## **Vision Zero Site Visit**

**Present:** Gunnar Hale (Engineering), Cory Surbrugg (Engineering), Marc Virata (Engineering), Jin Wang (Engineering), Dillon Willett (Engineering), Lance McRory (Traffic), Alisa Babler (Traffic), Florian Fiebig (Engineering), Dana Hornkohl (Engineering), Dave Dixon (Bike Fort Collins), Rachel Ruhlen (FC Moves), Jay Bishop (Resident)

**Date:** 2023 05 04

Location: Drake Rd & Lemay Ave

#### **CONTEXT**

<u>Crash history</u>: In 2022, there were eight crashes at this intersection that resulted in an injury, and a total of 27 crashes. This intersection is located on the High Injury Network. It was identified as a hot spot in the 2021 Safety in the City Report and a conceptual design was developed for the Transportation Capital Projects Prioritization Study (attached).

Intersection: This is a signalized four-leg angled intersection with five lanes across Lemay Ave and five or six lanes across Drake Rd consisting of travel lanes, left-turn lanes, and right-turn lanes. Most lanes are 11 feet wide; the westbound inside lane is 12 feet and the eastbound outside lane is 13 feet wide. There are unprotected bike lanes on all approaches, marked crosswalks, and pedestrian signals. Curb ramps are present. Attached sidewalks have no buffer from the road and frequent disruptions for driveways. Sidewalks are of varying widths and are too narrow in most parts of the intersection. There is no parking on any of the legs.



<u>Land use</u>: Commercial. Scotch Pines Village Shopping Center on the southwest corner has many destinations and employees. Woodward on the northwest corner is a large employer (1300 employees). There is a lake on the northeast corner and a church and preschool on the southeast corner. Nearby residential uses include apartment buildings and single family homes.

<u>Iraffic volume</u>: The average daily traffic (ADT) on Lemay Ave is 12,000 to 16,000 (2018 counts) and on Drake Road 10,000 to 12,000 (2018 and 2022 counts). Across all three peak hours counted on July 7, 2022, there were 35 bicycles and 39 pedestrians. Electric scooters were observed using the intersection during the site visit. See attached reports.

<u>Pedestrian and Bicycle generators</u>: Bus routes #5 and #7 have stops near this intersection. The Sprouts grocery store and other shops in Scotch Pines attracts pedestrian and bicycle traffic from nearby apartments and homes. Healthcare facilities north on Lemay Ave may attract bicycle traffic through this intersection.

<u>Planned improvements</u>: Short-term, there will be a red light camera at this intersection.

Near-term, there is a Highway Safety Improvement Program grant to install a southbound right turn lane on Lemay which is expected to reduce rear end crashes and reduce congestion.

Long-term, this intersection has concept design in development.

<u>Site visit conditions</u>: Daylight, mild, no precipitation.

#### **Observations**

The awkward angles of this intersection make it a difficult one for the volume of traffic that uses it. There are accommodations for pedestrians and bicyclists and the intersection is somewhat accessible for people with disabilities. There is sufficient street lighting.

The pavement in this area is rough with rutting and some patchwork. The asphalt surface was noted; the standard for arterial-arterial intersections is concrete, but there are challenges to concrete surface such as long curing time or poor quality pavement for fast-cure concrete and expensive maintenance. Paint markings are worn. The northwest corner has some drainage issues.

While the straightness of Lemay Ave was seen as a problem because it encourages speeding, the curves on Drake Rd are also seen as contributing to rear end crashes by people driving too fast for the sight distance of the curve. The trees similarly were seen as traffic calming but also potential visual obstructions, and could be a potential visual obstruction after the right-turn lane is added on southbound Lemay Ave. The absence of acceleration lanes for right turning vehicles is seen as a positive influence on traffic speeds.

ADA, pedestrian, and bicycle accommodations are present but have some deficiencies.

