



Metro

Los Angeles County  
Metropolitan Transportation  
Authority  
One Gateway Plaza  
3rd Floor Board Room  
Los Angeles, CA

## Board Report

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**File #:** 2018-0652, **File Type:** Motion / Motion Response

**Agenda Number:** 5.

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**AD HOC CONGESTION, HIGHWAY, AND ROADS COMMITTEE  
FEBRUARY 20, 2019**

**SUBJECT: CALTRANS ORAL REPORT IN RESPONSE TO THE ROAD MOVABLE BARRIERS  
SYSTEM MOTION**

**ACTION: RECEIVE ORAL REPORT**

**RECOMMENDATION**

RECEIVE oral report by Caltrans in response to the Road Movable Barriers System Motion from June 2018.

**ATTACHMENT**

Attachment A - Road Barriers Motion



**Board Report**

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**File #:** 2018-0424, **File Type:** Motion / Motion Response

**Agenda Number:** 61.

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**REGULAR BOARD MEETING  
JUNE 28, 2018**

**Motion by:**

**GARCETTI, DUPONT-WALKER, HAHN, GARCIA, FASANA AND BOWEN**

**Road Movable Barriers System**

**SUBJECT: MOTION BY GARCETTI, DUPONT-WALKER, HAHN, GARCIA,  
FASANA AND BOWEN**

**ROAD MOVABLE BARRIERS SYSTEM**

WE THEREFORE MOVE THAT the Board direct the CEO to report back on the following:

- A. An analysis of the feasibility to implement Road Movable Barriers System on Freeway systems in Los Angeles County where asymmetric traffic flow exists. The analysis shall include the following:
  - 1. Identifying the potential freeway corridor segments such as the I-405 between I-105/LAX to I-710, and others, that have unique directional traffic flows.
  - 2. Coordination with Caltrans to identify the associated capital costs such as bridge replacement.
  - 3. Coordination with Caltrans to identify the associated operation costs to implement Road Movable Barriers System to create reversible lanes during AM and PM peak hours;
- B. Identify and recommend funding sources to support a pilot demonstration program; and
- C. Report back on all the above during the October 2018 MTA Board cycle.



# ROAD MOVABLE BARRIERS SYSTEM Segment Analysis

Metro Board Action Item No. 61, June 28, 2018  
CEO to report on analysis of the feasibility to  
implement movable barrier system in Los Angeles  
County where asymmetric traffic flow exists.

NOVEMBER 2018



## **BOARD ACTION**

### **CEO report on analysis of the feasibility to implement Movable Barrier System in Los Angeles County where asymmetric traffic flow exists.**

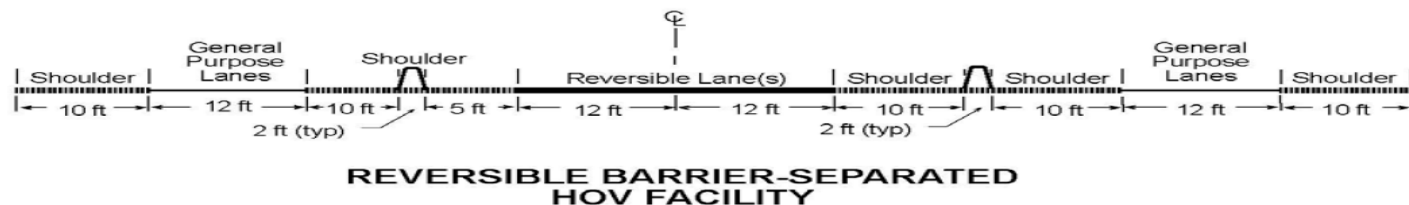
- ▶ **1. Identifying the potential freeway corridor segments such as the I-405 between I-105/LAX to I-710, and others, that have unique directional traffic flows.**
- ▶ 2. Coordination with Caltrans to identify the associated capital costs such as bridge replacement.
- ▶ 3. Coordination with Caltrans to identify the associated operation costs to implement Road Movable Barriers System to create reversible lanes during AM and PM peak hours.

# REVERSIBLE HOV LANES MINIMUM REQUIREMENTS

From High-Occupancy Vehicle Guidelines for Planning, Design & Operations.  
January 2018.

- ▶ Minimum length for these facilities should be 2 miles
- ▶ This type of operation is feasible only if the existing and forecasted directional traffic split is 65% or more in one direction during the design life of the project
- ▶ Free of right-of-way and physical constraints, such as bridge columns, in retrofitting a reversible flow

