

East St. Paul Area
 Intersection Level of Service
 Year 2001 - Existing Conditions
 PM Peak Period

	University Avenue / Dale Street						Intersection LOS							
	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	47.7	48.2	30.5	56.3	32.7	22.0	45.2	41.6	13.9	58.6	37.0	31.3	40.2	D
# Trips (veh/hr)	165	1029	100	163	788	95	134	785	217	169	475	115	4236	
Total Delay (sec/hr)	7855	49547	3047	9190	25779	2094	6052	32644	3016	9917	17578	3596	170315	
Level of Service	D	D	C	E	C	C	D	D	B	E	D	C	C	

	University Avenue / Mackubin Street						Intersection LOS							
	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	13.9	4.4	7.2	29.7	12.8	17.8	45.8	14.7	21.7	17.4	44.9	8.2	9.8	A
# Trips (veh/hr)	47	1322	37	76	985	22	43	1	64	6	5	27	2635	
Total Delay (sec/hr)	653	5817	266	2257	12608	392	1969	15	1389	104	225	221	25917	
Level of Service	B	A	A	D	B	C	E	B	C	C	E	A	A	

	University Avenue / Marion Street						Intersection LOS							
	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	38.6	37.0	28.3	33.1	24.1	11.8	58.3	30.8	18.6	49.1	29.0	10.3	31.0	C
# Trips (veh/hr)	111	1117	147	137	849	16	132	454	216	54	329	113	3676	
Total Delay (sec/hr)	4268	41379	4160	4524	20441	193	7700	13993	4010	2666	9541	1164	114039	
Level of Service	D	D	C	C	C	B	E	C	B	D	C	B	B	

	University Avenue / Rice Street						Intersection LOS							
	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	34.9	23.2	16.9	28.1	31.3	19.4	67.9	42.9	28.3	167.0	73.4	43.1	48.8	D
# Trips (veh/hr)	250	1055	82	46	771	127	76	481	81	102	405	152	2242	
Total Delay (sec/hr)	8733	24468	1389	1304	24168	2462	5183	20633	2292	17090	29689	6542	109363	
Level of Service	C	C	B	C	C	B	E	D	C	F	E	D	D	

	University Avenue / Constitution Avenue						Intersection LOS							
	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	22.5	13.6	15.0	31.2	11.6	6.7	43.8	33.9	11.6	47.4	31.0	9.6	16.2	B
# Trips (veh/hr)	26	1105	95	36	840	99	42	73	54	123	103	60	2656	
Total Delay (sec/hr)	592	15069	1430	1112	9744	664	1856	2466	628	5826	3186	575	43148	
Level of Service	C	B	B	C	B	A	D	C	B	D	C	A	A	

	University Avenue / Robert Street						Intersection LOS							
	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	25.0	13.7	9.3	26.3	12.6	7.6	31.1	43.3	29.6	47.9	23.9	6.2	17.5	B
# Trips (veh/hr)	6	989	210	38	740	6	208	111	239	7	4	10	2568	
Total Delay (sec/hr)	150	13549	1953	999	9324	46	6469	4806	7074	335	96	62	44864	
Level of Service	C	B	A	C	B	A	C	D	C	D	C	A	A	

St. Paul CBD
 Intersection Level of Service
 Year 2001 - Existing Conditions
 PM Peak Period

12th Street / Cedar Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	0.0	0.0	14.8	14.8	14.8	8.3	8.3	0.0	0.0	13.8	13.8	13.9	B
# Trips (veh/hr)	0	0	0	92	1141	42	47	109	0	0	246	183	1860	
Total Delay (sec/hr)	0	0	0	1076	16887	622	390	905	0	0	3395	2525	25800	
Level of Service	A	A	A	B	B	B	A	A	A	A	B	B	B	B

11th Street / Cedar Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	15.8	10.7	7.0	0.0	0.0	0.0	0.0	11.5	11.5	11.5	9.3	9.3	13.6	B
# Trips (veh/hr)	31	993	40	0	0	0	0	130	85	242	115	242	1636	
Total Delay (sec/hr)	490	15689	280	0	0	0	0	1495	978	2251	1070	2251	22252	
Level of Service	B	B	A	A	A	A	A	B	B	A	A	A	A	A

7th Street / Cedar Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	10.7	10.7	13.1	13.1	0.0	0.0	0.0	0.0	15.5	12.2	12.2	12.1	B
# Trips (veh/hr)	0	644	183	88	579	0	0	0	0	110	366	132	2102	
Total Delay (sec/hr)	0	6891	1958	1153	7585	0	0	0	0	1705	4465	1610	25367	
Level of Service	A	B	B	B	B	A	A	A	A	B	B	B	B	B

6th Street / Cedar Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	0.0	0.0	3.6	14.1	0.0	0.0	0.0	0.0	0.0	12.6	5.4	11.4	B
# Trips (veh/hr)	0	0	0	208	715	0	0	0	0	0	493	144	1560	
Total Delay (sec/hr)	0	0	0	749	10082	0	0	0	0	0	6212	778	17820	
Level of Service	A	A	A	A	B	A	A	A	A	A	B	A	A	A

5th Street / Cedar Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	14.3	4.1	0.0	0.0	0.0	0.0	0.0	0.0	8.0	10.3	0.0	10.7	B
# Trips (veh/hr)	0	653	201	0	0	0	0	0	0	300	428	0	1582	
Total Delay (sec/hr)	0	9338	824	0	0	0	0	0	0	2400	4408	0	16970	
Level of Service	A	B	A	A	A	A	A	A	A	A	B	A	A	A

4th Street / Cedar Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	10.7	3.2	12.0	12.0	0.0	0.0	0.0	0.0	12.3	12.3	3.6	10.5	B
# Trips (veh/hr)	0	71	52	27	65	0	0	0	0	57	446	93	811	
Total Delay (sec/hr)	0	760	166	324	780	0	0	0	0	701	5486	335	8552	
Level of Service	A	B	A	B	B	A	A	A	A	B	B	A	A	

4th Street / Minnesota Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	11.0	11.0	0.0	5.1	5.1	0.3	14.8	14.8	14.8	0.0	0.0	0.0	10.7	B
# Trips (veh/hr)	40	80	0	0	79	110	17	274	83	0	0	0	683	
Total Delay (sec/hr)	440	880	0	0	403	33	252	4055	1228	0	0	0	7291	
Level of Service	B	B	A	A	A	A	B	B	B	A	A	A	A	

4th Street / Robert Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	19.6	19.6	7.2	12.5	12.5	12.5	7.5	8.0	3.1	7.2	7.4	7.4	9.0	A
# Trips (veh/hr)	50	84	97	16	102	43	25	417	52	39	530	69	1524	
Total Delay (sec/hr)	980	1646	698	200	1275	538	188	3336	161	281	3922	511	13735	
Level of Service	B	B	A	B	B	B	A	A	A	A	A	A	A	

4th Street / Jackson Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	13.6	13.6	22.7	22.7	0.0	0.0	0.0	0.0	7.4	9.4	5.0	12.3	B
# Trips (veh/hr)	0	96	108	139	139	0	0	0	0	47	1004	87	1685	
Total Delay (sec/hr)	0	1306	1469	4631	3155	0	0	0	0	348	9438	435	20781	
Level of Service	A	B	B	C	C	A	A	A	A	A	A	A	A	

4th Street / Sibley Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	14.4	14.4	0.0	14.3	14.3	14.3	10.0	10.6	4.1	0.0	0.0	0.0	11.3	B
# Trips (veh/hr)	61	94	0	0	155	35	139	456	75	0	0	0	1015	
Total Delay (sec/hr)	878	1354	0	0	2217	501	1390	4834	308	0	0	0	11480	
Level of Service	B	B	A	B	B	B	A	B	A	A	A	A	A	

Notes:

1. Results obtained using Synchro version 5.0
2. Volumes were obtained from traffic counts conducted on December 18 & 19, 2001 by URS.

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Minneapolis CBD
 Intersection Level of Service
 Year 2020 - Baseline Conditions
 PM Peak Period

5th Street / Hennepin Avenue

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0	0	0	155.6	28.1	28.6	28.1	28.1	0	0	1.1	0	55.8	E
# Trips (veh/hr)	0	0	0	690	237	365	237	1806	0	0	44	0	3142	
Total Delay (sec/hr)	0	0	0	107364	6660	10439	6660	50749	0	0	48	0	175260	
Level of Service	A	A	A	F	C	C	C	C	A	A	A	A	A	

5th Street / Marquette Avenue

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0	0	0	158.4	51.9	158.4	51.9	51.9	0	0	10	0	73.7	E
# Trips (veh/hr)	0	0	0	514	249	72	249	1624	0	0	138	0	2597	
Total Delay (sec/hr)	0	0	0	81418	12923	11405	12923	84286	0	0	1380	0	191411	
Level of Service	A	A	A	F	D	F	D	D	A	A	A	A	A	

5th Street / 5th Avenue

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0	0	0	8.1	2.4	2.4	0.3	6.5	0	0	0	0	5.7	A
# Trips (veh/hr)	0	0	0	282	17	17	392	1900	0	0	0	0	2591	
Total Delay (sec/hr)	0	0	0	2284	41	41	118	12350	0	0	0	0	14793	
Level of Service	A	A	A	A	A	A	A	A	A	A	A	A	A	

Notes:

1. Results obtained using Synchro version 5.0
2. Existing cycle length of 90 seconds was used in analysis, but intersection offsets and splits were optimized.

