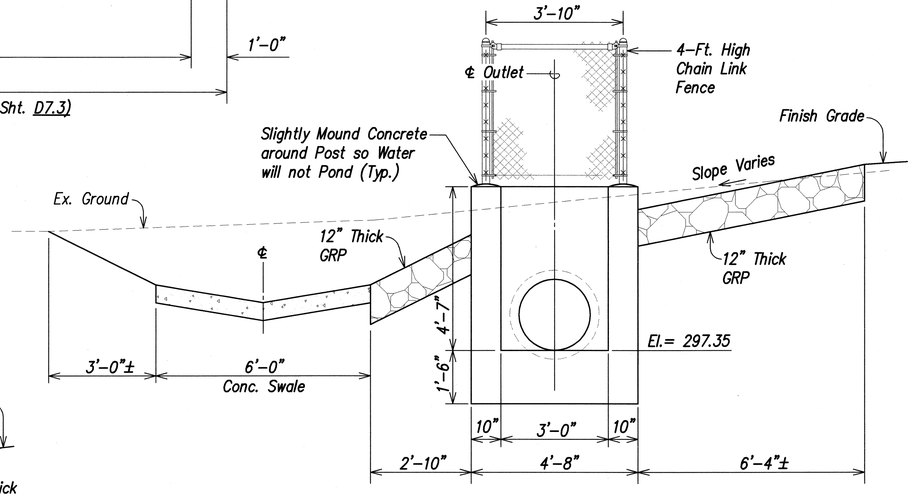
SHEET No. D7.2 OF D7.8 SHEETS

"AS-BUILT"

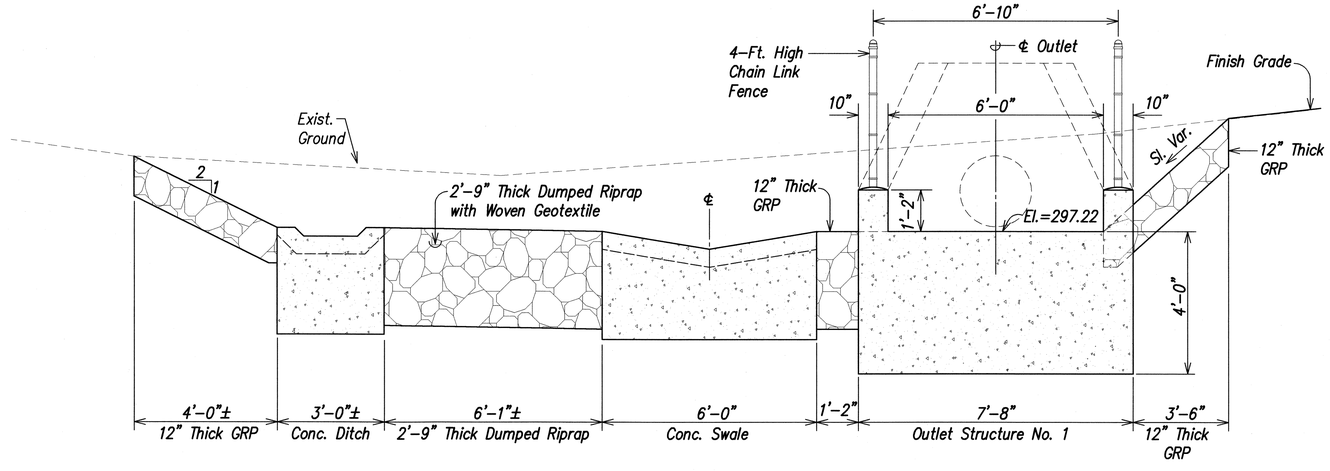
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	175	452



SECTION (ALONG ℄ OUTLET STRUCTURE) — A — D7.1 | D7.2



SECTION AT STA. 0+00 (BEGIN GRP APRON) — B — D7.1 | D7.2



GRP APRON–OUTLET NO. 1 — 1 — D7.1 | D7.2
Scale: 1/2 "=1'-0"

SECTION AT STA. (–)0+13 (END GRP APRON) — C — D7.1 | D7.2

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

L&S: STATE\DOT\KAUMUALI-1\PHASE1A REVISION\PLANS\KHW16-07.2-OUTL.dwg 2/10/09

GLENN K. IKEDA — LICENSED PROFESSIONAL ENGINEER No. 8328-C — HAWAII, U.S.A.
2-26-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
ParEn, Inc. dba PARK ENGINEERING LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

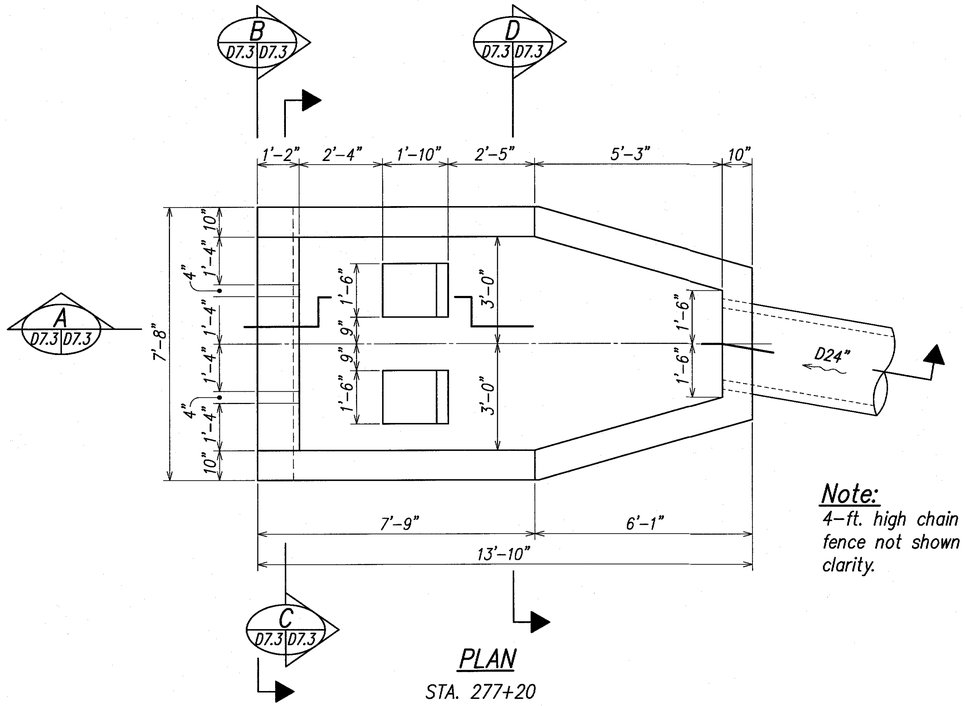
DRAINAGE DETAILS
OUTLET STRUCTURE NO. 1

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: FEB. 2009

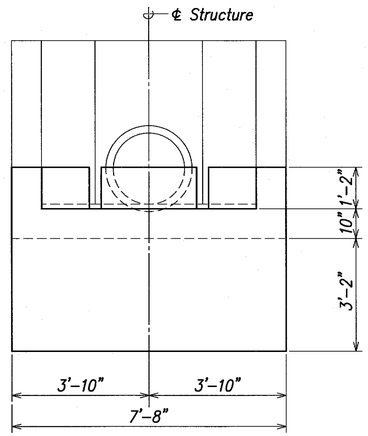
SHEET No. D7.2 OF D7.8 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	176	452

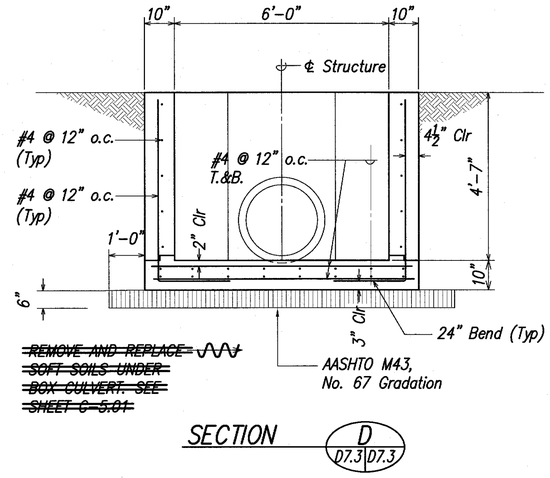


PLAN
STA. 277+20

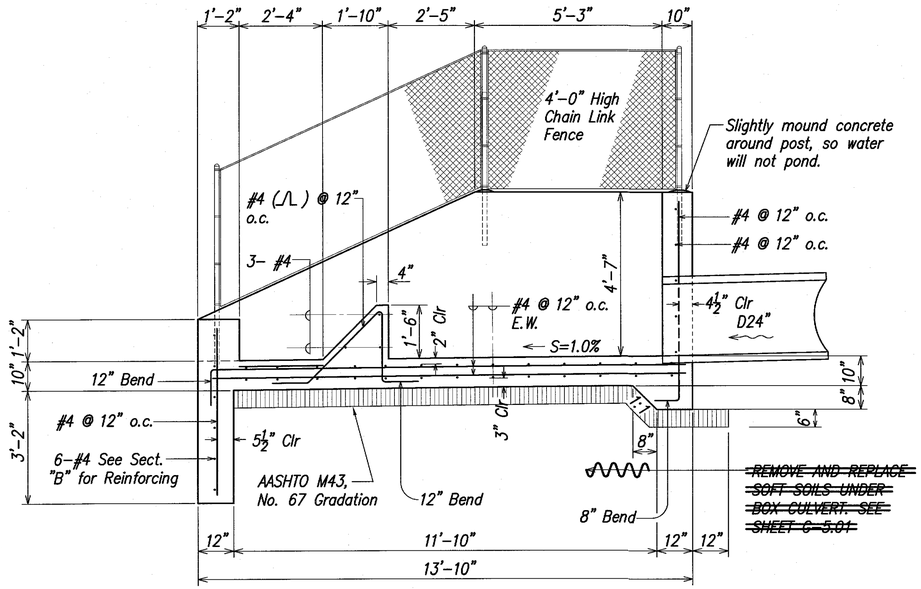
Note:
4-ft. high chain link fence not shown for clarity.



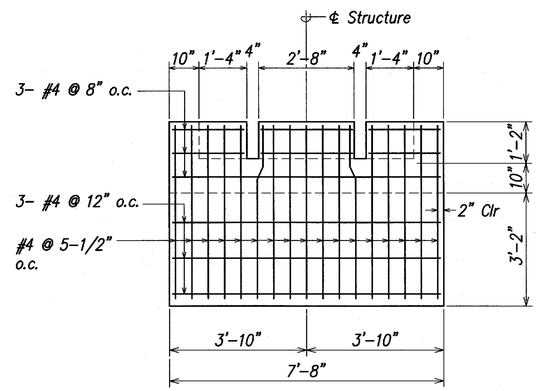
SECTION B D7.3 D7.3



SECTION D D7.3 D7.3



SECTION A D7.3 D7.3



SECTION C D7.3 D7.3

OUTLET STRUCTURE NO. 1
AT O.B. ℄ STA. 277+20
Scale: 1/2" = 1'-0"

1 D7.3
D1.1, D7.1, D7.2

LEGEND FOR AS-BUILT POSTINGS

~~Squiggly line~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

JONG NAMGUNG ★ LICENSED PROFESSIONAL ENGINEER ★ No. 3513-S HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
OUTLET STRUCTURE NO. 1

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: JAN. 2010

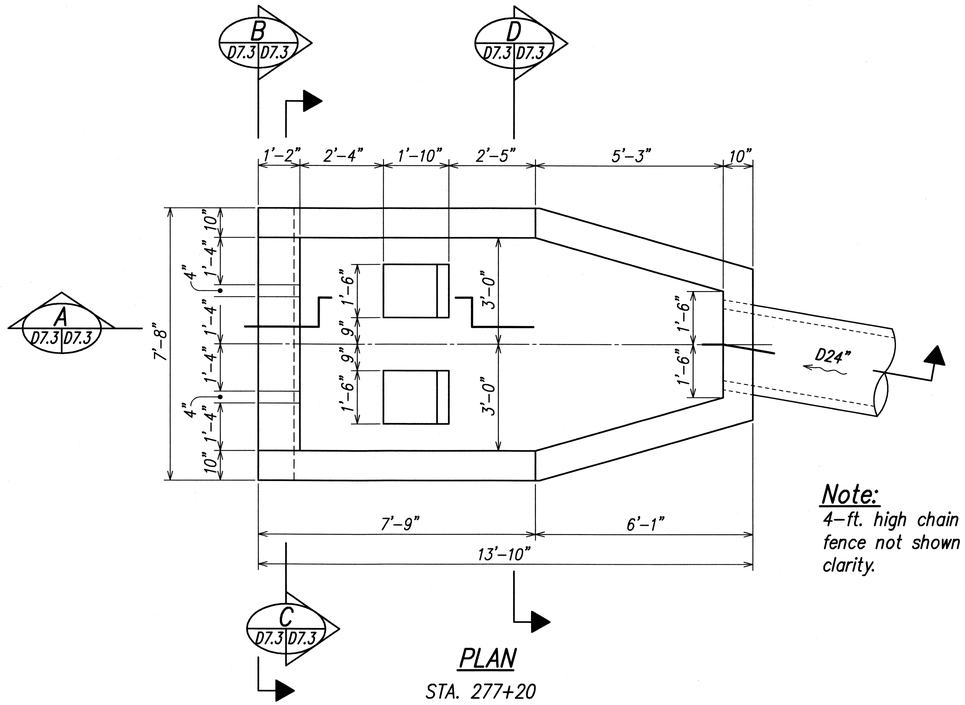
SHEET No. D7.3 OF D7.8 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

Anmts-D7.3-OUT1.dwg 2/24/09

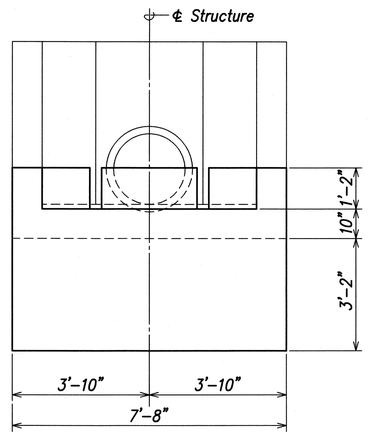
"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	176	452

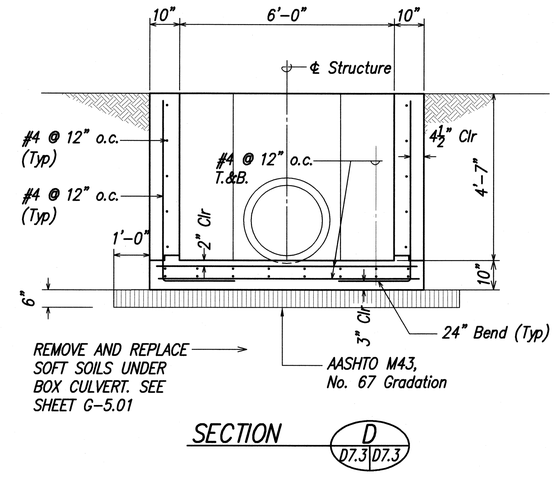


PLAN
STA. 277+20

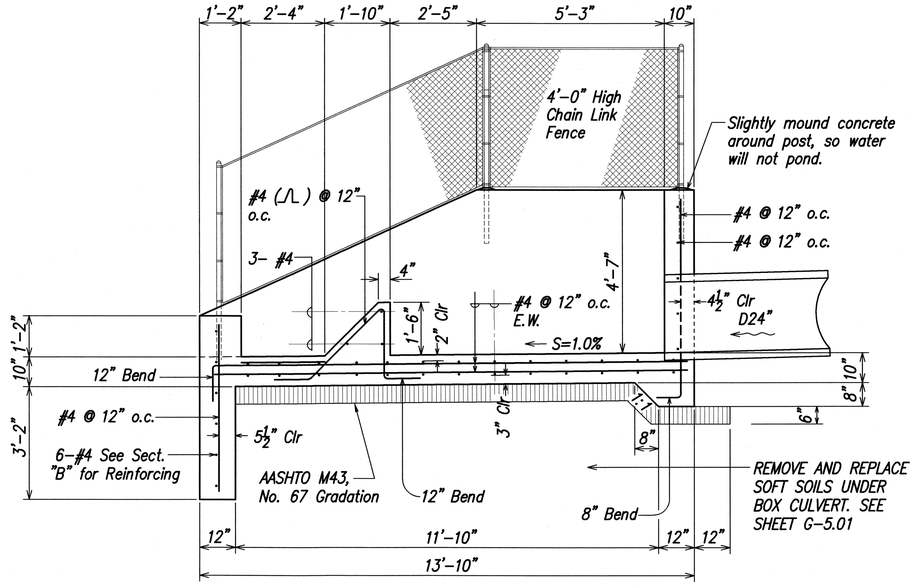
Note:
4-ft. high chain link fence not shown for clarity.



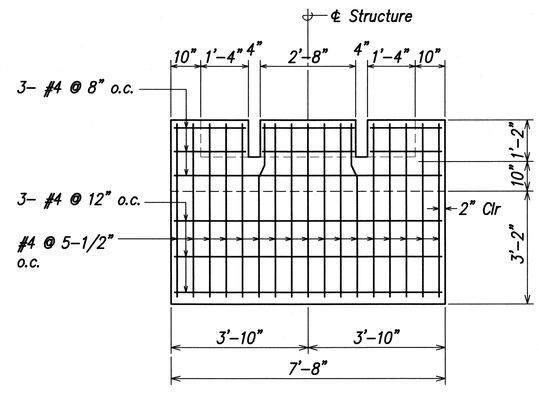
SECTION B D7.3 D7.3



SECTION D D7.3 D7.3



SECTION A D7.3 D7.3



SECTION C D7.3 D7.3

OUTLET STRUCTURE NO. 1
AT O.B. ℄ STA. 277+20
Scale: 1/2" = 1'-0"

1 D7.3
D1.1, D7.1, D7.2

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLAN
NOTE BOOK
No.

I:\82. STATE\DOT\KAUMUALI-I\PHASE1A REVISION\PLANS\ HWHS-0713-OUTI.dwg 2/24/09

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

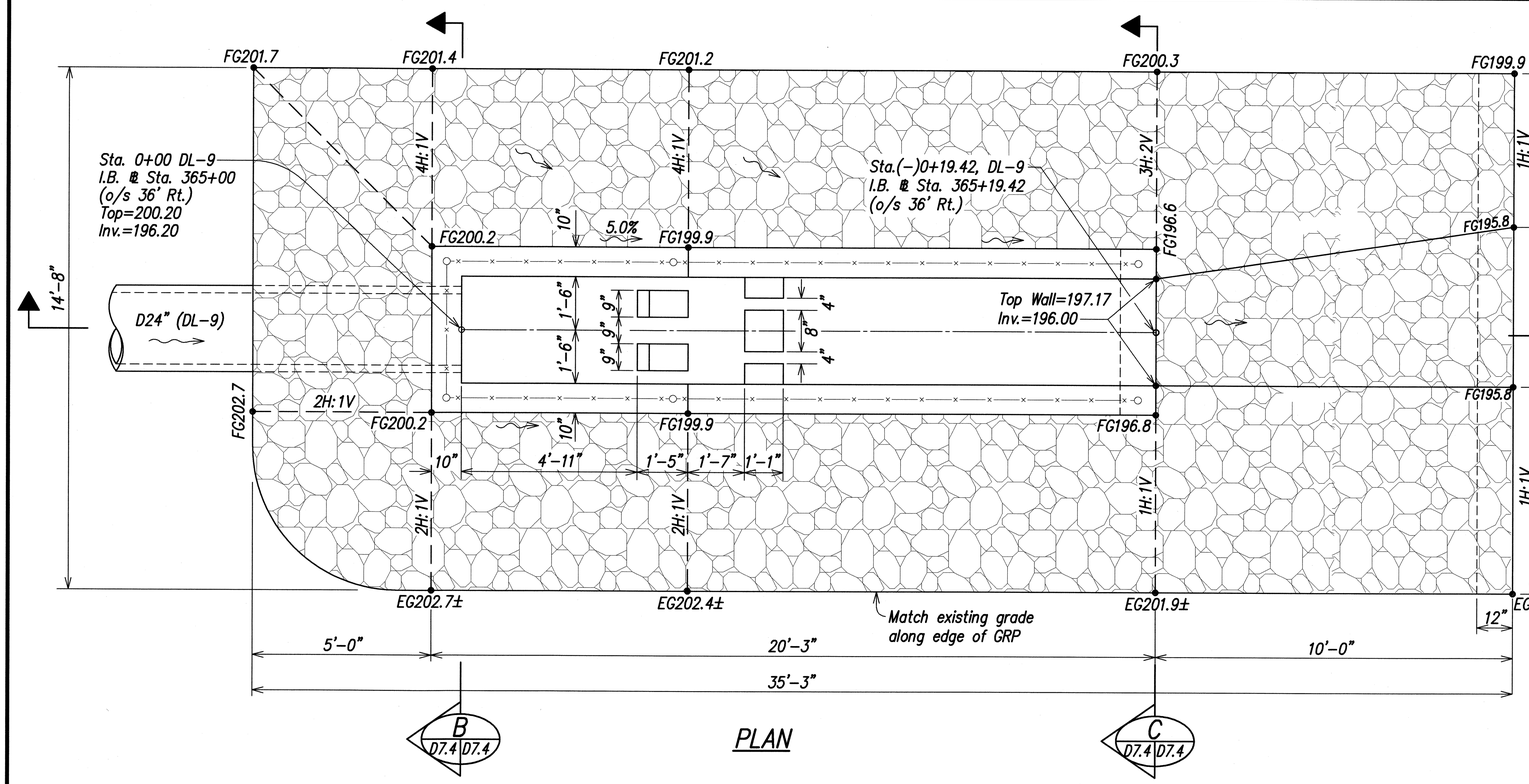
DRAINAGE DETAILS
OUTLET STRUCTURE NO. 1

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

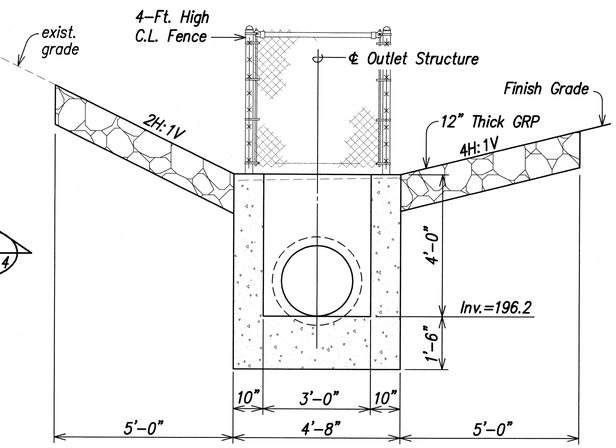
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D7.3 OF D7.8 SHEETS

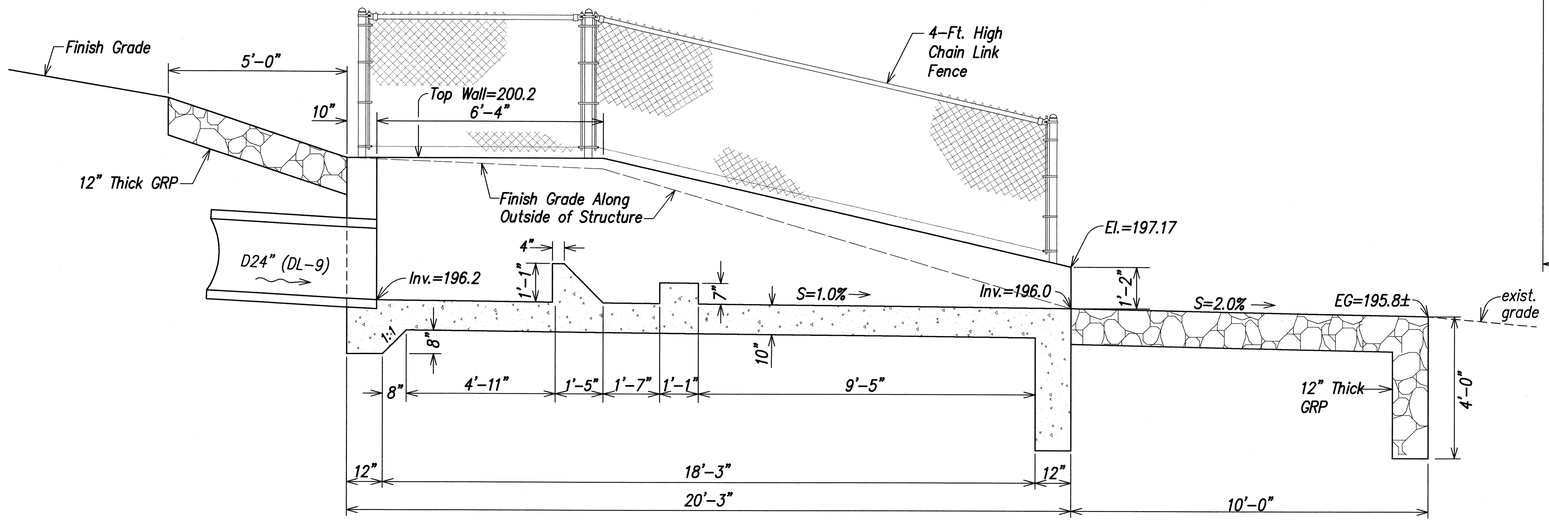
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	177	452



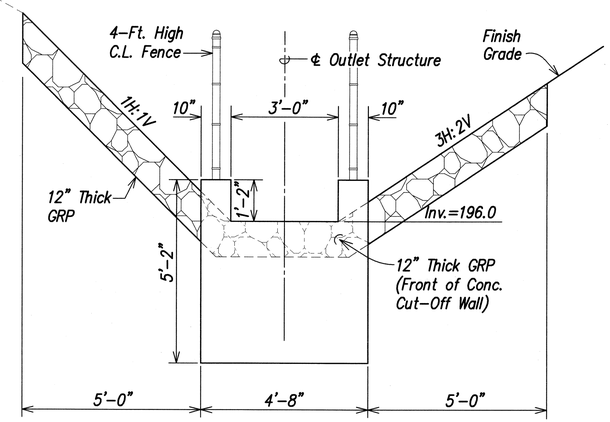
PLAN



SECTION STA. 0+00 B D7.4 D7.4



SECTION A D7.4 D7.4



SECTION STA.(-) 0+19.42 C D7.4 D7.4

OUTLET STRUCTURE NO. 4
AT ℄ STA. 365+00 (RT.)
Scale: 1/2 "=1'-0"

1 D1.10 D7.4 For Structural Reinforcing Details, See Sheet D7.5

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

LIBZ: STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\ KHWI0-D7.4-OUT4.dwg 2/10/09

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
2-26-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

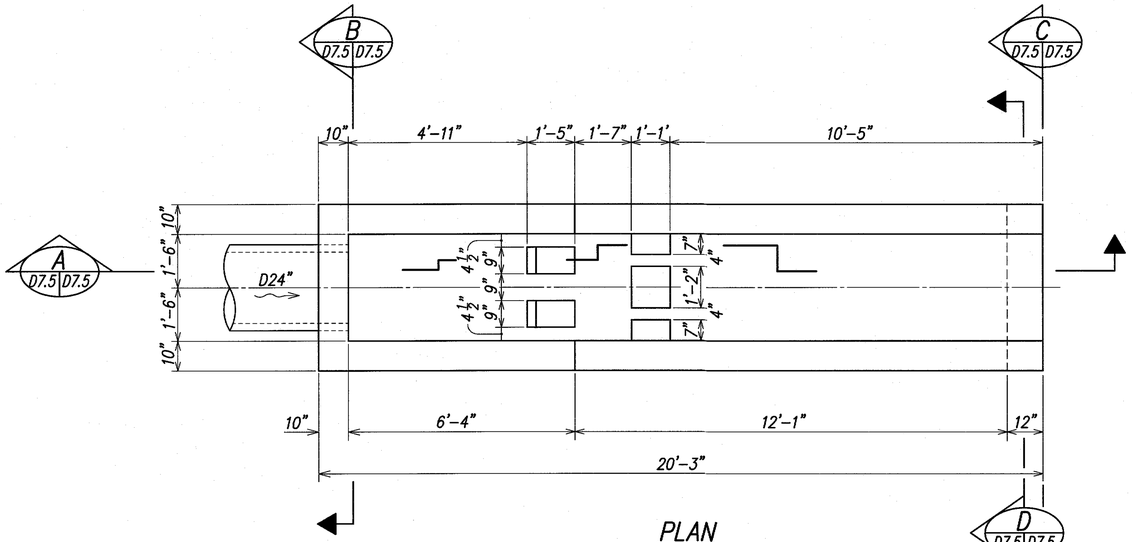
DRAINAGE DETAILS
OUTLET STRUCTURE NO. 4

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

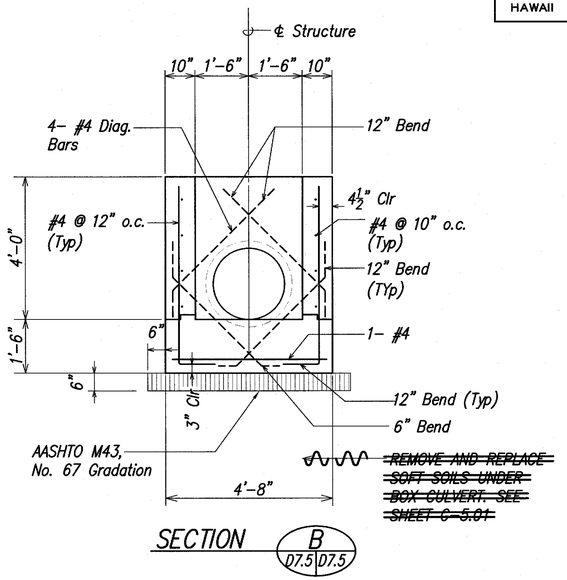
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D7.4 OF D7.8 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	178	452