**FIGURE 3.1**  
**TYPICAL CROSS SECTIONS**  
**BARRIER-SEPARATED HOV FACILITIES**  
NOT TO SCALE



HIGH-OCCUPANCY  
VEHICLE  
GUIDELINES

for Planning, Design  
and Operations

January 2018  
California State  
Transportation Agency

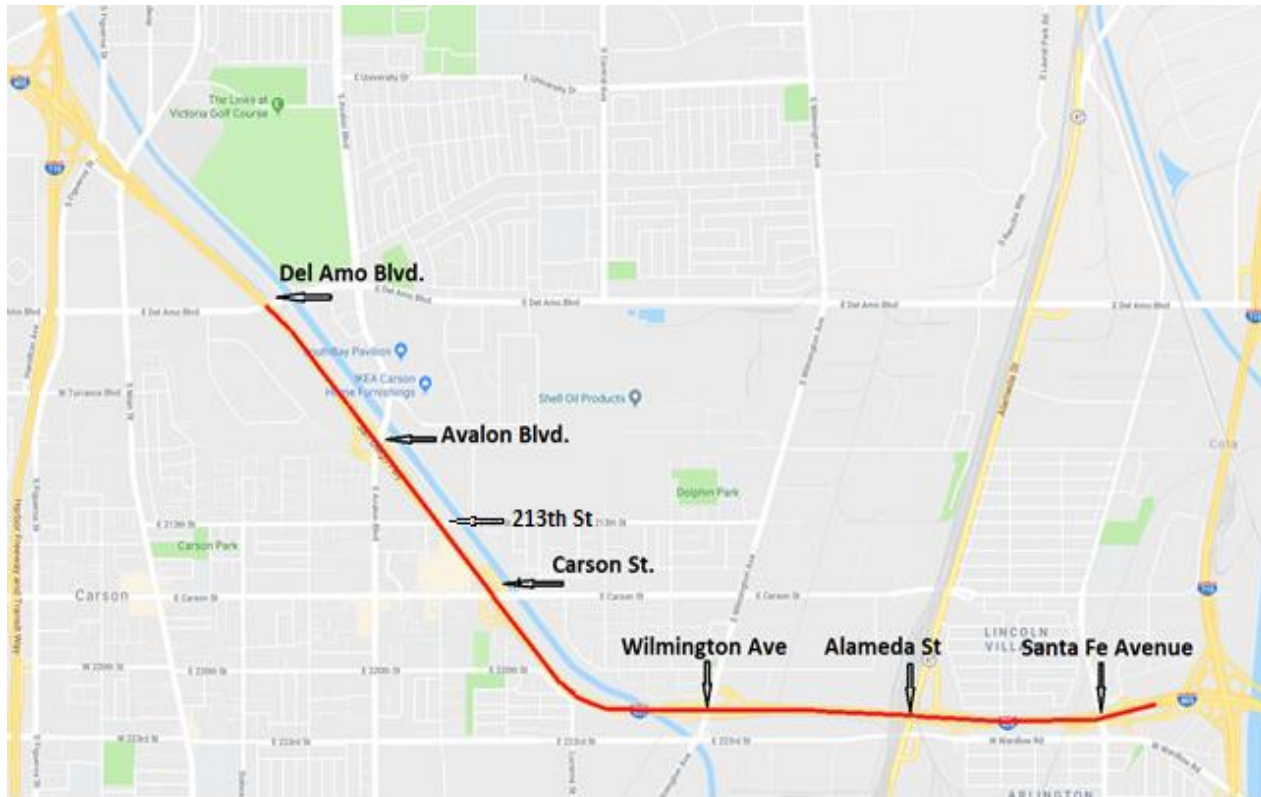


Prepared by:  
Department of Transportation  
Division of Traffic Operations  
web address: <http://onramp/hq/trafops/otr4p4r/hov/hov.html>

High-Occupancy Vehicle Guidelines  
For Planning, Design and Operations

## SEGMENT LOCATION

ON ROUTE 405 BETWEEN I-710 (PM 7.8)  
AND DEL AMO BLVD. (PM 11.8)



