



## CITY OF COMMERCE AGENDA REPORT

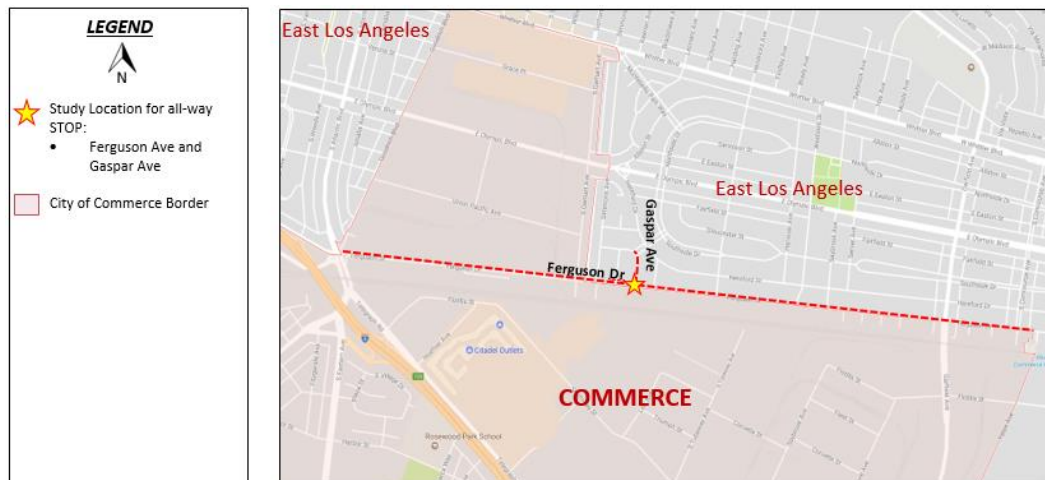
### TRAFFIC STUDY: FOUR-WAY STOP CONTROLLED INTERSECTION AT FERGUSON DRIVE & GASPAR AVENUE

---

#### SITE LOCATION:

Staff has completed an all way stop review at the intersection of Ferguson Drive and Gaspar Avenue. The location of the request is depicted in Figure 1: Vicinity Map below.

**Figure 1: Vicinity Map**



## DATA ANALYSIS AND WARRANT STUDY:

**Figure 2: Existing Conditions Map.**



**Ferguson Drive:** Ferguson Drive is approximately 37' (feet) in width with one lane in each direction and a yellow center dashed line. Ferguson Drive has a posted speed limit of 30 MPH. Parking is generally permitted on both sides of the roadway except for street sweeping restrictions, blue curb restrictions (3 locations) and at bus stop locations. At Ferguson Drive and Gaspar Avenue, only the north leg is stop controlled. Ferguson Drive extends for approximately 1,867-feet between Gerhart Avenue and S Hendricks Avenue before coming to a stop. Land use along Ferguson Drive at this location is considered medium multiple residential.

**Gaspar Avenue:** Gaspar Avenue is approximately 36' (feet) in width with one lane in each direction and no center line. Gaspar Avenue has a prima facie speed limit of 25 MPH. Gaspar Avenue, north of Ferguson Drive, is within the City of East Los Angeles jurisdiction. Parking is permitted on both sides of roadway with the exception of street sweeping restrictions. At the T-Intersection with Ferguson Drive, only the north leg is stop controlled. Land use along Gaspar Avenue is considered low-density residential per the City of Commerce General Plan Map.