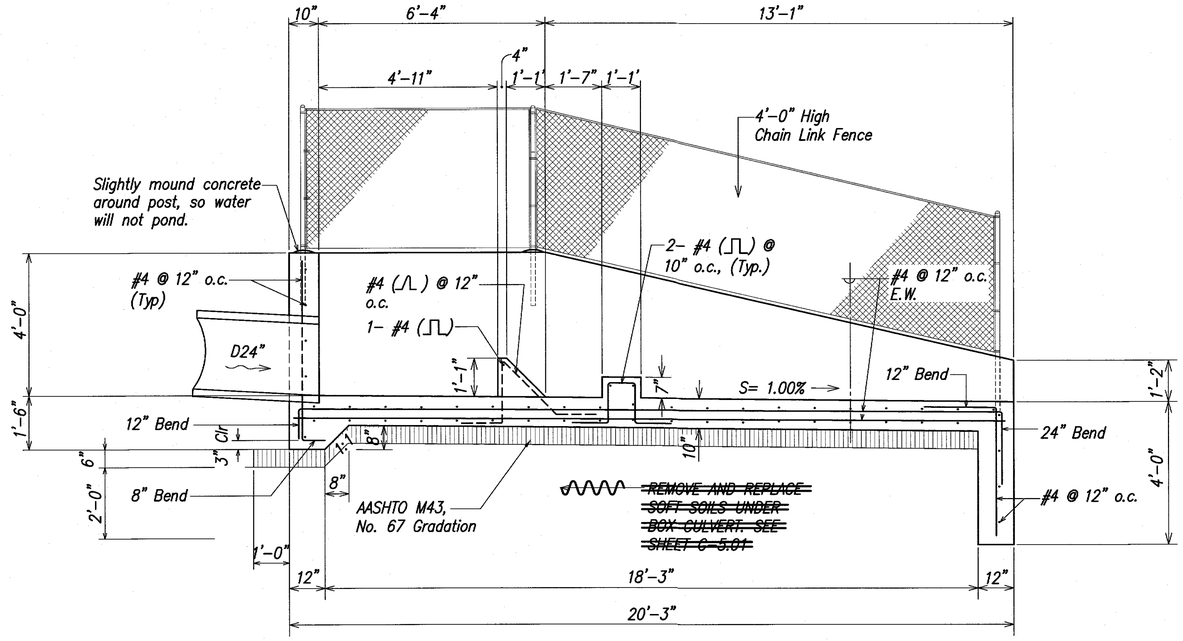


PLAN
STA. 365+00

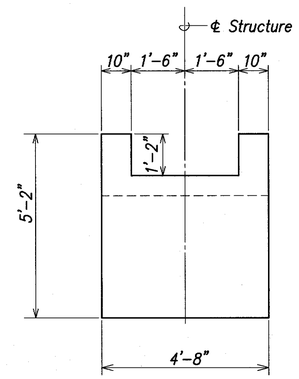


SECTION B D7.5 D7.5

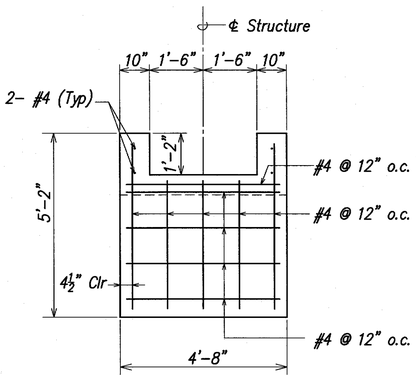
Note:
4-ft. High Chain Link Fence not shown for clarity.



SECTION A D7.5 D7.5



SECTION C D7.5 D7.5



SECTION D D7.5 D7.5

LEGEND FOR AS-BUILT POSTINGS

~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

REINFORCING DETAILS
OUTLET STRUCTURE NO. 4 — 1 D7.4 D7.5
Scale: 1/2" = 1'-0"

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
OUTLET STRUCTURE NO. 4

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: JAN. 2010

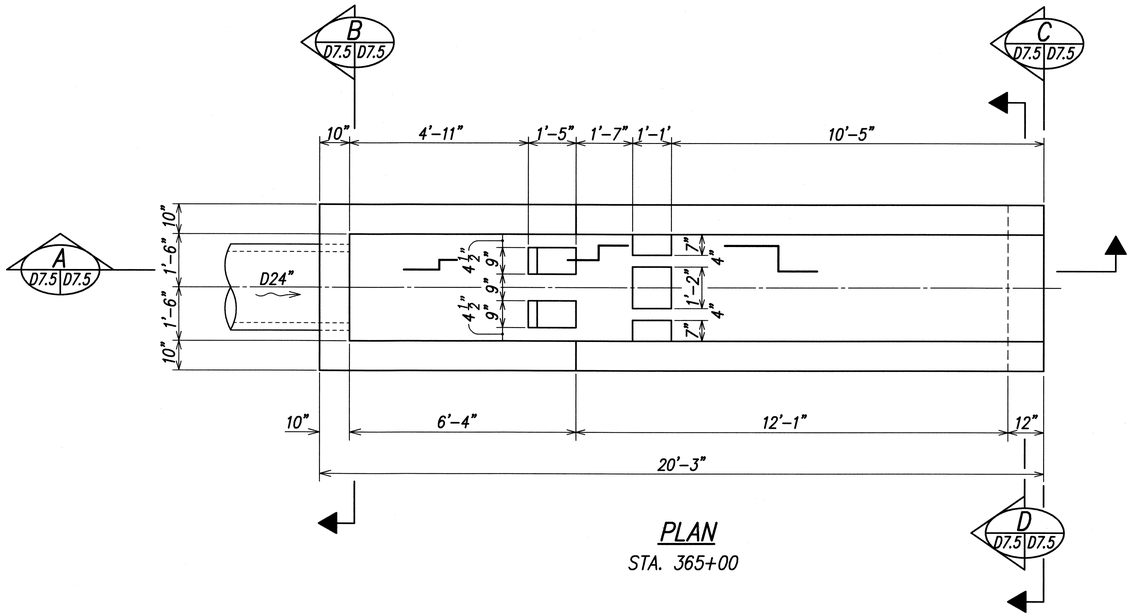
SHEET No. D7.5 OF D7.8 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

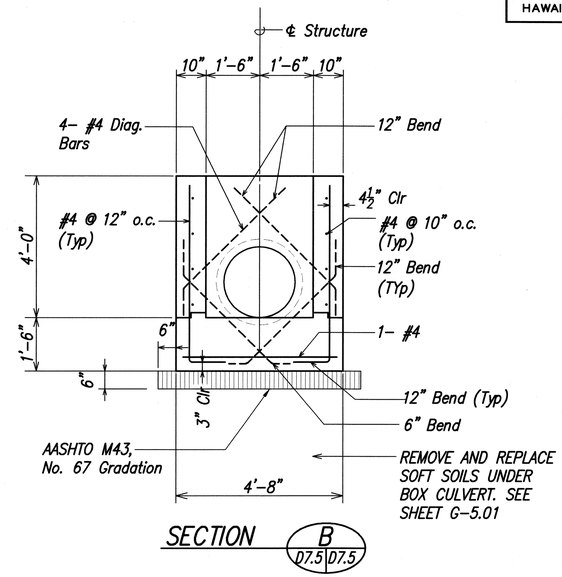
KWTS-0175-02(Dwg 11/24/08

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	178	452

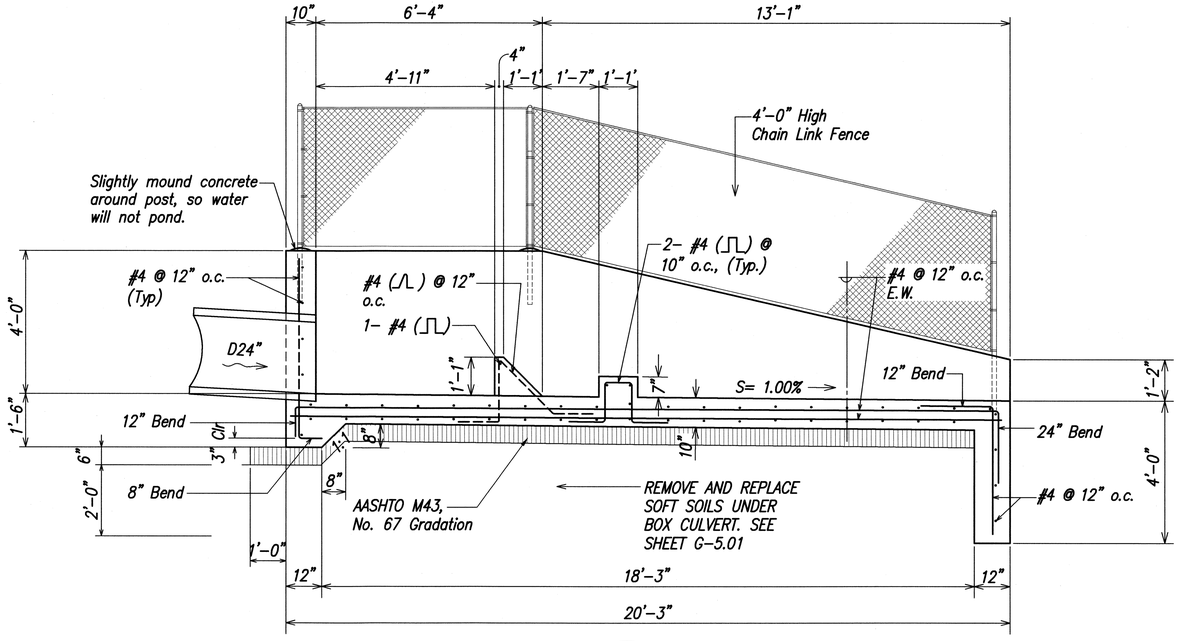


PLAN
STA. 365+00

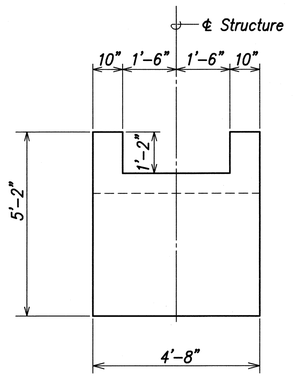


SECTION B D7.5 D7.5

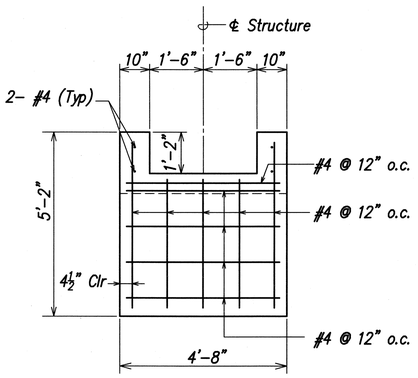
Note:
4-ft. High Chain Link Fence not shown for clarity.



SECTION A D7.5 D7.5



SECTION C D7.5 D7.5



SECTION D D7.5 D7.5

REINFORCING DETAILS
OUTLET STRUCTURE NO. 4
Scale: 1/2" = 1'-0"
1 D7.4 D7.5

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
OUTLET STRUCTURE NO. 4

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

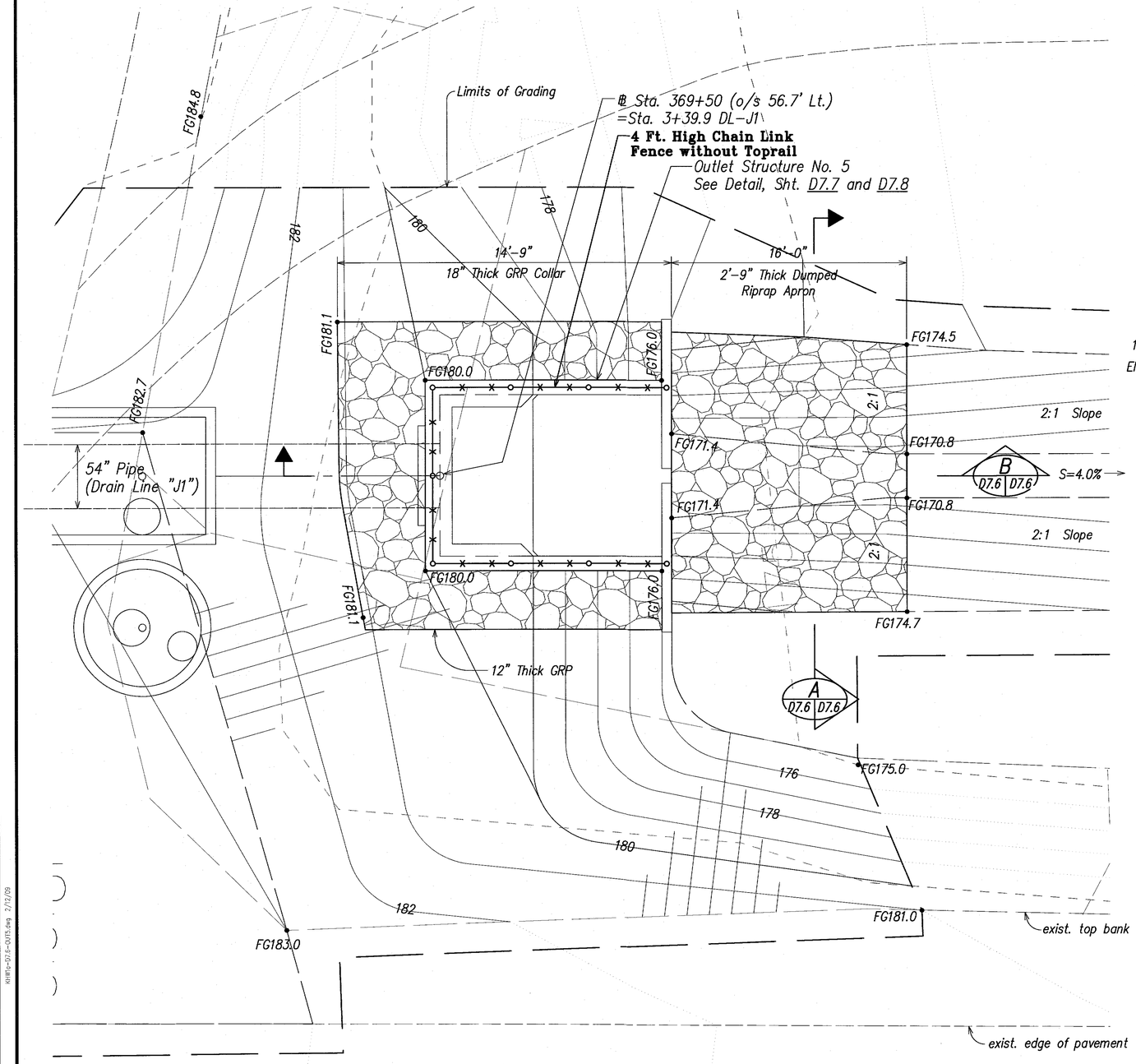
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D7.5 OF D7.8 SHEETS

ORIGINAL PLAN
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
NOTE BOOK
No.

U82: STATE\DOT\KAUMUALII\PHASE1A REVISION\PLANS\ KHWA-0175-00T4.dwg 11/24/08

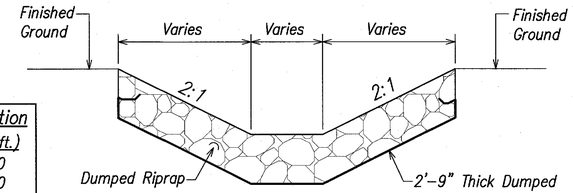
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	179	452



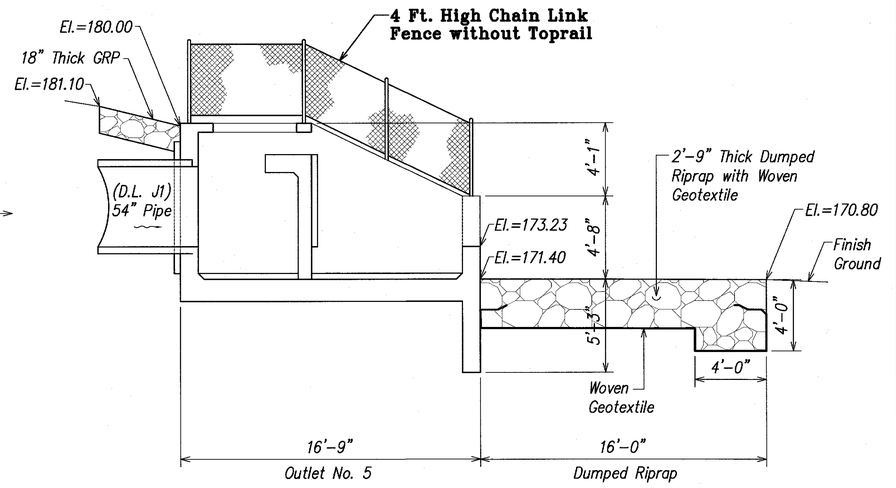
PLAN-OUTLET STRUCTURE NO. 5
AT ℄ STA. 369+50
Scale: 1/4 "=1'-0"

1
D1.10 D7.6

Dumped Riprap Gradation	
% Passing	Stone Size (ft.)
D_{100}	1.50 to 1.70
D_{85}	1.20 to 1.40
D_{50}	1.00 to 1.15
D_{15}	0.40 to 0.60



SECTION A D7.6 D7.6



SECTION B D7.6 D7.6

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-16

ORIGINAL PLAT	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

kHWa-D7.6-0015.dwg 2/12/09

LEGEND FOR AS-BUILT POSTINGS

~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
OUTLET STRUCTURE NO. 5

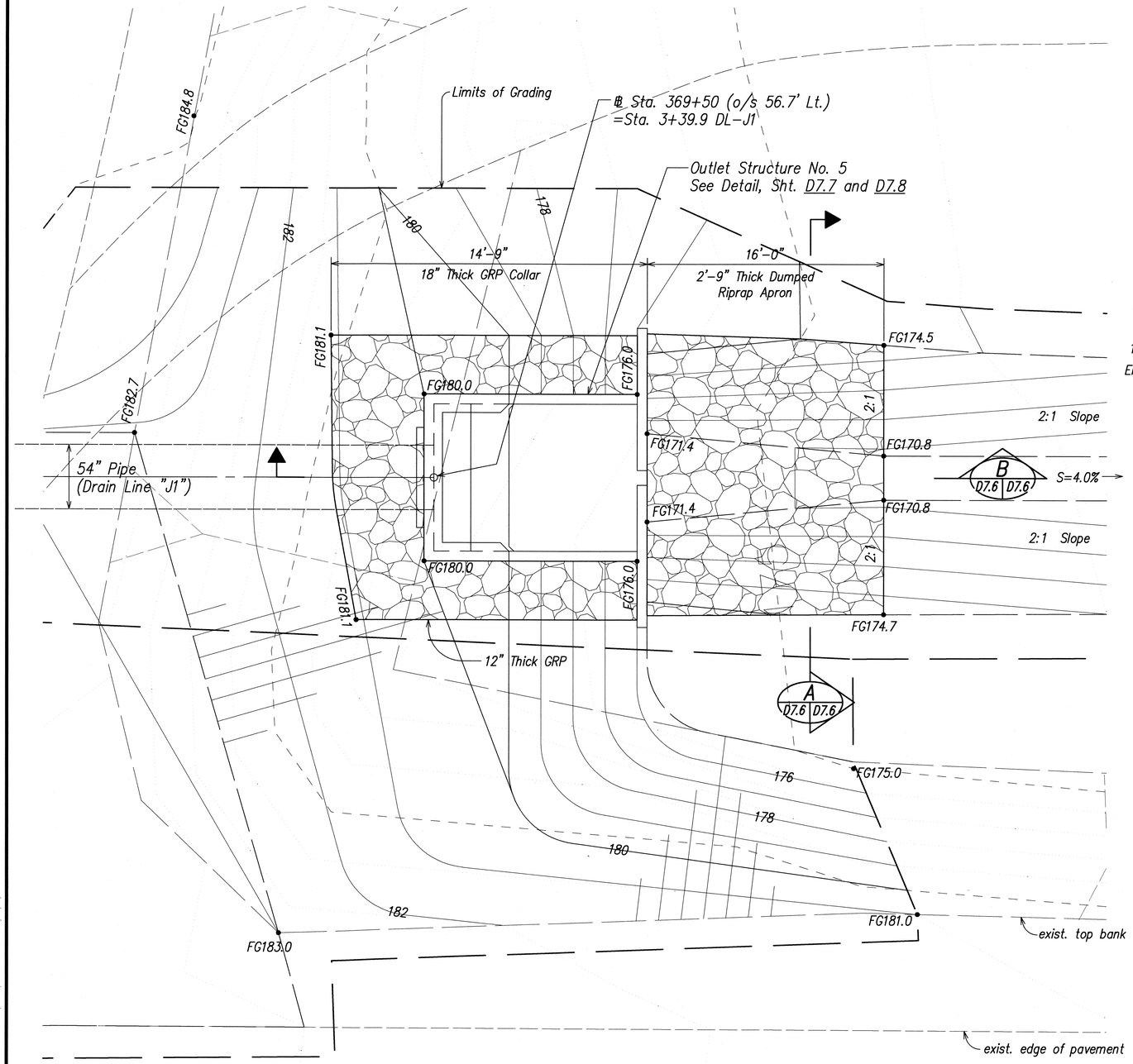
KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/4" = 1'-0" Date: JAN. 2010

SHEET No. D7.6 OF D7.8 SHEETS

"AS-BUILT"

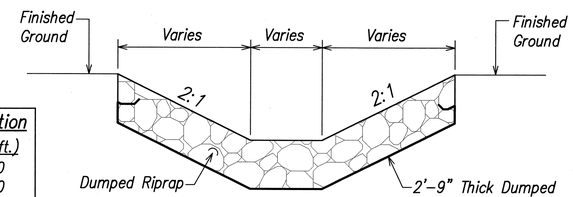
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	179	452



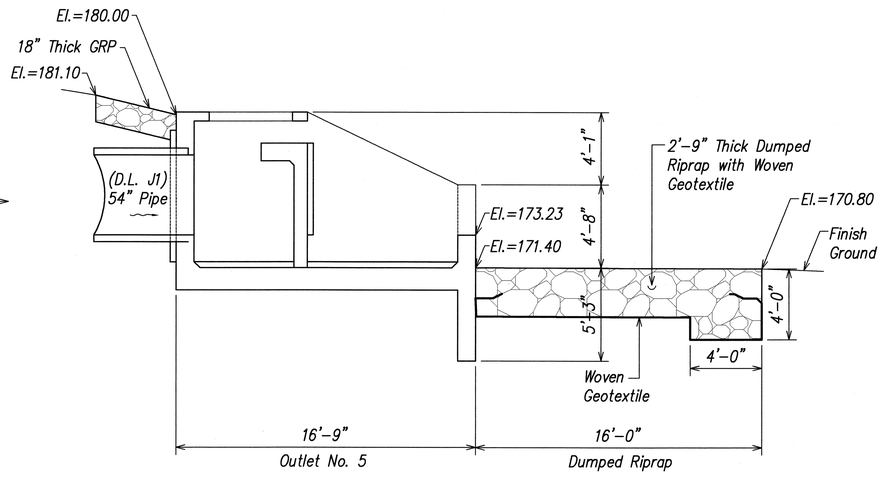
PLAN-OUTLET STRUCTURE NO. 5
AT ℄ STA. 369+50
Scale: 1/4 "=1'-0"

1
D1.10 D7.6

Dumped Riprap Gradation	
% Passing	Stone Size (ft.)
D_{100}	1.50 to 1.70
D_{85}	1.20 to 1.40
D_{50}	1.00 to 1.15
D_{15}	0.40 to 0.60



SECTION A
D7.6 D7.6



SECTION B
D7.6 D7.6

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
2-26-09
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PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
OUTLET STRUCTURE NO. 5

