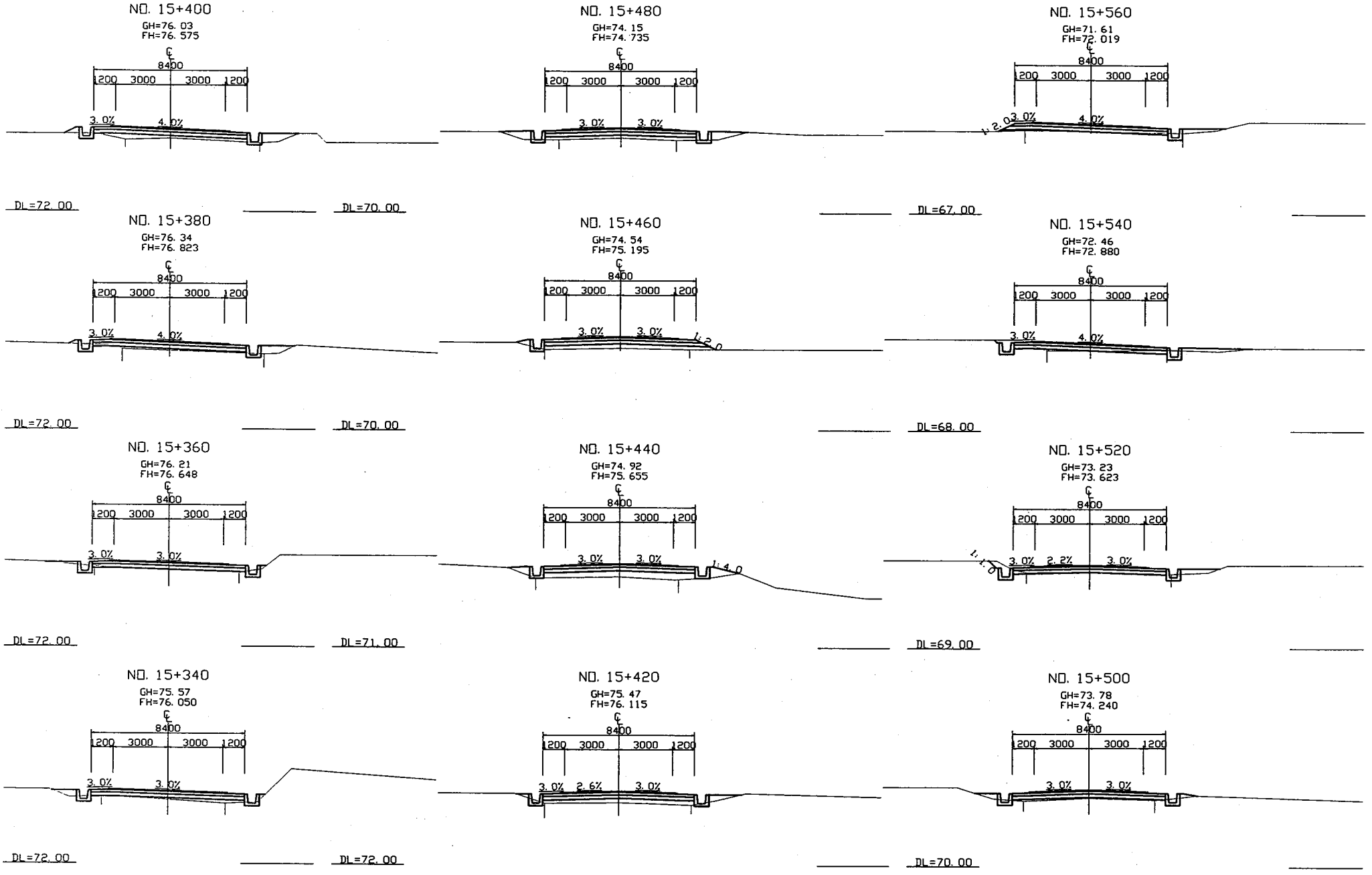
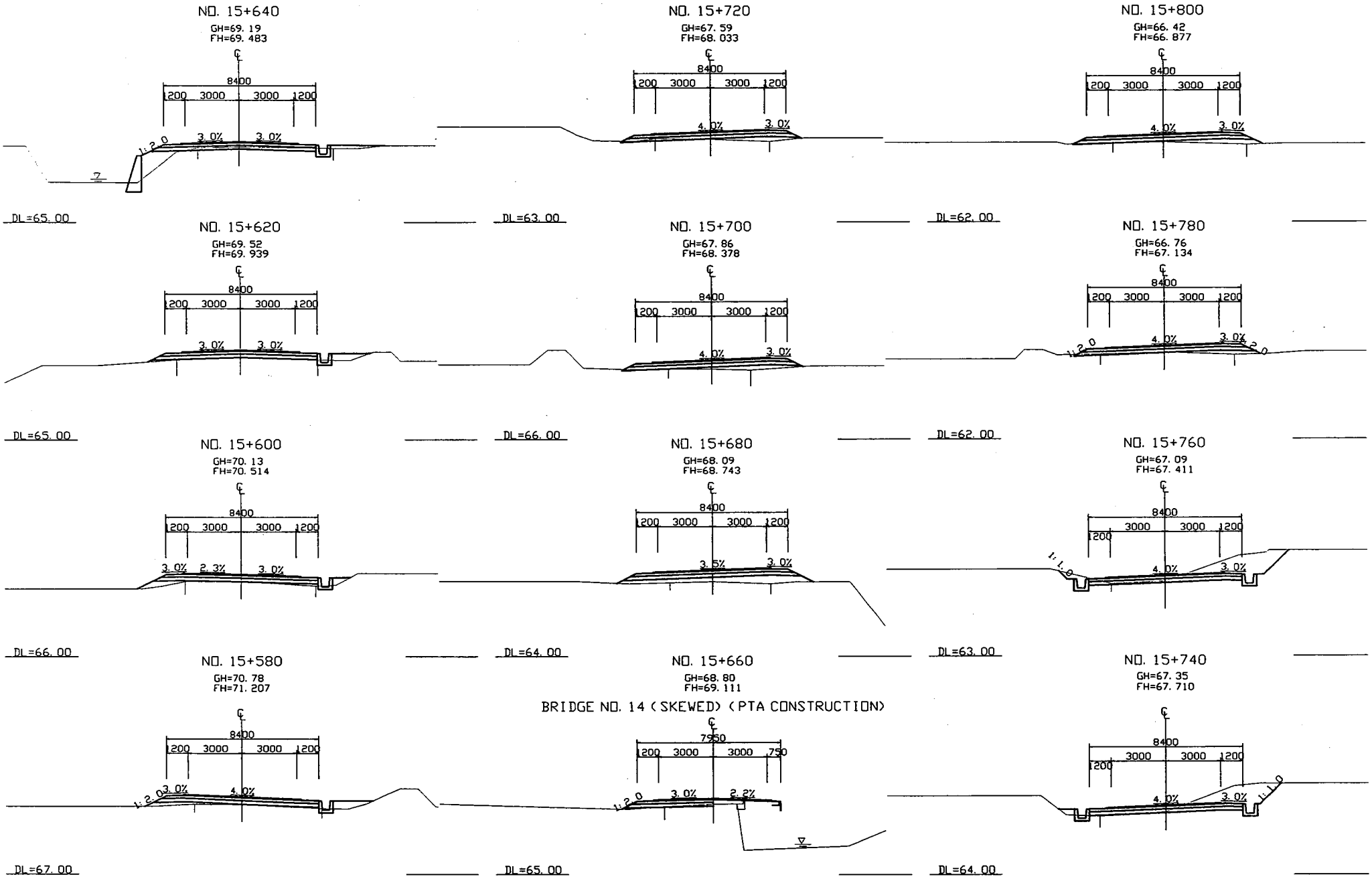


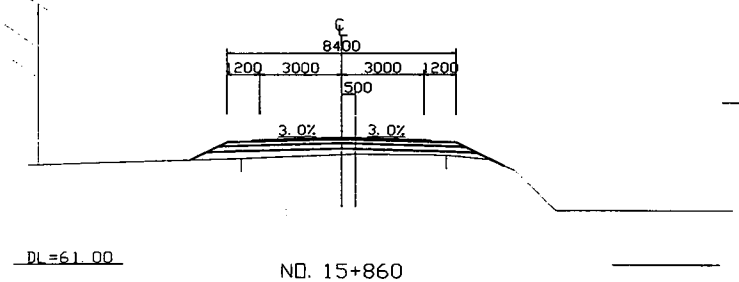
- 102 -

POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION (NO.15+340 - NO.15+560)	SCALE : S=1:100	DRAWING No: CS-41



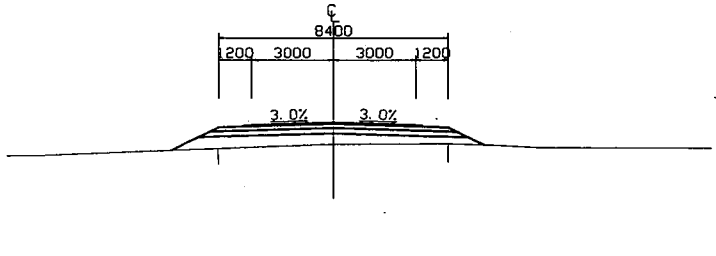
POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION (NO.15+580 - NO.15+8000)	SCALE: S=1:100	DRAWING No: CS-42

NO. 15+880
GH=65.15
FH=65.759



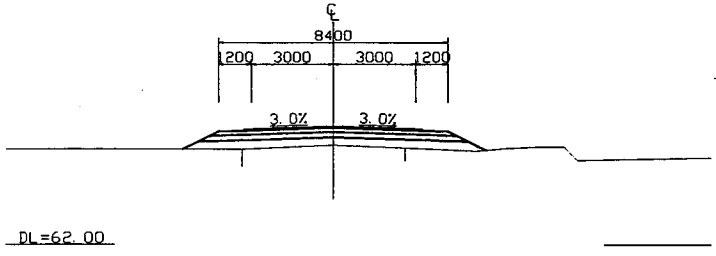
DL=61.00

NO. 15+860
GH=65.27
FH=66.090



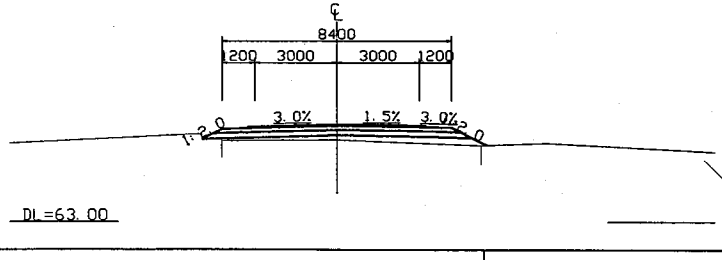
DL=61.00

NO. 15+840
GH=65.68
FH=66.369



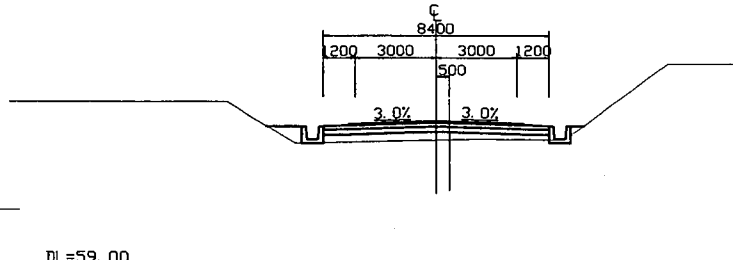
DL=62.00

NO. 15+820
GH=66.05
FH=66.623



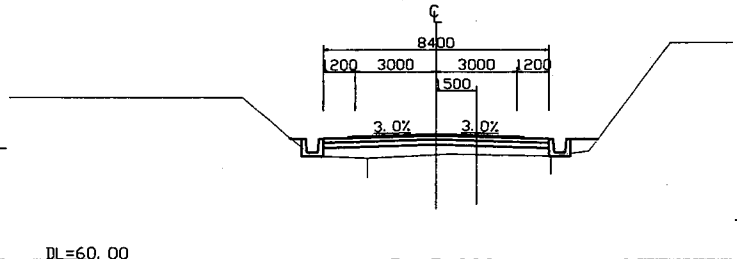
DL=63.00

NO. 15+960
GH=63.62
FH=64.335



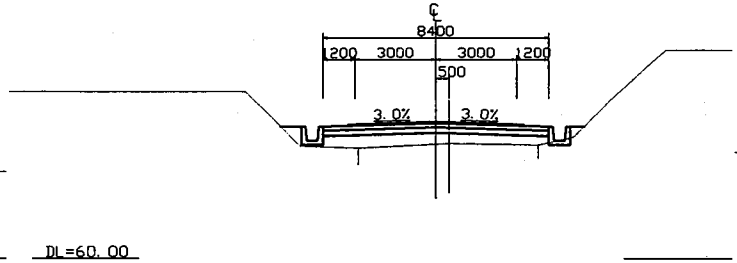
DL=59.00

NO. 15+940
GH=63.92
FH=64.691



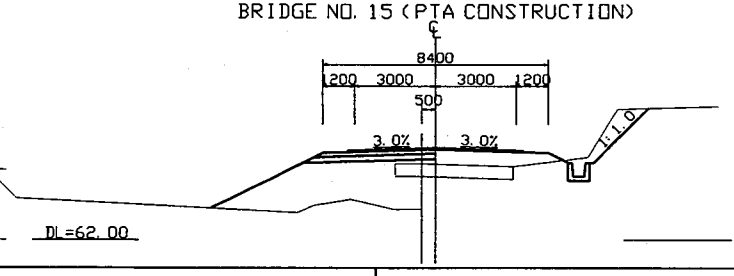
DL=60.00

NO. 15+920
GH=64.23
FH=65.047



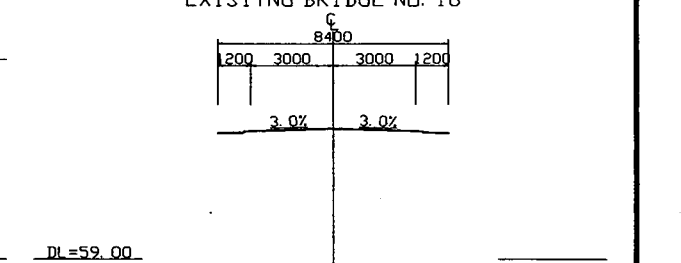
DL=60.00

NO. 15+900
GH=63.12
FH=65.403
BRIDGE NO. 15 (PTA CONSTRUCTION)



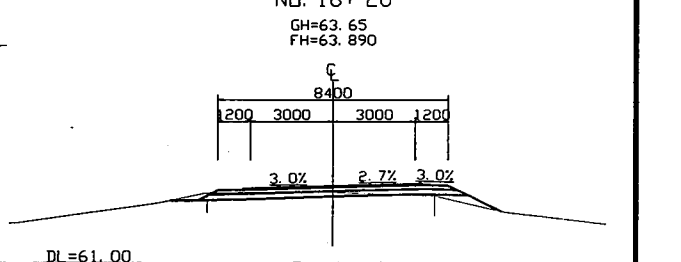
DL=62.00

NO. 16+40
GH=57.85
FH=63.890
EXISITNG BRIDGE NO. 16



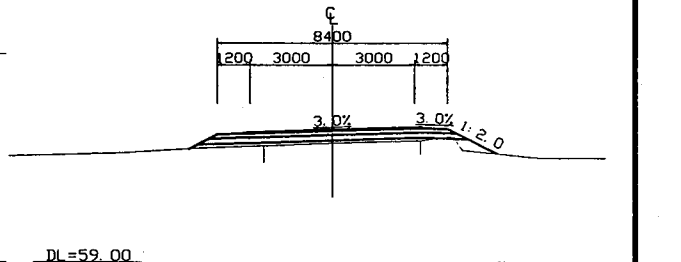
DL=59.00

NO. 16+20
GH=63.65
FH=63.890



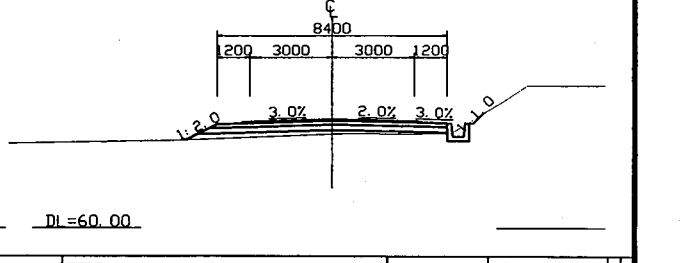
DL=61.00

NO. 16+0
GH=63.40
FH=63.890



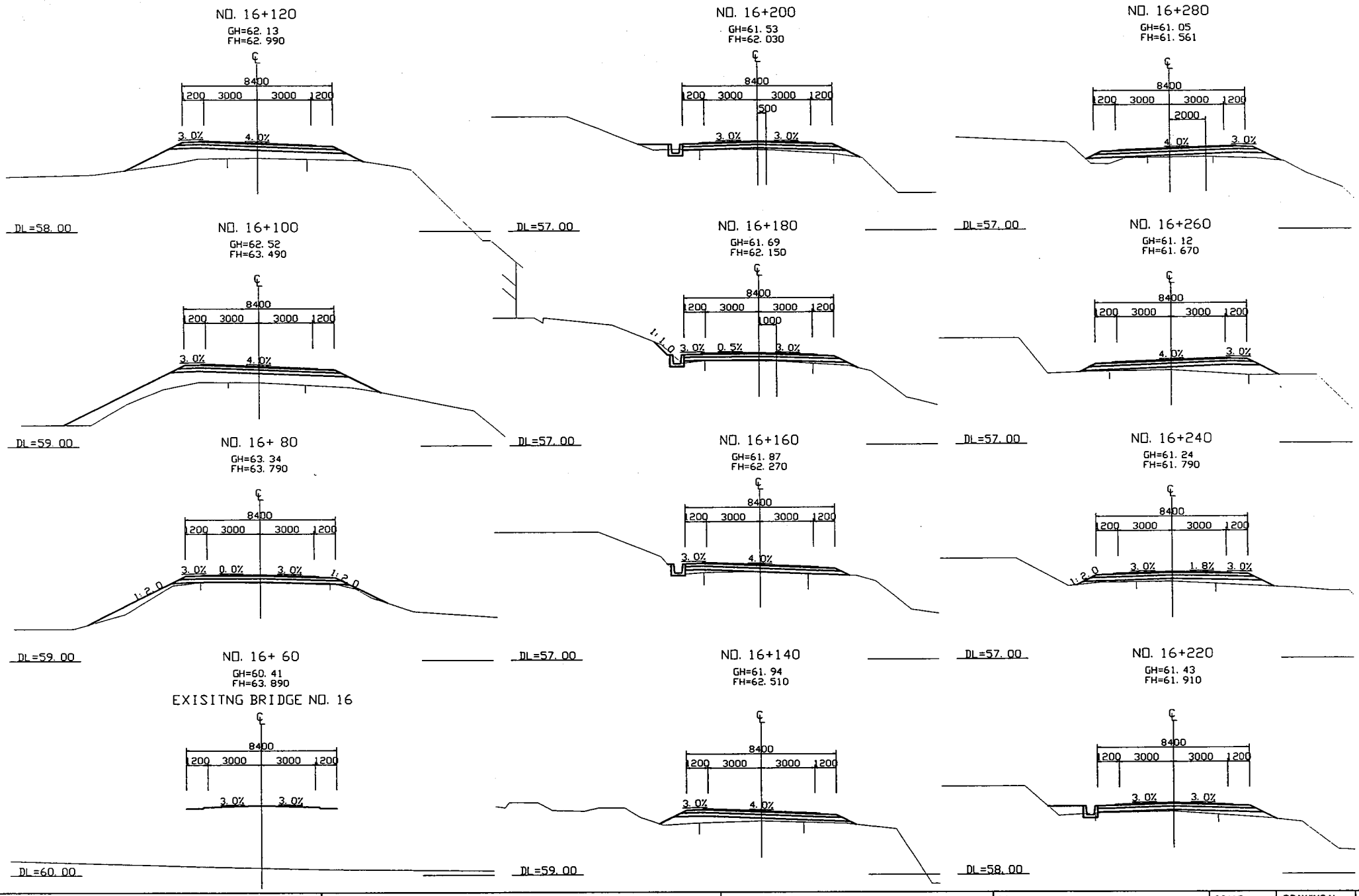
DL=59.00

NO. 15+980
GH=63.46
FH=64.009



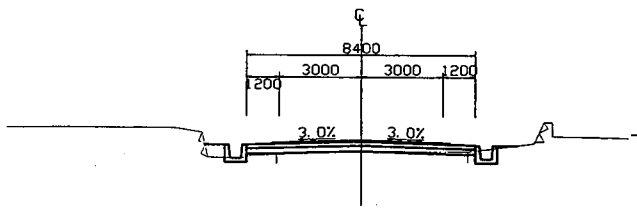
DL=60.00

POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION (NO.15+820 - NO.16+040)	SCALE : S=1:100	DRAWING No: CS-43



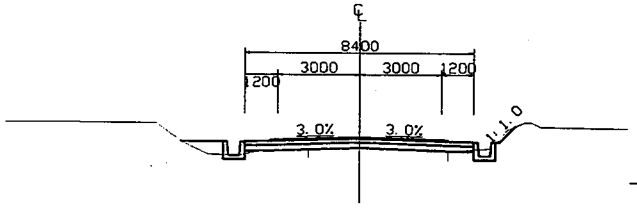
POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION (NO.16+060 – NO.16+280)	SCALE : S=1:100	DRAWING No: CS-44

NO. 16+360
GH=61. 38
FH=61. 781



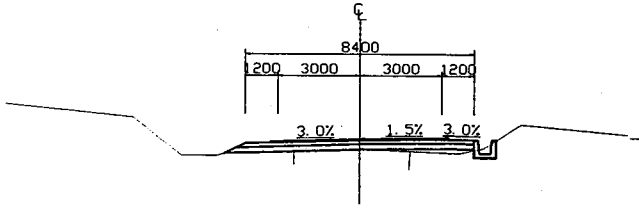
DL=57. 00

NO. 16+340
GH=61. 29
FH=61. 707



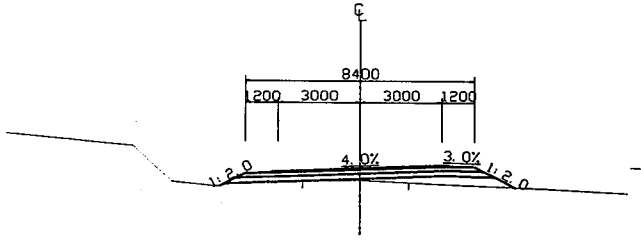
DL=57. 00

NO. 16+320
GH=61. 18
FH=61. 581



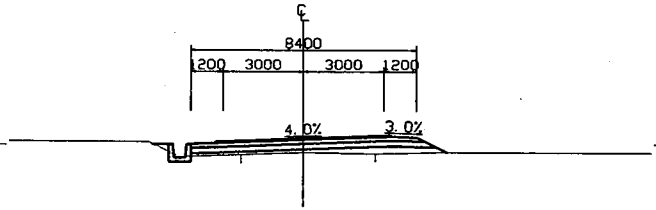
DL=57. 00

NO. 16+300
GH=61. 06
FH=61. 528



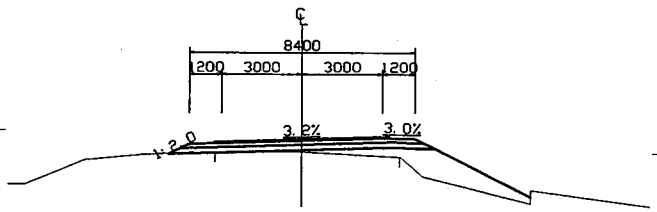
DL=58. 00

NO. 16+440
GH=61. 65
FH=62. 170



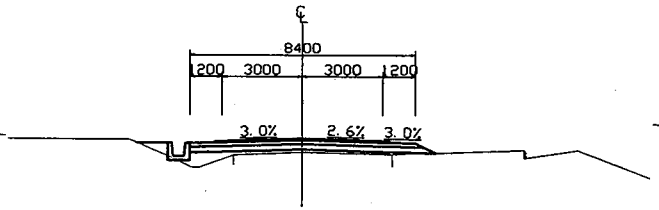
DL=57. 00

NO. 16+420
GH=61. 30
FH=61. 770



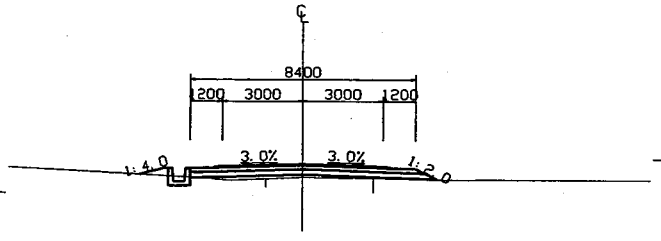
DL=57. 00

NO. 16+400
GH=61. 19
FH=61. 690



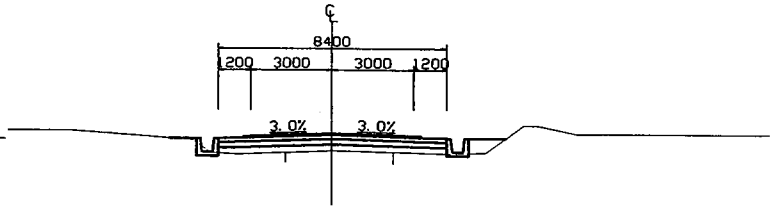
DL=57. 00

NO. 16+380
GH=61. 27
FH=61. 767



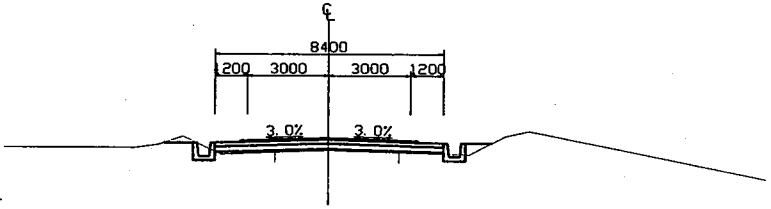
DL=58. 00

NO. 16+520
GH=63. 26
FH=63. 896



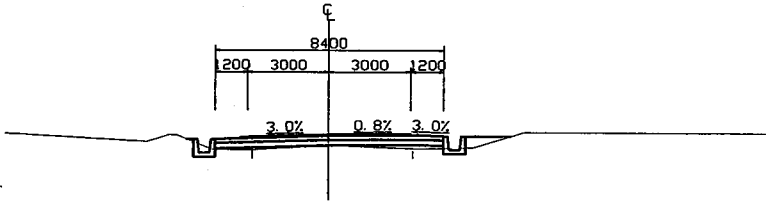
DL=59. 00

NO. 16+500
GH=63. 18
FH=63. 642



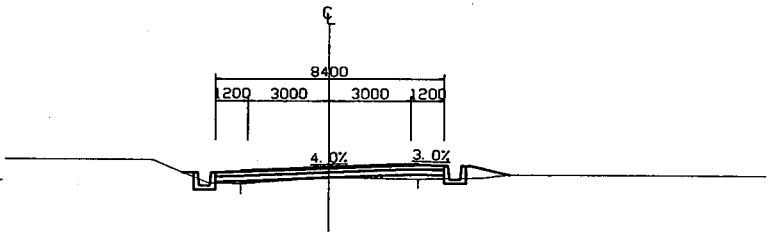
DL=59. 00

NO. 16+480
GH=62. 85
FH=63. 252



DL=58. 00

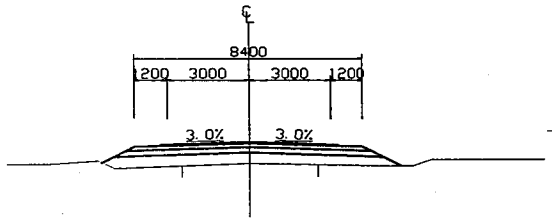
NO. 16+460
GH=62. 33
FH=62. 730



DL=59. 00

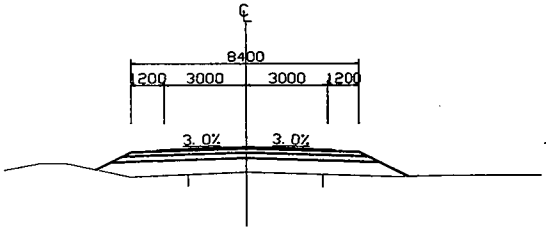
POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION (NO.16+300 - NO.16+520)	SCALE : S=1:100	DRAWING No: CS-45

