

DATE: May 20, 2019

TO: Mayor and Members of the City Council

VIA: Jeff Moneda, City Manager

FROM: Norm Dorais, Public Works Director/City Engineer

SUBJECT: TRAFFIC RELIEF PILOT PROGRAM - NO LEFT TURNS ON EAST HILLSDALE BOULEVARD AT THE INTERSECTIONS OF EAST HILLSDALE BOULEVARD/EDGEWATER BOULEVARD AND EAST HILLSDALE BOULEVARD/SHELL BOULEVARD

RECOMMENDATION

It is recommended that the City Council, by Minute Order, provide policy direction on the Traffic Relief Pilot Program (TRPP) to either (1) extend the program for an additional three (3) months and conduct any additional environmental review under CEQA necessary to permanently implement the program; or (2) terminate the program.

EXECUTIVE SUMMARY

The City Council voted to implement a three-month trial of the TRPP at the December 17, 2018 Council Meeting. The pilot program officially began on February 11, 2019. During the last three (3) months, the TRPP has been implemented on a daily basis during the work week from 4:00 PM-7:00 PM. Before and during the trial period, traffic counts were performed, a survey was conducted, and operational adjustments were made.

Based on City staff's observations, input received, and unintended improvements to eastbound California State Route 92 (SR 92) on-ramps, it appears the TRPP is functioning well.

BACKGROUND

Following over a year of discussions with the community and the City Council, a TRPP restricting left turns at two (2) intersections began on February 11, 2019. The TRPP restricted left-turn (and U-turn) movements while traveling eastbound on East Hillsdale Boulevard at the intersections of East Hillsdale Boulevard/Edgewater Boulevard and East Hillsdale Boulevard/Shell Boulevard. The restrictions have been in effect during the peak evening commute hours from 4:00 PM-7:00 PM, Monday to Friday, major holidays excluded, since the start of the three-month trial period.

The TRPP and survey results were discussed at the December 17, 2018 City Council Meeting. Consistent with City staff's concerns, the City Council also raised reservations on the impacts this TRPP would have on its residents. However, it was decided this attempt to alleviate traffic congestion would be worthwhile rather than keeping the status quo. The City Council approved 5-0-0 for the TRPP to move forward in implementation as described.

During the program, should any safety concerns arise, authority has been given to the City Manager to terminate at any time. Additionally, efforts were made to make this transition as smooth as possible: through engagement of impacted homeowner associations/properties, ensuring proper signage and notification prior to and during the pilot period, and coordination with the navigation apps.

ANALYSIS

East Hillsdale Boulevard is primarily a six-lane arterial roadway with recently-installed dedicated bike lanes and speed limits ranging from 40 mph, from the City limits to Edgewater Boulevard, to 35 mph, from Edgewater Boulevard to Shell Boulevard. Both intersections, East Hillsdale Boulevard/Edgewater Boulevard and East Hillsdale Boulevard/Shell Boulevard, are controlled by traffic signals. Edgewater Boulevard varies from four (4) to six (6) lanes in each direction and is an arterial roadway with a 40 mph posted speed limit approaching East Hillsdale Boulevard in both directions. Shell Boulevard is also a four-lane arterial roadway with a posted speed limit of 35 mph approaching East Hillsdale Boulevard in both directions.

Traffic counts indicate that peak hour traffic (5:00 PM-6:00 PM) has increased by as much as 30% since 2015.

Count Location		2015			2018		Change %
	E/B	W/B	Total	E/B	W/B	Total	
East Hillsdale Boulevard, East of Altair Avenue	1,572	1,234	2,806	1,977	1,273	3,250	+16%
East Hillsdale Boulevard, West of Shell Boulevard	1,246	740	1,986	1,538	953	2,491	+25%
East Hillsdale Boulevard, West of Foster City Boulevard	891	709	1,600	1,313	774	2,087	+30%

Traffic Volume Comparison 2015 to 2018 along East Hillsdale Boulevard 5:00 PM-6:00 PM Peak Hour:

Subsequent to the start of the TRPP, baseline traffic counts were conducted in mid-March 2019. During the pilot program, TRPP intersections showed an approximately 3% traffic volume decrease during the trial time period (4:00 PM-7:00 PM). While overall traffic volumes along East Hillsdale Boulevard increased by approximately 5% from 5:00 PM-6:00 PM, the TRPP elimination of the left turn phase resulted in more "green time" for through-traffic, thus improving traffic flow due to signal efficiency and resulting in decreased travel times. This efficiency is highlighted by three (3) of the nine (9) study intersections showing an improvement to the Level of Service, with only one (1) intersection (East Hillsdale at Center Park Lane) showing a reduction in the Level of Service. The remaining five (5) intersections maintained the same Level of Service. The complete traffic report is included in Attachment 1.

City staff also checked with the City of San Mateo staff on the issue of the potential for increased traffic through San Mateo as a result of the TRPP. The traffic counts indicated a minimal effect on the streets adjacent to the East Hillsdale Boulevard corridor.

In order to gauge public sentiment about how the program is being received, City staff prepared an online survey during March about how people felt the TRPP was working. The survey was sent to prior participants in the previous TRPP survey, advertised in the local paper, and links to the survey were displayed at City facilities and included on the City website. The survey was open for three (3) weeks from March 11 through March 31 and over 800 responses were received. The survey questions and the results are summarized in the three (3) tables below.







As was done with the initial survey in October of 2018, the full March 2019 survey results, including the complete list of questions and detailed responses, are available for review at the following web link: <u>www.fostercity.org/TRPPFeedbackSurvey</u>*.

Besides using traditional traffic counts, City staff is working with a vendor to provide origin and destination information. Tracking vehicles entering Foster City and leaving Foster City via the SR 92 on-ramps (Edgewater Boulevard and Metro Center Boulevard) provides data for estimating the number of vehicles using East Hillsdale Boulevard to "cut-through" Foster City. Staff did not learn of the vendor's product until after the start of the program, so there is only data since one (1) week after the start of the TRPP. Based on the data collected and analyzed to date, the average "cut-through" rate ranges between 15-20%. There does not appear to be a pattern to the "cut-through" traffic patterns (e.g. worse on Wednesday at 5:00 PM-5:15 PM). Rather, the percentages are random and do not present a consistent pattern. City staff continues to work with the vendor to improve the data collection and reporting strategy.

TRANSPORTATION SUBCOMMITTEE

The Transportation Subcommittee, consisting of Mayor Sam Hindi and Councilmember Sanjay Gehani, has reviewed the staff report.

ENVIRONMENTAL REVIEW

As further explained in the attached Notice of Exemption (Attachment 2), City staff has determined that the TRPP, and the proposed temporary three-month extension of the

TRPP, is statutorily and categorically exempt from CEQA pursuant to the following CEQA Guidelines Sections: § 15262 (Feasibility and Planning Studies); § 15301 (Existing Facilities); § 15306 (Information Collection); § 15305 (Minor Alterations in Land Use Limitations). Prior to considering any permanent implementation of the program, additional data collection and analysis will be conducted to confirm whether permanent implementation of the program is exempt from CEQA (under § 15301 (Existing Facilities) and/or § 15305 (Minor Alterations in Land Use Limitations) or requires additional environmental analysis in the form of a negative declaration, mitigated negative declaration or environmental impact report.

FUTURE STEPS

Should the TRPP be implemented on a permanent basis, the following options will be pursued:

1. Comparing the Cost of Contracting the Daily Installation and Removal of the Traffic Control Devices Against Using City Staff.

Contract services may be more cost effective and have the benefit of allowing transit vehicles to use the left turn at the restricted intersections in order to continue using their assigned routes.

2. Traffic Signal Modifications to Implement Turn Restrictions.

In lieu of using City or contract staff, traffic signal modifications can be made to "OMIT" left turns by time of day. This option does not allow for transit vehicles to use the intersection, thus requiring them to change their routes. Emergency vehicles could still proceed through the intersection using lights and sirens. The option potentially requires the elimination of the interior left turn lane in order to prevent vehicles from getting trapped in the left turn pocket without a means to safely get out.

3. Time-of-Day Dynamic Signage.

Another implementation strategy using City or contract forces is the use of "Time-of-Day" dynamic LED signage which activates during the turn restriction period. This option would be used in conjunction with Option 2 (two) above.

FISCAL IMPACT

The fiscal impact of the TRPP through April 30, 2019 is provided below.

Pilot Program Expenses	
Staff Costs (~\$700/day)	\$ 37,500
Material Costs	\$ 3,200
Traffic Study (Before/After)	\$ 8,471
Cal-West Support costs	\$ 2,956
Total to-date	\$ 52,127

Attachments:

- Attachment 1 Traffic Study dated April 24, 2019
- Attachment 2 Notice of Exemption

*Link to detailed responses for the March 2019 survey, including information about the Traffic Relief Pilot Program is available on the project page at <u>https://www.fostercity.org/trafficreliefpilotprogram</u>.



April 24, 2019

Norm Dorais City of Foster City 610 Foster City Boulevard Foster City, CA 94404

Subject: Hillsdale Blvd – Eastbound Left Turn Restrictions to Hwy 92 Ramps Before vs After Study

Introduction and Executive Summary

The City of Foster City implemented a Pilot Project in February 2019 to restrict left turn access along E Hillsdale Blvd (eastbound) towards the Highway 92 Ramps. The project, still on-going, includes Time-of-Day (4pm to 7pm) left turn restrictions at the following intersections:

- E Hillsdale Blvd & Edgewater Blvd
- E Hillsdale Blvd & Shell Blvd

The Pilot Project includes using City staff to close down the eastbound left turn lanes at these intersections. Left turn access is provided manually only for emergency response and transit vehicles.

The purpose of the Pilot Project is to deter cut-through traffic through the City of Foster City to help prioritize local streets for residents. This Before vs. After Study provides a comparison of traffic conditions on and along E Hillsdale Blvd and Metro Center Blvd.

Highlights by Intersection of this report include:



There are 229 less cars entering the City of Foster City over a 3-Hour Period as a result of the Trial Project.

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Altair Avenue is realizing an increase in vehicle traffic over the 3-Hour Trial Period.

E Hillsdale Blvd & Center Park Lane Eastbound Vehicles Turning Left or Making U-Turns



Some motorists are making U-Turns at Center Park Drive and heading back towards Edgewater Drive to access Hwy 92 Ramps.



An increase in left turn traffic onto Foster City Blvd was anticipated.

info@trafficpatterns.net

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Methodology

Traffic data comparisons were the primary analysis tool used to estimate the effectives of the left turn restrictions pilot project implemented to help detour cut-through traffic through the City of Foster City. The traffic volumes were used to do immediate traffic volume comparisons for before vs after scenarios and to help determine changes in intersection Level of Service (LOS) in the before and after scenarios. Travel time runs along eastbound E Hillsdale Blvd were provided during the pilot project scenario between S Norfolk St in San Mateo to Foster City Boulevard.

Figure 1 provides a map of intersections analyzed as part of this study and it shows the locations where eastbound left turns along E Hillsdale Blvd are implemented as part of the pilot project.



Figure 1 Map of Study Intersections and Turn Restrictions along E Hillsdale Blvd

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Analysis

Traffic Data Comparison

Pre-pilot project traffic data was collected in the Fall 2018 on November 7, 2018. 3-hour turning movements were collected between 4:00pm - 7:00pm. Trial implementation traffic data was collected on February 28, 2019 during the same time period and approximately two weeks after the start of the trial. At the Edgewater Blvd & Hwy 92 Ramps intersection, the traffic count equipment failed on February 28, 2019 and was reset on March 5, 2019. Table 1 compared the traffic volumes along E Hillsdale Blvd by intersections.