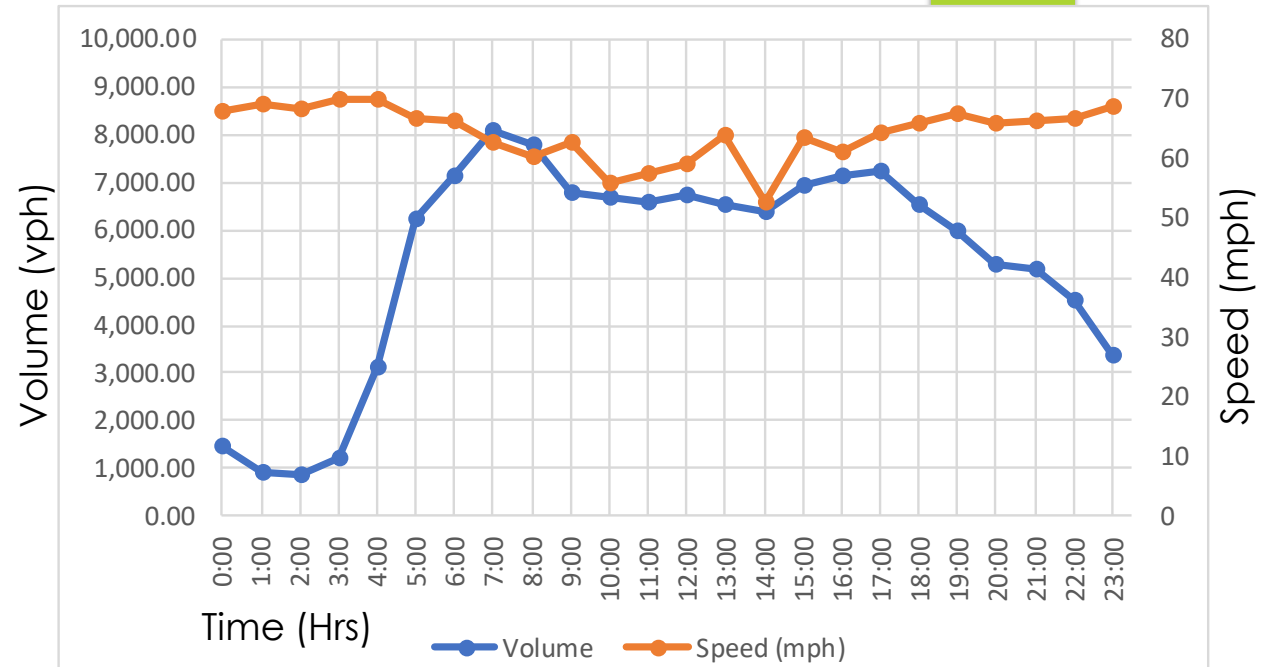
- I-405 is the most congested urban freeway in California, and the site of the top bottlenecks in Los Angeles County.
- There are no major physical constraints located in the median, making it physically feasible for movable barrier system, if 65/35 split tends to exist.
- This segment of I-405 is part of Metro Countywide Express Lanes Tier 1 Projects (5 to 10 Years).
- Caltrans PeMS data are used to measure flow, speed, and occupancy.



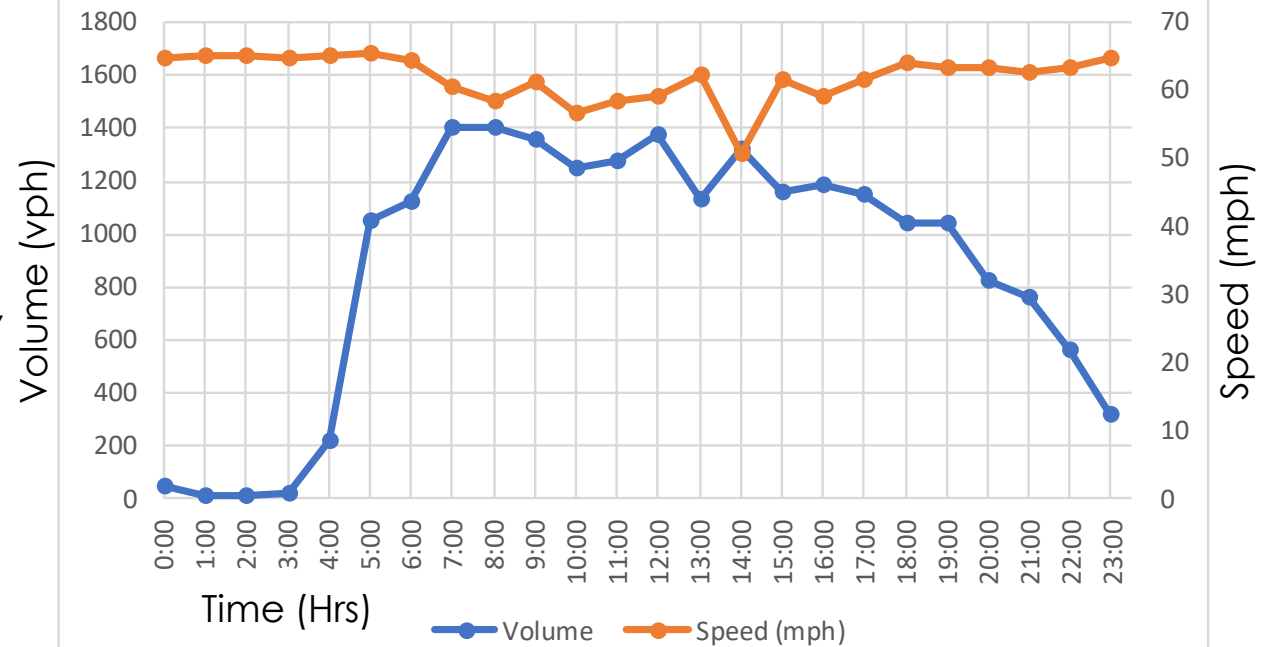
# DIRECTIONAL VOLUME AND SPEED COMPARISON I-405 NB

AT AVALON BLVD.