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

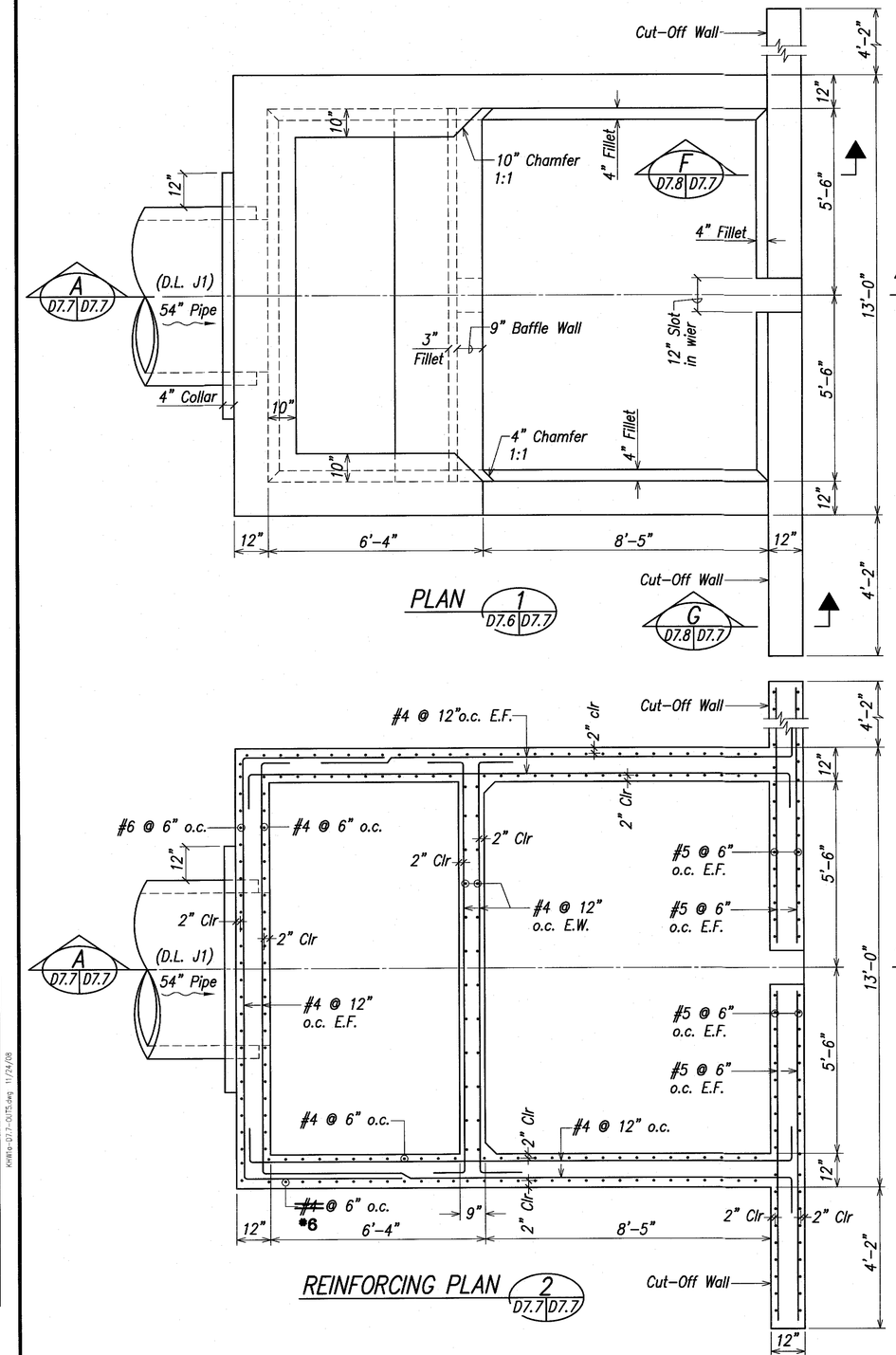
Scale: 1/4" = 1'-0" Date: FEB. 2009

SHEET No. D7.6 OF D7.8 SHEETS

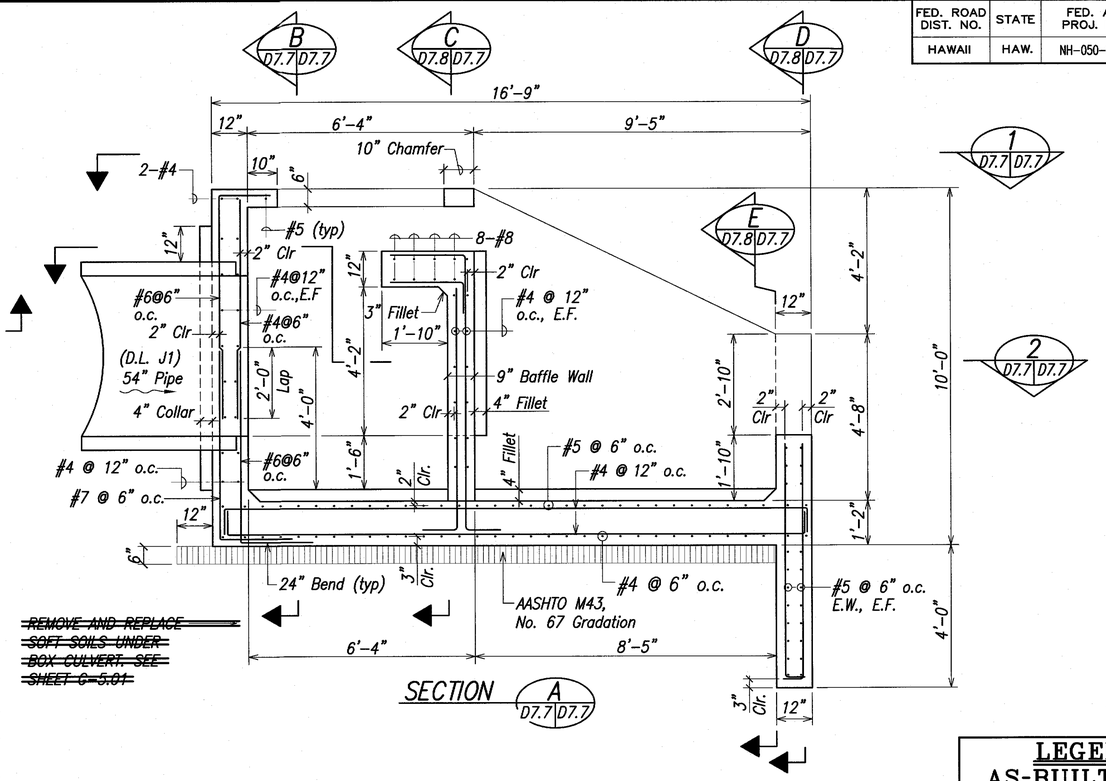
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

LB2: STATE\DOT\KAUMUALI-1\PHASE1A REVISION\PLANS\KHWY0-07.6-DJ15.dwg 2/12/09

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	180	452

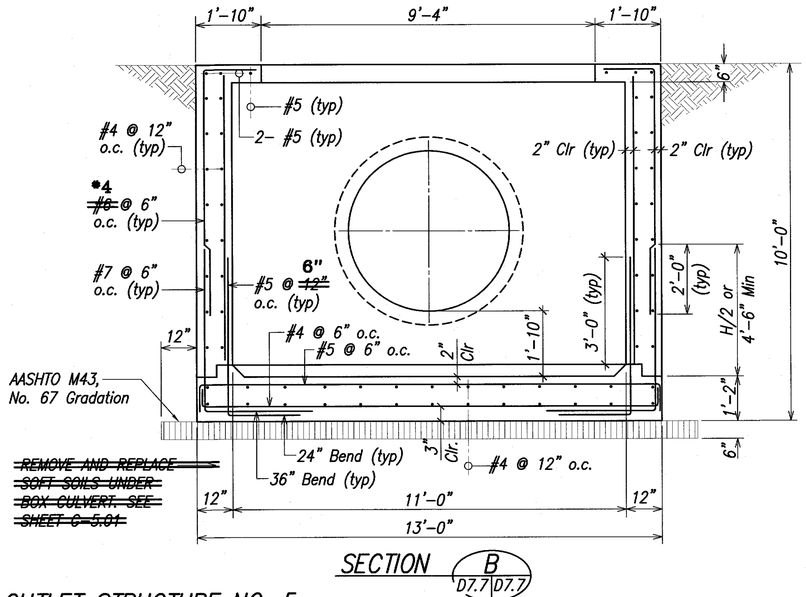


PLAN 1 D7.6 D7.7



SECTION A D7.7 D7.7

REINFORCING PLAN 2 D7.7 D7.7



SECTION B D7.7 D7.7

OUTLET STRUCTURE NO. 5
AT ℄ STA. 369+50
Scale: 1/2" = 1'-0"
1 D7.6 D7.7

LEGEND FOR AS-BUILT POSTINGS

~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
OUTLET STRUCTURE NO. 5

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

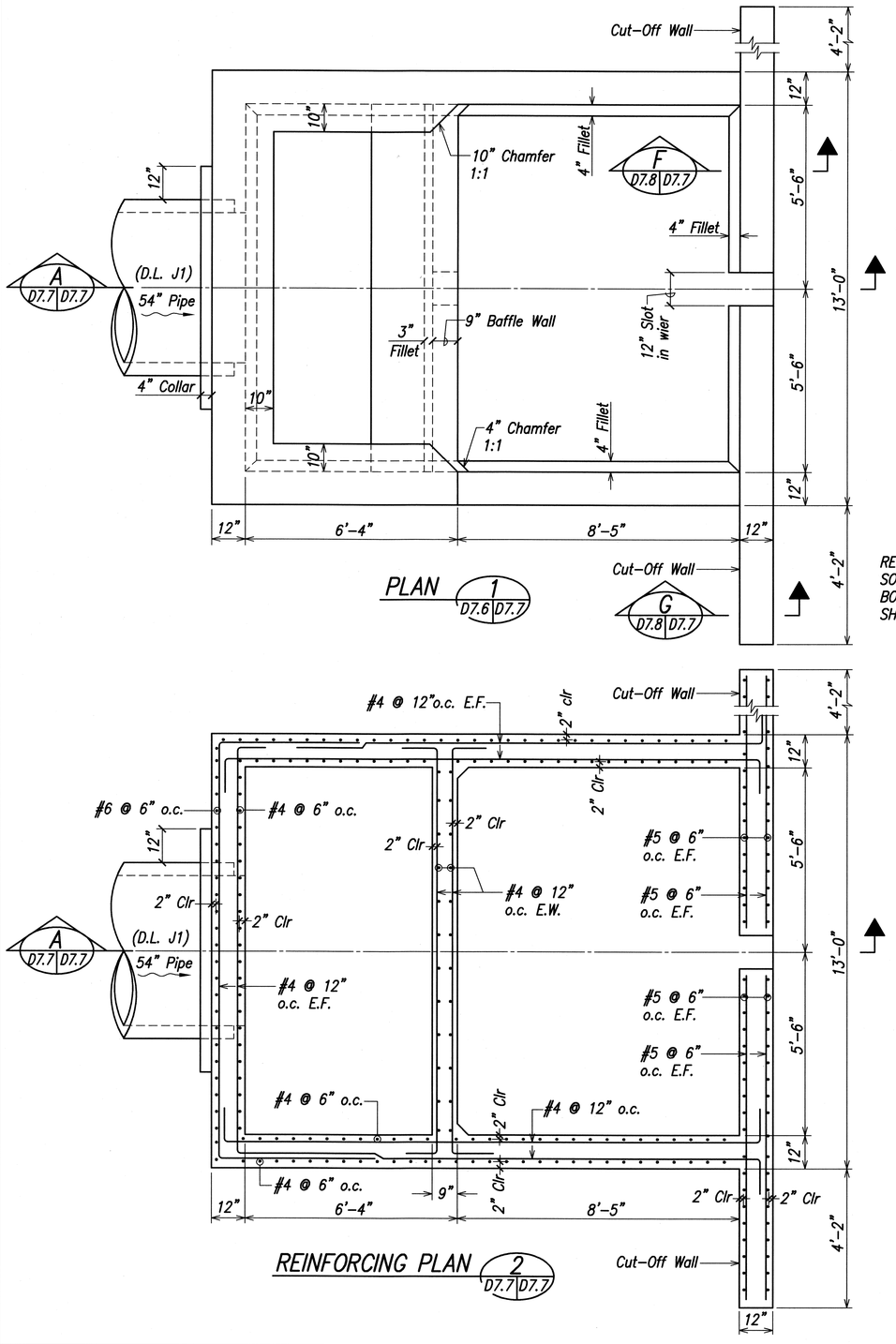
Scale: 1/2" = 1'-0" Date: JAN. 2010

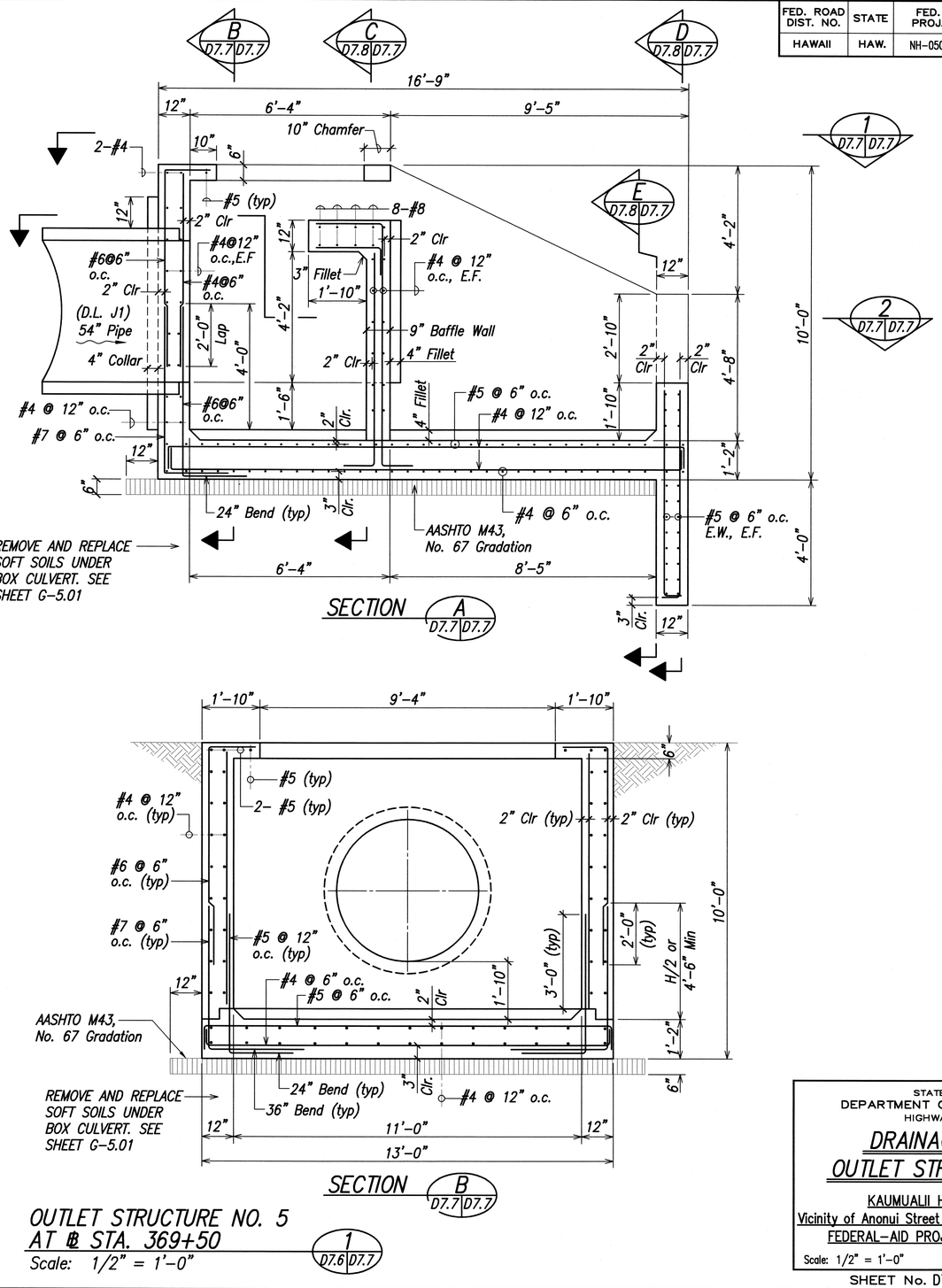
SHEET No. D7.7 OF D7.8 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

Kirlin-D77-0075.dwg 11/24/08

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	180	452





OUTLET STRUCTURE NO. 5
AT ℄ STA. 369+50
Scale: 1/2" = 1'-0"
1 D7.6 D7.7

ORIGINAL PLANS PLOTTED BY	DATE
PLANS TRACED BY	
NOTE BOOK	DESIGNED BY
No.	QUANTITIES BY
	CHECKED BY

I:\82\ STATE\DOT\KAUMUALI-I\PHASE1A REVISION\PLANS\ KHWHS-017-0015.dwg 11/24/08

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MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

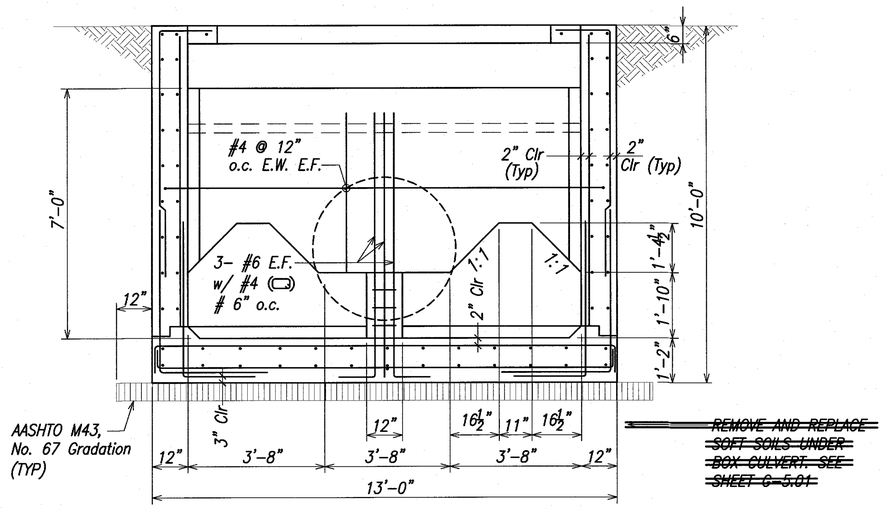
DRAINAGE DETAILS
OUTLET STRUCTURE NO. 5

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

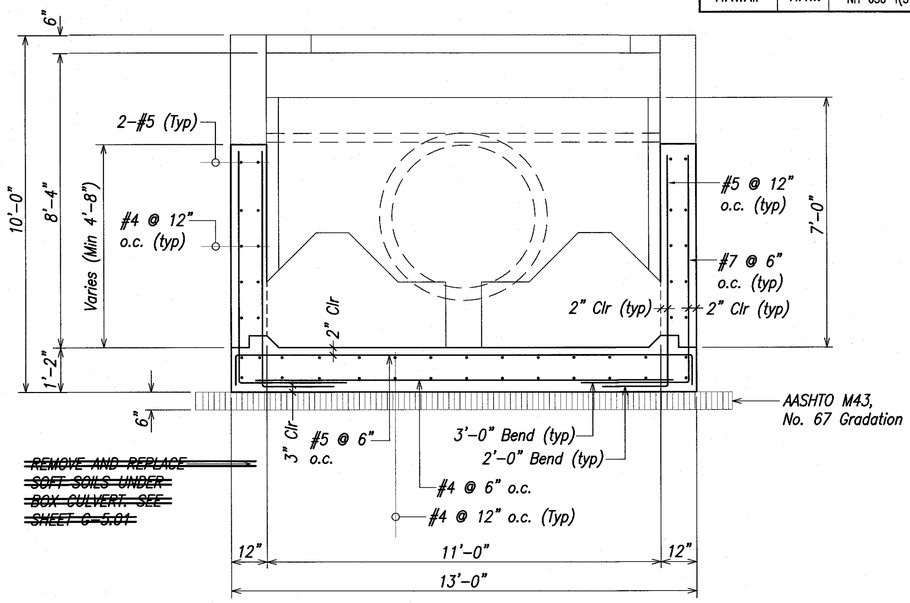
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D7.7 OF D7.8 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	181	452



SECTION C D7.7 D7.8



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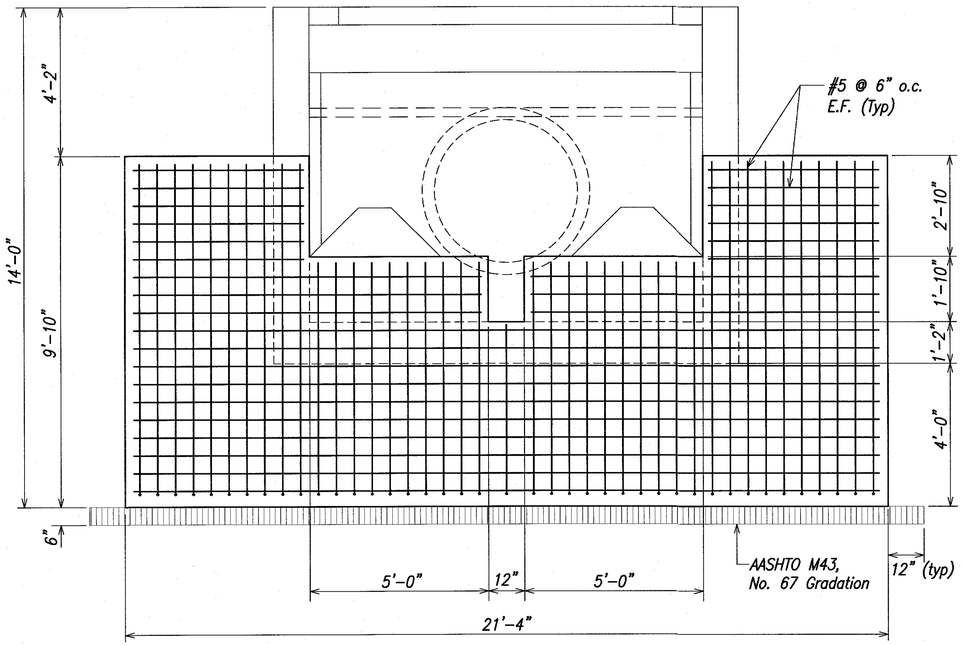

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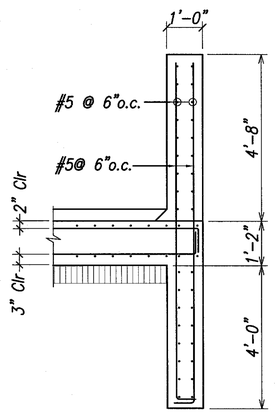
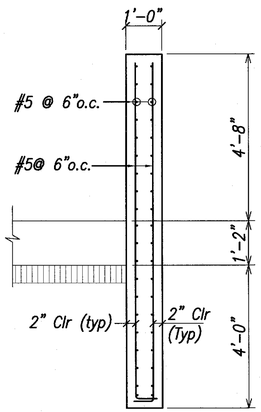


SECTION F D7.8 D7.7



SECTION G D7.8 D7.7

OUTLET STRUCTURE NO. 5
AT ℄ STA. 369+50
Scale: 1/2" = 1'-0"

1 D7.6 D7.8

LEGEND FOR AS-BUILT POSTINGS

~~	Squiggly line for as-built deletion
~~100.00~~	Double line for as-built deletion
Roadway	Text for as-built posting

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LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
OUTLET STRUCTURE NO. 5

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: JAN. 2010

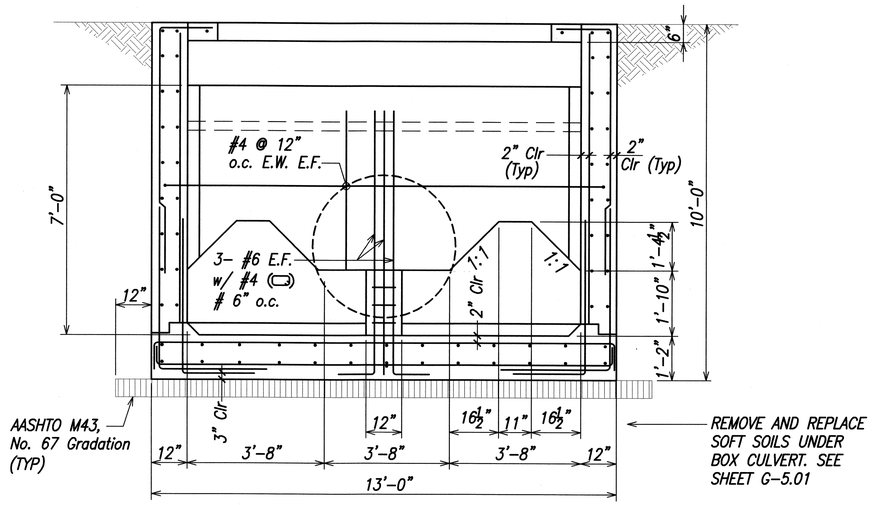
SHEET No. D7.8 OF D7.8 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

KWHe-378-8015.dgn 2/24/09

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	181	452



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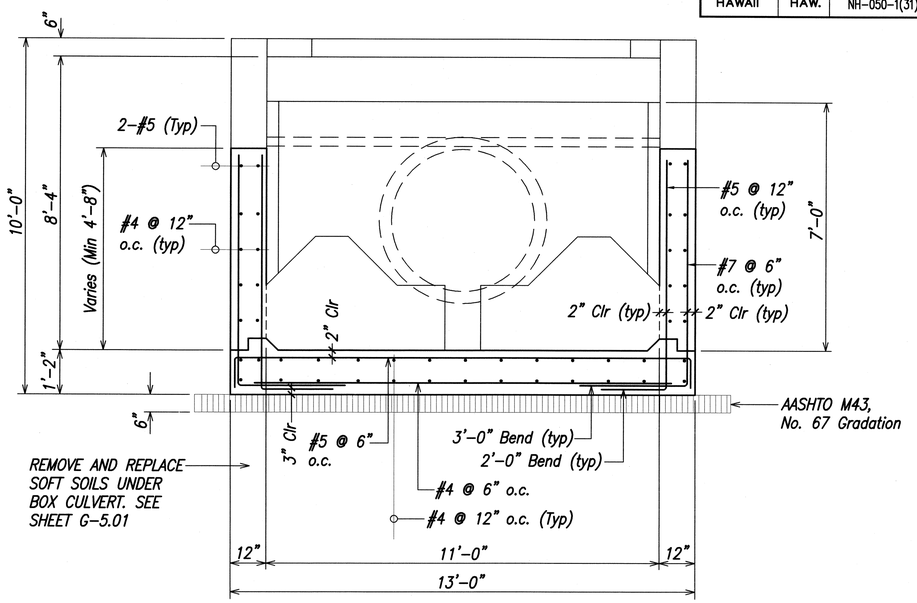
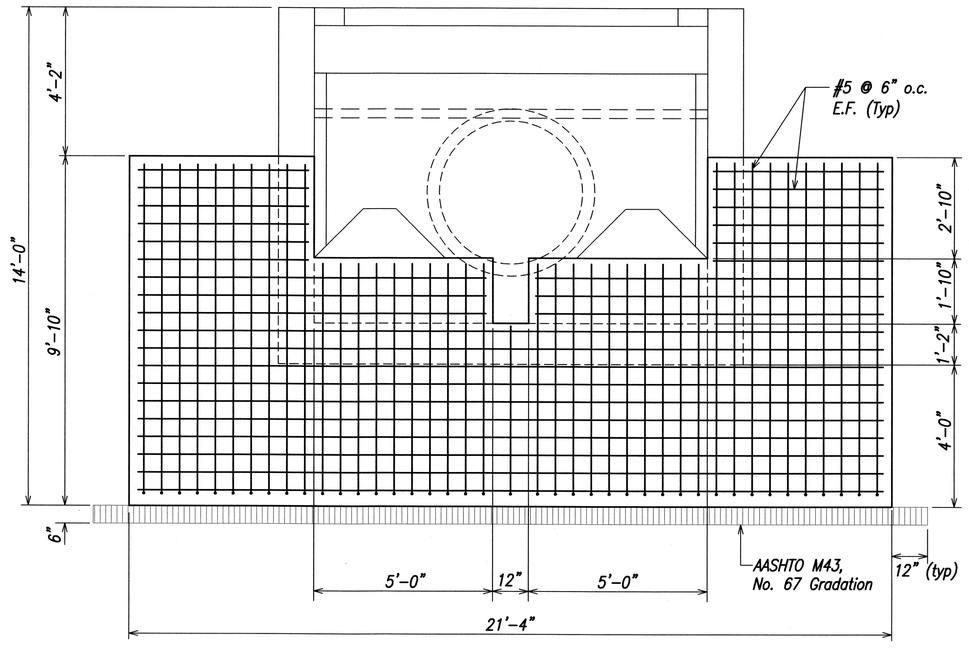
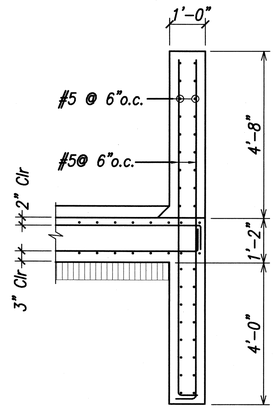


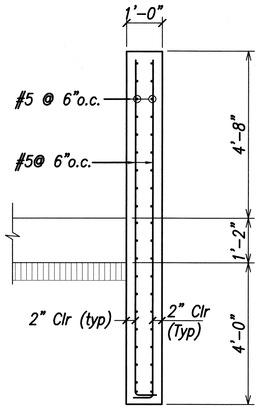
SECTION E D7.7 D7.8



SECTION D D7.7 D7.8



SECTION F D7.8 D7.7



SECTION G D7.8 D7.7

OUTLET STRUCTURE NO. 5
AT ℄ STA. 369+50
Scale: 1/2" = 1'-0"

1 D7.6 D7.8

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
OUTLET STRUCTURE NO. 5

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

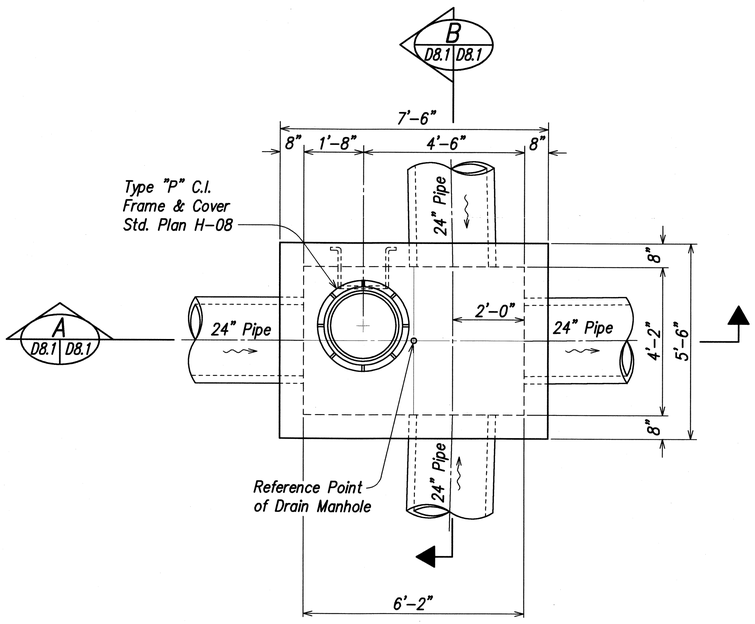
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D7.8 OF D7.8 SHEETS

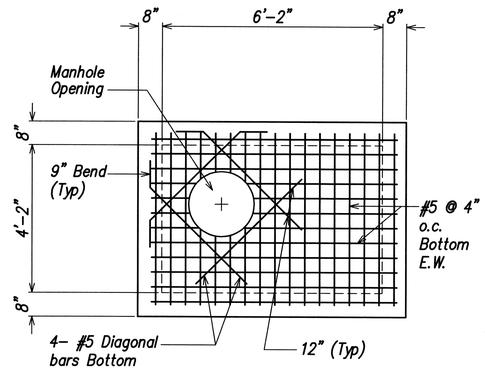
ORIGINAL PLAN
NOTE BOOK
SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE
No.

