

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H-1(102)8	1973	20	38

CONTROLLER	START TIME	DAY START	7:00 PM		8:00 PM		9:00 PM		10:00 PM		11:00 PM		12:00 AM		1:00 AM		2:00 AM															
A	7:00 PM	SUNDAY TUESDAY THURSDAY	I3F1 44/45		I3F4 44/45		I3F2 388/45		I7H2 104/60 I7C3 114/60		I3D2 186/35		NO VALVE 0/15 I4A1 109/5		IAB2 20/25		IAB3 237/25		IACC 146/25 IABA 141/25		IAB5 218/30		IAAE 102/60									
B	8:37 PM	SUNDAY TUESDAY THURSDAY					I3A2 70/35		I3A1 109/35		I3A4 109/25 I3B1 78/25		I3B2 112/60		IAC2 59/60		IACC 146/30		ICCI 139/30													
C	7:10 PM	SUNDAY TUESDAY THURSDAY	I1A1 67/10		I3C3 78/25		I1A4 15/10		I3C2 17/35		I3D3 33/10 I3C1 94/10		I1D1 4/25		I1A5 12/35 I3D1 140/25 I1D2 44/25		I3A3 122/60		I3A5 167/5		I3E1 98/35		I3E2 99/60		I3E3 90/35		I3E4 44/35		I3E5 39/10		I1A3 78/50	
D	8:24 PM	SUNDAY TUESDAY THURSDAY							I7H3 14/30		I7H1 19/35		NO VALVE 0/60		IACA 59/35		IAC1 62/30		IAC3 69/30				ISF1 162/60									

CONTROLLER A CONT.
CONTROLLER B CONT.
CONTROLLER C CONT.
CONTROLLER D CONT.

1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM
I3A2	I3G1 54/25	I7H1 44/30	I7C2 72/60	I7D3 239/60	I3F3 107/30
	I3C1	I7A1 168/60	I7B1 13/25	I3D1 264/25	I7D4 29/35
	I1A3	I1A2 214/60	I1D3 260/15		I3E1 307/60
I3F1	I3F2 104/60	I7C1 32/35	I7D1 48/10	I7D2 60/35	I7D5 62/10 I7D6 30/10

NOTES:
• HYDRAULIC SYSTEM IS DESIGNED FOR A MAX FLOW OF 550 GPM AT ANY PERIOD OF TIME. IN ADDITION, CERTAIN BANKS MAY NOT BE OPERATED SIMULTANEOUSLY BECAUSE OF FRICTION LOSSES. THIS SCHEDULE WAS PREPARED ON THE BASIS OF THIS CRITERIA.
• STATIONS SHALL NOT BE CHANGED AS TO DURATION, SEQUENCE, OR CONTROLLER WITHOUT A FULL ANALYSIS OF THE EFFECT SUCH CHANGES WILL HAVE ON THE OVERALL HYDRAULIC SYSTEM.
• CONTROLLER STARTING TIMES SHALL BE SIMILARLY ADHERED TO.
• A ONE MINUTE LAG HAS BEEN PROVIDED BY THE SCHEDULE BETWEEN THE END OF OPERATION OF ANY VALVE AND THE START OF THE NEXT.
• CERTAIN STATION TIMERS ARE DESIGNATED "NO VALVE". VALVES SHALL NOT BE WIRED TO THESE STATIONS. HOWEVER THE ELAPSED TIME INDICATED SHALL BE SET, AND THE STATION SHALL

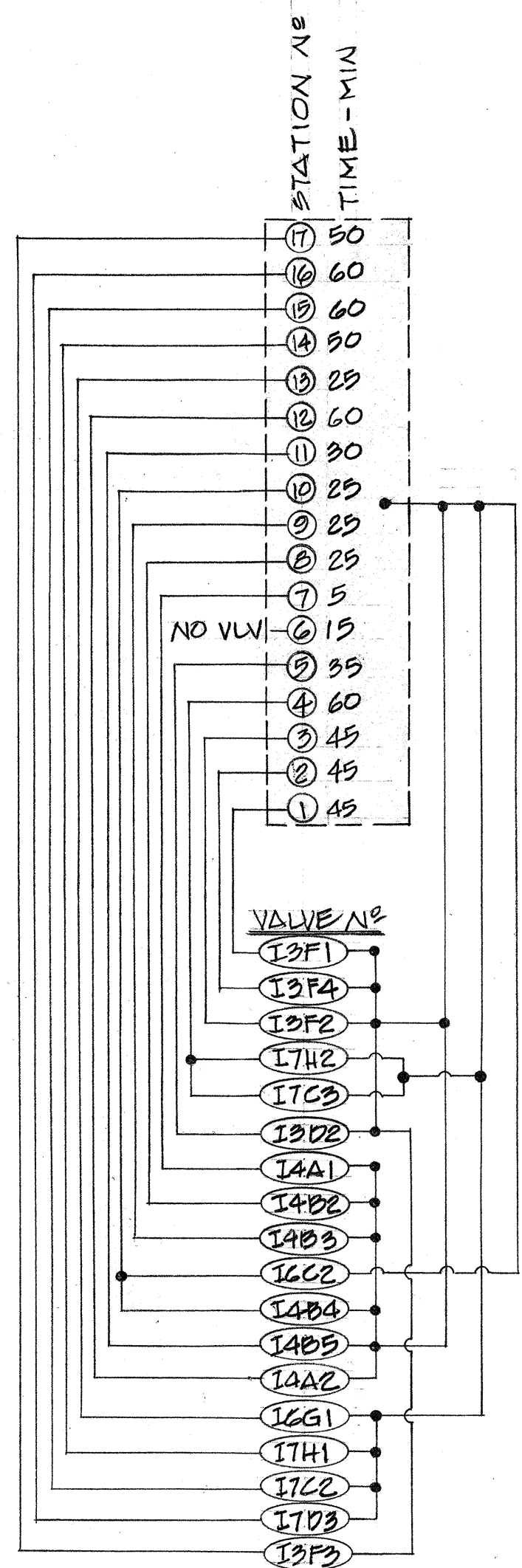
HIGH PRESSURE
"SYSTEM"
IRRIGATION
SCHEDULE

HORIZ SCALE: 1 HOUR = 3"
BE RUN IN SEQUENCE AS SHOWN
IN THE IRRIGATION SEQUENCE.

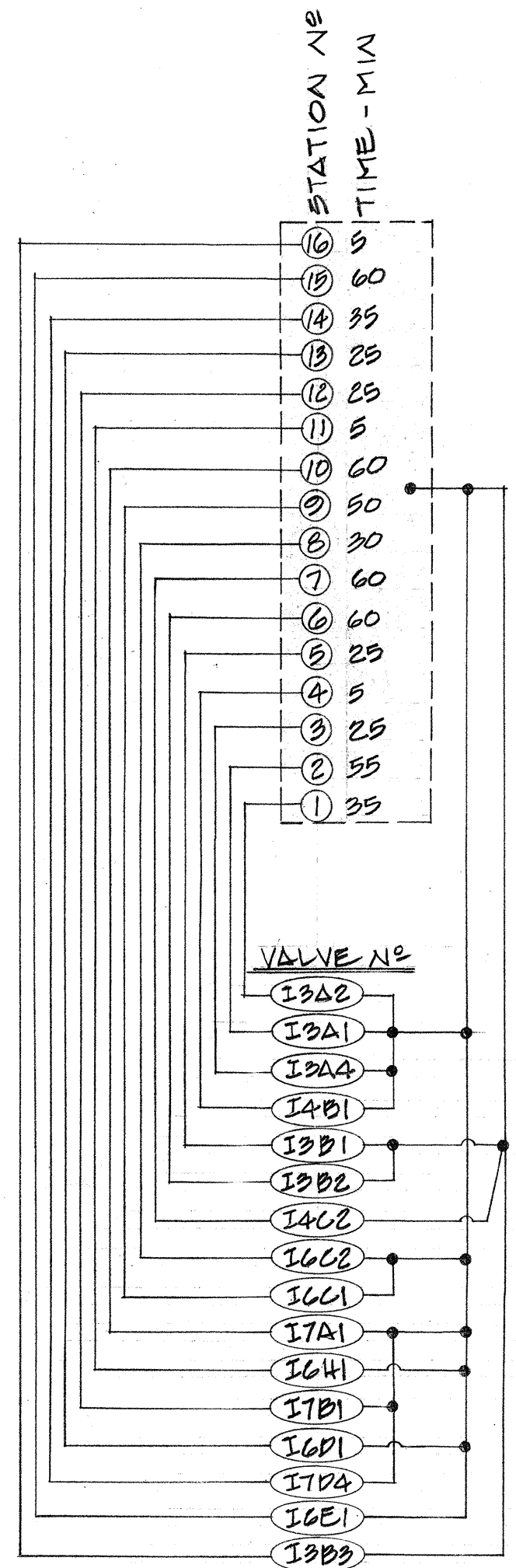
LEGEND

SYMBOL	DESCRIPTION
I3E1 307/60	VALVE NUMBER Q-GPM STATION TIME IN MINUTES
⑩ 5	AUTOMATIC CONTROLLER
⑦ 60	STATION TIME IN MINUTES
⑩ 25	STATION TIMER & NUMBER
I3E1	AUTOMATIC VALVE
— — —	SIGNAL RECORDER (9HT22)