University of Minnesota Area
 Intersection Level of Service
 Year 2020 - Baseline Conditions
 PM Peak Period

	Washington Avenue / Church Street												Intersection Total	Intersection LOS
	West Approach			East Approach			South Approach			North Approach				
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	12.9	18.5	20.5	26.3	16.2	0.0	34.5	29.2	16.1	0.5	35.2	6.7	18.1	B
# Trips (veh/hr)	3	699	49	61	1017	0	70	1	73	0	3	3	1979	
Total Delay (sec/hr)	34	12925	1011	1615	16509	0	2424	19	1181	0	94	18	35832	
Level of Service	B	B	C	C	B	A	C	C	B	A	D	A		

	University Avenue / 29th Street												Intersection Total	Intersection LOS
	West Approach			East Approach			South Approach			North Approach				
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	9.0	0.8	0.0	0.0	2.3	6.7	0.0	0.0	0.0	58.5	0.0	7.2	2.0	A
# Trips (veh/hr)	18	1379	0	0	1056	21	0	0	0	16	12	46	2548	
Total Delay (sec/hr)	158	1149	0	0	2464	138	0	0	0	937	0	331	5178	
Level of Service	A	A	A	A	A	A	A	A	A	F	A	A		

	University Avenue / Malcolm Avenue												Intersection Total	Intersection LOS
	West Approach			East Approach			South Approach			North Approach				
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	26.6	17.7	11.0	12.4	8.1	2.9	27.3	25.2	4.0	32.2	41.6	21.6	15.6	B
# Trips (veh/hr)	20	1487	20	27	862	32	41	1	20	190	3	29	2733	
Total Delay (sec/hr)	522	26320	223	334	6985	93	1128	34	81	6124	111	633	42588	
Level of Service	C	B	B	B	A	A	C	C	A	C	D	C		

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TH 280 Area
 Intersection Level of Service
 Year 2020 - Baseline Conditions
 PM Peak Period

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
	Delay (sec/veh)	0.0	59.7	13.0	31.6	5.5	0.0	0.0	0.0	0.0	33.8	35.4		
# Trips (veh/hr)	0	1451	278	29	813	0	0	0	0	388	919	196	4074	
Total Delay (sec/hr)	0	86653	3628	906	4472	0	0	0	0	13127	32563	5207	146556	
Level of Service	A	E	B	C	A	A	A	A	A	C	D	C	C	

University Avenue / Cromwell Avenue

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
	Delay (sec/veh)	47.0	14.8	0.0	0.0	27.9	13.5	36.2	35.9	32.9	0.0	0.0		
# Trips (veh/hr)	522	1310	0	0	614	455	223	437	29	0	0	0	3590	
Total Delay (sec/hr)	24501	19437	0	0	17110	6158	8061	15688	953	0	0	0	91907	
Level of Service	D	B	A	A	C	B	D	D	C	A	A	A	A	

University Avenue / Franklin Avenue - Pelham Boulevard

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
	Delay (sec/veh)	0.0	11.6	10.8	22.7	3.6	0.0	13.8	0.0	0.0	0.0	0.0		
# Trips (veh/hr)	0	1250	86	383	1069	0	356	0	0	0	0	0	3143	
Total Delay (sec/hr)	0	14542	925	8707	3847	0	4920	0	0	0	0	0	32941	
Level of Service	A	B	B	C	A	A	B	A	A	A	A	A	A	

University Avenue / Raymond Avenue

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
	Delay (sec/veh)	43.2	10.2	18.4	63.9	50.1	39.5	36.1	25.8	18.3	756.0	288.0		
# Trips (veh/hr)	204	1229	8	13	1114	142	55	124	26	281	89	133	3416	
Total Delay (sec/hr)	8813	12536	141	831	55832	5596	1984	3195	483	212193	25539	42383	369524	
Level of Service	D	B	B	E	D	D	D	C	B	F	F	F	F	

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Snelling/Lexington Area
 Intersection Level of Service
 Year 2020 - Baseline
 PM Peak Period

University Avenue / Fairview Avenue

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	21.5	29.5	109.9	4.8	8.9	44.5	26.3	30.9	100.6	10.3	10.9	15.3	22.4	C
# Trips (veh/hr)	72	355	103	41	621	106	116	340	94	237	1020	104	3210	
Total Delay (sec/hr)	1558	10484	11316	197	5545	4717	3051	10528	9453	2445	11088	1586	71967	
Level of Service	C	C	F	A	A	D	C	C	F	B	B	B	B	

University Avenue / Aldine Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	42.2	41.5	58.6	1.4	1.3	17.6	59.5	50.8	55.3	3.7	8.8	14.7	14.1	B
# Trips (veh/hr)	76	10	85	54	681	30	143	56	22	15	1182	45	2399	
Total Delay (sec/hr)	3205	401	4984	78	863	534	8484	2828	1216	56	10444	666	33758	
Level of Service	D	D	E	A	A	B	E	D	E	A	A	B	B	

University Avenue / Fry Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	14.8	41.0	41.0	1.6	1.2	13.4	12.1	36.2	43.5	4.1	3.0	8.6	5.2	A
# Trips (veh/hr)	25	17	19	18	659	30	44	14	81	117	1248	43	2313	
Total Delay (sec/hr)	364	698	765	29	769	401	531	507	3506	474	3701	370	12116	
Level of Service	B	D	D	A	A	B	B	D	D	A	A	A	A	

University Avenue / Snelling Avenue

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	24.2	42.9	86.0	17.8	32.4	116.2	34.3	33.7	86.6	14.6	35.2	31.5	40.8	D
# Trips (veh/hr)	101	1114	256	168	517	150	198	1125	89	94	1000	213	5025	
Total Delay (sec/hr)	2444	47768	21996	2996	16734	17464	6791	37924	7679	1368	35167	6727	205056	
Level of Service	C	D	F	B	C	F	C	C	F	B	D	C	C	

University Avenue / Pascal Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	47.9	54.3	46.5	5.4	8.3	18.8	17.1	32.0	48.9	9.8	12.0	13.3	15.5	B
# Trips (veh/hr)	17	111	35	35	744	143	185	94	85	166	1213	59	2888	
Total Delay (sec/hr)	814	6042	1643	187	6150	2688	3170	3005	4137	1625	14516	791	44768	
Level of Service	D	D	D	A	A	B	B	C	D	A	B	B	B	

University Avenue / Albert Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	10.2	35.2	36.9	7.7	10.6	18.4	16.0	47.9	41.3	9.6	10.1	8.5	12.3	B
# Trips (veh/hr)	32	7	6	25	836	149	187	39	56	134	1291	15	2776	
Total Delay (sec/hr)	323	234	222	193	8858	2742	2993	1852	2299	1294	13039	130	34180	
Level of Service	D			A			B			D			A	

University Avenue / Hamline Avenue

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	39.0	42.5	35.4	6.6	13.9	40.9	26.8	31.9	39.6	17.2	18.0	26.1	23.5	C
# Trips (veh/hr)	33	347	71	65	826	123	167	428	149	121	1259	91	3681	
Total Delay (sec/hr)	1301	14733	2502	431	11514	5040	4472	13639	5900	2091	22626	2372	86622	
Level of Service	D			A			C			D			B	

University Avenue / Griggs Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	17.6	9.4	64.6	1.4	2.1	17.2	114.2	13.8	107.2	19.9	20.5	14.7	16.3	C
# Trips (veh/hr)	17	0	8	12	994	34	70	1	10	27	1417	32	2621	
Total Delay (sec/hr)	294	3	538	16	2054	578	7956	9	1036	536	29103	466	42589	
Level of Service	C			A			F			C			B	

University Avenue / Lexington Parkway

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	28.1	48.4	113.3	28.5	36.0	108.5	54.5	76.1	187.1	94.5	105.4	140.7	76.6	E
# Trips (veh/hr)	131	1107	136	67	748	200	171	1132	158	245	978	223	5296	
Total Delay (sec/hr)	3686	53579	15376	1919	26915	21736	9343	86158	29494	23161	103046	31322	405734	
Level of Service	C			C			D			E			F	

University Avenue / Chatsworth Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	12.0	27.5	37.9	1.3	1.1	12.2	39.1	72.8	64.5	1.8	1.7	8.6	4.7	A
# Trips (veh/hr)	36	5	8	19	957	90	74	4	46	40	1181	65	2524	
Total Delay (sec/hr)	428	146	316	25	1021	1094	2878	291	2969	72	2047	558	11845	
Level of Service	B			A			E			F			A	

University Avenue / Victoria Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	70.7	68.3	73.6	5.5	9.8	24.2	49.0	53.5	57.6	9.2	14.3	24.3	23.2	C
# Trips (veh/hr)	75	160	66	39	917	39	74	184	71	61	1147	49	2882	
Total Delay (sec/hr)	5324	10911	4858	213	8956	944	3645	9826	4109	556	16402	1199	66942	
Level of Service	E			A			D			E			C	

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East St. Paul Area
 Intersection Level of Service
 Year 2020 Baseline Conditions
 PM Peak Period

University Avenue / Dale Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	55.8	40.4	25.8	37.3	31.6	22.2	229.8	206.1	40.6	498.8	195.5	163.2	116.1	F
# Trips (veh/hr)	192	1179	102	170	901	122	154	916	249	208	554	142,33333	4889	
Total Delay (sec/hr)	10689	47618	2637	6353	28472	2712	35307	188688	10115	103750	108223	23229	567793	
Level of Service	E	D	C	D	C	C	F	F	D	F	F	F	F	

University Avenue / Mackubin Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	17.4	4.6	6.6	40.4	13.7	16.6	96.2	107.7	60.6	109.8	66.0	20.9	13.0	B
# Trips (veh/hr)	60	1540	40	104	1078	16	52	4	54	16	5	27	2996	
Total Delay (sec/hr)	1044	7084	264	4202	14769	266	5002	431	3272	1757	330	564	38985	
Level of Service	C	A	A	E	B	C	F	F	F	F	F	C	C	

University Avenue / Marion Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	141.4	136.7	128.0	42.7	35.1	23.7	54.4	32.8	24.5	62.1	28.4	11.8	72.2	E
# Trips (veh/hr)	140	1307	154	152	948	20	155	559	257	75	366	133	4265	
Total Delay (sec/hr)	19754	178623	19707	6510	33232	467	8450	18343	6288	4634	10416	1561	307984	
Level of Service	F	F	F	D	D	C	D	C	C	E	C	B	B	

University Avenue / Rice Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	90.4	29.0	21.4	38.3	39.9	29.8	182.9	98.2	64.4	882.1	537.4	399.5	204.0	F
# Trips (veh/hr)	295	1205	93	55	889	149	82	584	100	101	471	168	2599	
Total Delay (sec/hr)	26658	34955	2000	2105	35471	4435	14934	57401	6443	89095	253295	67110	530290	
Level of Service	F	C	C	D	D	C	F	F	E	F	F	F	F	

University Avenue / Constitution Avenue

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	35.0	20.1	21.4	37.6	14.3	8.7	51.2	37.2	14.6	65.1	41.3	20.7	22.3	C
# Trips (veh/hr)	31	1240	113	46	951	111	58	82	64	149	125	77	3046	
Total Delay (sec/hr)	1072	24883	2407	1716	13563	966	2951	3048	939	9695	5163	1601	68003	
Level of Service	C	C	C	D	B	A	D	D	B	E	D	C	C	