U82: STATE\DOT\KAUMUALII\PHASE1A REVISION\PLANS\ KHWY-D7.8-OUTS.dwg 2/24/09

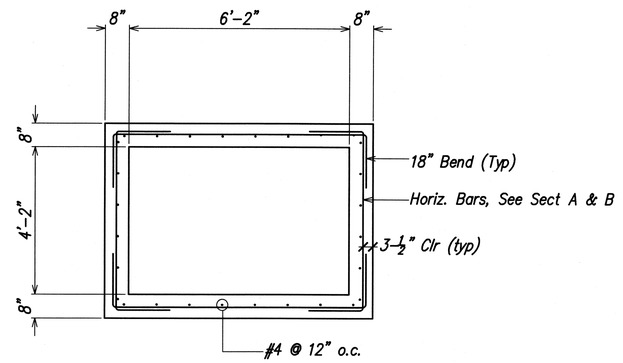
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	182	452



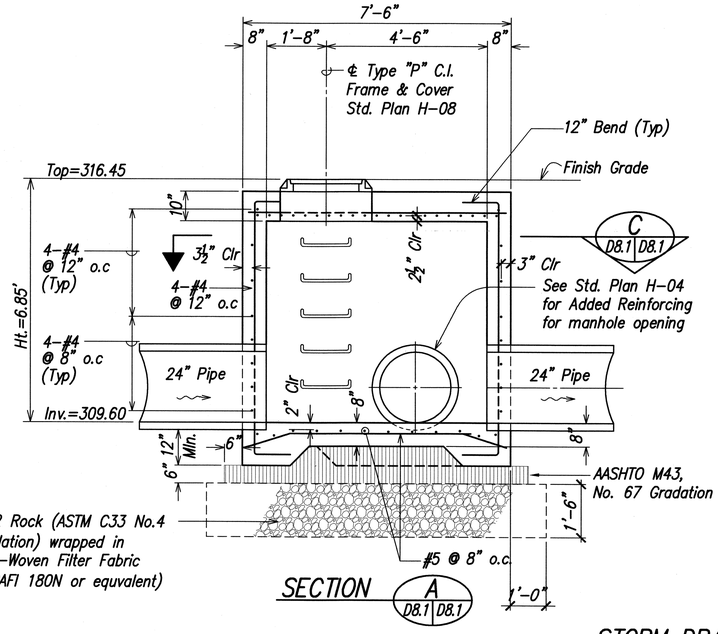
PLAN
Station 323+00

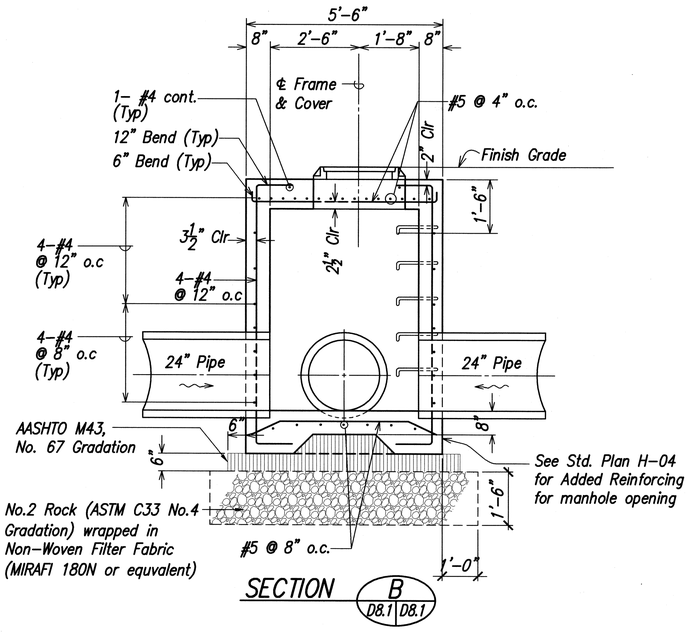


PLAN
(Top Slab Reinforcing)



SECTION
(Wall Reinforcing Plan) C D8.1 D8.1





STORM DRAIN MANHOLE "J2"
AT ℄ STA. 323+00 1 D1.6 D8.1
Scale: 1/2 "=1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

USE: STATE\DOT\KAUMUALII-1\PHASE1A REVISION\KAU-081-0M02.dwg 2/24/09

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

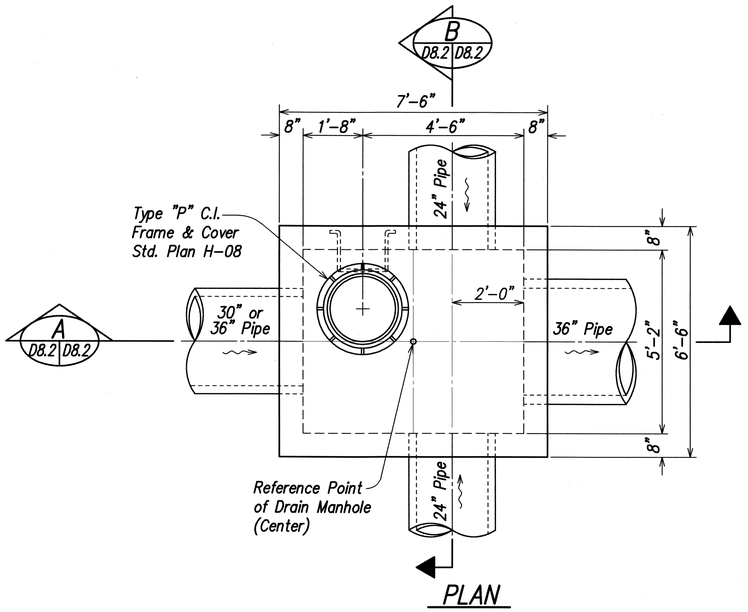
DRAINAGE DETAILS
STORM DRAIN MANHOLE "J2"

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

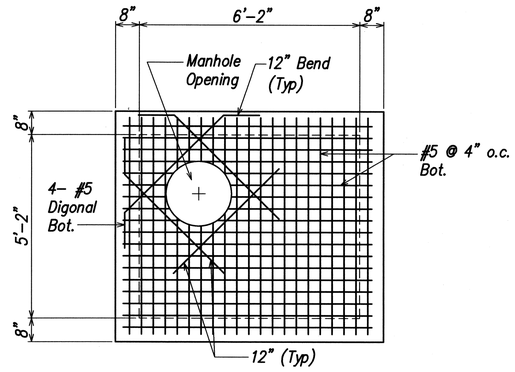
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D8.1 OF D8.10 SHEETS

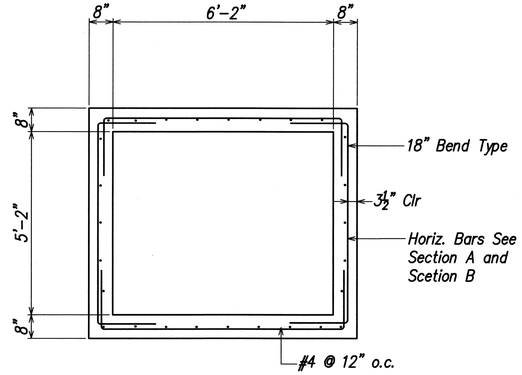
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	183	452



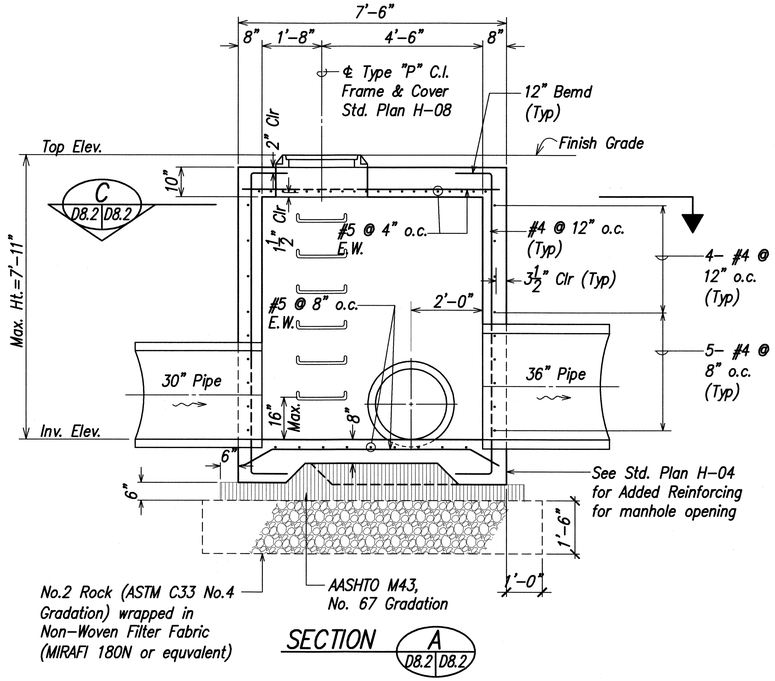
PLAN



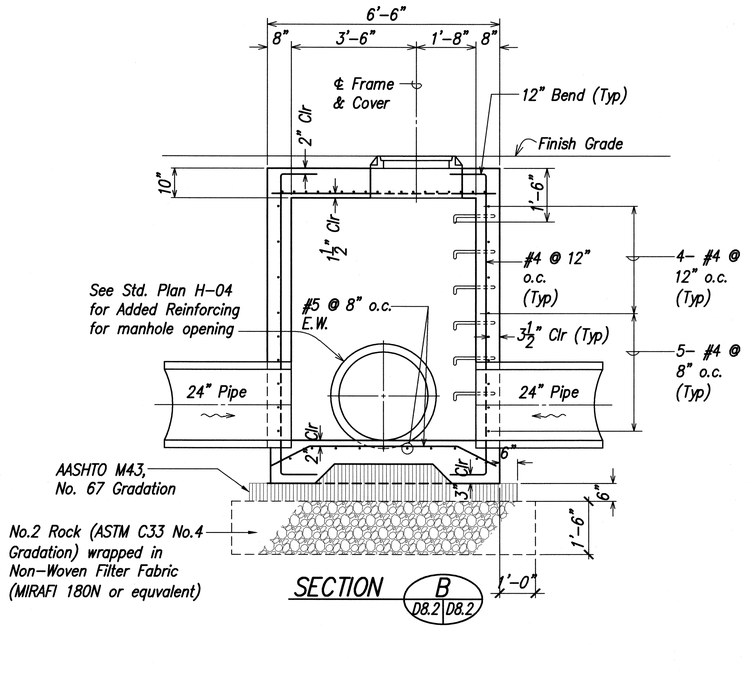
PLAN
(Top Slab Reinforcing)



SECTION
(Wall Reinforcing Plan)
C
D8.2 D8.2



SECTION
A
D8.2 D8.2



SECTION
B
D8.2 D8.2

Type H Storm Drain Manholes		
Structure	Location	Height
DMH-J9	@ Sta. 346+40	7.77'
DMH-J15	@ Sta. 354+25	7.92'

TYPE H STORM DRAIN MANHOLE
DRAIN MANHOLES "J9" & "J15"
Scale: 1/2 "=1'-0"

1
D8.2
D1.8, D1.9

ORIGINAL SURVEY PLOTTED BY
DRAWN BY
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QUANTITIES BY
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DATE
NOTE BOOK
No.

I:\82\ STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\ SHWRG-D8.2-HDRM.dwg 2/24/09

JONG NAMGUNG
LICENSED PROFESSIONAL ENGINEER
No. 3513-S
HAWAII, U.S.A.

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MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

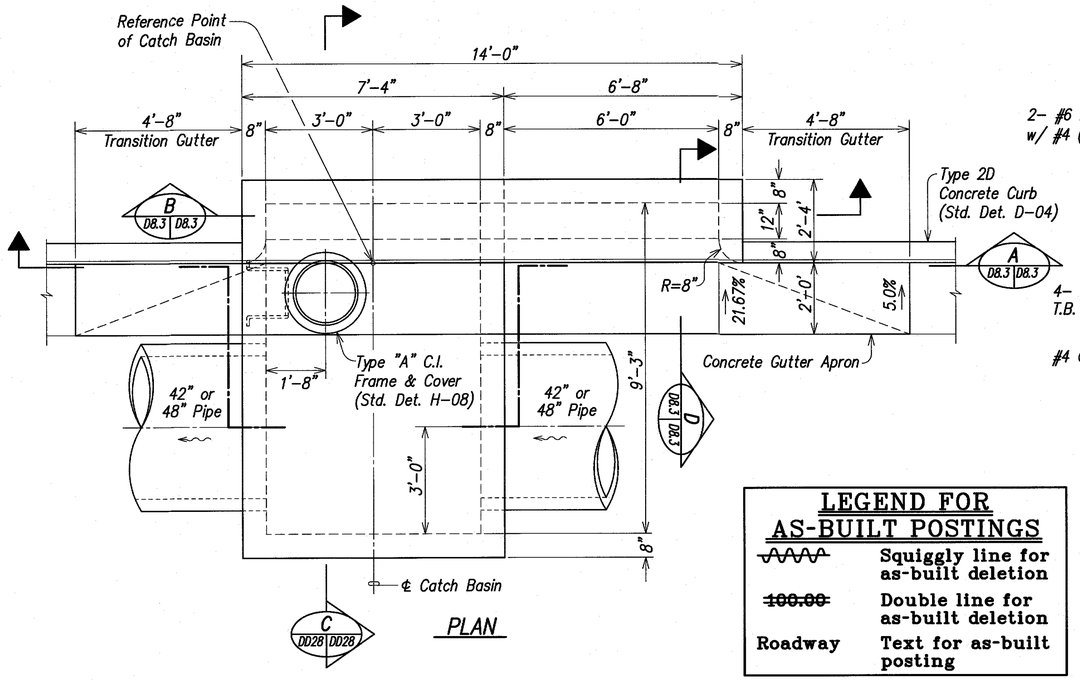
DRAINAGE DETAILS
TYPE H STORM DRAIN MANHOLE

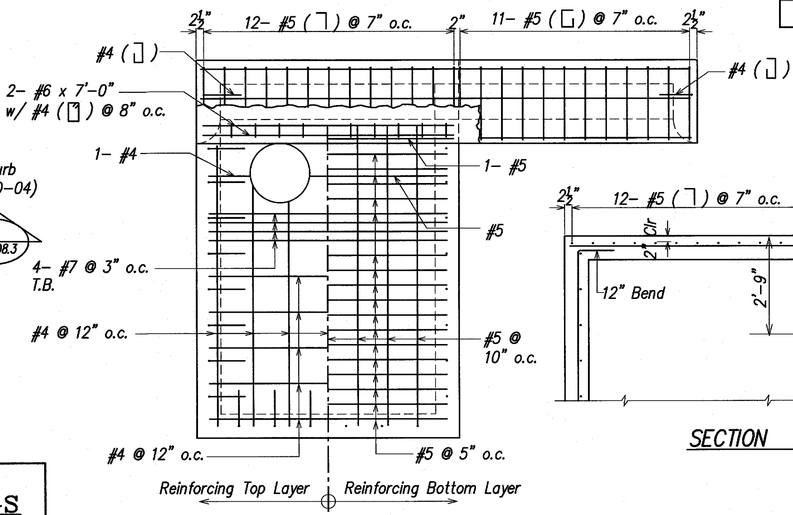
KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: FEB. 2009

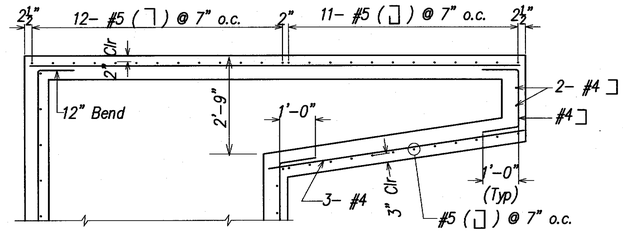
SHEET No. D8.2 OF D8.10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	184	452





PLAN VIEW OF REINFORCING STEEL



SECTION B D8.3 D8.3

LEGEND FOR AS-BUILT POSTINGS

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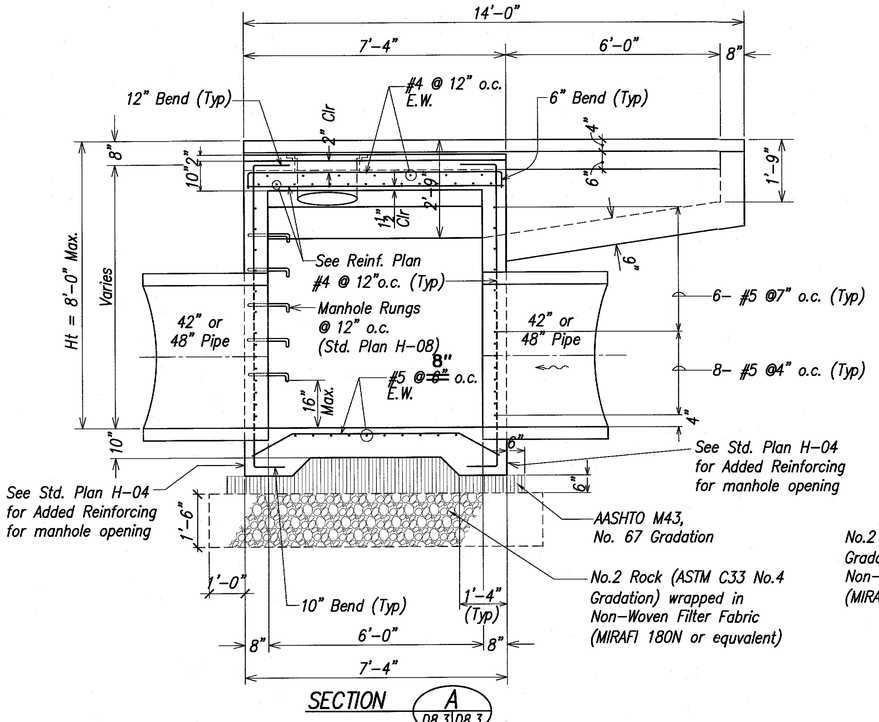
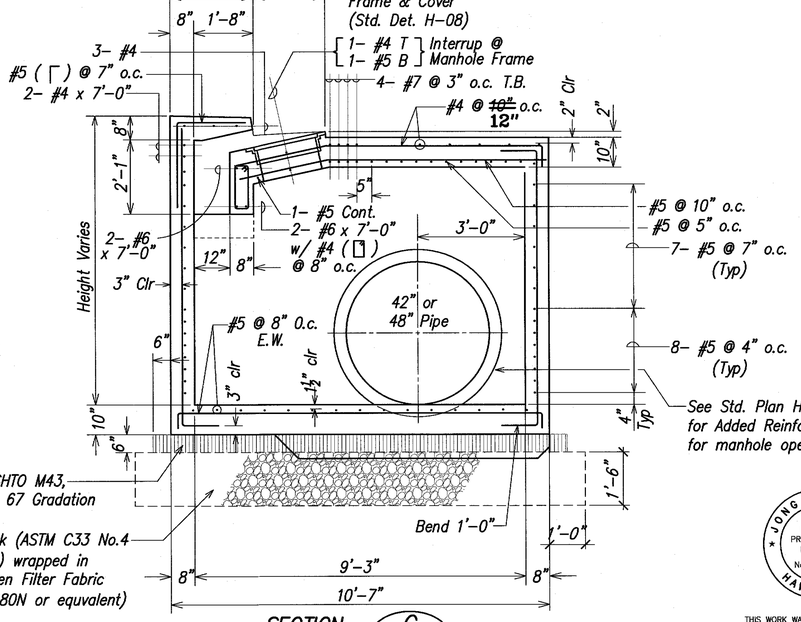
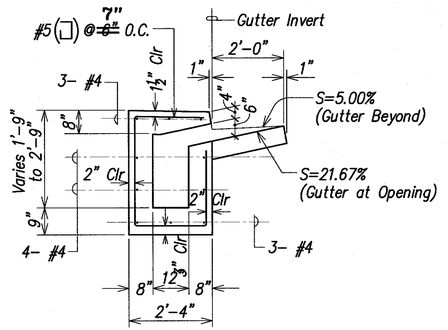
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**



SECTION A D8.3 D8.3



SECTION C D8.3 D8.3



SECTION D D8.3 D8.3

Type E1 Catch Basins		
Structure	Location	Height
CB-J22	℄ Sta. 357+00	7.97'
CB-J23	℄ Sta. 358+90	7.07'
CB-J24	℄ Sta. 360+90	7.00'
CB-J25	℄ Sta. 362+90	7.04'
CB-J26	℄ Sta. 364+60	10.87'

TYPE "E1" CATCH BASIN 1 D8.3 D1.9, D1.10
Scale: 1/2 "=1'-0"

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

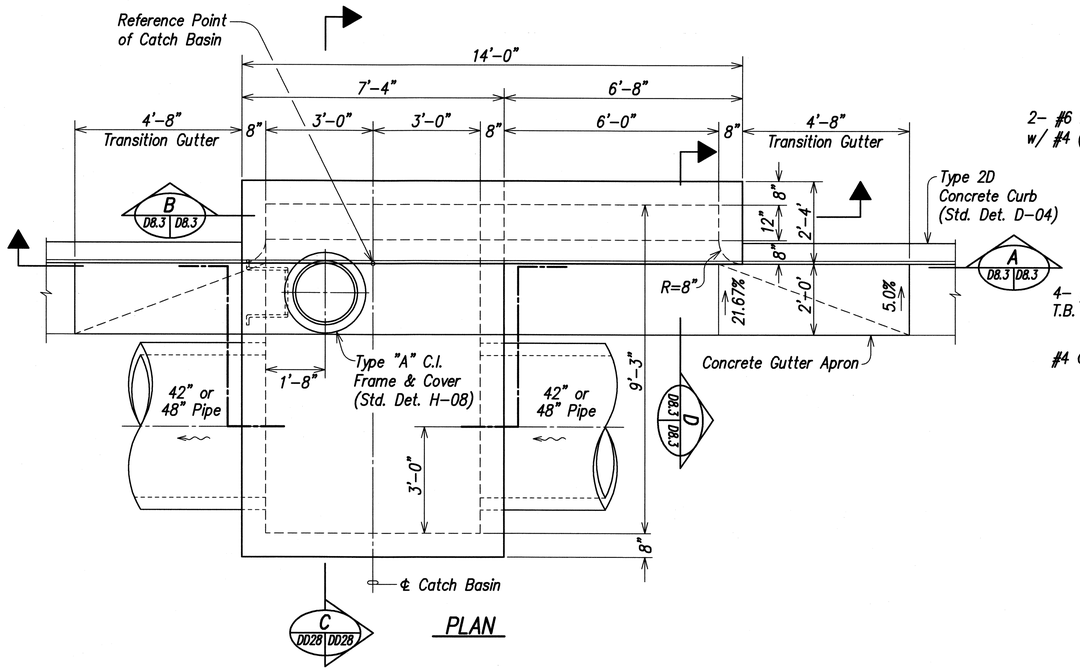
DRAINAGE DETAILS
TYPE E1 CATCH BASIN

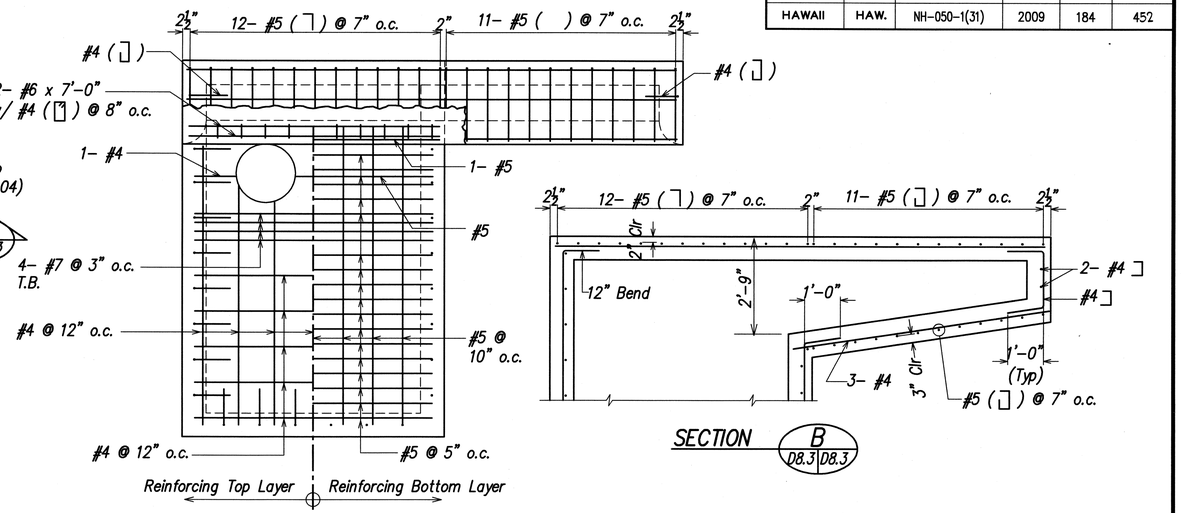
KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

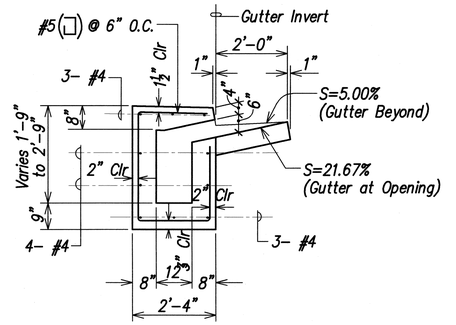
Scale: 1/2" = 1'-0" Date: JAN. 2010

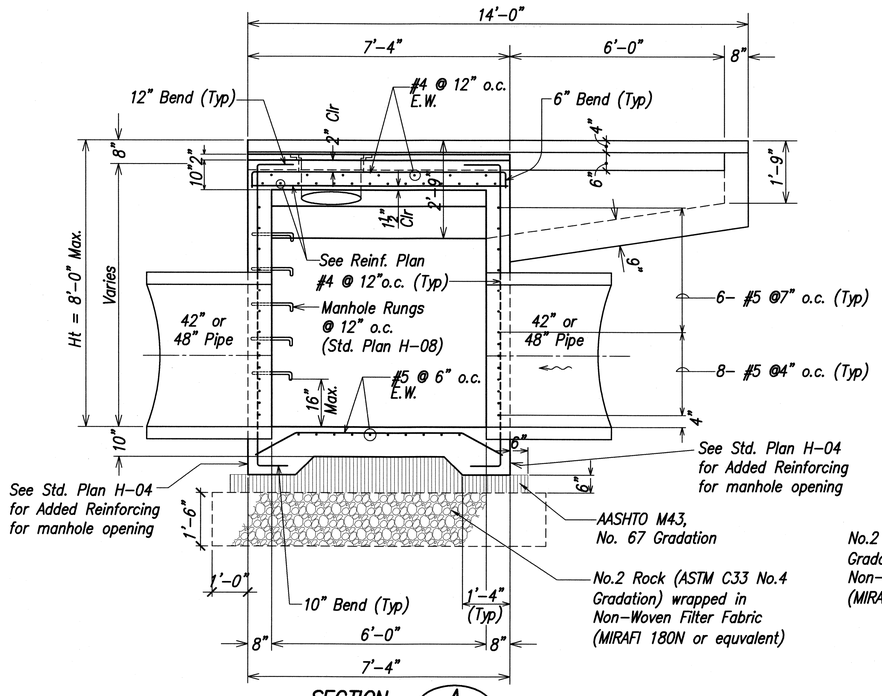
SHEET No. D8.3 OF D8.10 SHEETS

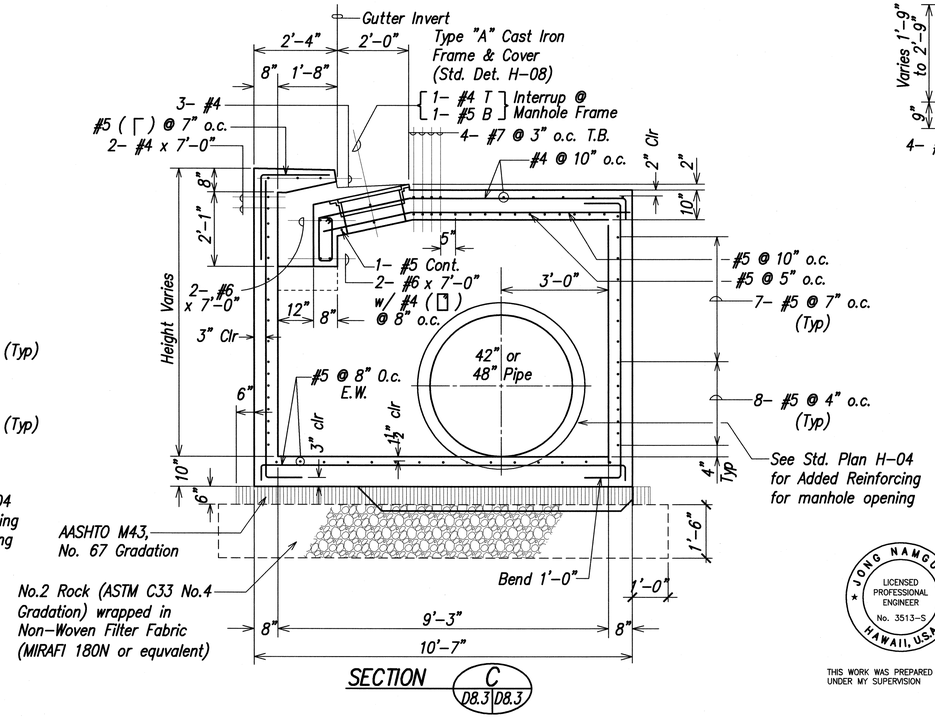
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	184	452











TYPE "E1" CATCH BASIN 1 D8.3
Scale: 1/2 "=1'-0" D1.9, D1.10

Type E1 Catch Basins		
Structure	Location	Height
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CB-J23	℄ Sta. 358+90	7.07'
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CB-J26	℄ Sta. 364+60	10.87'

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE
NOTE BOOK | No.

