June 27, 2019

Eastgate Transportation Study

Volume 2
Appendices

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CITY OF BELLEVUE WASHINGTON

Neighborhood Congestion Reduction

Appendix A

Traffic Simulation Model Calibration Process and Validation Results

Neighborhood
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Reduction

Eastgate Transportation Study –
VISSIM Network Modeling Assumptions

Client:	City of Bellevue
Project:	Bellevue Eastgate Transportation Study
Subject:	VISSIM Model Network Assumptions
Submit to:	Kevin McDonald, Jeremy Chin, Shuming Yan, Sean Wellander
Cc:	Xiaoping Zhang
Submitted by:	Tony Woody, Yuan Wen
Date:	October 30, 2018

VISSIM Model Calibration Assumptions

- The study areas for PM and AM peaks are shown in Figure 1 and Figure 2, respectively.
- Only I-90 freeway mainline upstream and downstream, near the ramps, will be modeled.
- Reduced speed area within VISSIM will be used to model the interface between the local and freeway transportation network. Estimated speed profiles used at the interface will be determined from historical WSDOT loop detector data. The approximate locations of the reduced speed area are shown in Figure 1.
- The data used to estimate the freeway mainline speed profile for each model are listed below:
    - 2018 Existing models: Washington State Transportation Center (UW TRAC) loop data
    - 2024 and 2035 future no-build and build models: WSDOT Peak-use shoulder lane (PUSL) models speed profile output
- Simulation Period: 7,200 second (2-hour period)
    - 0 – 1,800 seconds (first 30 minutes): seeding time (traffic demand assumed to 95% of peak hour demand)
    - 1,800 – 5,400 seconds (peak analysis hour): evaluation period
    - 5,400 – 7,200 seconds (extend 30 minutes after peak): extended peak - *Not measured, potentially used in future if peak spreading occurs.*

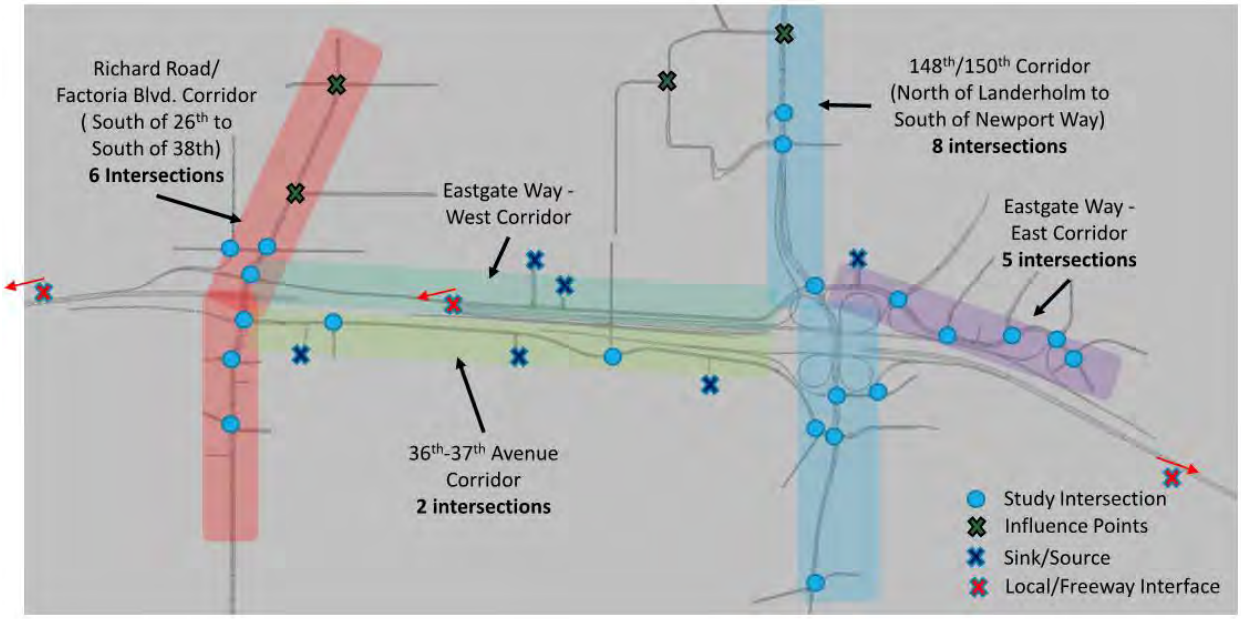


Figure 1. PM Peak Hour VISSIM Network Assumption

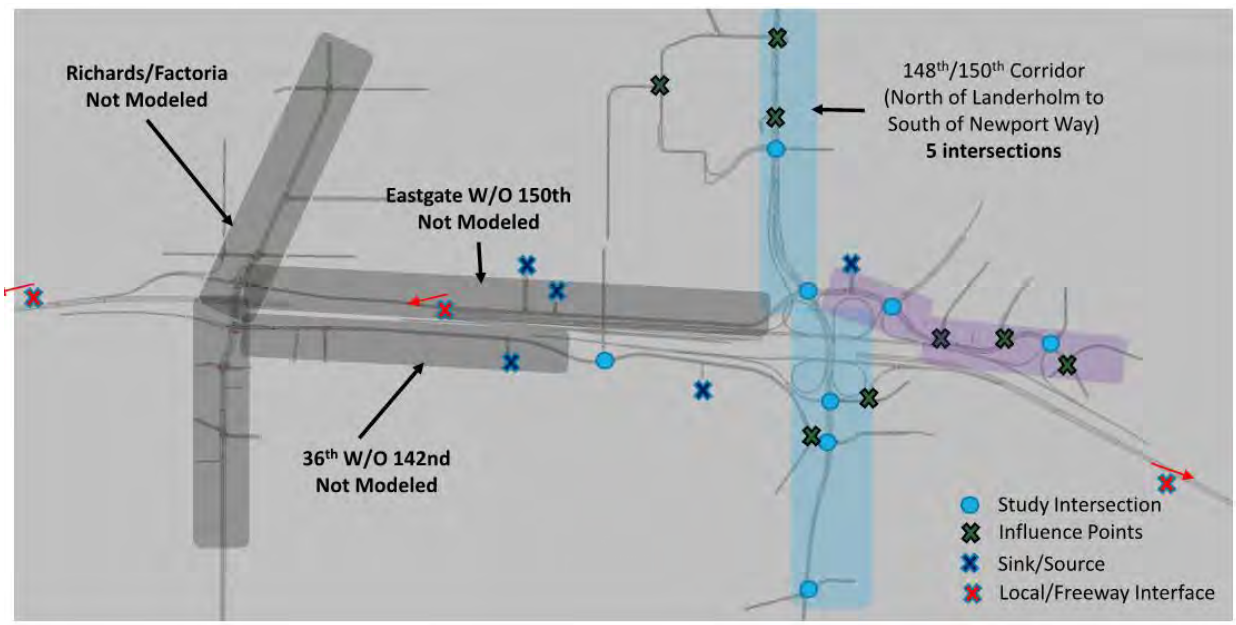


Figure 2. AM Peak Hour VISSIM Network Assumption

Appendix A.2 - Eastgate Transportation Study - Existing VISSIM Calibration Summary - AM Peak Hour

Table A.2-1 - Corridor Travel Times Validation Summary; AM Peak Hour

ID	Name	Peak Dir.	Peak Hour	Model (mins)	Field (mins)	Delta (mins)	% Delta
AM Peak Hour							
1	SB 148th-150th Avenue SE: SE 24th Street to Newport Way	Off-Peak	8:00-9:00	4.4	4.2	0.2	**4.6%**
2	NB 148th-150th Avenue SE: Newport Way to SE 24th Street	Peak	8:00-9:00	5.3	6.1	-0.8	**-13.4%**
	Newport Way to Eastgate Way		8:00-9:00	3.9	4.5	-0.6	**-12.9%**
	Eastgate Way to SE 24th Street		8:00-9:00	1.4	1.6	-0.2	**-14.8%**

Table A.2-2 - Volume Throughput Validation Summary, Total Intersection; AM Peak Hour

Intx. ID	Intersection	Field Volumes	Model Volumes	Diff	Diff %	GEH
15	148th & SE 28th	4112	4061	-51	-1%	0.8
16	150th/148th & Eastgate Way	4461	4346	-115	-3%	1.7
17	150th & I-90 Ramp/SE 37th	3387	3220	-167	-5%	2.9
18	150th & SE 38th	3359	3232	-127	-4%	2.2
20	150th & Newport Way	2528	2473	-55	-2%	1.1
22	Eastgate Way & 156th	2778	2663	-115	-4%	2.2
25	161st Ave SE & Eastgate Way	1376	1307	-69	-5%	1.9

Total	7
GEH >5	7
% Met	0%

Appendix A.2 - Eastgate Transportation Study - Existing VISSIM Calibration Summary - AM Peak Hour

Table A.2-3 - Volume Throughput Validation Summary, Intersection Approach; AM Peak Hour

Intx. ID	Intersection	Approach	Model Volumes	Field Volumes	Diff	Diff %	GEH
15	148th & SE 28th	NB	2385	2436	-51	-2%	1.0
15	148th & SE 28th	EB	140	127	13	11%	1.2
15	148th & SE 28th	SB	1512	1525	-13	-1%	0.3
15	148th & SE 28th	WB	24	24	0	-2%	0.1
16	150th/148th & Eastgate Way	NB	1829	1886	-57	-3%	1.3
16	150th/148th & Eastgate Way	EB	293	274	19	7%	1.1
16	150th/148th & Eastgate Way	SB	1146	1153	-7	-1%	0.2
16	150th/148th & Eastgate Way	WB	1079	1148	-69	-6%	2.1
17	150th & I-90 Ramp/SE 37th	NB	1379	1449	-70	-5%	1.9
17	150th & I-90 Ramp/SE 37th	EB	657	711	-54	-8%	2.1
17	150th & I-90 Ramp/SE 37th	SB	938	980	-42	-4%	1.4
17	150th & I-90 Ramp/SE 37th	WB	247	247	0	0%	0.0
18	150th & SE 38th	NB	1382	1407	-25	-2%	0.7
18	150th & SE 38th	EB	308	337	-29	-9%	1.6
18	150th & SE 38th	SB	1373	1427	-54	-4%	1.5
18	150th & SE 38th	WB	170	188	-18	-10%	1.3
20	150th & Newport Way	NB	853	883	-30	-3%	1.0
20	150th & Newport Way	EB	351	344	7	2%	0.4
20	150th & Newport Way	SB	647	677	-30	-4%	1.2
20	150th & Newport Way	WB	621	624	-3	0%	0.1
22	Eastgate Way & 156th	NB	744	791	-47	-6%	1.7
22	Eastgate Way & 156th	EB	909	953	-44	-5%	1.4
22	Eastgate Way & 156th	SB	513	516	-3	-1%	0.1
22	Eastgate Way & 156th	WB	497	518	-21	-4%	0.9
25	161st Ave SE & Eastgate Way	NB	539	556	-17	-3%	0.7
25	161st Ave SE & Eastgate Way	EB	110	108	2	2%	0.2
25	161st Ave SE & Eastgate Way	SB	208	213	-5	-2%	0.3
25	161st Ave SE & Eastgate Way	WB	450	499	-49	-10%	2.3

Total	28.0
GEH >5	28.0
% Met	0%

Appendix A.3 - Eastgate Transportation Study - Existing VISSIM Calibration Summary - PM Peak Hour

Table A.3-1 - Corridor Travel Times Validation Summary; PM Peak Hour

ID	Name	Peak Dir.	Peak Hour	Model (mins)	Field (mins)	Delta (mins)	% Delta
PM Peak Hour							
1	SB Richards Road/Factoria Blvd.: SE 26th Street to SE 38th Street	Peak	4:30-5:30	11.2	12.4	-1.2	**-9.7%**
	SE 26th Street to SE 32nd Street		4:30-5:30	6.0	6.7	-0.7	**-10.2%**
	SE 32nd Street to SE 38th Street		4:30-5:30	5.2	5.7	-0.5	**-9.0%**
2	SB 148th-150th Avenue SE: SE 24th Street to Newport Way	Peak	4:45-5:45	10.8	10.9	-0.1	**-1.2%**
	SE 24th Street to Eastgate Way		4:45-5:45	6.2	5.8	0.4	**6.5%**
	Eastgate Way to Newport Way		4:45-5:45	4.6	5.1	-0.5	**-10.0%**
3	NB Richards Rd./Factoria Blvd.: SE 38th Street to SE 26th Street	Off-Peak	4:30-5:30	2.6	3.0	-0.4	**-12.1%**
4	NB 148th-150th Avenue SE: Newport Way to SE 24th Street	Off-Peak	4:45-5:45	4.3	3.8	0.5	**12.0%**

Table A.3-2 - Volume Throughput Validation Summary, Total Intersection; PM Peak Hour

Intx. ID	Intersection	Field Volumes	Model Volumes	Diff	Diff %	GEH
1	SE 32nd & 128th AVE	732	711	-21	-3%	0.8
2	Richards Road & 32nd	2774	2642	-132	-5%	2.5
3	Richards Road & I-90 Off	3652	3496	-156	-4%	2.6
4	Factoria Blvd/Richards Road & I-90 Off	4249	4045	-204	-5%	3.2
5	Factoria Blvd. & 3600 Block	3502	3340	-162	-5%	2.8
6	Factoria Blvd. & SE 38th	3664	3527	-137	-4%	2.3
7	132nd & SE 36th	1699	1645	-54	-3%	1.3
14	148th & SE 27th	3942	3774	-168	-4%	2.7
15	148th & SE 28th	4382	4201	-181	-4%	2.8
16	150th/148th & Eastgate Way	4427	4218	-209	-5%	3.2
17	150th & I-90 Ramp/SE 37th	3636	3384	-252	-7%	4.3
18	150th & SE 38th	3614	3386	-228	-6%	3.9
19	Allen Rd & SE 38th	852	814	-38	-5%	1.3
20	150th & Newport Way	2823	2662	-161	-6%	3.1
22	Eastgate Way & 156th	2749	2696	-53	-2%	1.0
23	Eastgate Way & 158th	1160	1143	-17	-1%	0.5
24	Eastgate Way & 160th	1307	1285	-22	-2%	0.6
25	161st Ave SE & Eastgate Way	1483	1459	-24	-2%	0.6
26	Eastgate Way & Philips Hill Rd	1340	1320	-20	-2%	0.6
27	I-90 On Ramp & SE 37th St	1454	1343	-111	-8%	3.0

Total	20
GEH >5	0
% Met	100%

Appendix A.3 - Eastgate Transportation Study - Existing VISSIM Calibration Summary - PM Peak Hour

Table A.3-3 Volume Throughput Validation Summary, Intersection Approach; PM Peak Hour

Intx. ID	Intersection	Approach	Model Volumes	Field Volumes	Diff	Diff %	GEH
1	SE 32ND & 128TH AVE	EB	68	75	-7	-9%	0.8
1	SE 32ND & 128TH AVE	SB	348	354	-6	-2%	0.3
1	SE 32ND & 128TH AVE	WB	295	303	-8	-3%	0.5
2	Richards Road & 32nd	NB	1183	1224	-41	-3%	1.2
2	Richards Road & 32nd	EB	109	117	-8	-7%	0.7
2	Richards Road & 32nd	SB	1190	1252	-62	-5%	1.8
2	Richards Road & 32nd	WB	160	181	-21	-12%	1.6
3	Richards Road & I-90 Off	NB	1766	1840	-74	-4%	1.8
3	Richards Road & I-90 Off	SB	1281	1331	-50	-4%	1.4
3	Richards Road & I-90 Off	WB	449	481	-32	-7%	1.5
4	Factoria Blvd/Richards Road & I-90 Off	NB	1316	1352	-36	-3%	1.0
4	Factoria Blvd/Richards Road & I-90 Off	EB	585	637	-52	-8%	2.1
4	Factoria Blvd/Richards Road & I-90 Off	SB	1335	1417	-82	-6%	2.2
4	Factoria Blvd/Richards Road & I-90 Off	WB	809	843	-34	-4%	1.2
5	Factoria Blvd. & 3600 Block	NB	1208	1193	15	1%	0.4
5	Factoria Blvd. & 3600 Block	EB	120	122	-2	-1%	0.1
5	Factoria Blvd. & 3600 Block	SB	1736	1879	-143	-8%	3.4
5	Factoria Blvd. & 3600 Block	WB	275	308	-33	-11%	1.9
6	Factoria Blvd. & SE 38th	NB	867	848	19	2%	0.6
6	Factoria Blvd. & SE 38th	EB	422	427	-5	-1%	0.2
6	Factoria Blvd. & SE 38th	SB	1770	1913	-143	-7%	3.3
6	Factoria Blvd. & SE 38th	WB	467	476	-9	-2%	0.4
7	132nd & SE 36th	NB	448	465	-17	-4%	0.8
7	132nd & SE 36th	EB	650	670	-20	-3%	0.8
7	132nd & SE 36th	WB	547	564	-17	-3%	0.7
14	148th & SE 27th	NB	1677	1716	-39	-2%	1.0
14	148th & SE 27th	EB	103	103	0	0%	0.0
14	148th & SE 27th	SB	1995	2123	-128	-6%	2.8
15	148th & SE 28th	NB	1976	2024	-48	-2%	1.1
15	148th & SE 28th	EB	272	260	12	5%	0.7
15	148th & SE 28th	SB	1898	2040	-142	-7%	3.2
15	148th & SE 28th	WB	55	58	-3	-4%	0.3
16	150th/148th & Eastgate Way	NB	982	1012	-30	-3%	0.9
16	150th/148th & Eastgate Way	EB	882	848	34	4%	1.2
16	150th/148th & Eastgate Way	SB	1240	1415	-175	-12%	4.8
16	150th/148th & Eastgate Way	WB	1114	1152	-38	-3%	1.1
17	150th & I-90 Ramp/SE 37th	NB	1159	1195	-36	-3%	1.0

Total	70
GEH >5	0
% Met	100%

Table A.3-3 Volume Throughput Validation Summary, Intersection Approach; PM Peak Hour

Intx. ID	Intersection	Approach	Model Volumes	Field Volumes	Diff	Diff %	GEH
17	150th & I-90 Ramp/SE 37th	EB	477	537	-60	-11%	2.7
17	150th & I-90 Ramp/SE 37th	SB	1444	1575	-131	-8%	3.4
17	150th & I-90 Ramp/SE 37th	WB	303	329	-26	-8%	1.4
18	150th & SE 38th	NB	641	655	-14	-2%	0.5
18	150th & SE 38th	EB	792	830	-38	-5%	1.3
18	150th & SE 38th	SB	1762	1932	-170	-9%	4.0
18	150th & SE 38th	WB	191	197	-6	-3%	0.5
19	Allen Rd & SE 38th	NB	78	80	-2	-2%	0.2
19	Allen Rd & SE 38th	EB	735	772	-37	-5%	1.3
20	150th & Newport Way	NB	366	364	2	1%	0.1
20	150th & Newport Way	EB	361	362	-1	0%	0.1
20	150th & Newport Way	SB	1610	1753	-143	-8%	3.5
20	150th & Newport Way	WB	326	344	-18	-5%	1.0
22	Eastgate Way & 156th	NB	612	638	-26	-4%	1.0
22	Eastgate Way & 156th	EB	609	613	-4	-1%	0.2
22	Eastgate Way & 156th	SB	851	864	-13	-1%	0.4
22	Eastgate Way & 156th	WB	624	634	-10	-2%	0.4
23	Eastgate Way & 158th	EB	469	474	-5	-1%	0.2
23	Eastgate Way & 158th	SB	239	243	-4	-2%	0.3
23	Eastgate Way & 158th	WB	435	443	-8	-2%	0.4
24	Eastgate Way & 160th	EB	451	461	-10	-2%	0.5
24	Eastgate Way & 160th	SB	690	702	-12	-2%	0.4
24	Eastgate Way & 160th	WB	143	144	-1	0%	0.0
25	161st Ave SE & Eastgate Way	NB	129	125	4	3%	0.3
25	161st Ave SE & Eastgate Way	EB	810	832	-22	-3%	0.8
25	161st Ave SE & Eastgate Way	SB	309	314	-5	-2%	0.3
25	161st Ave SE & Eastgate Way	WB	211	212	-1	0%	0.0
26	Eastgate Way & Philips Hill Rd	NB	250	251	-1	0%	0.0
26	Eastgate Way & Philips Hill Rd	EB	845	862	-17	-2%	0.6
26	Eastgate Way & Philips Hill Rd	SB	174	176	-2	-1%	0.1
26	Eastgate Way & Philips Hill Rd	WB	50	51	-1	-2%	0.2
27	I-90 On ramp & SE 37th St	EB	766	823	-57	-7%	2.0
27	I-90 On ramp & SE 37th St	WB	577	631	-54	-9%	2.2

Appendix A.3 - Eastgate Transportation Study - Existing VISSIM Calibration Summary - PM Peak Hour

