January 21, 2022

Lindsay K. Poulin
MPH Co, LLC
1811 Concord Avenue, Suite 200
Chico, CA 95928

Traffic/Transportation Technical Study – Notre Dame Bridge Connection

Dear Ms. Poulin,

This letter presents traffic volume information for use in air quality and noise analysis and summarizes a traffic analysis and technical study performed to assess traffic conditions associated with the Notre Dame Bridge Connection project in Chico, CA. The proposed project consists of constructing a new two-lane bridge across Little Chico Creek and completing the planned Notre Dame Boulevard roadway link from Emerson Way north to the current terminus of Notre Dame Boulevard. The project road segment is approximately 500 feet in length as shown on **Figure 1**. The proposed bridge will include width for bicycle and pedestrian facilities. This technical study analyzes the following intersections and roadway segments:

Study Intersections

- SR 32 / El Monte Avenue
- Humboldt Road / Notre Dame Boulevard
- 20th Street / Notre Dame Boulevard

Study Roadway Segments

- El Monte Avenue between SR 32 & Humboldt Road
- Notre Dame Boulevard between Humboldt Road & Hartford Drive
- Notre Dame Boulevard between Hartford Drive & 20th Street

ANALYSIS SCENARIOS

Existing Conditions

Notre Dame Boulevard is a three-lane north-south roadway with bike lanes and sidewalk facilities. Caltrans classifies Notre Dame Boulevard as a major collector north of Humboldt Road and a minor arterial south of 20th Street. The City of Chico's 2030 General Plan classifies Notre Dame Boulevard as an arterial roadway. It is presumed to be posted at 35 mph when the connection is made with a school speed zone of 25 mph near Marsh Junior High School.

Existing peak hour traffic volumes, lane configurations, and controls for the SR 32 / El Monte Avenue, and 20th Street / Notre Dame Boulevard intersections were obtained from the *Traffic Study for the Valley's Edge Specific Plan* (Fehr & Peers, 2021). Within the study area, multiple developments are currently under construction including the Meriam Park development. Current day conditions may slightly vary from when the *Traffic Study for the Valley's Edge* was completed. Existing traffic volumes, lane configurations, and controls (including the recently installed traffic signal) at the Humboldt Road / Notre Dame Boulevard intersection were collected on December 7th, 2021. The existing traffic volumes, lane configurations, and controls for each study intersection are shown on **Figure 2**.

Near-Term Conditions

Near-Term Conditions represent the anticipated traffic volumes and how the local network will operate just after the construction of the bridge and completed connection. This analysis used a 5-year linear growth rate between the 2025 Plus Project and Cumulative Plus Project (20-Year Horizon) scenarios within the *Traffic Study for Valley's Edge*. As stated in that study, and included in this analysis, SR 32 widening and improvements at the SR 32 / El Monte Avenue intersection are included in this horizon scenario. Please refer to the *Traffic Study for Valley's Edge* for detailed information regarding anticipated projects and regional improvements included in the 2025 Plus Project scenario. Near-Term traffic volumes, lane configurations, and controls are shown on **Figure 3**.

Future Year (20-Year Horizon) Conditions

Similar to existing conditions, Future Year (20-Year Horizon) traffic volume forecasts and lane configurations for the SR 32 / El Monte Avenue and 20th Street / Notre Dame Boulevard intersections were obtained from the Cumulative Plus Project scenario within the *Traffic Study for Valley's Edge*. Traffic volumes at the Humboldt Road / Notre Dame Boulevard intersection were factored up to match the traffic volumes to/from the south from the SR 32 / El Monte Avenue intersection. Please refer to the *Traffic Study for Valley's Edge* for detailed information regarding anticipated projects and regional improvements included in the Cumulative Plus Project scenario. Future Year traffic volumes, lane configurations, and controls are shown on **Figure 4**.

LEVEL OF SERVICE ANALYSIS

Analysis Methodology

Level of service (LOS) is a term commonly used by transportation practitioners to measure and describe the operational characteristics of intersections, roadway segments, and other facilities. This term equates seconds of delay per vehicle at intersections to letter grades "A" through "F" with "A" representing optimum conditions and "F" representing breakdown or over capacity flows.

Intersections

The complete methodology for intersection level of service analysis is established in the *Highway Capacity Manual (HCM) 6th Edition*, published by the Transportation Research Board (TRB). **Table 1** presents the delay thresholds for each level of service grade at signalized and unsignalized intersections.

Table 1: Level of Service Definition for Intersections

Level of Service	Brief Description	Average Delay (seconds per vehicle)	
		Signalized	Unsignalized
A	Free flow conditions.	< 10	< 10
B	Stable conditions with some affect from other vehicles.	10 to 20	10 to 15
C	Stable conditions with significant affect from other vehicles.	20 to 35	15 to 25
D	High density traffic conditions still with stable flow.	35 to 55	25 to 35
E	At or near capacity flows.	55 to 80	35 to 50
F	Over capacity conditions.	> 80	> 50

Source: Highway Capacity Manual (6th Edition)

Level of service calculations were performed for the study intersections using the Synchro 11 software package with analysis and results reported in accordance with *HCM 6th Edition* methodology.

Level of Service Policy

The City of Chico *2030 General Plan* Circulation Element establishes the following level of service standards for roadways and intersections:

- Policy CIRC-1.4 (Level of Service Standards) – Maintain LOS D or better for roadways and intersections at the peak PM period, except as specified below:
  - LOS E is acceptable for City streets and intersections under the following circumstances:
  - Downtown streets within the boundaries identified in Figure DT-1 of the Downtown Element.
  - Arterials served by scheduled transit.
  - Arterials not served by scheduled transit, if bicycle and pedestrian facilities are provided within or adjacent to the roadway.
  - Utilize Caltrans LOS standards for Caltrans' facilities.
  - There are no LOS standards for private roads.

Level of Service (LOS) "E" is the policy level of service for the study intersections on SR 32 and 20th Street and LOS "D" is the policy level of service for the Humboldt Road intersection. It should be noted that Level of Service is no longer deemed an environmental impact criteria per Senate Bill 743. Intersection level of service information is presented here for comparison to General Plan policies and general information.

Existing Conditions

Table 2 presents the Existing Conditions level of service analysis and the calculation sheets are provided in **Attachment A**.

Table 2. Existing Conditions Intersection Level of Service

ID	Intersection	Intersection Control	Movement	AM Peak		PM Peak	
				LOS	Delay	LOS	Delay
1	SR 32 / El Monte Ave	Signal	Overall	E [1]	75 [1]	B [1]	20 [1]
2	Humboldt Rd / Notre Dame Blvd	Signal	Overall	C	22	B	14
3	20th St / Notre Dame Blvd	Signal	Overall	A [1]	7 [1]	A [1]	9 [1]

Notes:
[1] Obtained from Traffic Study for Valleys Edge (Fehr & Peers, 2021)
Source: Headway Transportation, 2021

As shown in the table, all study intersections operate at acceptable levels of service. Note that the SR 32 / El Monte Avenue intersection operates at poor level of service (high delay and LOS "E") during the AM peak hour. As previously noted, improvements are planned by Caltrans/City for this intersection to address existing operating conditions.

Near-Term Conditions

Table 3 presents the Near-Term level of service analysis and the calculation sheets are provided in **Attachment B**.

Table 3. Near-Term Intersection Level of Service

ID	Intersection	Intersection Control	Movement	AM Peak		PM Peak	
				LOS	Delay	LOS	Delay
1	SR 32 / El Monte Ave	Signal	Overall	C [1]	21 [1]	B [1]	13 [1]
2	Humboldt Rd / Notre Dame Blvd	Signal	Overall	C	25	B	15
3	20th St / Notre Dame Blvd	Signal	Overall	C	22	C	25

Notes:
[1] Includes SR 32 widening and intersection improvements
Source: Headway Transportation, 2021

As shown in the table, with the planned Caltrans/City improvements at the SR 32 / El Monte Avenue intersection, all study intersections are anticipated to operate within level of service policy under Near-Term conditions.

Future Year Conditions

Table 4 presents the Future Year (20-Year Horizon) level of service analysis and the calculation sheets are provided in **Attachment C**.

Table 4. Future Year Intersection Level of Service

ID	Intersection	Intersection Control	Movement	AM Peak		PM Peak	
				LOS	Delay	LOS	Delay
1	SR 32 / El Monte Ave	Signal	Overall	C [1]	33 [1]	B [1]	13 [1]
2	Humboldt Rd / Notre Dame Blvd	Signal	Overall	C	28	B	16
3	20th St / Notre Dame Blvd	Signal	Overall	C [1]	23 [1]	C [1]	25 [1]

Notes:
[1] Obtained from Traffic Study for Valleys Edge (Fehr & Peers, 2021)
Source: Headway Transportation, 2021

With the planned Caltrans/City improvements at the SR 32 / El Monte Avenue intersection, all intersections are anticipated to operate within level of service policy under Future Year conditions.

DAILY TRAFFIC & VMT CALCULATIONS

This Vehicle Miles Travelled (VMT) analysis is based on local route evaluation specific to the Notre Dame Boulevard segment between Humboldt Road and Hartford Drive. The ADT for each segment was estimated at 10 times the average of the AM and PM peak hour segment volumes. VMT was calculated for the three horizon scenarios, by multiplying the daily traffic volume by the length of the roadway (0.5 miles). Additionally, for the "Build" scenarios, where capacity will be effectively added to the roadway network because of the connection, the induced demand (or project induced) VMT was also calculated. Project induced VMT was calculated using the National Center for Sustainable Transportation's Induced Travel Calculator, which is based on the following formula:

Project Induced VMT = %Δ Lane Miles x Existing Network VMT x Elasticity

Where:

- Elasticity = %Δ in VMT / %Δ in Lane Miles

  The higher the elasticity, the greater the increase in VMT from a given increase in roadway capacity. An elasticity of 1.0 indicates that a given percent increase in lane miles will cause the same percent increase in VMT.

