

GENERAL GRADING LIMIT NOTES

1. Allow a 50 ft. transition between 2:1 fills and 6:1 fills.
2. Allow a 50 ft. transition between 2:1 cuts and 6:1 cuts.
3. For cut sections 42 ft. from the centerline, allow a 100 ft. transition unless otherwise indicated on the plans.
4. The transition lengths are for design purposes only. The exact locations and lengths are to be determined in the field by the engineer.

SLOPE LEGEND

- 6:1 Cut
- 2:1 Cut
- 1/2:1 Cut
- 4:1 Cut
- 6:1 Fill
- 2:1 Fill
- 1 1/2:1 Fill
- 3:1 Fill

Toe of Slope or Daylight Line

KALAOA 1-4
State of Hawaii - Owner

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	198C-01-71	1972	40	118

True North
Scale: 1 in. = 100'

Exis.

BEGIN PROJECT

Sta. 218 + 72.16
N. 326,567.39
E. 316,399.89

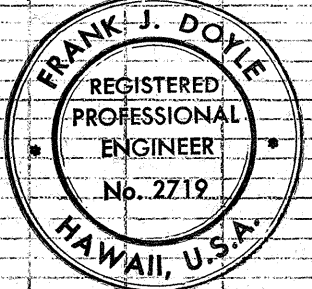
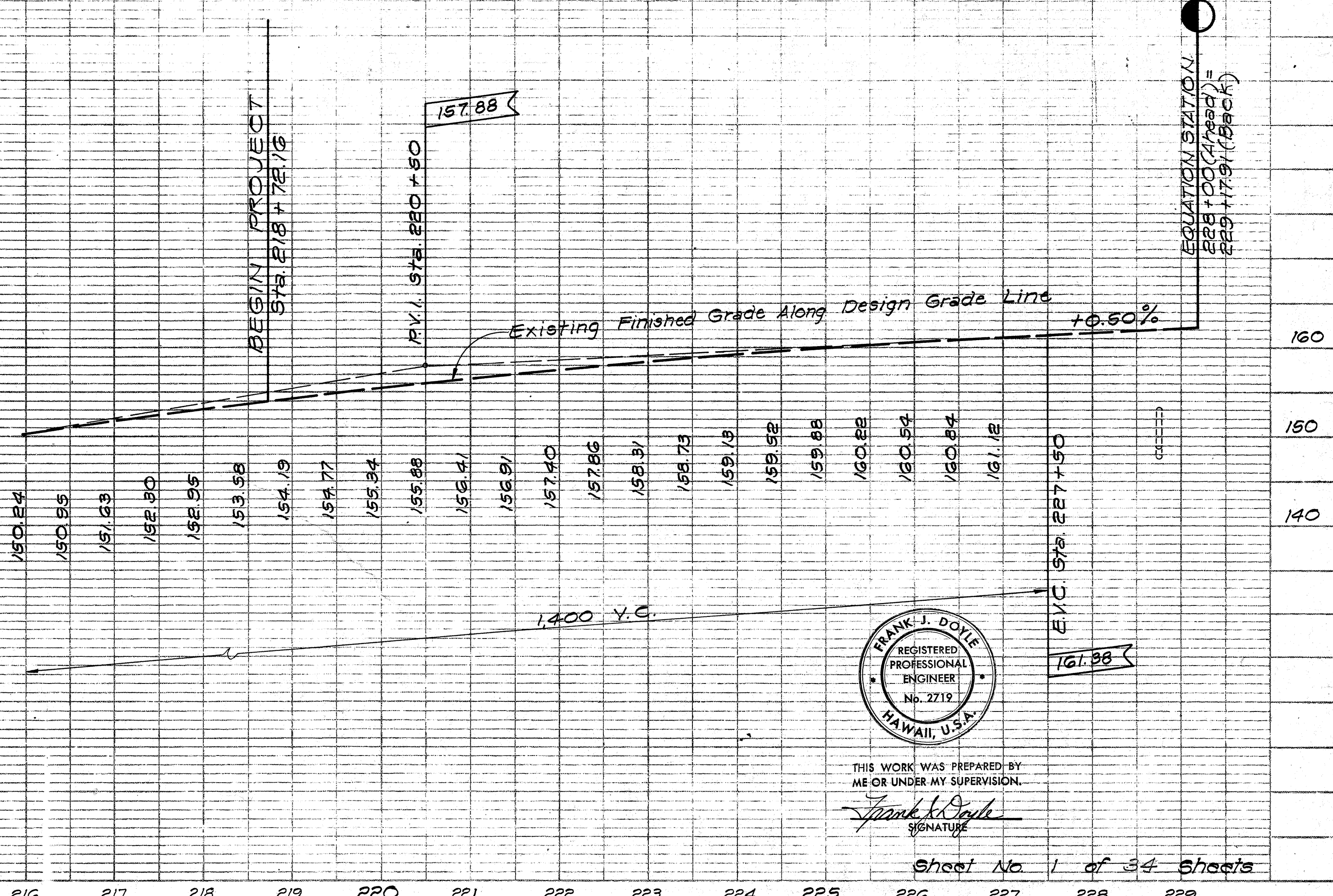
Existing R/W & Control of Access Line

Existing R/W & Control of Access Line

NOTE:

All stations shown on this sheet are referred to Sta. 235 + 50, end of Project No. BD69-352, Kailua-Kawahae Road, Section II.

EQUATION STATION
MATCH LINE
Sta. 228 + 00 (Ahead) =
Sta. 229 + 17.91 (Back)
(All Stations Referenced to Sta. 235 + 50)

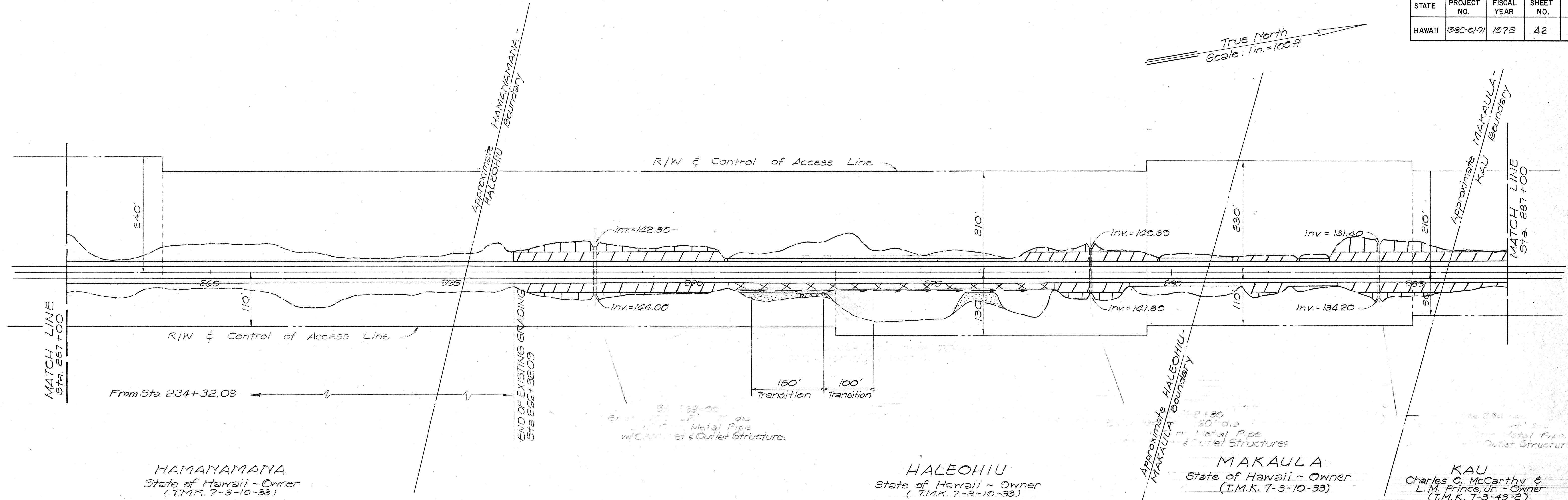


THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Frank J. Doyle
SIGNATURE

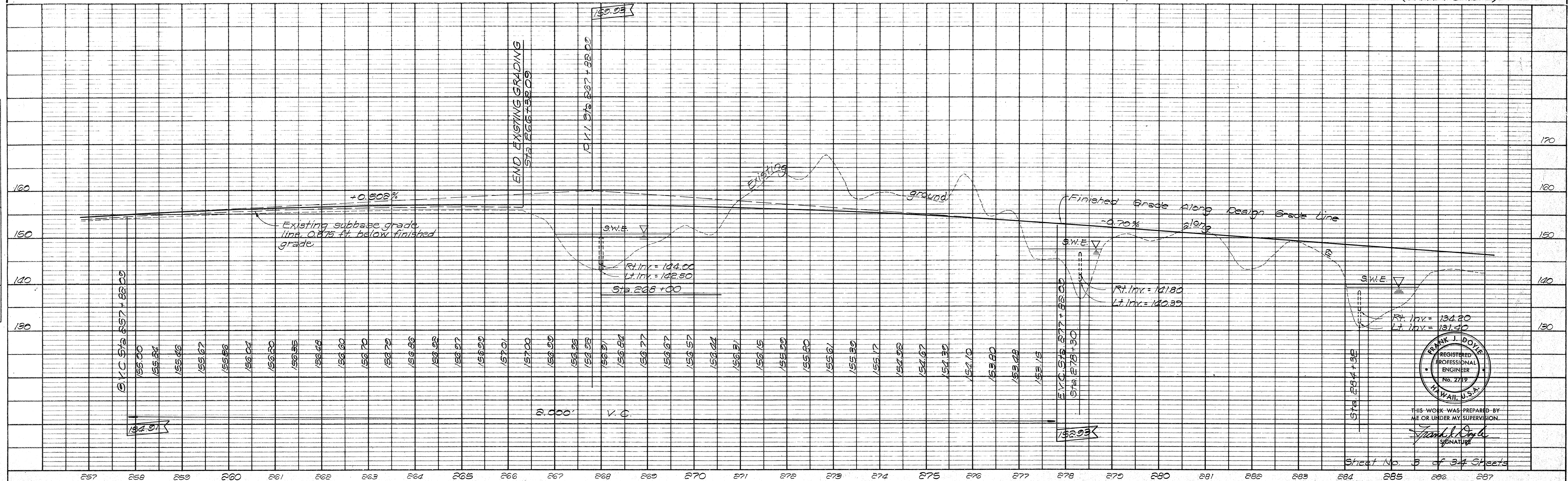
Sheet No. 1 of 34 sheets

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	198C-0171	1972	42	118

PLAN	DATE	BY
REVISED		
NOTED		
ALIGNMENT CHECKED		
RT. OF WAY CHECKED		
NO.		



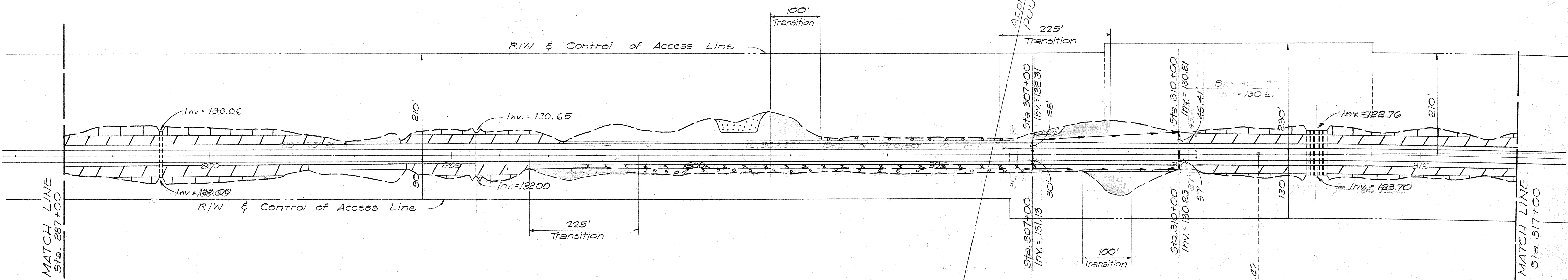
PROFILE	DATE	BY
REVISED		
NOTED		
GRADES CHECKED		
STRUCTURE NOTATIONS CHECKED		
NO.		



STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	138C-0171	1972	43	118

True North
Scale: 1 in. = 100 ft

PLAN	SURVEYED	DATE
NOTE BOOK	PLOTTED	BY
NO.	ALIGNMENT CHECKED	
	RT. OF WAY CHECKED	

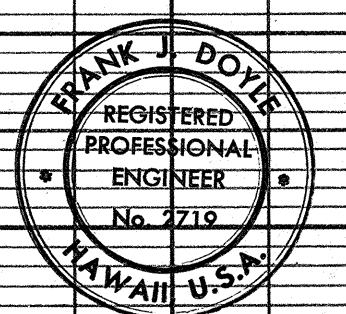
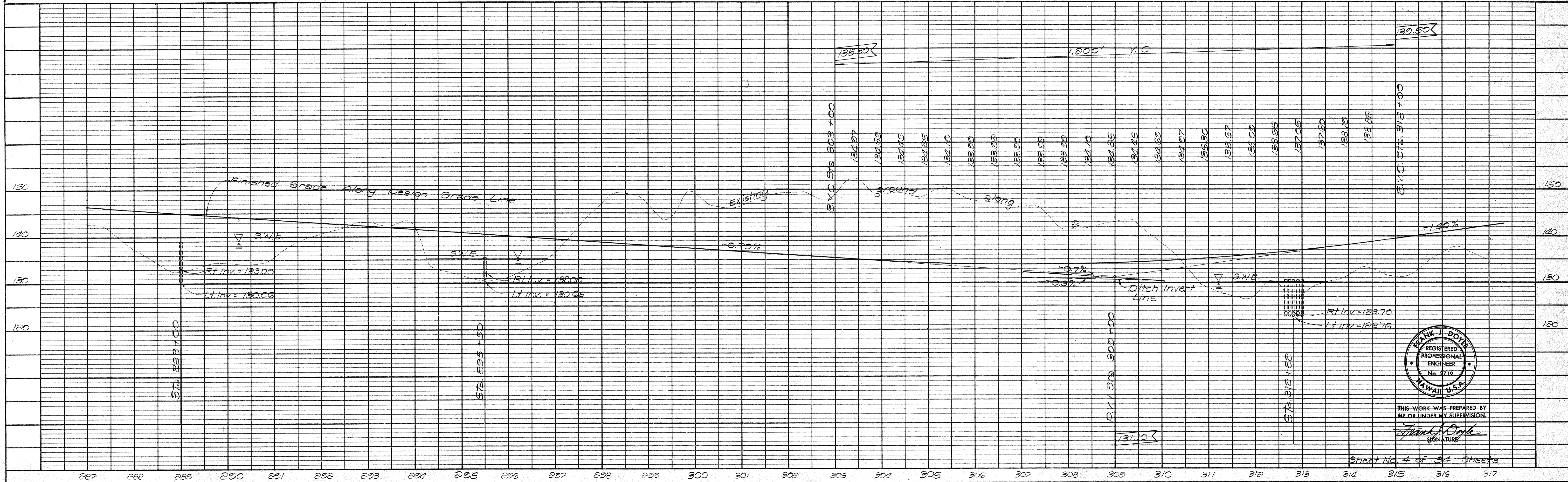


KAU
Charles C. McCarthy & L.M. Prince, Jr. - Owner
(T.M.K. 7-3-23-2)

P.O. Sta. 311+65.00
N 335° 133.47
E 317° 932.40

PUUKALA
State of Hawaii - Owner
Kona Coast Co. - Lessee
(T.M.K. 7-2-05-2)

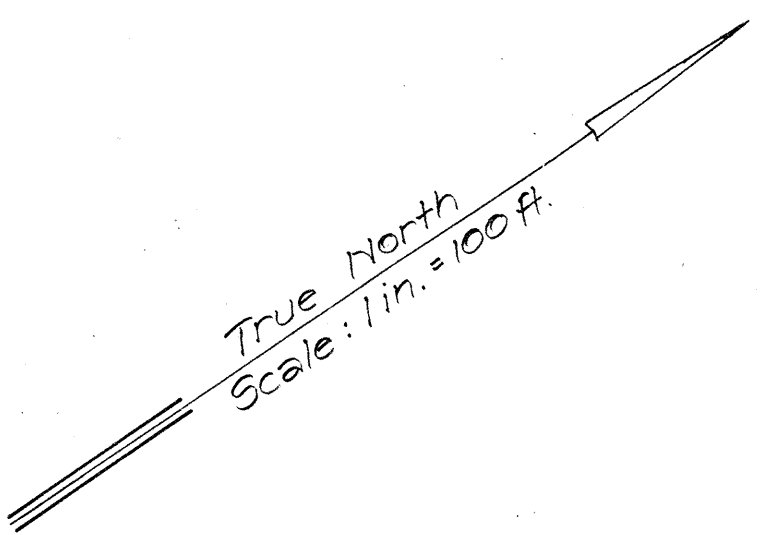
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NOTE BOOK	PLOTTED		
NO.	GRADES CHECKED		
	R. M.'S NOTED		
	STRUCTURE NOTATIONS CH'KD.		



