City of Louisville
COLORADO • SINCE 1878

City Council

Agenda

Tuesday, April 5, 2016
City Hall, Council Chambers
749 Main Street
7:00 PM

Note: The time frames assigned to agenda items are estimates for guidance only. Agenda items may be heard earlier or later than the listed time slot.

1. CALL TO ORDER

2. PLEDGE OF ALLEGIANCE

3. APPROVAL OF AGENDA

4. PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA

Council requests that public comments be limited to 3 minutes. When several people wish to speak on the same position on a given item, Council requests they select a spokesperson to state that position.

5. CONSENT AGENDA

The following items on the City Council Agenda are considered routine by the City Manager and shall be approved, adopted, accepted, etc., by motion of the City Council and roll call vote unless the Mayor or a City Council person specifically requests that such item be considered under "Regular Business." In such an event the item shall be removed from the "Consent Agenda" and Council action taken separately on said item in the order appearing on the Agenda. Those items so approved under the heading "Consent Agenda" will appear in the Council Minutes in their proper order.

A. Approval of Bills
B. Approval of Minutes: March 15, 2016
C. Approval of 2016 Humane Society Animal Impoundment Agreement
D. Approve Arbor Day Proclamation
E. Approve Resolution No. 16, Series 2016 – A Resolution Approving an Agreement for Delegation of Activities for a Boulder County Collaborative CDBG-DR Sub-Allocation for the City of Louisville Raw Water Diversion Improvements Project

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Citizen Information

If you wish to speak at the City Council meeting, please fill out a sign-up card and present it to the City Clerk.

Persons with disabilities planning to attend the meeting who need sign language interpretation, assisted listening systems, Braille, taped material, or special transportation, should contact the City Manager's Office at 303 335-4533. A forty-eight-hour notice is requested.

6. COUNCIL INFORMATIONAL COMMENTS ON PERTINENT ITEMS NOT ON THE AGENDA (Council general comments are scheduled at the end of the Agenda.)

7. CITY MANAGER'S REPORT

8. REGULAR BUSINESS

7:15 – 7:30 pm

A. PRESENTATION – CITIZENS FOR FINISHING FASTRACKS

- Presentation
- Public Comments (Please limit to three minutes each)
- Council Questions & Comments

7:30 – 8:15 pm

B. RECREATION CENTER/SENIOR CENTER AND AQUATIC CENTER EXPANSION – SURVEY RESULTS

- Staff Presentation
- Public Comments (Please limit to three minutes each)
- Council Questions & Comments

8:15 – 9:15 pm

C. RESOLUTION NO. 17, SERIES 2016 – A RESOLUTION APPROVING THE SOUTH BOULDER ROAD SMALL AREA PLAN

- Staff Presentation
- Public Comments (Please limit to three minutes each)
- Council Questions & Comments
- Action

9:15 – 10:00 pm

D. BIENNIAL BUDGET PROCESS AND FIRST REVIEW/DIRECTION ON 2017/2018 CONTRIBUTING PROJECTS

- Staff Presentation
- Public Comments (Please limit to three minutes each)
- Council Questions & Comments

9. CITY ATTORNEY'S REPORT

10. COUNCIL COMMENTS, COMMITTEE REPORTS, AND IDENTIFICATION OF FUTURE AGENDA ITEMS

11. ADJOURNMENT

City of Louisville
Cash Disbursement Edit List

Batch: 93978 Period: 03/10/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
	FOR BANK ACCOUNT: 4 FIRST NATIONAL BANK OF COLORAD				Control Disbursement Account	
13099-1	L3 COMMUNICATION MOBILE-VISION INC					
	0234865-IN	FLASHBACK VIDEO CAMERA SYSTEM	01/06/16	02/05/16	5,120.00	
	0234939-IN	FLASHBACK VIDEO CAMERA SYSTEMS	01/07/16	02/06/16	10,240.00	15,360.00
5	CHERYL KELLER					
	021616	CORPORAL ASSESSMENT FOOD	02/16/16	03/17/16	62.90	62.90
4160-1	SAFE SYSTEMS INC					
	411446	ALARM MONITORING LIB	12/17/15	01/16/16	250.50	
	411645	ALARM MONITORING PC	12/22/15	01/21/16	247.50	
	416183	ALARM MONITORING PC	01/21/16	02/20/16	315.00	
	416213	ALARM MONITORING LIB	01/21/16	02/20/16	315.00	
	416219	ALARM MONITORING CH	01/21/16	02/20/16	495.00	1,623.00
13698-1	SUNBELT RENTALS INC					
	56262025-001	ELECTRIC HEATERS GCC	11/19/15	12/19/15	310.00	310.00
11094-1	WESTERN DISPOSAL SERVICES					
	030116CITY	FEB 16 CITY TRASH SERVICE	03/01/16	03/31/16	1,174.00	
	030116CITY	FEB 16 CITY TRASH SERVICE	03/01/16	03/31/16	136.50	
	030116CITY	FEB 16 CITY TRASH SERVICE	03/01/16	03/31/16	202.00	
	030116CITY	FEB 16 CITY TRASH SERVICE	03/01/16	03/31/16	291.00	
	030116CITY	FEB 16 CITY TRASH SERVICE	03/01/16	03/31/16	297.50	
	030116RES	FEB 16 RESIDENTIAL TRASH SERV	03/01/16	03/31/16	115,969.09	118,070.09
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	BANK TOTAL PAYMENTS				135,425.99	135,425.99
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	GRAND TOTAL PAYMENTS				135,425.99	135,425.99

City of Louisville
Cash Disbursement Edit List

Batch: 94059 Period: 03/17/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
	FOR BANK ACCOUNT: 4 FIRST NATIONAL BANK OF COLORAD				Control Disbursement Account	
9743-1	LOWES					
	Q2808505	COMMUNITY GARDEN LUMBER	03/17/16	04/16/16	5,063.28	5,063.28
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	BANK TOTAL PAYMENTS				5,063.28	5,063.28
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	GRAND TOTAL PAYMENTS				5,063.28	5,063.28

City of Louisville
Cash Disbursement Edit List

Batch: 94080 Period: 03/18/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
	FOR BANK ACCOUNT: 4 FIRST NATIONAL BANK OF COLORAD				Control Disbursement Account	
5255-1	FAMILY SUPPORT REGISTRY					
	031116	EMPLOYEE GARNISHMENT PP#05	03/11/16	04/10/16	100.00	100.00
13776-1	GRAHAM CLARK					
	031816	TRAVEL ADVANCE 4/30-5/4/16	03/18/16	04/17/16	300.00	300.00
14002-1	KANSAS PAYMENT CENTER					
	031116	EMPLOYEE GARNISHMENT PP#05	03/11/16	04/10/16	270.46	270.46
55	BRUCE MARSHALL					
	U!00001027	5850/442009401: UTILITY REFUND	03/10/16	03/10/16	75.08	75.08
55	JAMSHID ZIRAKZADEH					
	U!00001028	7344/452070851: UTILITY REFUND	03/17/16	03/17/16	75.98	75.98
3875-1	XCEL ENERGY					
	491880334	FEB 16 STREET LIGHTS	03/01/16	03/31/16	33,307.57	
	491883375	FEB 16 FLASHERS	03/01/16	03/31/16	5.74	
	492407429	FEB 16 TRAFFIC LIGHTS	03/04/16	04/03/16	1,237.58	34,550.89
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	BANK TOTAL PAYMENTS				35,372.41	35,372.41
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	GRAND TOTAL PAYMENTS				35,372.41	35,372.41

City of Louisville
Cash Disbursement Edit List

Batch: 94156 Period: 03/24/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
	FOR BANK ACCOUNT: 4 FIRST NATIONAL BANK OF COLORAD				Control Disbursement Account	
14199-1	ARTSMARKET INC					
	012116	MUSEUM BUSINESS PLAN	01/21/16	02/20/16	4,930.00	4,930.00
1115-1	COLONIAL INSURANCE					
	0301155	#9711888 MAR 16 EMPLOYEE PREM	03/02/16	04/01/16	578.77	578.77
11298-1	DELTA DENTAL OF COLORADO					
	DELTA0416	#007562-0000 APR 16 EMPL PREM	03/24/16	04/23/16	13,059.86	13,059.86
6455-1	KAISER PERMANENTE					
	0018365838	05920-01-16 APR 16 EMPL PREM	03/07/16	04/06/16	131,492.86	131,492.86
8442-1	VISION SERVICE PLAN					
	VSP0416	12 059727 0001 APR 16 EMP PREM	03/28/16	04/27/16	2,584.94	2,584.94
3875-1	XCEL ENERGY					
	493310079	FEB 16 GROUP ENERGY	03/11/16	04/10/16	22,646.38	
	493310079	FEB 16 GROUP ENERGY	03/11/16	04/10/16	1,251.03	
	493310079	FEB 16 GROUP ENERGY	03/11/16	04/10/16	8,688.72	
	493310079	FEB 16 GROUP ENERGY	03/11/16	04/10/16	17,687.61	
	493310079	FEB 16 GROUP ENERGY	03/11/16	04/10/16	2,890.72	53,164.46
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	BANK TOTAL PAYMENTS				205,810.89	205,810.89
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	GRAND TOTAL PAYMENTS				205,810.89	205,810.89

City of Louisville
Cash Disbursement Edit List

Batch: 94235 Period: 04/05/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
	FOR BANK ACCOUNT: 4 FIRST NATIONAL BANK OF COLORAD				Control Disbursement Account	
1-1	A WAY OF LIFE FITNESS CONSULTING					
	89A	CONTRACTOR FEES YOUTH R-BALL	03/21/16	04/20/16	330.40	
	90A	CONTRACTOR FEES YOUTH R-BALL	03/21/16	04/20/16	165.20	495.60
14175-1	ACTION DIRECT LLC					
	PP01022916	LAF/LSVL BOUNDARY DRAINAGE	02/29/16	03/30/16	343,948.45	343,948.45
14121-1	ACUSHNET COMPANY					
	902046694	RESALE MERCHANDISE	03/04/16	04/03/16	4,197.40	
	902046695	RESALE MERCHANDISE	03/04/16	04/03/16	1,399.94	
	902046886	RESALE MERCHANDISE	03/04/16	04/03/16	793.23	
	902046887	RESALE MERCHANDISE	03/04/16	04/03/16	2,826.21	
	902078984	CLUB FITTING, TOOLS AND CLUBS	03/10/16	04/09/16	790.00	
	902079372	RESALE MERCHANDISE	03/10/16	04/09/16	209.57	
	902111899	GOLF SHOES SPECIAL ORDER	03/15/16	04/14/16	98.55	10,314.90
312-1	ADVANCED EXERCISE EQUIPMENT INC					
	24158	95T DISCOVER SI TREADMILLS	03/09/16	04/08/16	16,120.00	16,120.00
1006-1	ALL CURRENT ELECTRIC INC					
	3355	FLOCULATOR MOTOR REPAIR WTP	03/17/16	04/16/16	70.00	
	3356	ADD RECEPTACLES PD	03/17/16	04/16/16	785.00	855.00
14245-1	ALLIXA CONSULTING INC					
	A16001	CONTRACT AUDITOR	03/07/16	04/06/16	12,000.00	12,000.00
9891-1	AMBIANCE					
	10213	MAR 16 PLANT MAINT	03/10/16	04/09/16	195.00	195.00
1192-1	ARBOR OCCUPATIONAL MEDICINE PLLC					
	7644	PHYSICALS/DRUG SCREENS	02/03/16	03/04/16	515.00	515.00
10493-1	ARROW OFFICE EQUIPMENT LLC					
	480216-0	COMPUTER SCREEN PRIVACY FILTER	02/09/16	03/10/16	103.79	103.79
14201-1	AXIOM STRATEGIES INC					
	7761	APR 16 LEGISLATIVE SERVICES	03/18/16	04/17/16	3,000.00	3,000.00
11592-1	BACKFLOW CONSULTING TESTING & REPAIR					
	2228505	TEST GAUGE CERTIFICATIONS	03/03/16	04/02/16	175.00	
	51080	BACKFLOW TESTER CLASS WERTZ	03/11/16	04/10/16	685.00	860.00
13855-1	BIG AIR JUMPERS INC					
	O19729	NITE AT REC INFLATABLES	03/04/16	04/03/16	619.00	
	O19730	NITE AT REC INFLATABLES	03/11/16	04/10/16	544.00	
	O19731	NITE AT REC INFLATABLES	03/18/16	04/17/16	619.00	1,782.00
13621-1	BOLDER STAFFING INC					
	50036	HR ADMIN	03/10/16	04/09/16	666.00	
	50093	HR ADMIN	03/17/16	04/16/16	588.30	
	50147	HR ADMIN	03/24/16	04/23/16	466.20	1,720.50

Batch: 94235 Period: 04/05/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
640-1	BOULDER COUNTY					
	12876	BUSINESS CARDS PD	03/10/16	04/09/16	56.88	56.88
7706-1	BRANNAN SAND & GRAVEL CO LLC					
	156440	ASPHALT	01/04/16	02/03/16	167.16	
	156559	ASPHALT	01/06/16	02/05/16	44.10	
	156835	ASPHALT	01/15/16	02/14/16	42.42	
	157287	ASPHALT	01/26/16	02/25/16	42.00	
	157351	ASPHALT	01/27/16	02/26/16	151.20	
	157472	ASPHALT	01/28/16	02/27/16	105.00	
	157525	ASPHALT	01/29/16	02/28/16	42.00	
	157738	ASPHALT	02/09/16	03/10/16	164.83	
	157831	ASPHALT	02/10/16	03/11/16	166.05	
	157922	ASPHALT	02/11/16	03/12/16	103.07	
	158031	ASPHALT	02/12/16	03/13/16	164.42	
	158183	ASPHALT	02/15/16	03/16/16	41.31	
	158215	ASPHALT	02/16/16	03/17/16	166.46	
	158290	ASPHALT	02/17/16	03/18/16	41.72	
	158419	ASPHALT	02/18/16	03/19/16	165.65	
	158641	ASPHALT	02/22/16	03/23/16	164.01	
	158787	ASPHALT	02/24/16	03/25/16	167.69	
	158853	ASPHALT	02/25/16	03/26/16	82.62	
	159106	ASPHALT	02/29/16	03/30/16	83.44	
	159200	ASPHALT	03/01/16	03/31/16	86.71	
	159368	ASPHALT	03/03/16	04/02/16	148.47	
	159448	ASPHALT	03/04/16	04/03/16	44.17	
	159537	ASPHALT	03/07/16	04/06/16	164.42	
	159648	ASPHALT	03/08/16	04/07/16	168.10	
	159748	ASPHALT	03/09/16	04/08/16	175.05	
	159827	ASPHALT	03/10/16	04/09/16	84.66	
	160002	ASPHALT	03/14/16	04/13/16	164.41	
	160099	ASPHALT	03/15/16	04/14/16	167.69	
	160163	ASPHALT	03/16/16	04/15/16	166.87	
	160253	ASPHALT	03/17/16	04/16/16	158.05	
	160310	ASPHALT	03/21/16	04/20/16	41.41	3,675.16
1122-1	BRETSA					
	031116	SPANISH LANGUAGE LINE	03/11/16	04/10/16	67.55	67.55
13344-1	BROWN HILL ENGINEERING & CONTROLS LLC					
	11086	SCADA SUPPORT WTP	03/11/16	04/10/16	1,175.00	
	11109	SCADA SUPPORT WTP	03/18/16	04/17/16	1,591.00	2,766.00
14120-1	CATHERINE S FLETCHER					

Batch: 94235 Period: 04/05/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
	032116	613 GRANT LANDMARK INCENTIVE	03/21/16	04/20/16	1,000.00	1,000.00
13717-1	CDM SIGNS LLC					
	16-050	REMOVE SIGN CS	02/18/16	03/19/16	270.00	270.00
248-1	CDW GOVERNMENT					
	CGT8315	MACBOOK PRO PW	03/02/16	04/01/16	2,452.79	2,452.79
935-1	CENTENNIAL PRINTING CO					
	58924	COURT FORMS	03/15/16	04/14/16	579.00	579.00
14036-1	CENTER COPY BOULDER INC					
	44195	FELONY MISDEMEANOR WARRANTS	03/28/16	04/27/16	134.50	134.50
10773-1	CENTRIC ELEVATOR CORP					
	241199	MAR 16 ELEVATOR MAINT PC	03/01/16	03/31/16	246.29	
	241200	MAR 16 ELEVATOR MAINT LIB	03/01/16	03/31/16	451.32	
	241201	MAR 16 ELEVATOR MAINT RSC	03/01/16	03/31/16	265.59	
	241202	MAR 16 ELEVATOR MAINT CH	03/01/16	03/31/16	269.65	1,232.85
980-1	CENTURY CHEVROLET INC					
	45027946	PARTS UNIT 2144	03/10/16	04/09/16	26.24	26.24
13352-1	CGRS INC					
	2-15859-53791	FEB 16 REMOTE POLLING	02/29/16	03/30/16	25.00	25.00
2220-1	CHEMTRADE CHEMICALS US LLC					
	91766134	ALUMINUM SULFATE WTP	03/08/16	04/07/16	5,227.16	5,227.16
14047-1	CITY OF NORTHGLENN					
	1017	LAB ANALYSIS FEES WTP	02/29/16	03/30/16	1,110.00	1,110.00
11467-1	CLEAR CREEK CONSULTANTS INC					
	1793	COAL CREEK STATION AUDIT	03/07/16	04/06/16	1,392.50	1,392.50
13260-1	CLIFTON LARSON ALLEN LLP					
	1207030	FEB 16 UTILITY BILLING SERVICE	03/09/16	04/08/16	4,140.51	
	1207030	FEB 16 UTILITY BILLING SERVICE	03/09/16	04/08/16	2,641.77	
	1207030	FEB 16 UTILITY BILLING SERVICE	03/09/16	04/08/16	599.50	
	1207030	FEB 16 UTILITY BILLING SERVICE	03/09/16	04/08/16	899.25	8,281.03
10382-1	COBITCO INC					
	44784	TACK OIL	03/01/16	03/31/16	239.76	239.76
13296-1	COLOGRAPHIC					
	33660	RANGER LOGOS UNIT 5317	03/04/16	04/03/16	95.31	95.31
11582-1	COLORADO CARPET CENTER INC					
	36998	GOLF STORAGE ROOM VCT	02/08/16	03/09/16	860.00	860.00
10329-1	COLORADO DEPT OF HUMAN SERVICE					
	030816	PRESCHOOL LICENSE FEE #1524815	03/08/16	04/07/16	134.00	134.00
1130-1	COLORADO DEPT OF LABOR					
	624163	BOILER INSPECTION RSC	03/09/16	04/08/16	75.00	75.00
10056-1	COLORADO DOORWAYS INC					

Batch: 94235 Period: 04/05/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
	808436	DOOR REPLACEMENT RSC	03/10/16	04/09/16	1,784.00	1,784.00
14166-1	CONCRETE EXPRESS INC					
	PP03022916	LAF/LSVL BOUNDARY DRAINAGE	03/02/16	04/01/16	493,136.05	493,136.05
6137-1	COTTONWOOD DITCH COMPANY					
	126	2016 ASSESSMENT	03/02/16	04/01/16	720.00	720.00
10842-1	COZY CORNER TOWING					
	71576	TOW UNIT 2168	02/12/16	03/13/16	122.00	122.00
9973-1	CPS DISTRIBUTORS INC					
	2235661-00	PVC PIPE PARTS WWTP	03/15/16	04/14/16	40.21	
	2236167-00	PVC PIPE PARTS WWTP	03/16/16	04/15/16	320.40	
	2236388-00	PVC PIPE PARTS WWTP	03/17/16	04/16/16	279.59	
	2236702-00	PVC PIPE PARTS WWTP	03/17/16	04/16/16	155.40	795.60
13370-1	CRIBARI LAW FIRM, PC					
	022916	PROSECUTING ATTORNEY	02/29/16	03/30/16	1,362.75	
	032216	PROSECUTING ATTORNEY	03/22/16	04/21/16	3,024.50	4,387.25
1570-1	DANA KEPNER COMPANY INC					
	1422950-00	METER SETTERS	02/29/16	03/30/16	2,082.64	2,082.64
14182-1	DAWSON INFRASTRUCTURE SOLUTIONS LLC					
	160168	PARTS UNIT 3425	03/07/16	04/06/16	71.35	71.35
14189-1	DON KING LANDSCAPING LLC					
	1001	FLAGSTONE BENCHES OS	02/09/16	03/10/16	1,085.00	1,085.00
12392-2	DOOR TO DOOR PROMOTIONS					
	1480	NITE AT REC STAFF SHIRTS	02/25/16	03/26/16	234.85	234.85
1780-1	EBSCO					
	94112	PRINT PERIODICALS	03/13/16	04/12/16	3.30	3.30
14240-1	ELIZABETH A SOLEK					
	032116	725 LINCOLN STRUCTURE ASSESS	03/21/16	04/20/16	500.00	500.00
13963-1	ENSCICON CORPORATION					
	90395	ENGINEERING SERV SULLIVAN	03/08/16	04/07/16	740.00	
	90395A	ENGINEERING SERV SULLIVAN	03/08/16	04/07/16	740.00	1,480.00
6654-1	ENTERPRISE IRRIGATING DITCH CO					
	511	2016 ASSESSMENT	03/04/16	04/03/16	1,360.91	1,360.91
13746-1	ERIE LANDMARK COMPANY					
	40872	LANDMARK PLAQUES	03/09/16	04/08/16	564.00	564.00
14241-1	ERIK WEISSENBERGER					
	032116	509 LAFARGE STRUCTURE ASSESS	03/21/16	04/20/16	900.00	900.00
6761-1	FARIS MACHINERY CO					
	C13772	PARTS UNIT 3215	03/07/16	04/06/16	51.25	51.25
12270-1	FASTENAL COMPANY					
	COBOU58215	BRAIDED STEEL CORD/BOLTS WWTP	03/08/16	04/07/16	424.00	424.00

Batch: 94235 Period: 04/05/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
14070-1	FORENSIC TRUTH GROUP LLC					
	030216	PRE-EMPLOYMENT POLYGRAPH	03/02/16	04/01/16	140.00	
	030816	PRE-EMPLOYMENT POLYGRAPH	03/08/16	04/07/16	140.00	280.00
10623-1	FRONT RANGE LANDFILL INC					
	40481	LANDFILL FEES	01/15/16	02/14/16	191.20	
	40611	LANDFILL FEES	01/31/16	03/01/16	1,127.52	
	40861	LANDFILL FEES	02/29/16	03/30/16	921.75	2,240.47
14187-1	FRUITREVIVAL LLC					
	22-6120	WELLNESS PROGRAM FRUIT BOXES	12/31/15	01/30/16	2,964.00	
	22-6558	WELLNESS PROGRAM FRUIT BOXES	02/29/16	03/30/16	976.00	3,940.00
13098-1	G4S SECURE SOLUTIONS INC					
	7696110	BAILIFF SERVICES 3/14/16	03/20/16	04/19/16	110.00	110.00
6847-1	GENERAL AIR SERVICE & SUPPLY					
	91703346-1	CYLINDER RENTAL SHOPS	11/30/15	12/30/15	71.45	
	91802504-1	CYLINDER RENTAL SHOPS	02/29/16	03/30/16	59.99	131.44
2280-1	GOODHUE DITCH AND RESERVOIR CO					
	032916	2016 ASSESSMENT	03/29/16	04/28/16	2,640.00	2,640.00
246-1	GREEN MILL SPORTSMAN CLUB					
	107	RANGE USE	02/04/16	03/05/16	100.00	100.00
11361-1	HARMONY K LARKE					
	1612191-1	CONTRACTOR FEES LITTLE ARTIST	02/24/16	03/25/16	416.50	416.50
13162-1	HD SUPPLY WATERWORKS LTD					
	F067061	UTILITY LINE PARTS	02/16/16	03/17/16	831.79	
	F146384	UTILITY LINE CLAMP	02/22/16	03/23/16	109.99	
	F186394	METER GASKETS	03/01/16	03/31/16	40.00	981.78
2475-1	HILL PETROLEUM					
	0539374-IN	UNLEADED/DIESEL FUEL	01/29/16	02/28/16	5,608.73	
	0542819-IN	UNLEADED/DIESEL FUEL GC	02/18/16	03/19/16	149.81	5,758.54
6656-1	HOWARD DITCH COMPANY					
	030116	2016 ASSESSMENT	03/01/16	03/31/16	250.00	250.00
13471-1	INTEGRATED CONTROL SYSTEMS INC					
	16-298	HVAC IMPROVEMENTS CH	03/10/16	04/09/16	3,912.50	3,912.50
13778-1	INVISION GIS					
	1315	LUCITY SOFTWARE	03/02/16	04/01/16	1,481.87	
	1315	LUCITY SOFTWARE	03/02/16	04/01/16	1,481.88	
	1315	LUCITY SOFTWARE	03/02/16	04/01/16	1,481.88	
	1315	LUCITY SOFTWARE	03/02/16	04/01/16	1,481.87	5,927.50
11285-1	IRONWOOD EARTHCARE INC					
	16687	TREE REMOVAL	03/03/16	04/02/16	600.00	600.00
13817-1	ISRAEL ALVARADO					

Batch: 94235 Period: 04/05/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
	2016-36	NITE AT REC DJ SERVICES	03/04/16	04/03/16	275.00	
	2016-37	NITE AT REC DJ SERVICES	03/11/16	04/10/16	275.00	
	2016-38	NITE AT REC DJ SERVICES	03/18/16	04/17/16	275.00	825.00
14239-1	JC GOLF ACCESSORIES					
	SI-120512	ASSORTED GOLF MERCHANDISE	02/25/16	03/26/16	1,982.58	
	SI-120640	ASSORTED GOLF MERCHANDISE	02/29/16	03/30/16	420.00	
	SI-120691	ASSORTED GOLF MERCHANDISE	03/01/16	03/31/16	155.68	2,558.26
14053-1	JCG TECHNOLOGIES					
	5204	MINUTE RECORDING SUPPORT SERV	04/01/16	05/01/16	425.00	425.00
11337-1	KISSINGER AND FELLMAN PC					
	22602	COMCAST/XCEL TAX AUDIT	02/20/16	03/21/16	164.00	164.00
13390-1	KRISTIN NORDECK BROWN, PC					
	033016	PROSECUTING ATTORNEY LLA	03/30/16	04/29/16	805.00	805.00
14097-1	L.A.W.S.					
	10589	ADMIN LIGHT/SOUND PKG UNIT2162	12/09/15	01/08/16	655.00	
	10988	L3 MONITOR REPAIR UNIT 2176	03/21/16	04/20/16	164.00	
	10989	DVR REPAIR UNIT 2174	03/21/16	04/20/16	125.00	944.00
11075-1	LEFT HAND TREE & LANDSCAPE LLC					
	030216	PRUNE PINE TREES	03/02/16	04/01/16	1,200.00	1,200.00
3100-1	LOUISVILLE CHAMBER OF COMMERCE					
	101989	BRAD GRANT	03/09/16	04/08/16	5,000.00	
	101990	PARADE OF LIGHTS	03/09/16	04/08/16	2,000.00	7,000.00
13862-1	LOUISVILLE MILL SITE LLC					
	032816	GRAIN ELEVATOR DISBURSEMENT 17	03/28/16	04/27/16	27,642.00	27,642.00
11463-1	MATTHEW BENDER & CO INC					
	80974627	PEACE OFFICER HANDBOOKS	02/23/16	03/24/16	1,246.57	1,246.57
6763-1	MCGINN DITCH COMPANY					
	030316	2016 ASSESSMENT	03/03/16	04/02/16	2,100.00	2,100.00
12161-1	MINDSHARE HDV LLC					
	03082016	DMV CYPHER SOFTWARE SUPPORT	03/08/16	04/07/16	2,600.00	2,600.00
8	WWF OPERATING COMPANY					
	030816	BUSINESS ASSISTANCE REBATE	03/08/16	04/07/16	33,894.87	
	030816	BUSINESS ASSISTANCE REBATE	03/08/16	04/07/16	16,947.43	50,842.30
5	KATHRYN MORAN					
	030216	REIMBURSE RECORD FILING FEE	03/02/16	04/01/16	224.00	224.00
5	PHYSIO-CONTROL INC					
	116081035	AED ELECTRODE KIT PD	02/09/16	03/10/16	222.60	222.60
10	R8PA					
	031716	R8PA CONF REG WERTZ	03/17/16	04/16/16	195.00	195.00
10	CROWN TROPHY OF BOULDER					

Batch: 94235 Period: 04/05/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
	17788	ORACLE PLAQUE WWTP	03/21/16	04/20/16	131.23	131.23
14222-1	MJT COMMUNICATION INC					
	11709	CABLE TV WIRING PD	03/15/16	04/14/16	926.34	926.34
6168-1	MOTION & FLOW CONTROL PRODUCTS INC					
	6294944	CYLINDER REPAIR UNIT 3411	03/10/16	04/09/16	1,003.62	1,003.62
11061-1	MOUNTAIN PEAK CONTROLS INC					
	7942	SLUDGE PUMP PROGRAMMING WWTP	02/11/16	03/12/16	230.00	
	7945	GOLF COURSE REUSE AUTOMATION	02/16/16	03/17/16	3,873.30	4,103.30
226-1	MOUNTAIN STATES EMPLOYERS COUNCIL					
	56033	MSEC MEMBERSHIP DUES	03/20/16	04/19/16	5,200.00	5,200.00
2046-1	MOUNTAIN STATES IMAGING LLC					
	12783	DOCUMENT SCANNING PD	03/16/16	04/15/16	955.75	955.75
14101-1	MWH CONSTRUCTORS INC					
	PP08022916	WWTP CONSTRUCTION	02/29/16	03/30/16	964,201.00	964,201.00
8016-1	NATIONAL RESEARCH CENTER INC					
	5802	2016 CITIZEN SURVEY	03/14/16	04/13/16	7,200.00	7,200.00
6655-1	NEW COAL RIDGE DITCH COMPANY					
	032416	2016 ASSESSMENT	03/24/16	04/23/16	6,583.00	6,583.00
13597-1	NORTH LINE GIS LLC					
	1305	ENERGOV GIS DATA PREP	03/05/16	04/04/16	1,309.00	
	1305	ENERGOV GIS DATA PREP	03/05/16	04/04/16	280.50	
	1305	ENERGOV GIS DATA PREP	03/05/16	04/04/16	280.50	1,870.00
6427-1	NORTHERN COLO WATER CONSERVANCY DIST					
	030116	2016 SWSP OPERATION ASSESSMENT	03/01/16	03/31/16	118,224.18	
	030116A	2015 SWSP VFD UPGRADE CREDIT	03/01/16	03/31/16	28,209.89-	90,014.29
13649-1	OVERDRIVE INC					
	1100-134730447	CHILDRENS EBOOKS	03/12/16	04/11/16	470.82	
	1100-142638103	CHILDRENS AUDIO BOOKS	03/12/16	04/11/16	333.94	804.76
11477-1	P.R.O.S. INC					
	LO1604YB	YOUTH BASKETBALL REFEREES	03/24/16	04/23/16	378.00	378.00
14243-1	PEREA INC					
	031616	PRE-EMPLOYMENT BACKGROUNDS	03/16/16	04/15/16	1,800.00	1,800.00
13086-1	PETERSON PREDICTIVE MAINTENANCE					
	1419	PREVENTIVE MAINT WWTP	02/08/16	03/09/16	950.00	
	1420	PREVENTIVE MAINT WTP	02/08/16	03/09/16	600.00	1,550.00
14144-1	PING INC					
	13172338	RESALE MERCHANDISE	03/01/16	03/31/16	2,203.31	
	13176401	RESALE MERCHANDISE	03/03/16	04/02/16	684.32	
	13182255	RESALE MERCHANDISE	03/08/16	04/07/16	488.09	
	13198509	RESALE MERCHANDISE	03/13/16	04/12/16	51.64	

Batch: 94235 Period: 04/05/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
	13202885	RESALE MERCHANDISE	03/18/16	04/17/16	144.51	3,571.87
14160-1	PRECISE MRM LLC					
	IN200-1007946	GPS SOFTWARE AND POOLED DATA	02/22/16	03/23/16	132.75	132.75
13095-1	PSYCHOLOGICAL DIMENSIONS PC					
	09-2567	POST OFFER EVALUATION	03/16/16	04/15/16	200.00	
	09-2572	JOB SUITABILITY ASSESSMENT	03/16/16	04/15/16	225.00	425.00
13893-1	REBECCA TSUI					
	2016-3	CONTRACTOR FEES TAI CHI	03/27/16	04/26/16	546.00	546.00
6500-1	RECORDED BOOKS LLC					
	75293236	ADULT BOOKS AND MEDIA	03/03/16	04/02/16	396.00	
	75294434	ADULT BOOKS AND MEDIA	02/26/16	03/27/16	74.20	
	75305622	MATERIAL PROCESSING	03/17/16	04/16/16	180.20	
	75305740	MATERIAL PROCESSING	03/17/16	04/16/16	112.50	762.90
14221-1	ROBERT E BUSTRUM					
	16-200	BACKGROUND INVESTIGATION	03/07/16	04/06/16	400.00	400.00
13447-1	ROCKY MOUNTAIN POWER	GENERATION INC				
	5036850	TAKODA LIFT GENERATOR MAINT	11/06/15	12/06/15	1,185.66	1,185.66
12843-1	SCL HEALTH SYSTEM					
	11348	NEW HIRE TESTING	03/02/16	04/01/16	238.50	238.50
5369-1	SGS ACCUTEST INC					
	D3-73464	LAB ANALYSIS FEES WWTP	03/29/16	04/28/16	139.00	
	D3-73465	LAB ANALYSIS FEES WWTP	03/29/16	04/28/16	104.50	
	D3-73466	LAB ANALYSIS FEES WWTP	03/29/16	04/28/16	118.50	
	D3-73467	LAB ANALYSIS FEES WWTP	03/29/16	04/28/16	573.50	
	D3-73468	LAB ANALYSIS FEES WWTP	03/29/16	04/28/16	507.50	1,443.00
14136-1	SHERRI MURGALLIS					
	032116	945 FRONT LANDMARK INCENTIVE	03/21/16	04/20/16	10,000.00	10,000.00
13490-1	SIMPLEX GRINNELL					
	78466420	MUSEUM FIRE ALARM MONITORING	02/29/16	03/30/16	469.79	469.79
11136-1	SINK COMBS DETHLEFS					
	001534.00-4	RSC EXPANSION TASK FORCE	03/15/16	04/14/16	3,957.23	3,957.23
13293-1	STAPLES ADVANTAGE					
	8038201499	OFFICE SUPPLIES PD	02/27/16	03/28/16	290.99	290.99
13673-1	STERLING INFOSYSTEMS	INC				
	467058	BACKGROUND CHECKS	12/31/15	01/30/16	774.32	
	473236	BACKGROUND CHECKS	01/31/16	03/01/16	1,398.66	
	479626	BACKGROUND CHECKS	02/29/16	03/30/16	1,798.56	3,971.54
14244-1	SUNICE USA INC					
	1190250	GOLF APPAREL	02/22/16	03/23/16	1,602.11	1,602.11
14091-1	SUPER-TECH FILTER					

Batch: 94235 Period: 04/05/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
	255753	HVAC FILTERS CS	03/08/16	04/07/16	152.64	152.64
1201-1	SUPPLYWORKS					
	360070767	JANITORIAL SUPPLIES CS	03/01/16	03/31/16	30.78	
	361165731	JANITORIAL SUPPLIES AC	03/09/16	04/08/16	154.46	
	361165749	JANITORIAL SUPPLIES CH	03/09/16	04/08/16	567.06	
	361165756	JANITORIAL SUPPLIES CS	03/09/16	04/08/16	253.46	
	361165764	JANITORIAL SUPPLIES PC	03/09/16	04/08/16	168.72	
	361165772	JANITORIAL SUPPLIES RSC	03/09/16	04/08/16	2,164.09	
	361297302	JANITORIAL SUPPLIES LIB	03/10/16	04/09/16	600.48	
	361907827	BREAK ROOM SUPPLIES CS	03/17/16	04/16/16	243.43	4,182.48
13957-1	TADDIKEN TREE COMPANY INC					
	8807	TREE PRUNING	03/03/16	04/02/16	1,652.00	1,652.00
14213-1	THE ANTIGUA GROUP INC					
	4381750	STAFF UNIFORMS GC	03/10/16	03/10/16	438.14	
	4381751	STAFF UNIFORMS GC	03/10/16	03/10/16	722.25	
	4382176	STAFF UNIFORMS GC	03/11/16	03/11/16	1,696.51	2,856.90
7917-1	THE AQUEOUS SOLUTION INC					
	68918	POOL CHEMICALS	03/14/16	04/13/16	1,390.77	1,390.77
1047-1	THE DAVEY TREE EXPERT COMPANY					
	909782878	TREE PRUNING	02/29/16	03/30/16	1,185.00	1,185.00
11442-1	TRAVIS PAINT & RESTORATION INC					
	1813	SLIDE POOL PAINTING	11/25/15	12/25/15	439.05	439.05
14232-1	TRIPLE C COMMUNICATIONS INC					
	200180	PORTABLE POLICE RADIOS	03/21/16	04/20/16	12,142.20	12,142.20
14236-1	TYLER BUSINESS FORMS					
	241551	LASER CHECK STOCK	03/03/16	03/13/16	104.74	104.74
14065-1	TYLER TECHNOLOGIES INC					
	045-151043	ENERGOV SUPPORT	02/01/16	03/02/16	10,110.48	
	045-151044	TYLER SUPPORT/UPDATE LICENSING	02/01/16	03/02/16	28,650.48	
	045-151044	TYLER SUPPORT/UPDATE LICENSING	02/01/16	03/02/16	4,581.14	
	045-151044	TYLER SUPPORT/UPDATE LICENSING	02/01/16	03/02/16	2,812.98	
	045-151044	TYLER SUPPORT/UPDATE LICENSING	02/01/16	03/02/16	642.97	
	045-154585	TYLER SOFTWARE	03/02/16	04/01/16	4,010.94	
	045-154585	TYLER SOFTWARE	03/02/16	04/01/16	859.49	
	045-154585	TYLER SOFTWARE	03/02/16	04/01/16	859.49	52,527.97
4765-1	UNCC					
	21602464	FEB 16 LOCATES #48760	02/29/16	03/30/16	497.64	497.64
13426-1	UNIQUE MANAGEMENT SERVICES INC					
	421401	COLLECTION SERVICES	03/01/16	03/31/16	116.35	116.35
11087-1	UNITED SITE SERVICES					

Batch: 94235 Period: 04/05/16

Vendor/ Remit#	Invoice Number	Description	Invoice Date	Due Date	Invoice Amount	Check Amount
	114-3776115	TOILET RENTAL SKATE PARK	02/22/16	03/23/16	204.65	
	114-3836956	TOILET RENTAL CENTENNIAL PARK	03/15/16	04/14/16	209.60	414.25
10351-1	US BANK					
	4225790	PAYING AGENT FEES GO LIB BONDS	02/25/16	03/26/16	275.00	275.00
8035-1	VSR CORPORATION					
	7033	VIDEO INSPECTION SEWER LINE	02/29/16	03/30/16	1,425.00	1,425.00
4870-1	VWR INTERNATIONAL					
	8043685118	PH BUFFER WWTP	01/18/16	02/17/16	318.65	318.65
6210-1	W BRUCE JOSS					
	032216	MAR 16 MUNICIPAL JUDGE SALARY	03/22/16	04/21/16	2,600.00	2,600.00
12997-1	WHITESTONE CONSTRUCTION SERVICES INC					
	3476	MINERS FIELD RESTROOM REMODEL	02/26/16	03/27/16	14,976.97	14,976.97
14216-1	WHOLESALE SPECIALTIES					
	S1547635.001	RECYCLE PUMP WTP	03/07/16	04/06/16	2,717.26	2,717.26
10884-1	WORD OF MOUTH CATERING INC					
	2016-05	SR MEAL PROGRAM 3/7-3/25/16	03/19/16	04/18/16	4,376.50	4,376.50
13507-1	YATES LAW FIRM LLC					
	030216	FEB 16 WATER LEGAL FEES	03/02/16	04/01/16	2,687.00	2,687.00
13555-1	YOUNG REMBRANDTS - NW DENVER & BOULDER					
	2756083	CONTRACTOR FEES DRAWING	03/24/16	04/23/16	122.50	122.50
13790-1	ZAYO GROUP LLC					
	030116	MAR 16 INTERNET SERVICE	03/01/16	03/31/16	870.20	870.20
13558-1	ZIONS CREDIT CORP					
	631858	MAR 16 SOLAR POWER EQUIP LEASE	03/21/16	04/20/16	1,767.62	
	631858	MAR 16 SOLAR POWER EQUIP LEASE	03/21/16	04/20/16	883.81	2,651.43
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	BANK TOTAL PAYMENTS				2,283,996.76	2,283,996.76
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	GRAND TOTAL PAYMENTS				2,283,996.76	2,283,996.76

City of Louisville
COLORADO • SINCE 1878

City Council

Meeting Minutes

March 15, 2016
City Hall, Council Chambers
749 Main Street
7:00 PM

Call to Order – Mayor Muckle called the meeting to order at 7:00 p.m.

Roll Call was taken and the following members were present:

City Council:	***Mayor Muckle, Mayor Pro Tem Lipton***
	City Council members: Ashley Stolzmann, Dennis
	Maloney, Chris Leh, Susan Loo and Jay Keany
Staff Present:	***Malcolm Fleming, City Manager***
	Heather Balser, Deputy City Manager
	Kevin Watson, Finance Director
	Kurt Kowar, Public Works Director
	Meredyth Muth, Public Relations Manager
	Carol Hanson, Acting City Clerk
Others Present:	***Sam Light, City Attorney***

PLEDGE OF ALLEGIANCE

All rose for the pledge of allegiance.

APPROVAL OF AGENDA

Mayor Muckle called for changes to the agenda and hearing none, moved to approve the agenda, seconded by Council member Keany. All were in favor. Agenda approved.

PUBLIC COMMENTS ON ITEMS NOT ON THE AGENDA

Mayor Muckle called for public comments on items not on the agenda..

Debby Fahey, 1118 W. Enclave Circle, Louisville, CO thanked everyone for attending the Heat Relief Dinner and participating in the Silent Auction. She thanked those who sent donations and said close to $10,000 was raised. She noted a Weigh and Win

kiosk is going to be installed at the Recreation Center and will be available to anyone who wants to use it.

Jean Morgan, 1131 Spruce St., Louisville, CO noted there is a champion saucer magnolia at South and Main Street in beautiful pink bloom.

APPROVAL OF THE CONSENT AGENDA

Mayor Muckle called for changes to the consent agenda and hearing none, moved to approve the consent agenda, seconded by Council member Leh. All were in favor**.**

A. Approval of the Bills
B. Approval of Minutes: March 8, 2016
C. Approval of Agreement with Browns Hill Engineering and Controls for 2016 Supervisory Control and Data Acquisition Master Plan and Upgrade
D. Approval of Quit Claim Deed for Portion of Private Drainage Easement – Kestrel Subdivision Lot 3

COUNCIL INFORMATIONAL COMMENTS ON PERTINENT ITEMS NOT ON THE AGENDA

Mayor Muckle welcomed back Mayor Pro Tem Lipton. Mayor Pro Tem Lipton stated he had heard from residents and asked, since the Ranger position is not yet filled, there be some policing of dog regulations near Davidson Mesa.

CITY MANAGER'S REPORT

City Manager Fleming reported on the following:

– Ranger not hired yet, however Code Enforcement has been on the Mesa warning folks about dog on leash, etc. When the Ranger is hired, they will help with rules and regulations enforcement and education on Open Space.

Capital Projects:

– Front Street pass-through to Community Park. Staff met with the effected landowner and all are working toward a good solution.

Public Works Director Kowar reported on:

– County Road Bridge has crane sitting there, staff is working on sequencing with Xcel to accommodate the work
– Wastewater Treatment Plant is on schedule and on budget
– Parking lot at Front and Elm – paving stopped by weather should continue this month
– Drainage project on Hwy. 42 and downtown to improve floodplain. A bore was completed under railroad and now are working west into downtown. Stormwater pipes and inlets installed to handle more water
– Hwy 42/Short Street intersection new signal bids will go out. Design of curb, gutter and median as second phase

- Sid Copeland WTP pump station aged and needs upgrade. Bids are out.
- Dillon Bridge by Golf course (flood related) completed. Just some close out and documentation left
- Water intake damaged during the flood, funding partners helped to get that open this week.

City Manager Fleming noted this was just a few of the projects Public Works is managing. He encouraged everyone to check out the Sweet Spot Café at the Golf Course.

REGULAR BUSINESS

RECOGNITION OF DAVE FERGUSON – HISTORICAL COMMISSION

Mayor Muckle recognized Dave Ferguson who has served on the Historical Commission continuously for 22 years prior to 2016 when he chose not to reapply for the Commission. On behalf of the City Council and City staff, Mayor Muckle thanked Dave for his years of service and dedication.

Dan Mellish, Chair of the Historical Commission, noted Mr. Ferguson provided the color commentary and fact checking during the commission meetings and he thanked Mr. Ferguson, on behalf of the Commission, for his contribution.

Michael Deborski, 601 Pine Street, Louisville, CO thanked Dave Ferguson for the good influence on his and many other lives. He noted the Fergusons always had an open door policy.

Randy Caranci, 441 Elk Trail, Lafayette, CO noted the Caranci and Feguson families have been friends forever. He suggested going back to calling the area by County Road Bridge “Murphy’s Hill”. He thanked Mr. Ferguson for his contribution to the Historical Commission.

Jean Morgan, 1131 Spruce St, Louisville, CO noted Dave Ferguson was the first recording of an oral history she did and remarked it is available at the museum.

Mayor Muckle presented a plaque to Mr. Ferguson and a photo was taken with all the family members present.

Mr. Ferguson commented he couldn’t believe what he had just heard. He thanked everyone and noted the City of Louisville was a great place to raise his family.

The audience showed their appreciation with a standing ovation.

RESOLUTION NO. 14, SERIES 2016 – A RESOLUTION APPROVING A BUSINESS ASSISTANCE AGREEMENT WITH ACCURENCE, INC. FOR AN ECONOMIC DEVELOPMENT PROJECT IN THE CITY OF LOUISVILLE

Mayor Muckle called for a staff presentation.

Deputy City Manager Balser noted Accurence, Inc. develops and maintains mobile and desktop applications for insurance and contractor companies in the roofing industry.

Products assist adjusters and contractors in estimating and scoping projects.
- – Founded in 2005 and has evolved into a software-as-a-service (SaaS) model for the roofing industry.
- – Jacob Labrie, President

Project is to relocate their headquarters
- – Seeking 18,000 SF in the Northwest corridor.
- Currently located at 11030 Circle Point Road in Westminster.
- Interested in 305 S. Arthur Avenue
  - – 18,000 sf new construction project proposed by Etkin Johnson.

- 59 new jobs to Louisville
  - – Within 5 years, projected to be 71 employees
  - – Wages significantly higher than Boulder Co. average wage
- $750,000 in tenant improvements within new building.
  - – $27,500 in City Permit Fees, Construction Use taxes
  - – $1,900 is for Open Space and Historic Preservation purposes

Proposed Assistance:
- 50% rebate of City Building Permit Fees
  $5,400 value
- 50% rebate of Construction Use Taxes
  $5,600 value
- Incentives capped at $11,000.

Council member Leh noted Accurence is a client of his, recused himself and left the meeting.

Deputy City Manager Balser continued with the presentation.

- Considering locations in Westminster and Broomfield
- Lease rates for locations are significantly less than 305 South Arthur
  - – 108th and Wadsworth, Broomfield ($12.86 psf NNN)
  - – 11030 Circle Point, Westminster ($15.00 psf NNN)

  - 305 S. Arthur, Louisville ($18.25 psf NNN)

- Meets the general criteria of the BAP Program
  - expansion of jobs,
  - encouraging the diversity of jobs or employment opportunities,
  - Value added by moving the company's corporate headquarters to the city,
  - Project conforms to the comprehensive plan.

Staff recommended approval of a Business Assistance Package with Accurence, Inc.

APPLICANT PRESENTATION

Tim Bruffey, one of the co-founders of Accurence, noted they started in the CTC, liked the area and would like to return.

Mayor Muckle called for Public Comment and hearing none, called for Council comment.

COUNCIL COMMENT

Council member Loo noted BRaD (Business Retention and Development) is defining policy on how Business Assistance Packages (BAPs) are done.

Council member Maloney asked about the timing on the completion of building and if it was possible. Deputy City Manager Balser and the applicant agreed the timing was possible.

MOTION**:** Mayor Muckle moved to approve Resolution No. 14, Series 2016, seconded by Council member Maloney**.** Roll call vote was taken. Motion carried 6-0. Council member Leh recused.

Council member Leh returned to the meeting**.**

RESOLUTION NO. 15, SERIES 2016 – A RESOLUTION SETTING CERTAIN WATER, WASTEWATER, STORMWATER AND OTHER FEES, RATES AND CHARGES FOR THE CITY OF LOUISVILLE, COLORADO

Mayor Muckle called for a staff presentation.

Public Works Director Kowar stated staff recommended increasing the City's water and wastewater rates to (1) fund significant improvements at the City's wastewater treatment plant needed to satisfy new mandatory Federal and State wastewater standards and (2) provide sufficient revenue to properly operate and maintain the City's water and wastewater utility systems. Staff recommends Council adopt the proposed rate increases to go into effect May 1, 2016. The increase proposed for adoption at this

time is for 2016 rates only. Future rates will be evaluated for future increases each year.

In late 2015 and early 2016 City staff and Raeftalis Financial Consultants completed a rate evaluation for the water, wastewater, and stormwater funds. This evaluation used the most recent cost and revenue information to review and update the work completed in the 2014/2015 rate evaluation. The goals of this work are to ensure rates and fees continue to generate sufficient revenue to maintain required income to expense and debt coverage ratios, sustain utility operations and facilitate effective planning and budgeting. Staff presented the results of this evaluation to the Water Committee in November 2015 and February 2016.

The project team realized they could not just do nothing so reviewed two other scenarios. The “Just-in-Time” scenario uses rate increases set and timed to generate revenue needed only in that year. This approach results in major increases in one year and excess revenue or rate reductions in subsequent years. The alternative “Smoothing” scenario sets and times rate increases to produce just enough revenue when needed but do so by more gradually increasing rates over several years. Staff recommends the Smoothing scenario continue to be used to minimize large increases and to distribute increases over time.

The recommended increases will continue the process of matching Utility revenue with projected expenses for operations and required capital improvements. If adopted, the average residential combined water, wastewater, and stormwater utility bill will increase from $63.46 per month to $71.26 per month.

Staff recommends increasing utility rates for the 2016 calendar year by 13.0% for water and 13.0% for wastewater, with the increase effective May 1, 2016. Staff does not recommend an increase to stormwater rates at this time because current rates are adequate to cover projected costs.

Mayor Muckle called for questions from Council and hearing none, called for public comment.

PUBLIC COMMENT

Debby Fahey, 1118 W. Enclave Circle, Louisville, CO asked if money was being put aside to pay any debt increase in the future.

Finance Director Watson stated the debt load is designed to remain level.

Michael Menaker, 1827 W. Choke Cherry Drive, Louisville, Co noted he had no trouble paying his fair share, but took issue with the last gallon costing more than the first. Charge equitably; remove punitive pricing from the water rates.
COUNCIL COMMENT

Mayor Pro Tem Lipton noted he continues to express disappointment for having to raise the rates substantially and is frustrated by continuing to increase the cost of living in Louisville. Raising the rates seems easy to do, but there is a need to keep an eye on this during the five year plan. Block pricing needs to reflect strength of cost, and the last gallon really does cost more than the first.

Council member Stolzmann referred to the slide showing increase over time. She understood the need to replace infrastructure but was concerned about a doubling of rates in ten years. She encouraged the Water Committee look at ways to reduce that increase. She asked if the loan to Golf Course from the Wastewater Fund and the rate it is being paid back had any effect on water rates; would paying that off and having the loan to the Golf Course come from a different fund impact the water rate.

Finance Director Watson said those numbers could be run to find out.

Council member Stolzmann thought it might be interesting for the Water Committee to explore. She cautioned against taking dollars from the Water fund unless the expense was caused by the water utility because it does impact water bills.

Council member Loo asked about the utility rate increases and did not want citizens confused about actual cost. She noted billing charges and readiness to serve are not factored in. The notice that trash was not included needs to be clearer.

Public Works Director Kowar confirmed the notice would be made clearer in stating trash dollar amounts were not included.

Mayor Muckle noted the 2015 price for surrounding cities and Louisville's is 2016. All will likely be doing rate increases. The rate structure conversation led to the block structure to have customers pay for what they are getting. Most of the infrastructure is of the same age and aging. Systems need maintained going forward and to ontinue to provide core services into the future in a cost effective way. Opportunities to save money will continue to be considered. He thanked staff and Council for grappling with the numbers.

MOTION**:** Mayor Muckle moved to approve Resolution No. 15, Series 2016, seconded by Council member Loo. Roll call vote 7-0. Motion carried.

AGREEMENT WITH H2 DEVELOPMENT SERVICES, LLC FOR CONSTRUCTION MANAGEMENT SERVICES RELATED TO CORE AREA REDEVELOPMENT PROJECTS

Mayor Muckle called for a staff presentation.

Public Works Director Kowar noted this is an opportunity developed over a very short period of time with multiple complex components regarding construction and construction management services for the Highway 42/Core Area redevelopment.

The City has been working on the design of the South Street Underpass and the Core Area Redevelopment planning and financing for many years. Components of the redevelopment construction were to be completed during different seasonal construction time frames. Due to delays by the BNSF for the South Street Underpass, desire by the City to expedite water, sewer, and street improvements on streets with poor surface condition, addition of parking improvements to resolve Downtown parking issues, and a vibrant private development environment for non-city owned property the Core Area will experience all construction in the same area during the same construction season. This sole source recommendation is an outcome of preliminary meetings with H2 focused on the City bidding and building its own work and how best to coordinate with BNSF, DELO 2 ,and DELO Plaza improvements already underway. Ultimately, City Staff believes this is the most efficient way to ensure a quality-coordinated project on time, while incorporating competitive pricing.

City Staff recommends the sole source with H2 due to the fact that they are currently responsible for the major portions of construction underway in the Core Area development. The large portions of work to be completed are adjacent and dependent upon each other for successful completion of a cohesive and attractive project outcome. At this time, it would be difficult to bid and coordinate multiple contractors for the South Street Underpass, Front Street improvements, and parking improvements without adverse effects to the Core Area redevelopment construction. Approval of this contract also expedites the timeline for bidding and initialization of construction by 1-2 months in a busy construction environment where costs are continually increasing as time goes by.

Staff recommends approval of a sole source contract with a preliminary budget in the amount of $3,115,193 with H2 Development Services, LLC (H2) for construction management services along with the reconstruction of South Street from Main Street to Highway 42, the South Street Burlington Northern Santa Fe (BNSF) Underpass, Front Street from Walnut Street to Short Street, a new City parking lot on Lot 4 of the DELO Plaza Subdivision, and improvements to parking at Miners Field.

The proposed H2 contract provides for a flat 5% fee on infrastructure improvements and a to be determined negotiated contingency not to exceed 7% that would be an incentivized 50% shared savings (50% goes back to the City and 50% goes to H2) at the end of the project. The contingency will be reviewed at the time of the award of the actual bid cost of work to determine a reasonable amount for risk and shared savings.

Services in the H2 contract include solicitation and competitive bidding for all identified work, coordination of subcontractor sequencing and construction, and management of follow-up for a 2-year warranty.

A budget amendment will be required to formally approve the increased amounts to the Capital Fund, Water Fund and Stormwater Fund. This would occur in April/May of 2016 in conjunction with the overall budget amendment typically occurring in the 2nd quarter of the year. Capital Fund and Water Fund increases in 2016 will produce future decreases in the 5 year CIP due to acceleration of water line replacement previously planned for 2017 and booster street reconstruction previously planned for 2019.

Staff recommended Council authorize the Mayor, City Manager, City Attorney, and Director of Public Works & Utilities to negotiate and execute a final agreement incorporating actual bid costs with H2 Development Services, LLC based upon the Preliminary Budget of $3,115,193.94. In the event the actual bid costs exceed 10% of the Preliminary Budget this agreement will come back before City Council for additional review.

COUNCIL QUESTIONS

Council member Stolzmann asked about the handouts Council received. Public Works Director Kowar noted he had provided an overview describing the qualifications of H2. He provided a summary of the Urban Renewal Authority agreement reconciliation to be paid out over some amount of time; estimated to be around $1.9 million. There was also an updated forecast of project costs.

Mayor Pro Tem Lipton inquired when firm estimates would be available to understand what the costs are.

Public Works Director Kowar said if the contract was awarded, the bidding process would occur over the next month.

Pro Tem Lipton asked what would incentivize the contractor to constrain the cost besides the sharing of risk and reward of the contingency.

Public Works Director Kowar stated there is no risk or reward management on the actual line items. What is bid is how the final contract will be structured. Mayor Pro Tem Lipton asked if as the bids come in, adjustments would be made to the contingency and then the sharing of contingency savings as the price gets more refined. The answer was yes.

Council member Maloney asked what if bids come in at 4 million dollars. Public Works Director Kowar noted Council would then have to review. Council member Maloney thought sequencing the projects made perfect sense but in asking for a sole source, he felt the need for a good job of communication in explaining why this is the right time and what the economies of scale are.

Public Works Director Kowar noted H2 was already operating in the area, it would be difficult for the City to bring in their own contractor because of sequencing problems and the 5% fee was very competitive.

Mayor Muckle noted the sole source was the management. The pieces will be bid out by H2.

Mayor Pro Tem Lipton asked if H2 was providing the engineers. Public Works Director Kowar said H2 is managing the construction services and subcontractors.

Mayor Muckle noted the benefits are obvious. He asked what the total cost is compared to what was expected for all the projects.

Public Works Director Kowar thought the cost was 2.9 million originally and is now in the range of 4.2 million. Roughly 30% is in construction cost increases and the railroad portion of the project has increased

Mayor Muckle noted some of the funds were already committed to these projects. He wanted to get a sense of how far beyond those dollars would this collaboration take us.

Public Works Director Kowar said in the capital fund it would be about $1 million beyond what is budgeted this year, Water Fund about $468,000 more, Stormwater Fund is $89,000 more. City Manager Fleming noted some of those costs not budgeted for in 2016 were budgeted in 2017/2018 so will move those project activities forward.

Council member Loo noted the up-side to this is project costs have increased and economy of scale will be recognized by doing this all at once. Some money spent earlier should result in savings in the out years.

Council member Stolzmann asked about the difference in the Capital Fund overage from the packet to presentation. Public Works Director Kowar noted the $1 million he referred to did not take credit for the downtown parking/transit project surplus, phantom flagging costs of $150,000 added for BNSF, and taking credit for $200,000 for Urban Renewal Authority reconciliation.

PUBLIC COMMENT

Michael Menaker, 1827 W. Choke Cherry, Louisville, CO was in awe of Public Works Director Kowar ability to put all the moving parts together. He noted the vision for this area was begun in 2003. This would hasten the opportunity to recognize real synergy and savings. He urged Council to approve.

John Leary, 1116 La Farge, Louisville, CO said the theory of urban renewal is it builds up the tax base to see benefit in the future. It has been demonstrated before even looking at this project, it would be sometime after 2065 before any agencies who gave up tax money might break even. This project was not put into the calculation and he felt it was too much commitment to give .

COUNCIL COMMENT

Council member Stolzmann expressed concern and wondered what was driving the rush. She did not want to make a judgement without all the information. She wondered if the economy of scale was for the community or the developer of the housing in the area.

Mayor Pro Tem Lipton agreed the projects needed to be looked at as a whole. From a strategy viewpoint, he did not disagree with what was trying to be accomplished. The faster it is done, the more cost effective especially with construction cost inflation. He would have liked to have had more of a heads up.

Public Works Director Kowar noted the ideal was to make a decision tonight. He wanted to bundle an opportunity when it arose.

City Manager Fleming wondered if another alternative would be an advantage; getting contractors to coordinate would very likely be more expensive.

Council member Maloney thanked Public Works Director Kowar for putting this together. This will enable transit; walking and biking between the DELO area and east side of railroad tracks and downtown. He felt the project was an economy of scale and cost effective because it is done by a contractor who is doing other projects there.
It makes sense but he was hesitant about supporting sole source projects. He would, however, support this project.

Council member Leh appreciated the Public Works team for all their work on this project. He felt getting all the parts, funding sources, BNSF's attention, to all come together is remarkable. He was not in favor of sole sourcing as a rule but was convinced the cost would only rise if delayed. He voiced support for the project.

Council member Keany thought the pieces were all needing done so he would support the proposal.

Mayor Muckle noted all of Council was in favor of bidding projects, but the question was did they want to make an exception to get the coordination benefit. He noted most of the projects were paid or budgeted for as City projects, not urban renewal.

AGREEMENT WITH H2 DEVELOPMENT SERVICES, LLC

MOTION: Council member Maloney moved Council authorize the Mayor, City Manager, City Attorney and Director of Public Works to negotiate and execute a final agreement incorporating actual bid costs with H2 Development Services, LLC for the South Street Underpass Construction Project based upon the Preliminary Budget of $3,115,193.94. In the event the actual bid costs exceed 10% of the Preliminary Budget the agreement will come back before City Council for additional review. Council member Loo seconded.

Council member Stolzmann explained she would not support this because she felt there were too many unanswered questions. She felt the exposure was larger than the reward.

ROLL CALL VOTE: 6-1. Council member Stolzmann voting no. Motion carried.

City Manager Fleming thanked Kurt for negotiating this in addition to his numerous other duties. Public Works Director Kowar thanked Finance Director Watson and City Attorney Light for their help in getting this all done in a short amount of time.

DISCUSSION/DIRECTION/ACTION – 2016 CITIZEN SURVEY INSTRUMENT

Mayor Muckle called for a staff presentation.

Public Relations Manager Muth stated City Council gave Councilmembers Leh and Maloney input on the 2016 Citizen Survey instrument at the meeting on March 8. Included in the packet was a revised survey instrument for discussion. The majority of the survey should be finalized at this point, but questions 13 – 17 were those with the most changes. Input is sought on these specific questions. She reminded Council this is a citizen survey done every 4 years and will be sent to 2,000 randomly selected residents to get a statistically valid cross section representation.

Mayor Muckle called for Council comment..

COUNCIL COMMENT

Council member Loo thanked everyone who worked on the survey. She liked the way question 13 was re-done. She felt question 16 doesn't give the public the right idea. She suggested a phrase she borrowed from John Leary. "Most of the land zoned for residential uses in Louisville has been built out."

Council member Maloney and Council member Leh agreed. Council member Leh thanked everyone for their input on the survey.

Council member Loo and Council member Leh noted some typos to clean up.

Mayor Pro Tem Lipton didn't want to see trash pickup go to two weeks. He thought the better question was paying more for composting.

Council member Stolzmann said the question was to gauge where the community is on this issue.

Council member Maloney still found question #14 confusing. He felt the survey is important and was not an easy project. He thanked everyone who worked on it. He

wanted Council to be open to what the answers really were even if they are not what was expected.

Council member Stolzmann wanted to add a space for any feedback. She questioned why #16 now focused in on two specific areas.

Council member Leh said the team struggled with questions if asked and answered, would Council be able to use it to make decisions. The instrument is not perfect but helps to know what the public wants.

Council member Maloney reminded Council this was done every four years. Naming specifics give context for what is there and what is possible and a general question might be too broad.

Council member Stolzmann didn't oppose the question, just felt something was lost.

Council member Loo addressed open ended questions and asked what the consultant's answer was at the last meeting. Public Relations Manager Muth stated it was not done in previous surveys because open ended questions are not statistically helpful nor is there an ability to cross tabulate. It can be useful information, and there could be an open ended question but with some specificity.

Council member Leh felt there was nothing to lose by asking an open ended question.

Council member Loo asked if there was room for an open ended question. She was supportive of a directed open ended question without confusing the layout.

Council was in favor of an open ended question. Council member Keany suggested reformatting question 20 to allow room and put "Comments:".

Mayor Muckle called for public comment.

PUBLIC COMMENT

John Leary, 1116 La Farge Avenue, Louisville, CO appreciated putting the line in he mentioned, but the context was not as he meant. He felt the question was, Louisville is about built out, do we want to densify. Through Special Review Use, numerous areas throughout town could be changed to residential development. Sam's Club is not the only chance for senior housing; don't imply that if you want senior housing this is the last chance.

Jean Morgan, 1131 Spruce Street, Louisville, CO not question #20 could all be on same line to make question #21 the comment line. She asked if this survey would be available to the general public after the random sample.

Public Relations Manager Muth noted sending out 2,000 surveys garnered a broad response and opening it to the public has not been done in the past. Mayor Muckle noted there would then be information not statistically valid.

Ms. Morgan asked about the words excellent, good, fair and poor. She wondered if this slanted to the positive. Public Relations Manager Muth noted the wording was used in previous surveys and if changed would not provide comparison.

MOTION: Council member Loo moved to approve the survey as amended, seconded by Council member Maloney. All in favor.

DISCUSSION/DIRECTION – CHANGE TO VIDEO MINUTES FOR CITY COUNCIL, PLANNING COMMISSION, AND HISTORIC PRESERVATION COMMISSION

Mayor Muckle called for a staff presentation.

Public Relations Manager Muth noted this year the City will be moving to a new web streaming service that will give staff the ability to embed links into the meeting minutes connecting each meeting item directly to a specific video section of the meeting.

Given the ease of this system for the end user, the technological ability we now have to maintain video files, and the ability to post to the City's web site action minutes linked to the video almost immediately following a meeting, staff is recommending transitioning from the current longer, written minutes to shorter, written action minutes with accompanying video as the record of the meeting.

The video minutes will not be searchable by word or name the way the written minutes are, however staff will index the minutes at multiple points to make it easier to find items or speakers (beginning of item, staff presentation, public hearing, closing public hearing, etc.). City Clerks' best practices are moving towards less detail in minutes and not identifying each and every speaker and every point made. That being the case, searching written minutes that aren't as detailed will mean video is likely a better option if the end user wants to know exactly what everyone said.

Such a change will save a great amount of staff time in both writing and reviewing the minutes, thus freeing up time for additional work load.

The State of Colorado Municipal Records Retention Manual requires a paper copy of minutes be kept in perpetuity. Charter Section 4-1(b) also states Council "shall cause minutes of each regular and special meeting to be taken and to be retained permanently in the records of the City." The action minutes from the meeting will meet these requirements. Additionally, the City's record retention system (Laserfiche) can take the video files and they will be available to the public through the City's Digital Records Repository on the City's web site giving the public two ways to find the video on the

City's web site. The video minutes files will be kept in perpetuity in the Digital Repository along with an index of the video.

The City Attorney is recommending an update to the Municipal Code to recognize a video record for purposes of required minutes, and further clarify and define this process to include links to Planning Commission and Historic Preservation Commission minutes in the City Council's quasi-judicial process.

The same minutes process will be used for Planning Commission meetings and Historic Preservation Commission meetings as those are the three boards for which we record meetings.

Staff recommended Council approve the change to video minutes for City Council, Planning Commission, and Historic Preservation Commission.

Mayor Muckle called for Council comment.

COUNCIL COMMENT

Council member Maloney asked about storage. Public Relations Manager noted it would be stored both on the web streaming server and in the record retention system. Council member Maloney felt the concept made sense and noted there were tools available to word search video.

Council member Stolzmann was glad to move toward saving the video, but until there was the availability to search the video, she wanted written minutes kept.

Council member Leh asked about cost savings. Public Relations Manager Muth noted the savings is staff time. Council member Leh wanted to wait until the technology was better defined.

Mayor Muckle called for public comment.

PUBLIC COMMENT

Debby Fahey,, 1118 W. Enclave Circle, Louisville, CO agreed technology was not at this position yet and wanted a paper copy of the minutes.

Jean Morgan, 1131 Spruce Street, Louisville, CO asked about adding page numbers to items on the agenda. Council members noted they used the agenda with links to go to the right page and there were also bookmarks to use to get to items.

Mayor Muckle asked if using video was the trend. Public Relations Manager noted it was and Boulder County and Littleton currently use video minutes.

Mayor Pro Tem Lipton felt he had heard the word search was important and the written minutes could be shorter and supplemented by the video.

Council member Stolzmann thought if minutes were scaled back, it would be helpful to have a link to the meeting minutes for the Historic Preservation Commission or the Planning Commission.

Mayor Muckle asked if both could be done. The answer was yes.

City Attorney Light wanted to confirm the direction from Council on the link to the Planning Commission or HPC video in a quasi-judicial hearing and what the evidence would be before Council. Right now there are code provisions that would need to be changed to reflect the minutes could consist of the video of the meeting.

Public Relations Manager Muth noted if Council was not ready to move forward with video minutes, the HPC and Planning Commission minutes would remain the same.

Council gave staff direction to continue with written minutes for but shorten them somewhat and continue to have video available as well.

CITY ATTORNEY'S REPORT

City Attorney Light noted the purchase of the parking lot parcel from DELO Plaza Development has been completed. He noted he had sent an Open Records request to Council members and asked them to respond.

COUNCIL COMMENTS, COMMITTEE REPORTS, AND IDENTIFICATION OF FUTURE AGENDA ITEMS

Council member Stolzmann gave an update on the eco-pass feasibility study on County issues including measuring support for a tax for a Pass program. Countywide it did not get the support so it was determined it was not ready for the ballot. Boulder and Lafayette may ask voters this fall to give a local pass. She wondered if there was interest in Louisville joining in proposing a Louisville/Lafayette joint pass sometime in the future.

Council member Leh received a question about whether it was possible for a Council attendee to cede their time to someone else and can a public member bring in a presentation.

City Attorney Light noted the agenda related material should be included in the packet due to the charter issue stating all agenda related material should be available 72 hours prior to the meeting.

Mayor Pro Tem Lipton cautioned having the public drive the agenda.

Council member Leh noted it was likely to be on controversial development issues and an opportunity for one to speak for many who agree.

Council member Loo suggested surveying other communities if this becomes an issue.

ADJOURN

MOTION: Mayor Muckle moved for adjournment, seconded by Council member Leh . All were in favor. The meeting was adjourned at 10:25 p.m.

_____
Robert P. Muckle, Mayor

_____
Carol Hanson, Acting City Clerk

SUBJECT: **2016 HUMANE SOCIETY ANIMAL IMPOUNDMENT AGREEMENT**

DATE: **APRIL 5, 2016**

PRESENTED BY: **CHIEF DAVID D. HAYES, POLICE DEPARTMENT**

SUMMARY:
The Humane Society acts as the receiving agency for impoundment and sheltering purposes with respect to all animals brought to the Humane Society by City of Louisville Police personnel.

The Humane Society is responsible for sheltering and caring for the animals, while making reasonable efforts to contact the owner of any impounded animal, in an effort to have the animal reclaimed by their owner. The Humane Society holds all impounded animals for five days, where after it disposes of the animals, if not claimed by their owner or adopted by a new owner.

The 2016 agreement with the Humane Society is a four-year agreement, effective January 1, 2016 through December 31, 2019.

FISCAL IMPACT:
The City agrees to pay the Humane Society an annual fee for coverage of all services which fall within the agreement. The annual fee is as follows: $8,280 for 2016, $9,360 for 2017, $10,440 for 2018, and $10,750 for 2019. The Humane Society will bill on a quarterly basis and the City will pay the Humane Society within 30 days of receipt of the invoice. The annual fee for 2016 is included in the Police Department's 2016 budget under the Professional Services—Other line item for Code Enforcement.

RECOMMENDATION:
Staff Recommends City Council approve the 2016 Human Society Animal Impoundment Agreement.

ATTACHMENT(S):
1. 2016 Human Society Animal Impoundment Agreement

AGREEMENT FOR ANIMAL IMPOUNDMENT SERVICES

THIS AGREEMENT FOR ANIMAL IMPOUNDMENT SERVICES (the "Agreement") is made this _____ day of _____, 2015, by and between the **CITY OF LOUISVILLE,** a Colorado home rule municipal corporation (the "City"), and **THE HUMANE SOCIETY OF BOULDER VALLEY, INC.** a Colorado nonprofit corporation (the "Humane Society"), referred to jointly hereinafter as the "Parties."

The Parties, in consideration of their respective rights and obligations as set forth in this Agreement, hereby agree as follows:

1. **Previous Agreement Superseded.** This Agreement shall replace completely and supersede any other prior Agreements between the Parties for animal impound and sheltering services.

2. **Term of Agreement.** This Agreement shall be effective as of January 1, 2016 and shall terminate on December 31, 2019, unless it is sooner terminated as provided herein, or is renewed or extended by written agreement of the Parties.

3. **Termination.** This Agreement may be terminated by either Party, provided that termination shall not be effective until 90 days after the terminating Party provides written notice of termination to the other Party.

4. **Amendment.** This Agreement may be amended by the Parties at any time during its term, provided that it is amended in writing and such amendment is agreed to and signed by the authorized representatives of both Parties.

5. **Services to be Provided by the Humane Society.**

(a) The Humane Society agrees to maintain a shelter facility (the "Facility") within Boulder County, Colorado in accordance with all applicable State of Colorado health and animal treatment statutes. The Humane Society further agrees to act as the receiving agency for impoundment and sheltering purposes with respect to all animals brought to the Humane Society's Facility by authorized personnel of the City ("Authorized Personnel").

(b) The Humane Society agrees to hold all impounded animals for five days, and to then dispose of animals, unless properly reclaimed by a verified owner with the five day holding period. The Humane Society shall make reasonable efforts to contact the owner of any impounded animal which is brought to it by the City under this Agreement which bears reasonable means of identification. Reasonable efforts will consist of attempting to contact the owner at the phone number indicated on the license or tag.

(c) Except during any week where a legal holiday occurs, the Humane Society shall maintain a schedule of at least 40 hours per week whereby animals impounded

under this Agreement may be reclaimed by their owner. In any week in which a legal holiday occurs, eight hours may be deducted from the required 40 hours for each such holiday. In addition, the Humane Society shall make its shelter facilities available to Authorized Personnel of the City for the purpose of receiving impounded animals under this Agreement on a basis of 24 hours per day, seven days per week.

6. **Exceptions to Humane Society's Obligation to Provide Services.**

(a) The Humane Society is not obligated to accept animals other than dogs or cats under this Agreement, unless authorized by the Chief Executive Officer of the Humane Society or her authorized representative. Seriously sick or seriously injured animals brought to the Facility may be treated or destroyed at the sole option of the Humane Society, following reasonable efforts to contact the owner specified herein, and the Humane Society shall not be required to wait for any other applicable holding or impoundment period provided herein. In the event disposal of an animal is required due to serious illness or injury, the Humane Society shall make all reasonable efforts to identify and notify the owner of the animal's location and condition before destroying it, by researching all lost animal reports; however, the Humane Society shall not undertake identification efforts which, in its opinion, would unduly prolong suffering of the animal in question. The Humane Society will not provide any shelter or impoundment services for barnyard animals. The Humane Society does not accept deceased animals from City of Louisville personnel.

(b) All animals impounded by the City shall be the responsibility of the City until deposited at the shelter. Thereafter, all animals shall be the responsibility of the Humane Society under the terms of this Agreement.

(c) The City is responsible for transporting animals from its jurisdiction that have been left at a private veterinary clinic or boarding facility within the City of Louisville, Colorado city limits by officers or private citizens. Humane Society staff will transport these animals to the Facility if asked to do so by the City and will charge a $5 per animal transportation fee in addition to any impoundment charges. The City will also pay the respective veterinary clinic for any fees incurred and not paid by the animal's guardian.

(d) The City shall pay the Humane Society an additional fee of $35/day impounded for an animal ordered to be impounded pending a case in a court of law, in the event that the result of the case does not provide for cost of care compensation from the guardian to the Humane Society.

(e) In the event of a large impounding (e.g., hoarding case) from a single resident whether by relinquishment or otherwise, the City shall pay the Humane Society $100 per animal. The $100 per animal charge shall take effect upon

impoundment of the fifth animal in a large impoundment case, and shall not apply to the first four animals.

7. **Compensation for Services.** The City agrees to pay the Humane Society an annual fee for coverage of all services under contract except as specified in Sections 6(c), 6(d), and 6(e). The annual fee is as follows: $8,280 for 2016, $9,360 for 2017, $10,440 for 2018, and $10,750 for 2019. The Humane Society will bill on a quarterly basis and the City will pay the Humane Society within 30 days of receipt of the invoice.

8. **Reclaim Rights and Obligations.**

(a) Each animal impounded by the City and placed with the Humane Society pursuant to this Agreement may be reclaimed by the owner during the impound period upon verification of ownership, subject to the following provisions.

(b) The Humane Society will charge to any verified owner who reclaims an animal all costs and fees incurred by the Humane Society. The Humane Society will keep complete and accurate records of all such charges assessed and any payments made by reclaiming owners.

(c) The Humane Society may set and collect such impound, board and veterinary care fees for impounded animals as it deems appropriate and may refuse to return the animal to its owner if he or she fails to pay those fees in full. Any such fees collected will be retained by the Humane Society and will not be credited against any fees owed or paid by the City, except that fees collected from an owner and previously paid by the City shall be credited or refunded to the City.

(d) In connection with bringing an animal to the Humane Society, the City may institute a claim or proceeding against the person responsible for an animal (the "Defendant"), based upon or pursuant to C.R.S. 18-9-204.5, or another applicable statute, ordinance, regulation or law. The City hereby agrees that within one business day after it institutes such a claim or proceeding, it will provide the Humane Society with the following information, in writing: (i) the name, address and telephone number of the Defendant; (ii) the date that the Defendant was charged with a violation of C.R.S. 18-9-204.5 or any other applicable statute, ordinance, regulation or law; and (iii) a copy of the Arrest Report or Summons and Citation related to Defendant. The City also agrees to promptly provide the Humane Society with any available information as to the status of the pending prosecution against the Defendant (including any request or application for bail). In the event a court sets bail for a Defendant's release from custody pending final disposition pursuant to C.R.S. 18-9-204.5(4), the City shall provide all available information with respect to Defendant's bond conditions and shall assign to the Humane Society any and all payments received from

Defendant for the costs of boarding and caring for Defendant's animal placed with the Humane Society pursuant to C.R.S. 18-9-204.5(4).

(e) Before entering into any agreement with a Defendant regarding the disposition of all or part of a case or claim, and before seeking any final judicial determination of charges pending against a Defendant, the City will first contact and consult with the Humane Society to determine the extent of any and all fees, charges, bills or costs owed by the Defendant based upon or arising out of the Humane Society's receiving, keeping or disposing of an animal. In prosecuting the case or claim, the City shall assist and fully cooperate with the Humane Society in the Humane Society's efforts to seek payment from the Defendant (or any other responsible person or entity) for those fees, charges, bills or costs. This assistance and cooperation will include, but is not limited to: (i) having the Defendant pay the Humane Society before any final disposition of charges is arranged or determined; (ii) requesting that the court order the Defendant to pay the Humane Society in connection with the final disposition of charges; or (iii) asking that the court make payment a condition of any sentence or probation.

(f) In the event that the Defendant owner or other responsible person if found to be "not guilty" of violating C.R.S. 18-9-204.5 or any other applicable statute, ordinance, regulation or law, or if the charges or claims brought against the Defendant are dismissed, either by the court or by the City, then the City shall be responsible for the payment of all fees, charges, bills or costs based upon or arising out of the Humane Society's receiving, keeping or disposing of the animal(s) in question.

(g) The Humane Society shall refer to the City for appropriate action the names of any known owners of animals impounded under this Agreement who have been assessed and have refused to pay the associated costs and fees.

9. **Reports required.**

(a) The Humane Society will maintain complete and accurate records of impounded animals. These records will specify the date of impoundment, the reason for impoundment if provided by the City, the general condition of the animal upon arrival or first contact with the Humane Society employees, efforts to identify and give notice to the owner, the length of the animal's stay at the shelter, treatment and/or disposition of the animal, all associated costs and fees, identity of the reclaiming owner, amounts billed to and collected from the reclaiming owner, and all other billing and collection information required under Section 8, above.

(b) The Humane Society shall make its impound records and facilities available for inspection by any authorized representative of the City upon written request submitted to the Chief Executive Officer of the Humane Society or her

authorized representative at least 24 hours in advance of the requested inspecting.

10. **Reservation of Authority.** The Humane Society has full authority to establish internal operating policies and to conduct shelter operations which are not otherwise specified in, or in conflict with this Agreement. Nothing in this Agreement shall prohibit the City from establishing operating procedures or undertaking duties which are required by or in accordance with any city regulations or state or federal law.

11. **Payments Subject to Appropriation**. The City's obligation to pay annual fees and any other sums of money under this Agreement is subject to the appropriation of sufficient funds therefor by the City Council of the City (the "Council"). Nothing herein is intended or shall be construed to constitute a debt, multiple fiscal year direct or indirect debt or other financial obligation or indebtedness of the City within the meaning of any provision or limitation of the Constitution or statutes of the State, and shall never constitute nor give rise to a pecuniary liability of the City or a charge against its general credit or taxing powers. However, the City shall be obligated to pay for all services actually received.

12. **Compliance with Applicable Laws.**

(a) The Humane Society shall comply with all applicable local, state and federal laws, rules regulations and ordinances concerning the services performed under this Agreement. If the City finds that the Humane Society is not in compliance with any such laws, rules, regulations and/or ordinance, the City shall have the right to withhold future payments from the Humane Society until such time as the Humane Society shall be in compliance, and also may terminate this Agreement pursuant to Section 3, above.

(b) Exhibit A, the "City of Louisville Public Services Contract Addendum-Prohibition Against Employing Illegal Aliens", is attached hereto and incorporated herein by reference. There is also attached hereto a copy of Contractor's Pre-Contract Certification which Contractor has executed and delivered to the City prior to Contractor's execution of this Agreement.

13. **Independent Contractor.** The Parties recognize and agree that the Humane Society is an independent contractor for all purposes, both legal and practical, in performing services under this Agreement, and that the Humane Society and its agents and employees are not the City's agents or employees for any purpose. As an independent contractor, the Humane Society shall be responsible for employing and directing such personnel as it requires to perform the services as set forth in this Agreement, shall exercise complete authority over its personnel, and shall secure any and all permits that may be required in order to perform the services.

THE HUMANE SOCIETY SHALL SATISFY ALL TAX RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, PAYMENT OF ANY APPLICABLE STATE AND FEDERAL INCOME AND SOCIAL SECURITY TAXES, UNEMPLOYMENT TAXES, AND WORKERS' COMPENSATION TAXES. NO STATE, FEDERAL OR LOCAL TAXES OF ANY KIND SHALL BE WITHHELD OR PAID BY THE CITY.

AS AN INDEPENDENT CONTRACTOR, THE HUMANE SOCIETY AND ITS STAFF IS NOT ENTITLED TO WORKERS' COMPENSATION NOR TO UNEMPLOYMENT INSURANCE BENEFITS UNLESS SUCH WORKERS' COMPENSATION BENEFITS AND/OR UNEMPLOYMENT COMPENSATION COVERAGE IS PROVIDED BY THE HUMANE SOCIETY OR SOME ENTITY OTHER THAN THE CITY.

14. **Indemnification.** The Humane Society shall protect, indemnify, defend, and hold harmless the City, the departments and agencies thereof, its officers, elected and appointed, and its employees, servants and agents from any and every action, cause of action, claim or demand of any person, natural or corporate, who is not a subscribing party to this agreement by, because or through any matter, cause, or thing happening or in any way connected with the impoundment facility; except the Humane Society shall not be required to protect, indemnify, defend, and hold harmless the City for acts, claims or demands which may arise from the negligent acts of the City, its officers, elected or appointed, and the agencies thereof, nor for acts, claims, or demands based on the performance of this contract by the Humane Society in compliance with specific instructions or orders given to said Humane Society by authorized agents or elected or appointed officers of the City.

15. **Insurance Coverage.** The Humane Society is required to maintain at its own expense and without cost to the City, the following types and amounts of insurance. The policy limits required are to be considered minimum amounts.

(a) Comprehensive General Liability Insurance with minimum combined single limits of ONE MILLION DOLLARS ($1,000,000) each occurrence and TWO MILLION DOLLARS ($2,000,000) aggregate. The policy shall include the City of Louisville as additional insured with primary coverage as respects the City of Louisville and shall contain a severability of interests provision.

(b) Worker's Compensation and Employers Liability Insurance shall cover the obligations of the Humane Society in accordance with the provisions of the Worker's Compensation Act, as amended, of the State of Colorado.

(c) Comprehensive Automobile Liability Insurance with minimum combined single limits for bodily injury and property damage of not less than the amounts required by State law, with respect to each vehicle assigned to or used in performance of this Agreement by the Humane Society.

(d) The Humane Society's general liability insurance shall be endorsed to include the City as additional insured, unless the City in its sole discretion waives such requirement. Each policy required above shall be primary insurance, and any insurance carried by the City, its officers, or its employees, shall be excess and not contributory insurance to that provided by the Humane Society. Such policies shall contain a severability of interests provision. The Humane Society shall be solely responsible for any deductible losses under each of the policies required above. The Humane Society agrees that the respective insurance policies required above shall each contain a waiver of subrogation waiving rights of subrogation against the City

(e) Certificates of insurance shall be provided by the Humane Society as evidence that policies providing the required coverages, conditions, and minimum limits are in full force and effect, and shall be subject to review and approval by the City. No required coverage shall be cancelled, terminated or materially changed until at least 30 days prior written notice has been given to the City. The City reserves the right to request and receive a certified copy of any policy and any endorsement thereto.

(f) Failure on the part of the Humane Society to procure or maintain policies providing the required coverages, conditions, and minimum limits shall constitute a material breach of contract upon which the City may immediately terminate this Agreement.

(g) The Parties understand and agree that the City is relying on, and does not waive or intend to waive by any provision of this contract, the monetary limitations (presently $350,000 per person and $990,000 per occurrence) or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, C.R.S. § 24-10-101 et seq., as from time to time amended, or otherwise available to the City, its officers, or its employees.

16. **Invalidity of Provisions.** Should any of the provisions of this Agreement be held to be invalid or unenforceable, then the balance of the Agreement shall be held to be in full force and effect as though the invalid portion was not included; provided, however, that should the invalidity of unenforceability go to the essence of the Agreement or be of substantial nature, then the Party or Parties who would receive the benefit of the provision, were it not invalid or unenforceable, shall have the option to terminate this Agreement, forthwith.

17. **Assignment.** Neither the City nor the Humane Society may assign any portion of this Agreement without the prior written consent of the other party. Notwithstanding the preceding, the Humane Society may pledge amounts received pursuant to this Agreement without the consent of the City.

18. **Notices.** Any notices to be given in accordance with or Pursuant to this Agreement for Animal Impound Services shall be directed as follows:

The City:
David D. Hayes, Chief of Police, Louisville Police Department
992 Via Appia
Louisville, Colorado 80027

The Humane Society:
Lisa Pedersen, Chief Executive Officer
The Humane Society of Boulder Valley, Inc.
2323 55th Street
Boulder, Colorado 80301
(303) 442-4030, Ext. 629

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement for Animal Impoundment Services as of the date first set forth above.

CITY OF LOUISVILLE,
a Colorado home rule municipal corporation

By _____
Robert P. Muckle, Mayor

Attest:

By _____
Nancy Varra, City Clerk

THE HUMANE SOCIETY OF BOULDER VALLEY, INC.

By _____
Chief Executive Officer

Exhibit A

City of Louisville Public Services Contract Addendum
Prohibition Against Employing Illegal Aliens

Prohibition Against Employing Illegal Aliens. The Humane Society shall not knowingly employ or contract with an illegal alien to perform work under this contract. The Humane Society shall not enter into a contract with a subcontractor that fails to certify to the Humane Society that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this contract.

The Humane Society will participate in either the E-verify program or the Department program, as defined in C.R.S. § § 8-17.5-101(3.3) and 8-17.5-101(3.7), respectively, in order to confirm the employment eligibility of all employees who are newly hired for employment to perform work under the public contract for services. The Humane Society is prohibited from using the E-verify program or the Department program procedures to undertake pre-employment screening of job applicants while this contract is being performed.

If the Humane Society obtains actual knowledge that a subcontractor performing work under this contract for services knowingly employs or contracts with an illegal alien, the Humane Society shall:

a. Notify the subcontractor and the City within three days that the Humane Society has actual knowledge that the subcontractor is employing or contracting with an illegal alien; and

b. Terminate the subcontract with the subcontractor if within three days of receiving the notice required pursuant to this paragraph the subcontractor does not stop employing or contracting with the illegal alien; except that the Humane Society shall not terminate the contract with the subcontractor if during such three days the subcontractor provides information to establish that the subcontractor has not knowingly employed or contracted with an illegal alien.

The Humane Society shall comply with any reasonable request by the Department of Labor and Employment made in the course of an investigation that the Department is undertaking pursuant to the authority established in C.R.S. § 8-17.5-102(5).

If the Humane Society violates a provision of this Contract required pursuant to C.R.S. § 8-17.5-102, City may terminate the contract for breach of contract. If the contract is so terminated, the Humane Society shall be liable for actual and consequential damages to the City.

Pre-Contract Certification in Compliance with C.R.S. Section 8-17.5-102(1)

The undersigned hereby certifies as follows:

That at the time of providing this certification, the undersigned does not knowingly employ or contract with an illegal alien; and that the undersigned will participate in the E-Verify program or the Department program, as defined in C.R.S. § § 8-17.5-101(3.3) and 8-17.5-101(3.7), respectively, in order to confirm the employment eligibility of all employees who are newly hired for employment to perform under the public contract for services.

THE HUMANE SOCIETY OF BOULDER VALLEY, INC.

By Lisa Pedersen
Title: CEO

1-22-16
Date

SUBJECT: **2016 ARBOR DAY PROCLAMATION**

DATE: **APRIL 5, 2016**

PRESENTED BY: **CHRIS LICHTY, PARKS & RECREATION DEPARTMENT**

SUMMARY:
One of the requirements of being a Tree City USA is to formally celebrate Arbor Day annually. This year the City of Louisville will be celebrating Arbor Day on Saturday, April 16, 2016. The Forestry Division of the Parks and Recreation Department in conjunction with the City of Louisville Parks and Public Landscaping Advisory Board has developed a program of events that will promote the health and welfare of our Urban Forest. The enclosed proclamation, signed by the Mayor, formally announces this years' Arbor Day celebration.

FISCAL IMPACT:
N/A

RECOMMENDATION:
Approve the proposed Proclamation.

ATTACHMENT(S):
1. 2016 Arbor Day Proclamation

ARBOR DAY

WHEREAS, The City of Louisville conducts an annual Arbor Day Celebration, employs staff dedicated to tree care, has written a tree ordinance, and spends more than two dollars per capita on tree care, the National Arbor Day Foundation recognizes the City of Louisville as a Tree City USA for the 36th consecutive year and

WHEREAS, the City of Louisville received the Tree City USA Growth Award from the National Arbor Day Foundation for hiring a City Forester and completing an inventory of city trees and

WHEREAS, through the work of the Parks and Public Landscaping Advisory Board, the City of Louisville has established and committed to an ongoing landscape beautification master plan involving the planting of numerous trees and shrubs and

WHEREAS, through lottery proceeds the City of Louisville has established an arboretum and continues to maintain and manage through sound arboricultural practices.

WHEREAS, the Parks and Public Landscaping Advisory Board and City of Louisville staff continue to educate the public on sound horticultural and forestry practices and

WHEREAS, Arbor Day has been celebrated nationally since 1872.

NOW THEREFORE, I, Robert P. Muckle, Mayor of the City of Louisville, do hereby proclaim Saturday, April 16, 2016 as Arbor Day in the City of Louisville and urge all citizens to celebrate efforts to care for our trees and woodlands and to support our city's community forestry program, and I urge all citizens to plant trees to gladden the heart and promote the well-being of present and future generations.

DATED this 5th day of April 2016.

_____

Robert P. Muckle, Mayor

ATTEST:

_____

Carol Hanson, Deputy City Clerk

SUBJECT: **RESOLUTION NO. 16, SERIES 2016 – A RESOLUTION APPROVING AN AGREEMENT FOR DELEGATION OF ACTIVITIES FOR A BOULDER COUNTY COLLABORATIVE CDBG-DR SUB-ALLOCATION FOR THE CITY OF LOUISVILLE RAW WATER DIVERSION IMPROVEMENTS PROJECT**

DATE: **APRIL 5, 2016**

PRESENTED BY: **KURT KOWAR, PUBLIC WORKS DEPARTMENT**

SUMMARY:

The U.S. Department of Housing and Urban Development (HUD) has allocated the State of Colorado Community Development Block Grant-Disaster Recovery (CDBG-DR) funds for disasters in 2011, 2012 and 2013. The State of Colorado Department of Local Affairs (DOLA) made a sub-allocation of these funds to the Boulder County Collaborative for Round 2 and beyond which the City is a part of. Staff has worked with the City of Longmont (lead agency of the Collaborative) on securing Louisville's portion of these funds to be used for the Raw Water Diversion Improvements project that is currently in the final stages of construction.

The attached agreement will grant $700,936 in construction reimbursement with an addition Project Delivery portion of $105,141 for a total reimbursement allocation of $806,077. Project Delivery costs are reserved for the Collaborative. These funds are tied to technical assistance and consulting services for the implementation and oversite of this program and ensuring compliance and eligibility. Any funds not spent for the Project Delivery can be applied to construction portion and will increase the reimbursement amount received by the City.

The City Attorney has reviewed the Agreement and has found the agreement acceptable.

FISCAL IMPACT:

Merrick's Design Contract	$	65,795
Merrick's Design Contract Contingency	$	6,580
Merrick's Design Contract Addendum No. 1	$	41,000
Merrick's Construction Management Contract	$	125,000
Browns Hill Instrumentation Contract	$	32,395
Glacier Construction Cost	$	1,361,526
Construction Contingency	$	136,000
Total Project Cost	**$**	**1,768,296**
Insurance Payment	$	67,120
Colorado Water Conservation Board Grant (2)	$	45,000
CDPHE Contribution	$	312,125
CDBG-DR Grant	$	700,936
(Pending) FEMA Contribution Estimate	*$*	*250,000*
City of Louisville's Estimated Contribution	**$**	**393,115**

As stated above the Project Delivery Funds from CDBG-DR could provide some additional dollars to the City, thus further reducing the City's contribution. Additionally, The FEMA number of $250,000 is an estimate based on lengthy conversations with FEMA and the state. The City is awaiting final FEMA reimbursement approvals so there is a possibility the City estimated contribution may change as the FEMA number is confirmed/approved.

RECOMMENDATION:
Staff recommends City Council pass Resolution No. 16, Series 2016 authorizing the Mayor to sign the attached Agreement on behalf of the City.

ATTACHMENT(S):
1. Resolution
2. Agreement for Delegation of Activities Boulder County Collaborative CDBG-DR Sub-Allocation Grant No. B-13-DS-08-001: INF-00006

RESOLUTION NO. 16
SERIES 2016

A RESOLUTION APPROVING AN AGREEMENT FOR DELEGATION OF ACTIVITIES FOR A BOULDER COUNTY COLLABORATIVE CDBG-DR SUB-ALLOCATION FOR THE CITY OF LOUISVILLE RAW WATER DIVERSION IMPROVEMENTS PROJECT

WHEREAS, the U.S. Department of Housing and Urban Development ("HUD") Community Development Block Grant - Disaster Recovery ("CDBG-DR") Program has appropriated funds for disaster assistance and has distributed appropriated funds to the State of Colorado; and

WHEREAS, Louisville is a participant in the Boulder County Collaborative ("Collaborative") and has previously entered into an Collaborative Intergovernmental Agreement respecting sub-allocation of funds to participating governments; and

WHEREAS, the City of Longmont is the fiscal agent for the Collaborative's CDBG-DR sub-allocation from the Colorado Department of Local Affairs funds from HUD, and the City of Longmont is responsible for the development, implementation, administration, and evaluation of HUD's CDBG-DR funds on behalf of the Collaborative Partners ("Partners"); and

WHEREAS, HUD has allocated the State of Colorado CDBG-DR funds for recovery from the disasters in 2011, 2012, and 2013, and DOLA has allocated a sub-allocation of these funds to the Collaborative through the State's Third Amendment to the State's Action Plan submitted to HUD dated June 26, 2015; and

WHEREAS, the Collaborative has determined a method of distribution of the sub-allocation based on the Collaborative Intergovernmental Agreement, which details the targeted percentage amount each Partner will receive for infrastructure and/or housing assistance projects; and

WHEREAS, there has been proposed for the City of Louisville's Raw Water Diversion Improvements Project an Agreement for Delegation of Activities between the City of Longmont and the City of Louisville; and

WHEREAS, the City of Louisville possesses the authority and management capability necessary to assist the City of Longmont in the execution of its responsibilities as a CDBG-DR sub-grantee and has been determined to be an appropriate party to assume the primary administration of the Raw Water Diversion Improvements Project, an activity described as Priority Infrastructure Project in CDBG-DR Program Grant No. B-13-DS-08-001; and

WHEREAS, by such Agreement for Delegation of Activities, the City of Louisville and City of Longmont desire to make provision for the administration and conduct of that activity by the City of Louisville; and

WHEREAS, the parties are authorized to enter into such Agreement pursuant to law, including without limitation, Colorado Constitution, Article XIV § 18, and § 29-l-203, C.R.S.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF LOUISVILLE, COLORADO:

1. The City Council hereby approves the proposed Agreement for Delegation of Activities, Boulder County Collaborative CDBG-DR Sub-Allocation, Grant No. B-13-DS-08-001: INF-00006, between the City of Louisville and the City of Longmont ("Agreement"), in essentially the same form as the copy of such Agreement accompanying this Resolution.

2. The Mayor is authorized to execute the Agreement on behalf of the City, except that the Mayor is hereby further granted authority to negotiate and approve such revisions to said Agreement as the Mayor determines are necessary or desirable for the protection of the City, so long as the essential terms and conditions of the Agreement are not altered.

3. The Mayor, City Manager, Deputy City Manager, City Water Resources Engineer and other City staff are hereby authorized to execute all documents and do all other things necessary on behalf of the City to perform the obligations of the City under the Agreement.

4. Without limiting the provisions of Section 3, above, City Manager Malcolm Fleming is hereby designated as the official representative of the City authorized to take all actions in connection with the Agreement and to provide all such information as may be required in connection with the Agreement, and to enter into such subsequent contracts, including all understandings and assurances contained therein, as are necessary or desirable in connection with the Agreement or implementation thereof.

PASSED AND ADOPTED this _____ day of _____, 2016.

_____
Robert P. Muckle, Mayor

ATTEST:

_____
Carol Hanson, Acting City Clerk

AGREEMENT FOR DELEGATION OF ACTIVITIES

Boulder County Collaborative CDBG-DR Sub-Allocation
Grant No. B-13-DS-08-001: INF-00006

THIS AGREEMENT, including attached conditions, is made by and between the City of Longmont, Colorado, a Colorado municipal corporation ("City"), and City of Louisville, a Colorado municipal corporation ("Delegate").

WHEREAS, the City is the fiscal agent for the Boulder County Collaborative ("Collaborative") Community Development Block Grant-Disaster Recovery ("CDBG-DR") sub-allocation from the State of Colorado Department of Local Affairs ("DOLA") funds from the U.S. Department of Housing and Urban Development ("HUD") and is responsible for the development, implementation, administration, and evaluation of HUD's CDBG-DR funds on behalf of the Collaborative Partners ("Partners"); and

WHEREAS, HUD has allocated the State of Colorado CDBG-DR funds for recovery from the disasters in 2011, 2012, and 2013, and DOLA has allocated a sub-allocation of these funds to the Boulder County Collaborative through the State's Third Amendment to the State's Action Plan submitted to HUD dated June 26, 2015; and

WHEREAS, the Collaborative has determined a method of distribution of the sub-allocation based on the Community Development Block Grant – Disaster Recovery Collaborative Intergovernmental Agreement detailing the targeted percentage amount each Partner will receive for infrastructure and/or housing assistance projects; and

WHEREAS, the Delegate possesses the authority and management capability necessary to assist the City in the execution of its responsibilities as a CDBG-DR sub-grantee and has been determined by the City to be an appropriate party to assume the primary administration of an activity described as Priority Infrastructure Project in CDBG-DR Program Grant No. B-13-DS-08-001; and

WHEREAS, by this Agreement, the parties are making provision for the administration and conduct of that activity by the Delegate.

THEREFORE, WITNESSETH, the City and the Delegate do mutually agree as follows:

1. **WORK TO BE PERFORMED.** The Delegate shall, in a timely and satisfactory manner, as determined by the City, perform the activities described in the work program set forth in **Appendix A.**

2. **COMPLIANCE WITH APPROVED PROGRAM.** All activities authorized by this Agreement will be performed in accordance with the goals and objectives set forth in **Appendix A**, the budget set forth in **Appendix B**, and the conditions, assurances, and requirements set forth in CDBG-DR Program Grant No. B-13-DS-08-001 as detailed in **Appendix C**. Prior to undertaking any activity or making any expenditure that is not clearly

consistent with the terms and conditions of this Agreement, the Delegate shall, in writing, request the written approval of the City. No reimbursement shall be made for any such expenditure or activity that does not receive this prior written approval of the City.

3. FUNDS AUTHORIZED AND SCHEDULE OF PAYMENTS. Subject to the receipt of funds from the State of Colorado, the City will reimburse the Delegate for expenditures, verified by vouchers and similar documentation, authorized by **Appendix A.**

For work subject to this Agreement, the Delegate shall submit, as an invoice, a financial statement of expenses incurred. Within ten (10) working days of receipt of the invoice, the City will determine, in its reasonable discretion if those expenditures are authorized by **Appendix A**, and if so authorized, make payment of approved expenditures or notify the Delegate in writing of its decision to disapprove, and of any conditions to be met for approval. In no event will the Delegate receive reimbursement in excess of the total amount of CDBG-DR funds authorized by this Agreement and detailed in the budget set forth in **Appendix B**.