NO. 16+600
GH=62.75
FH=63.552



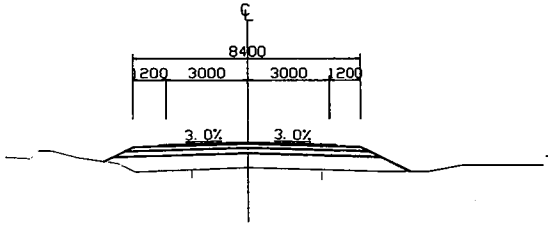
DL=59.00

NO. 16+580
GH=62.92
FH=63.842



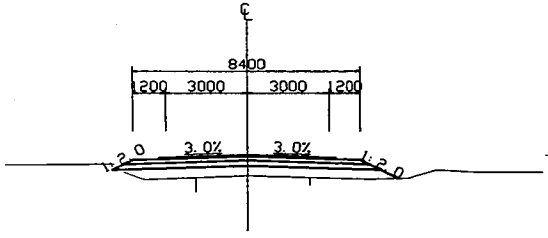
DL=59.00

NO. 16+560
GH=63.06
FH=63.996



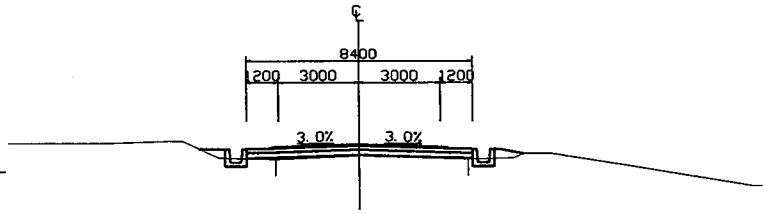
DL=59.00

NO. 16+540
GH=63.24
FH=64.014



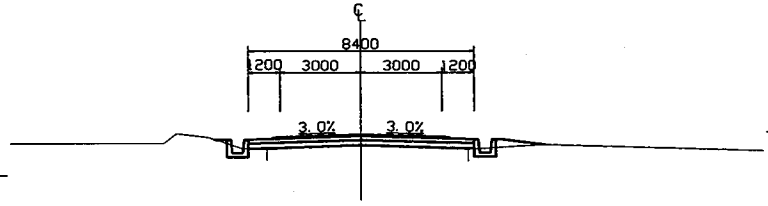
DL=60.00

NO. 16+680
GH=61.47
FH=61.906



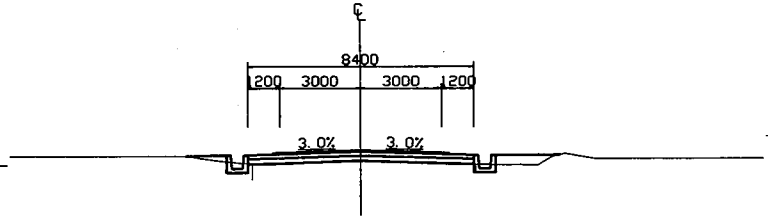
DL=57.00

NO. 16+660
GH=61.88
FH=62.288



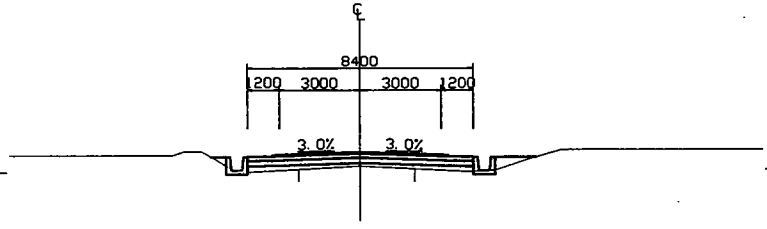
DL=57.00

NO. 16+640
GH=62.29
FH=62.690



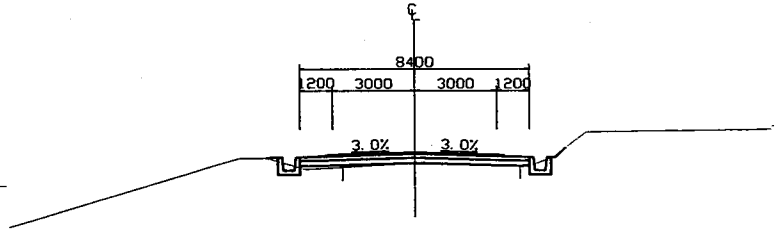
DL=58.00

NO. 16+620
GH=62.61
FH=63.130



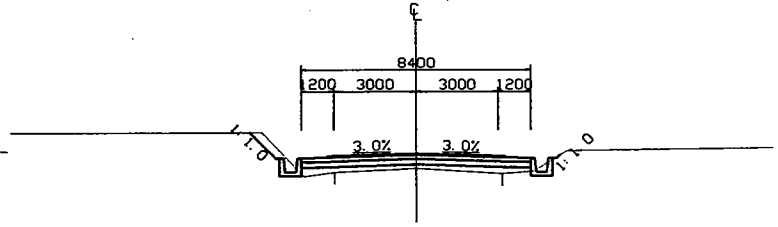
DL=59.00

NO. 16+760
GH=59.14
FH=59.558



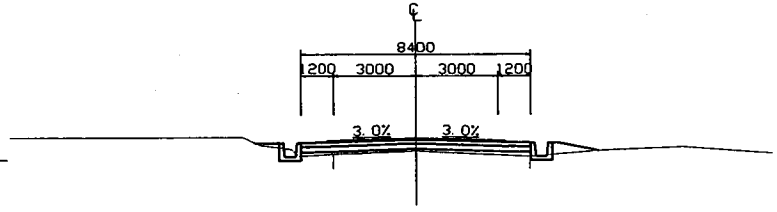
DL=55.00

NO. 16+740
GH=60.00
FH=60.555



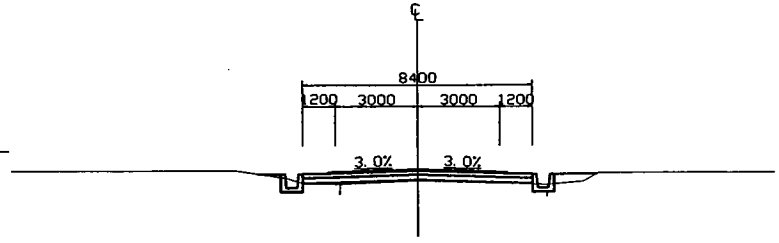
DL=56.00

NO. 16+720
GH=60.66
FH=61.142



DL=56.00

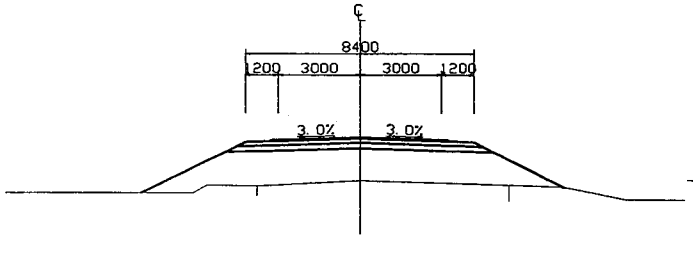
NO. 16+700
GH=61.09
FH=61.524



DL=58.00

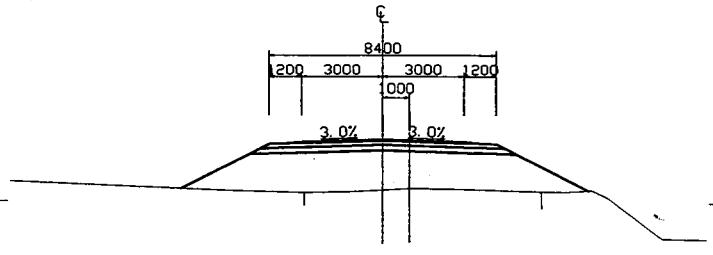
POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION (NO.16+540 - NO.16+760)	SCALE: S=1:100	DRAWING No: CS-46

NO. 16+840
GH=55. 56
FH=57. 154



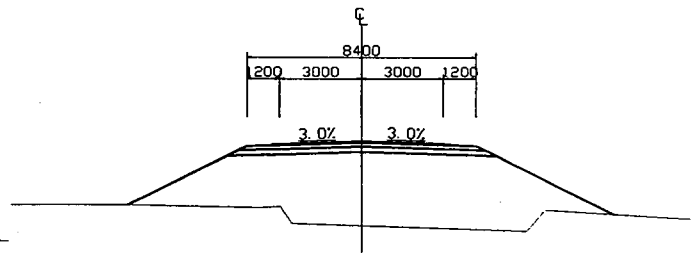
DL=52. 00

NO. 16+920
GH=55. 28
FH=57. 154



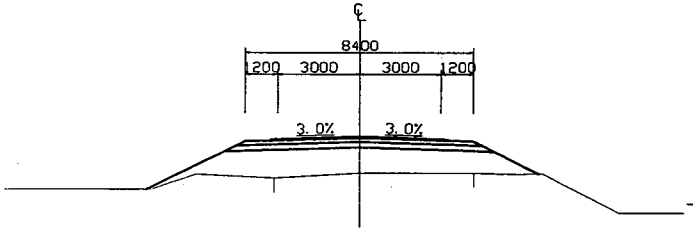
DL=52. 00

NO. 17+ 0
GH=54. 03
FH=57. 154



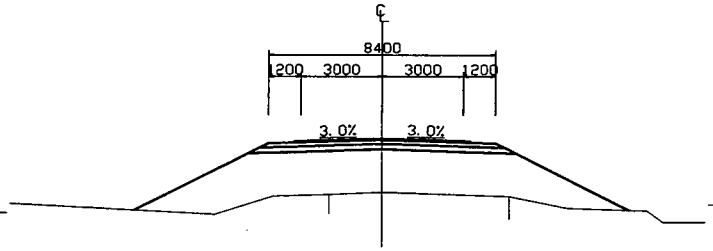
DL=52. 00

NO. 16+820
GH=55. 85
FH=57. 204



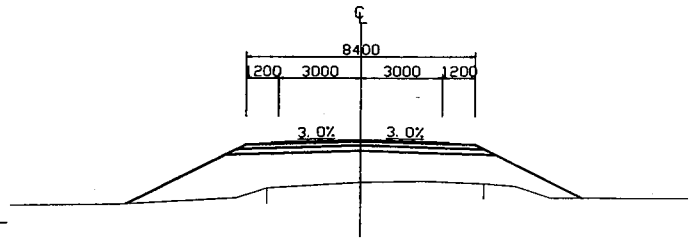
DL=52. 00

NO. 16+900
GH=55. 16
FH=57. 154



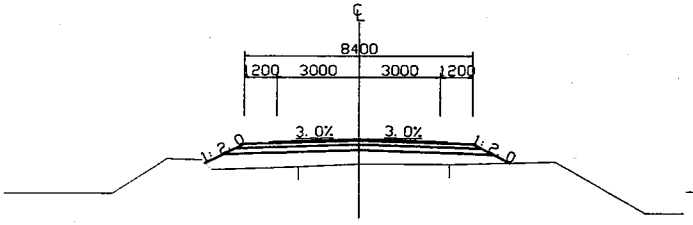
DL=52. 00

NO. 16+980
GH=55. 58
FH=57. 154



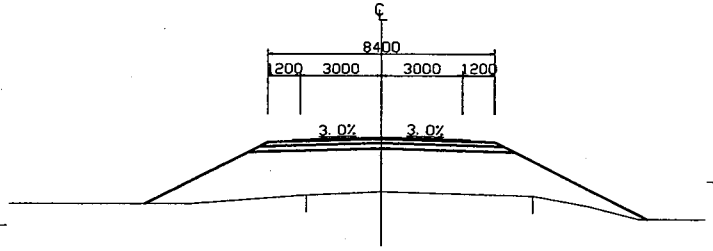
DL=52. 00

NO. 16+800
GH=56. 70
FH=57. 605



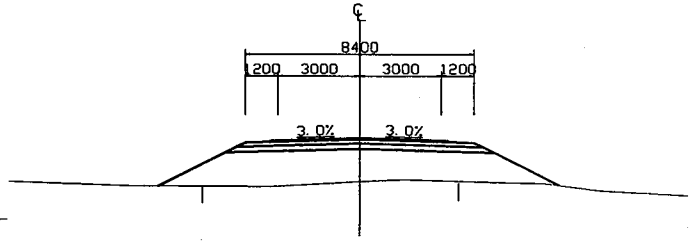
DL=53. 00

NO. 16+880
GH=55. 16
FH=57. 154



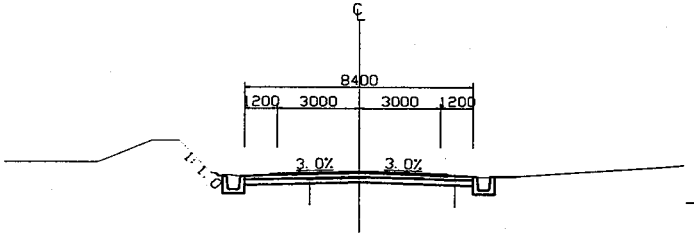
DL=52. 00

NO. 16+960
GH=55. 56
FH=57. 154



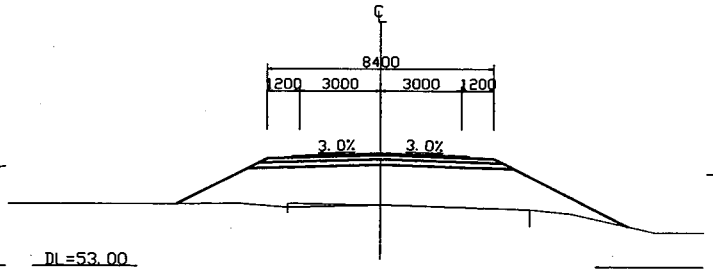
DL=52. 00

NO. 16+780
GH=58. 14
FH=58. 406



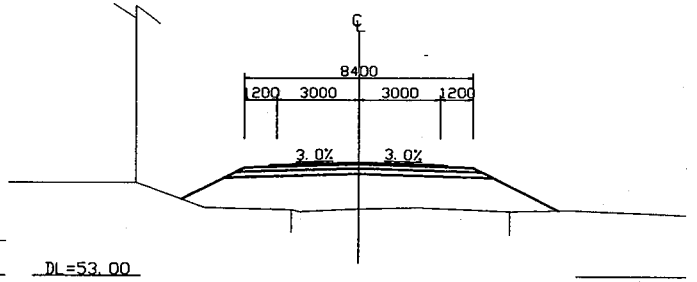
DL=55. 00

NO. 16+860
GH=55. 28
FH=57. 154



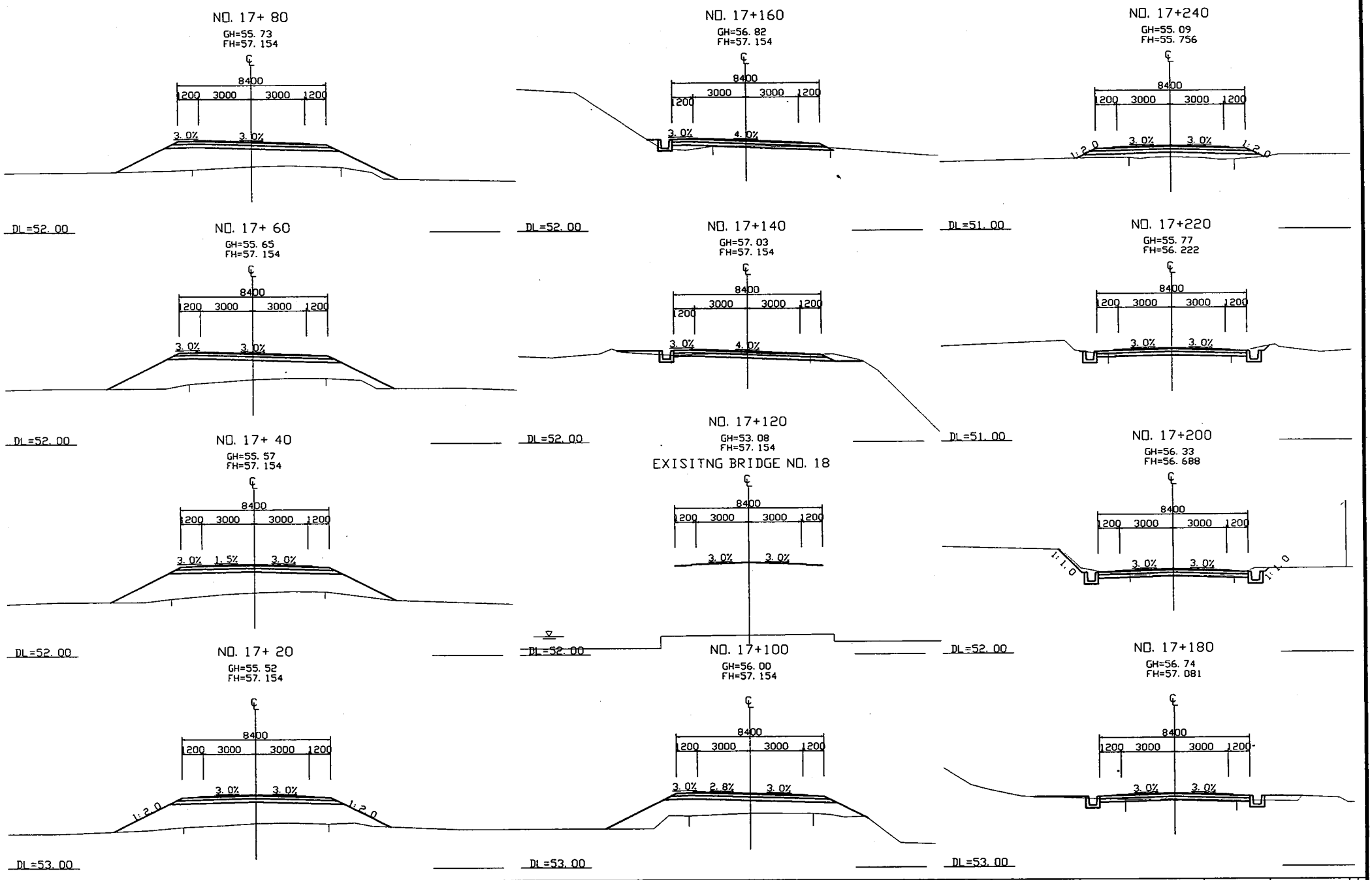
DL=53. 00

NO. 16+940
GH=55. 46
FH=57. 154



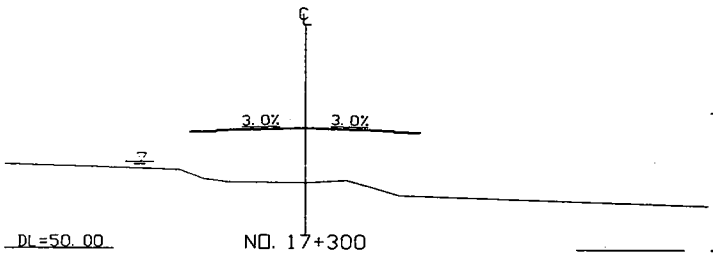
DL=53. 00

POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION (NO.16+780 – NO.17+000)	SCALE : S=1:100	DRAWING No: CS-47



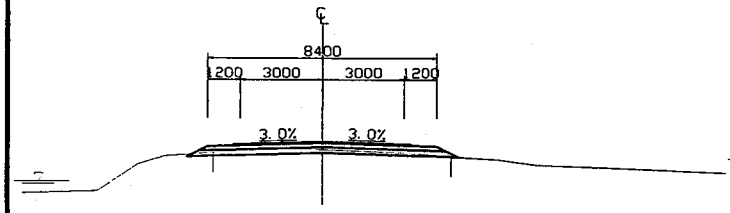
POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION (NO.17+020 - NO.17+240)	SCALE : S=1:100	DRAWING No: CS-48

NO. 17+320
GH=52. 46
FH=54. 467
NEW BRIDGE No. 19 (PTA CONSTRUCTION)



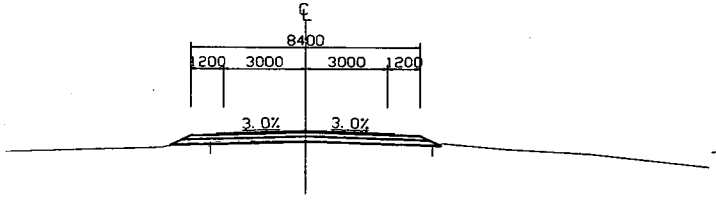
DL=50. 00

NO. 17+300
GH=54. 33
FH=54. 624



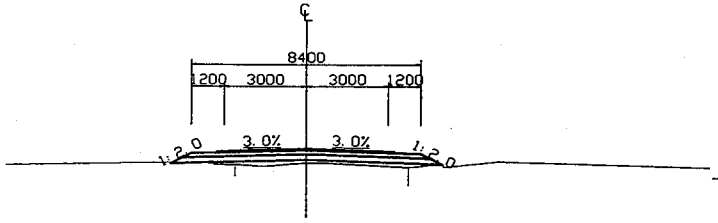
DL=50. 00

NO. 17+280
GH=54. 53
FH=54. 890



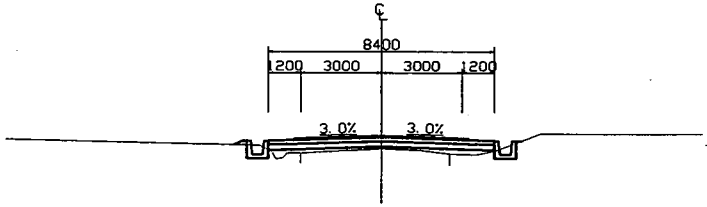
DL=50. 00

NO. 17+260
GH=54. 77
FH=55. 290



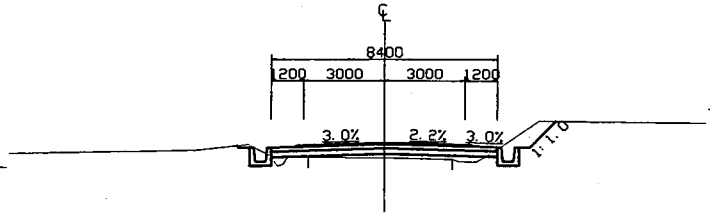
DL=51. 00

NO. 17+400
GH=56. 74
FH=57. 212



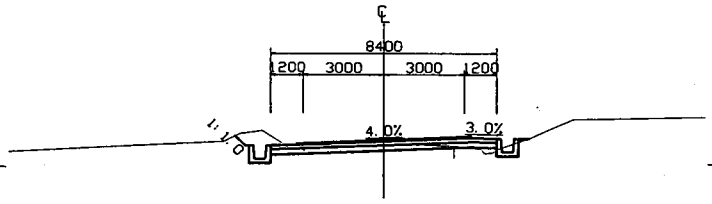
DL=52. 00

NO. 17+380
GH=55. 93
FH=56. 470



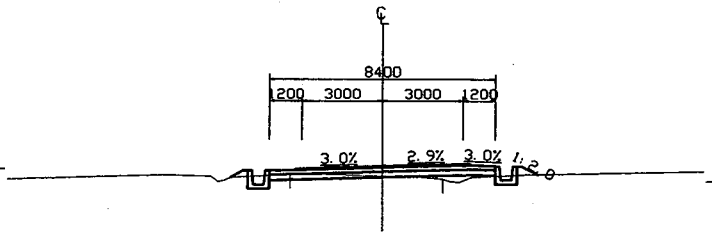
DL=52. 00

NO. 17+360
GH=55. 47
FH=55. 638



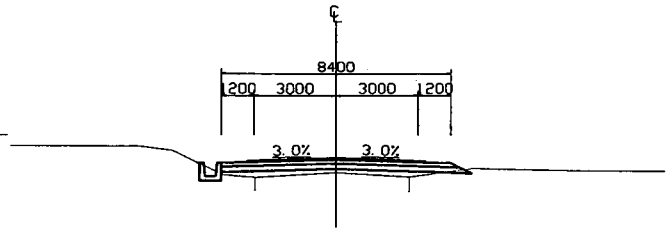
DL=51. 00

NO. 17+340
GH=54. 44
FH=54. 805



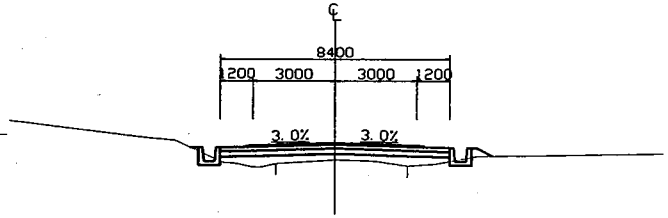
DL=51. 00

NO. 17+480
GH=58. 93
FH=59. 470



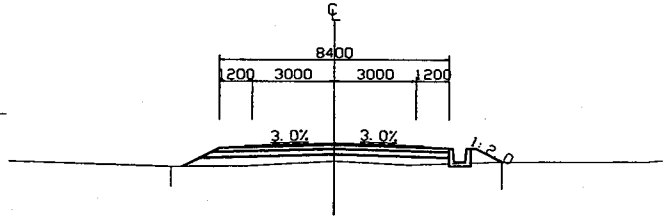
DL=55. 00

NO. 17+460
GH=58. 33
FH=58. 950



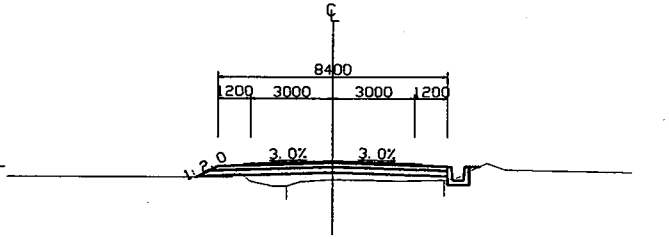
DL=54. 00

NO. 17+440
GH=57. 78
FH=58. 430



DL=54. 00

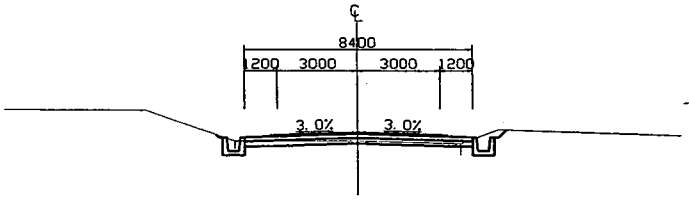
NO. 17+420
GH=57. 20
FH=57. 866



DL=53. 00

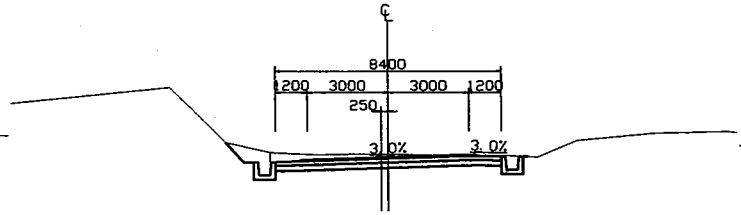
POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION (NO.17+260 – NO.17+480)	SCALE : S=1:100	DRAWING No: CS-49

NO. 17+560
GH=61.01
FH=61.332



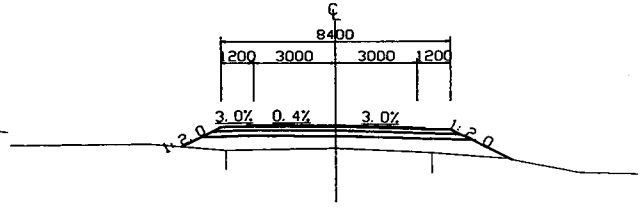
DL=56.00

NO. 17+640
GH=58.53
FH=58.410



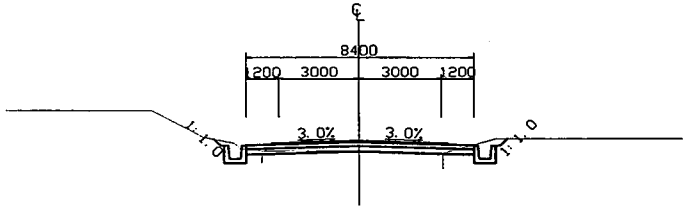
DL=54.00

NO. 17+720
GH=55.70
FH=56.563



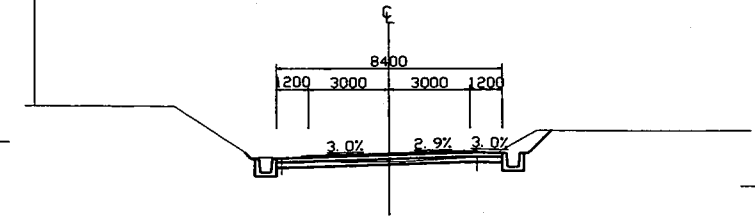
DL=51.00

NO. 17+540
GH=60.64
FH=61.030



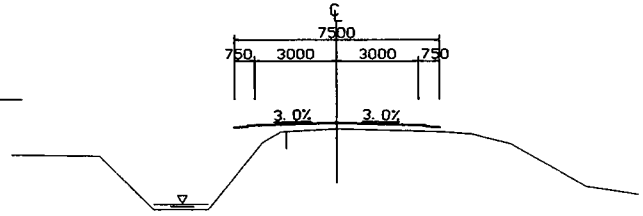
DL=56.00

NO. 17+620
GH=59.33
FH=59.630



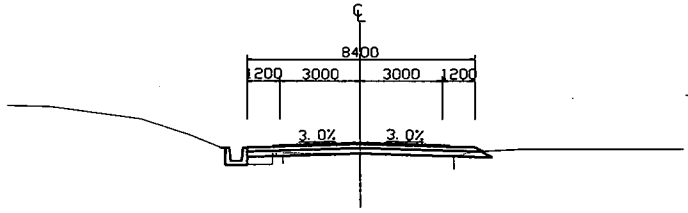
DL=55.00

NO. 17+700
GH=56.34
FH=56.580
BRIDGE NO. 20 NEW CONSTRUCTION



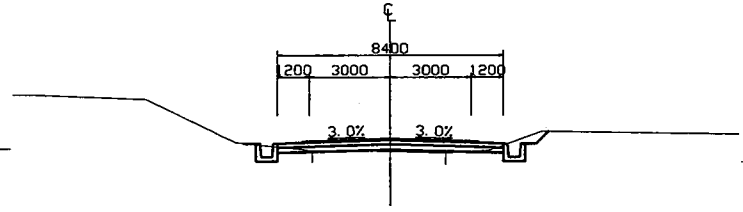
DL=52.00

NO. 17+520
GH=60.10
FH=60.510



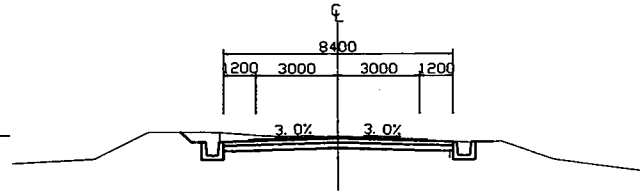
DL=56.00

NO. 17+600
GH=60.16
FH=60.633



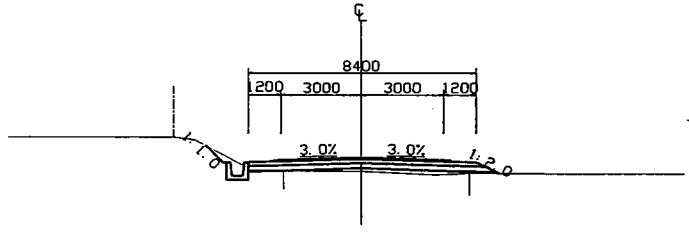
DL=56.00

NO. 17+680
GH=56.78
FH=56.717



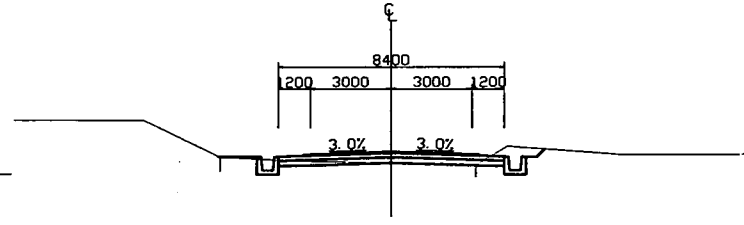
DL=52.00

NO. 17+500
GH=59.48
FH=59.990



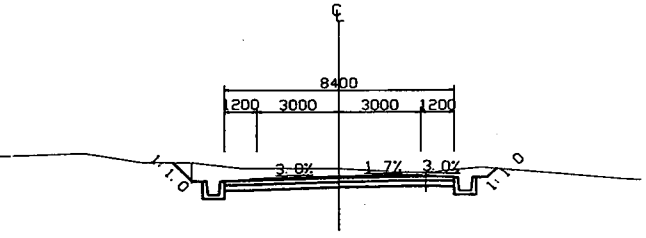
DL=56.00

NO. 17+580
GH=60.80
FH=61.200



DL=57.00

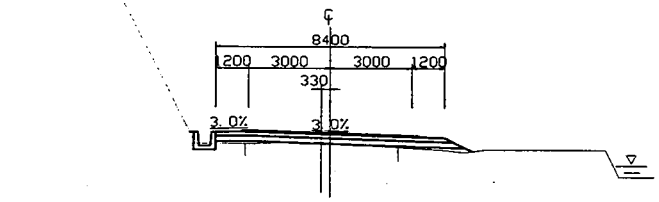
NO. 17+660
GH=57.62
FH=57.327



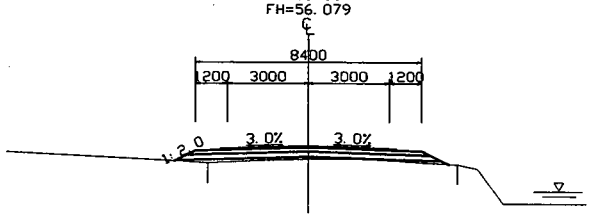
DL=54.00

POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION (NO.17+500 - NO.17+720)	SCALE: S=1:100	DRAWING No: CS-50