Table A.3-4 - Richard Road/Factoria Blvd. SB Travel Time - PM Peak Period

Richards/Factoria SB (26th-38th)				
Time	Field Aggeration	VISSIM	Difference	%Difference
4:00 PM	7.4	4.7	-2.7	-36%
4:15 PM	9.8	7.1	-2.7	-28%
4:30 PM	10.1	8.7	-1.4	-14%
4:45 PM	13.8	11.2	-2.6	-19%
5:00 PM	13.2	11.7	-1.5	-11%
5:15 PM	12.6	13.2	0.6	5%
5:30 PM	9.3	12.0	2.7	29%
5:45 PM	8.8	9.6	0.8	9%
Average	12.4	11.2	-1.2	-10%

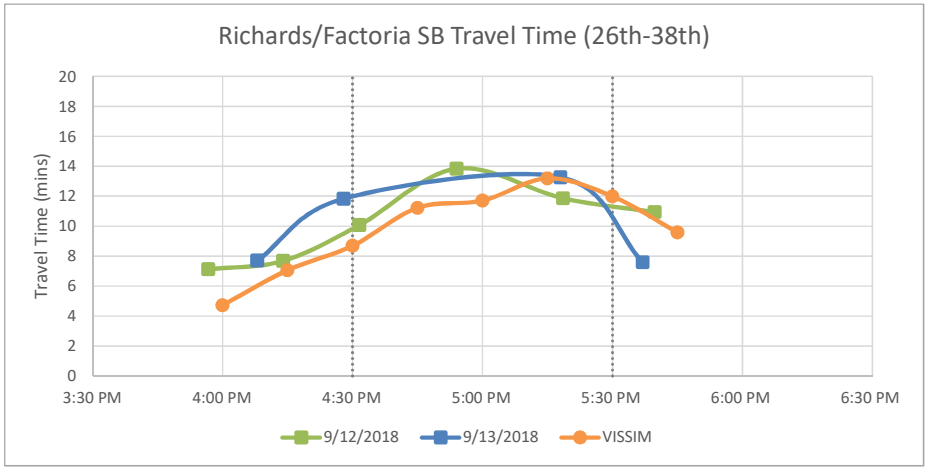
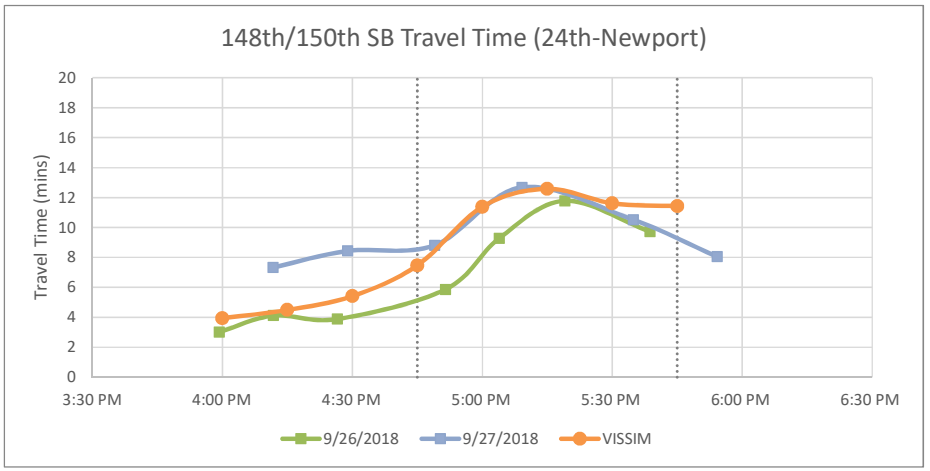


Table A.3-5 - 148th/150th SB Travel Time - PM Peak Period

148th/150th SB (Landerholm - Newport)				
Time	Field Aggeration	VISSIM	Difference	%Difference
4:00 PM	4.1	3.9	-0.2	-5%
4:15 PM	4.1	4.5	0.4	11%
4:30 PM	4.7	5.4	0.7	15%
4:45 PM	7.3	7.5	0.1	2%
5:00 PM	11.0	11.4	0.4	4%
5:15 PM	11.8	12.6	0.8	7%
5:30 PM	10.1	11.6	1.5	15%
5:45 PM	8.0	11.4	3.4	42%
Average	10.1	10.8	0.7	7%



Appendix B

Vehicle Travel Speed

Neighborhood
Congestion
Reduction

Appendix B.1 - Eastgate Transportation Study - VISSIM Travel Time and Corridor Speed Summary

Table B.1-1 - Corridor Travel Time Summary: 148th/150th Avenue SE

ID	Segment	Peak/ Direction	Travel Time (Minutes)				
			2018 Existing	2035 Baseline	% Diff vs 2018 Existing	2035 Recommended Projects	% Diff vs 2035 Baseline
1	SE 24th Street to SE Newport Way	PM/SB	10.8	15.8	46%	8.2	-48%
1a	SE 24th Street to SE 38th Street	PM/SB	9.1	14.6	60%	7.0	-52%
1b	SE 38th Street to SE Newport Way	PM/SB	1.7	1.1	-35%	1.2	9%
2	SE Newport Way to SE 24th Street	AM/NB	5.3	7.1	34%	4.8	-32%
2a	SE Newport Way to SE 38th Street	AM/NB	1.6	3.3	106%	1.6	-52%
2b	SE 38th Street to SE 24th Street	AM/NB	3.7	3.8	3%	3.1	-18%

Table B.1-2 - Corridor Travel Time Summary: Richards Road - Factoria Boulevard SE

ID	Segment	Peak/ Direction	Travel Time (Minutes)				
			2018 Existing	2035 Baseline	% Diff vs 2018 Existing	2035 Recommended Projects	% Diff vs 2035 Baseline
3	SE 26th Street to SE 38th Street	PM/SB	11.2	13.3	19%	11.9	-11%
3a	SE 26th Street to SE 32nd Street	PM/SB	6.0	7.3	22%	6.6	-10%
3b	SE 32nd Street to SE 38th Street	PM/SB	5.2	6.0	15%	5.3	-12%

Table B.1-3 - Corridor Travel Speed Summary: 148th/150th Avenue SE

ID	Segment	Peak/ Direction	Travel Speed (Miles per Hour)				
			2018 Existing	2035 Baseline	% Diff vs 2018 Existing	2035 Recommended Projects	% Diff vs 2035 Baseline
1	SE 24th Street to SE Newport Way	PM/SB	7.2	4.9	-32%	9.5	93%
1a	SE 24th Street to SE 38th Street	PM/SB	6.6	4.1	-38%	8.6	109%
1b	SE 38th Street to SE Newport Way	PM/SB	10.6	16.4	55%	15.0	-8%
2	SE Newport Way to SE 24th Street	AM/NB	14.7	11.0	-25%	16.3	48%
2a	SE Newport Way to SE 38th Street	AM/NB	11.3	5.5	-52%	11.3	106%
2b	SE 38th Street to SE 24th Street	AM/NB	16.2	15.8	-3%	19.4	23%

Table B.1-4 - Corridor Travel Speed Summary: Richards Road - Factoria Boulevard SE

ID	Segment	Peak/ Direction	Travel Speed (Miles per Hour)				
			2018 Existing	2035 Baseline	% Diff vs 2018 Existing	2035 Recommended Projects	% Diff vs 2035 Baseline
3	SE 26th Street to SE 38th Street	PM/SB	4.3	3.6	-16%	4.0	12%
3a	SE 26th Street to SE 32nd Street	PM/SB	4.0	3.3	-18%	3.6	11%
3b	SE 32nd Street to SE 38th Street	PM/SB	4.6	4.0	-13%	4.5	13%

Appendix B.2 - Eastgate Transportation Study - VISSIM Intersection Delay and Level of Service (LOS) Summary

Table B.2-1 - Intersection Delay and LOS Summary: Eastgate Area, PM Peak

ID	Intersection	Intersection Delay (Sec/Veh) / LOS		
		2018 Existing	2035 Baseline	2035 Recommended Project
16	148th Avenue SE & SE Eastgate Way	88 (F)	122 (F)	74 (E)
17	150th Avenue SE & SE 37th Street	72 (E)	125 (F)	77 (E)
18	150th Avenue SE & SE 38th Street	30 (C)	54 (D)	40 (D)
20	150th Avenue SE & SE Newport Way	44 (D)	45 (D)	42 (D)
24	160th Avenue SE & SE Eastgate Way	18 (B)	176 (F)	16 (B)
26	161st Avenue SE & SE Eastgate Way	27 (C)	106 (F)	30 (C)
26	SE 37th Street & SE Eastgate Way	10 (B)	16 (B)	12 (B)

Table B.2-2 - Intersection Delay and LOS Summary: Factoria Area, PM Peak

ID	Intersection	Intersection Delay (Sec/Veh) / LOS		
		2018 Existing	2035 Baseline	2035 Recommended Project
2	Richards Road & SE 32nd Street	255 (F)	319 (F)	299 (F)
3	Richards Road & I-90 On-Ramp	43 (D)	60 (E)	57 (E)
4	Factoria Boulevard & SE 36th Street	92 (F)	101 (F)	96 (F)
5	Factoria Boulevard & 3600 Block	34 (C)	37 (D)	35 (D)
6	Factoria Boulevard & SE 38th Street	86 (F)	92 (F)	68 (E)

Table B.2-3 - Intersection Delay and LOS Summary: Eastgate Area, AM Peak

ID	Intersection	Intersection Delay (Sec/Veh) / LOS		
		2018 Existing	2035 Baseline	2035 Recommended Project
16	148th Avenue SE & SE Eastgate Way	95 (F)	115 (F)	45 (D)
17	150th Avenue SE & SE 37th Street	74 (E)	76 (E)	23 (C)
18	150th Avenue SE & SE 38th Street	138 (F)	134 (F)	43 (D)
20	150th Avenue SE & SE Newport Way	105 (F)	103 (F)	54 (D)

Appendix C

Land Use Growth Assumptions

Neighborhood
Congestion
Reduction

Table C.1 - BKR Model Land Use Summary, Selected MMAs, Eastgate Transportation Study

MMA	MMA Name	2017					2035					2035-2017 Δ				
		DU	Retail	Industrial	Office	Education	DU	Retail	Industrial	Office	Education	DU	Retail	Industrial	Office	Education
		SFUnits + MF Units	RETAIL	Industrial	OFFICE + INST + HOTEL	SCHOOL	Total DU	Retail	WTCU + MANU	Office	Edu	Total DU	Retail	WTCU + MANU	Office	Edu
		# of units	# of emp	# of emp	# of emp	# of emp	# of units	# of emp	# of emp	# of emp	# of emp	# of units	# of emp	# of emp	# of emp	# of emp
8	Richards Valley	6014	194	56	895	125	6006	182	64	996	122	-8	-11	8	101	-3
10	Eastgate	968	1173	1201	12680	70	1701	1224	1097	20633	34	733	51	-104	7953	-36
11	Newcastle/SE Bellevue	9378	299	37	1477	334	9294	275	11	1049	290	-84	-23	-26	-428	-44
13	Factoria	1566	2028	121	4520	177	1791	2069	119	5221	171	225	41	-2	701	-6

Table C.2 - BKR Model Land Use Growth Rates, Selected MMAs, Eastgate Transportation Study

MMA	MMA Name	Total Growth % (2035-2017)					Annual Growth Rate (2035-2017) %				
		DU	Retail	Industrial	Office	Education	DU	Retail	Industrial	Office	Education
		SFUnits + MF Units	RETAIL	Industrial	OFFICE + INST + HOTEL	SCHOOL	Total DU	Retail	WTCU + MANU	Office	Edu
		# of units	# of emp	# of emp	# of emp	# of emp	# of units	# of emp	# of emp	# of emp	# of emp
8	Richards Valley	0%	-6%	14%	11%	-3%	0.0%	-0.3%	0.7%	0.6%	-0.2%
10	Eastgate	76%	4%	-9%	63%	-51%	3.2%	0.2%	-0.5%	2.7%	-3.9%
11	Newcastle/SE Bellevue	-1%	-8%	-70%	-29%	-13%	0.0%	-0.5%	-6.5%	-1.9%	-0.8%
13	Factoria	14%	2%	-1%	16%	-3%	0.8%	0.1%	-0.1%	0.8%	-0.2%

Table C.3 - Key Corridors - AM Peak Hour Raw Model Volumes, Northbound Direction, Eastgate Transportation Study

ID	Location	Direction	2017	2035	Diff	% Diff	Ann Gr. Rate
1	148th Ave SE, North of SE 28th St	NB	1562	1906	344	22%	1.1%
2	150th Ave SE North of SE 38th St	NB	1624	2031	407	25%	1.2%
3	150th Ave SE, North of SE Newport Way	NB	1394	1833	439	31%	1.5%
4	Richards Rd, North of SE 32nd St	NB	1443	1978	535	37%	1.8%
5	Factoria Blvd SE, South of SE 38th St	NB	1796	2022	226	13%	0.7%

Table C.4 - Key Corridors - PM Peak Hour Raw Model Volumes, Southbound Direction, Eastgate Transportation Study

ID	Location	Direction	2017	2035	Diff	% Diff	Ann Gr. Rate
1	148th Ave SE, North of SE 28th St	SB	1703	2064	361	21%	1.1%
2	150th Ave SE North of SE 38th St	SB	2062	2380	318	15%	0.8%
3	150th Ave SE, North of SE Newport Way	SB	1846	2233	388	21%	1.1%
4	Richards Rd, North of SE 32nd St	SB	1946	2364	419	22%	1.1%
5	Factoria Blvd SE, South of SE 38th St	SB	2139	2554	416	19%	1.0%


N
MMA 8
Richards Valley
MMA 9
East Bellevue
MMA 10
Eastgate
MMA 11
Southeast Bellevue
MMA 13
Factoria
Robinson
Community
Park
Eastgate
Park
SE 24th St
SE 26th St
SE 28th St
SE 32nd St
SE 35th Pl
SE 36th St
SE 37th St
SE 38th St
SE Eastgate Way
SE Allen Rd
SE Newport Way
Richards Rd
139th Ave SE
142nd Pl SE
148th Ave SE
150th Ave SE
156th Ave SE
158th Ave SE
160th Ave SE
161st Ave SE
136th Pl SE
132nd Ave SE
3600 Block
Factoria Blvd
Somerset Blvd SE
90
405

Appendix D

Candidate Congestion Reduction Projects and Project Identification Framework Results

Neighborhood Congestion Reduction

Table. D.1 – Summary of Identified Needs and Project Concepts

Intersection	Identified Traffic Congestion (Year 2035)	Project ID	Project Concepts to Address Needs	Performance Summary	Recommendation
148th-150th Avenue SE & Eastgate Way	• Intersection V/C exceeds MMA Standard (0.90) • Vehicle queuing on southbound, eastbound, and westbound approaches in PM Peak • Vehicle queuing in northbound direction in AM Peak	C101	Add a second Northbound (NB) Left, Extend Southbound (SB) Left turn lane and add NB Right turn pocket	• Second NBL benefits vehicles in the AM peak by adding capacity in peak direction • Adds vehicle queue storage for SB approach	Recommended Project E
		C102	Adds a southbound through lane from north of Eastgate to south of intersection	• Adds Southbound capacity to accommodate vehicle demand	Recommended Project E
		C103	Add a second westbound (WB) through lane	• Adds Westbound capacity, but no benefit to the intersection V/C	Not Recommended
		C104	Construct a 2-lane roundabout	• Potential conflicts with level-of-service and safety for bicycles and pedestrians • 2-Lane roundabout does not increase vehicle capacity or travel speed over current conditions • Requires right-of-way acquisition	Not Recommended
150th Avenue SE & I-90 EB off-ramp-SE 37th Street	• Intersection V/C exceeds MMA Standard (0.90)	C201	Add a second Eastbound Right (EBR), Extend SB left turn pocket, Extend SB through lane from loop ramp to SE 38th Street	• Adds vehicle capacity in Southbound and Northbound direction during peak conditions • Reduces vehicle queuing impacts along 150th Avenue SE	Recommended Project F
		C202	Restrict Eastbound Left (EBL)	• Reroutes Eastbound traffic from I-90 to loop ramp destined for NB 150th Avenue SE • Adds vehicle capacity and reduces queuing along 150th Avenue SE	Recommended Project F
		C203	Add a second Westbound Left (WBL) and Westbound Right (WBR) turn pocket	• Adds vehicle capacity on east approach and reduces queuing along SE 37th Street	Recommended Project F
I-90 EB On-ramp & SE 37th Street	• EBL experience high delay	C302	Modify channelization between 150th and I-90 EB On Ramp and signalize EB on-ramp intersection	• Reduces vehicle weaving movements along SE 37th Street between 150th Avenue SE and I-90 EB on-ramp • Traffic signal at the Eastbound on-ramp facilitates traffic flow and reduces vehicle congestion	Recommended Project H
150th Avenue SE & SE 38th Street	• Intersection V/C exceeds MMA Standard (0.85)	C401	Extend NB receiving lane/right turn pocket between SE 38th Street and 37th Street	• Adds vehicle capacity along 150th Avenue SE and accommodates traffic flow better between SE 38th Street and SE 37th Street.	Recommended Project G
		C402	Adjust signal timings to remove split phasing and optimize green time	• Increases intersection capacity at 150th Avenue SE & SE 38th Street	Recommended Project G

Table. D.1 – Summary of Identified Needs and Project Concepts

Intersection	Identified Traffic Congestion (Year 2035)	Project ID	Project Concepts to Address Needs	Performance Summary	Recommendation
150th Avenue SE & SE Newport Way	• Intersection V/C exceeds MMA Standard (0.85)	C501	Add a second Southbound Left (SBL)	• Adds vehicle capacity and reduces queuing on Southbound approach at Newport Way	Not Recommended
Factoria Boulevard & I-90 EB off- ramp -SE 36th Street	• Intersection V/C exceeds MMA Standard (0.95) • Vehicle queueing on EB approach in AM Peak	C701	Add variable channelization for EB approach (second EBT in AM). Includes drop lane east of on SE 36th St from the intersection to 131st Ave SE (Easternmost T-Mobile Driveway)	• Improves traffic flow for AM traffic destined to SE 36th Street from I-90	Recommended Project A
Factoria Boulevard & SE 38th Street	• Intersection V/C exceeds MMA Standard (0.85	C801	Add a second WB Left (WBL)	• Increases vehicle capacity for Westbound approach	Recommended Project B
		C802	Channelization modifications – Adds a second EB Left (EBL) and an EB Right (EBR) turn pocket	• Increases vehicle capacity for Eastbound approach • Requires some ROW acquisition on south side	Recommended Project B
Eastgate Way & SE 37th Street	• Eastbound queue spill back to 161st Ave SE and 160th Ave SE	C901	Add a new signal and modify channelization.	• Adds vehicle capacity • Expected to meet signal warrants in 2035 • Reduces vehicle queue length at 161st Avenue SE & Eastgate Way	Recommended Project I
142nd Pl. SE & SE 36th St.	• Intersection V/C exceeds MMA Standard (0.90)	C1001	Add SB Right (SBR) turn pocket	• Provides vehicle queue storage and improves vehicle LOS	Recommended Project D
142nd Pl. SE & I-90 Direct Access	• Intersection V/C exceeds MMA Standard (0.90)	C1101	Add NB Left (NBL) and SB Left (SBL) turn pockets	• Provides vehicle queue storage and improves vehicle LOS • Requires bridge widening	Not Recommended
		C1102	Transit only ramps, remove HOV left turns at intersection	• Additional analysis required to determine impacts of HOV traffic rerouting from ramps	Not Recommended
139th Ave. SE & SE 32nd Street	• Intersection V/C exceeds MMA Standard (0.90)	C1201	Construct signal	• Adds vehicle capacity	Recommended Project C
Somerset Boulevard-Allen Road & Newport Way	• Intersection experiences congestion	C1301	Align Somerset and Allen Road to consolidate the two adjacent intersections into a single signalized intersection	• Provides similar vehicle operational benefits to expected 2035 Baseline	Not Recommended

Appendix E

Benefit/Cost and MMLOS Analysis

Neighborhood
Congestion
Reduction

BENEFIT/COST AND MMLOS METHODS AND RESULTS

A key evaluation metric was the traffic congestion reduction benefit relative to the cost of the project. Each of the project concepts was also evaluated using metrics, standards, and guidelines for all modes to ensure that congestion relief does not come at the expense of pedestrian, bicycle, and transit mobility. This Appendix summarizes the methods and results of these two analyses.

Benefit/Cost Analysis

A calculation of the traffic congestion reduction benefit relative to project cost was performed to evaluate project concept packages and the individual project concepts. This section describes how the benefit/cost analysis was calculated and presents the conclusions of the analysis.

Traffic Congestion Relief Benefit

Using the output of the traffic analysis models, vehicle hours of delay (VHD) was calculated for the 2035 baseline (embedded with currently funded projects) and for the project concepts. The difference between the 2035 baseline VHD and the project concept VHD is the delay savings (traffic congestion reduction benefit) for each project concept. Note that VHD was calculated for project concept packages along the two corridors in the study area: 148th - 150th Avenue SE between SE 28th Street and SE Newport Way and Factoria Boulevard SE between SE 32nd Street and SE 38th Street. VHD was also calculated individually for each of the projects that make up the concept packages and for the other isolated intersection projects.

