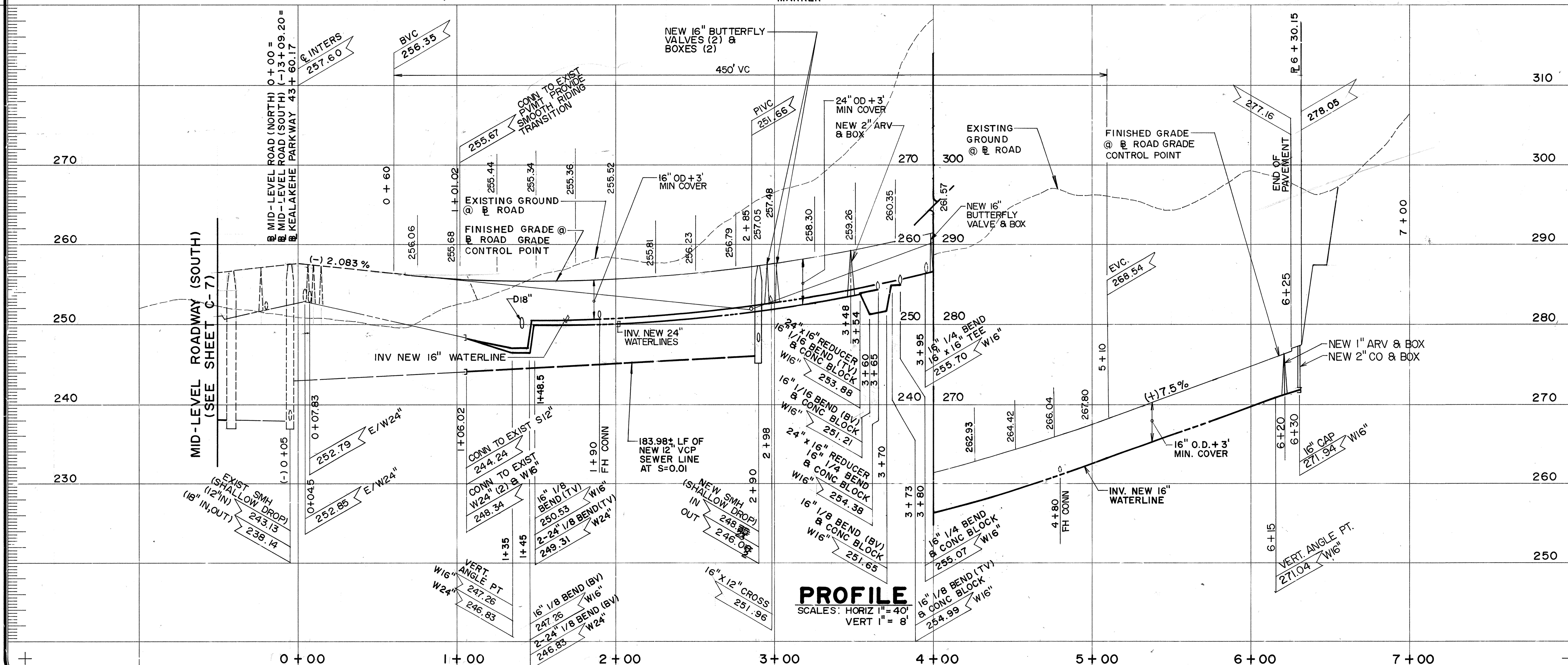
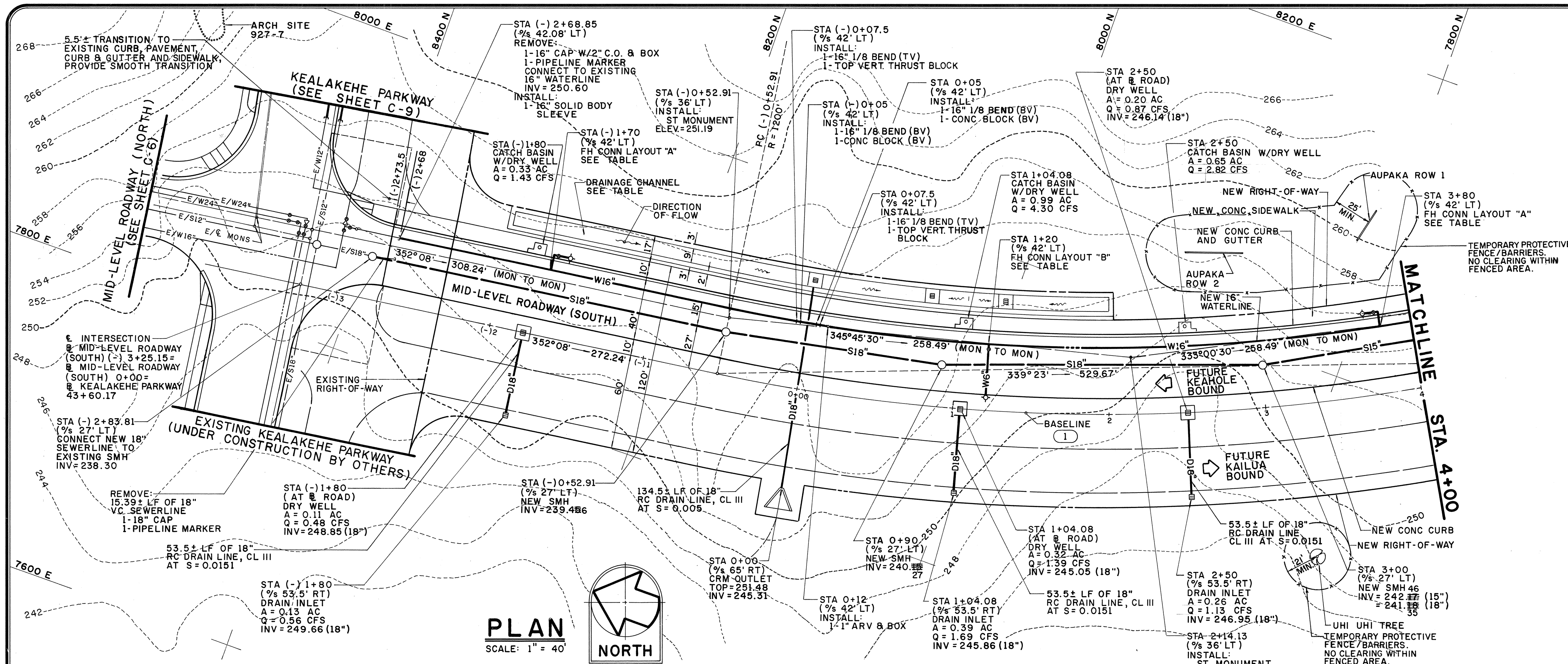