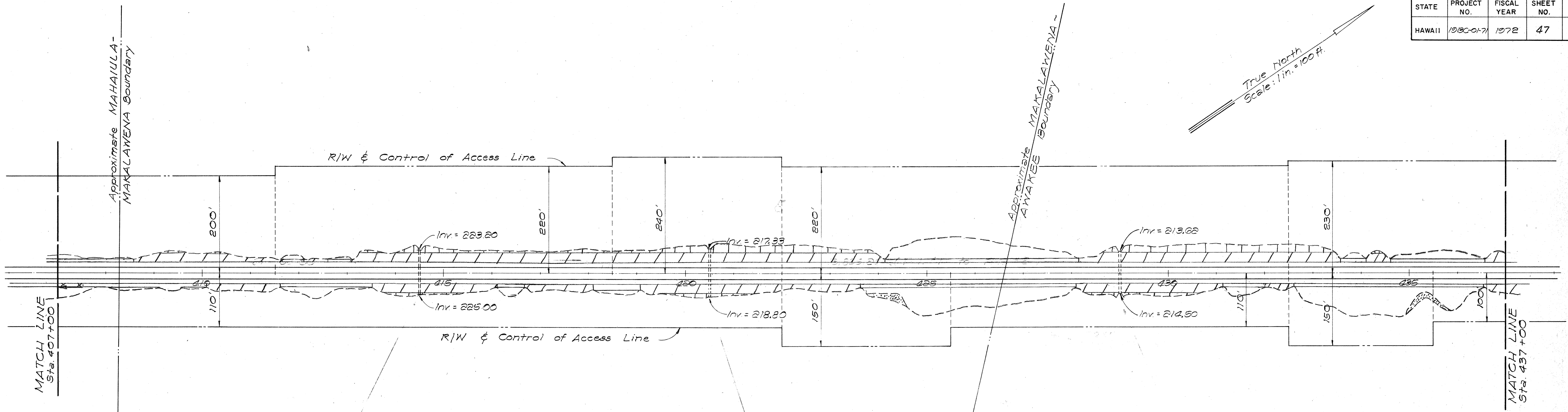
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Frank J. Doyle
SIGNATURE

Sheet No. 4 of 34 Sheets

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	1080-0171	1972	47	118



PLAN	DATE	BY
SURVEYED PLOTTED NOTE BOOK ALIGNMENT CHECKED RT. OF WAY CHECKED NO.		



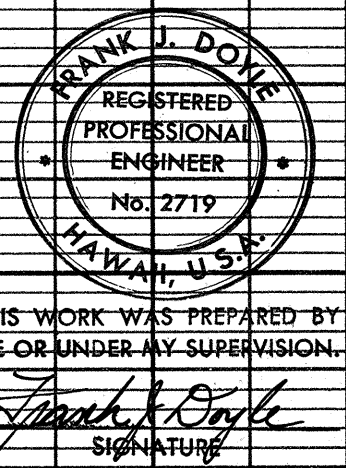
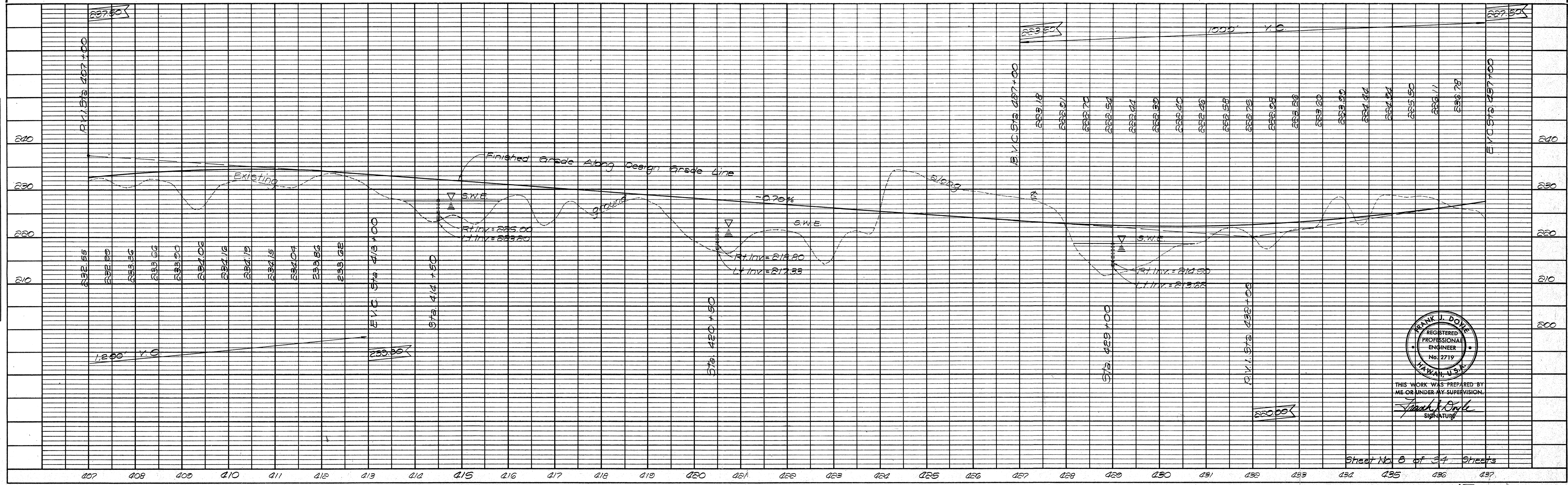
MAHAUIULA
State of Hawaii - Owner
Kona Coast Co. - Lessee
(T.M.K. 7-2-05-2)

Sta. 414+00
12" x 16" Corrugated Metal Pipe
12" x 16" Corrugated Metal Pipe
12" x 16" Corrugated Metal Pipe

MAKALAWENA
B. P. Bishop Estate - Owner
(T.M.K. 7-2-04-1)

A WAKEE
State of Hawaii - Owner
Kona Coast Co. - Lessee
(T.M.K. 7-2-04-4)

PROFILE	DATE	BY
SURVEYED PLOTTED NOTE BOOK GRADES CHECKED E.M.'S NOTED SIGNATURE NOTING CHG.		



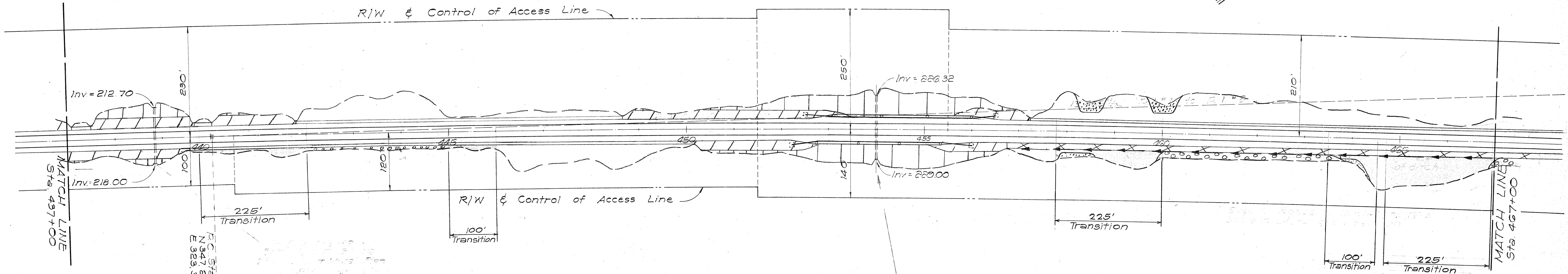
Sheet No. 8 of 34 Sheets

A W A K E E
State of Hawaii ~ Owner
Kona Coast Co. ~ Lessee
(T.M.K. 7-2-04-4)

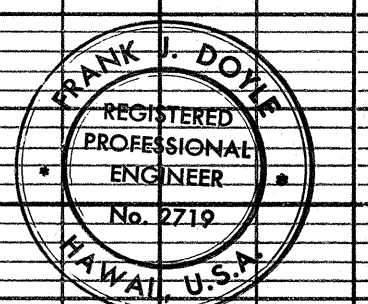
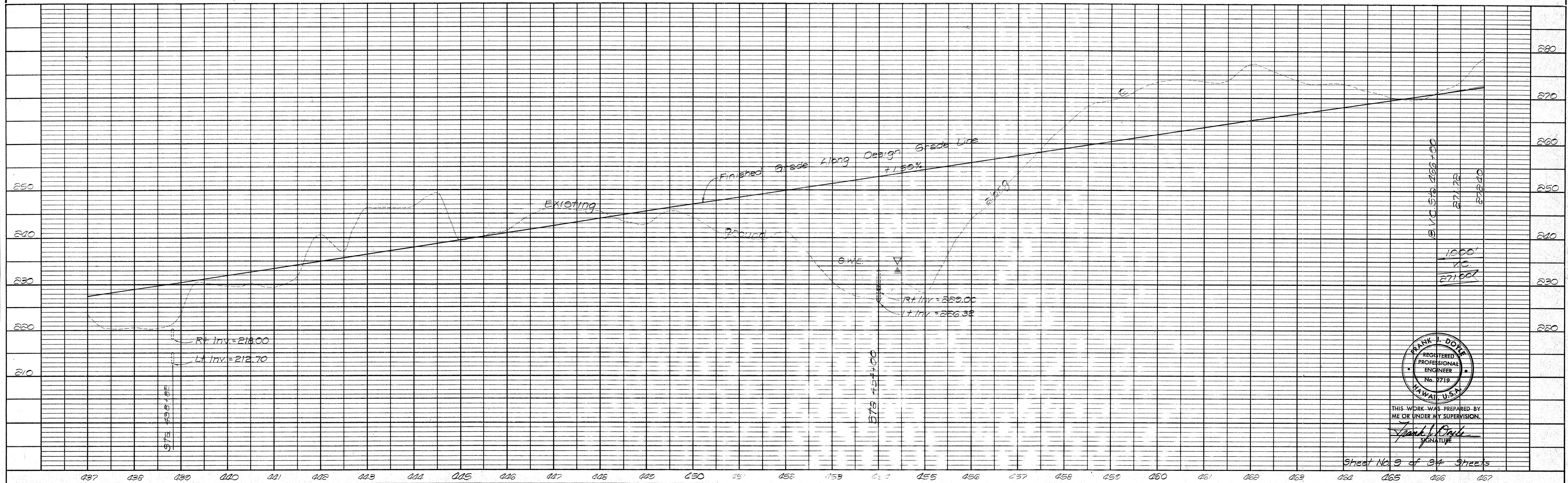
STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	198C-01-71	1972	48	118

True North
Scale: 1 in = 100 ft

PLAN	DATE	BY
SURVEYED		
PLOTTED		
ALIGNED		
CHECKED		
NO.		



PROFILE	DATE	BY
SURVEYED		
PLOTTED		
GRADES CHECKED		
STRUCTURE NOTATIONS CHKD.		
NO.		



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Frank J. Dore
SIGNATURE

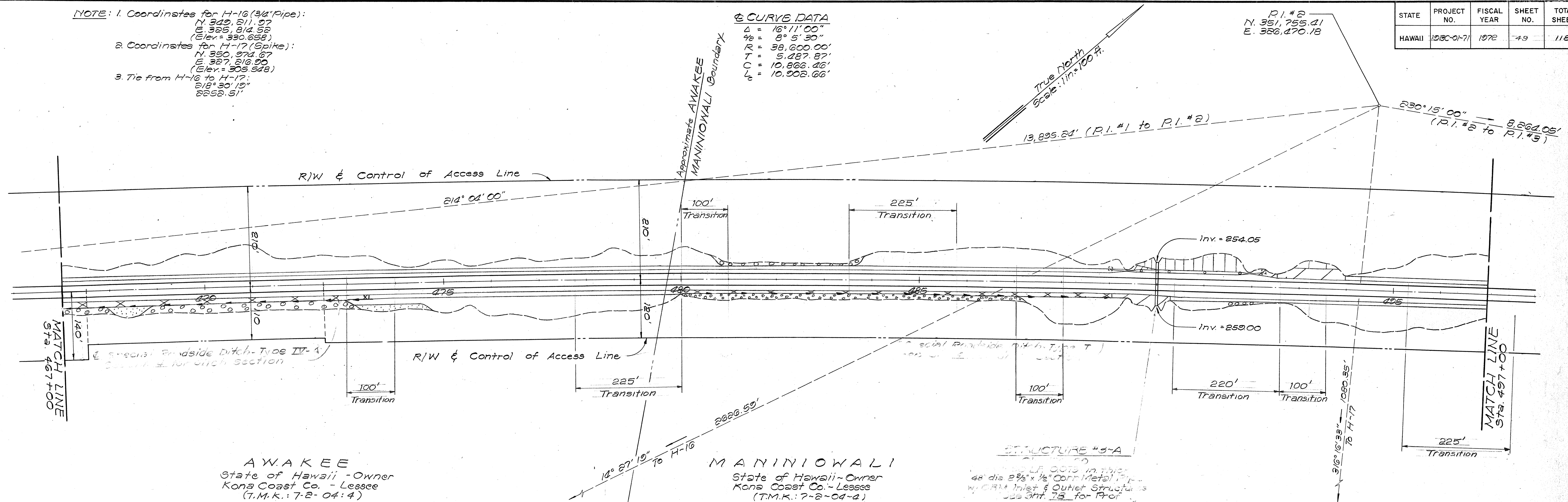
Sheet No. 9 of 34 Sheets

NOTE: 1. Coordinates for H-16 (3/4" Pipe):
 N. 349.211.97
 E. 325.814.52
 (Elev. = 330.655)
 2. Coordinates for H-17 (Spike):
 N. 350.974.67
 E. 327.218.20
 (Elev. = 305.548)
 3. Tie from H-16 to H-17:
 218° 30' 19"
 2252.51'

CURVE DATA
 Δ = 16° 11' 00"
 R = 8° 5' 30"
 T = 38,600.00'
 L = 5,487.87'
 P.C. = 10,866.46'
 P.T. = 10,902.66'

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	108C-01-71	1972	49	118

PLAN	DATE	BY
SURVEYED		
NOTE BOOK		
ALIGNMENT CHECKED		
RT. OF WAY CHECKED		
NO.		