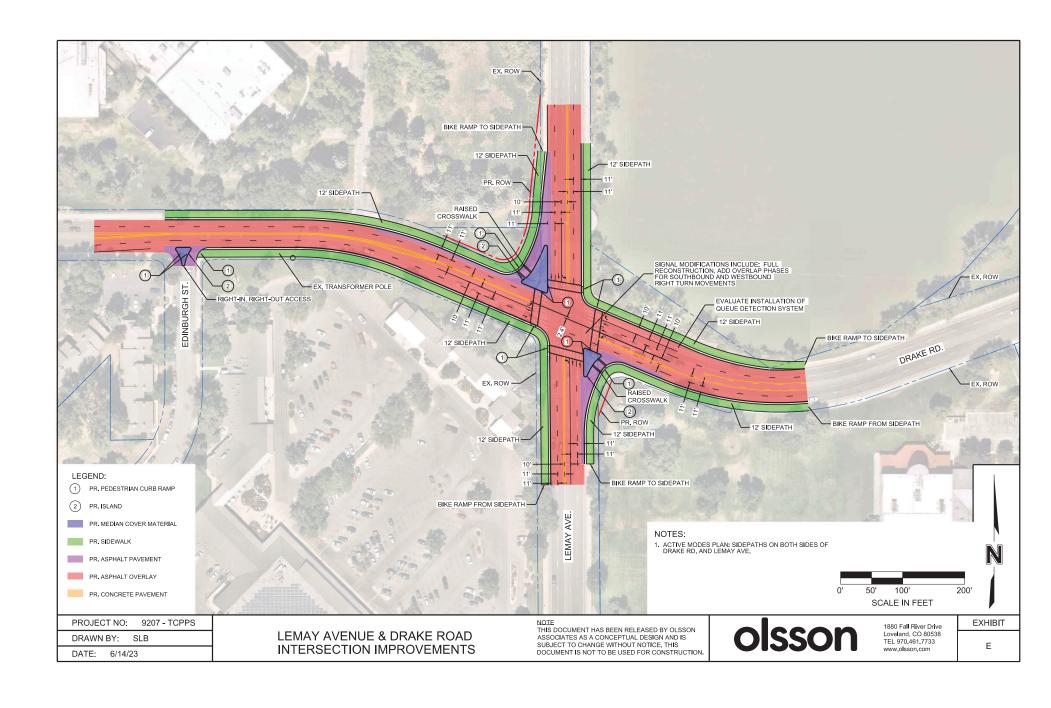
Curb ramps are in good condition but positioned awkwardly and not easily navigable by someone without vision. In particular, the southbound ramp on the northwest corner points travelers into the intersection rather than into the crosswalk. The northeast ramps lack a landing space.

The sidewalks are narrow. On the northwest corner, right-turning have difficulty seeing pedestrians and left-turners often aren't watching for pedestrians. The short, narrow ramp on the southwest corner brings pedestrians uncomfortably close to right-turning vehicles. Control boxes block visibility of pedestrians on the southeast corner and also block pedestrians' view of traffic. On the northeast corner, right-turners creep uncomfortably close to the narrow attached sidewalk and narrow ramps. The northwest and southeast pedestrian porkchop islands are very small and pedestrians feel vulnerable. One pedestrian button is missing. The skew of this intersection makes for long crossing distances which is hard for older or disabled pedestrians.

Bike lanes are narrow and unprotected and the gutter seam in the center is hazardous. Storm drain grates are not compatible with bike lanes. Southbound bicyclists were observed using the bike lane up to the intersection and then using the crosswalk and biking on the sidewalk south of the intersection. They were also observed using an old ramp north of the crosswalk on the northwest corner to transition from the bike lane to the sidewalk. Furthermore, there are few bike racks at Scotch Pines.

