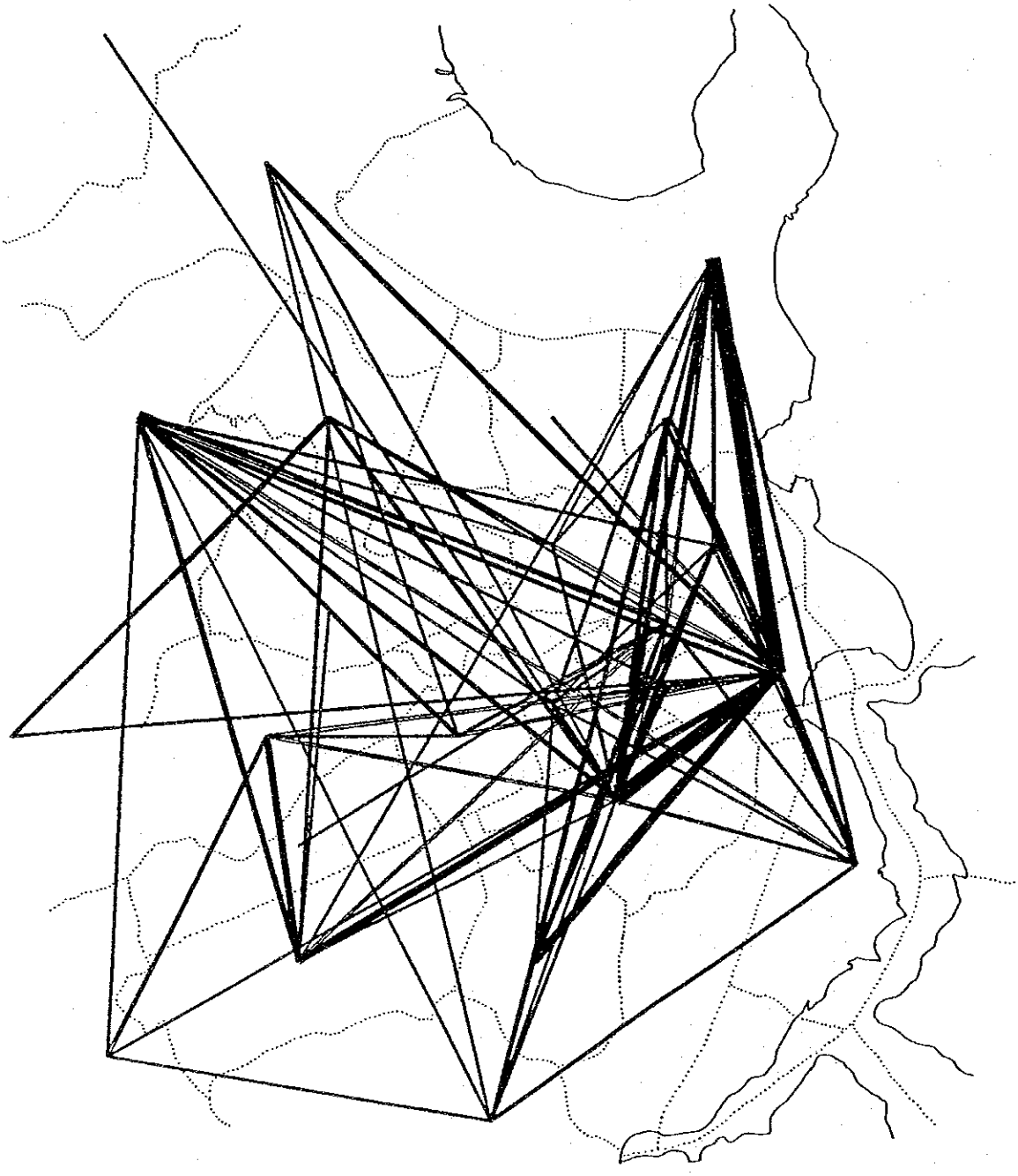
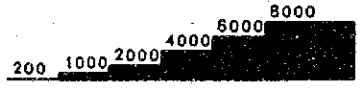
Appendix 5-4: Future Traffic Disire Line (Light Goods)

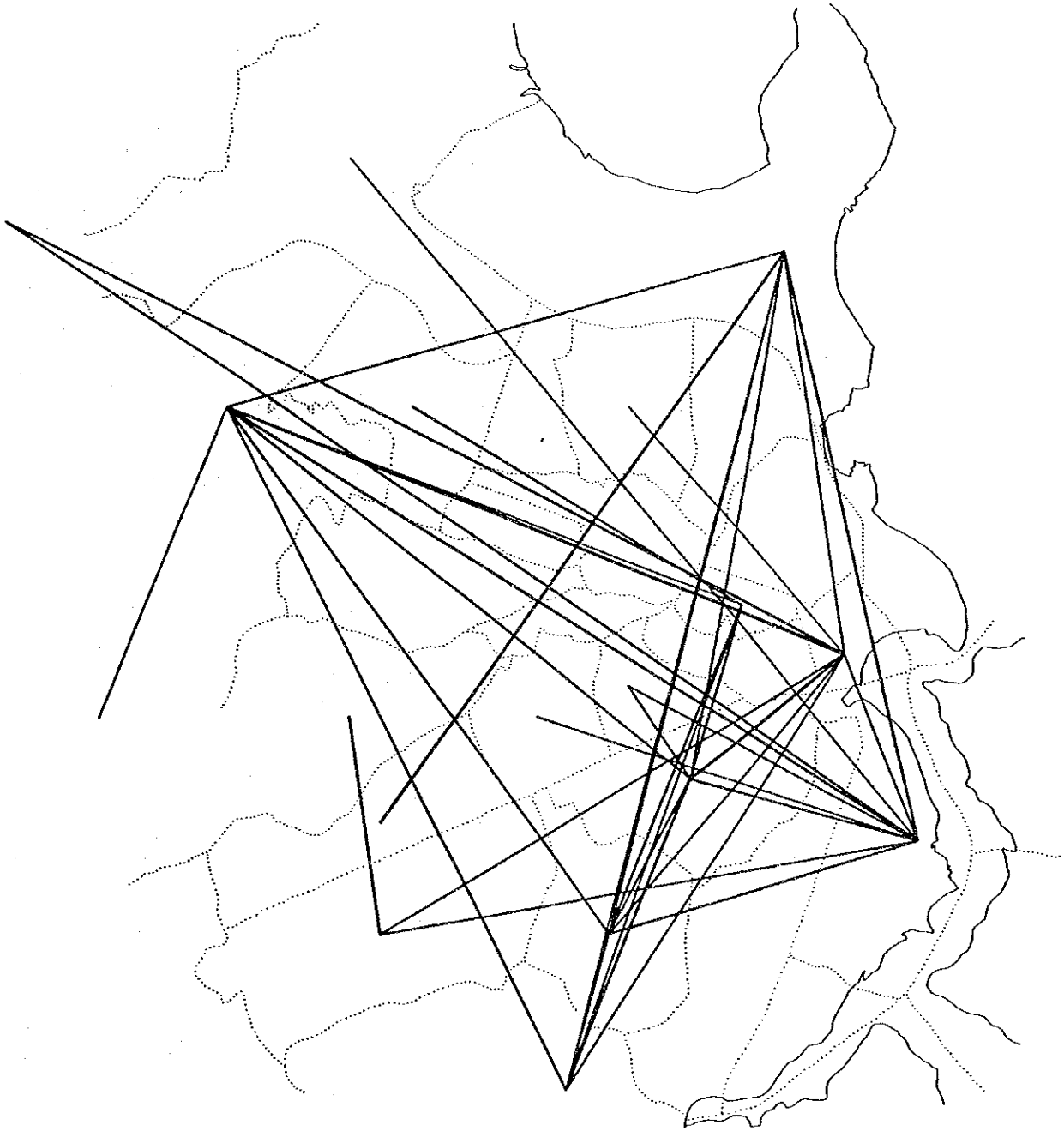


L-GOODS

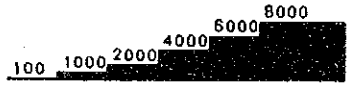


unit:tripends /day

Appendix 5-5: Future Traffic Disire Line (Medium Goods)



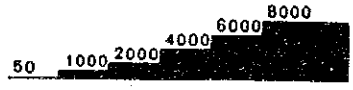
M-GOODS



unit:tripends /day

Appendix 5-6: Future Traffic Disire Line (Heavy Goods)

H-GOODS

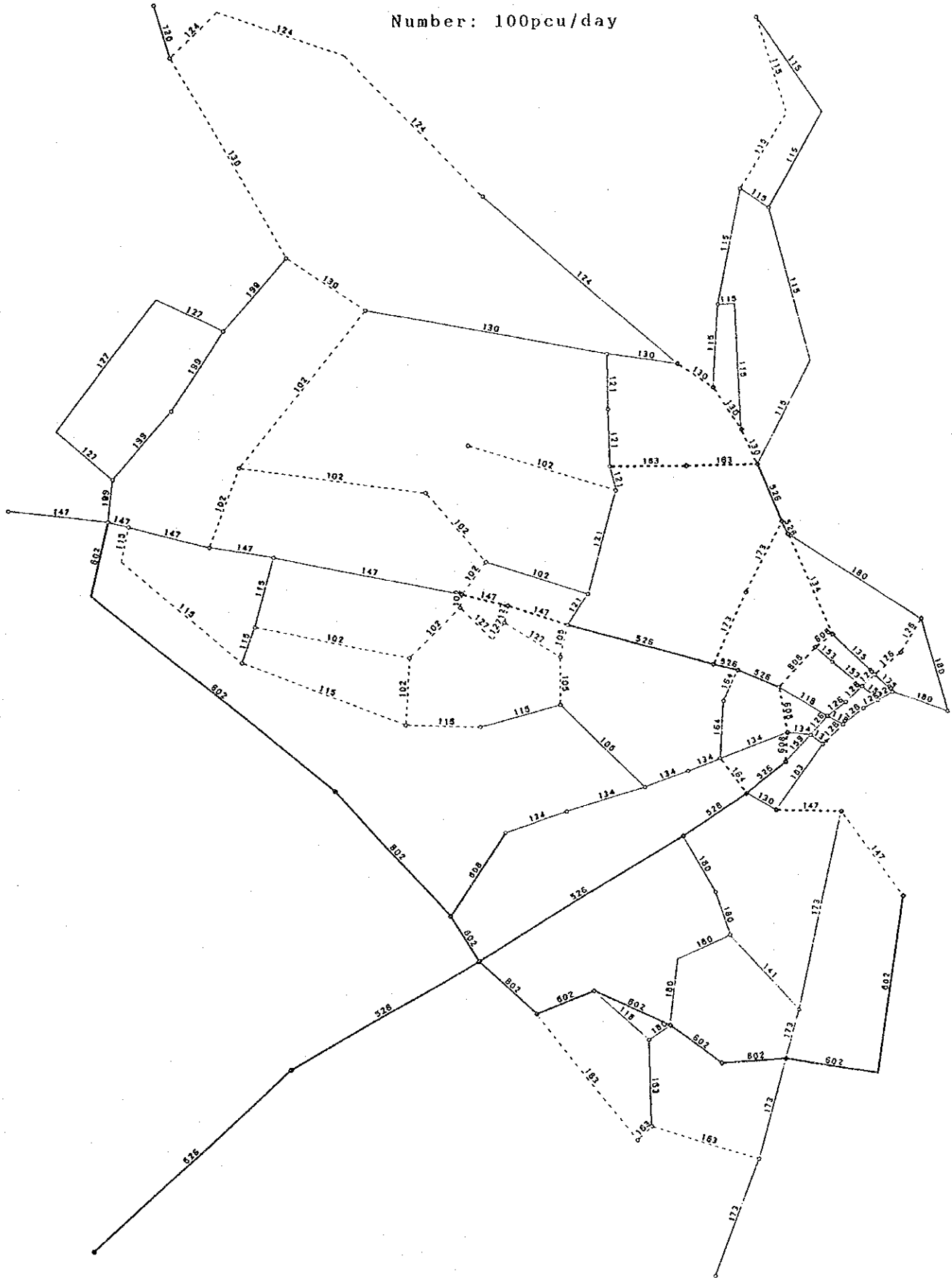


unit: tripends /day

Appendix 5-7: Traffic Capacity on Alternative Network

(1) Traffic Capacity on Present Network

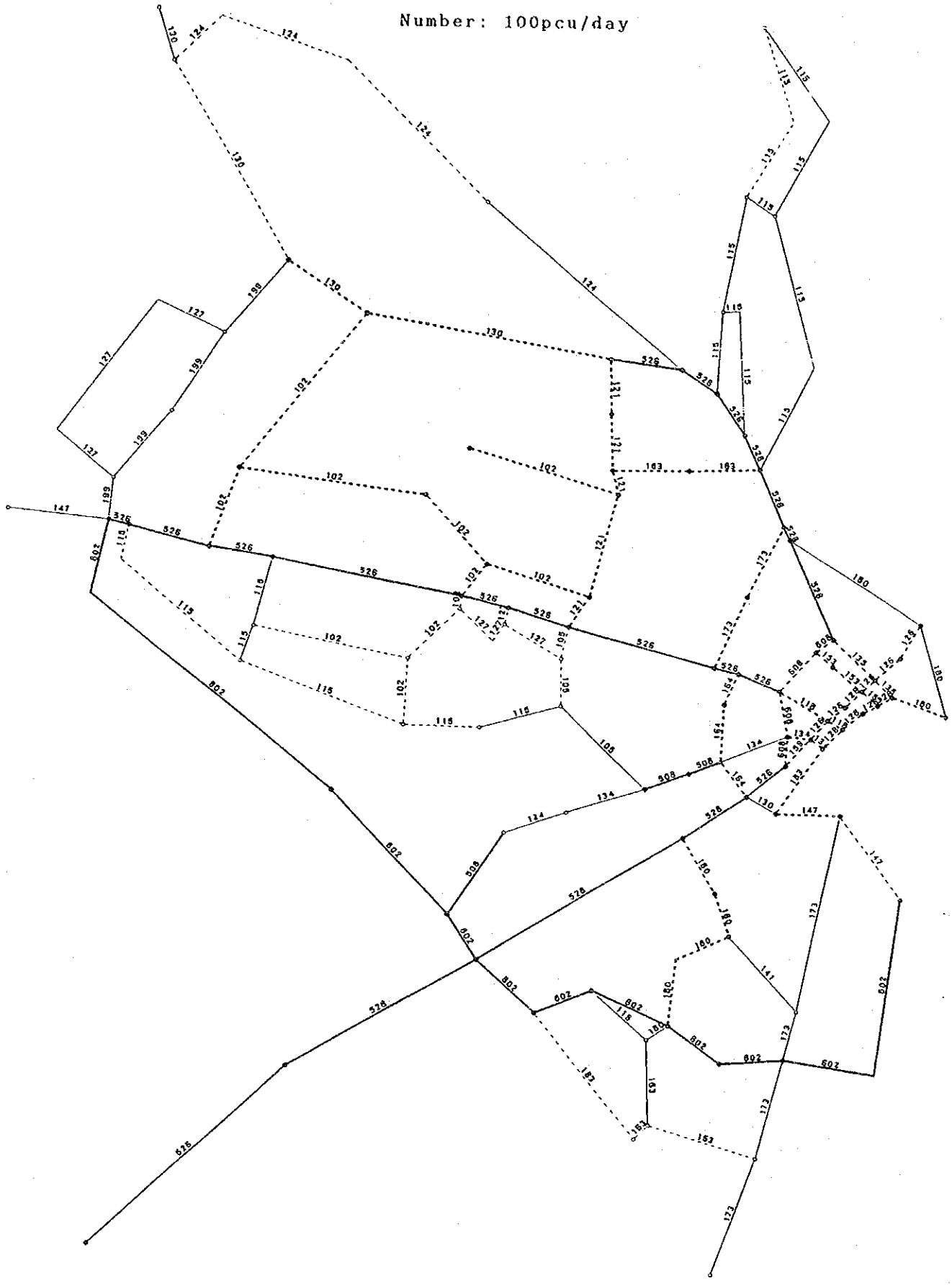
Number: 100pcu/day



LINK-VALUE

(2) Traffic Capacity on A-Network

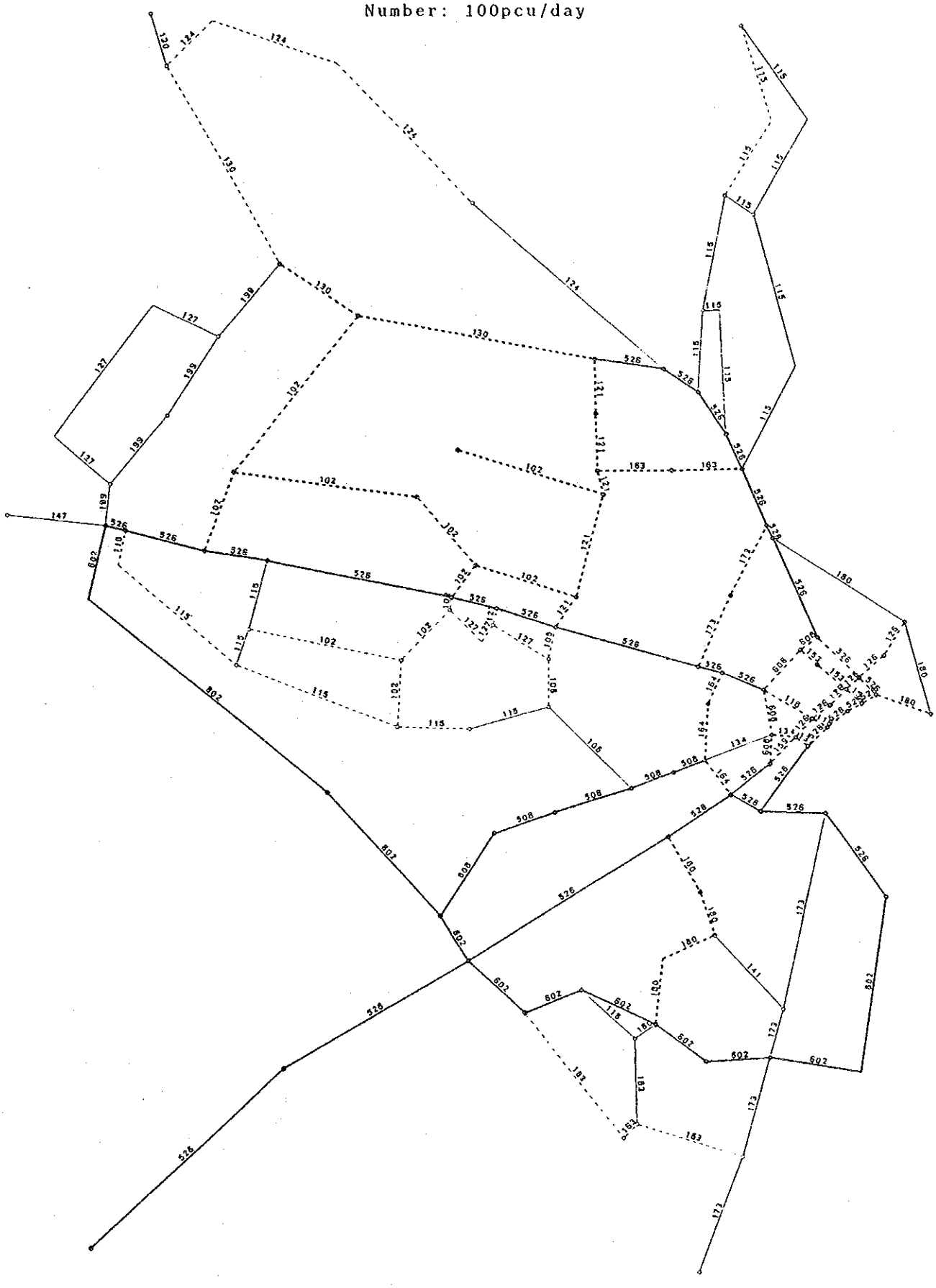
Number: 100pcu/day



LINK-VALUE

(3) Traffic Capacity on B- Network

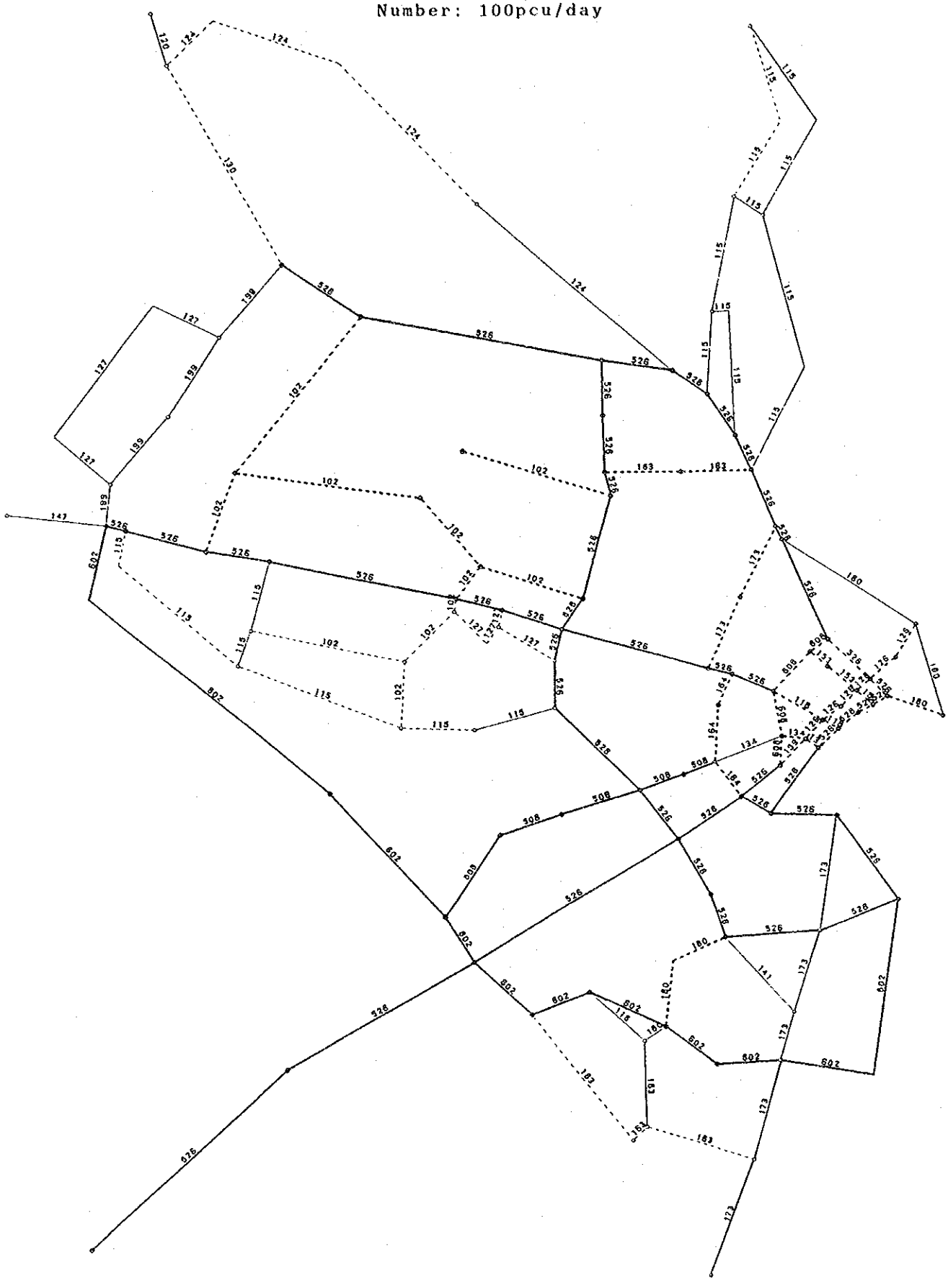
Number: 100pcu/day



LINK-VALUE

(4) Traffic Capacity on C-Network

Number: 100pcu/day

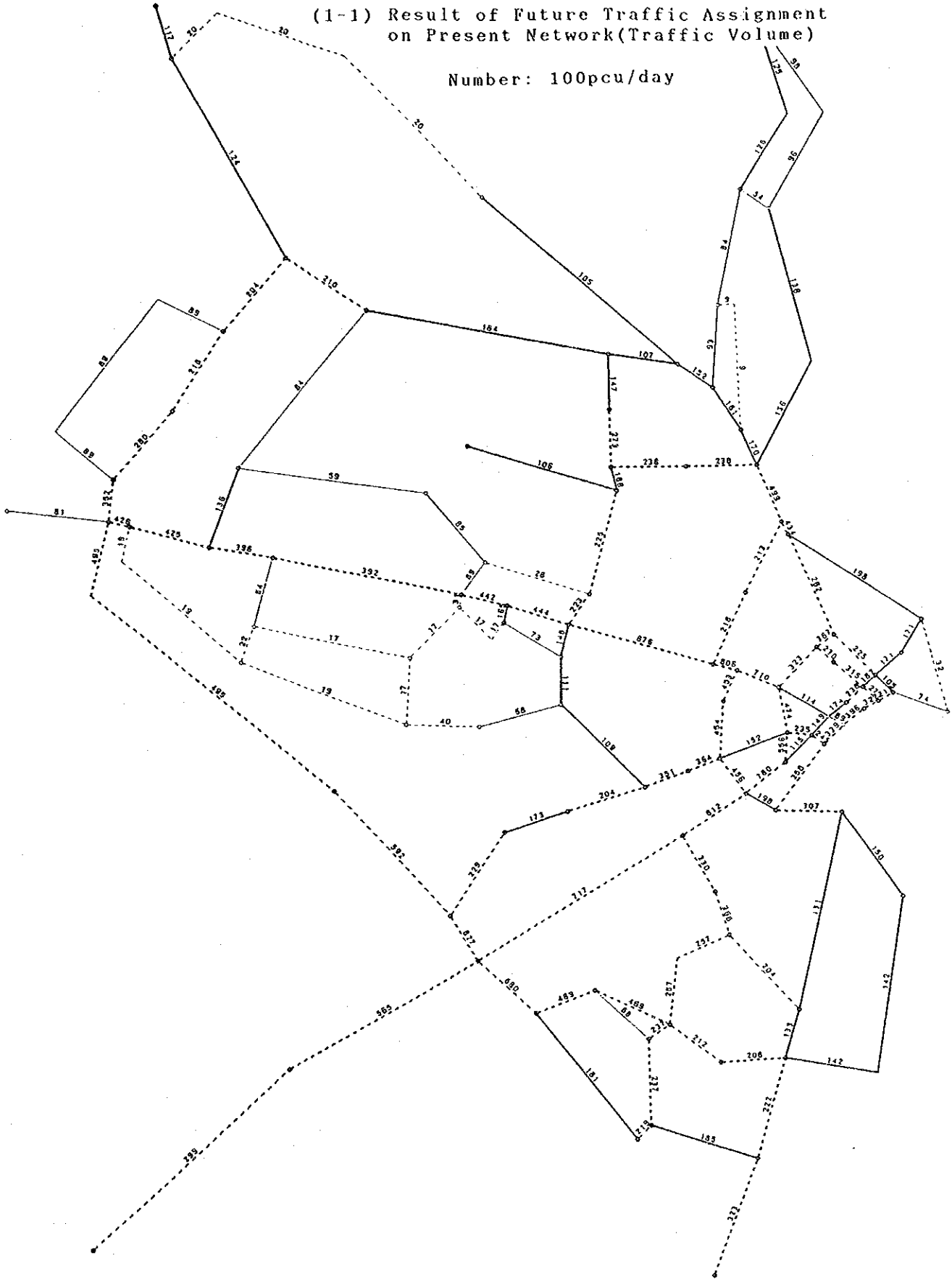


LINK-VALUE

Appendix 5-8: Results of Future Traffic Assignment on Alternative Network

(1-1) Result of Future Traffic Assignment on Present Network(Traffic Volume)

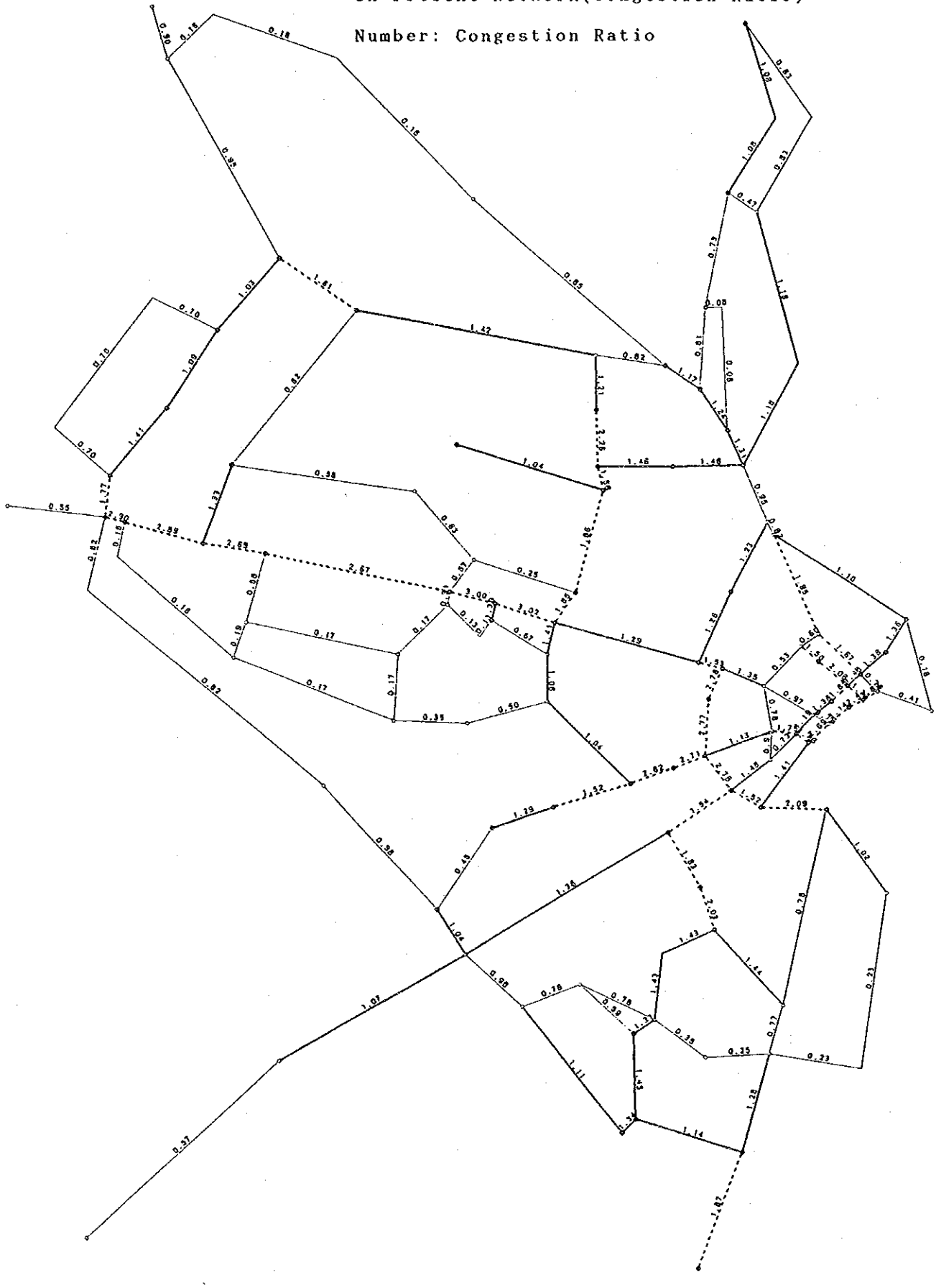
Number: 100pcu/day



CASE-0

(1-2) Result of Future Traffic Assignment
on Present Network(Congestion Ratio)