University Avenue / Robert Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	25.0	13.7	9.3	26.3	12.6	7.6	31.1	43.3	29.6	47.9	23.9	6.2	17.5	B
# Trips (veh/hr)	6	989	210	38	740	6	208	111	239	7	4	10	2568	
Total Delay (sec/hr)	150	13549	1953	999	9324	46	6469	4806	7074	335	96	62	44864	
Level of Service	C	B	A	C	B	A	C	D	C	D	C	A	A	

St. Paul CBD
 Intersection Level of Service
 Year 2020 - Baseline Conditions
 PM Peak Period

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
	Delay (sec/veh)	0.0	0.0	0.0	9.7	13.8	13.8	7.3	7.3	0.0	0.0	18.8		
# Trips (veh/hr)	0	0	0	120	1486	55	61	142	0	0	320	238	2422	
Total Delay (sec/hr)	0	0	0	1164	20507	759	445	1037	0	0	6016	4474	34402	
Level of Service	A	A	A	A	B	B	A	A	A	A	B	B	B	

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
	Delay (sec/veh)	10.3	10.3	3.6	0.0	0.0	0.0	0.0	19.3	19.3	16.0	16.0		
# Trips (veh/hr)	40	1293	52	0	0	0	0	169	111	150	315	0	2130	
Total Delay (sec/hr)	412	13318	187	0	0	0	0	3262	2142	2400	5040	0	26761	
Level of Service	B	B	A	A	A	A	A	B	B	B	B	A	A	

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
	Delay (sec/veh)	0.0	9.5	9.5	15.0	15.0	0.0	0.0	0.0	0.0	21.0	18.5		
# Trips (veh/hr)	0	839	238	115	754	0	0	0	0	143	477	172	2738	
Total Delay (sec/hr)	0	7971	2261	1725	11310	0	0	0	0	3003	8825	3182	38276	
Level of Service	A	A	A	B	B	A	A	A	A	C	B	B	B	

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
	Delay (sec/veh)	0.0	0.0	0.0	8.2	13.6	0.0	0.0	0.0	0.0	0.0	12.0		
# Trips (veh/hr)	0	0	0	271	931	0	0	0	0	0	642	188	2032	
Total Delay (sec/hr)	0	0	0	2222	12662	0	0	0	0	0	7704	1429	24017	
Level of Service	A	A	A	A	B	A	A	A	A	A	B	A	A	

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
	Delay (sec/veh)	0.0	14.9	6.1	0.0	0.0	0.0	0.0	0.0	0.0	3.9	6.0		
# Trips (veh/hr)	0	850	262	0	0	0	0	0	0	391	557	0	2060	
Total Delay (sec/hr)	0	12665	1598	0	0	0	0	0	0	1525	3342	0	19130	
Level of Service	A	B	A	A	A	A	A	A	A	A	A	A	A	

4th Street / Cedar Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	12.1	3.6	7.2	7.2	0.0	0.0	0.0	0.0	7.0	7.0	0.6	6.5	A
# Trips (veh/hr)	0	92	68	35	85	0	0	0	0	74	571	121	1046	
Total Delay (sec/hr)	0	1113	245	252	612	0	0	0	0	518	3997	73	6810	
Level of Service	A	B	A	A	A	A	A	A	A	A	A	A	A	

4th Street / Minnesota Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	8.1	8.1	0.0	0.0	8.9	4.9	14.1	14.1	14.1	0.0	0.0	0.0	11.0	B
# Trips (veh/hr)	52	104	0	0	103	143	22	357	108	0	0	0	889	
Total Delay (sec/hr)	421	842	0	0	917	701	310	5034	1523	0	0	0	9748	
Level of Service	A	A	A	A	A	A	B	B	B	A	A	A	A	

4th Street / Robert Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	10.3	10.3	3.7	11.5	11.5	11.5	15.2	14.5	7.9	13.6	14.0	14.0	13.0	B
# Trips (veh/hr)	21	133	56	65	109	126	51	690	90	33	543	68	1985	
Total Delay (sec/hr)	216	1370	207	748	1254	1449	775	10005	711	449	7602	952	25737	
Level of Service	B	B	A	B	B	B	B	B	A	B	B	B	B	

4th Street / Jackson Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	8.9	8.9	70.1	70.1	0.0	0.0	0.0	0.0	16.9	28.1	14.3	33.3	C
# Trips (veh/hr)	0	125	141	266	181	0	0	0	0	61	1308	113	2195	
Total Delay (sec/hr)	0	1113	1255	18647	12688	0	0	0	0	1031	36755	1616	73104	
Level of Service	A	A	A	E	E	A	A	A	A	B	C	B	B	

4th Street / Sibley Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	15.1	15.1	0.0	0.0	12.0	12.0	14.0	14.7	7.5	0.0	0.0	0.0	13.6	B
# Trips (veh/hr)	79	122	0	0	202	46	181	594	98	0	0	0	1322	
Total Delay (sec/hr)	1193	1842	0	0	2424	552	2534	8732	735	0	0	0	18012	
Level of Service	B	B	A	A	B	B	B	B	A	A	A	A	A	

Notes:

1. Results obtained using Synchro version 5.0
2. Volumes were obtained from traffic counts conducted on December 18 & 19, 2001 by URS.

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Minneapolis CBD
 Intersection Level of Service
 Year 2020-Build Conditions
 PM Peak Period

5th Street / Hennepin Avenue

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0	0	0	112.8	30.2	30.2	61.3	61.3	0	0	6.7	0	67.4	E
# Trips (veh/hr)	0	0	0	690	437	437	237	1806	0	0	44	0	3214	
Total Delay (sec/hr)	0	0	0	77832	13197	13197	14528	110708	0	0	295	0	216560	
Level of Service	A	A	A	F	C	C	E	E	A	A	A	A		

5th Street / Marquette Avenue

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0	0	0	66.7	0	0	47.6	47.6	0	0	13.4	0	49.6	D
# Trips (veh/hr)	0	0	0	514	0	0	249	1624	0	0	138	0	2525	
Total Delay (sec/hr)	0	0	0	34284	0	0	11852	77302	0	0	1849	0	125288	
Level of Service	A	A	A	E	A	A	D	D	A	A	B	A		

5th Street / 5th Avenue

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0	0	0	8.1	2.4	2.4	0.3	6.5	0	0	0	0	5.7	A
# Trips (veh/hr)	0	0	0	282	17	17	392	1900	0	0	0	0	2591	
Total Delay (sec/hr)	0	0	0	2284	41	41	118	12350	0	0	0	0	14793	
Level of Service	A	A	A	A	A	A	A	A	A	A	A	A		

Notes:

1. Results obtained using Synchro version 5.0
2. Existing cycle length of 90 seconds was used in analysis, but intersection offsets and splits were optimized.

University of Minnesota Area
 Intersection Level of Service
 Year 2020 - Build Conditions
 PM Peak Period

Washington Avenue / Church Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	20.7	18.1	20.5	27.4	16.5	0.0	36.7	26.0	19.9	12.7	26.4	11.6	18.5	B
# Trips (veh/hr)	3	648	65	68	985	0	75	1	84	1	1	3	1934	
Total Delay (sec/hr)	55	11735	1339	1852	16214	0	2762	17	1672	13	35	35	35729	
Level of Service	C	B	C	C	B	A	D	C	B	B	C	B	B	

University Avenue / 29th Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	13.2	2.3	0.0	0.0	7.6	9.8	0.0	0.0	0.0	0.0	0.0	0.0	4.7	A
# Trips (veh/hr)	17	1397	0	0	1073	21	0	0	0	0	0	0	2507	
Total Delay (sec/hr)	224	3259	0	0	8117	205	0	0	0	0	0	0	11805	
Level of Service	B	A	A	A	A	A	A	A	A	A	A	A	A	

University Avenue / Malcolm Avenue

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	57.9	58.6	49.0	93.2	85.4	69.5	45.8	60.1	17.8	77.5	58.3	8.5	66.5	E
# Trips (veh/hr)	20	1506	22	33	859	31	39	2	22	202	3	89	2828	
Total Delay (sec/hr)	1157	88302	1078	3107	73416	2178	1786	120	386	15655	175	757	188117	
Level of Service	E	E	D	F	F	E	D	E	B	E	E	A	A	

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TH 280 Area
 Intersection Level of Service
 Year 2020 - Build Conditions
 PM Peak Period

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
	Delay (sec/veh)	0.0	409.6	304.2	66.7	4.1	0.0	0.0	0.0	0.0	64.7	58.6		
# Trips (veh/hr)	0	1275	238	19	718	0	0	0	0	389	898	211	3747	
Total Delay (sec/hr)	0	522377	72306	1245	2966	0	0	0	0	25168	52593	5641	682296	
Level of Service	A	F	F	E	A	A	A	A	A	E	E	C		

University Avenue / Cromwell Avenue

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
	Delay (sec/veh)	81.9	12.5	0.0	0.0	23.8	21.3	37.4	34.5	28.2	0.0	0.0		
# Trips (veh/hr)	458	1208	0	0	490	350	239	446	28	0	0	0	3218	
Total Delay (sec/hr)	37553	15096	0	0	11654	7448	8918	15402	800	0	0	0	96871	
Level of Service	F	B	A	A	C	C	D	C	C	A	A	A		

University Avenue / Franklin Avenue - Pelham Boulevard

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
	Delay (sec/veh)	0.0	11.3	7.8	19.6	3.1	0.0	13.9	0.0	0.0	0.0	0.0		
# Trips (veh/hr)	0	1153	81	305	844	0	359	0	0	0	0	0	2743	
Total Delay (sec/hr)	0	12990	632	5974	2589	0	4985	0	0	0	0	0	27171	
Level of Service	A	B	A	B	A	A	B	A	A	A	A	A		

University Avenue / Raymond Avenue

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
	Delay (sec/veh)	77.3	10.4	9.7	104.1	224.8	366.9	48.9	39.7	34.4	248.2	36.6		
# Trips (veh/hr)	217	1328	5	7	1143	133	59	124	22	316	101	159	3614	
Total Delay (sec/hr)	16800	13811	45	729	256946	48924	2867	4923	746	78514	3684	3633	431623	
Level of Service	E	B	A	F	F	F	D	D	C	F	D	C		