4. PROGRAM INCOME. Program income, as defined at 24 CFR 570.504, generated by the Delegate, will be sent to the City while the Grant Agreement under B-13-DS-08-001 with DOLA remains open and will be used for other CDBG-DR eligible activities under the sub-allocation as determined by the Collaborative. Program income received after the Grant Agreement with DOLA is closed out can be retained and used by the Delegate that is a CDBG entitlement jurisdiction for any CDBG eligible use. Program income received by a Delegate that is not a CDBG entitlement jurisdiction after the Grant Agreement with DOLA is closed out, will be returned to the City and the City will place the program income in the Countywide Down Payment Assistance Program account to be used throughout the county for allowable down payment assistance expenses. Appropriate documentation of the receipt and use of program income during the term of this Agreement will be provided to the City.

5. REVERSION OF ASSETS. Upon the expiration or termination of this Agreement, the Delegate shall transfer any CDBG-DR funds on hand at that time and any accounts receivable attributable to the use of CDBG-DR funds to the City. Any real property under the Delegate's control that was acquired or improved in whole or in part with CDBG-DR funds in excess of $25,000 must either:

(A) Be used to meet one of the national objectives outlined in the March 5, 2013, Federal Register Notice (78 FR 14329) or 24 CFR 570.208 until five (5) years after the expiration of this Agreement. If however, the real property being acquired is part of a buyout or flood mitigation acquisition where the future and on-going use of the property is restricted in accordance with HUD rules, then the undeveloped real property will be considered to meet the HUD national objective;

OR

(B) Be disposed of in a manner that results in the City being reimbursed in the amount of the current fair market value of the property, less any portion of the value attributable to expenditures of non-CDBG-DR funds for acquisition of, or improvements to, the property.

If there is real property being acquired or improved under this Agreement with CDBG-DR funds, the Delegate and the City must have reached a prior agreement as to which of the above options will be used and enforced. The option for this Agreement is (**A).**

This paragraph 5 only applies to any funds or real property provided to or acquired by the Delegate under this Agreement.

6. REPORTS, RECORDS, MONITORING AND EVALUATION. The City will monitor, evaluate, and provide guidance, direction, and technical assistance to the Delegate in the conduct of activities listed in this paragraph. The Delegate will provide the following:

(A) Quarterly Reports. Within five (5) working days after the end of each quarter (by March 5, June 5, September 5 and December 5), the Delegate shall submit the following:

(1) Progress report of the Delegate's activities and accomplishments during the period with emphasis on the objectives of the project specified in **Appendix A**.

(2) Financial statement of CDBG-DR expenditures made by the Delegate during the period, including a comparison of accumulative CDBG-DR expenditures made in the conduct of the project to the specific cost categories and expenditure milestones set forth in the budget in **Appendix B**.

(3) Any special report made necessary by the imposition of the City or HUD, or additional reasonable requirements pursuant to CDBG-DR Program Grant No. B-13-DS-08-001.

(B) Project Completion Report. Within fifteen (15) days of the earlier of termination or completion of the project, the Delegate shall submit one (1) copy of the project completion report, and one (1) copy of the final financial status report. Electronic submission of these and all reports is encouraged. The project completion report shall contain a certification from the Delegate that the project is complete and all costs for reimbursement have been submitted to the City.

(C) Annual Audit. A complete annual audit is not required by federal law if the Delegate is a non-federal entity that expends less than $750,000 in federal funds annually, including funds authorized by this grant. However, all financial and other records must be available for review or audit by appropriate officials of the City, State, HUD, and the General Accounting Office. If the Delegate will expend $750,000 or more in federal funds during the calendar year in which the grant award made under this Agreement is expended, a single or program-specific audit must be submitted to the City for review immediately upon completion. The Delegate will include the activities delegated by the terms of this Agreement in its audit which shall be undertaken in accordance with the provisions of OMB Super Circular Title 2 of the CFR, Subtitle A, Chapter II, Part 200, and which shall include a compliance review as per 24 CFR 44.5.

(D) Retain Records. The Delegate will retain and permit access by the City, State, HUD, and the Comptroller General to inspect all program records pertaining to the grant for a period of at least four (4) years after the date of this grant close-out. Records to be maintained by Delegate will include, but are not limited to, the following: applications including eligibility determination, national objective and LMI determination, environmental clearance, duplication of benefit, beneficiary information and other compliance documentation as required.

For Housing projects/programs, Delegate shall also retain and permit access by the City, State, HUD, and the Comptroller General to inspect all individual household assistance records pertaining to the grant for a period of at least ten (10) years after the date of this grant close-out.

(E) Cooperate with Evaluation. The Delegate will ensure the cooperation of its staff and other responsible officials in the efforts of the City to monitor and evaluate the Delegate's activities. The Delegate will actively assist City in the following activities:

(1) On-site visits by the City made to monitor the progress of the activities delegated, to review compliance with the terms of this Agreement, and to offer assistance in the conduct of the project. Such on-site visits will be undertaken within ninety (90) days of this grant award, and then every six (6) months until grant close-out. The monitoring schedule is described further in **Appendix D**.

(2) Any special monitoring or evaluation activities made necessary by the imposition by the City, State, or HUD of additional reasonable requirements pursuant to HUD CDBG-DR Program Grant No. B-13-DS-08-001.

7. COMPLIANCE WITH FEDERAL, STATE, AND LOCAL LAWS. The Delegate shall comply with all applicable federal, state, and local laws, rules, statutes, charter provisions, ordinances, regulations, policies, guidelines, and requirements with respect to the acceptance and use of federal funds for this federally assisted program. **Appendix C** requires that the Delegate assure and certify compliance with said requirements, including the following:

(A) Residential Anti-Displacement and Relocation Assistance Plan included in **Appendix F**.

(B) Affirmation of Duplication of Benefits included in **Appendix H**.

(C) Financial Management Questionnaire to affirm proficient financial controls and procurement processes included in **Appendix I**.

8. CHANGES. This Agreement is an integration of the entire understanding of the parties, and any amendment must be signed by the authorized representative of both parties. Notwithstanding the foregoing, the City, State, or HUD may, from time to time, impose other reasonable conditions in connection with the activities delegated under the terms of this Agreement, and the Delegate will comply with such conditions upon receiving written notice from the City, State, or HUD or will agree to terminate this Agreement pursuant to Paragraph 11

herein.

The City Manager may approve and sign any amendments on behalf of the City that are consistent with the purposes of this Agreement and do not substantially increase the obligations of the City hereunder.

9. NON-DISCRIMINATION. In the performance of this Agreement, the Delegate shall not discriminate against any employee or applicant for employment with regard to race, color, religion, sex, national origin, disability, age, ancestry, or political belief. The Delegate further agrees that no person will be denied equal access to, excluded from participation in, or be denied the proceeds of any CDBG-DR funded project subject to this Agreement, and will adhere to the non-discrimination provisions promulgated pursuant to the Executive Orders and federal statutes referenced in **Appendix C**.

10. ENFORCEMENT. The City may, for cause and upon giving fifteen (15) days' written notice to the Delegate, undertake one or more of the following courses of action:

(A) Withhold funds until the situation has been corrected;

(B) Suspend the Delegate's authority to spend funds or to conduct the project until the situation is corrected; or

(C) Terminate this Agreement in whole or in part.

Cause shall include, but not be limited to:

(A) Failure, for any reason, of the Delegate to fulfill in a timely and proper manner its obligations under this Agreement;

(B) Submission by the Delegate to HUD, the State, or to the City of reports that are incorrect or incomplete in any material respect;

(C) Ineffective or improper use of funds provided under or generated by this Agreement; or

(D) Suspension or termination by the State or HUD of the grant to the City under which this Agreement is made, or the portion thereof delegated by this Agreement.

Delegate shall comply with the provisions of the Recapture Plan in **Appendix G**.

11. TERMINATION.

(A) Either party may terminate this Agreement without cause upon thirty (30) days' written notice to the other party.

(B) The Delegate may terminate this Agreement, upon thirty (30) days' written notice to the City, if the Delegate is unable or unwilling to comply with such additional conditions as may be lawfully applied by the City, State, or HUD. In such event, the City may require the Delegate to ensure that adequate arrangements have been made for the transfer of the delegated activities to another delegate or to the City.

(C) In the event of any termination, all property and finished or unfinished documents, data, studies, and reports purchased or prepared by the Delegate under this Agreement shall become the property of the City, and the Delegate shall be entitled to compensation for any unreimbursed expenses reasonably and necessarily incurred in satisfactory performance of the Agreement. Notwithstanding the above, the Delegate shall not be relieved of liability to the City for damages sustained by the City by virtue of any breach of the contract by the Delegate, and the City may withhold any reimbursement to the Delegate for the purpose of set-off until such time as the exact amount of damages due the City from the Delegate is agreed upon or otherwise determined.

(D) In the event of any termination, the City shall de-obligate any remaining unexpended grant funds for the project, and shall provide notice to Delegate that such project has failed to meet its expenditure milestones (included in **Appendix B**) and the corresponding HUD timeliness requirements and that as a result, the Delegate is required to immediately return to the City any previously received funds for the project for re-allocation to another project.

12. SUBCONTRACTING AND ASSIGNMENT. The Delegate shall not assign, delegate, nor subcontract any of the work or services authorized by this Agreement without the prior written approval of the City. The parties acknowledge that City approval has been given for those subcontractors engaged prior to execution of this Agreement for work or services on the project authorized by this Agreement.

13. COPIES OF PLANS. The City will be provided with copies of plans, reports, studies, or other documentation signifying and giving evidence of the completion of the activities authorized by the terms of this Agreement at such time as the Delegate has fulfilled its responsibilities in executing the terms of this Agreement.

14. LIABILITY. The Delegate and the City each assume responsibility for the actions and omissions of its own agents and employees in the performance or failure to perform work under this Agreement. It is agreed that such liability for actions or omissions of their own agents and employees is not intended to increase the amounts set forth in the Colorado Governmental Immunity Act, now existing, or as the same may be later amended. By agreeing to this provision, the parties do not waive nor intend to waive the limitations on liability which are provided to the parties under the Colorado Governmental Immunity Act § 24-10-101 et seq., C.R.S., as amended.

15. INSURANCE. The Delegate will procure and maintain in full force and effect such insurance or self-insurance that will insure its obligations and liabilities under this Agreement, including workers' compensation, automobile liability, and general liability.

16. **NOTICE.** Any notice provided for in this Agreement shall be in writing and shall be sufficiently given if delivered in person, by prepaid overnight express, or by registered or certified mail, postage prepaid, return receipt requested, and addressed to the following:

In case of the City, to:	In case of Delegate, to:
Kathy L. Fedler	Cory Peterson
CDBG-DR Program Manager	Water Resources Engineer
Civic Center Complex	City of Louisville
350 Kimbark Street	749 Main Street
Longmont, CO 80501	Louisville, CO 80027

Either party may designate another address by written notice as provided in this section.

17. **PROVISIONS CONSTRUED AS TO FAIR MEANING.** The provisions of this Agreement shall be construed as to their fair meaning and not for or against any party based upon any attribution to such party of the source of the language in question.

18. **HEADINGS FOR CONVENIENCE.** All headings, captions, and titles are for convenience and reference only and of no meaning in the interpretation or effect of this Agreement.

19. **NO THIRD PARTY BENEFICIARIES.** None of the terms or conditions in this Agreement shall give or allow any claim, benefit, or right of action by any third person not a party hereto. Any person other than the City or Delegate receiving services or benefits under this Agreement shall be only an incidental beneficiary.

20. **WAIVER.** No waiver of any breach or default under this Agreement shall be a waiver of any other or subsequent breach or default.

21. **GOVERNING LAW.** This Agreement shall be governed and construed in accordance with the laws of the State of Colorado.

22. **STATUS OF DELEGATE.** Delegate shall perform under this Agreement as an independent contractor and a separate entity and not as an employee or agent of the City. **Delegate's employees and volunteers are not entitled to City of Longmont worker's compensation benefits or its insurance carriers or funds. Delegate is obligated to pay federal and state income tax on money, if any, earned pursuant to this Agreement.**

23. **RELATIONSHIP OF THE PARTIES.** It is mutually agreed and understood that nothing contained in this Agreement is intended or shall be construed as in any way establishing the relationship of co-partners or joint ventures between the parties hereto or as construing the Delegate, including its agents and employees, as an agent of the City. The Delegate shall remain an independent and separate entity. When Delegate provides services as listed above, Delegate personnel shall do so as volunteers and not as paid employees.

24. **VERIFICATION OF LAWFUL PRESENCE.** Delegate shall verify the lawful

presence in the United States of each natural person eighteen (18) years of age or older who applies for state or local public benefits or for federal public benefits for the applicant, prior to providing the benefits, as required by Article 76.5 of Title 24 of the Colorado Revised Statutes, Restrictions on Public Benefits, C.R.S. 24-76.5-101, et seq. Delegate shall verify the lawful presence in the United States of each such applicant by requiring the applicant to: 1) produce (i) a valid Colorado driver's license or a Colorado identification card, issued pursuant to Article 2 of Title 42, C.R.S.; or (ii) a United States military card or a military dependent's identification card; or (iii) a United States Coast Guard merchant mariner card; or (iv) a Native American tribal document; and 2) execute an affidavit in substantially the form shown on **Appendix E** stating: (i) that he or she is a United States citizen or legal permanent resident; or (ii) that he or she is otherwise lawfully present in the United States pursuant to federal law.

For an applicant who has executed an affidavit stating that he or she is an alien lawfully present in the United States, Delegate shall verify the applicant's lawful presence for federal public benefits or state or local public benefits through the federal Systematic Alien Verification of Entitlement Program, ("SAVE Program"), operated by the United States Department of Homeland Security or a successor program designated by the United States Department of Homeland Security. Until such verification of lawful presence is made, the affidavit may be presumed to be proof of lawful presence for purposes of this section. If Delegate is unable to use the SAVE Program after reasonable efforts are made to use the program, Delegate shall request the City to verify the lawful presence of the applicant through the SAVE Program.

25. EFFECTIVE DATES. This Agreement shall be in effect from April 5, 2016 through December 31, 2016.

Executed this _____ day of _____, 2016.

CITY OF LONGMONT:

_____ _____

MAYOR DATE

APPROVED AS TO FORM:

_____ _____

ASSISTANT CITY ATTORNEY DATE

_____ _____

PROOFREAD DATE

APPROVED AS TO FORM AND SUBSTANCE:

_____ _____

CDBG-DR PROGRAM MANAGER DATE

APPROVED AS TO INSURANCE PROVISIONS:

_____ _____

RISK MANAGER DATE

CA File: 9967

State of Colorado)
) ss.
County of Boulder)

I attest that the foregoing instrument was acknowledged before me this _____ day of _____, 2016, by _____, as the Mayor of the City of Longmont.

Witness my hand and official seal.

_____

City Clerk, Notary Public

My commission expires _____.

DELEGATE: City of Louisville

_____ _____

MAYOR DATE

ATTEST:

_____ _____

ACTING CITY CLERK DATE

State of Colorado)
) ss.
County of Boulder)

The foregoing instrument was acknowledged before me this ____ day of _____, 2016, by Robert P. Muckle, Mayor, and Carol Hanson, Acting City Clerk, of the City of Louisville.

Witness my hand and official seal.

_____
Notary Public

My Commission expires _____.

Return Original Document to:
Longmont CDBG Office
350 Kimbark Street
Longmont, CO 80501

APPENDIX A

WORK PROGRAM: INF-00006

Delegate: City of Louisville

Project: Raw Water Diversion Improvements Project

Goal or Activity Description: This project consists of repair of the raw water intake and diversion structure on South Boulder Creek. Construction activities will include armoring of the stream channel and diversion dam with 540 cubic yards of riprap and grouted boulders. The existing intake basin will be replaced with a new stilling basin and a 25 foot-long intake channel. The sand trap will be demolished and the Meter and Control Building will be replaced with a single building. Other miscellaneous items include: a 6-foot bypass gate, a flow meter, 350 linear feet of security fencing, and a floating debris boom.

Area of Service: Citywide (designated place 46355)

National Objective:

Low/Mod Income Benefit:	N/A	**Percentage Met:**	N/A
Urgent Need:	X		

CDBG-DR Eligible Activity Citation from 24 CFR 570.201:	(c) Public facilities and improvements. (g) Payment of non-Federal share.
24 CFR 570.202:	N/A
Covered Project: (Major infrastructure project total cost of $50 million or more, including at least $10 million of CDBG-DR funds.)	No
Compliance with Davis Bacon Act Required:	Yes
Compliance with Section 3 of the Housing and Urban Development Act of 1968 Required? (Refer to Title 24 CFR Part 135 and the Boulder County Collaborative Section 3 plan dated January 18, 2016)	Yes
MBE/WBE Contract Statement Required: (Refer to Boulder County Collaborative CDBG-DR Required Bid and Contract Documents Instructions.)	Yes
Compliance with Resilience Performance Standards: Required?	Yes

Work Program	Completion Date
1. Household Assistance Programs	**N/A**
2. Environmental Review/Assessment	**August 31, 2015**
3. Procurement & Contracting	**September 30, 2015**
4. Acquisition	**N/A**
5. Clearance & Demolition (including re-vegetation)	**N/A**
6. Design/engineering	**August 31, 2015**
7. Construction	**May 31, 2016**
8. Project Delivery	**July 31, 2016**
9. Pre Agreement Tasks	
a. Architectural/Engineering	**X**
b. Environmental Review/Assessment	**X**
c. Real Property/Easements/Acquisition/Lease	**X**
d. Permits/Surveys	**X**
e. Legal/Bonding/Insurance	
f. Construction Costs	**X**
g. Construction Management	**X**
h. Project Delivery	**X**
i. Other (Please Specify)	

APPENDIX B

BUDGET: INF-00006

Delegate: City of Louisville

Project: Raw Water Diversion Improvements Project

Task	Total Project Costs	CDBG-DR Funds	Other Funds	Other Funding Sources
Raw Water Diversion Improvements Project	$1,493,911	$700,936	$18,187 $3,031 $312,125 $20,000 $67,120 $267,371	FEMA State CDPHE CWCB Insurance Local Share
Project Delivery* (Not to exceed 15%)		$105,141		
Total	**$1,493,911**	**$806,077****	**$687,834**	

CDBG-DR Funds on an Advance Basis: $0
CDBG-DR Funds on a Reimbursement Basis: $806,077

***Project Delivery:**
Up to 15 percent of total project costs funded by CDBG-DR may be used for project delivery costs. Project delivery costs shall not exceed 15 percent of total project costs. Project delivery costs are those costs associated with implementing and carrying out eligible CDBG-DR activities and may include force account labor, technical assistance, and consulting fees.

Project delivery will include costs associated with charges incurred from Hagerty Consulting. These charges could include time directly spent on a specific project activity, including application setup, eligibility review, quality control, monitoring and/or technical assistance, or distributed on a fair share basis for program-wide implementation. In addition, charges may be incurred by Hagerty Consulting prior to execution of this Agreement, since both project-specific and program-wide activities have been on-going to date.

In the event that eligible project delivery charges exceed the allowable limit, coverage of charges incurred from Hagerty Consulting will take first priority. Once Hagerty Consulting costs are allocated to project delivery in full, remaining project delivery funds, as available and up to the maximum 15 percent, can be used to cover other eligible project delivery charges incurred by the

Delegate.

All eligible project delivery charges require sufficient documentation to be an acceptable reimbursable cost. In order for force account labor to be considered an eligible project delivery cost, the Delegate must ensure that all hours attributed to each project are tracked daily and reported separately on an approved timesheet format. A sample timesheet format can be provided by the City.

Excluding Hagerty Consulting costs, any project delivery costs not used by the Delegate can be applied to the project itself, up to the budgeted amount of CDBG-DR funds attributed to the project in the budget table above.

** This is the maximum amount that the Delegate can receive. FEMA and state reimbursement is pending for this project; therefore reimbursement by CDBG-DR funds pursuant to this agreement will occur after FEMA reimbursement is complete. If less funding is needed, then payout will not exceed exact funds needed.

Expenditure Milestones:
Raw Water Diversion Improvements Project

	Date
50% draw down by:	July 31, 2016
75% draw down by:	September 30, 2016
Substantial Completion of Work Program and Submittal of Final Pay Request (date certain):	**November 30, 2016**

If target date for expenditure milestones are not met, the City has the authority to use any remedies stated in the Agreement, including, but not limited to, those specified in §10(a).

Disposition of Program Income: No program income is anticipated.

APPENDIX C

COMMUNITY DEVELOPMENT BLOCK GRANT PROGRAM CERTIFICATIONS

The Delegate hereby assures and certifies that it will comply with the regulations, policies, guidelines, and requirements with respect to the acceptance and use of federal funds for this federally assisted program. Also, the Delegate gives assurances and certifies with respect to the grant that:

A. It possesses legal authority to make a grant submission and to execute a community development and housing program;

B. Its governing body has duly adopted or passed as an official act a resolution, motion or similar action authorizing the person identified as the official representative of the Delegate to enter into subsequent contracts, all understandings and assurances contained therein, and directing and authorizing the person identified as the official representative of the Delegate to act in connection with the Agreement and to provide such additional information as may be required;

C. It has developed its request for funds and funded project so as to give maximum feasible priority to activities which benefit low and moderate income families, or aid in the prevention or elimination of slums or blight;

D. It will affirmatively further fair housing;

E. It will minimize the displacement of persons as a result of activities assisted with CDBG-DR funds and will assist persons actually displaced as a result of such activities, as described in the Residential Anti-Displacement and Relocation Assistance Plan included in **Appendix F**;

F. The Agreement will be conducted and administered in compliance with:

1. Title VI of the Civil Rights Act of 1964 (Public Law 88-352), and implementing regulations issued at 24 CFR 570 Part 1;

2. The Fair Housing Act (42 U.S.C. 3601-3619) and the Delegate will administer all programs and activities related to housing and community development in a manner to affirmatively further fair housing;

3. Section 109 of the Housing and Community Development Act of 1974, as amended, and the regulations issued pursuant thereto;

4. Section 3 of the Housing and Urban Development Act of 1968, as amended, and implementing regulations issued at 24 CFR Part 135;

5. Executive Order 11246, as amended by Executive Orders 11375, 11478, 12086 and 12107, and implementing regulations issued at 41 CFR Chapter 60;

6. Executive Order 11063, as amended by Executive Order 12259, and implementing regulations issued at 24 CFR Part 107;

7. Section 504 of the Rehabilitation Act of 1973 (Public Law 92-112), as amended, and implementing regulations issued at 24 CFR Part 8;

8. The Age Discrimination Act of 1975 (Public Law 94-135), as amended, and implementing regulations issued at 24 CFR Part 146;

9. The acquisition and relocation requirements of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and the implementing regulations at 49 CFR Part 24;

10. The labor standards requirements as set forth in 24 CFR Part 570, Subpart K and HUD regulations issued to implement such requirements;

11. Executive Order 11988 relating to the evaluation of flood hazards and Executive Order 11288 relating to the prevention, control, and abatement of water pollution;

12. The flood insurance purchase requirements of Section 202(a) of the Flood Disaster Protection Act of 1973 (Public Law 93-234);

13. The regulations, policies, guidelines, and requirements of 24 CFR Part 85 - Administrative Requirements and OMB Super Circular Title 2 of the CFR, Subtitle A, Chapter II, Part 200 as they relate to the acceptance and use of federal funds under this federally-assisted program;

14. Section 402 of the Vietnam Veterans Adjustment Assistance Act of 1974 (Public Law 93-508), as amended and implementing regulations when published for effect;

15. The Americans with Disabilities Act of 1990;

16. The regulations, policies, guidelines and requirements of OMB Super Circular Title 2 of the CFR, Subtitle A, Chapter II, Part 200. The grant activity will be part of the Delegate's annual audit and that audit will be submitted to the City for review;

17. The provisions of the National Environmental Policy Act of 1969, and the regulations issued pursuant thereto;

18. The Clean Air Act, as amended (42 U.S.C. 1857 et seq.); and the regulations of the Environmental Protection Agency with respect thereto, at 40 CFR Part 15, as amended;

19. The Archeological and Historic Preservation Act of 1974 (Public Law 93-291), Public Law 89-665, Executive Order 11593, and the procedures described by the Advisory Council on Historical Preservation in 36 CFR Part 800.

G. No member of or delegate to the congress of the United States shall be admitted to any share or part of this Agreement or to any benefit to arise from same;

H. No member, officer, or employee of the Delegate, or its designees or agents, no member of the governing body of the locality in which the program is situated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the program during his/her tenure or for one (1) year thereafter, shall have any interest, direct or indirect, in any contract or subcontract, or the process thereof, for work to be performed in connection with the program assisted under the grant, and that it shall incorporate, or cause to be incorporated, in all such contracts or subcontracts a provision prohibiting such interest pursuant to the purposes of this certification;

I. It will comply with the provisions of the Hatch Act, which limits the political activity of employees;

J. It will give HUD and the Controller General or any authorized representatives access to and the right to examine all records, books, papers, or documents related to the grant, and that it will maintain such records, books, papers or documents for three (3) years after the close of the project;

K. It will comply with the lead-based paint requirements of 24 CFR 570.608 issued pursuant to the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4831 et seq.);

L. It will not use CDBG-DR funds for publicity or propaganda purposes designed to support or defeat legislation pending with federal, state, or local governments;

M. Real or personal property purchased in whole or in part with CDBG-DR funds shall not be disposed of through sale, use, or location without the written permission of the City, State, and HUD. The proceeds from the disposition of real property shall be considered program income and subject to 24 CFR 570.504;

N. It will not attempt to recover any capital costs of public improvements assisted in whole or in part with funds provided under Section 106 of the Housing and Community Development Act by assessing any amount against properties owned and occupied by persons of low and moderate income, including any fee charged

or assessment made as a condition of obtaining access to such public improvements, unless:

1. Funds received under Section 106 of the Act are used to pay the proportion of such fee or assessment that relates to the capital costs of such public improvements that are financed from revenue sources other than Title I of the Act; or

2. For purposes of assessing any amount against properties owned and occupied by persons of low and moderate income, the Delegate certifies to the City that it lacks sufficient funds received under Section 106 of the Act to comply with the requirements of Subparagraph 1 above.

O. Funds will be used solely for necessary expenses related to disaster relief, long-term recovery, restoration of infrastructure and housing, and economic revitalization in the most impacted and distressed areas for which the President declared a major disaster in the aftermath of the September 2013 floods, pursuant to the Stafford Act.

P. The Delegate certifies that it has adopted and is enforcing the following policies:

1. A policy prohibiting the use of excessive force by law enforcement agencies within its jurisdiction against any individuals engaged in nonviolent civil rights demonstrations; and

2. A policy of enforcing applicable state and local laws against physically barring entrance to or exit from a facility or location that is the subject of such nonviolent civil rights demonstrations within its jurisdiction.

Q. The Delegate will not use grant funds for any activity in an area delineated as a special flood hazard area or equivalent in FEMA's most recent and current data source, unless it also ensures that the action is designed or modified to minimize harm to or within the floodplain in accordance with Executive Order 11988 and 24 CFR part 55. The relevant data source for this provision is the latest issued FEMA data or guidance which includes advisory data (such as Advisory Base Flood Elevations) or preliminary and final Flood Insurance Rate Maps.

R. The Delegate certifies that it has reviewed the requirements of the March 5, 2013 Federal Register Notice (78 FR 14329) and the June 3, 2014 Federal Register Notice (79 FR 31964) and requirements of Public Law 113-2 applicable to funds allocated by this Notice, and that it has in place proficient financial controls and procurement processes (refer to **Appendix I**: Financial Management Questionnaire) and has established adequate procedures to prevent any duplication of benefits as defined by section 312 of the Stafford Act (refer to **Appendix H**: Affirmation of Duplication of Benefits), to ensure timely expenditures of funds and to detect and prevent waste, fraud, and abuse of funds.

APPENDIX D

MONITORING SCHEDULE

Delegate: City of Louisville

Project: Raw Water Diversion Improvements Project

At a minimum, the project will be visited within ninety (90) days of the date of this Delegation Agreement and then at least every six (6) months until grant close-out.

The Delegate will be informed of the time of an on-site visit and the general subject matter to be covered. An exit review of tentative conclusions will be held with the Delegate to be followed by a formal communication within thirty (30) days.

The monitoring review(s) will cover:

- Review of accounting system.
- Review of Delegate's understanding of program financial requirements.
- Review of files for required policies and procedures and documentation.
- Review of records system for maintenance of appropriate documentation.
- Project/program review for compliance with all program requirements.

If it is determined that the Delegate has not met a requirement of the CDBG-DR Program, the City of Longmont will provide written notice of this determination and give the Delegate an opportunity to demonstrate within a stated timeline that it has done so. If the Delegate is unable to demonstrate compliance, the City of Longmont will take corrective action or remedial action. Said action will be designed to prevent a continuation of the deficiency, mitigate to the extent possible its adverse effects or consequences, and prevent its recurrence.

Delegate may be required to submit and comply with proposals for action to correct, mitigate and prevent a performance deficiency through one or more of the following:

- Prepare and follow a schedule of actions for carrying out the affected activities, consisting of schedules, timetables, and milestones necessary to implement the affected activities;
- Establish and follow a management plan that assigns responsibilities for carrying out the remedial action;
- Cancel or revise activities likely to be affected by the performance deficiency, before expending program funding for the activity.

APPENDIX E

AFFIDAVIT

I, _____, swear or affirm under penalty of perjury under the laws of the State of Colorado that (check one):

___ I am a United States citizen, or
___ I am a Permanent Resident of the United States, or
___ I am lawfully present in the United States pursuant to Federal law.

I understand that this sworn statement is required by law because I have applied for a public benefit. I understand that state law requires me to provide proof that I am lawfully present in the United States prior to receipt of this public benefit. I further acknowledge that making a false, fictitious, or fraudulent statement or representation in this sworn affidavit is punishable under the criminal laws of Colorado as perjury in the second degree under Colorado Revised Statute 18-8-503 and it shall constitute a separate criminal offense each time a public benefit is fraudulently received.

_____ _____

Signature **Date**

APPENDIX F

RESIDENTIAL ANTI-DISPLACEMENT AND RELOCATION ASSISTANCE PLAN

Every effort will be made to minimize temporary or permanent displacement of persons due to a CDBG project undertaken by the Delegate.

However, in the event of displacement as a result of a federally funded award, the Delegate will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, for any household, regardless of income which is involuntarily and permanently displaced.

If the property acquired is an occupiable lower-income dwelling, but will not be used for low/moderate income housing under 104(d) of the Housing and Community Development Act of 1974, as amended, the displacement and relocation plan shall provide that before obligating and spending funds that will directly result in such demolition or conversion, the Delegate will make public and submit to Boulder County Collaborative CDBG-DR the following information:

(A) A description of the proposed activity;

(B) The general location on a map and appropriate number of dwelling units by number of bedrooms that will be demolished or converted to a use other than as low and moderate income dwelling units as a direct result of the assisted activity;

(C) A time schedule for the commencement and completion date of the demolition or conversion;

(D) The general location on a map and appropriate number of dwelling units by number of bedrooms that will be provided as replacement dwelling units;

(E) Comparable replacement housing in the community within three (3) years of the commencement date of the demolition or rehabilitation;

(F) The source of funding and a time schedule for the provision of replacement dwelling units;

(G) The basis for concluding that each replacement dwelling unit will remain a low and moderate income dwelling unit for at least ten (10) years from the date of initial occupancy;

(H) Relocation benefits for all low or moderate income persons shall be provided, including reimbursement for moving expenses, security deposits, credit checks, temporary housing, and other related expenses and either:

1. Sufficient compensation to ensure that, at least for five (5) years after being relocated, any displaced low/moderate income household shall not bear a ratio of shelter costs to income that exceeds thirty (30) percent; or

2. If elected by a family, a lump-sum payment equal to the capitalized value of the compensation available under subparagraph 1. above to permit the household to secure participation in a housing cooperative or mutual housing association, or a Section 8 certificate of voucher for rental assistance.

(I) Persons displaced shall be relocated into comparable replacement housing that is decent, safe, and sanitary, adequate in size to accommodate the occupants, functionally equivalent, and in an area not subject to unreasonably adverse environmental conditions;

(J) Provide that persons displaced have the right to elect, as an alternative to the benefits in subparagraph (H)2 above, to received benefits under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 if such persons determine that it is in their best interest to do so; and

(K) The right of appeal to the Boulder County Collaborative where a claim for assistance under subparagraph (H)2 above, is denied by the Delegate. The Lead Agency's CDBG-DR Program Manager's decision shall be final unless a court determines the decision was arbitrary and capricious.

(L) Paragraphs (A) through (K) above shall not apply where the HUD Field Office objectively finds that there is an adequate supply of decent, affordable low/moderate income housing in the area.

(M) Consistent with the goals and objectives of activities assisted under the Act, the Delegate will take the following steps to minimize the displacement of persons from their homes:

1. All public facilities projects (water, sewer, gas, etc.) will be designed so that there will be not displacement of any residences or business;

2. No homes will be demolished that can be reasonably rehabilitated; and

3. There will be no displacement of any residential or business occupants on CDBG-DR projects.

APPENDIX G

BOULDER COUNTY COLLABORATIVE RECAPTURE PLAN

Overview

The Boulder County Collaborative ("BCC") is responsible for making a good faith effort to only fund eligible applicants and projects with the Community Development Block Group-Disaster Recovery ("CDBG-DR") funds from the Department of Housing and Urban Development ("HUD"). The City of Longmont ("City") is the Lead Agency for the BCC and is also responsible to monitor recipients of the CDBG-DR funds for compliance with the terms of their award. In the execution of these responsibilities, the City may on occasion seek to recapture funds awarded to residents or sub-grantees ("recipients") who did not spend the funds according to the rules of the Program, or who were awarded funds erroneously. HUD does not distinguish between persons who received funds due to an error on the part of staff or an error on the part of the applicant, however HUD does have different recapture ("collection") processes for residents who deliberately withheld or falsified information in the application process, as this is fraud.

HUD has no set guidelines or regulations for recapture of funds from individuals. This plan and timeframe was designed to be consistent with OMB Circular A-87 (2 CFR Part 225), OMB Circular A-85, 31 U.S.C 37 901 and 902, 24 CFR 17 Subpart C, 31 CFR, Forgivable Promissory Note, Homeowner/Contractor Agreement, closing documents and/or Grant Agreements signed by recipients of the program, and is designed to provide guidance on recapturing funds erroneously given out or erroneously spent through the HUD CDBG-Disaster Recovery Program ("Program") from the 2013 flood in Boulder County.

The first part of this plan deals with recapture procedures for funds awarded erroneously or for Program non-compliance. The second part of this plan deals with the recapture of funds obtained fraudulently. In the third part of the plan, BCC puts forth the method by which it will redistribute the recaptured funds within the local community.

Background

The City of Longmont, as the Lead Agency for the BCC, conducts an internal review of Program files. The review is to determine that in the awarding and disbursing of Program funds, the files are documented according to program policies. Documentation must be in the files and the review is to determine whether safeguards exist to ensure that recipients use funds for their intended purposes.

The Statute of Limitations for initiating recapture proceedings is six (6) years following signature on the application forms [24 CFR 28.35(a)].

Choice to Not Recapture or Settle for Less than Whole Amount

The various federal regulations cited above establish the City as the Lead Agency with authority to recapture the full amount of ineligible assistance whether awarded due to errors by BCC Partners or a Housing Assistance Program recipient. However, for claims under $100,000, if the City, State, or HUD determines that the recipient cannot repay ineligible grant assistance, BCC may choose to 1) forgive the funding; or 2) negotiate another amount. If negotiated, the City may defer the repayment to sale, refinance, or transfer of the existing home or otherwise place a lien on the property, or enter into a repayment plan with the recipient. BCC defines "ability to pay" as: "determined based on an assessment of the respondent's resources available both presently and prospectively from which BCC could ultimately recover the total award, which may be predicted based on historical evidence."

The City will make initial determinations and bring findings to the BCC in determining whether to recapture ineligible assistance. The BCC will consider the cost effectiveness of such action given the amount of ineligible assistance and the availability of records to support BCC's determination.

BCC may forgo collection of ineligible assistance if the following conditions are met:

1. A demand for recovery of the ineligible assistance was made; and

2. The ineligible assistance did not result from inaccurate or false information, knowingly or fraudulently, provided by the recipient; and

3. BCC determines that the recipient is unable to comply with the ineligible assistance repayment demand, but is otherwise willing and able to meet BCC requirements; and

4. BCC determines that it is in the best interest of the Federal Government to forgo collection of the ineligible assistance for amounts less than $5,000. BCC will normally return files concerning default amounts that are less than a threshold amount of $5,000 because the minimum cost to pursue a legal proceeding to recover money is unlikely to be less than that amount.

Note that ALL FOUR conditions above must be met for forbearance.

BCC may elect to accept a compromise settlement. If a compromise amount is negotiated and then put on an installment plan, the executed contract must say that if the recipient defaults, the recipient will owe the ENTIRE amount of the originally determined ineligible assistance, not just the negotiated amount. Assessment of a recipient's negotiated compromise amount will be based on the recipient's financial statements, obtained on penalty of perjury, showing assets, liabilities, income, expenses, credit reports and other pertinent financial information, 31 U.S.C. 902.2(g).

Requirements for Recapturing Funds Awarded Erroneously or for Non-Compliance with Program Rules

Notification

The City will provide notice to recipients upon determining that ineligible assistance was received. The notice will be delivered by registered or certified mail, or will be delivered by some other means that can be confirmed and documented. The notice will:

1. Specify in detail the reason(s) that the assistance was determined to be ineligible, stating the amount of ineligible assistance to be repaid;

2. Offer a meeting for the recipient to discuss the basis for the claim giving the recipient an opportunity to provide facts, figures, written records, or other information that might alter the determination that the assistance was ineligible;

3. Outline the recipients appeal rights;

4. Specify the address to which a response must be sent;

5. Contain a statement that failure to submit an answer within fifteen (15) days of receipt of the letter may result in the imposition of the maximum amount of penalties, allowable by law/regulation, and assessments sought.

Generally, the City will set the meeting within thirty (30) days of the date of the initial letter. Upon request, the City may grant additional time for the recipient to assemble the necessary documentation. If additional time is granted, the recipient file will be documented, on a case-by-case basis, as to why additional time was granted.

Corrective Action

If the problem causing the assistance to be ineligible can be corrected, appropriate corrective action will be required. For example:

- Where the recipient is a homeowner and did not follow the Forgivable Promissory Note requirement to obtain flood insurance, the insurance must be obtained promptly, and upon demonstrating proof of insurance, the recipient will re-sign the Forgivable Promissory Note in order to restart the term of the loan, also known as the Effective Period.
- If the recipient is a homeowner and is not using the house as his or her primary residence, when the recipient proves (s)he has moved into the home permanently, the Forgivable Promissory Note document will be re-signed and the Effective Period will restart.
- If a sub-grantee executes a change order on an infrastructure project without a sufficient cost estimate and signatures, then the recipient will need to obtain a cost estimate that justifies the change in costs and also get appropriate signatures.

If the recipient is a homeowner and the problem causing the assistance to be ineligible cannot be corrected, a recipient who has defaulted on the requirements but wishes to remain in the dwelling may stipulate to reverting from the current loan structure and converting the loan into a conventional non-forgivable mortgage loan having a fixed term (between five (5) and fifteen (15) years), or into a deferred loan with repayment of principal and interest due at sale, refinance, or transfer of the property at the currently prevailing interest rate. Examples of an irremediable violation of a Forgivable Promissory Note are:

- The homeowner is renting the property and is unwilling to terminate the lease.
- The homeowner will not allow final inspection.
- The homeowner received more monies than what was reported in the application for federal assistance.

For recipients of assistance under the Buyout or Acquisition Programs, if the recipient refuses a repayment plan or ceases payments on the repayment plan, the City will institute legal proceeding to recover the funds since there will be no mechanism available for the City to lien a property that was already sold.

If a sub-grantee has expended funds ineligibly and a corrective action cannot be determined, then the City will negotiate a zero interest loan repayment plan with the sub-grantee.

Repayment Agreement

If violations are irremediable, then the City may seek repayment of all ineligible assistance received by a recipient, plus the cost of collection to the fullest extent permitted by law. The City's efforts to collect ineligible assistance may include repayment agreements, court orders, garnishment of wages and/or income tax returns, the use of private or public collection agents, intergovernmental agreements with the BCC Partner, and any other remedies available, on a case-by-case basis.

The recipient may repay BCC in a lump-sum payment of the entire amount or by entering into a repayment agreement. A recipient who is a homeowner and who has defaulted on the rehabilitation requirements but wishes to remain in the dwelling, may agree to converting the current loan into a conventional non-forgivable mortgage loan having a fixed term (between five (5) and fifteen (15) years) at the currently prevailing interest rate.

A repayment agreement is a formal document prepared by the City and signed by the recipient, in which the recipient acknowledges the debt and the amount owed. The agreement specifies:

1. The amount to be paid, including processing fees;
2. How the amount owed is to be repaid;
3. Where payments are to be sent;
4. The specific date each month when the payment is due; and
5. Consequences of delinquent or defaulted payments.

The terms will not require prohibitive payments for the homeowners that would force the recipient to sell the property (except in cases of fraud), and will be over a period of time consistent with the recipient's ability to pay. However, the City will not pursue the debt if notification of the right to collect the debt has not been communicated to the recipient within ten (10) years of the City's right to collect the debt first accrued, unless facts material to the City's right to collect were not known, 31 U.S.C. 901.4.

31 U.S.C. 901.8(g) allows the City to decide not to charge interest on the repayment agreement; if it can be shown that interest is "against equity and good conscience." The recipient will pay a set fee each payment period equaling the repayment amount, plus the processing costs of collection, 31 U.S.C. 901.9(c). BCC approval of a repayment schedule will take into consideration the best interests of the recipient, the BCC, the State of Colorado, and the Federal Government.

A lien will be placed on the property for the duration of the payment schedule, 31 U.S.C. 901.8(c). The City will retain copies of all correspondence and a record of all conversations between the City and a recipient regarding ineligible assistance received by a recipient. If a recipient refuses to enter into a repayment schedule, the City will initiate enforcement actions such as civil or criminal penalties.

31 U.S.C. 3711(e) states that HUD, (the City in this case), must report the recipient to the Consumer Credit Reporting Agencies if the recipient goes past due on the payment plan or if a settlement is not reached.
Requirements for Collecting Ineligible Assistance Obtained by Possible Fraud:

NOTE: 24 CFR 28.10 *(d) states that no proof of specific intent to defraud is required to establish liability under this program.* If the BCC paid too much assistance on the recipient's behalf because of discrepancies in information furnished by the recipient, and if the City has sufficient evidence that the recipient intentionally misrepresented its circumstances, the City must pursue debt collection. In cases where the City has compelling evidence that the recipient knowingly omitted or falsified information in order to receive a Housing Assistance Grant, Buyout or Acquisition Assistance, Rental Assistance, or Infrastructure Grant, the City will seek repayment of all ineligible assistance received by the recipient by turning the case directly over to the HUD Office of Inspector General (OIG) and local law enforcement officials.

General Administrative Procedures

The City may choose to handle collections or may decide to hire a private collection agency to handle collections for this program (31 U.S.C. 901.5) as long as the following conditions are met in the contract with the collection agency:

1. The collection agency is a City-approved collector who can transfer funds to the City;
2. The City retains the right to resolve disputes, to compromise debts (negotiate settlement amounts less than the full amount), suspend or terminate collection, and refer debt for litigation;

3. The collection agency cannot offer debtors discounts or incentives;
4. The contract with the collection agency requires the collection agency to follow the Privacy Act of 1974 and State and Federal laws for debt collection practices, including the Fair Debt Practices Act, 15 U.S.C. 1692; and
5. The collection agency accounts for all amounts collected.

The City will be responsible for file and documentation maintenance, communication with recipients, and arrangements for appeals hearings. The City is also responsible for reports to the State or HUD. The City will manage procurement of a private collection agency and payment of same, if this method of collection is chosen, and other financial matters associated with the Program, using approved BCC and federal procurement and financial accounting standards if it chooses to hire a collection agency.

The City will maintain full and complete documentation of all debt, calculations performed, and communications with recipients. In all communications, precaution must be taken to prevent the distribution of any Personally Identifiable Information (PII).

Administrative costs on recapture will reflect only the actual costs of recapture.

The City or designee will collect the monies due, and all collections data will be entered as a miscellaneous "Housing Program Collection," "Buyout Program Collection," or "Infrastructure Program Collection." This category will be added to the City's financial chart of accounts. The City will ensure that all money collected from the recipient is reported to the State and/or HUD and repaid to the State and/or HUD, if required.

Redistribution Plan

Any funds recaptured by the City through its efforts will be returned to the BCC account. These funds will be made available for redistribution by BCC within the Housing Assistance Program, Buyout/Acquisition Program, or the Infrastructure Program, whichever is applicable. Funds recovered from the Program will be reassigned to the same Program. New recipients will be selected from the wait list in priority order based on the existing Program rules.

New recipients will be identified and contacted as funds come available. No commitments will be made based on projected collections.

If collected funds exceed eligible recipients at Program end, remaining collected funds will be transferred to another CDBG-DR eligible activity after approval by the State or HUD of a substantial amendment.

BOULDER COUNTY COLLABORATIVE RECAPTURE PLAN
APPENDIX

STEPS IN THE PROCESS FOR THOSE ELIGIBLE TO RESTART THE EFFECTIVE PERIOD

1. Verify, to the extent possible, that all information in the recipient's file is current, complete, and accurate.

2. The City will send a certified *NOTICE OF CONCERNS REGARDING PROMISSORY NOTE EFFECTIVE PERIOD* letter to the recipient indicating that the recipient is out of compliance on Forgivable Promissory Note, but that the five (5) year Effective Period can be restarted by having the recipient agree to comply with all provisions of the Promissory Note. Appeal information will also be included in the letter.

   a. If the recipient responds to the initial notification within fifteen (15) days of the date of the letter and agrees to restart the Effective Period, completes all required paperwork to document the resolution of compliance issues, re-signs the Promissory Note with the new Effective Date, no further action will be required and recapture will not be necessary.

   b. If the recipient responds to the initial notification within fifteen (15) days of the date of the letter and opts to appeal, (s)he must follow the procedure outlined in the BCC Housing Program Appeals Procedure, copies of which are available from the City.

   c. If the recipient responds to the initial notification within fifteen (15) days of the date of the letter and opts to pay back the funds, the City will work with the recipient to negotiate a repayment plan and complete necessary documentation. The City may negotiate a reduced or fully waived repayment under certain conditions of financial hardship proven by the recipient. Assessment of a recipient's negotiated compromise amount will be based on the recipient's financial statements, obtained on penalty of perjury, showing assets, liabilities, income, expenses, credit reports, and other pertinent financial information. This reduction of payment must have prior approval from the State or HUD. The City will place a lien on the property for the duration of the payment schedule, and release it once the debt is fully paid. Actual administrative costs of recapture may be added to the payment amount for each payment period.

   d. If the recipient does not respond within fifteen (15) days from the date of the first letter, a second certified *NOTICE OF SERIOUS ONGOING CONCERNS* letter will be sent to the recipient. This letter will clearly state the basis of the ineligible assistance determination and the amount of ineligible assistance to be repaid, along with the recipient's appeal rights and the specific actions to be taken by the City. This letter will also specify a date and time for a meeting with BCC officials, approximately fifteen (15) days from the date of this letter, to discuss the issues stated in the letter. The recipient will have the opportunity to

reschedule the meeting to a more convenient date and time, provided the response is prior to the originally scheduled meeting date.

e. If the recipient does not respond to the second letter within the allotted time period, a third certified *FINAL DETERMINATION NOTICE/DEMAND LETTER* will be sent to the recipient. This letter will state that recapture proceedings will be initiated thirty (30) days from the date of the letter unless the recipient initiates the formal appeal process before then. If there is no response from the recipient, the file will be turned over to the legal department or a collection agency for recapture. The City will report the recipient to Credit Reporting Bureaus.

3. If a compromise amount is negotiated and then put on an installment plan, the contract must say that if the recipient defaults, (s)he will owe the ENTIRE amount of the distribution and not just the negotiated amount.

4. For any negotiated settlements where full payment is not immediate, upon discharge of the debt, the discharge must be reported to the State or HUD.

STEPS IN THE PROCESS OF RECAPTURING A NON-FRAUDULENT DISTRIBUTION

1. Verify, to the extent possible, that all information in the recipient's file is current, complete, and accurate.

For Housing Assistance or Buyout/Acquisition Program Recipients:

2. The City will send a certified *NOTICE OF CONCERNS* letter to the recipient detailing the specific compliance issue which compels recapture of the distribution.

   a. If the recipient responds to the initial notification within fifteen (15) days of the date of the letter and can provide documentation proving compliance with the Forgivable Promissory Note, or in the case of buyouts, documentation to the contrary of funds received, the City will update the file accordingly and document the satisfactory resolution.

   b. If the recipient responds to the initial notification within fifteen (15) days of the date of the letter and can show that the concern stated in the letter can, in fact, be remediated and the recipient is willing to do so and restart the Effective Period, refer to STEPS IN THE PROCESS FOR THOSE ELIGIBLE TO RESTART THE EFFECTIVE PERIOD for guidance.

   c. If the recipient responds to the initial notification within fifteen (15) days of the date of the letter and opts to appeal, (s)he must follow the procedure outlined in the BCC Housing Program Appeals Procedure, copies of which are available from the City of Longmont.

   d. If the recipient responds to the initial notification within fifteen (15) days of the date of the letter and opts to pay back the funds, the City will work with the recipient to negotiate a repayment plan and complete necessary documentation. The City may negotiate a reduced or fully waived repayment under certain

conditions of financial hardship proven by the recipient. Assessment of a recipient's negotiated compromise amount will be based on the recipient's financial statements, obtained on penalty of perjury, showing assets, liabilities, income, expenses, credit reports, and other pertinent financial information. This reduction of payment must have prior approval from the State and/or HUD. The City will place a lien on the property for the duration of the payment schedule, and release it once the debt is fully paid. Actual administrative costs of recapture may be added to the payment amount for each payment period.

e. If the recipient does not respond within fifteen (15) days from the date of the first letter, a second certified *NOTICE OF SERIOUS ONGOING CONCERNS* letter will be sent to the recipient. This letter will clearly state the basis of the ineligible assistance determination and the amount of ineligible assistance to be repaid, along with the recipient's appeal rights and the specific actions to be taken by the City. This letter will also specify a date and time for a meeting with BCC officials, approximately fifteen (15) days from the date of this letter, to discuss the issues stated in the letter. The recipient will have the opportunity to reschedule the meeting to a more convenient date and time, provided the response is prior to the originally scheduled meeting date.

f. If the recipient does not respond to the second letter within the allotted time period, a third certified *FINAL DETERMINATION NOTICE/DEMAND* letter will be sent to the recipient. This letter will state that recapture proceedings will be initiated thirty (30) days from the date of the letter unless the recipient initiates the formal appeal process before then. If there is no response from the recipient, the file will be turned over to the legal department or collection agency for recapture.

For Sub-grantees (BCC Partners) Recipients:

3. The City will send a certified *NOTICE OF CONCERNS* letter to the recipient detailing the specific compliance issue which compels recapture of the distribution.

a. If the recipient responds to the initial notification within fifteen (15) days of the date of the letter and can provide documentation proving compliance or a feasible alternative solution, the City will update the file accordingly and document the satisfactory resolution.

b. If the recipient does not respond within fifteen (15) days from the date of the first letter, a second certified *NOTICE OF SERIOUS ONGOING CONCERNS* letter will be sent to the recipient. This letter will clearly state the basis of the ineligible assistance determination and the amount of ineligible assistance to be repaid, along with the recipient's appeal rights and the specific actions to be taken by the City. This letter will also specify a date and time for a meeting with BCC officials, approximately fifteen (15) days from the date of the letter, to discuss the issues stated in the letter. The recipient will have the opportunity to reschedule the meeting to a more convenient date and time, provided the response is prior to the originally scheduled meeting date.

c. If the recipient does not respond to the second letter within the allotted time

period, a third certified *FINAL DETERMINATION NOTICE/DEMAND* letter will be sent to the recipient. This letter will state that recapture proceedings will be initiated thirty (30) days from the date of the letter unless the recipient initiates the formal appeal process before then. If there is no response from the recipient, the file will be turned over to the legal department or a collection agency for recapture.

4. The City will maintain reports for collections not in default on a quarterly basis and aggregate the data.

5. The aggregated data will be reported quarterly to the State.

6. If a compromise amount is negotiated and then put on a repayment plan, the contract must say that if the recipient defaults, the recipient will owe the ENTIRE amount determined ineligible and not just the negotiated amount.

7. For any negotiated settlements where full payment is not immediate, upon discharge of the debt, the discharge must be reported to the State and/or HUD.

Approval and Revision Tracking

Policy and Procedure Name	BCC Recapture Plan	Original Approval Date	

Complete the below for each revision:

No.	Brief Description of Revision	Date sent for Approval	Signature of Person Approving	Date/Approval

APPENDIX H

DUPLICATION OF BENEFITS AFFIRMATION

SUBJECT: AFFIRMATION OF DUPLICATION OF BENEFITS FOR BOULDER COUNTY COLLABORATIVE CDBG-DR PROGRAM

Grant Recipient Local Government: **City of Louisville**

By entering into this Agreement, the Delegate affirms the following:

The Delegate acknowledges the Lead Agency received CDBG disaster recovery funds through a contract with the State of Colorado on behalf of the Boulder County CDBG-DR Collaborative.

The Delegate hereby affirms that no additional sources or amounts of matching funds beyond those indicated at the time of this CDBG-DR award for housing, infrastructure, or other applicable disaster recovery assistance have been obtained or will be utilized for the project(s) authorized under this intergovernmental Agreement. (With respect to such amounts, as stated in Appendix B, FEMA and state reimbursement is pending for this project; therefore reimbursement by CDBG-DR funds pursuant to this Agreement will occur after FEMA reimbursement is complete. If less funding is needed, then payout will not exceed exact funds needed.)

Duplication of Benefits sources include, but are not limited to, the Federal Emergency Management Agency (FEMA), Army Corp of Engineers (USACE), Federal Highway Administration (FHWA), private insurance companies, the National Flood Insurance Program (NFIP), state or federal grants, the Small Business Administration (SBA), and Not for Profit Agency Assistance.

The Delegate understands the responsibility to immediately notify the State of Colorado if any additional funds are received for the project(s) contained in the application cited above. In addition, the Lead Agency will follow its prescribed Recapture Plan, if and when it becomes necessary, to try to recoup funds that are a non-reported Duplication of Benefits from Delegate.

Under penalty of perjury of violation of federal and state laws applicable to the application for a grant under the program, the Delegate hereby states and certifies to the United States Department of Housing and Urban Development and the State of Colorado that by approving and signing this Agreement, the information included in this intergovernmental Agreement is true and accurate and that if at any time the Delegate becomes aware that the information included is inaccurate, it is the responsibility of the Delegate to bring the inaccuracy to the attention of the program.

APPENDIX I

FINANCIAL MANAGEMENT QUESTIONNAIRE

1. List those who will perform the following financial management functions and include titles.

A) *Signs contracts:*

_____ Title: _____

B) *Receives Invoices:*

_____ Title: _____

_____ Title: _____

_____ Title: _____

C) *Approves payment of invoices/purchase orders:*

_____ Title: _____

_____ Title: _____

D) *Prepares Requests for Payment:*

_____ Title: _____

E) *Signs Requests for Payment:*

_____ Title: _____

_____ Title _____

_____ Title: _____

_____ Title: _____

F) *Make Journal Entries:*

_____ Title: _____

G) *Post to general ledger and/or prepares monthly financial statements:*

_____ Title: _____

H) *Maintains custody of checkbook:*

_____ Title: _____

I) *Signs checks (minimum of two):*

_____ Title: _____

_____ Title: _____

J) *Reconciles bank statements:*

_____ Title: _____

K) *Compiles fiscal year-end financial statements:*

_____ Title: _____

2. Identify by title the individuals who are covered by a bond or insurance and the amounts. Include Chief Elected Official/Chief Executive Officer if involved in financial transactions.

Attach copy of bonds or insurance policy

Title: _____ Amount: _____
Title: _____ Amount: _____
Title: _____ Amount: _____
Title: _____ Amount: _____

3. Identify name of company that issued the bond or insurance policy:

Issue Date: _____ Expiration Date: _____
Issue Date: _____ Expiration Date: _____

4. What is your fiscal year end date? _____
5. The most recent audit covered what period? _____
   Identify name of firm that prepared the audit: _____

6. Name and telephone number of local official to contact regarding this questionnaire

Name	Title	Phone #

****

I certified that this information is true to the best of my knowledge.

Signature: _____

Title: _____ Date: _____

City of Louisville
COLORADO • SINCE 1878

CITY COUNCIL COMMUNICATION
AGENDA ITEM 8A

SUBJECT: **PRESENTATION – CITIZENS FOR FINISHING FASTRACKS**

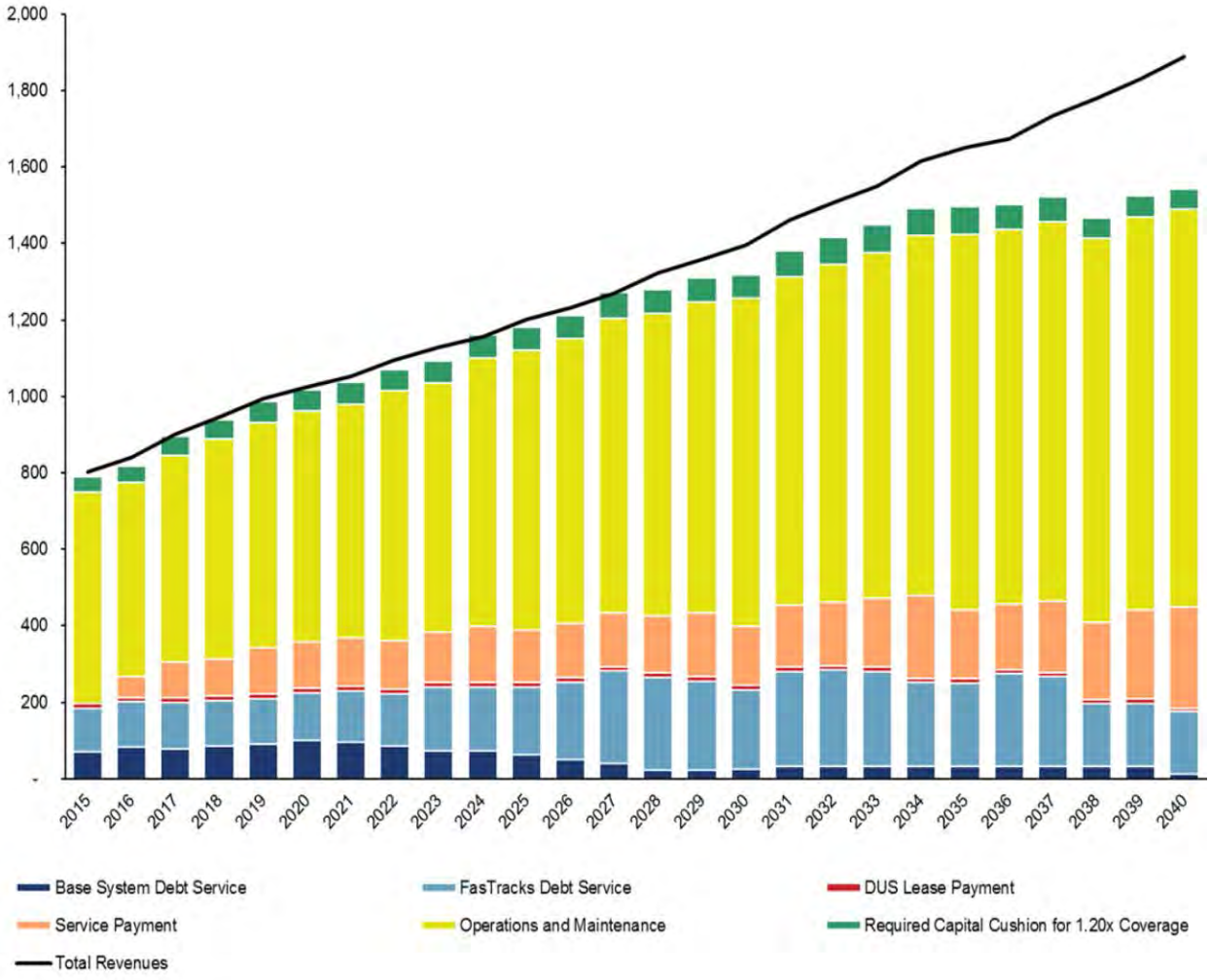
DATE: **APRIL 5, 2016**

PRESENTED BY: **ASHLEY STOLZMANN, LOUISVILLE CITY COUNCIL**
KAREN BENKER, CITIZENS FOR FINISHING FASTRACKS
JOAN PECK, CITIZENS FOR FINISHING FASTRACKS

SUMMARY:
The attached materials are provided by Karen Benker and Joan Peck, members of Citizens for Finishing FasTracks. Joan is currently on the Longmont City Council and Karen previously served on the Longmont City Council. They will attend the April 5, 2016 regular City Council meeting to discuss FasTracks progress in the Northwest Corridor.

ATTACHMENT(S):
1. RTD Cash Flow Through 2040
2. Sales Tax Update
3. Online Petition

RTD Cash Flow Through 2040



CITIZENS FOR FINISHING FASTRACKS

Boulder County FasTracks Sales Tax Revenue (0.4%) Collected by Cities and County, 2005-2015

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	11-yr TOTAL
Boulder (City)	$6,001,067	$6,173,590	$6,593,918	$6,537,811	$6,072,049	$6,777,684	$7,657,623	$8,004,967	$8,320,687	$9,026,339	$9,316,631	$80,482,366
Erie	$84,794	$75,230	$76,058	$78,892	$70,445	$74,081	$76,778	$80,232	$98,080	$100,088	$109,616	$924,294
Lafayette	$495,658	$510,718	$559,222	$611,032	$541,961	$632,706	$704,931	$810,539	$939,868	$1,037,764	$1,120,943	$7,965,343
Longmont	$3,184,170	$3,416,250	$3,564,167	$3,432,627	$3,294,503	$3,365,350	$3,481,356	$3,594,776	$3,786,577	$4,045,731	$4,327,750	$39,493,258
Louisville	$1,091,493	$928,630	$1,022,986	$1,055,239	$963,849	$1,006,024	$902,458	$964,360	$1,018,012	$1,101,001	$1,137,603	$11,191,656
Niwot	$60,248	$60,372	$64,214	$65,644	$57,520	$59,344	$60,643	$59,750	$63,916	$72,701	$89,734	$714,088
Superior	$604,752	$690,081	$722,879	$753,655	$716,204	$699,024	$636,928	$681,689	$706,822	$712,161	$726,226	$7,650,420
Boulder County Other	**$1,020,500**	**$1,043,438**	**$1,076,351**	**$964,667**	**$830,583**	**$950,482**	**$1,171,210**	**$1,205,686**	**$1,197,722**	**$1,342,108**	**$1,360,732**	**$12,163,478**
Boulder County TOTAL	**$12,542,683**	**$12,898,309**	**$13,679,795**	**$13,499,568**	**$12,547,114**	**$13,564,695**	**$14,691,927**	**$15,402,001**	**$16,131,684**	**$17,437,893**	**$18,189,235**	**$160,584,903**

Source: Colorado Department of Revenue

Boulder County Other includes small cities and towns and unincorporated

Westminster FasTracks Sales Tax Revenue (0.4%), 2005-2014

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	11-yr TOTAL
Broomfield	$3,444,028	$3,486,603	$3,610,858	$3,485,112	$3,083,656	$3,739,182	$3,726,422	$3,964,421	$4,015,780	$4,178,059	$4,308,714	$41,042,836
Westminster	$4,547,040	$4,889,191	$5,278,082	$5,284,298	$5,144,239	$5,257,421	$5,719,319	$5,724,990	$5,735,660	$6,130,701	$6,569,537	$60,280,478

SIGN OUR ONLINE PETITION!

Go to www.CitizensForFinishingFastracks.com

Boulder County's sales tax
$ 160,584,903 .00

WE VOTED FOR RAIL IN 2004 and have been paying taxes to RTD for 11 years, but Boulder County residents will not have any rail line constructed until sometime **after 2040**. All other metro RTD rail projects — that were adopted through the Fastracks vote — have either been built or are currently in the process of being constructed.

CITIZENS FOR FINISHING FASTRACKS is advocating for the build out of the full Northwest rail line NOW. **Tell RTD to keep its promise**. Go to our website, click on 'sign the petition' and post your comments to the RTD Board

CitizensForFinishingFastracks.com

SIGN OUR ONLINE PETITION!

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Boulder County's sales tax
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SUBJECT: **RECREATION/SENIOR CENTER AND AQUATICS EXPANSION - SURVEY RESULTS**

DATE: **APRIL 5, 2016**

PRESENTED BY: **JOE STEVENS, PARKS AND RECREATION**

SUMMARY:
The Recreation/Senior Center and Aquatics Task Force, consultant team and staff continue work on a feasibility study for the possible expansion of the Recreation/Senior Center and Aquatic amenities. The next step in the process was to conduct a citizen survey to gauge interest in amenities and support for a possible bond election to authorize funding for construction and assist with operating expenses. The City contracted with RRC Associates, Inc. to conduct a statistically valid citizen survey. On March 16, 2016 the preliminary results of this survey were presented to the Task Force. Sink Comb Dethlefs (SCD) will be present to review results and share their insights. SCD will use information from the survey results to begin creating a program that will include amenities, square footages and preliminary cost estimates. Design concepts will be the next step after a program is created. City Council is scheduled to receive the next update on this project May 17th 2016.

We are encouraged by the response rate, results and insights that 625 residents (sufficient to generate results with a statistically valid confidence level) shared with us as well as 581 Recreation/Senior Center members/users and 239 on our open website.

The Task Force is in the process of reviewing the design program, including space allocation and cost for the Recreation/Senior Center and improvements to Memory Square Swimming Pool. Based on survey results and prioritization by the Task Force, SCD estimates the capital cost of the project to be at least $25,00,000. The estimate is subject to change as additional programming and facility design issues are explored by the Task Force. Currently, the program includes new gymnasium spaces, a new multi-activity (MAC) gymnasium, improvements to running track, new family locker rooms, fitness locker rooms and improvements to existing locker rooms, new fitness spaces and improvements to existing fitness space, fitness center expansion, wellness and health consultation suites, group exercise studio, spinning studio, new catering kitchen, increased senior space, youth program space, improved lobby spaces as well as staff and administrative areas, improvements to the existing pool, 4 new lap lanes, a new leisure pool with play features, a new Memory Square pool house, children's pool, shade structures and site improvements.

Based on the Task Force's March 30, 2016 meeting, SCD will take the Task Force's program feedback and develop several concept plans that will be shared with the Task Force as we continue to work toward a preferred conceptual plan, recommended capital budget and operational budget, inlcuding fees/charges and cost recovery. The Task

Force will also host an open house to allow for additional public comment and the City will conduct

We also plan a 2nd survey/poll to better gauge citizen support for a potential bond election in November 2016.

Lastly, Finance staff has begun to compile some draft data on the tax implications to fund the proposed improvements. This is preliminary and only relative to the capital side of the project. Additional maintenance and operations along with expected revenue is currently being estimated and will be part of future conversations. Additionally, all tax implications are subject to review by the City's financial advisors and those conversations are only just beginning. However staff wanted to provide this preliminary information for discussion and consideration.

Below is a worksheet that estimates the debt service costs and property tax impacts of a proposed Recreation/Senior Center and Aquatics Expansion bond issue. The New Mill Levy column is the projected mill levy for debt service on the proposed Rec/Senior Center and Aquatics Expansion bonds and the Net Mill Levy column is the projected mill levy for debt service on the proposed Rec/Senior Center and Aquatics Expansion bonds, less the current mill levy for debt service on the Library Construction bonds. The mill levy for debt service on the Library Construction bonds is projected to expire after the 2018 collection year.

It is important to note that all of these data are very preliminary and provided to City Council at this time in order for Council to better understand the progress of work, programming status, and cost estimates based on assumptions being explored at this time. All of the estimates on both the initial capital costs and bond funding requirements will change as continued progress is made on the programming and design for the facilities. Also, the operating costs for the facilities are still being estimated and these costs will also require a funding plan which will likely be included as part of a tax proposal.

Council will continue to be periodically updated as all of the pieces of the project come together in anticipation of potentially placing a tax issue on the 2016 ballot.

City of Louisville, Colorado
Estimated Debt Service and Tax Impacts for Proposed Bond Issue

Range of Project Funding Requiements	Estimated Bond Issuance Costs	Range of Debt Issuance Amounts	Estimated Annual Debt Service	Sales Tax Rate to Support Annual Debt Service	New Mill Levy [1]			Net Mill Levy [2]		
					Mill Levy to Support Annual Debt Service	Annual Increase to Property Tax On $500,000 Residence	Annual Increase to Property Tax On $500,000 Business	Mill Levy to Support Annual Debt Service	Annual Increase to Property Tax On $500,000 Residence	Annual Increase to Property Tax On $500,000 Business
25,000,000	375,000	25,375,000	1,705,599	0.443%	2.941	117	426	1.415	56	205
27,000,000	405,000	27,405,000	1,842,046	0.478%	3.176	126	461	1.650	66	239
29,000,000	435,000	29,435,000	1,978,494	0.514%	3.411	136	495	1.885	75	273
31,000,000	465,000	31,465,000	2,114,942	0.549%	3.646	145	529	2.120	84	307
33,000,000	495,000	33,495,000	2,251,390	0.585%	3.882	154	563	2.356	94	342
35,000,000	525,000	35,525,000	2,387,838	0.620%	4.117	164	597	2.591	103	376
37,000,000	555,000	37,555,000	2,524,286	0.656%	4.352	173	631	2.826	112	410

Notes:
[1] New Mill Levy = Projected mill levy for debt service on the proposed Recreation Center Expansion bonds
[2] Net Mill Levy = Projected mill levy for debt service on the proposed Recreation Center Expansion bonds, less the current mill levy for debt service on the Library Construction bonds. This mill levy is projected to expire after the 2018 collection year.

Assumptions:
- Estimated Interest Rate on Bonds at Time of Bond Issuance = **3.000%**
- Term of Bonds (in Years) = **20**
- Estimated Taxable Sales at Time of Bond Issuance = **385,000,000**
- Estimated Net Assessed Valuation at Time of Bond Issuance = **580,000,000**

FISCAL IMPACT:
To be determined.

RECOMMENDATION:
Discussion

ATTACHMENT(S):
1. Survey Results/Power Point Presentation
2. Program Concepts

City of Louisville
COLORADO · SINCE 1878

RRC ASSOCIATES

CITY OF LOUISVILLE

RECREATION CENTER RE-DESIGN STUDY

04/05/2016

Presentation Overview

- Introduction & Methodology
- Demographics
- Current Usage
- Facility Priorities
- Financial Considerations
- Summary & Discussion

Introduction & Methodology

INTRODUCTION

The purpose of this study was to gather statistically valid public feedback on the Louisville Recreation/ Senior Center and Memory Square swimming pool.

This survey research effort and subsequent analysis were designed to assist the City of Louisville and Sink Combs Dethlefs in creating an architectural plan to renovate, improve, and expand existing recreational facilities and services.

METHODOLOGY

3 primary methods used to conduct survey:

1. Online, invitation-only web survey
2. Online, open-link public survey
3. Online, open-link survey emailed to the rec center's member contact list

Paper surveys were also available upon request.

METHODOLOGY

- List purchased for invitation sample mailing
  - Source: Melissa Data Corp.
  - Included renters as well as homeowners

- 4,000 surveys mailed to a random sample of Louisville respondents in Feb. 2016
  - Final sample size: **690**
  - Response rate: 15% (vs. target of 10%)
  - Margin of error: +/- 3.7 percentage points

DEMOGRAPHICS

Demographic Profile

- Relatively even gender split
- Fairly affluent (66% earn $100,000+ per year)

Demographic Profile

		Invitation Sample
Gender	Female	57%
	Male	43%
Age	Under 35	7%
	35 - 44	31%
	45 - 54	24%
	55 - 64	22%
	65 - 74	13%
	75 or over	2%
Annual Household Income	Under $25,000	1%
	$25,000 - $49,999	8%
	$50,000 - $74,999	7%
	$75,000 - $99,999	17%
	$100,000 - $149,999	29%
	$150,000 - $199,999	18%
	$200,000 - $249,999	11%
	$250,000 or more	8%

HOUSEHOLD PROFILE

- Half of respondents live in households with children (51%), and roughly ¼ are empty nesters (27%)

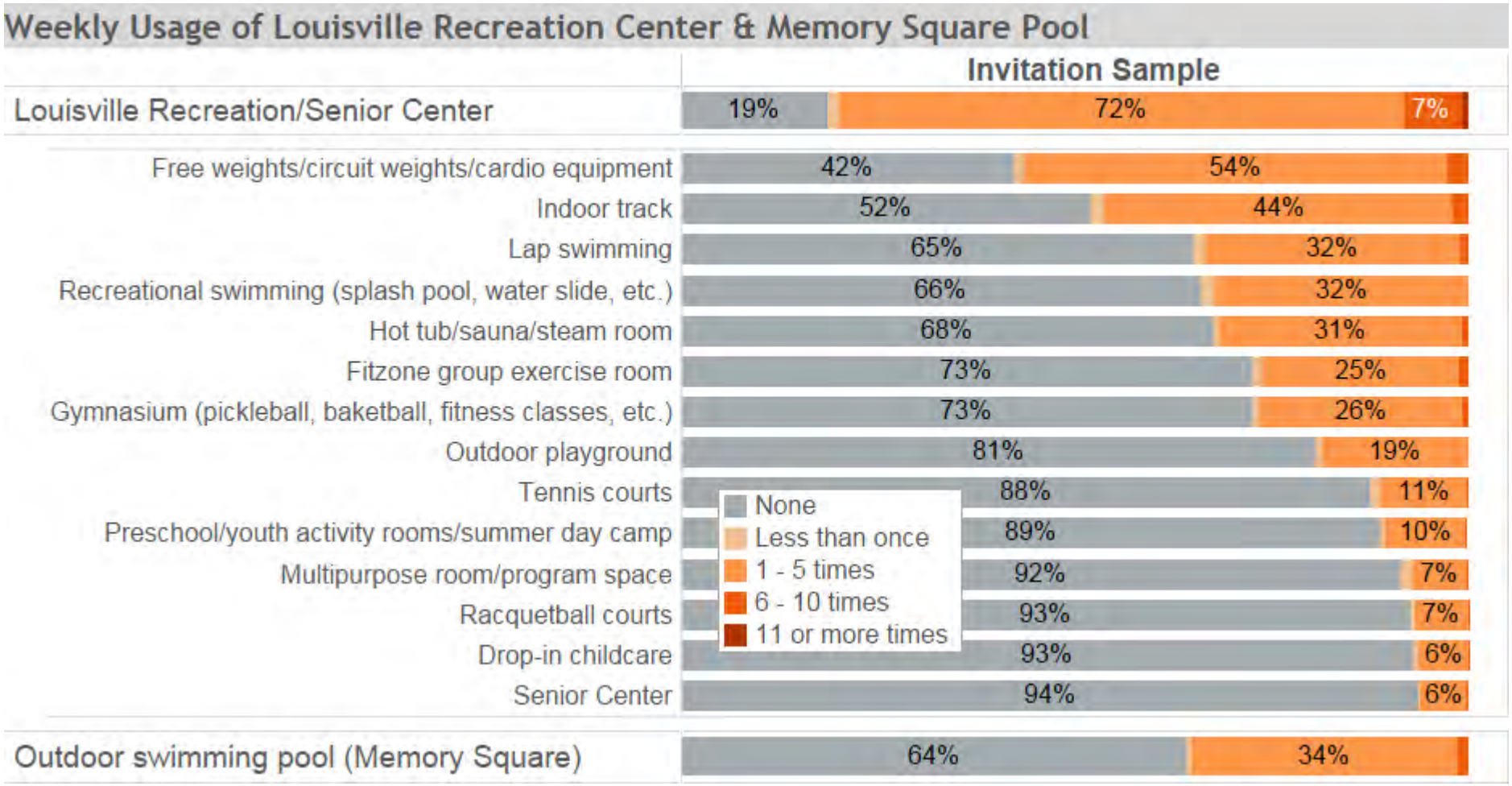
Household Profile

		Invitation Sample
Household Status	Single, no children	9%
	Single with children at home	2%
	Single, children no longer at home	4%
	Couple, no children	13%
	Couple with children at home	49%
	Couple, children no longer at home	23%
Number of People in Household	1	9%
	2	37%
	3	18%
	4	29%
	5 or more	7%
Percentage of Households with Members:	Age 0 - 5	22%
	Age 6 - 12	26%
	Age 13 - 18	15%
	Age 19 - 34	16%
	Age 35 - 49	48%
	Age 50 - 59	27%
	Age 60+	29%

Current Usage

Weekly Usage of Facilities

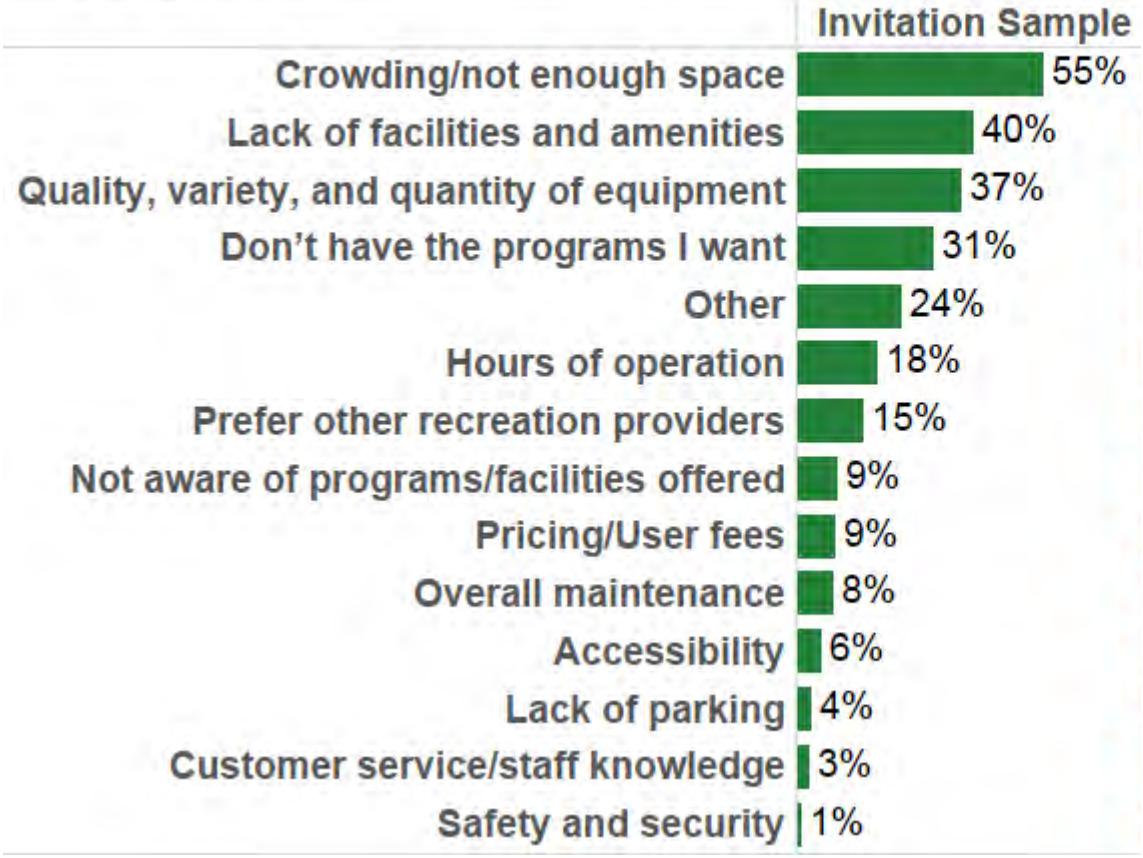
- Only 19% of respondents do not use the rec center at all, but there are major differences in the reported use of facilities (i.e., weights/cardio vs. Senior Center)
- Top amenities used: weights/cardio, indoor track, lap swimming



REC CENTER USAGE PREFERENCES

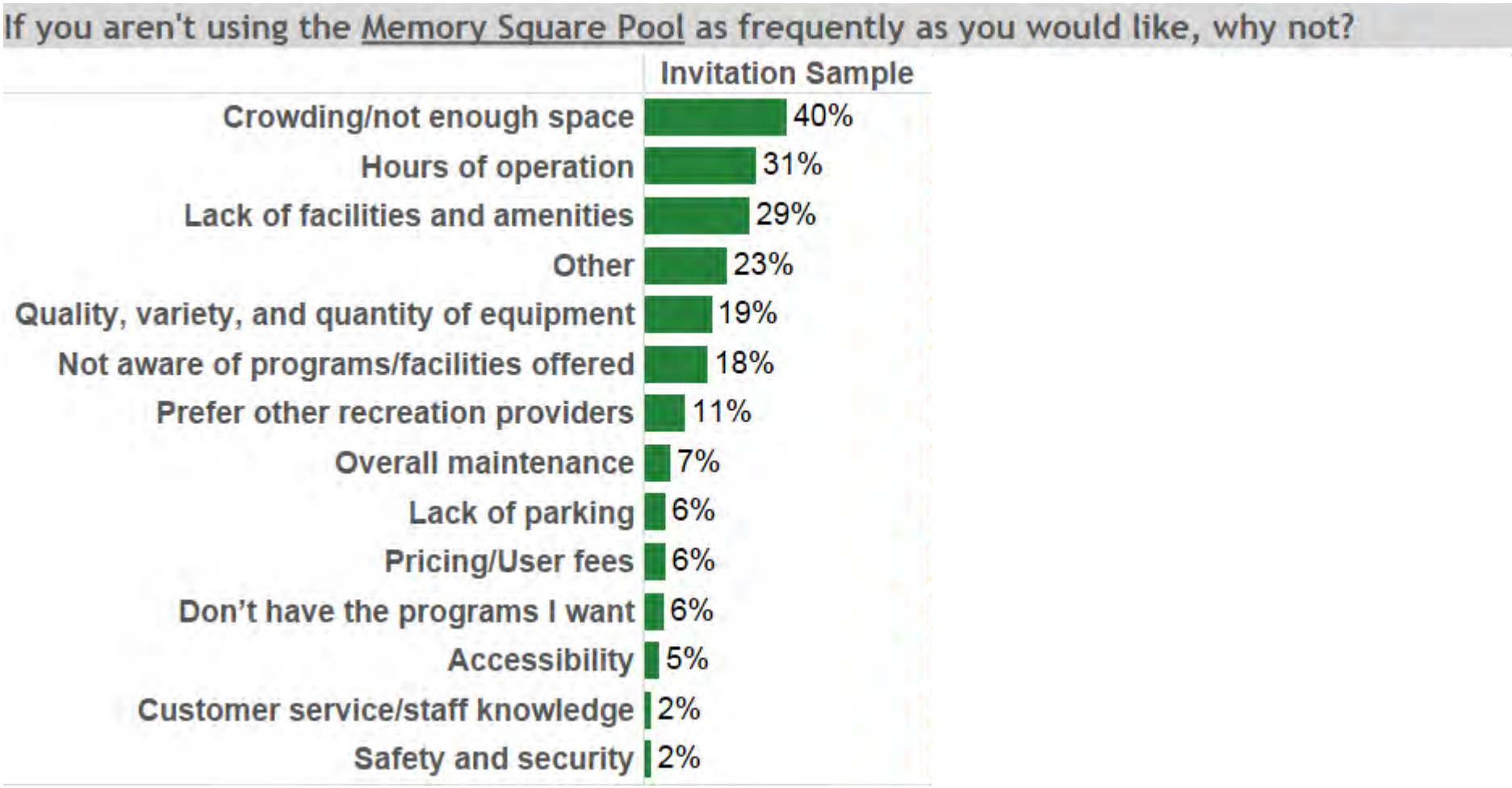
- Crowding, lack of facilities/amenities, and poor equipment topped the list of reasons why people aren't using the rec center

If you aren't using the Louisville Recreation/Senior Center as frequently as you would like, why not?



MEMORY SQUARE USAGE PREFERENCES

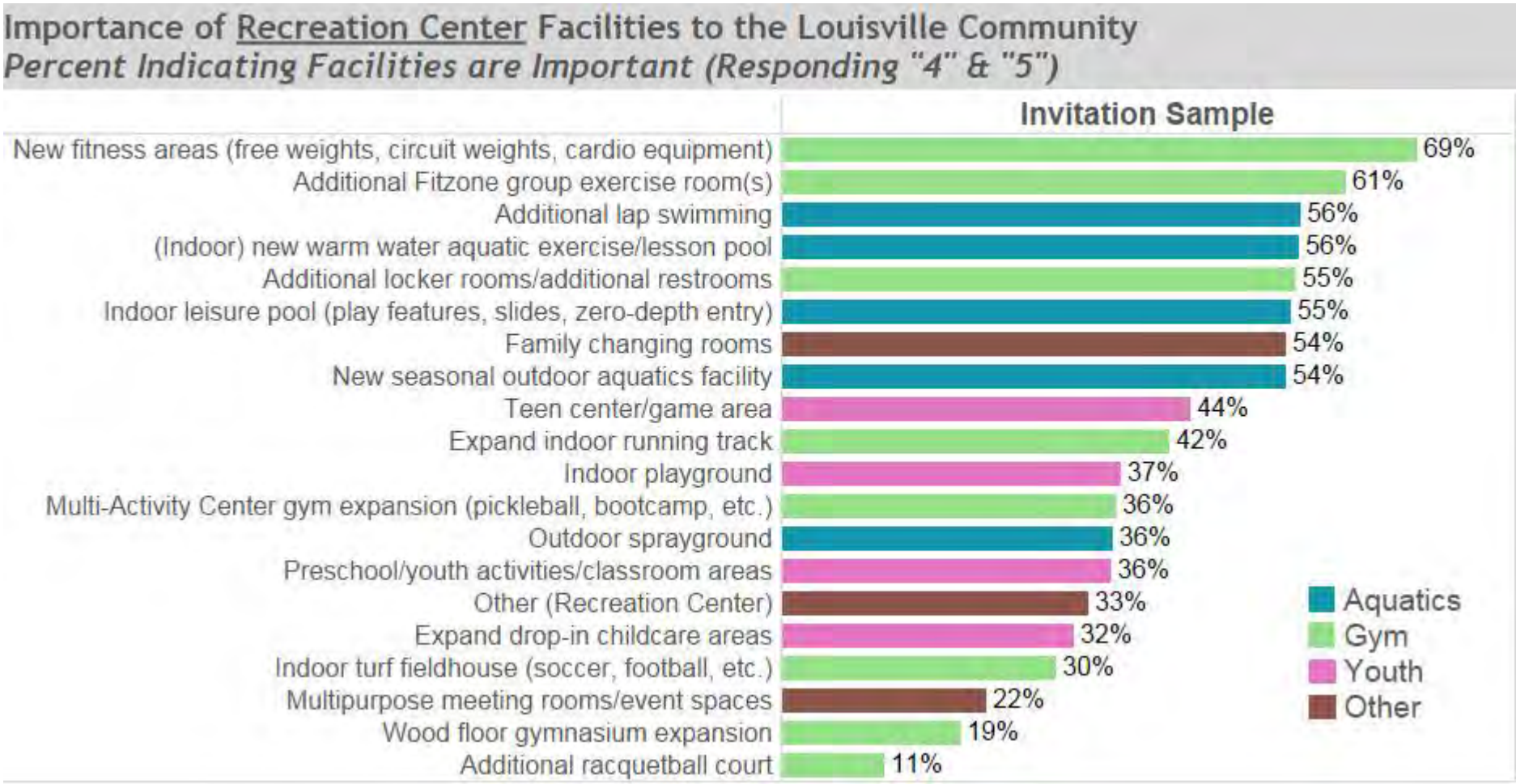
- Crowding, hours of operation, and lack of facilities/amenities topped the list of reasons why people aren't using Memory Square



FACILITY PRIORITIES

Importance of Rec Center Facilities

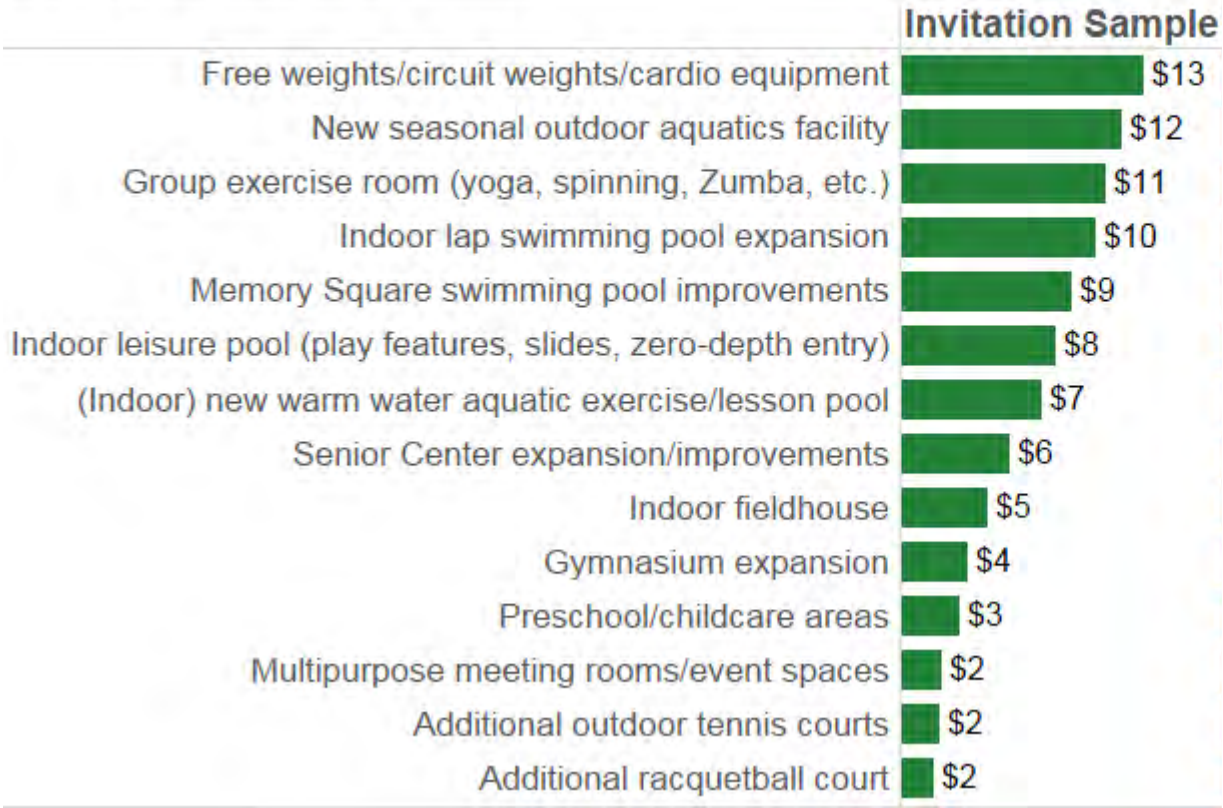
1= Not at all Important, 3 = Neutral, 5 = Very Important



ALLOCATION OF $100

- Respondents allocate most to weights/cardio ($13), seasonal outdoor aquatics ($12), and group exercise room ($11)

If you had $100 to spend on recreation facilities, services and/or programs, how would you allocate that $100 across the following categories?
Average Allocation Amount



Importance of Rec Center Facilities – Aquatics

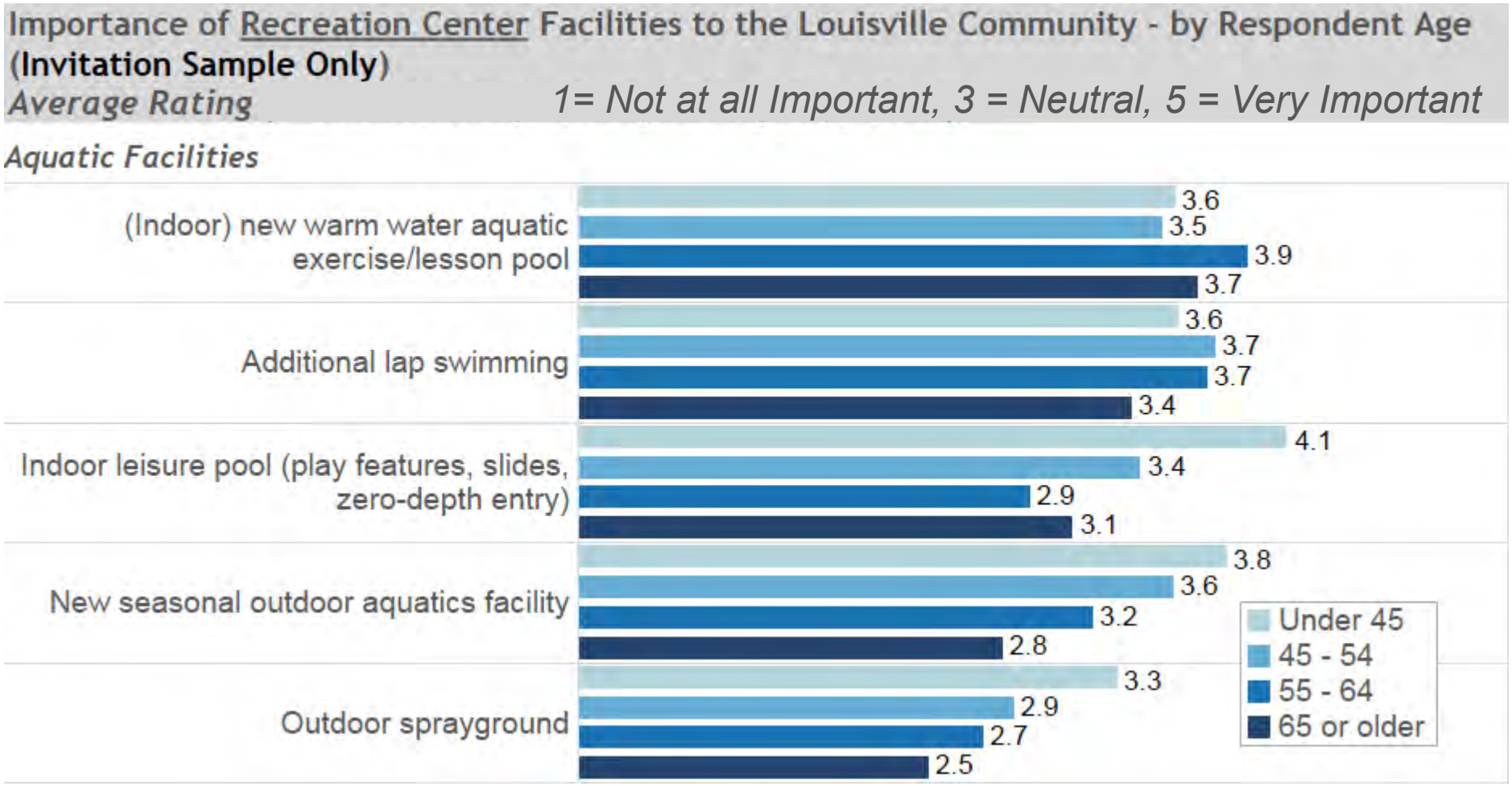
- Importance ratings for aquatic facilities very similar

Importance of Recreation Center Facilities to the Louisville Community
Average Rating *1= Not at all Important, 3 = Neutral, 5 = Very Important*

Aquatic Facilities

Importance of Rec Center Facilities – Aquatics
By Respondent Age

- Younger respondents rate indoor leisure pool, new seasonal outdoor aquatics facility as more important
- Older respondents prefer warm water aquatic exercise/lesson pool

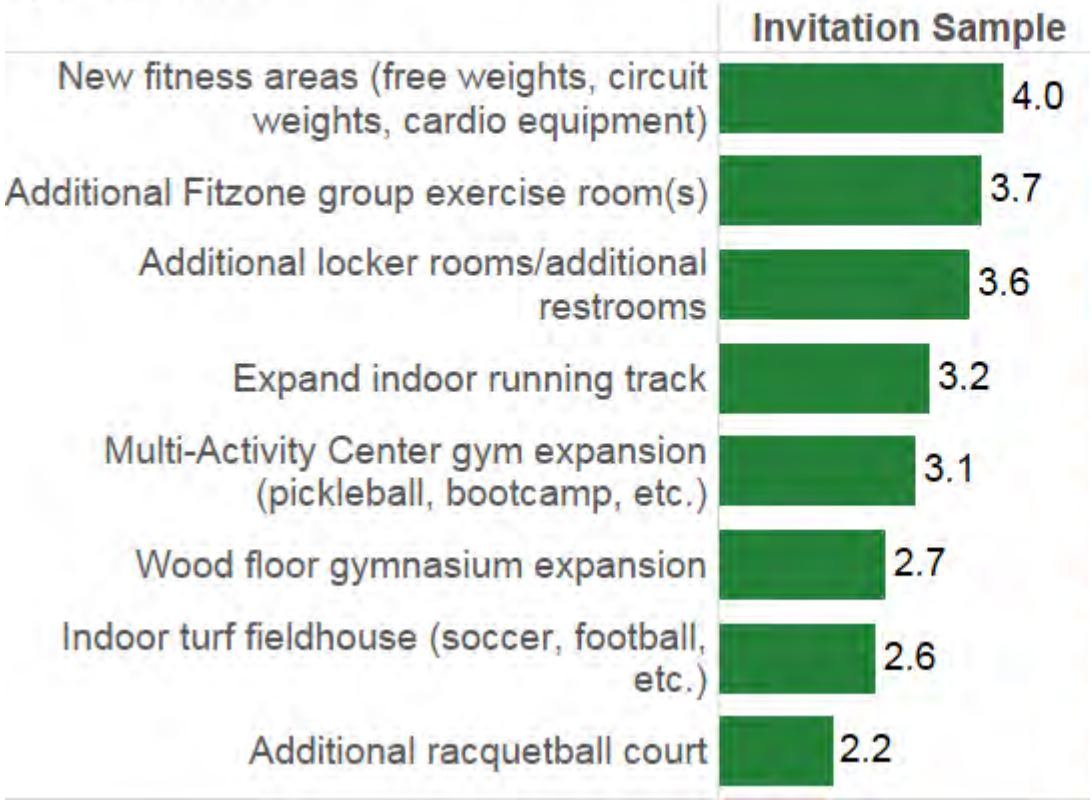


Importance of Rec Center Facilities - Gym

Importance of Recreation Center Facilities to the Louisville Community

Average Rating *1= Not at all Important, 3 = Neutral, 5 = Very Important*

Gym Facilities



Importance of Rec Center Facilities – Youth

- Youth facilities rated as somewhat less important

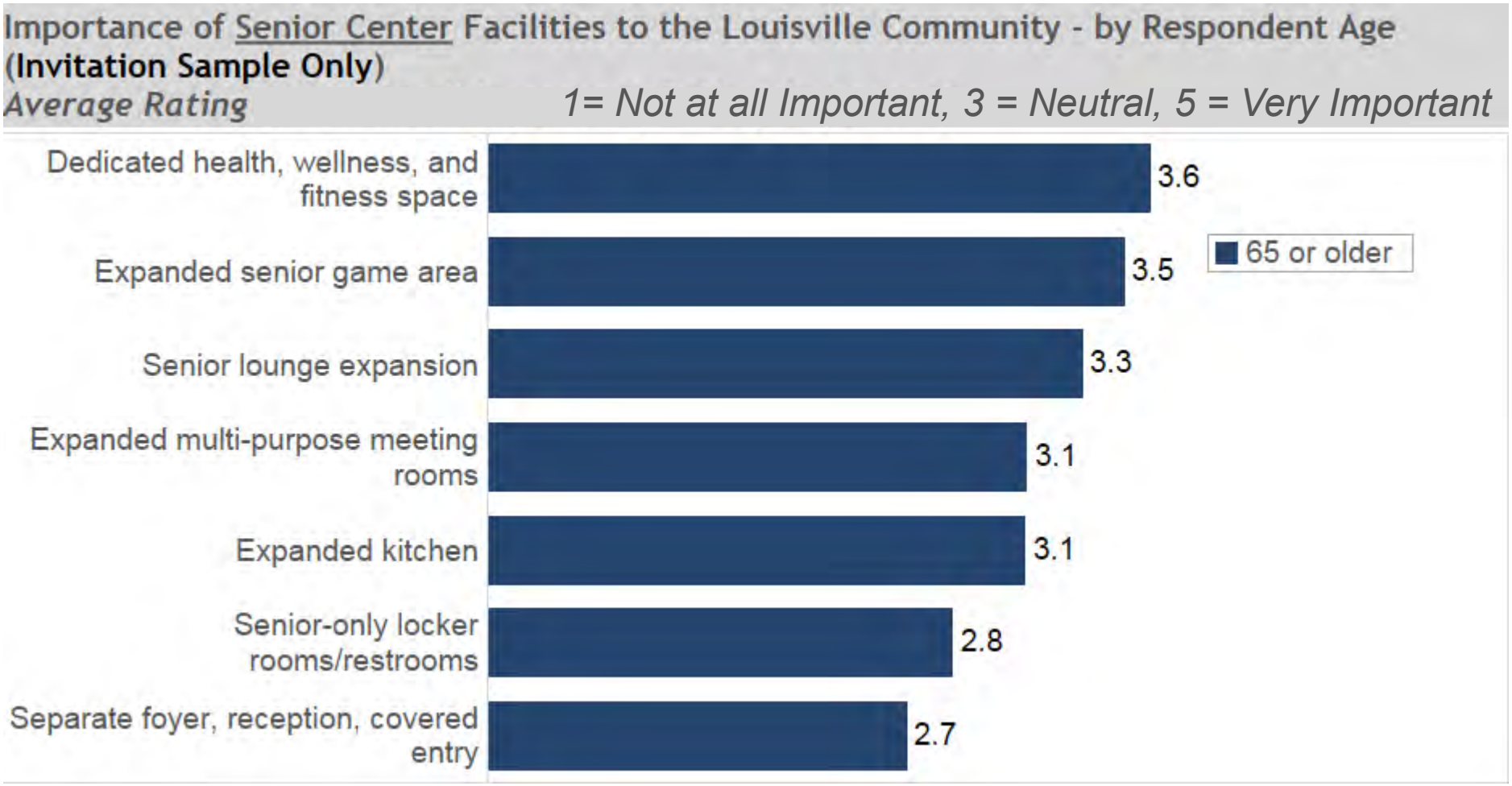
Importance of Recreation Center Facilities to the Louisville Community

Average Rating *1= Not at all Important, 3 = Neutral, 5 = Very Important*

Youth Facilities

Importance of Senior Center Facilities
By Respondent Age (65 or older)

- Seniors' priorities match up with overall priorities

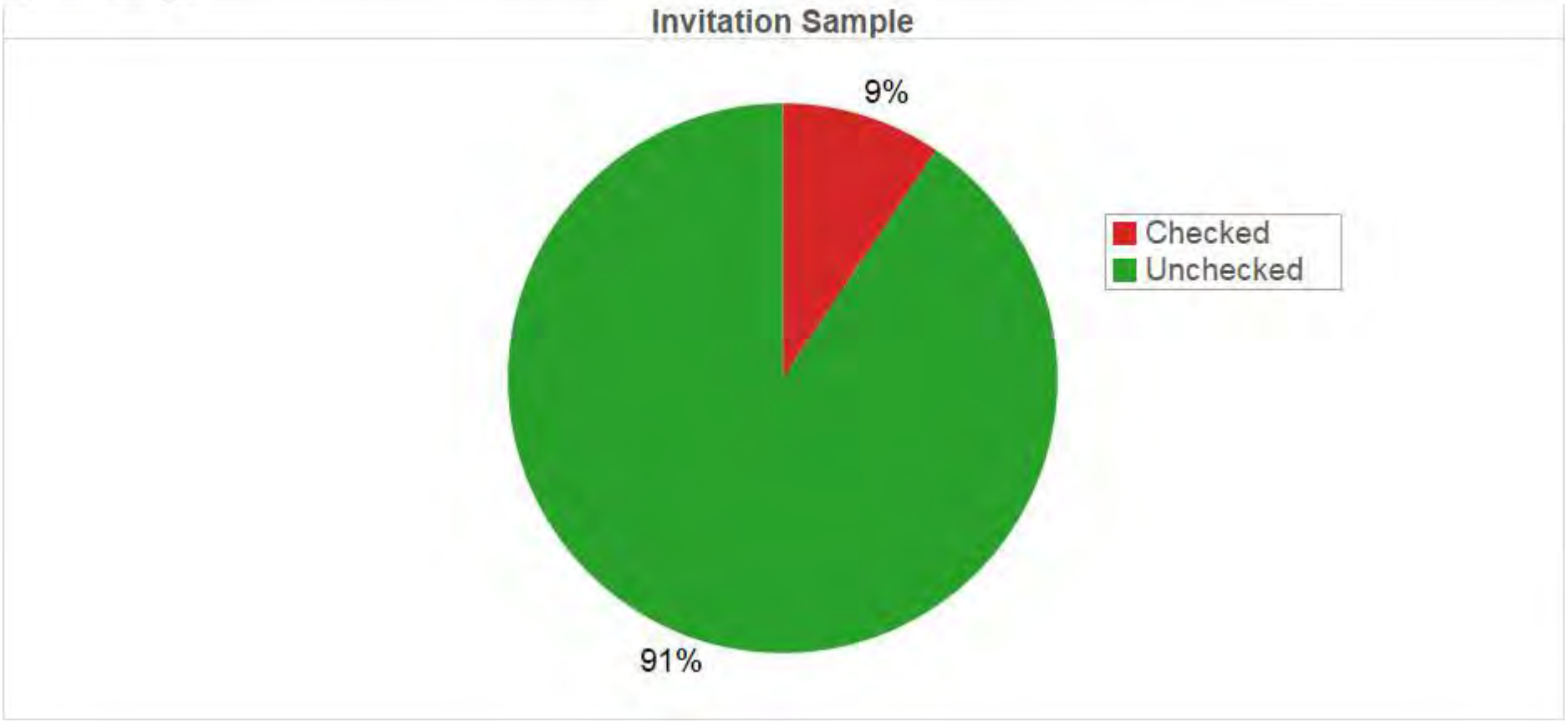


Importance of Memory Square Facilities

- Many improvements to Memory Square were identified as relatively important

No Additional Facilities Needed

Check here if you don't feel that any additional facilities are needed for you or the community:

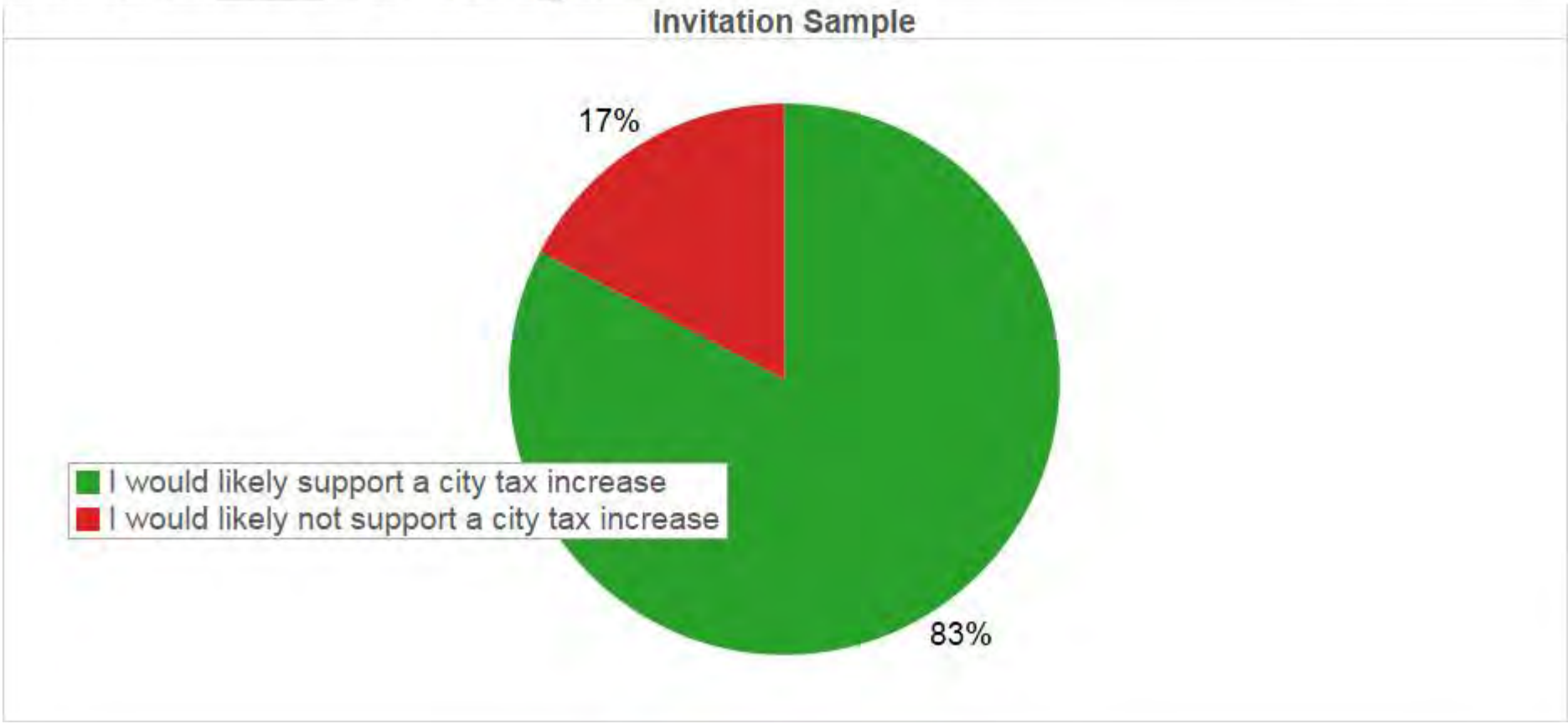


FINANCIAL CONSIDERATIONS

Opinion On Increasing Taxes

- A majority of respondents (83%) support a city tax increase for recreation improvements

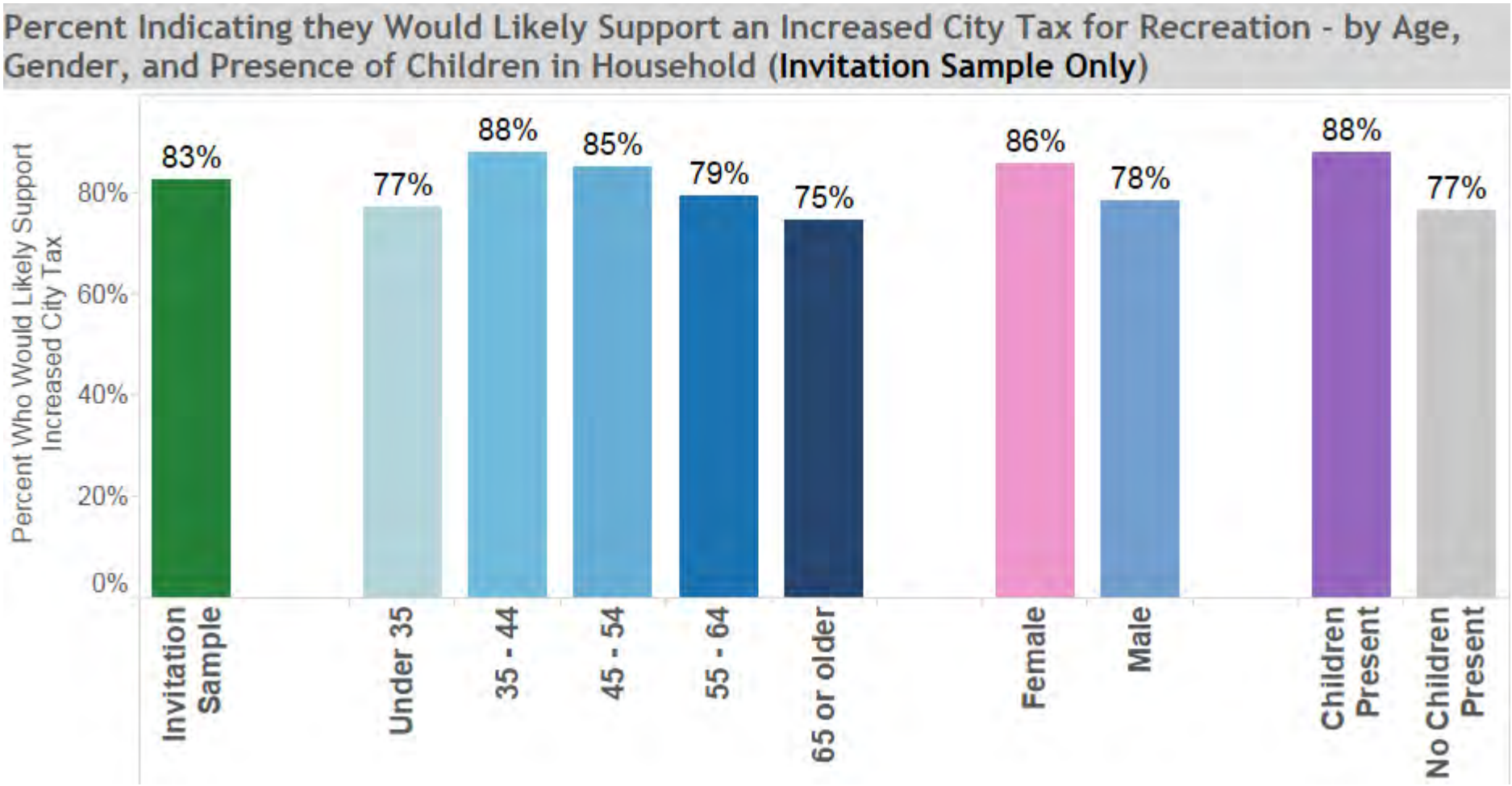
Which of the following two statements best describes your opinion concerning increasing city taxes for enhanced recreation improvements?



