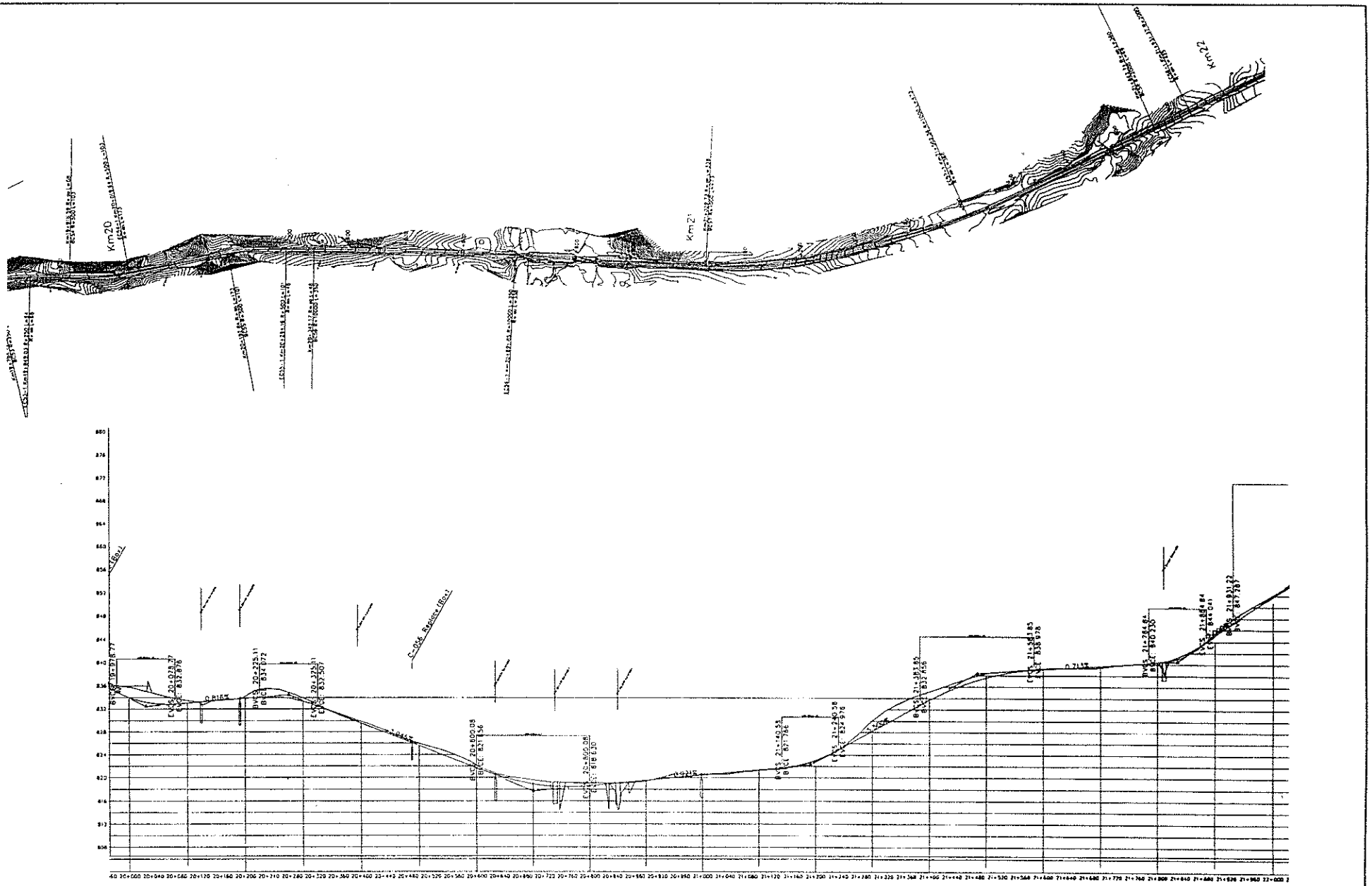
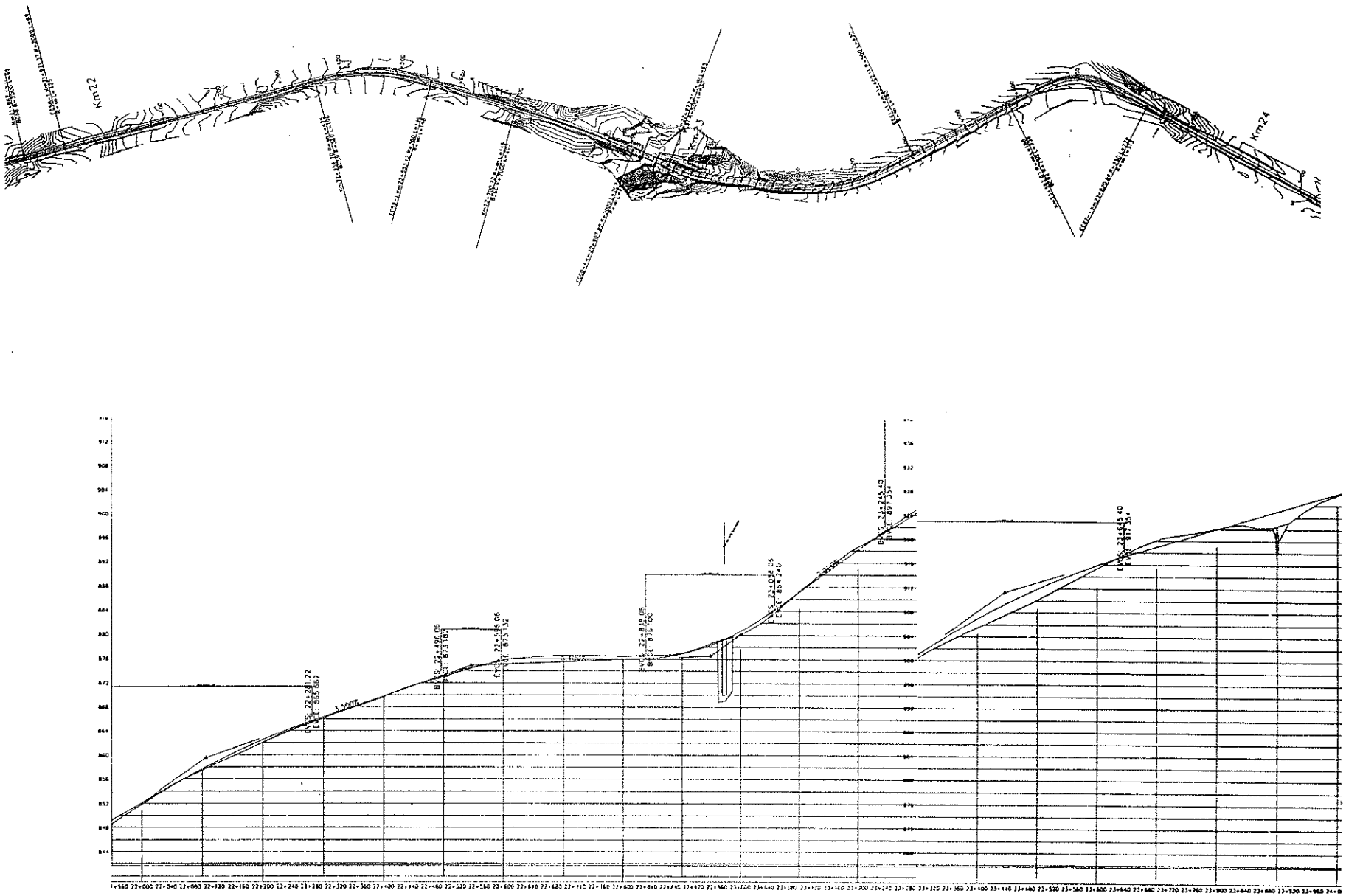
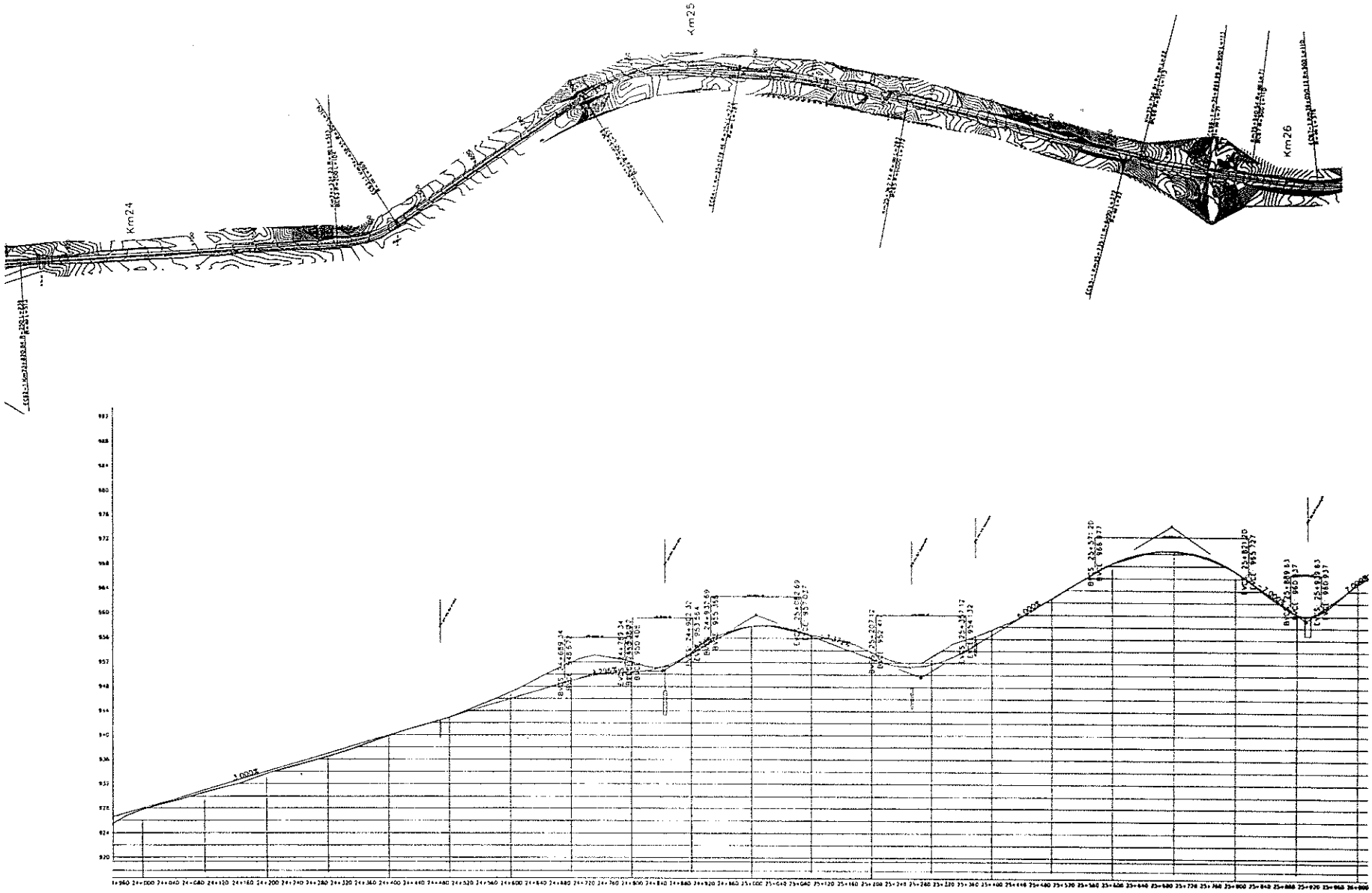


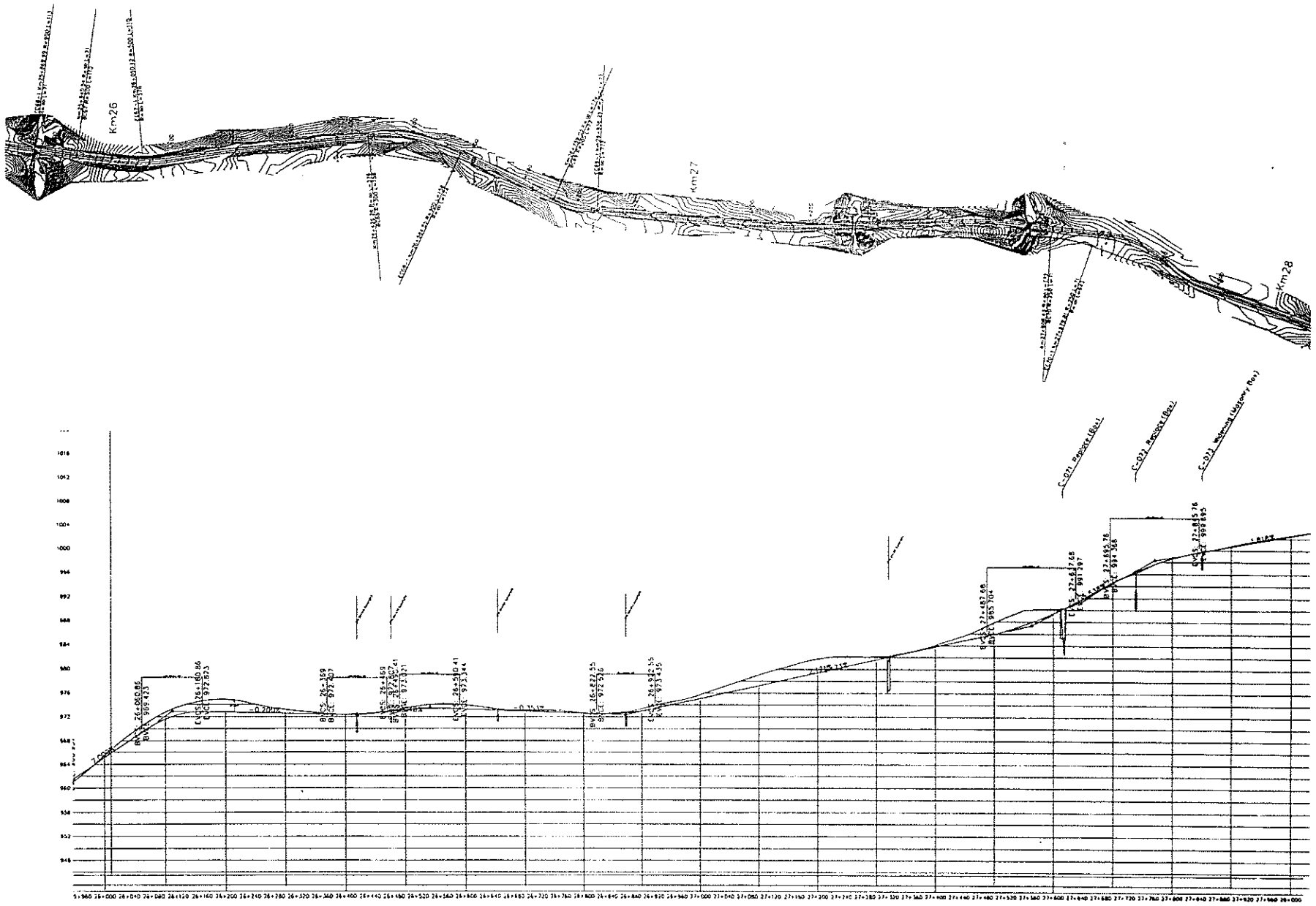
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 11



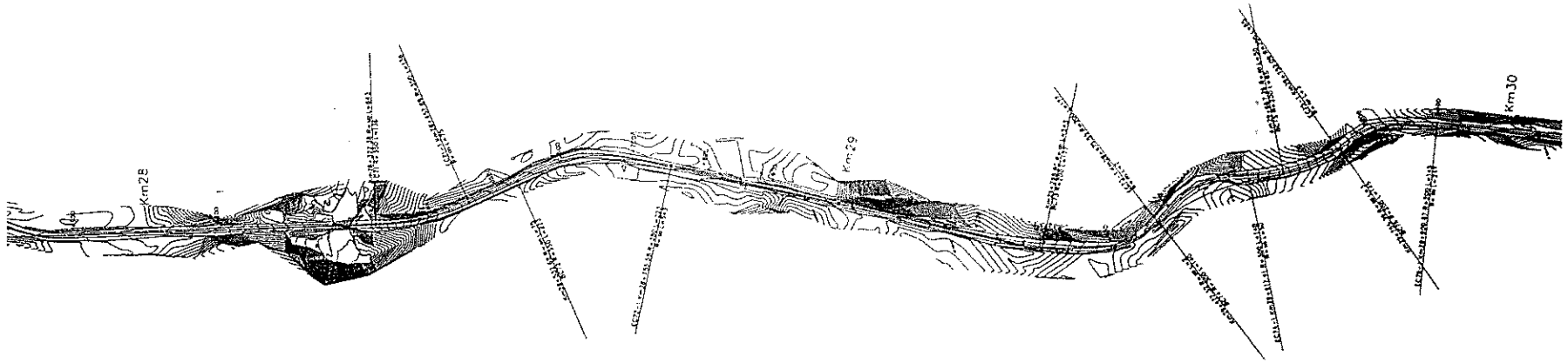
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 12

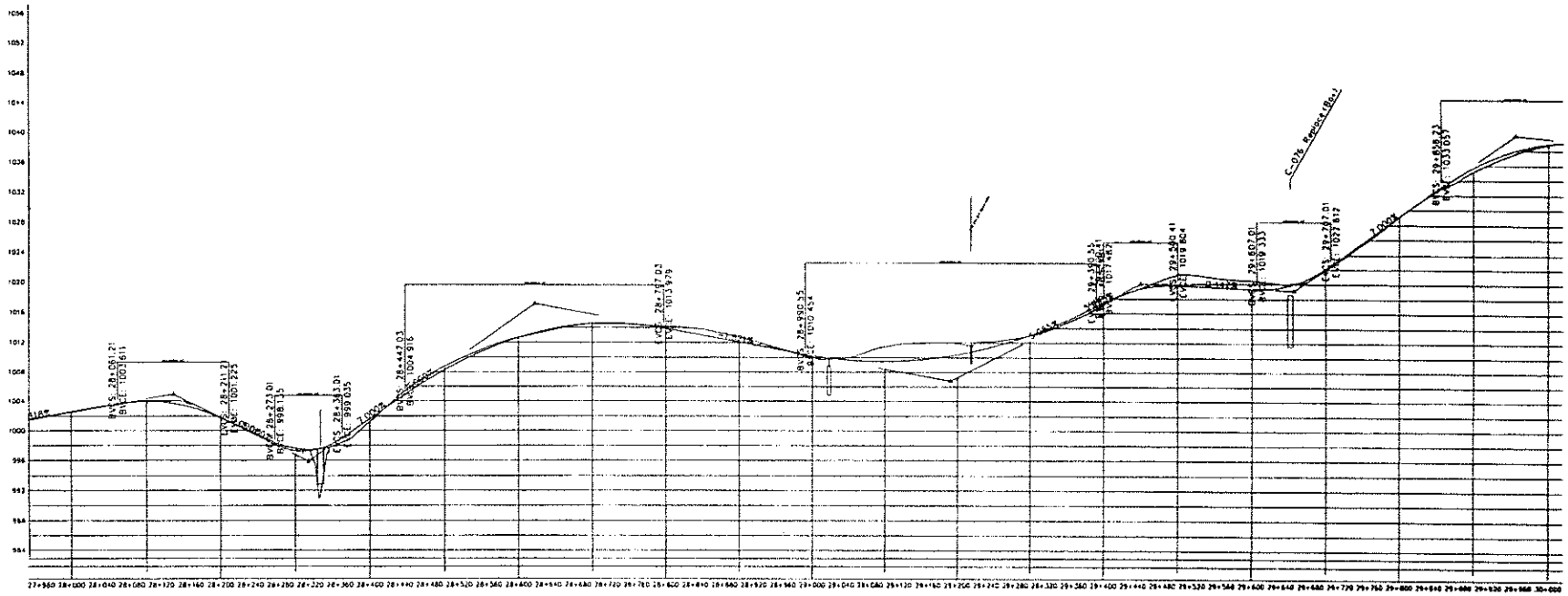


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 13

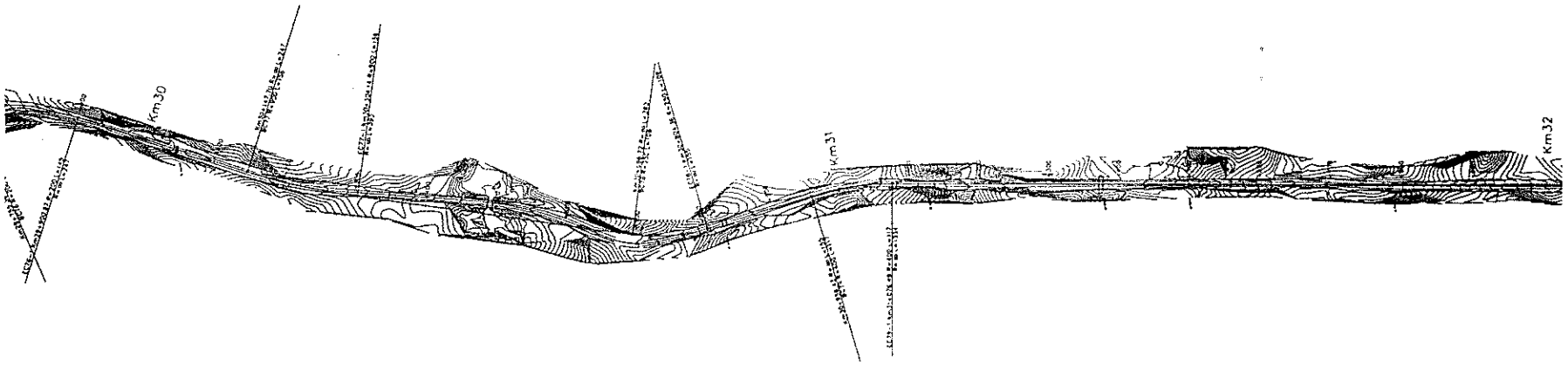


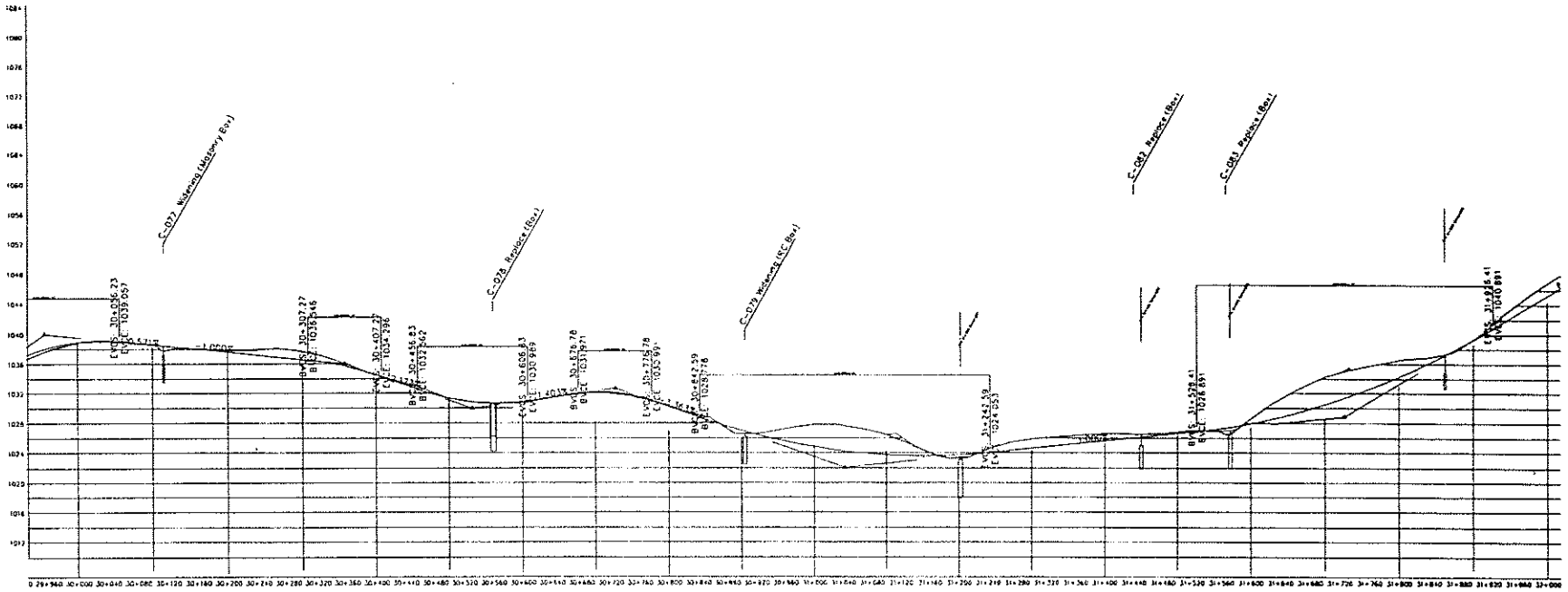
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 14



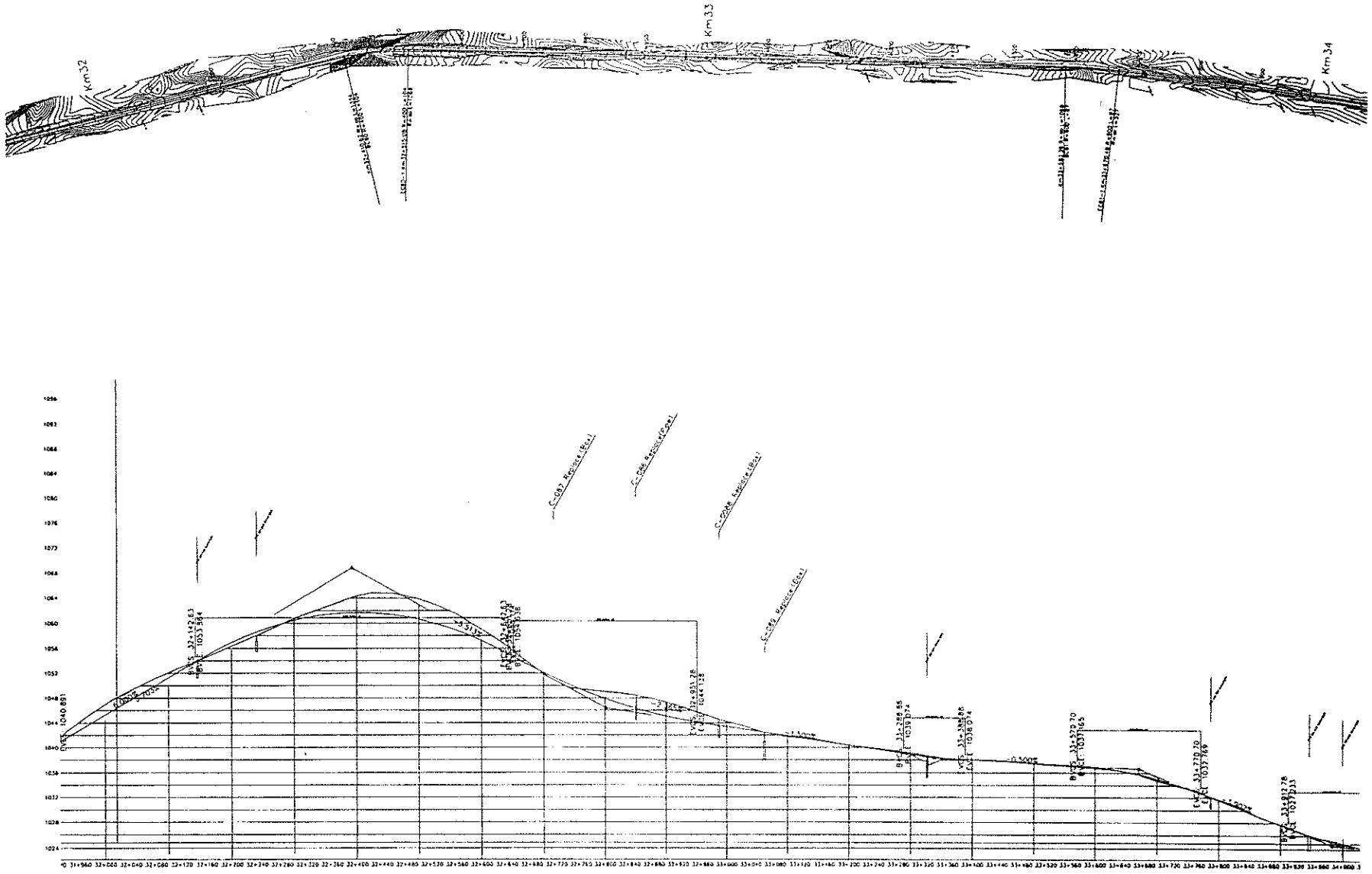


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 15

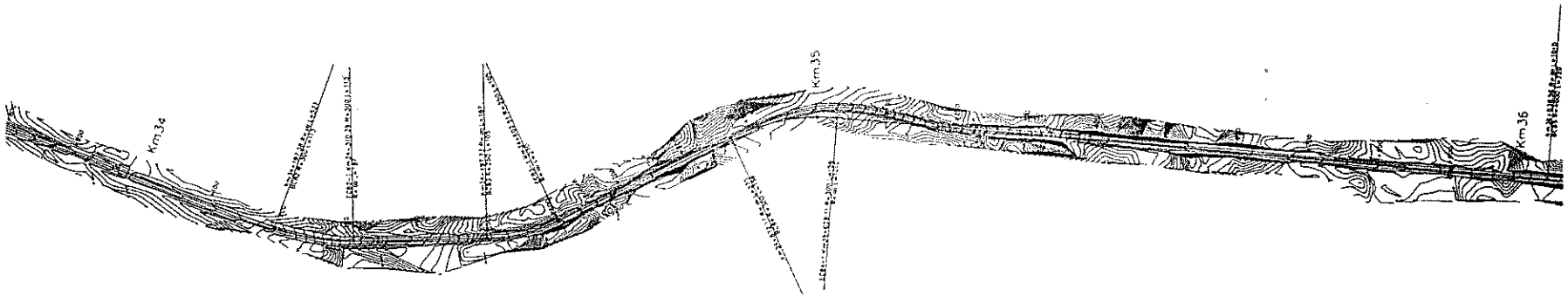


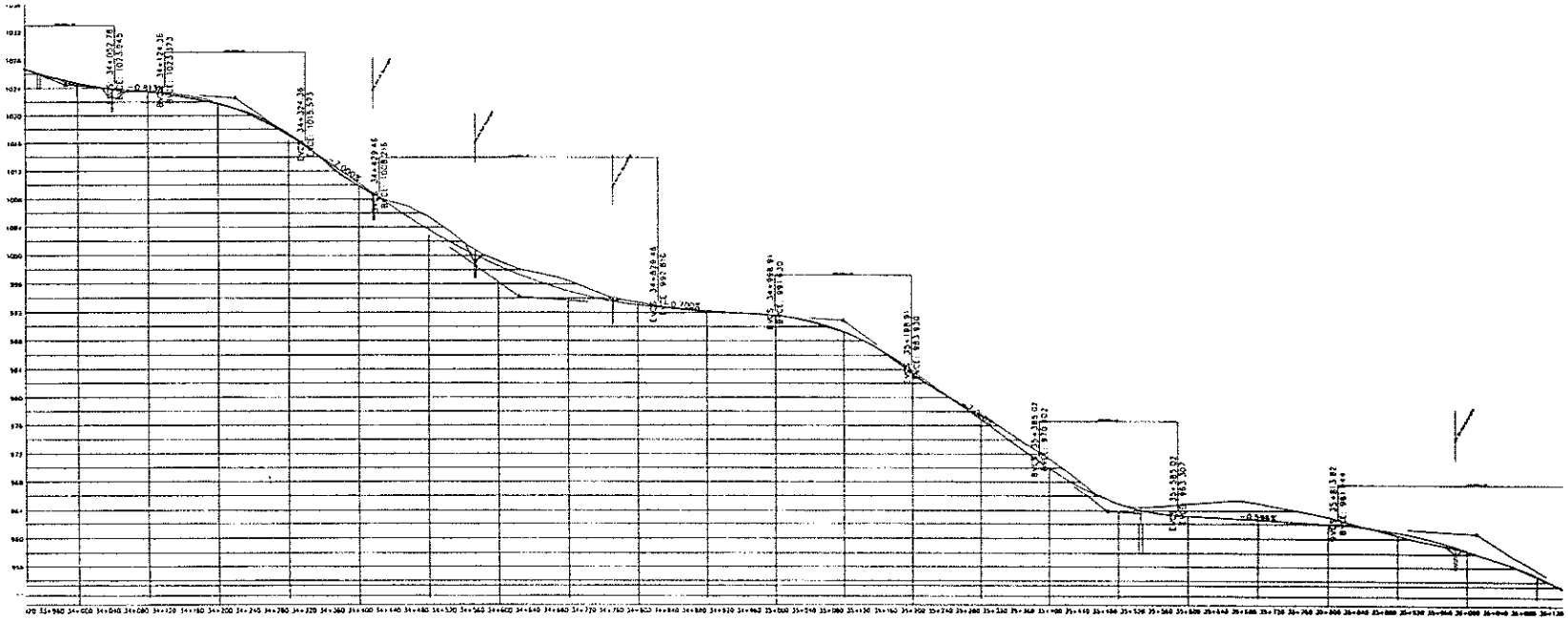


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 16

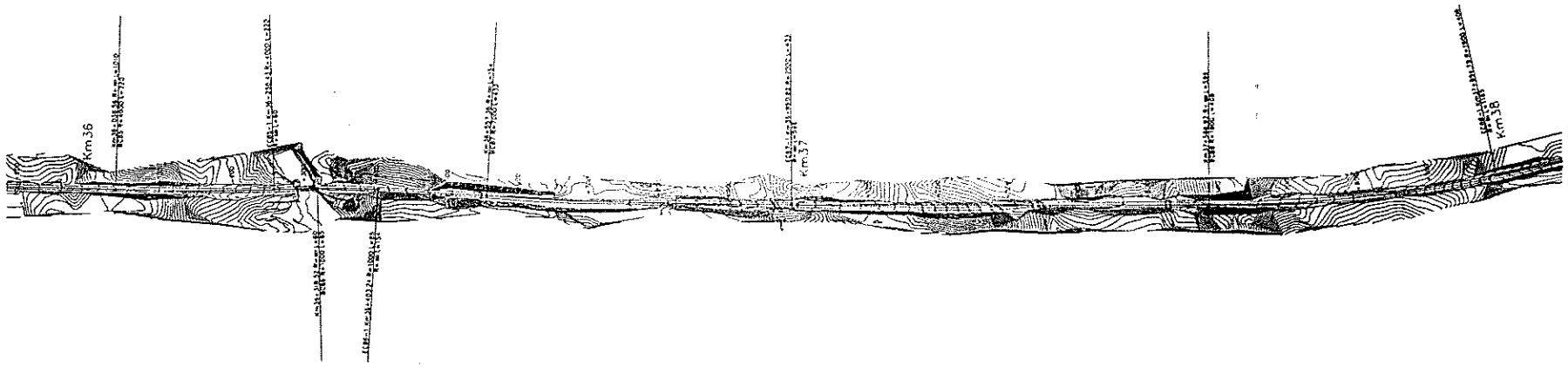


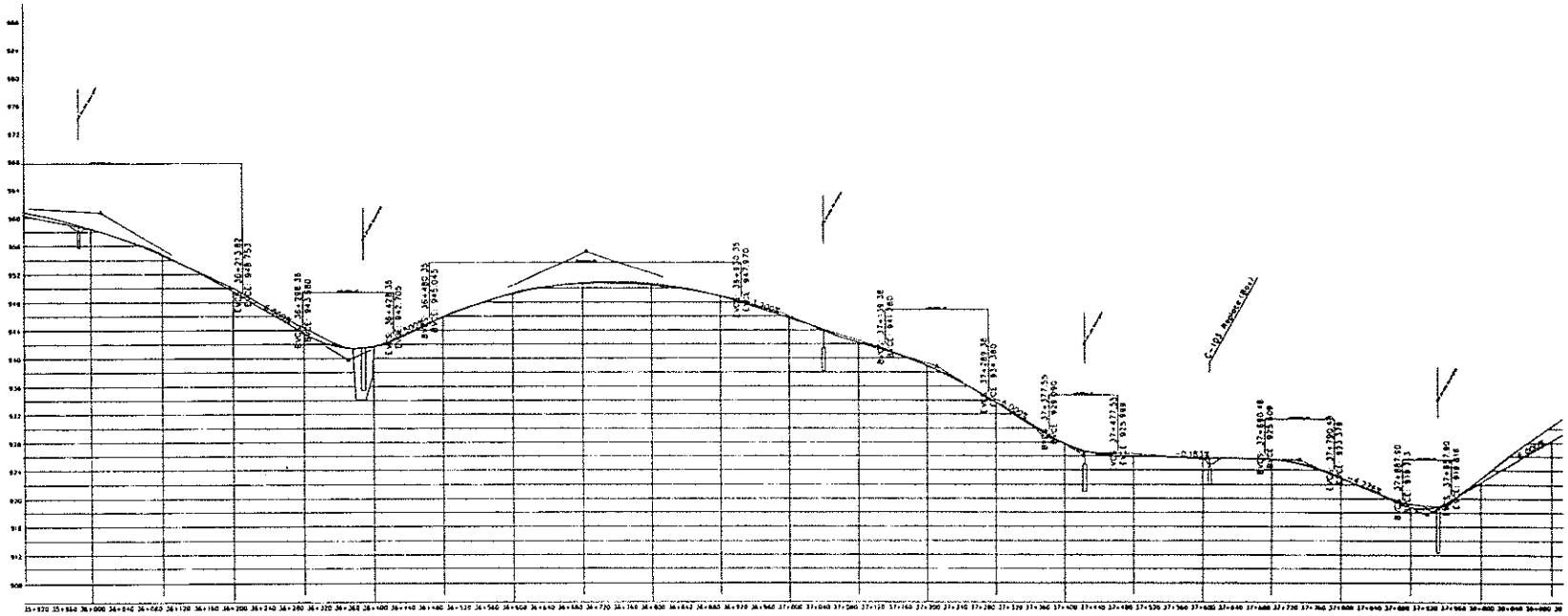
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 17



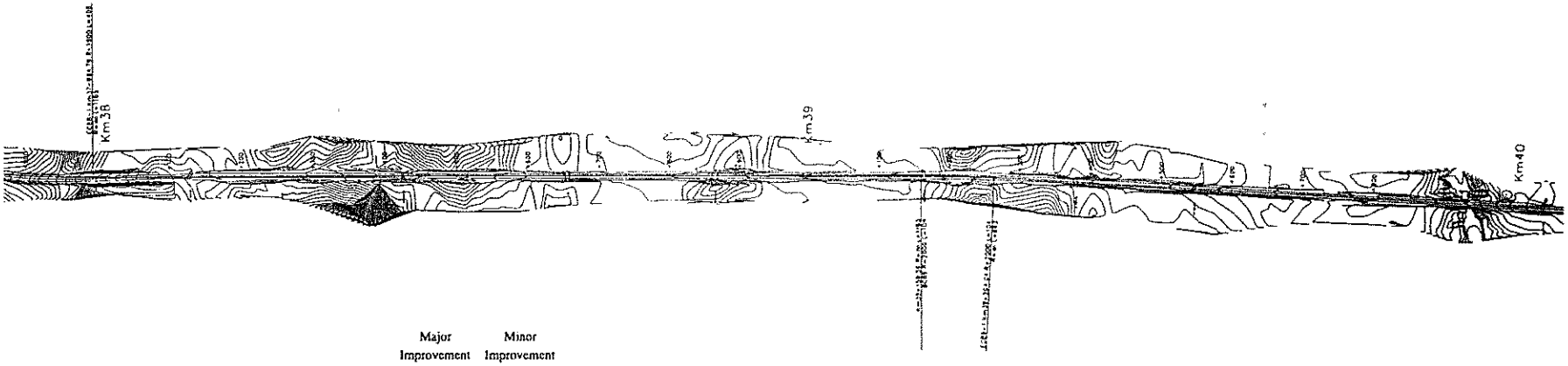


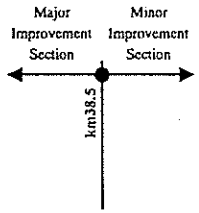
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 18