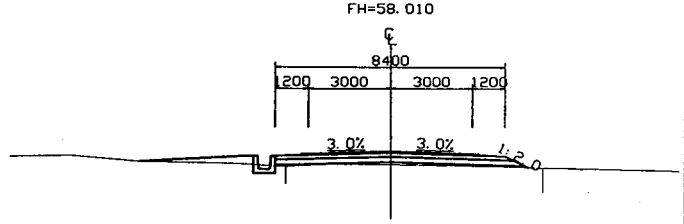
NO. 17+800
GH=55. 14
FH=55. 511



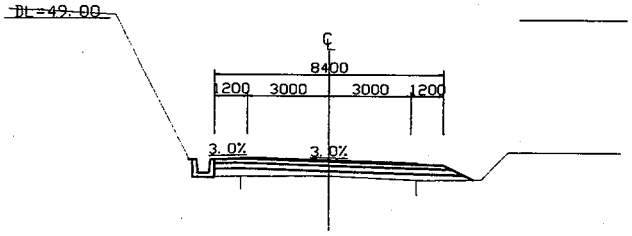
NO. 17+880
GH=55. 60
FH=56. 079



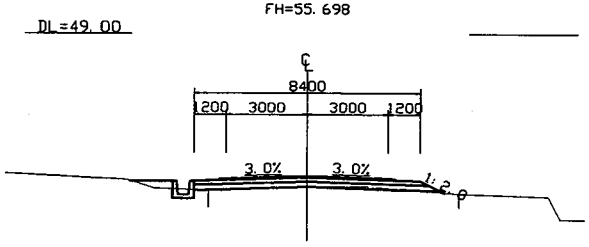
NO. 17+960
GH=57. 51
FH=58. 010



NO. 17+780
GH=55. 17
FH=55. 768

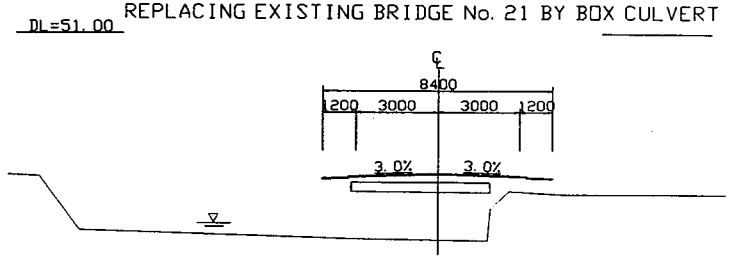


NO. 17+860
GH=55. 31
FH=55. 698

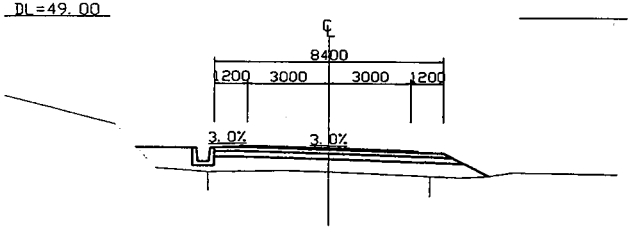


NO. 17+940
GH=55. 32
FH=57. 767

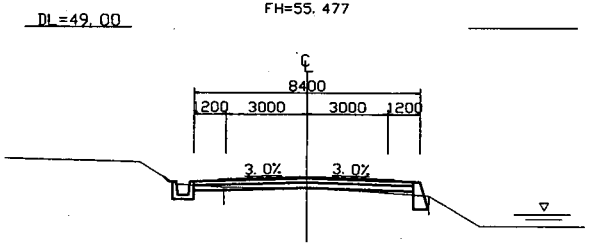
REPLACING EXISTING BRIDGE No. 21 BY BOX CULVERT



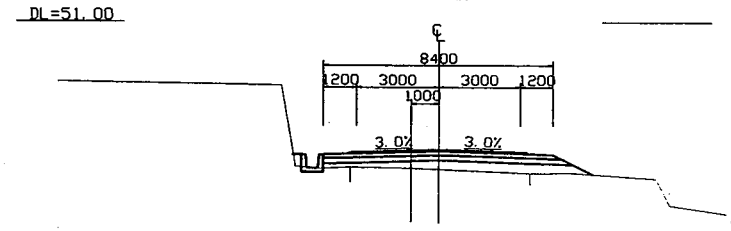
NO. 17+760
GH=55. 27
FH=56. 147



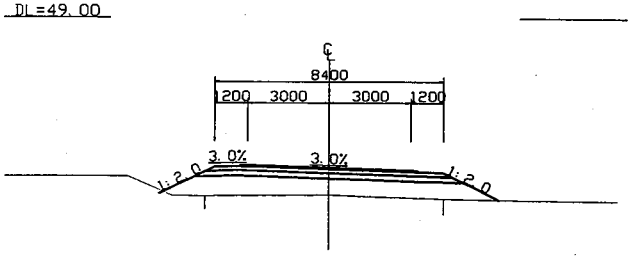
NO. 17+840
GH=55. 06
FH=55. 477



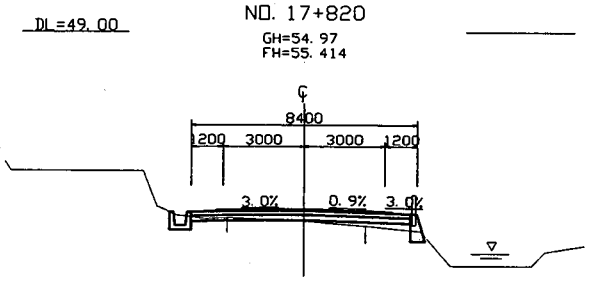
NO. 17+920
GH=56. 56
FH=57. 297



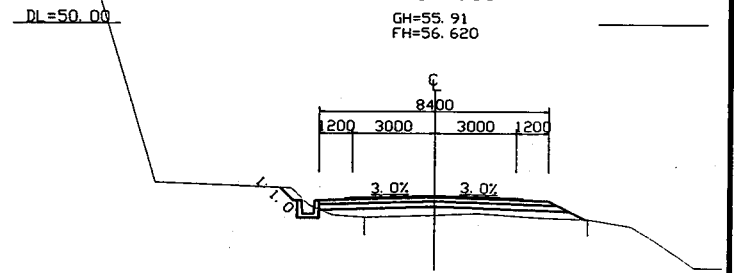
NO. 17+740
GH=55. 42
FH=56. 424



NO. 17+820
GH=54. 97
FH=55. 414

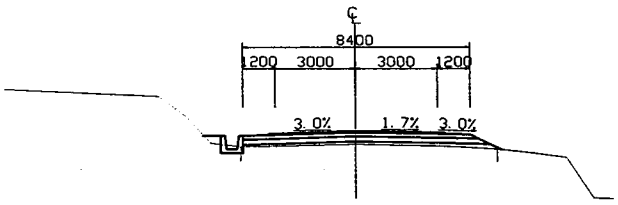


NO. 17+900
GH=55. 91
FH=56. 620

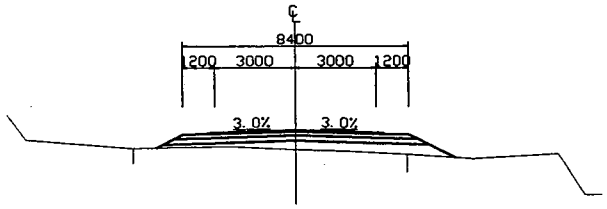


POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION (NO.17+740 - NO.17+960)	SCALE : S=1:100	DRAWING No: CS-51

NO. 18+ 40
GH=59. 48
FH=59. 978

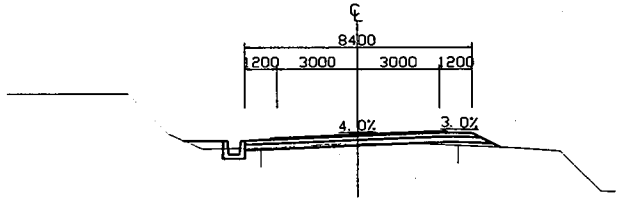


NO. 18+120
GH=60. 86
FH=61. 587



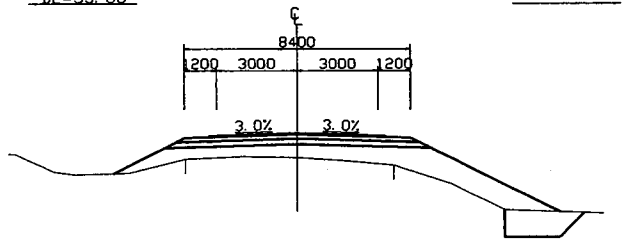
NO. 18+ 20
GH=59. 09
FH=59. 418

DL=53. 00



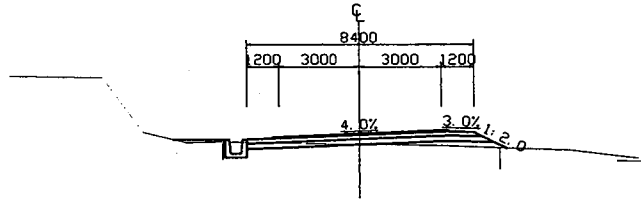
NO. 18+100
GH=60. 34
FH=61. 240

DL=55. 00



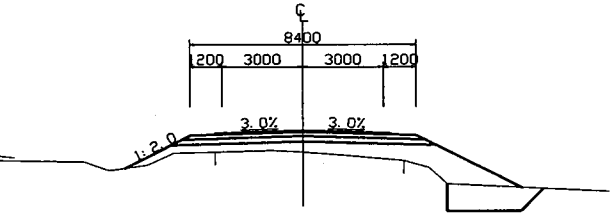
NO. 18+ 0
GH=58. 36
FH=58. 749

DL=53. 00



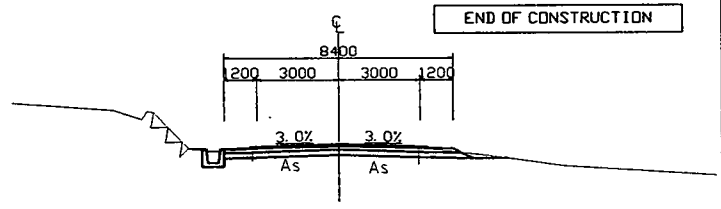
NO. 18+ 80
GH=60. 02
FH=60. 820

DL=54. 00



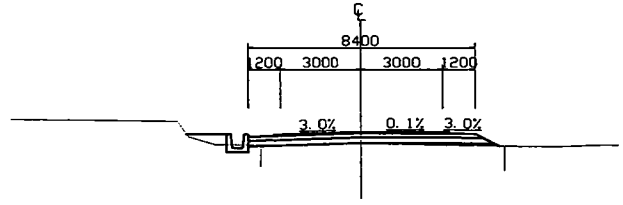
NO. 18+149. 27
GH=61. 81
FH=61. 920

2-PHASE
END OF CONSTRUCTION



NO. 17+980
GH=57. 85
FH=58. 279

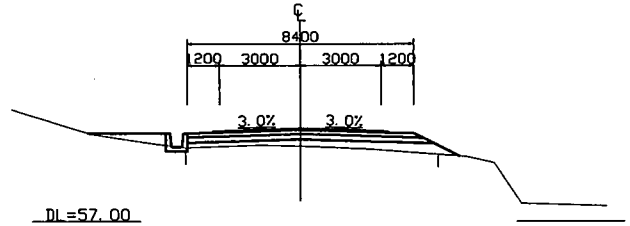
DL=52. 00



DL=54. 00

NO. 18+ 60
GH=59. 75
FH=60. 400

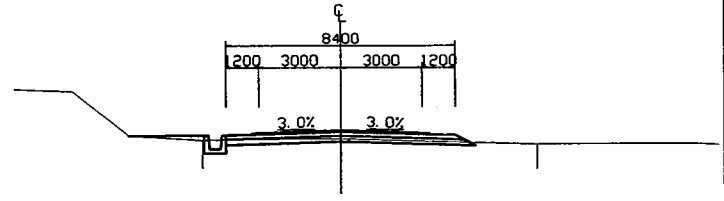
DL=54. 00



DL=57. 00

NO. 18+140
GH=61. 49
FH=61. 790

DL=55. 00

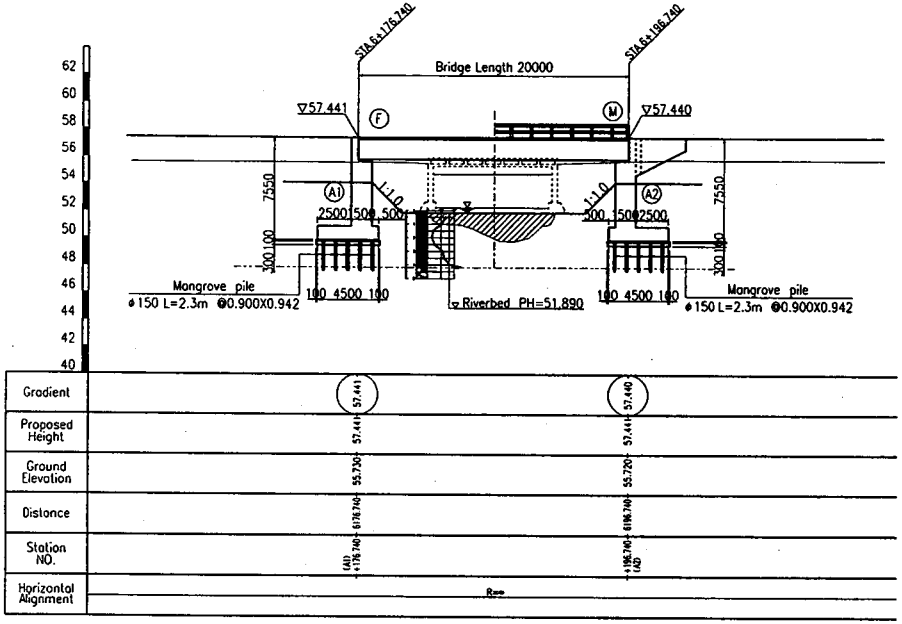


DL=58. 00

POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION (NO.17+980 – NO.18+160)	SCALE : S=1:100	DRAWING No: CS-52

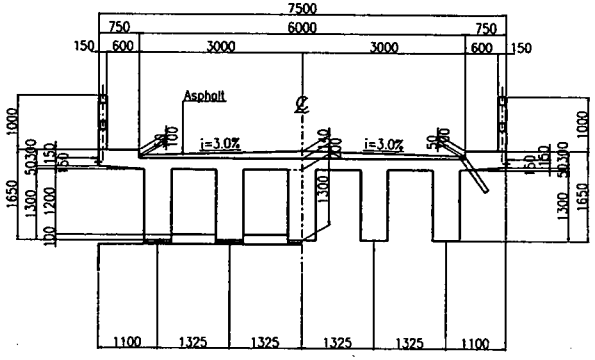
GENERAL VIEW OF No.5 BRIDGE

Profile S=1:200

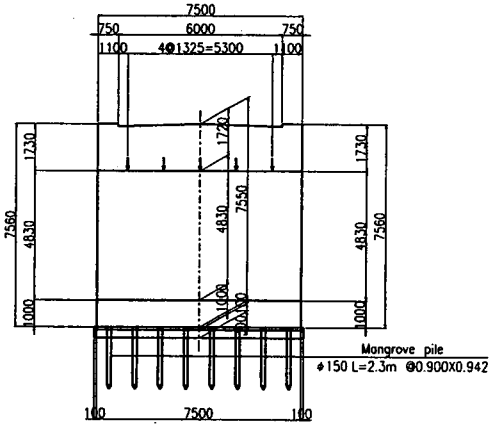


Section S=1:50

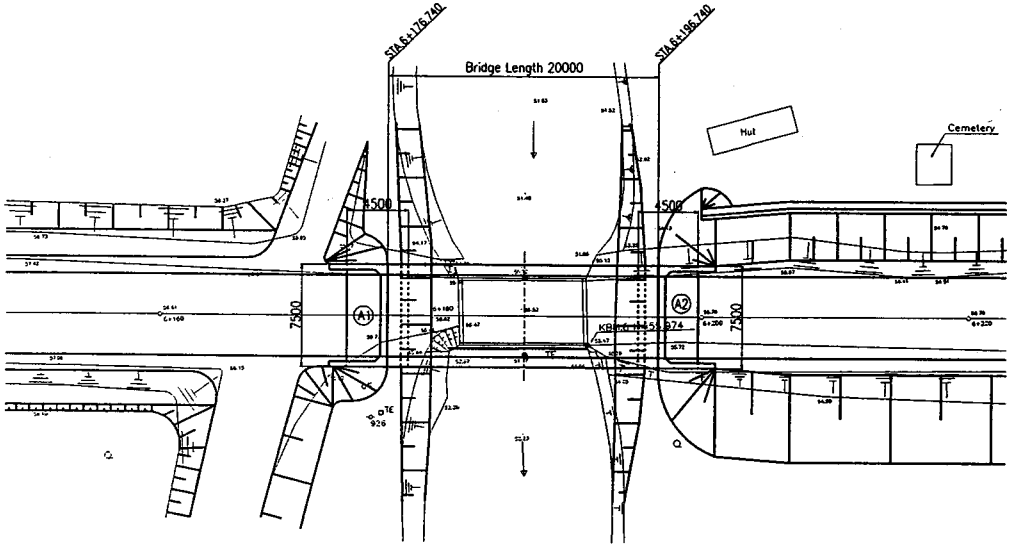
Fulcrum Center



Abutment S=1:100



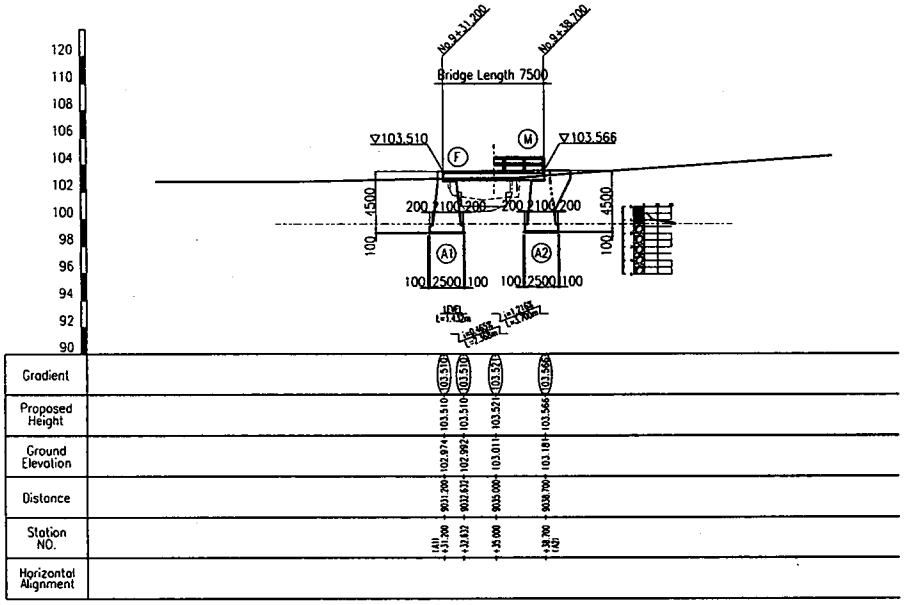
Plan S=1:200



POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: GENERAL VIEW OF No.5 BRIDGE	SCALE : S=1:50 S=1:100 S=1:200	DRAWING No: BR-01

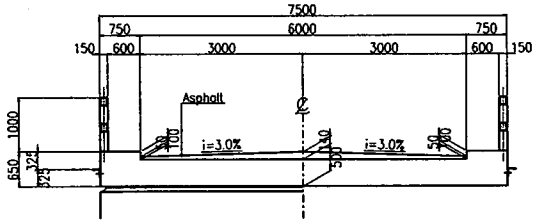
GENERAL VIEW OF No.8 BRIDGE

Profile S=1:200

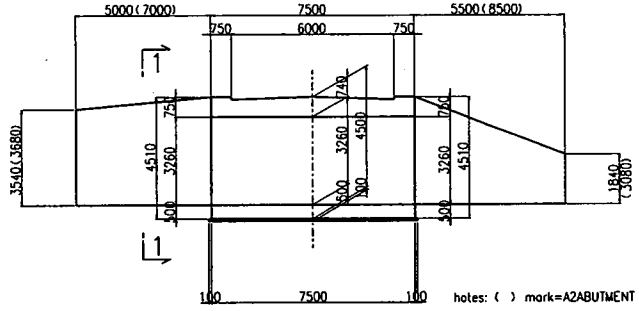


Section S=1:50

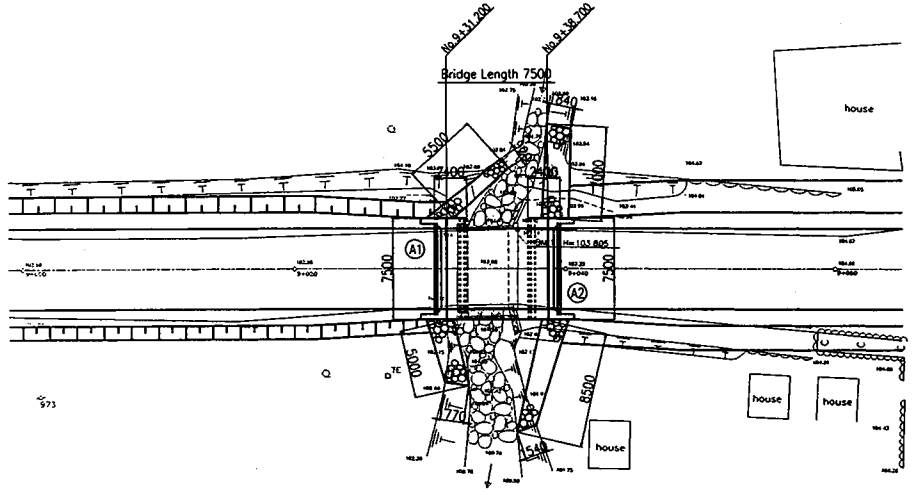
Fulcrum Center



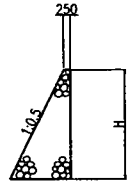
Abutment S=1:100



Plan S=1:200



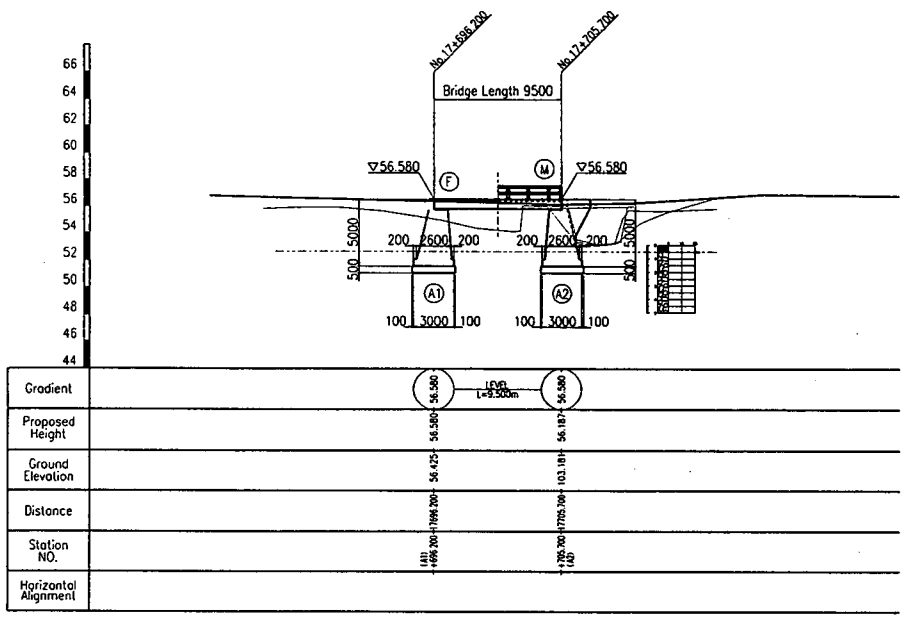
Section 1-1



POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: GENERAL VIEW OF No.8 BRIDGE	SCALE : S=1:50 S=1:100 S=1:200	DRAWING No: BR-02

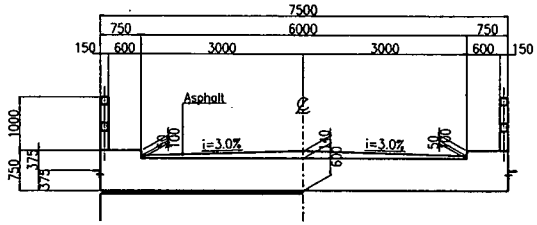
GENERAL VIEW OF No.20 BRIDGE

Profile S=1:200

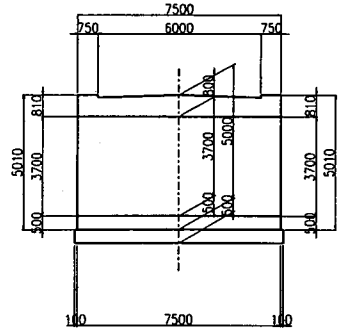


Section S=1:50

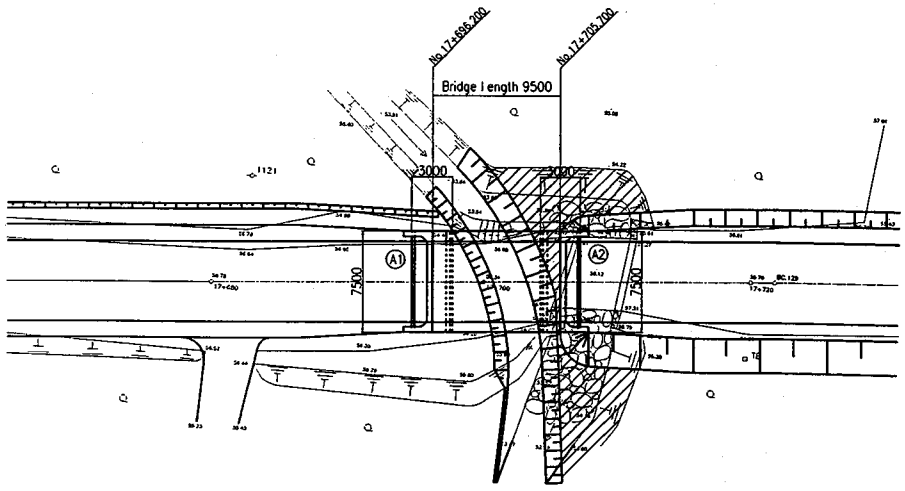
Fulcrum Center



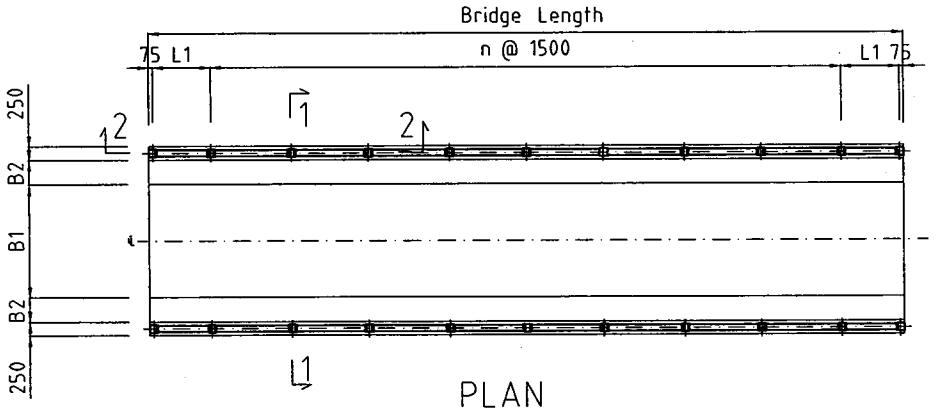
Abutment S=1:100



Plan S=1:200

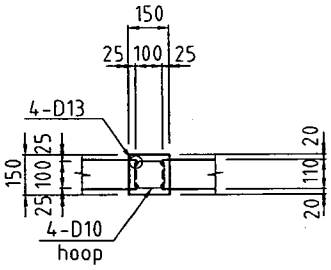


POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: GENERAL VIEW OF No.20 BRIDGE	SCALE : S=1:50 S=1:100 S=1:200	DRAWING No: BR-03

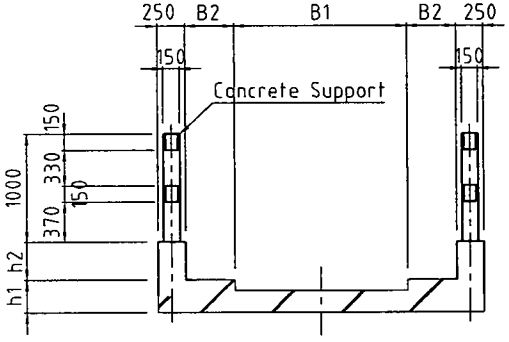


PLAN

NONE SCALE

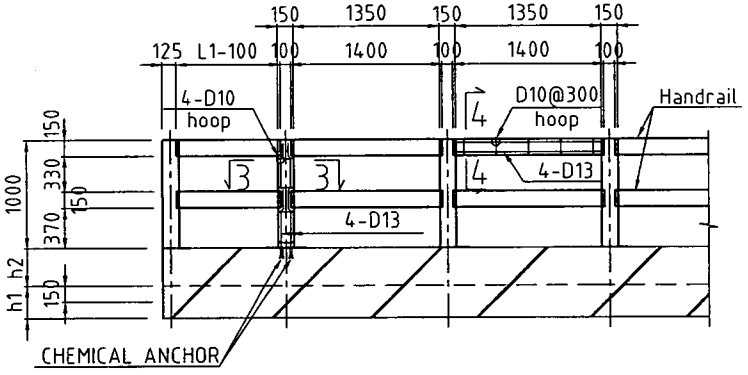


SECTION 3-3



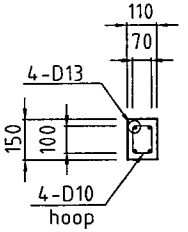
SECTION 1-1

S=1/25



SECTION 2-2

S=1/25

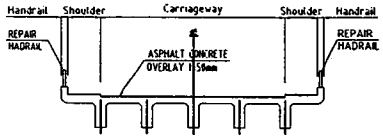


SECTION 4-4

LIST OF BRIDGES FOR HANDRAIL REPAIR

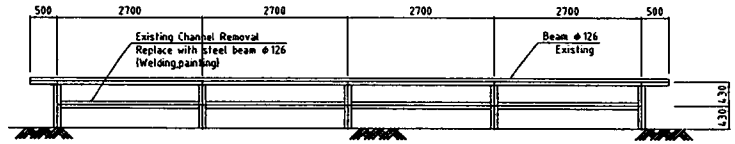
Bridge No.	Bridge Name	Chainage	Length (mm)	L1 (mm)	n@1500	B1 (mm)	B2 (mm)	h1 (mm)	h2 (mm)	Support			Handrail					Chemical Anchor		Total			Remarks
										Form (m)	Conc. (m3)	Re-Bar (kg)	L1-100 (mm)	Total Length	Form (m)	Conc. (m3)	Re-Bar (kg)	Drill (nos.)	CH.Anchor (nos.)	Form (m)	Conc. (m3)	Re-Bar (kg)	
2	SOUNKI POUM	1+446.90 ~ 1+465.80	18900	1125	11	6100	450	350	350	18.3	0.588	136.5	1025	17450	38.0	1.147	325.8	112	112	56.3	1.735	462.3	
3	REHNTU	1+851.90 ~ 1+858.90	6100	1475	2	5950	450	300	350	6.5	0.210	48.8	1375	5550	12.1	0.366	103.6	40	40	18.6	0.576	152.4	
4	MEINWEL	2+833.40 ~ 2+839.50	6100	1475	2	6100	350	300	350	6.5	0.210	48.8	1375	5550	12.1	0.366	103.6	40	40	18.6	0.576	152.4	
16	LEHN DIADI (1)	16+828.70 ~ 16+868.50	39800	1075	25	6100	650	350	450	36.5	1.176	273.1	975	36950	80.4	2.429	689.5	224	224	116.9	3.605	962.6	

POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: BRIDGE REPAIR WORK	SCALE : AS SHOWN	DRAWING No: BR-04



EXISTING BRIDGE CROSS SECTION

S=1/100

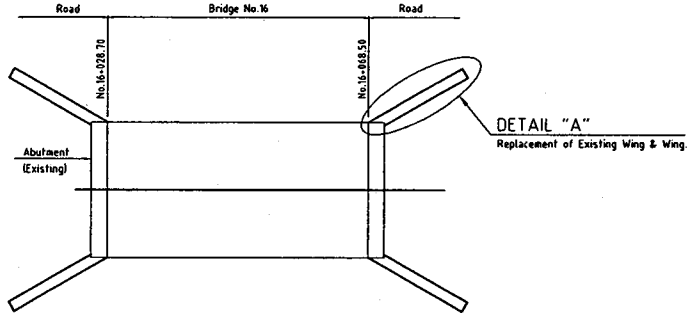


BRIDGE No.6 (NAN WOW) HANDRAIL

S=1/50

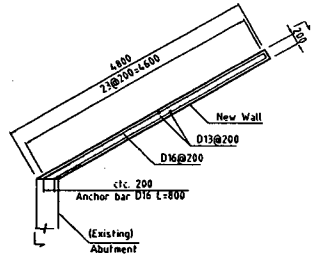
LIST OF BRIDGES FOR ASPHALT CONCRETE OVERLAY

Bridge No.	Bridge Name	Chainage	Length (m)	Width (m)	Pave Area (m2)	Remarks
2	SOUNKI POUM	1+446.90 ~ 1+465.80	18.9	6.1	115.3	
3	REHNTU	1+859.10 ~ 1+858.00	6.1	5.95	36.3	
4	MEINWEL	2+833.40 ~ 2+839.50	6.1	6.1	37.2	
6	NAN WOW	7+407.40 ~ 7+418.20	10.8	5.85	63.2	
16	LEHN DIADI (1)	16+028.70 ~ 16+068.50	39.8	6.1	242.8	
18	LEHDAN	17+118.10 ~ 17+133.20	15.1	6.46	97.5	