**Figure 3: Aerial View of Ferguson Dr and Gaspar Ave Intersection (Boundary Line Per La County Assessor)**



### **AVERAGE DAILY TRAFFIC (ADT)**

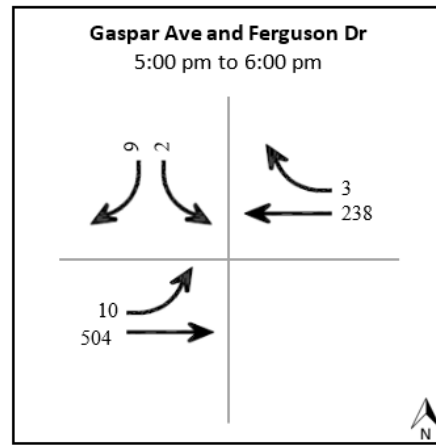
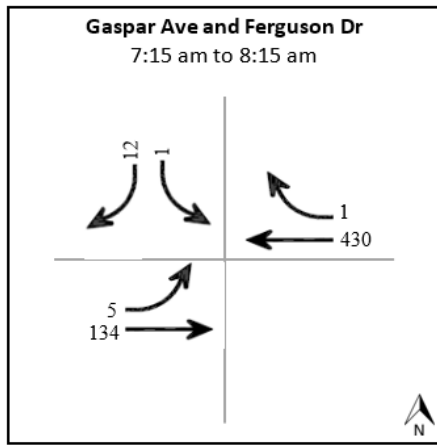
Ferguson Drive is considered a major street and Gaspar Ave is considered a residential roadway. The Average Daily Traffic (ADT) data was obtained from counts taken on July 20, 2017. The ADT data is expressed below:

<b>Table 1: 2017 Average Daily Traffic (ADT)</b>		<b>"hpd" is hours per day</b>
<b>Location</b>	<b>Vehicles per Day (vpd)</b>	<b>Vehicles per Hour (vph)</b>
Ferguson Dr W/O Gaspar Ave	7,508 vpd	$7,508 \text{ vpd} \div 24 \text{ hpd} = 313 \text{ vph}$
Gaspar Ave N/O Ferguson Dr	391 vpd	$391 \text{ vpd} \div 24 \text{ hpd} = 16 \text{ vph}$

In order to see the traffic patterns along Ferguson Drive and Gaspar Avenue, 24-hour tube counts were taken on Ferguson Drive west of Gaspar Avenue and Gaspar Avenue north of Ferguson Drive. As demonstrated above, Ferguson Drive carries more vehicles per day than Gaspar Avenue. Ferguson Drive extends for approximately 1,872-feet between Gerhart Avenue and S Hendricks Avenue before coming to a stop. Ferguson Drive is considered a major street per the City of Commerce General Plan Map.

### **TURNING MOVEMENT COUNTS**

To determine how much traffic is turning onto Ferguson Drive from Gaspar Avenue, a peak hour intersection count was conducted during typical peak commute hours. The count at Gaspar Avenue and Ferguson Drive was conducted on July 12, 2017 during the hours of 7:00AM to 9:00AM and 4:00PM to 6:00PM. The highest 1 hour for each time period is summarized below.



The intersection count showed that during peak hours very few vehicles are turning onto Ferguson Drive from Gaspar Avenue. Ferguson Drive (37-feet in width) is considered a major street per the City of Commerce General Plan and is posted for 30 MPH.

### **PEDESTRIAN COUNTS**

To determine how many pedestrians are crossing unprotected at the intersection of Ferguson Drive and Gaspar Avenue, a pedestrian count during the peak hour times of 7:00AM to 9:00AM, and 4:00PM to 6:00PM

was conducted on July 12, 2017. There are no existing crosswalks at the intersection of Ferguson Drive and Gaspar Avenue and only the north leg of the intersection is stop controlled.

<b>Table 2: Pedestrian Count</b>	
<b><i>Time (Every 1 hour – All Legs)</i></b>	<b><i>Number of Pedestrians</i></b>
7:00-8:00	8
8:00-9:00	2
16:00-17:00	14
17:00-18:00	3

According to the data presented in *Table 2: Pedestrian Count*, during the peak commute times from 7:00AM to 9:00AM and 4:00PM to 6:00PM a maximum of 14 pedestrians crossed at the intersection of Gaspar Avenue and Ferguson Drive in all legs of the intersection.