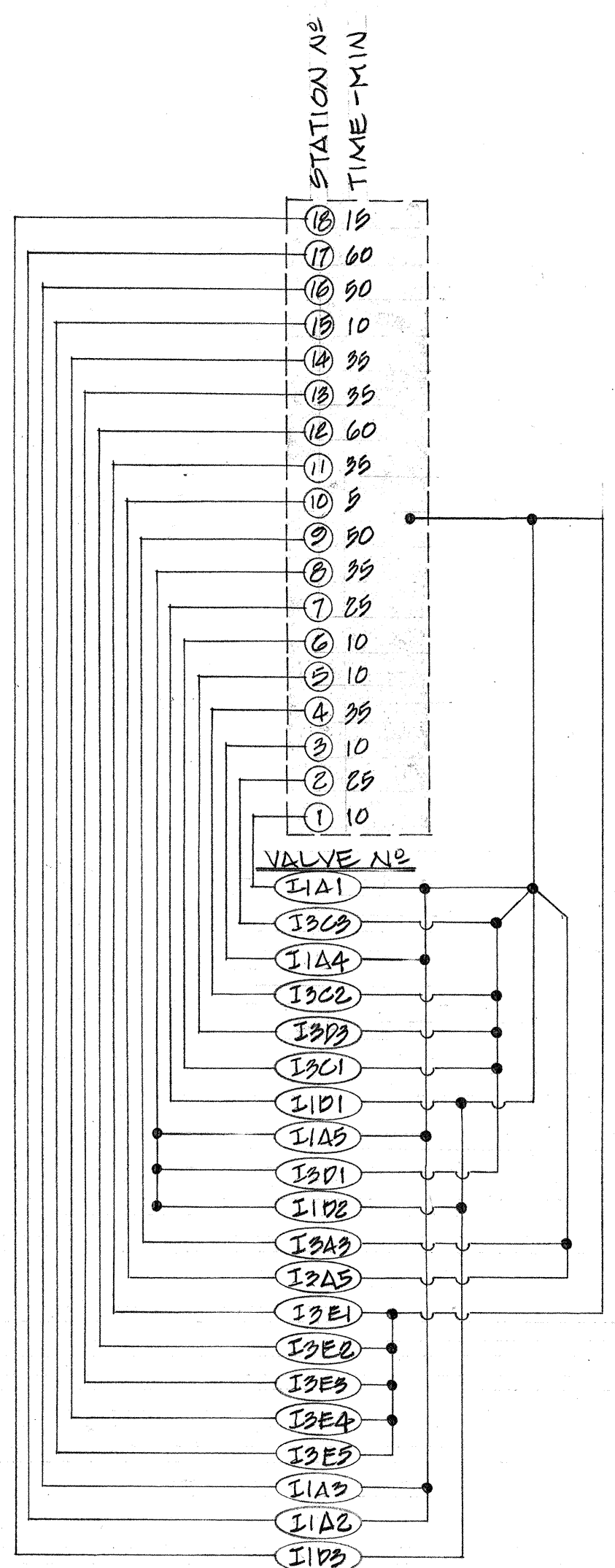
DELETE THIS SHEET SEE
SHEET NO. 20S-1 THRU 20S-5



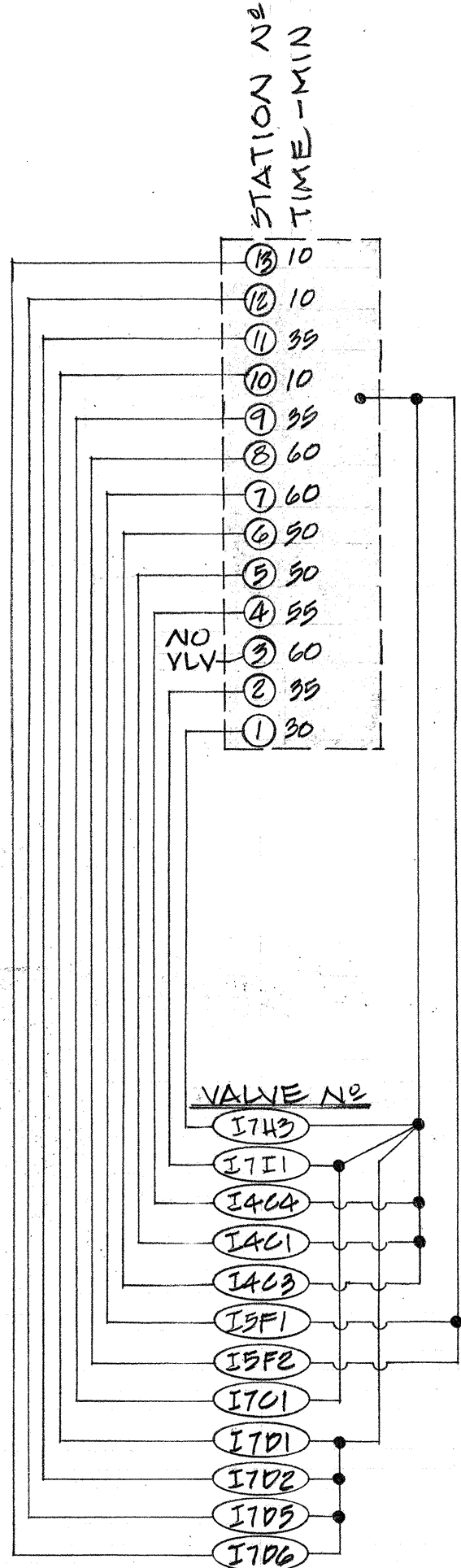
CONTROL DIAGRAM
CONTROLLER A
(TYPE A)



CONTROL DIAGRAM
CONTROLLER B
(TYPE A)



CONTROL DIAGRAM
CONTROLLER C
(TYPE A)



CONTROL DIAGRAM
CONTROLLER D
(TYPE A)

PHILIP K. H. YEE & ASSOCIATES
CONSULTING ENGINEERS
243 Liliuokalani Ave., Rm. 101
Honolulu, Hawaii 96815

REGISTERED PROFESSIONAL ENGINEER
No. 2624-B
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.