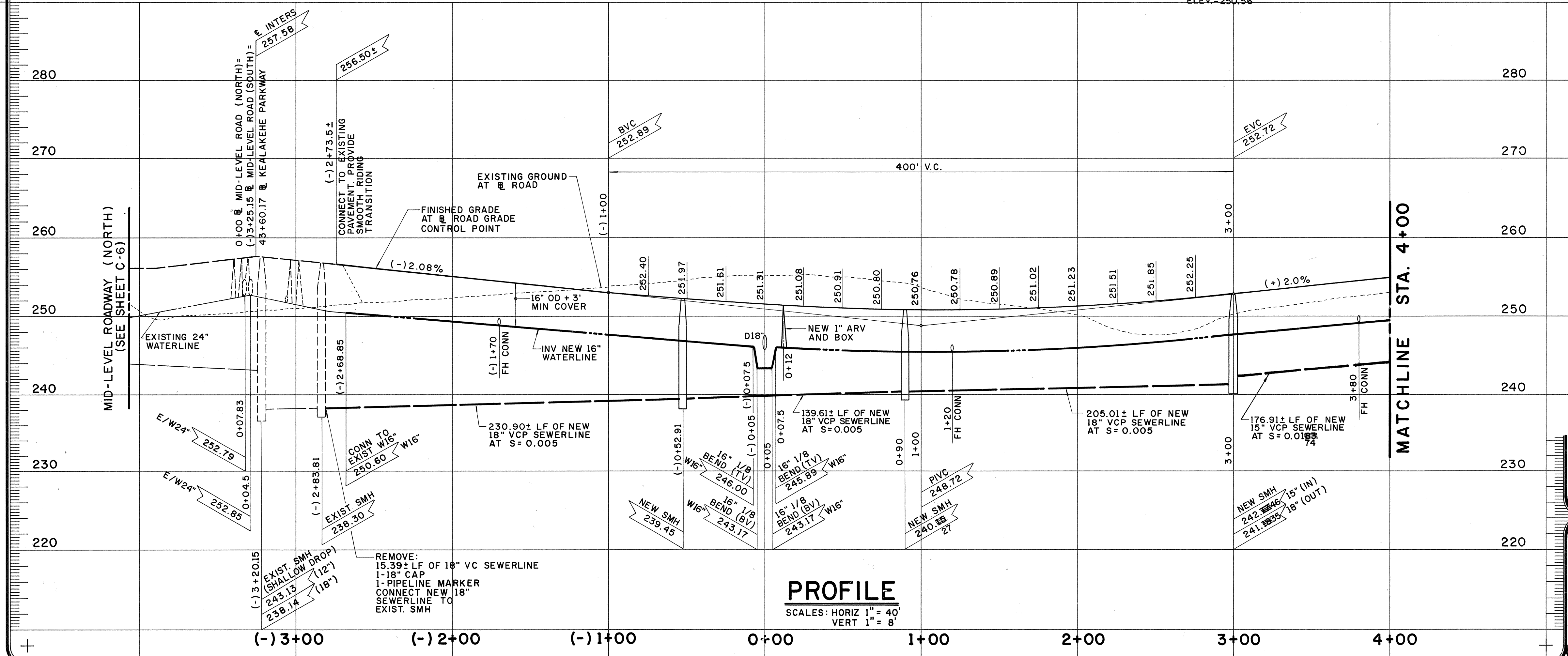
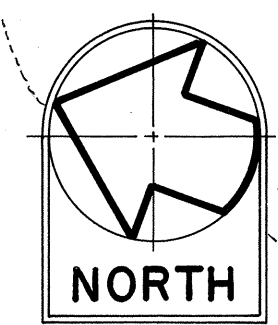
FIRE HYDRANT LATERAL TABLE	
① STA 3+95 (o/s 42' RT) INSTALL: 1-16" X 16" TEE 3-16" BUTTERFLY VALVES, 200 # 3-VALVE BOXES 1-CONC BLOCK	FH CONN LAYOUT "A" 1-16" X 6" TEE 1-6" 1/4 BEND 1-6" GATE VALVE, 200 # 1-VALVE BOX 1-FIRE HYDRANT 1-1/2" LF OF 6" DI PIPE, CL 52 3-CONC BLOCKS *17 FOR STA 1+90 20 FOR STA 4+80 2-6" RETAINER GLANDS
② FOR WATERLINES TO RESERVOIR, SEE RESERVOIR SITE PLAN SHEET CR-1	
③ STA 1+45 (o/s 15' RT) INSTALL: 1-16" 1/8 BEND (BV) 1-CONC. BLOCK (BV)	⑥ STA 1+48.5 (o/s 15' RT) INSTALL: 1-16" 1/8 BEND (TV) 1-TOP VERT. THRUST BLOCK
④ STA 1+45 (o/s 38.33' RT) INSTALL: 1-24" 1/8 BEND (BV) 1-CONC. BLOCK (BV)	⑦ STA 1+48.5 (o/s 38.33' RT) INSTALL: 1-24" 1/8 BEND (TV) 1-TOP VERT. THRUST BLOCK
⑤ STA 1+45 (o/s 42' RT) INSTALL: 1-24" 1/8 BEND (BV) 1-CONC. BLOCK (BV)	⑧ STA 1+48.5 (o/s 42' RT) INSTALL: 1-24" 1/8 BEND (TV) 1-TOP VERT. THRUST BLOCK
⑨ STA 2+98 (o/s 25' RT) INSTALL: 1-1" ARV & BOX	
⑩ STA 2+98 (o/s 30' RT) INSTALL: 1-12" 1/8 BEND (TV) 1-TOP VERT. THRUST BLOCK INV=252.13	
⑪ STA 2+98 (o/s 33' RT) INSTALL: 1-12" 1/8 BEND (BV) 1-CONC. BLOCK (BV) INV=248.85	
⑫ STA 2+98 (o/s 47' RT) INSTALL: 1-12" 1/8 BEND (BV) 1-CONC. BLOCK (BV) INV=248.85	
⑬ STA 2+98 (o/s 50' RT) INSTALL: 1-12" 1/8 BEND (TV) 1-TOP VERT. THRUST BLOCK INV=252.13	
NOTES:	
1. FOR LAYOUT OF PAVEMENT MARKINGS AND STRIPING SEE SIGNING AND STRIPING PLANS, SHEETS C-31 AND C-32	
2. FOR CATCH BASIN DETAILS, SEE SHEET C-27.	
3. SEE RESERVOIR SITE PLAN, SHEET CR-1 FOR WATERLINES TO RESERVOIR, ACCESS DRIVE & FENCING AROUND RESERVOIR.	
4. FOR DRAIN INLET DETAILS, SEE SHEET C-28	
5. FOR DRY WELL DETAILS, SEE SHEET C-27 AND C-28	
6. FOR DRAINAGE CHANNEL DETAILS, SEE SHEET C-28	
7. FOR CRM OUTLET DETAILS, SEE SHEET C-29.	
HYDROLOGIC DATA	
1 HR RAINFALL = 2.5" (TM = 10 YR)	
TC = 5 MIN	
I = 6.2	
C = 0.70	
Q = (0.70) X (6.2) = 4.34	
Q = (4.34 X A) CFS	