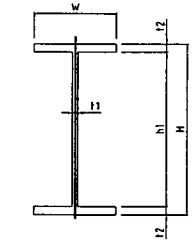


PLAN

none scale

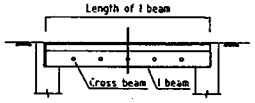


PLAN



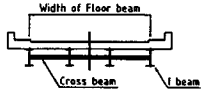
DETAIL OF MAIN GIRDER

non scale



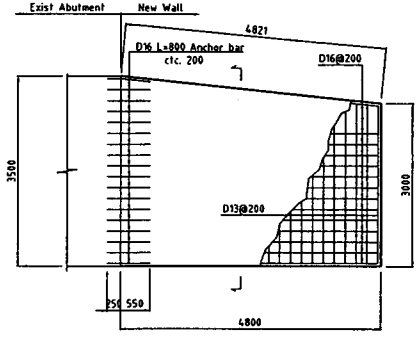
LONGITUDINAL SECTION

S=1/100



CROSS SECTION

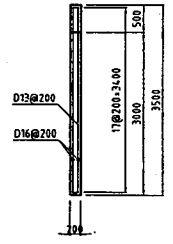
S=1/100



SIDE VIEW

DETAIL "A"

S=1/50



SECTION

Conc. (m3)	Re-Bar (kg)
3.12	465

LIST OF BRIDGES FOR BEAM REPAIR (BRUSHING & PAINTING)

Bridge No.	Bridge Name	Chainge	I beam								Cross beam (φ126)				Remarks
			Length (m)	n (nos)	W (mm)	H (mm)	h1 (mm)	t1 (mm)	t2 (mm)	A (m2)	Width (m)	n (nos)	A (m2)		
2	SOUNKI POUM	1+446.90 ~ 1+465.80	18.9	4	300	900	840	16	30	201.70	5.1	18	36.34		
3	REHNTU	1+859.10 ~ 1+858.00	6.1	4	200	600	570	11	15	43.38	5.1	5	10.10		
4	MEINWEL	2+833.40 ~ 2+839.50	6.1	4	225	600	570	11	15	45.20	5.5	5	10.88		

POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: BRIDGE REPAIR WORK	SCALE : AS SHOWN	DRAWING No: BR-05

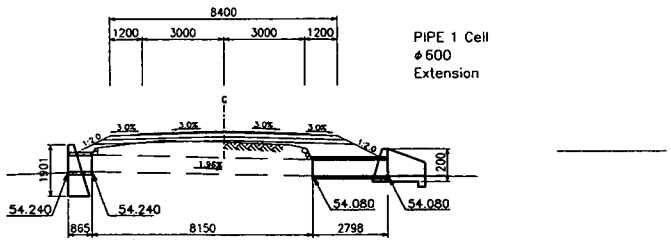
LIST OF SCHEDULE CULVERT

NO.	Station	Existing Culvert						New construction															Remarks (Extension Length)
		Facility	Cell	Dimension				Repair	Extension	Demolish	New	Unnecessary	Facility	Cell	Length (m)	Dimension			Invert Elev.		type Number	Construction type	
				Length (m)	Width (m)	Height (m)	Diameter (m)									Width (m)	Height (m)	Diameter (m)	Left (m)	Right (m)			
1	1 + 407	CSP	1	11.08			0.90			Exchange			RCP	1	16.18			0.90	56.251	56.170	3	P1-900	
2	1 + 629	RCP	2	8.43			0.45		Extension				PIPE	2	11.37			0.45	55.610	55.000	2T-1	P2-450	2.944
3	1 + 967	RCP	1	8.15			0.60		Extension				PIPE	1	11.81			0.60	54.240	54.080	2	P1-600	3.663
4	2 + 117	RCP	1	8.99			0.55			Exchange			PIPE	2	14.91			0.90	52.524	52.230	2C-2	P2-900	
5	2 + 197	RCP	2	9.48			0.45		Extension				PIPE	2	12.63			0.45	53.367	53.968	2T-1	P2-450	2.148
6	2 + 410	RCP	1	9.50			0.55		Extension				PIPE	1	14.45			0.55	54.700	54.386	1	P1-550	4.946
7	2 + 650	RCP	2	9.54			0.60			Exchange			PIPE	3	14.55			0.90	56.452	55.840	3C-1	P3-900	
8	2 + 709	RCP	1	10.14			0.55		Extension				PIPE	1	15.00			0.55	56.734	55.787	1	P1-550	4.858
9	3 + 196	RCP	3	12.30			0.60			Exchange			BOX	1	14.13	2.00	1.50		55.731	55.672	B-1	1-2.00*1.50	
10	3 + 360	N/A									New		PIPE	1	10.86			0.90	55.557	55.448	3	P1-900	
11	3 + 510	BOX	1	10.37	2.00	2.00				Exchange			BOX	2	9.00	4.00	3.00		53.516	53.489	B-2	2-4.00*3.00	
12	3 + 652	RCP	2	10.43			0.60	Repair						2	11.71			0.60	59.192	58.749	2T-3		
12A	4 + 200										New		RCP	1	10.54			0.90	59.972	59.863	3	P1-900	
13	4 + 294	RCP	2	11.13			0.60		Extension				PIPE	2	19.25			0.60	55.917	55.034	2T-3	P2-600	8.123
13A	4 + 360										New		RCP	1	13.48			0.90	55.701	55.563	3	P1-900	
14	4 + 552	RCP	2	10.04			0.60	Repair						2	11.02			0.60	55.630	55.410	2T-3		
15	4 + 631	RCP	3	13.83			0.60			Exchange			RCP	3	20.95			0.90	54.083	53.215	3C-1	P3-900	
16	4 + 699	CSP	1	18.35			1.80	Repair						1	18.35			1.80	57.380	56.660	16		
17	5 + 386	RCP	2	13.08			0.60		Extension				RCP	2	16.35			0.60	101.352	101.814	2T-3	P2-600	3.274
18	5 + 672	RCP	1	14.11			0.60			Exchange			RCP	2	17.51			0.90	88.158	87.545	2C-2	P2-900	
19	5 + 827	RCP	1	10.98			0.55		Extension				RCP	1	12.52			0.55	82.500	82.300	1	P1-550	1.536
20	6 + 045	RCP	2	10.37			0.55		Extension				RCP	2	15.56			0.55	65.910	65.150	2T-2	P2-550	5.194
21	6 + 496	RCP	2	22.88			0.60		Extension				RCP	2	27.54			0.60	59.470	58.370	2T-3	P2-600	4.663
22	6 + 918	CSP	1	19.94	1.80	1.10				Exchange			BOX	1	21.33	2.00	2.00		56.202	56.159	B-3	1-2.00*2.00	
23	7 + 044	CSP	2	12.02			0.45			Exchange			RCP	1	15.11			0.90	56.683	56.053	3	P1-900	
23A	7 + 860										New		RCP	1	11.43			0.90	91.457	91.457	3	P1-900	
24	8 + 220	RCP	2	11.25			0.60	Repair						2	14.25			0.60	84.970	84.480	2T-3		
25	8 + 324	RCP	1	8.82			0.55		Extension				RCP	1	11.32			0.55	87.579	87.470	1	P1-550	2.496
BR#7	8 + 511	Akahk BR	1							Exchange			BOX	1	11.92	3.00	3.00		92.215	92.203	B-4	1-3.00*3.00	
26	8 + 703	RCP	1	9.30			0.90		Extension				RCP	1	10.73			0.90	103.270	103.190	3	P1-900	1.433
27	8 + 977	RCP	1	9.99			0.55		Extension				RCP	1	12.72			0.55	102.240	107.743	1	P1-550	2.730
28	9 + 249	RCP	1	9.47			0.55		Extension				RCP	1	10.89			0.55	113.390	113.110	1	P1-550	2.415
29	9 + 434	RCP	1	9.66			0.60		Extension				RCP	1	15.57			0.60	114.035	114.035	2	P1-600	5.910
30	9 + 654	SP	1	6.30			0.63			Exchange			RCP	3	16.71			0.90	114.245	113.744	3C-1	P3-900	
31	15 + 254	N/A										Unnecessary											
32	16 + 123	Old Box										Unnecessary											
33	16 + 277	CSP	1	9.00	0.60	0.45				Exchange			RCP	1	11.45			0.90	59.717	59.610	2	P1-600	
BR#17	16 + 415	Pihs BR								Exchange			BOX	1	13.72	3.00	3.00		57.275	57.261	B-5	1-3.00*3.00	
34	16 + 815	CSP	2				1.00			Exchange			RCP	2	14.98			0.60	54.978	54.828	2C-1	P2-600	
35	16 + 903	CSP	2	8.90	0.60	0.45				Exchange			RCP	1	16.26			0.90	54.326	54.001	3	P1-900	
36	17 + 000	CSP	2	8.60	0.60	0.45				Exchange			RCP	1	14.15			0.90	54.816	54.568	3	P1-900	
37	17 + 820	N/A									New		RCP	1	8.99			0.60	53.914	54.000	2	P1-600	
BR#21	17 + 958	Sapwalap	BR							Exchange			BOX	2	9.00	3.00	3.00		54.484	54.475	B-6	2-3.00*3.00	
38	18 + 092	CSP	1	8.70			0.90			Exchange			RCP	1	13.57			0.90	58.980	58.502	3	P1-900	

POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: LIST OF SCHEDULE CULVERT	SCALE: -	DRAWING No: CD-1

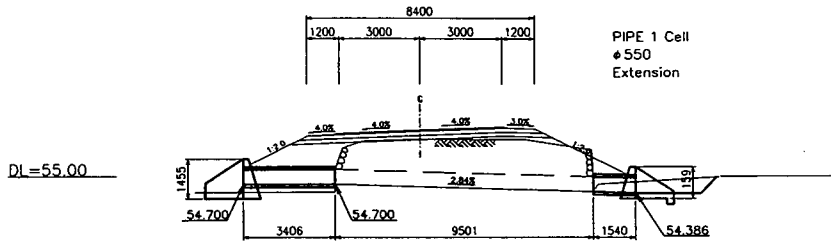
③NO.1+966.70

GH= 55.34
FH= 55.750



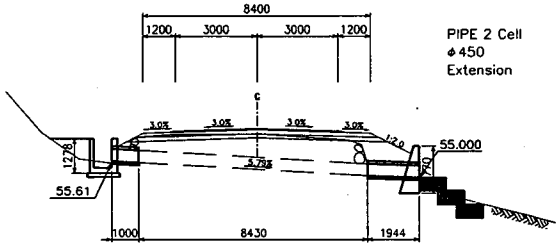
⑥NO.2+409.90

GH= 56.38
FH= 56.706



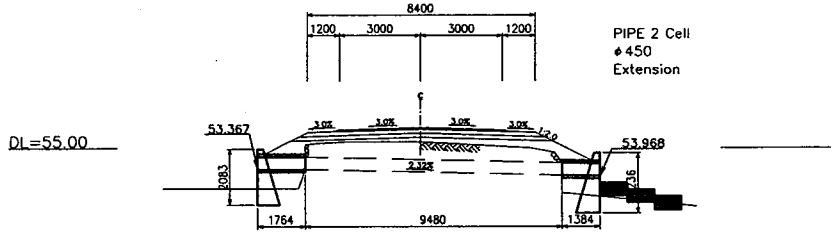
②NO.1+629.30

GH= 56.60
FH= 56.801



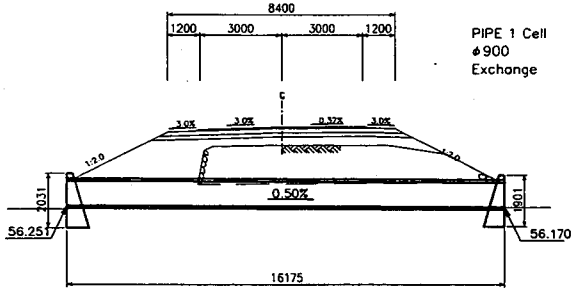
⑤NO.2+197.10

GH= 55.22
FH= 55.743



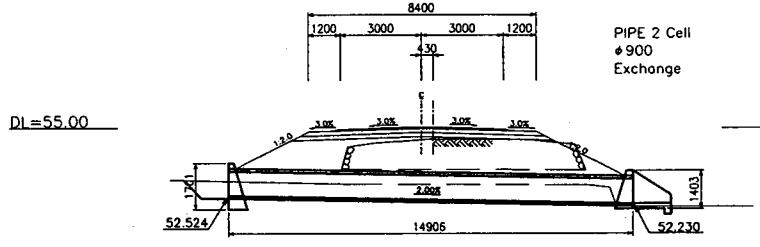
① NO.1+407.20

GH= 58.47
FH= 59.140



④NO.2+117.20

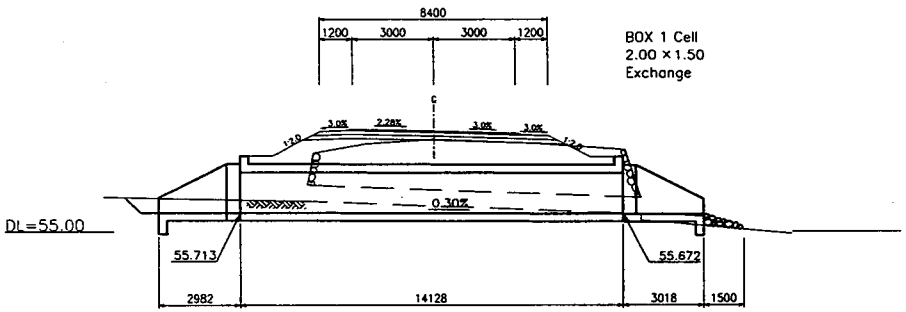
GH= 54.61
FH= 55.040



POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION OF CULVERT2/8	SCALE : 1:100	DRAWING No: CD-2

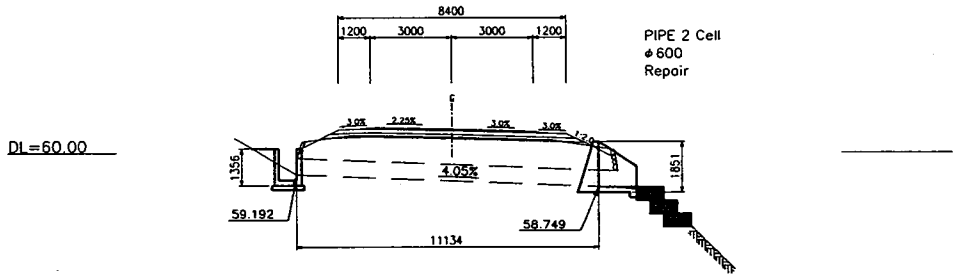
⑨NO.3+195.60

GH= 58.41
FH= 58.720



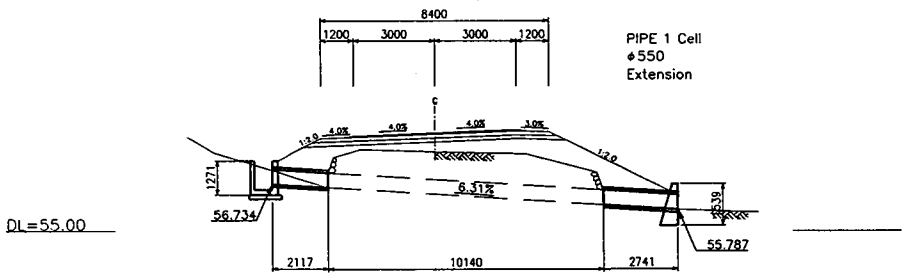
⑫NO.3+652.40

GH= 60.56
FH= 60.862



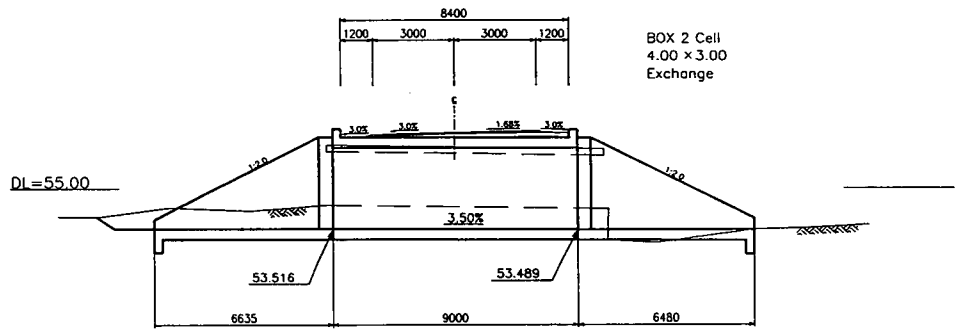
⑧NO.2+709.30

GH= 57.94
FH= 58.648



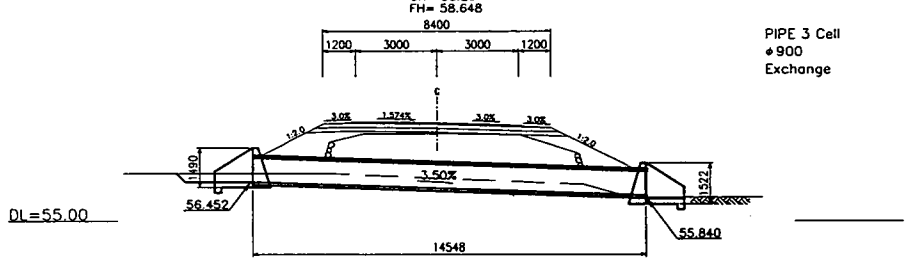
⑪NO.3+509.80

GH= 56.54
FH= 57.091



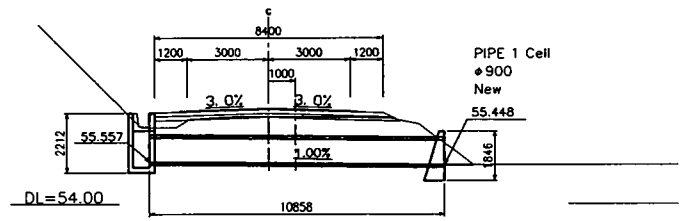
⑦ NO.2+650.30

GH= 58.26
FH= 58.648



⑩ NO.3+360

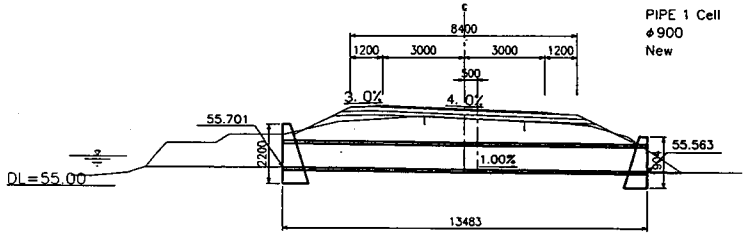
GH=57.23
FH=57.545



POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION OF CULVERT 3/8	SCALE : 1:100	DRAWING No: CD-3

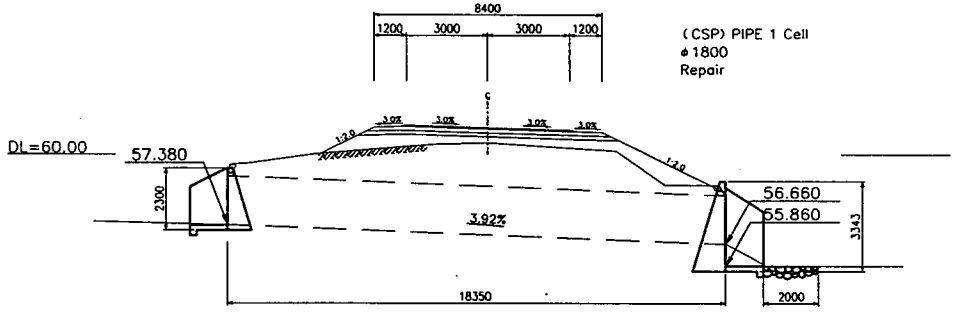
(13A) NO. 4+360

GH=57.51
FH=57.884



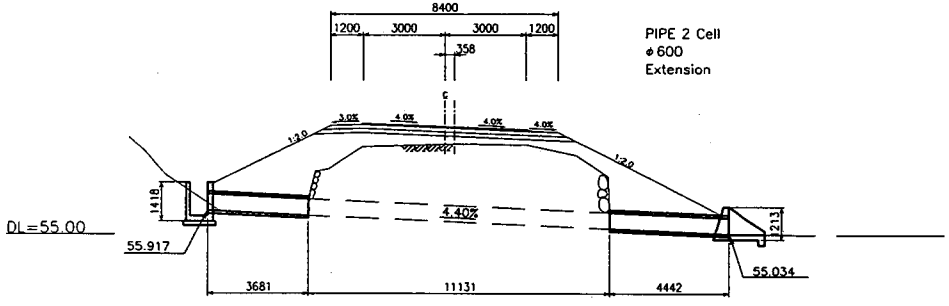
(16) NO.4+699.00

GH= 60.42
FH= 60.994



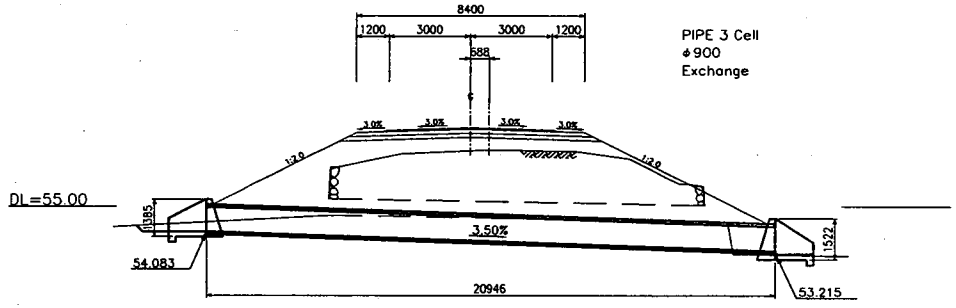
(13) NO.4+294.30

GH= 58.36
FH= 59.001



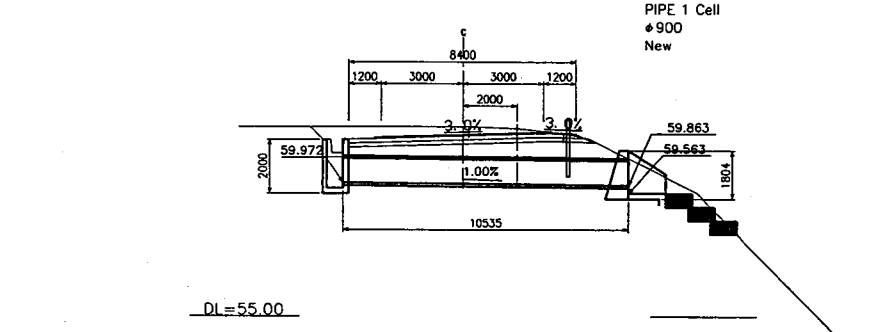
(15) NO.4+631.00

GH= 57.08
FH= 57.899



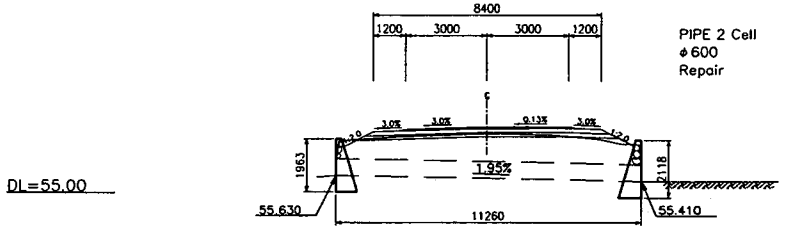
(12A) NO. 4+200

GH=62.02
FH=61.749



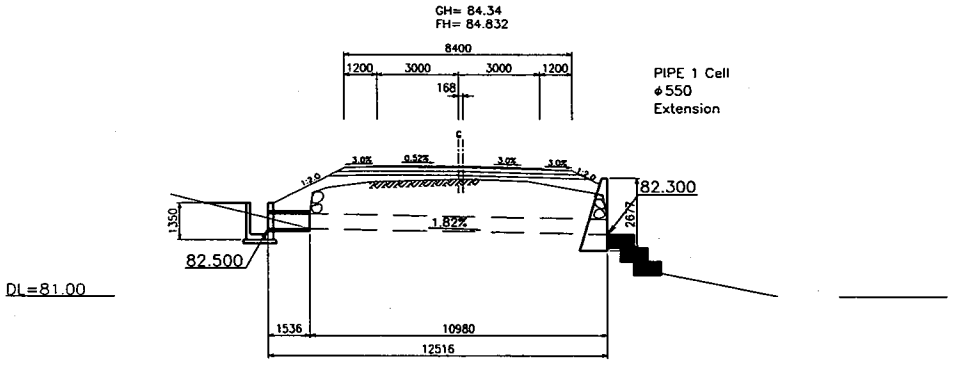
(14) NO.4+552.30

GH= 57.15
FH= 57.399

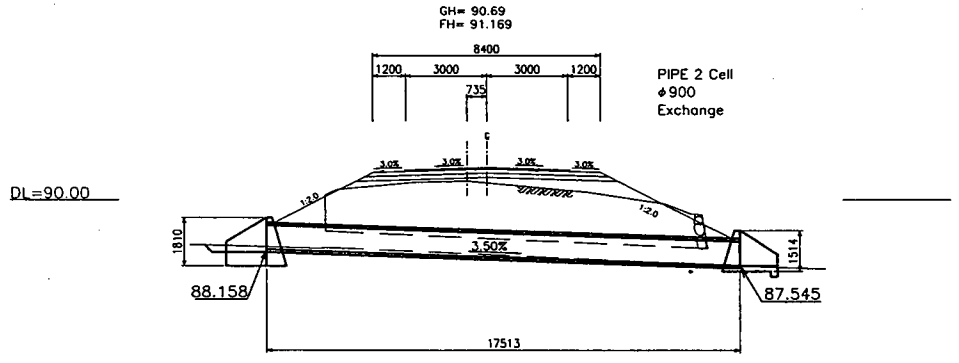


POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION OF CULVERT 4/8	SCALE : 1:100	DRAWING No: CD-4

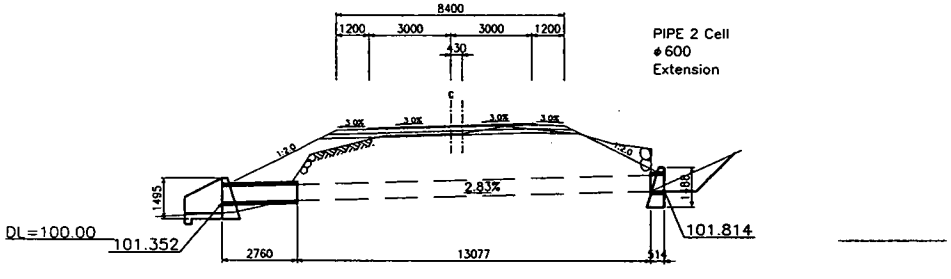
⑲NO.5+826.60



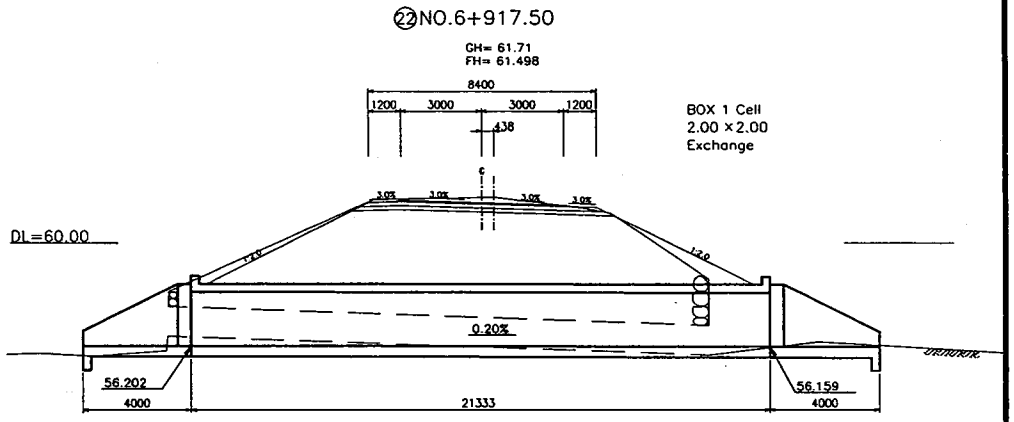
⑱NO.5+671.60



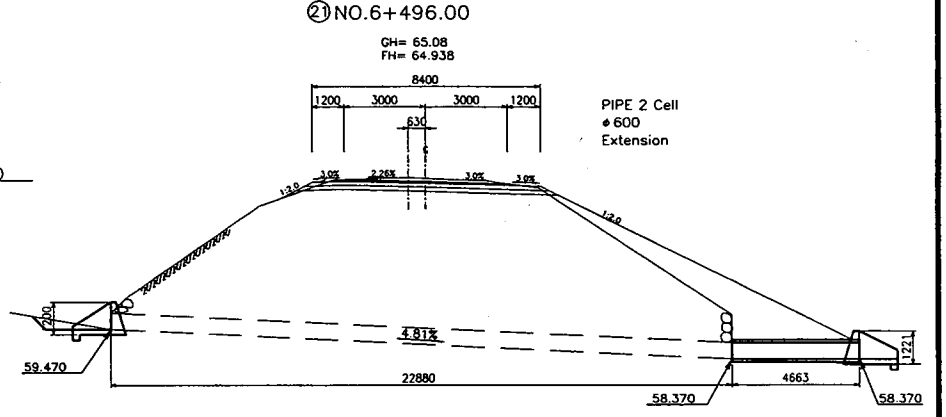
⑰NO.5+385.60



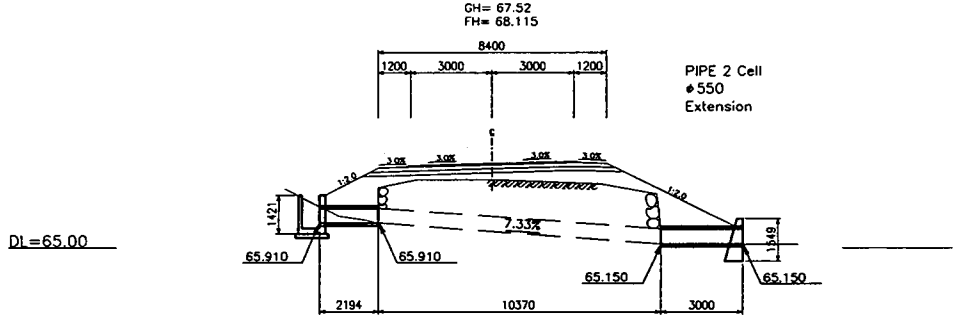
㉒NO.6+917.50



㉑NO.6+496.00



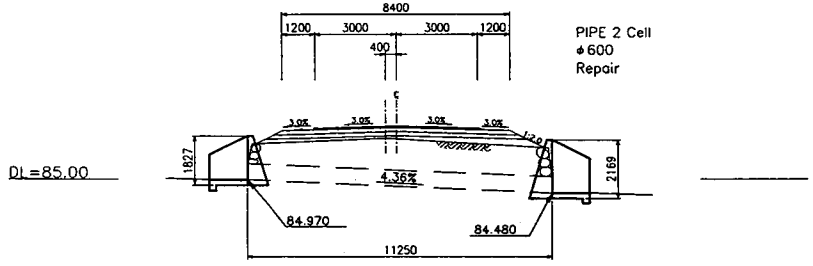
⑳NO.6+44.60



POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION OF CULVERT 5/8	SCALE : 1:100	DRAWING No: CD-5