- The calculator commonly uses an elasticity of 1.0 for lane additions to Interstate highways, and an elasticity of 0.75 for lane additions to Class 2 or 3 facilities.

The Induced Travel Calculator "allows users to estimate the VMT induced… as a result of expanding the capacity of roadways managed by Caltrans in one of California's urbanized counties (counties with a metropolitan statistical area (MSA)). The calculator applies only to Caltrans-managed facilities with Federal Highway Administration (FHWA) functional classifications of 1, 2, or 3. That corresponds to

Interstate highways (Class 1), other freeways and expressways (Class 2), and other principal arterials (Class 3)." Butte County does have a MSA, however, Notre Dame Boulevard does not have a FHWA functional classification of 1, 2, or 3.

While it is important to consider the possible effects of the project on induced demand VMT, the recommended methodology for calculating induced VMT is in the early stages of development and does not directly apply to the proposed project characteristics. The majority of the studies sited and used to develop elasticity figures are based on highly congested, urban areas. The Project Induced VMT for this project was calculated using the formula above, with location specific inputs that match the character of the project setting.

"Increased highway capacity can lead to increased VMT in the short run in several ways: if people shift from other modes to driving, if drivers make longer trips (by choosing longer routes and/or more distant destinations), or if drivers make more frequent trips. Longer-term effects may also occur if households and businesses move to more distant locations or if development patterns become more dispersed in response to the capacity increase. One study concludes that the full impact of capacity expansion on VMT materializes within five years and another concludes that the full effect takes as long as 10 years." (Handy, 2015)

As noted above, there are many factors that contribute to the potential for induced demand VMT, however, they all support the theory that induced demand is more likely in a congested, urban environment where driving a vehicle is an undesirable option. Notre Dame Boulevard and the surrounding roadways do not fit the congested character where capacity increase would lead to increased travel. Therefore, the potential for induced demand VMT for this project would be generated by drivers making more frequent trips.

The Impact of Highway Capacity and Induced Travel on Passenger Vehicle Use and Greenhouse Gas Emissions Technical Background Document (Handy/Boarnet, 2014) references six studies published between 1997 and 2011. Only one study appears to have focused on suburban settings (rather than congested urban/metropolitan settings), and the elasticities (0.10 in the short term and 0.39 in the long term) were much lower than those reported for urban settings.

The project induced VMT for this project was calculated based on an elasticity of 0.4 which is appropriate to the project setting. The calculation is shown below:

Project Induced VMT = %Δ Lane Miles x Existing Network VMT x Elasticity

(0.18 mi / 7,020 mi) * 4,905,398 * 0.4 = <u>50 Induced VMT per day</u>

An induced VMT of 50 vehicle miles per day is a negligible amount in terms of regional scale (approximately 0.001%). Additionally, the *Technical Advisory on Evaluating Transportation Impacts in*

CEQA, December 2018, published by the Governor's Office of Planning and Research (OPR) states the "addition of roadway capacity on local or collector streets provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit" is a "Project that would not likely lead to a substantial or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis" (pages 20 and 21). The bridge connection will contain pedestrian and bicycle facilities which offset any minor amount of induced vehicular travel. Therefore the 50 VMT are not included in the segment specific analysis below.

Existing Conditions

The most recent BCAG model (v2.1 Post Camp Fire) shows that initially, 708 ADT will develop across the bridge. Therefore, 708 ADT was added to the Existing Conditions (No Build) ADT to obtain an Existing Conditions (Build) ADT of 4,018. **Table 5** shows the Existing conditions VMT estimate.

Table 5. Existing Conditions Daily Volume & VMT

Scenario	Roadway	Location	Daily Volume (Veh)	Segment Length (Mi.)	Calculated VMT
No Build	Notre Dame Boulevard	Between Humboldt Rd and Hartford Dr	3,310	0.41	1,357
Build			4,018	0.5	2,009

As shown in the table, the Existing conditions VMT estimate under is approximately 1,357 vehicle miles per day and 2,009 vehicle miles per day under the no-build and build scenarios, respectively. VMT will increase by approximately 652 VMT per day on this segment with construction of the bridge.

Near-Term Conditions

The *Traffic Study for Valley's Edge* shows an average AM and PM peak hour segment volume difference of 87.5 on El Monte Avenue between the 2025 Plus Project scenario and Existing Condition scenario. Therefore, 875 ADT (10 times the peak hour volumes) was subtracted from the Near-Term (Build) ADT to obtain an Near-Term (No Build) ADT of 4,090. **Table 6** shows the Near-Term conditions VMT estimate.

Table 6. Near-Term Daily Volume & VMT

Scenario	Roadway	Location	Daily Volume (Veh)	Segment Length (Mi.)	Calculated VMT
No Build	Notre Dame Boulevard	Between Humboldt Rd and Hartford Dr	4,090	0.41	1,677
Build			4,965	0.5	2,483

As shown in the table, the Near-Term conditions VMT estimate under is approximately 1,677 vehicle miles per day and 2,483 vehicle miles per day under the no-build and build scenarios, respectively. VMT will increase by approximately 806 VMT per day on this segment with construction of the bridge.

Future Year Conditions

The *Traffic Study for Valley's Edge* shows an average AM and PM peak hour segment volume difference of 200 on El Monte Avenue between the 2025 Plus Project scenario and Cumulative Plus Project scenario. Therefore, 2,000 ADT (10 times the peak hour volumes) was subtracted from the Future Year (Build) ADT to obtain a Future Year (No Build) ADT of 4,130. **Table 7** shows the Future Year conditions VMT estimate.

Table 7. Future Year Conditions Daily Volume & VMT

Scenario	Roadway	Location	Daily Volume (Veh)	Segment Length (Mi.)	Calculated VMT
No Build	Notre Dame Boulevard	Between Humboldt Rd and Hartford Dr	4,130	0.41	1,693
Build			6,130	0.5	3,065

As shown in the table, the Future Year conditions VMT estimate under is approximately 1,693 vehicle miles per day and 3,065 vehicle miles per day under the no-build and build scenarios, respectively. VMT will increase by approximately 1,372 VMT per day on this segment with construction of the bridge.

Traffic Characteristics

With the proposed bridge connection, it is anticipated that Notre Dame Boulevard will function as a major collector/minor arterial with an assumed posted speed of 35 mph. It is presumed that vehicle traffic will generally travel at speeds near the posted speed limit (35 mph). Existing turning movement counts at the Humboldt Road / Notre Dame Boulevard intersection indicate heavy vehicle percentages of approximately 2%. It is not anticipated that heavy vehicle percentages will increase significantly under future scenarios or with the construction of the bridge connection.

Conclusions

Following is a list of the key study findings:

- The proposed project will construct a new two-lane bridge over Little Chico Creek. The proposed bridge will include bicycle and pedestrian facilities.
- The SR 32 / El Monte Avenue currently operates at poor level of service during the AM peak hour. Near-term regional intersection improvements are anticipated at the SR 32 / El Monte Avenue intersection which will improve operating conditions to an acceptable level.
- It is anticipated that all the study intersections will operate within level of service policy with construction of the bridge under Near-Term (Build) and Cumulative (Build) conditions.
- The *Technical Advisory on Evaluating Transportation Impacts in CEQA, December 2018*, published by the Governor's Office of Planning and Research (OPR) states the "addition of roadway capacity on local or collector streets provided the project also substantially improves conditions for pedestrians, cyclists, and, if applicable, transit" is a "Project that would not

likely lead to a substantial or measurable increase in vehicle travel, and therefore generally should not require an induced travel analysis" (pages 20 and 21).

- The bridge connection is calculated as creating an induced demand of 50 VMT per day. This amount is negligible in the regional scale (0.001%). The minor amount of induced travel would be offset with the inclusion of bicycle and pedestrian facilities.
- The estimated daily ADT / VMT for the Notre Dame Boulevard segment between Humboldt Road and Hartford Drive is:
  - Existing Conditions (no-build) – 3,310 ADT / 1,357 VMT per day
  - Existing Conditions (build) – 4,018 ADT / 2,009 VMT per day
  - Near-Term Conditions (no-build) – 4,090 ADT / 1,677 VMT per day
  - Near-Term Conditions (build) – 4,965 ADT / 2,483 VMT per day
  - Future Year Conditions (no-build) – 4,130 ADT / 1,693 VMT per day
  - Future Year Conditions (build) – 6,130 ADT / 3,065 VMT per day
- It is presumed that vehicular traffic will travel generally near the posted speed limit (assumed to be 35 mph) and will contain approximately 2% heavy vehicles with the completion of the bridge connection.