DRAINAGE CHANNEL DRYWELL TABLE	
STATION	OFFSET
1 + 40	69.5' RT. INV. = 250.53 (118")
1 + 80	69.5' RT.
2 + 00	69.5' RT.
2 + 20	69.5' RT.
2 + 40	69.5' RT.
2 + 60	69.5' RT.
3 + 20	69.5' RT.
3 + 40	69.5' RT.
5 + 97.5	69.5' RT.
DRAINAGE CHANNEL TABLE	
STATION	DEPTH
FROM 1+35.5 TO 3+55	1.50 FT.
PROJECT NO. 190A-02-92	
Belt Collins & Associates	
Engineering • Planning • Landscape Architecture	
680 Ala Moana Boulevard Suite 200 Honolulu, Hawaii 96813	
Phone: (808) 521-5361 Telex: BELTH 7430474 Fax: (808) 538-7819	
Client: HOUSING FINANCE AND DEVELOPMENT CORPORATION STATE OF HAWAII	
VILLAGES OF LA'I OPUA BACKBONE INFRASTRUCTURE PHASE-2A	
PLAN AND PROFILE MID-LEVEL ROADWAY (NORTH) STA 0+00 TO STA 6+30.15	
Designed by: Date: NOV 1993	
Drawn by: MFODC, RCD Proj. no.: (BCA) 841.0104	
Approved: Date: Date:	
CERYL M. PALISH REGISTERED PROFESSIONAL ENGINEER No. 5952-C HAWAII, U.S.A.	