**GENERAL PURPOSE (4 LANES)**



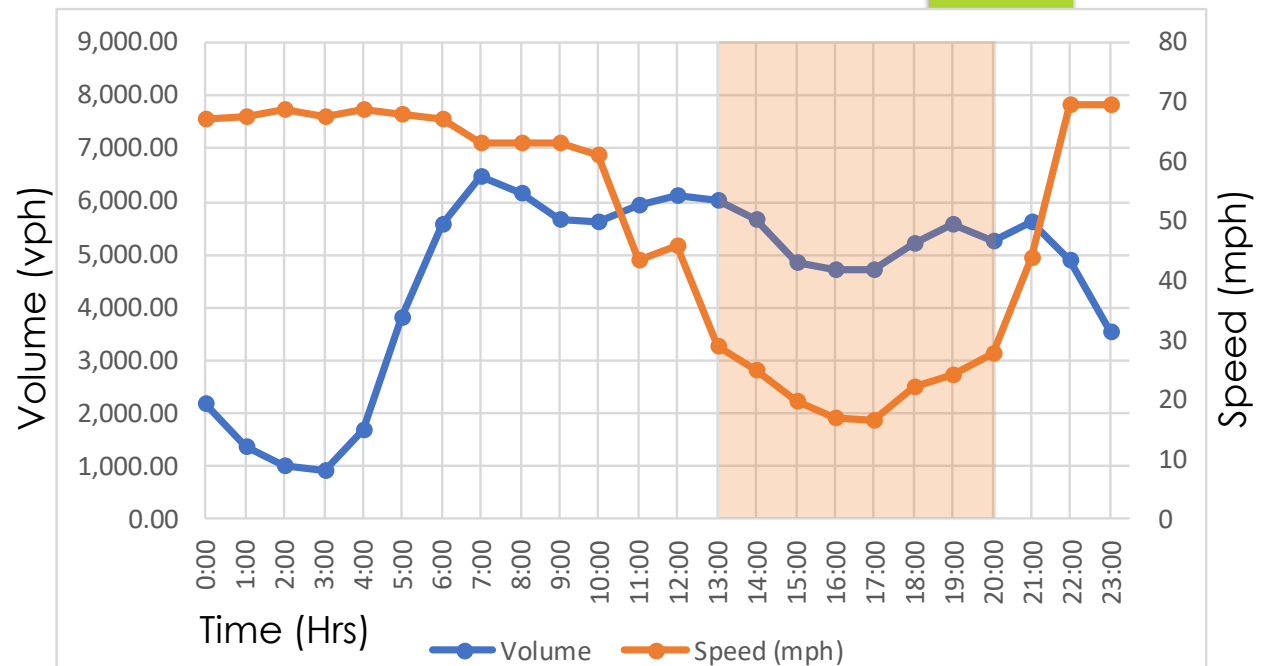
**HOV ONLY (1 LANE)**



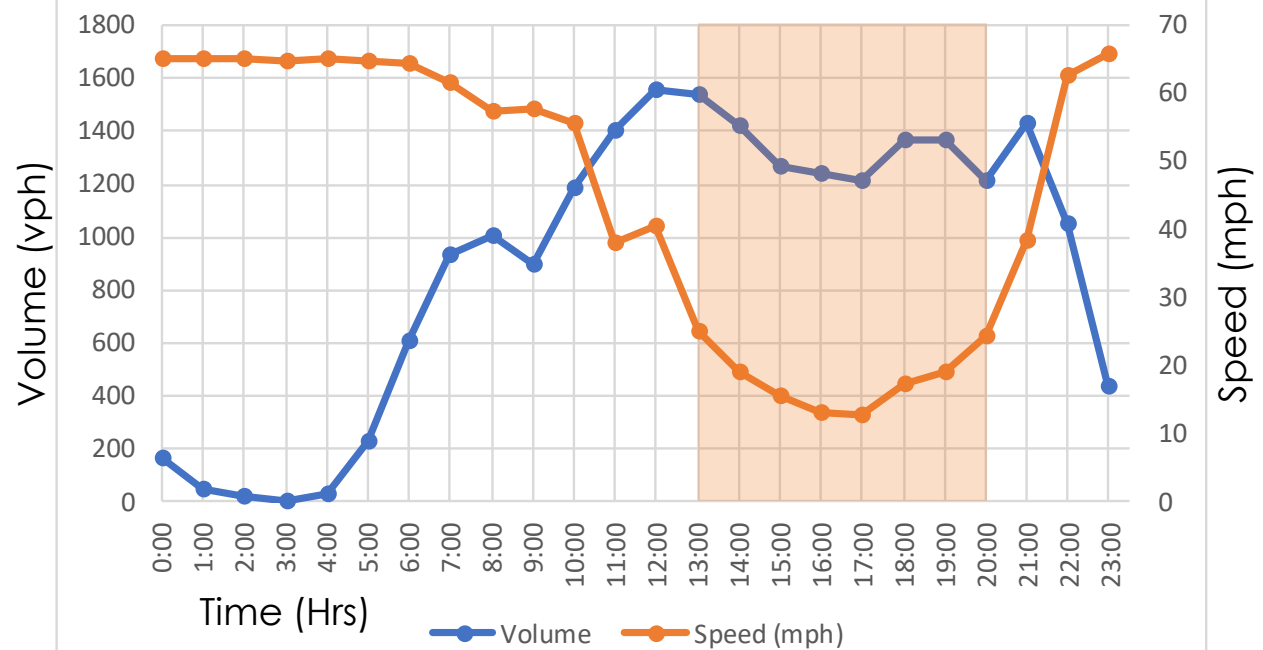
# DIRECTIONAL VOLUME AND SPEED COMPARISON I-405 SB

AT AVALON BLVD.