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LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

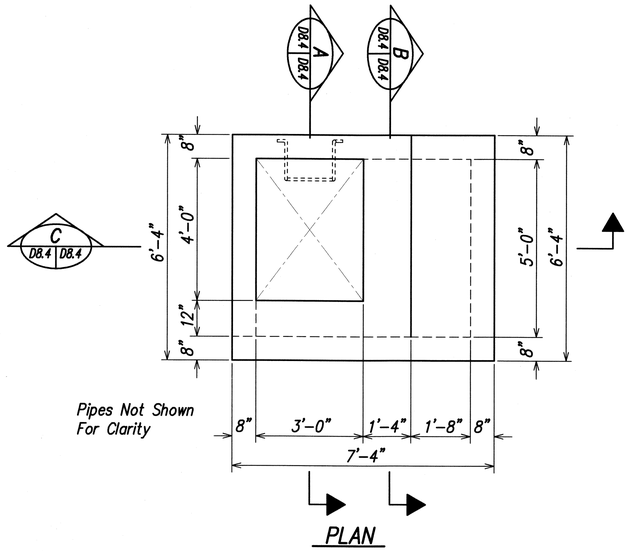
DRAINAGE DETAILS
TYPE E1 CATCH BASIN

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

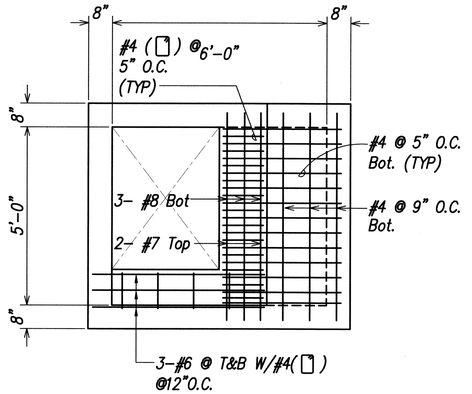
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D8.3 OF D8.10 SHEETS

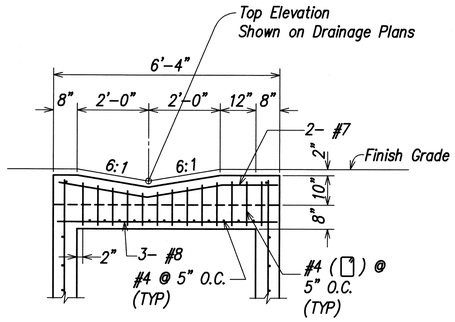
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	185	452



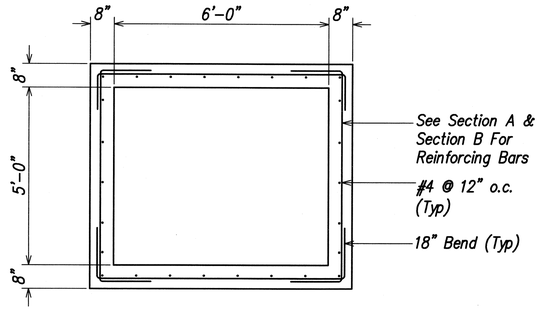
PLAN



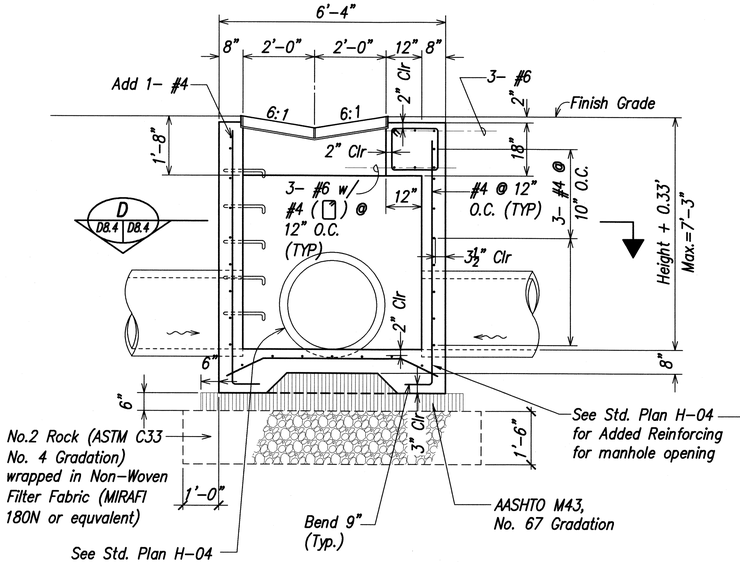
TOP SLAB REINFORCING PLAN



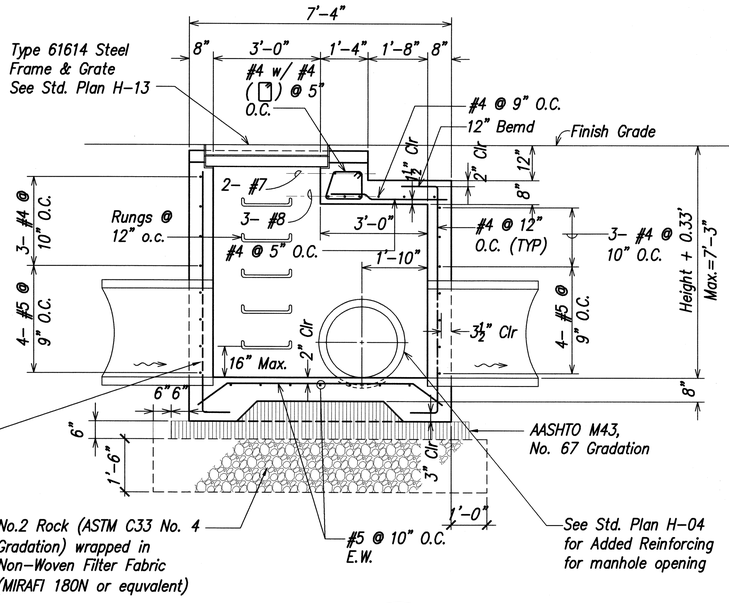
SECTION B D8.4 D8.4



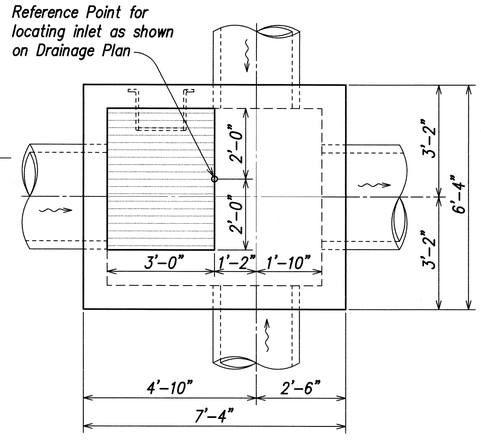
SECTION D D8.4 D8.4



SECTION A D8.4 D8.4



SECTION C D8.4 D8.4



TYPICAL PIPE LOCATIONS

TYPE I GRATED DRAIN INLET 1 D8.4
Scale: 1/2 "=1'-0"
D1.4, D1.5, D1.7, D1.8, D1.9

Type I Grated Drain Inlets		
Structure	Location	Height
GDI-G4	@ Sta. 309+00	5.64'
GDI-G5	@ Sta. 309+51	6.14'
GDI-G6	@ Sta. 310+00	6.73'
GDI-J4	@ Sta. 335+00	5.95'
GDI-J5	@ Sta. 339+15	6.22'
GDI-J10	@ Sta. 356+95	6.75'

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
TYPE I GRATED DRAIN INLET

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D8.4 OF D8.10 SHEETS

ORIGINAL PLANS — SHEETS PLOTTED BY — DATE
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QUANTITIES BY
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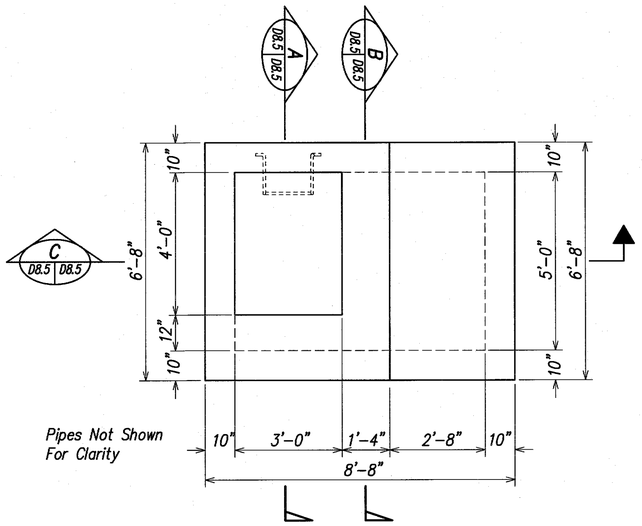
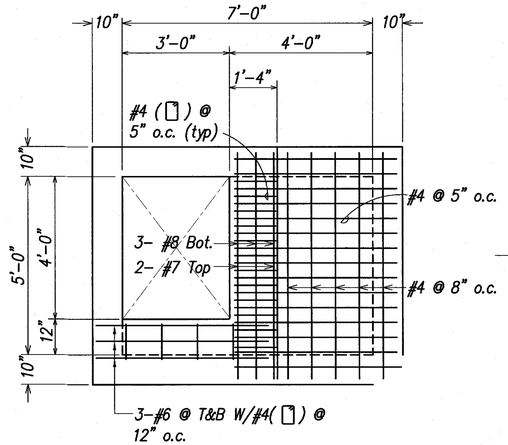
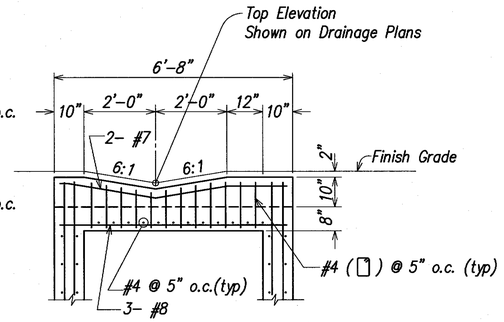
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	186	452



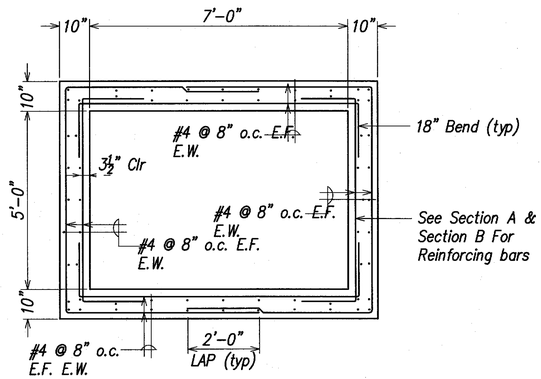
PLAN



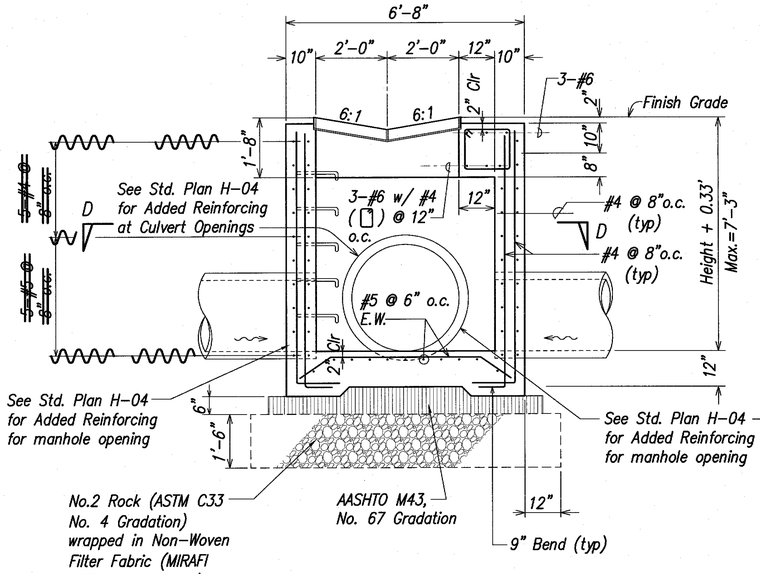
TOP SLAB REINFORCING PLAN



SECTION B D8.5 D8.5



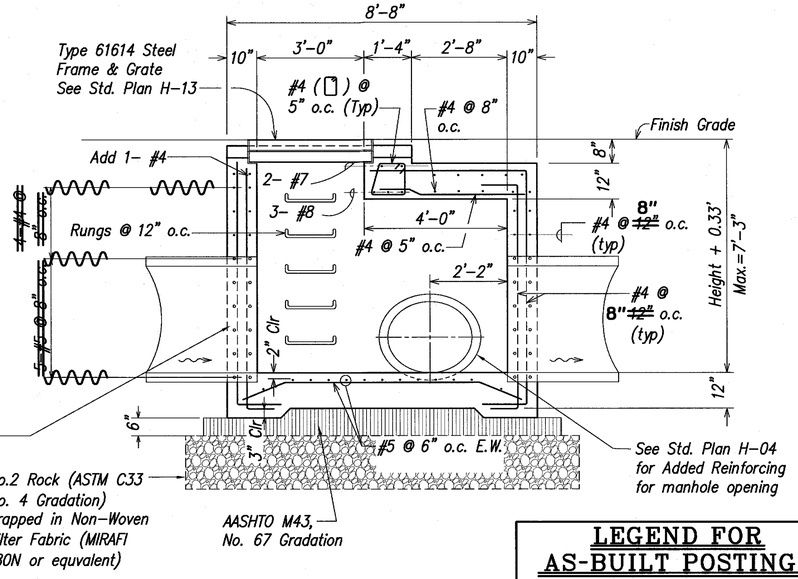
SECTION D D8.5 D8.5



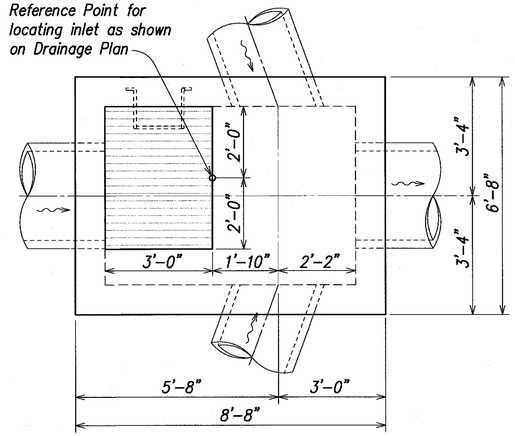
SECTION A D8.5 D8.5

TYPE II GRATED DRAIN INLET
Scale: 1/2 "=1'-0"

A D8.5
D1.8, D1.9



SECTION C D8.5 D8.5



TYPICAL PIPE LOCATIONS

Type II Grated Drain Inlets		
Structure	Location	Height
GDI-J6	@ Sta. 342+20	5.75'
GDI-J7	@ Sta. 350+50	6.36'

LEGEND FOR AS-BUILT POSTINGS

~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
TYPE II GRATED DRAIN INLET

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: JAN. 2010

SHEET No. D8.5 OF D8.10 SHEETS

ORIGINAL PLAN — SURVEY PLOTTED BY — DRAWN BY — TRACED BY — DESIGNED BY — QUANTITIES BY — CHECKED BY — DATE
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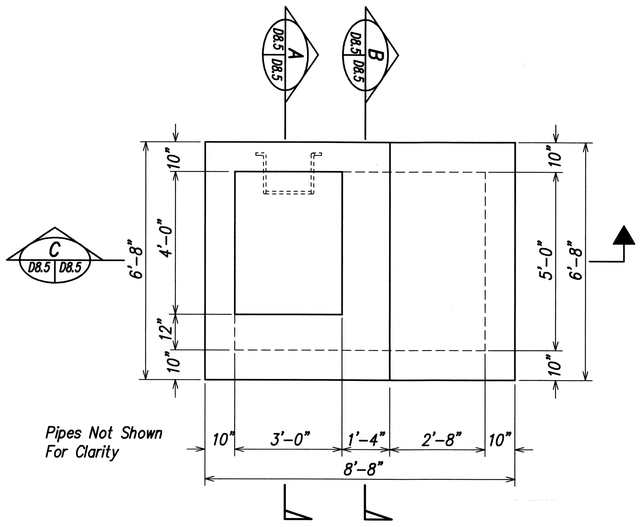
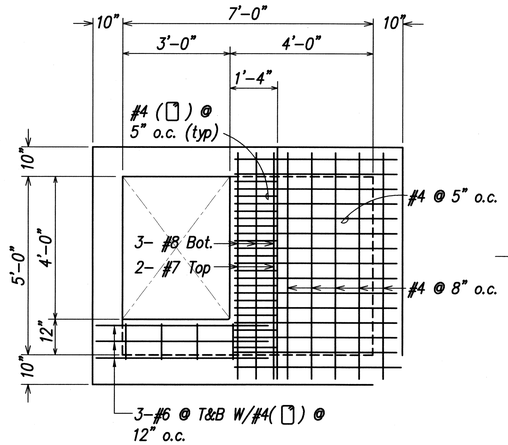
"AS-BUILT"

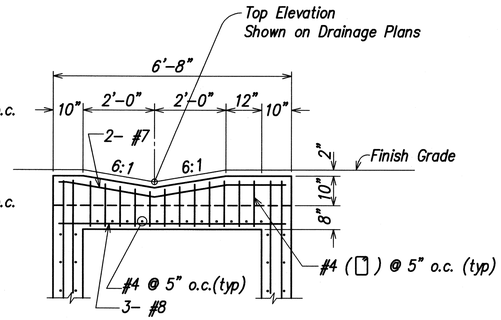
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	186	452



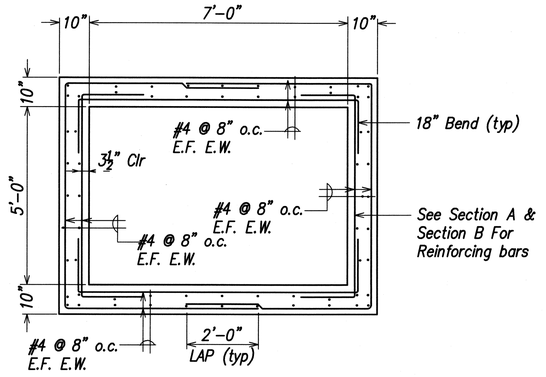
PLAN



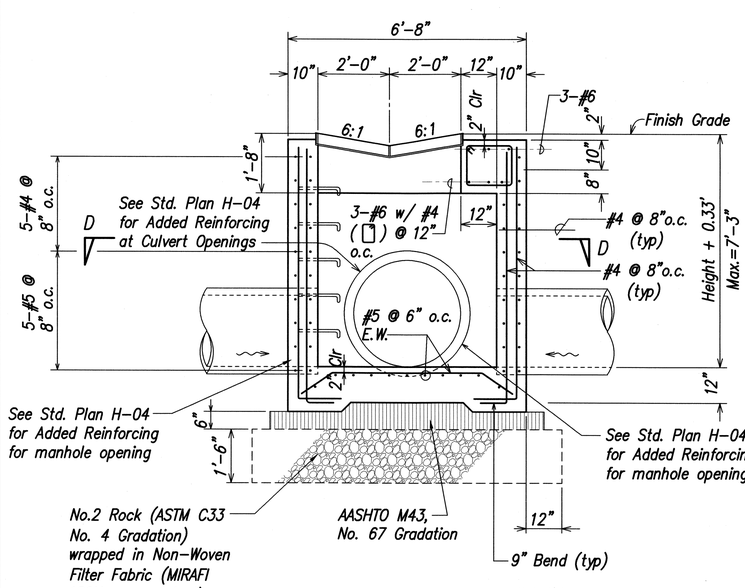
TOP SLAB REINFORCING PLAN



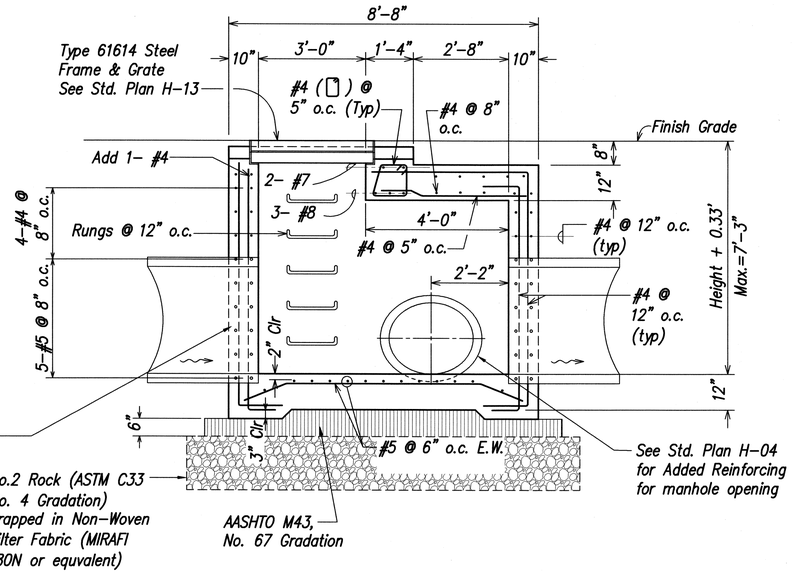
SECTION B D8.5 D8.5



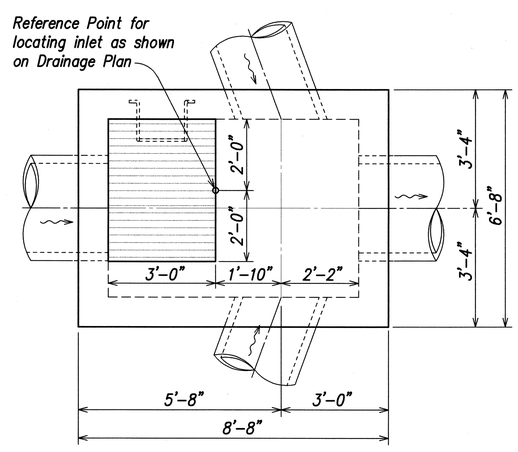
SECTION D D8.5 D8.5



SECTION A D8.5 D8.5



SECTION C D8.5 D8.5



TYPICAL PIPE LOCATIONS

TYPE II GRATED DRAIN INLET A D8.5
Scale: 1/2 "=1'-0"
D1.8, D1.9

Type II Grated Drain Inlets		
Structure	Location	Height
GDI-J6	@ Sta. 342+20	5.75'
GDI-J7	@ Sta. 350+50	6.36'

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

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LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

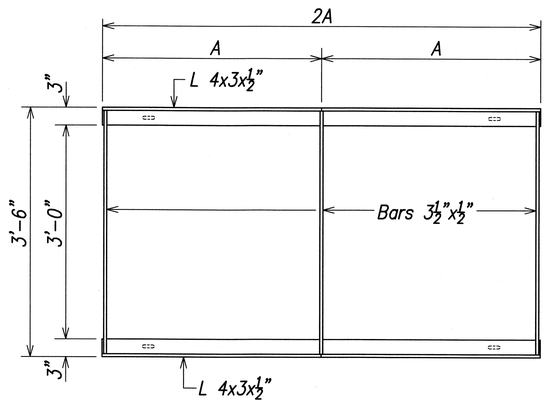
DRAINAGE DETAILS
TYPE II GRATED DRAIN INLET

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

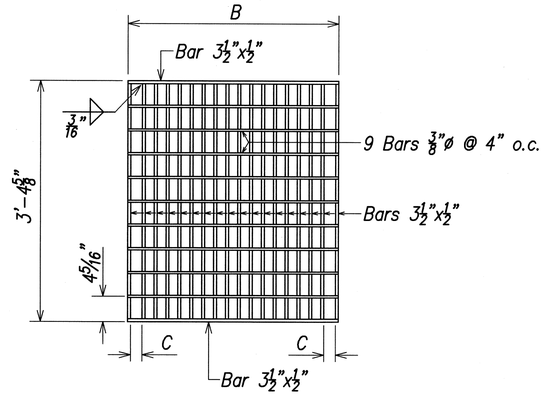
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D8.5 OF D8.10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	187	452



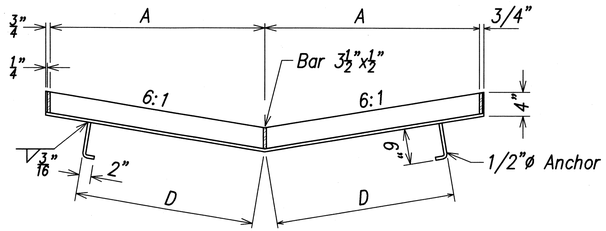
PLAN – FRAME



PLAN – GRATE

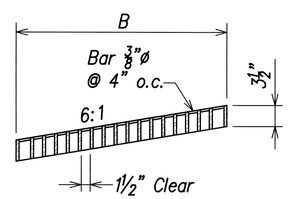
GENERAL NOTES:

1. All welds 3/8" unless otherwise noted.
2. Grates and frames shall be zinc coated after fabrication.
3. Anchors shall be ASTM A 307 and zinc coated.
4. Install Type 61614P and 61616P Steel Frame and Grate on Type 61614P and 61616P Grated Drain Inlets. See Sheet D3.1 for summary of drain structures which require installation.



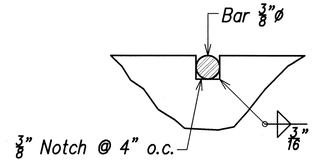
CROSS SECTION

FRAME



CROSS SECTION

GRATE



NOTCH DETAIL

DIMENSIONS					
Type	No. of Bars	A	B	C	D
61614P	12	2'-0"	1'-11½"	2"	1'-6"
61616P	18	3'-0"	2'-11⅜"	1 15/16"	2'-0"

61614P AND 61616P FRAME AND GRATES (1 / D3.1 D8.6)

Scale: 1" = 1'-0"

ORIGINAL PLAT | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE | NOTE BOOK | No.