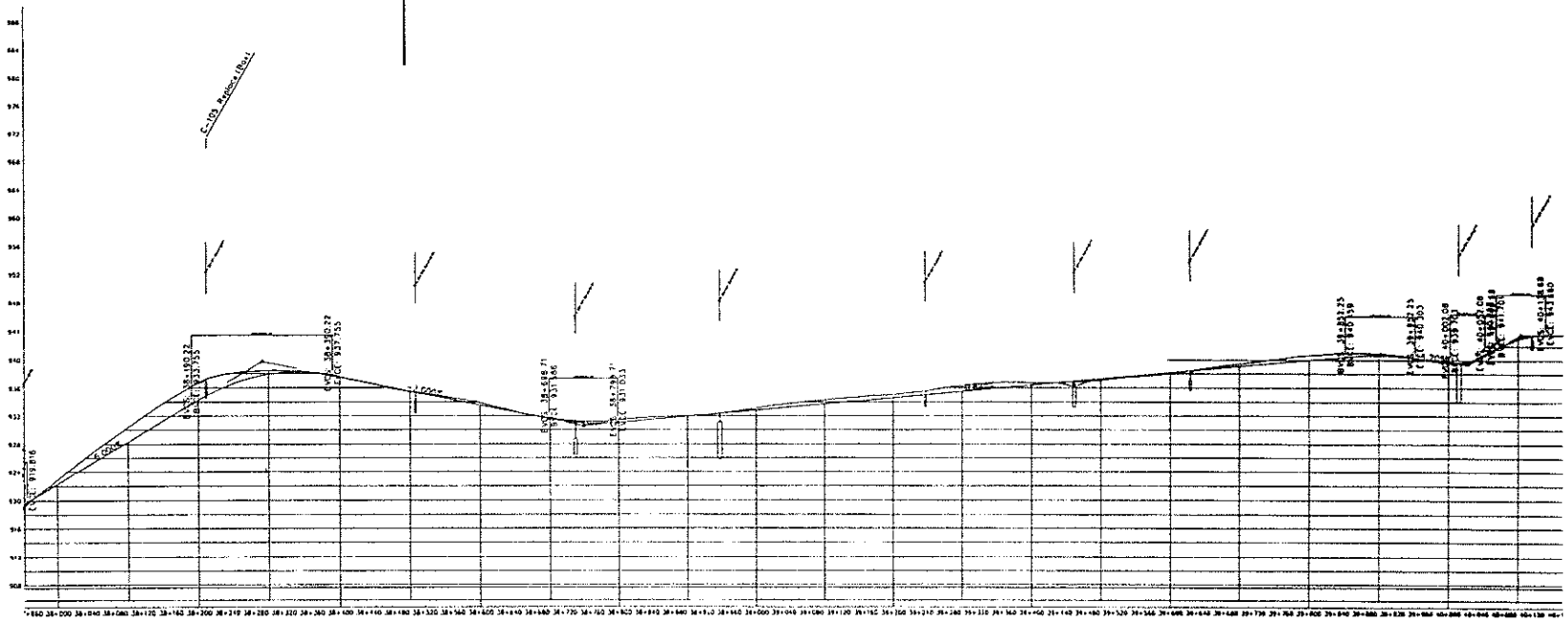




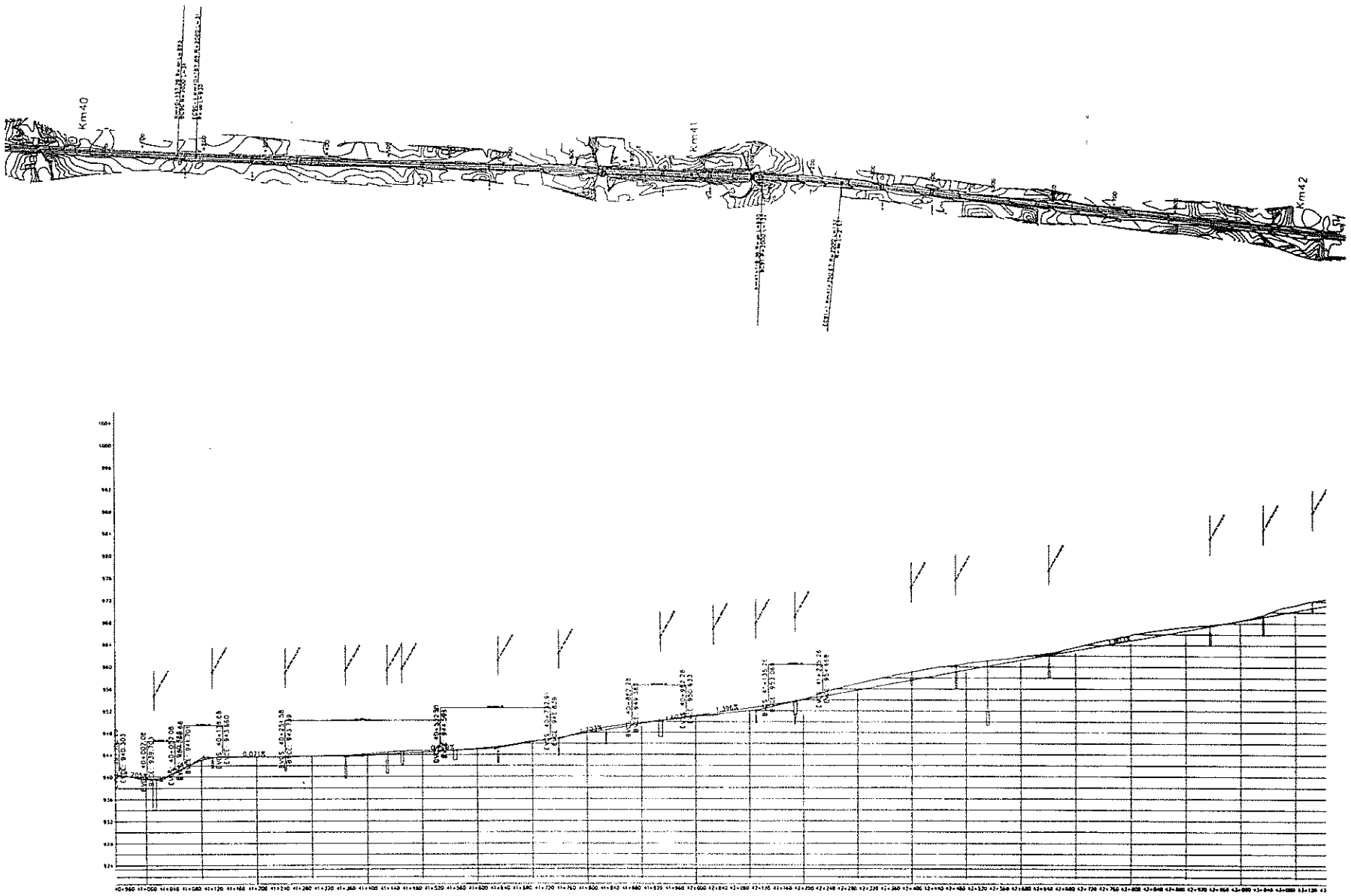
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 19



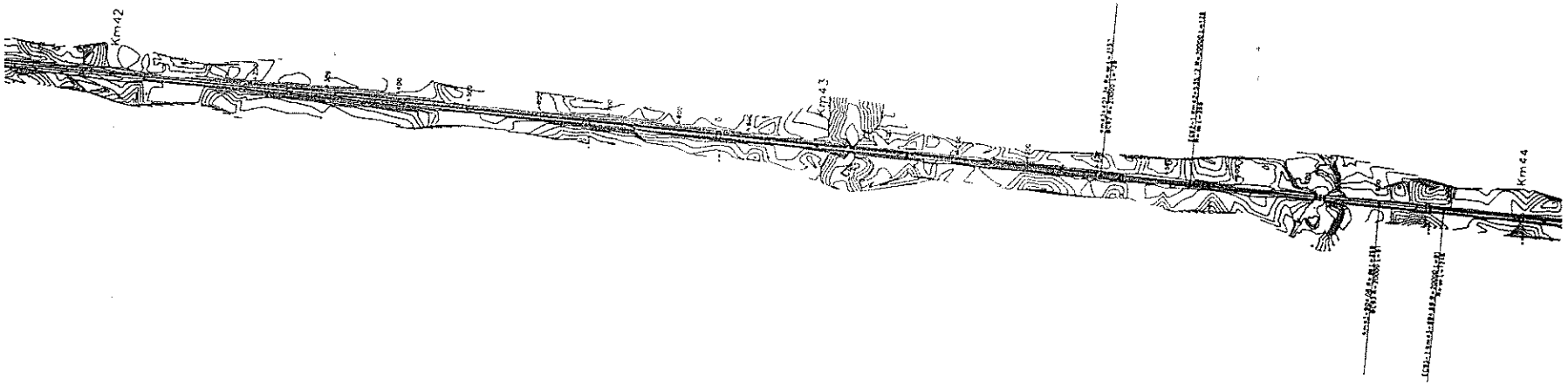


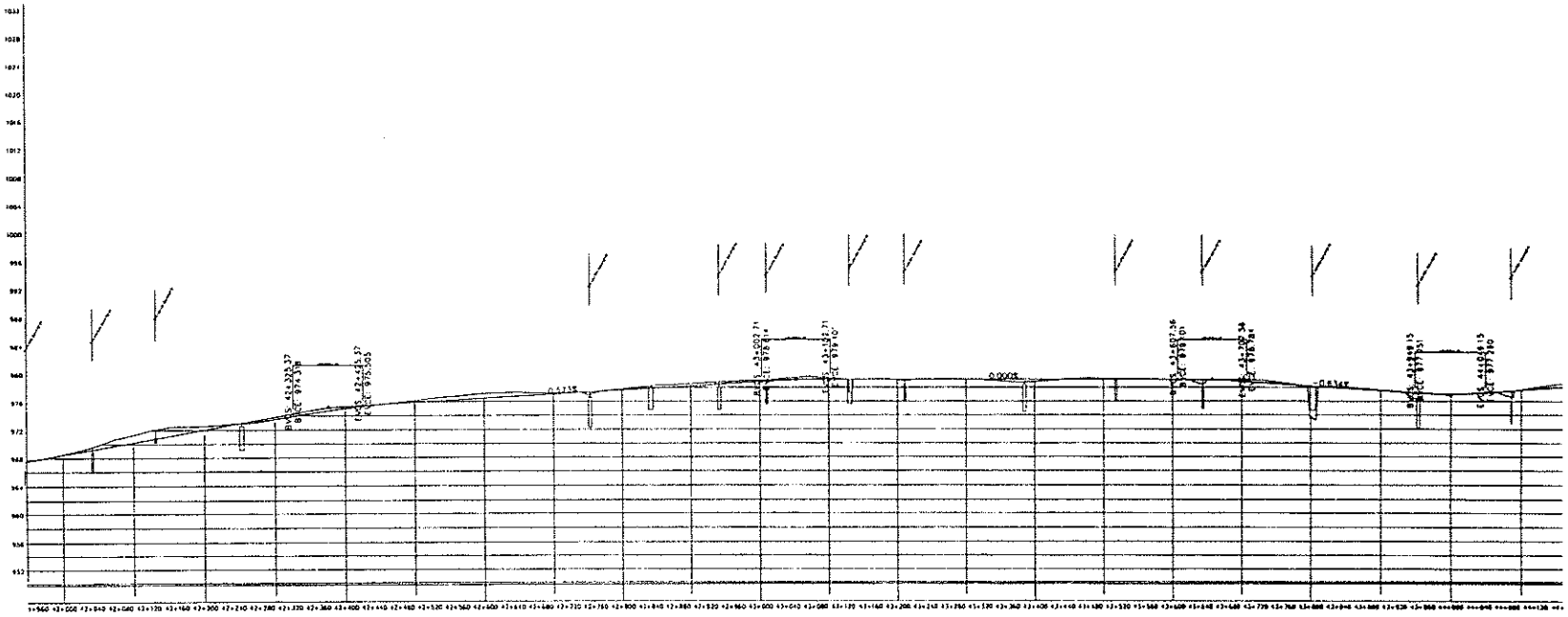


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 20

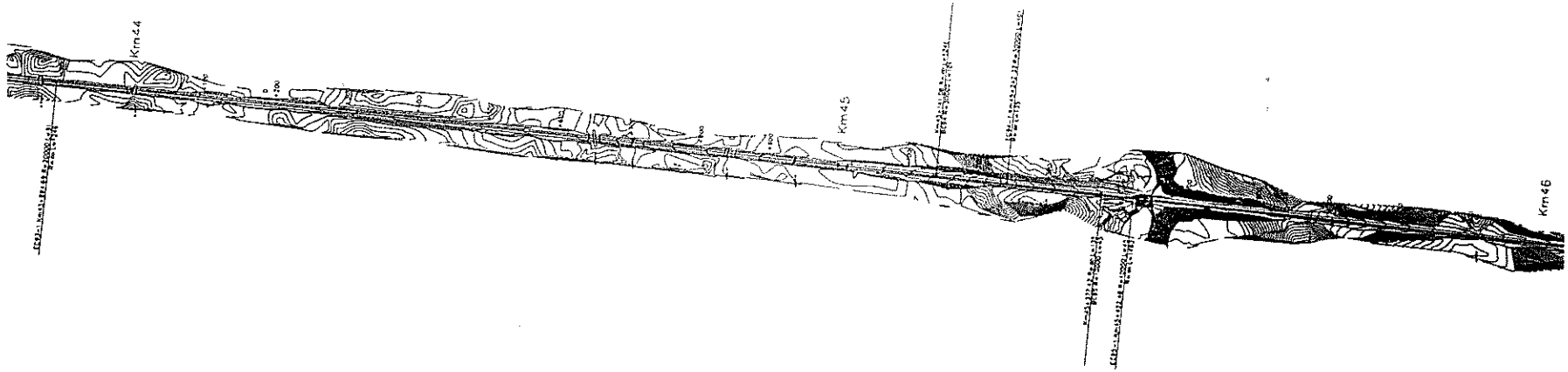


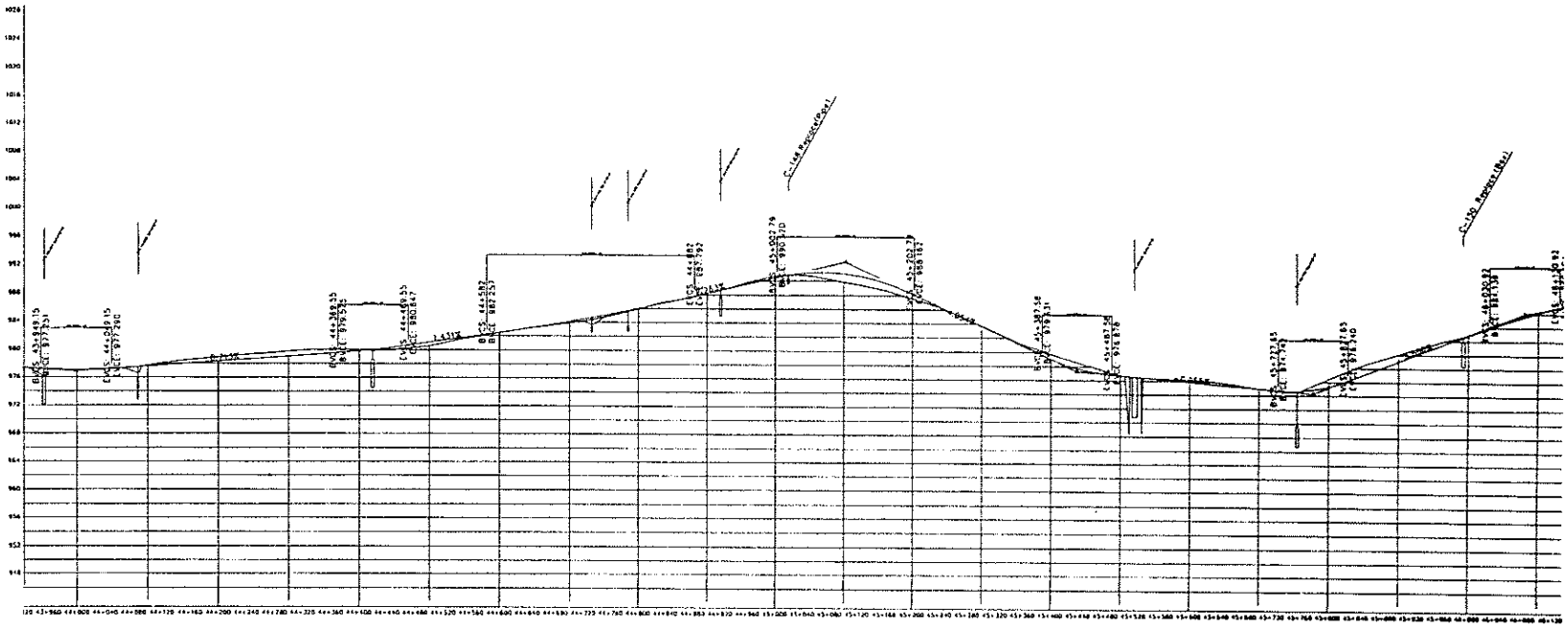
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 21



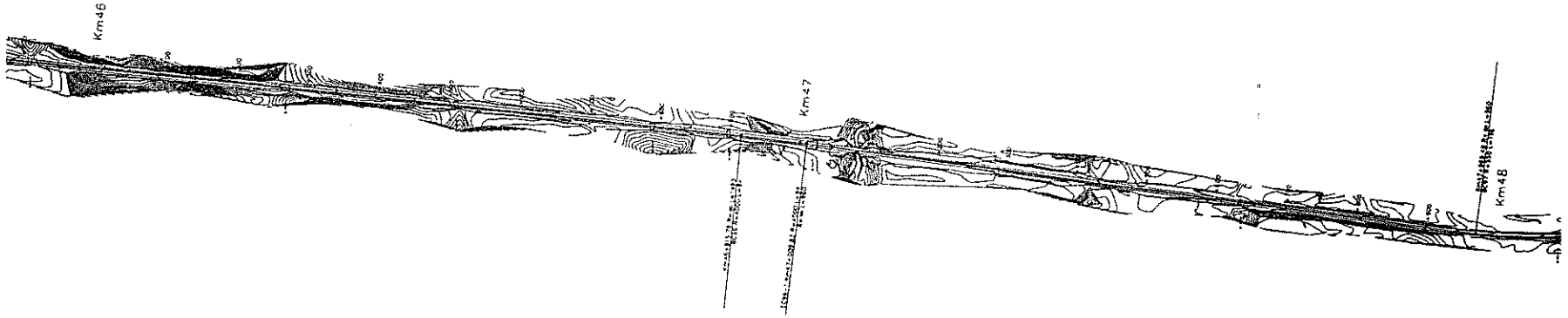


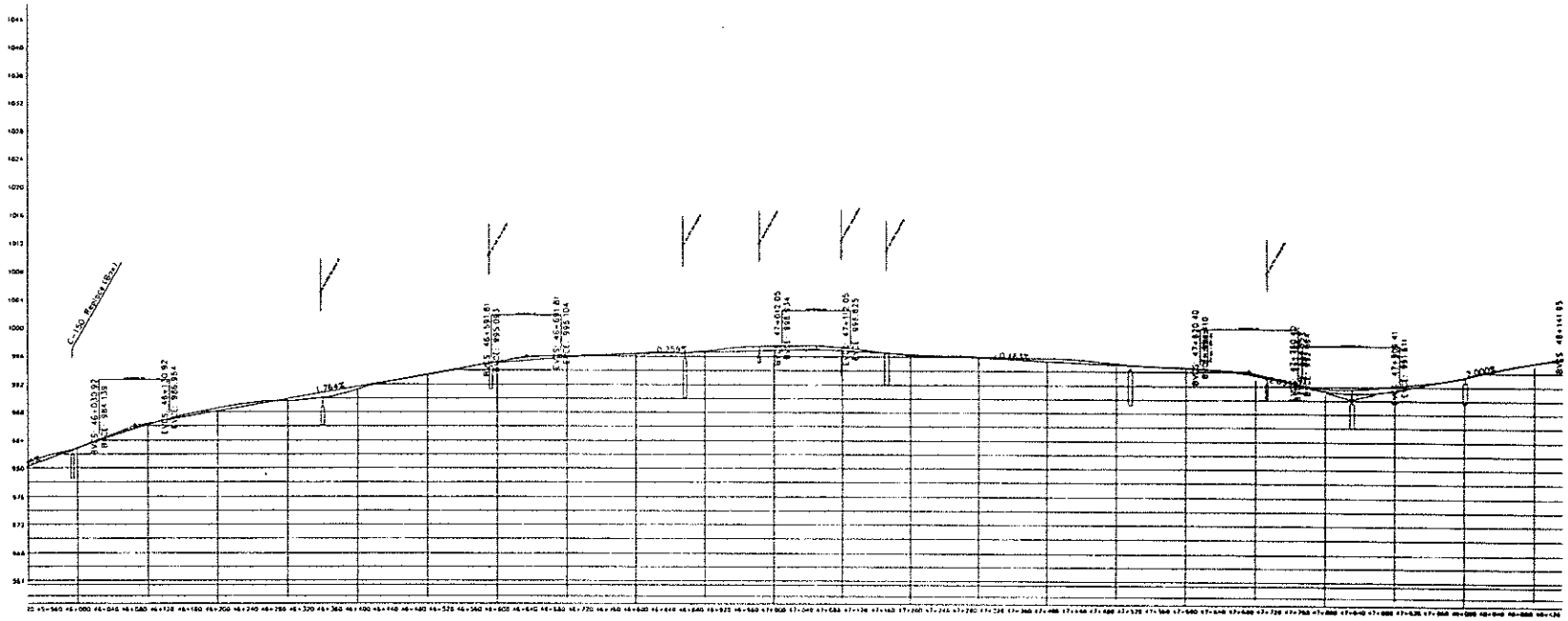
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 22



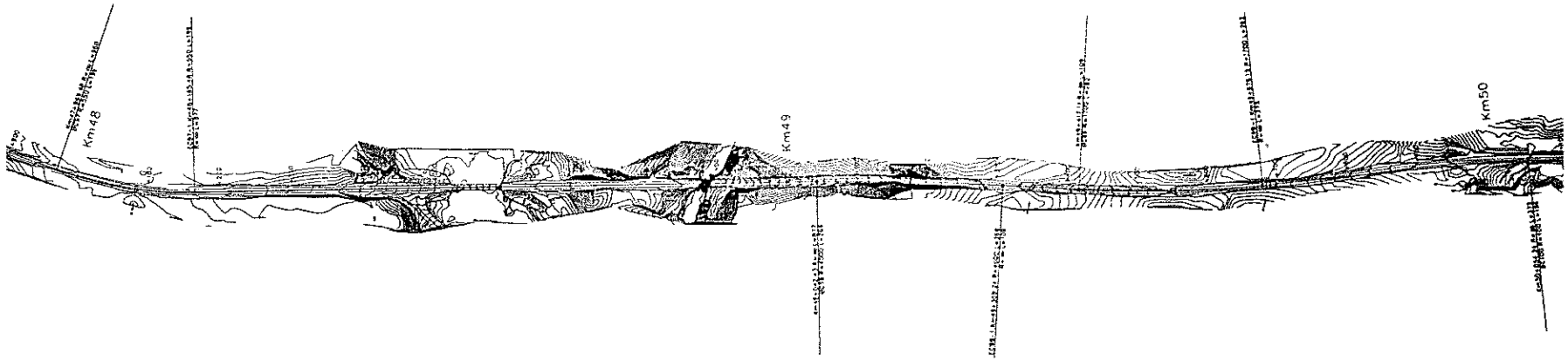


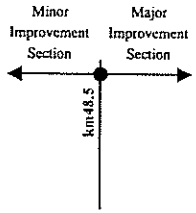
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 23

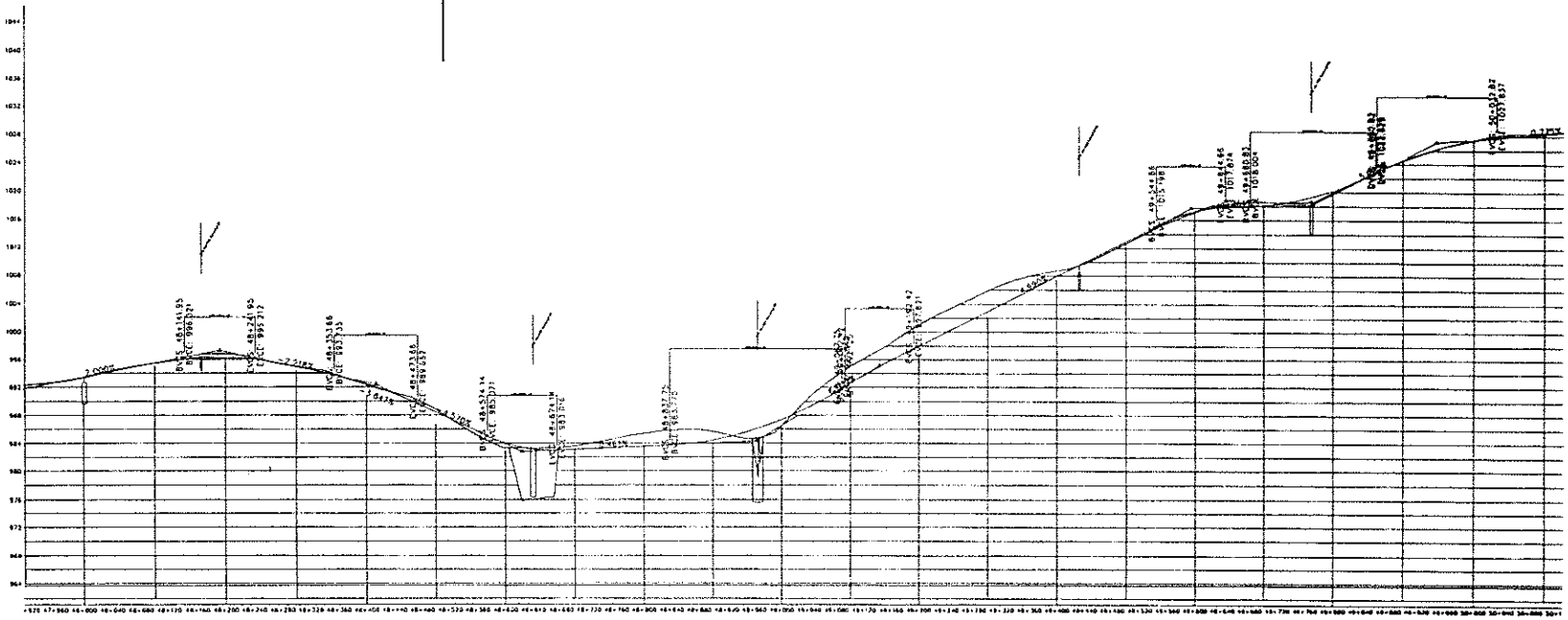




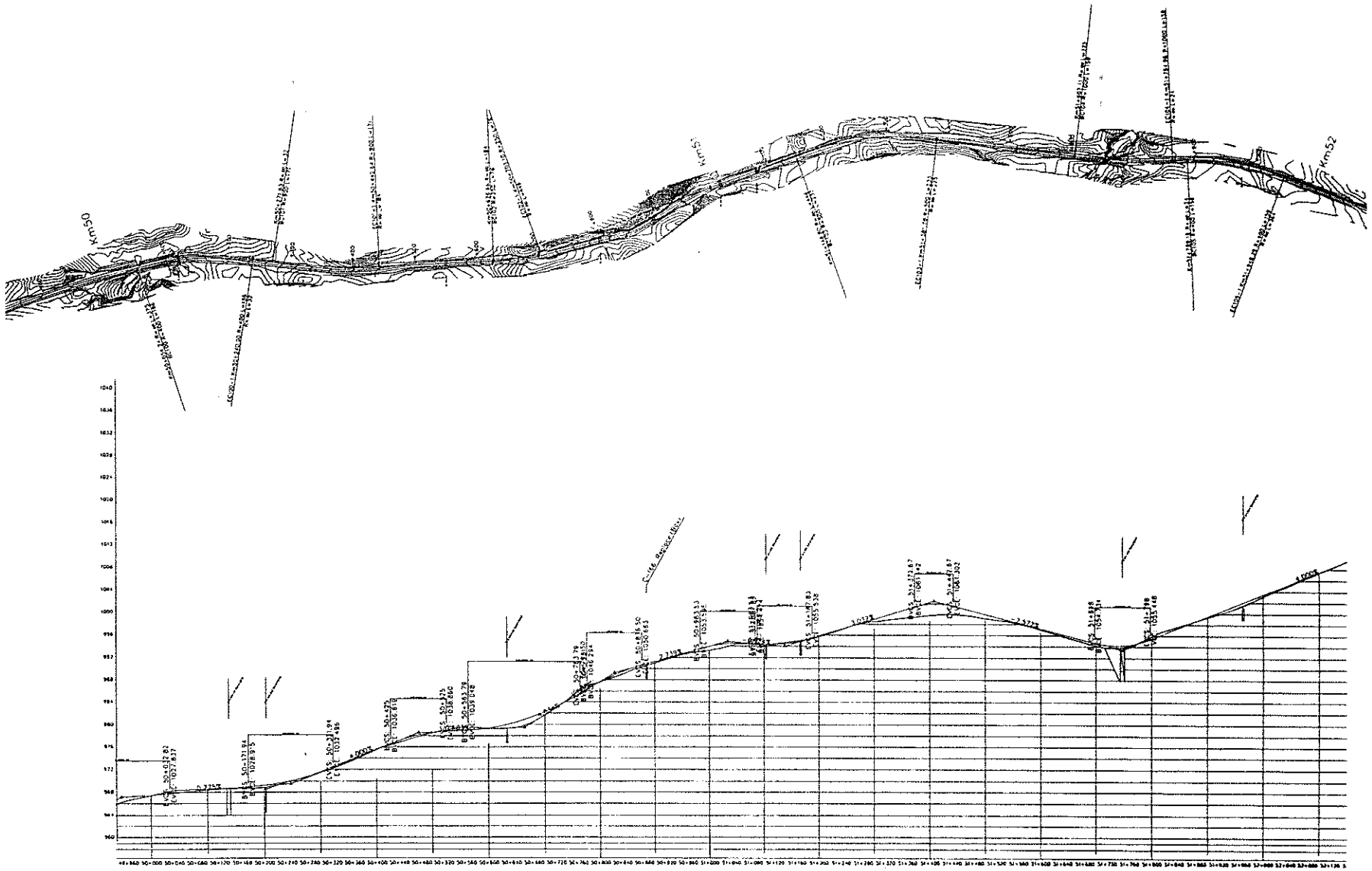
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 24



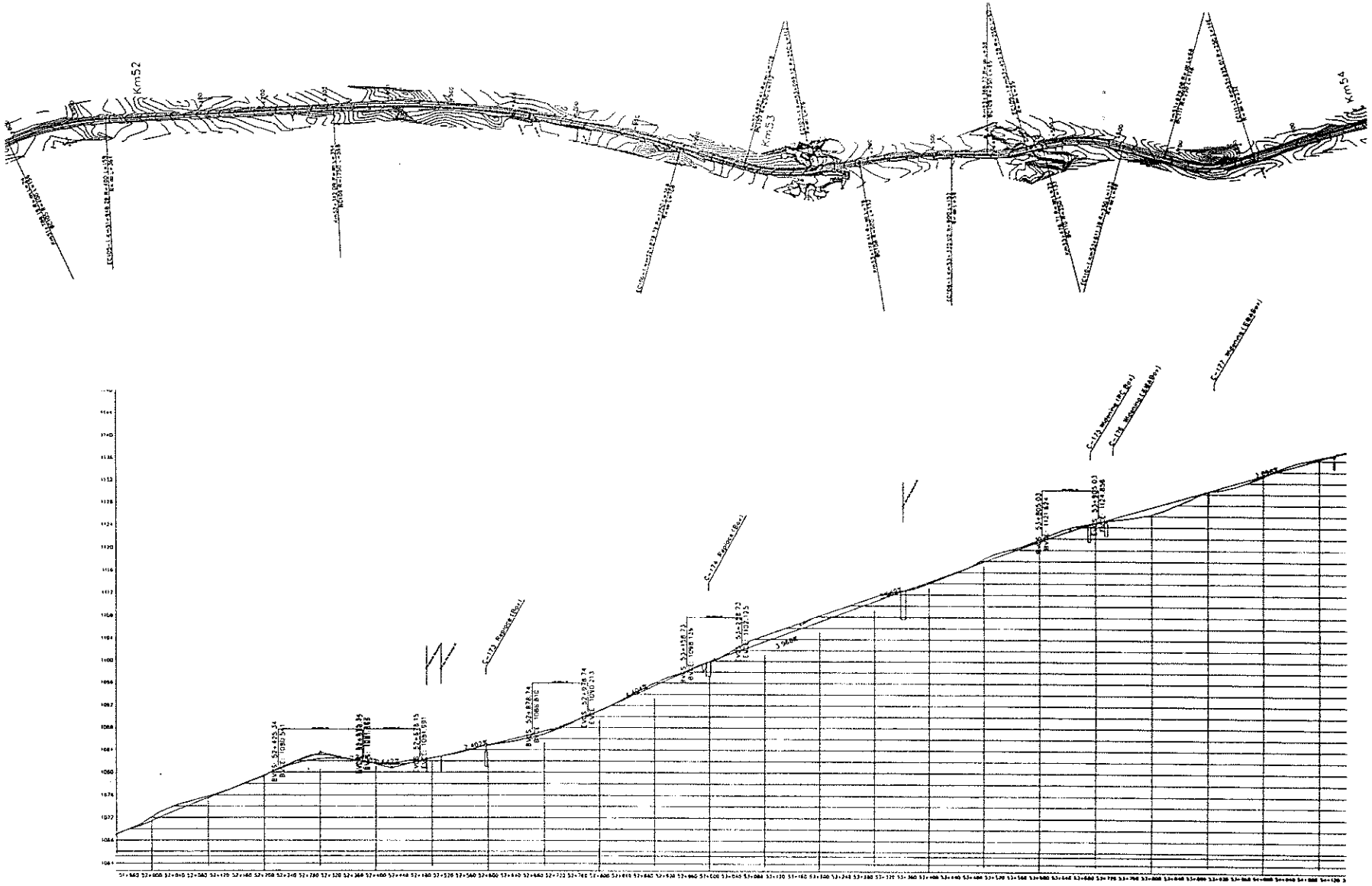




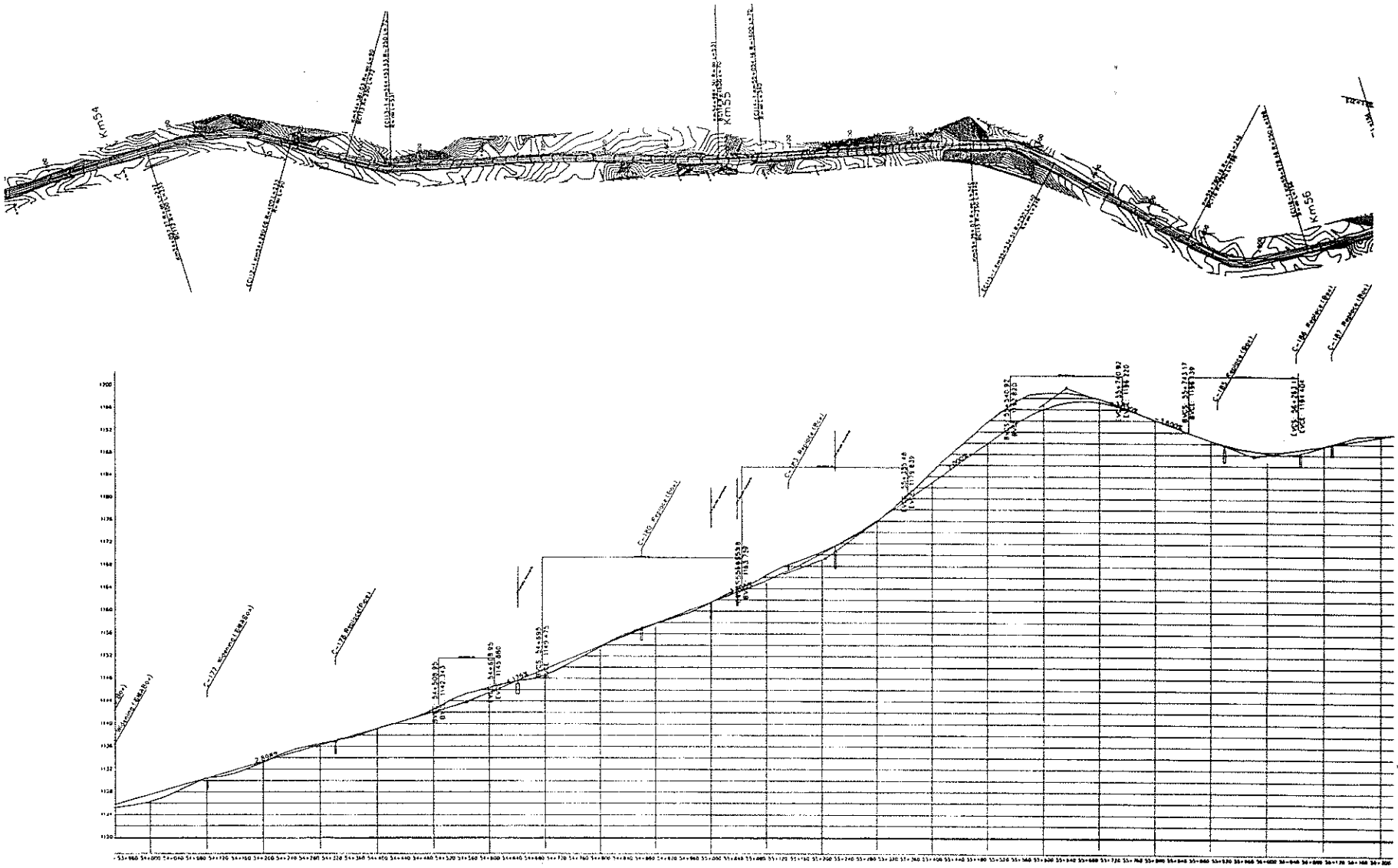
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 25



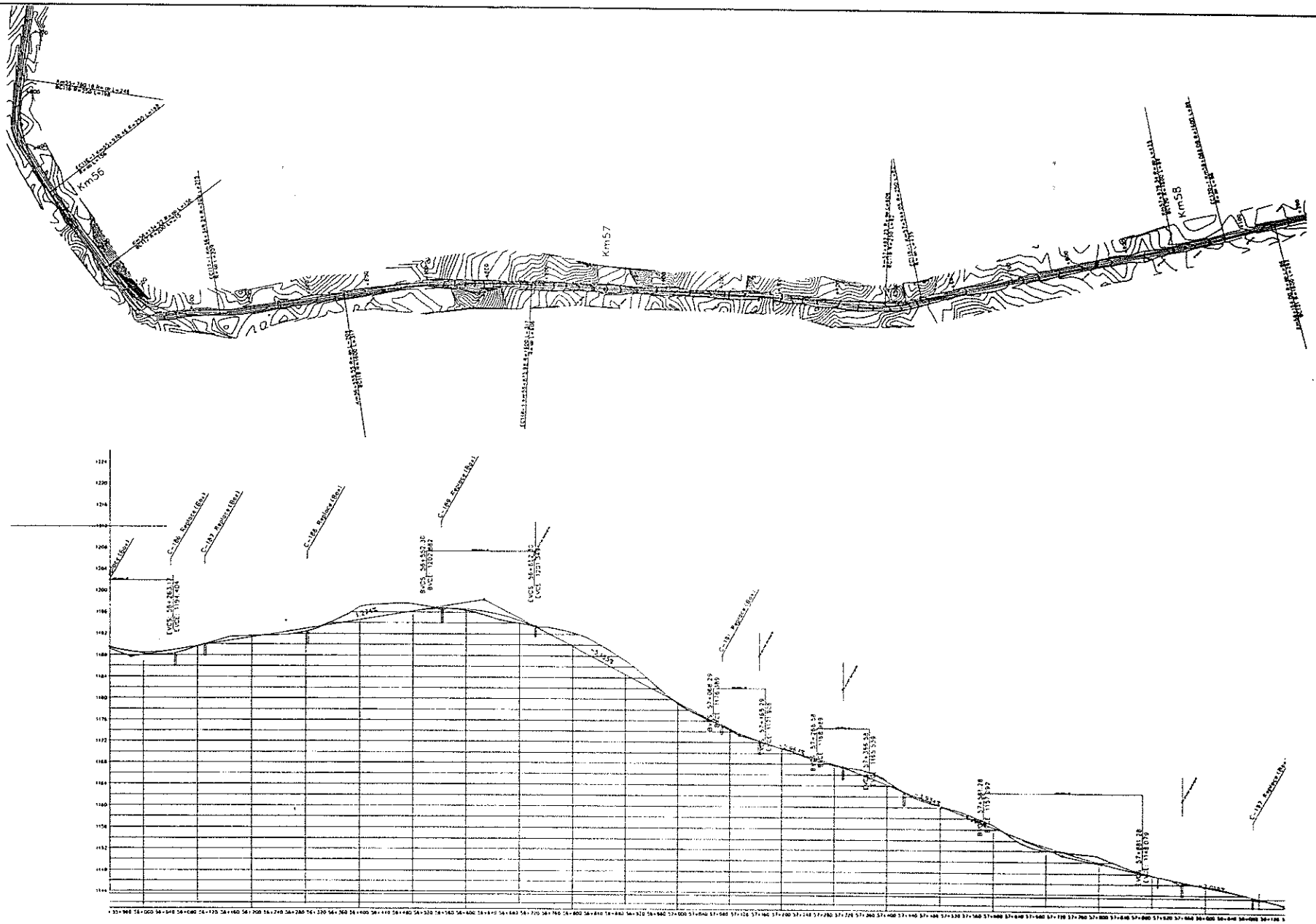
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 26