**GENERAL  
PURPOSE  
(4 LANES)**



**HOV ONLY  
(1 LANE)**





# DIRECTIONAL VOLUME SPLIT AT AVALON BLVD.

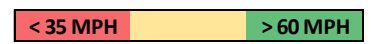
AVALON BLVD (PM 11.32) - DIRECTIONAL LANE CONFIGURATION: 4 GP & 1 HOV

Time	Directional Volume (vph)		Directional Volume (vph)		Directional Volume (vph)		Volume Split (%)						Average Speed (mph)			
	SB GP (4 lanes)	NB GP (4 lanes)	SB HOV (1 lane)	NB HOV (1 lane)	SB GP+HOV	NB GP+HOV	SB GP	NB GP	SB HOV	NB HOV	SB GP+HOV	NB GP+HOV	SB GP	NB GP	SB HOV	NB HOV
0:00	2192	1471	160	49	2352	1520	60%	40%	77%	23%	61%	39%	67	68	65	65
1:00	1364	903	50	11	1414	914	60%	40%	82%	18%	61%	39%	68	69	65	65
2:00	1023	851	16	7	1039	858	55%	45%	70%	30%	55%	45%	69	69	65	65
3:00	913	1223	1	19	914	1242	43%	57%	5%	95%	42%	58%	68	70	65	65
4:00	1664	3114	31	217	1695	3331	35%	65%	13%	88%	34%	66%	69	70	65	65
5:00	3796	6243	228	1047	4024	7290	38%	62%	18%	82%	36%	64%	68	67	65	66
6:00	5571	7128	610	1119	6181	8247	44%	56%	35%	65%	43%	57%	67	67	65	64
7:00	6454	8109	932	1402	7386	9511	44%	56%	40%	60%	44%	56%	63	63	62	61
8:00	6150	7815	1006	1401	7156	9216	44%	56%	42%	58%	44%	56%	63	61	58	59
9:00	5671	6817	898	1361	6569	8178	45%	55%	40%	60%	45%	55%	63	63	58	61
10:00	5633	6713	1187	1250	6820	7963	46%	54%	49%	51%	46%	54%	61	56	56	57
11:00	5920	6586	1407	1280	7327	7866	47%	53%	52%	48%	48%	52%	44	58	38	59
12:00	6095	6723	1560	1378	7655	8101	48%	52%	53%	47%	49%	51%	46	59	41	59
13:00	6006	6557	1542	1129	7548	7686	48%	52%	58%	42%	50%	50%	29	64	25	62
14:00	5673	6394	1424	1321	7097	7715	47%	53%	52%	48%	48%	52%	25	53	19	51
15:00	4833	6924	1266	1158	6099	8082	41%	59%	52%	48%	43%	57%	20	64	15	62
16:00	4710	7133	1237	1189	5947	8322	40%	60%	51%	49%	42%	58%	17	61	13	59
17:00	4716	7224	1214	1151	5930	8375	39%	61%	51%	49%	41%	59%	17	64	13	62
18:00	5221	6535	1364	1042	6585	7577	44%	56%	57%	43%	46%	54%	22	66	17	64
19:00	5549	6013	1365	1043	6914	7056	48%	52%	57%	43%	49%	51%	24	68	19	63
20:00	5273	5308	1216	822	6489	6130	50%	50%	60%	40%	51%	49%	28	66	25	63
21:00	5594	5194	1427	759	7021	5953	52%	48%	65%	35%	54%	46%	44	67	38	63
22:00	4875	4549	1051	559	5926	5108	52%	48%	65%	35%	54%	46%	70	67	63	63
23:00	3543	3399	434	316	3977	3715	51%	49%	58%	42%	52%	48%	70	69	66	65