### **ACCIDENT INVESTIGATION**

An accident investigation was conducted using the last 5.5 available years from SWITRS (Statewide Integrated Traffic Records System) records. A total of 4 accidents (2 in 2014 and 2 in 2012) were reported at the intersection of Ferguson Drive and Gaspar Avenue in the last 5.5 available years (2011 to current available data as of June 2017).

Table 3: Summary of Accident History provides a detailed list of the collisions at the intersection of Gerhart Avenue and Union Pacific Avenue.

0 accidents in 2017 (January to June 2017)  
 0 accidents in 2016  
 0 accidents in 2015  
 2 accidents in 2014  
 0 accidents in 2013  
 2 accidents in 2012

**Table 3: Summary of Accident History**

No.	Location	Dist.	Date	Time	Collision Type	Severity	Factor
1	FERGUSON DR AT GASPAS AVE	0	08/01/14	14:40	BROADSIDE	PDO	SB LT VEH (IMPAIRED) HIT WB THRU VEH
2	FERGUSON DR AT GASPAS AVE	0	08/13/14	19:05	BROADSIDE	PDO	SB THRU VEH HIT WB RT VEH
3	FERGUSON DR AT GASPAS AVE	0	07/10/12	13:50	REAR END	INJURY (2)	WB THRU VEH HIT WB STPED VEH
4	FERGUSON DR AT GASPAS AVE	0	08/21/12	19:00	REAR END	INJURY (1)	SB RT VEH HIT WB THRU VEH, EB THRU VEH AND EB PRKED VEH

### **RADAR SPEED SURVEY**

To determine actual speeds along Ferguson Drive, a radar speed survey was conducted on Ferguson Drive between Gaspar Avenue and Naim Avenue on Wednesday, July 12, 2017 between 9:45 am to 10:30 am. The radar measurements followed guidelines and procedures outlined in the CVC Sections 627, 21400, 22358 and the CAMUTCD 2B.13. Table 4 below shows the 2017 speed survey results:

**Table 4: Radar Speed Survey for Gerhart Avenue between Union Pacific Avenue and Ferguson Drive**

Location		Dir. of Travel	Date/Time of Survey	85 <sup>th</sup> ile Speed	50 <sup>th</sup> ile Speed	10 MPH Pace	Posted Limit MPH
1	Ferguson Dr: Gaspar Ave to Naim Ave	WB/EB	07/12/17 9:45am-10:30am	32.0	30.1	26-35	30

As shown in Table 4, the speed samples taken on July 12, 2017 show that the 85<sup>th</sup> percentile speed of vehicles is at 32 MPH. The 85<sup>th</sup> percentile indicates that 85% of the vehicles sampled were traveling at 32 MPH or lower. The 85<sup>th</sup> is at the posted speed limit of 30 MPH.

## **CRITERIA FOR DETERMINING IF STOP CONTROL IS WARRANTED**

Traffic control devices work in concert with the basic “rules of the road” contained in traffic laws and ordinances. The California Manual of Uniform Traffic Devices (CAMUTCD) describes applications, warrants, and placement of STOP signs (R1-1). The STOP sign is a regulatory device that is used when traffic is required to stop. STOP signs are used to assign right-of-way at an intersection.

Stop signs are not used as a speed control device. Since a STOP sign causes inconvenience to motorists, it should be used only where warranted. The placement of these signs is dictated by engineering judgment and based on guidelines found in the CAMUTCD and CVC. The City’s criteria for determining if two-way or all-way stop control is warranted is based on a number of factors as set by the CAMUTCD. These factors include minimum volume on each of the street approaches, accident investigation, speed of traffic, number of pedestrians and potential sight obstructions.

### **All-Way Stop Installation**

The following briefly outlines the Criteria for the installation of All-Way stop warrants.