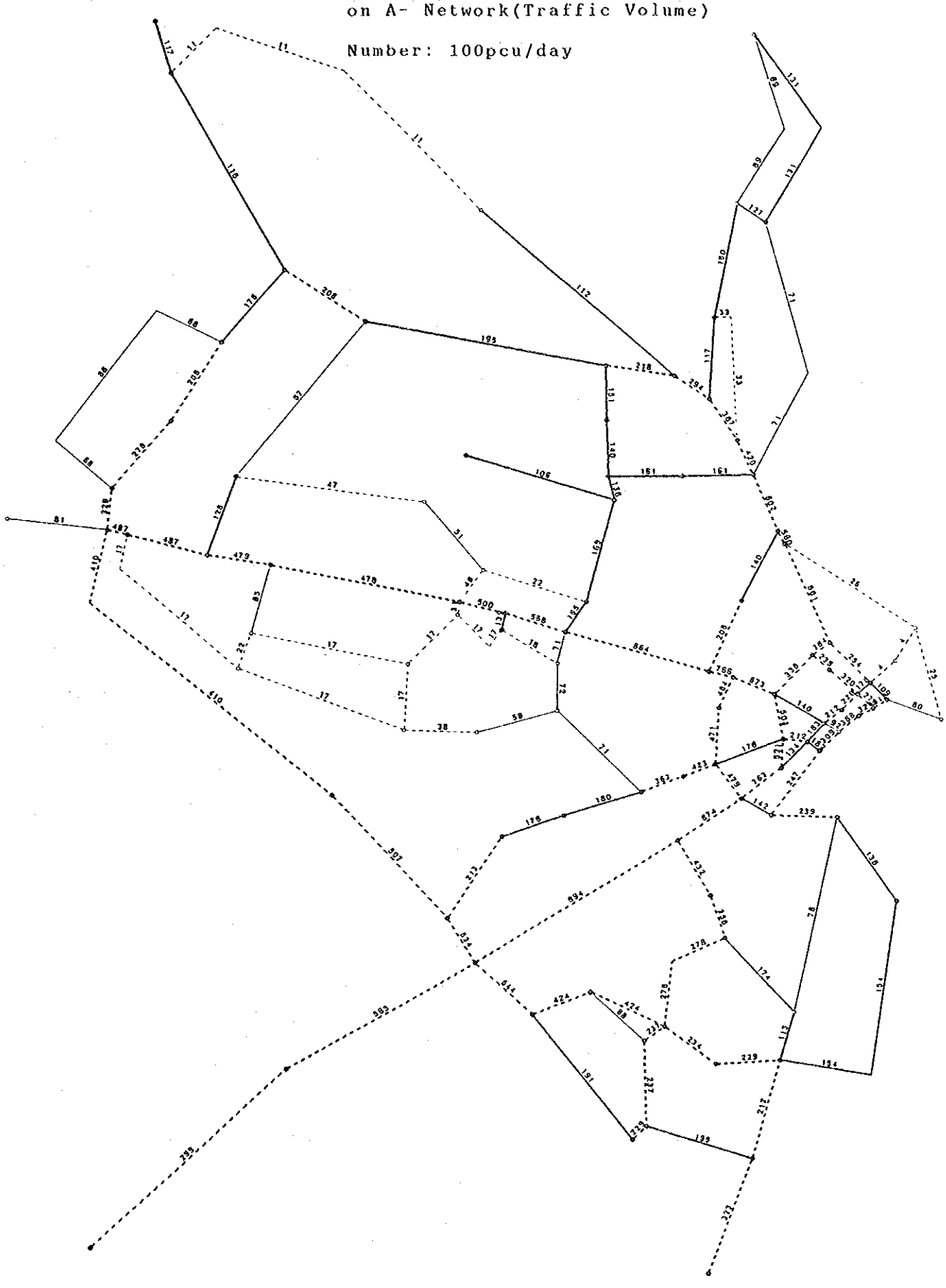
Number: Congestion Ratio



CASE-0

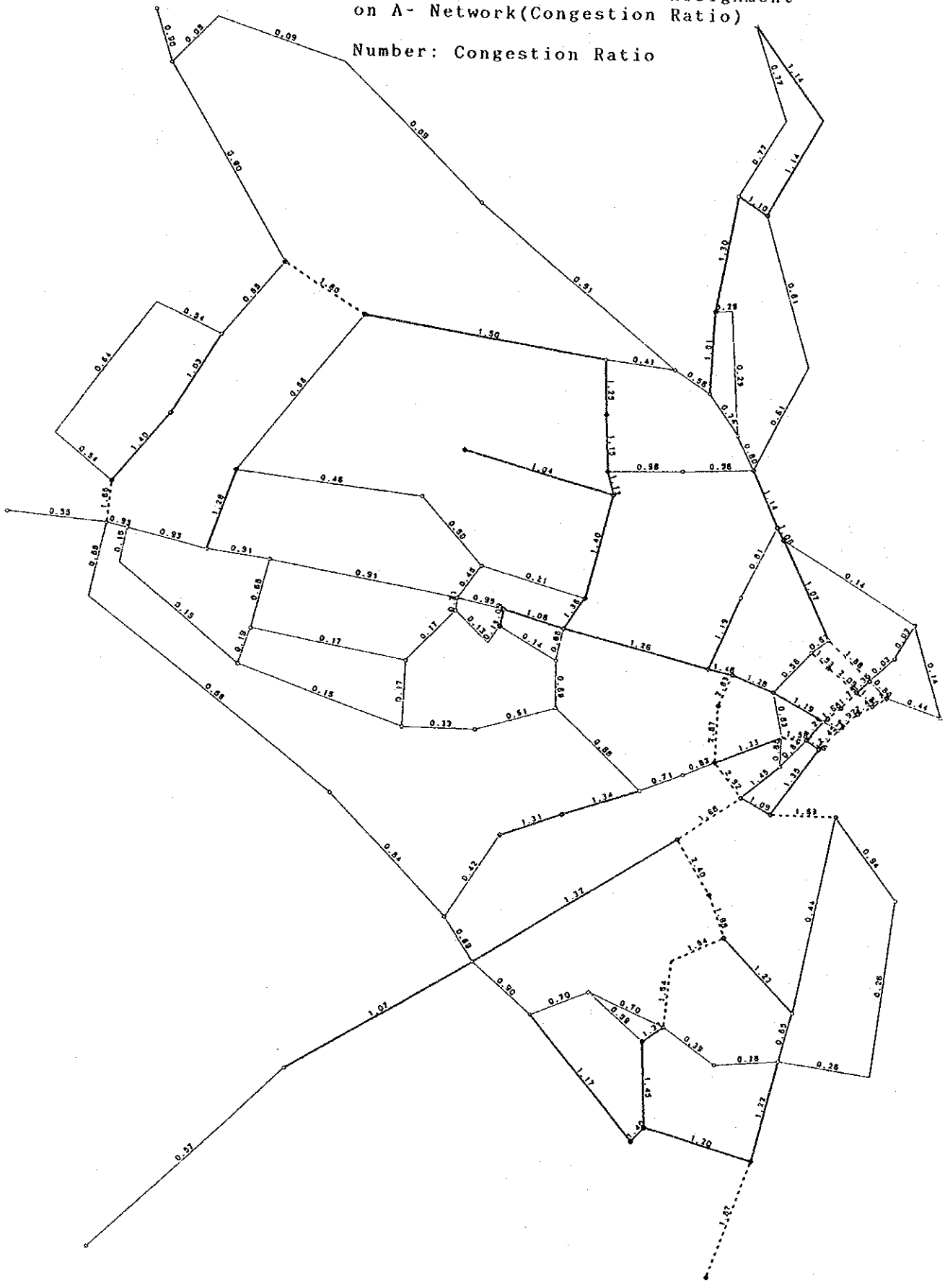
(2-1) Result of Future Traffic Assignment on A- Network(Traffic Volume)

Number: 100pcu/day



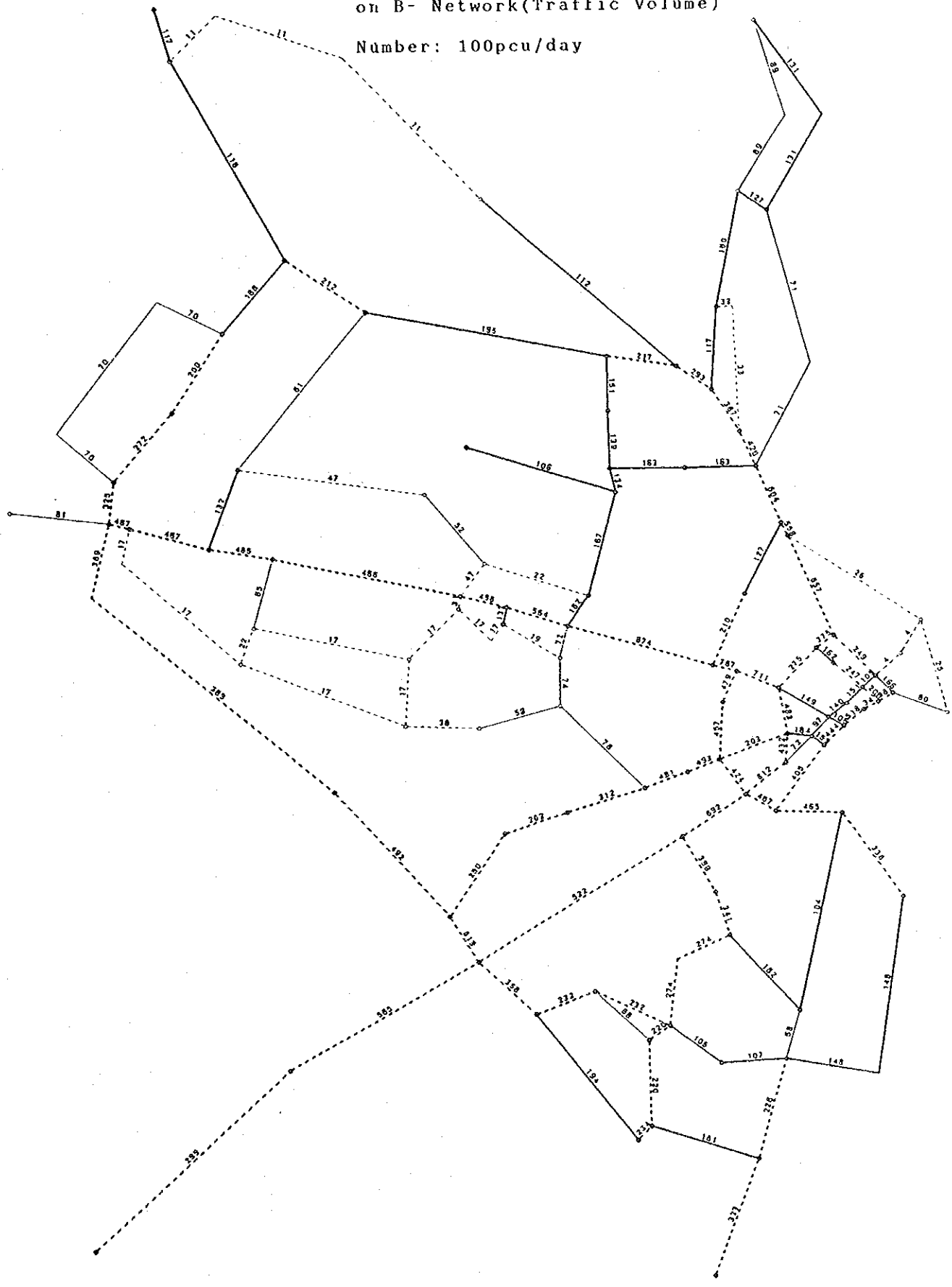
(2-2) Result of Future Traffic Assignment on A- Network(Congestion Ratio)

Number: Congestion Ratio



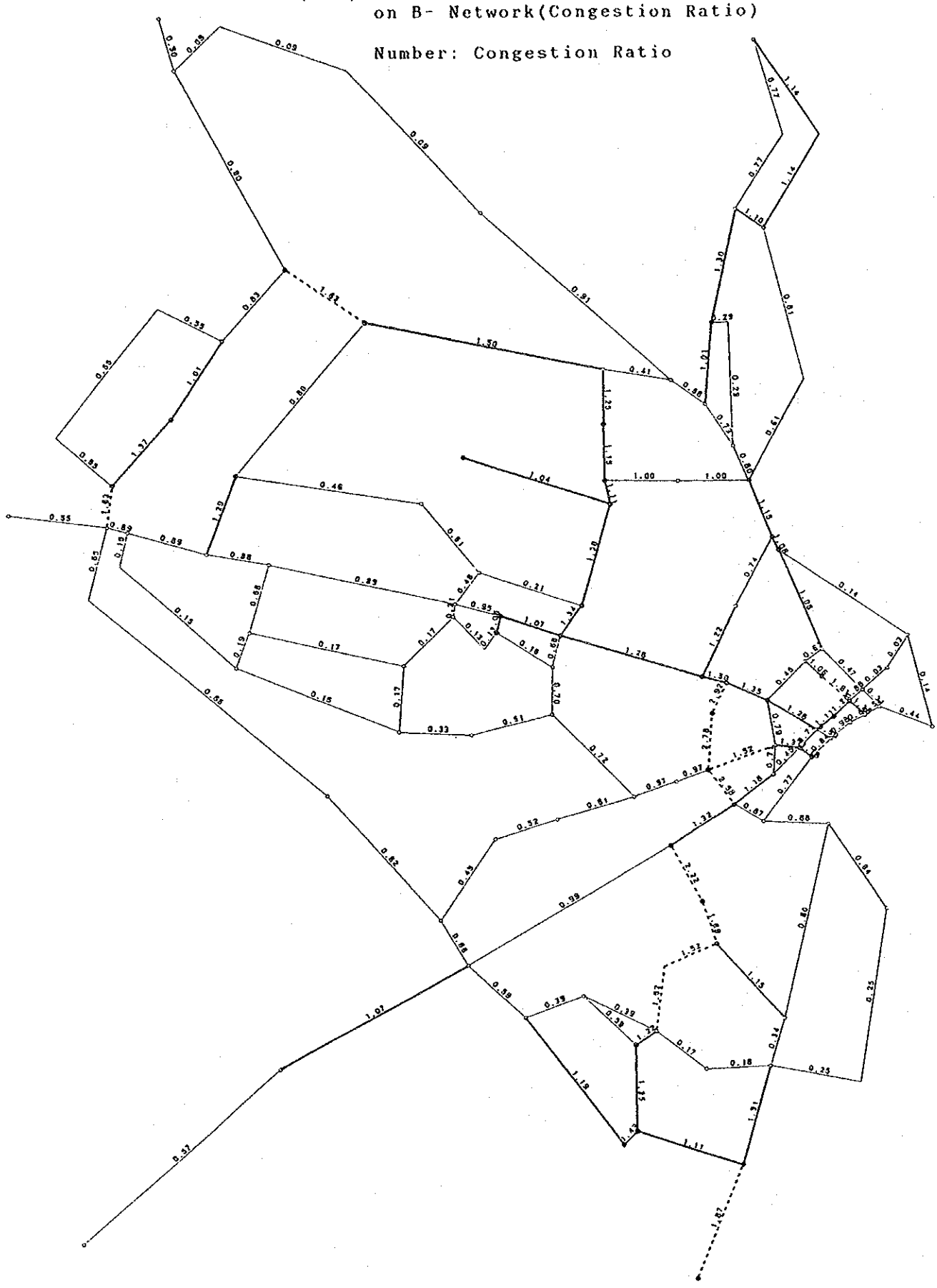
(3-1) Result of Future Traffic Assignment on B- Network(Traffic Volume)

Number: 100pcu/day



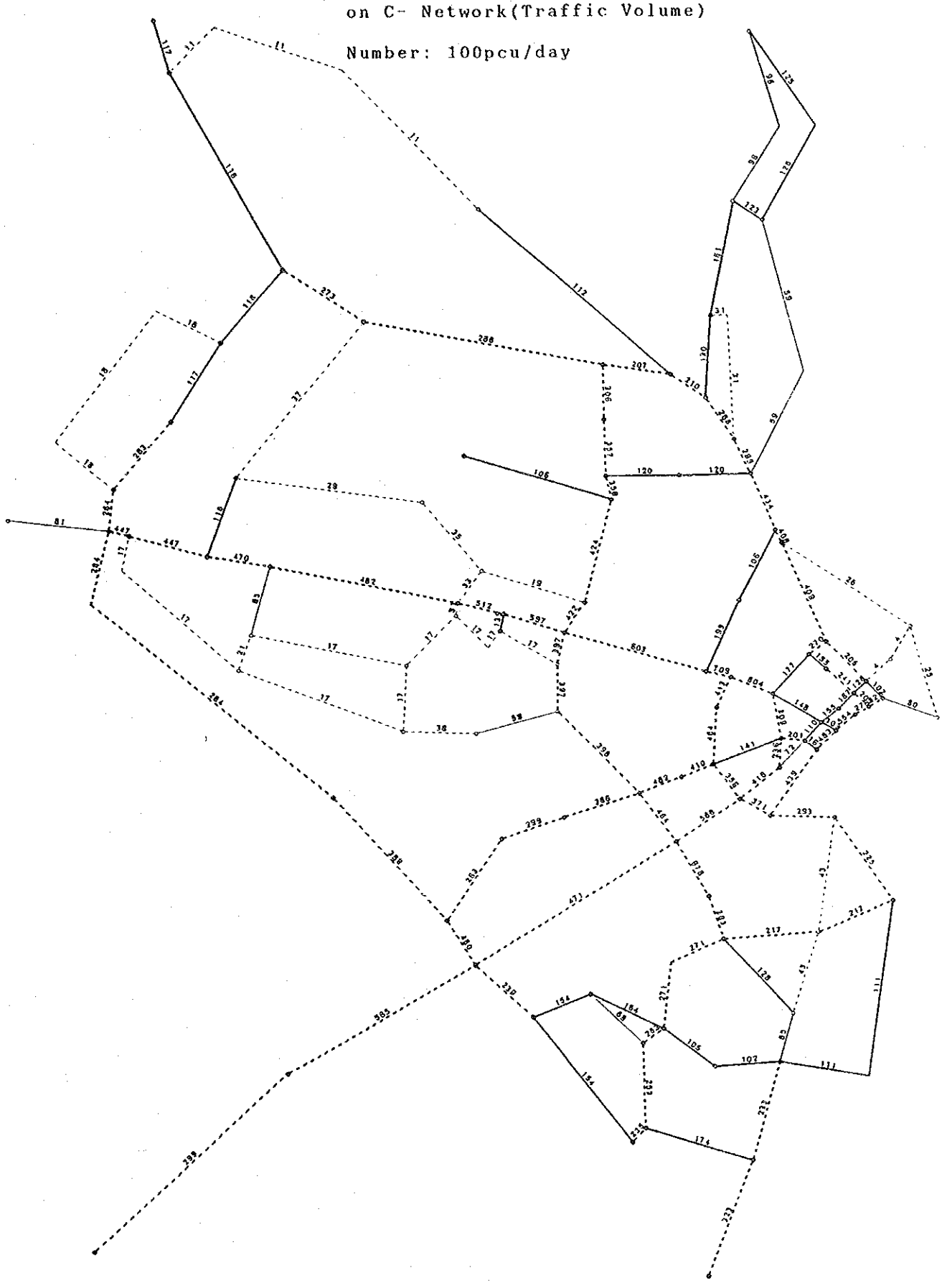
(3-2) Result of Future Traffic Assignment on B- Network(Congestion Ratio)

Number: Congestion Ratio



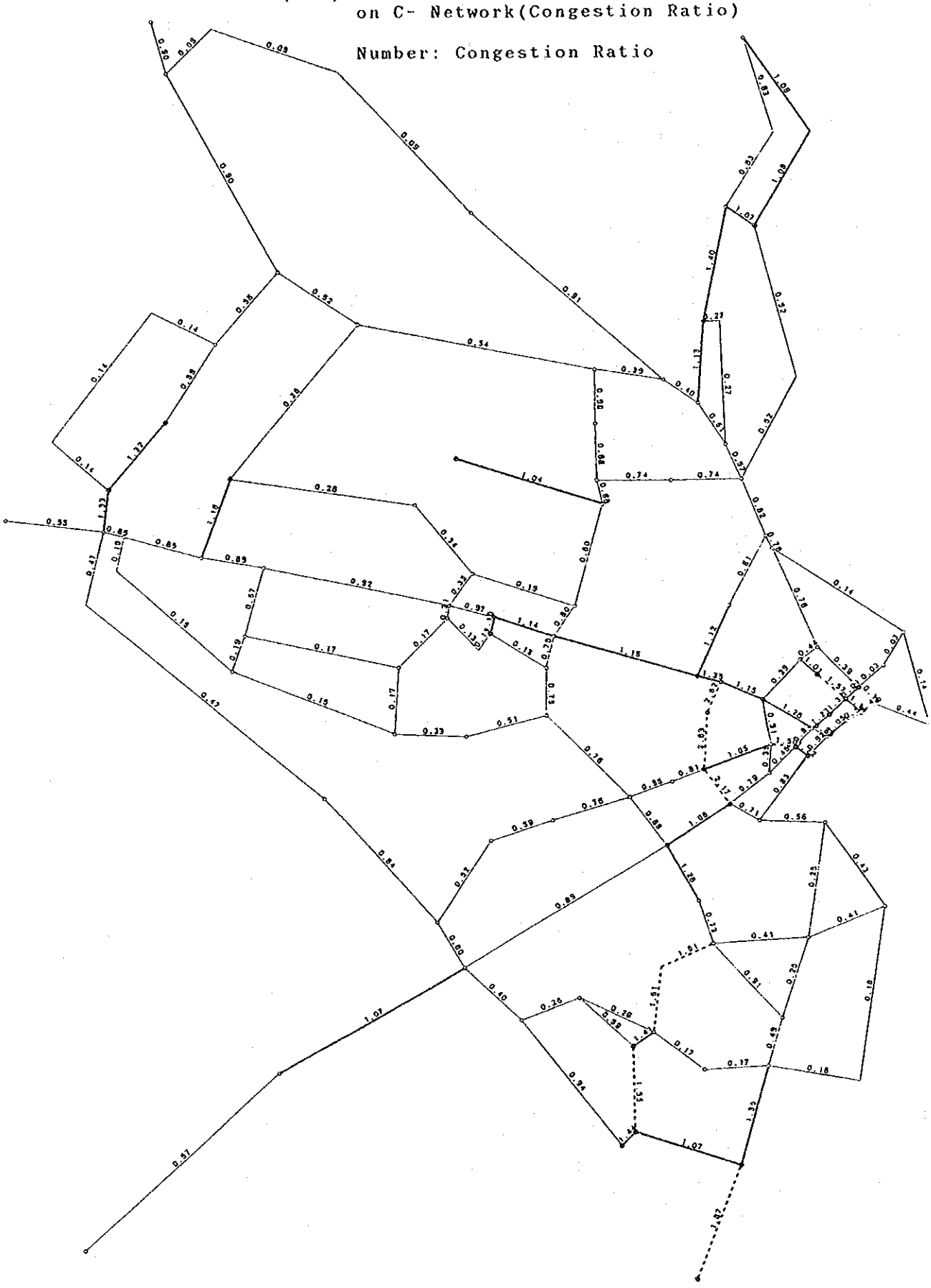
(4-1) Result of Future Traffic Assignment on C- Network(Traffic Volume)

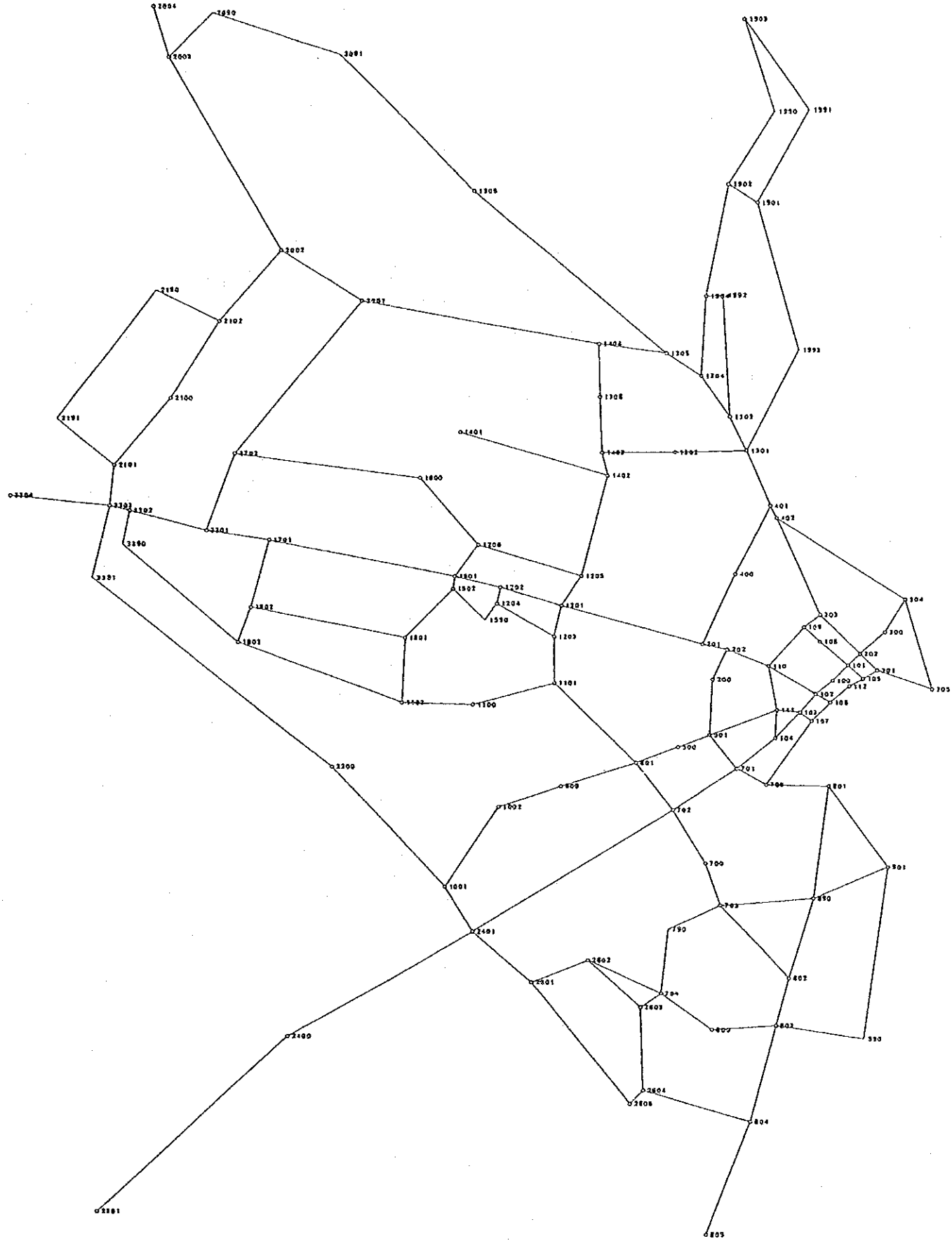
Number: 100pcu/day



(4-2) Result of Future Traffic Assignment on C- Network(Congestion Ratio)

