OCTA

COMMITTEE TRANSMITTAL

September 9, 2024

To: Members of the Board of Directors

From: Andrea West, Clerk of the Board

Subject: Amendments to the Master Plan of Arterial Highways

Regional Transportation Planning Committee Meeting of August 29, 2024

Present: Directors Dumitru, Federico, Foley, and Stephens
Absent: Directors Do, Harper, and Khan

Committee Vote

This item was passed by the Members present.

Committee Recommendation(s)

A. Approve the following Master Plan of Arterial Highways amendments:

County of Orange

1. Reclassify Villa Park Road/Santiago Canyon Road from a major (six-lane, divided) arterial to an asymmetric primary (five-lane, divided) arterial between Hewes Street and Cannon Street.
2. Reclassify Santiago Canyon Road from a primary (four-lane, divided) arterial to a divided collector (two-lane, divided) arterial between State Route 241 and Live Oak Canyon Road.
3. Reclassify El Toro Road from a major (six-lane, divided) arterial to a primary (four-lane, divided) arterial between Live Oak Canyon Road and Pheasant Creek.
4. Reclassify El Toro Road, from a major (six-lane, divided) arterial to an asymmetric primary (five-lane, divided) arterial between Pheasant Creek and Portola Parkway.
5. Delete Black Star Canyon Road between Silverado Canyon Road and the Orange County/Riverside County Line.
6. Reclassify Bucker Way from a secondary (four-lane, undivided) arterial to a divided collector (two-lane, divided) arterial between Ranch Canyon Road and Coyotes Road.
7. Reclassify Ranch Canyon Road from a primary (four-lane, divided) arterial to a divided collector (two-lane, divided) arterial between Bucker Way and Cow Camp Road.

City of Fullerton

8. Reclassify Harbor Boulevard, from a major (six-lane, divided) arterial to a primary (four-lane, divided) arterial between Bastanchury Road and Berkeley Avenue.

City of Laguna Hills

9. Reclassify Paseo De Valencia from a major (six-lane, divided) arterial to a divided collector (two-lane, divided) arterial between Alicia Parkway and La Paz Road.
10. Reclassify Paseo De Valencia from a secondary (four-lane, undivided) arterial to a divided collector (two-lane, divided) arterial between La Paz Road and Cabot Road.
11. Reclassify Cabot Road from a secondary (four-lane, undivided) arterial to a divided collector (two-lane, divided) arterial between Paseo de Valencia and El Paseo.

The Master Plan of Arterial Highways will be amended to reflect each approved request contingent upon receipt of documentation confirming that all affected general plans are consistent with the proposed amendment and are compliant with the California Environmental Quality Act. Amendment requests will expire if the Orange County Transportation Authority does not receive such documentation within three years of granting approval.

Should the proposed Master Plan of Arterial Highways amendment be modified for any reason after receiving approval, the modified Master Plan of Arterial Highways amendment must be returned to the Orange County Transportation Authority Board of Directors for reconsideration and action.

B. Direct the Executive Director of Planning, or his designee, to file a Notice of Exemption from the California Environmental Quality Act for the Master Plan of Arterial Highways amendments.

C. Receive and file a status report on the active Master Plan of Arterial Highways amendments.

OCTA

August 29, 2024

To: Regional Transportation Planning Committe

From: Darrell E. Johnson, Chief Executive Officer

Subject: Amendments to the Master Plan of Arterial Highways

Overview

The Orange County Transportation Authority administers the Master Plan of Arterial Highways, including the review and approval of amendments requested by local agencies. Approvals are recommended for amendment requests from the County of Orange, the City of Fullerton, and the City of Laguna Hills. Also, a status report on pending amendment requests is provided.

Recommendations

A. Approve the following Master Plan of Arterial Highways amendments:

<u>County of Orange</u>

1. Reclassify Villa Park Road/Santiago Canyon Road from a major (six-lane, divided) arterial to an asymmetric primary (five-lane, divided) arterial between Hewes Street and Cannon Street.
2. Reclassify Santiago Canyon Road from a primary (four-lane, divided) arterial to a divided collector (two-lane, divided) arterial between State Route 241 and Live Oak Canyon Road.
3. Reclassify El Toro Road from a major (six-lane, divided) arterial to a primary (four-lane, divided) arterial between Live Oak Canyon Road and Pheasant Creek.
4. Reclassify El Toro Road, from a major (six-lane, divided) arterial to an asymmetric primary (five-lane, divided) arterial between Pheasant Creek and Portola Parkway.
5. Delete Black Star Canyon Road between Silverado Canyon Road and the Orange County/Riverside County Line.
6. Reclassify Bucker Way from a secondary (four-lane, undivided) arterial to a divided collector (two-lane, divided) arterial between Ranch Canyon Road and Coyotes Road.
7. Reclassify Ranch Canyon Road from a primary (four-lane, divided) arterial to a divided collector (two-lane, divided) arterial between Bucker Way and Cow Camp Road.

City of Fullerton

8. Reclassify Harbor Boulevard, from a major (six-lane, divided) arterial to a primary (four-lane, divided) arterial between Bastanchury Road and Berkeley Avenue.

City of Laguna Hills

9. Reclassify Paseo De Valencia from a major (six-lane, divided) arterial to a divided collector (two-lane, divided) arterial between Alicia Parkway and La Paz Road.
10. Reclassify Paseo De Valencia from a secondary (four-lane, undivided) arterial to a divided collector (two-lane, divided) arterial between La Paz Road and Cabot Road.
11. Reclassify Cabot Road from a secondary (four-lane, undivided) arterial to a divided collector (two-lane, divided) arterial between Paseo de Valencia and El Paseo.

The Master Plan of Arterial Highways will be amended to reflect each approved request contingent upon receipt of documentation confirming that all affected general plans are consistent with the proposed amendment and are compliant with the California Environmental Quality Act. Amendment requests will expire if the Orange County Transportation Authority does not receive such documentation within three years of granting approval.

Should the proposed Master Plan of Arterial Highways amendment be modified for any reason after receiving approval, the modified Master Plan of Arterial Highways amendment must be returned to the Orange County Transportation Authority Board of Directors for reconsideration and action.

B. Direct the Executive Director of Planning, or his designee, to file a Notice of Exemption from the California Environmental Quality Act for the Master Plan of Arterial Highways amendments.

C. Receive and file a status report on the active Master Plan of Arterial Highways amendments.

Background

The Master Plan of Arterial Highways (MPAH) coordinates roadway system planning across Orange County jurisdictions. The MPAH was first adopted by the County of Orange in 1956, and the Orange County Transportation Authority (OCTA) assumed administration responsibilities in 1995.

OCTA is responsible for maintaining the integrity and continuity of the MPAH system as it evolves to fulfill transportation circulation needs by reviewing changes proposed by local jurisdictions. The reviews consider potential transportation-related concerns and ensure interagency collaboration to avoid unintended impacts in neighboring jurisdictions or regional transportation systems. Details on the requested amendments by the County of Orange (County), City of Fullerton (Fullerton), and City of Laguna Hills (Laguna Hills) are presented below, along with a status report of MPAH amendments that are in process.

Discussion

Consistent with the MPAH amendment process described in OCTA's Guidance for Administration of the MPAH, Attachment A documents OCTA's analysis of several requests for amendments to the MPAH. The requests were submitted to OCTA by the County (Attachments B, C, and D), Fullerton (Attachment E), and Laguna Hills (Attachment F). The table below summarizes the current and proposed roadway configurations.

The first five amendments in the table that are proposed by the County are illustrated in Attachment G and the cities of Lake Forest, Mission Viejo, Orange, and Villa Park have provided consent forms (Attachments H and I) to express their support. The remaining three amendments being proposed by the County are illustrated in Attachment J. Additionally, a map of the MPAH amendment request by the City of Fullerton is provided in Attachment K, and a map of the amendment request by the City of Laguna Hills is provided in Attachment L.

Most of the amendments are being requested to accommodate complete street initiatives. OCTA supports these initiatives through the MPAH amendment process, which also ensures that the integrity of the MPAH system is maintained and has no impacts on the ability of OCTA to deliver public transit. The amendment requests are supported by affected jurisdictions, where applicable, and they can be implemented within the existing right-of-way. The requested amendments are expected to sufficiently accommodate future traffic demand and, therefore, they do not adversely impact the MPAH and are recommended for approval.

Agency	Current Configuration	MPAH Classification	Requested Classification
1. Villa Park Road/Santiago Canyon Road - Hewes Street to Cannon Street			
County	4-lane, divided	6-lane, divided	5-lane, divided
2. Santiago Canyon Road - State Route 241 to Live Oak Canyon Road			
County	2-lane, undivided	4-lane, divided	2-lane, divided
3. El Toro Road - Live Oak Canyon Road to Pheasant Creek			
County	2-lane, undivided	6-lane, divided	4-lane, divided
4. El Toro Road - Pheasant Creek to Portola Parkway			
County	5-lane, divided	6-lane, divided	5-lane, divided
5. Black Star Canyon Road - Silverado Canyon Road to County Line			
County	Unbuilt	4-lane, undivided	Remove
6. Bucker Way - Ranch Canyon Road to Coyotes Road			
County	Unbuilt	4-lane, undivided	2-lane, divided
7. Ranch Canyon Road - Bucker Way to Cow Camp Road			
County	Unbuilt	4-lane, divided	2-lane, divided
8. Harbor Boulevard - Bastanchury Road to Berkeley Avenue			
Fullerton	4-lane, divided	6-lane, divided	4-lane, divided
9. Paseo De Valencia - Alicia Parkway to La Paz Road			
Laguna Hills	4-lane, divided	6-lane, divided	2-lane, divided
10. Paseo De Valencia - La Paz Road to Cabot Road			
Laguna Hills	4-lane, divided	4-lane, divided	2-lane, divided
11. Cabot Road - Paseo de Valencia to El Paseo			
Laguna Hills	4-lane, divided	4-lane, undivided	2-lane, divided

California Environmental Quality Act (CEQA)

Amendments to the MPAH plan are exempt from CEQA review. With direction from the Board, staff will file a Notice of Exemption from CEQA for the proposed MPAH amendment.

MPAH Amendment Status Update

There are currently 17 active amendments proposed for the MPAH (Attachment M). Several of the active amendments are awaiting local action to amend their respective general plans. Others are either under review, in the cooperative study process, pending resolution of issues with other agencies, or are awaiting refinement of development plans.

On July 12, 2021, the Board conditionally approved amendments to delete Tonner Canyon Road and Valencia Avenue in the City of Brea (Brea) from the MPAH. Since the general plan update was not completed within three years of the Board approval date, the amendment was not finalized and has expired. Staff is actively coordinating with Brea to potentially restart the amendment process when appropriate.

Staff is also coordinating with the cities of Costa Mesa and Newport Beach on the proposed 19th Street amendment. OCTA has met with both cities to discuss the status of this request. The setting for this change can have implications on roadways that involve the cities of Costa Mesa, Huntington Beach, Newport Beach, the County of Orange, and potentially the California Department of Transportation. OCTA is agreeable to lead a traffic study in the general area, including the Banning Ranch area, to gain consensus between the involved agencies on MPAH network needs before advancing the 19th Street amendment. However, OCTA was asked to pause the effort until after the cities of Costa Mesa and Newport Beach have updated their General Plan Housing Elements so the latest future housing assumptions can be reflected in the traffic analysis.

Summary

The County, Fullerton, and Laguna Hills have requested amendments to the MPAH. Based on an analysis of the requested changes, the MPAH Guidance has been satisfied, and staff recommends Board approval. A summary of active amendments proposed for the MPAH is also provided as information for the Board.

Attachments

A. Master Plan of Arterial Highways Amendments Detailed Discussion
B. Letter from Nardy Khan, PE, PMP, Deputy Director, OC Public Works, to Kurt Brotcke, Director, Strategic Planning, Orange County Transportation Authority, dated March 6, 2024, re: MPAH Amendment Request for Villa Park Road/Santiago Canyon Road
C. Letter from Nardy Khan, PE, PMP, Deputy Director, OC Public Works, to Kurt Brotcke, Director, Strategic Planning, Orange County Transportation Authority, dated March 27, 2024, re: MPAH Amendment Request for Santiago Canyon Road (SCR), El Toro Road, and Black Star Canyon Road
D. Letter from Nardy Khan, PE, PMP, Deputy Director, OC Public Works, to Kia Mortazavi, Executive Director, Strategic Planning, Orange County Transportation Authority, dated July 18, 2024, re: MPAH Amendment Request for Bucker Way and Ranch Canyon Road in RMV
E. Letter from Stephen Bise, PE, Public Works Director, City of Fullerton to Ivy Hang, Senior Transportation Analyst, Orange County Transportation

Authority, dated June 21, 2024, re: Master Plan of Arterial Highways Amendment – Harbor Boulevard

F. Letter from Jarad Hildenbrand, City Manager, City of Laguna Hills, to Kia Mortazavi, Executive Director, Planning Division, Orange County Transportation Authority, dated June 11, 2024, re: Master Plan of Arterial Highways Amendment – Paseo De Valencia and Cabot Road

G. County of Orange MPAH Amendments Map

H. Villa Park Road/Santiago Canyon Road – Jurisdiction Consent Forms

I. Santiago Canyon Road, El Toro Road, and Black Star Canyon Road – Jurisdiction Consent Forms

J. County of Orange MPAH Amendment Map – Bucker Way and Ranch Canyon Road

K. City of Fullerton MPAH Amendment Map

L. City of Laguna Hills MPAH Amendment Map

M. Status Report on Pending Master Plan of Arterial Highways Amendments

Prepared by:

Ivy Hang
Senior Transportation Analyst
(714) 560-5684

Approved by:

Kia Mortazavi
Executive Director, Planning
(714) 560-5741

ATTACHMENT A

Master Plan of Arterial Highways Amendments Detailed Discussion

County – Reclassify Villa Park Road/Santiago Canyon Road

Villa Park Road/Santiago Canyon Road, between Hewes Street and Cannon Street, is currently constructed as a primary (four-lane, divided) arterial, and is classified on the Master Plan of Arterial Highways (MPAH) as a future major (six-lane, divided) arterial. The County is requesting to reclassify this facility to an asymmetric primary (five-lane, divided) arterial. This reclassification would provide two eastbound lanes and three westbound lanes, while providing adequate right-of-way to accommodate class II bicycle lanes with three-foot painted buffers. The cities of Orange and Villa Park have also submitted consent forms to express their support for this MPAH amendment.

Based on analysis by Orange County Transportation Authority (OCTA) staff, using the Orange County Transportation Analysis Model (OCTAM) 5.1, 27,000 daily vehicle trips are forecasted for this segment in 2050. Since an asymmetric primary can carry up to 37,500 daily vehicle trips while maintaining an acceptable level of service, the proposed amendment provides ample capacity, and no trips are expected to be diverted to other facilities.

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

County – Reclassify Santiago Canyon Road

Santiago Canyon Road, between State Route 241 and Live Oak Canyon Road, is currently constructed as a collector (two-lane, undivided) arterial, and is classified on the MPAH as a future primary (four-lane, divided) arterial. The County is requesting a reclassification of this facility to a divided collector (two-lane, divided) arterial. The proposed changes would support the County's effort to improve traffic conditions on Santiago Canyon Road. The cities of Lake Forest and Mission Viejo have also submitted consent forms to express their support for this MPAH amendment.

Based on analysis by OCTA staff, using OCTAM 5.1, between 9,000 and 14,000 daily vehicle trips are forecasted for this segment in 2050. Since a divided collector can carry up to 15,000 daily vehicle trips while maintaining an acceptable level of service, the proposed amendment provides sufficient capacity, and no trips are expected to be diverted to other facilities.

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

County – Reclassify El Toro Road

El Toro Road, between Live Oak Canyon Road and Portola Parkway, currently has between two and five travel lanes. This facility is classified on the MPAH as a future major (six-lane, divided) arterial. The County is requesting to reclassify the segment of El Toro Road between Live Oak Canyon Road and Pheasant Creek to a primary

(four-lane, divided) arterial. For the segment of El Toro Road between Pheasant Creek and Portola Parkway, the County is requesting to reclassify to an asymmetric primary (five-lane, divided) arterial, consistent with the existing built configuration. The proposed changes would support the County's effort to accommodate class II bicycle lanes and improve traffic conditions on El Toro Road.

Based on analysis by OCTA staff, using OCTAM 5.1, between 10,000 and 15,000 daily vehicle trips are forecasted for the segment of El Toro Road between Live Oak Canyon Road and Portola Parkway in 2050. No trips are anticipated to be diverted to other facilities as a result of this amendment since the proposed classifications would have ample capacity for the forecasted volumes. Specifically, a primary can carry up to 30,000 daily vehicle trips while maintaining an acceptable level of service, and an asymmetric primary can carry up to 37,500 daily vehicle trips.

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

County – Delete Black Star Canyon Road

Black Star Canyon Road is currently built as an approximately one-mile, single-lane road that ends at the Black Star Canyon Falls trailhead in the Black Star Canyon wilderness area. The MPAH classifies the facility as a secondary (four-lane, undivided) arterial that extends to the Orange/Riverside County Line. A corresponding road was deleted from the Riverside County highway plan several years ago and an open space preserve was established by the City of Corona. Due to this lack of connectivity to Riverside County and concerns of severe environmental and cultural impacts from construction in the Cleveland National Forest, the County does not intend to implement this planned facility. Therefore, the County is requesting to delete Black Star Canyon Road from the MPAH.

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

County – Reclassify Bucker Way

Bucker Way is an unbuilt facility in the Rancho Mission Viejo community that is currently classified on the MPAH as a future Secondary (four-lane, undivided) arterial. The County is requesting to reclassify Bucker Way as a Divided Collector (two-lane, divided) arterial between Ranch Canyon Road and Coyotes Road to provide the appropriate capacity needed for the anticipated travel demand and accommodations for active transportation.

Based on analysis by OCTA staff, using OCTAM 5.1, approximately 3,000 daily vehicle trips are forecasted on this segment in 2050. Since a divided collector can carry up to 15,000 daily vehicle trips while maintaining an acceptable level of service, the proposed amendment provides sufficient capacity, and no trips are expected to be diverted to other facilities.

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

County – Reclassify Ranch Canyon Road

Ranch Canyon Road is an unbuilt facility in the Rancho Mission Viejo community that is currently classified on the MPAH as a future Primary (four-lane, divided) arterial. The County is requesting to reclassify Rancho Canyon Road to a Divided Collector (two-lane, divided) arterial between Bucker Way and Cow Camp Road to provide the appropriate capacity needed for the anticipated travel demand and accommodations for active transportation.

Based on analysis by OCTA staff, using OCTAM 5.1, approximately 13,000 daily vehicle trips are forecasted on this segment in 2050, assuming the amended classification. Since a divided collector can carry up to 15,000 daily vehicle trips while maintaining an acceptable level of service, the proposed amendment provides sufficient capacity. This amendment does result in a diversion of approximately 2,000 trips to other facilities within the Rancho Mission Viejo area but does not cause any performance issues.

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

Fullerton – Harbor Boulevard

Harbor Boulevard, between Bastanchury Road and Berkeley Avenue, currently has between four and six travel lanes. This segment is classified on the MPAH as a major (six-lane, divided) arterial. The City of Fullerton is requesting reclassification of this facility to a primary (four-lane, divided) arterial to accommodate active transportation improvements that are part of the Orange County Complete Streets Program (OCCSP) approved by the OCTA Board of Directors (Board) on February 12, 2024. This project requires a reduction of one lane in each direction north of Valley View Drive/Brea Boulevard and will provide six-foot bicycle lanes, a two-foot painted buffer, continuous sidewalks, and improved bus stops.

Based on analysis by OCTA staff, using OCTAM 5.1, approximately 35,000 daily vehicle trips are forecasted on Harbor Boulevard north of Valley View Drive/Brea Boulevard, and approximately 52,000 daily vehicle trips south of Valley View Drive/Brea Boulevard, assuming the amended classification. A primary arterial can carry up to 30,000 daily vehicle trips while maintaining an acceptable level of service. However, the City of Fullerton has established a level of service standard that allows a primary arterial to carry up to 33,800. While the projected volumes for 2050 exceed both the MPAH and locally-adopted level of service standards for roadway segments, additional analysis was performed that showed the corridor intersections would continue to meet the locally adopted level of service standards for intersections. Additionally, there are no adverse impacts that extend beyond the City of Fullerton's jurisdictional boundary.

The requested amendment does not adversely impact the MPAH outside of the City of Fullerton, therefore, it is recommended for approval.

Laguna Hills – Paseo De Valencia

Paseo De Valencia, between Alicia Parkway and Cabot Road, is currently constructed as a primary (four-lane, divided) arterial, and is classified as a major (six-lane, divided) arterial and between Alicia Parkway and La Paz Road. The segment between La Paz Road and Cabot Road is classified as a secondary (four-lane, divided) arterial. The City of Laguna Hills is requesting the reclassification of both segments to a divided collector (two-lane, divided) arterial to provide traffic and safety improvements in the vicinity of Valencia Elementary School. This is part of a project included in the OCCSP that was approved by the Board on February 12, 2024.

Based on analysis by OCTA staff, using OCTAM 5.1, between 5,000 and 10,000 daily vehicle trips are forecasted on Paseo De Valencia in 2050. Since a divided collector can carry up to 15,000 daily vehicle trips while maintaining an acceptable level of service, the proposed amendment provides sufficient capacity with no substantial diversion of traffic.

The requested amendment does not adversely impact the MPAH and is, therefore, recommended for approval.

Laguna Hills – Cabot Road

Cabot Road, between Paseo De Valencia and El Paseo, is currently constructed as a primary (four-lane, divided) arterial, and is classified as a secondary (four-lane, undivided) arterial. The City of Laguna Hills is requesting the reclassification of this facility to a divided collector (two-lane, divided) arterial to accommodate multimodal improvements that are linked to the improvements on Paseo De Valencia, and are part of the same project noted above that is included in the OCCSP approved by the Board on February 12, 2024.

Based on analysis by OCTA staff, using OCTAM 5.1, approximately 10,000 daily vehicle trips are forecasted on Cabot Road in 2050. Since a divided collector can carry up to 15,000 daily vehicle trips while maintaining an acceptable level of service, the proposed amendment provides sufficient capacity with no substantial diversion of traffic.

ATTACHMENT B

County Administration South
601 North Ross Street
Santa Ana, CA 92701

P.O. Box 4048
Santa Ana, CA 92702

(714) 667-8800

info@ocpw.ocgov.com

OCPublicWorks.com

Administrative Services

OC Development Services

OC Facilities Design & Construction Management

OC Facilities Maintenance & CUF

OC Fleet Services

OC Construction

OC Environmental Resources

OC Operations & Maintenance

OC Infrastructure Programs

OC Survey

March 6, 2024

Mr. Kurt Brotcke, Director
Strategic Planning
Orange County Transportation Authority
550s. Main Street
Orange, CA 92863-1584

Subject: MPAH Amendment Request for Villa Park Road/Santiago Canyon Road

Dear Mr. Brotcke,

Orange County Public Works (OCPW) is formally requesting the initiation of a Master Plan of Arterial Highways (MPAH) Amendment process for Villa Park Road and Santiago Canyon Road between Hewes Street and Cannon Street. This roadway segment is situated within unincorporated Orange County and City of Orange.

OCPW proposes the following modification to the MPAH:

- Reclassification of Villa Park Road/Santiago Canyon Road between Hewes Street and Cannon Street from a 6-lane Major Arterial Highway to a 5-lane Asymmetric Primary Arterial Highway.

Other stakeholders involved in the project include the City of Orange and the City of Villa Park, both of which endorse the amendment request (please refer to the attached consent forms). A Traffic Study conducted by OCPW has produced results that support the requested amendment (refer to the report attached).

Should you have any inquiries regarding this change, please feel free to contact Wei Zhu at (657) 303-3113.

Sincerely,

Nardy Khan, P.E., PMP
Deputy Director
OC Public Works/Infrastructure Programs

cc: Denis Bilodeau, OC Public Works/Traffic & Development Support
Wei Zhu, OC Public Works/Traffic

Attachments: Consent Form – City of Orange
Consent Form – City of Villa Park
Villa Park Road MPAH Amendment Traffic Study

ATTACHMENT C

ORANGE COUNTY
OC Public Works

County Administration South
601 North Ross Street
Santa Ana, CA 92701

P.O. Box 4048
Santa Ana, CA 92702

(714) 667-8800

info@ocpw.ocgov.com

OCPublicWorks.com

March 27, 2024

Mr. Kurt Brotcke, Director
Strategic Planning
Orange County Transportation Authority
550 South Main Street
Orange, CA. 92863-1584

Subject: MPAH Amendment Request for Santiago Canyon Road (SCR), El Toro Road, and Black Star Canyon Road

Dear Mr. Brotcke,

On May 8, 2017, the Orange County Transportation Authority (OCTA) Board of Directors (Board) approved an amendment to the Master Plan of Arterial Highways (MPAH), which included three changes: reclassification of Santiago Canyon Road (SCR), deletion of the Jeffrey Road Extension, and deletion of Black Star Canyon Road between Silverado Canyon Road and the Orange County/Riverside County line. The approval was contingent upon fulfilling several requirements, including amending each agency's general plan. This amendment was based on a traffic study that recommended reclassifying SCR, from east of the State Route 241 and Live Oak Canyon Road, from a primary (four-lane, divided) to a collector (two-lane undivided). However, this recommendation did not secure approval from the Orange County Planning Commission. Consequently, the County's General Plan was not amended, and the County's original MPAH Amendment request was indefinitely put on hold.

In 2023, Orange County Public Works (OCPW) embarked on another comprehensive Traffic Study for three roadways: SCR, El Toro Road, and Black Star Canyon Road. These roadway segments are situated within unincorporated Orange County, the City of Lake Forest, and the City of Mission Viejo. Please note that the deletion of the Jeffrey Road Extension is not included in our current request as it is not needed at this time. The outcome from our 2023 study for SCR diverges from the 2017 one and now takes precedence.

OCPW formally requests the withdrawal of the previous MPAH Amendment from 2017, and the initiation of a MPAH Amendment process for the segments of SCR, El Toro Road, and Black Star Canyon Road for the following modifications:

- Reclassify SCR between SR-241 and Live Oak Canyon Road from its currently planned designation as a Primary Arterial (four-lane divided roadway) to a Divided Collector (two-lane divided roadway with a center turn-lane)

- Reclassify El Toro Road (ETR) between Live Oak Canyon Road and Portola Parkway from its currently planned designation as a Major Arterial (six-lane divided roadway) to a Primary Arterial (four-lane divided roadway) with the exception that the southern end segment between Pheasant Creek and Portola Parkway remain at its current condition as an asymmetric Primary Arterial (five-lane divided roadway)

- Delete Black Star Canyon Road (BSCR) between Silverado Canyon Road and the Orange County/Riverside County line.

Both the City of Lake Forest and the City of Mission Viejo, as stakeholders of the project, endorse the amendment request (please refer to the attached consent forms). The report of the 2023 Traffic Study supporting the requested amendment is enclosed for your reference.

Should you have any inquiries regarding the amendment, please feel free to contact Wei Zhu at (657) 303-3113.

Sincerely,

Nardy Khan, P.E./P.M.P.
Deputy Director
Orange County Public Works/ Infrastructure Programs

cc: Denis Bilodeau, Manager, Traffic & Development Support
Wei Zhu, Sr. Civil Engineer, Traffic & Development Support

Attachment: Consent Form – City of Lake Forest
Consent Form – City of Mission Viejo
MPAH Amendment Study for SCR, ETR, BSCR

ATTACHMENT D

ORANGE COUNTY OC Public Works

County Administration South
601 North Ross Street
Santa Ana, CA 92701

P.O. Box 4048
Santa Ana, CA 92702

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info@ocpw.ocgov.com

OCPublicWorks.com

July 18, 2024

Mr. Kia Mortazavi, Executive Director
Strategic Planning
Orange County Transportation Authority
550 South Main Street
Orange, CA. 92863-1584

Subject: MPAH Amendment Request for Bucker Way and Ranch Canyon Road in RMV

Dear Mr. Mortazavi,

Orange County Public Works (OCPW) is formally requesting the initiation of a Master Plan of Arterial Highways (MPAH) Amendment for Bucker Way and Ranch Canyon Road within the Rancho Mission Viejo Planning Area 3 (PA3). The roadway segments are situated within unincorporated Orange County.

OCPW proposes the following modification to the MPAH:

- Reclassify Bucker Way between Ranch Canyon Road to Coyotes Road (S) from Secondary Arterial (4-lane) to Divided Collector (2-lane)

- Reclassify Ranch Canyon Road between Bucker Way to Cow Camp Road from Primary Arterial (4-lane) to Divided Collector (2-lane)

The report of the Traffic Study dated June 2024 prepared by Fehr & Peers supports the requested amendment and is enclosed for your reference.

Should you have any inquiries regarding the amendment, please feel free to contact Wei Zhu at (657) 303-3113.

Sincerely,

Nardy Khan, P.E./P.M.P.
Deputy Director
Orange County Public Works/ Infrastructure Programs

cc: Denis Bilodeau, Manager, Traffic & Development Support
Wei Zhu, Sr. Civil Engineer, Traffic & Development Support

Attachment: MPAH and GP Amendment for Bucker Way & Ranch Canyon Road

ATTACHMENT E

CITY OF FULLERTON

Public Works Department – *Engineering Division*

June 21, 2024

Orange County Transportation Authority
ATTN: Ivy Hang, Senior Transportation Analyst
550 South Main Street, P.O. Box 14184
Orange, CA 92863

Via Email: IHang@octa.net

Subject: **Master Plan of Arterial Highways Amendment – Harbor Boulevard**

The City of Fullerton is requesting an amendment to the Master Plan of Arterial Highways (MPAH). Harbor Boulevard is currently classified as a 6-lane Major Divided Arterial spanning from Berkely Avenue to Lambert Avenue within the City of Fullerton. Below is a summary of the existing lane geometry throughout that segment.

Segment:	Existing Lane Geometry:
Berkeley Avenue to West Valley View Drive/North Brea Boulevard	4-lanes
Valley View Drive/North Brea Boulevard to Bastanchury Road	6-lanes
Bastanchury Road to Imperial Highway	4-lanes
Harbor Boulevard to Lambert Road	6-lanes

NOTE: Harbor Boulevard is classified as a 4-lane Primary Divided Arterial south of Berkeley Avenue to Orangethorpe Avenue and north of Lambert Avenue to La Habra City Limits.

The City is requesting the segment between Berkely Avenue to Bastanchury Road be reclassified to a 4-lane Primary Divided Arterial. The reclassification will support the City's objective to provide various 'complete streets' improvements and fulfil our grant obligations for the recently awarded 2023 Orange County Complete Streets Program (OCCSP) grant application for the Harbor Boulevard Complete Streets Improvement Project. Attachment 'A' illustrates the limits and existing/proposed cross-section.

The reclassification requires lane reduction between Valley View Drive/North Brea Boulevard to Bastanchury Road, which was determined feasible based on the Response to OCTA Comments, dated April 16, 2024; see Attachment 'B' and Revised Traffic Analysis dated April 16, 2024; see Attachment 'C'.

Upon receiving conditional approval from OCTA's Board of Directors, Fullerton will take necessary steps to update the Circulation Element in our General Plan to reflect the changes identified above.

Please contact me if you have any questions or require additional information.

Regards,

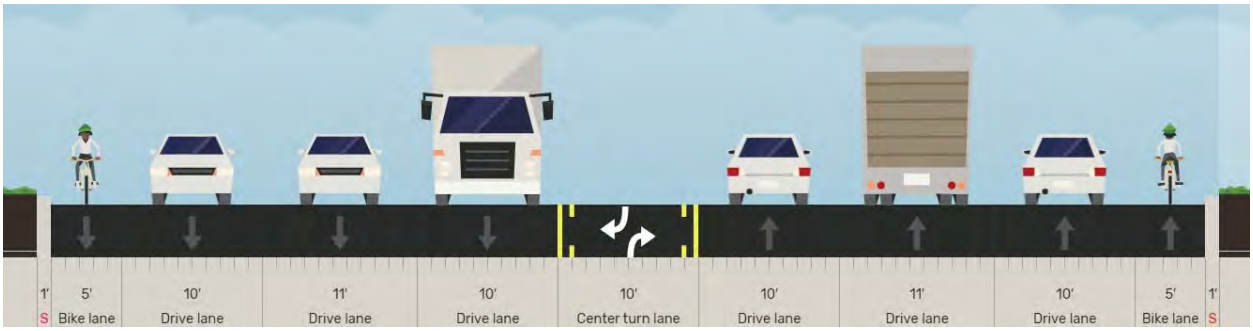
for Stephen Bise, PE, TE
Public Works Director
714-738-6852
Stephen.Bise@cityoffullerton.com

cc: David Grantham, City Engineer
Jerome Joaquin, Public Works Administration Manger
Dave Roseman, City Traffic Engineer
Chris Schaefer, Planning Manager

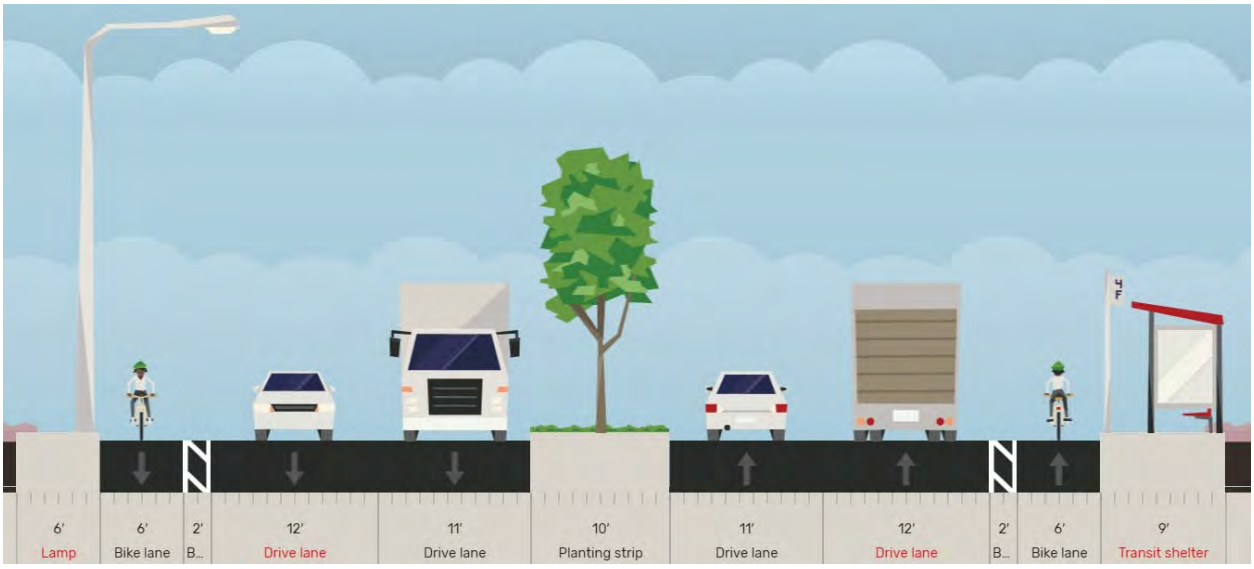
Attachment A

Typical Section

Roadway: **Harbor Boulevard**
Limits: **Valley View Drive/North Brea Boulevard to Bastanchury Road**
Length: **~5000 feet**
Right-of-Way Width: **104-115 feet**



Existing
10–11-ft travel lanes
10-ft two-way left turn lane
5-ft Class II Bike lanes
MPAH Classification = Major Divided Arterial



Proposed
11-12-ft travel lanes
10-ft median or left turn pocket
6-ft buffered Class II Bike Lanes
New, continuous sidewalk with upgrade transit stops
MPAH Classification = Primary Divided Arterial

Attachment B

MEMORANDUM

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Pasadena
Irvine
San Diego

To: Dave Roseman
City Traffic Engineer – City of Fullerton

Date: April 16, 2024

From: Richard E. Barretto, P.E., Principal
Linscott, Law & Greenspan, Engineers

LLG Ref: 1.20.4391.4

Subject: ***Response to Comments Memorandum for the Harbor Boulevard "Complete Streets" Improvements Project Traffic Analysis***

Linscott, Law & Greenspan, Engineers (LLG) is pleased to provide the following responses to address comments from OCTA, summarized in an email dated February 5, 2024, as it pertains to the *Traffic Analysis for the Harbor Boulevard "Complete Streets" Improvements Project*, dated September 20, 2023. The comments from OCTA are attached and referenced in our responses provided below.

Response to OCTA Comments:

- **Response to Comment 1:** *Upon reviewing the MPAH network map, we noted that Harbor Boulevard north of Berkeley Avenue is classified as a Major 6-lane divided Arterial, while south of Berkeley Avene is a Primary 4-lane Arterial. Suppose the City of Fullerton decided to pursue an MPAH amendment to align with the proposed reconfiguration. In that case, OCTA suggests including the segment between Brea Boulevard and Berkeley Avenue for consistent MPAH classification from Berkeley Avenue to Valencia Mesa Drive.*

  The traffic analysis has been revised to include the segments between Brea Boulevard/Valley View Drive and Berkeley Avenue.

- **Response to Comment 2:** *Specify the version of OCTAM used or provide the date of the model to ensure clarity in the analysis.*

  As noted on Page 5 of the report, under sub header *Year 2045 Buildout Traffic Volumes*, OCTAM 5.0 traffic model was utilized for Year 2045 traffic volume forecasts, which was the most current version of the model at the time of analysis.

- **Response to Comment 3:** *Clarify that the volumes were not provided directly by OCTA or directly from a version of OCTAM approved by OCTA.*

  Comment noted, the report has been updated accordingly.

- **Response to Comment 4:** *Clarify and provide a more comprehensive discussion on traffic volume development: a) Provide additional details on the methodology for forecasting future traffic volumes, particularly the rationale behind determining the 1.55% traffic growth; b) Clarify the justifications for not utilizing the model growth on the specific roadways.*

  As noted on Page 5 of the report, under sub header *Year 2045 Buildout Traffic Volumes*, the development of Year 2045 buildout traffic volumes for all study

intersections and roadway segments were based on the OCTAM 5.0 model.

The reference to 1.55% was included for informational purposes only. We were merely documenting the annual growth rate when comparing the existing traffic counts to the Year 2045 model generated traffic volumes. However, the report has been updated to remove this reference to avoid potential confusion.

- **Response to Comment 5:** *Clarify why traffic volumes for the with and without project scenarios are the same. The analysis should encompass potential traffic diversions or impacts to parallel/adjacent roadways due to the road diet.*

  It is our understanding that due to the existing topography and street network, there are not any viable parallel routes within the vicinity of the Project that would result in potential traffic diversions due to the road diet. Therefore, traffic volumes are expected to remain the same for both with and without the proposed Project. It should be noted that the weekday peak hour and daily service levels are generally considered adequate with the implementation of the proposed Project and therefore motorists will not feel the need to adjust their driving patterns.

- **Response to Comment 6:** *Identify the specific thresholds for determining significant impacts at intersections and on roadway segments (e.g., LOS threshold and changes in V/C).*

  As noted on Page 7 of the report, under sub header *Level of Service Standards and Thresholds,* the City of Fullerton has identified LOS D as the minimum acceptable condition that should be maintained at both study intersections and roadway segments. Improvements should be considered if the Project causes an intersection or roadway segment operating at or above acceptable LOS D to an unacceptable condition.

* * * * * * * * * * *

Please let us know if you have any comments or questions regarding this response memorandum.

Attachments

cc: Shane S. Green, P.E. LLG
File

OCTA COMMENTS DATED FEBRUARY 5, 2024

Fw: [EXTERNAL MAIL]MPAH - Harbor Boulevard Complete Street Traffic Study Comments

From: Ivy Hang <IHang@octa.net>
Sent: Monday, February 5, 2024 12:33 PM
To: Stephen Bise <Stephen.Bise@cityoffullerton.com>
Cc: Gregory Nord <gnord@octa.net>; Anup Kulkarni <akulkarni@octa.net>; Archie Tan <atan@octa.net>
Subject: [EXTERNAL MAIL]MPAH - Harbor Boulevard Complete Street Traffic Study Comments

Hi Stephen,

Thank you for providing the Traffic Analysis for the Harbor Boulevard "Complete Streets" Improvements Project. The traffic study recommends reconfiguring the segment from a 6-lane divided Major Arterial to a 4-lane divided Primary Arterial on Harbor Boulevard between Valencia Mesa Drive and Valley View Drive/Brea Boulevard.

Upon reviewing the MPAH network map, we noted that Harbor Boulevard north of Berkeley Avenue is classified as a Major 6-lane divided Arterial, while south of Berkeley Avenue is a Primary 4-lane divided Arterial. Suppose the City of Fullerton decides to pursue an MPAH amendment to align with the proposed reconfiguration. In that case, OCTA suggests including the segment between Brea Boulevard and Berkeley Avenue for consistent MPAH classification from Berkeley Avenue to Valencia Mesa Drive. In addition, please consider revising the traffic study following the comments provided below.

- Specify the version of OCTAM used or provide the date of the model to ensure clarity in the analysis.
- Clarify that the volumes were not provided directly by OCTA or directly from a version of OCTAM approved by OCTA.
- Clarify and provide a more comprehensive discussion on traffic volume development.
    - Provide additional details on the methodology for forecasting future traffic volumes, particularly the rationale behind determining the 1.55% traffic growth.
    - Clarify the justifications for not utilizing the model growth on the specific roadways.
- Clarify why traffic volumes for the with and without project scenarios are the same.
    - The analysis should encompass potential traffic diversions or impacts to parallel/adjacent roadways due to the road diet.
- Identify the specific thresholds for determining significant impacts at intersections and on roadway segments (e.g., LOS threshold and changes in V/C).

Feel free to reach out if you have any questions.

Thank You,

Ivy Hang
Senior Transportation Analyst
Long-Range Planning & Corridor Studies

Orange County Transportation Authority
550 South Main Street, P.O. Box 14184, Orange, CA 92863
P: (714) 560-5684 | **E:** ihang@octa.net

Attachment C

MEMORANDUM

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Pasadena
Irvine
San Diego

To: Dave Roseman
City Traffic Engineer – City of Fullerton

Date: April 16, 2024

From: Richard E. Barretto, P.E., Principal
Linscott, Law & Greenspan, Engineers

LLG Ref: 2.23.4708.1

Subject: ***Revised Traffic Analysis for the Harbor Boulevard "Complete Streets" Improvements Project Fullerton, California***

Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit this revised traffic analysis memorandum for the proposed Harbor Boulevard "Complete Streets" Improvements Project (hereinafter referred to as Project) located in Fullerton, California. This traffic analysis has been prepared to identify the traffic implications associated with the proposed "complete streets" modifications to Harbor Boulevard, between Bastanchury Road and Brea Boulevard/Valley View Drive. Further, the traffic analysis has been prepared in support of the City of Fullerton's proposed reclassification of Harbor Boulevard, between Valencia Mesa Drive and Berkeley Avenue, from a Major Arterial Highway to a Primary Arterial Highway. This letter was revised to address comments provided by OCTA via an email on February 5, 2024.

Harbor Boulevard, along the northern end and southern end, consists of a medical/medical office and commercial/retail properties at the street frontage, whereas the midblock section is fronted by open space. The Project involves multimodal improvements along the middle section of Harbor Boulevard, from Valencia Mesa Drive to Brea Boulevard/Valley View Drive, to provide bicycle and pedestrian connectivity in this corridor. The Project is proposing to modify Harbor Boulevard, between Valencia Mesa Drive and Brea Boulevard/Valley View Drive, to a four-lane divided roadway with on-street "buffered" bike lanes and curb adjacent sidewalks.

Included in this memorandum are:

- AM and PM peak hour and Daily capacity analyses for existing conditions,
- AM and PM peak hour and Daily capacity analyses for existing plus project conditions,
- AM and PM peak hour and Daily capacity analyses for future buildout (Year 2045) conditions,
- AM and PM peak hour and Daily capacity analyses for future buildout (Year 2045) plus project conditions, and
- Intersection vehicle queueing analyses along Harbor Boulevard.

This study satisfies the traffic analysis requirements of the City of Fullerton.

STUDY AREA/PROJECT LIMITS

The following six (6) study intersections and four (4) roadway segments located within the limits of the Project have been identified for evaluation:

Study Intersections:

1. Harbor Boulevard at Bastanchury Road
2. Harbor Boulevard at Valencia Mesa Drive
3. Harbor Boulevard at Brea Boulevard/Valley View Drive
4. Harbor Boulevard at Brea Dam Park (Future Signalized Intersection)
5. Harbor Boulevard at E. Valley View Drive
6. Harbor Boulevard at Berkeley Avenue

Study Roadway Segments:

A. Harbor Boulevard, between Bastanchury Road and Valencia Mesa Drive
B. Harbor Boulevard, between Valencia Mesa Drive and Brea Boulevard/Valley View Drive
C. Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive
D. Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue

Figure 1, which is located at the end of this memorandum, presents the vicinity map which illustrates the limits of the Harbor Boulevard improvements and depicts the study locations and surrounding street system.

The Level of Service (LOS) investigations at these key locations were used to evaluate the potential traffic implications associated with implementation of the proposed Project. Our methods of analysis, findings and conclusions are described in detail in the following sections of this memorandum.

PROJECT DESCRIPTION

Harbor Boulevard is currently classified as a Major Arterial Highway in the City's Circulation Elements as well as the Orange County Master Plan of Arterial Highways (MPAH). The existing configuration of Harbor Boulevard, between Bastanchury Road and Brea Boulevard/Valley View Drive, is currently three through lanes in the southbound direction and three through lanes in the northbound direction, with Class II bike lanes provided in the middle section from just north of Valencia Mesa Drive to north of Brea Boulevard/Valley View Drive. The existing configuration of Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive, is

currently two through lanes in the southbound direction and three through lanes in the northbound direction. The existing configuration of Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue is two through lanes in the southbound direction and two through lanes in the northbound direction. Daily traffic volumes on Harbor Boulevard, between Bastanchury Road and Berkeley Avenue, range between 28,271 ADT and 44,041 ADT.

With approval of the proposed reclassification to a Primary Arterial Highway, the proposed Project would allow for construction of "complete streets" improvements on Harbor Boulevard, between Bastanchury Road and Brea Boulevard/Valley View Drive, which include the removal of a through lane in both the northbound and southbound directions, the installation of a Class II bike lane with buffer in both the northbound and southbound directions, and the construction of sidewalks on both sides of the roadway, where applicable, which will connect to the existing sidewalk network. It should be noted that the proposed Project will maintain the existing lane geometrics south of Brea Boulevard/Valley View Drive. As such, upon completion of the Project, this section of Harbor Boulevard will generally match the number of travels lanes on the section of Harbor Boulevard south of Brea Boulevard/Valley View Drive.

The Project improvements are proposed to begin at Valencia Mesa Drive and terminate south of Brea Boulevard. Given the focus of the Project is on the midblock segments of Harbor Boulevard, the existing lane geometrics at the intersections of Harbor Boulevard at Bastanchury Road (Intersection No. 1) will be maintained as part of the proposed Project. The "Complete Streets" improvements consist of the following:

- **Harbor Boulevard at Bastanchury Road:** The implementation of a "Complete Streets" on Harbor Boulevard will not affect the intersection; existing lane geometrics will be maintained.

- **Harbor Boulevard at Valencia Mesa Drive:** The implementation of a "Complete Streets" on Harbor Boulevard will replace the outermost through-lane for the northbound approach with a Class II bike land and buffer, the outermost through-lane for the southbound approach with a trap right-turn lane, and the outermost through-lane for the southbound departure with a Class II bike lane and buffer. The northbound left-turn pocket will be restriped to provide 185-feet of storage. Sidewalks will be constructed for the southwest corner of the intersection and proceed southerly to connect to the existing

sidewalk on the west side of Harbor Boulevard at Brea Boulevard/Valley View Drive.

- **Harbor Boulevard at Brea Boulevard/Valley View Drive:** The implementation of a "Complete Streets" on Harbor Boulevard will replace the outermost through-lane for the southbound approach with a right-turn pocket providing 140-feet of storage and restripe the left-turn lane to provide 140-feet of storage. The outermost through-lane for the northbound approach will be removed and the outermost through-lane for the northbound departure will be replaced with a Class II bike lane and buffer.

It should also be noted that a new signalized intersection for the existing Brea Dam Park along Harbor Boulevard, located between Valencia Mesa Drive and Brea Boulevard/Valley View Drive, has been assumed as part of the proposed Project and consists of the following:

- **Harbor Boulevard at Brea Dam Park:** Construct a three-leg intersection to provide two through lanes and a 200-foot right-turn pocket in the northbound direction, two through lanes and a 250-foot left-turn pocket in the southbound direction, and shared left/right-turn lane in the westbound direction. Install a two-phase traffic signal. The implementation of a "Complete Streets" on Harbor Boulevard will construct sidewalks along Harbor Boulevard and provide a Class II bike lane and buffer in both the northbound and southbound directions.

Figure 2 presents the aerial map for Harbor Boulevard, between Bastanchury Road and Berkeley Avenue, under existing conditions. ***Figure 3*** presents the proposed lane geometry on Harbor Boulevard with the Project and compares it to the existing lane geometry.

EXISTING AND FUTURE TRAFFIC VOLUMES

Existing Traffic Volumes

Six (6) study intersections and four (4) roadway segments have been identified as the locations at which to evaluate existing and future traffic operating conditions. Existing weekday daily and peak hour traffic volumes for the five (5) existing study intersections and four (4) roadway segments evaluated in this report were obtained from manual turning movement counts conducted by Transportation Studies, Inc. in May 2023 and March 2024. ***Figure 4*** presents the existing weekday AM peak hour,

PM peak hour, and daily traffic volumes at the five (5) key study intersections and four (4) roadway segments evaluated in this report. ***Appendix A*** contains the detailed count sheets for the locations evaluated in this report.

Since the proposed Project is the implementation of "Complete Streets" improvements along Harbor Boulevard, the project does not generate any additional vehicular trips. As such, Existing Plus Project traffic volumes are identical to the Existing without Project traffic volumes.

Year 2045 Buildout Traffic Volumes

The Year 2045 traffic volume forecasts were developed via the utilization of the OCTAM 5.0 Year 2045 traffic model. Specifically, daily, AM peak period and PM peak period intersection traffic svolumes were provided by OCTA for the existing base year (i.e. Year 2016) and for the Year 2045 year. The AM peak period corresponds to a three-hour morning commute period while the PM peak period corresponds to a four-hour afternoon commute period. Using the peak period model runs and the OCTA approved peak hour factors (i.e. AM = 0.3566 and PM = 0.2662), the one-hour peak hour intersection traffic volumes were determined. ***Figure 5*** presents the Year 2045 Buildout weekday AM peak hour, PM peak hour, and daily traffic volumes at the six (6) key study intersections and four (4) roadway segments evaluated in this report.

Since the proposed Project is the implementation of "Complete Streets" improvements along Harbor Boulevard, the project does not generate any additional vehicular trips. As such, Year 2045 Buildout Plus Project traffic volumes are identical to the Year 2045 Buildout without Project traffic volumes.

LEVEL OF SERVICE CRITERIA

Level of Service Analysis Methodologies

In conformance with the City of Fullerton criteria, weekday AM and PM peak hour operating conditions for the six (6) key study intersections were evaluated using the methodology outlined in the *Highway Capacity Manual 6* (HCM 6) for signalized intersections. The analysis of the four (4) roadway segments were evaluated per the Volume to Capacity (V/C) Ratio methodology.

Highway Capacity Manual (HCM) Method of Analysis (Signalized)

Based on the HCM 6th Edition operations method of analysis, level of service for signalized intersections is defined in terms of control delay, which is a measure of driver discomfort, frustration, fuel consumption and lost travel time. The delay experienced by a motorist is made up of a number of factors that relate to control, geometries, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents and when there are no other vehicles on the road.

In the HCM, only the portion of total delay attributed to the control facility is quantified. This delay is called *control delay*. Control delay includes initial deceleration delay, queue move-up time, stopped delay and final acceleration delay. Specifically, LOS criteria for traffic signals are stated in terms of the average control delay per vehicle. The six qualitative categories of Level of Service that have been defined along with the corresponding HCM control delay value range for signalized intersections are shown in ***Table 1***.

Daily Volume to Capacity (V/C) Ratio Method of Analysis (Roadway Segments)

Daily operating conditions for the key study roadway segments have been investigated according to the Volume to Capacity (V/C) Ratio of each roadway segment. The V/C relationship is used to estimate the LOS of the roadway segment with the volume based on the 24-hour traffic volumes and the capacity based on the City's classification of each roadway. The six qualitative categories of Level of Service have been defined along with the corresponding Volume to Capacity (V/C) value range and are shown in ***Table 2***.

The roadway link capacity of each street classification according to the Orange County Master Plan of Arterial Highways (MPAH) is presented in ***Table 3***, along with the six corresponding service levels and associated V/C ratios.

Level of Service Standards and Thresholds

According to the City of Fullerton, LOS D is the minimum acceptable condition that should be maintained during the peak commute hours. LOS D has also been assumed as the threshold for daily.

Based on the City of Fullerton, the need for potential improvements will be assessed based on the following criteria:

- The Project causes a signalized or unsignalized intersection or roadway segment operating at or above an acceptable operating condition to degrade to an unacceptable condition.

EXISTING CONDITIONS TRAFFIC ANALYSIS

Existing Traffic Conditions Intersection Capacity Analysis

Table 4 summarizes the peak hour level of service results at the six (6) study intersections for Existing Plus Project traffic conditions. The first column (1) of HCM/LOS values in presents a summary of existing AM and PM peak hour traffic conditions utilizing the existing lane configurations. The second column (2) lists existing plus project traffic conditions utilizing the proposed project lane configurations. The third column (3) indicates whether the Project will exceed the LOS thresholds defined in this report and thus require improvements.

As shown in column (1) of *Table 4*, all five (5) existing key study intersections currently operate at an acceptable service level (LOS D or better) during the AM and PM peak hours.

As shown in column (2) of *Table 4*, all six (6) key study intersections are forecast to operate at an acceptable service level (LOS D or better) during the AM and PM peak hours with the addition of the proposed Project. As such, it can be concluded that the proposed Project will not have a negative effect on existing traffic conditions. ***Appendix B*** presents the HCM/LOS calculations for the study intersections.

Existing Traffic Conditions Roadway Segment Analysis

Table 5 summarizes the roadway segment level of service results at the four (4) roadway segments for Existing Plus Project traffic conditions. The first column (1) presents a summary of existing daily traffic conditions utilizing the existing lane configurations. The second column (2) lists existing plus project traffic conditions utilizing the proposed project lane configurations and indicates whether the intersection will operate adversely based on the criteria defined in this report and thus require improvements.

As shown in column (1) of *Table 5*, the two (2) out of the four (4) roadway segments currently operate adversely on a daily basis. Harbor Boulevard, between Brea

Boulevard/Valley View Drive and E. Valley View Drive (Segment C) and Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue (Segment D) currently operate at LOS E and LOS F, respectively. The remaining roadway segments currently operate at an acceptable service level (LOS D or better) on a daily basis.

As shown in column (2) of *Table 5*, Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive (Segment C) and Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue (Segment D) are forecast to operate adversely with the addition of the proposed Project. However, the proposed Project will maintain the existing lane geometrics along these roadway segments and thus the adverse service levels are not caused or worsened by the Project. The remaining two (2) roadway segments will continue to operate at an acceptable service level (LOS D or better) on a daily basis with the addition of the proposed Project. As such, it can be concluded that the proposed Project will not have a negative effect on existing traffic conditions.

YEAR 2045 BUILDOUT CONDITIONS TRAFFIC ANALYSIS

Year 2045 Buildout Traffic Conditions Intersection Capacity Analysis

Table 6 summarizes the peak hour level of service results at the six (6) study intersections for Year 2045 buildout Plus Project traffic conditions. The first column (1) of HCM/LOS values presents a summary of Year 2045 buildout AM and PM peak hour traffic conditions utilizing the existing lane configurations. The second column (2) lists Year 2045 buildout plus project traffic conditions utilizing the proposed project lane configurations. The third column (3) indicates whether the Project will exceed the LOS thresholds defined in this report and thus require additional improvements.

As shown in column (1) of *Table 6*, the intersection of Harbor Boulevard at Bastanchury Road (Intersection No. 1) is forecast to operate adversely during the AM and PM peak hours under Year 2045 Buildout traffic conditions. The remaining four (4) existing study intersections are forecast to operate at an acceptable service level (LOS D or better) during the AM and PM peak hours.

As shown in column (2) of *Table 6*, the intersection of Harbor Boulevard at Bastanchury Road (Intersection No. 1) will continue to operate adversely during the AM and PM peak hours with the addition of the proposed Project. Although the study intersection is forecast to operate adversely, the implementation of the Project does

not affect the forecast LOS E conditions. As such, it can be concluded that the proposed Project will not have a negative effect on future traffic conditions. *Appendix B* presents the HCM/LOS calculations for the study intersections.

Year 2045 Buildout Traffic Conditions Roadway Segment Analysis

Table 7 summarizes the roadway segment level of service results at the four (4) roadway segments for Year 2045 buildout Plus Project traffic conditions. The first column (1) presents a summary of Year 2045 Buildout daily traffic conditions utilizing the existing lane configurations. The second column (2) lists Year 2045 buildout plus project traffic conditions utilizing the proposed project lane configurations and indicates whether the intersection will operate adversely based on the criteria defined in this report and thus require additional improvements.

As shown in column (1) of *Table 7*, two (2) out of the four (4) roadway segments are forecast to operate adversely on a daily basis. Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive (Segment C) and Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue (Segment D) are forecast to operate at LOS F. The remaining roadway segments are forecast to operate at an acceptable service level (LOS D or better) on a daily basis under Year 2045 Buildout traffic conditions and assuming a six-lane arterial is maintained.

As shown in column (2) of *Table 7*, Harbor Boulevard between Bastanchury Road and Valencia Mesa Drive (Segment A), Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive (Segment C) and Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue (Segment D) are forecast to operate adversely with the addition of the proposed Project, whereas the segment between Valencia Mesa Drive and Brea Boulevard/Valley Drive (Segment D) is forecast to operate at LOS D with the conversion to a four-lane arterial.