Sincerely,
Headway Transportation, LLC

Loren E. Chilson, PE
Principal

Attachments:

- Figure 1 – Project Location
- Figure 2 – Existing Traffic Volumes, Lane Configurations, and Controls
- Figure 3 – Near-Term Traffic Volumes, Lane Configurations, and Controls
- Figure 4 – Future Year Traffic Volumes, Lane Configurations, and Controls
- Attachment A – Existing Conditions LOS Calculations
- Attachment B – Near-Term Conditions LOS Calculations
- Attachment C – Future Year Conditions LOS Calculations

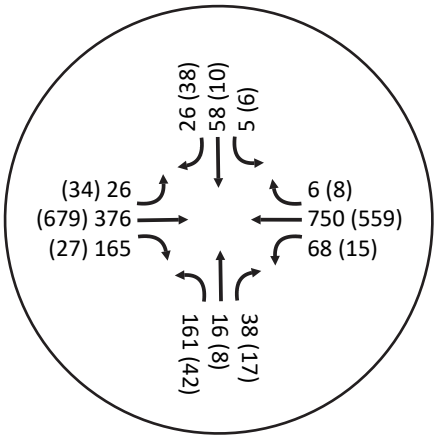
HEADWAY TRANSPORTATION

NO SCALE

1 - Study Intersection

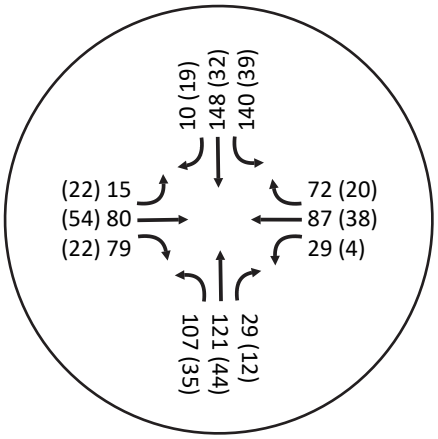
Figure 1
Notre Dame Bridge Connection
Traffic/Transportation Technical Study
Project Location

1 SR 32 / El Monte Ave

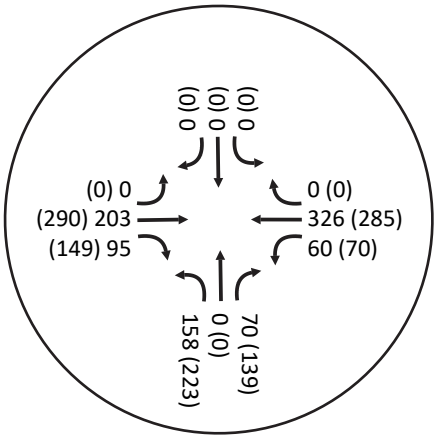


Note: Obtained from the Traffic Study for Valley's Edge (Fehr & Peers, 2021)

2 Humboldt Rd / Notre Dame Blvd



3 20th St / Notre Dame Blvd



Note: Obtained from the Traffic Study for Valley's Edge (Fehr & Peers, 2021)

HEADWAY TRANSPORTATION

NO SCALE

AM Peak Hour Volume (PM Peak Hour Volume)

- Traffic Signal

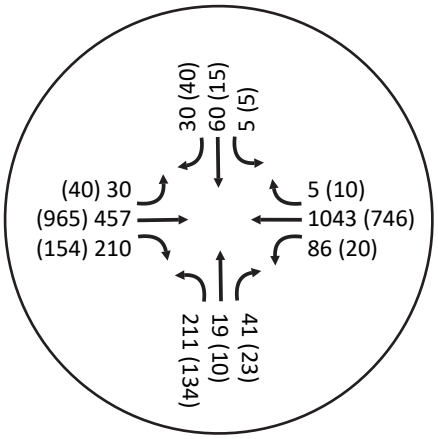
Average Daily Traffic (ADT)

Figure 2

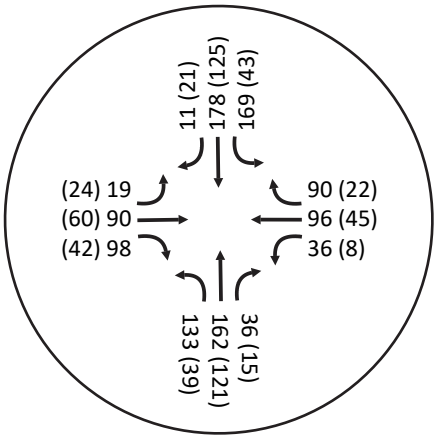
Notre Dame Bridge Connection
Traffic/Transportation Technical Study

Existing Traffic Volumes, Lane Configurations, and Controls

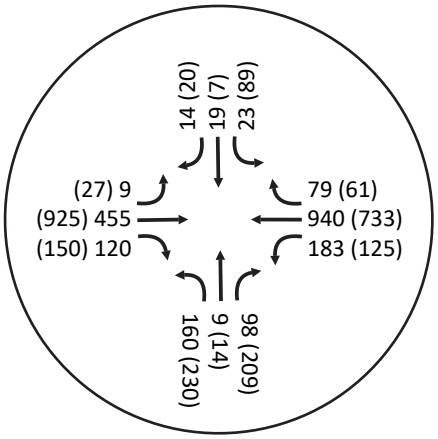
1 *SR 32 / El Monte Ave*



2 *Humboldt Rd / Notre Dame Blvd*



3 *20th St / Notre Dame Blvd*



HEADWAY TRANSPORTATION

NO SCALE

AM Peak Hour Volume (PM Peak Hour Volume)

- Traffic Signal

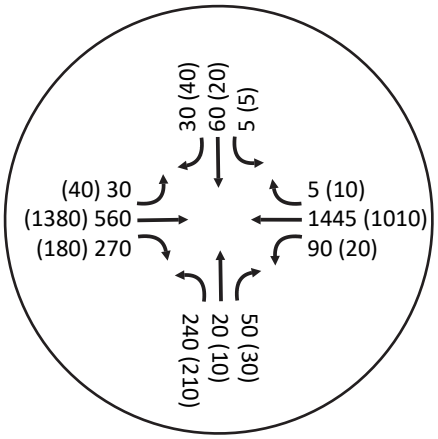
Average Daily Traffic (ADT)

Figure 3

Notre Dame Bridge Connection
Traffic/Transportation Technical Study

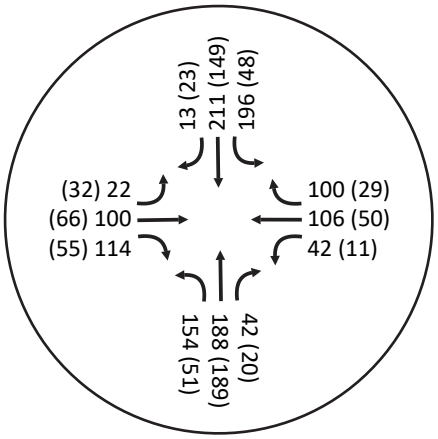
Near-Term Traffic Volumes, Lane Configurations, and Controls

1 SR 32 / El Monte Ave

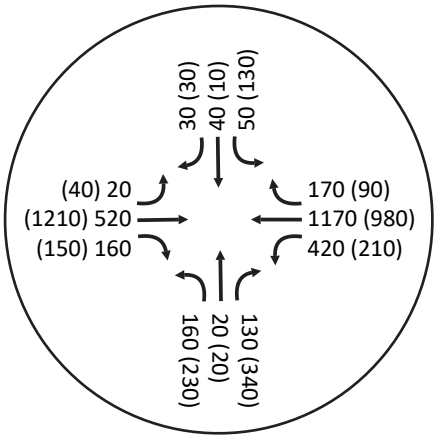


Note: Obtained from the Traffic Study for Valley's Edge (Fehr & Peers, 2021)

2 Humboldt Rd / Notre Dame Blvd



3 20th St / Notre Dame Blvd



Note: Obtained from the Traffic Study for Valley's Edge (Fehr & Peers, 2021)

HEADWAY TRANSPORTATION

NO SCALE

AM Peak Hour Volume (PM Peak Hour Volume)

- Traffic Signal

Average Daily Traffic (ADT)

Figure 4

Notre Dame Bridge Connection
Traffic/Transportation Technical Study

Future Year Traffic Volumes, Lane Configurations, and Controls

Valleys Edge
20: El Monte Ave. & Hwy 32

Existing Conditions - AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	26	376	165	68	750	6	161	16	38	5	58	26
Future Volume (veh/h)	26	376	165	68	750	6	161	16	38	5	58	26
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	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	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	33	476	95	86	949	8	204	20	0	6	73	18
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	401	1142	947	109	811	7	285	22	299	39	271	64
Arrive On Green	0.15	0.41	0.41	0.06	0.44	0.44	0.19	0.19	0.00	0.19	0.19	0.19
Sat Flow, veh/h	1767	1856	1539	1767	1837	15	1197	117	1572	40	1429	335
Grp Volume(v), veh/h	33	476	95	86	0	957	224	0	0	97	0	0
Grp Sat Flow(s),veh/h/ln	1767	1856	1539	1767	0	1852	1314	0	1572	1803	0	0
Q Serve(g_s), s	1.9	21.9	4.5	5.8	0.0	53.0	14.5	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	1.9	21.9	4.5	5.8	0.0	53.0	20.0	0.0	0.0	5.6	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.91		1.00	0.06		0.19
Lane Grp Cap(c), veh/h	401	1142	947	109	0	818	307	0	299	374	0	0
V/C Ratio(X)	0.08	0.42	0.10	0.79	0.00	1.17	0.73	0.00	0.00	0.26	0.00	0.00
Avail Cap(c_a), veh/h	401	1142	947	295	0	818	398	0	406	495	0	0
HCM Platoon Ratio	0.67	0.67	0.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.94	0.68	0.00	0.68	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	40.2	20.0	14.9	55.6	0.0	33.5	47.6	0.0	0.0	41.6	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.1	0.2	3.3	0.0	85.6	4.8	0.0	0.0	0.4	0.0	0.0
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	0.8	10.1	1.5	2.6	0.0	40.9	6.9	0.0	0.0	2.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	40.2	21.0	15.1	58.9	0.0	119.1	52.4	0.0	0.0	42.0	0.0	0.0
LnGrp LOS	D	C	B	E	A	F	D	A	A	D	A	A
Approach Vol, veh/h		604			1043			224			97	
Approach Delay, s/veh		21.2			114.1			52.4			42.0	
Approach LOS		C			F			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.4	79.8		27.8	33.2	59.0		27.8
Change Period (Y+Rc), s	* 5	6.0		* 5	6.0	* 6		* 5
Max Green Setting (Gmax), s	* 20	53.0		* 31	20.0	* 53		* 31
Max Q Clear Time (g_c+I1), s	7.8	23.9		7.6	3.9	55.0		22.0
Green Ext Time (p_c), s	0.1	0.7		0.4	0.0	0.0		0.8

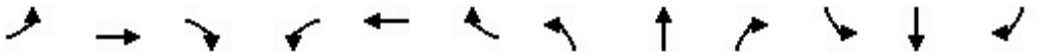
Intersection Summary	
HCM 6th Ctrl Delay	75.0
HCM 6th LOS	E

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.