#### **ALL-WAY STOP CONTROL WARRANTS FOR INSTALLATION**

The placement of All-Way stop control is warranted when:

- A. Traffic control signals are justified (Not Met)
- B. A crash problem exists as indicated by 5 or more accidents in a 12-month period. (Not Met)
- C. Minimum Volumes are met if:
  - 1. Volume entering intersection from the major approach (total of both approaches) averages 300 vehicles per hour for any 8 hours of an average day. (Met) And
  - 2. The combined vehicle, pedestrian and bicycle volumes entering the intersection from the minor street approaches averages at least 200 units per hour for the same 8 hours. (Not Met)
  - 3. If the 85<sup>th</sup> percentile approach speed of the major-street exceeds 40 mph, the minimum volumes are 70 percent of the above values. (Not Met)

Other criteria that may be considered in an engineering study include:

- A. The need to control left-turn conflicts
- B. The need to control vehicle/pedestrian conflicts near locations that generate high pedestrian volumes
- C. Locations where a road user, after stopping, cannot see conflicting traffic and is not able to negotiate the intersection unless conflicting cross traffic is also required to stop
- D. An intersection of two residential neighborhood collector (through) streets of similar design and operating characteristics where multi-way stop control would improve traffic operational characteristics of the intersection.



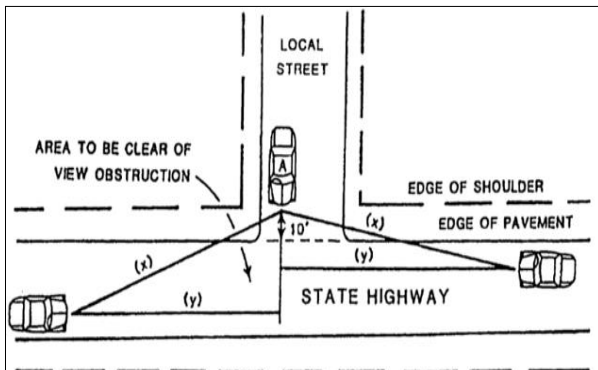
**Table 5: Peak Hour Counts (8 Hours)**

Time	West Bound and East Bound Traffic on Ferguson Drive Both Approaches (Major Street)	Met Minimum Threshold of 300 Veh per hour for any 8 hours of an average day (both approaches) ?	Highest Approach on Gaspar Avenue (North or South Dir) Minor St	Pedestrians crossing Ferguson Drive during the same peak traffic hours EL and WL	TOTAL Cars + Peds	Met Minimum Threshold of at least 200 units per hour for the same 8 hours (highest approach)?
07:00-08:00	556	YES	8	6	14	NO
08:00-09:00	413	YES	3	1	4	NO
13:00-14:00	353	YES	13	0	13	NO
14:00-15:00	442	YES	10	0	10	NO
15:00-16:00	575	YES	11	0	11	NO
16:00-17:00	711	YES	17	9	26	NO
17:00-18:00	801	YES	9	4	13	NO
18:00-19:00	622	YES	16	0	16	NO

### LINE OF SIGHT AT INTERSECTIONS

The driver of a vehicle approaching or departing from an intersection should have an unobstructed view of the intersection, including any traffic control devices, and sufficient lengths along the intersecting highway to permit the driver to anticipate and avoid potential collisions (Maze and Plazak 2000). These unobstructed views form triangular areas, known as sight triangles. Any object within the sight triangle that would obstruct the driver's view of an approaching vehicle (4.25 feet in height) should be removed or modified or appropriate traffic control devices should be installed as per the Manual on Uniform Traffic Control Devices. Obstructions within sight triangles could be buildings, vehicles, hedges, trees, bushes, tall crops, walls, fences or parked cars.