PLAN
SCALE: 1" = 40'



PROFILE
SCALES: HORIZ 1" = 40'
VERT 1" = 8'

FIRE HYDRANT LATERAL TABLE		
FH CONN LAYOUT "A"		FH CONN LAYOUT "B"
1- 16" x 6" TEE		1- 16" x 6" TEE
1- 6" 1/4 BEND		1- 6" GATE VALVE, 200#
1- 6" GATE VALVE, 200#		1- VALVE BOX
1- VALVE BOX		1- FIRE HYDRANT
1- FIRE HYDRANT		345' LF OF 6" DI PIPE
20± LF OF 6" DI PIPE CL 52		CL 52
3- CONC BLOCKS		2- CONC BLOCKS
2- 6" RETAINER GLANDS		

HYDROLOGIC DATA	
1 @ CURVE DATA	
Δ = 25° 30' 00"	1 HR RAINFALL = 2.5" (TM = 10 YR)
Δ/2 = 12° 45' 00"	TC = 5' MIN.
R = 1200.00'	I = 6.2
T = 271.53'	C = 0.70
Ch = 529.67'	CI = (0.70) x (6.2) = 4.34
Lc = 534.07'	Q = (4.34 x A) CFS

- NOTES:**
- FOR LAYOUT OF PAVEMENT MARKINGS AND STRIPING SEE SIGNING AND STRIPING PLANS SHTS. C-31 AND C-32
 - FOR CATCH BASIN DETAILS, SEE SHEET C-27.
 - FOR DRAIN INLET DETAILS, SEE SHT. C-28.
 - FOR DRYWELL DETAILS, SEE SHT. C-27 AND C-28.
 - FOR DRAINAGE CHANNEL DETAIL, SEE SHT. C-28.
 - FOR CRM OUTLET DETAILS, SEE SHEET C-29.

DRAINAGE CHANNEL DRYWELL TABLE		
STATION	OFFSET	
0+00	69.5' LT	INV = 245.98 (18")
0+80	69.5' LT	
1+30	69.5' LT	

DRAINAGE CHANNEL TABLE		
STATION FROM	TO	DEPTH (FEET)
(-) 2+00	0+80	1.50'
0+80	1+04.08	VARIES
1+04.08	1+04.08	1.00
1+04.08	1+30	VARIES
1+30	2+00	1.50

PROJECT NO. 190A-02-92

BELT COLLINS & ASSOCIATES
Engineering • Planning • Landscape Architecture
680 Ala Moana Boulevard, Suite 200, Honolulu, Hawaii 96813
Phone: (808) 521-5361 Telex: BELTH 7430474 Fax: (808) 538-7919

Client:
HOUSING FINANCE AND DEVELOPMENT CORPORATION
STATE OF HAWAII

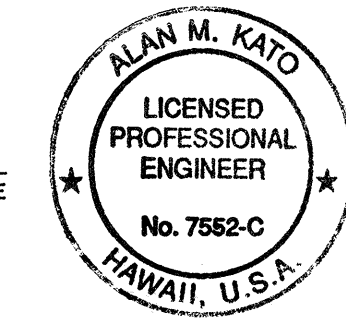
VILLAGES OF LA'I OPUA
BACKBONE INFRASTRUCTURE PHASE-2A
PLAN AND PROFILE
MID-LEVEL ROADWAY (SOUTH)
STA (-) 2+73.5± TO STA 4+00