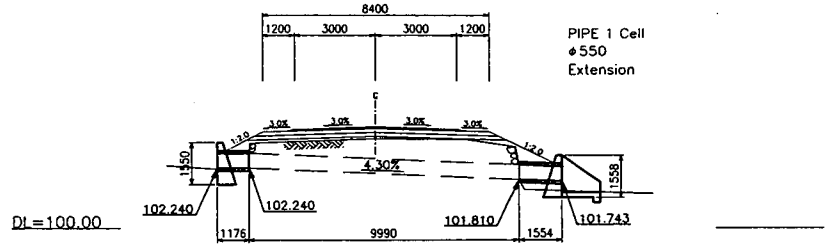
㉔NO.8+220.00

GH= 86.52
FH= 86.960



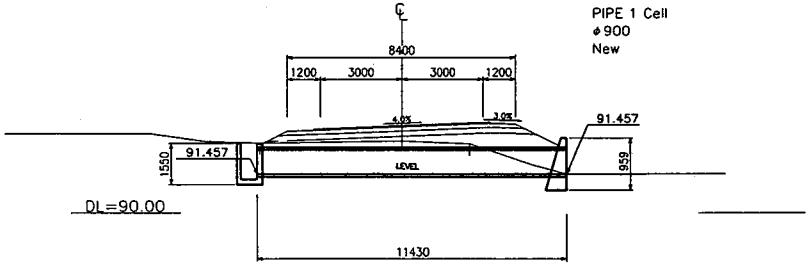
㉗NO.8+977.30

GH=103.32
FH=103.759



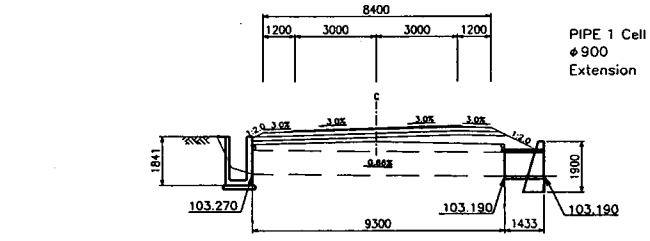
㉓A NO.7+860

GH=92.68
FH=93.260



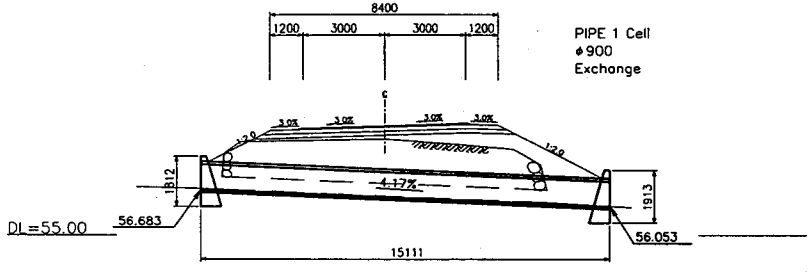
㉖NO.8+703.30

GH=104.49
FH=105.003



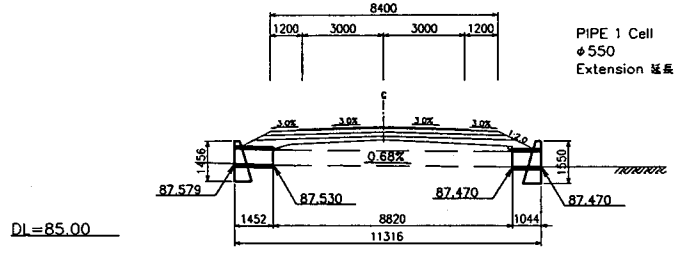
㉓NO.7+43.80

GH= 58.51
FH= 58.994



㉕NO.8+324.10

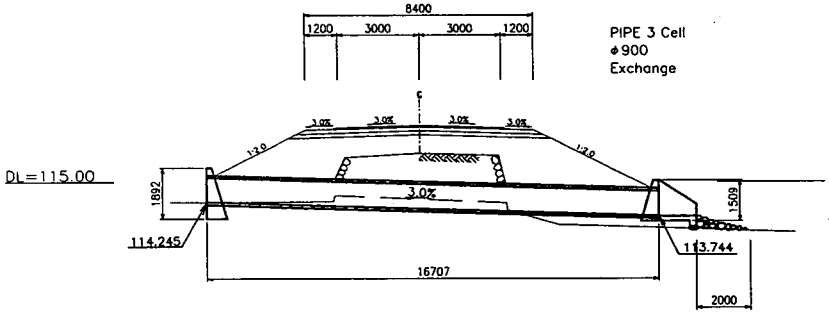
GH= 88.45
FH= 88.938



POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION OF CULVERT 6/8	SCALE : 1: 100	DRAWING No: CD-6

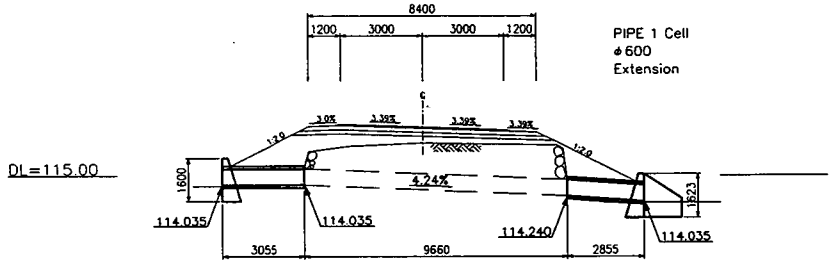
㉚ NO.9+654.20

GH=116.06
FH=117.100



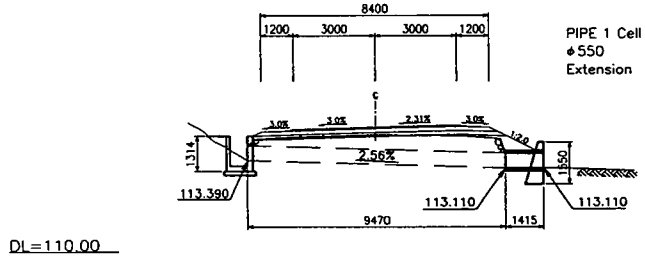
㉙ NO.9+434.30

GH=116.19
FH=116.787



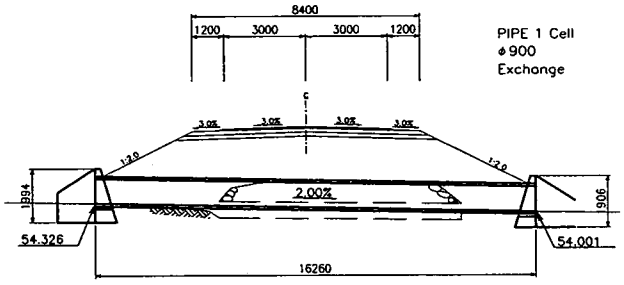
㉘ NO.9+249.20

GH=114.34
FH=114.625



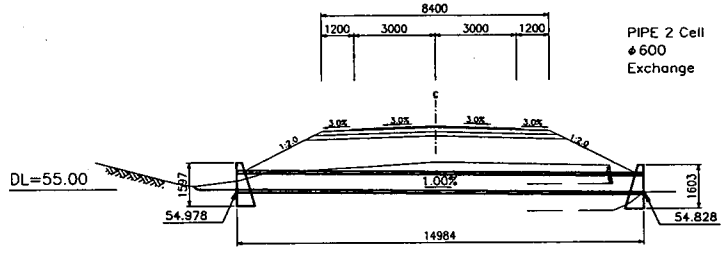
㉟ NO.16+903.20

GH= 55.17
FH= 57.160



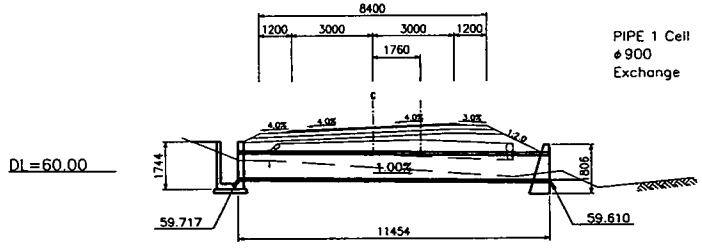
㉞ NO.16+814.50

GH= 55.97
FH= 57.280



㉝ NO.16+276.90

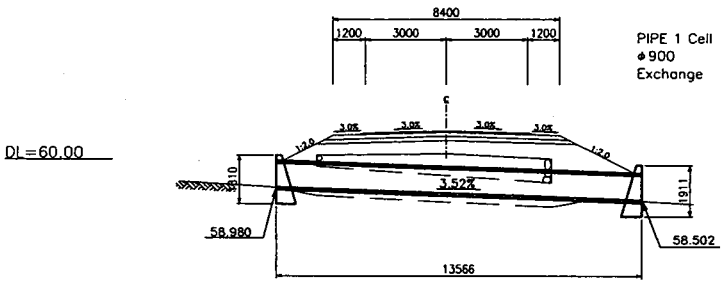
GH= 61.09
FH= 61.574



POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION OF CULVERT 7/8	SCALE: 1:100	DRAWING No: CD-7

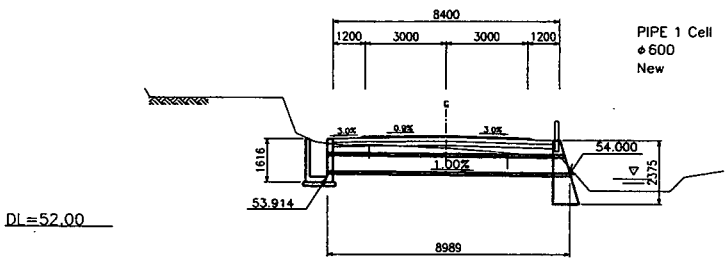
㊳ NO.18+92.00

GH= 60.22
FH= 61.072



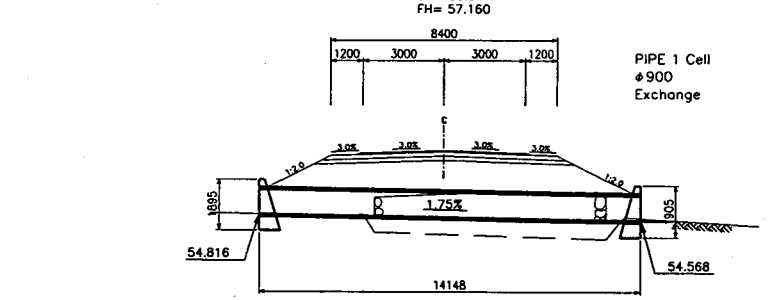
㊲ NO.17+820

GH=54.97
FH=55.414



㊱ NO.17

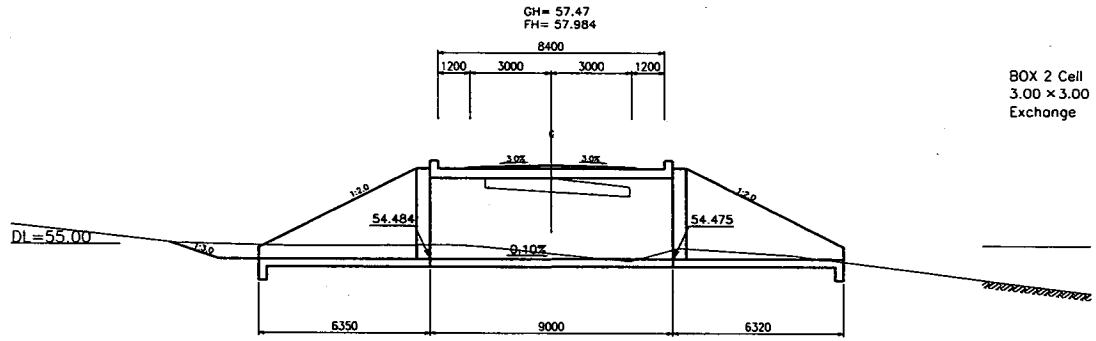
GH= 55.54
FH= 57.160



DL=50.00

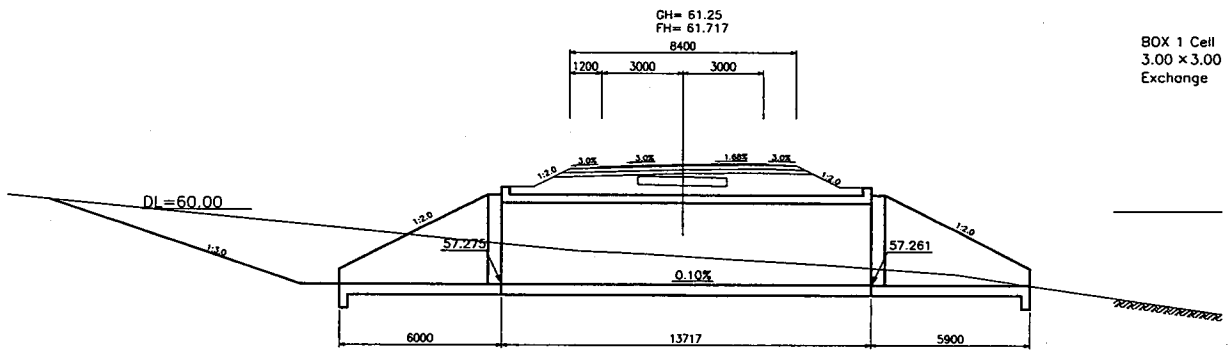
POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION OF CULVERT 8/8	SCALE : 1:100	DRAWING No: CD-8

BR#21
NO.17+958.00



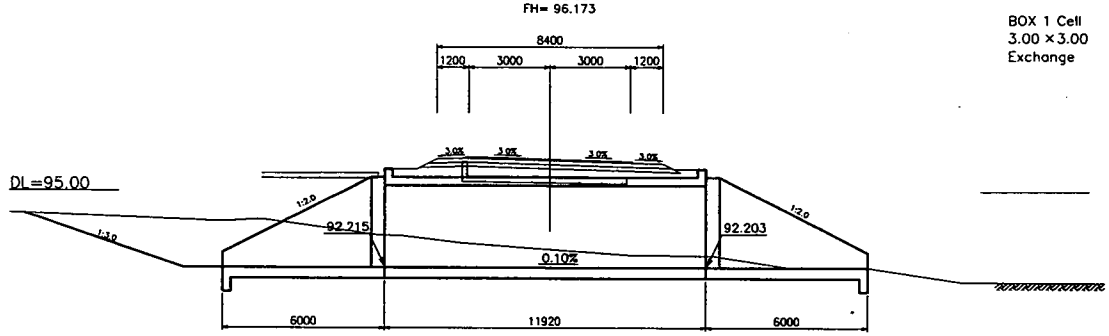
BOX 2 Cell
3.00 × 3.00
Exchange

BR#17
NO.16+415.00



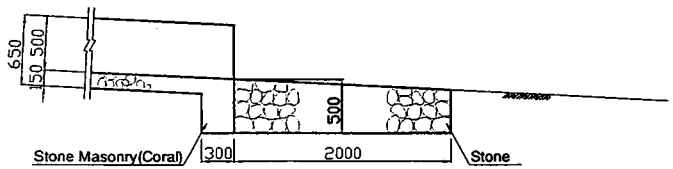
BOX 1 Cell
3.00 × 3.00
Exchange

BR#7
NO.8+51100

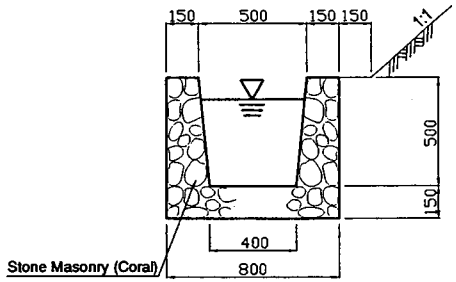


BOX 1 Cell
3.00 × 3.00
Exchange

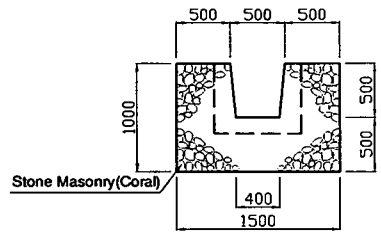
POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: CROSS SECTION OF CULVERT 1/8	SCALE : 1:100	DRAWING No: CD-9



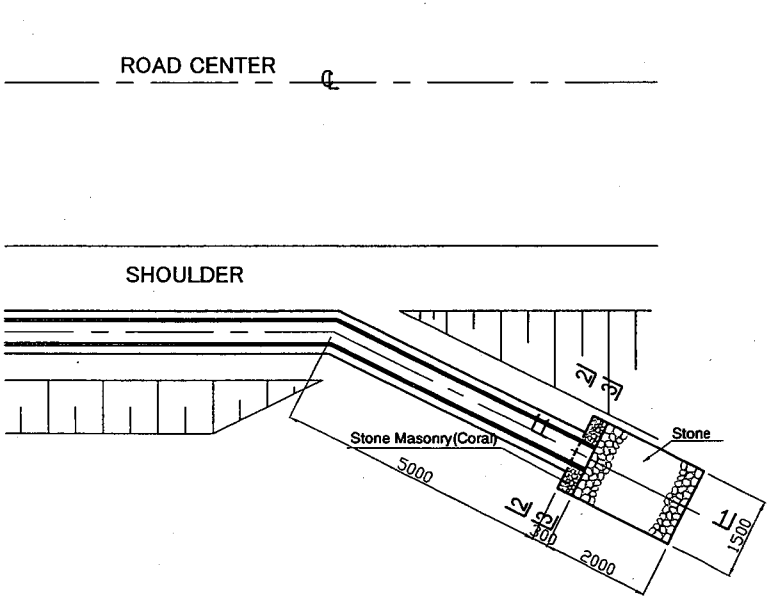
SECTION 1
SCALE 1:25



SECTION 2
SCALE 1:20



SECTION 3
SCALE 1:25

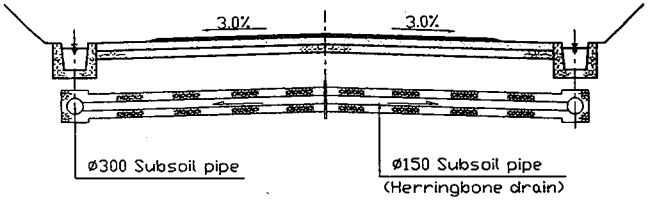


PLAN
SCALE 1:50

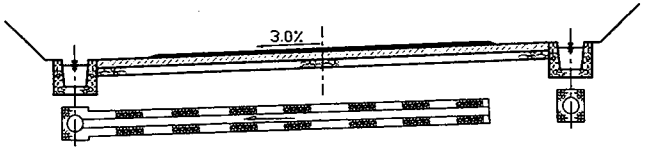
SCHEDULE LIST OF STONE MASONRY SIDE DITCH

LEFT SIDE						RIGHT SIDE					
CHAINAGE		CULVERT & PIPE REDUCTION	SIDE DITCH LENGTH	OUTFALL STRUCTURE	REMARKS	CHAINAGE		CULVERT & PIPE REDUCTION	SIDE DITCH LENGTH	OUTFALL STRUCTURE	REMARKS
Start	End	L(m)	L(m)			Start	End	L(m)	L(m)		
NO. 1+230	NO. 1+270	6.5	33.5	1		NO. 1+185	NO. 1+270	--	85.0	1	
NO. 1+510	NO. 1+770	2.5	257.5	1		NO. 3+940	NO. 4+080	3.0	137.0	2	Crest
NO. 2+015	NO. 2+090	--	75.0	1		NO. 4+470	NO. 4+515	--	45.0	1	
NO. 2+220	NO. 2+240	--	20.0	1		NO. 4+865	NO. 5+345	--	480.0	1	
NO. 2+285	NO. 2+460	1.1	173.9	1		NO. 5+386	NO. 5+525	1.0	138.0	1	
NO. 2+610	NO. 2+695	6.5	78.5	1		NO. 5+725	NO. 5+800	--	75.0	1	
NO. 2+660	NO. 2+680	--	20.0	1		NO. 5+920	NO. 6+178	9.5	248.5	--	Outfall to Bridge
NO. 2+735	NO. 2+833	--	98.0	--	Outfall to Bridge	NO. 6+300	NO. 6+430	--	130.0	2	Crest
NO. 2+840	NO. 2+890	--	50.0	--	Outfall to Bridge	NO. 6+530	NO. 6+810	--	280.0	2	Crest
NO. 3+020	NO. 3+108	--	88.0	1		NO. 7+160	NO. 7+250	--	90.0	1	
NO. 3+345	NO. 3+390	2.3	42.7	1		NO. 7+480	NO. 7+764	--	284.0	1	
NO. 3+675	NO. 4+275	2.3	597.7	1		NO. 8+600	NO. 8+625	--	25.0	1	
NO. 4+400	NO. 4+425	--	25.0	1		NO. 8+760	NO. 8+977	0.6	216.4	1	
NO. 4+552	NO. 4+602	1.6	48.4	1		NO. 9+038	NO. 9+175	6.0	131.0	--	Outfall to Bridge
NO. 4+890	NO. 5+190	--	330.0	1		NO. 9+480	NO. 9+654	18.1	155.9	1	
NO. 5+460	NO. 5+565	--	105.0	1		NO. 9+720	NO. 9+828	24.0	84.0	1	
NO. 5+720	NO. 5+800	--	80.0	1		NO. 15+180	NO. 15+280	--	100.0	1	
NO. 5+880	NO. 6+178	2.8	315.2	--	Outfall to Bridge	NO. 15+325	NO. 15+370	--	45.0	1	
NO. 6+300	NO. 6+475	--	175.0	1		NO. 15+410	NO. 15+445	--	35.0	1	
NO. 6+530	NO. 6+570	--	40.0	1		NO. 15+480	NO. 15+649	--	169.0	--	Outfall to Bridge
NO. 6+610	NO. 6+725	--	115.0	1		NO. 15+725	NO. 15+775	--	50.0	1	
NO. 6+850	NO. 7+035	--	85.0	1		NO. 15+900	NO. 16+000	3.0	97.0	--	Outfall to Culvert
NO. 7+135	NO. 7+220	--	86.0	1		NO. 16+320	NO. 16+360	--	40.0	1	
NO. 7+480	NO. 7+760	3.0	277.0	--		NO. 16+460	NO. 16+530	--	70.0	1	
NO. 7+764	NO. 7+840	5.5	70.5	--		NO. 16+610	NO. 16+780	--	170.0	1	
NO. 8+025	NO. 8+092	--	67.0	1		NO. 17+180	NO. 17+230	--	50.0	1	
NO. 8+340	NO. 8+495	--	155.0	1		NO. 17+322	NO. 17+460	12.0	126.0	--	Outfall to Bridge
NO. 8+512	NO. 8+675	--	163.0	--	Outfall to Bridge	NO. 17+525	NO. 17+696	--	171.0	1	
NO. 8+703	NO. 8+977	7.2	266.8	--	Outfall to Culvert						
NO. 9+038	NO. 9+654	11.0	605.0	--	Bridge,Culvert						
NO. 9+760	NO. 9+828	--	68.0	1							
NO. 15+130	NO. 15+160	--	30.0	1							
NO. 15+255	NO. 15+555	6.5	293.5	2							
NO. 15+740	NO. 15+768	--	28.0	--	Outfall to Culvert						
NO. 16+150	NO. 16+235	--	85.0	1							
NO. 16+340	NO. 16+400	6.0	54.0	1							
NO. 16+440	NO. 16+530	--	90.0	1							
NO. 16+606	NO. 16+795	7.0	183.0	1							
NO. 17+133	NO. 17+228	5.5	89.5	1							
NO. 17+322	NO. 17+400	6.0	72.0	--	Outfall to Bridge						
NO. 17+490	NO. 17+696	6.5	199.5	1							
NO. 17+780	NO. 17+880	2.0	98.0	1							
NO. 17+890	NO. 17+934	--	44.0	1							
NO. 17+980	NO. 18+080	2.7	97.3	1							
NO. 18+140	NO. 18+149	--	9.0	1							
SUB TOTAL			5,983	36		SUB TOTAL			3,728	26	
TOTAL		SIDE DITCH LENGTH 9,711 (m)				OUTFALL STRUCTURE 62 (Places)					

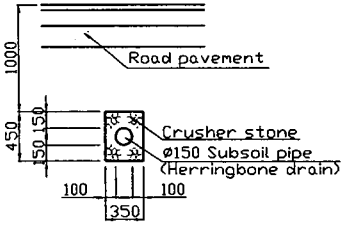
POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: SIDE DITCH AND OUTFALL FACILITY	SCALE : AS SHOWN	DRAWING No: M-01



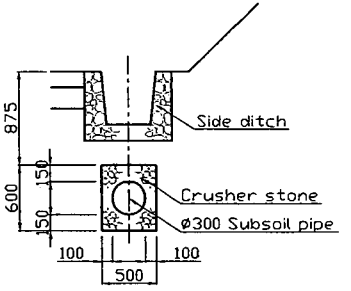
SECTION 1
SCALE 1:50



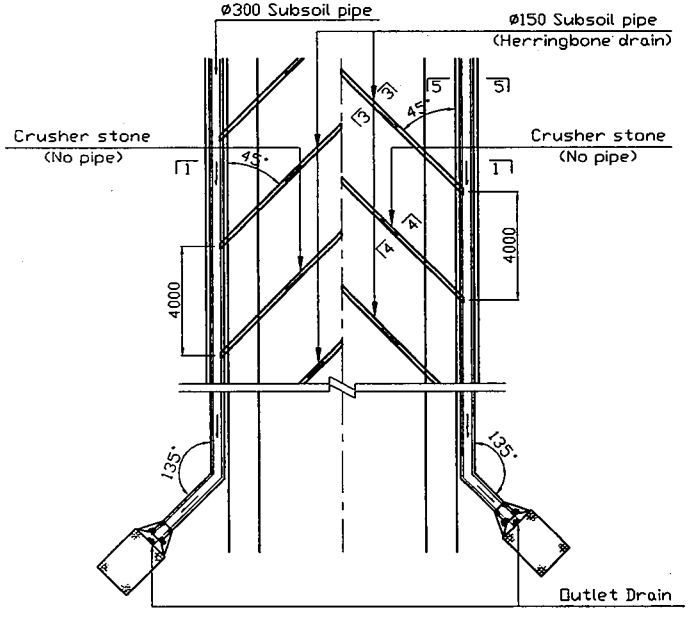
SECTION 2
SCALE 1:50



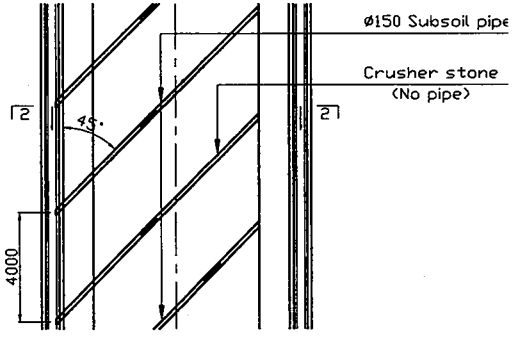
SECTION 3
SCALE 1:25



SECTION 5
SCALE 1:25

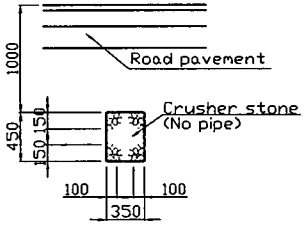


NORMAL CROSSFALL
SCALE 1:100

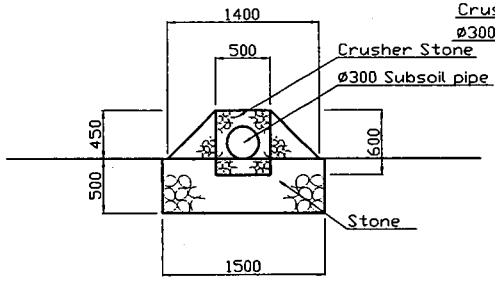


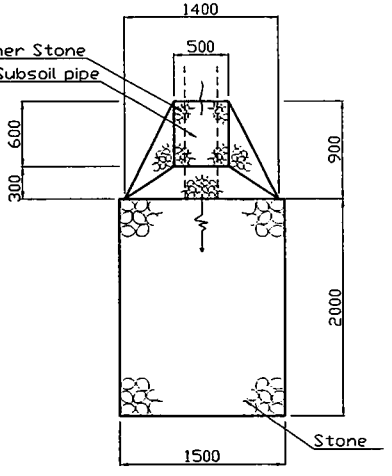
SUPERELEVATED CROSSFALL
SCALE 1:100

Notes : The subsoil pipes shall be installed alternately

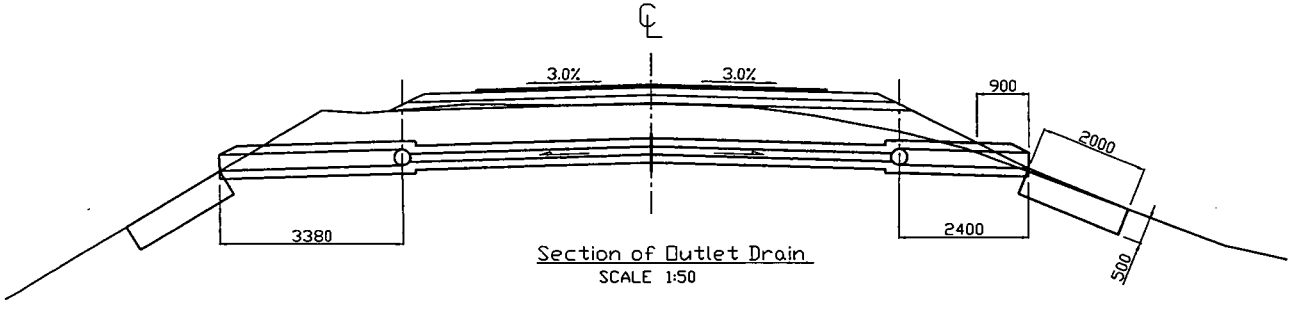


SECTION 4
SCALE 1:25





Detail of Outlet Drain
SCALE 1:25

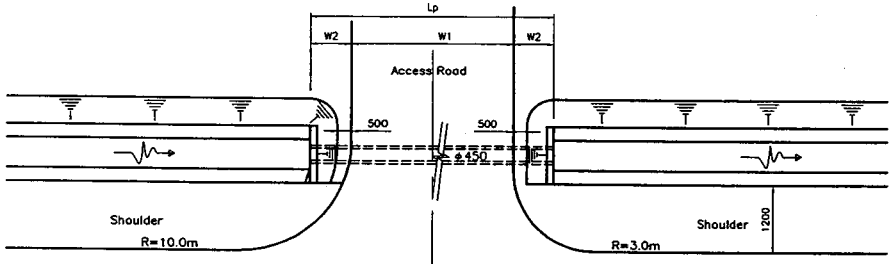


Section of Outlet Drain
SCALE 1:50

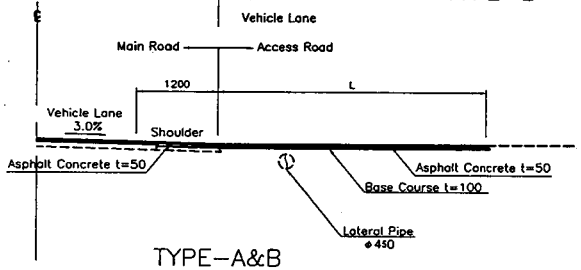
POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: HERRINGBONE DRAIN	SCALE : AS SHOWN	DRAWING No: M-02