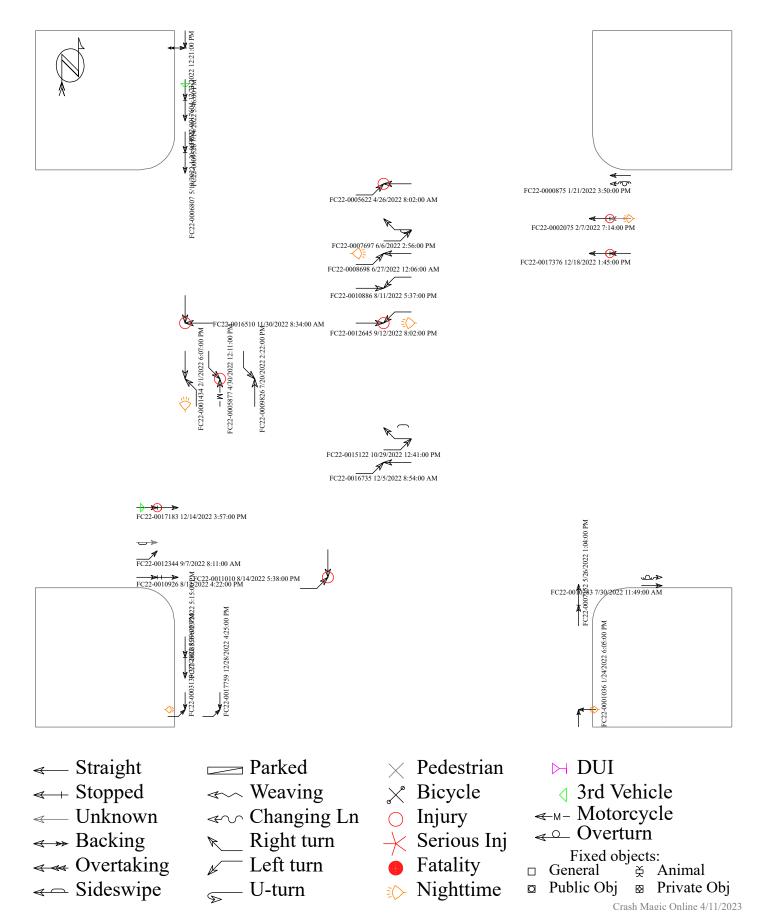
Participant suggestions to reduce crashes at this intersection will be evaluated for feasibility.

- Suggestions to improve safe driving through the intersection
  - o Remove permissive left turn arrow because of blind spot
  - Offset left turns with an island
  - o Add flashing light warnings on Drake upstream of curves approaching signal
  - Implement a lagging left
  - Refresh paint markings more frequently
  - o Do not implement acceleration lanes for right-turning vehicles
  - o When the new southbound right-turn lane is installed, make the turning radius tight to slow down traffic
- Suggestions to improve the experience of the intersection for people with disabilities
  - o Align tactile surfaces on curb ramps to direct vision-impaired pedestrians to the crosswalk
  - o Align curb ramps with crosswalks
  - o Add landing spaces where they are not present or are insufficient
  - o Upgrade curb ramps to compliance, including width
  - Ensure that ample time is allowed for slower pedestrians in longer crosswalks in skewed intersections
- Suggestions to improve the experience of the intersection for people walking
  - Widen sidewalks
  - o Implement shark-teeth to protect the crosswalk
  - o Raise crossings into the pork chop islands
  - o Replace the missing pedestrian button
  - Reposition control boxes so they do not obstruct visibility between people walking and driving
  - Make the crosswalks raised
  - o Add vertical elements to pork chop islands to make pedestrians feel more protected
- Suggestions to improve the experience of the intersection for people biking or scootering
  - o Replace storm drain grates with grates that are compatible with bike lanes
  - Widen and protect bike lanes
  - Determine if bike racks are sufficient at Scotch Pines
- Other suggestions
  - Improve the drainage of the northwest corner



