APPENDIX K

TRAFFIC OPERATIONS MEMORANDUM

FEHR PEERS

Memorandum

Date: July 18, 2022

To: Bruce Abelli-Amen, Baseline Environmental Consulting

From: David Manciati, Fehr & Peers

Subject: CEMEX SEIR – Traffic Operations

RS21-4036

Introduction

Purpose

The purpose of this memorandum is to analyze traffic operations at selected intersections in Yolo County that may be affected by proposed changes to the CEMEX project. This analysis is required for entitlement review purposes related to the project's compliance with Yolo County's *2030 Countywide General Plan*. The General Plan contains specific policies related to traffic operations performance. These policies establish level of service (LOS) thresholds that must be maintained for county roadways and intersections.

Relevant to traffic operations, the proposed project includes the following changes to existing CEMEX operations.

- Extend the CEMEX mining permit by 20 years, from 2027 to 2047
- Maintain the annual production limit of 1,204,819 tons mined (1,000,000 tons sold). Under the 20 Percent Exceedance approval, this would maintain an annual maximum of 1,445,783 tons mined (1,200,000 tons sold) in any one year.
- Increase the total production limit by 20,000,000 tons sold, representing continued mining at the same annual amount over the 20-year extension as the original permit

Of these changes, the permit extension could influence future traffic operations at the study intersections. If the permit elapses in 2027, the project site would stop generating vehicle trips and local traffic volumes would reflect this change. Continuation of the permit would mean similar traffic levels as today from the site would continue. Because background (i.e., non-project)

volumes are expected to increase over time in Yolo County, the project will be generally contributing a smaller proportion of the future traffic at the study intersections.

Approach

The traffic operations analysis begins with analyzing existing conditions to understand if current traffic operations meet the General Plan LOS expectations. These results set the foundation for the remainder of the project evaluation.

Traffic Operations Analysis

Methodology

Study Area

The following intersections were selected by the County for analysis in this study. These are the same locations analyzed for the project's 1996 EIR.

1. SR 16/I-505 Southbound Ramps
2. SR 16/I-505 Northbound Ramps
3. SR 16/CEMEX Driveway
4. SR 16/County Road 96
5. County Road 98/SR 16/W. Main Street
6. County Road 98/County Road 20/W. Kentucky Avenue

Data Collection

As this study has been conducted during the COVID-19 pandemic, which has had substantial impacts on travel patterns, it was not appropriate to collect new counts. Because the County did not have recent traffic counts for the study intersections, 2019 turning movement volume estimates were obtained from StreetLight Data. StreetLight Data technology uses mobile device data to estimate vehicle trips on the roadway network that can be used to derive volume estimates for specific roadways and intersections. Other traffic characteristics, such as peak hour factors, were based on 2014 traffic counts in the study area.

To estimate volumes representative of a typical mid-week day, StreetLight Data volumes were averaged for each AM and PM peak period hour (e.g., 7-8 AM, 8-9 AM, 5-6 PM, etc.) for Tuesdays, Wednesdays, and Thursdays in each month of 2019. The highest AM and PM peak hours across all months for each intersection were used in the analysis, except at the I-505/SR 16 interchange. Because the ramps operate as a system, the AM and PM peak period hours with the highest combined volume were evaluated at the two ramp terminal intersections. Traffic volume estimates

were then adjusted to address any imbalances between the ramps and the SR 16/CEMEX driveway intersection.

With the above methodology, this analysis captures midweek AM and PM peak hour intersection operations during a busy month. This is critical, as seasonal variation in traffic volumes may be high in rural settings.

Definitions

Each study intersection was analyzed using methodology recommended in the *Highway Capacity Manual (HCM) 6th Edition* (Transportation Research Board, 2016). The HCM methodology estimates vehicle delay to determine a corresponding level of service (LOS). LOS is a qualitative measure of traffic operating conditions whereby a letter grade, from A (representing free-flow vehicular traffic conditions with little to no congestion) to F (oversaturated conditions where traffic demand exceeds capacity resulting in long queues and delays), is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving. **Table 1** displays the delay range associated with each LOS category for signalized and unsignalized intersections per the HCM.

Table 1: Level of Service Definitions at Intersections

Level of Service	Description (at Signalized Intersections)	Average Control Delay[1]	
		Signalized	Unsignalized
A	Volume-to-capacity ratio is low and either progression is exceptionally favorable or cycle length is very short. Most vehicles arrive during the green phase and travel through the intersection without stopping.	≤ 10	< 10.0
B	Volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.	>10 to 20	> 10.0 to 15.0
C	Progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 to 35	> 15.0 to 25.0
D	Volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.	>35 to 55	> 25.0 to 35.0
E	Volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.	>55 to 80	> 35.0 to 50.0
F	Volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	>80	> 50.0

Notes: [1] Average control delay presented in seconds per vehicle. Delay values are rounded to the nearest second and evaluated for LOS based on the above thresholds (i.e., 10 seconds per vehicle = LOS A)
Source: Highway Capacity Manual, 6th Edition; Transportation Research Board, 2016.