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Snelling/Lexington Area
 Intersection Level of Service
 Year 2020 - LRT Build
 PM Peak Period

University Avenue / Fairview Avenue

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	29.9	33.3	137.8	23.3	25.7	214.9	89.2	48.4	109.5	78.1	78.4	111.0	65.4	
# Trips (veh/hr)	69	358	103	39	595	103	114	330	82	174	770	71	2809	E
Total Delay (sec/hr)	2055	11922	14190	918	15303	22203	10202	15983	9018	13621	60368	7916	183699	
Level of Service	C	C	F	C	C	F	F	D	F	E	E	F		

University Avenue / Aldine Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	33.5	45.3	48.8	9.0	10.6	73.4	33.6	38.5	47.3	217.3	219.8	224.9	109.8	
# Trips (veh/hr)	72	8	89	60	670	25	137	65	19	7	873	37	2062	F
Total Delay (sec/hr)	2410	347	4343	545	7121	1836	4614	2490	898	1593	191915	8246	226358	
Level of Service	C	D	D	A	B	E	C	D	D	F	F	F		

University Avenue / Fry Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	11.3	38.9	39.4	14.0	14.8	34.7	14.5	37.2	36.9	92.8	94.4	105.9	59.9	
# Trips (veh/hr)	25	19	16	22	647	26	51	15	77	89	955	31	1972	E
Total Delay (sec/hr)	285	752	630	303	9559	901	736	546	2844	8225	90121	3284	118187	
Level of Service	B	D	D	B	B	C	B	D	D	F	F	F		

University Avenue / Snelling Avenue

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	14.9	25.0	71.2	60.2	60.7	227.8	46.7	34.3	76.3	123.6	108.3	113.6	61.0	
# Trips (veh/hr)	109	1160	239	174	512	155	182	1102	76	58	773	176	4718.333333	E
Total Delay (sec/hr)	1633	28970	17033	10469	31099	35390	8493	37750	5827	7171	83752	20026	287612	
Level of Service	B	C	E	E	E	F	D	C	E	F	F	F		

University Avenue / Pascal Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	47.4	58.2	61.2	17.5	17.1	42.9	15.9	36.9	56.6	35.0	31.9	72.7	30.8	
# Trips (veh/hr)	19	105	39	38	759	174	160	106	95	149	983	48	2675	C
Total Delay (sec/hr)	916	6095	2387	666	12998	7465	2549	3896	5393	5227	31368	3488	82448	
Level of Service	D	E	E	B	B	D	B	D	E	C	C	E		

University Avenue / Albert Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	10.8	0.0	0.0	3.2	0.7	0.0	50.6	0.0	0.0	29.5	29.8	0.0	18.6	B
# Trips (veh/hr)	44	0	0	26	939	0	147	0	0	117	1038	0	2312	
Total Delay (sec/hr)	480	0	0	85	658	0	7455	0	0	3442	30967	0	43087	
Level of Service	B	A	A	A	A	A	F	A	A	D	D	A	A	

University Avenue / Hamline Avenue

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	68.2	74.5	149.4	33.3	39.8	188.3	58.0	63.3	59.7	67.4	64.7	109.7	67.3	E
# Trips (veh/hr)	37	275	72	59	764	182	154	407	161	104	958	82	3253	
Total Delay (sec/hr)	2502	20478	10709	1965	30433	30581	8927	25756	9597	7010	61929	8998	218884	
Level of Service	E	E	F	C	D	F	E	E	E	E	E	F	F	

University Avenue / Griggs Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	12.3	0.0	35.0	9.3	11.2	65.8	31.7	16.4	47.0	134.3	128.2	150.6	70.2	F
# Trips (veh/hr)	22	0	10	12	1008	40	85	2	6	24	1069	24	2302	
Total Delay (sec/hr)	266	0	350	108	11293	2632	2692	27	298	3269	136967	3664	161566	
Level of Service	B	A	C	A	B	E	C	B	D	F	F	F	F	

University Avenue / Lexington Parkway

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	77.3	92.5	97.8	65.7	63.0	118.2	65.5	75.6	61.5	199.9	191.9	227.1	105.9	F
# Trips (veh/hr)	136	1069	115	70	734	182	184	1191	189	195	726	185	4978	
Total Delay (sec/hr)	10539	98878	11251	4623	46239	21512	12036	90025	11603	39047	139408	42083	527243	
Level of Service	E	F	F	E	E	F	E	E	E	F	F	F	F	

University Avenue / Chatsworth Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	8.2	22.2	26.2	24.0	24.0	47.6	14.4	43.5	30.8	14.7	20.9	50.5	23.8	C
# Trips (veh/hr)	35	4	11	21	923	96	76	5	43	38	931	55	2237	
Total Delay (sec/hr)	284	89	288	497	22191	4566	1090	217	1323	565	19420	2761	53290	
Level of Service	A	C	C	C	C	D	B	D	C	B	C	D	D	

University Avenue / Victoria Street

	North Approach			East Approach			South Approach			West Approach			Intersection Total	Intersection LOS
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left		
Delay (sec/veh)	37.9	45.5	47.0	19.0	18.4	49.3	49.5	58.4	63.3	27.4	27.7	39.6	30.4	C
# Trips (veh/hr)	55	182	71	41	916	39	78	177	72	55	913	39	2638	
Total Delay (sec/hr)	2083	8275	3319	787	16854	1923	3847	10331	4558	1498	25260	1556	80290	
Level of Service	D	D	D	B	B	D	D	E	E	C	C	D	D	

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East St. Paul Area
 Intersection Level of Service
 Year 2020 LRT Build
 PM Peak Period

University Avenue / Dale Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	592.8	489.0	484.7	78.1	43.9	42.4	81.0	84.3	171.9	532.1	142.6	116.9	232.0	
# Trips (veh/hr)	166	1000	104	119	632	91	168	938	246	199	568	152.33333	4384	F
Total Delay (sec/hr)	96945	488804	50405	9298	27738	3847	13587	79133	42353	106065	81063	17787	1017025	
Level of Service	F	F	F	E	D	D	F	F	F	F	F	F	F	F

University Avenue / Mackubin Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	207.4	189.1	209.6	64.8	10.5	10.4	683.2	914.0	622.7	824.2	13.1	264.3	156.1	
# Trips (veh/hr)	53	1128	24	76	746	20	51	1	83	13	2	33	2230	F
Total Delay (sec/hr)	10992	213305	5030	4925	7833	208	33823	914	51684	10715	26	8722	348177	
Level of Service	F	F	F	E	B	B	F	F	F	F	B	F	F	F

University Avenue / Marion Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	1034.5	695.6	548.3	57.5	17.6	13.8	166.9	84.9	67.1	111.1	34.6	11.2	277.0	
# Trips (veh/hr)	105	908	113	93	604	13	148	545	250	59	393	118	3348	F
Total Delay (sec/hr)	108274	631605	62141	5348	10651	175	24701	46239	16767	6520	13586	1322	927387	
Level of Service	F	F	F	E	B	B	F	F	E	F	C	B	F	F

University Avenue / Rice Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	221.2	125.8	49.7	66.1	34.7	35.3	1373.6	1320.5	1303.0	3009.0	1706.8	1430.6	957.4	
# Trips (veh/hr)	187	809	66	41	556	93	70	408	69	72	308	116	1734	F
Total Delay (sec/hr)	41364	101799	3261	2731	19300	3280	96610	538337	90344	217653	525684	165946	1659885	
Level of Service	F	F	D	E	C	D	F	F	F	F	F	F	F	F

University Avenue / Constitution Avenue

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	76.5	29.9	27.8	255.9	349.7	262.8	92.7	41.1	37.4	381.9	51.4	39.1	150.5	
# Trips (veh/hr)	19	802	77	28	544	58	58	106	61	146	137	77	2113	F
Total Delay (sec/hr)	1454	23990	2134	7251	190255	15155	5379	4370	2294	55757	7020	2998	318056	
Level of Service	E	C	C	F	F	F	F	D	D	F	D	D	F	F

University Avenue / Robert Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	75.8	49.8	37.9	1789.6	1032.7	841.4	6576.4	3302.4	3533.5	68.9	53.5	51.7	905.9	
# Trips (veh/hr)	5	822	161	24	631	8	77	46	87	17	8	10	1897	F
Total Delay (sec/hr)	404	40980	6097	42951	651310	6731	508572	151909	307417	1149	446	535	1718502	
Level of Service	E	D	D	F	F	F	F	F	F	E	D	D	F	F

St. Paul CBD
 Intersection Level of Service
 Year 2020 - Build Conditions
 PM Peak Period

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	0.0	0.0	22.2	22.2	22.2	35.6	22.4	0.0	0.0	28.0	28.0	23.9	C
# Trips (veh/hr)	0	0	0	120	1486	55	61	142	0	0	320	238	2422	
Total Delay (sec/hr)	0	0	0	2664	32989	1221	2172	3181	0	0	8960	6664	57851	
Level of Service	A	A	A	C	C	C	D	C	A	A	C	C	C	

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	58.8	8.8	8.8	0.0	0.0	0.0	0.0	21.0	21.0	61.7	8.4	0.0	45.4	D
# Trips (veh/hr)	40	1293	52	0	0	0	0	169	111	150	315	0	2130	
Total Delay (sec/hr)	2352	76028	458	0	0	0	0	3549	2331	9255	2646	0	96619	
Level of Service	E	E	A	A	A	A	A	C	C	E	A	A	A	

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	12.4	12.4	33.5	33.5	0.0	0.0	0.0	0.0	247.6	247.6	247.6	87.1	F
# Trips (veh/hr)	0	839	238	115	754	0	0	0	0	143	477	172	2738	
Total Delay (sec/hr)	0	10404	2951	3853	25259	0	0	0	0	35407	118105	42587	238566	
Level of Service	A	B	B	C	C	A	A	A	A	F	F	F	F	

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	0.0	0.0	16.0	36.5	0.0	0.0	0.0	0.0	0.0	44.7	44.7	37.1	D
# Trips (veh/hr)	0	0	0	271	931	0	0	0	0	0	642	188	2032	
Total Delay (sec/hr)	0	0	0	4336	33982	0	0	0	0	0	28697	8404	75419	
Level of Service	A	A	A	B	D	A	A	A	A	A	D	D	D	