# S LEMAY AVE & E DRAKE RD 1/1/2022 - 12/30/2022

27 Crashes Clear



Casetrackingid Accidentdate Accidenttime	_Primarystreet	_Crossstreet	_Distfromint _	Dirfromint Cra	ashseverity Cra	ash Severity FCTypeOfCollisionSummary	Vehicletype_V1	Directionoftravel_V	1 Vehiclemovement_V1	Driveraction1_V1	Vehicletype_V2	Directionoftravel_V2   Vehiclemovement	V2 Driveraction1_V2	Age_D1	Age_D2 Roaddescription	Location Roadconditi	ion Weathercondition1
FC22-0000875 1/21/2022 3:50 pm	E DRAKE RD	S LEMAY AVE	0.00	0.00	0.00	PDO Side to Side-Same Direction	Unknown Hit & Run Only	West	Changing lanes	Lane Violation	SUV	West Going Straight	No Contributing Action		26.00 Intersection Related	On-roadway Dry	Cloudy
FC22-0001036 1/24/2022 6:05 pm	S LEMAY AVE	E DRAKE RD	200.00	2.00	0.00	PDO Right Angle	Unknown Hit & Run Only	West	Going Straight	Failed to Yield ROW	Passenger Car/Passenger Van	North Going Straight	No Contributing Action		25.00 Driveway Access Related	On-roadway Dry	Clear
FC22-0001434 2/1/2022 6:07 pm	S LEMAY AVE	E DRAKE RD	0.00	0.00	0.00	PDO Approach Turn	SUV	North	Making Left Turn	Failed to Yield ROW	Passenger Car/Passenger Van	South Going Straight	No Contributing Action	46.00	31.00 At Intersection	On-roadway Snowy	Snow
FC22-0002075 2/7/2022 7:14 pm	E DRAKE RD	S LEMAY AVE	0.00	0.00	1.00	Minor Injury Rear End	SUV	West	Other	Careless Driving	SUV	West Stopped in Traffic	No Contributing Action	72.00	44.00 Intersection Related	On-roadway Dry	Clear
FC22-0003139   3/7/2022   8:39 pm		E DRAKE RD	500.00	2.00	0.00	PDO Right Angle	SUV	East	Making Left Turn	Failed to Yield ROW	SUV	South Going Straight	No Contributing Action	21.00	27.00 Driveway Access Related	On-roadway Dry	Clear
FC22-0005622   4/26/2022   8:02 am	E DRAKE RD	S LEMAY AVE	0.00	0.00	1.00	Minor Injury Approach Turn	Passenger Car/Passenger Var	East	Making Left Turn	Failed to Yield ROW	Medium/Heavy Trucks staying w	il West Going Straight	No Contributing Action	35.00	27.00 At Intersection	On-roadway Dry	Clear
FC22-0005877   4/30/2022   12:11 pm	S LEMAY AVE	E DRAKE RD	0.00	0.00	1.00	Minor Injury Approach Turn	Pickup Truck/Utility Van	South	Making Left Turn	Failed to Yield ROW	Motorcycle	North Going Straight	No Contributing Action	68.00	28.00 At Intersection	On-roadway Dry	Clear
FC22-0006807 5/19/2022 1:30 pm	S LEMAY AVE	E DRAKE RD	40.00	1.00	0.00	PDO Rear End	SUV	South	Going Straight	Careless Driving	Pickup Truck/Utility Van	South Slowing	No Contributing Action	70.00	37.00 Intersection Related	On-roadway Dry	Cloudy
FC22-0007152 5/26/2022 1:04 pm	S LEMAY AVE	E DRAKE RD	100.00	2.00	0.00	PDO Rear End	SUV	North	Slowing	Careless Driving	Passenger Car/Passenger Van	North Slowing	No Contributing Action	16.00	17.00 Intersection Related	On-roadway Dry	Clear
FC22-0007697 6/6/2022 2:56 pm	E DRAKE RD	S LEMAY AVE	20.00	1.00	0.00	PDO Side to Side-Same Direction	SUV	East	Making Left Turn	Improper Turn	SUV	West Making Right Turn	No Contributing Action	18.00	64.00 Intersection Related	On-roadway Dry	Cloudy
FC22-0008556 6/23/2022 5:15 pm	S LEMAY AVE	E DRAKE RD	50.00	2.00	0.00	PDO Rear End	Passenger Car/Passenger Var	South	Going Straight	Careless Driving	Passenger Car/Passenger Van		No Contributing Action	27.00	51.00 Non-intersection	On-roadway Dry	Cloudy
FC22-0008698 6/27/2022 12:06 am	E DRAKE RD	S LEMAY AVE	0.00	0.00	0.00	PDO Approach Turn	SUV	East	Making Left Turn	Failed to Stop at Signa		West Going Straight	No Contributing Action	21.00	17.00 At Intersection	On-roadway Dry	Clear
FC22-0009526 7/14/2022 5:46 pm	S LEMAY AVE	E DRAKE RD	614.00	1.00	0.00	PDO Rear End	Passenger Car/Passenger Var		Going Straight	Followed Too Closely	Passenger Car/Passenger Van		No Contributing Action	51.00	30.00 Non-intersection	On-roadway Dry	Cloudy