**Figure 4: Stopping Sight Distance Criteria**



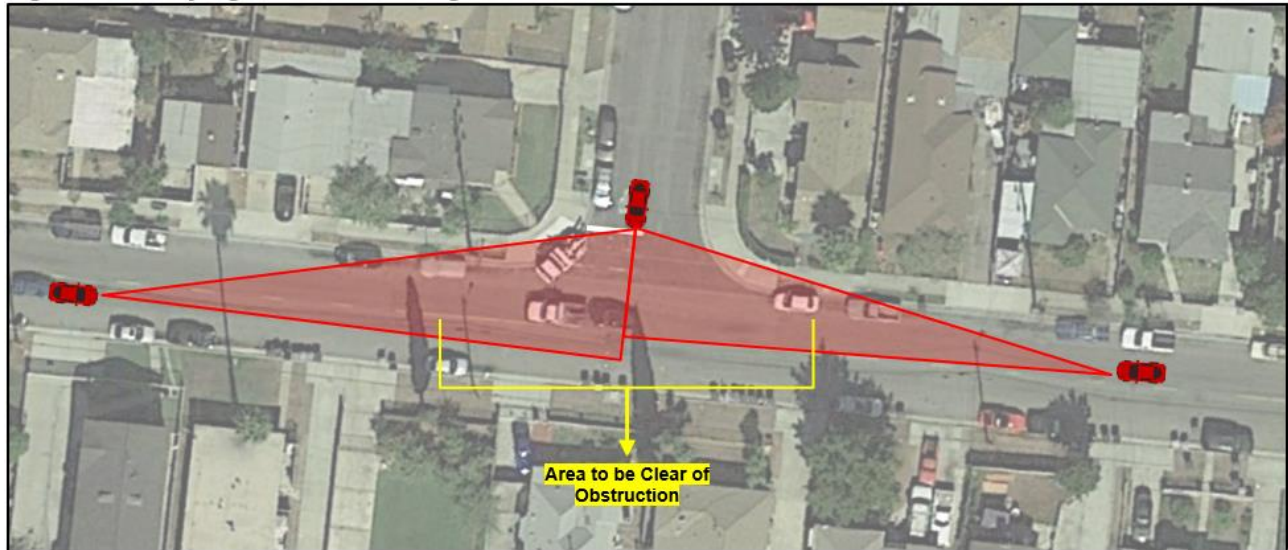
**Table 6: Stopping Sight Distance**

Design Speed (mph)	Brake reaction distance (ft)	Braking distance on level (ft)	Stopping Sight Distance	
			Calculated (ft)	Design (ft)
15	55.1	21.6	76.7	80
20	73.5	38.4	111.9	115
25	91.9	60.0	151.9	155
30	110.3	86.4	196.7	200
35	128.6	117.6	246.2	250
40	147.0	153.6	300.6	305
45	165.4	194.4	359.8	360
50	183.8	240.0	423.8	425
55	202.1	290.3	492.4	495
60	220.5	345.5	566.0	570
65	238.9	405.5	644.4	645

Note: Brake reaction distance predicated on a time of 2.5s; deceleration rate 11.2 ft/sec<sup>2</sup>

Per AASHTO's guidelines, for a roadway with a posted speed of 30 mph the sight distance is 200 feet. When looking at the available sight distance triangles for vehicles waiting on Gaspar Avenue to turn onto Ferguson Drive the red curb on adjacent corners should be expanded to provide the necessary line of sight. Striping the additional red curb will eliminate one parking space on both the northwest and northeast corners on Ferguson Drive. However, each corner house will still have available parking on Ferguson Drive as well as Gaspar Avenue.