The proposed Project will maintain the existing lane geometrics along Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive (Segment C) and Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue (Segment D) and thus the adverse service levels are not caused or worsened by the Project.

To determine if the proposed Project will result in a deficiency for Harbor Boulevard between Bastanchury Road and Valencia Mesa Drive (Segment A), the roadway segment was further analyzed under peak hour conditions, as presented in ***Table 8***. Review of *Table 8* indicates that Segment A is forecast to operate at an acceptable

level of service during the AM and PM peak hours. As such, it can be concluded that the proposed Project will not have a negative effect on future traffic conditions.

INTERSECTION QUEUING EVALUATION

To validate the adequacy of the existing stacking/storage lengths along Harbor Boulevard with the addition of the proposed Project, a Synchro queuing evaluation was prepared for the northbound and southbound left-turn and right-turn pockets at the six (6) study intersections. The queuing evaluation was conducted for Existing Plus Project and Year 2045 Buildout Plus Project traffic conditions utilizing the Synchro 11.0 SimTraffic 95th percentile delay methodology. It should be noted that vehicular queues from Synchro 11.0 SimTraffic are computed based on the average queues of the microsimulation model, and therefore, each simulation is unique.

Existing Traffic Conditions

Table 9 presents the lane queuing analyses results for the six (6) signalized study intersections for existing traffic conditions. The first column (1) presents the lane queuing results for Existing traffic conditions. The second column (2) presents the results for Existing Plus Project traffic conditions.

Review of column (1) of *Table 9* indicates that the five (5) existing study intersections have queues which exceed the existing storage capacity for one or more intersection approaches under existing traffic conditions.

Review of column (2) of *Table 9* indicates that six (6) study intersections have queues which exceed the existing storage capacity for one or more intersection approaches with the addition of the proposed Project. However, with the exception of the southbound right-turn at Harbor Boulevard and Brea Boulevard/Valley View Drive (Intersection No. 3) and the northbound left-turn at Harbor Boulevard and Berkeley Avenue (Intersection No 6), the approaches which provide insufficient storage are the same as those identified under existing without project traffic conditions. As such, it can be concluded that the effect of the proposed Project on the existing roadway network is considered minimal when taking into consideration the already deficient storage under existing traffic conditions. It should be noted that the spillover queue for the southbound right-turn at Harbor Boulevard and Brea Boulevard/Valley View Drive (Intersection No. 3) can be accommodated within the transition area of the turn pocket. Similarly, the spillover queue for the northbound left-turn at Harbor Boulevard and Berkeley Avenue (Intersection No. 6) can be accommodated within

the upstream two-way left-turn lane. ***Appendix C*** presents the Synchro 11.0 SimTraffic worksheets for the study intersections.

Year 2045 Buildout Traffic Conditions

Table 10 presents the lane queuing analyses results for the six (6) signalized study intersections for Year 2045 Buildout traffic conditions. The first column (1) presents the lane queuing results for Year 2045 Buildout traffic conditions. The second column (2) presents the results for Year 2045 Buildout Plus Project traffic conditions.

Review of column (1) *Table 10* indicates that the five (5) existing study intersections have queues which exceed the existing storage capacity for one or more intersection approaches under Year 2045 Buildout traffic conditions.

Review of column (2) of *Table 10* indicates that six (6) study intersections have queues which exceed the existing storage capacity for one or more intersection approaches with the addition of the proposed Project. However, with the exception of the southbound right-turn at Harbor Boulevard and Brea Boulevard/Valley View Drive (Intersection No. 3), the approaches which provide insufficient storage are the same as those identified under Year 2045 Buildout without project traffic conditions. As such, it can be concluded that the effect of the proposed Project on the future roadway network is considered minimal when taking into consideration the already deficient storage under Year 2045 buildout traffic conditions. It should be noted that the spillover queue for the southbound right-turn at Harbor Boulevard and Brea Boulevard/Valley View Drive (Intersection No. 3) can be accommodated within the transition area of the turn pocket. *Appendix C* presents the Synchro 11.0 SimTraffic worksheets for the study intersections.

CONCLUSIONS

Based on the above, the proposed “Complete Streets” Project is not expected to negatively affect existing or future traffic conditions along Harbor Boulevard. Based on the City of Fullerton’s level of service standards and threshold criteria, the weekday peak hour and daily service levels are considered adequate with the implementation of the proposed Project.

Although some queues at the six (6) study intersections are considered deficient, the implementation of the proposed Project will ensure bicycle and pedestrian connectivity along the corridor and will allow for a more balanced, multimodal

transportation network that meets the needs of all users of streets, roads, and highways, including motorists, pedestrians, and bicyclists. In addition, the proposed Project would generally provide continuity to Harbor Boulevard, which already is generally a four lane roadway south of Valley View Drive/Brea Boulevard. An added benefit of the proposed lane drop is that it helps to improve OCTA bus services since the bus will no longer be required to stop in a through lane and block traffic. It should be noted that some cities are adopting more flexible policies to solve traffic problems. For example, some communities have started accepting a lower (worse) automobile level of service standard in their downtowns and in urban neighborhoods or along transit corridors. By doing so, these cities are increasing capacity for other modes like transit and/or bikes. Therefore, opportunities and constraints both exist and should be thoroughly considered prior to approval of the "Complete Streets".

As such, LLG has concluded that the peak hour and daily traffic volumes (current and projected) on Harbor Boulevard do not warrant its current classification of Major Arterial Highway. The City's proposed reclassification of Harbor Boulevard, between Valencia Mesa Drive and Brea Boulevard/Valley View Drive, from a Major Arterial Highway to a Primary Arterial Highway, to install a new protected bike lane, with the provision of a new continuous sidewalk system, would appear feasible with the removal of one northbound through lane and one southbound through lane. It is also recommended to reclassify Harbor Boulevard, between Brea Boulevard/Valley View Drive and Berkeley Avenue, from a Major Arterial Highway to a Primary Arterial Highway for consistent MPAH classification. However, it should be noted that the proposed Project will maintain the existing lane geometrics along Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive, which currently has two through lanes in the southbound direction and three through lanes in the northbound direction with the third lane functioning primarily as a dedicated right turn for direct access to Brea Boulevard.

Therefore, it is recommended that the City of Fullerton formally request approval from Orange County Transportation Authority (OCTA) of the following classification for Harbor Boulevard:

Street	Limits	Existing Classification	Proposed Classification
Harbor Boulevard	Valencia Mesa Drive to Berkeley Avenue	Major Arterial	Primary Arterial

* * * * * * * * * * *

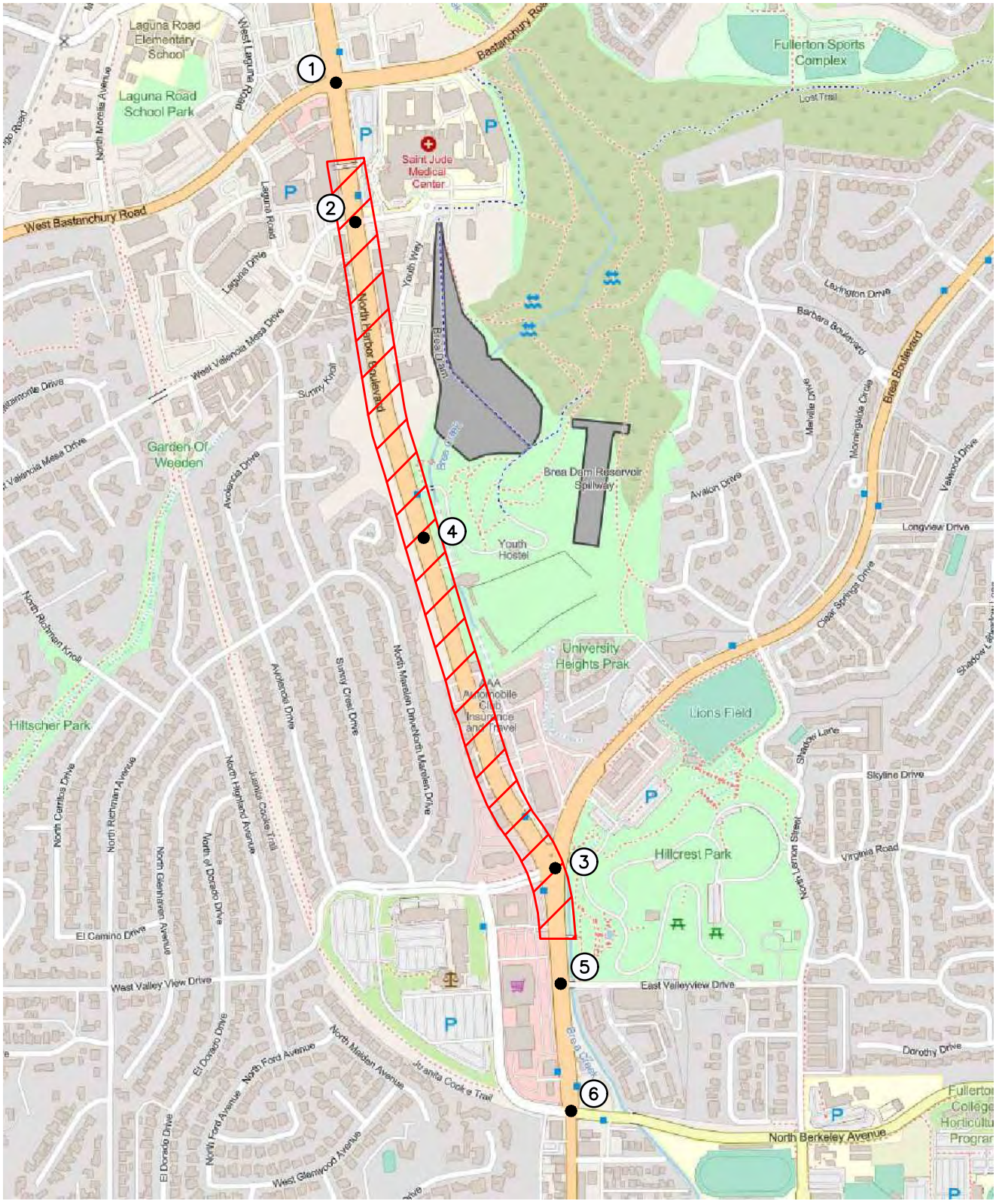
We appreciate the opportunity to work on this project. If you have any questions regarding this letter, please do not hesitate to call me at (949) 825-6175.

Sincerely,
Linscott, Law & Greenspan, Engineers

Richard E. Barretto, P.E.
Principal

cc: Shane S. Green, P.E., Senior Transportation Engineer

Attachments



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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT LIMITS

FIGURE 1

VICINITY MAP

HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

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LINSCOTT LAW & GREENSPAN engineers

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NO SCALE

KEY

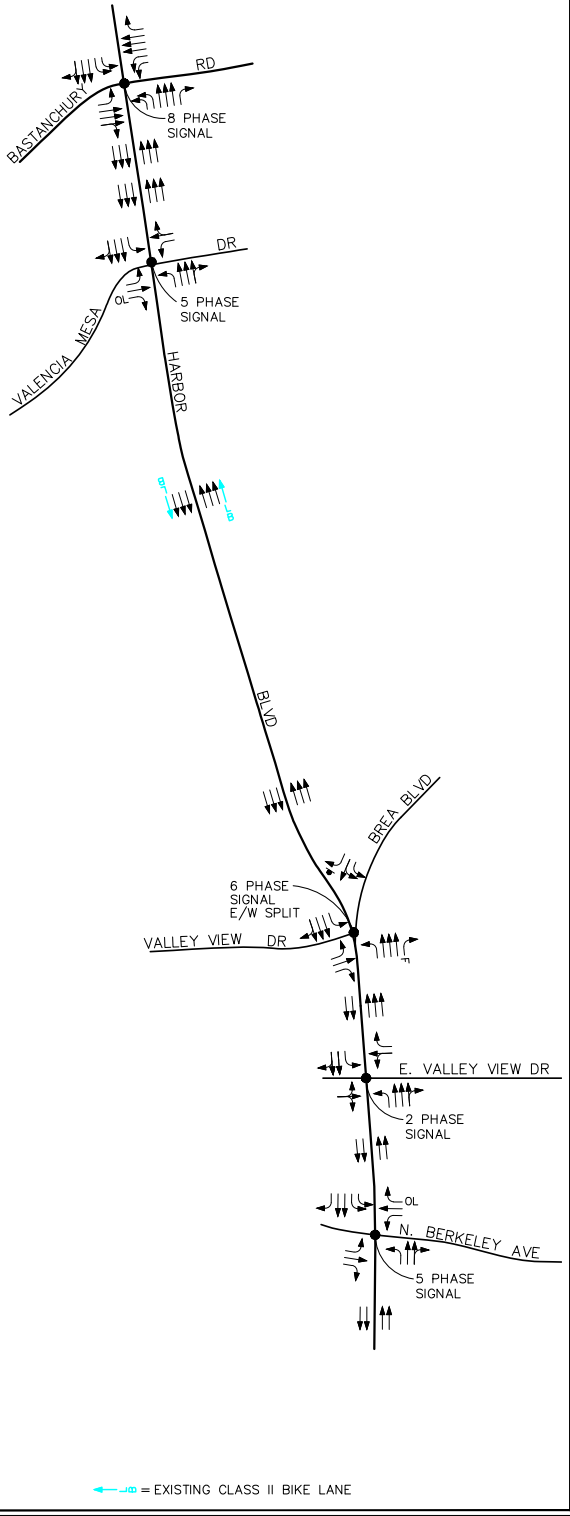
= PROJECT LIMITS

FIGURE 2

EXISTING SITE AERIAL

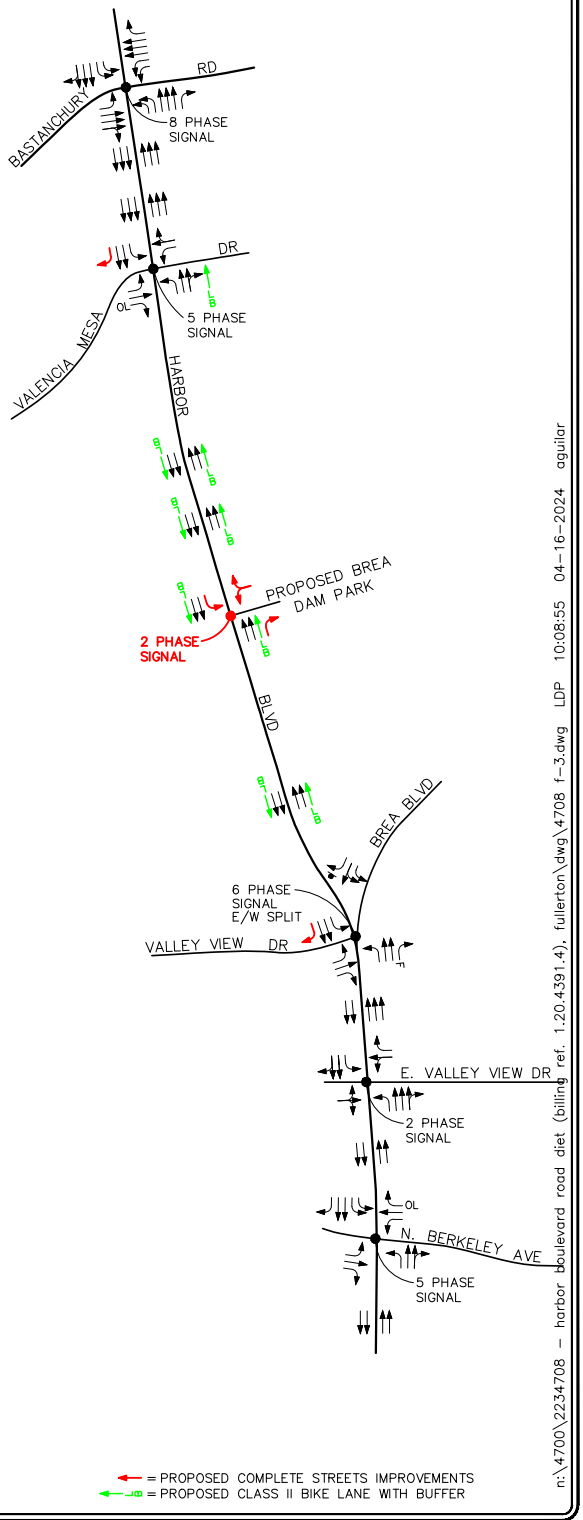
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

EXISTING/YEAR 2045 LANES



= EXISTING CLASS II BIKE LANE

PROPOSED "COMPLETE STREETS" PROJECT LANES



= PROPOSED COMPLETE STREETS IMPROVEMENTS
= PROPOSED CLASS II BIKE LANE WITH BUFFER

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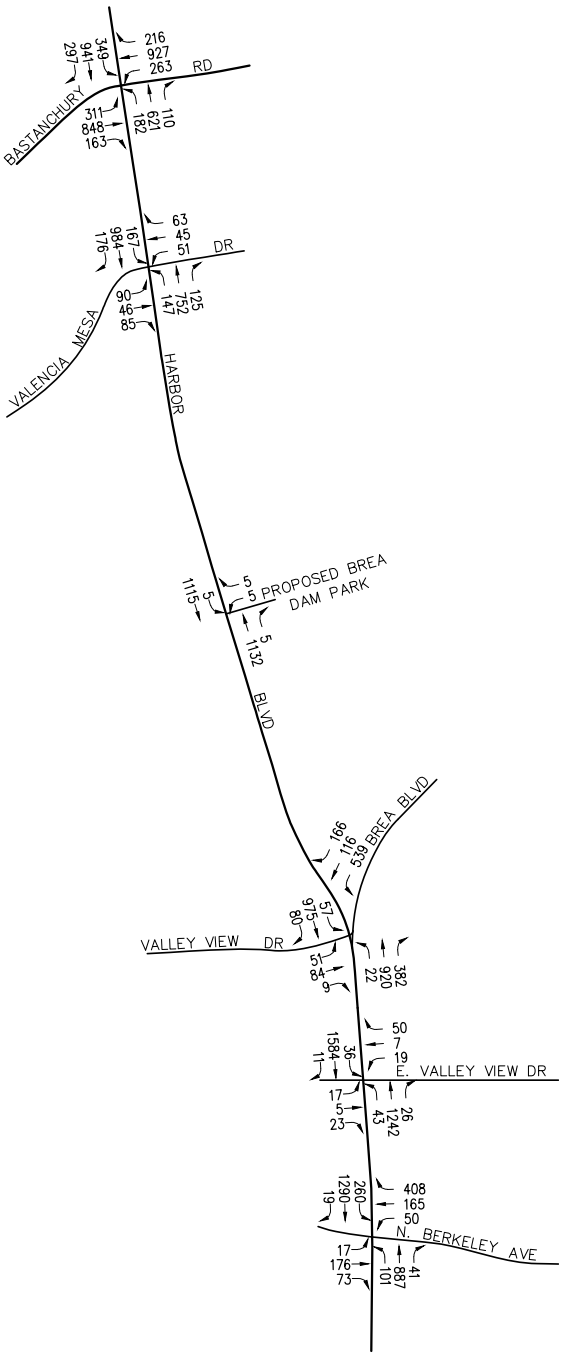
LLG

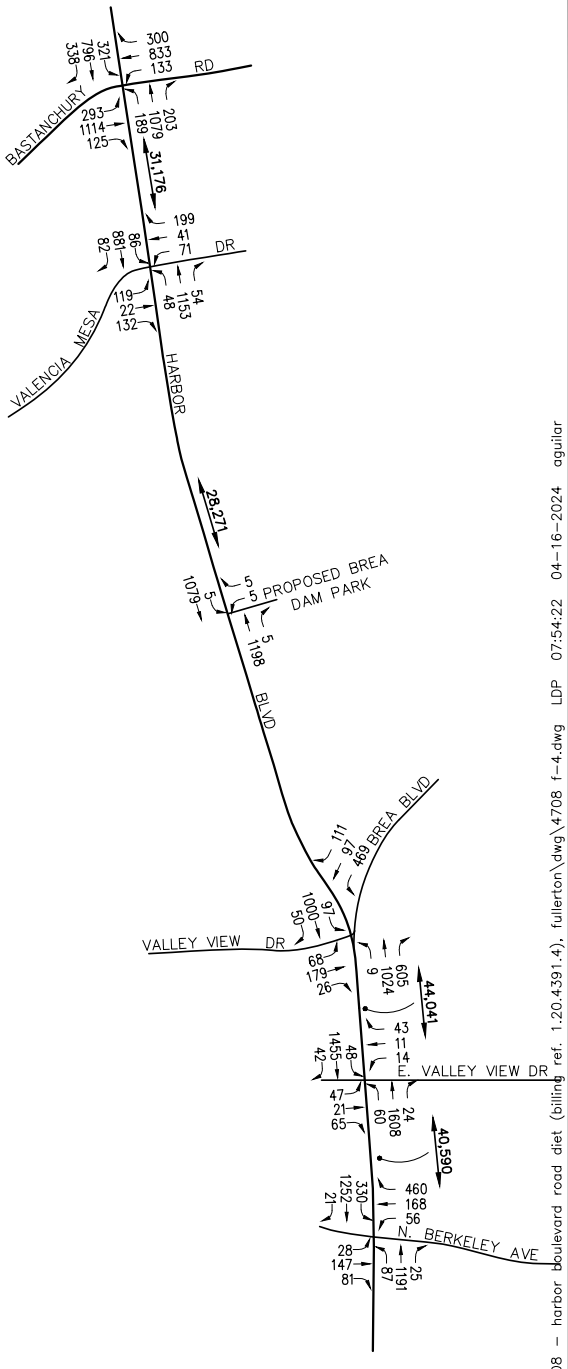
N NO SCALE

FIGURE 3

HARBOR BOULEVARD EXISTING VS COMPLETE STREETS LANE GEOMETRICS

HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON





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KEY
XX,XXX = DAILY TRAFFIC VOLUMES

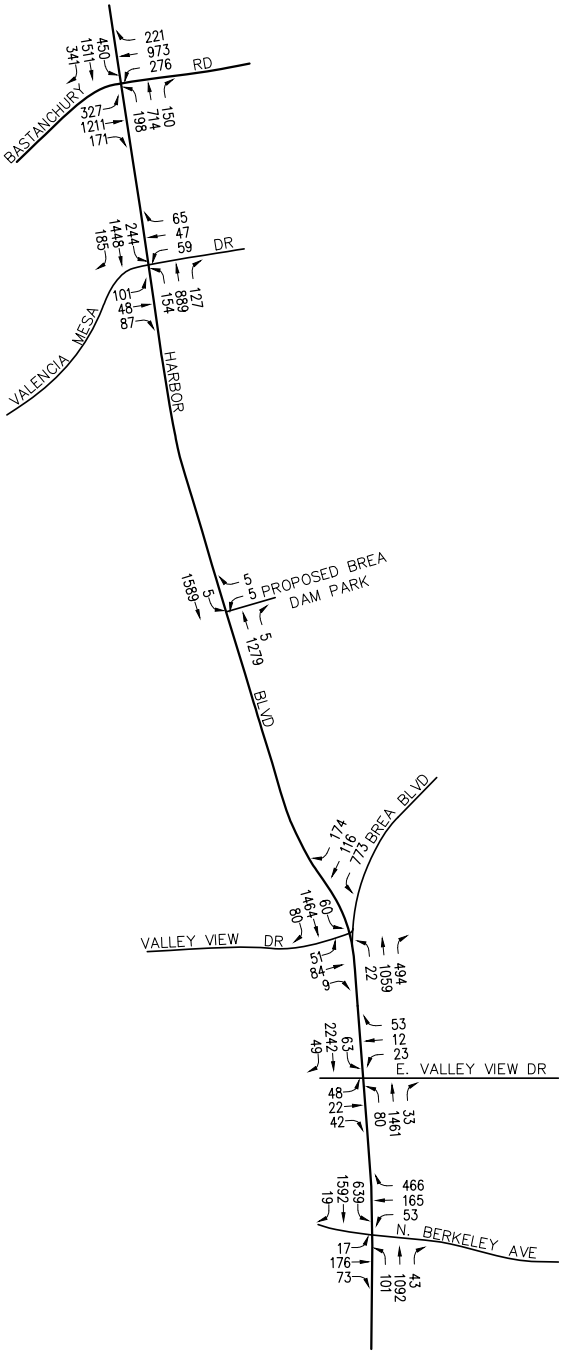
N NO SCALE

FIGURE 4

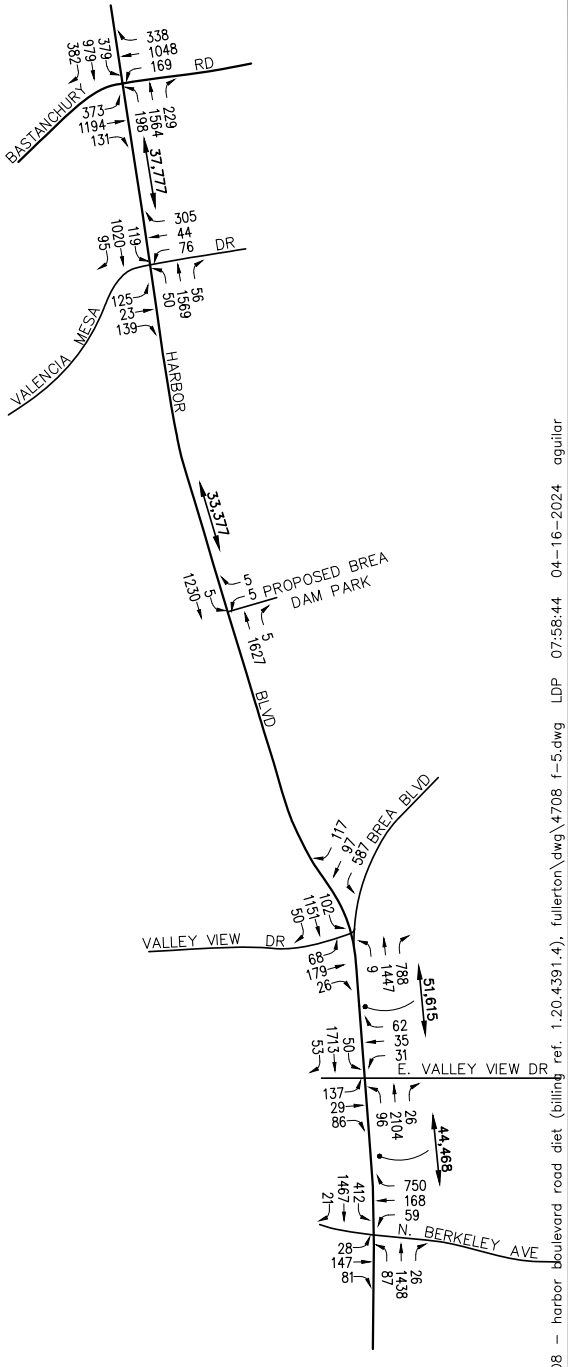
EXISTING TRAFFIC VOLUMES

HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

AM PEAK HOUR



PM PEAK HOUR AND
DAILY TRAFFIC VOLUMES



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NO SCALE

FIGURE 5

YEAR 2045 BUILDOUT TRAFFIC VOLUMES

HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

TABLE 1

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (HCM)[1]

HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Level of Service (LOS)	Control Delay Per Vehicle (seconds/vehicle)	Level of Service Description
A	≤ 10.0	This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	> 10.0 and ≤ 20.0	This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.
C	> 20.0 and ≤ 35.0	Average traffic delays. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
D	> 35.0 and ≤ 55.0	Long traffic delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	> 55.0 and ≤ 80.0	Very long traffic delays. This level is considered by many agencies (i.e. SANBAG) to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent occurrences.
F	≥ 80.0	Severe congestion. This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

[1] Source: *Highway Capacity Manual* (Signalized Intersections).

TABLE 2
LEVEL OF SERVICE CRITERIA FOR ROADWAY SEGMENTS (V/C METHODOLOGY)[2]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Level of Service (LOS)	Volume to Capacity Ratio (V/C)	Level of Service Description
A	≤ 0.600	**EXCELLENT**. Describes primarily free flow operations at average travel speeds, usually about 90% of the free flow speed for the arterial class. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream. Stopped delay at signalized intersections is minimal.
B	0.601 – 0.700	**VERY GOOD**. Represents reasonably unimpeded operations at average travel speeds, usually about 70% of the free flow speed for the arterial class. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome. Drivers are not generally subjected to appreciable tension.
C	0.701 – 0.800	**GOOD**. Represents stable conditions; however, ability to maneuver and change lanes in mid-block location may be more restricted than in LOS B, and longer queues and/or adverse signal coordination may contribute to lower average travel speeds of about 50% of the average free flow speed for the arterial class. Motorists will experience appreciable tension while driving.
D	0.801 – 0.900	**FAIR**. Borders on a range in which small increases in flow may cause substantial increases in approach delay and, hence, decreases in arterial speed. This may be due to adverse signal progression, inappropriate signal timing, high volumes, or some combination of these. Average travel speeds are about 40% of free flow speed.
E	0.901 – 1.000	**POOR**. Characterized by significant approach delays and average travel speeds of one-third the free flow speed or lower. Such operations are caused by some combination of adverse progression, high signal density, extensive queuing at critical intersections, and inappropriate signal timing.
F	> 1.000	**FAILURE**. Characterizes arterial flow at extremely low speeds below one-third to one-quarter of the free flow speed. Intersection congestion is likely at critical signalized locations, with resultant high approach delays. Adverse progression is frequently a contributor to this condition.

[2] Source: *Transportation Research Board 2000.*

TABLE 3
LEVEL OF SERVICE CRITERIA FOR ROADWAY SEGMENTS (V/C METHODOLOGY)[3]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Facility Type	Number of Lanes	Level of Service Criteria With Associated Roadway Capacity					
		Daily Values (VPD)					
		Level of Service (LOS)					
		A	B	C	D	E	F
Principal	8-lanes divided	45,000	52,500	60,000	67,500	75,000	--
Smart Street[4]	6-lanes divided	36,300	42,200	48,200	54,200	60,200	--
Major	6-lanes divided	33,900	39,400	45,000	50,600	56,300	--
Primary	4-lanes divided	22,500	26,300	30,000	33,800	37,500	--
Secondary	4-lanes undivided	15,000	17,500	20,000	22,500	25,000	--
Commuter	2-lanes undivided	7,500	8,800	10,000	11,300	12,500	--
V/C Ratio		≤ 0.600	0.601-0.700	0.701-0.800	0.801-0.900	0.901-1.000	≥ 1.01

Notes:

- VPD = vehicles per day

[3] Source: *Transportation Research Board 2000.*

[4] The capacity of a Smart Street is seven percent higher than the capacity of a major arterial, due to traffic flow operation enhancements that are associated with the Smart Street facility designation.

TABLE 4

EXISTING PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Study Intersection		Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Exceeds LOS Thresholds (2) – (1)	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Increase	Yes/No
1.	Harbor Boulevard at	AM	50.9	D	51.8	D	0.9	No
	Bastanchury Road	PM	44.1	D	48.9	D	4.8	No
2.	Harbor Boulevard at	AM	20.9	C	27.6	C	6.7	No
	Valencia Mesa Drive	PM	23.3	C	29.6	C	6.3	No
3.	Harbor Boulevard at	AM	35.3	D	35.7	D	0.4	No
	Brea Boulevard/Valley View Drive	PM	38.1	D	40.1	D	2.0	No
4.	Harbor Boulevard at	AM	--	--	1.5	A	--	No
	Proposed Brea Dam Park	PM	--	--	1.5	A	--	No
5.	Harbor Boulevard at	AM	5.1	A	5.1	A	0.0	No
	E. Valley View Drive	PM	7.5	A	7.5	A	0.0	No
6.	Harbor Boulevard at	AM	28.1	C	28.2	C	0.1	No
	Berkeley Avenue	PM	31.5	C	31.5	C	0.0	No

Notes:

- s/v = seconds per vehicle (delay)
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

TABLE 5

EXISTING DAILY ROADWAY SEGMENT ANALYSIS SUMMARY
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Roadway Segment	(1) Existing Traffic Conditions					(2) Existing Plus Project Traffic Conditions					
	No. of Lanes	LOS "E" Capacity (VPD)[5]	Daily Volume	V/C Ratio	LOS	No. of Lanes	LOS "E" Capacity (VPD)	Daily Volume	V/C Ratio	LOS	Adverse (Yes/No)
A. Harbor Boulevard, between Bastanchury Road and Valencia Mesa Drive	6D	56,300	31,176	0.554	A	4D	37,500	31,176	0.831	D	No
B. Harbor Boulevard, between Valencia Mesa Drive and Brea Boulevard/Valley View Drive	6D	56,300	28,271	0.502	A	4D	37,500	28,271	0.754	C	No
C. Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive	5D	46,900	44,041	**0.939**	**E**	5D	46,900	44,041	**0.939**	**E**	No[6]
D. Harbor Boulevard, between E. Valley View Drive and Berkeley Avenue	4D	37,500	40,590	**1.082**	**F**	4D	37,500	40,590	**1.082**	**F**	No[6]

Notes:

- D = Divided; U = Undivided; VPD = Vehicles per day; V/C = Volume over capacity
- **Bold LOS values** indicate adverse service levels

5 Source: *Guidance for Administration of the Orange County Master Plan of Arterial Highways, dated November 1995 and Amended April 1998.*

6 The roadway segment is forecast to operate at deficient levels of service both with and without the proposed Project. The proposed Project will maintain the existing lane geometrics along the roadway segment and thus the adverse service levels are not caused by the Project.

TABLE 6

YEAR 2045 BUILDOUT PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Study Intersection		Time Period	(1) Year 2045 Buildout Traffic Conditions		(2) Year 2045 Buildout Plus Project Traffic Conditions		(3) Exceeds LOS Thresholds (2) – (1)	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Increase	Yes/No
1.	Harbor Boulevard at Bastanchury Road	AM	**67.4**	**E**	**69.8**	**E**	2.4	No
		PM	**56.9**	**E**	**60.8**	**E**	3.9	No
2.	Harbor Boulevard at Valencia Mesa Drive	AM	21.2	C	34.1	C	12.9	No
		PM	26.1	C	37.1	D	11.0	No
3.	Harbor Boulevard at Brea Boulevard/Valley View Drive	AM	37.0	D	42.7	D	5.7	No
		PM	38.3	D	43.7	D	5.4	No
4.	Harbor Boulevard at Proposed Brea Dam Park	AM	--	--	1.7	A	--	No
		PM	--	--	1.7	A	--	No
5.	Harbor Boulevard at E. Valley View Drive	AM	9.4	A	9.4	A	0.0	No
		PM	14.2	B	14.2	B	0.0	No
6.	Harbor Boulevard at Berkeley Avenue	AM	31.8	C	31.8	C	0.0	No
		PM	47.0	D	47.0	D	0.0	No

Notes:

- s/v = seconds per vehicle (delay)
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

TABLE 7

YEAR 2045 BUILDOUT DAILY ROADWAY SEGMENT ANALYSIS SUMMARY
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Roadway Segment	(1) Year 2045 Buildout Traffic Conditions					(2) Year 2045 Buildout Plus Project Traffic Conditions					
	No. of Lanes	LOS "E" Capacity (VPD)[7]	Daily Volume	V/C Ratio	LOS	No. of Lanes	LOS "E" Capacity (VPD)	Daily Volume	V/C Ratio	LOS	Adverse (Yes/No)
A. Harbor Boulevard, between Bastanchury Road and Valencia Mesa Drive	6D	56,300	37,777	0.671	B	4D	37,500	37,777	**1.007**	**F**	**Yes**
B. Harbor Boulevard, between Valencia Mesa Drive and Brea Boulevard/Valley View Drive	6D	56,300	33,377	0.593	A	4D	37,500	33,377	0.890	D	No
C. Harbor Boulevard, between Brea Boulevard/Valley View Drive and E. Valley View Drive	5D	46,900	51,615	**1.101**	**F**	5D	46,900	51,615	**1.101**	**F**	No[8]
D. Harbor Boulevard, between and E. Valley View Drive and Berkeley Avenue	4D	37,500	55,468	**1.186**	**F**	4D	37,500	55,468	**1.186**	**F**	No[8]

Notes:

- D = Divided; U = Undivided; VPD = Vehicles per day; V/C = Volume over capacity
- **Bold LOS values** indicate adverse service levels

[7] Source: *Guidance for Administration of the Orange County Master Plan of Arterial Highways, dated November 1995 and Amended April 1998.*

[8] The roadway segment is forecast to operate at deficient levels of service both with and without the proposed Project. The proposed Project will maintain the existing lane geometrics along the roadway segment and thus the adverse service levels are not caused by the Project.

TABLE 8

YEAR 2045 BUILDOUT PLUS PROJECT PEAK HOUR ROADWAY SEGMENTS ANALYSIS SUMMARY
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Roadway Segment	Approach	Time Period	Link Capacity (VPHPL)	(1) Year 2045 Buildout Plus Project Traffic Conditions					
				Lanes	Total Link Capacity (VPH)	Peak Hour Volume	V/C Ratio	LOS	Adverse (Yes/No)
A. Harbor Boulevard, between Bastanchury Road and Valencia Mesa Drive	Northbound	AM	1,600	2	3,200	1,284	0.401	A	No
		PM	1,600	2	3,200	1,604	0.501	A	No
	Southbound	AM	1,600	2	3,200	1,632	0.510	A	No
		PM	1,600	2	3,200	1,303	0.407	A	No

Notes:

- VPHPL = Vehicles Per Hour Per Lane
- VPH = Vehicles Per Hour
- V/C = Volume to Capacity Ratio

TABLE 9

EXISTING PEAK HOUR INTERSECTION QUEUING ANALYSIS[9]

HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Key Intersection	Storage Provided (feet)	(1) Existing Traffic Conditions				(2) Existing Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)
1. Harbor Boulevard at Bastanchury Road									
Northbound Left-Turn	460[10]	244	Yes	267	Yes	277	Yes	330	Yes
Northbound Right-Turn	150	68	Yes	**213**	**No**	80	Yes	**264**	**No**
Southbound Left-Turn	550[11]	**617**	**No**	**702**	**No**	**690**	**No**	**633**	**No**
2. Harbor Boulevard at Valencia Mesa Drive									
Northbound Left-Turn	175 / 185[12]	**192**	**No**	84	Yes	**198**	**No**	139	Yes
Southbound Left-Turn	230	212	Yes	125	Yes	214	Yes	143	Yes
Southbound Right-Turn[13]	705	--	--	--	--	55	Yes	40	Yes

9 Queues are based on Synchro 11.0 SimTraffic 95th Percentile methodology.

10 Movement consists of dual left-turn lanes. Both lanes provide approximately 230' of storage. The storage reported is the total of both lanes.

11 Movement consists of dual left-turn lanes. The first lane provides approximately 140' of storage and the second lane provides approximately 410' of storage. The storage reported is the total of both lanes.

12 Restriping the northbound left-turn from 175-feet to 185-feet is proposed as part of the Project.

13 Restriping the southbound through/right-turn lane into a southbound right-turn pocket is proposed as part of the Project.

TABLE 9 (CONTINUED)
EXISTING PEAK HOUR INTERSECTION QUEUING ANALYSIS[14]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Key Intersection	Storage Provided (feet)	(1) Existing Traffic Conditions				(2) Existing Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)
3. Harbor Boulevard at Brea Boulevard/Valley View Drive									
Northbound Left-Turn	95	35	Yes	32	Yes	34	Yes	33	Yes
Southbound Left-Turn	150 / 140[15]	108	Yes	**156**	**No**	119	Yes	**196**	**No**
Southbound Right-Turn[16]	140	--	--	--	--	**164**	**No**	**190**	**No**
4. Harbor Boulevard at Proposed Brea Dam Park									
Northbound Right-Turn	200	--	--	--	--	25	Yes	25	Yes
Southbound Left-Turn	250	--	--	--	--	25	Yes	25	Yes

14 Queues are based on Synchro 11.0 SimTraffic 95th Percentile methodology.

15 Restriping the southbound left-turn from 150-feet to 140-feet is proposed as part of the Project.

16 Restriping the southbound through/right-turn lane into a southbound right-turn pocket is proposed as part of the Project.

TABLE 9 (CONTINUED)
EXISTING PEAK HOUR INTERSECTION QUEUING ANALYSIS[17]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Key Intersection	Storage Provided (feet)	(1) Existing Traffic Conditions				(2) Existing Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)
5. Harbor Boulevard at E. Valley View Drive									
Northbound Left-Turn	95	59	Yes	70	Yes	52	Yes	72	Yes
Southbound Left-Turn	100	76	Yes	75	Yes	69	Yes	62	Yes
6. Harbor Boulevard at Berkeley Avenue									
Northbound Left-Turn	205	173	Yes	204	Yes	172	Yes	**219**	**No**
Southbound Left-Turn	600[18]	279	Yes	315	Yes	290	Yes	297	Yes
Southbound Right-Turn	165	54	Yes	25	Yes	69	Yes	25	Yes

[17] Queues are based on Synchro 11.0 SimTraffic 95th Percentile methodology.

[18] Movement consists of dual left-turn lanes. Both lanes provide approximately 300' of storage. The storage reported is the total of both lanes.

TABLE 10

YEAR 2045 BUILDOUT PEAK HOUR INTERSECTION QUEUING ANALYSIS[19]

HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Key Intersection	Storage Provided (feet)	(1) Year 2045 Buildout Traffic Conditions				(2) Year 2045 Buildout Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)
1. Harbor Boulevard at Bastanchury Road									
Northbound Left-Turn	460[20]	302	Yes	**476**	**No**	424	Yes	**498**	**No**
Northbound Right-Turn	150	109	Yes	**278**	**No**	130	Yes	**274**	**No**
Southbound Left-Turn	550[21]	**729**	**No**	**730**	**No**	**703**	**No**	**723**	**No**
2. Harbor Boulevard at Valencia Mesa Drive									
Northbound Left-Turn	175 / 185[22]	**177**	**No**	**191**	**No**	**278**	**No**	**278**	**No**
Southbound Left-Turn	230	**260**	**No**	146	Yes	**247**	**No**	155	Yes
Southbound Right-Turn[23]	705	--	--	--	--	55	Yes	28	Yes

19 Queues are based on Synchro 11.0 SimTraffic 95th Percentile methodology.

20 Movement consists of dual left-turn lanes. Both lanes provide approximately 230' of storage. The storage reported is the total of both lanes.

21 Movement consists of dual left-turn lanes. The first lane provides approximately 140' of storage and the second lane provides approximately 410' of storage. The storage reported is the total of both lanes.

22 Restriping the northbound left-turn from 175-feet to 185-feet is proposed as part of the Project.

23 Restriping the southbound through/right-turn lane into a southbound right-turn pocket is proposed as part of the Project.

TABLE 10 (CONTINUED)
YEAR 2045 BUILDOUT PEAK HOUR INTERSECTION QUEUING ANALYSIS[24]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Key Intersection	Storage Provided (feet)	(1) Year 2045 Buildout Traffic Conditions				(2) Year 2045 Buildout Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)
3. Harbor Boulevard at Brea Boulevard/Valley View Drive									
Northbound Left-Turn	95	25	Yes	50	Yes	48	Yes	57	Yes
Southbound Left-Turn	150 / 140[25]	**157**	**No**	**163**	**No**	**165**	**No**	**196**	**No**
Southbound Right-Turn[26]	140	--	--	--	--	**180**	**No**	128	Yes
4. Harbor Boulevard at Proposed Brea Dam Park									
Northbound Right-Turn	200	--	--	--	--	25	Yes	25	Yes
Southbound Left-Turn	250	--	--	--	--	33	Yes	25	Yes

24 Queues are based on Synchro 11.0 SimTraffic 95th Percentile methodology.

25 Restriping the southbound left-turn from 150-feet to 140-feet is proposed as part of the Project.

26 Restriping the southbound through/right-turn lane into a southbound right-turn pocket is proposed as part of the Project.

TABLE 10 (CONTINUED)
YEAR 2045 BUILDOUT PEAK HOUR INTERSECTION QUEUING ANALYSIS[27]
HARBOR BOULEVARD COMPLETE STREETS IMPROVEMENT PROJECT, FULLERTON

Key Intersection	Storage Provided (feet)	(1) Year 2045 Buildout Traffic Conditions				(2) Year 2045 Buildout Plus Project Traffic Conditions			
		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
		Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)	Max. Queue/ Min. Storage Required (feet)	Adequate Storage (Yes/No)
5. Harbor Boulevard at E. Valley View Drive									
Northbound Left-Turn	95	**144**	**No**	**130**	**No**	**131**	**No**	**125**	**No**
Southbound Left-Turn	100	75	Yes	96	Yes	65	Yes	84	Yes
6. Harbor Boulevard at Berkeley Avenue									
Northbound Left-Turn	205	**242**	**No**	**286**	**No**	**246**	**No**	**300**	**No**
Southbound Left-Turn	600[28]	449	Yes	336	Yes	472	Yes	357	Yes
Southbound Right-Turn	165	76	Yes	37	Yes	63	Yes	49	Yes

[27] Queues are based on Synchro 11.0 SimTraffic 95th Percentile methodology.

[28] Movement consists of dual left-turn lanes. Both lanes provide approximately 300' of storage. The storage reported is the total of both lanes.

APPENDIX A

EXISTING TRAFFIC COUNT DATA

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVAR
E-W Direction: BASTANCHURY ROAD

File Name : H2305016
Site Code : 00000000
Start Date : 5/24/2023

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				BASTANCHURY ROAD Westbound				HARBOR BOULEVARD Northbound				BASTANCHURY ROAD Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
00:00	15	15	2	1	6	13	1	1	4	28	2	1	0	15	11	0	115
00:15	2	16	4	1	5	16	2	0	1	30	3	0	1	13	3	0	97
00:30	4	13	0	1	9	15	3	1	3	36	4	0	1	4	2	0	96
00:45	7	11	5	1	5	6	2	0	0	22	2	0	3	15	1	0	80
Total	28	55	11	4	25	50	8	2	8	116	11	1	5	47	17	0	388
01:00	10	15	1	1	2	2	2	2	3	21	3	0	0	8	3	0	73
01:15	1	15	1	1	2	7	2	1	0	14	0	0	2	4	3	0	53
01:30	6	6	1	1	2	2	3	0	2	12	0	0	1	2	4	0	42
01:45	0	12	1	0	3	1	1	1	1	14	0	0	1	2	1	0	38
Total	17	48	4	3	9	12	8	4	6	61	3	0	4	16	11	0	206
02:00	0	11	3	0	2	4	1	0	1	9	2	0	0	2	0	0	35
02:15	2	11	0	0	1	4	3	2	1	7	1	0	0	3	1	0	36
02:30	4	6	4	1	2	4	1	0	1	15	0	0	1	8	2	0	49
02:45	1	10	1	1	1	3	2	0	0	14	0	0	0	7	4	0	44
Total	7	38	8	2	6	15	7	2	3	45	3	0	1	20	7	0	164
03:00	1	12	0	0	3	3	1	0	1	14	0	0	1	2	2	0	40
03:15	2	11	2	0	0	6	1	0	0	19	0	0	1	4	9	0	55
03:30	1	21	4	0	4	3	1	0	2	29	0	0	0	6	5	0	76
03:45	4	23	6	0	2	7	1	1	1	23	0	0	1	11	7	0	87
Total	8	67	12	0	9	19	4	1	4	85	0	0	3	23	23	0	258
04:00	3	14	4	1	3	9	2	0	2	11	0	1	0	9	5	0	64
04:15	8	23	3	0	6	7	1	0	4	31	0	1	0	8	5	0	97
04:30	6	41	12	0	4	30	3	0	0	30	0	0	0	8	12	0	146
04:45	8	40	15	0	7	28	0	2	2	52	1	0	1	15	14	0	185
Total	25	118	34	1	20	74	6	2	8	124	1	2	1	40	36	0	492
05:00	12	35	11	1	6	20	5	0	8	31	4	0	0	8	16	0	157
05:15	19	92	18	1	11	22	6	3	7	53	2	0	3	25	15	0	277
05:30	26	88	15	4	12	51	10	4	5	74	4	1	2	34	24	0	354
05:45	35	87	34	1	23	54	12	3	29	82	6	0	1	45	31	0	443
Total	92	302	78	7	52	147	33	10	49	240	16	1	6	112	86	0	1231
06:00	26	83	39	4	25	57	13	4	14	57	6	0	6	44	25	0	403
06:15	36	122	49	3	16	70	14	2	21	66	4	0	6	61	26	0	496
06:30	39	167	66	3	31	79	31	2	19	77	10	1	8	93	33	0	659
06:45	43	222	74	7	43	148	35	2	36	96	12	1	20	119	63	0	921
Total	144	594	228	17	115	354	93	10	90	296	32	2	40	317	147	0	2479
07:00	40	255	94	4	36	155	33	7	19	104	15	1	31	171	41	0	1006
07:15	53	281	100	3	47	192	36	6	21	124	23	1	26	188	45	0	1146
07:30	74	165	87	6	57	243	41	4	25	164	31	1	36	219	42	0	1195
07:45	75	271	99	5	68	244	69	3	22	187	38	4	39	185	76	0	1385
Total	242	972	380	18	208	834	179	20	87	579	107	7	132	763	204	0	4732
08:00	92	259	71	6	47	240	73	8	33	133	53	1	41	195	72	0	1324
08:15	68	207	70	3	41	228	55	4	26	136	52	3	44	221	84	0	1242
08:30	62	204	89	6	60	215	47	4	29	165	29	2	39	247	79	0	1277
08:45	60	218	77	5	49	176	52	4	34	143	18	2	43	162	52	0	1095
Total	282	888	307	20	197	859	227	20	122	577	152	8	167	825	287	0	4938

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVAR
E-W Direction: BASTANCHURY ROAD

File Name : H2305016
Site Code : 00000000
Start Date : 5/24/2023
Page No : 2

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				BASTANCHURY ROAD Westbound				HARBOR BOULEVARD Northbound				BASTANCHURY ROAD Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
09:00	49	178	60	6	67	208	47	3	35	112	22	2	32	148	45	0	1014
09:15	39	145	65	5	52	156	64	4	33	116	26	0	38	145	52	0	940
09:30	49	132	64	5	56	161	44	9	44	122	37	1	37	130	60	0	951
09:45	44	158	50	5	48	160	46	5	27	128	30	0	46	150	54	0	951
Total	181	613	239	21	223	685	201	21	139	478	115	3	153	573	211	0	3856
10:00	58	136	56	4	62	155	54	4	40	110	30	1	46	134	63	0	953
10:15	53	152	61	4	75	134	42	5	32	125	31	3	31	135	54	0	937
10:30	53	157	62	3	48	164	49	4	45	135	31	1	35	133	65	0	985
10:45	38	151	44	3	74	148	69	5	39	128	27	0	33	166	64	0	989
Total	202	596	223	14	259	601	214	18	156	498	119	5	145	568	246	0	3864
11:00	57	157	49	4	70	152	44	8	47	152	28	2	20	141	57	0	988
11:15	58	152	69	8	50	153	31	6	36	135	27	1	48	160	80	0	1014
11:30	54	137	62	8	62	171	33	3	48	165	33	2	27	158	56	0	1019
11:45	47	132	55	5	39	138	25	5	58	166	35	1	34	145	56	0	941
Total	216	578	235	25	221	614	133	22	189	618	123	6	129	604	249	0	3962
12:00	54	138	56	6	58	143	41	7	48	165	47	0	48	168	59	0	1038
12:15	51	144	65	6	50	148	53	7	43	164	41	1	31	177	60	0	1041
12:30	41	135	63	7	74	135	45	3	45	165	44	0	30	164	59	0	1010
12:45	45	152	50	6	73	229	55	6	37	161	51	2	35	160	56	0	1118
Total	191	569	234	25	255	655	194	23	173	655	183	3	144	669	234	0	4207
13:00	53	140	72	8	64	163	40	12	28	149	39	0	52	200	71	0	1091
13:15	40	149	55	8	63	146	53	7	39	169	36	1	34	185	54	0	1039
13:30	63	168	54	5	65	190	40	8	42	168	45	5	26	193	53	0	1125
13:45	60	177	55	9	59	188	56	8	52	146	27	0	43	158	64	0	1102
Total	216	634	236	30	251	687	189	35	161	632	147	6	155	736	242	0	4357
14:00	81	183	67	9	71	183	48	8	38	155	41	0	41	192	60	0	1177
14:15	62	156	70	4	65	161	34	6	45	168	35	2	38	216	66	0	1128
14:30	75	210	68	7	72	179	43	1	50	175	38	2	31	212	64	0	1227
14:45	69	176	78	7	71	178	39	11	49	219	47	4	40	230	67	0	1285
Total	287	725	283	27	279	701	164	26	182	717	161	8	150	850	257	0	4817
15:00	62	191	97	9	66	201	43	10	46	188	40	1	39	196	69	0	1258
15:15	78	203	102	8	63	189	41	13	60	232	35	0	45	230	68	0	1367
15:30	75	205	83	7	86	183	45	13	56	242	50	3	45	252	63	0	1408
15:45	83	197	86	9	74	204	47	4	56	259	47	2	38	311	60	0	1477
Total	298	796	368	33	289	777	176	40	218	921	172	6	167	989	260	0	5510
16:00	84	214	82	3	79	222	25	11	53	240	47	2	36	288	61	0	1447
16:15	76	190	107	4	79	183	35	6	33	264	47	0	39	255	63	0	1381
16:30	82	220	75	12	81	181	24	3	63	269	38	4	33	264	68	0	1417
16:45	81	173	69	8	69	223	30	6	42	286	36	1	39	248	72	0	1383
Total	323	797	333	27	308	809	114	26	191	1059	168	7	147	1055	264	0	5628
17:00	94	194	75	3	71	189	27	8	61	267	60	1	24	292	75	0	1441
17:15	81	209	74	5	79	240	32	3	37	257	48	1	29	310	78	0	1483
17:30	92	200	63	3	68	201	12	7	51	220	48	0	25	231	58	0	1279
17:45	66	183	73	3	55	186	27	6	28	185	28	1	27	226	68	0	1162
Total	333	786	285	14	273	816	98	24	177	929	184	3	105	1059	279	0	5365
18:00	89	153	51	5	57	193	21	7	33	218	25	1	30	190	77	0	1150
18:15	74	141	49	3	59	161	32	8	30	196	30	0	20	166	56	0	1025

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVAR
E-W Direction: BASTANCHURY ROAD

File Name : H2305016
Site Code : 00000000
Start Date : 5/24/2023
Page No : 3

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				BASTANCHURY ROAD Westbound				HARBOR BOULEVARD Northbound				BASTANCHURY ROAD Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
18:30	41	145	61	8	66	163	28	15	33	224	37	2	14	170	49	0	1056
18:45	52	125	42	2	68	152	17	5	22	151	21	1	29	143	43	0	873
Total	256	564	203	18	250	669	98	35	118	789	113	4	93	669	225	0	4104
19:00	38	115	32	7	44	120	12	5	23	159	33	0	13	133	40	0	774
19:15	36	105	40	7	50	115	19	10	22	141	27	0	28	124	38	0	762
19:30	36	102	36	8	59	116	18	14	13	116	22	0	15	76	32	0	663
19:45	29	107	36	4	52	115	19	6	20	86	19	1	20	67	37	0	618
Total	139	429	144	26	205	466	68	35	78	502	101	1	76	400	147	0	2817
20:00	41	84	35	8	55	138	20	7	18	137	30	0	19	98	29	0	719
20:15	36	73	35	3	41	92	21	7	28	113	18	0	20	72	30	0	589
20:30	20	84	30	10	40	104	25	4	16	95	23	0	25	83	26	0	585
20:45	23	70	32	5	31	91	11	3	16	107	18	1	10	83	28	0	529
Total	120	311	132	26	167	425	77	21	78	452	89	1	74	336	113	0	2422
21:00	21	75	30	3	30	74	9	4	22	95	11	2	5	68	29	0	478
21:15	21	65	22	0	25	69	17	4	10	90	16	0	10	66	28	0	443
21:30	18	74	14	4	25	57	13	3	8	79	14	0	7	63	21	0	400
21:45	19	44	14	0	20	46	10	2	10	85	21	0	10	52	19	0	352
Total	79	258	80	7	100	246	49	13	50	349	62	2	32	249	97	0	1673
22:00	18	51	17	4	16	44	6	7	10	68	8	0	1	53	17	0	320
22:15	21	37	13	6	17	33	4	2	4	75	6	1	2	32	23	0	276
22:30	13	48	9	2	10	35	5	0	7	66	10	0	3	31	21	0	260
22:45	12	28	7	2	14	32	7	2	4	43	10	0	2	31	15	0	209
Total	64	164	46	14	57	144	22	11	25	252	34	1	8	147	76	0	1065
23:00	19	36	7	2	13	32	5	3	9	53	6	0	3	33	18	0	239
23:15	15	23	5	2	14	27	6	2	3	45	2	0	1	32	12	0	189
23:30	7	29	7	2	9	13	5	2	2	52	5	0	4	11	4	0	152
23:45	9	12	7	2	11	12	3	0	6	38	4	0	0	21	18	0	143
Total	50	100	26	8	47	84	19	7	20	188	17	0	8	97	52	0	723
Grand Total	3800	11002	4129	387	3825	10743	2381	428	2332	11162	2113	77	1945	11164	3770	0	69258
Apprch %	19.7	57	21.4	2	22	61.8	13.7	2.5	14.9	71.2	13.5	0.5	11.5	66.1	22.3	0	
Total %	5.5	15.9	6	0.6	5.5	15.5	3.4	0.6	3.4	16.1	3.1	0.1	2.8	16.1	5.4	0	