MAJOR JUNCTION

S=1/500



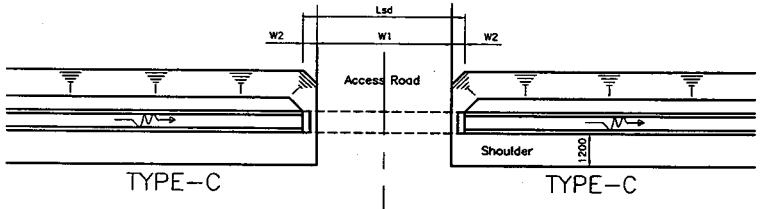
TYPE–A TYPE–B



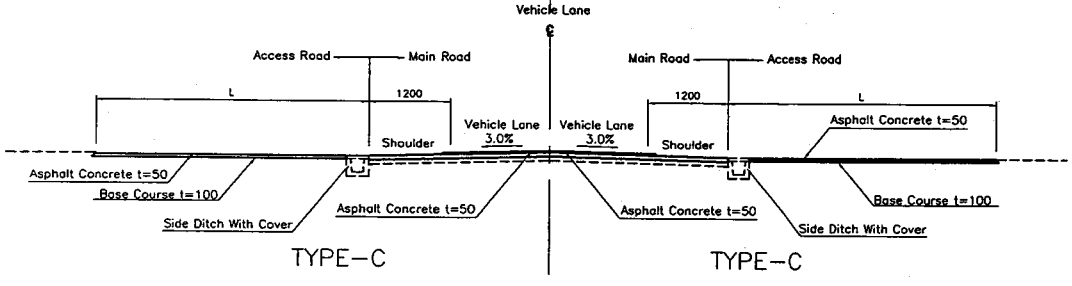
TYPE–A&B

MINOR JUNCTION & ROADSIDE ENTRANCE

S=1/500



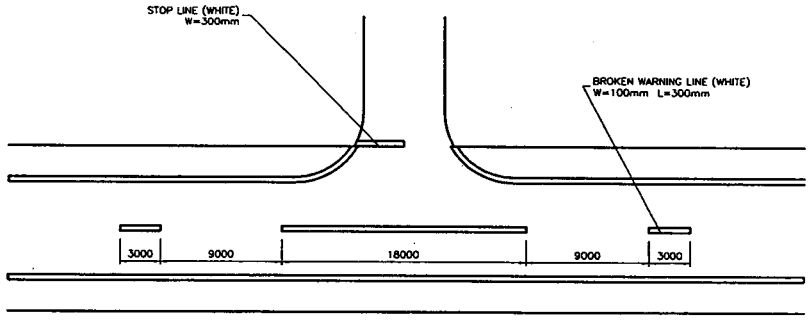
TYPE–C TYPE–C



TYPE–C TYPE–C

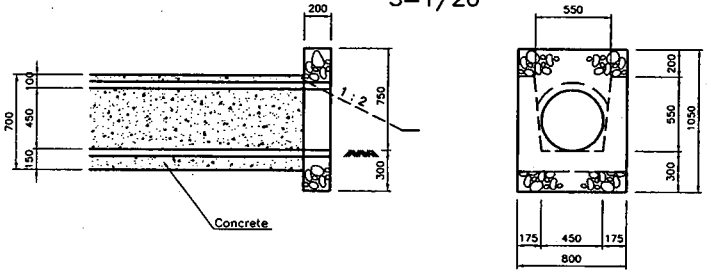
ROAD SIGN & MARKING FOR TYPE–A

S=1/200



HEAD WALL

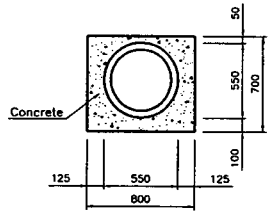
S=1/20



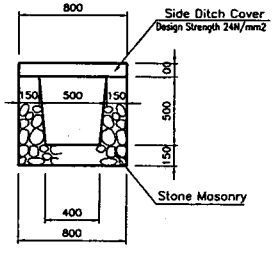
CONCRETE FOUNDATION

S=1/20

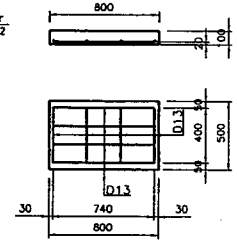
TYPE A,B



TYPE C



DETAIL OF COVER



POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: TYPICAL JUNCTIONS ENTRANCE	SCALE : AS SHOWN	DRAWING No: M-03

LIST OF JUNCTION AND ENTRANCES

LEFT SIDE

No.	Type	Chainage	w1 (m)	w2 (m)	L (m)	Shoulder (m)	R (m)	Lp (m)	Lsd (m)
1	C	1+170	1.5	1.0	2.0	1.2	--	--	3.5
2	C	1+190	3.0	1.0	2.0	1.2	--	--	5.0
3	B	1+239	3.5		4.0	1.2	3.0	Exist	--
4	B	1+473	2.5		5.0	1.2	3.0	--	--
5	C	1+565	3.0	1.0	2.0	1.2	--	--	5.0
6	B	1+878	3.0		4.0	1.2	3.0	Exist	--
7	C	2+462	1.5	1.0	2.0	1.2	--	--	3.5
8	B	2+526	3.5	1.5	4.0	1.2	3.0	6.5	--
9	B	2+684	3.0		4.0	1.2	3.0	--	--
10	C	2+878	3.0	1.0	2.0	1.2	--	--	5.0
11	C	2+976	2.5	1.0	2.0	1.2	--	--	4.5
12	C	3+282	1.5		2.0	1.2	--	--	--
13	B	3+334	3.0		4.0	1.2	3.0	Exist	--
14	B	3+532	3.0	1.5	4.0	1.2	3.0	6.0	--
15	B	3+630	3.0	1.5	4.0	1.2	3.0	6.0	--
16	C	3+897	2.5	1.0	2.0	1.2	--	--	4.5
17	C	4+140	2.5	1.0	2.0	1.2	--	--	4.5
18	C	4+207	2.5	1.0	2.0	1.2	--	--	4.5
19	C	4+508	3.0	1.0	2.0	1.2	--	--	5.0
20	B	4+530	1.5	1.5	4.0	1.2	3.0	4.5	--
21	C	4+650	2.5	1.0	2.0	1.2	--	--	4.5
22	C	4+685	1.5	1.0	4.0	1.2	--	--	3.5
23	B	4+705	3.5	1.5	4.0	1.2	3.0	6.5	--
24	C	5+720	3.0	1.0	2.0	1.2	--	--	5.0
25	C	6+220	1.5		4.0	1.2	--	--	--
26	C	6+427	2.5	1.0	2.0	1.2	--	--	4.5
27	B	6+727	3.5		4.0	1.2	3.0	--	--
28	C	7+300	3.0	1.0	4.0	1.2	--	--	5.0
29	B	7+760	3.5		4.0	1.2	3.0	Exist	--
30	B	7+790	2.5	1.5	4.0	1.2	3.0	5.5	--
31	C	7+897	3.0	1.0	2.0	1.2	--	--	5.0
32	C	7+940	3.0	1.0	2.0	1.2	--	--	5.0
33	C	8+270	1.5	1.0	2.0	1.2	--	--	3.5
34	C	8+350	2.5	1.0	2.0	1.2	--	--	4.5
35	C	8+400	1.5	1.0	2.0	1.2		--	3.5
36	C	8+460	1.5	1.0	2.0	1.2	--	--	3.5
37	B	8+746	3.0	1.0	2.0	1.2	3.0	5.0	--
38	C	9+070	3.5		4.0	1.2	--	--	Exist
39	C	9+290	3.0	1.0	2.0	1.2	--	--	5.0
40	C	9+370	3.0	1.0	2.0	1.2	--	--	5.0
41	B	9+405	1.5	1.0	2.0	1.2	3.0	3.5	--
42	C	9+410	3.0	1.5	4.0	1.2	--	--	6.0
43	C	9+497	3.0	1.0	2.0	1.2	--	--	5.0
44	C	9+594	1.5	1.0	4.0	1.2	--	--	3.5
45	C	15+112	5.0	1.0	2.0	1.2	--	--	7.0
46	C	15+255	1.5	1.0	2.0	1.2	--	--	3.5
47	C	15+320	2.5	1.0	2.0	1.2	--	--	4.5
48	B	15+360	3.5	1.5	4.0	1.2	3.0	6.5	--
49	C	15+380	3.0	1.0	2.0	1.2	--	--	5.0
50	C	15+392	3.0	1.0	2.0	1.2	--	--	5.0
51	C	15+445	2.5	1.0	2.0	1.2	--	--	4.5
52	B	15+668	3.5	1.5	4.0	1.2	3.0	6.5	--
53	C	15+768	2.5	1.0	2.0	1.2	--	--	4.5
54	C	15+878	3.0		4.0	1.2	--	--	--
55	C	15+980	3.5	1.0	4.0	1.2	--	--	5.5
56	B	16+130	3.5	1.5	4.0	1.2	3.0	6.5	--
57	C	16+183	1.5	1.0	2.0	1.2	--	--	3.5
58	B	16+376	3.0		4.0	1.2	3.0	--	6.0
59	C	16+700	1.5	1.0	2.0	1.2	--	--	3.5
60	B	16+770	4.0	1.5	4.0	1.2	3.0	7.0	--
61	C	16+923	2.5	1.0	9.0	1.2	--	--	4.5
62	B	17+183	2.5	1.5	4.0	1.2	3.0	5.5	--
63	C	17+238	1.5	1.0	4.0	1.2	--	--	3.5
64	C	17+263	1.5		2.0	1.2	--	--	--
65	B	17+333	3.0		4.0	1.2	3.0	--	6.0
66	C	17+403	2.5	1.0	2.0	1.2	--	--	4.5
67	B	17+433	3.5	1.5	4.0	1.2	3.0	6.5	--
68	C	17+440	1.5	1.0	4.0	1.2	--	--	3.5
69	B	17+463	3.0	1.5	4.0	1.2	3.0	6.0	--
70	B	17+560	3.5		4.0	1.2	3.0	--	6.5
71	C	17+608	1.5	1.0	4.0	1.2	--	--	3.5
72	C	17+638	1.5	1.0	4.0	1.2	--	--	3.5
73	C	17+660	1.5	1.0	2.0	1.2	--	--	3.5
74	B	17+728	2.5	1.5	4.0	1.2	3.0	5.5	--
75	B	17+960	2.5	1.5	4.0	1.2	3.0	5.5	--

RIGHT SIDE

No.	Type	Chainage	w1 (m)	w2 (m)	L (m)	Shoulder (m)	R (m)	Lp (m)	Lsd (m)
1	C	1+150	3.0	1.0	2.0	1.2	--	--	5.0
2	C	1+217	1.5	1.0	2.0	1.2	--	--	3.0
3	C	1+340	5.0	1.0	2.0	1.2	--	--	7.0
4	C	1+367	2.5	1.0	2.0	1.2	--	--	4.5
5	C	1+520	1.5		4.0	1.2	--	--	--
6	C	1+565	1.5		2.0	1.2	--	--	--
7	C	1+822	3.0		4.0	1.2	--	--	--
8	C	2+454	2.5	1.0	2.0	1.2	--	--	4.5
9	C	2+587	3.5		2.0	1.2	--	--	--
10	B	2+967	2.5	1.5	4.0	1.2	3.0	5.5	--
11	C	3+020	1.5		4.0	1.2	--	--	--
12	C	3+532	2.5		2.0	1.2	--	--	--
13	C	3+684	1.5	1.0	2.0	1.2	--	--	3.5
14	C	3+716	1.5	1.0	2.0	1.2	--	--	3.5
15	C	3+915	3.0	1.0	2.0	1.2	--	--	5.0
16	B	3+940	3.0	1.5	4.0	1.2	3.0	6.0	--
17	C	4+050	2.5	1.0	2.0	1.2	--	--	4.5
18	C	4+468	2.5	1.0	4.0	1.2	--	--	4.5
19	C	5+640	1.5	1.0	2.0	1.2	--	--	3.5
20	C	6+100	1.5	1.0	2.0	1.2	--	--	3.5
21	B	6+170	3.5	1.5	4.0	1.2	3.0	6.5	--
22	C	6+727	2.0	1.0	2.0	1.2	--	--	4.0
23	A	7+830	13.0		9.0	1.2	10.0	--	--
24	B	7+850	2.5		4.0	1.2	3.0	--	--
25	C	8+105	3.0		4.0	1.2	--	--	--
26	C	8+270	3.0		4.0	1.2	--	--	--
27	C	8+400	1.5	1.0	2.0	1.2	--	--	3.5
28	C	8+600	1.5	1.0	2.0	1.2	--	--	3.5
29	C	8+655	3.0		2.0	1.2	--	--	--
30	C	8+774	2.5	1.0	2.0	1.2	--	--	4.5
31	C	8+955	2.5	1.0	2.0	1.2	--	--	4.5
32	B	9+070	3.0		4.0	1.2	3.0	--	6.0
33	C	9+120	5.0	1.0	2.0	1.2	--	--	7.0
34	C	9+177	2.5		2.0	1.2	--	--	--
35	A	9+504	4.0	6.0	9.0	1.2	10.0	16.0	--
36	C	9+590	2.5	1.0	2.0	1.2	--	--	4.5
37	C	9+730	3.0	1.0	2.0	1.2	--	--	5.0
38	B	9+782	5.0	1.5	4.0	1.2	3.0	8.0	--
39	B	9+813	5.0	1.5	4.0	1.2	3.0	8.0	--
40	B	9+820	5.0	1.5	4.0	1.2	3.0	8.0	--
41	B	15+172	5.0	1.5	4.0	1.2	3.0	8.0	--
42	C	15+452	2.5	1.0	2.0	1.2	--	--	4.5
43	C	15+658	1.5	1.0	2.0	1.2	--	--	3.5
44	B	16+000	3.0		4.0	1.2	3.0	Exist	--
45	C	16+381	3.0		2.0	1.2	--	--	--
46	C	16+725	2.5	1.0	2.0	1.2	--	--	4.5
47	C	16+780	2.5	1.0	2.0	1.2	--	--	4.5
48	C	17+033	3.0		9.0	1.2	--	--	--
49	C	17+170	2.5		2.0	1.2	--	--	--
50	C	17+230	2.5	1.0	2.0	1.2	--	--	4.5
51	C	17+263	1.5	1.0	2.0	1.2	--	--	3.5
52	C	17+290	2.5	1.0	2.0	1.2	--	--	4.5
53	C	17+393	1.5	1.0	2.0	1.2	--	--	3.5
54	B	17+428	3.0	1.5	2.0	1.2	3.0	6.0	--
55	B	17+440	3.0	1.5	4.0	1.2	3.0	6.0	--
56	C	17+493	2.5	1.0	2.0	1.2	--	--	4.5
57	C	17+568	2.5	1.0	2.0	1.2	--	--	4.5
58	C	17+638	1.5	1.0	2.0	1.2	--	--	3.5

POHNPEI TRANSPORTATION AUTHORITY
POHNPEI STATE , FEDERATED STATES OF MICRONESIA

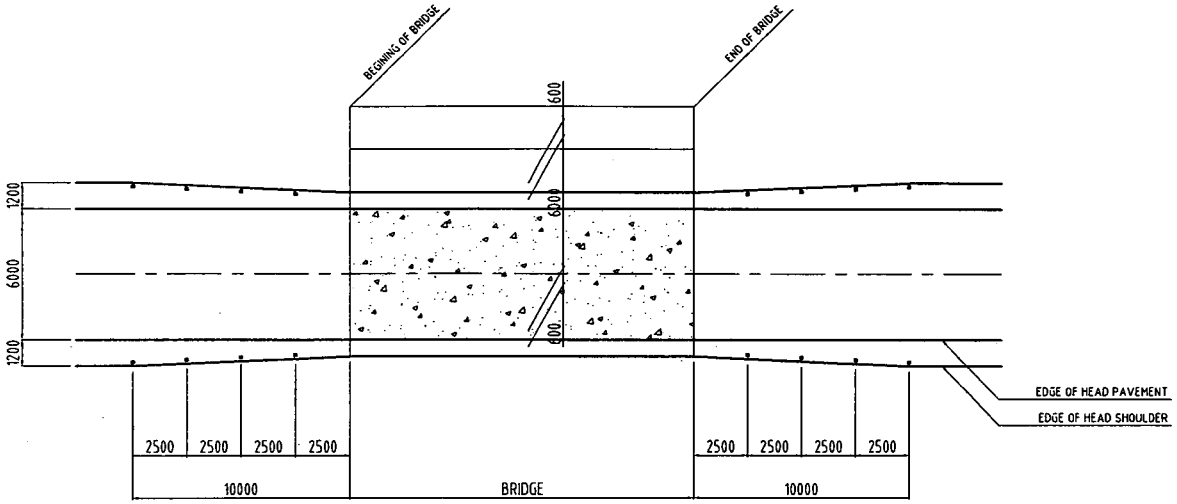
BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND

JAPAN INTERNATIONAL COOPERATION AGENCY
KATAHIRA & ENGINEERS INTERNATIONAL

TITLE: LISTS OF JUNCTIONS &SIGN POSTS

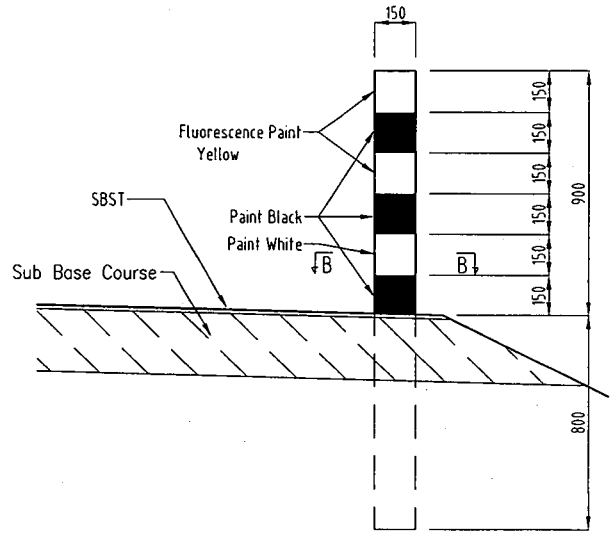
SCALE: None Scale

DRAWING No: M-04



PLAN

S=1/125

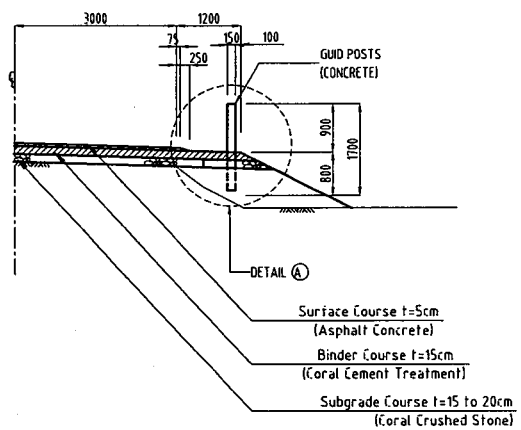


DETAIL (A)

S=1/10

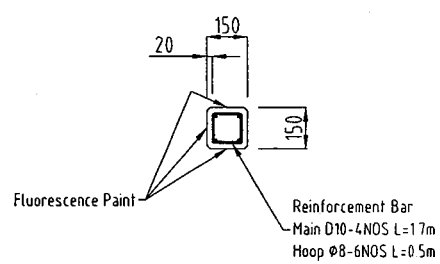
SCHEDULE OF GUARD POST

No.	STARTING CHAINAGE	ENDING CHAINAGE	SIDE	No. of POSTS	PITCH of POST	REMARKS
1	1+437	1+447	L & R	8	4@2.5m	Bridge No.2
2	1+466	1+476	L & R	8	4@2.5m	Bridge No.2
3	1+842	1+852	L & R	8	4@2.5m	Bridge No.3
4	1+858	1+868	L & R	8	4@2.5m	Bridge No.3
5	2+823	2+833	L & R	8	4@2.5m	Bridge No.4
6	2+840	2+850	L & R	8	4@2.5m	Bridge No.4
7	6+169	6+179	L & R	8	4@2.5m	Bridge No.5
8	6+195	6+205	L & R	8	4@2.5m	Bridge No.5
9	7+397	7+407	—	—	—	Substituted by Guard rail
10	7+418	7+428	L & R	8	4@2.5m	Bridge No.6
11	9+021	9+031	L & R	8	4@2.5m	Bridge No.8
12	9+039	9+049	L & R	8	4@2.5m	Bridge No.8
13	15+600	15+620	L	5	4@5.0m	River Side
14	15+639	15+649	L & R	8	4@2.5m	Bridge No.14
15	15+658	15+668	L & R	8	4@2.5m	Bridge No.14
16	15+876	15+886	L & R	8	4@2.5m	Bridge No.15
17	15+901	15+911	L & R	8	4@2.5m	Bridge No.15
18	16+019	16+029	L & R	8	4@2.5m	Bridge No.16
19	16+069	16+079	L & R	8	4@2.5m	Bridge No.16
20	17+108	17+118	L & R	8	4@2.5m	Bridge No.18
21	17+133	17+143	L & R	8	4@2.5m	Bridge No.18
22	17+301	17+311	L & R	8	4@2.5m	Bridge No.19
23	17+322	17+332	L & R	8	4@2.5m	Bridge No.19
24	17+686	17+696	L & R	8	4@2.5m	Bridge No.20
25	17+706	17+716	L & R	8	4@2.5m	Bridge No.20
26	17+830	17+920	R	19	18@5.0m	River Side
TOTAL of POSTS (L+R)			208Nos.			



GUIDE POST

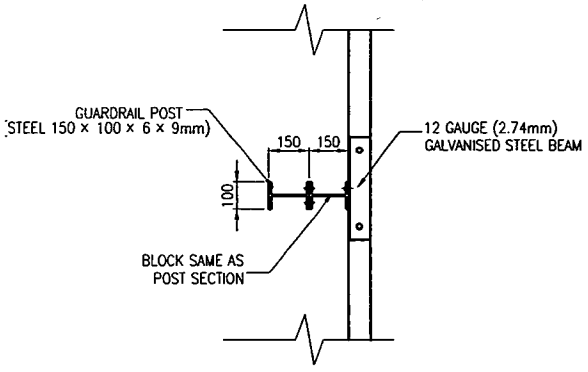
S=1/50



DETAIL B–B

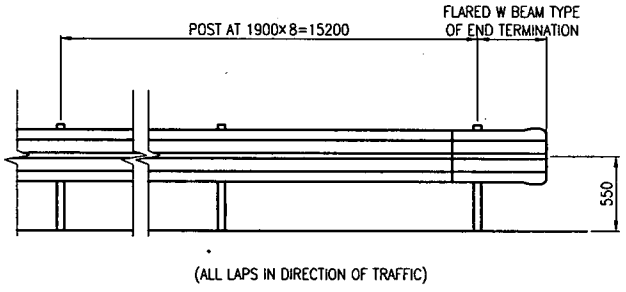
S=1/10

POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: GUIDE POST	SCALE : AS SHOWN DRAWING No: M-05



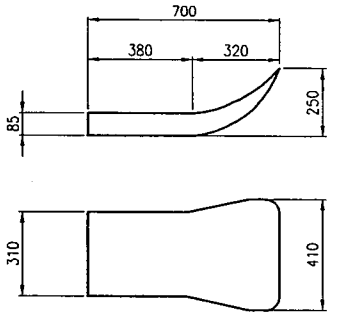
PLAN

S=1/20



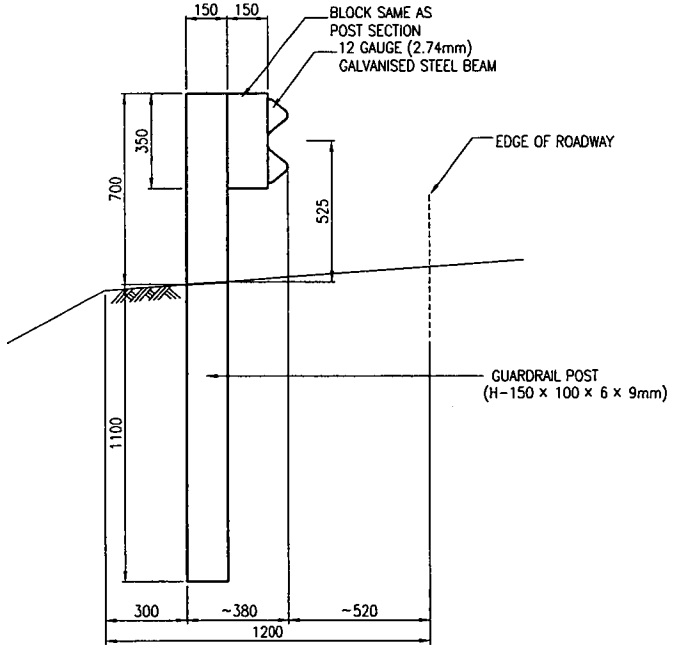
FRONT VIEW

S=1/40



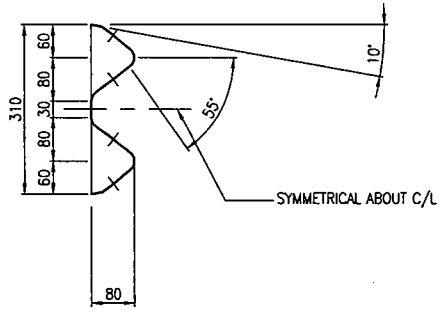
W-BEAM TERMINAL SECTION

S=1/20



TYPICAL POST DETAIL

S=1/20



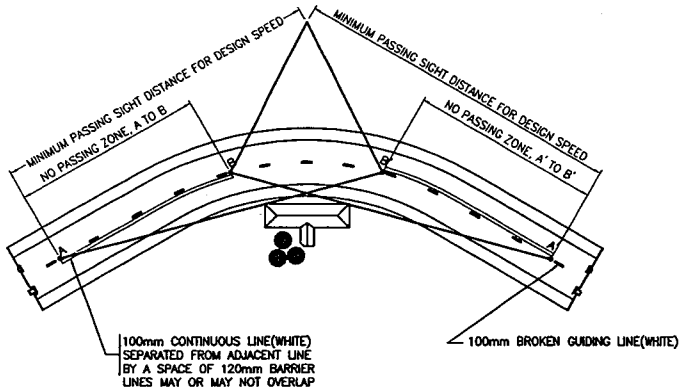
SECTION THROUGH W-BEAM

S=1/10

SCHEDULE OF GUARD RAIL

LEFT SIDE				RIGHT SIDE			
No	STARTING CHAINAGE	ENDING CHAINAGE	LENGTH (m)	No	STARTING CHAINAGE	ENDING CHAINAGE	LENGTH (m)
1	4+730	4+790	60	1	2+910	2+930	20
2	6+230	6+290	60	2	3+590	3+610	20
3	6+470	6+510	40	3	3+630	3+670	40
4	6+830	6+910	80	4	3+750	3+790	40
5	7+370	7+410	40	5	4+150	4+170	20
6	7+430	7+450	20	6	4+190	4+210	20
				7	5+810	5+890	80
				8	6+230	6+290	60
				9	6+470	6+510	40
				10	6+830	6+950	120
				11	7+070	7+090	20
				12	7+250	7+290	40
				13	7+330	7+350	20
		Sub Total	300m			Sub Total	540m
		TOTAL (L+R)		840m			

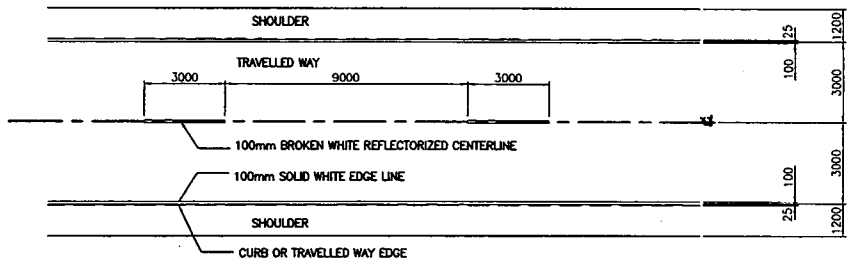
POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: DETAIL OF GUARD POST	SCALE : AS SHOWN	DRAWING No: M-06



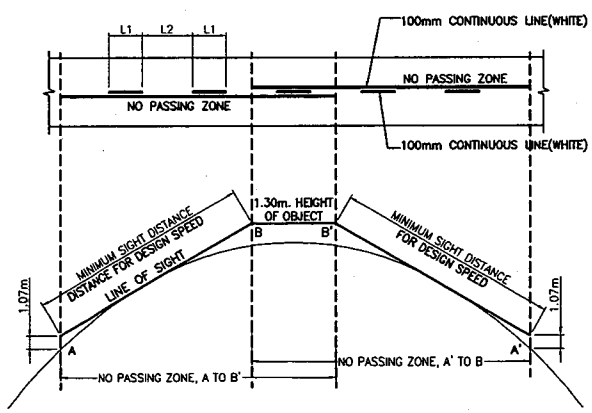
A, A' BEGIN NO – PASSING ZONE SIGHT DISTANCE BECOMES LESS THAN THE MINIMUM AS MEASURED BETWEEN POINTS ON CENTERLINE.

B, B' END NO – PASSING ZONE SIGHT DISTANCE AGAIN EXCEED THE MINIMUM REQUIRED LENGTH.

METHOD OF LOCATING AND DETERMINING THE LIMIT OF NO – PASSING ZONES ON HORIZONTAL CURVES



CENTER & EDGE LINE MARKINGS
RURAL HIGHWAY, TWO LANE
S=1/100



A, A', BEGIN NO PASSING ZONE SIGHT DISTANCE BECOMES LESS THAN MINIMUM MEASURED BETWEEN POINTS 1.30m. ABOVE PAVEMENT

B, B' END NO PASSING ZONE SIGHT DISTANCE AGAIN EXCEED MINIMUM REQUIRED LENGTH

NO PASSING ZONES IN OPPOSITE DIRECTIONS MAY OR MAY NOT OVERLAP, DEPENDING ON VERTICAL ALIGNMENT

METHOD OF LOCATING AND DETERMINING THE LIMIT OF NO – PASSING ZONES ON VERTICAL CURVES

POHNPEI TRANSPORTATION AUTHORITY POHNPEI STATE , FEDERATED STATES OF MICRONESIA	BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND	JAPAN INTERNATIONAL COOPERATION AGENCY KATAHIRA & ENGINEERS INTERNATIONAL	TITLE: STANDARD PAVEMENT MARKINGS	SCALE : AS SHOWN	DRAWING No: M-07

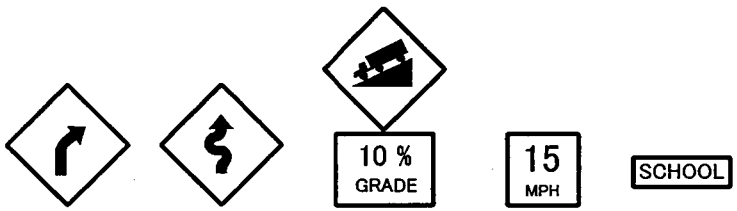
REGULATORY SIGNS

R2-1(20) 24"x 30"
R2-1(25) 24"x 30"
R2-1(30) 24"x 30"

Black legend & Boarder on White Background

Sign R2-1 will have a varying speed as Prescribed by the Engineer.

WARNING SIGNS

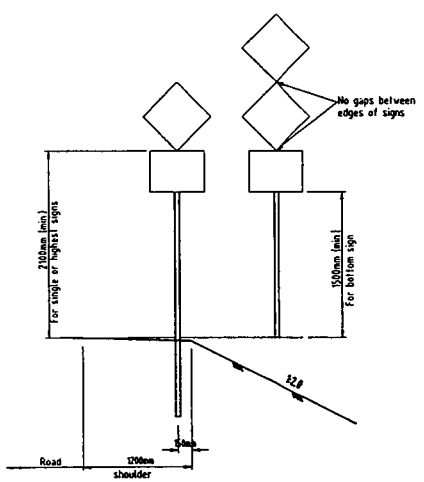


W1-2(R) 30"x 30"
W1-5R 30"x 30"
W7-1 30"x 30"
W7-3 24"x 18"
W13-1(15) 18"x 18"
S4-3 24"x 8"

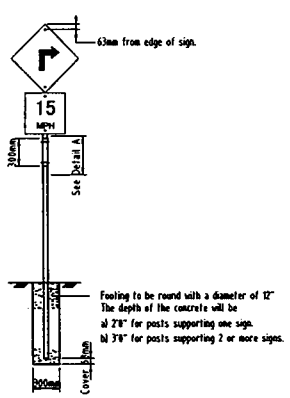
Black legend & Boarder on a Yellow Background

Sign W7-3 will have a varying grade as Prescribed by the Engineer.

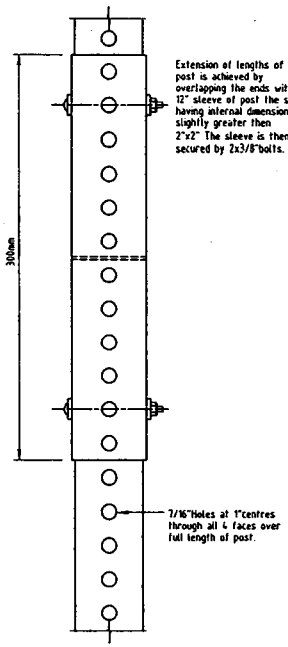
Sign W1-2, W1-5, may be either left or right orientated.