Existing Conditions

Each study intersection was analyzed using the Synchro 11 capacity analysis software to determine existing midweek AM and PM peak hour operations during a "busy month". Synchro applies HCM methodologies and considers vehicle volumes, lane configurations, pedestrian volumes, heavy vehicle percentages, and other pertinent parameters of intersection operations.

Table 2 displays analysis results and indicates that each intersection operates at LOS C or better during the AM and PM peak hours, except for SR 16/County Road 96 (CR 96). The minor street (CR 96) approach to the intersection operates at LOS F. This indicates that drivers in busy months are waiting over 50 seconds before accessing SR 16. Refer to Attachment A for detailed calculations.

Table 2: Peak Hour Intersection Operations under Existing Conditions (Busy Month)

Intersection	Control	Delay/LOS[1]	
		AM Peak Hour	PM Peak Hour
1. SR 16/I-505 Southbound Ramps	Side Street Stop	2 (18) / A (C)	1 (23) / A (C)
2. SR 16/I-505 Northbound Ramps	Traffic Signal	7 / A	9 / A
3. SR 16/CEMEX Driveway	Side Street Stop	1 (14) / A (B)	1 (15) / A (C)
4. SR 16/County Road 96	Side Street Stop	9 **(58)** / A **(F)**	9 **(63)** / A **(F)**
5. County Road 98/SR 16/W. Main Street	Traffic Signal	25 / C	30 / C
6. County Road 98 (SR 16)/County Road 20/W. Kentucky Avenue	Traffic Signal	18 / B	18 / B

Notes: [1] For signalized intersections, average intersection delay is reported in seconds per vehicle for the overall intersection. For side street stop-controlled intersections, average intersection delay is reported in seconds per vehicle for the overall intersection, with the worst movement in parentheses. Red font identifies unacceptable LOS conditions.
Source: Fehr & Peers, 2022.

General Plan Consistency

The purpose of the following section is to evaluate intersection LOS performance based on the expectations established in Yolo County's *2030 Countywide General Plan* and to relate those expectations to the proposed project.

LOS Policy

Yolo County's *2030 Countywide General Plan* contains policy CI-3.1 with the following vehicle LOS expectations.

- CI-3.1 Maintain Level of Service (LOS) C or better for roadways and intersections in the unincorporated county. In no case shall land use be approved that would either result in worse than LOS C conditions, or require additional improvements to maintain the required level of service, except as specified below [note: the full policy includes multiple exceptions but only exception H applies in the study area]. The intent of this policy is to consider level of service as a limit on the planned capacity of the County's roadways.
- H. SR 16 from I-505 to CR 98 – LOS D is acceptable, assuming that passing lanes and appropriate intersection improvements are constructed. The County will secure a fair share towards these improvements from all feasible sources. Caltrans and the Rumsey Band of Wintun Indians shall be encouraged to establish a funding mechanism to pay the remainder.

Caltrans uses LOS D for all the study intersections, as confirmed by email communication in March 2022. Therefore, the minimum acceptable LOS for study intersections 1 through 5 is LOS D. The minimum acceptable LOS for study intersection 6 is LOS C.

Policy Application

The SR 16/CR 96 intersection has an existing LOS deficiency as documented in Table 2. A challenge to remedying this deficiency are the limitations on capacity expansion associated with General Plan policy CI-3.1 described above. As an intentional limit on new capacity, and therefore new development, this policy effectively requires the proposed project to reduce its contribution to existing AM and PM peak hour traffic volumes to achieve acceptable LOS conditions. Demand reduction could include employee or truck trips although truck trips tend to have the largest effect on this intersection's LOS performance.

Based on existing conditions, the AM peak hour would require a reduction of 206 vehicles (103 inbound and103 outbound) to maintain acceptable LOS for weekday conditions while 180 vehicles (90 inbound and 90 outbound) would need to be reduced during PM peak hour

conditions. Based on recent aggregate mining projects in the Sacramento region, this level of reduction would likely exceed the CEMEX site's trip contribution during AM and PM peak hours. Therefore, even restricting all trip generation from the CEMEX site during the AM and PM peak hours would not produce acceptable peak hour operations.

Future Considerations

State Route 16/County Road 96

Caltrans is the owner and operator of the roadways used by vehicles traveling to and from the CEMEX site (i.e, SR 16, I-505, and I-5). Caltrans has developed its transportation network consistent with applicable design standards and has a process of investigating and identifying operational improvements on the State Highway System (SHS).