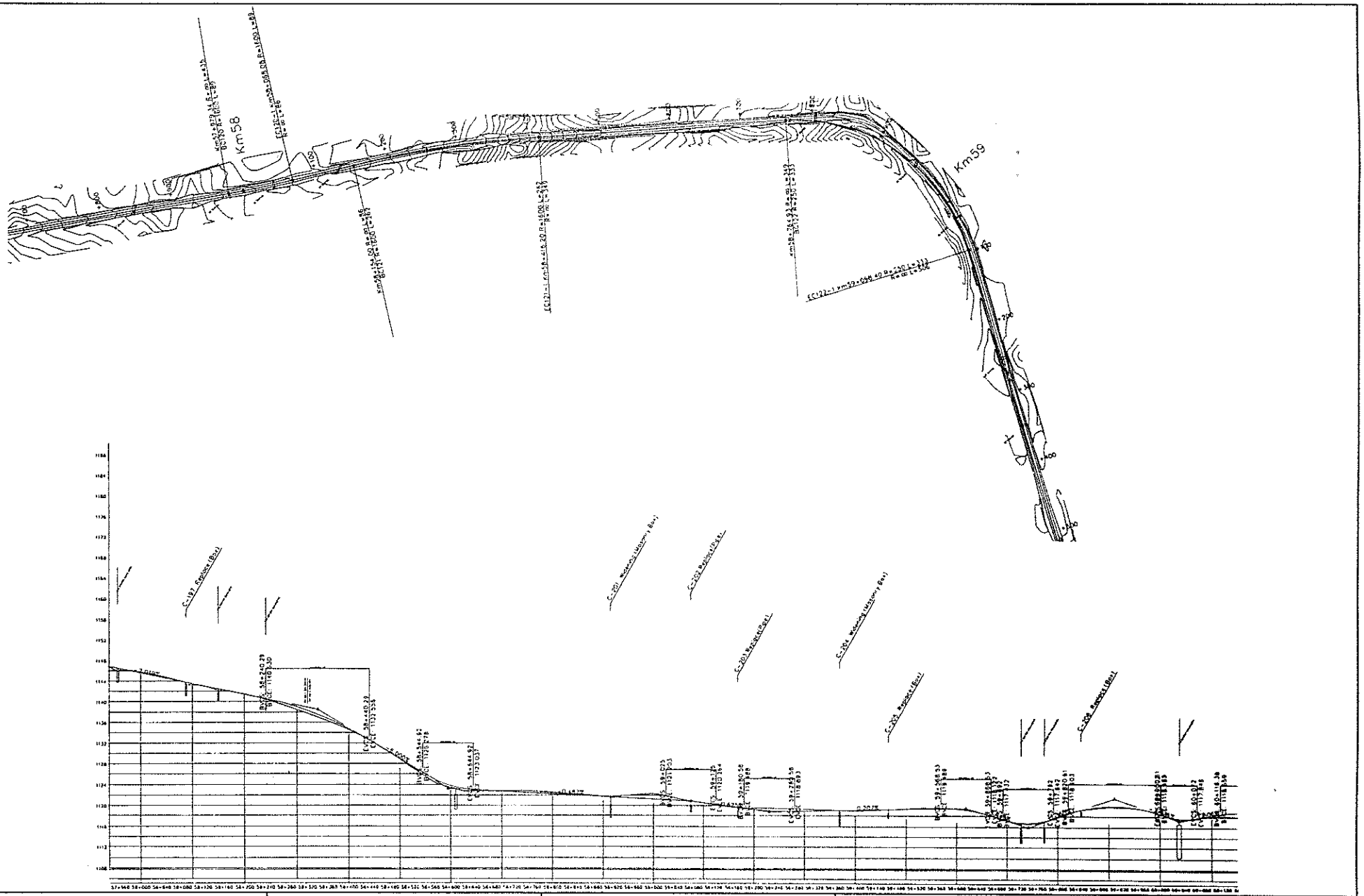
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 27



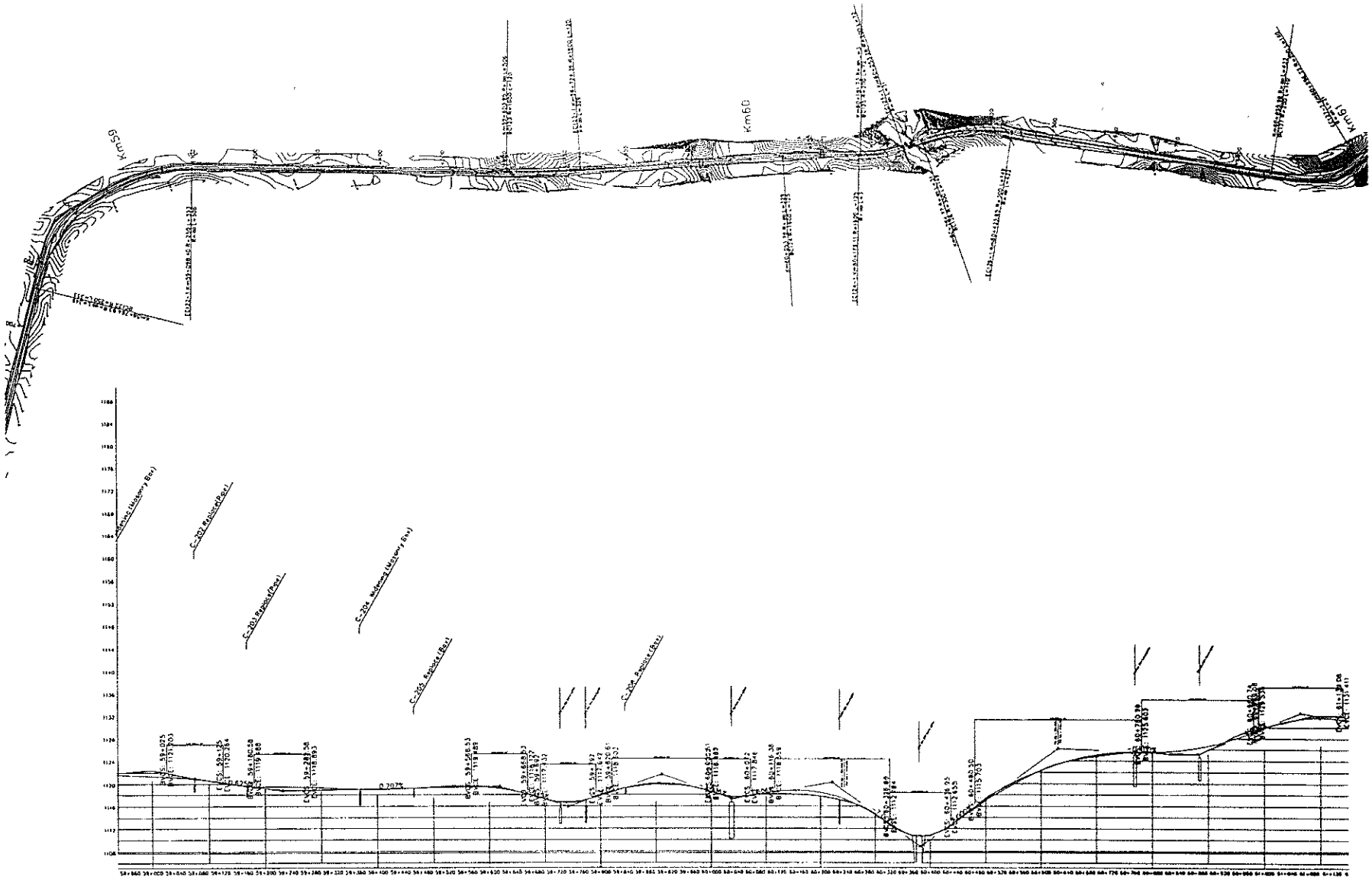
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 28



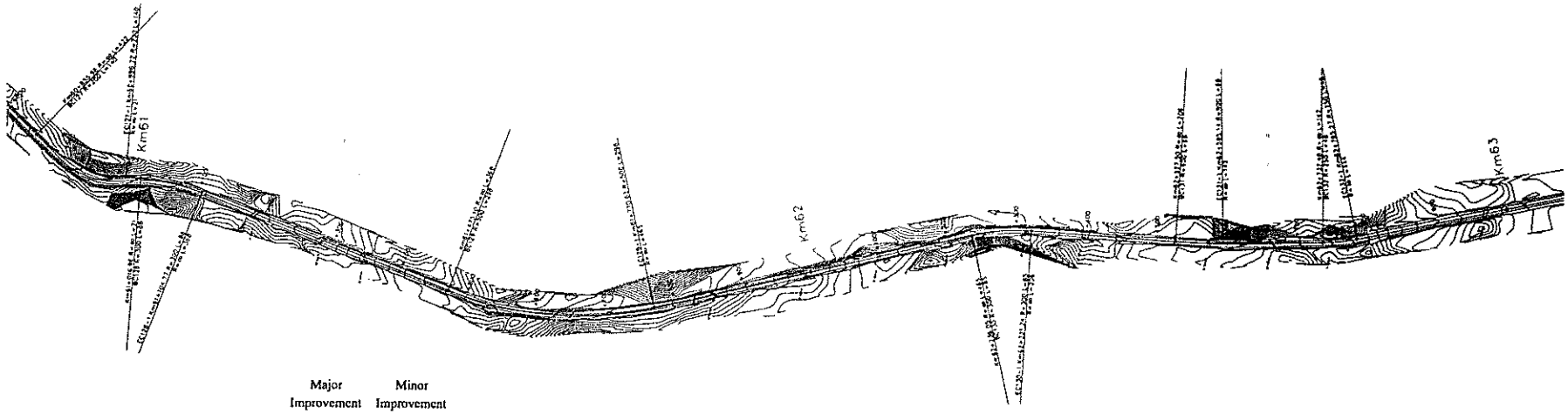
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 29

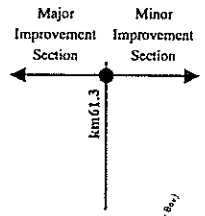


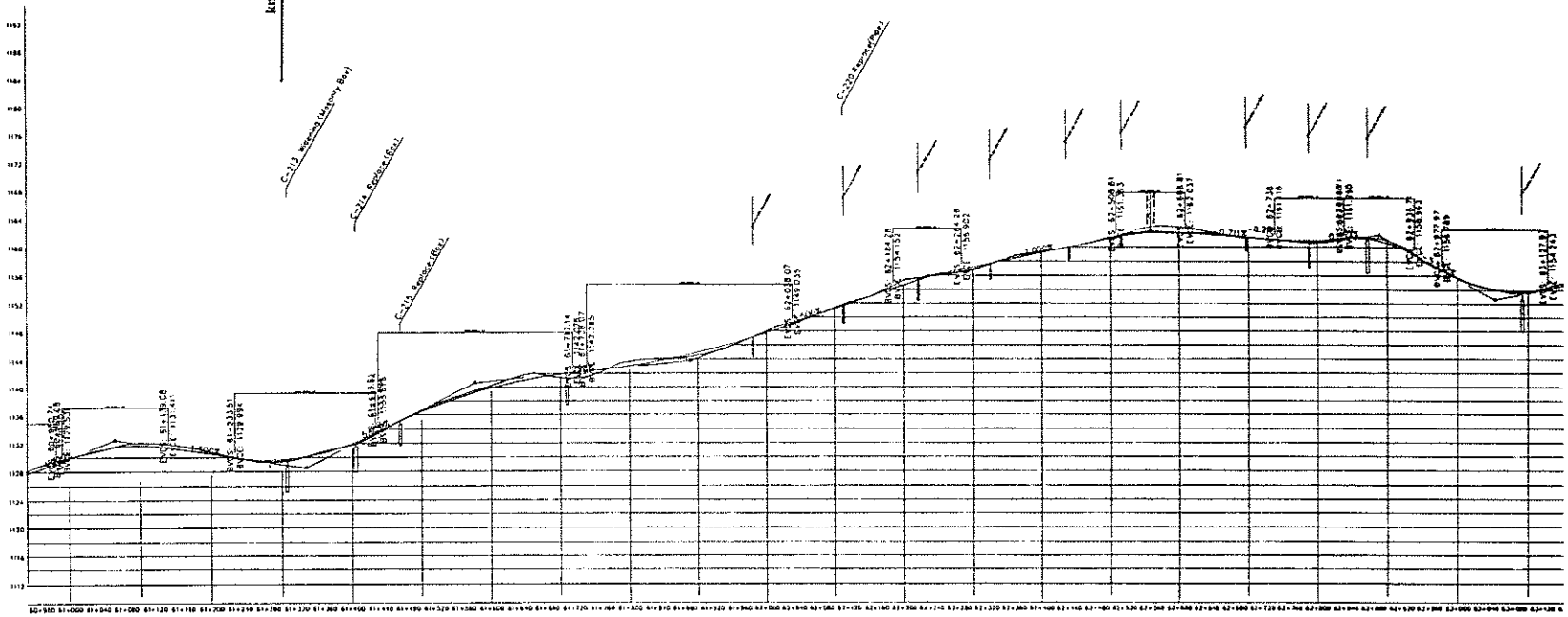
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 30



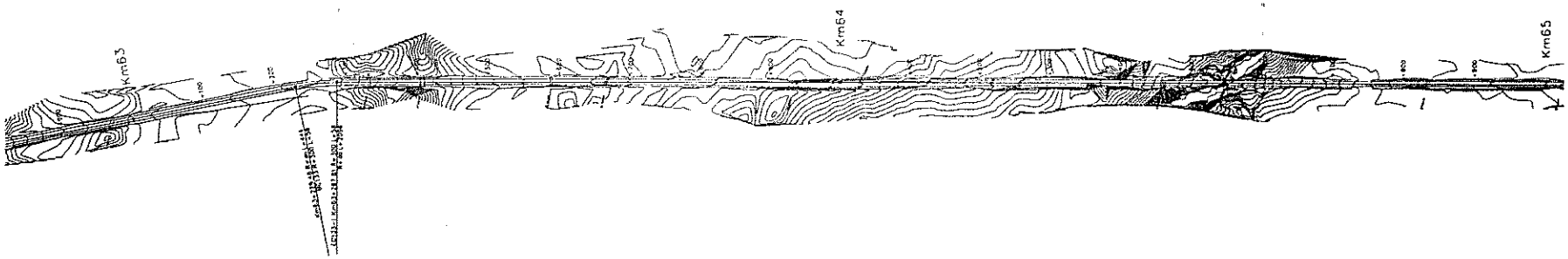
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 31

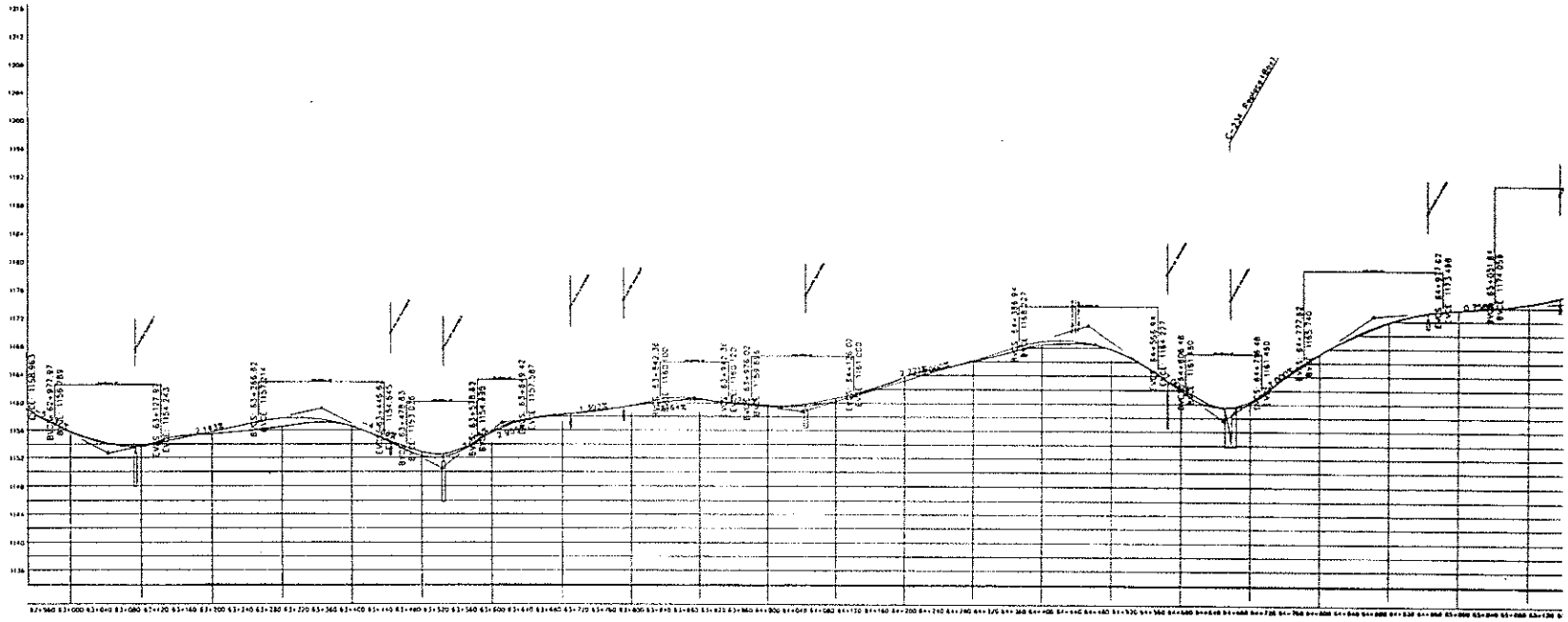




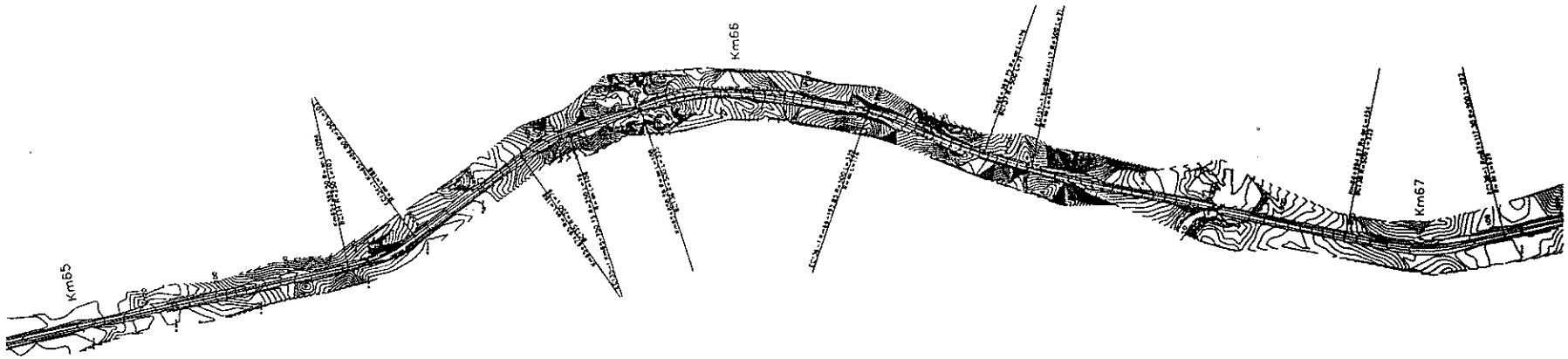


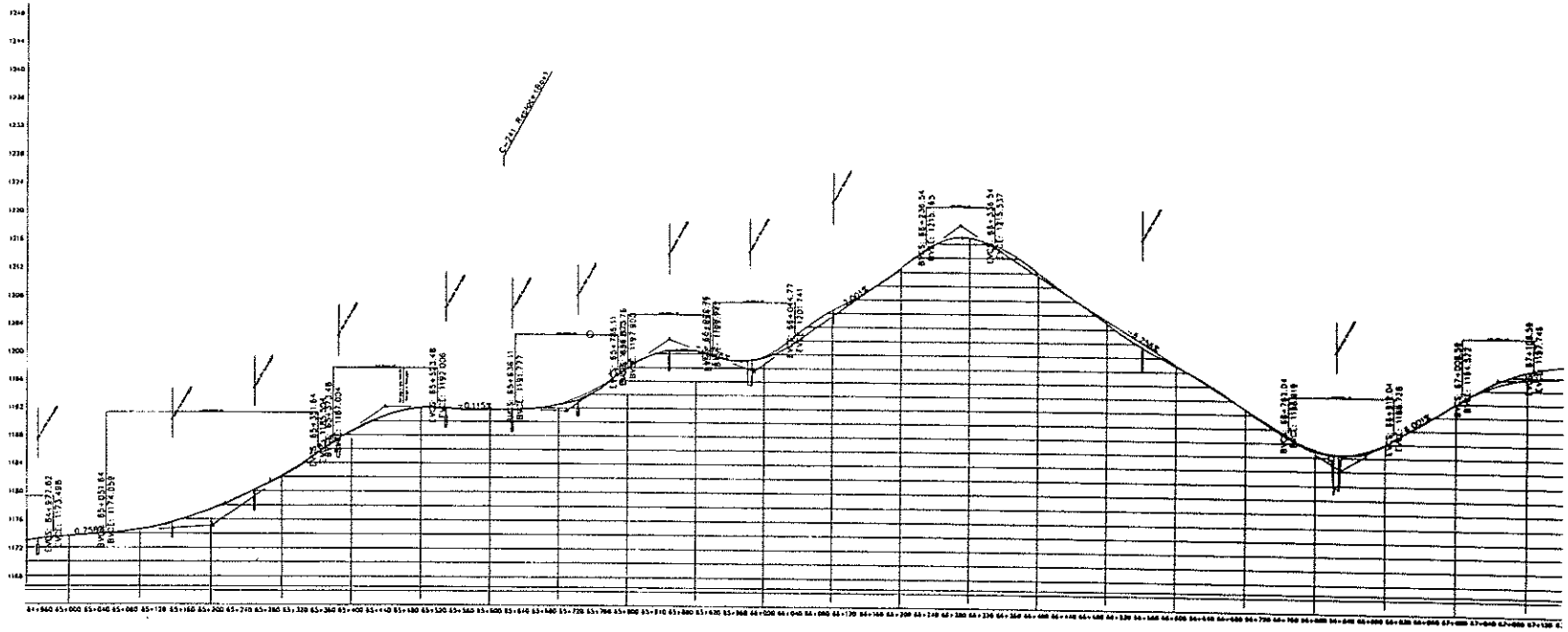
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 32



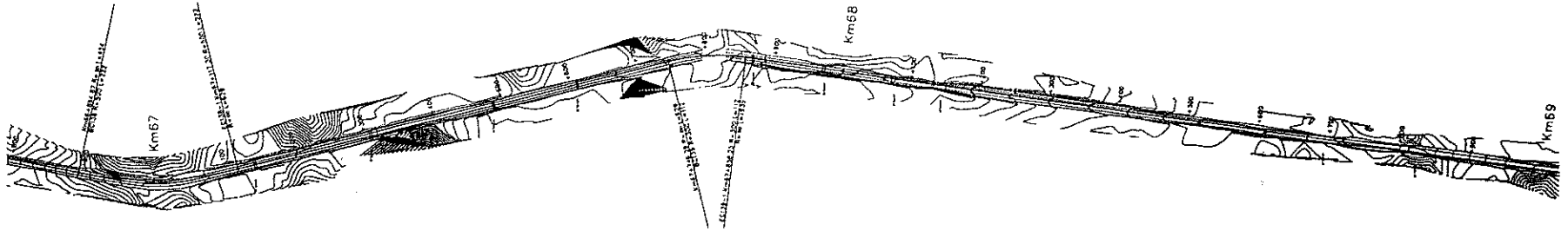


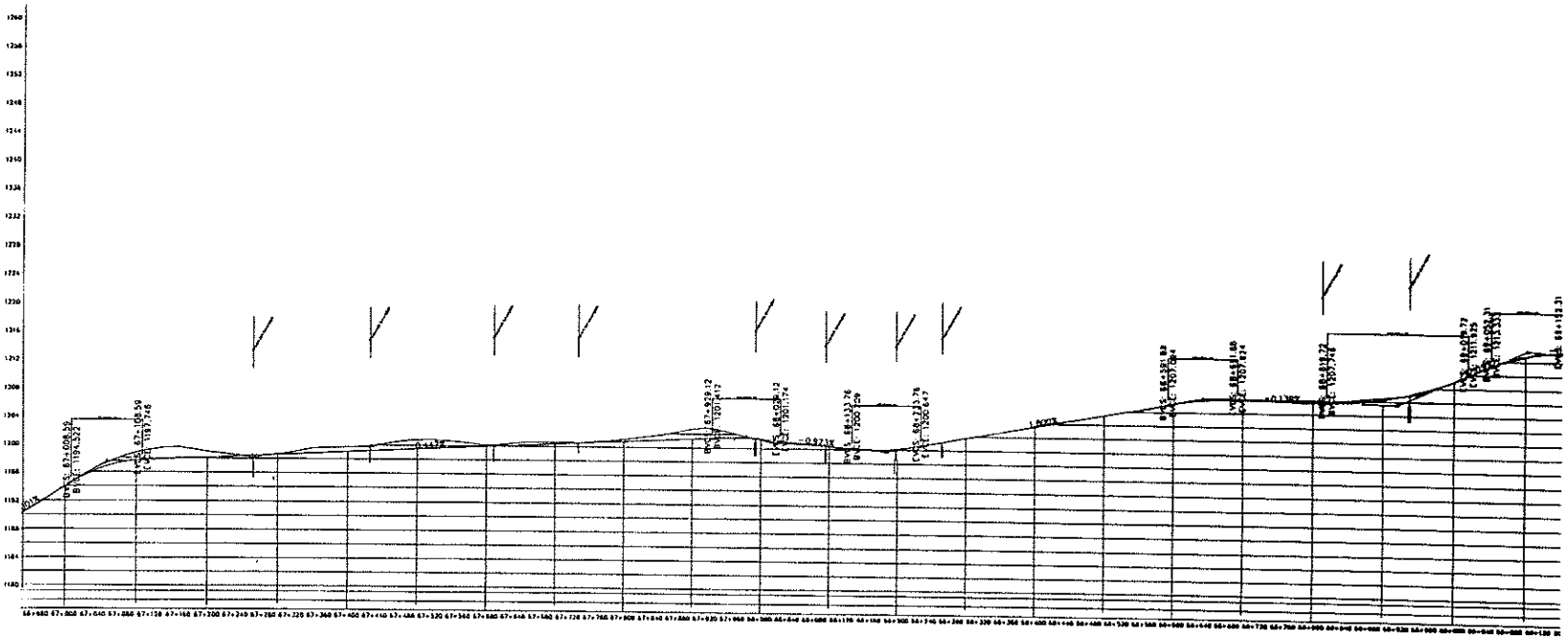
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 33



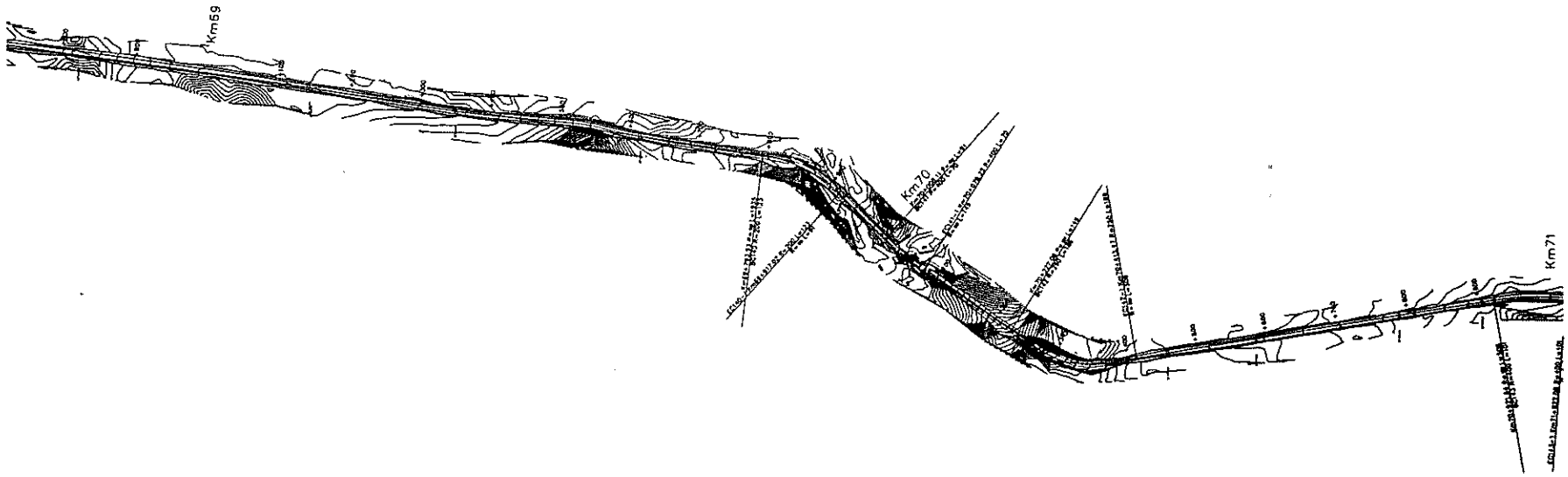


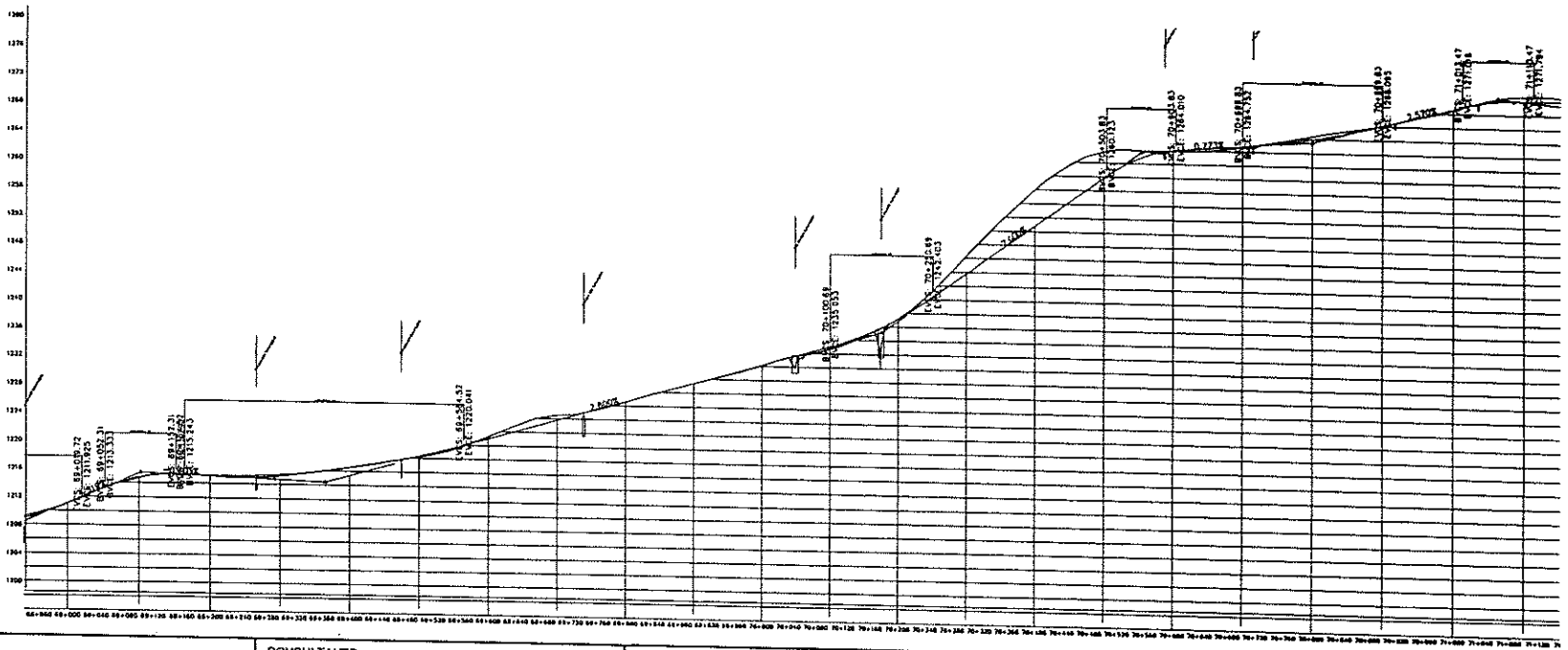
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 34



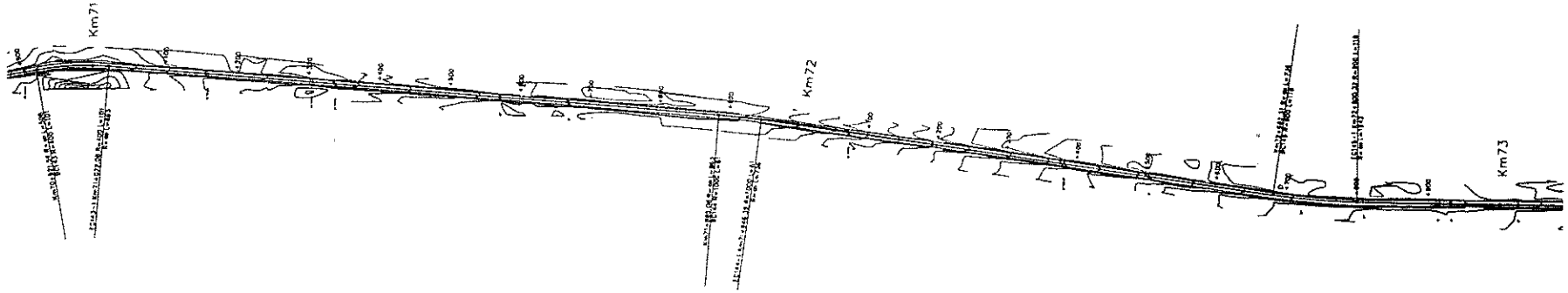


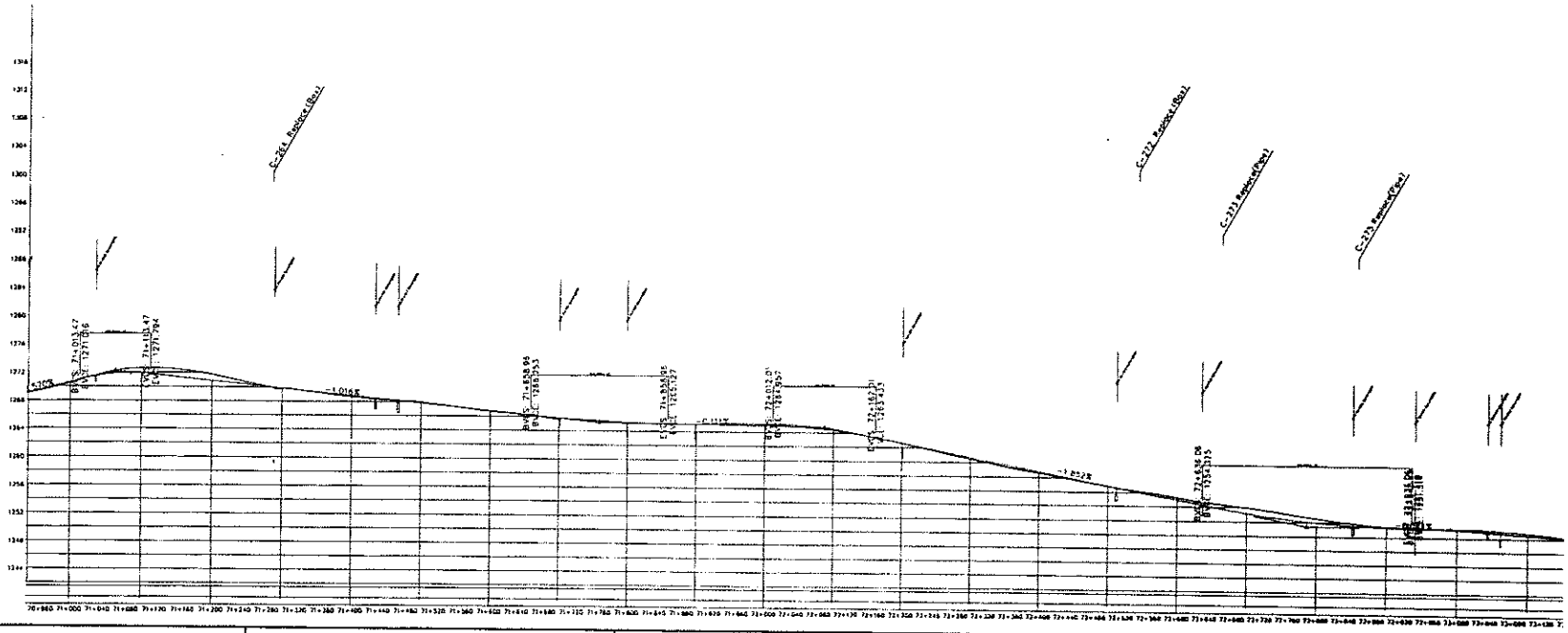
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 35