POSITIONING DETAILS Scale 1:30



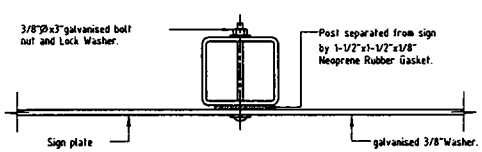
SIGN POST DETAIL Scale 1:30



DETAIL A Scale 1:2

NOTES

1. Sign posts shall be Square Tube, Structural Steel, with 7/16" holes drilled at 1" centers through all faces, and hot Dip Galvanised as specified. Nominal dimensions are 2"x 2" as specified.
2. Signs are to be constructed from Aluminum sheet, covered by an adhesive retroreflective sheet onto which the legend and boarder is attached.
3. Signs details shall conform to the specifications at the "Manual on uniform Traffic Devices for streets and Highways, (US FHWA Department of Transportation, 1978)
4. Sign are to be mounted with egdes touching, (ie no gaps)
5. Two Fasteners are to be provided per sign.
6. The depth of the concrete footing shall be 2'0" for single sign mountings & 3'0" for multiple sign mountings.
7. Further details are given in Section 700 of the specifications



SIGN / POST FASTENERS
NOT TO SCALE

INSTALLMENT LIST OF SIGN POSTS

LEFT			RIGHT		
No.	CHAINAGE	SIGN TYPE	No.	CHAINAGE	SIGN TYPE
1	1+197	W1-2(R)	1	1+061	W1-2(L)
2	1+585	R2-1(25)			W1-5R
3	1+662	W1-2(R)	2	1+486	W1-2(L)
4	2+166	R2-1(30)	3	2+166	S4-3
5	2+326	S4-3			W13-1(15)
		W13-1(15)	4	2+297	W1-2(R)
6	2+335	R2-1(30)	5	2+335	R2-1(25)
7	2+590	W1-5L	6	2+947	W1-2(L)
8	3+035	R2-1(25)	7	3+035	R2-1(20)
9	3+072	W1-2(R)	8	3+568	W1-2(R)
10	3+349	W1-2(L)	9	3+940	W7-1
11	3+694	W1-2(L)	10	3+945	W1-2(L)
12	4+020	W7-1	11	4+240	R2-1(25)
13	4+240	R2-1(20)	12	4+280	W1-2(L)
14	4+134	W1-2(R)	13	4+700	R2-1(20)
15	4+444	W1-2(L)	14	4+682	W1-2(L)
16	4+700	R2-1(25)	15	4+942	W1-2(L)
17	4+786	W1-2(L)	16	5+100	R2-1(30)
18	5+100	R2-1(20)	17	5+870	W7-1
19	5+115	W1-2(L)	18	5+900	R2-1(25)
20	5+160	W7-1	19	6+440	R2-1(20)
21	5+870	W7-1	20	7+700	S4-3
22	5+900	R2-1(30)			W13-1(15)
23	6+430	W7-1	21	7+741	W1-2(L)
24	6+440	R2-1(25)	22	8+407	W1-2(L)
25	6+640	W7-1	23	8+592	W1-2(L)
26	7+210	W7-1			W1-2(L)
27	7+600	W7-1	24	9+160	R2-1(25)
28	7+700	R2-1(20)	25	9+317	W1-2(L)
29	7+780	S4-3	26	15+041	S4-3
		W13-1(15)			W13-1(15)
30	7+875	R2-1(20)	27	15+314	W1-2(L)
30	7+911	W1-2(R)	28	15+482	W1-2(L)
		R2-1(30)	29	15+605	R2-1(30)
32	8+595	W1-2(L)	30	17+053	W1-2(L)
33	8+713	W1-2(R)	31	17+297	W1-2(L)
34	9+160	R2-1(20)	32	17+615	R2-1(25)
35	9+287	W1-2(R)	33	17+935	W1-2(L)
36	9+489	W1-2(L)			
37	9+805	R2-1(20)			
38	15+161	S4-3			
		W13-1(15)			
39	15+400	W7-1			
40	15+457	W1-2(R)			
41	15+605	R2-1(25)			
42	15+681	W1-2(R)			
43	17+130	R2-1(30)			
44	17+207	W1-2(R)			
45	17+411	W1-2(L)			
46	17+615	R2-1(20)			
47	18+080	W1-2(R)			
48	18+150	R2-1(25)			

POHNPEI TRANSPORTATION AUTHORITY
POHNPEI STATE , FEDERATED STATES OF MICRONESIA

BASIC DESIGN STUDY ON THE PROJECT FOR IMPROVEMENT OF THE CIRCUMFERENTIAL ROAD AROUND POHNPEI ISLAND

JAPAN INTERNATIONAL COOPERATION AGENCY
KATAHIRA & ENGINEERS INTERNATIONAL

TITLE: ROAD SIGNS

SCALE : AS SHOWN

DRAWING No: M-08

2.2.4 Implementation Plan

2.2.4.1 Implementation Policy

The basic conditions for implementing the Project are as follows:

- This Project, if approved, will be implemented in accordance with the guidelines of Japan's Grant Aid after the signing of the Exchange of Notes between the Governments of Japan (GOJ) and the Federated States of Micronesia (FSM).
- The Pohnpei State Government is responsible for implementing the Project. The Pohnpei Transportation Authority (PTA) is in charge of road construction and maintenance works under the Pohnpei State Government.
- The detailed design, assistance in tendering, and construction supervision of the Project will be undertaken by a Japanese consulting firm in accordance with a contract between the FSM Government and the consultant.
- The improvement works of the road will be undertaken by the successful Japanese tenderer in awarding the contract with the FSM Government.

The basic concepts in the implementation plan are as follows:

- Materials and equipment necessary for the Project will be procured in the State of Pohnpei as far as available. Items unavailable locally will be procured from Japan or third countries, which will be selected on the basis of cost, on condition that the quality and supplying capacity meet the requirements.
- The construction method and schedule of the Project will be planned reflecting local conditions of climate, topography, geology and so on.
- Easy and commonly used method of construction, not needing special equipment nor technology, will be adopted for the Project as much as possible.
- Organizations for construction management by the contractor and construction supervision by the consultant will be proposed meeting the standardized construction management methods.
- At least one lane shall be opened to traffic during construction and necessary measures for safety shall be taken.
- Full attention shall be paid to the environmental preservation, especially prevention of outflow of mud water and water pollution in excavation of coral materials.
- The coral materials shall be dredged at permissible areas after obtaining a permit in accordance with the State Act relating to the designation, acquisition and removal of mined and dredged materials; and for other purposes.
- The waste generated during construction shall be reused as much as possible, and remaining waste shall be disposed at the place permitted by the State Government. The disposal place is shown in Figure 2.2.4-1.

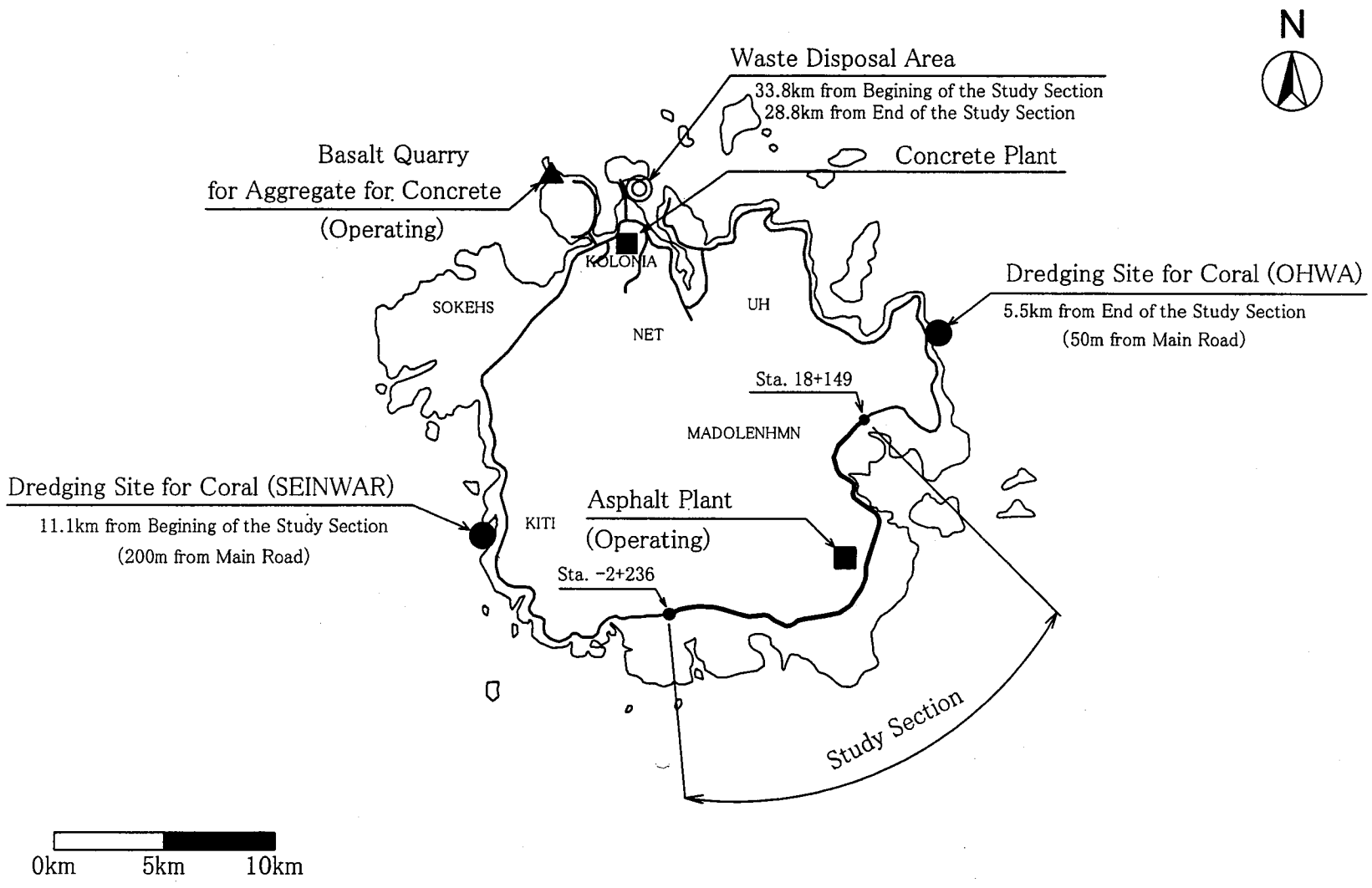


Figure 2.2.4-1 Waste Disposal Area and Major Material Sources

2.2.4.2 Implementation Conditions

1) Securing of safety for the road users and construction staff

During Road Construction

- A space of at least one lane shall be opened to traffic which is controlled by the alternate passing. Necessary safety facilities such as notice signs, detour signs, barricades, safety cones and safety light, and traffic control men shall be properly placed.

During Structure Construction

- The detour shall be provided for the existing traffic.
- In case the river is diverted during construction, the diverted river banks shall be protected by sandbags to prevent the erosion.

2) Environmental Considerations

- Measures to prevent the dust pollution during road construction shall be taken by sprinkling water and so on.
- Proper maintenance shall be carried out for the existing road utilized for transportation of materials and equipment.
- The coral materials will be dredged at two places presently operated as shown in Figure 2.2.4-1. The dredging permit shall be obtained by the PTA. The dredging shall be done with due precautions not to pollute the reef. Dredging method is shown in Table 2.2.4-1.

Table 2.2.4-1 Dredging Method of Coral Materials

Dredging Procedure	Considerations for Environment
Embank the dredging area.	Set up the silt screen to prevent the mud water from spreading.
Dredge coral materials in the area, and load them into dump trucks.	Pay attention not to discharge the oil from excavators and dump trucks.
Transport the materials to the stock yard and crush them in the crushing plant.	Prevent the dust pollution.
Carry the crushed materials to the site by dump trucks (for subbase course). Add cement to the materials and mix them in the mixing plant and then carry them to the site by dump trucks (for base course).	Prevent the cement from spreading when throwing into the mixing plant.

3) Land Acquisition and Relocation of Inhabitants

50 feet (15.24m) width is secured for the right of way (ROW) of the circumferential road. Since no change is made on the alignment in principle, construction limit is mostly within the ROW. However, partly cut/embankment slopes are constructed beyond the ROW. The Pohnpei State Government shall secure the additional ROW by the end of April 2003. The relocation of inhabitants is not required.

4) Tax Exemption

Tax exemption shall be executed for locally procured materials with the certificates issued by the implementing agency. For imported equipment/ materials, the customs clearances shall be made by the implementing agency.

2.2.4.3 Scope of Works

The undertakings of both governments, Japan and the FSM are listed in Table 2.2.4-2.

Table 2.2.4-2 Undertaking of Both Governments

Item	Contents	Undertaken by		Remarks
		Japan	FSM	
Procurement of materials and equipment	Procurement & delivery	O		
	Tax exemption and customs clearance		O	
	Maintenance/improvement of delivery route		O	
Preparatory works	Acquisition of lots for construction		O	Site office, stock yard, plant yard, working area, etc.
	Other preparatory works	O		
Removal/ relocation of obstructions	Removal of surface obstructions		O	Connection boxes of telecommunication cable, electric posts, etc.
	Removal of underground obstructions		O	Telecommunication cables, water pipes, etc.
Securing of ROW	Acquisition of additional ROW beyond 50 feet		O	
Dredging permit	Application & obtaining of dredging permit		O	
Construction works	Road improvement works	O		

2.2.4.4 Consultant Supervision

A Japanese consultant will carry out the detailed design, assistance in tendering and construction supervision in accordance with the contract between the Government of the FSM and the consultant.

1) Detailed Design

Major works in the detailed design to be carried out by the consultant are as follows:

- Site survey for the detailed design
- Detailed design of the road, bridge, drainage and so on
- Preparation of drawings and specifications

- Preparation of construction plan, materials/equipment procurement plan and cost estimate
- Preparation of tender documents

The necessary time for the detailed design is 3 months for phase 1 and 2 months for phase 2.

2) Assistance in Tendering

Major items of the services in the assistance in tendering are as follows:

- Tender publication
- Pre-qualification
- Tendering
- Tender evaluation
- Contract facilitation

The necessary time for the assistance in tendering is 3 months each for both phase 1 and phase 2.

3) Construction Supervision

The consultant will carry out the supervision of the construction work executed by the contractor. Major items of the construction supervision are as follows:

- Inspection and approval of site survey
- Inspection and approval of construction plan
- Quality control
- Progress control
- Measurement of work
- Inspection of safety aspects
- Final inspection and turnover

The necessary construction period is 11 months for phase 1 and 10.5 months for phase 2. For the construction supervision, a resident engineer is required to be stationed on the site. Full attention shall be paid on the safety control since the construction works are carried out occupying the existing road space. The supervision shall be carried out so as to prevent any accident, through the discussion and cooperation with the safety manager of the contractor.

2.2.4.5 Quality Control Plan

The quality control plan for earthwork and pavement work is shown in Table 2.2.4-3 and the quality control plan for concrete work is shown in Table 2.2.4-4.

Table 2.2.4-3 Quality Control Plan for Earthwork and Pavement Work

Work Item	Test Item	Test Method (Specification)	Frequency of Test
Embankment	Density in-situ	AASHTO T191	Once every 500m^2.
Base course / Subbase course	Sieve Analysis	AASHTO T27	Once before placement and once every 1,500m^3 or when the source is changed.
	CBR	AASHTO T193	Once before placement and once every 1,500 m^3 or when the source is changed.
	Moisture-density relation	AASHTO T180	Once before the placement and twice per 1,500 m^3 or when the source is changed.
	Density in-situ	AASHTO T191	Once every 500 m^2.
Asphalt concrete surface course	Temperature	-	At the departure from AC plant and the arrival at the site and during placement/ compaction (5 times a day of execution).
	Abrasion	AASHTO T96	Once every 1,500m^3 or when the source is changed.

Table 2.2.4-4 Quality Control Plan for Concrete Work

Item	Test Item	Test Method (Specification)	Frequency of Test
Cement	Physical property	AASTHO M85	Once before trial mix. Once every 10,000 bags or when the material brand is changed.
Fine Aggregate	Sieve analysis	AASTHO T27	Once a month
Coarse Aggregate	Physical property	AASTHO M80	Once before trial mix. Once every 1,500 m^3 or when the quarry is changed.
	Sieve analysis	AASTHO T27	Once a month
Water	Quality	AASTHO T26	Once before trial mix.
Concrete	Slump	AASHTO T119	Twice a day
	Air Content	AASHTO T121	Twice a day
	Compressive strength	AASHTO T22	6 specimens per placement or 6 specimens per 75m^3 when concrete volume in one placement is big (3 specimens for 7 days strength test and 3 specimens for 28 days strength test)
	Temperature	-	Twice a day

2.2.4.6 Procurement Plan

1) Construction Materials

The construction materials available in Pohnpei Island are only sand, aggregate for cement concrete and asphalt concrete (basalt) and aggregate for base / subbase courses (coral). All others are imported.

The way of procurement of materials is as follows:

- Imported materials which are constantly available in the local market will be procured regarded as local materials.
- Materials which are not available in the local market will be procured from Japan or neighboring countries. The country of material source will be decided comparing price, quality and so on.

Procurement plan of the major materials is shown in Table 2.2.4-5.

Table 2.2.4-5 Material Procurement Plan

Item	Procured from			Remarks
	Micronesia	Japan	Third Country	
Construction Materials				
Asphalt Concrete	O			
Concrete	O			Purchase from private supplier
Crushed stone (Subbase, Base course)	O			Coral Material
Cement			O	From Papua New Guinea
Sand	O			
Crushed stone (for concrete)	O			
Reinforcing steel bar	O			Import
Admixture	O			Import
Lubber bearing		O		Form Japan
Paint	O			Import
Non shrinkage mortal	O			Import
Expansion joint	O			Process in site
Sod	O			
Boulder	O			
PVC Pipe	O			Import
R.C Pipe D=300-600	O			Manufacture at site
R.C Pipe D=900	O			Manufacture at site
Guard rail			O	From Guam
Traffic Sign	O			
Materials for Temporary Works				
Timber	O			Import
Plywood (No waterproof)	O			Import
Plywood (Waterproof)	O			Import
Nail	O			Import
Lumber	O			Import
H-Beam:H-300,400			O	From Korea
Sand Bag	O			Import
Welding Rod	O			Import
Fuel, Oil	O			Import
Oxygen, Acetylene Gas	O			Import
Gas Cutting Device	O			Import
Silt Screen		O		From Japan

2) Equipment

Situation of Construction Equipment in Pohnpei Island

- Local Market

  The PTA and construction companies in the Pohnpei States own only a few equipments. As an example, major equipments owned by the PTA is as follows.

- Equipment Owned by the PTA

  In 1987, road construction equipment such as bulldozer, asphalt plant and so on was procured under the Japan's Grant Aid, but the depreciation periods of most of them have already passed. Major equipment owned by the PTA is listed in Table 2.2.4-6. The PTA has been executing most of the road construction projects in Pohnpei Island with those equipment.

Table 2.2.4-6 Major Equipment Owned by the PTA

Equipment	Specification	Procured Year	Number
Bulldozer	21t	1989	1
Bulldozer	15t	1996	1
Tractor Shovel	Crawler	1989	1
Tractor Shovel	Wheel	1995	1
Backhoe	1.0 m^3	1989	2
Backhoe	1.2 m^3	1996	1
Mini Backhoe	0.1 m^3	1994	1
Truck Crane	4.8t	1996	1
Asphalt Finisher		1989	1
Asphalt Finisher		1996	1
Vibration Roller	5t	1994	1
Vibration Roller	10t	1994	1
Vibration Roller	10t	1999	1
Motor Grader	3.1m	1994	1
Tire Roller	8-20t	1999	1
Dump Truck	10t	1998	4
Dump Truck	10t	1999	1
Dump Truck	6t	1999	3
Trailer Truck	lowboy	1997	1

Situation of Construction Equipment in Neighboring Countries

Most of the construction equipment in Pohnpei Island were imported from neighboring countries, mainly Guam. The situation of construction equipment in Guam is as follows:

- Equipment is not manufactured in Guam. Most of the equipment are imported from Japan or other country. The prices are higher than those in the original country due to transportation cost and taxes.

- Mostly secondhand equipment is dealt in the market in Guam. The equipment is a few in number and varies in manufacture year and model.
- There are equipment lease firms but prices are high.

Procurement Way

Under the above situation, the way of procurement of equipment is as follows:

- To procure the available equipments in Pohnpei.
- To procure the deficient equipment from Japan.

Procurement plan of equipment is shown in Table 2.2.4-7.

Table 2.2.4-7 Procurement Plan of Major Equipment

Equipment	Specification	Procured from			Remarks
		FSM	Japan	Third country	
Bulldozer	15t		O		
Backhoe	0.6 m^3		O		
Backhoe	1.0 m^3		O		
Jumbo Breaker	1,300 kg		O		
Dump Truck	10t	O	O		lease in Pohnpei + procure from Japan
Dump Truck	4t		O		
Wheel Crane	50t		O		
Motor Grader	3.1m		O		
Road Roller	10-12t	O	O		lease in Pohnpei + procure from Japan
Vibration Roller	6-8t (boarding type)		O		
Vibration Roller	3-4t (boarding type)		O		
Vibration Roller	0.8-1.1t (hand guide type)		O		
Tire Roller	8-20t	O	O		lease in Pohnpei + procure from Japan
Tractor Shovel	2.1 m^3 (wheel type)		O		
Asphalt Finisher	2.4-4.5m	O			lease in Pohnpei
Asphalt Distributor	2-3 KL	O			lease in Pohnpei
Crushing Plant	(self propelled)		O		
Mixing Plant	40 m^3/h (self propelled)		O		
Generator	15 KVA		O		
Generator	35 KVA		O		
Generator	45 KVA		O		
Line Marker	15-20cm		O		
Submersible Pump	Φ50-150mm		O		

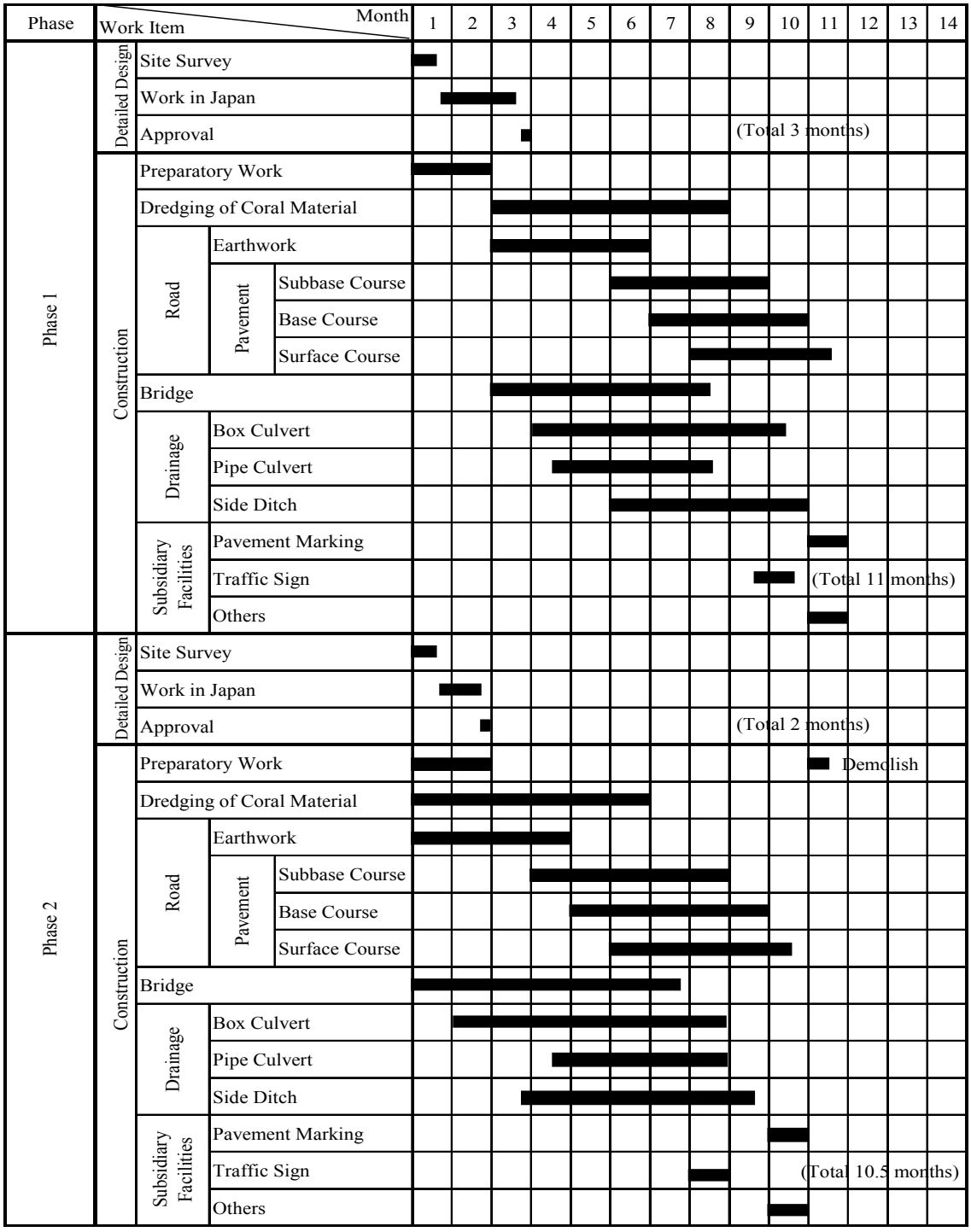
2.2.4.7 Implementation Schedule

The Project is planned to be implemented in two phases as follows:

- Phase 1 : Section 2 (5.108km)
- Phase 2 : Section 1 (6.664km)

The implementation schedule of the Project is shown in Table 2.2.4-8.

Table 2.2.4-8 Implementation Schedule



2.3 Obligations of the Federated States of Micronesia

The following measures should be taken by the Federated States of Micronesia on condition that the grant aid by the Government of Japan is extended to the Project:

- To provide data and information necessary for the Project.
- To secure the land necessary for the execution of the Project, such as the right-of-way, site offices, working areas, storage yards, plant facilities and others.
- To make passable all roads and bridges leading to the Project sites before the commencement of inland transportation of materials and equipment.
- To relocate existing utilities such as power poles, power cable, telecommunication cable, water pipes, etc.
- To bear commissions to the bank in Japan for its banking services based upon the Banking Arrangement, namely the advising commission of the "Authorization to Pay" and payment commission.
- To ensure prompt unloading, tax exemption, customs clearance at the port of disembarkation in the Federated States of Micronesia and prompt internal transportation of the materials and equipment for the Project.
- To exempt Japanese nationals engaged in the Project from customs duties, internal taxes and other fiscal levies, which may be imposed in the Federated States of Micronesia with respect to the supply of the products and services under the verified contracts.
- To accord Japanese nationals, whose services may be required in connection with the supply of the products and the services under the verified contract, such facilities as may be necessary for their entry into the Federated States of Micronesia and stay therein for the performance of their work.
- To provide necessary permission, licenses and other authorizations for implementing the Project (approval of environmental impact assessment, permit to dredge coral materials, earthmoving permit and other necessary permits).
- To maintain and use properly and effectively the facilities constructed under the Project.
- To coordinate and solve any issues related to the Project which may be raised form third parties or inhabitants in the Project area during implementation of the Project.
- To bear all the expenses, other than those covered by the Japan's grant aid, necessary for the Project.

Project Cost Estimation

The project cost borne by the Federated States of Micronesia is estimated at US$251,084 for Phase 1 and US$260,404 for Phase 2, totaling US$511,488 (refer to Appendix 5).

2.4 Project Operation Plan

Maintenance of the road to be improved under the Project will be carried out by the Pohnpei Transportation Authority (PTA).

Maintenance activities will include routine inspection, cleaning and repair works. A maintenance plan for the road to be constructed under the Project is proposed as shown in Table 2.4-1. The annual maintenance cost is estimated at US$20,240.

The PTA has been implementing road construction projects as well as road maintenance by itself and possesses the equipment and personnel necessary for road construction and maintenance. The capacity of the PTA for carrying out the maintenance works is sufficient. However, routine maintenance, especially cleaning of drainage facilities is found to be inadequate at present. It is important to secure the sufficient budget for maintenance.

Table 2.4-1 Maintenance Plan and Cost Estimate

(total road length : 11.772 km)

1. Routine Inspection

Facility	Inspection Item	Frequency	Number of staff	Equipment	Quantity	Cost (US$/year)
Side ditches	Damage, presence of mud, debris, obstacles, etc.	12 times a year (1 day/time)	2 persons	Scoop, hammer, sickle, barricade, pick-up truck	Worker : 24 man-day/year	840
Culverts	Damage, presence of mud, debris, obstacles, etc.				Pick-up : 12 veh-day/year	1,200
Pavement	Crack, deformation, pothole, etc.					
Shoulder	Presence of vegetation					
Cut slope	Erosion, collapse, etc.					
Embankment Slope	Erosion, collapse, etc.					
Bridges	Condition of superstructure, substructure and river					
Pavement marking	Stain, discolor, etc.					
Traffic signs	Damage, deformation, stain, discolor, etc.					
					Subtotal	2,040

2. Cleaning

Facility	Work Item	Frequency	Number of staff	Equipment	Quantity	Cost (US$/year)
Side ditches	Removal of mud, debris, obstacles, etc.	4 times a year (4 days/time)	5 persons	Scoop, broom, mowing machine, tools, barricade, pick-up truck	Worker : 80 man-day/year	2,800
Culverts	Removal of mud, debris, obstacles, etc.				Pick-up : 48 veh-day/year	4,800
Pavement	Cleaning					
Shoulder	Cleaning, cutting grass					
Cut slope	Cleaning					
Embankment Slope	Cleaning					
Bridges	Cleaning					
Pavement marking	Cleaning					
Traffic signs	Cleaning					
					Subtotal	7,600

3. Repair

Facility	Work Item	Frequency	Number of staff	Equipment/Material	Quantity	Cost (US$/year)
Side ditches	Repair of damages	2 times a year (10 days/time)	4 persons	Plate tamper, tools, barricade, pick-up truck, coral materials, bitumen, cement	Worker : 80 man-day/year	2,800
Culverts	Repair of damages				Tamper : 20 set-day/year	800
Pavement	Sealing of cracks, patching of potholes, etc.				Pick-up : 60 veh-day/year	6,000
Shoulder	Repair of damages				Coral : 10 m^3/year	240
Cut slope	Repair of damages				Bitumen : 2 ton/year	640
Embankment Slope	Repair of damages				Cement : 15 bags/year	120
Bridges	Repair of damages					
Pavement marking	Repainting					
Traffic signs	Repair of damages					
					Subtotal	10,600

	Total	20,240

2.5 Other Relevant Issues

To smoothly implement the Project, essential are the acquisition of necessary land, obtainment of approvals and permits necessary to implement the Project such as approval of environmental impact assessment, earthmoving permit, coral dredging permit and so on, and relocation of utilities such as power lines, communication lines and water pipes; all to be done by the FSM side.

To fully realize and sustain the effects of the Project, it is important to adequately carry out the maintenance and repair works to keep the road in good condition and to prolong its serviceable life.

CHAPTER 3 PROJECT EVALUATION AND RECOMMENDATIONS

3.1 Project Effect

Direct beneficiaries of the Project are the population residing in Pohnpei Island, amounting to 32,395 in 2000.

The major direct and indirect effects of the Project are shown in Table 3.1-1 and 3.1-2 respectively.

Table 3.1-1 Direct Effects of the Project

Present Issues	Measures to be Taken by the Project	Effect of the Project
1. Due to poor condition of the road, vehicles are forced to drive at a low speed. It takes about 36 minutes to travel the 11.8 km project sections.	• Travel condition will be drastically improved by paving.	• Travel time will be shortened to about 18 minutes.
2. Presently the road is unpaved and therefore requires the frequent maintenance works to keep the road in passable condition such as refilling of gravel (coral materials), grading and compaction, resulting in high maintenance cost which is estimated at US$150,000 per year.	• Refilling of gravel will be made unnecessary by paving.	• Road maintenance cost will be reduced to about US$20,000 per year.
3. There are 3 sections submerged during heavy rain as follows: • 100m section, about once a year for about half a day • 120m section, about once every 5 years for about 4 hours • 280m section, about 5-6 times a year for about 4 hours	• Countermeasures against submergence by raising the road elevation and improving the cross drainage capacity will be taken.	• The submergences will be eliminated and the road will always be passable.
4. For the maintenance of the road, coral materials are frequently being supplied, amounting to about 19,000 m^3 per year. Muddy water drained from road surface and through earth ditches may pollute the lagoon.	• Coral materials for the road maintenance will be made almost unnecessary by paving. • Lined ditches with grouted riprap which are resistant to erosion will be installed.	• Although about 41,000 m^3 of coral materials will be used for paving, little coral materials will be necessary after paving, resulting in the saving in total consumption of coral materials in the long run and consequently mitigation of environmental problems accompanied by coral dredging. • Water pollution of lagoon due to muddy water will be prevented.

Table 3.1-2 Indirect Effects of the Project

Present Issues	Measures to be Taken by the Project	Effect of the Project
1. Poor travel condition hinders the smooth movement of people and goods to and from the FSM capital Palikir and the State capital Kolonia.	• Improvement of the circumferential road will be completed and consequently the accessibility to the FSM capital and the State capital will be improved.	• Development of economic activities in the Project area will be promoted in various sectors, i.e., tourism industry due to improved accessibility to tourist spots (Nan Madol, Kepirohi Waterfall, etc.), agriculture and fishery due to improved accessibility to consuming areas, etc.