The SR 16 corridor was evaluated as part of the most recent regional transportation plan, the *2020 Metropolitan Transportation Plan/Sustainable Communities Strategy* (2020 MTP/SCS) (SACOG, 2019). Relevant to the SR 16/County Road 96 intersection, the 2020 MTP/SCS identified the following project on SR 16 to be built within the 20-year planning horizon:

- SR 16 Pavement Rehabilitation C – In Yolo County on SR 16 from CR 98 to I-5 Junction (PM R40.5/R43.42; SHOPP ID 20445)

Without Caltrans modifying the roadway capacity of SR 16, the existing LOS deficiency at SR 16/CR 96 would likely persist in the future (beyond 2027) with or without approval of the proposed project. Caltrans may identify future roadway capacity expansion in the corridor at any time and re-evaluates corridor needs as part of the MTP/SCS update every four years.

Remaining Study Intersections

The other study intersections currently operate at an acceptable LOS. Although the proposed project changes would not result in an increase in traffic above current permitted levels, background (i.e., non-project) traffic growth could cause LOS deficiencies at study intersections under future conditions. According to traffic volume forecasts for the 2020 MTP/SCS, background traffic volumes on SR 16 are projected to increase in the study area by approximately 0.17% to 1.22% percent annually, depending on the segment. Current conditions combined with this level of growth did not yet warrant capacity expansion of SR 16 or its intersections with local roadways based on Caltrans and Yolo County input to the 2020 MTP/SCS, which covers the planning horizon to 2040. The next update to the MTP/SCS will extend the planning horizon to 2050, which is beyond the proposed permit extension year (2047). As part of that MTP/SCS update, any necessary modifications to SR 16 will be identified.

Recommendations

The project involves a unique combination of tradeoffs. The General Plan LOS policy is clear that roadway capacity expansion is intentionally limited. However, the project is in a mineral overlay zone designated in the General Plan for aggregate mining and is part of the Cache Creek Area Plan (CCAP), which contains the following reference in its draft environmental impact report (DEIR) about supporting local aggregate projects.

> *"…[minimization] of aggregate truck trips is a fundamental consideration in implementation of the CCAP. By ensuring a local source of aggregate, Yolo has maximized the opportunity to reduce mining truck traffic in the County… In support of state policy, and the recommendations of the Technical Advisory, the CCAP ensures a local source of aggregate for local construction projects that would otherwise be transported from greater distances, and thereby reduces the distance trucks must travel to deliver product to regional sites… Overall the CCAP provides a 'travel efficient' program for aggregate resources serving the region while recognizing that unlike most urban land uses which fundamentally can be located anywhere, resource-based land uses are limited to locations where the resource exists."*

The land use element and CCAP support for mining activity on the project site may be sufficient evidence to support a LOS exception. Policy CI-3.1 (section X) allows exceptions to the LOS policy by the Board of Supervisors as noted below.

> *X. Additional exceptions to this policy may be allowed by the Board of Supervisors on a case-by-case basis, where reducing the level of service would result in a clear public benefit. Such circumstances may include, but are not limited to, the following:*
>
> *1. Preserving agriculture or open space land;*
>
> *2. Enhancing the agricultural economy;*
>
> *3. Preserving scenic roadways/highways;*
>
> *4. Preserving the rural character of the county;*
>
> *5. Avoiding adverse impacts to alternative transportation modes;*
>
> *6. Avoiding growth inducement; or*
>
> *7. Preserving downtown community environments.*
>
> *8. Where right-of-way constraints would make the improvements infeasible. (DEIR MM CI-2)*

The proposed project may qualify as enhancing the agricultural community or offer other clear public benefits such as truck trip efficiency noted in the CCAP DEIR statement above. The County's evaluation of the exception could also consider that all other hours of the day generally have lower volumes and better traffic operations.

FEHR PEERS

Attachment A:

Existing Conditions Technical Calculations

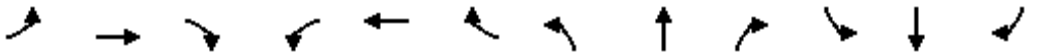
Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	303	69	21	239	162	0	0	0	69	0	5
Future Vol, veh/h	0	303	69	21	239	162	0	0	0	69	0	5
Conflicting Peds, #/hr	0	0	2	0	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	30
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	87	87	90	90	90	70	70	70
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	0	356	81	24	275	186	0	0	0	99	0	7