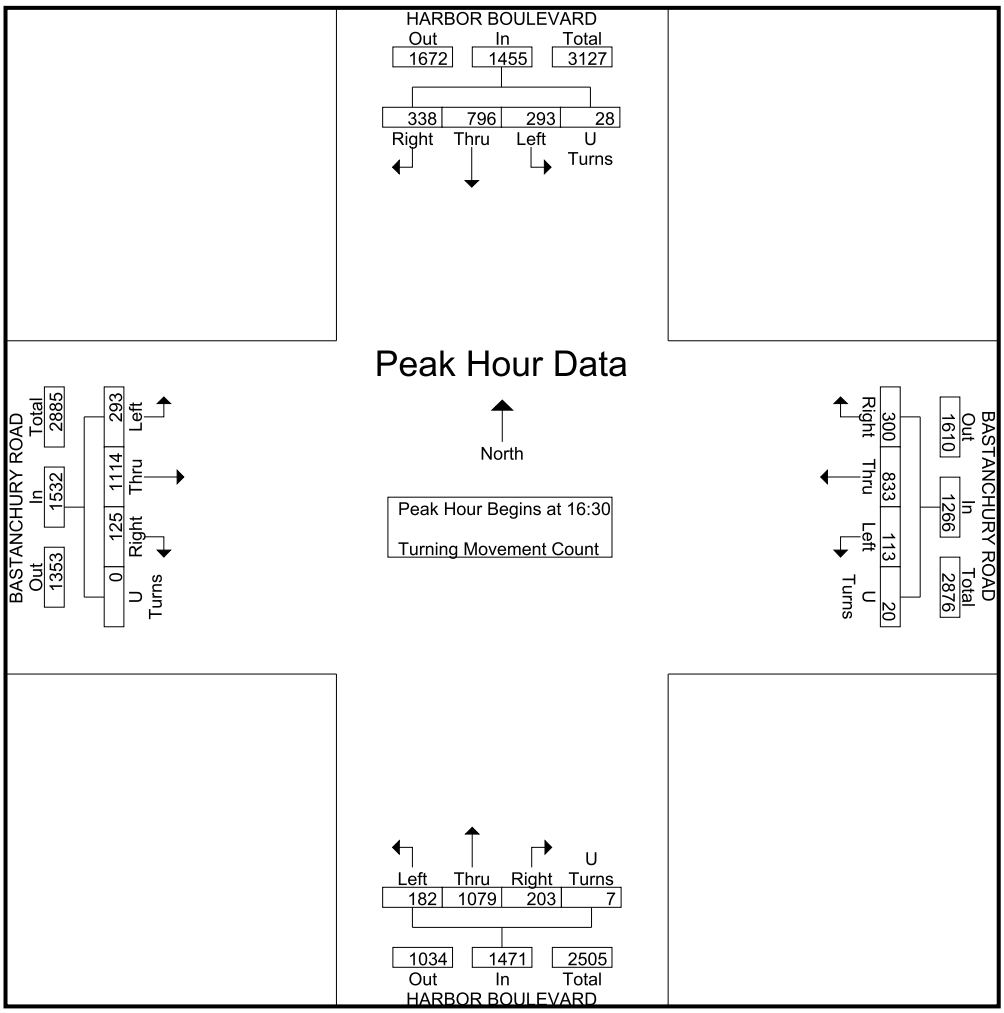
	HARBOR BOULEVARD Southbound								HARBOR BOULEVARD Northbound							
	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVAR
E-W Direction: BASTANCHURY ROAD

File Name : H2305016
Site Code : 00000000
Start Date : 5/24/2023
Page No : 4

	HARBOR BOULEVARD Southbound					BASTANCHURY ROAD Westbound					HARBOR BOULEVARD Northbound					BASTANCHURY ROAD Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 00:00 to 23:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	82	220	75	12	389	81	181	24	3	289	63	269	38	4	374	33	264	68	0	365	1417
16:45	81	173	69	8	331	69	223	30	6	328	42	286	36	1	365	39	248	72	0	359	1383
17:00	94	194	75	3	366	71	189	27	8	295	61	267	60	1	389	24	292	75	0	391	1441
17:15	81	209	74	5	369	79	240	32	3	354	37	257	48	1	343	29	310	78	0	417	1483
Total Volume	338	796	293	28	1455	300	833	113	20	1266	203	1079	182	7	1471	125	1114	293	0	1532	5724
% App. Total	23.2	54.7	20.1	1.9		23.7	65.8	8.9	1.6		13.8	73.4	12.4	0.5		8.2	72.7	19.1	0		
PHF	.899	.905	.977	.583	.935	.926	.868	.883	.625	.894	.806	.943	.758	.438	.945	.801	.898	.939	.000	.918	.965



Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: BREA BLVD/VALLEY VIEW

File Name : H2305018
Site Code : 00000000
Start Date : 5/24/2023
Page No : 1

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				BREA BOULEVARD Westbound				HARBOR BOULEVARD Northbound				VALLEY VIEW DRIVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
00:00	2	16	1	0	1	3	7	0	14	29	0	0	0	2	0	0	75
00:15	1	14	1	0	1	3	7	0	10	25	0	1	0	0	1	0	64
00:30	2	13	3	0	2	2	5	0	13	37	1	0	1	0	0	0	79
00:45	0	17	0	0	1	1	7	0	8	21	0	0	0	1	0	0	56
Total	5	60	5	0	5	9	26	0	45	112	1	1	1	3	1	0	274
01:00	0	11	2	0	1	1	7	0	6	23	0	0	1	0	0	0	52
01:15	0	19	1	0	0	0	1	0	5	10	0	0	2	1	0	0	39
01:30	0	10	1	0	0	0	4	0	3	14	2	0	0	0	0	0	34
01:45	1	14	0	0	0	0	1	0	8	15	0	0	0	1	1	0	41
Total	1	54	4	0	1	1	13	0	22	62	2	0	3	2	1	0	166
02:00	0	12	0	0	1	1	3	0	4	9	0	0	0	0	0	0	30
02:15	0	10	0	0	1	0	4	0	2	8	0	0	0	0	1	0	26
02:30	0	9	0	0	1	0	1	0	2	16	0	0	0	0	0	0	29
02:45	0	12	0	0	0	1	4	0	2	12	0	0	0	1	1	0	33
Total	0	43	0	0	3	2	12	0	10	45	0	0	0	1	2	0	118
03:00	0	14	0	0	0	0	2	0	4	14	0	0	0	0	0	0	34
03:15	0	13	0	0	0	0	2	0	5	20	0	0	0	0	1	0	41
03:30	0	22	0	0	0	0	4	0	16	30	2	0	0	1	0	0	75
03:45	0	24	0	0	0	0	6	0	16	22	0	0	0	0	0	0	68
Total	0	73	0	0	0	0	14	0	41	86	2	0	0	1	1	0	218
04:00	0	13	0	0	2	1	6	0	6	16	1	0	1	0	1	0	47
04:15	0	29	1	0	0	0	5	0	11	29	1	0	0	0	0	0	76
04:30	1	37	1	0	1	0	11	0	10	25	0	0	0	3	1	0	90
04:45	2	48	0	0	2	1	22	0	21	56	1	0	0	2	0	0	155
Total	3	127	2	0	5	2	44	0	48	126	3	0	1	5	2	0	368
05:00	0	34	0	0	0	0	24	0	11	46	1	0	0	3	1	0	120
05:15	0	59	16	0	3	3	25	0	20	58	0	0	2	4	2	0	192
05:30	1	75	7	0	3	0	38	1	20	102	1	0	0	5	2	0	255
05:45	0	98	1	0	9	2	42	0	41	107	1	0	0	1	3	0	305
Total	1	266	24	0	15	5	129	1	92	313	3	0	2	13	8	0	872
06:00	0	85	1	0	5	3	45	0	26	67	2	0	0	4	6	0	244
06:15	1	109	3	0	7	0	63	0	31	110	2	0	0	4	3	0	333
06:30	5	150	8	0	13	5	69	0	46	131	1	0	0	6	7	0	441
06:45	4	213	1	0	16	7	108	0	54	149	3	0	1	10	6	0	572
Total	10	557	13	0	41	15	285	0	157	457	8	0	1	24	22	0	1590
07:00	9	151	9	0	24	15	149	0	69	125	4	0	3	16	10	0	584
07:15	8	271	15	0	30	19	152	0	86	186	2	0	2	17	8	0	796
07:30	17	273	11	0	45	18	120	0	103	247	1	0	1	13	12	0	861
07:45	22	241	17	0	34	30	141	0	101	249	5	0	3	27	11	0	881
Total	56	936	52	0	133	82	562	0	359	807	12	0	9	73	41	0	3122
08:00	20	245	12	0	40	34	130	0	75	210	3	0	1	15	16	0	801
08:15	21	216	17	0	47	34	148	0	103	214	12	1	4	29	12	0	858
08:30	16	222	22	0	32	25	129	0	105	235	4	0	7	28	20	0	845
08:45	16	209	15	0	27	28	148	0	95	194	11	1	7	39	9	0	799
Total	73	892	66	0	146	121	555	0	378	853	30	2	19	111	57	0	3303

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
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City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: BREA BLVD/VALLEY VIEW

File Name : H2305018
Site Code : 00000000
Start Date : 5/24/2023
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Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				BREA BOULEVARD Westbound				HARBOR BOULEVARD Northbound				VALLEY VIEW DRIVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
09:00	14	200	15	0	30	25	142	0	86	176	3	0	9	6	14	0	720
09:15	14	172	11	0	18	19	117	0	89	163	5	0	10	26	19	0	663
09:30	10	188	12	0	25	13	93	0	82	170	9	0	9	29	13	0	653
09:45	8	186	23	0	19	23	120	0	95	156	5	0	8	25	17	0	685
Total	46	746	61	0	92	80	472	0	352	665	22	0	36	86	63	0	2721
10:00	15	200	14	0	18	21	119	0	70	142	3	0	8	20	12	1	643
10:15	15	177	18	0	17	18	108	0	81	142	7	0	13	25	12	0	633
10:30	11	191	15	0	30	14	77	1	82	178	4	0	7	17	26	0	653
10:45	10	204	14	0	19	13	102	0	76	158	6	0	6	14	16	0	638
Total	51	772	61	0	84	66	406	1	309	620	20	0	34	76	66	1	2567
11:00	6	210	11	0	24	17	102	0	87	179	4	1	10	15	15	0	681
11:15	16	202	16	0	24	15	109	0	90	151	8	0	8	15	19	0	673
11:30	7	187	10	0	25	20	100	0	94	183	8	0	5	34	16	0	689
11:45	10	172	17	0	29	22	130	0	100	159	7	0	10	28	26	0	710
Total	39	771	54	0	102	74	441	0	371	672	27	1	33	92	76	0	2753
12:00	14	191	24	0	21	17	119	0	102	205	3	0	20	40	35	0	791
12:15	8	177	14	0	26	8	88	0	105	166	4	0	8	28	15	0	647
12:30	13	196	16	0	16	21	95	0	99	215	8	0	6	16	17	0	718
12:45	18	182	13	0	32	28	123	0	104	181	10	0	9	22	16	0	738
Total	53	746	67	0	95	74	425	0	410	767	25	0	43	106	83	0	2894
13:00	21	191	12	0	23	40	106	0	99	196	6	0	5	21	18	0	738
13:15	17	183	19	0	25	28	110	0	108	181	8	0	12	32	21	0	744
13:30	14	195	17	0	22	19	108	0	111	212	7	0	13	15	8	0	741
13:45	6	193	14	0	33	21	129	0	126	182	9	0	11	18	14	0	756
Total	58	762	62	0	103	108	453	0	444	771	30	0	41	86	61	0	2979
14:00	12	217	19	0	9	27	111	0	95	200	7	0	9	20	12	0	738
14:15	11	206	16	0	23	22	114	0	102	176	7	0	7	22	11	0	717
14:30	13	238	15	0	24	32	95	0	123	225	12	1	5	20	14	0	817
14:45	12	212	17	0	24	23	116	0	145	243	12	0	10	31	18	0	863
Total	48	873	67	0	80	104	436	0	465	844	38	1	31	93	55	0	3135
15:00	13	245	22	0	26	23	109	0	113	230	3	0	6	14	14	0	818
15:15	16	230	9	0	27	24	120	0	111	223	8	0	10	26	20	0	824
15:30	12	218	20	0	26	32	104	0	140	253	8	1	10	26	13	0	863
15:45	17	270	16	0	26	32	104	0	143	284	5	0	16	41	23	0	977
Total	58	963	67	0	105	111	437	0	507	990	24	1	42	107	70	0	3482
16:00	12	249	16	0	37	38	109	0	143	252	2	0	6	36	20	0	920
16:15	19	241	24	0	26	16	119	0	119	265	3	0	11	32	19	0	894
16:30	16	261	21	1	33	26	107	0	137	263	0	0	13	50	25	0	953
16:45	7	221	30	0	23	25	130	0	164	243	3	0	4	46	12	0	908
Total	54	972	91	1	119	105	465	0	563	1023	8	0	34	164	76	0	3675
17:00	12	274	24	0	26	21	115	0	156	268	3	0	4	46	18	0	967
17:15	15	244	21	0	29	25	117	0	148	250	3	0	5	37	13	0	907
17:30	14	237	32	0	21	22	120	0	152	250	6	0	4	24	12	0	894
17:45	11	172	25	0	19	21	114	0	124	200	3	0	5	31	10	0	735
Total	52	927	102	0	95	89	466	0	580	968	15	0	18	138	53	0	3503
18:00	9	184	18	0	24	19	124	0	137	203	1	0	3	23	12	0	757
18:15	9	153	14	0	21	14	101	0	126	215	2	0	5	20	11	0	691

Transportation Studies, Inc
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City: FULLERTON
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File Name : H2305018
Site Code : 00000000
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Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				BREA BOULEVARD Westbound				HARBOR BOULEVARD Northbound				VALLEY VIEW DRIVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
18:30	6	159	22	0	18	7	98	0	127	214	2	0	2	14	11	0	680
18:45	10	146	25	0	18	16	87	0	128	180	3	0	2	12	13	0	640
Total	34	642	79	0	81	56	410	0	518	812	8	0	12	69	47	0	2768
19:00	3	153	15	0	24	33	97	0	107	157	4	0	8	9	9	0	619
19:15	5	125	20	0	28	13	88	0	105	158	5	0	3	18	9	0	577
19:30	3	129	10	0	14	15	88	0	78	125	2	1	2	14	8	0	489
19:45	5	128	10	0	7	8	76	0	83	98	5	0	3	20	4	0	447
Total	16	535	55	0	73	69	349	0	373	538	16	1	16	61	30	0	2132
20:00	6	101	17	0	14	11	73	0	82	142	3	0	6	14	5	0	474
20:15	5	112	9	0	13	16	78	0	92	131	3	0	2	8	10	0	479
20:30	4	130	11	0	12	26	53	0	76	127	5	0	3	12	4	0	463
20:45	3	93	9	0	7	12	40	0	84	115	2	0	6	5	6	0	382
Total	18	436	46	0	46	65	244	0	334	515	13	0	17	39	25	0	1798
21:00	3	98	11	0	21	20	93	0	70	116	1	0	0	7	2	0	442
21:15	2	96	9	0	5	3	54	0	36	87	2	0	5	7	3	0	309
21:30	1	93	4	0	5	10	30	0	45	91	2	0	1	5	3	0	290
21:45	1	63	3	0	7	5	39	0	40	67	0	0	3	6	5	0	239
Total	7	350	27	0	38	38	216	0	191	361	5	0	9	25	13	0	1280
22:00	0	63	7	0	4	1	16	0	50	75	5	0	4	1	4	0	230
22:15	0	45	2	0	2	2	27	0	42	70	1	0	2	0	5	0	198
22:30	0	63	5	0	4	2	21	0	33	77	1	0	3	1	1	0	211
22:45	2	37	4	0	0	3	22	0	29	46	2	0	1	1	2	0	149
Total	2	208	18	0	10	8	86	0	154	268	9	0	10	3	12	0	788
23:00	2	43	6	0	1	3	27	0	22	63	0	0	1	3	0	0	171
23:15	0	34	1	0	2	3	17	0	24	47	2	0	1	2	2	0	135
23:30	0	41	1	0	3	1	13	0	16	46	2	0	1	2	2	0	128
23:45	0	17	0	0	1	2	5	0	19	36	1	0	1	1	0	0	83
Total	2	135	8	0	7	9	62	0	81	192	5	0	4	8	4	0	517
Grand Total	687	12846	1031	1	1479	1293	7008	2	6804	12867	326	7	416	1386	869	1	47023
Apprch %	4.7	88.2	7.1	0	15.1	13.2	71.6	0	34	64.3	1.6	0	15.6	51.9	32.5	0	
Total %	1.5	27.3	2.2	0	3.1	2.7	14.9	0	14.5	27.4	0.7	0	0.9	2.9	1.8	0	

HARBOR BOULEVARD Southbound				BREA BOULEVARD Westbound				HARBOR BOULEVARD Northbound				VALLEY VIEW DRIVE Eastbound			
Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
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City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: BREA BLVD/VALLEY VIEW

File Name : H2305018
Site Code : 00000000
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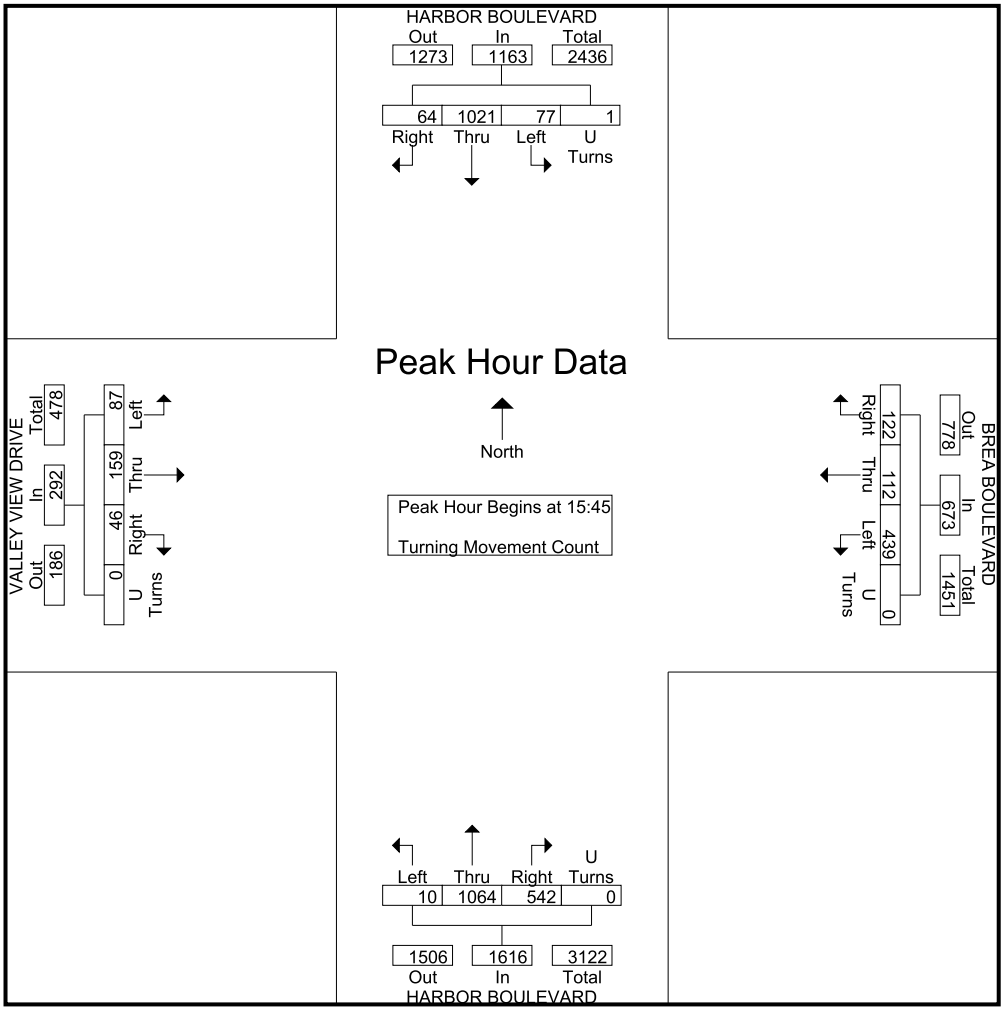
	HARBOR BOULEVARD Southbound					BREA BOULEVARD Westbound					HARBOR BOULEVARD Northbound					VALLEY VIEW DRIVE Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 00:00 to 23:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 15:45																					
15:45	17	270	16	0	303	26	32	104	0	162	143	284	5	0	432	16	41	23	0	80	977
16:00	12	249	16	0	277	37	38	109	0	184	143	252	2	0	397	6	36	20	0	62	920
16:15	19	241	24	0	284	26	16	119	0	161	119	265	3	0	387	11	32	19	0	62	894
16:30	16	261	21	1	299	33	26	107	0	166	137	263	0	0	400	13	50	25	0	88	953
Total Volume	64	1021	77	1	1163	122	112	439	0	673	542	1064	10	0	1616	46	159	87	0	292	3744
% App. Total	5.5	87.8	6.6	0.1		18.1	16.6	65.2	0		33.5	65.8	0.6	0		15.8	54.5	29.8	0		
PHF	.842	.945	.802	.250	.960	.824	.737	.922	.000	.914	.948	.937	.500	.000	.935	.719	.795	.870	.000	.830	.958



Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: VALENCIA MESA DR

File Name : H2305017
Site Code : 00000000
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Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				VALENCIA MESA DRIVE Westbound				HARBOR BOULEVARD Northbound				VALENCIA MESA DRIVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
00:00	2	14	0	0	7	0	2	0	0	28	0	0	2	0	0	0	55
00:15	0	13	6	0	5	0	0	0	1	28	0	0	0	0	1	0	54
00:30	2	14	2	0	6	0	4	0	3	34	1	0	0	0	4	0	70
00:45	0	11	3	0	1	0	3	0	1	22	0	0	0	0	1	0	42
Total	4	52	11	0	19	0	9	0	5	112	1	0	2	0	6	0	221
01:00	2	12	3	0	4	0	1	0	1	22	0	0	1	0	2	0	48
01:15	0	17	1	0	2	0	0	0	0	10	1	0	0	0	2	0	33
01:30	0	9	2	0	1	0	3	0	1	12	0	0	1	0	0	0	29
01:45	0	13	1	0	2	0	2	0	1	15	1	0	0	0	0	0	35
Total	2	51	7	0	9	0	6	0	3	59	2	0	2	0	4	0	145
02:00	1	11	0	0	3	0	0	0	1	9	0	0	0	0	0	0	25
02:15	2	10	1	0	0	0	0	0	2	6	0	0	0	0	2	0	23
02:30	0	8	0	0	1	0	1	0	0	15	2	0	0	0	0	0	27
02:45	0	10	2	0	0	0	0	0	0	13	0	0	2	0	0	0	27
Total	3	39	3	0	4	0	1	0	3	43	2	0	2	0	2	0	102
03:00	0	12	0	0	1	1	1	0	0	15	0	0	0	0	0	0	30
03:15	0	13	0	0	1	0	1	0	1	17	0	0	0	0	0	0	33
03:30	0	21	0	0	1	0	2	0	0	31	0	0	0	0	1	0	56
03:45	0	21	2	0	1	0	0	0	0	21	1	0	0	0	2	0	48
Total	0	67	2	0	4	1	4	0	1	84	1	0	0	0	3	0	167
04:00	0	17	0	0	4	0	0	0	1	12	3	0	0	1	0	0	38
04:15	0	20	0	0	5	0	1	0	1	31	0	0	3	0	1	0	62
04:30	0	39	3	0	0	0	1	0	0	28	0	0	3	1	0	0	75
04:45	0	38	2	0	0	0	2	0	2	55	0	0	0	0	0	0	99
Total	0	114	5	0	9	0	4	0	4	126	3	0	6	2	1	0	274
05:00	2	34	6	0	0	0	1	0	2	36	3	0	0	2	5	0	91
05:15	2	86	8	0	5	0	1	0	2	57	4	0	0	6	0	0	171
05:30	5	83	12	0	0	1	1	0	5	98	5	0	4	3	0	0	217
05:45	9	94	4	0	3	4	1	0	5	105	7	0	3	0	4	0	239
Total	18	297	30	0	8	5	4	0	14	296	19	0	7	11	9	0	718
06:00	4	82	11	0	10	1	4	0	6	60	9	0	4	4	5	0	200
06:15	15	112	11	0	6	4	1	0	15	82	11	0	6	5	8	0	276
06:30	14	161	21	0	7	3	7	0	17	83	27	0	3	5	4	0	352
06:45	16	216	28	0	12	6	6	0	16	127	23	0	7	9	10	0	476
Total	49	571	71	0	35	14	18	0	54	352	70	0	20	23	27	0	1304
07:00	21	281	22	0	8	4	7	0	17	127	14	0	12	12	10	0	535
07:15	25	287	27	0	6	4	3	0	24	157	28	0	12	10	12	0	595
07:30	31	274	31	0	7	6	6	0	15	212	30	0	13	6	17	0	648
07:45	56	260	45	0	5	14	14	0	30	207	41	0	17	12	20	0	721
Total	133	1102	125	0	26	28	30	0	86	703	113	0	54	40	59	0	2499
08:00	41	271	47	0	20	4	12	0	23	178	36	0	14	10	23	0	679
08:15	42	234	35	0	21	18	17	0	38	177	37	0	22	13	18	0	672
08:30	37	219	40	0	17	9	8	0	34	190	33	0	32	11	29	0	659
08:45	53	223	26	0	20	5	12	0	21	146	28	0	27	18	30	0	609
Total	173	947	148	0	78	36	49	0	116	691	134	0	95	52	100	0	2619

Transportation Studies, Inc
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File Name : H2305017
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Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				VALENCIA MESA DRIVE Westbound				HARBOR BOULEVARD Northbound				VALENCIA MESA DRIVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
09:00	18	186	43	0	23	6	19	0	19	129	33	0	34	7	23	0	540
09:15	34	170	40	0	27	14	12	0	26	136	26	0	32	24	21	0	562
09:30	28	152	28	0	31	11	17	0	19	125	24	0	28	8	32	0	503
09:45	30	172	40	1	29	12	24	0	19	128	20	0	23	12	24	0	534
Total	110	680	151	1	110	43	72	0	83	518	103	0	117	51	100	0	2139
10:00	27	173	29	0	31	11	25	0	17	121	14	0	27	8	33	0	516
10:15	22	164	38	0	39	19	30	0	18	123	19	0	31	13	34	0	550
10:30	22	183	33	0	24	10	13	0	24	152	19	0	24	20	25	0	549
10:45	24	173	45	0	42	11	22	0	29	146	24	0	24	10	18	0	568
Total	95	693	145	0	136	51	90	0	88	542	76	0	106	51	110	0	2183
11:00	30	175	23	0	38	5	21	0	25	156	15	0	38	5	29	0	560
11:15	22	184	34	0	32	10	24	0	16	149	18	0	29	4	21	0	543
11:30	16	153	22	1	35	18	25	0	18	179	13	0	41	9	40	0	570
11:45	12	157	19	0	25	11	40	0	23	188	17	0	25	8	33	0	558
Total	80	669	98	1	130	44	110	0	82	672	63	0	133	26	123	0	2231
12:00	24	172	20	0	37	6	19	0	19	198	19	0	29	5	21	0	569
12:15	31	154	40	2	27	10	23	0	22	190	17	0	21	9	26	0	572
12:30	25	163	24	3	26	11	18	0	19	188	16	0	30	5	30	0	558
12:45	28	176	35	1	28	6	15	0	10	200	23	0	18	6	27	0	573
Total	108	665	119	6	118	33	75	0	70	776	75	0	98	25	104	0	2272
13:00	34	165	30	0	30	14	16	0	15	170	26	0	21	6	22	0	549
13:15	30	170	31	1	27	7	22	0	20	189	18	0	21	10	31	0	577
13:30	31	172	35	0	43	10	16	0	16	194	19	0	31	10	21	0	598
13:45	39	189	39	0	31	3	12	0	17	169	24	0	14	12	25	0	574
Total	134	696	135	1	131	34	66	0	68	722	87	0	87	38	99	0	2298
14:00	33	199	24	0	26	6	12	0	9	189	10	0	22	8	27	0	565
14:15	19	180	42	0	35	7	16	0	18	194	10	0	30	11	24	0	586
14:30	26	222	31	0	29	8	15	0	11	200	22	0	23	4	31	0	622
14:45	30	207	38	0	52	14	14	0	24	259	21	0	31	16	26	0	732
Total	108	808	135	0	142	35	57	0	62	842	63	0	106	39	108	0	2505
15:00	21	227	26	0	37	10	20	0	23	220	16	0	31	6	33	0	670
15:15	28	212	35	0	41	6	13	0	16	237	20	0	20	4	35	0	667
15:30	26	245	19	1	44	11	17	0	12	273	20	0	27	6	30	0	731
15:45	22	234	37	0	47	7	14	0	16	281	12	0	29	9	31	0	739
Total	97	918	117	1	169	34	64	0	67	1011	68	0	107	25	129	0	2807
16:00	23	237	18	0	54	13	28	0	11	290	8	0	26	4	31	0	743
16:15	24	221	29	0	43	9	9	0	18	287	11	0	27	8	25	0	711
16:30	18	244	15	0	48	8	14	0	9	294	13	0	38	3	32	0	736
16:45	22	206	21	0	40	7	10	0	14	273	17	0	25	9	33	0	677
Total	87	908	83	0	185	37	61	0	52	1144	49	0	116	24	121	0	2867
17:00	18	210	21	0	68	17	38	0	13	299	7	0	42	2	29	0	764
17:15	12	245	24	0	41	13	21	0	16	267	6	0	18	8	32	0	703
17:30	12	223	10	0	30	6	12	0	9	277	6	0	15	8	26	0	634
17:45	25	188	21	0	18	4	9	0	11	210	6	0	10	7	7	0	516
Total	67	866	76	0	157	40	80	0	49	1053	25	0	85	25	94	0	2617
18:00	11	179	14	0	34	10	19	0	13	232	7	0	7	8	13	0	547
18:15	19	155	18	0	28	2	10	0	9	201	5	0	5	11	17	0	480

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: VALENCIA MESA DR

File Name : H2305017
Site Code : 00000000
Start Date : 5/24/2023
Page No : 3

Groups Printed- Turning Movement Count

	HARBOR BOULEVARD Southbound				VALENCIA MESA DRIVE Westbound				HARBOR BOULEVARD Northbound				VALENCIA MESA DRIVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
18:30	14	156	17	0	29	9	14	0	13	253	3	0	8	0	17	0	533
18:45	12	137	24	1	21	6	14	0	18	177	11	0	11	4	8	0	444
Total	56	627	73	1	112	27	57	0	53	863	26	0	31	23	55	0	2004
19:00	5	132	9	0	31	9	20	0	12	178	3	0	10	9	7	0	425
19:15	11	117	18	0	25	2	10	0	13	164	5	0	6	2	5	0	378
19:30	6	127	7	0	15	1	14	0	15	127	4	0	9	3	5	1	334
19:45	9	123	17	1	22	5	8	0	10	95	2	0	7	4	5	0	308
Total	31	499	51	1	93	17	52	0	50	564	14	0	32	18	22	1	1445
20:00	6	113	11	0	31	5	15	0	10	147	5	0	6	4	7	0	360
20:15	4	87	17	1	22	3	13	0	4	135	3	0	3	2	6	0	300
20:30	9	114	10	1	14	3	15	0	9	118	5	0	4	3	4	0	309
20:45	4	86	4	0	15	0	11	0	11	120	5	0	4	1	4	0	265
Total	23	400	42	2	82	11	54	0	34	520	18	0	17	10	21	0	1234
21:00	10	83	3	0	19	2	12	0	4	111	4	0	8	1	3	0	260
21:15	7	82	6	0	7	1	14	0	5	105	3	0	3	0	2	0	235
21:30	4	76	7	0	4	1	7	0	3	96	1	0	3	1	1	0	204
21:45	6	56	2	0	14	2	13	0	5	89	3	0	1	0	1	0	192
Total	27	297	18	0	44	6	46	0	17	401	11	0	15	2	7	0	891
22:00	1	53	4	0	6	6	5	0	2	81	0	0	1	0	0	0	159
22:15	4	38	4	0	6	2	8	0	6	69	2	0	2	3	4	0	148
22:30	2	53	5	0	8	0	6	0	4	78	1	0	0	0	4	0	161
22:45	6	28	3	0	0	0	4	0	6	51	2	0	2	0	1	0	103
Total	13	172	16	0	20	8	23	0	18	279	5	0	5	3	9	0	571
23:00	0	42	2	0	7	0	2	0	2	61	1	0	0	0	0	0	117
23:15	4	25	1	0	4	1	5	0	0	42	1	0	0	0	1	0	84
23:30	3	35	1	0	4	0	6	0	1	52	0	0	0	0	0	0	102
23:45	0	12	3	0	5	0	1	0	0	38	2	0	3	0	6	0	70
Total	7	114	7	0	20	1	14	0	3	193	4	0	3	0	7	0	373
Grand Total	1425	12252	1668	14	1841	505	1046	0	1082	12566	1032	0	1246	488	1320	1	36486
Apprch %	9.3	79.8	10.9	0.1	54.3	14.9	30.8	0	7.4	85.6	7	0	40.8	16	43.2	0	
Total %	3.9	33.6	4.6	0	5	1.4	2.9	0	3	34.4	2.8	0	3.4	1.3	3.6	0	

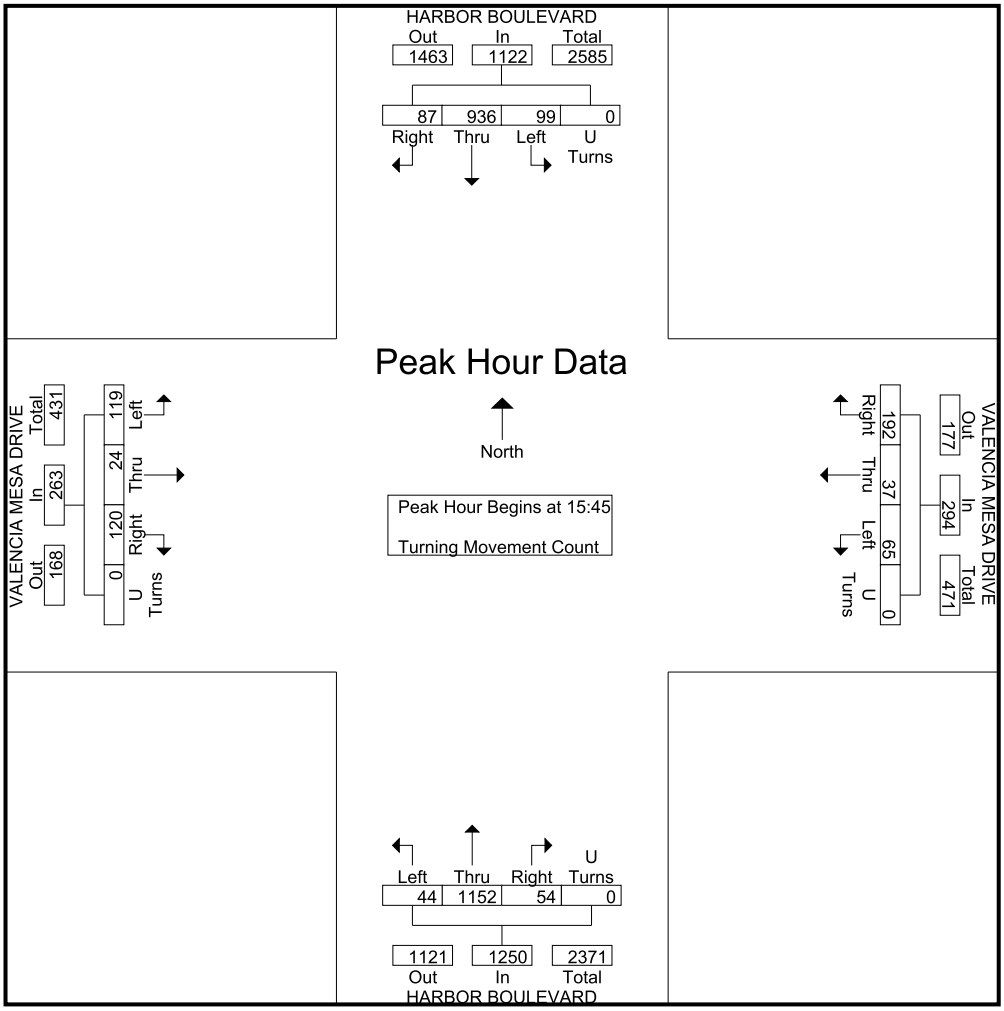
HARBOR BOULEVARD Southbound					Westbound			HARBOR BOULEVARD Northbound				Eastbound			
Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: VALENCIA MESA DR

File Name : H2305017
Site Code : 00000000
Start Date : 5/24/2023
Page No : 4

	HARBOR BOULEVARD Southbound					VALENCIA MESA DRIVE Westbound					HARBOR BOULEVARD Northbound					VALENCIA MESA DRIVE Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 00:00 to 23:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 15:45																					
15:45	22	234	37	0	293	47	7	14	0	68	16	281	12	0	309	29	9	31	0	69	739
16:00	23	237	18	0	278	54	13	28	0	95	11	290	8	0	309	26	4	31	0	61	743
16:15	24	221	29	0	274	43	9	9	0	61	18	287	11	0	316	27	8	25	0	60	711
16:30	18	244	15	0	277	48	8	14	0	70	9	294	13	0	316	38	3	32	0	73	736
Total Volume	87	936	99	0	1122	192	37	65	0	294	54	1152	44	0	1250	120	24	119	0	263	2929
% App. Total	7.8	83.4	8.8	0		65.3	12.6	22.1	0		4.3	92.2	3.5	0		45.6	9.1	45.2	0		
PHF	.906	.959	.669	.000	.957	.889	.712	.580	.000	.774	.750	.980	.846	.000	.989	.789	.667	.930	.000	.901	.986



Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: E. VALLEY VIEW DRIVE

File Name : H2403021
Site Code : 00000000
Start Date : 3/27/2024
Page No : 1

Groups Printed- Turning Movement Count

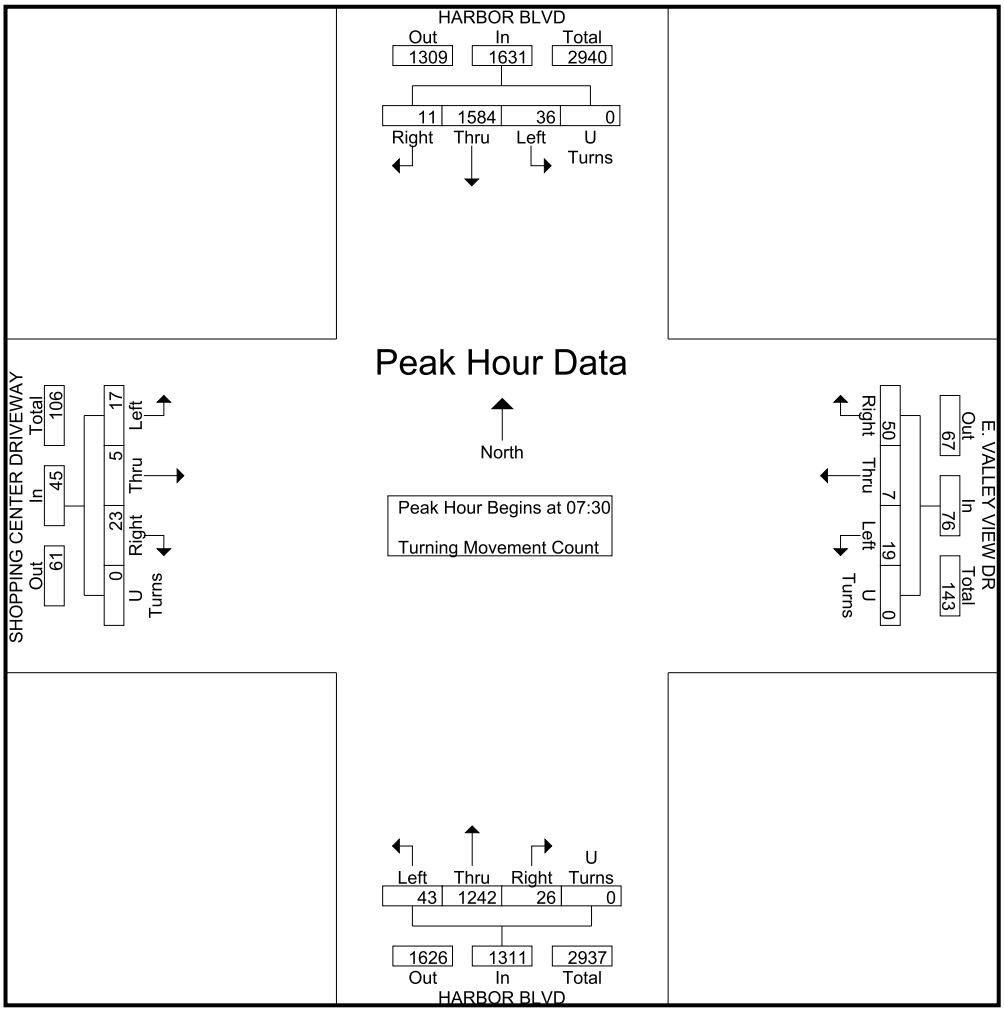
	HARBOR BLVD Southbound				E. VALLEY VIEW DR Westbound				HARBOR BLVD Northbound				SHOPPING CENTER DRIVEWAY Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
07:00	4	328	15	0	7	2	2	0	6	184	4	0	7	0	6	0	565
07:15	1	381	11	0	7	2	2	0	8	253	10	0	7	1	3	0	686
07:30	0	433	8	0	12	2	6	0	8	317	4	0	8	1	4	0	803
07:45	3	386	10	0	17	1	5	0	4	339	10	0	2	3	6	0	786
Total	8	1528	44	0	43	7	15	0	26	1093	28	0	24	5	19	0	2840
08:00	3	404	9	0	7	2	6	0	7	259	9	0	6	0	3	0	715
08:15	5	361	9	0	14	2	2	0	7	327	20	0	7	1	4	0	759
08:30	5	384	6	2	8	1	4	0	6	300	16	0	6	1	6	0	745
08:45	4	340	8	3	13	2	6	0	8	291	13	0	6	0	1	0	695
Total	17	1489	32	5	42	7	18	0	28	1177	58	0	25	2	14	0	2914
16:00	11	338	14	0	7	3	5	0	13	363	22	0	13	6	7	0	802
16:15	6	377	9	0	9	4	2	0	6	393	22	0	13	7	11	0	859
16:30	6	372	9	0	6	4	3	0	4	404	14	0	13	6	10	0	851
16:45	16	352	10	1	16	0	2	0	10	394	10	0	17	4	9	0	841
Total	39	1439	42	1	38	11	12	0	33	1554	68	0	56	23	37	0	3353
17:00	14	367	13	1	9	3	5	0	5	401	18	0	24	4	12	0	876
17:15	6	364	12	2	12	4	4	0	5	409	18	0	11	7	16	0	870
17:30	9	365	8	0	8	6	7	0	11	356	21	0	11	4	9	0	815
17:45	6	381	8	0	10	2	4	0	10	378	12	0	21	11	11	0	854
Total	35	1477	41	3	39	15	20	0	31	1544	69	0	67	26	48	0	3415
Grand Total	99	5933	159	9	162	40	65	0	118	5368	223	0	172	56	118	0	12522
Apprch %	1.6	95.7	2.6	0.1	60.7	15	24.3	0	2.1	94	3.9	0	49.7	16.2	34.1	0	
Total %	0.8	47.4	1.3	0.1	1.3	0.3	0.5	0	0.9	42.9	1.8	0	1.4	0.4	0.9	0	

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: E. VALLEY VIEW DRIVE

File Name : H2403021
Site Code : 00000000
Start Date : 3/27/2024
Page No : 2

	HARBOR BLVD Southbound					E. VALLEY VIEW DR Westbound					HARBOR BLVD Northbound					SHOPPING CENTER DRIVEWAY Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30																					
07:30	0	433	8	0	441	12	2	6	0	20	8	317	4	0	329	8	1	4	0	13	803
07:45	3	386	10	0	399	17	1	5	0	23	4	339	10	0	353	2	3	6	0	11	786
08:00	3	404	9	0	416	7	2	6	0	15	7	259	9	0	275	6	0	3	0	9	715
08:15	5	361	9	0	375	14	2	2	0	18	7	327	20	0	354	7	1	4	0	12	759
Total Volume	11	1584	36	0	1631	50	7	19	0	76	26	1242	43	0	1311	23	5	17	0	45	3063
% App. Total	0.7	97.1	2.2	0		65.8	9.2	25	0		2	94.7	3.3	0		51.1	11.1	37.8	0		
PHF	.550	.915	.900	.000	.925	.735	.875	.792	.000	.826	.813	.916	.538	.000	.926	.719	.417	.708	.000	.865	.954

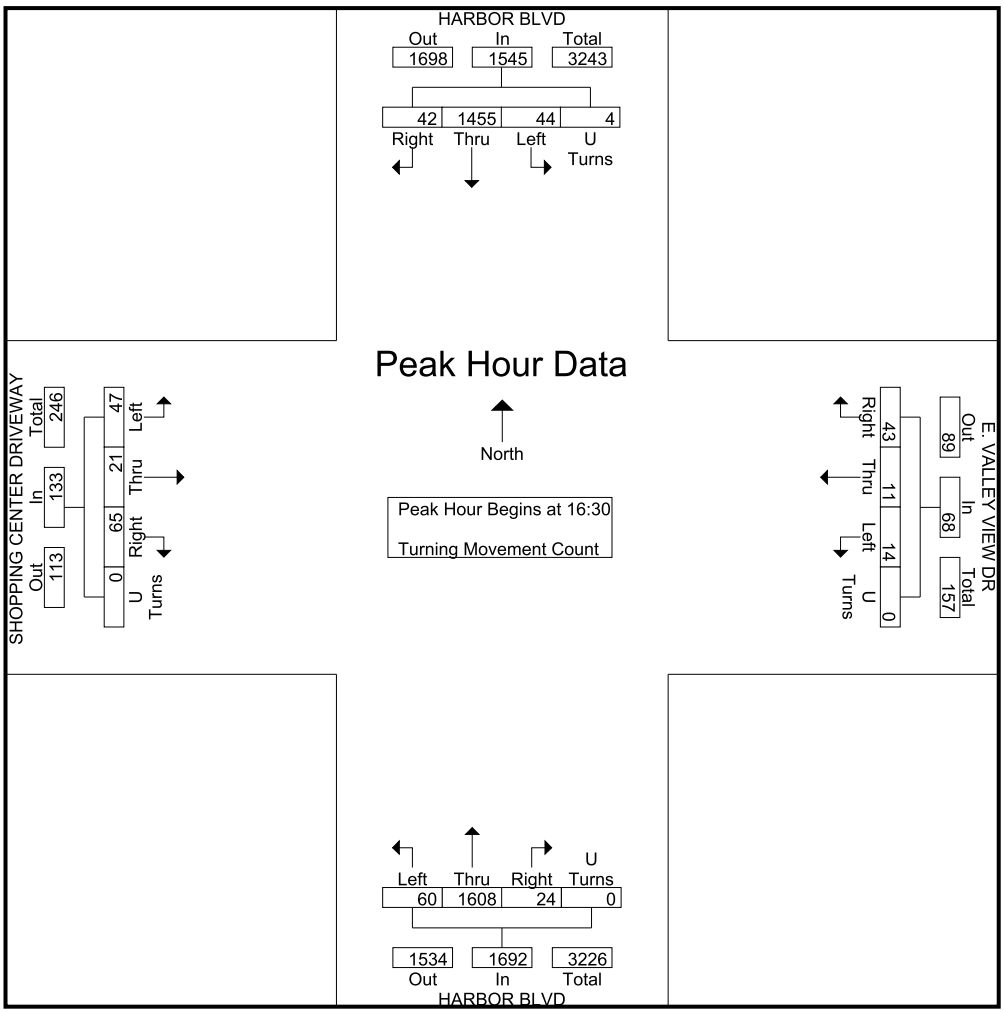


Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: E. VALLEY VIEW DRIVE

File Name : H2403021
Site Code : 00000000
Start Date : 3/27/2024
Page No : 3

	HARBOR BLVD Southbound					E. VALLEY VIEW DR Westbound					HARBOR BLVD Northbound					SHOPPING CENTER DRIVEWAY Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	6	372	9	0	387	6	4	3	0	13	4	404	14	0	422	13	6	10	0	29	851
16:45	16	352	10	1	379	16	0	2	0	18	10	394	10	0	414	17	4	9	0	30	841
17:00	14	367	13	1	395	9	3	5	0	17	5	401	18	0	424	24	4	12	0	40	876
17:15	6	364	12	2	384	12	4	4	0	20	5	409	18	0	432	11	7	16	0	34	870
Total Volume	42	1455	44	4	1545	43	11	14	0	68	24	1608	60	0	1692	65	21	47	0	133	3438
% App. Total	2.7	94.2	2.8	0.3		63.2	16.2	20.6	0		1.4	95	3.5	0		48.9	15.8	35.3	0		
PHF	.656	.978	.846	.500	.978	.672	.688	.700	.000	.850	.600	.983	.833	.000	.979	.677	.750	.734	.000	.831	.981



Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: BERKEKEY AVE

File Name : H2403022
Site Code : 00000000
Start Date : 3/27/2024
Page No : 1

Groups Printed- Turning Movement Count

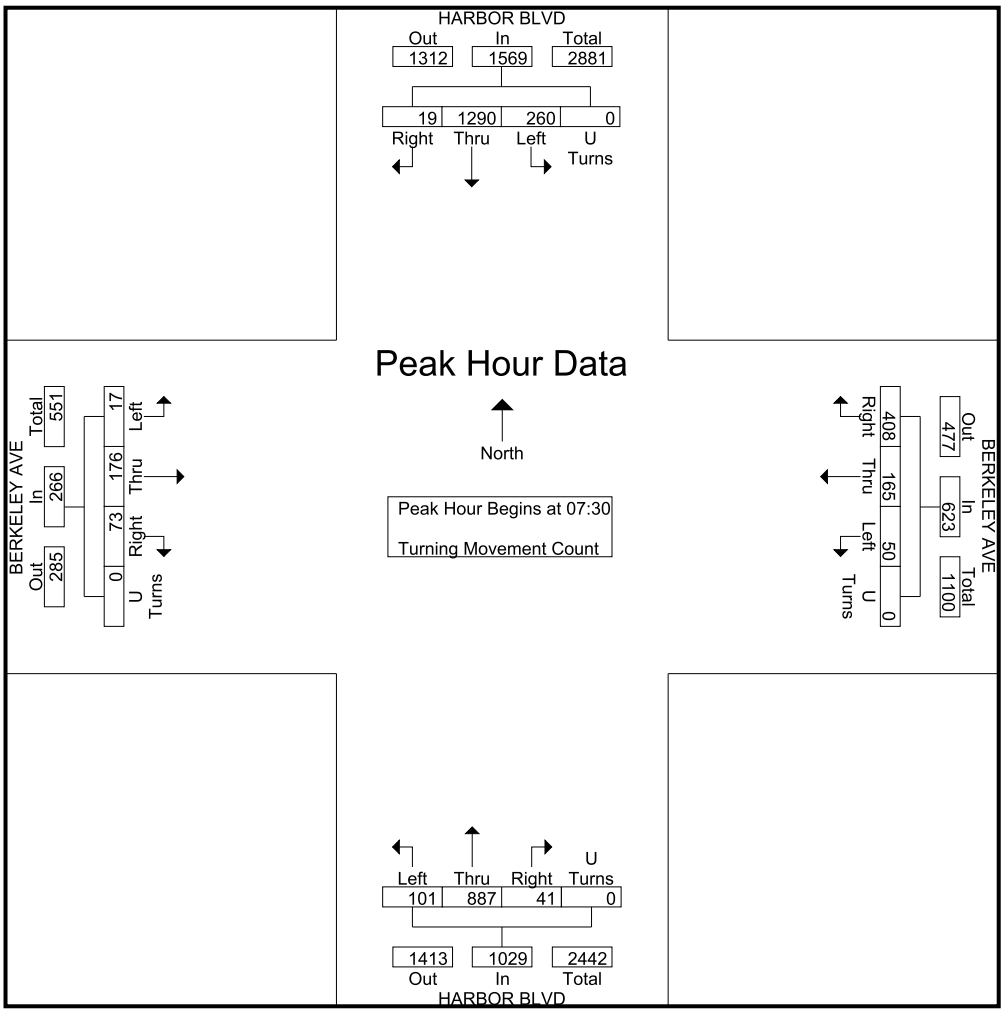
	HARBOR BLVD Southbound				BERKELEY AVE Westbound				HARBOR BLVD Northbound				BERKELEY AVE Eastbound				
Start Time	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Right	Thru	Left	U Turns	Int. Total
07:00	1	275	63	0	55	18	7	0	3	141	9	0	7	26	2	0	607
07:15	9	312	64	0	80	32	6	0	10	187	15	0	15	33	3	0	766
07:30	3	345	66	0	112	46	7	0	10	226	18	0	14	41	2	0	890
07:45	7	317	68	0	119	38	13	0	7	211	23	0	13	34	1	0	851
Total	20	1249	261	0	366	134	33	0	30	765	65	0	49	134	8	0	3114
08:00	4	327	74	0	95	30	18	0	12	187	26	0	21	58	7	0	859
08:15	5	301	52	0	82	51	12	0	12	263	34	0	25	43	7	0	887
08:30	3	310	58	0	100	27	9	0	8	205	26	0	18	25	0	0	789
08:45	2	316	44	0	74	26	13	0	3	238	24	0	10	27	4	0	781
Total	14	1254	228	0	351	134	52	0	35	893	110	0	74	153	18	0	3316
16:00	4	330	83	0	113	32	12	0	7	274	24	0	27	33	5	0	944
16:15	4	240	69	0	112	49	13	0	8	298	25	0	16	31	8	0	873
16:30	6	301	79	0	114	48	14	0	6	294	15	0	29	50	6	0	962
16:45	4	281	71	0	107	34	14	0	4	303	24	0	13	30	11	0	896
Total	18	1152	302	0	446	163	53	0	25	1169	88	0	85	144	30	0	3675
17:00	5	346	90	0	110	40	15	0	7	303	21	0	25	33	4	0	999
17:15	6	324	90	0	129	46	13	0	8	291	27	0	14	34	7	0	989
17:30	5	286	74	0	101	52	11	0	3	280	18	0	10	31	8	0	879
17:45	9	252	80	0	96	32	5	0	7	293	21	0	7	33	14	0	849
Total	25	1208	334	0	436	170	44	0	25	1167	87	0	56	131	33	0	3716
Grand Total	77	4863	1125	0	1599	601	182	0	115	3994	350	0	264	562	89	0	13821
Apprch %	1.3	80.2	18.5	0	67.1	25.2	7.6	0	2.6	89.6	7.8	0	28.9	61.4	9.7	0	
Total %	0.6	35.2	8.1	0	11.6	4.3	1.3	0	0.8	28.9	2.5	0	1.9	4.1	0.6	0	

Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: BERKEKEY AVE

File Name : H2403022
Site Code : 00000000
Start Date : 3/27/2024
Page No : 2

	HARBOR BLVD Southbound					BERKELEY AVE Westbound					HARBOR BLVD Northbound					BERKELEY AVE Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30																					
07:30	3	345	66	0	414	112	46	7	0	165	10	226	18	0	254	14	41	2	0	57	890
07:45	7	317	68	0	392	119	38	13	0	170	7	211	23	0	241	13	34	1	0	48	851
08:00	4	327	74	0	405	95	30	18	0	143	12	187	26	0	225	21	58	7	0	86	859
08:15	5	301	52	0	358	82	51	12	0	145	12	263	34	0	309	25	43	7	0	75	887
Total Volume	19	1290	260	0	1569	408	165	50	0	623	41	887	101	0	1029	73	176	17	0	266	3487
% App. Total	1.2	82.2	16.6	0		65.5	26.5	8	0		4	86.2	9.8	0		27.4	66.2	6.4	0		
PHF	.679	.935	.878	.000	.947	.857	.809	.694	.000	.916	.854	.843	.743	.000	.833	.730	.759	.607	.000	.773	.979

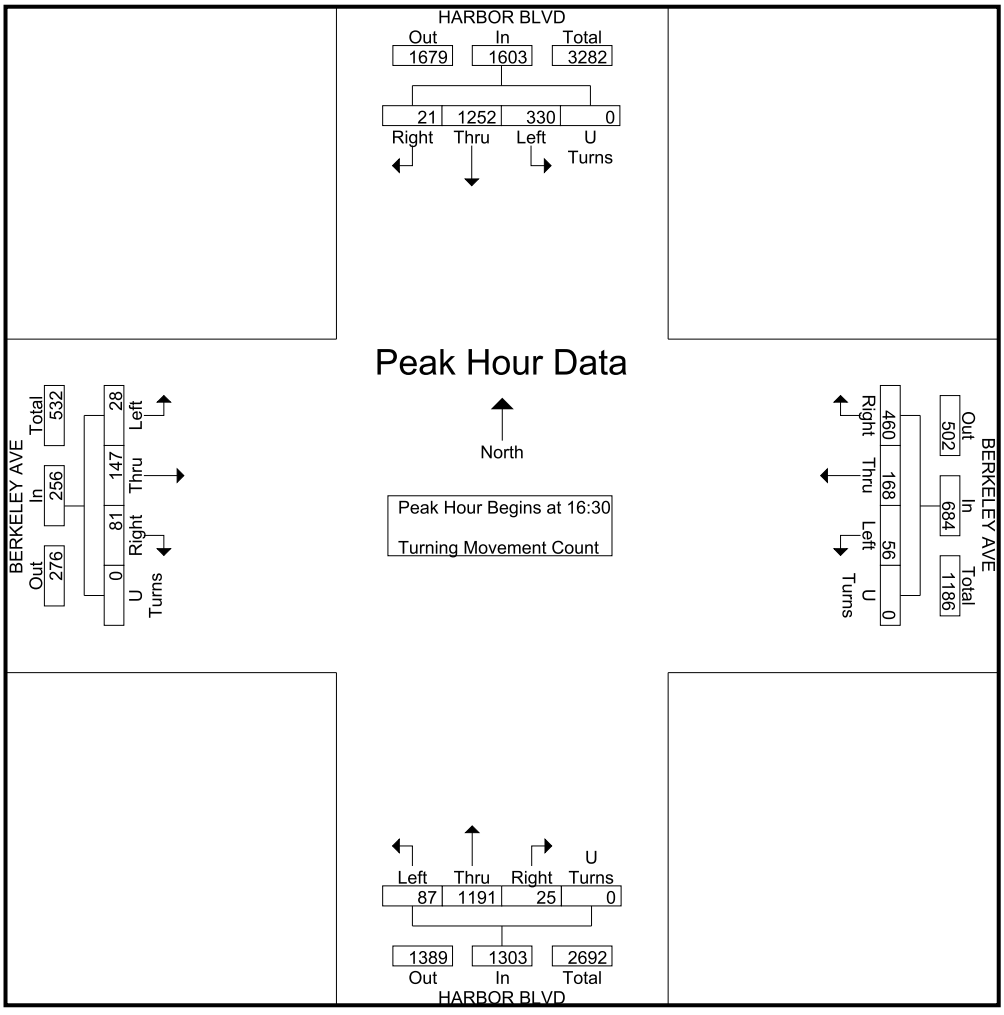


Transportation Studies, Inc
2640 Walnut Avenue, Suite L
Tustin, CA. 92780

City: FULLERTON
N-S Direction: HARBOR BOULEVARD
E-W Direction: BERKEKEY AVE

File Name : H2403022
Site Code : 00000000
Start Date : 3/27/2024
Page No : 3

	HARBOR BLVD Southbound					BERKELEY AVE Westbound					HARBOR BLVD Northbound					BERKELEY AVE Eastbound					
Start Time	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Right	Thru	Left	U Turns	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 16:30																					
16:30	6	301	79	0	386	114	48	14	0	176	6	294	15	0	315	29	50	6	0	85	962
16:45	4	281	71	0	356	107	34	14	0	155	4	303	24	0	331	13	30	11	0	54	896
17:00	5	346	90	0	441	110	40	15	0	165	7	303	21	0	331	25	33	4	0	62	999
17:15	6	324	90	0	420	129	46	13	0	188	8	291	27	0	326	14	34	7	0	55	989
Total Volume	21	1252	330	0	1603	460	168	56	0	684	25	1191	87	0	1303	81	147	28	0	256	3846
% App. Total	1.3	78.1	20.6	0		67.3	24.6	8.2	0		1.9	91.4	6.7	0		31.6	57.4	10.9	0		
PHF	.875	.905	.917	.000	.909	.891	.875	.933	.000	.910	.781	.983	.806	.000	.984	.698	.735	.636	.000	.753	.962



Transportation Studies, Inc.