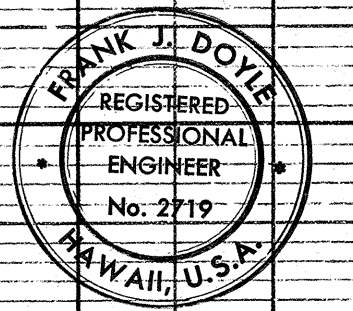
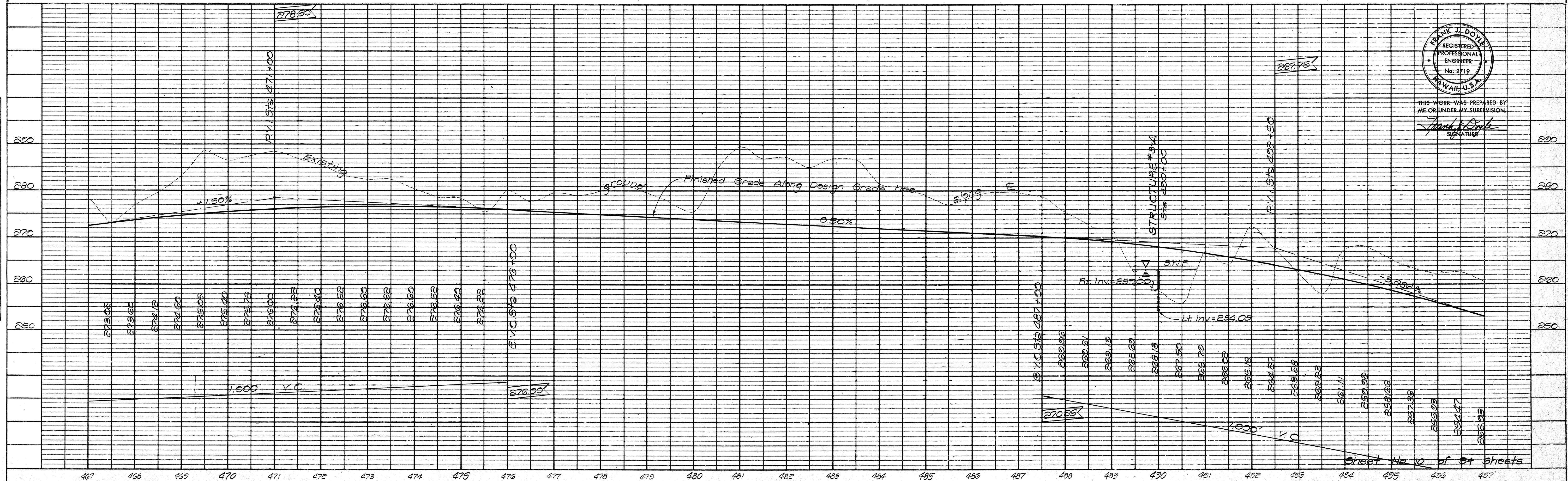


AWAKEE
 State of Hawaii - Owner
 Kona Coast Co. - Lessee
 (T.M.K.: 7-2-04:4)

MANINIOWALI
 State of Hawaii - Owner
 Kona Coast Co. - Lessee
 (T.M.K.: 7-2-04:4)

STRUCTURE #3-A
 48" dia 2 1/2" x 1/2" Corrugated Metal Pipe
 w/ 6" Inlet & Outlet Structures
 25' Int. for Proj.

PROFILE	DATE	BY
SURVEYED		
PLATTED		
GRADES CHECKED		
8" x 11" NOTED		
STRUCTURE NOTED		
NO.		



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 Frank J. Doyle
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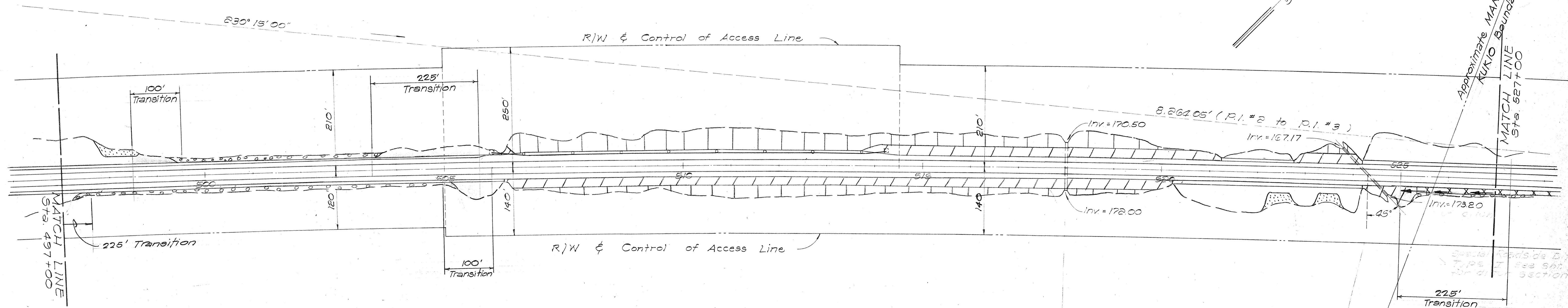
Sheet No. 10 of 34 Sheets

MANINIOWALI

State of Hawaii ~ Owner
Kona Coast Co. ~ Lessee
(T.M.K. 7-2-04-4)

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	1080-01-71	1978	50	118

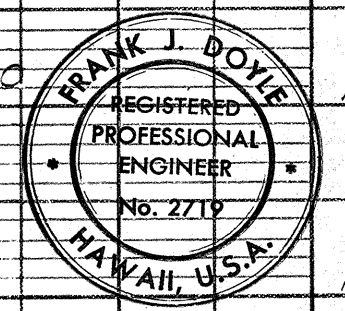
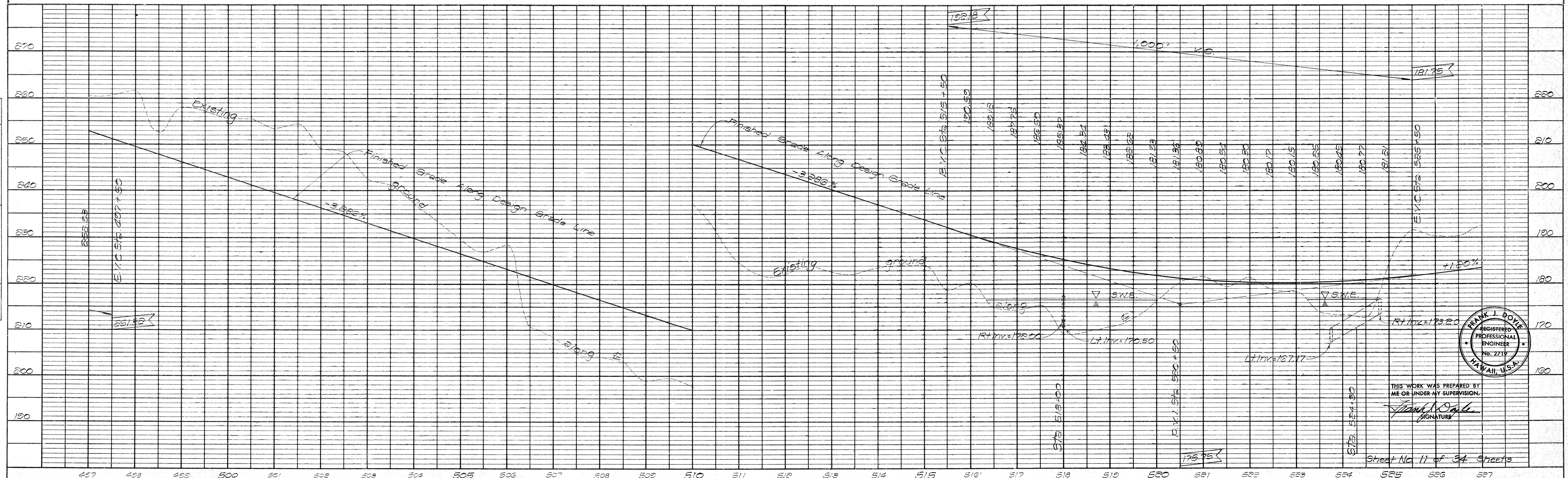
PLAN	DATE	BY
SURVEYED NOTED ALIGNED CHECKED RT. OF WAY NO.		



True North
Scale: 1 in = 100 ft.

KUKIO
Foothill Land Corp.
Kaloko Land Corp.
Mauna Loa Cattle Corp.
(T.M.K. 7-2-04-5) Owners

PROFILE	DATE	BY
SURVEYED NOTED GRADES CHECKED S.W. 3' TYPED STRUCTURE NOTATIONS CHD.		



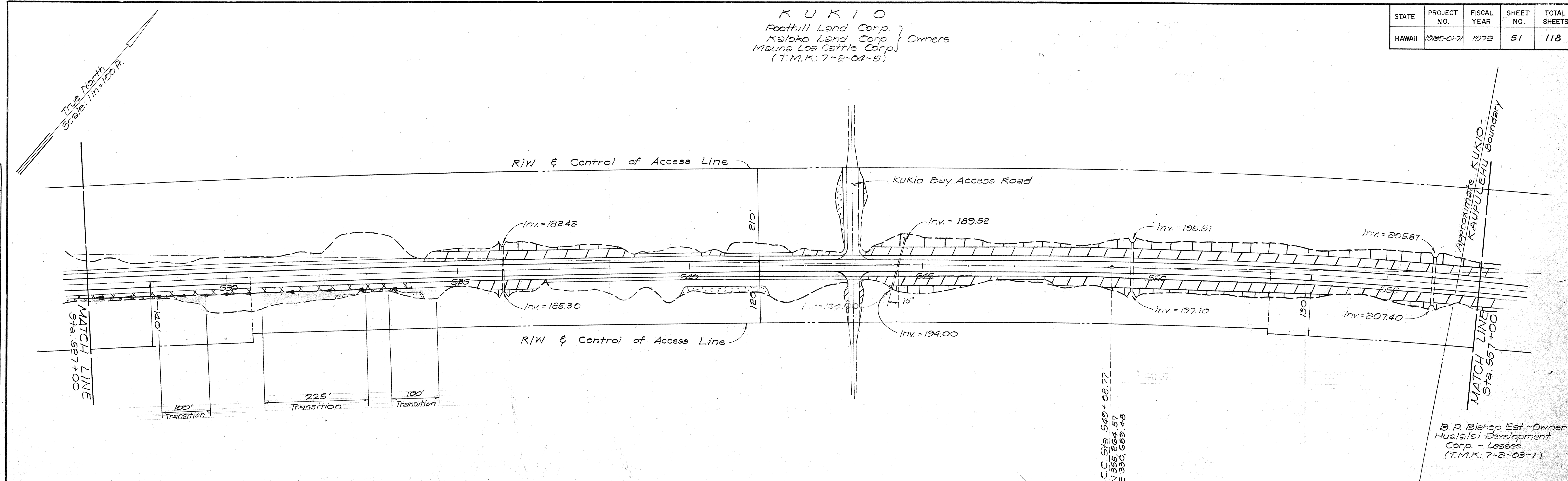
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Sheet No. 11 of 34 Sheets

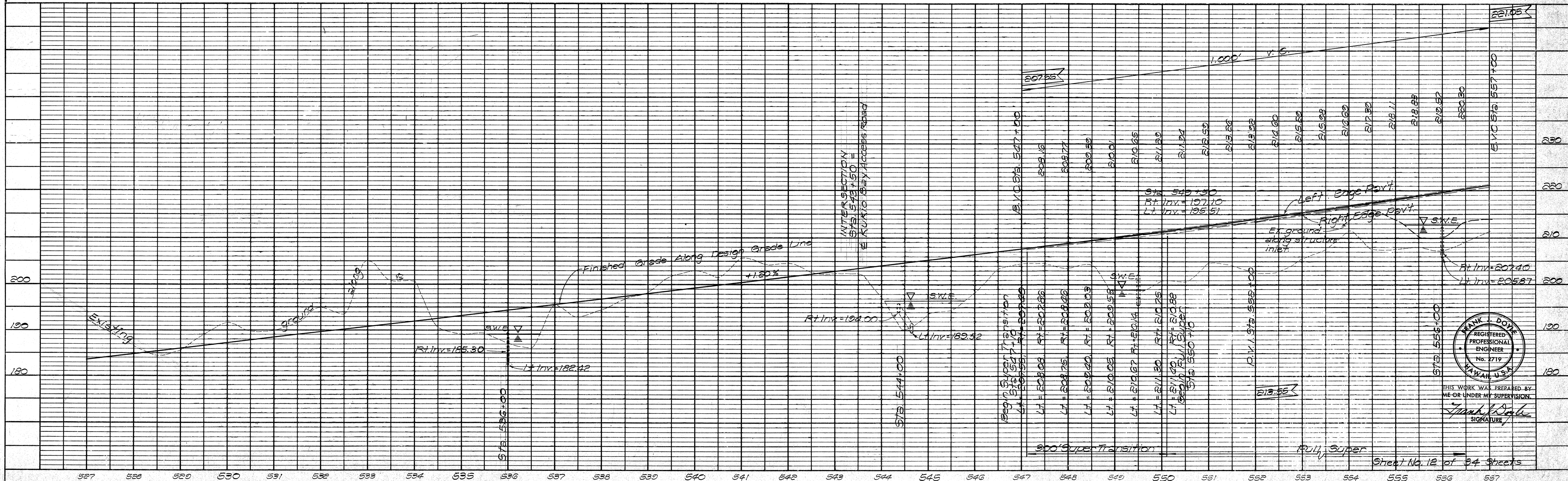
STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	198C-01-71	1972	51	118

KUKIO
 Foothill Land Corp. } Owners
 Kaloko Land Corp. }
 Mauna Loa Cattle Corp. }
 (T.M.K. 7-2-02-5)

PLAN	DATE	BY
SURVEYED		
PLATTED		
ALIGNED - CHECKED		
RT. OF WAY CHECKED		
NO.		



PROFILE	DATE	BY
SURVEYED		
PLATTED		
GRADES CHECKED		
B.M.'S NOTED		
STRUCTURE LOCATIONS CHD.		
NO.		

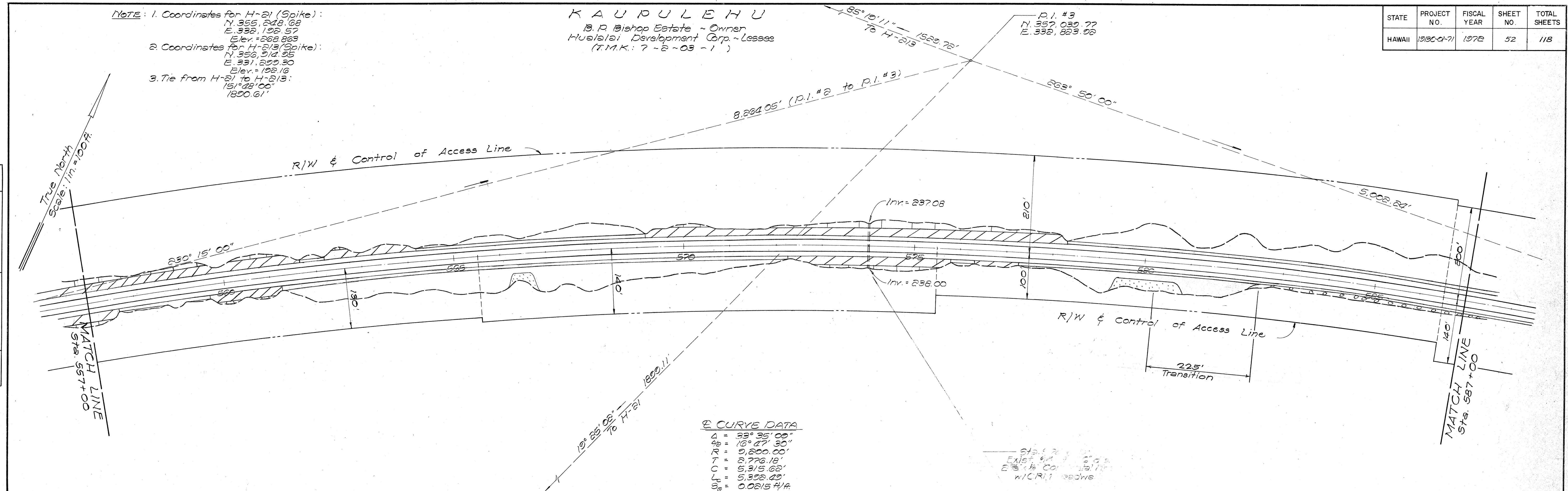


NOTE: 1. Coordinates for H-21 (Spike):
 N. 355, 248.63
 E. 332, 128.57
 Elev. = 268.863
 2. Coordinates for H-213 (Spike):
 N. 356, 214.25
 E. 331, 222.30
 Elev. = 192.16
 3. Tie from H-21 to H-213:
 151° 28' 00"
 1890.61'

KAUPULEHU
 B. P. Bishop Estate - Owner
 Hualalai Development Corp. - Lessee
 (T.M.K. 7-2-03-1)