FC22-0009826 7/20/2022 2:22 pm	S LEMAY AVE	E DRAKE RD	0.00	0.00	0.00	PDO Approach Turn	Passenger Car/Passenger Var	North	Going Straight	No Contributing Action	Passenger Car/Passenger Van		No Contributing Action	27.00	72.00 At Intersection	On-roadway Dry	Cloudy
FC22-0010283 7/30/2022 11:49 am	E DRAKE RD	S LEMAY AVE	700.00	3.00	0.00	PDO Side to Side-Same Direction	Pickup Truck/Utility Van	East	Changing lanes	Lane Violation	Passenger Car/Passenger Van		No Contributing Action	40.00	22.00 Non-intersection	On-roadway Dry	Clear
FC22-0010886 8/11/2022 5:37 pm	E DRAKE RD	S LEMAY AVE	0.00	0.00	0.00	PDO Approach Turn	Passenger Car/Passenger Var		Making Left Turn	Failed to Yield ROW	Passenger Car/Passenger Van	0 0	No Contributing Action	40.00	18.00 At Intersection	On-roadway Dry	Clear
FC22-0010926 8/12/2022 4:22 pm		S LEMAY AVE	60.00	4.00	0.00	PDO Rear End	Passenger Car/Passenger Var	East	Going Straight	Followed Too Closely	Passenger Car/Passenger Van		No Contributing Action	38.00	30.00 Intersection Related	On-roadway Dry	Clear
FC22-0011010 8/14/2022 5:38 pm	S LEMAY AVE	E DRAKE RD	0.00	0.00	1.00	Minor Injury Right Angle	SUV	South	Going Straight	Failed to Stop at Signa		East Making Left Turn	Other Contributing Action	24.00	16.00 At Intersection	On-roadway Dry	Cloudy
FC22-0012344 9/7/2022 8:11 am	E DRAKE RD	S LEMAY AVE	0.00	0.00	0.00	PDO Side to Side-Same Direction	Unknown Hit & Run Only	East		Lane Violation	Passenger Car/Passenger Van	· · ·	No Contributing Action		24.00 At Intersection	On-roadway Dry	Clear
FC22-0012645 9/12/2022 8:02 pm	E DRAKE RD	S LEMAY AVE	0.00	0.00	1.00	Minor Injury Approach Turn	Pickup Truck/Utility Van	West	Making Left Turn	Failed to Yield ROW	Passenger Car/Passenger Van		No Contributing Action	16.00	20.00 Intersection Related	On-roadway Dry	Clear
FC22-0015122   10/29/2022   12:41 pm	E DRAKE RD	S LEMAY AVE	0.00	0.00	0.00	PDO Side to Side-Same Direction	Passenger Car/Passenger Var	West	Making Right Turn	Improper Turn	Passenger Car/Passenger Van	"	Improper Turn	74.00	21.00 At Intersection	On-roadway Dry	Clear
FC22-0016510 11/30/2022 8:34 am	E DRAKE RD	S LEMAY AVE	0.00	0.00	2.00 M	oderate Injury Right Angle	SUV	West	Going Straight	Failed to Stop at Signa		South Going Straight	No Contributing Action	58.00	30.00 At Intersection	On-roadway Wet	Clear
FC22-0016735   12/5/2022   8:54 am	E DRAKE RD	S LEMAY AVE	0.00	0.00	0.00	PDO Approach Turn	Passenger Car/Passenger Var	East	Making Left Turn	Failed to Yield ROW	Passenger Car/Passenger Van		No Contributing Action	40.00	59.00 At Intersection	On-roadway Dry	Clear
FC22-0017183   12/14/2022   3:57 pm	E DRAKE RD	S LEMAY AVE	0.00	0.00	1.00	Minor Injury Rear End	SUV	East	Going Straight	Careless Driving	SUV	East Stopped in Traffic	No Contributing Action	21.00		On-roadway Dry	Cloudy
FC22-0017376   12/18/2022   1:45 pm	E DRAKE RD	S LEMAY AVE	50.00	3.00	1.00	Minor Injury Rear End	Unknown Hit & Run Only	West	Going Straight	Careless Driving	Passenger Car/Passenger Van		No Contributing Action		42.00 Intersection Related	On-roadway Dry	Clear
FC22-0017604   12/23/2022   12:21 pm	S LEMAY AVE	E DRAKE RD	2640.00	1.00	0.00	PDO Rear End	Medium/Heavy Trucks staying	East	Backing	Failed to Yield ROW	Passenger Car/Passenger Van	South Going Straight	No Contributing Action	60.00	35.00 Driveway Access Related	On-roadway Icy	Cloudy
							within the state, GVWR/GCWF	2									
							16,001 or over										
FC22-0017759   12/28/2022   4:25 pm	S LEMAY AVE	E DRAKE RD	50.00	2.00	0.00	PDO Right Angle	SUV	East	Making Left Turn	Failed to Yield ROW	Passenger Car/Passenger Van	South Going Straight	No Contributing Action	33.00	33.00 Driveway Access Related	l ∣On-roadway ∣Wet	Clear