2640 Walnut Avenue, Suite L

Tustin, CA. 92780

Location : HARBOR BOULEVARD — Site: FULLERTON

Segment : VALLEY MESA TO BASTANCHURY — Date: 05/25/23

Client : CITY FULLERTON

Interval	NB				SB				Combined				Day: Thursday
Begin	AM		PM		AM		PM		AM		PM		
12:00	53	152	244	955	23	72	228	887	76	224	472	1,842	
12:15	28		274		17		212		45		486		
12:30	38		214		18		214		56		428		
12:45	33		223		14		233		47		456		
01:00	23	80	222	894	15	55	204	931	38	135	426	1,825	
01:15	19		217		19		210		38		427		
01:30	21		220		13		244		34		464		
01:45	17		235		8		273		25		508		
02:00	16	65	254	1,092	8	46	270	1,094	24	111	524	2,186	
02:15	16		253		15		252		31		505		
02:30	17		256		13		284		30		540		
02:45	16		329		10		288		26		617		
03:00	24	100	299	1,321	20	79	260	1,095	44	179	559	2,416	
03:15	18		276		11		275		29		551		
03:30	32		334		24		258		56		592		
03:45	26		412		24		302		50		714		
04:00	18	126	398	1,359	17	134	310	1,098	35	260	708	2,457	
04:15	26		310		31		268		57		578		
04:30	24		344		38		254		62		598		
04:45	58		307		48		266		106		573		
05:00	36	288	407	1,386	59	336	268	1,073	95	624	675	2,459	
05:15	67		388		60		281		127		669		
05:30	82		302		91		264		173		566		
05:45	103		289		126		260		229		549		
06:00	56	374	244	955	99	648	220	811	155	1,022	464	1,766	
06:15	82		254		128		211		210		465		
06:30	116		246		189		204		305		450		
06:45	120		211		232		176		352		387		
07:00	131	769	228	764	294	1,379	140	571	425	2,148	368	1,335	
07:15	160		182		353		166		513		348		
07:30	200		198		336		133		536		331		
07:45	278		156		396		132		674		288		
08:00	200	782	180	644	341	1,263	129	472	541	2,045	309	1,116	
08:15	202		180		326		109		528		289		
08:30	208		144		326		112		534		256		
08:45	172		140		270		122		442		262		
09:00	214	798	164	501	276	969	99	317	490	1,767	263	818	
09:15	182		122		250		86		432		208		
09:30	192		107		193		72		385		179		
09:45	210		108		250		60		460		168		
10:00	166	764	96	362	248	948	54	232	414	1,712	150	594	
10:15	192		88		224		60		416		148		
10:30	208		102		252		62		460		164		
10:45	198		76		224		56		422		132		
11:00	216	876	68	235	218	882	42	142	434	1,758	110	377	
11:15	222		64		200		36		422		100		
11:30	206		54		234		33		440		87		
11:45	232		49		230		31		462		80		
Totals	5,174		10,468		6,811		8,723		11,985		19,191		
Split%	43.2		54.5		56.8		45.5						
Day Totals		15,642				15,534				31,176			
Day Splits		50.2				49.8							
Peak Hour	07:45		03:45		07:15		03:15		07:30		03:45		
Volume	888		1,464		1,426		1,145		2,279		2,598		
Factor	0.80		0.89		0.90		0.92		0.85		0.91		

Transportation Studies, Inc.

2640 Walnut Avenue, Suite L

Tustin, CA. 92780

Location : HARBOR BOULEVARD — Site: FULLERTON

Segment : VALENCIA MESA TO VALLEY VIEW — Date: 05/25/23

Client : CITY FULLERTON

Interval	NB				SB				Combined				Day: Thursday
Begin	AM		PM		AM		PM		AM		PM		
12:00	47	135	212	889	28	74	235	808	75	209	447	1,697	
12:15	30		242		16		200		46		442		
12:30	28		201		18		186		46		387		
12:45	30		234		12		187		42		421		
01:00	19	73	200	836	14	61	156	781	33	134	356	1,617	
01:15	16		192		20		186		36		378		
01:30	23		222		18		194		41		416		
01:45	15		222		9		245		24		467		
02:00	15	62	224	1,005	6	47	224	983	21	109	448	1,988	
02:15	18		215		14		223		32		438		
02:30	16		270		14		264		30		534		
02:45	13		296		13		272		26		568		
03:00	23	96	249	1,091	15	72	244	1,002	38	168	493	2,093	
03:15	16		236		10		248		26		484		
03:30	31		274		24		238		55		512		
03:45	26		332		23		272		49		604		
04:00	18	124	314	1,129	18	138	294	1,064	36	262	608	2,193	
04:15	24		271		30		260		54		531		
04:30	22		274		42		270		64		544		
04:45	60		270		48		240		108		510		
05:00	39	299	324	1,149	51	296	284	1,058	90	595	608	2,207	
05:15	61		300		50		260		111		560		
05:30	87		265		84		262		171		527		
05:45	112		260		111		252		223		512		
06:00	68	439	234	878	91	551	197	726	159	990	431	1,604	
06:15	101		244		101		188		202		432		
06:30	132		209		160		184		292		393		
06:45	138		191		199		157		337		348		
07:00	134	842	192	690	243	1,091	152	556	377	1,933	344	1,246	
07:15	177		170		296		154		473		324		
07:30	224		188		256		128		480		316		
07:45	307		140		296		122		603		262		
08:00	223	803	157	581	284	1,026	111	436	507	1,829	268	1,017	
08:15	204		158		264		100		468		258		
08:30	202		139		258		120		460		259		
08:45	174		127		220		105		394		232		
09:00	205	800	143	447	209	816	90	312	414	1,616	233	759	
09:15	195		112		223		88		418		200		
09:30	175		90		156		76		331		166		
09:45	225		102		228		58		453		160		
10:00	157	709	76	332	211	808	56	240	368	1,517	132	572	
10:15	178		78		183		69		361		147		
10:30	184		99		216		60		400		159		
10:45	190		79		198		55		388		134		
11:00	178	732	58	212	196	820	43	152	374	1,552	101	364	
11:15	176		56		190		34		366		90		
11:30	178		50		226		39		404		89		
11:45	200		48		208		36		408		84		
Totals	5,114		9,239		5,800		8,118		10,914		17,357		
Split%	46.9		53.2		53.1		46.8						
Day Totals		14,353				13,918				28,271			
Day Splits		50.8				49.2							
Peak Hour	07:30		03:30		07:15		03:45		07:15		03:45		
Volume	958		1,191		1,132		1,096		2,063		2,287		
Factor	0.78		0.90		0.96		0.93		0.86		0.94		

* Data File : D2305033

Transportation Studies, Inc.

Location : HARBOR BOULEVARD
Segment : BREA BLVD TO E. VALLEY VIEW DR
Client : LL&G

Site: FULLERTON
Date: 03/27/24
Day: Wednesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	52	142	289	1,186	24	69	394	1,549	76	211	683	2,735
12:15	42		297		17		356		59		653	
12:30	25		313		12		358		37		671	
12:45	23		287		16		441		39		728	
01:00	26	82	305	1,300	21	66	430	1,599	47	148	735	2,899
01:15	26		317		20		341		46		658	
01:30	15		354		13		375		28		729	
01:45	15		324		12		453		27		777	
02:00	13	60	318	1,357	12	52	336	1,520	25	112	654	2,877
02:15	18		324		13		370		31		694	
02:30	13		348		13		402		26		750	
02:45	16		367		14		412		30		779	
03:00	20	116	357	1,459	12	98	434	1,864	32	214	791	3,323
03:15	25		343		24		518		49		861	
03:30	45		377		32		462		77		839	
03:45	26		382		30		450		56		832	
04:00	26	170	398	1,549	28	174	401	1,689	54	344	799	3,238
04:15	26		388		28		402		54		790	
04:30	48		368		54		402		102		770	
04:45	70		395		64		484		134		879	
05:00	51	376	402	1,582	66	403	462	1,641	117	779	864	3,223
05:15	81		382		83		428		164		810	
05:30	94		404		112		441		206		845	
05:45	150		394		142		310		292		704	
06:00	94	605	413	1,465	113	817	370	1,308	207	1,422	783	2,773
06:15	139		348		176		352		315		700	
06:30	174		382		230		296		404		678	
06:45	198		322		298		290		496		612	
07:00	188	1,133	289	1,061	398	2,014	313	1,155	586	3,147	602	2,216
07:15	250		288		494		276		744		564	
07:30	331		256		572		304		903		560	
07:45	364		228		550		262		914		490	
08:00	268	1,220	210	812	571	2,057	242	819	839	3,277	452	1,631
08:15	337		208		466		223		803		431	
08:30	318		216		550		183		868		399	
08:45	297		178		470		171		767		349	
09:00	262	967	159	590	382	1,420	180	548	644	2,387	339	1,138
09:15	252		179		334		150		586		329	
09:30	221		142		300		112		521		254	
09:45	232		110		404		106		636		216	
10:00	216	970	92	359	340	1,311	92	290	556	2,281	184	649
10:15	240		104		300		61		540		165	
10:30	261		81		336		81		597		162	
10:45	253		82		335		56		588		138	
11:00	249	1,092	62	248	378	1,511	54	166	627	2,603	116	414
11:15	270		66		340		43		610		109	
11:30	281		62		389		33		670		95	
11:45	292		58		404		36		696		94	
Totals	6,933		12,968		9,992		14,148		16,925		27,116	
Split%	41.0		47.8		59.0		52.2					
Day Totals		19,901				24,140				44,041		
Day Splits		45.2				54.8						
Peak Hour	07:30		05:15		07:15		03:00		07:30		04:45	
Volume	1,300		1,593		2,187		1,864		3,459		3,398	
Factor	0.89		0.96		0.96		0.90		0.95		0.97	

Transportation Studies, Inc.

Location : HARBOR BOULEVARD
Segment : E. VALLEY VIEW DR TO BERKELEY
Client : LL&G

Site: FULLERTON
Date: 03/27/24
Day: Wednesday

Interval	NB				SB				Combined			
Begin	AM		PM		AM		PM		AM		PM	
12:00	51	145	277	1,212	27	73	296	1,206	78	218	573	2,418
12:15	47		302		17		276		64		578	
12:30	27		332		14		302		41		634	
12:45	20		301		15		332		35		633	
01:00	33	86	299	1,291	19	67	313	1,235	52	153	612	2,526
01:15	24		324		20		270		44		594	
01:30	16		341		12		302		28		643	
01:45	13		327		16		350		29		677	
02:00	12	64	321	1,389	21	64	280	1,258	33	128	601	2,647
02:15	22		332		15		310		37		642	
02:30	15		362		14		334		29		696	
02:45	15		374		14		334		29		708	
03:00	21	122	369	1,486	14	94	358	1,530	35	216	727	3,016
03:15	30		344		22		378		52		722	
03:30	46		383		30		377		76		760	
03:45	25		390		28		417		53		807	
04:00	26	177	404	1,618	29	176	353	1,467	55	353	757	3,085
04:15	29		414		30		372		59		786	
04:30	50		383		49		358		99		741	
04:45	72		417		68		384		140		801	
05:00	51	385	384	1,618	66	384	402	1,453	117	769	786	3,071
05:15	84		400		76		390		160		790	
05:30	96		426		110		360		206		786	
05:45	154		408		132		301		286		709	
06:00	93	614	418	1,505	122	771	318	1,179	215	1,385	736	2,684
06:15	142		376		156		327		298		703	
06:30	174		380		211		260		385		640	
06:45	205		331		282		274		487		605	
07:00	191	1,143	294	1,103	332	1,519	247	968	523	2,662	541	2,071
07:15	268		292		380		268		648		560	
07:30	328		259		418		241		746		500	
07:45	356		258		389		212		745		470	
08:00	287	1,264	214	833	391	1,494	202	752	678	2,758	416	1,585
08:15	349		228		368		196		717		424	
08:30	320		209		390		178		710		387	
08:45	308		182		345		176		653		358	
09:00	258	989	163	618	318	1,211	162	529	576	2,200	325	1,147
09:15	256		182		296		153		552		335	
09:30	232		146		265		114		497		260	
09:45	243		127		332		100		575		227	
10:00	214	977	94	379	275	1,107	92	292	489	2,084	186	671
10:15	234		110		270		68		504		178	
10:30	265		84		286		82		551		166	
10:45	264		91		276		50		540		141	
11:00	257	1,099	74	275	302	1,196	56	173	559	2,295	130	448
11:15	260		73		278		41		538		114	
11:30	280		65		308		38		588		103	
11:45	302		63		308		38		610		101	
Totals	7,065		13,327		8,156		12,042		15,221		25,369	
Split%	46.4		52.5		53.6		47.5					
Day Totals		20,392				20,198				40,590		
Day Splits		50.2				49.8						
Peak Hour	07:30		05:15		07:15		04:45		07:30		04:45	
Volume	1,320		1,652		1,578		1,536		2,886		3,163	
Factor	0.93		0.97		0.94		0.96		0.97		0.99	

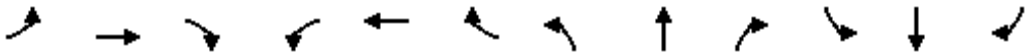
APPENDIX B

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX B-I

EXISTING TRAFFIC CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	311	848	163	263	927	216	182	621	110	349	941	297
Future Volume (vph)	311	848	163	263	927	216	182	621	110	349	941	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.976				0.850			0.850		0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4963	0	3433	5085	1583	3433	5085	1583	3433	4902	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4963	0	3433	5085	1583	3433	5085	1583	3433	4902	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33				170			126		64	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			833			926	
Travel Time (s)		17.8			16.7			12.6			12.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	331	902	173	280	986	230	194	661	117	371	1001	316
Shared Lane Traffic (%)												
Lane Group Flow (vph)	331	1075	0	280	986	230	194	661	117	371	1317	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	27.0	49.0		21.0	43.0	43.0	14.0	43.0	43.0	17.0	46.0	
Total Split (%)	20.8%	37.7%		16.2%	33.1%	33.1%	10.8%	33.1%	33.1%	13.1%	35.4%	
Maximum Green (s)	23.0	44.0		17.0	38.0	38.0	10.0	38.0	38.0	13.0	41.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	23.0	35.9		20.9	33.9	33.9	10.0	42.1	42.1	13.0	45.1	
Actuated g/C Ratio	0.18	0.28		0.16	0.26	0.26	0.08	0.32	0.32	0.10	0.35	
v/c Ratio	1.06	0.77		0.51	0.74	0.43	0.73	0.40	0.20	1.08	0.76	
Control Delay	117.6	45.6		53.8	47.6	13.3	66.2	14.1	2.2	126.1	39.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	117.6	45.6		53.8	47.6	13.3	66.2	14.1	2.2	126.1	39.6	
LOS	F	D		D	D	B	E	B	A	F	D	
Approach Delay		62.5			43.5			23.1			58.6	
Approach LOS		E			D			C			E	
Queue Length 50th (ft)	~305	297		112	279	39	89	157	9	~179	344	
Queue Length 95th (ft)	#494	326		163	318	108	#141	59	8	#281	421	
Internal Link Dist (ft)		963			901			753			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	313	1701		552	1486	583	264	1648	598	343	1743	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.06	0.63		0.51	0.66	0.39	0.73	0.40	0.20	1.08	0.76	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 59 (45%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 49.3		Intersection LOS: D	
Intersection Capacity Utilization 80.1%		ICU Level of Service D	
Analysis Period (min) 15			

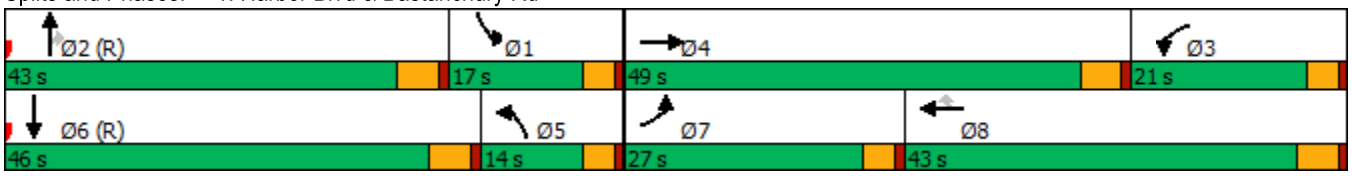
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	311	848	163	263	927	216	182	621	110	349	941	297
Future Volume (veh/h)	311	848	163	263	927	216	182	621	110	349	941	297
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	331	902	173	280	986	230	194	661	117	371	1001	316
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	1123	214	518	1232	383	442	1493	463	522	1212	382
Arrive On Green	0.18	0.26	0.26	0.15	0.24	0.24	0.17	0.39	0.39	0.15	0.32	0.32
Sat Flow, veh/h	1781	4304	822	3456	5106	1585	3456	5106	1585	3456	3844	1212
Grp Volume(v), veh/h	331	712	363	280	986	230	194	661	117	371	886	431
Grp Sat Flow(s),veh/h/ln	1781	1702	1722	1728	1702	1585	1728	1702	1585	1728	1702	1652
Q Serve(g_s), s	23.0	25.4	25.6	9.7	23.6	11.9	6.5	12.4	6.5	13.3	31.3	31.4
Cycle Q Clear(g_c), s	23.0	25.4	25.6	9.7	23.6	11.9	6.5	12.4	6.5	13.3	31.3	31.4
Prop In Lane	1.00		0.48	1.00		1.00	1.00		1.00	1.00		0.73
Lane Grp Cap(c), veh/h	315	888	449	518	1232	383	442	1493	463	522	1074	521
V/C Ratio(X)	1.05	0.80	0.81	0.54	0.80	0.60	0.44	0.44	0.25	0.71	0.83	0.83
Avail Cap(c_a), veh/h	315	1152	583	518	1493	463	442	1493	463	522	1074	521
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.94	0.94	0.94	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	44.9	45.0	51.1	46.4	22.0	49.8	31.9	30.1	52.5	41.2	41.2
Incr Delay (d2), s/veh	64.5	3.2	6.4	1.1	2.7	1.5	0.6	0.9	1.2	4.5	7.3	14.0
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	15.7	10.9	11.5	4.3	10.1	4.5	2.8	4.8	2.6	5.9	13.6	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	118.0	48.1	51.3	52.3	49.0	23.6	50.4	32.8	31.3	57.0	48.5	55.2
LnGrp LOS	F	D	D	D	D	C	D	C	C	E	D	E
Approach Vol, veh/h		1406			1496			972			1688	
Approach Delay, s/veh		65.4			45.7			36.1			52.0	
Approach LOS		E			D			D			D	

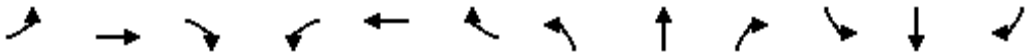
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.6	43.0	24.5	38.9	20.6	46.0	27.0	36.4
Change Period (Y+Rc), s	4.0	5.0	5.0	* 5	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	13.0	38.0	17.0	* 44	10.0	41.0	23.0	38.0
Max Q Clear Time (g_c+I1), s	15.3	14.4	11.7	27.6	8.5	33.4	25.0	25.6
Green Ext Time (p_c), s	0.0	4.6	0.4	6.3	0.1	4.5	0.0	5.8

Intersection Summary	
HCM 6th Ctrl Delay	50.9
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	46	85	51	45	63	147	752	125	167	984	176
Future Volume (vph)	90	46	85	51	45	63	147	752	125	167	984	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	175		0	230		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850		0.912			0.979			0.977	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1699	0	1770	4979	0	1770	4968	0
Flt Permitted	0.583			0.726			0.950			0.950		
Satd. Flow (perm)	1086	1863	1583	1352	1699	0	1770	4979	0	1770	4968	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			59		53			30			34	
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			3958			833	
Travel Time (s)		18.5			16.0			54.0			12.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	48	89	54	47	66	155	792	132	176	1036	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	48	89	54	113	0	155	924	0	176	1221	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								

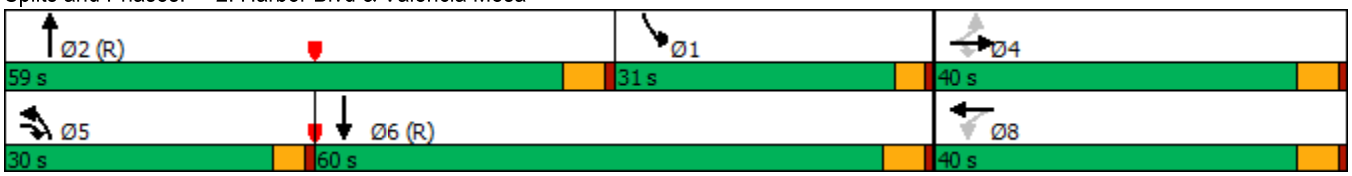


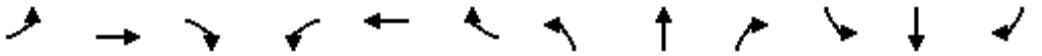
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	
Total Split (s)	40.0	40.0	30.0	40.0	40.0		30.0	59.0		31.0	60.0	
Total Split (%)	30.8%	30.8%	23.1%	30.8%	30.8%		23.1%	45.4%		23.8%	46.2%	
Maximum Green (s)	35.0	35.0	26.0	35.0	35.0		26.0	54.0		27.0	55.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0			7.0			7.0	
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	
Pedestrian Calls (#/hr)				5	5			5			5	
Act Effct Green (s)	17.2	17.2	38.8	17.2	17.2		16.7	71.8		27.0	82.2	
Actuated g/C Ratio	0.13	0.13	0.30	0.13	0.13		0.13	0.55		0.21	0.63	
v/c Ratio	0.66	0.20	0.17	0.30	0.42		0.68	0.33		0.48	0.39	
Control Delay	73.5	48.5	11.6	52.2	30.8		52.0	6.6		48.0	8.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	73.5	48.5	11.6	52.2	30.8		52.0	6.6		48.0	8.1	
LOS	E	D	B	D	C		D	A		D	A	
Approach Delay		44.6			37.7			13.1			13.1	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	78	37	18	42	47		81	20		153	109	
Queue Length 95th (ft)	122	66	46	74	93		152	226		m211	304	
Internal Link Dist (ft)		733			625			3878			753	
Turn Bay Length (ft)	55		85				175			230		
Base Capacity (vph)	292	501	623	364	496		354	2764		367	3153	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.33	0.10	0.14	0.15	0.23		0.44	0.33		0.48	0.39	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 84 (65%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 17.1		Intersection LOS: B	
Intersection Capacity Utilization 54.4%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	46	85	51	45	63	147	752	125	167	984	176
Future Volume (veh/h)	90	46	85	51	45	63	147	752	125	167	984	176
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	95	48	89	54	47	66	155	792	132	176	1036	185
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	175	288	407	220	108	152	183	1833	303	561	2769	494
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.10	0.42	0.42	0.63	1.00	1.00
Sat Flow, veh/h	1280	1870	1585	1252	704	988	1781	4413	730	1781	4358	777
Grp Volume(v), veh/h	95	48	89	54	0	113	155	610	314	176	809	412
Grp Sat Flow(s),veh/h/ln	1280	1870	1585	1252	0	1692	1781	1702	1739	1781	1702	1731
Q Serve(g_s), s	9.4	2.9	5.7	5.1	0.0	7.9	11.1	16.6	16.8	5.9	0.0	0.0
Cycle Q Clear(g_c), s	17.3	2.9	5.7	8.0	0.0	7.9	11.1	16.6	16.8	5.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.58	1.00		0.42	1.00		0.45
Lane Grp Cap(c), veh/h	175	288	407	220	0	261	183	1414	722	561	2163	1100
V/C Ratio(X)	0.54	0.17	0.22	0.25	0.00	0.43	0.85	0.43	0.44	0.31	0.37	0.37
Avail Cap(c_a), veh/h	322	504	590	365	0	456	356	1414	722	561	2163	1100
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.92	0.92	0.92	0.63	0.63	0.63
Uniform Delay (d), s/veh	57.7	47.7	38.0	51.2	0.0	49.8	57.3	27.1	27.1	17.5	0.0	0.0
Incr Delay (d2), s/veh	2.6	0.3	0.3	0.6	0.0	1.1	9.5	0.9	1.8	0.2	0.3	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	3.2	1.4	2.3	1.6	0.0	3.4	5.3	6.6	7.0	2.2	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.3	48.0	38.3	51.8	0.0	51.0	66.8	27.9	28.9	17.7	0.3	0.6
LnGrp LOS	E	D	D	D	A	D	E	C	C	B	A	A
Approach Vol, veh/h		232			167			1079			1397	
Approach Delay, s/veh		49.3			51.2			33.8			2.6	
Approach LOS		D			D			C			A	

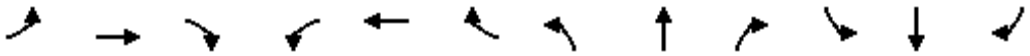
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	46.0	59.0		25.0	17.4	87.6		25.0				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	27.0	* 54		35.0	26.0	55.0		35.0				
Max Q Clear Time (g_c+I1), s	7.9	18.8		19.3	13.1	2.0		10.0				
Green Ext Time (p_c), s	0.4	6.1		0.7	0.3	9.9		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		20.9	
HCM 6th LOS		C	

Notes

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

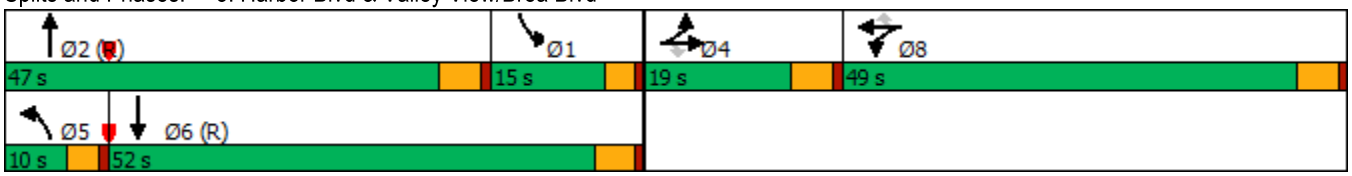
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	84	9	539	116	166	22	920	382	57	975	80
Future Volume (vph)	51	84	9	539	116	166	22	920	382	57	975	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.989	
Flt Protected	0.950			0.950	0.969		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1715	1583	1770	5085	1583	1770	5029	0
Flt Permitted	0.950			0.950	0.969		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1715	1583	1770	5085	1583	1770	5029	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			171			346		11	
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			3958	
Travel Time (s)		23.8			15.7			5.5			54.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	53	87	9	556	120	171	23	948	394	59	1005	82
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	53	87	9	334	342	171	23	948	394	59	1087	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			

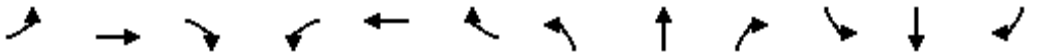


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	
Total Split (s)	19.0	19.0	19.0	49.0	49.0	49.0	10.0	47.0		15.0	52.0	
Total Split (%)	14.6%	14.6%	14.6%	37.7%	37.7%	37.7%	7.7%	36.2%		11.5%	40.0%	
Maximum Green (s)	14.0	14.0	14.0	44.0	44.0	44.0	6.0	42.0		11.0	47.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	
Pedestrian Calls (#/hr)				5	5	5		5			5	
Act Effct Green (s)	11.1	11.1	11.1	32.8	32.8	32.8	6.8	59.1	130.0	10.0	64.3	
Actuated g/C Ratio	0.09	0.09	0.09	0.25	0.25	0.25	0.05	0.45	1.00	0.08	0.49	
v/c Ratio	0.35	0.55	0.04	0.79	0.79	0.32	0.25	0.41	0.25	0.44	0.44	
Control Delay	61.7	69.7	0.2	58.0	58.1	6.2	79.6	17.8	0.4	49.8	8.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	61.7	69.7	0.2	58.0	58.1	6.2	79.6	17.8	0.4	49.8	8.6	
LOS	E	E	A	E	E	A	E	B	A	D	A	
Approach Delay		62.7			47.6			13.8			10.7	
Approach LOS		E			D			B			B	
Queue Length 50th (ft)	43	71	0	276	284	0	20	141	0	53	144	
Queue Length 95th (ft)	84	126	0	355	363	50	48	172	0	102	57	
Internal Link Dist (ft)		791			959			200			3878	
Turn Bay Length (ft)	85						95			150		
Base Capacity (vph)	190	200	290	568	580	648	92	2311	1583	149	2492	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.28	0.43	0.03	0.59	0.59	0.26	0.25	0.41	0.25	0.40	0.44	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 23.0		Intersection LOS: C	
Intersection Capacity Utilization 61.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	84	9	539	116	166	22	920	382	57	975	80
Future Volume (veh/h)	51	84	9	539	116	166	22	920	382	57	975	80
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	53	87	9	642	0	0	23	948	0	59	1005	82
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	112	118	100	737	0		46	1650		451	2685	219
Arrive On Green	0.06	0.06	0.06	0.21	0.00	0.00	0.03	0.32	0.00	0.25	0.56	0.56
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	5106	1585	1781	4812	392
Grp Volume(v), veh/h	53	87	9	642	0	0	23	948	0	59	710	377
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1702	1585	1781	1702	1800
Q Serve(g_s), s	3.7	5.9	0.7	22.7	0.0	0.0	1.7	20.1	0.0	3.3	15.2	15.2
Cycle Q Clear(g_c), s	3.7	5.9	0.7	22.7	0.0	0.0	1.7	20.1	0.0	3.3	15.2	15.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.22
Lane Grp Cap(c), veh/h	112	118	100	737	0		46	1650		451	1900	1004
V/C Ratio(X)	0.47	0.74	0.09	0.87	0.00		0.50	0.57		0.13	0.37	0.37
Avail Cap(c_a), veh/h	192	201	171	1206	0		82	1650		451	1900	1004
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	0.00	0.00	1.00	1.00	0.00	0.94	0.94	0.94
Uniform Delay (d), s/veh	58.8	59.9	57.4	49.9	0.0	0.0	62.5	36.6	0.0	37.5	16.0	16.1
Incr Delay (d2), s/veh	3.1	8.7	0.4	4.1	0.0	0.0	8.0	1.5	0.0	0.1	0.5	1.0
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	1.8	3.1	0.3	10.2	0.0	0.0	0.9	8.5	0.0	1.4	5.6	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.9	68.6	57.8	54.0	0.0	0.0	70.4	38.0	0.0	37.6	16.6	17.1
LnGrp LOS	E	E	E	D	A		E	D		D	B	B
Approach Vol, veh/h		149			642			971			1146	
Approach Delay, s/veh		65.6			54.0			38.8			17.8	
Approach LOS		E			D			D			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	37.9	47.0		13.2	7.4	77.6		31.9				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	11.0	* 42		14.0	6.0	47.0		44.0				
Max Q Clear Time (g_c+I1), s	5.3	22.1		7.9	3.7	17.2		24.7				
Green Ext Time (p_c), s	0.0	6.5		0.3	0.0	7.3		2.2				

Intersection Summary			
HCM 6th Ctrl Delay		35.3	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.

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

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

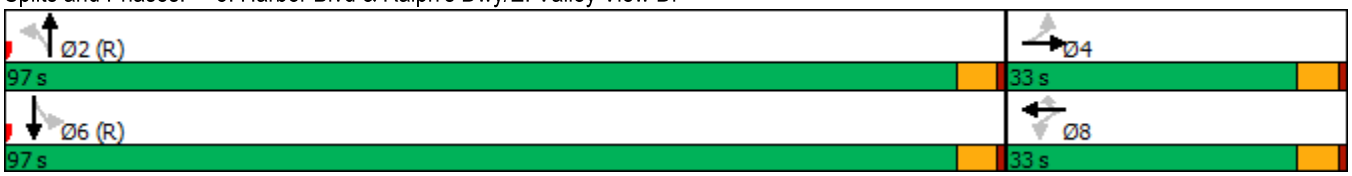
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	23	19	7	50	43	1242	26	36	1584	11
Future Volume (vph)	17	5	23	19	7	50	43	1242	26	36	1584	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.931				0.850		0.997			0.999	
Flt Protected		0.981			0.964		0.950			0.950		
Satd. Flow (prot)	0	1701	0	0	1796	1583	1770	5070	0	1770	3536	0
Flt Permitted		0.867			0.810		0.125			0.189		
Satd. Flow (perm)	0	1504	0	0	1509	1583	233	5070	0	352	3536	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				53		6			1	
Link Speed (mph)		25			25			35			30	
Link Distance (ft)		390			645			190			410	
Travel Time (s)		10.6			17.6			3.7			9.3	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	18	5	24	20	7	53	45	1307	27	38	1667	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	27	53	45	1334	0	38	1679	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	97.0	97.0		97.0	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	74.6%	74.6%		74.6%	74.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	92.0	92.0		92.0	92.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		11.4			11.4	11.4	111.8	111.8		111.8	111.8	
Actuated g/C Ratio		0.09			0.09	0.09	0.86	0.86		0.86	0.86	
v/c Ratio		0.31			0.20	0.28	0.23	0.31		0.13	0.55	
Control Delay		34.5			54.6	15.7	5.6	2.5		1.4	3.0	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		34.5			54.6	15.7	5.6	2.5		1.4	3.0	
LOS		C			D	B	A	A		A	A	
Approach Delay		34.5			28.8			2.6			3.0	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		19			22	0	5	56		0	71	
Queue Length 95th (ft)		50			45	35	m17	101		m7	190	
Internal Link Dist (ft)		310			565			110			330	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		342			325	382	200	4360		302	3040	
Starvation Cap Reductn		0			0	0	0	0		0	116	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.14			0.08	0.14	0.23	0.31		0.13	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 98 (75%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 3.9		Intersection LOS: A	
Intersection Capacity Utilization 61.8%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	5	23	19	7	50	43	1242	26	36	1584	11
Future Volume (veh/h)	17	5	23	19	7	50	43	1242	26	36	1584	11
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	18	5	24	20	7	53	45	1307	27	38	1667	12
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	14	36	103	29	79	281	4497	93	396	3159	23
Arrive On Green	0.05	0.05	0.05	0.05	0.05	0.05	0.87	0.87	0.87	0.87	0.87	0.87
Sat Flow, veh/h	411	289	731	1114	590	1585	294	5149	106	410	3617	26
Grp Volume(v), veh/h	47	0	0	27	0	53	45	864	470	38	818	861
Grp Sat Flow(s),veh/h/ln	1431	0	0	1704	0	1585	294	1702	1851	410	1777	1866
Q Serve(g_s), s	2.5	0.0	0.0	0.0	0.0	4.3	5.5	5.6	5.6	2.3	14.1	14.1
Cycle Q Clear(g_c), s	4.3	0.0	0.0	1.9	0.0	4.3	19.6	5.6	5.6	7.8	14.1	14.1
Prop In Lane	0.38		0.51	0.74		1.00	1.00		0.06	1.00		0.01
Lane Grp Cap(c), veh/h	109	0	0	133	0	79	281	2973	1617	396	1552	1630
V/C Ratio(X)	0.43	0.00	0.00	0.20	0.00	0.67	0.16	0.29	0.29	0.10	0.53	0.53
Avail Cap(c_a), veh/h	359	0	0	378	0	341	281	2973	1617	396	1552	1630
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.8	0.0	0.0	59.6	0.0	60.7	4.2	1.4	1.4	2.1	1.9	1.9
Incr Delay (d2), s/veh	2.7	0.0	0.0	0.7	0.0	9.6	1.2	0.2	0.5	0.5	1.3	1.2
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	1.6	0.0	0.0	0.9	0.0	1.9	0.4	1.0	1.1	0.2	3.1	3.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.4	0.0	0.0	60.3	0.0	70.3	5.5	1.6	1.9	2.5	3.2	3.2
LnGrp LOS	E	A	A	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		47			80			1379			1717	
Approach Delay, s/veh		63.4			66.9			1.8			3.2	
Approach LOS		E			E			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		118.5		11.5		118.5		11.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		92.0		28.0		92.0		28.0				
Max Q Clear Time (g_c+I1), s		21.6		6.3		16.1		6.3				
Green Ext Time (p_c), s		15.0		0.2		24.9		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			5.1									
HCM 6th LOS			A									

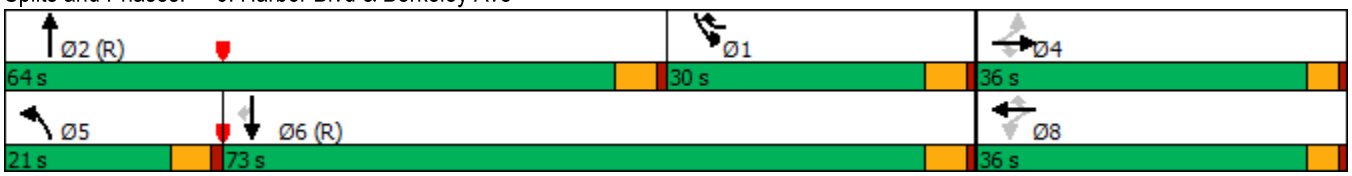
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	176	73	50	165	408	101	887	41	260	1290	19
Future Volume (vph)	17	176	73	50	165	408	101	887	41	260	1290	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.993				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3514	0	3433	3539	1583
Flt Permitted	0.401			0.367			0.950			0.950		
Satd. Flow (perm)	747	1863	1583	684	1863	1583	1770	3514	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101			77		5				50
Link Speed (mph)		35			35			35			30	
Link Distance (ft)		538			720			654			541	
Travel Time (s)		10.5			14.0			12.7			12.3	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	17	180	74	51	168	416	103	905	42	265	1316	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	180	74	51	168	416	103	947	0	265	1316	19
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	29.0	29.0	29.0	35.0	35.0	11.0	11.0	30.0		11.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	30.0	21.0	64.0		30.0	73.0	73.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	23.1%	16.2%	49.2%		23.1%	56.2%	56.2%
Maximum Green (s)	32.0	32.0	32.0	32.0	32.0	25.0	16.0	59.0		25.0	68.0	68.0
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	19.3	19.3	19.3	19.3	19.3	48.3	12.7	71.7		25.0	84.0	84.0
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.37	0.10	0.55		0.19	0.65	0.65
v/c Ratio	0.15	0.65	0.23	0.50	0.61	0.65	0.60	0.49		0.40	0.58	0.02
Control Delay	47.6	62.3	4.9	65.8	60.1	31.7	69.8	19.9		37.3	9.3	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	0.0
Total Delay	47.6	62.3	4.9	65.8	60.1	31.7	69.8	19.9		37.3	9.4	0.7
LOS	D	E	A	E	E	C	E	B		D	A	A
Approach Delay		45.7			41.9			24.8			13.9	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	13	147	0	41	136	242	84	239		85	93	0
Queue Length 95th (ft)	33	200	21	78	188	302	142	368		121	427	m1
Internal Link Dist (ft)		458			640			574			461	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	183	458	465	168	458	636	220	1941		660	2287	1040
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	168	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.09	0.39	0.16	0.30	0.37	0.65	0.47	0.49		0.40	0.62	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 122 (94%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 24.6		Intersection LOS: C	
Intersection Capacity Utilization 70.5%		ICU Level of Service C	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave

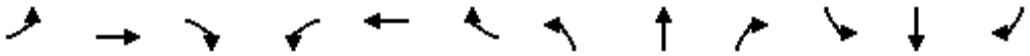


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	176	73	50	165	408	101	887	41	260	1290	19
Future Volume (veh/h)	17	176	73	50	165	408	101	887	41	260	1290	19
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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	17	180	74	51	168	416	103	905	42	265	1316	19
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	309	262	141	309	695	127	1569	73	944	2330	1039
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.07	0.45	0.45	0.27	0.66	0.66
Sat Flow, veh/h	831	1870	1585	1126	1870	1585	1781	3458	160	3456	3554	1585
Grp Volume(v), veh/h	17	180	74	51	168	416	103	465	482	265	1316	19
Grp Sat Flow(s),veh/h/ln	831	1870	1585	1126	1870	1585	1781	1777	1841	1728	1777	1585
Q Serve(g_s), s	2.5	11.6	5.3	5.7	10.7	0.0	7.4	25.2	25.2	7.8	26.3	0.5
Cycle Q Clear(g_c), s	13.2	11.6	5.3	17.3	10.7	0.0	7.4	25.2	25.2	7.8	26.3	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	124	309	262	141	309	695	127	806	836	944	2330	1039
V/C Ratio(X)	0.14	0.58	0.28	0.36	0.54	0.60	0.81	0.58	0.58	0.28	0.56	0.02
Avail Cap(c_a), veh/h	191	460	390	232	460	823	219	806	836	944	2330	1039
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	55.8	50.1	47.5	58.1	49.8	27.8	59.5	26.3	26.3	37.2	12.2	7.8
Incr Delay (d2), s/veh	0.5	1.7	0.6	1.5	1.5	0.9	11.5	3.0	2.9	0.2	1.0	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	0.5	5.5	2.1	1.7	5.1	9.8	3.7	11.1	11.5	3.4	10.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.3	51.9	48.1	59.6	51.3	28.7	70.9	29.3	29.2	37.3	13.2	7.8
LnGrp LOS	E	D	D	E	D	C	E	C	C	D	B	A
Approach Vol, veh/h		271			635			1050			1600	
Approach Delay, s/veh		51.1			37.1			33.3			17.2	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	40.5	64.0		25.5	14.3	90.2		25.5				
Change Period (Y+Rc), s	5.0	5.0		4.0	5.0	5.0		4.0				
Max Green Setting (Gmax), s	25.0	59.0		32.0	16.0	68.0		32.0				
Max Q Clear Time (g_c+I1), s	9.8	27.2		15.2	9.4	28.3		19.3				
Green Ext Time (p_c), s	0.8	6.8		1.1	0.1	13.7		2.2				

Intersection Summary			
HCM 6th Ctrl Delay		28.1	
HCM 6th LOS		C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	1114	125	133	833	300	189	1079	203	321	796	338
Future Volume (vph)	293	1114	125	133	833	300	189	1079	203	321	796	338
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.985				0.850			0.850		0.955	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4856	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4856	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18				248			141		84	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			833			926	
Travel Time (s)		17.8			16.7			12.6			12.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	302	1148	129	137	859	309	195	1112	209	331	821	348
Shared Lane Traffic (%)												
Lane Group Flow (vph)	302	1277	0	137	859	309	195	1112	209	331	1169	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	27.0	57.0		13.0	43.0	43.0	16.0	43.0	43.0	17.0	44.0	
Total Split (%)	20.8%	43.8%		10.0%	33.1%	33.1%	12.3%	33.1%	33.1%	13.1%	33.8%	
Maximum Green (s)	23.0	52.0		9.0	38.0	38.0	12.0	38.0	38.0	13.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	26.4	48.9		8.7	31.2	31.2	12.0	40.0	40.0	14.4	42.4	
Actuated g/C Ratio	0.20	0.38		0.07	0.24	0.24	0.09	0.31	0.31	0.11	0.33	
v/c Ratio	0.84	0.67		0.60	0.70	0.54	0.62	0.71	0.36	0.87	0.71	
Control Delay	70.5	35.1		70.1	48.2	12.7	45.7	24.5	3.9	80.0	39.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	70.5	35.1		70.1	48.2	12.7	45.7	24.5	3.9	80.0	39.2	
LOS	E	D		E	D	B	D	C	A	F	D	
Approach Delay		41.9			42.1			24.4			48.2	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	239	309		58	243	41	85	332	18	145	307	
Queue Length 95th (ft)	#438	360		93	272	121	m118	182	6	#241	364	
Internal Link Dist (ft)		963			901			753			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	360	2014		237	1486	638	316	1563	584	380	1639	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.84	0.63		0.58	0.58	0.48	0.62	0.71	0.36	0.87	0.71	

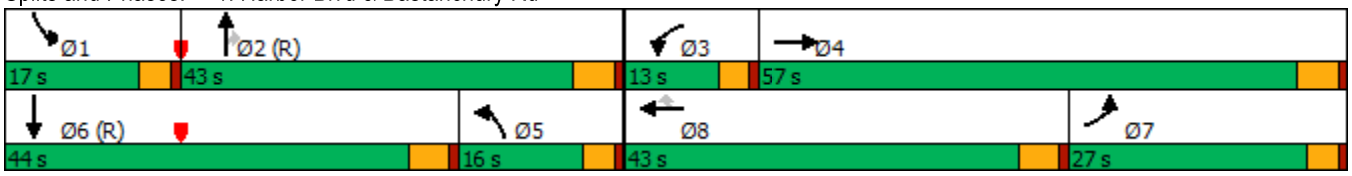
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 5 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 39.0		Intersection LOS: D	
Intersection Capacity Utilization 77.3%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



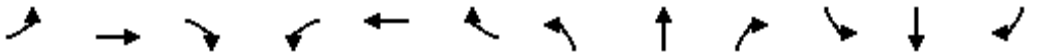
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	293	1114	125	133	833	300	189	1079	203	321	796	338
Future Volume (veh/h)	293	1114	125	133	833	300	189	1079	203	321	796	338
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		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	302	1148	129	137	859	309	195	1112	209	331	821	348
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	1629	183	188	1122	348	517	1824	566	346	1057	445
Arrive On Green	0.18	0.35	0.35	0.05	0.22	0.22	0.30	0.71	0.71	0.10	0.30	0.30
Sat Flow, veh/h	1781	4657	523	3456	5106	1585	3456	5106	1585	3456	3522	1485
Grp Volume(v), veh/h	302	839	438	137	859	309	195	1112	209	331	793	376
Grp Sat Flow(s),veh/h/ln	1781	1702	1776	1728	1702	1585	1728	1702	1585	1728	1702	1603
Q Serve(g_s), s	21.8	27.6	27.7	5.1	20.5	19.2	5.8	14.3	6.6	12.4	27.7	27.9
Cycle Q Clear(g_c), s	21.8	27.6	27.7	5.1	20.5	19.2	5.8	14.3	6.6	12.4	27.7	27.9
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		0.93
Lane Grp Cap(c), veh/h	315	1191	621	188	1122	348	517	1824	566	346	1021	481
V/C Ratio(X)	0.96	0.70	0.71	0.73	0.77	0.89	0.38	0.61	0.37	0.96	0.78	0.78
Avail Cap(c_a), veh/h	315	1362	710	239	1493	463	517	1824	566	346	1021	481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.86	0.86	0.86	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.0	36.5	36.5	60.5	47.6	30.2	40.8	14.0	12.9	58.2	41.5	41.6
Incr Delay (d2), s/veh	39.5	1.4	2.7	7.9	1.7	15.0	0.4	1.3	1.6	37.3	5.8	11.9
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	13.0	11.5	12.2	2.4	8.7	8.6	2.3	3.8	2.2	7.0	11.9	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.5	37.9	39.2	68.4	49.3	45.2	41.2	15.3	14.5	95.5	47.3	53.5
LnGrp LOS	F	D	D	E	D	D	D	B	B	F	D	D
Approach Vol, veh/h		1579			1305			1516			1500	
Approach Delay, s/veh		48.7			50.3			18.5			59.5	
Approach LOS		D			D			B			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	51.4	11.1	50.5	24.4	44.0	28.0	33.6
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	5.0	* 5	5.0	* 5
Max Green Setting (Gmax), s	13.0	38.0	9.0	52.0	12.0	* 39	23.0	* 38
Max Q Clear Time (g_c+I1), s	14.4	16.3	7.1	29.7	7.8	29.9	23.8	22.5
Green Ext Time (p_c), s	0.0	8.3	0.1	8.8	0.2	4.6	0.0	6.0

Intersection Summary	
HCM 6th Ctrl Delay	44.1
HCM 6th LOS	D

Notes

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	22	132	71	41	199	48	1153	54	86	881	82
Future Volume (vph)	119	22	132	71	41	199	48	1153	54	86	881	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	175		0	230		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850		0.876			0.993			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1632	0	1770	5050	0	1770	5019	0
Flt Permitted	0.293			0.742			0.950			0.950		
Satd. Flow (perm)	546	1863	1583	1382	1632	0	1770	5050	0	1770	5019	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			82		201			7			16	
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			3958			833	
Travel Time (s)		18.5			16.0			54.0			12.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	23	139	75	43	209	51	1214	57	91	927	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	23	139	75	252	0	51	1271	0	91	1013	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	
Total Split (s)	48.0	48.0	15.0	48.0	48.0		15.0	61.0		21.0	67.0	
Total Split (%)	36.9%	36.9%	11.5%	36.9%	36.9%		11.5%	46.9%		16.2%	51.5%	
Maximum Green (s)	43.0	43.0	11.0	43.0	43.0		11.0	56.0		17.0	62.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	
Lead/Lag			Lag				Lag	Lead		Lag	Lead	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0			7.0			7.0	
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	
Pedestrian Calls (#/hr)				5	5			5			5	
Act Effct Green (s)	23.9	23.9	37.9	23.9	23.9		9.0	77.1		15.0	83.1	
Actuated g/C Ratio	0.18	0.18	0.29	0.18	0.18		0.07	0.59		0.12	0.64	
v/c Ratio	1.25	0.07	0.27	0.30	0.54		0.42	0.42		0.45	0.32	
Control Delay	213.3	39.9	14.4	46.0	14.7		72.1	3.0		55.0	5.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	213.3	39.9	14.4	46.0	14.7		72.1	3.0		55.0	5.8	
LOS	F	D	B	D	B		E	A		D	A	
Approach Delay		103.1			21.9			5.7			9.8	
Approach LOS		F			C			A			A	
Queue Length 50th (ft)	~131	16	35	55	37		45	23		75	54	
Queue Length 95th (ft)	#222	38	76	93	107		m89	39		m112	80	
Internal Link Dist (ft)		733			625			3878			753	
Turn Bay Length (ft)	55		85				175			230		
Base Capacity (vph)	180	616	512	457	674		149	2996		231	3213	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.69	0.04	0.27	0.16	0.37		0.34	0.42		0.39	0.32	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 18.1		Intersection LOS: B	
Intersection Capacity Utilization 65.3%		ICU Level of Service C	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

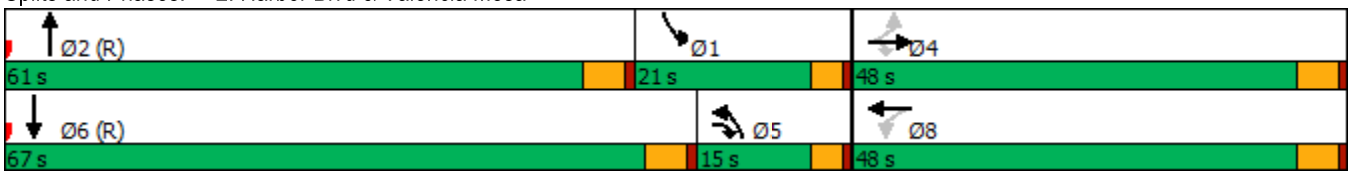
Queue shown is maximum after two cycles.

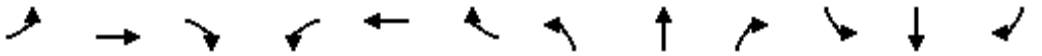
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	22	132	71	41	199	48	1153	54	86	881	82
Future Volume (veh/h)	119	22	132	71	41	199	48	1153	54	86	881	82
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	125	23	139	75	43	209	51	1214	57	91	927	86
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	201	494	658	368	73	357	269	2153	101	351	2268	210
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.15	0.43	0.43	0.39	0.95	0.95
Sat Flow, veh/h	1128	1870	1585	1224	278	1350	1781	4998	235	1781	4755	440
Grp Volume(v), veh/h	125	23	139	75	0	252	51	827	444	91	663	350
Grp Sat Flow(s),veh/h/ln	1128	1870	1585	1224	0	1627	1781	1702	1828	1781	1702	1791
Q Serve(g_s), s	14.1	1.2	0.0	6.3	0.0	17.5	3.3	23.7	23.8	4.5	1.9	1.9
Cycle Q Clear(g_c), s	31.6	1.2	0.0	7.5	0.0	17.5	3.3	23.7	23.8	4.5	1.9	1.9
Prop In Lane	1.00		1.00	1.00		0.83	1.00		0.13	1.00		0.25
Lane Grp Cap(c), veh/h	201	494	658	368	0	430	269	1466	788	351	1623	854
V/C Ratio(X)	0.62	0.05	0.21	0.20	0.00	0.59	0.19	0.56	0.56	0.26	0.41	0.41
Avail Cap(c_a), veh/h	276	619	764	449	0	538	269	1466	788	351	1623	854
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.88	0.88	0.88	0.65	0.65	0.65
Uniform Delay (d), s/veh	55.4	35.6	24.4	38.4	0.0	41.6	48.2	27.8	27.8	32.9	1.6	1.6
Incr Delay (d2), s/veh	3.1	0.0	0.2	0.3	0.0	1.3	0.3	1.4	2.6	0.3	0.5	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	4.2	0.6	2.8	1.9	0.0	7.2	1.4	9.4	10.4	1.8	0.6	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.5	35.7	24.5	38.7	0.0	42.9	48.5	29.2	30.4	33.2	2.1	2.6
LnGrp LOS	E	D	C	D	A	D	D	C	C	C	A	A
Approach Vol, veh/h		287			327			1322			1104	
Approach Delay, s/veh		40.2			41.9			30.3			4.8	
Approach LOS		D			D			C			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.6	61.0		39.4	23.6	67.0		39.4				
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	17.0	56.0		43.0	11.0	62.0		43.0				
Max Q Clear Time (g_c+I1), s	6.5	25.8		33.6	5.3	3.9		19.5				
Green Ext Time (p_c), s	0.1	8.9		0.7	0.0	7.5		1.9				

Intersection Summary												
HCM 6th Ctrl Delay			23.3									
HCM 6th LOS			C									

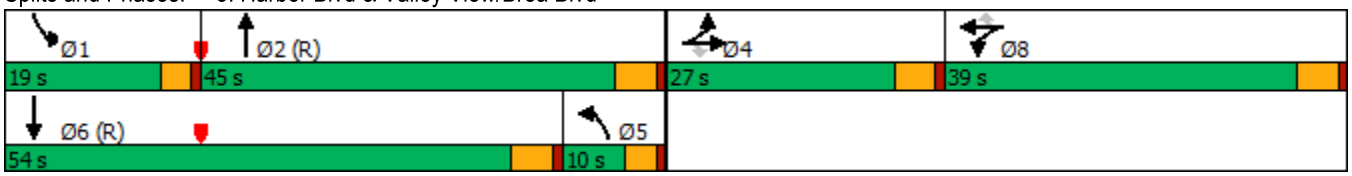
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	179	26	469	97	111	9	1024	605	97	1000	50
Future Volume (vph)	68	179	26	469	97	111	9	1024	605	97	1000	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.993	
Flt Protected	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1713	1583	1770	5085	1583	1770	5050	0
Flt Permitted	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1713	1583	1770	5085	1583	1770	5050	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			134			491		7	
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			3958	
Travel Time (s)		23.8			15.7			5.5			54.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	70	185	27	484	100	114	9	1056	624	100	1031	52
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	70	185	27	290	294	114	9	1056	624	100	1083	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			

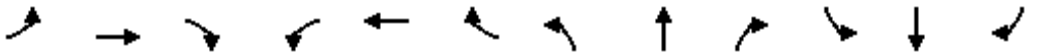
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	
Total Split (s)	27.0	27.0	27.0	39.0	39.0	39.0	10.0	45.0		19.0	54.0	
Total Split (%)	20.8%	20.8%	20.8%	30.0%	30.0%	30.0%	7.7%	34.6%		14.6%	41.5%	
Maximum Green (s)	22.0	22.0	22.0	34.0	34.0	34.0	6.0	40.0		15.0	49.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	
Pedestrian Calls (#/hr)				5	5	5		5			5	
Act Effct Green (s)	17.6	17.6	17.6	27.8	27.8	27.8	6.0	53.5	130.0	12.1	67.6	
Actuated g/C Ratio	0.14	0.14	0.14	0.21	0.21	0.21	0.05	0.41	1.00	0.09	0.52	
v/c Ratio	0.29	0.73	0.08	0.81	0.80	0.26	0.11	0.50	0.39	0.61	0.41	
Control Delay	52.5	70.6	0.5	65.6	64.9	5.3	50.8	21.3	0.8	78.7	13.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	52.5	70.6	0.5	65.6	64.9	5.3	50.8	21.3	0.8	78.7	13.5	
LOS	D	E	A	E	E	A	D	C	A	E	B	
Approach Delay		59.4			55.4			13.9			19.1	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)	54	151	0	245	248	0	7	230	4	87	134	
Queue Length 95th (ft)	98	227	0	337	341	33	m18	276	13	126	236	
Internal Link Dist (ft)		791			959			200			3878	
Turn Bay Length (ft)	85						95			150		
Base Capacity (vph)	299	315	379	439	448	512	81	2092	1583	204	2630	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.23	0.59	0.07	0.66	0.66	0.22	0.11	0.50	0.39	0.49	0.41	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 72 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 26.4 Intersection LOS: C
Intersection Capacity Utilization 66.2% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	179	26	469	97	111	9	1024	605	97	1000	50
Future Volume (veh/h)	68	179	26	469	97	111	9	1024	605	97	1000	50
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	70	185	27	555	0	0	9	1056	0	100	1031	52
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	210	221	187	639	0		306	2486		124	1876	95
Arrive On Green	0.12	0.12	0.12	0.18	0.00	0.00	0.17	0.49	0.00	0.07	0.38	0.38
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	5106	1585	1781	4978	251
Grp Volume(v), veh/h	70	185	27	555	0	0	9	1056	0	100	705	378
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1702	1585	1781	1702	1825
Q Serve(g_s), s	4.7	12.6	2.0	19.7	0.0	0.0	0.5	17.4	0.0	7.2	21.1	21.2
Cycle Q Clear(g_c), s	4.7	12.6	2.0	19.7	0.0	0.0	0.5	17.4	0.0	7.2	21.1	21.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.14
Lane Grp Cap(c), veh/h	210	221	187	639	0		306	2486		124	1283	688
V/C Ratio(X)	0.33	0.84	0.14	0.87	0.00		0.03	0.42		0.81	0.55	0.55
Avail Cap(c_a), veh/h	301	317	268	932	0		306	2486		206	1283	688
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	0.00	0.00	1.00	1.00	0.00	0.96	0.96	0.96
Uniform Delay (d), s/veh	52.6	56.1	51.4	51.8	0.0	0.0	44.8	21.6	0.0	59.6	31.8	31.8
Incr Delay (d2), s/veh	0.9	12.5	0.3	6.2	0.0	0.0	0.0	0.5	0.0	11.2	1.6	3.0
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	2.2	6.8	0.8	9.1	0.0	0.0	0.2	7.0	0.0	3.5	8.6	9.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.5	68.6	51.8	58.0	0.0	0.0	44.9	22.1	0.0	70.9	33.4	34.9
LnGrp LOS	D	E	D	E	A		D	C		E	C	C
Approach Vol, veh/h		282			555			1065			1183	
Approach Delay, s/veh		63.2			58.0			22.3			37.1	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	68.3		20.4	27.3	54.0		28.3				
Change Period (Y+Rc), s	4.0	5.0		5.0	5.0	* 5		5.0				
Max Green Setting (Gmax), s	15.0	40.0		22.0	6.0	* 49		34.0				
Max Q Clear Time (g_c+I1), s	9.2	19.4		14.6	2.5	23.2		21.7				
Green Ext Time (p_c), s	0.1	7.4		0.8	0.0	6.9		1.6				

Intersection Summary			
HCM 6th Ctrl Delay		38.1	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.