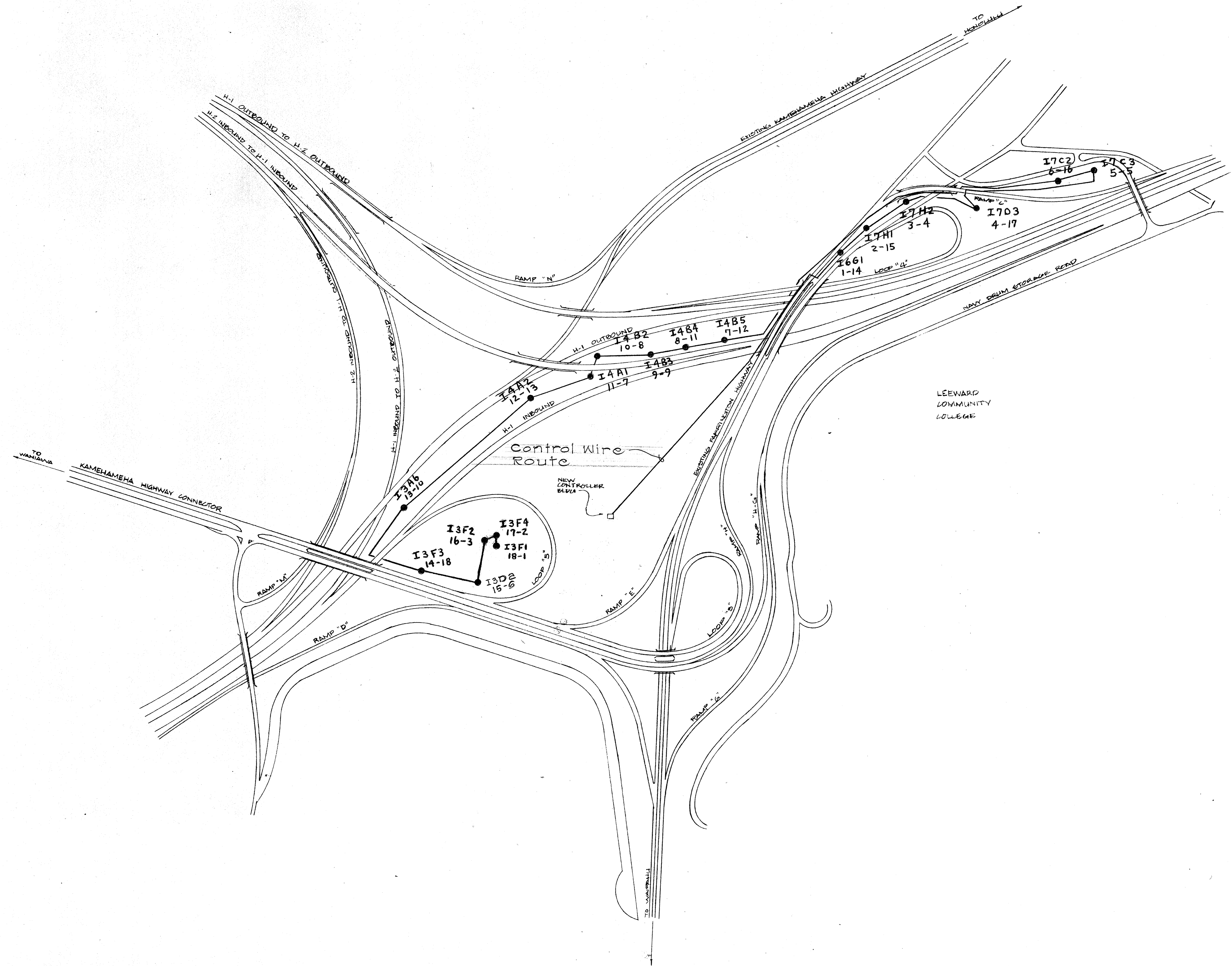
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAI'AWA INTERCHANGE
WATER SPRINKLER SYSTEM
PROJ # I-H-1(102)8

IRRIGATION SCHEDULE &
CONTROL DIAGRAMS
HIGH PRESSURE SYSTEM

DATE
DRAWN BY
CHECKED BY
DESIGNED BY
NOTED BY
QUANTITIES BY
REVISIONS BY

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.				



CONTROLLER - A
 START TIME: 8:00 AM
 DAYS RUN: MONDAY, TUESDAY, WEDNESDAY, THURSDAY

IDENTI.	VALVE NO.	STATION NO.	TIME (MIN)
I6G1	1	14	15
I7H1	2	15	25
I7H2	3	4	30
I7D3	4	17	30
I7C3	5	5	30
I7C2	6	16	30
I4B5	7	12	15
I4B4	8	11	15
I4B3	9	9	15
I4B2	10	8	5
I4A1	11	7	10
I4A2	12	13	30
I3A6	13	10	15
I3F3	14	18	25
I3D2	15	6	20
I3F2	16	3	25
I3F4	17	2	25
I3F1	18	1	25

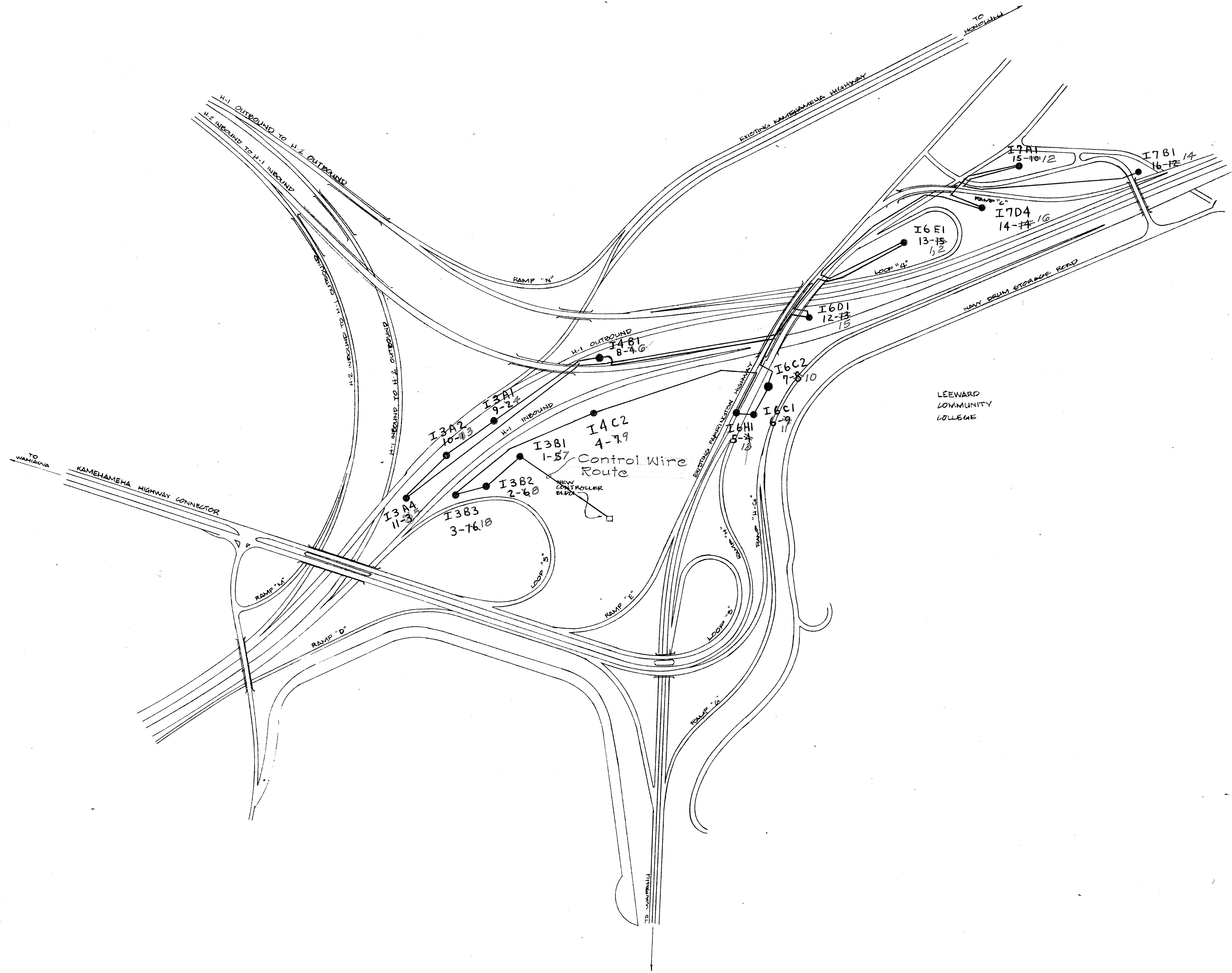
Legend
 I3F1 ← Valve Identifier
 ① ← Station Number
 1 ← Valve Number

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Waiawa Interchange
Control Wire Route location for
"A" Controller
Proj No. I-HI-1(102):8

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.				



CONTROLLER B
 START TIME: 7:00 AM
 DAYS RUN: TUESDAY, THURSDAY, FRIDAY

IDENTI.	VALVE NO.	STATION NO.	TIME (MIN)
I3B1	1	7	15
I3B2	2	8	30
I3B3	3	18	5
I4C2	4	9	30
I6H1	5	13	5
I6C1	6	11	15
I6C2	7	10	30
I4B1	8	6	5
I3A1	9	4	30
I3A2	10	3	20
I3A4	11	5	15
I6D1	12	15	15
I6E1	13	1,2	30,30
I7D4	14	16	20
I7A1	15	12	15
I7B1	16	14	15

Legend

I4C2 ← Valve Identifier
 ④⑦ ← Station Number
 1 ← Valve Number

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

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

Waiawa Interchange
 Control Wire Route location for
 "B" Controller
 Proj No. I-HI-1(102):8

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.				