LOWEST SPEED



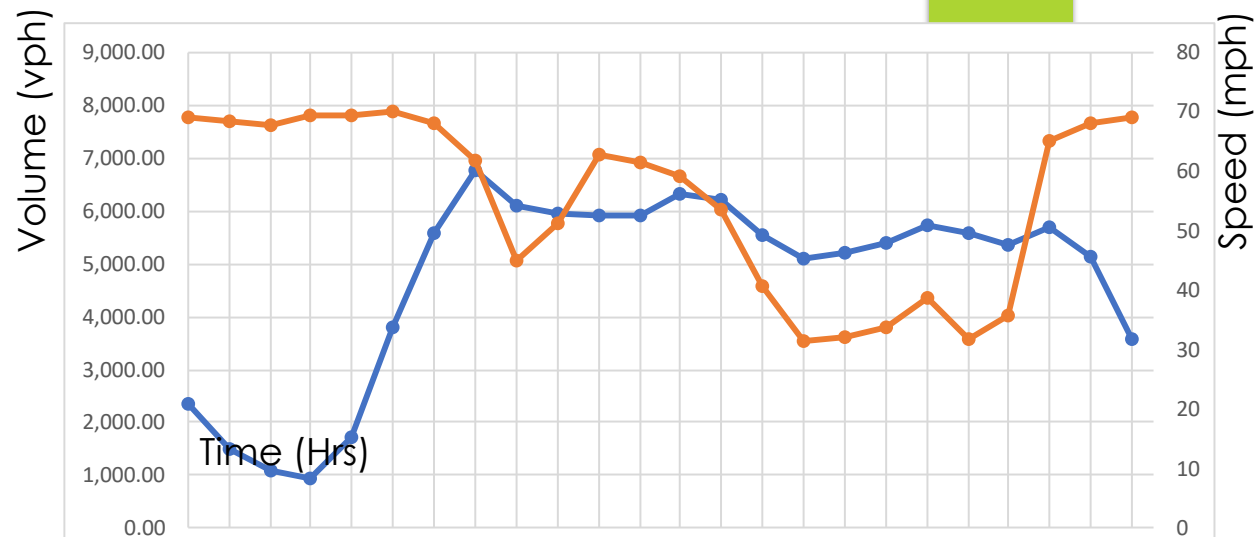
Cells in blue with >65% are when apparent volume split occurs.



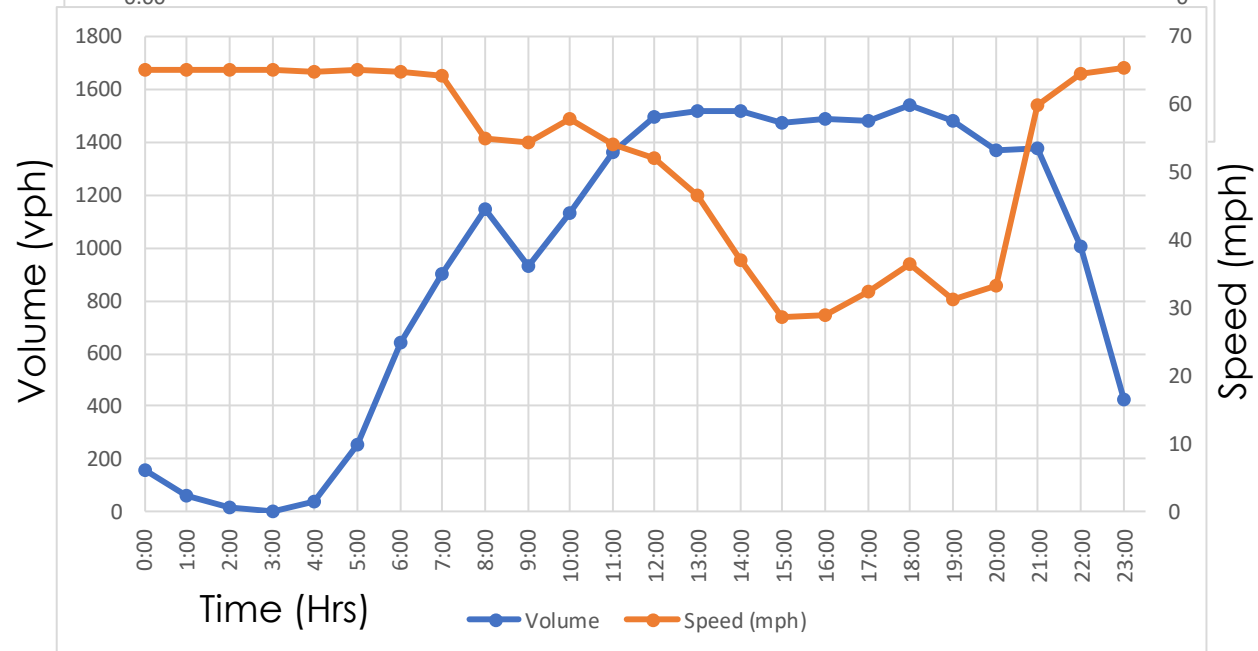
# DIRECTIONAL VOLUME AND SPEED COMPARISON I-405 NB

AT SANTA FE AVE.