HCM 6th Signalized Intersection Summary
2: Notre Dame Blvd & Humboldt Rd

12/14/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	80	79	29	87	75	107	125	29	137	144	10
Future Volume (veh/h)	15	80	79	29	87	75	107	125	29	137	144	10
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	21	114	113	41	124	107	153	179	41	196	206	14
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	45	205	203	76	488	397	201	386	318	259	413	28
Arrive On Green	0.02	0.24	0.24	0.04	0.26	0.26	0.11	0.20	0.20	0.14	0.24	0.24
Sat Flow, veh/h	1795	849	842	1795	1885	1536	1795	1885	1551	1795	1742	118
Grp Volume(v), veh/h	21	0	227	41	124	107	153	179	41	196	0	220
Grp Sat Flow(s),veh/h/ln	1795	0	1691	1795	1885	1536	1795	1885	1551	1795	0	1860
Q Serve(g_s), s	0.6	0.0	6.4	1.2	2.8	3.0	4.5	4.5	1.2	5.7	0.0	5.6
Cycle Q Clear(g_c), s	0.6	0.0	6.4	1.2	2.8	3.0	4.5	4.5	1.2	5.7	0.0	5.6
Prop In Lane	1.00		0.50	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	45	0	408	76	488	397	201	386	318	259	0	441
V/C Ratio(X)	0.47	0.00	0.56	0.54	0.25	0.27	0.76	0.46	0.13	0.76	0.00	0.50
Avail Cap(c_a), veh/h	396	0	714	396	796	649	495	1108	912	1088	0	1709
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	26.2	0.0	18.1	25.5	16.0	16.1	23.5	19.0	17.7	22.4	0.0	18.0
Incr Delay (d2), s/veh	7.4	0.0	1.2	5.8	0.3	0.4	5.9	0.9	0.2	4.5	0.0	0.9
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	0.3	0.0	2.4	0.6	1.2	1.0	2.1	1.9	0.4	2.6	0.0	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.6	0.0	19.3	31.3	16.3	16.4	29.4	19.9	17.9	26.9	0.0	18.8
LnGrp LOS	C	A	B	C	B	B	C	B	B	C	A	B
Approach Vol, veh/h		248			272			373			416	
Approach Delay, s/veh		20.5			18.6			23.6			22.6	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.8	16.2	7.3	18.1	11.1	17.9	6.4	19.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	33.0	32.0	12.0	23.0	15.0	50.0	12.0	23.0
Max Q Clear Time (g_c+I1), s	7.7	6.5	3.2	8.4	6.5	7.6	2.6	5.0
Green Ext Time (p_c), s	0.6	1.2	0.0	1.2	0.2	1.5	0.0	1.0

Intersection Summary	
HCM 6th Ctrl Delay	21.7
HCM 6th LOS	C

Valleys Edge
29: Notre Dame Blvd. & E 20th 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)	0	203	95	60	326	0	158	0	70	0	0	0
Future Volume (veh/h)	0	203	95	60	326	0	158	0	70	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	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	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	0	211	44	62	340	0	165	0	22	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	7	674	138	171	1685	0	327	343	291	7	7	6
Arrive On Green	0.00	0.23	0.23	0.10	0.48	0.00	0.19	0.00	0.19	0.00	0.00	0.00
Sat Flow, veh/h	1767	2912	595	1767	3618	0	1767	1856	1571	1767	1856	1572
Grp Volume(v), veh/h	0	126	129	62	340	0	165	0	22	0	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1744	1767	1763	0	1767	1856	1571	1767	1856	1572
Q Serve(g_s), s	0.0	1.6	1.6	0.9	1.5	0.0	2.2	0.0	0.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	1.6	1.6	0.9	1.5	0.0	2.2	0.0	0.3	0.0	0.0	0.0
Prop In Lane	1.00		0.34	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	7	408	404	171	1685	0	327	343	291	7	7	6
V/C Ratio(X)	0.00	0.31	0.32	0.36	0.20	0.00	0.50	0.00	0.08	0.00	0.00	0.00
Avail Cap(c_a), veh/h	993	2640	2613	993	5281	0	1324	1390	1176	993	1390	1178
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)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	8.5	8.5	11.3	4.0	0.0	9.8	0.0	9.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.2	0.2	0.5	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
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	0.0	0.4	0.4	0.3	0.1	0.0	0.6	0.0	0.1	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	8.7	8.7	11.8	4.0	0.0	10.2	0.0	9.0	0.0	0.0	0.0
LnGrp LOS	A	A	A	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h		255			402			187			0	
Approach Delay, s/veh		8.7			5.2			10.1			0.0	
Approach LOS		A			A			B				

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	17.8	8.9	0.0	6.6	11.2	0.0	8.9
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	15.0	40.0	20.0	20.0	15.0	40.0	15.0	20.0
Max Q Clear Time (g_c+I1), s	0.0	3.5	4.2	0.0	2.9	3.6	0.0	2.3
Green Ext Time (p_c), s	0.0	1.5	0.2	0.0	0.0	0.9	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	7.4
HCM 6th LOS	A

Notes

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

Valleys Edge
20: El Monte Ave. & Hwy 32 — Existing Conditions - PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	679	27	15	559	8	42	8	17	6	10	38
Future Volume (veh/h)	34	679	27	15	559	8	42	8	17	6	10	38
Initial Q (Qb), veh	0	0	0	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	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	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	43	859	-80	19	708	10	53	10	-26	8	13	33
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	729	1450	1229	23	680	10	132	14	95	0	0	0
Arrive On Green	0.82	1.00	0.00	0.01	0.37	0.37	0.06	0.06	0.00	0.06	0.06	0.06
Sat Flow, veh/h	1767	1856	1572	1767	1824	26	1186	224	1572	0	0	0
Grp Volume(v), veh/h	43	859	-80	19	0	718	63	0	-26	54	0	0
Grp Sat Flow(s),veh/h/ln	1767	1856	1572	1767	0	1850	1410	0	1572	0	0	0
Q Serve(g_s), s	0.5	0.0	0.0	1.2	0.0	41.0	4.8	0.0	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.5	0.0	0.0	1.2	0.0	41.0	4.8	0.0	0.0	0.0	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.01	0.84		1.00	0.15		0.61
Lane Grp Cap(c), veh/h	729	1450	1229	23	0	690	145	0	95	0	0	0
V/C Ratio(X)	0.06	0.59	-0.07	0.84	0.00	1.04	0.43	0.00	-0.27	0.00	0.00	0.00
Avail Cap(c_a), veh/h	729	1450	1229	289	0	690	458	0	443	0	0	0
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.00	0.83	0.00	0.83	1.00	0.00	0.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	5.7	0.0	0.0	54.2	0.0	34.5	50.8	0.0	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	1.6	0.0	21.8	0.0	42.4	2.0	0.0	0.0	0.0	0.0	0.0
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	0.6	0.0	0.6	0.0	24.8	1.8	0.0	0.0	1.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	5.7	1.6	0.0	76.0	0.0	76.9	52.9	0.0	0.0	0.0	0.0	0.0
LnGrp LOS	A	A	A	E	A	F	D	A	A	A	A	A
Approach Vol, veh/h		822			737			37			54	
Approach Delay, s/veh		2.0			76.9			90.0			0.0	
Approach LOS		A			E			F			A	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.4	92.0		11.6	51.4	47.0		11.6
Change Period (Y+Rc), s	* 5	6.0		* 5	6.0	* 6		* 5
Max Green Setting (Gmax), s	* 18	45.0		* 30	18.0	* 41		* 31
Max Q Clear Time (g_c+I1), s	3.2	2.0		2.0	2.5	43.0		6.8
Green Ext Time (p_c), s	0.0	1.5		0.2	0.0	0.0		0.2

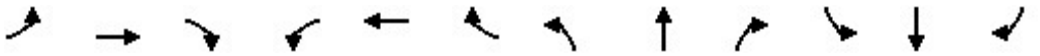
Intersection Summary	
HCM 6th Ctrl Delay	37.4
HCM 6th LOS	D

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.

