# 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.



Land use: 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>Traffic 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
  - Add flashing light warnings on Drake upstream of curves approaching signal
  - Implement a lagging left
  - Refresh paint markings more frequently
  - Do not implement acceleration lanes for right-turning vehicles
  - 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
  - Align tactile surfaces on curb ramps to direct vision-impaired pedestrians to the crosswalk
  - Align curb ramps with crosswalks
  - Add landing spaces where they are not present or are insufficient
  - 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
  - Implement shark-teeth to protect the crosswalk
  - Raise crossings into the pork chop islands
  - Replace the missing pedestrian button
  - Reposition control boxes so they do not obstruct visibility between people walking and driving
  - Make the crosswalks raised
  - 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





Crash Magic Online

Crash Magic Online 4/11/2023

Clear

Casetrackingid	Accidentdate	Accidenttime	Primarvstreet C	Crossstreet D	Distfromint	Dirfromint Cras	hseverity C	rash Severity FCTypeOfCollisionSummary	Vehicletype V1	Directionoftravel V1	Vehiclemovement V1	Driveraction1 V1	Vehicletype V2	Directionoftravel V2	Vehiclemovement V2	Driveraction1 V2	Age_D1 Age_D2 Roaddescrip	tion Loc	ation Roadconditio	on Weathercondition1
FC22-0000875	1/21/2022	3:50 pm	E DRAKE RD S L	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		-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 Ac	cess 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 On-	-roadway Snowy	Snow
FC22-0002075	2/7/2022	7:14 pm	E DRAKE RD S L	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		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 Ac	cess Related On-	-roadway Dry	Clear
FC22-0005622	4/26/2022	8:02 am	E DRAKE RD S L	LEMAY AVE	0.00	0.00	1.00	Minor Injury Approach Turn	Passenger Car/Passenger Van	East	Making Left Turn	Failed to Yield ROW	Medium/Heavy Trucks staying w	vilWest	Going Straight	No Contributing Action	35.00 27.00 At Intersection	on On-	-roadway Dry	Clear
	4/30/2022	12:11 pm	= _	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 On-	-roadway Dry	Clear
	5/19/2022	1:30 pm		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		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
	6/6/2022	2:56 pm		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		DRAKE RD	50.00	2.00	0.00	PDO Rear End	Passenger Car/Passenger Van	South	Going Straight	Careless Driving	Passenger Car/Passenger Van	South	Going Straight	No Contributing Action	27.00 51.00 Non-intersec	tion On-	-roadway Dry	Cloudy
FC22-0008698	6/27/2022	12:06 am		LEMAY AVE	0.00	0.00	0.00	PDO Approach Turn	SUV	East	Making Left Turn	Failed to Stop at Signal		West	Going Straight	No Contributing Action	21.00 17.00 At Intersection	on On-	-roadway Dry	Clear
FC22-0009526	7/14/2022	5:46 pm		DRAKE RD	614.00	1.00	0.00	PDO Rear End	Passenger Car/Passenger Van		Going Straight	Followed Too Closely	Passenger Car/Passenger Van		Slowing	No Contributing Action	51.00 30.00 Non-intersec	tion On-	-roadway Dry	Cloudy
FC22-0009826	7/20/2022	2:22 pm		DRAKE RD	0.00	0.00	0.00	PDO Approach Turn	Passenger Car/Passenger Van	North	Going Straight	No Contributing Action	Passenger Car/Passenger Van		Making Left Turn	No Contributing Action	27.00 72.00 At Intersection	-	-roadway Dry	Cloudy
FC22-0010283	7/30/2022	11:49 am		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	East	Going Straight	No Contributing Action	40.00 22.00 Non-intersec	tion On-	-roadway Dry	Clear
	8/11/2022	5:37 pm		LEMAY AVE	0.00	0.00	0.00	PDO Approach Turn	Passenger Car/Passenger Van		Making Left Turn	Failed to Yield ROW	Passenger Car/Passenger Van	East	Going Straight	No Contributing Action	40.00 18.00 At Intersection	on On-	-roadway Dry	Clear
FC22-0010926	8/12/2022	4:22 pm		LEMAY AVE	60.00	4.00	0.00	PDO Rear End	Passenger Car/Passenger Van	East	Going Straight	Followed Too Closely	Passenger Car/Passenger Van	East	Stopped in Traffic	No Contributing Action	38.00 30.00 Intersection	Related On-	-roadway Dry	Clear
FC22-0011010	8/14/2022	5:38 pm		DRAKE RD	0.00	0.00	1.00	Minor Injury Right Angle	SUV	South	Going Straight	Failed to Stop at Signal		East	Making Left Turn	Other Contributing Action	24.00 16.00 At Intersection	on On-	-roadway Dry	Cloudy
FC22-0012344	9/7/2022	8:11 am		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	East	Making Left Turn	No Contributing Action	24.00 At Intersection	on On-	-roadway Dry	Clear
FC22-0012645	9/12/2022	8:02 pm		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	East	Going Straight	No Contributing Action	16.00 20.00 Intersection	Related On-	-roadway Dry	Clear
FC22-0015122	10/29/2022	12:41 pm		LEMAY AVE	0.00	0.00	0.00	PDO Side to Side-Same Direction	Passenger Car/Passenger Van	West	Making Right Turn	Improper Turn	Passenger Car/Passenger Van	East	Making Left Turn	Improper Turn	74.00 21.00 At Intersection	on On-	-roadway Dry	Clear
FC22-0016510		8:34 am		LEMAY AVE	0.00	0.00	2.00 N	Ioderate Injury Right Angle	SUV	West	Going Straight	Failed to Stop at Signal		South	Going Straight	No Contributing Action	58.00 30.00 At Intersection	on On-	-roadway Wet	Clear
FC22-0016735	12/5/2022	8:54 am		LEMAY AVE	0.00	0.00	0.00	PDO Approach Turn	Passenger Car/Passenger Van	East	Making Left Turn	Failed to Yield ROW	Passenger Car/Passenger Van	West	Going Straight	No Contributing Action	40.00 59.00 At Intersection	on On-	-roadway Dry	Clear
FC22-0017183	12/14/2022	3:57 pm		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 51.00 At Intersection	on On-	-roadway Dry	Cloudy
FC22-0017376	12/18/2022	1:45 pm		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	West	Stopped in Traffic	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		Backing	Failed to Yield ROW	Passenger Car/Passenger Van	South	Going Straight	No Contributing Action	60.00 35.00 Driveway Ac	cess Related On-	-roadway Icy	Cloudy
									within the state, GVWR/GCWR											-   · · · · · · · · · · · · · · · · · ·
									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 Ac	cess Related On-	-roadway Wet	Clear