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	27.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	181.3	0.0	0.0	98.0	F
# Trips (veh/hr)	0	1112	0	0	0	0	0	0	0	948	0	0	2060	
Total Delay (sec/hr)	0	30024	0	0	0	0	0	0	0	171872	0	0	201896	
Level of Service	A	C	A	A	A	A	A	A	A	F	A	A	A	

4th Street / Cedar Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/Veh)	0.0	0.0	0.0	8.4	8.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	A
# Trips (veh/hr)	0	0	160	35	85	0	0	0	0	0	0	0	280	
Total Delay (sec/hr)	0	0	0	294	714	0	0	0	0	0	0	0	1008	
Level of Service	A	A	A	A	A	A	A	A	A	A	A	A		

4th Street / Minnesota Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	0.0	0.0	0.0	0.0	0.0	7.2	7.2	0.0	0.0	0.0	0.0	7.2	A
# Trips (veh/hr)	0	0	0	0	0	0	110	454	0	0	0	0	564	
Total Delay (sec/hr)	0	0	0	0	0	0	792	3269	0	0	0	0	4061	
Level of Service	A	A	A	A	A	A	A	A	A	A	A	A		

4th Street / Robert Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	0.0	0.0	11.6	0.0	11.6	0.0	17.2	0.0	0.0	16.2	0.0	16.1	B
# Trips (veh/hr)	0	0	0	103	0	97	0	831	0	0	643	0	1674	
Total Delay (sec/hr)	0	0	0	1195	0	1125	0	14293	0	0	10417	0	27030	
Level of Service	A	A	A	B	A	B	A	B	A	A	B	A		

4th Street / Jackson Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	0.0	0.0	32.3	32.3	0.0	0.0	0.0	0.0	0.0	18.9	18.9	22.0	C
# Trips (veh/hr)	0	0	0	266	181	0	0	0	0	0	1369	113	1929	
Total Delay (sec/hr)	0	0	0	8592	5846	0	0	0	0	0	25874	2136	42448	
Level of Service	A	A	A	C	C	A	A	A	A	A	B	B		

4th Street / Sibley Street

	West Approach			East Approach			South Approach			North Approach			Intersection Total	Intersection LOS
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
Delay (sec/veh)	0.0	0.0	0.0	18.1	18.1	5.4	4.8	9.8	0.0	0.0	0.0	0.0	10.3	B
# Trips (veh/hr)	0	0	0	202	46	46	181	692	0	0	0	0	1121	
Total Delay (sec/hr)	0	0	0	3656	248	248	869	6782	0	0	0	0	11555	
Level of Service	A	A	A	B	B	A	A	A	A	A	A	A		

Notes:

1. Results obtained using Synchro version 5.0
2. Volumes were obtained from traffic counts conducted on December 18 & 19, 2001 by URS.

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Detailed Queue Result Tables

- Existing Condition
- Baseline Condition
- Build Condition

**Minneapolis CBD
Approximate 95th Percentile Queue Lengths
Year 1999 - Existing Conditions
PM Peak Period**

	East Approach		Thru/Rt	South Approach		North Approach Thru/Rt
	Lt/Thru	Thru		Lt/Thru	Thru	
Queue Length-95th Percentile(ft)	189	189	189	145	145	11
Link / Storage Length (ft)	330	330	330	330	330	330

	East Approach		Thru/Rt	South Approach		North Approach Thru/Rt
	Lt/Thru	Thru		Lt/Thru	Thru	
Queue Length-95th Percentile(ft)	86	86	86	465	465	20
Link / Storage Length (ft)	330	330	330	330	330	330

	East Approach		South Approach		Thru
	Thru	Lt	Lt	Lt/Thru	
Queue Length-95th Percentile(ft)	62	0	0	158	158
Link / Storage Length (ft)	330	330	330	330	330

- Notes:
1. Results obtained using Synchro version 5.0
 2. Volumes were obtained from the Downtown Minneapolis Comprehensive Study conducted by SRF Consulting Group, Inc. completed in 1999.
 3. Existing cycle length of 90 seconds was used in analysis, but intersection offsets and splits were optimized.

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University of Minnesota Area
 Approximate 95th Percentile Queue Lengths
 Year 2001 - Existing Conditions
 PM Peak Period

Washington Avenue / Church Street

	West Approach		East Approach		South Approach		North Approach	
	Lv/Thru	Thru/Rt	Lv/Thru	Thru/Rt	Lv/Thru/Rt	Lv/Thru/Rt	Lv/Thru/Rt	Lv/Thru/Rt
Queue Length-95th Percentile(ft)	183	184	288	282	132	132	16	16
Link / Storage Length (ft)	N/A	N/A	465	465	375	375	100	100

University Avenue / 29th Street

	West Approach		East Approach		North Approach	
	Lv/Thru	Thru/Rt	Lv/Thru	Thru/Rt	Lt	Rt
Queue Length-95th Percentile(ft)	46	0	0	0	41	49
Link / Storage Length (ft)	900	900	715	715	400	25

University Avenue / Malcolm Street

	West Approach		East Approach		South Approach		North Approach	
	Thru	Rt	Thru	Rt	Lv/Thru	Rt	Lv/Thru/Rt	Lv/Thru/Rt
Queue Length-95th Percentile(ft)	286	277	37	195	171	32	50	180
Link / Storage Length (ft)	715	715	50	1175	1175	50	100	350

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TH 280 Area
 Approximate 95th Percentile Queue Lengths
 Year 2001 - Existing Conditions
 PM Peak Period

	West Approach			East Approach			North Approach			
	Thru	Thru	Right	Left	Thru	Thru	Left	L/Thru	Thru	Thru/RT
Queue Length-95th Percentile(ft)	989	902	122	51	122	122	350	660	507	333
Link / Storage Length (ft)	1700	1700	375	280	280	280	400	550	550	550

	West Approach			East Approach			South Approach		
	Left	Thru	Right	Thru	Thru	Right	Left	Thru	Thru/RT
Queue Length-95th Percentile(ft)	339	417	304	252	298	126	203	220	190
Link / Storage Length (ft)	280	280	280	1050	1050	75	210	210	210

	West Approach			East Approach			South Approach		
	Thru	Thru	Right	Left	Thru	Thru	Left	Left	Left/RT
Queue Length-95th Percentile(ft)	268	274	70	309	39	43	159	162	
Link / Storage Length (ft)	325	325	75	350	425	425	400	400	

	West Approach			East Approach			South Approach			North Approach				
	Left	Thru	Thru/RT	Left	Thru	Thru	Right	L/Thru/RT	Left	Thru	Thru/RT	Left	Thru	Thru/RT
Queue Length-95th Percentile(ft)	212	401	429	123	404	405	98	124				423	404	
Link / Storage Length (ft)	475	475	475	220	1300	1300	75	400				500	500	500

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Snelling/Lexington Area
Approximate 95th Percentile Queue Lengths
Year 2001 - Existing Conditions
PM Peak Period

	North Approach		East Approach		South Approach		West Approach			
	RV/Thru	Left	Right	Thru	Left	Rv/Thru	Thru	Right	Thru	Left
Queue Length-95th Percentile (ft)	144	110	77	126	126	169	169	169	301	56
Link / Storage Length (ft)	380	140	100	1250	1250	600	600	100	1400	260

	North Approach		East Approach		South Approach		West Approach	
	RV/Thru/Lt	Right	Thru	Left	Rv/Thru/Lt	Right	Thru	Left
Queue Length-95th Percentile (ft)	183	80	213	35	286	102	239	35
Link / Storage Length (ft)	250	100	590	380	550	100	1250	260

	North Approach		East Approach		South Approach		West Approach		
	RV/Thru/Lt	Right	Thru	Left	Rv/Thru	Left	Right	Thru	Left
Queue Length-95th Percentile (ft)	82	73	73	11	73	117	708	219	26
Link / Storage Length (ft)	250	600	600	170	240	240	100	590	170

	North Approach		East Approach		South Approach		West Approach			
	Right	Thru	Left	Thru	Right	Thru	Left	Thru	Left	
Queue Length-95th Percentile (ft)	46	323	323	238	87	216	216	298	579	162
Link / Storage Length (ft)	160	600	600	300	150	1230	1230	450	600	360

	North Approach		East Approach		South Approach		West Approach			
	RV/Thru/Lt	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
Queue Length-95th Percentile (ft)	184	131	248	84	69	102	93	194	495	60
Link / Storage Length (ft)	250	100	600	325	120	400	120	100	1230	170

University Avenue / Albert Street

	North Approach		East Approach		South Approach		West Approach			
	R/Thru/Lt		Right	Thru	Left	Right	Thru	Left		
Queue Length-95th Percentile (ft)	49		130	132	103	92	122	79	263	8
Link / Storage Length (ft)	250		100	600	300	90	180	100	600	200

University Avenue / Hamline Avenue

	North Approach		East Approach		South Approach		West Approach				
	R/Thru	Left	Right	Thru	Left	R/Thru	Thru	Left			
Queue Length-95th Percentile (ft)	290	89	128	319	117	220	220	165	240	481	57
Link / Storage Length (ft)	250	250	100	1250	350	330	330	200	100	600	250

University Avenue / Griggs Street

	North Approach		East Approach		South Approach		West Approach				
	R/Thru/Lt		Right	Thru	Left	R/Thru/Lt		Right	Thru	Left	
Queue Length-95th Percentile (ft)	48		76	0	60	60		90	0	0	0
Link / Storage Length (ft)	250		100	1250	270	250		100	1250	1250	270

University Avenue / Lexington Parkway

	North Approach			East Approach			South Approach			West Approach		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
Queue Length-95th Percentile (ft)	308	916	145	148	280	291	215	1038	252	201	503	353
Link / Storage Length (ft)	160	600	600	100	1230	380	200	800	450	150	1250	350

University Avenue / Chatsworth Street

	North Approach		East Approach		South Approach		West Approach			
	R/Thru/Lt		Right	Thru	Left	R/Thru/Lt		Right	Thru	Left
Queue Length-95th Percentile (ft)	41		94	80	34	96		89	0	6
Link / Storage Length (ft)	250		100	1250	260	250		100	1230	260

University Avenue / Victoria Street

	North Approach		East Approach		South Approach		West Approach			
	R/Thru/Lt		Right	Thru	Left	R/Thru/Lt		Right	Thru	Left
Queue Length-95th Percentile (ft)	279		101	203	39	293		108	223	46
Link / Storage Length (ft)	250		100	1250	260	250		100	1250	270

Note: Queues exceeding the available storage length by 50 feet or less are not considered deficiencies. It is assumed the taper length would accommodate these vehicles.