### **City of Fort Collins Traffic Operations**

626 Linden Street, PO Box 580 Fort Collins, CO 80522-0580 Peak Hour Turning Movement Count

North/South Street: Lemay East/West Street: Drake

Time: AM ICU Number: 64

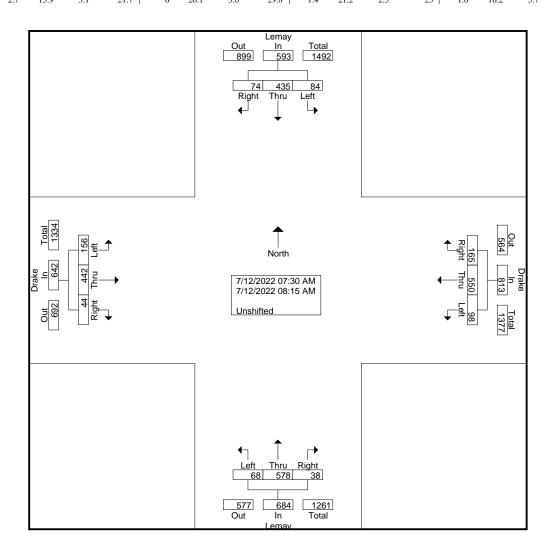
File Name: Lemay & Drake 7-12-22

Site Code : 00000064 Start Date : 7/12/2022

Page No : 1

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		Len	nay					Lei	may			]					
		South	ound			Westl			North	bound							
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:30 AM	20	92	26	138	38	124	16	178	7	114	11	132	8	99	39	146	594
07:45 AM	19	130	20	169	41	161	28	230	8	197	24	229	12	140	49	201	829
Total	39	222	46	307	79	285	44	408	15	311	35	361	20	239	88	347	1423
08:00 AM	17	110	18	145	47	132	26	205	14	130	18	162	6	95	29	130	642
08:15 AM	18	103	20	141	39	133	28	200	9	137	15	161	18	108	39	165	667
Grand Total	74	435	84	593	165	550	98	813	38	578	68	684	44	442	156	642	2732
Apprch %	12.5	73.4	14.2		20.3	67.7	12.1		5.6	84.5	9.9		6.9	68.8	24.3		
Total %	27	15.0	3.1	21.7	6	20.1	3.6	20.8	1.4	21.2	2.5	25	1.6	16.2	5.7	23.5	