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	198C-01-71	1972	52	118

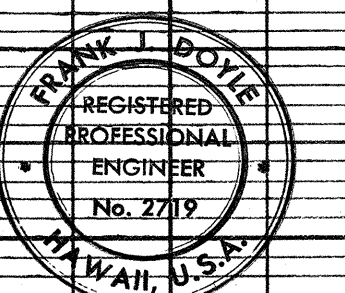
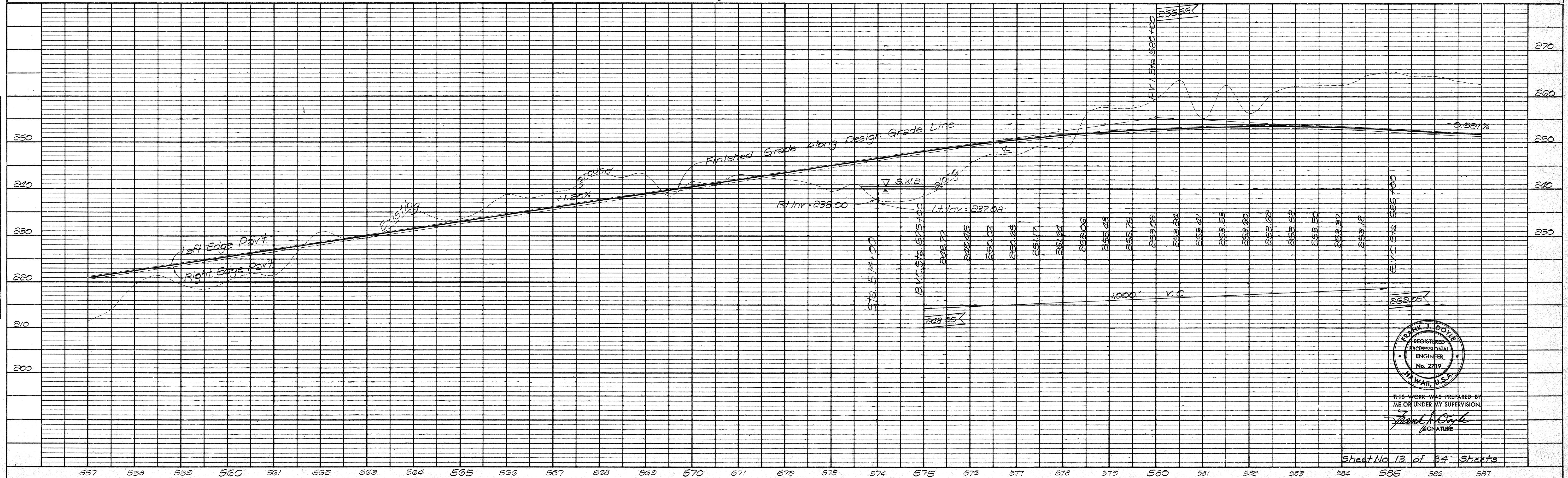
PLAN	DATE
SURVEYED	BY
PLOTTED	
ALIGNMENT CHECKED	
RT. OF WAY CHECKED	
NOTE BOOK NO.	



2. CURVE DATA
 1. 33° 35' 00"
 2. 16° 27' 30"
 3. 276.18'
 4. 5,315.62'
 5. 5,322.49'
 6. 0.0215 1/4"

Sta. 574+00
 ELEV. 268.863
 ELEV. 192.16
 W.C.R. 1.0000

PROFILE	DATE
SURVEYED	BY
PLOTTED	
GRADES CHECKED	
STRUCTURE NOTATION CHKO.	
NOTE BOOK NO.	



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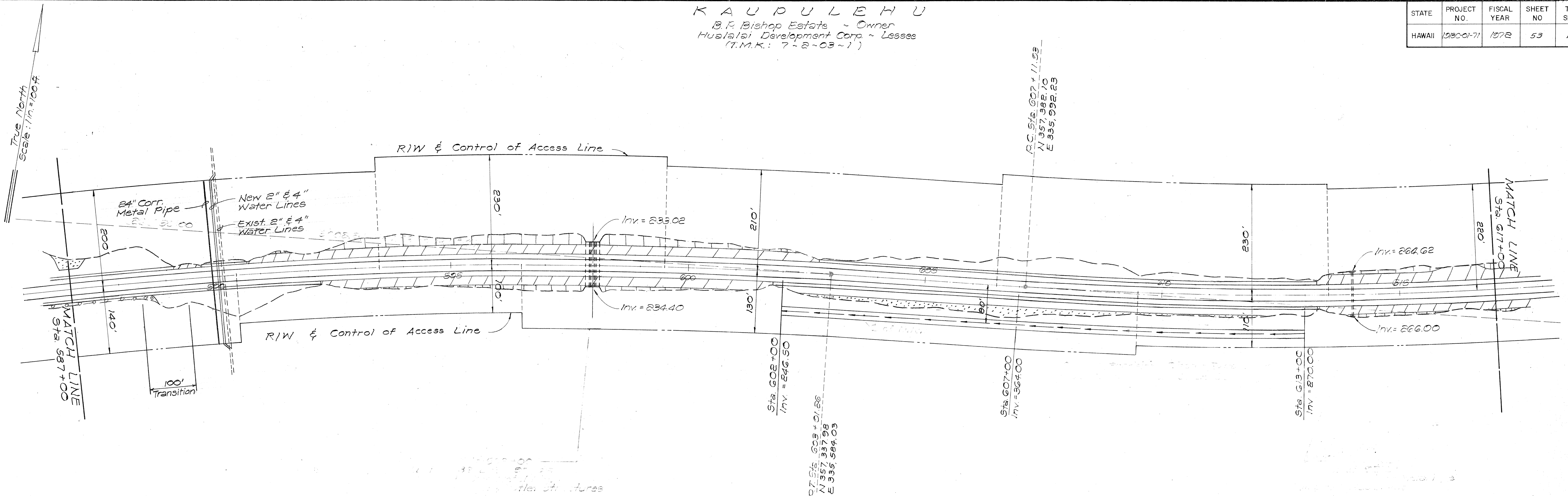
Sheet No. 13 of 34 Sheets

KAUPULEHU

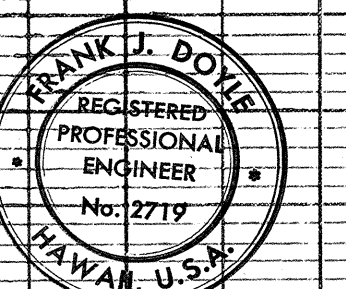
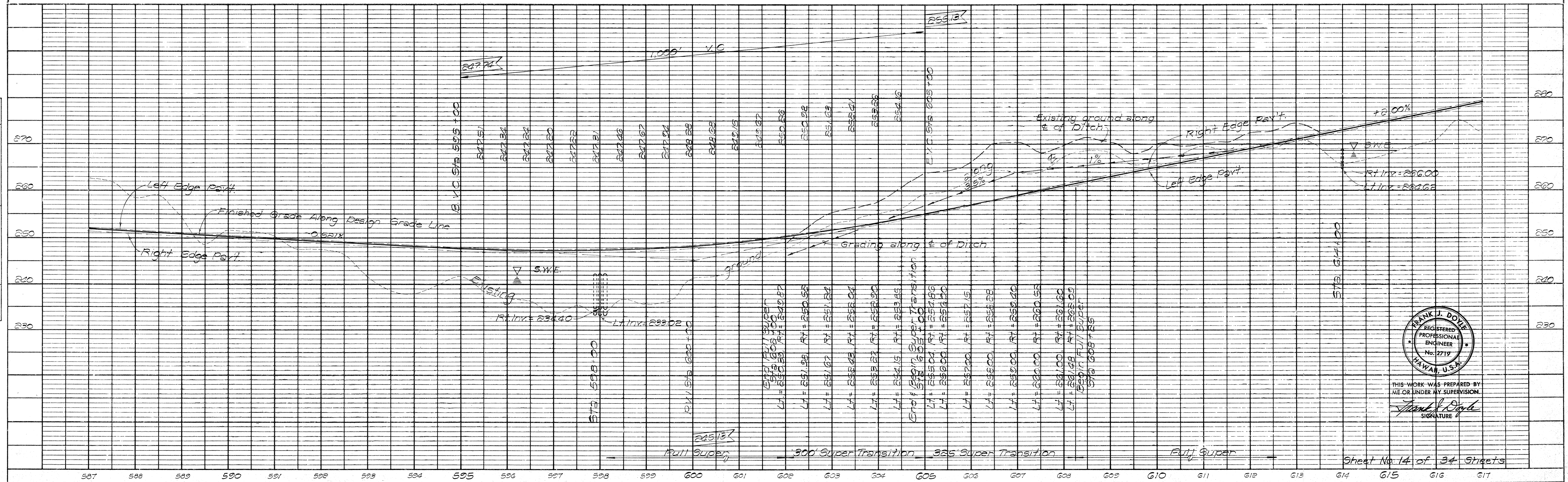
B. P. Bishop Estate - Owner
Hualalai Development Corp. - Lessee
(T.M.K.: 7-2-03-1)

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	1985-01-71	1972	53	118

PLAN	DATE	BY
SURVEYED		
PLOTTED		
ALIGNED		
CHECKED		
NO.		



PROFILE	DATE	BY
SURVEYED		
PLOTTED		
GRADES CHECKED		
STRUCTURE NOTATIONS OK'D.		
NO.		



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Signature: Frank J. Doyle

PLAN	DATE
SURVEYED	BY
PLOTTED	
ALIGNMENT CHECKED	
ST. OF WAY CHECKED	
NO.	

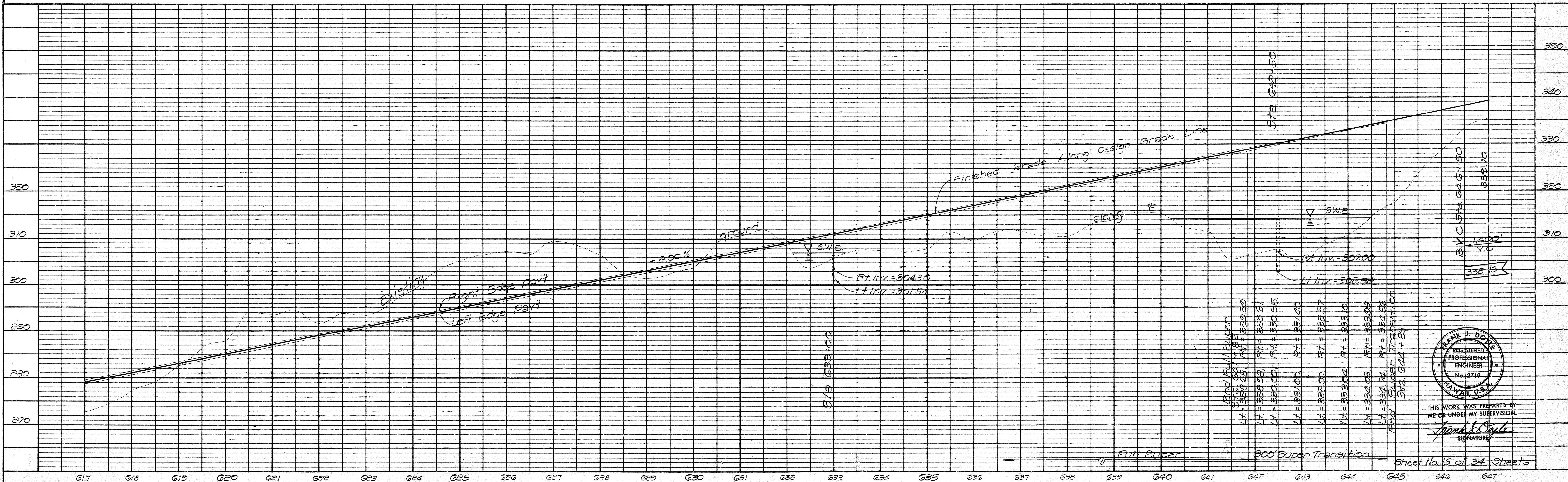
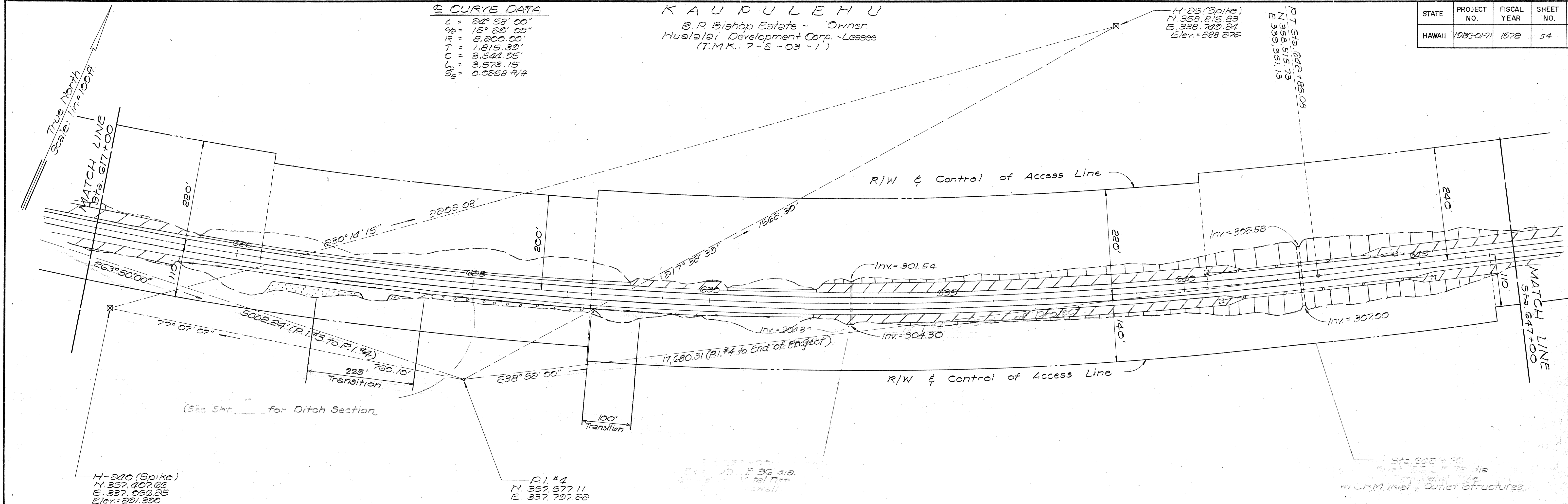
PROFILE	DATE
SURVEYED	BY
PLOTTED	
GRADES CHECKED	
STRUCTURE NOTATIONS CHKD.	
NO.	

2 CURVE DATA

Δ	$24^{\circ} 58' 00''$
$\Delta/2$	$12^{\circ} 29' 00''$
L	$8,200.00'$
E	$1,816.30'$
P	$9,544.95'$
Y	$9,578.15'$
X	$0.0858 \pm 1/4$

K A U P U L E H U
 B. R. Bishop Estate - Owner
 Hualalai Development Corp. - Lessee
 (T.M.K. 7-2-05-1)

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	198C-0171	1972	54	118

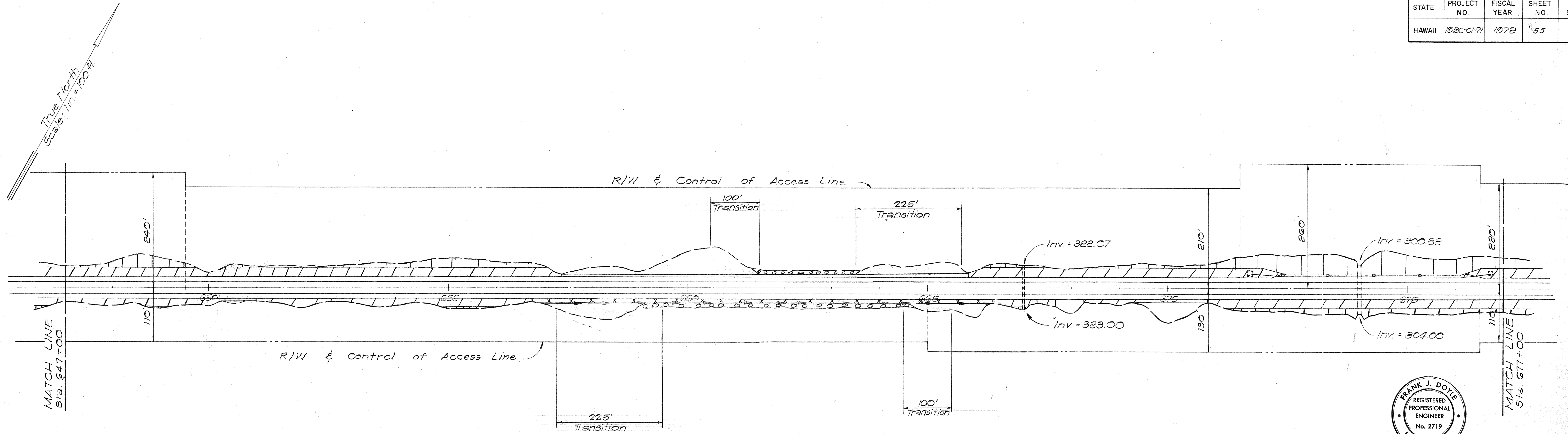


FRANK J. DOWE
 REGISTERED
 PROFESSIONAL
 ENGINEER
 No. 2710
 HAWAII, U.S.A.