HCM 6th Signalized Intersection Summary
2: Notre Dame Blvd & Humboldt Rd

12/14/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	54	22	4	38	20	35	44	12	39	32	19
Future Volume (veh/h)	22	54	22	4	38	20	35	44	12	39	32	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	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	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	24	59	24	4	41	22	38	48	13	42	35	21
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	54	203	83	10	255	214	81	228	193	88	138	83
Arrive On Green	0.03	0.16	0.16	0.01	0.14	0.14	0.05	0.12	0.12	0.05	0.12	0.12
Sat Flow, veh/h	1795	1270	517	1795	1885	1583	1795	1885	1598	1795	1104	662
Grp Volume(v), veh/h	24	0	83	4	41	22	38	48	13	42	0	56
Grp Sat Flow(s),veh/h/ln	1795	0	1787	1795	1885	1583	1795	1885	1598	1795	0	1766
Q Serve(g_s), s	0.4	0.0	1.2	0.1	0.6	0.4	0.6	0.7	0.2	0.7	0.0	0.9
Cycle Q Clear(g_c), s	0.4	0.0	1.2	0.1	0.6	0.4	0.6	0.7	0.2	0.7	0.0	0.9
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		0.38
Lane Grp Cap(c), veh/h	54	0	286	10	255	214	81	228	193	88	0	220
V/C Ratio(X)	0.44	0.00	0.29	0.41	0.16	0.10	0.47	0.21	0.07	0.48	0.00	0.25
Avail Cap(c_a), veh/h	716	0	1366	716	1441	1210	895	2005	1699	1970	0	2935
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.3	0.0	11.1	14.9	11.5	11.4	14.0	11.9	11.7	13.9	0.0	11.9
Incr Delay (d2), s/veh	5.6	0.0	0.6	25.0	0.3	0.2	4.1	0.5	0.1	3.9	0.0	0.6
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	0.4	0.1	0.2	0.1	0.3	0.2	0.1	0.3	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.9	0.0	11.7	39.9	11.8	11.6	18.2	12.4	11.9	17.8	0.0	12.5
LnGrp LOS	B	A	B	D	B	B	B	B	B	B	A	B
Approach Vol, veh/h		107			67			99			98	
Approach Delay, s/veh		13.5			13.4			14.5			14.8	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.5	8.6	5.2	9.8	6.4	8.8	5.9	9.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	33.0	32.0	12.0	23.0	15.0	50.0	12.0	23.0
Max Q Clear Time (g_c+I1), s	2.7	2.7	2.1	3.2	2.6	2.9	2.4	2.6
Green Ext Time (p_c), s	0.1	0.2	0.0	0.3	0.0	0.3	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	14.1
HCM 6th LOS	B

Valleys Edge
29: Notre Dame Blvd. & E 20th 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)	0	290	149	70	285	0	223	0	139	0	0	0
Future Volume (veh/h)	0	290	149	70	285	0	223	0	139	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	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	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	0	302	100	73	297	0	232	0	94	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	6	628	204	190	1712	0	361	379	321	6	6	5
Arrive On Green	0.00	0.24	0.24	0.11	0.49	0.00	0.20	0.00	0.20	0.00	0.00	0.00
Sat Flow, veh/h	1767	2612	848	1767	3618	0	1767	1856	1571	1767	1856	1572
Grp Volume(v), veh/h	0	202	200	73	297	0	232	0	94	0	0	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1697	1767	1763	0	1767	1856	1571	1767	1856	1572
Q Serve(g_s), s	0.0	2.8	2.9	1.1	1.4	0.0	3.5	0.0	1.5	0.0	0.0	0.0
Cycle Q Clear(g_c), s	0.0	2.8	2.9	1.1	1.4	0.0	3.5	0.0	1.5	0.0	0.0	0.0
Prop In Lane	1.00		0.50	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	6	424	408	190	1712	0	361	379	321	6	6	5
V/C Ratio(X)	0.00	0.48	0.49	0.38	0.17	0.00	0.64	0.00	0.29	0.00	0.00	0.00
Avail Cap(c_a), veh/h	914	2431	2340	914	4862	0	1218	1279	1083	914	1279	1084
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)	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Uniform Delay (d), s/veh	0.0	9.4	9.5	12.1	4.2	0.0	10.6	0.0	9.8	0.0	0.0	0.0
Incr Delay (d2), s/veh	0.0	0.3	0.3	0.5	0.0	0.0	0.7	0.0	0.2	0.0	0.0	0.0
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	0.0	0.7	0.7	0.3	0.2	0.0	0.9	0.0	0.3	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.8	9.8	12.5	4.2	0.0	11.3	0.0	10.0	0.0	0.0	0.0
LnGrp LOS	A	A	A	B	A	A	B	A	A	A	A	A
Approach Vol, veh/h		402			370			326			0	
Approach Delay, s/veh		9.8			5.9			10.9			0.0	
Approach LOS		A			A			B				

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	0.0	19.1	9.9	0.0	7.1	12.0	0.0	9.9
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	15.0	40.0	20.0	20.0	15.0	40.0	15.0	20.0
Max Q Clear Time (g_c+I1), s	0.0	3.4	5.5	0.0	3.1	4.9	0.0	3.5
Green Ext Time (p_c), s	0.0	1.3	0.3	0.0	0.1	1.5	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	8.8
HCM 6th LOS	A

Notes

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

HCM 6th Signalized Intersection Summary
1: El Monte Ave & SR 32

12/14/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	457	212	86	1043	5	211	19	41	5	60	30
Future Volume (veh/h)	30	457	212	86	1043	5	211	19	41	5	60	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	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	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	38	571	265	108	1304	6	281	0	51	6	75	38
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	53	2125	948	134	2287	1020	455	0	296	312	218	111
Arrive On Green	0.03	0.60	0.60	0.08	0.65	0.65	0.19	0.00	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1767	3526	1572	1767	3526	1572	2539	0	1572	1343	1161	588
Grp Volume(v), veh/h	38	571	265	108	1304	6	281	0	51	6	0	113
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1767	1763	1572	1270	0	1572	1343	0	1750
Q Serve(g_s), s	2.6	9.2	9.7	7.2	24.7	0.2	13.0	0.0	3.3	0.4	0.0	6.7
Cycle Q Clear(g_c), s	2.6	9.2	9.7	7.2	24.7	0.2	19.7	0.0	3.3	0.4	0.0	6.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.34
Lane Grp Cap(c), veh/h	53	2125	948	134	2287	1020	455	0	296	312	0	329
V/C Ratio(X)	0.72	0.27	0.28	0.80	0.57	0.01	0.62	0.00	0.17	0.02	0.00	0.34
Avail Cap(c_a), veh/h	295	2125	948	295	2287	1020	634	0	406	407	0	452
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	0.92	0.00	0.92	1.00	0.00	1.00
Uniform Delay (d), s/veh	57.7	11.3	11.4	54.6	11.7	7.4	50.8	0.0	40.9	39.7	0.0	42.3
Incr Delay (d2), s/veh	16.6	0.3	0.7	10.6	1.0	0.0	1.3	0.0	0.3	0.0	0.0	0.6
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	1.4	3.4	3.3	3.5	8.8	0.1	4.2	0.0	1.3	0.1	0.0	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	74.3	11.6	12.1	65.2	12.8	7.4	52.1	0.0	41.1	39.8	0.0	42.9
LnGrp LOS	E	B	B	E	B	A	D	A	D	D	A	D
Approach Vol, veh/h		874			1418			332			119	
Approach Delay, s/veh		14.5			16.7			50.4			42.8	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	27.6	14.1	78.3	27.6	8.6	83.9
Change Period (Y+Rc), s	5.0	5.0	6.0	5.0	5.0	6.0
Max Green Setting (Gmax), s	31.0	20.0	53.0	31.0	20.0	53.0
Max Q Clear Time (g_c+I1), s	21.7	9.2	11.7	8.7	4.6	26.7
Green Ext Time (p_c), s	0.9	0.2	4.9	0.5	0.0	10.2

Intersection Summary	
HCM 6th Ctrl Delay	21.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
2: Notre Dame Blvd/El Monte Ave & Humboldt Rd

12/14/2021

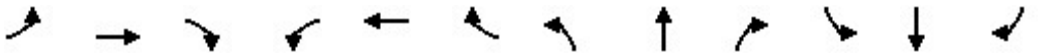
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	90	98	36	96	90	133	162	36	169	178	11
Future Volume (veh/h)	19	90	98	36	96	90	133	162	36	169	178	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.98	1.00		0.97	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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	27	129	140	51	137	129	190	231	51	241	254	16
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	54	199	216	84	497	412	240	413	341	304	446	28
Arrive On Green	0.03	0.25	0.25	0.05	0.26	0.26	0.13	0.22	0.22	0.17	0.25	0.25
Sat Flow, veh/h	1795	807	876	1795	1885	1561	1795	1885	1554	1795	1752	110
Grp Volume(v), veh/h	27	0	269	51	137	129	190	231	51	241	0	270
Grp Sat Flow(s),veh/h/ln	1795	0	1684	1795	1885	1561	1795	1885	1554	1795	0	1862
Q Serve(g_s), s	0.9	0.0	9.0	1.8	3.6	4.2	6.4	6.9	1.7	8.1	0.0	7.9
Cycle Q Clear(g_c), s	0.9	0.0	9.0	1.8	3.6	4.2	6.4	6.9	1.7	8.1	0.0	7.9
Prop In Lane	1.00		0.52	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	54	0	416	84	497	412	240	413	341	304	0	474
V/C Ratio(X)	0.50	0.00	0.65	0.61	0.28	0.31	0.79	0.56	0.15	0.79	0.00	0.57
Avail Cap(c_a), veh/h	343	0	616	343	689	571	428	959	791	942	0	1480
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	30.0	0.0	21.2	29.4	18.4	18.6	26.4	21.8	19.8	25.1	0.0	20.4
Incr Delay (d2), s/veh	7.1	0.0	1.7	6.8	0.3	0.4	5.8	1.2	0.2	4.7	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	0.5	0.0	3.6	0.9	1.5	1.5	3.0	3.0	0.6	3.7	0.0	3.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.2	0.0	22.9	36.2	18.7	19.0	32.2	23.0	20.0	29.8	0.0	21.5
LnGrp LOS	D	A	C	D	B	B	C	C	C	C	A	C
Approach Vol, veh/h		296			317			472			511	
Approach Delay, s/veh		24.2			21.6			26.4			25.4	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.6	18.8	7.9	20.5	13.4	21.0	6.9	21.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	33.0	32.0	12.0	23.0	15.0	50.0	12.0	23.0
Max Q Clear Time (g_c+I1), s	10.1	8.9	3.8	11.0	8.4	9.9	2.9	6.2
Green Ext Time (p_c), s	0.7	1.5	0.0	1.3	0.3	1.8	0.0	1.1