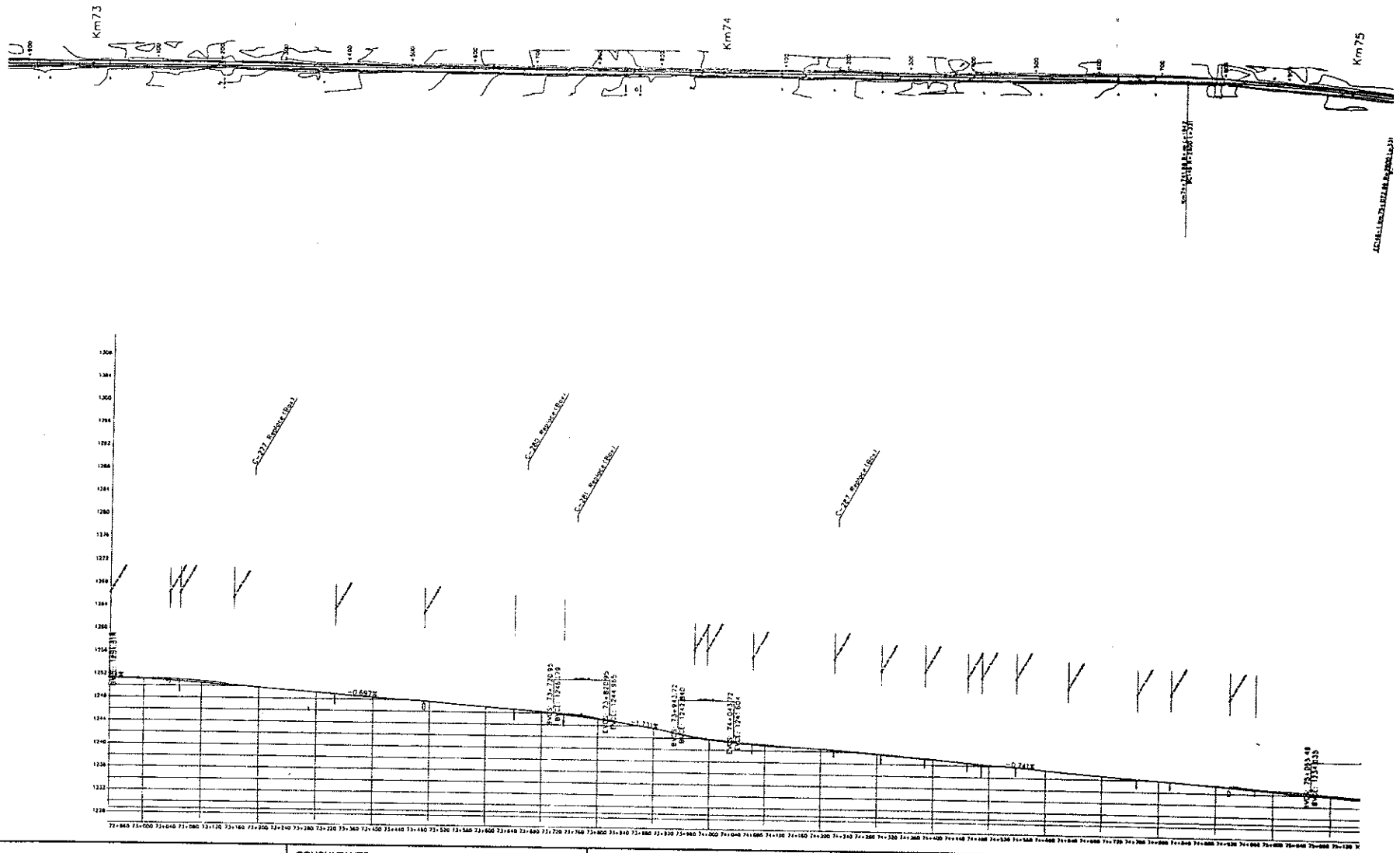


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 36

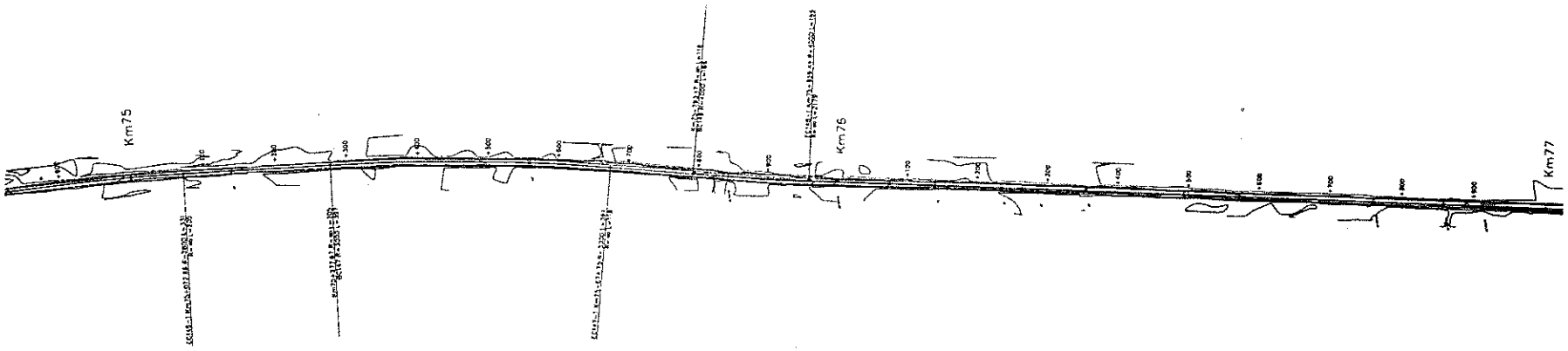


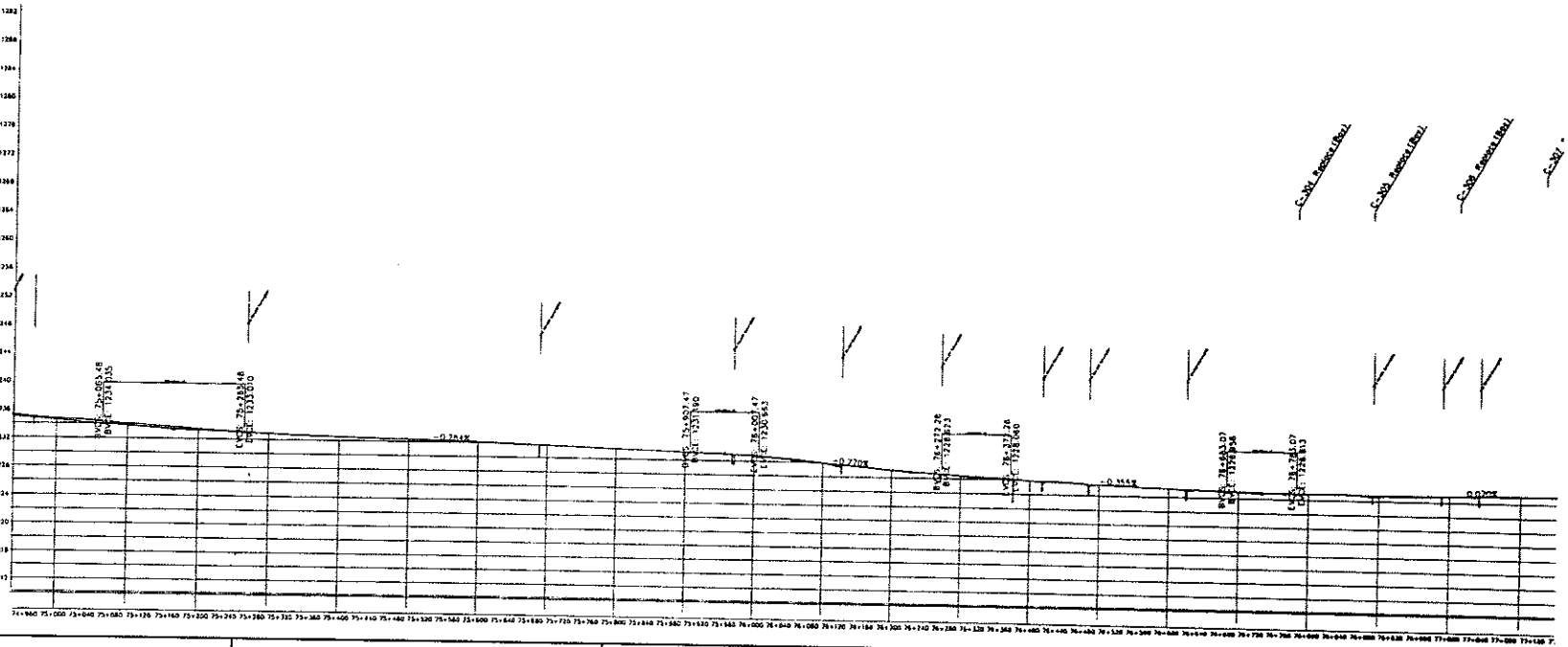


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 37

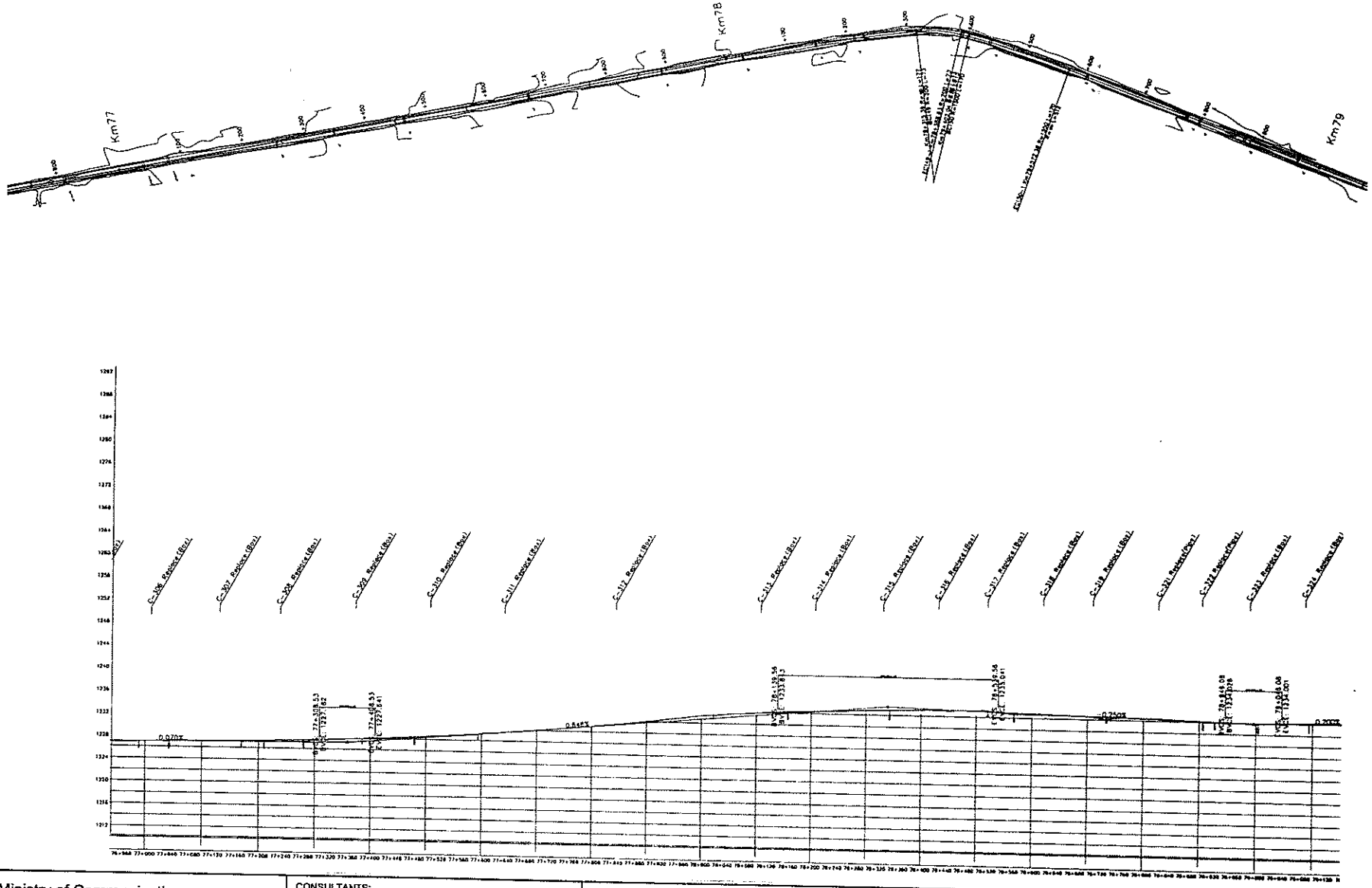


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 38

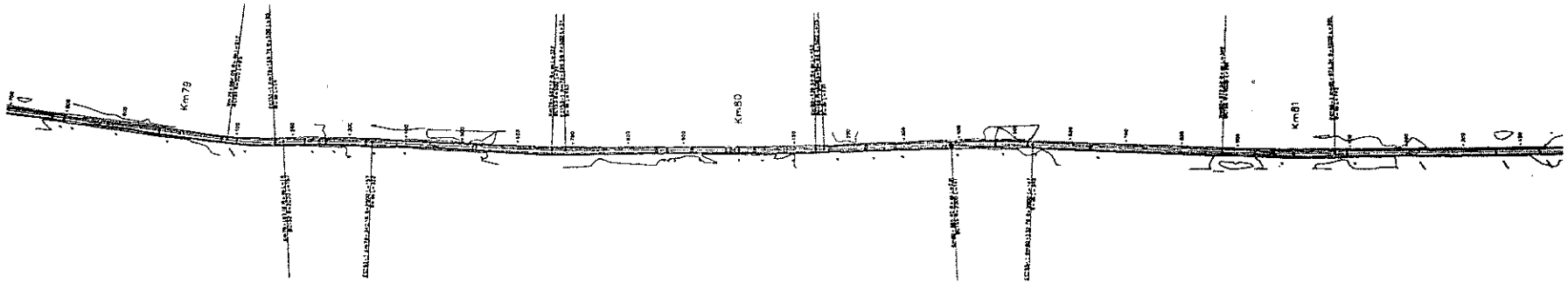


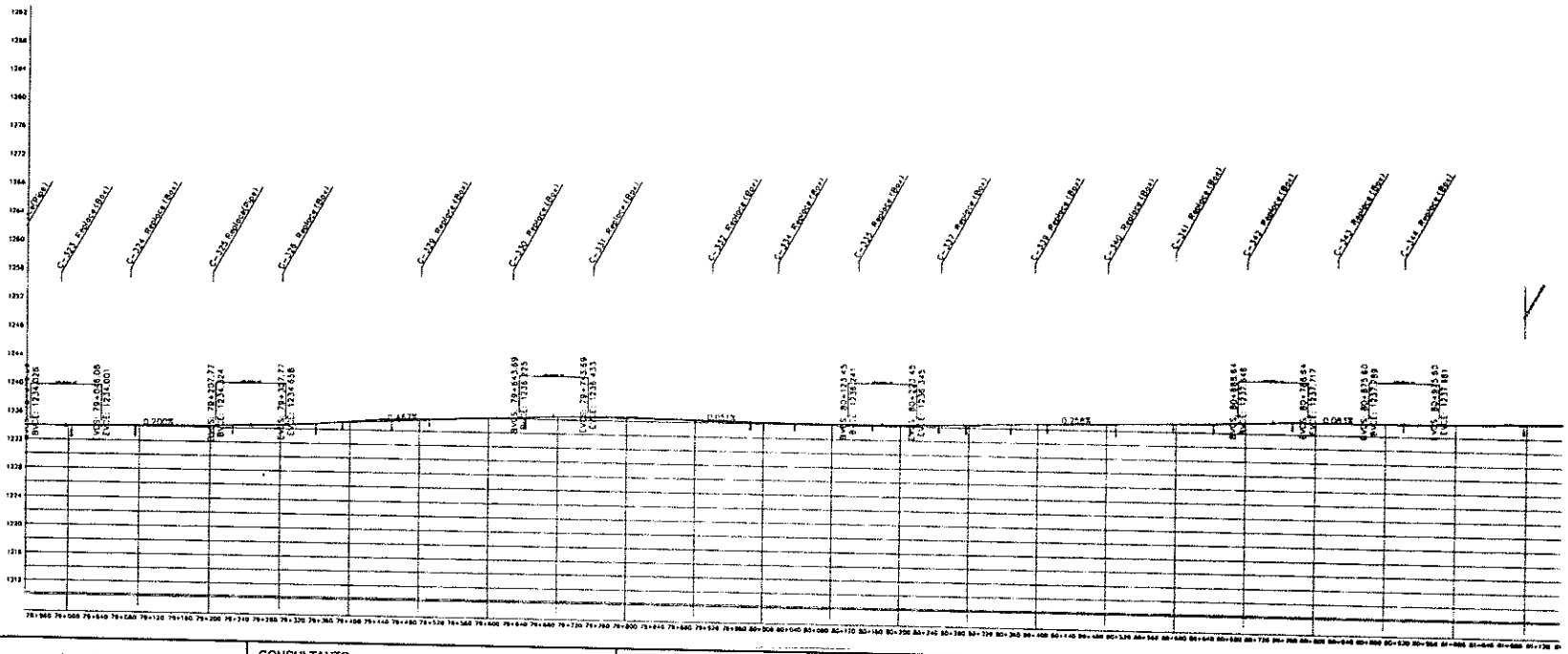


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 39

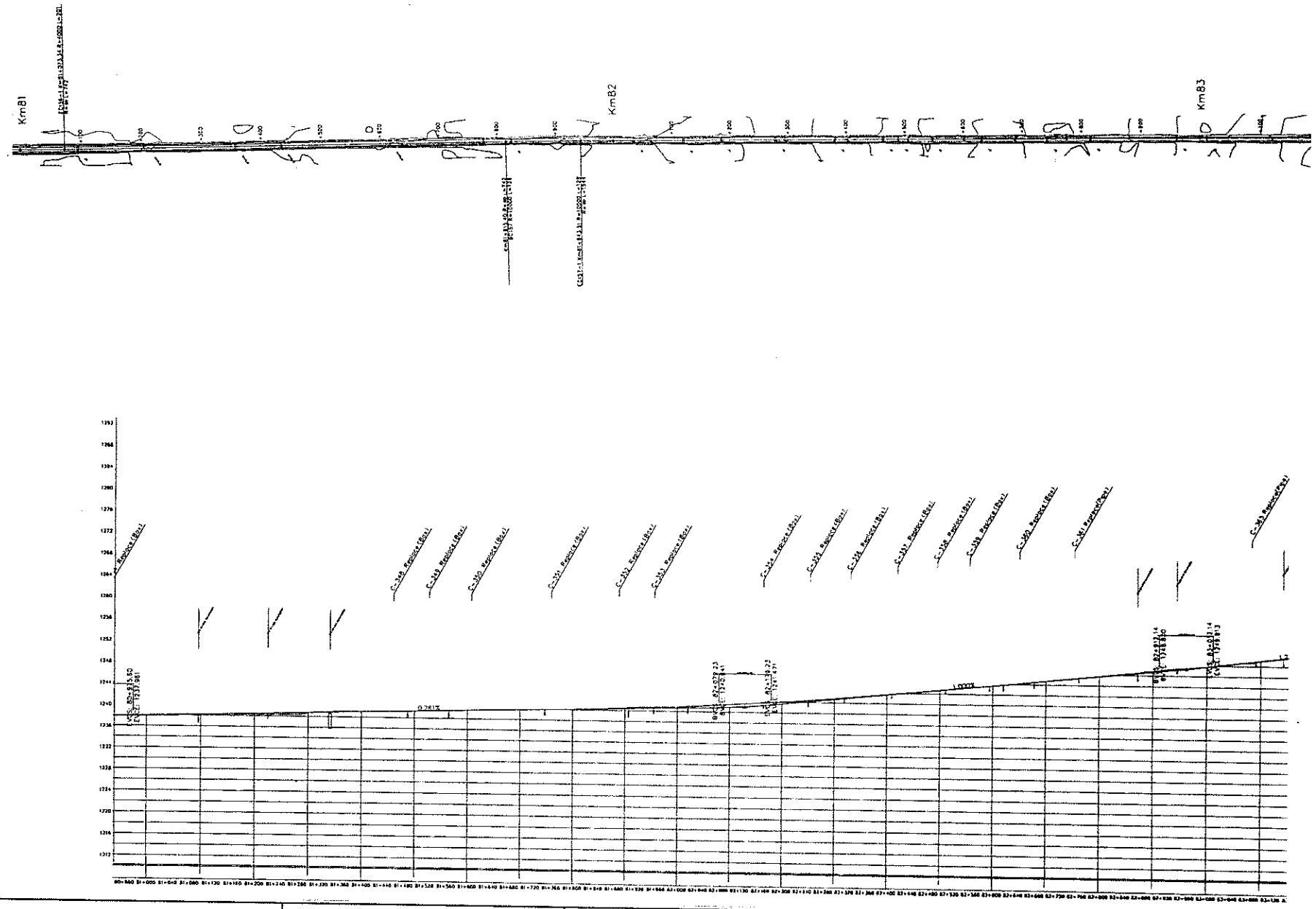


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 40

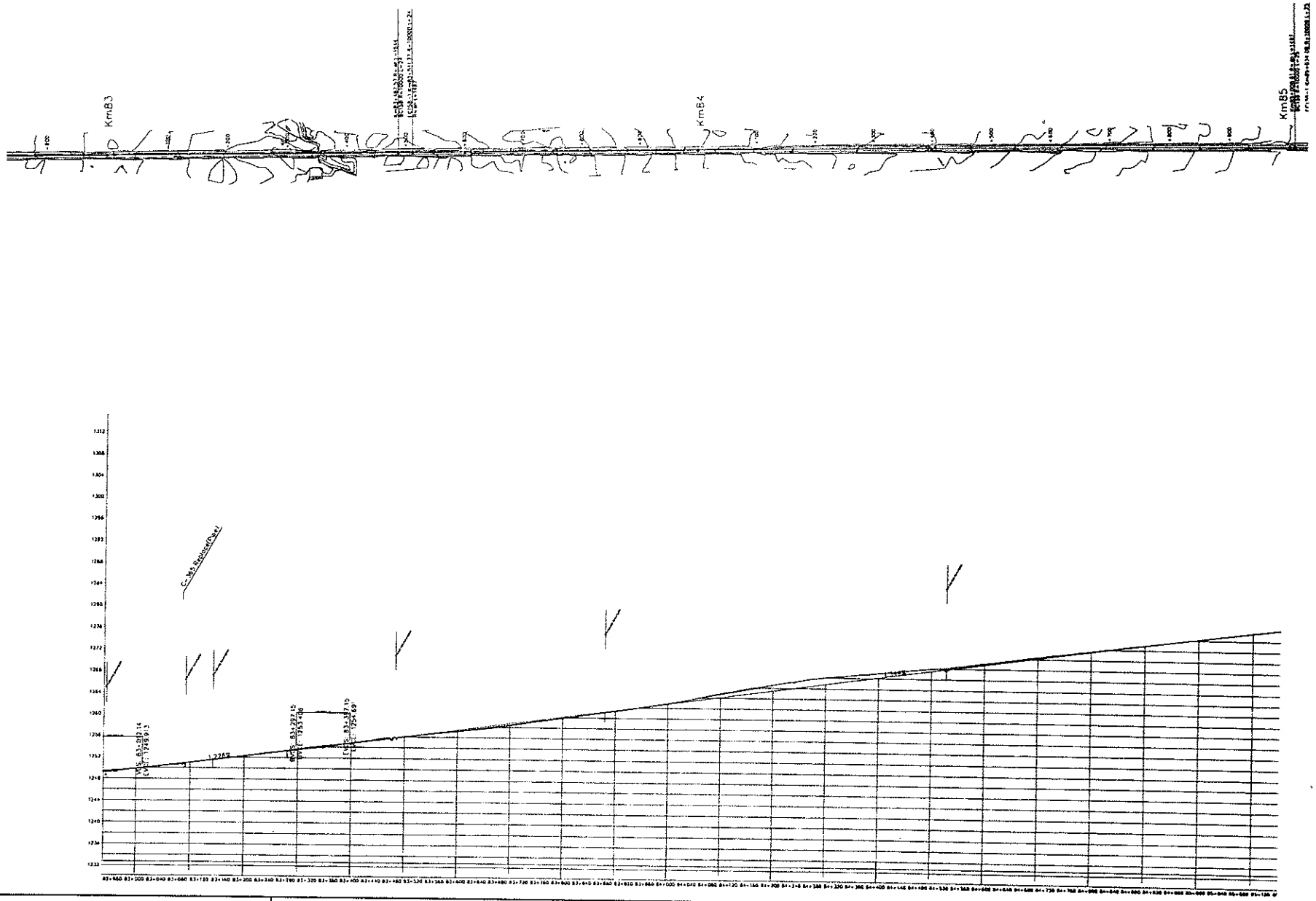




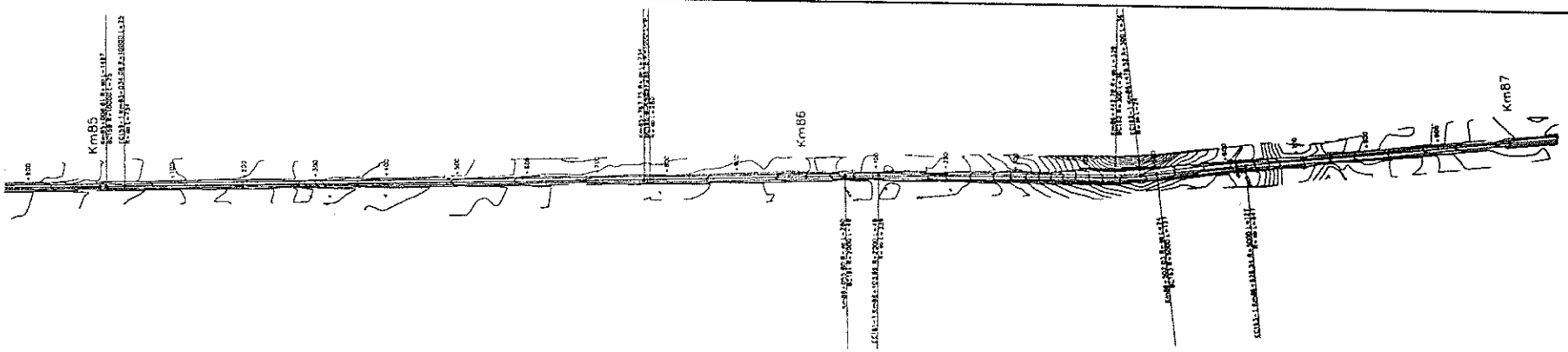
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 41

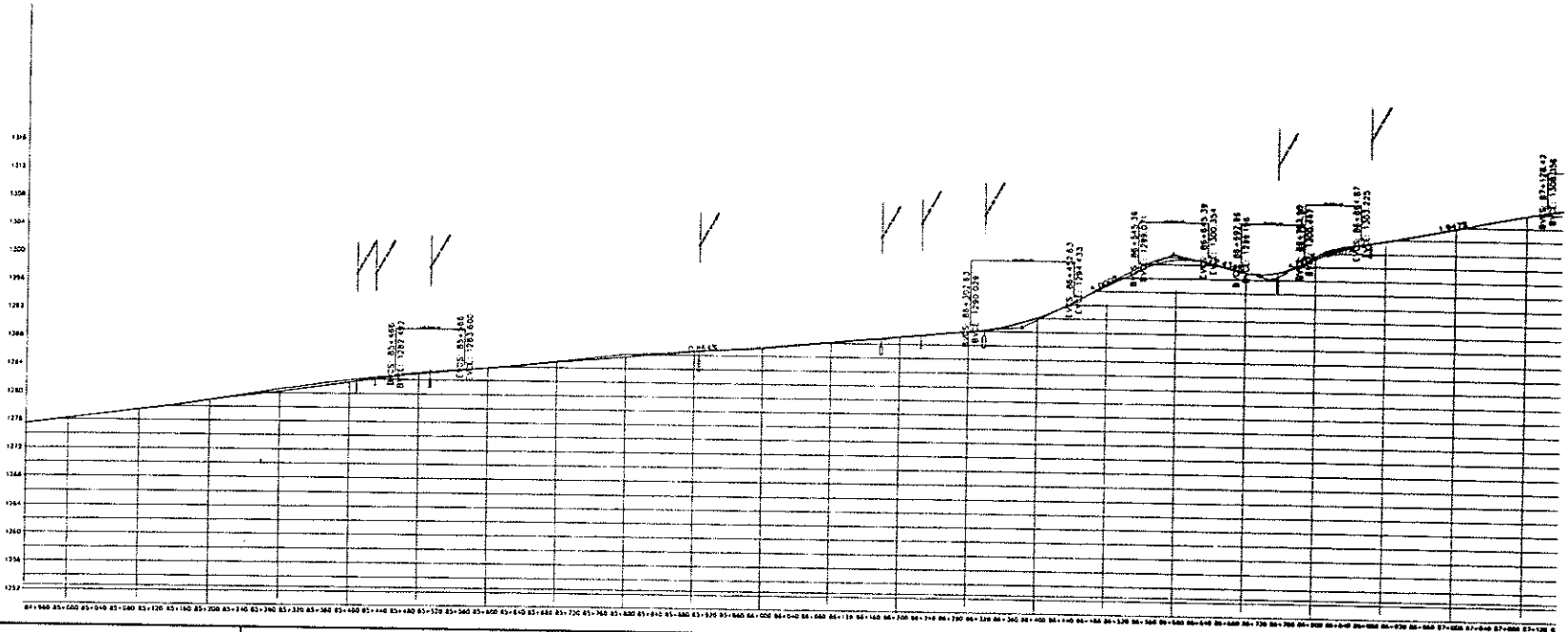


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 42



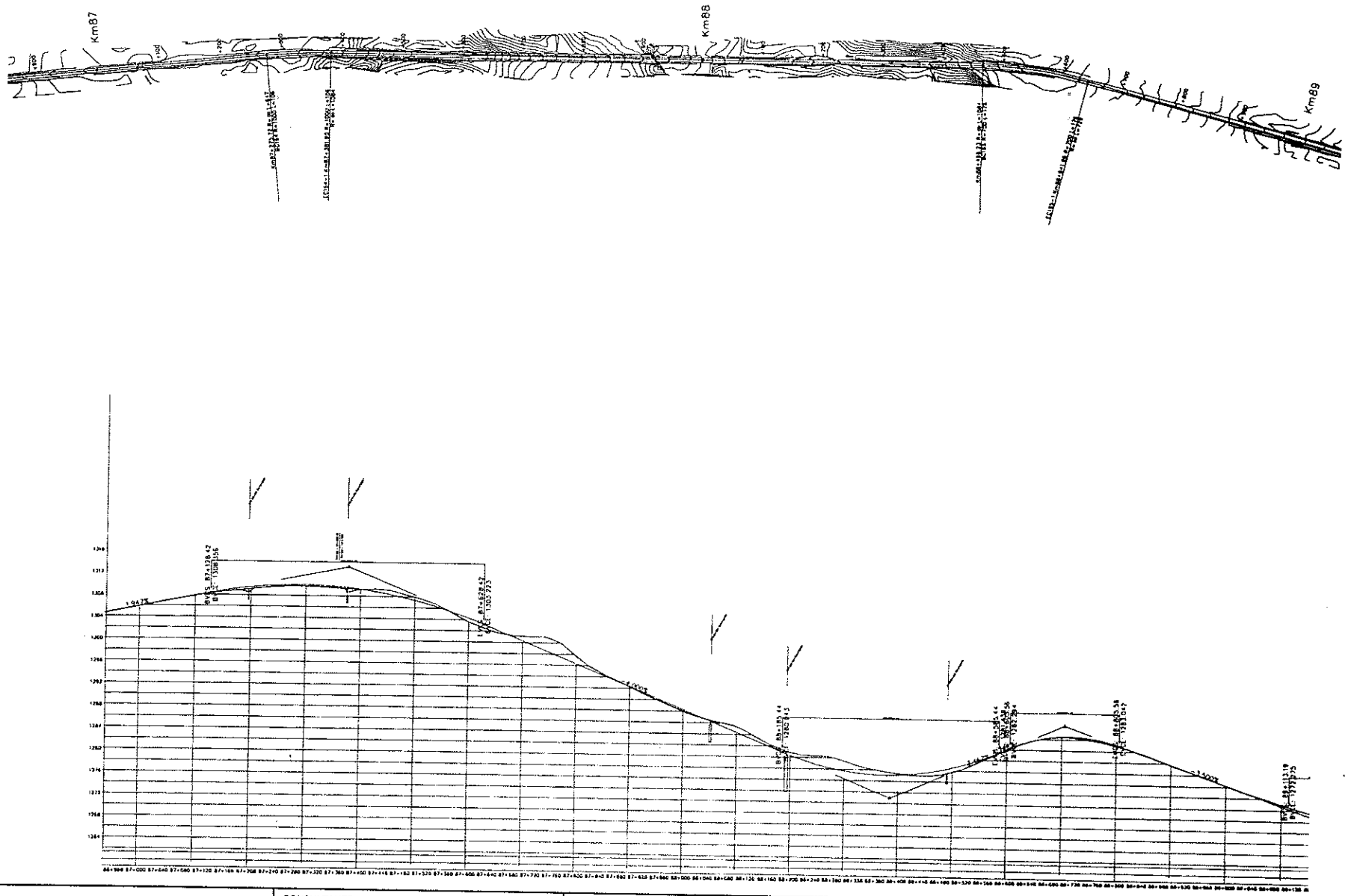
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 43



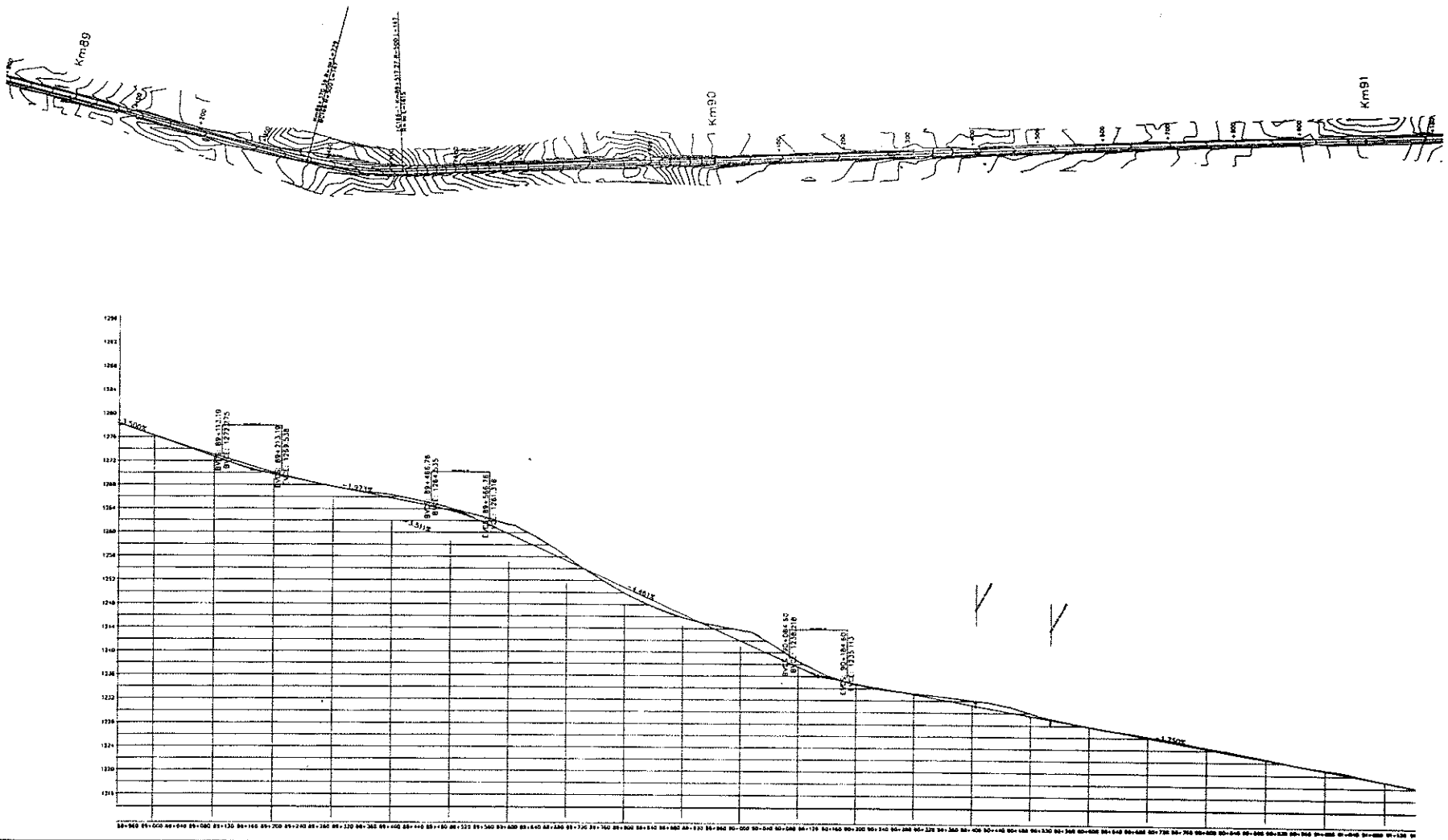


- The Ministry of Communication of The Islamic Republic of Pakistan
- Japan International Cooperation Agency

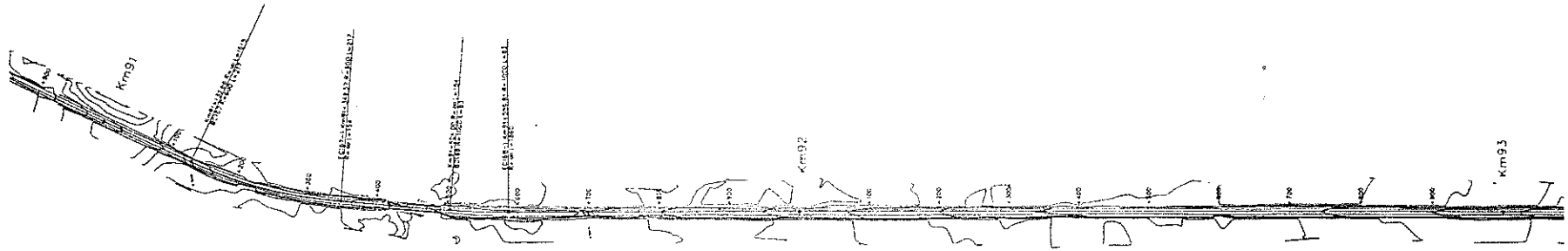
CONSULTANTS:	PROJECT NAME:	DRAWING TITLE:	Date:	DRAWING No.:
Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	The Improvement of Kararo-Wadh Section of National Highway N-25	SCALE: AS SHOWN	Prepared by:	44
			Checked by:	

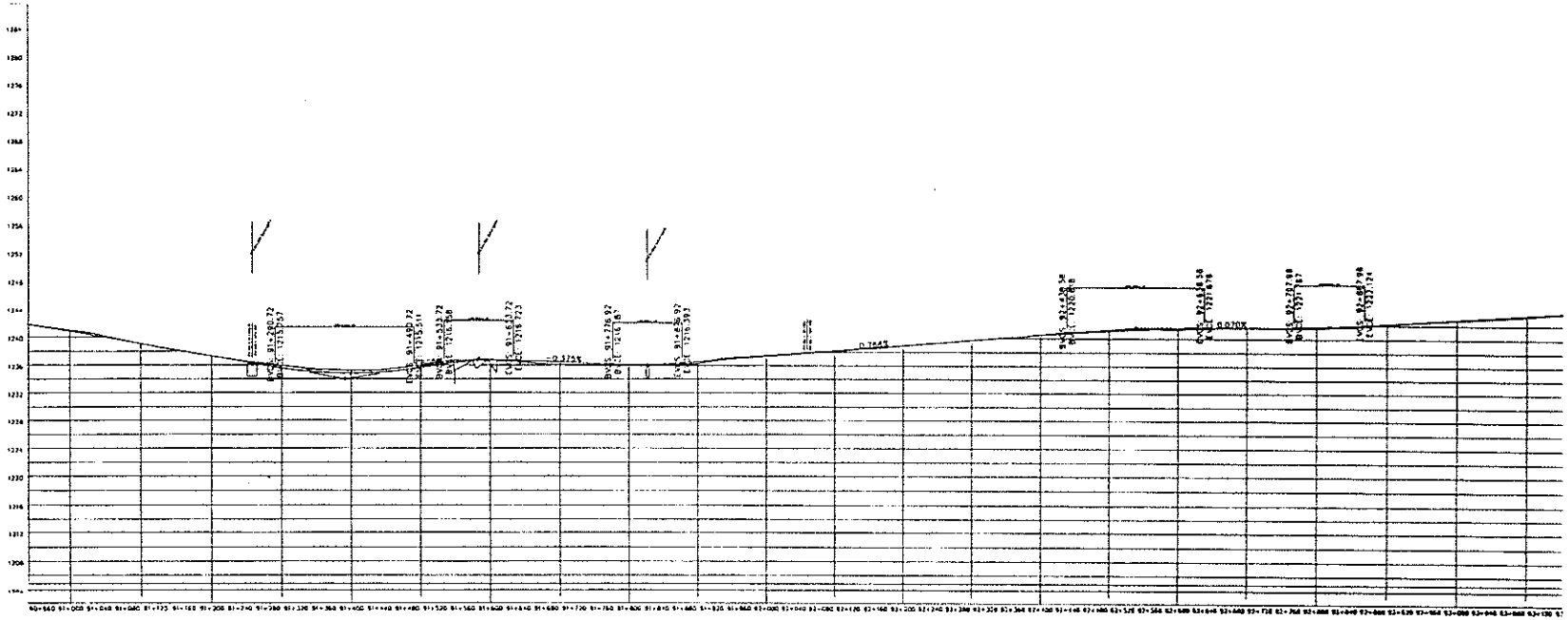


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 45

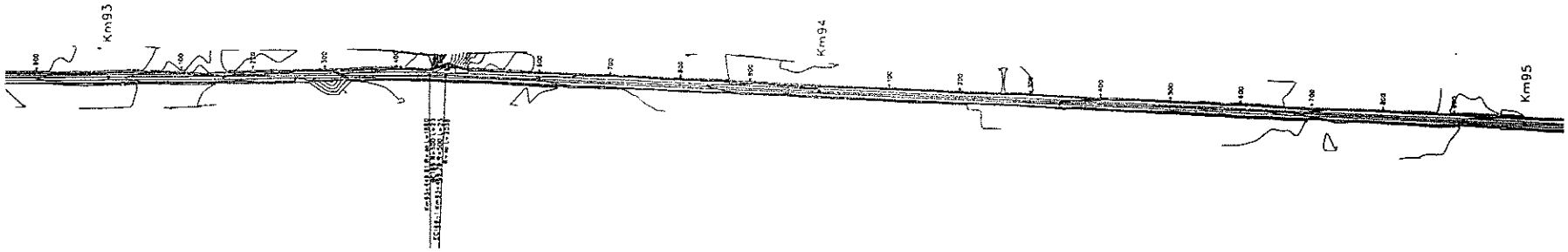


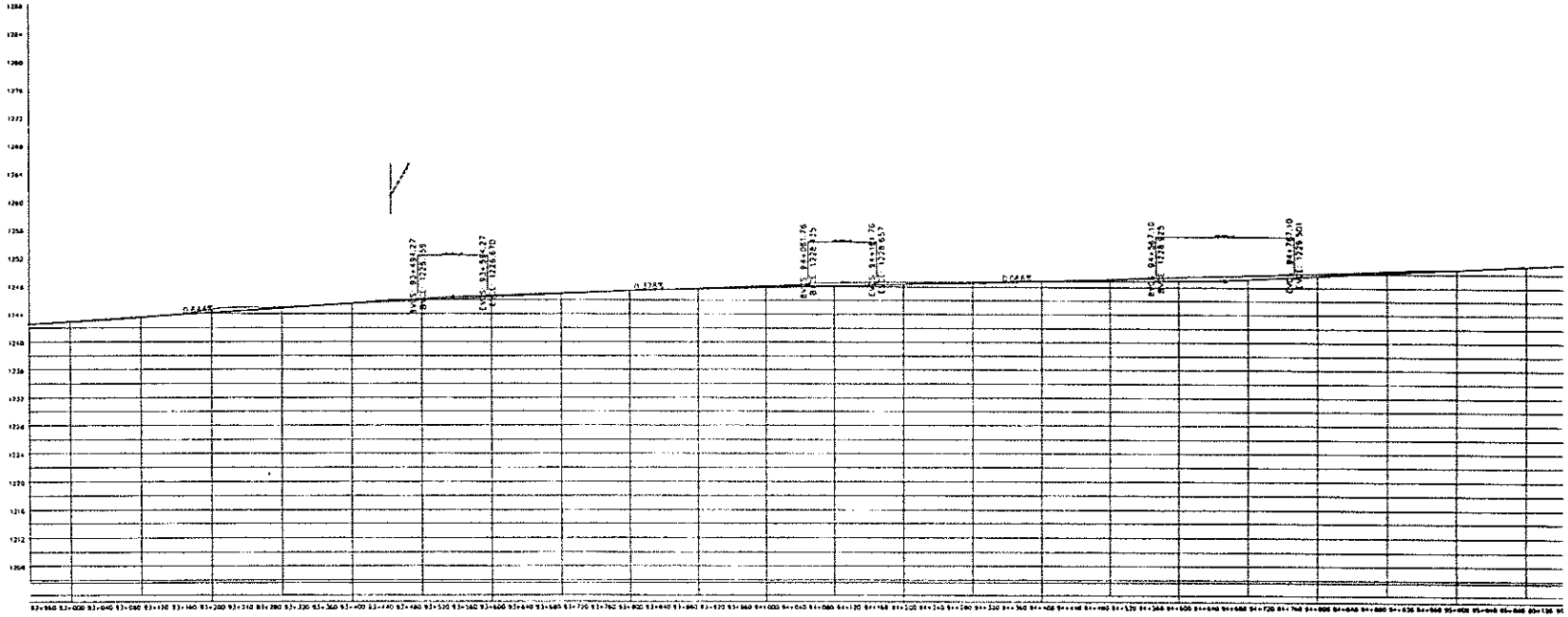
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 46