**Figure 5: Line of Sight Distance Triangle**





# ATTACHMENT 1: AVERAGE DAILY TRAFFIC (ADT) – 1 OF 2

Prepared by NDS/ATD

## VOLUME

Gerhart Ave & Union Pacific Ave

Day: Tuesday  
Date: 7/25/2017

City: Commerce  
Project #: CA17\_5478\_001

DAILY TOTALS					NB	SB	EBWB					Total
					3,272	3,488						0
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL	
00:00	11	15			26	12:00	59	51			110	
00:15	9	6			15	12:15	49	52			101	
00:30	8	2			10	12:30	59	50			109	
00:45	8	36	4	27	12	12:45	48	215	60	213	108	
01:00	7	3			10	13:00	56	61			117	
01:15	11	7			18	13:15	48	59			107	
01:30	3	6			9	13:30	39	62			101	
01:45	4	25	6	22	10	13:45	49	192	59	241	108	
02:00	3	0			3	14:00	47	56			103	
02:15	3	4			7	14:15	50	50			100	
02:30	4	6			10	14:30	44	50			94	
02:45	4	14	0	10	4	14:45	56	197	39	195	95	
03:00	3	3			6	15:00	60	54			114	
03:15	5	5			10	15:15	61	54			115	
03:30	5	7			12	15:30	63	52			115	
03:45	2	15	13	28	15	15:45	70	254	49	209	119	
04:00	7	10			17	16:00	86	48			134	
04:15	3	7			10	16:15	87	54			141	
04:30	6	8			14	16:30	98	60			158	
04:45	6	22	17	42	23	16:45	76	347	57	219	133	
05:00	6	20			26	17:00	96	72			168	
05:15	7	29			36	17:15	104	50			154	
05:30	10	34			44	17:30	85	73			158	
05:45	17	40	37	120	54	17:45	89	374	64	259	153	
06:00	13	39			52	18:00	86	78			164	
06:15	16	50			66	18:15	68	51			119	
06:30	13	62			75	18:30	63	50			113	
06:45	14	56	74	225	88	18:45	49	266	41	220	90	
07:00	25	58			83	19:00	44	49			93	
07:15	16	71			87	19:15	40	33			73	
07:30	34	83			117	19:30	47	31			78	
07:45	32	107	88	300	120	19:45	39	170	41	154	80	
08:00	27	67			94	20:00	40	41			81	
08:15	42	64			106	20:15	39	34			73	
08:30	37	50			87	20:30	31	31			62	
08:45	39	145	48	229	87	20:45	22	132	26	132	48	
09:00	33	43			76	21:00	31	30			61	
09:15	39	40			79	21:15	26	23			49	
09:30	48	39			87	21:30	37	27			64	
09:45	37	157	28	150	65	21:45	27	121	28	108	55	
10:00	25	42			67	22:00	22	21			43	
10:15	35	35			70	22:15	14	19			33	
10:30	32	41			73	22:30	16	4			20	
10:45	32	124	28	146	60	22:45	12	64	7	51	19	
11:00	40	35			75	23:00	25	10			35	
11:15	29	27			56	23:15	11	4			15	
11:30	38	41			79	23:30	8	14			22	
11:45	35	142	48	151	83	23:45	13	57	9	37	22	
TOTALS	883	1450			2333	TOTALS	2389	2038			4427	
SPLIT %	37.8%	62.2%			34.5%	SPLIT %	54.0%	46.0%			65.5%	

DAILY TOTALS					NB	SB						EB	WB	Total
					3,272	3,488						0	0	6,760
AM Peak Hour	11:45	07:15			07:30	PM Peak Hour	16:30	17:30					17:00	
AM Pk Volume	202	309			437	PM Pk Volume	374	266					633	
Pk Hr Factor	0.856	0.878			0.910	Pk Hr Factor	0.899	0.853					0.942	
7 - 9 Volume	252	529	0	0	781	4 - 6 Volume	721	478	0	0			1199	
7 - 9 Peak Hour	08:00	07:15			07:30	4 - 6 Peak Hour	16:30	17:00					17:00	
7 - 9 Pk Volume	145	309	0	0	437	4 - 6 Pk Volume	374	259	0	0			633	
Pk Hr Factor	0.863	0.878	0.000	0.000	0.910	Pk Hr Factor	0.899	0.887	0.000	0.000			0.942	