Number: Congestion Ratio





NODE-NUMBER

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
1	101	401	1301	4	.88	13109	11678	24787			
						4796	5541	10337			
						1130	746	1876			
						109	77	186			
						1745	1746	3491			
						25727	24180	49907	52600.	.95	55.0
2	102	1301	1303	3	.40	4397	4031	8428			
						1833	2010	3843			
						472	361	833			
						36	45	81			
						478	478	956			
						8716	8332	17048	13000.	1.31	5.0
3	103	1303	1304	3	.60	4052	3721	7773			
						1715	1866	3581			
						472	361	833			
						36	45	81			
						478	478	956			
						8253	7878	16131	13000.	1.24	5.0
4	104	1304	1305	3	.60	4094	4161	8255			
						1805	1979	3784			
						510	427	937			
						36	50	86			
						171	172	343			
						7540	7660	15200	13000.	1.17	5.0
5	105	1305	1404	2	.80	2612	3124	5736			
						1289	1375	2664			
						249	306	555			
						5	40	45			
						171	172	343			
						4927	5747	10674	13000.	.82	30.3
6	106	1404	2001	2	3.16	3446	3920	7366			
						1707	1745	3452			
						314	334	648			
						17	46	63			
						1023	1024	2047			
						8901	9543	18444	13000.	1.42	22.1
7	107	2001	2002	1	1.20	4076	4884	8960			
						2203	2369	4572			
						264	315	579			
						9	46	55			
						1023	1024	2047			
						9903	11093	20996	13000.	1.62	5.0
8	108	2002	2003	1	3.00	1307	1357	2664			
						935	967	1902			
						375	698	1073			
						62	72	134			
						875	876	1751			
						5803	6564	12367	13000.	.95	29.1
9	109	2003	2004	2	.60	1065	1135	2200			
						805	855	1660			
						375	698	1073			
						62	72	134			
						875	876	1751			
						5431	6230	11661	13000.	.90	40.0
10	118	1201	1205	2	.40	5343	4720	10063			
						2203	2603	4806			
						405	705	1110			
						76	73	149			
						799	800	1599			
						10981	11352	22333	12100.	1.85	5.0
11	119	1205	1402	2	1.40	5456	4821	10277			
						2229	2585	4814			
						399	670	1069			
						76	73	149			
						799	800	1599			
						11108	11365	22473	12100.	1.86	5.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
12	120	1402	1403	2	.28	4678	3993	8671			
						2004	2120	4124			
						214	295	509			
						35	44	79			
						799	800	1599			
						9612	9235	18847	12100.	1.56	5.0
13	121	1306	1404	2	.70	3260	3222	6482			
						1592	1544	3136			
						66	29	95			
						12	6	18			
						799	800	1599			
						7417	7242	14659	12100.	1.21	27.4
14	122	1306	1403	2	.70	6747	8025	14772			
						3401	2869	6270			
						327	267	594			
						44	46	90			
						799	800	1599			
						13331	13966	27297	12100.	2.26	5.0
15	124	1302	1403	3	.94	4529	3936	8465			
						1350	1766	3116			
						87	66	153			
						12	1	13			
						1975	1976	3951			
						12014	11765	23779	16300.	1.46	36.1
16	125	1301	1302	3	.86	4529	3936	8465			
						1350	1766	3116			
						87	66	153			
						12	1	13			
						1975	1976	3951			
						12014	11765	23779	16300.	1.46	36.1
17	126	102	106	2	.20	2107	1948	4055			
						808	620	1428			
						119	0	119			
						0	0	0			
						538	538	1076			
						4767	4182	8949	11800.	.76	40.0
18	127	102	110	2	.60	2699	2780	5479			
						881	1056	1937			
						158	155	313			
						14	30	44			
						538	538	1076			
						5552	5850	11402	11800.	.97	32.3
19	128	110	202	4	.56	11241	10762	22003			
						5546	5354	10900			
						776	865	1641			
						110	138	248			
						5678	5678	11356			
						35703	35294	70997	52600.	1.35	59.8
20	129	201	202	4	.26	13140	14171	27311			
						6641	6670	13311			
						1323	1123	2446			
						197	156	353			
						5678	5678	11356			
						40052	40589	80641	52600.	1.53	41.5
21	130	201	1201	4	1.84	10153	9229	19382			
						4559	4858	9417			
						829	1107	1936			
						141	156	297			
						5678	5678	11356			
						33827	33803	67630	52600.	1.29	66.2
22	131	1201	1202	3	.80	4682	4305	8987			
						2116	1867	3983			
						669	613	1282			
						103	106	209			
						4713	4714	9427			
						22584	21858	44442	14700.	3.02	5.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
23	132	1202	1501	3	.60	4398	4094	8492			
						2362	2407	4769			
						559	554	1113			
						69	59	128			
						4713	4714	9427			
						22224	21928	44152	14700.	3.00	5.0
24	133	1501	1701	2	2.16	2719	2628	5347			
						1635	1555	3190			
						523	493	1016			
						63	56	119			
						4713	4714	9427			
						19728	19479	39207	14700.	2.67	30.3
25	134	1701	3301	2	1.00	2869	2899	5768			
						1641	1541	3182			
						517	514	1031			
						46	45	91			
						4713	4714	9427			
						19821	19745	39566	14700.	2.69	29.3
26	135	3301	3302	2	1.04	3698	3463	7161			
						2368	2389	4757			
						488	543	1031			
						39	34	73			
						4713	4714	9427			
						21298	21182	42480	14700.	2.89	21.4
27	136	3302	3303	2	.24	3754	3502	7256			
						2398	2420	4818			
						488	543	1031			
						39	34	73			
						4713	4714	9427			
						21384	21252	42636	14700.	2.90	20.9
28	137	3303	3304	2	1.20	455	815	1270			
						185	190	375			
						232	522	754			
						106	111	217			
						712	712	1424			
						3558	4518	8076	14700.	.55	40.0
29	141	400	401	3	.96	6144	5192	11336			
						2545	2757	5302			
						221	289	510			
						11	18	29			
						589	590	1179			
						10931	10351	21282	17300.	1.23	5.0
30	142	201	400	3	1.00	5533	5426	10959			
						2743	2415	5158			
						520	442	962			
						24	50	74			
						589	590	1179			
						11155	10645	21800	17300.	1.26	5.0
31	143	104	111	3	.28	12378	11978	24356			
						6931	6224	13155			
						2259	1684	3943			
						282	232	514			
						1451	1452	2903			
						29026	26622	55648	60800.	.92	33.7
32	144	110	111	3	.56	10559	10948	21507			
						5530	6204	11734			
						952	1287	2239			
						142	172	314			
						1451	1452	2903			
						22772	24598	47370	60800.	.78	41.8
33	145	109	110	3	.68	7279	7108	14387			
						3360	3667	7027			
						242	669	911			
						34	76	110			
						1451	1452	2903			
						15578	16697	32275	60800.	.53	50.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
34	146	109	303	3	.20	8749	8522	17271			
						3809	3838	7647			
						871	432	1303			
						98	56	154			
						1451	1452	2903			
						18947	17748	36695	60800.	.60	50.0
35	148	803	990	4	3.40	2136	2106	4242			
						1434	1432	2866			
						963	725	1688			
						247	189	436			
						393	394	787			
						7416	6737	14153	60200.	.24	80.0
36	149	704	800	4	.76	2990	2859	5849			
						1614	1513	3127			
						1691	1369	3060			
						320	273	593			
						713	714	1427			
						11085	10071	21156	60200.	.35	80.0
37	150	800	803	4	.80	2861	2795	5656			
						1578	1452	3030			
						1687	1359	3046			
						312	275	587			
						713	714	1427			
						10838	9932	20820	60200.	.35	80.0
38	151	704	2602	4	1.00	10084	10398	20482			
						5602	5617	11219			
						2004	2264	4268			
						391	411	802			
						713	714	1427			
						23006	23918	46924	60200.	.78	59.2
39	155	2601	2602	4	.80	10398	10084	20482			
						5617	5602	11219			
						2264	2004	4268			
						411	391	802			
						713	714	1427			
						23915	23009	46924	60200.	.78	59.2
40	156	2401	2601	4	1.00	14018	13750	27768			
						7279	7686	14965			
						2264	2004	4268			
						411	391	802			
						713	714	1427			
						29197	28759	57956	60200.	.96	40.8
41	157	1001	2401	4	.68	13894	13434	27328			
						7991	7952	15943			
						2708	2224	4932			
						349	414	763			
						1210	1210	2420			
						31978	30706	62684	60200.	1.04	37.9
42	158	2200	3391	4	4.90	9433	10152	19585			
						6022	6256	12278			
						1746	2464	4210			
						336	332	668			
						1210	1210	2420			
						23585	25962	49547	60200.	.82	59.8
43	159	1001	2200	4	2.10	12079	12893	24972			
						7396	7700	15096			
						2008	2796	4804			
						388	369	757			
						1210	1210	2420			
						28285	30922	59207	60200.	.98	43.7
44	161	705	801	3	.92	6626	5718	12344			
						3386	2912	6298			
						551	593	1144			
						98	103	201			
						1530	1530	3060			
						15998	14715	30713	14700.	2.09	5.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
45	162	801	901	1	1.36	3739	3154	6893			
						1581	1413	2994			
						511	579	1090			
						98	99	197			
						393	394	787			
						7815	7204	15019	14700.	1.02	22.8
46	163	801	802	2	2.48	2887	2564	5451			
						1805	1499	3304			
						40	14	54			
						0	4	4			
						712	712	1424			
						6908	6239	13147	17300.	.76	39.5
47	164	802	803	2	.60	1487	1701	3188			
						1200	1206	2406			
						555	904	1459			
						44	125	169			
						712	712	1424			
						6065	7226	13291	17300.	.77	39.1
48	165	803	804	2	2.24	2886	3064	5950			
						2000	1882	3882			
						1447	1706	3153			
						161	263	424			
						796	796	1592			
						10651	11535	22186	17300.	1.28	5.0
49	166	804	805	2	1.60	5965	6035	12000			
						3890	3550	7440			
						1573	1817	3390			
						172	278	450			
						796	796	1592			
						15905	16441	32346	17300.	1.87	5.0
50	171	103	107	2	.20	4234	4191	8425			
						2171	1895	4066			
						0	0	0			
						0	0	0			
						1999	2000	3999			
						12402	12086	24488	13400.	1.83	22.7
51	172	103	111	2	.24	2558	2440	4998			
						1179	1152	2331			
						783	988	1771			
						91	117	208			
						1999	2000	3999			
						11573	11919	23492	13400.	1.75	25.7
52	173	111	501	2	.80	1139	1010	2149			
						485	425	910			
						51	16	67			
						1	7	8			
						1999	2000	3999			
						7726	7488	15214	13400.	1.14	40.0
53	174	500	601	2	.60	3521	3611	7132			
						1786	1918	3704			
						356	471	827			
						59	45	104			
						3713	3714	7427			
						17335	17748	35083	13400.	2.62	21.8
54	175	500	501	2	.40	3816	3766	7582			
						1992	1980	3972			
						502	436	938			
						81	138	219			
						3713	3714	7427			
						18194	18174	36368	13400.	2.71	5.0
55	176	600	1002	2	.80	3217	3341	6558			
						2083	2253	4336			
						307	530	837			
						61	100	161			
						712	712	1424			
						8233	9090	17323	13400.	1.29	21.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
56	177	600	601	2	1.00	4490	4621	9111			
						2398	2298	4696			
						538	406	944			
						80	61	141			
						712	712	1424			
						10340	10050	20390	13400.	1.52	5.0
57	178	1001	1002	4	1.20	4749	4395	9144			
						3056	2791	5847			
						861	557	1418			
						152	106	258			
						712	712	1424			
						12119	10754	22873	50800.	.45	80.0
58	182	200	501	2	.80	4161	4178	8339			
						2143	2630	4773			
						543	752	1295			
						64	102	166			
						4872	4872	9744			
						22198	23234	45432	16400.	2.77	20.5
59	183	200	202	2	.40	4997	4445	9442			
						2208	2371	4579			
						360	471	831			
						51	64	115			
						4872	4872	9744			
						22694	22566	45260	16400.	2.76	20.9
60	184	501	701	3	.48	3859	3697	7556			
						2122	2537	4659			
						738	846	1584			
						115	216	331			
						4872	4872	9744			
						22418	23190	45608	16400.	2.78	20.1
61	185	2101	3303	2	.40	7247	7140	14387			
						4612	4361	8973			
						1942	1459	3401			
						227	241	468			
						602	602	1204			
						18230	16948	35178	19900.	1.77	5.0
62	186	2100	2101	2	1.10	5123	4891	10014			
						3206	2973	6179			
						1942	1459	3401			
						227	241	468			
						602	602	1204			
						14700	13311	28011	19900.	1.41	5.0
63	187	2002	2102	2	1.16	3715	4428	8143			
						2289	2408	4697			
						954	676	1630			
						99	137	236			
						602	602	1204			
						10015	10405	20420	19900.	1.03	26.2
64	191	401	402	4	.10	10432	10911	21343			
						4455	3922	8377			
						457	909	1366			
						59	98	157			
						1745	1746	3491			
						21213	22183	43396	52600.	.83	67.4
65	193	104	701	4	.60	15008	15338	30346			
						7645	8558	16203			
						1684	2259	3943			
						232	282	514			
						3663	3664	7327			
						37706	40252	77958	52600.	1.48	5.0
66	194	701	702	4	1.00	14817	15505	30322			
						7678	9116	16794			
						2153	2829	4982			
						287	432	719			
						3663	3664	7327			
						38651	42567	81218	52600.	1.54	5.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
67	195	702	2401	4	3.00	13138	14125	27263			
						6360	8116	14476			
						1416	1806	3222			
						274	232	506			
						3663	3664	7327			
						34141	37541	71682	52600.	1.36	35.5
68	196	2400	2501	4	3.60	4695	4585	9280			
						1950	2640	4590			
						419	484	903			
						64	54	118			
						2314	2314	4628			
						14617	15297	29914	52600.	.57	80.0
69	197	2400	2401	4	2.70	11800	11005	22805			
						7045	5735	12780			
						1540	1374	2914			
						228	185	413			
						2314	2314	4628			
						29551	26985	56536	52600.	1.07	48.9
70	200	103	104	2	.48	3030	2960	5990			
						1421	1627	3048			
						0	0	0			
						0	0	0			
						418	418	836			
						5705	5841	11546	15900.	.73	37.3
71	201	102	103	2	.28	2916	2685	5601			
						1381	1284	2665			
						783	988	1771			
						91	117	208			
						418	418	836			
						7390	7550	14940	12600.	1.19	20.5
72	202	100	101	2	.30	7261	7267	14528			
						2444	3176	5620			
						202	247	449			
						22	51	73			
						418	418	836			
						11429	12344	23773	12600.	1.89	5.0
73	203	100	102	2	.30	3667	3358	7025			
						1642	1532	3174			
						941	1024	1965			
						105	147	252			
						418	418	836			
						8760	8633	17393	12600.	1.38	5.0
74	204	101	302	2	.20	5586	5644	11230			
						1987	2509	4496			
						0	0	0			
						0	0	0			
						418	418	836			
						8827	9407	18234	12600.	1.45	5.0
75	205	300	304	3	.52	5919	5925	11844			
						2345	2494	4839			
						0	0	0			
						0	0	0			
						68	68	136			
						8468	8623	17091	12600.	1.36	5.0
76	206	300	302	3	.44	5925	5919	11844			
						2494	2345	4839			
						0	0	0			
						0	0	0			
						68	68	136			
						8623	8468	17091	12600.	1.36	5.0
77	207	106	107	2	.30	5198	4853	10051			
						2426	2338	4764			
						111	146	257			
						23	22	45			
						3071	3072	6143			
						17128	16765	33893	12600.	2.69	5.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
78	208	105	112	2	.30	4799	4880	9679			
						2147	1954	4101			
						67	162	229			
						5	4	9			
						3071	3072	6143			
						16308	16386	32694	12600.	2.59	5.0
79	208	112	106	2	.30	7146	6960	14106			
						3046	3146	6192			
						111	265	376			
						23	22	45			
						3071	3072	6143			
						19696	19918	39614	12600.	3.14	5.0
80	209	105	301	2	.16	627	892	1519			
						279	346	625			
						162	124	286			
						4	34	38			
						3071	3072	6143			
						10455	10804	21259	12600.	1.69	40.0
81	210	107	705	2	1.00	2526	2138	4664			
						1207	843	2050			
						111	146	257			
						23	22	45			
						3071	3072	6143			
						13237	12555	25792	18300.	1.41	40.0
82	211	701	705	2	.40	4100	3580	7680			
						2179	2069	4248			
						440	447	887			
						75	81	156			
						935	936	1871			
						10189	9594	19783	13000.	1.52	5.0
83	212	301	305	2	.80	1224	1640	2864			
						537	627	1164			
						187	162	349			
						7	34	41			
						420	420	840			
						3416	3953	7369	18000.	.41	40.0
84	213	101	105	2	.20	4265	4611	8876			
						1906	1780	3686			
						0	57	57			
						0	29	29			
						2382	2382	4764			
						13317	13738	27055	15300.	1.77	26.6
85	214	101	108	2	.48	6038	5640	11678			
						2161	2497	4658			
						202	190	392			
						22	22	44			
						2382	2382	4764			
						15815	15729	31544	15300.	2.06	5.0
86	215	108	109	2	.20	6038	5640	11678			
						2161	2497	4658			
						202	190	392			
						22	22	44			
						957	958	1915			
						11540	11457	22997	15300.	1.50	5.0
87	216	301	302	2	.28	748	597	1345			
						281	258	539			
						38	25	63			
						0	3	3			
						1415	1416	2831			
						5350	5162	10512	13500.	.78	40.0
88	217	302	303	2	.64	4725	4626	9351			
						2101	2451	4552			
						38	25	63			
						0	3	3			
						1415	1416	2831			
						11147	11384	22531	13500.	1.67	5.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
89	218	304	402	2	3.40	6254	6101	12355			
						2408	2562	4970			
						0	0	0			
						0	0	0			
						420	420	840			
						9922	9923	19845	18000.	1.10	21.5
90	219	1905	2091	1	4.80	269	289	558			
						133	151	284			
						0	0	0			
						0	0	0			
						188	188	376			
						966	1004	1970	12400.	.16	30.0
91	220	1305	1905	2	3.40	3108	2663	5771			
						1200	1288	2488			
						320	180	500			
						34	13	47			
						188	188	376			
						5614	4914	10528	12400.	.85	29.7
92	221	1902	1990	1	2.70	3978	3435	7413			
						1575	1668	3243			
						0	0	0			
						0	0	0			
						299	300	599			
						6450	6003	12453	11500.	1.08	21.5
93	222	1902	1904	2	1.60	1995	2428	4423			
						994	991	1985			
						38	66	104			
						0	5	5			
						299	300	599			
						3962	4466	8428	11500.	.73	36.9
94	223	1304	1904	2	1.10	2738	2340	5078			
						1135	1112	2247			
						66	38	104			
						5	0	5			
						299	300	599			
						4917	4428	9345	11500.	.81	33.7
95	224	1901	1902	2	.42	1896	1786	3682			
						702	792	1494			
						38	66	104			
						0	5	5			
						0	0	0			
						2674	2725	5399	11500.	.47	40.0
96	225	1901	1991	2	3.00	2652	2290	4942			
						1050	1112	2162			
						638	358	996			
						67	32	99			
						34	34	68			
						5281	4316	9597	11500.	.83	27.3
97	226	1301	1993	2	3.70	4202	3730	7932			
						1634	1786	3420			
						572	320	892			
						62	32	94			
						34	34	68			
						7268	6354	13622	11500.	1.18	5.0
98	227	1303	1992	2	1.80	345	310	655			
						118	144	262			
						0	0	0			
						0	0	0			
						0	0	0			
						463	454	917	11500.	.08	40.0
99	228	1702	3301	1	1.08	3128	2863	5991			
						1965	2086	4051			
						373	431	804			
						35	31	66			
						284	284	568			
						6796	6756	13552	10200.	1.33	5.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
100	229	1702	2001	1	2.68	2011	2345	4356			
						1011	1139	2150			
						22	53	75			
						0	8	8			
						284	284	568			
						3918	4466	8384	10200.	.82	26.9
101	230	1401	1402	1	2.20	2180	2130	4310			
						955	715	1670			
						439	249	688			
						30	42	72			
						500	500	1000			
						5603	4969	10572	10200.	1.04	25.2
102	231	1600	1702	1	2.40	1368	1362	2730			
						663	747	1410			
						0	19	19			
						0	0	0			
						285	286	571			
						2886	3005	5891	10200.	.58	30.0
103	232	1206	1600	1	1.20	1518	1487	3005			
						759	893	1652			
						6	35	41			
						0	0	0			
						285	286	571			
						3144	3308	6452	10200.	.63	30.0
104	233	1205	1206	2	1.40	240	252	492			
						134	178	312			
						6	35	41			
						0	0	0			
						285	286	571			
						1241	1358	2599	10200.	.25	40.0
105	234	2101	2191	2	4.36	2249	2124	4373			
						1388	1406	2794			
						0	0	0			
						0	0	0			
						285	286	571			
						4492	4388	8880	12700.	.70	37.4
106	239	1701	1802	2	.90	1187	1066	2253			
						635	655	1290			
						176	149	325			
						21	15	36			
						358	358	716			
						3311	3138	6449	11500.	.56	40.0
107	240	1802	1803	2	.40	29	8	37			
						0	15	15			
						0	0	0			
						4	0	4			
						358	358	716			
						1115	1097	2212	11500.	.19	40.0
108	241	1801	1802	1	1.90	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	10200.	.17	30.0
109	243	1501	1502	1	.10	495	325	820			
						165	200	365			
						36	61	97			
						6	3	9			
						285	286	571			
						1605	1514	3119	10200.	.31	30.0
110	244	1502	1801	1	1.00	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	10200.	.17	30.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
111	245	1102	1801	1	.88	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	10200.	.17	30.0
112	246	1100	1102	1	1.20	64	68	132			
						45	31	76			
						0	0	0			
						0	4	4			
						637	638	1275			
						2020	2025	4045	11500.	.35	30.0
113	247	1100	1101	2	1.20	463	434	897			
						345	254	599			
						93	89	182			
						1	21	22			
						637	638	1275			
						2908	2843	5751	11500.	.50	40.0
114	248	1102	1803	1	2.20	64	68	132			
						45	31	76			
						0	0	0			
						0	4	4			
						285	286	571			
						964	969	1933	11500.	.17	30.0
115	249	1803	3390	1	2.46	56	39	95			
						30	31	61			
						0	0	0			
						0	0	0			
						285	286	571			
						941	928	1869	11500.	.16	30.0
116	250	1202	1204	1	.20	4607	4534	9141			
						2198	1904	4102			
						348	297	645			
						43	56	99			
						285	286	571			
						8485	8058	16543	12700.	1.30	5.0
117	251	1204	1590	1	1.00	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	12700.	.13	30.0
118	252	1203	1204	1	.90	1681	1949	3630			
						862	951	1813			
						18	31	49			
						0	2	2			
						285	286	571			
						3434	3826	7260	12700.	.57	30.0
119	256	601	1101	2	1.60	1235	1456	2691			
						738	770	1508			
						129	112	241			
						54	21	75			
						1003	1004	2007			
						5402	5525	10927	10500.	1.04	40.0
120	257	1101	1203	1	.60	1365	1557	2922			
						822	763	1585			
						124	103	227			
						34	21	55			
						1003	1004	2007			
						5546	5601	11147	10500.	1.06	30.0
121	258	1201	1203	1	.40	2766	2842	5608			
						1259	1407	2666			
						72	106	178			
						19	34	53			
						1003	1004	2007			
						7235	7575	14810	10500.	1.41	23.3

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A → B	B → A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
122	259	700	703	2	.60	5855	6586	12441			
						3659	4106	7765			
						636	938	1574			
						48	121	169			
						2123	2124	4247			
						17299	19303	36602	18000.	2.03	5.0
123	260	700	702	2	.80	3812	4111	7923			
						2182	2500	4682			
						1672	1386	3058			
						345	158	503			
						2123	2124	4247			
						16742	16229	32971	18000.	1.83	5.0
124	261	703	790	2	1.60	3609	3803	7412			
						2074	2209	4283			
						121	48	169			
						4	0	4			
						2280	2280	4560			
						12777	12948	25725	18000.	1.43	33.2
125	262	704	2603	2	.28	4058	4069	8127			
						2121	2342	4463			
						855	844	1699			
						127	150	277			
						1140	1140	2280			
						11690	11969	23659	18000.	1.31	22.6
126	263	703	802	2	1.40	2246	2783	5029			
						1585	1897	3482			
						515	890	1405			
						44	121	165			
						1425	1426	2851			
						9268	11101	20369	14100.	1.44	26.5
127	264	2602	2603	2	1.00	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						1140	1140	2280			
						3420	3420	6840	11500.	.59	40.0
128	265	2603	2604	2	1.10	4058	4069	8127			
						2121	2342	4463			
						855	844	1699			
						127	150	277			
						1140	1140	2280			
						11690	11969	23659	16300.	1.45	5.0
129	266	2604	2605	1	.20	3254	3373	6627			
						1590	2033	3623			
						966	970	1936			
						142	161	303			
						1140	1140	2280			
						10622	11249	21871	16300.	1.34	21.6
130	267	2601	2605	1	2.00	3706	3752	7458			
						1714	2136	3850			
						0	0	0			
						0	0	0			
						1140	1140	2280			
						8840	9308	18148	16300.	1.11	26.1
131	268	804	2604	1	1.40	2971	3079	6050			
						1668	1890	3558			
						111	126	237			
						15	11	26			
						1392	1392	2784			
						9082	9430	18512	16300.	1.14	27.5
132	276	1206	1501	1	.56	1309	1352	2661			
						787	697	1484			
						0	0	0			
						0	0	0			
						285	286	571			
						2951	2907	5858	10200.	.57	30.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
133	277	2102	2100	2	1.20	4136	4724	8860			
						2518	2655	5173			
						954	676	1630			
						99	137	236			
						602	602	1204			
						10665	10948	21613	19900.	1.09	23.8
134	278	303	402	3	1.46	4657	4331	8988			
						1514	1893	3407			
						909	457	1366			
						98	59	157			
						1760	1760	3520			
						13563	12595	26158	13400.	1.95	5.0
135	279	304	305	2	1.40	176	335	511			
						68	63	131			
						0	0	0			
						0	0	0			
						420	420	840			
						1504	1658	3162	18000.	.18	40.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
1	101	401	1301	4	.88	16544	14790	31334			
						6532	7415	13947			
						1119	826	1945			
						109	77	186			
						1745	1746	3491			
						30876	29326	60202	52600.	1.14	35.5
2	102	1301	1303	4	.40	12588	11364	23952			
						5114	5700	10814			
						1100	812	1912			
						109	77	186			
						478	478	956			
						21663	20353	42016	52600.	.80	55.6
3	103	1303	1304	4	.60	11369	10285	21654			
						4621	5171	9792			
						1100	812	1912			
						109	77	186			
						478	478	956			
						19951	18745	38696	52600.	.74	61.9
4	104	1304	1305	4	.60	9207	8567	17774			
						3757	4255	8012			
						567	559	1126			
						48	51	99			
						171	172	343			
						14755	14609	29364	52600.	.56	76.1
5	105	1305	1404	4	.80	6652	6492	13144			
						2711	3139	5850			
						329	461	790			
						17	41	58			
						171	172	343			
						10585	11192	21777	52600.	.41	80.0
6	106	1404	2001	3	3.16	3700	4147	7847			
						1913	1991	3904			
						293	416	709			
						17	46	63			
						1023	1024	2047			
						9319	10180	19499	13000.	1.50	5.0
7	107	2001	2002	3	1.20	3941	4626	8567			
						2184	2277	4461			
						250	478	728			
						9	46	55			
						1023	1024	2047			
						9721	11069	20790	13000.	1.60	5.0
8	108	2002	2003	1	3.00	1050	1135	2185			
						805	855	1660			
						375	698	1073			
						62	72	134			
						875	876	1751			
						5416	6230	11646	13000.	.90	30.0
9	109	2003	2004	2	.60	1065	1135	2200			
						805	855	1660			
						375	698	1073			
						62	72	134			
						875	876	1751			
						5431	6230	11661	13000.	.90	40.0
10	118	1201	1205	3	.40	3355	2896	6251			
						1233	1479	2712			
						420	703	1123			
						76	73	149			
						799	800	1599			
						8053	8400	16453	12100.	1.36	22.2
11	119	1205	1402	3	1.40	3493	3119	6612			
						1296	1536	2832			
						420	703	1123			
						76	73	149			
						799	800	1599			
						8254	8680	16934	12100.	1.40	5.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
12	120	1402	1403	3	.28	2865	2441	5306			
						1134	1134	2268			
						211	304	515			
						35	44	79			
						799	800	1599			
						6923	6715	13638	12100.	1.13	36.2
13	121	1306	1404	3	.70	3258	3865	7123			
						1508	1158	2666			
						115	106	221			
						13	18	31			
						799	800	1599			
						7432	7689	15121	12100.	1.25	28.8
14	122	1306	1403	3	.70	2449	3082	5531			
						1327	1097	2424			
						285	197	482			
						44	35	79			
						799	800	1599			
						6875	7078	13953	12100.	1.15	34.6
15	124	1302	1403	3	.94	1592	1383	2975			
						466	696	1162			
						19	14	33			
						0	0	0			
						1975	1976	3951			
						8021	8035	16056	16300.	.99	50.0
16	125	1301	1302	3	.86	1592	1383	2975			
						466	696	1162			
						19	14	33			
						0	0	0			
						1975	1976	3951			
						8021	8035	16056	16300.	.99	50.0
17	126	102	106	3	.20	2208	1744	3952			
						947	781	1728			
						130	0	130			
						4	0	4			
						538	538	1076			
						5041	4139	9180	11800.	.78	49.7
18	127	102	110	3	.60	2867	3356	6223			
						1245	1391	2636			
						393	423	816			
						49	56	105			
						538	538	1076			
						6659	7375	14034	11800.	1.19	25.1
19	128	110	202	4	.56	9029	9565	18594			
						5079	4395	9474			
						994	1117	2111			
						144	161	305			
						5678	5678	11356			
						33562	33711	67273	52600.	1.28	66.9
20	129	201	202	4	.26	11688	11628	23316			
						5492	6017	11509			
						1722	1429	3151			
						241	223	464			
						5678	5678	11356			
						38381	38206	76587	52600.	1.46	49.2
21	130	201	1201	4	1.84	8843	8696	17539			
						4236	4282	8518			
						1123	1406	2529			
						208	200	408			
						5678	5678	11356			
						32983	33424	66407	52600.	1.26	68.5
22	131	1201	1202	4	.80	7735	8048	15783			
						3669	3475	7144			
						957	959	1916			
						137	131	268			
						4713	4714	9427			
						27868	27976	55844	52600.	1.06	77.6

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
23	132	1202	1501	4	.60	5792	5914	11706			
						3034	3053	6087			
						829	869	1698			
						106	85	191			
						4713	4714	9427			
						24941	25102	50043	52600.	.95	80.0
24	133	1501	1701	4	2.16	4994	5245	10239			
						2765	2794	5559			
						800	786	1586			
						101	83	184			
						4713	4714	9427			
						23801	24002	47803	52600.	.91	80.0
25	134	1701	3301	4	1.00	5072	5423	10495			
						2731	2755	5486			
						794	807	1601			
						84	72	156			
						4713	4714	9427			
						23782	24150	47932	52600.	.91	80.0
26	135	3301	3302	4	1.04	5254	5423	10677			
						3105	3190	6295			
						758	755	1513			
						77	61	138			
						4713	4714	9427			
						24245	24448	48693	52600.	.93	80.0
27	136	3302	3303	4	.24	5254	5423	10677			
						3105	3190	6295			
						758	755	1513			
						77	61	138			
						4713	4714	9427			
						24245	24448	48693	52600.	.93	80.0
28	137	3303	3304	2	1.20	455	815	1270			
						185	190	375			
						232	522	754			
						106	111	217			
						712	712	1424			
						3558	4518	8076	14700.	.55	40.0
29	141	400	401	3	.96	3632	2994	6626			
						1323	1292	2615			
						213	369	582			
						11	18	29			
						589	590	1179			
						7181	6848	14029	17300.	.81	43.6
30	142	201	400	3	1.00	4844	5051	9895			
						2691	2120	4811			
						509	519	1028			
						24	50	74			
						589	590	1179			
						10392	10129	20521	17300.	1.19	21.1
31	143	104	111	3	.28	12458	12144	24602			
						7055	6430	13485			
						1270	936	2206			
						171	139	310			
						1451	1452	2903			
						26919	25219	52138	60800.	.86	37.1
32	144	110	111	3	.56	11488	11766	23254			
						6113	6887	13000			
						936	1270	2206			
						139	171	310			
						1451	1452	2903			
						24243	26062	50305	60800.	.83	39.0
33	145	109	110	3	.68	7288	7613	14901			
						4049	3993	8042			
						242	669	911			
						34	76	110			
						1451	1452	2903			
						16276	17528	33804	60800.	.56	50.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
34	146	109	303	3	.20	9594	9051	18645			
						4230	4635	8865			
						669	242	911			
						76	34	110			
						1451	1452	2903			
						19743	18628	38371	60800.	.63	50.0
35	148	803	990	4	3.40	2721	2529	5250			
						1583	1538	3121			
						963	725	1688			
						247	189	436			
						393	394	787			
						8150	7266	15416	60200.	.26	80.0
36	149	704	800	4	.76	3875	3587	7462			
						1959	1830	3789			
						1691	1369	3060			
						320	273	593			
						713	714	1427			
						12315	11116	23431	60200.	.39	80.0
37	150	800	803	4	.80	3695	3472	7167			
						1899	1745	3644			
						1687	1359	3046			
						312	275	587			
						713	714	1427			
						12043	10902	22945	60200.	.38	80.0
38	151	704	2602	4	1.00	9291	9708	18999			
						5140	5198	10338			
						1487	1958	3445			
						323	314	637			
						713	714	1427			
						20513	21906	42419	60200.	.70	66.6
39	155	2601	2602	4	.80	9708	9291	18999			
						5198	5140	10338			
						1958	1487	3445			
						314	323	637			
						713	714	1427			
						21903	20516	42419	60200.	.70	66.6
40	156	2401	2601	4	1.00	13614	13279	26893			
						7072	7402	14474			
						1958	1487	3445			
						314	323	637			
						713	714	1427			
						27683	26766	54449	60200.	.90	46.7
41	157	1001	2401	4	.68	11043	10990	22033			
						6781	6501	13282			
						2423	1929	4352			
						320	372	692			
						1210	1210	2420			
						27260	26095	53355	60200.	.89	53.4
42	158	2200	3391	4	2.45	7231	7687	14918			
						4733	4995	9728			
						1523	2122	3645			
						302	309	611			
						1210	1210	2420			
						19546	21483	41029	60200.	.68	73.9
43	159	1001	2200	4	2.10	9861	10412	20273			
						6202	6534	12736			
						1765	2434	4199			
						351	343	694			
						1210	1210	2420			
						24276	26473	50749	60200.	.84	57.8
44	161	705	801	3	.92	4370	3729	8099			
						2114	1777	3891			
						511	579	1090			
						98	99	197			
						1530	1530	3060			
						12390	11551	23941	14700.	1.63	5.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
45	162	801	901	1	1.36	3154	2731	5885			
						1432	1307	2739			
						511	579	1090			
						98	99	197			
						393	394	787			
						7081	6675	13756	14700.	.94	24.5
46	163	801	802	2	2.48	1216	998	2214			
						682	470	1152			
						0	0	0			
						0	0	0			
						712	712	1424			
						4034	3604	7638	17300.	.44	40.0
47	164	802	803	2	.60	901	1074	1975			
						792	817	1609			
						555	904	1459			
						44	125	169			
						712	712	1424			
						5071	6210	11281	17300.	.65	40.0
48	165	803	804	2	2.24	2600	2742	5342			
						1788	1704	3492			
						1447	1706	3153			
						161	263	424			
						796	796	1592			
						10153	11035	21188	17300.	1.22	22.1
49	166	804	805	2	1.60	5965	6035	12000			
						3890	3550	7440			
						1573	1817	3390			
						172	278	450			
						796	796	1592			
						15905	16441	32346	17300.	1.87	5.0
50	171	103	107	3	.20	2004	2152	4156			
						1128	934	2062			
						0	0	0			
						0	0	0			
						1999	2000	3999			
						9129	9086	18215	13400.	1.36	50.0
51	172	103	111	3	.24	3180	2970	6150			
						1461	1263	2724			
						95	26	121			
						4	10	14			
						1999	2000	3999			
						10840	10315	21155	13400.	1.58	39.0
52	173	111	501	2	.80	1969	1723	3692			
						925	876	1801			
						95	26	121			
						4	10	14			
						1999	2000	3999			
						9093	8681	17774	13400.	1.33	40.0
53	174	500	601	4	.60	3864	3907	7771			
						1925	1931	3856			
						468	477	945			
						85	81	166			
						3713	3714	7427			
						18119	18177	36296	50800.	.71	80.0
54	175	500	501	4	.40	5413	5410	10823			
						2873	2987	5860			
						600	640	1240			
						117	164	281			
						3713	3714	7427			
						20976	21311	42287	50800.	.83	80.0
55	176	600	1002	2	.80	3360	3628	6988			
						2148	2105	4253			
						346	440	786			
						64	101	165			
						712	712	1424			
						8528	9052	17580	13400.	1.31	20.3