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East St. Paul Area
 Approximate 95th Percentile Queue Lengths
 Year 2001 - Existing Conditions
 PM Peak Period

	West Approach			East Approach			South Approach			North Approach					
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right			
Queue Length-95th Percentile(ft)	250	666	653	139	228	290	300	300	112	134	224	99	155	177	191
Link / Storage Length (ft)	350	2544	2544	100	350	4299	4299	4299	70	230	1310	1310	140	2562	2562

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Queue Length-95th Percentile(ft)	51	45	42	81	34	38	96	96	40	56	56	56
Link / Storage Length (ft)	100	525	525	275	3704	3704	796	796	2603	30	30	30

	West Approach			East Approach			South Approach			North Approach					
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right			
Queue Length-95th Percentile(ft)	162	297	305	99	187	188	188	188	37	159	199	115	88	129	126
Link / Storage Length (ft)	160	4299	4299	75	300	812	812	812	75	130	1871	1871	150	1716	1716

	West Approach			East Approach			South Approach			North Approach					
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right			
Queue Length-95th Percentile(ft)	198	295	305	108	63	242	263	263	115	248	246	254	254	254	254
Link / Storage Length (ft)	300	812	812	75	240	439	439	439	75	1469	1469	1623	1623	1623	1623

	West Approach			East Approach			South Approach			North Approach					
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right			
Queue Length-95th Percentile(ft)	47	125	131	201	188	88	67	62	62	61	68	66	66	66	66
Link / Storage Length (ft)	100	439	439	1737	1737	75	100	577	577	577	100	1687	1687	1687	1687

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Queue Length-95th Percentile(ft)	254	241	97	185	149	178	208	208	32	37	37	37
Link / Storage Length (ft)	1282	1282	120	1207	1207	163	163	163	100	514	514	514

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Source: URS / BRW, Inc.

4/4/02

St. Paul CBD
 Approximate 95th Percentile Queue Lengths
 Year 2001 - Existing Conditions
 PM Peak Period

	East Approach			South Approach			North Approach		
	Lt	Lt/Thru	Thru	Thru/Rt	Lt/Thru	Thru	Thru	Lt/Thru	Thru/Rt
Queue Length-95th Percentile(ft)	56	206	206	206	23	23	96	23	96
Link / Storage Length (ft)	330	330	330	330	275	275	225	275	225

	West Approach		South Approach		North Approach	
	Lt/Thru	Thru/Rt	Thru	Thru/Rt	Lt/Thru	Thru
Queue Length-95th Percentile(ft)	280	299	35	35	43	43
Link / Storage Length (ft)	295	295	210	210	275	275

	West Approach		East Approach		North Approach	
	Thru	Thru/Rt	Lt/Thru	Thru	Lt	Thru/Rt
Queue Length-95th Percentile(ft)	172	172	170	170	69	57
Link / Storage Length (ft)	325	325	265	265	75	130

	East Approach			North Approach		
	Lt	Thru	Thru	Thru	Lt/Thru	Thru/Rt
Queue Length-95th Percentile(ft)	42	163	163	88	95	95
Link / Storage Length (ft)	270	270	270	565	565	565

	West Approach		North Approach	
	Thru	Thru/Rt	Lt	Thru
Queue Length-95th Percentile(ft)	156	197	100	97
Link / Storage Length (ft)	300	300	100	285

4th Street / Cedar Street

	West Approach		East Approach		North Approach	
	Lt/Thru	Rt	Lt/Thru	Rt	Lt/Thru	Rt
Queue Length-95th Percentile(ft)	50	41	98	98	250	126
Link / Storage Length (ft)	285	295	250	250	250	250

4th Street / Minnesota Street

	West Approach		East Approach		South Approach	
	Lt/Thru	Rt	Lt/Thru	Rt	Lt/Thru	Thru/Rt
Queue Length-95th Percentile(ft)	47	19	0	0	54	54
Link / Storage Length (ft)	295	230	60	60	345	345

4th Street / Robert Street

	West Approach		East Approach		South Approach		North Approach	
	Lt/Thru	Rt	Lt/Thru/Rt	Lt	Thru	Thru/Rt	Lt	Thru
Queue Length-95th Percentile(ft)	90	5	79	19	89	107	13	75
Link / Storage Length (ft)	230	75	380	110	345	345	110	255

4th Street / Jackson Street

	West Approach		East Approach		North Approach	
	Lt/Thru	Rt	Lt/Thru	Rt	Lt/Thru	Thru/Rt
Queue Length-95th Percentile(ft)	87	191	154	133	133	137
Link / Storage Length (ft)	380	340	267	267	267	267

4th Street / Sibley Street

	West Approach		East Approach		South Approach	
	Lt/Thru	Rt	Lt	Thru	Lt	Thru/Rt
Queue Length-95th Percentile(ft)	73	103	66	94	94	109
Link / Storage Length (ft)	340	290	285	285	285	285

Notes:

1. Results obtained using Synchro version 5.0
2. Volumes were obtained from traffic counts conducted on December 18 & 19, 2001 by URS.

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**Minneapolis CBD
Approximate 95th Percentile Queue Lengths
Year 2020 - Baseline Conditions
PM Peak Period**

	East Approach		Rt	Lt/Thru	South Approach		North Approach Thru/Rt
	Lt/Thru	Thru			Thru	Lt	
Queue Length-95th Percentile(ft)	N/A	804	253	588	588	588	2
Link / Storage Length (ft)	N/A	330	330	330	330	330	330

	East Approach		Thru/Rt	Lt/Thru	South Approach		North Approach Thru/Rt
	Lt/Thru	Thru			Thru	Lt	
Queue Length-95th Percentile(ft)	N/A	N/A	433	318	318	318	55
Link / Storage Length (ft)	N/A	N/A	330	330	330	330	330

	East Approach		Rt	Lt	South Approach		Thru
	Thru	Thru			Thru	Lt	
Queue Length-95th Percentile(ft)	N/A	61	0	0	39	39	39
Link / Storage Length (ft)	N/A	330	330	330	330	330	330

- Notes:
1. Results obtained using Synchro version 5.0
 2. Existing cycle length of 90 seconds was used in analysis, but intersection offsets and splits were optimized.

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**University of Minnesota Area
 Approximate 95th Percentile Queue Lengths
 Year 2020 - Baseline Conditions
 PM Peak Period**

	West Approach		East Approach		South Approach		North Approach	
	L/Thru	Thru/RT	L/Thru	Thru/RT	L/Thru/RT	L/Thru/RT	L/Thru/RT	L/Thru/RT
Queue Length-95th Percentile(ft)	219	229	270	267	122		22	
Link / Storage Length (ft)	N/A	N/A	465	465	375		100	

	West Approach		East Approach		North Approach	
	L/Thru	Thru/RT	L/Thru	Thru/RT	Lt	Rt
Queue Length-95th Percentile(ft)	75	23	0	0	46	49
Link / Storage Length (ft)	900	900	715	715	400	25

	West Approach		East Approach		South Approach		North Approach	
	Thru	Thru	Rt	Thru	L/Thru	Rt	L/Thru/RT	L/Thru/RT
Queue Length-95th Percentile(ft)	389	366	41	88	96	25	56	187
Link / Storage Length (ft)	715	715	50	1175	1175	50	100	350

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TH 280 Area
 Approximate 95th Percentile Queue Lengths
 Year 2020 - Baseline Conditions
 PM Peak Period

	West Approach			East Approach			North Approach		
	Thru	Right	Thru	Left	Thru	Thru	Left	Lv/Thru	Thru
Queue Length-95th Percentile(ft)	1008	123	900	55	95	90	233	307	252
Link / Storage Length (ft)	1700	375	1700	280	280	280	400	550	550

	West Approach			East Approach			South Approach		
	Left	Thru	Right	Thru	Thru	Right	Left	Thru	Thru
Queue Length-95th Percentile(ft)	384	414	250	277	333	131	178	194	158
Link / Storage Length (ft)	280	280	280	1050	1050	75	210	210	210

	West Approach			East Approach			South Approach		
	Thru	Right	Thru	Left	Thru	Thru	Left	Left/Right	Thru
Queue Length-95th Percentile(ft)	220	244	80	261	94	14	131	132	
Link / Storage Length (ft)	325	325	75	350	425	425	400	400	

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Thru/Right	Left	Thru	Thru	Right	Lv/Thru/Right	Thru	Lv/Thru	Thru/Right	
Queue Length-95th Percentile(ft)	172	165	178	79	535	564	112	229		1149	1359	
Link / Storage Length (ft)	475	475	475	220	1300	1300	75	400		500	500	

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Snelling/Lexington Area
Approximate 95th Percentile Queue Lengths
Year 2020 - Baseline Conditions
PM Peak Period

	North Approach		East Approach		South Approach		West Approach			
	RV/Thru	Left	Right	Thru	Left	RV/Thru	Left	Right	Thru	Left
Queue Length-95th Percentile (ft)	190	227	74	161	142	203	196	210	397	75
Link / Storage Length (ft)	380	140	100	1250	230	600	140	100	1400	260

	North Approach		East Approach		South Approach		West Approach	
	RV/Thru/Lt	Right	Thru	Left	RV/Thru/Lt	Right	Thru	Left
Queue Length-95th Percentile (ft)	212	71	102	24	285	86	240	44
Link / Storage Length (ft)	250	100	590	380	550	100	1250	260

	North Approach		East Approach		South Approach		West Approach	
	RV/Thru/Lt	Right	Thru	Left	RV/Thru	Left	Right	Left
Queue Length-95th Percentile (ft)	78	53	53	26	64	124	104	29
Link / Storage Length (ft)	250	600	600	170	240	240	100	170

	North Approach		East Approach		South Approach		West Approach						
	Right	Thru	Left	Thru	Right	Thru	Left	Thru					
Queue Length-95th Percentile (ft)	62	908	908	754	148	273	340	2230	2242	2227	118	505	194
Link / Storage Length (ft)	160	600	600	300	150	1230	450	230	230	230	70	600	360