CONTROLLER C
 START TIME: 8:30 AM
 DAYS RUN: TUESDAY, THURSDAY, FRIDAY

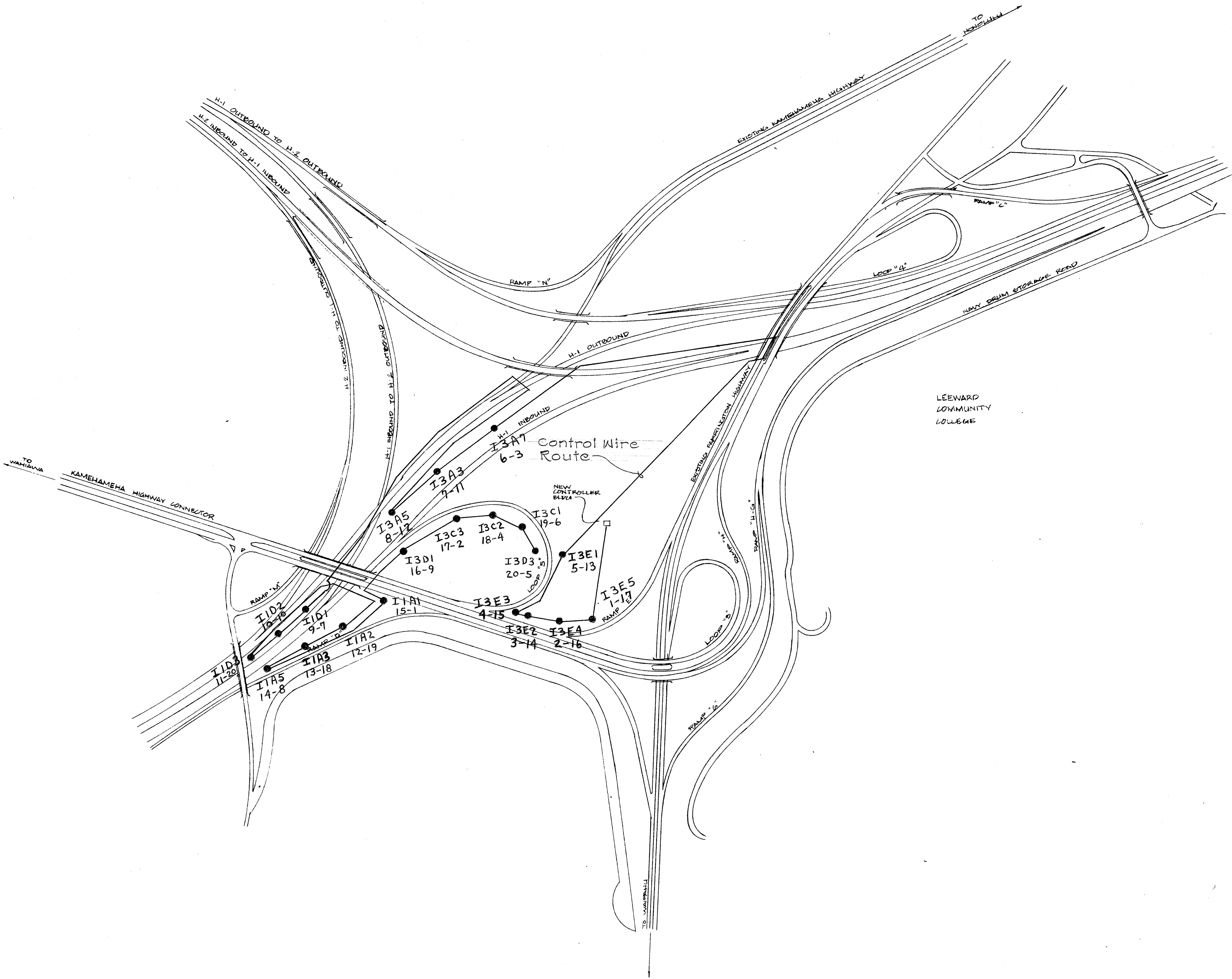
IDENTI.	VALVE NO.	STATION NO.	TIME (MIN)
I3E5	1	17	5
I3E4	2	16	20
I3E2	3	14	30
I3E3	4	15	20
I3E1	5	13	20
I3A7	6	3	5
I3A3	7	11	25
I3A5	8	12	5
I1D1	9	7	15
I1D2	10	10	20
I1D3	11	20	20
I1A2	12	19	30
I1A3	13	18	25
I1A5	14	8	20
I1A1	15	1	20
I3D1	16	2	20
I3C3	17	2	15
I3C2	18	4	20
I3C1	19	6	5
I3D3	20	5	5

Legend

I3E5 ← Valve Identifier
 ①-⑭ ← Station Number
 — Valve Number

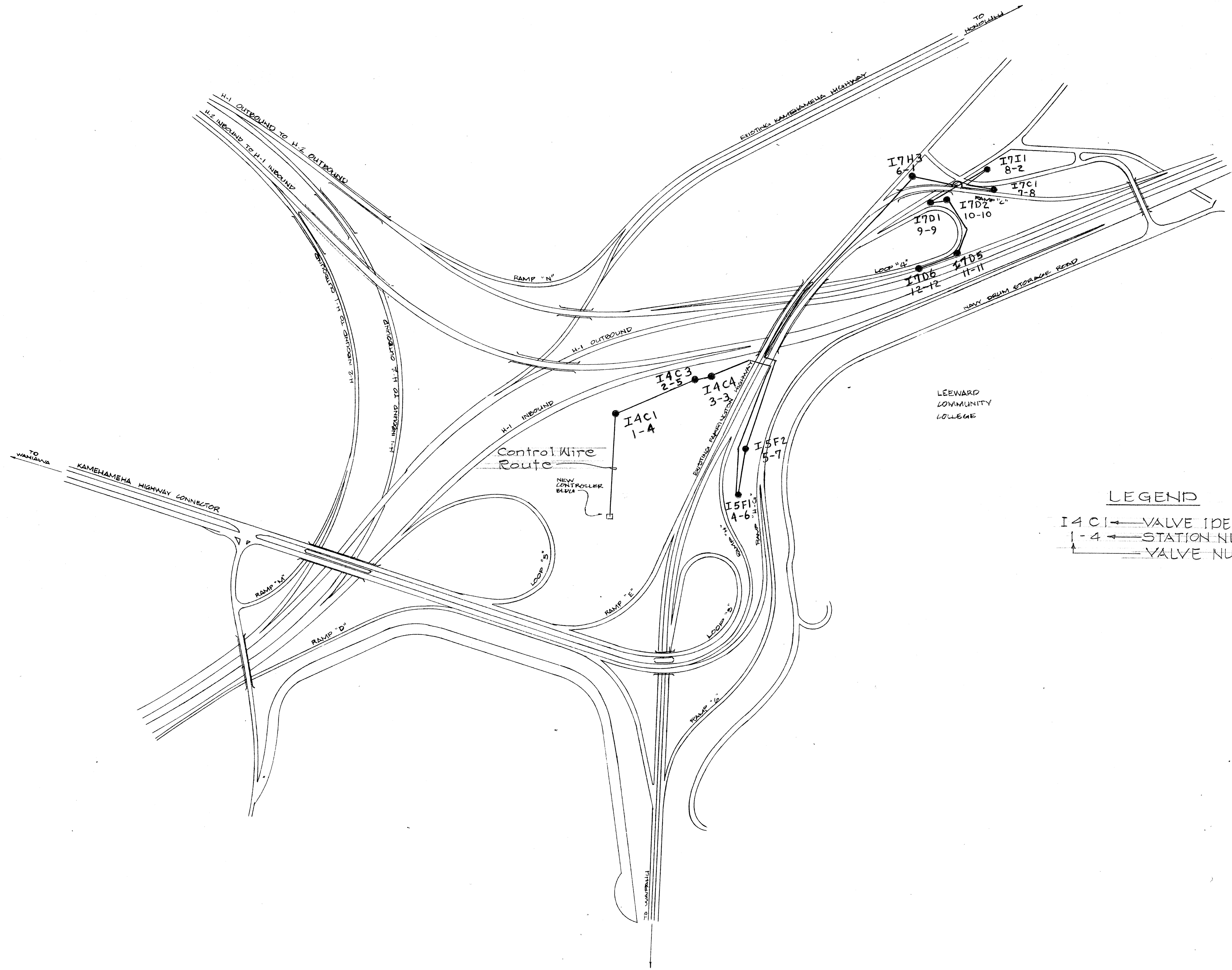
STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

Waiawa Interchange
 Control Wire Route location for
 "C" Controller
 Proj No. I-HI-1(102):8



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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.				