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
56	177	600	601	2	1.00	3828	3815	7643			
						1861	1974	3835			
						448	445	893			
						81	64	145			
						712	712	1424			
						8964	9007	17971	13400.	1.34	5.0
57	178	1001	1002	4	1.20	4455	3957	8412			
						2702	2650	5352			
						717	542	1259			
						147	103	250			
						712	712	1424			
						11168	10136	21304	50800.	.42	80.0
58	182	200	501	3	.80	4562	4503	9065			
						2309	2800	5109			
						690	840	1530			
						85	135	220			
						4872	4872	9744			
						23122	24004	47126	16400.	2.87	5.0
59	183	200	202	3	.40	5110	4634	9744			
						2299	2458	4757			
						448	618	1066			
						84	85	169			
						4872	4872	9744			
						23173	23199	46372	16400.	2.83	5.0
60	184	501	701	3	.48	4630	4322	8952			
						2461	3017	5478			
						738	859	1597			
						115	218	333			
						4872	4872	9744			
						23528	24327	47855	16400.	2.92	5.0
61	185	2101	3303	2	.20	6769	6504	13273			
						4248	3906	8154			
						1772	1466	3238			
						227	241	468			
						602	602	1204			
						17048	15871	32919	19900.	1.65	5.0
62	186	2100	2101	2	1.10	5251	4900	10151			
						3216	2935	6151			
						1772	1466	3238			
						227	241	468			
						602	602	1204			
						14498	13296	27794	19900.	1.40	5.0
63	187	2002	2102	2	1.16	2978	3533	6511			
						1886	1914	3800			
						760	659	1419			
						99	137	236			
						602	602	1204			
						8487	8982	17469	19900.	.88	32.1
64	191	401	402	4	.10	14258	15374	29632			
						6784	5870	12654			
						460	909	1369			
						59	98	157			
						1745	1746	3491			
						27374	28594	55968	52600.	1.06	43.5
65	193	104	701	4	.60	14876	14937	29813			
						7683	8652	16335			
						1429	1975	3404			
						191	256	447			
						3663	3664	7327			
						36979	39299	76278	52600.	1.45	5.0
66	194	701	702	4	1.00	17341	17355	34696			
						9162	10704	19866			
						1898	2558	4456			
						246	408	654			
						3663	3664	7327			
						42026	45391	87417	52600.	1.66	5.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
67	195	702	2401	4	3.00	13620	14133	27753			
						6622	8542	15164			
						815	1004	1819			
						136	136	272			
						3663	3664	7327			
						33269	36083	69352	52600.	1.32	39.9
68	196	2400	2501	4	3.60	4695	4585	9280			
						1950	2640	4590			
						419	484	903			
						64	54	118			
						2314	2314	4628			
						14617	15297	29914	52600.	.57	80.0
69	197	2400	2401	4	2.70	11800	11005	22805			
						7045	5735	12780			
						1540	1374	2914			
						228	185	413			
						2314	2314	4628			
						29551	26985	56536	52600.	1.07	48.9
70	200	103	104	3	.48	2732	2479	5211			
						1253	1597	2850			
						493	705	1198			
						52	85	137			
						418	418	836			
						6381	6995	13376	15900.	.84	39.0
71	201	102	103	3	.28	3760	3445	7205			
						1780	1732	3512			
						588	731	1319			
						56	95	151			
						418	418	836			
						8138	8178	16316	12600.	1.29	5.0
72	202	100	101	3	.30	6959	6925	13884			
						2097	2896	4993			
						202	287	489			
						22	51	73			
						418	418	836			
						10780	11802	22582	12600.	1.79	5.0
73	203	100	102	3	.30	4883	4593	9476			
						2244	2176	4420			
						981	1024	2005			
						105	147	252			
						418	418	836			
						10658	10512	21170	12600.	1.68	5.0
74	204	101	302	3	.20	5090	4902	9992			
						1560	2072	3632			
						202	190	392			
						22	22	44			
						418	418	836			
						8374	8674	17048	12600.	1.35	5.0
75	205	300	304	3	.52	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						68	68	136			
						204	204	408	12600.	.03	50.0
76	206	300	302	3	.44	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						68	68	136			
						204	204	408	12600.	.03	50.0
77	207	106	107	3	.30	4307	3779	8086			
						1976	1850	3826			
						71	132	203			
						23	18	41			
						3071	3072	6143			
						15707	15163	30870	12600.	2.45	20.8

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
78	208	105	112	3	.30	4682	4864	9546			
						2098	1954	4052			
						27	159	186			
						5	4	9			
						3071	3072	6143			
						16062	16364	32426	12600.	2.57	5.0
79	208	112	106	3	.30	6051	5987	12038			
						2757	2797	5554			
						71	262	333			
						23	22	45			
						3071	3072	6143			
						18232	18590	36822	12600.	2.92	5.0
80	209	105	301	3	.16	732	922	1654			
						349	431	780			
						159	124	283			
						4	34	38			
						3071	3072	6143			
						10624	10919	21543	12600.	1.71	50.0
81	210	107	705	3	1.00	2155	1775	3930			
						1042	722	1764			
						71	132	203			
						23	18	41			
						3071	3072	6143			
						12621	12031	24652	18300.	1.35	50.0
82	211	701	705	2	.40	2215	1954	4169			
						1072	1055	2127			
						440	447	887			
						75	81	156			
						935	936	1871			
						7197	6954	14151	13000.	1.09	33.7
83	212	301	305	3	.80	1400	1975	3375			
						605	690	1295			
						187	162	349			
						7	34	41			
						420	420	840			
						3660	4351	8011	18000.	.45	50.0
84	213	101	105	3	.20	4386	4758	9144			
						1976	1914	3890			
						0	97	97			
						0	29	29			
						2382	2382	4764			
						13508	14099	27607	15300.	1.80	27.8
85	214	101	108	3	.48	6443	6225	12668			
						2360	2709	5069			
						0	0	0			
						0	0	0			
						2382	2382	4764			
						15949	16080	32029	15300.	2.09	5.0
86	215	108	109	3	.20	6443	6225	12668			
						2360	2709	5069			
						0	0	0			
						0	0	0			
						957	958	1915			
						11674	11808	23482	15300.	1.53	5.0
87	216	301	302	3	.28	1053	668	1721			
						259	256	515			
						38	28	66			
						0	3	3			
						1415	1416	2831			
						5633	5237	10870	13500.	.81	50.0
88	217	302	303	3	.64	6143	5570	11713			
						1819	2328	4147			
						240	218	458			
						22	25	47			
						1415	1416	2831			
						12753	12657	25410	13500.	1.88	5.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
89	218	304	402	2	3.40	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						420	420	840			
						1260	1260	2520	18000.	.14	40.0
90	219	1905	2091	1	4.80	15	0	15			
						0	0	0			
						0	0	0			
						0	0	0			
						188	188	376			
						579	564	1143	12400.	.09	30.0
91	220	1305	1905	2	3.40	3365	2885	6250			
						1330	1400	2730			
						320	180	500			
						34	13	47			
						188	188	376			
						6001	5248	11249	12400.	.91	27.4
92	221	1902	1990	1	2.70	2652	2290	4942			
						1050	1112	2162			
						0	0	0			
						0	0	0			
						299	300	599			
						4599	4302	8901	11500.	.77	27.6
93	222	1902	1904	2	1.60	3501	4085	7586			
						1695	1607	3302			
						358	638	996			
						32	67	99			
						299	300	599			
						6905	8069	14974	11500.	1.30	5.0
94	223	1304	1904	2	1.10	2866	2422	5288			
						1114	1166	2280			
						638	358	996			
						67	32	99			
						299	300	599			
						6354	5300	11654	11500.	1.01	25.7
95	224	1901	1902	2	.42	3509	3731	7240			
						1605	1579	3184			
						358	638	996			
						32	67	99			
						0	0	0			
						5926	6787	12713	11500.	1.11	5.0
96	225	1901	1991	2	3.00	3978	3435	7413			
						1575	1668	3243			
						638	358	996			
						67	32	99			
						34	34	68			
						7132	6017	13149	11500.	1.14	5.0
97	226	1301	1993	2	3.70	2545	2224	4769			
						1018	1085	2103			
						0	0	0			
						0	0	0			
						34	34	68			
						3665	3411	7076	11500.	.62	36.1
98	227	1303	1992	2	1.80	1219	1079	2298			
						493	529	1022			
						0	0	0			
						0	0	0			
						0	0	0			
						1712	1608	3320	11500.	.29	40.0
99	228	1702	3301	3	1.08	2853	2671	5524			
						1788	1849	3637			
						454	438	892			
						35	31	66			
						284	284	568			
						6506	6341	12847	10200.	1.26	5.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
100	229	1702	2001	3	2.68	1094	1332	2426			
						594	609	1203			
						29	134	163			
						0	8	8			
						284	284	568			
						2598	3085	5683	10200.	.56	50.0
101	230	1401	1402	3	2.20	2180	2130	4310			
						955	715	1670			
						439	249	688			
						30	42	72			
						500	500	1000			
						5603	4969	10572	10200.	1.04	35.5
102	231	1600	1702	3	2.40	918	899	1817			
						599	510	1109			
						0	19	19			
						0	0	0			
						285	286	571			
						2372	2305	4677	10200.	.46	50.0
103	232	1206	1600	3	1.20	1025	981	2006			
						663	624	1287			
						6	35	41			
						0	0	0			
						285	286	571			
						2555	2533	5088	10200.	.50	50.0
104	233	1205	1206	3	1.40	223	138	361			
						57	63	120			
						0	0	0			
						0	0	0			
						285	286	571			
						1135	1059	2194	10200.	.22	50.0
105	234	2101	2191	2	4.36	1604	1518	3122			
						971	1032	2003			
						0	0	0			
						0	0	0			
						285	286	571			
						3430	3408	6838	12700.	.54	40.0
106	239	1701	1802	2	.90	1195	1095	2290			
						650	655	1305			
						176	149	325			
						21	15	36			
						358	358	716			
						3334	3167	6501	11500.	.57	40.0
107	240	1802	1803	2	.40	0	0	0			
						0	0	0			
						0	0	0			
						4	0	4			
						358	358	716			
						1086	1074	2160	11500.	.19	40.0
108	241	1801	1802	1	1.90	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	10200.	.17	30.0
109	243	1501	1502	1	.10	495	325	820			
						165	200	365			
						36	61	97			
						6	3	9			
						285	286	571			
						1605	1514	3119	10200.	.31	30.0
110	244	1502	1801	1	1.00	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	10200.	.17	30.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
111	245	1102	1801	1	.88	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	10200.	.17	30.0
112	246	1100	1102	1	1.20	0	0	0			
						0	0	0			
						0	0	0			
						0	4	4			
						637	638	1275			
						1911	1926	3837	11500.	.33	30.0
113	247	1100	1101	2	1.20	490	465	955			
						375	270	645			
						93	89	182			
						1	21	22			
						637	638	1275			
						2965	2890	5855	11500.	.51	40.0
114	248	1102	1803	1	2.20	0	0	0			
						0	0	0			
						0	0	0			
						0	4	4			
						285	286	571			
						855	870	1725	11500.	.15	30.0
115	249	1803	3390	1	2.46	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	11500.	.15	30.0
116	250	1202	1204	1	.20	3637	3828	7465			
						1598	1385	2983			
						366	328	694			
						43	58	101			
						285	286	571			
						6951	6901	13852	12700.	1.09	20.9
117	251	1204	1590	1	1.00	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	12700.	.13	30.0
118	252	1203	1204	1	.90	18	22	40			
						7	15	22			
						0	0	0			
						0	0	0			
						285	286	571			
						880	895	1775	12700.	.14	30.0
119	256	601	1101	2	1.60	217	247	464			
						130	249	379			
						46	52	98			
						21	0	21			
						1003	1004	2007			
						3511	3612	7123	10500.	.68	40.0
120	257	1101	1203	1	.60	321	326	647			
						177	191	368			
						41	43	84			
						1	0	1			
						1003	1004	2007			
						3592	3615	7207	10500.	.69	30.0
121	258	1201	1203	1	.40	304	303	607			
						176	170	346			
						43	41	84			
						0	1	1			
						1003	1004	2007			
						3575	3570	7145	10500.	.68	30.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
122	259	700	703	3	.60	4962	5493	10455			
						3070	3457	6527			
						982	1469	2451			
						145	193	338			
						2123	2124	4247			
						16800	18839	35639	18000.	1.98	5.0
123	260	700	702	3	.80	6272	6771	13043			
						3601	3979	7580			
						2203	1732	3935			
						417	255	672			
						2123	2124	4247			
						21899	21351	43250	18000.	2.40	5.0
124	261	703	790	3	1.60	3593	3733	7326			
						2064	2214	4278			
						427	565	992			
						101	68	169			
						2280	2280	4560			
						13654	14121	27775	18000.	1.54	33.0
125	262	704	2603	2	.28	4058	4069	8127			
						2121	2342	4463			
						855	844	1699			
						127	150	277			
						1140	1140	2280			
						11690	11969	23659	18000.	1.31	22.6
126	263	703	802	2	1.40	1369	1760	3129			
						1006	1243	2249			
						555	904	1459			
						44	125	169			
						1425	1426	2851			
						7892	9464	17356	14100.	1.23	35.0
127	264	2602	2603	2	1.00	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						1140	1140	2280			
						3420	3420	6840	11500.	.59	40.0
128	265	2603	2604	2	1.10	4058	4069	8127			
						2121	2342	4463			
						855	844	1699			
						127	150	277			
						1140	1140	2280			
						11690	11969	23659	16300.	1.45	5.0
129	266	2604	2605	1	.20	3576	3659	7235			
						1768	2245	4013			
						966	970	1936			
						142	161	303			
						1140	1140	2280			
						11122	11747	22869	16300.	1.40	20.3
130	267	2601	2605	1	2.00	3992	4074	8066			
						1926	2314	4240			
						0	0	0			
						0	0	0			
						1140	1140	2280			
						9338	9808	19146	16300.	1.17	24.9
131	268	804	2604	1	1.40	3293	3365	6658			
						1846	2102	3948			
						111	126	237			
						15	11	26			
						1392	1392	2784			
						9582	9928	19510	16300.	1.20	26.3
132	276	1206	1501	3	.56	843	802	1645			
						561	606	1167			
						35	6	41			
						0	0	0			
						285	286	571			
						2329	2278	4607	10200.	.45	50.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
133	277	2102	2100	2	1.20	4006	4475	8481			
						2437	2526	4963			
						760	659	1419			
						99	137	236			
						602	602	1204			
						10066	10536	20602	19900.	1.04	25.8
134	278	303	402	4	1.46	15374	14258	29632			
						5870	6784	12654			
						909	460	1369			
						98	59	157			
						1760	1760	3520			
						28636	27419	56055	52600.	1.07	43.5
135	279	304	305	2	1.40	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						420	420	840			
						1260	1260	2520	18000.	.14	40.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
1	101	401	1301	4	.88	16533	14679	31212			
						6431	7353	13784			
						1253	832	2085			
						152	94	246			
						1745	1746	3491			
						31161	29216	60377	52600.	1.15	35.1
2	102	1301	1303	4	.40	12506	11183	23689			
						4978	5613	10591			
						1234	818	2052			
						152	94	246			
						478	478	956			
						21842	20148	41990	52600.	.80	55.6
3	103	1303	1304	4	.60	11287	10104	21391			
						4485	5084	9569			
						1234	818	2052			
						152	94	246			
						478	478	956			
						20130	18540	38670	52600.	.74	61.9
4	104	1304	1305	4	.60	9125	8386	17511			
						3621	4168	7789			
						701	565	1266			
						91	68	159			
						171	172	343			
						14934	14404	29338	52600.	.56	76.2
5	105	1305	1404	4	.80	6560	6301	12861			
						2571	3048	5619			
						463	467	930			
						60	58	118			
						171	172	343			
						10750	10973	21723	52600.	.41	80.0
6	106	1404	2001	3	3.16	3611	3963	7574			
						1775	1902	3677			
						427	422	849			
						60	63	123			
						1023	1024	2047			
						9489	9970	19459	13000.	1.50	5.0
7	107	2001	2002	3	1.20	3978	4595	8573			
						2152	2253	4405			
						384	484	868			
						52	63	115			
						1023	1024	2047			
						10123	11077	21200	13000.	1.63	5.0
8	108	2002	2003	1	3.00	1050	1135	2185			
						805	855	1660			
						375	698	1073			
						62	72	134			
						875	876	1751			
						5416	6230	11646	13000.	.90	30.0
9	109	2003	2004	2	.60	1065	1135	2200			
						805	855	1660			
						375	698	1073			
						62	72	134			
						875	876	1751			
						5431	6230	11661	13000.	.90	40.0
10	118	1201	1205	3	.40	3277	2823	6100			
						1196	1452	2648			
						420	703	1123			
						76	73	149			
						799	800	1599			
						7938	8300	16238	12100.	1.34	23.3
11	119	1205	1402	3	1.40	3415	3046	6461			
						1259	1509	2768			
						420	703	1123			
						76	73	149			
						799	800	1599			
						8139	8580	16719	12100.	1.38	20.9

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
12	120	1402	1403	3	.28	2787	2368	5155			
						1097	1107	2204			
						211	304	515			
						35	44	79			
						799	800	1599			
						6808	6615	13423	12100.	1.11	37.2
13	121	1306	1404	3	.70	3251	3862	7113			
						1506	1156	2662			
						115	106	221			
						13	18	31			
						799	800	1599			
						7423	7684	15107	12100.	1.25	28.9
14	122	1306	1403	3	.70	2446	3075	5521			
						1325	1095	2420			
						285	197	482			
						44	35	79			
						799	800	1599			
						6870	7069	13939	12100.	1.15	34.7
15	124	1302	1403	3	.94	1663	1453	3116			
						501	721	1222			
						19	14	33			
						0	0	0			
						1975	1976	3951			
						8127	8130	16257	16300.	1.00	50.0
16	125	1301	1302	3	.86	1663	1453	3116			
						501	721	1222			
						19	14	33			
						0	0	0			
						1975	1976	3951			
						8127	8130	16257	16300.	1.00	50.0
17	126	102	106	3	.20	2801	2425	5226			
						1114	1026	2140			
						16	0	16			
						0	0	0			
						538	538	1076			
						5561	5065	10626	11800.	.90	42.4
18	127	102	110	3	.60	3164	3717	6881			
						1312	1498	2810			
						393	423	816			
						49	56	105			
						538	538	1076			
						7023	7843	14866	11800.	1.26	20.8
19	128	110	202	4	.56	10289	10803	21092			
						5614	4993	10607			
						1015	1154	2169			
						148	168	316			
						5678	5678	11356			
						35411	35642	71053	52600.	1.35	59.7
20	129	201	202	4	.26	12424	12513	24937			
						5768	6295	12063			
						1672	1445	3117			
						248	227	475			
						5678	5678	11356			
						39314	39413	78727	52600.	1.50	45.1
21	130	201	1201	4	1.84	9241	8870	18111			
						4403	4370	8773			
						1144	1443	2587			
						212	207	419			
						5678	5678	11356			
						33602	33781	67383	52600.	1.28	66.7
22	131	1201	1202	4	.80	7954	8086	16040			
						3772	3480	7252			
						978	996	1974			
						141	138	279			
						4713	4714	9427			
						28244	28114	56358	52600.	1.07	76.6

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
23	132	1202	1501	4	.60	5725	5708	11433			
						3000	2927	5927			
						850	906	1756			
						110	92	202			
						4713	4714	9427			
						24894	24865	49759	52600.	.95	80.0
24	133	1501	1701	4	2.16	4653	4757	9410			
						2547	2500	5047			
						821	823	1644			
						105	90	195			
						4713	4714	9427			
						23296	23315	46611	52600.	.89	80.0
25	134	1701	3301	4	1.00	4681	4885	9566			
						2430	2378	4808			
						815	844	1659			
						88	79	167			
						4713	4714	9427			
						23144	23330	46474	52600.	.88	80.0
26	135	3301	3302	4	1.04	4744	4747	9491			
						2798	2832	5630			
						721	734	1455			
						70	57	127			
						4713	4714	9427			
						23333	23360	46693	52600.	.89	80.0
27	136	3302	3303	4	.24	4744	4747	9491			
						2798	2832	5630			
						721	734	1455			
						70	57	127			
						4713	4714	9427			
						23333	23360	46693	52600.	.89	80.0
28	137	3303	3304	2	1.20	455	815	1270			
						185	190	375			
						232	522	754			
						106	111	217			
						712	712	1424			
						3558	4518	8076	14700.	.55	40.0
29	141	400	401	3	.96	3198	2635	5833			
						1131	1177	2308			
						208	282	490			
						11	18	29			
						589	590	1179			
						6545	6200	12745	17300.	.74	48.1
30	142	201	400	3	1.00	5104	5386	10490			
						2706	2212	4918			
						504	432	936			
						24	50	74			
						589	590	1179			
						10657	10382	21039	17300.	1.22	5.0
31	143	104	111	3	.28	9461	8575	18036			
						5450	4920	10370			
						1430	1066	2496			
						218	163	381			
						1451	1452	2903			
						22778	20472	43250	60800.	.71	45.9
32	144	110	111	3	.56	10359	10997	21356			
						5651	6450	12101			
						1066	1430	2496			
						163	218	381			
						1451	1452	2903			
						22984	25317	48301	60800.	.79	40.9
33	145	109	110	3	.68	4801	5400	10201			
						2882	2874	5756			
						335	808	1143			
						51	119	170			
						1451	1452	2903			
						12859	14603	27462	60800.	.45	50.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
34	146	109	303	3	.20	9167	8432	17599			
						4038	4397	8435			
						808	335	1143			
						119	51	170			
						1451	1452	2903			
						19531	18008	37539	60800.	.62	50.0
35	148	803	990	4	3.40	2834	2451	5285			
						1829	1863	3692			
						795	606	1401			
						167	68	235			
						393	394	787			
						7933	6912	14845	60200.	.25	80.0
36	149	704	800	4	.76	749	616	1365			
						374	366	740			
						879	822	1701			
						129	112	241			
						713	714	1427			
						5407	5104	10511	60200.	.17	80.0
37	150	800	803	4	.80	778	710	1488			
						426	393	819			
						875	812	1687			
						121	114	235			
						713	714	1427			
						5456	5211	10667	60200.	.18	80.0
38	151	704	2602	4	1.00	4504	4634	9138			
						2375	2364	4739			
						953	1146	2099			
						164	123	287			
						713	714	1427			
						11416	11801	23217	60200.	.39	80.0
39	155	2601	2602	4	.80	4634	4504	9138			
						2364	2375	4739			
						1146	953	2099			
						123	164	287			
						713	714	1427			
						11798	11419	23217	60200.	.39	80.0
40	156	2401	2601	4	1.00	8825	8632	17457			
						4282	4697	8979			
						1146	953	2099			
						123	164	287			
						713	714	1427			
						17907	17869	35776	60200.	.59	77.7
41	157	1001	2401	4	.68	10743	10673	21416			
						6338	6851	13189			
						2310	1823	4133			
						262	328	590			
						1210	1210	2420			
						26117	25784	51901	60200.	.86	55.8
42	158	2200	3391	4	2.45	6591	7281	13872			
						4473	4778	9251			
						1368	2079	3447			
						255	285	540			
						1210	1210	2420			
						18195	20702	38897	60200.	.65	77.4
43	159	1001	2200	4	2.10	9406	10191	19597			
						6033	6408	12441			
						1610	2391	4001			
						304	319	623			
						1210	1210	2420			
						23201	25968	49169	60200.	.82	60.4
44	161	705	801	4	.92	9463	8797	18260			
						5200	4704	9904			
						1751	1770	3521			
						329	371	700			
						1530	1530	3060			
						23742	22744	46486	52600.	.88	59.1

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
45	162	801	901	4	1.36	7361	7129	14490			
						3898	3694	7592			
						1751	1770	3521			
						329	371	700			
						393	394	787			
						16927	16658	33585	52600.	.64	70.6
46	163	801	802	2	2.48	2102	1668	3770			
						1302	1010	2312			
						0	0	0			
						0	0	0			
						712	712	1424			
						5540	4814	10354	17300.	.60	40.0
47	164	802	803	2	.60	150	158	308			
						198	220	418			
						127	260	387			
						4	14	18			
						712	712	1424			
						2750	3076	5826	17300.	.34	40.0
48	165	803	804	2	2.24	2930	3253	6183			
						2075	2030	4105			
						1447	1706	3153			
						161	263	424			
						796	796	1592			
						10770	11872	22642	17300.	1.31	5.0
49	166	804	805	2	1.60	5965	6035	12000			
						3890	3550	7440			
						1573	1817	3390			
						172	278	450			
						796	796	1592			
						15905	16441	32346	17300.	1.87	5.0
50	171	103	107	3	.20	1413	1312	2725			
						531	631	1162			
						0	0	0			
						0	0	0			
						1999	2000	3999			
						7941	7943	15884	13400.	1.19	50.0
51	172	103	111	3	.24	2096	2144	4240			
						1012	812	1824			
						95	41	136			
						4	14	18			
						1999	2000	3999			
						9307	9080	18387	13400.	1.37	50.0
52	173	111	501	2	.80	2770	2570	5340			
						1305	1374	2679			
						95	41	136			
						4	14	18			
						1999	2000	3999			
						10274	10068	20342	13400.	1.52	35.1
53	174	500	601	4	.60	7319	7669	14988			
						3596	4435	8031			
						707	835	1542			
						103	136	239			
						3713	3714	7427			
						23777	25324	49101	50800.	.97	77.2
54	175	500	501	4	.40	7636	7326	14962			
						4340	3621	7961			
						817	738	1555			
						154	164	318			
						3713	3714	7427			
						25211	24057	49268	50800.	.97	76.9
55	176	600	1002	4	.80	5467	5952	11419			
						3090	3883	6973			
						598	811	1409			
						84	158	242			
						712	712	1424			
						12141	14067	26208	50800.	.52	80.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
56	177	600	601	4	1.00	7641	7411	15052			
						4453	3730	8183			
						819	697	1516			
						138	84	222			
						712	712	1424			
						16282	14923	31205	50800.	.61	77.0
57	178	1001	1002	4	1.20	5366	4651	10017			
						3834	2946	6780			
						953	659	1612			
						158	77	235			
						712	712	1424			
						13716	11282	24998	50800.	.49	80.0
58	182	200	501	3	.80	4119	4187	8306			
						2018	2574	4592			
						603	835	1438			
						85	135	220			
						4872	4872	9744			
						22214	23452	45666	16400.	2.78	5.0
59	183	200	202	3	.40	5760	5157	10917			
						2608	2702	5310			
						443	531	974			
						84	85	169			
						4872	4872	9744			
						24122	23792	47914	16400.	2.92	5.0
60	184	501	701	3	.48	3142	2700	5842			
						1790	1696	3486			
						642	741	1383			
						141	211	352			
						4872	4872	9744			
						21255	21127	42382	16400.	2.58	31.9
61	185	2101	3303	2	.20	6800	6467	13267			
						4272	3938	8210			
						1766	1332	3098			
						210	198	408			
						602	602	1204			
						17040	15469	32509	19900.	1.63	5.0
62	186	2100	2101	2	1.10	5229	4836	10065			
						3202	2935	6137			
						1766	1332	3098			
						210	198	408			
						602	602	1204			
						14399	12835	27234	19900.	1.37	5.0
63	187	2002	2102	2	1.16	2883	3370	6253			
						1800	1836	3636			
						754	525	1279			
						82	94	176			
						602	602	1204			
						8243	8344	16587	19900.	.83	33.9
64	191	401	402	4	.10	13812	15103	28915			
						6630	5754	12384			
						553	1048	1601			
						76	141	217			
						1745	1746	3491			
						27011	28614	55625	52600.	1.06	44.2
65	193	104	701	4	.60	9656	10332	19988			
						5428	5990	11418			
						1377	1864	3241			
						169	285	454			
						3663	3664	7327			
						29334	31897	61231	52600.	1.16	55.4
66	194	701	702	4	1.00	11963	12019	23982			
						6155	7063	13218			
						1625	2327	3952			
						306	413	719			
						3663	3664	7327			
						33275	35967	69242	52600.	1.32	40.2