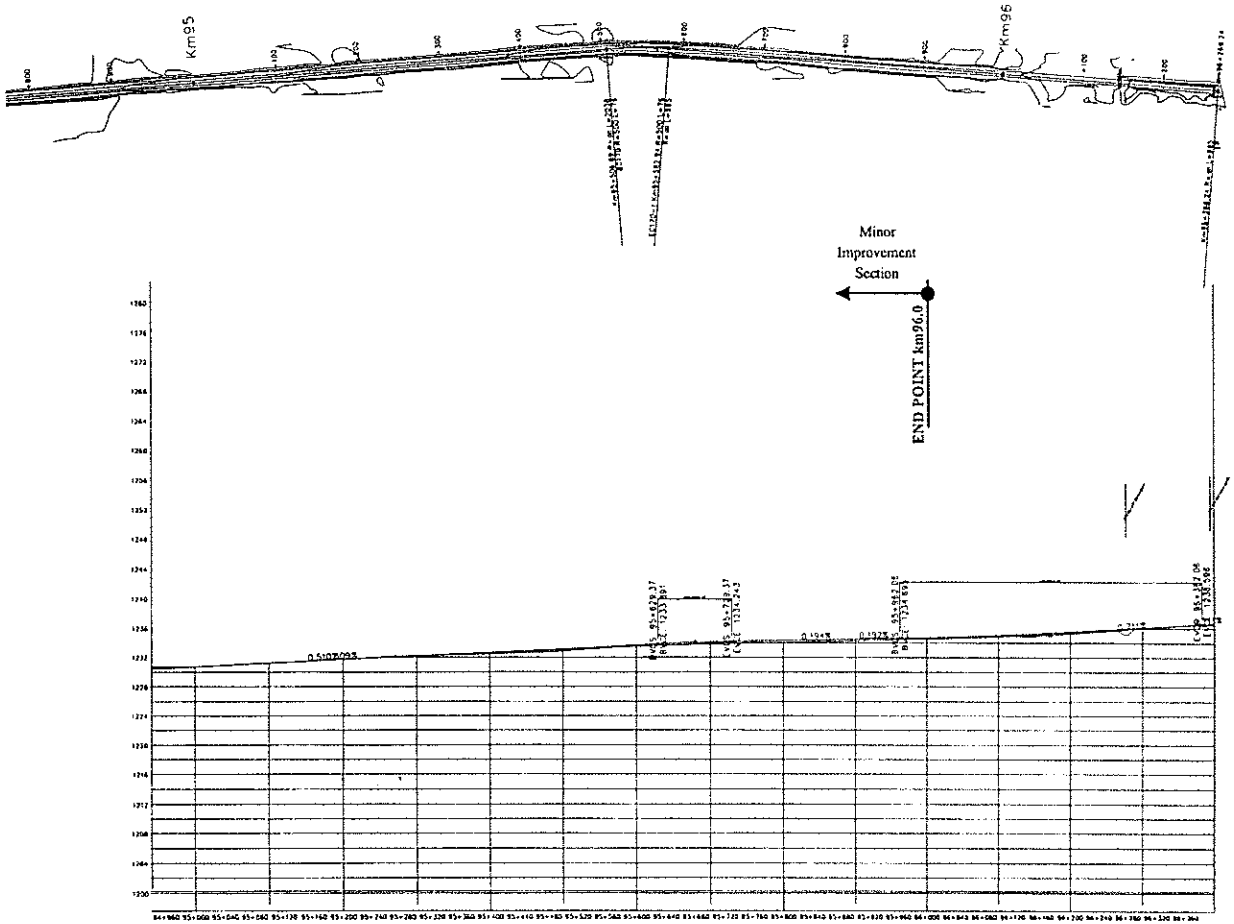


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 47



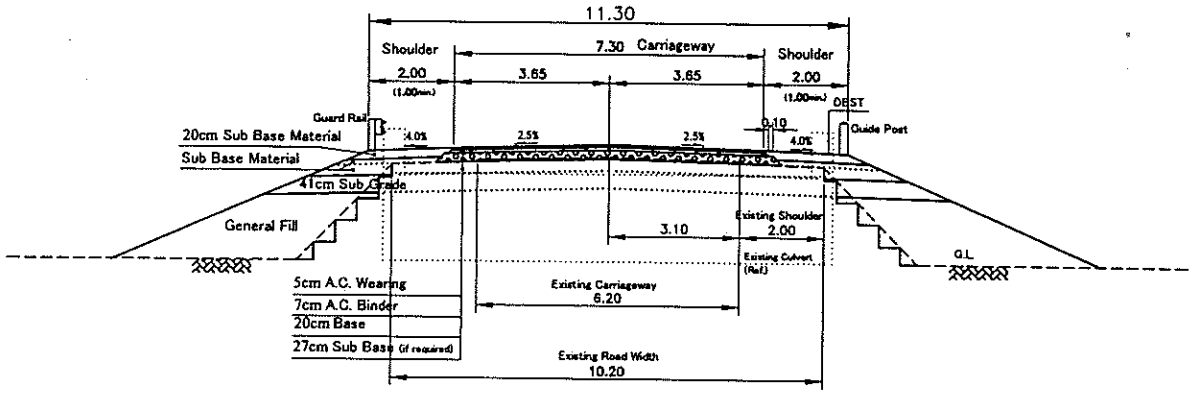


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 48

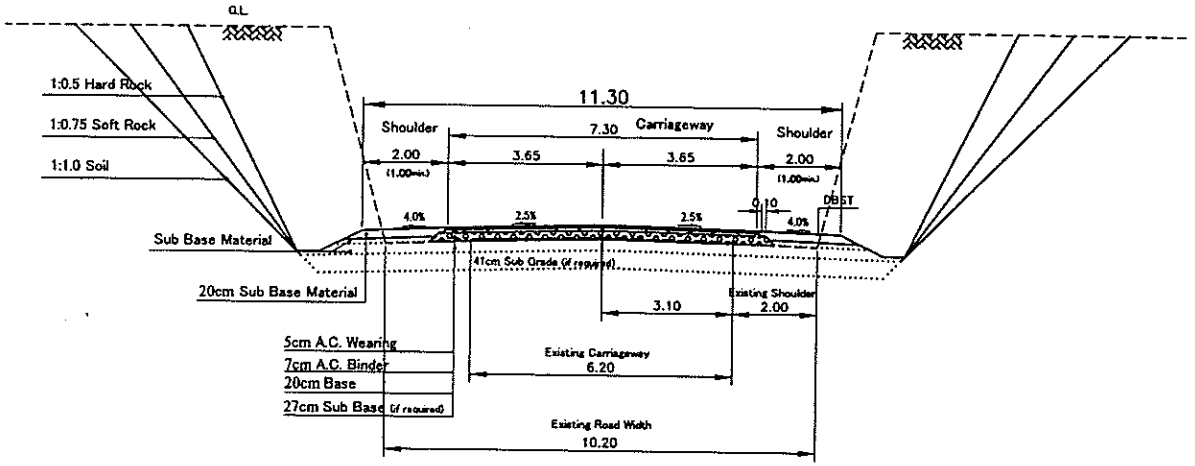


• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 49

Typical Cross Section (Fill Section)

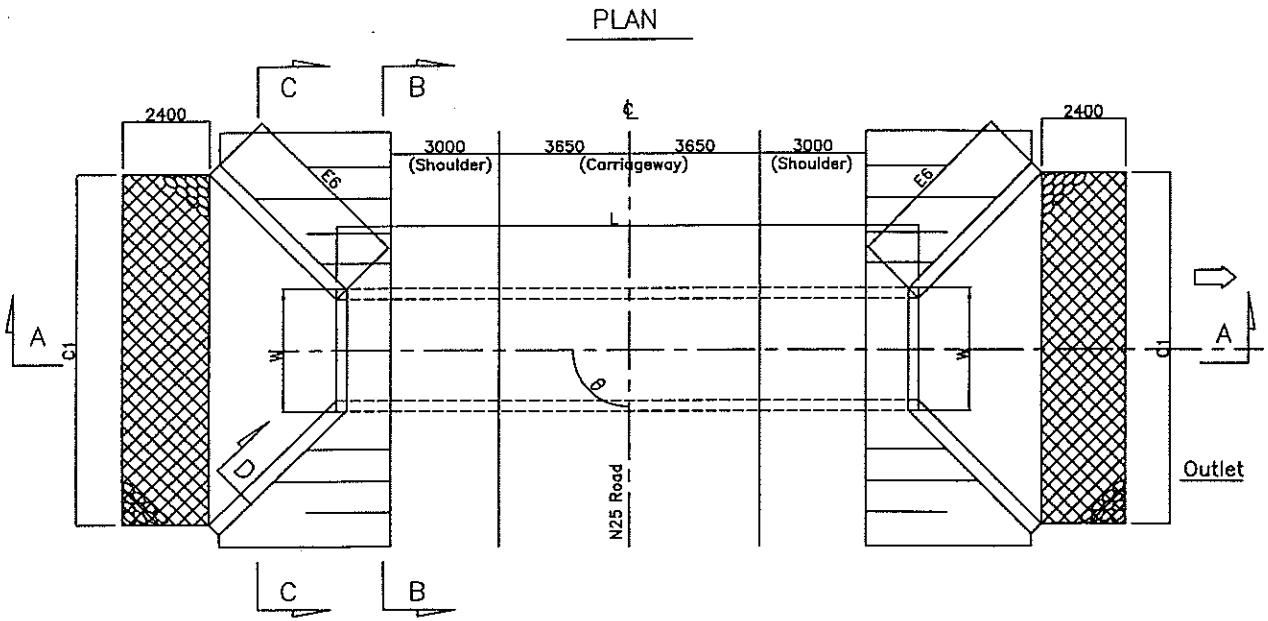


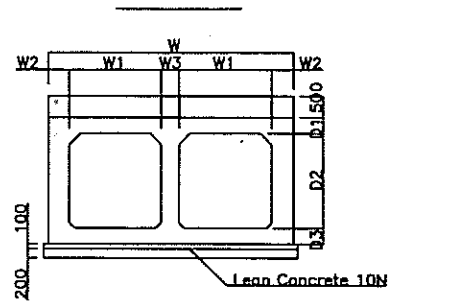
Typical Cross Section (Cut Section)

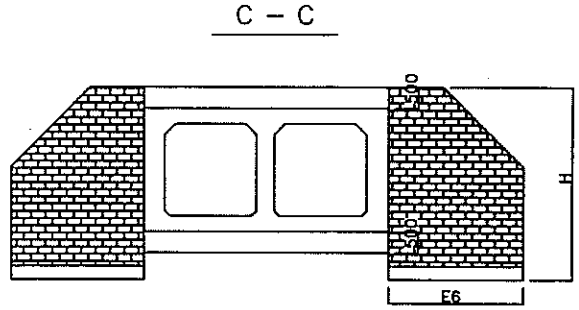


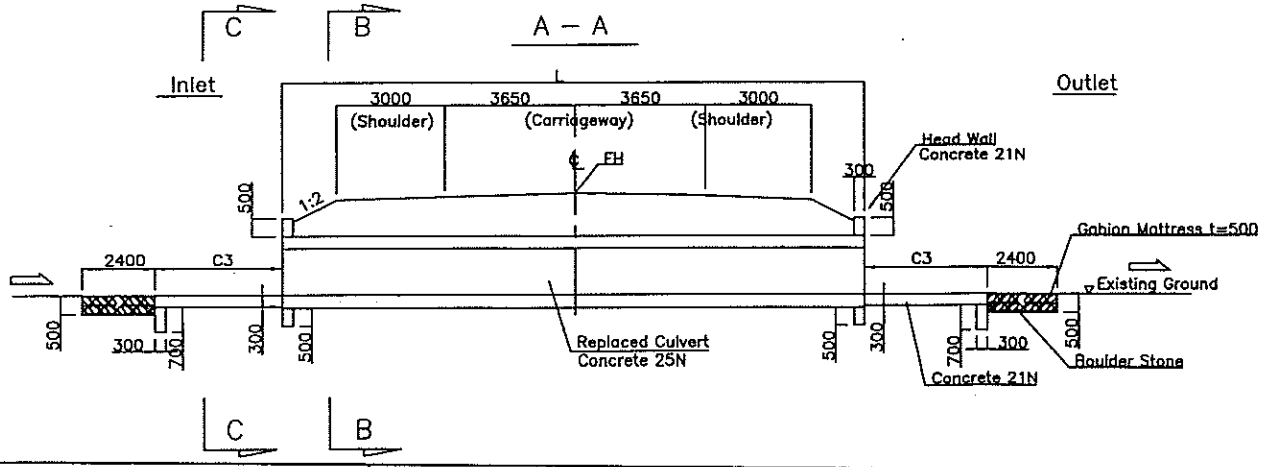
• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 50

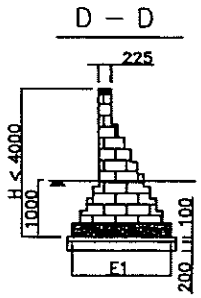
REPLACED RC BOX CULVERT (1)











• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 51

REPLACED BOX CULVERT (2)

Schedule of Culvert Dimension

Sta.No.	Culvert Dimension											Inlet, Outlet				
	Skew	Number of Cell	W1	W2	W3	W	D1	D2	D3	D	L	H	E1	E6	C1	C3
00+995	90	1	4000	600	0	5200	500	3000	600	4100	12300	6075	3463	11314	21200	8000
07+558	85	2	5500	700	600	13000	700	2500	700	3900	11945	5625	3237	10465	27800	7400
08+732	70	1	3000	500	0	4000	400	4000	500	4900	13089	6525	3689	13859	23600	9800
10+000	70	1	3000	500	0	4000	400	4000	500	4900	12664	6525	3689	13859	23600	9800
12+200	90	1	2000	300	0	2600	300	2000	300	2600	11900	4500	2672	7920	13800	5600
12+415	90	1	6500	800	0	8100	800	5000	800	6600	11900	8550	4706	17819	33300	12600
12+608	45	2	5500	700	600	13000	700	4500	700	5900	25098	7425	4141	16122	36800	11400
14+280	80	1	2000	300	0	2600	300	1500	300	2100	12490	4050	2446	6505	11800	4600
18+114	45	1	3000	400	0	3800	400	3000	400	3800	33954	5625	3237	11031	19400	7800
18+211	90	1	3000	500	0	4000	400	3500	500	4400	14300	6075	3463	12445	21600	8800
18+780	90	1	2000	400	0	2800	300	2500	400	3200	14300	4950	2898	9334	16000	6600
18+955	60	1	3500	500	0	4500	400	2500	500	3400	23015	4950	2898	9617	18100	6800
19+797	80	1	2500	600	0	3700	400	4000	600	5000	14521	6525	3689	13859	23300	9800
19+997	90	1	3000	400	0	3800	400	2500	400	3300	13500	4950	2898	9617	17400	6800
20+362	90	1	2000	400	0	2800	300	2500	400	3200	14300	4950	2898	9334	16000	6600
27+477	62	1	8000	800	0	9600	800	5500	950	7150	20071	9000	4932	19233	36800	13600
27+598	70	1	3000	400	0	3800	400	3000	400	3800	23731	5625	3237	11031	19400	7800
29+495	70	1	7000	800	0	8600	800	7000	800	8600	17346	10575	5723	23476	41800	16600
30+404	90	1	8000	800	0	9600	800	5500	850	7150	15100	9000	4932	19233	36800	13600
31+412	90	1	5000	700	0	6400	600	5000	700	6300	12300	8100	4480	17253	30800	12200
31+700	70	1	3000	400	0	3800	400	2500	400	3300	21603	4950	2898	9617	17400	6800
32+740	90	1	2000	300	0	2600	300	2000	300	2600	15900	4500	2672	7920	13800	5600
32+825	60	1	3500	500	0	4500	400	2000	500	2900	17472	4500	2672	8202	16100	5800
32+900	60	1	3500	500	0	4500	400	3000	500	3900	19782	5625	3237	11031	20100	7800
37+437	90	1	4500	600	0	5700	500	2500	600	3600	15100	5625	3237	9899	19700	7000
38+032	90	1	2500	400	0	3300	400	2500	400	3300	12300	4950	2898	9617	16900	6800
45+810	80	1	4500	600	0	5700	500	3500	600	4600	13708	7425	4141	12728	23700	9000
50+690	80	1	2500	400	0	3300	400	2000	400	2800	13302	4500	2672	8202	14900	5800
52+780	50	5	5000	700	600	28800	600	3000	700	4300	32351	6075	3463	11597	45200	8200
52+895	37	1	8000	800	0	9600	800	2500	850	4150	34336	6075	3463	10748	24800	7600
54+665	90	1	3600	500	0	4500	400	2000	500	2900	11900	4500	2672	8202	16100	5800
54+931	85	1	2000	300	0	2600	300	1000	300	1600	11945	3600	2220	5091	9800	3600
55+710	65	1	4000	600	0	5200	500	2500	600	3600	15428	5625	3237	9899	19200	7000
55+845	65	1	3500	500	0	4500	400	2000	500	2900	13591	4500	2672	8202	16100	5800
55+900	70	1	3500	500	0	4500	400	2000	500	2900	12664	4500	2672	8202	16100	5800
56+089	65	1	3500	500	0	4500	400	2000	500	2900	13591	4500	2672	8202	16100	5800
56+341	65	1	3500	500	0	4500	400	2500	500	3400	13591	4950	2898	9617	18100	6800
56+850	80	1	4000	600	0	5200	500	1500	600	2600	12084	4500	2672	7071	15200	5000
57+875	70	1	2500	400	0	3300	400	2000	400	2800	13941	4500	2672	8202	14900	5800
59+246	90	1	2000	300	0	2600	300	1000	300	1600	13100	3600	2220	5091	9800	3600
59+630	70	1	2000	300	0	2600	300	1000	300	1600	12664	3600	2220	5091	9800	3600
61+170	55	1	6000	800	0	7600	800	4000	800	5600	17571	8550	4706	14991	28800	10600
61+227	85	1	3500	500	0	4500	400	3500	500	4400	12347	6075	3463	12445	22100	8800

• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 52

REPLACED BOX CULVERT (3)

Schedule of Culvert Dimension

Sta.No.	Culvert Dimension											Inlet, Outlet				
	Skew	Number of Cell	W1	W2	W3	W	D1	D2	D3	D	L	H	E1	E6	C1	C3
64+720	45	1	4000	600	0	5200	500	1500	600	2600	22399	4500	2672	7071	15200	5000
65+625	80	1	2500	400	0	3300	400	2500	400	3300	12896	4950	2898	9617	16900	6800
70+665	80	1	1500	300	0	2100	300	500	300	1100	12084	2925	1881	3677	7300	2600
71+186	60	1	2000	300	0	2600	300	1500	300	2100	14296	4050	2446	6505	11800	4600
72+545	75	1	3500	500	0	4500	400	1000	500	1900	13562	3600	2220	5374	12100	3800
73+237	85	1	4000	600	0	5200	500	1500	600	2600	11945	4500	2672	7071	15200	5000
73+748	90	1	1500	300	0	2100	300	1500	300	2100	12700	4050	2446	6505	11300	4600
73+825	90	1	1500	300	0	2100	300	1500	300	2100	12700	4050	2446	6505	11300	4600
74+290	90	1	1500	300	0	2100	300	1500	300	2100	11900	4050	2446	6505	11300	4600
76+915	90	1	2000	300	0	2600	300	1000	300	1600	11900	3600	2220	5091	9800	3600
76+955	90	1	2000	300	0	2600	300	1000	300	1600	12700	3600	2220	5091	9800	3600
77+025	90	1	2000	300	0	2600	300	1000	300	1600	12700	3600	2220	5091	9800	3600
77+130	90	1	1500	300	0	2100	300	500	300	1100	12700	2925	1881	3677	7300	2600
77+220	90	1	2000	300	0	2600	300	1500	300	2100	11900	4050	2446	6505	11800	4600
77+337	90	1	2000	300	0	2600	300	1000	300	1600	12700	3600	2220	5091	9800	3600
77+545	90	1	1500	300	0	2100	300	1000	300	1600	11900	3600	2220	5091	9300	3600
77+770	90	1	2000	300	0	2600	300	500	300	1100	11900	2925	1881	3677	7800	2600
77+908	90	1	2500	400	0	3300	400	1000	400	1800	12700	3600	2220	5374	10900	3800
78+095	90	1	2500	400	0	3300	400	1000	400	1800	14300	3600	2220	5374	10900	3800
78+265	90	1	2500	400	0	3300	400	500	400	1300	12700	2925	1881	3960	8900	2800
78+310	90	1	2000	300	0	2600	300	1000	300	1600	12300	3600	2220	5091	9800	3600
78+472	90	1	2500	400	0	3300	400	1000	400	1800	12300	3600	2220	5374	10900	3800
78+645	90	1	2500	400	0	3300	400	1500	400	2300	12300	4050	2446	6788	12900	4800
78+662	90	1	2000	300	0	2600	300	1000	300	1600	11900	3600	2220	5091	9800	3600
78+745	90	1	2500	400	0	3300	400	1000	400	1800	12700	3600	2220	5374	10900	3800
79+090	80	1	1500	300	0	2100	300	1000	300	1600	12896	3600	2220	5091	9300	3600
79+132	80	1	2000	300	0	2600	300	500	300	1100	12896	2925	1881	3677	7800	2600
79+260	80	1	1500	300	0	2100	300	500	300	1100	13302	2925	1881	3677	7300	2600
79+740	90	1	1500	300	0	2100	300	500	300	1100	12700	2925	1881	3677	7300	2600
79+788	80	1	2000	300	0	2600	300	1000	300	1600	12084	3600	2220	5091	9800	3600
79+855	80	1	2000	300	0	2600	300	500	300	1100	12084	2925	1881	3677	7800	2600
79+900	80	1	2000	300	0	2600	300	500	300	1100	12084	2925	1881	3677	7800	2600
79+995	90	1	2500	400	0	3300	400	1000	400	1800	12700	3600	2220	5374	10900	3800
80+040	90	1	2000	300	0	2600	300	1000	300	1600	11900	3600	2220	5091	9800	3600
80+160	90	1	2000	300	0	2600	300	1000	300	1600	12700	3600	2220	5091	9800	3600
80+338	90	1	2000	300	0	2600	300	500	300	1100	12700	2925	1881	3677	7800	2600
80+400	90	1	1500	300	0	2100	300	1000	300	1600	12700	3600	2220	5091	9300	3600
80+510	90	1	2000	300	0	2600	300	1000	300	1600	12700	3600	2220	5091	9800	3600
80+670	90	1	1500	300	0	2100	300	500	300	1100	12700	2925	1881	3677	7300	2600
80+840	90	1	2000	300	0	2600	300	1000	300	1600	12700	3600	2220	5091	9800	3600
80+967	90	1	1500	300	0	2100	300	500	300	1100	12700	2925	1881	3677	7300	2600
81+490	90	1	2000	300	0	2600	300	1000	300	1600	12700	3600	2220	5091	9800	3600
81+650	90	1	2000	300	0	2600	300	1500	300	2100	12700	4050	2446	6505	11800	4600
81+695	90	1	2000	300	0	2600	300	1000	300	1600	12700	3600	2220	5091	9800	3600
81+760	90	1	2000	300	0	2600	300	1000	300	1600	13100	3600	2220	5091	9800	3600
81+910	90	1	2000	300	0	2600	300	500	300	1100	12700	2925	1881	3677	7800	2600
81+995	90	1	1500	300	0	2100	300	500	300	1100	13100	2925	1881	3677	7300	2600
82+055	90	1	2000	300	0	2600	300	500	300	1100	12700	2925	1881	3677	7800	2600
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82+255	90	1	1500	300	0	2100	300	500	300	1100	12700	2925	1881	3677	7300	2600
82+328	90	1	1000	300	0	1600	300	500	300	1100	13100	2925	1881	3677	6800	2600
82+360	90	1	2000	300	0	2600	300	500	300	1100	12700	2925	1881	3677	7800	2600
82+420	90	1	2000	300	0	2600	300	500	300	1100	13100	2925	1881	3677	7800	2600
82+504	80	1	1500	300	0	2100	300	500	300	1100	12896	2925	1881	3677	7300	2600

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CONSULTANTS:
Construction Project Consultants, Inc. (CPC)
AND
Nippon Koei Co.,Ltd.

PROJECT NAME:
The Improvement of Kararo-Wadh Section of National Highway N-25

DRAWING TITLE:

SCALE: AS SHOWN

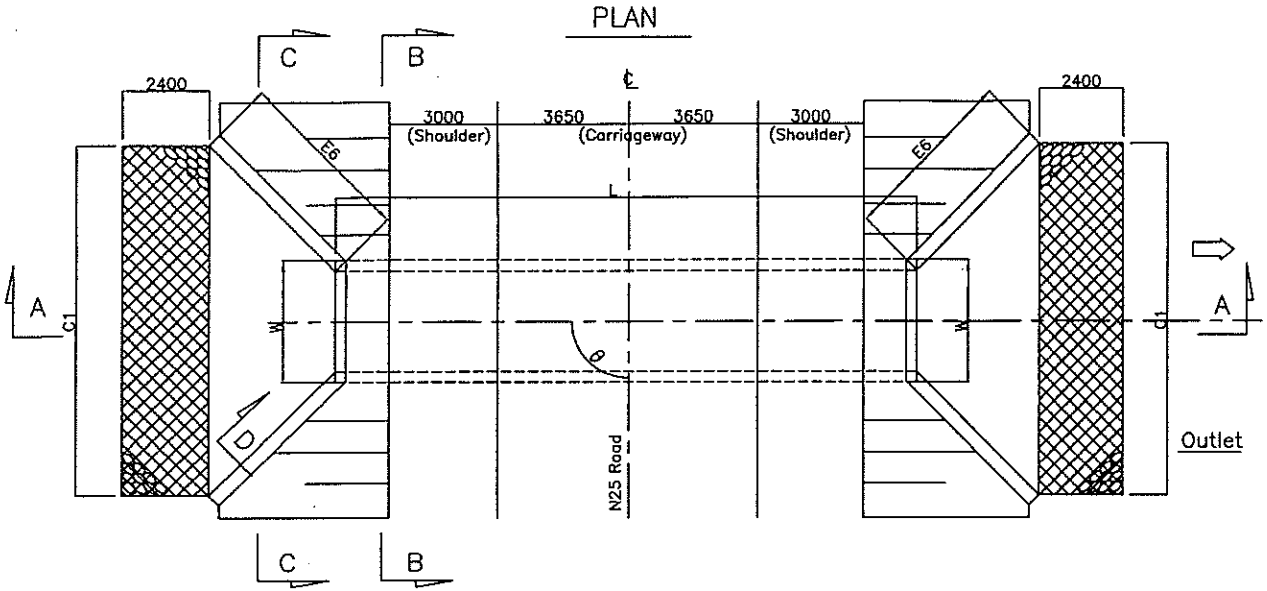
Date:

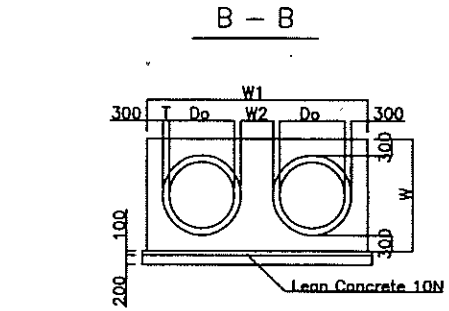
Prepared by:

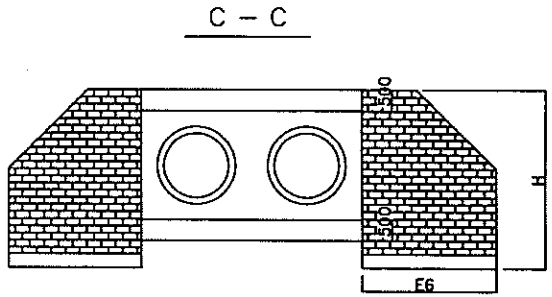
Checked by:

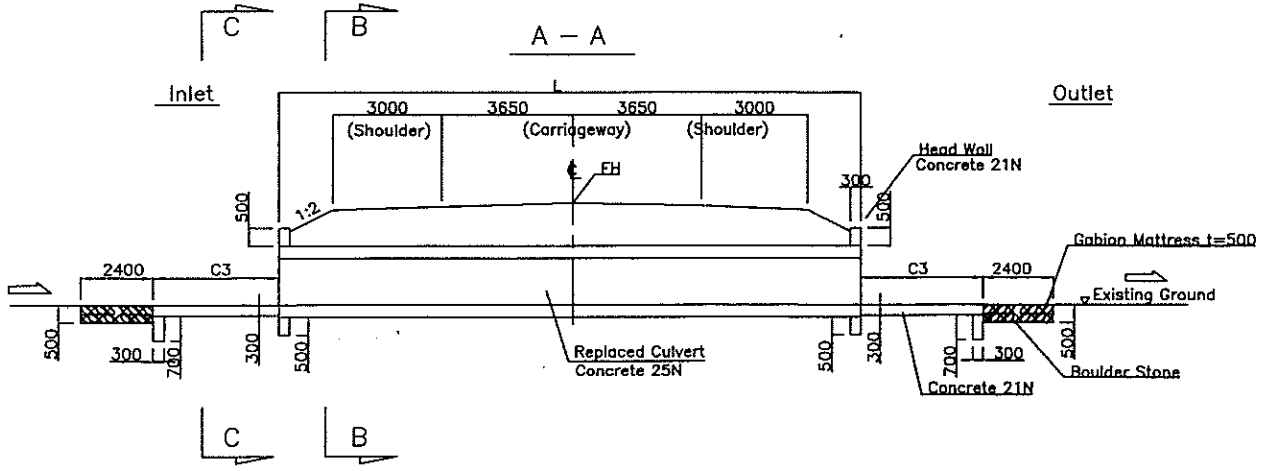
DRAWING No.:
53

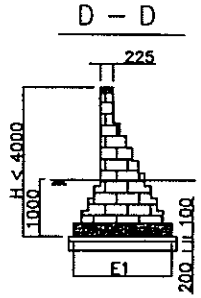
REPLACED PIPE CULVERT (1)











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REPLACED PIPE CULVERT (2)

Schedule of Culvert Dimension

Sta.No.	Culvert Dimension									Inlet, Outlet				
	Skew	Number of Pipe	Type of Pipe	Do	T	W	W 1	W2	L	H	E1	E6	C1	C3
00+690	90	2	750	760	88	1536	2872	400	27556	3600	2220	4910	9816	3472
02+466	90	1	1500	1520	150	2420	2420	0	11900	4950	2898	7410	12900	5240
13+284	90	2	1500	1520	150	2420	4840	600	16220	4050	2446	7410	15320	5240
32+690	80	2	1500	1520	150	2420	4840	600	19720	4050	2446	7410	15320	5240
44+832	60	2	1200	1220	125	2070	4140	600	14624	4050	2446	6421	13220	4540
54+135	80	2	1500	1520	150	2420	4840	600	13221	4050	2446	7410	15320	5240
58+835	75	2	1500	1520	150	2420	4840	600	12320	4050	2446	7410	15320	5240
58+945	80	2	1200	1220	125	2070	4140	600	12612	4050	2446	6421	13220	4540
62+095	90	2	1500	1520	150	2420	4840	600	11900	4950	2898	7410	15320	5240
72+605	90	1	750	760	88	1536	1536	0	21556	3600	2220	4910	8480	3472
72+815	90	1	1500	1520	150	2420	2420	0	11900	4050	2446	7410	12900	5240
78+945	90	2	750	760	88	1536	2872	400	12956	3600	2220	4910	9816	3472
78+975	90	2	600	610	75	1360	2520	400	12460	2925	1881	4412	8760	3120
79+200	90	2	900	910	100	1710	3220	400	12460	3600	2220	5402	10860	3820
82+610	90	2	600	610	75	1360	2520	400	13660	2925	1881	4412	8760	3120
83+070	80	2	450	460	45	1150	2000	300	13099	2925	1881	3818	7400	2700

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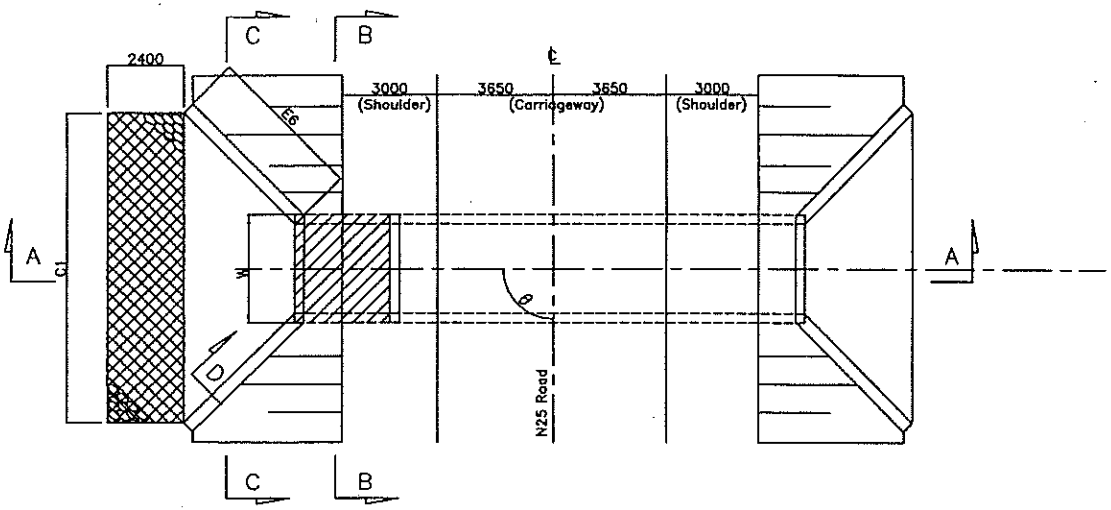
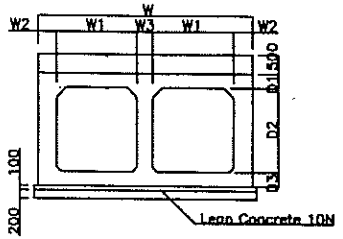
WIDENING RC BOX CULVERT (1)

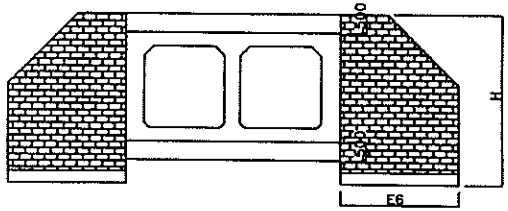
PLAN



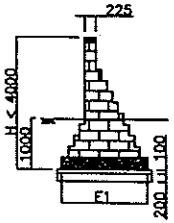
B – B



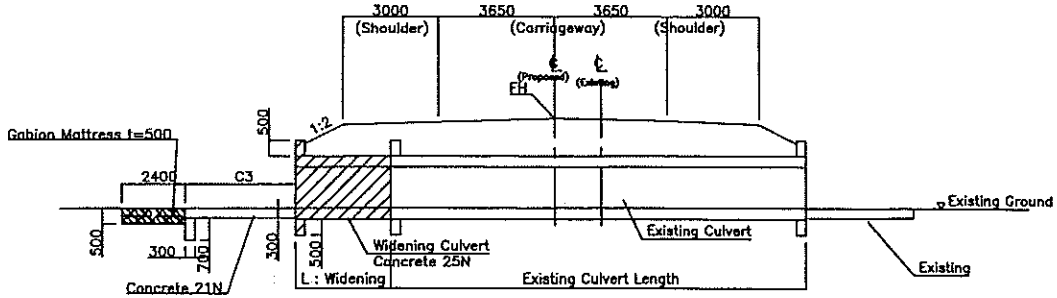
C – C



D – D



A – A



Schedule of Culvert Dimension

Sta.No.	Culvert Dimension											Inlet, Outlet				
	Skew	Number of Cell	W1	W2	W3	W	D1	D2	D3	D	L	H	E1	E6	C1	C3
30+747	90	1	4520	700	0	5920	600	3750	700	5050	7370	8000	4480	13718	25320	9700
53+689	90	1	4600	700	0	6000	600	2850	700	4150	5450	6500	3689	11172	21800	7900

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CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.

PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25

DRAWING TITLE:

SCALE: AS SHOWN

Date:

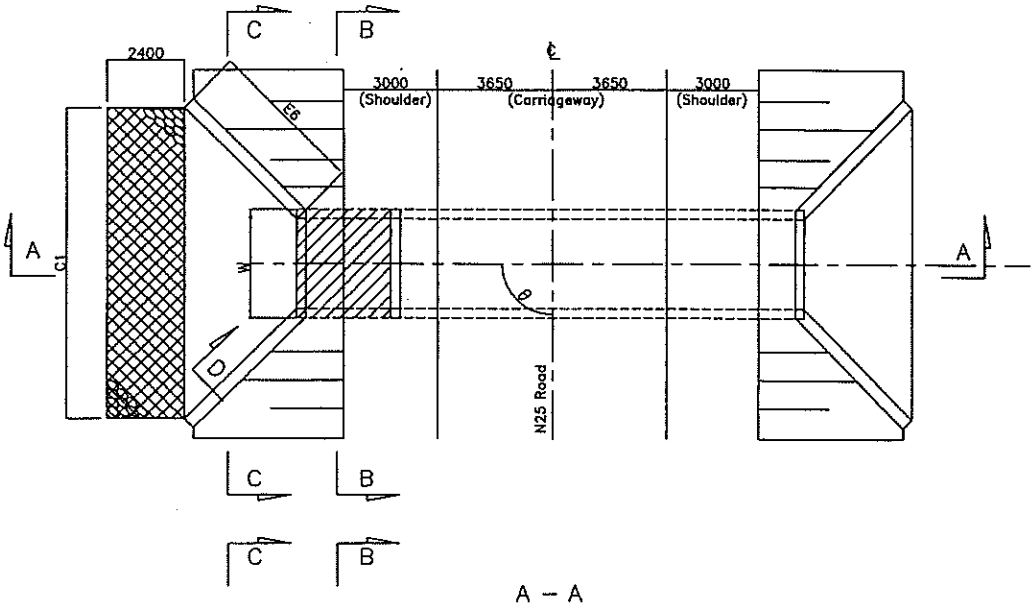
Prepared by:

Checked by:

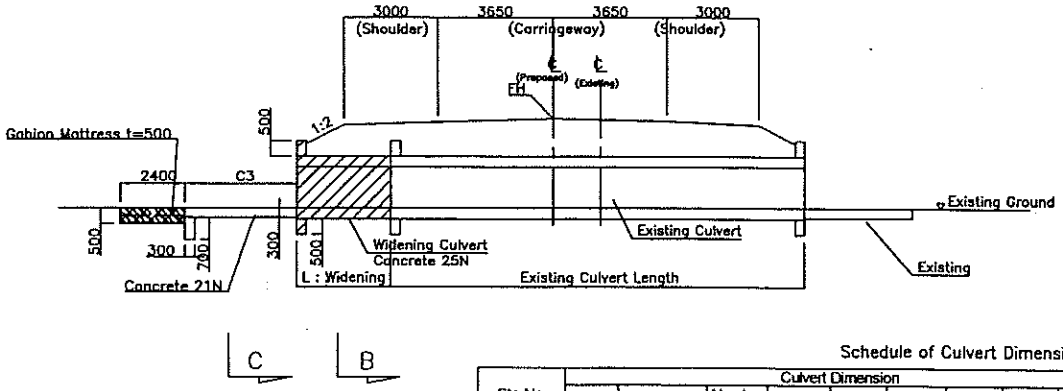
DRAWING No.: 56

WIDENING PIPE CULVERT (1)

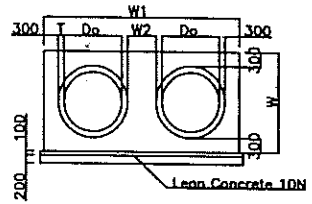
PLAN



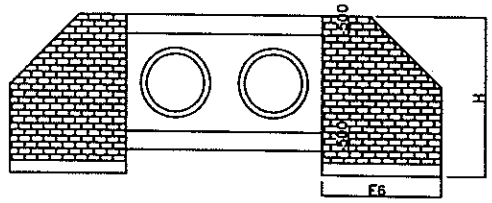
A – A



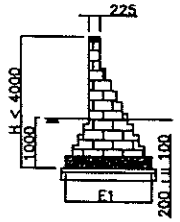
B – B



C – C



D – D



Schedule of Culvert Dimension

Sta.No.	Culvert Dimension									Inlet, Outlet				
	Skew	Type of Pipe	Number of Pipe	Do	T	W	W1	W2	L	H	E1	E6	C1	C3
03+810	90	1.20	2	1220	125	2070	4140	600	15300	4050	2446	6421	13220	4540

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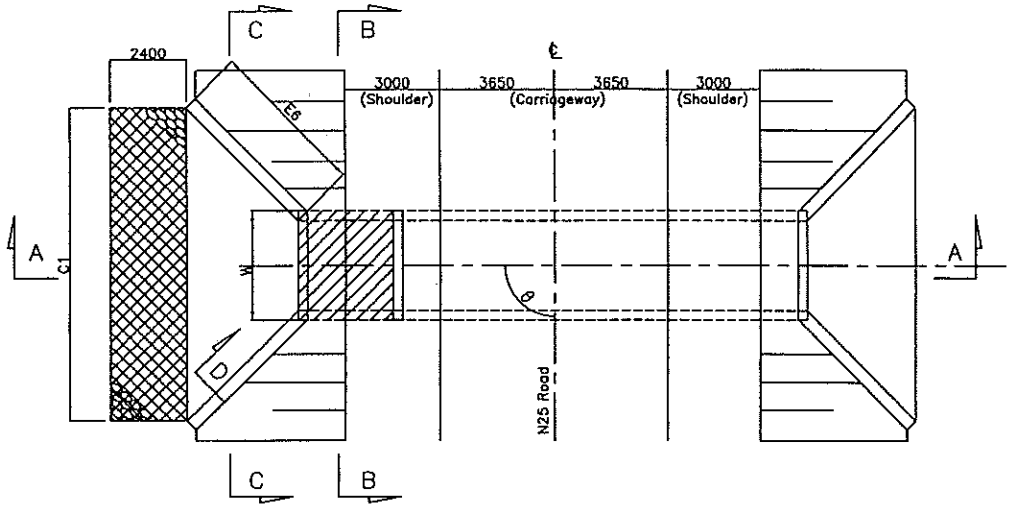
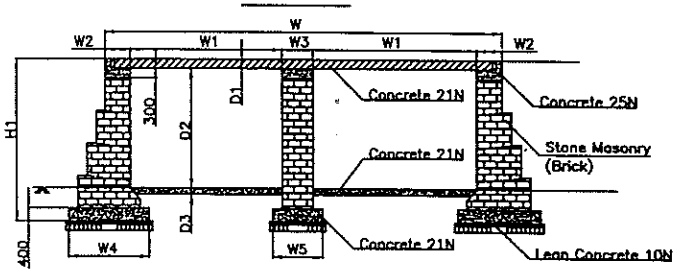
WIDENING SLAB CULVERT (1)

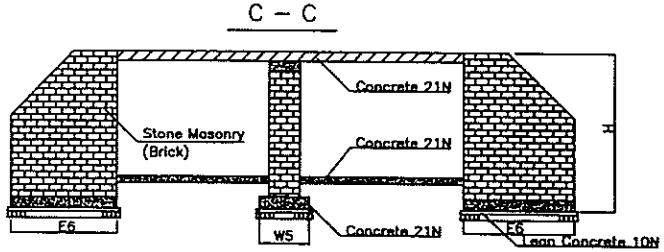
PLAN



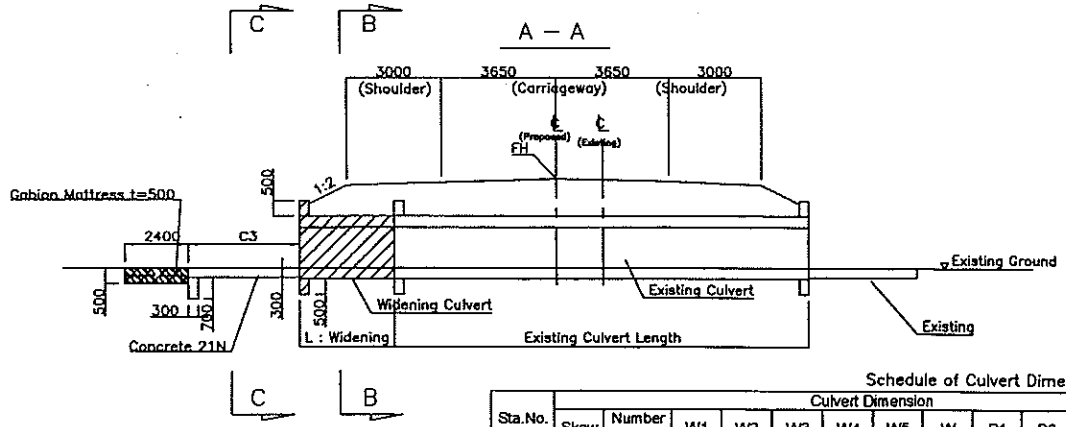
B – B



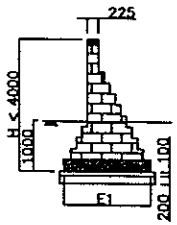
C – C



A – A



D – D

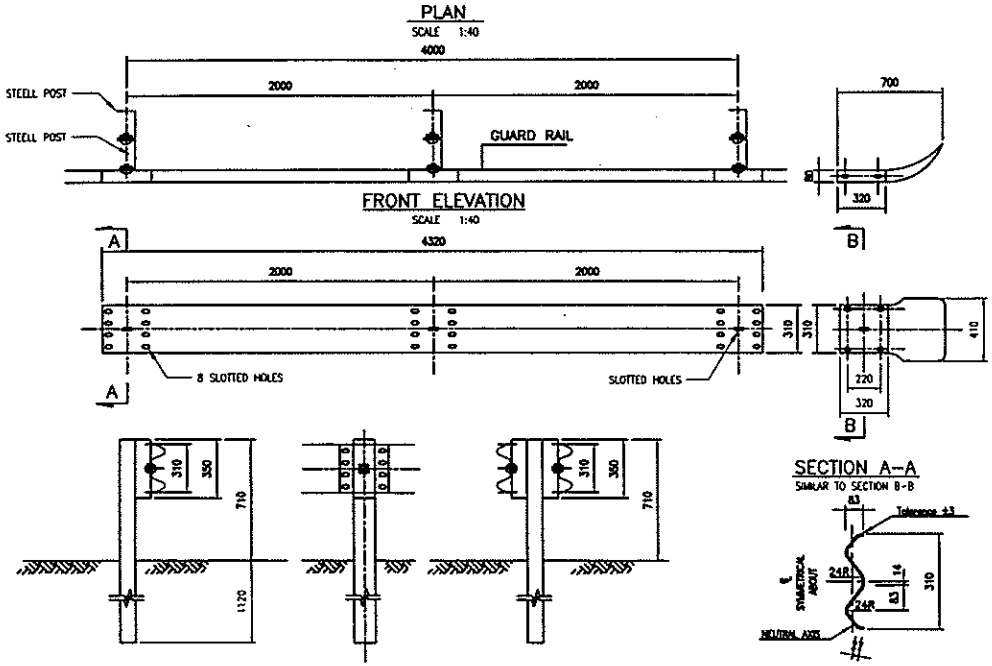


Schedule of Culvert Dimension

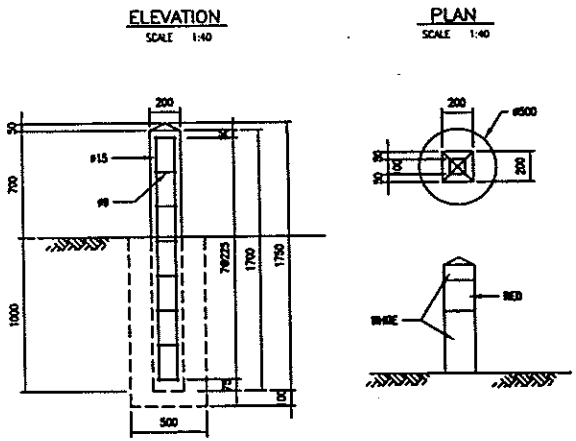
Sta.No.	Culvert Dimension												Inlet, Outlet				
	Skew	Number of Cell	W1	W2	W3	W4	W5	W	D1	D2	D3	L	H1	C1	C3	E1	E6
02+766	78	1	2400	800	0	2600	0	4000	280	3200	200	6287	5625	25200	10600	3237	14991
19+242	80	1	4500	800	0	3500	0	6100	470	5400	200	9951	6550	39300	16600	4706	23476
27+710	90	1	2400	800	0	2300	0	4000	280	2100	200	8750	4500	21200	8600	2672	12162
29+957	30	1	2470	800	0	2900	0	4070	280	3700	200	25168	6525	29270	12600	3689	17819
53+720	65	1	5700	800	0	2600	0	7300	600	2400	200	7533	6525	28500	10600	3689	14991
53+905	55	1	2450	800	0	2300	0	4050	280	1900	200	9114	5625	21250	8600	3237	12162
58+700	80	1	1850	800	0	2600	0	3450	250	2800	200	8580	5625	24650	10600	3237	14991
59+145	90	1	2400	800	0	2300	0	4000	280	2500	200	7350	4500	21200	8600	2672	12162
61+077	75	1	3450	800	0	2900	0	5050	360	3500	200	9033	7425	30250	12600	4141	17819

• The Ministry of Communication of The Islamic Republic of Pakistan • Japan International Cooperation Agency	CONSULTANTS: Construction Project Consultants, Inc. (CPC) AND Nippon Koei Co.,Ltd.	PROJECT NAME: The Improvement of Kararo-Wadh Section of National Highway N-25	DRAWING TITLE: SCALE: AS SHOWN	Date: Prepared by: Checked by:	DRAWING No.: 58

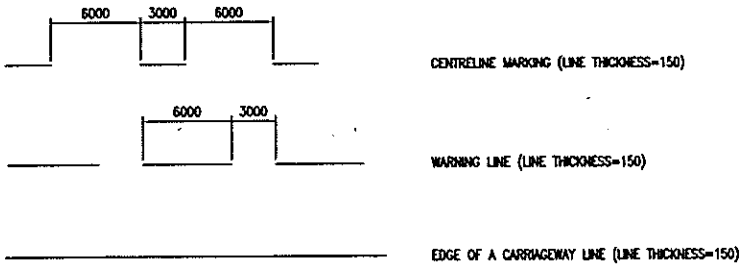
GUARD RAIL



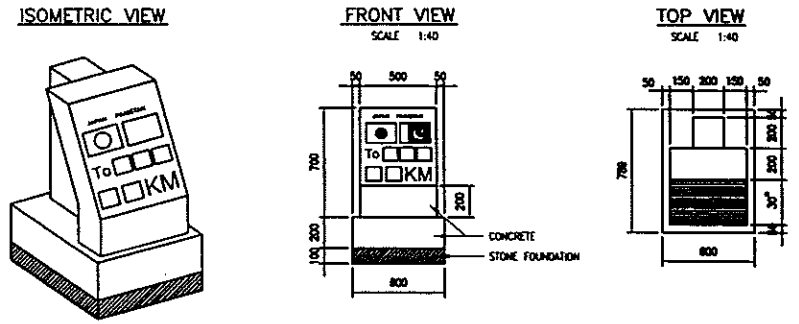
GUARD POST



LINE MARKINGS



KILOMETER POST



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2.2.4 Implementation Plan

2.2.4.1 Implementation Policy

The following items are considered in the construction policy, since this project is implemented within the framework of grant aid assistance of Japan.

- Make the most of the local labor and materials to create employment opportunities, to promote technology transfer, and to vitalize the local economy.
- Establish and promote effective communication among the government of Pakistan, consultants and the contractor for efficient implementation of the project.
- The temporary works for the road construction will be planned in order to realize efficient transportation of materials to the site and efficient operation of construction machines. For this purpose, the topography, geology and other relevant factors will be fully studied and reflected in the construction plan.
- Appropriate measures should be taken in the works involving existing structures to avoid damaging the structures that are to be reused (ex. avoid damaging lower structure when removing the deteriorated upper structure).
- A realistic construction plan should be prepared in consideration of rainfall patterns, material procurement period, selection of appropriate construction methods, and other matters.
- The work schedule and detour plan will be prepared to prevent the occurrence of traffic problems and significant disturbance to the current traffic.

2.2.4.2 Special Concerns about Construction

The following lists special concerns with regard to execution of construction.

(1) Abide by the labor laws and rules

The contractor should abide by the current laws on construction works of Pakistan and respect the local working customs and employment conditions in order to prevent troubles with construction workers and also to assure the safety of the workers.

(2) Environmental preservation during construction

The contractor should pay due attention to the environmental issues listed in “construction permission” that they will receive prior to construction, in supervising and executing the construction. The contractor should also give due consideration to minimizing dust and dirty water from waste material and soil disposal, earth work, pavement work etc. associated with the construction work when supervising and executing the construction.

(3) Necessity of means of communication at site

Since there is no infrastructure for telecommunication at the sites of bridges in this plan, installation of a minimum level of communication facilities should be considered to facilitate supervision of construction and to assure safety of workers at work sites.

(4) Respecting the local customs

In the preparation of the construction plan, due consideration should be given to the local and religious customs so as to arrange a reasonable work schedule.

(5) Assuring traffic safety

Since the construction in this plan involves rehabilitation of existing culverts, detour construction is necessary for the traffic during the construction work. The construction of detours should be planned to achieve effective and rational detouring of traffic as well as safety of the traffic, in accordance with the progress of construction.

(6) Customs

The construction plan should consider the period required for the imported materials to pass the customs and allow for possible delays at customs in the construction plan.

(7) Management of construction schedule

Progress of work on the Pakistani side should be monitored and adjusted if necessary.

2.2.4.3 Sharing of Construction Work

The outline of a scheme for sharing the construction work between the governments of Pakistan and Japan is presented as follows.

(1) Responsibility of Japanese side

1) Rehabilitation of the road and transversal drainage facilities for the target section of the road

- Earthworks, pavement works, road construction such as road shoulder works, and other

associated temporary works
- Construction of transversal drainage facilities, and associated temporary works
- Temporary works (installation of base camp, office, warehouse)

2) Procurement of construction materials and machines

Procurement of materials and machines for road and bridge construction specified in "chapter 2.4.6 Materials and machines procurement plan"

3) Safety measures

Measures and management of construction safety during the construction work

4) Consulting service

Provision of consulting services concerning detailed design, preparation of tender and contract documents, and support in tendering and construction supervision as specified in "chapter 2.4.4 detailed design and construction supervision plan"

(2) Responsibility of Pakistani side

1) Acquisition of construction permission

NHA should acquire construction permission for the execution of this project prior to the tendering of contractors.

2) Customs clearance and tariff exemption formalities

Provision of assistance with regard to the clearance of customs and tariff exemption formalities on listed imported materials and machines at the port customs in Pakistan, prior to shipping of those materials and machines to the construction site.

3) Land acquisition and compensation issues

Acquisition of land needed for the construction of a base camp and other temporary facilities, and for the disposal of waste materials and soil associated with the construction work.

4) Relocation of common facilities

Acquisition of land for temporary yard (camp yard, office, concrete plant etc.)
Provision of quarry sites, soil for construction purposes, and disposal sites for waste materials resulting from the removal of existing facilities.

5) Others

- Provision of facility on entrance and stay in Pakistan of the Japanese and other

individuals from third countries (other than Pakistan and Japan) engaged in this project
- Exemption or refunding of customs tariff and taxes that the government of Pakistan imposes
- Assignment of counterpart personnel to this project and provision of means of transportation and budget for their work

2.2.4.4 Detailed Design and Construction Supervision Plan

(1) Schedule for consulting service

Before this project is implemented, an exchange of notes (E/N) should be prepared and signed by the governments of Japan and Pakistan on the execution of the detailed design under the grant acid scheme of Japan. After the signing of E/N, the consultants with a recommendation letter from JICA will sign a contract, in accordance with Japan's grant aid scheme, on their consulting service with NHA, the implementation agency for this project. The consultants will then proceed to provide services comprising detailed designing, tendering of assistance, and construction supervision. The following shows the major items included in a contract on consulting services.

1) Document preparation phase (detailed design)

The consultants will conduct the detailed designing of facilities and prepare tender documents based on the results of reports on the basic design study. The following documents should be presented to NHA for approval.

- Report on detailed design
- Drawings for detailed design
- Tender documents

2) Tender phase

NHA will select, with support from the consultants, a contractor of Japanese nationality by open bidding. The representative personnel of the Pakistani side engaged in the tender and contract should comprise those who are in the position of approving the tender results and contract, and those who have the ability to make technical decisions. The items of consulting service in this phase are as follows.

- Public notification of tender
- Pre-qualification screening
- Tender and evaluation

- Contract

3) Construction supervision phase

After the contract with the contractor is signed, the consultants will issue a notification on commencement of the construction work and the contractor will then officially commence construction upon receipt of the letter. During the construction supervision, the consultants will report the progress of work to NHA and handle matters of safety, quality and progress of work, and payment. The consultants also will propose corrective measures regarding the construction work to the contractor if necessary. The consultants should also report to the Embassy of Japan and JICA Pakistan office in Islamabad.

The consulting service terminates upon completion of the defect liability inspection that is conducted one year after the end of construction supervision.

(2) Institution and organization for project implementation

The assignment of the consultants' personnel and their responsibilities during the detailed design, tender, and supervision phases are as follows.

1) Detailed designing and preparing tender documents

The assignment of the consultants' personnel and their responsibilities during the detailed design and tender phases are as follows. The role of each engineer in the consultants' team is as follows.

Engineer	Role	M/M
(1) Project Manager	Management of entire project	6
(2) Road design (1)	Management of road design, design schedule, longitudinal design in plan	6
(3) Road design (2)	Transversal design, earth work plan	4
(4) Road inspection	Detailed road condition survey	2
(5) Pavement design	Pavement structure design, determination of materials source	4
(6) Pavement inspection	Detailed pavement condition survey	2
(7) Transversal facility design (1)	Management of structure design (ex. transversal structure)	5
(8) Transversal facility design (2)	Structure design, design and CAD	4
(9) Transversal facility inspection	Detailed survey on transversal structure etc.	2
(10) Construction schedule/ cost estimate	Construction schedule and cost estimate	5
(11) Tender document	Tender document preparation	4

The detailed designing service includes the preparation of tender documents. In consideration of the fact that the project is to be implemented under the grant aid scheme of the government of Japan, the following items should be carefully considered in

preparing the documents.

- The style of the tender documents and contract documents should be in line with the guidelines for grant aid assistance projects of Japan.
- The technical specifications should be prepared with due consideration to relevant akistani specifications and should aim at achieving an appropriate quality level.
- The engineers who will be engaged in the preparation of the tender documents should possess sufficient knowledge regarding the technical details of both the basic and detailed designs.

2) Assistance in tendering

- Project manager : works as a coordinator for the smooth execution of the project, bears ultimate responsibility for all aspects of the project
- Stationed supervisor : stationed at the construction site to manage technical and safety issues and manage the construction schedule.
- Structural engineer : deals with technical issues arising on the construction and designing of facilities
- Material engineer : deals with procurement of materials and the establishing of testing procedures for such materials in addition to technical issues associated with the tests.

2.2.4.5 Quality Management Plan

The cost of material testing estimated according to the standard of quality control described in the construction supervision plan will be listed. Specifically, at the base camp a laboratory will be set up where the quality of concrete can be tested. It is assumed that the minimum level of equipment for the concrete tests will be imported from Japan. A technical staff will be stationed at the laboratory to keep pace with the progress of the construction work. The quality control plan for the execution of this project is summarized in the following table.

Table 2.21 Summary of Quality Control

Materials			Testing	Sampling & Testing Frequency
Aggregate (base course, sub-base course)	Material Production		Liquid Limit、Plasticity Index	For each new production
			Sieve Analysis (after mixture, if necessry)	
			Los Angeles Abrasion/Aggregate Impact Value	
			Moisture Density /Specific Gravity	
			Sodium Sulfate Soundness	
	Compaction		Field Density (compaction degree)	For each construction per day
Prime Coat/Tack Coat	Material	Cut Back Grade	Production Certificate	For each new
		Residual Bitumen/ Temporary	Temperature/ Optimum dicision by visual inspection before construction	For each new production
Asphalt Conter	Material	Bitumen	Production Certificate	For each new
		Aggregate	Seive Analysis after mixture	For each new mixture or 1 time per month
			Water Absorption	For each new source
			Los Angeles Abrasion/Aggregate Impact Value	
	Marshall Mix Design		Marshall Stability	For each mixture
			Flow	
			AirVoid	
			Bulk. Specific Gravity	
			Max. Specific Gravity/ Asphalt content in JMF	
			Loss of Stability	
	Compaction		Temperature/ Optimum dicision by visual inspection before construction	For each production/ construction
			Thickness/ Compaction degree	
			Extraction Gradation	For mixture per day
Concrete	Material	Cement	Production Certificate (Chemical and Physical Properties of Portland Cement)	For each new source
		Water	Quality of Water to be used in concrete	For each new source
		Admixture	Production Certificate	For each new source
		Fine Aggregate	Specific Gravity & Water Absorption	For each new source
			Sieve Analysis	
			Clay lumps and Friable Particles	
		Coarse Aggregate	Specific Gravity & Water Absorption	For each new source
			Sieve Analysis after mixture	For each mixture
	Cement Concrete (in JMF)		28 Days Compressive Strength (in Cylinder)	For each mixture
	Cement Concrete (placed in the site)		Slump	For each mixture
			Air Content Degree	For each mixture
			Temperature	For each mixture
			28 Days Compressive Strength (in Cylinder)	For each mixture
Deformed bar	Material		Production Certificate (Obtain mill certificate). Test : – Yied stress – Tensile strength – % Elongation – Weight per unit length (kg/m)	For each lot

2.2.4.6 Materials and Machines Procurement Plan

(1) Procurement of construction materials and machines

Table 2.22 shows the countries from which the listed materials will possibly be procured.

Table 2.22 Procurement Countries for Major Materials

Material	Pakistan	Japan	3rd country	Remarks
Aggregate for road and concrete (sand and aggregate)	○			Produced in the project
Iron bar	○			Maintain quality and supply
Wood (plywood, square timber, lumber)	○			Can be procured in Pakistan
Cement	○			Can be procured in Pakistan (only Portland cement)
Asphalt	○			Pakistani product made from imported materials
Fuel and lubricant	○			Imported products can be procured in Pakistan
Road marking paint and beads	○			Maintain quality and supply

(2) Procurement of construction machines

Table 2.23 shows countries from which the listed machines will possibly be procured.

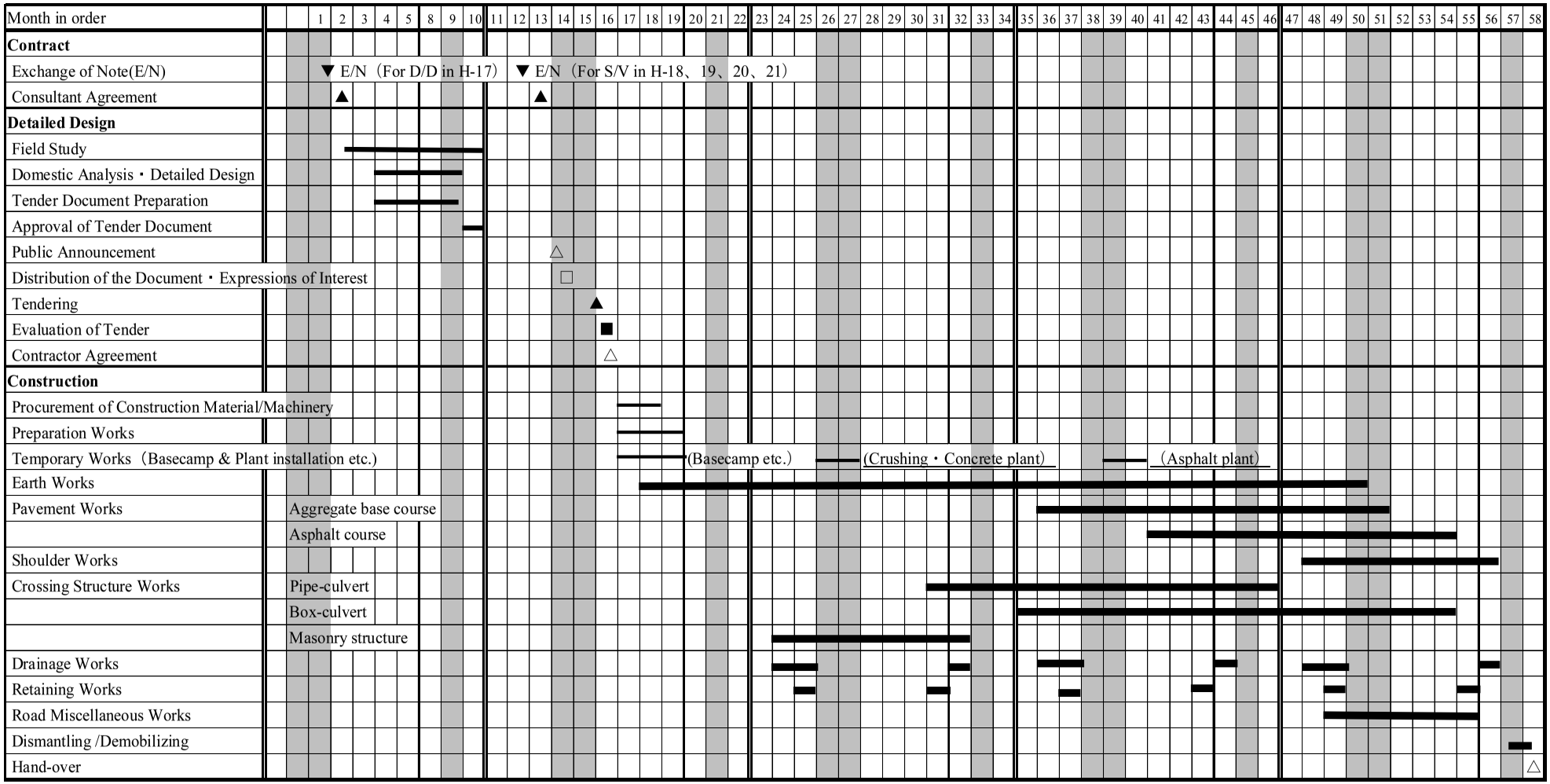
Table 2.23 Procurement Countries for Construction Machines

Machine	Category			
	Pakistan	Japan	3rd country	Remarks
Bulldozer	○			Consider procurement in Pakistan
Back hoe	○			Consider procurement in Pakistan
Tractor shovel	○			Consider procurement in Pakistan
Dump truck		○		Procurement in Pakistan is possible but quality of truck is not assured
Wheel crawler crane 35t	○			Procurement in Pakistan is possible at times
Motor grader	○			Consider procurement in Pakistan
Macadam roller	○			Consider procurement in Pakistan
Tire roller	○			Consider procurement in Pakistan
Concrete plant		○		Procured from Japan
Agitator truck		○		Procured from Japan
Asphalt plant		○		Procured from Japan
Asphalt finisher		○		Procured from Japan
Beam & auxiliary construction		○		Procured from Japan
Air compressor		○		Consider procurement from Japan
Submersible pump		○		Consider procurement from Japan
Engine pump		○		Impossible to procure in Pakistan
Generator（diesel）		○		Consider procurement from Japan
Line marker		○		Procured from Japan

2.2.4.7 Implementation Schedule

Table 2.24 is a tentative implementation schedule for the project proposed in accordance with the procedures for Japan's grant aid scheme.

Table 2.24 Implementation Schedule



Note：Rainy Season, Rainfall Amount（'00-'04, Avarage 184mm in past 5 years)

2.3 Outline of Work Assigned to Pakistani Government

2.3.1 General Requirements of Grant Aid Assistance Projects by the Government of Japan

The governments of Japan and Pakistan have already agreed on the scope of work to be assigned to the government of Pakistan and the details were recorded in the minutes of meeting. The following outlines the general items of agreement.

- Land necessary for the project should be secured before the beginning of the construction work.
- Japanese nationals should be given the privilege of exemption from customs tariff, tax, and other kinds of governmental imposts in Pakistan, on the provision of goods and services that are duly approved in the contract.
- Japanese nationals who are to provide and execute services and products that are duly approved in the contract, should be given the facility of entering and staying in Pakistan.

2.3.2 Issues Specific to This Project

The work items assigned to Pakistan that are specific to this project are listed in the following table.

Table 2.25 Work Items Assigned to Pakistan

No.	Work Item	Detail	Estimated cost
1	Acquisition of land for construction and temporary facilities	NHA should prepare land for temporary facilities such as lodging and office by lease (3.5 ha / 4 year).	Lease 3.5 x 4 x 125,000PR=1,750,000 PR (¥3,200,000)
2	Securing material sources	The ownership and rights of rock excavation site, quarry, soil source should be verified.	
3	Opening bank account and payment of A/P cost	Handling charges depending on the payment amount will be incurred. Payment of ¥6,000 for each A/P and 1％ of each payment, including changes	¥40,000,000 (22,400,000PR)
4	Operation and maintenance of constructed facilities	Annual operation and maintenance cost will be required	Estimated separately under “operation and maintenance ”
Total			24,150,000PR (¥43,200,000)

2.3.3 Request to the Pakistani Side

The following are requests to the Pakistani side for the smooth execution of the project.

1) Holding briefing meetings with the local residents regarding this project.

The Japanese side requests that the Pakistani side hold briefing meetings with the local residents or their representatives, living along the target section of the road, to inform them of the project immediately after the signing of the exchange of notes on the implementation of the project.

2) Traffic safety

The Japanese side requests that the Pakistani side inform the drivers passing the construction site of the construction work and instruct them to follow the directions of the traffic control personnel at the site.

3) Avoid overloading

When the traffic is restricted to a single lane, the road condition tends to worsen. This can lead to a higher risk of a vehicle being stranded or rolling over, which will hamper the progress of construction. From this point of view, the Japanese side requests that the Pakistani side warn drivers at the control point on National Highway 25 about the risk of overloading and advise them to reduce their loads.

2.4 Management and Maintenance of the Project

The following operation and maintenance work will be necessary after the completion of this project.

(1) Non-regular maintenance

The facilities maintenance work needed throughout the year, especially after the end of the rainy season, is listed below.

- Patching of road surface (filling holes)
- Roadbed repairs as required
- Rebuilding road shoulders
- Repair of structures

(2) Regular maintenance

- Repairs to roadbed
- Surface re-pavement (overlay)
- Rebuilding road shoulders
- Repair of structures

At present, the maintenance work listed above is being satisfactorily performed by the KHUZDAR Unit of NHA, which contracts the work to local contractors. Since the immediate repair of a damaged spot is important for proper maintenance, adequate daily inspections should be performed.

2.5 Outline of Estimated Project Cost

2.5.1 Estimated Cost for the Work Subject to Assistance

(1) Cost to be borne by the Japanese side

The estimated project cost under the grant aid scheme of the Japan side is listed in Table 2.26 below. This cost estimate is provisional and would be further examined by the Government of Japan for approval of the Grant.
Estimated project cost: 4,113 million yen

Table 2.26 Estimated Project Cost (to be borne by Japan)

Project category	Total (million yen)
1) Construction	3,808
・Site clearing and stumping	5
・Earthwork	366
・Subgrade	45
・Face of slope	30
・Paving work	884
・Shoulder work	111
・Drainage work	1,021
・Irrigation canal	30
・Retaining wall	25
・Accessory work	90
・Machinery operation cost	352
・Technician laboring cost	28
・Field expenses	307
・Common facilities cost	270
・General management cost	244
2) Design control cost	305
Total	4,113

(2) Cost to be borne by the Pakistani side

The project cost to be borne by the Pakistani side is estimated to be 24,150,000 PR (¥43,200,000), which is to be used for acquiring land for the construction work and temporary facilities, opening bank account, and paying for A/P.

(3) Conditions for cost estimation

1) Foreign exchange rate
1 US$ = ¥107.90 (as of Feb. 2005)

2) Construction period
The entire construction period consists of four stages and the period of construction stage is 42 months as shown in the construction schedule.

3) Others
- This project is to be implemented in accordance with the system of grant aid assistance of Japan.

- The exchange rate specified above may be revised by the government of Japan

2.5.2 Operation and Maintenance cost

The estimated cost of operation and maintenance calculated based on the management and maintenance plan is as follows.

Table 2.27 Summary of Operqation & Maintenance Cost

Type	Sycle	Work Items	Place	Specification	Unit	Unit Price (RP)	Quantity	Times	Amount (Rp)
Routine	Every year	Patching	Rehabilitated area	0.2% of total area per year	m2	196	654	9	1,152,914
			No rehabilitated area	2% of total area per year	m2	95	7,475	9	6,418,207
		Base course repair	Rehabilitated area	0.2% of total area per year	m2	109	654	9	640,475
			No rehabilitated area	2% of total area per year	m2	109	7,475	9	7,319,716
		Shoulder repair	Rehabilitated area	0.2% of total length per year	m2	76	179	9	122,121
			No rehabilitated area	2% of total length per year	m2	76	2,048	9	1,395,671
		Structure repair	Rehabilitated area	0.2% of total length per year	m	16331	3	9	399,431
			No rehabilitated area	2% of total length per year	m	16331	93	9	13,612,598
		Sub-Total (1)						Total for ten years=	31,061,133
								Per year=	3,106,113
Periodic	Every 8 years	Base course repair	Rehabilitated area	2% of total area per year	m2	109	6,541	1	711,639
			No rehabilitated area	5% of total area per year	m2	109	18,688	1	2,033,254
		Overlay	Rehabilitated area	2% of total area per year	m2	196	6,541	1	1,281,016
			No rehabilitated area	5% of total area per year	m2	95	18,688	1	1,782,835
		Shoulder repair	Rehabilitated area	3% of total length per year	m2	76	2,688	1	203,535
			No rehabilitated area	20% of total length per year	m2	76	20,480	1	1,550,746
		Structure repair	Rehabilitated area	0.2% of total length per year	m	16331	9	1	145,215
			No rehabilitated area	1% of total length per year	m	16331	44	1	726,076
		Sub-Total (2)							8,434,317
Total-III (=I+II)									39,495,450
Operation cost				10%of Total-III	lump sum	-	-	1	3,949,545
Grand Total									43,444,995
Cost per one year									4,344,500
								Equivalent to J.yen=	7,800,000

The total annual operation and maintenance cost (both regular and non-regular maintenance) estimated above is 4,345,000 Rp (approximately 7,800 thousand yen). This amount corresponds to only 0.1% of the total operation and maintenance budget of 4,130 million Rp of NHA and it is considered to be viable.

Chapter 3 Project Evaluation and Recommendation

Chapter 3 Project Evaluation and Recommendations

3.1 Project Effect

The target portion of the road for this project is a section of National Highway 25 that is the only trunk road that runs through the province of Balochistan in north-south direction. Implementation of this project is considered to benefit about 7 million of the whole residents in the province of Balochistan. The following are the expected benefits determined through the study.

Direct benefits

－The number of traffic accidents will decrease (average number of accident:120 case/ year for 5 years) due to improved road alignment (max. slope reduced from 10 % to 7 %, min. curve radius reduced from 50 m to 135 m) and improved traffic safety.

－Possible reduction in travel time due to the smooth traffic on improved road with the average speed of 60km/hr, compared with actual speed restriction of 30km/hr on about 30 places of sharp curves and steep slopes

Indirect benefits

－The National Highway 25 that includes the target section for this project is the National Highway directly connecting Afghanistan and the central Asia to the Karachi port in Pakistan. Thus, the implementation of the project, by eliminating the traffic bottleneck in the international highway, can also help promote the revitalization of Afghanistan that is rapidly underway.

－Rehabilitation of the road is expected to bring up the number of buses, ambulances and school buses plying certain routes. This will facilitate transportation to major towns in the area. As a result, the local people will obtain excellent facilities.

－The area along National Highway 25 within the province of Baluchistan constitutes large-scale farmland for cash crops such as fruits and vegetables. Especially around Quetta area, promiculture is widely practiced and the products are exported from the Karachi port. As in this example, the elimination of the traffic bottleneck in highway 25 will contribute to more rapid and secure transportation of harvested farm products to Karachi for both consumption and exportation and eventually contribute to facilities of the local residents.

3.2 Recommendationstation of this project

it is important to closely coordinate the operations by the two countries: the construction work for the sections that require relatively technical works financed by Japan's grant aid assistance and the other works that Pakistan is financially responsibility of. The project will contribute to the improvement of entire section of National Highway 25. Facilitating exchange of detailed information and opinions between the representatives of the two sides will be indispensable.

Appendices

Appendix 1. Member List of the Survey Team

1.1 Field survey in Pakistan for the basic design study

No.	Name	Job title	Occupation
1	Yuki ARATSU	Leader	Team Director, Transportation and Electric Power Team, Project Management Group I, the Grant Aid Management Department, JICA.
2	Kotaro NISHIGATA	Project Coordinator	Transportation and Electric Power Team, Project Management Group I, the Grant Aid Management Department, JICA.
3	Shozo INOUE	Chief Consultant/ Road Planner	Construction Project Consultants, Inc.
4	Hideaki MORITA	Assistant Chief Consultant/ Road Designer	Construction Project Consultants, Inc.
5	Sen TOGO	Bridge Designer	NIPPON KOEI CO., LTD.
6	Yuichi KITAMURA	Natural Condition Surveyor	NIPPON KOEI CO., LTD
7	Kazuharu KOISHIKAWA	Cost Estimator / Construction Planner	Construction Project Consultants, Inc.
8	Hiroshi IBARAKI	Team Coordinator	Construction Project Consultants, Inc.

1.2 Explanation of draft basic design report in Pakistan

No.	Name	Job title	Occupation
1	Nobuyuki YAMAURA	Leader	Resident Representative, JICA Pakistan Office
2	Kotaro NISHIGATA	Project Coordinator	Transportation and Electric Power Team, Project Management Group I, the Grant Aid Management Department, JICA.
3	Shozo INOUE	Chief Consultant/ Road Planner	Construction Project Consultants, Inc.
4	Hideaki MORITA	Assistant Chief Consultant/ Road Designer	Construction Project Consultants, Inc.
7	Kazuharu KOISHIKAWA	Cost Estimator / Construction Planner	Construction Project Consultants, Inc.