L:\82: STATE\DOT\KAUMUALI-I\PHASE1A REVISION\PLANS\KHM1a-D8.6-MISC.dwg 2/12/09

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
2-26-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

PorEA, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

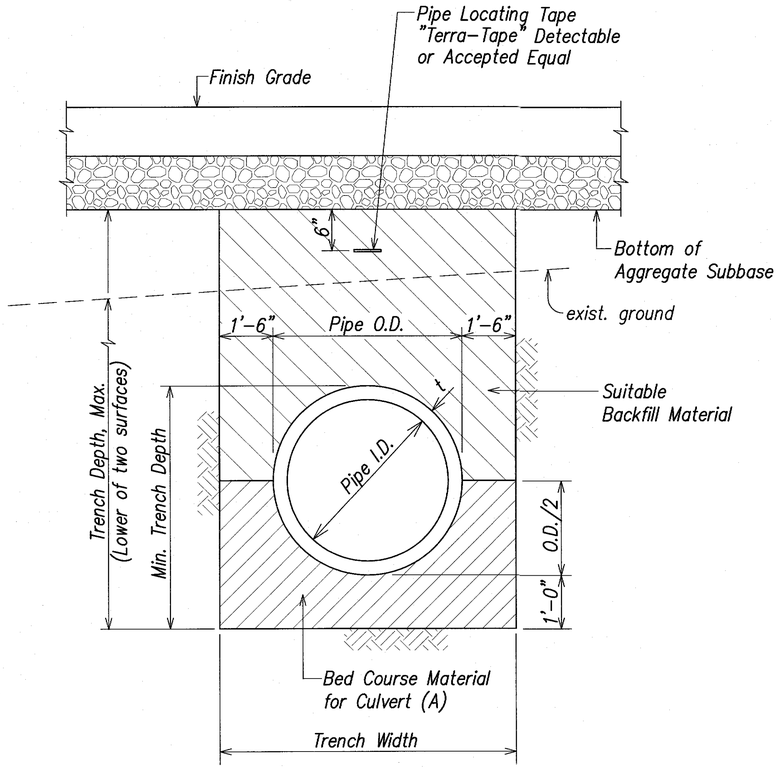
DRAINAGE DETAILS
TYPE 61614P AND TYPE 61616P STEEL FRAME AND GRATE

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1" = 1'-0" Date: FEB. 2009

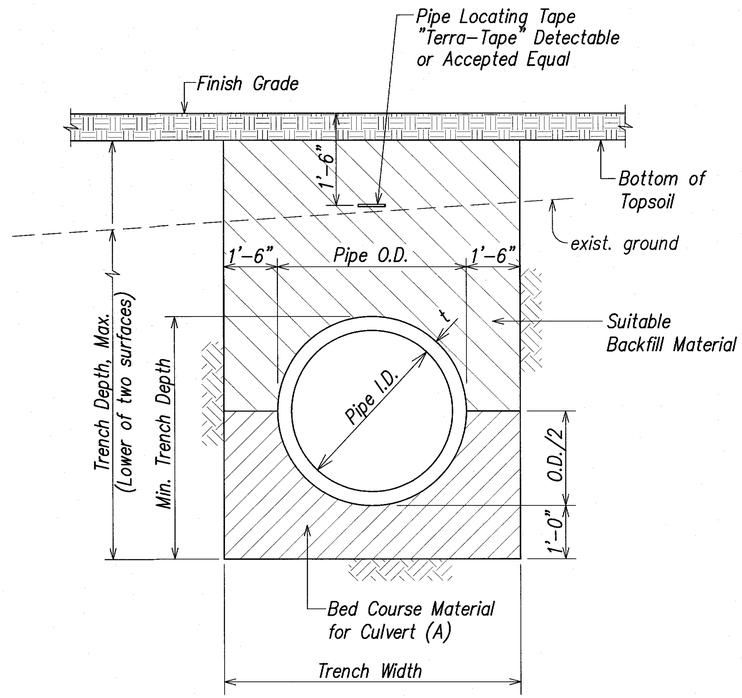
SHEET No. D8.6 OF D8.10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	188	452



TYPICAL TRENCH FOR DRAIN CULVERT (PAVED AREAS)

Scale: 3/4" = 1'-0"



TYPICAL TRENCH FOR DRAIN CULVERT (NON-PAVED AREAS)

Scale: 3/4" = 1'-0"

Table of Trench Widths				
I.D.	t	O.D.	Trench Width	A (S.F.)
24"	2-1/2"	29"	5'-5" ~~4'-5"~~	9.67
30"	2-3/4"	35-1/2"	6'-0" ~~5'-0"~~	11.33
36"	3-1/8"	42-1/4"	6'-6" ~~5'-7"~~	13.13
42"	3-3/4"	49-1/2"	7'-2" ~~6'-2"~~	15.14
48"	4-1/8"	56-1/4"	7'-8" ~~6'-9"~~	17.08
54"	4-5/8"	63-1/4"	8'-3" ~~6'-9"~~	19.16

LEGEND FOR AS-BUILT POSTINGS

~~^^^^~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	"
NOTE BOOK	TRACED BY	"
	DESIGNED BY	"
No.	QUANTITIES BY	"
	CHECKED BY	"

KHWYD-D8.7-MISC.dwg 11/21/08

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

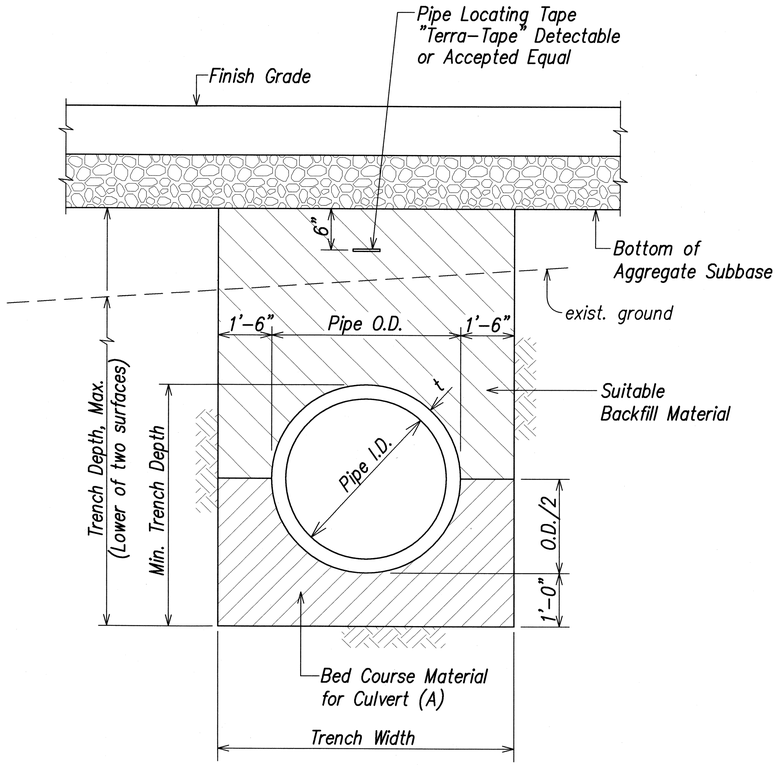
DRAINAGE DETAILS

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: As Noted Date: JAN. 2010

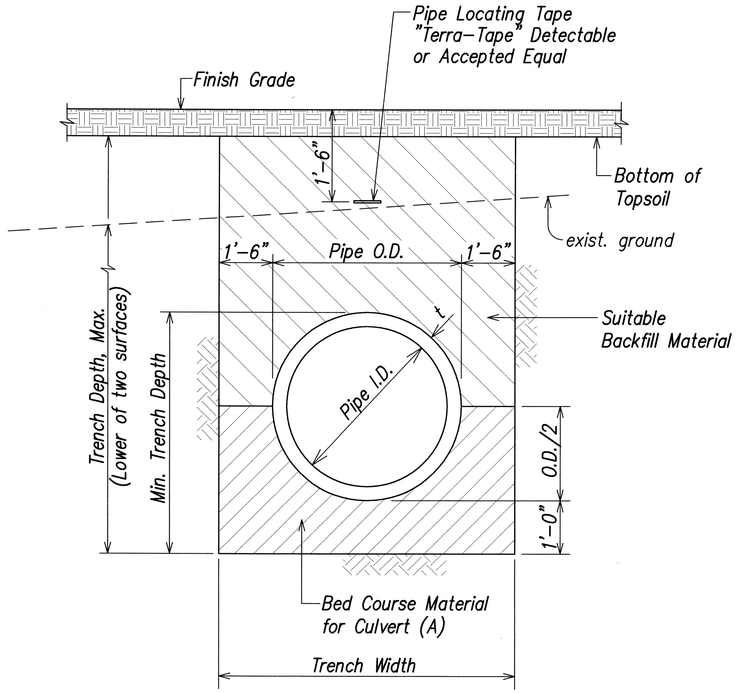
SHEET No. D8.7 OF D8.10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	188	452



TYPICAL TRENCH FOR DRAIN CULVERT (PAVED AREAS)

Scale: 3/4" = 1'-0"



TYPICAL TRENCH FOR DRAIN CULVERT (NON-PAVED AREAS)

Scale: 3/4" = 1'-0"

Table of Trench Widths				
I.D.	t	O.D.	Trench Width	A (S.F.)
24"	2-1/2"	29"	4'-5"	9.67
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42"	3-3/4"	49-1/2"	6'-2"	15.14
48"	4-1/8"	56-1/4"	6'-9"	17.08
54"	4-5/8"	63-1/4"	6'-9"	19.16

ORIGINAL PLAT
NOTE BOOK No.
SURVEY PLOTTED BY DATE
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY

L:\B2\ STATE\OAT\KAUMUALII-1\PHASE1A REVISION\PLANS\KHWY0-D8.7-MISC.dwg 11/21/08

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
2-26-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Parth, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

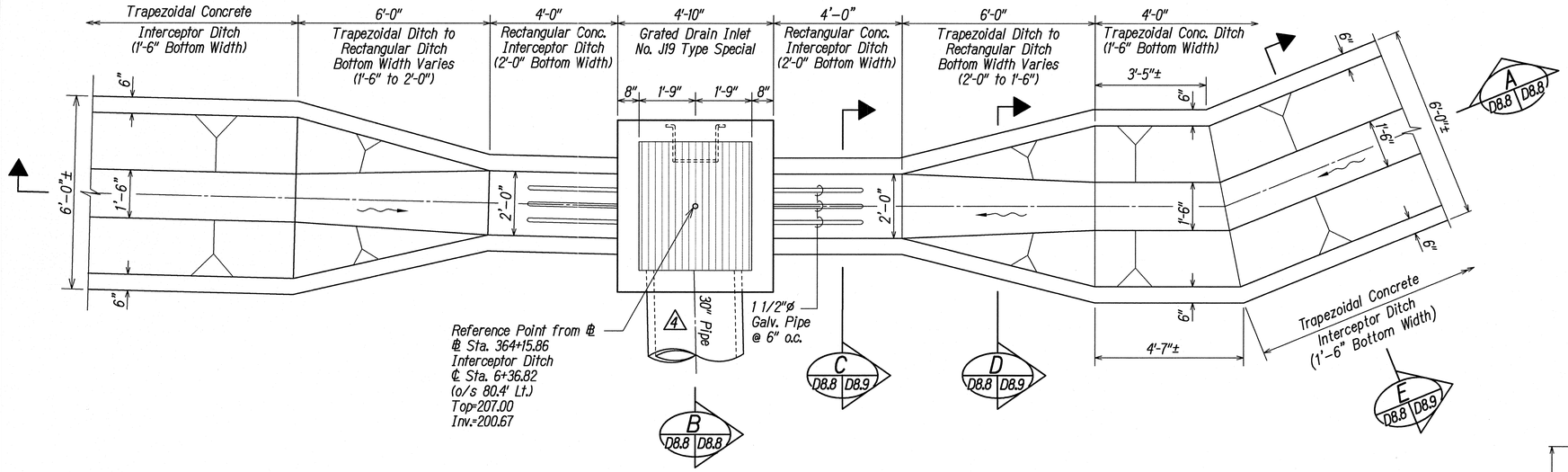
DRAINAGE DETAILS

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

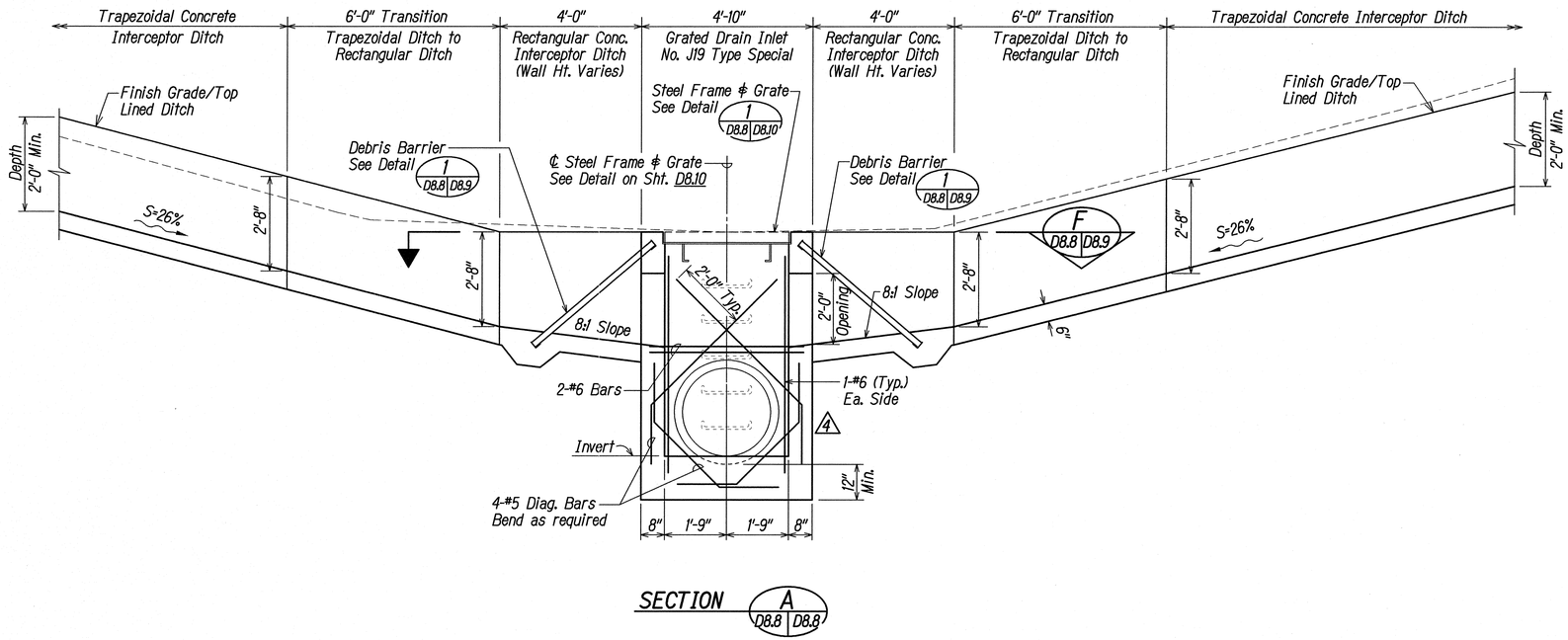
Scale: As Noted Date: FEB. 2009

SHEET No. D8.7 OF D8.10 SHEETS

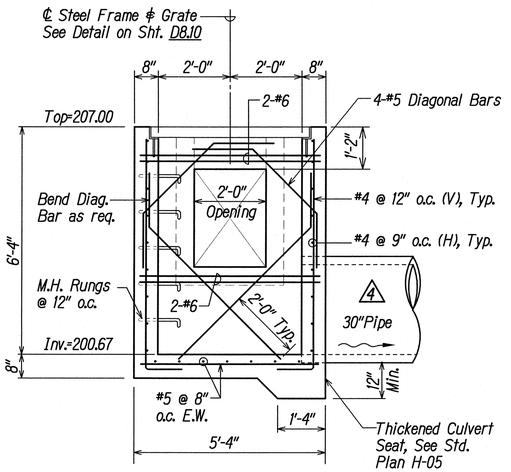
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.189	452



PLAN



SECTION A D8.8 D8.8



SECTION B D8.8 D8.8

GRATED DRAIN INLET NO. J19 AT ℄ STA. 364+16± — 1 D1.10 D8.8

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

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

L:\B2\ STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\ C01-08.08-J19D01.dwg 1/14/10

STEWART N. WILLIAMS — LICENSED PROFESSIONAL ENGINEER — No. 3908-S — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

4-30-10

MITSUNAGA & ASSOCIATES

Expiration Date of License

DATE	REVISION
2/01/10	4 Revised Pipe Size.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS
GRATED DRAIN INLET NO. J19

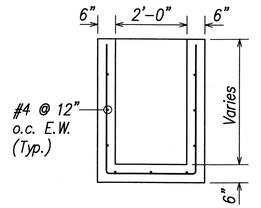
KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: JAN. 2010

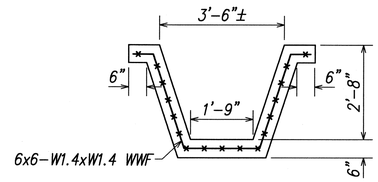
SHEET No. D8.8 OF D8.10 SHEETS

C.O. 189

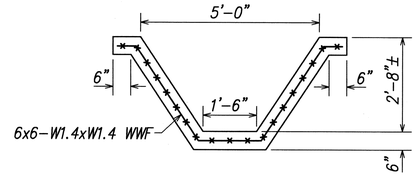
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	190	452



SECTION C D8.8 D8.9



SECTION D D8.8 D8.9



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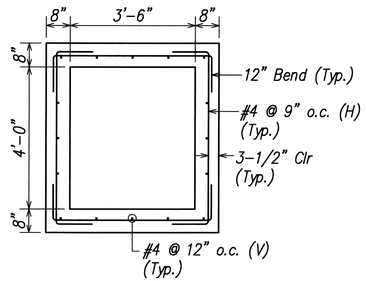
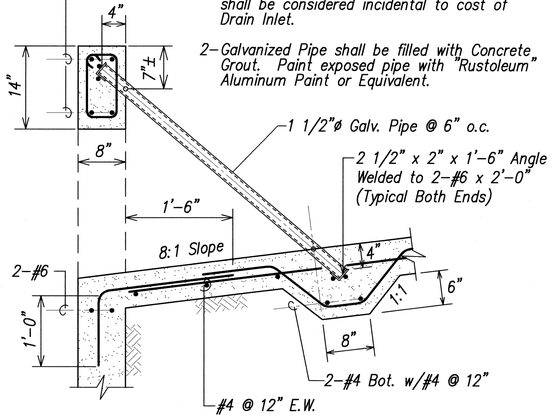


SECTION F D8.8 D8.9



Note:

1- Debris Barrier will not be paid directly, but shall be considered incidental to cost of Drain Inlet.

2- Galvanized Pipe shall be filled with Concrete Grout. Paint exposed pipe with "Rustoleum" Aluminum Paint or Equivalent.

DEBRIS BARRIER DETAIL 1 D8.8 D8.9

Scale: 1" = 1'-0"

ORIGINAL PLAN — SURVEY PLOTTED BY — DRAWN BY — TRACED BY — DESIGNED BY — QUANTITIES BY — CHECKED BY — DATE — NOTE BOOK — No.

I:\80- STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\ksmhs-08.09-J19R2R.dwg 2/23/09

JONG NAMGUNG ★ LICENSED PROFESSIONAL ENGINEER No. 3513-S ★ HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

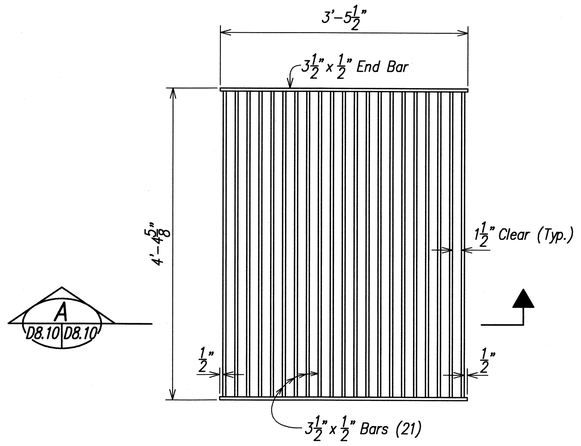
DRAINAGE DETAILS
GRATED DRAIN INLET NO. J19

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

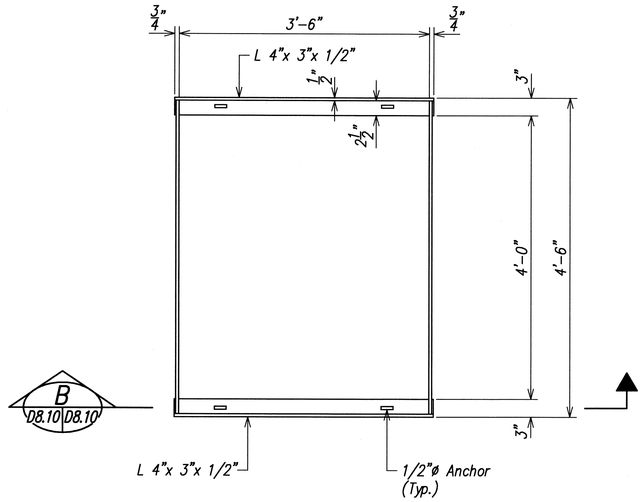
Scale: 1/2" = 1'-0" Date: FEB. 2009

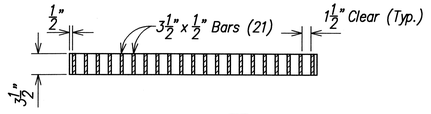
SHEET No. D8.9 OF D8.10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	191	452

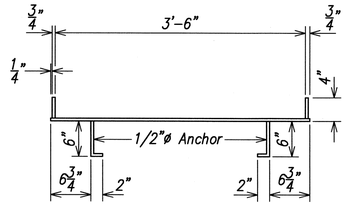


PLAN





SECTION A D8.10 D8.10



SECTION B D8.10 D8.10

STEEL FRAME AND GRATE FOR GRATED DRAIN INLET NO. J19

Scale: 1" = 1'-0"

1 D8.8 D8.10

ORIGINAL PLAN	STREET PLOTTED BY	DATE
	DRAWN BY	"
NOTE BOOK	TRACED BY	"
	DESIGNED BY	"
No.	QUANTITIES BY	"
	CHECKED BY	"

L:\82- STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\ HWY-D8.10-J19DI.dwg 2/25/09

JONG NAMGUNG ★ LICENSED PROFESSIONAL ENGINEER No. 3513-S ★ HAWAII, U.S.A.

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MITSUNAGA & ASSOCIATES
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAINAGE DETAILS

GRATED DRAIN INLET NO. J19

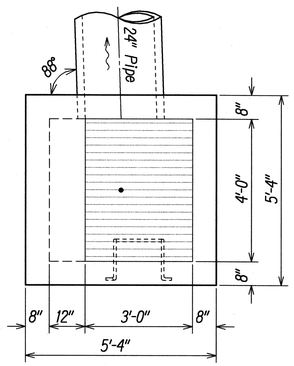
STEEL FRAME AND GRATE

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

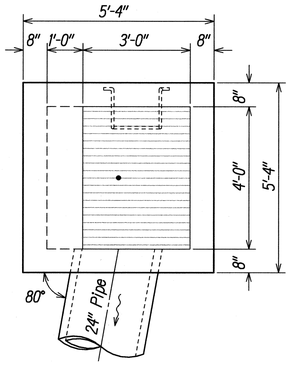
Scale: 1/2" = 1'-0" Date: FEB. 2009

SHEET No. D8.10 OF D8.10 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	192	452



GDI-E4 — 4 (D1.1 | D9.1)
℄ Sta. 279+30
Type 61614P (H=4.34')
Top=311.74
Inv.=307.40



GDI-E5 — 5 (D1.1 | D9.1)
℄ Sta. 281+55
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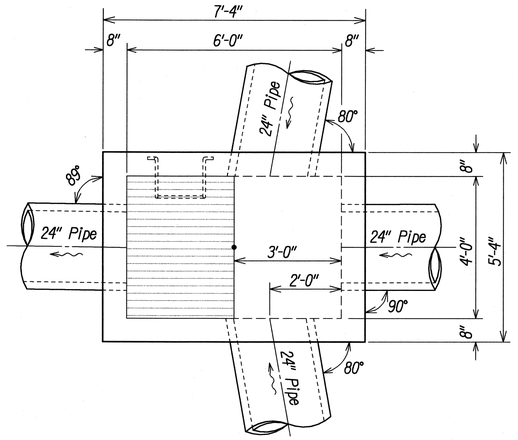

GDI-E6 — 6 (D1.1 | D9.1)
℄ Sta. 281+45
Type 61614 (H=5.59')
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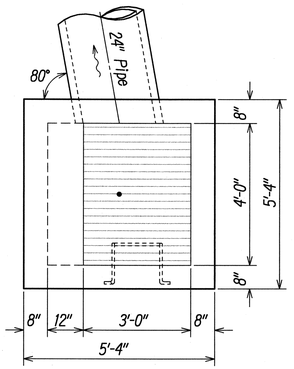
Inv.=313.00



GDI-E7 — 7 (D1.1 | D9.1)
℄ Sta. 281+55
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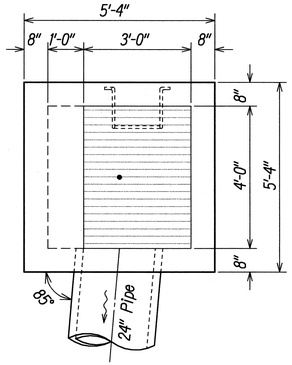

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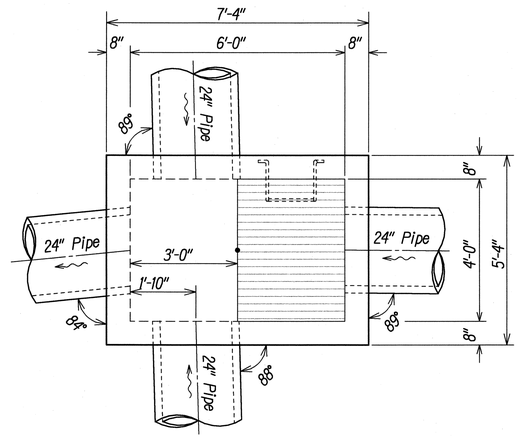


GDI-E3 — 3 (D1.1 | D9.1)
℄ Sta. 279+30
Type 61614 (H=5.00')
Top=311.70
Inv.=306.70

ORIGINAL PLAN
SURVEY PLOTTED BY _____ DATE
DRAWN BY : :
TRACED BY : :
NOTE BOOK DESIGNED BY : :
QUANTITIES BY : :
No. CHECKED BY : :

USE: STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\KHWY=-D9.1-GDI.dwg 5/07/09

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
5-11-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

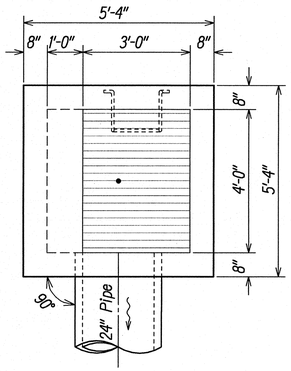
DRAIN STRUCTURE DIAGRAMS
GRATED DRAIN INLETS

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: MAY 2009

SHEET No. D9.1 OF D9.8 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.193	452



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℄ Sta. 287+60
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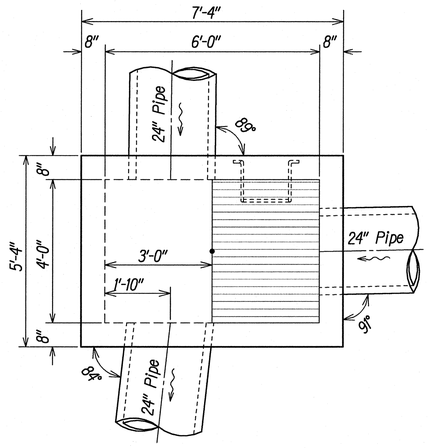

GDI-F2 — 5 (D1.2 | D9.2)
℄ Sta. 287+60
Type 61614 (H=8.12')
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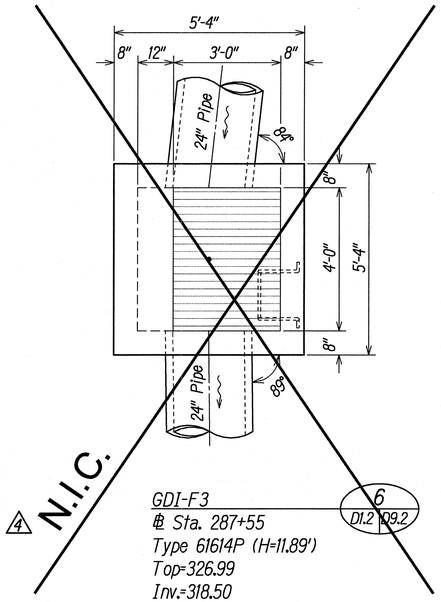
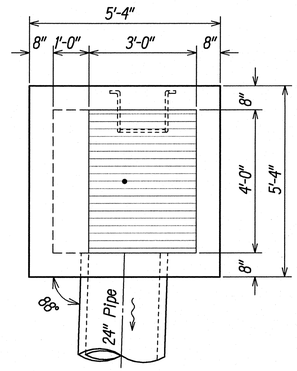
Inv.=321.80
Inv.=319.40