Intersection Summary	
HCM 6th Ctrl Delay	24.7
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary
3: Notre Dame Blvd & 20th St

12/14/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	455	120	183	940	79	160	9	98	23	19	14
Future Volume (veh/h)	9	455	120	183	940	79	160	9	98	23	19	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	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	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	10	495	130	199	1022	86	174	10	107	25	21	15
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	22	1273	332	237	1916	161	211	285	242	47	114	96
Arrive On Green	0.01	0.46	0.46	0.13	0.58	0.58	0.12	0.15	0.15	0.03	0.06	0.06
Sat Flow, veh/h	1767	2766	722	1767	3292	277	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	10	314	311	199	547	561	174	10	107	25	21	15
Grp Sat Flow(s),veh/h/ln	1767	1763	1726	1767	1763	1806	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	0.4	9.4	9.5	8.8	15.0	15.1	7.7	0.4	4.9	1.1	0.9	0.7
Cycle Q Clear(g_c), s	0.4	9.4	9.5	8.8	15.0	15.1	7.7	0.4	4.9	1.1	0.9	0.7
Prop In Lane	1.00		0.42	1.00		0.15	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	22	811	794	237	1026	1051	211	285	242	47	114	96
V/C Ratio(X)	0.45	0.39	0.39	0.84	0.53	0.53	0.83	0.04	0.44	0.53	0.18	0.16
Avail Cap(c_a), veh/h	110	811	794	276	1026	1051	232	536	454	119	417	354
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.2	14.2	14.2	33.8	10.1	10.1	34.4	28.8	30.7	38.4	35.6	35.6
Incr Delay (d2), s/veh	13.9	1.4	1.4	17.7	2.0	1.9	19.8	0.0	1.3	9.0	0.8	0.7
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	0.3	3.7	3.7	4.8	5.5	5.6	4.3	0.2	1.9	0.6	0.4	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.2	15.6	15.7	51.5	12.1	12.1	54.2	28.8	32.0	47.4	36.4	36.3
LnGrp LOS	D	B	B	D	B	B	D	C	C	D	D	D
Approach Vol, veh/h		635			1307			291			61	
Approach Delay, s/veh		16.2			18.1			45.2			40.9	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.6	16.8	15.2	41.3	14.0	9.4	5.5	51.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.4	23.1	12.5	21.0	10.5	18.0	5.0	28.5
Max Q Clear Time (g_c+I1), s	3.1	6.9	10.8	11.5	9.7	2.9	2.4	17.1
Green Ext Time (p_c), s	0.0	0.3	0.1	2.6	0.0	0.1	0.0	5.4

Intersection Summary	
HCM 6th Ctrl Delay	21.6
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary
1: El Monte Ave & SR 32

12/14/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	965	154	20	746	10	134	10	23	5	15	40
Future Volume (veh/h)	40	965	154	20	746	10	134	10	23	5	15	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	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	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	50	1206	192	25	932	12	177	0	29	6	19	50
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	65	2478	1105	43	2434	1086	367	0	201	240	58	152
Arrive On Green	0.04	0.70	0.70	0.02	0.69	0.69	0.13	0.00	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1767	3526	1572	1767	3526	1572	2642	0	1572	1370	452	1189
Grp Volume(v), veh/h	50	1206	192	25	932	12	177	0	29	6	0	69
Grp Sat Flow(s),veh/h/ln	1767	1763	1572	1767	1763	1572	1321	0	1572	1370	0	1641
Q Serve(g_s), s	3.1	17.0	4.5	1.5	12.2	0.3	7.2	0.0	1.8	0.4	0.0	4.2
Cycle Q Clear(g_c), s	3.1	17.0	4.5	1.5	12.2	0.3	11.4	0.0	1.8	0.4	0.0	4.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.72
Lane Grp Cap(c), veh/h	65	2478	1105	43	2434	1086	367	0	201	240	0	209
V/C Ratio(X)	0.77	0.49	0.17	0.58	0.38	0.01	0.48	0.00	0.14	0.02	0.00	0.33
Avail Cap(c_a), veh/h	289	2478	1105	289	2434	1086	774	0	443	452	0	463
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	0.99	0.00	0.99	1.00	0.00	1.00
Uniform Delay (d), s/veh	52.5	7.4	5.5	53.1	7.2	5.3	48.9	0.0	42.7	42.1	0.0	43.7
Incr Delay (d2), s/veh	17.5	0.7	0.3	11.9	0.5	0.0	1.0	0.0	0.3	0.0	0.0	0.9
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	1.6	5.3	1.3	0.8	3.9	0.1	2.4	0.0	0.7	0.1	0.0	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.0	8.1	5.9	65.0	7.6	5.3	49.9	0.0	43.0	42.1	0.0	44.6
LnGrp LOS	E	A	A	E	A	A	D	A	D	D	A	D
Approach Vol, veh/h		1448			969			206			75	
Approach Delay, s/veh		9.9			9.1			48.9			44.4	
Approach LOS		A			A			D			D	

Timer - Assigned Phs	2	3	4	6	7	8
Phs Duration (G+Y+Rc), s	19.0	7.7	83.3	19.0	9.0	81.9
Change Period (Y+Rc), s	5.0	5.0	6.0	5.0	5.0	6.0
Max Green Setting (Gmax), s	31.0	18.0	45.0	31.0	18.0	45.0
Max Q Clear Time (g_c+I1), s	13.4	3.5	19.0	6.2	5.1	14.2
Green Ext Time (p_c), s	0.6	0.0	10.0	0.3	0.1	6.9

Intersection Summary	
HCM 6th Ctrl Delay	13.6
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

HCM 6th Signalized Intersection Summary
2: Notre Dame Blvd/El Monte Ave & Humboldt Rd

12/14/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	60	42	8	45	22	39	121	15	43	125	21
Future Volume (veh/h)	24	60	42	8	45	22	39	121	15	43	125	21
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	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	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	26	65	46	9	49	24	42	132	16	47	136	23
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	58	166	118	22	269	226	87	298	252	95	255	43
Arrive On Green	0.03	0.16	0.16	0.01	0.14	0.14	0.05	0.16	0.16	0.05	0.16	0.16
Sat Flow, veh/h	1795	1023	724	1795	1885	1588	1795	1885	1598	1795	1572	266
Grp Volume(v), veh/h	26	0	111	9	49	24	42	132	16	47	0	159
Grp Sat Flow(s),veh/h/ln	1795	0	1747	1795	1885	1588	1795	1885	1598	1795	0	1837
Q Serve(g_s), s	0.5	0.0	1.8	0.2	0.7	0.4	0.7	2.1	0.3	0.8	0.0	2.6
Cycle Q Clear(g_c), s	0.5	0.0	1.8	0.2	0.7	0.4	0.7	2.1	0.3	0.8	0.0	2.6
Prop In Lane	1.00		0.41	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	58	0	284	22	269	226	87	298	252	95	0	299
V/C Ratio(X)	0.45	0.00	0.39	0.42	0.18	0.11	0.48	0.44	0.06	0.49	0.00	0.53
Avail Cap(c_a), veh/h	662	0	1234	662	1332	1122	827	1853	1570	1820	0	2821
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.5	0.0	12.2	16.0	12.3	12.2	15.1	12.4	11.7	15.0	0.0	12.5
Incr Delay (d2), s/veh	5.4	0.0	0.9	12.4	0.3	0.2	4.1	1.0	0.1	3.9	0.0	1.5
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	0.6	0.1	0.3	0.1	0.3	0.7	0.1	0.4	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.9	0.0	13.1	28.3	12.6	12.4	19.2	13.5	11.8	18.9	0.0	14.0
LnGrp LOS	C	A	B	C	B	B	B	B	B	B	A	B
Approach Vol, veh/h		137			82			190			206	
Approach Delay, s/veh		14.5			14.3			14.6			15.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.7	10.1	5.4	10.3	6.6	10.3	6.0	9.6
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	33.0	32.0	12.0	23.0	15.0	50.0	12.0	23.0
Max Q Clear Time (g_c+I1), s	2.8	4.1	2.2	3.8	2.7	4.6	2.5	2.7
Green Ext Time (p_c), s	0.1	0.7	0.0	0.5	0.0	0.9	0.0	0.2

Intersection Summary	
HCM 6th Ctrl Delay	14.7
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary
3: Notre Dame Blvd & 20th St