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

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

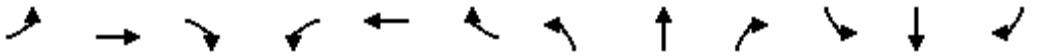
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	21	65	14	11	43	60	1608	24	48	1455	42
Future Volume (vph)	47	21	65	14	11	43	60	1608	24	48	1455	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.934				0.850		0.998			0.996	
Flt Protected		0.983			0.973		0.950			0.950		
Satd. Flow (prot)	0	1710	0	0	1812	1583	1770	5075	0	1770	3525	0
Flt Permitted		0.872			0.775		0.143			0.125		
Satd. Flow (perm)	0	1517	0	0	1444	1583	266	5075	0	233	3525	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34				44		4			5	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			645			190			410	
Travel Time (s)		10.6			17.6			3.7			8.0	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	48	21	66	14	11	44	61	1641	24	49	1485	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	0	25	44	61	1665	0	49	1528	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	35.0	35.0		35.0	35.0	35.0	95.0	95.0		95.0	95.0	
Total Split (%)	26.9%	26.9%		26.9%	26.9%	26.9%	73.1%	73.1%		73.1%	73.1%	
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	90.0	90.0		90.0	90.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		15.5			15.5	15.5	104.5	104.5		104.5	104.5	
Actuated g/C Ratio		0.12			0.12	0.12	0.80	0.80		0.80	0.80	
v/c Ratio		0.64			0.15	0.19	0.29	0.41		0.26	0.54	
Control Delay		53.0			49.2	14.4	6.0	3.2		3.5	2.4	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		53.0			49.2	14.4	6.0	3.2		3.5	2.4	
LOS		D			D	B	A	A		A	A	
Approach Delay		53.0			27.0			3.3			2.4	
Approach LOS		D			C			A			A	
Queue Length 50th (ft)		83			19	0	8	91		0	31	
Queue Length 95th (ft)		136			42	32	m16	120		m1	88	
Internal Link Dist (ft)		310			565			110			330	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		376			333	399	213	4081		187	2835	
Starvation Cap Reductn		0			0	0	0	0		0	50	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.36			0.08	0.11	0.29	0.41		0.26	0.55	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 32 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 5.3 Intersection LOS: A
Intersection Capacity Utilization 72.6% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

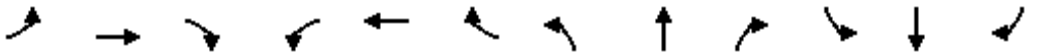
Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr



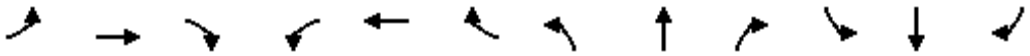
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	21	65	14	11	43	60	1608	24	48	1455	42
Future Volume (veh/h)	47	21	65	14	11	43	60	1608	24	48	1455	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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	48	21	66	14	11	44	61	1641	24	49	1485	43
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	86	35	80	110	75	165	289	4247	62	275	2889	84
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.82	0.82	0.82	0.82	0.82	0.82
Sat Flow, veh/h	469	336	770	643	722	1585	341	5185	76	298	3527	102
Grp Volume(v), veh/h	135	0	0	25	0	44	61	1077	588	49	747	781
Grp Sat Flow(s),veh/h/ln	1576	0	0	1365	0	1585	341	1702	1857	298	1777	1852
Q Serve(g_s), s	8.9	0.0	0.0	0.0	0.0	3.3	8.9	10.9	10.9	6.8	17.1	17.1
Cycle Q Clear(g_c), s	10.9	0.0	0.0	1.6	0.0	3.3	26.0	10.9	10.9	17.6	17.1	17.1
Prop In Lane	0.36		0.49	0.56		1.00	1.00		0.04	1.00		0.06
Lane Grp Cap(c), veh/h	201	0	0	185	0	165	289	2788	1521	275	1455	1517
V/C Ratio(X)	0.67	0.00	0.00	0.14	0.00	0.27	0.21	0.39	0.39	0.18	0.51	0.51
Avail Cap(c_a), veh/h	398	0	0	376	0	366	289	2788	1521	275	1455	1517
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	0.0	0.0	52.9	0.0	53.7	7.7	3.1	3.1	5.4	3.7	3.7
Incr Delay (d2), s/veh	3.8	0.0	0.0	0.3	0.0	0.9	1.7	0.4	0.7	1.4	1.3	1.3
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	4.6	0.0	0.0	0.8	0.0	1.4	0.7	2.9	3.3	0.5	4.9	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.8	0.0	0.0	53.2	0.0	54.5	9.4	3.5	3.9	6.9	5.0	4.9
LnGrp LOS	E	A	A	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		135			69			1726			1577	
Approach Delay, s/veh		60.8			54.1			3.8			5.0	
Approach LOS		E			D			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		111.5		18.5		111.5		18.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		90.0		30.0		90.0		30.0				
Max Q Clear Time (g_c+I1), s		28.0		12.9		19.6		5.3				
Green Ext Time (p_c), s		21.6		0.7		20.1		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			7.5									
HCM 6th LOS			A									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	147	81	56	168	460	87	1191	25	330	1252	21
Future Volume (vph)	28	147	81	56	168	460	87	1191	25	330	1252	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3529	0	3433	3539	1583
Flt Permitted	0.410			0.475			0.950			0.950		
Satd. Flow (perm)	764	1863	1583	885	1863	1583	1770	3529	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			50		2				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		538			720			654			541	
Travel Time (s)		10.5			14.0			12.7			10.5	
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
Adj. Flow (vph)	29	153	84	58	175	479	91	1241	26	344	1304	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	153	84	58	175	479	91	1267	0	344	1304	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

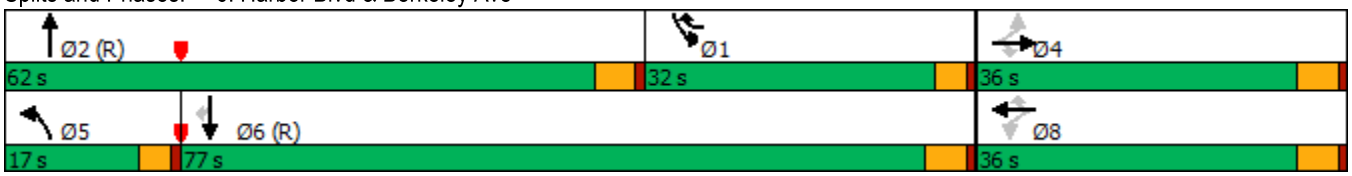


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	36.0	36.0	10.0	10.0	30.0		10.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	32.0	17.0	62.0		32.0	77.0	77.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	24.6%	13.1%	47.7%		24.6%	59.2%	59.2%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0	28.0	13.0	57.0		28.0	72.0	72.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	19.0	19.0	19.0	19.0	19.0	52.0	11.3	69.0		28.0	85.7	85.7
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.40	0.09	0.53		0.22	0.66	0.66
v/c Ratio	0.26	0.56	0.27	0.45	0.64	0.72	0.59	0.68		0.47	0.56	0.02
Control Delay	51.9	58.3	9.1	59.5	62.1	35.3	72.9	25.8		31.1	3.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	0.0
Total Delay	51.9	58.3	9.1	59.5	62.1	35.3	72.9	25.8		31.1	3.9	0.1
LOS	D	E	A	E	E	D	E	C		C	A	A
Approach Delay		42.1			43.9			29.0			9.5	
Approach LOS		D			D			C			A	
Queue Length 50th (ft)	22	123	0	46	143	311	75	385		135	48	0
Queue Length 95th (ft)	48	173	37	83	196	367	133	579		145	188	m1
Internal Link Dist (ft)		458			640			574			461	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	182	444	447	211	444	663	179	1874		739	2334	1061
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	165	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.16	0.34	0.19	0.27	0.39	0.72	0.51	0.68		0.47	0.60	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 52 (40%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 24.4		Intersection LOS: C	
Intersection Capacity Utilization 78.9%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	147	81	56	168	460	87	1191	25	330	1252	21
Future Volume (veh/h)	28	147	81	56	168	460	87	1191	25	330	1252	21
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	29	153	84	58	175	479	91	1241	26	344	1304	22
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	291	247	155	291	707	114	1561	33	1004	2391	1067
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.06	0.44	0.44	0.29	0.67	0.67
Sat Flow, veh/h	1210	1870	1585	1234	1870	1585	1781	3559	75	3456	3554	1585
Grp Volume(v), veh/h	29	153	84	58	175	479	91	619	648	344	1304	22
Grp Sat Flow(s),veh/h/ln	1210	1870	1585	1234	1870	1585	1781	1777	1857	1728	1777	1585
Q Serve(g_s), s	3.0	9.8	6.1	5.9	11.3	0.0	6.6	39.1	39.1	10.2	24.6	0.6
Cycle Q Clear(g_c), s	14.3	9.8	6.1	15.7	11.3	0.0	6.6	39.1	39.1	10.2	24.6	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	138	291	247	155	291	707	114	779	814	1004	2391	1067
V/C Ratio(X)	0.21	0.53	0.34	0.38	0.60	0.68	0.80	0.79	0.80	0.34	0.55	0.02
Avail Cap(c_a), veh/h	238	446	378	257	446	839	178	779	814	1004	2391	1067
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	57.8	50.5	48.9	57.7	51.1	28.6	60.0	31.5	31.5	36.3	11.0	7.1
Incr Delay (d2), s/veh	0.7	1.5	0.8	1.5	2.0	1.7	13.0	8.2	7.9	0.2	0.9	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	0.9	4.7	2.5	1.9	5.4	11.9	3.4	18.1	18.9	4.3	9.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.5	51.9	49.8	59.2	53.1	30.3	73.0	39.7	39.4	36.5	11.9	7.1
LnGrp LOS	E	D	D	E	D	C	E	D	D	D	B	A
Approach Vol, veh/h		266			712			1358			1670	
Approach Delay, s/veh		52.0			38.3			41.8			16.9	
Approach LOS		D			D			D			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	42.8	62.0		25.2	12.3	92.5		25.2				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	28.0	* 57		31.0	13.0	72.0		31.0				
Max Q Clear Time (g_c+I1), s	12.2	41.1		16.3	8.6	26.6		17.7				
Green Ext Time (p_c), s	1.1	7.6		1.0	0.1	13.3		2.6				

Intersection Summary			
HCM 6th Ctrl Delay		31.5	
HCM 6th LOS		C	

Notes

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

APPENDIX B-II

EXISTING PLUS PROJECT TRAFFIC CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	311	848	163	263	927	216	182	621	110	349	941	297
Future Volume (vph)	311	848	163	263	927	216	182	621	110	349	941	297
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.976				0.850			0.850		0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4963	0	3433	5085	1583	3433	5085	1583	3433	4902	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4963	0	3433	5085	1583	3433	5085	1583	3433	4902	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33				170			126		64	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			428			926	
Travel Time (s)		17.8			16.7			6.5			12.6	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	331	902	173	280	986	230	194	661	117	371	1001	316
Shared Lane Traffic (%)												
Lane Group Flow (vph)	331	1075	0	280	986	230	194	661	117	371	1317	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	27.0	49.0		21.0	43.0	43.0	14.0	43.0	43.0	17.0	46.0	
Total Split (%)	20.8%	37.7%		16.2%	33.1%	33.1%	10.8%	33.1%	33.1%	13.1%	35.4%	
Maximum Green (s)	23.0	44.0		17.0	38.0	38.0	10.0	38.0	38.0	13.0	41.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	23.0	35.9		20.9	33.9	33.9	10.0	42.1	42.1	13.0	45.1	
Actuated g/C Ratio	0.18	0.28		0.16	0.26	0.26	0.08	0.32	0.32	0.10	0.35	
v/c Ratio	1.06	0.77		0.51	0.74	0.43	0.73	0.40	0.20	1.08	0.76	
Control Delay	117.6	45.6		53.8	47.6	13.3	55.9	25.1	5.0	126.1	39.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	117.6	45.6		53.8	47.6	13.3	55.9	25.1	5.0	126.1	39.6	
LOS	F	D		D	D	B	E	C	A	F	D	
Approach Delay		62.5			43.5			28.8			58.6	
Approach LOS		E			D			C			E	
Queue Length 50th (ft)	~305	297		112	279	39	85	94	4	~179	344	
Queue Length 95th (ft)	#494	326		163	318	108	#134	137	35	#281	421	
Internal Link Dist (ft)		963			901			348			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	313	1701		552	1486	583	264	1648	598	343	1743	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.06	0.63		0.51	0.66	0.39	0.73	0.40	0.20	1.08	0.76	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 59 (45%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 50.3		Intersection LOS: D	
Intersection Capacity Utilization 80.1%		ICU Level of Service D	
Analysis Period (min) 15			

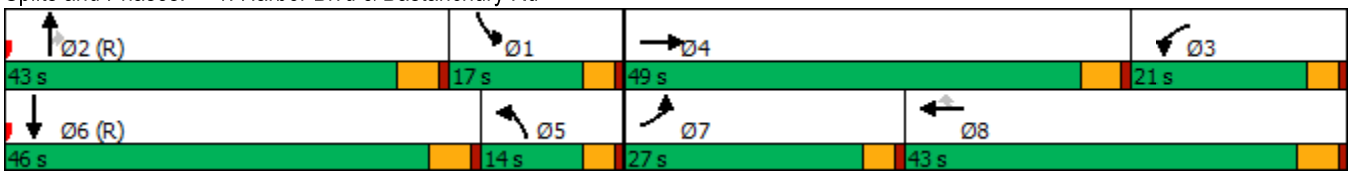
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	311	848	163	263	927	216	182	621	110	349	941	297
Future Volume (veh/h)	311	848	163	263	927	216	182	621	110	349	941	297
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	331	902	173	280	986	230	194	661	117	371	1001	316
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	1123	214	518	1232	383	442	1493	463	522	1212	382
Arrive On Green	0.18	0.26	0.26	0.15	0.24	0.24	0.13	0.29	0.29	0.15	0.32	0.32
Sat Flow, veh/h	1781	4304	822	3456	5106	1585	3456	5106	1585	3456	3844	1212
Grp Volume(v), veh/h	331	712	363	280	986	230	194	661	117	371	886	431
Grp Sat Flow(s),veh/h/ln	1781	1702	1722	1728	1702	1585	1728	1702	1585	1728	1702	1652
Q Serve(g_s), s	23.0	25.4	25.6	9.7	23.6	11.9	6.7	13.7	7.3	13.3	31.3	31.4
Cycle Q Clear(g_c), s	23.0	25.4	25.6	9.7	23.6	11.9	6.7	13.7	7.3	13.3	31.3	31.4
Prop In Lane	1.00		0.48	1.00		1.00	1.00		1.00	1.00		0.73
Lane Grp Cap(c), veh/h	315	888	449	518	1232	383	442	1493	463	522	1074	521
V/C Ratio(X)	1.05	0.80	0.81	0.54	0.80	0.60	0.44	0.44	0.25	0.71	0.83	0.83
Avail Cap(c_a), veh/h	315	1152	583	518	1493	463	442	1493	463	522	1074	521
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	53.5	44.9	45.0	51.1	46.4	22.0	52.4	37.4	35.1	52.5	41.2	41.2
Incr Delay (d2), s/veh	64.5	3.2	6.4	1.1	2.7	1.5	0.7	1.0	1.3	4.5	7.3	14.0
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	15.7	10.9	11.5	4.3	10.1	4.5	2.9	5.7	3.0	5.9	13.6	14.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	118.0	48.1	51.3	52.3	49.0	23.6	53.1	38.3	36.5	57.0	48.5	55.2
LnGrp LOS	F	D	D	D	D	C	D	D	D	E	D	E
Approach Vol, veh/h		1406			1496			972			1688	
Approach Delay, s/veh		65.4			45.7			41.1			52.0	
Approach LOS		E			D			D			D	

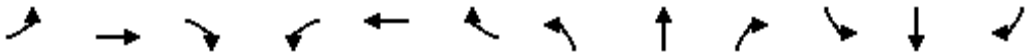
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.6	43.0	24.5	38.9	20.6	46.0	27.0	36.4
Change Period (Y+Rc), s	4.0	5.0	5.0	* 5	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	13.0	38.0	17.0	* 44	10.0	41.0	23.0	38.0
Max Q Clear Time (g_c+I1), s	15.3	15.7	11.7	27.6	8.7	33.4	25.0	25.6
Green Ext Time (p_c), s	0.0	4.6	0.4	6.3	0.1	4.5	0.0	5.8

Intersection Summary	
HCM 6th Ctrl Delay	51.8
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	46	85	51	45	63	147	752	125	167	984	176
Future Volume (vph)	90	46	85	51	45	63	147	752	125	167	984	176
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	185		0	230		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850		0.912			0.979				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1699	0	1770	3465	0	1770	3539	1583
Flt Permitted	0.583			0.726			0.950			0.950		
Satd. Flow (perm)	1086	1863	1583	1352	1699	0	1770	3465	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			59		52			19				185
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			616			406	
Travel Time (s)		18.5			16.0			8.4			6.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	95	48	89	54	47	66	155	792	132	176	1036	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	48	89	54	113	0	155	924	0	176	1036	185
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								6

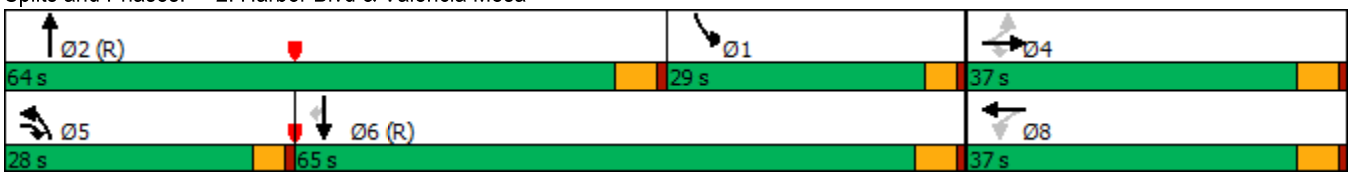


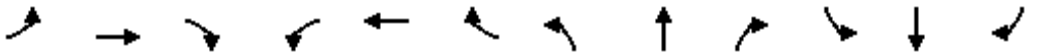
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	30.0
Total Split (s)	37.0	37.0	28.0	37.0	37.0		28.0	64.0		29.0	65.0	65.0
Total Split (%)	28.5%	28.5%	21.5%	28.5%	28.5%		21.5%	49.2%		22.3%	50.0%	50.0%
Maximum Green (s)	32.0	32.0	24.0	32.0	32.0		24.0	59.0		25.0	60.0	60.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag			Lead				Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5			5			5	5
Act Effct Green (s)	17.2	17.2	38.8	17.2	17.2		16.6	73.8		25.0	82.2	82.2
Actuated g/C Ratio	0.13	0.13	0.30	0.13	0.13		0.13	0.57		0.19	0.63	0.63
v/c Ratio	0.66	0.20	0.17	0.30	0.42		0.69	0.47		0.52	0.46	0.17
Control Delay	73.2	48.4	11.6	52.1	31.2		91.7	4.9		52.9	10.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	73.2	48.4	11.6	52.1	31.2		91.7	4.9		52.9	10.9	2.1
LOS	E	D	B	D	C		F	A		D	B	A
Approach Delay		44.5			37.9			17.4			15.0	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	78	37	18	42	48		134	42		150	133	8
Queue Length 95th (ft)	122	66	46	74	94		150	69		m207	534	m27
Internal Link Dist (ft)		733			625			536			326	
Turn Bay Length (ft)	55		85				185			230		
Base Capacity (vph)	267	458	600	332	457		326	1975		340	2237	1069
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.36	0.10	0.15	0.16	0.25		0.48	0.47		0.52	0.46	0.17

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 84 (65%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 19.6		Intersection LOS: B	
Intersection Capacity Utilization 58.7%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	90	46	85	51	45	63	147	752	125	167	984	176
Future Volume (veh/h)	90	46	85	51	45	63	147	752	125	167	984	176
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	95	48	89	54	47	66	155	792	132	176	1036	185
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	174	287	406	220	108	152	183	1383	231	494	2261	1008
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.10	0.45	0.45	0.28	0.64	0.64
Sat Flow, veh/h	1280	1870	1585	1252	704	988	1781	3048	508	1781	3554	1585
Grp Volume(v), veh/h	95	48	89	54	0	113	155	462	462	176	1036	185
Grp Sat Flow(s),veh/h/ln	1280	1870	1585	1252	0	1692	1781	1777	1779	1781	1777	1585
Q Serve(g_s), s	9.5	2.9	5.8	5.1	0.0	7.9	11.1	24.9	24.9	10.3	19.5	6.3
Cycle Q Clear(g_c), s	17.3	2.9	5.8	8.0	0.0	7.9	11.1	24.9	24.9	10.3	19.5	6.3
Prop In Lane	1.00		1.00	1.00		0.58	1.00		0.29	1.00		1.00
Lane Grp Cap(c), veh/h	174	287	406	220	0	260	183	806	807	494	2261	1008
V/C Ratio(X)	0.54	0.17	0.22	0.25	0.00	0.43	0.85	0.57	0.57	0.36	0.46	0.18
Avail Cap(c_a), veh/h	293	460	553	336	0	417	329	806	807	494	2261	1008
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.8	47.8	38.1	51.3	0.0	49.9	57.3	26.2	26.2	37.7	12.1	9.7
Incr Delay (d2), s/veh	2.6	0.3	0.3	0.6	0.0	1.1	10.3	2.9	2.9	0.4	0.7	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	3.2	1.4	2.3	1.6	0.0	3.4	5.4	10.6	10.6	4.5	7.2	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.4	48.1	38.4	51.8	0.0	51.0	67.7	29.1	29.1	38.1	12.8	10.1
LnGrp LOS	E	D	D	D	A	D	E	C	C	D	B	B
Approach Vol, veh/h		232			167			1079			1397	
Approach Delay, s/veh		49.4			51.3			34.7			15.7	
Approach LOS		D			D			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	41.0	64.0		25.0	17.3	87.7		25.0				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	25.0	* 59		32.0	24.0	60.0		32.0				
Max Q Clear Time (g_c+I1), s	12.3	26.9		19.3	13.1	21.5		10.0				
Green Ext Time (p_c), s	0.3	5.8		0.6	0.3	9.1		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		27.6	
HCM 6th LOS		C	

Notes

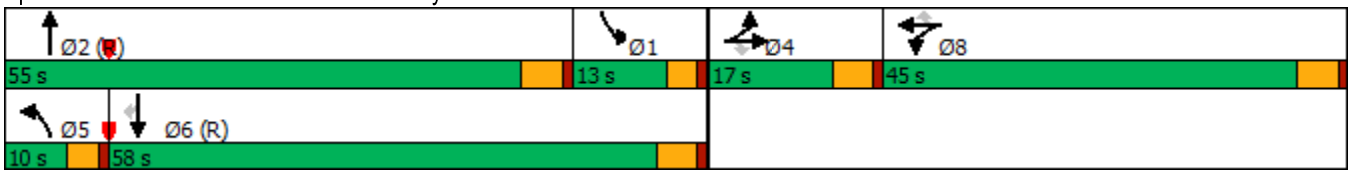
* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	84	9	539	116	166	22	920	382	57	975	80
Future Volume (vph)	51	84	9	539	116	166	22	920	382	57	975	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	140		140
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.969		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1715	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950	0.969		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1715	1583	1770	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			171			241			92
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			363	
Travel Time (s)		23.8			15.7			5.5			5.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	53	87	9	556	120	171	23	948	394	59	1005	82
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	53	87	9	334	342	171	23	948	394	59	1005	82
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	30.0
Total Split (s)	17.0	17.0	17.0	45.0	45.0	45.0	10.0	55.0		13.0	58.0	58.0
Total Split (%)	13.1%	13.1%	13.1%	34.6%	34.6%	34.6%	7.7%	42.3%		10.0%	44.6%	44.6%
Maximum Green (s)	12.0	12.0	12.0	40.0	40.0	40.0	6.0	50.0		9.0	53.0	53.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag							Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5	5		5			5	5
Act Effct Green (s)	10.4	10.4	10.4	32.1	32.1	32.1	6.7	62.1	130.0	8.4	65.9	65.9
Actuated g/C Ratio	0.08	0.08	0.08	0.25	0.25	0.25	0.05	0.48	1.00	0.06	0.51	0.51
v/c Ratio	0.38	0.58	0.04	0.81	0.81	0.33	0.26	0.56	0.25	0.52	0.56	0.10
Control Delay	63.8	73.3	0.2	60.6	60.6	6.5	79.7	18.4	0.4	63.9	15.9	7.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.8	73.3	0.2	60.6	60.6	6.5	79.7	18.4	0.4	63.9	15.9	7.5
LOS	E	E	A	E	E	A	E	B	A	E	B	A
Approach Delay		65.5			49.7			14.3			17.8	
Approach LOS		E			D			B			B	
Queue Length 50th (ft)	43	71	0	277	284	0	20	209	0	51	77	0
Queue Length 95th (ft)	86	128	0	369	376	52	43	254	0	86	332	46
Internal Link Dist (ft)		791			959			200			283	
Turn Bay Length (ft)	85						95			140		140
Base Capacity (vph)	163	171	267	517	527	605	90	1691	1583	122	1793	847
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.33	0.51	0.03	0.65	0.65	0.28	0.26	0.56	0.25	0.48	0.56	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 26.2		Intersection LOS: C	
Intersection Capacity Utilization 68.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	84	9	539	116	166	22	920	382	57	975	80
Future Volume (veh/h)	51	84	9	539	116	166	22	920	382	57	975	80
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	53	87	9	642	0	0	23	948	0	59	1005	82
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	117	99	734	0		46	1367		344	1988	887
Arrive On Green	0.06	0.06	0.06	0.21	0.00	0.00	0.03	0.38	0.00	0.19	0.56	0.56
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	53	87	9	642	0	0	23	948	0	59	1005	82
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.7	5.9	0.7	22.7	0.0	0.0	1.7	29.1	0.0	3.6	22.6	3.1
Cycle Q Clear(g_c), s	3.7	5.9	0.7	22.7	0.0	0.0	1.7	29.1	0.0	3.6	22.6	3.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	111	117	99	734	0		46	1367		344	1988	887
V/C Ratio(X)	0.48	0.75	0.09	0.87	0.00		0.50	0.69		0.17	0.51	0.09
Avail Cap(c_a), veh/h	164	173	146	1096	0		82	1367		344	1988	887
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	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.9	59.9	57.5	50.0	0.0	0.0	62.5	33.6	0.0	43.8	17.6	13.3
Incr Delay (d2), s/veh	3.2	9.3	0.4	5.5	0.0	0.0	8.0	2.9	0.0	0.2	0.9	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	1.8	3.1	0.3	10.4	0.0	0.0	0.9	12.9	0.0	1.6	8.7	1.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.1	69.3	57.9	55.5	0.0	0.0	70.4	36.5	0.0	44.0	18.5	13.5
LnGrp LOS	E	E	E	E	A		E	D		D	B	B
Approach Vol, veh/h		149			642			971			1146	
Approach Delay, s/veh		66.0			55.5			37.3			19.5	
Approach LOS		E			E			D			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	30.1	55.0		13.1	7.4	77.7		31.8				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	9.0	* 50		12.0	6.0	53.0		40.0				
Max Q Clear Time (g_c+I1), s	5.6	31.1		7.9	3.7	24.6		24.7				
Green Ext Time (p_c), s	0.0	6.4		0.2	0.0	7.4		2.1				

Intersection Summary			
HCM 6th Ctrl Delay		35.7	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.

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

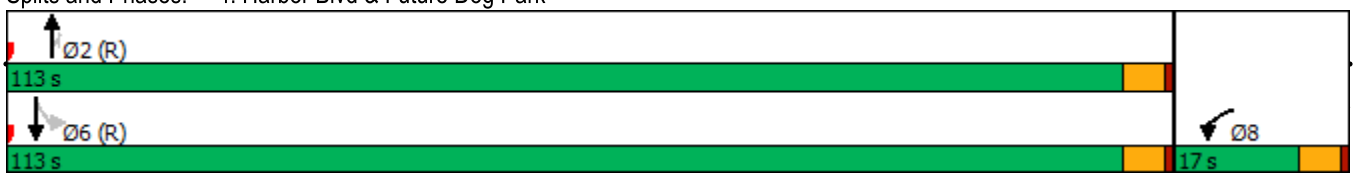
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	5	1132	5	5	1115
Future Volume (vph)	5	5	1132	5	5	1115
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		200	250	
Storage Lanes	1	0		1	1	
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	0.932			0.850		
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1694	0	3539	1583	1770	3539
Flt Permitted	0.976				0.250	
Satd. Flow (perm)	1694	0	3539	1583	466	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	5			5		
Link Speed (mph)	30		50			50
Link Distance (ft)	484		960			1191
Travel Time (s)	11.0		13.1			16.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	5	1132	5	5	1115
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	1132	5	5	1115
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60	60		60	60	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases				2	6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8		2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0		6.0	6.0	6.0	6.0
Minimum Split (s)	11.0		11.0	11.0	11.0	11.0
Total Split (s)	17.0		113.0	113.0	113.0	113.0
Total Split (%)	13.1%		86.9%	86.9%	86.9%	86.9%
Maximum Green (s)	12.0		108.0	108.0	108.0	108.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	6.4		126.5	126.5	126.5	126.5
Actuated g/C Ratio	0.05		0.97	0.97	0.97	0.97
v/c Ratio	0.11		0.33	0.00	0.01	0.32
Control Delay	46.1		0.4	0.2	1.2	2.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	46.1		0.4	0.2	1.2	2.8
LOS	D		A	A	A	A
Approach Delay	46.1		0.4			2.8
Approach LOS	D		A			A
Queue Length 50th (ft)	4		3	0	0	0
Queue Length 95th (ft)	23		28	m0	m2	510
Internal Link Dist (ft)	404		880			1111
Turn Bay Length (ft)				200	250	
Base Capacity (vph)	160		3444	1541	453	3444
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.06		0.33	0.00	0.01	0.32

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 1.8		Intersection LOS: A	
Intersection Capacity Utilization 44.6%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Harbor Blvd & Future Dog Park

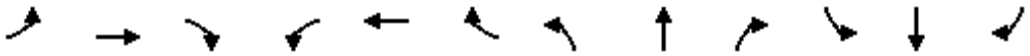


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	5	1132	5	5	1115
Future Volume (veh/h)	5	5	1132	5	5	1115
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	5	1132	5	5	1115
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	12	12	3227	1439	485	3227
Arrive On Green	0.02	0.02	0.91	0.91	0.91	0.91
Sat Flow, veh/h	770	770	3647	1585	497	3647
Grp Volume(v), veh/h	11	0	1132	5	5	1115
Grp Sat Flow(s),veh/h/ln	1693	0	1777	1585	497	1777
Q Serve(g_s), s	0.8	0.0	5.6	0.0	0.2	5.5
Cycle Q Clear(g_c), s	0.8	0.0	5.6	0.0	5.8	5.5
Prop In Lane	0.45	0.45		1.00	1.00	
Lane Grp Cap(c), veh/h	26	0	3227	1439	485	3227
V/C Ratio(X)	0.43	0.00	0.35	0.00	0.01	0.35
Avail Cap(c_a), veh/h	156	0	3227	1439	485	3227
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	63.5	0.0	0.8	0.6	1.2	0.8
Incr Delay (d2), s/veh	11.0	0.0	0.3	0.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.1	0.0	0.0	0.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	74.4	0.0	1.1	0.6	1.2	1.1
LnGrp LOS	E	A	A	A	A	A
Approach Vol, veh/h	11		1137			1120
Approach Delay, s/veh	74.4		1.1			1.1
Approach LOS	E		A			A

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		123.0			123.0	7.0
Change Period (Y+Rc), s		5.0			5.0	5.0
Max Green Setting (Gmax), s		108.0			108.0	12.0
Max Q Clear Time (g_c+I1), s		7.6			7.8	2.8
Green Ext Time (p_c), s		9.5			9.4	0.0

Intersection Summary	
HCM 6th Ctrl Delay	1.5
HCM 6th LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	5	23	19	7	50	43	1242	26	36	1584	11
Future Volume (vph)	17	5	23	19	7	50	43	1242	26	36	1584	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.931				0.850		0.997			0.999	
Flt Protected		0.981			0.964		0.950			0.950		
Satd. Flow (prot)	0	1701	0	0	1796	1583	1770	5070	0	1770	3536	0
Flt Permitted		0.867			0.810		0.125			0.189		
Satd. Flow (perm)	0	1504	0	0	1509	1583	233	5070	0	352	3536	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				53		6			1	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		427			781			235			407	
Travel Time (s)		11.6			21.3			4.6			7.9	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	18	5	24	20	7	53	45	1307	27	38	1667	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	47	0	0	27	53	45	1334	0	38	1679	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		

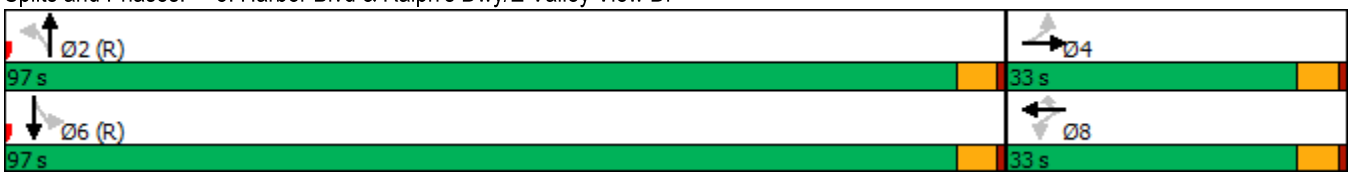


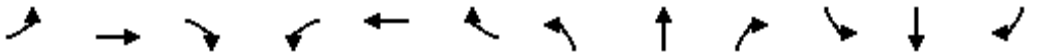
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	97.0	97.0		97.0	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	74.6%	74.6%		74.6%	74.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	92.0	92.0		92.0	92.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		11.4			11.4	11.4	111.8	111.8		111.8	111.8	
Actuated g/C Ratio		0.09			0.09	0.09	0.86	0.86		0.86	0.86	
v/c Ratio		0.31			0.20	0.28	0.23	0.31		0.13	0.55	
Control Delay		34.5			54.6	15.7	5.8	2.6		1.8	1.8	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		34.5			54.6	15.7	5.8	2.6		1.8	1.8	
LOS		C			D	B	A	A		A	A	
Approach Delay		34.5			28.8			2.7			1.8	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		19			22	0	6	65		0	6	
Queue Length 95th (ft)		50			45	35	m18	108		m9	298	
Internal Link Dist (ft)		347			701			155			327	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		342			325	382	200	4360		302	3040	
Starvation Cap Reductn		0			0	0	0	0		0	75	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.14			0.08	0.14	0.23	0.31		0.13	0.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 105 (81%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 3.4		Intersection LOS: A	
Intersection Capacity Utilization 61.8%		ICU Level of Service B	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr



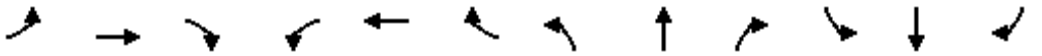


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	5	23	19	7	50	43	1242	26	36	1584	11
Future Volume (veh/h)	17	5	23	19	7	50	43	1242	26	36	1584	11
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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	18	5	24	20	7	53	45	1307	27	38	1667	12
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	59	14	36	103	29	79	281	4497	93	396	3159	23
Arrive On Green	0.05	0.05	0.05	0.05	0.05	0.05	0.87	0.87	0.87	0.87	0.87	0.87
Sat Flow, veh/h	411	289	731	1114	590	1585	294	5149	106	410	3617	26
Grp Volume(v), veh/h	47	0	0	27	0	53	45	864	470	38	818	861
Grp Sat Flow(s),veh/h/ln	1431	0	0	1704	0	1585	294	1702	1851	410	1777	1866
Q Serve(g_s), s	2.5	0.0	0.0	0.0	0.0	4.3	5.5	5.6	5.6	2.3	14.1	14.1
Cycle Q Clear(g_c), s	4.3	0.0	0.0	1.9	0.0	4.3	19.6	5.6	5.6	7.8	14.1	14.1
Prop In Lane	0.38		0.51	0.74		1.00	1.00		0.06	1.00		0.01
Lane Grp Cap(c), veh/h	109	0	0	133	0	79	281	2973	1617	396	1552	1630
V/C Ratio(X)	0.43	0.00	0.00	0.20	0.00	0.67	0.16	0.29	0.29	0.10	0.53	0.53
Avail Cap(c_a), veh/h	359	0	0	378	0	341	281	2973	1617	396	1552	1630
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.8	0.0	0.0	59.6	0.0	60.7	4.2	1.4	1.4	2.1	1.9	1.9
Incr Delay (d2), s/veh	2.7	0.0	0.0	0.7	0.0	9.6	1.2	0.2	0.5	0.5	1.3	1.2
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	1.6	0.0	0.0	0.9	0.0	1.9	0.4	1.0	1.1	0.2	2.8	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	63.4	0.0	0.0	60.3	0.0	70.3	5.5	1.6	1.9	2.5	3.2	3.2
LnGrp LOS	E	A	A	E	A	E	A	A	A	A	A	A
Approach Vol, veh/h		47			80			1379			1717	
Approach Delay, s/veh		63.4			66.9			1.8			3.2	
Approach LOS		E			E			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		118.5		11.5		118.5		11.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		92.0		28.0		92.0		28.0				
Max Q Clear Time (g_c+I1), s		21.6		6.3		16.1		6.3				
Green Ext Time (p_c), s		15.0		0.2		23.2		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			5.1									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	176	73	50	165	408	101	887	41	260	1290	19
Future Volume (vph)	17	176	73	50	165	408	101	887	41	260	1290	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.993				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3514	0	3433	3539	1583
Flt Permitted	0.435			0.400			0.950			0.950		
Satd. Flow (perm)	810	1863	1583	745	1863	1583	1770	3514	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			80		5				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		647			786			659			504	
Travel Time (s)		12.6			15.3			12.8			9.8	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	17	180	74	51	168	416	103	905	42	265	1316	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	180	74	51	168	416	103	947	0	265	1316	19
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

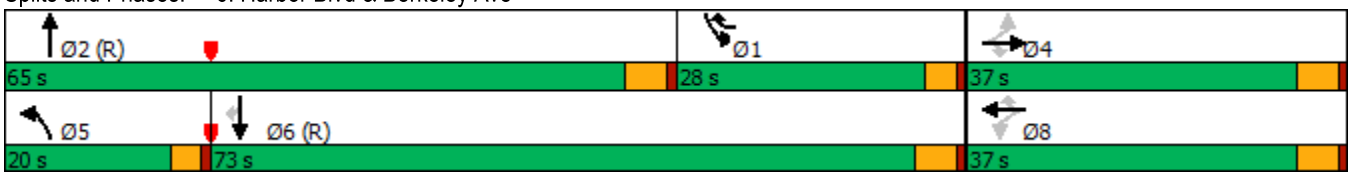


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	36.0	36.0	10.0	10.0	30.0		10.0	30.0	30.0
Total Split (s)	37.0	37.0	37.0	37.0	37.0	28.0	20.0	65.0		28.0	73.0	73.0
Total Split (%)	28.5%	28.5%	28.5%	28.5%	28.5%	21.5%	15.4%	50.0%		21.5%	56.2%	56.2%
Maximum Green (s)	32.0	32.0	32.0	32.0	32.0	24.0	16.0	60.0		24.0	68.0	68.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	19.3	19.3	19.3	19.3	19.3	48.3	12.7	72.7		24.0	84.0	84.0
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.37	0.10	0.56		0.18	0.65	0.65
v/c Ratio	0.14	0.65	0.24	0.46	0.61	0.65	0.60	0.48		0.42	0.58	0.02
Control Delay	47.1	62.3	6.7	61.9	60.1	31.3	69.8	19.2		41.0	9.8	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	0.0
Total Delay	47.1	62.3	6.7	61.9	60.1	31.3	69.8	19.2		41.0	9.9	0.4
LOS	D	E	A	E	E	C	E	B		D	A	A
Approach Delay		46.2			41.4			24.2			14.9	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	13	147	0	40	136	240	84	235		105	250	0
Queue Length 95th (ft)	33	200	27	76	188	300	142	363		142	386	m1
Internal Link Dist (ft)		567			706			579			424	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	199	458	459	183	458	638	220	1968		633	2287	1040
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	168	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.09	0.39	0.16	0.28	0.37	0.65	0.47	0.48		0.42	0.62	0.02

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 24.8 Intersection LOS: C
Intersection Capacity Utilization 71.4% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	176	73	50	165	408	101	887	41	260	1290	19
Future Volume (veh/h)	17	176	73	50	165	408	101	887	41	260	1290	19
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	17	180	74	51	168	416	103	905	42	265	1316	19
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	124	309	262	141	309	671	127	1596	74	891	2330	1039
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.07	0.46	0.46	0.26	0.66	0.66
Sat Flow, veh/h	831	1870	1585	1126	1870	1585	1781	3458	160	3456	3554	1585
Grp Volume(v), veh/h	17	180	74	51	168	416	103	465	482	265	1316	19
Grp Sat Flow(s),veh/h/ln	831	1870	1585	1126	1870	1585	1781	1777	1841	1728	1777	1585
Q Serve(g_s), s	2.5	11.6	5.3	5.7	10.7	0.0	7.4	24.8	24.8	8.0	26.3	0.5
Cycle Q Clear(g_c), s	13.2	11.6	5.3	17.3	10.7	0.0	7.4	24.8	24.8	8.0	26.3	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	124	309	262	141	309	671	127	820	850	891	2330	1039
V/C Ratio(X)	0.14	0.58	0.28	0.36	0.54	0.62	0.81	0.57	0.57	0.30	0.56	0.02
Avail Cap(c_a), veh/h	191	460	390	232	460	799	219	820	850	891	2330	1039
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	55.8	50.1	47.5	58.1	49.8	29.3	59.5	25.5	25.5	38.8	12.2	7.8
Incr Delay (d2), s/veh	0.5	1.7	0.6	1.5	1.5	1.1	11.5	2.8	2.7	0.2	1.0	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	0.5	5.5	2.1	1.7	5.1	10.2	3.7	10.9	11.3	3.4	10.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.3	51.9	48.1	59.6	51.3	30.4	70.9	28.4	28.3	39.0	13.2	7.8
LnGrp LOS	E	D	D	E	D	C	E	C	C	D	B	A
Approach Vol, veh/h		271			635			1050			1600	
Approach Delay, s/veh		51.1			38.3			32.5			17.4	
Approach LOS		D			D			C			B	

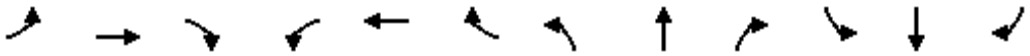
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	38.5	65.0		26.5	13.3	90.2		26.5				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	24.0	* 60		32.0	16.0	68.0		32.0				
Max Q Clear Time (g_c+I1), s	10.0	26.8		15.2	9.4	28.3		19.3				
Green Ext Time (p_c), s	0.7	6.9		1.1	0.1	13.1		2.2				

Intersection Summary			
HCM 6th Ctrl Delay		28.2	
HCM 6th LOS		C	

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	293	1114	125	133	833	300	189	1079	203	321	796	338
Future Volume (vph)	293	1114	125	133	833	300	189	1079	203	321	796	338
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.985				0.850			0.850		0.955	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4856	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4856	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18				248			141		84	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			428			926	
Travel Time (s)		17.8			16.7			6.5			12.6	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	302	1148	129	137	859	309	195	1112	209	331	821	348
Shared Lane Traffic (%)												
Lane Group Flow (vph)	302	1277	0	137	859	309	195	1112	209	331	1169	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	27.0	57.0		13.0	43.0	43.0	16.0	43.0	43.0	17.0	44.0	
Total Split (%)	20.8%	43.8%		10.0%	33.1%	33.1%	12.3%	33.1%	33.1%	13.1%	33.8%	
Maximum Green (s)	23.0	52.0		9.0	38.0	38.0	12.0	38.0	38.0	13.0	39.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lag		Lead	Lead	Lead	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	26.4	48.9		8.7	31.2	31.2	12.0	40.0	40.0	14.4	42.4	
Actuated g/C Ratio	0.20	0.38		0.07	0.24	0.24	0.09	0.31	0.31	0.11	0.33	
v/c Ratio	0.84	0.67		0.60	0.70	0.54	0.62	0.71	0.36	0.87	0.71	
Control Delay	70.5	35.1		70.1	48.2	12.7	73.0	51.2	24.3	80.0	39.2	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	70.5	35.1		70.1	48.2	12.7	73.0	51.2	24.3	80.0	39.2	
LOS	E	D		E	D	B	E	D	C	F	D	
Approach Delay		41.9			42.1			50.3			48.2	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	239	309		58	243	41	80	329	69	145	307	
Queue Length 95th (ft)	#438	360		93	272	121	m130	362	m110	#241	364	
Internal Link Dist (ft)		963			901			348			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	360	2014		237	1486	638	316	1563	584	380	1639	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.84	0.63		0.58	0.58	0.48	0.62	0.71	0.36	0.87	0.71	

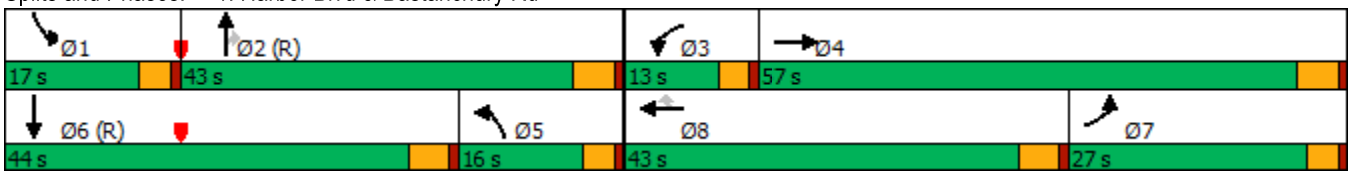
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 5 (4%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 45.7		Intersection LOS: D	
Intersection Capacity Utilization 77.3%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	293	1114	125	133	833	300	189	1079	203	321	796	338
Future Volume (veh/h)	293	1114	125	133	833	300	189	1079	203	321	796	338
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	302	1148	129	137	859	309	195	1112	209	331	821	348
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	1629	183	188	1122	348	517	1824	566	346	1057	445
Arrive On Green	0.18	0.35	0.35	0.05	0.22	0.22	0.15	0.36	0.36	0.10	0.30	0.30
Sat Flow, veh/h	1781	4657	523	3456	5106	1585	3456	5106	1585	3456	3522	1485
Grp Volume(v), veh/h	302	839	438	137	859	309	195	1112	209	331	793	376
Grp Sat Flow(s),veh/h/ln	1781	1702	1776	1728	1702	1585	1728	1702	1585	1728	1702	1603
Q Serve(g_s), s	21.8	27.6	27.7	5.1	20.5	19.2	6.6	23.3	12.7	12.4	27.7	27.9
Cycle Q Clear(g_c), s	21.8	27.6	27.7	5.1	20.5	19.2	6.6	23.3	12.7	12.4	27.7	27.9
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		0.93
Lane Grp Cap(c), veh/h	315	1191	621	188	1122	348	517	1824	566	346	1021	481
V/C Ratio(X)	0.96	0.70	0.71	0.73	0.77	0.89	0.38	0.61	0.37	0.96	0.78	0.78
Avail Cap(c_a), veh/h	315	1362	710	239	1493	463	517	1824	566	346	1021	481
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	53.0	36.5	36.5	60.5	47.6	30.2	49.8	34.3	30.9	58.2	41.5	41.6
Incr Delay (d2), s/veh	39.5	1.4	2.7	7.9	1.7	15.0	0.5	1.5	1.8	37.3	5.8	11.9
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	13.0	11.5	12.2	2.4	8.7	8.6	2.8	9.6	5.1	7.0	11.9	12.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	92.5	37.9	39.2	68.4	49.3	45.2	50.3	35.9	32.8	95.5	47.3	53.5
LnGrp LOS	F	D	D	E	D	D	D	D	C	F	D	D
Approach Vol, veh/h		1579			1305			1516			1500	
Approach Delay, s/veh		48.7			50.3			37.3			59.5	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	51.4	11.1	50.5	24.4	44.0	28.0	33.6
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	5.0	* 5	5.0	* 5
Max Green Setting (Gmax), s	13.0	38.0	9.0	52.0	12.0	* 39	23.0	* 38
Max Q Clear Time (g_c+I1), s	14.4	25.3	7.1	29.7	8.6	29.9	23.8	22.5
Green Ext Time (p_c), s	0.0	6.3	0.1	8.8	0.2	4.6	0.0	6.0

Intersection Summary	
HCM 6th Ctrl Delay	48.9
HCM 6th LOS	D

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	22	132	71	41	199	48	1153	54	86	881	82
Future Volume (vph)	119	22	132	71	41	199	48	1153	54	86	881	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	185		0	230		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850		0.876			0.993				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1632	0	1770	3514	0	1770	3539	1583
Flt Permitted	0.314			0.742			0.950			0.950		
Satd. Flow (perm)	585	1863	1583	1382	1632	0	1770	3514	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			112		169			5				86
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			616			406	
Travel Time (s)		18.5			16.0			8.4			6.2	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	125	23	139	75	43	209	51	1214	57	91	927	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	23	139	75	252	0	51	1271	0	91	927	86
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	30.0
Total Split (s)	42.0	42.0	13.0	42.0	42.0		13.0	71.0		17.0	75.0	75.0
Total Split (%)	32.3%	32.3%	10.0%	32.3%	32.3%		10.0%	54.6%		13.1%	57.7%	57.7%
Maximum Green (s)	37.0	37.0	9.0	37.0	37.0		9.0	66.0		13.0	70.0	70.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag			Lag				Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5			5			5	5
Act Effct Green (s)	25.2	25.2	38.3	25.2	25.2		8.1	78.7		12.1	82.7	82.7
Actuated g/C Ratio	0.19	0.19	0.29	0.19	0.19		0.06	0.61		0.09	0.64	0.64
v/c Ratio	1.12	0.06	0.26	0.28	0.56		0.46	0.60		0.55	0.41	0.08
Control Delay	164.9	38.7	8.9	44.5	19.4		49.9	9.4		64.1	4.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	164.9	38.7	8.9	44.5	19.4		49.9	9.4		64.1	4.6	0.1
LOS	F	D	A	D	B		D	A		E	A	A
Approach Delay		79.2			25.1			11.0			9.2	
Approach LOS		E			C			B			A	
Queue Length 50th (ft)	~119	16	16	54	60		43	91		79	58	0
Queue Length 95th (ft)	#206	37	57	91	131		88	215		m116	73	m0
Internal Link Dist (ft)		733			625			536			326	
Turn Bay Length (ft)	55		85				185			230		
Base Capacity (vph)	166	530	536	393	585		122	2129		177	2251	1038
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.75	0.04	0.26	0.19	0.43		0.42	0.60		0.51	0.41	0.08

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 2 (2%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 75.4%		ICU Level of Service D	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	119	22	132	71	41	199	48	1153	54	86	881	82
Future Volume (veh/h)	119	22	132	71	41	199	48	1153	54	86	881	82
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	125	23	139	75	43	209	51	1214	57	91	927	86
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	198	490	561	365	73	354	164	1755	82	218	1914	853
Arrive On Green	0.26	0.26	0.26	0.26	0.26	0.26	0.09	0.51	0.51	0.12	0.54	0.54
Sat Flow, veh/h	1128	1870	1585	1224	278	1350	1781	3456	162	1781	3554	1585
Grp Volume(v), veh/h	125	23	139	75	0	252	51	624	647	91	927	86
Grp Sat Flow(s),veh/h/ln	1128	1870	1585	1224	0	1627	1781	1777	1841	1781	1777	1585
Q Serve(g_s), s	14.2	1.2	0.0	6.3	0.0	17.6	3.5	34.6	34.7	6.1	21.2	3.4
Cycle Q Clear(g_c), s	31.7	1.2	0.0	7.5	0.0	17.6	3.5	34.6	34.7	6.1	21.2	3.4
Prop In Lane	1.00		1.00	1.00		0.83	1.00		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	198	490	561	365	0	426	164	902	935	218	1914	853
V/C Ratio(X)	0.63	0.05	0.25	0.21	0.00	0.59	0.31	0.69	0.69	0.42	0.48	0.10
Avail Cap(c_a), veh/h	224	532	597	393	0	463	164	902	935	218	1914	853
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.7	35.8	29.7	38.7	0.0	41.9	55.2	24.3	24.3	52.7	18.7	14.6
Incr Delay (d2), s/veh	4.6	0.0	0.2	0.3	0.0	1.7	1.1	4.3	4.2	1.3	0.9	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	4.3	0.6	3.1	2.0	0.0	7.3	1.6	14.5	15.0	2.8	8.4	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.4	35.9	30.0	38.9	0.0	43.6	56.3	28.6	28.5	54.0	19.6	14.9
LnGrp LOS	E	D	C	D	A	D	E	C	C	D	B	B
Approach Vol, veh/h		287			327			1322			1104	
Approach Delay, s/veh		43.7			42.5			29.6			22.1	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	19.9	71.0		39.1	15.9	75.0		39.1				
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	13.0	66.0		37.0	9.0	70.0		37.0				
Max Q Clear Time (g_c+I1), s	8.1	36.7		33.7	5.5	23.2		19.6				
Green Ext Time (p_c), s	0.1	8.9		0.3	0.0	7.6		1.7				

Intersection Summary												
HCM 6th Ctrl Delay			29.6									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	179	26	469	97	111	9	1024	605	97	1000	50
Future Volume (vph)	68	179	26	469	97	111	9	1024	605	97	1000	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	140		140
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1713	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950	0.968		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1713	1583	1770	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			134			342			101
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			363	
Travel Time (s)		23.8			15.7			5.5			5.0	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	70	185	27	484	100	114	9	1056	624	100	1031	52
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	70	185	27	290	294	114	9	1056	624	100	1031	52
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	30.0
Total Split (s)	24.0	24.0	24.0	37.0	37.0	37.0	10.0	53.0		16.0	59.0	59.0
Total Split (%)	18.5%	18.5%	18.5%	28.5%	28.5%	28.5%	7.7%	40.8%		12.3%	45.4%	45.4%
Maximum Green (s)	19.0	19.0	19.0	32.0	32.0	32.0	6.0	48.0		12.0	54.0	54.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5	5		5			5	5
Act Effct Green (s)	16.7	16.7	16.7	27.2	27.2	27.2	6.0	56.0	130.0	11.1	69.0	69.0
Actuated g/C Ratio	0.13	0.13	0.13	0.21	0.21	0.21	0.05	0.43	1.00	0.09	0.53	0.53
v/c Ratio	0.31	0.77	0.08	0.82	0.82	0.26	0.11	0.69	0.39	0.67	0.55	0.06
Control Delay	54.2	75.8	0.5	68.0	67.2	5.5	50.4	25.0	0.8	89.8	15.5	1.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.2	75.8	0.5	68.0	67.2	5.5	50.4	25.0	0.8	89.8	15.5	1.6
LOS	D	E	A	E	E	A	D	C	A	F	B	A
Approach Delay		63.3			57.4			16.2			21.2	
Approach LOS		E			E			B			C	
Queue Length 50th (ft)	54	151	0	245	248	0	7	433	1	89	151	0
Queue Length 95th (ft)	101	#234	0	345	348	34	m19	447	10	#155	316	9
Internal Link Dist (ft)		791			959			200			283	
Turn Bay Length (ft)	85						95			140		140
Base Capacity (vph)	258	272	345	413	421	490	81	1523	1583	165	1879	887
Starvation Cap Reductn	0	0	0	0	0	0	0	15	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.68	0.08	0.70	0.70	0.23	0.11	0.70	0.39	0.61	0.55	0.06

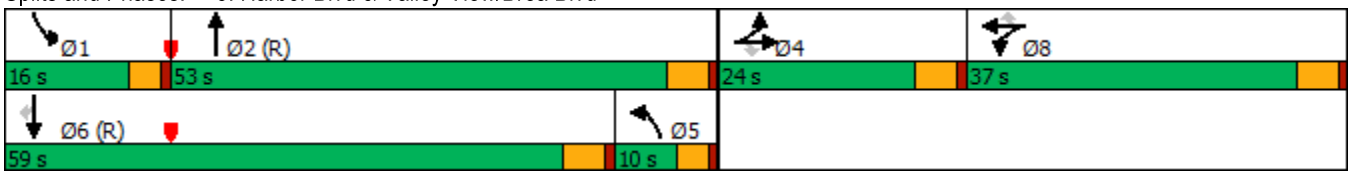
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 72 (55%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 28.7		Intersection LOS: C	
Intersection Capacity Utilization 74.5%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	179	26	469	97	111	9	1024	605	97	1000	50
Future Volume (veh/h)	68	179	26	469	97	111	9	1024	605	97	1000	50
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	70	185	27	555	0	0	9	1056	0	100	1031	52
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	218	185	636	0		242	1740		123	1476	658
Arrive On Green	0.12	0.12	0.12	0.18	0.00	0.00	0.14	0.49	0.00	0.07	0.42	0.42
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	70	185	27	555	0	0	9	1056	0	100	1031	52
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.7	12.6	2.0	19.7	0.0	0.0	0.6	28.1	0.0	7.2	31.1	2.6
Cycle Q Clear(g_c), s	4.7	12.6	2.0	19.7	0.0	0.0	0.6	28.1	0.0	7.2	31.1	2.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	207	218	185	636	0		242	1740		123	1476	658
V/C Ratio(X)	0.34	0.85	0.15	0.87	0.00		0.04	0.61		0.81	0.70	0.08
Avail Cap(c_a), veh/h	260	273	232	877	0		242	1740		164	1476	658
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	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.8	56.3	51.6	51.9	0.0	0.0	48.8	24.1	0.0	59.7	31.3	23.0
Incr Delay (d2), s/veh	1.0	18.2	0.4	7.3	0.0	0.0	0.1	1.6	0.0	19.7	2.8	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	2.2	7.1	0.8	9.2	0.0	0.0	0.3	11.9	0.0	3.8	13.2	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	53.8	74.5	52.0	59.2	0.0	0.0	48.9	25.7	0.0	79.3	34.1	23.2
LnGrp LOS	D	E	D	E	A		D	C		E	C	C
Approach Vol, veh/h		282			555			1065			1183	
Approach Delay, s/veh		67.2			59.2			25.9			37.4	
Approach LOS		E			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	68.7		20.1	22.6	59.0		28.2				
Change Period (Y+Rc), s	4.0	5.0		5.0	5.0	* 5		5.0				
Max Green Setting (Gmax), s	12.0	48.0		19.0	6.0	* 54		32.0				
Max Q Clear Time (g_c+I1), s	9.2	30.1		14.6	2.6	33.1		21.7				
Green Ext Time (p_c), s	0.0	7.1		0.5	0.0	6.9		1.5				

Intersection Summary		
HCM 6th Ctrl Delay		40.1
HCM 6th LOS		D

Notes

User approved volume balancing among the lanes for turning movement.