Opinion On Increasing Taxes

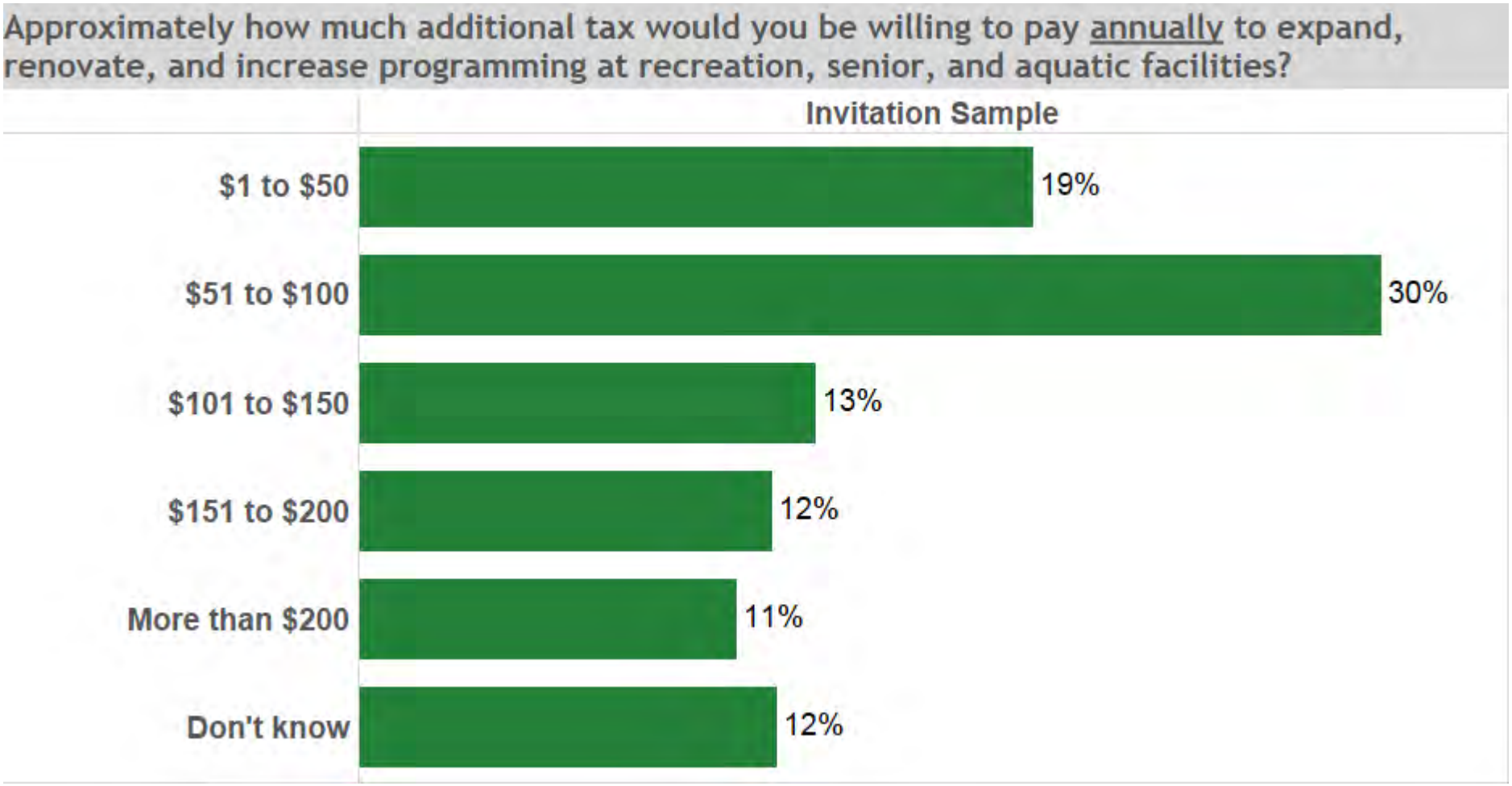
By Age, Gender, and Presence of Children in Household

- Middle-aged respondents, females, and respondents with kids are more likely to support an increased tax



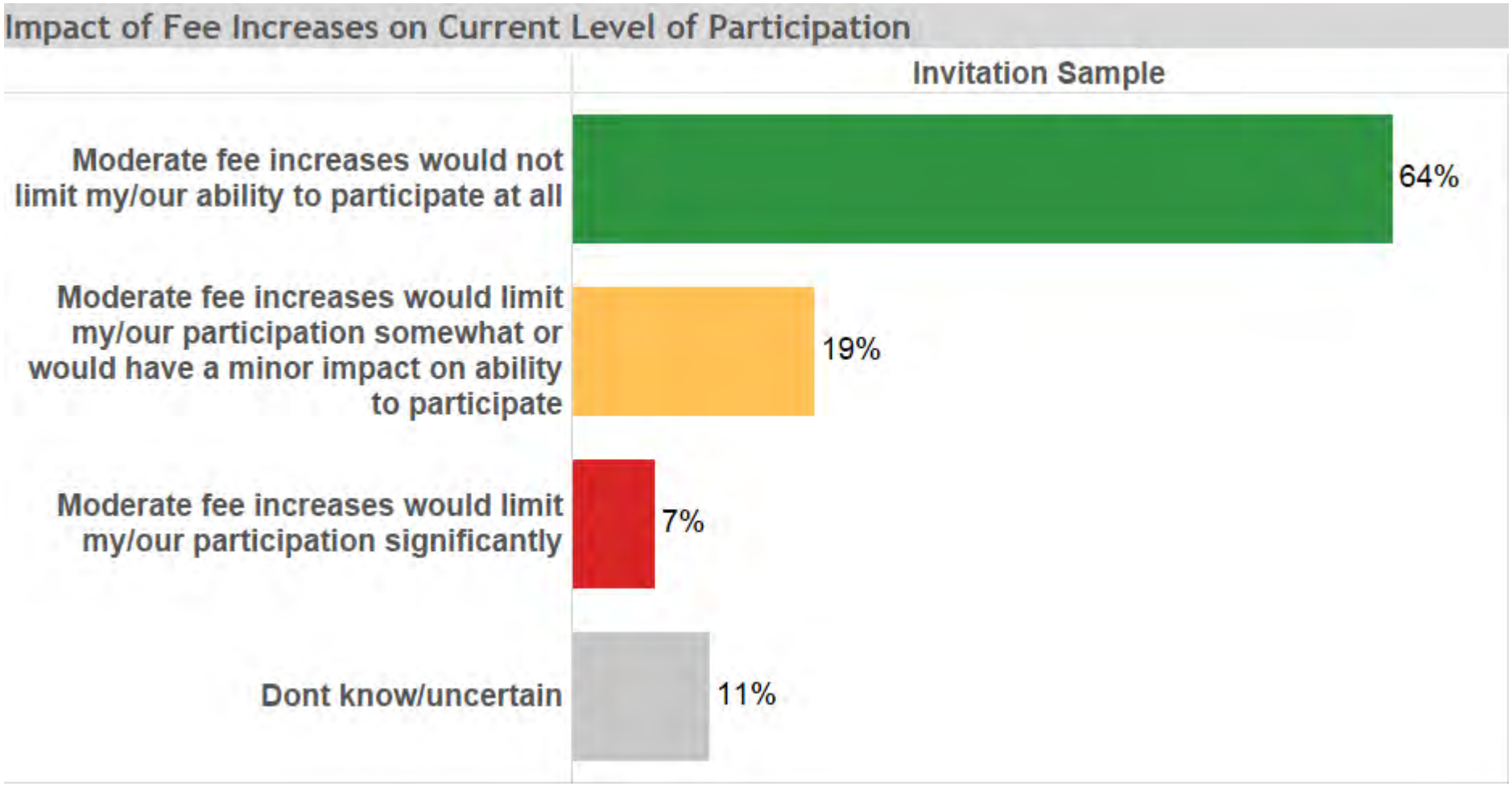
Tax Amount Willing to Pay

- About half of respondents (49%) would support an increase of $100 per year or less



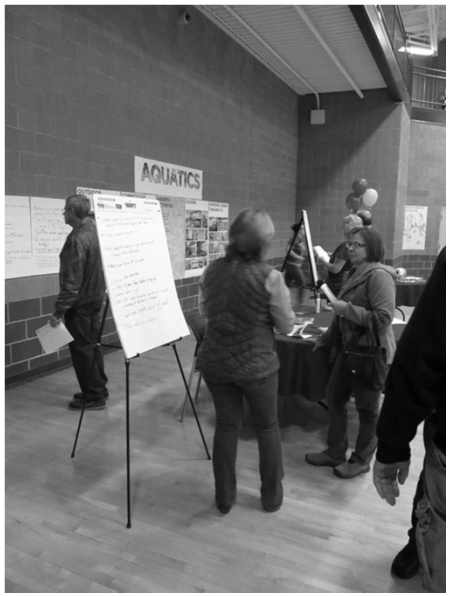
Impact of Fees on Participation

- A majority (64%) said fee increases would not affect their ability to participate



FOLLOW-UP SURVEY

- The City will issue a follow-up telephone survey in summer 2016 to registered voters with further financial analysis
- Open Houses will also occur as the design is developed



Project Update

Task Force Recommendation: Space Priorities

City Council Meeting | April 5, 2016

- Family Change Locker Rooms
- New Fitness Area Locker Rooms
- New Multi-Activity Court (MAC) Gymnasium
- Extending Existing Track – 3 lanes?
- New Fitness Center Expansion
- Wellness/Health Consultation Suite
- New Group Exercise Studio
- New Spinning Studio
- New Aqua Exercise/Lesson/Fitness Pool
- New Leisure Pool with Play Features + Indoor/Outdoor Access to New Patio Space
- Generous + Unique Outdoor Patio Space near Natatorium (for a variety of uses year-round)
- Pool Party Room
- Memory Square Outdoor Pool/Poolhouse Improvements
- Seniors – New Reception, Dedicated Lounge Area, Expanded Game Area, More Multi-Purpose Meeting Space
- Children + Youth – (2) Youth Activity Classrooms, Expanded Drop-In Childcare, New Indoor Playground
- Expanded Support Spaces
- Deferred Maintenance Items

Preliminary Conceptual Program / Cost Summary

City Council Meeting | April 5, 2016

▪ Family Change Locker Rooms	$425,250
▪ New Fitness Area Locker Rooms	$567,000
▪ New Multi-Activity Court (MAC) Gymnasium	$2,511,914
▪ Extending Existing Track – 3 lanes?	$776,250
▪ New Fitness Center Expansion	$3,599,859
▪ Wellness/Health Consultation Suite	$228,218
▪ New Group Exercise Studio	$1,141,088
▪ New Spinning Studio	$787,894
▪ New Aqua Exercise/Lesson/Fitness Pool	$992,250
▪ New Leisure Pool with Play Features, Party Room	$6,799,714
▪ Memory Square Outdoor Pool/Poolhouse Improvements	$1,579,500
▪ Seniors – New Reception, Dedicated Lounge Area, Expanded Game Area, More Multi-Purpose Meeting Space	$1,025,359
▪ Children + Youth – (2) Youth Activity Classrooms, Expanded Drop-In Childcare, New Indoor Playground	$834,877
▪ Expanded Support Spaces	Varies
▪ Deferred Maintenance Items	Varies
▪ Site Improvements, New Outdoor Patio Space	$559,024
Total Project Cost Estimate	**$25,162,156**

Total Project Cost includes Construction Costs + Non-Construction Costs (Contingency, Inflation/Escalation, Professional Services, Fixtures-Furniture-Equipment, Testing + Inspections, Permit Fees, Miscellaneous Expenses, etc.).

Questions?

Project Schedule Overview

City Council Meeting | April 5, 2016

- November/December 2015
  - Kickoff meetings with Task Force/Staff
  - 2 Open Houses advertised + conducted
  - Facility tours conducted with Task Force/Staff
- January 2016
  - Draft survey reviewed with Task Force/Staff
  - Staff/stakeholder interviews conducted
  - Demographics + Trends reports finalized
- February 2016
  - Survey issued, for statistically valid results
  - Existing facility review – site, buildings, infrastructure, etc.
- March 2016
  - Survey results available
  - Design team develops initial Program for review/approval
  - Final Program approved
  - Design team begins Study's Concept Design, Cost Estimates
- April 2016
  - Concept Design, Cost Estimates presentation to Task Force/Staff/City Council
  - Public Open House for Feedback
  - Design team begins Study's Final Design, Cost Estimates
- May 2016
  - Final Design, Cost Estimates presentation to Task Force/Staff/City Council
- June-September 2016
  - Set City schedule for requirements, etc.
- November 2016
  - Election

Questions?

Building Support Spaces

	Existing and/or Renovated Area	Light Reno $ 45	Med. Reno $ 125	Heavy Reno $ 245	New Addition Area	Light New $ 245	Med. New $ 350	Heavy New $ 375	Construction Cost	Non-Construction Cost 35.0%	Total Project Cost	Notes
Lobby Spaces												
Entry Hall/Lobby/Vestibule Renov/Addition	2,040		$255,000						$ 255,000	$89,250	$ 344,250	
Vestibule	110	$ 4,950							$ 4,950	$1,733	$ 6,683	
Reception/Access Control Modifications (allowance)	250		$31,250						$ 31,250	$10,938	$ 42,188	
Existing Vending/Lounge Area (near Pool)	980								$ -	$0	$0	Renovate to new function
New Lounge Area					600		$ 210,000		$210,000	$73,500	$283,500	
Total Lobby Spaces	**3,380**	**$ 4,950**	**$ 286,250**		**600**		**$ 210,000**		**$501,200**	**$175,420**	**$676,620**	
Staff and Administration Areas												
Existing staff offices	1,660	$ 74,700							$ 74,700	$26,145	$100,845	
Expanded Staff Office Area	800	$ 36,000							$ 36,000	$12,600	$48,600	Expand into another existing area
New Staff Break Room	250		$31,250						$ 31,250	$10,938	$42,188	Expand into another existing area
New staff conference room	200		$25,000						$ 25,000	$8,750	$33,750	Expand into another existing area
New staff copy/work room	150		$18,750						$ 18,750	$6,563	$25,313	Expand into another existing area
Total Staff Offices	**3,060**	**$ 110,700**	**$ 75,000**		**0**				**$185,700**	**$64,995**	**$250,695**	
Building Service and Support Areas												
Mechanical and electrical					400	$ 98,000			$ 98,000	$34,300	$ 132,300	
General Storage	800				400	$ 98,000			$ 98,000	$34,300	$ 132,300	
Receiving/Staging									$ -	$0	$0	
Custodial and Maintenance									$ -	$0	$0	
Misc									$ -	$0	$0	
Total Service and Support Areas	**800**				**800**	**$ 196,000**			**$196,000**	**$68,600**	**$ 264,600**	
Locker Rooms												
												confirm that recently renovated lockers don't need addl major renov.
Men's Pool Locker Room (existing)	1,020	$ 45,900							$ 45,900	$16,065	$ 61,965	
New Family Change Rooms					900		$ 315,000		$ 315,000	$110,250	$ 425,250	Add within existing area
New Fitness Locker/Restroom Men					600		$ 210,000		$ 210,000	$73,500	$ 283,500	
New Fitness Locker/Restroom Women					600		$ 210,000		$ 210,000	$73,500	$ 283,500	
Mech./Circ./Walls/Struct., etc.					315		$ 110,250		$ 110,250	$38,588	$148,838	
Total Locker Rooms	**2,040**	**$ 91,800**			**2,415**		**$ 845,250**		**$ 937,050**	**$327,968**	**$ 1,265,018**	
Subtotal Base Support	**9,280**				**3,815**				**$1,819,950**	**$636,983**	**$2,456,933**	

Program Improvements

Gymnasium Spaces

Existing Gymnasium

												confirm level of renov necessary in gym
Existing Gymnasium Area	9,240	$ 415,800							$ 415,800	$145,530	$561,330	
Existing Gymnasium Storage	640	$ -							$ -	$0	$0	
Mech./Walls/Struct, etc.	1,482	$ -							$ -	$0	$0	
Total Existing Gymnasium	**11,362**	**$ 415,800**							**$ 415,800**	**$145,530**	**$561,330**	
New Multi-Activity (MAC) Gymnasium												
New Gymnasium Area					6,204	$ 1,519,980			$ 1,519,980	$ 531,993	$ 2,051,973	
New Gymnasium Storage					400	$ 98,000			$ 98,000	$ 34,300	$ 132,300	
Mech./Walls/Struct, etc.					991	$ 242,697			$ 242,697	$ 84,944	$ 327,641	
Total New MAC Gymnasium					**7,595**	**$ 1,860,677**			**$1,860,677**	**$651,237**	**$2,511,914**	
Existing Elevated Running Track												
Exist. Running Track (extend between existing gym and new MAC gym)	4,600		$575,000						$575,000	$ 201,250	$776,250	
Total Running Track	**4,600**		**$ 575,000**						**$575,000**	**$201,250**	**$776,250**	
Subtotal Gymnasium Spaces	**15,962**				**7,595**				**$2,851,477**	**$998,017**	**$3,849,494**	

Fitness Spaces

Existing Fitness Spaces										
Free Weight Training Area (Main Level)	825	$ 37,125				$ 37,125	$ 12,994	$ 50,119	Renovate to another function
Circuit/Machine Weight Training (Main level)	800	$ 36,000				$ 36,000	$ 12,600	$ 48,600	Renovate to another function
Cardio Training Area (Upper Level)	1,345	$ 60,525				$ 60,525	$ 21,184	$ 81,709	Renovate to another function
Total Existing Fitness Center	**2,970**	**$ 133,650**				**$ 133,650**	**$46,778**	**$180,428**	
New Fitness Center Expansion									
Cardiovascular Training (40 stations)			2,000		$ 700,000	$ 700,000	$245,000	$ 945,000	
Circuit/Machine Weight Training (30 Stations)			1,875		$ 656,250	$ 656,250	$229,688	$ 885,938	
Strength/Free Weight Training (18 Stations)			1,600		$ 560,000	$ 560,000	$196,000	$ 756,000	
Plyometric Cross-Training Area			1,000		$ 350,000	$ 350,000	$122,500	$ 472,500	
Fitness check-in, Coordinator			150		$ 52,500	$ 52,500	$18,375	$ 70,875	
Mech./Walls/Struct., etc.			994		$ 347,813	$ 347,813	$121,734	$ 469,547	
Total New Fitness Center Expansion			**7,619**		**$ 2,666,563**	**$2,666,563**	**$933,297**	**$3,599,859**	
Wellness / Health Consultation Suite									
Consultation/examination rooms (2)			200	$ 49,000		$ 49,000	$17,150	$66,150	
Small meeting Room			200	$ 49,000		$ 49,000	$17,150	$66,150	
Active evaluation / rehab area			200	$ 49,000		$ 49,000	$17,150	$66,150	
Mech./Walls/Struct., etc.			90	$ 22,050		$ 22,050	$7,718	$29,768	
Total Wellness / Health Consultation Suite			**690**	**$ 169,050**		**$169,050**	**$59,168**	**$228,218**	
Group Exercise Studio #1 (Existing)									
Fitness/Exercise Studio	1,430	$ 64,350				$ 64,350	$22,523	$86,873	
Storage	0					$ -	$0	$0	
Mech./Walls/Struct., etc.	0					$ -	$0	$0	
Total Group Exercise Studio #1 (Existing)	**1,430**	**$ 64,350**				**$64,350**	**$22,523**	**$86,873**	
Group Exercise Studio #2 (New)									
Fitness/Exercise Studio			1,800		$ 630,000	$ 630,000	$220,500	$850,500	
Storage			300		$ 105,000	$ 105,000	$36,750	$141,750	
Mech./Walls/Struct., etc.			315		$ 110,250	$ 110,250	$38,588	$148,838	
Total Group Exercise Studio #2 (New)			**2,415**		**$ 845,250**	**$845,250**	**$295,838**	**$1,141,088**	
Spinning Studio									
Spinning Area (25 bikes)			1,250		$ 437,500	$ 437,500	$153,125	$590,625	
Storage			200		$ 70,000	$ 70,000	$24,500	$94,500	
Mech./Walls/Struct., etc.			218		$ 76,125	$ 76,125	$26,644	$102,769	
Total Spinning Studio			**1,668**		**$ 583,625**	**$583,625**	**$204,269**	**$787,894**	
Subtotal Fitness Spaces	**4,400**		**12,391**			**$4,462,488**	**$1,561,871**	**$6,024,358**	

Aquatics Addition and Improvements / Memory Square Pool Improvements									
Pool Support Spaces (Existing)									
Pool and Lifeguard Offices	360	$ 16,200				$ 16,200	$5,670	$21,870	
Pool Storage	215					$ -	$0	$0	
Pool Mechanical (existing)	530	$ 23,850				$ 23,850	$8,348	$32,198	
Subtotal Pool Support Spaces (Existing)	**1,105**	**$ 40,050**				**$40,050**	**$14,018**	**$54,068**	
Existing Lap Swimming Pool and Deck Area									
Existing Lap Swimming Pool (6 lanes , 25 yards)	4,390	$ 197,550				$ 197,550	$69,143	$266,693	
Existing Leisure Swimming Pool	700					$ -	$0	$0	Renovate this pool into another function
Natatorium Area	11,850	$ 533,250				$ 533,250	$186,638	$719,888	
Subtotal Existing Lap Swimming and Deck Area	**16,940**	**$ 730,800**				**$ 730,800**	**$255,780**	**$986,580**	
New Aqua Exercise / Lesson / Fitness pool									
New Fitness and Lesson Pool (4 lanes x 25 yards)			2,100		$ 735,000	$ 735,000	$257,250	$992,250	
Natatorium Addition			0			$ -	$0	$0	renovate/add within existing natatorium
Equipment Allowance			-			$ -	$0	$0	
Mech./Walls/Struct., etc.			-			$ -	$0	$0	renovate/add within existing natatorium
Subtotal New Aqua Exercise / Lesson / Fitness Pool			**2,100**		**$ 735,000**	**$ 735,000**	**$257,250**	**$992,250**	
New Leisure Pool with Play Features									
New warm water leisure recreation pool			3,650		$ 1,277,500	$ 1,277,500	$447,125	$1,724,625	
New Leisure Pool Natatorium			8,030		$ 2,810,500	$ 2,810,500	$983,675	$3,794,175	
Feature Allowance						$ 200,000	$70,000	$270,000	
Pool Mechanical (New)			800	$ 196,000		$ 196,000	$68,600	$264,600	
Expanded Pool Storage			300	$ 73,500		$ 73,500	$25,725	$99,225	
Mech./Walls/Struct., etc.			1,370		$ 479,325	$ 479,325	$167,764	$647,089	
Subtotal New Leisure Pool with Play Features			**14,150**	**$ 269,500**	**$ 4,567,325**	**$ 5,036,825**	**$1,762,889**	**$6,799,714**	
Memory Square Outdoor Pool Improvements									
New Poolhouse Building, lounge, lockers, offices, mechanical, storage			2,500		$ 875,000	$ 875,000	$306,250	$1,181,250	
Replace Children's pool					$ 250,000	$ 250,000	$87,500	$337,500	
Shade Structures					$ 25,000	$ 25,000	$8,750	$33,750	
Site landscape, hardscape improvements					$ 20,000	$ 20,000	$7,000	$27,000	
Subtotal Memory Square Outdoor Pool Improvements			**2,500**		**$ 1,170,000**	**$1,170,000**	**$409,500**	**$1,579,500**	
Subtotal Aquatics Addition and Improvements / Memory Square Pool Improvements	**18,045**		**18,750**			**$7,712,675**	**$2,699,436**	**$10,412,111**	

Senior Center Areas										
Existing Senior Center Support Space										
Library	415	$ 18,675					$ 18,675	$6,536	$25,211	renovate to create new entry
Restrooms	330	$ 14,850					$ 14,850	$5,198	$20,048	
Kitchen	330	$ 14,850					$ 14,850	$5,198	$20,048	renovate to expand game room
Meeting Room	330	$ 14,850					$ 14,850	$5,198	$20,048	
Subtotal Existing Senior Center Support Space	**1,405**	**$ 63,225**					**$63,225**	**$22,129**	**$85,354**	
New Foyer, Reception and Lounge										
New Senior Reception and Lounge	500		$62,500				$ 62,500	$21,875	$84,375	Renovate within existing area
Mech./Walls/Struct., etc.	75		$9,375				$ 9,375	$3,281	$12,656	
Subtotal New Foyer, Reception and Lounge	**575**		**$ 71,875**				**$71,875**	**$25,156**	**$97,031**	
Game Room Area										
Existing Game Room Area	650		$81,250				$ 81,250	$28,438	$109,688	
Expand Game Room	330		$41,250				$ 41,250	$14,438	$55,688	Expand into current kitchen space
Storage	50	$ 2,250					$ 2,250	$788	$3,038	
Subtotal Game Room	**1,030**	**$ 2,250**	**$ 122,500**				**$ 124,750**	**$43,663**	**$168,413**	
Multipurpose Meeting and Classrooms										
Existing Multipurpose Meeting Rooms	3,270	$ 147,150					$ 147,150	$51,503	$198,653	
Renovated Preschool rooms intco senior meeting/class rooms	1,445	$ 65,025					$ 65,025	$22,759	$87,784	Renovate preschool rooms for senior use
Storage	300	$ 13,500					$ 13,500	$4,725	$18,225	
Subtotal Multipurpose Meeting and Classrooms	**5,015**	**$ 225,675**					**$225,675**	**$78,986**	**$304,661**	
New Catering Kitchen										
Catering Kitchen Area				600		$ 225,000	$ 225,000	$78,750	$303,750	
Storage				200	$ 49,000		$ 49,000	$17,150	$66,150	
Subtotal New Catering Kitchen				**800**	**$ 49,000**	**$ -** **$ 225,000**	**$274,000**	**$95,900**	**$369,900**	
Subtotal Senior Center Areas	**8,025**			**800**			**$759,525**	**$265,834**	**$1,025,359**	
Children and Youth Areas										
New Preschool Program										Renovate within existing area
Entry Foyer/ Cubbie area	300		$37,500				$ 37,500	$13,125	$50,625	
Classroom 1	750		$93,750				$ 93,750	$32,813	$126,563	
Classroom 2	750		$93,750				$ 93,750	$32,813	$126,563	
Teacher's Workroom / Offices	200		$25,000				$ 25,000	$8,750	$33,750	
Restrooms (2)	120			$29,400			$ 29,400	$10,290	$39,690	
Storage (shared between classrooms)	200		$25,000				$ 25,000	$8,750	$33,750	
Mech./Walls/Struct., etc.	348	$ 15,660					$ 15,660	$5,481	$21,141	
Subtotal Preschool	**2,668**	**$ 15,660**	**$ 275,000**	**$ 29,400**			**$320,060**	**$112,021**	**$432,081**	
New Child Sitting										Renovate within existing area
Child Sitting Room (24 children)	900		$112,500				$ 112,500	$39,375	$151,875	
Children's restroom	60			$14,700			$ 14,700	$5,145	$19,845	
Storage	100		$12,500				$ 12,500	$4,375	$16,875	
Mech./Walls/Struct., etc.	159	$ 7,155					$ 7,155	$2,504	$9,659	
Subtotal Child Sitting	**1,219**	**$ 7,155**	**$ 125,000**	**$ 14,700**			**$146,855**	**$51,399**	**$198,254**	
New Indoor Playground										
Indoor playground area	900		$112,500				$ 112,500	$39,375	$151,875	Renovate within existing area
parent seating/viewing area	250		$31,250				$ 31,250	$10,938	$42,188	
Mech./Walls/Struct., etc.	173	$ 7,763					$ 7,763	$2,717	$10,479	
Subtotal Playground	**1,323**	**$ 7,763**	**$ 143,750**				**$ 151,513**	**$53,029**	**$204,542**	
Subtotal Children and Youth Areas	**5,210**						**$618,428**	**$216,450**	**$834,877**	
New Building Area				43,350			**$ 14,592,240**	**$ 5,107,284**	**$ 19,699,523**	
Existing Area Renovation/Repurpose	**60,922**						**$ 3,632,303**	**$ 1,271,306**	**$ 4,903,608**	
Overall Building Total New and Renovated Area							**$18,224,542**	**$6,378,590**	**$24,603,132**	

Base Site Development							
Renovate Existing Parking Lot (135 spaces)	45,518	$227,589		$227,589	$79,656	$307,246	to be determined with City Planning approval re: ratio
Landscaping (50% of developed area)	31,626	$126,503		$126,503	$44,276	$170,778	
Plazas, Sidewalks, Patios, etc	5,000	$60,000		$60,000	$21,000	$81,000	
Miscellaneous							
Subtotal Site Improvements				**$414,092**	**$144,932**	**$559,024**	
Total Project Budget	**60,922**		**43,350**	**$18,638,634**	**$6,523,522**	**$25,162,156**	

Non-construction Costs	(Multiplier for Non-construction Cost column above)		
Contingency (includes escalation to 2017-2018 construction cost)	20%	$	0
Professional Services	8.0%	$	0
Fixtures, Furnishings & Equipment	5.0%	$	0
Miscellaneous Expenses (permit fees,	2.0%	$	0
Site Acquisition Allowance	0%	$	-
TOTAL NON-CONSTRUCTION COSTS	35.0%	$	0

NOTE: The costs above are an average opinion of construction costs based upon similar Recreation Centers built in the region and other recently constructed Centers built nationally and adjusted to the area. The actual cost of the construction could be higher or lower (+/- 15%) depending upon decisions not yet made by the Task Force. The cost of financing is not included in the figures above.
The cost of inflation/escalation is included in the figures above.

SUBJECT: **RESOLUTION NO. 17, SERIES 2016 – A RESOLUTION APPROVING THE SOUTH BOULDER ROAD SMALL AREA PLAN**

DATE: **APRIL 5, 2016**

PRESENTED BY: **SCOTT ROBINSON, PLANNER II**

SUMMARY:
Attached is the draft South Boulder Road small area plan. The South Boulder Road small area plan is intended to define desired community character, land uses, and public infrastructure priorities to provide a reliable roadmap for public and private investments in the corridor. Staff is requesting City Council provide direction on any desired changes to the plan before it is brought back for potential adoption at the April 19 regular meeting.

The creation of the plan followed a robust public process, as described in the plan. Also attached are results of that process, including the community survey report, results from the last public workshop in November, 2015, and the detailed traffic impact analysis.

DISCUSSION:
The draft plan was discussed at the March 29 study session. Based on that discussion, staff is providing the following additional information:

Review criteria for additional height
The draft plan proposes allowing an additional story of building height if certain conditions are met. The proposed conditions are outlined in the draft plan, but will be further detailed in the design guidelines which will be developed after adoption of the plan. The conditions relate to overall design, improvements to the public realm, and impacts on views and shadows.

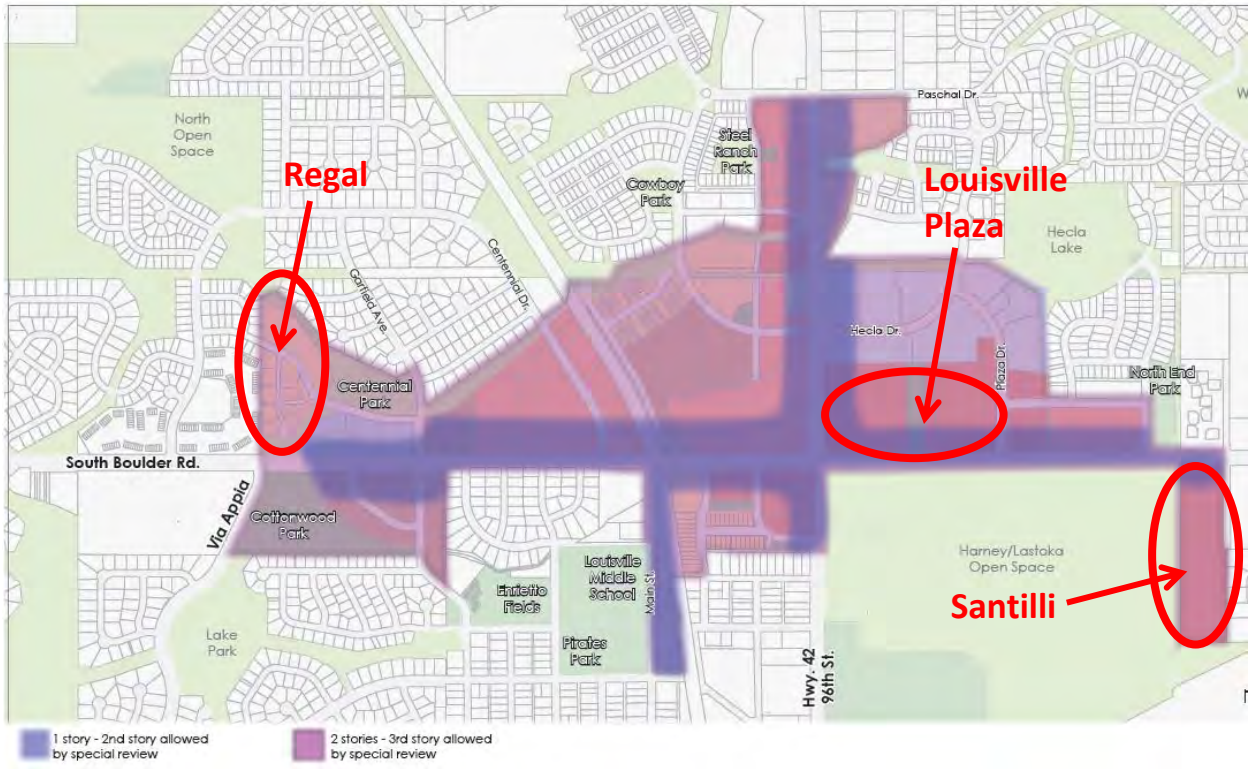
Council discussed at the study session whether a condition should be added requiring significant public benefit. This could be similar to the criteria for waivers through the PUD process in LMC section 17.28.110, which requires “city council finds that the development plan contains areas allocated for usable open space in common park area in excess of public use dedication requirements or that the modification or waiver is warranted by the design and amenities incorporated in the development plan, and the needs of residents for usable or functional open space and buffer areas can be met.”

There was also discussion about adding criteria limiting additional impacts on areas such as traffic and the fiscal position. If Council desires to add criteria about additional public benefit or impacts, staff recommends adding general language to the plan and allowing the detailed language to be defined along with the other criteria in the design guidelines.

Locations of allowed heights

There was discussion at the study session about where 2-3 stories should be allowed, and where building height should be limited to 1-2 stories. Areas brought up included the Regal affordable housing development and the Santilli property. Regal currently consists of two story apartments on the south side of Regal Street, and one story units on the north side. The Santilli property is mostly vacant currently.

There was also discussion about where the dividing line should be on the Louisville Plaza site. The map currently shows the line about halfway across the existing parking lot, with only 1-2 story buildings allowed on the southern half. It was suggested that perhaps the line should be moved north to about where the King Sooper's and other large buildings are. If Council desires these changes staff will update the map.



Public land

The draft plan recommends exploring the purchase of the Santilli property for public land if and when it becomes available. It was suggested at the study session that the Seventh Day Adventist Church property at the southeast corner of Hwy 42/96th Street and Paschal Drive should also be considered for purchase. The stated objective was to create additional buffer between the City and Lafayette to the north. This recommendation can be added, however the suggestion has not been reviewed by the Open Space Advisory Board and it is not clear how much value a parcel of this size in this location would have.

Visibility for businesses
A concern was raised about landscaping and building placement making it difficult to see stores set further back in developments. To some extent this should be a self-correcting problem because retail uses will likely take the prominent, visible locations and leave the less visible locations for office users. In addition, there are principles and guidelines in the draft plan about creating visibility into developments that will be further clarified in the design guidelines. However, more explicit language about ensuring visibility for businesses or addressing signage can be added if Council so desires.

Signal timing
The traffic study for South Boulder Road calls for optimizing the timing of the signals in the corridor to improve traffic flow. There was a question about when this should be done. The City updates signal timing about every three years and will continue to do so as the corridor develops so the timing remains appropriate for the amount of traffic and development in the corridor.

Fiscal model inputs
The inputs used for the fiscal impact analysis are listed below. There was a question during the study session about the source of assumptions on the percentage of income spent on taxable items and the percentage of that spending captured in the City. The percentages used are standard national numbers provided by the fiscal model consultant, TischlerBise. Those numbers are easily changed in the model, so if Council would like to see alternative model runs with different percentages, staff can provide those.

FISCAL IMPACT:
The projected development under the plan was analyzed with the City's new fiscal model. The projected development numbers are:

Existing Development in Study Area		
Retail	352,729	Square feet
Office	178,608	Square feet
Residential	407	Units
Employees	1,682	People
Residents	569	People

Projected 20 year Increase over Existing		
Retail	26,931	Square feet
Office	374,298	Square feet
Residential	546	Units
Employees	1,658	People
Residents	724	People

The projected fiscal impacts from the model are:

20 Year Cumulative Fiscal Impact	
Revenue by Fund	
General Fund	$34,171,000
Urban Revitalization District Fund	$4,461,000
Open Space & Parks Fund	$6,117,000
Lottery Fund	$0
Historic Preservation Fund	$2,166,000
Capital Pojects Fund	$20,081,000
TOTAL REVENUE	$66,966,000
Expenditures by Fund	
General Fund	$28,303,000
Urban Revitalization District Fund	$0
Open Space & Parks Fund	$923,000
Lottery Fund	$0
Historic Preservation Fund	$0
Capital Projects Fund	$25,033,000
TOTAL EXPENDITURES	$54,259,000
Net Fiscal Result by Fund	
General Fund	$5,868,000
Urban Revitalization District Fund	$4,461,000
Open Space & Parks Fund	$5,193,000
Lottery Fund	$0
Historic Preservation Fund	$2,166,000
Capital Projects Fund	($4,952,000)
NET FISCAL IMPACT	$12,736,000

In summary, the assumptions used in the model are:

Residential Low Density		
	Persons/Unit	2.57
	Market Value	$600,000
	Construction Value	$300,000
	Household Income	$132,000
	Spent on Taxable Items	35%
	Taxable Sales in City	40%
	Trips	6.76
	Adjustment Factor	50%
Residential Medium Density		

	Persons/Unit	1.26
	Market Value	$450,000
	Construction Value	$225,000
	Household Income	$99,000
	Spent on Taxable Items	35%
	Taxable Sales in City	40%
	Trips	4.13
	Adjustment Factor	50%
Residential High Density		
	Persons/Unit	1.38
	Market Value	$350,000
	Construction Value	$175,000
	Household Income	$77,000
	Spent on Taxable Items	35%
	Taxable Sales in City	40%
	Trips	4.68
	Adjustment Factor	50%
BCHA Townhomes		
	Persons/Unit	1.26
	Market Value	$0
	Construction Value	$0
	Household Income	$50,000
	Spent on Taxable Items	38%
	Taxable Sales in City	40%
	Trips	3.44
	Adjustment Factor	50%
BCHA Apartments		
	Persons/Unit	1.38
	Market Value	$0
	Construction Value	$0
	Household Income	$46,000
	Spent on Taxable Items	38%
	Taxable Sales in City	40%
	Trips	3.44
	Adjustment Factor	50%
Retail <25k SF		
	Employees/1000 SF	3.33
	Market Value/SF	$272
	Construction Value/SF	$194
	Sales per SF	$300
	Trips	110.32
	Adjustment Factor	28%
Retail 25k-50k SF		

	Employees/1000 SF	2.86
	Market Value/SF	$259
	Construction Value/SF	$185
	Sales per SF	$300
	Trips	85.56
	Adjustment Factor	31%
Retail >50k SF		
	Employees/1000 SF	2.50
	Market Value/SF	$245
	Construction Value/SF	$175
	Sales per SF	$300
	Trips	67.91
	Adjustment Factor	30%
Office <25k SF		
	Employees/1000 SF	4.13
	Market Value/SF	$272
	Construction Value/SF	$194
	Sales per SF	$0
	Trips	18.31
	Adjustment Factor	50%
Office 25k-50k SF		
	Employees/1000 SF	3.88
	Market Value/SF	$259
	Construction Value/SF	$185
	Sales per SF	$0
	Trips	15.50
	Adjustment Factor	50%
Office >50k SF		
	Employees/1000 SF	3.63
	Market Value/SF	$245
	Construction Value/SF	$175
	Sales per SF	$0
	Trips	13.13
	Adjustment Factor	50%

The model assumes the residential development will build out over the first three years, and the commercial over 10 years. The 2013 Comprehensive Plan update calls for positive fiscal impacts from the South Boulder Road area, and staff believes this plan satisfies that requirement. The Adjustment Factor is related to trip generation and, in short, prevents double counting of trips.

PLANNING COMMISSION ACTION:
Planning Commission reviewed the draft plan at their February 11, 2016 and March 10, 2016 meetings. The minutes from those meetings are attached. In general, Planning Commission was in favor of the plan and only asked that some additional information and clarification be provided at the second meeting. Public comments at the meeting were generally positive and focused on technical matters.

RECOMMENDATION:
Staff recommends City Council provide direction for any desired changes to the draft South Boulder Road small area plan before it is brought back for potential adoption at the April 19, 2016 City Council meeting.

ATTACHMENT(S):
1. Resolution No. 17, Series 2016
2. Draft South Boulder Road small area plan
3. Community survey report
4. Materials from November 2015 placemaking workshop - link
5. Traffic impact study
6. Public comments
7. Planning Commission minutes
8. Powerpoint

RESOLUTION NO. 17,
SERIES 2016

A RESOLUTION APPROVING THE
SOUTH BOULDER ROAD SMALL AREA PLAN

WHEREAS, the City of Louisville is a home rule municipal corporation organized under and pursuant to Article XX of the Colorado Constitution and the Louisville Home Rule Charter; and

WHEREAS, by virtue of such authority, and as further authorized by state statutes, including but not limited to C.R.S. §§ 31-23-206 et seq. the City has broad authority to make and adopt a comprehensive plan for the physical development of the municipality; and

WHEREAS, pursuant to such authorities, the City has also adopted a 2005 Comprehensive Plan, updated in 2009 and 2013, which Plan serves as a guiding document containing the policy framework under which new development and redevelopment within the City will be evaluated; and

WHEREAS, the City Council formally initiated a process to supplement the City's Comprehensive Plan, which process consists of several phases and includes various workshops, meetings and hearings regarding the drafting and adoption of the supplemental South Boulder Road Small Area Plan; and

WHEREAS, the public record reflects that the Planning Commission has held duly noticed public hearings regarding the South Boulder Road Small Area Plan on November 13, 2014, January 8, 2015, April 23, 2015, February 11, 2016, and March 10, 2016; and

WHEREAS, the Planning Commission has entered into the record extensive public comment and testimony; and

WHEREAS, the Planning Commission finds that a need exists to supplement the current 2013 Comprehensive Plan update, and that the adoption of the South Boulder Road Small Area Plan will promote the health, safety, and welfare of the present and future residents of the City through facilitating the adequate provisions for transportation, water resources, utility infrastructure, parks, recreation, schools, maintaining the level of services provided by all service sector departments; and

WHEREAS, after a duly noticed public hearing on March 10, 2016, where evidence and testimony was entered into the record, the Planning Commission finds the South Boulder Road Small Area Plan should be approved; and

WHEREAS, City Council has reviewed the South Boulder Road Small Area Plan, including the recommendation of the Planning Commission and finds that the South Boulder Road Small Area Plan should be approved, without condition.

NOW THEREFORE, BE IT RESOLVED, that the City Council of the City of Louisville, Colorado does hereby approve the South Boulder Road Small Area Plan.

PASSES AND ADOPTED this 19th day of April, 2016.

BY: _____
Robert P. Muckle, Mayor

ATTEST:

_____
Carol Hanson, Acting City Clerk

SOUTH BOULDER ROAD

SMALL AREA PLAN

City of Louisville
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ACKNOWLEDGEMENTS

City Council

Robert P. Muckle, Mayor
Jeff Lipton, Mayor Pro Tem, Ward 2
Jay Keany, Ward 1
Chris Leh, Ward 1
Susan Loo, Ward 2
Dennis Maloney, Ward 3
Ashley Stolzmann, Ward 3

Planning Commission

Chris Pritchard, Chair
Cary Tengler, Vice-chair
Steve Brauneis
David Hsu
Jeff Moline
Ann O'Connell
Tom Rice

City Boards and Commissions

Business Retention & Development Committee
Open Space Advisory Board
Parks & Public Landscaping Advisory Board
Revitalization Commission

Planning & Building Safety Department

Scott Robinson, Project Manager
Troy Russ, Planning and Building Safety Director
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South Boulder Road Walkability Audit

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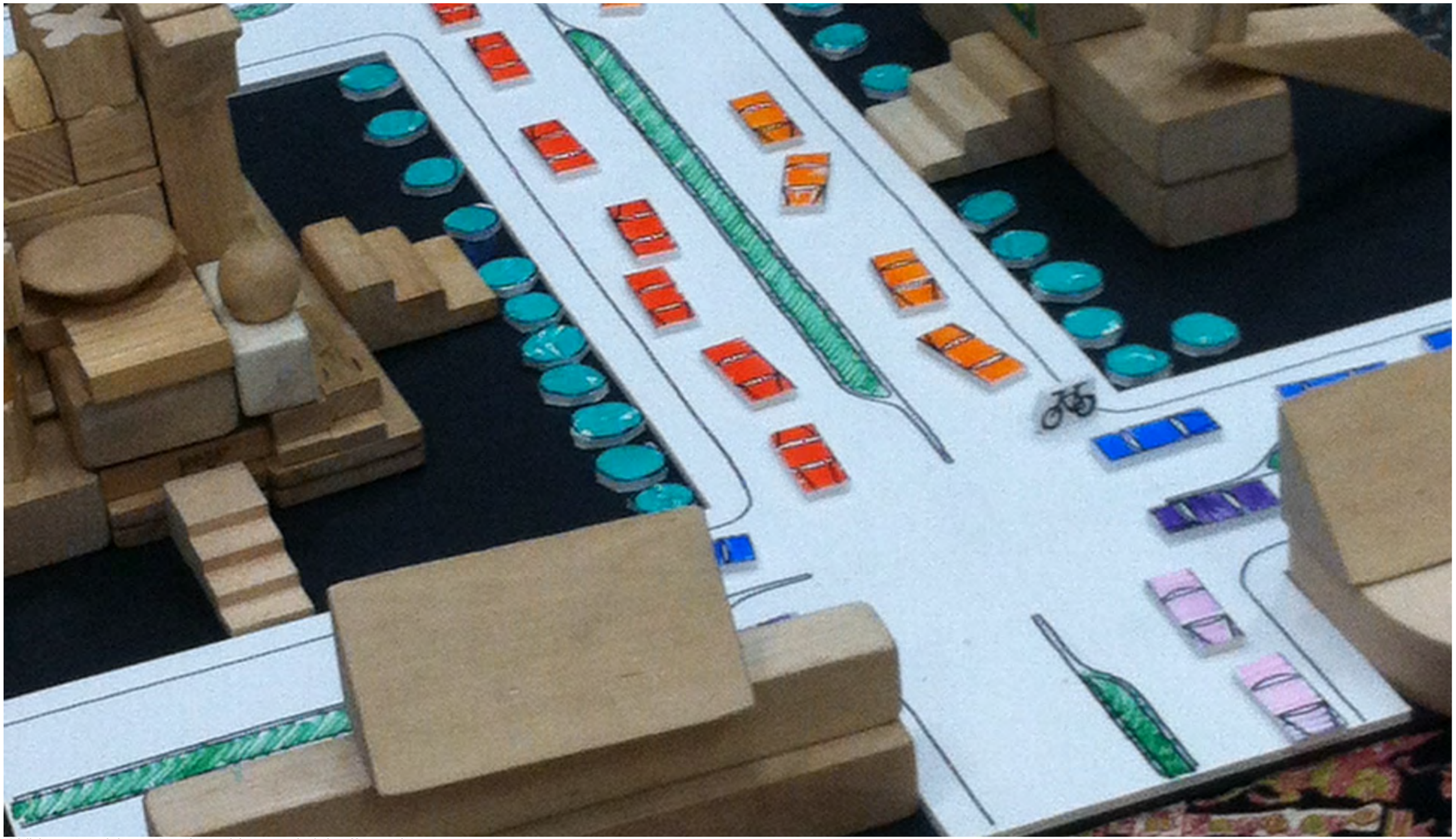


Children's activity at South Boulder Road Kick-off Meeting

INTRODUCTION

The South Boulder Road area of Louisville began being annexed into the City in the late 1970s. Development occurred intermittently and by the time the 2013 Comprehensive Plan update was adopted, the area ranged from undeveloped greenfield sites to sites undergoing redevelopment. Given this diversity, the Comprehensive Plan called for a more in-depth look at how the South Boulder Road area should continue to evolve.

Purpose

The South Boulder Road small area plan is intended to define desired community character, land uses, and public infrastructure priorities to provide a reliable roadmap for public and private investments in the corridor. As an extension of the Comprehensive Plan, the small area plan is a policy document and not a regulatory document. However, the plan will serve as the basis for updated design guidelines, any potential zoning changes, capital improvement project requests, and public dedication requirements from private developers. The South Boulder Road small area plan translates the broad policies of the Comprehensive Plan into the specific actions and regulations that will achieve those policies. The 2013 Comprehensive Plan update had two key purposes:

1. Better meet today's unique challenges of redevelopment versus new development, regional traffic and City transportation policy, the economy and the realities of retail growth, and neighborhood issues and concerns

2. Better clarify the Community's vision in terms of community character and physical design to provide the public and staff with a common language and tools to review and discuss redevelopment requests

The Comprehensive Plan created a framework to address these purposes through changes in land use, design, and infrastructure. The South Boulder Road small area plan takes that framework a step further by setting guidelines for how design and land use regulations should be changed and identifying what infrastructure is needed. The final step, following this plan, will be to draft and adopt the new regulations and build the new infrastructure, through a combination of the City's capital improvement program and private investment.

How to use this plan

The South Boulder Road small area plan defines the community's vision for the corridor to guide future public and private investment. The document is divided into five sections

1. The Process describes the public involvement and community outreach effort used to generate the small area plan

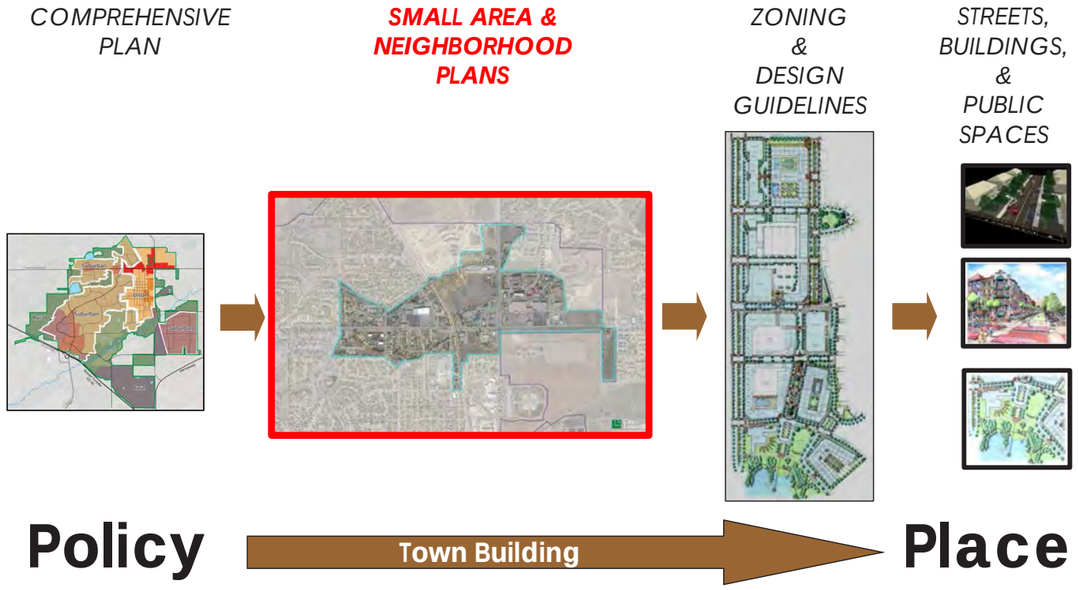
2. The Context describes the current conditions in the study area and key trends and challenges facing the corridor

3. The Principles describe the general goals for the plan, referred to as the Measures of Success, and the broad design principles to guide future action in the corridor

4. The Plan includes maps and illustrations describing the desired land uses, building character, and street, trail, and park improvements in the study area

5. Implementation describes steps to be taken to achieve the goals of the plan, and includes cost estimates for the anticipated public improvements

The South Boulder Road small area plan is a policy document. In order to achieve the community's vision for the corridor described in the plan, regulatory changes will need to be adopted to the Louisville Municipal Code, including the incorporation of new design guidelines for the area. The plan does, however, provide the basis for the City to require private property owners to build or dedicate some public infrastructure or land when properties develop or redevelop. Other public investments will need to be made by the City through the annual capital budgeting process.



South Boulder Road Kick-off Meeting

The South Boulder Road small area plan was developed through a five-step process and involved extensive input from residents, both within the corridor and throughout the community, property owners, business owners, and elected and appointed officials.

Step 1 – Set Goals

Goals, represented by the Measures of Success (see page 17), were needed to guide the development of the plan. This began with stakeholder interviews in December, 2013, with residents, property owners, and business owners in and around the corridor. They discussed their views on the study area and how they would like to see it evolve. Questions were also posted on the City's discussion website, EnvisionLouisvilleCO.com, allowing anyone in the community to provide early input.

A public Kick-off Meeting was held in October, 2014. Over 120 people attended the meeting. Participants were asked to identify areas they liked, disliked, and wanted to see change.

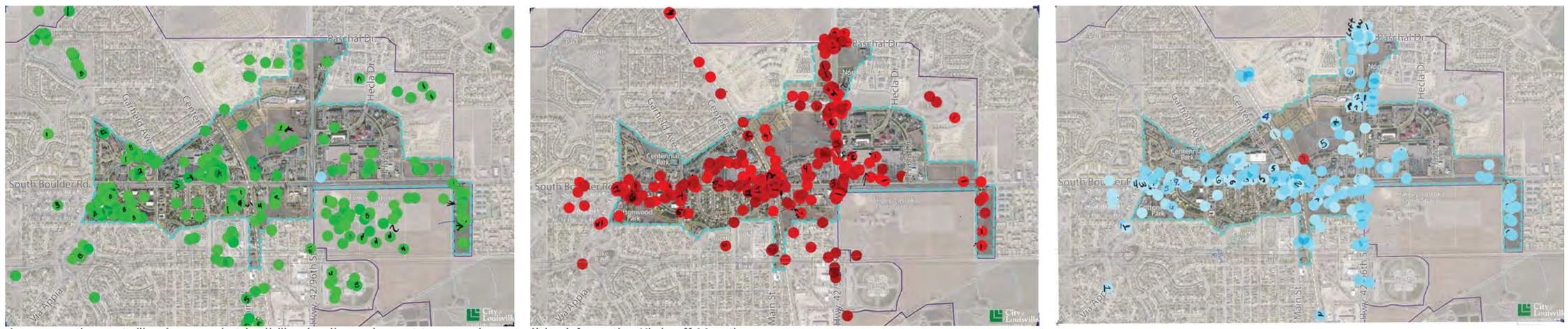
They also discussed how they would like to use the corridor in the future and how the Core Community Values from the Comprehensive Plan could be incorporated into the area. This input was used to develop a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis (see page 13) and the Measures of Success, which were endorsed by Planning Commission and City Council.

Step 2 – Corridor Analysis

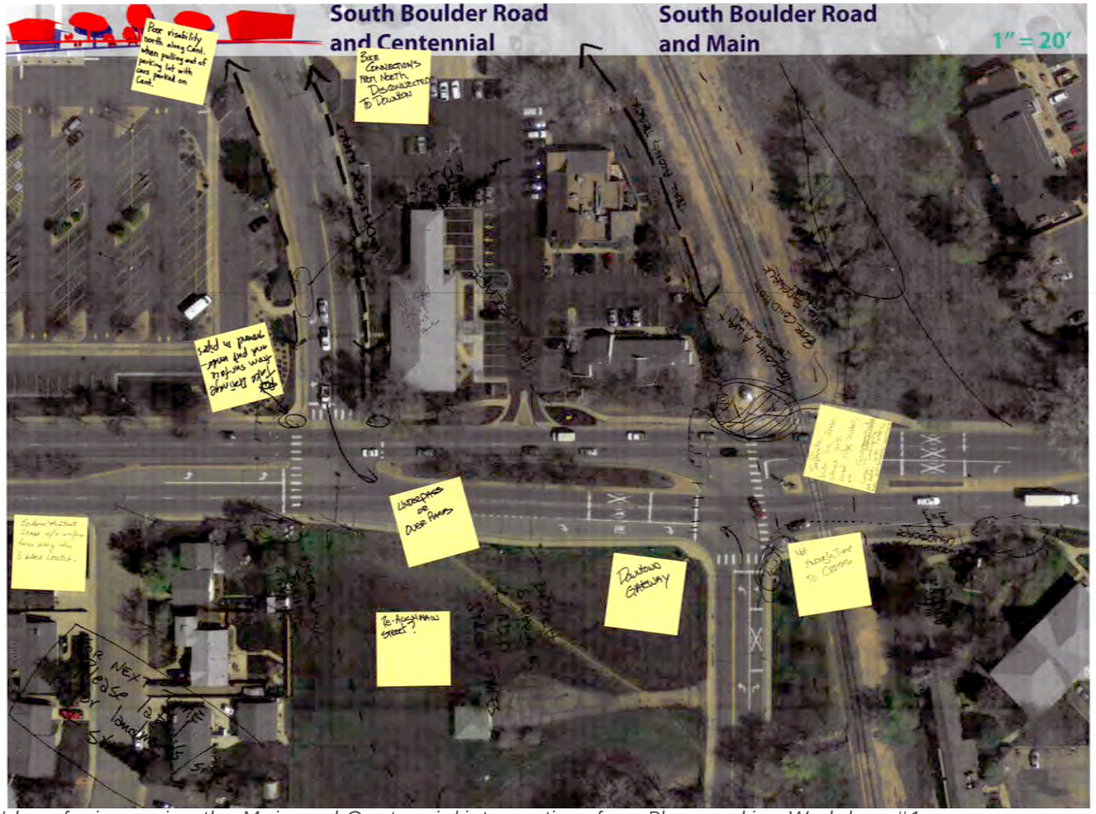
The current built environment of the corridor was analyzed, including the existing regulations and how people currently use the corridor. A corridor character assessment was conducted, as was a buildout analysis estimating how much development the existing zoning would allow. Members of the public participated in a Walkability Audit to identify areas where pedestrian and bicycle facilities could be improved.

A Placemaking Workshop was held where participants could brainstorm ideas for solving the problems identified in the Walkability Audit.

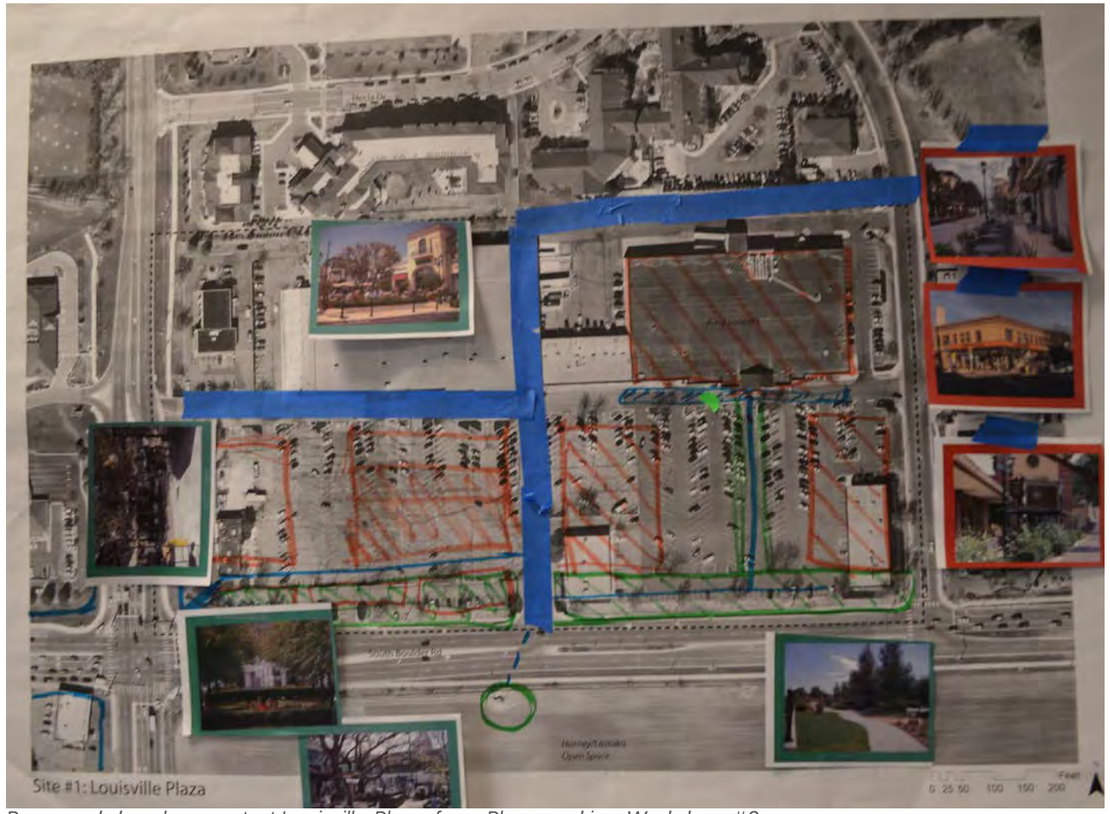
Community members participating in the South Boulder Road Walkability Audit



Areas particpants like (green dots), dislike (red), and want to see change (blue) from the Kick-off Meeting



Ideas for improving the Main and Centennial intersections from Placemaking Workshop #1



Proposed development at Louisville Plaza from Placemaking Workshop #2

Attendees reviewed the major intersections in the corridor and the corridor as a whole, identifying opportunities where connections could be enhanced. The City also conducted a mail and internet survey of 1,200 randomly selected homes throughout the community to received input on the desired land uses and physical character for the corridor.

Step 3 – Development of Alternatives

Three alternative development scenarios were created based on the community's desires for the corridor. A second Placemaking Workshop was held in February, 2015, where participants were asked how they would like to see example sites develop or redevelop in the future. Attendees identified desired land uses and selected sample photos showing the types of buildings and park spaces they would prefer to see on the sites.

The results of this meeting and all the previous public input and analysis were used to develop outlines for three varying development alternatives. Each alternative indicated future allowed land uses and development intensities throughout the corridor. Planning Commission and City Council reviewed and refined the alternatives before endorsing them.

Step 4 – Review of Alternatives

The alternatives were analyzed and the results presented to the public for review. For each alternative, a maximum potential buildout, including employee and population projections, was calculated. These data were used to generate a fiscal impact analysis. Potential transportation improvements were also identified, and the buildout data were used to run traffic analyses.

Drawings showing possible building size, location, and character were created for various sites in the corridor. This information was presented to the public at a third Placemaking Workshop in November, 2015, where attendees were asked to identify the character elements, transportation improvements, and buildout scenarios they preferred.

Step 5 – Creation of Preferred Alternative

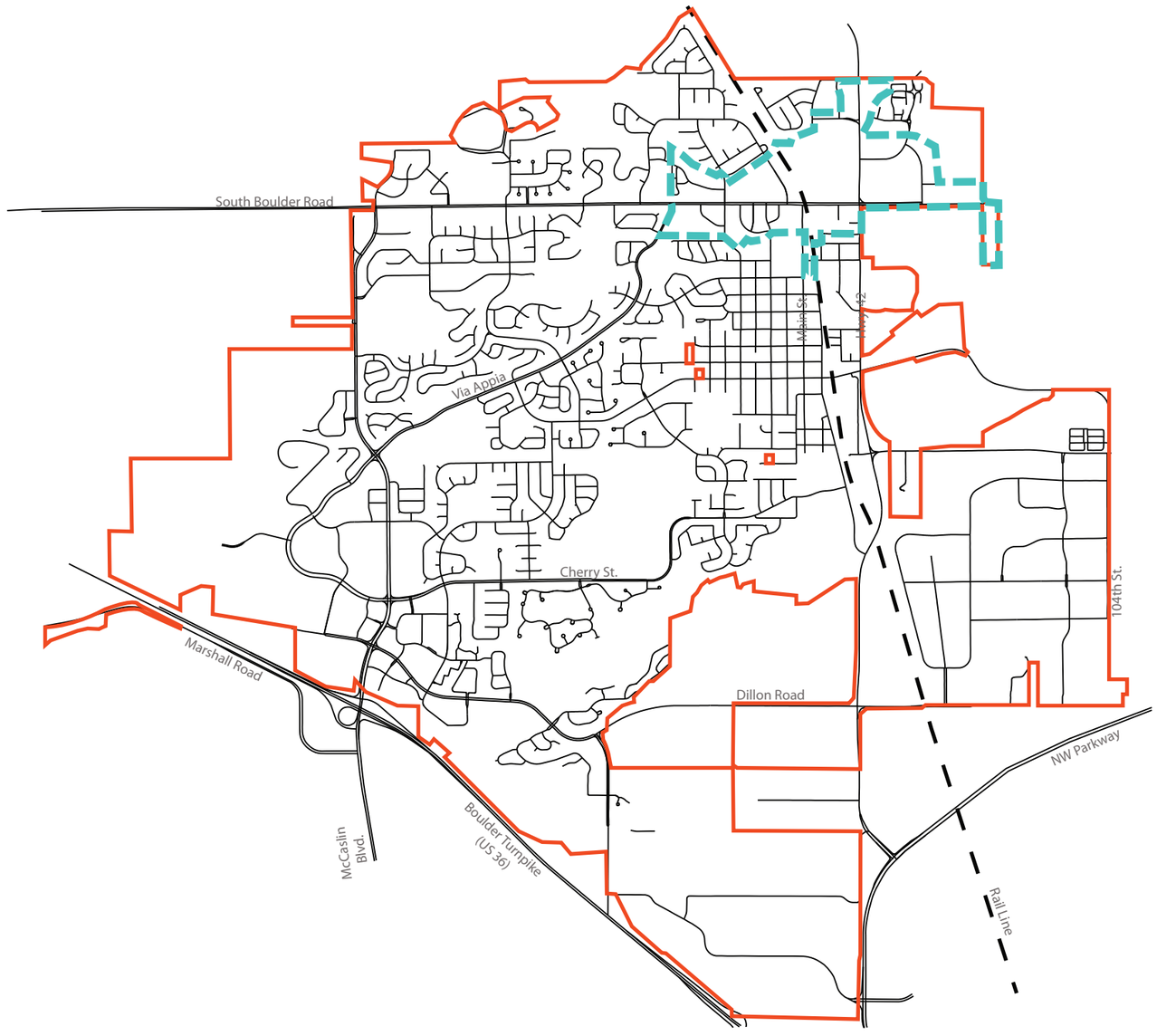
All the input gathered in the previous steps was used to develop a preferred alternative to

serve as the basis for the plan. Input from the third public workshop was utilized to determine favored elements of each alternative to be incorporated into the preferred alternative. Details of the preferred alternative, whcih serves as the basis for this plan, were then developed for analysis.

Staff estimated the maximum amount of development the preferred alternative could generate and analyzed the expected transportation and fiscal impacts. The preferred alternative was also evaluated against the Measures of Success defined in Step 1. The preferred alternative was documented in the draft plan presented to Planning Commission and City Council at public hearings. The South Boulder Road small area plan was adopted by City Council on XX, 2016.

Community comments on the draft roadway improvements plan from Placemaking Workshop #3

City-wide Context



Study Area

The study area for the South Boulder Road small area plan is in the northeast portion of Louisville, stretching along South Boulder Road from Via Appia to the west to the City limit with Lafayette to the east. The study area includes areas on both sides of South Boulder Road, and extends north along Highway 42/96th Street to the City limit at Paschal Drive.

History

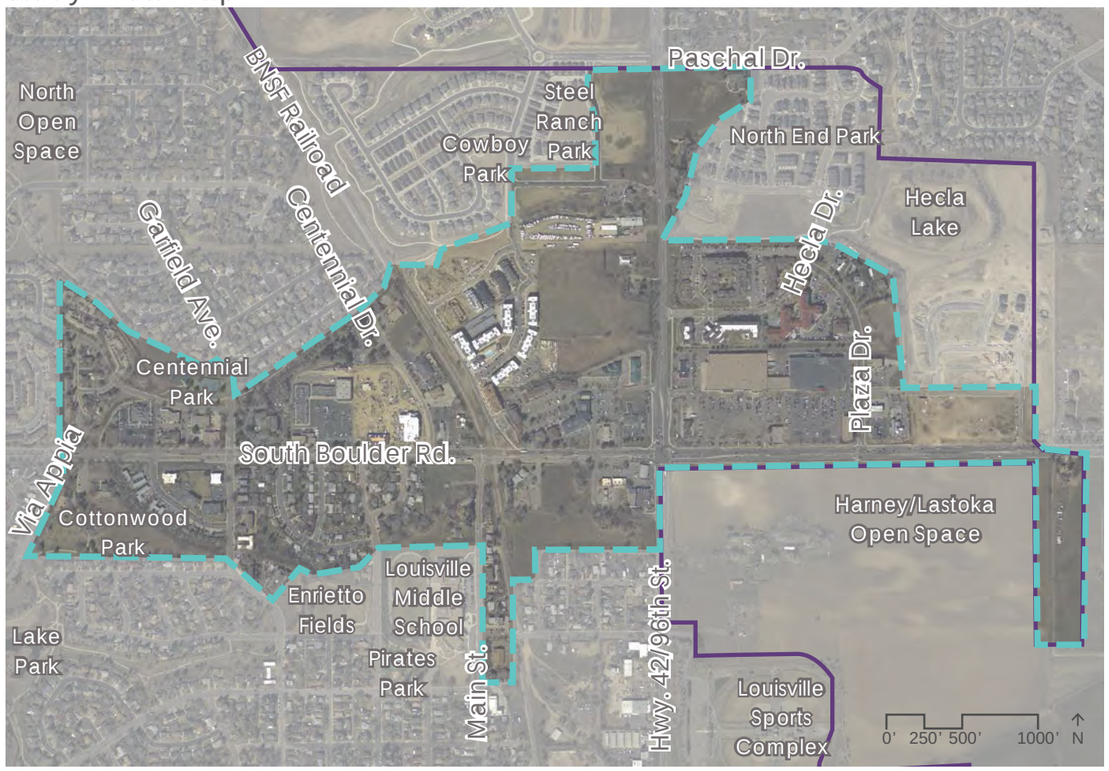
With a modest beginning as a narrow dirt road connecting small mining towns and farms, South Boulder Road follows the township and range system laid out in the early 1860s across Boulder County. South Boulder Road is just outside of the area which Louis Nawatny platted in 1878 for the small mining town of Louisville. The Hecla Mine, north of South Boulder Road, was the setting of the Louisville area's struggle for labor rights during the Long Strike from 1910-1914. Both Louisville and the South Boulder Road area experienced minimal change until after World War II and the closing of the last Louisville area mine in 1955.

In 1962 Louisville reached a population of 2,500. Increasing ease of commute to new employment opportunities led to the first significant population increases in Louisville since the 1910s. The Scenic Heights neighborhood, the first residential subdivision along South Boulder Road, developed in the 1960s to meet the need for more housing. Residential development along the corridor continued to diversify throughout latter part of 20th century, including apartment complexes, affordable housing, a mobile home park and senior living. This residential growth continues today in the northern part of the Louisville.

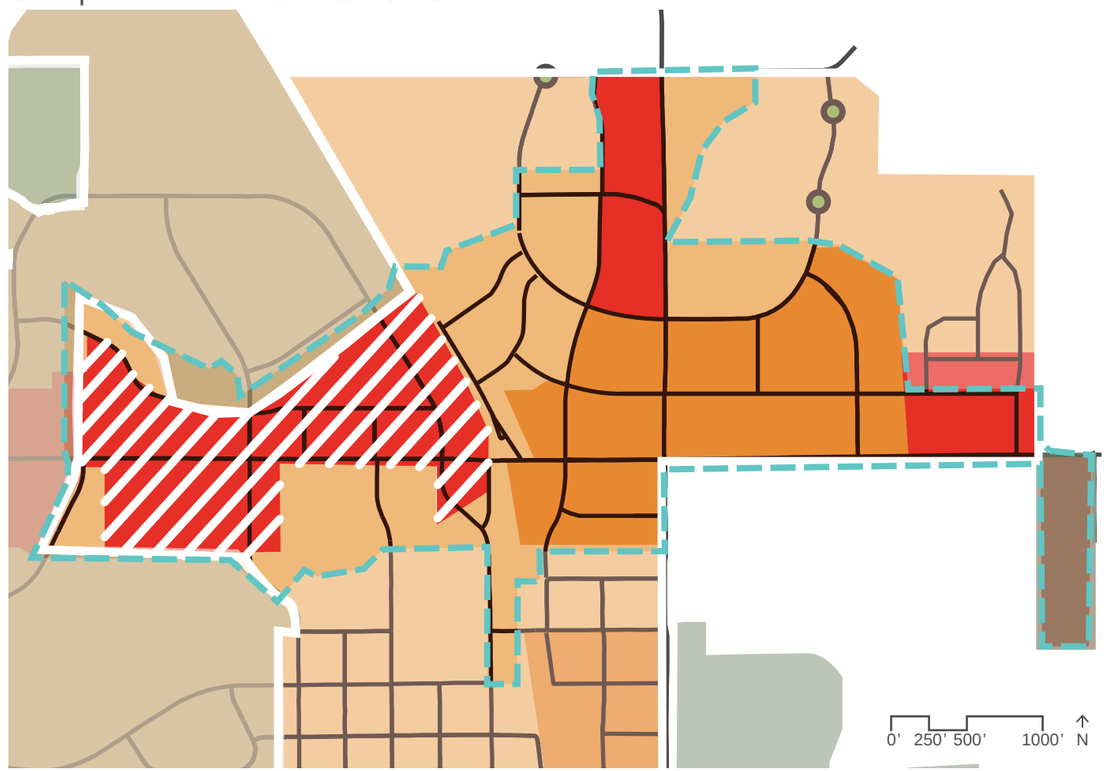
The commercial development along South Boulder Road began with the Wagon Wheel Inn, the building known today as Union Jack's Liquor Store, at the intersection with

CONTEXT

Study Area Map



Comprehensive Plan Framework



Highway 42. From the 1940s until the 1970s, this prominent restaurant brought people throughout the area to Louisville. The Village Square Shopping Center, constructed in the late 1970s, offered shopping to new residents on the north side of the Louisville. Large-scale commercial development continued with Louisville Plaza and Christopher Plaza.

Emphasis on commercial growth along McCaslin Boulevard and South Boulder Road was representative of Louisville's growing economy and contributed to the preservation of historic buildings within the commercial core of Old Town. Both residential and commercial development throughout the area has thrived as Louisville achieved national recognition for being one of the best places to live.

2013 Comprehensive Plan update

The 2013 Comprehensive Plan update divided the City into three character zones and five development types. Most of the South Boulder Road area is in the Urban character zone, except for the western portion of South Boulder Road, which was left undetermined between Urban and Suburban. The final designation was to be decided by this small area plan process. The Urban character zone calls for smaller blocks, more connected streets, and a more pedestrian friendly environment, while the Suburban character zone calls for more auto-oriented development on larger blocks with larger streets.

The area around the intersection of South Boulder Road and Hwy 42/96th Street was designated a Center development type, with the Corridor development type to the east, west, and north, and the Neighborhood type further off the major roads. Centers are intended for a mix of uses and more activity, while Corridors are for more specialized uses along major roads, and Neighborhoods are for residential development.

Character Photos

Figure Ground

Existing Conditions

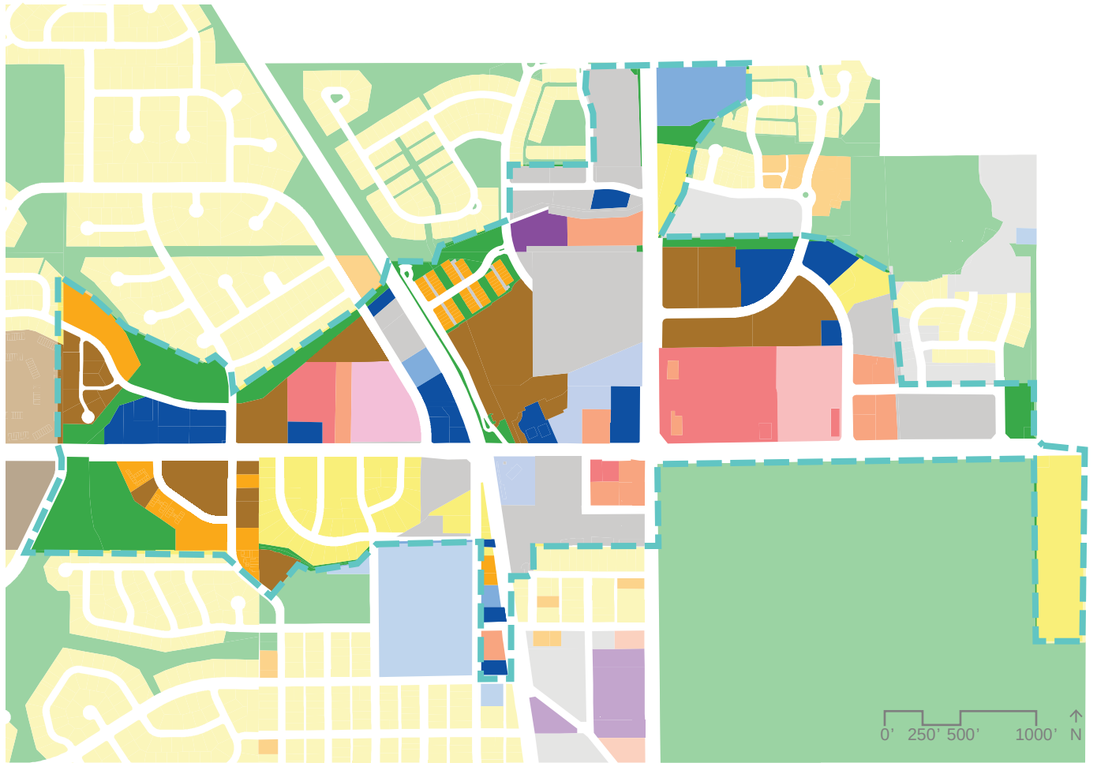
Character

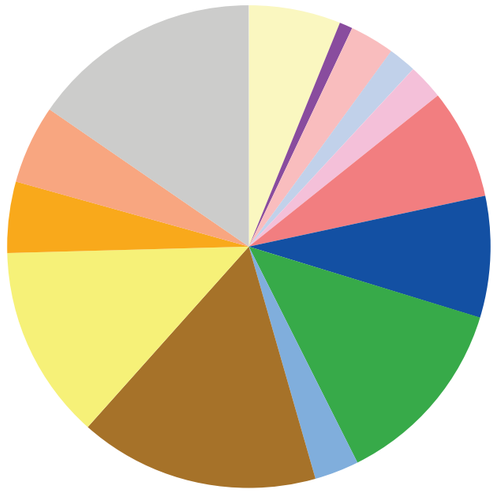
South Boulder Road provides a good cross section of development in Louisville since it was primarily developed in the late 1970’s and early 1980’s. The corridor contains a mix of land uses: single family residential, multi-family residential, office, neighborhood commercial and big box retail. Building setbacks range from 20 feet to 120 feet from the street with a “sea of parking” located between the building and the road. Because of these large setbacks most businesses have large monument signs, lending to the auto-centric focus of the corridor.

Architecture in this corridor ranges from 1960’s ranch (residential), to 1980’s stucco and masonry (commercial), to 1990’s brick and glass block. Commercial building forms are relatively square with flat roofs and parapets used to hide rooftop mechanical units. The buildings are articulated with large aluminum frame windows, post and lintel awnings with metal roof coverings used to engage the public realm. New commercial development in the corridor is governed by the Commercial Development Design Standards and Guidelines, adopted by the City in 1997.

Pedestrian movement in the corridor is on attached and detached sidewalks that vary from 4 to 6 feet in width. Tree lawns are placed sporadically through the corridor and bicycle movement is in the right-of-way with designated bike lanes.

Land Use





Land Use

Agricultural	6.15%
Entertainment	0%
Hotel	0%
Industrial	0.88%
Large Format Retail	2.98%
Mixed Use Commercial	1.87%
Mixed Use Residential	2.37%
Mobile Home	0%
Multi-Tenant Retail	7.37%
Office	8.14%
Open Space/ Park	12.84%
Public Service/ Institutional	2.98%
Residential High Density	16.01%
Residential Low Density	12.98%
Residential Medium Density	4.77%
Single Tenant Retail	5.27%
Stand Alone Restaurant	0%
Vacant	15.39%

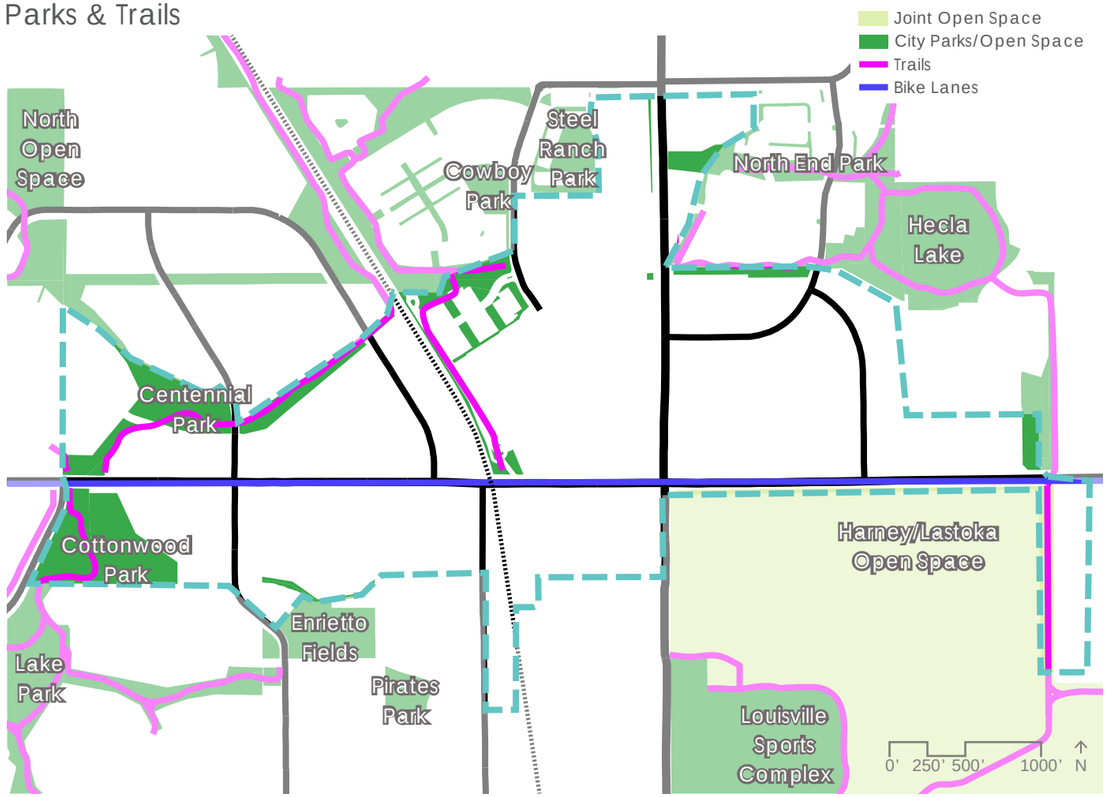
Development

There is a broad mix of uses in the South Boulder Road study area, including a variety of commercial and residential types of use. Taking all types together, commercial and residential uses each make up about 30 percent of the land in the corridor. Most of the land immediately outside the study area is residential development, providing support for the businesses in the corridor. Much of the vacant land in the corridor has development planned or under construction at the time of the small area plan's adoption.

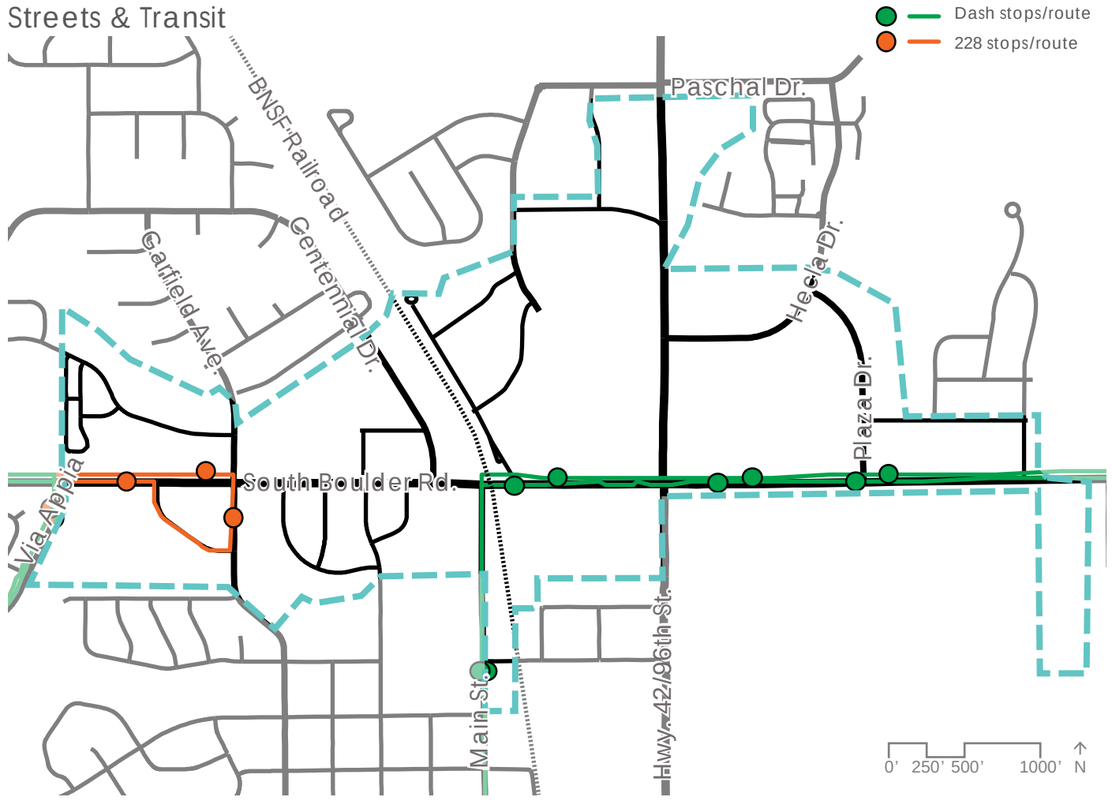
City Utilities

The City provides water, sanitary sewer, and storm sewer in the study area. According to the Public Works Department, the utility infrastructure has the capacity to serve future growth in the area. The sanitary sewer along South Boulder Road and several storm sewer pipes crossing under South Boulder Road are in need of rehabilitation or replacement.

Parks & Trails



Streets & Transit



Parks and Open Space

The study area is fairly well served by parks and open space around the periphery of the corridor, but lacks significant public green space in the core of the area. The nearby amenities range from protected agriculture and open fields to playgrounds and sports facilities, but there is not a central civic gathering space. The recent acquisition of additional land adjacent to Cottonwood Park provides an opportunity to further enhance the park offerings in the corridor.

Pedestrian and Bike Facilities

There are several trails leading into the study area, but few of them connect through the area. The planned underpasses at the BNSF railroad and Hwy 42/96th Street north of South Boulder Road will improve connectivity, but crossing South Boulder Road itself remains difficult. The bike lanes along South Boulder Road have made bike travel easier, but many of the sidewalks in the area are narrow and close to the street, creating an unpleasant walking environment. Connections from sidewalks and trails to destinations in the corridor are often inadequate.

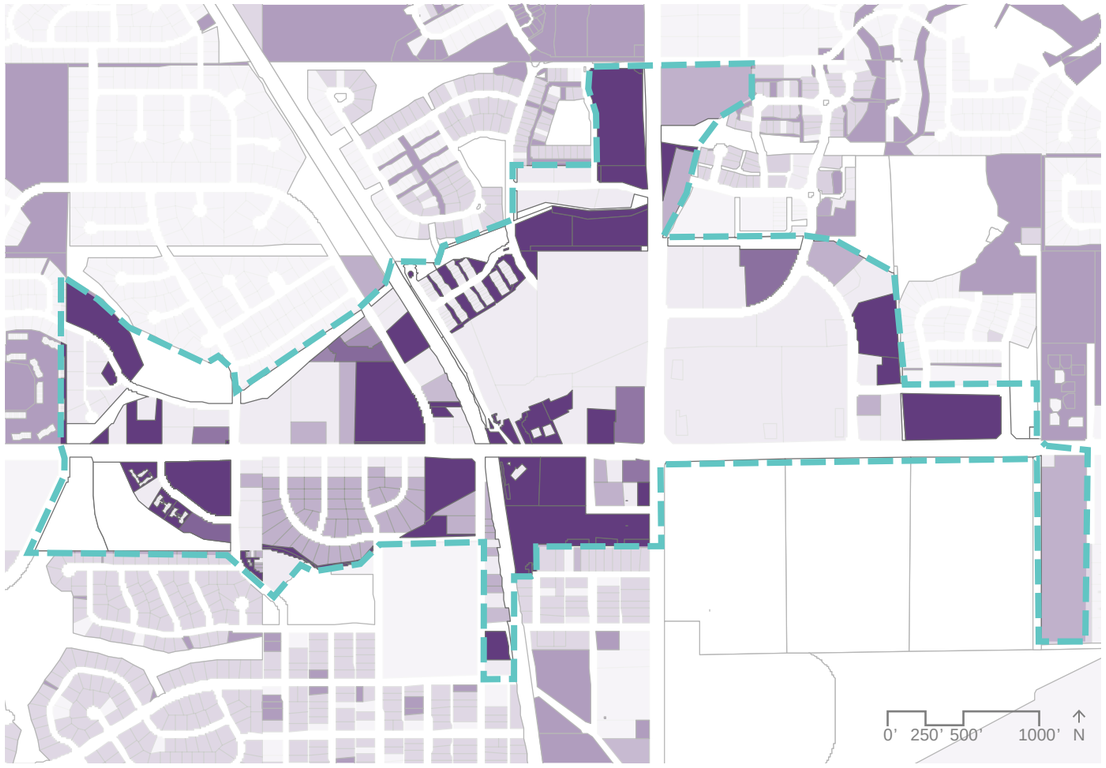
Streets

South Boulder Road and Hwy 42/96th Street are the major roads in the study area, each carrying on average 20,000 to 25,000 cars per day. The street network in the area is not fully connected, but the planned extensions of Hecla Drive, Kaylix Drive, and Front Street (see page 22) will improve connectivity. The Highway 42 Gateway plan, adopted in 2013, includes several modifications to the street to improve operations and safety, which will be completed as funding allows.