12/14/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	925	150	125	733	61	230	14	209	89	7	20
Future Volume (veh/h)	27	925	150	125	733	61	230	14	209	89	7	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	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	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	28	964	145	130	764	59	240	15	18	93	7	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	49	1579	237	157	1906	147	273	262	222	119	99	84
Arrive On Green	0.03	0.51	0.51	0.09	0.57	0.57	0.15	0.14	0.14	0.07	0.05	0.00
Sat Flow, veh/h	1767	3073	462	1767	3316	256	1767	1856	1572	1767	1856	1572
Grp Volume(v), veh/h	28	553	556	130	406	417	240	15	18	93	7	0
Grp Sat Flow(s),veh/h/ln	1767	1763	1772	1767	1763	1809	1767	1856	1572	1767	1856	1572
Q Serve(g_s), s	1.4	20.0	20.0	6.5	11.4	11.5	12.0	0.6	0.9	4.7	0.3	0.0
Cycle Q Clear(g_c), s	1.4	20.0	20.0	6.5	11.4	11.5	12.0	0.6	0.9	4.7	0.3	0.0
Prop In Lane	1.00		0.26	1.00		0.14	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	49	906	911	157	1013	1040	273	262	222	119	99	84
V/C Ratio(X)	0.57	0.61	0.61	0.83	0.40	0.40	0.88	0.06	0.08	0.78	0.07	0.00
Avail Cap(c_a), veh/h	118	906	911	157	1013	1040	275	474	402	196	392	332
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	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.2	15.5	15.5	40.3	10.6	10.6	37.2	33.5	33.6	41.3	40.5	0.0
Incr Delay (d2), s/veh	9.8	3.1	3.0	29.2	1.2	1.2	25.8	0.1	0.2	10.6	0.3	0.0
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	0.7	8.0	8.1	4.0	4.3	4.4	7.0	0.3	0.3	2.3	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.0	18.5	18.5	69.5	11.7	11.7	63.0	33.6	33.7	51.9	40.8	0.0
LnGrp LOS	D	B	B	E	B	B	E	C	C	D	D	A
Approach Vol, veh/h		1137			953			273			100	
Approach Delay, s/veh		19.4			19.6			59.4			51.1	
Approach LOS		B			B			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.1	16.7	12.0	51.3	17.9	8.8	6.5	56.7
Change Period (Y+Rc), s	4.0	4.0	4.0	5.0	4.0	4.0	4.0	5.0
Max Green Setting (Gmax), s	10.0	23.0	8.0	32.0	14.0	19.0	6.0	34.0
Max Q Clear Time (g_c+I1), s	6.7	2.9	8.5	22.0	14.0	2.3	3.4	13.5
Green Ext Time (p_c), s	0.1	0.1	0.0	5.0	0.0	0.0	0.0	5.1

Intersection Summary	
HCM 6th Ctrl Delay	25.2
HCM 6th LOS	C

Valleys Edge
20: El Monte Ave. & Hwy 32 — Cumulative Plus Project - AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	560	270	90	1445	5	240	20	50	5	60	30
Future Volume (veh/h)	30	560	270	90	1445	5	240	20	50	5	60	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	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	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	38	709	164	114	1829	5	322	0	4	6	76	20
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	44	1691	738	139	1851	808	500	0	304	331	274	72
Arrive On Green	0.05	0.96	0.96	0.08	0.52	0.52	0.19	0.00	0.19	0.19	0.19	0.19
Sat Flow, veh/h	1767	3526	1539	1767	3526	1540	2579	0	1572	1401	1416	373
Grp Volume(v), veh/h	38	709	164	114	1829	5	322	0	4	6	0	96
Grp Sat Flow(s),veh/h/ln	1767	1763	1539	1767	1763	1540	1289	0	1572	1401	0	1788
Q Serve(g_s), s	2.6	1.7	0.7	7.6	61.5	0.2	14.6	0.0	0.2	0.4	0.0	5.5
Cycle Q Clear(g_c), s	2.6	1.7	0.7	7.6	61.5	0.2	20.1	0.0	0.2	0.4	0.0	5.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.21
Lane Grp Cap(c), veh/h	44	1691	738	139	1851	808	500	0	304	331	0	346
V/C Ratio(X)	0.86	0.42	0.22	0.82	0.99	0.01	0.64	0.00	0.01	0.02	0.00	0.28
Avail Cap(c_a), veh/h	44	1691	738	221	1851	808	819	0	498	504	0	566
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.77	0.77	0.77	0.55	0.55	0.55	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.8	1.3	1.3	54.4	28.1	13.6	49.8	0.0	39.2	39.2	0.0	41.3
Incr Delay (d2), s/veh	68.6	0.6	0.5	3.4	13.0	0.0	1.4	0.0	0.0	0.0	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	1.9	0.5	0.3	3.4	25.8	0.1	4.8	0.0	0.1	0.1	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	125.4	1.9	1.8	57.8	41.1	13.6	51.2	0.0	39.2	39.2	0.0	41.7
LnGrp LOS	F	A	A	E	D	B	D	A	D	D	A	D
Approach Vol, veh/h		911			1948			326			102	
Approach Delay, s/veh		7.0			42.0			51.1			41.6	
Approach LOS		A			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.5	63.5		28.2	9.0	69.0		28.2
Change Period (Y+Rc), s	* 5	6.0		* 5	6.0	* 6		* 5
Max Green Setting (Gmax), s	* 15	51.0		* 38	3.0	* 63		* 38
Max Q Clear Time (g_c+I1), s	9.6	3.7		7.5	4.6	63.5		22.1
Green Ext Time (p_c), s	0.1	1.4		0.5	0.0	0.0		1.1

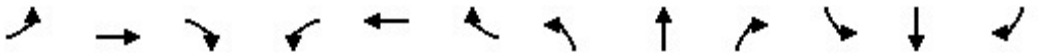
Intersection Summary	
HCM 6th Ctrl Delay	33.2
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Notre Dame Blvd & Humboldt Rd

12/14/2021



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	100	114	42	106	100	154	188	42	196	211	13
Future Volume (veh/h)	22	100	114	42	106	100	154	188	42	196	211	13
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.97	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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	31	143	163	60	151	143	220	269	60	280	301	19
Peak Hour Factor	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	58	197	224	88	504	411	267	430	355	339	469	30
Arrive On Green	0.03	0.25	0.25	0.05	0.27	0.27	0.15	0.23	0.23	0.19	0.27	0.27
Sat Flow, veh/h	1795	785	895	1795	1885	1538	1795	1885	1556	1795	1752	111
Grp Volume(v), veh/h	31	0	306	60	151	143	220	269	60	280	0	320
Grp Sat Flow(s),veh/h/ln	1795	0	1680	1795	1885	1538	1795	1885	1556	1795	0	1862
Q Serve(g_s), s	1.2	0.0	11.8	2.3	4.5	5.3	8.4	9.1	2.2	10.6	0.0	10.7
Cycle Q Clear(g_c), s	1.2	0.0	11.8	2.3	4.5	5.3	8.4	9.1	2.2	10.6	0.0	10.7
Prop In Lane	1.00		0.53	1.00		1.00	1.00		1.00	1.00		0.06
Lane Grp Cap(c), veh/h	58	0	421	88	504	411	267	430	355	339	0	499
V/C Ratio(X)	0.54	0.00	0.73	0.68	0.30	0.35	0.82	0.63	0.17	0.83	0.00	0.64
Avail Cap(c_a), veh/h	305	0	548	305	614	501	382	855	705	839	0	1319
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.6	0.0	24.2	33.0	20.6	20.9	29.1	24.5	21.9	27.5	0.0	22.8
Incr Delay (d2), s/veh	7.5	0.0	3.4	8.9	0.3	0.5	9.4	1.5	0.2	5.1	0.0	1.4
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	0.6	0.0	4.9	1.2	2.0	1.9	4.2	4.1	0.8	4.9	0.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	41.1	0.0	27.6	41.9	20.9	21.4	38.6	26.0	22.1	32.6	0.0	24.2
LnGrp LOS	D	A	C	D	C	C	D	C	C	C	A	C
Approach Vol, veh/h		337			354			549			600	
Approach Delay, s/veh		28.9			24.7			30.6			28.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.3	21.1	8.5	22.7	15.5	23.9	7.3	23.9
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	33.0	32.0	12.0	23.0	15.0	50.0	12.0	23.0
Max Q Clear Time (g_c+I1), s	12.6	11.1	4.3	13.8	10.4	12.7	3.2	7.3
Green Ext Time (p_c), s	0.8	1.8	0.1	1.3	0.3	2.2	0.0	1.2

Intersection Summary	
HCM 6th Ctrl Delay	28.3
HCM 6th LOS	C

Valleys Edge
29: Notre Dame Blvd. & E 20th St.

Cumulative Plus Project - AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	520	160	420	1170	170	160	20	130	50	40	30
Future Volume (veh/h)	20	520	160	420	1170	170	160	20	130	50	40	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	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	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	21	542	140	438	1219	170	167	21	18	52	42	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	61	737	190	456	1522	211	213	213	180	121	116	98
Arrive On Green	0.03	0.27	0.27	0.26	0.49	0.49	0.12	0.11	0.11	0.07	0.06	0.06
Sat Flow, veh/h	1767	2772	713	1767	3108	432	1767	1856	1569	1767	1856	1569
Grp Volume(v), veh/h	21	344	338	438	689	700	167	21	18	52	42	1
Grp Sat Flow(s),veh/h/ln	1767	1763	1722	1767	1763	1777	1767	1856	1569	1767	1856	1569
Q Serve(g_s), s	0.7	10.3	10.4	14.2	19.0	19.3	5.3	0.6	0.6	1.6	1.3	0.0
Cycle Q Clear(g_c), s	0.7	10.3	10.4	14.2	19.0	19.3	5.3	0.6	0.6	1.6	1.3	0.0
Prop In Lane	1.00		0.41	1.00		0.24	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	61	469	458	456	863	870	213	213	180	121	116	98
V/C Ratio(X)	0.34	0.73	0.74	0.96	0.80	0.80	0.78	0.10	0.10	0.43	0.36	0.01
Avail Cap(c_a), veh/h	456	1214	1186	456	1214	1224	609	639	540	456	639	540
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.4	19.4	19.5	21.2	12.4	12.5	24.8	23.0	23.0	26.0	26.1	25.5
Incr Delay (d2), s/veh	1.2	0.8	0.9	31.6	1.7	1.8	2.4	0.1	0.1	0.9	0.7	0.0
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	0.3	3.8	3.8	9.2	6.2	6.4	2.2	0.2	0.2	0.7	0.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	28.6	20.3	20.4	52.9	14.1	14.3	27.2	23.1	23.1	26.9	26.8	25.5
LnGrp LOS	C	C	C	D	B	B	C	C	C	C	C	C
Approach Vol, veh/h		703			1827			206			95	
Approach Delay, s/veh		20.6			23.4			26.4			26.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	33.4	11.0	7.6	19.0	20.4	8.0	10.7
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	15.0	40.0	20.0	20.0	15.0	40.0	15.0	20.0
Max Q Clear Time (g_c+I1), s	2.7	21.3	7.3	3.3	16.2	12.4	3.6	2.6
Green Ext Time (p_c), s	0.0	6.3	0.2	0.1	0.0	2.7	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	23.1
HCM 6th LOS	C