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	439	0	0	720	762	275
Stage 1	-	-	-	-	-	-	323	323	-
Stage 2	-	-	-	-	-	-	397	439	-
Critical Hdwy	-	-	-	4.17	-	-	6.47	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	5.47	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.47	5.57	-
Follow-up Hdwy	-	-	-	2.263	-	-	3.563	4.063	3.363
Pot Cap-1 Maneuver	0	-	-	1095	-	0	387	329	752
Stage 1	0	-	-	-	-	0	723	641	-
Stage 2	0	-	-	-	-	0	668	570	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1095	-	-	377	0	752
Mov Cap-2 Maneuver	-	-	-	-	-	-	377	0	-
Stage 1	-	-	-	-	-	-	723	0	-
Stage 2	-	-	-	-	-	-	651	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.7	17.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1095	-	377	752
HCM Lane V/C Ratio	-	-	0.022	-	0.261	0.009
HCM Control Delay (s)	-	-	8.4	-	17.9	9.8
HCM Lane LOS	-	-	A	-	C	A
HCM 95th %tile Q(veh)	-	-	0.1	-	1	0



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	318	54	0	303	10	119	0	88	0	0	0
Future Volume (veh/h)	0	318	54	0	303	10	119	0	88	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1796	1796	0	1796	1796	1796	1796	1796			
Adj Flow Rate, veh/h	0	361	0	0	394	13	163	0	121			
Peak Hour Factor	0.88	0.88	0.88	0.77	0.77	0.77	0.73	0.73	0.73			
Percent Heavy Veh, %	0	7	7	0	7	7	7	7	7			
Cap, veh/h	0	656		0	656	543	460	0	408			
Arrive On Green	0.00	0.37	0.00	0.00	0.37	0.37	0.27	0.00	0.27			
Sat Flow, veh/h	0	1796	0	0	1796	1486	1711	0	1517			
Grp Volume(v), veh/h	0	361	0	0	394	13	163	0	121			
Grp Sat Flow(s),veh/h/ln	0	1796	0	0	1796	1486	1711	0	1517			
Q Serve(g_s), s	0.0	4.2	0.0	0.0	4.7	0.1	2.0	0.0	1.7			
Cycle Q Clear(g_c), s	0.0	4.2	0.0	0.0	4.7	0.1	2.0	0.0	1.7			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	656		0	656	543	460	0	408			
V/C Ratio(X)	0.00	0.55		0.00	0.60	0.02	0.35	0.00	0.30			
Avail Cap(c_a), veh/h	0	3425		0	3425	2834	1500	0	1331			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	6.6	0.0	0.0	6.8	5.3	7.7	0.0	7.6			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.3	0.0	0.2	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.3	0.0	0.0	0.4	0.0	0.3	0.0	0.2			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	6.9	0.0	0.0	7.1	5.3	7.9	0.0	7.8			
LnGrp LOS	A	A		A	A	A	A	A	A			
Approach Vol, veh/h		361	A		407			284				
Approach Delay, s/veh		6.9			7.0			7.9				
Approach LOS		A			A			A				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		15.1				15.1		11.1				
Change Period (Y+Rc), s		5.5				5.5		4.1				
Max Green Setting (Gmax), s		50.0				50.0		23.0				
Max Q Clear Time (g_c+I1), s		6.2				6.7		4.0				
Green Ext Time (p_c), s		1.1				1.2		0.3				

Intersection Summary	
HCM 6th Ctrl Delay	7.2
HCM 6th LOS	A

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	391	288	60	28	25
Future Vol, veh/h	15	391	288	60	28	25
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	7	7	7	7	7	7
Mvmt Flow	16	425	313	65	30	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	380	0	-	0	805	348
Stage 1	-	-	-	-	348	-
Stage 2	-	-	-	-	457	-
Critical Hdwy	4.17	-	-	-	6.47	6.27
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	2.263	-	-	-	3.563	3.363
Pot Cap-1 Maneuver	1152	-	-	-	345	684
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	627	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1150	-	-	-	339	683
Mov Cap-2 Maneuver	-	-	-	-	339	-
Stage 1	-	-	-	-	693	-
Stage 2	-	-	-	-	626	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1150	-	-	-	445
HCM Lane V/C Ratio	0.014	-	-	-	0.129
HCM Control Delay (s)	8.2	-	-	-	14.3
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0.4

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	179	544	13	22	214	8	12	16	47	5	46	12
Future Vol, veh/h	179	544	13	22	214	8	12	16	47	5	46	12
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	160	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	89	89	89	70	70	70	88	88	88
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	206	625	15	25	240	9	17	23	67	6	52	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	251	0	0	642	0	0	1375	1348	635	1387	1351	247
Stage 1	-	-	-	-	-	-	1047	1047	-	297	297	-
Stage 2	-	-	-	-	-	-	328	301	-	1090	1054	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	1286	-	-	919	-	-	120	147	470	117	147	780
Stage 1	-	-	-	-	-	-	270	299	-	701	659	-
Stage 2	-	-	-	-	-	-	674	656	-	255	297	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1284	-	-	917	-	-	68	120	469	74	120	779
Mov Cap-2 Maneuver	-	-	-	-	-	-	68	120	-	74	120	-
Stage 1	-	-	-	-	-	-	226	251	-	587	640	-
Stage 2	-	-	-	-	-	-	592	637	-	167	249	-