### **City of Fort Collins Traffic Operations**

626 Linden Street, PO Box 580 Fort Collins, CO 80522-0580 **Peak Hour Turning Movement Count** 

North/South Street: Lemay East/West Street: Drake

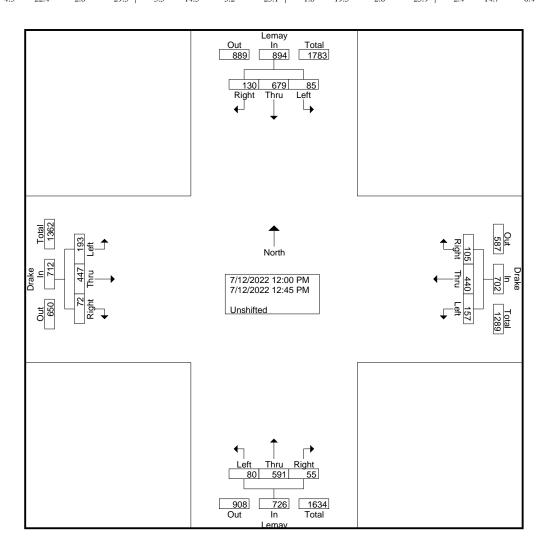
Time: NN ICU Number: 64 File Name : Lemay & Drake 7-12-22 Site Code : 00000064

Start Date : 7/12/2022

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		Len	nay			Dr	ake			Len							
		Southb	ound			Westl	oound			Northb	ound						
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
12:00 PM	34	158	23	215	30	114	37	181	10	141	28	179	17	118	44	179	754
12:15 PM	29	163	11	203	28	98	27	153	21	143	10	174	19	96	38	153	683
12:30 PM	30	168	25	223	20	112	47	179	11	162	24	197	18	97	56	171	770
12:45 PM	37	190	26	253	27	116	46	189	13	145	18	176	18	136	55	209	827
Total	130	679	85	894	105	440	157	702	55	591	80	726	72	447	193	712	3034
Grand Total	130	679	85	894	105	440	157	702	55	591	80	726	72	447	193	712	3034
Apprch %	14.5	76	9.5		15	62.7	22.4		7.6	81.4	11		10.1	62.8	27.1		
Total %	4.3	22.4	2.8	29.5	3.5	14.5	5.2	23.1	1.8	19.5	2.6	23.9	2.4	147	6.4	23.5	



### **City of Fort Collins Traffic Operations**

626 Linden Street, PO Box 580 Fort Collins, CO 80522-0580 Peak Hour Turning Movement Count

North/South Street: Lemay

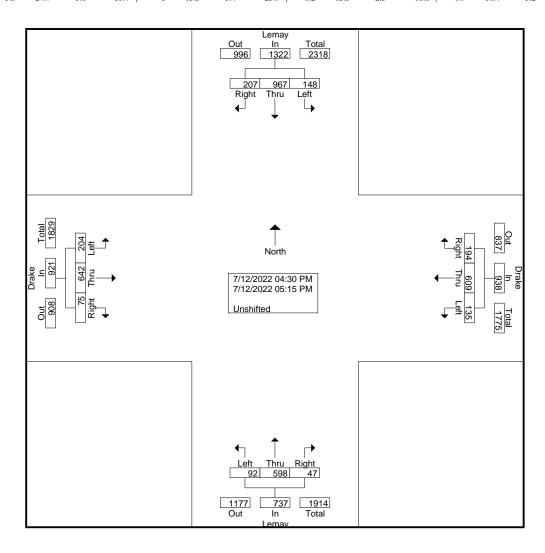
East/West Street: Drake Time: PM ICU Number: 64 File Name: Lemay & Drake 7-12-22