To calculate the benefit/cost ratio, the VHD was divided by the project cost per $1 million to develop a ratio of benefit to cost:

$$\frac{\text{Vehicle Hours of Delay}}{\text{Project Concept Cost \$M}} = \text{Benefit to Cost Ratio}$$

The results of the benefit/cost calculations are presented in **Table E-1**. In addition to the benefit/cost ratios, the project team considered the total congestion relief benefit that would be achieved by the different project concepts. Using both the benefit/cost ratio and the total traffic congestion reduction reveals a more holistic evaluation of both value per dollar and total congestion reduction.

Evaluating Project Concepts through a Multimodal Lens

The Transportation Commission's Multimodal Level of Service (MMLOS) final report describes the recommended metrics, standards and guidelines for facilities that support people walking, riding a bicycle, using the transit system, or driving. The vehicle level of service standards and guidelines have been used to identify traffic congestion issues and potential traffic congestion reduction projects. To complement this vehicle LOS analysis, a LOS analysis for pedestrian,

bicycle, and transit was also prepared for each of the potential traffic congestion reduction projects. This analysis was prepared by evaluating whether the traffic congestion reduction project could:

1) Construct the MMLOS identified pedestrian, bicycle, and transit facilities along the project frontage, or
2) Leave sufficient right-of-way that future development could construct the MMLOS identified infrastructure

Criteria 1 above was triggered if the traffic congestion reduction project would require reconstruction of a curb/sidewalk or removal of a bicycle facility to accommodate the additional vehicle capacity. Criteria 2 was applied for all other conditions.

The results of the MMLOS analysis indicate that all recommended traffic congestion reduction projects either meet MMLOS standards/guidelines, provide sufficient right-of-way for future implementation, or would require implementation as part of future land redevelopment. **Table E-2** provides the detailed results of the MMLOS analysis.

Table E-1. Project Concept Benefit/Cost Ratios

Table 1. 148th-150th Avenue SE Corridor Benefit/Cost Ratios

Intersection	Project Concept ID	Project Description	PM Peak Hour Results: 2035 PM Total Entering Volume	2035 Baseline PM Delay (Sec)	2035 Concept PM Delay (Sec)	2035 Baseline - Tot. Veh. Delay (Veh x Avg. Delay in minutes)	2035 Concept- Tot. Veh. Delay (Veh x Avg. Delay in minutes)	Delta (in minutes)	Travel Operations Benefit: Vehicle Hours of Delay Reduced	Cost ($1 million)	Benefit / Cost Ratio
Intersection Results											
148th -150th Avenue SE / SE Eastgate Way	C102	C101 + Add SB Through lane from north of Eastgate to south of intersection	5540	90	61	8310	5632	2678	44.63	$ 5.04	8.9
150th Avenue SE / SE 37th Street	C201	Add 2x EBR, Extend SB left turn pocket, Extend SB through lane from loop ramp to 38th	4485	73	54	5457	4037	1420	23.67	$ 1.62	14.6
150th/SE 37th Street	C202	Restrict EBL turn	4485	73	49	5457	3663	1794	29.90	$ 0.03	1196.0
150thAvenue SE / SE 37th Street	C203	Add 2x WBL at approach, with WBR turn pocket	4485	73	35	5457	2616	2841	47.34	$ 0.92	51.5
I-90 On-Ramp / SE 37th Street	C302	Modify channelization between 150th and I-90 EB On & Signal at EB on-ramp	1780	16	6.3	475	187	288	4.80	$ 0.46	10.5
150th Avenue SE / SE 38th Street	C401	Extend NB right turn lane between 38th Street and 37th Street	4360	67	67	4869	4869	0	0.00	$ 0.52	0.000 *
150th/SE 38th Street	C402	Modify E-W split phasing to concurrent phasing	4360	67	53	4869	3851	1017	16.96	$ 0.03	678.2
Traffic Simulation Results			**2035 PM Segment Volume**	**2035 Corridor Travel Time (Mins)**	**2035 Corridor Concept Travel Time (Mins)**	**2035 Corridor Concept Travel Time Baseline - Concept (Mins)**			**Travel Operations Benefit: Vehicle Hours of Delay Reduced**	**Cost ($1 million)**	**Benefit / Cost Ratio**
Eastgate Projects	A2	C102, C201, C202, C203, C302, C401, C402	3015	15.8	8.2	7.6			381.90	$ 8.61	44.4

Table 2. Factoria Area Benefit/Cost Ratios

Intersection	Project Concept ID	Project Description	PM Peak Hour Results: 2035 PM Total Entering Volume	2035 Baseline PM Delay (Sec)	2035 Concept PM Delay (Sec)	2035 Baseline - Tot. Veh. Delay (Veh x Avg. Delay in minutes)	2035 Concept- Tot. Veh. Delay (Veh x Avg. Delay in minutes)	Delta (in minutes)	Travel Operations Benefit: Vehicle Hours of Delay Reduced	Cost ($1 million)	Benefit / Cost Ratio
Intersection Results											
Factoria Boulevard SE / SE 38th Street	C801	Add 2x WB Left (maintain right turn pocket)	4225	110	94	7746	6619	1127	18.78	$ 0.18	107.3
Factoria Boulevard SE / SE 38th Street	C802	Additional channelization mods (EB 2x Left exclusive)	4225	110	78	7746	5493	2253	37.56	$ 0.95	39.5
Traffic Simulation Results			**2035 PM Segment Volume**	**2035 Corridor Travel Time (Mins)**	**2035 Corridor Concept Travel Time (Mins)**	**2035 Corridor Concept Travel Time Baseline - Concept (Mins)**			**Travel Operations Benefit: Vehicle Hours of Delay Reduced**	**Cost ($1 million)**	**Benefit / Cost Ratio**
Factoria Projects	B1	C801, C802	2115	13.3	11.9	1.4			49.35	$ 1.13	43.9

Table 3. Other Project Benefit/Cost Ratios

Intersection	Project Concept ID	Project Description	PM Peak Hour Results: 2035 PM Total Entering Volume	2035 Baseline PM Delay (Sec)	2035 Concept PM Delay (Sec)	2035 Baseline - Tot. Veh. Delay (Veh x Avg. Delay in minutes)	2035 Concept- Tot. Veh. Delay (Veh x Avg. Delay in minutes)	Delta (in minutes)	Travel Operations Benefit: Vehicle Hours of Delay Reduced	Cost ($1 million)	Benefit / Cost Ratio
Synchro Results											
142nd Place SE / SE 36th Street	C1001	Add SBR	2105	35	19	1228	667	561	9.36	$ 0.81	11.6
139th Avenue SE / SE 32nd Street	C1201	Add signal	1485	250	9	6188	223	5965	99.41	$ 0.93	106.9
Traffic Simulation Results					**Average Intersection Delay Delta (Mins)**	**Average Intersection Delay Delta * Tot. Veh. (Mins)**			**Travel Operations Benefit: Vehicle Hours of Delay Reduced**	**Cost ($1 million)**	**Benefit / Cost Ratio**
SE Eastgate Way / SE 37th Street	C901	Add signal and modify channelization	1845		160	4920			82.00	$ 1.15	71.3

Sources:
Traffic operations analysis, forecasted volumes, delta: Concord Engineering, 2019.
Planning level cost estimates: KPFF, 2019.
B/C ratio calculations: Fehr & Peers, 2019.

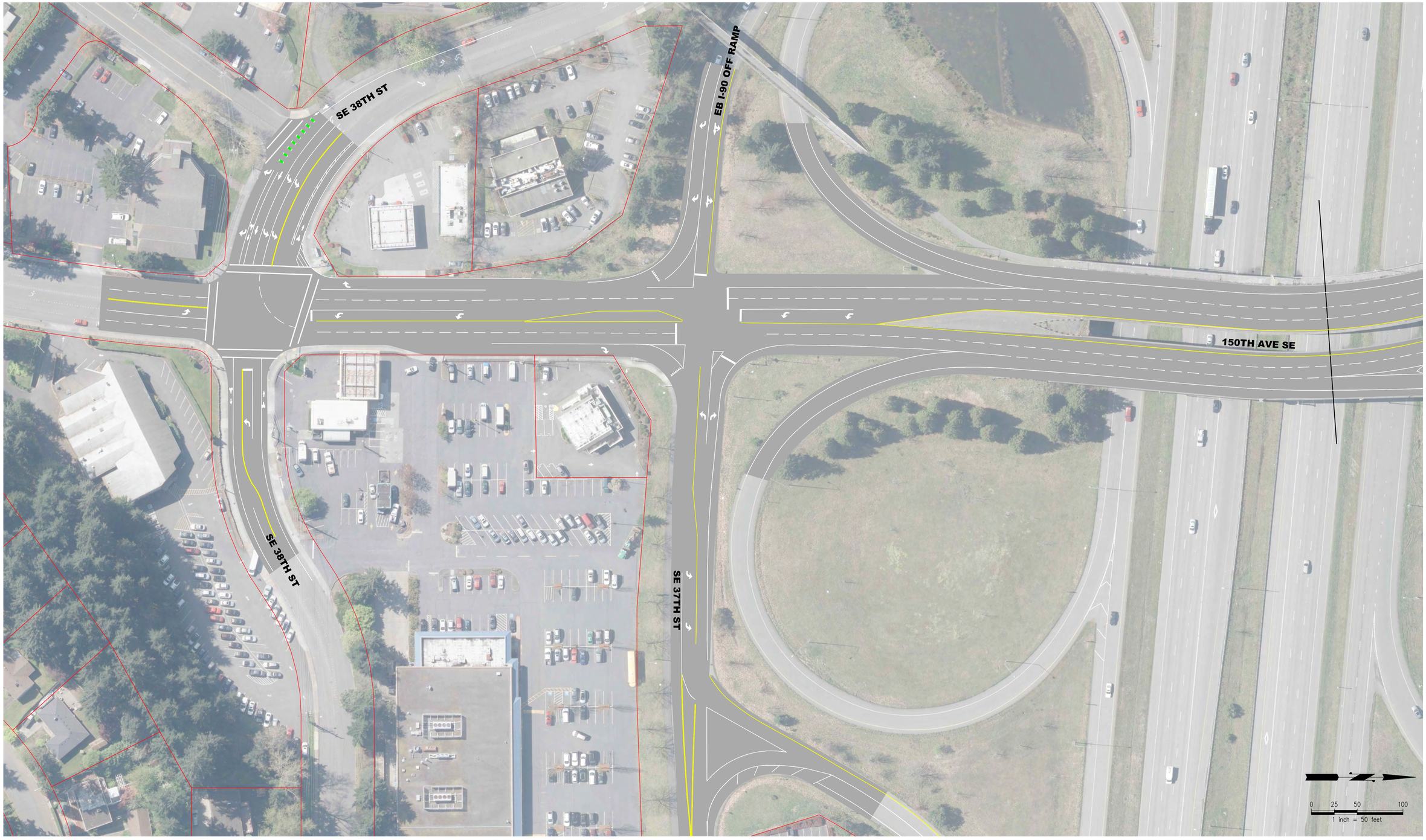
Table E-2. Project MMLOS Evaluation

						MMLOS Standard/Guideline			
Intersection	**ID**	**Project Description**	**MMLOS Standard Built?**	**If Not, Could be Built Later?**	**Crossing Distance Widened?**	**Sidewalks Needed**	**Pedestrian Crossing Needed**	**Bike Facilities Needed**	**MMLOS Evaluation**
148th - 150th Avenue SE / SE Eastgate Way	C101	Add NB 2x Left, Extend SB Left turn lane	Not Impacted	Yes	Yes	Activity Center - 16 ft.	Activity Center - Enhanced	LOS 1 on 150th Ave SE N/O SE Eastgate Way - None needed, 8 ft. attached trail/sidewalk on east side of 150th Ave SE (Not up to current code, but not impacted by this project nor precluded from any future construction); LOS 3 on SE Eastgate Way - Striped bike lane (5 ft.) planned W/O 150th Ave SE; not precluded E/O 150th Ave SE.	Current designs maintain porkchop, if removed - would widen crossing distance for pedestrians - mitigate with enhanced crossing; confirm planned/under construction bike intersection enhancements on Eastgate Way are not impacted; 16 foot sidewalk on SE Eastgate Way can be accommodated. No bike facilities needed on 150th Ave SE at this time - construct LOS 1 facilities (widen multiuse trail on east side of 150th) in future; adequate ROW exists for future 12 foot multiuse path.
148th -150th Avenue SE / SE Eastgate Way	C102	C101 + Add SB Through lane from north of Eastgate to south of intersection	Not Impacted	Yes	Yes	Activity Center - 16 ft.	Activity Center - Enhanced	LOS 1 on 150th Ave SE N/O SE Eastgate Way - None needed, 8 ft. attached trail/sidewalk on east side of 150th (Not up to current City code, but not impacted by this project nor precluded from any future construction); LOS 3 on SE Eastgate Way - Striped bike lane (5 ft.) planned W/O 150th Ave SE; not precluded E/O 150th Ave SE.	Pork chop removal would widen crossing distance for pedestrians - mitigate with enhanced crossing.
148th -150th Avenue SE / SE Eastgate Way	C110	Add NBR turn pocket	Not Impacted	Yes		Activity Center - 16 ft.	Activity Center - Enhanced	LOS 1 on 150th Ave SE - None needed, existing trail	Overpass area, no MMLOS impacts or enhancements needed; path on west side of bridge could benefit from being wider if the overpass is ever reconstructed.
150th Avenue SE / SE 37th Street	C201	Add 2x EBR, Extend SB left turn pocket, Extend SB through lane from loop ramp to 38th	Not Impacted	Yes		Activity Center - 16 ft.; Assume construction per City standards with redevelopment	Activity Center - Enhanced	LOS 1 on 150th Ave SE N/O intersection - not impacted or precluded; S/O intersection LOS 2 = protected bike facilities (not impacted or precluded by this project); LOS 1 on SE 37th St - planned for construction as part of Mountains to Sound Trail, not impacted or precluded	There is not adequate right of way today to accommodate the pedestrian MMLOS standard of 16 ft sidewalks. The congestion relief project will only occur with redevelopment, at which time sidewalks will be constructed by the developer. The bike MMLOS is not impacted or precluded on 150th Ave SE north or south of the intersection. The Mountains to Sound Trail will accommodate the LOS 1 on SE 37th St.
150th Avenue SE / SE 37th Street	C202	Restrict EBL turn	Not Impacted	Yes		Activity Center - 16 ft.	Activity Center - Enhanced	LOS 1 on SE 37th St - planned for construction as part of Mountains to Sound Trail, not impacted or precluded	There is adequate right of way to accommodate the eastbound left turn restriction without impacting pedestrian or bicycle level of service.
150th Avenue SE / SE 37th Street	C203	Add 2x WBL at approach, with WBR turn pocket	Not Impacted	Yes		Activity Center - 16 ft.	Activity Center - Enhanced	LOS 1 on SE 37th St - planned for construction as part of Mountains to Sound Trail, not impacted or precluded	There is adequate right of way to accommodate the additional westbound left turn pocket without impacting pedestrian or bicycle level of service.
I-90 On-Ramp / SE 37th Street	C302	Modify channelization between 150th and I-90 EB On & Signal at EB on-ramp	Yes			Activity Center - 16 ft. on SE 37th	Activity Center - Enhanced	LOS 1 on SE 37th St - planned for construction as part of Mountains to Sound Trail, not impacted or precluded	On SE 37th St, the planned Mountains to Sound trail accommodates the LOS 1 bike MMLOS standard. Project elements do not impact or preclude components of the Mountains to Sound trail. SE 37th Street is located in an activity center, which requires a 16 ft sidewalk. There is not adequate right of way today to accommodate the pedestrian MMLOS standard of 16 feet sidewalks. The congestion relief project will only occur with redevelopment of the parcel on the southeast corner of the intersection, at which time 16 feet sidewalks will be constructed by the developer.
150th Avenue SE / SE 38th Street	C401	Extend NB right turn lane between 38th Street and 37th Street	Yes		Yes	Activity Center - 16 ft. on 150th and north side of 38th St, 6-8 ft. on south side of SE 38 St; Assume construction per City standards with redevelopment	Activity Center - Enhanced	LOS 2 on 150th Ave SE - not impacted or precluded	The City's bike MMLOS standard of LOS 2 on 150th Ave SE south of the intersection is not impacted or precluded by this project. The project would require 16 ft sidewalks on 150th Ave SE on the north side of SE 38th St and 6-8 ft on the south side of SE 38th St. Sidewalks will be constructed on SE 38th St E/O Factoria Blvd SE per City standards with redevelopment. The congestion relief project will only occur with redevelopment because there is not adequate right of way today.
150th Avenue SE / SE 38th Street	C402	Modify E-W split phasing to concurrent phasing	Not Impacted	Yes		Elsewhere in City - 6-8 ft.	Standard	LOS 1 on 150th Ave SE - not impacted or precluded	See above.
150th Avenue SE / SE Newport Way	C501	Add 2x Left at southbound approach to alleviate queuing spillback	Yes		Yes	Elsewhere in City - 6-8 ft.	Standard	LOS 1 on 150th Ave SE - PBL on 150th (16 ft.); LOS 3 on SE Newport Way - sharrows W/O intersection, striped bike lane E/O intersection (5 ft.); LOS 1 Bike intersection improvements on 150th Ave SE - bike signal, green solid or skip-stripe, green bike box, Dutch intersection; LOS 3 Bike intersection improvements on SE Newport Way - green cycle length, sharrow lane markings, automatic signal actuation, bike lane to left at approach to intersection	The City's MMLOS standard can be met but will require acquisition of at least five single family homes adjacent to the congestion relief project. If right of way is acquired, then the City could construct a protected bike lane using 16 ft of right of way on 150th Ave SE as well as sharrows on Newport west of intersection and a striped bike lane east of the intersection. The intersection would also need to accommodate LOS 1bike intersection improvements on 150th Ave SE, which include: bike signals, green solid or skip-stripe, green bike box, Dutch intersection; and LOS 3 Bike intersection improvements on Newport Way: green cycle length, sharrow lane markings, automatic signal actuation, bike lane to left at approach to intersection.
Factoria Boulevard SE / SE 36th Street - I-90EB Off-Ramp	C701	Add variable channelization for EB approach (1 EBT and 1 EBT/R in AM), plus EB receiving lane	Not Impacted	Yes		Activity Center - 16 ft.	Standard	LOS 1 on SE 36th St - planned for construction as part of Mountains to Sound Trail, not impacted or precluded	There is adequate right of way for the channelization improvements that would not impact nor preclude the MMLOS standard of LOS 1 on SE 36th St (planned for construction as part of Mountains to Sound Trail). The pedestrian MMLOS standard of 16 ft for detached sidewalks would not be impacted or precluded from construction.
Factoria Boulevard / SE 38th Street	C801	Add 2x WB Left (maintain right turn pocket)	Yes		Yes	Activity Center - 16 ft. - Assume construction per City standards with redevelopment	Activity Center - Enhanced	No bike facilities on SE 38th St E/O SE Factoria Blvd	Sidewalks will be constructed on 38th St E/O SE Factoria Blvd per City standards with redevelopment. The congestion relief project will only occur with redevelopment because there is not adequate right of way today.
Factoria Boulevard / SE 38th Street	C802	Additional channelization mods (EB 2x Left exclusive)	Yes		Yes	Activity Center - 16 ft. - Assume construction per City standards with redevelopment	Activity Center - Enhanced	LOS 3 on SE 38th St W/O SE Factoria Blvd - Sharrow lane marking or no marking (30 mph and <15K)	There is adequate right of way to meet MMLOS standard of LOS 3 on SE 38th St west of SE Factoria Boulevard with a sharrow lane marking or no marking. The project will not impact nor preclude future construction of 16 ft sidewalks per the activity center standard.
SE Eastgate Way / SE 37th Street	C901	Add signal and modify channelization	Yes			Elsewhere in City - 6-8 ft.	Standard	LOS 3 on SE 35th Pl - no marking or shared marking (north leg; 25 mph, >7k) LOS 3 on SE Eastgate Way - Sharrow lane marking or no marking (west leg; 30 mph, <15k), LOS 1 on SE 37th St (Mountains to Sound Trail)	There is adequate right of way to accommodate LOS 3 on SE 35th Pl and on the west leg of SE Eastgate Way with no markings or sharrow markings. There is adequate right of way to meet the pedestrian MMLOS standard by constructing 6-8 ft sidewalks.
142nd Place SE / SE 36th Street	C1001	Add SBL and remove E crosswalk (or SBR and W crosswalk)	No	Yes	Yes	Elsewhere in City - 6-8 ft.	Standard	LOS 3 on 142nd Pl SE - Sharrow lane marking or no marking (25 mph and >7k), LOS 1 on SE 36th St (Mountains to Sound Trail)	There is adequate right of way to meet the LOS 3 bike standard on 142nd Pl SE with a sharrow or no marking. The Mountains to Sound Trail will accommodate the LOS 1 on SE 36th St. There is adequate right of way to meet the pedestrian MMLOS standard by constructing 6-8 ft sidewalks.
139th Avenue SE / SE 32nd Street	C1201	Add signal	Yes			Elsewhere in City - 6-8 ft.	Standard	LOS 3 on 139th Ave SE - striped or protected bike lane (35 mph, <25k) and SE 32nd St - no marking or sharrow lane marking (30 mph, <15k)	There is adequate right of way for project to meet the bike MMLOS standard by constructing a striped or protected bike lane on 139th Ave SE. The intersection will meet the MMLOS bike standard on SE 32nd with no marking. The project will meet the pedestrian MMLOS standard by constructing 6-8 ft sidewalks at the intersection to connect to any future sidewalks.