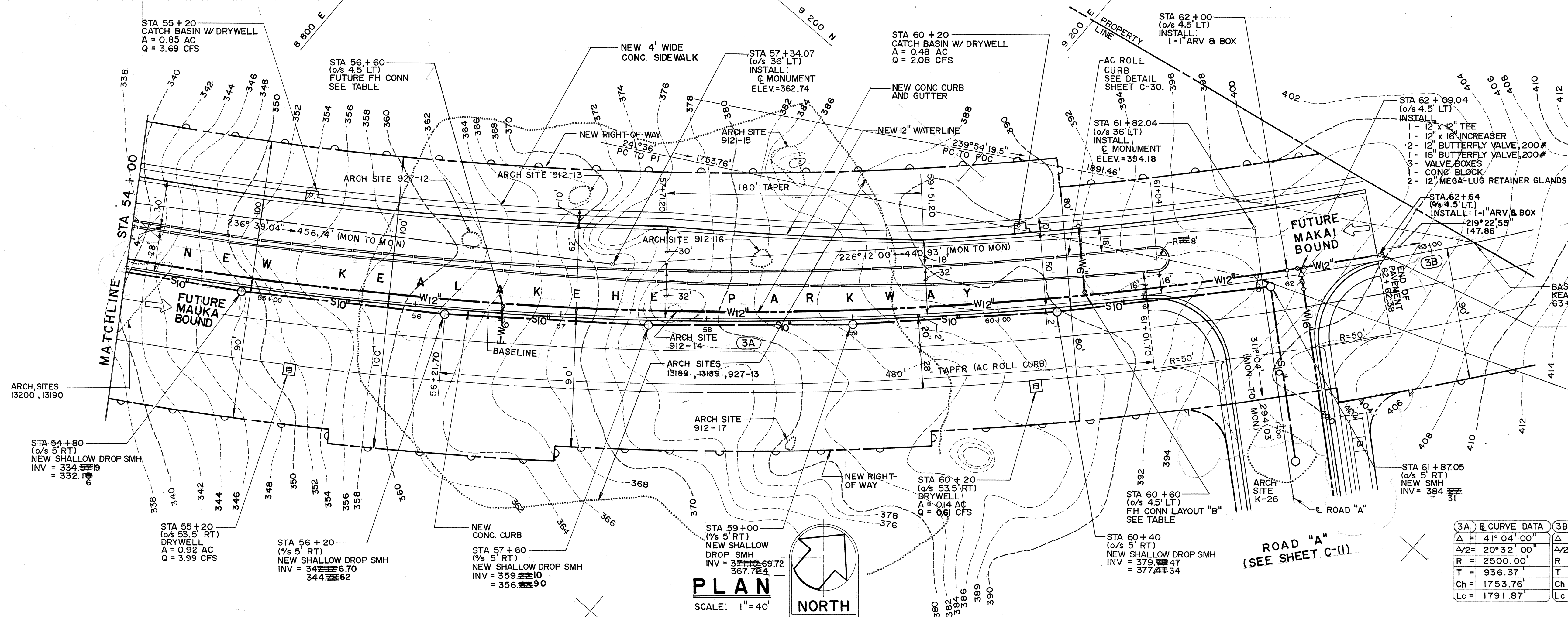
Designed by: A.K./C.E. Date: NOV. 1993
Drawn by: R.B. Proj. no.: (BCA) 841.0104

Approved: _____
Date _____

Rev	Date	Description	Eng	App
1	2/15/94	ADDED RETAINER GLANDS PER D.W.S.	AK	

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.