Site Code : 00000064 Start Date : 7/12/2022

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ſ			Len	nay		Drake Lemay												
			Southb	ound					North	bound								
	Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
	04:30 PM	54	225	24	303	40	127	34	201	14	151	17	182	14	127	42	183	869
	04:45 PM	40	227	38	305	50	158	35	243	6	151	28	185	22	176	58	256	989
	Total	94	452	62	608	90	285	69	444	20	302	45	367	36	303	100	439	1858
	05:00 PM	57	267	42	366	49	136	26	211	16	178	22	216	23	160	55	238	1031
	05:15 PM	56	248	44	348	55	188	40	283	11	118	25	154	16	179	49	244	1029
	Grand Total	207	967	148	1322	194	609	135	938	47	598	92	737	75	642	204	921	3918
	Apprch %	15.7	73.1	11.2		20.7	64.9	14.4		6.4	81.1	12.5		8.1	69.7	22.1		
	Total %	5.3	24.7	3.8	33.7	5	15.5	3.4	23.9	1.2	15.3	2.3	18.8	1.9	16.4	5.2	23.5	



City of Fort Collins Traffic Operations 626 Linden Street, PO Box 580 Fort Collins, CO 80522-0580 **Peak Hour Turning Movement Count** 

North/South Street: Lemay East/West Street: Drake

Time: PHF ICU Number: 64 File Name : Lemay & Drake 7-12-22 Site Code : 00000064

Start Date : 7/12/2022

Page No : 1

		Len				Dra					may						
		Southb				Westb					bound			Easth			
Start Time	Right	Thru		App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis																	
Peak Hour for Entire	Intersection	on Begins a	at 07:30 A														
07:30 AM	20	92	26	138	38	124	16	178	7	114	11	132	8	99	39	146	594
07:45 AM	19	130	20	169	41	161	28	230	8	197	24	229	12	140	49	201	829
08:00 AM	17	110	18	145	47	132	26	205	14	130	18	162	6	95	29	130	642
08:15 AM	18	103	20	141	39	133	28	200	9	137	15	161	18	108	39	165	667
Total Volume	74	435	84	593	165	550	98	813	38	578	68	684	44	442	156	642	2732
% App. Total	12.5	73.4	14.2		20.3	67.7	12.1		5.6	84.5	9.9		6.9	68.8	24.3		
PHF	.925	.837	.808	.877	.878	.854	.875	.884	.679	.734	.708	.747	.611	.789	.796	.799	.824
Peak Hour Analysis From 10:00 AM to 01:45 PM - Peak 1 of 1 Peak Hour for Entire Intersection Begins at 12:00 PM																	
12:00 PM	34	158	23	215	30	114	37	181	10	141	28	179	17	118	44	179	754
12:15 PM	29	163	11	203	28	98	27	153	21	143	10	174	19	96	38	153	683
12:30 PM	30	168	25	223	20	112	47	179	11	162	24	197	18	97	56	171	770
12:45 PM	37	190	26	253	27	116	46	189	13	145	18	176	18	136	55	209	827
Total Volume	130	679	85	894	105	440	157	702	55	591	80	726	72	447	193	712	3034
Mark App. Total	14.5	76	9.5		15	62.7	22.4		7.6	81.4	11		10.1	62.8	27.1		
PHF	.878	.893	.817	.883	.875	.948	.835	.929	.655	.912	.714	.921	.947	.822	.862	.852	.917
Peak Hour for Entire	Peak Hour Analysis From 02:00 PM to 05:15 PM - Peak 1 of 1 Peak Hour for Entire Intersection Begins at 04:30 PM																
04:30 PM	54	225	24	303	40	127	34	201	14	151	17	182	14	127	42	183	869
04:45 PM	40	227	38	305	50	158	35	243	6	151	28	185	22	176	58	256	989
05:00 PM	57	267	42	366	49	136	26	211	16	178	22	216	23	160	55	238	1031
05:15 PM	56	248	44	348	55	188	40	283	11	118	25	154	16	179	49	244	1029
Total Volume	207	967	148	1322	194	609	135	938	47	598	92	737	75	642	204	921	3918
% App. Total	15.7	73.1	11.2		20.7	64.9	14.4		6.4	81.1	12.5		8.1	69.7	22.1		
PHF	.908	.905	.841	.903	.882	.810	.844	.829	.734	.840	.821	.853	.815	.897	.879	.899	.950