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

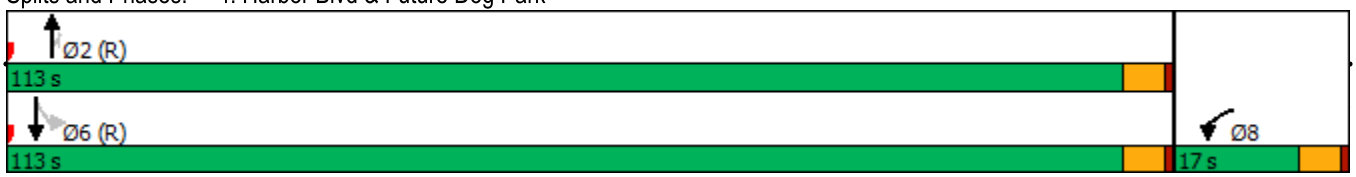
Unsignalized Delay for [NBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	5	1198	5	5	1079
Future Volume (vph)	5	5	1198	5	5	1079
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		200	250	
Storage Lanes	1	0		1	1	
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	0.932			0.850		
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1694	0	3539	1583	1770	3539
Flt Permitted	0.976				0.233	
Satd. Flow (perm)	1694	0	3539	1583	434	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	5			5		
Link Speed (mph)	30		30			30
Link Distance (ft)	484		960			1191
Travel Time (s)	11.0		21.8			27.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	5	1198	5	5	1079
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	1198	5	5	1079
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60	60		60	60	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases				2	6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8		2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0		6.0	6.0	6.0	6.0
Minimum Split (s)	11.0		11.0	11.0	11.0	11.0
Total Split (s)	17.0		113.0	113.0	113.0	113.0
Total Split (%)	13.1%		86.9%	86.9%	86.9%	86.9%
Maximum Green (s)	12.0		108.0	108.0	108.0	108.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	6.4		126.5	126.5	126.5	126.5
Actuated g/C Ratio	0.05		0.97	0.97	0.97	0.97
v/c Ratio	0.11		0.35	0.00	0.01	0.31
Control Delay	46.1		1.2	0.0	0.8	0.6
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	46.1		1.2	0.0	0.8	0.6
LOS	D		A	A	A	A
Approach Delay	46.1		1.2			0.6
Approach LOS	D		A			A
Queue Length 50th (ft)	4		0	0	0	0
Queue Length 95th (ft)	23		3	m1	m1	65
Internal Link Dist (ft)	404		880			1111
Turn Bay Length (ft)				200	250	
Base Capacity (vph)	160		3444	1541	422	3444
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.06		0.35	0.00	0.01	0.31

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.35			
Intersection Signal Delay: 1.1		Intersection LOS: A	
Intersection Capacity Utilization 46.4%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Harbor Blvd & Future Dog Park



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	5	1198	5	5	1079
Future Volume (veh/h)	5	5	1198	5	5	1079
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	5	1198	5	5	1079
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	12	12	3227	1439	458	3227
Arrive On Green	0.02	0.02	0.91	0.91	0.91	0.91
Sat Flow, veh/h	770	770	3647	1585	467	3647
Grp Volume(v), veh/h	11	0	1198	5	5	1079
Grp Sat Flow(s),veh/h/ln	1693	0	1777	1585	467	1777
Q Serve(g_s), s	0.8	0.0	6.1	0.0	0.2	5.2
Cycle Q Clear(g_c), s	0.8	0.0	6.1	0.0	6.3	5.2
Prop In Lane	0.45	0.45		1.00	1.00	
Lane Grp Cap(c), veh/h	26	0	3227	1439	458	3227
V/C Ratio(X)	0.43	0.00	0.37	0.00	0.01	0.33
Avail Cap(c_a), veh/h	156	0	3227	1439	458	3227
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	63.5	0.0	0.8	0.6	1.3	0.8
Incr Delay (d2), s/veh	11.0	0.0	0.3	0.0	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.5	0.0	0.0	0.5
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	74.4	0.0	1.2	0.6	1.3	1.1
LnGrp LOS	E	A	A	A	A	A
Approach Vol, veh/h	11		1203			1084
Approach Delay, s/veh	74.4		1.2			1.1
Approach LOS	E		A			A

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		123.0			123.0	7.0
Change Period (Y+Rc), s		5.0			5.0	5.0
Max Green Setting (Gmax), s		108.0			108.0	12.0
Max Q Clear Time (g_c+I1), s		8.1			8.3	2.8
Green Ext Time (p_c), s		13.1			11.1	0.0

Intersection Summary	
HCM 6th Ctrl Delay	1.5
HCM 6th LOS	A

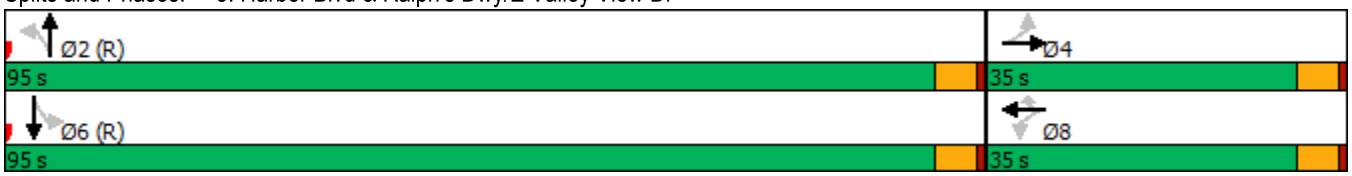
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	47	21	65	14	11	43	60	1608	24	48	1455	42
Future Volume (vph)	47	21	65	14	11	43	60	1608	24	48	1455	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.934				0.850		0.998			0.996	
Flt Protected		0.983			0.973		0.950			0.950		
Satd. Flow (prot)	0	1710	0	0	1812	1583	1770	5075	0	1770	3525	0
Flt Permitted		0.872			0.775		0.143			0.125		
Satd. Flow (perm)	0	1517	0	0	1444	1583	266	5075	0	233	3525	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		34				44		4			5	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		427			781			235			407	
Travel Time (s)		11.6			21.3			4.6			7.9	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	48	21	66	14	11	44	61	1641	24	49	1485	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	0	25	44	61	1665	0	49	1528	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		

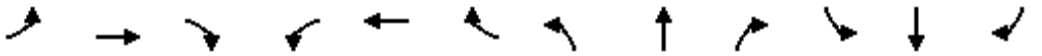
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	35.0	35.0		35.0	35.0	35.0	95.0	95.0		95.0	95.0	
Total Split (%)	26.9%	26.9%		26.9%	26.9%	26.9%	73.1%	73.1%		73.1%	73.1%	
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	90.0	90.0		90.0	90.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		15.5			15.5	15.5	104.5	104.5		104.5	104.5	
Actuated g/C Ratio		0.12			0.12	0.12	0.80	0.80		0.80	0.80	
v/c Ratio		0.64			0.15	0.19	0.29	0.41		0.26	0.54	
Control Delay		53.0			49.2	14.4	5.8	2.9		3.5	1.3	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		53.0			49.2	14.4	5.8	2.9		3.5	1.3	
LOS		D			D	B	A	A		A	A	
Approach Delay		53.0			27.0			3.0			1.4	
Approach LOS		D			C			A			A	
Queue Length 50th (ft)		83			19	0	8	79		1	16	
Queue Length 95th (ft)		136			42	32	m15	112		m1	14	
Internal Link Dist (ft)		347			701			155			327	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		376			333	399	213	4081		187	2835	
Starvation Cap Reductn		0			0	0	0	0		0	86	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.36			0.08	0.11	0.29	0.41		0.26	0.56	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 41 (32%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 72.6%		ICU Level of Service C	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	21	65	14	11	43	60	1608	24	48	1455	42
Future Volume (veh/h)	47	21	65	14	11	43	60	1608	24	48	1455	42
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	48	21	66	14	11	44	61	1641	24	49	1485	43
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	86	35	80	110	75	165	289	4247	62	275	2889	84
Arrive On Green	0.10	0.10	0.10	0.10	0.10	0.10	0.82	0.82	0.82	0.82	0.82	0.82
Sat Flow, veh/h	469	336	770	643	722	1585	341	5185	76	298	3527	102
Grp Volume(v), veh/h	135	0	0	25	0	44	61	1077	588	49	747	781
Grp Sat Flow(s),veh/h/ln	1576	0	0	1365	0	1585	341	1702	1857	298	1777	1852
Q Serve(g_s), s	8.9	0.0	0.0	0.0	0.0	3.3	8.9	10.9	10.9	6.8	17.1	17.1
Cycle Q Clear(g_c), s	10.9	0.0	0.0	1.6	0.0	3.3	26.0	10.9	10.9	17.6	17.1	17.1
Prop In Lane	0.36		0.49	0.56		1.00	1.00		0.04	1.00		0.06
Lane Grp Cap(c), veh/h	201	0	0	185	0	165	289	2788	1521	275	1455	1517
V/C Ratio(X)	0.67	0.00	0.00	0.14	0.00	0.27	0.21	0.39	0.39	0.18	0.51	0.51
Avail Cap(c_a), veh/h	398	0	0	376	0	366	289	2788	1521	275	1455	1517
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	0.0	0.0	52.9	0.0	53.7	7.7	3.1	3.1	5.4	3.7	3.7
Incr Delay (d2), s/veh	3.8	0.0	0.0	0.3	0.0	0.9	1.7	0.4	0.7	1.4	1.3	1.3
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	4.6	0.0	0.0	0.8	0.0	1.4	0.7	2.9	3.3	0.5	4.9	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.8	0.0	0.0	53.2	0.0	54.5	9.4	3.5	3.9	6.9	5.0	4.9
LnGrp LOS	E	A	A	D	A	D	A	A	A	A	A	A
Approach Vol, veh/h		135			69			1726			1577	
Approach Delay, s/veh		60.8			54.1			3.8			5.0	
Approach LOS		E			D			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		111.5		18.5		111.5		18.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		90.0		30.0		90.0		30.0				
Max Q Clear Time (g_c+I1), s		28.0		12.9		19.6		5.3				
Green Ext Time (p_c), s		21.6		0.7		20.1		0.2				

Intersection Summary												
HCM 6th Ctrl Delay			7.5									
HCM 6th LOS			A									

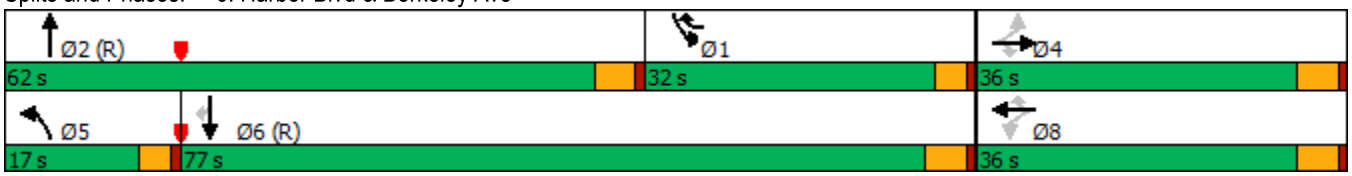
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	147	81	56	168	460	87	1191	25	330	1252	21
Future Volume (vph)	28	147	81	56	168	460	87	1191	25	330	1252	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3529	0	3433	3539	1583
Flt Permitted	0.400			0.467			0.950			0.950		
Satd. Flow (perm)	745	1863	1583	870	1863	1583	1770	3529	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			50		2				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		647			786			659			504	
Travel Time (s)		12.6			15.3			12.8			9.8	
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
Adj. Flow (vph)	29	153	84	58	175	479	91	1241	26	344	1304	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	153	84	58	175	479	91	1267	0	344	1304	22
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	33.0	33.0	10.0	10.0	30.0		10.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	32.0	17.0	62.0		32.0	77.0	77.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	24.6%	13.1%	47.7%		24.6%	59.2%	59.2%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0	28.0	13.0	57.0		28.0	72.0	72.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	21.0	21.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	18.4	18.4	18.4	18.4	18.4	51.4	11.9	69.6		28.0	85.7	85.7
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.40	0.09	0.54		0.22	0.66	0.66
v/c Ratio	0.28	0.58	0.28	0.47	0.67	0.73	0.57	0.67		0.47	0.56	0.02
Control Delay	53.9	60.0	9.5	62.1	64.3	36.2	69.6	25.1		36.6	8.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	0.0
Total Delay	53.9	60.0	9.5	62.1	64.3	36.2	69.6	25.1		36.6	8.0	0.3
LOS	D	E	A	E	E	D	E	C		D	A	A
Approach Delay		43.4			45.2			28.1			13.8	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	22	123	0	46	143	311	75	385		116	100	0
Queue Length 95th (ft)	50	178	38	86	202	386	129	553		172	313	m1
Internal Link Dist (ft)		567			706			579			424	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	177	444	447	207	444	656	187	1890		739	2334	1061
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	165	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.16	0.34	0.19	0.28	0.39	0.73	0.49	0.67		0.47	0.60	0.02

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 55 (42%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 26.2 Intersection LOS: C
Intersection Capacity Utilization 78.9% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	147	81	56	168	460	87	1191	25	330	1252	21
Future Volume (veh/h)	28	147	81	56	168	460	87	1191	25	330	1252	21
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	29	153	84	58	175	479	91	1241	26	344	1304	22
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, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	138	291	247	155	291	707	114	1561	33	1004	2391	1067
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.06	0.44	0.44	0.29	0.67	0.67
Sat Flow, veh/h	1210	1870	1585	1234	1870	1585	1781	3559	75	3456	3554	1585
Grp Volume(v), veh/h	29	153	84	58	175	479	91	619	648	344	1304	22
Grp Sat Flow(s),veh/h/ln	1210	1870	1585	1234	1870	1585	1781	1777	1857	1728	1777	1585
Q Serve(g_s), s	3.0	9.8	6.1	5.9	11.3	0.0	6.6	39.1	39.1	10.2	24.6	0.6
Cycle Q Clear(g_c), s	14.3	9.8	6.1	15.7	11.3	0.0	6.6	39.1	39.1	10.2	24.6	0.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.04	1.00		1.00
Lane Grp Cap(c), veh/h	138	291	247	155	291	707	114	779	814	1004	2391	1067
V/C Ratio(X)	0.21	0.53	0.34	0.38	0.60	0.68	0.80	0.79	0.80	0.34	0.55	0.02
Avail Cap(c_a), veh/h	238	446	378	257	446	839	178	779	814	1004	2391	1067
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	57.8	50.5	48.9	57.7	51.1	28.6	60.0	31.5	31.5	36.3	11.0	7.1
Incr Delay (d2), s/veh	0.7	1.5	0.8	1.5	2.0	1.7	13.0	8.2	7.9	0.2	0.9	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	0.9	4.7	2.5	1.9	5.4	11.9	3.4	18.1	18.9	4.3	9.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	58.5	51.9	49.8	59.2	53.1	30.3	73.0	39.7	39.4	36.5	11.9	7.1
LnGrp LOS	E	D	D	E	D	C	E	D	D	D	B	A
Approach Vol, veh/h		266			712			1358			1670	
Approach Delay, s/veh		52.0			38.3			41.8			16.9	
Approach LOS		D			D			D			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	42.8	62.0		25.2	12.3	92.5		25.2				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	28.0	* 57		31.0	13.0	72.0		31.0				
Max Q Clear Time (g_c+I1), s	12.2	41.1		16.3	8.6	26.6		17.7				
Green Ext Time (p_c), s	1.1	7.6		1.0	0.1	13.3		2.6				

Intersection Summary			
HCM 6th Ctrl Delay		31.5	
HCM 6th LOS		C	

Notes

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

APPENDIX B-III

YEAR 2045 BUILDOUT TRAFFIC CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	327	1211	171	276	973	221	198	714	150	450	1511	341
Future Volume (vph)	327	1211	171	276	973	221	198	714	150	450	1511	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.981				0.850			0.850		0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4989	0	3433	5085	1583	3433	5085	1583	3433	4943	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4989	0	3433	5085	1583	3433	5085	1583	3433	4943	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21				165			150		43	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			833			926	
Travel Time (s)		17.8			16.7			12.6			12.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	327	1211	171	276	973	221	198	714	150	450	1511	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	327	1382	0	276	973	221	198	714	150	450	1852	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	25.0	48.0		20.0	43.0	43.0	12.0	43.0	43.0	19.0	50.0	
Total Split (%)	19.2%	36.9%		15.4%	33.1%	33.1%	9.2%	33.1%	33.1%	14.6%	38.5%	
Maximum Green (s)	21.0	43.0		16.0	38.0	38.0	8.0	38.0	38.0	15.0	45.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	21.0	41.7		14.6	35.4	35.4	8.0	38.0	38.0	17.6	47.6	
Actuated g/C Ratio	0.16	0.32		0.11	0.27	0.27	0.06	0.29	0.29	0.14	0.37	
v/c Ratio	1.15	0.86		0.72	0.70	0.40	0.94	0.48	0.26	0.97	1.01	
Control Delay	147.2	46.8		66.4	45.4	12.6	88.4	18.7	3.2	90.0	63.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	147.2	46.8		66.4	45.4	12.6	88.4	18.7	3.2	90.0	63.0	
LOS	F	D		E	D	B	F	B	A	F	E	
Approach Delay		66.0			44.4			29.5			68.3	
Approach LOS		E			D			C			E	
Queue Length 50th (ft)	~322	387		116	264	35	89	79	5	~223	~618	
Queue Length 95th (ft)	#513	449		164	313	103	#165	154	30	#336	#720	
Internal Link Dist (ft)		963			901			753			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	285	1664		422	1486	579	211	1486	568	466	1838	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.15	0.83		0.65	0.65	0.38	0.94	0.48	0.26	0.97	1.01	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 55 (42%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.15			
Intersection Signal Delay: 56.0		Intersection LOS: E	
Intersection Capacity Utilization 94.4%		ICU Level of Service F	
Analysis Period (min) 15			

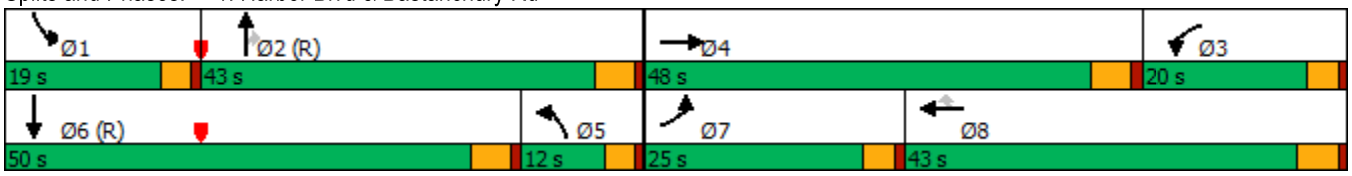
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	327	1211	171	276	973	221	198	714	150	450	1511	341
Future Volume (veh/h)	327	1211	171	276	973	221	198	714	150	450	1511	341
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	327	1211	171	276	973	221	198	714	150	450	1511	341
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	1391	196	333	1277	396	332	1708	530	399	1443	324
Arrive On Green	0.16	0.31	0.31	0.10	0.25	0.25	0.19	0.67	0.67	0.12	0.35	0.35
Sat Flow, veh/h	1781	4521	638	3456	5106	1585	3456	5106	1585	3456	4170	936
Grp Volume(v), veh/h	327	912	470	276	973	221	198	714	150	450	1232	620
Grp Sat Flow(s),veh/h/ln	1781	1702	1755	1728	1702	1585	1728	1702	1585	1728	1702	1702
Q Serve(g_s), s	21.0	32.9	32.9	10.2	23.0	15.8	6.8	8.4	3.7	15.0	45.0	45.0
Cycle Q Clear(g_c), s	21.0	32.9	32.9	10.2	23.0	15.8	6.8	8.4	3.7	15.0	45.0	45.0
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	288	1047	540	333	1277	396	332	1708	530	399	1178	589
V/C Ratio(X)	1.14	0.87	0.87	0.83	0.76	0.56	0.60	0.42	0.28	1.13	1.05	1.05
Avail Cap(c_a), veh/h	288	1126	581	425	1493	463	332	1708	530	399	1178	589
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.93	0.93	0.93	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	42.6	42.6	57.7	45.2	42.5	50.2	15.7	8.3	57.5	42.5	42.5
Incr Delay (d2), s/veh	95.0	7.2	12.9	10.4	2.0	1.2	2.7	0.7	1.2	84.9	39.0	51.6
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	16.8	14.5	15.9	4.9	9.8	6.2	2.8	2.7	1.8	11.0	24.2	26.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	149.5	49.8	55.5	68.0	47.2	43.7	52.9	16.4	9.5	142.4	81.5	94.1
LnGrp LOS	F	D	E	E	D	D	D	B	A	F	F	F
Approach Vol, veh/h		1709			1470			1062			2302	
Approach Delay, s/veh		70.5			50.6			22.2			96.8	
Approach LOS		E			D			C			F	

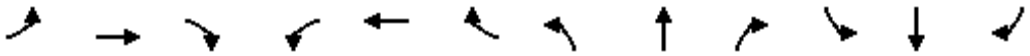
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	48.5	17.5	45.0	17.5	50.0	25.0	37.5
Change Period (Y+Rc), s	4.0	5.0	5.0	* 5	5.0	* 5	4.0	5.0
Max Green Setting (Gmax), s	15.0	38.0	16.0	* 43	8.0	* 45	21.0	38.0
Max Q Clear Time (g_c+I1), s	17.0	10.4	12.2	34.9	8.8	47.0	23.0	25.0
Green Ext Time (p_c), s	0.0	5.3	0.3	5.0	0.0	0.0	0.0	5.9

Intersection Summary	
HCM 6th Ctrl Delay	67.4
HCM 6th LOS	E

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	48	87	59	47	65	154	889	127	244	1448	185
Future Volume (vph)	101	48	87	59	47	65	154	889	127	244	1448	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	175		0	230		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850		0.913			0.981			0.983	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1701	0	1770	4989	0	1770	4999	0
Flt Permitted	0.589			0.726			0.950			0.950		
Satd. Flow (perm)	1097	1863	1583	1352	1701	0	1770	4989	0	1770	4999	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			17		51			23			22	
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			3958			833	
Travel Time (s)		18.5			16.0			54.0			12.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	101	48	87	59	47	65	154	889	127	244	1448	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	48	87	59	112	0	154	1016	0	244	1633	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								

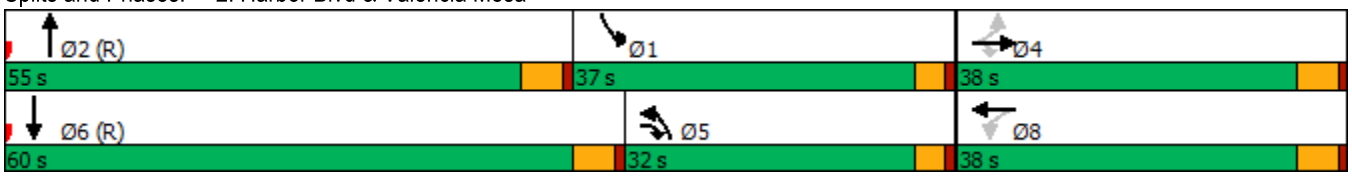


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	
Total Split (s)	38.0	38.0	32.0	38.0	38.0		32.0	55.0		37.0	60.0	
Total Split (%)	29.2%	29.2%	24.6%	29.2%	29.2%		24.6%	42.3%		28.5%	46.2%	
Maximum Green (s)	33.0	33.0	28.0	33.0	33.0		28.0	50.0		33.0	55.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	
Lead/Lag			Lag				Lag	Lead		Lag	Lead	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0			7.0			7.0	
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	
Pedestrian Calls (#/hr)				5	5			5			5	
Act Effct Green (s)	17.6	17.6	40.8	17.6	17.6		18.1	75.2		23.1	80.2	
Actuated g/C Ratio	0.14	0.14	0.31	0.14	0.14		0.14	0.58		0.18	0.62	
v/c Ratio	0.68	0.19	0.17	0.32	0.41		0.63	0.35		0.77	0.53	
Control Delay	73.9	48.0	23.0	52.4	30.8		50.9	9.2		45.4	5.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	73.9	48.0	23.0	52.4	30.8		50.9	9.2		45.4	5.9	
LOS	E	D	C	D	C		D	A		D	A	
Approach Delay		49.9			38.3			14.7			11.0	
Approach LOS		D			D			B			B	
Queue Length 50th (ft)	83	37	43	46	47		131	53		220	85	
Queue Length 95th (ft)	129	66	64	80	94		199	116		m231	m118	
Internal Link Dist (ft)		733			625			3878			753	
Turn Bay Length (ft)	55		85				175			230		
Base Capacity (vph)	278	472	512	343	469		381	2896		449	3093	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.36	0.10	0.17	0.17	0.24		0.40	0.35		0.54	0.53	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 33 (25%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 16.3		Intersection LOS: B	
Intersection Capacity Utilization 64.6%		ICU Level of Service C	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	48	87	59	47	65	154	889	127	244	1448	185
Future Volume (veh/h)	101	48	87	59	47	65	154	889	127	244	1448	185
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	101	48	87	59	47	65	154	889	127	244	1448	185
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	181	294	744	225	112	155	555	1737	247	624	1939	248
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.31	0.38	0.38	0.70	0.85	0.85
Sat Flow, veh/h	1281	1870	1585	1254	711	983	1781	4516	642	1781	4584	585
Grp Volume(v), veh/h	101	48	87	59	0	112	154	669	347	244	1075	558
Grp Sat Flow(s),veh/h/ln	1281	1870	1585	1254	0	1693	1781	1702	1755	1781	1702	1765
Q Serve(g_s), s	10.0	2.9	0.0	5.5	0.0	7.8	8.5	19.6	19.7	7.3	17.1	17.2
Cycle Q Clear(g_c), s	17.8	2.9	0.0	8.4	0.0	7.8	8.5	19.6	19.7	7.3	17.1	17.2
Prop In Lane	1.00		1.00	1.00		0.58	1.00		0.37	1.00		0.33
Lane Grp Cap(c), veh/h	181	294	744	225	0	267	555	1309	675	624	1440	747
V/C Ratio(X)	0.56	0.16	0.12	0.26	0.00	0.42	0.28	0.51	0.51	0.39	0.75	0.75
Avail Cap(c_a), veh/h	304	475	897	346	0	430	555	1309	675	624	1440	747
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.90	0.90	0.90	0.16	0.16	0.16
Uniform Delay (d), s/veh	57.4	47.4	19.4	51.0	0.0	49.4	33.7	30.6	30.7	13.7	7.1	7.1
Incr Delay (d2), s/veh	2.7	0.3	0.1	0.6	0.0	1.1	0.2	1.3	2.5	0.1	0.6	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	3.4	1.4	1.5	1.8	0.0	3.4	3.6	7.9	8.4	2.4	2.8	3.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.1	47.6	19.4	51.6	0.0	50.5	33.9	31.9	33.2	13.8	7.7	8.2
LnGrp LOS	E	D	B	D	A	D	C	C	C	B	A	A
Approach Vol, veh/h		236			171			1170			1877	
Approach Delay, s/veh		42.6			50.9			32.6			8.6	
Approach LOS		D			D			C			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	49.5	55.0		25.5	44.5	60.0		25.5				
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	33.0	50.0		33.0	28.0	55.0		33.0				
Max Q Clear Time (g_c+I1), s	9.3	21.7		19.8	10.5	19.2		10.4				
Green Ext Time (p_c), s	0.6	6.6		0.7	0.3	14.2		0.8				

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	84	9	773	116	174	22	1059	494	60	1464	80
Future Volume (vph)	51	84	9	773	116	174	22	1059	494	60	1464	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.992	
Flt Protected	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1706	1583	1770	5085	1583	1770	5045	0
Flt Permitted	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1706	1583	1770	5085	1583	1770	5045	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			169			388		8	
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			3958	
Travel Time (s)		23.8			15.7			5.5			54.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	84	9	773	116	174	22	1059	494	60	1464	80
Shared Lane Traffic (%)				43%								
Lane Group Flow (vph)	51	84	9	441	448	174	22	1059	494	60	1544	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	
Total Split (s)	12.0	12.0	12.0	44.0	44.0	44.0	10.0	60.0		14.0	64.0	
Total Split (%)	9.2%	9.2%	9.2%	33.8%	33.8%	33.8%	7.7%	46.2%		10.8%	49.2%	
Maximum Green (s)	7.0	7.0	7.0	39.0	39.0	39.0	6.0	55.0		10.0	59.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	
Pedestrian Calls (#/hr)				5	5	5		5			5	
Act Effct Green (s)	7.0	7.0	7.0	37.3	37.3	37.3	6.0	59.9	130.0	8.8	64.7	
Actuated g/C Ratio	0.05	0.05	0.05	0.29	0.29	0.29	0.05	0.46	1.00	0.07	0.50	
v/c Ratio	0.54	0.84	0.04	0.92	0.92	0.30	0.27	0.45	0.31	0.50	0.61	
Control Delay	80.6	114.8	0.3	69.6	69.6	6.8	55.7	16.0	0.5	72.8	18.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	80.6	114.8	0.3	69.6	69.6	6.8	55.7	16.0	0.5	72.8	18.9	
LOS	F	F	A	E	E	A	E	B	A	E	B	
Approach Delay		95.6			59.3			11.7			20.9	
Approach LOS		F			E			B			C	
Queue Length 50th (ft)	43	72	0	371	377	3	19	216	0	44	409	
Queue Length 95th (ft)	#95	#170	0	#569	#574	56	45	143	2	m89	539	
Internal Link Dist (ft)		791			959			200			3878	
Turn Bay Length (ft)	85						95			150		
Base Capacity (vph)	95	100	212	504	511	593	81	2343	1583	136	2516	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	59	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.54	0.84	0.04	0.88	0.88	0.29	0.27	0.45	0.31	0.44	0.63	

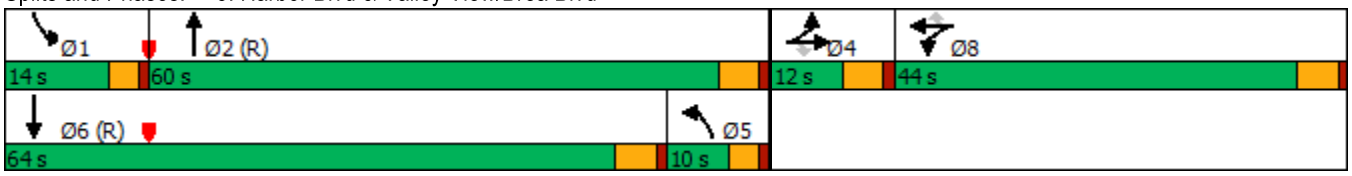
Intersection Summary

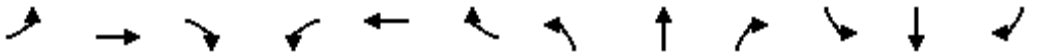
Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 120 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 29.4 Intersection LOS: C
Intersection Capacity Utilization 77.9% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	84	9	773	116	174	22	1059	494	60	1464	80
Future Volume (veh/h)	51	84	9	773	116	174	22	1059	494	60	1464	80
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	51	84	9	856	0	0	22	1059	0	60	1464	80
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	101	85	939	0		134	2518		77	2249	123
Arrive On Green	0.05	0.05	0.05	0.26	0.00	0.00	0.07	0.49	0.00	0.04	0.45	0.45
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	5106	1585	1781	4955	271
Grp Volume(v), veh/h	51	84	9	856	0	0	22	1059	0	60	1006	538
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1702	1585	1781	1702	1822
Q Serve(g_s), s	3.6	5.8	0.7	30.3	0.0	0.0	1.5	17.2	0.0	4.3	29.8	29.8
Cycle Q Clear(g_c), s	3.6	5.8	0.7	30.3	0.0	0.0	1.5	17.2	0.0	4.3	29.8	29.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.15
Lane Grp Cap(c), veh/h	96	101	85	939	0		134	2518		77	1545	827
V/C Ratio(X)	0.53	0.83	0.11	0.91	0.00		0.16	0.42		0.78	0.65	0.65
Avail Cap(c_a), veh/h	96	101	85	1069	0		134	2518		137	1545	827
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	0.00	0.00	1.00	1.00	0.00	0.86	0.86	0.86
Uniform Delay (d), s/veh	59.9	60.9	58.5	46.4	0.0	0.0	56.3	21.1	0.0	61.6	27.5	27.5
Incr Delay (d2), s/veh	5.5	42.4	0.5	10.7	0.0	0.0	0.6	0.5	0.0	13.4	1.8	3.4
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	1.8	4.0	0.3	14.4	0.0	0.0	0.7	6.9	0.0	2.2	11.8	13.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.4	103.3	59.1	57.1	0.0	0.0	56.9	21.6	0.0	74.9	29.4	30.9
LnGrp LOS	E	F	E	E	A		E	C		E	C	C
Approach Vol, veh/h		144			856			1081			1604	
Approach Delay, s/veh		87.1			57.1			22.3			31.6	
Approach LOS		F			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	69.1		12.0	14.7	64.0		39.3				
Change Period (Y+Rc), s	4.0	5.0		5.0	5.0	* 5		5.0				
Max Green Setting (Gmax), s	10.0	55.0		7.0	6.0	* 59		39.0				
Max Q Clear Time (g_c+I1), s	6.3	19.2		7.8	3.5	31.8		32.3				
Green Ext Time (p_c), s	0.0	8.9		0.0	0.0	11.2		2.0				

Intersection Summary			
HCM 6th Ctrl Delay		37.0	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	22	42	23	12	53	80	1461	33	63	2242	49
Future Volume (vph)	48	22	42	23	12	53	80	1461	33	63	2242	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.949				0.850		0.997			0.997	
Flt Protected		0.979			0.968		0.950			0.950		
Satd. Flow (prot)	0	1731	0	0	1803	1583	1770	5070	0	1770	3529	0
Flt Permitted		0.845			0.743		0.043			0.154		
Satd. Flow (perm)	0	1494	0	0	1384	1583	80	5070	0	287	3529	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				53		6			4	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			645			190			410	
Travel Time (s)		10.6			17.6			3.7			8.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	48	22	42	23	12	53	80	1461	33	63	2242	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	112	0	0	35	53	80	1494	0	63	2291	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	97.0	97.0		97.0	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	74.6%	74.6%		74.6%	74.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	92.0	92.0		92.0	92.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		15.4			15.4	15.4	104.6	104.6		104.6	104.6	
Actuated g/C Ratio		0.12			0.12	0.12	0.80	0.80		0.80	0.80	
v/c Ratio		0.59			0.21	0.23	1.25	0.37		0.27	0.81	
Control Delay		58.5			51.4	13.7	204.0	3.2		2.8	7.4	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		58.5			51.4	13.7	204.0	3.2		2.8	7.4	
LOS		E			D	B	F	A		A	A	
Approach Delay		58.5			28.7			13.4			7.3	
Approach LOS		E			C			B			A	
Queue Length 50th (ft)		80			28	0	~84	78		0	200	
Queue Length 95th (ft)		129			54	35	m#168	107		m7	286	
Internal Link Dist (ft)		310			565			110			330	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		332			298	382	64	4080		230	2840	
Starvation Cap Reductn		0			0	0	0	0		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	28	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.34			0.12	0.14	1.25	0.37		0.27	0.81	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 87 (67%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 11.5		Intersection LOS: B	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

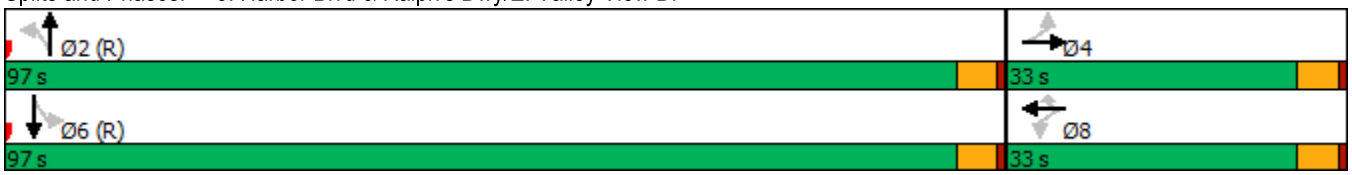
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

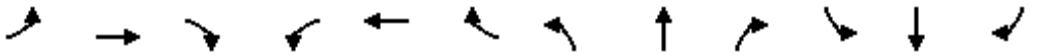


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	22	42	23	12	53	80	1461	33	63	2242	49
Future Volume (veh/h)	48	22	42	23	12	53	80	1461	33	63	2242	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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	48	22	42	23	12	53	80	1461	33	63	2242	49
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	35	52	116	52	138	145	4296	97	327	2973	65
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.84	0.84	0.84	0.84	0.84	0.84
Sat Flow, veh/h	599	405	602	811	596	1585	162	5137	116	352	3556	77
Grp Volume(v), veh/h	112	0	0	35	0	53	80	968	526	63	1116	1175
Grp Sat Flow(s),veh/h/ln	1606	0	0	1407	0	1585	162	1702	1849	352	1777	1856
Q Serve(g_s), s	6.0	0.0	0.0	0.0	0.0	4.1	56.9	8.5	8.5	6.5	36.0	36.7
Cycle Q Clear(g_c), s	8.8	0.0	0.0	2.8	0.0	4.1	93.6	8.5	8.5	14.9	36.0	36.7
Prop In Lane	0.43		0.37	0.66		1.00	1.00		0.06	1.00		0.04
Lane Grp Cap(c), veh/h	179	0	0	168	0	138	145	2847	1547	327	1486	1552
V/C Ratio(X)	0.63	0.00	0.00	0.21	0.00	0.38	0.55	0.34	0.34	0.19	0.75	0.76
Avail Cap(c_a), veh/h	378	0	0	359	0	341	145	2847	1547	327	1486	1552
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.1	0.0	0.0	55.4	0.0	56.1	25.6	2.4	2.4	4.1	4.7	4.7
Incr Delay (d2), s/veh	3.6	0.0	0.0	0.6	0.0	1.8	14.3	0.3	0.6	1.3	3.5	3.5
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	3.8	0.0	0.0	1.1	0.0	1.7	2.6	2.0	2.3	0.5	9.9	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.6	0.0	0.0	56.0	0.0	57.8	39.9	2.8	3.0	5.5	8.2	8.2
LnGrp LOS	E	A	A	E	A	E	D	A	A	A	A	A
Approach Vol, veh/h		112			88			1574			2354	
Approach Delay, s/veh		61.6			57.1			4.7			8.2	
Approach LOS		E			E			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		113.7		16.3		113.7		16.3				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		92.0		28.0		92.0		28.0				
Max Q Clear Time (g_c+I1), s		95.6		10.8		38.7		6.1				
Green Ext Time (p_c), s		0.0		0.5		39.1		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			9.4									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	176	73	53	165	466	101	1092	43	639	1592	19
Future Volume (vph)	17	176	73	53	165	466	101	1092	43	639	1592	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.994				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3518	0	3433	3539	1583
Flt Permitted	0.440			0.407			0.950			0.950		
Satd. Flow (perm)	820	1863	1583	758	1863	1583	1770	3518	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			50		4				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		538			720			654			541	
Travel Time (s)		10.5			14.0			12.7			10.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	176	73	53	165	466	101	1092	43	639	1592	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	176	73	53	165	466	101	1135	0	639	1592	19
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

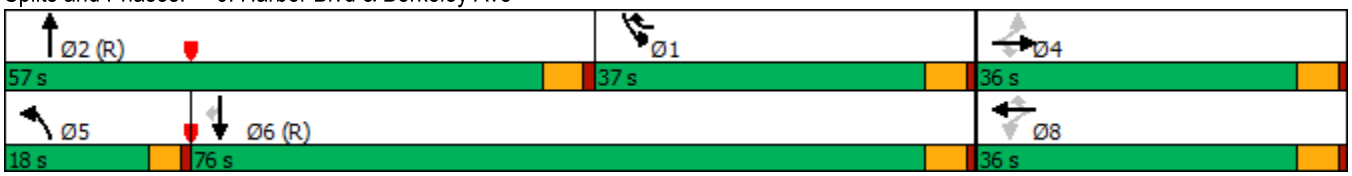


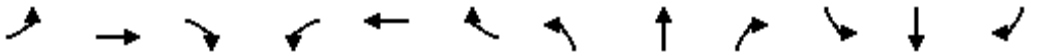
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	36.0	36.0	11.0	10.0	30.0		11.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	37.0	18.0	57.0		37.0	76.0	76.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	28.5%	13.8%	43.8%		28.5%	58.5%	58.5%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0	32.0	14.0	52.0		32.0	71.0	71.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		4.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		5.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	19.0	19.0	19.0	19.0	19.0	56.0	12.0	64.0		32.0	85.0	85.0
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.43	0.09	0.49		0.25	0.65	0.65
v/c Ratio	0.14	0.65	0.24	0.48	0.61	0.66	0.62	0.66		0.76	0.69	0.02
Control Delay	47.1	62.2	6.5	63.0	60.1	30.0	73.1	28.2		35.9	7.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.3	0.0
Total Delay	47.1	62.2	6.5	63.0	60.1	30.0	73.1	28.2		35.9	7.8	0.2
LOS	D	E	A	E	E	C	E	C		D	A	A
Approach Delay		45.9			39.8			31.8			15.7	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	13	144	0	42	134	281	83	357		230	178	0
Queue Length 95th (ft)	33	197	27	78	185	330	143	530		310	468	m0
Internal Link Dist (ft)		458			640			574			461	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	195	444	447	180	444	710	192	1732		845	2313	1052
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	240	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.09	0.40	0.16	0.29	0.37	0.66	0.53	0.66		0.76	0.77	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 115 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 25.7		Intersection LOS: C	
Intersection Capacity Utilization 80.7%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	176	73	53	165	466	101	1092	43	639	1592	19
Future Volume (veh/h)	17	176	73	53	165	466	101	1092	43	639	1592	19
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	17	176	73	53	165	466	101	1092	43	639	1592	19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	155	304	258	147	304	768	125	1394	55	1112	2344	1045
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.07	0.40	0.40	0.32	0.66	0.66
Sat Flow, veh/h	1221	1870	1585	1209	1870	1585	1781	3485	137	3456	3554	1585
Grp Volume(v), veh/h	17	176	73	53	165	466	101	557	578	639	1592	19
Grp Sat Flow(s),veh/h/ln	1221	1870	1585	1209	1870	1585	1781	1777	1846	1728	1777	1585
Q Serve(g_s), s	1.7	11.3	5.3	5.5	10.5	0.0	7.3	35.6	35.6	20.0	35.9	0.5
Cycle Q Clear(g_c), s	12.2	11.3	5.3	16.8	10.5	0.0	7.3	35.6	35.6	20.0	35.9	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	155	304	258	147	304	768	125	711	738	1112	2344	1045
V/C Ratio(X)	0.11	0.58	0.28	0.36	0.54	0.61	0.81	0.78	0.78	0.57	0.68	0.02
Avail Cap(c_a), veh/h	248	446	378	238	446	888	192	711	738	1112	2344	1045
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	55.6	50.3	47.8	58.1	50.0	24.5	59.6	34.1	34.1	36.7	13.7	7.6
Incr Delay (d2), s/veh	0.3	1.7	0.6	1.5	1.5	0.9	13.6	8.4	8.1	0.7	1.6	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	0.5	5.4	2.1	1.7	5.0	10.4	3.7	16.7	17.3	8.5	13.8	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.9	52.0	48.4	59.5	51.5	25.4	73.2	42.5	42.2	37.4	15.3	7.7
LnGrp LOS	E	D	D	E	D	C	E	D	D	D	B	A
Approach Vol, veh/h		266			684			1236			2250	
Approach Delay, s/veh		51.3			34.3			44.9			21.5	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	46.8	57.0		26.2	13.1	90.7		26.2				
Change Period (Y+Rc), s	5.0	5.0		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	32.0	52.0		31.0	14.0	71.0		31.0				
Max Q Clear Time (g_c+I1), s	22.0	37.6		14.2	9.3	37.9		18.8				
Green Ext Time (p_c), s	1.8	6.3		1.1	0.1	16.2		2.3				

Intersection Summary												
HCM 6th Ctrl Delay			31.8									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Future Volume (vph)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.985				0.850			0.850		0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4872	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4872	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17				206			126		79	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			833			926	
Travel Time (s)		17.8			16.7			12.6			12.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Shared Lane Traffic (%)												
Lane Group Flow (vph)	373	1325	0	169	1048	338	198	1564	229	379	1361	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	27.0	55.0		15.0	43.0	43.0	14.0	45.0	45.0	15.0	46.0	
Total Split (%)	20.8%	42.3%		11.5%	33.1%	33.1%	10.8%	34.6%	34.6%	11.5%	35.4%	
Maximum Green (s)	23.0	50.0		11.0	38.0	38.0	10.0	40.0	40.0	11.0	41.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	25.5	43.8		17.2	35.5	35.5	10.0	40.0	40.0	11.0	41.0	
Actuated g/C Ratio	0.20	0.34		0.13	0.27	0.27	0.08	0.31	0.31	0.08	0.32	
v/c Ratio	1.07	0.78		0.37	0.75	0.58	0.75	1.00	0.40	1.31	0.86	
Control Delay	119.2	41.5		55.9	46.9	19.1	52.6	45.1	3.7	206.3	45.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	119.2	41.5		55.9	46.9	19.1	52.6	45.1	3.7	206.3	45.6	
LOS	F	D		E	D	B	D	D	A	F	D	
Approach Delay		58.6			41.9			41.1			80.6	
Approach LOS		E			D			D			F	
Queue Length 50th (ft)	~369	361		68	291	90	88	~500	1	~210	373	
Queue Length 95th (ft)	#577	389		110	341	189	m#135	m#593	m9	#313	436	
Internal Link Dist (ft)		963			901			753			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	347	1937		453	1486	608	264	1564	574	290	1590	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.07	0.68		0.37	0.71	0.56	0.75	1.00	0.40	1.31	0.86	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 85 (65%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.31			
Intersection Signal Delay: 55.4		Intersection LOS: E	
Intersection Capacity Utilization 96.9%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

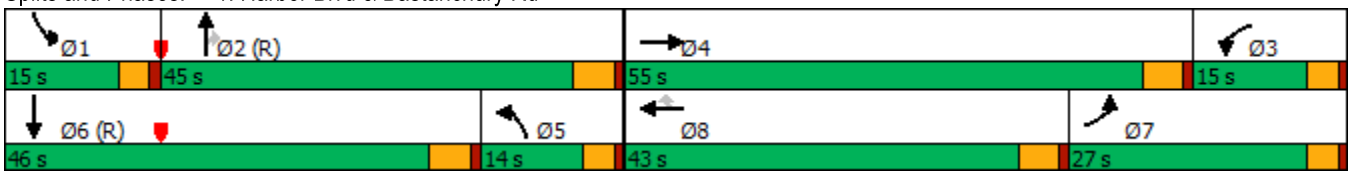
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Future Volume (veh/h)	373	1194	131	169	1048	338	198	1564	229	379	979	382
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	373	1194	131	169	1048	338	198	1564	229	379	979	382
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	1464	161	404	1294	402	373	1769	549	292	1139	444
Arrive On Green	0.18	0.31	0.31	0.12	0.25	0.25	0.22	0.69	0.69	0.08	0.32	0.32
Sat Flow, veh/h	1781	4670	512	3456	5106	1585	3456	5106	1585	3456	3612	1409
Grp Volume(v), veh/h	373	870	455	169	1048	338	198	1564	229	379	923	438
Grp Sat Flow(s),veh/h/ln	1781	1702	1778	1728	1702	1585	1728	1702	1585	1728	1702	1617
Q Serve(g_s), s	23.0	30.6	30.7	5.9	25.1	20.9	6.6	31.6	5.8	11.0	33.1	33.1
Cycle Q Clear(g_c), s	23.0	30.6	30.7	5.9	25.1	20.9	6.6	31.6	5.8	11.0	33.1	33.1
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		0.87
Lane Grp Cap(c), veh/h	315	1067	558	404	1294	402	373	1769	549	292	1074	510
V/C Ratio(X)	1.18	0.82	0.82	0.42	0.81	0.84	0.53	0.88	0.42	1.30	0.86	0.86
Avail Cap(c_a), veh/h	315	1309	684	404	1493	463	373	1769	549	292	1074	510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.70	0.70	0.70	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.5	41.1	41.2	53.3	45.6	29.0	48.0	17.9	7.3	59.5	41.8	41.8
Incr Delay (d2), s/veh	110.2	3.4	6.3	0.7	3.0	11.7	1.0	5.0	1.6	156.2	9.0	17.0
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	19.7	13.0	14.1	2.6	10.7	9.1	2.7	6.5	2.5	11.0	14.6	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	163.7	44.5	47.5	54.0	48.6	40.8	49.0	22.8	8.9	215.7	50.8	58.8
LnGrp LOS	F	D	D	D	D	D	D	C	A	F	D	E
Approach Vol, veh/h		1698			1555			1991			1740	
Approach Delay, s/veh		71.5			47.5			23.8			88.7	
Approach LOS		E			D			C			F	

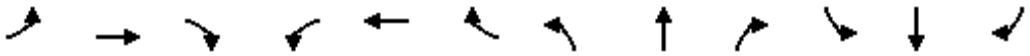
Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	50.0	19.2	45.8	19.0	46.0	27.0	38.0
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	5.0	* 5	4.0	5.0
Max Green Setting (Gmax), s	11.0	40.0	11.0	50.0	10.0	* 41	23.0	38.0
Max Q Clear Time (g_c+I1), s	13.0	33.6	7.9	32.7	8.6	35.1	25.0	27.1
Green Ext Time (p_c), s	0.0	4.9	0.1	8.1	0.1	3.8	0.0	5.9

Intersection Summary	
HCM 6th Ctrl Delay	56.9
HCM 6th LOS	E

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	23	139	76	44	305	50	1569	56	119	1020	95
Future Volume (vph)	125	23	139	76	44	305	50	1569	56	119	1020	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	175		0	230		0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	0.91
Frt			0.850		0.869			0.995			0.987	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1619	0	1770	5060	0	1770	5019	0
Flt Permitted	0.195			0.742			0.950			0.950		
Satd. Flow (perm)	363	1863	1583	1382	1619	0	1770	5060	0	1770	5019	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			63		253			5			16	
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			3958			833	
Travel Time (s)		18.5			16.0			54.0			12.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	23	139	76	44	305	50	1569	56	119	1020	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	23	139	76	349	0	50	1625	0	119	1115	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	
Total Split (s)	50.0	50.0	13.0	50.0	50.0		13.0	60.0		20.0	67.0	
Total Split (%)	38.5%	38.5%	10.0%	38.5%	38.5%		10.0%	46.2%		15.4%	51.5%	
Maximum Green (s)	45.0	45.0	9.0	45.0	45.0		9.0	55.0		16.0	62.0	
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	
Lead/Lag			Lead				Lead	Lead		Lag	Lag	
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0			7.0			7.0	
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	
Pedestrian Calls (#/hr)				5	5			5			5	
Act Effct Green (s)	29.6	29.6	43.3	29.6	29.6		8.7	70.4		16.0	77.7	
Actuated g/C Ratio	0.23	0.23	0.33	0.23	0.23		0.07	0.54		0.12	0.60	
v/c Ratio	1.52	0.05	0.24	0.24	0.62		0.42	0.59		0.55	0.37	
Control Delay	321.1	34.3	15.3	39.5	16.1		96.9	6.5		50.3	5.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	321.1	34.3	15.3	39.5	16.1		96.9	6.5		50.3	5.6	
LOS	F	C	B	D	B		F	A		D	A	
Approach Delay		150.0			20.3			9.2			9.9	
Approach LOS		F			C			A			A	
Queue Length 50th (ft)	~146	15	44	53	67		44	53		106	69	
Queue Length 95th (ft)	#244	34	78	84	147		m63	82		m134	112	
Internal Link Dist (ft)		733			625			3878			753	
Turn Bay Length (ft)	55		85				175			230		
Base Capacity (vph)	125	644	579	478	725		130	2743		217	3006	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	1.00	0.04	0.24	0.16	0.48		0.38	0.59		0.55	0.37	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 81 (62%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.52			
Intersection Signal Delay: 21.9		Intersection LOS: C	
Intersection Capacity Utilization 82.1%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

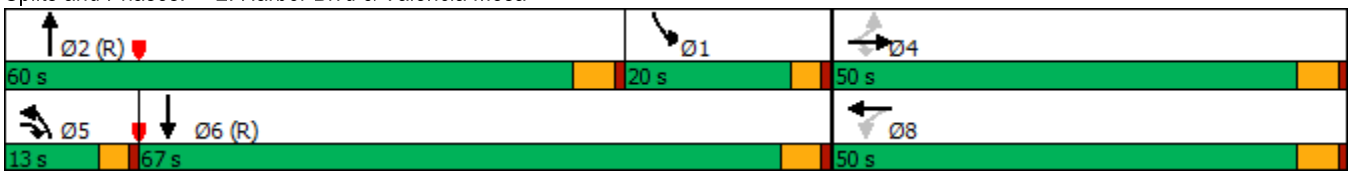
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa



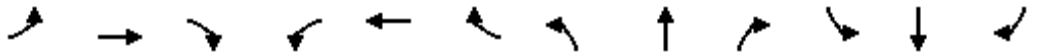
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	23	139	76	44	305	50	1569	56	119	1020	95
Future Volume (veh/h)	125	23	139	76	44	305	50	1569	56	119	1020	95
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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	125	23	139	76	44	305	50	1569	56	119	1020	95
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	197	605	574	441	66	457	69	2141	76	246	2521	234
Arrive On Green	0.32	0.32	0.32	0.32	0.32	0.32	0.04	0.42	0.42	0.28	1.00	1.00
Sat Flow, veh/h	1032	1870	1585	1224	204	1412	1781	5061	181	1781	4753	442
Grp Volume(v), veh/h	125	23	139	76	0	349	50	1055	570	119	730	385
Grp Sat Flow(s),veh/h/ln	1032	1870	1585	1224	0	1616	1781	1702	1838	1781	1702	1791
Q Serve(g_s), s	15.5	1.1	8.0	5.9	0.0	24.2	3.6	33.7	33.7	7.3	0.0	0.0
Cycle Q Clear(g_c), s	39.7	1.1	8.0	7.0	0.0	24.2	3.6	33.7	33.7	7.3	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.87	1.00		0.10	1.00		0.25
Lane Grp Cap(c), veh/h	197	605	574	441	0	523	69	1440	778	246	1805	950
V/C Ratio(X)	0.64	0.04	0.24	0.17	0.00	0.67	0.73	0.73	0.73	0.48	0.40	0.41
Avail Cap(c_a), veh/h	220	647	610	469	0	559	123	1440	778	246	1805	950
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	0.77	0.77	0.77	0.50	0.50	0.50
Uniform Delay (d), s/veh	55.1	30.1	29.0	32.5	0.0	37.9	61.8	31.4	31.4	43.2	0.0	0.0
Incr Delay (d2), s/veh	5.0	0.0	0.2	0.2	0.0	2.8	10.7	2.6	4.7	0.7	0.3	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	4.3	0.5	3.1	1.8	0.0	10.0	1.8	13.5	15.1	3.0	0.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.0	30.1	29.2	32.7	0.0	40.7	72.5	33.9	36.1	43.9	0.3	0.6
LnGrp LOS	E	C	C	C	A	D	E	C	D	D	A	A
Approach Vol, veh/h		287			425			1675			1234	
Approach Delay, s/veh		42.7			39.3			35.8			4.6	
Approach LOS		D			D			D			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	23.0	60.0		47.0	9.0	73.9		47.0				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	16.0	* 55		45.0	9.0	62.0		45.0				
Max Q Clear Time (g_c+I1), s	9.3	35.7		41.7	5.6	2.0		26.2				
Green Ext Time (p_c), s	0.1	10.1		0.4	0.0	8.6		2.5				

Intersection Summary			
HCM 6th Ctrl Delay		26.1	
HCM 6th LOS		C	

Notes

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



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	179	26	587	97	117	9	1447	788	102	1151	50
Future Volume (vph)	68	179	26	587	97	117	9	1447	788	102	1151	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	150		0
Storage Lanes	1		1	1		1	1		1	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	0.91
Frt			0.850			0.850			0.850		0.994	
Flt Protected	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1708	1583	1770	5085	1583	1770	5055	0
Flt Permitted	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1708	1583	1770	5085	1583	1770	5055	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			134			453		7	
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			3958	
Travel Time (s)		23.8			15.7			5.5			54.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	179	26	587	97	117	9	1447	788	102	1151	50
Shared Lane Traffic (%)				42%								
Lane Group Flow (vph)	68	179	26	340	344	117	9	1447	788	102	1201	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	
Total Split (s)	19.0	19.0	19.0	36.0	36.0	36.0	10.0	62.0		13.0	65.0	
Total Split (%)	14.6%	14.6%	14.6%	27.7%	27.7%	27.7%	7.7%	47.7%		10.0%	50.0%	
Maximum Green (s)	14.0	14.0	14.0	31.0	31.0	31.0	6.0	57.0		9.0	60.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	
Pedestrian Calls (#/hr)				5	5	5		5			5	
Act Effct Green (s)	14.0	14.0	14.0	29.2	29.2	29.2	6.0	58.5	130.0	9.3	69.8	
Actuated g/C Ratio	0.11	0.11	0.11	0.22	0.22	0.22	0.05	0.45	1.00	0.07	0.54	
v/c Ratio	0.36	0.90	0.09	0.90	0.90	0.25	0.11	0.63	0.50	0.80	0.44	
Control Delay	59.8	99.0	0.6	76.2	75.2	5.9	50.8	19.1	1.3	110.5	10.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	59.8	99.0	0.6	76.2	75.2	5.9	50.8	19.1	1.3	110.5	10.7	
LOS	E	F	A	E	E	A	D	B	A	F	B	
Approach Delay		79.8			65.5			13.0			18.5	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)	54	151	0	289	292	0	8	363	0	83	154	
Queue Length 95th (ft)	103	#290	0	#460	#463	38	m12	288	0	#183	82	
Internal Link Dist (ft)		791			959			200			3878	
Turn Bay Length (ft)	85						95			150		
Base Capacity (vph)	190	200	290	400	407	479	81	2288	1583	127	2719	
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.36	0.90	0.09	0.85	0.85	0.24	0.11	0.63	0.50	0.80	0.44	

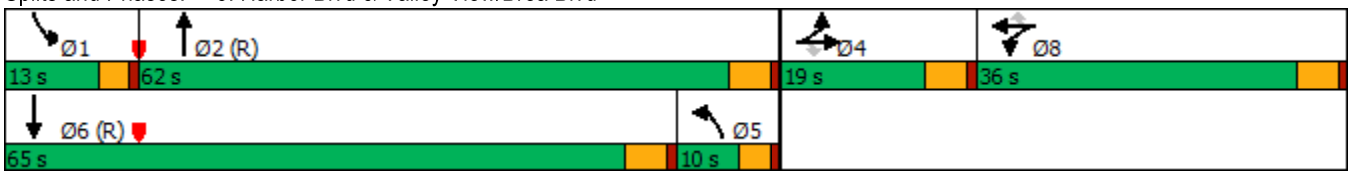
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 16 (12%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay: 27.6		Intersection LOS: C	
Intersection Capacity Utilization 77.7%		ICU Level of Service D	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	179	26	587	97	117	9	1447	788	102	1151	50
Future Volume (veh/h)	68	179	26	587	97	117	9	1447	788	102	1151	50
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	68	179	26	656	0	0	9	1447	0	102	1151	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	201	171	730	0		128	2410		123	2316	101
Arrive On Green	0.11	0.11	0.11	0.20	0.00	0.00	0.07	0.47	0.00	0.07	0.46	0.46
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	5106	1585	1781	5017	218
Grp Volume(v), veh/h	68	179	26	656	0	0	9	1447	0	102	781	420
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1702	1585	1781	1702	1831
Q Serve(g_s), s	4.6	12.3	1.9	23.3	0.0	0.0	0.6	27.1	0.0	7.3	20.8	20.9
Cycle Q Clear(g_c), s	4.6	12.3	1.9	23.3	0.0	0.0	0.6	27.1	0.0	7.3	20.8	20.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.12
Lane Grp Cap(c), veh/h	192	201	171	730	0		128	2410		123	1571	845
V/C Ratio(X)	0.35	0.89	0.15	0.90	0.00		0.07	0.60		0.83	0.50	0.50
Avail Cap(c_a), veh/h	192	201	171	850	0		128	2410		123	1571	845
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	0.00	0.00	1.00	1.00	0.00	0.95	0.95	0.95
Uniform Delay (d), s/veh	53.8	57.2	52.6	50.4	0.0	0.0	56.3	25.3	0.0	59.7	24.5	24.5
Incr Delay (d2), s/veh	1.1	34.8	0.4	11.3	0.0	0.0	0.2	1.1	0.0	33.7	1.1	2.0
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	2.1	7.8	0.8	11.3	0.0	0.0	0.3	11.0	0.0	4.4	8.1	9.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.9	92.0	53.0	61.6	0.0	0.0	56.5	26.4	0.0	93.5	25.5	26.4
LnGrp LOS	D	F	D	E	A		E	C		F	C	C
Approach Vol, veh/h		273			656			1456			1303	
Approach Delay, s/veh		79.0			61.6			26.6			31.1	
Approach LOS		E			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	66.4		19.0	14.4	65.0		31.6				
Change Period (Y+Rc), s	4.0	5.0		5.0	5.0	* 5		5.0				
Max Green Setting (Gmax), s	9.0	57.0		14.0	6.0	* 60		31.0				
Max Q Clear Time (g_c+I1), s	9.3	29.1		14.3	2.6	22.9		25.3				
Green Ext Time (p_c), s	0.0	12.4		0.0	0.0	8.6		1.3				

Intersection Summary		
HCM 6th Ctrl Delay		38.3
HCM 6th LOS		D

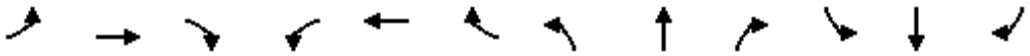
Notes

User approved volume balancing among the lanes for turning movement.