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
67	195	702	2401	4	3.00	7652	8324	15976			
						3438	4650	8088			
						955	1415	2370			
						230	248	478			
						3663	3664	7327			
						24679	27540	52219	52600.	.99	72.5
68	196	2400	2501	4	3.60	4695	4585	9280			
						1950	2640	4590			
						419	484	903			
						64	54	118			
						2314	2314	4628			
						14617	15297	29914	52600.	.57	80.0
69	197	2400	2401	4	2.70	11800	11005	22805			
						7045	5735	12780			
						1540	1374	2914			
						228	185	413			
						2314	2314	4628			
						29551	26985	56536	52600.	1.07	48.9
70	200	103	104	3	.48	1081	871	1952			
						508	540	1048			
						311	434	745			
						6	67	73			
						418	418	836			
						3483	3734	7217	15900.	.45	50.0
71	201	102	103	3	.28	1865	1602	3467			
						889	821	1710			
						406	475	881			
						10	81	91			
						418	418	836			
						4850	4870	9720	12600.	.77	45.7
72	202	100	101	3	.30	4408	4159	8567			
						1287	1758	3045			
						202	208	410			
						22	22	44			
						418	418	836			
						7419	7653	15072	12600.	1.20	20.2
73	203	100	102	3	.30	2604	2518	5122			
						1175	1205	2380			
						799	882	1681			
						59	137	196			
						418	418	836			
						6808	7152	13960	12600.	1.11	25.5
74	204	101	302	3	.20	2852	2642	5494			
						832	1124	1956			
						202	190	392			
						22	22	44			
						418	418	836			
						5408	5466	10874	12600.	.86	40.2
75	205	300	304	3	.52	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						68	68	136			
						204	204	408	12600.	.03	50.0
76	206	300	302	3	.44	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						68	68	136			
						204	204	408	12600.	.03	50.0
77	207	106	107	3	.30	8640	7897	16537			
						4020	3864	7884			
						253	388	641			
						69	32	101			
						3071	3072	6143			
						22586	21849	44435	52600.	.84	50.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A → B	B → A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
78	208	105	112	3	.30	5469	5337	10806			
						2344	1862	4206			
						106	159	265			
						34	4	38			
						3071	3072	6143			
						17340	16745	34085	52600.	.65	50.0
79	208	112	106	3	.30	11065	10698	21763			
						5046	4978	10024			
						253	404	657			
						69	32	101			
						3071	3072	6143			
						26037	25796	51833	52600.	.99	41.9
80	209	105	301	3	.16	3126	3355	6481			
						1153	1463	2616			
						159	124	283			
						4	34	38			
						3071	3072	6143			
						13822	14384	28206	52600.	.54	50.0
81	210	107	705	4	1.00	7328	6484	13812			
						3389	3333	6722			
						253	388	641			
						69	32	101			
						3071	3072	6143			
						20643	19905	40548	52600.	.77	80.0
82	211	701	705	4	.40	10073	10251	20324			
						5977	5537	11514			
						1637	1521	3158			
						289	368	657			
						935	936	1871			
						22996	22742	45738	52600.	.87	53.7
83	212	301	305	3	.80	1400	1975	3375			
						605	690	1295			
						187	162	349			
						7	34	41			
						420	420	840			
						3660	4351	8011	18000.	.45	50.0
84	213	101	105	3	.20	2287	2384	4671			
						967	795	1762			
						0	18	18			
						0	0	0			
						2382	2382	4764			
						10400	10361	20761	15300.	1.36	50.0
85	214	101	108	3	.48	3881	3745	7626			
						1224	1575	2799			
						0	0	0			
						0	0	0			
						2382	2382	4764			
						12251	12466	24717	15300.	1.62	39.1
86	215	108	109	3	.20	3881	3745	7626			
						1224	1575	2799			
						0	0	0			
						0	0	0			
						957	958	1915			
						7976	8194	16170	15300.	1.06	39.1
87	216	301	302	3	.28	3118	2772	5890			
						903	1128	2031			
						38	28	66			
						0	3	3			
						1415	1416	2831			
						8342	8213	16555	52600.	.31	50.0
88	217	302	303	3	.64	5970	5414	11384			
						1735	2252	3987			
						240	218	458			
						22	25	47			
						1415	1416	2831			
						12496	12425	24921	52600.	.47	50.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
89	218	304	402	2	3.40	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						420	420	840			
						1260	1260	2520	18000.	.14	40.0
90	219	1905	2091	1	4.80	15	0	15			
						0	0	0			
						0	0	0			
						0	0	0			
						188	188	376			
						579	564	1143	12400.	.09	30.0
91	220	1305	1905	2	3.40	3365	2885	6250			
						1330	1400	2730			
						320	180	500			
						34	13	47			
						188	188	376			
						6001	5248	11249	12400.	.91	27.4
92	221	1902	1990	1	2.70	2652	2290	4942			
						1050	1112	2162			
						0	0	0			
						0	0	0			
						299	300	599			
						4599	4302	8901	11500.	.77	27.6
93	222	1902	1904	2	1.60	3501	4085	7586			
						1695	1607	3302			
						358	638	996			
						32	67	99			
						299	300	599			
						6905	8069	14974	11500.	1.30	5.0
94	223	1304	1904	2	1.10	2866	2422	5288			
						1114	1166	2280			
						638	358	996			
						67	32	99			
						299	300	599			
						6354	5300	11654	11500.	1.01	25.7
95	224	1901	1902	2	.42	3509	3731	7240			
						1605	1579	3184			
						358	638	996			
						32	67	99			
						0	0	0			
						5926	6787	12713	11500.	1.11	5.0
96	225	1901	1991	2	3.00	3978	3435	7413			
						1575	1668	3243			
						638	358	996			
						67	32	99			
						34	34	68			
						7132	6017	13149	11500.	1.14	5.0
97	226	1301	1993	2	3.70	2545	2224	4769			
						1018	1085	2103			
						0	0	0			
						0	0	0			
						34	34	68			
						3665	3411	7076	11500.	.62	36.1
98	227	1303	1992	2	1.80	1219	1079	2298			
						493	529	1022			
						0	0	0			
						0	0	0			
						0	0	0			
						1712	1608	3320	11500.	.29	40.0
99	228	1702	3301	3	1.08	2959	2758	5717			
						1840	1926	3766			
						454	438	892			
						35	31	66			
						284	284	568			
						6664	6505	13169	10200.	1.29	5.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
100	229	1702	2001	3	2.68	1220	1485	2705			
						700	674	1374			
						29	134	163			
						0	8	8			
						284	284	568			
						2830	3303	6133	10200.	.60	50.0
101	230	1401	1402	3	2.20	2180	2130	4310			
						955	715	1670			
						439	249	688			
						30	42	72			
						500	500	1000			
						5603	4969	10572	10200.	1.04	35.5
102	231	1600	1702	3	2.40	917	906	1823			
						626	521	1147			
						0	19	19			
						0	0	0			
						285	286	571			
						2398	2323	4721	10200.	.46	50.0
103	232	1206	1600	3	1.20	1064	1028	2092			
						692	637	1329			
						6	35	41			
						0	0	0			
						285	286	571			
						2623	2593	5216	10200.	.51	50.0
104	233	1205	1206	3	1.40	223	138	361			
						57	63	120			
						0	0	0			
						0	0	0			
						285	286	571			
						1135	1059	2194	10200.	.22	50.0
105	234	2101	2191	2	4.36	1631	1571	3202			
						1003	1070	2073			
						0	0	0			
						0	0	0			
						285	286	571			
						3489	3499	6988	12700.	.55	40.0
106	239	1701	1802	2	.90	1195	1095	2290			
						650	655	1305			
						176	149	325			
						21	15	36			
						358	358	716			
						3334	3167	6501	11500.	.57	40.0
107	240	1802	1803	2	.40	0	0	0			
						0	0	0			
						0	0	0			
						4	0	4			
						358	358	716			
						1086	1074	2160	11500.	.19	40.0
108	241	1801	1802	1	1.90	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	10200.	.17	30.0
109	243	1501	1502	1	.10	495	325	820			
						165	200	365			
						36	61	97			
						6	3	9			
						285	286	571			
						1605	1514	3119	10200.	.31	30.0
110	244	1502	1801	1	1.00	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	10200.	.17	30.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
111	245	1102	1801	1	.88	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	10200.	.17	30.0
112	246	1100	1102	1	1.20	0	0	0			
						0	0	0			
						0	0	0			
						0	4	4			
						637	638	1275			
						1911	1926	3837	11500.	.33	30.0
113	247	1100	1101	2	1.20	490	465	955			
						375	270	645			
						93	89	182			
						1	21	22			
						637	638	1275			
						2965	2890	5855	11500.	.51	40.0
114	248	1102	1803	1	2.20	0	0	0			
						0	0	0			
						0	0	0			
						0	4	4			
						285	286	571			
						855	870	1725	11500.	.15	30.0
115	249	1803	3390	1	2.46	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	11500.	.15	30.0
116	250	1202	1204	1	.20	3619	3768	7387			
						1567	1348	2915			
						366	328	694			
						43	58	101			
						285	286	571			
						6902	6804	13706	12700.	1.08	21.1
117	251	1204	1590	1	1.00	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	12700.	.13	30.0
118	252	1203	1204	1	.90	36	82	118			
						38	52	90			
						0	0	0			
						0	0	0			
						285	286	571			
						929	992	1921	12700.	.15	30.0
119	256	601	1101	2	1.60	295	415	710			
						237	353	590			
						46	52	98			
						21	0	21			
						1003	1004	2007			
						3696	3884	7580	10500.	.72	40.0
120	257	1101	1203	1	.60	326	421	747			
						216	227	443			
						41	43	84			
						1	0	1			
						1003	1004	2007			
						3636	3746	7382	10500.	.70	30.0
121	258	1201	1203	1	.40	339	290	629			
						175	178	353			
						43	41	84			
						0	1	1			
						1003	1004	2007			
						3609	3565	7174	10500.	.68	30.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
122	259	700	703	3	.60	5450	5864	11314			
						3141	3602	6743			
						554	812	1366			
						105	80	185			
						2123	2124	4247			
						16383	17702	34085	18000.	1.89	5.0
123	260	700	702	3	.80	5951	6567	12518			
						3559	3863	7422			
						1546	1304	2850			
						304	215	519			
						2123	2124	4247			
						19883	20055	39938	18000.	2.22	5.0
124	261	703	790	3	1.60	3632	3604	7236			
						1933	2080	4013			
						427	552	979			
						101	66	167			
						2280	2280	4560			
						13562	13826	27388	18000.	1.52	34.3
125	262	704	2603	2	.28	3529	3504	7033			
						1842	2008	3850			
						855	844	1699			
						127	150	277			
						1140	1140	2280			
						10882	11070	21952	18000.	1.22	26.4
126	263	703	802	2	1.40	1818	2260	4078			
						1208	1522	2730			
						127	260	387			
						4	14	18			
						1425	1426	2851			
						7567	8622	16189	14100.	1.15	38.3
127	264	2602	2603	2	1.00	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						1140	1140	2280			
						3420	3420	6840	11500.	.59	40.0
128	265	2603	2604	2	1.10	3529	3504	7033			
						1842	2008	3850			
						855	844	1699			
						127	150	277			
						1140	1140	2280			
						10882	11070	21952	16300.	1.35	22.9
129	266	2604	2605	1	.20	3716	3944	7660			
						1828	2289	4117			
						966	970	1936			
						142	161	303			
						1140	1140	2280			
						11322	12076	23398	16300.	1.44	5.0
130	267	2601	2605	1	2.00	4191	4128	8319			
						1918	2322	4240			
						0	0	0			
						0	0	0			
						1140	1140	2280			
						9529	9870	19399	16300.	1.19	24.6
131	268	804	2604	1	1.40	2782	3035	5817			
						1520	1815	3335			
						111	126	237			
						15	11	26			
						1392	1392	2784			
						8745	9311	18056	16300.	1.11	28.1
132	276	1206	1501	3	.56	890	841	1731			
						574	635	1209			
						35	6	41			
						0	0	0			
						285	286	571			
						2389	2346	4735	10200.	.46	50.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
133	277	2102	2100	2	1.20	3984	4411	8395			
						2423	2526	4949			
						754	525	1279			
						82	94	176			
						602	602	1204			
						9967	10075	20042	19900.	1.01	27.0
134	278	303	402	4	1.46	15103	13812	28915			
						5754	6630	12384			
						1048	553	1601			
						141	76	217			
						1760	1760	3520			
						28656	27056	55712	52600.	1.06	44.2
135	279	304	305	2	1.40	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						420	420	840			
						1260	1260	2520	18000.	.14	40.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
1	101	401	1301	4	.88	11045	10246	21291			
						4076	4776	8852			
						728	470	1198			
						68	52	120			
						1745	1746	3491			
						22016	21356	43372	52600.	.82	67.5
2	102	1301	1303	4	.40	8912	8255	17167			
						3243	3838	7081			
						728	470	1198			
						68	52	120			
						478	478	956			
						15249	14623	29872	52600.	.57	78.7
3	103	1303	1304	4	.60	7789	7232	15021			
						2773	3344	6117			
						728	470	1198			
						68	52	120			
						478	478	956			
						13656	13106	26762	52600.	.51	80.0
4	104	1304	1305	4	.60	6581	6673	13254			
						2409	2929	5338			
						299	321	620			
						10	29	39			
						171	172	343			
						10131	10847	20978	52600.	.40	80.0
5	105	1305	1404	4	.80	5979	6551	12530			
						2452	2902	5354			
						328	490	818			
						12	52	64			
						171	172	343			
						9636	11105	20741	52600.	.39	80.0
6	106	1404	2001	4	3.16	5581	6003	11584			
						3213	3419	6632			
						668	1086	1754			
						124	129	253			
						1023	1024	2047			
						13571	15053	28624	52600.	.54	80.0
7	107	2001	2002	4	1.20	5051	5757	10808			
						3018	3243	6261			
						618	1067	1685			
						116	129	245			
						1023	1024	2047			
						12722	14593	27315	52600.	.52	80.0
8	108	2002	2003	1	3.00	1050	1135	2185			
						805	855	1660			
						375	698	1073			
						62	72	134			
						875	876	1751			
						5416	6230	11646	13000.	.90	30.0
9	109	2003	2004	2	.60	1065	1135	2200			
						805	855	1660			
						375	698	1073			
						62	72	134			
						875	876	1751			
						5431	6230	11661	13000.	.90	40.0
10	118	1201	1205	4	.40	10589	9275	19864			
						4973	5504	10477			
						1186	1729	2915			
						224	181	405			
						799	800	1599			
						21003	21180	42183	52600.	.80	58.9
11	119	1205	1402	4	1.40	10659	9305	19964			
						5003	5554	10557			
						1186	1729	2915			
						224	181	405			
						799	800	1599			
						21103	21260	42363	52600.	.81	58.6

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
12	120	1402	1403	4	.28	8923	7519	16442			
						4393	4704	9097			
						944	1297	2241			
						183	152	335			
						799	800	1599			
						18150	17673	35823	52600.	.68	71.0
13	121	1306	1404	4	.70	7065	6915	13980			
						3835	3591	7426			
						774	1030	1804			
						149	114	263			
						799	800	1599			
						15292	15308	30600	52600.	.58	80.0
14	122	1306	1403	4	.70	7460	8850	16310			
						4701	4365	9066			
						1297	944	2241			
						152	183	335			
						799	800	1599			
						17608	18052	35660	52600.	.68	71.3
15	124	1302	1403	3	.94	59	73	132			
						3	28	31			
						0	0	0			
						0	0	0			
						1975	1976	3951			
						5987	6029	12016	16300.	.74	50.0
16	125	1301	1302	3	.86	59	73	132			
						3	28	31			
						0	0	0			
						0	0	0			
						1975	1976	3951			
						5987	6029	12016	16300.	.74	50.0
17	126	102	106	3	.20	2663	2396	5059			
						1091	922	2013			
						18	0	18			
						0	0	0			
						538	538	1076			
						5404	4932	10336	11800.	.88	43.9
18	127	102	110	3	.60	3322	3494	6816			
						1162	1412	2574			
						457	466	923			
						61	56	117			
						538	538	1076			
						7195	7620	14815	11800.	1.26	21.1
19	128	110	202	4	.56	7752	8584	16336			
						3705	3378	7083			
						660	610	1270			
						78	62	140			
						5678	5678	11356			
						30045	30402	60447	52600.	1.15	79.8
20	129	201	202	4	.26	11359	11194	22553			
						4843	4928	9771			
						1002	926	1928			
						116	114	230			
						5678	5678	11356			
						35588	35350	70938	52600.	1.35	59.9
21	130	201	1201	4	1.84	8164	7704	15868			
						3099	3551	6650			
						706	875	1581			
						104	90	194			
						5678	5678	11356			
						30021	30309	60330	52600.	1.15	80.0
22	131	1201	1202	4	.80	8942	9016	17958			
						4196	4146	8342			
						1109	1028	2137			
						150	142	292			
						4713	4714	9427			
						29945	29786	59731	52600.	1.14	70.2

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
23	132	1202	1501	4	.60	6259	6138	12397			
						3128	3283	6411			
						893	850	1743			
						119	96	215			
						4713	4714	9427			
						25669	25551	51220	52600.	.97	80.0
24	133	1501	1701	4	2.16	5226	5404	10630			
						2707	2749	5456			
						851	754	1605			
						113	93	206			
						4713	4714	9427			
						24113	24082	48195	52600.	.92	80.0
25	134	1701	3301	4	1.00	4962	5240	10202			
						2418	2455	4873			
						814	744	1558			
						92	74	166			
						4713	4714	9427			
						23423	23547	46970	52600.	.89	80.0
26	135	3301	3302	4	1.04	4234	4239	8473			
						2349	2540	4889			
						676	664	1340			
						70	48	118			
						4713	4714	9427			
						22284	22393	44677	52600.	.85	80.0
27	136	3302	3303	4	.24	4234	4239	8473			
						2349	2540	4889			
						676	664	1340			
						70	48	118			
						4713	4714	9427			
						22284	22393	44677	52600.	.85	80.0
28	137	3303	3304	2	1.20	455	815	1270			
						185	190	375			
						232	522	754			
						106	111	217			
						712	712	1424			
						3558	4518	8076	14700.	.55	40.0
29	141	400	401	3	.96	2513	2293	4806			
						908	911	1819			
						66	119	185			
						5	2	7			
						589	590	1179			
						5335	5218	10553	17300.	.61	50.0
30	142	201	400	3	1.00	4580	5205	9785			
						2544	2007	4551			
						376	283	659			
						18	34	52			
						589	590	1179			
						9697	9650	19347	17300.	1.12	25.2
31	143	104	111	3	.28	3986	4216	8202			
						2515	1862	4377			
						692	323	1015			
						70	31	101			
						1451	1452	2903			
						12448	11173	23621	60800.	.39	50.0
32	144	110	111	3	.56	7003	6336	13339			
						2983	3556	6539			
						323	692	1015			
						31	70	101			
						1451	1452	2903			
						15078	15842	30920	60800.	.51	50.0
33	145	109	110	3	.68	2440	2433	4873			
						1288	1284	2572			
						179	489	668			
						25	53	78			
						1451	1452	2903			
						8514	9210	17724	60800.	.29	50.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
34	146	109	303	3	.20	5933	5769	11702			
						2364	2696	5060			
						489	179	668			
						53	25	78			
						1451	1452	2903			
						13787	13254	27041	60800.	.44	50.0
35	148	803	990	4	3.40	2041	1694	3735			
						1278	1437	2715			
						532	404	936			
						67	59	126			
						393	394	787			
						5763	5298	11061	60200.	.18	80.0
36	149	704	800	4	.76	1278	1091	2369			
						492	607	1099			
						521	629	1150			
						71	88	159			
						713	714	1427			
						5164	5362	10526	60200.	.17	80.0
37	150	800	803	4	.80	1150	1028	2178			
						456	546	1002			
						517	619	1136			
						63	90	153			
						713	714	1427			
						4968	5224	10192	60200.	.17	80.0
38	151	704	2602	4	1.00	2332	2550	4882			
						1302	1012	2314			
						811	833	1644			
						137	89	226			
						713	714	1427			
						7806	7637	15443	60200.	.26	80.0
39	155	2601	2602	4	.80	2550	2332	4882			
						1012	1302	2314			
						833	811	1644			
						89	137	226			
						713	714	1427			
						7634	7809	15443	60200.	.26	80.0
40	156	2401	2601	4	1.00	5345	5167	10512			
						2245	2882	5127			
						833	811	1644			
						89	137	226			
						713	714	1427			
						11662	12224	23886	60200.	.40	80.0
41	157	1001	2401	4	.68	9551	10057	19608			
						5610	6349	11959			
						1985	1782	3767			
						246	295	541			
						1210	1210	2420			
						23499	24485	47984	60200.	.80	62.4
42	158	2200	3391	4	2.45	4245	4844	9089			
						2914	2938	5852			
						1064	1451	2515			
						182	219	401			
						1210	1210	2420			
						13463	14971	28434	60200.	.47	80.0
43	159	1001	2200	4	2.10	7095	7789	14884			
						4474	4568	9042			
						1326	1783	3109			
						231	253	484			
						1210	1210	2420			
						18544	20312	38856	60200.	.65	77.5
44	161	705	801	4	.92	5733	5483	11216			
						3057	2636	5693			
						520	837	1357			
						84	90	174			
						1530	1530	3060			
						14672	14653	29325	52600.	.56	80.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
45	162	801	901	4	1.36	5733	5483	11216			
						3057	2636	5693			
						520	837	1357			
						84	90	174			
						393	394	787			
						11261	11245	22506	52600.	.43	80.0
46	163	801	890	2	1.30	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						712	712	1424			
						2136	2136	4272	17300.	.25	40.0
47	163	890	802	2	1.18	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						712	712	1424			
						2136	2136	4272	17300.	.25	40.0
48	164	802	803	2	.60	466	462	928			
						416	336	752			
						526	555	1081			
						39	106	145			
						712	712	1424			
						4187	4362	8549	17300.	.49	40.0
49	165	803	804	2	2.24	3202	3423	6625			
						2231	2082	4313			
						1447	1706	3153			
						161	263	424			
						796	796	1592			
						11198	12094	23292	17300.	1.35	5.0
50	166	804	805	2	1.60	5965	6035	12000			
						3890	3550	7440			
						1573	1817	3390			
						172	278	450			
						796	796	1592			
						15905	16441	32346	17300.	1.87	5.0
51	171	103	107	3	.20	1714	1414	3128			
						648	573	1221			
						0	0	0			
						0	0	0			
						1999	2000	3999			
						8359	7987	16346	13400.	1.22	50.0
52	172	103	111	3	.24	2549	2960	5509			
						1117	1170	2287			
						95	41	136			
						4	14	18			
						1999	2000	3999			
						9865	10254	20119	13400.	1.50	43.6
53	173	111	501	2	.80	596	570	1166			
						307	280	587			
						95	41	136			
						4	14	18			
						1999	2000	3999			
						7102	6974	14076	13400.	1.05	40.0
54	174	500	601	4	.60	6844	7256	14100			
						3574	4246	7820			
						696	862	1558			
						102	191	293			
						3713	3714	7427			
						23255	24941	48196	50800.	.95	79.0
55	175	500	501	4	.40	5551	5179	10730			
						3056	2504	5560			
						548	431	979			
						94	48	142			
						3713	3714	7427			
						21124	19831	40955	50800.	.81	80.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
56	176	600	1002	4	.80	6320	7290	13610			
						3741	4479	8220			
						667	840	1507			
						100	164	264			
						712	712	1424			
						13831	16077	29908	50800.	.59	79.5
57	177	600	601	4	1.00	9876	9161	19037			
						5631	4963	10594			
						990	908	1898			
						178	134	312			
						712	712	1424			
						20157	18478	38635	50800.	.76	62.4
58	178	1001	1002	4	1.20	6167	4967	11134			
						3915	3082	6997			
						919	665	1584			
						152	81	233			
						712	712	1424			
						14512	11758	26270	50800.	.52	80.0
59	182	200	501	3	.80	4568	4700	9268			
						2360	2768	5128			
						477	671	1148			
						59	92	151			
						4872	4872	9744			
						22675	23702	46377	16400.	2.83	5.0
60	183	200	202	3	.40	3970	3303	7273			
						1448	1690	3138			
						279	405	684			
						41	59	100			
						4872	4872	9744			
						20715	20596	41311	16400.	2.52	35.8
61	184	501	701	3	.48	1788	1522	3310			
						1160	989	2149			
						175	198	373			
						31	28	59			
						4872	4872	9744			
						18007	17607	35614	16400.	2.17	50.0
62	185	2101	3303	2	.20	5638	5394	11032			
						3282	3072	6354			
						1183	1098	2281			
						144	134	278			
						602	602	1204			
						13524	12870	26394	19900.	1.33	5.0
63	186	2100	2101	2	1.10	5608	5394	11002			
						3282	3033	6315			
						1183	1098	2281			
						144	134	278			
						602	602	1204			
						13494	12831	26325	19900.	1.32	5.0
64	187	2002	2102	2	1.16	2040	2616	4656			
						1054	1214	2268			
						171	291	462			
						16	30	46			
						602	602	1204			
						5290	6308	11598	19900.	.58	40.0
65	191	401	402	4	.10	9721	10300	20021			
						4319	3622	7941			
						354	665	1019			
						50	63	113			
						1745	1746	3491			
						20133	20679	40812	52600.	.78	72.3
66	193	104	701	4	.60	5298	4857	10155			
						2370	3055	5425			
						634	1126	1760			
						37	137	174			
						3663	3664	7327			
						20036	21567	41603	52600.	.79	80.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
67	194	701	702	4	1.00	11058	9670	20728			
						5007	5744	10751			
						542	875	1417			
						53	107	160			
						3663	3664	7327			
						28297	28477	56774	52600.	1.08	63.9
68	195	702	2401	4	3.00	6618	6729	13347			
						2715	3923	6638			
						807	1154	1961			
						179	221	400			
						3663	3664	7327			
						22473	24615	47088	52600.	.90	80.0
69	196	2400	2501	4	3.60	4695	4585	9280			
						1950	2640	4590			
						419	484	903			
						64	54	118			
						2314	2314	4628			
						14617	15297	29914	52600.	.57	80.0
70	197	2400	2401	4	2.70	11800	11005	22805			
						7045	5735	12780			
						1540	1374	2914			
						228	185	413			
						2314	2314	4628			
						29551	26985	56536	52600.	1.07	48.9
71	200	103	104	3	.48	1082	871	1953			
						508	540	1048			
						311	434	745			
						6	67	73			
						418	418	836			
						3484	3734	7218	15900.	.45	50.0
72	201	102	103	3	.28	2217	2117	4334			
						1052	1062	2114			
						406	475	881			
						10	81	91			
						418	418	836			
						5365	5626	10991	12600.	.87	39.6
73	202	100	101	3	.30	4957	4872	9829			
						1512	2043	3555			
						155	184	339			
						10	22	32			
						418	418	836			
						8063	8603	16666	12600.	1.32	5.0
74	203	100	102	3	.30	3143	2948	6091			
						1292	1383	2675			
						863	923	1786			
						71	137	208			
						418	418	836			
						7628	7842	15470	12600.	1.23	5.0
75	204	101	302	3	.20	3531	3484	7015			
						1096	1455	2551			
						155	149	304			
						10	22	32			
						418	418	836			
						6221	6557	12778	12600.	1.01	31.1
76	205	300	304	3	.52	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						68	68	136			
						204	204	408	12600.	.03	50.0
77	206	300	302	3	.44	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						68	68	136			
						204	204	408	12600.	.03	50.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
78	207	106	107	3	.30	9965	9334	19299			
						4547	4424	8971			
						253	388	641			
						69	32	101			
						3071	3072	6143			
						24438	23846	48284	52600.	.92	45.9
79	208	105	112	3	.30	3080	3006	6086			
						1348	1101	2449			
						106	161	267			
						34	4	38			
						3071	3072	6143			
						13955	13657	27612	52600.	.52	50.0
80	208	112	106	3	.30	12361	11997	24358			
						5469	5515	10984			
						253	406	659			
						69	32	101			
						3071	3072	6143			
						27756	27636	55392	52600.	1.05	37.8
81	209	105	301	3	.16	932	1139	2071			
						437	528	965			
						161	141	302			
						4	34	38			
						3071	3072	6143			
						10916	11267	22183	52600.	.42	50.0
82	210	107	705	4	1.00	8551	7620	16171			
						3974	3776	7750			
						253	388	641			
						69	32	101			
						3071	3072	6143			
						22451	21484	43935	52600.	.84	80.0
83	211	701	705	4	.40	9166	9847	19013			
						5173	4950	10123			
						406	588	994			
						44	87	131			
						935	936	1871			
						18088	19042	37130	52600.	.71	70.1
84	212	301	305	3	.80	1400	1975	3375			
						605	690	1295			
						187	162	349			
						7	34	41			
						420	420	840			
						3660	4351	8011	18000.	.45	50.0
85	213	101	105	3	.20	2157	2290	4447			
						927	771	1698			
						0	35	35			
						0	0	0			
						2382	2382	4764			
						10230	10277	20507	15300.	1.34	50.0
86	214	101	108	3	.48	3649	3478	7127			
						1161	1489	2650			
						0	0	0			
						0	0	0			
						2382	2382	4764			
						11956	12113	24069	15300.	1.57	41.7
87	215	108	109	3	.20	3649	3478	7127			
						1161	1489	2650			
						0	0	0			
						0	0	0			
						957	958	1915			
						7681	7841	15522	15300.	1.01	41.7
88	216	301	302	3	.28	836	468	1304			
						162	168	330			
						21	26	47			
						0	3	3			
						1415	1416	2831			
						5285	4945	10230	52600.	.19	50.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
89	217	302	303	3	.64	4367	3952	8319			
						1258	1623	2881			
						176	175	351			
						10	25	35			
						1415	1416	2831			
						10252	10248	20500	52600.	.39	50.0
90	218	304	402	2	3.40	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						420	420	840			
						1260	1260	2520	18000.	.14	40.0
91	219	1905	2091	1	4.80	15	0	15			
						0	0	0			
						0	0	0			
						0	0	0			
						188	188	376			
						579	564	1143	12400.	.09	30.0
92	220	1305	1905	2	3.40	3365	2885	6250			
						1330	1400	2730			
						320	180	500			
						34	13	47			
						188	188	376			
						6001	5248	11249	12400.	.91	27.4
93	221	1902	1990	1	2.70	2941	2476	5417			
						1160	1213	2373			
						0	0	0			
						0	0	0			
						299	300	599			
						4998	4589	9587	11500.	.83	26.5
94	222	1902	1904	2	1.60	3807	4556	8363			
						1870	1795	3665			
						358	638	996			
						32	67	99			
						299	300	599			
						7386	8728	16114	11500.	1.40	5.0
95	223	1304	1904	2	1.10	3433	2784	6217			
						1325	1376	2701			
						638	358	996			
						67	32	99			
						299	300	599			
						7132	5872	13004	11500.	1.13	21.0
96	224	1901	1902	2	.42	3327	3611	6938			
						1527	1505	3032			
						358	638	996			
						32	67	99			
						0	0	0			
						5666	6593	12259	11500.	1.07	5.0
97	225	1901	1991	2	3.00	3689	3249	6938			
						1465	1567	3032			
						638	358	996			
						67	32	99			
						34	34	68			
						6733	5730	12463	11500.	1.08	5.0
98	226	1301	1993	2	3.70	2074	1918	3992			
						830	910	1740			
						0	0	0			
						0	0	0			
						34	34	68			
						3006	2930	5936	11500.	.52	40.0
99	227	1303	1992	2	1.80	1123	1023	2146			
						470	494	964			
						0	0	0			
						0	0	0			
						0	0	0			
						1593	1517	3110	11500.	.27	40.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
100	228	1702	3301	3	1.08	2640	2367	5007			
						1588	1742	3330			
						373	431	804			
						35	31	66			
						284	284	568			
						5931	5916	11847	10200.	1.16	20.3
101	229	1702	2001	3	2.68	545	829	1374			
						198	217	415			
						22	53	75			
						0	8	8			
						284	284	568			
						1639	2028	3667	10200.	.36	50.0
102	230	1401	1402	3	2.20	2180	2130	4310			
						955	715	1670			
						439	249	688			
						30	42	72			
						500	500	1000			
						5603	4969	10572	10200.	1.04	35.5
103	231	1600	1702	3	2.40	408	344	752			
						196	204	400			
						0	19	19			
						0	0	0			
						285	286	571			
						1459	1444	2903	10200.	.28	50.0
104	232	1206	1600	3	1.20	568	479	1047			
						306	364	670			
						6	35	41			
						0	0	0			
						285	286	571			
						1741	1771	3512	10200.	.34	50.0
105	233	1205	1206	3	1.40	30	70	100			
						50	30	80			
						0	0	0			
						0	0	0			
						285	286	571			
						935	958	1893	10200.	.19	50.0
106	234	2101	2191	2	4.36	0	30	30			
						39	0	39			
						0	0	0			
						0	0	0			
						285	286	571			
						894	888	1782	12700.	.14	40.0
107	239	1701	1802	2	.90	1195	1095	2290			
						650	655	1305			
						176	149	325			
						21	19	40			
						358	358	716			
						3334	3179	6513	11500.	.57	40.0
108	240	1802	1803	2	.40	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						358	358	716			
						1074	1074	2148	11500.	.19	40.0
109	241	1801	1802	1	1.90	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	10200.	.17	30.0
110	243	1501	1502	1	.10	495	325	820			
						165	200	365			
						36	61	97			
						6	3	9			
						285	286	571			
						1605	1514	3119	10200.	.31	30.0

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
111	244	1502	1801	1	1.00	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	10200.	.17	30.0
112	245	1102	1801	1	.88	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	10200.	.17	30.0
113	246	1100	1102	1	1.20	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						637	638	1275			
						1911	1914	3825	11500.	.33	30.0
114	247	1100	1101	2	1.20	490	465	955			
						375	270	645			
						93	89	182			
						1	25	26			
						637	638	1275			
						2965	2902	5867	11500.	.51	40.0
115	248	1102	1803	1	2.20	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	11500.	.15	30.0
116	249	1803	3390	1	2.46	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	11500.	.15	30.0
117	250	1202	1204	1	.20	3655	3850	7505			
						1605	1400	3005			
						366	328	694			
						43	58	101			
						285	286	571			
						6976	6938	13914	12700.	1.10	20.8
118	251	1204	1590	1	1.00	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	12700.	.13	30.0
119	252	1203	1204	1	.90	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						285	286	571			
						855	858	1713	12700.	.13	30.0
120	256	601	1101	4	1.60	8466	7711	16177			
						5186	5320	10506			
						1252	1549	2801			
						285	224	509			
						1003	1004	2007			
						20020	19813	39833	52600.	.76	65.7
121	257	1101	1203	4	.60	8498	7718	16216			
						5167	5196	10363			
						1247	1540	2787			
						265	228	493			
						1003	1004	2007			
						19963	19690	39653	52600.	.75	66.1