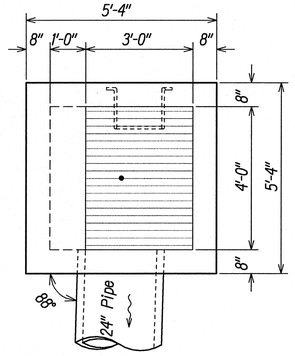


4 N.I.C.

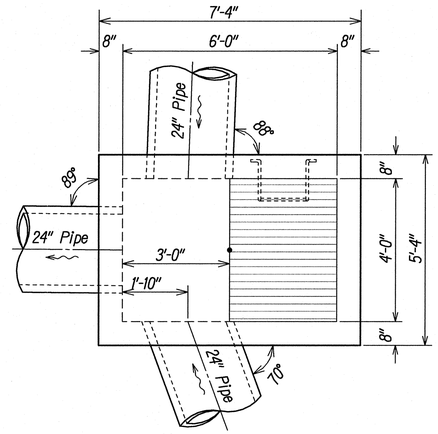
GDI-F3 — 6 (D1.2 | D9.2)
℄ Sta. 287+55
Type 61614P (H=11.89')
Top=326.99
Inv.=318.50
Inv.=315.10



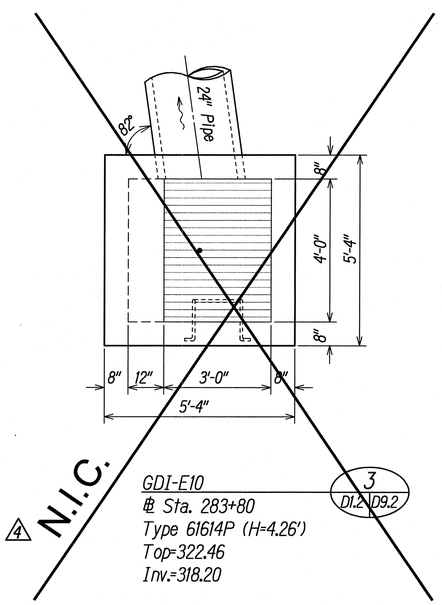
GDI-F4 — 7 (D1.3 | D9.2)
℄ Sta. 289+90
Type 61614P (H=4.39')
Top=329.89
Inv.=325.50



GDI-E8 — 1 (D1.2 | D9.2)
℄ Sta. 283+70
Type 61614P (H=4.60')
Top=322.70
Inv.=318.10



GDI-E9 — 2 (D1.2 | D9.2)
℄ Sta. 283+70
Type 61614 (H=6.00')
Top=323.50
Inv.=317.50



4 N.I.C.

GDI-E10 — 3 (D1.2 | D9.2)
℄ Sta. 283+80
Type 61614P (H=4.26')
Top=322.46
Inv.=318.20

2/01/10	4 Deleted GDI-E10 and GDI-F3.
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAIN STRUCTURE DIAGRAMS
GRATED DRAIN INLETS

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: JAN. 2010

SHEET No. D9.2 OF D9.8 SHEETS

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
2-1-10

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

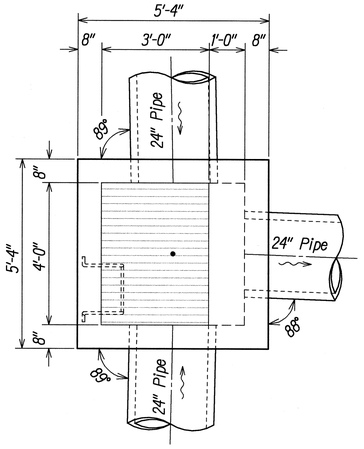
ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
No.	CHECKED BY	

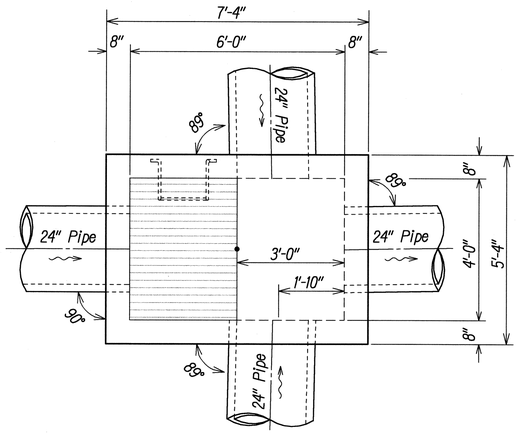
L:\B2\ STATE\DOT\KAUMUALII-1\PANEL4 REVISION\PLANS\ GDI-09.2-GD2.dwg 2/18/10

C.O. 193

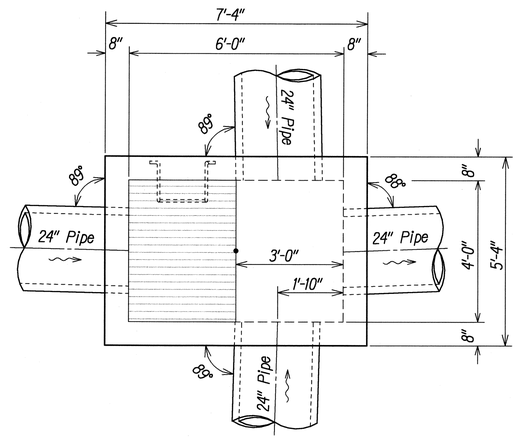
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	194	452



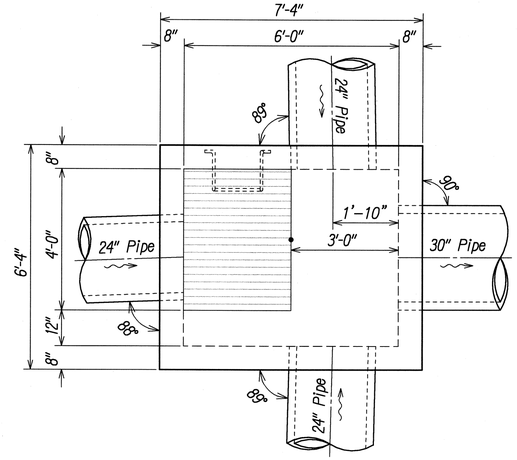
GDI-G1 — 5 (DI.4 | D9.3)
℄ Sta. 299+75
Type 61614 (H=5.83')
Top=333.83
Inv.=328.00



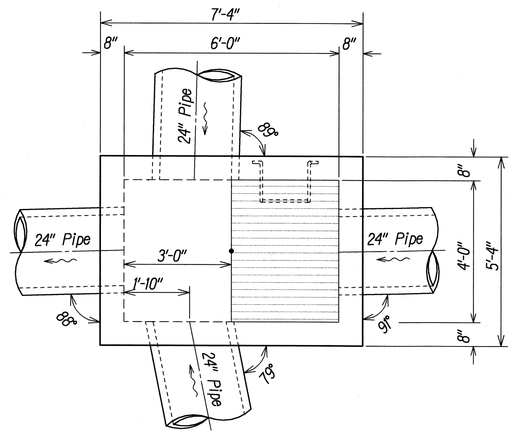
GDI-G2 — 6 (DI.4 | D9.3)
℄ Sta. 303+74
Type 61614 (H=6.40')
Top=324.80
Inv.=319.30
Inv.=318.40



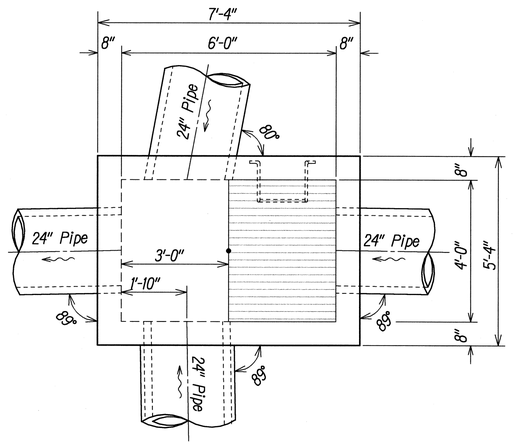
GDI-G3 — 7 (DI.4 | D9.3)
℄ Sta. 307+00
Type 61614 (H=6.43')
Top=315.63
Inv.=309.20



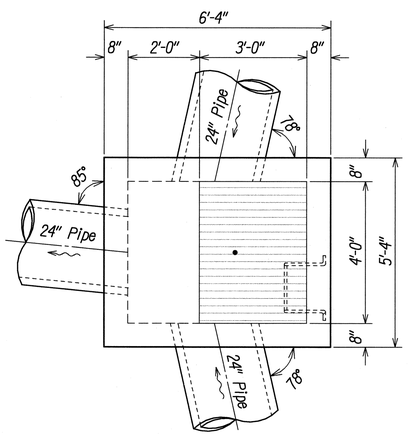
GDI-G4 — 8 (DI.5 | D9.3)
℄ Sta. 309+00
Type I (H=5.64')
Top=312.74
Inv.=307.10



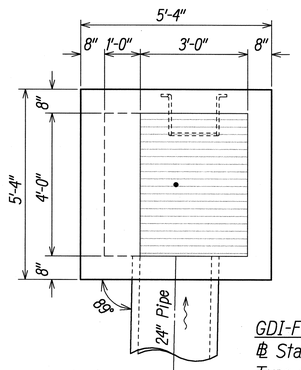
GDI-F5 — 1 (DI.3 | D9.3)
℄ Sta. 289+90
Type 61614 (H=5.50')
Top=330.30
Inv.=324.80



GDI-F6 — 2 (DI.3 | D9.3)
℄ Sta. 291+80
Type 61614 (H=6.14')
Top=332.94
Inv.=326.80



GDI-F7 — 3 (DI.3 | D9.3)
℄ Sta. 294+00
Type 61614 (H=6.57')
Top=336.07
Inv.=329.50



GDI-F8 — 4 (DI.3 | D9.3)
℄ Sta. 291+80
Type 61614P (H=4.80')
Top=332.40
Inv.=327.60

ORIGINAL PLANS — SURVEY PLOTTED BY — DRAWN BY — TRACED BY — DESIGNED BY — QUANTITIES BY — CHECKED BY — DATE — NOTE BOOK — No.

I:\SEC. STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\KHWD-09.3-GDI.dwg 5/08/09

GLENN K. IKEDA — LICENSED PROFESSIONAL ENGINEER — No. 8328-C — HAWAII, U.S.A.
5-11-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

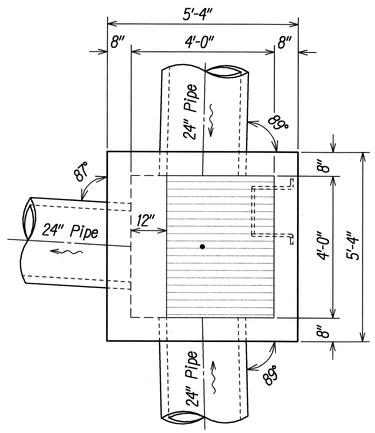
DRAIN STRUCTURE DIAGRAMS
GRATED DRAIN INLETS

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

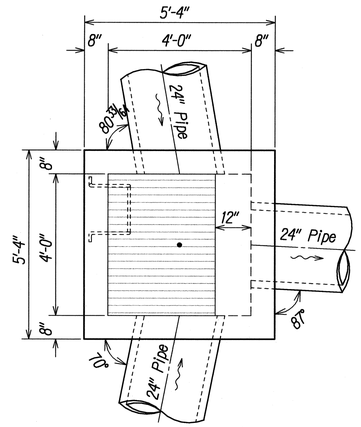
Scale: 1/2" = 1'-0" — Date: MAY 2009

SHEET No. D9.3 OF D9.8 SHEETS

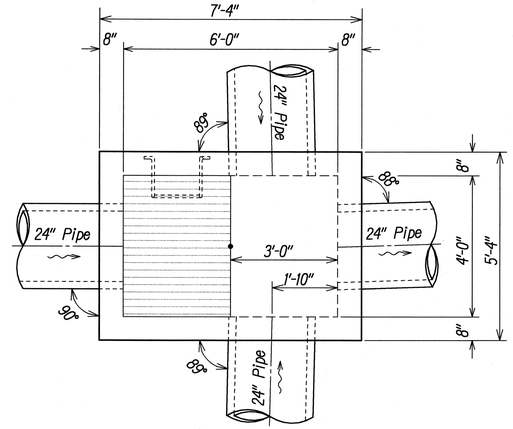
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	195	452



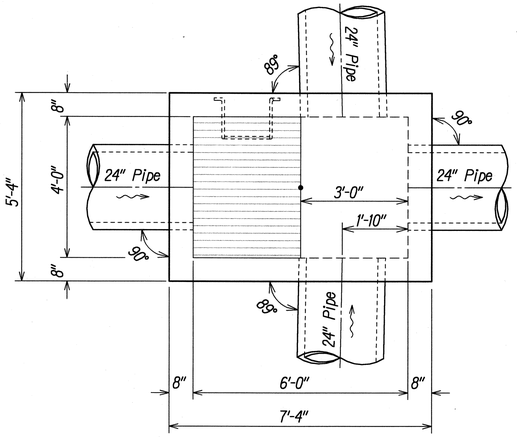
GDI-H2 — 4 (D1.5 | D9.4)
℄ Sta. 314+50
Type 61614 (H=5.35')
Top=316.75
Inv.=311.40



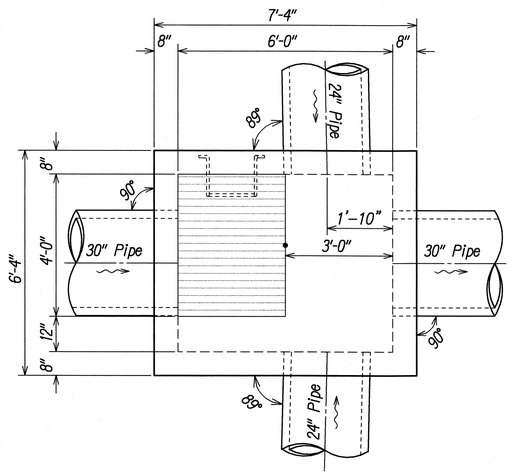
GDI-J1 — 5 (D1.6 | D9.4)
℄ Sta. 319+38
Type 61614 (H=6.41')
Top=319.31
Inv.=312.90



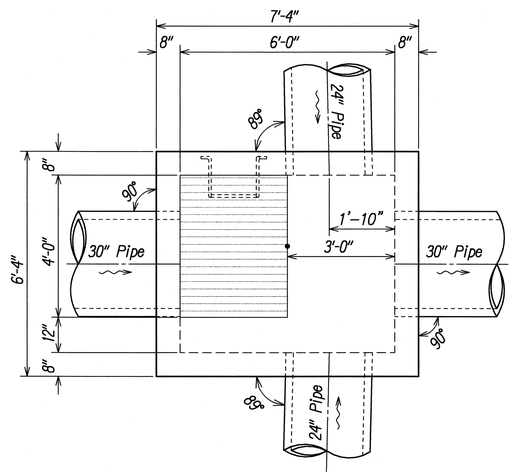
GDI-J2 — 6 (D1.6 | D9.4)
℄ Sta. 326+80
Type 61614 (H=5.64')
Top=311.44
Inv.=305.80



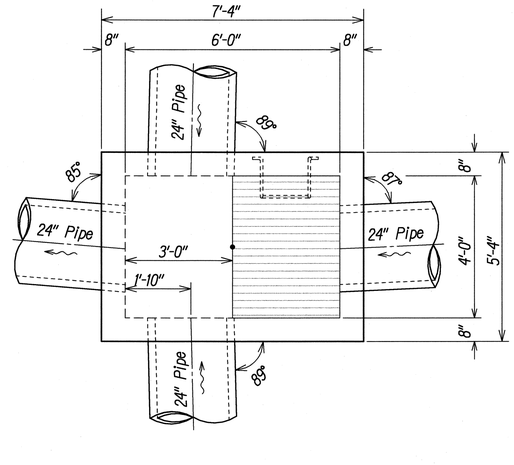
GDI-J3 — 7 (D1.7 | D9.4)
℄ Sta. 331+26
Type 61614 (H=6.17')
Top=305.17
Inv.=299.00



GDI-G5 — 1 (D1.5 | D9.4)
℄ Sta. 309+51
Type I (H=6.14')
Top=312.64
Inv.=306.50



GDI-G6 — 2 (D1.5 | D9.4)
℄ Sta. 310+00
Type I (H=6.73')
Top=312.73
Inv.=306.00



GDI-H1 — 3 (D1.5 | D9.4)
℄ Sta. 312+00
Type 61614 (H=5.56')
Top=314.36
Inv.=308.80

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	TRACED BY	
	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

LIB2: STATE\DOT\KAUMUALI-1\PHASE1A REVISION\PLANS\KHWY=-D9.4-0204.dwg 11/21/08

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
5-11-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Glenn K. Ikeda
ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

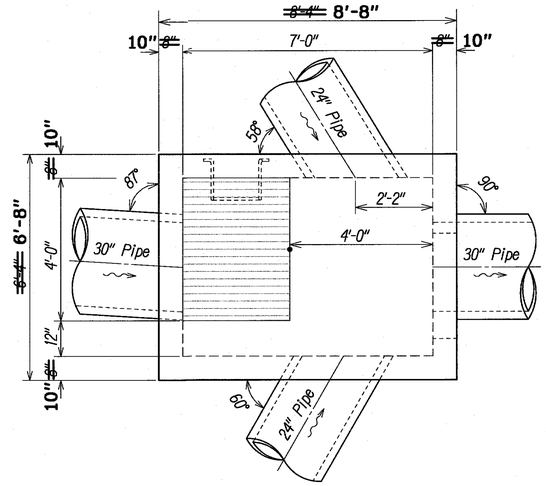
DRAIN STRUCTURE DIAGRAMS
GRATED DRAIN INLETS

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

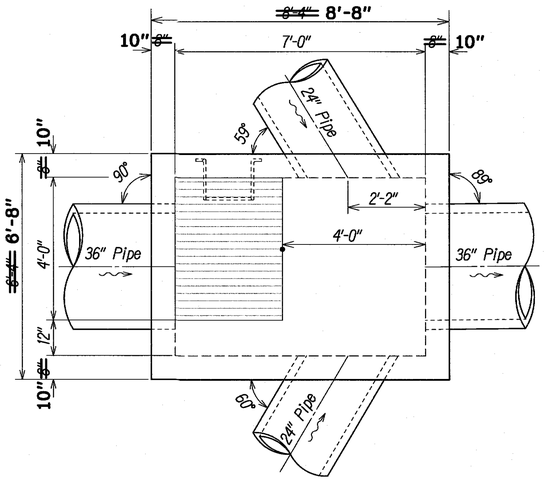
Scale: 1/2" = 1'-0" Date: MAY 2009

SHEET No. D9.4 OF D9.8 SHEETS

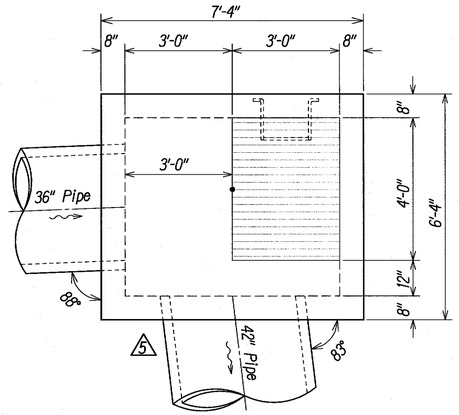
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.196	452



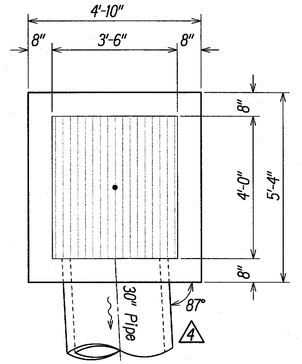
GDI-J6 — 4 (D1.8 | D9.5)
℄ Sta. 342+20
Type II (H=5.75')
Top=279.35
Inv.=274.10 (24")
Inv.=273.60 (30")



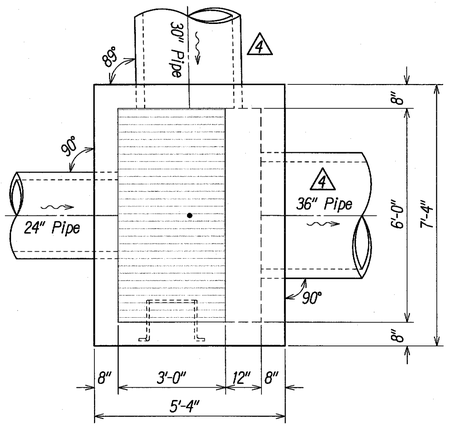
GDI-J7 — 5 (D1.9 | D9.5)
℄ Sta. 350+50
Type II (H=6.36')
Top=260.16
Inv.=254.80 (24")
Inv.=253.80 (36")



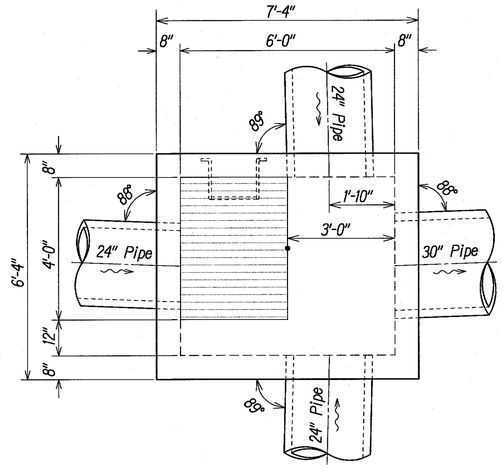
GDI-J10 — 6 (D1.9 | D9.5)
℄ Sta. 356+95
Type I (H=6.75')
Top=244.65
Inv.=237.90



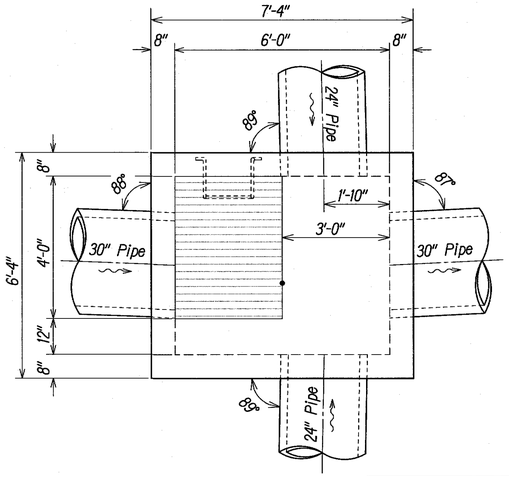
4 GDI-J19 — 8 (D1.10 | D9.5)
℄ Sta. 364+15.86
Type Special (H=6.33')
Top=207.00
Inv.=200.67



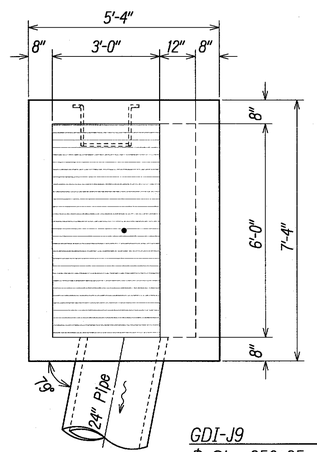
GDI-J18 — 7 (D1.10 | D9.5)
4 ℄ Sta. 364+18
Type 61616 (H=6.33')
Top=205.63
Inv.=199.30



GDI-J4 — 1 (D1.7 | D9.5)
℄ Sta. 335+00
Type I (H=5.95')
Top=295.85
Inv.=290.40 (24")
Inv.=289.90 (30")



GDI-J5 — 2 (D1.8 | D9.5)
℄ Sta. 339+15
Type I (H=6.22')
Top=286.22
Inv.=280.50 (24")
Inv.=280.00 (30")



GDI-J9 — 3 (D1.9 | D9.5)
℄ Sta. 356+85
Type 61616 (H=4.50')
Top=243.50
Inv.=239.00

LEGEND FOR AS-BUILT POSTINGS

~~Squiggly line~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

DATE	REVISION
3/09/10	5 Revised GDI-J10 Pipe Size.
2/01/10	4 Revised GDI-18 Structure Type, Pipe Size, and Height. Revised GDI-J19 Pipe Size and Structure ID.

ORIGINAL PLAN — SURVEY PLOTTED BY — DRAWN BY — NOTE BOOK — TRACED BY — DESIGNED BY — QUANTITIES BY — CHECKED BY — DATE — No.