**GENERAL PURPOSE (4 LANES)**



**HOV ONLY (1 LANE)**

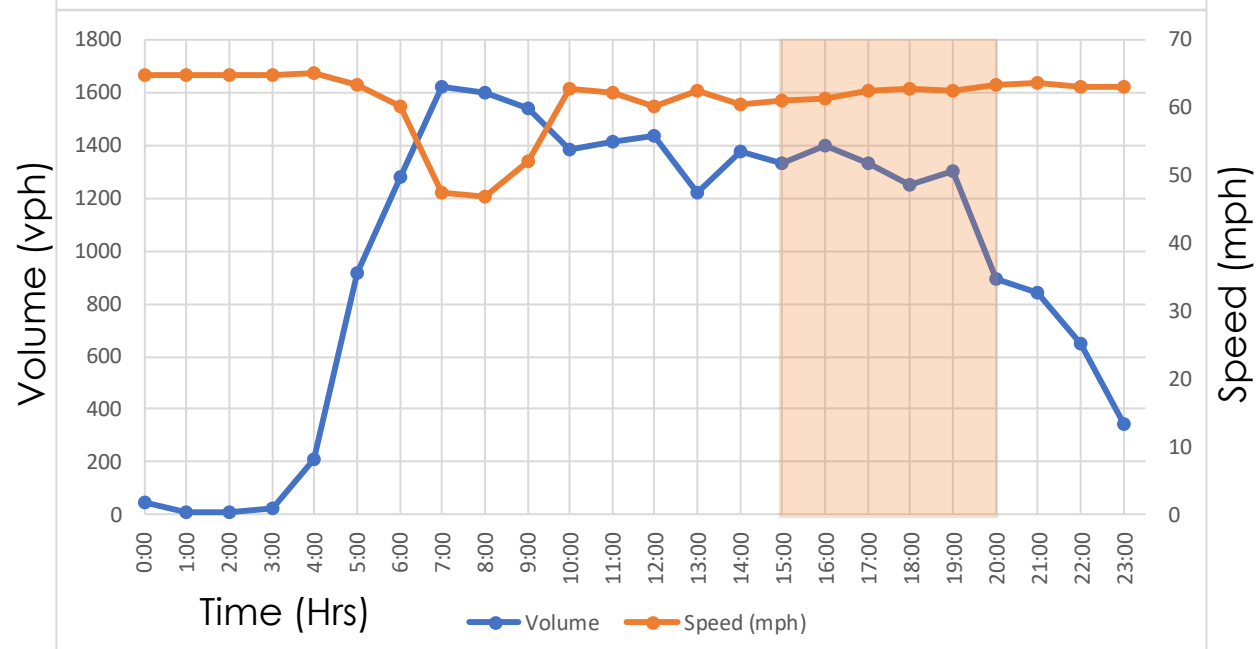
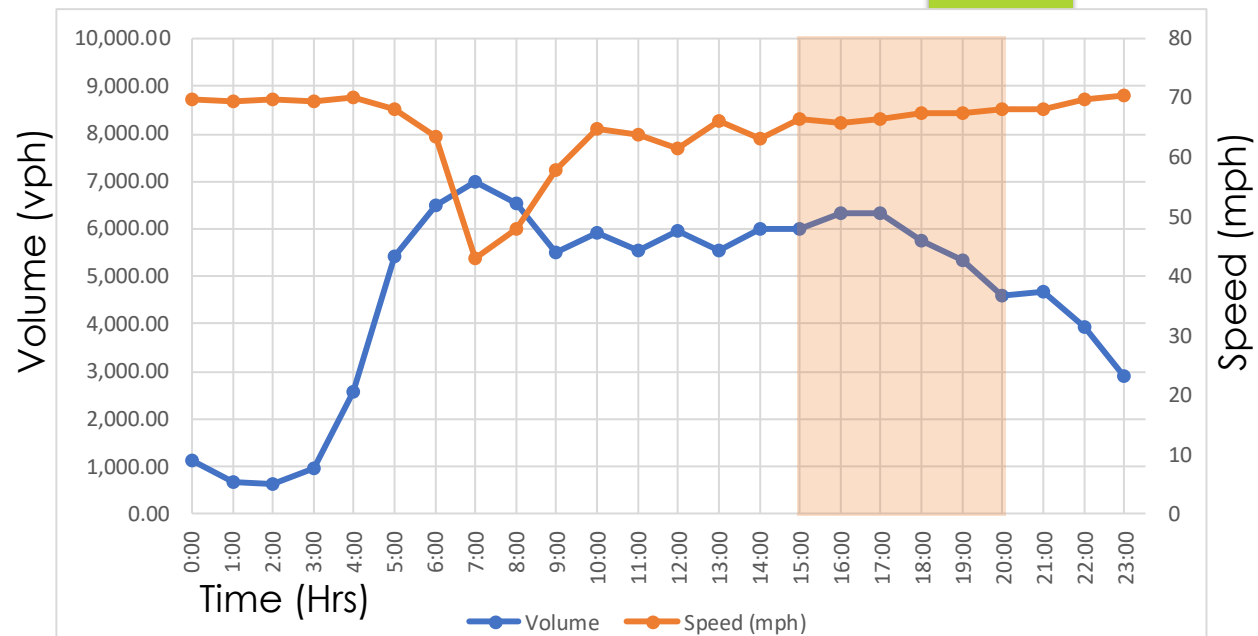


# DIRECTIONAL VOLUME AND SPEED COMPARISON I-405 SB

AT SANTA FE AVE.