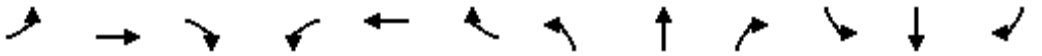
Approach	EB	WB	NB	SB
HCM Control Delay, s	2	0.8	49.2	58.4
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	183	1284	-	-	917	-	-	135
HCM Lane V/C Ratio	0.585	0.16	-	-	0.027	-	-	0.53
HCM Control Delay (s)	49.2	8.3	-	-	9	-	-	58.4
HCM Lane LOS	E	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	3.2	0.6	-	-	0.1	-	-	2.6

CEMEX SEIR

5: CR 98 & SR 16 & W Main St

Existing Conditions - AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	315	147	217	55	85	32	97	356	41	64	340	83
Future Volume (veh/h)	315	147	217	55	85	32	97	356	41	64	340	83
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	342	160	236	60	92	35	105	387	45	70	370	90
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
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	393	458	398	87	161	131	135	479	56	94	503	416
Arrive On Green	0.23	0.27	0.27	0.05	0.09	0.09	0.08	0.30	0.30	0.06	0.28	0.28
Sat Flow, veh/h	1711	1706	1484	1711	1796	1470	1711	1577	183	1711	1796	1484
Grp Volume(v), veh/h	342	160	236	60	92	35	105	0	432	70	370	90
Grp Sat Flow(s),veh/h/ln	1711	1706	1484	1711	1796	1470	1711	0	1760	1711	1796	1484
Q Serve(g_s), s	12.5	4.9	9.0	2.2	3.2	1.4	3.9	0.0	14.8	2.6	12.2	3.0
Cycle Q Clear(g_c), s	12.5	4.9	9.0	2.2	3.2	1.4	3.9	0.0	14.8	2.6	12.2	3.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	393	458	398	87	161	131	135	0	534	94	503	416
V/C Ratio(X)	0.87	0.35	0.59	0.69	0.57	0.27	0.78	0.00	0.81	0.74	0.74	0.22
Avail Cap(c_a), veh/h	788	1205	1048	656	1268	1037	656	0	972	656	992	820
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	19.2	20.7	30.4	28.5	27.7	29.5	0.0	20.9	30.3	21.3	18.0
Incr Delay (d2), s/veh	2.4	0.6	2.0	3.6	3.8	1.3	3.7	0.0	3.6	4.3	2.5	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	1.9	3.1	1.0	1.5	0.5	1.6	0.0	5.7	1.1	4.6	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	19.9	22.7	34.0	32.3	29.0	33.1	0.0	24.5	34.6	23.8	18.3
LnGrp LOS	C	B	C	C	C	C	C	A	C	C	C	B
Approach Vol, veh/h		738			187			537			530	
Approach Delay, s/veh		23.9			32.2			26.2			24.3	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.9	23.3	9.7	24.2	19.6	11.6	8.2	25.8
Change Period (Y+Rc), s	4.6	5.8	4.6	6.0	4.6	* 5.8	4.6	6.0
Max Green Setting (Gmax), s	25.0	46.0	25.0	36.0	30.0	* 46	25.0	36.0
Max Q Clear Time (g_c+I1), s	4.2	11.0	5.9	14.2	14.5	5.2	4.6	16.8
Green Ext Time (p_c), s	0.1	3.8	0.1	2.6	0.4	0.8	0.1	2.8