FIRE HYDRANT LATERAL TABLE

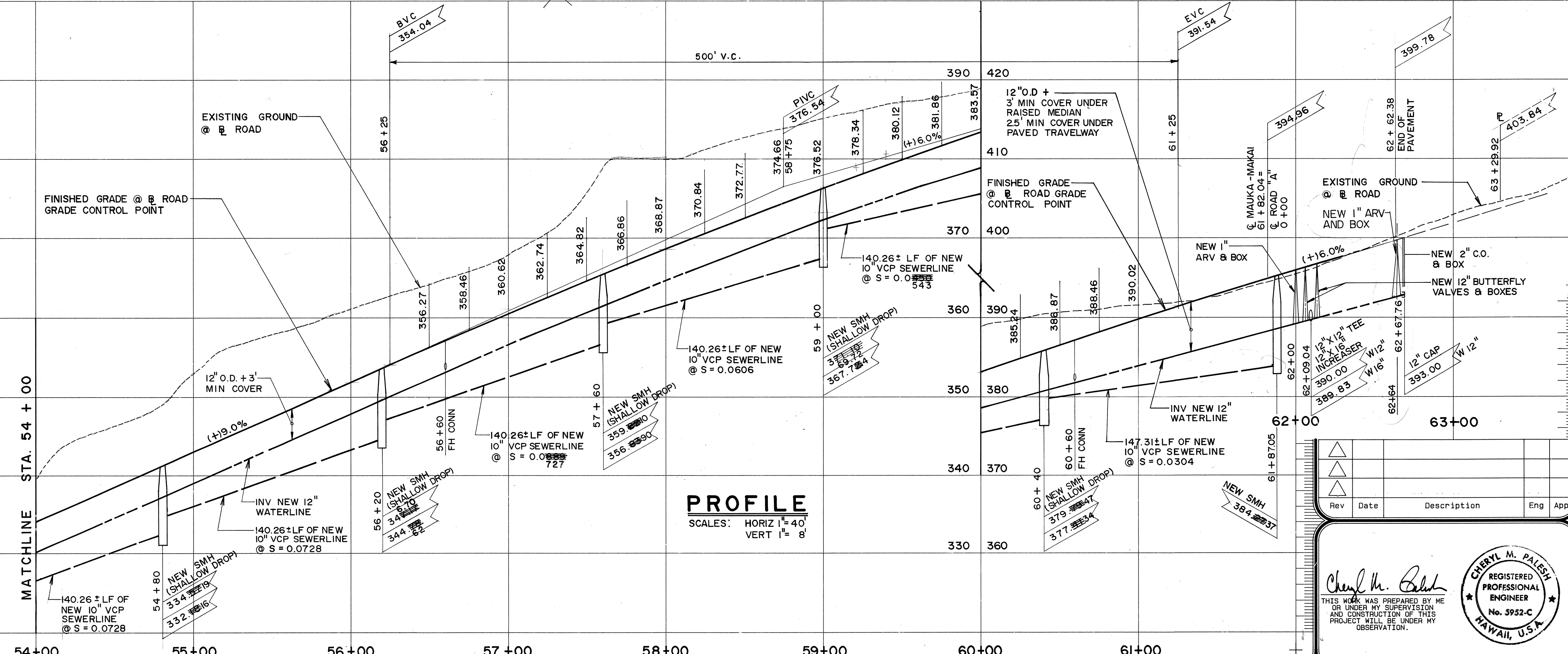
FUTURE FH CONN	FH CONN LAYOUT "B"
1-12" x 6" TEE	1-12" x 6" TEE
1-6" GATE VALVE, 200#	1-6" GATE VALVE, 200#
1- VALVE BOX	1- VALVE BOX
26.5± LF OF 6" D.I. PIPE	1- FIRE HYDRANT
CL 52	47.5± LF OF 6" D.I. PIPE
1- 6" CAP	CL 52
1- PIPELINE MARKER	2- CONC BLOCKS
2- CONC BLOCKS	2- 6" RETAINER GLANDS

- NOTES:**
- FOR LAYOUT OF PAVEMENT MARKINGS AND STRIPING SEE SIGNING AND STRIPING PLANS, SHEETS C-31 AND C-32.
 - FOR CATCH BASIN DETAILS SEE SHEET C-27.
 - FOR DRYWELL DETAILS SEE SHEETS C-27 AND C-28.

HYDROLOGIC DATA

1 HR. RAINFALL = 2.5" (TM=10 YR)
TC = 5 MIN
I = 5.2
C = 0.70
C₁ = (0.70)(6.2) = 4.34
Q = (4.34 X A) CFS

3A) @ CURVE DATA	3B) @ CURVE DATA
Δ = 41° 04' 00"	Δ = 3° 23' 21"
Δ/2 = 20° 32' 00"	Δ/2 = 1° 41' 40.5"
R = 2500.00'	R = 2500.00'
T = 936.37'	T = 73.96'
Ch = 1753.76'	Ch = 147.86'
Lc = 1791.87'	Lc = 147.86'



BELT COLLINS & ASSOCIATES
Engineering • Planning • Landscape Architecture
680 Ala Moana Boulevard Suite 200 Honolulu, Hawaii 96813
Phone: (808) 521-5361 Telex: BELTH 7430474 Fax: (808) 538-7819