3.2 Recommendations

The Project will contribute to the improvement of living condition of inhabitants and have many effects as mentioned above. Therefore, it is appropriate to implement the Project under the Japan's grant aid.

To realize, enlarge and sustain the effect of the Project, the matters to be undertaken by the FSM side are as follows:

1) To adequately carry out the maintenance and repair works as necessary to keep the road in good condition and to prolong its serviceable life. Especially, cleaning of drainage facilities is of vital importance. It is necessary to secure the sufficient budget for maintenance.

2) To further improve the other sections of the circumferential road than the Project Sections and thus to upgrade the function of the circumferential road as a whole. Major problems in the other sections of the circumferential road and recommendations thereto are as follows:
   - Side ditches : In many portions, earth ditches do not work well due to erosion and sedimentation. They should be repaired. It is desirable to improve the side ditches with grouted riprap or concrete if possible.
   - Shoulder : It is often observed that the shoulder is covered by grass and bushes hindering the water from flowing to the roadside, reducing sight distances and making driving hazardous. Grass and bushes should be removed. It is desirable to take measures to prevent the vegetation e.g., by paving the shoulder.
   - Structures : It is desirable to widen or reconstruct the bridges with insufficient width. In some portions, shoulder is narrowed due to insufficient length of culverts. It is desirable to extend the culverts and to secure the standard width of shoulder.
     Many culverts need to be improved on their inlets/outlets.
   - Traffic safety devices : Guardrails/ guide posts should be installed where they are necessary but absent.
   - Springwater : At the point about 1 km before the beginning point of the Study Section, the groundwater springs on the road surface. This phenomenon remarkably weakens the pavement structure. Proper subsurface drainage should be provided when the occasion arises, e.g. when the pavement needs to be rehabilitated after damaged.

APPENDICES

APPENDIX 1

MEMBER LIST
OF THE STUDY TEAM

MEMBER LIST OF THE STUDY TEAM

1. Field Survey Team

Name	Position	Belong to
Mr. Hideki TOMOBE	Leader	Resident Representative of the JICA Fiji Office
Mr. Kunihiko SAWANO	Chief Consultant / Traffic Planner	Katahira & Engineers International
Mr. Hidetaka SAGARA	Road Designer	Katahira & Engineers International
Mr. Masao AIZAWA	Natural Condition Survey (Topography & Geology)	Katahira & Engineers International
Mr. Seizo YAMADA	Natural Condition Survey (Hydrology)	Katahira & Engineers International
Mr. Ryohei WATANABE	Cost Estimator	Katahira & Engineers International
Mr. Keiichi MURAKAMI	Bridge/Structure Designer	Katahira & Engineers International

2. Draft Report Explanation Team

Name	Position	Belong to
Ms. Yumiko ASAKUMA	Leader	Second Project Management Division, Grant Aid Management Department, JICA
Mr. Kunihiko SAWANO	Chief Consultant / Traffic Planner	Katahira & Engineers International
Mr. Hidetaka SAGARA	Road Designer	Katahira & Engineers International

APPENDIX 2

STUDY SCHEDULE

STUDY SCHEDULE

1. Field Survey Team (November 26 to December 30, 2002)

No.	Date		Activities				
			Tomobe	Sawano	Sagara, Aizawa, Watanabe	Murakami	Yamada
1	Nov. 26, 2002	Tue				Tokyo to Guan (NH923) Guam to Pohnpei (CO956)	
2	Nov. 27	Wed				Preliminary Discussion with PTA	
3	Nov. 28	Thu				"	
4	Nov. 29	Fri				"	
5	Nov. 30	Sat				Site survey	
6	Dec. 1	Sun		Tokyo to Guam (JO941) Guam to Pohnpei (CO957)		"	Tokyo to Guam (JO941) Guam to Pohnpei (CO957)
7	Dec. 2	Mon		Courtesy call on Department of Foreign Affairs, Pohnpei State Government, PTA, Embassy of Japan & JICA FSM Office			
8	Dec. 3	Tue		Discussion with PTA, Site survey			
9	Dec. 4	Wed		Discussion with PTA, Data collection	Data collection	Data collection	Data collection
10	Dec. 5	Thu		"	Site survey & market survey	Site survey	"
11	Dec. 6	Fri		Discussion with Department of Foreign Affairs & PTA	"	"	Site survey
12	Dec. 7	Sat		Internal meeting & site survey			
13	Dec. 8	Sun		Data analysis	Site survey		
14	Dec. 9	Mon		Discussion with PTA & other offices	Site survey & cost survey	Site survey	Discussion with PTA & other offices
15	Dec. 10	Tue		"	Site survey, meeting with subcontractors for topographic & geotechnical surveys		
16	Dec. 11	Wed		"	Site survey & orientation to traffic surveyors		
17	Dec. 12	Thu		Data collection, discussion with PTA, site survey & traffic survey			
18	Dec. 13	Fri		"			
19	Dec. 14	Sat		Internal meeting & site survey			
20	Dec. 15	Sun		Data analysis			
21	Dec. 16	Mon		Discussion with PTA & preparation of draft M/D	Site survey		Data analysis
22	Dec. 17	Tue	Arrive at Pohnpei (CO957)	Data analysis	Site survey	Courtesy call on JICA FSM Office & Embassy of Japan	"
			Courtesy call on JICA FSM Office & Embassy of Japan				
23	Dec. 18	Wed	Discussion with Department of Foreign Affairs & Pohnpei State Government		Site survey & data analysis	Discussion with Department of Foreign Affairs & Pohnpei State Government	"
24	Dec. 19	Thu	Discussion with PTA, signing of M/D & site survey		"	Discussion with PTA, signing of M/D & site survey	Leave Pohnpei (CO957)
25	Dec. 20	Fri	Report to Embassy of Japan		"	Report to Embassy of Japan	
			Leave Pohnpei (CO956)	Data analysis		Data analysis	
26	Dec. 21	Sat		Internal meeting & site survey			
27	Dec. 22	Sun		Data analysis			
28	Dec. 23	Mon		Data analysis & site survey			
29	Dec. 24	Tue		"			
30	Dec. 25	Wed		"			
31	Dec. 26	Thu		"			
32	Dec. 27	Fri		Report to JICA FSM Office & Embassy of Japan			
33	Dec. 28	Sat		Data analysis			
34	Dec. 29	Sun		"			
35	Dec. 30	Mon		Pohnpei to Guam (CO959), Guam to Tokyo (NH924)			

2. Draft Report Explanation Team (February 20 to March 6, 2003)

No.	Date		Activities	
			Asakuma	Sawano, Sagara
1	Feb. 20, 2003	Thu	Tokyo to Guam (JO941)	
2	Feb. 21	Fri	Guam to Pohnpei (CO956) Discussion with Department of Foreign Affairs, Pohnpei State Government & PTA	
3	Feb. 22	Sat	Site survey	
4	Feb. 23	Sun	Internal meeting	
5	Feb. 24	Mon	Discussion with JICA FSM Office, Embassy of Japan & PTA	
6	Feb. 25	Tue	Discussion with Department of Foreign Affairs, Pohnpei State Government and PTA Signing of M/D	
7	Feb. 26	Wed	Report to JICA & Embassy of Japan Leave Pohnpei (CO956)	Report to JICA & Embassy of Japan Discussion with PTA
8	Feb. 27	Thu		Joint site survey with PTA on ROW acquisition sites
9	Feb. 28	Fri		Discussion with PTA on basic design
10	Mar. 1	Sat		"
11	Mar. 2	Sun		Internal meeting
12	Mar. 3	Mon		Joint site survey with PTA on utilities relocation sites
13	Mar. 4	Tue		Pohnpei to Guam (CO957)
14	Mar. 5	Wed		Survey on procurement of equipment and materials
15	Mar. 6	Thu		Guam to Tokyo (NH924)

APPENDIX 3

LIST OF PARTIES CONCERNED IN THE FEDERATED STATES OF MICRONESIA

LIST OF PARTIES CONCERNED IN THE FEDERATED STATES OF MICRONESIA

(1) FSM National Government

Department of Foreign Affairs

Mr. Lorin Robert	Deputy Secretary
Mr. Carl D. Apis	Deputy Assistant Secretary, Asian Affairs
Mr. Jackson T. Soram	Foreign Service Officer, Asian Affairs

Department of Economic Affairs

Ms. Virginia Helgenberger	Statistics Specialist IV (Field Supervisor), Pohnpei Branch Statistics Office, Division of Statistics

(2) Pohnpei State Government

Pohnpei State Government

Mr. Johnny P. David	Governor
Mr. Jack E. Yakana	Lieutenant Governor

Public Affairs Office

Mr. Estephan P. Santiago	Public Affairs Officer

Environmental Protection Agency

Mr. Elden Hellan	Executive Director

Department of Land and Natural Resources

Mr. John Weilbacher	Chief, Division of Public Land
Mr. Kondios Gornelius	Chief, Division of Survey & Mapping
Mr. Emensio Eperiam	Chief, Division of Historic Preservation and Cultural Affairs

Department Justice

Mr. Aurelio P. Joab	Senior Labor Officer, Labor & Regulatory Inspector, Immigration & Labor Division

Department of Public Safety

Mr. Fredrick Route	Sergeant, Traffic Division

Department of Revenue and Taxation

Mr. Isao Saimon	Tax Officer

(3) Other Relevant Organizations

Pohnpei Weather Services

Mr. Ceasar Hadley	Assistant Manager, Meteorological In-charge/ Weather Service Coordinator

Pohnpei Transportation Authority

Mr. Vincent Rosario	Acting Commissioner
Mr. Swengly Poll	Administrative Officer
Mr. Antonio Elias	Surveyor

Pohnpei Utilities Corporation

Mr. Lukner B. Weibacher	Assistant Manger, Department of Power Generation

FSM Telecommunications Corporation

Mr. Takuro Akinaga	CEO/General Manger

APPENDIX 4

MINUTES OF DISCUSSIONS

Minutes of Discussions
of the Basic Design Study
on the Project for Improvement of the Circumferential Road around Pohnpei Island
in the Federated States of Micronesia

In response to a request from the Government of the Federated States of Micronesia (hereinafter referred to as "the FSM"), the Government of Japan decided to conduct a Basic Design Study on the Project for Improvement of the Circumferential Road around Pohnpei Island in the Federated States of Micronesia (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA dispatched to the FSM the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Mr. Hideki Tomobe, Resident Representative of the JICA Fiji Office, and is scheduled to stay in the country from December 17 to December 20, 2002.

The Team held discussions with the officials concerned of the Government of the FSM and the Pohnpei State Government and conducted a field survey at the study area.

In the course of discussions and field survey, both sides confirmed the main items described in the attached sheets. The Team will proceed to further works and prepare the Basic Design Study Report.

Palikir, December 19, 2002

Hideki TOMOBE
Leader
Basic Design Study Team
Japan International Cooperation Agency

Lorin Robert
Deputy Secretary
Department of Foreign Affairs,
The Federated States of Micronesia

Jack E. Yakana
Acting Governor
Pohnpei State Government

Vincent Rosario
Acting Commissioner
Pohnpei Transportation Authority

ATTACHMENT

1. Objective of the Project

The objective of the Project is to improve the approximately 20 km of the Circumferential Road around Phonpei Island.

2. Project Sites

The sites of the Project are shown in Annex-1.

3. Responsible and Implementing Organizations

The responsible organization is the Government of the FSM.

The implementing agencies are the Pohnpei State Government and the Pohnpei Transportation Authority (PTA).

The organization chart of the PTA is shown in Annex-2.

4. Items Requested by the Government of the FSM

After discussions with the Team, the components of the Project which were finally requested by the FSM side are as follows;

- Paving of 11.6km sections out of the Project except for the sections already paved and planned to be paved by the PTA in 2003. (see Annex-1)
- Provision of adequate drainage system and traffic safety facilities such as guardrails along the roadway where necessary.
- Reconstruction of six bridges and necessary repair of other bridges, excluding Peiai, Lehn Diadi II, Kitamw and Dewenmol bridges to be reconstructed by the Pohnpei State Government in 2003

JICA will assess the appropriateness of the request and will recommend to the Government of Japan for approval.

5. Japan's Grant Aid Scheme

5-1. The FSM side understands the Japan's Grant Aid scheme explained by the Team, as described in Annex-3.

5-2. The FSM side will take the necessary measures, as described in Annex-4, for smooth implementation of the Project, as a condition for the Japan's Grant Aid to be implemented.

6. Schedule of the Study

6-1. The consultants will proceed to further studies in the FSM until December 30, 2002.

6-2. JICA will prepare the draft final report in English and dispatch a mission to the FSM in order to explain its contents at the end of February 2003.

6-3. In case that the contents of the report are accepted in principle by the Government of the FSM, JICA will complete the final report and send it to the Government of the FSM by the end of March 2003.

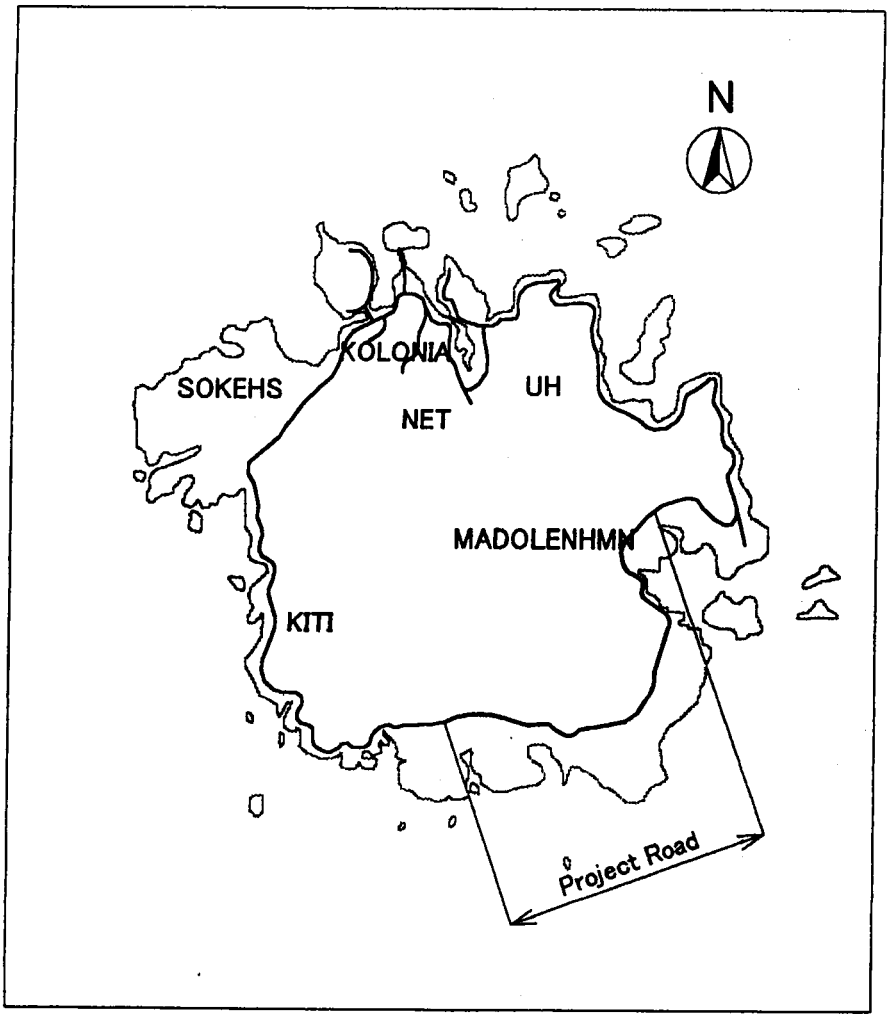
7. Other Relevant Issues

7-1. If the land acquisition for improvement of roads is necessary, the Pohnpei State Government shall complete the procedure for the acquisition of necessary land by the end of April 2003.

7-2. In the case the relocation of existing utilities (power and communication lines, water lines) is necessary, it shall be carried out by the FSM side.

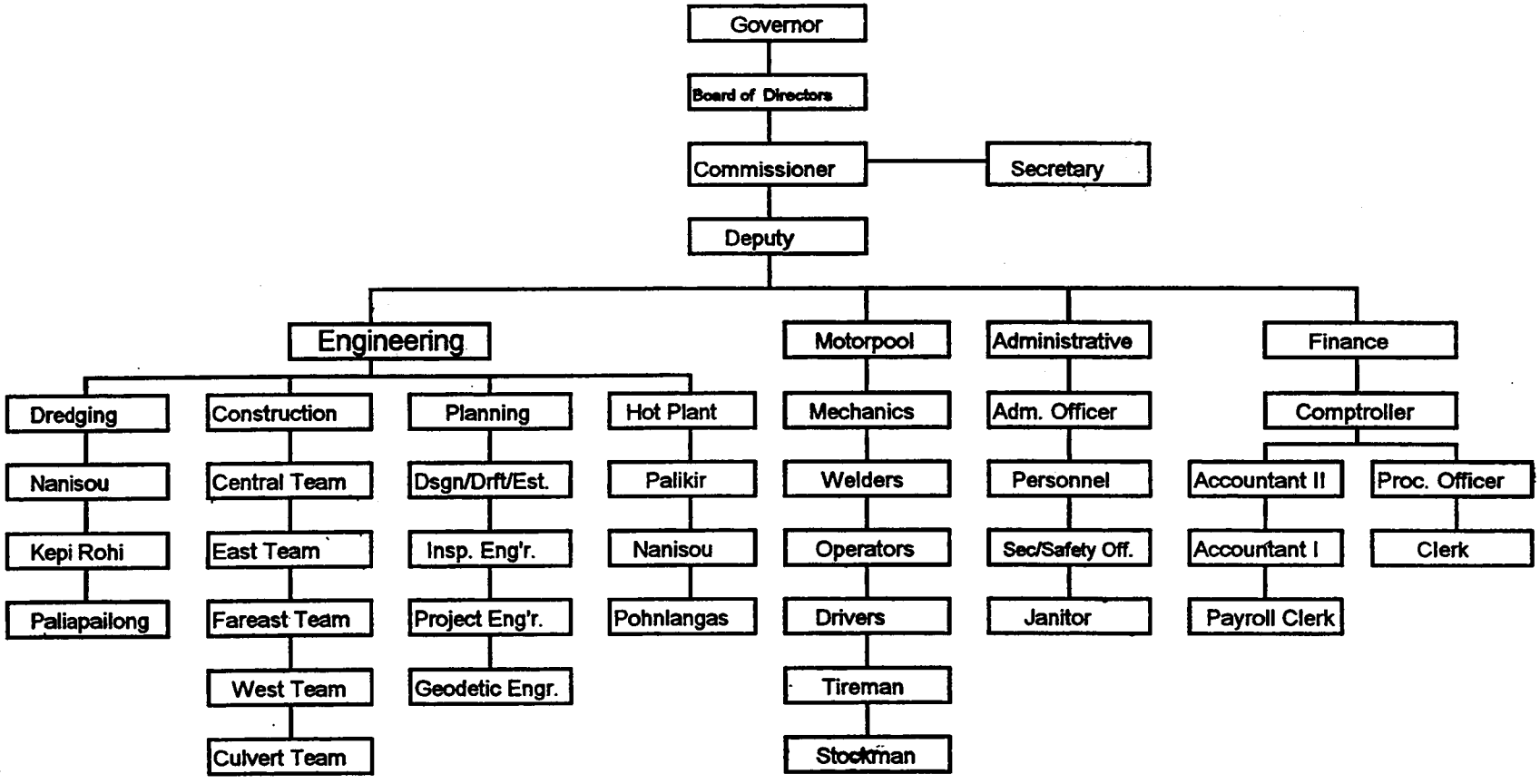
7-3. The procedures necessary for the approval of EIA (Environmental Impact Assessment) shall be implemented by the Pohnpei State Government by the end of April 2003.

7-4. The permit to dredge coral materials to be used for pavement and the earthmoving permit necessary for earthwork for widening the road shall be obtained by the PTA prior to the construction work. In addition, the Pohnpei State Government shall obtain the consent from local residents if it is necessary that the pavement materials will be excavated and gathered from coral shelves.


N
KOLONIA
SOKEHS
UH
NET
MADOLENHMW
KITTI
Project Road

20km
19km
18km
17km
16km
15km
14km
13km
12km
11km
10km
9km
8km
7km
6km
5km
4km
3km
2km
1km
0km
Kitti Madolenihmw
Paved/to be Paved by PTA
Requested to the Government of Japan

PTA Organizational Chart



Prepared By: Sado Martin
PTA Commissioner

Date: 5-25-99

Approved By: Robert Hadley
Chairman, BOD

Date: 7-26-99

ANNEX-2

(ANNEX-3)

JAPAN'S GRANT AID SCHEME

The Grant Aid scheme provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. The Grant Aid is not supplied through the donation of materials as such.

1. Grant Aid Procedures

Japan's Grant Aid Scheme is executed through the following procedures.

Application	(Request made by a recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal & Approval	(Appraisal by the Government of Japan and Approval by Cabinet)
Determination of Implementation	(The Notes exchanged between the Governments of Japan and the recipient country)

Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA (Japan International Cooperation Agency) to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Scheme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes (E/N) signed by the Governments of Japan and the recipient country.

Finally, for the smooth implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

2.Basic Design Study

1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project"), is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation.
- Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic point of view;
- Confirmation of items agreed upon by both parties concerning the basic concept of the Project.
- Preparation of a basic design of the Project.
- Estimation of cost of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For smooth implementation of the Study, JICA uses registered consulting firms. JICA selects firms based on proposals submitted by interested firms. The firms selected carry out a Basic Design Study and write a report, based upon terms of reference set by JICA.

The consulting firms used for the Study are recommended by JICA to the recipient country to also work on the Project's implementation after the Exchange of Notes, in order to maintain technical consistency.

3.Japan's Grant Aid Scheme

1) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

2) "The period of the Grant Aid" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors

such as natural disaster, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

3) Under the Grant Aid, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

4) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability of Japanese taxpayers.

5) Undertakings required to the Government of the recipient country

In the implementation of the Grant Aid Project, the recipient country is required to undertake such necessary measures as the following:

a) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction,
b) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the sites,
c) To secure buildings prior to the procurement in case the installation of the equipment,
d) To ensure all the expense and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid,
e) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which will be imposed in the recipient country with respect to the supply of the products and services under the verified contracts,
f) To accord Japanese nationals, whose services may be required in connection with supply of the products and services under the Verification contracts, such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.

6) "Proper Use"

The recipient country is required to operate and maintain the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign staff

necessary for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.

7) "Re-export"

The products purchased under the Grant Aid should not be re-exported from the recipient country.

8) Banking Arrangement (B/A)

a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in a bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the verified contracts.

b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of recipient country or its designated authority.

9) Authorization to pay (A/P)

The Government of the recipient country should bear an advising commission of an Authorization to Pay and payment commissions to the Bank.

(ANNEX-4)

Major Undertakings to be taken by Each Government

NO	Items	To be covered by Grant Aid	To be covered by Recipient side
1	To secure land		●
2	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising Commission of A/P		●
	2) Payment commission		●
3	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine (Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and customs clearance of the products at the port of disembarkation		●
	3) Internal transportation from the port of disembarkation to the project site	●	
4	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance		●
5	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		●
6	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		●
7	To bear all the expense, other than those to be borne by the Grant Aid, necessary for construction of the facilities		●

(B/A: Banking Arrangement, A/P: Authorization to pay)

Minutes of Discussions
on the Basic Design Study
on the Project for Improvement of the Circumferential Road around Pohnpei Island
in the Federated States of Micronesia
(Explanation on Draft Report)

In December 2002, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Basic Design Study Team on the Project for Improvement of the Circumferential Road around Pohnpei Island (hereinafter referred to as "the Project") to the Federated States of Micronesia (hereinafter referred to as "the FSM"), and through discussions, field survey and technical examination of the results in Japan, JICA prepared the draft report of the study.

In order to explain and to consult with the officials concerned of the Government of the FSM on the components of the draft report, JICA sent to the FSM the Draft Report Explanation Team (hereinafter referred to as "the Team"), headed by Ms. Yumiko Asakuma, an Officer of the Second Project Management Division, the Grant Aid Management Department, JICA, from February 21 to March 4, 2003.

As a result of discussions, both sides confirmed the main items described in the attached sheets.

Kolonia, February 25, 2003

Yumiko Asakuma
Leader
Draft Report Explanation Team
Japan International Cooperation Agency

Lorin Robert
Deputy Secretary
Department of Foreign Affairs
Federated States of Micronesia

Johnny P. David
Governor
Pohnpei State Government

Vincent Rosario
Acting Commissioner
Pohnpei Transportation Authority

ATTACHMENT

1. Components of the Draft Report

The Government of the FSM agreed and accepted in principle the components of the draft report explained by the Team.

2. Japan's Grant Aid Scheme

The FSM side understands the Japan's Grant Aid scheme and the necessary measures to be taken by the Government of the FSM as explained by the Team and described in ANNEX-3 and ANNEX-4 of the Minutes of Discussions signed by both sides on December 19, 2002.

3. Schedule of the Study

JICA will complete the final report in accordance with the confirmed item and send it to the Government of the FSM by April, 2003.

4. Other Relevant Issues

4-1. The Pohnpei State Government will implement the following works in 2003 (see ANNEX-1)

- Paving of 4.934km sections of the Circumferential Road around Pohnpei Island
- Reconstruction of Dewenmol, Peiai, Lehn Diadi II and Kitamw Bridges, out of which Dewenmol Bridge is located in the above-mentioned 4.934km sections

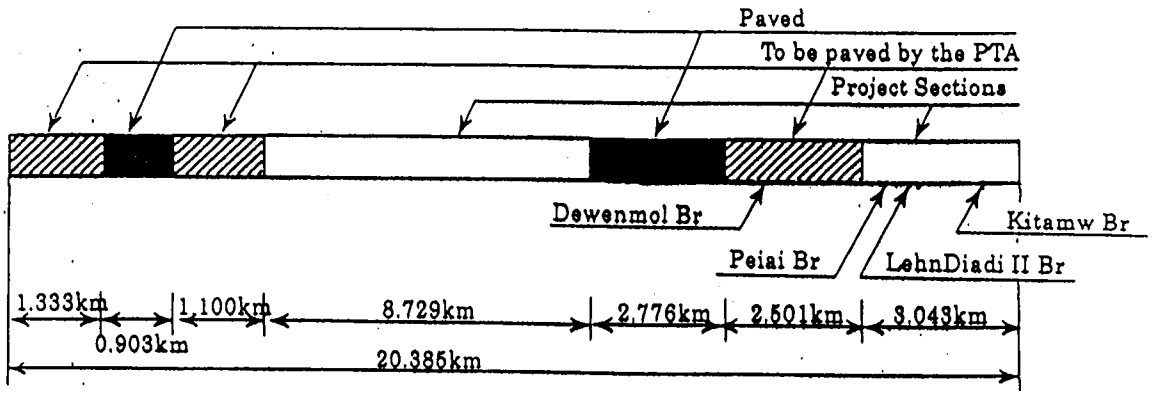
The scope of the Project will be the improvement of 11.772km sections of the Circumferential Road around Pohnpei Island (Project Sections) excluding the already paved sections and the 4.934km sections to be paved by the Pohnpei State Government and further excluding the reconstruction of Peiai, Lehn Diadi II and Kitamw Bridges located in the Project Sections.

4-2. The FSM side shall secure the necessary budget and personnel for implementation of the Project and for maintenance of the facilities.

4-3. The following matters were reconfirmed:

- The Pohnpei State Government shall complete the procedures for the acquisition of necessary land by the end of April, 2003.
- The Pohnpei State Government shall complete the procedures necessary for the approval of the Environmental Protection Agency (EPA) by the end of April, 2003.
- The Pohnpei State Government shall obtain the permit to dredge coral materials to be used for pavement and the earthmoving permit necessary for earthwork for widening the road prior to the construction work.

- If any environmental complaints, especially against dredging coral materials, are raised by third parties, inhabitants, or anybody else during implementation of the Project, the Pohnpei State Government shall properly solve them.
- The FSM side shall complete the relocation of existing utilities (power and communication lines, water lines) to be obstacles to the construction work prior to the construction work.



Demarcation of Work

APPENDIX 5

COST ESTIMATION BORNE BY THE FEDERATED STATES OF MICRONESIA

COST ESTIMATION BORNE BY THE FEDERATED STATES OF MICRONESIA

Summary (Unit : US$)

Utilities Relocation Cost	Total	Phase 1	Phase 2
(1) Electric Line	US$ 106,848	US$ 75,684	US$ 31,164
(2) Connection box for Telecommunication Line	US$ 12,240	US$ 5,100	US$ 7,140
(3) Water Line	US$ 392,400	US$ 170,300	US$ 222,100
Total	US$ 511,488	US$ 251,084	US$ 260,404

(1) Electoric Line, and (2) Connection box for Telecommunication Line

Phase	STA	Facility	Unit	Quantity	Unit Cost
Phase 2	1+110 ～ 1+580	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	3	
	1+580 ～ 2+160	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	2	
	2+160 ～ 2+740	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	5	
	2+740 ～ 3+320	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	2	
	3+320 ～ 3+900	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	0	
	3+900 ～ 4+480	Electric Line	Span	3	
		Connection box for Telecommunication line	Nos	1	
	4+480 ～ 5+060	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	1	
	5+060 ～ 5+640	Electric Line	Span	3	
		Connection box for Telecommunication line	Nos	1	
	5+640 ～ 6+220	Electric Line	Span	2	
		Connection box for Telecommunication line	Nos	1	
	6+220 ～ 6+800	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	1	
	6+800 ～ 7+380	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	3	
	7+380 ～ 7+764	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	5	
	Total	Electric Line	Span	17	4,452
		Connection box for Telecommnication line	Nos	25	204
Phase 1	7+764 ～ 8+320	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	3	
	8+320 ～ 8+880	Electric Line	Span	0	
		Connection box for Telecommunication line	Nos	2	
	8+880 ～ 9+440	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	3	
	9+440 ～ 9+828	Electric Line	Span	0	
		Connection box for Telecommunication line	Nos	2	
	15+106 ～ 15+720	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	4	
	15+720 ～ 16+340	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	5	
	16+340 ～ 16+960	Electric Line	Span	1	
		Connection box for Telecommunication line	Nos	4	
	16+960 ～ 17+580	Electric Line	Span	2	
		Connection box for Telecommunication line	Nos	9	
	17+580 ～ 18+149	Electric Line	Span	0	
		Connection box for Telecommunication line	Nos	3	
	Total	Electric Line	Span	7	4,452
		Connection box for Telecommnication line	Nos	35	204

(3) Water Line

	Total	Phase 1	Phase 2
Relocation Length	11,772×1/3= 3,924m	5,108m×1/3=1,703m	6,664m×1/3=2,221m
Cost	3, 924m×US$100/m= US$392, 400	1, 703m×US$100/m= US$170, 300	2, 221m×US$100/m= US$222, 100

APPENDIX 6

REFERENCES

REFERENCES

- The FMS Planning Framework 1999 – 2002, Federated States of Micronesia, March 2000
- Pohnpei Transportation Authority Corporation Plan (FY2001 to FY2003), State of Pohnpei, April 2001
- Pohnpei State Public Sector Investment Program, the Government of Federated States of Micronesia, 1996
- Infrastructure Development Plan FY 2003 – 2017, Federated States of Micronesia, March 2002
- Trade Bulletin, Department of Economic Affairs, Federated States of Micronesia, November 1998
- FSM Report to Consultative Group of Donors, the Government of the Federal States of Micronesia, September 2000
- Statistical Yearbook FSM 1999, Department of Economic Affairs, Federated States of Micronesia, July 1999
- 2000 Population and Housing Census Report, Federated States of Micronesia, May 2002
- Environmental Impact Assessment Regulations, State of Pohnpei, April 1995
- Earthmoving Regulations, State of Pohnpei, September 1996
- An act relating to the designation, acquisition and removal of mined and dredged materials; and for other purposes, State of Pohnpei, March 2000
- Historical and cultural preservation act of 2002, State of Pohnpei, December 2002
- The Pohnpei watershed forest reserve and mangrove protection act of 1987, State of Pohnpei, June 1987
- Marine sanctuary and wildlife refuge act of 1999, State of Pohnpei, July 1999
- Impacts of Dredging for Aggregates from Fringing Reefs : Pohnpei State, Recommendations and Alternatives, South Pacific Applied Geoscience Commission, December 1998