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
122	258	1201	1203	4	.40	7718	8498	16216			
						5196	5167	10363			
						1540	1247	2787			
						228	265	493			
						1003	1004	2007			
						19687	19966	39653	52600.	.75	66.1
123	259	700	703	4	.60	4762	4745	9507			
						2818	2982	5800			
						2098	1887	3985			
						384	388	772			
						2123	2124	4247			
						19297	19037	38334	52600.	.73	80.0
124	260	700	702	4	.80	12638	13685	26323			
						7202	7803	15005			
						2450	2677	5127			
						597	479	1076			
						2123	2124	4247			
						32900	34651	67551	52600.	1.28	5.0
125	261	703	790	3	1.60	3325	3330	6655			
						1807	1959	3766			
						543	662	1205			
						109	101	210			
						2280	2280	4560			
						13385	13756	27141	18000.	1.51	35.1
126	262	704	2603	2	.28	4625	4599	9224			
						2349	2676	5025			
						855	844	1699			
						127	150	277			
						1140	1140	2280			
						12485	12833	25318	18000.	1.41	5.0
127	263	703	802	2	1.40	466	462	928			
						416	336	752			
						526	555	1081			
						39	106	145			
						1425	1426	2851			
						6326	6504	12830	14100.	.91	40.0
128	264	2602	2603	2	1.00	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						1140	1140	2280			
						3420	3420	6840	11500.	.59	40.0
129	265	2603	2604	2	1.10	4625	4599	9224			
						2349	2676	5025			
						855	844	1699			
						127	150	277			
						1140	1140	2280			
						12485	12833	25318	16300.	1.55	5.0
130	266	2604	2605	1	.20	3812	3937	7749			
						1797	2315	4112			
						966	970	1936			
						142	161	303			
						1140	1140	2280			
						11387	12095	23482	16300.	1.44	5.0
131	267	2601	2605	1	2.00	2823	2863	5686			
						1255	1602	2857			
						0	0	0			
						0	0	0			
						1140	1140	2280			
						7498	7885	15383	16300.	.94	29.5
132	268	804	2604	1	1.40	2612	2763	5375			
						1468	1659	3127			
						111	126	237			
						15	11	26			
						1392	1392	2784			
						8523	8883	17406	16300.	1.07	28.9

SEQ	LINK	A-NODE	B-NODE	K-V	DISTANCE	ASSIGNED VOLUME A - B	B - A	TOTAL	CAPACITY	CONGESTION RATIO	VELOCITY
133	276	1206	1501	3	.56	409	538	947			
						334	256	590			
						35	6	41			
						0	0	0			
						285	286	571			
						1668	1664	3332	10200.	.33	50.0
134	277	2102	2100	2	1.20	2040	2646	4686			
						1093	1214	2307			
						171	291	462			
						16	30	46			
						602	602	1204			
						5329	6338	11667	19900.	.59	40.0
135	278	303	402	4	1.46	10300	9721	20021			
						3622	4319	7941			
						665	354	1019			
						63	50	113			
						1760	1760	3520			
						20721	20178	40899	52600.	.78	72.3
136	279	304	305	2	1.40	0	0	0			
						0	0	0			
						0	0	0			
						0	0	0			
						420	420	840			
						1260	1260	2520	18000.	.14	40.0
137	500	601	702	4	.76	8041	8493	16534			
						4859	4729	9588			
						1535	1322	2857			
						258	364	622			
						2123	2124	4247			
						23113	23330	46443	52600.	.88	65.9
138	501	703	890	4	1.20	1055	1037	2092			
						661	753	1414			
						1190	831	2021			
						268	213	481			
						2123	2124	4247			
						11269	10463	21732	52600.	.41	80.0
139	502	890	901	4	1.00	1055	1037	2092			
						661	753	1414			
						1190	831	2021			
						268	213	481			
						2123	2124	4247			
						11269	10463	21732	52600.	.41	80.0

CHAPTER 6: IDENTIFICATION OF ROAD NETWORK

LIST OF APPENDICES

Appendix 6-1: Existing Classified Roads

Link No.	Road Classification	Road Length (km)	Lane No.	Type of Pavement
1.	Arterial Roads:			
1-1	Bagamoyo Road	35.0	2	Paved
1-2	Morocco Road	3.5	2	Paved
1-3	Kinondoni Road	1.7	2	Paved
1-4	Morogoro Road (33.0 km in	2.7	*4	Paved
	total)	30.3	2	Paved
1-5	United Nation Road	2.0	2	Paved
1-6	UWT Road	1.9	*4	Paved
1-7	Port Access	15.6	*4	Paved
1-8	Bandari Road	2.2	2	Paved
1-9	Kilwa Road	15.7	2	Paved
1-10	Uhulu Road (5.0 km in total)	1.1	*4	Paved
		3.9	2	Paved
1-11	Msinbazi Road	1.6	*4	Paved
1-12	Mpakani Road	3.9	2	Paved
1-13	Upanga Road	1.8	2	Paved
1-14	Pugu Road (17.4 km in total)	11.2	*4	Paved
		6.2	2	Paved
		(139.3 km)		
1-15	City Centre Roads & Streets			
1-15-1	Nkurumah Street	0.3	2	Paved
1-15-2	Samora(Independence) Ave.	0.8	2	Paved
1-15-3	Sokoine(City) Drive	0.8	2	Paved
1-15-4	Gerezani Street	1.2	2	Paved
1-15-5	Kivukoni Front	1.0	2	Paved
1-15-6	Maktaba & Azikiwe Sts.	0.7	*4	Paved
	(0.9 km in total)	0.2	2	Paved
1-15-7	Ohio Street	1.0	2	Paved
1-15-8	Ocean Road	3.2	2	Paved
		(9.2 km)		
	Total of Arterial Roads	148.5 km		
	4-lanes paved roads	34.8 km		
	2-lanes paved roads	113.7 km		

2.	Collector Roads:			
2-1	Old Bagamoyo Road	8.2	2	Paved
2-2	Haile Sellasie	5.0	2	Paved
2-3	Toure Drive	5.6	2	Paved
2-4	Bongoyo Street	0.8	2	Paved
2-5	Shekilango Road	3.8	2	Paved
2-6	Kondoa Street	1.2	2	Paved
2-7	Mwinjuma Road	2.4	2	Paved
2-8	Makanya Road (5.0 km in total)	3.5	2	Paved
		1.5		*Gravel
2-9	University Road	3.8	2	Paved
2-10	* Kigogo C-1 (to be named)	1.3	2	*Gravel
2-11	* Kigogo C-2 (to be named)	1.8	2	*Gravel
2-12	* Kigogo C-3 (to be named)	1.9	2	*Gravel
2-13	Old Kigogo Road	6.8	2	*Gravel
2-14	Kagera Street	2.0	2	Paved
2-15	Mikumi Street	1.1	2	Paved
2-16	New Kigogo Road	2.7	2	Paved
2-17	Chang'ombe Road	4.6	2	Paved
2-18	Temeke Street	1.9	2	Paved
2-19	Mbagala I Road	1.4	2	Paved
2-20	Mbagala II Road	2.2	2	Paved
2-21	Mahunda Street	2.0	2	Paved
	Total of Collector Roads	65.5 km		
	- 2 lanes paved roads	52.2 km		
	- 2 lanes unpaved roads	13.3 km		

Link No.	Road Classification	Road Length (km)	Lane No.	Type of Pavement
3.	Local Roads			
	Total of Local Roads	933.0 km	(100.0%)	
	- 2 lanes paved roads	251.0 km	(27.0%)	
	* Urban Area	204.0 km		
	* Sub-Urban Area	47.0 km		
	- Minor unpaved roads	682.0 km	(73.0%)	

Appendix 6-2: Present Situation of Roads Proposed in DSM Master Plan

Name of Roads	Proposed Measures in Fibe Year Dev. Progm.	Present Situation
1. Selander Bridge	4 lanes bridge incl. access (1,000 m)	Implemented with assist. of Japanese Gov.
2. New Kigogo Road	1.7 km of 2 lanes paved road	Implemented by Tanzanian Gov.
3. Morogoro Road	4 lanes paved road in 2.4 km long	Implemented with assist. of Japanese Gov.
4. Upanga Road	Widening to 4 lanes in 1.4 km long	To be implemented soon with assist. of Italian Gov.
5. Tabata East Roads	2 lanes, 5.5 km N-S Road and 2.9 km E-S Road	Not to be implemented near future
6. Gerezani, Bandari and Kilwa Roads	Widening to 4 lanes in 5.0 km long	Not Implemented yet and no near future plans
7. Kurasini Bridge	550 m bridge across Kurasini Creek with 4 lanes	Not implemented yet but requested by DCC to be included in the Study
8. Bagamoyo Road	4 lanes for 2.5 km	Improvements are scheduled to be conducted in the nearest future with assist of Italian Gov.

Appendix 6-3: Breakdown of Priority Roads Proposed by DCC

Group 1 : Arterial and Collector Roads Proposed by DCC

	Name of Roads	Length(km) Measured by St. Tm.	Road Classification	Proposed Measured by DCC
1.	Old Bagamoyo Road	8.2 (8.4)	Collector	Reconst.
2.	Old Kigogo Road	6.8 (6.0)	Collector	Reconst.
3.	Shekilango Road	3.8 (4.4)	Collector	Reconst.
4.	Morocco Road through Kigogo Road to Uhuru Road	6.2 (6.8)	Arterial	Upgrade to dual lanes
5.	Kinondoni Road	0.7 (0.7)	Arterial	Overlay
6.	Morogoro Road from Morocco Road Junc. to Port Access junc. incl. 4.5 km of TRM.	9.5 (8.0)	Arterial	Upgrade to dual lanes from Morocco Rd. to Port Access.
7.	Uhulu Road from Buguruni to Msimbazi Road Junction	2.8 (2.3)	Arterial	Upgrade to dual lanes
8.	Gerezani Street incl. Bandari Road and Kilwa Road	12.0 (12.0)	Arterial	Upgrade to dual lanes from Pugu Rd. junc. up to Mabagala Indust. area.
9.	Chang'ombe Roads incl. Chang'ombe Road(4.6km), Temeke Road(1.9km) and Mbagara Road I(1.4km)	7.9 km (8.0 km)	Collector	-Overlay -Reconst. -Reconst.
	Total Length of Group 1:	57.9 km (56.6 km)		

(1) The figure in the ( ) implies the road length estimated by DCC.

Group 2 : Area Roads Proposed by DCC

Name of Area Roads/Streets		Length(km) Measured by St. Tm.	Road Classification	Proposed Measured by DCC
A. Oysterbay Residential Area Streets				
A-1	Laibon St.	0.8		Overlay
A-2	Kwale St.	0.3		ditto
A-3	Toure Drive	5.5	Collector	ditto
A-4	Haile Sellaside	4.8	Collector	ditto
A-5	Winding Ave.	1.0		ditto
A-6	Bongoyo St.	1.8	Collector	ditto
A-7	Hill Rd.	1.0		ditto
A-8	Mazengo St.	0.3		ditto
A-9	Ruvu St.	0.2		ditto
A-10	Kimweri Ave.	3.8		Reconst.
	Total (A)	19.5 km (19.0 km)		
B. Mwinjuma Road		2.4	Collector	Reconst.
	Total (B)	2.4 km (2.4 km)		
C. Magomeni Commercial Area Street				
C-1	Kondoa St.	1.2	Collector	Reconst.
C-2	Kagera St.	2.0	Collector	ditto
	Total (C)	3.2 km (3.2 km)		
D. Central Area Street				
(1)	N-S Streets			
D-1	Lindi St.	0.2		Overlay
D-2	Uhuru St	0.2		ditto
D-3	Aggery St.	0.4		ditto
D-4	Kitumbini St.	0.3		ditto
D-5	Band St.	0.2		ditto
D-6	Mosque St.	0.4		ditto
D-7	Morogoro St.	0.9		ditto
D-8	Zanaki St.	0.9		ditto
D-9	Mrina St.	0.3		ditto
D-10	Mkwepu (Mkwebru) St.	0.4		ditto
D-11	Maktaba (Azikiwe) St.	0.9	Arterial	ditto
D-12	Ohio St.	1.0	Arterial	ditto
D-13	Ocean Road	3.4	Arterial	ditto
	N-S Street Total	9.5 km		
(2)	E-W Streets			
D-14	Nkrumah St.	0.3	Arterial	Overlay
D-15	Africa St.	0.3		ditto
D-16	Kisutu St.	0.5		ditto
D-17	Libya St.	0.5		ditto
D-18	Mtendeni St.	0.3		ditto
D-19	Jamhuri St.	1.1		ditto
D-20	Mshihili St.	0.3		ditto
D-21	Market-Makunganya Sts.	1.0		ditto

D-22	India St.	0.6		ditto
D-23	Indep.(Samora) Ave.(50%)	0.8	Arterial	ditto
D-24	Mansfield St.	0.5		
D-25	Sokoine(City) Drive(50%)	0.8	Arterial	ditto
D-26	Kivukoni Front	1.0	Arterial	ditto
	E-W Streets Total	8.0 km		
	Total (D)	17.5 km		
		(16.9 km)		

Note:

(1) The following roads are not included in the above area roads taking good condition of pavement into consideration:

Railway St.	0.2
Algeria St.	0.2
Mission St.	0.2
South St.	0.1
Mwisho & Zaramo Sts.	0.4
Bridge St.	0.3
Pamba St.	0.3
Mirambo St.	0.3
Kibo St.	0.2
Shaban Robert St.	1.2
Lhuthul Road	0.7
Magogoni St.	0.4
Garden Ave.	1.1
Mali & Sewa Sts.	0.3
Madaraka Ave.	0.2
Ghana Ave.	1.1
Total	7.2 km

(2) Gerezani Road is included in the Group A.

E. Kariakoo Area Commercial Street

(1) E-W Streets

E-1	Matumbi (A) St.	0.4		Reconst.
E-2	Matumbi (B) St.	0.3		ditto
E-3	Nyati St.	0.4		ditto
E-4	Faru St.	0.4		ditto
E-5	Twiga St.	0.4		ditto
E-6	Ndovu St.	0.4		ditto
E-7	Rufiji St.	0.4		ditto
E-8	Muhoro St.	0.7		ditto
E-9	Ungoni St.	0.3		ditto
E-10	Amani St.	0.7		ditto
E-11	Udowe St.	0.4		ditto
E-12	Kariakoo St.	0.8		ditto
E-13	Kibambawe St.	0.3		ditto
E-14	Mafia St.	0.8		ditto
E-15	Mkunguni St.	0.9		ditto
E-16	Pemba St.	0.4		ditto
E-17	Tandamuti St.	1.0		ditto
E-18	Narung'ombe St.	1.0		ditto
E-19	Mahiwa St.	0.2		ditto
E-20	Mhonda St.	0.5		ditto
E-21	Magila St.	0.3		ditto
E-22	Mchikichi St.	0.7		ditto
E-23	Aggrey St.	1.1		ditto
E-24	Masasi St.	0.3		ditto
E-25	Uhuru St.	1.2	Arterail	Overlay
E-26	Kipata St.	0.6		Reconst.
E-27	Lindi St.	0.7		Reconst.

E-28	Somali St.	0.5		ditto
E-29	Kiungani St.	0.6		ditto
E-30	Mbaruku St.	0.4		ditto
E-31	Kisarawe St.	0.6		ditto
E-32	Viwanda	0.5		ditto
	E-W Streets Total	18.2 km		
(2)	N-S Streets			
E-33	Lumumba St.	1.2		Overlay
E-34	Nyasa St.	0.2		Reconst.
E-35	Ukami St.	0.2		ditto
E-36	Kipande St.	0.2		ditto
E-37	Livingstone St.	1.3		ditto
E-38	Mvita St.	0.2		ditto
E-39	Hivao St.	0.1		ditto
E-40	Chura St.	0.2		ditto
E-41	Sikuku St.	1.5		ditto
E-42	Sukuma St.	0.2		ditto
E-43	Gogo St.	0.1		ditto
E-44	Swahili St.	1.6		ditto
E-45	Wanyamwezi St.	1.6		ditto
E-46	Msimbazi St.	1.6	Arterial	Overlay
E-47	Kongo St.	1.1		Reconst.
E-48	Jangwani St.	0.5		ditto
E-49	Likoma St.	0.6		ditto
E-50	Mzizima St.	0.6		ditto
E-51	Muheza St.	0.4		ditto
	N-S Streets Total	13.4 km		
	Total (E)	31.6 km		
		(31.4 km)		

F Chang'ombe Industrail Area Street

F-1	Soza Road	1.5		Reconst.
F-2	Migeyo Road	0.7		ditto
F-3	Mbozi Road	2.0		ditto
F-4	Dakawa St.	0.8		ditto
F-5	Upper Volta St.	0.5		ditto
F-6	Chuma Road	0.6		ditto
F-7	Rwanda Road	0.2		ditto
F-8	Uruwira Road	0.5		ditto
F-9	Wasambara Road	1.3		ditto
F-10	Manyara	0.5		ditto
F-11	Msikiti	0.3		ditto
F-12	Ismailia	0.2		ditto
F-13	Rwegasore	0.5		ditto
F-14	Kimathi	0.2		ditto
F-15	Tagore	0.2		ditto
F-16	Ivory Coast	0.2		ditto
F-17	Chamwenyewe	0.2		ditto
F-18	Mzore Road	0.4		ditto
F-19	Ubena	1.0		ditto
F-20	Diwani	0.7		ditto
F-21	Bazaar	0.2		ditto
F-22	Mapinduzi St.	0.8		ditto
F-23	Monrovia Road	1.3		ditto
	Total (F)	14.6 km		
		(14.6 km)		

Note: 2 nos. of Chang'ombe Roads are not included in the above area streets since these are listed in the Group A

G. Temeke Area Street

G-1	Yombo St.	2.8	Overlay
G-2	Everret	1.1	ditto
G-3	Chihota St.	1.6	Reconst.
G-4	Mahunda St.	3.1	Overlay
G-5	Mbagala II St.	2.0	Reconst.
G-6	Bububu St.	2.0	Overlay
G-7	Kichangani St.	1.3	Reconst.
	Total (G)	13.9 km	
		(13.0 km)	

Note: Temeke road is included in the list of Group A.

H. Ilala Commercial and Residential Area Street

(1)	E-W Streets		
H-1	Kilwa St.	1.3	Reconst.
H-2	Songea St.	0.9	ditto
H-3	Lindi St.	1.9	Overlay
H-4	Sadabi St.	0.5	Reconst.
H-5	Chunya St.	0.5	ditto
H-6	Mtwara St.	0.3	ditto
H-7	Ilala St.	0.4	ditto
H-8	Tanga St.	0.7	ditto
H-9	Chunya-Pangani Sts.	0.3	ditto
H-10	Ngoma-Nzasa Str.	0.9	ditto
H-11	Manyoni St.	0.4	ditto
H-12	Moshi St.	0.7	ditto
	E-W Streets Total	7.8 km	
(2)	N-S Streets		
H-13	Gungoni St.	0.6	ditto
H-14	Tunduru St.	0.2	ditto
H-15	Tukuyu St.	0.2	ditto
H-16	Arusha St.	0.6	ditto
H-17	Dodoma St.	0.3	ditto
H-18	Mwanza St.	0.3	ditto
H-19	Kilosa St.	0.3	ditto
	N-S Streets Total	2.5 km	
	Total (H)	10.3 km	
		(10.3 km)	

Total of Group 2:

A	Oysterbay Industrial Area Streets	19.5	(19.0)
B	Mwinjuma Road	2.4	(2.4)
C	Magomeni Commercial Area Streets	3.2	(3.2)
D	Central Area Streets	17.5	(16.9)
E	Kariokoo Commercial Area Streets	31.6	(31.4)
F	Chang'ombe Area Streets	14.6	(14.6)
G	Temeke Residential Area Streets	13.9	(13.0)
H	Ilala Commercial And Residential Area Sts.	10.3	(10.3)
	Total	113.0 km	(110.8 km)

Note: The figures in the ( ) implies the road length proposed by DCC.

CHAPTER 7: ENGINEERING SURVEY AND ANALYSIS

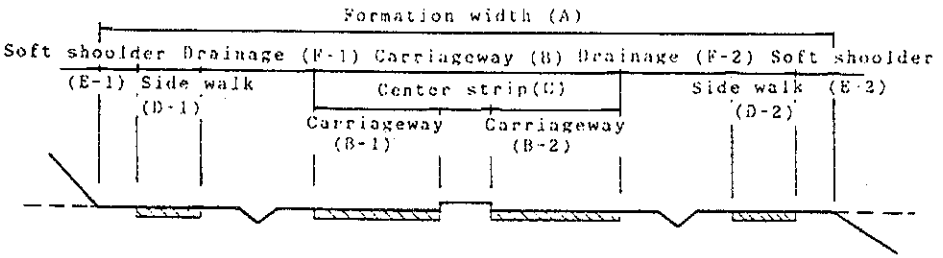
LIST OF APPENDICES

Appendix 7-1-1: Summary of Road Inventory

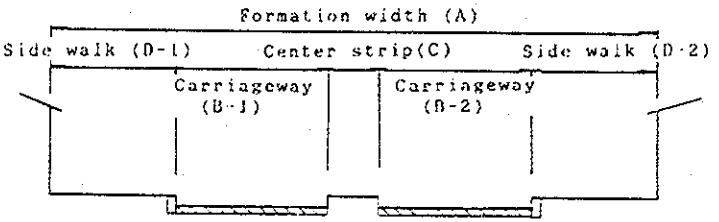
Roads subject to the Study are all the roads in Dar es Salaam excluding local roads, either not listed in the priority area roads proposed by DCC or not engineered roads located in the rural areas. Length of road inventory surveyed totals to 305 km as follows:

-	Arterail Roads	148.5 km over 23 routes
-	Collector Roads	65.5 km over 21 routes
-	Local Roads	91.2 km in 8 areas over 128 routes
	Total	305.2 km

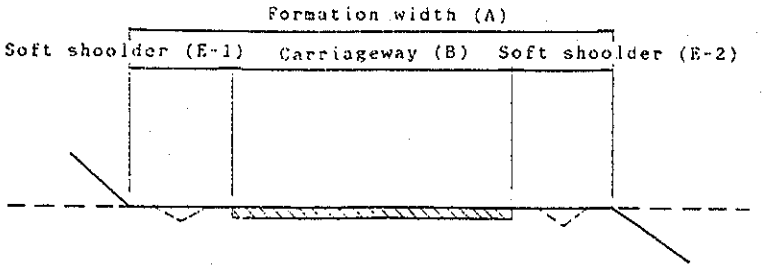
TYPE 1



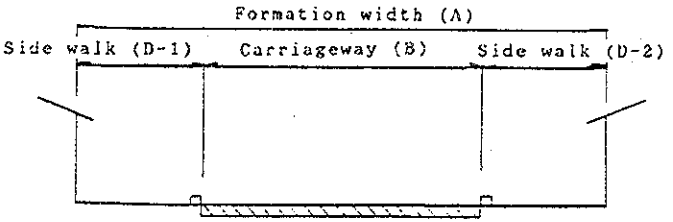
TYPE 3



TYPE 2



TYPE 4



Typical Cross Section of Existing Roads

Appendix 7-1-1: Summary of Road Inventory (1/10)

Link No.	Name of Roads	Beginning Point	Ending Point	Length (km)	Road Classification	Lane No.	Carriageway width	Pavement Type	Right-of-way Width	Land use Pattern	Traffic Capacity	ADT Vol		Congetion Ratio
1-1	Bagamoyo Road	Upanga Road	City Boundary	35.0	Arterial	2	7.0	Asphalt	22.0	Residence / Industry	52,600 13,000	60089 21312		0.76 1.64
1-2	Morocco Road	Bagamoyo Road	Morogoro Road	3.5	Arterial	2	7.5	Asphalt	14.6	Residence / Commerce	12100	12408		1.02
1-3	Kinondoni Road	Bagamoyo Road	Morocco Road	1.7	Arterial	2	7.5	Asphalt	16.9	Residence / Commerce	16300	13485		0.83
1-4	Morogoro Road	Sokoine Drive	City Boundary	33.0	Arteiral	4/2	7.5/ 60	Asphalt	13.6 / 45.0	Residence / Agriculture	52600 14700/11800	33097 24,719		0.65 1.68/1.01
1-5	United Nations Road	Bagamoyo Road	Morogoro Road	2.0	Arterial	2	10.5	Asphalt	18.4	Commerce	17,300	10,690		0.62
1-6	UWT Road	Upanga Road	Pugu Road	1.9	Arterial	4	19.4	Asphalt	23.7	Commerce	60,800	23693		0.39
1-7	Port Access	Morogoro / Mpakani	Bandari Road	15.6	Arterial	4	20.4	Asphalt	42.2	Agriculture Commerce	60200	16689		0.28
1-8	Bandari Road	Port Access	Gerezani	2.2	Arterial	2	7.0	Asphalt	14.4	Commerce	14700	18683		1.27
1-9	Kilwa Road	Bandari Road	City Boundary	15.6	Arterial	2	7.0	Asphalt	9.0 / 22	Residence / Agriculture	21000	10512		0.50
1-10	Uhuru Road	Nkrumah / Samora	Port Access	1.1 3.9	Arterial	4 2	9.0 12.8	Asphalt	15.6	Commerce / Residence	50,800 13,400	25642		0.50 1.91
1-11	Msimbazi Road	Morogoro Road	Pugu / Gerezani	1.6	Arterial	2	12.6	Asphalt	23.0	Commerce	16400	21333		1.30
1-12	Mpakani Road	Bagamoyo Road	Port Access Morogoro	3.9	Arterial	2	7.5	Asphalt	10.7	Residence / Public	22700	7735		0.34
1-13	Upanga Road	Bagamoyo	Jamhuri	1.8	Arterial	2	10.5	Asphalt	19.0	Residence	13400	20410		1.52
1-14	Pugu Road	UWT Nkrumah	City Boundary	11.2 5.2	Arterial	4 2	14.4 7.0	Asphalt	13.5	Commerce / Industry	52600	42640		0.81
1-15-1	Nkrumah Street	Samora	UWT / Nkrumah	0.3	Arterial	2	9.5	Asphalt	14.9	Commerce / Residence	15900	13480		0.85
1-15-2	Samora Avenue	Luthuli	Uhuru	0.8	Arterial	2	6.0	Asphalt	12.5	Commerce	12600	12480		1.07
1-15-3	Sokoine (City) Drive	Luthuli	Gerezani	0.8	Arterial	2	9.5	Asphalt	17.7	Commerce	12,600	23646		1.88
1-15-4	Gerezani Street	Pugu Road	Sokoine Drive	1.2	Arterial	2	10.0/7.0	Asphalt	14.2	Commerce	13000 18300	15241 23646		1.17 1.29
1-15-5	Kivukoni Front	Ocean Road	Sokoine	1.0	Arterial	2	5.0	Asphalt	8.0	Commerce	17100	13680		0.80
1-15-6	Maktaba & Azikiwe Street	Kivukoni	UWT Road	0.7 0.2	Arterial	4	12.0	Asphalt	25.1	Commerce	15300	19327		1.26

Appendix 7-1-1: Summary of Road Inventory (2/10)

Link No.	Name of Roads	Beginning Point	Ending Point	Length (km)	Road Classification	Lane No.	Carriage-way width	Pavement Type	Right-of-way Width	Land use Pattern	Traffic Capacity	ADT Vol.		Congetion Ratio
1-15-7	Ohio Street	Kivukoni	Upanga	1.0	Arterail	2	9.0	Asphalt	18.3	Residence / Commerce	13,500	15169		1.12
2-1	Old Bagamoyo Road	Bagamoyo Road	Bagamoyo Road	8.0	Collector	2	6.5	Asphalt	10.0	Residence	12400	6817		0.55
2-2	Haile Sellasie Road	Msasani Street	Bagamoyo Road	5.0	Collector	2	6.5	Asphalt	16.0	Residence	11500	8109		0.71
2-3	Toure Drive	Kenyatta Drive	Masaki Street	5.6	Collector	2	6.5	Asphalt	16.0	Residence	11500	5292		0.46
2-4	Bongoyo Street	Kaunda Drive	Msasani Road	0.8	Collector	2	6.5	Asphalt	16.6	Residence	11500	2500		0.22
2-5	Shekilango Road	Bagamoyo Road	Morogoro Road	3.7	Collector	2	6.5	Asphalt	14.9	Residence/ Industry	10200	6782		0.66
2-6	Kondoa Street	Morroco	Mkanya	1.5	Collector	2	7.5	Asphalt	13.2	Residence	12700	2500		0.20
2-7	Mwinjuma Road	Morroco	Mwananyamala Area	2.4	Collector	2	7.0	Asphalt	12.1	Residence	10200	8674		0.85
2-8	Makanya Road	Shekilango	Makanya	1.5 3.5	Collector	2 2	6.5	Asphalt / Gravel	10.0	Residence	10200	2500		0.25
2-9	University Road	Mpakani	Mpakani	3.8	Collector	2	6.7	Asphalt	10.6	Institution	12700	2500		0.20
2-10	Kigogo C - 1	Old Kigogo	Morogoro Road	1.3	Collector	2	6.5	Asphalt	8.2	Commerce Residence	11500	2510		0.22
2-11	Kigogo C - 2	Kigogo C-3	Kigogo C-1	1.8	Collector	2	5.5	Gravel	7.0	Residence	10200	2500		0.25
2-12	Kigogo C - 3	Old Kigogo Road	Kagera Street	1.9	Collector	2	6.5	Gravel	11.7	Residence	10200	2500		0.25
2-13	Old Kigogo Road	New Kigogo	Morogoro	6.6	Collector	2	6.5	Asphalt / Gravel	11.7	Residence	11500	3482		0.30
2-14	Kagera Street	Makanya	Morogoro	1.2	Collector	2	7.5	Asphalt	11.0	Residence	12700	2500		0.20
2-15	Mikumi Street	Mwinyi Mkuu	Kagera Street	1.1	Collector	2	7.5	Asphalt	11.0	Residence	12700	2500		0.20
2-16	New Kigogo Road	Uhuru Road	Morogoro	2.6	Collector	2	7.0	Asphalt	10.9	Residence / Agriculture	10500	11889		1.13
2-17	Chang'ombe Road	Pugu Road	Temeke	4.4	Collector	2	7.0	Asphalt	25.8	Industry / Residence	14100	17072		1.21
2-18	Temeke Street	Port Access	Mbagalla II	2.0	Collector	2	6.0	Asphalt	15.8	Residence / Commerce	11500	5622		0.49
2-19	Mbagalla I	Temeke	Kilwa	1.3	Collector	2	6.0	Asphalt	15.8	Residence	11500	6837		0.59

Appendix 7-1-1: Summary of Road Inventory (3/10)

Link No.	Name of Roads	Beginning Point	Ending Point	Length (km)	Road Classification	Lane No.	Carriage-way width	Pavement Type	Right-of-way Width	Land use Pattern	Traffic Capacity	ADT Vol	Ratio of Trucks	Congetion Ratio
2-20	Mbagalla II	Temeke / Mbagalla T	Pugu	2.2	Collector	2	7.0	Asphalt	12.0	Commerce / Residence	11500	6837		0.59
2-21	Mahunda Street	Kivungo	Yombo Street	2.0	Collector	2	7.0	Asphalt	12.5	Residence	11500	2500		0.22
1-15-8	Ocean Road	Upanga Road	Kivukoni Front	3.4	Arterial	2	7.0	Asphalt	10.9	Residence				
3.					LOCAL ROADS									
3-1	Osterbay Residential Streets													
3-1-1	Laibon Street	Bagamoyo	Kaunda Drive	0.8	Local	2	5.0	Asphalt	14.6	Residence				
3-1-2	Kwale Street	Laibon	Kaunda Drive	0.3	Local	2	5.0	Asphalt	14.6	Residence				
3-1-3	Winding Avenue	Kenyatta Drive	Bagamoyo Road	1.0	Local	2	5.0	Asphalt	13.8	Residence				
3-1-4	Hill Road	Kenyatta Drive	Winding Avenue	1.0	Local	2	6.5	Asphalt	14.2	Residence				
3-1-5	Mazengo Street	Winding Avenue	Mkwawa Road	0.3	Local	2	5.0	Asphalt	14.5	Residence				
3-1-6	Ruvu Street	Haile Silassie	Chole Road	0.2	Local	2	5.0	Asphalt	15.4	Residence				
3-1-7	Kimweri Avenue	Masaki Road	Old Bagamoyo	3.8	Local	2	5.0	Asphalt	14.5	Residence				
3-2	Central Area Streets													
3-2-1	Lindi Street	Nkrumah	UWT Road	0.2	Local	2	9.5	Asphalt	14.0	Commerce				
3-2-2	Uhuru Street	Samora	Msimbazi	0.2	Local	2	9.5	Asphalt	14.0	Commerce				

Appendix 7-1-1: Summary of Road Inventory (4/10)