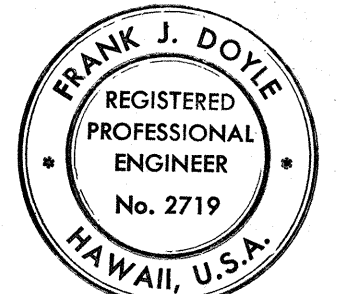
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 Frank J. Dowe
 SIGNATURE

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	10BC-01-71	1972	55	118

PLAN	DATE	BY
SURVEYED		
NOTE BOOK		
NO.		

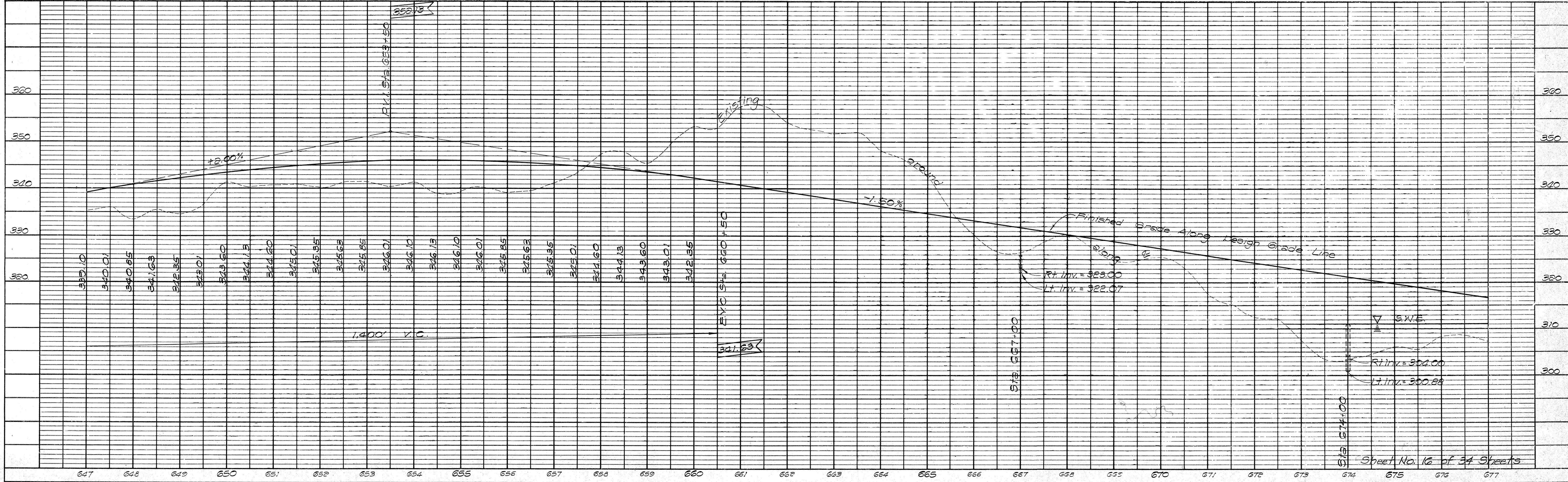


KAUPULEHU
 B. P. Bishop Estate - Owner
 Hualalai Development Corp. - Lessee
 (FMK: 7-2-68-1)



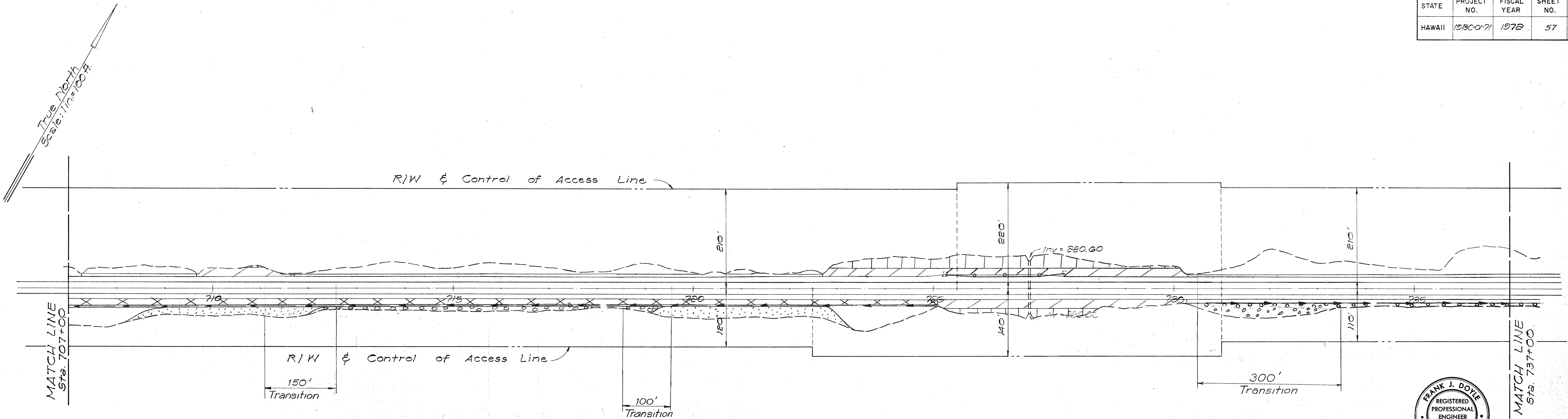
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Frank J. Doyle
 SIGNATURE

PROFILE	DATE	BY
SURVEYED		
NOTE BOOK		
NO.		

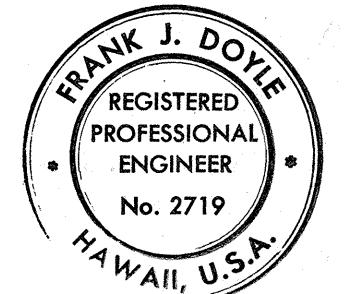


STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	108C-0-71	1972	57	118

PLAN	DATE
SURVEYED	BY
NOTE BOOK	NO.
ALIGNMENT CHECKED	
RT. OF WAY CHECKED	



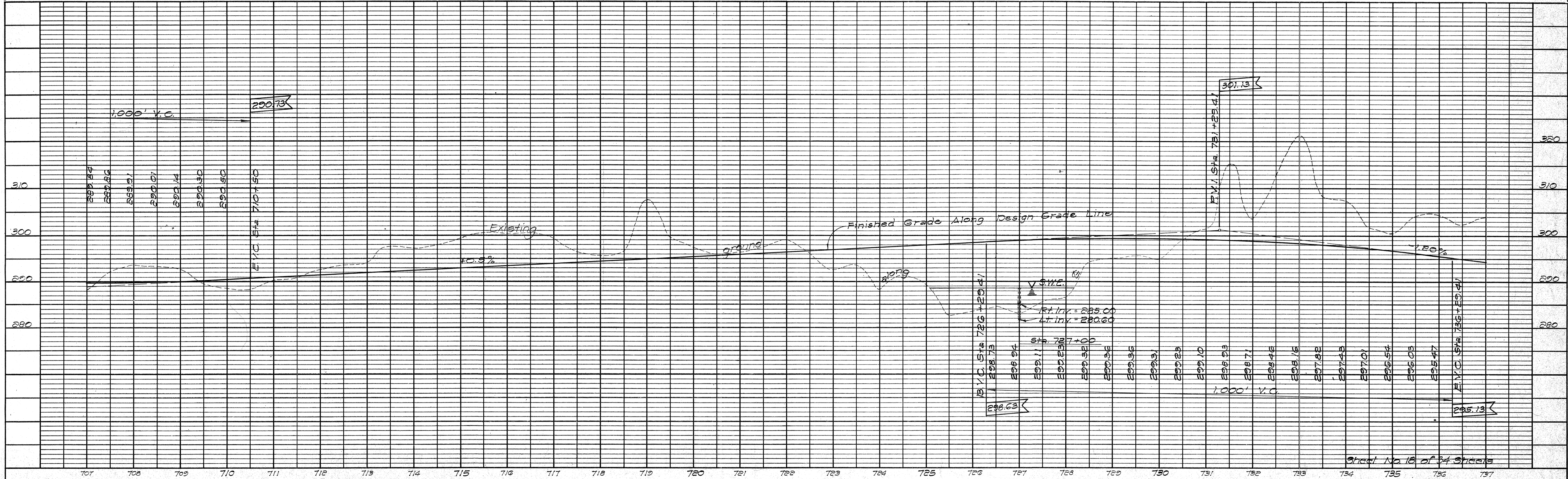
P U U W A A W A
 State of Hawaii - Owner
 L.S. Dillingham,
 B.F. Dillingham and
 C.W. Carlsmith - Lessee
 (T.M.K. 7-1-03-1)



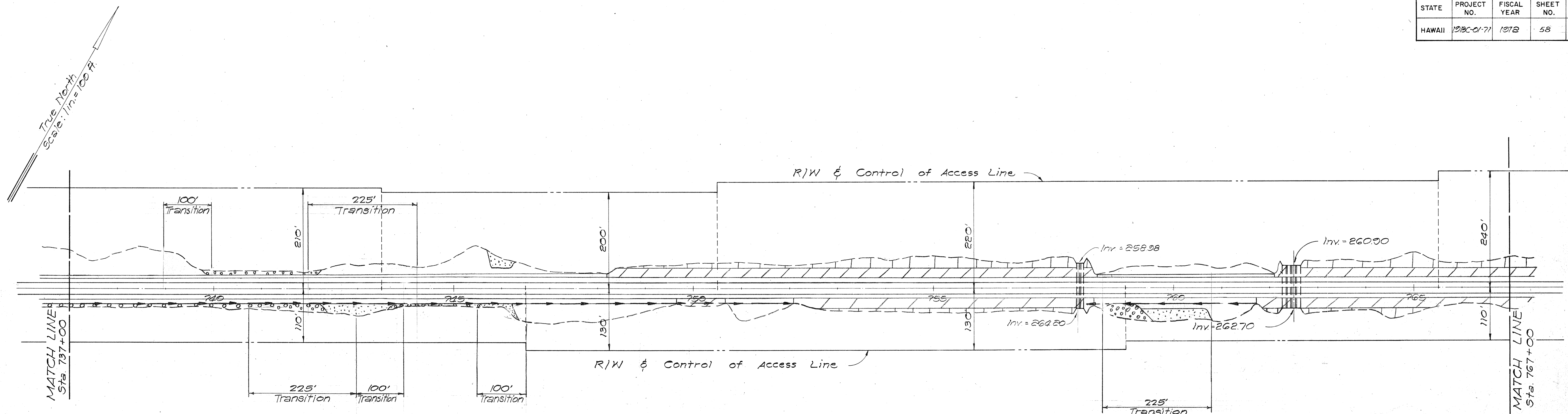
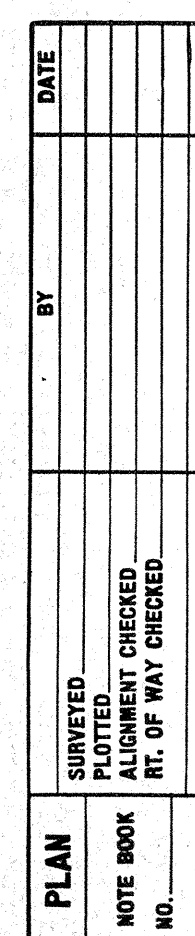
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Frank J. Doyle
SIGNATURE

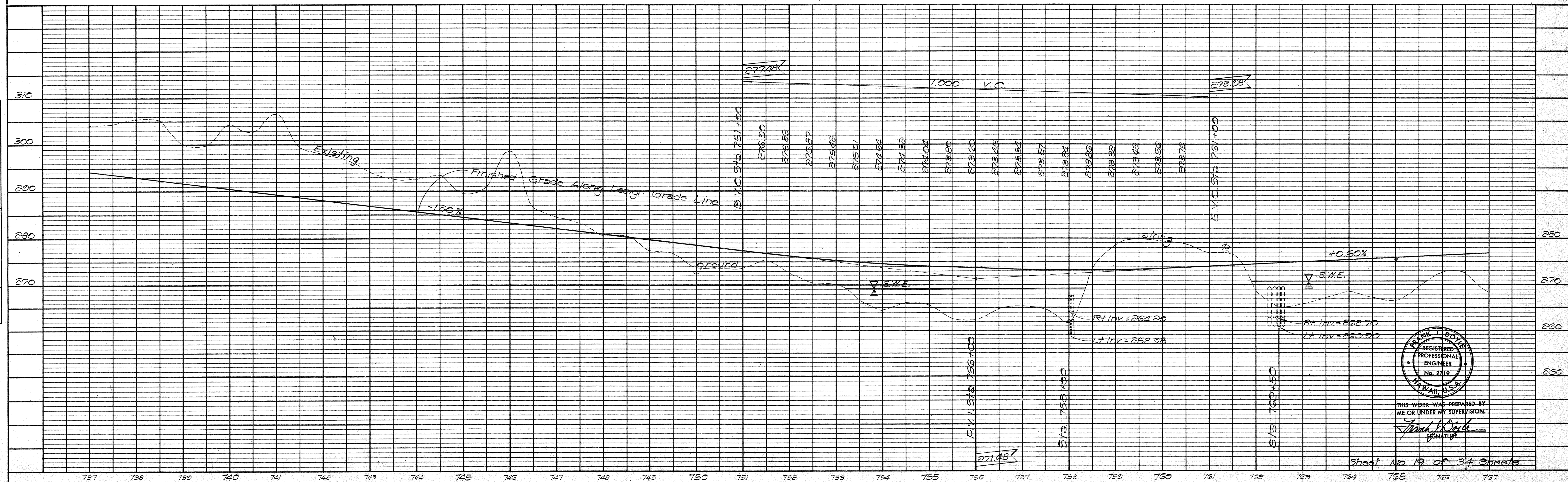
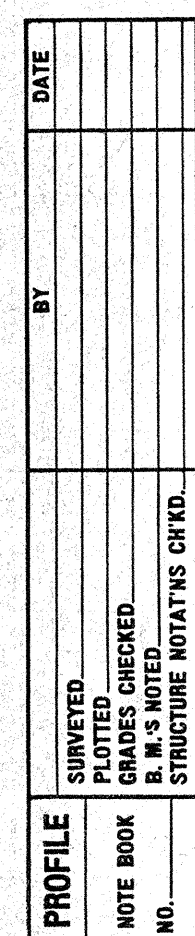
PROFILE	DATE
SURVEYED	BY
NOTE BOOK	NO.
GRADES CHECKED	
R.M.S. NOTED	
STRUCTURE NOTATIONS CHKD.	



STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	191BC-01-71	1972	58	118



P U U W A A W A
State of Hawaii ~ Owner
L.S. Dillingham,
B.F. Dillingham and
C.W. Carlsmith ~ Lessee
(T.M.K.: 7-1 ~ 03 ~ 1)



A circular professional engineer seal for Frank J. Doyle. The outer ring contains the text "FRANK J. DOYLE" at the top and "HAWAII, U.S.A." at the bottom. The inner circle contains the text "REGISTERED PROFESSIONAL ENGINEER" and "No. 2719". There are two small stars on either side of the number.