Table 1 E Hillsdale Boulevard Before vs. After Pilot Project Implementation Hillsdale Blvd & Altair Ave-Sea Spray Ln

	Hillsdale (EB))	F	illsdale (Wi	В)	Altair (NB) Sea			Sea Spray (SE	a Spray (SB)	
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	129	5848	1159	142	3068	45	421	12	131	17	17	52
AFTER	210	5168	1529	121	3188	34	437	18	99	18	12	44
Δ	81	(680)	370	(21)	120	(11)	16	6	(32)	1	(5)	(8)
%	62.8%	-11.6%	31.9%	-14.8%	3.9%	-24.4%	3.8%	50.0%	-24.4%	5.9%	-29.4%	-15.4%

Hillsdale Blvd & Edgewater Blvd

	1	Hillsdale (EB)	Hillsdale (WB)			Edgewater (NB)			Edgewater (SB)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	1333	3401	1058	582	2067	332	726	784	320	564	1477	696
AFTER	22	4066	1269	549	1810	594	814	1207	229	549	1485	682
\triangle	(1311)	665	211	(33)	(257)	262	88	423	(91)	(15)	8	(14)
%	-98.3%	19.6%	19.9%	-5.7%	-12.4%	78.9%	12.1%	54.0%	-28.4%	-2.7%	0.5%	-2.0%

Hillsdale Blvd & Center Park Ln

	1	Hillsdale (EB)	1	Hillsdale (WB	5)	Ce	enter Park (N	IB)	Ce	nter Park (S	SB)
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	583	3837	-	-	2087	213	-		-	530	141	283
AFTER	1091	3815	-	-	2069	201	-	121	-	519	-	249
Δ	508	(22)	2	24	(18)	(12)	12		2	(11)	121	(34)
%	87.1%	-0.6%		5	-0.9%	-5.6%	17		2	-2.1%	070	-12.0%

Hillsdale Blvd & Shell Blvd

	1	Hillsdale (EB)	Hillsdale (WB)				Shell (NB)		Shell (SB)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
BEFORE	537	2568	1123	277	1461	182	675	342	272	260	514	230	
AFTER	24	2930	1263	262	1342	199	672	497	243	272	510	187	
Δ	(513)	362	140	(15)	(119)	17	(3)	155	(29)	12	(4)	(43)	
%	-95.5%	14.1%	12.5%	-5.4%	-8.1%	9.3%	-0.4%	45.3%	-10.7%	4.6%	-0.8%	-18.7%	

Hillsdale Blvd & Foster City Blvd

	Hillsdale (EB)			н	Hillsdale (WB)			Foster City (NB)			Foster City (SB)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
BEFORE	747	1164	1140	314	672	279	448	1223	82	603	1353	495	
AFTER	1027	1342	1089	204	652	269	466	1185	95	622	1350	428	
\triangle	280	178	(51)	(110)	(20)	(10)	18	(38)	13	19	(3)	(67)	
%	37.5%	15.3%	-4.5%	-35.0%	-3.0%	-3.6%	4.0%	-3.1%	15.9%	3.2%	-0.2%	-13.5%	

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Table 2 provides a comparison of Before vs After Trial Project for traffic data along Metro Center Blvd.

Table 2 Metro Center Blvd - Before vs. After Pilot Project Implementation Traffic Volume Comparisons by Intersection, 3-Hour Trial Period on 2-28-2019

[M	Metro Center (EB) Metro Center (WB)					E	dgewater (Ni	B)	E	dgewater (SF	B)
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	526	1945	33	67	1884	602	31	22	15	769	24	578
AFTER	565	1891	41	65	1584	380	61	73	27	774	34	528
	39	(54)	8	(2)	(300)	(222)	30	51	12	5	10	(50)
%	7.4%	-2.8%	24.2%	-3.0%	-15.9%	-36.9%	96.8%	231.8%	80.0%	0.7%	41.7%	-8.7%

Metro Center Blvd - Edgewater Blvd

Metro Center Blvd & Vintage Park Dr

	Me	tro Center (EB)	Me	tro Center (\	NB)	Vin	tage Park (I	NB)	Vi	ntage Park (S	SB)
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	382	878	86	72	408	911	60	506	175	693	341	468
AFTER	306	897	81	90	407	955	47	550	267	747	308	450
Δ	(76)	19	(5)	18	(1)	44	(13)	44	92	54	(33)	(18)
%	-19.9%	2.2%	-5.8%	25.0%	-0.2%	4.8%	-21.7%	8.7%	52.6%	7.8%	-9.7%	-3.8%

Metro Center Blvd & Hwy 92 Off-Ramp-Shopping Center

	Me	tro Center	(EB)	Metro Center (WB)			Shopping Center (NB)			Hwy 92 Off-Ramp (SB)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	1370	590	25	27	288	2490	14	134	47	435	15	188
AFTER	1255	637	4	31	337	2905	11	93	49	558	10	190
Δ	(115)	47	(21)	4	49	415	(3)	(41)	2	123	(5)	2
%	-8.4%	8.0%	-84.0%	14.8%	17.0%	16.7%	-21.4%	-30.6%	4.3%	28.3%	-33.3%	1.1%

Table 3 provides a comparison of Before vs After Trial Project for the Edgewater Blvd & Hwy 92 Ramp intersection.

Table 3

Edgewater Blvd - Before vs. After Pilot Project Implementation Traffic Volume Comparisons by Intersection, 3-Hour Trial Period on 3-5-2019

Edgewater Blvd-Mariners Island Blvd & Hwy 92 Ramps-Emerald Bay

	Mar	iners Island	(EB)	Edgewater Blvd (WB)		En	nerald Bay (N	1B)	Hwy 92 Ramps (SB)			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	1404	1835	44	38	1858	854	9	26	20	607	7	338
AFTER	1000	1770	18	26	1737	563	13	2	13	861	7	449
\bigtriangleup	(404)	(65)	(26)	(12)	(121)	(291)	4	(24)	(7)	254	0	111
%	-28.8%	-3.5%	-59.1%	-31.6%	-6.5%	-34.1%	44.4%	-92.3%	-35.0%	41.8%	0.0%	32.8%

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Analyzing Table 1 notes a decrease of -229 vehicles continuing entering Foster City from San Mateo at E Hillsdale Blvd at Altair Avenue during the 3-hour trial period, a decrease of -3.2%. It should be noted though that during peak hour between 5:00 pm to 6:00 pm the traffic entering Foster City from San Mateo increased by +129 vehicles, +5.4%. The minor discrepancies within 5% are considered normal as traffic data collection is a one-time snap shot in time and various factors can influence changes such as roadway conditions on Hwy 92 or personal drive times of motorists.

Note: The trial project did not result in a significant decrease in traffic entering Foster City from San Mateo.

Table 1 also notes an increase in eastbound left turn (observed U-Turns) at the E Hillsdale Blvd & Park Center Lane (shopping center) intersection. While some motorists do appear to be heading back westbound towards Edgewater Blvd to making a right turn back towards towards the Hwy 92 ramps, there is no noticeable left turn traffic observed to be cutting through the shopping center towards Metro Center Boulevard.

Lastly, Table 1 notes that eastbound left turns at E Hillsdale Blvd & Foster City Blvd increased by +280 vehicles during 3-hour trial period, a +37.5% increase. This is anticipated as it is the only direct left turn access movement towards the Hwy 92 ramps from E Hillsdale Blvd.

Table 2 notes a -115 vehicle (-8.4%) decrease in the eastbound left turn movement onto Hwy 92 from Metro Center Blvd during the 3-hour trial period, but an increase in the westbound right turn movement onto Hwy 92 during the same period, +415 vehicles (+16.7%) does occur. This notes that the left turn restrictions along E Hillsdale Blvd are effective in reducing cut-through traffic along Metro Center Blvd and that motorists are using Foster City Blvd as the only route back towards Hwy 92. This reduction in eastbound approach traffic along Metro Center Blvd notes a drop in the use of Metro Center Blvd is a cut-through route towards Hwy 92 between Edgewater Blvd and the Hwy 92 ramps.

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Along E Hillsdale Blvd though, the two intersection movements being most impacted by the turn restrictions include:

- 1) E Hillsdale Blvd & Center Park Lane Eastbound Left/U-Turn
- 2) E Hillsdale Blvd & Foster City Blvd Eastbound Left

Level of Service (LOS) Analysis

LOS provides a quantitative method of analyzing performance of an intersection in terms of vehicle delay. Intersections with high capacity and near zero delay conditions provide an LOS-A experience for motorists. Intersections that experience congestion with more demand than capacity provide an LOS-F experience for motorists with significant delays.

For the nine intersections studies as part of the Pilot Project, Table 4 provides a comparison of the LOS conditions at each of the intersections both before and during implementation of the Pilot Project.

No	Intersection Name	Before	After
INO.	Intersection Name	LOS	LOS
1	E Hillsdale Blvd & Foster City Blvd	E	D
2	E Hillsdale Blvd & Shell Blvd	E	E
3	E Hillsdale Blvd & Center Park Dr	В	D
4	E Hillsdale Blvd & Edgewater Blvd	F	F
5	E Hillsdale Blvd & Altair Ave-Sea Spray Ln	F	F
6	Metro Center Blvd & Hwy 92 Ramps-OSH	F*	С
7	Metro Center Blvd & Vintage Park Dr	D	D
8	Metro Center Blvd & Edgewater Blvd	D	D
9	Edgewater Blvd & Hwy 2 Ramps-Emerald Bay Ln	F	Е

Table 4Study Intersections – Existing Conditions Level of Service (LOS)

* Manually adjust from LOS-C to LOS-F during Pre-Trial Analysis based on field observations while traffic model shows more efficient operations.

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Since LOS is driven by traffic volume data, it would be reasonable to assume initially that the overall decrease in traffic volumes along each of the study corridors (E Hillsdale Blvd, Metro Center Blvd, and Edgewater Blvd) an improvement in LOS at the study intersections should follow. Table 4 confirms this assumption.

At Metro Center Blvd & Hwy 92 Ramps-OSH, Table 4 notes an improvement in intersection LOS but this is because of a manual adjustment in the pre-trial analysis. Taking the adjustment into consideration, the intersection LOS analysis has no change in the traffic model but significant improvements based on field observations.

At the Edgewater Blvd & Hwy 92 Ramps intersection the intersection realized an improvement from LOS-F to LOS-E from the pre-trial project to trial project conditions respectively.

The intersection of E Hillsdale Blvd & Foster City Blvd also improved from LOS-E to LOS-D. This is an interesting finding because the total volume of traffic entering Foster City from San Mateo is within an allowable variation of 5% compared to the pre-trial analysis.

The only intersection seeing a substantial impact due to the Pilot Project is the E Hillsdale Blvd & Center Park Lane intersection, LOS-B to LOS-D.

Travel Time Runs

Travel Time Runs include using a floating car that moves with traffic to estimate the amount of time it takes to travel along a corridor. As part of this study, floating car studies were conducted during the Pilot Project implementation phase. Travel Time Runs were conducted the same day as the traffic volume data collection (2-28-2019) for the eastbound direction of E Hillsdale Blvd between S Norfolk St in San Mateo to Foster City Boulevard. Several runs were conducted during the 3-hour pilot project period, Figure 2 shows the Travel Time Run findings.

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The longest travel time surveyed as part of the Pilot Project implementation is 9 min – 44 sec to get between S Norfolk St in San Mateo to Foster City Boulevard. It takes an average an additional one minute to get to the Hwy 92 Ramps on Metro Center Blvd via Foster City Blvd.