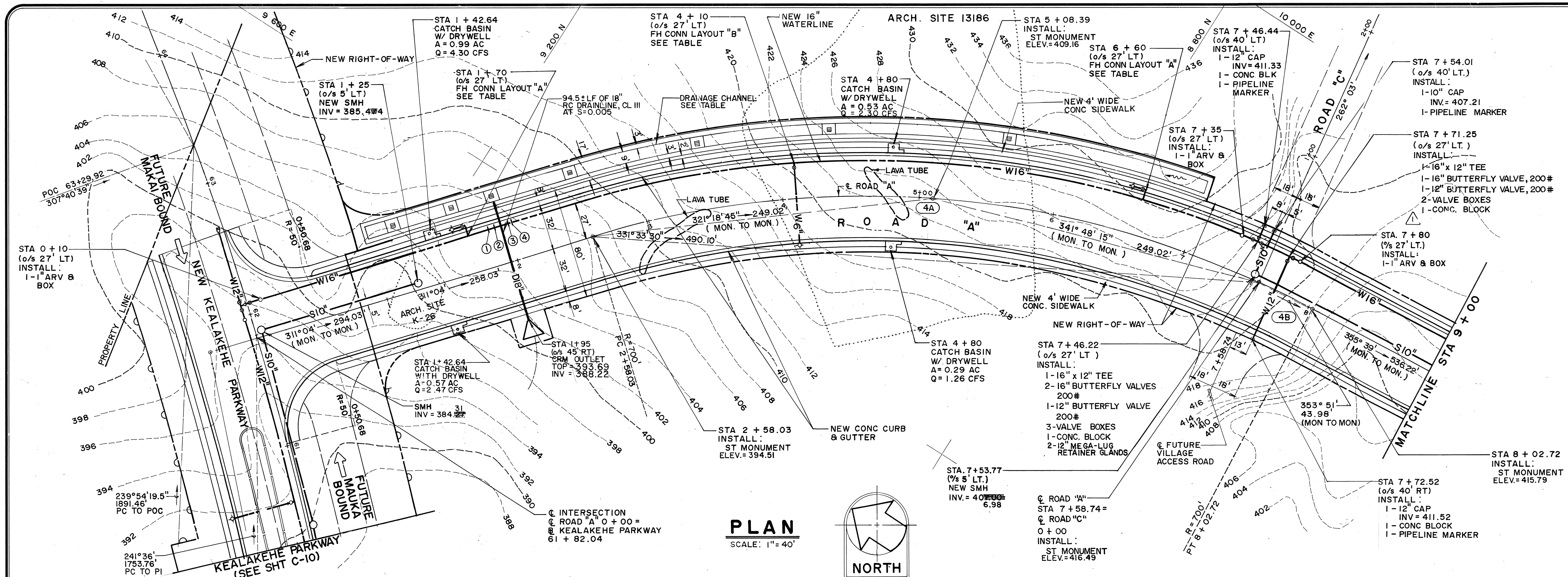
Client: **HOUSING FINANCE AND DEVELOPMENT CORPORATION**
STATE OF HAWAII

VILLAGES OF LA'I OPUA
BACKBONE INFRASTRUCTURE PHASE-2A

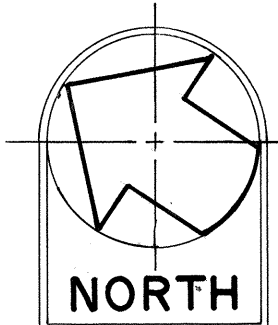
PLAN AND PROFILE
KEALAKEHE PARKWAY
STA. 54+00 TO 62+62.38

Designed by: A.K. Date: NOV. 1993
Drawn by: AOA Proj. no.: (BCA) 841.0104
Approved: _____

CHERYL M. PALESKY
REGISTERED PROFESSIONAL ENGINEER
No. 3952-C
HAWAII, U.S.A.



PLAN
SCALE: 1"=40'