Appendix 2. Survey Schedule

2.1 Field survey in Pakistan for the basic design study

Month	Date		JICA OFFICIALS		Chief Cousultant /Road planner (Inoue)			Road design (Morita)			Construction planning /Estimate (Koishikawa)			Bridge design (Togo)			Naturar condition survey (Kitamura)			Coordinator (Ibaraki)		
			Program	Remarks	Day	Stay	Program	Day	Stay	Program	Day	Stay	Program	Day	Stay	Program	Day	Stay	Program	Day	Stay	Program
Jan	1	Sat																				
	2	Sun																				
	3	Mon																				
	4	Tue																				
	5	Wed			Legend: H1=Pearl continental、H2=Serena quetta、H3=Kuzdar NHA guest house、H4=Holiday inn、K=in flight																	
	6	Thr			KHI=Karachi, ISB=Islamabad, QHT=Quetta, KZ=Kuzdar, BKK=Bangkok, TYO=Tokyo																	
	7	Fri																				
	8	Sat			1	H1	TYO>KHI 10:45-22:50TG641,501	1	H1	TYO>KHI 10:45-22:50TG641,501	1	H1	TYO>KHI 10:45-22:50TG641,501				1	H1	TYO>KHI 10:45-22:50TG641,501	1	H1	TYO>KHI 10:45-22:50TG641,501
	9	Sun			2	H4	KHI>ISB 16:00-17:55PK308	2	H4	KHI>ISB 16:00-17:55PK308	2	H4	KHI>ISB 16:00-17:55PK308				2	H1	KHI	2	H1	KHI
	10	Mon			3	H4	ISB	3	H4	ISB	3	H4	ISB				3	H1	KHI	3	H1	KHI
	11	Tue	(MR Inaba, Kondo)		4	H4	ISB	4	H4	ISB	4	H4	ISB				4	H1	KHI	4	H1	KHI
	12	Wed	ISB>QHT	NHA QUETTA	5	H2	ISB>QHT 10:30-11:30PK363	5	H1	ISB>KHI 10:00-11:55PK301	5	H4	ISB				5	H1	KHI	5	H1	KHI
	13	Thr	QHT>KHI	SITE	6	H1	QHT>KHI with NHA	6	H1	KHI	6	H1	ISB>KHI 19:00-20:55PK309	1	H1	TYO>KHI 10:45-21:05TG641,507	6	H1	KHI	6	H1	KHI
	14	Fri	KHI>ISB		7	H1	KHI	7	H1	KHI	7	H1	KHI	2	H1	KHI	7	H3	KHI>KZ	7	H3	KHI>KZ
	15	Sat			8	H3	KHI>KZ	8	H3	KHI>KZ	8	H3	KHI>KZ	3	H3	KHI>KZ	8	H3	KZ	8	H3	KZ
	16	Sun			9	H3	KZ	9	H3	KZ	9	H3	KZ	4	H3	KZ	9	H3	KZ	9	H3	KZ
	17	Mon			10	H3	KZ	10	H3	KZ	10	H3	KZ	5	H3	KZ	10	H3	KZ	10	H3	KZ
	18	Tue			11	H3	KZ	11	H3	KZ	11	H3	KZ	6	H3	KZ	11	H3	KZ	11	H3	KZ
	19	Wed			12	H1	KZ>KHI	12	H1	KZ>KHI	12	H1	KZ>KHI	7	H1	KZ>KHI	12	H1	KZ>KHI	12	H1	KZ>KHI
Eid	20	Thr			13	H1	KHI	13	H1	KHI	13	H1	KHI	8	H1	KHI	13	H1	KHI	13	H1	KHI
Eid	21	Fri			14	H1	KHI	14	H1	KHI	14	H1	KHI	9	H1	KHI	14	H1	KHI	14	H1	KHI
Eid	22	Sat			15	H1	KHI	15	H1	KHI	15	H1	KHI	10	H1	KHI	15	H1	KHI	15	H1	KHI
	23	Sun	(MR Aratsu, Nishigata)		16	H1	KHI	16	H1	KHI	16	H1	KHI	11	H1	KHI	16	H1	KHI	16	H1	KHI
	24	Mon	>KHI 22:25CX701	MOVE	17	H1	KHI	17	H1	KHI	17	H1	KHI	12	H1	KHI	17	H3	KHI>KZ	17	H1	KHI
	25	Tue	KHI<>SITE	SITE	18	H1	KHI<>SITE	18	H1	KHI<>SITE	18	H1	KHI	13	H1	KHI	18	H3	KZ	18	H3	KHI>KZ
	26	Wed	KHI>ISB 11:00-12:55	EOJ・JICA	19	H4	KHI>ISB 07:00-8:55PK300	19	H4	KHI>ISB 07:00-8:55PK300	19	H3	KHI	14	H3	KHI>KZ	19	H3	KZ	19	H3	KZ
	27	Thr	ISB	AD,MOC,NHA	20	H4	ISB	20	H4	ISB	20	H3	KHI>KZ	15	H3	KZ	20	H3	KZ	20	H3	KZ
	28	Fri	ISB	NHA	21	H4	ISB	21	H4	ISB	21	H1	KZ	16	H3	KZ	21	H3	KZ	21	H3	KZ
	29	Sat	ISB	NHA	22	H4	ISB	22	H1	ISB>KHI 19:00-20:55PK309	22	H1	KZ>KHI	17	H1	KZ>KHI	22	H3	KZ	22	H1	KZ>KHI
	30	Sun	ISB		23	H4	ISB	23	H1	KHI	23	H1	KHI	18	H1	KHI	23	H3	KZ	23	K1	KHI
	31	Mon	ISB	NHA	24	H4	ISB	24	H1	KHI	24	H1	KHI	19	H1	KHI	24	H3	KZ	24		KHI>TYO 03:35-19:00TG508,640
Feb	1	Tue	ISB>	MOC,EAD JICA,EOJ	25	K1	ISB>BKK 23:30-10:10PK371,TG508	25	H3	KHI>KZ	25	H3	KHI	20	H3	KHI>KZ	25	H3	KZ			
	2	Wed	>TYO	MOVE	26		BKK>TYO 11:20-19:00TG640	26	H3	KZ	26	H3	KHI	21	H3	KZ	26	H3	KZ			
	3	Thr						27	H3	KZ	27	H1	KHI	22	H3	KZ	27	H3	KZ			
	4	Fri						28	H1	KZ>KHI	28	H4	KHI>ISB 23:00-01:PK3	23	H1	KZ>KHI	28	H1	KZ>KHI			
	5	Sat						29	H1	KHI	29	H4	ISB	24	H1	KHI	29	H3	KHI>KZ			
	6	Sun						30	H1	KHI	30	H4	ISB	25	H1	KHI	30	H3	KZ			
	7	Mon						31	H4	KHI>ISB 16:00-17:55PK308	31	H4	ISB	26	H4	KHI>ISB 16:00-17:55PK308	31	H3	KZ			
	8	Tue						32	H4	ISB	32	K1	ISB>KHI 23:30-01:25PK371	27	H4	ISB	32	H3	KZ			
	9	Wed						33	H4	ISB	33		KHI>TYO 03:35-	28	H4	ISB	33	H3	KZ			
	10	Thr						34	H4	ISB				29	K1	ISB>22:55PK852	34	H3	KZ			
	11	Fri						35	K1	ISB>KHI 19:00-20:55PK309				30		>TYO12:50 PK852	35	H3	KZ			
	12	Sat						36		BKK>TYO 11:20-19:00TG640							36	H3	KZ			
	13	Sun															37	H3	KZ			
	14	Mon															38	H3	KZ			
	15	Tue															39	H3	KZ			
	16	Wed															40	H3	KZ			
	17	Thr															41	H3	KZ			
	18	Fri															42	H3	KZ			
	19	Sat															43	H3	KZ			
	20	Sun															44	H3	KZ			
	21	Mon															45	H3	KZ			
	22	Tue															46	H1	KZ>KHI			
	23	Wed															47	H1	KHI			
	24	Thr															48	H1	KHI			
	25	Fri															49	K1	KHI>BKK 23:55CX2700			
	26	Sat															50		BKK>TYO 18:00TG676			

2.2 Explanation of draft basic design report in Pakistan

Month	Date		JICA OFFICIALS					Chief Cousultant /Road planner (Inoue)			Road design (Morita)			Construction planning /Estimate (Koishikawa)		
			Yamaura		Nishigata			Inoue			Morita			Koishikawa		
			Day	Program	Day	Stay	Program	Day	Stay	Program	Day	Stay	Program	Day	Stay	Program
Jun	1	Wed														
	2	Thr			1	H1	TYO＞KHI 11:00-20:30 TG641,507	1	H1	TYO＞KHI 11:00-20:30 TG641,507	1	H1	TYO＞KHI 11:00-20:30 TG641,507	1	H1	TYO＞KHI 11:00-20:30 TG641,507
	3	Fri	1	JICA・EOJ・NHA	2	H2	JKHI＞ISB 7:00-8:55 PK300 JICA・EOJ・NHA	2	H2	JKHI＞ISB 7:00-8:55 PK300 JICA・EOJ・NHA	2	H2	JKHI＞ISB 7:00-8:55 PK300 JICA・EOJ・NHA	2	H2	JKHI＞ISB 7:00-8:55 PK300 JICA・EOJ・NHA
	4	Sat	2	NHA	3	H2	NHA	3	H2	NHA	3	H2	NHA	3	H2	NHA
	5	Sun	3	Internal Meeting	4	H2	Internal Meeting	4	H2	Internal Meeting	4	H2	Internal Meeting	4	H2	Internal Meeting
	6	Mon	4	NHA	5	H2	NHA	5	H2	NHA	5	H2	NHA	5	H2	NHA
	7	Tue	5	NHA	6	H2	NHA	6	H2	NHA	6	H2	NHA	6	H2	NHA
	8	Wed	6	MOC, other	7	H2	MOC, other	7	H2	MOC, other	7	H2	MOC, other	7	H2	MOC, other
	9	Thr	7	JICA・EOJ	8	K	JICA・EOJ ISB>KHI19:00-20:55 PK309 KHI＞BKK 23:30-6:30+1 CX2700	8	H1	JICA・EOJ	8	H1	JICA・EOJ	8	H1	JICA・EOJ
	10	Fri			9		BKK＞TYO 11:20-19:00 TG640	9	K	NHA ISB>KHI19:00-20:55 PK309 KHI＞ BKK 23:30-6:30+1 CX2700	9	K	NHA ISB>KHI19:00-20:55 PK309 KHI＞ BKK 23:30-6:30+1 CX2700	9	K	NHA ISB>KHI19:00-20:55 PK309 KHI＞ BKK 23:30-6:30+1 CX2700
	11	Sat						10		BKK＞TYO 11:20-19:00 TG640	10		BKK＞TYO 11:20-19:00 TG640	10		BKK＞TYO 11:20-19:00 TG640
	12	Sun														
	13	Mon														

Appendix 3. List of Party Concerned in Eritrea

Ministry of Communication		
Mr.Firdous Alam	:	Joint Secretary
Mr.Mohammad Abbas	:	Additional Secretary
Mr.Tahir Sharif	:	Director(Rords)
	:	
National Highway Authority		
Mr. Farrukh Javed	:	Chairman
Mr. Raja Nowsherwan	:	Member Planning
Mr. Arshad Mahmood ch.	:	General Manager（Design）
Mr. S.A.Latif	:	General Manager（Planning）
Mr. Asim Amin	:	General Manager（Procurement & Contract）
Mr. Sabir Hasan	:	General Manager（Balochistan）
Mr. Bashtr Ahman	:	Director（Design）
Mr.Mushtaq Khan	:	Director（Environment）
Mr. Sajjad Mehdi	:	Director(Materials)
Mr. Mian N.Mahmud	:	Geometric Specialist
Mr. Muhammad Iqbal	:	Structure Expert
Mr.Mohammad Khalique	:	Deputy Director（Design）
Mr. Agah Inayat	:	Deputy Director of NHA Khuzdar
Mr. Noboru Kondo	:	Adviser
Ministry of Economic Affairs & Statistics		
Mr.Muhammad Ashraf Khan	:	Joint Secretary
Gouverment of Balochistan)		
Mr.Saleem Raza	:	Balochistan Road Development Sector Project Director
	:	
Office of the Honorary Consul-General of Japan		
Syed Nadeem Shah	:	Honorary Consul-General of Japan
Asian Development Bank		
Mr. Marshuk Ali Shah	:	Country Dirctor
Mr.Manzoor Rehman	:	Senior Project Implementation Specalist
Embassy of Japan in Pakistan		
Mr. Takehiro Okubo	:	Head of Economic and Development Section
Mr. Takeshi Matsunaga	:	Former Head of Economic and Development Section
Mr. Yoshihito Katsuo	:	Second Secretary
Mr. Teruo Kobayashi	:	Second Secretary
JICA Pakistan Office		
Mr. Nobuyuki Yamaura	:	Resident Representative
Mrs. Sachiko Misumi	:	Senior Deputy Resident Representative
Mr. Mitsumobu Inaba	:	Assistant Representative
Mr.Sohail Ahmad	:	Senior Programme Officer

Appendix 4. Minutes of Discussions

4. 1 Field survey in Pakistan for the basic design study

4, 2 Explanation of draft basic design report in Pakistan

4. 1 Field survey in Pakistan for the basic design study

MINUTES OF DISCUSSIONS

ON THE BASIC DESIGN STUDY

ON THE PROJECT FOR IMPROVEMENT

OF KARARO-WADH SECTION OF NATIONAL HIGHWAY N-25

IN THE ISLAMIC REPUBLIC OF PAKISTAN

In response to a request from the Government of the Islamic Republic of Pakistan (hereinafter referred to as "Pakistan"), the Government of Japan decided to conduct a Basic Design Study on the Project for Improvement of Kararo-Wadh Section of National Highway N-25 (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Pakistan the Basic Design Study Team (hereinafter referred to as "the Team"), which is headed by Yuki Aratsu, Team Director, Traffic Infrastructure Team, Project Management Group II, Grant Aid Management Department, JICA, and is scheduled to stay in the country from January 9th to February 25th, 2005.

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

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

Islamabad, February 1, 2005

Yuki Aratsu
Leader
Basic Design Study Team
Japan International Cooperation Agency

Farrukh Javed
Chairman
National Highway Authority
Islamic Republic of Pakistan

Firdaus Alam
Joint Secretary
Ministry of Communications
Islamic Republic of Pakistan

Muhammad Ashraf Khan
Joint Secretary
Economic Affairs Division
Ministry of Economic Affairs & Statistics
Islamic Republic of Pakistan

ATTACHMENT

1.Objective of the Project

The objective of the Project is to improve the road communication through rehabilitation and upgrade of National Highway N-25 Kararo-Wadh section.

2.Responsible and Implementing Organization

2-1. The Responsible Organization is Ministry of Communications.

2-2.The Implementing Organization is National Highway Authority (NHA).

2-2.The organization chart of NHA is shown in ANNEX-2.

3.Project sites

The sites of the Project are located in Kararo – Wadh section of National Highway N-25 as shown in ANNEX-1.

4.Items requested by the Government of Pakistan

After discussions with the Team, requested components were confirmed as below;

- Improvement of Kararo – Wadh section of National Highway N-25

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

- make the maximum use of structure and pavement already constructed by NHA for rehabilitation
- exclude sections, the Team will consider that NHA has the ability to improve, from the scope of the Project

5.Japan's Grant Aid Scheme

5-1. Pakistani side understands the Japan's Grant Aid Scheme explained by the Team, as described in ANNEX-3.

5-2. Pakistani side will take the necessary measures, as described in ANNEX-4, for smooth implementation of the Project, as a condition for the Japanese Grant Aid to be implemented.

6.Schedule of the Study

6-1. The consultants will proceed to further studies in Pakistan until February 25, 2005.

6-2. Based on the field survey, JICA will prepare the draft report in English and dispatch a mission

in order to explain its contents in May, 2005.

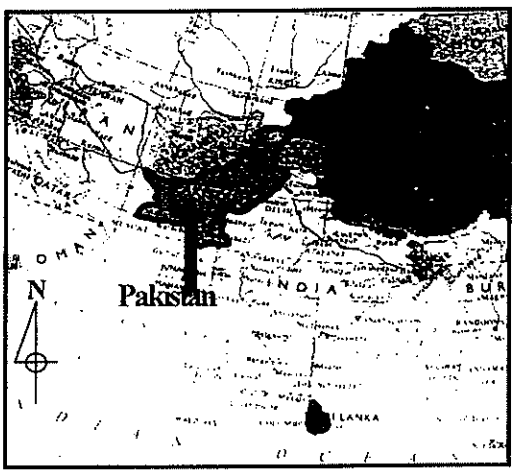
6-4. When the contents of the report is accepted in principle by the Government of Pakistan, JICA will complete the final report and send it to the Government of Pakistan by August, 2005.

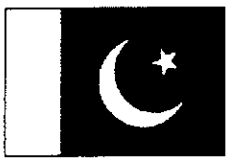
7.Other relevant issues

7-1. The procedures necessary for the approval of IEE (Initial Environmental Examination) shall be implemented by the Pakistani side by the end of May, 2005. Copy of such approval shall be sent to JICA Pakistan Office as soon as NHA receives that approval. And in the process of IEE, Pakistani side shall make full explanation to the people, who reside along the Site, about the contents of and impacts by the Project.

7-2. Pakistani side promised that, in case the need for revision of the PC-1 for the Project arises, the revision shall be got approved from Executive Committee of National Economic Council (ECNEC) or at least anticipatory approval of chairman ECNEC by the end of May, 2005.

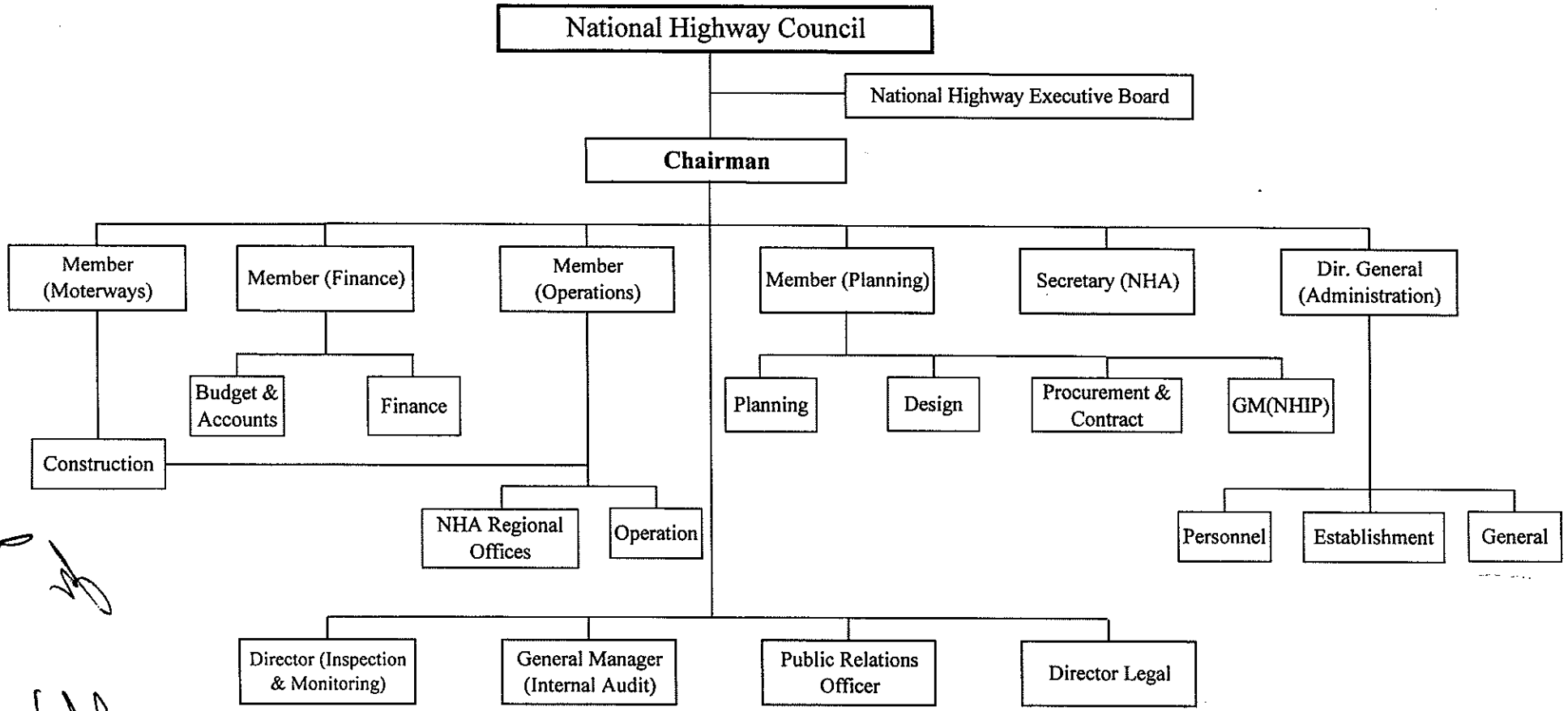
ANNEX-1





LOCATION MAP

NHA-Ministry of Communication Organization Flowchart



ANNEX-2

ANNEX-3

JAPAN'S GRANT AID

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 the recipient country)
Study	(Basic Design Study conducted by JICA)
Appraisal &Approval	(Appraisal by the Government of Japan and Approval by the Cabinet)
Determination of Implementation	(The Note exchanged between the Governments of Japan and 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 (a) Japanese consulting firm(s).

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 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 (hereafter referred to as "the Study") conducted by JICA on a requested project (hereafter 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 on by both parties concerning the basic concept of the Project.
- Preparation of a basic design of the Project.
- Estimation of costs 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 the 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 though 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 (a) registered consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms. The firm(s) selected carry(ies) out a Basic Design Study and write(s) a report, based upon terms of reference set by JICA. The consultant firm(s) used for the Study is(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 procedures such as exchanging of the Notes, concluding contracts with (a) consultant firm(s) and (a) contractor(s) 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, constructing 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 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 to Japanese taxpayers.

(5) Undertakings required of 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 Project,

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 expenses and prompt excursion 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 the supply of the products and services under the Verified 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 maintain and use the facilities constructed and the 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 Arrangements (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 the 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.

(end)

ANNEX-4

Major Undertaking 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 clear, level and reclaim the site when needed		•
3	To construct gates and fences in and around the site		•
4	To construct roads		
1) Within the site		•	
2) Outside the site			•
5	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			•
6	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		•	
7	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 of their work		•
8	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		•
9	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		•
10	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment		•

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

4, 2 Explanation of draft basic design report in Pakistan

MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT FOR IMPROVEMENT
OF KARARO-WADH SECTION OF NATIONAL HIGHWAY N-25
IN THE ISLAMIC REPUBLIC OF PAKISTAN
(EXPLANATION ON DRAFT REPORT)

In January, 2005, the Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched a Basic Design Study Team on the Project for Improvement of Kararo-Wadh Section of National Highway N-25 (hereinafter referred to as "the Project") to the Islamic Republic of Pakistan (hereinafter referred to as "Pakistan"), and through discussion, field survey, and technical examination of the results, JICA prepared a draft report of the study.

In order to explain and to consult the Pakistan on the components of the draft report, JICA sent to Pakistan the Draft Report Explanation Team (hereinafter referred to as " the Team "), which is headed by Nobuyuki Yamaura, Resident Representative, JICA Pakistan Office from June 3 to June 10, 2005.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Islamabad, June 8, 2005

Nobuyuki Yamaura
Leader
Draft Report Explanation Team
Japan International Cooperation Agency

Farrukh Javed
Chairman
National Highway Authority
Islamic Republic of Pakistan

Firdous Alam
Joint Secretary
Ministry of Communications
Islamic Republic of Pakistan

Javed Mahmood
Joint Secretary
Economic Affairs Division
Ministry of Economic Affairs & Statistics
Islamic Republic of Pakistan

ATTACHMENT

1.Components of the Draft Report

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

2.Japan's Grant Aid scheme

Pakistani side understands the Japan's Grant Aid Scheme and the necessary measures to be taken by the Government of Pakistan as explained by the Team and described in Annex-3 and Annex-4 of the Minutes of Discussions signed by both parties on February 1, 2005.

3.Schedule of the Study

JICA will complete the final report in accordance with the confirmed item and send it to the Government of Pakistan by August, 2005.

4. Scope of the Project

The Team proposed the detailed contents of improvement of the Project section as indicated in Annex-1, and the Pakistani side agreed.

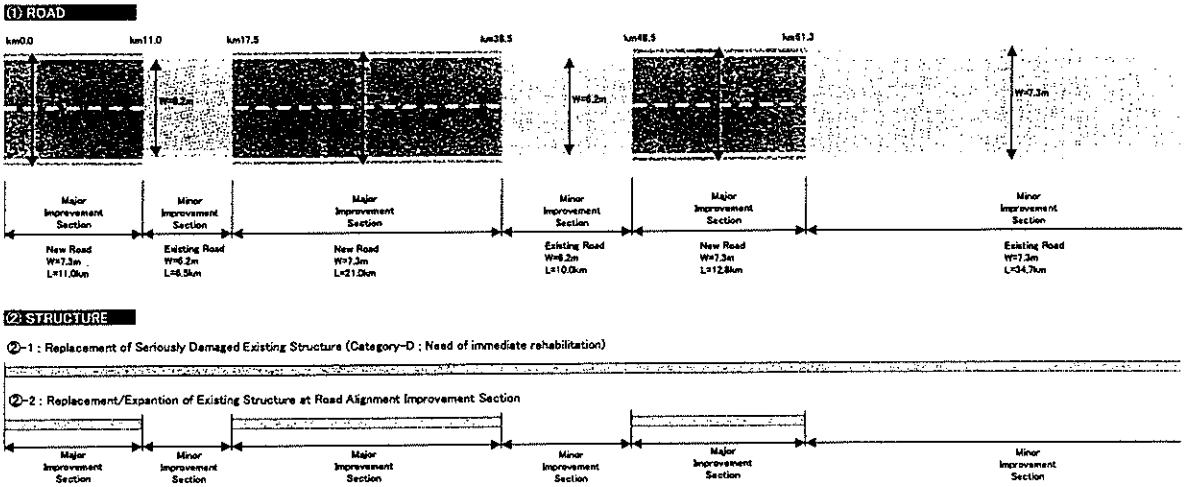
5.Other relevant issues

5-1.The Pakistani side shall make full explanation to the people, who reside along the Site, about the contents of and impacts by the Project prior to the Project implementation.

5-2.The team explained that the Pakistani side should get anticipatory approval of the PC-1 from the Chairman, Executive Committee of National Economic Council (ECNEC) prior to the Cabinet Meeting of the Government of Japan on the Project, otherwise, the implementation schedule of the Project might change. The Pakistani side agreed to obtain the anticipatory approval of the Chairman, ECNEC before June 24, 2005 and that such approval shall be communicated to JICA Pakistan Office as soon as possible.

Annex-1

Scope of the Project



Items of improvements	Contents
1)Major road improvement section	44.8 km
1-1) Roadway	
- Width of paving	7.3 m (3.65 m x 2 lanes)
- Structure of paving	Asphalt concrete 12 cm (Wearing 5 cm, Binder 7 cm) Base course (Crushed rock) 20cm Subbase course (Granular material) 27 cm
1-2) Road shoulder	
- Road shoulder width	Standard width 2.0 m (Min. 1.0 m)
- Structure of paving	Surface layer (Double bituminous surface treatment, DBST) Subbase course (Granular material) 59cm
2) Minor road improvement section	51.2 km Formation of road shoulder Road marking (central & edge lines, etc.)
3) Improvement of road-crossing structures	a) Cross drain * Reconstruction : 113 culverts * Extension of width : 12 culverts Full improvement of 113 culverts b) Longitudinal drain * Earth ditch : 41,970 m * Masonry ditch : 5,080 m * Concrete ditch : 906m
4) Installation of ancillaries	Water collection & drainage work: Water collection pits, inflow pipe canals, gabion Traffic sign: 103 locations Guardrail : 5,500 m Guard post: 300 locations Edge marker: 191 locations Marking : Central line, lateral lines, etc. 96 km section Kilo posts: 97 locations

Appendix 5. Other Relevant Data

5. 1 Results of bridge soundness survey

5. 2 Results of culvert soundness survey

5. 3 Results of site investigation survey

5. 1 Results of bridge soundness survey

Bridge Inventory Result

Station No.	Bridge Type	Total Bridge length (m)	Bridge Width (m)	No. of Spans	Inventory of damege										Inventory of durability				Damege Level	Width	Countermeasure
					Main Girder	Cross Beam	Deck Slab	Pier	Abutment	Foundation	Parapet wall	Pavement	Slope Protection	Damege Result (α)	Live Road	Traffic Volume	Passing Year	Durability Result (β)			
01+964	RC Slab	6.5	7.3	1	3	3	3	1	1	2	2	1	4	3.4E+23	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
03+625	RC Girder	30.6	7.3	3	3	3	3	3	2	1	4	1	2	1.1E+24	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
06+325	RC Slab	18.6	8.8	2	3	3	4	4	2	1	3	1	1	9.0E+24	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
7+810	RC Girder	11.2	7.5	1	4	4	4	2	2	1	5	1	2	9.9E+28	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
10+510	RC Slab	13.7	7.5	2	2	2	2	1	2	3	3	1	2	2.1E+17	1.6	1	3	7.7E+00	B	Widening Req.	widening
10 + 970	RC Slab	7.0	9.0	1	1	1	1	1	1	1	5	1	1	5.0E+00	1.6	1	3	7.7E+00	B	Widening Req.	widening
11+190	RC Slab	74.6	7.1	6	3	3	3	3	2	2	5	1	2	4.5E+25	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
13+841	RC Slab	53.4	10.1	6	3	3	3	2	2	1	5	1	2	4.2E+23	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
14+878	RC Slab	44.5	7.6	5	2	2	2	1	1	1	3	1	3	2.4E+14	1.6	1	3	7.7E+00	B	Widening Req.	widening
17+384	RC Girder	63.7	7.5	7	1	1	2	4	3	1	1	1	3	1.6E+07	1.6	1	3	7.7E+00	B	Widening Req.	widening
20+612	RC Slab	16.2	7.6	2	3	3	3	2	2	4	1	1	1	2.2E+25	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
20+732	RC Slab	34.0	7.6	4	3	3	3	3	2	2	2	1	1	4.5E+24	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
21+685	RC Slab	16.4	8.2	2	1	1	1	1	2	1	5	1	1	4.0E+01	1.6	1	3	7.7E+00	B	Widening Req.	widening
22+850	RC Girder	25.4	8.2	3	3	3	3	4	2	4	3	1	4	8.3E+27	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
25+788	RC Girder	11.2	8.9	1	3	2	3	3	3	3	1	1	4	2.8E+26	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
27+477	RC Slab	8.0	8.8	1	3	3	3	1	1	4	1	1	5	8.4E+24	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
28+193	RC Slab	26.9	10.4	3	3	3	3	2	2	3	3	1	3	1.4E+26	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
30+404	RC Slab	7.3	10.2	1	4	4	4	3	3	2	5	1	1	9.0E+30	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
36+210	RC Slab	29.6	7.1	4	4	4	4	3	3	3	1	1	3	1.2E+32	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
39+835	RC Slab	7.1	10.5	1	3	3	3	3	3	1	4	1	5	2.4E+25	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
40+757	RC Slab	15.2	9.6	2	4	4	4	3	3	1	4	1	4	3.6E+30	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
41+002	RC Slab	7.3	10.3	1	4	4	4	1	1	3	5	1	4	1.5E+30	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
42 + 951	RC Slab	6.5	9.4	1	1	1	1	3	3	1	1	1	3	6.6E+03	1.6	1	3	7.7E+00	B	Widening Req.	widening
43+622	RC Girder	16.0	8.1	2	4	4	3	3	3	1	5	1	4	2.5E+29	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
45+340	RC Slab	15.6	9.4	2	1	1	1	2	2	4	5	1	4	5.2E+06	1.6	1	3	7.7E+00	B	Widening Req.	widening
46+978	RC Slab	6.5	9.8	1	1	1	1	1	1	3	1	1	4	3.9E+03	1.6	1	3	7.7E+00	B	Widening Req.	widening
48+450	RC Girder	70.5	8.0	8	2	1	1	3	3	1	2	1	3	1.4E+13	1.6	1	3	7.7E+00	B	Widening Req.	widening
48+775	RC Girder	13.6	9.3	1	3	3	3	2	2	1	1	1	5	5.3E+23	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
49+950	RC Slab	6.5	9.7	1	3	3	3	5	5	5	5	1	5	2.0E+30	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
51+552	RC Slab	7.5	9.5	1	3	3	3	1	1	1	5	1	4	2.6E+22	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
52+995	RC Slab	8.0	11.6	1	4	4	4	5	5	5	1	1	4	6.0E+34	1.6	1	3	7.7E+00	D		Replacement
53+355	RC Girder	9.5	8.7	1	4	4	3	1	1	1	4	1	1	1.7E+25	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
60+160	RC Girder	21.4	9.4	2	3	3	4	3	3	1	4	1	2	6.8E+25	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
64+438	RC Girder	16.0	7.6	1	3	3	4	3	3	1	1	1	3	3.8E+25	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
65+745	RC Slab	7.0	9.6	1	4	4	4	2	2	3	1	1	1	1.2E+30	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
66+590	RC Slab	14.2	8.0	2	4	4	4	5	1	5	1	1	1	3.0E+31	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
69+796	RC Girder	17.8	10.4	2	4	4	3	1	2	4	5	1	1	1.8E+29	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
69+930	RC Slab	18.1	8.6	2	3	3	3	1	1	1	5	1	1	1.6E+21	1.6	1	3	7.7E+00	B	Widening Req.	widening
83+210	RC Slab	13.8	9.0	2	4	4	4	1	1	1	2	1	1	1.5E+26	1.6	1	3	7.7E+00	C	Widening Req.	Replacement
91+325	RC Slab	73.0	8.8	10	3	3	3	2	2	2	5	1	1	3.4E+24	1.6	1	3	7.7E+00	C	Widening Req.	Replacement

Replacement : 30
widening : 10

5．2　Results of culvert soundness survey

	S.No.	Sta.No.	Type	No. of Cell	1 cell length (m)	Total length (m)	Height (m)	Skew	Culvert Width (m)	Earth cover (m)	Damege level by Inventory							
											Main Structure	Inlet	Outlet	Open	Capacity	Passing Period	Damege result	Total Damege Level
1	ST- 1	00+115	SC	1	3.1	3.1	1.9	90	13.1	1.5	3	3	3	1	1	2	1.6E+26	C
2	ST- 2	00+690	PC	2	0.75	2x0.75	0.75	90	8.9	4.5	5	3	5	5	1	2	2.8E+39	D
3	ST- 3	00+776	PC	1	0.75	2x0.75	0.75	90	20.7	4	1	3	3	3	1	2	7.5E+11	B
4	ST-4	00+995	SC	1	3.8	3.8	2.8	90	10.1	0.5	4	4	3	1	1	2	4.9E+31	C
5	ST-5	01+820	SC	1	3.8	3.8	2.8	70	16	3.5	1	1	1	1	1	2	8.0E+0	A
7	ST-7	02+297	SC	1	1.8	1.8	2.3	90	11.4	0.6	4	1	3	1	1	2	1.9E+26	C
8	ST- 8	02+466	SC	1	1.8	1.8	0.9	90	11.4	1.3	3	3	3	3	1	2	3.8E+28	C
9	ST- 9	02+766	SC	1	2.4	2.4	3.2	78	12	0.2	4	1	1	1	1	2	9.4E+21	B
10	ST-10	03+165	SC	1	2.4	2.4	3.2	78	12	0.3	3	2	4	1	1	2	5.4E+25	C
12	ST-12	03+810	PC	1	2x1.0	2x1.0	1	90	8.9	4	2	3	2	5	1	2	8.7E+21	B
13	ST-13	04+180	SC	1	1.75	1.75	1.9	90	13.3	1.4	3	3	2	1	1	2	4.0E+24	C
14	ST-14	05+895	SC	1	3	3	2.5	80	17.2	0.9	4	3	2	1	1	2	9.5E+28	C
16	ST-16	06+520		Disused							0	0	0		0	2	0.0E+0	
17	ST-17	06+820	SC	1	1.26	1.26	2.8	75	11.85	0.6	4	3	4	1	1	2	4.9E+31	C
18	ST-18	07+058	SC	2	5.5	12	6.8	70	10.3	1	4	3	3	1	1	2	3.7E+30	C
19	ST-19	07+158	SC	1	3.7	3.7	4.7	65	10.74	1.4	3	3	3	1	1	2	1.6E+26	C
20	ST-20	07+558	SC	2	4.6	10.4	2.2	85	11.4	0.4	4	4	4	3	1	2	1.6E+35	D
22	ST-22	08+732	SC	1	3	3	4	70	13.5	0.5	5	5	5	1	1	2	8.9E+37	D
23	ST-23	10+000	SC	1	2.75	2.75	3.6	70	13.2	0.15	5	3	3	1	1	2	9.0E+33	D
27	ST-27	11+325	SC	1	1.78	1.78	2.5	60	14.6	1.3	1	1	1	1	1	2	8.0E+0	A
28	ST-28	12+008	SC	1	2.43	2.43	3.5	70	10.6	1	5	2	3	1	1	2	2.3E+32	C
29	ST-29	12+200	SC	1	2	2	1.65	90	8.45	0.2	5	3	3	1	1	2	9.0E+33	D
30	ST-30	12+278	SC	1	3	3	3.7	90	9.45	1	4	1	1	1	1	2	9.4E+21	B
31	ST-31	12+310	SC	1	1.87	1.87	1.3	90	9.98	0.4	4	3	2	5	1	2	3.0E+32	C
32	ST-32	12+415	SC	1	6.15	6.15	4.63	90	11.5	0.1	4	5	5	3	1	2	8.8E+36	D
33	ST-33	12+608	SC	2	4.54	10.9	4.1	45	9.6	0.15	4	5	5	3	1	2	8.8E+36	D
34	ST-34	12+936	SC	3	4.78	18	3.6	90	14.9	2	3	1	1	3	1	2	9.7E+19	B
35	ST-35	13+103	SC	1	4.55	4.55	4.9	90	9.2	0.3	3	3	3	1	1	2	1.6E+26	C
36	ST-36	13+284	SC	1	1.5	1.5	2.3	90	12.3	1	5	3	3	1	1	2	9.0E+33	D
37	ST-37	13+420	SC	1	2.45	2.45	2.34	90	10.6	0.8	4	4	4	1	1	2	6.5E+32	C
39	ST-39	14+163	SC	1	4.5	4.5	4.2	70	10.5	1	4	4	4	1	1	2	6.5E+32	C
40	ST-40	14+280	SC	1	1.8	1.8	1.1	80	10.6	0.5	5	4	4	5	1	2	5.0E+39	D
41	ST-41	14+728	SC	1	2.4	2.4	3.7	70	10.25	0.8	5	2	2	3	1	2	1.5E+33	C
42	ST-42	14 + 595	SC	1	1.77	1.77	1.8	80	9.5	1	4	2	2	3	1	2	6.0E+29	C
44	ST-44	15+021	SC	1	2.4	2.4	2.7	80	10.55		4	2	2	1	1	2	2.5E+27	C
45	ST-45	15+140	SC	1	1.2	1.2	0.75	90	9.45	0.9	4	3	2	5	1	2	3.0E+32	C
46	ST-46	15+242	SC	1	3	3	3.2	90	9	1	3	1	1	1	1	2	4.0E+17	B
47	ST-47	15+415	SC	1	1.24	1.24	1.2	45	12.1	1	3	2	2	3	1	2	2.5E+25	C
48	ST-48	15+535	SC	1	1.2	1.2	1.95	90	9.9	0.3	5	2	2	1	1	2	6.1E+30	C
49	ST-49	15+592	SC	1	1.2	1.2	2.4	45	10	0.5	4	4	2	1	1	2	1.3E+30	C
50	ST-50	15+700	SC	2	2.98	7.76	3.5	90	9.3	1	4	2	3	5	1	2	3.0E+32	C
51	ST-51	15+818	SC	1	3.2	3.2	2.9	90	11.96	0.5	3	1	1	1	1	2	4.0E+17	B
52	ST-52	16+100	SC	1	3.7	3.7	3.55	80	24.5	6	3	2	3	1	1	2	4.0E+24	C
53	ST-53	17 +147	SC	1	2.34	2.34	1.6	45	7.3	1.2	4	3	3	1	1	2	3.7E+30	C
55	ST-55	18+114	SC	1	2.52	2.52	2.75	45	8.8	3	5	3	4	3	1	2	2.9E+37	D
56	ST-56	18+211	SC	1	3	3	3.4	90	8.25	1	3	3	3	1	1	2	1.6E+26	C
57	ST-57	18+385	SC	1	3.6	3.6	2.7	45	12.8	1	3	1	1	1	1	2	4.0E+17	B
58	ST-58	18+780	SC	1	1.78	1.78	2.5	90	12.7	1	4	3	4	3	1	2	1.2E+34	D
59	ST-59	18+857	SC	1	2.4	2.4	2.5	90	17.5	0.6	2	3	3	3	1	2	2.6E+22	C
60	ST-60	18+955	SC	1	3.3	3.3	2.4	60	13.74	2.2	4	3	4	3	1	2	1.2E+34	D
61	ST-61	19+242	SC	1	4.5	4.5	5.4	80	13.9	2.5	2	2	2	3	1	2	1.8E+19	B
62	ST-62	19+797	SC	1	2.43	2.43	3.6	80	8.8	1	5	3	4	3	1	2	2.9E+37	D
63	ST-63	19+997	SC	1	2.65	2.65	2.1	90	10.03	0.8	5	3	4	3	1	2	2.9E+37	D
64	ST-64	20+065	SC	1	3.15	3.15	3.3	90	10.3	0.4	3	3	4	1	1	2	2.1E+27	C
65	ST-65	20+268	SC	1	2.5	2.5	4	80	10.7	0.7	3	2	2	1	1	2	1.0E+23	C
66	ST-66	20+362	SC	1	1.87	1.87	2.4	90	8.8	1	4	3	4	3	1	2	1.2E+34	D
67	ST-67	20+508	SC	1	3.08	3.08	3.8	90	9.9	1	2	1	1	1	1	2	2.7E+11	B
70	ST-70	20+935	SC	1	4.5	4.5	3	90	9.8	1	2	1	1	1	1	2	2.7E+11	B
73	ST-73	23+765	SC	1	3	3	3.8	90	11.4	0.9	3	4	5	1	1	2	2.0E+29	C
74	ST-74	24+356	SC	1	1.26	1.26	2.8	90	10.67	0.2	3	2	2	1	1	2	1.0E+23	C
75	ST-75	24+728	SC	1	4.9	4.9	4	40	16	4	2	4	4	1	1	2	1.9E+22	B
76	ST-76	25+132	SC	1	2.85	2.85	3.5	60	13.45	4	3	4	4	3	1	2	6.7E+30	C
77	ST-77	25+235	SC	1	3	3	2.5	45	17.2	0.7	3	3	2	1	1	2	4.0E+24	C
79	ST-79	26+283	SC	1	2.4	2.4	1.8	80	8.6	1.2	3	1	1	5	1	2	1.3E+21	B
80	ST-80	26+332	SC	1	1.5	1.5	0.9	80	8.37	1	3	1	1	5	1	2	1.3E+21	B
81	ST-81	26+515	SC	1	2.4	2.4	1.1	80	9.1	1	3	1	1	5	1	2	1.3E+21	B
82	ST-82	26+732	SC	1	2.7	2.7	1.65	90	7.4	0.8	3	4	4	5	1	2	8.6E+31	C