Transit

The study area is served by two RTD bus routes: the 228 and the Dash. The 228 serves the west end of the study area, connecting to McCaslin Blvd, Flatirons Crossing mall, and the Broomfield Park'n'Ride, with 30 minute intervals during peak hours, and 60 minute intervals off-peak. The Dash serves the length of the corridor along South Boulder Road, connecting to Downtown Louisville, Lafayette, and Boulder, with 15 minute intervals during peak hours and 30 minute intervals off-peak.

Redevelopment Pressure



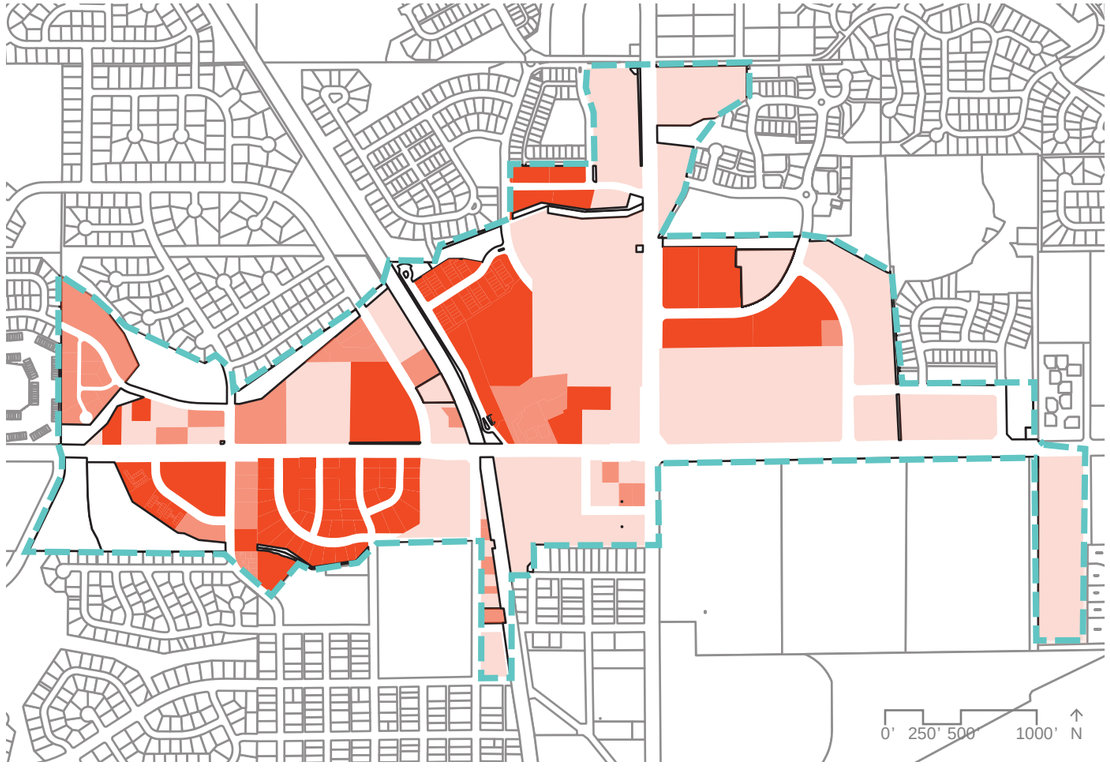
Property Values

The ratio of a property's structure value to total value is one indicator of how likely the property is to redevelop. While many other factors will be considered before a property owner redevelops a property, a low ratio of structure value to property value indicates the property is not being used to its fullest potential. By this measure, there are many stable properties at the core of the study area, but several properties elsewhere in the corridor are potential candidates for redevelopment.

Ratio of structure value to total property value

- More than 0.5 (Little to no pressure)
- 0.4 to 0.5 (Some pressure)
- 0.3 to 0.4 (Moderate pressure)
- Less than 0.3 (Significant pressure)

Development Potential



Existing Zoning

The zoning for a property sets limits for how much can be built on a property based on the allowed building height and lot coverage. The ratio of existing square footage to allowed maximum square footage is another indicator of which properties may redevelop, where additional development is more likely on properties with a low ratio. Several commercial properties in the center of the study area could see additional development under the existing zoning, while many of the residential properties are near their maximum allowed buildout.

Ratio of existing development to maximum potential buildout

- Less than 0.5
- 0.5 to 0.9
- More than 0.9

Remaining potential development in the corridor:

Residential: 645 units
Office: 1,254,406 square feet
Retail: 145,382 square feet

SWOT Analysis

	Positive	Negative
Internal	**Strengths** • Parks and open space near corridor • Physcial form of the corridor (parcel sizes and rights-of-way) • Proximity to existing neighborhooods	**Weaknesses** • Pedestrian and bike connections are lacking, uninviting, and perceived as unsafe • Conformity to community values • Aesthetic appearance of corridor • Connections to adjacent neighborhoods
External	**Opportunities** • Corridor as transportation link • Shops, businesses, and services on corridor • Valuable mix of uses on corridor	**Threats** • Impact of the market and regional competition on existing and desired land uses • Traffic • Train noise and impacts • Lack of community consensus on purpose of corridor • Upkeep of existing buildings

SWOT Analysis

A strengths, weaknesses, opportunities, and threats (SWOT) analysis categorizes characteristics of the study area based on their value and the amount of control the City has over them. Strengths and weaknesses are positives and negatives of the area that are under the direct control of the City. Opportunities and threats are positives and negatives that may be influenced by the City, but are outside the City's direct control.

The above SWOT analysis was compiled based on comments from the public collected at stakeholder interviews, public meetings, and through EnvisionLouisvilleCO.com. The analysis was endorsed by Planning Commission and City Council during the goal setting phase of the project to help identify project principles and measures of success and guide the creation of the plan.

Survey Preferences

Community Survey

The City mailed out a community survey in November, 2014, the results of which were returned in February, 2015. The survey was mailed to 1,200 randomly selected residents, of whom 380 returned the completed survey. The survey included questions about how respondents currently use the corridor and how they would like to use it in the future, as well as which land uses they felt were lacking or over-represented. The survey also included a visual preference portion, providing respondents with photos showing options for different types of buildings, parks, and rights of way, and asking them to rate how appropriate each element was for the study area.

The survey respondents indicated a preference for more senior and affordable housing, but not much residential development otherwise. Respondents also wanted more restaurants and community shops, public gathering spaces, and shared work spaces in mixed-use environments. Pedestrian-friendly buildings of one to three stories were the most desired in the visual preference questions. The most preferred photos are shown above.

Project Principles and Measures of Success

The overall goal of the South Boulder Road small area plan project, based on direction from the Comprehensive Plan and City Council, is to create a land use and infrastructure plan that conforms to Louisville's character and is supported by the community. To that end, the plan must support the core community values identified in the Comprehensive Plan. Based on community input, the four values in which the South Boulder Road area is deficient and most needs improvement are as follows:

- Integrated open space and trail networks
- Our livable small town feel
- A sense of community
- A balanced transportation system

To address these deficiencies the following six project principles were adopted, with associated measures of success for each. The principles and measures of success were endorsed by Planning Commission and City Council early in the planning process and served as guides for the development and evaluation of the alternative scenarios. The preferred alternative adopted as the basis for this plan best satisfied these principles and measures of success.

Principle 1 - Provide for safer and more convenient connections across South Boulder Road and Highway 42 for bikes and pedestrians.

a) Provide safe and convenient facilities that serve a broad range of users with multiple modes of travel
   i) Are all modes of travel accommodated?
   ii) Are users of all ages and ability levels accommodated?
   iii) Do the improvements proposed provide safer conditions for all users and ability levels?
   iv) Are existing deficiencies addressed?
b) Design solutions that the City can realistically maintain over time
c) Promote regional trail connectivity within the study area

Principle 2 - Utilize policy and design to encourage desired uses to locate in the corridor.

a) Do allowed uses serve community needs as defined in the survey and elsewhere?
b) Are allowed uses supported by the market?
   i) To what extent are incentives needed to induce identified uses to locate in the study area?
c) Does the land use mix demonstrate positive fiscal benefits?
d) Is the process for approving desired uses and desired character simpler and more predictable?

Principle 3 - Establish design regulations to ensure development closely reflects the community's vision for the corridor while accommodating creativity in design.

a) Physical form should incorporate desires expressed in community survey and elsewhere
b) Allow flexibility to respond to changes in market requirements, design trends, and creativity in design

Principle 4 - Mitigate impacts of trains and improve safety of railroad crossings.

a) Address train noise
b) Address traffic impacts from train

Principle 5 - Balance the regional traffic needs of South Boulder Road and Highway 42 with the community's desire for safety and accessibility.

a) Accommodate future regional transportation plans and maintain the area as a regional corridor
   i) How does the corridor alternative adequately address future transportation needs?
   ii) How does the corridor alternative accommodate adopted regional transit plans?
b) Make sure traffic passing through the corridor does not make it an undesirable place to live, work, play, and travel
   i) Does traffic noise decrease?
   ii) Do pedestrians and bicyclists feel safe?
   iii) How long will a trip take on the corridor?
c) Provide safe and efficient access and visibility in strategic locations for proposed land uses

Principle 6 - Provide for community gathering spaces and public infrastructure to encourage visitors to spend time in the corridor.

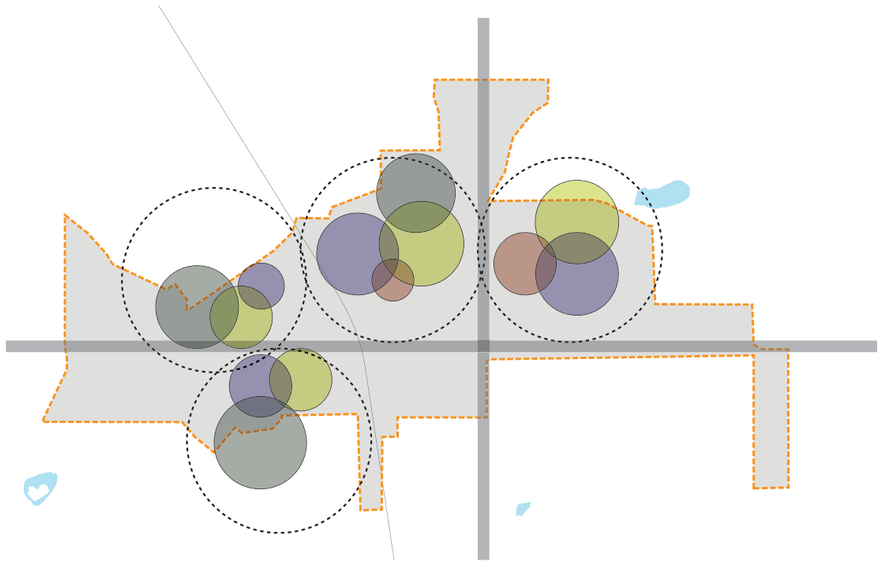
a) Provide for community amenities identified in survey and elsewhere
b) Provide programming to activate public spaces

Community Design Principles and Placemaking Concepts

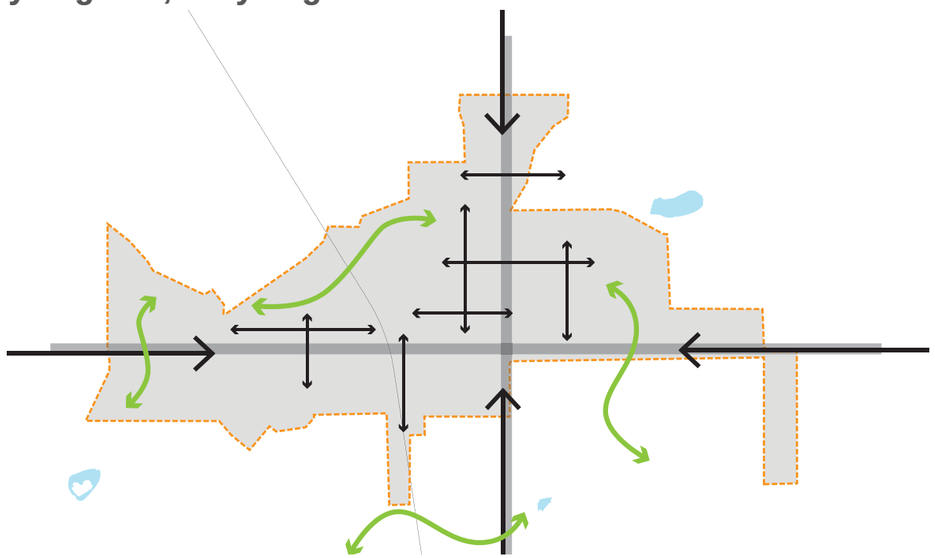
The Project Principles and Measures of Success, along with additional public input and analysis, led to the development of the community design principles and placemaking concepts described on the following pages. While the above section directed the outcome of the plan, the following section provides general guidelines for development in the corridor. The community design principles provide general goals for public and private investment in the corridor, while the placemaking concepts call for more specific items to be included in new development. Both the principles and concepts will be incorporated into new design standards and guidelines to be developed after adoption of this plan.

Community Design Principles

Places to go and places to stay



Easy to get to, easy to get around



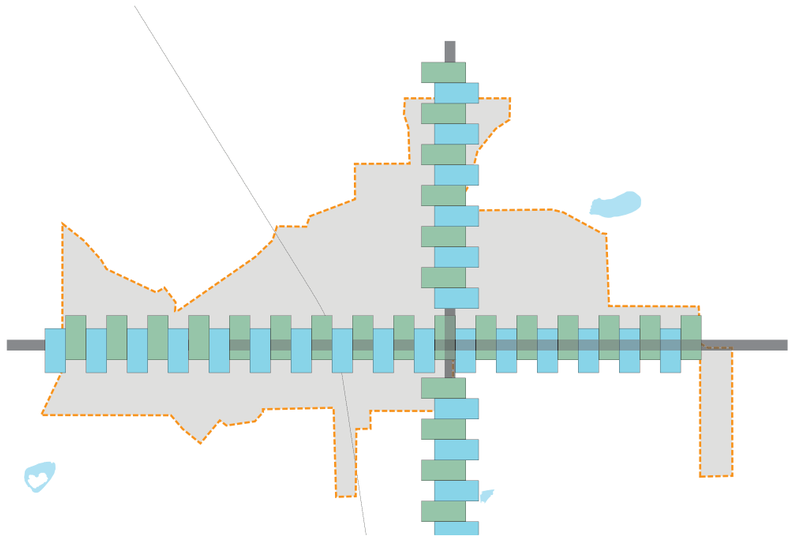
Places to go and places to stay

- Public spaces that encourage gathering and interaction
- A range of retail and entertainment uses that encourage longer visits
- Small parks and plazas that increase the appeal and experience of daily activities

Easy to get to, easy to get around

- Safe trail connections to all quadrants
- Properties connected with driveways and walks
- A street network that offers balanced choices to move around
- Opportunities to “park once and walk”

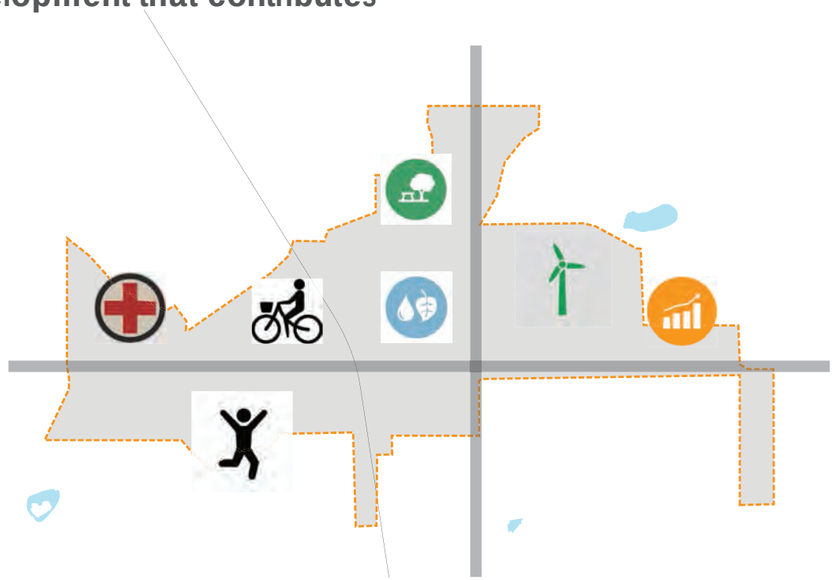
Knitting the community together



Knitting the community together

- Sidewalks and plazas facing onto South Boulder Road
- Safe intersections for people to cross South Boulder Road and Hwy 42/96th Street
- Traffic flow and speed that is not detrimental to businesses or people along the corridor
- A continuous and connected high quality pedestrian experience

Development that contributes



Development that contributes

- Uses that provide services for the community and are fiscally positive
- Building designs that add to the character of the corridor
- Greenspaces, trails, and semi-public gathering spaces

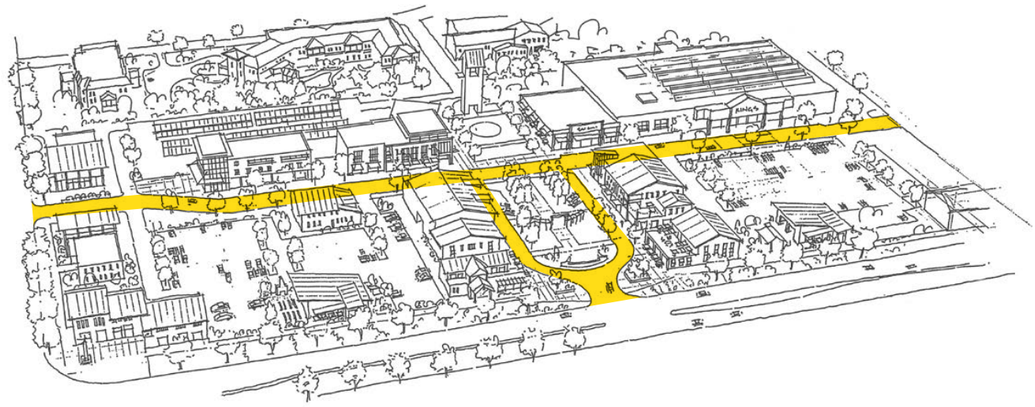
PRINCIPLES

Placemaking Concepts

Parking Rooms

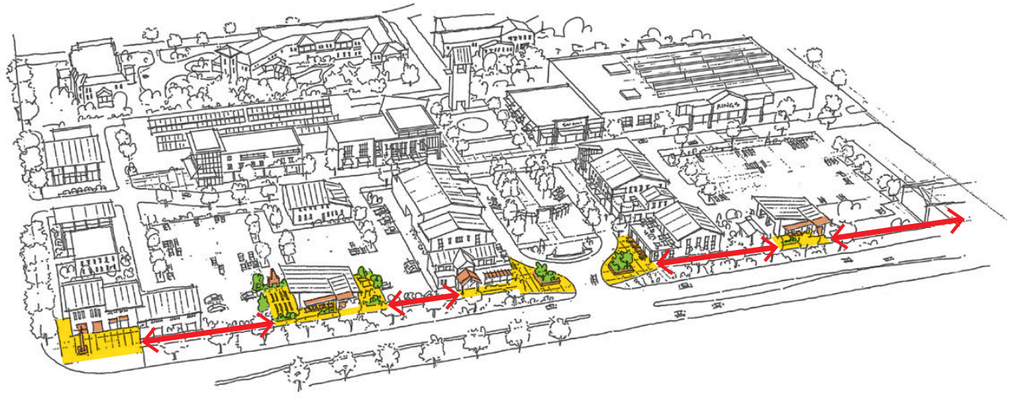
Parking rooms – smaller, comfortable, high-performing places to park your car once and walk from place to place

Transitional Streets



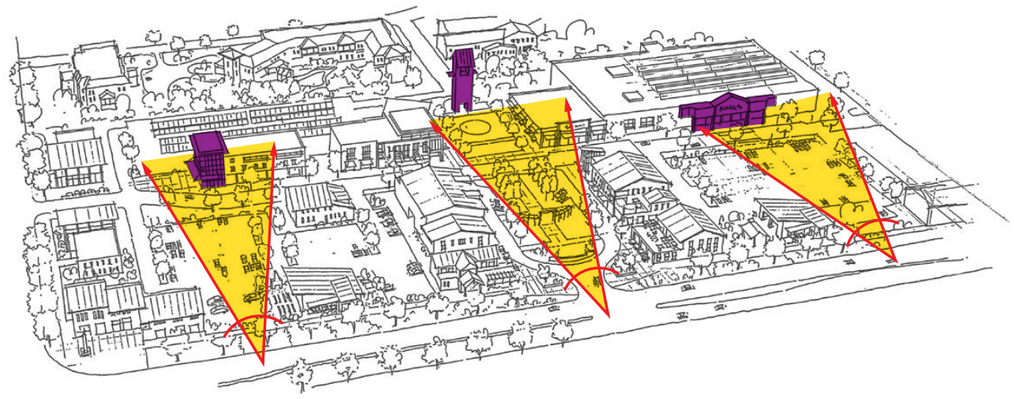
Transitional streets – streets that fill the gap between busy and quiet

Pedestrian Refuges



Pedestrian refuges – small, comfortable places along the corridor enhance the pedestrian experience

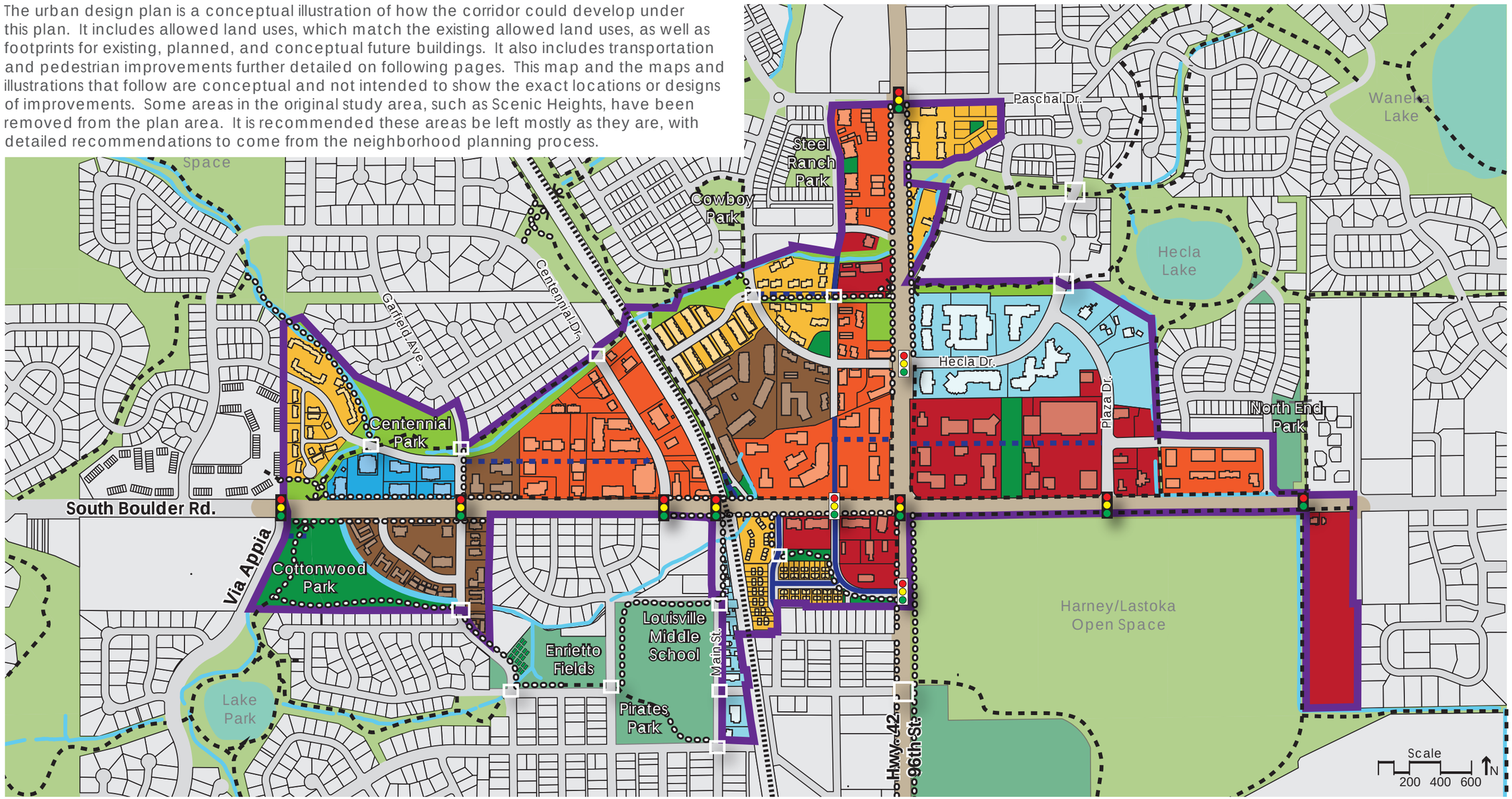
Views into the Community



Views into the community – perpendicular streets and spaces that showcase the community

Louisville Plaza Concept Illustrative

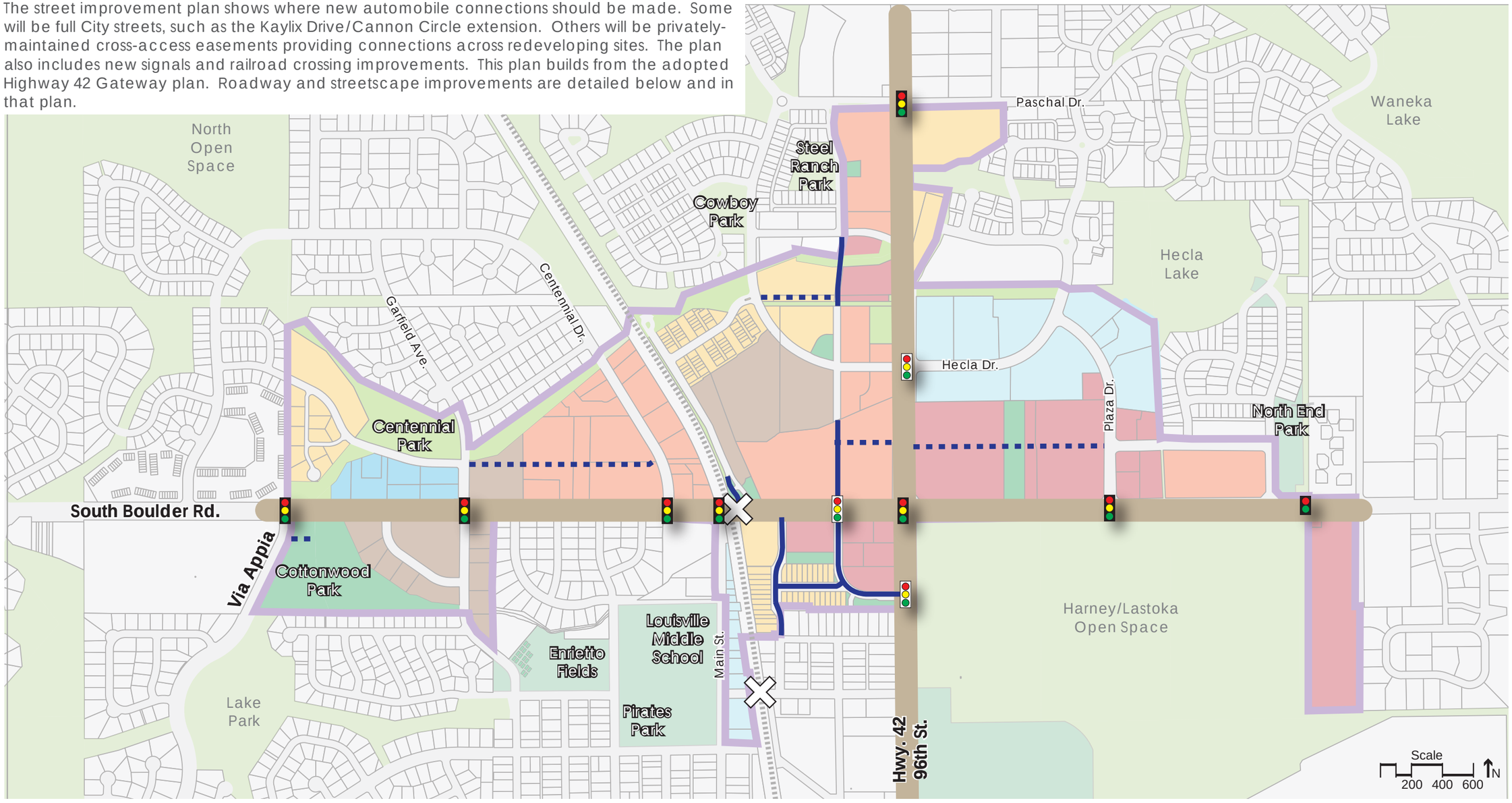
The urban design plan is a conceptual illustration of how the corridor could develop under this plan. It includes allowed land uses, which match the existing allowed land uses, as well as footprints for existing, planned, and conceptual future buildings. It also includes transportation and pedestrian improvements further detailed on following pages. This map and the maps and illustrations that follow are conceptual and not intended to show the exact locations or designs of improvements. Some areas in the original study area, such as Scenic Heights, have been removed from the plan area. It is recommended these areas be left mostly as they are, with detailed recommendations to come from the neighborhood planning process.



Urban Design Plan

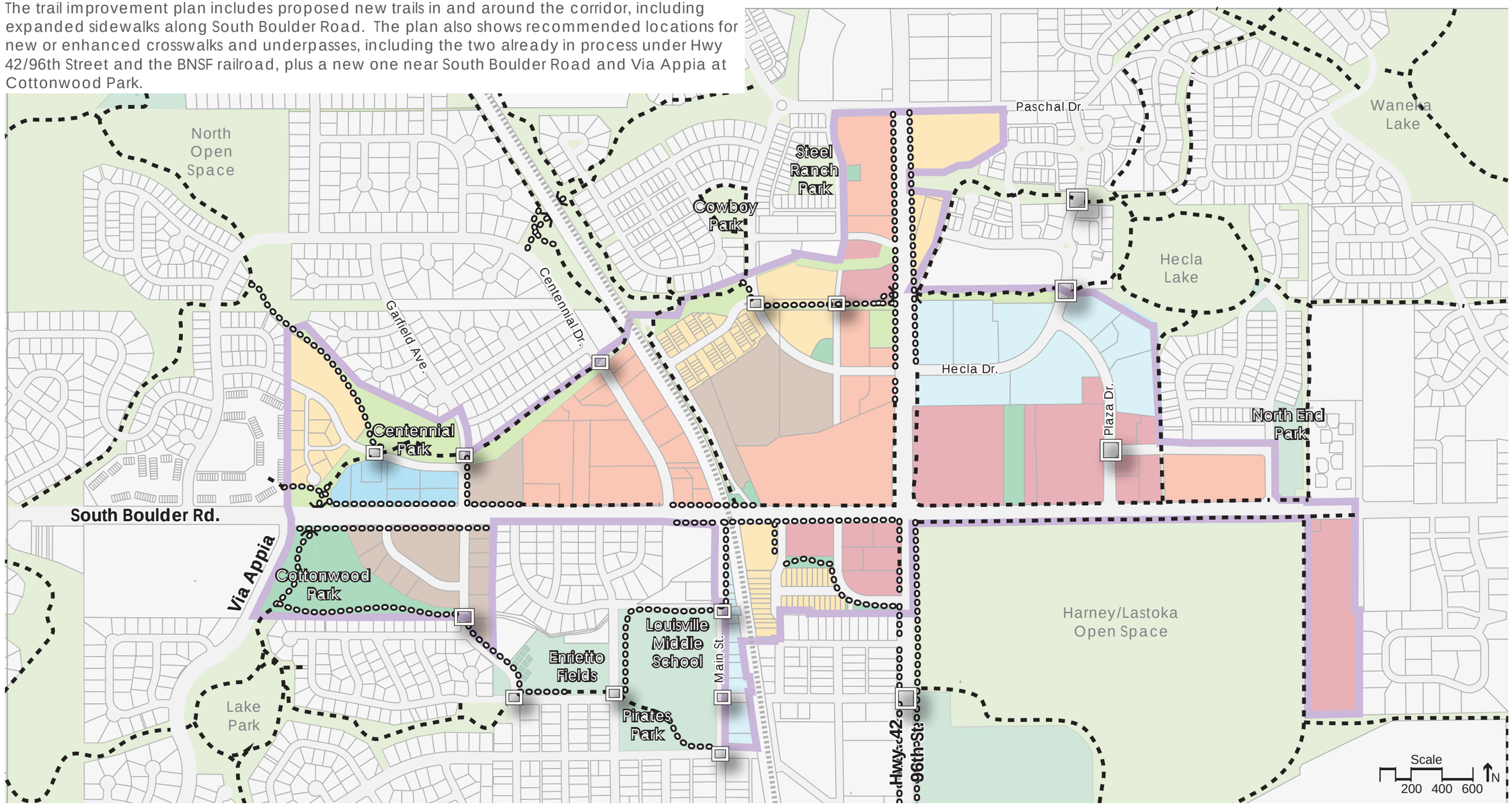
THE PLAN

The street improvement plan shows where new automobile connections should be made. Some will be full City streets, such as the Kaylix Drive/Cannon Circle extension. Others will be privately-maintained cross-access easements providing connections across redeveloping sites. The plan also includes new signals and railroad crossing improvements. This plan builds from the adopted Highway 42 Gateway plan. Roadway and streetscape improvements are detailed below and in that plan.



Street Improvement Plan

The trail improvement plan includes proposed new trails in and around the corridor, including expanded sidewalks along South Boulder Road. The plan also shows recommended locations for new or enhanced crosswalks and underpasses, including the two already in process under Hwy 42/96th Street and the BNSF railroad, plus a new one near South Boulder Road and Via Appia at Cottonwood Park.



Trails Improvement Plan


Construct Hwy 42 Underpass
Heela Open Space
Remove right turn lane at Garfield and replace with expaned sidewalk and landscaping
Centennial Park
Pedestrian improvements at Via Appia if an underpass in not constructed
Regal Street
Luke Street
Steel Ranch Blvd
Construct an off-set left turn at Main Street and allow Steel Street to function as a two-way Street
Heela Way
Add crosswalk to Plaza Drive at Hecla Way
Adjust median to allow for a southbound left from Blue Star
South Boulder Road
Extend curbing and remove acceleration and deceleration lanes
Via Appia
Cottonwood Park
Cottonwood Drive
Garfield Avenue
Sunset Drive
Circle Drive
Main Street
Front Street
Carnal Circle
Alternatives for the eastbound right turn lane at Main Street
Louisville Middle School
Create a southern trail parallel to South Boulder
Lawrence Enrietto Park
Harney Lastoka Open Space
Harper Street
HWY 42
Griffith Street
Tighten Main Street's turn radii
Consider a pedestrian underpass at Via Appia
Lake Park

Roadway Improvements

The roadway improvements map provides an illustration of the transportation and trail improvements. More specifically, this plan calls for modifications to South Boulder Road described by intersection in the table to the right. These improvements will in some places help traffic function more efficiently or provide additional vehicular access, and in others will increase pedestrian safety and accessibility without significant detrimental impacts on traffic operations.

Highway 42/96th Street should be modified in accordance with the adopted Highway 42 Gateway plan. In addition, as properties develop and redevelop, pedestrian connections from streets and sidewalks to destinations inside developments must be provided.

Transit

As the corridor develops, two transit improvements are desired. First is the 96th Street bus route described in the Highway 42 Gateway plan. Second is the extension of the 228 bus route, from its current turnaround at Cottonwood, further east toward Highway 42/96th Street. The Dash route, which already serves most of the South Boulder Road corridor, should be periodically evaluated to ensure it is providing adequate service as development occurs. The City should continue to work with RTD to implement these enhancements.

South Boulder Road Traffic Improvements by Intersection	
Via Appia	Build underpass under South Boulder Road and eliminate north-south crosswalk. Adjust signal timing to eliminate walk phase. Move Cottonwood Park entrance 150 feet east, extend westbound left-turn storage 150 feet east.
Cottonwood Drive	Close median in South Boulder Road.
Garfield Avenue	Introduce protected left-turn signal. Eliminate eastbound acceleration and deceleration lanes. Shift roadway to accomodate offset left-turn lanes.
Longs Peak Drive	Convert to 3/4 movement, eliminating lefts onto South Boulder Road.
Jefferson Avenue	Close north-south through movement. Allow left turns onto Jefferson from South Boulder Road.
Centennial Drive	Remove on-street parking on Centennial Drive to extend right-turn queue.
Main Street	Add pedestrian island at eastbound right-turn lane on South Boulder Road and improve geometrics of northbound Main Street right turn. Modify westbound South Boulder Road left-turn lane to create offset configuration and provide pedestrian refuge.
Steel Street	Allow southbound movement on Steel Street and right turn onto South Boulder Road. Extend offset left median on South Boulder Road to prevent new southbound Steel Street traffic from making a left onto Main Street.
Front Street	Convert to 3/4 movement, eliminating lefts onto South Boulder Road. Remove right-turn lane.
Cannon Circle/Kaylix Drive	Option 1 - Close westbound left-turn movement from South Boulder Road. Option 2 - Install new signal. Allow full movement except westbound left turn from South Boulder Road.
Hwy 42/96th Street	Extend eastbound and westbound left-turn lane storage on South Boulder Road.
Louisville Plaza Entrance	Reduce eastbound left-turn lane storage on South Boulder Road. Remove continuous acceleration/deceleration lane on westbound South Boulder Road.
Plaza Drive	Introduce protected left-turn signal on South Boulder Road. Remove continuous acceleration/deceleration lane on westbound South Boulder Road.
Blue Star Lane	Allow un-signalized full movement. Remove continuous acceleration/deceleration lane on westbound South Boulder Road.

Parks and Open Space

The expansion of Cottonwood Park is an opportunity to provide a significant benefit to the surrounding area. The City should use a robust public process to identify what the community would like to see in the park as it is redesigned. This plan recommends the existing driveway entrance to the park be moved east to improve operations on South Boulder Road. A new driveway from Via Appia should also be investigated. This plan also recommends improved trail connections to the east to the Enrietto Ballfields and to the north, via an underpass under South Boulder Road.

The plan also recommends a new green space and public plaza on the Louisville Plaza site. The space can be acquired either through dedication or easement if and when the shopping center redevelops. The public space should provide connections to South Boulder Road and the Balfour development to the north.

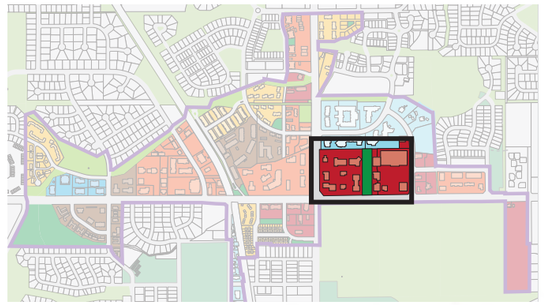
Finally, the City should evaluate the purchase of the Santilli property, at the southeast corner of the study area, for public land when the property becomes available.

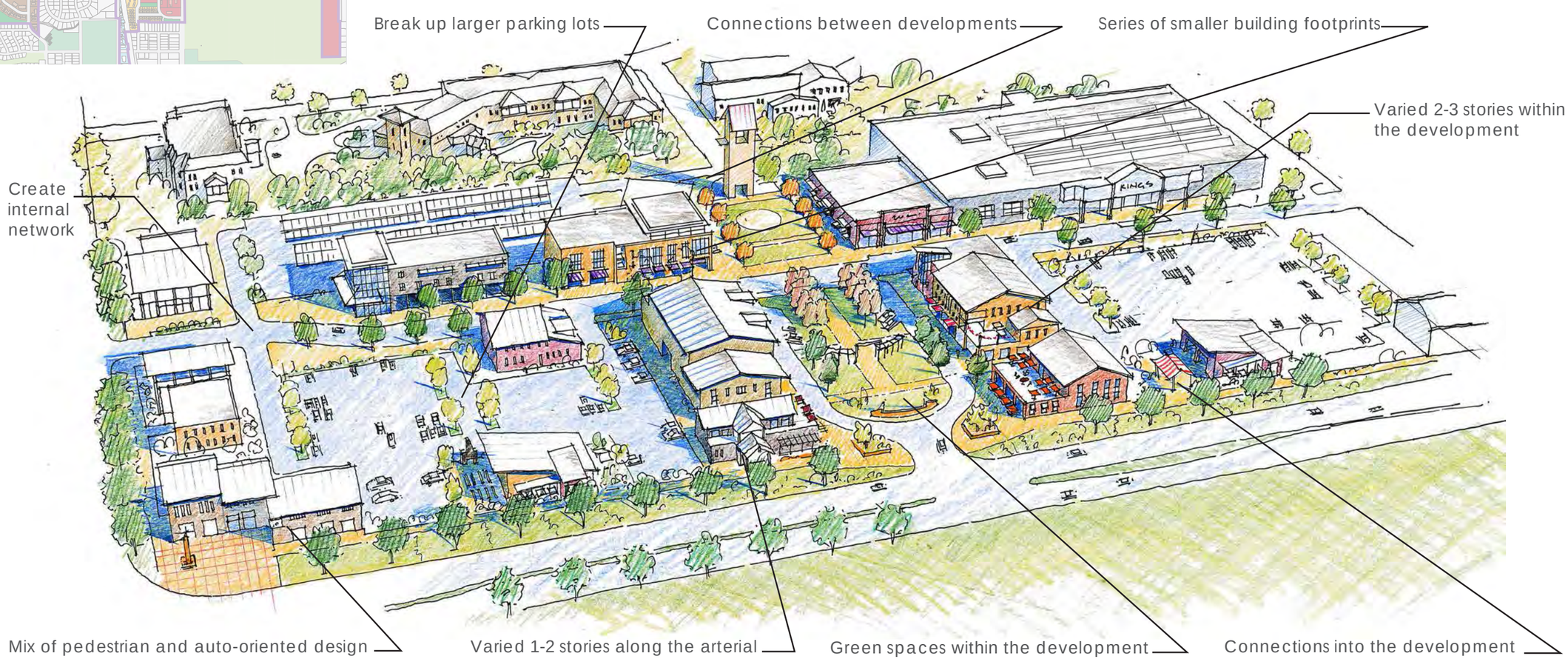
THE PLAN

Village Square Concept Illustrative

Urban Design Elements

Louisville Plaza Concept Illustrative

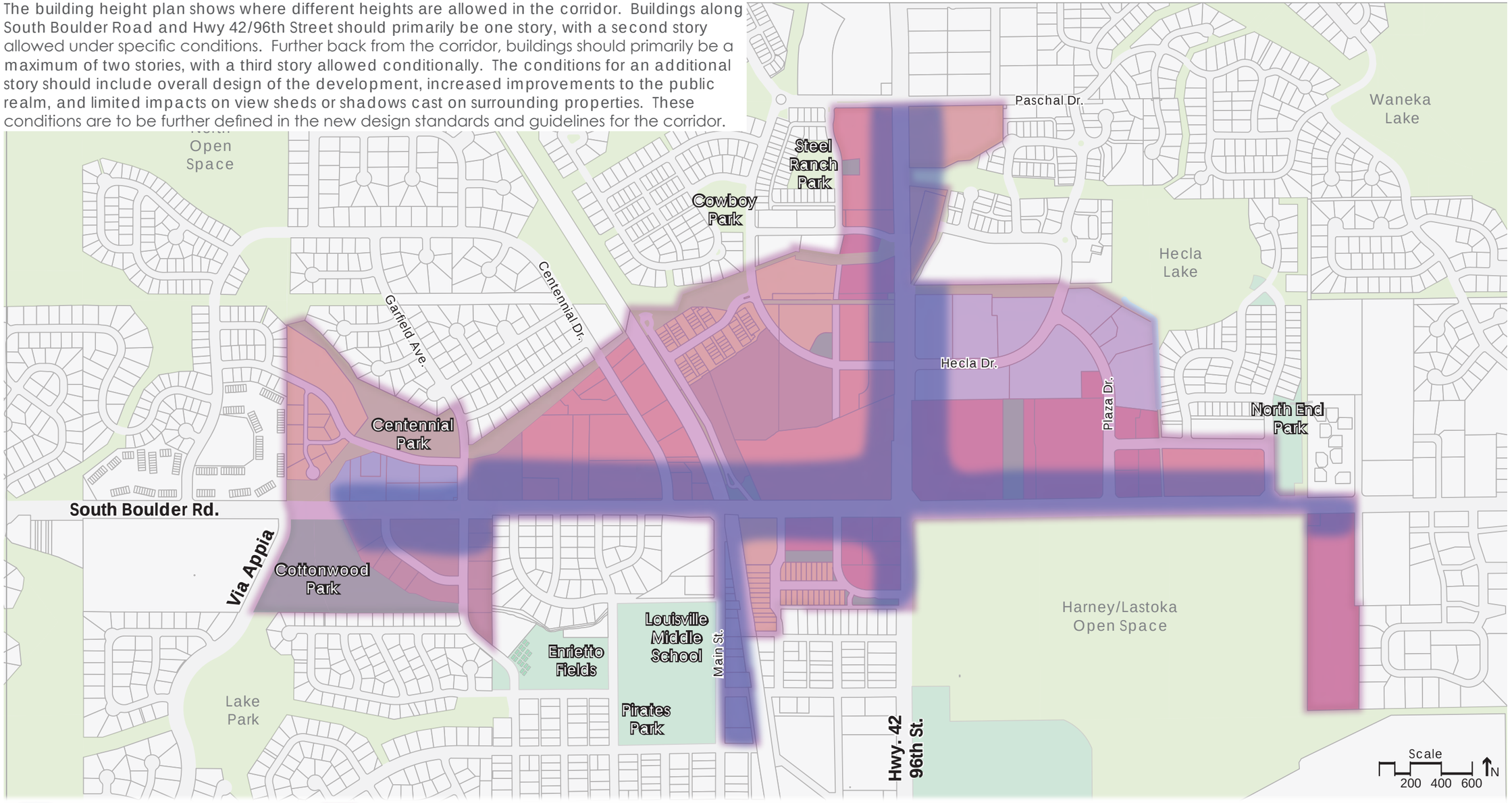




Urban Design Elements

THE PLAN

The building height plan shows where different heights are allowed in the corridor. Buildings along South Boulder Road and Hwy 42/96th Street should primarily be one story, with a second story allowed under specific conditions. Further back from the corridor, buildings should primarily be a maximum of two stories, with a third story allowed conditionally. The conditions for an additional story should include overall design of the development, increased improvements to the public realm, and limited impacts on view sheds or shadows cast on surrounding properties. These conditions are to be further defined in the new design standards and guidelines for the corridor.



Building Height Plan

Development Impact

This plan does not change allowed land uses in the corridor, but it does affect the amount of development allowed. The tables below show what development is currently in the study area and how much more development could occur under this plan at full buildout. This is a reduction from what the existing zoning allows at the time of adoption, mostly because of the decreased height allowances.

Existing Development in Study Area		
Retail	352,729	Square feet
Office	178,608	Square feet
Residential	407	Units
Employees	1,682	People
Residents	569	People

Projected 20 year Increase over Existing		
Retail	26,931	Square feet
Office	374,298	Square feet
Residential	546	Units
Employees	1,658	People
Residents	724	People

Fiscal Impact

The table below shows the projected 20 year cumulative fiscal impact based on the projected maximum buildout and the City's 2015 fiscal model. As required by the 2013 Comprehensive Plan update, the area will have a positive fiscal impact.

20 Year Cumulative Fiscal Impact	
Revenue by Fund	
General Fund	$34,171,000
Urban Revitalization District Fund	$4,461,000
Open Space & Parks Fund	$6,117,000
Lottery Fund	$0
Historic Preservation Fund	$2,166,000
Capital Pojects Fund	$20,081,000
TOTAL REVENUE	$66,966,000
Expenditures by Fund	
General Fund	$28,303,000
Urban Revitalization District Fund	$0
Open Space & Parks Fund	$923,000
Lottery Fund	$0
Historic Preservation Fund	$0
Capital Projects Fund	$25,033,000
TOTAL EXPENDITURES	$54,259,000
Net Fiscal Result by Fund	
General Fund	$5,868,000
Urban Revitalization District Fund	$4,461,000
Open Space & Parks Fund	$5,193,000
Lottery Fund	$0
Historic Preservation Fund	$2,166,000
Capital Projects Fund	($4,952,000)
NET FISCAL IMPACT	$12,736,000

Schools Impact

The South Boulder Road corridor includes portions of the attendance areas of two elementary schools, one middle school, and one high school. The table below shows the projected peak enrollment for each of the schools as provided by Boulder Valley School District. This plan does not increase the amount of residential allowed in the study area, so increases in enrollment come from previously approved or entitled residential development under the existing zoning.

BVSD Schools	Peak Projected Enrollment	Percent of Capacity Filled
Coal Creek Elementary	438	78%
Louisville Elementary	655	101%
Louisville Middle	676	98%
Monarch High	1,832	100%

Traffic Impact

The table below summarizes traffic impacts by using the amount of time it would take a car to travel the length of the South Boulder Road corridor during the morning and evening rush hours. By optimizing signal timing, current travel times can be reduced and much of the impact from buildout and regional traffic increases can be mitigated. Adding an additional signal at Kaylix Drive/Cannon Circle and South Boulder Road would allow for increased access to developments and provide a parallel north-south connection to Hwy 42/96th Street, but would also slow travel through the corridor.

South Boulder Road Corridor Average Corridor Travel Time		
	Eastbound	Westbound
Existing Network		
AM Peak	3 min 17 sec	3 min 0 sec
PM Peak	3 min 38 sec	3 min 0 sec
Existing Optimized		
AM Peak	2 min 53 sec	2 min 33 sec
PM Peak	3 min 8 sec	3 min 0 sec
Buildout		
AM Peak (w/Kaylix)	3 min 38 sec	3 min 17 sec
PM Peak (w/Kaylix)	4 min 19 sec	4 min 4 sec
AM Peak (w/o Kaylix)	3 min 27 sec	3 min 38 sec
PM Peak (w/o Kaylix)	3 min 50 sec	3 min 50 sec

South Boulder Road Placemaking Workshop #2

The South Boulder Road small area plan does not call for any rezoning or changes in allowed uses in the study area. The major recommendations of the plan will be implemented through the adoption of new design standards and guidelines for the corridor. The design elements highlighted in the Plan section will serve as the basis for the new guidelines, which will need to be adopted by Planning Commission and City Council. The new design standards and guidelines will ensure future private development in the corridor complies with the community's vision and this plan. Funding for this will come from the City's annual operating budget.

Public improvements in the corridor will be implemented either by City funding, contributions from private developers, or a combination. The City's annual capital improvement program budgeting process provides an opportunity for the City to fund and construct infrastructure. The capital improvements listed in the table below are recommended for inclusion in upcoming budgets to help meet the goals of the plan. The timeline is intended to guide requests as funding and opportunity allows.

Some public infrastructure may be built and paid for by private property owners in conjunction with development of their property. The City may require such improvements if the need for them is identified in an adopted plan, such as this one. Some of the capital improvements identified in this plan and listed below can be required from private development projects, and some may be funded or built jointly by the developer and the City.

Infrastructure design, whether built by the City or by private developers, is governed by the Public Works Department's construction standards. The construction standards control the design of streets, sidewalks, and public utilities. The standards will need to be updated along with the design standards and guidelines so public infrastructure conforms to the principles of this plan.

The plan also calls for additional public spaces, including plazas, parks, and open space. The expanded Cottonwood Park will require a future public process to determine the community's desires for the park, then funded through the capital budgeting process. The Louisville Plaza public space should be acquired when and if the shopping center redevelops. The Santilli property should be evaluated by the Open Space Advisory Board and purchased if determined appropriate when it becomes available.

Cost Estimates

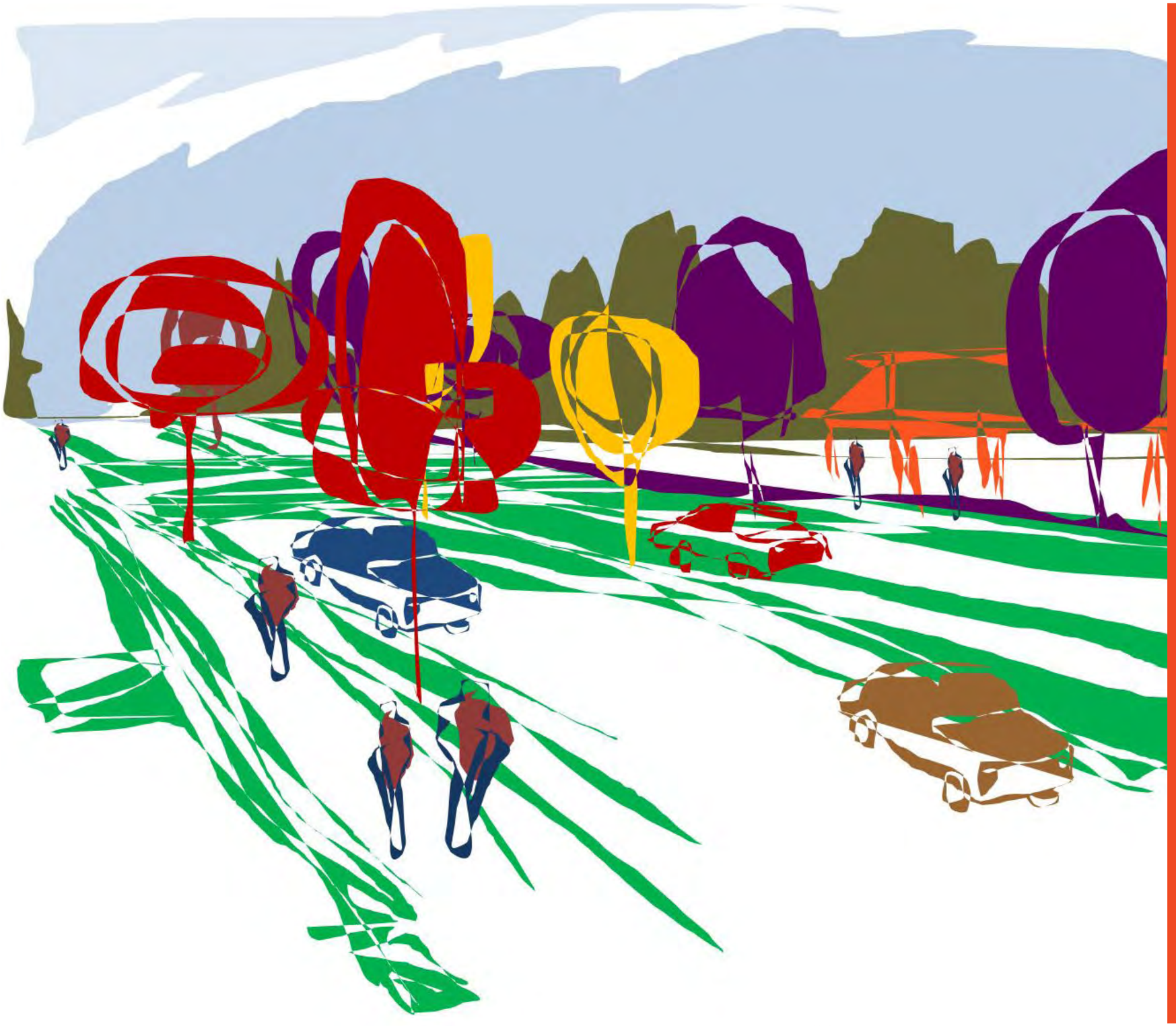
Cost estimates in the table below use broad ranges because the improvements have not been designed yet and to account for changing construction costs. Estimates are categorized as follows:

$	Less than $100,000
$$	Between $100,000 and $500,000
$$$	Between $500,000 and $1 million
$$$$	More than $1 million

Recommended Public Improvements					
Project	Description	Opinion of Probable Cost	Schedule		
			1-5 Years	6-10 Years	11-20 Years
PLANNING (Operating Budget)					
South Boulder Road Design Guidelines	New design standards and guidelines for the study area based on this plan	$	•		
Cottonwood Park Master Plan	Public process to determine the future of the expanded Cottonwood Park	$		•	
DESIGN AND CONSTRUCTION (Capital Budget)					
Parks and Public Spaces					
Cottonwood Park	Improvements to Cottonwood Park based on Master Plan	$$$$		•	
Louisville Plaza Public Space	Public plaza and green space in the Louisivlle Plaza development				•
Santilli Property	Possible purchase of Santilli property for open space	$$$$			•
Pedestrian and Bicycle Underpasses					
Hwy 42/96th Street	Underpass connecting North End and Kestrel between Hecla Drive and Summit View	$$$$	•		
BNSF/Bullhead Gulch	Underpass connecting North Louisville and Steel Ranch	$$$$	•		
South Boulder Road/Cottonwood Park	Underpass connecting Cottonwood Park and Centennial Park	$$$$			•

Recommended Public Improvements					
Project	Description	Opinion of Probable Cost	Schedule		
			1-5 Years	6-10 Years	11-20 Years
Trails					
Kestrel	Trail between Steel Ranch and Hwy 42/96th Street underpass	$	•		
Centennial Park to North Open Space	Trail along Goodhue Ditch	$$		•	
Enrietto Fields and LMS Connections	Connect Enrietto Ballfields and Louisville Middle School to existing and future trails	$		•	
LMS and Main Street North	Trail from LMS to South Boulder Road along Main Street	$		•	
LMS South	Trail from LMS and Pirate Park to Main Street	$			•
Hwy 42/96th Street Northeast	Trail along east side of Hwy 42/96th Street north of South Boulder Road	$$		•	
Hwy 42/96th Street Northwest	Trail along west side of Hwy 42/96th Street north of South Boulder Road	$$	•		
Hwy 42/96th Street Southeast	Trail along east side of Hwy 42/96th Street south of South Boulder Road	$$		•	
Hwy 42/96th Street Southwest	Trail along west side of Hwy 42/96th Street south of South Boulder Road	$$		•	
South Boulder Road North-Central	Trail along north side of South Boulder Road between Centennial Drive and Steel Street	$		•	
South Boulder Road South-Central	Trail along south side of South Boulder Road between Centennial Drive and BNSF railroad	$$		•	
South Boulder Road Northwest	Trail along north side of South Boulder Road between Via Appia and Village Square	$$		•	
South Boulder Road Southwest	Trail along south side of South Boulder Road between Via Appia and Garfield	$$		•	
Coal Creek Station	Trails along and through Coal Creek Station development	$	•		
Roadways (Public)					
Kaylix Drive North	Extension between Kestrel development and Summit View Drive	$$		•	
Kaylix Drive South	Extension between Kestrel development and South Boulder Road	$$		•	
Steel Street	Conversion to two-way traffic	$			•
Cottonwood Park Access Drive	New access drive off of Via Appia	$		•	
Pedestrian Crossings/Traffic Calming					
Davidson Trail	Crossings at Regal, Garfield, and Centennial	$		•	
Kestrel and North End Trail	Crossings at West Hecla and Kaylix	$	•		
Plaza Drive and Hecla Way	Crosswalks and intersection improvements	$			•
Cottonwood Trail	Crossing at Garfield	$			•
Coyote Run Trail	Crossings at Lincoln, Jefferson, Main Street	$		•	
LMS Trail	Crossing at Main Street	$			•
Louisville Middle School	Crosswalks at Main Street and Griffith Street	$		•	
Hwy 42/96th Street	Crosswalks at Griffith Street	$		•	

Recommended Public Improvements					
Project	Description	Opinion of Probable Cost	Schedule		
			1-5 Years	6-10 Years	11-20 Years
Hwy 42 Plan					
New Signals					
Cannon Circle	As part of Coal Creek Station development	$$	•		
Roadway					
Hwy 42/96th Street North of S Boulder Rd	Improvements described in Highway 42 Gateway plan	$$$$	•	•	•
Hwy 42/96th Street South of S Boulder Rd	Improvements described in Highway 42 Gateway plan	$$$$	•	•	•
South Boulder Road Plan					
New Signals					
Kaylix Drive/Cannon Circle	Optional new signal	$$			•
Intersection Improvements					
Via Appia and South Boulder Road	With underpass, remove crosswalk and extend left-turn storage	$			•
Garfield and South Boulder Road	Remove acceleration and deceleration lanes, install offset left	$$$			•
Jefferson and South Boulder Road	Close north-south through movement	$			•
Main Street and South Boulder Road	Add pedestrian island in eastbound right turn lane, create offset left, tighten geometrics	$$		•	
Kaylix Drive/Cannon Circle	Close westbound left movement	$			•
Plaza and South Boulder Road	Introduce protected left phase	$		•	
Blue Star and South Boulder Road	Allow un-signalized full movement	$		•	
Median Improvements					
Cottonwood Park	Move access east, extend median	$			•
Cottonwood Drive	Close median	$$			•
Longs Peak Drive	Make 3/4 movement, allow left in	$$		•	
Front Street	Make 3/4 movement, allow left in	$$		•	
Curb Adjustments and Landscaping					
Westbound South Boulder Road	Remove continuous acceleration/deceleration lane along westbound South Boulder Road	$$$		•	



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City of Louisville

South Boulder Road Planning Survey

2015

NRC
National Research Center Inc

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Contents

Summary

- The City of Louisville and Cuningham Group Architecture, Inc. contracted with National Research Center, Inc. to develop and administer a topical survey to residents regarding future development of the South Boulder Road area in northeast Louisville.
- The 2014 South Boulder Road Planning Survey was mailed to a random sample of 1,200 households in the city.
- A total of 380 surveys were returned, providing a response rate of 32%.
- The margin of error is plus or minus five percentage points around any given percentage point for the entire sample.

Overall, residents of Louisville enjoy a high quality of life.

- Almost all survey respondents (98%) rated the overall quality of life in the city as excellent or good (Table 1).
- Respondents identified the overall quality of parks, trails and open spaces, the city's overall economic health, ease of travel by car and their sense of safety traveling throughout the city as the most positive aspects of the city; about 9 in 10 respondents rated these aspects as excellent or good.
- Most residents (about 85%) rated the physical condition of commercial and residential buildings favorably. However, they gave more tentative ratings of the variety and affordability housing throughout the city (58% and 25% excellent or good, respectively).

Residents view the South Boulder Road area as an opportunity to improve the aspects they value most.

- As with the city overall, the more positively rated characteristics of the South Boulder Road area included the quality of parks, trails and open spaces (76% excellent or good) and sense of safety traveling through the corridor (79%; Table 2). In general, though, most aspects of the South Boulder Road area were not rated as favorably as when compared to the city overall.
- Residents cited sense of safety traveling through the corridor, quality of parks, trails and open spaces and ease of travel walking as the most important aspects to improve (Table 3); about four in five respondents felt these aspects were essential or very important for the City of attempt to improve.
- Overall quality of shopping and dining opportunities, ease of travel by car and ease of travel by bicycle were rated important to improve by about 7 in 10 respondents.

The South Boulder Road area is frequented for errands and recreation.

- Nine in 10 respondents reported that they shop/dine in the area and about three-quarters use the parks and trails in the area. About two in five respondents lived in the study area (Table 4).
- Louisville Plaza/King Soopers (Stores east of Hwy 42) was reported as the most commonly visited location in the South Boulder Road area; about 7 in 10 respondents said they visit this plaza at least one a week and almost all visited it at least once a month (Table 5).

- Other common destinations included Village Square/Alfalfa's (Stores at Centennial) and recreational trails in the area, visited by about two in five respondents at least weekly.
- Over three quarters of respondents reported driving through the South Boulder Road area multiple times a week, if not daily (Table 6); but over half said they would like to be able to travel through the area on a bicycle or by walking more often than they currently do (Table 7)

The general mix of amenities in the South Boulder Road is about right, with some opportunities.

- Overall, a majority of respondents felt there was the right amount of most amenities in the area (Table 8).
- Residents saw “too few” amenities in the categories of affordable (subsidized) housing; live/work (combined living and working spaces); and outdoor community gathering space (amphitheater, commons, etc.).
- Respondents were split between the right amount and too few of the following: housing for seniors (smaller one-level single-family house, apartments with elevators); restaurants, cafes, coffee shops, pubs/bars; work-share spaces Bike and pedestrian amenities/recreational trails; small “parklets”/plazas; neighborhood parks (like Cottonwood Park); and indoor community gathering space (arts center, community center, etc.).

Respondents were clear in some design element preferences and flexible about others.

- For commercial buildings, respondents preferred 1- and 2-story buildings (Table 9) with 10 or 15-20 feet setbacks (Table 10).
- For multi-family residential housing, respondents preferred 2-story townhouses (Table 11) with a 15 - 20 foot setback with porches and small yards (Table 12).
- Respondents were open to a variety of park/plaza options, except the parklet (Table 13).
- For the streetscape, respondents were open to a variety options, except for the sidewalk right up against street (Table 14).
- Most respondents preferred parking lots on the sides of buildings (Table 15) with a landscaped buffer with amenities (Table 16).
- Respondents liked the options of projecting or awnings for business signage (Table 17).

Tables of Results

The following pages contain a complete set of responses to each question on the survey, excluding the "don't know" responses.

Survey Results

Table 1: Question 1

Please rate each of the following for Louisville (City-wide):	Excellent	Good	Fair	Poor	Total
Overall quality of life	71%	27%	3%	0%	100%
Overall economic health	34%	54%	9%	2%	100%
Variety of housing options	13%	45%	32%	10%	100%
Availability of affordable quality housing	4%	21%	41%	34%	100%
Overall quality of shopping and dining opportunities	25%	54%	19%	2%	100%
Overall quality of parks, trails and open spaces	61%	32%	4%	2%	100%
Ease of travel by car	44%	45%	8%	3%	100%
Ease of travel walking	43%	40%	12%	5%	100%
Ease of travel by bicycle	50%	35%	14%	1%	100%
Ease of travel by bus	24%	35%	30%	10%	100%
Sense of safety traveling throughout the city	64%	32%	4%	0%	100%
Physical condition of commercial buildings	25%	60%	14%	1%	100%
Physical condition of residential buildings	18%	69%	12%	1%	100%

Table 2: Question 2 (Quality)

First, please rate the quality of each of the following aspects or characteristics as they relate to the South Boulder Road study area (shown in the letter). Then, please tell us how important to you, if at all, it is that the City attempt to improve each of the following in the South Boulder Road study area.	Excellent	Good	Fair	Poor	Total
Variety of housing options	11%	47%	32%	10%	100%
Availability of affordable quality housing	4%	31%	37%	27%	100%
Overall quality of shopping and dining opportunities	13%	42%	36%	10%	100%
Overall quality of parks, trails and open space	30%	46%	19%	5%	100%
Ease of travel by car	27%	54%	12%	7%	100%
Ease of travel walking	24%	41%	22%	13%	100%
Ease of travel by bicycle	26%	35%	29%	10%	100%
Ease of travel by bus	20%	39%	30%	11%	100%
Sense of safety traveling through the corridor	34%	45%	17%	4%	100%
Physical condition of commercial buildings	9%	49%	38%	5%	100%
Physical condition of residential buildings	7%	54%	33%	6%	100%

Table 3: Question 2 (Importance)

First, please rate the quality of each of the following aspects or characteristics as they relate to the South Boulder Road study area (shown in the letter). Then, please tell us how important to you, if at all, it is that the City attempt to improve each of the following in the South Boulder Road study area.	Essential	Very important	Somewhat important	Not at all important	Total
Variety of housing options	13%	36%	37%	14%	100%
Availability of affordable quality housing	20%	35%	31%	15%	100%
Overall quality of shopping and dining opportunities	21%	47%	24%	7%	100%
Overall quality of parks, trails and open space	37%	45%	12%	5%	100%
Ease of travel by car	23%	46%	24%	7%	100%
Ease of travel walking	34%	44%	17%	4%	100%
Ease of travel by bicycle	35%	36%	22%	7%	100%
Ease of travel by bus	21%	38%	30%	11%	100%
Sense of safety traveling through the corridor	49%	34%	11%	6%	100%
Physical condition of commercial buildings	14%	42%	37%	7%	100%
Physical condition of residential buildings	13%	46%	36%	5%	100%

Table 4: Question 3

Which, if any, of the following applies to you in relation to the South Boulder Road study area? (Mark all that apply.)	Percent
I live in the area (see map in attached letter)	41%
My child attends LMS	8%
I use parks and trails in the area	75%
I shop/dine in the area	90%
I use medical/professional services in the area	47%
I only travel through the area	13%
I work in the area	7%
None of the above	1%

Total may exceed 100% as respondents could select more than one option.

Table 5: Question 4

In a typical month, how many times, if at all, do you visit each of the following?	Never	1-3 times a month	Once a week	Multiple times a week	Daily	Total
Village Square/Alfalfa's (Stores at Centennial)	11%	52%	18%	16%	3%	100%
Christopher Village (Stores west of Hwy 42/96th St)	42%	48%	6%	3%	0%	100%
Louisville Plaza/King Soopers (Stores east of Hwy 42)	2%	26%	33%	36%	3%	100%
Medical and professional offices along South Boulder Road	56%	39%	2%	2%	1%	100%
Cottonwood Park	45%	41%	8%	5%	2%	100%
Harney/Lastoka Open Space	67%	27%	3%	3%	1%	100%
Recreational trails in the area	17%	41%	18%	18%	6%	100%

Table 6: Question 5 (Actual Use)

First, tell us how many times in a typical month, if at all, you travel through the study area using each of the following modes. Then, please indicate if you'd like to use each mode more, the same amount or less in the study area.	Never	1-3 times a month	Once a week	Multiple times a week	Daily	Total
In a car	1%	10%	10%	37%	42%	100%
In a bus	82%	13%	2%	2%	2%	100%
On a bicycle	43%	36%	8%	9%	4%	100%
Walking	36%	30%	9%	16%	8%	100%

Table 7: Question 5 (Preferred Use)

First, tell us how many times in a typical month, if at all, you travel through the study area using each of the following modes. Then, please indicate if you'd like to use each mode more, the same amount or less in the study area.	Use more	Use the same	Use less	Total
In a car	5%	73%	22%	100%
In a bus	31%	57%	12%	100%
On a bicycle	55%	41%	5%	100%
Walking	55%	44%	2%	100%

Table 8: Question 6

Please indicate whether you feel that there are too many, the right amount or not enough of each of the following in the South Boulder Road study area:	Too many	Right amount	Too few	Total
Housing for singles / couples (apartments, townhomes, smaller duplex, single-family)	18%	48%	34%	100%
Housing for families with children (smaller duplex, single-family)	7%	65%	28%	100%
Housing for seniors (smaller one-level single-family house, apartments with elevators)	4%	45%	51%	100%
Affordable (subsidized) housing	10%	36%	54%	100%
Live/work (combined living and working spaces)	4%	37%	59%	100%
Restaurants, cafes, coffee shops, pubs/bars	1%	50%	49%	100%
Neighborhood shops (dry cleaners, barbers/beauty salon, etc.)	1%	69%	30%	100%
Community shops (grocery store, drug store, etc.)	0%	86%	14%	100%
Regional shops, such as big box retailers	19%	60%	22%	100%
Work-share spaces	3%	48%	49%	100%
Health clinics / medical offices	6%	88%	6%	100%
Professional services (lawyers, accountants, etc.)	5%	87%	8%	100%
General business offices (corporate offices, etc.)	9%	72%	18%	100%
Research and development	4%	57%	39%	100%
Bike and pedestrian amenities/recreational trails	1%	49%	51%	100%
Small "Parklets" / plazas	3%	50%	47%	100%
Neighborhood parks (like Cottonwood Park)	0%	59%	41%	100%
Regional park (like Community Park)	0%	64%	36%	100%
Indoor community gathering space (arts center, community center, etc.)	1%	45%	54%	100%
Outdoor community gathering space (amphitheater, commons, etc.)	1%	38%	61%	100%

Design Elements

Table 9: Design Element #1: Commercial Building Height/Size

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.		Excellent fit	Good fit	Fair fit	Poor fit	Total
	1-story	27%	35%	24%	14%	100%
	2-story	35%	40%	18%	8%	100%
	2 or 3-story	23%	31%	24%	22%	100%
	3.5-story	11%	22%	24%	43%	100%

Table 10: Design Element #2: Commercial Building Placement (Setback)

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.		Excellent fit	Good fit	Fair fit	Poor fit	Total
	Setback 15-20 feet from street and sidewalk	21%	39%	26%	14%	100%
	Parking lot in front	17%	35%	23%	25%	100%
	No setback	18%	25%	22%	35%	100%
	10 foot setback, directly adjacent to sidewalk	20%	39%	27%	14%	100%

Table 11: Design Element #3: Multi Family Residential Building Height/Size

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.		Excellent fit	Good fit	Fair fit	Poor fit	Total
	1-story duplex	19%	33%	30%	17%	100%
	2-story townhouses	21%	48%	22%	9%	100%
	3-story apartment building	5%	18%	24%	54%	100%
	Apartments/condos above retail/commercial (mixed-use building)	22%	30%	16%	33%	100%

Table 12: Design Element #4: Multi Family Residential Building Placement (Setback)

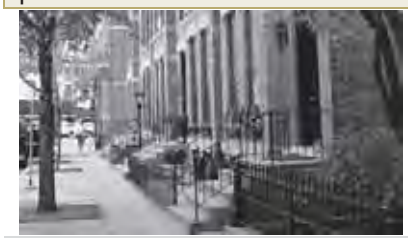
For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.		Excellent fit	Good fit	Fair fit	Poor fit	Total
	5 foot setback with stoop	9%	17%	27%	47%	100%
	5 - 10 foot setback with porches	15%	36%	28%	21%	100%
	15 - 20 foot setback with porches and small yards	30%	39%	21%	10%	100%
	20+ foot setback with shared entryways	9%	26%	30%	35%	100%

Table 13: Design Element #5: Park/Plaza

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.		Excellent fit	Good fit	Fair fit	Poor fit	Total
	Recreational Park	31%	38%	20%	11%	100%
	Town Green	35%	38%	20%	7%	100%
	Parklet	18%	28%	27%	27%	100%
	Plaza	40%	35%	16%	10%	100%

Table 14: Design Element #6: Streetscape

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.		Excellent fit	Good fit	Fair fit	Poor fit	Total
	Sidewalk right up against street	2%	9%	38%	50%	100%
	Sidewalk buffered from street and parking with landscaping	25%	48%	20%	6%	100%
	Regular size sidewalk with some amenities	11%	46%	34%	9%	100%
	Wide sidewalk with many pedestrian amenities	45%	30%	18%	6%	100%

Table 15: Design Element #7: Parking Placement

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.		Excellent fit	Good fit	Fair fit	Poor fit	Total
	Parking lot on side of building	17%	57%	22%	4%	100%
	Diagonal parking in street	9%	28%	25%	38%	100%
	Parallel street parking	6%	31%	33%	30%	100%
	Large parking lot in front of building	4%	18%	23%	55%	100%

Table 16: Design Element #8: Parking Edge

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.		Excellent fit	Good fit	Fair fit	Poor fit	Total
	No buffer between parking and sidewalk	1%	12%	29%	58%	100%
	Minimal landscaped buffer	8%	40%	40%	12%	100%
	Landscaped buffer with amenities	37%	46%	15%	2%	100%
	Low wall	7%	29%	38%	27%	100%

Table 17: Design Element #9: Business Signage

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.		Excellent fit	Good fit	Fair fit	Poor fit	Total
	Projecting	37%	46%	11%	6%	100%
	Internally-illuminated	9%	39%	41%	11%	100%
	Awning	29%	49%	18%	5%	100%
	Monument with tenant change panels	6%	17%	25%	52%	100%

Respondent Characteristics

Table 18: Question D1

Which best describes the building you live in?	Percent
One family house detached from any other houses	74%
Building with two or more homes (duplex, townhome, apartment or condominium)	23%
Mobile home	0%
Other	3%
Total	100%

Table 19: Question D2

Do you rent or own your home?	Percent
Rent	27%
Own	73%
Total	100%

Table 20: Question D3

How many people, including yourself, live in your household?	Percent
1	16%
2	34%
3	20%
4	24%
5	4%
6+	2%
Total	100%

Table 21: Question D4

What is your gender?	Percent
Female	51%
Male	49%
Total	100%

Table 22: Question D5

18-24 years	2%
25-34 years	21%
35-44 years	22%
45-54 years	24%
55-64 years	17%
65-74 years	10%
75 years or older	5%
Total	100%

Table 23: Question D6

Are you currently employed?	Percent
Yes	79%
No	21%
Total	100%

Table 24: Question D7

In which city do you work?	Percent
Boulder, Longmont, Niwot	27%
Broomfield, Westminster, Arvada, Lafayette, Superior	14%
Denver, Lakewood, Aurora	9%
Louisville	36%
Multiple areas	7%
Other	6%
Total	100%

Table 25: Question D8

About how much do you estimate your household's total income before taxes will be for the current year?	Percent
Less than $24,999	4%
$25,000 to $49,999	9%
$50,000 to $99,999	30%
$100,000 to $149,999	22%
$150,000 or more	23%
Prefer not to answer	14%
Total	100%

Complete Survey Responses

The following pages contain a complete set of responses to each question on the survey, including the "don't know" responses. The percent of respondents giving a particular response is shown followed by the number of respondents.

Table 26: Question 1

Please rate each of the following for Louisville (City-wide):	Excellent		Good		Fair		Poor		Not familiar		Total	
Overall quality of life	71%	N=266	27%	N=101	3%	N=10	0%	N=0	0%	N=1	100%	N=377
Overall economic health	33%	N=125	53%	N=199	9%	N=35	2%	N=8	3%	N=10	100%	N=376
Variety of housing options	12%	N=46	44%	N=164	31%	N=117	10%	N=38	3%	N=11	100%	N=376
Availability of affordable quality housing	4%	N=14	18%	N=68	36%	N=135	30%	N=112	12%	N=44	100%	N=373
Overall quality of shopping and dining opportunities	25%	N=93	54%	N=202	19%	N=71	2%	N=7	0%	N=0	100%	N=374
Overall quality of parks, trails and open spaces	61%	N=229	32%	N=120	4%	N=16	2%	N=8	0%	N=1	100%	N=375
Ease of travel by car	44%	N=166	45%	N=170	8%	N=29	3%	N=11	0%	N=0	100%	N=376
Ease of travel walking	43%	N=162	39%	N=147	12%	N=46	5%	N=17	1%	N=2	100%	N=374
Ease of travel by bicycle	46%	N=171	32%	N=119	12%	N=47	1%	N=5	9%	N=33	100%	N=375
Ease of travel by bus	17%	N=64	24%	N=92	21%	N=77	7%	N=27	31%	N=116	100%	N=376
Sense of safety traveling throughout the city	64%	N=240	32%	N=119	4%	N=16	0%	N=1	0%	N=0	100%	N=376
Physical condition of commercial buildings	25%	N=93	60%	N=225	14%	N=54	1%	N=3	0%	N=1	100%	N=377
Physical condition of residential buildings	18%	N=68	68%	N=256	12%	N=45	1%	N=3	1%	N=3	100%	N=375

Table 27: Question 2 (Quality)

First, please rate the quality of each of the following aspects or characteristics as they relate to the South Boulder Road study area (shown in the letter). Then, please tell us how important to you, if at all, it is that the City attempt to improve each of the following in the South Boulder Road study area.	Excellent		Good		Fair		Poor		Not familiar		Total	
Variety of housing options	10%	N=37	42%	N=152	29%	N=106	9%	N=32	11%	N=38	100%	N=365
Availability of affordable quality housing	3%	N=12	25%	N=88	29%	N=105	21%	N=76	21%	N=75	100%	N=356
Overall quality of shopping and dining opportunities	12%	N=43	41%	N=144	35%	N=124	10%	N=35	2%	N=6	100%	N=354
Overall quality of parks, trails and open space	29%	N=102	43%	N=153	18%	N=64	5%	N=17	5%	N=18	100%	N=353
Ease of travel by car	27%	N=96	53%	N=188	12%	N=42	7%	N=25	2%	N=7	100%	N=357
Ease of travel walking	22%	N=81	39%	N=141	21%	N=76	12%	N=45	5%	N=17	100%	N=359
Ease of travel by bicycle	23%	N=83	31%	N=110	25%	N=90	8%	N=30	13%	N=47	100%	N=359
Ease of travel by bus	13%	N=46	25%	N=90	19%	N=68	7%	N=25	36%	N=129	100%	N=358
Sense of safety traveling through the corridor	33%	N=119	44%	N=157	17%	N=60	4%	N=13	2%	N=7	100%	N=356
Physical condition of commercial buildings	8%	N=30	47%	N=169	37%	N=132	5%	N=18	3%	N=10	100%	N=359
Physical condition of residential buildings	7%	N=24	52%	N=185	32%	N=113	6%	N=22	4%	N=14	100%	N=358

Table 28: Question 2 (Importance)

First, please rate the quality of each of the following aspects or characteristics as they relate to the South Boulder Road study area (shown in the letter). Then, please tell us how important to you, if at all, it is that the City attempt to improve each of the following in the South Boulder Road study area.	Essential		Very important		Somewhat important		Not at all important		Not familiar		Total	
Variety of housing options	12%	N=43	34%	N=123	35%	N=126	14%	N=49	5%	N=17	100%	N=359
Availability of affordable quality housing	18%	N=63	32%	N=112	28%	N=99	14%	N=48	8%	N=29	100%	N=352
Overall quality of shopping and dining opportunities	21%	N=76	47%	N=166	24%	N=86	7%	N=24	0%	N=1	100%	N=353
Overall quality of parks, trails and open space	36%	N=129	44%	N=156	12%	N=42	5%	N=17	3%	N=10	100%	N=354
Ease of travel by car	23%	N=82	46%	N=162	24%	N=82	7%	N=25	0%	N=0	100%	N=351
Ease of travel walking	34%	N=119	44%	N=154	17%	N=60	4%	N=15	2%	N=6	100%	N=354
Ease of travel by bicycle	32%	N=114	34%	N=118	21%	N=73	7%	N=24	7%	N=23	100%	N=353
Ease of travel by bus	16%	N=57	30%	N=104	24%	N=83	8%	N=29	21%	N=74	100%	N=347
Sense of safety traveling through the corridor	49%	N=171	34%	N=120	11%	N=39	6%	N=22	0%	N=0	100%	N=351
Physical condition of commercial buildings	14%	N=48	42%	N=147	36%	N=128	7%	N=23	2%	N=6	100%	N=352
Physical condition of residential buildings	13%	N=44	45%	N=159	35%	N=124	5%	N=18	2%	N=5	100%	N=351

Table 29: Question 3

Which, if any, of the following applies to you in relation to the South Boulder Road study area? (Mark all that apply.)	Percent	Number
I live in the area (see map in attached letter)	41%	N=151
My child attends LMS	8%	N=29
I use parks and trails in the area	75%	N=279
I shop/dine in the area	90%	N=335
I use medical/professional services in the area	47%	N=173
I only travel through the area	13%	N=50
I work in the area	7%	N=27
None of the above	1%	N=4

Total may exceed 100% as respondents could select more than one option.

Table 30: Question 4

In a typical month, how many times, if at all, do you visit each of the following?	Never		1-3 times a month		Once a week		Multiple times a week		Daily		Total	
Village Square/Alfalfa's (Stores at Centennial)	11%	N=42	52%	N=191	18%	N=66	16%	N=57	3%	N=11	100%	N=367
Christopher Village (Stores west of Hwy 42/96th St)	42%	N=151	48%	N=170	6%	N=23	3%	N=12	0%	N=1	100%	N=357
Louisville Plaza/King Soopers (Stores east of Hwy 42)	2%	N=7	26%	N=95	33%	N=121	36%	N=135	3%	N=12	100%	N=371
Medical and professional offices along South Boulder Road	56%	N=203	39%	N=141	2%	N=6	2%	N=8	1%	N=3	100%	N=361
Cottonwood Park	45%	N=161	41%	N=147	8%	N=27	5%	N=19	2%	N=6	100%	N=360
Harney/Lastoka Open Space	67%	N=242	27%	N=99	3%	N=9	3%	N=11	1%	N=3	100%	N=364
Recreational trails in the area	17%	N=64	41%	N=152	18%	N=65	18%	N=67	6%	N=21	100%	N=369

Table 31: Question 5 (Actual Use)

First, tell us how many times in a typical month, if at all, you travel through the study area using each of the following modes. Then, please indicate if you'd like to use each mode more, the same amount or less in the study area.	Never		1-3 times a month		Once a week		Multiple times a week		Daily		Total	
In a car	1%	N=4	10%	N=38	10%	N=38	37%	N=137	42%	N=157	100%	N=373
In a bus	82%	N=300	13%	N=46	2%	N=6	2%	N=7	2%	N=7	100%	N=367
On a bicycle	43%	N=157	36%	N=133	8%	N=29	9%	N=33	4%	N=13	100%	N=365
Walking	36%	N=133	30%	N=112	9%	N=33	16%	N=60	8%	N=31	100%	N=369

Table 32: Question 5 (Preferred Use)

First, tell us how many times in a typical month, if at all, you travel through the study area using each of the following modes. Then, please indicate if you'd like to use each mode more, the same amount or less in the study area.	Use more		Use the same		Use less		Total	
In a car	5%	N=15	73%	N=225	22%	N=67	100%	N=307
In a bus	31%	N=88	57%	N=162	12%	N=35	100%	N=286
On a bicycle	55%	N=163	41%	N=121	5%	N=14	100%	N=297
Walking	55%	N=164	44%	N=131	2%	N=5	100%	N=300

Table 33: Question 6

Please indicate whether you feel that there are too many, the right amount or not enough of each of the following in the South Boulder Road study area:	Too many		Right amount		Too few		Not familiar		Total	
Housing for singles / couples (apartments, townhomes, smaller duplex, single-family)	14%	N=52	37%	N=136	26%	N=95	22%	N=80	100%	N=363
Housing for families with children (smaller duplex, single-family)	5%	N=20	48%	N=173	21%	N=75	26%	N=95	100%	N=363
Housing for seniors (smaller one-level single-family house, apartments with elevators)	2%	N=9	29%	N=106	33%	N=120	35%	N=128	100%	N=362
Affordable (subsidized) housing	6%	N=23	23%	N=82	34%	N=122	38%	N=136	100%	N=363
Live/work (combined living and working spaces)	2%	N=7	20%	N=71	31%	N=112	48%	N=173	100%	N=362
Restaurants, cafes, coffee shops, pubs/bars	1%	N=3	49%	N=178	48%	N=173	3%	N=9	100%	N=363
Neighborhood shops (dry cleaners, barbers/beauty salon, etc.)	1%	N=4	64%	N=230	28%	N=100	7%	N=27	100%	N=362

Please indicate whether you feel that there are too many, the right amount or not enough of each of the following in the South Boulder Road study area:	Too many		Right amount		Too few		Not familiar		Total	
Community shops (grocery store, drug store, etc.)	0%	N=0	84%	N=307	13%	N=48	2%	N=9	100%	N=364
Regional shops, such as big box retailers	18%	N=64	57%	N=207	21%	N=75	5%	N=17	100%	N=364
Work-share spaces	1%	N=5	22%	N=80	23%	N=82	54%	N=195	100%	N=362
Health clinics / medical offices	4%	N=16	65%	N=236	4%	N=15	26%	N=95	100%	N=362
Professional services (lawyers, accountants, etc.)	3%	N=12	53%	N=191	5%	N=17	39%	N=141	100%	N=361
General business offices (corporate offices, etc.)	6%	N=21	46%	N=168	12%	N=43	36%	N=130	100%	N=362
Research and development	2%	N=6	24%	N=88	16%	N=59	58%	N=208	100%	N=361
Bike and pedestrian amenities/recreational trails	0%	N=2	44%	N=163	47%	N=171	8%	N=31	100%	N=366
Small "Parklets" / plazas	2%	N=8	42%	N=153	39%	N=144	16%	N=59	100%	N=364
Neighborhood parks (like Cottonwood Park)	0%	N=1	54%	N=197	37%	N=136	8%	N=29	100%	N=363
Regional park (like Community Park)	0%	N=1	59%	N=214	33%	N=120	8%	N=27	100%	N=362
Indoor community gathering space (arts center, community center, etc.)	1%	N=3	39%	N=141	46%	N=166	15%	N=53	100%	N=364
Outdoor community gathering space (amphitheater, commons, etc.)	1%	N=3	33%	N=119	52%	N=189	14%	N=52	100%	N=363

Table 34: Question D1

Which best describes the building you live in?	Percent	Number
One family house detached from any other houses	74%	N=272
Building with two or more homes (duplex, townhome, apartment or condominium)	23%	N=86
Mobile home	0%	N=0
Other	3%	N=9
Total	100%	N=367

Table 35: Question D2

Do you rent or own your home?	Percent	Number
Rent	27%	N=99
Own	73%	N=268
Total	100%	N=367

Table 36: Question D3

How many people, including yourself, live in your household?	Percent	Number
1	16%	N=59
2	34%	N=123
3	20%	N=74
4	24%	N=88
5	4%	N=13
6+	2%	N=6
Total	100%	N=364

Table 37: Question D4

What is your gender?	Percent	Number
Female	51%	N=185
Male	49%	N=175
Total	100%	N=360

Table 38: Question D5

In which category is your age?	Percent	Number
18-24 years	2%	N=6
25-34 years	21%	N=75
35-44 years	22%	N=80
45-54 years	24%	N=87
55-64 years	17%	N=62
65-74 years	10%	N=36
75 years or older	5%	N=17
Total	100%	N=364

Table 39: Question D6

Are you currently employed?	Percent	Number
Yes	79%	N=285
No	21%	N=78
Total	100%	N=363

Table 40: Question D7

In which city do you work?	Percent	Number
Boulder, Longmont, Niwot	27%	N=70
Broomfield, Westminster, Arvada, Lafayette, Superior	14%	N=37
Denver, Lakewood, Aurora	9%	N=23
Louisville	36%	N=93
Multiple areas	7%	N=18
Other	6%	N=16
Total	100%	N=257

Table 41: Question D8

About how much do you estimate your household's total income before taxes will be for the current year?	Percent	Number
Less than $24,999	4%	N=13
$25,000 to $49,999	9%	N=32
$50,000 to $99,999	30%	N=108
$100,000 to $149,999	22%	N=79
$150,000 or more	23%	N=83
Prefer not to answer	14%	N=51
Total	100%	N=365

Table 42: Design Element #1: Commercial Building Height/Size

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.	Excellent fit		Good fit		Fair fit		Poor fit		Total	
1-story	27%	N=84	35%	N=109	24%	N=74	14%	N=42	100%	N=309
2-story	35%	N=107	40%	N=123	18%	N=54	8%	N=25	100%	N=309
2 or 3-story	23%	N=72	31%	N=96	24%	N=74	22%	N=70	100%	N=312
3.5-story	11%	N=36	22%	N=69	24%	N=73	43%	N=133	100%	N=311

Table 43: Design Element #2: Commercial Building Placement (Setback)

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.	Excellent fit		Good fit		Fair fit		Poor fit		Total	
Setback 15-20 feet from street and sidewalk	21%	N=64	39%	N=121	26%	N=80	14%	N=45	100%	N=310
Parking lot in front	17%	N=53	35%	N=107	23%	N=70	25%	N=79	100%	N=310
No setback	18%	N=56	25%	N=77	22%	N=69	35%	N=108	100%	N=310
10 foot setback, directly adjacent to sidewalk	20%	N=64	39%	N=120	27%	N=85	14%	N=42	100%	N=311

Table 44: Design Element #3: Multi Family Residential Building Height/Size

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.	Excellent fit		Good fit		Fair fit		Poor fit		Total	
1-story duplex	19%	N=61	33%	N=104	30%	N=93	17%	N=54	100%	N=312
2-story townhouses	21%	N=67	48%	N=150	22%	N=67	9%	N=28	100%	N=312
3-story apartment building	5%	N=15	18%	N=55	24%	N=75	54%	N=167	100%	N=312
Apartments/condos above retail/commercial (mixed-use building)	22%	N=68	30%	N=92	16%	N=50	33%	N=102	100%	N=312

Table 45: Design Element #4: Multi Family Residential Building Placement (Setback)

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.	Excellent fit		Good fit		Fair fit		Poor fit		Total	
5 foot setback with stoop	9%	N=27	17%	N=53	27%	N=85	47%	N=147	100%	N=311
5 - 10 foot setback with porches	15%	N=45	36%	N=113	28%	N=88	21%	N=64	100%	N=310
15 - 20 foot setback with porches and small yards	30%	N=94	39%	N=122	21%	N=65	10%	N=30	100%	N=311
20+ foot setback with shared entryways	9%	N=29	26%	N=80	30%	N=94	35%	N=109	100%	N=311

Table 46: Design Element #5: Park/Plaza

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.	Excellent fit		Good fit		Fair fit		Poor fit		Total	
Recreational Park	31%	N=97	38%	N=118	20%	N=62	11%	N=36	100%	N=313
Town Green	35%	N=108	38%	N=118	20%	N=64	7%	N=22	100%	N=312
Parklet	18%	N=56	28%	N=89	27%	N=85	27%	N=83	100%	N=313
Plaza	40%	N=124	35%	N=109	16%	N=50	10%	N=30	100%	N=313

Table 47: Design Element #6: Streetscape

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.	Excellent fit		Good fit		Fair fit		Poor fit		Total	
Sidewalk right up against street	2%	N=7	9%	N=29	38%	N=118	50%	N=157	100%	N=312
Sidewalk buffered from street and parking with landscaping	25%	N=79	48%	N=150	20%	N=64	6%	N=19	100%	N=311
Regular size sidewalk with some amenities	11%	N=35	46%	N=144	34%	N=105	9%	N=30	100%	N=313
Wide sidewalk with many pedestrian amenities	45%	N=142	30%	N=93	18%	N=57	6%	N=20	100%	N=312

Table 48: Design Element #7: Parking Placement

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.	Excellent fit		Good fit		Fair fit		Poor fit		Total	
Parking lot on side of building	17%	N=54	57%	N=177	22%	N=68	4%	N=12	100%	N=311
Diagonal parking in street	9%	N=28	28%	N=87	25%	N=78	38%	N=116	100%	N=309
Parallel street parking	6%	N=18	31%	N=97	33%	N=103	30%	N=94	100%	N=312
Large parking lot in front of building	4%	N=12	18%	N=55	23%	N=72	55%	N=172	100%	N=311

Table 49: Design Element #8: Parking Edge

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.	Excellent fit		Good fit		Fair fit		Poor fit		Total	
No buffer between parking and sidewalk	1%	N=2	12%	N=36	29%	N=92	58%	N=182	100%	N=312
Minimal landscaped buffer	8%	N=24	40%	N=126	40%	N=124	12%	N=38	100%	N=312
Landscaped buffer with amenities	37%	N=116	46%	N=143	15%	N=46	2%	N=8	100%	N=312
Low wall	7%	N=21	29%	N=91	38%	N=118	27%	N=83	100%	N=312

Table 50: Design Element #9: Business Signage

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area.	Excellent fit		Good fit		Fair fit		Poor fit		Total	
Projecting	37%	N=115	46%	N=144	11%	N=35	6%	N=18	100%	N=312
Internally-illuminated	9%	N=27	39%	N=121	41%	N=129	11%	N=35	100%	N=312
Awning	29%	N=89	49%	N=151	18%	N=55	5%	N=16	100%	N=312
Monument with tenant change panels	6%	N=19	17%	N=54	25%	N=77	52%	N=163	100%	N=312

Responses to Open-ended Questions

Following are verbatim responses to the open-ended question on the survey, grouped by coded theme. The verbatim responses were not edited for grammar or punctuation.

Question D7: In which city do you work?

Boulder, Longmont, Niwot

- BOULDER
- BOULDER
- BOULDER
- BOULDER
- BOULDER
- Boulder
- LONGMONT
- Boulder, CO
- NIWOT
- LONGMONT
- LONGMONT
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Broomfield, Westminster, Arvada, Lafayette, Superior

- Lafayette
- Broomfield
- LAFAYETTE
- LAFAYETTE
- WESTMINSTER
- Westminster
- Lafayette
- Broomfield
- Arvada
- ARVADA
- LAFAYETTE
- BROOMFIELD
- Broomfield
- Westminster
- SUPERIOR
- BROOMFIELD
- WESTMINSTER
- LAFAYETTE
- BROOMFIELD
- superior
- SUPERIOR
- Broomfield
- LAFAYETTE
- lafayette
- LAFAYETTE
- Lafayette
- Westminster
- broomfield
- Superior
- Broomfield, CO
- lafayette
- BROOMFIELD

Denver, Lakewood, Aurora

- Denver
- lakewood
- DENVER
- DENVER
- DENVER
- AURORA
- Denver
- Denver
- DENVER
- Denver
- DENVER
- DENVER
- Denver
- Denver
- Denver
- Lakewood
- denver
- AURORA
- Denver
- DENVER
- DENVER
- Denver
- LAKEWOOD

Louisville

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Multiple areas

- LOUISVILLE & BOULDER
- DENVER/ BOULDER
- Travel throughout Boulder Valley School District, base in Boulder
- NORTHGLENN/ THORNTON
- Front Range
- BOULDER, LOUISVILLE, BROOMFIELD
- BROOMFIELD/ LOUISVILLE
- LAFAYETTE & DENVER
- LONGMONT & GOLDEN
- Boulder and Louisville
- LOUISVILLE/ LAFAYETTE
- LOUISVILLE/ ARVADA
- BOULDER & LOUISVILLE
- Boulder & Longmont
- Numerous
- LOUISVILLE & BOULDER
- Louisville and others
- LOUISVILLE & BOULDER
- DENVER METRO

Other

- Golden
- BOULDER COUNTY
- BOULDER COUNTY
- GOLDEN
- Fort Collins
- BRIGHTON
- GOLDEN
- BOULDER COUNTY
- boulder county
- Golden
- GOLDEN
- FORT COLLINS

Appendix A: Subgroup Comparisons for Selected Survey Questions

Responses in the following tables show only the proportion of respondents giving a certain answer; for example, the percent of respondents who rated the quality of life as "excellent" or "good," or the percent of respondents who attended a public meeting more than once a month. ANOVA and chi-square tests of significance were applied to these comparisons of survey questions. A "p-value" of 0.05 or less indicates that there is less than a 5% probability that differences observed between subgroups are due to chance; or in other words, a greater than 95% probability that the differences observed are "real." Where differences were statistically significant, they have been shaded grey.

Comparisons by Respondent Characteristics

- The youngest respondents, those living in attached housing units and renters tended view aspects of housing and ease travel by a variety of modes less favorably than their counterparts in the South Boulder Road area (Table 52). They also placed higher emphasis on the importance of improving housing variety and affordability (Table 54).
- Respondents under age 55 were the most likely to bicycle through the area (Table 55), but would also like to be able to bike more (Table 56). They also tended to feel there were too few bike and pedestrian amenities/recreational trails (Table 57).
- The youngest residents, those living in attached housing units and renters tended to feel there were too few housing options available, including housing for singles/couples, housing for families and affordable (subsidized) housing (Table 57).
- Regarding preferences for design elements of the South Boulder Road area, few differences were found based on gender, housing unit type and housing tenure. Among limited differences, most were by age, with the youngest residents preferring such options as no setbacks for commercial buildings, mixed-used buildings and recreational parks (Table 58 to Table 66).