LEGEND

I 4 C 1 ← VALVE IDENTIFICATION

1 - 4 ← STATION NUMBER

1 ← VALVE NUMBER

CONTROLLER D

START TIME: 9:30 AM

DAYS RUN: TUESDAY, THURSDAY

MONDAY

IDENT.	VALVE NO	STATION NO	TIME (MIN)
I4C1	1	4	30
I4C3	2	5	25
I4C4	3	3	30
I5F1	4	6	25
I5F2	5	7	30
I7H3	6	1	15
I7C1	7	8	30
I7I1	8	2	20
I7D1	9	9	20
I7D2	10	10	20
I7D5	11	11	5
I7D6	12	12	5

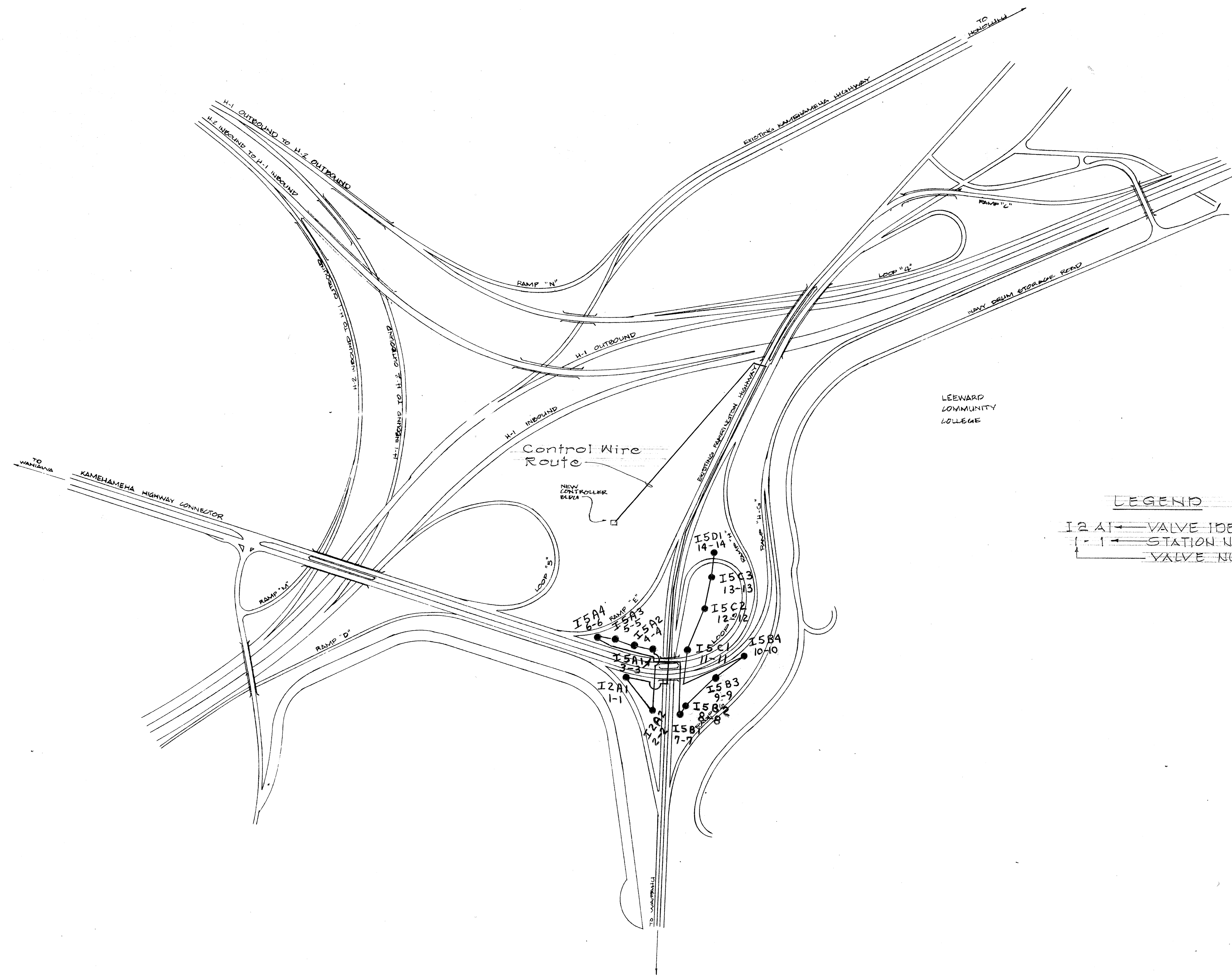
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Waiawa Interchange
Control Wire Route location for
"D" Controller

Proj No. I-HI-1(102):B

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.				



CONTROLLER E
 START TIME: 2:30 A.M.
 DAYS RUN: MONDAY, WEDNESDAY, FRIDAY

LEGEND
 I2 A1 VALVE IDENTIFICATION
 1-1 STATION NUMBER
 1 VALVE NUMBER

IDENTI.	VALVE NO.	STATION NO.	TIME (MIN)
I2A1	1	1	30
I2A2	2	2	30
I5A1	3	3	10
I5A2	4	4	30
I5A3	5	5	20
I5A4	6	6	10
I5B1	7	7	10
I5B2	8	8	30
I5B3	9	9	30
I5B4	10	10	10
I5C1	11	11	30
I5C2	12	12	30
I5C3	13	13	30
I5D1	14	14	30

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

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

Waiawa Interchange
 Control Wire Route location for
 "E" Controller
 Proj No I-HI-1(102)-B

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-HH(102)8	1973	21	38

CONTROLLER	START TIME	DAY START	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM	12:00 AM	1:00 AM	2:00 AM						
E	7:00 PM	MONDAY WEDNESDAY SATURDAY	I2A1 65/60	I2A2 146/60	I2A1 24/15	I2A2 027/60	I2A3 118/35	I2A4 42/15	I2B1 74/15	I2B2 204/60	I2B3 137/60	I2B4 97/15				
F	7:00 PM	MONDAY WEDNESDAY SATURDAY	I1B4 162/60	I2B3 147/15	I2B1 130/60	I1B2 119/60	I1B1 84/60	I1B3 96/60	I2B2 46/15	I2B3 46/60	I2B1 40/15	I2B4 45/15				
G	12:00 AM	MONDAY WEDNESDAY SATURDAY							I2B1 57/15	I2A3 63/15	I2A5 106/35	I2A4 99/35	I2A6 45/15			
H	7:00 PM	MONDAY WEDNESDAY SATURDAY	I2A5 94/35	I2B4 94/15	I2B2 80/15	I2A7 111/35	I2F1 116/35	I2F2 135/35	I2E3 132/35	I2G1 134/35	I2G2 99/35	I2E4 96/35	I2E6 96/35	I2E1 87/35	I2B1 78/15	I2F2 70/35

	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM
CONTROLLER E CONT.		I2B4 ISC1 98/60	ISC2 174/60	ISC3 198/60	ISD1 168/60	
CONTROLLER F CONT.		I2E1 I2E4 36/35	I2E3 39/35	I2C1 60/60	I2C2 98/60	
CONTROLLER G CONT.		I2A6 I2E5 39/35	I2A2 135/35	I2A1 147/35	I2G2 143/35	I2E6 34/15 I2C3 12/3 I2H 12
CONTROLLER H CONT.		I2F2 I2E3 58/35	I2B3 50/15			I2C3 12/3 I2H 12

LOW PRESSURE SYSTEM
IRRIGATION SCHEDULE

HORIZ. SCALE: 1 HOUR = 3"