83	ST-83	26+863		Disused					9.8		0	0	0		0	2	0.0E+0	
84	ST-84	27+185	SC	1	4.5	4.5	4.7	70	10.15	0.9	3	3	5	1	1	2	1.5E+28	C
86	ST-86	27+598	SC	1	2.7	2.7	3	70	9.12	3	4	4	4	1	1	2	6.5E+32	C
87	ST-87	27+710	SC	1	2.4	2.4	2.1	90	10	1	3	1	1	1	1	2	4.0E+17	B
89	ST-89	28+875	SC	1	4.55	4.55	4	90	9.1	1	3	3	2	1	1	2	4.0E+24	C
90	ST-90	29+072	SC	1	2	2	2.6	60	8.85	0.3	4	3	3	1	1	2	3.7E+30	C
91	ST-91	29+495	SC	1	6.9	6.9	7	70	7.65	1.5	4	4	4	1	1	2	6.5E+32	C
92	ST-92	29+957	SC	1	2.47	2.47	3.7	30	9.1	1.3	3	1	1	1	1	2	4.0E+17	B
94	ST-94	30+747	SC	1	4.52	4.52	3.75	90	10.36	0.4	1	1	1	1	1	2	8.0E+0	A
95	ST-95	31+034	SC	2	6.2	13.6	5.2	90	7.7	0.2	4	4	4	1	1	2	6.5E+32	C
96	ST-96	31+287	SC	1	4.7	4.7	3.1	80	25.5	1.5	3	2	4	1	1	2	5.4E+25	C
97	ST-97	31+412	SC	1	4.55	4.55	4.6	90	9.9	0.5	4	4	4	1	1	2	6.5E+32	C
98	ST-98	31+700	SC	1	3	3	2.3	70	19.6	2.5	3	3	3	1	1	2	1.6E+26	C
99	ST-99	31+984	SC	1	3.3	3.3	1.9	75	15	1	3	4	4	5	1	2	8.6E+31	C
100	ST-100	32+080	SC	1	2.7	2.7	1.7	75	15.2	0.9	3	4	4	5	1	2	8.6E+31	C
101		32+690	SC	1	1.26	1.26	2.8	80	11.85	1.3	4	5	5	5	1	2	1.1E+38	D
102		32+740	PC	2	2x1.0	2x1.0	1	90	9	0.5	3	1	1	5	1	2	1.3E+21	B
103		32+825	SC	1	3.1	3.1	2	60	9	1	4	3	4	5	1	2	1.5E+35	D
104	ST-101	32+900	SC	1	3.1	3.1	3	60	13.1	1.5	4	3	3	5	1	2	1.1E+34	D
105	ST-102	33+165	SC	1	2.46	2.46	3	80	12.8	0.5	4	4	2	5	1	2	4.0E+33	C
106	ST-103	33+622	PC	2	2x0.93	2x0.93	0.93	90	14.7	1	1	1	1	1	1	2	8.0E+0	A
107	ST-104	33+775	SC	1	4	4	2.25	90	10.6		3	2	2	1	1	2	1.0E+23	C
108	ST-105	33+832	PC	1	0.9	0.9	0.9	90	16.6	1	1	1	1	1	1	2	8.0E+0	A
109	ST-106	34+252	SC	1	1.8	1.8	1.8	80	9.8	1.5	4	3	2	5	1	2	3.0E+32	C
110	ST-107	34 + 307	SC	1	1.8	1.8	2.5	80	10.3	1.2	3	2	2	5	1	2	3.3E+26	C
111	ST-108	34+400	SC	1	2.55	2.55	2.7	45	24.6	1.3	3	3	3	1	1	2	1.6E+26	C
112	ST-109	34+595	SC	1	1.26	1.26	2.8	45	14	1.1	4	2	2	1	1	2	2.5E+27	C
113	ST-110	35+075		Disused							0	0	0		0	2	0.0E+0	
114	ST-111	35+348	SC	1	4.85	4.85	4.1	75	13.5	2.5	3	2	2	1	1	2	1.0E+23	C
115	ST-112	35+815	SC	1	3.1	3.1	2.5	65	16.5	0.6	3	2	2	1	1	2	1.0E+23	C
117	ST-114	36+870	SC	1	4.6	4.6	3.25	65	27.6	2.5	3	3	3	1	1	2	1.6E+26	C
118	ST-115	37+255	SC	1	5.7	5.7	3.9	70	9.75	1.8	3	2	2	3	1	2	2.5E+25	C
119	ST-116	37+437	SC	1	4.5	4.5	2.5	90	12	1.2	4	4	4	5	1	2	2.0E+36	D
120	ST-117	37+765	SC	2	4.3	9.6	6.3	90	14	0.3	3	1	1	1	1	2	4.0E+17	B
121	ST-118	38+032	SC	1	2.4	2.4	2.1	90	14.9	0.5	3	3	3	1	1	2	1.6E+26	C
122	ST-119	38+330	SC	1	2.25	2.25	1.96	80	11.7	1	3	2	2	1	1	2	1.0E+23	C
123	ST-120	38+562	SC	1	4.5	4.5	2.4	90	13.5	2.5	3	3	3	3	1	2	3.8E+28	C
124	ST-121	38+770	SC	1	6.2	6.2	5.25	90	9.7	1.3	4	3	2	1	1	2	9.5E+28	C
125	ST-122	39+068	SC	1	2.67	2.67	1.5	90	12.8	0.8	4	2	5	1	1	2	9.4E+30	C
126	ST-123	39+282	SC	1	4.25	4.25	2.9	90	9.6	0.7	1	1	1	1	1	2	8.0E+0	A
127	ST-124	39+450	SC	1	2.7	2.7	1.5	85	10.5	1.3	4	3	3	3	1	2	8.9E+32	C
129	ST-126	39+940	SC	1	3	3	1.4	80	11.8	0.6	1	1	1	1	1	2	8.0E+0	A
130	ST-127	40+072	SC	1	2.98	2.98	1.6	65	10	1	4	3	3	1	1	2	3.7E+30	C
131	ST -128	40+180	SC	1	3	3	2.8	90	11	1.4	3	1	1	1	1	2	4.0E+17	B
132	ST-129	40+255	SC	1	4.1	4.1	3.6	90	12.8	0.3	1	1	1	1	1	2	8.0E+0	A
133	ST-130	40+262	SC	2	4.8	11	2.4	80	13.9		4	4	4	1	1	2	6.5E+32	C
134	ST-131	40+380	SC	3	6.1	21.5	1.7	85	8.1	0.2	4	4	4	1	1	2	6.5E+32	C
135	ST-132	40+460	SC	1	3.05	3.05	2.2	45	9.75	0.8	1	3	3	1	1	2	3.1E+9	A
136	ST-133	40+568	SC	1	2.37	2.37	1.5	90	9.5	1.8	1	1	1	1	1	2	8.0E+0	A
138	ST-135	40+655	SC	1	2	2	2.18	80	10.6	1	4	2	2	1	1	2	2.5E+27	C
139	ST-136	40+930	SC	1	1	1	1.5	90	10.5	1	1	2	2	1	1	2	2.1E+6	A
141	ST-138	41+220	SC	1	3	3	1.2	90	10.6	1	3	3	3	3	1	2	3.8E+28	C
142	ST-139	41+303	SC	1	3.1	3.1	3.1	80	11	1.1	3	3	3	5	1	2	4.8E+29	C
143	ST-140	41+358	SC	2	4.6	10.4	2.5	90	10.3	9.3	3	4	3	1	1	2	2.1E+27	C
144	ST-141	41+470	SC	1	3.3	3.3	2.5	80	9.5	2	3	1	1	1	1	2	4.0E+17	B
145	ST-142	41+765	SC	1	3.1	3.1	2.2	85	10.2	1.3	3	1	1	1	1	2	4.0E+17	B
146	ST-143	41+865	SC	1	2.7	2.7	2.9	75	10	0.8	3	2	2	1	1	2	1.0E+23	C
147	ST-144	41+950	SC	1	2.4	2.4	0.7	80	10.5	1.2	3	3	3	5	1	2	4.8E+29	C
148	ST-145	42+070	SC	2	6.1	14	3.45	90	10.65	0.4	3	2	2	1	1	2	1.0E+23	C
149	ST-146	42+572	SC	1	4.65	4.65	4.3	90	10.85	0.8	4	3	4	1	1	2	4.9E+31	C
150	ST-147	42+660	SC	2	6.2	14	3.2	90	10.9	0.3	4	3	3	1	1	2	3.7E+30	C
151	ST-148	42+755	SC	1	4.7	4.7	3.2	90	10.9	0.8	3	3	1	1	1	2	7.9E+21	B
152	ST-149	42+830	SC	1	2.5	2.5	2.4	75	10.4	1.1	1	1	1	1	1	2	8.0E+0	A
154	ST-151	43+027	SC	1	2.55	2.55	2.2	80	10.86	0.7	4	3	2	1	1	2	9.5E+28	C
155	ST-152	43+200	SC	2	4.55	10.3	4	90	10.7	0.3	4	3	3	1	1	2	3.7E+30	C
156	ST-153	43+333	SC	1	3.05	3.05	2.6	90	10.4	0.4	3	3	3	1	1	2	1.6E+26	C
157	ST-154	43+460	SC	1	2.4	2.4	3.1	80	10.1	1	1	1	1	1	1	2	8.0E+0	A
159	ST-156	43+770	SC	1	4.55	4.55	4.05	90	13.1	1.1	3	1	1	1	1	2	4.0E+17	B
160	ST-157	43+905	SC	1	1.8	1.8	3.1	70	14.7	1.7	1	1	1	1	1	2	8.0E+0	A
161	ST-158	44+240	SC	2	4.6	10.4	4	80	14	1.4	4	2	3	1	1	2	9.5E+28	C
162	ST-159	44+550	PC	2	2x0.9	2x0.9	0.9	80	7.8	1	1	1	1	1	1	2	8.0E+0	A
163	ST-160	44+605	PC	1	2x0.9	2x0.9	0.9	80	7.8	2	1	1	1	1	1	2	8.0E+0	A
164	ST-161	44+737	SC	1	3.1	3.1	2.7	80	13.6	1	1	3	3	1	1	2	3.1E+9	A

165	ST-162	44+832	PC	2	2x0.9	2x0.9	0.9	60	10	0.5	4	5	2	5	1	2	3.0E+34	D
167	ST-164	45+570	SC	1	3.9	3.9	2.9	45	14.4	5	4	3	3	1	1	2	3.7E+30	C
168	ST-165	45+810	SC	1	4.5	4.5	3.5	80	10.9	0.8	5	5	5	1	1	2	8.9E+37	D
169	ST-166	46+166	SC	2	5.3	12.28	2.6	75	10.4	1.4	3	2	2	5	1	2	3.3E+26	C
170	ST-167	46+406	SC	1	4.62	4.62	3.2	85	10.15	0.6	1	2	3	1	1	2	8.1E+7	A
171	ST-168	46+684	SC	1	4.55	4.55	5.5	90	9.9	0.9	1	2	2	1	1	2	2.1E+6	A
172	ST-169	46+795	SC	1	3	3	1.4	90	10.2	1	3	3	3	3	1	2	3.8E+28	C
173	ST-170	46 + 915	PC	2	Pipe	2x0.9	0.9	90	11.2	3	1	1	1	1	1	2	8.0E+0	A
175	ST-172	47+335	SC	1	6.2	6.2	5	90	10.2	0.7	3	1	1	1	1	2	4.0E+17	B
176	ST-173	47 + 534	SC	1	3	3	2.2	85	9.5	1	1	1	1	1	1	2	8.0E+0	A
177	ST-174	47- 655	SC	1	6.1	6.1	3.6	90	9	2	1	1	1	1	1	2	8.0E+0	A
178	ST-175	47+805	SC	1	6.1	6.1	2.9	90	9.75	0.8	1	1	5	1	1	2	1.6E+7	A
179	ST-176	47+978	SC	1	2.45	2.45	1.65	90	9.6	0.3	1	1	1	1	1	2	8.0E+0	A
182	ST-179	49 + 244	SC	1	3.2	3.2	2.4	65	10.6	1	3	3	3	1	1	2	1.6E+26	C
183	ST-180	49+585	SC	1	4.6	4.6	4	90	10.7	0.4	1	1	1	1	1	2	8.0E+0	A
185	ST-182	50+015	SC	1	1.23	1.23	3.4	70	9.8	1	3	2	3	3	1	2	9.8E+26	C
186	ST-183	50+446	SC	1	2.6	2.6	1.6	90	9.75	1.1	3	3	3	3	1	2	3.8E+28	C
187	ST-184	50+690	SC	1	2.5	2.5	1.65	80	10.65	0.7	3	3	3	1	1	2	1.6E+26	C
188	ST-185	50+910	SC	1	2.5	2.5	2.1	90	10.6	0.5	3	2	3	3	1	2	9.8E+26	C
189	ST-186	50+973	SC	1	2.47	2.47	2.4	80	11	0.4	3	3	3	1	1	2	1.6E+26	C
191	ST-188	51+773	SC	1	3.3	3.3	2.1	80	13.4	0.6	3	4	2	5	1	2	1.7E+29	C
192	ST-189	52+492	SC	1	1.8	1.8	1.3	75	9.45	1	1	1	1	5	1	2	2.5E+4	A
193	ST-190	52+598	SC	1	1.25	1.25	2.1	90	9.7	0.6	1	1	1	1	1	2	8.0E+0	A
194	ST-191	52+780	SC	5	4	24.8	2.8	50	11.85	1	5	4	5	1	1	2	1.2E+37	D
197	ST-194	53+689	SC	1	4.6	4.6	2.85	90	13.8	0.3	1	1	1	1	1	2	8.0E+0	A
198	ST-195	53+720	SC	1	5.7	5.7	2.4	65	12	0.2	1	1	1	1	1	2	8.0E+0	A
199	ST-196	53+905	SC	1	2.45	2.45	1.9	55	11.6	0.2	1	1	1	1	1	2	8.0E+0	A
200	ST-197	54+135	SC	1	2.3	2.3	1.5	80	14.2	1	3	3	3	1	1	2	1.6E+26	C
201	ST-198	54+458	SC	2	6	13.2	1.84	60	11.17	0.5	4	2	2	5	1	2	7.7E+30	C
202	ST-199	54+665	SC	1	3.1	3.1	1.9	90	13.5	0.3	4	3	3	5	1	2	1.1E+34	D
203	ST-200	54+795	SC	1	2.6	2.6	2.6	90	12.6	0.3	4	2	2	5	1	2	7.7E+30	C
204	ST-201	54+845	SC	1	2.57	2.57	2.8	90	14.2	0.2	4	2	3	1	1	2	9.5E+28	C
205	ST-202	54+931	SC	1	1.9	1.9	0.8	85	12.2	0.1	5	5	5	5	1	2	2.8E+41	D
206	ST-203	55+015	SC	1	3	3	3.3	80	12.7	0.8	4	3	3	1	1	2	3.7E+30	C
207	ST-204	55+710	SC	1	3.67	3.67	2.4	65	12.7	0.8	4	3	3	1	1	2	3.7E+30	C
208	ST-205	55+845	SC	1	3.2	3.2	2	65	12.5	0.4	4	2	2	1	1	2	2.5E+27	C
209	ST-206	55+900	SC	1	3.1	3.1	1.9	70	10.9	0.3	5	2	3	1	1	2	2.3E+32	C
210	ST-207	56+089	SC	1	3.45	3.45	2	65	9.9	0.3	4	2	2	5	1	2	7.7E+30	C
211	ST-208	56+341	SC	1	3.1	3.1	2.45	65	13.4	0.3	4	3	2	1	1	2	9.5E+28	C
212	ST-209	56+517	SC	1	2.55	2.55	1.6	90	10	0.4	3	2	2	1	1	2	1.0E+23	C
213	ST-210	56+850	SC	1	3.7	3.7	1.4	80	13.5	0.3	5	3	3	5	1	2	2.8E+37	D
214	ST-211	56+948	SC	1	3.75	3.75	2.1	65	15.2	0.3	4	3	3	1	1	2	3.7E+30	C
215	ST-212	57+100	SC	2	3.1	7,8	1.9	90	12.3	0.5	4	3	3	1	1	2	3.7E+30	C
216	ST-213	57+500	SC	3	3.4	13.2	2.35	75	12.7	0.3	3	4	4	1	1	2	2.8E+28	C
217	ST-214	57+737	SC	1	1.3	1.3	1.4	80	13.3	0.6	1	1	1	5	1	2	2.5E+4	A
218	ST-215	57+781	SC	2	3.25	8	2.55	75	11.7	0.2	4	2	3	1	1	2	9.5E+28	C
219	ST-216	57 + 875	SC	1	2.4	2.4	2	70	11.5	0.7	5	4	4	5	1	2	5.0E+39	D
220	ST-217	57+935	SC	1	2.4	2.4	1.8	90	10.8	0.6	4	2	3	1	1	2	9.5E+28	C
221	ST-218	58+025	SC	1	1.7	1.7	1.4	75	12.1	0.8	3	2	3	5	1	2	1.3E+28	C
222	ST-219	58+393	SC	3	4.85	4.85	18.1	75	8.9	1.2	1	1	1	1	1	2	8.0E+0	A
223	ST-220	58+700	SC	1	1.85	1.85	2.8	80	12.6	1.5	1	1	1	1	1	2	8.0E+0	A
224	ST-221	58+835	SC	1	1,9	1,9	1.3	75	9.6	1	5	4	4	5	1	2	5.0E+39	D
225	ST-222	58+945	SC	1	1.25	1.25	1.2	80	12	0.8	3	3	3	5	1	2	4.8E+29	C
226	ST-223	59+145	SC	1	2.4	2.4	2.5	90	10.4	0.4	1	1	1	1	1	2	8.0E+0	A
227	ST-224	59+246	SC	1	1.8	1.8	1	90	12.4	0.7	5	3	3	5	1	2	2.8E+37	D
228	ST-225	59+507	SC	1	3.1	3.1	2.8	75	17.4	1	4	2	3	1	1	2	9.5E+28	C
229	ST-226	59+553	SC	1	2.35	2.35	2.9	80	11.85	1.2	1	1	1	1	1	2	8.0E+0	A
230	ST-227	59+630	SC	1	1.7	1.7	1	70	11.5	0.3	5	5	5	5	1	2	2.8E+41	D
231	ST-228	59+815	SC	1	8.4	8.4	6.4	80	11.5	1	2	1	1	5	1	2	8.6E+14	B
232	ST-229	60+022	SC	1	2.35	2.35	4	80	13.6	0.2	4	3	3	1	1	2	3.7E+30	C
234	ST-231	60+554	SC	1	4.9	4.9	5.5	45	10	0.5	4	2	3	1	1	2	9.5E+28	C
235	ST-232	60+665	SC	1	4.2	4.2	4.1	75	15.7	0.6	4	2	3	1	1	2	9.5E+28	C
236	ST-233	61+077	SC	1	3.45	3.45	3.5	75	10.05	1	3	1	1	1	1	2	4.0E+17	B
237	ST-234	61+170	SC	1	5.6	5.6	3.6	55	9.7	0.5	4	2	2	1	1	2	2.5E+27	C
238	ST-235	61+227	SC	1	3.3	3.3	3.1	85	10	0.5	4	2	2	1	1	2	2.5E+27	C
239	ST-236	61+478	SC	2	3.5	8.5	3.3	60	10	0.6	3	2	5	1	1	2	4.0E+26	C
240	ST-237	61+750	SC	1	2.5	2.5	2.3	45	11	0.6	4	2	2	1	1	2	2.5E+27	C
241	ST-238	61+880	SC	1	2.5	2.5	2.4	75	12	0.4	3	3	3	5	1	2	4.8E+29	C
242	ST-239	61+990	SC	1	2.8	2.8	2.7	90	11.2	0.6	4	2	2	3	1	2	6.0E+29	C
243	ST-240	62+095	SC	1	2	2	1.5	90	12.8	0.7	5	3	3	3	1	2	2.2E+36	D
244	ST-241	62+197	SC	1	2	2	1.8	70	11.3		2	2	2	5	1	2	2.3E+20	B
245	ST-242	62+290	SC	1	2	2	0.8	80	10.2	1	3	2	2	5	1	2	3.3E+26	C
246	ST-243	62+455	SC	1	2	2	1.7	80	11.6	0.3	1	3	4	5	1	2	1.3E+14	B

247	ST-244	62+548	SC	1	1.5	1.5	2.8	80	12.4	0.8	4	2	2	5	1	2	7.7E+30	C
248	ST-245	62+640	SC	1	4	4	4.7	65	10.8	0.4	3	3	3	5	1	2	4.8E+29	C
249	ST-246	62+855	SC	1	4	4	4.7	65	9.1	1	1	1	1	1	1	2	8.0E+0	A
250	ST-247	63+221	SC	1	2.5	2.5	1.1	75	13.3	1	3	1	1	3	1	2	9.7E+19	B
251	ST-248	63+297	SC	1	4.5	4.5	5.6	80	12	1.2	3	1	3	1	1	2	7.9E+21	B
252	ST-249	63+470	SC	1	1.8	1.8	1.5	90	12.2	0.7	4	2	2	3	1	2	6.0E+29	C
253	ST-250	63+558	SC	1	2	2	1.5	75	13	0.6	4	2	2	3	1	2	6.0E+29	C
254	ST-251	63+820	SC	1	5.1	5.1	2.8	60	10.2	0.8	3	1	2	1	1	2	2.0E+20	B
255	ST-252	64+345	SC	1	1.26	1.26	5.6	90	15.2	1.3	2	2	4	1	1	2	3.7E+19	B
257	ST-254	64+720	SC	1	3.7	3.7	1.45	45	10.5	0.8	4	3	3	5	1	2	1.1E+34	D
258	ST-255	64+910	SC	1	2.5	2.5	1.2	80	10	1	3	2	2	3	1	2	2.5E+25	C
259	ST-256	65+025	SC	1	2.5	2.5	2.6	75	12.3	0.4	5	1	1	1	1	2	2.3E+25	C
260	ST-257	65+150	SC	1	4.4	4.4	1.9	60	9.7	0.9	4	3	3	3	1	2	8.9E+32	C
261	ST-258	65+300	SC	1	3	3	1.8	65	11	1	4	2	2	1	1	2	2.5E+27	C
262	ST-259	65+395	SC	1	2.5	2.5	2.4	90	10	0.9	5	1	1	5	1	2	7.3E+28	C
263	ST-260	65+492	SC	1	3.1	3.1	1.3	75	11.9	1	3	1	1	3	1	2	9.7E+19	B
264	ST-261	65+625	SC	1	2.3	2.3	2.3	80	11.8	0.6	5	2	2	5	1	2	1.9E+34	D
266	ST-263	65+860	SC	1	1.2	1.2	1.3	90	9.8	0.8	4	2	2	1	1	2	2.5E+27	C
267	ST-264	66+318	SC	1	2.4	2.4	3.2	85	11.4	0.4	3	1	3	1	1	2	7.9E+21	B
269	ST-266	67+022	SC	1	1.2	1.2	2.3	90	14.3	0.8	1	1	1	1	1	2	8.0E+0	A
270	ST-267	67+190	SC	1	1.2	1.2	1.5	90	13.7	1	1	1	1	3	1	2	1.9E+3	A
271	ST-268	67+372	SC	1	1.3	1.3	1.8	90	13.8	0.6	1	1	1	5	1	2	2.5E+4	A
272	ST-269	67+495	SC	1	1.3	1.3	1	90	10.9	0.5	1	1	1	5	1	2	2.5E+4	A
273	ST-270	67+750	SC	1	2.1	2.1	2.1	60	11.3	0.4	3	1	1	1	1	2	4.0E+17	B
274	ST-271	67+850	SC	1	1.8	1.8	2.2	90	10.3	0.4	3	2	2	3	1	2	2.5E+25	C
275	ST-272	67+950	SC	1	4.3	4.3	2	90	9.8	1.5	3	2	2	5	1	2	3.3E+26	C
276	ST-273	68+020	SC	1	2.5	2.5	1.5	80	9	0.6	3	1	1	3	1	2	9.7E+19	B
277	ST-274	68+570	SC	1	3.2	3.2	1.7	90	10	0.3	1	1	1	1	1	2	8.0E+0	A
278	ST-275	68+690	SC	2	3.6	8.4	2.3	90	10	1.4	4	2	2	1	1	2	2.5E+27	C
279	ST-276	69+020	SC	1	1.5	1.5	1	70	9	0.9	3	2	2	5	1	2	3.3E+26	C
280	ST-277	69+235	SC	1	1.3	1.3	2	70	13.1	0.6	3	3	3	5	1	2	4.8E+29	C
281	ST-278	69+500	SC	1	3.1	3.1	2.8	60	10.3	0.6	3	3	3	5	1	2	4.8E+29	C
284	ST-281	70+335	SC	1	2.5	2.5	1.1	90	9.7		3	2	2	5	1	2	3.3E+26	C
285	ST-282	70+460	SC	1	1.8	1.8	0.5	90	9.8	0.6	3	3	3	5	1	2	4.8E+29	C
286	ST-283	70+665	SC	1	1.4	1.4	0.5	80	10	0.4	4	3	3	5	1	2	1.1E+34	D
287	ST-284	70+783	SC	1	1.8	1.8	0.5	80	9.9	0.5	3	3	3	5	1	2	4.8E+29	C
288	ST-285	71+186	SC	1	1.8	1.8	1.1	60	11	0.4	4	4	4	5	1	2	2.0E+36	D
289	ST-286	71+218	SC	1	3	3	1.5	80	9.7	0.3	4	2	2	1	1	2	2.5E+27	C
290	ST-287	71+448	SC	1	1.4	1.4	1	60	10.8	0.2	4	2	2	3	1	2	6.0E+29	C
291	ST-288	71+548	SC	1	1.2	1.2	1.2	90	9.7	0.6	3	3	3	3	1	2	3.8E+28	C
292	ST-289	71+648	SC	1	2	2	1.3	75	10.3	1	3	1	2	3	1	2	5.0E+22	C
293	T-289.	71+950	SC	1	2.1	2.1	1.3	75	9.7	0.8	3	1	2	3	1	2	5.0E+22	C
294	ST-290	72+264	SC	1	3.5	3.5	1	70	10.2	0.9	3	1	2	3	1	2	5.0E+22	C
295	ST-291	72+383	SC	1	3.7	3.7	1.2	60	9.9	0.6	3	1	1	3	1	2	9.7E+19	B
296	ST-292	72+545	SC	1	3.4	3.4	1	75	9.8	0.7	4	3	3	5	1	2	1.1E+34	D
297	ST-293	72+605	PC	1	0.75	0.75	0.75	90	9.7	3	4	4	5	5	1	2	1.5E+37	D
298	ST-294	72+795	SC	1	3	3	1	90	9.7	0.2	4	2	2	5	1	2	7.7E+30	C
299	ST-295	72+815	SC	1	1.3	1.3	1	90	9.2	1.2	5	4	4	5	1	2	5.0E+39	D
300	ST-296	72+905	disused						9.8		0	0	0		0	2	0.0E+0	
301	ST-297	73+090	SC	1	1.4	1.4	1.2	85	10.9	0.6	1	1	1	1	1	2	8.0E+0	A
302	ST-298	73+237	SC	1	4	4	1.1	85	12.6	0.4	4	4	4	5	1	2	2.0E+36	D
303	ST-299	73+398	SC	1	1.7	1.7	1.4	80	13.4	0.4	1	1	1	3	1	2	1.9E+3	A
304	ST-300	73+487	SC	1	1.6	1.6	1.2	80	9.7	0.8	1	1	1	3	1	2	1.9E+3	A
305	ST-301	73+748	SC	1	1.1	1.1	1.1	90	9.7	0.6	5	5	5	5	1	2	2.8E+41	D
306	ST-302	73+825	SC	1	1.1	1.1	1.1	90	9.7	0.6	5	5	5	5	1	2	2.8E+41	D
307	ST-303	73+970	SC	1	1.2	1.2	0.5	90	9.7	0.7	1	5	5	5	1	2	9.5E+16	B
308	ST-304	74+055	SC	1	1.8	1.8	1	90	9.7	0.6	3	1	1	3	1	2	9.7E+19	B
309	ST-305	74+130	SC	1	1.2	1.2	1.3	90	9.7	0.4	3	4	4	3	1	2	6.7E+30	C
310	ST-306	74+205	SC	1	1.2	1.2	1.1	90	9.7	0.4	3	1	1	3	1	2	9.7E+19	B
311	ST-307	74+230	SC	1	2	2	1.8	90	10	0.3	1	1	1	1	1	2	8.0E+0	A
312	ST-308	74+290	SC	1	1.5	1.5	1.1	90	9.7	0.4	4	5	4	5	1	2	1.5E+37	D
313	ST-309	74+510	SC	1	1.2	1.2	1.1	90	9.7	0.4	1	3	4	5	1	2	1.3E+14	B
314	ST-310	74+570	SC	1	1.3	1.3	0.8	90	9.8	0.6	1	3	4	5	1	2	1.3E+14	B
315	ST-311	74+655	SC	2	4.5	10.9	1	90	9.7	0.6	3	2	3	5	1	2	1.3E+28	C
316	ST-312	74+702	SC	1	1.2	1.2	1	90	10	0.2	3	2	3	5	1	2	1.3E+28	C
317	ST-313	75+017	SC	1	1.2	1.2	0.5	90	9.7	0.2	3	2	2	5	1	2	3.3E+26	C
318	ST-314	75+438	SC	1	1.9	1.9	1.4	90	9.7	0.4	4	4	2	5	1	2	4.0E+33	C
319	T-315	75+713	SC	2	3.2	7.6	1.3	80	10	0.1	3	3	4	5	1	2	6.5E+30	C
320	ST-316	75+870	SC	1	1.8	1.8	1	90	9.7	0.3	1	2	2	5	1	2	6.6E+9	A
321	ST-317	76+015	SC	1	1.5	1.5	0.7	90	7.9	0.4	3	3	3	5	1	2	4.8E+29	C
322	ST-318	76+120	SC	1	1.26	1.26	2.8	90	9.7	0.4	2	3	3	5	1	2	3.3E+23	C
323	ST-319	76+162	SC	1	2	2	1	90	9.7	0.4	3	3	3	5	1	2	4.8E+29	C
324	ST-320	76+227	SC	1	1.9	1.9	1	80	9.7	0.5	4	3	3	1	1	2	3.7E+30	C

325	ST-321	76+369	SC	1	2.2	2.2	1.2	80	9.7	0.3	3	4	3	1	1	2	2.1E+27	C
326	ST-322	76+636	SC	1	1.5	1.5	0.6	80	9.5	0.6	3	3	3	5	1	2	4.8E+29	C
327	ST-323	76+735	SC	1	1.3	1.3	0.9	90	10.2	0.4	3	3	3	5	1	2	4.8E+29	C
328	ST-324	76+785	SC	1	1.8	1.8	1	75	8.9	0.4	1	1	1	3	1	2	1.9E+3	A
329	ST-325	76+915	SC	1	1.8	1.8	0.8	90	10.1	0.3	4	4	4	5	1	2	2.0E+36	D
330	ST-326	76+955	SC	1	1.8	1.8	0.8	90	11.8	0.6	5	5	5	5	1	2	2.8E+41	D
331	ST-327	77+025	SC	1	1.7	1.7	0.7	90	10	0.6	3	5	5	5	1	2	4.8E+33	D
332	ST-328	77+130	SC	1	1.2	1.2	0.4	90	9.3	0.6	5	5	5	5	1	2	2.8E+41	D
333	ST-329	77+220	SC	1	1.8	1.8	1.1	90	11.5	0.4	5	5	5	5	1	2	2.8E+41	D
334	ST-330	77+337	SC	1	1.8	1.8	0.6	90	9.4	0.6	4	5	5	5	1	2	1.1E+38	D
335	ST-331	77+545	SC	1	1.2	1.2	0.6	90	9.7	0.4	4	5	5	5	1	2	1.1E+38	D
336	ST-332	77+770	SC	1	1.6	1.6	0.3	90	9.7	0.4	5	5	5	5	1	2	2.8E+41	D
337	ST-333	77+908	SC	1	2.1	2.1	0.7	90	11.6	0.6	5	5	5	5	1	2	2.8E+41	D
338	ST-334	78+025	SC	disused													0.0E+0	
339	ST-335	78+095	SC	1	2.1	2.1	0.65	90	8.4	1	5	5	5	5	1	2	2.8E+41	D
340	ST-336	78+265	SC	1	2.2	2.2	0.4	90	10.7	0.6	5	5	5	5	1	2	2.8E+41	D
341	ST-337	78 + 310	SC	1	2	2	1	90	9.7	0.5	5	5	5	5	1	2	2.8E+41	D
342	ST-338	78+472	SC	1	2.2	2.2	0.6	90	9.4	0.5	3	5	5	5	1	2	4.8E+33	D
343	ST-339	78+645	SC	1	2.2	2.2	1.2	90	9.3	0.5	3	5	5	5	1	2	4.8E+33	D
344	ST-340	78+662	SC	1	1.8	1.8	1	90	8.6	0.4	3	5	5	5	1	2	4.8E+33	D
345	ST-341	78+745	SC	1	2.4	2.4	1	90	9.4	0.6	3	5	5	5	1	2	4.8E+33	D
346	ST-342	78+835	SC	1	1.6	1.6	1.3	90	13.5	0.2	3	2	2	3	1	2	2.5E+25	C
347	ST-343	78+945	SC	1	1.3	1.3	0.6	90	9.7	1	5	5	5	5	1	2	2.8E+41	D
348	ST-344	78+975	SC	1	1	1	0.5	90	9.7	0.8	5	5	5	5	1	2	2.8E+41	D
349	ST-345	79+090	SC	1	1.3	1.3	1	80	9.7	0.6	5	5	5	5	1	2	2.8E+41	D
350	ST-346	79 + 132	SC	1	1.8	1.8	0.5	80	9.9	0.6	4	5	5	5	1	2	1.1E+38	D
351	ST-347	79+200	SC	1	1.5	1.5	0.65	90	9.2	1	4	5	5	5	1	2	1.1E+38	D
352	ST-348	79+260	SC	1	1.5	1.5	0.4	80	10	0.7	4	4	5	5	1	2	1.5E+37	D
353	ST-349	79+395	SC	2	2.4	5.9	1	65	9.8	0.7	3	3	3	3	1	2	3.8E+28	C
354	ST-350	79+720	SC	1	1.8	1.8	0.7	90	9.4	0.6	1	5	5	5	1	2	9.5E+16	B
355	ST-351	79+740	SC	1	1.3	1.3	0.5	90	9.3	0.6	5	5	5	5	1	2	2.8E+41	D
356	ST-352	79+788	SC	1	1.8	1.8	0.8	80	9.5	0.4	4	5	5	5	1	2	1.1E+38	D
357	ST-353	79+855	SC	1	1.9	1.9	0.5	80	9.5	0.4	4	5	5	5	1	2	1.1E+38	D
358	ST-354	79+900	SC	1	1.9	1.9	0.5	80	9.5	0.4	4	5	5	5	1	2	1.1E+38	D
359	ST-355	79+958	SC	1	1.8	1.8	1	90	9.7	0.5	1	3	3	3	1	2	7.5E+11	B
360	ST-356	79+995	SC	1	2.4	2.4	0.6	90	9.8	0.6	4	5	5	5	1	2	1.1E+38	D
361	ST-357	80+040	SC	1	2	2	1	90	9.7	0.4	4	5	5	5	1	2	1.1E+38	D
362	ST-358	80+103	SC	1	1.9	1.9	0.8	90	9.9	0.6	3	3	3	5	1	2	4.8E+29	C
363	ST-359	80+160	SC	1	1.8	1.8	0.8	90	9.7	0.6	4	3	3	5	1	2	1.1E+34	D
364	ST-360	80+257	SC	1	1.26	1.26	1	90	9.7	0.9	3	2	3	3	1	2	9.8E+26	C
365	ST-361	80+338	SC	1	1.8	1.8	0.4	90	9.7	0.6	4	4	4	5	1	2	2.0E+36	D
366	ST-362	80+400	SC	1	1.3	1.3	0.8	90	9.8	0.6	4	5	5	5	1	2	1.1E+38	D
367	ST-363	80+510	SC	1	1.8	1.8	0.6	90	10	0.6	4	5	5	5	1	2	1.1E+38	D
368	ST-364	80+670	SC	1	1.2	1.2	0.5	90	9.4	0.6	5	5	5	5	1	2	2.8E+41	D
369	ST-365	80+840	SC	1	1.8	1.8	0.8	90	10.4	0.6	5	5	5	5	1	2	2.8E+41	D
370	ST-366	80+967	SC	1	1.2	1.2	0.3	90	9.1	0.6	5	5	5	5	1	2	2.8E+41	D
371	ST-367	81+082	SC	3	4.8	16.4	2.8	60	10.9	0.3	3	1	1	1	1	2	4.0E+17	B
372	ST-368	81+228	SC	1	1.8	1.8	0.8	90	9.8	0.6	3	2	2	1	1	2	1.0E+23	C
373	ST-369	81+305	SC	1	2	2	1	90	9.8	0.6	3	2	2	1	1	2	1.0E+23	C
374	ST-370	81+490	SC	1	1.8	1.8	0.6	90	10	0.6	5	5	5	5	1	2	2.8E+41	D
375	ST-371	81+650	SC	1	1.8	1.8	1.1	90	11.85	0.6	5	5	5	5	1	2	2.8E+41	D
376	ST-372	81+695	SC	1	1.8	1.8	0.6	90	9.4	0.6	5	5	4	5	1	2	3.7E+40	D
377	ST-373	81+760	SC	1	1.6	1.6	0.7	90	11.85	0.7	5	4	5	5	1	2	3.7E+40	D
378	ST-374	81+910	SC	1	1.7	1.7	0.4	90	9.5	0.6	5	5	5	5	1	2	2.8E+41	D
379	ST-375	81+995	SC	1	1.3	1.3	0.5	90	9.7	0.7	5	5	5	5	1	2	2.8E+41	D
380	ST-376	82+055	SC	1	1.6	1.6	0.4	90	9.6	0.6	5	5	5	5	1	2	2.8E+41	D
381	ST-377	82+152	SC	1	1	1	0.2	90	9.6	0.6	5	5	5	5	1	2	2.8E+41	D
382	ST-378	82+255	SC	1	1.3	1.3	0.2	90	9.1	0.6	5	5	5	5	1	2	2.8E+41	D
383	ST-379	82+328	SC	1	1	1	0.3	90	9.1	0.7	3	5	5	5	1	2	4.8E+33	D
384	ST-380	82+360	SC	1	1.8	1.8	0.5	90	9.4	0.6	4	5	5	5	1	2	1.1E+38	D
385	ST-381	82+420	SC	1	1.8	1.8	0.5	90	8.7	0.7	5	5	5	5	1	2	2.8E+41	D
386	ST-382	82+504	SC	1	1.1	1.1	0.3	80	9.2	0.6	3	5	5	5	1	2	4.8E+33	D
387	ST-383	82+610	SC	1	1.8	1.8	0.3	90	9	1.3	5	5	5	5	1	2	2.8E+41	D
388	ST-384	82+685	SC	1	2	2	0.2	90	9.4	0.6	3	3	5	5	1	2	4.8E+31	C
389	ST-385	82+880	SC	1	1.9	1.9	0.5	90	9.2	0.5	3	4	4	5	1	2	8.6E+31	C
390	ST-386	82+950	SC	1	0.8	0.8	0.3	90	10	1.2	3	2	2	3	1	2	2.5E+25	C
391	ST-387	83+070	SC	1	0.7	0.7	0.3	80	9.6	0.9	4	4	5	5	1	2	1.5E+37	D
393	ST-389	83+635	SC	1	1.26	1.26	0.7	70	11.95	1.1	4	1	1	1	1	2	9.4E+21	B
394	ST-390	84+267	SC	1	1.5	1.5	1.1	60	10.8	1.2	3	2	1	1	1	2	2.0E+20	B
395	ST-391	85+145	SC	1	1.2	1.2	1	60	9.7	0.7	4	2	4	5	1	2	4.0E+33	C
396	ST-392	85+175	SC	1	1.2	1.2	0.3	90	10.5	0.8	3	4	5	5	1	2	6.4E+32	C
397	ST-393	85+250	SC	1	2.3	2.3	1.2	60	9.8	0.8	1	2	3	3	1	2	2.0E+10	A
398	ST-394	85+647	SC	1	3.3	3.3	1.6	60	10.5	1.2	3	2	2	1	1	2	1.0E+23	C

399	ST-395	85+910	SC	1	3.8	3.8	1.2	60	9.6	1.1	3	2	1	1	1	2	2.0E+20	B
400	ST-396	85+970	SC	1	1.8	1.8	1.1	80	10	0.9	4	1	2	1	1	2	4.8E+24	C
401	ST-397	86+056	SC	1	5	5	1.7	80	9.9	0.9	3	1	1	1	1	2	4.0E+17	B
402	ST-398	86+485	SC	1	2.5	2.5	2.2	90	10	0.7	4	2	1	1	1	2	4.8E+24	C
403	ST-399	86+620	SC	1	2.5	2.5	1.6	85	9.8	0.4	3	1	1	1	1	2	4.0E+17	B
404	ST-400	86+930	SC	1	2	2	1.4	80	10	0.5	1	2	3	1	1	2	8.1E+7	A
405	ST-401	87+110	SC	1	1.9	1.9	1.4	90	10	1.2	3	2	3	1	1	2	4.0E+24	C
406	ST-402	87+790	SC	1	3.8	3.8	3.2	45	13.7	0.8	3	1	2	1	1	2	2.0E+20	B
407	ST-403	87+925	SC	1	6	6	6.5	60	11.9	0.8	3	1	1	1	1	2	4.0E+17	B
408	ST-404	88+225	SC	1	2.5	2.5	1.5	90	9.7	0.4	3	3	4	3	1	2	5.0E+29	C
409	ST-405	90+140	SC	1	2.9	2.9	0.8	60	10.5	0.3	4	4	4	1	1	2	6.5E+32	C
410	ST-406	90+262	SC	1	2.8	2.8	0.8	60	10.5	0.4	3	2	3	3	1	2	9.8E+26	C
411	ST-407	90+990	SC	2	6.4	14	1.8	60	11.3	0.3	4	2	2	1	1	2	2.5E+27	C
413	ST-409	91+555	SC	1	4.2	4.2	1.4	80	10.3	0.4	4	3	3	3	1	2	8.9E+32	C

5．3　Results of site investigation survey