North/South Street: Lemay East/West Street: Drake Time: AM ICU Number: 64

							Grou	ps Printed-	Unshifted								
		Ler	nay			Dr	ake			Lei	may			Dr	ake		
		South	oound			Westh	oound			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 %	2.7	15.9	3.1	21.7	6	20.1	3.6	29.8	1.4	21.2	2.5	25	1.6	16.2	5.7	23.5	



North/South Street: Lemay East/West Street: Drake Time: NN ICU Number: 64

							Grou	ps Printed-	Unshifted								
		Len	nay			Drake Lemay Drake											
		Southb	ound			Westb	ound			Northl	oound			Eastb	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	14.7	6.4	23.5	



North/South Street: Lemay East/West Street: Drake Time: PM ICU Number: 64

							Grou	ps Printed-	Unshifted								_
		Lei	nay			Dr	ake			Lei	may			]			
		South	oound			Westh	oound			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	



North/South Street: Lemay East/West Street: Drake Time: PHF ICU Number: 64

							-	1		-				-			1
		Len					ake			Len				Dra			
		Southb				Westl				North				Eastb			
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																	
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 for Entire 12:00 PM 12:15 PM 12:30 PM 12:45 PM	e Intersectio 34 29 30 <b>37</b>	on Begins a 158 163 168 <b>190</b>	at 12:00 PM 23 11 25 <b>26</b>	M 215 203 223 <b>253</b>	<b>30</b> 28 20 27	114 98 112 <b>116</b>	37 27 <b>47</b> 46	181 153 179 <b>189</b>	10 <b>21</b> 11 13	141 143 <b>162</b> 145	<b>28</b> 10 24 18	179 174 <b>197</b> 176	17 <b>19</b> 18 18	118 96 97 <b>136</b>	44 38 <b>56</b> 55	179 153 171 <b>209</b>	754 683 770 <b>827</b>
Total Volume	130	679	85	894	105	440	157	702	55	591	80	726	72	447	193	712	3034
% 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 Analysis Peak Hour for Entire 04:30 PM	Intersection 54	on Begins a 225	at 04:30 PM 24	M 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