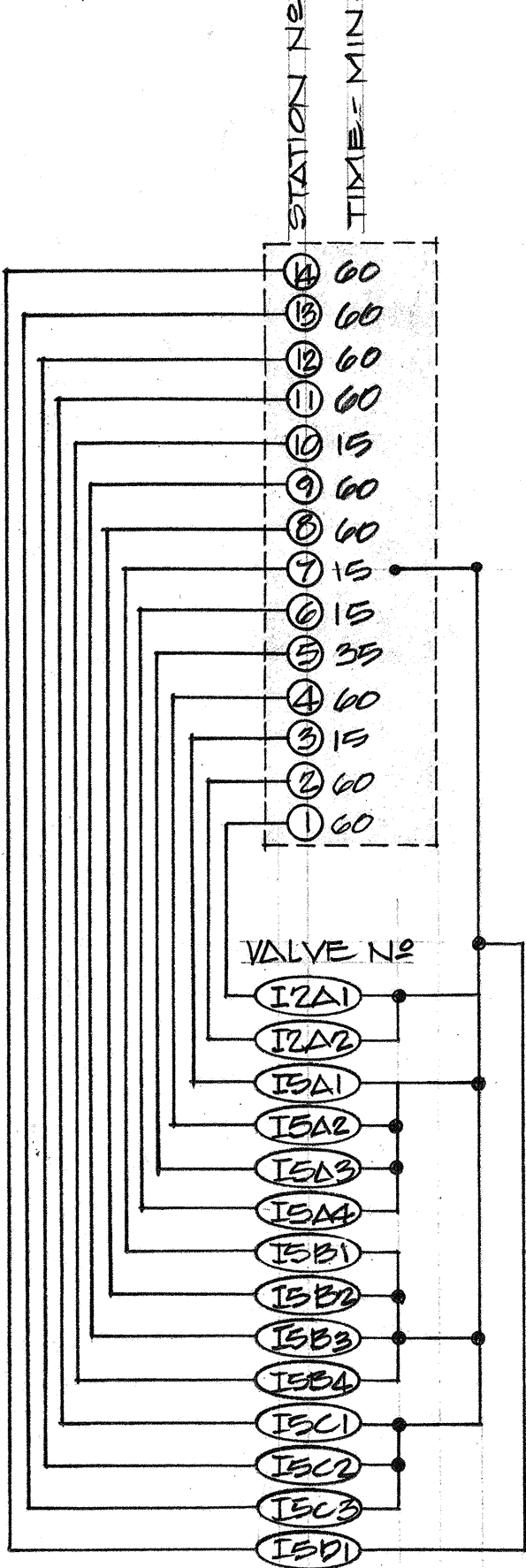
LEGEND

SYMBOL	DESCRIPTION
I2E1 307/60	VALVE NUMBER Q-GPM STATION TIME IN MINUTES
⑤ 5	AUTOMATIC CONTROLLER
⑦ 60	STATION TIME IN MINUTES
⑥ 25	STATION TIMER & NUMBER
I2E1	AUTOMATIC VALVE

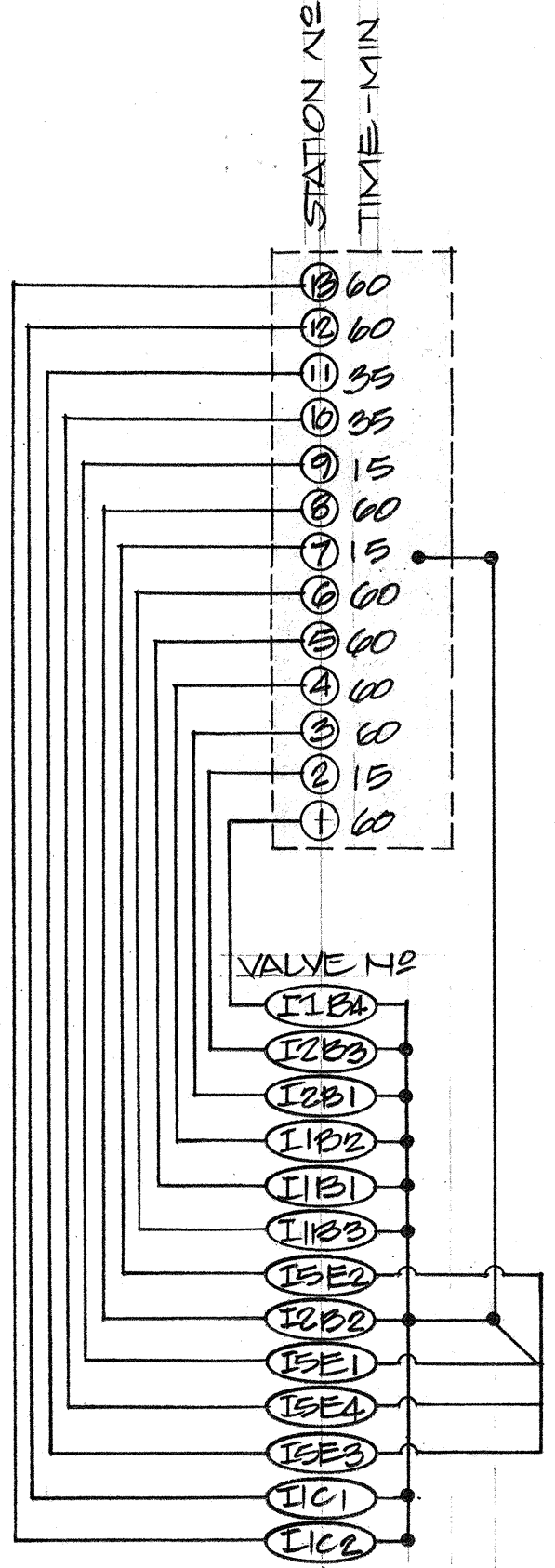
NOTES

- HYDRAULIC SYSTEM IS DESIGNED FOR A MAXIMUM FLOW OF 275 GPM AT ANY PERIOD OF TIME. IN ADDITION, CERTAIN BANKS MAY NOT BE OPERATED SIMULTANEOUSLY BECAUSE OF FRICTION LOSSES. THIS SCHEDULE WAS PREPARED ON THE BASIS OF THIS CRITERIA.
- STATIONS SHALL NOT BE CHANGED AS TO DURATION, SEQUENCE, OR CONTROLLER WITHOUT A FULL ANALYSIS OF THE EFFECT SUCH CHANGES WILL HAVE ON THE OVERALL HYDRAULIC SYSTEM.
- CONTROLLER STARTING SHALL BE SIMILARLY ADHERED TO.
- CERTAIN VALVES ON THE HIGH PRESSURE SYSTEM ARE CONTROLLED BY CONTROLLERS IN THIS GROUP.

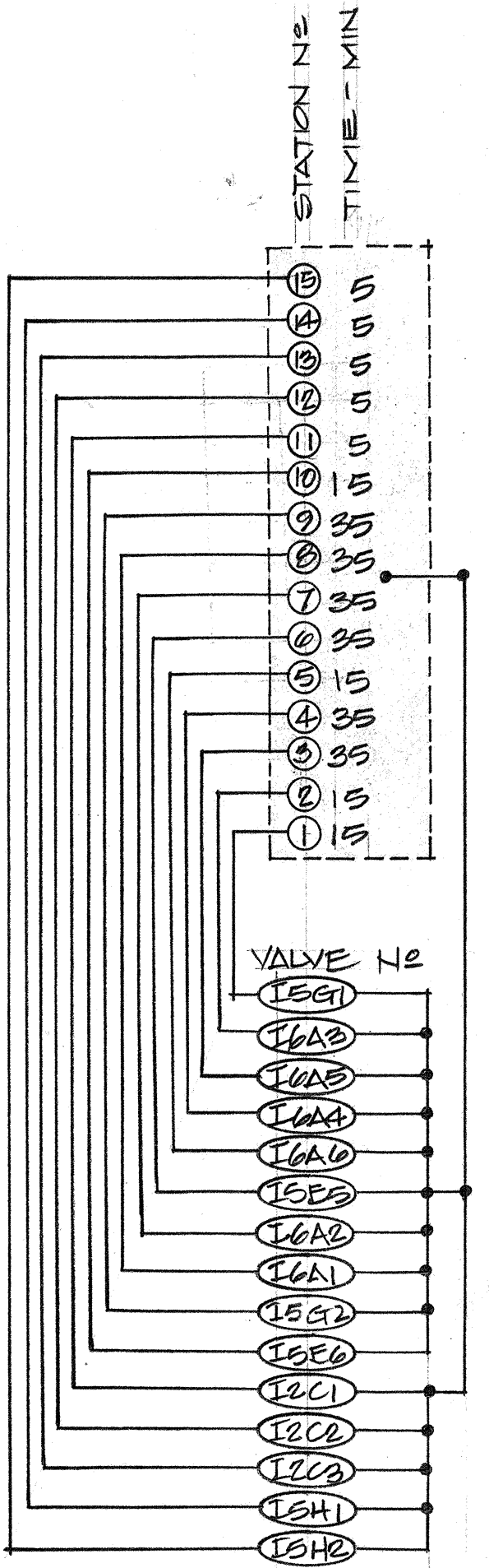
DELETE THIS SHEET SEE
SHEET NO. 21S-1 THRU 21S-3