	North Approach		East Approach		South Approach		West Approach				
	RV/Thru/Lt	Right	Thru	Left	Right	Thru	Left	Thru			
Queue Length-95th Percentile (ft)	222	104	234	104	129	109	114	81	536	536	37
Link / Storage Length (ft)	250	100	600	325	120	400	120	100	1230	1230	170

University Avenue / Albert Street

	North Approach			East Approach			South Approach			West Approach		
	R/Thru/Lt	Thru	Left	Right	Thru	Left	Right	Thru/Lt	Thru	Right	Thru	Left
Queue Length-95th Percentile (ft)	50	252	127	112	252	127	79	144	570	570	570	15
Link / Storage Length (ft)	250	600	300	100	600	300	100	180	600	600	600	200

University Avenue / Hamline Avenue

	North Approach			East Approach			South Approach			West Approach		
	R/Thru/Lt	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
Queue Length-95th Percentile (ft)	300	205	122	92	205	122	190	263	617	617	617	72
Link / Storage Length (ft)	250	1250	350	100	1250	350	200	330	600	100	600	250

University Avenue / Griggs Street

	North Approach			East Approach			South Approach			West Approach		
	R/Thru/Lt	Thru	Left	Right	Thru	Left	Right	Thru/Lt	Thru	Right	Thru	Left
Queue Length-95th Percentile (ft)	129	0	290	70	0	290	389	290	656	656	656	5
Link / Storage Length (ft)	250	1250	270	100	1250	270	100	250	1250	1250	1250	270

University Avenue / Lexington Parkway

	North Approach			East Approach			South Approach			West Approach		
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
Queue Length-95th Percentile (ft)	63	1018	790	1018	201	442	145	517	857	2078	2078	1050
Link / Storage Length (ft)	160	600	150	600	100	1230	200	380	450	150	1250	350

University Avenue / Chatsworth Street

	North Approach			East Approach			South Approach			West Approach		
	R/Thru/Lt	Thru	Left	Right	Thru	Left	Right	Thru/Lt	Thru	Right	Thru	Left
Queue Length-95th Percentile (ft)	49	63	59	74	63	59	68	161	0	0	0	32
Link / Storage Length (ft)	250	1250	260	100	1250	260	100	250	1230	100	1230	260

University Avenue / Victoria Street

	North Approach			East Approach			South Approach			West Approach		
	R/Thru/Lt	Thru	Left	Right	Thru	Left	Right	Thru/Lt	Thru	Right	Thru	Left
Queue Length-95th Percentile (ft)	300	240	42	98	240	42	95	295	424	424	424	47
Link / Storage Length (ft)	250	1250	260	100	1250	260	100	250	1250	100	1250	270

Note: Queues exceeding the available storage length by 50 feet or less are not considered deficiencies. It is assumed the taper length would accommodate these vehicles.

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East St. Paul Area
 Approximate 95th Percentile Queue Lengths
 Year 2020 - Baseline Conditions
 PM Peak Period

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Queue Length-95th Percentile(ft)	350	513	469	194	366	389	108	295	1425	172	1221	1188
Link / Storage Length (ft)	350	2544	2544	100	350	4299	70	230	1310	140	2562	2562

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Queue Length-95th Percentile(ft)	70	84	53	125	76	57	89	57				
Link / Storage Length (ft)	100	525	525	275	3704	3704	2803	30				

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Queue Length-95th Percentile(ft)	216	1239	1279	115	194	290	42	177	314	111	137	109
Link / Storage Length (ft)	160	4299	4299	75	300	812	75	130	1871	150	1716	1716

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Queue Length-95th Percentile(ft)	212	281	308	72	236	397	119	481	469	1887	1866	
Link / Storage Length (ft)	300	812	812	75	240	439	75	1469	1469	1623	1623	

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Queue Length-95th Percentile(ft)	90	474	474	285	235	88	76	90	140	189	90	
Link / Storage Length (ft)	100	439	439	1737	1737	75	577	577	100	1687	1687	

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Queue Length-95th Percentile(ft)	356	350	160	205	193	262	40	49				
Link / Storage Length (ft)	1282	1282	120	1207	1207	163	100	514				

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St. Paul CBD
 Approximate 95th Percentile Queue Lengths
 Year 2020 - Baseline Conditions
 PM Peak Period

	East Approach			South Approach		North Approach	
	Lt	Lt/Thru	Thru	Lt/Thru	Thru	Lt/Thru	Thru
Queue Length-95th Percentile(ft)	62	267	267	23	23	149	149
Link / Storage Length (ft)	330	330	330	275	275	225	225

	West Approach		South Approach		North Approach	
	Lt/Thru	Thru/Rt	Thru	Thru/Rt	Lt/Thru	Thru
Queue Length-95th Percentile(ft)	300	315	67	67	98	98
Link / Storage Length (ft)	295	295	210	210	275	275

	West Approach		East Approach		North Approach	
	Thru	Thru/Rt	Lt/Thru	Thru	Lt	Thru/Rt
Queue Length-95th Percentile(ft)	221	221	254	254	104	109
Link / Storage Length (ft)	325	325	265	265	75	130

	East Approach		North Approach	
	Lt	Thru	Lt/Thru	Thru/Rt
Queue Length-95th Percentile(ft)	100	211	211	154
Link / Storage Length (ft)	270	270	270	565

	West Approach		North Approach	
	Thru	Thru/Rt	Lt	Thru
Queue Length-95th Percentile(ft)	212	302	31	44
Link / Storage Length (ft)	300	300	100	285

4th Street / Cedar Street

	West Approach		East Approach		North Approach	
	Thru/Rt	Lt/Thru	Thru	Rt	Thru	Rt
Queue Length-95th Percentile(ft)	49		26	0	52	58
Link / Storage Length (ft)	285		295	60	250	250

4th Street / Minnesota Street

	West Approach		East Approach		South Approach	
	Lt/Thru	Thru	Thru	Rt	Lt/Thru	Thru/Rt
Queue Length-95th Percentile(ft)	59	38	0	0	68	68
Link / Storage Length (ft)	295	230	60	60	345	345

4th Street / Robert Street

	West Approach		East Approach		South Approach		North Approach	
	Lt/Thru	Thru	Thru	Rt	Lt	Thru	Lt	Thru/Rt
Queue Length-95th Percentile(ft)	79	0	0	82	36	167	24	144
Link / Storage Length (ft)	230	75	360	360	110	345	110	255

4th Street / Jackson Street

	West Approach		East Approach		North Approach	
	Thru/Rt	Lt/Thru	Thru	Rt	Thru	Thru/Rt
Queue Length-95th Percentile(ft)	87		370	353	312	58
Link / Storage Length (ft)	380		340	267	267	267

4th Street / Sibley Street

	West Approach		East Approach		South Approach	
	Lt/Thru	Thru/Rt	Thru/Rt	Lt	Thru	Thru/Rt
Queue Length-95th Percentile(ft)	158	119	119	103	148	182
Link / Storage Length (ft)	340	290	290	285	285	285

Notes:

1. Results obtained using Synchro version 5.0
2. Volumes were obtained from traffic counts conducted on December 18 & 19, 2001 by URS.

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**Minneapolis CBD
Approximate 95th Percentile Queue Lengths
Year 2020 - Build Conditions
PM Peak Period**

5th Street / Hennepin Avenue

	East Approach		Rt	Lv/Thru	South Approach		North Approach Thru/Rt
	Lv/Thru	Thru			Thru	Thru	
Queue Length-95th Percentile(ft)	N/A	757	441	629	629	629	13
Link / Storage Length (ft)	N/A	330	330	330	330	330	330

5th Street / Marquette Avenue

	East Approach		Thru	Lv/Thru	South Approach		North Approach Thru/Rt
	Lv/Thru	Thru			Thru	Thru	
Queue Length-95th Percentile(ft)	N/A	N/A	554	352	352	352	76
Link / Storage Length (ft)	330	330	330	330	330	330	330

5th Street / 5th Avenue

	East Approach			South Approach		
	Thru	Lt	Rt	Thru	Thru	Thru
Queue Length-95th Percentile(ft)	N/A	61	64	39	39	39
Link / Storage Length (ft)	N/A	330	330	330	330	330

Notes:

1. Results obtained using Synchro version 5.0
2. Existing cycle length of 90 seconds was used in analysis, but intersection offsets and splits were optimized.

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**University of Minnesota Area
 Approximate 95th Percentile Queue Lengths
 Year 2020 - Build Conditions
 PM Peak Period**

	West Approach		East Approach		South Approach		North Approach	
	Lv/Thru	Thru/Rt	Lv/Thru	Thru/Rt	Lv/Thru/Rt	Lv/Thru/Rt	Lv/Thru/Rt	Lv/Thru/Rt
Queue Length-95th Percentile(ft)	214	211	262	242	153		22	
Link / Storage Length (ft)	N/A	N/A	465	465	375		100	

	West Approach		East Approach		North Approach	
	Lv/Thru	Thru	Lt	Rt	Lt	Rt
Queue Length-95th Percentile(ft)	140	117	240	235	N/A	N/A
Link / Storage Length (ft)	900	900	715	715	N/A	N/A

	West Approach		East Approach		South Approach		North Approach	
	Thru	Rt	Thru	Rt	Lv/Thru	Rt	Lv/Thru	Rt
Queue Length-95th Percentile(ft)	662	656	N/A	N/A	77	50	283	66
Link / Storage Length (ft)	715	715	N/A	N/A	100	100	350	350

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TH 280 Area
Approximate 95th Percentile Queue Lengths
Year 2020 - Build Conditions
PM Peak Period

	West Approach			East Approach			North Approach			
	Thru	Thru/Rt	Thru	Left	Thru	Thru	Left	Lt/Thru	Thru	Thru/Rt
Queue Length-95th Percentile(ft)	186	1275	1325	37	71	56	439	931	364	270
Link / Storage Length (ft)	125	1700	1700	280	280	280	400	550	550	550

	West Approach			East Approach			South Approach		
	Left	Thru	Thru	Thru	Thru	Thru/Rt	Left	Thru	Thru/Rt
Queue Length-95th Percentile(ft)	383	366	243	9	252	313	201	228	105
Link / Storage Length (ft)	280	280	280	1050	1050	400	210	210	210