Notes

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

Valleys Edge
20: El Monte Ave. & Hwy 32

Cumulative Plus Project - PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1380	180	20	1010	10	210	10	30	5	20	40
Future Volume (veh/h)	40	1380	180	20	1010	10	210	10	30	5	20	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		1.00	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	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	51	1747	184	25	1278	12	275	0	1	6	25	3
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	260	2596	1134	31	2115	924	427	0	207	236	214	26
Arrive On Green	0.29	1.00	1.00	0.02	0.60	0.60	0.13	0.00	0.13	0.13	0.13	0.13
Sat Flow, veh/h	1767	3526	1539	1767	3526	1540	2742	0	1572	1405	1625	195
Grp Volume(v), veh/h	51	1747	184	25	1278	12	275	0	1	6	0	28
Grp Sat Flow(s),veh/h/ln	1767	1763	1539	1767	1763	1540	1371	0	1572	1405	0	1820
Q Serve(g_s), s	3.0	0.0	0.0	2.0	31.8	0.4	13.8	0.0	0.1	0.5	0.0	1.9
Cycle Q Clear(g_c), s	3.0	0.0	0.0	2.0	31.8	0.4	15.7	0.0	0.1	0.5	0.0	1.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.11
Lane Grp Cap(c), veh/h	260	2596	1134	31	2115	924	427	0	207	236	0	240
V/C Ratio(X)	0.20	0.67	0.16	0.80	0.60	0.01	0.64	0.00	0.00	0.03	0.00	0.12
Avail Cap(c_a), veh/h	260	2596	1134	76	2115	924	673	0	348	363	0	403
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.47	0.47	0.47	0.72	0.72	0.72	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.2	0.0	0.0	68.5	17.6	11.3	60.5	0.0	52.8	53.0	0.0	53.6
Incr Delay (d2), s/veh	0.1	0.7	0.1	11.9	0.9	0.0	1.6	0.0	0.0	0.0	0.0	0.2
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	1.3	0.2	0.0	1.0	11.8	0.1	4.9	0.0	0.0	0.2	0.0	0.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.3	0.7	0.1	80.4	18.5	11.3	62.1	0.0	52.8	53.0	0.0	53.8
LnGrp LOS	D	A	A	F	B	B	E	A	D	D	A	D
Approach Vol, veh/h		1982			1315			276			34	
Approach Delay, s/veh		1.7			19.6			62.1			53.7	
Approach LOS		A			B			E			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.5	109.1		23.4	26.6	90.0		23.4
Change Period (Y+Rc), s	* 5	6.0		* 5	6.0	* 6		* 5
Max Green Setting (Gmax), s	* 6	87.0		* 31	9.0	* 84		* 31
Max Q Clear Time (g_c+I1), s	4.0	2.0		3.9	5.0	33.8		17.7
Green Ext Time (p_c), s	0.0	4.7		0.1	0.0	17.0		0.8

Intersection Summary	
HCM 6th Ctrl Delay	13.4
HCM 6th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

HCM 6th Signalized Intersection Summary
2: Notre Dame Blvd & Humboldt Rd

12/14/2021

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	32	66	55	11	50	29	51	189	20	48	149	23
Future Volume (veh/h)	32	66	55	11	50	29	51	189	20	48	149	23
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	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	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	43	88	73	15	67	39	68	252	27	64	199	31
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	87	152	126	34	247	209	123	410	347	117	341	53
Arrive On Green	0.05	0.16	0.16	0.02	0.13	0.13	0.07	0.22	0.22	0.07	0.22	0.22
Sat Flow, veh/h	1781	945	784	1781	1870	1585	1781	1870	1585	1781	1580	246
Grp Volume(v), veh/h	43	0	161	15	67	39	68	252	27	64	0	230
Grp Sat Flow(s),veh/h/ln	1781	0	1729	1781	1870	1585	1781	1870	1585	1781	0	1826
Q Serve(g_s), s	0.8	0.0	3.1	0.3	1.1	0.8	1.3	4.3	0.5	1.2	0.0	4.0
Cycle Q Clear(g_c), s	0.8	0.0	3.1	0.3	1.1	0.8	1.3	4.3	0.5	1.2	0.0	4.0
Prop In Lane	1.00		0.45	1.00		1.00	1.00		1.00	1.00		0.13
Lane Grp Cap(c), veh/h	87	0	279	34	247	209	123	410	347	117	0	395
V/C Ratio(X)	0.50	0.00	0.58	0.43	0.27	0.19	0.55	0.62	0.08	0.55	0.00	0.58
Avail Cap(c_a), veh/h	626	0	1119	626	1210	1026	777	1684	1427	1679	0	2568
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	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	0.0	13.8	17.2	13.9	13.7	16.0	12.5	11.0	16.1	0.0	12.5
Incr Delay (d2), s/veh	4.3	0.0	1.9	8.4	0.6	0.4	3.9	1.5	0.1	3.9	0.0	1.4
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	0.4	0.0	1.1	0.2	0.4	0.2	0.6	1.5	0.1	0.5	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.8	0.0	15.7	25.6	14.5	14.2	19.9	14.0	11.1	20.0	0.0	13.9
LnGrp LOS	C	A	B	C	B	B	B	B	B	B	A	B
Approach Vol, veh/h		204			121			347			294	
Approach Delay, s/veh		16.8			15.8			15.0			15.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	12.8	5.2	10.7	6.9	12.7	6.2	9.7
Change Period (Y+Rc), s	4.5	5.0	4.5	5.0	4.5	5.0	4.5	5.0
Max Green Setting (Gmax), s	33.5	32.0	12.5	23.0	15.5	50.0	12.5	23.0
Max Q Clear Time (g_c+I1), s	3.2	6.3	2.3	5.1	3.3	6.0	2.8	3.1
Green Ext Time (p_c), s	0.1	1.5	0.0	0.8	0.1	1.4	0.0	0.4

Intersection Summary	
HCM 6th Ctrl Delay	15.5
HCM 6th LOS	B

Valleys Edge
29: Notre Dame Blvd. & E 20th St.

Cumulative Plus Project - PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1210	150	210	980	90	230	20	340	130	10	30
Future Volume (veh/h)	40	1210	150	210	980	90	230	20	340	130	10	30
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	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	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	42	1260	148	219	1021	89	240	21	87	135	10	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	95	1451	170	258	1801	157	280	158	133	169	41	35
Arrive On Green	0.05	0.46	0.46	0.15	0.55	0.55	0.16	0.08	0.08	0.10	0.02	0.02
Sat Flow, veh/h	1767	3178	372	1767	3281	286	1767	1856	1567	1767	1856	1567
Grp Volume(v), veh/h	42	697	711	219	548	562	240	21	87	135	10	1
Grp Sat Flow(s),veh/h/ln	1767	1763	1787	1767	1763	1804	1767	1856	1567	1767	1856	1567
Q Serve(g_s), s	1.8	27.8	28.2	9.5	16.0	16.0	10.4	0.8	4.2	5.9	0.4	0.0
Cycle Q Clear(g_c), s	1.8	27.8	28.2	9.5	16.0	16.0	10.4	0.8	4.2	5.9	0.4	0.0
Prop In Lane	1.00		0.21	1.00		0.16	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	95	805	816	258	968	990	280	158	133	169	41	35
V/C Ratio(X)	0.44	0.87	0.87	0.85	0.57	0.57	0.86	0.13	0.65	0.80	0.24	0.03
Avail Cap(c_a), veh/h	158	989	1003	316	1146	1173	361	663	560	270	568	480
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	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.0	19.2	19.2	32.6	11.6	11.6	32.1	33.2	34.8	34.7	37.7	37.5
Incr Delay (d2), s/veh	1.2	6.0	6.3	14.1	0.2	0.2	12.4	0.1	2.0	3.3	1.1	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	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	11.4	11.8	4.9	5.4	5.5	5.2	0.4	1.6	2.6	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.2	25.1	25.6	46.8	11.8	11.8	44.5	33.3	36.8	38.0	38.8	37.6
LnGrp LOS	D	C	C	D	B	B	D	C	D	D	D	D
Approach Vol, veh/h		1450			1329			348			146	
Approach Delay, s/veh		25.7			17.5			41.9			38.0	
Approach LOS		C			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	48.1	16.4	5.7	15.5	40.8	11.5	10.7
Change Period (Y+Rc), s	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0
Max Green Setting (Gmax), s	7.0	51.0	16.0	24.0	14.0	44.0	12.0	28.0
Max Q Clear Time (g_c+I1), s	3.8	18.0	12.4	2.4	11.5	30.2	7.9	6.2
Green Ext Time (p_c), s	0.0	5.1	0.1	0.0	0.1	5.6	0.1	0.2

Intersection Summary	
HCM 6th Ctrl Delay	24.7
HCM 6th LOS	C

Notes

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