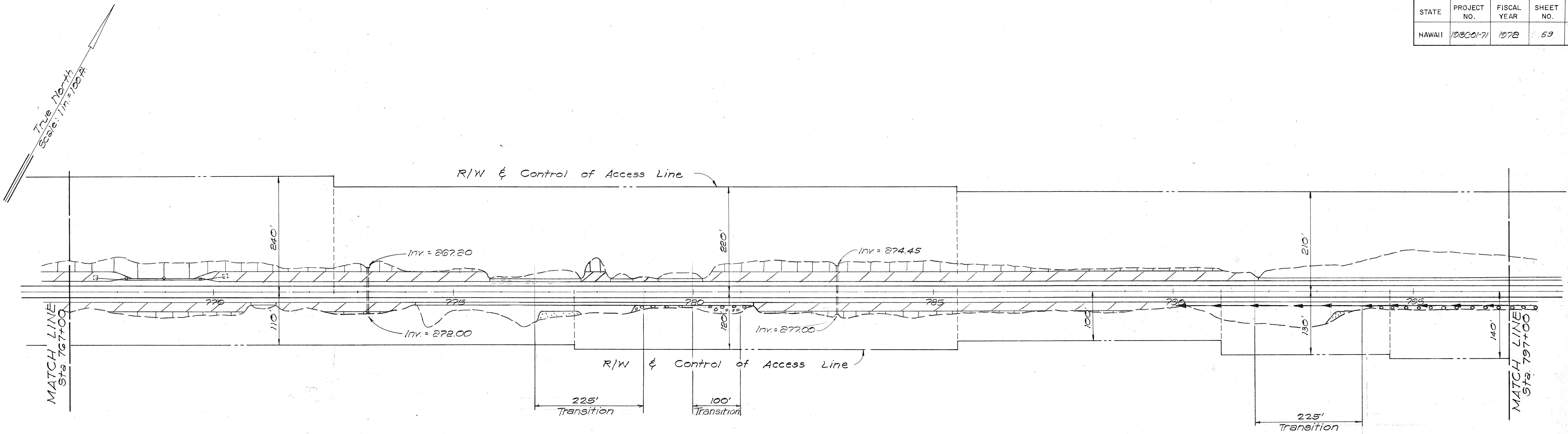
THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.

Frank J. Doyle
SIGNATURE

Sheet No. 19 of 34 Sheets

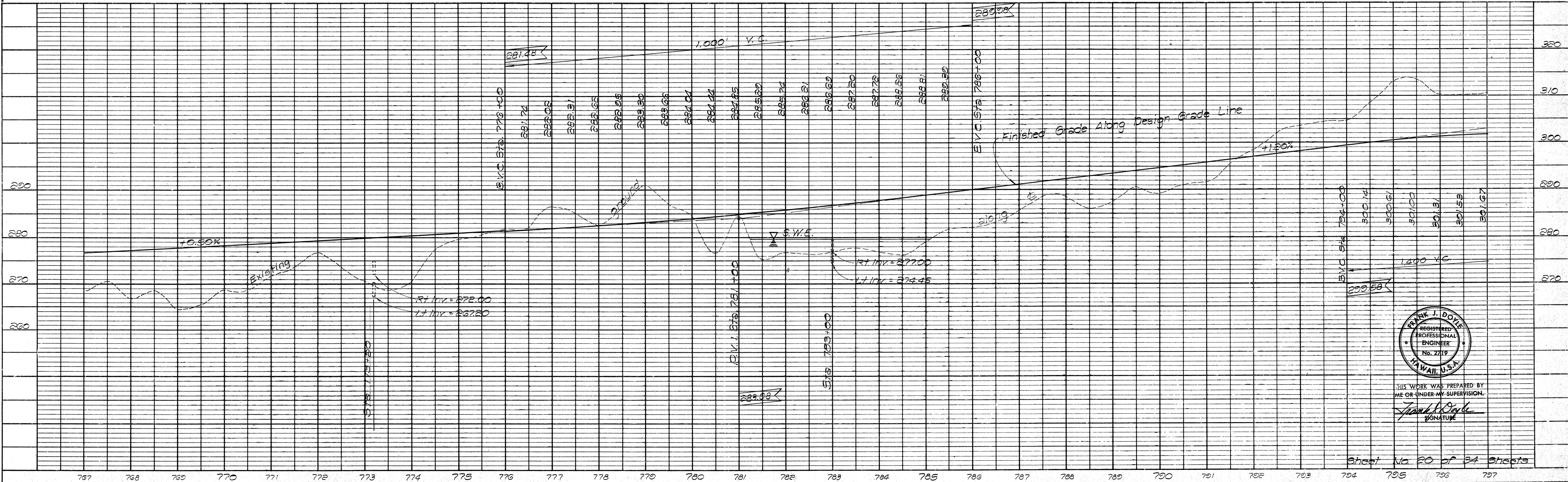
STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	1980-71	1978	59	118

PLAN	DATE
SURVEYED	BY
PLOTTED	BY
NOTE BOOK	NO.
ALIGNMENT CHECKED	NO.
BY	DATE



PUUWAAWA
State of Hawaii - Owner
(T.M.K. 7-1-02-8)

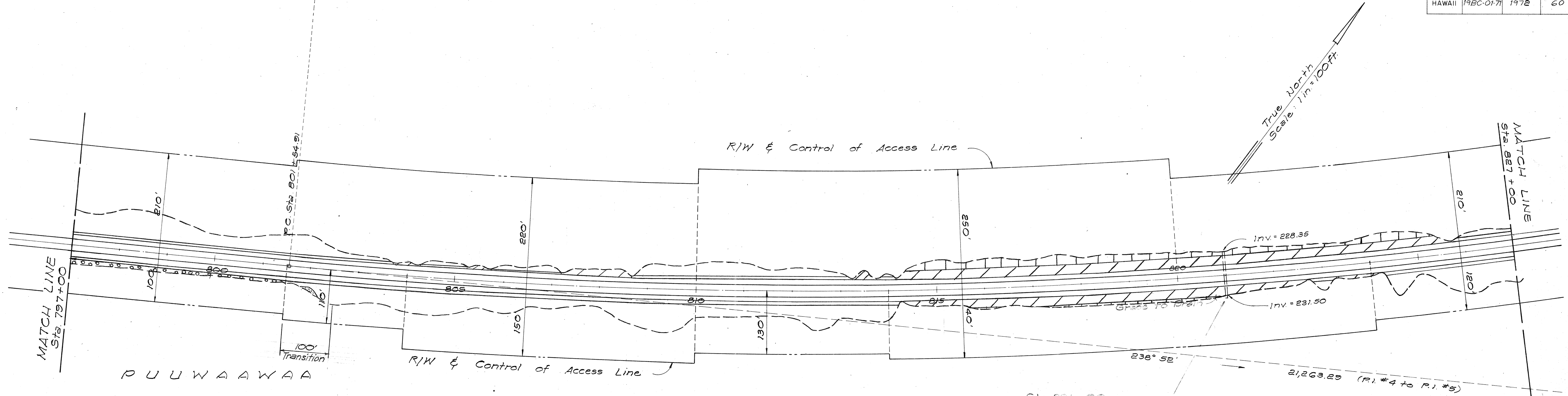
PROFILE	DATE
SURVEYED	BY
PLOTTED	BY
NOTE BOOK	NO.
GRADES CHECKED	NO.
STRUCTURE NOTATIONS CHKD.	NO.



State of Hawaii - Owner
(T.M.K.: 7-1-02:8)

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	19BC-0171	1972	60	118

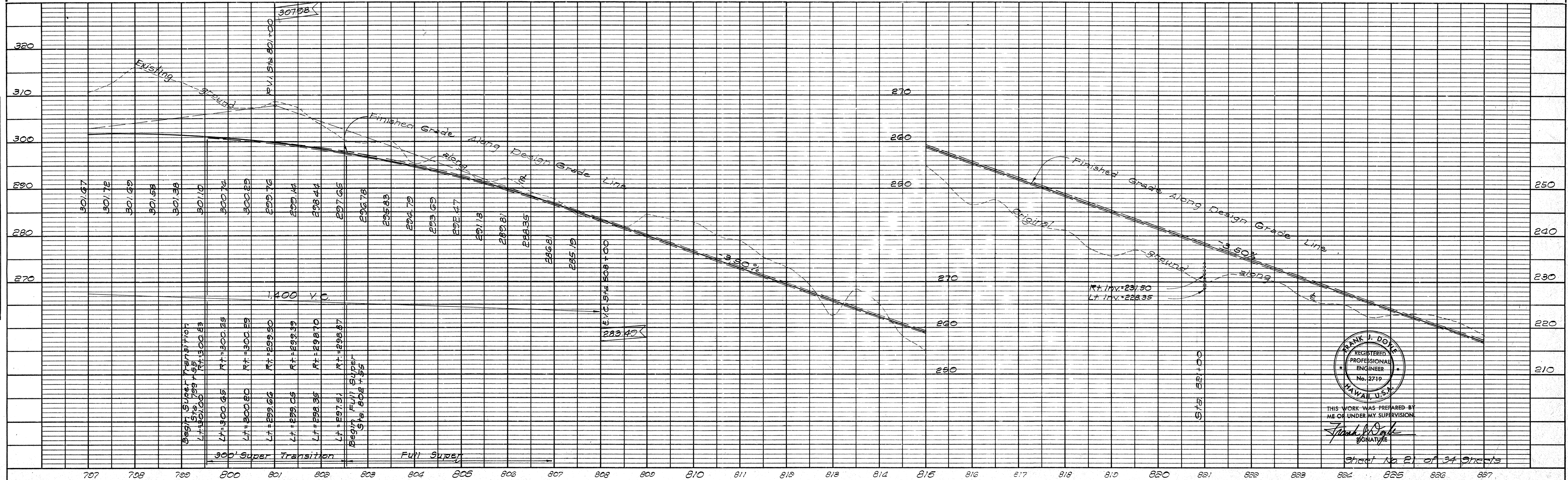
PLAN	DATE	BY
SURVEYED PLOTTED NOTE BOOK ALIGNMENT CHECKED RT. OF WAY CHECKED NO.		



State of Hawaii - Owner
L.S. Dillingham,
B.F. Dillingham and
C.W. Carlsmith - Lessee
(T.M.K.: 7-1-03:1)

Sta 821+00
Exist 72" P. & S. Pipes
27" x 12" Corrugated Pipes
w/ Concrete Pipe Intake and
CPI Outlet Structure

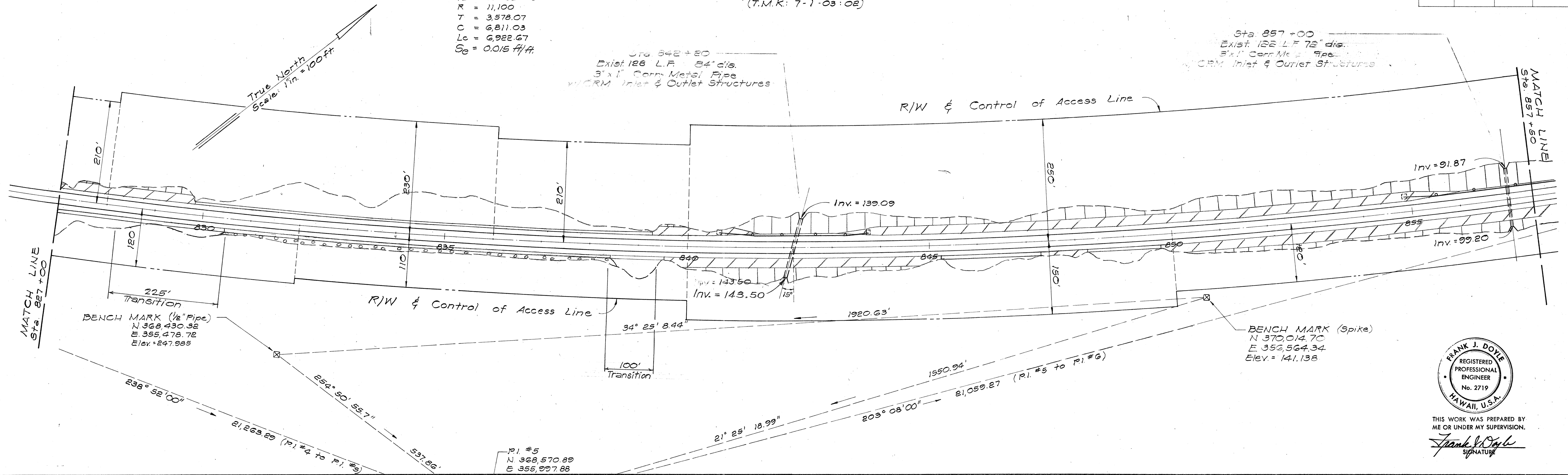
PROFILE	DATE	BY
SURVEYED PLOTTED NOTE BOOK GRADES CHECKED E.M.S. NOTED STRUCTURE NOTATION CHD.		



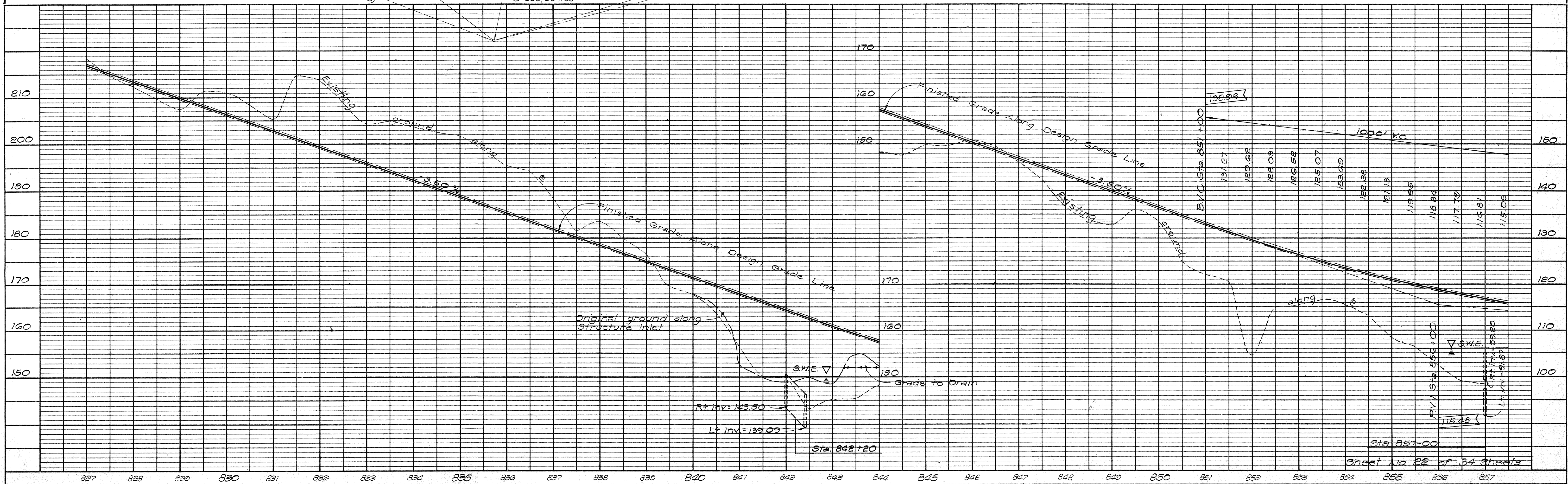
STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	19BC-01-71	1972	61	118

E CURVE DATA
 $\Delta = 35^\circ 44' 00''$
 $\Delta/2 = 17^\circ 52' 00''$
 $R = 11,100$
 $T = 3,578.07$
 $C = 6,811.03$
 $L_c = 6,922.67$
 $S_e = 0.015 \text{ ft/ft}$

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 State of Hawaii - Owner
 (T.M.K.: 7-1-03:02)