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

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	29	86	31	35	62	96	2104	26	50	1713	53
Future Volume (vph)	137	29	86	31	35	62	96	2104	26	50	1713	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.954				0.850		0.998			0.995	
Flt Protected		0.974			0.977		0.950			0.950		
Satd. Flow (prot)	0	1731	0	0	1820	1583	1770	5075	0	1770	3522	0
Flt Permitted		0.795			0.780		0.087			0.063		
Satd. Flow (perm)	0	1413	0	0	1453	1583	162	5075	0	117	3522	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18				19		3			6	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		390			645			190			410	
Travel Time (s)		10.6			17.6			3.7			8.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	137	29	86	31	35	62	96	2104	26	50	1713	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	252	0	0	66	62	96	2130	0	50	1766	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	97.0	97.0		97.0	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	74.6%	74.6%		74.6%	74.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	92.0	92.0		92.0	92.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		25.1			25.1	25.1	94.9	94.9		94.9	94.9	
Actuated g/C Ratio		0.19			0.19	0.19	0.73	0.73		0.73	0.73	
v/c Ratio		0.88			0.24	0.19	0.81	0.58		0.59	0.69	
Control Delay		76.3			45.3	32.0	40.5	6.1		31.7	4.1	
Queue Delay		0.0			0.0	0.0	0.0	0.3		0.0	0.0	
Total Delay		76.3			45.3	32.0	40.5	6.4		31.7	4.1	
LOS		E			D	C	D	A		C	A	
Approach Delay		76.3			38.9			7.9			4.8	
Approach LOS		E			D			A			A	
Queue Length 50th (ft)		190			46	30	73	203		2	116	
Queue Length 95th (ft)		#322			89	70	m29	m167		m#34	91	
Internal Link Dist (ft)		310			565			110			330	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		318			312	355	118	3704		85	2572	
Starvation Cap Reductn		0			0	0	0	731		0	0	
Spillback Cap Reductn		0			0	0	0	0		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.79			0.21	0.17	0.81	0.72		0.59	0.69	

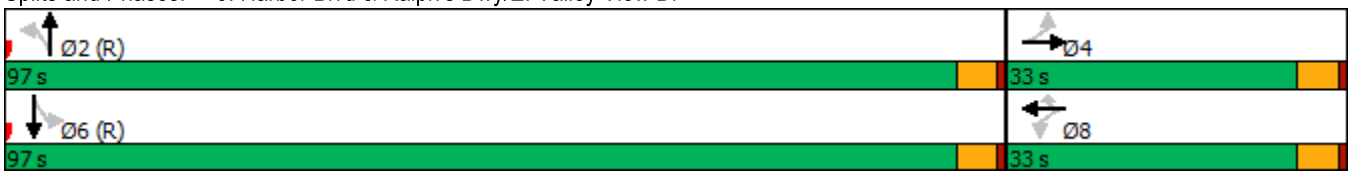
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 111 (85%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 11.4		Intersection LOS: B	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

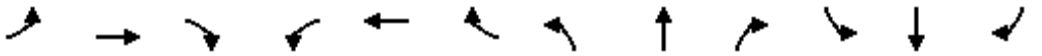
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr



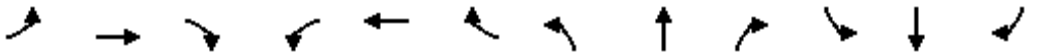


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	29	86	31	35	62	96	2104	26	50	1713	53
Future Volume (veh/h)	137	29	86	31	35	62	96	2104	26	50	1713	53
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	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	137	29	86	31	35	62	96	2104	26	50	1713	53
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	34	95	146	152	286	190	3861	48	163	2613	81
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.74	0.74	0.74	0.74	0.74	0.74
Sat Flow, veh/h	826	186	524	585	841	1585	271	5199	64	189	3519	109
Grp Volume(v), veh/h	252	0	0	66	0	62	96	1377	753	50	862	904
Grp Sat Flow(s),veh/h/ln	1537	0	0	1426	0	1585	271	1702	1859	189	1777	1851
Q Serve(g_s), s	16.2	0.0	0.0	0.0	0.0	4.3	36.0	22.7	22.8	20.2	31.5	31.9
Cycle Q Clear(g_c), s	20.8	0.0	0.0	4.6	0.0	4.3	67.9	22.7	22.8	42.9	31.5	31.9
Prop In Lane	0.54		0.34	0.47		1.00	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	320	0	0	298	0	286	190	2528	1380	163	1320	1375
V/C Ratio(X)	0.79	0.00	0.00	0.22	0.00	0.22	0.51	0.54	0.55	0.31	0.65	0.66
Avail Cap(c_a), veh/h	372	0	0	352	0	341	190	2528	1380	163	1320	1375
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	0.0	0.0	45.4	0.0	45.4	25.5	7.2	7.2	16.5	8.4	8.4
Incr Delay (d2), s/veh	9.4	0.0	0.0	0.4	0.0	0.4	9.3	0.8	1.6	4.8	2.5	2.5
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	8.9	0.0	0.0	1.9	0.0	1.8	2.7	7.5	8.4	1.1	11.3	11.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	0.0	0.0	45.7	0.0	45.8	34.8	8.1	8.8	21.3	10.9	10.9
LnGrp LOS	E	A	A	D	A	D	C	A	A	C	B	B
Approach Vol, veh/h		252			128			2226			1816	
Approach Delay, s/veh		61.3			45.8			9.5			11.2	
Approach LOS		E			D			A			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		101.5		28.5		101.5		28.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		92.0		28.0		92.0		28.0				
Max Q Clear Time (g_c+I1), s		69.9		22.8		44.9		6.6				
Green Ext Time (p_c), s		17.5		0.7		24.9		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			14.2									
HCM 6th LOS			B									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	147	81	59	168	750	87	1438	26	412	1467	21
Future Volume (vph)	28	147	81	59	168	750	87	1438	26	412	1467	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3529	0	3433	3539	1583
Flt Permitted	0.425			0.488			0.950			0.950		
Satd. Flow (perm)	792	1863	1583	909	1863	1583	1770	3529	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			50		2				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		538			720			654			541	
Travel Time (s)		10.5			14.0			12.7			10.5	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	28	147	81	59	168	750	87	1438	26	412	1467	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	147	81	59	168	750	87	1464	0	412	1467	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	36.0	36.0	10.0	10.0	30.0		10.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	35.0	16.0	59.0		35.0	78.0	78.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	26.9%	12.3%	45.4%		26.9%	60.0%	60.0%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0	31.0	12.0	54.0		31.0	73.0	73.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	18.6	18.6	18.6	18.6	18.6	54.6	10.9	66.4		31.0	86.5	86.5
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.42	0.08	0.51		0.24	0.67	0.67
v/c Ratio	0.25	0.55	0.27	0.46	0.63	1.08	0.59	0.81		0.50	0.62	0.02
Control Delay	51.6	58.3	8.6	59.9	61.9	92.1	73.4	32.1		28.9	4.3	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	0.0
Total Delay	51.6	58.3	8.6	59.9	61.9	92.1	73.4	32.1		28.9	4.4	0.1
LOS	D	E	A	E	E	F	E	C		C	A	A
Approach Delay		41.8			84.9			34.4			9.7	
Approach LOS		D			F			C			A	
Queue Length 50th (ft)	22	119	0	47	137	~698	71	511		141	55	0
Queue Length 95th (ft)	47	167	34	83	188	#799	128	#814		m178	291	m0
Internal Link Dist (ft)		458			640			574			461	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	188	444	447	216	444	693	167	1803		818	2355	1070
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	190	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.15	0.33	0.18	0.27	0.38	1.08	0.52	0.81		0.50	0.68	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 6 (5%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 35.3		Intersection LOS: D	
Intersection Capacity Utilization 103.7%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

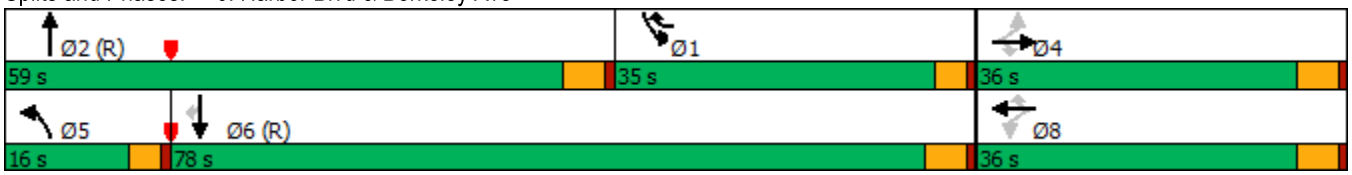
Queue shown is maximum after two cycles.

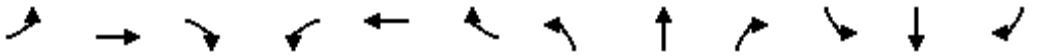
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	147	81	59	168	750	87	1438	26	412	1467	21
Future Volume (veh/h)	28	147	81	59	168	750	87	1438	26	412	1467	21
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	28	147	81	59	168	750	87	1438	26	412	1467	21
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	446	378	271	446	744	109	1483	27	797	2106	939
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.06	0.42	0.42	0.23	0.59	0.59
Sat Flow, veh/h	1217	1870	1585	1241	1870	1585	1781	3571	65	3456	3554	1585
Grp Volume(v), veh/h	28	147	81	59	168	750	87	715	749	412	1467	21
Grp Sat Flow(s),veh/h/ln	1217	1870	1585	1241	1870	1585	1781	1777	1859	1728	1777	1585
Q Serve(g_s), s	2.6	8.4	5.3	5.4	9.8	31.0	6.3	51.2	51.3	13.5	37.2	0.7
Cycle Q Clear(g_c), s	12.3	8.4	5.3	13.8	9.8	31.0	6.3	51.2	51.3	13.5	37.2	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	254	446	378	271	446	744	109	738	772	797	2106	939
V/C Ratio(X)	0.11	0.33	0.21	0.22	0.38	1.01	0.80	0.97	0.97	0.52	0.70	0.02
Avail Cap(c_a), veh/h	254	446	378	271	446	744	164	738	772	824	2106	939
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	46.6	40.9	39.7	46.6	41.4	34.5	60.2	37.2	37.2	43.7	18.4	10.9
Incr Delay (d2), s/veh	0.2	0.4	0.3	0.4	0.5	35.1	14.7	26.3	25.9	0.5	1.9	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	3.9	2.1	1.7	4.6	16.5	3.3	26.9	28.1	5.8	15.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	41.3	40.0	47.0	41.9	69.6	74.9	63.5	63.1	44.2	20.3	11.0
LnGrp LOS	D	D	D	D	D	F	E	E	E	D	C	B
Approach Vol, veh/h		256			977			1551			1900	
Approach Delay, s/veh		41.5			63.5			63.9			25.4	
Approach LOS		D			E			E			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	35.0	59.0		36.0	12.0	82.0		36.0				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	31.0	* 54		31.0	12.0	73.0		31.0				
Max Q Clear Time (g_c+I1), s	15.5	53.3		14.3	8.3	39.2		33.0				
Green Ext Time (p_c), s	1.3	0.6		1.0	0.1	14.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		47.0	
HCM 6th LOS		D	

Notes

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

APPENDIX B-IV

YEAR 2045 BUILDOUT PLUS PROJECT TRAFFIC CONDITIONS

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	327	1211	171	276	973	221	198	714	150	450	1511	341
Future Volume (vph)	327	1211	171	276	973	221	198	714	150	450	1511	341
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.981				0.850			0.850		0.972	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	4989	0	3433	5085	1583	3433	5085	1583	3433	4943	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	4989	0	3433	5085	1583	3433	5085	1583	3433	4943	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		21				165			150		43	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			428			926	
Travel Time (s)		17.8			16.7			6.5			12.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	327	1211	171	276	973	221	198	714	150	450	1511	341
Shared Lane Traffic (%)												
Lane Group Flow (vph)	327	1382	0	276	973	221	198	714	150	450	1852	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	25.0	48.0		20.0	43.0	43.0	12.0	43.0	43.0	19.0	50.0	
Total Split (%)	19.2%	36.9%		15.4%	33.1%	33.1%	9.2%	33.1%	33.1%	14.6%	38.5%	
Maximum Green (s)	21.0	43.0		16.0	38.0	38.0	8.0	38.0	38.0	15.0	45.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lead	Lead		Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	21.0	41.7		14.6	35.4	35.4	8.0	38.0	38.0	17.6	47.6	
Actuated g/C Ratio	0.16	0.32		0.11	0.27	0.27	0.06	0.29	0.29	0.14	0.37	
v/c Ratio	1.15	0.86		0.72	0.70	0.40	0.94	0.48	0.26	0.97	1.01	
Control Delay	147.2	46.8		66.4	45.4	12.6	100.9	35.2	6.4	90.0	63.0	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	147.2	46.8		66.4	45.4	12.6	100.9	35.2	6.4	90.0	63.0	
LOS	F	D		E	D	B	F	D	A	F	E	
Approach Delay		66.0			44.4			43.4			68.3	
Approach LOS		E			D			D			E	
Queue Length 50th (ft)	~322	387		116	264	35	84	216	42	~223	~618	
Queue Length 95th (ft)	#513	449		164	313	103	#162	167	18	#336	#720	
Internal Link Dist (ft)		963			901			348			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	285	1664		422	1486	579	211	1486	568	466	1838	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.15	0.83		0.65	0.65	0.38	0.94	0.48	0.26	0.97	1.01	

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 55 (42%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.15
Intersection Signal Delay: 58.3 Intersection LOS: E
Intersection Capacity Utilization 94.4% ICU Level of Service F
Analysis Period (min) 15

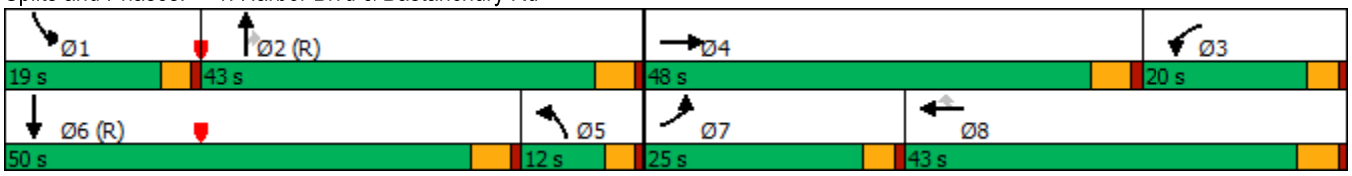
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	327	1211	171	276	973	221	198	714	150	450	1511	341
Future Volume (veh/h)	327	1211	171	276	973	221	198	714	150	450	1511	341
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	327	1211	171	276	973	221	198	714	150	450	1511	341
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	288	1391	196	333	1277	396	332	1708	530	399	1443	324
Arrive On Green	0.16	0.31	0.31	0.10	0.25	0.25	0.10	0.33	0.33	0.12	0.35	0.35
Sat Flow, veh/h	1781	4521	638	3456	5106	1585	3456	5106	1585	3456	4170	936
Grp Volume(v), veh/h	327	912	470	276	973	221	198	714	150	450	1232	620
Grp Sat Flow(s),veh/h/ln	1781	1702	1755	1728	1702	1585	1728	1702	1585	1728	1702	1702
Q Serve(g_s), s	21.0	32.9	32.9	10.2	23.0	15.8	7.1	14.1	6.7	15.0	45.0	45.0
Cycle Q Clear(g_c), s	21.0	32.9	32.9	10.2	23.0	15.8	7.1	14.1	6.7	15.0	45.0	45.0
Prop In Lane	1.00		0.36	1.00		1.00	1.00		1.00	1.00		0.55
Lane Grp Cap(c), veh/h	288	1047	540	333	1277	396	332	1708	530	399	1178	589
V/C Ratio(X)	1.14	0.87	0.87	0.83	0.76	0.56	0.60	0.42	0.28	1.13	1.05	1.05
Avail Cap(c_a), veh/h	288	1126	581	425	1493	463	332	1708	530	399	1178	589
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	54.5	42.6	42.6	57.7	45.2	42.5	56.3	33.5	17.4	57.5	42.5	42.5
Incr Delay (d2), s/veh	95.0	7.2	12.9	10.4	2.0	1.2	2.9	0.8	1.3	84.9	39.0	51.6
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	16.8	14.5	15.9	4.9	9.8	6.2	3.2	5.8	3.5	11.0	24.2	26.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	149.5	49.8	55.5	68.0	47.2	43.7	59.2	34.2	18.7	142.4	81.5	94.1
LnGrp LOS	F	D	E	E	D	D	E	C	B	F	F	F
Approach Vol, veh/h		1709			1470			1062			2302	
Approach Delay, s/veh		70.5			50.6			36.7			96.8	
Approach LOS		E			D			D			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	19.0	48.5	17.5	45.0	17.5	50.0	25.0	37.5
Change Period (Y+Rc), s	4.0	5.0	5.0	* 5	5.0	* 5	4.0	5.0
Max Green Setting (Gmax), s	15.0	38.0	16.0	* 43	8.0	* 45	21.0	38.0
Max Q Clear Time (g_c+I1), s	17.0	16.1	12.2	34.9	9.1	47.0	23.0	25.0
Green Ext Time (p_c), s	0.0	5.0	0.3	5.0	0.0	0.0	0.0	5.9

Intersection Summary	
HCM 6th Ctrl Delay	69.8
HCM 6th LOS	E

Notes

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

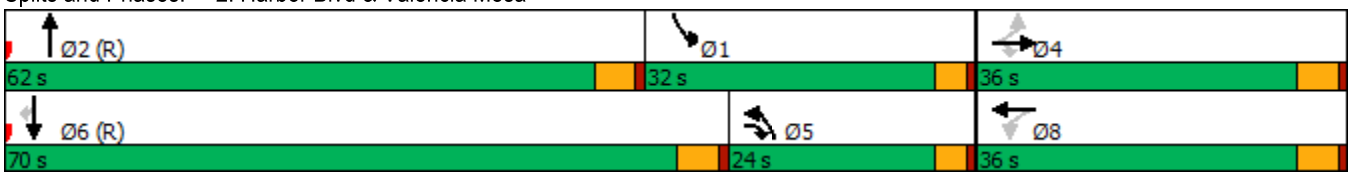
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	48	87	59	47	65	154	889	127	244	1448	185
Future Volume (vph)	101	48	87	59	47	65	154	889	127	244	1448	185
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	185		0	230		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850		0.913			0.981				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1701	0	1770	3472	0	1770	3539	1583
Flt Permitted	0.590			0.726			0.950			0.950		
Satd. Flow (perm)	1099	1863	1583	1352	1701	0	1770	3472	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			59		50			15				148
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			616			406	
Travel Time (s)		18.5			16.0			8.4			6.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	101	48	87	59	47	65	154	889	127	244	1448	185
Shared Lane Traffic (%)												
Lane Group Flow (vph)	101	48	87	59	112	0	154	1016	0	244	1448	185
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	30.0
Total Split (s)	36.0	36.0	24.0	36.0	36.0		24.0	62.0		32.0	70.0	70.0
Total Split (%)	27.7%	27.7%	18.5%	27.7%	27.7%		18.5%	47.7%		24.6%	53.8%	53.8%
Maximum Green (s)	31.0	31.0	20.0	31.0	31.0		20.0	57.0		28.0	65.0	65.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag			Lag				Lag	Lead		Lag	Lead	Lead
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5			5			5	5
Act Effct Green (s)	17.7	17.7	38.7	17.7	17.7		16.0	74.3		24.0	82.3	82.3
Actuated g/C Ratio	0.14	0.14	0.30	0.14	0.14		0.12	0.57		0.18	0.63	0.63
v/c Ratio	0.68	0.19	0.17	0.32	0.41		0.71	0.51		0.75	0.65	0.18
Control Delay	73.5	48.0	11.4	52.4	31.2		48.5	29.8		47.2	3.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.1	0.0
Total Delay	73.5	48.0	11.4	52.4	31.2		48.5	29.8		47.2	3.2	0.1
LOS	E	D	B	D	C		D	C		D	A	A
Approach Delay		45.4			38.5			32.3			8.6	
Approach LOS		D			D			C			A	
Queue Length 50th (ft)	83	37	17	46	48		121	296		217	53	0
Queue Length 95th (ft)	129	66	46	80	95		185	380		m231	m72	m1
Internal Link Dist (ft)		733			625			536			326	
Turn Bay Length (ft)	55		85				185			230		
Base Capacity (vph)	262	444	504	322	443		272	1990		381	2240	1056
Starvation Cap Reductn	0	0	0	0	0		0	0		0	94	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.39	0.11	0.17	0.18	0.25		0.57	0.51		0.64	0.67	0.18

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 33 (25%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 20.6 Intersection LOS: C
Intersection Capacity Utilization 72.5% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa

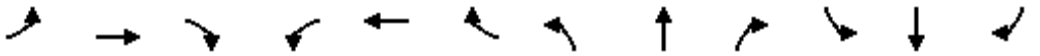


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	48	87	59	47	65	154	889	127	244	1448	185
Future Volume (veh/h)	101	48	87	59	47	65	154	889	127	244	1448	185
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		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	101	48	87	59	47	65	154	889	127	244	1448	185
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	180	294	622	225	112	154	419	1368	195	529	1777	793
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.24	0.44	0.44	0.30	0.50	0.50
Sat Flow, veh/h	1281	1870	1585	1254	711	983	1781	3121	446	1781	3554	1585
Grp Volume(v), veh/h	101	48	87	59	0	112	154	506	510	244	1448	185
Grp Sat Flow(s),veh/h/ln	1281	1870	1585	1254	0	1693	1781	1777	1790	1781	1777	1585
Q Serve(g_s), s	10.0	2.9	0.0	5.6	0.0	7.8	9.4	29.1	29.1	14.5	44.7	8.6
Cycle Q Clear(g_c), s	17.8	2.9	0.0	8.4	0.0	7.8	9.4	29.1	29.1	14.5	44.7	8.6
Prop In Lane	1.00		1.00	1.00		0.58	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	180	294	622	225	0	266	419	779	785	529	1777	793
V/C Ratio(X)	0.56	0.16	0.14	0.26	0.00	0.42	0.37	0.65	0.65	0.46	0.81	0.23
Avail Cap(c_a), veh/h	284	446	751	327	0	404	419	779	785	529	1777	793
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	47.4	25.4	51.0	0.0	49.5	41.6	28.7	28.7	37.2	27.4	18.4
Incr Delay (d2), s/veh	2.7	0.3	0.1	0.6	0.0	1.1	0.5	4.2	4.1	0.6	4.2	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	3.4	1.4	1.8	1.8	0.0	3.4	4.1	12.6	12.6	6.3	18.7	3.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.2	47.7	25.5	51.7	0.0	50.5	42.2	32.8	32.8	37.9	31.7	19.1
LnGrp LOS	E	D	C	D	A	D	D	C	C	D	C	B
Approach Vol, veh/h		236			171			1170			1877	
Approach Delay, s/veh		44.9			50.9			34.0			31.2	
Approach LOS		D			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	42.6	62.0		25.4	34.6	70.0		25.4				
Change Period (Y+Rc), s	4.0	5.0		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	28.0	57.0		31.0	20.0	65.0		31.0				
Max Q Clear Time (g_c+I1), s	16.5	31.1		19.8	11.4	46.7		10.4				
Green Ext Time (p_c), s	0.5	6.3		0.6	0.2	10.3		0.8				

Intersection Summary												
HCM 6th Ctrl Delay			34.1									
HCM 6th LOS			C									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	84	9	773	116	174	22	1059	494	60	1464	80
Future Volume (vph)	51	84	9	773	116	174	22	1059	494	60	1464	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	140		140
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1706	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950	0.964		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1706	1583	1770	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			169			270			101
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			363	
Travel Time (s)		23.8			15.7			5.5			5.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	84	9	773	116	174	22	1059	494	60	1464	80
Shared Lane Traffic (%)				43%								
Lane Group Flow (vph)	51	84	9	441	448	174	22	1059	494	60	1464	80
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			6



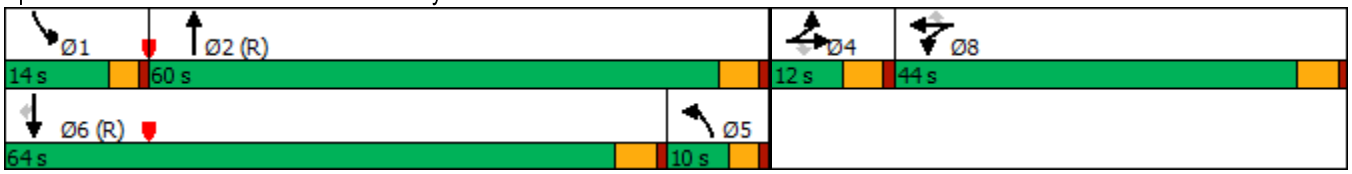
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	30.0
Total Split (s)	12.0	12.0	12.0	44.0	44.0	44.0	10.0	60.0		14.0	64.0	64.0
Total Split (%)	9.2%	9.2%	9.2%	33.8%	33.8%	33.8%	7.7%	46.2%		10.8%	49.2%	49.2%
Maximum Green (s)	7.0	7.0	7.0	39.0	39.0	39.0	6.0	55.0		10.0	59.0	59.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5	5		5			5	5
Act Effct Green (s)	7.0	7.0	7.0	37.3	37.3	37.3	6.0	59.9	130.0	8.8	64.7	64.7
Actuated g/C Ratio	0.05	0.05	0.05	0.29	0.29	0.29	0.05	0.46	1.00	0.07	0.50	0.50
v/c Ratio	0.54	0.84	0.04	0.92	0.92	0.30	0.27	0.65	0.31	0.50	0.83	0.10
Control Delay	80.6	114.8	0.3	69.6	69.6	6.8	55.6	20.5	0.5	87.3	26.1	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0
Total Delay	80.6	114.8	0.3	69.6	69.6	6.8	55.6	20.6	0.5	87.3	26.2	5.0
LOS	F	F	A	E	E	A	E	C	A	F	C	A
Approach Delay		95.6			59.3			14.8			27.4	
Approach LOS		F			E			B			C	
Queue Length 50th (ft)	43	72	0	371	377	3	19	424	0	52	403	5
Queue Length 95th (ft)	#95	#170	0	#569	#574	56	46	272	2	102	#773	29
Internal Link Dist (ft)		791			959			200			283	
Turn Bay Length (ft)	85						95			140		140
Base Capacity (vph)	95	100	212	504	511	593	81	1631	1583	136	1762	839
Starvation Cap Reductn	0	0	0	0	0	0	0	47	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	17	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.84	0.04	0.88	0.88	0.29	0.27	0.67	0.31	0.44	0.84	0.10

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 120 (92%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay: 32.9		Intersection LOS: C	
Intersection Capacity Utilization 88.3%		ICU Level of Service E	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	84	9	773	116	174	22	1059	494	60	1464	80
Future Volume (veh/h)	51	84	9	773	116	174	22	1059	494	60	1464	80
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	51	84	9	856	0	0	22	1059	0	60	1464	80
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	96	101	85	939	0		134	1753		77	1613	719
Arrive On Green	0.05	0.05	0.05	0.26	0.00	0.00	0.07	0.49	0.00	0.04	0.45	0.45
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	51	84	9	856	0	0	22	1059	0	60	1464	80
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	3.6	5.8	0.7	30.3	0.0	0.0	1.5	28.0	0.0	4.3	49.7	3.8
Cycle Q Clear(g_c), s	3.6	5.8	0.7	30.3	0.0	0.0	1.5	28.0	0.0	4.3	49.7	3.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	96	101	85	939	0		134	1753		77	1613	719
V/C Ratio(X)	0.53	0.83	0.11	0.91	0.00		0.16	0.60		0.78	0.91	0.11
Avail Cap(c_a), veh/h	96	101	85	1069	0		134	1753		137	1613	719
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	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.9	60.9	58.5	46.4	0.0	0.0	56.3	23.8	0.0	61.6	33.0	20.4
Incr Delay (d2), s/veh	5.5	42.4	0.5	10.7	0.0	0.0	0.6	1.6	0.0	15.3	9.0	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	1.8	4.0	0.3	14.4	0.0	0.0	0.7	11.8	0.0	2.2	21.9	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	65.4	103.3	59.1	57.1	0.0	0.0	56.9	25.3	0.0	76.8	42.0	20.7
LnGrp LOS	E	F	E	E	A		E	C		E	D	C
Approach Vol, veh/h		144			856			1081			1604	
Approach Delay, s/veh		87.1			57.1			26.0			42.2	
Approach LOS		F			E			C			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.6	69.1		12.0	14.7	64.0		39.3				
Change Period (Y+Rc), s	4.0	5.0		5.0	5.0	* 5		5.0				
Max Green Setting (Gmax), s	10.0	55.0		7.0	6.0	* 59		39.0				
Max Q Clear Time (g_c+I1), s	6.3	30.0		7.8	3.5	51.7		32.3				
Green Ext Time (p_c), s	0.0	8.2		0.0	0.0	5.0		2.0				

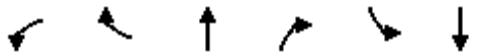
Intersection Summary		
HCM 6th Ctrl Delay	42.7	
HCM 6th LOS	D	

Notes

User approved volume balancing among the lanes for turning movement.

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

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

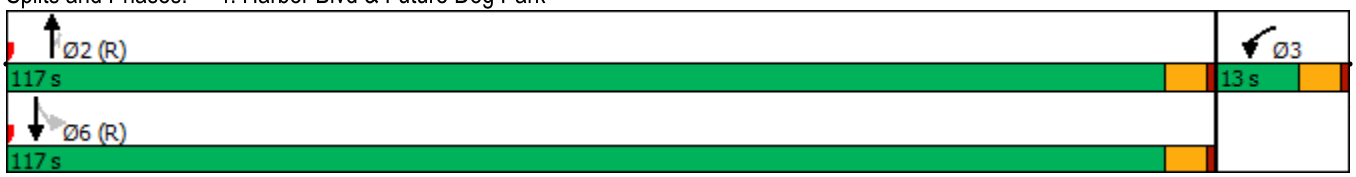


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	5	1279	5	5	1589
Future Volume (vph)	5	5	1279	5	5	1589
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		200	250	
Storage Lanes	1	0		1	1	
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	0.932			0.850		
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1694	0	3539	1583	1770	3539
Flt Permitted	0.976				0.213	
Satd. Flow (perm)	1694	0	3539	1583	397	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	5			5		
Link Speed (mph)	30		30			30
Link Distance (ft)	484		960			1191
Travel Time (s)	11.0		21.8			27.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	5	1279	5	5	1589
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	1279	5	5	1589
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Perm	Perm	NA
Protected Phases	3		2			6
Permitted Phases				2	6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	3		2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0		6.0	6.0	6.0	6.0
Minimum Split (s)	11.0		11.0	11.0	11.0	11.0
Total Split (s)	13.0		117.0	117.0	117.0	117.0
Total Split (%)	10.0%		90.0%	90.0%	90.0%	90.0%
Maximum Green (s)	8.0		112.0	112.0	112.0	112.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	6.4		126.5	126.5	126.5	126.5
Actuated g/C Ratio	0.05		0.97	0.97	0.97	0.97
v/c Ratio	0.11		0.37	0.00	0.01	0.46
Control Delay	46.1		0.8	0.2	1.6	2.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	46.1		0.8	0.2	1.6	2.1
LOS	D		A	A	A	A
Approach Delay	46.1		0.8			2.0
Approach LOS	D		A			A
Queue Length 50th (ft)	4		17	0	0	1
Queue Length 95th (ft)	23		28	m0	m1	347
Internal Link Dist (ft)	404		880			1111
Turn Bay Length (ft)				200	250	
Base Capacity (vph)	108		3444	1541	386	3444
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.09		0.37	0.00	0.01	0.46

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 1.6		Intersection LOS: A	
Intersection Capacity Utilization 57.3%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Harbor Blvd & Future Dog Park

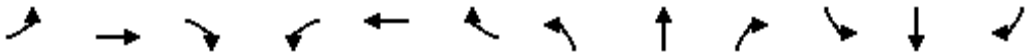


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	5	1279	5	5	1589
Future Volume (veh/h)	5	5	1279	5	5	1589
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	5	1279	5	5	1589
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	12	12	3227	1439	424	3227
Arrive On Green	0.02	0.02	0.91	0.91	0.91	0.91
Sat Flow, veh/h	770	770	3647	1585	430	3647
Grp Volume(v), veh/h	11	0	1279	5	5	1589
Grp Sat Flow(s),veh/h/ln	1693	0	1777	1585	430	1777
Q Serve(g_s), s	0.8	0.0	6.7	0.0	0.2	9.7
Cycle Q Clear(g_c), s	0.8	0.0	6.7	0.0	6.9	9.7
Prop In Lane	0.45	0.45		1.00	1.00	
Lane Grp Cap(c), veh/h	26	0	3227	1439	424	3227
V/C Ratio(X)	0.43	0.00	0.40	0.00	0.01	0.49
Avail Cap(c_a), veh/h	104	0	3227	1439	424	3227
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	63.5	0.0	0.9	0.6	1.4	1.0
Incr Delay (d2), s/veh	11.0	0.0	0.4	0.0	0.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.6	0.0	0.0	0.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	74.4	0.0	1.2	0.6	1.4	1.5
LnGrp LOS	E	A	A	A	A	A
Approach Vol, veh/h	11		1284			1594
Approach Delay, s/veh	74.4		1.2			1.5
Approach LOS	E		A			A

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		123.0			123.0	7.0
Change Period (Y+Rc), s		5.0			5.0	5.0
Max Green Setting (Gmax), s		112.0			112.0	8.0
Max Q Clear Time (g_c+I1), s		8.7			11.7	2.8
Green Ext Time (p_c), s		14.8			23.3	0.0

Intersection Summary	
HCM 6th Ctrl Delay	1.7
HCM 6th LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	22	42	23	12	53	80	1461	33	63	2242	49
Future Volume (vph)	48	22	42	23	12	53	80	1461	33	63	2242	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.949				0.850		0.997			0.997	
Flt Protected		0.979			0.968		0.950			0.950		
Satd. Flow (prot)	0	1731	0	0	1803	1583	1770	5070	0	1770	3529	0
Flt Permitted		0.845			0.743		0.043			0.154		
Satd. Flow (perm)	0	1494	0	0	1384	1583	80	5070	0	287	3529	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14				53		6			4	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		427			781			235			407	
Travel Time (s)		11.6			21.3			4.6			7.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	48	22	42	23	12	53	80	1461	33	63	2242	49
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	112	0	0	35	53	80	1494	0	63	2291	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	97.0	97.0		97.0	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	74.6%	74.6%		74.6%	74.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	92.0	92.0		92.0	92.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		15.4			15.4	15.4	104.6	104.6		104.6	104.6	
Actuated g/C Ratio		0.12			0.12	0.12	0.80	0.80		0.80	0.80	
v/c Ratio		0.59			0.21	0.23	1.25	0.37		0.27	0.81	
Control Delay		58.5			51.4	13.7	204.2	3.2		2.5	3.6	
Queue Delay		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		58.5			51.4	13.7	204.2	3.2		2.5	3.7	
LOS		E			D	B	F	A		A	A	
Approach Delay		58.5			28.7			13.4			3.6	
Approach LOS		E			C			B			A	
Queue Length 50th (ft)		80			28	0	~84	77		1	10	
Queue Length 95th (ft)		129			54	35	m#170	106		m5	298	
Internal Link Dist (ft)		347			701			155			327	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		332			298	382	64	4080		230	2840	
Starvation Cap Reductn		0			0	0	0	0		0	6	
Spillback Cap Reductn		0			0	0	0	0		0	28	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.34			0.12	0.14	1.25	0.37		0.27	0.81	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 87 (67%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay: 9.4		Intersection LOS: A	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

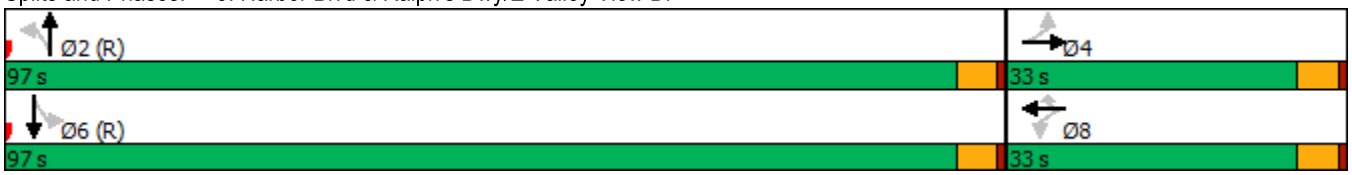
Queue shown is maximum after two cycles.

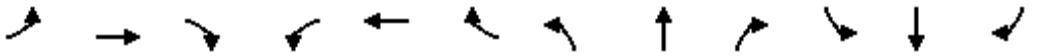
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr



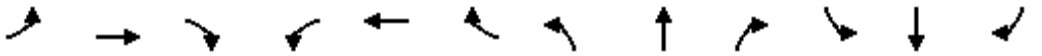


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	22	42	23	12	53	80	1461	33	63	2242	49
Future Volume (veh/h)	48	22	42	23	12	53	80	1461	33	63	2242	49
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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	48	22	42	23	12	53	80	1461	33	63	2242	49
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	35	52	116	52	138	145	4296	97	327	2973	65
Arrive On Green	0.09	0.09	0.09	0.09	0.09	0.09	0.84	0.84	0.84	0.84	0.84	0.84
Sat Flow, veh/h	599	405	602	811	596	1585	162	5137	116	352	3556	77
Grp Volume(v), veh/h	112	0	0	35	0	53	80	968	526	63	1116	1175
Grp Sat Flow(s),veh/h/ln	1606	0	0	1407	0	1585	162	1702	1849	352	1777	1856
Q Serve(g_s), s	6.0	0.0	0.0	0.0	0.0	4.1	56.9	8.5	8.5	6.5	36.0	36.7
Cycle Q Clear(g_c), s	8.8	0.0	0.0	2.8	0.0	4.1	93.6	8.5	8.5	14.9	36.0	36.7
Prop In Lane	0.43		0.37	0.66		1.00	1.00		0.06	1.00		0.04
Lane Grp Cap(c), veh/h	179	0	0	168	0	138	145	2847	1547	327	1486	1552
V/C Ratio(X)	0.63	0.00	0.00	0.21	0.00	0.38	0.55	0.34	0.34	0.19	0.75	0.76
Avail Cap(c_a), veh/h	378	0	0	359	0	341	145	2847	1547	327	1486	1552
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.1	0.0	0.0	55.4	0.0	56.1	25.6	2.4	2.4	4.1	4.7	4.7
Incr Delay (d2), s/veh	3.6	0.0	0.0	0.6	0.0	1.8	14.3	0.3	0.6	1.3	3.5	3.5
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	3.8	0.0	0.0	1.1	0.0	1.7	2.6	2.0	2.3	0.5	9.9	10.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.6	0.0	0.0	56.0	0.0	57.8	39.9	2.8	3.0	5.5	8.2	8.2
LnGrp LOS	E	A	A	E	A	E	D	A	A	A	A	A
Approach Vol, veh/h		112			88			1574			2354	
Approach Delay, s/veh		61.6			57.1			4.7			8.2	
Approach LOS		E			E			A			A	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		113.7		16.3		113.7		16.3				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		92.0		28.0		92.0		28.0				
Max Q Clear Time (g_c+I1), s		95.6		10.8		38.7		6.1				
Green Ext Time (p_c), s		0.0		0.5		39.1		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			9.4									
HCM 6th LOS			A									

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	176	73	53	165	466	101	1092	43	639	1592	19
Future Volume (vph)	17	176	73	53	165	466	101	1092	43	639	1592	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.994				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3518	0	3433	3539	1583
Flt Permitted	0.440			0.407			0.950			0.950		
Satd. Flow (perm)	820	1863	1583	758	1863	1583	1770	3518	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			50		4				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		647			786			659			504	
Travel Time (s)		12.6			15.3			12.8			9.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	17	176	73	53	165	466	101	1092	43	639	1592	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	176	73	53	165	466	101	1135	0	639	1592	19
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

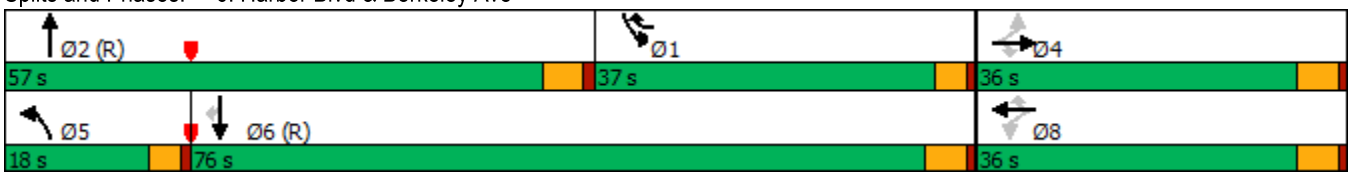


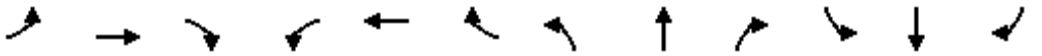
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	36.0	36.0	10.0	10.0	30.0		10.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	37.0	18.0	57.0		37.0	76.0	76.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	28.5%	13.8%	43.8%		28.5%	58.5%	58.5%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0	33.0	14.0	52.0		33.0	71.0	71.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	19.0	19.0	19.0	19.0	19.0	57.0	12.0	64.0		33.0	85.0	85.0
Actuated g/C Ratio	0.15	0.15	0.15	0.15	0.15	0.44	0.09	0.49		0.25	0.65	0.65
v/c Ratio	0.14	0.65	0.24	0.48	0.61	0.65	0.62	0.66		0.73	0.69	0.02
Control Delay	47.1	62.2	6.5	63.0	60.1	29.0	73.1	28.2		36.0	8.1	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.3	0.0
Total Delay	47.1	62.2	6.5	63.0	60.1	29.0	73.1	28.2		36.0	8.5	0.2
LOS	D	E	A	E	E	C	E	C		D	A	A
Approach Delay		45.9			39.1			31.8			16.2	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	13	144	0	42	134	277	83	357		227	180	0
Queue Length 95th (ft)	33	197	27	78	185	324	143	530		305	470	m0
Internal Link Dist (ft)		567			706			579			424	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	195	444	447	180	444	722	192	1732		871	2313	1052
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	240	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.09	0.40	0.16	0.29	0.37	0.65	0.53	0.66		0.73	0.77	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 115 (88%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 25.9		Intersection LOS: C	
Intersection Capacity Utilization 79.9%		ICU Level of Service D	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	176	73	53	165	466	101	1092	43	639	1592	19
Future Volume (veh/h)	17	176	73	53	165	466	101	1092	43	639	1592	19
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	17	176	73	53	165	466	101	1092	43	639	1592	19
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	155	304	258	147	304	768	125	1394	55	1112	2344	1045
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.07	0.40	0.40	0.32	0.66	0.66
Sat Flow, veh/h	1221	1870	1585	1209	1870	1585	1781	3485	137	3456	3554	1585
Grp Volume(v), veh/h	17	176	73	53	165	466	101	557	578	639	1592	19
Grp Sat Flow(s),veh/h/ln	1221	1870	1585	1209	1870	1585	1781	1777	1846	1728	1777	1585
Q Serve(g_s), s	1.7	11.3	5.3	5.5	10.5	0.0	7.3	35.6	35.6	20.0	35.9	0.5
Cycle Q Clear(g_c), s	12.2	11.3	5.3	16.8	10.5	0.0	7.3	35.6	35.6	20.0	35.9	0.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	155	304	258	147	304	768	125	711	738	1112	2344	1045
V/C Ratio(X)	0.11	0.58	0.28	0.36	0.54	0.61	0.81	0.78	0.78	0.57	0.68	0.02
Avail Cap(c_a), veh/h	248	446	378	238	446	888	192	711	738	1112	2344	1045
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	55.6	50.3	47.8	58.1	50.0	24.5	59.6	34.1	34.1	36.7	13.7	7.6
Incr Delay (d2), s/veh	0.3	1.7	0.6	1.5	1.5	0.9	13.6	8.4	8.1	0.7	1.6	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	0.5	5.4	2.1	1.7	5.0	10.4	3.7	16.7	17.3	8.5	13.8	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.9	52.0	48.4	59.5	51.5	25.4	73.2	42.5	42.2	37.4	15.3	7.7
LnGrp LOS	E	D	D	E	D	C	E	D	D	D	B	A
Approach Vol, veh/h		266			684			1236			2250	
Approach Delay, s/veh		51.3			34.3			44.9			21.5	
Approach LOS		D			C			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	46.8	57.0		26.2	13.1	90.7		26.2				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	33.0	* 52		31.0	14.0	71.0		31.0				
Max Q Clear Time (g_c+I1), s	22.0	37.6		14.2	9.3	37.9		18.8				
Green Ext Time (p_c), s	1.9	6.3		1.1	0.1	16.2		2.3				

Intersection Summary			
HCM 6th Ctrl Delay		31.8	
HCM 6th LOS		C	

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Future Volume (vph)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	325		0	193		145	230		150	275		0
Storage Lanes	1		0	2		1	2		1	2		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	0.91	0.91	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	0.91
Frt		0.985				0.850			0.850		0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4872	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	5009	0	3433	5085	1583	3433	5085	1583	3433	4872	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		17				223			126		79	
Link Speed (mph)		40			40			45			50	
Link Distance (ft)		1043			981			428			926	
Travel Time (s)		17.8			16.7			6.5			12.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Shared Lane Traffic (%)												
Lane Group Flow (vph)	373	1325	0	169	1048	338	198	1564	229	379	1361	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8			2			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	43.0		10.0	43.0	43.0	10.0	43.0	43.0	10.0	36.0	
Total Split (s)	27.0	55.0		15.0	43.0	43.0	14.0	44.0	44.0	16.0	46.0	
Total Split (%)	20.8%	42.3%		11.5%	33.1%	33.1%	10.8%	33.8%	33.8%	12.3%	35.4%	
Maximum Green (s)	23.0	50.0		11.0	38.0	38.0	10.0	39.0	39.0	12.0	41.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	4.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	
Flash Dont Walk (s)		31.0			31.0	31.0		31.0	31.0		24.0	
Pedestrian Calls (#/hr)		5			5	5		5	5		5	
Act Effct Green (s)	25.5	43.8		17.2	35.5	35.5	10.0	39.0	39.0	12.0	41.0	
Actuated g/C Ratio	0.20	0.34		0.13	0.27	0.27	0.08	0.30	0.30	0.09	0.32	
v/c Ratio	1.07	0.78		0.37	0.75	0.57	0.75	1.03	0.41	1.20	0.86	
Control Delay	119.2	41.5		55.9	46.9	17.0	63.9	63.5	15.9	165.4	45.6	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	119.2	41.5		55.9	46.9	17.0	63.9	63.5	15.9	165.4	45.6	
LOS	F	D		E	D	B	E	E	B	F	D	
Approach Delay		58.6			41.4			58.0			71.7	
Approach LOS		E			D			E			E	
Queue Length 50th (ft)	~369	361		68	291	76	79	~471	46	~198	373	
Queue Length 95th (ft)	#577	389		110	341	174	m102	m#598	m55	#302	436	
Internal Link Dist (ft)		963			901			348			846	
Turn Bay Length (ft)	325			193		145	230		150	275		
Base Capacity (vph)	347	1937		453	1486	620	264	1525	563	316	1590	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	1.07	0.68		0.37	0.71	0.55	0.75	1.03	0.41	1.20	0.86	

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 85 (65%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.20			
Intersection Signal Delay: 57.9		Intersection LOS: E	
Intersection Capacity Utilization 96.9%		ICU Level of Service F	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

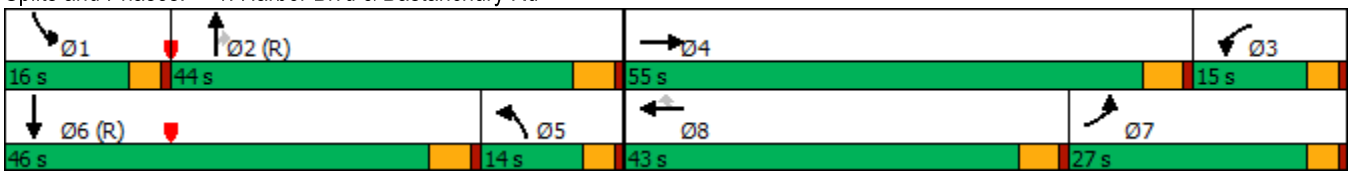
Queue shown is maximum after two cycles.