# ATTACHMENT 1: AVERAGE DAILY TRAFFIC (ADT) – 2 OF 2

Prepared by NDS/ATD

## VOLUME

Union Pacific Ave W/O Gerhart Ave

Day: Tuesday  
Date: 7/25/2017

City: Commerce  
Project #: CA17\_5478\_002

DAILY TOTALS					NB	SB	EB					WB	Total	
					0	0						1,196	956	2,152
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL			
00:00			2	4	6	12:00			17	15	32			
00:15			1	3	4	12:15			19	22	41			
00:30			2	0	2	12:30			26	12	38			
00:45			1	6	1	8	2	14	18	80	19	68	37	148
01:00			1	0	1	13:00			24	24	48			
01:15			3	0	3	13:15			9	25	34			
01:30			1	3	4	13:30			5	17	22			
01:45			1	6	1	4	2	10	15	53	28	94	43	147
02:00			0	3	3	14:00			9	13	22			
02:15			0	0	0	14:15			13	13	26			
02:30			1	0	1	14:30			17	5	22			
02:45			1	2	1	4	2	6	12	51	6	37	18	88
03:00			1	0	1	15:00			22	13	35			
03:15			2	1	3	15:15			17	5	22			
03:30			0	0	0	15:30			20	14	34			
03:45			0	3	4	5	4	8	34	93	26	58	60	151
04:00			1	1	2	16:00			50	13	63			
04:15			0	1	1	16:15			39	14	53			
04:30			1	0	1	16:30			64	20	84			
04:45			1	3	1	3	2	6	43	196	13	60	56	256
05:00			2	2	4	17:00			76	12	88			
05:15			1	4	5	17:15			73	5	78			
05:30			2	5	7	17:30			83	9	92			
05:45			0	5	5	16	5	21	55	287	7	33	62	320
06:00			4	17	21	18:00			67	15	82			
06:15			2	21	23	18:15			30	15	45			
06:30			4	21	25	18:30			32	6	38			
06:45			3	13	31	90	34	103	21	150	8	44	29	194
07:00			8	26	34	19:00			12	8	20			
07:15			8	25	33	19:15			14	5	19			
07:30			7	33	40	19:30			11	3	14			
07:45			8	31	31	115	39	146	8	45	7	23	15	68
08:00			6	24	30	20:00			5	3	8			
08:15			9	23	32	20:15			5	5	10			
08:30			6	25	31	20:30			4	4	8			
08:45			4	25	23	95	27	120	2	16	4	16	6	32
09:00			3	21	24	21:00			4	2	6			
09:15			9	16	25	21:15			2	6	8			
09:30			7	11	18	21:30			9	8	17			
09:45			15	34	9	57	24	91	3	18	6	22	9	40
10:00			7	12	19	22:00			3	2	5			
10:15			6	5	11	22:15			2	4	6			
10:30			12	14	26	22:30			5	1	6			
10:45			7	32	10	41	17	73	0	10	0	7	0	17
11:00			12	17	29	23:00			0	1	1			
11:15			10	7	17	23:15			2	0	2			
11:30			7	13	20	23:30			0	2	2			
11:45			6	35	12	49	18	84	0	2	4	7	4	9
TOTALS			195	487	682	TOTALS			1001	469	1470			
SPLIT %			28.6%	71.4%	31.7%	SPLIT %			68.1%	31.9%	68.3%			
DAILY TOTALS					NB	SB	EB					WB	Total	
					0	0	1,196					956	2,152	

## ATTACHMENT 2: TURNING MOVEMENT COUNTS – 1 OF 1

### TURNING MOVEMENT COUNT

PROJECT NAME: City of Commerce Intersection Review  
 PROJECT NO: JN# 17374  
 DATE: 7/12/17