022-09.5-GDS.dwg 3/12/10

GLENN K. IKEDA — LICENSED PROFESSIONAL ENGINEER No. 8328-C — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

ParEn, Inc. dba PARK ENGINEERING LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAIN STRUCTURE DIAGRAMS GRATED DRAIN INLETS

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Līhu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

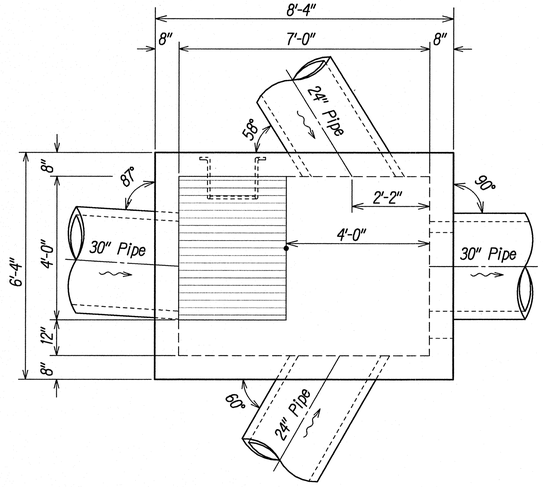
Scale: 1/2" = 1'-0" — Date: JAN. 2010

SHEET No. D9.5 OF D9.8 SHEETS

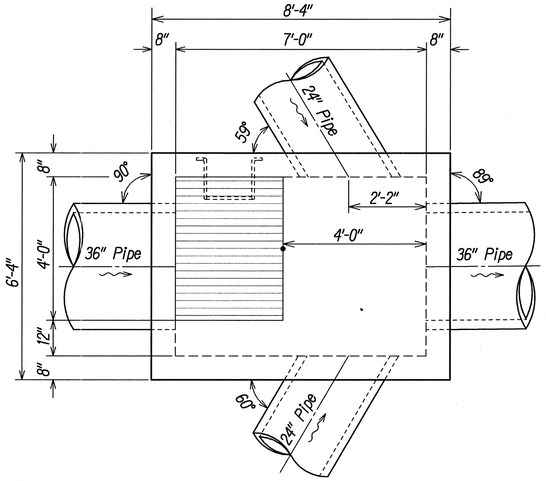
"AS-BUILT"

C.O. 196

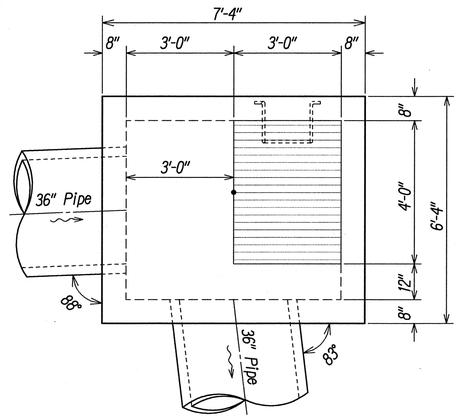
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.196	452



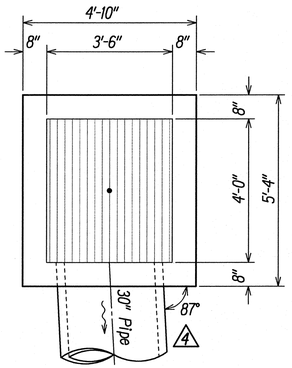
GDI-J6 (4) D1.8 | D9.5
℄ Sta. 342+20
Type II (H=5.75')
Top=279.35
Inv.=274.10 (24")
Inv.=273.60 (30")



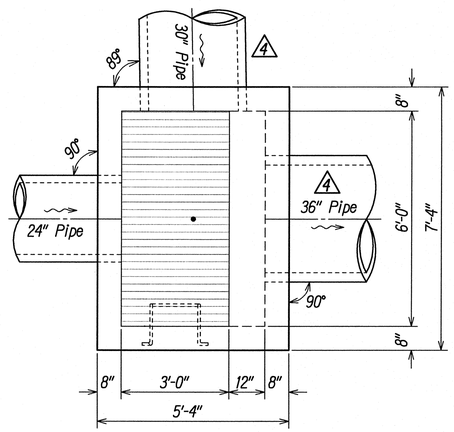
GDI-J7 (5) D1.9 | D9.5
℄ Sta. 350+50
Type II (H=6.36')
Top=260.16
Inv.=254.80 (24")
Inv.=253.80 (36")



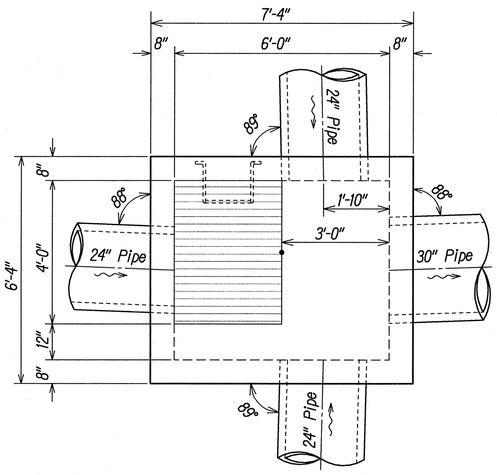
GDI-J10 (6) D1.9 | D9.5
℄ Sta. 356+95
Type I (H=6.75')
Top=244.65
Inv.=237.90



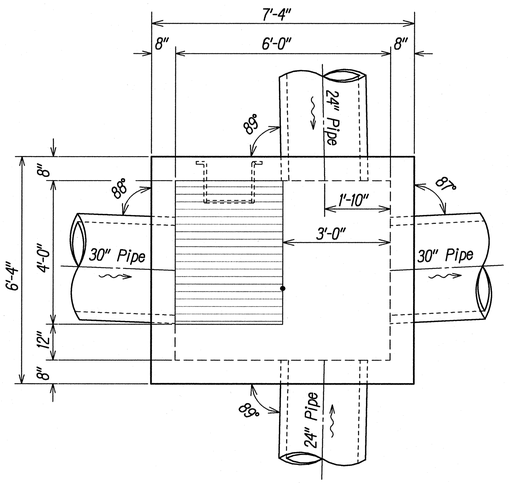
4 GDI-J19 (8) D1.10 | D9.5
℄ Sta. 364+15.86
Type Special (H=6.33')
Top=207.00
Inv.=200.67



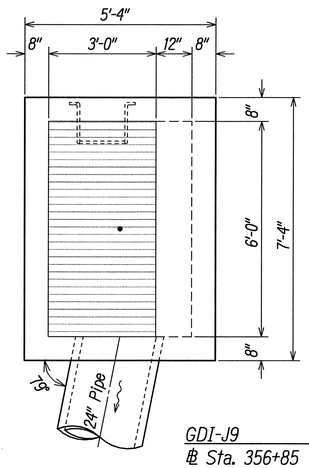
GDI-J18 (7) D1.10 | D9.5
4 ℄ Sta. 364+18
Type 61616 (H=6.33')
Top=205.63
Inv.=199.30



GDI-J4 (1) D1.7 | D9.5
℄ Sta. 335+00
Type I (H=5.95')
Top=295.85
Inv.=290.40 (24")
Inv.=289.90 (30")



GDI-J5 (2) D1.8 | D9.5
℄ Sta. 339+15
Type I (H=6.22')
Top=286.22
Inv.=280.50 (24")
Inv.=280.00 (30")



GDI-J9 (3) D1.9 | D9.5
℄ Sta. 356+85
Type 61616 (H=4.50')
Top=243.50
Inv.=239.00

DATE	REVISION
2/01/10	4 Revised GDI-18 Structure Type, Pipe Size, and Height. Revised GDI-J19 Pipe Size and Structure ID.

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE
NOTE BOOK | No.

LIBZ: STATE\OAT\KAUMUALII-1\PHASE1A REVISION\PLANS\ C01-D9.5-GDS.dwg 1/15/10

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
2-1-10
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAIN STRUCTURE DIAGRAMS
GRATED DRAIN INLETS

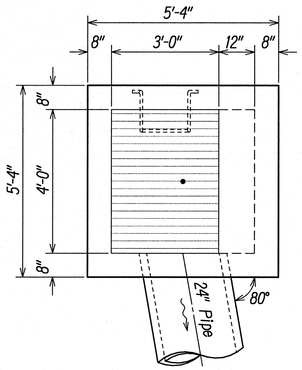
KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: JAN. 2010

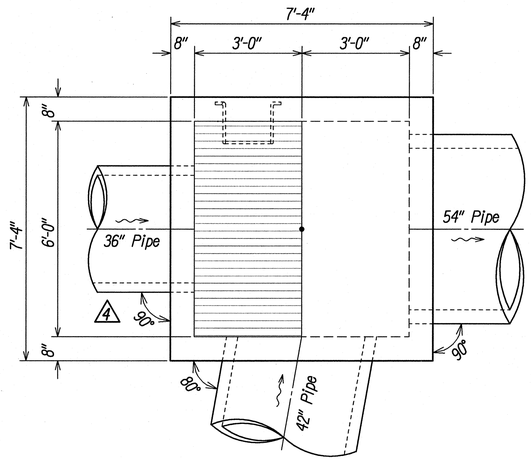
SHEET No. D9.5 OF D9.8 SHEETS

C.O. 196

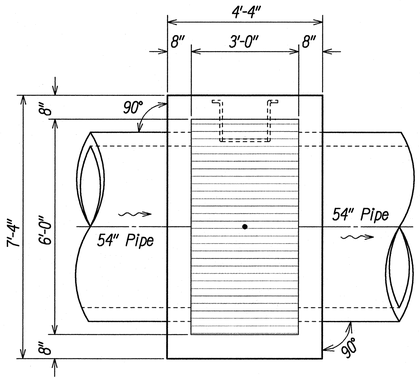
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	C.O.197	452



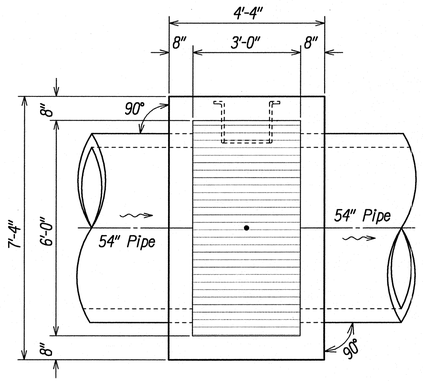
GDI-J13 (5) D1.10 D9.6
I.B. ℄ Sta. 362+85
Type 61614 (H=5.50')
Top=215.80
Inv.=210.30



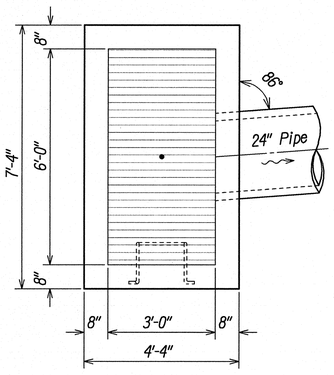
GDI-J15 (6) D1.10 D9.6
O.B. ℄ Sta. 364+58.48
Type 61616 (H=11.68')
Top=203.18
Inv.=196.60 (36") 4
Inv.=191.50 (42",54")



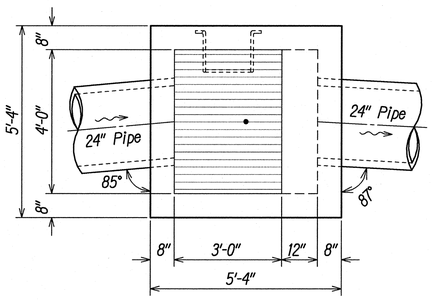
GDI-J16 (7) D1.10 D9.6
O.B. ℄ Sta. 366+70
Type 61616 (H=7.12')
Top=191.62
Inv.=184.50



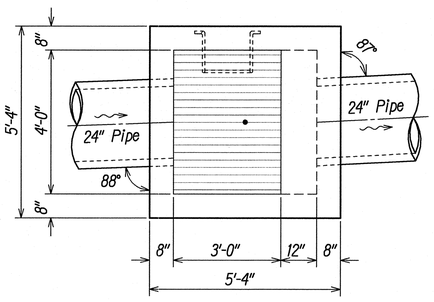
GDI-J17 (8) D1.10 D9.6
℄ Sta. 369+05
Type 61616 (H=7.00')
Top=183.00
Inv.=176.00



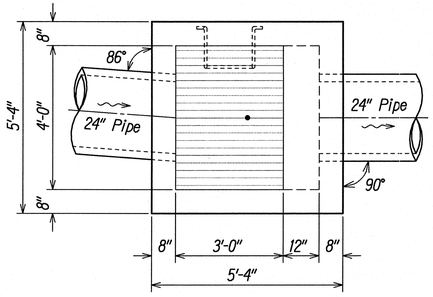
GDI-9A (1) D1.10 D9.6
℄ Sta. 363+10
Type 61616 (H=4.20')
Top=210.00
Inv.=205.80



GDI-J11 (2) D1.9 D9.6
O.B. ℄ Sta. 358+80
Type 61614P (H=4.79')
Top=236.29
Inv.=231.50



GDI-J12 (3) D1.10 D9.6
O.B. ℄ Sta. 360+80
Type 61614P (H=4.79')
Top=226.69
Inv.=221.90



GDI-J14 (4) D1.10 D9.6
O.B. ℄ Sta. 362+90
Type 61614P (H=4.83')
Top=214.23
Inv.=209.40

2/01/10	4 Revised GDI-J15 Pipe Size, Elevations and Height.
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAIN STRUCTURE DIAGRAMS
GRATED DRAIN INLETS

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: JAN. 2010

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
2-1-10
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
PorEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

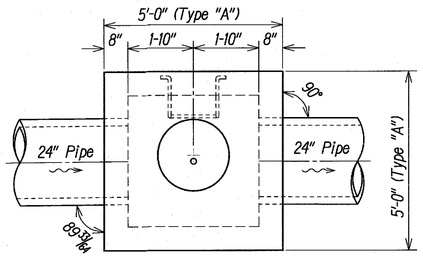
SHEET No. D9.6 OF D9.8 SHEETS

C.O. 197

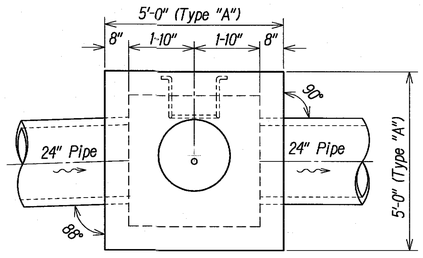
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

U82: STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\C01-D9.6-GDI6.dwg 1/07/10

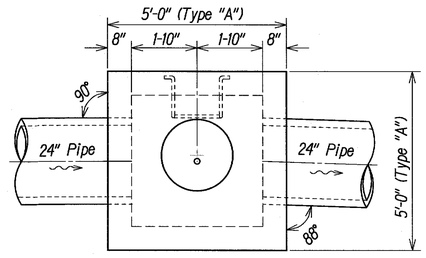
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	198	452



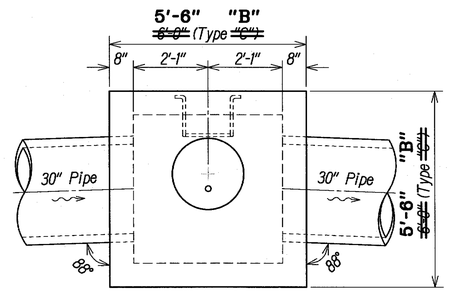
DMH-J3 — 8 (D1.6 | D9.7)
℄ Sta. 324+90
Type A (H=6.75')
Top=314.45
Inv.=307.70



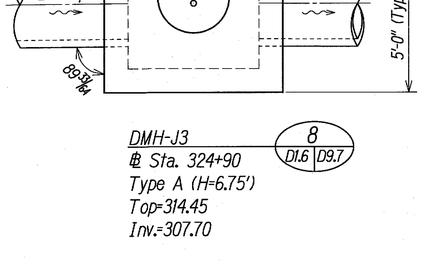
DMH-J4 — 9 (D1.7 | D9.7)
℄ Sta. 329+00
Type A (H=6.07')
Top=309.67
Inv.=303.60



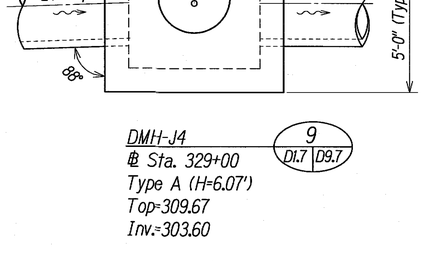
DMH-J5 — 10 (D1.7 | D9.7)
℄ Sta. 333+10
Type A (H=6.30')
Top=301.10
Inv.=294.80



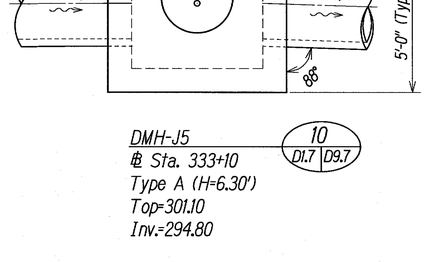
DMH-J6 — 11 (D1.7 | D9.7)
℄ Sta. 337+20
Type B (H=6.39')
Top=291.59
Inv.=285.20



DMH-F1 — 1 (D1.3 | D9.7)
℄ Sta. 292+58
Type A (H=6.20')
Top=334.00
Inv.=327.80



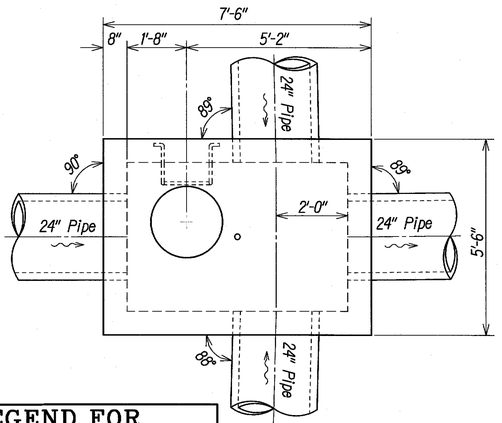
DMH-G1 — 2 (D1.4 | D9.7)
℄ Sta. 301+75
Type A (H=5.87')
Top=330.87
Inv.=325.00



DMH-G2 — 3 (D1.4 | D9.7)
℄ Sta. 305+40
Type A (H=6.47')
Top=319.67
Inv.=313.20

DMH-H2 — 5 (D1.5 | D9.7)
℄ Sta. 313+40
Type A (H=6.28')
Top=316.48
Inv.=310.20

DMH-J1 — 6 (D1.6 | D9.7)
℄ Sta. 321+20
Type A (H=7.05')
Top=318.25
Inv.=311.20



DMH-J2 — 7 (D1.6 | D9.7)
℄ Sta. 323+00
Special (H=6.85')
Top=316.45
Inv.=~~306.60~~ **309.60**

LEGEND FOR AS-BUILT POSTINGS

~~Squiggly line~~	**Squiggly line for as-built deletion**
~~100.00~~	**Double line for as-built deletion**
Roadway	**Text for as-built posting**

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	TRACED BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

40061-07-7-DM01.dwg 1/21/09

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-16

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

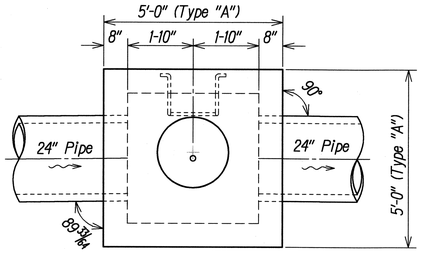
DRAIN STRUCTURE DIAGRAMS
DRAIN MANHOLES

KAUMUALI'I HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihu'e Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

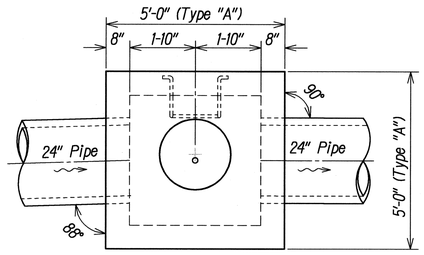
Scale: 1/2" = 1'-0" Date: JAN. 2010

SHEET No. D9.7 OF D9.8 SHEETS

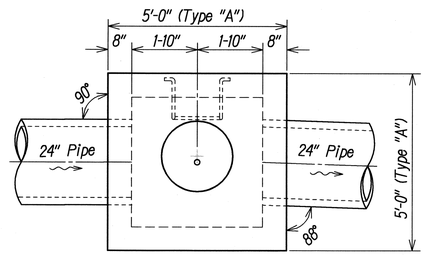
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	198	452



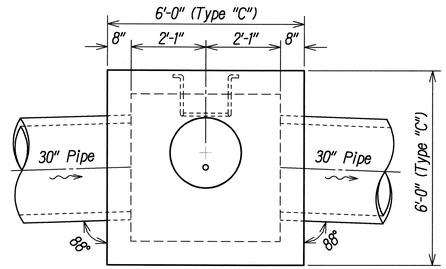
DMH-J3 — 8 (D1.6 | D9.7)
℄ Sta. 324+90
Type A (H=6.75')
Top=314.45
Inv.=307.70



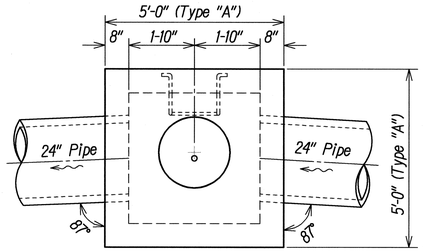
DMH-J4 — 9 (D1.7 | D9.7)
℄ Sta. 329+00
Type A (H=6.07')
Top=309.67
Inv.=303.60



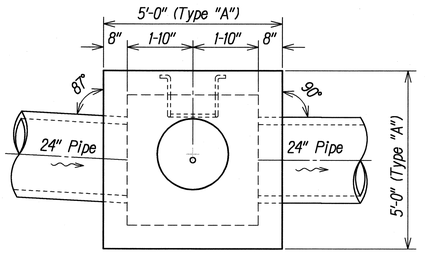
DMH-J5 — 10 (D1.7 | D9.7)
℄ Sta. 333+10
Type A (H=6.30')
Top=301.10
Inv.=294.80



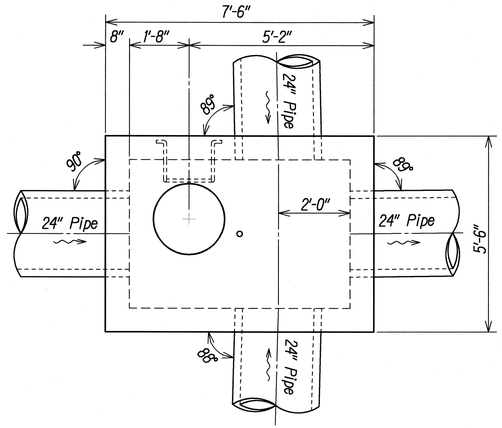
DMH-J6 — 11 (D1.7 | D9.7)
℄ Sta. 337+20
Type B (H=6.39')
Top=291.59
Inv.=285.20



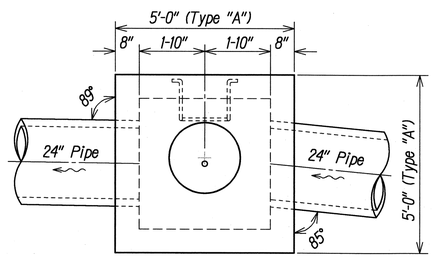
DMH-H2 — 5 (D1.5 | D9.7)
℄ Sta. 313+40
Type A (H=6.28')
Top=316.48
Inv.=310.20



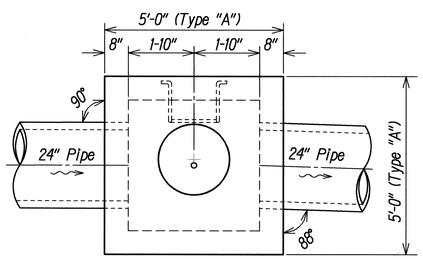
DMH-J1 — 6 (D1.6 | D9.7)
℄ Sta. 321+20
Type A (H=7.05')
Top=318.25
Inv.=311.20



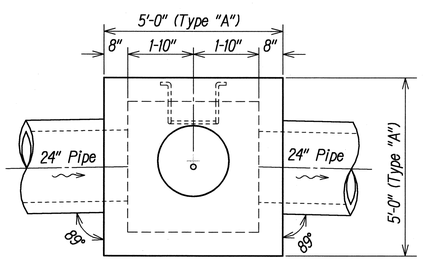
DMH-J2 — 7 (D1.6 | D9.7)
℄ Sta. 323+00
Special (H=6.85')
Top=316.45
Inv.=306.60



DMH-F1 — 1 (D1.3 | D9.7)
℄ Sta. 292+58
Type A (H=6.20')
Top=334.00
Inv.=327.80



DMH-G1 — 2 (D1.4 | D9.7)
℄ Sta. 301+75
Type A (H=5.87')
Top=330.87
Inv.=325.00



DMH-G2 — 3 (D1.4 | D9.7)
℄ Sta. 305+40
Type A (H=6.47')
Top=319.67
Inv.=313.20

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	TRACED BY	
NOTE BOOK	DESIGNED BY	
No.	QUANTITIES BY	
	CHECKED BY	

I:\B2\ STATE\DOT\KAUMUALII-1\PHASE1A REVISION\PLANS\KHWY0-097-DMH1.dwg 11/21/08

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
5-11-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Glenn K. Ikeda
PetEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

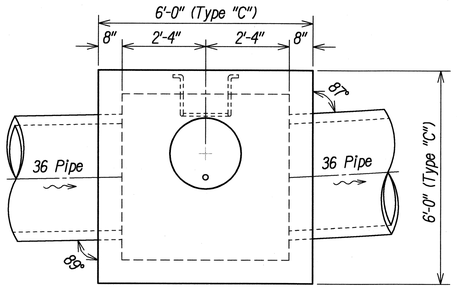
DRAIN STRUCTURE DIAGRAMS
DRAIN MANHOLES

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

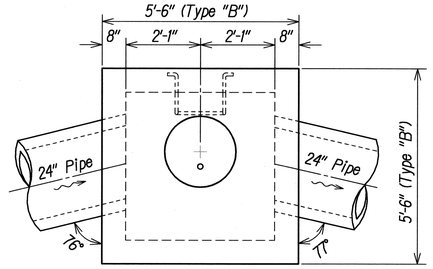
Scale: 1/2" = 1'-0" Date: MAY 2009

SHEET No. D9.7 OF D9.8 SHEETS

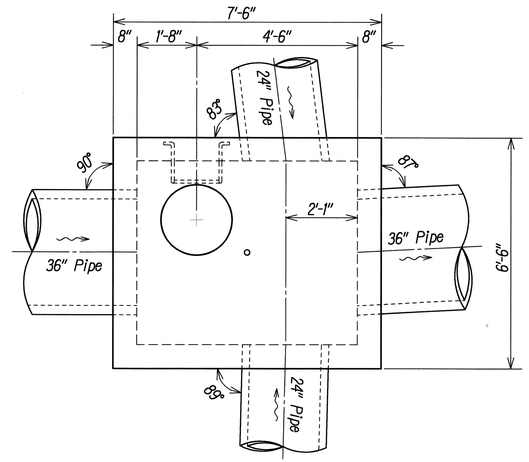
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-050-1(31)	2009	199	452



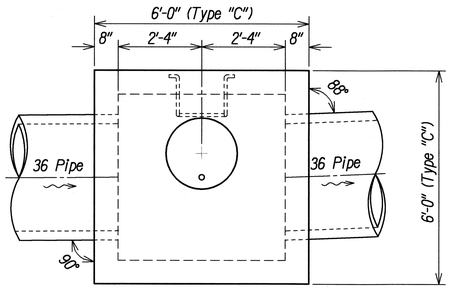
DMH-J12 (7) D1.9 | D9.8
℄ Sta. 355+90
Type C (H=7.51')
Top=248.41
Inv.=240.90



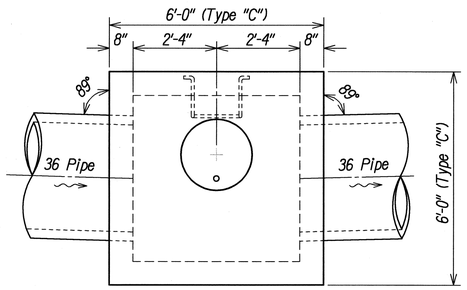
DMH-9A (8) D1.10 | D9.8
℄ Sta. 363+70
Type B (H=5.70')
Top=210.20
Inv.=204.50



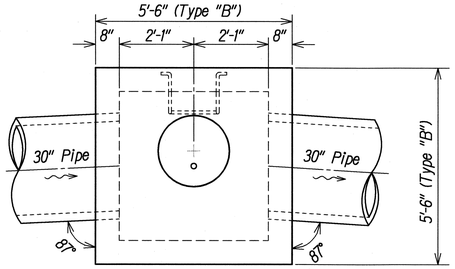
DMH-J15 (6) D1.9 | D9.8
℄ Sta. 354+25
Type H (H=7.92')
Top=252.37
Inv.=245.45 (24")
Inv.=244.45 (36")



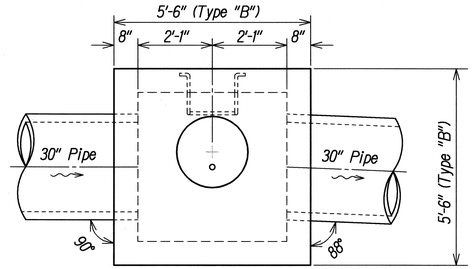
DMH-J10 (4) D1.9 | D9.8
℄ Sta. 348+40
Type C (H=6.19')
Top=265.59
Inv.=259.40



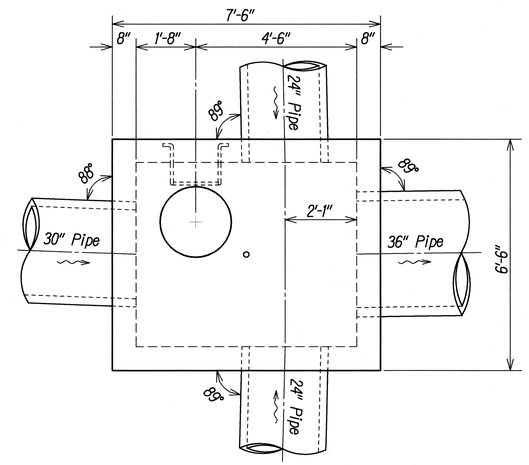
DMH-J11 (5) D1.9 | D9.8
℄ Sta. 352+35
Type C (H=6.56')
Top=256.76
Inv.=250.20



DMH-J7 (1) D1.8 | D9.8
℄ Sta. 340+65
Type B (H=6.29')
Top=283.59
Inv.=277.30



DMH-J8 (2) D1.8 | D9.8
℄ Sta. 344+50
Type B (H=6.52')
Top=275.02
Inv.=268.50



DMH-J9 (3) D1.8 | D9.8
℄ Sta. 346+40
Type H (H=7.77')
Top=270.57
Inv.=263.80 (24")
Inv.=263.30 (30")
Inv.=262.80 (36")

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE
NOTE BOOK | No.

L@Z: STATE\DOT\KAUMUALI-1\PHASE1A REVISION\PLANS\HWYs-D9.8-DMH2.dwg 5/11/09

GLENN K. IKEDA
LICENSED PROFESSIONAL ENGINEER
No. 8328-C
HAWAII, U.S.A.
5-11-09
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
ParEn, Inc.
dba PARK ENGINEERING
LICENSE EXPIRES 4-30-10

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

DRAIN STRUCTURE DIAGRAMS
DRAIN MANHOLES

KAUMUALII HIGHWAY WIDENING
Vicinity of Anonui Street to Vicinity of Lihue Mill Bridge
FEDERAL-AID PROJECT NO. NH-050-1(31)

Scale: 1/2" = 1'-0" Date: MAY 2009

SHEET No. D9.8 OF D9.8 SHEETS