Findings:

The Trial Project to restrict left turn access along eastbound E Hillsdale Blvd towards the Hwy 92 ramps at Edgewater Blvd and Metro Center Blvd in efforts to reduce cut-through traffic to Hwy 92 through the City does appear to be effective.

Although during the 5:00pm - 6:00pm peak hour, traffic entering the City of Foster City has slightly increased, the additional traffic notes motorists staying in town, likely shopping or residents making it home more quickly. The overall traffic volume entering the City during the three-hour trial period is - 3.2% less.

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At the E Hillsdale Blvd & Altair Avenue-Sea Spray Lane intersection, Sea Spray Lane is seeing an increase in traffic volume. The increase is likely motorists cutting towards Edgewater Blvd. The +81 vehicle increase along Sea Spray Lane during three-hour period represents a three vehicle increase per cycle and should be considered negligible.

The two intersections movements seeing the largest impact from the trial project include E Hillsdale Blvd & Park Center Drive and E Hillsdale Blvd & Foster City Blvd.

Should the project be considered for permanent retention, the following recommendations are provided:

1) Compare the cost of contracting the implementation and take-down of traffic control against using City-forces.

Contract services may be more cost-effective and will continue to allow transit and emergency vehicles to traverse intersections with turn restrictions.

2) Traffic signal modifications to implement turn restrictions.

An alternative to using city or contract staff to implement the turn restrictions is the traffic signal modifications that "OMIT" left turns by time-of-day. This would require transit vehicles to change their routes to avoid the restrictions while emergency vehicles can continue to traverse through the intersections using "Code 3" sirens. The E Hillsdale Blvd & Edgewater Blvd will also require a permanent removal of one of the eastbound left turn lanes to avoid motorists being "trapped" in the existing No. 1 left turn lane when the left turn is omitted.

3) Time-of-Day Dynamic Signage.

An alternative to the on-going use of staff resources to implement the left turn lane closures along E Hillsdale Blvd at Edgewater Blvd and Shell Blvd can be the use of "Time-of-Day" blank-out signs that are activated by the adjacent traffic signals at each intersection. The signs can be set to turn on from the 4pm – 7pm turn restriction period. The signs would operate in conjunction with the "omission" of the left turn movements at the traffic signals.

Exhibit Number	Description
А	Detailed Intersection Analysis of Traffic Data
В	Traffic Data Calculations – Peak Hour
С	Traffic Data Calculations – 3 Hour Trial Period
D	Synchro Traffic Model Calculations

List of Exhibits

1. E Hillsdale Blvd & Altair Avenue-Sea Spray Lane

Eastbound traffic volumes entering Foster City from San Mateo increased after implementation of the project by approximately +5.4% during the 5:00pm - 6:00pm peak hour. Although during the 3-hour period of the trial period from 4:00pm - 7:00, total traffic entering Foster City decreased by -229 vehicles, or -3.2%.

During the trial period, motorists using the Sea Spray Lane route towards Edgewater Blvd increased by +34 vehicles in the peak hour (83%) and by +81 vehicle during the trial period (63%). While this increase sounds substantial, this increase should be considered negligible as it represents only 3 additional vehicles per traffic signal cycle in the peak hour and trial period.

2. E Hillsdale Blvd & Edgewater Blvd

This is the first intersection where eastbound motorists experienced left turn restrictions towards the Hwy 92 ramps. The new eastbound left turn lane closures resulted in a decrease of -457 left turn vehicles during the 5:00pm - 6:00pm peak hour, representing a -98.7% reduction in left turn traffic. During the 4:00pm - 7:00pm trial period, the left turn movements were reduced -1,311 vehicles, or -98.3%.

The eastbound through traffic volumes at the intersection increased by +273 vehicles, or 23.7% (1,152 to 1,425) during the peak hour. During the trial period traffic eastbound through traffic increased by +665 vehicles, or a +19.6% increase.

The westbound right turn approach of the intersection did experience in increase of +97 vehicles, or +79.5% (122 to 219) during the peak hour confirming field observation that vehicles may be making U-Turns at E Hillsdale Blvd & Center Park Lane (Shopping Center) to bypass the turn restrictions. During the trial period, the westbound right turn increased by +262 vehicles, or 78.9%.

3. E Hillsdale Blvd & Center Park Lane (Shopping Center)

Field observations noted an increase in left turn movements at this intersection, confirmed in the traffic data noting a +214 increase in left turns at the intersection (194 to 408). Over the three-hour trial period the increase was +508, or +87.1%. The increase in left turns is assumed to be predominantly U-Turn movements head back towards Edgewater Blvd based on field observations.

No noticeable left turns were noted cutting through the shopping center back towards Edgewater Boulevard or towards Metro Center Boulevard.

4. E Hillsdale Blvd & Shell Boulevard

This is the second intersection where eastbound motorists experienced left turn restrictions towards the Hwy 92 ramps. The new eastbound left turn lane closures resulted in a decrease of -185 left turns, representing a -99.5% reduction during the peak hour. During the 4:00 pm - 7:00 pm trial period, the eastbound left turn volumes drop by -513 vehicles, a -96% drop.

The eastbound through traffic volumes at the intersection increased by +72 vehicles, or +7.7% (931 to 1,003).

5. E Hillsdale Blvd & Foster City Boulevard

An increase in left turn traffic volumes at E Hillsdale Boulevard & Foster City Boulevard were anticipated and confirmed by both field observations and traffic data. The eastbound left turn traffic volumes increased by +71 vehicles, or +27.1% (262 to 333) during the peak hour. During the 3-hour trial period the eastbound left turn volumes increased by +280 vehicles, or +37.5%.

6. Metro Center Blvd & Hwy 92 Ramps-OSH

Along Metro Center Blvd, the largest reduction in traffic volumes occurred at the Metro Center Blvd & Hwy 92 Southbound Ramp-Shopping Center (Former Orchard Supply Hardware) intersection. The eastbound left turn movement onto Hwy 92 reduced -65 vehicles (-12%) during the 5:00pm-6:00pm peak hour and by -115 vehicles (-8%) during the 3-hour trial period. The westbound right turn movement onto Hwy 92 increased by +58 vehicles (6%) during the peak hour and by +415 vehicles (+17%) during the three-hour trial period. The Intersection LOS was manually noted as LOS-F even though the traffic models noted an LOS-C condition during the pre-trial analysis. The manual change was made following field observations that noted excessive queuing in both approaches accessing the Hwy 92 Ramps. During the trial project, the Intersection LOS is again calculated as LOS-C by the model with notable operational improvements during field observations from reduced queues trying to access the Hwy 92 Ramps.

7. Edgewater Blvd & Hwy 92 Ramps

At the Edgewater Blvd-Mariners Island Blvd & Hwy 92 Ramps intersection, the northbound right turn movement onto Hwy 92 reduced by -150 vehicles (-43%) during the 5:00pm - 6:00pm peak hour and by -291 vehicles (-34%) during the three-hour trial period. This results in a positive change in the intersection LOS, LOS-E during the trial program compared to LOS-F before. It should be noted though that the traffic counts for this intersection were recounted due to equipment failure. The LOS-E operation is calculated using the recount data approximately one week later.

Exhibit B Traffic Data Calculations over Peak Hour, 5pm-6pm

Hillsdale Blvd & Altair Ave-Sea Spray Ln

	1	Hillsdale (EB)			illsdale (WE	3)		Altair (NB)		S	ea Spray (SB	s)
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	41	1958	392	52	1205	14	149	4	52	5	5	14
AFTER	75	1838	607	42	1250	16	154	7	30	1	4	20
\bigtriangleup	34	(120)	215	(10)	45	2	5	3	(22)	(4)	(1)	6
%	82.9%	-6.1%	54.8%	-19.2%	3.7%	14.3%	3.4%	75.0%	-42.3%	-80.0%	-20.0%	42.9%

Hillsdale Blvd & Edgewater Blvd

		Hillsdale (EB)	ł	Hillsdale (WE	3)	E	dgewater (N	B)	E	dgewater (S	B)
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	463	1152	360	240	802	122	242	288	120	206	513	295
AFTER	6	1425	400	221	740	219	284	372	85	186	554	265
\triangle	(457)	273	40	(19)	(62)	97	42	84	(35)	(20)	41	(30)
%	-98.7%	23.7%	11.1%	-7.9%	-7.7%	79.5%	17.4%	29.2%	-29.2%	-9.7%	8.0%	-10.2%

Hillsdale Blvd & Center Park Ln

	-	Hillsdale (EB)	~	Hillsdale (WE	\$)	Ce	nter Park (N	IB)	Ce	nter Park (S	B)
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	194	1359	-	-	836	74	-	-	-	210	-	98
AFTER	408	1305	-	-	849	72	-	-		193	-	90
	214	(54)	-	-	13	(2)	-	-	-	(17)	-	(8)
%	110.3%	-4.0%	-	-	1.6%	-2.7%	-	-	-	-8.1%	-	-8.2%

Hillsdale Blvd & Shell Blvd

	ł	Hillsdale (EB)	Hillsdale (WB)				Shell (NB)		Shell (SB)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	186	931	396	123	567	70	252	130	119	102	189	92
AFTER	1	1003	463	110	524	65	266	193	109	109	209	70
\triangle	(185)	72	67	(13)	(43)	(5)	14	63	(10)	7	20	(22)
%	-99.5%	7.7%	16.9%	-10.6%	-7.6%	-7.1%	5.6%	48.5%	-8.4%	6.9%	10.6%	-23.9%

Hillsdale Blvd & Foster City Blvd

							_		-	-		-)
		Hillsdale (EB)	ŀ	Hillsdale (WB	5)	FC	oster City (N	В)	F	oster City (S	в)
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	262	438	426	254	298	122	150	402	35	236	470	189
AFTER	333	495	393	71	257	90	174	411	33	235	498	153
\triangle	71	57	(33)	(183)	(41)	(32)	24	9	(2)	(1)	28	(36)
%	27.1%	13.0%	-7.7%	-72.0%	-13.8%	-26.2%	16.0%	2.2%	-5.7%	-0.4%	6.0%	-19.0%

		Hillsdale	e & Altair	
	Left	Thru	Right	Total
BEFORE	41	1958	392	2391
AFTER	75	1838	607	2520
\triangle	34	(120)	215	129
	82.9%	-6.1%	54.8%	5.4%

Metro Center Blvd & Edgwater Blvd

	Me	etro Center (EB)	Me	tro Center (WB)	E	dgewater (N	B)	E	dgewater (SE	3)
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	182	693	14	22	717	206	13	4	6	312	12	213
AFTER	189	656	17	25	536	25	22	28	10	321	10	208
\triangle	7	(37)	3	3	(181)	(181)	9	24	4	9	(2)	(5)
%	3.8%	-5.3%	21.4%	13.6%	-25.2%	-87.9%	69.2%	600.0%	66.7%	2.9%	-16.7%	-2.3%

Metro Center Blvd & Vintage Park Dr

	Me	tro Center (I	EB)	Me	tro Center (\	NB)	Vin	tage Park (I	NB)	Vii	ntage Park (S	SB)
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	168	259	31	27	152	339	29	218	61	269	141	186
AFTER	95	341	33	32	143	331	20	234	100	281	149	189
\triangle	(73)	82	2	5	(9)	(8)	(9)	16	39	12	8	3
%	-43.5%	31.7%	6.5%	18.5%	-5.9%	-2.4%	-31.0%	7.3%	63.9%	4.5%	5.7%	1.6%