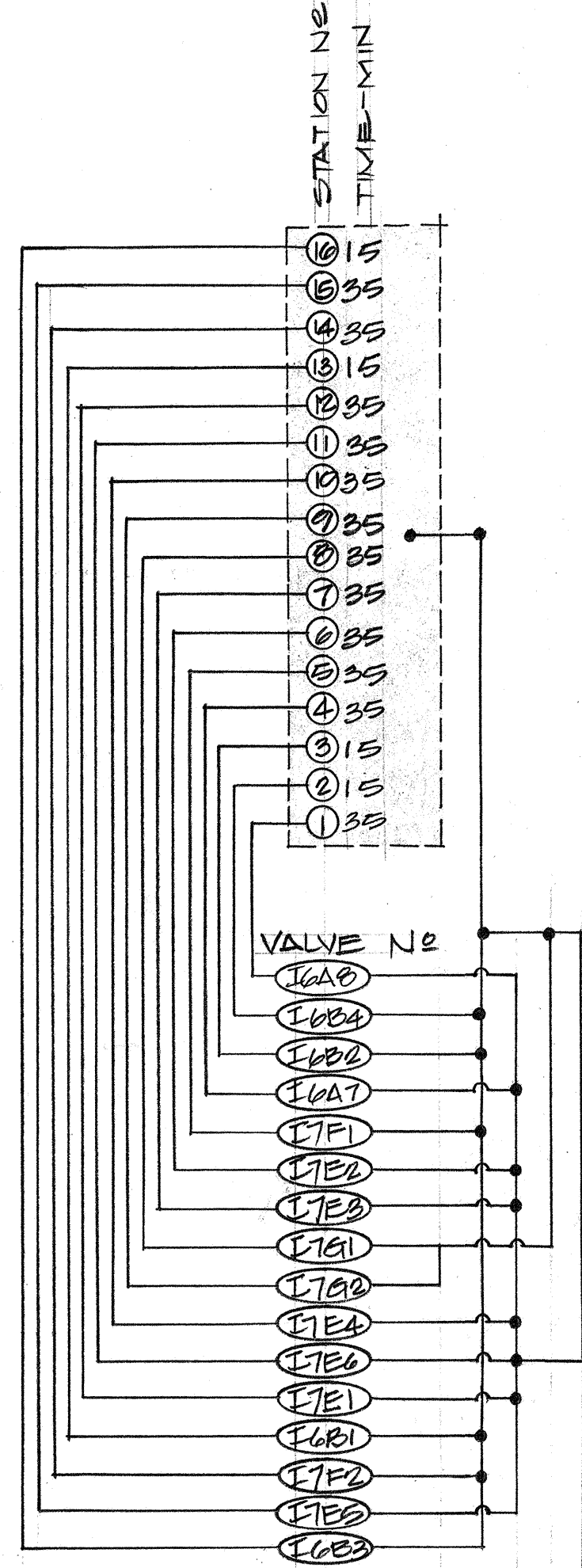
CONTROL DIAGRAM
CONTROLLER E
(TYPE A)



CONTROL DIAGRAM
CONTROLLER F
(TYPE A)



CONTROL DIAGRAM
CONTROLLER G
(TYPE A)



CONTROL DIAGRAM
CONTROLLER H
(TYPE A)

DATE	_____
DESIGNED BY	_____
DRAWN BY	_____
CHECKED BY	_____
NOTED BY	_____
NO.	_____

PHILLIP K. H. YEE & ASSOCIATES
CONSULTING ENGINEERS
243 Lihouelani Ave., Rm. 101
Honolulu, Hawaii 96813

CURTIS Q. HAYE
REGISTERED PROFESSIONAL ENGINEER
No. 2624-E
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.

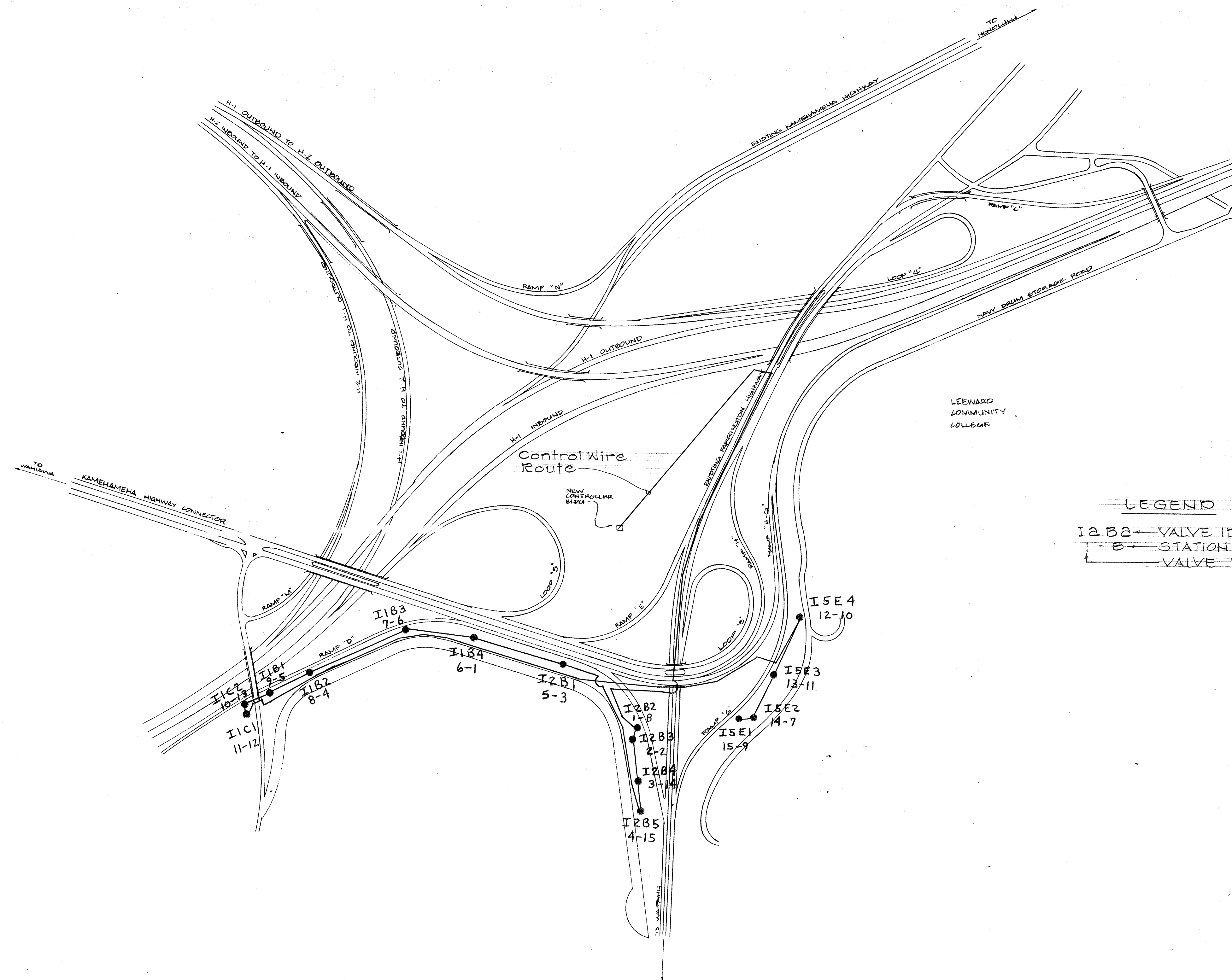
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

WAIAWA INTERCHANGE
WATER SPRINKLER SYSTEM
PROJ # I-HH-1(102)8

IRRIGATION SCHEDULE
& CONTROL DIAGRAMS -
LOW PRESSURE SYSTEM

SHEET No. 21 OF 38 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.				



CONTROLLER F
START TIME: 8:00 AM
DAYS RUN: MONDAY, WEDNESDAY
FRIDAY

LEGEND

12 B2 ← VALVE IDENTIFICATION
1 - 8 ← STATION NUMBER
↑
← VALVE NUMBER

IDENTI.	VALVE NO	STATION NO	TIME (MIN)
I2B2	1	8	30
I2B3	2	2	25
I2B4	3	14	25
I2B5	4	15	20
I2B1	5	3	30
I1B4	6	1	25
I1B3	7	6	25
I1B2	8	4	30
I1B1	9	5	30
I1C2	10	13	30
I1C1	11	12	30
I5E4	12	10	20
I5E3	13	11	20
I5E2	14	7	10
I5E1	15	9	10