Table 51: Question 1

Please rate each of the following for Louisville (City-wide) (Percent excellent or good):	Gender		Age			Housing type		Housing tenure		Overall
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	
Overall quality of life	99%	96%	94%	98%	99%	98%	95%	95%	98%	97%
Overall economic health	90%	88%	89%	87%	91%	88%	90%	94%	86%	88%
Variety of housing options	57%	58%	39%	65%	60%	60%	51%	43%	63%	57%
Availability of affordable quality housing	26%	25%	21%	29%	24%	26%	24%	17%	29%	25%
Overall quality of shopping and dining opportunities	78%	81%	79%	79%	78%	80%	74%	75%	80%	79%
Overall quality of parks, trails and open spaces	94%	93%	88%	94%	96%	96%	85%	86%	96%	93%
Ease of travel by car	89%	89%	88%	93%	84%	90%	86%	84%	91%	89%
Ease of travel walking	80%	87%	71%	85%	87%	86%	75%	74%	86%	83%
Ease of travel by bicycle	83%	87%	85%	84%	84%	85%	83%	84%	85%	85%
Ease of travel by bus	58%	61%	52%	66%	57%	58%	65%	63%	58%	60%
Sense of safety traveling throughout the city	96%	95%	94%	96%	96%	96%	92%	94%	96%	95%
Physical condition of commercial buildings	83%	87%	78%	87%	86%	85%	84%	83%	85%	85%
Physical condition of residential buildings	90%	84%	89%	87%	86%	89%	82%	86%	87%	87%

Table 52: Question 2 (Quality)

First, please rate the quality of each of the following aspects or characteristics as they relate to the South Boulder Road study area (shown in the letter). (Percent excellent or good)	Gender		Age			Housing type		Housing tenure		
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	Overall
Variety of housing options	56%	60%	42%	70%	52%	64%	41%	42%	64%	58%
Availability of affordable quality housing	37%	33%	26%	46%	26%	40%	20%	22%	41%	36%
Overall quality of shopping and dining opportunities	50%	56%	56%	50%	56%	51%	61%	60%	51%	54%
Overall quality of parks, trails and open space	72%	78%	68%	75%	82%	78%	68%	71%	77%	76%
Ease of travel by car	83%	80%	79%	85%	77%	81%	80%	78%	82%	81%
Ease of travel walking	65%	63%	50%	63%	76%	65%	63%	63%	65%	65%
Ease of travel by bicycle	59%	65%	51%	62%	71%	62%	61%	62%	61%	62%
Ease of travel by bus	64%	56%	50%	67%	60%	55%	73%	61%	60%	60%
Sense of safety traveling through the corridor	78%	79%	73%	76%	87%	79%	77%	73%	81%	79%
Physical condition of commercial buildings	53%	61%	46%	57%	66%	56%	61%	56%	57%	57%
Physical condition of residential buildings	60%	61%	52%	61%	65%	61%	58%	60%	61%	61%

Table 53: Question 2 (Importance)

Then, please tell us how important to you, if at all, it is that the City attempt to improve each of the following in the South Boulder Road study area. (Percent essential or very important)	Gender		Age			Housing type		Housing tenure		
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	Overall
Variety of housing options	52%	46%	59%	40%	54%	45%	62%	62%	44%	49%
Availability of affordable quality housing	57%	52%	73%	44%	59%	47%	79%	76%	47%	54%
Overall quality of shopping and dining opportunities	69%	67%	66%	73%	63%	69%	67%	66%	69%	69%
Overall quality of parks, trails and open space	84%	82%	92%	87%	72%	85%	77%	77%	85%	83%
Ease of travel by car	71%	68%	64%	68%	75%	73%	57%	63%	71%	69%
Ease of travel walking	81%	77%	75%	85%	73%	78%	83%	80%	79%	79%
Ease of travel by bicycle	69%	72%	65%	75%	65%	73%	61%	64%	73%	71%
Ease of travel by bus	65%	53%	71%	56%	53%	56%	67%	67%	56%	59%
Sense of safety traveling through the corridor	86%	79%	78%	84%	83%	84%	80%	81%	83%	83%
Physical condition of commercial buildings	62%	51%	42%	58%	65%	61%	42%	38%	63%	56%
Physical condition of residential buildings	60%	57%	49%	59%	65%	61%	52%	51%	61%	59%

Table 54: Question 4

In a typical month, how many times, if at all, do you visit each of the following? (Percent at least once a month)	Gender		Age			Housing type		Housing tenure		Overall
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	
Village Square/Alfalfa's (Stores at Centennial)	87%	90%	84%	92%	87%	89%	89%	88%	89%	89%
Christopher Village (Stores west of Hwy 42/96th St)	52%	64%	60%	58%	56%	57%	59%	64%	55%	58%
Louisville Plaza/King Soopers (Stores east of Hwy 42)	97%	99%	100%	98%	97%	98%	98%	98%	98%	98%
Medical and professional offices along South Boulder Road	53%	35%	42%	51%	36%	49%	30%	43%	44%	44%
Cottonwood Park	58%	53%	76%	59%	36%	52%	65%	76%	48%	55%
Harney/Lastoka Open Space	37%	29%	44%	32%	26%	31%	38%	50%	27%	33%
Recreational trails in the area	83%	83%	93%	86%	70%	80%	92%	96%	78%	83%

Table 55: Question 5 (Actual Use)

First, tell us how many times in a typical month, if at all, you travel through the study area using each of the following modes. (Percent at least once a month)	Gender		Age			Housing type		Housing tenure		Overall
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	
In a car	99%	99%	100%	100%	98%	100%	97%	97%	100%	99%
In a bus	13%	24%	25%	20%	11%	16%	25%	21%	17%	18%
On a bicycle	50%	64%	68%	64%	37%	57%	56%	64%	54%	57%
Walking	64%	64%	81%	61%	55%	58%	79%	83%	57%	64%

Table 56: Question 5 (Preferred Use)

First, tell us how many times in a typical month, if at all, you travel through the study area using each of the following modes. Then, please indicate if you'd like to use each mode more, the same amount or less in the study area.		Gender		Age			Housing type		Housing tenure		
		Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	Overall
	Use more	3%	5%	0%	3%	9%	4%	5%	5%	4%	5%
	Use the same	70%	76%	55%	80%	78%	78%	60%	65%	77%	73%
In a car	Use less	26%	19%	45%	17%	14%	18%	35%	30%	19%	22%
	Use more	30%	32%	33%	32%	29%	29%	35%	38%	28%	31%
	Use the same	64%	49%	50%	59%	56%	60%	47%	48%	59%	57%
In a bus	Use less	6%	19%	17%	9%	15%	11%	17%	13%	12%	12%
	Use more	63%	48%	64%	64%	33%	54%	60%	62%	53%	55%
	Use the same	34%	46%	31%	34%	58%	44%	30%	30%	44%	41%
On a bicycle	Use less	3%	6%	5%	2%	9%	3%	10%	8%	4%	5%
	Use more	60%	50%	57%	60%	43%	53%	60%	62%	52%	55%
	Use the same	40%	48%	43%	38%	54%	46%	38%	36%	46%	44%
Walking	Use less	1%	2%	0%	1%	3%	1%	2%	2%	1%	2%

Table 57: Question 6

Please indicate whether you feel that there are too many, the right amount or not enough of each of the following in the South Boulder Road study area:		Gender		Age			Housing type		Housing tenure		Overall
		Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	
Housing for singles / couples (apartments, townhomes, smaller duplex, single-family)	Too many	19%	17%	5%	25%	18%	23%	7%	4%	24%	18%
	Right amount	44%	52%	32%	54%	52%	54%	34%	37%	53%	48%
	Too few	37%	31%	63%	21%	30%	24%	59%	59%	23%	34%
Housing for families with children (smaller duplex, single-family)	Too many	10%	4%	5%	10%	5%	9%	0%	8%	7%	7%
	Right amount	59%	70%	61%	69%	58%	69%	48%	52%	68%	65%
	Too few	31%	27%	34%	21%	37%	22%	52%	41%	24%	28%
Housing for seniors (smaller one-level single-family house, apartments with elevators)	Too many	4%	3%	0%	7%	1%	5%	0%	0%	5%	4%
	Right amount	39%	50%	72%	50%	25%	42%	55%	61%	41%	45%
	Too few	57%	47%	28%	43%	74%	53%	45%	39%	54%	51%
Affordable (subsidized) housing	Too many	8%	12%	5%	13%	10%	12%	5%	0%	14%	10%
	Right amount	30%	40%	23%	44%	34%	42%	22%	28%	40%	36%
	Too few	62%	48%	72%	43%	57%	45%	74%	72%	46%	54%
Live/work (combined living and working spaces)	Too many	4%	3%	0%	7%	0%	5%	0%	0%	5%	4%
	Right amount	28%	46%	48%	33%	35%	36%	41%	38%	38%	37%
	Too few	68%	50%	52%	60%	65%	59%	59%	62%	58%	59%
Restaurants, cafes, coffee shops, pubs/bars	Too many	1%	1%	0%	1%	1%	1%	0%	0%	1%	1%
	Right amount	46%	54%	57%	39%	62%	46%	62%	59%	47%	50%
	Too few	53%	45%	43%	60%	37%	53%	38%	41%	52%	49%
Neighborhood shops (dry cleaners, barbers/beauty salon, etc.)	Too many	1%	2%	0%	2%	1%	2%	0%	0%	2%	1%
	Right amount	62%	75%	75%	63%	73%	65%	79%	79%	65%	69%
	Too few	37%	23%	25%	35%	26%	33%	21%	21%	33%	30%
Community shops (grocery store, drug store, etc.)	Too many	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Right amount	86%	86%	94%	83%	86%	83%	95%	92%	84%	86%
	Too few	14%	14%	6%	17%	14%	17%	5%	8%	16%	14%
Regional shops, such as big box retailers	Too many	23%	15%	21%	17%	19%	20%	14%	25%	16%	19%
	Right amount	57%	61%	63%	62%	53%	59%	62%	56%	61%	60%
	Too few	20%	23%	16%	21%	28%	21%	24%	19%	23%	22%
Work-share spaces	Too many	3%	3%	0%	6%	0%	4%	0%	7%	2%	3%
	Right amount	34%	59%	36%	44%	70%	50%	42%	29%	56%	48%

Please indicate whether you feel that there are too many, the right amount or not enough of each of the following in the South Boulder Road study area:		Gender		Age			Housing type		Housing tenure		Overall
		Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	
	Too few	63%	38%	64%	50%	30%	46%	58%	65%	43%	49%
	Too many	7%	5%	0%	11%	1%	6%	5%	8%	5%	6%
	Right amount	89%	88%	96%	84%	92%	88%	89%	86%	89%	88%
Health clinics / medical offices	Too few	5%	7%	4%	6%	7%	6%	6%	6%	5%	6%
	Too many	5%	6%	0%	9%	4%	7%	0%	3%	6%	5%
Professional services (lawyers, accountants, etc.)	Right amount	86%	87%	96%	82%	87%	85%	94%	93%	85%	87%
	Too few	9%	7%	4%	9%	9%	8%	6%	5%	9%	8%
	Too many	14%	5%	12%	6%	13%	9%	9%	12%	8%	9%
General business offices (corporate offices, etc.)	Right amount	71%	73%	70%	74%	72%	71%	76%	81%	69%	72%
	Too few	15%	22%	19%	20%	15%	20%	15%	7%	22%	18%
	Too many	6%	3%	0%	4%	6%	4%	4%	4%	4%	4%
	Right amount	65%	51%	67%	50%	59%	53%	75%	93%	48%	57%
Research and development	Too few	29%	46%	33%	46%	35%	43%	21%	3%	48%	39%
	Too many	0%	1%	0%	1%	1%	1%	0%	0%	1%	1%
Bike and pedestrian amenities/recreational trails	Right amount	43%	55%	48%	41%	62%	44%	61%	50%	48%	49%
	Too few	57%	44%	52%	59%	38%	55%	39%	50%	52%	51%
	Too many	4%	1%	3%	4%	1%	3%	3%	3%	3%	3%
	Right amount	44%	57%	43%	48%	59%	50%	51%	48%	51%	50%
Small "Parklets" / plazas	Too few	52%	42%	54%	48%	40%	47%	46%	49%	46%	47%
	Too many	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%
Neighborhood parks (like Cottonwood Park)	Right amount	56%	62%	53%	55%	69%	60%	56%	47%	63%	59%
	Too few	44%	37%	47%	44%	31%	40%	44%	53%	36%	41%
	Too many	0%	1%	0%	1%	0%	0%	0%	0%	0%	0%
Regional park (like Community Park)	Right amount	61%	67%	66%	59%	70%	62%	69%	61%	65%	64%
	Too few	39%	32%	34%	40%	30%	37%	31%	39%	35%	36%
Indoor community gathering space (arts center, community center, etc.)	Too many	1%	1%	0%	1%	1%	1%	0%	0%	1%	1%
	Right amount	38%	53%	30%	47%	55%	45%	46%	41%	47%	45%
	Too few	61%	46%	70%	51%	44%	54%	54%	59%	52%	54%
Outdoor community gathering space (amphitheater, commons, etc.)	Too many	0%	2%	0%	1%	2%	1%	0%	0%	1%	1%
	Right amount	29%	47%	23%	40%	49%	39%	35%	29%	42%	38%
	Too few	70%	51%	77%	60%	49%	59%	65%	71%	57%	61%

Table 58: Design Element #1: Commercial Building Height/Size

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Gender		Age			Housing type		Housing tenure		Overall
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	
1-story	63%	61%	57%	63%	64%	63%	58%	61%	62%	62%
2-story	76%	72%	87%	78%	56%	72%	82%	87%	70%	74%
2 or 3-story	56%	53%	79%	52%	37%	50%	66%	65%	50%	54%
3.5-story	33%	34%	39%	28%	38%	32%	38%	32%	34%	34%

Table 59: Design Element #2: Commercial Building Placement (Setback)

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Gender		Age			Housing type		Housing tenure		Overall
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	
Setback 15-20 feet from street and sidewalk	66%	53%	48%	60%	68%	63%	48%	55%	61%	60%
Parking lot in front	55%	48%	59%	47%	55%	49%	59%	58%	49%	52%
No setback	46%	39%	60%	43%	27%	40%	53%	52%	40%	43%
10 foot setback, directly adjacent to sidewalk	61%	55%	48%	64%	59%	61%	55%	56%	60%	59%

Table 60: Design Element #3: Multi Family Residential Building Height/Size

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Gender		Age			Housing type		Housing tenure		Overall
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	
1-story duplex	60%	45%	52%	52%	54%	53%	54%	58%	51%	53%
2-story townhouses	72%	68%	72%	72%	65%	73%	62%	68%	71%	69%
3-story apartment building	19%	27%	30%	19%	23%	20%	31%	24%	22%	22%
Apartments/condos above retail/commercial (mixed-use building)	56%	48%	67%	51%	40%	47%	65%	63%	48%	51%

Table 61: Design Element #4: Multi Family Residential Building Placement (Setback)

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Gender		Age			Housing type		Housing tenure		
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	Overall
5 foot setback with stoop	26%	25%	28%	30%	16%	26%	25%	24%	26%	25%
5 - 10 foot setback with porches	60%	42%	63%	49%	44%	47%	65%	59%	48%	51%
15 - 20 foot setback with porches and small yards	72%	66%	67%	71%	69%	68%	74%	73%	68%	69%
20+ foot setback with shared entryways	34%	35%	15%	37%	48%	40%	19%	20%	40%	35%

Table 62: Design Element #5: Park/Plaza

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Gender		Age			Housing type		Housing tenure		
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	Overall
Recreational Park	72%	65%	79%	62%	72%	68%	71%	74%	67%	69%
Town Green	72%	73%	76%	73%	68%	74%	67%	69%	74%	72%
Parklet	49%	43%	56%	41%	47%	43%	57%	54%	43%	46%
Plaza	76%	73%	77%	74%	73%	73%	79%	76%	74%	75%

Table 63: Design Element #6: Streetscape

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Gender		Age			Housing type		Housing tenure		
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	Overall
Sidewalk right up against street	11%	13%	19%	7%	14%	12%	13%	18%	10%	12%
Sidewalk buffered from street and parking with landscaping	73%	73%	58%	78%	78%	79%	58%	58%	79%	73%
Regular size sidewalk with some amenities	62%	51%	51%	62%	54%	56%	60%	58%	57%	57%
Wide sidewalk with many pedestrian amenities	79%	71%	69%	80%	72%	76%	72%	72%	77%	75%

Table 64: Design Element #7: Parking Placement

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Gender		Age			Housing type		Housing tenure		
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	Overall
Parking lot on side of building	78%	71%	74%	76%	72%	74%	76%	73%	75%	74%
Diagonal parking in street	39%	35%	47%	37%	28%	40%	31%	34%	39%	37%
Parallel street parking	36%	37%	36%	38%	34%	39%	32%	33%	38%	37%
Large parking lot in front of building	23%	19%	16%	18%	33%	22%	20%	19%	22%	22%

Table 65: Design Element #8: Parking Edge

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Gender		Age			Housing type		Housing tenure		
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	Overall
No buffer between parking and sidewalk	13%	11%	22%	11%	6%	10%	20%	18%	10%	12%
Minimal landscaped buffer	54%	41%	46%	55%	37%	48%	49%	51%	47%	48%
Landscaped buffer with amenities	82%	84%	86%	78%	88%	82%	85%	85%	82%	83%
Low wall	38%	34%	45%	27%	44%	36%	35%	35%	36%	36%

Table 66: Design Element #9: Business Signage

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Gender		Age			Housing type		Housing tenure		
	Female	Male	18 to 34	35 to 54	55 and over	Detached	Attached	Rent	Own	Overall
Projecting	83%	84%	92%	89%	65%	82%	86%	93%	80%	83%
Internally-illuminated	54%	42%	37%	45%	63%	50%	41%	41%	51%	48%
Awning	74%	79%	65%	82%	77%	83%	59%	68%	80%	77%
Monument with tenant change panels	25%	21%	22%	17%	38%	23%	25%	19%	25%	23%

Comparisons by Proximity to South Boulder Road Study Area

- Those living in the South Boulder Road area tended to give lower rating than those outside the area to city-wide quality of life ratings (Table 67).
- As may be expected, those living in the South Boulder Road area tended to visit the various nearby amenities more often than those outside the area (Table 70).
- Residents in the study area tended to use the bus more, bike more and walk more than those outside the area (Table 71). However, South Boulder Road residents wanted to use the bus less and walk more (Table 72).
- Few differences between residents and non-residents of the South Boulder Road area were found when examining preferences for the nine design elements. Where differences were found, those who did not live in the area indicated stronger preferences for 3.5-story commercial buildings, 2-story townhouses and mixed-use buildings (Table 74 to Table 82).

Table 67: Question 1

Please rate each of the following for Louisville (City-wide) (Percent excellent or good):	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
Overall quality of life	95%	99%	97%
Overall economic health	84%	92%	88%
Variety of housing options	60%	56%	57%
Availability of affordable quality housing	23%	26%	25%
Overall quality of shopping and dining opportunities	74%	83%	79%
Overall quality of parks, trails and open spaces	88%	98%	93%
Ease of travel by car	86%	92%	89%
Ease of travel walking	74%	89%	83%
Ease of travel by bicycle	75%	91%	85%
Ease of travel by bus	60%	60%	60%
Sense of safety traveling throughout the city	91%	99%	95%
Physical condition of commercial buildings	80%	88%	85%
Physical condition of residential buildings	83%	90%	87%

Table 68: Question 2 (Quality)

First, please rate the quality of each of the following aspects or characteristics as they relate to the South Boulder Road study area (shown in the letter). (Percent excellent or good)	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
Variety of housing options	61%	55%	58%
Availability of affordable quality housing	39%	33%	36%
Overall quality of shopping and dining opportunities	61%	49%	54%
Overall quality of parks, trails and open space	79%	75%	76%
Ease of travel by car	75%	85%	81%
Ease of travel walking	64%	66%	65%
Ease of travel by bicycle	66%	59%	62%
Ease of travel by bus	58%	61%	60%
Sense of safety traveling through the corridor	81%	78%	79%
Physical condition of commercial buildings	65%	52%	57%
Physical condition of residential buildings	65%	58%	61%

Table 69: Question 2 (Importance)

Then, please tell us how important to you, if at all, it is that the City attempt to improve each of the following in the South Boulder Road study area. (Percent essential or very important)	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
Variety of housing options	45%	52%	49%
Availability of affordable quality housing	56%	53%	54%
Overall quality of shopping and dining opportunities	70%	68%	69%
Overall quality of parks, trails and open space	83%	83%	83%
Ease of travel by car	72%	68%	69%
Ease of travel walking	78%	79%	79%
Ease of travel by bicycle	69%	72%	71%
Ease of travel by bus	63%	56%	59%
Sense of safety traveling through the corridor	82%	84%	83%
Physical condition of commercial buildings	47%	63%	56%
Physical condition of residential buildings	55%	61%	59%

Table 70: Question 4

In a typical month, how many times, if at all, do you visit each of the following? (Percent at least once a month)	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
Village Square/Alfalfa's (Stores at Centennial)	93%	85%	89%
Christopher Village (Stores west of Hwy 42/96th St)	69%	50%	58%
Louisville Plaza/King Soopers (Stores east of Hwy 42)	99%	97%	98%
Medical and professional offices along South Boulder Road	38%	48%	44%
Cottonwood Park	69%	46%	55%
Harney/Lastoka Open Space	42%	27%	33%
Recreational trails in the area	94%	75%	83%

Table 71: Question 5 (Actual Use)

First, tell us how many times in a typical month, if at all, you travel through the study area using each of the following modes. (Percent at least once a month)	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
In a car	100%	98%	99%
In a bus	26%	13%	18%
On a bicycle	64%	53%	57%
Walking	90%	47%	64%

Table 72: Question 5 (Preferred Use)

First, tell us how many times in a typical month, if at all, you travel through the study area using each of the following modes. Then, please indicate if you'd like to use each mode more, the same amount or less in the study area.		Proximity to SBR		Overall
		Live in area	Do NOT live in area	
In a car	Use more	4%	5%	5%
	Use the same	72%	74%	73%
	Use less	24%	21%	22%
In a bus	Use more	31%	31%	31%
	Use the same	49%	62%	57%
	Use less	20%	6%	12%
On a bicycle	Use more	55%	55%	55%
	Use the same	38%	43%	41%
	Use less	7%	3%	5%
Walking	Use more	62%	50%	55%
	Use the same	36%	50%	44%
	Use less	2%	1%	2%

Table 73: Question 6

Please indicate whether you feel that there are too many, the right amount or not enough of each of the following in the South Boulder Road study area:		Proximity to SBR		Overall
		Live in area	Do NOT live in area	
Housing for singles / couples (apartments, townhomes, smaller duplex, single-family)	Too many	23%	14%	18%
	Right amount	41%	54%	48%
	Too few	36%	32%	34%
Housing for families with children (smaller duplex, single-family)	Too many	7%	7%	7%
	Right amount	59%	69%	65%
	Too few	34%	24%	28%
Housing for seniors (smaller one-level single-family house, apartments with elevators)	Too many	4%	3%	4%
	Right amount	53%	39%	45%
	Too few	43%	57%	51%
Affordable (subsidized) housing	Too many	13%	8%	10%
	Right amount	42%	32%	36%
	Too few	45%	60%	54%
Live/work (combined living and working spaces)	Too many	4%	4%	4%
	Right amount	48%	29%	37%
	Too few	48%	67%	59%
Restaurants, cafes, coffee shops, pubs/bars	Too many	2%	0%	1%
	Right amount	53%	48%	50%
	Too few	45%	52%	49%

Please indicate whether you feel that there are too many, the right amount or not enough of each of the following in the South Boulder Road study area:		Proximity to SBR		Overall
		Live in area	Do NOT live in area	
Neighborhood shops (dry cleaners, barbers/beauty salon, etc.)	Too many	2%	0%	1%
	Right amount	67%	71%	69%
	Too few	31%	29%	30%
Community shops (grocery store, drug store, etc.)	Too many	0%	0%	0%
	Right amount	91%	84%	86%
	Too few	9%	16%	14%
Regional shops, such as big box retailers	Too many	22%	17%	19%
	Right amount	56%	63%	60%
	Too few	23%	21%	22%
Work-share spaces	Too many	4%	3%	3%
	Right amount	52%	44%	48%
	Too few	44%	53%	49%
Health clinics / medical offices	Too many	6%	6%	6%
	Right amount	90%	87%	88%
	Too few	4%	7%	6%
Professional services (lawyers, accountants, etc.)	Too many	5%	6%	5%
	Right amount	90%	84%	87%
	Too few	5%	10%	8%
General business offices (corporate offices, etc.)	Too many	10%	8%	9%
	Right amount	73%	71%	72%
	Too few	16%	20%	18%
Research and development	Too many	6%	2%	4%
	Right amount	56%	58%	57%
	Too few	38%	40%	39%
Bike and pedestrian amenities/recreational trails	Too many	1%	0%	1%
	Right amount	49%	48%	49%
	Too few	49%	52%	51%
Small "Parklets" / plazas	Too many	3%	3%	3%
	Right amount	52%	49%	50%
	Too few	45%	48%	47%
Neighborhood parks (like Cottonwood Park)	Too many	1%	0%	0%
	Right amount	55%	62%	59%
	Too few	44%	38%	41%
Regional park (like Community Park)	Too many	1%	0%	0%
	Right amount	60%	67%	64%
	Too few	39%	33%	36%
Indoor community gathering space (arts center, community center, etc.)	Too many	1%	1%	1%
	Right amount	40%	50%	45%
	Too few	59%	49%	54%
Outdoor community gathering space (amphitheater, commons, etc.)	Too many	1%	1%	1%
	Right amount	34%	42%	38%
	Too few	65%	58%	61%

Table 74: Design Element #1: Commercial Building Height/Size

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
1-story	62%	62%	62%
2-story	75%	74%	74%
2 or 3-story	52%	56%	54%
3.5-story	25%	40%	34%

Table 75: Design Element #2: Commercial Building Placement (Setback)

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
Setback 15-20 feet from street and sidewalk	53%	64%	60%
Parking lot in front	54%	51%	52%
No setback	43%	43%	43%
10 foot setback, directly adjacent to sidewalk	53%	63%	59%

Table 76: Design Element #3: Multi Family Residential Building Height/Size

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
1-story duplex	53%	53%	53%
2-story townhouses	55%	80%	69%
3-story apartment building	16%	27%	22%
Apartments/condos above retail/commercial (mixed-use building)	43%	57%	51%

Table 77: Design Element #4: Multi Family Residential Building Placement (Setback)

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
5 foot setback with stoop	21%	29%	25%
5 - 10 foot setback with porches	45%	55%	51%
15 - 20 foot setback with porches and small yards	70%	69%	69%
20+ foot setback with shared entryways	35%	35%	35%

Table 78: Design Element #5: Park/Plaza

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
Recreational Park	65%	72%	69%
Town Green	76%	70%	72%
Parklet	48%	45%	46%
Plaza	72%	77%	75%

Table 79: Design Element #6: Streetscape

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
Sidewalk right up against street	16%	10%	12%
Sidewalk buffered from street and parking with landscaping	65%	79%	73%
Regular size sidewalk with some amenities	60%	56%	57%
Wide sidewalk with many pedestrian amenities	70%	79%	75%

Table 80: Design Element #7: Parking Placement

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
Parking lot on side of building	73%	75%	74%
Diagonal parking in street	32%	41%	37%
Parallel street parking	33%	39%	37%
Large parking lot in front of building	28%	18%	22%

Table 81: Design Element #8: Parking Edge

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
No buffer between parking and sidewalk	13%	11%	12%
Minimal landscaped buffer	46%	50%	48%
Landscaped buffer with amenities	83%	82%	83%
Low wall	35%	36%	36%

Table 82: Design Element #9: Business Signage

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Percent excellent or good fit)	Proximity to SBR		Overall
	Live in area	Do NOT live in area	
Projecting	84%	83%	83%
Internally-illuminated	45%	50%	48%
Awning	70%	82%	77%
Monument with tenant change panels	25%	23%	23%

Appendix B: Survey Methodology

Survey Instrument Development

Louisville has conducted a general residential survey every two or three years for more than 20 years. The general residential surveys ask recipients about their perspectives on the quality of life in the city, use of city amenities, opinion on policy issues facing the city and assessment of City service delivery. This topical survey was developed to explore key issues related to the development of the South Boulder Road area. The survey instrument development process began with a review of the topics to be explored. In an iterative process between City staff, Cuningham Group Architecture, Inc. and NRC staff, a final 12-page questionnaire was developed.

Selecting Survey Recipients

"Sampling" refers to the method by which survey recipients are chosen. The "sample" refers to all those who were given a chance to participate in the survey. All households located in the city boundaries were eligible for the survey. Because City governments generally do not have inclusive lists of all the residences in the jurisdiction (tax assessor and utility billing databases often omit rental units), lists from the United States Postal Service (USPS), updated every three months, usually provide the best representation of all households in a specific geographic location. NRC used USPS data to randomly select the sample of households.

A larger list than needed was sampled so that a process referred to as "geocoding" could be used to eliminate addresses from the list that were outside the study boundaries. Geocoding is a computerized process in which addresses are compared to electronically mapped boundaries and coded as inside or outside desired boundaries. All addresses determined to be outside the study boundaries were eliminated from the sample. A random selection was made of the remaining addresses to create a final list of 1,200 addresses. Attached household units were over-sampled because residents of this type of housing typically respond at lower rates to surveys than do those in detached housing units.

An individual within each household was randomly selected to complete the survey using the birthday method. The birthday method selects a person within the household by asking the "person whose birthday has most recently passed" to complete the questionnaire. The underlying assumption in this method is that day of birth has no relationship to the way people respond to surveys. This instruction was contained in the cover letter accompanying the questionnaire.

Survey Administration and Response

Two versions of the survey were created. The full 12-page version included three pages of questions and demographics, plus nine pages of images representing the design elements for respondents to rates. The shorter, 3-page version included just the 3 pages of questions and demographics. Households selected to participate were randomly assigned the 3- or 12-page

version of the survey. All survey recipients were provided the option to complete the survey online. Those households that received the 3-page version of the survey were given the option to complete the entire survey of just the photographic comparison portion of the survey online. All surveys were given a unique identifier to access the online survey; this identifier also permitted the matching of responses from the 3-page hard copies to the online photographic comparisons submitted via the Internet.

Each selected household was contacted three times. First, a prenotification announcement, informing the household members that they had been selected to participate in the South Boulder Road Planning Survey, was sent. Approximately one week after mailing the prenotification, each household was mailed a survey and a cover letter signed by the Mayor enlisting participation. The packet also contained a postage-paid return envelope in which the survey recipients could return the completed questionnaire to NRC. A reminder letter and survey, scheduled to arrive one week after the first survey, was the final contact. The second cover letter asked those who had not completed the survey to do so and those who had already done so to refrain from turning in another survey.

The mailings were sent in November 2014 and completed surveys were collected over the following six weeks. About 2% of the 1,200 surveys mailed were returned because the housing unit was vacant or the postal service was unable to deliver the survey as addressed. Of the remaining 1,179 households, 380 completed the survey, providing a response rate of 32%; average response rates for a mailed resident survey range from 25% to 40%.

95% Confidence Intervals

The 95% confidence interval (or "margin of error") quantifies the "sampling error" or precision of the estimates made from the survey results. A 95% confidence interval can be calculated for any sample size, and indicates that in 95 of 100 surveys conducted like this one, for a particular item, a result would be found that is within plus or minus five percentage points of the result that would be found if everyone in the population of interest was surveyed. The practical difficulties of conducting any resident survey may introduce other sources of error in addition to sampling error. Despite best efforts to boost participation and ensure potential inclusion of all households, some selected households will decline participation in the survey (potentially introducing non-response error) and some eligible households may be unintentionally excluded from the listed sources for the sample (referred to as coverage error).

While the 95 percent confidence interval for the survey is generally no greater than plus or minus five percentage points around any given percent reported for the entire sample; results for subgroups will have wider confidence intervals. Where estimates are given for subgroups, they are less precise. For each subgroup from the survey, the margin of error rises to as much as plus or minus 10% for a sample size of 100 completed surveys.

Survey Processing (Data Entry)

Mailed surveys were submitted via postage-paid business reply envelopes. Each survey was reviewed and "cleaned" as necessary. For example, a question may have asked a respondent to pick two items out of a list of five, but the respondent checked three; staff would choose randomly two of the three selected items to be coded in the survey responses dataset.

All surveys are entered into an electronic dataset, which was subject to a data entry protocol of "key and verify." In this process, data were entered twice into an electronic dataset and then compared. Discrepancies were evaluated against the original survey form and corrected. Range checks as well as other forms of quality control were also performed.

Weighting the Data

The primary objective of weighting survey data is to make the survey sample reflective of the larger population of the city. This is done by: 1) reviewing the sample demographics and comparing them to the population norms from the most recent Census or other sources and 2) comparing the responses to different questions for demographic subgroups. The demographic characteristics that are least similar to the Census and yield the most different results are the best candidates for data weighting. Several different weighting "schemes" are tested to ensure the best fit for the data. The data were weighted by housing tenure (rent or own), housing type (attached or detached), age and gender. The results of the weighting scheme are presented in Table 83.

Table 83: Weighting Table for the City of Louisville South Boulder Road Planning Survey

	2010 Census*	Unweighted	Weighted
Rent	27%	11%	27%
Own	73%	89%	73%
Detached†	74%	86%	74%
Attached†	26%	14%	26%
Female	51%	52%	51%
Male	49%	48%	49%
Age 18-34	23%	7%	22%
Age 35-54	46%	43%	46%
Age 55 and over	31%	50%	32%
Female 18-34	11%	4%	13%
Female 35-54	24%	25%	25%
Female 55 and over	16%	23%	14%
Male 18-34	12%	3%	9%
Male 35-54	22%	18%	22%
Male 55 and over	15%	27%	18%

* Population in households
† ACS 2011 5-year estimates

Analyzing the Data

The surveys were analyzed using the Statistical Package for the Social Sciences (SPSS). Frequency distributions are presented in the body of the report. Chi-square and ANOVA tests of significance were applied to breakdowns of selected survey questions by respondent and geographic characteristics. A "p-value" of 0.05 or less indicates that there is less than a 5% probability that differences observed between groups are due to chance; or in other words, a greater than 95% probability that the differences observed in the selected categories of our sample represent "real" differences among those populations. Where differences between subgroups are statistically significant, they are marked with grey shading in the appendices.

Appendix C: Survey Materials

Dear Louisville Resident,

It won't take much of your time to make a big difference!

Your household has been randomly selected to participate in a survey about the development of South Boulder Road. Even if you don't live in the area, we still want to hear from you. Your survey will arrive in the mail in a few days.

If you prefer, you can complete the survey online at (please enter the address exactly as it appears here):

www.n-r-c.com/survey/louisvillesbr.htm

To complete the survey online, please enter the access code printed above the word "RESIDENT" on the other side of the postcard. Your responses are completely confidential and will be reported in group form only.

Thank you for helping create a better Louisville.

Sincerely,

Robert P. Muckle, Mayor
City of Louisville

Dear Louisville Resident,

It won't take much of your time to make a big difference!

Your household has been randomly selected to participate in a survey about the development of South Boulder Road. Even if you don't live in the area, we still want to hear from you. Your survey will arrive in the mail in a few days.

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Thank you for helping create a better Louisville.

Sincerely,

Robert P. Muckle, Mayor
City of Louisville

749 Main Street ● Louisville, CO 80027

Presorted
First Class Mail
US Postage
PAID
Boulder, CO
Permit NO. 94

749 Main Street ● Louisville, CO 80027

Presorted
First Class Mail
US Postage
PAID
Boulder, CO
Permit NO. 94

749 Main Street ● Louisville, CO 80027

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749 Main Street ● Louisville, CO 80027

Presorted
First Class Mail
US Postage
PAID
Boulder, CO
Permit NO. 94

749 Main Street
Louisville, CO 80027
303.335.4596
FAX 303.335.4550

Dear City of Louisville Resident:

Please help us shape the future of Louisville and the South Boulder Road corridor. As part of the City's South Boulder Road Small Area Plan process, we are trying to determine the community's vision and desired uses for the area. The enclosed survey shows different possibilities for the area and we want to know what you think it should look like. Even if you live outside the South Boulder Road corridor, we still want to hear from you.

Your participation in this survey is very important – especially since your household is one of only 1,200 Louisville households being surveyed.

A few things to remember:

- Your responses are completely confidential.
- In order to hear from a diverse group of residents, the adult 18 years or older in your household who most recently had a birthday should complete this survey.
- You may return the survey by mail in the enclosed postage-paid envelope, or you can complete the survey online at (please type the address exactly as it appears):

  www.n-r-c.com/survey/louisvillesbr.htm

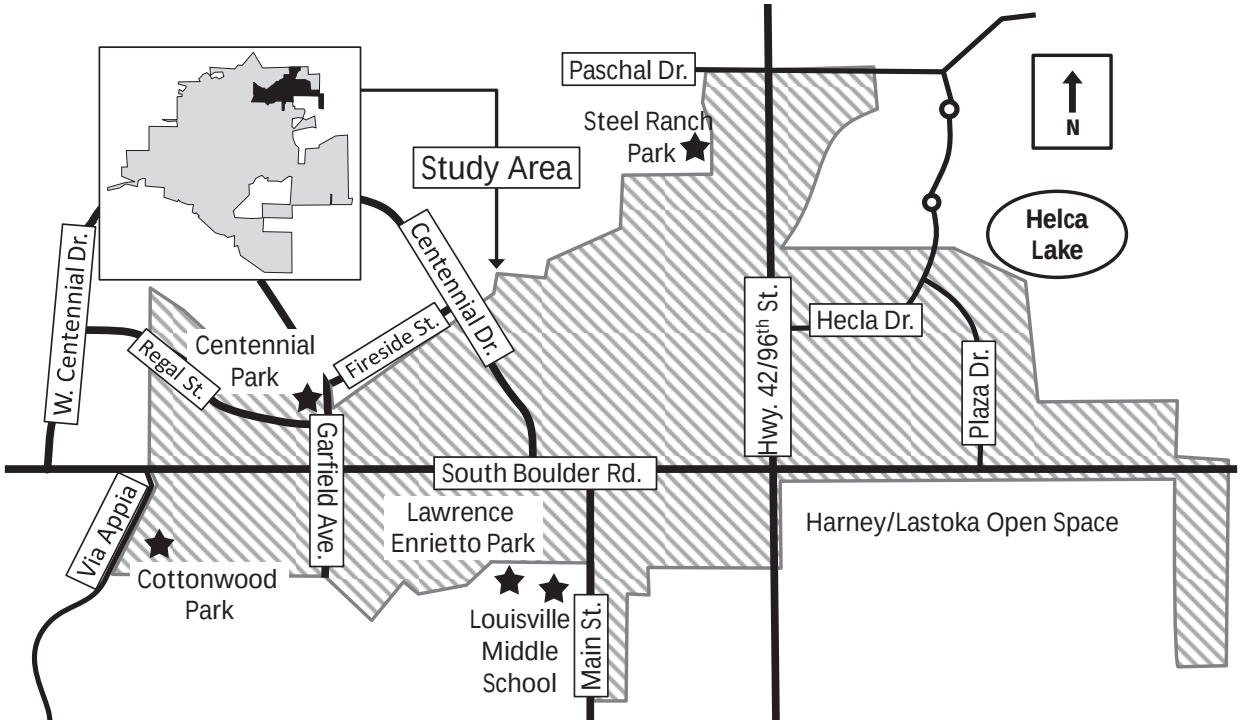
If you choose to complete the survey online, please enter the access code printed at the top of this letter. If you have any questions about the survey please call 303-335-4596.

Thank you for your time and participation.

Sincerely,

Robert P. Muckle, Mayor

Map of Study Area



749 Main Street
Louisville, CO 80027
303.335.4596
FAX 303.335.4550

Dear City of Louisville Resident:

Here's a second chance if you haven't already responded to the survey about the South Boulder Road Small Area Plan in Louisville. (If you completed it and sent it back, we thank you for your time and ask you to recycle this survey. Please do not respond twice.)

The survey shows pictures of what the South Boulder Road area could look like and asks you what you would prefer to see. Even if you live outside the South Boulder Road corridor, we still want to hear from you. Don't miss this opportunity to provide input about an important area in our city. Your participation in this survey is very important – especially since your household is one of 1,200 Louisville households being surveyed.

A few things to remember:

- Your responses are completely confidential.
- In order to hear from a diverse group of residents, the adult 18 years or older in your household who most recently had a birthday should complete this survey.
- You may return the survey by mail in the enclosed postage-paid envelope, or you can complete the survey online at (please type the address exactly as it appears):

  www.n-r-c.com/survey/louisvillesbr.htm

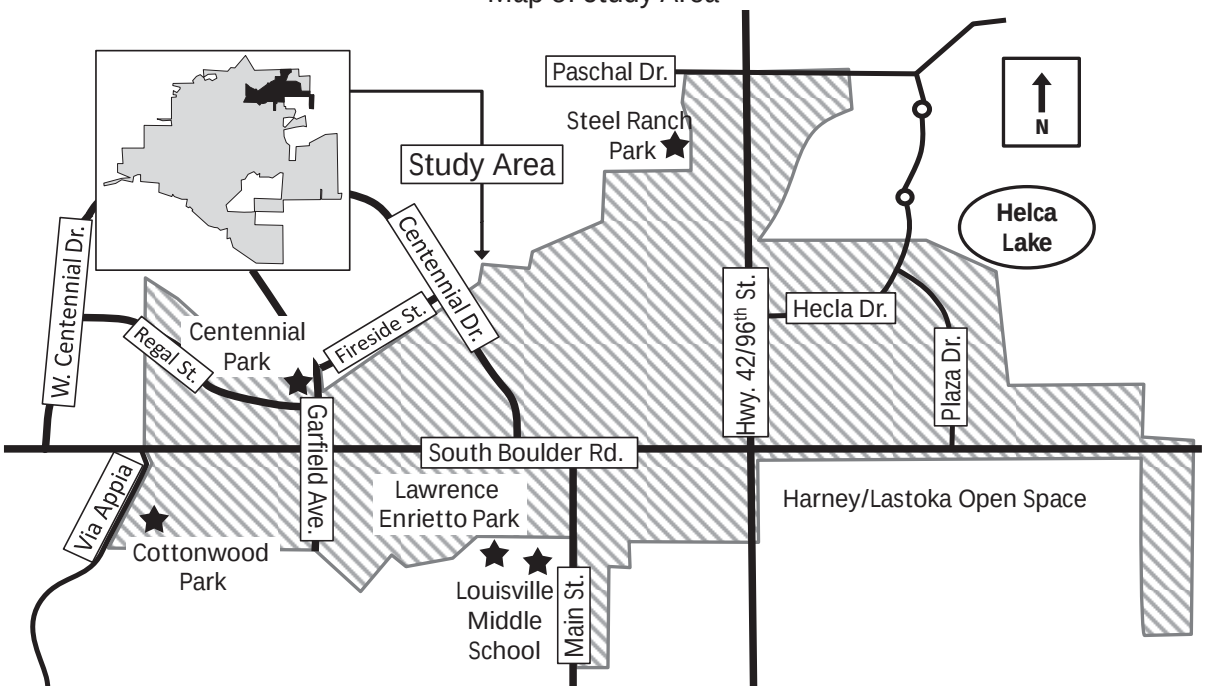
If you choose to complete the survey online, please enter the access code printed at the top of this letter. If you have any questions about the survey please call 303-335-4596.

Thank you for your time and participation.

Sincerely,

Robert P. Muckle, Mayor

Map of Study Area



Please circle the response that most closely represents your opinion for each question. Your responses are confidential and will be reported in group form only.

1. Please rate each of the following for Louisville (City-wide):

	QUALITY				
	Excellent	Good	Fair	Poor	Not familiar
Overall quality of life	1	2	3	4	5
Overall economic health	1	2	3	4	5
Variety of housing options	1	2	3	4	5
Availability of affordable quality housing	1	2	3	4	5
Overall quality of shopping and dining opportunities	1	2	3	4	5
Overall quality of parks, trails and open spaces	1	2	3	4	5
Ease of travel by car	1	2	3	4	5
Ease of travel walking	1	2	3	4	5
Ease of travel by bicycle	1	2	3	4	5
Ease of travel by bus	1	2	3	4	5
Sense of safety traveling throughout the city	1	2	3	4	5
Physical condition of commercial buildings	1	2	3	4	5
Physical condition of residential buildings	1	2	3	4	5

2. First, please rate the quality of each of the following aspects or characteristics as they relate to the South Boulder Road study area (shown in the letter). Then, please tell us how important to you, if at all, it is that the City attempt to improve each of the following in the South Boulder Road study area.

	QUALITY					IMPORTANCE				
	Excellent	Good	Fair	Poor	Not familiar	Essential	Very important	Somewhat important	Not at all important	Not familiar
Variety of housing options	1	2	3	4	5	1	2	3	4	5
Availability of affordable quality housing	1	2	3	4	5	1	2	3	4	5
Overall quality of shopping and dining opportunities	1	2	3	4	5	1	2	3	4	5
Overall quality of parks, trails and open space	1	2	3	4	5	1	2	3	4	5
Ease of travel by car	1	2	3	4	5	1	2	3	4	5
Ease of travel walking	1	2	3	4	5	1	2	3	4	5
Ease of travel by bicycle	1	2	3	4	5	1	2	3	4	5
Ease of travel by bus	1	2	3	4	5	1	2	3	4	5
Sense of safety traveling through the corridor	1	2	3	4	5	1	2	3	4	5
Physical condition of commercial buildings	1	2	3	4	5	1	2	3	4	5
Physical condition of residential buildings	1	2	3	4	5	1	2	3	4	5

3. Which, if any, of the following applies to you in relation to the South Boulder Road study area? (Mark all that apply.)

- ❑ I live in the area (see map in attached letter)
- ❑ My child attends LMS
- ❑ I use parks and trails in the area
- ❑ I shop/dine in the area
- ❑ I use medical/professional services in the area
- ❑ I only travel through the area
- ❑ I work in the area
- ❑ None of the above

4. In a typical month, how many times, if at all, do you visit each of the following?

	Never	1-3 times a month	Once a week	Multiple times a week	Daily
Village Square/Alfalfa's (Stores at Centennial)	1	2	3	4	5
Christopher Village (Stores west of Hwy 42/96th St)	1	2	3	4	5
Louisville Plaza/King Soopers (Stores east of Hwy 42)	1	2	3	4	5
Medical and professional offices along South Boulder Road	1	2	3	4	5
Cottonwood Park	1	2	3	4	5
Harney/Lastoka Open Space	1	2	3	4	5
Recreational trails in the area	1	2	3	4	5

5. First, tell us how many times in a typical month, if at all, you travel through the study area using each of the following modes. Then, please indicate if you'd like to use each mode more, the same amount or less in the study area.

	Never	1-3 times a month	Once a week	Multiple times a week	Daily	Use more	Use the same	Use less
In a car	1	2	3	4	5	1	2	3
In a bus	1	2	3	4	5	1	2	3
On a bicycle	1	2	3	4	5	1	2	3
Walking	1	2	3	4	5	1	2	3

6. Please indicate whether you feel that there are too many, the right amount or not enough of each of the following in the South Boulder Road study area:

HOUSING OPPORTUNITIES	Too many	Right amount	Not enough	Not familiar
Housing for singles / couples (apartments, townhomes, smaller duplex, single-family)	1	2	3	4
Housing for families with children (smaller duplex, single-family)	1	2	3	4
Housing for seniors (smaller one-level single-family house, apartments with elevators)	1	2	3	4
Affordable (subsidized) housing	1	2	3	4
Live/work (combined living and working spaces)	1	2	3	4
SHOPPING AND DINING OPPORTUNITIES				
Restaurants, cafes, coffee shops, pubs/bars	1	2	3	4
Neighborhood shops (dry cleaners, barbers/beauty salon, etc.)	1	2	3	4
Community shops (grocery store, drug store, etc.)	1	2	3	4
Regional shops, such as big box retailers	1	2	3	4
BUSINESS AND PROFESSIONAL SERVICE OPPORTUNITIES				
Work-share spaces	1	2	3	4
Health clinics / medical offices	1	2	3	4
Professional services (lawyers, accountants, etc.)	1	2	3	4
General business offices (corporate offices, etc.)	1	2	3	4
Research and development	1	2	3	4
PARKS AND PUBLIC SPACES				
Bike and pedestrian amenities/recreational trails	1	2	3	4
Small "Parklets" / plazas	1	2	3	4
Neighborhood parks (like Cottonwood Park)	1	2	3	4
Regional park (like Community Park)	1	2	3	4
Indoor community gathering space (arts center, community center, etc.)	1	2	3	4
Outdoor community gathering space (amphitheater, commons, etc.)	1	2	3	4

The following questions are about you and your household. Again, all of your responses to this survey are completely confidential and will be reported in group form only.

D1. Which best describes the building you live in?

- ❑ One family house detached from any other houses
- ❑ Building with two or more homes (duplex, townhome, apartment or condominium)
- ❑ Mobile home
- ❑ Other

D2. Do you rent or own your home?

❑ Rent ❑ Own

D3. How many people, including yourself, live in your household?

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6+

D4. What is your gender?

❑ Female ❑ Male

D5. In which category is your age?

- ❑ 18-24 years
- ❑ 25-34 years
- ❑ 35-44 years
- ❑ 45-54 years
- ❑ 55-64 years
- ❑ 65-74 years
- ❑ 75 years or older

D6. Are you currently employed?

- ❑ Yes→**Go to question D7**
- ❑ No

D7. In which city do you work? _____

D8. About how much do you estimate your household's total income before taxes will be for the current year?

- ❑ Less than $24,999
- ❑ $25,000 to $49,999
- ❑ $50,000 to $99,999
- ❑ $100,000 to $149,999
- ❑ $150,000 or more
- ❑ Prefer not to answer

Design Element Photograph Comparisons

There are a number of things that contribute to the way South Boulder Road could look, which we call design elements. We have chosen a set of four photos to show options for each of nine design elements. For each photo on the pages that follow, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. Please evaluate only the design element asked about in each question.

Design Element #1: Commercial Building Height/Size

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Below each photo is a brief description of the specific design element being asked about, followed by the question and response options.)

1A. 1-story.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

1B. 2-story.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

1C. 2 or 3-story.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

1D. 3.5-story.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

Design Element #2: Commercial Building Placement (Setback)

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Below each photo is a brief description of the specific design element followed by the question and response options.)

2A. Setback 15-20 feet from street and sidewalk.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

2B. Parking lot in front.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

2C. No setback.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

2D. 10 foot setback, directly adjacent to sidewalk.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

Design Element #3: Multi Family Residential Building Height/Size

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Below each photo is a brief description of the specific design element followed by the question and response options.)

3A. 1-story duplex.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

3B. 2-story townhouses.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

3C. 3-story apartment building.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

3D. Apartments/condos above retail/commercial (mixed-use building).
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

Design Element #4: Multi Family Residential Building Placement (Setback)

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Below each photo is a brief description of the specific design element followed by the question and response options.)

4A. 5 foot setback with stoop.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

4B. 5 - 10 foot setback with porches.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

4C. 15 - 20 foot setback with porches and small yards.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

4D. 20+ foot setback with shared entryways.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

Design Element #5: Park/Plaza

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Below each photo is a brief description of the specific design element followed by the question and response options.)

5A. Recreational Park.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

5B. Town Green.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

5C. Parklet.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

5D. Plaza.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

Design Element #6: Streetscape

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Below each photo is a brief description of the specific design element followed by the question and response options.)

6A. Sidewalk right up against street.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

6B. Sidewalk buffered from street and parking with landscaping.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

6C. Regular size sidewalk with some amenities.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

6D. Wide sidewalk with many pedestrian amenities.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

Design Element #7: Parking Placement

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Below each photo is a brief description of the specific design element followed by the question and response options.)

7A. Parking lot on side of building.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

7B. Diagonal parking in street.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

7C. Parallel street parking.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

7D. Large parking lot in front of building.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

Design Element #8: Parking Edge

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Below each photo is a brief description of the specific design element followed by the question and response options.)

8A. No buffer between parking and sidewalk.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

8B. Minimal landscaped buffer.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

8C. Landscaped buffer with amenities.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

8D. Low wall.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

Design Element #9: Business Signage

For each photo below, tell us whether you think the design element shown would be an excellent fit, a good fit, a fair fit or a poor fit for the South Boulder Road study area. (Below each photo is a brief description of the specific design element followed by the question and response options.)

9A. Projecting.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

9B. Internally-illuminated.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

9C. Awning.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

9D. Monument with tenant change panels.
For the South Boulder Road study area, is this an…
❑ Excellent fit ❑ Good fit ❑ Fair fit ❑ Poor fit

City of Louisville

749 Main Street
Louisville, CO 80027
303.335.4596
FAX 303.335.4550

Dear City of Louisville Resident:

Please help us shape the future of Louisville and the South Boulder Road corridor. As part of the City's South Boulder Road Small Area Plan process, we are trying to determine the community's vision and desired uses for the area. The enclosed survey shows different possibilities for the area and we want to know what you think it should look like. Even if you live outside the South Boulder Road corridor, we still want to hear from you.

Your participation in this survey is very important – especially since your household is one of only 1,200 Louisville households being surveyed.

A few things to remember:

- Your responses are completely confidential.
- In order to hear from a diverse group of residents, the adult 18 years or older in your household who most recently had a birthday should complete this survey.
- After the two pages of survey questions, you will be asked to go online to complete the photograph comparison portion of the survey.
- You may complete and return the two pages of survey questions that follow by mail in the enclosed postage-paid envelope, or you can complete the entire survey online at (please type the address exactly as it appears): www.n-r-c.com/survey/louisvillesbr.htm

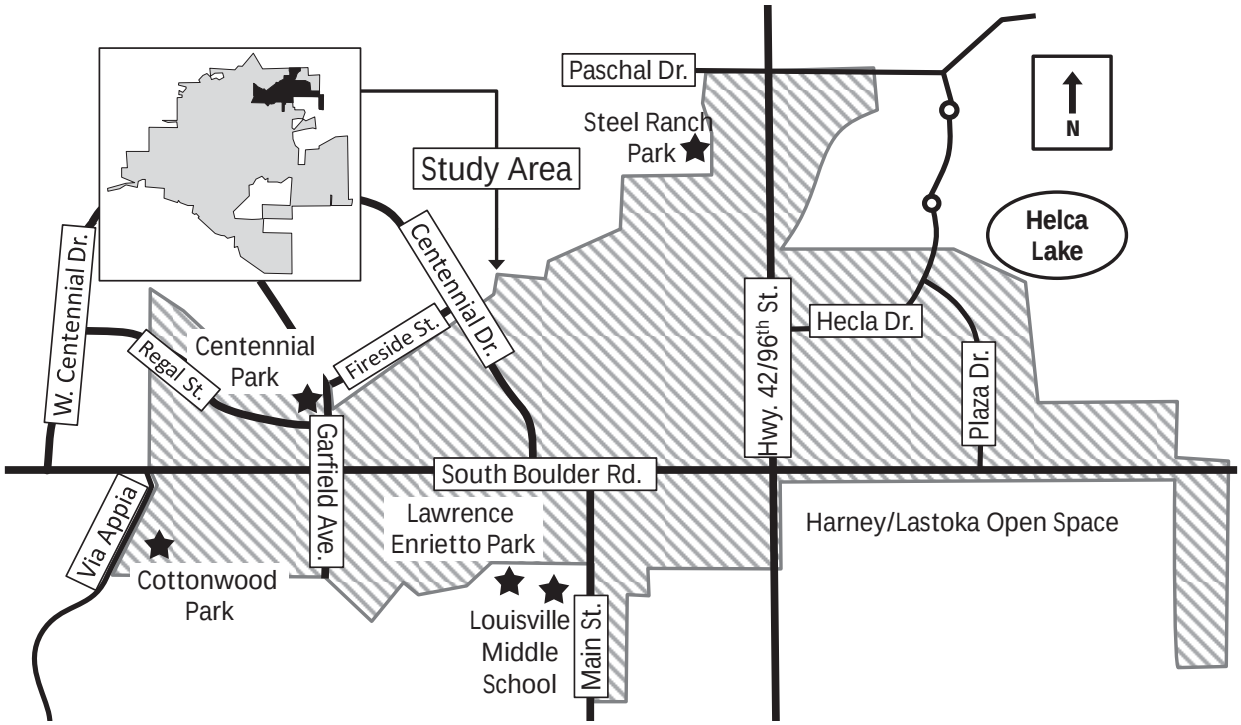
To complete the survey online, please enter the access code printed at the top of this letter. If you have any questions about the survey please call 303-335-4596.

Thank you for your time and participation.

Sincerely,

Robert P. Muckle, Mayor

Map of Study Area



City of Louisville

749 Main Street
Louisville, CO 80027
303.335.4596
FAX 303.335.4550

Dear City of Louisville Resident:

Here's a second chance if you haven't already responded to the survey about the South Boulder Road Small Area Plan in Louisville. (If you completed it and sent it back, we thank you for your time and ask you to recycle this survey. Please do not respond twice.)

The survey shows pictures of what the South Boulder Road area could look like and asks you what you would prefer to see. Even if you live outside the South Boulder Road corridor, we still want to hear from you. Don't miss this opportunity to provide input about an important area in our city. Your participation in this survey is very important – especially since your household is one of 1,200 Louisville households being surveyed.

A few things to remember:

- Your responses are completely confidential.
- In order to hear from a diverse group of residents, the adult 18 years or older in your household who most recently had a birthday should complete this survey.
- After the two pages of survey questions, you will be asked to go online to complete the photograph comparison portion of the survey.
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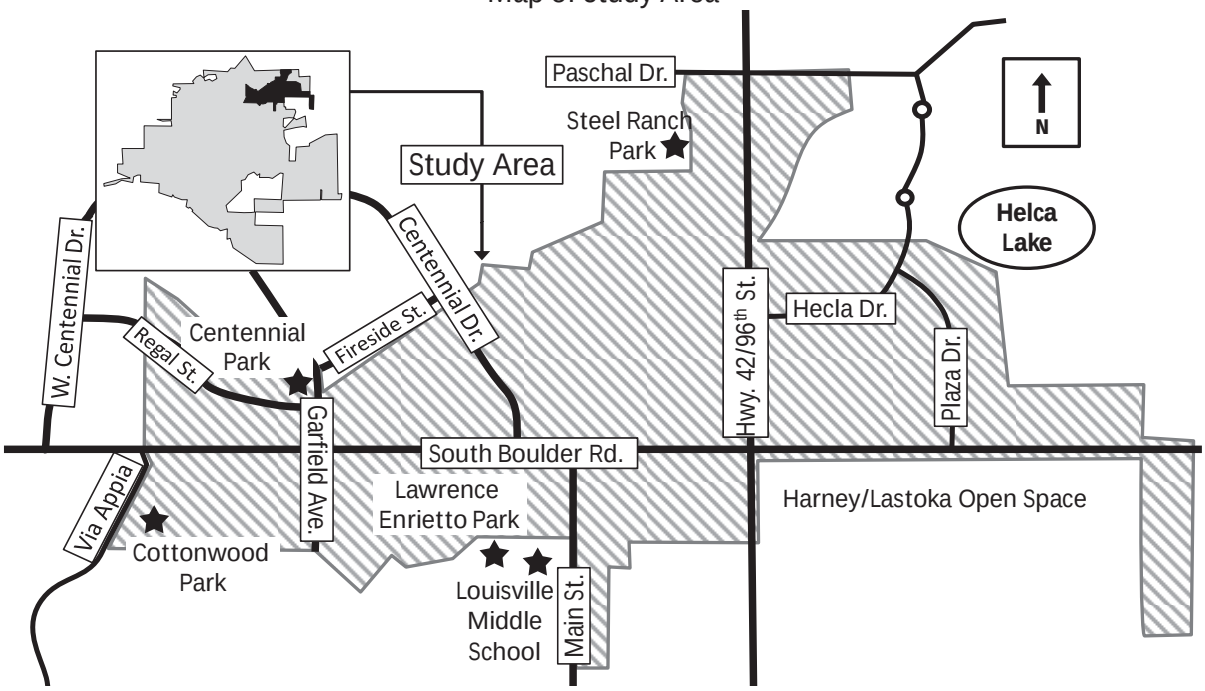
Map of Study Area



Please circle the response that most closely represents your opinion for each question. Your responses are confidential and will be reported in group form only.

1. Please rate each of the following for Louisville (City-wide):

	QUALITY				
	Excellent	Good	Fair	Poor	Not familiar
Overall quality of life	1	2	3	4	5
Overall economic health	1	2	3	4	5
Variety of housing options	1	2	3	4	5
Availability of affordable quality housing	1	2	3	4	5
Overall quality of shopping and dining opportunities	1	2	3	4	5
Overall quality of parks, trails and open spaces	1	2	3	4	5
Ease of travel by car	1	2	3	4	5
Ease of travel walking	1	2	3	4	5
Ease of travel by bicycle	1	2	3	4	5
Ease of travel by bus	1	2	3	4	5
Sense of safety traveling throughout the city	1	2	3	4	5
Physical condition of commercial buildings	1	2	3	4	5
Physical condition of residential buildings	1	2	3	4	5

2. First, please rate the quality of each of the following aspects or characteristics as they relate to the South Boulder Road study area (shown in the letter). Then, please tell us how important to you, if at all, it is that the City attempt to improve each of the following in the South Boulder Road study area.

	QUALITY					IMPORTANCE				
	Excellent	Good	Fair	Poor	Not familiar	Essential	Very important	Somewhat important	Not at all important	Not familiar
Variety of housing options	1	2	3	4	5	1	2	3	4	5
Availability of affordable quality housing	1	2	3	4	5	1	2	3	4	5
Overall quality of shopping and dining opportunities	1	2	3	4	5	1	2	3	4	5
Overall quality of parks, trails and open space	1	2	3	4	5	1	2	3	4	5
Ease of travel by car	1	2	3	4	5	1	2	3	4	5
Ease of travel walking	1	2	3	4	5	1	2	3	4	5
Ease of travel by bicycle	1	2	3	4	5	1	2	3	4	5
Ease of travel by bus	1	2	3	4	5	1	2	3	4	5
Sense of safety traveling through the corridor	1	2	3	4	5	1	2	3	4	5
Physical condition of commercial buildings	1	2	3	4	5	1	2	3	4	5
Physical condition of residential buildings	1	2	3	4	5	1	2	3	4	5

3. Which, if any, of the following applies to you in relation to the South Boulder Road study area? (Mark all that apply.)

- ❑ I live in the area (see map in attached letter)
- ❑ My child attends LMS
- ❑ I use parks and trails in the area
- ❑ I shop/dine in the area
- ❑ I use medical/professional services in the area
- ❑ I only travel through the area
- ❑ I work in the area
- ❑ None of the above

4. In a typical month, how many times, if at all, do you visit each of the following?

	Never	1-3 times a month	Once a week	Multiple times a week	Daily
Village Square/Alfalfa's (Stores at Centennial)	1	2	3	4	5
Christopher Village (Stores west of Hwy 42/96th St)	1	2	3	4	5
Louisville Plaza/King Soopers (Stores east of Hwy 42)	1	2	3	4	5
Medical and professional offices along South Boulder Road	1	2	3	4	5
Cottonwood Park	1	2	3	4	5
Harney/Lastoka Open Space	1	2	3	4	5
Recreational trails in the area	1	2	3	4	5

5. First, tell us how many times in a typical month, if at all, you travel through the study area using each of the following modes. Then, please indicate if you'd like to use each mode more, the same amount or less in the study area.

	Never	1-3 times a month	Once a week	Multiple times a week	Daily	Use more	Use the same	Use less
In a car	1	2	3	4	5	1	2	3
In a bus	1	2	3	4	5	1	2	3
On a bicycle	1	2	3	4	5	1	2	3
Walking	1	2	3	4	5	1	2	3

6. Please indicate whether you feel that there are too many, the right amount or not enough of each of the following in the South Boulder Road study area:

HOUSING OPPORTUNITIES	Too many	Right amount	Not enough	Not familiar
Housing for singles / couples (apartments, townhomes, smaller duplex, single-family)	1	2	3	4
Housing for families with children (smaller duplex, single-family)	1	2	3	4
Housing for seniors (smaller one-level single-family house, apartments with elevators)	1	2	3	4
Affordable (subsidized) housing	1	2	3	4
Live/work (combined living and working spaces)	1	2	3	4
SHOPPING AND DINING OPPORTUNITIES				
Restaurants, cafes, coffee shops, pubs/bars	1	2	3	4
Neighborhood shops (dry cleaners, barbers/beauty salon, etc.)	1	2	3	4
Community shops (grocery store, drug store, etc.)	1	2	3	4
Regional shops, such as big box retailers	1	2	3	4
BUSINESS AND PROFESSIONAL SERVICE OPPORTUNITIES				
Work-share spaces	1	2	3	4
Health clinics / medical offices	1	2	3	4
Professional services (lawyers, accountants, etc.)	1	2	3	4
General business offices (corporate offices, etc.)	1	2	3	4
Research and development	1	2	3	4
PARKS AND PUBLIC SPACES				
Bike and pedestrian amenities/recreational trails	1	2	3	4
Small "Parklets" / plazas	1	2	3	4
Neighborhood parks (like Cottonwood Park)	1	2	3	4
Regional park (like Community Park)	1	2	3	4
Indoor community gathering space (arts center, community center, etc.)	1	2	3	4
Outdoor community gathering space (amphitheater, commons, etc.)	1	2	3	4

The following questions are about you and your household. Again, all of your responses to this survey are completely confidential and will be reported in group form only.

D1. Which best describes the building you live in?

- ❑ One family house detached from any other houses
- ❑ Building with two or more homes (duplex, townhome, apartment or condominium)
- ❑ Mobile home
- ❑ Other

D2. Do you rent or own your home?

❑ Rent ❑ Own

D3. How many people, including yourself, live in your household?

❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6+

D4. What is your gender?

❑ Female ❑ Male

D5. In which category is your age?

- ❑ 18-24 years
- ❑ 25-34 years
- ❑ 35-44 years
- ❑ 45-54 years
- ❑ 55-64 years
- ❑ 65-74 years
- ❑ 75 years or older

D6. Are you currently employed?

- ❑ Yes→**Go to question D7**
- ❑ No

D7. In which city do you work? _____

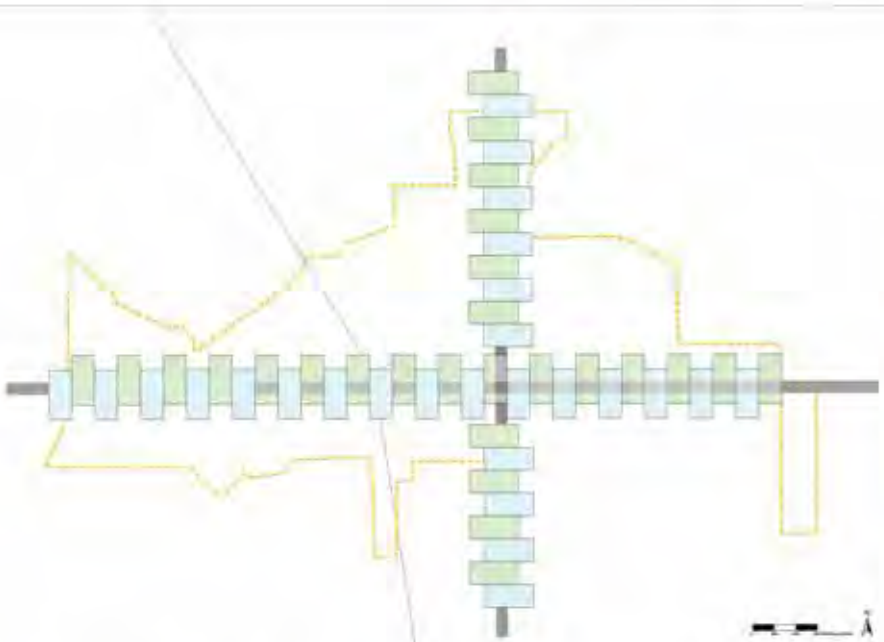
D8. About how much do you estimate your household's total income before taxes will be for the current year?

- ❑ Less than $24,999
- ❑ $25,000 to $49,999
- ❑ $50,000 to $99,999
- ❑ $100,000 to $149,999
- ❑ $150,000 or more
- ❑ Prefer not to answer

Design Element Photograph Comparisons (Please go online to complete!)

There are a number of things that contribute to the way South Boulder Road could look, which we call design elements. We have chosen a set of four photos to show options for each of nine design elements. To complete the photograph comparison section only, please go to the following website: www.n-r-c.com/survey/louisvillesbrphotos.htm You will need to enter your access code located in the upper right corner of the letter attached to this survey. Thank you in advance for completing this important portion of the survey online! We appreciate your feedback.

URBAN DESIGN PRINCIPLES



A Zipper, not a barrier

Sidewalks and plazas facing onto South Boulder Road

Safe intersections that allow people to cross South Boulder Road and 42

Traffic flow / speed that is not detrimental to businesses or people along the corridor

A continuous and connected high quality pedestrian experience

Development that Contributes

To be defined by the community

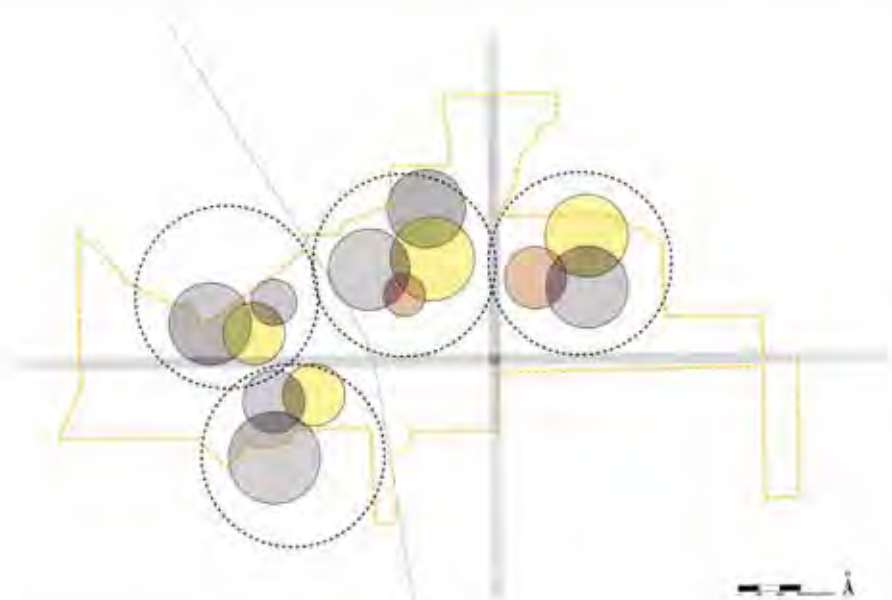
Greenspaces

Housing Choices

New trail connections

Semi-public gathering spaces

URBAN DESIGN PRINCIPLES

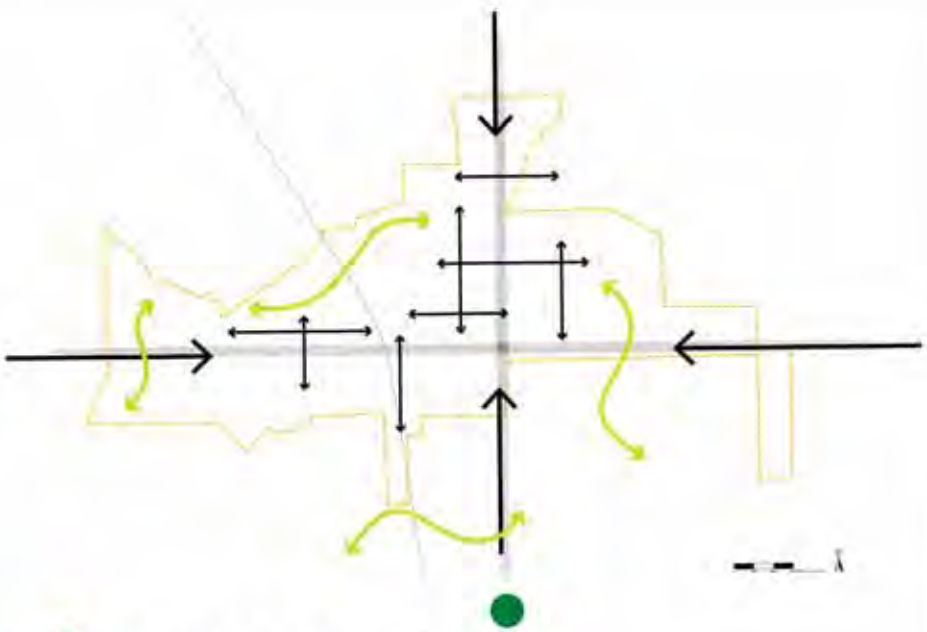


Go to and Stay at Places

Public spaces that encourage gathering and interaction

A range of retail and entertainment uses that encourage longer visits

Small parks and plazas that increase the appeal and experience of daily activities.



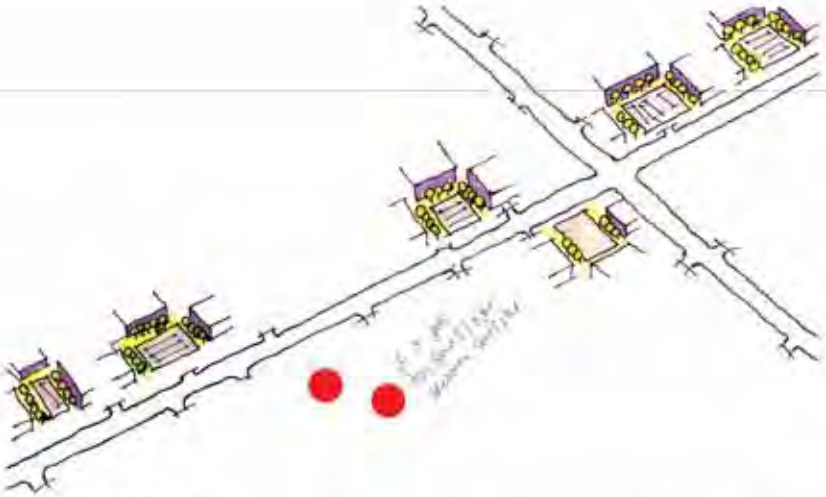
Easy to get to, easy to get around

Safe grade separated trail connections to all quadrants

Properties connected with driveways and walks

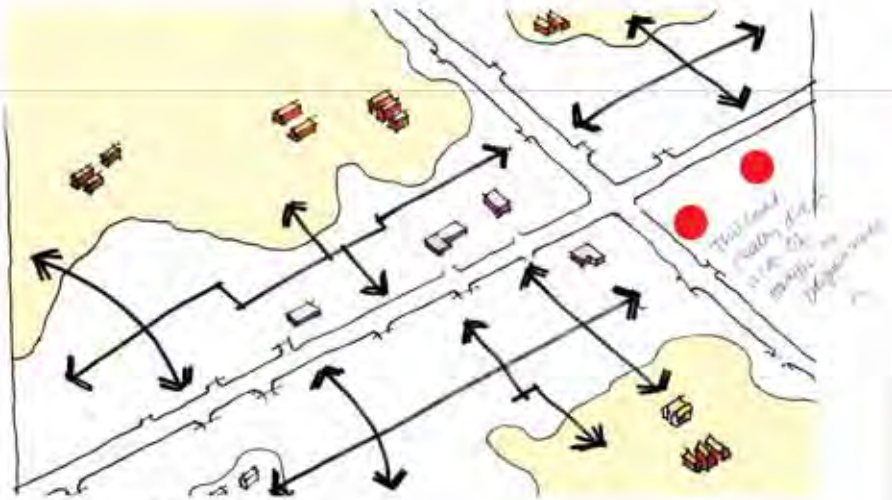
A street network that offers balanced choices to move around

Opportunities to "park once and walk"



Parking rooms

Smaller, comfortable, high performing, places to park your car once and walk from place to place



Transitional Streets

Streets that fill the gap between busy and quiet.

Pedestrian Oasis

Small comfortable places along the corridor that humanize the corrridor

Windows to the Comm

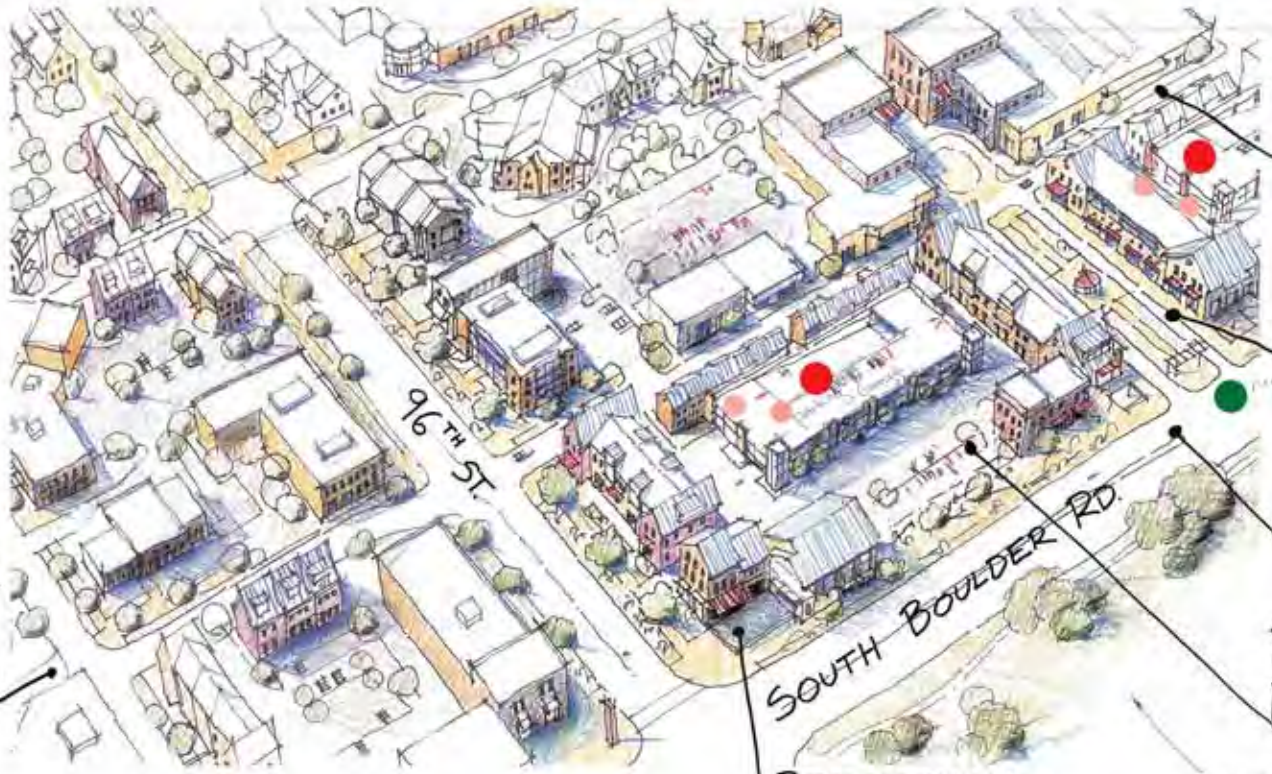
Perpendicular streets and spaces that showcase the community

Village Square


SMALL BUILDINGS WITH A VARIETY OF STYLES
TRANSITIONAL STREETS THAT CONNECT PROPERTIES
PARKING ROOMS WITH ACTIVE EDGES
PARKING ROOMS
PEDESTRIAN OASIS ON BOTH SIDES OF PARKING LOT
ALFALFA'S
South Boulder Road

Louisville Plaza

Christopher Plaza & Louisville Plaza (Kings)



TRANSITIONAL STREETS

VIEWS INTO THE COMMUNITY

15-20 FT SETBACKS

PARKING VISIBLE FROM S BOULDER RD

TRANSITIONAL STREETS THAT CONNECT TO NEIGHBORHOOD

PEDESTRIAN OASIS


VIEWS INTO THE COMMUNITY
INCORPORATE EXISTING ANCHORS INTO NEW DEVELOPMENT
VARIETY OF BUILDINGS AND STYLES
WIDE SIDEWALKS
SOUTH BOULDER RD
OPEN SPACES FOR GATHERING

Existing Conditions

Existing Conditions with recently planned or constructed projects

One Story Scenario

Two Story Scenario

Three Story Scenario

Existing Conditions

Existing Conditions with recently planned or constructed projects

One Story Scenario

Two Story Scenario

Three Story Scenario

Development Scenario
Mobility Measures

South Boulder Road Corridor	Average Speed (mph)		Average Corridor Travel Time		Fuel Consumed (gal)	
	EB	WB	EB	WB	EB	WB
Existing Network						
AM Peak	21	23	3 min 17 sec	3 min 0 sec	53	94
PM Peak	19	23	3 min 38 sec	3 min 0 sec	111	64
Existing Optimized						
AM Peak	24	27	2 min 53 sec	2 min 33 sec	48	74
PM Peak	22	23	3 min 8 sec	3 min 0 sec	96	65
Buildout (1 Story)						
AM Peak	22	24	3 min 8 sec	2 min 53 sec	64	88
PM Peak	18	19	3 min 50 sec	3 min 38 sec	133	111
Buildout (2 Story)						
AM Peak	20	23	3 min 27 sec	3 min 0 sec	83	100
PM Peak	16	18	4 min 19 sec	3 min 50 sec	142	121
Buildout (3 Story)						
AM Peak	18	22	3 min 50 sec	3 min 8 sec	110	114
PM Peak	12	14	5 min 45 sec	4 min 56 sec	196	172

Fiscal Analysis

Projected Development by Scenario	
Existing in Study Area	
Retail	352,729 Square feet
Office	178,608 Square feet
Residential	407 Units
Employees	1,682 People
Residents	569 People
20 yr Increase over Existing	
1-story scenario	
Retail	632,683 Square feet
Office	277,963 Square feet
Residential	626 Units
Employees	3,089 People
Residents	921 People
2-story scenario	
Retail	507,523 Square feet
Office	872,132 Square feet
Residential	710 Units
Employees	4,981 People
Residents	959 People
3-story scenario	
Retail	504,019 Square feet
Office	1,518,738 Square feet
Residential	1,006 Units
Employees	7,280 People
Residents	1,359 People

20 yr Cumulative Fiscal Impact Revenue by Fund	1-story	2-story	3-story
General Fund	$45,637,802	$41,012,330	$44,704,012
Urban Revitalization District Fund	$3,392,039	$4,947,234	$7,927,491
Open Spaces & Parks Fund	$8,253,024	$7,306,719	$8,151,589
Lottery Fund	$0	$0	$0
Historic Preservation Fund	$2,834,333	$2,558,353	$2,895,181
Capital Projects Fund	$24,467,970	$22,290,478	$25,931,125
TOTAL REVENUE	**$84,585,166**	**$78,115,113**	**$89,609,398**
Expenditures by Fund			
General Fund	$23,032,000	$29,769,825	$38,172,674
Urban Revitalization District Fund	$0	$0	$0
Open Spaces & Parks Fund	$510,666	$531,620	$1,365,031
Lottery Fund	$0	$0	$0
Historic Preservation Fund	$0	$0	$0
Capital Projects Fund	$21,429,557	$36,822,139	$45,024,018
TOTAL EXPENDITURES	**$44,972,222**	**$67,123,585**	**$84,561,723**
NET FISCAL RESULT BY FUND			
General Fund	$22,605,802	$11,242,504	$6,531,337
Urban Revitalization District Fund	$3,392,039	$4,947,234	$7,927,491
Open Spaces & Parks Fund	$7,742,357	$6,775,099	$6,786,558
Lottery Fund	$0	$0	$0
Historic Preservation Fund	$2,834,333	$2,558,353	$2,895,181
Capital Projects Fund	$3,038,413	-$14,531,661	-$19,092,892
NET FISCAL IMPACT	**$39,612,944**	**$10,991,528**	**$5,047,675**


Hwy 42 Underpass budgeted for 2018
Remove right turn lane or consider introducing an off-set left turn lanes at Garfield
Pedestrian improvements at Via Appia if an underpass in not constructed
Consider constructing an off-set left turn at Main Street and allow Steel Street to function as a two-way Street
Add crosswalk to Plaza Drive at Hecla Way
Consider nonsignalized full movement at Blue Star
Add bike lanes and consider removing acceleration and deceleration lanes
Alternatives for the eastbound right turn lane at Main Street
Create a southern trail parallel to South Boulder
Tighten Main Street's turn radii
Consider a pedestrian underpass at Via Appia
Development Scenario
Mobility Measures
SOUTH BOULDER ROAD SMALL AREA PLAN
Transportation Improvement Alternatives

City of Louisville
South Boulder Road
Small Area Plan

TRANSPORATION ASSESSMENT MEMORANDUM

JANUARY 2016

Prepared By:

Kimley»Horn

Contents

Figures

TABLES

INTRODUCTION

This Transportation Assessment Memorandum has been prepared for the City of Louisville (Louisville) to help understand how well the existing transportation system along the South Boulder Road corridor performs. For the purposes of this assessment, the South Boulder Road corridor is generally bound by Via Appia to the west and the Louisville City Limits to the east.

A map illustrating the study area is provided in **Figure 1**.

EXISTING CONDITIONS

ROADWAY CHARACTERISTICS

According to Louisville's Comprehensive Plan, South Boulder Road is an "Urban Corridor" throughout the study area with the exception of the segment at Highway 42 where it transitions to "Urban Center". South Boulder Road provides two lanes of travel in each direction (eastbound and westbound) and has a posted speed limit of 35 miles per hour (MPH) through the corridor. South Boulder Road services both local and commuter traffic. The roadway provides a connection between Louisville and the communities east and west, primarily Boulder and Lafayette. According to the Comprehensive Plan, approximately 64 percent of the total trips along South Boulder Road through the study area are local.

The following six signalized Intersections are located along South Boulder Road within the study area:

- Via Appia
- Garfield Avenue
- Centennial Drive
- Main Street
- Highway 42
- Plaza Drive

There is one signalized pedestrian crossing within the study area, directly east of the Plaza Drive intersection. The existing intersection lane configuration and control for each of the signalized intersections are shown in **Figure 2**.

TRAFFIC VOLUMES

Existing peak hour turning movement counts were provided by Louisville for each signalized intersection along South Boulder Road. The turning movement counts were conducted on Tuesday, October 8, 2013 for the Via Appia, Garfield Avenue, Centennial Drive, Main Street, and Plaza Drive intersections along South Boulder Road and on Wednesday, November 16, 2011 for the Highway 42 and South Boulder Road intersection. The counts were conducted in 15-minute intervals during the morning (AM) and afternoon (PM) peak hours of adjacent street traffic from 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM on the count days. Existing traffic volumes from the turning movement counts are shown in **Figure 3** and the count sheets are provided in the **Appendix**.

LEVEL OF SERVICE

Kimley-Horn performed a level of service analysis of the corridor to determine any existing capacity deficiencies at the six signalized intersections. The acknowledged source for determining overall capacity is the Transportation Research Board's *Highway Capacity Manual, Special Report 209* (2010). Per the Highway Capacity Manual, capacity analysis results are listed in terms of level of service (LOS). LOS is a qualitative term describing operating conditions a driver will experience while traveling on a particular street or highway during a specific time interval. It ranges from A (very little delay) to F (long delays and congestion). **Table 1** shows the definition of level of service for signalized and unsignalized intersections. LOS for a signalized and four-way stop controlled intersection is defined for the intersection as a whole as well as each approach.

Table 1. Level of Service Definitions

Level of Service	Signalized Intersection Average Total Delay (sec/veh)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80
Source: **Highway Capacity Manual, Special Report 209, Transportation Research Board (2010)**	

Synchro traffic analysis software was used to analyze the study area intersections for LOS. The Synchro software utilizes Highway Capacity Manual (HCM) methodology to calculate intersection delay and LOS. The results of the Syncho LOS analysis for the six signalized intersections and each of their approaches within the study corridor are shown in **Table 2** and on **Figure 2**. The Synchro worksheets for the LOS analysis are provided in the **Appendix**.

The LOS analysis was conducted utilizing the existing signal cycle lengths and phasing observed during a site visit. Also reported within **Table 2** are the LOS analysis results when the cycle lengths are optimized along the corridor. The optimization involved several changes to the existing signal lengths during the peak hour along the corridor. The signal lengths used for the optimized LOS analysis are provided in **Table 3**. Optimizing the signal cycle lengths results in an improved LOS for several intersection approaches along the corridor, most notably for the eastbound approach at the Main Street intersection, the north and southbound approaches at Garfield Avenue, and the southbound approach at Plaza Drive.

Table 2. Existing Intersection LOS

Intersection	Intersection Approach	LOS (AM/PM)	Optimized LOS (AM/PM)
Via Appia		**A/B**	**A/B**
	Northbound	D/D	C/D
	Eastbound	A/B	A/B
	Westbound	A/A	A/A
Garfield Avenue		**B/A**	**A/A**
	Northbound	D/D	C/C
	Southbound	C/D	B/C
	Eastbound	A/A	A/A
	Westbound	A/A	A/A
Centennial Drive		**A/A**	**A/A**
	Southbound	D/D	D/D
	Eastbound	A/A	A/A
	Westbound	A/A	A/A
Main Street		**B/B**	**A/B**
	Northbound	D/D	D/D
	Eastbound	B/B	A/A
	Westbound	A/A	A/A
Highway 42		**C/D**	**C/D**
	Northbound	C/D	D/D
	Southbound	D/D	D/D
	Eastbound	C/D	C/C
	Westbound	C/D	C/D
Plaza Drive		**B/B**	**A/A**
	Southbound	C/D	B/C
	Eastbound	A/A	A/A
	Westbound	A/A	A/A

Table 3. Peak Hour Signal Cycle Length

Intersection	Existing Cycle Length (seconds, AM/PM)	Optimized Cycle Length (seconds, AM/PM)
Via Appia	100/120	90/120
Garfield Avenue	100/120	45/60
Centennial Drive	120/120	90/120
Main Street	120/120	90/120
Highway 42	75/120	90/120
Plaza Drive	105/120	45/60

QUEUE LENGTHS

Queue lengths were also analyzed utilizing the Synchro traffic analysis software. The Synchro software utilizes Highway Capacity Manual (HCM) methodology to calculate queue lengths at each intersection approach. The results of the queue analysis for each approach of the six study signalized intersections is provided in **Table 4**. The Synchro worksheets showing the queue length analysis are provided in the **Appendix**.

Table 4. Existing Queue Lengths

Intersection	Movement	Existing Length (feet)	Existing AM (feet)	Existing PM (feet)	Optimized AM (feet)	Optimized PM (feet)
Via Appia						
	Northbound Right	180	92	324	92	324
	Northbound Left	C	70	83	63	83
	Eastbound Right	100'	10	37	11	37
	Westbound Left	140'	58	**193**	23	74
Garfield Avenue						
	Northbound Left	65	**113**	64	64	38
	Southbound Left	65	44	**92**	25	53
	Eastbound Left	75	6	4	3	8
	Eastbound Right	80	3	1	1	10
	Westbound Left	70	16	17	8	27
Centennial Drive						
	Southbound Left	C	130	144	103	146
	Southbound Right	90	33	36	28	37
	Eastbound Left	90	13	14	4	5
Main Street						
	Northbound Left	C	109	131	91	131
	Northbound Right	120	49	114	46	114
	Eastbound Right	120	12	38	3	40
	Westbound Left	180	51	75	8	69
Highway 42						
	Northbound Left	220	138	89	139	89
	Southbound Left	155	65	96	61	96
	Southbound Right	260	114	70	127	70
	Eastbound Left	150/300	124	219	126	189
	Westbound Left	220	112	147	121	141
	Westbound Right	260	19	1	36	10
Plaza Drive						
	Southbound Left	150	52	**238**	29	124

Intersection	Movement	Existing Length (feet)	Existing AM (feet)	Existing PM (feet)	Optimized AM (feet)	Optimized PM (feet)
	Southbound Right	C	47	54	39	36
	Eastbound Left	275	21	23	5	18
	Westbound Right	100	19	18	13	18

As shown in the table, all existing queues of the South Boulder Road key intersections are accommodated within the existing storage bays except for the following:

- Westbound Left Turn at Via Appia,
- Northbound and Southbound Left Turns at the Garfield Avenue, and
- Southbound Left Turn at Plaza Drive

Traffic signal optimization of the Via Appia, Garfield Avenue, and Plaza Drive intersections along South Boulder Road address the existing queueing issues observed.

TRAVEL TIMES

Actual travel time data was collected along the segment of South Boulder Road between Via Appia and Plaza Drive based on vehicle travel runs. The eastbound and westbound AM and PM peak hour travel times for this segment of the study corridor are provided in **Table 5** below.

Table 5. South Boulder Road – Existing Peak Hour Travel Times

Direction	Travel Time	
	AM Peak Hour	**PM Peak Hour**
Eastbound	3 minutes, 20 seconds	3 minutes, 44 seconds
Westbound	2 minutes, 56 seconds	2 minutes, 52 seconds
Source: **Kimley-Horn and Associates, Inc. (2015)**		

ACCIDENT HISTORY

Louisville provided accident history data for the study. Based on this data, a total of 157 accidents were reported at the signalized intersections along the study corridor over the three year study period of 2012, 2013, and 2014. The 157 accidents involved 308 vehicles, resulting in 48 injuries. Data on the severity of the injuries was not provided. The intersection with the highest accident concentration was the South Boulder Road/Highway 42 intersection, where 62 of the crashes occurred. The remaining five study area intersections all had similar crash numbers and rates. The reported accidents by intersection are shown in **Figure 4**.

FUTURE CONDITIONS

Louisville's Comprehensive Plan provides several recommendations for South Boulder Road. These recommendations include:

- A silent railroad crossing of at-grade crossing east of Main Street;
- Consideration of a realignment for Main Street to Centennial Drive;
- Introducing a new roadway network connection between Main Street and Highway 42; and
- Locating retail and commercial land uses in close proximity to South Boulder Road to provide visibility and access

Of the four recommendations provided above, it is understood that the City of Louisville does not desire to evaluate a realignment of Main Street to Centennial Drive. The recommendation included for evaluation within this study is introducing the new roadway network connection, herein named Kaylix Avenue/Cannon Street to intersection South Boulder Road at a signalized intersection between Main Street and SH-42. In addition, right turn lanes were removed where feasible as directed by the City's Planning Department to determine if acceptable operations would result.

Future traffic volumes were identified for the study area based on the planned development locations, uses, and type. These were refined into three separate development densities, known as 1-story, 2-story, and 3-story. The 3-story development uses are possible to develop per the current zoning. An evaluation of the 1-story and 2-story build out options was conducted to provide an overall comparison. The trip generation for the new development in the study area for each development density is shown in **Table 6**.

Table 6. South Boulder Road Trip Generation

Vehicle Trip Generation							
		AM			PM		
Scenario	**Size**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
3 Story							
Residential	1,006 Units	107	322	429	331	195	526
Office	1,518,737 SF	1343	183	1526	268	1311	1579
Retail	504,019 SF	125	76	201	380	411	791
Total		**1575**	**581**	**2156**	**979**	**1917**	**2896**
2 Story							
Residential	711 Units	56	167	223	180	106	286
Office	872,132 SF	793	108	901	145	710	855
Retail	507,522 SF	126	78	204	385	418	803
Total		**975**	**353**	**1328**	**710**	**1234**	**1944**
1 Story							
Residential	627 Units	41	123	164	135	79	214
Office	277,963 SF	167	23	190	32	158	190
Retail	632,682 SF	181	111	292	573	621	1194
Total		**389**	**257**	**646**	**740**	**858**	**1598**

As shown in the trip generation table, the 3-story alternative of development is anticipated to generate approximately 2,156 morning peak hour and 2,896 afternoon peak hour new trips to the surrounding street network. By comparison, the 2-story development alternative would generate approximately 1,328 morning peak hour trips and 1,944 afternoon peak hour trips. The 1-story development would generate approximately 646 morning peak hour trips and 1,598 afternoon peak hour trips. The future traffic volumes for the three studied development horizons are shown in **Figure 5** for the 1-Story Build Out, **Figure 6** for the 2-Story Build Out, and **Figure 7** for the 3-Story Build Out.

Based on these future traffic volume estimates for the three build out options, Synchro traffic models were developed to identify future level of service at the intersections. These are summarized in **Table 7**.

Table 7. South Boulder Road Intersection Delay and Level of Service

Intersection		AM Peak Hour		PM Peak Hour	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
1	**Via Appia**				
	Existing Network	6.9	A	19.0	B
	Existing Optimized	8.7	A	21.8	C
	Buildout (1 Story)	11.7	B	29.6	C
	Buildout (2 Story)	14.0	B	31.7	C
	Buildout (3 Story)	17.2	B	42.9	D
2	**Garfield Avenue**				
	Existing Network	9.9	A	5.4	A
	Existing Optimized	8.2	A	3.6	A
	Buildout (1 Story)	10.1	B	9.0	A
	Buildout (2 Story)	10.1	B	9.4	A
	Buildout (3 Story)	10.3	B	20.6	C
3	**Centennial Drive**				
	Existing Network	12.8	B	7.8	A
	Existing Optimized	12.2	B	5.7	A
	Buildout (1 Story)	7.0	A	13.7	B
	Buildout (2 Story)	8.3	A	13.8	B
	Buildout (3 Story)	9.0	A	12.0	B
4	**Main Street**				
	Existing Network	8.8	A	9.4	A
	Existing Optimized	11.3	B	8.6	A
	Buildout (1 Story)	5.6	A	8.8	A
	Buildout (2 Story)	7.2	A	9.7	A
	Buildout (3 Story)	6.8	A	15.8	B

Intersection		AM Peak Hour		PM Peak Hour	
		Delay (sec/veh)	LOS	Delay (sec/veh)	LOS
5	**Highway 42**				
	Existing Network	42.8	D	48.8	D
	Existing Optimized	41.9	D	44.8	D
	Buildout (1 Story)	46.8	D	57.1	E
	Buildout (2 Story)	57.2	E	58.7	E
	Buildout (3 Story)	64.6	E	100.7	F
6	**Plaza Drive**				
	Existing Network	10.7	B	9.8	A
	Existing Optimized	5.7	A	5.8	A
	Buildout (1 Story)	14.4	B	15.7	B
	Buildout (2 Story)	15.7	B	16.4	B
	Buildout (3 Story)	17.4	B	20.2	C
7	**Kaylix Avenue/Cannon Street**				
	Buildout (1 Story)	10.4	B	8.2	A
	Buildout (2 Story)	11.0	B	9.3	A
	Buildout (3 Story)	19.1	B	30.1	C

The increased development density results in an increase to the average vehicle delay through the intersections. Although all study intersections are anticipated to operate acceptably (LOS D or better) during the morning and afternoon peak hours, with exception of the SH-42 and South Boulder Road intersection. This intersection is anticipated to operate at LOS D during the morning peak hour and a LOS E during the afternoon peak hour with the 1-Story development alternative. This degrades to LOS E during both peak hours under the 2-Story development alternative and further degrades to LOS E during the morning peak hour and LOS F during the afternoon peak hour with the 3-Story development build out. Improvements that should be considered at this intersection to improve operations include an eastbound right turn lane and northbound right turn lane if and when right-of-way becomes available.

In addition, a comparison of the corridor travel times was performed to provide a comparison of congestion levels anticipated through the corridor based on each buildout alternative. This is shown in **Table 8**.

Table 8. South Boulder Road Measures of Effectiveness Comparison

South Boulder Road Corridor	Average Speed (mph)		Average Corridor Travel Time		Fuel Consumed (gal)	
	EB	WB	EB	WB	EB	WB
Existing Network						
AM Peak	21	23	3 min 17 sec	3 min 0 sec	53	94
PM Peak	19	23	3 min 38 sec	3 min 0 sec	111	64
Existing Optimized						
AM Peak	24	27	2 min 53 sec	2 min 33 sec	48	74
PM Peak	22	23	3 min 8 sec	3 min 0 sec	96	65
Buildout (1 Story)						
AM Peak	21	23	3 min 17 sec	3 min 0 sec	68	91
PM Peak	17	18	4 min 4 sec	3 min 50 sec	139	116
AM Peak – Without Cannon/Kaylix Signal	23	25	3 min 0 sec	2 min 46 sec	61	84
PM Peak – Without Cannon/Kaylix Signal	20	19	3 min 27 sec	3 min 38 sec	129	114
Buildout (2 Story)						
AM Peak	19	21	3 min 38 sec	3 min 17 sec	88	108
PM Peak	16	17	4 min 19 sec	4 min 4 sec	152	128
AM Peak – Without Cannon/Kaylix Signal	20	24	3 min 27 sec	2 min 53 sec	82	96
PM Peak – Without Cannon/Kaylix Signal	18	18	3 min 50 sec	3 min 50 sec	142	125
Buildout (3 Story)						
AM Peak	16	18	4 min 19 sec	3 min 50 sec	112	128
PM Peak	12	13	5 min 45 sec	5 min 18 sec	195	181
AM Peak – Without Cannon/Kaylix Signal	19	20	3 min 38 sec	3 min 27 sec	104	117
PM Peak – Without Cannon/Kaylix Signal	13	14	5 min 18 sec	4 min 56 sec	183	170

As shown in the measures of effectiveness comparison table, optimization of the corridor traffic signal timing and coordination can reduce existing travel times by around 25 seconds both directions during the morning peak hour and by 30 seconds on eastbound South Boulder Road during the afternoon peak hour. A new traffic signal at the Cannon Drive/Kaylix Avenue intersection with South Boulder Road may increase South Boulder Road travel times through the study corridor by 11 seconds eastbound and 24

seconds westbound during the morning peak hour and by 29 seconds eastbound and 14 seconds westbound during the afternoon peak hour with the 2 Story Buildout Option, for example.

The operational analysis of the study intersections along South Boulder Road results in the following recommendations, as summarized in **Figure 8**.