Intersection Summary	
HCM 6th Ctrl Delay	25.4
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	185	45	86	31	13	11	239	177	17	205	11
Future Volume (veh/h)	22	185	45	86	31	13	11	239	177	17	205	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.98	1.00		0.97	1.00		0.97
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796	1796
Adj Flow Rate, veh/h	27	226	55	112	40	17	13	291	216	23	277	15
Peak Hour Factor	0.82	0.82	0.82	0.77	0.77	0.77	0.82	0.82	0.82	0.74	0.74	0.74
Percent Heavy Veh, %	7	7	7	7	7	7	7	7	7	7	7	7
Cap, veh/h	76	286	70	200	331	141	34	373	307	57	372	20
Arrive On Green	0.04	0.21	0.21	0.12	0.28	0.28	0.02	0.21	0.21	0.03	0.22	0.22
Sat Flow, veh/h	1711	1387	338	1711	1186	504	1711	1796	1482	1711	1686	91
Grp Volume(v), veh/h	27	0	281	112	0	57	13	291	216	23	0	292
Grp Sat Flow(s),veh/h/ln	1711	0	1725	1711	0	1690	1711	1796	1482	1711	0	1777
Q Serve(g_s), s	0.7	0.0	7.0	2.8	0.0	1.1	0.3	6.9	6.1	0.6	0.0	6.9
Cycle Q Clear(g_c), s	0.7	0.0	7.0	2.8	0.0	1.1	0.3	6.9	6.1	0.6	0.0	6.9
Prop In Lane	1.00		0.20	1.00		0.30	1.00		1.00	1.00		0.05
Lane Grp Cap(c), veh/h	76	0	356	200	0	472	34	373	307	57	0	392
V/C Ratio(X)	0.35	0.00	0.79	0.56	0.00	0.12	0.38	0.78	0.70	0.40	0.00	0.74
Avail Cap(c_a), veh/h	1026	0	1418	1026	0	1390	988	1836	1515	988	0	1816
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.9	0.0	16.9	18.8	0.0	12.1	21.8	16.9	16.5	21.3	0.0	16.3
Incr Delay (d2), s/veh	1.0	0.0	1.5	0.9	0.0	0.0	2.6	1.4	1.1	1.7	0.0	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.1	1.0	0.0	0.3	0.1	2.2	1.7	0.2	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.9	0.0	18.4	19.7	0.0	12.1	24.3	18.2	17.6	23.0	0.0	17.4
LnGrp LOS	C	A	B	B	A	B	C	B	B	C	A	B
Approach Vol, veh/h		308			169			520			315	
Approach Delay, s/veh		18.7			17.1			18.1			17.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.6	15.3	9.4	14.7	5.0	15.9	6.1	18.0
Change Period (Y+Rc), s	4.1	6.0	4.1	5.4	4.1	6.0	4.1	5.4
Max Green Setting (Gmax), s	26.9	46.0	27.0	37.0	26.0	46.0	27.0	37.0
Max Q Clear Time (g_c+I1), s	2.6	8.9	4.8	9.0	2.3	8.9	2.7	3.1
Green Ext Time (p_c), s	0.0	0.3	0.0	0.4	0.0	0.2	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	18.1
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	376	196	0	493	246	0	0	0	18	0	38
Future Vol, veh/h	0	376	196	0	493	246	0	0	0	18	0	38
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	30
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	87	87	87	90	90	90	70	70	70
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	442	231	0	567	283	0	0	0	26	0	54

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	-	-	0	1125	1242	567
Stage 1	-	-	-	-	-	-	567	567	-
Stage 2	-	-	-	-	-	-	558	675	-
Critical Hdwy	-	-	-	-	-	-	6.43	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.43	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	-	-	-	-	-	-	3.527	4.027	3.327
Pot Cap-1 Maneuver	0	-	-	0	-	0	226	174	521
Stage 1	0	-	-	0	-	0	566	505	-
Stage 2	0	-	-	0	-	0	571	452	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	-	-	-	226	0	521
Mov Cap-2 Maneuver	-	-	-	-	-	-	226	0	-
Stage 1	-	-	-	-	-	-	566	0	-
Stage 2	-	-	-	-	-	-	571	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	-	226	521
HCM Lane V/C Ratio	-	-	-	0.114	0.104
HCM Control Delay (s)	-	-	-	23	12.7
HCM Lane LOS	-	-	-	C	B
HCM 95th %tile Q(veh)	-	-	-	0.4	0.3

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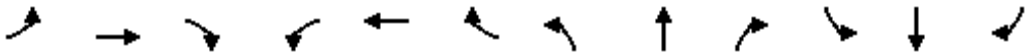
2: I-505 NB Ramps & SR 16

Existing Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	363	31	0	440	15	299	0	79	0	0	0
Future Volume (veh/h)	0	363	31	0	440	15	299	0	79	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1856	1856	0	1856	1856	1856	1856	1856			
Adj Flow Rate, veh/h	0	412	0	0	571	19	410	0	108			
Peak Hour Factor	0.88	0.88	0.88	0.77	0.77	0.77	0.73	0.73	0.73			
Percent Heavy Veh, %	0	3	3	0	3	3	3	3	3			
Cap, veh/h	0	734		0	734	607	525	0	466			
Arrive On Green	0.00	0.40	0.00	0.00	0.40	0.40	0.30	0.00	0.30			
Sat Flow, veh/h	0	1856	0	0	1856	1536	1767	0	1567			
Grp Volume(v), veh/h	0	412	0	0	571	19	410	0	108			
Grp Sat Flow(s),veh/h/ln	0	1856	0	0	1856	1536	1767	0	1567			
Q Serve(g_s), s	0.0	5.4	0.0	0.0	8.4	0.2	6.6	0.0	1.6			
Cycle Q Clear(g_c), s	0.0	5.4	0.0	0.0	8.4	0.2	6.6	0.0	1.6			
Prop In Lane	0.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	734		0	734	607	525	0	466			
V/C Ratio(X)	0.00	0.56		0.00	0.78	0.03	0.78	0.00	0.23			
Avail Cap(c_a), veh/h	0	2971		0	2971	2459	1302	0	1154			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	7.3	0.0	0.0	8.2	5.8	10.0	0.0	8.3			
Incr Delay (d2), s/veh	0.0	0.3	0.0	0.0	0.7	0.0	1.0	0.0	0.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.7	0.0	0.0	1.2	0.0	1.5	0.0	0.3			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.6	0.0	0.0	8.9	5.8	11.0	0.0	8.4			
LnGrp LOS	A	A		A	A	A	B	A	A			
Approach Vol, veh/h		412	A		590			518				
Approach Delay, s/veh		7.6			8.8			10.5				
Approach LOS		A			A			B				

Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		17.8				17.8		13.4				
Change Period (Y+Rc), s		5.5				5.5		4.1				
Max Green Setting (Gmax), s		50.0				50.0		23.0				
Max Q Clear Time (g_c+I1), s		7.4				10.4		8.6				
Green Ext Time (p_c), s		1.3				1.9		0.7				

Intersection Summary												
HCM 6th Ctrl Delay			9.0									
HCM 6th LOS			A									

Notes

User approved pedestrian interval to be less than phase max green.

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	437	450	5	5	5
Future Vol, veh/h	5	437	450	5	5	5
Conflicting Peds, #/hr	2	0	0	2	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	5	475	489	5	5	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	496	0	-	0	979	494
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	485	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1063	-	-	-	276	573
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	617	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1061	-	-	-	274	572
Mov Cap-2 Maneuver	-	-	-	-	274	-
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	616	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	15
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1061	-	-	-	371
HCM Lane V/C Ratio	0.005	-	-	-	0.029
HCM Control Delay (s)	8.4	-	-	-	15
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	481	5	25	567	8	11	41	42	5	10	156
Future Vol, veh/h	13	481	5	25	567	8	11	41	42	5	10	156
Conflicting Peds, #/hr	2	0	2	2	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	160	-	-	190	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	89	89	89	70	70	70	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	15	553	6	28	637	9	16	59	60	6	11	177

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	648	0	0	561	0	0	1380	1292	558	1346	1291	644
Stage 1	-	-	-	-	-	-	588	588	-	700	700	-
Stage 2	-	-	-	-	-	-	792	704	-	646	591	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.13	6.53	6.23	7.13	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.13	5.53	-
Follow-up Hdwy	2.227	-	-	2.227	-	-	3.527	4.027	3.327	3.527	4.027	3.327
Pot Cap-1 Maneuver	933	-	-	1005	-	-	121	162	527	128	162	471
Stage 1	-	-	-	-	-	-	493	494	-	428	440	-
Stage 2	-	-	-	-	-	-	381	438	-	459	493	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	931	-	-	1003	-	-	69	154	526	77	154	470
Mov Cap-2 Maneuver	-	-	-	-	-	-	69	154	-	77	154	-
Stage 1	-	-	-	-	-	-	484	485	-	420	427	-
Stage 2	-	-	-	-	-	-	225	425	-	352	484	-

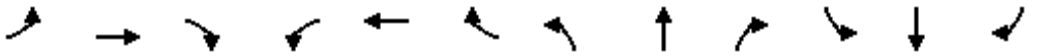
Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.4	62.8	25
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	186	931	-	-	1003	-	-	370
HCM Lane V/C Ratio	0.722	0.016	-	-	0.028	-	-	0.525
HCM Control Delay (s)	62.8	8.9	-	-	8.7	-	-	25
HCM Lane LOS	F	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	4.6	0	-	-	0.1	-	-	2.9