Appendix F

Plan Views of Recommended Congestion Reduction Projects

Neighborhood Congestion Reduction



10% DESIGN - NOT FOR CONSTRUCTION

BASELINE / EXISTING

NO.	DATE	BY	APPR.	REVISIONS

Approved By

TRANSPORTATION DESIGN MANAGER DATE

PROJECT MANAGER DATE

DATE

DESIGNED BY : DATE

DRAWN BY : DATE

CHECKED BY DATE

City of Bellevue
Transportation Department

kpff

EASTGATE TRANSPORTATION STUDY

C201/203/302
150TH AVE SE AND
SE 37th St and SE 38th St

SHT 1 OF 7

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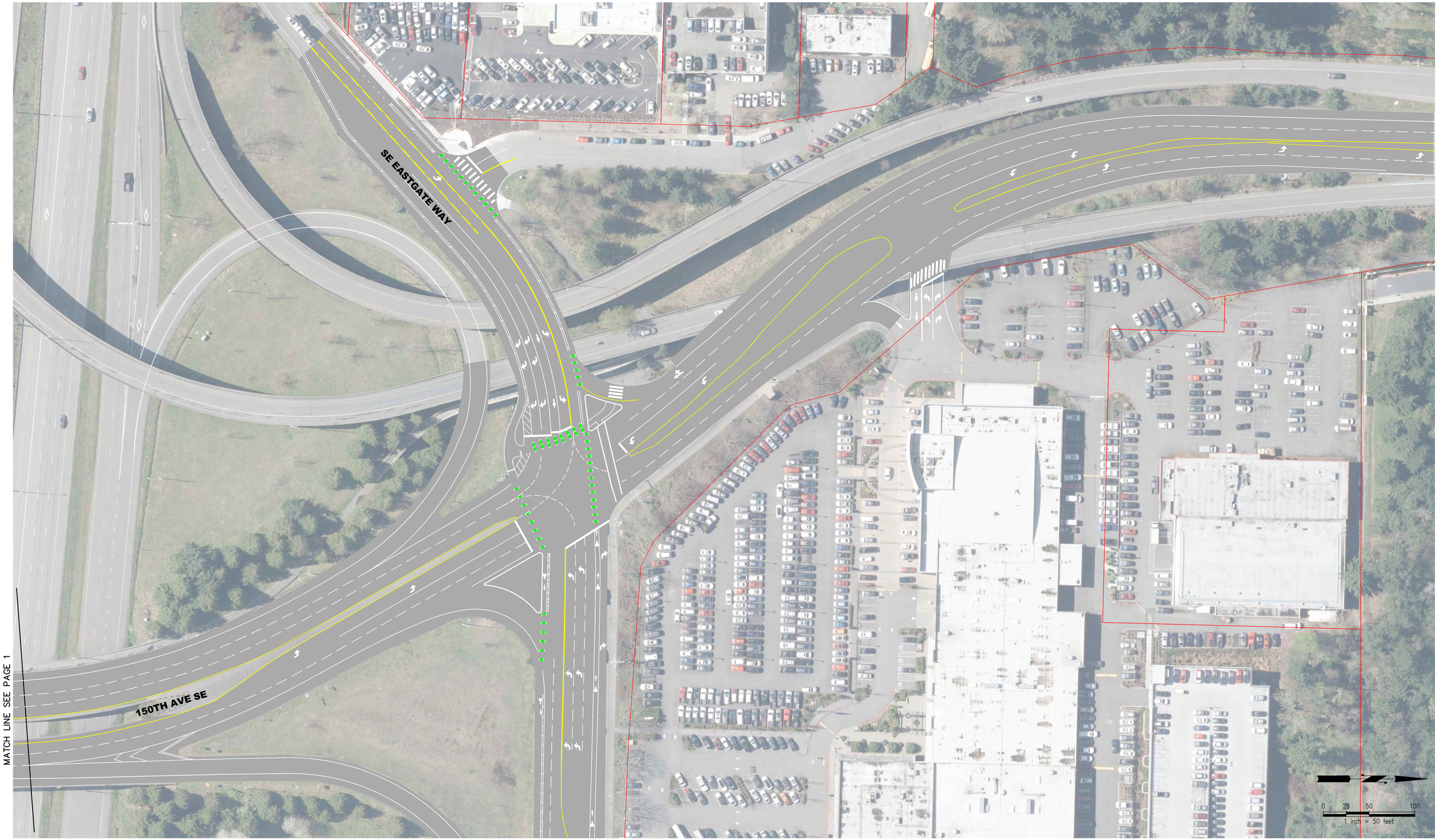
Jun 17, 2019 – 11:55am



10% DESIGN - NOT FOR CONSTRUCTION

BASELINE / EXISTING

NO.	DATE	BY	APPR.	REVISIONS

Approved By

TRANSPORTATION DESIGN MANAGER DATE

PROJECT MANAGER DATE

DATE

DESIGNED BY : DATE

DRAWN BY : DATE

CHECKED BY DATE

City of Bellevue
Transportation Department

kpff

EASTGATE TRANSPORTATION STUDY

C101, C102
150TH AVE SE AND SE EASTGATE WAY

SHT 2 OF 7

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keithi

Jun 17, 2019 – 11:55am

10% DESIGN - NOT FOR CONSTRUCTION

BASELINE / EXISTING

NO.	DATE	BY	APPR.	REVISIONS

Approved By

TRANSPORTATION DESIGN MANAGER DATE

PROJECT MANAGER DATE

DATE

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CHECKED BY DATE

City of Bellevue
Transportation Department

kpff

EASTGATE TRANSPORTATION STUDY

C701
SE 36TH ST AND FACTORIA BLVD SE

SHT 3 OF 7

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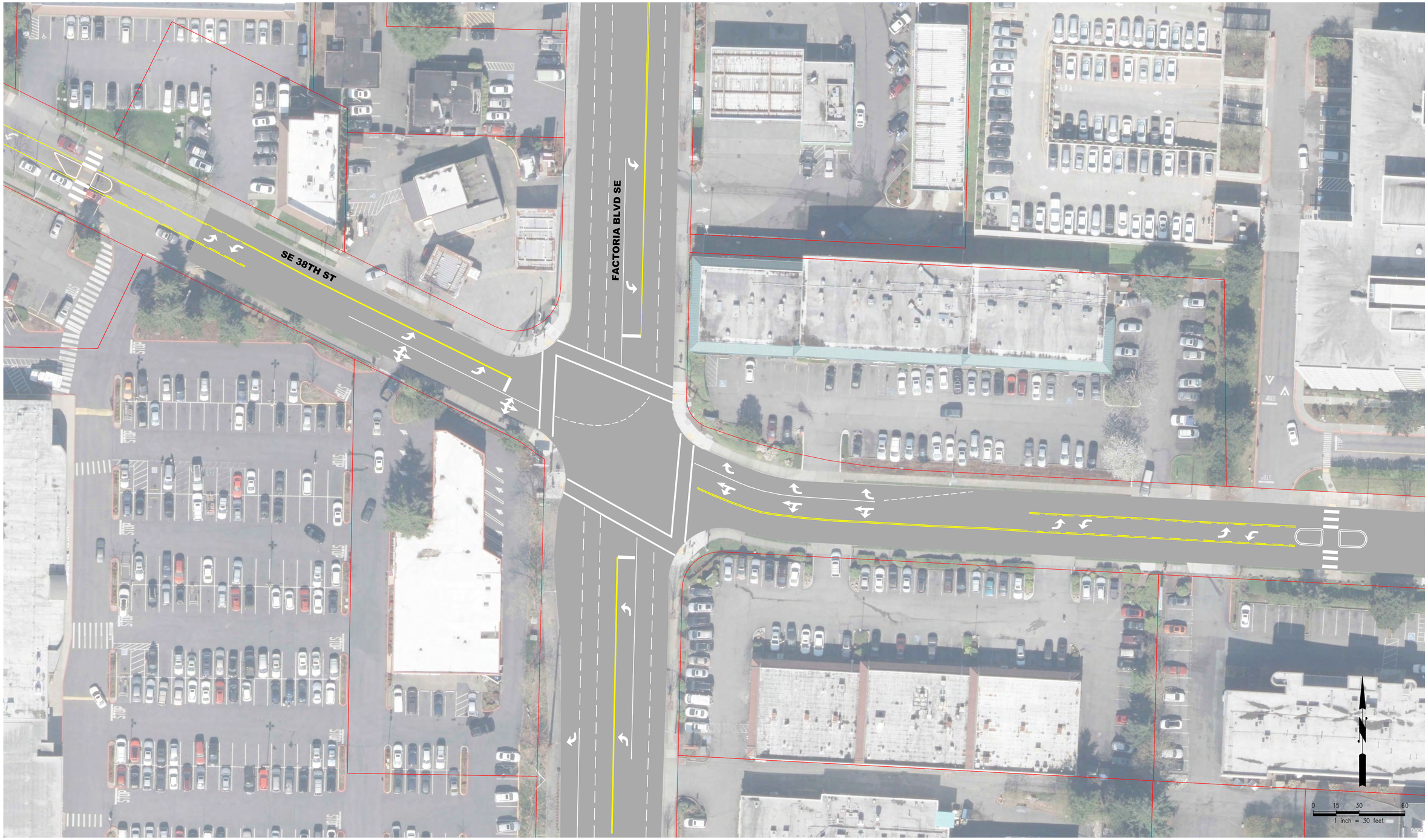
Jun 17, 2019 – 11:50am



10% DESIGN - NOT FOR CONSTRUCTION

BASELINE / EXISTING

NO.	DATE	BY	APPR.	REVISIONS

Approved By

TRANSPORTATION DESIGN MANAGER DATE

PROJECT MANAGER DATE

DATE

DESIGNED BY : DATE

DRAWN BY : DATE

CHECKED BY DATE

City of Bellevue
Transportation Department

kpff

EASTGATE TRANSPORTATION STUDY

C801/ C802
FACTORIA BLVD SE AND SE 38TH ST

SHT 4 OF 7

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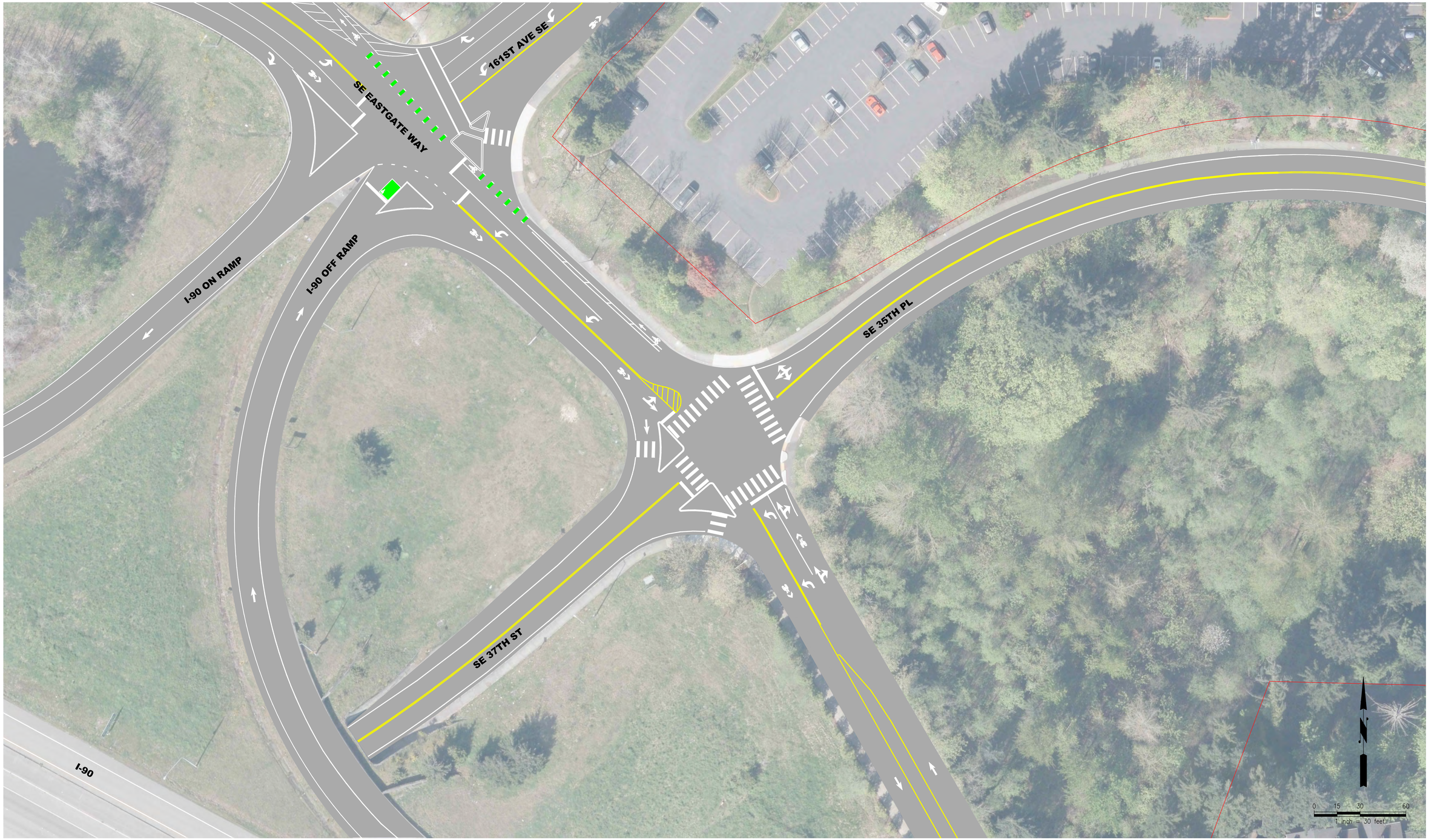
keithi

Jun 17, 2019 - 11:56am



10% DESIGN - NOT FOR CONSTRUCTION

BASELINE / EXISTING

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Approved By

TRANSPORTATION DESIGN MANAGER DATE

PROJECT MANAGER DATE

DATE

DESIGNED BY : DATE

DRAWN BY : DATE

CHECKED BY DATE

City of Bellevue
Transportation Department

kpff

EASTGATE TRANSPORTATION STUDY

C901
SE 37TH ST AND EASTGATE WAY

SHT 5 OF 7

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keithi

Jun 17, 2019 – 11:56am

10% DESIGN - NOT FOR CONSTRUCTION

BASELINE / EXISTING

NO.	DATE	BY	APPR.	REVISIONS

Approved By

TRANSPORTATION DESIGN MANAGER DATE

PROJECT MANAGER DATE

DATE

DESIGNED BY : DATE

DRAWN BY : DATE

CHECKED BY DATE

City of Bellevue
Transportation Department

kpff

EASTGATE TRANSPORTATION STUDY

C1001
SE 36TH ST AND 142ND PL SE

SHT 6 OF 7

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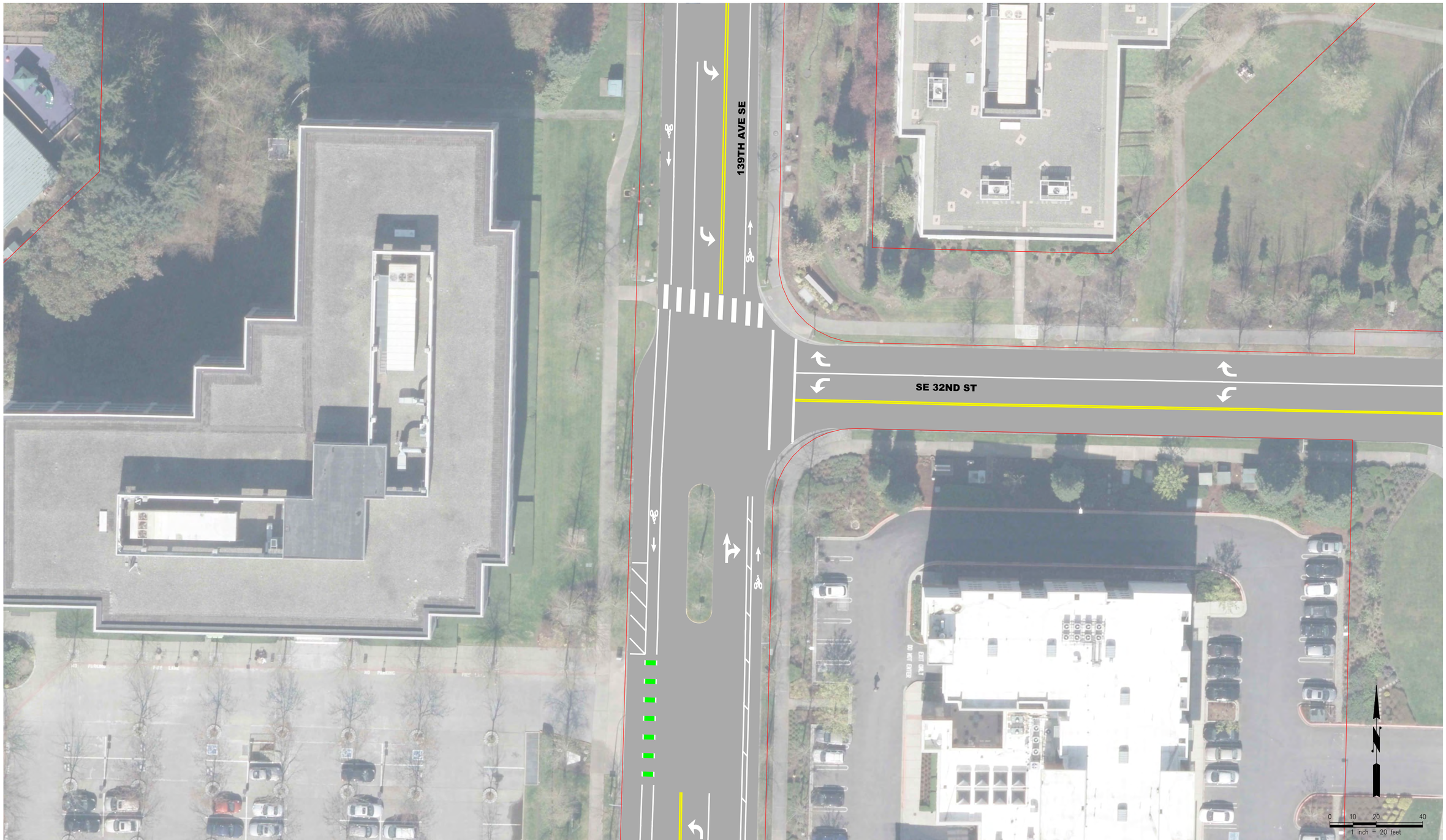
keithi

Jun 17, 2019 - 11:56am



10% DESIGN - NOT FOR CONSTRUCTION

BASELINE / EXISTING

NO.	DATE	BY	APPR.	REVISIONS

Approved By

TRANSPORTATION DESIGN MANAGER — DATE

PROJECT MANAGER — DATE

DATE

DESIGNED BY : — DATE

DRAWN BY : — DATE

CHECKED BY — DATE

City of Bellevue
Transportation Department

kpff

EASTGATE TRANSPORTATION STUDY

C1201
139TH AVE SE AND SE 32ND ST

SHT 7 OF 7

keithi

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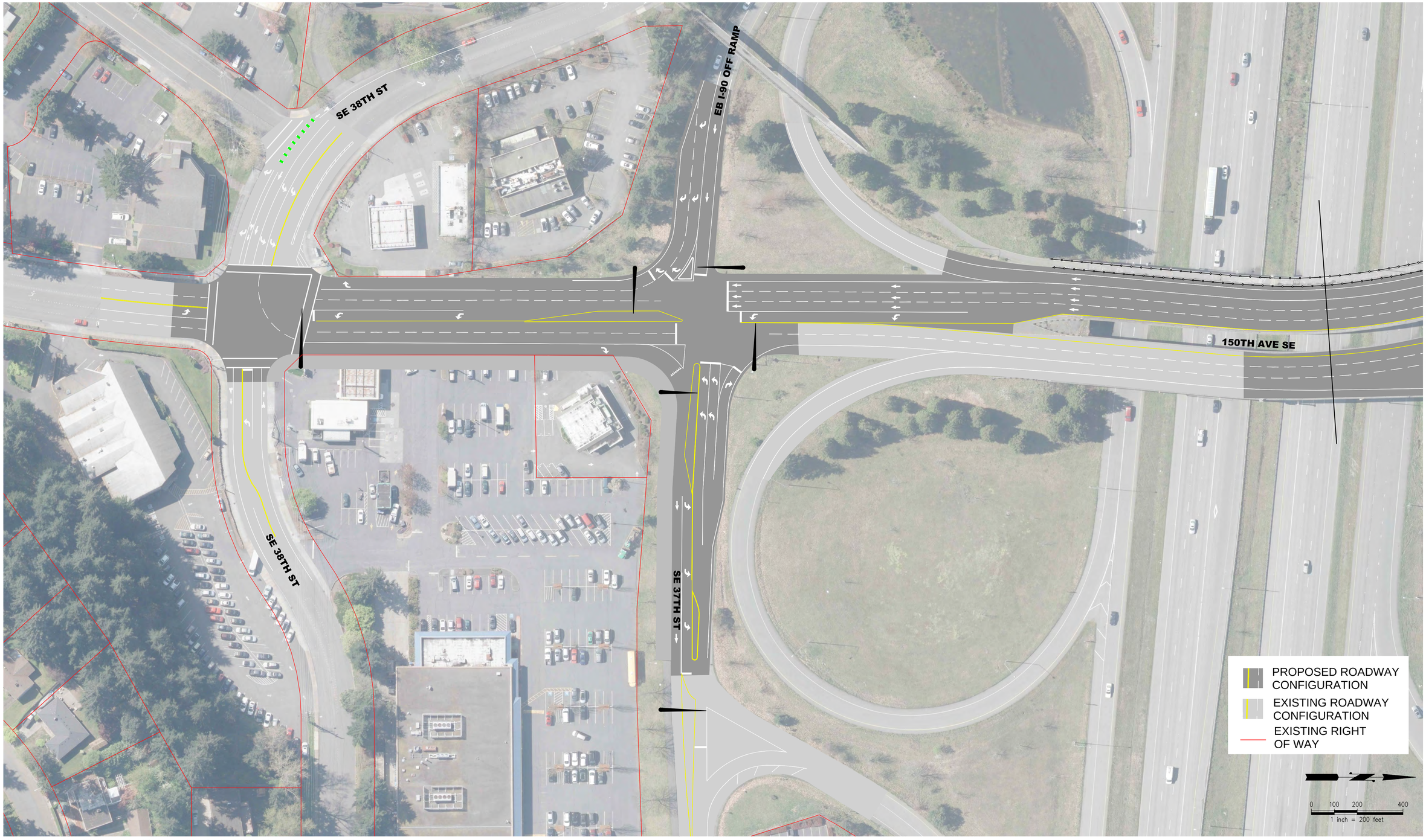