Link No.	Name of Roads	Beginning Point	Ending Point	Length (km)	Road Classification	Lane No.	Carriage-way width	Pavement Type	Right-of-way Width	Land use Pattern				
3-2-3	Aggrey Street	Samora	UWT	0.4	Local	2	9.5	Asphalt	15.0	Commerce				
3-2-4	Kitumbini Street	Aggrey	Jamhuli	0.3	Local	2	7.0	Asphalt	16.3	Commerce				
3-2-5	Bond Street	Libya	UWT	0.2	Local	2	7.0	Asphalt	16.4	Commerce				
3-2-6	Mosque Street	Samora	Libya Street	0.4	Local	2	7.0	Asphalt	13.9	Commerce				
3-2-7	Zanaki Street	Sokoine Drive	UWT	0.9	Local	2	9.5	Asphalt	16.7	Commerce				
3-2-8	Mrina Street	Jamhuri Street	Kisutu Street	0.3	Local	2	7.0	Asphalt	16.0	Commerce				
3-2-9	Mkwepu Street	Sokoine Drive	India / Jamhuri	0.4	Local	2	9.5	Asphalt	12.1	Commerce				
3-2-10	Africa Street			0.3	Local	2	7.0	Asphalt	16.5	Commerce				
3-2-11	Kisutu Street	Upanga	Mtendeni	0.5	Local	2	7.0	Asphalt	16,8	Commerce				
3-2-12	Libya Street	Zanaki / Mtendeni	UWT	0.5	Local	2	7.0	Asphalt	13.7	Commerce				
3-2-13	Mtendeni Street	Zanaki	Africa Street	0.3	Local	2	7.0	Asphalt	12.0	Commerce				
3-2-14	Jamhuri Street	Aggrey Street	Maktaba / Azikiwe	1.1	Local	2	9.5	Asphalt	17.3	Commerce				
3-2-15	Mshihili Street	Morogoro Road	Kitumbini Street	0.3	Local	2	7.0	Asphalt	13.7	Commerce				
3-2-16	Market - Indira Ghandi Street	Samora / Azikiwe	Nkrumah	1.0	Local	2	7.0	Asphalt	13.0	Commerce				
3-2-17	India Street	Upanga / Jamhuri	Uhuru / Samora	0.6	Local	2	9.5	Asphalt	14.8	Commerce				
3-2-18	Mansfield Street	Mkwepu	Morogoro	0.5	Local	2	7.0	Asphalt	11.3	Commerce				

Appendix 7-1-1: Summary of Road Inventory (5/10)

Link No.	Name of Roads	Beginning Point	Ending Point	Length (km)	Road Classification	Lane No.	Carriage-way width	Pavement Type	Right-of-way Width	Land use Pattern				
3-3	Kariako Area Commercial Streets.													
3-3-1	Matumbi (A) Street	Swahili Street	Congo Street	0.4	Local	2	6.0	Asphalt	12.0	Residence				
3-3-2	Matumbi (B) Street	Swahili Street	Congo Street	0.3	Local	2	6.0	Asphalt	12.0	Residence				
3-3-3	Nyati Street	Sikukuu Street	Congo Street	0.4	Local	2	6.0	Asphalt	12.0	Residence				
3-3-4	Faru Street	Sikukuu Street	Jangwani	0.4	Local	2	6.0	Asphalt	11.7	Residence				
3-3-5	Twiga Street	Sikukuu Street	Jangwani Street	0.4	Local	2	6.0	Asphalt	12.4	Residence				
3-3-6	Ndovu Street	Sikukuu Street	Jangwani Street	0.4	Local	2	6.0	Asphalt	12.3	Residence				
3-3-7	Rufiji Street	Msimbazi Street	Jangwani Street	0.4	Local	2	6.0	Asphalt	12.1	Residence				
3-3-8	Muhoro Street	Swahili Street	Jangwani Street	0.7	Local	2	6.0	Asphalt	12.5	Residence				
3-3-9	Ungoni Street	Lumumba Street	Msimbazi Street	0.3	Local	2	6.0	Asphalt	10.0	Residence				
3-3-10	Amani Street	Lumumba Street	Jangwani Street	0.7	Local	2	6.0	Asphalt	12.0	Residence				
3-3-11	Udowe Street	Lumumba Street	Swahili Street	0.4	Local	2	6.0	Asphalt	12.0	Residence				
3-3-12	Kariakoo Street	Lumumba Street	Mzizima Street	0.8	Local	2	6.0	Asphalt	10.0	Residence				
3-3-13	Kibambawe Street	Congo Street	Mzizima Street	0.3	Local	2	6.0	Asphalt	10.0	Residence				
3-3-14	Mafia Street	Lumumba Street	Mzizima Street	0.8	Local	2	6.0	Asphalt	15.4	Residence / Commerce				
3-3-15	Mkunguni Street	Lumumba Street	Mzizima Street	0.9	Local	2	6.0	Asphalt	15.7	Commerce				
3-3-16	Pemba Street	Lumumba Street	Swahili Street	0.4	Local	2	6.0	Asphalt	15.1	Commerce				
3-3-17	Tandamuti Street	Lumumba Street	Gogo Street	1.0	Local	2	6.0	Asphalt	15.0	Commerce				
3-3-18	Narung'ombe Street	Lumumba Street	Gogo Street	1.0	Local	2	6.0	Asphalt	12.0	Commerce				
3-3-19	Mahiwa Street	Lumumba Street	Sikukuu Street	0.2	Local	2	6.0	Asphalt	12.0	Commerce				

Appendix 7-1-1: Summary of Road Inventory (6/10)

Link No.	Name of Roads	Beginning Point	Ending Point	Length (km)	Road Classification	Lane No.	Carriage-way width	Pavement Type	Right-of-way Width	Land use Pattern				
3-3-20	Mhonda Street	Swahili Street	Muheza Street	0.5	Local	2	6.0	Asphalt	12.0	Commerce				
3-3-21	Magila Street	Msimbazi Street	Muheza	0.3	Local	2	6.0	Asphalt	12.0	Commerce				
3-3-22	Mchikichi Street	Msimbazi Street	Lumumba Street	0.7	Local	2	6.0	Asphalt	12.4	Commerce				
3-3-23	Aggrey Street	Muheza Street	Lumumba Street	1.1	Local	2	6.0	Asphalt	11.6	Commerce				
3-3-24	Masasi Street	Msimbazi Street	Muheza Street	0.3	Local	2	6.0	Asphalt	12.2	Commerce				
3-3-26	Kipata Street	Lumumba Street	Msimbazi Street	0.6	Local	2	6.0	Asphalt	9.3	Commerce				
3-3-27	Lindi Street	Lumumba Street	Msimbazi Street	0.7	Local	2	6.0	Asphalt	12.3	Commerce				
3-3-28	Somali Street	Lumumba Street	Congo Street	0.5	Local	2	6.0	Asphalt	11.1	Residence				
3-3-29	Kiungani Street	Lumumba Street	Msimbazi Street	0.6	Local	2	6.0	Asphalt	13.3	Commerce				
3-3-30	Mbaruku Street	Msimbazi Street	Sikukuu Street	0.4	Local	2	6.0	Asphalt	15.0	Commerce				
3-3-31	Kisarawe Street	Msimbazi Street	Lumumba Street	0.6	Local	2	6.0	Asphalt	12.0	Commerce				
3-3-32	Viwanda Street	Lumumba Street	Msimbazi Street	0.5	Local	2	6.0	Asphalt	12.0	Commerce				
3-3-33	Lumumba Street	Morogoro Road	Pugu Road	1.2	Local	4	15.0	Asphalt	31.3	Commerce				
3-3-34	Nyasa Street	Kariakoo Street	Mkunguni Street	0.2	Local	2	6.0	Asphalt	10.2	Commerce				
3-3-35	Ukami Street	Kariakoo Street	Mkunguni Street	0.2	Local	2	6.0	Asphalt	10.1	Commerce				
3-3-36	Kipande Street	Lumumba Street	Amani Street	0.2	Local	2	6.0	Asphalt	10.1	Commerce				
3-3-37	Livingstone Street	Pugu Road	Msimbazi Street	1.3	Local	2	6.0	Asphalt	13.8	Commerce				
3-3-38	Mvita Street	Lumumba Street	Amani Street	0.2	Local	2	6.0	Asphalt	10.3	Commerce				
3-3-39	Hivao Street	Lumumba Street	Amani Street	0.1	Local	2	6.0	Asphalt	10.2	Commerce				
3-3-40	Chura Street	Mafia Street	Mkunguni Street	0.2	Local	2	6.0	Asphalt	10.0	Commerce				

Appendix 7-1-1: Summary of Road Inventory (7/10)

Link No.	Name of Roads	Beginning Point	Ending Point	Length (km)	Road Classification	Lane No.	Carriage-way width	Pavement Type	Right-of-way Width	Land use Pattern				
3-3-41	Sikukuu Street	Morogoro Road	Pugu Road	1.5	Local	2	6.0	Asphalt	14.4	Commerce				
3-3-42	Sukuma Street	Kariakoo Street	Mkunguni Street	0.2	Local	2	6.0	Asphalt	12.0	Commerce				
3-3-42	Gogo Street	Kariakoo Street	Mkunguni Street	0.1	Local	2	6.0	Asphalt	12.0	Commerce				
3-3-44	Swahili Street	Morogoro Road	Pugu Road	1.6	Local	2	6.0	Asphalt	15.8	Commerce				
3-3-45	Wanyamwezi Street	Morogoro Road	Pugu Road	1.6	Local	2	6.0	Asphalt	15.2	Commerce				
3-3-47	Congo Street	Matumbi B Street	Mbaruku Street	1.1	Local	2	6.0	Asphalt	15.2	Commerce				
3-3-48	Jangwani Street	Twiga Street	Msimbazi Street	0.5	Local	2	6.0	Asphalt	15.2	Commerce				
3-3-49	Likoma Street	Kariakoo street	Uhuru street	0.6	Local	2	6.0	Asphalt	12.4	Commerce				
3-3-50	Mzizima Street	Kariakoo Street	Uhuru Street	0.6	Local	2	6.0	Asphalt	12.4	Residence				
3-3-51	Muheza Street	Uhuru Street	Tandamuti Street	0.4	Local	2	6.0	Asphalt	12.0	Residence				
3-4	Chang'ombe Industrial Area Street													
3-4-1	Saza Road	Mbozi Road	-	1.5	Local	2	7.0	Asphalt	17.7	Industry				
3-4-2	Migeyo Road	Chang'ombe Road	Mbozi Road	0.7	Local	2	7.0	Asphalt	17.9	Industry				
3-4-3	Mbozi Road	Port Acces	Migeyo Road	2.0	Local	2	7.0	Asphalt	16.0	Industry				
3-4-4-	Dakawa Road	Uruwira Road	Usambara Road	0.8	Local	2	7.0	Asphalt	18.0	Industry				
3-4-5	Upper Volta Street	Rwanda Road	Uruwira Road	0.5	Local	2	7.0	Asphalt	16.0	Industry				
3-4-6	Chuma Road	Chang'ombe Road	Chang'ombe Raod	0.6	Local	2	7.0	Asphalt	20.5	Industry				
3-4-7	Rwanda Road	Dakawa Road	Migeyo Road	0.2	Local	2	7.0	Asphalt	12.0	Industry				
3-4-8	Uruwira Road	Chuma Road	Migeyo Road	0.5	Local	2	7.0	Asphalt	20.5	Industry				

Appendix 7-1-1: Summary of Road Inventory (8/10)

Link No.	Name of Roads	Beginning Point	Ending Point	Length (km)	Road Classification	Lane No.	Carriage-way width	Pavement Type	Right-of-way Width	Land use Pattern				
3-4-9	Usamabara Road	Port Acces	Dakawa Road	1.3	Local	2	7.0	Asphalt	18.0	Residence				
3-4-10	Manyara Road	-	Dakawa Road	0.5	Local	2	7.0	Asphalt	18.0	Residence				
3-4-11	Msikiti Road	-	Mzore Road	0.3	Local	2	7.0	Asphalt	18.0	Residence				
3-4-12	Ismailia Road	Diwani Road	Dakawa Road	0.2	Local	2	7.0	Asphalt	18.5	Residence				
3-4-13	Rwegasore Road	Diwani Road	-	0.5	Local	2	7.0	Asphalt	18.3	Residence				
3-4-14	Kimathi Road	Msikiti Road	Mzore Road	0.2	Local	2	7.0	Asphalt	17.9	Residence				
3-4-15	Tagore Road	Msikiti Road	Mzore Road	0.2	Local	2	7.0	Asphalt	18.5	Residence				
3-4-16	Ivory Coast Road	-	Mzore Road	0.2	Local	2	7.0	Asphalt	16.0	Residence				
3-4-17	Chamwenye we Road	Chamwenye we Road	Mzore Road	0.2	Local	2	7.0	Asphalt	17.5	Residence				
3-4-18	Mzore Road	Chamwenye we Road	Manyara Road	0.4	Local	2	7.0	Asphalt	18.5	Residence				
3-4-19	Ubena Road	(Chang'ombo Road	Usambra Road	1.0	Local	2	7.0	Asphalt	17.5	Residence				
3-4-20	Diwani Road	(Chamwenyewe Road	Manyara Road	0.2	Local	2	7.0	Asphalt	18.0	Residence				
3-4-21	Bazaar Road	Diwani Road	Rwegasore Road	0.2	Local	2	7.0	Asphalt	18.0	Residence				
3-4-22	Mapinduzi Street	Pugu Road	Industrial Area	0.8	Local	2	7.0	Asphalt	18.5	Industry				
3-4-23	Monrovia Street	Industrial Area	Chang'ombe Road	1.3	Local	2	7.0	Asphalt	18.3	Residence				

Appendix 7-1-1: Summary of Road Inventory (9/10)

Link No.	Name of Roads	Beginning Point	Ending Point	Length (km)	Road Classification	Lane No.	Carriageway width	Pavement Type	Right-of-way Width	Land use Pattern
3-5	Temeke Area Street									
3-5-1	Yombo Street	Temeke Street	Mahunda Street	2.8	Local	2	7.0	Asphalt	9.0	Residence
3-5-2	Everret Street	Yombo Street	Temeke Street	1.1	Local	2	7.0	Asphalt	7.0	Residence
3-5-3	Chihota Street	Mbagala Road	Bububu Street	1.6	Local	2	7.0	Asphalt	15.5	Residence
3-5-4	Bububu Street	Mahunda Street	Chihota Street	2.0	Local	2	7.0	Asphalt	12.0	Residence
3-5-6-	Kichangani Street	Mahunda Street	Kilwa Road	7.3	Local	2	7.0	Asphalt	12.5	Residence
3-6	Ilala Commercial and Residence Area Street									
3-6-1	Kilwa Street	Shaurimoyo Street	Bungoni Street	1.3	Local	2	6.5	Asphalt	18.3	Residence
3-6-2	Songea Street	Iringa Street	Tabora Street	0.9	Local	2	6.5	Asphalt	12.0	Residence
3-6-3	Lindi Street	Msimbazi Street	Bungoni Street	1.9	Local	2	6.5	Asphalt	12.2	Residence
3-6-4	Sadani Street	Iringa Street	Newala Street	0.5	Local	2	6.5	Asphalt	12.5	Residence
3-6-5	Chunya Street	Bungoni Street	Arusha Street	0.5	Local	2	6,5	Asphalt	12.3	Residence
3-6-6-	Mtwara Street	Bungoni Street	Arusha Street	0.3	Local	2	6.5	Asphalt	13.0	Residence
3-6-7	Ilala Street	Bungoni Street	Arusha Street	0.4	Local	2	6.5	Asphalt	12.0	Residence
3-6-8	Tanga Street	Arusha Street	Newala Street	0.7	Local	2	6.5	Asphalt	12.3	Residence
3-6-9	Chunya-Pangani Street	Arusha Street	Newala Street	0.3	Local	2	6.5	Asphalt	13.5	Residence
3-6-10	Ngoma-Nzasa Street	Bungoni Street	Newala Street	0.9	Local	2	6.5	Asphalt	12.5	Residence

Appendix 7-1-1: Summary of Road Inventory (10/10)

Link No.	Name of Roads	Beginning Point	Ending Point	Length (km)	Road Classification	Lane No.	Carriage-way width	Pavement Type	Right-of-way Width	Land use Pattern				
3-6-11	Manyoni Street	Bungoni Street	Arusha Street	0.4	Local	2	6.5	Asphalt	12.5	Residence				
3-6-12	Moshi Street	Tabora Street	Bungoni Street	0.7	Local	2	6.5	Asphalt	12.8	Residence				
3-6-13	Bungoni Stre t	Uhuru Street	Kilwa Street	o.6	Local	2	6.5	Asphalt	12.4	Residence				
3-6-14	Tunduru Street	Uhuru Street	Manyoni Street	0.2	Local	2	6.5	Asphalt	12.6	Residence				
3-6-15	Tukuyu Street	Uhuru Street	Kilwa Street	0.2	Local	2	6.5	Asphalt	12.1	Residence				
3-6-16	Arusha Street	Uhuru Street	Kilwa Street	0.6	Local	2	6.5	Asphalt	12.0	Residence				
3-6-17	Dodoma Street	Tanga Street	Kilwa Street	0.3	Local	2	6.5	Asphalt	12.4	Residence				
3-6-18	Mwanza Street	Uhuru Street	Kilosa Street	0.3	Local	2	6.5	Asphalt	12.3	Residence				
3-6-19	Kilosa Street	Mwanza Street	Kilwa Street	0.3	Local	2	6.5	Asphalt	12.3	Residence				

Appendix 7-1-2: Existing Condition of Roadside Drainage

Name of Roads	Drainage System	Existing Condition	Countermeasures to be taken
1. Arterial Roads			
1-1 Bagamoyo	Ditch drainage	Poor	Maintenance
1-2 Morocco	Piped system	Poor	-ditto-
1-3 Kinondoni	Ditch drainage	Poor	Re-construction
1-4 Morogoro	Piped system/	Good	Maintenance
	Ditch drainage	Poor	Re-construction
1-5 United Nat.	Piped system	Poor	-ditto-
1-6 UWT	-ditto-	Good	Maintenance
1-7 Port Access	-ditto-	Good	-ditto-
1-8 Bandari	Ditch drainage	Fair	-ditto-
1-9 Kilwa	-ditto-	Fair	-ditto-
1-10 Uhulu	Pipe system/	Poor	Re-construction
	Ditch drainage	Poor	Maintenance
1-11 Msinbazi	Ditch drainage	Poor	-ditto-
1-12 Mpakani	-ditto-	Fair	-ditto-
1-13 Upanga	Piped System	Poor	-ditto-
1-14 Pugu	-ditto-	Good	-ditto-
1-15 City Center	-ditto-	Fair	-ditto-
2. Collector Roads			
2-1 Old Bagamoyo	Ditch drainage	Poor	Re-construction
2-2 Haile Sall.	-ditto-	Fair	Maintenance
2-3 Toure Drive	-ditto-	Fair	-ditto-
2-4 Bongoyo	-ditto-	Fair	-ditto-
2-5 Shekilango	Piped System	Poor	Re-construction
2-6 Kondoa	Ditch drainage	Poor	-ditto-
2-7 Mwinjuma	-ditto-	Poor	-ditto-
2-8 Makanya	-ditto-	Poor	-ditto-
2-9 University	-ditto-	Good	Maintenance
2-10 Kigogo C-1	-ditto-	Poor	Re-construction
2-11 Kigogo C-2	-ditto-	Poor	-ditto-
2-12 Kigogo C-3	-ditto-	Poor	-ditto-
2-13 Old Kogogo	-ditto-	Poor	-ditto-
2-14 Kagera	-ditto-	Fair	Maintenance
2-15 Mikumi	-ditto-	Poor	Re-construction
2-16 New Kigogo	-ditto-	Fair	Maintenance
2-17 Chango'mbe	Piped system	Fair	-ditto-
2-18 Temeke	Ditch drainage	Poor	-ditto-
2-19 Mbagala I	-ditto-	Poor	Re-construction
2-20 Mbagala II	-ditto-	Poor	-ditto-
2-21 Mahunda	-ditto-	Fair	Maintenance
3. Area Roads			
3-1 Central Area	Piped system/	Fair	Maintenance
	Lined channel	Fair	-ditto-
3-2 Kariokoo Area	Lined channel/	Fair	Maintenance/
	Piped system	Poor	Rehabilitation
3-3 Chango'mbe Area	Piped system	Very bad	Reconstruction
3-4 Oysterbay Area	Earth ditch	Fair	Maintenance
3-5 Temeke Area	Piped system/	Poor	-ditto-
	Earth ditch	Poor	-ditto-
3-6 Mwinjuma Area	Piped system/	Poor	-ditto-
	Earth ditch	Poor	-ditto-
3-7 Magomeni Area	Piped system/	Poor	-ditto-
	Earth ditch	Poor	-ditto-
3-8 Ilala Area	Piped system/	Poor	Maintenance/
	Earth ditch	Poor	Rehabilitation

Appendix 7-2-1: Method of PSI Survey Conducted

The present searviceability index (PSI) survey by visual assessment was conducted for evaluating the surface condition of exsitng roads by the following method:

(1) Rating Group : Five persons composing of two (2) Japanese engineers and three (3) local counterpart engineers from DCC and MOCW. All of them were throughly understood as to the method before starting the survey.

(2) Road to be Surveyed : All arterail and collector roads in the City with a total lenght of 325 km.

(3) Test car : Mini bus

(4) Runung Speed : 10 km/hr approx.

(5) Length of unit section: Each section about 500 m long

(6) Preliminary experiment: Preliminary experiment was conducted in the selected section prior to starting the survey.

Appendix 7-2-2: Rating Items on Pavement Conditions

Pavement Deficiency	Description
Rutting/Waves	• Longitudinal depressions that form under traffic in the wheel paths and have a minimum length of approximately 6 meters/Longitudinal or transverse undulations in the surface of the pavement, consisting of alternate valleys and crests approximately 60 cm or more apart.
Cracking (Longitudinal/ Transverse)	• A crack or break in the pavement surface. (Approximately parallel to centerline/at right angles to centerline)
Cracking (Alligator/ Block)	• Interconnected or interlaced cracks forming a series of small polygons that resemble an alligator's hide./ Interconnected cracks forming a series of large polygons usually with sharp corners or angles.
Pothole	• Bowl-shape hole of various sizes in the pavement.
Bump	• Localized upward displacement of the pavement.
Bleeding	• Free bitumen on the surface of the pavement.
Shoving	• Displacement or bulging of paving material in the direction of loading or pressure.
Other items taken into ratings	
Driving Comfort, Speed Change Cycle due to Surface Defects	• Owing to the various pavement deficiencies as indicated above, operating speed is interrupted thus giving discomfort to passengers.
Patching	• Partially rehabilitated area with asphaltic materials.

Appendix 7-2-3: **PSI RATING FORM**

SHEET NO. :

THE FEASIBILITY STUDY ON ROAD IMPROVEMENT AND MAINTENANCE PROJECT IN DAR ES SALAAM

From : To :	District : Route : Link :
Pavement Type : AC ( ) DBST ( ) GRAVEL ( )	Date : / / 1989

RATING	5	4	3	2	1	0
1. Driving Comfort						
2. Speed Change Cycle due to Surface Condition						
3. Patching						
4. Rutting						
5. Longitudinal or Transverse Cracking						
6. Alligator Cracking						
7. Pot Hole						
8. Bumping						
9. Bleeding						
10. Shoving						

SUMMATION OF POINTS ÷ 10 = RIDE RATING

REMARK :

Appendix 7-2-4: Result of PSI Survey

Name of Roads	Total Length	PSI Average	PSI Values 5.0-2.5	2.5-1.5	1.5-0.0
1. Arterial Roads					
1-1 Bagamoyo	35.0	1.70	8.0	15.5	11.5
1-2 Morocco	3.5	2.03	-	3.5	-
1-3 Kinondoni	1.7	2.43	1.2	0.5	-
1-4 Morogoro	33.0	2.35	4.0	27.5	1.5
1-5 United Nat.	2.0	2.85	2.0	-	-
1-6 UWT	1.9	3.25	1.9	-	-
1-7 Port Access	15.6	3.85	15.6	-	-
1-8 Bandari	2.2	2.07	1.0	-	1.2
1-9 Kilwa	15.7	2.25	5.5	9.7	0.5
1-10 Uhulu	5.0	2.41	1.0	4.0	-
1-11 Msinbazi	1.6	2.10	0.5	1.1	-
1-12 Mpakani	3.9	2.06	-	3.9	-
1-13 Upanga	1.8	2.80	1.8	-	-
1-14 Pugu	17.4	3.64	10.0	7.4	-
1-15-1 Nkurumah	0.3	1.80	-	0.3	-
1-15-2 Samora	0.8	2.20	-	0.8	-
1-15-3 Sokoine	0.8	2.45	-	0.8	-
1-15-4 Gerezani	1.2	2.00	-	1.2	-
1-15-5 Kivukoni	1.0	2.20	-	1.0	-
1-15-6 Maktaba/Azik.	0.9	2.00	-	0.9	-
1-15-7 Ohio	1.0	2.34	-	1.0	-
1-15-8 Ocean	3.2	2.46	-	3.2	-
Sub-total (1)	148.5km		52.5km	81.3km	14.7km
2. Collector Roads					
2-1 Old Bagamoyo	8.0	1.19	-	2.0	6.0
2-2 Haile Sall.	5.0	1.50	-	3.0	2.0
2-3 Toure Drive	5.6	2.26	-	5.6	-
2-4 Bongoyo	0.8	2.40	-	0.8	-
2-5 Shekilango	3.7	1.50	-	1.7	2.0
2-6 Kondoa	1.5	2.20	-	1.5	-
2-7 Mwinjuma	2.4	1.14	-	-	2.4
2-8 Makanya	5.0	0.57	-	1.5	3.5
2-9 University	3.8	2.07	-	3.3	-
2-10 Kigogo C-1	1.3	2.47	1.3	-	-
2-11 Kigogo C-2	1.8	0.00	-	-	1.8
2-12 Kigogo C-3	1.9	0.00	-	-	1.9
2-13 Old Kogogo	6.6	0.38	-	1.0	5.6
2-14 Kagera	1.2	1.60	1.0	-	0.2
2-15 Mikumi	1.1	1.25	-	-	1.1
2-16 New Kigogo	2.6	2.16	1.5	-	1.1
2-17 Chango'mbe	4.4	2.68	3.0	1.4	-
2-18 Temeke	2.0	2.65	2.0	-	-
2-19 Mbagala I	1.3	1.07	0.3	-	1.0
2-20 Mbagala II	2.2	2.35	1.7	-	0.5
2-21 Mahunda	2.0	1.30	0.5	-	1.5
Sub-total (2)	64.2km		11.3km	22.3km	30.6km
3. Area Roads					
A. Oyster Bay Area	19.5	1.5 - 2.5	-	19.5	-
B. Mwunijuma Area	2.4	0.0 - 1.0	-	-	2.4
C. Magomeni Area	3.2	0.0 - 3.0	1.0	2.0	0.2
D. Central Area	17.5	1.5 - 2.5	-	17.5	-
E. Kariakoo Area	31.6	0.0 - 1.0	-	-	31.6
F. Chango'mbe Area	14.6	0.0 - 1.0	-	-	14.6
G. Temeke Area	13.9	1.5 - 2.5	-	13.9	-
H. Ilala Area	10.3	0.0 - 1.0	-	-	10.3
Sub-total (3)	113.0km		1.0km	52.9km	59.1km
Total	325.7km		64.8km	156.5km	104.4km

Appendix 7-2-4: Result of PSI Survey (1/4)

Link No.	Name of Roads	Length (km)	PSI Rate in Each Unit (500) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Average	Maintenance	Overlay	Reconstruction
Group 1: Arterial Roads																										
			Maintenance								Overlay		Maintenance		Overlay			Reconstruction		Maintenace						
1-1	Bagamoyo Road	35.0	3.8	3.9	2.8	2.9	2.5	2.6	2.6	1.9	1.3	2.2	2.7	2.7	2.7	2.3	1.1	1.5	2.7	1.7	1.5	1.4				
			Reconstruction					Overlay										Maintenace		Reconstruction						
			1.2	1.6	1.8	1.9	1.7	1.9	1.8	1.8	1.6	2.0	1.7	2.7	2.3	2.5	2.2	2.8	2.9	2.8	1.8	0.2				
			Reconstruction			Waze Hill		Overlay						Reconstruction							Overlay					
			0.0	0.6	0.2	0.0	1.7	1.8	1.9	1.9	1.9	2.8	2.1	0.9	0.0	0.1	0.8	0.6	0.9	2.2	1.5	2.0				
			Overlay				Reconstruction																From DSM - Waze Hill : 22.0km		1.97	8.0	9.0	5.6
																							Waze Hill - Mpiji River: 13.0km		1.27	-	6.5	6.5
			2.5	1.9	1.6	1.0	0.8	1.2	0.9	0.0	0.0	0.0												1.70	8.0	15.5	11.5
			Overlay																							
1-2	Morocco Road	3.5	2.3	2.1	2.1	2.0	1.7	2.0	2.0														2.03	-	3.5	-
			Overlay		Maintenance																					
1-3	Kinondoni Road	1.7	1.6	2.9	2.8																		2.43	1.2	0.5	-
			Overlay		Maintenance								Overlay				Reconstruction Port Access									
1-4	Morogoro Road	33.0	2.5	1.8	4.0	4.0	4.0	4.0	4.0	3.0	2.6	2.9	1.8	2.8	1.3	2.5	2.3	1.6	1.4	1.3	1.6	2.0				
			4 lanes (3.5Km)									Overlay				2 lanes (5.5Km)					TRH					
			2.2	2.5	2.7	2.1	2.2	2.4	2.7	2.2	2.3	2.3	2.6	2.1	1.8	2.3	2.2	2.3	1.9	1.9	1.9	2.4				
			TRH 2.5Km										Overlay													
			1.4	1.9	2.0	1.7	2.0	1.5	1.7	2.2	2.0	1.9	1.8	2.3	2.5	2.3	2.4	2.6	2.2	2.6	2.3	2.6				
			Overlay																				Other Sections : 23.5km		2.38	4.0	18.0	1.5
																							Section Proposed by DCC: 9.5km		2.19	-	9.5	-
			2.7	2.6	2.4	2.4	2.5	2.6																2.35	4.0	27.5	1.5
			Maintenance																							
1-5	United Nation Road	2.0	3.0	3.0	2.4	3.0																	2.85	2.0	-	-
			Maintenance																							
1-6	UWT Road	1.9	3.5	3.3	3.4	2.8																	3.25	1.9	-	-
			Maintenance																							
1-7	Port Access	15.6	3.9	3.9	3.9	3.9	4.0	3.9	4.0	3.9	4.0	3.9	2.7	3.8	4.0	4.0	4.0	4.0	3.8	4.0	4.0	3.9				
			Maintenance																							
			3.7	3.0	3.4	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0											3.85	15.6	-	-
			Maintenace		Reconstruction																					
1-8	Bandari Road	2.2	2.4	2.6	1.3	1.2																	2.07	1.0	-	1.2

Appendix 7-2-4: Result of PSI Survey (2/4)