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

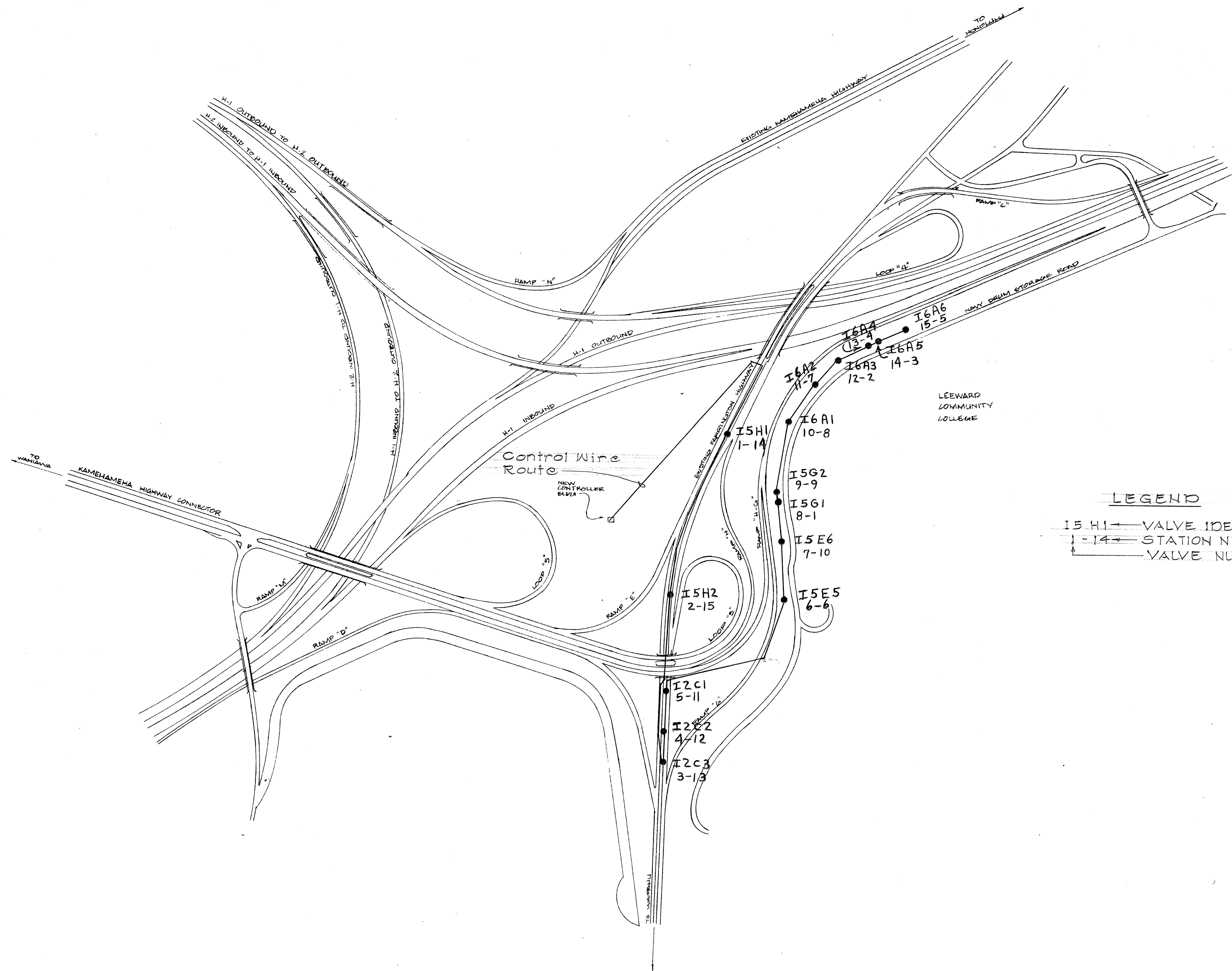
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Waiawa Interchange
Control Wire Route location for
"F" Controller

Proj No. I-HI-1(102):8

SHEET No. 215-1 OF 20 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.				



LEGEND

I5H1 VALVE IDENTIFICATION

1-14 STATION NUMBER

VALVE NUMBER

CONTROLLER G
 START TIME: 12:30PM
 DAYS RUN: MONDAY, WEDNESDAY, FRIDAY

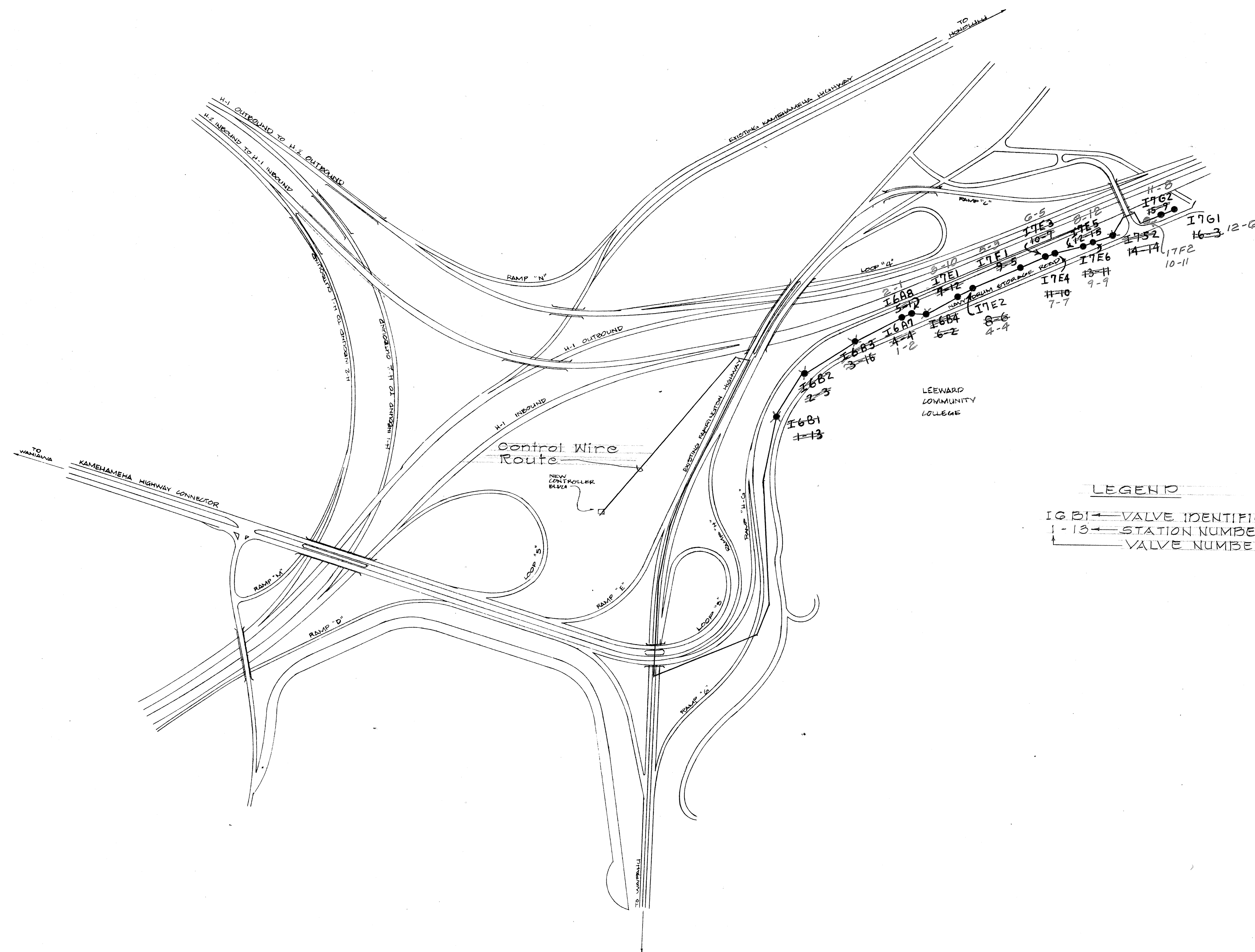
IDENTI.	VALVE NO	STATION NO	TIME (MIN)
I5H1	1	14	10
I5H2	2	15	10
I2C3	3	13	10
I2C2	4	12	10
I2C1	5	11	10
I5E5	6	6	20
I5E6	7	10	10
I5G1	8	1	10
I5G2	9	9	20
I6A1	10	8	20
I6A2	11	7	20
I6A3	12	2	10
I6A4	13	4	20
I6A5	14	3	20
I6A6	15	5	10

STATE OF HAWAII
 DEPARTMENT OF TRANSPORTATION
 HIGHWAYS DIVISION

Waiawa Interchange
 Control Wire Route location for
 "G" Controller
 Proj No. I-H1-1(102):B

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTED BY	DRAWN BY	
CHECKED BY	TRACED BY	
	QUANTITIES BY	
	CHECKED BY	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.				



CONTROLLER H
START TIME: 4:15 PM
DAYS RUN: MONDAY, WEDNESDAY,
FRIDAY

LEGEND

IGBI ← VALVE IDENTIFICATION
1-13 ← STATION NUMBER
← VALVE NUMBER

IDENTI.	VALVE NO	STATION NO	TIM (MIN)
1GA7	1	2	20
1GA8	2	1	20
17E1	3	10	20
17E2	4	4	20
17F1	5	3	20
17E3	6	5	20
17E4	7	7	20
17E5	8	12	20
17E6	9	9	20
17F2	10	11	20
17G2	11	8	20
17G1	12	6	20

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

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

Waiawa Interchange
Control Wire Route location for
"H" Controller

Proj No. I-HI-1(102):8

SHEET No. 215-3 OF 20 SHEETS