10% DESIGN - NOT FOR CONSTRUCTION

RECOMMENDED PROJECT

NO.	DATE	BY	APPR.	REVISIONS

Approved By

TRANSPORTATION DESIGN MANAGER — DATE

PROJECT MANAGER — DATE

DATE

J. EWING 6/2019 — DESIGNED BY : — DATE

J. EWING 6/2019 — DRAWN BY : — DATE

K. IRELAND 6/2019 — CHECKED BY — DATE

City of Bellevue
Transportation Department

kpff

EASTGATE TRANSPORTATION STUDY

C201/203/302
150TH AVE SE AND
SE 37TH ST AND SE 38TH ST

SHT 1 OF 8

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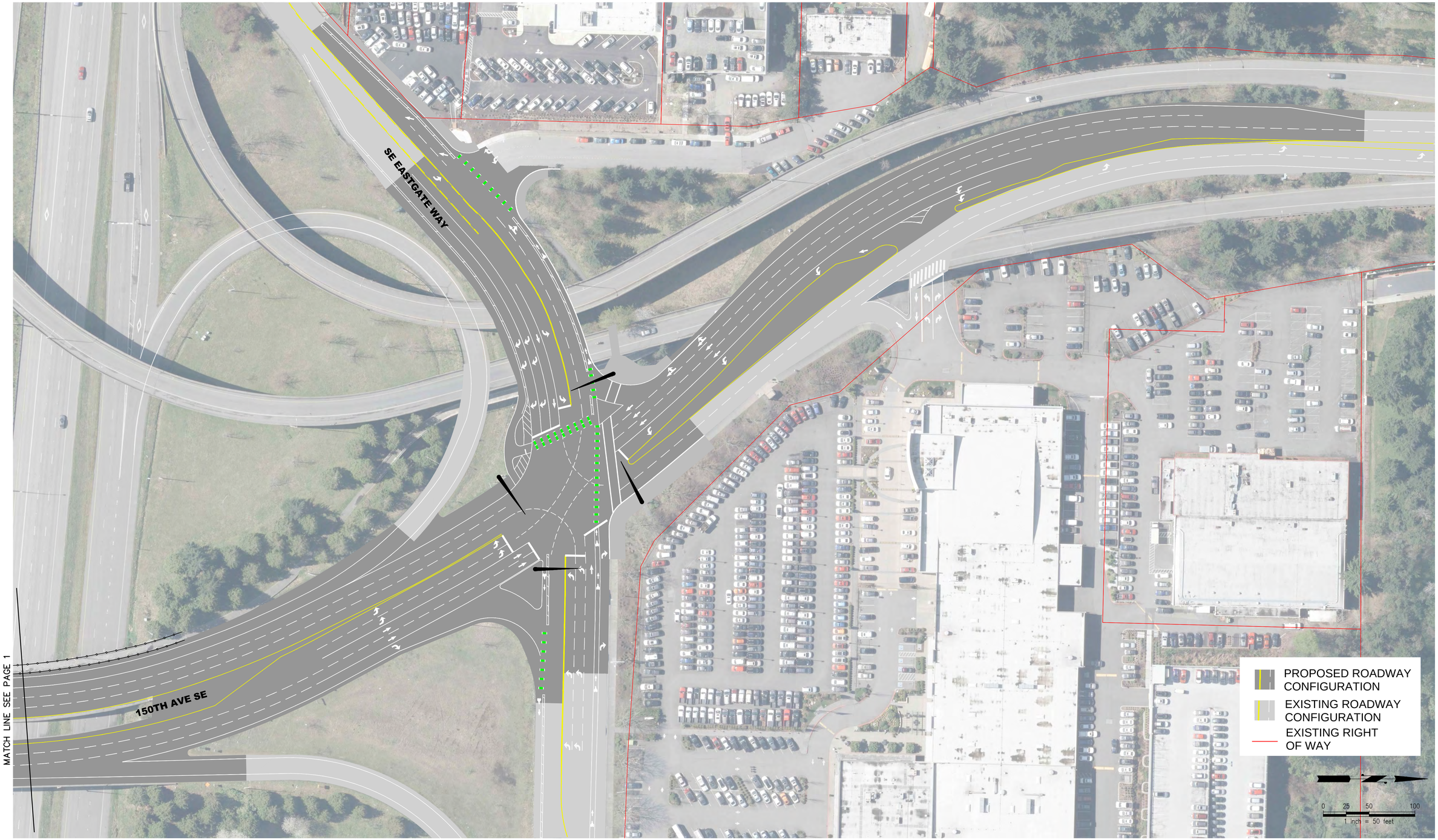

10% DESIGN - NOT FOR CONSTRUCTION

RECOMMENDED PROJECT

NO.	DATE	BY	APPR.	REVISIONS

Approved By

TRANSPORTATION DESIGN MANAGER — DATE

PROJECT MANAGER — DATE

DATE

C. MONKEN 6/2019
DESIGNED BY : DATE
C. MONKEN 6/2019
DRAWN BY : DATE
K. IRELAND 6/2019
CHECKED BY DATE

City of Bellevue
Transportation Department

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EASTGATE TRANSPORTATION STUDY

C102
150TH AVE SE AND SE EASTGATE WAY

SHT 2 OF 8

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RECOMMENDED PROJECT

NO.	DATE	BY	APPR.	REVISIONS

Approved By

TRANSPORTATION DESIGN MANAGER — DATE

PROJECT MANAGER — DATE

DATE

J. EWING	6/2019
DESIGNED BY :	DATE
J. EWING	6/2019
DRAWN BY :	DATE
K. IRELAND	6/2019
CHECKED BY	DATE

City of Bellevue
Transportation Department

kpff

EASTGATE TRANSPORTATION STUDY

C701
SE 36TH ST AND FACTORIA BLVD SE

SHT 3 OF 8

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NO.	DATE	BY	APPR.	REVISIONS

Approved By

TRANSPORTATION DESIGN MANAGER — DATE

PROJECT MANAGER — DATE

DATE

J. EWING 6/2019 — DESIGNED BY : — DATE

J. EWING 6/2019 — DRAWN BY : — DATE

K. IRELAND 6/2019 — CHECKED BY — DATE

City of Bellevue
Transportation Department

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EASTGATE TRANSPORTATION STUDY

C801
SE 38TH ST AND FACTORIA BLVD SE

SHT 4 OF 8

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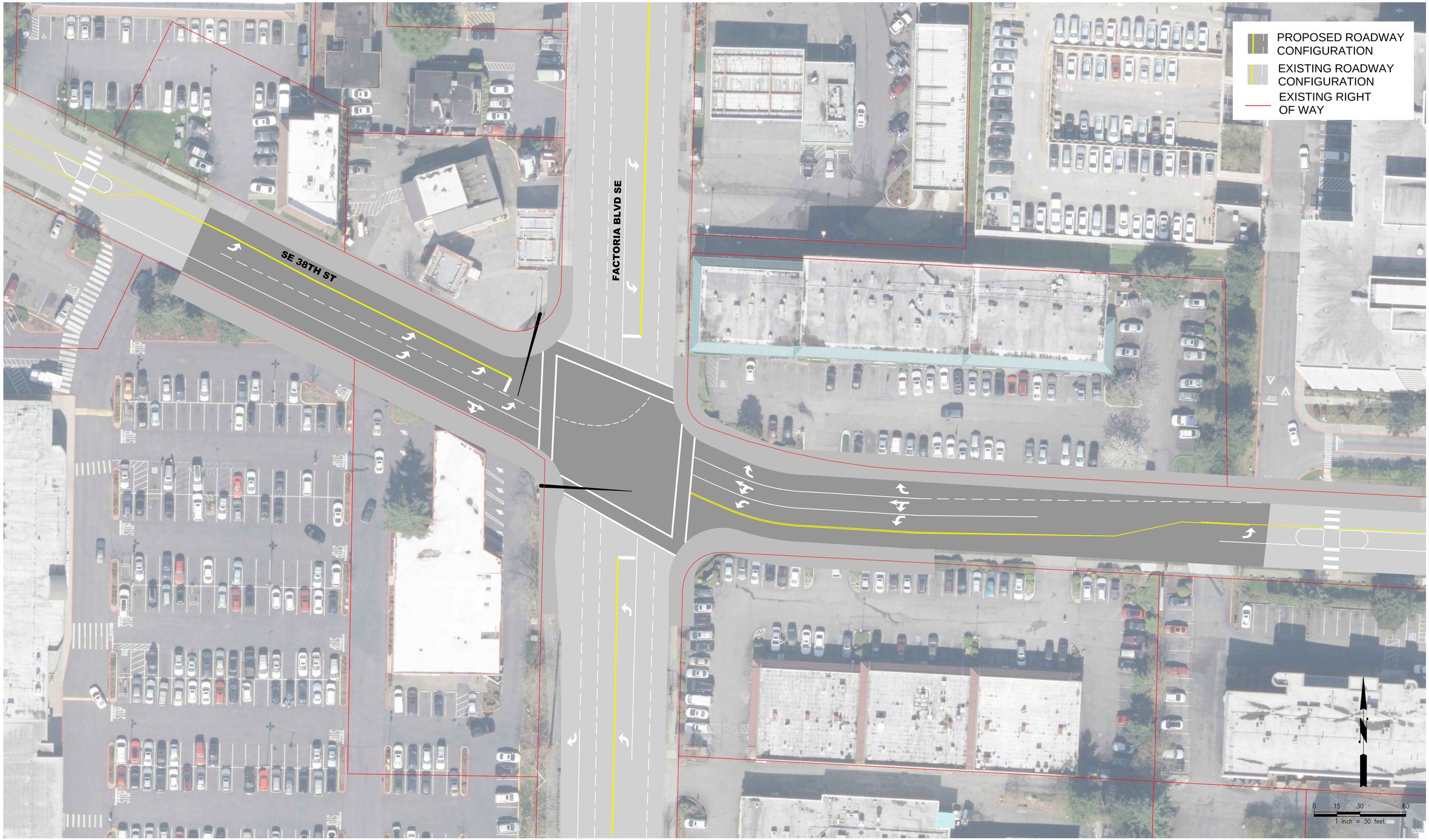

10% DESIGN - NOT FOR CONSTRUCTION

RECOMMENDED PROJECT

NO.	DATE	BY	APPR.	REVISIONS

Approved By

TRANSPORTATION DESIGN MANAGER — DATE

PROJECT MANAGER — DATE

DATE

J. EWING 6/2019
DESIGNED BY : DATE
J. EWING 6/2019
DRAWN BY : DATE
K. IRELAND 6/2019
CHECKED BY DATE

City of Bellevue
Transportation Department

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EASTGATE TRANSPORTATION STUDY

C802
SE 38TH ST AND FACTORIA BLVD SE

SHT 5 OF 8

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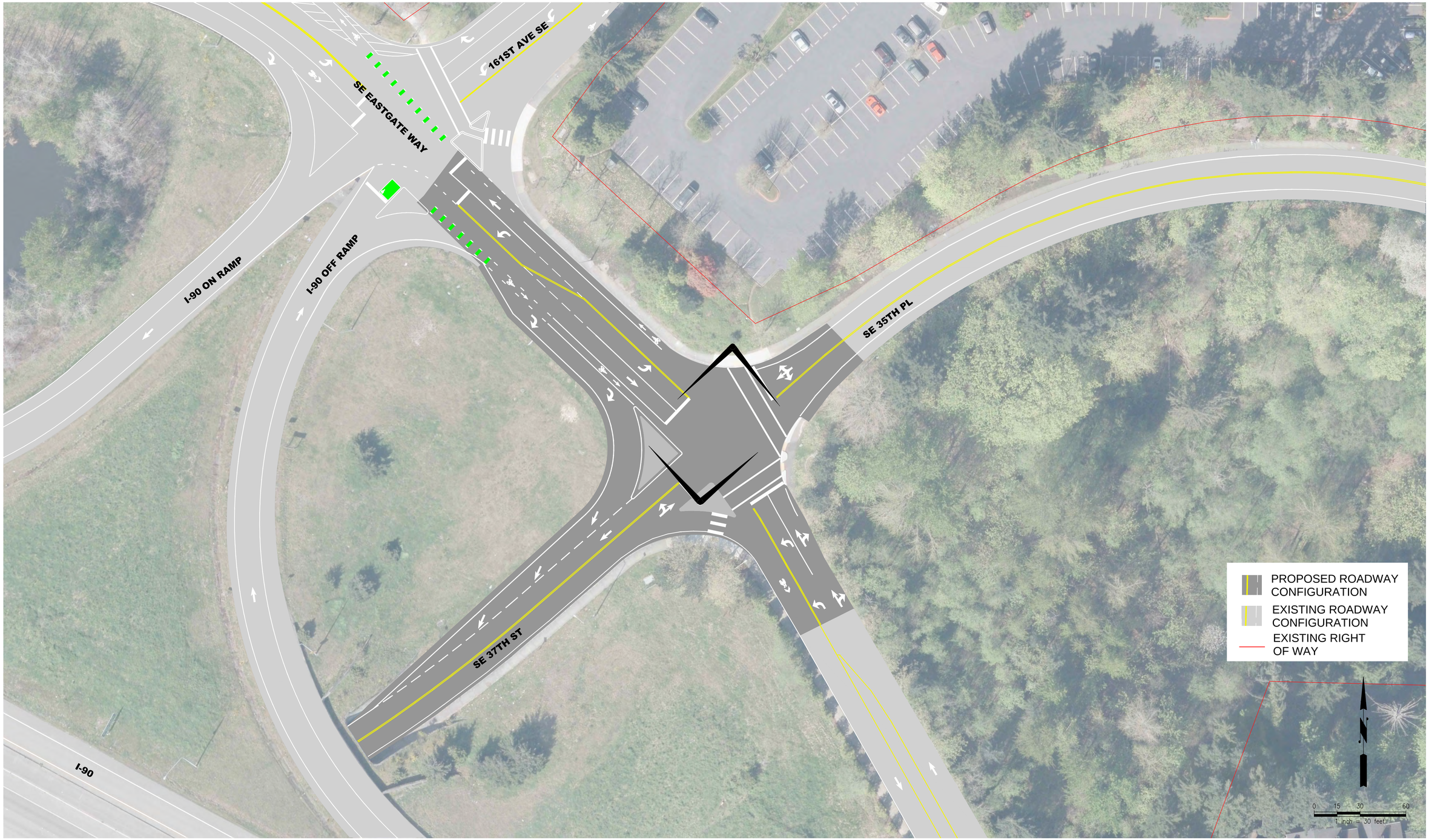

10% DESIGN - NOT FOR CONSTRUCTION

RECOMMENDED PROJECT

NO.	DATE	BY	APPR.	REVISIONS

Approved By

TRANSPORTATION DESIGN MANAGER — DATE

PROJECT MANAGER — DATE

DATE

J. SHINN	6/2019
DESIGNED BY :	DATE
J. SHINN	6/2019
DRAWN BY :	DATE
K. IRELAND	6/2019
CHECKED BY	DATE

City of Bellevue
Transportation Department

kpff

EASTGATE TRANSPORTATION STUDY

C901
SE 37TH ST AND EASTGATE WAY

SHT 6 OF 8

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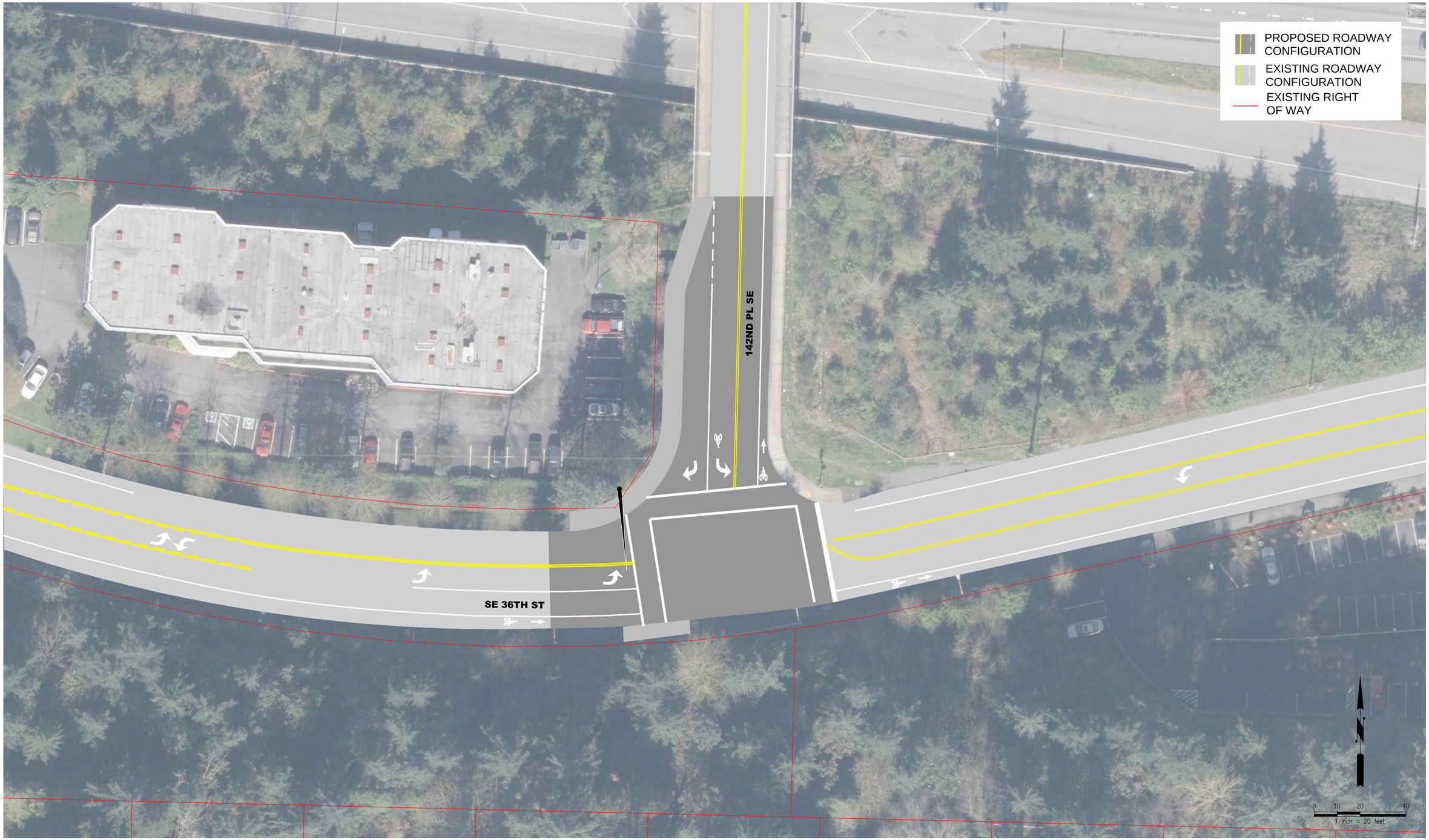

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PROJECT MANAGER — DATE

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J. SHINN	6/2019
DESIGNED BY :	DATE
J. SHINN	6/2019
DRAWN BY :	DATE
K. IRELAND	6/2019
CHECKED BY	DATE