Via Appia
- Lengthen Westbound Left Turn Lane to 300 feet
- Operate Northbound Right Turn on Overlap Phase (NB Right Turn Green Arrow During WB Left Turn Protected Green Arrow Phase)

Garfield Avenue
Protected/Permissive Left Turn Phasing Eastbound and Westbound

Centennial Drive
Remove On-Street Parking to Lengthen Southbound Right Turn Lane to 200 feet

Kaylix Avenue/Cannon Street
- New Signalized Intersection
- Restrict Westbound Left Turns

Highway 42
- Lengthen Eastbound Dual Left Turn Lanes to 300 feet
- Lengthen Westbound Dual Left Turn Lanes to 300 feet
- Construct Separate 250-foot Westbound Right Turn Lane with removal of Westbound Auxiliary Lane

Plaza Drive
- Protected/Permissive Left Turn Phasing Eastbound
- Remove Westbound Right Turn Deceleration Lane
- Remove Westbound Right Turn Acceleration Lane

APPENDIX

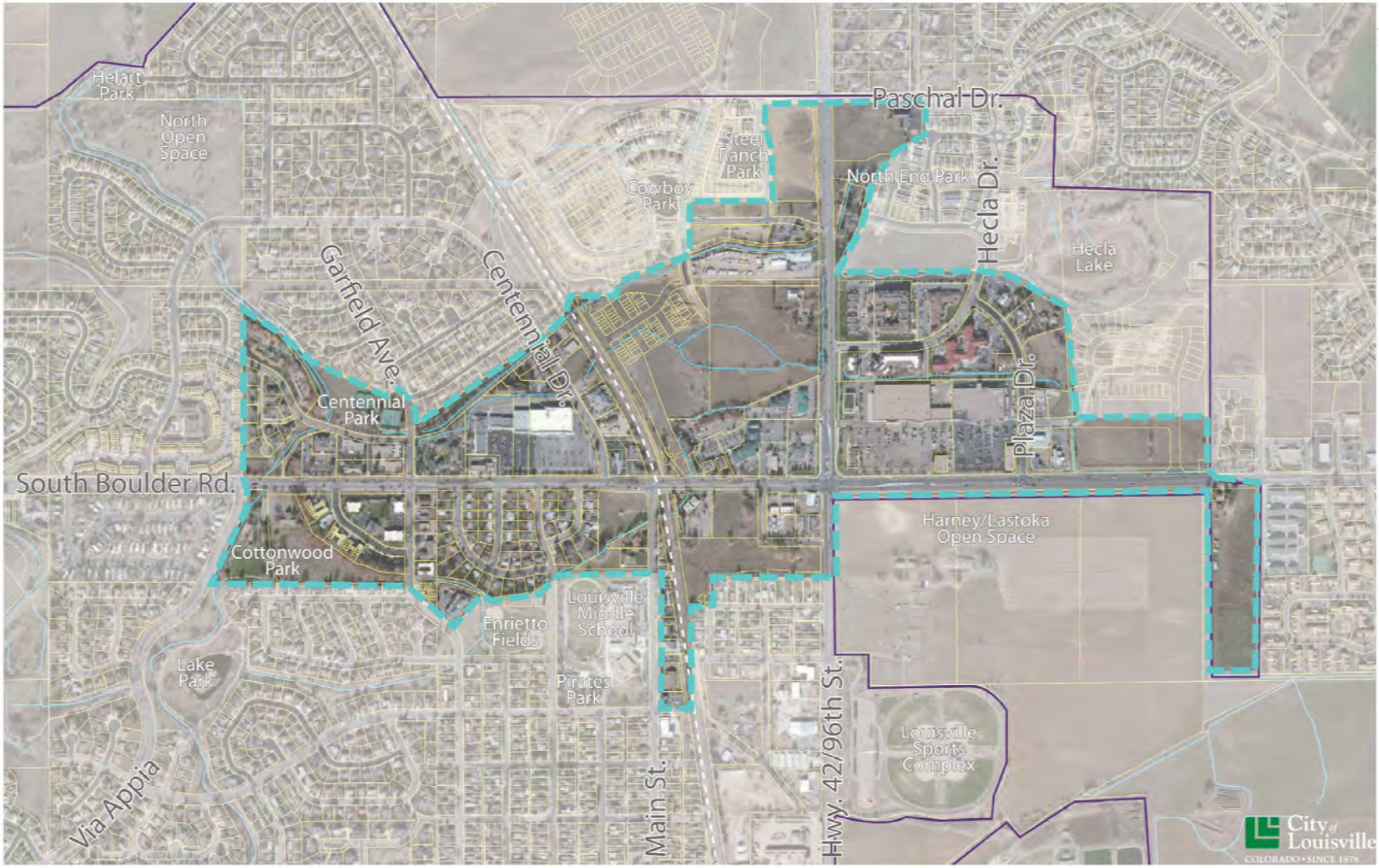
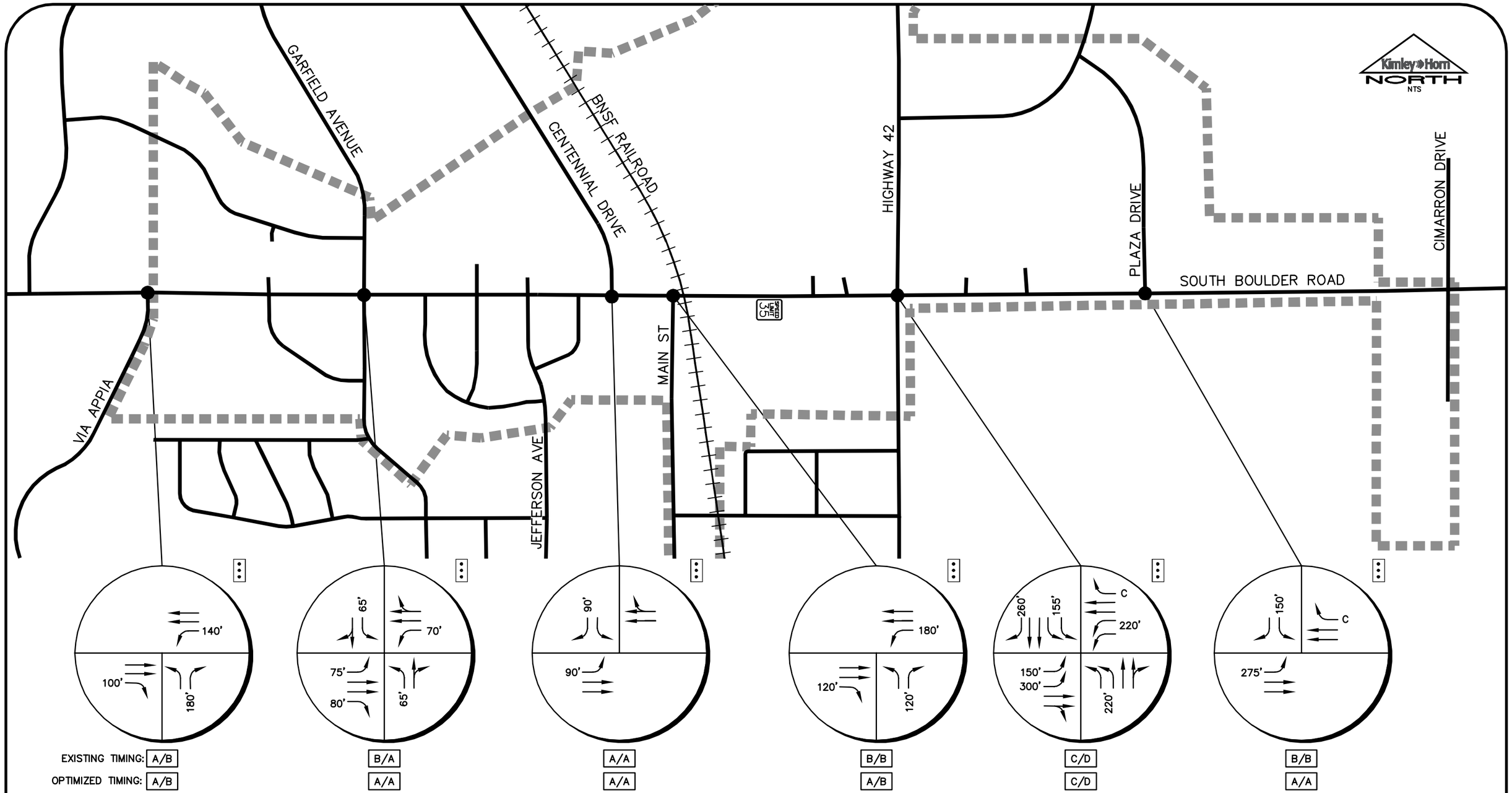


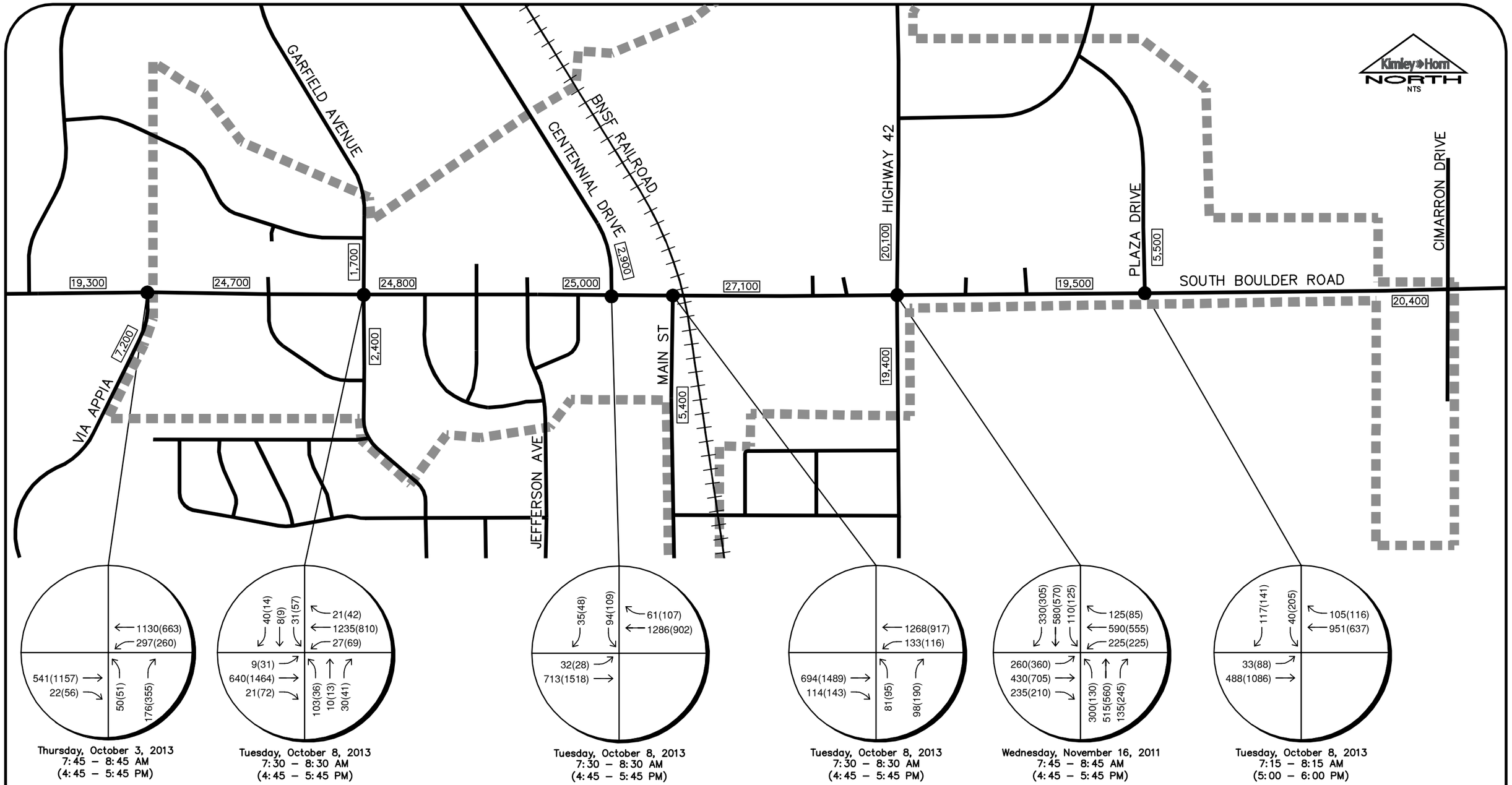
Figure 1: Study Area



SOUTH BOULDER ROAD
EXISTING LANE CONFIGURATIONS, CONTROL AND LEVEL OF SERVICE

FIGURE 2

Kimley»Horn



Thursday, October 3, 2013
7:45 – 8:45 AM
(4:45 – 5:45 PM)

Tuesday, October 8, 2013
7:30 – 8:30 AM
(4:45 – 5:45 PM)

Tuesday, October 8, 2013
7:30 – 8:30 AM
(4:45 – 5:45 PM)

Tuesday, October 8, 2013
7:30 – 8:30 AM
(4:45 – 5:45 PM)

Wednesday, November 16, 2011
7:45 – 8:45 AM
(4:45 – 5:45 PM)

Tuesday, October 8, 2013
7:15 – 8:15 AM
(5:00 – 6:00 PM)

LEGEND

● Study Area Key Intersection

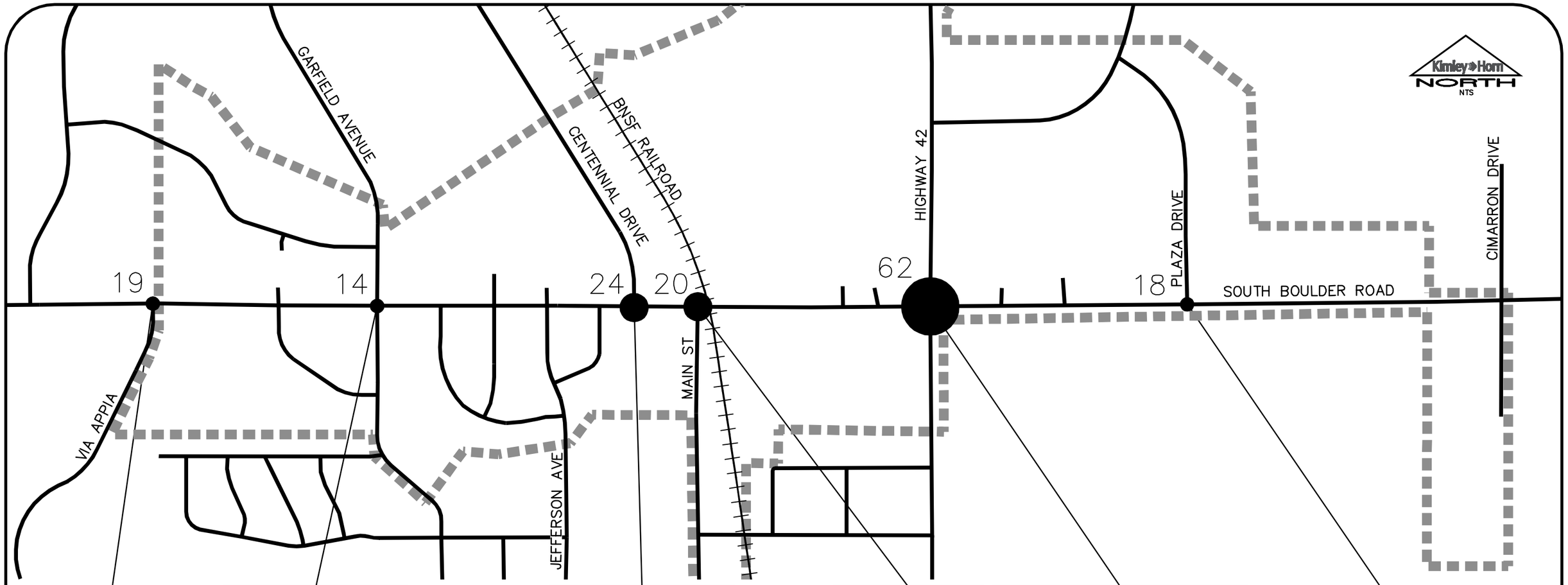
XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes

XX,X00 Estimated Daily Traffic Volume

SOUTH BOULDER ROAD
EXISTING TRAFFIC VOLUMES

FIGURE 3

Kimley»Horn



2014 = 8 Crashes
2013 = 3 Crashes
2012 = 7 Crashes

Careless driving = 7
Failure to yield on left turn = 4
Following too close = 3
Failure to yield on right turn = 1
Careless driving causing injury = 1
Hit & run = 1
Special hazard = 1
Pedestrian = 1

2014 = 3 Crashes
2013 = 4 Crashes
2012 = 7 Crashes

Careless driving = 4
Following too close = 3
Failure to yield on left turn = 1
Hit & run = 1
Special hazard = 1
Unsafe backing = 1
Reckless driving = 1
Failure to yield = 1

2014 = 9 Crashes
2013 = 7 Crashes
2012 = 8 Crashes

Careless driving = 9
Following too close = 6
Failure to yield on left turn = 4
Failure to yield = 1
Failure to stop at red light = 1
Special hazard = 1
Unsafe lane change = 1
Roadways laned for traffic = 1

2014 = 9 Crashes
2013 = 4 Crashes
2012 = 7 Crashes

Following too close = 13
Careless driving = 4
Special hazard = 3

2014 = 15 Crashes
2013 = 20 Crashes
2012 = 27 Crashes

Careless driving = 28
Following too close = 18
Failure to yield on left turn = 4
Failure to stop at red light = 2
Special hazard = 2
Hit & run = 4
Unsafe lane change = 1
Required position and method of turning = 1
No violation = 2
Failed to stop = 1

2014 = 7 Crashes
2013 = 5 Crashes
2012 = 6 Crashes

Careless driving = 6
Following too close = 5
Failure to yield on left turn = 5
Left scene upon striking unattended = 1
Hit & run = 1

LEGEND

OF ACCIDENTS

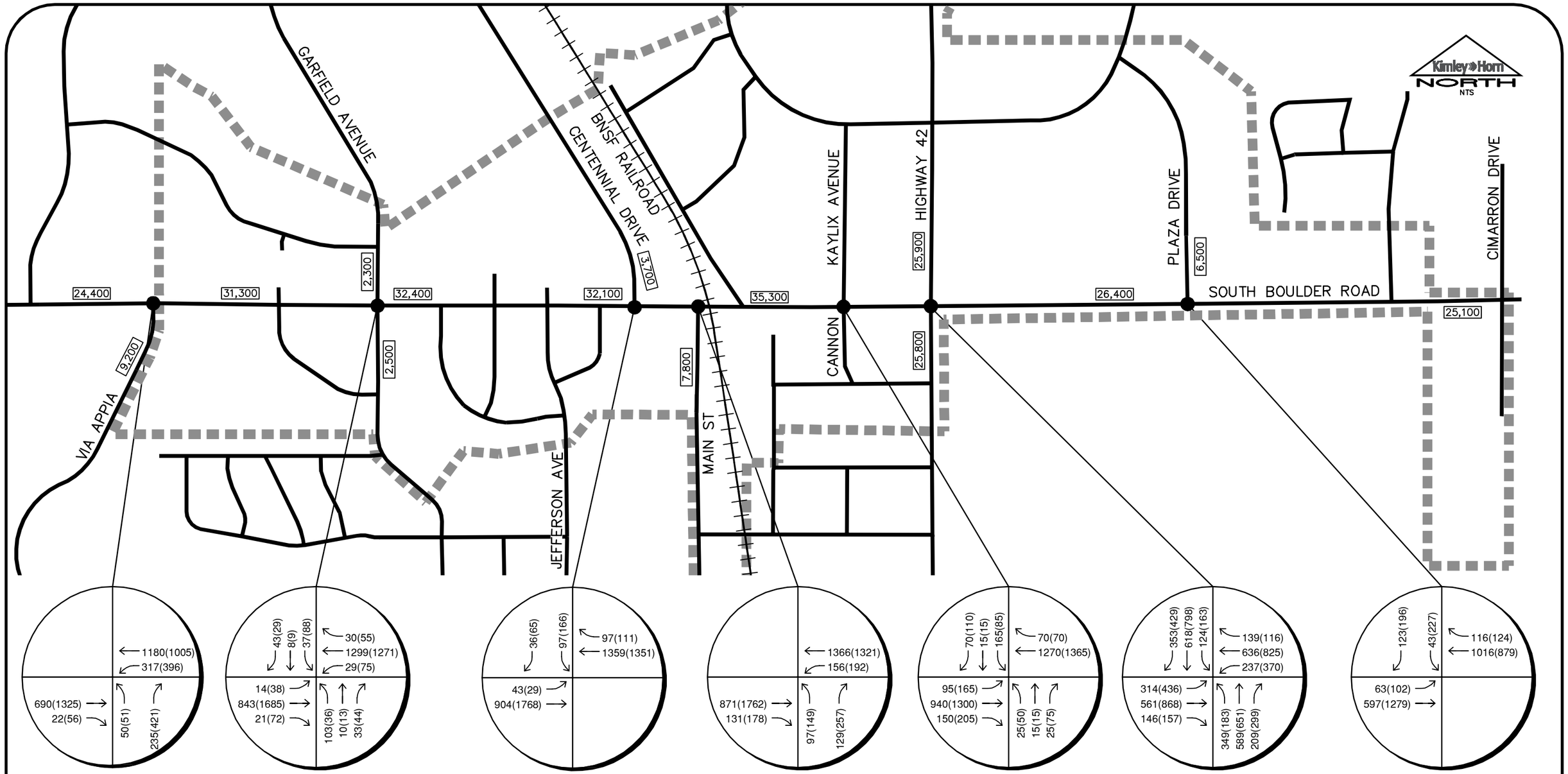
0–19

20–29

30–69

SOUTH BOULDER ROAD
2012-2014 ACCIDENT HISTORY

FIGURE 4



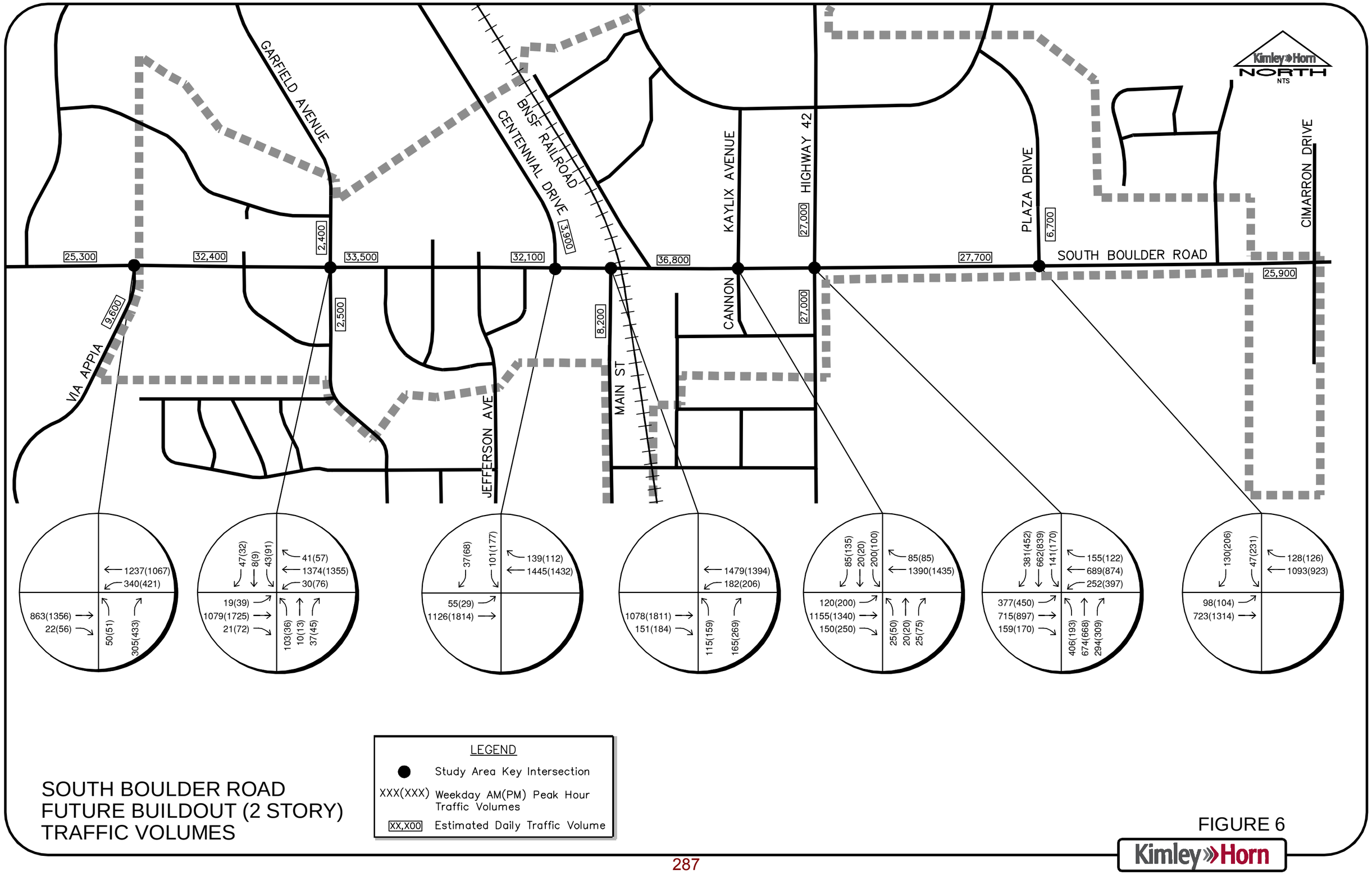
LEGEND

- ● Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

SOUTH BOULDER ROAD
FUTURE BUILDOUT (1 STORY)
TRAFFIC VOLUMES

FIGURE 5

Kimley»Horn

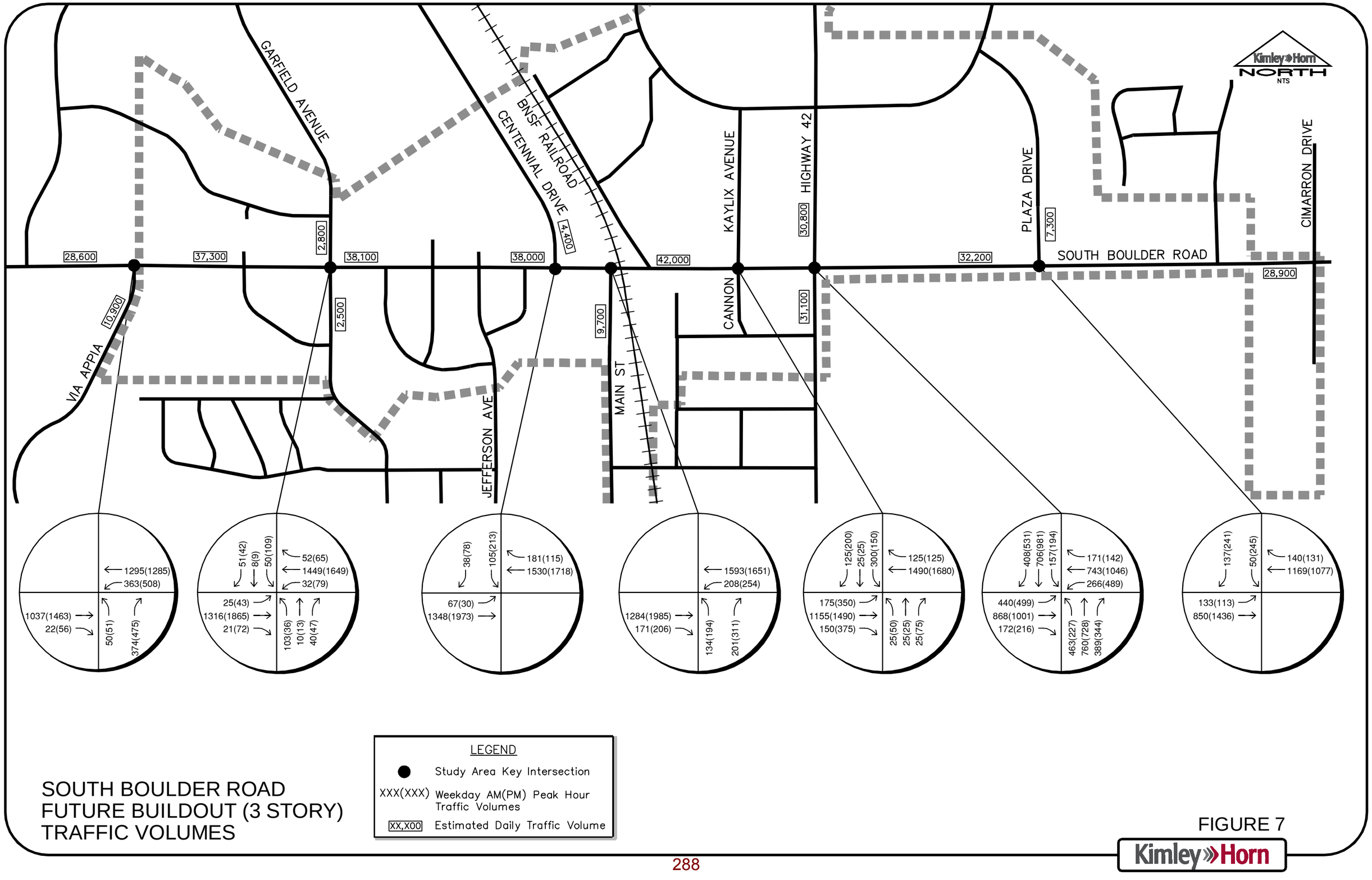


LEGEND

- ● Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

SOUTH BOULDER ROAD FUTURE BUILDOUT (2 STORY) TRAFFIC VOLUMES

FIGURE 6

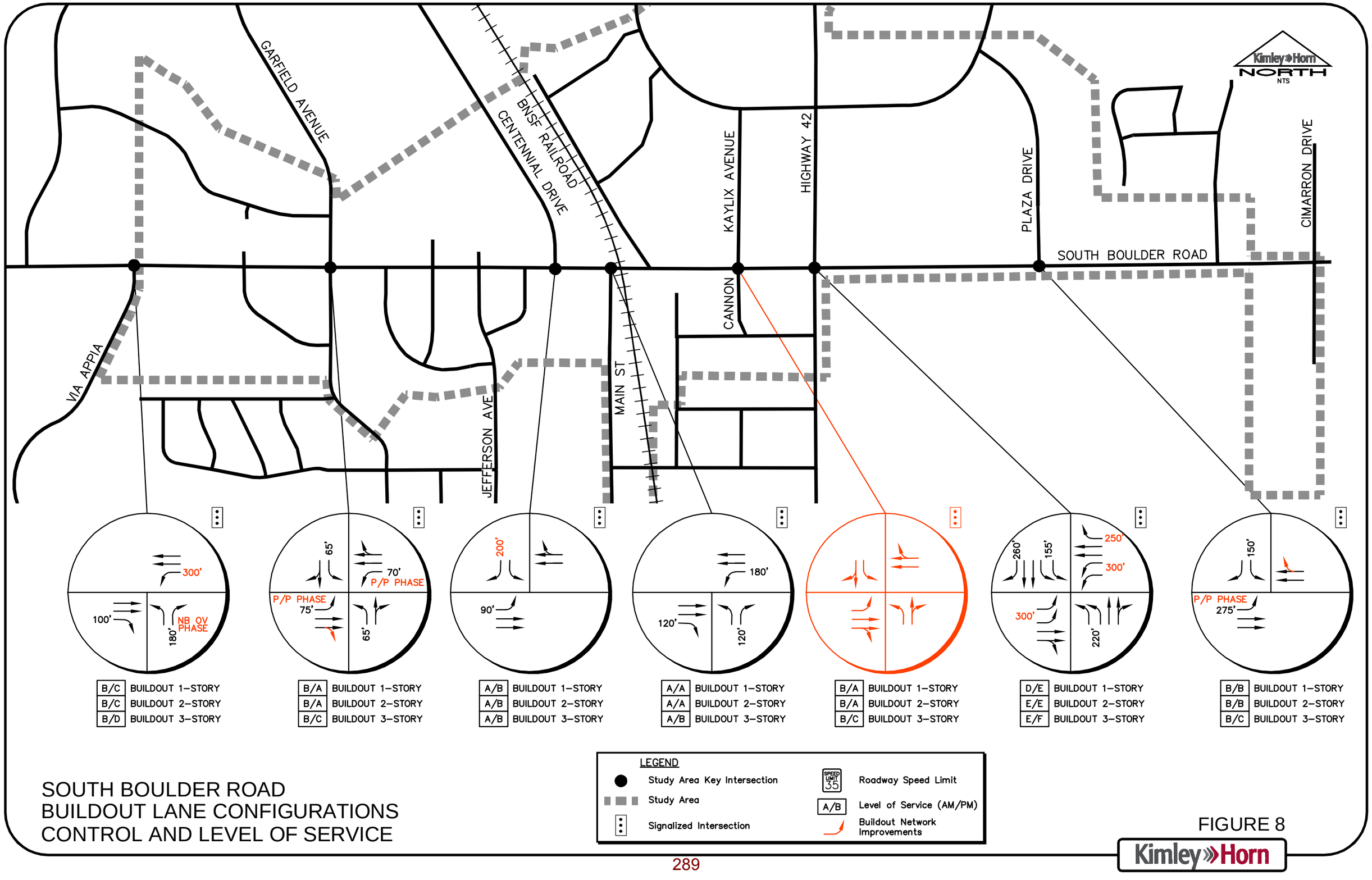


LEGEND

- ● Study Area Key Intersection
- XXX(XXX) Weekday AM(PM) Peak Hour Traffic Volumes
- XX,X00 Estimated Daily Traffic Volume

SOUTH BOULDER ROAD FUTURE BUILDOUT (3 STORY) TRAFFIC VOLUMES

FIGURE 7



SOUTH BOULDER ROAD
BUILDOUT LANE CONFIGURATIONS
CONTROL AND LEVEL OF SERVICE

FIGURE 8

APPENDIX

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	541	22	297	1130	50	176
Future Volume (veh/h)	541	22	297	1130	50	176
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	588	24	323	1228	54	191
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2172	972	671	2680	235	358
Arrive On Green	0.61	0.61	0.19	1.00	0.13	0.13
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	588	24	323	1228	54	191
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	7.7	0.6	7.0	0.0	2.7	10.6
Cycle Q Clear(g_c), s	7.7	0.6	7.0	0.0	2.7	10.6
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2172	972	671	2680	235	358
V/C Ratio(X)	0.27	0.02	0.48	0.46	0.23	0.53
Avail Cap(c_a), veh/h	2172	972	860	2680	514	608
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.81	0.81	1.00	1.00
Uniform Delay (d), s/veh	8.9	7.6	4.8	0.0	38.8	34.0
Incr Delay (d2), s/veh	0.3	0.0	0.2	0.5	0.5	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.3	3.3	0.2	1.4	4.8
LnGrp Delay(d),s/veh	9.3	7.6	5.0	0.5	39.3	35.3
LnGrp LOS	A	A	A	A	D	D
Approach Vol, veh/h	612			1551	245	
Approach Delay, s/veh	9.2			1.4	36.2	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.4	67.4				81.7		18.3
Change Period (Y+Rc), s	5.0	6.0				6.0		5.0
Max Green Setting (Gmax), s	20.0	35.0				60.0		29.0
Max Q Clear Time (g_c+I1), s	9.0	9.7				2.0		12.6
Green Ext Time (p_c), s	0.4	21.2				40.7		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	6.9
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1157	56	260	663	51	355
Future Volume (veh/h)	1157	56	260	663	51	355
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1258	61	283	721	55	386
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1906	853	343	2384	417	519
Arrive On Green	0.54	0.54	0.19	1.00	0.23	0.23
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	1258	61	283	721	55	386
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	30.5	2.2	8.9	0.0	2.9	26.0
Cycle Q Clear(g_c), s	30.5	2.2	8.9	0.0	2.9	26.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1906	853	343	2384	417	519
V/C Ratio(X)	0.66	0.07	0.82	0.30	0.13	0.74
Avail Cap(c_a), veh/h	1906	853	503	2384	429	530
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.95	0.95	1.00	1.00
Uniform Delay (d), s/veh	19.8	13.3	17.6	0.0	36.2	35.8
Incr Delay (d2), s/veh	1.8	0.2	4.4	0.3	0.1	5.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.3	1.0	5.1	0.1	1.5	12.1
LnGrp Delay(d),s/veh	21.6	13.4	21.9	0.3	36.4	41.3
LnGrp LOS	C	B	C	A	D	D
Approach Vol, veh/h	1319			1004	441	
Approach Delay, s/veh	21.2			6.4	40.7	
Approach LOS	C			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	16.2	70.6				86.8		33.2
Change Period (Y+Rc), s	5.0	6.0				6.0		5.0
Max Green Setting (Gmax), s	22.0	53.0				80.0		29.0
Max Q Clear Time (g_c+I1), s	10.9	32.5				2.0		28.0
Green Ext Time (p_c), s	0.3	18.3				55.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	19.0
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	541	22	297	1130	50	176
Future Volume (veh/h)	541	22	297	1130	50	176
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	588	24	323	1228	54	191
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1283	574	901	2828	113	673
Arrive On Green	0.36	0.36	0.48	1.00	0.06	0.06
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	588	24	323	1228	54	191
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	10.2	0.8	0.0	0.0	2.4	0.0
Cycle Q Clear(g_c), s	10.2	0.8	0.0	0.0	2.4	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1283	574	901	2828	113	673
V/C Ratio(X)	0.46	0.04	0.36	0.43	0.48	0.28
Avail Cap(c_a), veh/h	1283	574	901	2828	643	1146
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.85	0.85	1.00	1.00
Uniform Delay (d), s/veh	19.5	16.5	8.8	0.0	36.2	15.0
Incr Delay (d2), s/veh	1.2	0.1	0.1	0.4	3.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.4	3.7	0.2	1.3	2.7
LnGrp Delay(d),s/veh	20.7	16.6	8.9	0.4	39.3	15.3
LnGrp LOS	C	B	A	A	D	B
Approach Vol, veh/h	612			1551	245	
Approach Delay, s/veh	20.5			2.2	20.6	
Approach LOS	C			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	34.9	35.0				69.9		10.1
Change Period (Y+Rc), s	6.0	* 6				6.0		5.0
Max Green Setting (Gmax), s	6.0	* 29				40.0		29.0
Max Q Clear Time (g_c+I1), s	2.0	12.2				2.0		4.4
Green Ext Time (p_c), s	3.1	6.2				21.4		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	8.7
HCM 2010 LOS	A

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1157	56	260	663	51	355
Future Volume (veh/h)	1157	56	260	663	51	355
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1258	61	283	721	55	386
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1563	699	743	3005	105	660
Arrive On Green	0.44	0.44	0.71	1.00	0.06	0.06
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	1258	61	283	721	55	386
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	36.9	2.7	0.0	0.0	3.6	0.0
Cycle Q Clear(g_c), s	36.9	2.7	0.0	0.0	3.6	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1563	699	743	3005	105	660
V/C Ratio(X)	0.80	0.09	0.38	0.24	0.52	0.59
Avail Cap(c_a), veh/h	1563	699	743	3005	429	949
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.96	0.96	1.00	1.00
Uniform Delay (d), s/veh	29.0	19.5	9.8	0.0	54.8	27.0
Incr Delay (d2), s/veh	4.5	0.2	0.1	0.2	4.0	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.0	1.2	2.7	0.1	1.9	9.9
LnGrp Delay(d),s/veh	33.5	19.7	9.9	0.2	58.8	27.8
LnGrp LOS	C	B	A	A	E	C
Approach Vol, veh/h	1319			1004	441	
Approach Delay, s/veh	32.9			2.9	31.7	
Approach LOS	C			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	48.9	59.0				107.9		12.1
Change Period (Y+Rc), s	6.0	* 6				6.0		5.0
Max Green Setting (Gmax), s	22.0	* 53				80.0		29.0
Max Q Clear Time (g_c+I1), s	2.0	38.9				2.0		5.6
Green Ext Time (p_c), s	8.3	10.8				11.7		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	21.8
HCM 2010 LOS	C

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	690	22	317	1180	50	235
Future Volume (veh/h)	690	22	317	1180	50	235
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	750	24	345	1283	54	255
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1319	590	932	2985	101	748
Arrive On Green	0.37	0.37	0.83	1.00	0.06	0.06
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	750	24	345	1283	54	255
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	18.6	1.1	0.0	0.0	3.3	0.0
Cycle Q Clear(g_c), s	18.6	1.1	0.0	0.0	3.3	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1319	590	932	2985	101	748
V/C Ratio(X)	0.57	0.04	0.37	0.43	0.54	0.34
Avail Cap(c_a), veh/h	1319	590	932	2985	468	1076
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.80	0.80	1.00	1.00
Uniform Delay (d), s/veh	27.5	22.0	2.9	0.0	50.5	18.2
Incr Delay (d2), s/veh	1.8	0.1	0.1	0.4	4.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	0.5	1.4	0.2	1.7	4.9
LnGrp Delay(d),s/veh	29.2	22.1	3.0	0.4	54.9	18.5
LnGrp LOS	C	C	A	A	D	B
Approach Vol, veh/h	774			1628	309	
Approach Delay, s/veh	29.0			0.9	24.9	
Approach LOS	C			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	51.8	47.0				98.8		11.2
Change Period (Y+Rc), s	6.0	* 6				6.0		5.0
Max Green Setting (Gmax), s	24.0	* 41				70.0		29.0
Max Q Clear Time (g_c+I1), s	2.0	20.6				2.0		5.3
Green Ext Time (p_c), s	15.6	8.8				30.2		1.0

Intersection Summary	
HCM 2010 Ctrl Delay	11.7
HCM 2010 LOS	B

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1325	56	396	1005	51	421
Future Volume (veh/h)	1325	56	396	1005	51	421
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1440	61	430	1092	55	458
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1445	647	749	2996	110	712
Arrive On Green	0.41	0.41	0.78	1.00	0.06	0.06
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	1440	61	430	1092	55	458
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	48.7	2.8	4.7	0.0	3.6	0.0
Cycle Q Clear(g_c), s	48.7	2.8	4.7	0.0	3.6	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1445	647	749	2996	110	713
V/C Ratio(X)	1.00	0.09	0.57	0.36	0.50	0.64
Avail Cap(c_a), veh/h	1445	647	749	2996	429	997
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.81	0.81	1.00	1.00
Uniform Delay (d), s/veh	35.4	21.8	8.4	0.0	54.5	25.5
Incr Delay (d2), s/veh	22.8	0.3	0.6	0.3	3.5	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	28.4	1.3	4.2	0.1	1.9	11.8
LnGrp Delay(d),s/veh	58.3	22.1	9.0	0.3	58.0	26.5
LnGrp LOS	E	C	A	A	E	C
Approach Vol, veh/h	1501			1522	513	
Approach Delay, s/veh	56.8			2.7	29.9	
Approach LOS	E			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	52.6	55.0				107.6		12.4
Change Period (Y+Rc), s	6.0	* 6				6.0		5.0
Max Green Setting (Gmax), s	26.0	* 49				80.0		29.0
Max Q Clear Time (g_c+I1), s	6.7	50.7				2.0		5.6
Green Ext Time (p_c), s	12.4	0.0				23.8		1.8

Intersection Summary	
HCM 2010 Ctrl Delay	29.6
HCM 2010 LOS	C

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	863	22	340	1237	50	305
Future Volume (veh/h)	863	22	340	1237	50	305
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	938	24	370	1345	54	332
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1319	590	873	2975	105	748
Arrive On Green	0.37	0.37	0.83	1.00	0.06	0.06
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	938	24	370	1345	54	332
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	24.9	1.1	0.0	0.0	3.2	0.0
Cycle Q Clear(g_c), s	24.9	1.1	0.0	0.0	3.2	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1319	590	873	2975	105	748
V/C Ratio(X)	0.71	0.04	0.42	0.45	0.51	0.44
Avail Cap(c_a), veh/h	1319	590	873	2975	468	1072
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.77	0.77	1.00	1.00
Uniform Delay (d), s/veh	29.4	22.0	4.2	0.0	50.2	19.3
Incr Delay (d2), s/veh	3.3	0.1	0.1	0.4	3.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.7	0.5	1.9	0.2	1.7	6.7
LnGrp Delay(d),s/veh	32.7	22.1	4.3	0.4	54.0	19.8
LnGrp LOS	C	C	A	A	D	B
Approach Vol, veh/h	962			1715	386	
Approach Delay, s/veh	32.5			1.2	24.6	
Approach LOS	C			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	51.5	47.0				98.5		11.5
Change Period (Y+Rc), s	6.0	* 6				6.0		5.0
Max Green Setting (Gmax), s	24.0	* 41				70.0		29.0
Max Q Clear Time (g_c+I1), s	2.0	26.9				2.0		5.2
Green Ext Time (p_c), s	16.3	8.5				32.8		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	14.0
HCM 2010 LOS	B

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1356	56	421	1067	51	433
Future Volume (veh/h)	1356	56	421	1067	51	433
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1474	61	458	1160	55	471
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1445	647	748	2994	110	712
Arrive On Green	0.41	0.41	0.78	1.00	0.06	0.06
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	1474	61	458	1160	55	471
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	49.0	2.8	6.0	0.0	3.6	0.0
Cycle Q Clear(g_c), s	49.0	2.8	6.0	0.0	3.6	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1445	647	748	2994	110	713
V/C Ratio(X)	1.02	0.09	0.61	0.39	0.50	0.66
Avail Cap(c_a), veh/h	1445	647	748	2994	429	997
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.77	0.77	1.00	1.00
Uniform Delay (d), s/veh	35.5	21.8	8.5	0.0	54.5	25.8
Incr Delay (d2), s/veh	28.8	0.3	0.8	0.3	3.4	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	29.7	1.3	4.7	0.1	1.9	12.4
LnGrp Delay(d),s/veh	64.3	22.1	9.4	0.3	57.9	26.9
LnGrp LOS	F	C	A	A	E	C
Approach Vol, veh/h	1535			1618	526	
Approach Delay, s/veh	62.6			2.9	30.1	
Approach LOS	E			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	52.5	55.0				107.5		12.5
Change Period (Y+Rc), s	6.0	* 6				6.0		5.0
Max Green Setting (Gmax), s	26.0	* 49				80.0		29.0
Max Q Clear Time (g_c+I1), s	8.0	51.0				2.0		5.6
Green Ext Time (p_c), s	12.5	0.0				26.7		1.9

Intersection Summary	
HCM 2010 Ctrl Delay	31.7
HCM 2010 LOS	C

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1037	22	363	1295	50	374
Future Volume (veh/h)	1037	22	363	1295	50	374
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1127	24	395	1408	54	407
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1319	590	824	2966	110	748
Arrive On Green	0.37	0.37	0.82	1.00	0.06	0.06
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	1127	24	395	1408	54	407
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	32.2	1.1	0.0	0.0	3.2	0.0
Cycle Q Clear(g_c), s	32.2	1.1	0.0	0.0	3.2	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1319	590	824	2966	110	748
V/C Ratio(X)	0.85	0.04	0.48	0.47	0.49	0.54
Avail Cap(c_a), veh/h	1319	590	824	2966	468	1068
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.71	0.71	1.00	1.00
Uniform Delay (d), s/veh	31.8	22.0	5.5	0.0	49.9	20.6
Incr Delay (d2), s/veh	7.2	0.1	0.1	0.4	3.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.0	0.5	2.2	0.2	1.7	8.8
LnGrp Delay(d),s/veh	39.0	22.1	5.7	0.4	53.3	21.2
LnGrp LOS	D	C	A	A	D	C
Approach Vol, veh/h	1151			1803	461	
Approach Delay, s/veh	38.6			1.5	25.0	
Approach LOS	D			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	51.2	47.0				98.2		11.8
Change Period (Y+Rc), s	6.0	* 6				6.0		5.0
Max Green Setting (Gmax), s	24.0	* 41				70.0		29.0
Max Q Clear Time (g_c+I1), s	2.0	34.2				2.0		5.2
Green Ext Time (p_c), s	16.9	5.3				35.5		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	17.2
HCM 2010 LOS	B

Notes

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1463	56	508	1285	51	475
Future Volume (veh/h)	1463	56	508	1285	51	475
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1590	61	552	1397	55	516
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1445	647	745	2988	113	712
Arrive On Green	0.41	0.41	0.51	1.00	0.06	0.06
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	1590	61	552	1397	55	516
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	49.0	2.8	24.1	0.0	3.6	0.0
Cycle Q Clear(g_c), s	49.0	2.8	24.1	0.0	3.6	0.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1445	647	745	2988	113	713
V/C Ratio(X)	1.10	0.09	0.74	0.47	0.48	0.72
Avail Cap(c_a), veh/h	1445	647	745	2988	429	994
HCM Platoon Ratio	1.00	1.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.62	0.62	1.00	1.00
Uniform Delay (d), s/veh	35.5	21.8	22.5	0.0	54.3	26.9
Incr Delay (d2), s/veh	56.1	0.3	2.2	0.3	3.2	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	35.1	1.3	14.2	0.1	1.9	14.2
LnGrp Delay(d),s/veh	91.6	22.1	24.7	0.3	57.4	28.5
LnGrp LOS	F	C	C	A	E	C
Approach Vol, veh/h	1651			1949	571	
Approach Delay, s/veh	89.0			7.2	31.3	
Approach LOS	F			A	C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	52.3	55.0				107.3		12.7
Change Period (Y+Rc), s	6.0	* 6				6.0		5.0
Max Green Setting (Gmax), s	26.0	* 49				80.0		29.0
Max Q Clear Time (g_c+I1), s	26.1	51.0				2.0		5.6
Green Ext Time (p_c), s	0.0	0.0				38.1		2.1

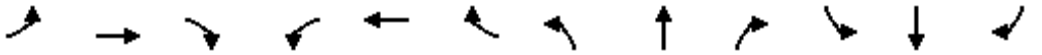
Intersection Summary	
HCM 2010 Ctrl Delay	42.9
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	640	21	27	1235	21	103	10	30	31	8	40
Future Volume (veh/h)	9	640	21	27	1235	21	103	10	30	31	8	40
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	10	696	23	29	1342	23	112	11	33	34	9	43
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	259	2371	1061	561	2386	41	334	90	271	341	62	296
Arrive On Green	1.00	1.00	1.00	0.67	0.67	0.67	0.22	0.22	0.22	0.22	0.22	0.22
Sat Flow, veh/h	397	3539	1583	730	3561	61	1347	411	1234	1357	281	1344
Grp Volume(v), veh/h	10	696	23	29	667	698	112	0	44	34	0	52
Grp Sat Flow(s),veh/h/ln	397	1770	1583	730	1770	1852	1347	0	1645	1357	0	1626
Q Serve(g_s), s	0.8	0.0	0.0	1.4	19.9	20.0	7.3	0.0	2.1	2.1	0.0	2.6
Cycle Q Clear(g_c), s	20.8	0.0	0.0	1.4	19.9	20.0	9.9	0.0	2.1	4.2	0.0	2.6
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.75	1.00		0.83
Lane Grp Cap(c), veh/h	259	2371	1061	561	1186	1241	334	0	362	341	0	358
V/C Ratio(X)	0.04	0.29	0.02	0.05	0.56	0.56	0.34	0.00	0.12	0.10	0.00	0.15
Avail Cap(c_a), veh/h	259	2371	1061	561	1186	1241	334	0	362	341	0	358
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	3.1	0.0	0.0	5.7	8.7	8.7	35.4	0.0	31.3	32.9	0.0	31.4
Incr Delay (d2), s/veh	0.3	0.3	0.0	0.2	1.9	1.9	2.7	0.0	0.7	0.6	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.1	0.0	0.3	10.3	10.7	3.0	0.0	1.0	0.8	0.0	1.2
LnGrp Delay(d),s/veh	3.4	0.3	0.0	5.8	10.7	10.6	38.1	0.0	31.9	33.5	0.0	32.3
LnGrp LOS	A	A	A	A	B	B	D		C	C		C
Approach Vol, veh/h		729			1394			156			86	
Approach Delay, s/veh		0.3			10.5			36.4			32.8	
Approach LOS		A			B			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		73.0		27.0		73.0		27.0
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		67.0		22.0		67.0		22.0
Max Q Clear Time (g_c+I1), s		22.8		11.9		22.0		6.2
Green Ext Time (p_c), s		37.0		0.4		37.5		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	9.9
HCM 2010 LOS	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	1464	72	69	810	42	36	13	41	57	9	14
Future Volume (veh/h)	31	1464	72	69	810	42	36	13	41	57	9	14
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	34	1591	78	75	880	46	39	14	45	62	10	15
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	493	2802	1253	294	2709	142	203	45	146	172	79	118
Arrive On Green	1.00	1.00	1.00	0.79	0.79	0.79	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	602	3539	1583	296	3422	179	1380	390	1252	1338	674	1011
Grp Volume(v), veh/h	34	1591	78	75	455	471	39	0	59	62	0	25
Grp Sat Flow(s),veh/h/ln	602	1770	1583	296	1770	1831	1380	0	1642	1338	0	1684
Q Serve(g_s), s	0.7	0.0	0.0	8.5	8.7	8.7	3.1	0.0	4.0	5.3	0.0	1.6
Cycle Q Clear(g_c), s	9.3	0.0	0.0	8.5	8.7	8.7	4.7	0.0	4.0	9.3	0.0	1.6
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.76	1.00		0.60
Lane Grp Cap(c), veh/h	493	2802	1253	294	1401	1450	203	0	192	172	0	197
V/C Ratio(X)	0.07	0.57	0.06	0.25	0.32	0.32	0.19	0.00	0.31	0.36	0.00	0.13
Avail Cap(c_a), veh/h	493	2802	1253	294	1401	1450	203	0	192	172	0	197
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.4	0.0	0.0	3.5	3.5	3.5	49.6	0.0	48.6	52.8	0.0	47.5
Incr Delay (d2), s/veh	0.3	0.8	0.1	2.1	0.6	0.6	2.1	0.0	4.1	5.8	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.3	0.0	0.9	4.4	4.6	1.3	0.0	2.0	2.3	0.0	0.8
LnGrp Delay(d),s/veh	0.7	0.8	0.1	5.6	4.1	4.1	51.7	0.0	52.7	58.6	0.0	48.9
LnGrp LOS	A	A	A	A	A	A	D		D	E		D
Approach Vol, veh/h		1703			1001			98			87	
Approach Delay, s/veh		0.8			4.2			52.3			55.8	
Approach LOS		A			A			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		101.0		19.0		101.0		19.0
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		95.0		14.0		95.0		14.0
Max Q Clear Time (g_c+I1), s		11.3		6.7		10.7		11.3
Green Ext Time (p_c), s		75.9		0.2		76.5		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	5.4
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	640	21	27	1235	21	103	10	30	31	8	40
Future Volume (veh/h)	9	640	21	27	1235	21	103	10	30	31	8	40
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	10	696	23	29	1342	23	112	11	33	34	9	43
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	312	2567	1148	570	2582	44	237	56	169	244	39	185
Arrive On Green	0.73	0.73	0.73	0.73	0.73	0.73	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	397	3539	1583	730	3561	61	1347	411	1234	1357	281	1344
Grp Volume(v), veh/h	10	696	23	29	667	698	112	0	44	34	0	52
Grp Sat Flow(s),veh/h/ln	397	1770	1583	730	1770	1852	1347	0	1645	1357	0	1626
Q Serve(g_s), s	0.9	5.4	0.3	1.1	13.3	13.3	6.5	0.0	1.9	1.8	0.0	2.3
Cycle Q Clear(g_c), s	14.2	5.4	0.3	6.5	13.3	13.3	8.7	0.0	1.9	3.7	0.0	2.3
Prop In Lane	1.00		1.00	1.00		0.03	1.00		0.75	1.00		0.83
Lane Grp Cap(c), veh/h	312	2567	1148	570	1283	1343	237	0	226	244	0	223
V/C Ratio(X)	0.03	0.27	0.02	0.05	0.52	0.52	0.47	0.00	0.19	0.14	0.00	0.23
Avail Cap(c_a), veh/h	312	2567	1148	570	1283	1343	338	0	350	346	0	345
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.96	0.81	0.81	0.81	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.0	3.8	3.1	4.9	4.8	4.8	34.7	0.0	30.6	32.2	0.0	30.8
Incr Delay (d2), s/veh	0.2	0.3	0.0	0.1	1.2	1.2	0.5	0.0	0.2	0.1	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.7	0.2	0.2	6.7	7.0	2.4	0.0	0.9	0.7	0.0	1.0
LnGrp Delay(d),s/veh	8.2	4.0	3.1	5.0	6.1	6.0	35.2	0.0	30.7	32.3	0.0	30.9
LnGrp LOS	A	A	A	A	A	A	D		C	C		C
Approach Vol, veh/h		729			1394			156			86	
Approach Delay, s/veh		4.0			6.0			33.9			31.5	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		64.0		16.0		64.0		16.0
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		52.0		17.0		52.0		17.0
Max Q Clear Time (g_c+I1), s		16.2		10.7		15.3		5.7
Green Ext Time (p_c), s		30.8		0.3		31.5		0.4

Intersection Summary		
HCM 2010 Ctrl Delay		8.2
HCM 2010 LOS		A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	31	1464	72	69	810	42	36	13	41	57	9	14
Future Volume (veh/h)	31	1464	72	69	810	42	36	13	41	57	9	14
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	34	1591	78	75	880	46	39	14	45	62	10	15
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	492	2536	1135	332	2452	128	239	39	125	209	67	101
Arrive On Green	1.00	1.00	1.00	0.72	0.72	0.72	0.10	0.10	0.10	0.10	0.10	0.10
Sat Flow, veh/h	602	3539	1583	296	3422	179	1380	390	1252	1338	674	1011
Grp Volume(v), veh/h	34	1591	78	75	455	471	39	0	59	62	0	25
Grp Sat Flow(s),veh/h/ln	602	1770	1583	296	1770	1831	1380	0	1642	1338	0	1684
Q Serve(g_s), s	0.5	0.0	0.0	5.8	5.9	5.9	1.6	0.0	2.0	2.7	0.0	0.8
Cycle Q Clear(g_c), s	6.4	0.0	0.0	5.8	5.9	5.9	2.4	0.0	2.0	4.7	0.0	0.8
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.76	1.00		0.60
Lane Grp Cap(c), veh/h	492	2536	1135	332	1268	1312	239	0	164	209	0	168
V/C Ratio(X)	0.07	0.63	0.07	0.23	0.36	0.36	0.16	0.00	0.36	0.30	0.00	0.15
Avail Cap(c_a), veh/h	492	2536	1135	332	1268	1312	239	0	164	209	0	168
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	0.74	0.92	0.92	0.92	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	0.4	0.0	0.0	3.2	3.2	3.2	25.8	0.0	25.2	27.4	0.0	24.7
Incr Delay (d2), s/veh	0.2	0.9	0.1	1.4	0.7	0.7	0.1	0.0	0.5	0.3	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.3	0.0	0.6	3.0	3.1	0.6	0.0	0.9	1.0	0.0	0.4
LnGrp Delay(d),s/veh	0.6	0.9	0.1	4.7	4.0	3.9	25.9	0.0	25.7	27.7	0.0	24.8
LnGrp LOS	A	A	A	A	A	A	C		C	C		C
Approach Vol, veh/h		1703			1001			98			87	
Approach Delay, s/veh		0.8			4.0			25.8			26.9	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		49.0		11.0		49.0		11.0
Change Period (Y+Rc), s		6.0		5.0		6.0		5.0
Max Green Setting (Gmax), s		43.0		6.0		43.0		6.0
Max Q Clear Time (g_c+I1), s		8.4		4.4		7.9		6.7
Green Ext Time (p_c), s		33.1		0.1		33.6		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	3.6
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	14	843	21	29	1299	30	103	10	33	37	8	43
Future Volume (veh/h)	14	843	21	29	1299	30	103	10	33	37	8	43
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	15	916	23	32	1412	33	112	11	36	40	9	47
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	224	2245	56	527	2471	58	203	51	167	211	35	181
Arrive On Green	0.03	1.00	1.00	0.08	0.70	0.70	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1774	3528	89	1774	3535	83	1342	384	1257	1353	261	1362
Grp Volume(v), veh/h	15	459	480	32	706	739	112	0	47	40	0	56
Grp Sat Flow(s),veh/h/ln	1774	1770	1847	1774	1770	1848	1342	0	1641	1353	0	1622
Q Serve(g_s), s	0.4	0.0	0.0	0.0	22.0	22.1	9.0	0.0	2.8	3.0	0.0	3.4
Cycle Q Clear(g_c), s	0.4	0.0	0.0	0.0	22.0	22.1	12.4	0.0	2.8	5.8	0.0	3.4
Prop In Lane	1.00		0.05	1.00		0.04	1.00		0.77	1.00		0.84
Lane Grp Cap(c), veh/h	224	1126	1175	527	1237	1292	203	0	218	211	0	216
V/C Ratio(X)	0.07	0.41	0.41	0.06	0.57	0.57	0.55	0.00	0.22	0.19	0.00	0.26
Avail Cap(c_a), veh/h	265	1126	1175	527	1237	1292	256	0	283	265	0	280
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.5	0.0	0.0	8.1	8.3	8.3	48.4	0.0	42.5	45.1	0.0	42.8
Incr Delay (d2), s/veh	0.1	1.0	1.0	0.0	1.5	1.4	0.9	0.0	0.2	0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.3	0.3	0.4	11.1	11.6	3.4	0.0	1.3	1.1	0.0	1.5
LnGrp Delay(d),s/veh	11.6	1.0	1.0	8.2	9.7	9.7	49.3	0.0	42.7	45.3	0.0	43.0
LnGrp LOS	B	A	A	A	A	A	D		D	D		D
Approach Vol, veh/h		954			1477			159			96	
Approach Delay, s/veh		1.2			9.7			47.3			44.0	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.4	76.0		19.6	7.5	82.9		19.6
Change Period (Y+Rc), s	6.0	6.0		5.0	6.0	6.0		5.0
Max Green Setting (Gmax), s	4.0	70.0		19.0	4.0	70.0		19.0
Max Q Clear Time (g_c+I1), s	2.0	2.0		14.4	2.4	24.1		7.8
Green Ext Time (p_c), s	0.8	16.6		0.3	0.0	28.5		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	38	1685	72	75	1271	55	36	13	44	86	9	29
Future Volume (veh/h)	38	1685	72	75	1271	55	36	13	44	86	9	29
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	41	1832	78	82	1382	60	39	14	48	93	10	32
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	255	2336	99	308	2464	107	192	45	153	175	47	151
Arrive On Green	0.05	1.00	1.00	0.06	0.71	0.71	0.12	0.12	0.12	0.12	0.12	0.12
Sat Flow, veh/h	1774	3460	146	1774	3456	150	1359	370	1269	1335	391	1251
Grp Volume(v), veh/h	41	931	979	82	706	736	39	0	62	93	0	42
Grp Sat Flow(s),veh/h/ln	1774	1770	1837	1774	1770	1836	1359	0	1639	1335	0	1642
Q Serve(g_s), s	1.0	0.0	0.0	0.0	22.9	23.0	3.2	0.0	4.1	8.2	0.0	2.8
Cycle Q Clear(g_c), s	1.0	0.0	0.0	0.0	22.9	23.0	6.0	0.0	4.1	12.4	0.0	2.8
Prop In Lane	1.00		0.08	1.00		0.08	1.00		0.77	1.00		0.76
Lane Grp Cap(c), veh/h	255	1194	1240	308	1262	1309	192	0	197	175	0	198
V/C Ratio(X)	0.16	0.78	0.79	0.27	0.56	0.56	0.20	0.00	0.31	0.53	0.00	0.21
Avail Cap(c_a), veh/h	299	1194	1240	308	1262	1309	210	0	219	192	0	219
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.59	0.59	0.59	0.75	0.75	0.75	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.5	0.0	0.0	11.5	8.2	8.2	50.3	0.0	48.2	53.9	0.0	47.6
Incr Delay (d2), s/veh	0.2	3.1	3.1	0.3	1.4	1.3	0.2	0.0	0.3	0.9	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.0	1.1	1.5	11.5	11.9	1.2	0.0	1.9	3.1	0.0	1.3
LnGrp Delay(d),s/veh	10.7	3.1	3.1	11.9	9.6	9.6	50.5	0.0	48.6	54.8	0.0	47.8
LnGrp LOS	B	A	A	B	A	A	D		D	D		D
Approach Vol, veh/h		1951			1524			101			135	
Approach Delay, s/veh		3.3			9.7			49.3			52.7	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.5	87.0		19.5	9.0	91.6		19.5
Change Period (Y+Rc), s	6.0	6.0		5.0	6.0	6.0		5.0
Max Green Setting (Gmax), s	6.0	81.0		16.0	6.0	81.0		16.0
Max Q Clear Time (g_c+I1), s	2.0	2.0		8.0	3.0	25.0		14.4
Green Ext Time (p_c), s	1.4	60.3		0.3	0.0	32.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	9.0
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	1079	21	30	1374	41	103	10	37	43	8	47
Future Volume (veh/h)	19	1079	21	30	1374	41	103	10	37	43	8	47
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	21	1173	23	33	1493	45	112	11	40	47	9	51
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	2259	44	450	2429	73	203	48	174	211	33	187
Arrive On Green	0.03	1.00	1.00	0.07	0.69	0.69	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1774	3550	70	1774	3508	106	1337	353	1283	1348	243	1377
Grp Volume(v), veh/h	21	585	611	33	752	786	112	0	51	47	0	60
Grp Sat Flow(s),veh/h/ln	1774	1770	1850	1774	1770	1844	1337	0	1636	1348	0	1620
Q Serve(g_s), s	0.5	0.0	0.0	0.0	25.0	25.1	9.0	0.0	3.1	3.5	0.0	3.7
Cycle Q Clear(g_c), s	0.5	0.0	0.0	0.0	25.0	25.1	12.7	0.0	3.1	6.6	0.0	3.7
Prop In Lane	1.00		0.04	1.00		0.06	1.00		0.78	1.00		0.85
Lane Grp Cap(c), veh/h	209	1126	1178	450	1225	1277	203	0	222	211	0	220
V/C Ratio(X)	0.10	0.52	0.52	0.07	0.61	0.62	0.55	0.00	0.23	0.22	0.00	0.27
Avail Cap(c_a), veh/h	243	1126	1178	450	1225	1277	252	0	283	261	0	280
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.86	0.86	0.86	0.69	0.69	0.69	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.3	0.0	0.0	8.6	9.0	9.1	48.3	0.0	42.4	45.3	0.0	42.7
Incr Delay (d2), s/veh	0.2	1.5	1.4	0.0	1.6	1.5	0.9	0.0	0.2	0.2	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.5	0.5	0.4	12.7	13.2	3.4	0.0	1.4	1.3	0.0	1.6
LnGrp Delay(d),s/veh	12.4	1.5	1.4	8.6	10.6	10.6	49.2	0.0	42.6	45.5	0.0	42.9
LnGrp LOS	B	A	A	A	B	B	D		D	D		D
Approach Vol, veh/h		1217			1571			163			107	
Approach Delay, s/veh		1.6			10.6			47.1			44.1	
Approach LOS		A			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.1	76.0		19.9	7.9	82.2		19.9
Change Period (Y+Rc), s	6.0	6.0		5.0	6.0	6.0		5.0
Max Green Setting (Gmax), s	4.0	70.0		19.0	4.0	70.0		19.0
Max Q Clear Time (g_c+I1), s	2.0	2.0		14.7	2.5	27.1		8.6
Green Ext Time (p_c), s	1.2	25.1		0.3	0.0	29.4		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	1725	72	76	1355	57	36	13	45	91	9	32
Future Volume (veh/h)	39	1725	72	76	1355	57	36	13	45	91	9	32
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	42	1875	78	83	1473	62	39	14	49	99	10	35
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	234	2338	97	294	2451	103	196	46	159	180	46	159
Arrive On Green	0.05	1.00	1.00	0.06	0.71	0.71	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1774	3464	143	1774	3461	145	1356	364	1274	1334	364	1274
Grp Volume(v), veh/h	42	951	1002	83	751	784	39	0	63	99	0	45
Grp Sat Flow(s),veh/h/ln	1774	1770	1837	1774	1770	1837	1356	0	1638	1334	0	1638
Q Serve(g_s), s	1.0	0.0	0.0	0.0	25.9	26.1	3.2	0.0	4.2	8.8	0.0	3.0
Cycle Q Clear(g_c), s	1.0	0.0	0.0	0.0	25.9	26.1	6.2	0.0	4.2	13.0	0.0	3.0
Prop In Lane	1.00		0.08	1.00		0.08	1.00		0.78	1.00		0.78
Lane Grp Cap(c), veh/h	234	1194	1240	294	1253	1301	196	0	205	180	0	205
V/C Ratio(X)	0.18	0.80	0.81	0.28	0.60	0.60	0.20	0.00	0.31	0.55	0.00	0.22
Avail Cap(c_a), veh/h	278	1194	1240	294	1253	1301	207	0	218	191	0	218
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.56	0.56	0.56	0.72	0.72	0.72	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.3	0.0	0.0	12.2	8.9	8.9	50.0	0.0	47.8	53.7	0.0	47.2
Incr Delay (d2), s/veh	0.2	3.2	3.3	0.4	1.5	1.5	0.2	0.0	0.3	1.4	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	1.1	1.1	1.6	13.1	13.6	1.2	0.0	1.9	3.3	0.0	1.3
LnGrp Delay(d),s/veh	11.5	3.2	3.3	12.6	10.4	10.4	50.2	0.0	48.1	55.0	0.0	47.4
LnGrp LOS	B	A	A	B	B	B	D		D	E		D
Approach Vol, veh/h		1995			1618			102			144	
Approach Delay, s/veh		3.4			10.5			48.9			52.6	
Approach LOS		A			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	87.0		20.0	9.0	91.0		20.0
Change Period (Y+Rc), s	6.0	6.0		5.0	6.0	6.0		5.0
Max Green Setting (Gmax), s	6.0	81.0		16.0	6.0	81.0		16.0
Max Q Clear Time (g_c+I1), s	2.0	2.0		8.2	3.0	28.1		15.0
Green Ext Time (p_c), s	1.5	62.1		0.4	0.0	34.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	1316	21	32	1449	52	103	10	40	50	8	51
Future Volume (veh/h)	25	1316	21	32	1449	52	103	10	40	50	8	51
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	27	1430	23	35	1575	57	112	11	43	54	9	55
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	194	2269	36	389	2392	86	203	46	180	212	31	192
Arrive On Green	0.04	1.00	1.00	0.07	0.69	0.69	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1774	3565	57	1774	3484	126	1332	333	1301	1345	227	1390
Grp Volume(v), veh/h	27	709	744	35	798	834	112	0	54	54	0	64
Grp Sat Flow(s),veh/h/ln	1774	1770	1853	1774	1770	1841	1332	0	1633	1345	0	1617
Q Serve(g_s), s	0.7	0.0	0.0	0.0	28.3	28.6	9.1	0.0	3.2	4.1	0.0	3.9
Cycle Q Clear(g_c), s	0.7	0.0	0.0	0.0	28.3	28.6	13.0	0.0	3.2	7.3	0.0	3.9
Prop In Lane	1.00		0.03	1.00		0.07	1.00		0.80	1.00		0.86
Lane Grp Cap(c), veh/h	194	1126	1179	389	1215	1264	203	0	226	212	0	224
V/C Ratio(X)	0.14	0.63	0.63	0.09	0.66	0.66	0.55	0.00	0.24	0.25	0.00	0.29
Avail Cap(c_a), veh/h	222	1126	1179	389	1215	1264	248	0	282	258	0	279
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.76	0.76	0.61	0.61	0.61	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.3	0.0	0.0	9.1	9.8	9.9	48.3	0.0	42.2	45.5	0.0	42.5
Incr Delay (d2), s/veh	0.2	2.0	1.9	0.1	1.7	1.7	0.9	0.0	0.2	0.2	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.6	0.6	0.5	14.1	15.0	3.4	0.0	1.5	1.5	0.0	1.8
LnGrp Delay(d),s/veh	13.5	2.0	1.9	9.1	11.5	11.5	49.2	0.0	42.4	45.7	0.0	42.8
LnGrp LOS	B	A	A	A	B	B	D		D	D		D
Approach Vol, veh/h		1480			1667			166			118	
Approach Delay, s/veh		2.2			11.5			47.0			44.1	
Approach LOS		A			B			D			D	

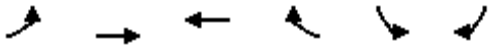
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.8	76.0		20.2	8.2	81.5		20.2
Change Period (Y+Rc), s	6.0	6.0		5.0	6.0	6.0		5.0
Max Green Setting (Gmax), s	4.0	70.0		19.0	4.0	70.0		19.0
Max Q Clear Time (g_c+I1), s	2.0	2.0		15.0	2.7	30.6		9.3
Green Ext Time (p_c), s	1.5	35.5		0.3	0.0	29.6		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	10.3
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	43	1865	72	79	1649	65	36	13	47	109	9	42
Future Volume (veh/h)	43	1865	72	79	1649	65	36	13	47	109	9	42
Number	5	2	12	1	6	16	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	47	2027	78	86	1792	71	39	14	51	118	10	46
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	170	2288	87	208	2425	96	197	47	171	190	39	178
Arrive On Green	0.03	0.66	0.66	0.07	0.70	0.70	0.13	0.13	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1774	3476	133	1774	3471	137	1342	352	1284	1331	291	1336
Grp Volume(v), veh/h	47	1026	1079	86	909	954	39	0	65	118	0	56
Grp Sat Flow(s),veh/h/ln	1774	1770	1839	1774	1770	1839	1342	0	1636	1331	0	1627
Q Serve(g_s), s	1.2	56.5	58.3	0.0	38.2	39.0	3.2	0.0	4.3	10.5	0.0	3.7
Cycle Q Clear(g_c), s	1.2	56.5	58.3	0.0	38.2	39.0	6.9	0.0	4.3	14.8	0.0	3.7
Prop In Lane	1.00		0.07	1.00		0.07	1.00		0.78	1.00		0.82
Lane Grp Cap(c), veh/h	170	1165	1211	208	1236	1284	197	0	218	190	0	217
V/C Ratio(X)	0.28	0.88	0.89	0.41	0.73	0.74	0.20	0.00	0.30	0.62	0.00	0.26
Avail Cap(c_a), veh/h	182	1165	1211	208	1236	1284	197	0	218	190	0	217
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.46	0.46	0.46	0.53	0.53	0.53	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.3	16.7	17.0	49.0	11.2	11.3	49.8	0.0	46.9	53.6	0.0	46.7
Incr Delay (d2), s/veh	0.4	4.8	5.1	0.7	2.1	2.1	0.2	0.0	0.3	4.6	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	28.9	30.8	2.7	19.1	20.4	1.2	0.0	2.0	4.1	0.0	1.7
LnGrp Delay(d),s/veh	17.7	21.4	22.0	49.7	13.3	13.4	50.0	0.0	47.2	58.2	0.0	46.9
LnGrp LOS	B	C	C	D	B	B	D		D	E		D
Approach Vol, veh/h		2152			1949			104			174	
Approach Delay, s/veh		21.7			15.0			48.2			54.6	
Approach LOS		C			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	85.0		21.0	9.2	89.8		21.0
Change Period (Y+Rc), s	6.0	6.0		5.0	6.0	6.0		5.0
Max Green Setting (Gmax), s	8.0	79.0		16.0	4.0	83.0		16.0
Max Q Clear Time (g_c+I1), s	2.0	60.3		8.9	3.2	41.0		16.8
Green Ext Time (p_c), s	5.6	17.9		0.4	0.0	35.4		0.0

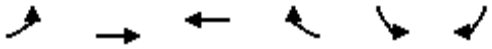
Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	713	1286	61	94	35
Future Volume (veh/h)	32	713	1286	61	94	35
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	35	775	1398	66	102	38
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	301	2713	2294	108	251	224
Arrive On Green	0.05	0.77	0.67	0.67	0.14	0.14
Sat Flow, veh/h	1774	3632	3535	162	1774	1583
Grp Volume(v), veh/h	35	775	717	747	102	38
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1834	1774	1583
Q Serve(g_s), s	0.0	7.9	27.3	27.5	6.3	2.5
Cycle Q Clear(g_c), s	0.0	7.9	27.3	27.5	6.3	2.5
Prop In Lane	1.00			0.09	1.00	1.00
Lane Grp Cap(c), veh/h	301	2713	1180	1223	251	224
V/C Ratio(X)	0.12	0.29	0.61	0.61	0.41	0.17
Avail Cap(c_a), veh/h	301	2713	1180	1223	251	224
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.6	4.2	11.2	11.2	46.9	45.3
Incr Delay (d2), s/veh	0.8	0.3	2.3	2.3	4.8	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.9	13.9	14.5	3.4	2.4
LnGrp Delay(d),s/veh	19.4	4.4	13.5	13.5	51.7	46.9
LnGrp LOS	B	A	B	B	D	D
Approach Vol, veh/h		810	1464		140	
Approach Delay, s/veh		5.1	13.5		50.4	
Approach LOS		A	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		98.0		22.0	12.0	86.0		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		92.0		17.0	6.0	80.0		
Max Q Clear Time (g_c+I1), s		9.9		8.3	2.0	29.5		
Green Ext Time (p_c), s		13.6		0.1	2.6	30.6		

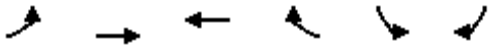
Intersection Summary	
HCM 2010 Ctrl Delay	12.8
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	1518	902	107	109	48
Future Volume (veh/h)	28	1518	902	107	109	48
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	30	1650	980	116	118	52
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	385	2654	2099	248	281	251
Arrive On Green	0.08	1.00	0.66	0.66	0.16	0.16
Sat Flow, veh/h	1774	3632	3282	377	1774	1583
Grp Volume(v), veh/h	30	1650	544	552	118	52
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1796	1774	1583
Q Serve(g_s), s	0.0	0.0	18.2	18.2	7.2	3.4
Cycle Q Clear(g_c), s	0.0	0.0	18.2	18.2	7.2	3.4
Prop In Lane	1.00			0.21	1.00	1.00
Lane Grp Cap(c), veh/h	385	2654	1165	1182	281	251
V/C Ratio(X)	0.08	0.62	0.47	0.47	0.42	0.21
Avail Cap(c_a), veh/h	385	2654	1165	1182	281	251
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	13.3	0.0	10.1	10.1	45.5	43.9
Incr Delay (d2), s/veh	0.4	1.1	1.3	1.3	4.6	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.4	9.2	9.3	3.9	3.3
LnGrp Delay(d),s/veh	13.7	1.1	11.5	11.4	50.1	45.8
LnGrp LOS	B	A	B	B	D	D
Approach Vol, veh/h		1680	1096		170	
Approach Delay, s/veh		1.3	11.4		48.8	
Approach LOS		A	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		96.0		24.0	11.0	85.0		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		90.0		19.0	5.0	79.0		
Max Q Clear Time (g_c+I1), s		2.0		9.2	2.0	20.2		
Green Ext Time (p_c), s		51.4		0.2	2.8	20.9		

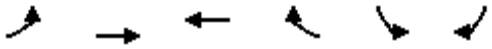
Intersection Summary	
HCM 2010 Ctrl Delay	7.8
HCM 2010 LOS	A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	713	1286	61	94	35
Future Volume (veh/h)	32	713	1286	61	94	35
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	35	775	1398	66	102	38
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	446	2776	1905	90	139	124
Arrive On Green	0.31	1.00	0.55	0.55	0.08	0.08
Sat Flow, veh/h	1774	3632	3535	162	1774	1583
Grp Volume(v), veh/h	35	775	717	747	102	38
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1834	1774	1583
Q Serve(g_s), s	0.0	0.0	24.4	24.5	4.5	1.8
Cycle Q Clear(g_c), s	0.0	0.0	24.4	24.5	4.5	1.8
Prop In Lane	1.00			0.09	1.00	1.00
Lane Grp Cap(c), veh/h	446	2776	980	1015	139	124
V/C Ratio(X)	0.08	0.28	0.73	0.74	0.73	0.31
Avail Cap(c_a), veh/h	446	2776	1106	1146	222	198
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.98	0.86	0.86	1.00	1.00
Uniform Delay (d), s/veh	13.7	0.0	13.4	13.4	36.1	34.8
Incr Delay (d2), s/veh	0.0	0.2	2.6	2.6	2.8	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.1	12.5	13.0	2.3	1.6
LnGrp Delay(d),s/veh	13.7	0.2	16.0	16.0	38.9	35.3
LnGrp LOS	B	A	B	B	D	D
Approach Vol, veh/h		810	1464		140	
Approach Delay, s/veh		0.8	16.0		37.9	
Approach LOS		A	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		68.7		11.3	18.4	50.3		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		59.0		10.0	3.0	50.0		
Max Q Clear Time (g_c+I1), s		2.0		6.5	2.0	26.5		
Green Ext Time (p_c), s		13.0		0.1	0.7	17.8		

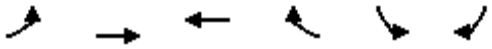
Intersection Summary	
HCM 2010 Ctrl Delay	12.2
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	1518	902	107	109	48
Future Volume (veh/h)	28	1518	902	107	109	48
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	30	1650	980	116	118	52
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	423	2921	2422	287	147	131
Arrive On Green	0.03	1.00	0.76	0.76	0.08	0.08
Sat Flow, veh/h	1774	3632	3282	377	1774	1583
Grp Volume(v), veh/h	30	1650	544	552	118	52
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1796	1774	1583
Q Serve(g_s), s	0.4	0.0	12.8	12.8	7.8	3.7
Cycle Q Clear(g_c), s	0.4	0.0	12.8	12.8	7.8	3.7
Prop In Lane	1.00			0.21	1.00	1.00
Lane Grp Cap(c), veh/h	423	2921	1344	1364	147	131
V/C Ratio(X)	0.07	0.56	0.40	0.40	0.80	0.40
Avail Cap(c_a), veh/h	468	2921	1344	1364	281	251
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.93	0.93	1.00	1.00
Uniform Delay (d), s/veh	3.6	0.0	5.0	5.0	54.0	52.2
Incr Delay (d2), s/veh	0.0	0.7	0.4	0.4	3.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.3	6.3	6.4	4.0	3.3
LnGrp Delay(d),s/veh	3.6	0.7	5.4	5.4	57.8	52.9
LnGrp LOS	A	A	A	A	E	D
Approach Vol, veh/h		1680	1096		170	
Approach Delay, s/veh		0.7	5.4		56.3	
Approach LOS		A	A		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		105.0		15.0	7.9	97.1		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		90.0		19.0	5.0	79.0		
Max Q Clear Time (g_c+I1), s		2.0		9.8	2.4	14.8		
Green Ext Time (p_c), s		79.6		0.2	0.0	59.6		

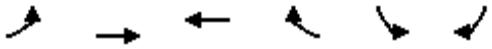
Intersection Summary	
HCM 2010 Ctrl Delay	5.7
HCM 2010 LOS	A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	43	904	1359	97	97	36
Future Volume (veh/h)	43	904	1359	97	97	36
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	47	983	1477	105	105	39
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	279	2916	2510	178	135	120
Arrive On Green	0.03	1.00	0.75	0.75	0.08	0.08
Sat Flow, veh/h	1774	3632	3446	237	1774	1583
Grp Volume(v), veh/h	47	983	776	806	105	39
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1821	1774	1583
Q Serve(g_s), s	0.6	0.0	21.6	21.9	6.4	2.6
Cycle Q Clear(g_c), s	0.6	0.0	21.6	21.9	6.4	2.6
Prop In Lane	1.00			0.13	1.00	1.00
Lane Grp Cap(c), veh/h	279	2916	1325	1363	135	120
V/C Ratio(X)	0.17	0.34	0.59	0.59	0.78	0.32
Avail Cap(c_a), veh/h	339	2916	1325	1363	210	187
HCM Platoon Ratio	1.33	1.33	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.83	0.83	1.00	1.00
Uniform Delay (d), s/veh	5.6	0.0	6.2	6.2	49.9	48.1
Incr Delay (d2), s/veh	0.1	0.3	0.9	0.9	3.7	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.1	10.7	11.1	3.3	2.3
LnGrp Delay(d),s/veh	5.7	0.3	7.1	7.1	53.6	48.7
LnGrp LOS	A	A	A	A	D	D
Approach Vol, veh/h		1030	1582		144	
Approach Delay, s/veh		0.5	7.1		52.3	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		96.6		13.4	8.3	88.3		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		86.0		13.0	6.0	74.0		
Max Q Clear Time (g_c+I1), s		2.0		8.4	2.6	23.9		
Green Ext Time (p_c), s		73.6		0.1	0.0	46.1		

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	1768	1351	111	166	65
Future Volume (veh/h)	29	1768	1351	111	166	65
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	32	1922	1468	121	180	71
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	420	2796	1910	157	210	187
Arrive On Green	0.33	1.00	0.58	0.58	0.12	0.12
Sat Flow, veh/h	1774	3632	3406	272	1774	1583
Grp Volume(v), veh/h	32	1922	780	809	180	71
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1815	1774	1583
Q Serve(g_s), s	0.0	0.0	40.1	40.8	11.9	5.0
Cycle Q Clear(g_c), s	0.0	0.0	40.1	40.8	11.9	5.0
Prop In Lane	1.00			0.15	1.00	1.00
Lane Grp Cap(c), veh/h	420	2796	1020	1046	210	187
V/C Ratio(X)	0.08	0.69	0.76	0.77	0.86	0.38
Avail Cap(c_a), veh/h	420	2796	1150	1180	325	290
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.59	0.59	0.82	0.82	1.00	1.00
Uniform Delay (d), s/veh	20.0	0.0	19.2	19.4	51.9	48.8
Incr Delay (d2), s/veh	0.0	0.8	3.0	3.1	8.2	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	20.4	21.3	6.3	4.5
LnGrp Delay(d),s/veh	20.0	0.8	22.2	22.5	60.2	49.3
LnGrp LOS	B	A	C	C	E	D
Approach Vol, veh/h		1954	1589		251	
Approach Delay, s/veh		1.1	22.4		57.1	
Approach LOS		A	C		E	

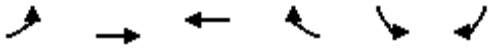
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		100.8		19.2	25.6	75.2		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		87.0		22.0	3.0	78.0		
Max Q Clear Time (g_c+I1), s		2.0		13.9	2.0	42.8		
Green Ext Time (p_c), s		63.0		0.2	1.0	26.3		

Intersection Summary	
HCM 2010 Ctrl Delay	13.7
HCM 2010 LOS	B

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	1126	1445	139	101	37
Future Volume (veh/h)	55	1126	1445	139	101	37
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	60	1224	1571	151	110	40
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	247	2906	2429	231	140	125
Arrive On Green	0.02	0.82	0.74	0.74	0.08	0.08
Sat Flow, veh/h	1774	3632	3360	311	1774	1583
Grp Volume(v), veh/h	60	1224	844	878	110	40
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1808	1774	1583
Q Serve(g_s), s	0.8	10.4	25.7	26.6	6.7	2.6
Cycle Q Clear(g_c), s	0.8	10.4	25.7	26.6	6.7	2.6
Prop In Lane	1.00			0.17	1.00	1.00
Lane Grp Cap(c), veh/h	247	2906	1316	1344	140	125
V/C Ratio(X)	0.24	0.42	0.64	0.65	0.79	0.32
Avail Cap(c_a), veh/h	303	2906	1316	1344	210	187
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.78	0.78	1.00	1.00
Uniform Delay (d), s/veh	7.4	2.7	6.9	7.0	49.7	47.9
Incr Delay (d2), s/veh	0.2	0.4	1.2	1.2	5.6	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	5.1	12.9	13.6	3.5	2.4
LnGrp Delay(d),s/veh	7.5	3.1	8.1	8.3	55.3	48.4
LnGrp LOS	A	A	A	A	E	D
Approach Vol, veh/h		1284	1722		150	
Approach Delay, s/veh		3.3	8.2		53.5	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		96.3		13.7	8.5	87.8		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		86.0		13.0	6.0	74.0		
Max Q Clear Time (g_c+I1), s		12.4		8.7	2.8	28.6		
Green Ext Time (p_c), s		69.9		0.1	0.0	43.9		

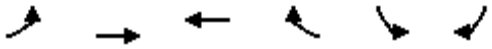
Intersection Summary	
HCM 2010 Ctrl Delay	8.3
HCM 2010 LOS	A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	29	1814	1432	112	177	68
Future Volume (veh/h)	29	1814	1432	112	177	68
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	32	1972	1557	122	192	74
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	369	2773	1982	154	222	198
Arrive On Green	0.28	1.00	0.60	0.60	0.12	0.12
Sat Flow, veh/h	1774	3632	3421	259	1774	1583
Grp Volume(v), veh/h	32	1972	823	856	192	74
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1817	1774	1583
Q Serve(g_s), s	0.0	0.0	42.2	43.2	12.7	5.1
Cycle Q Clear(g_c), s	0.0	0.0	42.2	43.2	12.7	5.1
Prop In Lane	1.00			0.14	1.00	1.00
Lane Grp Cap(c), veh/h	369	2773	1054	1082	222	198
V/C Ratio(X)	0.09	0.71	0.78	0.79	0.87	0.37
Avail Cap(c_a), veh/h	369	2773	1150	1181	325	290
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.56	0.56	0.79	0.79	1.00	1.00
Uniform Delay (d), s/veh	23.0	0.0	18.4	18.6	51.5	48.2
Incr Delay (d2), s/veh	0.0	0.9	3.2	3.4	11.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.3	21.3	22.7	6.9	4.6
LnGrp Delay(d),s/veh	23.0	0.9	21.6	22.0	62.5	48.6
LnGrp LOS	C	A	C	C	E	D
Approach Vol, veh/h		2004	1679		266	
Approach Delay, s/veh		1.2	21.8		58.7	
Approach LOS		A	C		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		100.0		20.0	22.6	77.5		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		87.0		22.0	3.0	78.0		
Max Q Clear Time (g_c+I1), s		2.0		14.7	2.0	45.2		
Green Ext Time (p_c), s		65.1		0.2	1.0	26.2		

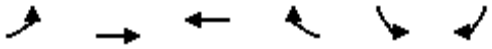
Intersection Summary	
HCM 2010 Ctrl Delay	13.8
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	67	1348	1530	181	105	38
Future Volume (veh/h)	67	1348	1530	181	105	38
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	73	1465	1663	197	114	41
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	219	2898	2362	275	144	129
Arrive On Green	0.02	0.82	0.74	0.74	0.08	0.08
Sat Flow, veh/h	1774	3632	3288	372	1774	1583
Grp Volume(v), veh/h	73	1465	909	951	114	41
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1797	1774	1583
Q Serve(g_s), s	1.0	14.1	30.3	32.2	6.9	2.7
Cycle Q Clear(g_c), s	1.0	14.1	30.3	32.2	6.9	2.7
Prop In Lane	1.00			0.21	1.00	1.00
Lane Grp Cap(c), veh/h	219	2898	1309	1329	144	129
V/C Ratio(X)	0.33	0.51	0.69	0.72	0.79	0.32
Avail Cap(c_a), veh/h	272	2898	1309	1329	210	187
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.81	0.81	0.73	0.73	1.00	1.00
Uniform Delay (d), s/veh	10.3	3.1	7.7	7.9	49.6	47.7
Incr Delay (d2), s/veh	0.3	0.5	1.5	1.7	7.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	6.9	14.9	16.2	3.7	2.4
LnGrp Delay(d),s/veh	10.5	3.6	9.2	9.6	56.7	48.2
LnGrp LOS	B	A	A	A	E	D
Approach Vol, veh/h		1538	1860		155	
Approach Delay, s/veh		3.9	9.4		54.4	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		96.1		13.9	8.7	87.3		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		86.0		13.0	6.0	74.0		
Max Q Clear Time (g_c+I1), s		16.1		8.9	3.0	34.2		
Green Ext Time (p_c), s		68.5		0.1	0.0	39.3		

Intersection Summary	
HCM 2010 Ctrl Delay	9.0
HCM 2010 LOS	A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	1973	1718	115	213	78
Future Volume (veh/h)	30	1973	1718	115	213	78
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	33	2145	1867	125	232	85
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	156	2696	2342	155	260	232
Arrive On Green	0.03	1.00	0.70	0.70	0.15	0.15
Sat Flow, veh/h	1774	3632	3463	223	1774	1583
Grp Volume(v), veh/h	33	2145	970	1022	232	85
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1823	1774	1583
Q Serve(g_s), s	0.6	0.0	44.4	46.6	15.4	5.8
Cycle Q Clear(g_c), s	0.6	0.0	44.4	46.6	15.4	5.8
Prop In Lane	1.00			0.12	1.00	1.00
Lane Grp Cap(c), veh/h	156	2696	1230	1267	260	232
V/C Ratio(X)	0.21	0.80	0.79	0.81	0.89	0.37
Avail Cap(c_a), veh/h	171	2696	1230	1267	310	277
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.41	0.67	0.67	1.00	1.00
Uniform Delay (d), s/veh	15.8	0.0	12.4	12.7	50.3	46.2
Incr Delay (d2), s/veh	0.1	1.1	2.7	3.0	21.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.4	22.2	24.0	9.1	5.3
LnGrp Delay(d),s/veh	15.9	1.1	15.1	15.7	71.5	46.5
LnGrp LOS	B	A	B	B	E	D
Approach Vol, veh/h		2178	1992		317	
Approach Delay, s/veh		1.3	15.4		64.8	
Approach LOS		A	B		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		97.4		22.6	8.0	89.4		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		88.0		21.0	3.0	79.0		
Max Q Clear Time (g_c+I1), s		2.0		17.4	2.6	48.6		
Green Ext Time (p_c), s		85.6		0.2	0.0	30.3		

Intersection Summary	
HCM 2010 Ctrl Delay	12.0
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	694	114	133	1268	81	98
Future Volume (veh/h)	694	114	133	1268	81	98
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	754	124	145	1378	88	107
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1917	858	612	2536	325	290
Arrive On Green	1.00	1.00	0.13	0.72	0.18	0.18
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	754	124	145	1378	88	107
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	0.0	0.0	0.0	21.7	5.1	7.1
Cycle Q Clear(g_c), s	0.0	0.0	0.0	21.7	5.1	7.1
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	1917	858	612	2536	325	290
V/C Ratio(X)	0.39	0.14	0.24	0.54	0.27	0.37
Avail Cap(c_a), veh/h	1917	858	612	2536	325	290
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	9.6	7.9	42.1	42.9
Incr Delay (d2), s/veh	0.6	0.4	0.9	0.8	2.0	3.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.1	2.3	10.8	2.7	3.4
LnGrp Delay(d),s/veh	0.6	0.4	10.5	8.7	44.1	46.5
LnGrp LOS	A	A	B	A	D	D
Approach Vol, veh/h	878			1523	195	
Approach Delay, s/veh	0.6			8.9	45.4	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	21.0	71.0				92.0		28.0
Change Period (Y+Rc), s	6.0	6.0				6.0		6.0
Max Green Setting (Gmax), s	15.0	65.0				86.0		22.0
Max Q Clear Time (g_c+I1), s	2.0	2.0				23.7		9.1
Green Ext Time (p_c), s	10.8	14.5				34.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1489	143	116	917	95	190
Future Volume (veh/h)	1489	143	116	917	95	190
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1618	155	126	997	103	207
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2212	990	371	2684	251	224
Arrive On Green	1.00	1.00	0.17	1.00	0.14	0.14
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	1618	155	126	997	103	207
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	0.0	0.0	0.0	0.0	6.3	15.5
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	6.3	15.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2212	990	371	2684	251	224
V/C Ratio(X)	0.73	0.16	0.34	0.37	0.41	0.92
Avail Cap(c_a), veh/h	2212	990	371	2684	251	224
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	9.1	0.0	46.9	50.9
Incr Delay (d2), s/veh	2.2	0.3	2.5	0.4	4.9	42.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.1	2.3	0.1	3.5	9.5
LnGrp Delay(d),s/veh	2.2	0.3	11.5	0.4	51.8	93.8
LnGrp LOS	A	A	B	A	D	F
Approach Vol, veh/h	1773			1123	310	
Approach Delay, s/veh	2.0			1.6	79.8	
Approach LOS	A			A	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	16.0	81.0				97.0		23.0
Change Period (Y+Rc), s	6.0	6.0				6.0		6.0
Max Green Setting (Gmax), s	10.0	75.0				91.0		17.0
Max Q Clear Time (g_c+I1), s	2.0	2.0				2.0		17.5
Green Ext Time (p_c), s	5.9	47.9				22.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	9.4
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	694	114	133	1268	81	98
Future Volume (veh/h)	694	114	133	1268	81	98
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	754	124	145	1378	88	107
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2205	987	474	2683	163	146
Arrive On Green	0.21	0.21	0.06	0.76	0.09	0.09
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	754	124	145	1378	88	107
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	14.6	5.1	2.1	12.3	3.8	5.3
Cycle Q Clear(g_c), s	14.6	5.1	2.1	12.3	3.8	5.3
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2205	987	474	2683	163	146
V/C Ratio(X)	0.34	0.13	0.31	0.51	0.54	0.74
Avail Cap(c_a), veh/h	2205	987	545	2683	355	317
HCM Platoon Ratio	0.33	0.33	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.96	0.70	0.70	1.00	1.00
Uniform Delay (d), s/veh	17.8	14.0	5.9	3.8	34.7	35.4
Incr Delay (d2), s/veh	0.4	0.3	0.5	0.2	1.0	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	2.3	1.1	6.0	1.9	2.4
LnGrp Delay(d),s/veh	18.2	14.3	6.5	4.1	35.7	38.1
LnGrp LOS	B	B	A	A	D	D
Approach Vol, veh/h	878			1523	195	
Approach Delay, s/veh	17.6			4.3	37.0	
Approach LOS	B			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	10.8	55.8				66.6		13.4
Change Period (Y+Rc), s	6.0	6.0				6.0		6.0
Max Green Setting (Gmax), s	8.0	38.0				52.0		16.0
Max Q Clear Time (g_c+I1), s	4.1	16.6				14.3		7.3
Green Ext Time (p_c), s	0.3	19.8				33.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	11.3
HCM 2010 LOS	B

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1489	143	116	917	95	190
Future Volume (veh/h)	1489	143	116	917	95	190
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1618	155	126	997	103	207
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2212	990	371	2684	251	224
Arrive On Green	1.00	1.00	0.17	1.00	0.14	0.14
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	1618	155	126	997	103	207
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	0.0	0.0	0.0	0.0	6.3	15.5
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	6.3	15.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2212	990	371	2684	251	224
V/C Ratio(X)	0.73	0.16	0.34	0.37	0.41	0.92
Avail Cap(c_a), veh/h	2212	990	371	2684	251	224
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.78	0.78	0.83	0.83	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	9.1	0.0	46.9	50.9
Incr Delay (d2), s/veh	1.7	0.3	1.0	0.2	0.4	38.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.1	2.1	0.1	3.1	9.2
LnGrp Delay(d),s/veh	1.7	0.3	10.0	0.2	47.3	89.7
LnGrp LOS	A	A	B	A	D	F
Approach Vol, veh/h	1773			1123	310	
Approach Delay, s/veh	1.6			1.3	75.6	
Approach LOS	A			A	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	16.0	81.0				97.0		23.0
Change Period (Y+Rc), s	6.0	6.0				6.0		6.0
Max Green Setting (Gmax), s	10.0	75.0				91.0		17.0
Max Q Clear Time (g_c+I1), s	2.0	2.0				2.0		17.5
Green Ext Time (p_c), s	5.9	47.9				22.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	8.6
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	871	131	156	1366	97	129
Future Volume (veh/h)	871	131	156	1366	97	129
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	947	142	170	1485	105	140
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2397	1072	487	2776	189	169
Arrive On Green	0.90	0.90	0.11	1.00	0.11	0.11
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	947	142	170	1485	105	140
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	4.5	1.1	3.1	0.0	6.2	9.5
Cycle Q Clear(g_c), s	4.5	1.1	3.1	0.0	6.2	9.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2397	1072	487	2776	189	169
V/C Ratio(X)	0.40	0.13	0.35	0.53	0.56	0.83
Avail Cap(c_a), veh/h	2397	1072	652	2776	274	245
HCM Platoon Ratio	1.33	1.33	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.42	0.42	1.00	1.00
Uniform Delay (d), s/veh	2.0	1.8	3.9	0.0	46.7	48.2
Incr Delay (d2), s/veh	0.5	0.2	0.4	0.2	1.0	9.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.5	1.5	0.1	3.1	4.6
LnGrp Delay(d),s/veh	2.4	2.1	4.3	0.2	47.6	58.0
LnGrp LOS	A	A	A	A	D	E
Approach Vol, veh/h	1089			1655	245	
Approach Delay, s/veh	2.4			0.6	53.6	
Approach LOS	A			A	D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.8	80.5				92.3		17.7
Change Period (Y+Rc), s	6.0	6.0				6.0		6.0
Max Green Setting (Gmax), s	16.0	59.0				81.0		17.0
Max Q Clear Time (g_c+I1), s	5.1	6.5				2.0		11.5
Green Ext Time (p_c), s	0.7	47.8				68.9		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1762	178	192	1321	149	257
Future Volume (veh/h)	1762	178	192	1321	149	257
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1915	193	209	1436	162	279
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2183	976	398	2803	192	369
Arrive On Green	1.00	1.00	0.25	1.00	0.11	0.11
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	1915	193	209	1436	162	279
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	0.0	0.0	0.0	0.0	10.8	4.7
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.0	10.8	4.7
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2183	976	398	2803	192	369
V/C Ratio(X)	0.88	0.20	0.53	0.51	0.84	0.76
Avail Cap(c_a), veh/h	2183	976	398	2803	222	396
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.64	0.64	0.45	0.45	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	19.4	0.0	52.5	42.8
Incr Delay (d2), s/veh	3.6	0.3	1.1	0.1	20.0	6.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.1	5.3	0.1	6.3	2.7
LnGrp Delay(d),s/veh	3.6	0.3	20.5	0.1	72.5	49.3
LnGrp LOS	A	A	C	A	E	D
Approach Vol, veh/h	2108			1645	441	
Approach Delay, s/veh	3.3			2.7	57.8	
Approach LOS	A			A	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	21.0	80.0				101.0		19.0
Change Period (Y+Rc), s	6.0	6.0				6.0		6.0
Max Green Setting (Gmax), s	13.0	74.0				93.0		15.0
Max Q Clear Time (g_c+I1), s	2.0	2.0				2.0		12.8
Green Ext Time (p_c), s	9.6	58.1				46.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	8.8
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1078	151	182	1479	115	165
Future Volume (veh/h)	1078	151	182	1479	115	165
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1172	164	198	1608	125	179
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2277	1019	404	2692	231	207
Arrive On Green	0.86	0.86	0.13	1.00	0.13	0.13
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	1172	164	198	1608	125	179
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	9.4	1.9	4.1	0.0	7.3	12.2
Cycle Q Clear(g_c), s	9.4	1.9	4.1	0.0	7.3	12.2
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2277	1019	404	2692	231	207
V/C Ratio(X)	0.51	0.16	0.49	0.60	0.54	0.87
Avail Cap(c_a), veh/h	2277	1019	551	2692	274	245
HCM Platoon Ratio	1.33	1.33	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.89	0.89	0.33	0.33	1.00	1.00
Uniform Delay (d), s/veh	3.5	3.0	5.4	0.0	44.7	46.9
Incr Delay (d2), s/veh	0.7	0.3	0.6	0.2	0.7	21.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.5	0.9	1.9	0.1	3.6	6.6
LnGrp Delay(d),s/veh	4.3	3.3	6.1	0.2	45.5	68.1
LnGrp LOS	A	A	A	A	D	E
Approach Vol, veh/h	1336			1806	304	
Approach Delay, s/veh	4.1			0.8	58.8	
Approach LOS	A			A	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	12.9	76.8				89.7		20.3
Change Period (Y+Rc), s	6.0	6.0				6.0		6.0
Max Green Setting (Gmax), s	16.0	59.0				81.0		17.0
Max Q Clear Time (g_c+I1), s	6.1	11.4				2.0		14.2
Green Ext Time (p_c), s	0.8	45.7				72.1		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	7.2
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1811	184	206	1394	159	269
Future Volume (veh/h)	1811	184	206	1394	159	269
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1968	200	224	1515	173	292
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2183	976	381	2782	202	369
Arrive On Green	1.00	1.00	0.24	1.00	0.11	0.11
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	1968	200	224	1515	173	292
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	0.0	0.0	0.1	0.0	11.5	6.5
Cycle Q Clear(g_c), s	0.0	0.0	0.1	0.0	11.5	6.5
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2183	976	381	2782	202	369
V/C Ratio(X)	0.90	0.20	0.59	0.54	0.86	0.79
Avail Cap(c_a), veh/h	2183	976	381	2782	222	387
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.61	0.61	0.38	0.38	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	22.7	0.0	52.2	43.2
Incr Delay (d2), s/veh	4.2	0.3	1.4	0.2	23.3	9.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.1	5.8	0.1	6.9	3.7
LnGrp Delay(d),s/veh	4.2	0.3	24.1	0.2	75.5	52.4
LnGrp LOS	A	A	C	A	E	D
Approach Vol, veh/h	2168			1739	465	
Approach Delay, s/veh	3.8			3.2	61.0	
Approach LOS	A			A	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	20.3	80.0				100.3		19.7
Change Period (Y+Rc), s	6.0	6.0				6.0		6.0
Max Green Setting (Gmax), s	13.0	74.0				93.0		15.0
Max Q Clear Time (g_c+I1), s	2.1	2.0				2.0		13.5
Green Ext Time (p_c), s	9.7	59.6				50.8		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.7
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1284	171	208	1593	134	201
Future Volume (veh/h)	1284	171	208	1593	134	201
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	1396	186	226	1732	146	218
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2157	965	392	2610	272	243
Arrive On Green	1.00	1.00	0.15	1.00	0.15	0.15
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	1396	186	226	1732	146	218
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	0.0	0.0	5.2	0.0	8.4	14.9
Cycle Q Clear(g_c), s	0.0	0.0	5.2	0.0	8.4	14.9
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2157	965	392	2610	272	243
V/C Ratio(X)	0.65	0.19	0.58	0.66	0.54	0.90
Avail Cap(c_a), veh/h	2157	965	520	2610	274	245
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.12	0.12	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	5.3	0.0	43.0	45.7
Incr Delay (d2), s/veh	1.3	0.4	0.3	0.1	1.1	31.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.1	2.4	0.0	4.2	8.6
LnGrp Delay(d),s/veh	1.3	0.4	5.6	0.1	44.0	76.7
LnGrp LOS	A	A	A	A	D	E
Approach Vol, veh/h	1582			1958	364	
Approach Delay, s/veh	1.2			0.7	63.6	
Approach LOS	A			A	E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	14.1	73.0				87.1		22.9
Change Period (Y+Rc), s	6.0	6.0				6.0		6.0
Max Green Setting (Gmax), s	16.0	59.0				81.0		17.0
Max Q Clear Time (g_c+I1), s	7.2	2.0				2.0		16.9
Green Ext Time (p_c), s	0.9	55.7				74.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	6.8
HCM 2010 LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1985	206	254	1651	194	311
Future Volume (veh/h)	1985	206	254	1651	194	311
Number	2	12	1	6	3	18
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	2158	224	276	1795	211	338
Adj No. of Lanes	2	1	1	2	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	2183	976	340	2743	222	369
Arrive On Green	1.00	1.00	0.14	1.00	0.13	0.13
Sat Flow, veh/h	3632	1583	1774	3632	1774	1583
Grp Volume(v), veh/h	2158	224	276	1795	211	338
Grp Sat Flow(s),veh/h/ln	1770	1583	1774	1770	1774	1583
Q Serve(g_s), s	0.0	0.0	7.5	0.0	14.2	12.0
Cycle Q Clear(g_c), s	0.0	0.0	7.5	0.0	14.2	12.0
Prop In Lane		1.00	1.00		1.00	1.00
Lane Grp Cap(c), veh/h	2183	976	340	2743	222	369
V/C Ratio(X)	0.99	0.23	0.81	0.65	0.95	0.91
Avail Cap(c_a), veh/h	2183	976	340	2743	222	369
HCM Platoon Ratio	2.00	2.00	1.33	1.33	1.00	1.00
Upstream Filter(I)	0.48	0.48	0.09	0.09	1.00	1.00
Uniform Delay (d), s/veh	0.0	0.0	35.5	0.0	52.1	44.8
Incr Delay (d2), s/veh	11.0	0.3	1.6	0.1	46.4	26.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.1	8.7	0.0	9.8	7.9
LnGrp Delay(d),s/veh	11.0	0.3	37.1	0.1	98.5	71.1
LnGrp LOS	B	A	D	A	F	E
Approach Vol, veh/h	2382			2071	549	
Approach Delay, s/veh	10.0			5.0	81.6	
Approach LOS	B			A	F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	19.0	80.0				99.0		21.0
Change Period (Y+Rc), s	6.0	6.0				6.0		6.0
Max Green Setting (Gmax), s	13.0	74.0				93.0		15.0
Max Q Clear Time (g_c+I1), s	9.5	2.0				2.0		16.2
Green Ext Time (p_c), s	3.4	64.1				66.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	15.8
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	430	235	225	590	125	300	515	135	110	580	330
Future Volume (veh/h)	260	430	235	225	590	125	300	515	135	110	580	330
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	283	467	255	245	641	0	326	560	147	120	630	359
Adj No. of Lanes	2	2	0	2	2	1	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	621	337	321	944	422	413	778	203	184	755	338
Arrive On Green	0.11	0.28	0.28	0.09	0.27	0.00	0.12	0.28	0.28	0.05	0.21	0.21
Sat Flow, veh/h	3442	2217	1203	3442	3539	1583	3442	2777	727	3442	3539	1583
Grp Volume(v), veh/h	283	372	350	245	641	0	326	356	351	120	630	359
Grp Sat Flow(s),veh/h/ln	1721	1770	1650	1721	1770	1583	1721	1770	1735	1721	1770	1583
Q Serve(g_s), s	6.0	14.4	14.5	5.2	12.2	0.0	6.9	13.6	13.7	2.6	12.8	16.0
Cycle Q Clear(g_c), s	6.0	14.4	14.5	5.2	12.2	0.0	6.9	13.6	13.7	2.6	12.8	16.0
Prop In Lane	1.00		0.73	1.00		1.00	1.00		0.42	1.00		1.00
Lane Grp Cap(c), veh/h	367	495	462	321	944	422	413	495	486	184	755	338
V/C Ratio(X)	0.77	0.75	0.76	0.76	0.68	0.00	0.79	0.72	0.72	0.65	0.83	1.06
Avail Cap(c_a), veh/h	367	495	462	321	944	422	413	495	486	184	755	338
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	32.6	24.6	24.7	33.2	24.6	0.0	32.1	24.3	24.4	34.8	28.2	29.5
Incr Delay (d2), s/veh	14.5	10.1	11.0	15.7	3.9	0.0	14.2	8.7	9.0	16.7	10.5	66.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	8.4	8.0	3.2	6.4	0.0	4.1	7.8	7.7	1.6	7.3	13.2
LnGrp Delay(d),s/veh	47.1	34.7	35.7	48.9	28.6	0.0	46.3	33.0	33.4	51.5	38.8	96.1
LnGrp LOS	D	C	D	D	C		D	C	C	D	D	F
Approach Vol, veh/h		1005			886			1033			1109	
Approach Delay, s/veh		38.5			34.2			37.3			58.7	
Approach LOS		D			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.0	27.0	14.0	22.0	13.0	26.0	9.0	27.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	7.0	21.0	9.0	16.0	8.0	20.0	4.0	21.0
Max Q Clear Time (g_c+I1), s	7.2	16.5	8.9	18.0	8.0	14.2	4.6	15.7
Green Ext Time (p_c), s	0.0	3.1	0.0	0.0	0.0	3.8	0.0	3.9