Link No.	Name of Roads	Length (km)	PSI Rate in Each Unit (500) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Average	Maintenance	Overlay	Reconstruction
			Maintenance		Overlay			Maintenance			Overlay			Reconstruction			Overlay			Maintenance						
1-9	Kilwa Road	15.7	2.6	2.3	2.4	2.3	1.6	2.7	2.8	2.4	1.7	2.4	1.4	2.1	1.6	1.1	2.4	2.7	2.7	2.8	2.7	2.9				
			Maintenance					Overlay																		
			2.6	2.7	2.8	2.2	1.7	2.0	2.5	2.8	1.4	1.7	1.7													
														Section Proposed by UCC:							8.6km		2.19	2.1	6.0	0.5
														Other Sections							7.1km		2.32	3.4	3.7	-
																							2.25	5.5	9.7	0.5
			Overlay							Maintenance																
1-10	Uhuru Road	5.0	2.4	2.1	1.8	2.1	2.0	2.1	2.3	2.1	3.5	3.7											2.41	1.0	4.0	-
			Maintenance		Overlay																					
1-11	Msimbazi Road	1.6	2.8	1.7	1.8																		2.10	0.5	1.1	-
			Overlay																							
1-12	Mpakani Road	3.9	2.4	2.0	1.8	2.1	1.8	2.0	2.2	2.2													2.06	-	3.9	-
			Maintenance																							
1-13	Upanga Road	1.8	2.5	2.8	2.9	3.0																	2.80	1.8	-	-
			Maintenance																							
1-14	Pugu Road	17.4	3.7	3.8	3.8	3.8	3.8	3.9	3.9	3.9	3.8	3.8	3.9	3.9	3.8	3.8	3.8	3.9	3.8	3.8	3.8	3.8	3.64	10.0		-
			Overlay																							
			2.5	2.3	2.0	2.0	2.0	2.6	1.6	2.1	2.5	1.9	2.8	2.5	2.7	2.7	3.4						2.37	10.0	7.4	-
1-15	Central Area Streets		Overlay																							
1-15-1	Nkurumah Street	0.3	1.8																				1.80	-	0.3	-
			Overlay																							
1-15-2	Samora Avenue	0.8	2.1	2.3																			2.20	-	0.8	-
			Overlay																							
1-15-3	Sokoine Drive	0.8	2.4	2.5																			2.45	-	0.8	-
			Overlay																							
1-15-4	Gerezani Street	1.2	1.8	1.7	2.5																		2.00	-	1.2	-
			Overlay																							
1-15-5	Kivukoni Front	1.0	2.1	2.5	2.0																		2.20	-	1.0	-
			Overlay																							
1-15-6	Maktaba & Azikiwe	0.9	2.1	1.9																			2.00	-	0.9	-
			Overlay																							
1-15-7	Ohio Street	1.0	2.0	2.7																			2.34	-	1.0	-
			Overlay																							
1-15-8	Ocean Road	3.2	2.8	2.5	2.5	1.9	2.4	2.4	2.7														2.36	-	3.2	-

Appendix 7-2-4: Result of PSI Survey (3/4)

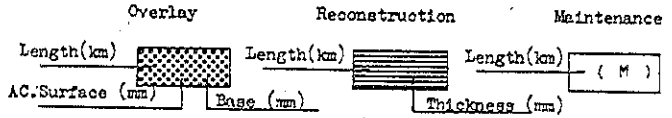
Link No.	Name of Roads	Length (km)	PSI Rate in Each Unit (500) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Average	Maintenance	Overlay	Reconstruction
Group 2: Collector Roads																										
			Overlay						Reconstruction																	
2-1	Old Bagamoyo Road	8.2	1.8	2.0	1.8	2.0	1.3	0.9	0.8	0.9	1.3	1.2	0.9	0	0	1.0	1.5	1.6					1.19	-	2.2	6.0
			Overlay						Reconstruction (Gravel Pav.)																	
2-2	Haile Sellasie	5.0	2.4	2.2	2.4	2.4	2.7	2.9	0.0	0.0	0.0	0.0											1.50	-	3.0	2.0
			Overlay																							
2-3	Toure Drive	5.6	2.5	2.3	2.2	2.3	2.3	2.1	2.9	2.1	2.0	2.1	2.1										2.26	-	5.6	-
			Overlay																							
2-4	Bongoyo Street	0.8	2.1	2.7																			2.40	-	0.8	-
			Reconstruction				Overlay				Reconstruction															
2-5	Shekilango Road	3.8	1.2	2.0	1.6	2.2	2.8	0.1	0.6														1.50	-	1.8	2.0
			Overlay																							
2-6	Kondoa Street	1.2	2.6	2.6	1.4	2.6																	2.20	-	1.2	-
			Reconstruction																							
2-7	Mwinjuma Road	2.4	0.9	2.1	1.1	0.5	1.1																1.14	-	-	2.4
			Overlay		Reconstruction (Gravel Pav.)																					
2-8	Makanya Road	5.0	1.9	1.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0											0.57	-	1.5	3.5
			Overlay																							
2-9	University Road	3.8	1.6	2.1	2.0	2.2	1.9	2.4	2.0	2.1													2.07	-	3.8	-
			Maintenance																							
2-10	Kigogo C-1(to be named)	1.3	2.7	2.2	2.5																		2.47	1.3	-	-
			Reconstruction (Gravel Pav.)																							
2-11	Kigogo C-2(to be named)	1.8	0.0	0.0	0.0	0.0																	0.0	-	-	1.8
			Reconstruction (Gravel Pav.)																							
2-12	Kigogo C-3(to be named)	1.9	0.0	0.0	0.0	0.0																	0.0	-	-	1.9
			Overlay				Reconstruction (Gravel Pav.)																			
2-13	Old Kigogo Road	6.8	2.7	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0								0.38	-	1.0	5.8
			Maintenance		Reconstruction																					
2-14	Kagera Street	2.0	2.6	1.9	1.5																		1.60	1.0	-	0.2
			Reconstruction																							
2-15	Mikumi Street	1.1	0.9	1.6																			1.25	-	-	1.1

Appendix 7-2-4: Result of PSI Survey (4/4)

Link No.	Name of Roads	Length (km)	PSI Rate in Each Unit (500) 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	Average	Maintenance	Overlay	Recenstruction
			Maintenance			Reconstruction																				
2-16	New Kigogo Road	2.7	2.8	2.8	2.7	1.3	1.2																2.16	1.6	-	1.1
			Maintenance			Overlay			Maintenance													Overlay					
2-17	Chang'ombe Road	4.6	3.7	2.3	2.4	2.9	2.6	2.9	2.6	2.8	2.2												2.68	3.2	1.4	-
				Maintenance																						
2-18	Temeke Street	1.9	2.6	2.3	3.0	2.7																	2.65	1.9	-	-
			Reconstruction			Maintenance																				
2-19	Mbagala I. Road	1.4	0.0	0.5	2.7																		1.07	0.4	-	1.0
			Reconstruction			Maintenance																				
2-20	Mbagala II Road	2.2	1.4	2.8	2.4	2.8																	2.35	1.7	-	0.5
			Mainteance			Reconstruction																				
2-21	Mahunda Street	2.0	2.9	0.3	0.2	0.4																	1.3	0.5	-	1.5
Group 3: Area Roads																										
A	Oyster Bay	8.1																					1.5-2.5		8.1	
B	Mwunijuma	(-)																					0.0-1.0			2.4
C	Magomeni	(-)																					0.0-3.0	1.0	2.0	0.2
D	Central Area	10.3																					1.5-2.5		10.3	
E	Kariakoo	30.0																					0.0-1.0			30.0
F	Chang'ombe	14.6																					0.0-1.0			14.6
G	Temeke	13.9																					1.5-2.5		13.9	
H	Ilala	10.3																					0.0-1.0			10.3
I	Other Local Rds.	4.0																				0	0-1.0	-	-	4.0
	Total	305.2																						64.1	135.9	105.2

PSI survey was not conducted for these area roads because of the difficulty in identifing pavement condition for each short road. PSI values were determined by visual observation on the basis of accumulated experience of the Study Team through the PSI survey.

Road Section by Countermeasures (1/4)



Link No.	Name of Roads	Length (km)	1	2	3	4	5	6	7	8	9	10	11	12	13
Group 1: Arterial Roads															
1-1	Bagamoyo Road	35.0	(M)				(M)				(M)				
						(M)									
1-2	Morocco Road	3.5													
1-3	Kinondoni Road	1.7	(M)												
1-4	Morogoro Road	33.0		(M)											
1-5	United Nation Road	2.0	(M)												
1-6	U.W.T Road	1.9	(M)												
1-7	Port Access	15.6													
			(M)												
1-8	Bandari Road	2.2	(M)												
1-9	Kilwa Road	15.7	(M)				(M)						(M)		
1-10	Uhuru Road	6.0					(M)								

Road Section by Countermeasures (2/4)

Overlay — Length(km) — AC.Surface (mm)
Reconstruction — Length(km) — Base (mm) — Thickness (mm)
Maintenance — Length(km) — (M)

Link No.	Name of Roads	Length (km)	1 2 3 4 5 6 7 8 9 10 11 12 13
1-11	Msimbazi Road	1.6	(M)
1-12	Mpakani Road	3.9	
1-13	Upanga Road	1.8	(M)
1-14	Pugu Road	17.4	(M)
1-15	Central Area Streets		
1-15-1	Nkurumah Street	0.3	
1-15-2	Samora Avenue	0.8	
1-15-3	Sokoine Drive	0.8	
1-15-4	Gerezani Street	1.2	
1-15-5	Kivukoni Front	1.0	
1-15-6	Maktaba and Azikiwe	0.9	
1-15-7	Ohio Street	1.0	
1-15-8	Ocean Road	3.2	
	Total (1)	118.3 km	

Road Section by Countermeasures (3/4)

Overlay — Length(km) — AC.Surface (mm) — Base (mm)

Reconstruction — Length(km) — Thickness (mm)

Maintenance — Length(km) — (M)

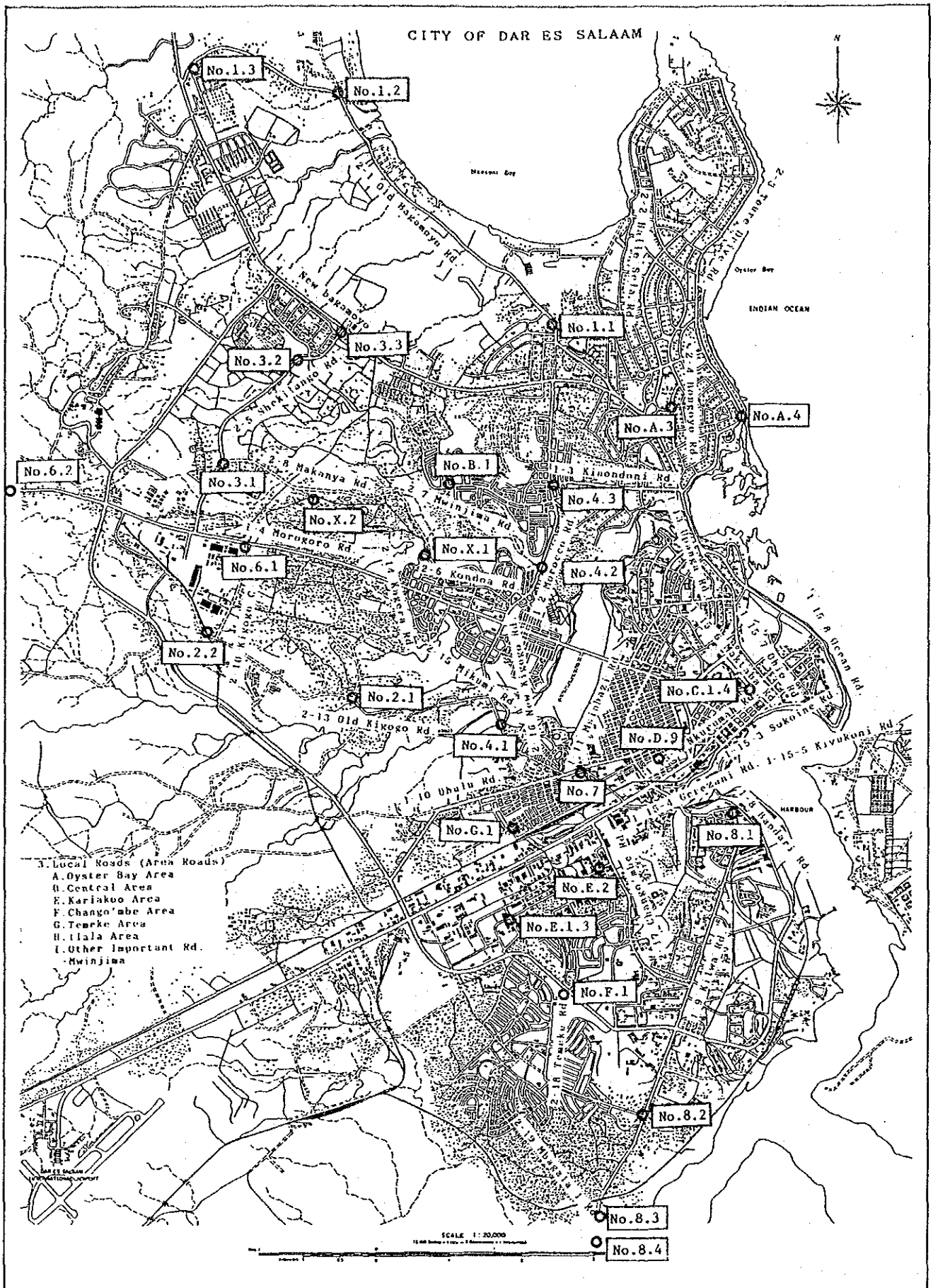
Link No.	Name of Roads	Length (km)
Group 2: Collector Roads		
2-1	Old Bagamoyo Road	8.2
2-2	Haile Sellasie	5.0
2-3	Toure Drive	5.6
2-4	Bongoyo Street	0.8
2-5	Shekilango Road	3.8
2-6	Kondoa Street	1.2
2-7	Mwinjuma Road	2.4
2-8	Makanya Road	5.0
2-9	University Road	3.8
2-10	Kigogo C-1 (to be name	1.3
2-11	Kigogo C-2 to be named	1.8
2-12	Kigogo C-2 to be named	1.9
2-13	Old Kigogo Road	6.8
2-14	Kagera Street	2.0
2-15	Mikumi Street	1.1
2-16	New Kigogo Road	2.7
2-17	Chang'ombe Road	1.6

Road Section by Countermeasures (4/4)

Overlay — Length(km) — AC.Surface (mm)
Reconstruction — Length(km) — Base (mm) — Thickness (mm)
Maintenance — Length(km) — (M)

Link No.	Name of Roads	Length (km)	1 2 3 4 5 6 7 8 9 10 11 12 13
2-18	Temeke Street	1.9	(M)
2-19	Mbagala I Road	1.4	(M)
2-20	Mbagala II Road	2.2	(M)
2-21	Makunda Street	2.0	(M)
	Total	65.5 km	
Group 3: Local Roads (Area Roads Proposed by DCC)			
A	Oyster Bay	8.1	
B	Mwunjuma	(-)	
C	Magomeni	(-)	
D	Central Area	10.3	
E	Kariakoo	31.6	
F	Chang'ombe	14.6	
G	Temeke	13.9	
H	Ilala	10.3	
I	Other Important Rds.	4.0	
	Total 91.2 km		

Study Roads	Total (km)	Overlay (km)	Reconstruction (km)	Maintenance (km)
Arterial Roads	148.5	81.3	14.7	52.5
Collector Roads	65.5	22.3	31.6	11.6
Local Roads	91.2	32.3	58.9	0.0
Total	305.2 km	135.9km	105.2km	64.1km



Sampling Location : ○

Appendix 7-3-1: Sampling Location along the Routes

Appendix 7-3-2: Summary of Subsoil Test Results

A total of 30 bore holes were done by hand auger on selected points along the roads. Laboratory tests done were soil classifcation and CBR test. Tests were doneat the Central Materials Laboratory of the Ministry of Communications and Works. Test results are presented in this Appendix 6-3-2, together with refer ence data of other projects conducted around the project areas in the past.

On the basis of Field investigations and laaboratory test results, subsoil materials have been classified into the following groups:

(1) Silt clayey sand

The materials can be found everywhere at different route. They are silt lime-clayey characteristics with an average plasticity Index rate of 12 - 26% and a liquid limit of 26 - 39% with an maximum dry density (MDD) range of 1,934 - 2,290 kg/c.m..

CBR rates at 95% of MDD of Modified Proctor range from 10 - 29% after 4 days soak. The optimum moisture content (OMC) is around 8 - 11%. An average CBR value of 10% after 4 days soak has been selected for sebsequent preliminary pavement design. According to AASHTO Unified soil classification, They can be classified as class A-2-6.

(2) Clayey silts lime and plastic clayey sand

These soils are usually to be found near water course. They can also be found in place where an alluvial deposit with high plasticity are extended. These materials could be included in group A-2-7 for those have high sand content, and plastic fine materials. These materials have an average liquid limit range of 38 - 41% with plasticity Index value of 7% and an MDD of 1,982- 2,263 kg/c.m.. An average CBR value of 8% after 4 days soak has been selected for the pavement design to all route with sub-soil of this group.

(3) Calcareous fine sand

This group includes non-plastic materials without soil binder. They can be classified as A-3 group.

CBR value at 95% of maximum density was found to range from 10 - 72% after 4 days soak. OMC ranges from 8 - 13%. The maximum density was found to range from 1,812 - 1,892 kg/c.m. An Average CBR value of 10% after 4 days soak has been selected for design of pavement with sub-soil characteristics under this group.

(4) Gravel sands

- Another sub-grade classified by AASHTO is A-1-a which includes those materials consisiting predominantly of stone fragment with or without a well graded soil binder. In the present study the materials were none plastic with a CBR value range of 42- 72% and an OMC value range from 8 - 14 % with an MDD value of 2,263 kg/c.m.

- A sub-group classified by AASHTO as A-1-b was also met during sub-soil investigation. This group includes those materials consisting predominantly of coarse sand either with or without a well graded soil binder. In this case the materials have been found to be none plastic with CBR value of 13 -24% with moisture content value of 6 - 16% and with an MDD range of 1,793 - 2,133 kg/c.m. For the two sub-group, an average CBR value of 12% after 4 days soak has been selected for designof pavement for all routes with subsoil characteristics under this group.

(5) Silt clay materilas

The last group met with is A-4 group. Typical materials of this groups are non plastic or moderately plasitc silty soil. The materilas group includeed mixture of silty soil and up to 64% of sand and gravel related on No.200 sieve. The materilas met with have a liquid limit value of 25%, a plasticity Index value of 8%, CBR valee of 7%, an OMC value of 6.4% and an MDD value of 219 kg/c.m. An average CBR value of 8% after 4 days soak has been selected as a pavement design.

Appendix 7-3-2: Summary of Subsoil Test Results (1/4)

Route Name	Old Bagamoyo Road			Old Kigogo Road		Shekilango Road			Morocco Road				Notes
Sample Numbers	1-1	1-2	1-3	2-1	2-2	3-1	3-2	3-3	4-1	4-2	4-3		
Compose													
Fine Gravel	1	4	2	2	3	1	1	2	37	77	2		
Sand	73	81	69	61	78	95	65	73	35	15	64		
Silt and Clay	26	15	29	37	19	4	34	25	28	8	34		
Atterberg LimitTest.													
Liquid Limit	41	NP	35	25	27	NP	37	39	33	NP	Np		
Plastic Limit	14	NP	10	17	23	NP	12	13	12	NP	NP		
Plastic Index	27	NP	25	8	4	NP	25	26	21	NP	NP		
Compaction Test.													
Max. Dry Density	2060	2068	2060	2199	2165	1818	2033	2090	2173	2213	2263		
Opt. water content	11.2	9.8	10.5	6.4	8.1	13.8	10.2	10.8	8.8	7.00	7.0		
F.W.C	12.7	13.3	18.5	17.7	13.5	0.5	13.9	14.2	6.1	7.2	15.9		
Labo. CBR Test.													
Swell	NIL	NIL	3.5	NIL	NIL	NIL	NIL	0.2	NIL	0.02	0.02		
CBR Value	8	24	1	7	14	19	2	4	21	72	72		
Classfication.													
AASHTO 17-149	A-2-7	A-1-b	A-2-6	A-4	A-2-4	A-3	A-2-6	A-2-6	A-2-6	A-1-a	A-3		
Unified	GC	GP-GC	GC	SC	GM-GC	GP-GC	GC	GC	GC	GP-GC	GC		
Remarks	F	F	H	F	H	H	F	F	E	E	F		

F; Flat, H: Hilly, E; Embankment.

Appendix 7-3-2: Summary of Subsoil Test Results (2/4)

Route Name	Morogoro Road		Uhuru Street	Gerezani Inc. Bandari			Kilwa Road	Oysterbay Residential		Mwinjuma Road			Notes
Sample Numbers	6.1	6.2	7	8.1	8.2	8.3	8.4	A.3	A.4	B.1			
Compose.													
Fine Gravel	2	4	1	1	1	2	1	69	66	8			
Sand	76	71	96	90	83	78	89	12	14	91			
Silt and Clay	22	25	3	9	16	20	10	19	20	11			
Atterberg LimitTest.													
Liquid Limit	33	38	NP	NP	NP	NP	NP	44	38	NP			
Plastic Limit	13	16	NP	NP	NP	NP	NP	22	15	NP			
Plastic Index	20	22	NP	NP	NP	NP	NP	22	23	NP			
Compaction Test.													
Max. Dry Density	2122	2112	1798	1859	2133	2290	1990	1982	2100	1980			
Opt. water content	9.0	11.3	16.2	11.0	8.5	8.0	6.5	11.6	8.8	9.0			
F.W.C	18.2	14.0	3.3	3.0	6.4	12.7	6.5	12.4	10.8	11.0			
Labo. CBR Test.													
Swell	NIL	NIL	NIL	NIL	NIL	NIL	NIL	2.33	NIL	NIL			
CBR Value	17	7	14	16	15	10	21	42	96	23			
Classfication.													
AASHTO 17-149	A-2-6	A-2-7	A-1-b	A-1-b	A-1-b	A-2-6	A-1-b	A-1-a	A-1-a	A-1-b			
Unified	GC	GC	GP-GC	GP-GC	GP-GC	GC	GP-GC	GC	GC	GP-GC			
Remarks	H	F	F	F	F	H	H			F			

F; Flat, H: Hilly, E; Embankment.

Appendix 7-3-2: Summary of Subsoil Test Results (3/4)

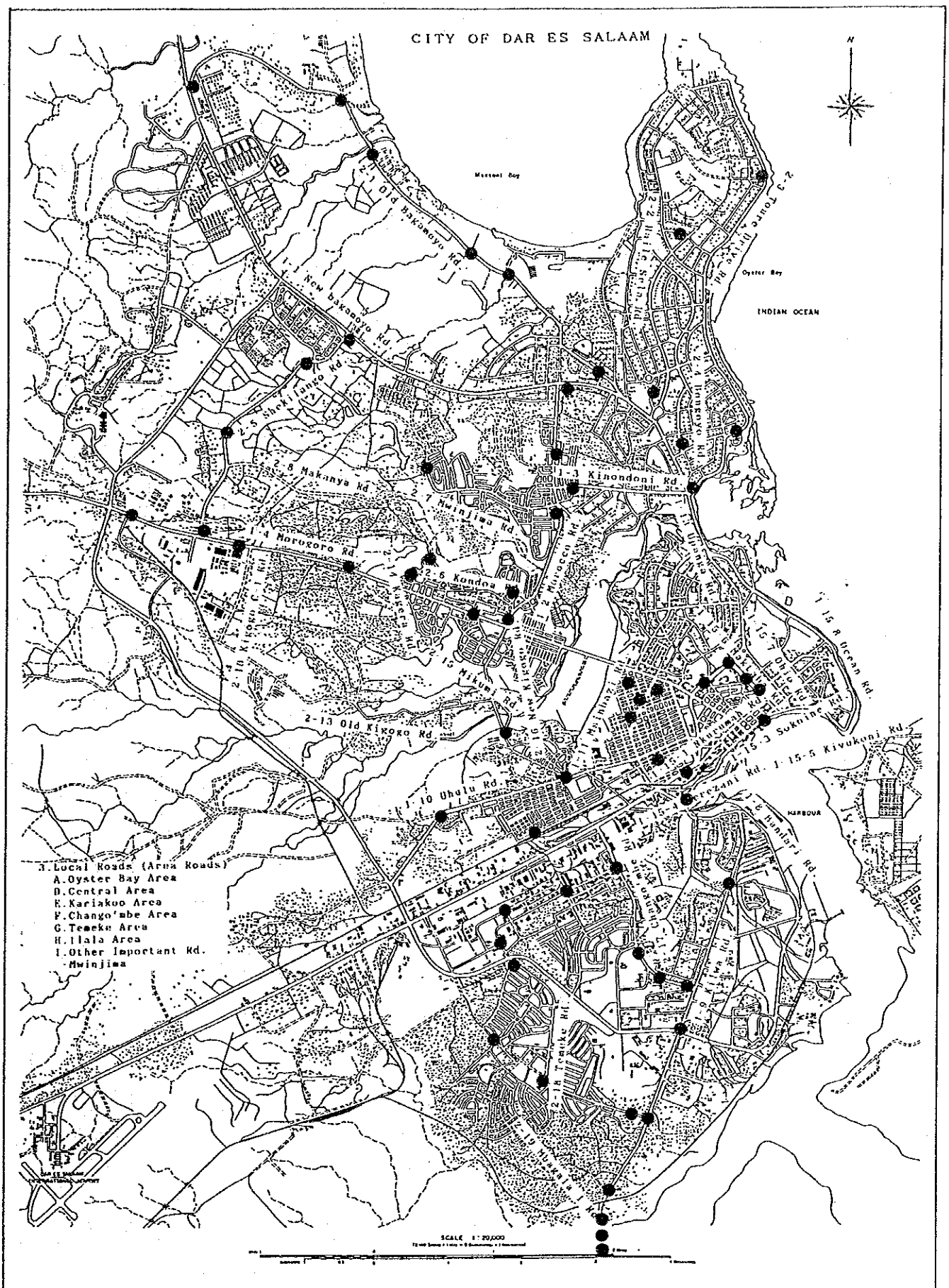
Route Name	Route - X			Karia-koo Area	Chang'ombe Area Street		Ilala Commer-cial	Temeke Area Streets					Notes
Sample Numbers	x.1	x.2	x.y	D.^{9}11	E.2	E.^{1}3	G.1	F.1					
Compose.													
Fine Gravel	2	1	2	1	1	1	1	1					
Sand	79	62	76	77	94	91	95	97					
Silt and Clay	19	37	22	22	5	8	4	2					
Atterberg LimitTest.													
Liquid Limit	31	33	26	NP	NP	NP	NP	NP					
Plastic Limit	14	16	14	NP	NP	NP	NP	NP					
Plastic Index	17	17	12	NP	NP	NP	NP	NP					
Compaction Test.													
Max. Dry Density	2100	1934	2100	1812	1888	1892	1827	1989					
Opt. water content	8.3	11.1	9.0	8.8	10.0	8.4	15.1	12.3					
F.W.C	10.2	13.6	18.1	1.5	3.9	10.1	1.8	1.8					
Labo. CBR Test.													
Swell	0.09	1.29	NIL	NIL	NIL	NIL	NIL	NIL					
CBR Value	19	29	21	10	22	20	13	21					
Classfication.													
AASHTO 17-149	A-2-6	A-2-6	A-2-6	A-3	A-1-b	A-3	A-1-b	A-1-b					
Unified	GC	GC	GC	GP-GC	GP-GC	GP-GC	GP-GC	GP-GC					
Remarks	H	H	F	F	F	F	F	F					

F; Flat, H: Hilly, E; Embankment.

Appendix 7-3-2: Summary of Subsoil Test Results (4/4)

Route Name	Morogoro Road PRJ			Pugu Road PRJ									Notes
Sample Numbers	c-1	c-2	c-3	1	2	3	4	5	6				
Compose.													
Fine Gravel	1	1											
Sand	76	82	84										
Silt and Clay	23	17	16										
Atterberg LimitTest.													
Liquid Limit	NP	NP	NP										
Plastic Limit	NP	NP	NP										
Plastic Index	NP	NP	NP										
Compaction Test.													
Max. Dry Density	2.040	2.009	1.902	1760	1755	1740	1735	1740	1705				
Opt. water content F.W.C	9.0	8.4	12.9	8.5	11.0	12.0	13.5	14.0	13.9				
Labo. CBR Test.													
Swell	0	0	0										
CBR Value	13.7	11.9	7.8	12	10	13	14	13	17				
Classfication.													
AASHTO 17-149	A-1-b	A-1-b	A-1-b										
Unified													
Remarks													

F; Flat, H: Hilly, E; Embankment.



Appendix 7-3-3: Inspection Points of Pavement

Appendix 7-3-4: Thickness of Pavement Structural Component (1/3)

No.	Name of Roads	Length km	No. of Survey Points	Survey Point 1	2	3	4	5	6	7	8	Esitimated Existing Thickness
	Group 1: Arterial and Collector Road											
1	Old Bagamoyo Road	8.2	6	N 2.5 12	P 9 10	P - 15	P - 17	V.P 1 10	P 5.5 19.5			- 12
2	Old Kigogo Road	6.8	-	-	-	-	-	-	-			-
3	Shekilango Road	3.8	4	P. 2. 12	N 1 10.5	V.P - 11.5	V.P 2 16					- 10
4	Morocco Road through Kigogo to Uhuru Roads	6.2	6	G 3.5 22.5	G 3 14	N 3.5 19.5	N 2 18	G 4.5 7.5	G 6.5 10.5			3 12
5	Kinondoni Street	1.7	2	P 9.5 10	N 2 29.5							2 10
6	Morogoro Road (up to Ubungo J.C)	6.5	5	G 10 25	N 2 25	P 8.5 16.5	N 7 23	N 7 12				7 15
6	Morogoro Road (3.0km of TRM)	3.0	2	N 3.5 10.5	N 4 9							4 10
7	Uhuru Road	2.8	2	N 4 11	N 4 14.5							4 12

Note's

Upper: Pavement Surface Condition survey point.
V.G, Very Good, G. Good, N. Normal, P. Poor, V.P. Very Poor.
Middle: Mesured thickness of Surface Course. (cm)
Lowwer: Mesured thickness of Base Course. (cm)

Appendix 7-3-4: Thickness of Pavement Structural Component (2/3)

No.	Name of Roads	Length km	No. of Survey Points	Survey Point 1	2	3	4	5	6	7	8	Esitimated Existing Thickness
8	Gerezani Street incl. Bandari & Kilwa Road (cnushed stone Base	7.1	4	G 8.5 15.5	V.P 4.5 7.5	V.P 7.5 17.5	V.P 4 8					 4 10
8	Kilwa Road (cement stablization Base)	5.9	6	7.G 9 11	G 13 8	N 8 25	N 4 6	N 7 22	N 3 19			 4 10
9	Chang'ombe Roads incl. Temeke Road (1.9km) & Mbagala 1 Road (1.4km)	7.9	3	G 1.5 17.5	G 1.5 8.5	G 1.5 18.5						 1.5 12
	Group 2: Area Roads											
	Oysterbay Residential Area Streets	19.5	9									
	Laibon and Bongoyo Road	2.6	2	N 2.5 14.5	N 2.5 11							 2.5 11
	Naile Selaie Street	4.8	2	G 3.5 11.5	G 2.5 18.5							 2.5 12
	Toure Drive	5.5	5	G 7 8.5	G 7 14	G 2.5 17.5	N 2.5 7.5	N 2.5 13				 3 12
3	Mwinjuma Road	2.4	2	P 12 9	P 1.5 9.5							 2 9

Note's

Upper: Pavement Surface Condition. survey point.
V.G, Very Good, G. Good, N. Normal, P. Poor, V.P. Very Poor.
Middle: Mesured thickness of Surface Course.(cm)
Lowwer: Mesured thickness of Base Course. (cm)

Appendix 7-3-4: Thickness of Pavement Structural Component (3/3)

No.	Name of Roads	Length km	No. of Survey Points	Survey Point 1	2	3	4	5	6	7	8	Esitimated Existing Thickness
C	Magomeni Commercial Area Street	3.2	2	G 5 9.5	P 4 12							4 10
D	Central Area Streets	17.5	5	P 5 25	P 3 33	P - 31	P 5 18.5	P 2.5 23.5				2.5 20
E	Kariakoo Commercial Area Street	31.6	6	P 4 21	P 2 10	P 1 34	P 3 22	P - 9	P 2 9			- 10
F	Chang'ombe Area Streets	14.6	6	G 2.5 20	G 2.5 20	N 5.5 21.5	N 5.5 19	G 1.5 26	N 1.5 21			2 20
G	Temeke Area Streets incl. Mbagala 11 (2.0km)	13.9	7	G 3.5 18.5	G 5 22.5	G 3.5 22.5	G 4 16	G 4 16	G 8 14	G ~.5 20		3.5 20
H	Ilala Commercial and Residential Area Streets	10.3	3	G 3.5 24.5	G 1.5 28.5	G 2.5 16.5						2 20

Note's.

Upper: Pavement Surface Condition-survey point.
V.G, Very Good, G. Good, N. Normal, P. Poor, V.P. Very Poor.
Middle: Mesured thickness of Surface Course. (cm)
Lowwer: Mesured thickness of Base Course. (cm)

Appendix 7-3-5: Location of Quarry Sites near DSM