City of Bellevue
Transportation Department

kpff

EASTGATE TRANSPORTATION STUDY

C1001
SE 36TH ST AND 142ND PL SE

SHT 7 OF 8

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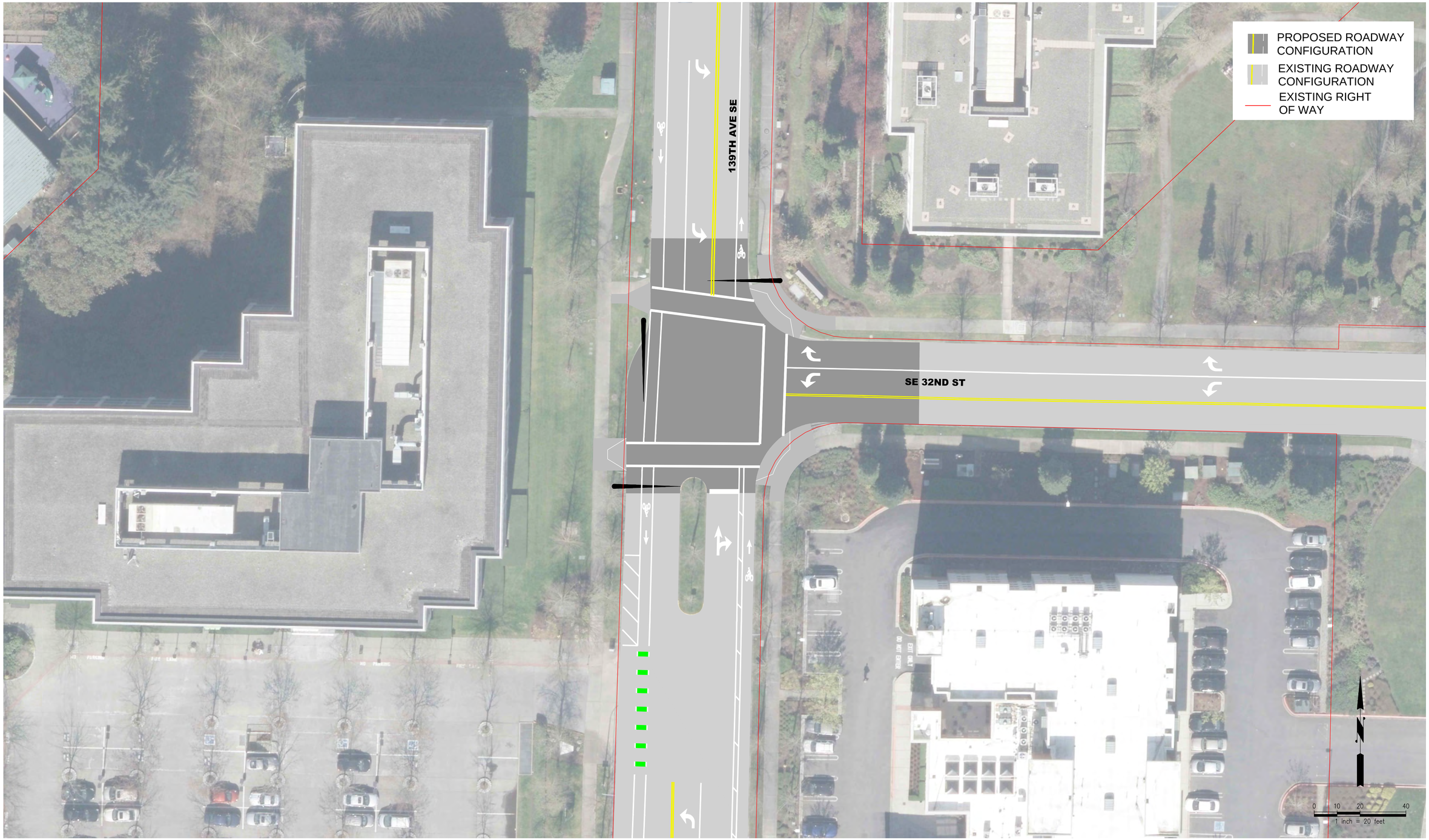

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RECOMMENDED PROJECT

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Approved By

TRANSPORTATION DESIGN MANAGER — DATE

PROJECT MANAGER — DATE

DATE

J. EWING	6/2019
DESIGNED BY :	DATE
J. EWING	6/2019
DRAWN BY :	DATE
K. IRELAND	6/2019
CHECKED BY	DATE

City of Bellevue
Transportation Department

kpff

EASTGATE TRANSPORTATION STUDY

C1201
139TH AVE SE AND SE 32ND ST

SHT 8 OF 8

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Jun 14, 2019 – 8:33am

Appendix G

Cost Estimates

Neighborhood
Congestion
Reduction

DRAFT - OPINION OF PROBABLE COST - EXECUTIVE SUMMARY

PROJECT: Eastgate Traffic Study
CIP NO.
DATE: 04/25/19

Project	Project Location	Cost (1000's)		Assumptions
C101	150th Ave SE - 2 SB lanes	$	2,380,000	Existing shoulders assumed to not be full depth pavement
C102	150th Ave SE - 3 SB lanes	$	5,040,000	No bridge structure retrofit required to add additional lane, Existing shoulders assumed to not be full depth pavement
C201	150th Ave SE - I-90 off ramp	$	1,620,000	
C203	150th Ave SE - SE 37th ST	$	920,000	
C302	SE 37th ST - I-90 on ramp - Signal	$	455,000	
C401	150th Ave SE - SE 38th ST	$	520,000	*Frontage improvements will be completed during redevelopment for R/W and sidewalk
C500	Newport Way - 150th Ave SE			Full takes required on 5 parcels
C701	Factoria Blvd SE - SE 36th ST			Improvements adjacent to T-Mobile, potential major utility work required, cost not reported due to unknown risk.
C801	Factoria Blvd SE - SE 38th ST - Re-stripe	$	175,000	
C802	Factoria Blvd SE - SE 38th ST - Full Build	$	950,000	*Frontage improvements will be completed during redevelopment for R/W and sidewalk, Traffic Signal duplicate from C801
C901	SE Eastgate Way and SE 37th St	$	1,150,000	
C1001	142nd PL SE & SE 36th ST	$	810,000	
C1201	139th Ave SE and SE 32nd ST	$	930,000	

Assumptions:
1. Estimate calculated in 2019 dollars.
2. Estimate is based on 5% Design
3. Cost estimate include design and construction costs
4. Work in the vicinity of 150th, costs assume shoulders are not full depth pavement, reconstruction taken to existing edge of traveled way
5. Drainage costs assume, detention structures are vaults or pipes

OPINION OF PROBABLE COST - SUMMARY
PROJECT: Eastgate Transporation Study
C101- 150TH AVE SE AND SE EASTGATE WAY
CIP NO.
DATE:

I. RIGHT OF WAY ACQUISITION & EASEMENT AND REIMBURSEMENT COSTS				
II. CONSTRUCTION				
1. Grading/Drainage				
2. Structures				
3. Surfacing/Paving				
4. Roadside Development				
5. Traffic Services & Safety				
		$450,800		
6. Miscellaneous Items Not Yet Estimated				
20.0% of (Lines 1 through 5) @ 5% Level		*$90,160*	**$ 540,960**	
7. Allowance for 5%-Level Accuracy				
30.0% of (Lines 1 through 6)	*$*	*162,288.00*		
8.Traffic Signal				
All inclusive Includes such items as: conduits, APS, mast, signal heads, etc.	*$*	*500,000.00*	**$ 1,203,248.00**	
9. Mobilization, Survey, Potholing				
15% of (Line 1 through 8)	*$*	*180,487.20*		
10. Maintenance of Traffic				
15% of (Line 1 through 8)	*$*	*180,487.20*	**$ 1,564,222.4**	
11. Construction Engineering				
15.0% of (Lines 1 through 10)	*$*	*234,633.36*		
12. Construction Contingency				
10.0% of (Lines 1 through 10)	*$*	*156,422.24*		**$ 1,955,278.00**
III. DESIGN ENGINEERING AND CITY COSTS				
1. Design Engineering (Consultant Contract)				
15.0% of (CONSTRUCTION cost not incl contingency)	*$*	*234,633.36*		
2. Agency Administration				
10.0% of (CONSTRUCTION cost not incl contingency)	*$*	*156,422.24*		
3. Alignment Survey				
2.0% of (CONSTRUCTION cost not incl contingency)	*$*	*31,284.45*		
TOTAL ESTIMATED COST				**$ 2,377,700.00**

Assumptions:
1. Estimate calculated in 2019 dollars.
2. Estimate is based on 5% Design

*Items not estimated at 5% level assumed cost for these included in items 6 and 7.

kpff
1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
206.622.5822

Client: City of Bellevue
Project: Eastgate Transporation Study
Title: C101- 150TH AVE SE AND SE EASTGATE WAY
By: JES
Date: 04/15/19

Preliminary Engineer's Estimate of Probable Cost

C101- 150TH AVE SE AND SE EASTGATE WAY

ITEM NO.	STD ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL COST	% OF CONST
		ROADWAY					
	25	CLEARING AND GRUBBING	0.12	Acre	$60,000	$7,272.73	1.6%
	310	ROADWAY EXCAVATION INCL. HAUL	513	CY	$25.00	$12,821.33	2.8%
	5120	CRUSHED SURFACING TOP COURSE	358	TON	$60.00	$21,507.24	4.8%
	5767	HMA CL 1/2" PG 58H-22	895	TON	$200.00	$178,932.10	39.7%
	6700	CEMENT CONC. TRAFFIC CURB AND GUTTER	938	LF	$75.00	$70,350.00	15.6%
	7055	CEMENT CONC. SIDEWALK	190	SY	$125.00	$23,791.67	5.3%
	7058	CEMENT CONC. CURB RAMP TYPE	4	EA	$3,500.00	$14,000.00	3.1%
	SP	FENCING	0	LF	$40.00	$0.00	0.0%
		DRAINAGE/UTILITIES					
	3541	SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	30	LF	$70.00	$2,100.00	0.5%
	3091	CATCH BASIN TYPE 1	2	EA	$2,500.00	$5,000.00	1.1%
	3105	CATCH BASIN TYPE 2 48 IN. DIAM.		EA	$5,000.00	$0.00	0.0%
	3767	PVC SANITARY SEWER PIPE 8 IN. DIAM.		LF	$45.00	$0.00	0.0%
		WATER QUALITY		SF	$2.50	$0.00	0.0%
		DETENTION		SF	$15.00	$0.00	0.0%
		STRUCTURE				$0.00	0.0%
	SP	GRAVITY BLOCK WALL		SF	$120.00	$0.00	0.0%
	SP	CONCRETE STAIRWAY		LS	$3,000.00	$0.00	0.0%
		ENVIRONMENT					
		EROSION/WATER POLLUTION CONTROL	1	LS	$10,000.00	$10,000.00	2.2%
		SWPPP PREPARATION AND MAINTENANCE	1	LS	$5,000.00	$5,000.00	1.1%
		SPCC PLAN	1	LS	$5,000.00	$5,000.00	1.1%
		TRAFFIC AND ILLUMINATION					0.0%
		PERMANENT SIGNING AND STRIPING	1	LS	$15,000.00	$15,000.00	3.3%
		ILLUMINATION	3	EA	$25,000.00	$75,000.00	16.6%
		LANDSCAPING					
		LANDSCAPE RESTORATION	1	LS	$5,000.00	$5,000.00	1.1%
			Subtotal			**$450,800.00**	

OPINION OF PROBABLE COST - SUMMARY
PROJECT: Eastgate Transporation Study
C102- 150th AVE SE - 3 SB Lanes
CIP NO.
DATE:

I. RIGHT OF WAY ACQUISITION & EASEMENT AND REIMBURSEMENT COSTS				
II. CONSTRUCTION				
1. Grading/Drainage				
2. Structures				
3. Surfacing/Paving				
4. Roadside Development				
5. Traffic Services & Safety				
		$1,312,800		
6. Miscellaneous Items Not Yet Estimated				
20.0% of (Lines 1 through 5) @ 5% Level		*$262,560*	**$1,575,360**	
7. Allowance for 5%-Level Accuracy				
30.0% of (Lines 1 through 6)	*$*	*472,608.00*		
8.Traffic Signal				
All inclusive Includes such items as: conduits, APS, mast, signal heads, etc.	*$*	*500,000.00*	**$ 2,547,968.00**	
9. Mobilization, Survey, Potholing				
15% of (Line 1 through 8)	*$*	*382,195.20*		
10. Maintenance of Traffic				
15% of (Line 1 through 8)	*$*	*382,195.20*	**$ 3,312,358.4**	
11. Construction Engineering				
15.0% of (Lines 1 through 10)	*$*	*496,853.76*		
12. Construction Contingency				
10.0% of (Lines 1 through 10)	*$*	*331,235.84*		**$ 4,140,448.00**
III. DESIGN ENGINEERING AND CITY COSTS				
1. Design Engineering (Consultant Contract)				
15.0% of (CONSTRUCTION cost not incl contingency)	*$*	*496,853.76*		
2. Agency Administration				
10.0% of (CONSTRUCTION cost not incl contingency)	*$*	*331,235.84*		
3. Alignment Survey				
2.0% of (CONSTRUCTION cost not incl contingency)	*$*	*66,247.17*		
TOTAL ESTIMATED COST				**$ 5,034,800.00**

Assumptions:
1. Estimate calculated in 2019 dollars.
2. Estimate is based on 5% Desig 0

*Items not estimated at 5% level assumed cost for these included in items 6 and 7.

kpff
1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
206.622.5822

Client: City of Bellevue
Project: Eastgate Transporation Study
Title: C102- 150th AVE SE - 3 SB L
By: JES
Date: 04/15/19

Preliminary Engineer's Estimate of Probable Cost

C102- 150th AVE SE - 3 SB Lanes

ITEM NO.	STD ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL COST	% OF CONST
		ROADWAY					
	0025	CLEARING AND GRUBBING	0.46	Acre	$60,000	$27,548.21	2.1%
	0310	ROADWAY EXCAVATION INCL. HAUL	823	CY	$25.00	$20,576.11	1.6%
	5120	CRUSHED SURFACING TOP COURSE	1020	TON	$60.00	$61,200.00	4.7%
	5767	HMA CL 1/2" PG 58H-22	3500	TON	$150.00	$525,000.00	40.0%
	6700	CEMENT CONC. TRAFFIC CURB AND GUTTER	1650	LF	$50.00	$82,500.00	6.3%
	7055	CEMENT CONC. SIDEWALK	300	SY	$125.00	$37,500.00	2.9%
	SP	FENCING	0	LF	$40.00	$0.00	0.0%
		DRAINAGE/UTILITIES					
	3541	SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	600	LF	$45.00	$27,000.00	2.1%
	3091	CATCH BASIN TYPE 1	4	EA	$2,500.00	$10,000.00	0.8%
	3105	CATCH BASIN TYPE 2 48 IN. DIAM.	3	EA	$5,000.00	$15,000.00	1.1%
	3767	PVC SANITARY SEWER PIPE 8 IN. DIAM.		LF	$45.00	$0.00	0.0%
		WATER QUALITY	22075	SF	$2.50	$55,187.50	4.2%
		DETENTION	8946.5	CF	$15.00	$134,197.50	10.2%
		STRUCTURE				$0.00	0.0%
	SP	GRAVITY BLOCK WALL		SF	$120.00	$0.00	0.0%
	SP	CONCRETE STAIRWAY		LS	$3,000.00	$0.00	0.0%
	4410	BP RAIL	1100	LF	$120.00	$132,000.00	10.1%
		ENVIRONMENT					
		EROSION/WATER POLLUTION CONTROL	1	LS	$20,000.00	$20,000.00	1.5%
		SWPPP PREPARATION AND MAINTENANCE	1	LS	$5,000.00	$5,000.00	0.4%
		SPCC PLAN	1	LS	$5,000.00	$5,000.00	0.4%
		TRAFFIC AND ILLUMINATION					0.0%
		PERMANENT SIGNING AND STRIPING	1	LS	$5,000.00	$5,000.00	0.4%
		ILLUMINATION	4	LS	$25,000.00	$100,000.00	7.6%
		LANDSCAPING					
		LANDSCAPE RESTORATION	1	LS	$10,000.00	$10,000.00	0.8%
		URBAN DESIGN	1	LS	$40,000.00	$40,000.00	3.0%
				Subtotal		**$1,312,800.00**	

OPINION OF PROBABLE COST - SUMMARY
PROJECT: Eastgate Transporation Study

C102/201 150th Ave SE

CIP NO.
DATE:

I. RIGHT OF WAY ACQUISITION & EASEMENT AND REIMBURSEMENT COSTS					
II. CONSTRUCTION					
1. Grading/Drainage					
2. Structures					
3. Surfacing/Paving					
4. Roadside Development					
5. Traffic Services & Safety					
			$267,900		
6. Miscellaneous Items Not Yet Estimated					
20.0% of (Lines 1 through 5) @ 5% Level			*$53,580*	**$ 321,480**	
7. Allowance for 5%-Level Accuracy					
30.0% of (Lines 1 through 6)			*$ 96,444.00*		
8.Traffic Signal					
All inclusive Includes such items as: conduits, APS, mast, signal heads, etc.			*$ 400,000.00*	**$ 817,924.00**	
9. Mobilization, Survey, Potholing					
15% of (Line 1 through 8)			*$ 122,688.60*		
10. Maintenance of Traffic					
15% of (Line 1 through 8)			*$ 122,688.60*	**$ 1,063,301.2**	
11. Construction Engineering	5802 SF	2.5			
15.0% of (Lines 1 through 1(	*1843*		*$ 159,495.18*		
12. Construction Contingency					
10.0% of (Lines 1 through 10)			*$ 106,330.12*		**$ 1,329,126.50**
III. DESIGN ENGINEERING AND CITY COSTS					
1. Design Engineering (Consultant Contract)					
15.0% of (CONSTRUCTION cost not incl contingency)			*$ 159,495.18*		
2. Agency Administration					
10.0% of (CONSTRUCTION cost not incl contingency)			*$ 106,330.12*		
3. Alignment Survey					
2.0% of (CONSTRUCTION cost not incl contingency)			*$ 21,266.02*		
TOTAL ESTIMATED COST					**$ 1,616,300.00**

Assumptions:
1. Estimate calculated in 2019 dollars.
2. Estimate is based on 5% Design

*Items not estimated at 5% level assumed cost for these included in items 6 and 7.

kpff
1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
206.622.5822

Client: City of Bellevue
Project: Eastgate Transporation Study
Title: C102/201 150th Ave SE
By: JES
Date: 04/15/19

Preliminary Engineer's Estimate of Probable Cost

C102/201 150th Ave SE

ITEM NO.	STD ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL COST	% OF CONST
		ROADWAY					
	25	CLEARING AND GRUBBING	0.18	Acre	$60,000	$10,502.75	3.9%
	310	ROADWAY EXCAVATION INCL. HAUL	367	CY	$25.00	$9,175.13	3.4%
	5120	CRUSHED SURFACING TOP COURSE	269	TON	$40.00	$10,751.13	4.0%
	5767	HMA CL 1/2" PG 58H-22	752	TON	$150.00	$112,816.44	42.1%
	6700	CEMENT CONC. TRAFFIC CURB AND GUTTER	841	LF	$35.00	$29,435.00	11.0%
	7055	CEMENT CONC. SIDEWALK	0	SY	$60.00	$0.00	0.0%
	7058	CEMENT CONC. CURB RAMP TYPE	0	EA	$2,000.00	$0.00	0.0%
	SP	FENCING	0	LF	$40.00	$0.00	0.0%
		DRAINAGE/UTILITIES					
	3541	SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.		LF	$45.00	$0.00	0.0%
	3091	CATCH BASIN TYPE 1		EA	$1,500.00	$0.00	0.0%
	3105	CATCH BASIN TYPE 2 48 IN. DIAM.		EA	$1,000.00	$0.00	0.0%
	3767	PVC SANITARY SEWER PIPE 8 IN. DIAM.		LF	$45.00	$0.00	0.0%
		WATER QUALITY	5802	SF	$2.50	$14,505.00	5.4%
		DETENTION	1843	CF	$15.00	$27,637.50	10.3%
		STRUCTURE				$0.00	0.0%
	SP	GRAVITY BLOCK WALL		SF	$120.00	$0.00	0.0%
	SP	CONCRETE STAIRWAY		LS	$3,000.00	$0.00	0.0%
		ENVIRONMENT					
		EROSION/WATER POLLUTION CONTROL	1	LS	$8,000.00	$8,000.00	3.0%
		SWPPP PREPARATION AND MAINTENANCE	1	LS	$5,000.00	$5,000.00	1.9%
		SPCC PLAN	1	LS	$5,000.00	$5,000.00	1.9%
		TRAFFIC AND ILLUMINATION					0.0%
		PERMANENT SIGNING AND STRIPING	1	LS	$5,000.00	$5,000.00	1.9%
		ILLUMINATION	1	LS	$25,000.00	$25,000.00	9.3%
		LANDSCAPING					
		LANDSCAPE RESTORATION	1	LS	$5,000.00	$5,000.00	1.9%
		Subtotal				**$267,900.00**	

OPINION OF PROBABLE COST - SUMMARY
PROJECT: Eastgate Transporation Study
C203 - 150th Ave SE - SE 37th ST
CIP NO.
DATE:

I. RIGHT OF WAY ACQUISITION & EASEMENT AND REIMBURSEMENT COSTS				
II. CONSTRUCTION				
1. Grading/Drainage				
2. Structures				
3. Surfacing/Paving				
4. Roadside Development				
5. Traffic Services & Safety				
		$298,600		
6. Miscellaneous Items Not Yet Estimated				
20.0% of (Lines 1 through 5) @ 5% Level		*$59,720*	**$ 358,320**	
7. Allowance for 5%-Level Accuracy				
30.0% of (Lines 1 through 6)	*$*	*107,496.00*		
8.Traffic Signal				
All inclusive Includes such items as: conduits, APS, mast, signal heads, etc.	*$*	*-*	**$ 465,816.00**	
9. Mobilization, Survey, Potholing				
15% of (Line 1 through 8)	*$*	*69,872.40*		
10. Maintenance of Traffic				
15% of (Line 1 through 8)	*$*	*69,872.40*	**$ 605,560.8**	
11. Construction Engineering				
15.0% of (Lines 1 through 10)	*$*	*90,834.12*		
12. Construction Contingency				
10.0% of (Lines 1 through 10)	*$*	*60,556.08*		**$ 756,951.00**
III. DESIGN ENGINEERING AND CITY COSTS				
1. Design Engineering (Consultant Contract)				
15.0% of (CONSTRUCTION cost not incl contingency)	*$*	*90,834.12*		
2. Agency Administration				
10.0% of (CONSTRUCTION cost not incl contingency)	*$*	*60,556.08*		
3. Alignment Survey				
2.0% of (CONSTRUCTION cost not incl contingency)	*$*	*12,111.22*		
TOTAL ESTIMATED COST				**$ 920,500.00**

Assumptions:
1. Estimate calculated in 2019 dollars.
2. Estimate is based on 5% Design

*Items not estimated at 5% level assumed cost for these included in items 6 and 7.

kpff
1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
206.622.5822

Client: City of Bellevue
Project: Eastgate Transporation Study
Title: C203 - 150th Ave SE - SE 37th ST
By: JRE
Date: 04/11/19

Preliminary Engineer's Estimate of Probable Cost

C203 - 150th Ave SE - SE 37th ST

ITEM NO.	STD ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL COST	% OF CONST
		ROADWAY					
	25	CLEARING AND GRUBBING	0.11	Acre	$60,000	$6,793.39	2.3%
	310	ROADWAY EXCAVATION INCL. HAUL	140	CY	$25.00	$3,500.03	1.2%
	5120	CRUSHED SURFACING TOP COURSE	237	TON	$60.00	$14,211.08	4.8%
	5767	HMA CL 1/2" PG 58H-22	341	TON	$200.00	$68,143.52	22.8%
	6700	CEMENT CONC. TRAFFIC CURB AND GUTTER	385	LF	$75.00	$28,875.00	9.7%
	7055	CEMENT CONC. SIDEWALK	662	SY	$100.00	$66,155.56	22.2%
	7058	CEMENT CONC. CURB RAMP TYPE		EA	$3,500.00	$0.00	0.0%
	SP	FENCING		LF	$40.00	$0.00	0.0%
		DRAINAGE/UTILITIES					
	3541	SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.		LF	$70.00	$0.00	0.0%
	3091	CATCH BASIN TYPE 1	1	EA	$2,500.00	$2,500.00	0.8%
	3105	CATCH BASIN TYPE 2 48 IN. DIAM.		EA	$5,000.00	$0.00	0.0%
	3767	PVC SANITARY SEWER PIPE 8 IN. DIAM.	75	LF	$45.00	$3,375.00	1.1%
		WATER QUALITY		SF	$2.50	$0.00	0.0%
		DETENTION		CF	$15.00	$0.00	0.0%
		STRUCTURE					0.0%
	SP	GRAVITY BLOCK WALL		SF	$120.00	$0.00	0.0%
	SP	CONCRETE STAIRWAY		LS	$3,000.00	$0.00	0.0%
		ENVIRONMENT					
		EROSION/WATER POLLUTION CONTROL	1	LS	$10,000.00	$10,000.00	3.3%
		SWPPP PREPARATION AND MAINTENANCE	1	LS	$5,000.00	$5,000.00	1.7%
		SPCC PLAN	1	LS	$5,000.00	$5,000.00	1.7%
		TRAFFIC AND ILLUMINATION					0.0%
		PERMANENT SIGNING AND STRIPING	1	LS	$5,000.00	$5,000.00	1.7%
		TRAFFIC SIGNAL	0	LS	$80,000.00	$0.00	0.0%
		ILLUMINATION	1	LS	$75,000.00	$75,000.00	25.1%
		LANDSCAPING					
		LANDSCAPE RESTORATION	1	LS	$5,000.00	$5,000.00	1.7%
			Subtotal			**$298,600.00**	

OPINION OF PROBABLE COST - SUMMARY
PROJECT: Eastgate Transporation Study
C302
CIP NO.
DATE:

I. RIGHT OF WAY ACQUISITION & EASEMENT AND REIMBURSEMENT COSTS				
II. CONSTRUCTION				
1. Grading/Drainage				
2. Structures				
3. Surfacing/Paving				
4. Roadside Development				
5. Traffic Services & Safety				
		$0		
6. Miscellaneous Items Not Yet Estimated				
20.0% of (Lines 1 through 5) @ 5% Level		*$0*	**$ -**	
7. Allowance for 5%-Level Accuracy				
30.0% of (Lines 1 through 6)	*$*	*-*		
8.Traffic Signal				
All inclusive Includes such items as: conduits, APS, mast, signal heads, etc.	*$*	*280,000.00*	**$ 280,000.00**	
9. Mobilization, Survey, Potholing				
15% of (Line 1 through 8)	*$*	*42,000.00*		
10. Maintenance of Traffic				
15% of (Line 1 through 8)	*$*	*42,000.00*	**$ 364,000.0**	
11. Construction Engineering				
15.0% of (Lines 1 through 10)	*$*	*54,600.00*		
12. Construction Contingency				
10.0% of (Lines 1 through 10)	*$*	*36,400.00*		**$ 455,000.00**
III. DESIGN ENGINEERING AND CITY COSTS				
1. Design Engineering (Consultant Contract)				
15.0% of (CONSTRUCTION cost not incl contingency)	*$*	*54,600.00*		
2. Agency Administration				
10.0% of (CONSTRUCTION cost not incl contingency)	*$*	*36,400.00*		
3. Alignment Survey				
2.0% of (CONSTRUCTION cost not incl contingency)	*$*	*7,280.00*		
TOTAL ESTIMATED COST				**$ 553,300.00**

Assumptions:
1. Estimate calculated in 2019 dollars.
2. Estimate is based on 5% Design

*Items not estimated at 5% level assumed cost for these included in items 6 and 7.

kpff
1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
206.622.5822

Client: City of Bellevue
Project: Eastgate Transporation Study
Title: C302
By: JRE
Date: 04/11/19

Preliminary Engineer's Estimate of Probable Cost

Option C302

ITEM NO.	STD ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL COST	% OF CONST
		ROADWAY					
	25	CLEARING AND GRUBBING		Acre	$60,000	$0.00	#DIV/0!
	310	ROADWAY EXCAVATION INCL. HAUL		CY	$25.00	$0.00	#DIV/0!
	5120	CRUSHED SURFACING TOP COURSE		TON	$40.00	$0.00	#DIV/0!
	5767	HMA CL 1/2" PG 58H-22		TON	$150.00	$0.00	#DIV/0!
	6700	CEMENT CONC. TRAFFIC CURB AND GUTTER		LF	$35.00	$0.00	#DIV/0!
	7055	CEMENT CONC. SIDEWALK		SY	$60.00	$0.00	#DIV/0!
	7058	CEMENT CONC. CURB RAMP TYPE		EA	$2,000.00	$0.00	#DIV/0!
	SP	FENCING		LF	$40.00	$0.00	#DIV/0!
		DRAINAGE/UTILITIES					
	3541	SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.		LF	$45.00	$0.00	#DIV/0!
	3091	CATCH BASIN TYPE 1		EA	$1,500.00	$0.00	#DIV/0!
	3105	CATCH BASIN TYPE 2 48 IN. DIAM.		EA	$1,000.00	$0.00	#DIV/0!
	3767	PVC SANITARY SEWER PIPE 8 IN. DIAM.		LF	$45.00	$0.00	#DIV/0!
					$20,000.00		
		STRUCTURE				$0.00	#DIV/0!
	SP	GRAVITY BLOCK WALL		SF	$120.00	$0.00	#DIV/0!
	SP	CONCRETE STAIRWAY		LS	$3,000.00	$0.00	#DIV/0!
		ENVIRONMENT					
		EROSION/WATER POLLUTION CONTROL		LS	$5,000.00	$0.00	#DIV/0!
		SWPPP PREPARATION AND MAINTENANCE		LS	$5,000.00	$0.00	#DIV/0!
		SPCC PLAN		LS	$5,000.00	$0.00	#DIV/0!
		TRAFFIC AND ILLUMINATION					#DIV/0!
		PERMANENT SIGNING AND STRIPING		LS	$5,000.00	$0.00	#DIV/0!
		ILLUMINATION		LS	$75,000.00	$0.00	#DIV/0!
		LANDSCAPING					
		LANDSCAPE RESTORATION		LS	$5,000.00	$0.00	#DIV/0!
			Subtotal			**$0.00**	

OPINION OF PROBABLE COST - SUMMARY
PROJECT: Eastgate Transporation Study
C401 - 150th Ave SE - SE 38th ST
CIP NO.
DATE:

I. RIGHT OF WAY ACQUISITION & EASEMENT AND REIMBURSEMENT COSTS				
II. CONSTRUCTION				
1. Grading/Drainage				
2. Structures				
3. Surfacing/Paving				
4. Roadside Development				
5. Traffic Services & Safety				
		$117,900		
6. Miscellaneous Items Not Yet Estimated				
20.0% of (Lines 1 through 5) @ 5% Level		*$23,580*	**$ 141,480**	
7. Allowance for 5%-Level Accuracy				
30.0% of (Lines 1 through 6)	*$*	*42,444.00*		
8.Traffic Signal				
All inclusive Includes such items as: conduits, APS, mast, signal heads, etc.	*$*	*80,000.00*	**$ 263,924.00**	
9. Mobilization, Survey, Potholing				
15% of (Line 1 through 8)	*$*	*39,588.60*		
10. Maintenance of Traffic				
15% of (Line 1 through 8)	*$*	*39,588.60*	**$ 343,101.2**	
11. Construction Engineering				
15.0% of (Lines 1 through 10)	*$*	*51,465.18*		
12. Construction Contingency				
10.0% of (Lines 1 through 10)	*$*	*34,310.12*		**$ 428,876.50**
III. DESIGN ENGINEERING AND CITY COSTS				
1. Design Engineering (Consultant Contract)				
15.0% of (CONSTRUCTION cost not incl contingency)	*$*	*51,465.18*		
2. Agency Administration				
10.0% of (CONSTRUCTION cost not incl contingency)	*$*	*34,310.12*		
3. Alignment Survey				
2.0% of (CONSTRUCTION cost not incl contingency)	*$*	*6,862.02*		
TOTAL ESTIMATED COST				**$ 521,600.00**

Assumptions:
1. Estimate calculated in 2019 dollars.
2. Estimate is based on 5% Design

*Items not estimated at 5% level assumed cost for these included in items 6 and 7.

kpff
1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
206.622.5822

Client: City of Bellevue
Project: Eastgate Transporation Study
Title: C401 - 150th Ave SE - SE 38th ST
By: JRE
Date: 04/12/19

Preliminary Engineer's Estimate of Probable Cost

Cost Estimate assume redevelopment, costs were taken up to back of curb.

C401 - 150th Ave SE - SE 38th ST

ITEM NO.	STD ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL COST	% OF CONST
		ROADWAY					
	25	CLEARING AND GRUBBING		Acre	$60,000	$0.00	0.0%
	310	ROADWAY EXCAVATION INCL. HAUL	41.97	CY	$25.00	$1,049.31	0.9%
	5120	CRUSHED SURFACING TOP COURSE	104.76	TON	$60.00	$6,285.89	5.3%
	5767	HMA CL 1/2" PG 58H-22	138	TON	$200.00	$27,568.70	23.4%
	6700	CEMENT CONC. TRAFFIC CURB AND GUTTER	406	LF	$75.00	$30,450.00	25.8%
	7055	CEMENT CONC. SIDEWALK	0	SY	$125.00	$0.00	0.0%
	7058	CEMENT CONC. CURB RAMP TYPE	0	EA	$3,500.00	$0.00	0.0%
	SP	FENCING		LF	$40.00	$0.00	0.0%
		DRAINAGE/UTILITIES					
	3541	SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.		LF	$70.00	$0.00	0.0%
	3091	CATCH BASIN TYPE 1		EA	$2,500.00	$0.00	0.0%
	3105	CATCH BASIN TYPE 2 48 IN. DIAM.		EA	$5,000.00	$0.00	0.0%
	3767	PVC SANITARY SEWER PIPE 8 IN. DIAM.		LF	$45.00	$0.00	0.0%
		STRUCTURE				$0.00	0.0%
	SP	GRAVITY BLOCK WALL		SF	$120.00	$0.00	0.0%
	SP	CONCRETE STAIRWAY		LS	$3,000.00	$0.00	0.0%
		ENVIRONMENT					
		EROSION/WATER POLLUTION CONTROL	1	LS	$7,500.00	$7,500.00	6.4%
		SWPPP PREPARATION AND MAINTENANCE	1	LS	$5,000.00	$5,000.00	4.2%
		SPCC PLAN	1	LS	$5,000.00	$5,000.00	4.2%
		TRAFFIC AND ILLUMINATION					0.0%
		PERMANENT SIGNING AND STRIPING	1	LS	$5,000.00	$5,000.00	4.2%
		ILLUMINATION	1	LS	$25,000.00	$25,000.00	21.2%
		LANDSCAPING					
		LANDSCAPE RESTORATION	1	LS	$5,000.00	$5,000.00	4.2%
			Subtotal			**$117,900.00**	

OPINION OF PROBABLE COST - SUMMARY
PROJECT: Eastgate Transporation Study
C801
CIP NO.
DATE:

I. RIGHT OF WAY ACQUISITION & EASEMENT AND REIMBURSEMENT COSTS				
II. CONSTRUCTION				
1. Grading/Drainage				
2. Structures				
3. Surfacing/Paving				
4. Roadside Development				
5. Traffic Services & Safety				
		$5,000		
6. Miscellaneous Items Not Yet Estimated				
20.0% of (Lines 1 through 5) @ 5% Level		*$1,000*	**$ 6,000**	
7. Allowance for 5%-Level Accuracy				
30.0% of (Lines 1 through 6)	*$*	*1,800.00*		
8.Traffic Signal				
All inclusive Includes such items as: conduits, APS, mast, signal heads, etc.	*$*	*80,000.00*	**$ 87,800.00**	
9. Mobilization, Survey, Potholing				
15% of (Line 1 through 8)	*$*	*13,170.00*		
10. Maintenance of Traffic				
15% of (Line 1 through 8)	*$*	*13,170.00*	**$ 114,140.0**	
11. Construction Engineering				
15.0% of (Lines 1 through 10)	*$*	*17,121.00*		
12. Construction Contingency				
10.0% of (Lines 1 through 10)	*$*	*11,414.00*		**$ 142,675.00**
III. DESIGN ENGINEERING AND CITY COSTS				
1. Design Engineering (Consultant Contract)				
15.0% of (CONSTRUCTION cost not incl contingency)	*$*	*17,121.00*		
2. Agency Administration				
10.0% of (CONSTRUCTION cost not incl contingency)	*$*	*11,414.00*		
3. Alignment Survey				
2.0% of (CONSTRUCTION cost not incl contingency)	*$*	*2,282.80*		
TOTAL ESTIMATED COST				**$ 173,500.00**

Assumptions:
1. Estimate calculated in 2019 dollars.
2. Estimate is based on 5% Design

*Items not estimated at 5% level assumed cost for these included in items 6 and 7.

kpff
1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
206.622.5822

Client: City of Bellevue
Project: Eastgate Transporation Study
Title: C801
By: JRE
Date: 04/12/19

Preliminary Engineer's Estimate of Probable Cost

Option C801

ITEM NO.	STD ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL COST	% OF CONST
		ROADWAY					
	25	CLEARING AND GRUBBING		Acre	$60,000	$0.00	0.0%
	310	ROADWAY EXCAVATION INCL. HAUL		CY	$25.00	$0.00	0.0%
	5120	CRUSHED SURFACING TOP COURSE		TON	$60.00	$0.00	0.0%
	5767	HMA CL 1/2" PG 58H-22		TON	$200.00	$0.00	0.0%
	6700	CEMENT CONC. TRAFFIC CURB AND GUTTER		LF	$75.00	$0.00	0.0%
	7055	CEMENT CONC. SIDEWALK		SY	$125.00	$0.00	0.0%
	7058	CEMENT CONC. CURB RAMP TYPE		EA	$3,500.00	$0.00	0.0%
	SP	FENCING		LF	$40.00	$0.00	0.0%
		DRAINAGE/UTILITIES					
	3541	SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.		LF	$70.00	$0.00	0.0%
	3091	CATCH BASIN TYPE 1		EA	$2,500.00	$0.00	0.0%
	3105	CATCH BASIN TYPE 2 48 IN. DIAM.		EA	$5,000.00	$0.00	0.0%
	3767	PVC SANITARY SEWER PIPE 8 IN. DIAM.		LF	$45.00	$0.00	0.0%
					$20,000.00		
		STRUCTURE				$0.00	0.0%
	SP	GRAVITY BLOCK WALL		SF	$120.00	$0.00	0.0%
	SP	CONCRETE STAIRWAY		LS	$3,000.00	$0.00	0.0%
		ENVIRONMENT					
		EROSION/WATER POLLUTION CONTROL		LS	$7,500.00	$0.00	0.0%
		SWPPP PREPARATION AND MAINTENANCE		LS	$5,000.00	$0.00	0.0%
		SPCC PLAN		LS	$5,000.00	$0.00	0.0%
		TRAFFIC AND ILLUMINATION					0.0%
		PERMANENT SIGNING AND STRIPING	1	LS	$5,000.00	$5,000.00	100.0%
		ILLUMINATION		LS	$25,000.00	$0.00	0.0%
		LANDSCAPING					
		LANDSCAPE RESTORATION		LS	$5,000.00	$0.00	0.0%
			Subtotal			**$5,000.00**	

OPINION OF PROBABLE COST - SUMMARY
PROJECT: Eastgate Transporation Study
C802 - Factoria Blvd SE - SE 38th ST
CIP NO.
DATE:

I. RIGHT OF WAY ACQUISITION & EASEMENT AND REIMBURSEMENT COSTS				
II. CONSTRUCTION				
1. Grading/Drainage				
2. Structures				
3. Surfacing/Paving				
4. Roadside Development				
5. Traffic Services & Safety				
		$206,300		
6. Miscellaneous Items Not Yet Estimated				
20.0% of (Lines 1 through 5) @ 5% Level		*$41,260*	**$ 247,560**	
7. Allowance for 5%-Level Accuracy				
30.0% of (Lines 1 through 6)	*$*	*74,268.00*		
8.Traffic Signal				
All inclusive Includes such items as: conduits, APS, mast, signal heads, etc.	*$*	*160,000.00*	**$ 481,828.00**	
9. Mobilization, Survey, Potholing				
15% of (Line 1 through 8)	*$*	*72,274.20*		
10. Maintenance of Traffic				
15% of (Line 1 through 8)	*$*	*72,274.20*	**$ 626,376.4**	
11. Construction Engineering				
15.0% of (Lines 1 through 10)	*$*	*93,956.46*		
12. Construction Contingency				
10.0% of (Lines 1 through 10)	*$*	*62,637.64*		**$ 782,970.50**
III. DESIGN ENGINEERING AND CITY COSTS				
1. Design Engineering (Consultant Contract)				
15.0% of (CONSTRUCTION cost not incl contingency)	*$*	*93,956.46*		
2. Agency Administration				
10.0% of (CONSTRUCTION cost not incl contingency)	*$*	*62,637.64*		
3. Alignment Survey				
2.0% of (CONSTRUCTION cost not incl contingency)	*$*	*12,527.53*		
TOTAL ESTIMATED COST				**$ 952,100.00**

Assumptions:
1. Estimate calculated in 2019 dollars.
2. Estimate is based on 5% Design

*Items not estimated at 5% level assumed cost for these included in items 6 and 7.

kpff
1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
206.622.5822

Client: City of Bellevue
Project: Eastgate Transporation Study
Title: C802 - Factoria Blvd SE - SE 38th ST
By: JRE
Date: 04/12/19

Preliminary Engineer's Estimate of Probable Cost

Cost Estimate assume redevelopment, costs were taken up to back of curb.