Intersection Summary	
HCM 2010 Ctrl Delay	42.8
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	360	705	210	225	555	85	130	560	245	125	570	305
Future Volume (veh/h)	360	705	210	225	555	85	130	560	245	125	570	305
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	391	766	228	245	603	0	141	609	266	136	620	332
Adj No. of Lanes	2	2	0	2	2	1	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	574	986	294	344	1062	475	258	700	306	201	973	435
Arrive On Green	0.11	0.25	0.25	0.20	0.60	0.00	0.08	0.29	0.29	0.06	0.28	0.28
Sat Flow, veh/h	3442	2690	801	3442	3539	1583	3442	2400	1048	3442	3539	1583
Grp Volume(v), veh/h	391	504	490	245	603	0	141	449	426	136	620	332
Grp Sat Flow(s),veh/h/ln	1721	1770	1721	1721	1770	1583	1721	1770	1678	1721	1770	1583
Q Serve(g_s), s	13.1	31.8	31.9	8.0	12.4	0.0	4.7	28.9	28.9	4.6	18.5	23.1
Cycle Q Clear(g_c), s	13.1	31.8	31.9	8.0	12.4	0.0	4.7	28.9	28.9	4.6	18.5	23.1
Prop In Lane	1.00		0.47	1.00		1.00	1.00		0.62	1.00		1.00
Lane Grp Cap(c), veh/h	574	649	631	344	1062	475	258	516	489	201	973	435
V/C Ratio(X)	0.68	0.78	0.78	0.71	0.57	0.00	0.55	0.87	0.87	0.68	0.64	0.76
Avail Cap(c_a), veh/h	574	649	631	344	1062	475	258	516	489	201	973	435
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.2	40.7	40.7	46.4	19.3	0.0	53.5	40.3	40.4	55.4	38.2	39.9
Incr Delay (d2), s/veh	6.4	8.9	9.1	11.8	2.2	0.0	8.1	17.9	18.7	16.9	3.2	11.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	17.2	16.7	4.3	6.2	0.0	2.5	16.7	15.9	2.7	9.5	11.5
LnGrp Delay(d),s/veh	56.7	49.5	49.8	58.2	21.5	0.0	61.6	58.2	59.1	72.3	41.4	51.8
LnGrp LOS	E	D	D	E	C		E	E	E	E	D	D
Approach Vol, veh/h		1385			848			1016			1088	
Approach Delay, s/veh		51.6			32.1			59.0			48.5	
Approach LOS		D			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	50.0	14.0	39.0	25.0	42.0	12.0	41.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	12.0	44.0	9.0	33.0	20.0	36.0	7.0	35.0
Max Q Clear Time (g_c+I1), s	10.0	33.9	6.7	25.1	15.1	14.4	6.6	30.9
Green Ext Time (p_c), s	0.1	6.7	0.0	5.7	0.4	11.1	0.0	3.2

Intersection Summary	
HCM 2010 Ctrl Delay	48.8
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	260	430	235	225	590	125	300	515	135	110	580	330
Future Volume (veh/h)	260	430	235	225	590	125	300	515	135	110	580	330
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	283	467	255	245	641	0	326	560	147	120	630	359
Adj No. of Lanes	2	2	0	2	2	1	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	637	346	349	1042	466	406	666	174	288	728	326
Arrive On Green	0.04	0.09	0.09	0.20	0.59	0.00	0.12	0.24	0.24	0.08	0.21	0.21
Sat Flow, veh/h	3442	2217	1203	3442	3539	1583	3442	2777	727	3442	3539	1583
Grp Volume(v), veh/h	283	372	350	245	641	0	326	356	351	120	630	359
Grp Sat Flow(s),veh/h/ln	1721	1770	1650	1721	1770	1583	1721	1770	1735	1721	1770	1583
Q Serve(g_s), s	6.5	16.4	16.5	5.3	9.3	0.0	7.4	15.3	15.4	2.6	13.8	11.4
Cycle Q Clear(g_c), s	6.5	16.4	16.5	5.3	9.3	0.0	7.4	15.3	15.4	2.6	13.8	11.4
Prop In Lane	1.00		0.73	1.00		1.00	1.00		0.42	1.00		1.00
Lane Grp Cap(c), veh/h	367	509	474	349	1042	466	406	424	416	288	728	326
V/C Ratio(X)	0.77	0.73	0.74	0.70	0.61	0.00	0.80	0.84	0.84	0.42	0.87	1.10
Avail Cap(c_a), veh/h	387	509	474	349	1042	466	430	487	477	288	752	336
HCM Platoon Ratio	0.33	0.33	0.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	0.93	0.93	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	37.6	33.2	33.3	30.8	13.5	0.0	34.4	28.9	29.0	34.8	30.7	15.2
Incr Delay (d2), s/veh	7.3	8.4	9.2	5.0	2.5	0.0	9.1	11.1	11.7	0.4	10.1	80.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	9.2	8.8	2.8	4.8	0.0	4.0	8.7	8.8	1.3	7.8	12.2
LnGrp Delay(d),s/veh	44.9	41.6	42.5	35.8	16.1	0.0	43.5	40.0	40.7	35.1	40.8	95.3
LnGrp LOS	D	D	D	D	B		D	D	D	D	D	F
Approach Vol, veh/h		1005			886			1033			1109	
Approach Delay, s/veh		42.8			21.5			41.3			57.8	
Approach LOS		D			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.1	29.0	14.4	22.5	13.5	29.6	11.7	25.2
Change Period (Y+Rc), s	6.0	* 6	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	8.0	* 23	10.0	17.0	9.0	22.0	5.0	22.0
Max Q Clear Time (g_c+I1), s	7.3	18.5	9.4	15.8	8.5	11.3	4.6	17.4
Green Ext Time (p_c), s	0.1	1.8	0.1	0.7	0.0	3.5	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	41.9
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	360	705	210	225	555	85	130	560	245	125	570	305
Future Volume (veh/h)	360	705	210	225	555	85	130	560	245	125	570	305
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	391	766	228	245	603	0	141	609	266	136	620	332
Adj No. of Lanes	2	2	0	2	2	1	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	577	1049	312	296	1062	475	196	666	290	190	1005	450
Arrive On Green	0.11	0.26	0.26	0.17	0.60	0.00	0.06	0.28	0.28	0.06	0.28	0.28
Sat Flow, veh/h	3442	2690	801	3442	3539	1583	3442	2400	1048	3442	3539	1583
Grp Volume(v), veh/h	391	504	490	245	603	0	141	449	426	136	620	332
Grp Sat Flow(s),veh/h/ln	1721	1770	1721	1721	1770	1583	1721	1770	1678	1721	1770	1583
Q Serve(g_s), s	13.1	31.2	31.2	8.2	12.4	0.0	4.8	29.5	29.5	4.7	18.2	14.3
Cycle Q Clear(g_c), s	13.1	31.2	31.2	8.2	12.4	0.0	4.8	29.5	29.5	4.7	18.2	14.3
Prop In Lane	1.00		0.47	1.00		1.00	1.00		0.62	1.00		1.00
Lane Grp Cap(c), veh/h	577	690	671	296	1062	475	196	491	465	190	1005	450
V/C Ratio(X)	0.68	0.73	0.73	0.83	0.57	0.00	0.72	0.91	0.92	0.72	0.62	0.74
Avail Cap(c_a), veh/h	577	690	671	344	1062	475	258	516	489	201	1005	450
HCM Platoon Ratio	0.67	0.67	0.67	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.69	0.96	0.96	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.2	38.6	38.6	48.8	19.3	0.0	55.7	42.0	42.0	55.8	37.3	15.3
Incr Delay (d2), s/veh	1.8	4.7	4.8	11.4	2.1	0.0	3.8	20.4	21.4	9.1	1.1	6.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	16.2	15.8	4.3	6.2	0.0	2.4	17.1	16.5	2.5	9.1	7.0
LnGrp Delay(d),s/veh	52.0	43.2	43.4	60.2	21.4	0.0	59.5	62.4	63.4	64.9	38.4	21.6
LnGrp LOS	D	D	D	E	C		E	E	E	E	D	C
Approach Vol, veh/h		1385			848			1016			1088	
Approach Delay, s/veh		45.7			32.6			62.4			36.6	
Approach LOS		D			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.3	52.8	11.8	40.1	26.1	42.0	12.6	39.3
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	6.0	* 6	6.0	* 6
Max Green Setting (Gmax), s	12.0	44.0	9.0	33.0	20.0	* 36	7.0	* 35
Max Q Clear Time (g_c+I1), s	10.2	33.2	6.8	20.2	15.1	14.4	6.7	31.5
Green Ext Time (p_c), s	0.1	5.3	0.0	4.6	2.4	4.0	0.0	1.8

Intersection Summary	
HCM 2010 Ctrl Delay	44.8
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	314	561	146	237	636	139	349	589	209	124	618	353
Future Volume (veh/h)	314	561	146	237	636	139	349	589	209	124	618	353
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	341	610	159	258	691	0	379	640	227	135	672	384
Adj No. of Lanes	2	2	0	2	2	1	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	400	809	210	434	1096	490	442	815	289	193	869	389
Arrive On Green	0.15	0.39	0.39	0.13	0.31	0.00	0.13	0.32	0.32	0.06	0.25	0.25
Sat Flow, veh/h	3442	2781	724	3442	3539	1583	3442	2563	909	3442	3539	1583
Grp Volume(v), veh/h	341	388	381	258	691	0	379	442	425	135	672	384
Grp Sat Flow(s),veh/h/ln	1721	1770	1735	1721	1770	1583	1721	1770	1702	1721	1770	1583
Q Serve(g_s), s	10.6	20.9	20.9	7.8	18.4	0.0	11.9	25.0	25.0	4.2	19.5	26.6
Cycle Q Clear(g_c), s	10.6	20.9	20.9	7.8	18.4	0.0	11.9	25.0	25.0	4.2	19.5	26.6
Prop In Lane	1.00		0.42	1.00		1.00	1.00		0.53	1.00		1.00
Lane Grp Cap(c), veh/h	400	515	505	434	1096	490	442	562	541	193	869	389
V/C Ratio(X)	0.85	0.75	0.76	0.59	0.63	0.00	0.86	0.79	0.79	0.70	0.77	0.99
Avail Cap(c_a), veh/h	469	515	505	434	1096	490	532	579	557	250	869	389
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	0.82	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.6	30.3	30.3	45.4	32.6	0.0	46.9	34.1	34.1	51.0	38.7	41.3
Incr Delay (d2), s/veh	9.3	8.2	8.4	1.5	2.8	0.0	10.0	6.9	7.2	3.2	4.4	42.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	11.3	11.1	3.8	9.4	0.0	6.2	13.2	12.8	2.1	10.0	16.2
LnGrp Delay(d),s/veh	54.8	38.5	38.7	46.9	35.3	0.0	56.9	41.0	41.3	54.2	43.0	83.7
LnGrp LOS	D	D	D	D	D		E	D	D	D	D	F
Approach Vol, veh/h		1110			949			1246			1191	
Approach Delay, s/veh		43.6			38.5			45.9			57.4	
Approach LOS		D			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.9	38.0	19.1	33.0	17.8	40.1	11.2	41.0
Change Period (Y+Rc), s	6.0	* 6	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	12.0	* 32	17.0	27.0	15.0	29.0	8.0	36.0
Max Q Clear Time (g_c+I1), s	9.8	22.9	13.9	28.6	12.6	20.4	6.2	27.0
Green Ext Time (p_c), s	0.3	3.2	0.3	0.0	0.2	3.3	0.0	6.6

Intersection Summary	
HCM 2010 Ctrl Delay	46.8
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	436	868	157	370	825	116	183	651	299	163	798	429
Future Volume (veh/h)	436	868	157	370	825	116	183	651	299	163	798	429
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	474	943	171	402	897	0	199	708	325	177	867	466
Adj No. of Lanes	2	2	0	2	2	1	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	516	1023	185	913	1648	737	253	688	316	201	950	425
Arrive On Green	0.30	0.68	0.68	0.27	0.47	0.00	0.07	0.29	0.29	0.06	0.27	0.27
Sat Flow, veh/h	3442	2994	543	3442	3539	1583	3442	2359	1082	3442	3539	1583
Grp Volume(v), veh/h	474	557	557	402	897	0	199	531	502	177	867	466
Grp Sat Flow(s),veh/h/ln	1721	1770	1767	1721	1770	1583	1721	1770	1672	1721	1770	1583
Q Serve(g_s), s	16.0	32.3	32.4	11.7	21.8	0.0	6.8	35.0	35.0	6.1	28.5	28.1
Cycle Q Clear(g_c), s	16.0	32.3	32.4	11.7	21.8	0.0	6.8	35.0	35.0	6.1	28.5	28.1
Prop In Lane	1.00		0.31	1.00		1.00	1.00		0.65	1.00		1.00
Lane Grp Cap(c), veh/h	516	605	604	913	1648	737	253	517	488	201	950	425
V/C Ratio(X)	0.92	0.92	0.92	0.44	0.54	0.00	0.79	1.03	1.03	0.88	0.91	1.10
Avail Cap(c_a), veh/h	516	605	604	913	1648	737	258	517	488	201	973	435
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.3	17.6	17.6	36.7	23.0	0.0	54.7	42.5	42.5	56.1	42.5	33.5
Incr Delay (d2), s/veh	16.3	16.6	16.8	0.1	1.3	0.0	13.3	47.0	48.3	32.5	12.5	72.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	18.0	18.0	5.5	10.9	0.0	3.7	23.8	22.7	3.8	15.6	20.8
LnGrp Delay(d),s/veh	57.6	34.3	34.4	36.8	24.3	0.0	67.9	89.5	90.8	88.5	55.0	106.0
LnGrp LOS	E	C	C	D	C		E	F	F	F	E	F
Approach Vol, veh/h		1588			1299			1232			1510	
Approach Delay, s/veh		41.3			28.1			86.5			74.7	
Approach LOS		D			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	38.0	47.0	14.8	38.2	23.0	62.0	12.0	41.0
Change Period (Y+Rc), s	6.0	* 6	6.0	* 6	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	15.0	* 41	9.0	* 33	18.0	38.0	7.0	35.0
Max Q Clear Time (g_c+I1), s	13.7	34.4	8.8	30.5	18.0	23.8	8.1	37.0
Green Ext Time (p_c), s	0.5	3.7	0.0	1.7	0.0	5.9	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	57.1
HCM 2010 LOS	E

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	377	715	159	252	689	155	406	674	294	141	662	381
Future Volume (veh/h)	377	715	159	252	689	155	406	674	294	141	662	381
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	410	777	173	274	749	0	441	733	320	153	720	414
Adj No. of Lanes	2	2	0	2	2	1	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	466	890	198	335	991	443	499	776	338	211	847	379
Arrive On Green	0.18	0.41	0.41	0.10	0.28	0.00	0.15	0.32	0.32	0.06	0.24	0.24
Sat Flow, veh/h	3442	2878	641	3442	3539	1583	3442	2400	1047	3442	3539	1583
Grp Volume(v), veh/h	410	478	472	274	749	0	441	540	513	153	720	414
Grp Sat Flow(s),veh/h/ln	1721	1770	1750	1721	1770	1583	1721	1770	1678	1721	1770	1583
Q Serve(g_s), s	12.8	27.3	27.3	8.6	21.3	0.0	13.8	32.7	32.8	4.8	21.4	26.3
Cycle Q Clear(g_c), s	12.8	27.3	27.3	8.6	21.3	0.0	13.8	32.7	32.8	4.8	21.4	26.3
Prop In Lane	1.00		0.37	1.00		1.00	1.00		0.62	1.00		1.00
Lane Grp Cap(c), veh/h	466	547	541	335	991	443	499	572	542	211	847	379
V/C Ratio(X)	0.88	0.87	0.87	0.82	0.76	0.00	0.88	0.94	0.95	0.72	0.85	1.09
Avail Cap(c_a), veh/h	501	547	541	344	991	443	532	579	549	219	847	379
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.73	0.73	0.73	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.2	30.4	30.4	48.7	36.2	0.0	46.1	36.3	36.3	50.7	40.0	41.8
Incr Delay (d2), s/veh	11.3	13.4	13.5	13.0	5.4	0.0	14.6	24.4	25.4	9.3	8.2	73.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	15.2	15.1	4.7	11.1	0.0	7.6	19.8	18.9	2.6	11.4	19.3
LnGrp Delay(d),s/veh	55.5	43.8	43.9	61.7	41.5	0.0	60.7	60.6	61.7	60.0	48.2	115.3
LnGrp LOS	E	D	D	E	D		E	E	E	E	D	F
Approach Vol, veh/h		1360			1023			1494			1287	
Approach Delay, s/veh		47.4			46.9			61.0			71.2	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.7	40.0	21.0	32.3	19.9	36.8	11.7	41.5
Change Period (Y+Rc), s	6.0	* 6	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	11.0	* 34	17.0	26.0	16.0	29.0	7.0	36.0
Max Q Clear Time (g_c+I1), s	10.6	29.3	15.8	28.3	14.8	23.3	6.8	34.8
Green Ext Time (p_c), s	0.1	2.4	0.1	0.0	0.1	2.7	0.0	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	57.2
HCM 2010 LOS	E

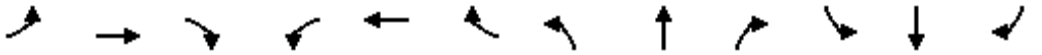
Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	450	897	170	397	874	122	193	668	309	170	839	452
Future Volume (veh/h)	450	897	170	397	874	122	193	668	309	170	839	452
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	489	975	185	432	950	0	210	726	336	185	912	491
Adj No. of Lanes	2	2	0	2	2	1	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	516	1015	192	1548	2299	1029	229	706	326	201	1003	449
Arrive On Green	0.30	0.68	0.68	0.45	0.65	0.00	0.07	0.30	0.30	0.06	0.28	0.28
Sat Flow, veh/h	3442	2970	563	3442	3539	1583	3442	2352	1088	3442	3539	1583
Grp Volume(v), veh/h	489	580	580	432	950	0	210	546	516	185	912	491
Grp Sat Flow(s),veh/h/ln	1721	1770	1763	1721	1770	1583	1721	1770	1671	1721	1770	1583
Q Serve(g_s), s	16.7	36.2	36.4	9.5	15.4	0.0	7.3	36.0	36.0	6.4	29.9	34.0
Cycle Q Clear(g_c), s	16.7	36.2	36.4	9.5	15.4	0.0	7.3	36.0	36.0	6.4	29.9	34.0
Prop In Lane	1.00		0.32	1.00		1.00	1.00		0.65	1.00		1.00
Lane Grp Cap(c), veh/h	516	605	602	1548	2299	1029	229	531	501	201	1003	449
V/C Ratio(X)	0.95	0.96	0.96	0.28	0.41	0.00	0.92	1.03	1.03	0.92	0.91	1.09
Avail Cap(c_a), veh/h	516	605	602	1548	2299	1029	229	531	501	201	1003	449
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.67	0.67	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.5	18.2	18.3	20.8	10.1	0.0	55.7	42.0	42.0	56.2	41.5	69.4
Incr Delay (d2), s/veh	20.4	21.8	22.1	0.0	0.6	0.0	36.5	46.6	47.9	41.4	12.0	70.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	20.7	20.8	4.5	7.7	0.0	4.6	24.4	23.2	4.2	16.2	8.8
LnGrp Delay(d),s/veh	62.0	40.0	40.4	20.8	10.6	0.0	92.2	88.6	89.9	97.7	53.5	139.9
LnGrp LOS	E	D	D	C	B		F	F	F	F	D	F
Approach Vol, veh/h		1649			1382			1272			1588	
Approach Delay, s/veh		46.7			13.8			89.7			85.4	
Approach LOS		D			B			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	61.0	47.0	14.0	40.0	23.0	85.0	12.0	42.0
Change Period (Y+Rc), s	6.0	* 6	6.0	* 6	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	15.0	* 41	8.0	* 34	18.0	38.0	7.0	35.0
Max Q Clear Time (g_c+I1), s	11.5	38.4	9.3	36.0	18.7	17.4	8.4	38.0
Green Ext Time (p_c), s	2.3	1.7	0.0	0.0	0.0	7.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	58.7
HCM 2010 LOS	E

Notes



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	440	868	172	266	743	171	463	760	380	157	706	408
Future Volume (veh/h)	440	868	172	266	743	171	463	760	380	157	706	408
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	478	943	187	289	808	0	503	826	413	171	767	443
Adj No. of Lanes	2	2	0	2	2	1	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	501	964	191	1251	1962	878	532	771	383	188	837	374
Arrive On Green	0.29	0.65	0.65	0.36	0.55	0.00	0.15	0.34	0.34	0.05	0.24	0.24
Sat Flow, veh/h	3442	2946	584	3442	3539	1583	3442	2292	1139	3442	3539	1583
Grp Volume(v), veh/h	478	566	564	289	808	0	503	636	603	171	767	443
Grp Sat Flow(s),veh/h/ln	1721	1770	1760	1721	1770	1583	1721	1770	1662	1721	1770	1583
Q Serve(g_s), s	15.0	33.8	33.9	6.4	14.5	0.0	15.9	37.0	37.0	5.4	23.2	26.0
Cycle Q Clear(g_c), s	15.0	33.8	33.9	6.4	14.5	0.0	15.9	37.0	37.0	5.4	23.2	26.0
Prop In Lane	1.00		0.33	1.00		1.00	1.00		0.69	1.00		1.00
Lane Grp Cap(c), veh/h	501	579	576	1251	1962	878	532	595	559	188	837	374
V/C Ratio(X)	0.95	0.98	0.98	0.23	0.41	0.00	0.95	1.07	1.08	0.91	0.92	1.18
Avail Cap(c_a), veh/h	501	579	576	1251	1962	878	532	595	559	188	837	374
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.65	0.65	0.65	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.6	18.6	18.6	24.3	14.2	0.0	46.0	36.5	36.5	51.7	40.9	42.0
Incr Delay (d2), s/veh	21.9	25.3	25.7	0.0	0.6	0.0	25.8	56.8	60.8	40.7	14.8	106.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	19.8	20.1	3.1	7.2	0.0	9.5	27.4	26.4	3.6	13.0	22.4
LnGrp Delay(d),s/veh	60.6	43.9	44.3	24.4	14.8	0.0	71.8	93.3	97.3	92.4	55.7	148.7
LnGrp LOS	E	D	D	C	B		E	F	F	F	E	F
Approach Vol, veh/h		1608			1097			1742			1381	
Approach Delay, s/veh		49.0			17.3			88.5			90.1	
Approach LOS		D			B			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	46.5	42.0	22.0	32.0	21.0	67.5	11.0	43.0
Change Period (Y+Rc), s	6.0	* 6	5.0	6.0	5.0	6.0	5.0	6.0
Max Green Setting (Gmax), s	9.0	* 36	17.0	26.0	16.0	29.0	6.0	37.0
Max Q Clear Time (g_c+I1), s	8.4	35.9	17.9	28.0	17.0	16.5	7.4	39.0
Green Ext Time (p_c), s	0.1	0.1	0.0	0.0	0.0	4.8	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	64.6
HCM 2010 LOS	E

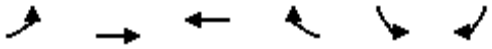
Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	499	1001	216	489	1046	142	227	726	344	194	981	531
Future Volume (veh/h)	499	1001	216	489	1046	142	227	726	344	194	981	531
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1863
Adj Flow Rate, veh/h	542	1088	235	532	1137	0	247	789	374	211	1066	577
Adj No. of Lanes	2	2	0	2	2	1	2	2	0	2	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	1408	1790	385	459	1180	528	201	661	313	172	973	435
Arrive On Green	0.27	0.41	0.41	0.13	0.33	0.00	0.06	0.28	0.28	0.05	0.28	0.28
Sat Flow, veh/h	3442	2899	623	3442	3539	1583	3442	2334	1103	3442	3539	1583
Grp Volume(v), veh/h	542	662	661	532	1137	0	247	598	565	211	1066	577
Grp Sat Flow(s),veh/h/ln	1721	1770	1753	1721	1770	1583	1721	1770	1668	1721	1770	1583
Q Serve(g_s), s	15.3	35.1	35.5	16.0	37.9	0.0	7.0	34.0	34.0	6.0	33.0	33.0
Cycle Q Clear(g_c), s	15.3	35.1	35.5	16.0	37.9	0.0	7.0	34.0	34.0	6.0	33.0	33.0
Prop In Lane	1.00		0.36	1.00		1.00	1.00		0.66	1.00		1.00
Lane Grp Cap(c), veh/h	1408	1093	1082	459	1180	528	201	501	473	172	973	435
V/C Ratio(X)	0.38	0.61	0.61	1.16	0.96	0.00	1.23	1.19	1.20	1.23	1.10	1.33
Avail Cap(c_a), veh/h	1408	1093	1082	459	1180	528	201	501	473	172	973	435
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.52	0.52	0.52	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.3	23.8	23.9	52.0	39.3	0.0	56.5	43.0	43.0	57.0	43.5	43.5
Incr Delay (d2), s/veh	0.0	1.3	1.4	93.6	18.8	0.0	139.3	104.7	107.5	142.3	58.5	161.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	17.6	17.7	13.5	21.6	0.0	7.2	31.2	29.7	6.2	24.0	33.9
LnGrp Delay(d),s/veh	31.3	25.1	25.2	145.6	58.1	0.0	195.8	147.7	150.5	199.3	102.0	205.1
LnGrp LOS	C	C	C	F	E		F	F	F	F	F	F
Approach Vol, veh/h		1865			1669			1410			1854	
Approach Delay, s/veh		26.9			86.0			157.2			145.1	
Approach LOS		C			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	80.6	12.0	39.0	55.6	46.0	11.0	40.0
Change Period (Y+Rc), s	5.0	6.0	5.0	6.0	6.0	* 6	5.0	6.0
Max Green Setting (Gmax), s	16.0	42.0	7.0	33.0	18.0	* 40	6.0	34.0
Max Q Clear Time (g_c+I1), s	18.0	37.5	9.0	35.0	17.3	39.9	8.0	36.0
Green Ext Time (p_c), s	0.0	3.4	0.0	0.0	0.1	0.1	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		100.7
HCM 2010 LOS		F

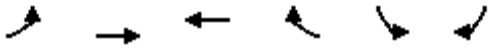
Notes



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	488	951	105	40	117
Future Volume (veh/h)	33	488	951	105	40	117
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	36	530	1034	114	43	127
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	327	2359	2359	1056	405	362
Arrive On Green	0.67	0.67	0.67	0.67	0.23	0.23
Sat Flow, veh/h	488	3632	3632	1583	1774	1583
Grp Volume(v), veh/h	36	530	1034	114	43	127
Grp Sat Flow(s),veh/h/ln	488	1770	1770	1583	1774	1583
Q Serve(g_s), s	3.9	6.2	14.4	2.7	2.0	7.1
Cycle Q Clear(g_c), s	18.4	6.2	14.4	2.7	2.0	7.1
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	327	2359	2359	1056	405	362
V/C Ratio(X)	0.11	0.22	0.44	0.11	0.11	0.35
Avail Cap(c_a), veh/h	327	2359	2359	1056	405	362
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	12.6	6.9	8.2	6.3	32.0	34.0
Incr Delay (d2), s/veh	0.7	0.2	0.6	0.2	0.5	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.0	7.2	1.2	1.0	3.3
LnGrp Delay(d),s/veh	13.3	7.1	8.8	6.5	32.5	36.6
LnGrp LOS	B	A	A	A	C	D
Approach Vol, veh/h		566	1148		170	
Approach Delay, s/veh		7.5	8.6		35.6	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		76.0		29.0		76.0		
Change Period (Y+Rc), s		6.0		5.0		6.0		
Max Green Setting (Gmax), s		70.0		24.0		70.0		
Max Q Clear Time (g_c+I1), s		20.4		9.1		16.4		
Green Ext Time (p_c), s		2.4		0.3		2.4		

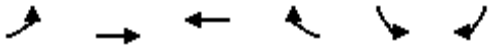
Intersection Summary	
HCM 2010 Ctrl Delay	10.7
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	88	1086	637	116	205	141
Future Volume (veh/h)	88	1086	637	116	205	141
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	96	1180	692	126	223	153
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	529	2698	2698	1207	259	231
Arrive On Green	1.00	1.00	0.76	0.76	0.15	0.15
Sat Flow, veh/h	666	3632	3632	1583	1774	1583
Grp Volume(v), veh/h	96	1180	692	126	223	153
Grp Sat Flow(s),veh/h/ln	666	1770	1770	1583	1774	1583
Q Serve(g_s), s	1.6	0.0	6.9	2.5	14.7	11.0
Cycle Q Clear(g_c), s	8.5	0.0	6.9	2.5	14.7	11.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	529	2698	2698	1207	259	231
V/C Ratio(X)	0.18	0.44	0.26	0.10	0.86	0.66
Avail Cap(c_a), veh/h	529	2698	2698	1207	503	449
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.55	0.55	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.3	0.0	4.2	3.7	50.1	48.5
Incr Delay (d2), s/veh	0.4	0.3	0.2	0.2	6.3	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.1	3.5	1.1	7.7	5.0
LnGrp Delay(d),s/veh	0.7	0.3	4.4	3.9	56.4	50.9
LnGrp LOS	A	A	A	A	E	D
Approach Vol, veh/h		1276	818		376	
Approach Delay, s/veh		0.3	4.3		54.1	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		97.5		22.5		97.5		
Change Period (Y+Rc), s		6.0		5.0		6.0		
Max Green Setting (Gmax), s		75.0		34.0		75.0		
Max Q Clear Time (g_c+I1), s		10.5		16.7		8.9		
Green Ext Time (p_c), s		3.1		0.8		3.1		

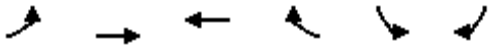
Intersection Summary	
HCM 2010 Ctrl Delay	9.8
HCM 2010 LOS	A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	488	951	105	40	117
Future Volume (veh/h)	33	488	951	105	40	117
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	36	530	1034	114	43	127
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	412	2686	2686	1202	184	164
Arrive On Green	1.00	1.00	0.76	0.76	0.10	0.10
Sat Flow, veh/h	488	3632	3632	1583	1774	1583
Grp Volume(v), veh/h	36	530	1034	114	43	127
Grp Sat Flow(s),veh/h/ln	488	1770	1770	1583	1774	1583
Q Serve(g_s), s	0.9	0.0	8.0	1.5	1.8	6.3
Cycle Q Clear(g_c), s	8.8	0.0	8.0	1.5	1.8	6.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	412	2686	2686	1202	184	164
V/C Ratio(X)	0.09	0.20	0.38	0.09	0.23	0.77
Avail Cap(c_a), veh/h	412	2686	2686	1202	377	336
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.6	0.0	3.3	2.5	32.9	34.9
Incr Delay (d2), s/veh	0.3	0.1	0.4	0.2	0.5	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	3.9	0.7	0.9	3.0
LnGrp Delay(d),s/veh	0.9	0.1	3.7	2.7	33.4	40.7
LnGrp LOS	A	A	A	A	C	D
Approach Vol, veh/h		566	1148		170	
Approach Delay, s/veh		0.2	3.6		38.8	
Approach LOS		A	A		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		66.7		13.3		66.7		
Change Period (Y+Rc), s		6.0		5.0		6.0		
Max Green Setting (Gmax), s		52.0		17.0		52.0		
Max Q Clear Time (g_c+I1), s		10.8		8.3		10.0		
Green Ext Time (p_c), s		2.4		0.2		2.4		

Intersection Summary	
HCM 2010 Ctrl Delay	5.7
HCM 2010 LOS	A



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	88	1086	637	116	205	141
Future Volume (veh/h)	88	1086	637	116	205	141
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	96	1180	692	126	223	153
Adj No. of Lanes	1	2	2	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	500	2316	2316	1036	288	257
Arrive On Green	1.00	1.00	0.65	0.65	0.16	0.16
Sat Flow, veh/h	666	3632	3632	1583	1774	1583
Grp Volume(v), veh/h	96	1180	692	126	223	153
Grp Sat Flow(s),veh/h/ln	666	1770	1770	1583	1774	1583
Q Serve(g_s), s	1.4	0.0	5.0	1.8	7.2	5.4
Cycle Q Clear(g_c), s	6.5	0.0	5.0	1.8	7.2	5.4
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	500	2316	2316	1036	288	257
V/C Ratio(X)	0.19	0.51	0.30	0.12	0.78	0.60
Avail Cap(c_a), veh/h	500	2316	2316	1036	473	422
HCM Platoon Ratio	2.00	2.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.60	0.60	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.4	0.0	4.5	3.9	24.1	23.3
Incr Delay (d2), s/veh	0.5	0.5	0.3	0.2	3.3	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.2	2.5	0.8	3.8	2.5
LnGrp Delay(d),s/veh	0.9	0.5	4.8	4.1	27.4	25.0
LnGrp LOS	A	A	A	A	C	C
Approach Vol, veh/h		1276	818		376	
Approach Delay, s/veh		0.5	4.7		26.4	
Approach LOS		A	A		C	

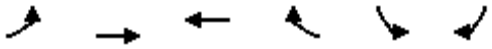
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		
Phs Duration (G+Y+Rc), s		45.3		14.7		45.3		
Change Period (Y+Rc), s		6.0		5.0		6.0		
Max Green Setting (Gmax), s		33.0		16.0		33.0		
Max Q Clear Time (g_c+I1), s		8.5		9.2		7.0		
Green Ext Time (p_c), s		3.1		0.5		3.1		

Intersection Summary	
HCM 2010 Ctrl Delay	5.8
HCM 2010 LOS	A

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	63	597	1016	116	43	123
Future Volume (veh/h)	63	597	1016	116	43	123
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	68	649	1104	126	47	134
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	369	2510	1689	192	161	144
Arrive On Green	0.07	0.71	0.53	0.53	0.09	0.09
Sat Flow, veh/h	1774	3632	3296	365	1774	1583
Grp Volume(v), veh/h	68	649	609	621	47	134
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1798	1774	1583
Q Serve(g_s), s	0.0	3.6	13.7	13.7	1.4	4.6
Cycle Q Clear(g_c), s	0.0	3.6	13.7	13.7	1.4	4.6
Prop In Lane	1.00			0.20	1.00	1.00
Lane Grp Cap(c), veh/h	369	2510	933	948	161	144
V/C Ratio(X)	0.18	0.26	0.65	0.65	0.29	0.93
Avail Cap(c_a), veh/h	369	2510	933	948	161	144
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	2.8	9.4	9.4	23.3	24.8
Incr Delay (d2), s/veh	0.2	0.2	3.5	3.5	0.7	54.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	1.8	7.5	7.7	0.7	6.0
LnGrp Delay(d),s/veh	15.5	3.1	12.9	12.9	24.1	79.1
LnGrp LOS	B	A	B	B	C	E
Approach Vol, veh/h		717	1230		181	
Approach Delay, s/veh		4.3	12.9		64.8	
Approach LOS		A	B		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		45.0		10.0	10.0	35.0		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		39.0		5.0	4.0	29.0		
Max Q Clear Time (g_c+I1), s		5.6		6.6	2.0	15.7		
Green Ext Time (p_c), s		1.0		0.0	0.3	1.2		

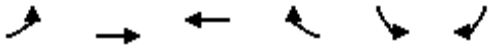
Intersection Summary	
HCM 2010 Ctrl Delay	14.4
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	102	1279	879	124	227	196
Future Volume (veh/h)	102	1279	879	124	227	196
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	111	1390	955	135	247	213
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	378	2282	1402	198	305	272
Arrive On Green	0.09	0.64	0.45	0.45	0.17	0.17
Sat Flow, veh/h	1774	3632	3208	440	1774	1583
Grp Volume(v), veh/h	111	1390	542	548	247	213
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1785	1774	1583
Q Serve(g_s), s	0.0	13.8	14.6	14.6	8.0	7.7
Cycle Q Clear(g_c), s	0.0	13.8	14.6	14.6	8.0	7.7
Prop In Lane	1.00			0.25	1.00	1.00
Lane Grp Cap(c), veh/h	378	2282	796	803	305	272
V/C Ratio(X)	0.29	0.61	0.68	0.68	0.81	0.78
Avail Cap(c_a), veh/h	378	2282	796	803	355	317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.4	6.2	13.1	13.1	23.9	23.8
Incr Delay (d2), s/veh	0.4	1.2	4.7	4.6	11.0	9.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	7.0	8.1	8.2	4.8	7.2
LnGrp Delay(d),s/veh	20.8	7.4	17.8	17.7	34.9	33.6
LnGrp LOS	C	A	B	B	C	C
Approach Vol, veh/h		1501	1090		460	
Approach Delay, s/veh		8.4	17.8		34.3	
Approach LOS		A	B		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		44.7		15.3	11.7	33.0		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		37.0		12.0	4.0	27.0		
Max Q Clear Time (g_c+I1), s		15.8		10.0	2.0	16.6		
Green Ext Time (p_c), s		2.5		0.3	0.8	1.0		

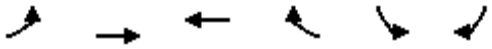
Intersection Summary	
HCM 2010 Ctrl Delay	15.7
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	98	723	1093	128	47	130
Future Volume (veh/h)	98	723	1093	128	47	130
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	107	786	1188	139	51	141
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	346	2510	1684	197	161	144
Arrive On Green	0.07	0.71	0.53	0.53	0.09	0.09
Sat Flow, veh/h	1774	3632	3287	373	1774	1583
Grp Volume(v), veh/h	107	786	657	670	51	141
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1797	1774	1583
Q Serve(g_s), s	0.0	4.6	15.3	15.5	1.5	4.9
Cycle Q Clear(g_c), s	0.0	4.6	15.3	15.5	1.5	4.9
Prop In Lane	1.00			0.21	1.00	1.00
Lane Grp Cap(c), veh/h	346	2510	933	947	161	144
V/C Ratio(X)	0.31	0.31	0.70	0.71	0.32	0.98
Avail Cap(c_a), veh/h	346	2510	933	947	161	144
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	19.0	3.0	9.8	9.8	23.4	24.9
Incr Delay (d2), s/veh	0.5	0.3	4.4	4.4	0.8	68.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	2.3	8.4	8.6	0.8	6.8
LnGrp Delay(d),s/veh	19.5	3.3	14.2	14.2	24.2	93.5
LnGrp LOS	B	A	B	B	C	F
Approach Vol, veh/h		893	1327		192	
Approach Delay, s/veh		5.3	14.2		75.1	
Approach LOS		A	B		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		45.0		10.0	10.0	35.0		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		39.0		5.0	4.0	29.0		
Max Q Clear Time (g_c+I1), s		6.6		6.9	2.0	17.5		
Green Ext Time (p_c), s		1.4		0.0	0.5	1.3		

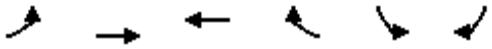
Intersection Summary	
HCM 2010 Ctrl Delay	15.7
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	104	1314	923	126	231	206
Future Volume (veh/h)	104	1314	923	126	231	206
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	113	1428	1003	137	251	224
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	362	2275	1408	192	308	275
Arrive On Green	0.09	0.64	0.45	0.45	0.17	0.17
Sat Flow, veh/h	1774	3632	3223	427	1774	1583
Grp Volume(v), veh/h	113	1428	567	573	251	224
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1787	1774	1583
Q Serve(g_s), s	0.0	14.5	15.6	15.6	8.2	8.2
Cycle Q Clear(g_c), s	0.0	14.5	15.6	15.6	8.2	8.2
Prop In Lane	1.00			0.24	1.00	1.00
Lane Grp Cap(c), veh/h	362	2275	796	804	308	275
V/C Ratio(X)	0.31	0.63	0.71	0.71	0.81	0.81
Avail Cap(c_a), veh/h	362	2275	796	804	355	317
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	6.4	13.4	13.4	23.8	23.8
Incr Delay (d2), s/veh	0.5	1.3	5.4	5.3	11.4	12.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	7.4	8.7	8.8	5.0	7.7
LnGrp Delay(d),s/veh	22.0	7.7	18.7	18.7	35.3	36.5
LnGrp LOS	C	A	B	B	D	D
Approach Vol, veh/h		1541	1140		475	
Approach Delay, s/veh		8.8	18.7		35.8	
Approach LOS		A	B		D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		44.6		15.4	11.6	33.0		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		37.0		12.0	4.0	27.0		
Max Q Clear Time (g_c+I1), s		16.5		10.2	2.0	17.6		
Green Ext Time (p_c), s		2.6		0.3	0.8	1.0		

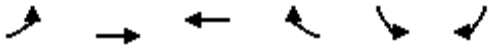
Intersection Summary	
HCM 2010 Ctrl Delay	16.4
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	133	850	1169	140	50	137
Future Volume (veh/h)	133	850	1169	140	50	137
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	145	924	1271	152	54	149
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	326	2510	1680	200	161	144
Arrive On Green	0.07	0.71	0.53	0.53	0.09	0.09
Sat Flow, veh/h	1774	3632	3279	379	1774	1583
Grp Volume(v), veh/h	145	924	704	719	54	149
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1796	1774	1583
Q Serve(g_s), s	0.0	5.7	17.2	17.4	1.6	5.0
Cycle Q Clear(g_c), s	0.0	5.7	17.2	17.4	1.6	5.0
Prop In Lane	1.00			0.21	1.00	1.00
Lane Grp Cap(c), veh/h	326	2510	933	947	161	144
V/C Ratio(X)	0.45	0.37	0.75	0.76	0.33	1.04
Avail Cap(c_a), veh/h	326	2510	933	947	161	144
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.5	3.1	10.2	10.3	23.4	25.0
Incr Delay (d2), s/veh	1.0	0.4	5.6	5.7	0.9	84.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.4
%ile BackOfQ(50%),veh/ln	2.1	2.8	9.7	9.9	0.8	7.5
LnGrp Delay(d),s/veh	22.4	3.6	15.8	16.0	24.3	110.0
LnGrp LOS	C	A	B	B	C	F
Approach Vol, veh/h		1069	1423		203	
Approach Delay, s/veh		6.1	15.9		87.2	
Approach LOS		A	B		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		45.0		10.0	10.0	35.0		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		39.0		5.0	4.0	29.0		
Max Q Clear Time (g_c+I1), s		7.7		7.0	2.0	19.4		
Green Ext Time (p_c), s		1.7		0.0	0.6	1.4		

Intersection Summary	
HCM 2010 Ctrl Delay	17.4
HCM 2010 LOS	B



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	113	1436	1077	131	245	241
Future Volume (veh/h)	113	1436	1077	131	245	241
Number	5	2	6	16	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1863	1863
Adj Flow Rate, veh/h	123	1561	1171	142	266	262
Adj No. of Lanes	1	2	2	0	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	302	2194	1378	167	349	312
Arrive On Green	0.09	0.62	0.43	0.43	0.20	0.20
Sat Flow, veh/h	1774	3632	3273	385	1774	1583
Grp Volume(v), veh/h	123	1561	650	663	266	262
Grp Sat Flow(s),veh/h/ln	1774	1770	1770	1795	1774	1583
Q Serve(g_s), s	0.0	18.0	19.8	19.9	8.5	9.6
Cycle Q Clear(g_c), s	0.0	18.0	19.8	19.9	8.5	9.6
Prop In Lane	1.00			0.21	1.00	1.00
Lane Grp Cap(c), veh/h	302	2194	767	778	349	312
V/C Ratio(X)	0.41	0.71	0.85	0.85	0.76	0.84
Avail Cap(c_a), veh/h	302	2194	767	778	384	343
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.6	7.8	15.2	15.3	22.8	23.2
Incr Delay (d2), s/veh	0.9	2.0	11.3	11.4	7.5	15.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	9.3	12.0	12.2	4.9	9.1
LnGrp Delay(d),s/veh	25.4	9.7	26.5	26.6	30.2	38.4
LnGrp LOS	C	A	C	C	C	D
Approach Vol, veh/h		1684	1313		528	
Approach Delay, s/veh		10.9	26.6		34.3	
Approach LOS		B	C		C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		43.2		16.8	11.2	32.0		
Change Period (Y+Rc), s		6.0		5.0	6.0	6.0		
Max Green Setting (Gmax), s		36.0		13.0	4.0	26.0		
Max Q Clear Time (g_c+I1), s		20.0		11.6	2.0	21.9		
Green Ext Time (p_c), s		2.8		0.2	0.9	0.9		

Intersection Summary	
HCM 2010 Ctrl Delay	20.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	940	150	0	1270	70	25	15	25	165	15	70
Future Volume (veh/h)	95	940	150	0	1270	70	25	15	25	165	15	70
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	0	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	103	1022	163	0	1380	76	27	16	27	179	16	76
Adj No. of Lanes	1	2	0	0	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	226	1673	267	0	1519	83	461	215	362	509	97	462
Arrive On Green	0.09	1.00	1.00	0.00	0.89	0.89	0.34	0.34	0.34	0.34	0.34	0.34
Sat Flow, veh/h	1774	3059	487	0	3505	187	1299	624	1053	1358	283	1343
Grp Volume(v), veh/h	103	591	594	0	714	742	27	0	43	179	0	92
Grp Sat Flow(s),veh/h/ln	1774	1770	1777	0	1770	1830	1299	0	1677	1358	0	1626
Q Serve(g_s), s	3.4	0.0	0.0	0.0	25.3	25.8	1.6	0.0	1.9	11.2	0.0	4.3
Cycle Q Clear(g_c), s	3.4	0.0	0.0	0.0	25.3	25.8	6.0	0.0	1.9	13.1	0.0	4.3
Prop In Lane	1.00		0.27	0.00		0.10	1.00		0.63	1.00		0.83
Lane Grp Cap(c), veh/h	226	968	972	0	788	814	461	0	577	509	0	559
V/C Ratio(X)	0.46	0.61	0.61	0.00	0.91	0.91	0.06	0.00	0.07	0.35	0.00	0.16
Avail Cap(c_a), veh/h	287	1126	1131	0	885	915	461	0	577	509	0	559
HCM Platoon Ratio	2.00	2.00	2.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.91	0.91	0.91	0.00	0.68	0.68	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.9	0.0	0.0	0.0	4.7	4.8	27.2	0.0	24.3	28.7	0.0	25.1
Incr Delay (d2), s/veh	1.3	0.7	0.7	0.0	8.7	8.9	0.2	0.0	0.3	1.9	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.2	0.2	0.0	12.6	13.1	0.6	0.0	0.9	4.5	0.0	2.0
LnGrp Delay(d),s/veh	19.2	0.7	0.7	0.0	13.5	13.6	27.4	0.0	24.5	30.6	0.0	25.7
LnGrp LOS	B	A	A		B	B	C		C	C		C
Approach Vol, veh/h		1288			1456			70			271	
Approach Delay, s/veh		2.2			13.6			25.6			29.0	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		43.8		66.2		43.8	11.2	55.0
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		28.0		70.0		28.0	9.0	55.0
Max Q Clear Time (g_c+I1), s		8.0		2.0		15.1	5.4	27.8
Green Ext Time (p_c), s		1.3		39.4		1.1	0.1	21.1

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	165	1300	205	0	1365	70	50	15	75	85	15	110
Future Volume (veh/h)	165	1300	205	0	1365	70	50	15	75	85	15	110
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	0	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	179	1413	223	0	1484	76	54	16	82	92	16	120
Adj No. of Lanes	1	2	0	0	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	295	1837	286	0	1640	84	356	80	409	392	57	429
Arrive On Green	0.14	1.00	1.00	0.00	0.96	0.96	0.30	0.30	0.30	0.30	0.30	0.30
Sat Flow, veh/h	1774	3069	479	0	3520	175	1248	265	1358	1292	190	1422
Grp Volume(v), veh/h	179	807	829	0	764	796	54	0	98	92	0	136
Grp Sat Flow(s),veh/h/ln	1774	1770	1778	0	1770	1832	1248	0	1623	1292	0	1612
Q Serve(g_s), s	6.1	0.0	0.0	0.0	16.3	17.1	4.1	0.0	5.4	6.8	0.0	7.7
Cycle Q Clear(g_c), s	6.1	0.0	0.0	0.0	16.3	17.1	11.9	0.0	5.4	12.2	0.0	7.7
Prop In Lane	1.00		0.27	0.00		0.10	1.00		0.84	1.00		0.88
Lane Grp Cap(c), veh/h	295	1059	1064	0	847	877	356	0	489	392	0	486
V/C Ratio(X)	0.61	0.76	0.78	0.00	0.90	0.91	0.15	0.00	0.20	0.23	0.00	0.28
Avail Cap(c_a), veh/h	437	1312	1319	0	959	992	356	0	489	392	0	486
HCM Platoon Ratio	2.00	2.00	2.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.44	0.44	0.44	0.00	0.57	0.57	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.5	0.0	0.0	0.0	1.7	1.7	36.5	0.0	31.2	35.7	0.0	32.0
Incr Delay (d2), s/veh	0.9	0.9	1.1	0.0	6.7	6.9	0.9	0.0	0.9	1.4	0.0	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.3	0.3	0.0	6.7	7.4	1.5	0.0	2.5	2.6	0.0	3.6
LnGrp Delay(d),s/veh	15.4	0.9	1.1	0.0	8.4	8.6	37.4	0.0	32.1	37.1	0.0	33.4
LnGrp LOS	B	A	A		A	A	D		C	D		C
Approach Vol, veh/h		1815			1560			152			228	
Approach Delay, s/veh		2.4			8.5			34.0			34.9	
Approach LOS		A			A			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		42.2		77.8		42.2	14.4	63.4
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		19.0		89.0		19.0	18.0	65.0
Max Q Clear Time (g_c+I1), s		13.9		2.0		14.2	8.1	19.1
Green Ext Time (p_c), s		0.8		63.0		0.8	0.3	38.3

Intersection Summary	
HCM 2010 Ctrl Delay	8.2
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	1155	150	0	1390	85	25	20	25	200	20	85
Future Volume (veh/h)	120	1155	150	0	1390	85	25	20	25	200	20	85
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	0	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	130	1255	163	0	1511	92	27	22	27	217	22	92
Adj No. of Lanes	1	2	0	0	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	238	1834	237	0	1602	97	393	236	289	455	97	407
Arrive On Green	0.11	1.00	1.00	0.00	0.95	0.95	0.31	0.31	0.31	0.31	0.31	0.31
Sat Flow, veh/h	1774	3153	408	0	3484	206	1273	762	935	1351	315	1316
Grp Volume(v), veh/h	130	702	716	0	786	817	27	0	49	217	0	114
Grp Sat Flow(s),veh/h/ln	1774	1770	1791	0	1770	1826	1273	0	1698	1351	0	1631
Q Serve(g_s), s	4.0	0.0	0.0	0.0	23.8	25.7	1.8	0.0	2.3	15.0	0.0	5.7
Cycle Q Clear(g_c), s	4.0	0.0	0.0	0.0	23.8	25.7	7.5	0.0	2.3	17.2	0.0	5.7
Prop In Lane	1.00		0.23	0.00		0.11	1.00		0.55	1.00		0.81
Lane Grp Cap(c), veh/h	238	1030	1042	0	836	863	393	0	525	455	0	504
V/C Ratio(X)	0.55	0.68	0.69	0.00	0.94	0.95	0.07	0.00	0.09	0.48	0.00	0.23
Avail Cap(c_a), veh/h	286	1142	1156	0	901	930	393	0	525	455	0	504
HCM Platoon Ratio	2.00	2.00	2.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.83	0.83	0.83	0.00	0.56	0.56	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	17.0	0.0	0.0	0.0	2.2	2.3	31.0	0.0	27.0	33.2	0.0	28.2
Incr Delay (d2), s/veh	1.6	1.2	1.3	0.0	10.7	11.4	0.3	0.0	0.4	3.5	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.4	0.4	0.0	10.7	11.8	0.7	0.0	1.1	6.1	0.0	2.7
LnGrp Delay(d),s/veh	18.6	1.2	1.3	0.0	13.0	13.7	31.3	0.0	27.4	36.7	0.0	29.3
LnGrp LOS	B	A	A		B	B	C		C	D		C
Approach Vol, veh/h		1548			1603			76			331	
Approach Delay, s/veh		2.7			13.4			28.8			34.1	
Approach LOS		A			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		40.0		70.0		40.0	12.0	58.0
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		27.0		71.0		27.0	9.0	56.0
Max Q Clear Time (g_c+I1), s		9.5		2.0		19.2	6.0	27.7
Green Ext Time (p_c), s		1.5		49.3		1.1	0.1	24.3

Intersection Summary	
HCM 2010 Ctrl Delay	11.0
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	200	1340	250	0	1435	85	50	20	75	100	20	135
Future Volume (veh/h)	200	1340	250	0	1435	85	50	20	75	100	20	135
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	0	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	217	1457	272	0	1560	92	54	22	82	109	22	147
Adj No. of Lanes	1	2	0	0	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	314	1853	339	0	1662	98	297	97	361	357	59	393
Arrive On Green	0.16	1.00	1.00	0.00	0.98	0.98	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	2988	548	0	3491	199	1211	346	1289	1285	210	1405
Grp Volume(v), veh/h	217	852	877	0	809	843	54	0	104	109	0	169
Grp Sat Flow(s),veh/h/ln	1774	1770	1766	0	1770	1828	1211	0	1635	1285	0	1615
Q Serve(g_s), s	7.3	0.0	0.0	0.0	13.8	15.5	4.5	0.0	5.9	8.6	0.0	10.1
Cycle Q Clear(g_c), s	7.3	0.0	0.0	0.0	13.8	15.5	14.6	0.0	5.9	14.5	0.0	10.1
Prop In Lane	1.00		0.31	0.00		0.11	1.00		0.79	1.00		0.87
Lane Grp Cap(c), veh/h	314	1097	1095	0	866	894	297	0	458	357	0	452
V/C Ratio(X)	0.69	0.78	0.80	0.00	0.93	0.94	0.18	0.00	0.23	0.31	0.00	0.37
Avail Cap(c_a), veh/h	436	1312	1310	0	959	990	297	0	458	357	0	452
HCM Platoon Ratio	2.00	2.00	2.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.39	0.39	0.39	0.00	0.48	0.48	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.8	0.0	0.0	0.0	0.8	0.8	40.6	0.0	33.2	38.8	0.0	34.7
Incr Delay (d2), s/veh	1.1	1.0	1.2	0.0	8.4	9.1	1.3	0.0	1.2	2.2	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	0.3	0.4	0.0	3.8	4.1	1.6	0.0	2.8	3.2	0.0	4.8
LnGrp Delay(d),s/veh	14.9	1.0	1.2	0.0	9.2	9.9	42.0	0.0	34.4	41.0	0.0	37.1
LnGrp LOS	B	A	A		A	A	D		C	D		D
Approach Vol, veh/h		1946			1652			158			278	
Approach Delay, s/veh		2.7			9.6			37.0			38.6	
Approach LOS		A			A			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		39.5		80.5		39.5	15.7	64.8
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		19.0		89.0		19.0	18.0	65.0
Max Q Clear Time (g_c+I1), s		16.6		2.0		16.5	9.3	17.5
Green Ext Time (p_c), s		0.5		68.4		0.6	0.4	41.4

Intersection Summary	
HCM 2010 Ctrl Delay	9.3
HCM 2010 LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	1155	150	0	1490	125	25	25	25	300	25	125
Future Volume (veh/h)	175	1155	150	0	1490	125	25	25	25	300	25	125
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	0	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	190	1255	163	0	1620	136	27	27	27	326	27	136
Adj No. of Lanes	1	2	0	0	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	239	1947	252	0	1609	134	296	234	234	398	74	370
Arrive On Green	0.15	1.00	1.00	0.00	0.97	0.97	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1774	3153	408	0	3402	275	1218	856	856	1345	269	1355
Grp Volume(v), veh/h	190	702	716	0	860	896	27	0	54	326	0	163
Grp Sat Flow(s),veh/h/ln	1774	1770	1791	0	1770	1814	1218	0	1712	1345	0	1624
Q Serve(g_s), s	5.8	0.0	0.0	0.0	51.6	53.5	2.0	0.0	2.6	26.5	0.0	8.9
Cycle Q Clear(g_c), s	5.8	0.0	0.0	0.0	51.6	53.5	11.3	0.0	2.6	29.4	0.0	8.9
Prop In Lane	1.00		0.23	0.00		0.15	1.00		0.50	1.00		0.83
Lane Grp Cap(c), veh/h	239	1093	1106	0	860	882	296	0	468	398	0	444
V/C Ratio(X)	0.79	0.64	0.65	0.00	1.00	1.02	0.09	0.00	0.12	0.82	0.00	0.37
Avail Cap(c_a), veh/h	248	1126	1140	0	885	907	296	0	468	398	0	444
HCM Platoon Ratio	2.00	2.00	2.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.71	0.71	0.71	0.00	0.42	0.42	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.3	0.0	0.0	0.0	1.5	1.5	37.0	0.0	30.0	41.2	0.0	32.3
Incr Delay (d2), s/veh	11.6	0.9	0.9	0.0	19.2	23.6	0.6	0.0	0.5	17.0	0.0	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.5	0.3	0.3	0.0	13.6	15.0	0.7	0.0	1.3	11.8	0.0	4.3
LnGrp Delay(d),s/veh	32.9	0.9	0.9	0.0	20.7	25.1	37.6	0.0	30.5	58.2	0.0	34.6
LnGrp LOS	C	A	A		C	F	D		C	E		C
Approach Vol, veh/h		1608			1756			81			489	
Approach Delay, s/veh		4.7			22.9			32.8			50.3	
Approach LOS		A			C			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		35.6		74.4		35.6	14.1	60.2
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		28.0		70.0		28.0	9.0	55.0
Max Q Clear Time (g_c+I1), s		13.3		2.0		31.4	7.8	55.5
Green Ext Time (p_c), s		2.1		52.4		0.0	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	19.1
HCM 2010 LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	1490	375	0	1680	125	50	25	75	150	25	200
Future Volume (veh/h)	350	1490	375	0	1680	125	50	25	75	150	25	200
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	0	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	380	1620	408	0	1826	136	54	27	82	163	27	217
Adj No. of Lanes	1	2	0	0	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	370	2145	518	0	1783	131	60	58	175	163	25	203
Arrive On Green	0.17	0.76	0.76	0.00	1.00	1.00	0.14	0.14	0.14	0.14	0.14	0.14
Sat Flow, veh/h	1774	2828	683	0	3436	246	1131	407	1237	1279	178	1432
Grp Volume(v), veh/h	380	988	1040	0	956	1006	54	0	109	163	0	244
Grp Sat Flow(s),veh/h/ln	1774	1770	1742	0	1770	1819	1131	0	1644	1279	0	1610
Q Serve(g_s), s	21.0	36.7	43.0	0.0	64.0	64.0	0.0	0.0	7.3	9.7	0.0	17.0
Cycle Q Clear(g_c), s	21.0	36.7	43.0	0.0	64.0	64.0	17.0	0.0	7.3	17.0	0.0	17.0
Prop In Lane	1.00		0.39	0.00		0.14	1.00		0.75	1.00		0.89
Lane Grp Cap(c), veh/h	370	1342	1321	0	944	970	60	0	233	163	0	228
V/C Ratio(X)	1.03	0.74	0.79	0.00	1.01	1.04	0.90	0.00	0.47	1.00	0.00	1.07
Avail Cap(c_a), veh/h	370	1342	1321	0	944	970	60	0	233	163	0	228
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.19	0.19	0.19	0.00	0.17	0.17	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.5	7.9	8.7	0.0	0.0	0.0	60.0	0.0	47.3	56.9	0.0	51.5
Incr Delay (d2), s/veh	27.4	0.4	0.6	0.0	15.2	22.9	90.0	0.0	6.6	70.0	0.0	79.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.1	17.7	20.5	0.0	4.0	6.2	3.3	0.0	3.8	8.6	0.0	12.6
LnGrp Delay(d),s/veh	69.9	8.4	9.3	0.0	15.2	22.9	150.0	0.0	54.0	126.9	0.0	130.8
LnGrp LOS	F	A	A		F	F	F		D	F		F
Approach Vol, veh/h		2408			1962			163			407	
Approach Delay, s/veh		18.5			19.2			85.8			129.2	
Approach LOS		B			B			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6	7	8
Phs Duration (G+Y+Rc), s		23.0		97.0		23.0	27.0	70.0
Change Period (Y+Rc), s		6.0		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		17.0		91.0		17.0	21.0	64.0
Max Q Clear Time (g_c+I1), s		19.0		45.0		19.0	23.0	66.0
Green Ext Time (p_c), s		0.0		44.1		0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	30.1
HCM 2010 LOS	C

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	588	24	323	1228	54	191
v/c Ratio	0.24	0.02	0.46	0.41	0.36	0.47
Control Delay	7.1	3.3	4.5	2.8	49.1	16.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	3.3	4.5	2.8	49.1	16.4
Queue Length 50th (ft)	69	0	31	82	33	38
Queue Length 95th (ft)	115	10	58	123	70	92
Internal Link Dist (ft)	245			1006	416	
Turn Bay Length (ft)		100	140			180
Base Capacity (vph)	2442	1099	824	2966	513	577
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.24	0.02	0.39	0.41	0.11	0.33

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1258	61	283	721	55	386
v/c Ratio	0.59	0.06	0.52	0.24	0.41	0.76
Control Delay	18.0	8.8	16.3	5.7	61.2	44.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	8.8	16.3	5.7	61.2	44.4
Queue Length 50th (ft)	310	11	105	116	41	251
Queue Length 95th (ft)	462	37	193	154	83	324
Internal Link Dist (ft)	245			1006	416	
Turn Bay Length (ft)		100	140			180
Base Capacity (vph)	2120	958	543	3044	427	507
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.06	0.52	0.24	0.13	0.76

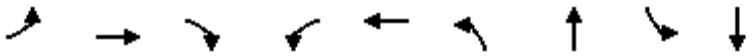
Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	588	24	323	1228	54	191
v/c Ratio	0.25	0.02	0.46	0.42	0.34	0.45
Control Delay	7.9	3.7	2.8	0.9	43.3	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.9	3.7	2.8	0.9	43.3	16.7
Queue Length 50th (ft)	68	0	7	18	29	43
Queue Length 95th (ft)	120	11	23	29	63	92
Internal Link Dist (ft)	245			1006	416	
Turn Bay Length (ft)		100	140			180
Base Capacity (vph)	2327	1048	784	2914	570	544
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.02	0.41	0.42	0.09	0.35

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1258	61	283	721	55	386
v/c Ratio	0.59	0.06	0.52	0.24	0.41	0.76
Control Delay	18.0	8.8	17.7	0.6	61.2	44.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	8.8	17.7	0.6	61.2	44.4
Queue Length 50th (ft)	310	11	48	5	41	251
Queue Length 95th (ft)	462	37	74	14	83	324
Internal Link Dist (ft)	245			1006	416	
Turn Bay Length (ft)		100	140			180
Base Capacity (vph)	2120	958	543	3044	427	507
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.06	0.52	0.24	0.13	0.76

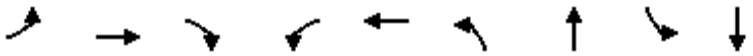
Intersection Summary



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	10	696	23	29	1365	112	44	34	52
v/c Ratio	0.05	0.29	0.02	0.06	0.58	0.38	0.11	0.11	0.13
Control Delay	5.3	5.4	1.5	6.1	10.1	37.6	15.1	32.5	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	5.3	5.4	1.5	6.1	10.1	37.6	15.1	32.5	13.2
Queue Length 50th (ft)	2	61	1	6	219	61	6	18	5
Queue Length 95th (ft)	m6	83	3	16	274	113	34	44	35
Internal Link Dist (ft)		1006			1220		430		375
Turn Bay Length (ft)	75			70		65		65	
Base Capacity (vph)	189	2371	1068	465	2365	296	389	298	392
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.29	0.02	0.06	0.58	0.38	0.11	0.11	0.13

Intersection Summary

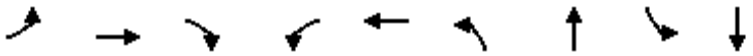
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	1591	78	75	926	39	59	62	25
v/c Ratio	0.08	0.57	0.06	0.39	0.33	0.24	0.25	0.40	0.12
Control Delay	1.9	3.3	0.2	9.3	3.3	52.5	22.0	57.4	29.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	1.9	3.3	0.2	9.3	3.3	52.5	22.0	57.4	29.1
Queue Length 50th (ft)	3	121	0	9	56	28	10	45	7
Queue Length 95th (ft)	m4	100	m1	17	60	64	51	92	34
Internal Link Dist (ft)		1006			1220		430		375
Turn Bay Length (ft)	75			70		65		65	
Base Capacity (vph)	439	2801	1269	194	2785	161	232	156	211
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.57	0.06	0.39	0.33	0.24	0.25	0.40	0.12

Intersection Summary

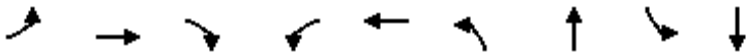
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	10	696	23	29	1365	112	44	34	52
v/c Ratio	0.05	0.29	0.02	0.06	0.58	0.53	0.15	0.16	0.18
Control Delay	4.2	3.5	0.3	3.2	4.7	26.8	9.9	17.7	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.2	3.5	0.3	3.2	4.7	26.8	9.9	17.7	9.2
Queue Length 50th (ft)	1	35	0	2	131	26	2	8	2
Queue Length 95th (ft)	m3	43	m1	m8	230	#64	22	25	23
Internal Link Dist (ft)		1006			1220		430		375
Turn Bay Length (ft)	75			70		65		65	
Base Capacity (vph)	201	2368	1075	482	2364	239	320	241	325
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.29	0.02	0.06	0.58	0.47	0.14	0.14	0.16

Intersection Summary

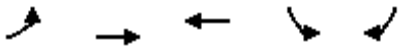
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	34	1591	78	75	926	39	59	62	25
v/c Ratio	0.07	0.54	0.06	0.36	0.32	0.22	0.30	0.35	0.14
Control Delay	2.1	2.6	0.6	7.7	0.9	28.3	16.1	31.0	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	2.1	2.6	0.6	7.7	0.9	28.3	16.1	31.0	18.3
Queue Length 50th (ft)	2	77	1	6	33	13	5	21	3
Queue Length 95th (ft)	m8	188	m10	27	20	38	34	53	23
Internal Link Dist (ft)		1006			1220		430		375
Turn Bay Length (ft)	75			70		65		65	
Base Capacity (vph)	476	2937	1327	208	2920	186	205	186	183
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.54	0.06	0.36	0.32	0.21	0.29	0.33	0.14

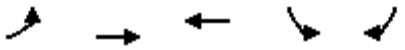
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	35	775	1464	102	38
v/c Ratio	0.13	0.29	0.62	0.41	0.15
Control Delay	5.3	4.5	6.8	52.4	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	5.3	4.5	6.8	52.4	15.4
Queue Length 50th (ft)	5	80	98	73	0
Queue Length 95th (ft)	13	100	110	130	33
Internal Link Dist (ft)		1220	237	608	
Turn Bay Length (ft)	90			90	
Base Capacity (vph)	261	2713	2345	250	256
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	42	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.13	0.29	0.62	0.41	0.15

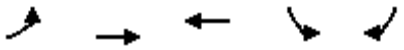
Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	30	1650	1096	118	52
v/c Ratio	0.08	0.62	0.48	0.42	0.18
Control Delay	5.5	6.8	4.3	50.8	13.4
Queue Delay	0.0	0.3	0.2	2.8	0.0
Total Delay	5.5	7.0	4.5	53.6	13.4
Queue Length 50th (ft)	4	139	64	84	0
Queue Length 95th (ft)	m14	314	103	144	36
Internal Link Dist (ft)		1220	237	608	
Turn Bay Length (ft)	90			90	
Base Capacity (vph)	364	2654	2300	280	294
Starvation Cap Reductn	0	0	439	0	0
Spillback Cap Reductn	0	356	0	86	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.08	0.72	0.59	0.61	0.18

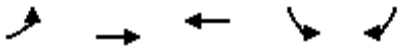
Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	35	775	1464	102	38
v/c Ratio	0.12	0.27	0.56	0.55	0.19
Control Delay	2.0	1.2	3.1	49.1	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	2.0	1.2	3.1	49.1	14.0
Queue Length 50th (ft)	2	21	61	56	0
Queue Length 95th (ft)	4	25	88	103	28
Internal Link Dist (ft)		1220	237	608	
Turn Bay Length (ft)	90			90	
Base Capacity (vph)	281	2866	2622	255	261
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	5	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.12	0.27	0.56	0.40	0.15

Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	30	1650	1096	118	52
v/c Ratio	0.08	0.58	0.42	0.65	0.25
Control Delay	2.1	3.2	3.0	67.6	15.5
Queue Delay	0.0	0.0	0.4	0.9	0.0
Total Delay	2.1	3.3	3.4	68.5	15.5
Queue Length 50th (ft)	2	72	37	89	0
Queue Length 95th (ft)	m5	78	101	146	37
Internal Link Dist (ft)		1220	237	608	
Turn Bay Length (ft)	90			90	
Base Capacity (vph)	385	2849	2615	280	294
Starvation Cap Reductn	0	0	898	0	0
Spillback Cap Reductn	0	96	0	44	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.08	0.60	0.64	0.50	0.18

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	754	124	145	1378	88	107
v/c Ratio	0.39	0.14	0.25	0.54	0.27	0.28
Control Delay	13.9	1.8	7.9	8.9	44.8	9.9
Queue Delay	0.5	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	1.8	7.9	8.9	44.8	9.9
Queue Length 50th (ft)	120	0	31	231	59	0
Queue Length 95th (ft)	143	12	51	279	109	49
Internal Link Dist (ft)	237			1112	463	
Turn Bay Length (ft)		120	180		120	120
Base Capacity (vph)	1916	912	569	2536	324	377
Starvation Cap Reductn	701	0	0	0	0	0
Spillback Cap Reductn	0	0	0	57	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.14	0.25	0.56	0.27	0.28

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1618	155	126	997	103	207
v/c Ratio	0.73	0.15	0.49	0.37	0.41	0.58
Control Delay	17.6	6.1	21.3	1.7	52.6	20.6
Queue Delay	0.3	0.5	0.0	0.0	0.0	0.0
Total Delay	17.9	6.7	21.3	1.7	52.6	20.6
Queue Length 50th (ft)	393	21	29	31	74	35
Queue Length 95th (ft)	712	38	75	35	131	114
Internal Link Dist (ft)	237			1112	463	
Turn Bay Length (ft)		120	180		120	120
Base Capacity (vph)	2211	1020	258	2683	250	359
Starvation Cap Reductn	143	567	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.34	0.49	0.37	0.41	0.58

Intersection Summary

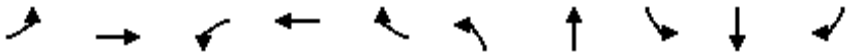
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	754	124	145	1378	88	107
v/c Ratio	0.36	0.12	0.26	0.51	0.51	0.42
Control Delay	8.0	1.3	1.8	2.7	47.9	13.0
Queue Delay	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	1.3	1.8	2.7	47.9	13.0
Queue Length 50th (ft)	86	0	5	26	48	0
Queue Length 95th (ft)	117	3	m8	32	91	46
Internal Link Dist (ft)	237			1112	463	
Turn Bay Length (ft)		120	180		120	120
Base Capacity (vph)	2110	993	559	2718	354	402
Starvation Cap Reductn	664	0	0	0	0	0
Spillback Cap Reductn	0	0	0	17	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.12	0.26	0.51	0.25	0.27

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1618	155	126	997	103	207
v/c Ratio	0.68	0.14	0.48	0.35	0.61	0.70
Control Delay	8.0	2.4	21.4	1.2	66.3	27.9
Queue Delay	0.8	0.5	0.0	0.0	0.0	0.0
Total Delay	8.8	3.0	21.4	1.2	66.3	27.9
Queue Length 50th (ft)	206	6	25	23	78	37
Queue Length 95th (ft)	293	40	69	27	131	114
Internal Link Dist (ft)	237			1112	463	
Turn Bay Length (ft)		120	180		120	120
Base Capacity (vph)	2393	1097	272	2845	250	359
Starvation Cap Reductn	426	634	0	0	0	0
Spillback Cap Reductn	0	0	0	8	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.82	0.33	0.46	0.35	0.41	0.58

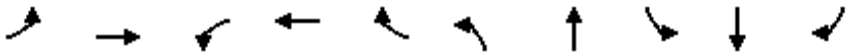
Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	283	722	245	641	136	326	707	120	630	359
v/c Ratio	0.77	0.70	0.77	0.68	0.24	0.79	0.71	0.66	0.84	0.65
Control Delay	48.7	23.6	50.7	28.9	2.6	48.0	27.4	53.3	39.9	13.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.7	23.6	50.7	28.9	2.6	48.0	27.4	53.3	39.9	13.1
Queue Length 50th (ft)	67	127	58	140	0	77	145	28	148	32
Queue Length 95th (ft)	#124	186	#112	196	19	#138	205	#65	#232	114
Internal Link Dist (ft)		1112		1210			1330		1218	
Turn Bay Length (ft)	150		220			220		155		260
Base Capacity (vph)	366	1036	320	943	560	411	991	183	754	556
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.70	0.77	0.68	0.24	0.79	0.71	0.66	0.84	0.65

Intersection Summary

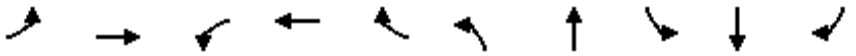
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	391	994	245	603	92	141	875	136	620	332
v/c Ratio	0.68	0.78	0.71	0.57	0.16	0.55	0.85	0.68	0.64	0.49
Control Delay	52.8	47.2	66.3	34.0	0.6	62.1	46.8	72.9	41.8	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.8	47.2	66.3	34.0	0.6	62.1	46.8	72.9	41.8	6.3
Queue Length 50th (ft)	166	327	101	156	0	55	316	54	222	0
Queue Length 95th (ft)	219	401	#147	198	1	89	#402	#96	286	70
Internal Link Dist (ft)		1112		1210			1330		1218	
Turn Bay Length (ft)	150		220			220		155		260
Base Capacity (vph)	572	1277	343	1061	589	257	1025	200	973	676
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.78	0.71	0.57	0.16	0.55	0.85	0.68	0.64	0.49

Intersection Summary

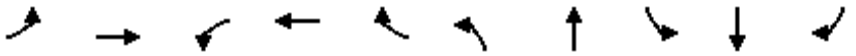
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	283	722	245	641	136	326	707	120	630	359
v/c Ratio	0.76	0.65	0.73	0.61	0.23	0.76	0.72	0.48	0.79	0.63
Control Delay	42.4	20.1	48.9	27.0	5.6	50.0	32.4	46.6	40.9	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.4	20.1	48.9	27.0	5.6	50.0	32.4	46.6	40.9	13.5
Queue Length 50th (ft)	84	155	71	142	2	92	177	34	176	38
Queue Length 95th (ft)	#126	211	#121	185	36	#139	241	61	238	127
Internal Link Dist (ft)		1112		1210			1330		1218	
Turn Bay Length (ft)	150		220			220		155		260
Base Capacity (vph)	382	1109	344	1049	580	457	1018	267	829	582
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.65	0.71	0.61	0.23	0.71	0.69	0.45	0.76	0.62

Intersection Summary

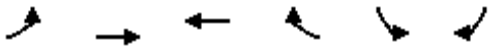
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	391	994	245	603	92	141	875	136	620	332
v/c Ratio	0.68	0.74	0.76	0.55	0.15	0.59	0.89	0.67	0.65	0.50
Control Delay	42.2	25.3	71.1	32.8	2.8	64.8	50.9	71.8	42.5	6.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.2	25.3	71.1	32.8	2.8	64.8	50.9	71.8	42.5	6.4
Queue Length 50th (ft)	128	251	84	164	0	55	316	54	222	0
Queue Length 95th (ft)	189	354	#141	206	10	89	#402	#96	286	70
Internal Link Dist (ft)		1112		1210			1330		1218	
Turn Bay Length (ft)	150		220			220		155		260
Base Capacity (vph)	572	1337	343	1104	619	257	1025	206	976	677
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.74	0.71	0.55	0.15	0.55	0.85	0.66	0.64	0.49

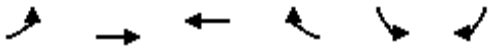
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	36	530	1034	114	43	127
v/c Ratio	0.12	0.22	0.44	0.10	0.11	0.28
Control Delay	7.5	7.1	9.0	1.6	33.0	7.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.5	7.1	9.0	1.6	33.0	7.7
Queue Length 50th (ft)	8	66	155	1	23	0
Queue Length 95th (ft)	21	88	194	19	52	47
Internal Link Dist (ft)		1210	593		491	
Turn Bay Length (ft)	275			100	100	
Base Capacity (vph)	299	2359	2359	1091	404	459
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.22	0.44	0.10	0.11	0.28

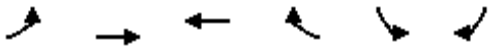
Intersection Summary



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	96	1180	692	126	223	153
v/c Ratio	0.18	0.45	0.26	0.10	0.76	0.39
Control Delay	4.3	4.5	5.8	1.2	63.2	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.3	4.5	5.8	1.2	63.2	9.2
Queue Length 50th (ft)	15	114	78	0	166	0
Queue Length 95th (ft)	m23	140	128	18	238	54
Internal Link Dist (ft)		1210	701		491	
Turn Bay Length (ft)	275			100	100	100
Base Capacity (vph)	524	2623	2623	1206	501	558
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.45	0.26	0.10	0.45	0.27

Intersection Summary

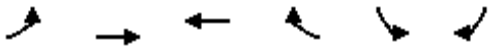
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	36	530	1034	114	43	127
v/c Ratio	0.11	0.22	0.43	0.10	0.17	0.41
Control Delay	3.7	3.0	5.2	1.4	18.1	10.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.7	3.0	5.2	1.4	18.1	10.9
Queue Length 50th (ft)	1	13	58	0	10	6
Queue Length 95th (ft)	m5	34	104	13	29	39
Internal Link Dist (ft)		1210	593		491	
Turn Bay Length (ft)	275			100	100	
Base Capacity (vph)	341	2431	2431	1123	314	365
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.22	0.43	0.10	0.14	0.35

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	96	1180	692	126	223	153
v/c Ratio	0.22	0.54	0.32	0.12	0.63	0.35
Control Delay	3.9	4.1	6.5	1.8	29.5	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.9	4.1	6.5	1.8	29.5	6.2
Queue Length 50th (ft)	8	64	54	0	74	0
Queue Length 95th (ft)	m18	118	96	18	124	36
Internal Link Dist (ft)		1210	701		491	
Turn Bay Length (ft)	275			100	100	100
Base Capacity (vph)	446	2178	2178	1023	472	534
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.54	0.32	0.12	0.47	0.29

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	15	21	36
Stops (#)	1824	3440	5264
Average Speed (mph)	21	23	22
Total Travel Time (hr)	36	60	96
Distance Traveled (mi)	740	1371	2111
Fuel Consumed (gal)	53	94	146
Fuel Economy (mpg)	14.0	14.6	14.4
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	179	298	477
Performance Index	19.8	30.7	50.5

Network Totals

Number of Intersections	6
Total Delay (hr)	61
Stops (#)	7247
Average Speed (mph)	20
Total Travel Time (hr)	138
Distance Traveled (mi)	2710
Fuel Consumed (gal)	202
Fuel Economy (mpg)	13.4
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	561
Performance Index	80.9

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	37	16	53
Stops (#)	3784	1741	5525
Average Speed (mph)	19	23	20
Total Travel Time (hr)	78	46	124
Distance Traveled (mi)	1450	1033	2483
Fuel Consumed (gal)	111	64	175
Fuel Economy (mpg)	13.1	16.1	14.2
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	360	179	539
Performance Index	47.2	20.9	68.0

Network Totals

Number of Intersections	6
Total Delay (hr)	90
Stops (#)	7883
Average Speed (mph)	17
Total Travel Time (hr)	180
Distance Traveled (mi)	3120
Fuel Consumed (gal)	245
Fuel Economy (mpg)	12.8
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	599
Performance Index	112.4

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	10	12	22
Stops (#)	1565	1759	3324
Average Speed (mph)	24	27	26
Total Travel Time (hr)	31	51	82
Distance Traveled (mi)	740	1371	2111
Fuel Consumed (gal)	48	74	122
Fuel Economy (mpg)	15.6	18.5	17.4
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	150	209	359
Performance Index	14.6	16.6	31.2

Network Totals

Number of Intersections	6
Total Delay (hr)	47
Stops (#)	5312
Average Speed (mph)	22
Total Travel Time (hr)	124
Distance Traveled (mi)	2710
Fuel Consumed (gal)	177
Fuel Economy (mpg)	15.3
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	434
Performance Index	61.5

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	23	16	39
Stops (#)	3200	1900	5100
Average Speed (mph)	22	23	23
Total Travel Time (hr)	65	45	110
Distance Traveled (mi)	1450	1033	2483
Fuel Consumed (gal)	96	65	162
Fuel Economy (mpg)	15.0	15.9	15.4
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	368	146	514
Performance Index	32.2	21.0	53.2

Network Totals

Number of Intersections	6
Total Delay (hr)	77
Stops (#)	7509
Average Speed (mph)	19
Total Travel Time (hr)	166
Distance Traveled (mi)	3120
Fuel Consumed (gal)	232
Fuel Economy (mpg)	13.4
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	570
Performance Index	98.0

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	17	21	38
Stops (#)	2579	2693	5272
Average Speed (mph)	21	23	22
Total Travel Time (hr)	44	62	106
Distance Traveled (mi)	933	1449	2382
Fuel Consumed (gal)	68	91	158
Fuel Economy (mpg)	13.8	16.0	15.1
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	193	190	383
Performance Index	24.3	28.2	52.5

Network Totals

Number of Intersections	7
Total Delay (hr)	78
Stops (#)	7926
Average Speed (mph)	19
Total Travel Time (hr)	166
Distance Traveled (mi)	3084
Fuel Consumed (gal)	234
Fuel Economy (mpg)	13.2
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	449
Performance Index	99.5

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	52	40	92
Stops (#)	4720	3745	8465
Average Speed (mph)	17	18	18
Total Travel Time (hr)	101	84	185
Distance Traveled (mi)	1710	1525	3235
Fuel Consumed (gal)	139	116	254
Fuel Economy (mpg)	12.3	13.2	12.7
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	408	336	744
Performance Index	64.8	50.8	115.6

Network Totals

Number of Intersections	7
Total Delay (hr)	159
Stops (#)	11944
Average Speed (mph)	15
Total Travel Time (hr)	276
Distance Traveled (mi)	4083
Fuel Consumed (gal)	362
Fuel Economy (mpg)	11.3
Unserved Vehicles (#)	5
Vehicles in dilemma zone (#)	824
Performance Index	192.6

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	15	17	31
Stops (#)	2094	2143	4237
Average Speed (mph)	23	25	24
Total Travel Time (hr)	41	58	99
Distance Traveled (mi)	918	1451	2370
Fuel Consumed (gal)	61	84	145
Fuel Economy (mpg)	15.0	17.3	16.3
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	170	202	372
Performance Index	20.3	22.9	43.3

Network Totals

Number of Intersections	7
Total Delay (hr)	74
Stops (#)	6983
Average Speed (mph)	19
Total Travel Time (hr)	163
Distance Traveled (mi)	3113
Fuel Consumed (gal)	225
Fuel Economy (mpg)	13.8
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	437
Performance Index	93.2

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	38	36	74
Stops (#)	4814	3877	8691
Average Speed (mph)	20	19	19
Total Travel Time (hr)	87	80	167
Distance Traveled (mi)	1703	1525	3228
Fuel Consumed (gal)	129	114	243
Fuel Economy (mpg)	13.2	13.4	13.3
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	290	284	574
Performance Index	51.8	46.8	98.6

Network Totals

Number of Intersections	7
Total Delay (hr)	146
Stops (#)	12345
Average Speed (mph)	16
Total Travel Time (hr)	263
Distance Traveled (mi)	4107
Fuel Consumed (gal)	356
Fuel Economy (mpg)	11.5
Unserved Vehicles (#)	19
Vehicles in dilemma zone (#)	647
Performance Index	179.9

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	29	29	58
Stops (#)	2988	3523	6511
Average Speed (mph)	19	21	20
Total Travel Time (hr)	62	74	136
Distance Traveled (mi)	1158	1559	2717
Fuel Consumed (gal)	88	108	195
Fuel Economy (mpg)	13.2	14.5	13.9
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	364	440	804
Performance Index	36.9	39.2	76.1

Network Totals

Number of Intersections	7
Total Delay (hr)	107
Stops (#)	9528
Average Speed (mph)	17
Total Travel Time (hr)	208
Distance Traveled (mi)	3522
Fuel Consumed (gal)	284
Fuel Economy (mpg)	12.4
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	884
Performance Index	133.6

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	63	48	111
Stops (#)	5093	4238	9331
Average Speed (mph)	16	17	16
Total Travel Time (hr)	114	94	207
Distance Traveled (mi)	1769	1616	3385
Fuel Consumed (gal)	152	128	280
Fuel Economy (mpg)	11.6	12.6	12.1
Unserved Vehicles (#)	0	3	3
Vehicles in dilemma zone (#)	345	276	621
Performance Index	77.3	59.4	136.7

Network Totals

Number of Intersections	7
Total Delay (hr)	186
Stops (#)	12976
Average Speed (mph)	14
Total Travel Time (hr)	308
Distance Traveled (mi)	4268
Fuel Consumed (gal)	396
Fuel Economy (mpg)	10.8
Unserved Vehicles (#)	33
Vehicles in dilemma zone (#)	706
Performance Index	221.8

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	23	22	45
Stops (#)	2876	2797	5673
Average Speed (mph)	20	24	22
Total Travel Time (hr)	56	66	122
Distance Traveled (mi)	1142	1559	2701
Fuel Consumed (gal)	82	96	179
Fuel Economy (mpg)	13.9	16.2	15.1
Unserved Vehicles (#)	0	0	0
Vehicles in dilemma zone (#)	281	291	572
Performance Index	31.3	29.5	60.8

Network Totals

Number of Intersections	7
Total Delay (hr)	98
Stops (#)	8776
Average Speed (mph)	18
Total Travel Time (hr)	199
Distance Traveled (mi)	3548
Fuel Consumed (gal)	273
Fuel Economy (mpg)	13.0
Unserved Vehicles (#)	0
Vehicles in dilemma zone (#)	649
Performance Index	122.2

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	46	43	88
Stops (#)	5517	4269	9786
Average Speed (mph)	18	18	18
Total Travel Time (hr)	96	89	185
Distance Traveled (mi)	1761	1616	3377
Fuel Consumed (gal)	142	125	267
Fuel Economy (mpg)	12.4	12.9	12.6
Unserved Vehicles (#)	3	3	6
Vehicles in dilemma zone (#)	352	293	645
Performance Index	60.9	54.6	115.5

Network Totals

Number of Intersections	7
Total Delay (hr)	165
Stops (#)	13607
Average Speed (mph)	15
Total Travel Time (hr)	287
Distance Traveled (mi)	4291
Fuel Consumed (gal)	387
Fuel Economy (mpg)	11.1
Unserved Vehicles (#)	35
Vehicles in dilemma zone (#)	719
Performance Index	202.5

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	45	44	90
Stops (#)	3665	4177	7842
Average Speed (mph)	16	18	17
Total Travel Time (hr)	84	92	176
Distance Traveled (mi)	1355	1667	3022
Fuel Consumed (gal)	112	128	240
Fuel Economy (mpg)	12.1	13.1	12.6
Unserved Vehicles (#)	0	9	9
Vehicles in dilemma zone (#)	407	496	903
Performance Index	55.5	56.1	111.6

Network Totals

Number of Intersections	7
Total Delay (hr)	162
Stops (#)	11307
Average Speed (mph)	14
Total Travel Time (hr)	275
Distance Traveled (mi)	3927
Fuel Consumed (gal)	354
Fuel Economy (mpg)	11.1
Unserved Vehicles (#)	57
Vehicles in dilemma zone (#)	995
Performance Index	193.8

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	104	95	200
Stops (#)	5875	4966	10841
Average Speed (mph)	12	13	13
Total Travel Time (hr)	160	150	311
Distance Traveled (mi)	1960	1930	3890
Fuel Consumed (gal)	195	181	376
Fuel Economy (mpg)	10.0	10.7	10.3
Unserved Vehicles (#)	126	237	363
Vehicles in dilemma zone (#)	446	410	856
Performance Index	120.8	109.0	229.8

Network Totals

Number of Intersections	7
Total Delay (hr)	333
Stops (#)	14995
Average Speed (mph)	10
Total Travel Time (hr)	473
Distance Traveled (mi)	4896
Fuel Consumed (gal)	543
Fuel Economy (mpg)	9.0
Unserved Vehicles (#)	687
Vehicles in dilemma zone (#)	947
Performance Index	374.6

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	32	34	66
Stops (#)	3986	3835	7821
Average Speed (mph)	19	20	20
Total Travel Time (hr)	70	81	152
Distance Traveled (mi)	1330	1667	2996
Fuel Consumed (gal)	104	117	221
Fuel Economy (mpg)	12.7	14.2	13.5
Unserved Vehicles (#)	9	4	13
Vehicles in dilemma zone (#)	318	336	654
Performance Index	43.3	44.4	87.7

Network Totals

Number of Intersections	7
Total Delay (hr)	143
Stops (#)	11399
Average Speed (mph)	16
Total Travel Time (hr)	256
Distance Traveled (mi)	3975
Fuel Consumed (gal)	342
Fuel Economy (mpg)	11.6
Unserved Vehicles (#)	88
Vehicles in dilemma zone (#)	744
Performance Index	174.3

S Boulder Rd

Direction	EB	WB	All
Total Delay (hr)	98	82	180
Stops (#)	16999	4802	21801
Average Speed (mph)	13	14	13
Total Travel Time (hr)	154	137	290
Distance Traveled (mi)	1947	1930	3877
Fuel Consumed (gal)	274	170	444
Fuel Economy (mpg)	7.1	11.4	8.7
Unserved Vehicles (#)	125	170	295
Vehicles in dilemma zone (#)	325	319	644
Performance Index	145.3	95.0	240.3

Network Totals

Number of Intersections	7
Total Delay (hr)	316
Stops (#)	26211
Average Speed (mph)	11
Total Travel Time (hr)	457
Distance Traveled (mi)	4934
Fuel Consumed (gal)	617
Fuel Economy (mpg)	8.0
Unserved Vehicles (#)	659
Vehicles in dilemma zone (#)	726
Performance Index	388.5

Scott Robinson

From: Scott Belonger <sbelonger@lorisandassociates.com>
Sent: Thursday, October 29, 2015 1:28 PM
To: Scott Robinson
Subject: RE: South Boulder Road Small Area Plan

Sounds great! Although I am interested in seeing the Main St intersection realigned, my greatest interest is an underpass at Via Appia/Cottonwood Park! I bike and walk this corridor many times per week. Although I have seen several possible locations mentioned as possibilities for an underpass, this location is BY FAR the most appropriate location for an underpass in this corridor. Once the new trail map / wayfinding system is implemented and the proposed North Drainage and SH 42 / Hecla underpass come on line, this is going to be an even more critical location for an underpass. I don't think people fully appreciate what a significant trail corridor this will be in the future. I am very glad to hear that this location is being closely considered for an underpass. I hope to find ways to get involved and further promote this project in the future. I think an underpass at Cottonwood Park is also an IDEAL candidate for funding through DRCOG or other sources. Thanks for the info. –scott

Scott Belonger, P.E.

Loris and Associates, Inc.

Ph: 720.974.5603

From: Scott Robinson [mailto:scottr@louisvilleco.gov]
Sent: Thursday, October 29, 2015 1:14 PM
To: Scott Belonger
Subject: RE: South Boulder Road Small Area Plan

Scott,

Council directed us to not explore realigning Main to meet up with Centennial, so that will not be discussed. We will be looking at geometric changes at most of the intersections to improve operations and the pedestrian experience. Right now we are focusing on an underpass at Via Appia/Cottonwood Park with the possibility of exploring other locations.

Thanks

Scott Robinson, AICP

Planner II

City of Louisville

303-335-4596

scottr@louisvilleco.gov

From: Scott Belonger [mailto:sbelonger@lorisandassociates.com]
Sent: Wednesday, October 28, 2015 9:04 PM
To: Scott Robinson
Subject: RE: South Boulder Road Small Area Plan

Thanks for the response. I know how everything seems to come together right before the meeting! If I can't make it, I will watch for the postings after.

I am especially interested in the location of possible future underpasses beneath South Boulder Road and reconfiguration of the Main Street / SBR intersection. Will these items be part of the discussion?

From: Scott Robinson [mailto:scottr@louisvilleco.gov]
Sent: Wednesday, October 28, 2015 5:34 PM
To: Scott Belong
Subject: RE: South Boulder Road Small Area Plan

Scott,

We are still working on the drawings, and probably will be right up to the meeting. We will, however, post them on the website and accept additional comments after the meeting. Or we will have hard copies available in City hall for review. I hope you'll give us your feedback even if you can't make the meeting. Please let me know if you have any more questions.

Thanks

Scott Robinson, AICP

Planner II

City of Louisville

303-335-4596

scottr@louisvilleco.gov

From: Scott Belonger [mailto:sbelonger@lorisandassociates.com]
Sent: Wednesday, October 28, 2015 11:10 AM
To: Scott Robinson
Subject: South Boulder Road Small Area Plan

Scott, Are any of the displays that will be used in next week's meeting available prior to the meeting. Not sure that I can make it but I would definitely like to see what options are being considered. If I can make it, I'd like to show up with some ideas. Please let me know. Thanks! -scott

Scott Belonger, P.E.

Associate Principal

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L O R I S

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Louisville, CO 80027

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Scott Robinson

From: Linda Abrams <lindadba@msn.com>
Sent: Sunday, November 22, 2015 2:56 PM
To: Scott Robinson
Subject: s boulder plan

I see nothing wrong with the King Soopers shopping area. Leave it alone.

The Alfalfa's area probably could use a few nice shops or dining options. I cannot figure out why a 3-4 story apartment building is being built there creating more traffic and more people whining about train horns!

Linda Abrams
415 Fairfield Ln

Memorandum

To: Scott Robbinson

From: Scott Belonger, Patsy McEntee, 697 Fireside Street

Date: 12/1/2015

Re: South Boulder Road Small Area Plan Transportation Improvements

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Thank you for this opportunity to provide comments regarding the South Boulder Road Small Area Plan. We are excited to live in a community that is willing to challenge themselves to create a new vision of what this community could be. The confidence and high expectations that have developed in our community in the recent years is truly energizing. We hope to further challenge our city planners, councilpersons, and residents to think big, **envision the ideal solutions** and pursue, develop and fund the **best plan possible**.

We have reviewed the information presented at the South Boulder Road Place- Making Workshop #3 on November 5, 2015. We are encouraged by what we see in the materials presented. We would like to offer some additional thoughts, primarily focused on the "Transportation Improvement Alternatives" display.

GENERAL DISPLAY PRESENTATION COMMENT

It would be helpful if the display would graphically differentiate between:

a. Existing facilities to remain in-place as part of the plan.

b. Existing facilities to be improved (sidewalks widened, roadway separation increased, intersections to be improved, etc.).

c. New facilities to be developed.

IMPROVEMENT PRIORITIES

Below is a list of recommended transportation listed in order of importance.

(1) Establish an east-west pedestrian focused corridor to be used as an alternative to South Boulder Road.

Need:

The need for this is two-fold. Firstly, this would provide a much more pleasant and safe user experience for users of the alternative corridor. Secondly, it would improve the vehicle capacity and function of the signalized intersections on South Boulder Road. Although

pedestrians are not currently a significant factor at the intersections, if pedestrian activity increases as part of this overall plan, heavy pedestrian volumes at the SBR intersections may reduce vehicle capacity.

Implementation:

This alternative corridor can be established relatively easily by utilizing portions of the existing and currently planned future trail system (the soon to be named Goodhue Trail & Lake to Lake Trail) located north of the SBR.