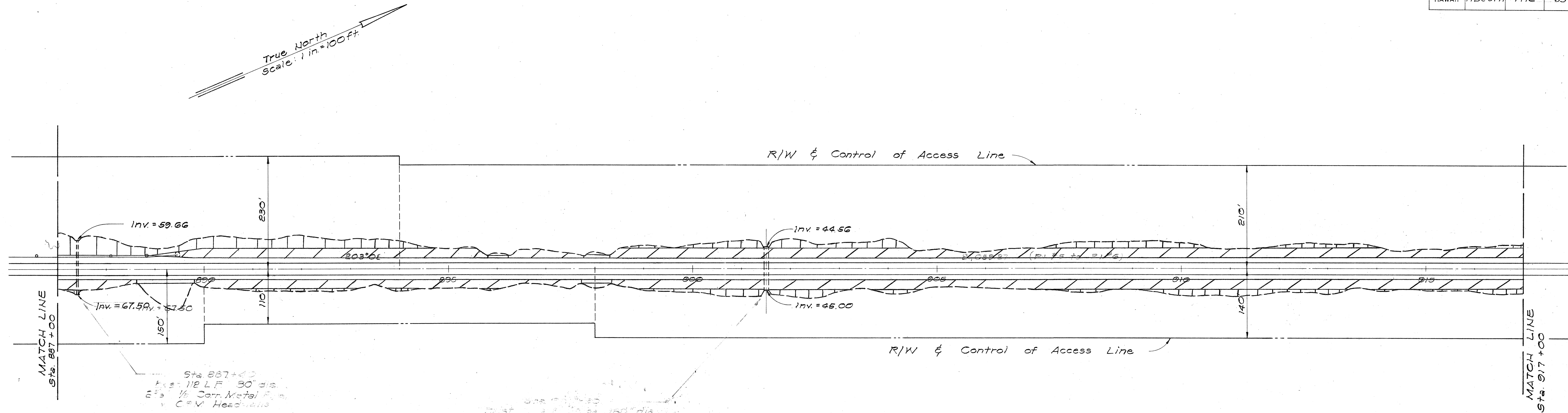


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 Frank J. Doyle
 SIGNATURE



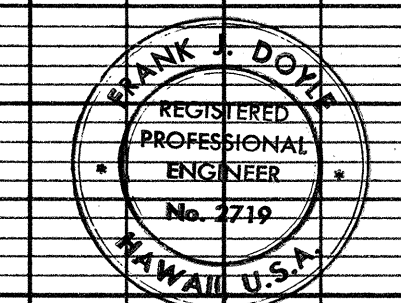
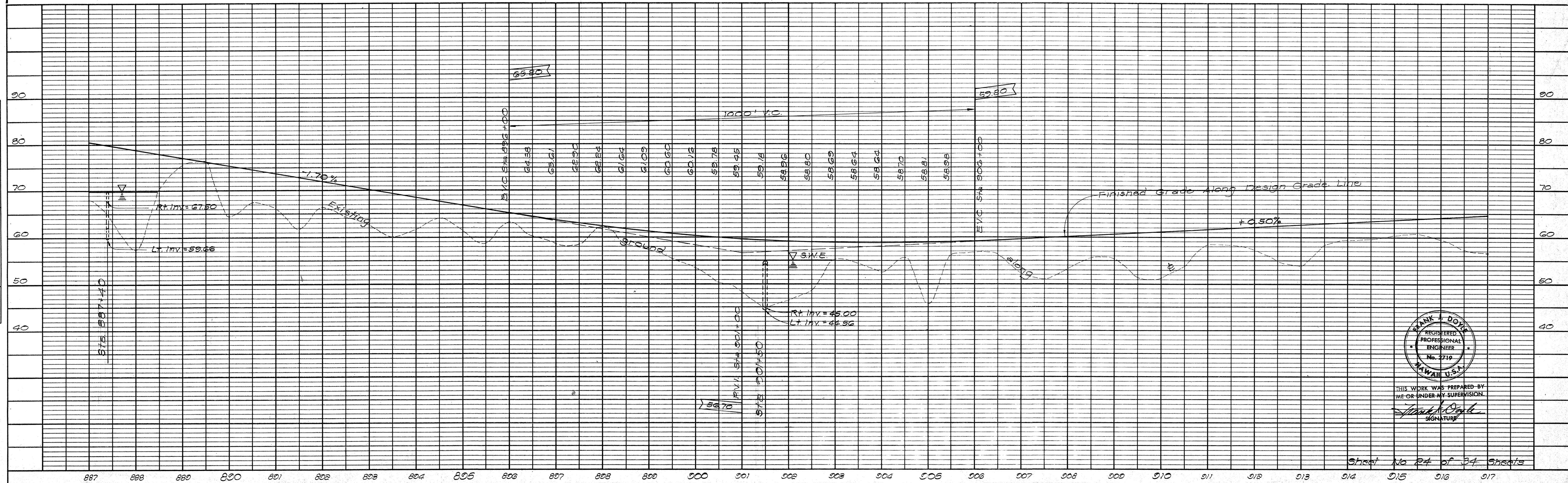
STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	19BC-01-71	1972	63	118

PLAN	DATE	BY
SURVEYED		
PLANNED		
NOTED		
STRUCTURE NOTED		
NO.		



PUUWAAWAA
State of Hawaii - Owner
(T.M.K. 7-1-03:02)

PROFILE	DATE	BY
SURVEYED		
PLANNED		
NOTED		
STRUCTURE NOTED		
NO.		



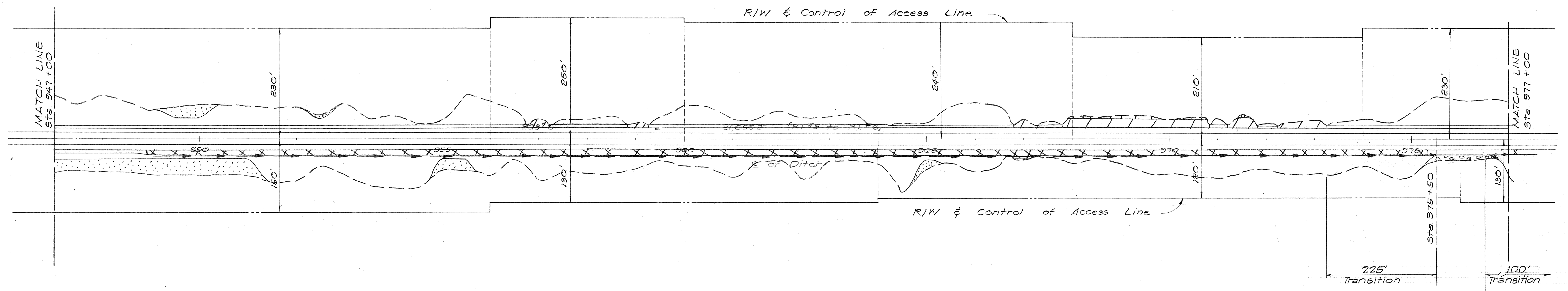
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Sheet No 24 of 34 Sheets

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	19BC-01-71	1972	65	118

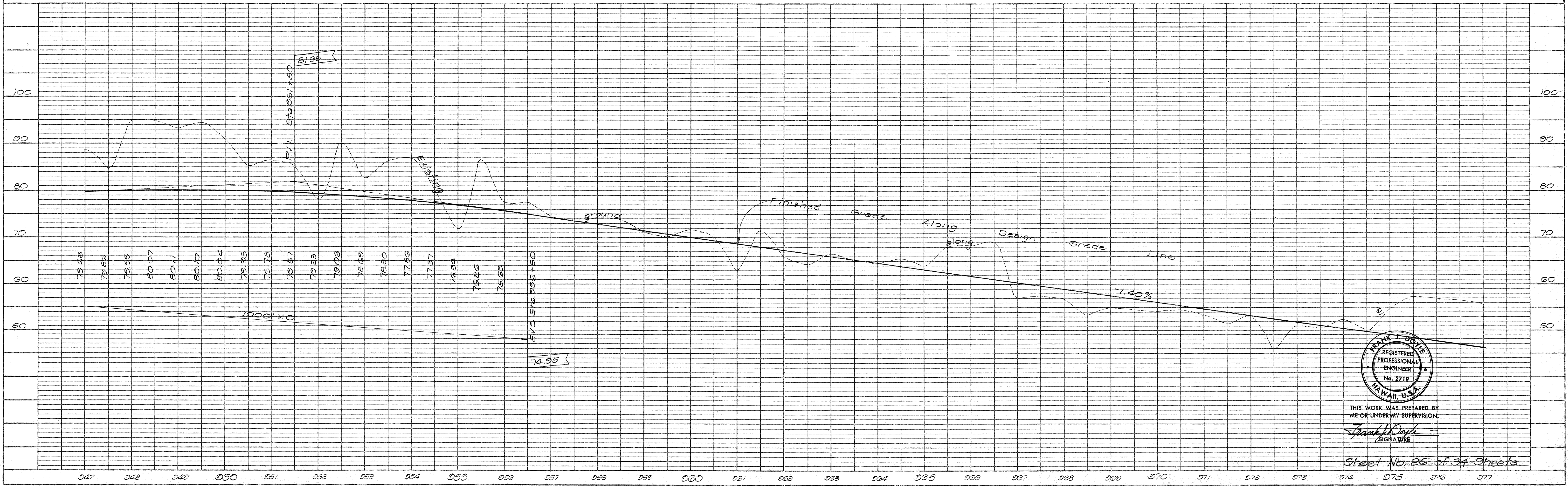
True North
Scale 1 in. = 100 ft.

PLAN	DATE
SURVEYED	BY
PLOTTED	
NOTE BOOK	
ALIGNMENT CHECKED	
RT. OF WAY CHECKED	
NO.	



PUUWAAWAA
State of Hawaii - Owner
(T.M.K. 7-1-03:02)

PROFILE	DATE
SURVEYED	BY
PLOTTED	
NOTE BOOK	
GRADES CHECKED	
STRUCTURE NOTATION CHKD.	
NO.	



FRANK J. DOYLE
REGISTERED
PROFESSIONAL
ENGINEER
No. 2719
HAWAII, U.S.A.

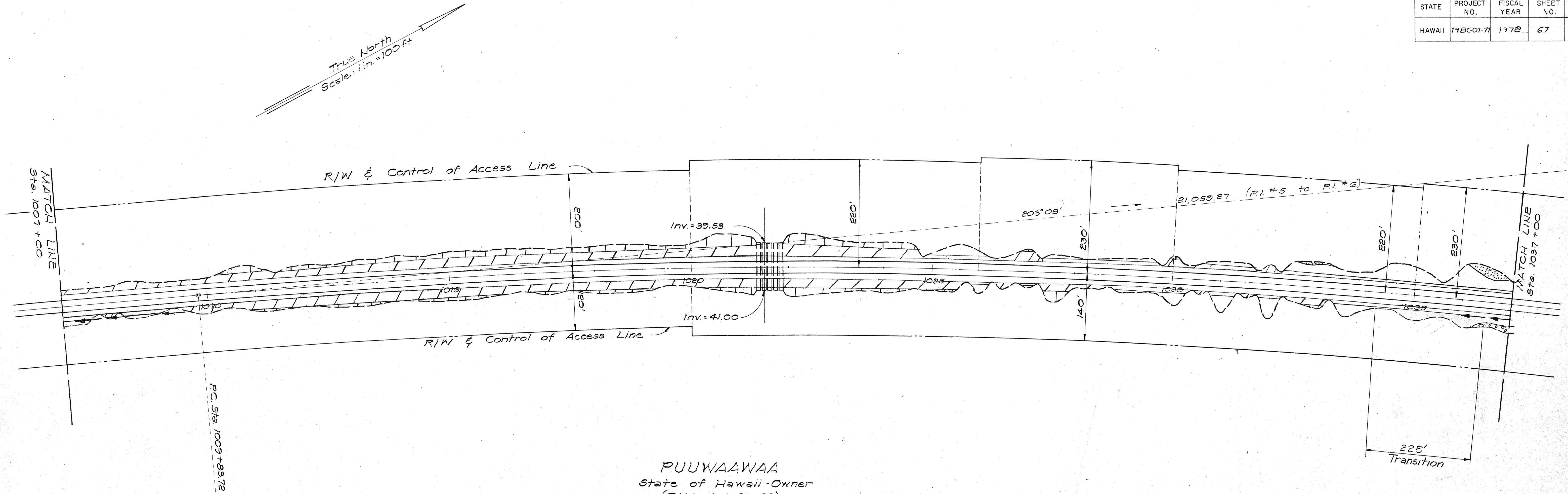
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Frank J. Doyle
(SIGNATURE)

Sheet No. 26 of 34 Sheets

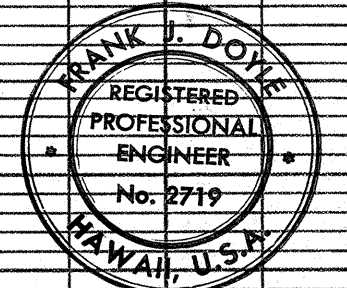
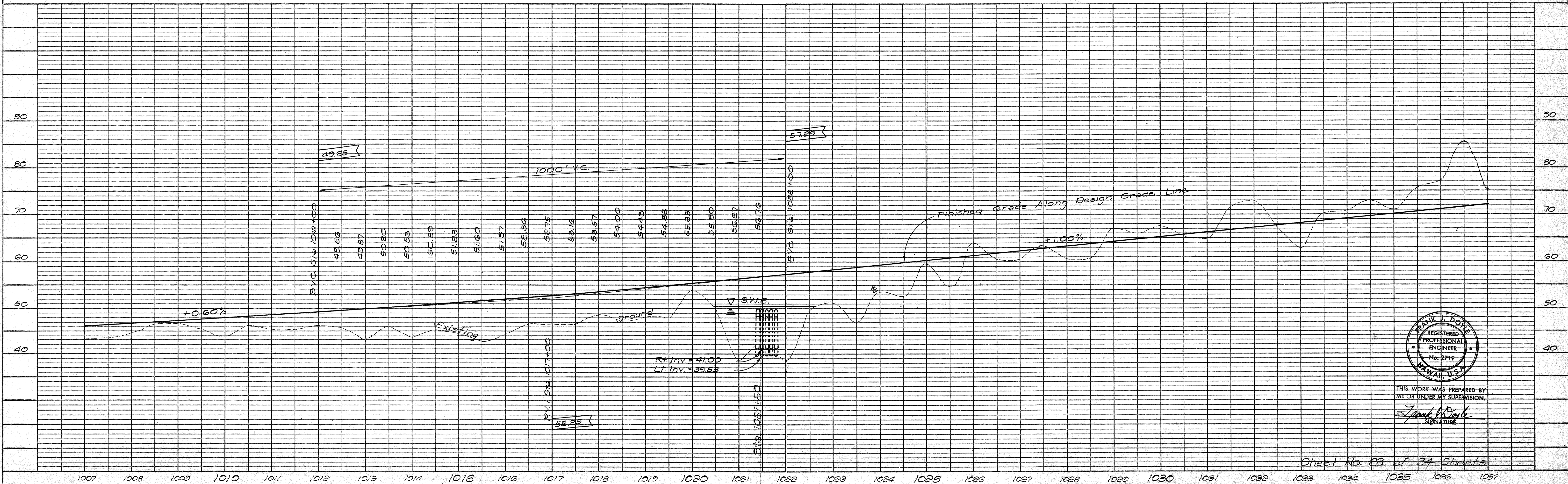
STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	19BC01-71	1972	67	118

PLAN	DATE	BY
SURVEYED		
PLOTTED		
NOTE BOOK		
NO.		



PUUWAAWAA
State of Hawaii-Owner
(T.M.K.: 7-1-03:02)

PROFILE	DATE	BY
SURVEYED		
GRADES CHECKED		
B.M.'S NOTED		
STRUCTURE NOTATIONS		
NO.		