C802 - Factoria Blvd SE - SE 38th ST

ITEM NO.	STD ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL COST	% OF CONST
		ROADWAY					
	25	CLEARING AND GRUBBING	0.02	Acre	$60,000	$1,258.95	0.6%
	310	ROADWAY EXCAVATION INCL. HAUL	58	CY	$40.00	$2,333.23	1.1%
	5120	CRUSHED SURFACING TOP COURSE	82	TON	$60.00	$4,900.28	2.4%
	5767	HMA CL 1/2" PG 58H-22	229	TON	$200.00	$45,707.41	22.2%
	6700	CEMENT CONC. TRAFFIC CURB AND GUTTER	964	LF	$75.00	$72,300.00	35.0%
	7055	CEMENT CONC. SIDEWALK		SY	$125.00	$0.00	0.0%
	7058	CEMENT CONC. CURB RAMP TYPE		EA	$3,500.00	$0.00	0.0%
	SP	FENCING		LF	$40.00	$0.00	0.0%
		DRAINAGE/UTILITIES					
	3541	SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	90	LF	$70.00	$6,300.00	3.1%
	3091	CATCH BASIN TYPE 1	9	EA	$2,500.00	$22,500.00	10.9%
	3105	CATCH BASIN TYPE 2 48 IN. DIAM.		EA	$5,000.00	$0.00	0.0%
	3767	PVC SANITARY SEWER PIPE 8 IN. DIAM.		LF	$45.00	$0.00	0.0%
					$20,000.00		
		STRUCTURE				$0.00	0.0%
	SP	GRAVITY BLOCK WALL		SF	$120.00	$0.00	0.0%
	SP	CONCRETE STAIRWAY		LS	$3,000.00	$0.00	0.0%
		ENVIRONMENT					
		EROSION/WATER POLLUTION CONTROL	1	LS	$6,000.00	$6,000.00	2.9%
		SWPPP PREPARATION AND MAINTENANCE	1	LS	$5,000.00	$5,000.00	2.4%
		SPCC PLAN	1	LS	$5,000.00	$5,000.00	2.4%
		TRAFFIC AND ILLUMINATION					0.0%
		PERMANENT SIGNING AND STRIPING	1	LS	$5,000.00	$5,000.00	2.4%
		ILLUMINATION	1	LS	$25,000.00	$25,000.00	12.1%
		LANDSCAPING					
		LANDSCAPE RESTORATION	1	LS	$5,000.00	$5,000.00	2.4%
			Subtotal			**$206,300.00**	

OPINION OF PROBABLE COST - SUMMARY
PROJECT: Eastgate Transporation Study
C901- SE Eastgate Way and SE 37th St
CIP NO.
DATE:

I. RIGHT OF WAY ACQUISITION & EASEMENT AND REIMBURSEMENT COSTS				
II. CONSTRUCTION				
1. Grading/Drainage				
2. Structures				
3. Surfacing/Paving				
4. Roadside Development				
5. Traffic Services & Safety				
		$149,200		
6. Miscellaneous Items Not Yet Estimated				
20.0% of (Lines 1 through 5) @ 5% Level		*$29,840*	**$ 179,040**	
7. Allowance for 5%-Level Accuracy				
30.0% of (Lines 1 through 6)	*$*	*53,712.00*		
8.Traffic Signal				
All inclusive Includes such items as: conduits, APS, mast, signal heads, etc.	*$*	*350,000.00*	**$ 582,752.00**	
9. Mobilization, Survey, Potholing				
15% of (Line 1 through 8)	*$*	*87,412.80*		
10. Maintenance of Traffic				
15% of (Line 1 through 8)	*$*	*87,412.80*	**$ 757,577.6**	
11. Construction Engineering				
15.0% of (Lines 1 through 10)	*$*	*113,636.64*		
12. Construction Contingency				
10.0% of (Lines 1 through 10)	*$*	*75,757.76*		**$ 946,972.00**
III. DESIGN ENGINEERING AND CITY COSTS				
1. Design Engineering (Consultant Contract)				
15.0% of (CONSTRUCTION cost not incl contingency)	*$*	*113,636.64*		
2. Agency Administration				
10.0% of (CONSTRUCTION cost not incl contingency)	*$*	*75,757.76*		
3. Alignment Survey				
2.0% of (CONSTRUCTION cost not incl contingency)	*$*	*15,151.55*		
TOTAL ESTIMATED COST				**$ 1,151,600.00**

Assumptions:
1. Estimate calculated in 2019 dollars.
2. Estimate is based on 5% Design

*Items not estimated at 5% level assumed cost for these included in items 6 and 7.

kpff
1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
206.622.5822

Client: City of Bellevue
Project: Eastgate Transporation Study
Title: C901- SE Eastgate Way and SE 37th St
By: JES
Date: 04/15/19

Preliminary Engineer's Estimate of Probable Cost

C901- SE Eastgate Way and SE 37th St

ITEM NO.	STD ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL COST	% OF CONST
		ROADWAY					
	25	CLEARING AND GRUBBING	0.07	Acre	$60,000	$3,988.98	2.7%
	310	ROADWAY EXCAVATION INCL. HAUL	95	CY	$25.00	$2,371.61	1.6%
	5120	CRUSHED SURFACING TOP COURSE	193	TON	$60.00	$11,565.58	7.8%
	5767	HMA CL 1/2" PG 58H-22	497	TON	$200.00	$99,475.62	66.7%
	6700	CEMENT CONC. TRAFFIC CURB AND GUTTER	0	LF	$75.00	$0.00	0.0%
	7055	CEMENT CONC. SIDEWALK	74	SY	$125.00	$9,222.22	6.2%
	7058	CEMENT CONC. CURB RAMP TYPE	0	EA	$3,500.00	$0.00	0.0%
	SP	FENCING	0	LF	$40.00	$0.00	0.0%
		DRAINAGE/UTILITIES					
	3541	SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.		LF	$70.00	$0.00	0.0%
	3091	CATCH BASIN TYPE 1		EA	$2,500.00	$0.00	0.0%
	3105	CATCH BASIN TYPE 2 48 IN. DIAM.		EA	$5,000.00	$0.00	0.0%
	3767	PVC SANITARY SEWER PIPE 8 IN. DIAM.		LF	$45.00	$0.00	0.0%
					$20,000.00		
		STRUCTURE				$0.00	0.0%
	SP	GRAVITY BLOCK WALL		SF	$120.00	$0.00	0.0%
	SP	CONCRETE STAIRWAY		LS	$3,000.00	$0.00	0.0%
		ENVIRONMENT					
		EROSION/WATER POLLUTION CONTROL	1	LS	$7,500.00	$7,500.00	5.0%
		SWPPP PREPARATION AND MAINTENANCE	1	LS	$5,000.00	$5,000.00	3.4%
		SPCC PLAN	1	LS	$5,000.00	$5,000.00	3.4%
		TRAFFIC AND ILLUMINATION					0.0%
		PERMANENT SIGNING AND STRIPING	1	LS	$5,000.00	$5,000.00	3.4%
		ILLUMINATION	0	EA	$25,000.00	$0.00	0.0%
		LANDSCAPING					
		LANDSCAPE RESTORATION		LS	$5,000.00	$0.00	0.0%
			Subtotal			**$149,200.00**	

OPINION OF PROBABLE COST - SUMMARY
PROJECT: Eastgate Transporation Study
C1001- 142nd PL SE & SE 36th ST
CIP NO.
DATE:

I. RIGHT OF WAY ACQUISITION & EASEMENT AND REIMBURSEMENT COSTS				**$ 9,375.00**
II. CONSTRUCTION				
1. Grading/Drainage				
2. Structures				
3. Surfacing/Paving				
4. Roadside Development				
5. Traffic Services & Safety				
		$207,800		
6. Miscellaneous Items Not Yet Estimated				
20.0% of (Lines 1 through 5) @ 5% Level		*$41,560*	**$ 249,360**	
7. Allowance for 5%-Level Accuracy				
30.0% of (Lines 1 through 6)	*$*	*74,808.00*		
8.Traffic Signal				
All inclusive Includes such items as: conduits, APS, mast, signal heads, etc.	*$*	*80,000.00*	**$ 404,168.00**	
9. Mobilization, Survey, Potholing				
15% of (Line 1 through 8)	*$*	*60,625.20*		
10. Maintenance of Traffic				
15% of (Line 1 through 8)	*$*	*60,625.20*	**$ 525,418.4**	
11. Construction Engineering				
15.0% of (Lines 1 through 10)	*$*	*78,812.76*		
12. Construction Contingency				
10.0% of (Lines 1 through 10)	*$*	*52,541.84*		**$ 656,773.00**
III. DESIGN ENGINEERING AND CITY COSTS				
1. Design Engineering (Consultant Contract)				
15.0% of (CONSTRUCTION cost not incl contingency)	*$*	*78,812.76*		
2. Agency Administration				
10.0% of (CONSTRUCTION cost not incl contingency)	*$*	*52,541.84*		
3. Alignment Survey				
2.0% of (CONSTRUCTION cost not incl contingency)	*$*	*10,508.37*		
TOTAL ESTIMATED COST				**$ 808,100.00**

Assumptions:
1. Estimate calculated in 2019 dollars.
2. Estimate is based on 5% Design

*Items not estimated at 5% level assumed cost for these included in items 6 and 7.

kpff
1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
206.622.5822

Preliminary Engineer's Estimate of Probable Cost

Client: City of Bellevue
Project: Eastgate Transporation Study
Title: C1001- 142nd PL SE & SE 36
By: JES
Date: 04/15/19

C1001- 142nd PL SE & SE 36th ST

ITEM NO.	STD ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL COST	% OF CONST
		ROADWAY					
	25	CLEARING AND GRUBBING	0.04	Acre	$60,000	$2,535.81	1.2%
	310	ROADWAY EXCAVATION INCL. HAUL	114	CY	$25.00	$2,851.68	1.4%
	421	GRAVEL BORROW INCL. HAUL	175	CY	$75.00	$13,125.00	6.3%
	5120	CRUSHED SURFACING TOP COURSE	73	TON	$60.00	$4,356.26	2.1%
	5767	HMA CL 1/2" PG 58H-22	115	TON	$200.00	$23,056.17	11.1%
	6700	CEMENT CONC. TRAFFIC CURB AND GUTTER	174	LF	$75.00	$13,050.00	6.3%
	7055	CEMENT CONC. SIDEWALK	154	SY	$125.00	$19,291.67	9.3%
	7058	CEMENT CONC. CURB RAMP TYPE	1	EA	$3,500.00	$3,500.00	1.7%
	SP	FENCING	0	LF	$40.00	$0.00	0.0%
		DRAINAGE/UTILITIES					
	3541	SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.	24	LF	$70.00	$1,680.00	0.8%
	3091	CATCH BASIN TYPE 1	1	EA	$2,500.00	$2,500.00	1.2%
	3105	CATCH BASIN TYPE 2 48 IN. DIAM.		EA	$5,000.00	$0.00	0.0%
	3767	PVC SANITARY SEWER PIPE 8 IN. DIAM.		LF	$45.00	$0.00	0.0%
					$20,000.00		
		STRUCTURE				$0.00	0.0%
	SP	GRAVITY BLOCK WALL	786	SF	$120.00	$94,320.00	45.4%
	SP	CONCRETE STAIRWAY		LS	$3,000.00	$0.00	0.0%
		ENVIRONMENT					
		EROSION/WATER POLLUTION CONTROL	1	LS	$7,500.00	$7,500.00	3.6%
		SWPPP PREPARATION AND MAINTENANCE	1	LS	$5,000.00	$5,000.00	2.4%
		SPCC PLAN	1	LS	$5,000.00	$5,000.00	2.4%
		TRAFFIC AND ILLUMINATION					0.0%
		PERMANENT SIGNING AND STRIPING	1	LS	$5,000.00	$5,000.00	2.4%
		ILLUMINATION		EA	$25,000.00	$0.00	0.0%
		LANDSCAPING					
		LANDSCAPE RESTORATION	1	LS	$5,000.00	$5,000.00	2.4%
		Subtotal				**$207,800.00**	

OPINION OF PROBABLE COST - SUMMARY
PROJECT: Eastgate Transporation Study
C1201 - 139th Ave SE and SE 32nd ST
CIP NO.
DATE:

I. RIGHT OF WAY ACQUISITION & EASEMENT AND REIMBURSEMENT COSTS				
II. CONSTRUCTION				
1. Grading/Drainage				
2. Structures				
3. Surfacing/Paving				
4. Roadside Development				
5. Traffic Services & Safety				
		$77,600		
6. Miscellaneous Items Not Yet Estimated				
20.0% of (Lines 1 through 5) @ 5% Level		*$15,520*	**$ 93,120**	
7. Allowance for 5%-Level Accuracy				
30.0% of (Lines 1 through 6)	*$*	*27,936.00*		
8.Traffic Signal				
All inclusive Includes such items as: conduits, APS, mast, signal heads, etc.	*$*	*350,000.00*	**$ 471,056.00**	
9. Mobilization, Survey, Potholing				
15% of (Line 1 through 8)	*$*	*70,658.40*		
10. Maintenance of Traffic				
15% of (Line 1 through 8)	*$*	*70,658.40*	**$ 612,372.8**	
11. Construction Engineering				
15.0% of (Lines 1 through 10)	*$*	*91,855.92*		
12. Construction Contingency				
10.0% of (Lines 1 through 10)	*$*	*61,237.28*		**$ 765,466.00**
III. DESIGN ENGINEERING AND CITY COSTS				
1. Design Engineering (Consultant Contract)				
15.0% of (CONSTRUCTION cost not incl contingency)	*$*	*91,855.92*		
2. Agency Administration				
10.0% of (CONSTRUCTION cost not incl contingency)	*$*	*61,237.28*		
3. Alignment Survey				
2.0% of (CONSTRUCTION cost not incl contingency)	*$*	*12,247.46*		
TOTAL ESTIMATED COST				**$ 930,900.00**

Assumptions:
1. Estimate calculated in 2019 dollars.
2. Estimate is based on 5% Design

*Items not estimated at 5% level assumed cost for these included in items 6 and 7.

kpff
1601 Fifth Avenue, Suite 1600
Seattle, WA 98101
206.622.5822

Client: City of Bellevue
Project: Eastgate Transporation Study
Title: C1201 - 139th Ave SE and SE
By: JRE
Date: 04/12/19

Preliminary Engineer's Estimate of Probable Cost

C1201 - 139th Ave SE and SE 32nd ST

ITEM NO.	STD ITEM NO.	ITEM	QTY	UNIT	UNIT PRICE	TOTAL COST	% OF CONST
		ROADWAY					
	25	CLEARING AND GRUBBING	0.00	Acre	$60,000	$283.75	0.4%
	310	ROADWAY EXCAVATION INCL. HAUL		CY	$25.00	$0.00	0.0%
	5120	CRUSHED SURFACING TOP COURSE	30	TON	$60.00	$1,800.30	2.3%
	5767	HMA CL 1/2" PG 58H-22	8	TON	$200.00	$1,624.81	2.1%
	6700	CEMENT CONC. TRAFFIC CURB AND GUTTER	206	LF	$75.00	$15,450.00	19.9%
	7055	CEMENT CONC. SIDEWALK	147	SY	$125.00	$18,430.56	23.8%
	7058	CEMENT CONC. CURB RAMP TYPE	4	EA	$3,500.00	$14,000.00	18.0%
	SP	FENCING		LF	$40.00	$0.00	0.0%
		DRAINAGE/UTILITIES					
	3541	SCHEDULE A STORM SEWER PIPE 12 IN. DIAM.		LF	$70.00	$0.00	0.0%
	3091	CATCH BASIN TYPE 1		EA	$2,500.00	$0.00	0.0%
	3105	CATCH BASIN TYPE 2 48 IN. DIAM.		EA	$5,000.00	$0.00	0.0%
	3767	PVC SANITARY SEWER PIPE 8 IN. DIAM.		LF	$45.00	$0.00	0.0%
					$20,000.00		
		STRUCTURE				$0.00	0.0%
	SP	GRAVITY BLOCK WALL		SF	$120.00	$0.00	0.0%
	SP	CONCRETE STAIRWAY		LS	$3,000.00	$0.00	0.0%
		ENVIRONMENT					
		EROSION/WATER POLLUTION CONTROL	1	LS	$6,000.00	$6,000.00	7.7%
		SWPPP PREPARATION AND MAINTENANCE	1	LS	$5,000.00	$5,000.00	6.4%
		SPCC PLAN	1	LS	$5,000.00	$5,000.00	6.4%
		TRAFFIC AND ILLUMINATION					0.0%
		PERMANENT SIGNING AND STRIPING	1	LS	$5,000.00	$5,000.00	6.4%
		ILLUMINATION		LS	$75,000.00	$0.00	0.0%
		LANDSCAPING					
		LANDSCAPE RESTORATION	1	LS	$5,000.00	$5,000.00	6.4%
			Subtotal			**$77,600.00**	

Appendix H

2024 Traffic Analysis

Neighborhood
Congestion
Reduction

Appendix H.1 - Eastgate Transportation Study - VISSIM Travel Time and Corridor Speed Summary - 2024 Early Implementation

Table H.1-1 - Corridor Travel Time Summary: 148th/150th Avenue SE

ID	Segment	Peak/ Direction	Travel Time (Minutes)				
			2018 Existing	2024 Baseline	% Diff vs 2018 Existing	2024 Early Implementation Projects	% Diff vs 2024 Baseline
1	SE 38th Street to SE Newport Way	PM/SB	10.8	10.2	-6%	4.3	-58%
1a	SE 24th Street to SE 38th Street	PM/SB	9.1	9.2	1%	3.2	-65%
1b	SE 38th Street to SE Newport Way	PM/SB	1.7	1.1	-35%	1.1	0%
2	SE Newport Way to SE 24th Street	AM/NB	5.3	5.4	2%	3.9	-28%
2a	SE Newport Way to SE 38th Street	AM/NB	1.6	1.6	0%	1.1	-31%
2b	SE 38th Street to SE 24th Street	AM/NB	3.7	3.9	5%	2.8	-28%

Table H.1-2 - Corridor Travel Time Summary: Richards Road - Factoria Boulevard SE

ID	Segment	Peak/ Direction	Travel Time (Minutes)				
			2018 Existing	2024 Baseline	% Diff vs 2018 Existing	2024 Early Implementation Projects	% Diff vs 2024 Baseline
3	SE 26th Street to SE 38th Street	PM/SB	11.2	12.6	13%	10.8	-14%
3a	SE 24th Street to SE 32nd Street	PM/SB	6.0	6.9	15%	5.8	-16%
3b	SE 32nd Street to SE 38th Street	PM/SB	5.2	5.7	10%	5.0	-12%

Table H.1-3 - Corridor Travel Speed Summary: 148th/150th Avenue SE

ID	Segment	Peak/ Direction	Travel Speed (Miles per Hour)				
			2018 Existing	2024 Baseline	% Diff vs 2018 Existing	2024 Early Implementation Projects	% Diff vs 2024 Baseline
1	SE 38th Street to SE Newport Way	PM/SB	7.2	7.6	6%	18.1	137%
1a	SE 24th Street to SE 38th Street	PM/SB	6.6	6.5	-1%	18.8	188%
1b	SE 38th Street to SE Newport Way	PM/SB	10.6	16.4	55%	16.4	0%
2	SE Newport Way to SE 24th Street	AM/NB	14.7	14.4	-2%	20.0	38%
2a	SE Newport Way to SE 38th Street	AM/NB	11.3	11.3	0%	16.4	45%
2b	SE 38th Street to SE 24th Street	AM/NB	16.2	15.4	-5%	21.4	39%

Table H.1-4 - Corridor Travel Speed Summary: Richards Road - Factoria Boulevard SE

ID	Segment	Peak/ Direction	Travel Speed (Miles per Hour)				
			2018 Existing	2024 Baseline	% Diff vs 2018 Existing	2024 Early Implementation Projects	% Diff vs 2024 Baseline
3	SE 26th Street to SE 38th Street	PM/SB	4.3	3.8	-11%	4.4	17%
3a	SE 24th Street to SE 32nd Street	PM/SB	4.0	3.5	-13%	4.1	19%
3b	SE 32nd Street to SE 38th Street	PM/SB	4.6	4.2	-9%	4.8	14%

Appendix H.2 - Eastgate Transportation Study - Intersection Volume/Capacity Results - 2024 Early Implementation

Table H.2-1 - Intersection V/C for 2024 Early Implementation Projects

ID	Intersection Name	V/C Threshold	Control	Rec. Alt Control	PM	
					2024 Baseline	2024 Early Implementation Projects
6	Factoria Boulevard & SE 38th Street	0.95	Signalized	Signalized	1.01	0.92
16	148th/150th Avenue SE & SE Eastgate Way	0.90	Signalized	Signalized	0.99	0.83
17	150th Avenue SE & WB I-90 Off-Ramp/SE 37th Street	0.90	Signalized	Signalized	0.91	0.65
18	150th Avenue SE & SE 38th Street	0.85	Signalized	Signalized	0.87	0.85
26	SE Eastgate Way & SE 37th Street	0.90	Unsignalized	Signalized	0.59^	0.60
27	I-90 EB On-Ramp & SE 37th Street	0.90	Unsignalized	Signalized	0.53	0.65

Notes

- HCM 2000 methodology used to analyze study intersections
- V/C reported for unsignalized intersections is the V/C for the worst movement
- MMA Identifiers: 8: Richards Valley; 10: Eastgate; 11: SE Bellevue; 13: Factoria
- Cells highlighted in black indicates that the intersection V/C does not meet the LOS threshold
- *Intersections not studied for the AM Peak
- **Synchro results not available for intersection due to lane configuration
-^Degree utilization reported instead of V/C