For this alternative corridor to be effective, it must provide a main-line trail alignment that is as **efficient and direct** as possible and be well connected to destinations along the route. To achieve this, the following improvements should be pursued. These are listed in order of significance to achieve the objective:

(a) Construct an underpass beneath the BNSF rail line at a location aligned/parallel with planned Hwy 42 underpass.

The currently planned "North Drainage Underpass" is approximately 1700 feet north of this location, requiring a total of 0.64 miles of out of direction travel if it is to serve this suggested alternative east/west corridor. This more than doubles the distance between Centennial Drive and Louisville Plaza, making it much less likely to be used as a pedestrian route between areas west and east of the BNSF. The North Drainage Underpass should be scaled back to focus on drainage only if needed to allow development of an **underpass at this location to effectively serve this alternate pedestrian corridor.** This underpass certainly represents a significant challenge and cost but is the single most critical aspect establishing an effective alternative pedestrian corridor.

The ideal crossing from a user connectivity standpoint would be to stay aligned with current trail alignments that occur along and/or aligned with the Davidson Highline Ditch. An underpass at this farther south location will allow the maximum number of users to access connections to the South (Downtown) and to the East (Waneka and King Soopers Center).

(b) Construct an underpass beneath South Boulder Road, east of Via Appia Way at Cottonwood Park.

The underpass shown for consideration at Via Appia should be pursued as a priority. This will provide a critical connection and improvement to the Goodhue / Lake to Lake trails.

(c) Provide a new connection between the existing trail and Village Square.

(d) Provide additional neighborhood connections along the existing undeveloped city-owned irrigation / drainage/utility ROW corridors to the north and west of the study area.

(e) Plan for a woonerf or other improved pedestrian connection through the Balfour development to Louisville Plaza.

If the Louisville Plaza is redeveloped, as shown in other displays in the Small Area Plan, a primary pedestrian access point oriented toward the north, through the Balfour development would greatly improve the overall connectivity and strength of the alternative east-west corridor.

(2) Provide improved north/south pedestrian connectivity between the Goodhue / Lake to Lake Trail and the SBR / Main Street Intersection.

Need:

The Goodhue / Lake to Lake Trail and Main Street are two significant destinations in close proximity, with poor quality pedestrian connection between them. Existing sidewalks are narrow (4 feet to 6 feet), in poor condition and overgrown with vegetation. This would also provide improved connectivity to the SBR / Hwy 42 intersection, which is currently 8' wide east of the railroad tracks, but 6 feet wide or less between Centennial Drive and the tracks.

Implementation:

A trail and/or improved sidewalk, with a minimum of 8 foot width and 5 foot separation from existing roadways should be developed between the existing Goodhue / Lake to Lake trails and the SBR / Main Street intersection. This could be done in any of three locations. The preferred location would be adjacent to the railroad tracks. However, technical challenges and property ownership issues may make this location prohibitive. The next best location would be on the west side of Centennial Drive, to line up with the existing crosswalk at the Centennial Drive / SBR intersection. The third option would be at the east side of Centennial Drive.

(3) Provide Dedicated Pedestrian Access to Louisville Plaza.

Need:

There is currently NO dedicated pedestrian access between the existing sidewalks along SBR and Hwy 42 and the Louisville Plaza. Any pedestrian wishing to access any of the businesses in the Louisville Plaza must enter the relatively narrow vehicular access drives until getting into the parking lot. It is assumed that this will be corrected if the area is redeveloped. However, the current configuration is so inadequate that an interim solution should be provided.

Implementation:

Curb ramps should be provided at multiple locations providing dedicated pedestrian access between the existing sidewalks and safe locations within the parking lot (away from vehicle access points).

(4) Provide Improved Transit Stops.

Need:

South Boulder Road is a significant transit route for both the DASH and Route 228. Route 228 will become a more important route as the BRT service to Denver comes on line soon. Existing transit stops on SBR are minimal at best and do not include any bike parking/storage facilities. Transit should become a more visible and celebrated element of the overall transportation system on SBR.

Implementation:

Improved transit stops should be developed and should incorporate high quality aesthetic treatments similar to other facilities within the City. Bike parking should be provided, as should weather protection for transit users. Artistic treatments are a civic enhancement that contributes to community, sense of place, and desire to use those facilities and landscapes. **Our treatment of transit stops should symbolize a level of respect for transit as a transportation mode and not appear to be an afterthought**, or bare minimum level of treatment required to provide basic access to those restricted to transit. A high-level transit treatment should be incorporated into the Cottonwood Park / Via Appia underpass design. This transit stop is heavily used and should be treated as a public amenity.

LEGEND

Additional improvements

Potential new connection and/or improved connection

U Potential Underpass

South Boulder Road Small Area Plan

Additional Comments by
Scott Belonger & Patsy McEntee
697 Fireside St Louisville

Scott Robinson

From: Justine Vigil-Tapia <jvigilt@gmail.com>
Sent: Thursday, November 19, 2015 8:31 PM
To: Scott Robinson
Subject: Small Area Plan (South Boulder Road) Feedback

Hi Scott,
I favor Louisville Plaza #1 and Village Square #1. Louisville Plaza 1 looks like a nice balance of building to open/public space area.

Transportation is definitely a big concern. Can't really tell from the plan how walkable or easily accessible (or safe) it will be to get from west side of 42 to east side? I live in old town and mostly shop at King Soopers. I would love to walk or ride my bike safely to Kings.

Don't know what a solution would look like but coming out of Walgreens/Alfalfas onto South Boulder Road requires cars to come across the sidewalk and as we get more peds/bikes using the sidewalk it creates unsafe situations for all. The fiscal impact seems too great with the 3-story scenario (too many units, people).

Regards, Justine

Scott Robinson

From: Marianne Gibbs <marianne.gibbs@comcast.net>
Sent: Friday, November 20, 2015 12:36 PM
To: Scott Robinson
Subject: RE: South Boulder Road small area plan

Thank you for getting back! I'm glad to hear there was some conversation surrounding this point… And really appreciate your response.

An over/underpass from Old Town (whether it's at Main/LaFarge/Jefferson or Griffith across 96, then…toward that new farm area??? Have we exhausted the possibilities?…) …kind of makes or breaks the decision to take the car vs use the bicycle… for grocery and errands.

If any way possible, would love, love, love to improve walkability, bike-ability to tie the travel to/fro grocery shopping and other shopping (not to mention school and school programs) at South Boulder/96th to Old Town residence base….at same time tying in all new housing north of South Boulder Rd to Old Town events, restaurants and shopping without need for car….

Hmmmmmm, gotta be a way…. If not now, when?

Is there discussion on the City website outlining the un-surmountables? Or discussion on this?

Many thanks again,

~ Marianne

…improved cross walk….well, better than nothing, …right direction, but probably not sufficient for serious errand running via bikes… Are improved bike lanes in the works?…biking on Main Street sometimes scary w/ buses, car doors, etc… I'm thinking Europe, Scandinavia, Holland, incredible bike-ability, next to no need for cars, solves lots of parking problems, traffic, etc… also makes for great community interaction… still hoping!

From: Scott Robinson [mailto:scottr@louisvilleco.gov]
Sent: Friday, November 20, 2015 12:09 PM
To: 'Marianne Gibbs' <marianne.gibbs@comcast.net>
Subject: RE: South Boulder Road small area plan

Marianne,

Thank you for your comments, we will be sure to include them in the decision-making process. We have looked into an underpass or overpass at Main Street, but neither was feasible at this time with the land and utility constraints in the area. The transportation plan calls for improvements to the crosswalks to make getting across South Boulder Road and Highway 42 easier though. Let me know if you have any more questions.

Thanks

Scott Robinson, AICP

Planner II

City of Louisville

303-335-4596

scottr@louisvilleco.gov

From: Marianne Gibbs [mailto:marianne.gibbs@comcast.net]
Sent: Thursday, November 19, 2015 7:49 PM
To: Scott Robinson
Subject: South Boulder Road small area plan

Hi Scott,

Marianne Gibbs here, old town resident on La Farge.

I didn't see any suggested pedestrian under or over pass proposed or discussed where Main Street, from Old Town, meets South Boulder Road .

Has there been discussion regarding making local travel via bicycle or walk from Old Town area to Alfalfa's or King Sooper's safer? I would love to see a pedestrian/cycle only under or over pass across South Boulder Road. I did see somewhere one being proposed at Via Appia which is lovely, but would much prefer one, or see additional one tie old town near Main Street to grocery areas….

Apologies if this has been detailed already, I may have missed it on the City of Louisville website.

Thank you for all you do,

~ Marianne

Scott Robinson

From: Planning Commission
Sent: Wednesday, February 10, 2016 8:28 AM
To: Scott Robinson
Subject: FW: Adopt S. Boulder Rd Plan

Monica Garland
Senior Administrative Assistant
Planning & Building Safety Division
City of Louisville
Phone: 303.335.4592
Fax: 303.335.4588
monicag@louisvilleco.gov

From: Nick Simpson [mailto:nsimpsonco@msn.com]
Sent: Tuesday, February 09, 2016 10:15 AM
To: Planning Commission
Subject: Adopt S. Boulder Rd Plan

Members of Planning Commission, Please adopt the South Boulder Road Small Area Plan at this week's meeting.

Regarding the 'South Boulder Road Small Area Plan' up before the Louisville Planning Commission.

My Name: Nicholas Simpson
My Address: 884 W Chestnut Circle
Louisville, CO, 80027
Action items:

Scott Robinson

From: Planning Commission
Sent: Wednesday, February 10, 2016 8:28 AM
To: Scott Robinson
Subject: FW: planning commission

Monica Garland
Senior Administrative Assistant
Planning & Building Safety Division
City of Louisville
Phone: 303.335.4592
Fax: 303.335.4588
monicag@louisvilleco.gov

From: sandra aris [mailto:sandra.mary.aris@gmail.com]
Sent: Monday, February 08, 2016 7:54 PM
To: Planning Commission
Subject: planning commission

Members of Planning Commission, Please adopt the South Boulder Road Small Area Plan at tonight's meeting.

--
Warm Regards,

Sandra Aris
Cell: 310 908 8314
915 w chestnut cir
Louisville co 80027

Scott Robinson

From: Planning Commission
Sent: Wednesday, February 10, 2016 8:28 AM
To: Scott Robinson
Subject: FW: planning committee issue

Monica Garland
Senior Administrative Assistant
Planning & Building Safety Division
City of Louisville
Phone: 303.335.4592
Fax: 303.335.4588
monicag@louisvilleco.gov

From: djruffbroker@comcast.net [mailto:djruffbroker@comcast.net]
Sent: Monday, February 08, 2016 9:33 PM
To: Planning Commission
Subject: re: planning committee issue

To the Members of Louisville Planning Commission, - Please adopt the South Boulder Road Small Area Plan at your meeting tomorrow. I have been a citizen and property owner in Louisville since 1985. I am deeply concerned with the amount of growth this city has had in the last several years and hate to see Louisville lose its small town charm. I owe my home here and also have 2 rental properties in Hunter's Ridge which have been easy to rent out due to the awesome amenities of Louisville. I have noticed more and more traffic congestion and accidents and even more crime. I hope you take into consideration that Louisville is a unique awesome place to live and that if you continue to build and build it will lose that charm and be just like most other cities.

I have already purchased and paid for an acre lot on the Dived Ranch golf course in Ridgway CO which I will build on much quicker than planned (and quite easily with the proceeds of my 3 properties in Louisville) if Louisville loses more of its charming small town appeal. Your decision will not only affect the quality of lifestyle here for its residents but also the kind of people you will attract here. I encourage you to temper the growth and maintain the appeal that originally attracted people to this awesome city that I chose to live in after graduating CU business school in 1984. Thank you for your time and consideration. Regards, Donna Ruff
1875 Quail Ct.
Louisville, CO
and also the owner of 103 Pheasant Run and 175 Pheasant Run in Louisville

Scott Robinson

From: Planning Commission
Sent: Monday, February 08, 2016 3:37 PM
To: Scott Robinson
Subject: FW: Small Area Plan

Monica Garland
Senior Administrative Assistant
Planning & Building Safety Division
City of Louisville
Phone: 303.335.4592
Fax: 303.335.4588
monicag@louisvilleco.gov

-----Original Message-----
From: jo emery [mailto:joemery32@gmail.com]
Sent: Monday, February 08, 2016 1:35 PM
To: Planning Commission
Subject: Small Area Plan

Please adopt this plan at your meeting.
Roy and Jo Emery, 650 W. Aspen Way, Louisville.

Scott Robinson

From: Planning Commission
Sent: Wednesday, February 10, 2016 3:10 PM
To: Scott Robinson
Subject: FW: Small Area Plan

Monica Garland
Senior Administrative Assistant
Planning & Building Safety Division
City of Louisville
Phone: 303.335.4592
Fax: 303.335.4588
monicag@louisvilleco.gov

From: Mike Ross [mailto:2mikeross@gmail.com]
Sent: Wednesday, February 10, 2016 2:41 PM
To: Planning Commission
Cc: sherry sommer
Subject: Small Area Plan

Members of Planning Commission,

Please adopt the South Boulder Road Small Area Plan at tomorrow night's meeting.

Best Regards,
Mike & Natalie Ross

Mike Ross
888 S. Palisade Ct.
Louisville, CO 80027

Scott Robinson

From: Planning Commission
Sent: Wednesday, February 10, 2016 8:28 AM
To: Scott Robinson
Subject: FW: South Boulder Road small area plan - Feb 11 PC Meeting
Attachments: South Boulder Road SAP_Petition_021116.pdf

Monica Garland
Senior Administrative Assistant
Planning & Building Safety Division
City of Louisville
Phone: 303.335.4592
Fax: 303.335.4588
monicag@louisvilleco.gov

From: James Williams [mailto:jamesmunroewilliams@gmail.com]
Sent: Monday, February 08, 2016 8:17 PM
To: Planning Commission
Subject: South Boulder Road small area plan - Feb 11 PC Meeting

Scott -

Attached is a petition requesting the proposed pedestrian underpass at South Boulder Road/Cottonwood Park to be included in the 1-5 year Schedule in the Recommended Public Improvements (as opposed to 6-10 year). The petition clearly states the reasoning behind this request and is signed by 27 Louisville residents. Additional signatures may be delivered prior to Thursday meeting.

For my personal comments:

Of the three underpasses included in the plan, the South Boulder Road/Cottonwood Park underpass is closest to downtown and provides the much needed benefit of safe pedestrian/bicycle crossing of South Boulder Road. The BNSF underpass, while certainly important, is not even within the South Boulder Road small area plan boundary. In fact, one could argue that the South Boulder Road/Cottonwood Park underpass should be the logical first underpass to be built, as it would allow Louisville connectivity that the other two underpasses would build-on.

Please confirm your receipt of this email and attachment, both of which should be read into public comments this Thursday at the Planning Commission meeting. As of right now, I will not be able to make the meeting, so I am sending in advance.

Appreciate your hard work on this important endeavor to shape the future of South Boulder Road small area with particular attention to the pedestrian/bicycle infrastructure.

Regards,

James Williams

RESOLUTION SUPPORTING THE SOUTH BOULDER ROAD PLANNING STUDY

The undersigned citizens of Louisville support the South Boulder Road Small Area Plan (the "Planning Study") being conducted and the desire to provide our input into the Planning Study and its impact on our neighborhood. THEREFORE,

WHEREAS, safety is the chief priority to the citizens of Louisville when a Planning Study is conducted,

WHEREAS, connectivity of pathways encourages active modes of transportation, use of parks and open space, and ease of access in Louisville,

WHEREAS, street grade crossing on South Boulder Road immediately east of Via Appia involves intersection between major automobile/bus, high density residential area, and active use trails and open space and posing hazards to pedestrians and cyclists,

WHEREAS, safe pedestrian and bicycle access between Cottonwood Park and Centennial Park open space through avoidance of street grade crossing of South Boulder Road is necessary,

NOW THEREFORE, **THE UNDERSIGNED SUPPORT THE SOUTH BOULDER SMALL AREA PLAN REPORT PROVIDED IT INCLUDES THE FOLLOWING TO BE INSTALLED IN THE NEXT 1-5 YEARS:**

1. A fifteen foot (15') wide, underground, pedestrian and bicycle concrete tunnel constructed under South Boulder Road immediately east of Via Appia that connects the north and south side of South Boulder Road via the Cottonwood Park – to – Centennial park greenway path. See Attachment 1.

ATTACHMENT 1

THE FOLLOWING ARE IN SUPPORT OF THIS RESOLUTION:

Name	Louisville Street Address
Eric J Davila	1903 Garfield Ave
Stephanie Nevarez	1903 Garfield Ave
Robin Hayes	364 peerless St.
Craig Hayes	366 Peerless St
Mary Schmitt	348 Peerless St.
GEORGE GRAHAM	324 PEERLESS ST.
Paul Pauly	307 Peerless St.
Garrick R. Williams	1889 Garfield Ave.
	1846 Garfield Ave
	1846 Garfield Ave.
John W. Chance	2015 Strathmore St.
	2062 Strathmore St.

THE FOLLOWING ARE IN SUPPORT OF THIS RESOLUTION:

Name	Louisville Street Address
[signature]	1889 Garfield Ave.
[signature]	348 Peerless
[signature]	1865 Garfield Ave.
[signature]	1850 Garfield Ave.
[signature]	1850 Garfield Ave
[signature]	1808 Garfild Avenue
[signature]	493 Fireside St.
[signature]	509 FIRESIDE ST.
[signature]	225 W South Boulder Rd
[signature]	690 Fireside St
[signature]	638 Fireside St.
[signature]	494 FIRESIDE ST.

THE FOLLOWING ARE IN SUPPORT OF THIS RESOLUTION:

Name	Louisville Street Address
Chris Esser	2016 Strathmore St
Ross Davis	1948 Strathmore ST
Charles Oliver	231 S Madison Ave
Andrew Nickerson	383 Peerless St
Barbara Nich	388 Peerless St. Louisville

Scott Robinson

From: Planning Commission
Sent: Thursday, February 11, 2016 9:38 AM
To: Scott Robinson
Subject: FW: South Boulder Road Small Area Plan

Monica Garland
Senior Administrative Assistant
Planning & Building Safety Division
City of Louisville
Phone: 303.335.4592
Fax: 303.335.4588
monicag@louisvilleco.gov

From: Doris Ostrander [mailto:dorishostrander@gmail.com]
Sent: Thursday, February 11, 2016 8:11 AM
To: Planning Commission
Subject: South Boulder Road Small Area Plan

Members of Planning Commission, please adopt the So. Bldr. Road Small Area Plan at tonight's meeting.

Doris Ostrander
598 Ridge View Dr.

Scott Robinson

From: Scott Belonger <sbelonger@lorisandassociates.com>
Sent: Thursday, February 11, 2016 1:59 PM
To: Planning Commission; Scott Robinson
Subject: South Boulder Road Small Area Plan Comments
Attachments: SOBORO SMP ~ SJB Comments.pdf

I have reviewed the latest version of South Boulder Road Small Area Plan and would like to reiterate comments that I have made previously that have not been incorporated into the plan. The numbered comments below relate to the numbered items in the attachment.

1. The current 4' sidewalk along Centennial Dr. between the trail and South Boulder Road should be widened to 10' to provide a trail/shared use path connection between the existing trail and South Boulder Road / Main Street.

2. A connection should be provided between the Village Shopping Center and the trail.

3. The proposed underpass beneath the BNSF RR should be located to be aligned with the existing trail near Fireside St. and the proposed underpass at SH 42.

4. A trail connection should be added to the existing public right of way as shown in the attachment. Although this is not shaded green in the attachment, it is all City of Louisville right of way and is an excellent opportunity for an additional trail to improve connectivity in this area. I realize that it slightly outside of the study area. However, the plan does include other new trails outside of the study area.

5. The plan shows an existing trail along the east side of the BNSF RR through Steel Ranch. There is no trail or sidewalk in this area so it should not be shown as an existing trail in the map.

Scott Belonger, P.E.

Associate Principal

~~~~~~~~~~~~~~~~~~~~~~~~~~~~

L O R I S

Loris and Associates, Inc.

100 Superior Plaza Way, Suite 220

Superior, CO 80027

Ph: 720.974.5603
~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Fax: 303.444.0611

http://www.lorisandassociates.com

The trail improvement plan includes proposed new trails in and around the corridor, including expanded sidewalks along South Boulder Road. The plan also shows recommended locations for new or enhanced crosswalks and underpasses, including the two already in process under Hwy 42/96th Street and the BNSF railroad, plus a new one near South Boulder Road and Via Appia at Cottonwood Park.

Trails Improvement Plan

ADDITIONAL NEW TRAILS
(X) – KEYED NOTES.

City of Louisville
COLORADO • SINCE 1878

Planning Commission
Meeting Minutes
February 11, 2016
City Hall, Council Chambers
749 Main Street
6:30 PM

Call to Order: Pritchard called the meeting to order at 6:30 PM.

Roll Call was taken and the following members were present:

Commission Members Present:	Chris Pritchard, Chairman Cary Tengler, Vice Chairman Steve Brauneis Jeff Moline Tom Rice David Hsu
Commission Members Absent:	Ann O'Connell, Secretary
Staff Members Present:	Sean McCartney, Principal Planner Scott Robinson, Planner II

Approval of Agenda:
Moline moved and **Hsu** seconded a motion to approve the February 11, 2016 agenda. Motion passed by voice vote.

Approval of Minutes:
Brauneis moved and **Moline** seconded a motion to approve the January 14, 2016 minutes as prepared by staff. Motion passed by voice vote.

Public Comments: Items not on the Agenda
None heard.

Regular Business – Public Hearing Items

- **South Boulder Road Small Area Plan:** A request to review a draft copy of the South Boulder Road Small Area Plan.
  - Staff Member: Scott Robinson, Planner II

Emails entered into the record: **Tengler** moved and **Brauneis** seconded the motion to enter emails into the public record. Motion passed by unanimous voice vote.

Conflict of Interest and Disclosure:
None.

Public Notice Certification:

This is a legislative act and does not have the same public notice requirements as usual quasi-judicial applications. Staff posted signs along South Boulder Road and posted notice on City website. Agenda posted per regulations and email sent to email distribution list.

Staff Report of Facts and Issues:
Robinson presented from Power Point:

- Staff has worked on Small Area Plan since October 2013 and presents a draft plan for the PC to review.
- What is a Small Area Plan? The Comp Plan updated in 2013 is a city-wide policy document. What is built on the ground is controlled by zoning and design guidelines. To go from the Comp Plan to zoning and design guidelines, Staff uses the small area planning process. It takes the big ideas from the Comp Plan and translates them into one specific area, such as the South Boulder Road area. Out of this, Staff will create the zoning and design guidelines that will then create the built environment the community wants to see. The South Boulder Road study area includes both sides of South Boulder Road from Via Appia on the west to the city limit at Lafayette on the east, and along Highway 42/96th Street to the city limit at Paschal on the north.
- Three big questions in the Small Area Plan are:
    - What are desired land uses for the corridor?
    - What are the preferred physical character design guidelines for the corridor?
    - What are the public infrastructure priorities and public investment needed?

There are some public investment items called out in the plan, but for the most part, this sets design guidelines or parameters for design guidelines that will control private development. Staff will present some drawings and renderings, but these are to give the PC an idea of what these guidelines would produce. The City is not proposing to tear down any buildings or build any new buildings. Staff is putting the guidelines in place so that when and if areas develop or redevelop, they will be built with the character and design that the community wants to see.

- Project Schedule:
    - October 2014 – Kick-off Meeting (talked about general goals for the plan)
    - January 2015 – Walkability Audit and first Placemaking Workshop #1 (looked at transportation, walking, and biking issues)
    - February 2015 – Placemaking Workshop #2 (looked at different sites in the corridor and asked what people would or would not like to see on the sites)
    - November 2015 – Placemaking Workshop #3
        - Development scenarios
            - 1 story
            - 2 story
            - 3 story
        - Urban design elements
        - Roadway improvements

We took the outcome of the November 2015 meeting and all public comments received through the planning process (including the survey done in late 2014 and early 2015) and used it to create the preferred alternative which is the basis for the Draft Plan presented tonight. In general, the Plan has six sections:

- **Introduction**
- **Process**
- **Context**
- **Project Principles**
    1. Provide for safer and more convenient connections across South Boulder Road and Highway 42 for bikes and pedestrians.

2. Utilize policy and design to encourage desired uses to locate in the corridor.
3. Establish design regulations to ensure development closely reflects the community's vision for the corridor while accommodating creativity in design.
4. Mitigate impacts of trains and improve safety of railroad crossings.
5. Balance the regional traffic needs of South Boulder Road and Highway 42 with the community's desire for safety and accessibility.
6. Provide for community gathering spaces and public infrastructure to encourage visitors to spend time in the corridor.

- **The Plan**
  - Community Design Principles.
    - Go To and Stay at Places
      - Public spaces that encourage gathering and interaction
      - A range of retail and entertainment uses that encourage longer visits
      - Small parks and plazas that increase the appeal and experience of daily activities
    - Easy to get to, easy to get around
      - Safe grade separated trail connections to all quadrants
      - Properties connected with driveways and walks
      - A street network that offers balanced choices to move around
      - Opportunities to "park once and walk"
    - A Zipper not a barrier
      - Sidewalks and plazas facing onto South Boulder Road
      - Safe intersections that allow people to cross South Boulder Road and Highway 42
      - Traffic flow/speed that is not detrimental to businesses or people along the corridor
      - A continuous and connected high quality pedestrian experience
    - Development that Contributes
      - To be defined by the community
        - Greenspaces
        - Housing choices
        - New trail connections
        - Semi-public gathering spaces
  - Placemaking Concepts.
    - Transitional Street
    - Pedestrian Refuges
    - Views into the Community
    - Parking Rooms
  - Urban Design Plan. (current zoning land uses)
  - Street Improvements. Additional signal at Cannon and Kaylix on South Boulder Road. Staff had a transportation consultant look at it. There are benefits and drawbacks. The signal can work from a traffic perspective but will cause additional delay, and timing will be tight. If there is an accident, there could be a breakdown of these intersections and significant delays. On the other hand, it provides additional access to developments on either side. It will be easier and safer to make turns off South Boulder Road into developments. It will provide a parallel connection to Highway 42 so traffic can move from north to south without accessing Highway 42. Proposed Kaylix will connect to Baseline in the north and to the DELO project in the south. It will provide a safe pedestrian crossing with a new signal. There are two other signals planned that are included in the Highway 42 Gateway Plan adopted a few years ago. One is at Hecla and the other is at Cannon Circle on Highway 42. There are also new proposed public streets at the

new Coal Creek Station development and the extension of Kaylix through the Kestrel development, which includes the middle portion of Kaylix. The northern portion extends through the RV Storage currently there. The City has an easement through the Christopher Plaza development that would be turned into a full street. Currently, the road at Steel Street goes into the North Main Apartments as a right-in. Staff is proposing some modifications of the Main Street intersection to turn it into a right-in / right-out. Drivers can get from Steel Ranch to South Boulder Road without going out to Highway 42. There are dash lines which represent connections that may not be public streets but private streets or public easements through existing or new developments. They create an opportunity to move through the corridor easier to get to these developments.

- Trail Improvements. Staff suggests new trails and sidewalk improvements which include widening or improving the sidewalk along South Boulder Road and Highway 42 where there is room. In some places, there is no room, especially along the south side. Staff is proposing a new trail connection parallel to South Boulder Road. For people not comfortable walking or riding a bike along South Boulder Road, there will be a parallel connection to move east to west through the corridor without having to be on South Boulder Road. Staff is proposing three underpasses. Two are already planned; one on Highway 42 at the Kestrel/North End development north of Hecla and one under the railroad at Bullhead Gulch connecting Centennial Drive to Steel Ranch. A new third underpass is proposed at Via Appia and Cottonwood Park to create a better connection across South Boulder Road. Staff has looked at other places because the public mentioned better crossings of South Boulder Road. The only place one would work was at Main Street which involved the realignment of Main Street to line up with Centennial. City Council directed Staff to not pursue this any further. Without the Main Street realignment, there was no room to put in an underpass.
- Roadway Improvements. Staff is proposing to take out acceleration/deceleration lanes and make other geometric improvements. We are putting in pedestrian refuges in the center island to make it safer, easier, and more comfortable to cross South Boulder Road. The Santilli property located the far southeast portion of South Boulder Road is currently zoned commercial, and the plan has it remaining commercial. It is long, narrow, and separated from other developments in town, so it is not a great site for commercial development. I spoke with the Open Space Advisory Board (OSAB) last night and brought this item up. They said it does have potential for public land, whether as open space, other park space, or some utility use with drainage improvements. OSAB will consider putting it on their priority acquisition list. This South Boulder Road Plan says to consider this land for open space acquisition if and when it becomes available based on comments from OSAB last night.
- Building Heights. Three alternatives were 1 story, 2 story, and 3 story. The public said they don't like the idea of 3 story buildings along South Boulder Road and Highway 42. Staff is proposing 1 story buildings fronting the street with the option of going to 2 stories if they meet certain conditions such as not creating additional shadows on adjoining properties, not blocking views, meeting fiscal performance requirements, and additional benefits to the public realm and design benefits.
- Urban Design Elements. Staff presents a conceptual diagram of Village Shopping Center showing what redevelopment could look like under the proposed guidelines. Staff proposes a variety of building types and styles, active pedestrian plazas, 10-20 foot setbacks, parking between buildings, views into the development, wide sidewalks with landscaping, no consistent street wall, and a mix of hard and soft landscaping. Staff presents a conceptual diagram of

Louisville Plaza/King Soopers. Staff proposes a mix of pedestrian and auto-oriented design, varied 1-2 stories along the arterial, green spaces within the development, connections into the development, varied 2-3 stories within the development, a series of smaller building footprints, connections between developments, break up of larger parking lots, and creation of an internal network.

- **Implementation**
  - Draft and adopt design standards and guidelines
  - Timeline
  - Cost estimates to be given in ranges

Commission Questions of Staff:

Brauneis says we have looked at a number of the elements of this plan in the past. Can you clarify what Staff is looking for?

Robinson says we are looking for the PC to adopt a resolution recommending approval of the plan to City Council (CC). If there are changes or recommendations requested, the PC can give the direction to Staff who will come back at the March PC meeting with the changes so it can be adopted. It will then go to CC and additional public hearings. Anyone thinking they were not adequately heard tonight, or still have concerns, can come to the CC meetings.

Pritchard says Staff is also looking for additional direction regarding signalization of Cannon and South Boulder Road.

Moline asks about the cost estimates. I am weighing the challenge of approving a plan without cost estimates.

Robinson says Staff does not have them ready yet. If the PC is not comfortable approving without them, we will have them by the March meeting.

Moline says at one of the early public meetings, there was some cost analysis done on some of the alternatives.

Robinson says Staff did the fiscal analysis. This is about ranges of cost for actual public improvements. We are calling for an additional underpass and want to know generally how much will that cost. Also included will be street improvements, infrastructure improvements, and new trails and sidewalks.

Rice says on page 29, there is a plan impact analysis. Traffic impact is discussed. There is a matrix listed that shows the change in travel times with and without Kaylix. The information shows westbound traffic will be quicker with Kaylix signal than without.

Robinson says the signal timing going west, travel time actually goes down in the am. For the other directions, the overall travel time increases.

Hsu asks if any of the new streets are dependent on the traffic signal?

Robinson says no. Staff is recommending the streets with or without the Kaylix signal. The streets have benefits even if the signal is not installed.

Rice says the Main Street railroad crossing and the South Boulder Road configuration as it currently exists is pretty complex. The Steel Street entrance will move entering traffic from the north. How will that work?

Robinson says the reason it was designed as a right-in was because there was concern about cars coming out and cutting across South Boulder Road to make a left onto Main Street. Staff wanted to prevent that movement. Staff is now proposing putting in a raised median between the left turn lane and the west bound through lane and extending it all the way back to Steel Street. A driver would be physically prevented from cutting across to make the left turn. With this improvement, it will be safe to include that connection. It will be necessary to make the changes on Main Street so drivers can't make the weave movement across South Boulder Road.

Hsu asks about the traffic light at Kaylix. If the City does not install it now, are there impacts to deciding later?

Robinson says no. The signal timings are different. Our traffic engineer has recommended signal timing to optimize traffic without the signal. If the signal is installed, timings would be adjusted. There is nothing to prevent the signal to be installed in the future.
Rice asks about the impact analysis on page 29, listing development impact and fiscal impact. Regarding development impact, as I read it, it gives us a synopsis of what currently exists in terms of what has been built out. It says what is projected over the next 20 years based on what could be built given the zoning that exists now.
Robinson says yes, with the existing allowed uses and then assuming these design guidelines are adopted.
Rice says that existing development is 407 residential units but then it shows an additional 546 potential residential units. Where are these 546 units? Does this include Kestrel? A good portion has already been approved, correct?
Robinson says it includes Kestrel development, Coal Creek Station development, the Foundry development, the proposed North End Marketplace development, the Centre Court apartments, and a few currently zoned residential that are undeveloped.
Rice says generally, this summary says that net fiscal impact is positive. The only negative is in the area of capital projects fund of about $5 million. What is that?
Robinson says the way the model works is that for every new resident and employee projected, it assumes additional impact on capital facilities such as city buildings (City Hall, Rec Center, and Police building). It is streets, trails, parks, and open space. The model is a marginal cost model. It has incremental costs so if it projects enough new people to trigger a new park, it then adds the cost of the new park to the model. With the new residents and employees projected in the first table, it says we will need to make these capital improvements to keep our current level of service with our capital facilities. After we got the model adopted and we saw most developments end up with this capital deficit, it is supposed to be offset by the impact fees we charge. One of the things highlighted is we may need to update our impact fees. We will look at that in the next couple years and do a new impact fee study, and we may raise the impact fees. It should balance that out the capital deficit we see in proposed developments.
Rice says we are talking about capital impact city-wide. The capital costs of these improvements such as underpasses, are they included in any of this?
Robinson says not specifically. The model uses existing levels of service to project estimated capital costs. It doesn't have specific projects. Some of the improvements recommended here are to improve the level of service such as new trails and a new underpass. It would be considered enhanced level of service. Those are costs not necessarily derived from any additional development. They are costs from existing residents.
Moline asks what would that money be, and what are some of the things it might pay?
Robinson says the general fund mostly goes towards operational expenses such as staff salaries, daily running costs, utilities, and roads.

Public Comment:
Suzanne Brandler, 1609 Cottonwood Drive, #11, Louisville, CO
Looking at the traffic along South Boulder Road, does the police get to comment on this plan? Does the Fire Department get to comment and review it? I live close to South Boulder Road and I hear sirens and emergency vehicles. I want to make sure they get a chance to look at it.
Pritchard says the Police Department, the Fire Department, and basic staff such as Public Works are notified. We have not received anything from the Police Department on this matter. Have we seen a surge in traffic accidents along this corridor?
Robinson says no, I am aware of any.

John Leary, 1116 Lafarge Avenue, Louisville, CO
I want to talk about what City Council said about land uses in this area. I heard them say that they did not want additional residential. This plan has the Special Review Use (SRU) provision for residential at Village Square and part of North End along South Boulder Road. The SRU

process comments were from Jeff Lipton when he was Chairman of the PC regarding the first Safeway proposal. He criticized having SRU as a planning process. When SRU is mentioned, it's maybe we'll do this and maybe we won't at some time in the future. It gives no certainty to the public and it gives no certainty to anyone interested in development. They may withhold development if the promise of something may happen eventually. The main message from the public in this process was about connectivity across South Boulder Road. It may be impossible to do an underpass and I don't know how deeply it has been examined. There is another option that may not be visibly attractive but an overpass is a possibility. I don't think that can be dismissed as technically unfeasible. The #1 priority of the public is connectivity, especially residents who live north of South Boulder Road. Looking at the traffic estimates, they are actually underestimated because time is added to the existing situation. This is a 20 year plan and by 2035, there will be more traffic. When you add traffic, it is not linear. You get more delays when you add traffic. It would be good to get an idea of traffic levels for 2025. Regarding the current Highway 42 plan, there are some goals and principles about traffic. The goal is to move traffic through there as quickly as possible. The Highway 42 plan does not do that. There were trade-offs in terms of how it is constructed with lights and speeds that do not move cars through as quickly as possible. The financial analysis is lacking some detail and documentation so it is hard to look at. I appreciate the comments you brought up because if none of those capital projects are in there and that surplus is long gone. Doing the 20 year projection ignores the time value of money. It is only valid if your expenditures and your revenues match each year. If they don't, you need to have a discount rate which could change significantly. Regarding build-out projections, I am not sure they are consistent with market analysis for a small area plan process. It was a shallow analysis looking at doubling the office space in the next 20 years in that area. I think the best market analysis done was for the Urban Renewal Area and I don't think it projected that kind of demand for offices. I don't know if it is over the next 20 years or the next 10 years, but I don't think it is realistic. I don't know if the retail is realistic. It seems a little on the low side for a 20 year projection. I think we need to tie that back to the information done by market people. When I look at the drawings of the King Soopers area, I see the parking there today when two-thirds of the lot is packed out to the street in front of ARC and Hobby Lobby and King Soopers. If we put streets through there and more and more buildings, I don't think anyone is going to want to invest in a parking structure there. How realistic are these projections?

Alexandra Bradley, 1385 Caledonia Circle, Louisville, CO
I am really surprised to see the traffic light at Kaylix. I talked to the traffic consultant at the last public meeting and he said the light wasn't feasible. I thought it was a done deal. I have grave concerns about the traffic flow with that additional light. I want to bring up the small entrance change for Cottonwood Park being proposed. My understanding is that it will allow a spur road off Via Appia to get to the parking lot. It is a lovely idea but Cottonwood Park is a treasure park for our children because it is totally safe. It is fenced off and the parking lot is far away in terms of little kids running into it. There are mature trees where the little spur road would go. The road would be right next to the playground so we would lose that safe treasure. It is the best park in town to take kids if they bolt so I want the park to be protected. It doesn't help people coming off South Boulder Road to try to get into the park. It only helps people coming on Via Appia from the Rec Center. It would save 10 seconds since you'd only have to turn the corner. My biggest concern in town is school enrollment, and specifically Louisville Elementary School (LES). Glen Segrue, BVSD Project Manager, sent new 5 year projections today. His newest projections look at 653 students in 2018-2019, which is over capacity. LES is very crowded. What are the odds that we will get the exact number in each classroom? We are looking at portables and not enough space in the classrooms. The last time I checked with Jennifer Rocke, LES Principal, about classrooms, there was one more classroom available for growth. The kids are eating into massive shifts so they can fit into the cafeteria. If the numbers increase past that, or if it is decided that school cannot handle the capacity, we are looking at redrawing boundaries for the entire city. Growth in this corridor will not just impact LES but all the schools. In this plan, if it

allows any more possibility of more kids with more development, I urge that it be taken out. The community really expressed to CC and through the public means that we don't want any more density. If there is any slight inkling of it in this plan, I'd like it taken out. I love the conceptual idea of smaller stores and smaller parking lots, but many of us have to leave Louisville to shop in big box stores. The possibility of having big box stores such as Hobby Lobby or ARC leave and not be replaced might cause the City to lose good tax revenue. How can little stores pull in the same sales tax?

Moline says that his children went to Coal Creek Elementary when there were many portables, and they had a fine, really good experience. I don't know that portables necessarily mean a real decline in education here in Louisville.
Bradley says portables themselves are not necessarily a horrific thing. It is the whole size of the school. Having a school over 600 kids puts a strain on the whole entire system. It is the size of the hallways, the cafeteria size, and the poor art teacher who has 600 kids that come through her class currently. There have been national studies that the best size of an elementary school is around 400 kids. Below that or above that, you have impacts on test scores. A huge elementary school impacts the kids negatively. The staff and the infrastructure are affected.
Moline says in other parts of the county, when schools are not meeting those enrollments, they get closed and schools combine. I look at this issue and think that the school district should deal with this complexity. If the school district is saying that the capacity is something you feel is far in excess of what the program and what the building can support, it is a problem for the district to try and solve.
Bradley says it is the responsibility of the City to try and evaluate the impact to the community. If we know, as a city, that we have a problem with the schools in Louisville, that the current drawn boundaries do not put kids in the schools equally, and we know we are running into a problem for LES, the capacity should be readdressed by BVSD. They are already doing that. It is a big problem and the responsibility of BVSD, but I think there is some responsibility for the City itself. What the PC decides directly impacts the community whether BVSD acts or not. If BVSD acts and decides LES can no longer support the number of kids attending and we need to redraw the boundaries, it just impacted your community.
Moline says that BVSD says they can accommodate the size by ratcheting down open enrollment.
Bradley says open enrollment has been closed. There is a big argument in the community as to whether LES can accommodate 600 students. At 653 students, the defined capacity of the school is based on the number of physical classrooms. It does not address how many kids are flowing through the hallways.
Tengler says I am very sympathetic to what you suggest. I think that as much as we might like to provide that sort of guidance, we cannot tell a builder downtown what type of architectural design they can use. There are certain things that are out of the scope of what we are allowed to effectively voice our opinion on, or make any judgement on, in this PC.
Bradley says I think you have a lot of power and ability to voice your opinions and suggestions. BVSD can take them or leave them, but I think that as a city, we have an opportunity to request and ask. I am asking the PC to look at what the impact of increased development will be in this area. My son is a third grader and was at LES. He is no longer at LES because he could not take the noise and eat in the cafeteria. We had to withdraw him from the school which was devastating to me because we loved LES. It is a wonderful school and wonderful community.
Tengler says I agree, as a city we do, and as individuals we certainly have that opportunity. But for the PC to effectively put a condition on approval of something and suggest that BVSD needs to build a new school, it is out of our scope.

Randy Caranci, 441 Elk Trail, Lafayette, CO
I have voiced my opinion several times at different types of meetings regarding the redevelopment of Highway 42 which has yet to be funded. The impact on Highway 42 continues

to grow. I am not against development or seeing additional retail business to help support the sales taxes. I hear different conversations with different people and they seem to want to put a spin on Highway 42, which will not happen for a while. There is no projected date for funding. If you look at where Lafayette may bring in their ballfields and soccer fields on Highway 42, they will impact Highway 42 and everything north. It is already a nightmare at morning and evening work commute. Regarding the underpass at Hecla, is the City funding that? The Kestrel developer told me that they were paying 100% of that pedestrian underpass. I want to make sure that is on public record. They are not present tonight to respond.
Robinson says Kestrel is not paying for the underpass, but they are paying for the trail to the underpass. The County is going to provide some funding towards the Hecla underpass as part of a separate agreement we have had for several years. The underpass will require some City funding as well. Boulder County Housing Authority (BCHA) as part of the Kestrel development will build the trail on the west side of the underpass but I don't know the exact amount.
Caranci says the Kestrel developer then basically misled that group. I asked that same question at the public meeting. When somebody says "some" funding, I don't know how much that is. It might be a fraction amount. There are a lot of costs associated with the underpass. The Kestrel development is going to do really well. I am not a big proponent of public housing or BCHA receiving funds from the City of Louisville. They told us at a public meeting with citizens present that they will pay 100% of the underpass. This is my concern and I like to make it part of public record when I can.

Sherry Sommer, 910 S. Palisade Court, Louisville, CO
I want to say a big thank you to Alex Bradley for advocating for our children and our schools. We know there is a huge negative factor in Colorado that schools are woefully underfunded. I have had personal experience with stresses on my family due to crowding in schools. I know that BVSD may have certain guidelines or limits but I think we need to be proactive as a community to protect our children where we can with the tools we have. I respect that the PC may not have all the tools, but I urge you to use whatever tools you can. I have a question regarding the impact fees in the next couple of years. I wonder where the $5 million comes from regarding capital improvements since the impact fees seem to be lagging?
Robinson says every year, the City goes through a budgeting process. As a development comes in, the City looks at it and assesses priorities and allocates funding based on what they feel is important. The way the fiscal model works, it is a purely mathematical project. It is up to CC to decide if they will spend money to maintain the existing level of service.
Sommer says the CC could potentially raise taxes? I think it is important to evaluate the impact fees sooner rather than later.
Robinson says under the State Constitution, any increase in taxes has to go to a vote by the people. They just can't decide to raise taxes. They instituted the use tax a few years ago. If CC decides that is the direction they want to go, they can take something to the public.
Tengler asks for clarification regarding the $5 million deficit in the Capital Projects fund. Has Staff looked at this from the standpoint of the 20 year plan and how that impacted this?
Robinson says the capital is tied directly to when the development comes in and creates new demand on capital facilities. We don't know when it is going to happen. The model shows the residential coming in the first few years because currently, there is high demand for residential. Commercial is mostly spread out over the first 10 years of the development. The operational impacts are cumulative and happen every year. The capital is one time and tied to a specific development.

Cindy Bedell, 662 W Willow Street, Louisville, CO
I want to lend my support to what some other public comments have stated. I have been in attendance through much of the public process. I want to remind the PC that throughout the public process, the input has been loud and clear that the community does not support additional residential beyond what has already been approved in the planned area, especially

high density. I also want to remind you that CC directed Staff to not add more residential, especially high density residential above what was already approved.
Pritchard asks Robinson if Staff was directed by CC to do nothing regarding density issues?
Robinson says CC's direction to Staff was to not change the allowed uses. Staff has looked at where residential was already allowed and to maintain their current zoning allowance of density. We have not added any new residential. There are some places where medium or high density residential was previously allowed.
Moline asks how many additional units are there that were not already planned?
Robinson says approximately 100. There is the Seventh Day Adventist property located at Paschal and Highway 42 zoned residential. The RV storage in the GDP calls for residential. There are some areas that currently have residential on them, but they are underbuilt from what the zoning would allow.

Alexandra Bradley, 1385 Caledonia Circle, Louisville, CO
Glen Segrue's latest BVSD projection, Attachment A, shows an additional residential development potential of 183 units. I assume he got that from the Planning Department which could include Christopher Village which is not built to capacity.

John Nahodyl, 2333 Dogwood Circle, Louisville, CO
My question is directed towards Robinson and has to do with the realignment of North Main Street and Centennial. You stated that CC said we are supposed to drop that. Can you explain that a little more? Does it involve them at North Main? If that property does become available at some future date, would the City be interested in purchasing it to realign North Main Street with Centennial?
Robinson says at a CC meeting last year, it was discussed. The proposal would impact three properties along Main Street. All three property owners were at the meeting and expressed their opposition. They asked CC to remove it from the plan; CC directed Staff to not pursue it further.

Brauneis asks Robinson regarding the concern surrounding the new access to Cottonwood Park, is that one of those "squishy" lines on there?
Robinson says as mentioned in the plan, with the acquisition of the additional land at Cottonwood Park, we are proposing that the Parks Department undertake a public process of the master plan of the entire Cottonwood Park area. As part of that, we recommend they look at:

1. Shifting the existing entrance driveway further east which would help the operation of the Via Appia intersection.
2. Depending on the design of the park, provide additional access off of Via Appia.

We don't want to get into designing the Park at this stage. When and if it is redesigned and redeveloped, there could be benefits to having an additional access off of Via Appia. We are recommending a full robust public process to look at the future of the whole Cottonwood Park development.

Moline says there were great comments from the public that prompt a couple of questions. Regarding the Highway 42 Plan and my experience with that plan, I don't know that its primary purpose is trying to move traffic quicker through the corridor. Do you want to comment on that?
Robinson says there were some trade-offs when we went through that planning process. We (the community) decided some of the design and character elements would outweigh what would move the most traffic. If we are just looking at moving traffic, it would be turning it into two lanes in each direction. It would involve significant takings on both sides of the road. We said we want to create a sort-of front door for the community. There are some places where we are willing to make a trade-off so it might be a little slower going through. We are actually proposing dropping the speed limit from the present 40 mph to 35 mph. It would have additional community benefits and would make it easier for pedestrians to cross and more pleasant to bike or walk. Based on the projections in the plan, it actually does reduce travel time through the

corridor slightly. It should, in theory, help people move through the corridor, but its primary purpose was not to move as much traffic as fast as possible.

Moline says if we look at page 29, and the traffic impacts and minutes, I heard somebody say that those times are in excess of the travel times now. However, that is not my reading of that graphic.
Robinson says it shows how long on average it would take you to drive through the corridor during those peak hours. I think what John Leary mentioned is that it is based on existing traffic volume plus projected volume from development in the corridor. At this stage, we did not look at what the existing 2035 traffic volumes would be and then additional traffic. When we did this modeling, it was to compare the alternatives. We tried to get some sense of what the impacts would be from the one story, two story, and three story alternatives, so we used existing traffic. If you are interested, we can go back to our traffic consultant and have them use the 2035 numbers since we have numbers expected along South Boulder Road in 2035. I am not sure what the change would be because additional build out is already assumed in their model.
Moline says I think John raises good point. For the future draft of the plan, it might be interesting to see what is projected out into the future. If the numbers are available, we might get them and plug them into the plan. As a reminder, the Comp Plan told us that the road carries a lot of through traffic. We are buffeted by the winds of what is happening to the east.
Brauneis says regarding John's comment about once you hit a certain saturation level, then you are in the "muck". Where, if, when, and would that be?
Robinson says to a certain extent, any future congestion on the road is going to come no matter what we do in the corridor. It carries regional traffic.

Closed Public Hearing and discussion by Commission:
Pritchard reminds PC that Staff has a few items they want PC to look at and comment on such as the Santilli open space acquisition and the Cannon Circle/South Boulder Road stoplight.
Brauneis says starting at the macro level of the document, this is something that has been worked on heavily over the last 1.5 years. In a lot of ways, it reflects a lot of what people have expressed as a community. We are being pulled and stretched in different directions about what we really value as a community. I am excited to see it move forward. I expect there will be a different level of scrutiny at CC. While I am personally comfortable at this point in time, I expect there will be more questions to come in the process. As far as the two specific issues, on the potential for open space property acquisition, if and when it becomes available, it is a natural for open space. When you look at that piece of property, it doesn't offer huge commercial potential. I would leave it to the Open Space Advisory Board (OSAB) to evaluate it as time progresses. Regarding the additional signal at Cannon, I don't understand the dynamics surrounding it. Typically, I come out in favor of safety so if it makes sense at that spot, I'd want to hear more about it.
Hsu says I echo what Commission Brauneis said about the macroscopic view. Looking through this plan, it has a lot of principles and was easy to read. It is nice to see the ideas out there and it reflects the work Staff put into it. As far as the specific issues, with the traffic signal, I lean toward punting and deferring that decision because we can always add that later. I am ambivalent about that much like Staff is. As a driver, I'd like to get through more quickly. I don't like having a light every block because it's frustrating. I do see that without that light, it is hard to cross north and south of South Boulder Road. It may alleviate some of the traffic on Highway 42. Since we can always add it later, I lean toward deferring it and not putting in a traffic signal if we don't have to. As far as Open Space, I defer to OSAB and Parks. Personally, I like the idea of having more open space, especially since we are considering more development in the rest of the region. The property is far away from everything else. Lastly, we talked about getting more numbers on costs. I have a question for the PC. Do we consider this, because it sounds like more of a CC thing to consider? Does the PC generally consider costs as far as land use?

Brauneis says typically the PC hears those numbers so it is a missing part of the equation for all of us. My hunch is the cost numbers, especially given in ranges and knowing they are pushed out possibly 20 years, are what we are focused on in the plan. We probably differ on how uncomfortable we are without having those numbers at this point in time.
Hsu says then I'd like to see the costs at the next meeting and a breakdown of them.
Tengler says I too am impressed with the overall plan. I think Staff did a great job incorporating a lot of the public feedback that has happened over the last year and a half. There were a lot of very relevant and great points made in the public comments. I think John Leary's point was good and realize that the drawings are very speculative in showing what could happen. When I looked at the King Soopers proposed drawing, I thought "where do the cars go"? As much as I am in favor of more walkability and a safer environment, the King Soopers parking lot and the old Safeway parking lot are/were hazardous. They are tough to navigate as a pedestrian. I like the thought, but I question how feasible it is. Regarding the comments on the school enrollment, Alex, I wish we had better tools at our disposal. Maybe we build that in from the standpoint of passing whatever vote we put along to CC with the recommendation that they strongly consider it. It is not in our purview to make it a condition but we can certainly give some guidance to CC in terms of what we think. Again, I am sympathetic to your point of view and wish we had some stronger tools. As to the specific questions from Staff, my inclination is to turn the Santilli property into open space. It doesn't seem like a great spot for commercial stuck between the agriculture there now and the residential on the Lafayette side. Let's add it to the buffer we have. As to the traffic light at Cannon, my sense is that it will add a little bit of delay to the northbound traffic at certain points in the day, specifically at the evening rush hour. By and large, it is a safety issue and it seems to be a relatively minor inconvenience for anybody turning in there or making a right hand turn out of there. It will provide better access for future residents in that area. I am with Commissioner Hsu in terms of the financial analysis. I would like to see more "fine" prioritization rather than 1 to 5 or 6 to 10. There are bunch of things in 1 to 5, so is there a way we can characterize that in terms of fiscal impact as well as the priority within that? I realize it is a heavy ask at this stage. Is it feasible to do a 1, 2, and 3?
Robinson says yes, we can look at the top priorities. It always comes down to getting funding from CC. The dates and years are intended to be guides for when they go into the CIP requests. If there are things you want to see moved up, let us know. If you think there are things that are priorities, we can try to highlight those. We can look at breaking 1 to 5 into a finer grain.
Tengler says, specifically to the question I asked previously about where those big chunks of capital occur, is it feasible to also look and see where the big bumps would be based on the current prioritization?
Robinson says yes.
Rice says I want to express a concern I have about this plan, and then also reflect on some of the discussion we have had tonight. Echoing what others have said, overall I think it is an excellent plan and is very well done. I think the process we have gone through to develop this plan has been a really good one in terms of trying to get the community involved in the discussion as opposed to the Planning Department coming up with a proposal for all of this. I am impressed with that. First my concern is not having the economic issues fully on the table before us. One of the key components of this plan is the public improvements being suggested. We are not saying we are going to do these things. We are saying, if we can build a plan, these are the kinds of things we'd like to do. For example, and it has been stated by more than one person tonight, one of the key issues the public has expressed is the connectivity across South Boulder Road. To me, looming large is the ability to develop the underpass at Cottonwood Park. To me, if we are going to pass a plan down the line, we ought to know the dollars and cents associated with it. I myself would be in favor of deferring this discussion to approve the plan until we have those numbers. If that is not possible, I would say that CC is the next step in the line. We need to know in terms of planning what it is we are proposing and how much it will cost the community. We then need to know how that plays into the fiscal impact we see from development in this area. This plan does not add to the density and that is a very important

concept. We are not approving a plan that will add to density. As Robinson has said, this plan is based upon the existing ability of people to build on these properties. As I pointed out when I was asking questions, in large measure, the residential increase has already been approved through the planning process. We are not approving a plan that will add, in any significant way, to the density of what exists in this particular area. With regard to the school issue, I am at a loss. Every time the PC approves a development plan, we get feedback from BVSD. It is one of the key things we solicit. Time and again, when I see the proposals come through, BVSD says they can serve and it will have minimal impact. I don't know what else to say besides the fact that we have to defer to those people on their ability to decide how the schools could be operated. It is over my head to be able to tell them how to run the school district. I think it is important to know that we don't look past that and we don't ignore it. In fact, it is something that is given due consideration in every case. Lastly, it is also key to understand that this is not a development plan. We are not telling someone what to develop or when to develop it or how much to develop. We are simply trying to give an overall addition to the Comp Plan in terms of this particular area and how we would like to see it built out. With regard to the issue of the traffic signal, to me that is a feasibility issue. We will have to rely upon people who are expert in the area. The information we have now suggests that if you add that intersection being called Kaylix (to the north) but it Cannon (to the south), at peak time there is an 11 second difference in the morning and a 29 second difference in the afternoon. As I pointed out, in the westbound direction, it is actually faster. I found that hard to believe but apparently, the experts tell us it is faster if you put in the Kaylix light. In the evening, it is 14 seconds additional time. If those numbers are accurate, this is feasible and reasonable to me. We started this process a long time ago. Nobody wants traffic jams and we have to be careful about it. I think we are using due care. On the open space, I can only echo that it seems to be logical open space. If it is economically feasible to acquire the land, I would support that.

Moline says I don't have too much to add based on what my fellow commissioners have said. I thank the public for coming out and speaking on these issues. I have one minor thing. On page 12 of the plan, there are some maps. In some of the maps, they show significant pressure for development and some of those properties are open space. I think it is the value of the land and very little improvement on them. They show as very threatened. I think it would be important to get that corrected so the public understands it. Related to that, some of the maps are not to scale. When they are to scale, I would recommend against using verbal scales when they are on the web. At that point, people are zooming in and zooming out. A 1"= 400' doesn't mean as much as a graphic scale. I am someone who has lived and traveled in this corridor for 20 years, almost every day. This is one area of town that I think I know well. One thing that I asked the city to look at, and I would like to keep it on the table, is dealing with storm water on South Boulder Road. It is being conveyed in curbs in some portions of the corridor. I wonder if there is the potential of undergrounding it. One of the intersections I use almost every day is Centennial and South Boulder Road (next to Alfalfa's). Partly because of storm water issues, as you approach the intersection, you head down the hill that leads you into the intersection. It prevents the most optimal traffic flow in that intersection and it is worsened when you have ice and snow. I hope it can be looked at from a public works transportation perspective. I feel the plan's design guidelines and design policies are things that would be great enhancements for this corridor. It needs to make those connections. We have really good open space and park resources on the periphery of this corridor. I appreciate that the plan attempts to improve the trail connectivity of places between Cottonwood Park, Steel Ranch Parks, Hecla, Waneka, and Harney. In this part of town, those are great resources as people mentioned. By virtue of the plan, enhancing those connections to those areas makes it a better plan. I like the schematics about what is proposed at the King Soopers site. I like that kind of look for future redevelopment of that area. The new mall in Longmont (The Village at Twin Peaks) offers a model and reflects some of what we are proposing tonight. I think it works. I do have the concerns about the parking.

Pritchard says I am supportive of the process. We have come a long way and there are a few areas we need to tighten up such as the cost analysis. It would give us more clarity. When it

comes to traffic flow, we need to look at the 2035 data and see if we are making the right judgement calls. In regard to the signals, if it is warranted by CDOT, I will not argue with them.
Robinson says that South Boulder Road is a local road, so it is entirely up to the City. If we adjust timing, we would work with CDOT since Highway 42 is their road.
Pritchard says we also need to consider costs and make sure the development will help us pay for the additional lights if warranted. Regarding trail connectivity, who in this town is against that? Anything we can do to make these connections is beneficial. It needs to be incorporated into this plan. The issue with the school is an ongoing issue. I defer to BVSD because they are aware of what we are attempting to do. They say they can accommodate the student loads. As a city, we are aware of this. CC has complained to BVSD about this so it is an ongoing argument. Regarding open space, if the property comes up and we have the capacity to buy it, then great. If the property owner comes forward, I don't believe we should change the zoning but do as staff proposes and leave it. I would like to see the numbers and would feel more comfortable since we have gone this far. I think we should go the whole way and give something to CC that they can truly look at, and feel that CC has all the necessary information to move forward.
Brauneis asks if Staff will have the cost analysis numbers before presentation at CC?
Robinson says yes. We apologize that they were not ready tonight. We are working on them currently with Parks and Public Works. Staff should have them by the end of February. When we were doing tentative scheduling, we assumed two meetings with PC before CC presentation. We intend to have the numbers for the PC March meeting.
Rice says can we roll this over until March meeting to approve the plan? Will that change the schedule?
Robinson says yes.
Tengler asks if these traffic studies are beginning to incorporate the potential for driverless cars? If you believe the more aggressive estimates, you could start seeing them in as few of 5 years. Within 20 years, you will certainly see an impact.
Robinson says no. We have talked a little about it the design aspect. One of the advantages of this compartmentalized parking is that parking demand could decrease significantly because of automatic cars. It allows for the development of these parcels. We are not necessarily projecting or totally anticipating at this point. I can follow up with the traffic consultant. We want to keep the plan flexible so that changes or unforeseen changes can be accommodated.
Pritchard says my impression is that the PC would like to continue this matter until March. Other issues such as the "yellow" lines that are difficult to see can be corrected. I want a clean plan going to CC. I would like to continue this matter to the March meeting.

Motion made by **Tengler** to continue the South Boulder Road Small Area Plan, Series 2016, seconded by **Rice**. Motion passed by unanimous voice vote.

City of Louisville
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Planning Commission

Meeting Minutes

March 10, 2016
City Hall, Council Chambers
749 Main Street
6:30 PM

Call to Order: **Pritchard** called the meeting to order at 6:30 PM.

Roll Call was taken and the following members were present:

Commission Members Present:	Chris Pritchard, Chairman Cary Tengler, Vice Chairman Ann O'Connell, Secretary Steve Brauneis Jeff Moline Tom Rice David Hsu
Commission Members Absent:	All Present
Staff Members Present:	Aaron DeJong, Director of Economic Development Scott Robinson, Planner II

Approval of Agenda:
Brauneis moved and **Tengler** seconded a motion to approve the March 10, 2016 agenda. Motion passed by voice vote.

Approval of Minutes:
Moline moved and **Brauneis** seconded to approve the February 11, 2016 minutes. Ann O'Connell abstains due to excused absence. Motion passed by voice vote.

Public Comments: Items not on the Agenda
None.

Regular Business:

- **South Boulder Road Small Area Plan: Resolution 5, Series 2016.** A request to review a draft copy of the South Boulder Road Small Area Plan. *Continued from February 11, 2016.*
  - Staff Member: Scott Robinson, Planner II

Robinson presents. This was originally heard at the February 11, 2016 meeting and continued to tonight to provide more information. Some of the maps have been adjusted to make them more readable. Some typos were pointed out and have been corrected. There were questions about traffic impact and what the traffic would be in comparison to the 2035 projected traffic. I

spoke with Curtis Rowe, our traffic consultant with Kimley Horn. When DRCOG does the 2035 does traffic projections, it is based on build out. The numbers they are projecting are very similar to what DRCOG was projecting; it is slightly higher. The traffic will be driven by the development in the community. There will be some cut-through traffic, and it will reach a point when it will stop increasing because there will be better alternatives such as Baseline, Highway 7, and Dillon Road to avoid this area. The build out numbers and the traffic projections in analysis are felt to be accurate for the 2035 projection. There was a question about storm water conveyance along South Boulder Road which is currently conveyed in the gutter. There are no underground storm pipes. The Public Works Department says they do not have this in their future plans. If they hear complaints about the amount of water, it will be discussed. It is not easy to tear up a street to install underground pipes.

Cost Estimates for the major infrastructure items and some other things in broad ranges will be rough estimates because they are designed yet. There are no accurate costs at this point. We are looking at some of these not being built for 5 or 10+ years. The cost estimates tables are located in the South Boulder Road Small Area Plan page 31.

There are four categories:

$	Less than $100,000
$$	Between $100,000 and $500,000
$$$	Between $500,000 and $1 million
$$$$	More than $1 million

Rice says you point out that you are using these categories, using dollar signs similar to Yelp. The last category is more than $1 million, which is $1 million to infinity. From what I have heard from people and their desires for the South Boulder Road corridor, the interconnectivity between the north and south, east and west, is key in making this improvement move people around. The underpasses are really important. Three of the principal underpasses, Highway 42, Bullhead Gulch, and Cottonwood Park are $$$$. What does an underpass cost?
Robinson says $1.5 million. The McCaslin Underpass cost $1.5 million.
Rice says hasn't Bullhead Gulch already been funded?
Robinson says partially. When Steel Ranch went in, they provided some funding. A large portion of funding will come from the storm water management enterprise fund because there is a storm water connection going through there.
Rice asks about Highway 42 underpass. Does that have a funding source?
Robinson says partially. We have an agreement with Boulder County that they will provide some funding.
Rice says I understand that the Cottonwood Park underpass has no funding at present.
Robinson says yes.
Rice says on the third page of the Cost Analysis, there is roadway improvements at Highway 42 (north and south) in accordance with the Gateway Plan. It has $$$$. What is the magnitude?
Robinson says the last time cost estimates were done for the full plan, it was in the $12-15 million range.
Rice says that is shown as a 1-5 year schedule. Will it be done in multiple phases?
Robinson says that project will be done in phases. We have federal money lined up. We have started work with CDOT on improvements at Short Street intersection. There is more money from the County to be used as well. I don't expect it to be done in five years, but we are starting this year. It will probably span 1-10 years.

Pritchard says I have concern about something brought up at the BRAD meeting about the elimination of the right hand turn lane going onto Main Street.

Robinson says Staff went back and looked at it. There is a discrepancy between what the drawings show and what the text describes. On page 24 of the South Boulder Road Small Area Plan, looking at the Main Street intersection sketch, we would keep the dedicated right turn lane and put in a pedestrian island (pork chop) to allow the right turn and bring pedestrians out. It is similar to McCaslin and Dillon. I would recommend modifying the language in the Main Street Improvements by Intersection from: Remove eastbound right-turn lane on South Boulder Road and improve geometrics of northbound Main Street right turn. Modify westbound South Boulder Road left-turn lane to create offset configuration and provide pedestrian refuge. To: Add pedestrian island at eastbound right-turn lane on South Boulder Road and improve geometrics of northbound Main Street right turn. Modify westbound South Boulder Road left-turn lane to create offset configuration and provide pedestrian refuge.

Hsu asks about possible traffic signal at Kaylix and Cannon. Is Staff still looking for input?
Robinson says, based on the discussion at the last meeting, the plan is to leave it in there as a possibility to be considered when development occurs. It is not in the plan recommending to "do it or not do it".
Pritchard says a light at Cannon and the existing light at Highway 42 would be tight. It could cause more problems that we might solve. I am comfortable with this document.

Motion made by **Hsu** to approve **South Boulder Road Small Area Plan**, **Resolution No. 5, Series 2016**: a resolution recommending approval of the South Boulder Road Small Area Plan, seconded by **Rice**. Roll call vote.

Name	Vote
Chris Pritchard	Yes
Cary Tengler	Yes
Ann O'Connell	Yes
Jeff Moline	Yes
Steve Brauneis	Yes
Tom Rice	Yes
David Hsu	Yes
Motion passed/failed:	Pass

Motion passes 7-0.

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SMALL AREA PLAN | VIA APPIA TO CITY LIMITS

City Council

April 5, 2016

City of Louisville
COLORADO • SINCE 1878

What is a Small Area Plan?

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What is a Small Area Plan?

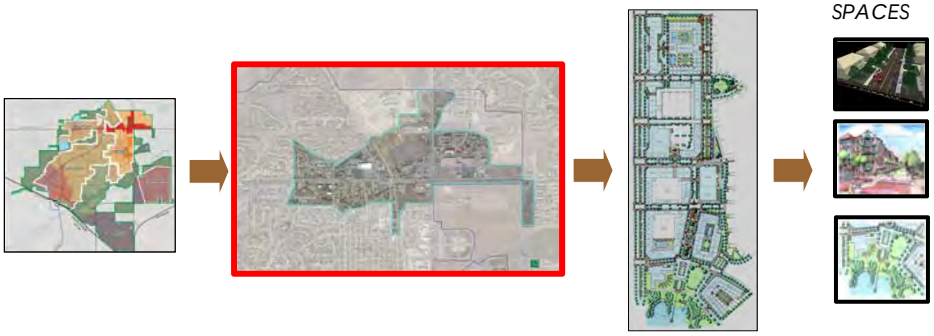
1st Step to Implementing the Comprehensive Plan

COMPREHENSIVE PLAN

SMALL AREA & NEIGHBORHOOD PLANS

ZONINNG & DESIGN GUIDELINES

STREETS, BUIDINGS, & PUBLIC SPACES



Policy → Town Building → **Place**

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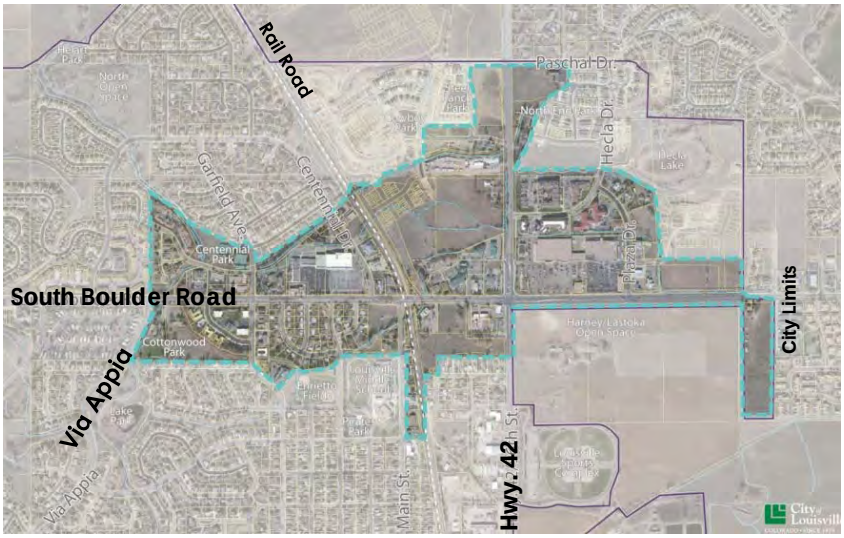
Study Area



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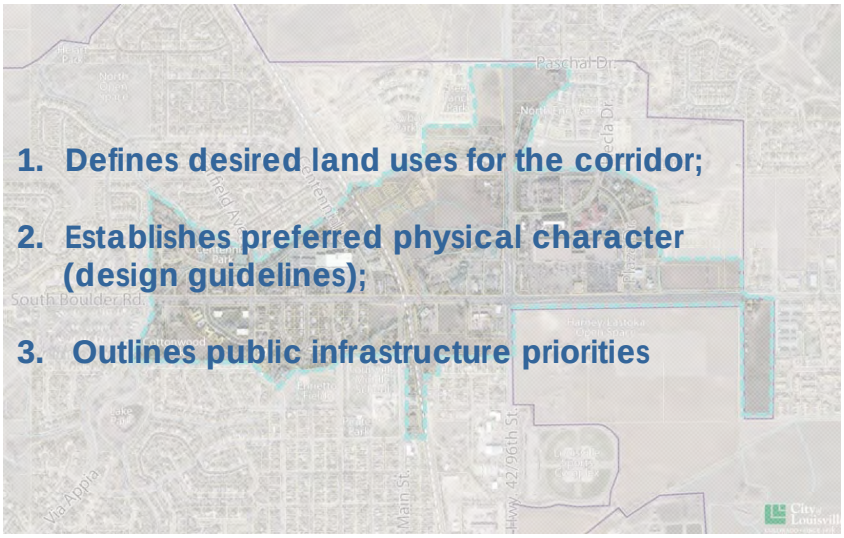
Study Area



1. Defines desired land uses for the corridor;
2. Establishes preferred physical character (design guidelines);
3. Outlines public infrastructure priorities

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Project Schedule

- October 2014 – Kick-off Meeting
- January 2015 – Walkability Audit/Placemaking Workshop #1
- February 2015 – Placemaking Workshop #2
- November 2015 – Placemaking Workshop #3

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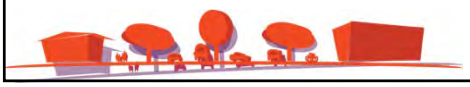
Workshop 3

- Development scenarios
  - 1 story
  - 2 story
  - 3 story
- Urban design elements
- Roadway improvements



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Plan Outline

- Introduction
- Process
- Context
- Principles
- The Plan
- Implementation

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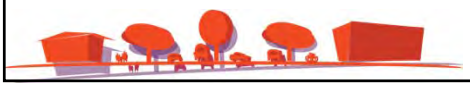
Project Principles

1. Provide for safer and more convenient connections across South Boulder Road and Highway 42 for bikes and pedestrians.
2. Utilize policy and design to encourage desired uses to locate in the corridor.
3. Establish design regulations to ensure development closely reflects the community's vision for the corridor while accommodating creativity in design.
4. Mitigate impacts of trains and improve safety of railroad crossings.
5. Balance the regional traffic needs of South Boulder Road and Highway 42 with the community's desire for safety and accessibility.
6. Provide for community gathering spaces and public infrastructure to encourage visitors to spend time in the corridor.



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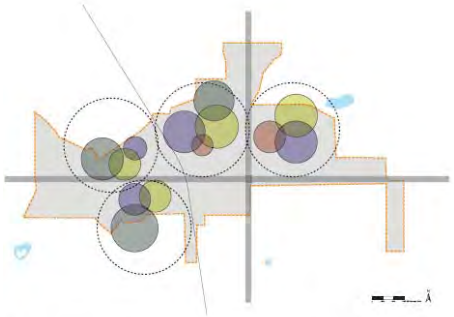
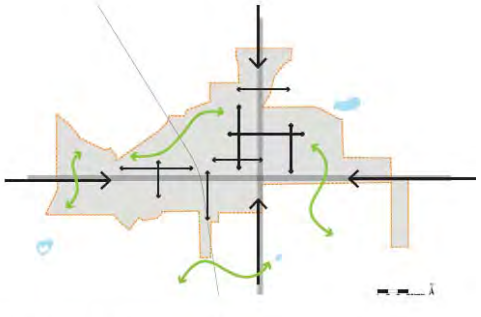
Community Design Principles





Go to and Stay at Places

Public spaces that encourage gathering and interaction

A range of retail and entertainment uses that encourage longer visits

Small parks and plazas that increase the appeal and experience of daily activities.

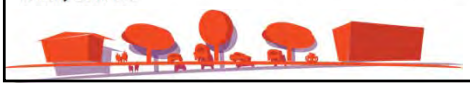
Easy to get to, easy to get around

Safe grade separated trail connections to all quadrants

Properties connected with driveways and walks

A street network that offers balanced choices to move around

Opportunities to "park once and walk"



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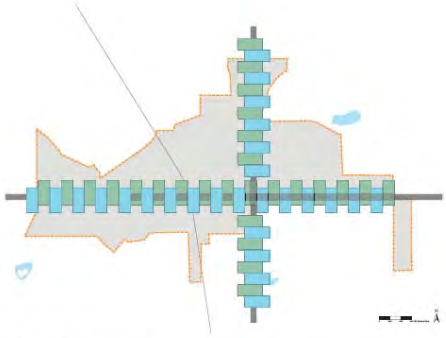
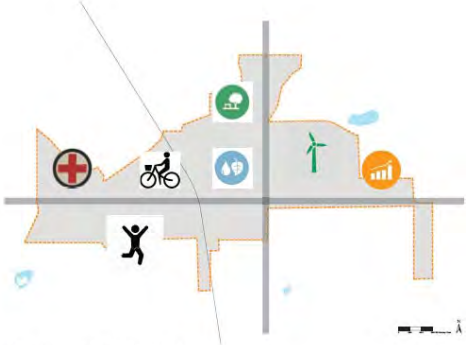
Community Design Principles





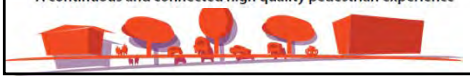
A Zipper, not a barrier

Sidewalks and plazas facing onto South Boulder Road

Safe intersections that allow people to cross South Boulder Road and 42

Traffic flow / speed that is not detrimental to businesses or people along the corridor

A continuous and connected high quality pedestrian experience



Development that Contributes

To be defined by the community

Greenspaces

Housing Choices

New trail connections

Semi-public gathering spaces

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Placemaking Concepts

Transitional Streets

Pedestrian Refuges

Views into the Community

Parking Rooms

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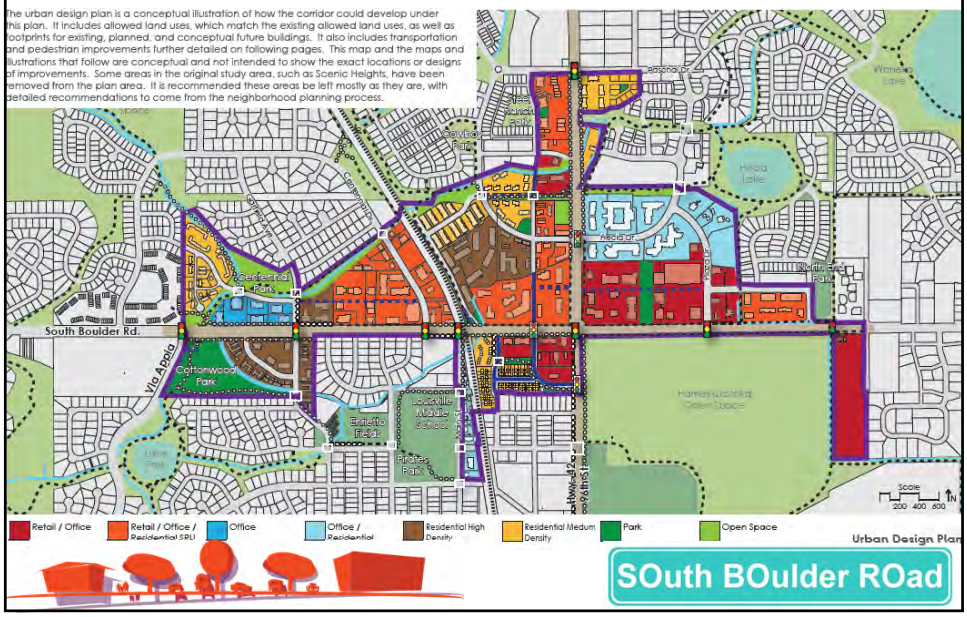
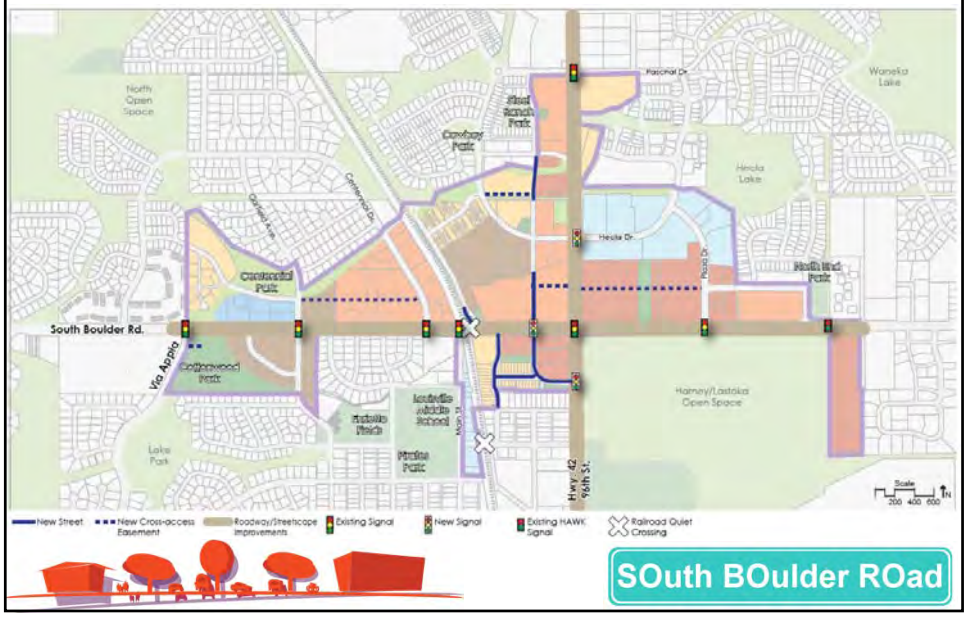
Urban Design Plan

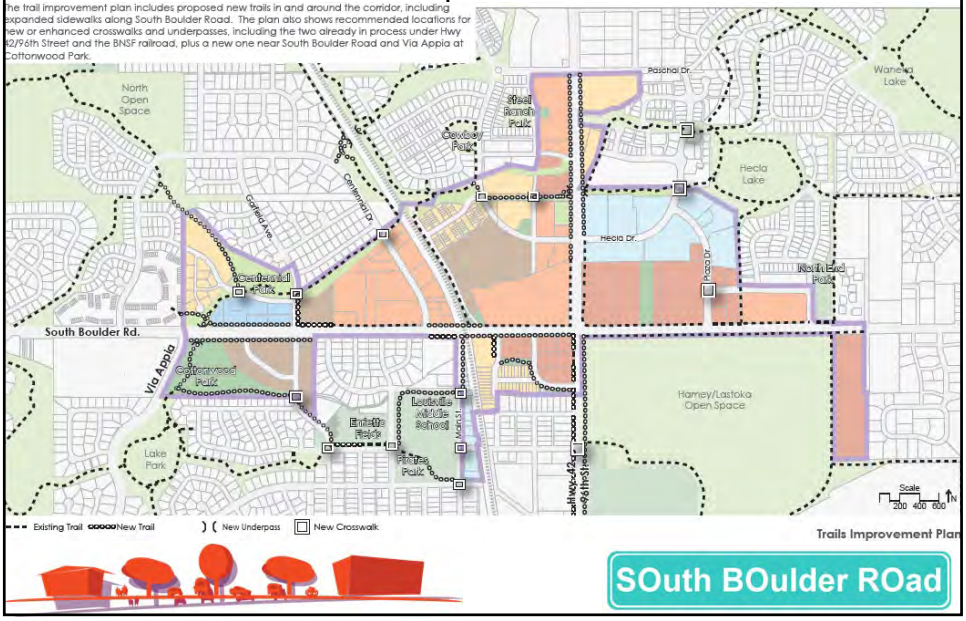


Street Improvements



Trail Improvements

The trail improvement plan includes proposed new trails in and around the corridor, including expanded sidewalks along South Boulder Road. The plan also shows recommended locations for new or enhanced crosswalks and underpasses, including the two already in process under Hwy 42/96th Street and the BNSF railroad, plus a new one near South Boulder Road and Via Appia at Cottonwood Park.



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Roadway Improvements

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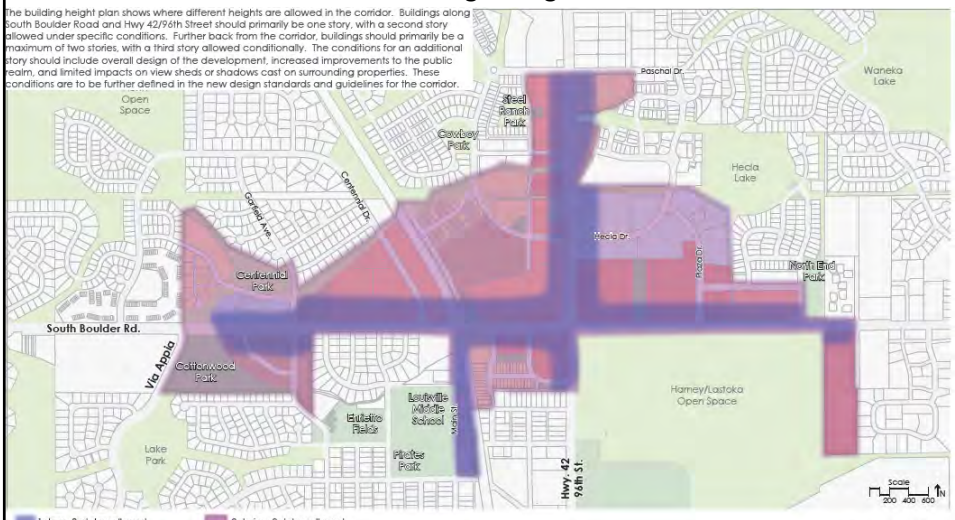
Building Heights

The building height plan shows where different heights are allowed in the corridor. Buildings along South Boulder Road and Hwy 42/96th Street should primarily be one story, with a second story allowed under specific conditions. Further back from the corridor, buildings should primarily be a maximum of two stories, with a third story allowed conditionally. The conditions for an additional story should include overall design of the development, increased improvements to the public realm, and limited impacts on view sheds or shadows cast on surrounding properties. These conditions are to be further defined in the new design standards and guidelines for the corridor.



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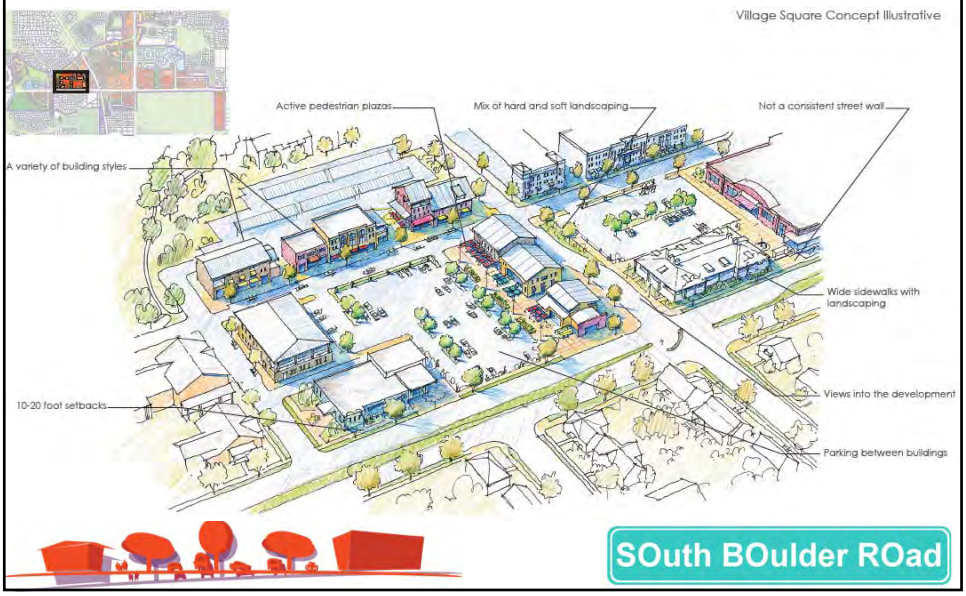
Urban Design Elements



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Urban Design Elements

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Fiscal Impact

Existing Development in Study Area		
Retail	352,729	Square feet
Office	178,608	Square feet
Residential	407	Units
Employees	1,682	People
Residents	569	People

Projected 20 year Increase over Existing		
Retail	26,931	Square feet
Office	374,298	Square feet
Residential	546	Units
Employees	1,658	People
Residents	724	People

20 Year Cumulative Fiscal Impact	
Revenue by Fund	
General Fund	$34,171,000
Urban Revitalization District Fund	$4,461,000
Open Space & Parks Fund	$6,117,000
Lottery Fund	$0
Historic Preservation Fund	$2,166,000
Capital Pojects Fund	$20,081,000
TOTAL REVENUE	$66,966,000
Expenditures by Fund	
General Fund	$28,303,000
Urban Revitalization District Fund	$0
Open Space & Parks Fund	$923,000
Lottery Fund	$0
Historic Preservation Fund	$0
Capital Projects Fund	$25,033,000
TOTAL EXPENDITURES	$54,259,000
Net Fiscal Result by Fund	
General Fund	$5,868,000
Urban Revitalization District Fund	$4,461,000
Open Space & Parks Fund	$5,193,000
Lottery Fund	$0
Historic Preservation Fund	$2,166,000
Capital Projects Fund	($4,952,000)
NET FISCAL IMPACT	$12,736,000

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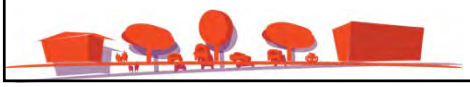
Implementation

- Draft and adopt design standards and guidelines
- Timeline
- Cost estimates given in ranges



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Rezoning

Rezonings should only be considered if:

- The land to be rezoned was zoned in error and is inconsistent with the Comprehensive Plan
- The area is changing and it is in the public interest to encourage redevelopment
- Necessary to provide land for a community-related use

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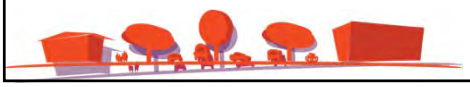
Special Review Use

- Consistent with spirit and intent of Comp Plan, not contrary to general welfare of City and neighborhood
- Lend economic stability compatible with character of surrounding area
- Internal efficiency for residents, recreation, public access, safety, utilities, and other factors related to public health and convenience
- External effects including traffic, nuisances, litter, and other effects on public health, welfare, safety and convenience
- Adequate pedestrian facilities to prevent use vehicular ways



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Proposed Height Criteria

- Overall design
- Enhancements to public realm
- Limited impacts on views from surrounding properties
- Limited impacts of shadows on surrounding properties

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CITY COUNCIL COMMUNICATION
AGENDA ITEM 8D

SUBJECT: **BIENNIAL BUDGET PROCESS AND FIRST REVIEW/DIRECTION ON 2017/2018 CONTRIBUTING PROJECTS**

DATE: **APRIL 5, 2016**

PRESENTED BY: **MALCOLM FLEMING, CITY MANAGER**
KEVIN WATSON, FINANCE DIRECTOR

SUMMARY:
This item is intended to solicit Council comments and direction on (1) staff's plans for implementing a biennial (2-year) budget, starting with the 2017-2018 Budget, and (2) the potential 2017-2018 Contributing Projects that Departments are considering as we work to develop the 2017-2018 budget for Council's consideration in September/October..

Biennial Budget.
As noted above, and based on previous Council direction staff will be implementing a biennial budget starting with the 2017-2018 budget. As noted in previous meetings, the City Charter requires an annual budget. To comply with the City Charter and still implement a biennial budget, staff will prepare a proposed two-year (2017-2018) budget for Council consideration this year with the expectation that Council will adopt the 2017 budget in November, and then next year, consider just a few significant changes that will be necessary before adopting the updated 2018 budget.

Potential Contributing Projects.
The attached summary table lists the potential Contributing Projects that Departments are considering requesting funding for as part of the 2017-2018 budget. This is a preliminary list intended for discussion. There will not likely be sufficient financial resources or staff capacity to successfully implement all these actions. Furthermore, Council may have other priorities in mind. Accordingly, it will be very helpful for Council to review this preliminary list and provide staff with direction on which of the preliminary contributing projects listed should be the highest priorities in the 2017-2018 budget, which to consider as low priorities, and what projects Council would like to see added to the list for consideration as part of the 2017-2018 budget process.

RECOMMENDATION:
Discussion and direction on the 2017-2018 potential contributing projects.

ATTACHMENTS:
1. City of Louisville Programs, Sub-Programs, and 2017-2018 Potential Contributing Projects

City of Louisville Programs, Sub-Programs, and 2017-2018 Potential Contributing Projects

Programs	Sub-Programs	2017 Potential Contributing Projects	2018 Potential Contributing Projects
Transportation	Planning and Engineering	1. Improve pavement management system capability to illustrate trends, annual plans, and other key factors. 2. Fine tune pavement management system to ensure reliability. 3. Begin using Project Module in IAN. 4. Configure Lucity reporting for effective Metrics. 5. Continue implementing 5-Year CIP 6. Continue implementing Hwy 42 Plan 7. Develop prioritized list and action plan for Small Area Plan transportation improvements	1. Continue implementing 5 Year CIP. 2. Continue implementing Hwy 42 Plan 3. Start implementing action plan for Small Area Plan transportation improvements
	Transportation Infrastructure Maintenance	1. Continue progress toward no streets below OCI 35. 2. Complete Steele Ranch BNSF Underpass Design. 3. Complete Kestrel Hwy 42 Underpass Design. 4. Design RR Quiet Zones.	1. Continue progress toward no streets below OCI 35. 2. Continue funding plan for 2019 Steele Ranch BNSF Underpass Construction. 3. Complete Kestrel Hwy 42 Underpass Construction. 4. Construct Railroad Quiet Zones.
	Streetscapes	Review downtown brickwork and submit CIP for 2018.	1. Finish downtown brickwork rehabilitation. 2. Develop streetscapes priority list
	Snow & Ice Removal	1. Improve GPS visualization and tracking metric capabilities. 2.Begin working towards in truck status and location systems.	Complete in truck status and location systems.
Utilities	Water	1. Complete major portions of downtown water distribution system rehabilitation. 2. Evaluate Utility Financials.	1. Complete major portions of downtown water distribution system rehabilitation. 2. Evaluate Utility Financials.
	Wastewater	1. Complete major portions of downtown sewer collection system rehabilitation. 2. Evaluate Utility Financials.	1. Complete major portions of downtown sewer collection system rehabilitation. 2. Evaluate Utility Financials.
	Stormwater	1. Implement Citywide Drainage maintenance projects. 2. Improve Operations Stormwater Maintenance Practices. 3. Evaluate Utility Financials.	1. Implement Citywide Drainage maintenance projects. 2. Evaluate Utility Financials.
	Solid Waste, Recycling and Composting	1. Begin implementation of any Citizen Survey results regarding waste diversion opportunities. 2. Develop ongoing outreach information program.	Prepare, issue, and complete RFP process for Single Hauler Waste Collection contract to renew 1st Qtr 2019.

City of Louisville Programs, Sub-Programs, and 2017-2018 Potential Contributing Projects			
Programs	**Sub-Programs**	**2017 Potential Contributing Projects**	**2018 Potential Contributing Projects**
Public Safety & Justice	Patrol and Investigation	1. Improve case clearance rate from 2016. 2. Provide Procedural Justice Training to all Department Staff. 3. Establish Neighborhood Watch type program with initial implementation in a few neighborhoods. 4. Select and begin implementing Police Records Management system	1. Continue to improve clearance rate from 2017. 2. Continue implementation of Neighborhood Watch type program in additional neighborhoods. 3. Develop plan to address false alarms. 4. Finish transition to new Records Management system
	Code Enforcement	1. Adopt (and follow) standards for Code Enforcement officer initiated activity to ensure that CE is balancing proactive and reactive service. 2. Measure and address repeat violations. 3. Provide outreach to neighborhood and civic groups on the municipal code. 4. Continue coordination with Open Space & Parks Ranger	1. Develop informational brochure/handouts for citizens on how to comply with code. 2. Work with Director of Planning and Building Safety to assess need for additional Code Enforcement staff/shared responsibilities. 3. Continue outreach with neighborhood and civic groups. 4. Assess any needed code changes. 5. Continue coordination with Open Space & Parks Ranger
	Municipal Court	1. Continue actions to increase collaboration between staff in Court and PD 2. Coordinate selection of new Court software with Police Records Management system	Complete transition to coordinated Court and Police Records Management system.

City of Louisville Programs, Sub-Programs, and 2017-2018 Potential Contributing Projects

Programs	Sub-Programs	2017 Potential Contributing Projects	2018 Potential Contributing Projects
Parks	Parks	1. Continue accessing and addressing park, playground and restroom deficiencies. 2. Coordinate wayfinding with Open Space and Trails. 3. Eradicate List A noxious weeds in parks and rights-of-way.	1. Prioritize and implement irrigation replacement in most inefficient parks 2.Continue wayfinding implementation 3.Improve and upgrade tennis courts and sports fields 4. Evaluate and replace a minimum of one playground that does not meet safety or ADA standards 4.Eradicate List A noxious weeds in park and rights-of-way.
	Forestry	Implement public outreach and educational programs on the importance and value of trees of trees in Louisville, and providing information on care, species selection, diseases, proper planting, pruning and removal.	1. Inventory and evaluate health and condition of the City's urban forests 2. Prune trees for health and safety concerns. Remove hazard trees 3.Continue to monitor and take appropriate action on tree disease and especially Emerald Ash Borer (EAB). 4. Continue consultations with residents and local businesses. 5. Coordinate on Streetscapes priority list.
	Horticulture	Develop a priority list and action plan for replacing plant material that is in decline on City property and implement that plan.	1. Evaluate contactor's performance on annual downtown flower planting/care to ensure efficiency and meets community expectations; determine if modifications and/or expansion to other areas in City should be considered in 2019. 2.Make progress on action plan to remove, replace and enhance plant material that is in decline on City property. 3. Coordinate on Streetscape priority list.
	Cemetery	1. Continue actively marketing cemetery plots that are difficult to attract buyers because of location or other factors. 2. Improve the Cemetery's wayfinding programs so loved ones can better locate the final resting place of their dearly departed.	1. Improve on-sight equipment storage. 2. Determine if cemetery master plan update is necessary. 3. Continue to market the cemetery keeping abreast of trends that continue to impact municipal cemeteries. 4. Eradicate List A noxious weeds.
Open Space & Trails	Acquisition	Offer right of 1st refusal on open space properties the City has identified as high priority acquisitions for open space.	Purchase or obtain right of 1st refusal for high priority open space properties assuming willing sellers.
	Maintenance and Management	1. Coordinate wayfinding with Parks. 2. Eradicate List A noxious weeds. 3. Implement one (1) prescribed burn on open space.	1. Continue to implement wayfinding program for open space and trails. 2. Eradicate List A noxious weeds. 3. Use experience from 2017 to conduct another prescribed burn on open space.
	Education and Outreach	1. Continue education and outreach programs. 2. Recommend Code updates that will give the Ranger/Naturalists ability to issue citations to perpetrators who violate parks and open space rules and regulations.	1. Evaluate and make adjustment to the Ranger/Naturalists position based on demands, experiences, priorities and feedback. 2. Continue education and outreach programs
	Trail Maintenance	Ongoing maintenance and repair based on usage and weather.	Ongoing maintenance and repair based on usage and weather.
	New Trails	Coordinate wayfinding with Parks.	Coordinate wayfinding with Parks.

City of Louisville Programs, Sub-Programs, and 2017-2018 Potential Contributing Projects

Programs	Sub-Programs	2017 Potential Contributing Projects	2018 Potential Contributing Projects
Recreation	Youth Activities	1. Break ground for Recreation Senior Center and Memory Square Swimming Pool renovation and expansion. 2. Implement transition plan to sustain operations during construction and transition.	1. Continue reconstruction and expansion of the Recreation Senior Center and Memory Square Swimming Pool. 2. Continue to operate the Recreation Senior Center during construction and implement the transition program to facilitate operations
	Adult Activities		
	Senior Activities and Services		
	Aquatics		
	Golf Course	1. Generate sufficient revenue to cover operating expenses. 2. Continue to improve golf course maintenance facility. 3. Reevaluate best way to provide restrooms & shelter on back 9 4. Eradicate List A noxious weeds on golf course	1. Golf Course is maturing and will generate sufficient revenue to cover operating revenue and start building afund balance. 2. Enhance practice and learning center opportunities 3. Back 9 solution for restroom and shelter is in placce 4. Eradicate List A noxious weeds on golf course.
Cultural Services	Library Services	1. Develop a slate of STEM instruction for all ages 2. Focus on upper elementary, or 'Tween,' services, including creation of a seating area	1. Second floor reorganized to maximize space for individual and small group study 2. Louisville Times run from 1942-2007 digitized for public access
	Museum Services	1. Complete initial design for Visitors'Center/Historical Museum campus expansion 2. Expand programming about Louisville's past, featuring the resources of the Historical Museum 3. Complete Historic Structure Assessments on Tomeo House and the Jacoe Store	1. Focus on making oral histories of long-time Louisville residents available to the public 2. Tomeo House accurately reflects turn-of-the-century life of a Louisville mining family
	Cultural Arts & Special Events	1. Continue July 4 and Labor Day Festivities. 2. Implement Cultural Arts Master Plan. 3. Develop Public Art Policy for Council consideration	1. Continue July 4 and Labor Day Festivities. 2. Implement Council adopted Public Art Policy
Community Design	Community Design	1. Continue design guidelines development reflecting approved Small Area Plans 2. Research and evaluate Affordable Housing policy options	1. Continue preparation of neighborhood plans 2. Expand use of GIS related applications 3. Coordinate on Streetscapes priority list.
	Development Review	1. Continue implementation IAN/EnerGov user portal 2. Evaluate Development Review cost recovery	1. Increase E-review of building plans and development review
	Historic Preservation	1. Implement Historic Preservation Revolving Loan Fund 2. Pursue reauthorization of Historic Preservation Tax	Evaluate historic preservation strategies within neighborhood plans
Economic Prosperity	Business Retention and Development	1. Sam's Club redevelopment 2. Continue coordination of CTC connection 3. Continue support for Louisville Street Faire	Continue being a resource to business community
	Urban Renewal	Continue implementation of 550 S. McCaslin Urban Renewal Plan	Encourage additional investment in Urban Renewal Areas through facilitating public infrastructure

City of Louisville Programs, Sub-Programs, and 2017-2018 Potential Contributing Projects

Programs	Sub-Programs	2017 Potential Contributing Projects	2018 Potential Contributing Projects
Administration & Support Services	Governance & Administration	1. Implement 1st YR of Biennial Budget 2. Refine Key Indicators/Performance Measures 3. Work w Planning to evaluate Affordable Housing policy options 4. Begin incorporation of IAN reports in communications 5. Coordinate consideration of Historic Preservation Tax reauthorization 6. Manage new initiatives to stay within citywide resources (staff and $) and avoid staff burnout	1. Implement 2nd Yr Biennial Budget 2. Expand incorporation of IAN reports in communications. 3. Manage new initiatives to stay within citywide resources (staff and $) and avoid staff burnout
	Public Information & Involvement	Implement eNewsletter with new email service	Update website design
	City Clerk/Public Records	1. Candidate election 2. Continue to convert paper records to electronic/searchable format	1. TABOR Election 2. Continue to convert paper records to electronic/searchable format
	Legal Support	1. Provide staff training on ways to minimize legal review expenses without increasing risk exposure. 2. Review and update contract and other formats	
	Human Resources & Organizational Development	1. Adopt and implement organizational succession plans for Phase 1 departments 2. Develop comprehensive formal citywide training program with a comprehensive leadership component	1. Adopt and implement organizational succession plans for Phase 2 departments 2. Implement comprehensive formal citywide training program with a comprehensive leadership component
	Finance, Accounting & Tax Administration	1. Complete implementation of the Financial Management System (FMS) component of the Information Access Now (IAN) 2. Restructure the 2017-2018 Biennial Budget Document to incorporate changes for program budgeting, performance measures, and performance management	Use the new IAN to improve service levels and to enhance financial transparency
	Information Technology	1. Maintain current (acceptable) Operating Service Levels 2. Complete Document Management assessment and direction (Laserfiche/Tyler) 3.Complete Electronic Security Compliance Audit 4.GIS Assessment and Strategic Plan 5.Select Police/Court Records Mgmt System (PD/Clerk) 6.Develop Mobile Computing Strategy 7.Update City Access Services (Security/Door Access/Surveillance, etc.)	1. Main Operating Service Levels 2. Finish install of Police/Courts Records Management systems. 3. Implement GIS action plan
	Sustainability	Implement Council approved elements of Sustainability Plan	Update Sustainability Plan
	Facilities Maintenance	Continue 10 year Master Planning annual updates, build on sustainability opportunities.	Continue 10 year Master Planning annual updates, build on sustainability opportunities.
	Fleet Maintenance	Improve ability to view and utilize equipment GPS data.	Evaluate and optimize Fleet replacement policies.