TIME	N-S STREET: <u>Gerhart Avenue</u>							E-W STREET: <u>Union Pacific Avenue</u>										
	NORTH BOUND			SOUTH BOUND			N-S TOTAL	EAST BOUND			WEST BOUND			E-W TOTAL				
	LEFT	THRU	RIGHT	LEFT	THRU	RIGHT		LEFT	THRU	RIGHT	LEFT	THRU	RIGHT		NL	SL	EL	WL
07:00-07:15	2	26			33	19	80	2		4				6		3		
07:15-07:30	2	28			61	26	117			4				4	2			3
07:30-07:45	15	29			60	23	127	2		5				7				3
07:45-08:00	11	35			70	19	135	4		2				6		1		
08:00-08:15	7	35			35	9	86	2		3				5				
08:15-08:30	7	39			45	11	102	2		2				4		1		1
08:30-08:45	4	22			41	13	80			3				3		1		
08:45-09:00	4	29			38	7	78			2				2		1		

13:00-13:15							0							0						
13:15-13:30							0							0						
13:30-13:45							0							0						
13:45-14:00							0							0						
14:00-14:15							0							0						
14:15-14:30							0							0						
14:30-14:45							0							0						
14:45-15:00							0							0						

16:00-16:15	4	55			40	6	105	34		19				53						2
16:15-16:30	3	42			53	3	101	17		22				39			3			4
16:30-16:45	6	50			58	6	120	47		31				78						1
16:45-17:00	5	53			62	5	125	18		33				51						2
17:00-17:15	3	60			68	3	134	55		57				112						
17:15-17:30	3	66			59	2	130	33		27				60						
17:30-17:45	2	60			59	1	122	23		44				67						4
17:45-18:00		61			57	5	123	20		30				50			1			

### PEAK-HOUR VOLUME ANALYSIS

CALCULATED PEAK HOUR VOLUMES-AM										ADJUSTED PEAK HOUR VOLUMES-AM									
77					226					0									
SR					ST					SL									
8	EL								WR	0									
0	ET					07:15-08:15			WT	0									
14	ER								WL	0									
NL					NT					NR									
35					127					0									

CALCULATED PEAK HOUR VOLUMES-NOON										ADJUSTED PEAK HOUR VOLUMES-NOON									
0					0					0									
SR					ST					SL									
0	EL								WR	0									
0	ET					13:00-14:00			WT	0									
0	ER								WL	0									
NL					NT					NR									
0					0					0									

CALCULATED PEAK HOUR VOLUMES-PM										ADJUSTED PEAK HOUR VOLUMES-PM									
16					247					0									
SR					ST					SL									
153	EL								WR	0									
0	ET					16:30-17:30			WT	0									
148	ER								WL	0									
NL					NT					NR									
17					229					0									

# ATTACHMENT 3: RADAR SPEED SURVEY – 1 OF 1

City of Commerce Public Works											
Street Name: <u>FERGUSON DRIVE</u>											
Limits: <u>GASPAR AVENUE to NAIM AVENUE</u>											
Radar Survey Sheet											
X=West /-East											
	5	10	15	20	25	30	35	40	#	%ea	cum.%
45											
40											
35	X								1	1.0%	100%
	X								1	1.0%	99.0%
	X								4	4.0%	98.0%
	X								2	2.0%	94.0%
	X								5	5.0%	92.0%
	X								19	19.0%	87.0%
	X								21	21.0%	68.0%
	X								20	20.0%	47.0%
	X								6	6.0%	27.0%
	X								6	6.0%	21.0%
	X								7	7.0%	15.0%
	X								5	5.0%	8.0%
	X								3	3.0%	3.0%
25											
20											
15											
10											
5											
0											
Total Samples									100		

85th Percentile Speed: <u>32.0</u>	Date of Survey: <u>7/12/2017</u>	Start Time: <u>9:45</u>
50th Percentile Speed: <u>30.1</u>	Weather: <u>GOOD</u>	End Time: <u>10:30</u>
15th Percentile Speed: <u>27.0</u>	Road Condition: <u>POOR</u>	Posted Speed: <u>30</u>
10 MPH Pace: <u>26- 35</u>	Street Class.: <u></u>	Observer: <u>BR</u>
Number in Pace: <u>95</u>	Conditions not Apparent: <u>NONE</u>	
Percent in Pace: <u>95.0%</u>		