**GENERAL PURPOSE (4 LANES)**

**HOV ONLY (1 LANE)**

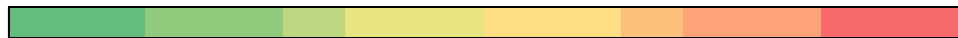


# DIRECTIONAL VOLUME SPLIT AT SANTA FE AVE.

SANTA FE AVE (PM 8.02) - DIRECTIONAL LANE CONFIGURATION: 4 GP & 1 HOV

Time	Directional Volume (vph)		Directional Volume (vph)		Directional Volume (vph)		Volume Split (%)						Average Speed (mph)			
	SB GP (4 lanes)	NB GP (4 lanes)	SB HOV (1 lane)	NB HOV (1 lane)	SB GP+HOV	NB GP+HOV	SB GP	NB GP	SB HOV	NB HOV	SB GP+HOV	NB GP+HOV	SB GP	NB GP	SB HOV	NB HOV
0:00	2344	1132	160	46	2504	1178	67%	33%	78%	22%	68%	32%	65	70	65	65
1:00	1478	652	59	11	1537	663	69%	31%	84%	16%	70%	30%	65	69	65	65
2:00	1094	630	13	6	1107	636	63%	37%	68%	32%	64%	36%	65	70	65	65
3:00	928	953	4	24	932	977	49%	51%	14%	86%	49%	51%	65	69	65	65
4:00	1729	2580	35	211	1764	2791	40%	60%	14%	86%	39%	61%	65	70	65	65
5:00	3798	5436	254	916	4052	6352	41%	59%	22%	78%	39%	61%	65	68	65	64
6:00	5593	6480	643	1283	6236	7763	46%	54%	33%	67%	45%	55%	65	64	65	60
7:00	6774	6992	905	1626	7679	8618	49%	51%	36%	64%	47%	53%	64	43	64	48
8:00	6120	6534	1145	1603	7265	8137	48%	52%	42%	58%	47%	53%	55	48	55	47
9:00	5969	5521	929	1540	6898	7061	52%	48%	38%	62%	49%	51%	54	58	54	52
10:00	5916	5935	1130	1384	7046	7319	50%	50%	45%	55%	49%	51%	58	65	58	63
11:00	5920	5545	1364	1415	7284	6960	52%	48%	49%	51%	51%	49%	54	64	54	62
12:00	6328	5967	1499	1435	7827	7402	51%	49%	51%	49%	51%	49%	52	61	52	60
13:00	6210	5549	1522	1222	7732	6771	53%	47%	55%	45%	53%	47%	47	66	47	63
14:00	5566	5979	1517	1377	7083	7356	48%	52%	52%	48%	49%	51%	37	63	37	61
15:00	5109	5999	1474	1333	6583	7332	46%	54%	53%	47%	47%	53%	29	67	29	61
16:00	5211	6319	1491	1402	6702	7721	45%	55%	52%	48%	46%	54%	29	66	29	61
17:00	5390	6345	1485	1332	6875	7677	46%	54%	53%	47%	47%	53%	33	67	33	62
18:00	5721	5748	1543	1251	7264	6999	50%	50%	55%	45%	51%	49%	37	68	37	63
19:00	5599	5324	1481	1300	7080	6624	51%	49%	53%	47%	52%	48%	31	68	31	63
20:00	5379	4580	1372	891	6751	5471	54%	46%	61%	39%	55%	45%	33	68	33	63
21:00	5694	4668	1377	844	7071	5512	55%	45%	62%	38%	56%	44%	60	68	60	64
22:00	5123	3937	1005	645	6128	4582	57%	43%	61%	39%	57%	43%	65	70	65	63
23:00	3567	2918	424	347	3991	3265	55%	45%	55%	45%	55%	45%	65	70	65	63

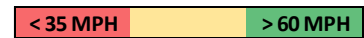
LOWEST SPEED



Lowest Volume

Highest Volume

Cells in red with >65% are when apparent volume split occurs.



< 35 MPH

> 60 MPH

# SUMMARY OF FINDINGS & CONCLUSION

- ▶ Noticeable asymmetric traffic flow patterns (approx. 65/35 split) were observed only during off-peak hours in segment of the I-405 between Del Amo Blvd. and I-710.
- ▶ **During those hours, speeds are moderately high and minimal congestion is present, thus implementing Movable Barrier System will not be a viable investment.**
- ▶ Upon evaluation of other routes, the following locations exhibit similar conditions and movable barrier **will not be a viable investment**:
  - ▶ **Route 60** from Crossroad Parkway to Barford POC (Approx. 3.9 miles): Approximately 50/50 volume percentage split throughout the day.
  - ▶ **I-10** from Rio Hondo to I-605 (Approx. 2.8 miles): 65/35 volume split only occurs when vehicles are traveling at free-flow speed.
  - ▶ **Route 14** from I-5 to Newhall Avenue (Approx. 4.2 miles): 65/35 volume split occurs when vehicles are traveling at free-flow speed during 7:00PM to 1:00AM.
- ▶ Detailed traffic modeling and analysis needed to further assess other scenarios & alternatives.