CEMEX SEIR

5: CR 98 & SR 16 & W Main St

Existing Conditions - PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	233	176	94	269	61	141	386	109	59	348	174
Future Volume (veh/h)	160	233	176	94	269	61	141	386	109	59	348	174
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.99	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	174	253	191	102	292	66	153	420	118	64	378	189
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
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	215	494	357	132	388	320	191	484	136	85	536	443
Arrive On Green	0.12	0.26	0.26	0.07	0.21	0.21	0.11	0.35	0.35	0.05	0.29	0.29
Sat Flow, veh/h	1767	1930	1395	1767	1856	1531	1767	1389	390	1767	1856	1534
Grp Volume(v), veh/h	174	230	214	102	292	66	153	0	538	64	378	189
Grp Sat Flow(s),veh/h/ln	1767	1763	1562	1767	1856	1531	1767	0	1779	1767	1856	1534
Q Serve(g_s), s	7.4	8.6	9.1	4.4	11.4	2.7	6.5	0.0	21.8	2.8	14.0	7.7
Cycle Q Clear(g_c), s	7.4	8.6	9.1	4.4	11.4	2.7	6.5	0.0	21.8	2.8	14.0	7.7
Prop In Lane	1.00		0.89	1.00		1.00	1.00		0.22	1.00		1.00
Lane Grp Cap(c), veh/h	215	451	400	132	388	320	191	0	620	85	536	443
V/C Ratio(X)	0.81	0.51	0.53	0.77	0.75	0.21	0.80	0.00	0.87	0.75	0.71	0.43
Avail Cap(c_a), veh/h	687	1051	931	573	1107	913	573	0	830	573	866	716
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.0	24.6	24.7	35.1	28.6	25.2	33.6	0.0	23.4	36.2	24.5	22.2
Incr Delay (d2), s/veh	2.8	1.3	1.6	3.6	3.6	0.4	2.9	0.0	8.0	4.8	2.1	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	3.6	3.4	1.9	5.2	1.0	2.8	0.0	9.4	1.2	5.6	2.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.8	25.8	26.3	38.7	32.2	25.6	36.5	0.0	31.5	41.1	26.6	23.0
LnGrp LOS	D	C	C	D	C	C	D	A	C	D	C	C
Approach Vol, veh/h		618			460			691			631	
Approach Delay, s/veh		28.8			32.7			32.6			27.0	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.3	25.5	13.0	28.3	14.0	21.9	8.3	32.9
Change Period (Y+Rc), s	4.6	5.8	4.6	6.0	4.6	* 5.8	4.6	6.0
Max Green Setting (Gmax), s	25.0	46.0	25.0	36.0	30.0	* 46	25.0	36.0
Max Q Clear Time (g_c+I1), s	6.4	11.1	8.5	16.0	9.4	13.4	4.8	23.8
Green Ext Time (p_c), s	0.1	4.2	0.2	3.1	0.2	2.4	0.1	3.0

Intersection Summary	
HCM 6th Ctrl Delay	30.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	138	22	129	98	19	22	381	121	13	182	38
Future Volume (veh/h)	87	138	22	129	98	19	22	381	121	13	182	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.97	1.00		0.97	1.00		0.98	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h	106	168	27	168	127	25	27	465	148	18	246	51
Peak Hour Factor	0.82	0.82	0.82	0.77	0.77	0.77	0.82	0.82	0.82	0.74	0.74	0.74
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	195	225	36	230	247	49	67	538	445	47	414	86
Arrive On Green	0.11	0.15	0.15	0.13	0.17	0.17	0.04	0.29	0.29	0.03	0.28	0.28
Sat Flow, veh/h	1767	1552	249	1767	1498	295	1767	1856	1534	1767	1483	308
Grp Volume(v), veh/h	106	0	195	168	0	152	27	465	148	18	0	297
Grp Sat Flow(s),veh/h/ln	1767	0	1802	1767	0	1792	1767	1856	1534	1767	0	1791
Q Serve(g_s), s	2.7	0.0	5.0	4.4	0.0	3.7	0.7	11.4	3.6	0.5	0.0	6.9
Cycle Q Clear(g_c), s	2.7	0.0	5.0	4.4	0.0	3.7	0.7	11.4	3.6	0.5	0.0	6.9
Prop In Lane	1.00		0.14	1.00		0.16	1.00		1.00	1.00		0.17
Lane Grp Cap(c), veh/h	195	0	261	230	0	296	67	538	445	47	0	499
V/C Ratio(X)	0.54	0.00	0.75	0.73	0.00	0.51	0.40	0.86	0.33	0.38	0.00	0.59
Avail Cap(c_a), veh/h	993	0	1388	993	0	1381	956	1777	1469	956	0	1715
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.2	0.0	19.7	20.1	0.0	18.3	22.6	16.2	13.4	23.0	0.0	15.0
Incr Delay (d2), s/veh	0.9	0.0	1.6	1.7	0.0	0.5	1.5	1.7	0.2	1.9	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	1.7	1.6	0.0	1.3	0.3	3.6	1.0	0.2	0.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.1	0.0	21.3	21.7	0.0	18.8	24.0	17.8	13.6	24.9	0.0	15.4
LnGrp LOS	C	A	C	C	A	B	C	B	B	C	A	B
Approach Vol, veh/h		301			320			640			315	
Approach Delay, s/veh		21.2			20.4			17.1			15.9	
Approach LOS		C			C			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.4	19.9	10.4	12.4	5.9	19.4	9.4	13.3
Change Period (Y+Rc), s	4.1	6.0	4.1	5.4	4.1	6.0	4.1	5.4
Max Green Setting (Gmax), s	26.0	46.0	27.0	37.0	26.0	46.0	27.0	37.0
Max Q Clear Time (g_c+I1), s	2.5	13.4	6.4	7.0	2.7	8.9	4.7	5.7
Green Ext Time (p_c), s	0.0	0.4	0.1	0.3	0.0	0.3	0.0	0.3

Intersection Summary	
HCM 6th Ctrl Delay	18.3
HCM 6th LOS	B