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Frank J. Doyle
SIGNATURE

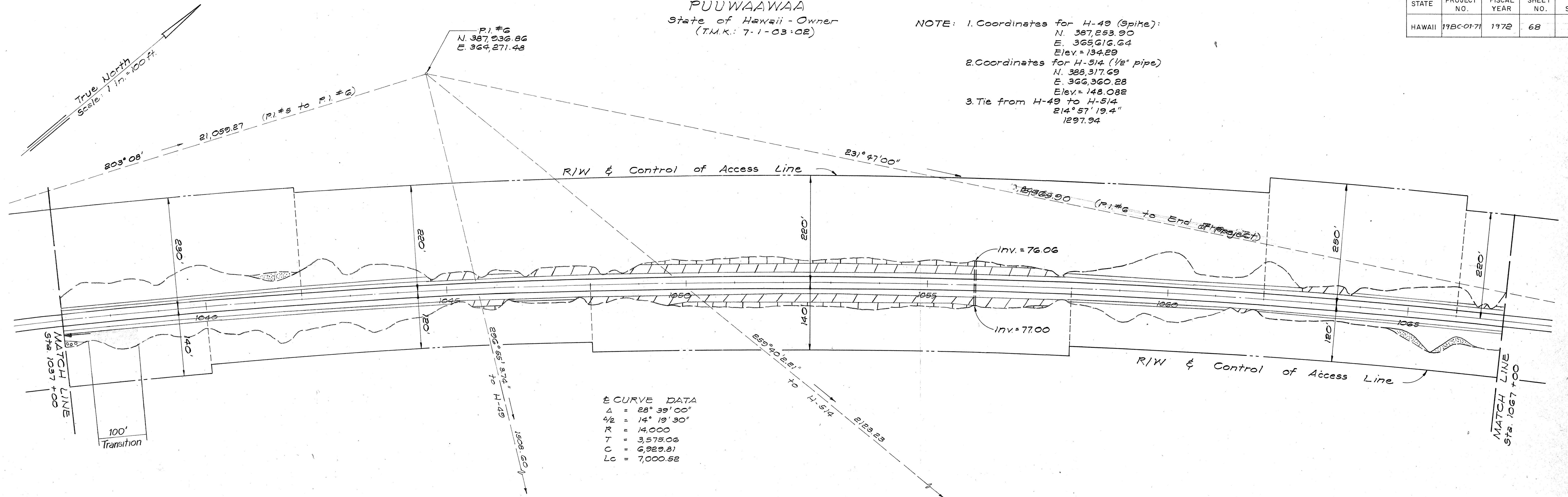
Sheet No. 28 of 34 Sheets

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	17BC-01-71	1972	68	118

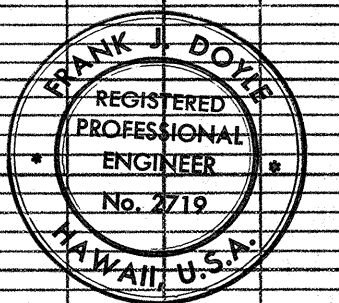
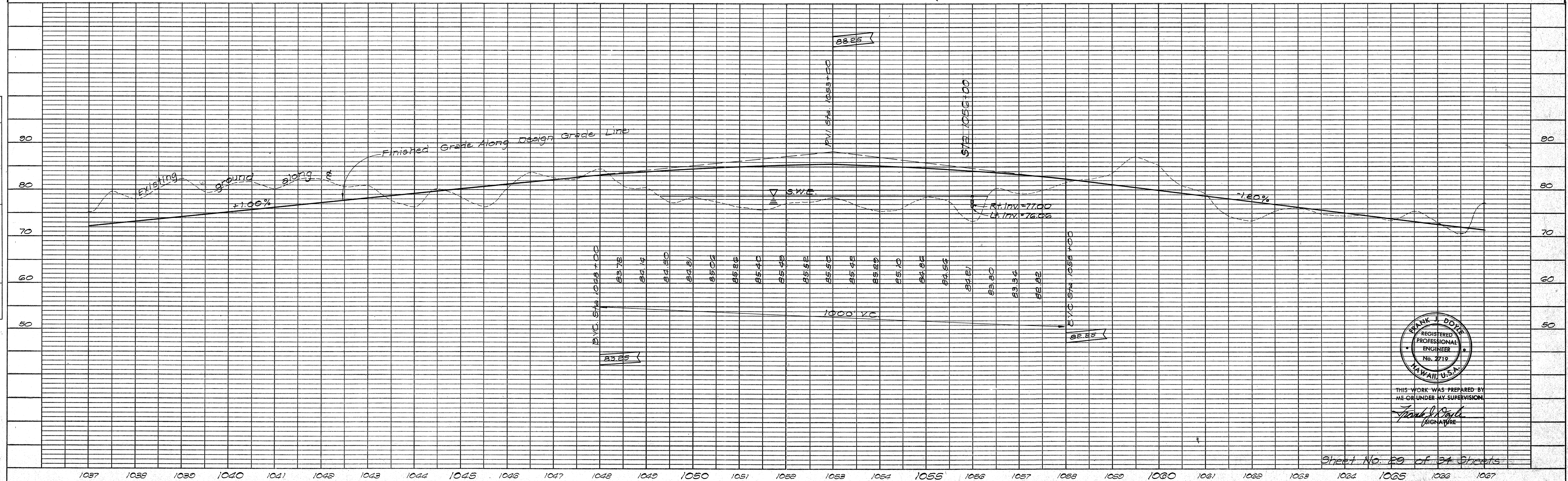
PUUWAAWAA
State of Hawaii - Owner
(T.M.K.: 7-1-03:02)

NOTE: 1. Coordinates for H-49 (Spike):
N. 387,253.90
E. 365,616.64
Elev. = 134.29
2. Coordinates for H-514 (1/2" pipe)
N. 388,317.69
E. 366,360.28
Elev. = 148.082
3. Tie from H-49 to H-514
214° 57' 19.4"
1297.94

PLAN	DATE
SURVEYED NOTE BOOK NO.	BY
PLOTTED ALIGNMENT CHECKED RT. OF WAY CHECKED	



PROFILE	DATE
SURVEYED NOTE BOOK NO.	BY
PLOTTED GRADES CHECKED B.M.'S INTERFERED STRUCTURE NOTATIONS CHD.	



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Frank J. Davis
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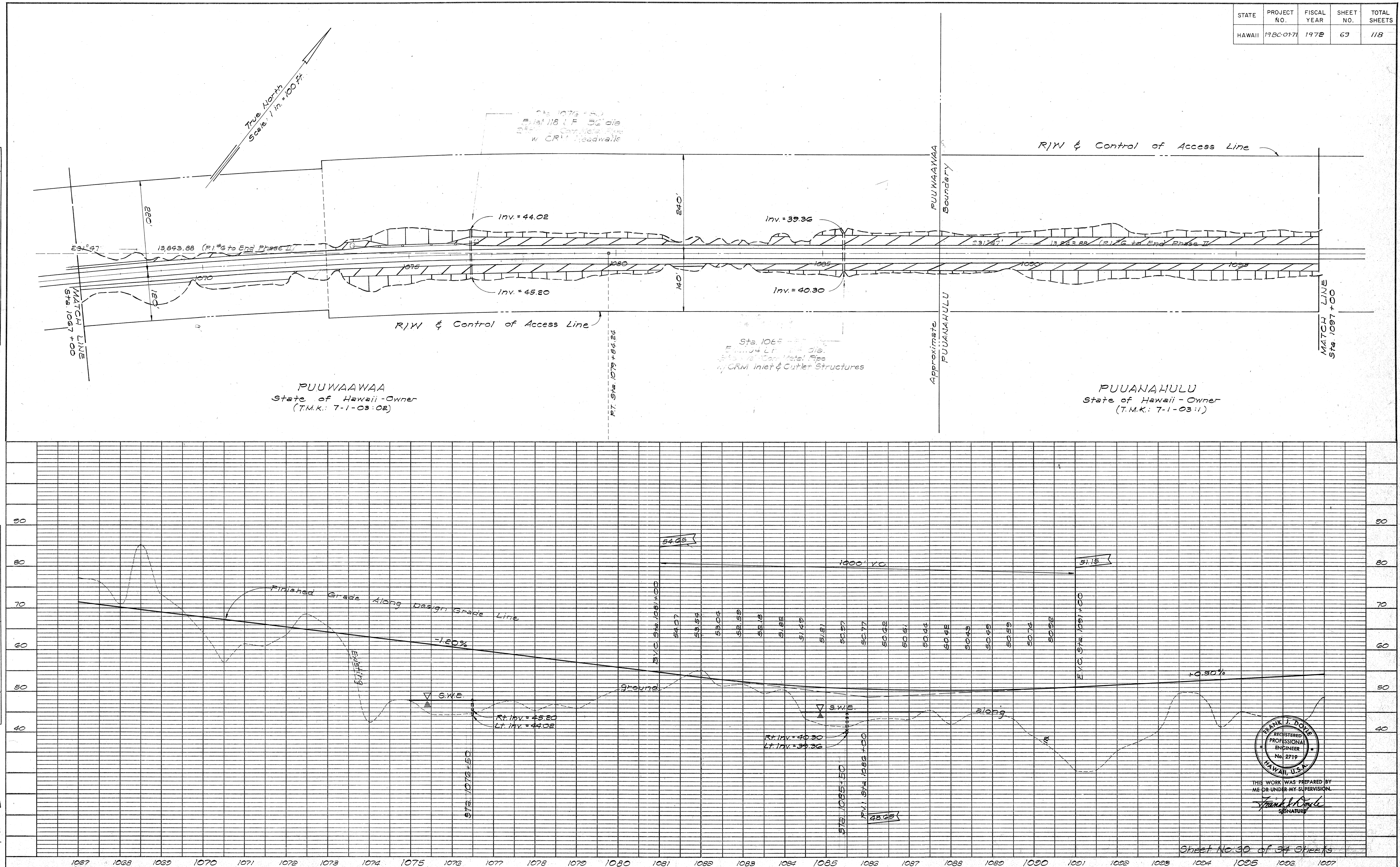
Sheet No. 29 of 34 Sheets

STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	19BC-0771	1972	69	118

PLAN	DATE
SURVEYED	BY
PLOTTED	
NOTE BOOK	
NO.	

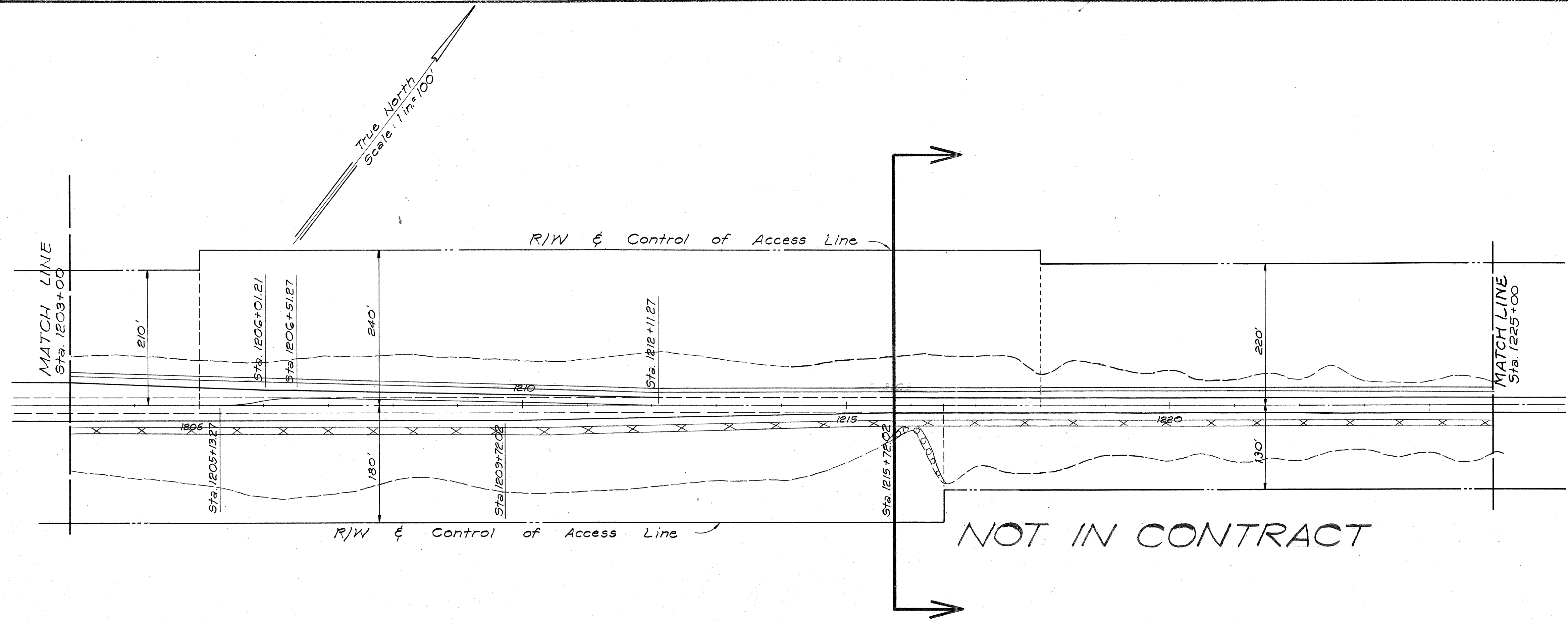
PROFILE	DATE
SURVEYED	BY
PLOTTED	
NOTE BOOK	
NO.	

C-2-3
GRADING
PHASE II



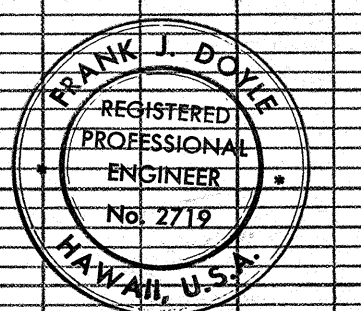
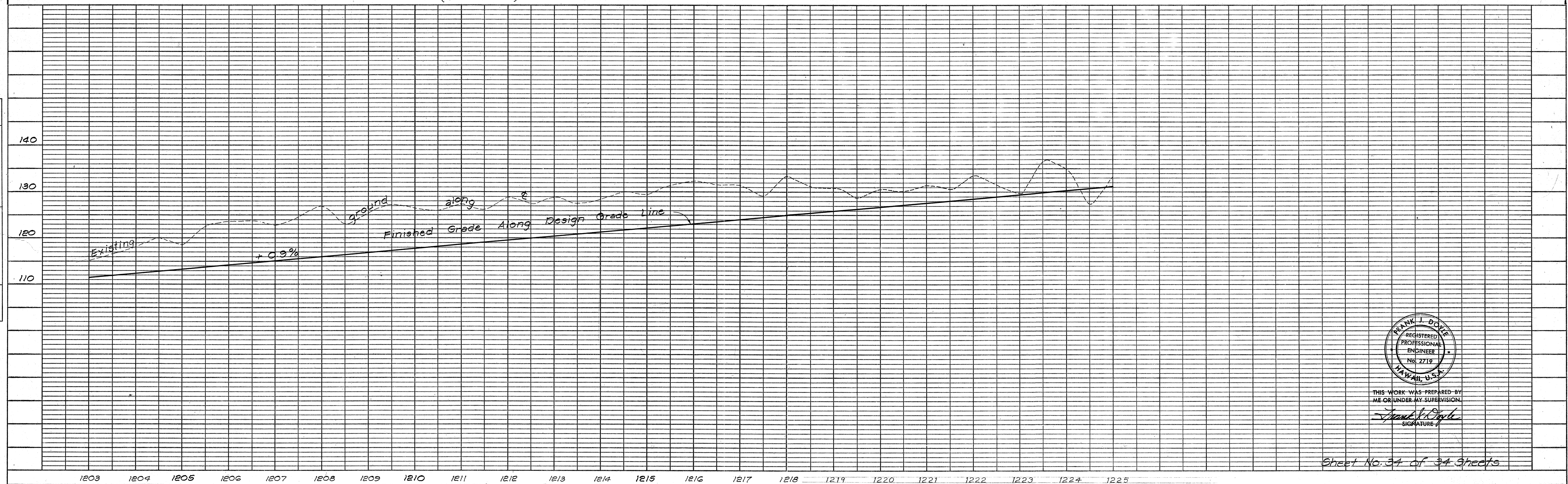
STATE	PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	79BC-01-71	1972	73	118

PLAN	NO.	NOTE BOOK	SURVEYED	BY	DATE



WAIKOLOA
Richard Smart - Owner
(6-8-01:5)

PROFILE	NO.	NOTE BOOK	SURVEYED	BY	DATE



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Frank J. Dole
SIGNATURE

Sheet No. 34 of 34 Sheets