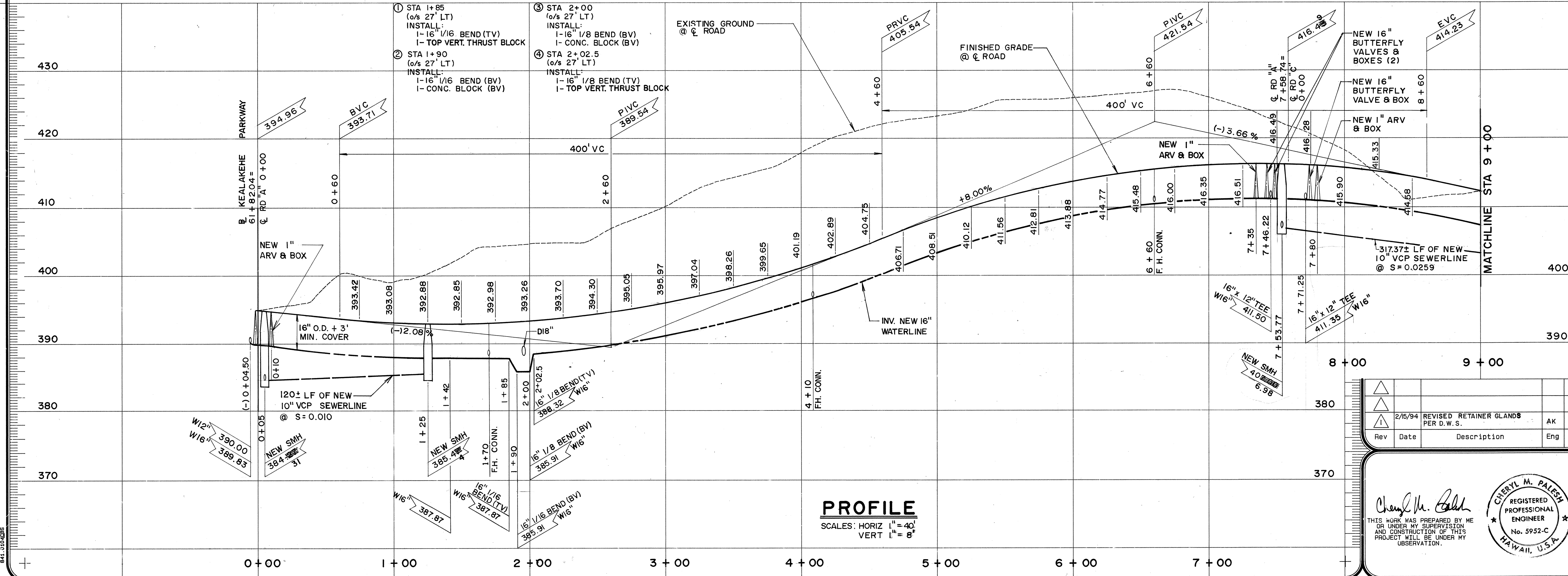
FIRE HYDRANT LATERAL TABLE	
FH CONN. LAYOUT "A"	FH CONN. LAYOUT "B"
1-16" x 6" TEE	1-16" x 6" TEE
1-6" 1/4 BEND	1-6" GATE VALVE 200#
1-6" GATE VALVE 200#	1-VALVE BOX
1-VALVE BOX	1-FIRE HYDRANT
1-FIRE HYDRANT	61' LF OF 6" D.I. PIPE
17' LF OF 6" D.I. PIPE	CL 52
3-CONC. BLOCKS	2-CONC. BLOCKS
2-6" RETAINER GLANDS	

(4A) C CURVE DATA		(4B) C CURVE DATA	
Δ = 40°59'00"	Δ/2 = 20°29'30"	Δ = 3°36'00"	Δ/2 = 1°48'00"
R = 700.00'	T = 261.60'	R = 700.00'	T = 22.00'
Ch = 490.10'	Lc = 500.71'	Ch = 43.98'	Lc = 43.98'

- NOTES:
- FOR LAYOUT OF PAVEMENT MARKINGS AND STRIPING SEE SIGNING AND STRIPING PLAN, SHEET C-31 AND C-32
 - FOR CATCH BASIN DETAILS SEE SHEET C-27
 - FOR DRAINAGE CHANNEL DETAILS, SEE SHEET C-28
 - FOR CRM OUTLET DETAILS, SEE SHEET C-29

DRAINAGE CHANNEL TABLE		
STATION	DEPTH	
FROM	TO	(FEET)
1+00	7+00	1.50

HYDROLOGIC DATA	
1 HR. RAINFALL = 2.5" (TM=10 YR.)	
TC = 5 MIN.	
I = 6.2	
C = 0.70	
CI = (0.70) x (6.2) = 4.34	
Q = (4.34 x A) CFS	



PROFILE
SCALE: HORIZ 1"=40'
VERT 1"=8'

DRAINAGE CHANNEL DRYWELL TABLE		
STATION	OFFSET	
1+20	49.5' LT	
1+65	49.5' LT	
1+95	49.5' LT	
2+55	49.5' LT	INV=388.69 (16')
3+45	49.5' LT	
4+35	49.5' LT	
5+60	49.5' LT	

PROJECT NO. 190A-02-92

BELT COLLINS & ASSOCIATES
Engineering • Planning • Landscape Architecture
580 Ala Moana Boulevard, Suite 200, Honolulu, Hawaii 96813
Phone: (808) 521-5361 Telex: BELTH 7430474 Fax: (808) 538-7819

Client:
HOUSING FINANCE AND DEVELOPMENT CORPORATION
STATE OF HAWAII

VILLAGES OF LA'I OPUA
BACKBONE INFRASTRUCTURE PHASE-2A

PLAN AND PROFILE ROAD "A"
STA 0+00 TO STA 9+00

Designed by: A.K. Date: NOV 1993
Drawn by: R.C.D. Proj. no.: (BCA) 841.0104

Approved: _____
Date: _____

Rev Date Description Eng App

2/15/94	REVISED RETAINER GLANDS PER D.W.S.	AK	
---------	------------------------------------	----	--

Cheryl M. Paley
REGISTERED PROFESSIONAL ENGINEER
No. 5952-C
HAWAII, U.S.A.