Metro Center Blvd & Hwy 92-Shopping Center Dwy

	Me	tro Center	(EB)	Me	tro Center (\	NB)	Shop	ping Center	(NB)	Hwy 92 Off-Ramp (SB)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	525	173	10	12	97	921	7	56	20	79	10	37
AFTER	460	236	0	14	110	979	5	29	26	126	4	44
\bigtriangleup	(65)	63	(10)	2	13	58	(2)	(27)	6	47	(6)	7
%	-12.4%	36.4%	-100.0%	16.7%	13.4%	6.3%	-28.6%	-48.2%	30.0%	59.5%	-60.0%	18.9%

Edgewater Blvd-Mariners Island Blvd & Hwy 92 Ramps-Emerald Bay

	Mar	iners Island	(EB)	Edgewater Blvd (WB)		(WB)	Emerald Bay (NB)			Hwy 92 Off-Ramps (SB)		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	569	696	18	15	685	353	1	13	12	316	5	186
AFTER	374	699	9	11	683	203	8	0	2	238	7	103
\triangle	(195)	3	(9)	(4)	(2)	(150)	7	(13)	(10)	(78)	2	(83)
%	-34.3%	0.4%	-50.0%	-26.7%	-0.3%	-42.5%	700.0%	-100.0%	-83.3%	-24.7%	40.0%	-44.6%

Hillsdale Blvd & Altair Ave-Sea Spray Ln

		Hillsdale (EB)	H	lillsdale (Wi	В)		Altair (NB)			Sea Spray (SE	5)
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	129	5848	1159	142	3068	45	421	12	131	17	17	52
AFTER	210	5168	1529	121	3188	34	437	18	99	18	12	44
\triangle	81	(680)	370	(21)	120	(11)	16	6	(32)	1	(5)	(8)
%	62.8%	-11.6%	31.9%	-14.8%	3.9%	-24.4%	3.8%	50.0%	-24.4%	5.9%	-29.4%	-15.4%

Hillsdale Blvd & Edgewater Blvd

	Hillsdale (EB)			-	Hillsdale (WB)	E	dgewater (N	B)	E	dgewater (S	B)
	Left	Thru	Right	Left	Left Thru Right			Thru	Right	Left	Thru	Right
BEFORE	1333	3401	1058	582	2067	332	726	784	320	564	1477	696
AFTER	22	4066	1269	549	1810	594	814	1207	229	549	1485	682
\triangle	(1311)	665	211	(33)	(257)	262	88	423	(91)	(15)	8	(14)
%	-98.3%	19.6%	19.9%	-5.7%	-12.4%	78.9%	12.1%	54.0%	-28.4%	-2.7%	0.5%	-2.0%

Hillsdale Blvd & Center Park Ln

	Hillsdale (EB)			-	Hillsdale (WB	5)	Ce	nter Park (N	IB)	Ce	nter Park (S	B)
	Left	Thru	Right	Left	Left Thru Right		Left	Thru	Right	Left	Thru	Right
BEFORE	583	3837	-	÷	2087	213		-	-	530	-	283
AFTER	1091	3815	-	-	2069	201	-	-	-	519	-	249
\bigtriangleup	508	(22)	-	-	(18)	(12)	-	-	-	(11)	-	(34)
%	87.1%	-0.6%	-	-	-0.9%	-5.6%	-	-	-	-2.1%	-	-12.0%

Hillsdale Blvd & Shell Blvd

	Hillsdale (EB)			ŀ	Hillsdale (WB	•)		Shell (NB)			Shell (SB)	
	Left	Thru	Right	Left	Left Thru Right			Thru	Right	Left	Thru	Right
BEFORE	537	2568	1123	277	1461	182	675	342	272	260	514	230
AFTER	24	2930	1263	262	1342	199	672	497	243	272	510	187
\triangle	(513)	362	140	(15)	(119)	17	(3)	155	(29)	12	(4)	(43)
%	-95.5%	14.1%	12.5%	-5.4%	-8.1%	9.3%	-0.4%	45.3%	-10.7%	4.6%	-0.8%	-18.7%

Hillsdale Blvd & Foster City Blvd

	Hillsdale (EB)			F	lillsdale (WE	3)	F	oster City (N	B)	F	oster City (S	B)
	Left	Thru	Right	Left	Left Thru Right			Thru	Right	Left	Thru	Right
BEFORE	747	1164	1140	314	672	279	448	1223	82	603	1353	495
AFTER	1027	1342	1089	204	652	269	466	1185	95	622	1350	428
\triangle	280	178	(51)	(110)	(20)	(10)	18	(38)	13	19	(3)	(67)
%	37.5%	15.3%	-4.5%	-35.0%	-3.0%	-3.6%	4.0%	-3.1%	15.9%	3.2%	-0.2%	-13.5%

		Hillsdale	& Altair	
	Left	Thru	Right	Total
BEFORE	129	5848	1159	7136
AFTER	210	5168	1529	6907
\bigtriangleup	81	(680)	370	(229)
	62.8%	-11.6%	31.9%	-3.2%

Metro Center Blvd - Edgewater Blvd

	Metro Center (EB)			Me	tro Center (\	WB)	E	dgewater (NI	B)	E	dgewater (SE	3)
	Left	Thru	Right	Left	Left Thru Right			Thru	Right	Left	Thru	Right
BEFORE	526	1945	33	67	1884	602	31	22	15	769	24	578
AFTER	565	1891	41	65	1584	380	61	73	27	774	34	528
Δ	39	(54)	8	(2)	(300)	(222)	30	51	12	5	10	(50)
%	7.4%	-2.8%	24.2%	-3.0%	-15.9%	-36.9%	96.8%	231.8%	80.0%	0.7%	41.7%	-8.7%

Metro Center Blvd & Vintage Park Dr

	Metro Center (EB)			Me	tro Center (۱	WB)	Vin	tage Park (I	NB)	Vi	ntage Park (S	5B)
	Left	Thru	Right	Left	Left Thru Right			Thru	Right	Left	Thru	Right
BEFORE	382	878	86	72	408	911	60	506	175	693	341	468
AFTER	306	897	81	90	407	955	47	550	267	747	308	450
\bigtriangleup	(76)	19	(5)	18	(1)	44	(13)	44	92	54	(33)	(18)
%	-19.9%	2.2%	-5.8%	25.0%	-0.2%	4.8%	-21.7%	8.7%	52.6%	7.8%	-9.7%	-3.8%

Metro Center Blvd & Hwy 92 Off-Ramp-Shopping Center

	Metro Center (EB)			Me	tro Center (WB)	Shop	ping Center	(NB)	Hwy	92 Off-Ramp	(SB)
	Left	Thru	Right	Left	Left Thru Right			Thru	Right	Left	Thru	Right
BEFORE	1370	590	25	27	288	2490	14	134	47	435	15	188
AFTER	1255	637	4	31	337	2905	11	93	49	558	10	190
\bigtriangleup	(115)	47	(21)	4	49	415	(3)	(41)	2	123	(5)	2
%	-8.4%	8.0%	-84.0%	14.8%	17.0%	16.7%	-21.4%	-30.6%	4.3%	28.3%	-33.3%	1.1%

Edgewater Blvd-Mariners Island Blvd & Hwy 92 Ramps-Emerald Bay

	Mariners Island (EB)			Edge	water Blvd	(WB)	En	nerald Bay (N	IB)	Hwy	y 92 Ramps	(SB)
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
BEFORE	1404	1835	44	38	1858	854	9	26	20	607	7	338
AFTER	1000	1770	18	26	1737	563	13	2	13	861	7	449
\bigtriangleup	(404)	(65)	(26)	(12)	(121)	(291)	4	(24)	(7)	254	0	111
%	-28.8%	-3.5%	-59.1%	-31.6%	-6.5%	-34.1%	44.4%	-92.3%	-35.0%	41.8%	0.0%	32.8%

Exhibit C Traffic Data Calculations over Trial Period, 4pm-7pm

Exhibit D

Synchro Traffic Model – Intersection Level of Service (LOS) Reports

Exhibit D-1 Synchro Analysis - E Hillsdale Blvd & Altair Ave-Sea Spray Lane Exhibit D-2 Synchro Analysis - E Hillsdale Blvd & Edgewater Blvd Exhibit D-3 Synchro Analysis - E Hillsdale Blvd & Center Park Ln Synchro Analysis - E Hillsdale Blvd & Shell Blvd Exhibit D-4 Exhibit D-5 Synchro Analysis - E Hillsdale Blvd & Foster City Blvd Exhibit D-6 Synchro Analysis - Metro Center Blvd & Edgewater Blvd Exhibit D-7 Synchro Analysis - Metro Center Blvd & Vintage Park Dr Exhibit D-8 Synchro Analysis - Metro Center Blvd & Hwy 92 Ramps Exhibit D-9 Synchro Analysis - Edgewater Blvd & Hwy 92 Ramps

Exhibit D-1: Synchro Analysis - E Hillsdale & Altair Ave-Sea Spray Ln

Lanes, Volumes, Timings 22:

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Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations		ፈሴ		5	4		5	##%		5	##%	
Traffic Volume (vph)	1	4	20	154	7	30	75	1838	607	42	1250	16
Future Volume (vph)	1	4	20	154	7	30	75	1838	607	42	1250	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	10	10	10	10	10	10
Storage Length (ft)	200		200	260		0	250	10	0	75	10	0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			25			25		-
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Ped Bike Factor		0.98			0.99			1.00			1.00	
Frt		0.878			0.952			0.963			0.998	
Flt Protected		0.998		0.950	0.971		0.950	01700		0.950	01770	
Satd. Flow (prot)	0	3047	0	1681	1626	0	1652	4554	0	1652	4735	0
Flt Permitted	-	0.998	-	0.950	0.971	-	0.950		-	0.950		-
Satd. Flow (perm)	0	3047	0	1681	1626	0	1652	4554	0	1652	4735	0
Right Turn on Red	-		Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		22			17			58			1	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		247			282			843			426	
Travel Time (s)		5.6			6.4			19.2			9.7	
Confl. Bikes (#/hr)		010	11		0.1	9		. ,	3			2
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
Adi, Flow (vph)	1	4	22	167	8	33	82	1998	660	46	1359	17
Shared Lane Traffic (%)				37%								
Lane Group Flow (vph)	0	27	0	105	103	0	82	2658	0	46	1376	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12	5		12	5		10	5		10	5
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.09	1.09	1.09	1.09	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA		Split	NA		Prot	NA		Prot	NA	
Protected Phases	. 3	3		. 4	4		5	2		1	6	
Permitted Phases												
Minimum Split (s)	37.2	37.2		36.2	36.2		9.5	30.0		9.5	30.0	
Total Split (s)	40.0	40.0		43.0	43.0		15.0	42.0		15.0	42.0	
Total Split (%)	28.6%	28.6%		30.7%	30.7%		10.7%	30.0%		10.7%	30.0%	
Maximum Green (s)	35.8	35.8		38.8	38.8		11.4	37.0		11.4	37.0	
Yellow Time (s)	3.2	3.2		3.2	3.2		3.1	4.0		3.1	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		0.5	1.0		0.5	1.0	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.2		4.2	4.2		3.6	5.0		3.6	5.0	
Lead/Lag	Lead	Lead		Lag	Laq		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Walk Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Flash Dont Walk (s)	28.0	28.0		27.0	27.0			20.0			20.0	
Pedestrian Calls (#/hr)	0	0		0	0			0			0	

Baseline

Exhibit D-1: Synchro Analysis - E Hillsdale & Altair Ave-Sea Spray Ln

Lanes, Volumes, Timings 22:

22:	0										04/1	15/2019
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Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Act Effct Green (s)		35.8		38.8	38.8		11.4	37.0		11.4	37.0	
Actuated g/C Ratio		0.26		0.28	0.28		0.08	0.26		0.08	0.26	
v/c Ratio		0.03		0.23	0.22		0.61	2.13		0.34	1.10	
Control Delay		17.4		40.6	33.9		81.9	538.4		69.0	119.1	
Queue Delay		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		17.4		40.6	33.9		81.9	538.4		69.0	119.1	
LOS		В		D	С		F	F		E	F	
Approach Delay		17.4			37.3			524.7			117.5	
Approach LOS		В			D			F			F	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 14	0											
Offset: 50.3 (36%), Refere	nced to phas	se 6:SWT	, Start of	Green								
Natural Cycle: 115												
Control Type: Pretimed												
Maximum v/c Ratio: 2.13												
Intersection Signal Delay:	366.8			In	tersection	ו LOS: F						
Intersection Capacity Utiliz	ation 76.3%			IC	CU Level	of Service	D					
Analysis Period (min) 15												

Splits and Phases: 22:



Exhibit D-2: Synchro Analysis - E Hillsdale Blvd & Edgewater Blvd

Lanes, Volumes, Timings 27:

	-	\mathbf{x}	2	1	×	₹	3	×	~	í,	*	×
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	55	**	1	55	A 1.		55	**	1	5	***	1
Traffic Volume (vph)	6	1425	400	221	740	219	284	372	85	186	554	265
Future Volume (vph)	6	1425	400	221	740	219	284	372	85	186	554	265
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	10	10	10	13	10	10
Storage Length (ft)	700	.=	115	500		0	540	10	75	315		200
Storage Lanes	2		1	2		0	2		1	1		1
Taper Length (ft)	25			25		-	25			25		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	0.97	0.95	1.00	1.00	0.91	1.00
Ped Bike Factor			0.97						0.99			
Frt			0.850		0.966				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd, Flow (prot)	3433	3539	1583	3433	3419	0	3204	3303	1478	1829	4746	1478
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3539	1543	3433	3419	0	3204	3303	1457	1829	4746	1478
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			113		27				113			288
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		277			383			755			1138	
Travel Time (s)		6.3			8.7			17.2			25.9	
Confl. Peds. (#/hr)			12						2			
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
Adj. Flow (vph)	7	1549	435	240	804	238	309	404	92	202	602	288
Shared Lane Traffic (%)												
Lane Group Flow (vph)	7	1549	435	240	1042	0	309	404	92	202	602	288
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24	- C		24	Ū		20	Ū		20	Ū.
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.09	1.09	1.09	0.96	1.09	1.09
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6						4			8
Minimum Split (s)	9.5	41.6	41.6	9.5	40.0		9.5	42.9	42.9	9.5	39.0	39.0
Total Split (s)	28.0	42.0	42.0	28.0	42.0		18.0	43.0	43.0	27.0	52.0	52.0
Total Split (%)	20.0%	30.0%	30.0%	20.0%	30.0%		12.9%	30.7%	30.7%	19.3%	37.1%	37.1%
Maximum Green (s)	24.0	37.4	37.4	24.0	37.0		14.0	38.1	38.1	22.5	47.0	47.0
Yellow Time (s)	3.5	3.6	3.6	3.5	4.0		3.5	3.9	3.9	3.5	4.0	4.0
All-Red Time (s)	0.5	1.0	1.0	0.5	1.0		0.5	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.6	4.6	4.0	5.0		4.0	4.9	4.9	4.5	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Walk Time (s)		4.0	4.0		4.0			4.0	4.0		4.0	4.0
Flash Dont Walk (s)		33.0	33.0		31.0			34.0	34.0		30.0	30.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0

Baseline

Exhibit D-2: Synchro Analysis - E Hillsdale Blvd & Edgewater Blvd

Lanes, Volumes, Timings 27:

	4	\mathbf{x}	2	F	×	ť	3	×	~	í,	¥	×
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Act Effct Green (s)	24.0	37.4	37.4	24.0	37.0		14.0	38.1	38.1	22.5	47.0	47.0
Actuated g/C Ratio	0.17	0.27	0.27	0.17	0.26		0.10	0.27	0.27	0.16	0.34	0.34
v/c Ratio	0.01	1.64	0.88	0.41	1.13		0.97	0.45	0.19	0.69	0.38	0.42
Control Delay	62.0	325.8	56.4	54.1	117.0		96.6	20.6	1.8	68.7	36.2	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	62.0	325.8	56.4	54.1	117.0		96.6	20.6	1.8	68.7	36.2	5.5
LOS	E	F	E	D	F		F	С	А	E	D	A
Approach Delay		266.0			105.2			47.6			34.1	
Approach LOS		F			F			D			С	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 14	40											
Offset: 0 (0%), Reference	d to phase 2:	NWT and	6:SET, 5	Start of G	reen							
Natural Cycle: 115												
Control Type: Pretimed												
Maximum v/c Ratio: 1.64												
Intersection Signal Delay:	143.1			Ir	ntersection	ו LOS: F						
Intersection Capacity Utiliz	zation 102.79	%		IC	CU Level	of Service	G					
Analysis Period (min) 15												
Splits and Phases: 27:	- -											
					- L L.			1 1				

Ø1	Ø2 (R)	4 Ø3		X Ø4	
28 s	42 s	27 s	43	3 s	
₽ 05	🌬 ø6 (R)	y Ø2	¥ ø8		
28 s	42 s	18 s	52 s		

Lanes, Volumes, Timings 21:

		2	5	×	×	\sim
Lane Group	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations	*	1	*	***	**1	0.000
Traffic Volume (vph)	193	90	408	1305	849	72
Future Volume (vph)	193	90	408	1305	849	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	11	10	10	10
Storage Length (ft)	200	200	400	10	10	0
Storage Lanes	1	0	1			0
Taper Length (ft)	25	3	25			Ű
Lane Util. Factor	1 00	1 00	1 00	0.91	0 91	0 91
Ped Bike Factor	1.00	0.92	1.00	0.71	0.99	0.71
Frt		0.850	1.00		0.988	
Flt Protected	0 950	0.000	0 950		0.700	
Satd Flow (prot)	1770	1583	1711	4746	4663	0
Flt Permitted	0.950	1000	0.950	- / 40	1003	0
Satd Flow (nerm)	1770	1/50	1706	1716	1663	0
Right Turn on Pod	1770	1400 Voc	1700	+/40	4005	Vos
Satd Flow (DTOD)		162			1/	162
Jalu. FIUW (KTUK)	20	98		20	14	
Link Speed (IIIpII)	30			3U 1120	30	
LINK DISIGNLE (II)	293			1130	093 10 E	
Confl Dode (#/br)	0.7	47	Λ	20.9	13.5	20
Coniii. Peus. (#/III) Dook Hour Factor	0.02	4/	4	0.00	0.00	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Auj. FIOW (VPN)	210	98	443	1418	923	78
Shared Lane Traffic (%)	010	00	440	1410	1001	0
Lane Group Flow (vph)	210	98	443	1418	1001	U
Enter Blocked Intersection	No	NO	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(ft)	12			13	13	
Link Offset(ft)	0			0	0	
Crosswalk Width(ft)	16			16	16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.04	1.09	1.09	1.09
Turning Speed (mph)	15	9	15			9
Turn Type	Prot	Perm	Prot	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases		6				
Minimum Split (s)	29.5	27.5	9.5	22.5	27.5	
Total Split (s)	36.0	47.0	27.0	84.0	47.0	
Total Split (%)	30.0%	39.2%	22.5%	70.0%	39.2%	
Maximum Green (s)	31.5	42.5	23.4	79.5	42.5	
Yellow Time (s)	3.5	3.5	3.1	3.5	3.5	
All-Red Time (s)	1.0	1.0	0.5	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5	3.6	4.5	4.5	
Lead/Lag	10	Lag	Lead		Lag	
Lead-Lag Optimize?		Yes	Yes		Yes	
Walk Time (s)	5.0	5.0			5.0	
Flash Dont Walk (s)	20.0	18.0			18.0	
Pedestrian Calls (#/hr)	0	0			0	

Baseline

Exhibit D-3: Synchro Analysis - E Hillsdale Blvd & Center Park Ln

Lanes, Volumes, Timings 21:

	-	2	3	*	*	*~	
Lane Group	SEL	SER	NEL	NET	SWT	SWR	
Act Effct Green (s)	31.5	52.5	23.4	79.5	52.5		
Actuated g/C Ratio	0.26	0.44	0.20	0.66	0.44		
v/c Ratio	0.45	0.14	1.33	0.45	0.49		
Control Delay	40.8	4.4	206.4	10.3	25.2		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	40.8	4.4	206.4	10.3	25.2		
LOS	D	А	F	В	С		
Approach Delay	29.2			57.0	25.2		
Approach LOS	С			E	С		
Intersection Summary							
Area Type:	Other						
Cycle Length: 120							
Actuated Cycle Length: 120	0						
Offset: 0 (0%), Referenced	to phase 2:	VET and	6:SWT, S	tart of Gr	een		
Natural Cycle: 80							
Control Type: Pretimed							
Maximum v/c Ratio: 1.33							
Intersection Signal Delay: 4	44.3			In	tersection	LOS: D	
Intersection Capacity Utilization	ation 73.4%			IC	U Level o	of Service D	
Analysis Period (min) 15							

Splits and Phases: 21:

📕 Ø2 (R)	•	₩ Ø4
84 s		36 s
7 Ø5	🖋 Ø6 (R)	
27 s	47 s	

04/15/2019

Exhibit D-4: Synchro Analysis - E Hillsdale Blvd & Shell Blvd

Lanes, Volumes, Timings 5:

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	5	**	1	ካካ	*	1	5	**	1	5	**	1
Traffic Volume (vph)	1	1003	463	110	524	65	266	193	109	109	209	70
Future Volume (vph)	1	1003	463	110	524	65	266	193	109	109	209	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	10	10	11	10	11
Storage Length (ft)	130		130	430		215	250		200	150	10	150
Storage Lanes	1		1	2		1	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0170	0.96	0177		0.97		0170	0.97		0170	0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950		01000	0.950		01000	0.950		01000	0.950		01000
Satd. Flow (prot)	1770	3539	1583	3433	1863	1583	1711	3303	1478	1711	3303	1531
Flt Permitted	0.950	0007	1000	0.950	1000	1000	0.950	0000	1170	0.950	0000	1001
Satd. Flow (perm)	1770	3539	1521	3433	1863	1541	1711	3303	1432	1711	3303	1471
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			223			85			118			85
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		582			897			602			1238	
Travel Time (s)		13.2			20.4			13.7			28.1	
Confl. Peds. (#/hr)			24			13			18			25
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
Adi, Flow (vph)	1	1090	503	120	570	71	289	210	118	118	227	76
Shared Lane Traffic (%)												-
Lane Group Flow (vph)	1	1090	503	120	570	71	289	210	118	118	227	76
Enter Blocked Intersection	No	No	No									
Lane Alignment	Left	Left	Right									
Median Width(ft)		24	5		24	5		11	5		11	J
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.09	1.09	1.04	1.09	1.04
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	custom									
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			4			8			2			6
Minimum Split (s)	9.5	37.6	35.6	9.5	37.6	35.6	9.5	35.6	37.6	9.5	35.6	37.6
Total Split (s)	20.0	39.0	37.0	20.0	39.0	37.0	24.0	37.0	39.0	24.0	37.0	39.0
Total Split (%)	16.7%	32.5%	30.8%	16.7%	32.5%	30.8%	20.0%	30.8%	32.5%	20.0%	30.8%	32.5%
Maximum Green (s)	16.4	34.4	32.4	16.4	34.4	32.4	20.4	32.4	34.4	19.9	32.4	34.4
Yellow Time (s)	3.1	3.6	3.6	3.1	3.6	3.6	3.1	3.6	3.6	3.1	3.6	3.6
All-Red Time (s)	0.5	1.0	1.0	0.5	1.0	1.0	0.5	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.6	4.6	4.6	3.6	4.6	4.6	3.6	4.6	4.6	4.1	4.6	4.6
Lead/Lag	Lead	Lag	Lag									
Lead-Lag Optimize?	Yes	Yes	Yes									
Walk Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Flash Dont Walk (s)		28.0	26.0		28.0	26.0		26.0	28.0		26.0	28.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0