	West Approach			East Approach			South Approach		
	Thru	Thru	Right	Left	Thru	Thru	Left	Left/Rt	Thru
Queue Length-95th Percentile(ft)	202	211	76	149	7	7	159	176	
Link / Storage Length (ft)	325	325	75	350	425	425	400	400	400

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Thru/Rt	Left	Thru	Thru/Rt	Right	Lt/Thru/Rt	Thru	Thru/Rt	Thru/Rt	Thru/Rt
Queue Length-95th Percentile(ft)	260	218	231	35	1501	1349	N/A	285			957	325
Link / Storage Length (ft)	200	475	475	220	1300	1300	N/A	400			500	500

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Snelling/Lexington Area
Approximate 95th Percentile Queue Lengths
Year 2020 - LRT Build Conditions
PM Peak Period

	North Approach		East Approach		South Approach			West Approach			
	R/Thru	Thru	R/Thru	Thru	Left	R/Thru	Thru	Left	R/Thru	Thru	Left
Queue Length-95th Percentile (ft)	235	235	366	366	473	267	267	244	560	560	226
Link / Storage Length (ft)	380	380	1250	1250	200	600	600	140	1400	1400	230

University Avenue / Aldine Street

	North Approach		East Approach		South Approach		West Approach	
	R/Thru/Lt	Thru	R/Thru	Thru	R/Thru/Lt	Thru	R/Thru	Thru
Queue Length-95th Percentile (ft)	189	202	63	63	232	2600	2600	90
Link / Storage Length (ft)	250	590	300	300	550	1250	1250	220

University Avenue / Fry Street

	North Approach		East Approach		South Approach		West Approach	
	R/Thru/Lt	Thru	R/Thru	Thru	R/Thru	Thru	R/Thru	Thru
Queue Length-95th Percentile (ft)	69	207	49	49	70	107	3176	3176
Link / Storage Length (ft)	250	600	220	220	240	240	590	590

University Avenue / Snelling Avenue

	North Approach			East Approach			South Approach			West Approach		
	Right	Thru	Left	R/Thru	Thru	Left	Right	Thru	Left	R/Thru	Thru	Left
Queue Length-95th Percentile (ft)	68	625	423	804	804	769	2384	2394	2394	2456	3670	3611
Link / Storage Length (ft)	160	600	300	1230	1230	275	230	230	230	600	600	220

University Avenue / Pascal Street

	North Approach		East Approach		South Approach			West Approach	
	R/Thru/Lt	Thru	R/Thru	Thru	Right	Thru	Left	R/Thru	Thru
Queue Length-95th Percentile (ft)	235	326	199	131	141	177	719	719	91
Link / Storage Length (ft)	250	600	210	400	120	400	120	1230	1230

University Avenue / Albert Street

	North Approach		East Approach		South Approach		West Approach	
	Rt/Thru	Left	Rt/Thru	Thru	Rt/Thru	Right	Rt/Thru	Thru
Queue Length-95th Percentile (ft)	43		107	107		230	1247	1247
Link / Storage Length (ft)	250		600	600		180	600	600

University Avenue / Hamline Avenue

	North Approach		East Approach		South Approach		West Approach	
	Rt/Thru	Left	Rt/Thru	Thru	Rt/Thru	Left	Rt/Thru	Left
Queue Length-95th Percentile (ft)	335	242	640	640	470	714	287	1728
Link / Storage Length (ft)	250	250	1250	1250	330	330	200	600

University Avenue / Griggs Street

	North Approach		East Approach		South Approach		West Approach	
	Rt/Thru/Lt		Rt/Thru	Left	Rt/Thru/Lt		Rt/Thru	Left
Queue Length-95th Percentile (ft)	44		402	82	98		2575	56
Link / Storage Length (ft)	250		1250	190	250		1250	190

University Avenue / Lexington Parkway

	North Approach		East Approach		South Approach		West Approach	
	Right	Thru	Rt/Thru	Left	Rt/Thru	Thru	Right	Left
Queue Length-95th Percentile (ft)	818	1559	1559	579	689	689	968	241
Link / Storage Length (ft)	160	600	600	150	1230	1230	200	450

University Avenue / Chatsworth Street

	North Approach		East Approach		South Approach		West Approach	
	Rt/Thru/Lt		Rt/Thru	Left	Rt/Thru/Lt		Rt/Thru	Left
Queue Length-95th Percentile (ft)	47		320	320	126		404	93
Link / Storage Length (ft)	250		1250	190	250		1230	190

University Avenue / Victoria Street

	North Approach		East Approach		South Approach		West Approach	
	Rt/Thru/Lt		Rt/Thru	Left	Rt/Thru/Lt		Rt/Thru	Left
Queue Length-95th Percentile (ft)	298		286	73	311		356	74
Link / Storage Length (ft)	250		1250	190	250		1250	190

Note: Queues exceeding the available storage length by 50 feet or less are not considered deficiencies. It is assumed the taper length would accommodate these vehicles.

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East St. Paul Area
 Approximate 95th Percentile Queue Lengths
 Year 2020 - LRT Build
 PM Peak Period

	West Approach			East Approach			South Approach			North Approach			
	Left	Thru	Thru/Rt	Left	Thru	Right	Left	Thru	Thru	Right	Left	Thru	Thru/Rt
Queue Length-95th Percentile(ft)	272	3049	3048	193	264	262	290	589	625	370	179	2121	2041
Link / Storage Length (ft)	350	2544	100	350	4299	70	230	1310	1310	1310	140	2562	2562

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Thru/Rt	Left	Thru	Thru/Rt	Left	Thru	Thru/Rt	Left	Thru	Thru/Rt
Queue Length-95th Percentile(ft)	120	1690	1684	113	115	134	925	56	263	30		
Link / Storage Length (ft)	100	525	525	275	3704	3704	796	2603	30			

	West Approach			East Approach			South Approach			North Approach			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Thru	Right	Left	Thru	Right
Queue Length-95th Percentile(ft)	284	3811	3921	123	140	133	191	804	789	125	119	192	126
Link / Storage Length (ft)	160	4299	75	300	812	75	130	1871	1871	75	150	1716	1716

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Thru/Rt	Left	Thru	Thru/Rt	Left	Thru	Thru/Rt	Left	Thru	Thru/Rt
Queue Length-95th Percentile(ft)	325	929	1094	127	237	1781	1784	2034	2034			
Link / Storage Length (ft)	300	812	75	240	75	1469	1469	1623	1623			

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Thru/Rt	Left	Thru	Thru/Rt	Left	Thru	Thru/Rt	Left	Thru	Thru/Rt
Queue Length-95th Percentile(ft)	103	297	113	867	115	108	100	143	1289	583		
Link / Storage Length (ft)	100	439	1737	75	100	577	577	100	1687	1687		

	West Approach			East Approach			South Approach			North Approach		
	Left	Thru	Right	Left	Thru	Thru/Rt	Left	Thru	Thru/Rt	Left	Thru	Thru/Rt
Queue Length-95th Percentile(ft)	507	167	1283	1342	1144	1264	59	55				
Link / Storage Length (ft)	1282	120	1207	1207	163	163	100	514				

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Source: URS / BRW, Inc.

4/4/02

St. Paul CBD
Approximate 95th Percentile Queue Lengths
Year 2020 - Build Conditions
PM Peak Period

	East Approach		Thru	Thru/Rt	South Approach		North Approach	
	Lt	Lv/Thru			Lt	Thru	Thru	Thru/Rt
Queue Length-95th Percentile(ft)	N/A	373	373	373	58	94	161	161
Link / Storage Length (ft)	N/A	330	330	330	275	275	225	225

	West Approach		Thru	Thru/Rt	North Approach	
	Lv/Thru	Thru/Rt			Lt	Thru
Queue Length-95th Percentile(ft)	507	533	71	71	133	74
Link / Storage Length (ft)	295	295	210	210	275	275

	West Approach		East Approach		North Approach	
	Thru	Thru/Rt	Lv/Thru	Thru	Lt	Left/Thru/Rt
Queue Length-95th Percentile(ft)	263	263	328	328	N/A	745
Link / Storage Length (ft)	325	325	265	265	N/A	130

	East Approach		North Approach	
	Lt	Thru	Thru	Thru/Rt
Queue Length-95th Percentile(ft)	154	286	286	255
Link / Storage Length (ft)	270	270	270	565

	West Approach		North Approach	
	Thru	Thru/Rt	Lt	Thru
Queue Length-95th Percentile(ft)	258	N/A	665	N/A
Link / Storage Length (ft)	300	N/A	285	N/A

4th Street / Cedar Street

	West Approach		East Approach		North Approach	
	Lt/Thru	Rt	Lt/Thru	Rt	Lt/Thru	Rt
Queue Length-95th Percentile(ft)		0	49	N/A	N/A	N/A
Link / Storage Length (ft)		285	295	N/A	N/A	N/A

4th Street / Minnesota Street

	West Approach		East Approach		South Approach	
	Lt/Thru	Rt	Lt/Thru	Rt	Lt/Thru	Thru/Rt
Queue Length-95th Percentile(ft)	N/A	N/A	N/A	N/A	82	N/A
Link / Storage Length (ft)	N/A	N/A	N/A	N/A	345	N/A

4th Street / Robert Street

	West Approach		East Approach		South Approach		North Approach	
	Lt/Thru	Rt	Lt/Thru	Rt	Lt	Thru	Lt	Thru
Queue Length-95th Percentile(ft)	N/A	N/A	N/A	164	N/A	224	N/A	164
Link / Storage Length (ft)	N/A	N/A	N/A	380	N/A	345	N/A	255

4th Street / Jackson Street

	West Approach		East Approach		North Approach	
	Lt/Thru	Rt	Lt/Thru	Rt	Lt/Thru	Thru/Rt
Queue Length-95th Percentile(ft)	N/A	N/A	318	222	222	222
Link / Storage Length (ft)	N/A	N/A	340	267	267	267

4th Street / Sibley Street

	West Approach		East Approach		South Approach	
	Lt/Thru	Rt	Lt/Thru	Rt	Lt	Thru
Queue Length-95th Percentile(ft)	N/A	N/A	126	21	49	135
Link / Storage Length (ft)	N/A	N/A	290	290	285	285

Notes:

1. Results obtained using Synchro version 5.0
2. Volumes were obtained from traffic counts conducted on December 18 & 19, 2001 by URS.

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