Baseline

Exhibit D-4: Synchro Analysis - E Hillsdale Blvd & Shell Blvd

Lanes, Volumes, Timings 5:

04/1	5/2	01	9
0 17 1	012	•••	

	_	-	7	۲	+	۲	•	×	/	6	×	~
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NEL	NET	NER	SWL	SWT	SWR
Act Effct Green (s)	16.4	34.4	32.4	16.4	34.4	32.4	20.4	32.4	34.4	19.9	32.4	34.4
Actuated g/C Ratio	0.14	0.29	0.27	0.14	0.29	0.27	0.17	0.27	0.29	0.17	0.27	0.29
v/c Ratio	0.00	1.07	0.88	0.26	1.07	0.15	1.00	0.24	0.24	0.42	0.25	0.16
Control Delay	45.0	91.7	40.9	48.0	99.5	5.7	95.2	36.8	3.0	57.7	44.5	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.0	91.7	40.9	48.0	99.5	5.7	95.2	36.8	3.0	57.7	44.5	9.6
LOS	D	F	D	D	F	А	F	D	А	E	D	A
Approach Delay		75.6			82.6			57.7			41.9	
Approach LOS		E			F			E			D	
Intersection Summary												
Area Type: O	ther											
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 0 (0%), Referenced to	phase 2:	WBT and	6:EBT, S	tart of Gr	een							
Natural Cycle: 105												
Control Type: Pretimed												
Maximum v/c Ratio: 1.07												
Intersection Signal Delay: 69.	7			In	tersectior	n LOS: E						
Intersection Capacity Utilization	on 86.8%			IC	U Level o	of Service	E					
Analysis Period (min) 15												

Splits and Phases: 5:

_ # _{Ø1}		↓ _{Ø3}	₽ Ø4
20 s	39 s	24 s	37 s
×05	✓ 106 (R)	1 Ø7	Ø8
20 s	39 s	24 s	37 s

Exhibit D-5: Synchro Analysis - E Hillsdale Blvd & Foster City Blvd

Lanes, Volumes, Timings 8:

	-	\mathbf{x}	2	~	×	ť	3	×	~	4	*	×
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	ካካ	**	1	ካካ	A 1.		5	**	1	5	**	1
Traffic Volume (vph)	333	594	393	71	257	90	174	411	33	235	498	153
Future Volume (vph)	333	594	393	71	257	90	174	411	33	235	498	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	13	11	11	13	11	10	10	10	10	12
Storage Length (ft)	400		200	400		200	200		200	140		140
Storage Lanes	2		1	2		0	1		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	0.95	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor			0.96		0.99				0.97			0.97
Frt			0.850		0.961				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd, Flow (prot)	3319	3421	1636	3319	3255	0	1711	3303	1478	1652	3303	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3319	3421	1576	3319	3255	0	1711	3303	1437	1652	3303	1543
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			427		43				113			153
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		487			682			1238			324	
Travel Time (s)		11.1			15.5			28.1			7.4	
Confl. Peds. (#/hr)			22			23			13			11
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
Adj. Flow (vph)	362	646	427	77	279	98	189	447	36	255	541	166
Shared Lane Traffic (%)												
Lane Group Flow (vph)	362	646	427	77	377	0	189	447	36	255	541	166
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		22	Ŭ		22	Ũ		11	Ū		11	Ű
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	0.96	1.04	1.04	0.96	1.04	1.09	1.09	1.09	1.09	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6						4			8
Minimum Split (s)	9.5	35.6	35.6	9.5	35.6		9.5	33.6	33.6	9.5	33.6	33.6
Total Split (s)	20.0	36.0	36.0	27.0	43.0		23.0	37.0	37.0	20.0	34.0	34.0
Total Split (%)	16.7%	30.0%	30.0%	22.5%	35.8%		19.2%	30.8%	30.8%	16.7%	28.3%	28.3%
Maximum Green (s)	16.4	31.4	31.4	23.4	38.4		19.4	32.4	32.4	16.4	29.4	29.4
Yellow Time (s)	3.1	3.6	3.6	3.1	3.6		3.1	3.6	3.6	3.1	3.6	3.6
All-Red Time (s)	0.5	1.0	1.0	0.5	1.0		0.5	1.0	1.0	0.5	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.6	4.6	4.6	3.6	4.6		3.6	4.6	4.6	3.6	4.6	4.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Walk Time (s)		4.0	4.0		4.0			4.0	4.0		4.0	4.0
Flash Dont Walk (s)		27.0	27.0		27.0			25.0	25.0		25.0	25.0
Pedestrian Calls (#/hr)		0	0		0			0	0		0	0

Baseline

Exhibit D-5: Synchro Analysis - E Hillsdale Blvd & Foster City Blvd

Lanes, Volumes, Timings 8:

04/15/201	9
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Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Act Effct Green (s)	16.4	31.4	31.4	23.4	38.4		19.4	32.4	32.4	16.4	29.4	29.4
Actuated g/C Ratio	0.14	0.26	0.26	0.20	0.32		0.16	0.27	0.27	0.14	0.24	0.24
v/c Ratio	0.80	0.72	0.59	0.12	0.35		0.68	0.50	0.08	1.13	0.67	0.34
Control Delay	64.3	45.7	7.0	40.5	28.6		67.0	55.6	4.0	147.3	45.7	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.3	45.7	7.0	40.5	28.6		67.0	55.6	4.0	147.3	45.7	9.1
LOS	E	D	А	D	С		E	E	А	F	D	A
Approach Delay		38.9			30.6			56.1			66.3	
Approach LOS		D			С			E			E	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120	0											
Offset: 0 (0%), Referenced	to phase 2:	NWT and	6:SET, 5	Start of Gi	reen							
Natural Cycle: 100												
Control Type: Pretimed												
Maximum v/c Ratio: 1.13												
Intersection Signal Delay: 4	48.6			In	tersection	ו LOS: D						
Intersection Capacity Utilization	ation 86.9%			IC	U Level	of Service	Ε					
Analysis Period (min) 15												
Splits and Phases: 8:												

Ø1	X 2 4 (R)	L _{Ø3}	X Ø4
20 s	43 s	20 s 3	37 s
₽ 05	🚽 🛰 ø6 (R)) Ø7	¥ _{Ø8}
27 s	36 s	23 s	34 s

Exhibit D-6: Synchro Analysis - Metro Center Blvd Edgewater Blvd

Lanes, Volumes, Timings <u>31:</u>

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	ሻሻ	A 12		5	***	1		ۍ ۲	1	5	្ន	1
Traffic Volume (vph)	189	656	17	25	536	130	22	28	10	321	10	208
Future Volume (vph)	189	656	17	25	536	130	22	28	10	321	10	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	700		0	200		0	0		0	170		170
Storage Lanes	2		0	1		1	0		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.91	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor		1.00				0.97			0.98			0.98
Frt		0.996				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.978		0.950	0.955	
Satd. Flow (prot)	3433	3522	0	1770	5085	1583	0	1822	1583	1681	1690	1583
Flt Permitted	0.950			0.950				0.978		0.950	0.955	
Satd. Flow (perm)	3433	3522	0	1770	5085	1530	0	1822	1556	1681	1690	1551
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2				141			100			226
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		566			384			232			792	
Travel Time (s)		12.9			8.7			5.3			18.0	
Confl. Peds. (#/hr)			5			10			4			7
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
Adj. Flow (vph)	205	713	18	27	583	141	24	30	11	349	11	226
Shared Lane Traffic (%)										48%		
Lane Group Flow (vph)	205	731	0	27	583	141	0	54	11	181	179	226
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	Perm	Split	NA	Perm
Protected Phases	1	6		5	2		4	4		3	3	
Permitted Phases						2			4			3
Minimum Split (s)	9.5	31.9		9.5	23.9	23.9	36.7	36.7	36.7	36.7	36.7	36.7
Total Split (s)	14.0	41.0		20.0	47.0	47.0	40.0	40.0	40.0	39.0	39.0	39.0
Total Split (%)	10.0%	29.3%		14.3%	33.6%	33.6%	28.6%	28.6%	28.6%	27.9%	27.9%	27.9%
Maximum Green (s)	10.4	36.1		16.4	42.1	42.1	36.3	36.3	36.3	35.3	35.3	35.3
Yellow Time (s)	3.1	3.9		3.1	3.9	3.9	3.2	3.2	3.2	3.2	3.2	3.2
All-Red Time (s)	0.5	1.0		0.5	1.0	1.0	0.5	0.5	0.5	0.5	0.5	0.5
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.6	4.9		3.6	4.9	4.9		3.7	3.7	3.7	3.7	3.7
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk Time (s)		5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Flash Dont Walk (s)		22.0			14.0	14.0	28.0	28.0	28.0	28.0	28.0	28.0
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	0
Act Effct Green (s)	10.4	36.1		16.4	42.1	42.1		36.3	36.3	35.3	35.3	35.3

Baseline

Exhibit D-6: Synchro Analysis - Metro Center Blvd Edgewater Blvd

Lanes, Volumes, Timings <u>31:</u>

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio	0.07	0.26		0.12	0.30	0.30		0.26	0.26	0.25	0.25	0.25
v/c Ratio	0.80	0.80		0.13	0.38	0.25		0.11	0.02	0.43	0.42	0.40
Control Delay	92.4	35.3		75.0	48.1	15.2		40.5	0.1	47.6	47.4	7.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Delay	92.4	35.3		75.0	48.1	15.2		40.5	0.1	47.6	47.4	7.2
LOS	F	D		E	D	В		D	А	D	D	Α
Approach Delay		47.8			42.9			33.7			32.0	
Approach LOS		D			D			С			С	
Intersection Summary												
Area Type:	Other											
Cycle Length: 140												
Actuated Cycle Length: 140)											
Offset: 0 (0%), Referenced	to phase 6:1	EBT, Star	t of Gree	n								
Natural Cycle: 115												
Control Type: Pretimed												
Maximum v/c Ratio: 0.80												
Intersection Signal Delay: 4	11.9			In	tersectior	ו LOS: D						
Intersection Capacity Utiliza	ation 88.3%			IC	U Level	of Service	E					
Analysis Period (min) 15												

Splits and Phases: 31:



Exhibit D-7: Synchro Analysis - Metro Center Blvd & Vintage Park Dr

Lanes, Volumes, Timings <u>7:</u>

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Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	۲.	•	1	۲.	≜1 }		٦ ۲	≜ 16		۲.	^	1
Traffic Volume (vph)	95	341	33	32	143	331	20	234	100	281	149	189
Future Volume (vph)	95	341	33	32	143	331	20	234	100	281	149	189
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	260		260	200		0	175		0	250		140
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	1.00
Ped Bike Factor			0.79		0.92			0.95				0.92
Frt			0.850		0.895			0.955				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	2927	0	1770	3225	0	1770	3539	1583
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	1863	1254	1770	2927	0	1770	3225	0	1770	3539	1463
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			106		360			57				205
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		345			169			394			972	
Travel Time (s)		7.8			3.8			9.0			22.1	
Confl. Peds. (#/hr)			83			74			61			51
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
Adi, Flow (vph)	103	371	36	35	155	360	22	254	109	305	162	205
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	371	36	35	515	0	22	363	0	305	162	205
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12	J -		12	9		12	J -		12	5
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA	Perm	Prot	NA		Prot	NA		Prot	NA	Perm
Protected Phases	1	6		5	2		7	4		3	8	
Permitted Phases			6									8
Minimum Split (s)	9.5	30.5	30.5	9.5	31.5		9.5	30.7		9.5	32.2	32.2
Total Split (s)	22.0	35.0	35.0	25.0	38.0		25.0	40.0		20.0	35.0	35.0
Total Split (%)	18.3%	29.2%	29.2%	20.8%	31.7%		20.8%	33.3%		16.7%	29.2%	29.2%
Maximum Green (s)	18.5	30.5	30.5	21.5	33.5		21.5	36.3		16.5	30.8	30.8
Yellow Time (s)	3.0	3.5	3.5	3.0	3.5		3.0	3.2		3.0	3.2	3.2
All-Red Time (s)	0.5	1.0	1.0	0.5	1.0		0.5	0.5		0.5	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.5	4.5	4.5	3.5	4.5		3.5	3.7		3.5	4.2	4.2
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Walk Time (s)		5.0	5.0		5.0			5.0			5.0	5.0
Flash Dont Walk (s)		21.0	21.0		22.0			22.0			23.0	23.0
Pedestrian Calls (#/hr)		0	0		0			0			0	0
Act Effct Green (s)	18.5	30.5	30.5	21.5	33.5		21.5	36.3		16.5	30.8	30.8

Baseline

Exhibit D-7: Synchro Analysis - Metro Center Blvd & Vintage Park Dr

Lanes, Volumes, Timings <u>7:</u>

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Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Actuated g/C Ratio	0.15	0.25	0.25	0.18	0.28		0.18	0.30		0.14	0.26	0.26
v/c Ratio	0.38	0.78	0.09	0.11	0.48		0.07	0.36		1.26	0.18	0.39
Control Delay	50.2	54.7	0.5	42.4	11.9		41.8	28.5		186.5	35.4	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	50.2	54.7	0.5	42.4	11.9		41.8	28.5		186.5	35.4	7.1
LOS	D	D	А	D	В		D	С		F	D	A
Approach Delay		50.0			13.8			29.3			95.3	
Approach LOS		D			В			С			F	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 12	0											
Offset: 0 (0%), Referenced	to phase 2:	NWT and	6:SET, 5	Start of G	reen							
Natural Cycle: 85												
Control Type: Pretimed												
Maximum v/c Ratio: 1.26												
Intersection Signal Delay:	51.2			In	tersectior	n LOS: D						
Intersection Capacity Utiliz	ation 79.6%			IC	CU Level of	of Service	e D					
Analysis Period (min) 15												

Splits and Phases: 7:

Ø1	Ø2 (R)	↓ _{Ø3}	≯ Ø4	
22 s	38 s	20 s	40 s	
₽ _Ø5	🚽 🔌 Ø6 (R)	y 07	¥ _{Ø8}	
25 s	35 s	25 s	35 s	

Exhibit D-8: Synchro Analysis - Metro Center Blvd & Hwy 92 Ramps

Lanes, Volumes, Timings <u>14:</u>

	-	\mathbf{x}	2	1	×	₹	3	×	~	4	*	*
Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	5	ដ	77		្រា	1	ሻሻ	≜ 16		N	41 6	1
Traffic Volume (vph)	126	4	44	5	29	26	460	236	0	14	110	979
Future Volume (vph)	126	4	44	5	29	26	460	236	0	14	110	979
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	500		500	60		0	600		0	100		400
Storage Lanes	1		2	0		1	2		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.88	1.00	1.00	1.00	0.97	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor						0.97						
Frt			0.850			0.850					0.878	0.850
Flt Protected	0.950	0.955			0.993		0.950			0.950		
Satd. Flow (prot)	1681	1690	2787	0	1850	1583	3433	3539	0	1770	2977	1441
Flt Permitted	0.950	0.955			0.993		0.950			0.950		
Satd. Flow (perm)	1681	1690	2787	0	1850	1529	3433	3539	0	1770	2977	1441
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			113			120					532	532
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		243			206			479			441	
Travel Time (s)		5.5			4.7			10.9			10.0	
Confl. Peds. (#/hr)						11						
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
Adj. Flow (vph)	137	4	48	5	32	28	500	257	0	15	120	1064
Shared Lane Traffic (%)	49%											50%
Lane Group Flow (vph)	70	71	48	0	37	28	500	257	0	15	652	532
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12	5		12	0		24	0		24	5
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Split	NA	Prot	Split	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases	4	4	4	3	3		5	2		1	6	
Permitted Phases						3						6
Minimum Split (s)	23.0	23.0	23.0	22.5	22.5	22.5	9.5	27.5		9.5	22.5	22.5
Total Split (s)	36.0	36.0	36.0	22.5	22.5	22.5	36.0	48.0		18.0	22.5	22.5
Total Split (%)	28.9%	28.9%	28.9%	18.1%	18.1%	18.1%	28.9%	38.6%		14.5%	18.1%	18.1%
Maximum Green (s)	31.0	31.0	31.0	18.3	18.3	18.3	32.4	43.5		14.4	18.0	18.0
Yellow Time (s)	4.0	4.0	4.0	3.2	3.2	3.2	3.1	3.5		3.1	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	0.5	1.0		0.5	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0		4.2	4.2	3.6	4.5		3.6	4.5	4.5
Lead/Lag	Lag	Lag	Lag	Lead	Lead	Lead	Lead	Lag		Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Walk Time (s)								6.0				
Flash Dont Walk (s)								17.0				
Pedestrian Calls (#/hr)								0				
Act Effct Green (s)	31.0	31.0	31.0		18.3	18.3	32.4	43.5		14.4	25.5	25.5

Baseline

Exhibit D-8: Synchro Analysis - Metro Center Blvd & Hwy 92 Ramps

Lanes, Volumes, Timings 14:

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Lane Group	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Actuated g/C Ratio	0.25	0.25	0.25		0.15	0.15	0.26	0.35		0.12	0.20	0.20
v/c Ratio	0.17	0.17	0.06		0.14	0.09	0.56	0.21		0.07	0.63	0.74
Control Delay	38.0	38.0	0.2		47.8	0.5	42.7	29.0		50.2	11.6	10.7
Queue Delay	0.0	0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	38.0	38.0	0.2		47.8	0.5	42.7	29.0		50.2	11.6	10.7
LOS	D	D	А		D	А	D	С		D	В	В
Approach Delay		28.4			27.4			38.1			11.7	
Approach LOS		С			С			D			В	
Intersection Summary												
Area Type:	Other											
Cycle Length: 124.5												
Actuated Cycle Length: 12	24.5											
Offset: 0 (0%), Referenced	d to phase 2:	NET, Sta	rt of Gree	n								
Natural Cycle: 85												
Control Type: Pretimed												
Maximum v/c Ratio: 0.74												
Intersection Signal Delay:	22.6			In	tersectior	n LOS: C						
Intersection Capacity Utiliz	zation 68.3%			IC	CU Level of	of Service	еC					
Analysis Period (min) 15												

Splits and Phases: 14:

↓ _{Ø1}	🖡 🗡 Ø2 (R)		X _{Ø3}	X
18 s	48 s		22.5 s	36 s
) Ø5		¥ ø6		
36 s		22.5 s		

Exhibit D-9: Synchro Analysis - Edgewater Blvd & Hwy 92 Ramps

Lanes, Volumes, Timings <u>34:</u>

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	5	41		5	**	1		្រា	1	5	ដ	1
Traffic Volume (vph)	374	699	9	11	683	203	8	0	2	238	7	103
Future Volume (vph)	374	699	9	11	683	203	8	0	2	238	7	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	200		0	50		350	50		50	500		250
Storage Lanes	1		0	1		1	0		1	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor						0.97			0.98			0.98
Frt		0.998				0.850			0.850			0.850
Flt Protected	0.950			0.950				0.950		0.950	0.955	
Satd. Flow (prot)	1770	3532	0	1770	3539	1583	0	1770	1583	1681	1690	1583
Flt Permitted	0.950			0.950				0.950		0.950	0.955	
Satd. Flow (perm)	1770	3532	0	1770	3539	1540	0	1770	1557	1681	1690	1559
Right Turn on Red			Yes			Yes	-		Yes			Yes
Satd. Flow (RTOR)		1				221			82			117
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		243			566			197			586	
Travel Time (s)		5.5			12.9			4.5			13.3	
Confl. Peds. (#/hr)						2			2			2
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
Adi, Flow (vph)	407	760	10	12	742	221	9	0	2	259	8	112
Shared Lane Traffic (%)										49%		
Lane Group Flow (vph)	407	770	0	12	742	221	0	9	2	132	135	112
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24	<u> </u>		24	5		12	J -		12	5
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA	custom	Split	NA	Perm
Protected Phases	5	2		1	6		3	3		4	4	
Permitted Phases						6			2			4
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	30.0	60.0		12.0	42.0	42.0	38.0	38.0	60.0	30.0	30.0	30.0
Total Split (%)	21.4%	42.9%		8.6%	30.0%	30.0%	27.1%	27.1%	42.9%	21.4%	21.4%	21.4%
Maximum Green (s)	25.5	55.5		7.5	37.5	37.5	33.5	33.5	55.5	25.5	25.5	25.5
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5		4.5	4.5	4.5	4.5	4.5
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lead	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Walk Time (s)		7.0			7.0	7.0	7.0	7.0	7.0			
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0			
Pedestrian Calls (#/hr)		0			0	0	0	0	0			
Act Effct Green (s)	25.5	55.5		7.5	37.5	37.5		33.5	55.5	25.5	25.5	25.5

Baseline

Exhibit D-9: Synchro Analysis - Edgewater Blvd & Hwy 92 Ramps

Lanes, Volumes, Timings 34:

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EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
0.18	0.40		0.05	0.27	0.27		0.24	0.40	0.18	0.18	0.18
1.26	0.55		0.13	0.78	0.39		0.02	0.00	0.43	0.44	0.30
186.9	34.4		94.6	34.0	5.2		41.1	0.0	55.9	56.1	9.5
0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
186.9	34.4		94.6	34.0	5.2		41.1	0.0	55.9	56.1	9.5
F	С		F	С	А		D	А	E	E	Α
	87.1			28.2			33.6			42.3	
	F			С			С			D	
Other											
10											
Offset: 0 (0%), Referenced to phase 2:EBT, Start of Green											
Intersection Signal Delay: 57.6				tersectior	n LOS: E						
Intersection Capacity Utilization 65.9% ICI					of Service	С					
	EBL 0.18 1.26 186.9 0.0 186.9 F Other 0 d to phase 2:1 57.6 zation 65.9%	EBL EBT 0.18 0.40 1.26 0.55 186.9 34.4 0.0 0.0 186.9 34.4 F C 87.1 F Other 87.1 Other 57.6 57.6 24100 65.9%	EBL EBT EBR 0.18 0.40	EBL EBT EBR WBL 0.18 0.40 0.05 1.26 0.55 0.13 186.9 34.4 94.6 0.0 0.0 0.0 186.9 34.4 94.6 F C F 87.1 F F 0 F C F 0 F C F 0 F C F 57.6 In zation 65.9% IC	EBL EBT EBR WBL WBT 0.18 0.40 0.05 0.27 1.26 0.55 0.13 0.78 186.9 34.4 94.6 34.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 F C F C 87.1 28.2 F C Other	EBL EBT EBR WBL WBT WBR 0.18 0.40 0.05 0.27 0.27 1.26 0.55 0.13 0.78 0.39 186.9 34.4 94.6 34.0 5.2 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 F C F C A 87.1 28.2 F C C Other Intersection LOS: E Intersection LOS: E ICU Level of Service	EBL EBT EBR WBL WBT WBR NBL 0.18 0.40 0.05 0.27 0.27 1.26 0.55 0.13 0.78 0.39 186.9 34.4 94.6 34.0 5.2 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 F C F C A 87.1 28.2 - - - Other - - C - - 10 - - - - - - 57.6 Intersection LOS: E - - - - 57.6 Intersection LOS: E - - - - 27.6 ICU Level of Service C <td>EBL EBT EBR WBL WBT WBR NBL NBT 0.18 0.40 0.05 0.27 0.27 0.24 1.26 0.55 0.13 0.78 0.39 0.02 186.9 34.4 94.6 34.0 5.2 41.1 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 F C F C A D 87.1 28.2 33.6 C C C Other </td> <td>EBL EBT EBR WBL WBT WBR NBL NBT NBR 0.18 0.40 0.05 0.27 0.27 0.24 0.40 1.26 0.55 0.13 0.78 0.39 0.02 0.00 186.9 34.4 94.6 34.0 5.2 41.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 F C F C A D A 87.1 28.2 33.6 C C C Other Intersection LOS: E Intersection LOS: E Intersection C S S 57.6 Intersection LOS: E ICU Level of Service C <t< td=""><td>EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL 0.18 0.40 0.05 0.27 0.27 0.24 0.40 0.18 1.26 0.55 0.13 0.78 0.39 0.02 0.00 0.43 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 F C F C A D A E 87.1 28.2 33.6 F C C C C Other</td><td>EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT 0.18 0.40 0.05 0.27 0.27 0.24 0.40 0.18 0.18 1.26 0.55 0.13 0.78 0.39 0.02 0.00 0.43 0.44 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 56.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 56.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 56.1 F C F C A D A E E 87.1 28.2 33.6 42.3 42.3 42.3 42.3 42.3 42.3 42.3 42.3 42.3 42.</td></t<></td>	EBL EBT EBR WBL WBT WBR NBL NBT 0.18 0.40 0.05 0.27 0.27 0.24 1.26 0.55 0.13 0.78 0.39 0.02 186.9 34.4 94.6 34.0 5.2 41.1 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 F C F C A D 87.1 28.2 33.6 C C C Other	EBL EBT EBR WBL WBT WBR NBL NBT NBR 0.18 0.40 0.05 0.27 0.27 0.24 0.40 1.26 0.55 0.13 0.78 0.39 0.02 0.00 186.9 34.4 94.6 34.0 5.2 41.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 F C F C A D A 87.1 28.2 33.6 C C C Other Intersection LOS: E Intersection LOS: E Intersection C S S 57.6 Intersection LOS: E ICU Level of Service C <t< td=""><td>EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL 0.18 0.40 0.05 0.27 0.27 0.24 0.40 0.18 1.26 0.55 0.13 0.78 0.39 0.02 0.00 0.43 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 F C F C A D A E 87.1 28.2 33.6 F C C C C Other</td><td>EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT 0.18 0.40 0.05 0.27 0.27 0.24 0.40 0.18 0.18 1.26 0.55 0.13 0.78 0.39 0.02 0.00 0.43 0.44 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 56.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 56.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 56.1 F C F C A D A E E 87.1 28.2 33.6 42.3 42.3 42.3 42.3 42.3 42.3 42.3 42.3 42.3 42.</td></t<>	EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL 0.18 0.40 0.05 0.27 0.27 0.24 0.40 0.18 1.26 0.55 0.13 0.78 0.39 0.02 0.00 0.43 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 F C F C A D A E 87.1 28.2 33.6 F C C C C Other	EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL SBT 0.18 0.40 0.05 0.27 0.27 0.24 0.40 0.18 0.18 1.26 0.55 0.13 0.78 0.39 0.02 0.00 0.43 0.44 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 56.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 56.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 186.9 34.4 94.6 34.0 5.2 41.1 0.0 55.9 56.1 F C F C A D A E E 87.1 28.2 33.6 42.3 42.3 42.3 42.3 42.3 42.3 42.3 42.3 42.3 42.

Splits and Phases: 34:



Notice of Exemption

Appendix E

To: Office of Planning and Research P.O. Box 3044, Room 113	From: (Public Agency): City of Foster City 610 Foster City Blvd							
Sacramento, CA 95812-3044	Foster City, CA 94404							
County Clerk County of: <u>San Mateo</u> 555 County Center	(Address)							
Redwood City, CA 940								
Project Title: Temporary Extension of Traffi	c Relief Pilot Program							
Project Applicant: City of Poster City								
Project Location - Specific: 2 intersections: East Hillsdale Blvd and Shell Bl	vd and East Hillsdale Blvd and Edgewater Blvd							
Project Location - City: Foster City	Project Location - County: San Mateo							
Description of Nature, Purpose and Beneficiar 3 month temporary extension of existing 3 mo (including u-turms) at both project location in order to discourage cut-through traffic in Fost	ries of Project: onth Traffic Relief Pilot program to restrict left hand turns tersections between the hours of 4PM and 7PM on weekdays in er City from Hwy 101 northbound traffic.							
Name of Public Agency Approving Project: Ci	ty of Foster City							
Name of Person or Agency Carrying Out Proje	ect: City of Foster City							
 Exempt Status: (check one): Ministerial (Sec. 21080(b)(1); 15268); Declared Emergency (Sec. 21080(b)(4); Emergency Project (Sec. 21080(b)(4); Categorical Exemption. State type an Statutory Exemptions. State code num 	; (3); 15269(a));); 15269(b)(c)); id section number: <u>§ 15301; § 15306; § 15305</u> mber: <u>§ 15262</u>							
Reasons why project is exempt: Please see attached								
Lead Agency Contact Person: <u>Norm Dorais</u>	Area Code/Telephone/Extension: (650) 286-3200							
If filed by applicant: 1. Attach certified document of exemption 2. Has a Notice of Exemption been filed b	i finding. by the public agency approving the project?. ⊠ Yes □ No							
Signature:	Date: Title: Director of Public Works							
⊠ Signed by Lead Agency ⊠ Signe	ed by Applicant							
Authority cited: Sections 21083 and 21110, Public Reso Reference: Sections 21108, 21152, and 21152.1, Public	urces Code. Date Received for filing at OPR:							

Attachment - Reasons Why Project is Exempt

§ 15262. Feasibility and Planning Studies.

A project involving only feasibility or planning studies for possible future actions which the agency, board, or commission has not approved, adopted, or funded does not require the preparation of an EIR or negative declaration but does require consideration of environmental factors. This section does not apply to the adoption of a plan that will have a legally binding effect on later activities.

The project qualifies for this statutory exemption because it involves a temporary traffic relief pilot program for the purpose of studying whether the restriction of left turns off of East Hillsdale Blvd is a feasible and effective mechanism to reduce cut-through traffic from Hwy 101 into Foster City. Any permanent implementation of the pilot program would require separate future action by the City Council.

§ 15301. Existing Facilities.

Class 1 consists of the operation, repair, maintenance, permitting, leasing, licensing, or minor alteration of existing public or private structures, facilities, mechanical equipment, or topographical features, involving negligible or no expansion of existing or former use. The types of "existing facilities" itemized below are not intended to be all-inclusive of the types of projects which might fall within Class 1. The key consideration is whether the project involves negligible or no expansion of use. Examples include but are not limited to:

(c) Existing highways and streets, sidewalks, gutters, bicycle and pedestrian trails, and similar facilities (this includes road grading for the purpose of public safety, and other alterations such as the addition of bicycle facilities, including but not limited to bicycle parking, bicycle-share facilities and bicycle lanes, transit improvements such as bus lanes, pedestrian crossings, street trees, and other similar alterations that do not create additional automobile lanes).

The project qualifies for a Class 1 categorical exemption because restricting the hours in which left hand turns are allowed off East Hillsdale Blvd. is a minor alteration to an existing street that would involve negligible or no expansion of use as the project would not generate any net new trips.

§ 15306. Information Collection.

Class 6 consists of basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource. These may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded.

The project qualifies for a Class 6 categorical exemption because the purpose of the traffic relief pilot program is to collect data on whether restricting left hand turns from East Hillsdale Blvd. is a feasible and effective mechanism for reducing cut-through traffic from hwy 101 into the City. Counts at 9 intersections were conducted prior to implementation of the pilot program and additional counts will be conducted after implementation of the program to determine whether there is any reduction in trips through these intersections as a result.

§ 15305. Minor Alterations in Land Use Limitations.

Class 5 consists of minor alterations in land use limitations in areas with an average slope of less than 20%, which do not result in any changes in land use or density

The project qualifies for a Class 5 categorical exemption because restricting left turns at two intersections off of East Hillsdale Blvd. is a minor alteration in land use limitation in an area with an average slope of less than 20% which does not result in any changes in land use or density.

Exceptions to Categorical Exemption Analysis

15300.2 Exceptions

(a) Location. Classes 3, 4, 5, 6, and 11 are qualified by consideration of where the project is to be located -- a project that is ordinarily insignificant in its impact on the environment may in a particularly sensitive environment be significant. Therefore, these classes are considered to apply all instances, except where the project may impact on an environmental resource of hazardous or critical concern where designated, precisely mapped, and officially adopted pursuant to law by federal, state, or local agencies.

This exception does not apply to the project because the project location is an existing City street in an urbanized, extensively developed area of the City of Foster City and therefore is not in a particularly sensitive environment and will not impact an environmental resource of hazardous or critical concern.

(b) Cumulative Impact. All exemptions for these classes are inapplicable when the cumulative impact of successive projects of the same type in the same place, over time is significant.

This exception does not apply to the proposed project because it would not be expected to contribute to significant cumulative impacts when considered along with other impacts or other

reasonably foreseeable projects or when considered with the overall buildout under the City's General Plan.

(c) Significant Effect. A categorical exemption shall not be used for an activity where there is a reasonable possibility that the activity will have a significant effect on the environment due to unusual circumstances.

This exception does not apply to the proposed project because there are no unusual circumstances involved. The project site is an existing City street in an urbanized, extensively developed area of the City of Foster City. There are no sensitive natural communities, no areas of sensitive habitat, and no areas of critical habitat occurring at the project site. Additionally, there are no buildings currently listed or eligible for listing on the California Register of Historical Resources, no recorded archaeological sites, and no known paleontological resources located on the project site. Therefore, implementation of the proposed project would not result in asignificant effect on the environment due to unusual circumstances.

(d) Scenic Highways. A categorical exemption shall not be used for a project which may result in damage to scenic resources, including but not limited to, trees, historic buildings, rock outcroppings, or similar resources, within a highway officially designated as a state scenic highway. This does not apply to improvements which are required as mitigation by an adopted negative declaration or certified EIR.

The project site is not within or visible from any state scenic highway and therefore this exception does not apply to the proposed project.

(e) Hazardous Waste Sites. A categorical exemption shall not be used for a project located on a site which is included on any list compiled pursuant to Section 65962.5 of the Government Code.

This exception does not apply to the proposed project because it is not located on a hazardous waste site listed pursuant to California Government Code Section 65962.5 which requires various state agencies to compile lists of hazardous waste disposal facilities, unauthorized release from underground storage tanks, contaminated drinking water wells, and solid waste facilities from which there is known migration of hazardous waste and submit such information to the Secretary for Environmental Protection on at least an annual basis.

(f) Historical Resources. A categorical exemption shall not be used for a project which may cause a substantial adverse change in the significance of a historical resource.

This exception does not apply to the proposed project because the federal, State, and City historic registers do not indicate any historically or architecturally significant buildings designated within or adjacent to the project site.