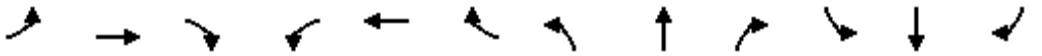
\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Harbor Blvd & Bastanchury Rd





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	373	1194	131	169	1048	338	198	1564	229	379	979	382
Future Volume (veh/h)	373	1194	131	169	1048	338	198	1564	229	379	979	382
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	373	1194	131	169	1048	338	198	1564	229	379	979	382
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	315	1464	161	404	1294	402	373	1730	537	319	1139	444
Arrive On Green	0.18	0.31	0.31	0.12	0.25	0.25	0.11	0.34	0.34	0.09	0.32	0.32
Sat Flow, veh/h	1781	4670	512	3456	5106	1585	3456	5106	1585	3456	3612	1409
Grp Volume(v), veh/h	373	870	455	169	1048	338	198	1564	229	379	923	438
Grp Sat Flow(s),veh/h/ln	1781	1702	1778	1728	1702	1585	1728	1702	1585	1728	1702	1617
Q Serve(g_s), s	23.0	30.6	30.7	5.9	25.1	20.6	7.0	38.0	10.4	12.0	33.1	33.1
Cycle Q Clear(g_c), s	23.0	30.6	30.7	5.9	25.1	20.6	7.0	38.0	10.4	12.0	33.1	33.1
Prop In Lane	1.00		0.29	1.00		1.00	1.00		1.00	1.00		0.87
Lane Grp Cap(c), veh/h	315	1067	558	404	1294	402	373	1730	537	319	1074	510
V/C Ratio(X)	1.18	0.82	0.82	0.42	0.81	0.84	0.53	0.90	0.43	1.19	0.86	0.86
Avail Cap(c_a), veh/h	315	1309	684	404	1493	463	373	1730	537	319	1074	510
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	53.5	41.1	41.2	53.3	45.6	28.3	54.9	41.0	17.1	59.0	41.8	41.8
Incr Delay (d2), s/veh	110.2	3.4	6.3	0.7	3.0	11.7	1.4	8.2	2.5	111.7	9.0	17.0
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	19.7	13.0	14.1	2.6	10.7	8.9	3.1	16.6	4.1	10.0	14.6	15.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	163.7	44.5	47.5	54.0	48.6	40.0	56.3	49.2	19.6	170.7	50.8	58.8
LnGrp LOS	F	D	D	D	D	D	E	D	B	F	D	E
Approach Vol, veh/h		1698			1555			1991			1740	
Approach Delay, s/veh		71.5			47.3			46.5			78.9	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	16.0	49.0	19.2	45.8	19.0	46.0	27.0	38.0
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	5.0	* 5	4.0	5.0
Max Green Setting (Gmax), s	12.0	39.0	11.0	50.0	10.0	* 41	23.0	38.0
Max Q Clear Time (g_c+I1), s	14.0	40.0	7.9	32.7	9.0	35.1	25.0	27.1
Green Ext Time (p_c), s	0.0	0.0	0.1	8.1	0.1	3.8	0.0	5.9

Intersection Summary	
HCM 6th Ctrl Delay	60.8
HCM 6th LOS	E

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	23	139	76	44	305	50	1569	56	119	1020	95
Future Volume (vph)	125	23	139	76	44	305	50	1569	56	119	1020	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	55		85	0		0	185		0	230		0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850		0.869			0.995				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1619	0	1770	3522	0	1770	3539	1583
Flt Permitted	0.232			0.742			0.950			0.950		
Satd. Flow (perm)	432	1863	1583	1382	1619	0	1770	3522	0	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			85		178			4				95
Link Speed (mph)		30			30			50			45	
Link Distance (ft)		813			705			616			406	
Travel Time (s)		18.5			16.0			8.4			6.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	125	23	139	76	44	305	50	1569	56	119	1020	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	125	23	139	76	349	0	50	1625	0	119	1020	95
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4	5		8		5	2		1	6	
Permitted Phases	4		4	8								6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	5	8	8		5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	10.0	36.0	36.0		10.0	26.0		10.0	30.0	30.0
Total Split (s)	43.0	43.0	13.0	43.0	43.0		13.0	71.0		16.0	74.0	74.0
Total Split (%)	33.1%	33.1%	10.0%	33.1%	33.1%		10.0%	54.6%		12.3%	56.9%	56.9%
Maximum Green (s)	38.0	38.0	9.0	38.0	38.0		9.0	66.0		12.0	69.0	69.0
Yellow Time (s)	4.0	4.0	3.0	4.0	4.0		3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	5.0		4.0	5.0		4.0	5.0	5.0
Lead/Lag			Lead				Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?			Yes				Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0			14.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5			5			5	5
Act Effct Green (s)	32.0	32.0	45.1	32.0	32.0		8.1	72.0		12.0	75.9	75.9
Actuated g/C Ratio	0.25	0.25	0.35	0.25	0.25		0.06	0.55		0.09	0.58	0.58
v/c Ratio	1.18	0.05	0.23	0.22	0.66		0.45	0.83		0.73	0.49	0.10
Control Delay	184.9	34.3	11.8	38.5	26.0		94.5	12.7		67.3	7.6	0.7
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Delay	184.9	34.3	11.8	38.5	26.0		94.5	12.7		67.3	7.6	0.7
LOS	F	C	B	D	C		F	B		E	A	A
Approach Delay		89.0			28.3			15.1			12.8	
Approach LOS		F			C			B			B	
Queue Length 50th (ft)	~114	14	29	49	124		44	102		105	116	0
Queue Length 95th (ft)	#240	36	73	90	225		90	221		m132	152	m3
Internal Link Dist (ft)		733			625			536			326	
Turn Bay Length (ft)	55		85				185			230		
Base Capacity (vph)	126	544	615	403	599		122	1952		163	2065	963
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	0
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	0
Reduced v/c Ratio	0.99	0.04	0.23	0.19	0.58		0.41	0.83		0.73	0.49	0.10

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 81 (62%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.18
Intersection Signal Delay: 21.7 Intersection LOS: C
Intersection Capacity Utilization 95.6% ICU Level of Service F
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

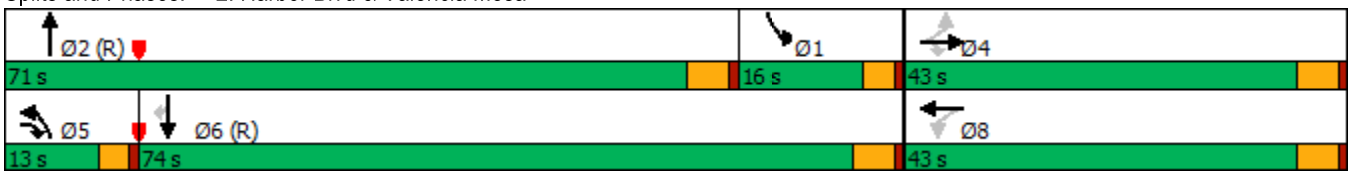
Queue shown is maximum after two cycles.

\# 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Harbor Blvd & Valencia Mesa



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	23	139	76	44	305	50	1569	56	119	1020	95
Future Volume (veh/h)	125	23	139	76	44	305	50	1569	56	119	1020	95
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	125	23	139	76	44	305	50	1569	56	119	1020	95
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	156	547	524	402	60	413	69	1777	63	151	1995	890
Arrive On Green	0.29	0.29	0.29	0.29	0.29	0.29	0.04	0.51	0.51	0.08	0.56	0.56
Sat Flow, veh/h	1032	1870	1585	1224	204	1412	1781	3500	125	1781	3554	1585
Grp Volume(v), veh/h	125	23	139	76	0	349	50	794	831	119	1020	95
Grp Sat Flow(s),veh/h/ln	1032	1870	1585	1224	0	1616	1781	1777	1848	1781	1777	1585
Q Serve(g_s), s	12.7	1.1	8.4	6.2	0.0	25.3	3.6	51.7	52.3	8.5	23.0	3.6
Cycle Q Clear(g_c), s	38.0	1.1	8.4	7.3	0.0	25.3	3.6	51.7	52.3	8.5	23.0	3.6
Prop In Lane	1.00		1.00	1.00		0.87	1.00		0.07	1.00		1.00
Lane Grp Cap(c), veh/h	156	547	524	402	0	472	69	902	938	151	1995	890
V/C Ratio(X)	0.80	0.04	0.27	0.19	0.00	0.74	0.73	0.88	0.89	0.79	0.51	0.11
Avail Cap(c_a), veh/h	156	547	524	402	0	472	123	902	938	164	1995	890
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	59.9	33.0	31.9	35.6	0.0	41.5	61.8	28.5	28.6	58.4	17.5	13.3
Incr Delay (d2), s/veh	25.1	0.0	0.3	0.2	0.0	6.1	13.6	12.0	12.0	20.8	0.9	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	5.2	0.5	3.3	1.9	0.0	10.9	1.9	23.1	24.2	4.6	9.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.0	33.0	32.2	35.8	0.0	47.6	75.4	40.5	40.6	79.2	18.5	13.5
LnGrp LOS	F	C	C	D	A	D	E	D	D	E	B	B
Approach Vol, veh/h		287			425			1675			1234	
Approach Delay, s/veh		55.3			45.5			41.6			23.9	
Approach LOS		E			D			D			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	16.0	71.0		43.0	9.0	78.0		43.0				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	12.0	* 66		38.0	9.0	69.0		38.0				
Max Q Clear Time (g_c+I1), s	10.5	54.3		40.0	5.6	25.0		27.3				
Green Ext Time (p_c), s	0.0	7.5		0.0	0.0	8.6		1.9				

Intersection Summary			
HCM 6th Ctrl Delay		37.1	
HCM 6th LOS		D	

Notes

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	179	26	587	97	117	9	1447	788	102	1151	50
Future Volume (vph)	68	179	26	587	97	117	9	1447	788	102	1151	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	85		0	0		0	95		0	140		140
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1681	1708	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.950			0.950	0.965		0.950			0.950		
Satd. Flow (perm)	1770	1863	1583	1681	1708	1583	1770	3539	1583	1770	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			134			134			315			101
Link Speed (mph)		25			45			35			50	
Link Distance (ft)		871			1039			280			363	
Travel Time (s)		23.8			15.7			5.5			5.0	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	179	26	587	97	117	9	1447	788	102	1151	50
Shared Lane Traffic (%)				42%								
Lane Group Flow (vph)	68	179	26	340	344	117	9	1447	788	102	1151	50
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Free	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			Free			6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	11.0	11.0	11.0	36.0	36.0	36.0	10.0	23.0		10.0	30.0	30.0
Total Split (s)	19.0	19.0	19.0	36.0	36.0	36.0	10.0	62.0		13.0	65.0	65.0
Total Split (%)	14.6%	14.6%	14.6%	27.7%	27.7%	27.7%	7.7%	47.7%		10.0%	50.0%	50.0%
Maximum Green (s)	14.0	14.0	14.0	31.0	31.0	31.0	6.0	57.0		9.0	60.0	60.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag							Lag	Lag		Lead	Lead	Lead
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)				7.0	7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)				24.0	24.0	24.0		11.0			18.0	18.0
Pedestrian Calls (#/hr)				5	5	5		5			5	5
Act Effct Green (s)	14.0	14.0	14.0	29.2	29.2	29.2	6.0	58.5	130.0	9.3	69.8	69.8
Actuated g/C Ratio	0.11	0.11	0.11	0.22	0.22	0.22	0.05	0.45	1.00	0.07	0.54	0.54
v/c Ratio	0.36	0.90	0.09	0.90	0.90	0.25	0.11	0.91	0.50	0.80	0.61	0.06
Control Delay	59.8	99.0	0.6	76.2	75.2	5.9	51.0	31.6	1.2	108.1	17.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0
Total Delay	59.8	99.0	0.6	76.2	75.2	5.9	51.0	32.1	1.2	108.1	17.2	4.3
LOS	E	F	A	E	E	A	D	C	A	F	B	A
Approach Delay		79.8			65.5			21.3			23.9	
Approach LOS		E			E			C			C	
Queue Length 50th (ft)	54	151	0	289	292	0	8	643	16	91	120	0
Queue Length 95th (ft)	103	#290	0	#460	#463	38	m12	#747	18	#196	414	21
Internal Link Dist (ft)		791			959			200			283	
Turn Bay Length (ft)	85						95			140		140
Base Capacity (vph)	190	200	290	400	407	479	81	1592	1583	127	1901	897
Starvation Cap Reductn	0	0	0	0	0	0	0	22	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.90	0.09	0.85	0.85	0.24	0.11	0.92	0.50	0.80	0.61	0.06

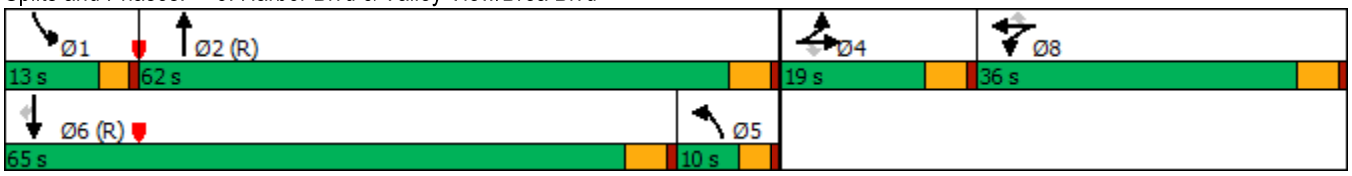
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 16 (12%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay: 33.2		Intersection LOS: C	
Intersection Capacity Utilization 89.7%		ICU Level of Service E	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Harbor Blvd & Valley View/Brea Blvd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	179	26	587	97	117	9	1447	788	102	1151	50
Future Volume (veh/h)	68	179	26	587	97	117	9	1447	788	102	1151	50
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	68	179	26	656	0	0	9	1447	0	102	1151	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	201	171	730	0		128	1677		123	1640	732
Arrive On Green	0.11	0.11	0.11	0.20	0.00	0.00	0.07	0.47	0.00	0.07	0.46	0.46
Sat Flow, veh/h	1781	1870	1585	3563	0	1585	1781	3554	1585	1781	3554	1585
Grp Volume(v), veh/h	68	179	26	656	0	0	9	1447	0	102	1151	50
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1585	1781	1777	1585	1781	1777	1585
Q Serve(g_s), s	4.6	12.3	1.9	23.3	0.0	0.0	0.6	47.1	0.0	7.3	33.5	2.3
Cycle Q Clear(g_c), s	4.6	12.3	1.9	23.3	0.0	0.0	0.6	47.1	0.0	7.3	33.5	2.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	192	201	171	730	0		128	1677		123	1640	732
V/C Ratio(X)	0.35	0.89	0.15	0.90	0.00		0.07	0.86		0.83	0.70	0.07
Avail Cap(c_a), veh/h	192	201	171	850	0		128	1677		123	1640	732
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	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.8	57.2	52.6	50.4	0.0	0.0	56.3	30.6	0.0	59.7	27.9	19.5
Incr Delay (d2), s/veh	1.1	34.8	0.4	11.3	0.0	0.0	0.2	6.1	0.0	35.1	2.5	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	2.1	7.8	0.8	11.3	0.0	0.0	0.3	20.9	0.0	4.4	13.9	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.9	92.0	53.0	61.6	0.0	0.0	56.5	36.7	0.0	94.8	30.4	19.6
LnGrp LOS	D	F	D	E	A		E	D		F	C	B
Approach Vol, veh/h		273			656			1456			1303	
Approach Delay, s/veh		79.0			61.6			36.8			35.0	
Approach LOS		E			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	13.0	66.4		19.0	14.4	65.0		31.6				
Change Period (Y+Rc), s	4.0	5.0		5.0	5.0	* 5		5.0				
Max Green Setting (Gmax), s	9.0	57.0		14.0	6.0	* 60		31.0				
Max Q Clear Time (g_c+I1), s	9.3	49.1		14.3	2.6	35.5		25.3				
Green Ext Time (p_c), s	0.0	5.5		0.0	0.0	8.3		1.3				

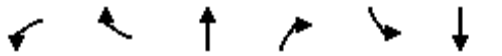
Intersection Summary		
HCM 6th Ctrl Delay		43.7
HCM 6th LOS		D

Notes

User approved volume balancing among the lanes for turning movement.

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

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

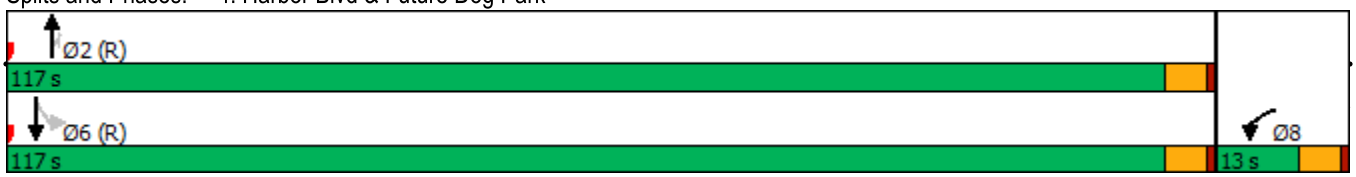


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	5	1627	5	5	1230
Future Volume (vph)	5	5	1627	5	5	1230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0	0		200	250	
Storage Lanes	1	0		1	1	
Taper Length (ft)	60				60	
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frt	0.932			0.850		
Flt Protected	0.976				0.950	
Satd. Flow (prot)	1694	0	3539	1583	1770	3539
Flt Permitted	0.976				0.145	
Satd. Flow (perm)	1694	0	3539	1583	270	3539
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	5			5		
Link Speed (mph)	30		30			30
Link Distance (ft)	484		960			1191
Travel Time (s)	11.0		21.8			27.1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	5	5	1627	5	5	1230
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	1627	5	5	1230
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		12			12
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60	60		60	60	
Number of Detectors	1		2	1	1	2
Detector Template	Left		Thru	Right	Left	Thru
Leading Detector (ft)	20		100	20	20	100
Trailing Detector (ft)	0		0	0	0	0
Detector 1 Position(ft)	0		0	0	0	0
Detector 1 Size(ft)	20		6	20	20	6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(ft)			94			94
Detector 2 Size(ft)			6			6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot		NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases				2	6	

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Detector Phase	8		2	2	6	6
Switch Phase						
Minimum Initial (s)	6.0		6.0	6.0	6.0	6.0
Minimum Split (s)	11.0		11.0	11.0	11.0	11.0
Total Split (s)	13.0		117.0	117.0	117.0	117.0
Total Split (%)	10.0%		90.0%	90.0%	90.0%	90.0%
Maximum Green (s)	8.0		112.0	112.0	112.0	112.0
Yellow Time (s)	4.0		4.0	4.0	4.0	4.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	6.4		126.5	126.5	126.5	126.5
Actuated g/C Ratio	0.05		0.97	0.97	0.97	0.97
v/c Ratio	0.11		0.47	0.00	0.02	0.36
Control Delay	46.1		2.1	0.4	0.6	1.9
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	46.1		2.1	0.4	0.6	1.9
LOS	D		A	A	A	A
Approach Delay	46.1		2.1			1.8
Approach LOS	D		A			A
Queue Length 50th (ft)	4		18	0	0	4
Queue Length 95th (ft)	23		101	m0	m0	355
Internal Link Dist (ft)	404		880			1111
Turn Bay Length (ft)				200	250	
Base Capacity (vph)	108		3444	1541	263	3444
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.09		0.47	0.00	0.02	0.36

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 2.2		Intersection LOS: A	
Intersection Capacity Utilization 58.3%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Harbor Blvd & Future Dog Park



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	5	1627	5	5	1230
Future Volume (veh/h)	5	5	1627	5	5	1230
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	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	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	5	5	1627	5	5	1230
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	12	12	3227	1439	312	3227
Arrive On Green	0.02	0.02	0.91	0.91	0.91	0.91
Sat Flow, veh/h	770	770	3647	1585	310	3647
Grp Volume(v), veh/h	11	0	1627	5	5	1230
Grp Sat Flow(s),veh/h/ln	1693	0	1777	1585	310	1777
Q Serve(g_s), s	0.8	0.0	10.1	0.0	0.4	6.3
Cycle Q Clear(g_c), s	0.8	0.0	10.1	0.0	10.5	6.3
Prop In Lane	0.45	0.45		1.00	1.00	
Lane Grp Cap(c), veh/h	26	0	3227	1439	312	3227
V/C Ratio(X)	0.43	0.00	0.50	0.00	0.02	0.38
Avail Cap(c_a), veh/h	104	0	3227	1439	312	3227
HCM Platoon Ratio	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
Uniform Delay (d), s/veh	63.5	0.0	1.0	0.6	1.9	0.8
Incr Delay (d2), s/veh	11.0	0.0	0.6	0.0	0.1	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.9	0.0	0.0	0.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	74.4	0.0	1.6	0.6	2.0	1.2
LnGrp LOS	E	A	A	A	A	A
Approach Vol, veh/h	11		1632			1235
Approach Delay, s/veh	74.4		1.6			1.2
Approach LOS	E		A			A

Timer - Assigned Phs		2			6	8
Phs Duration (G+Y+Rc), s		123.0			123.0	7.0
Change Period (Y+Rc), s		5.0			5.0	5.0
Max Green Setting (Gmax), s		112.0			112.0	8.0
Max Q Clear Time (g_c+I1), s		12.1			12.5	2.8
Green Ext Time (p_c), s		24.4			14.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	1.7
HCM 6th LOS	A

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	29	86	31	35	62	96	2104	26	50	1713	53
Future Volume (vph)	137	29	86	31	35	62	96	2104	26	50	1713	53
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		65	95		0	100		0
Storage Lanes	0		0	0		1	1		0	1		0
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.95	0.95
Frt		0.954				0.850		0.998			0.995	
Flt Protected		0.974			0.977		0.950			0.950		
Satd. Flow (prot)	0	1731	0	0	1820	1583	1770	5075	0	1770	3522	0
Flt Permitted		0.795			0.780		0.087			0.063		
Satd. Flow (perm)	0	1413	0	0	1453	1583	162	5075	0	117	3522	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18				19		3			6	
Link Speed (mph)		25			25			35			35	
Link Distance (ft)		427			781			235			407	
Travel Time (s)		11.6			21.3			4.6			7.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	137	29	86	31	35	62	96	2104	26	50	1713	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	252	0	0	66	62	96	2130	0	50	1766	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100		20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0		0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0		6.0	6.0	
Minimum Split (s)	33.0	33.0		33.0	33.0	33.0	26.0	26.0		26.0	26.0	
Total Split (s)	33.0	33.0		33.0	33.0	33.0	97.0	97.0		97.0	97.0	
Total Split (%)	25.4%	25.4%		25.4%	25.4%	25.4%	74.6%	74.6%		74.6%	74.6%	
Maximum Green (s)	28.0	28.0		28.0	28.0	28.0	92.0	92.0		92.0	92.0	
Yellow Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0			5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0	21.0	14.0	14.0		14.0	14.0	
Pedestrian Calls (#/hr)	5	5		5	5	5	5	5		5	5	
Act Effct Green (s)		25.1			25.1	25.1	94.9	94.9		94.9	94.9	
Actuated g/C Ratio		0.19			0.19	0.19	0.73	0.73		0.73	0.73	
v/c Ratio		0.88			0.24	0.19	0.81	0.58		0.59	0.69	
Control Delay		76.3			45.3	32.0	39.7	6.1		30.5	6.1	
Queue Delay		0.0			0.0	0.0	0.0	0.2		0.0	0.0	
Total Delay		76.3			45.3	32.0	39.7	6.3		30.5	6.1	
LOS		E			D	C	D	A		C	A	
Approach Delay		76.3			38.9			7.7			6.7	
Approach LOS		E			D			A			A	
Queue Length 50th (ft)		190			46	30	73	219		14	373	
Queue Length 95th (ft)		#322			89	70	m29	m167		m2	12	
Internal Link Dist (ft)		347			701			155			327	
Turn Bay Length (ft)						65	95			100		
Base Capacity (vph)		318			312	355	118	3704		85	2572	
Starvation Cap Reductn		0			0	0	0	673		0	14	
Spillback Cap Reductn		0			0	0	0	238		0	0	
Storage Cap Reductn		0			0	0	0	0		0	0	
Reduced v/c Ratio		0.79			0.21	0.17	0.81	0.70		0.59	0.69	

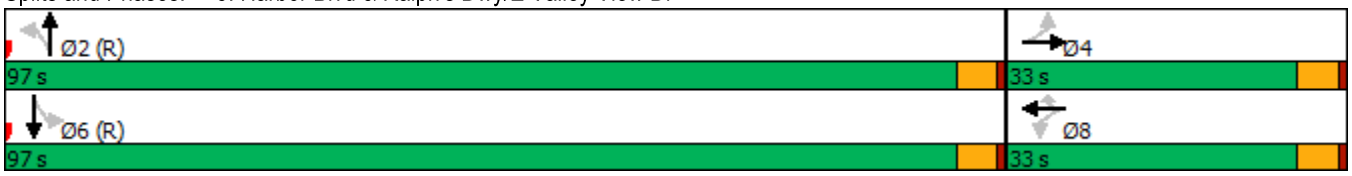
Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 115 (88%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 12.1		Intersection LOS: B	
Intersection Capacity Utilization 87.9%		ICU Level of Service E	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

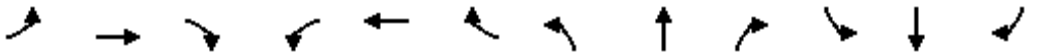
Splits and Phases: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	29	86	31	35	62	96	2104	26	50	1713	53
Future Volume (veh/h)	137	29	86	31	35	62	96	2104	26	50	1713	53
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	137	29	86	31	35	62	96	2104	26	50	1713	53
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	192	34	95	146	152	286	190	3861	48	163	2613	81
Arrive On Green	0.18	0.18	0.18	0.18	0.18	0.18	0.74	0.74	0.74	0.74	0.74	0.74
Sat Flow, veh/h	826	186	524	585	841	1585	271	5199	64	189	3519	109
Grp Volume(v), veh/h	252	0	0	66	0	62	96	1377	753	50	862	904
Grp Sat Flow(s),veh/h/ln	1537	0	0	1426	0	1585	271	1702	1859	189	1777	1851
Q Serve(g_s), s	16.2	0.0	0.0	0.0	0.0	4.3	36.0	22.7	22.8	20.2	31.5	31.9
Cycle Q Clear(g_c), s	20.8	0.0	0.0	4.6	0.0	4.3	67.9	22.7	22.8	42.9	31.5	31.9
Prop In Lane	0.54		0.34	0.47		1.00	1.00		0.03	1.00		0.06
Lane Grp Cap(c), veh/h	320	0	0	298	0	286	190	2528	1380	163	1320	1375
V/C Ratio(X)	0.79	0.00	0.00	0.22	0.00	0.22	0.51	0.54	0.55	0.31	0.65	0.66
Avail Cap(c_a), veh/h	372	0	0	352	0	341	190	2528	1380	163	1320	1375
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	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	51.9	0.0	0.0	45.4	0.0	45.4	25.5	7.2	7.2	16.5	8.4	8.4
Incr Delay (d2), s/veh	9.4	0.0	0.0	0.4	0.0	0.4	9.3	0.8	1.6	4.8	2.5	2.5
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	8.9	0.0	0.0	1.9	0.0	1.8	2.7	7.5	8.4	1.1	11.3	11.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	61.3	0.0	0.0	45.7	0.0	45.8	34.8	8.1	8.8	21.3	10.9	10.9
LnGrp LOS	E	A	A	D	A	D	C	A	A	C	B	B
Approach Vol, veh/h		252			128			2226			1816	
Approach Delay, s/veh		61.3			45.8			9.5			11.2	
Approach LOS		E			D			A			B	

Timer - Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		101.5		28.5		101.5		28.5				
Change Period (Y+Rc), s		5.0		5.0		5.0		5.0				
Max Green Setting (Gmax), s		92.0		28.0		92.0		28.0				
Max Q Clear Time (g_c+I1), s		69.9		22.8		44.9		6.6				
Green Ext Time (p_c), s		17.5		0.7		24.9		0.5				

Intersection Summary												
HCM 6th Ctrl Delay			14.2									
HCM 6th LOS			B									



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	147	81	59	168	750	87	1438	26	412	1467	21
Future Volume (vph)	28	147	81	59	168	750	87	1438	26	412	1467	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	130		135	200		0	205		0	300		165
Storage Lanes	1		1	1		1	1		0	2		1
Taper Length (ft)	60			60			60			60		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	1.00
Frt			0.850			0.850		0.997				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	3529	0	3433	3539	1583
Flt Permitted	0.425			0.488			0.950			0.950		
Satd. Flow (perm)	792	1863	1583	909	1863	1583	1770	3529	0	3433	3539	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			50		2				50
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		647			786			659			504	
Travel Time (s)		12.6			15.3			12.8			9.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	28	147	81	59	168	750	87	1438	26	412	1467	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	147	81	59	168	750	87	1464	0	412	1467	21
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane		Yes										
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	60		60	60		60	60		60	60		60
Number of Detectors	1	2	1	1	2	1	1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100	20	20	100	20	20	100		20	100	20
Trailing Detector (ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Position(ft)	0	0	0	0	0	0	0	0		0	0	0
Detector 1 Size(ft)	20	6	20	20	6	20	20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Perm	NA	pm+ov	Prot	NA		Prot	NA	Perm
Protected Phases		4			8	1	5	2		1	6	
Permitted Phases	4		4	8		8						6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8	1	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	30.0	30.0	30.0	36.0	36.0	10.0	10.0	30.0		10.0	30.0	30.0
Total Split (s)	36.0	36.0	36.0	36.0	36.0	35.0	16.0	59.0		35.0	78.0	78.0
Total Split (%)	27.7%	27.7%	27.7%	27.7%	27.7%	26.9%	12.3%	45.4%		26.9%	60.0%	60.0%
Maximum Green (s)	31.0	31.0	31.0	31.0	31.0	31.0	12.0	54.0		31.0	73.0	73.0
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	3.0	3.0	4.0		3.0	4.0	4.0
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0		4.0	5.0	5.0
Lead/Lag						Lag	Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?						Yes	Yes	Yes		Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	None	C-Max		None	C-Max	C-Max
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	7.0
Flash Dont Walk (s)	18.0	18.0	18.0	24.0	24.0			18.0			18.0	18.0
Pedestrian Calls (#/hr)	5	5	5	5	5			5			5	5
Act Effct Green (s)	18.6	18.6	18.6	18.6	18.6	54.6	10.9	66.4		31.0	86.5	86.5
Actuated g/C Ratio	0.14	0.14	0.14	0.14	0.14	0.42	0.08	0.51		0.24	0.67	0.67
v/c Ratio	0.25	0.55	0.27	0.46	0.63	1.08	0.59	0.81		0.50	0.62	0.02
Control Delay	51.6	58.3	8.6	59.9	61.9	92.1	73.4	32.1		36.1	8.0	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.1	0.0
Total Delay	51.6	58.3	8.6	59.9	61.9	92.1	73.4	32.1		36.1	8.1	0.3
LOS	D	E	A	E	E	F	E	C		D	A	A
Approach Delay		41.8			84.9			34.4			14.1	
Approach LOS		D			F			C			B	
Queue Length 50th (ft)	22	119	0	47	137	~698	71	511		134	85	0
Queue Length 95th (ft)	47	167	34	83	188	#799	128	#814		m208	425	m0
Internal Link Dist (ft)		567			706			579			424	
Turn Bay Length (ft)	130		135	200			205			300		165
Base Capacity (vph)	188	444	447	216	444	693	167	1803		818	2355	1070
Starvation Cap Reductn	0	0	0	0	0	0	0	0		0	190	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	0
Reduced v/c Ratio	0.15	0.33	0.18	0.27	0.38	1.08	0.52	0.81		0.50	0.68	0.02

Intersection Summary			
Area Type:	Other		
Cycle Length: 130			
Actuated Cycle Length: 130			
Offset: 14 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 37.1		Intersection LOS: D	
Intersection Capacity Utilization 103.7%		ICU Level of Service G	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.

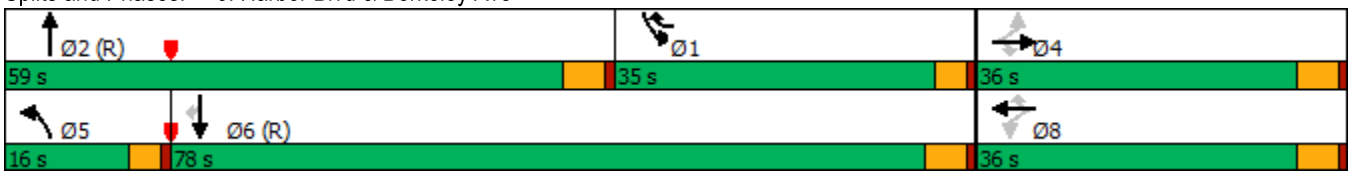
Queue shown is maximum after two cycles.

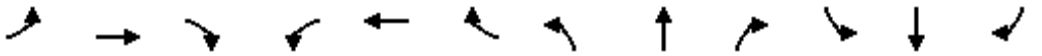
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Harbor Blvd & Berkeley Ave





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	147	81	59	168	750	87	1438	26	412	1467	21
Future Volume (veh/h)	28	147	81	59	168	750	87	1438	26	412	1467	21
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	28	147	81	59	168	750	87	1438	26	412	1467	21
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	254	446	378	271	446	744	109	1483	27	797	2106	939
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.06	0.42	0.42	0.23	0.59	0.59
Sat Flow, veh/h	1217	1870	1585	1241	1870	1585	1781	3571	65	3456	3554	1585
Grp Volume(v), veh/h	28	147	81	59	168	750	87	715	749	412	1467	21
Grp Sat Flow(s),veh/h/ln	1217	1870	1585	1241	1870	1585	1781	1777	1859	1728	1777	1585
Q Serve(g_s), s	2.6	8.4	5.3	5.4	9.8	31.0	6.3	51.2	51.3	13.5	37.2	0.7
Cycle Q Clear(g_c), s	12.3	8.4	5.3	13.8	9.8	31.0	6.3	51.2	51.3	13.5	37.2	0.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.03	1.00		1.00
Lane Grp Cap(c), veh/h	254	446	378	271	446	744	109	738	772	797	2106	939
V/C Ratio(X)	0.11	0.33	0.21	0.22	0.38	1.01	0.80	0.97	0.97	0.52	0.70	0.02
Avail Cap(c_a), veh/h	254	446	378	271	446	744	164	738	772	824	2106	939
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	46.6	40.9	39.7	46.6	41.4	34.5	60.2	37.2	37.2	43.7	18.4	10.9
Incr Delay (d2), s/veh	0.2	0.4	0.3	0.4	0.5	35.1	14.7	26.3	25.9	0.5	1.9	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	3.9	2.1	1.7	4.6	16.5	3.3	26.9	28.1	5.8	15.1	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	41.3	40.0	47.0	41.9	69.6	74.9	63.5	63.1	44.2	20.3	11.0
LnGrp LOS	D	D	D	D	D	F	E	E	E	D	C	B
Approach Vol, veh/h		256			977			1551			1900	
Approach Delay, s/veh		41.5			63.5			63.9			25.4	
Approach LOS		D			E			E			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	35.0	59.0		36.0	12.0	82.0		36.0				
Change Period (Y+Rc), s	5.0	* 5		5.0	4.0	5.0		5.0				
Max Green Setting (Gmax), s	31.0	* 54		31.0	12.0	73.0		31.0				
Max Q Clear Time (g_c+I1), s	15.5	53.3		14.3	8.3	39.2		33.0				
Green Ext Time (p_c), s	1.3	0.6		1.0	0.1	14.5		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		47.0	
HCM 6th LOS		D	

Notes

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

APPENDIX C

SIMTRAFFIC QUEUEING WORKSHEETS

APPENDIX C-I

EXISTING TRAFFIC CONDITIONS

Queuing and Blocking Report

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	385	868	830	416	190	252	435	403	261	203	129	142
Average Queue (ft)	338	543	469	197	76	166	246	218	155	51	60	88
95th Queue (ft)	453	1033	950	324	157	281	358	318	239	126	110	134
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)		12	0									
Queuing Penalty (veh)		0	0									
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	50	1			0	1	21		6	0		
Queuing Penalty (veh)	142	2			0	2	54		12	0		

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	TR
Maximum Queue (ft)	113	124	139	88	294	332	490	468	506
Average Queue (ft)	45	65	72	30	192	237	262	251	298
95th Queue (ft)	92	109	125	68	284	333	397	380	451
Link Distance (ft)	722	722	722				854	854	854
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)				150	275	275			
Storage Blk Time (%)			0		1	6	4		
Queuing Penalty (veh)			0		2	18	14		

Queuing and Blocking Report

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	T	TR	L	T	T
Maximum Queue (ft)	114	188	126	119	150	201	198	116	145	245	169	167
Average Queue (ft)	64	57	28	47	66	115	36	35	58	125	34	52
95th Queue (ft)	108	136	74	100	128	192	107	86	119	212	103	123
Link Distance (ft)		743		640	640		3866	3866	3866		722	722
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	55		85			175				230		
Storage Blk Time (%)	32	8	0			4	0			0		
Queuing Penalty (veh)	42	14	0			11	0			2		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	SB
Directions Served	TR
Maximum Queue (ft)	202
Average Queue (ft)	82
95th Queue (ft)	162
Link Distance (ft)	722
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	T	L	T	T
Maximum Queue (ft)	127	163	42	337	329	66	151	122	116	147	272	293
Average Queue (ft)	39	72	8	229	203	7	59	52	41	46	88	104
95th Queue (ft)	89	137	30	317	302	35	118	106	92	108	195	219
Link Distance (ft)		793	793	974	974		178	178	178		3866	3866
Upstream Blk Time (%)							0		0			
Queuing Penalty (veh)							0		0			
Storage Bay Dist (ft)	85					95				150		
Storage Blk Time (%)	1	12					3			0	3	
Queuing Penalty (veh)	1	6					1			0	1	

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	203
Average Queue (ft)	24
95th Queue (ft)	114
Link Distance (ft)	3866
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	L	T	TR
Maximum Queue (ft)	80	77	58	64	73	71	108	139	210	221
Average Queue (ft)	30	25	24	27	15	25	38	25	56	56
95th Queue (ft)	66	62	49	59	49	62	93	76	153	146
Link Distance (ft)	343	584			128	128	128		343	343
Upstream Blk Time (%)							0			
Queuing Penalty (veh)							1			
Storage Bay Dist (ft)			65	95				100		
Storage Blk Time (%)		1	0	0	0			0	2	
Queuing Penalty (veh)		0	0	0	0			1	1	

Queuing and Blocking Report

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	89	221	149	136	231	284	232	336	397	137	199	334
Average Queue (ft)	14	103	30	41	108	130	88	186	212	67	90	156
95th Queue (ft)	51	191	97	96	184	234	173	287	328	126	153	284
Link Distance (ft)		460			660	660		600	600			458
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		9			1		0	4				0
Queuing Penalty (veh)		8			0		0	4				1

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	358	108
Average Queue (ft)	171	8
95th Queue (ft)	303	54
Link Distance (ft)	458	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		165
Storage Blk Time (%)	7	
Queuing Penalty (veh)	1	

Network Summary

Network wide Queuing Penalty: 344

Queuing and Blocking Report

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	383	519	477	292	118	252	363	327	227	201	149	226
Average Queue (ft)	281	288	246	190	35	107	235	200	129	80	55	88
95th Queue (ft)	426	461	385	267	88	226	324	290	226	151	111	156
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	13	1				0	18		3	1		
Queuing Penalty (veh)	46	3				0	24		7	2		

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	TR
Maximum Queue (ft)	269	288	316	210	304	330	553	525	446
Average Queue (ft)	154	175	185	100	226	262	321	278	249
95th Queue (ft)	236	259	285	213	338	364	662	584	405
Link Distance (ft)	722	722	722				854	854	854
Upstream Blk Time (%)							5	0	
Queuing Penalty (veh)							0	0	
Storage Bay Dist (ft)				150	275	275			
Storage Blk Time (%)	1		17	0	9	23	2		
Queuing Penalty (veh)	1		35	1	23	61	7		

Queuing and Blocking Report

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	T	TR	L	T	T
Maximum Queue (ft)	113	170	124	133	274	104	147	180	181	136	78	95
Average Queue (ft)	69	38	38	58	125	38	25	29	42	66	26	49
95th Queue (ft)	114	120	88	117	226	84	89	124	126	125	64	87
Link Distance (ft)		743		640	640		3866	3866	3866		722	722
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	55		85			175				230		
Storage Blk Time (%)	34	1	0				0					
Queuing Penalty (veh)	53	2	0				0					

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	SB
Directions Served	TR
Maximum Queue (ft)	121
Average Queue (ft)	64
95th Queue (ft)	106
Link Distance (ft)	722
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	T	L	T	T
Maximum Queue (ft)	144	316	59	325	310	65	184	188	160	184	241	319
Average Queue (ft)	68	162	19	211	183	3	82	82	64	87	100	114
95th Queue (ft)	147	280	50	300	274	32	150	151	128	156	192	236
Link Distance (ft)		793	793	974	974		178	178	178		3866	3866
Upstream Blk Time (%)							0	0	0			
Queuing Penalty (veh)							1	1	0			
Storage Bay Dist (ft)	85					95				150		
Storage Blk Time (%)	5	37					5			3	2	
Queuing Penalty (veh)	9	25					0			11	2	

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB
Directions Served	TR
Maximum Queue (ft)	143
Average Queue (ft)	19
95th Queue (ft)	112
Link Distance (ft)	3866
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	B19	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	T	L	T	TR
Maximum Queue (ft)	189	72	60	82	120	119	173	34	102	95	92
Average Queue (ft)	85	24	21	35	32	46	82	1	33	22	20
95th Queue (ft)	154	58	51	70	83	100	152	17	75	64	63
Link Distance (ft)	343	584			128	128	128	458		343	343
Upstream Blk Time (%)					0	0	2				
Queuing Penalty (veh)					0	0	9				
Storage Bay Dist (ft)			65	95					100		
Storage Blk Time (%)		1	0	0	0				1	0	
Queuing Penalty (veh)		0	0	2	0				5	0	

Queuing and Blocking Report

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	139	213	146	104	210	349	264	464	540	176	199	221
Average Queue (ft)	23	91	30	42	115	187	89	265	309	81	104	93
95th Queue (ft)	75	172	86	84	190	310	204	395	460	147	168	178
Link Distance (ft)		460			660	660		600	600			458
Upstream Blk Time (%)								0	0			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)	0	5			1		0	15				
Queuing Penalty (veh)	0	6			0		0	13				

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	237	24
Average Queue (ft)	103	2
95th Queue (ft)	190	14
Link Distance (ft)	458	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		165
Storage Blk Time (%)	1	
Queuing Penalty (veh)	0	

Network Summary

Network wide Queuing Penalty: 351

APPENDIX C-II

EXISTING PLUS PROJECT TRAFFIC CONDITIONS

Queuing and Blocking Report

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	385	748	669	354	188	253	384	348	258	166	152	157
Average Queue (ft)	331	438	357	182	79	173	250	217	153	45	68	92
95th Queue (ft)	441	859	748	293	166	287	355	307	234	111	132	145
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)		1										
Queuing Penalty (veh)		0										
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	38	0			0	1	21		4			
Queuing Penalty (veh)	106	1			0	4	55		9			

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	TR
Maximum Queue (ft)	173	175	163	112	298	334	604	580	530
Average Queue (ft)	93	104	98	38	213	256	347	307	252
95th Queue (ft)	150	155	156	80	326	364	666	589	432
Link Distance (ft)	333	333	333				854	854	854
Upstream Blk Time (%)							4	0	
Queuing Penalty (veh)							0	0	
Storage Bay Dist (ft)				150	275	275			
Storage Blk Time (%)			1		7	17	5		
Queuing Penalty (veh)			1		21	54	18		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	L	T	T	R
Maximum Queue (ft)	109	126	95	103	162	212	241	240	244	210	192	86
Average Queue (ft)	59	45	34	38	67	120	112	131	129	66	76	22
95th Queue (ft)	104	104	74	83	128	198	207	219	214	154	151	55
Link Distance (ft)		749		645	645		542	542		334	334	334
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	55		85			185			230			
Storage Blk Time (%)	18	5	1			4	1		0	0		
Queuing Penalty (veh)	24	9	1			14	2		2	0		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	B13	B13	B13
Directions Served	T	T	T
Maximum Queue (ft)	71	10	6
Average Queue (ft)	3	0	0
95th Queue (ft)	50	7	4
Link Distance (ft)	333	333	333
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B12	B12	SB
Directions Served	L	T	R	L	LT	R	L	T	T	T	T	L
Maximum Queue (ft)	100	157	38	349	334	34	66	220	233	3	10	160
Average Queue (ft)	38	74	8	226	200	3	7	105	104	0	0	53
95th Queue (ft)	83	134	31	313	291	39	34	195	198	2	7	119
Link Distance (ft)		793	793	984	984	984		178	178	340	340	
Upstream Blk Time (%)								1	2			
Queuing Penalty (veh)								6	7			
Storage Bay Dist (ft)	85						95					140
Storage Blk Time (%)	2	12						12				0
Queuing Penalty (veh)	1	6						3				0

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB	SB	SB	B14	B14
Directions Served	T	T	R	T	T
Maximum Queue (ft)	312	326	200	18	15
Average Queue (ft)	171	176	52	1	1
95th Queue (ft)	282	284	164	17	18
Link Distance (ft)	290	290		772	772
Upstream Blk Time (%)	2	1			
Queuing Penalty (veh)	10	8			
Storage Bay Dist (ft)			140		
Storage Blk Time (%)	20	23	0		
Queuing Penalty (veh)	12	18	0		

Intersection: 4: Harbor Blvd & Future Dog Park

Movement	WB	NB	NB	B16	B14	SB	SB	SB	B15
Directions Served	LR	T	T	T	T	L	T	T	T
Maximum Queue (ft)	34	21	22	10	4	31	108	116	7
Average Queue (ft)	7	1	1	0	0	2	9	11	0
95th Queue (ft)	25	10	10	7	2	13	50	60	5
Link Distance (ft)	423	896	896	772	290		1143	1143	542
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)						250			
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	L	T	TR
Maximum Queue (ft)	94	81	86	64	92	107	90	80	215	215
Average Queue (ft)	35	23	27	23	22	35	23	26	51	51
95th Queue (ft)	77	60	59	52	69	88	68	69	154	152
Link Distance (ft)	380	720			173	173	173		340	340
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)			65	95				100		
Storage Blk Time (%)		1	1	0	0			0	2	
Queuing Penalty (veh)		1	0	0	0			0	1	

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	75	235	158	116	213	307	203	310	332	149	203	338
Average Queue (ft)	16	116	33	45	107	131	92	198	201	70	99	157
95th Queue (ft)	51	205	98	96	187	241	172	292	297	129	161	292
Link Distance (ft)		572			726	726		605	605			425
Upstream Blk Time (%)												0
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		9			1		0	6				0
Queuing Penalty (veh)		8			0		0	6				1

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	373	146
Average Queue (ft)	178	9
95th Queue (ft)	321	69
Link Distance (ft)	425	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		165
Storage Blk Time (%)	7	
Queuing Penalty (veh)	1	

Network Summary

Network wide Queuing Penalty: 412

Queuing and Blocking Report

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	364	462	404	296	130	252	362	327	243	167	137	282
Average Queue (ft)	248	264	232	189	41	107	232	201	133	77	67	117
95th Queue (ft)	377	401	334	263	105	214	318	279	221	150	114	216
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	4	1				0	18		2	1		0
Queuing Penalty (veh)	16	2				0	23		6	4		0

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	B13	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	T	L	L	T	T	TR
Maximum Queue (ft)	346	358	375	210	9	280	323	525	490	388
Average Queue (ft)	209	228	241	140	0	197	233	280	238	210
95th Queue (ft)	305	325	355	264	8	299	334	519	456	351
Link Distance (ft)	333	333	333		334			854	854	854
Upstream Blk Time (%)	0	0	1					0		
Queuing Penalty (veh)	1	2	7					0		
Storage Bay Dist (ft)				150		275	275			
Storage Blk Time (%)	5		32	0		3	12	3		
Queuing Penalty (veh)	9		64	0		9	32	10		

Queuing and Blocking Report

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	B15	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	T	L	T	T
Maximum Queue (ft)	114	219	136	124	279	192	317	334	11	170	112	130
Average Queue (ft)	70	46	51	54	123	51	179	200	0	75	46	58
95th Queue (ft)	114	150	104	107	227	139	308	327	8	143	102	108
Link Distance (ft)		749		645	645		542	542	1143		334	334
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	55		85			185				230		
Storage Blk Time (%)	28	1	2				12			0		
Queuing Penalty (veh)	42	4	3				6			0		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	SB	B13	B13	B13
Directions Served	R	T	T	T
Maximum Queue (ft)	54	4	8	9
Average Queue (ft)	13	0	0	0
95th Queue (ft)	40	4	6	6
Link Distance (ft)	334	333	333	333
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B12	B12	SB
Directions Served	L	T	R	L	LT	R	L	T	T	T	T	L
Maximum Queue (ft)	145	282	54	311	284	28	72	244	254	86	98	200
Average Queue (ft)	59	140	19	206	177	2	3	124	135	5	5	105
95th Queue (ft)	133	249	47	289	264	25	33	226	244	40	43	196
Link Distance (ft)		793	793	984	984	984		178	178	340	340	
Upstream Blk Time (%)								2	3			
Queuing Penalty (veh)								14	18			
Storage Bay Dist (ft)	85						95					140
Storage Blk Time (%)	4	33						14				5
Queuing Penalty (veh)	7	23						1				23

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB	SB	SB	B14	B14
Directions Served	T	T	R	T	T
Maximum Queue (ft)	361	358	200	58	45
Average Queue (ft)	234	238	58	3	2
95th Queue (ft)	350	349	190	27	23
Link Distance (ft)	290	290		772	772
Upstream Blk Time (%)	5	6			
Queuing Penalty (veh)	27	32			
Storage Bay Dist (ft)			140		
Storage Blk Time (%)	31	32			
Queuing Penalty (veh)	30	16			

Intersection: 4: Harbor Blvd & Future Dog Park

Movement	WB	NB	NB	NB	SB	SB	SB
Directions Served	LR	T	T	R	L	T	T
Maximum Queue (ft)	30	73	80	12	19	39	58
Average Queue (ft)	6	5	6	0	1	2	5
95th Queue (ft)	22	33	36	6	11	16	32
Link Distance (ft)	423	896	896			1143	1143
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)				200	250		
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	B25	SB	SB	SB	B12
Directions Served	LTR	LT	R	L	T	T	TR	T	L	T	TR	T
Maximum Queue (ft)	189	68	64	97	114	133	137	14	75	124	126	8
Average Queue (ft)	85	21	24	33	29	48	42	0	29	34	31	0
95th Queue (ft)	153	55	53	72	86	107	105	7	62	91	87	6
Link Distance (ft)	380	720			173	173	173	425		340	340	178
Upstream Blk Time (%)					0	0	0					
Queuing Penalty (veh)					0	0	1					
Storage Bay Dist (ft)			65	95					100			
Storage Blk Time (%)		1	1	1	0				0	1		
Queuing Penalty (veh)		0	0	3	0				0	0		

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	100	181	148	153	221	346	264	508	499	156	186	250
Average Queue (ft)	26	93	34	47	108	168	96	271	296	79	105	103
95th Queue (ft)	68	167	94	105	192	284	219	413	440	137	160	194
Link Distance (ft)		572			726	726		605	605			425
Upstream Blk Time (%)								0	0			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		5			1		0	16				0
Queuing Penalty (veh)		6			0		1	14				0

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	248	35
Average Queue (ft)	118	4
95th Queue (ft)	200	20
Link Distance (ft)	425	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		165
Storage Blk Time (%)	3	
Queuing Penalty (veh)	1	

Network Summary

Network wide Queuing Penalty: 459

APPENDIX C-III

YEAR 2045 BUILDOUT TRAFFIC CONDITIONS

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	385	1026	991	988	181	252	382	333	254	203	164	168
Average Queue (ft)	370	812	758	484	82	174	262	223	165	60	76	103
95th Queue (ft)	433	1261	1212	939	162	287	362	309	250	147	140	162
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)		44	6	0								
Queuing Penalty (veh)		0	0	0								
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	73	4			0	1	23		7	0		
Queuing Penalty (veh)	296	12			0	2	64		16	1		

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	TR
Maximum Queue (ft)	167	196	192	151	305	335	903	885	882
Average Queue (ft)	81	106	110	51	273	328	821	777	717
95th Queue (ft)	138	163	169	109	359	370	1059	1046	1040
Link Distance (ft)	722	722	722				854	854	854
Upstream Blk Time (%)							55	22	18
Queuing Penalty (veh)							0	0	0
Storage Bay Dist (ft)				150	275	275			
Storage Blk Time (%)			2	0	21	47	36		
Queuing Penalty (veh)			2	0	107	236	161		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	T	TR	L	T	T
Maximum Queue (ft)	113	199	106	119	161	188	154	181	235	276	222	188
Average Queue (ft)	66	54	27	54	66	105	66	83	125	156	93	106
95th Queue (ft)	112	135	67	108	121	177	130	150	206	260	176	173
Link Distance (ft)		743		640	640		3866	3866	3866		722	722
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	55		85			175				230		
Storage Blk Time (%)	34	5	0			1	0			2	0	
Queuing Penalty (veh)	45	10	0			2	0			8	0	

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	SB
Directions Served	TR
Maximum Queue (ft)	210
Average Queue (ft)	124
95th Queue (ft)	192
Link Distance (ft)	722
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	B12	SB	SB
Directions Served	L	T	R	L	LT	L	T	T	T	T	L	T
Maximum Queue (ft)	133	187	34	542	503	48	202	152	146	7	210	491
Average Queue (ft)	46	82	8	347	311	5	77	67	51	0	67	217
95th Queue (ft)	109	156	31	478	451	25	158	140	121	5	157	377
Link Distance (ft)		793	793	974	974		178	178	178	343		3866
Upstream Blk Time (%)							0	0	0			
Queuing Penalty (veh)							1	0	0			
Storage Bay Dist (ft)	85					95					150	
Storage Blk Time (%)	3	19					5				0	11
Queuing Penalty (veh)	3	10					1				2	7

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	608	439
Average Queue (ft)	237	90
95th Queue (ft)	418	279
Link Distance (ft)	3866	3866
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	B19	B19	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	T	T	L	T	TR
Maximum Queue (ft)	182	94	98	128	212	172	180	306	303	104	288	290
Average Queue (ft)	77	35	28	82	112	82	84	103	100	36	63	52
95th Queue (ft)	147	76	65	144	246	163	168	372	371	75	181	171
Link Distance (ft)	343	584			128	128	128	458	458		343	343
Upstream Blk Time (%)				16	27	2	2	2	2		0	0
Queuing Penalty (veh)				0	144	10	11	16	14		2	2
Storage Bay Dist (ft)			65	95						100		
Storage Blk Time (%)		4	1	32	8					0	3	
Queuing Penalty (veh)		2	0	154	6					1	2	

Intersection: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

Movement	B12	B12
Directions Served	T	T
Maximum Queue (ft)	75	69
Average Queue (ft)	3	3
95th Queue (ft)	31	28
Link Distance (ft)	178	178
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	77	303	175	106	225	379	264	512	578	240	263	323
Average Queue (ft)	12	115	36	47	106	171	116	296	330	141	165	132
95th Queue (ft)	48	217	104	93	185	311	242	491	523	214	235	253
Link Distance (ft)		460			660	660		600	600			458
Upstream Blk Time (%)								3	5			
Queuing Penalty (veh)								0	0			
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		9	0		1		0	21		0	0	0
Queuing Penalty (veh)		8	0		0		1	21		0	0	1

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB	B19
Directions Served	T	R	T
Maximum Queue (ft)	342	150	12
Average Queue (ft)	150	9	0
95th Queue (ft)	278	76	6
Link Distance (ft)	458		128
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		165	
Storage Blk Time (%)	5		
Queuing Penalty (veh)	1		

Network Summary

Network wide Queuing Penalty: 1385

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	385	1022	1002	988	152	253	403	370	333	205	121	290
Average Queue (ft)	380	892	838	508	42	143	284	244	183	110	59	183
95th Queue (ft)	419	1225	1215	1029	104	286	381	336	275	203	108	368
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)		65	10	1								
Queuing Penalty (veh)		0	0	0								
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	79	1			0	0	29		8	3		0
Queuing Penalty (veh)	316	4			0	0	48		27	11		0

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	L	L	T	T	TR
Maximum Queue (ft)	745	747	759	210	305	335	893	866	656
Average Queue (ft)	570	581	596	172	289	321	741	598	330
95th Queue (ft)	896	892	907	278	350	380	1115	1038	565
Link Distance (ft)	722	722	722				854	854	854
Upstream Blk Time (%)	5	5	7				60	0	0
Queuing Penalty (veh)	32	36	47				0	0	0
Storage Bay Dist (ft)				150	275	275			
Storage Blk Time (%)	52		62	4	40	79	3		
Queuing Penalty (veh)	104		142	20	131	257	13		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	T	TR	L	T	T
Maximum Queue (ft)	114	241	145	222	390	209	896	932	957	181	73	82
Average Queue (ft)	70	47	43	61	193	70	371	396	418	81	17	32
95th Queue (ft)	120	158	108	145	322	191	1029	1062	1095	146	53	70
Link Distance (ft)		743		640	640		3866	3866	3866		722	722
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	55		85			175				230		
Storage Blk Time (%)	33	1	1				31			0		
Queuing Penalty (veh)	53	3	1				15			0		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	SB
Directions Served	TR
Maximum Queue (ft)	112
Average Queue (ft)	54
95th Queue (ft)	100
Link Distance (ft)	722
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Queuing and Blocking Report

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	NB	NB	NB	NB	B12	B12	B12
Directions Served	L	T	R	L	LT	L	T	T	T	T	T	T
Maximum Queue (ft)	145	444	50	421	380	95	257	252	220	61	52	20
Average Queue (ft)	80	235	17	276	244	6	152	145	122	3	2	1
95th Queue (ft)	161	472	44	385	349	50	234	226	202	25	24	14
Link Distance (ft)		793	793	974	974		178	178	178	343	343	343
Upstream Blk Time (%)							3	2	1			
Queuing Penalty (veh)							16	11	4			
Storage Bay Dist (ft)	85					95						
Storage Blk Time (%)	8	57					13					
Queuing Penalty (veh)	15	39					1					

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB	SB	SB	SB
Directions Served	L	T	T	TR
Maximum Queue (ft)	170	271	339	253
Average Queue (ft)	91	99	108	26
95th Queue (ft)	163	199	237	134
Link Distance (ft)		3866	3866	3866
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	150			
Storage Blk Time (%)	5	1		
Queuing Penalty (veh)	20	2		

Intersection: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	B19	B19	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	T	T	L	T	TR
Maximum Queue (ft)	326	179	125	128	225	179	213	360	381	113	157	160
Average Queue (ft)	193	58	42	74	125	110	163	57	74	44	52	47
95th Queue (ft)	304	130	93	130	223	167	218	257	281	96	135	124
Link Distance (ft)	343	584			128	128	128	458	458		343	343
Upstream Blk Time (%)	0			7	13	4	13	0	0			
Queuing Penalty (veh)	0			0	96	26	96	1	3			
Storage Bay Dist (ft)			65	95						100		
Storage Blk Time (%)		12	3	18	11					2	2	
Queuing Penalty (veh)		7	2	124	11					17	1	

Intersection: 5: Harbor Blvd & Ralph's Dwy/E. Valley View Dr

Movement	B12	B12
Directions Served	T	T
Maximum Queue (ft)	4	29
Average Queue (ft)	0	1
95th Queue (ft)	3	17
Link Distance (ft)	178	178
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	112	208	123	259	605	673	264	634	641	160	195	206
Average Queue (ft)	31	92	30	56	219	456	129	552	572	93	119	93
95th Queue (ft)	77	172	77	142	561	702	286	722	717	156	180	170
Link Distance (ft)		460			660	660		600	600			458
Upstream Blk Time (%)					2	7		22	39			
Queuing Penalty (veh)					0	0		0	0			
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		5	0		4		0	48				
Queuing Penalty (veh)		5	0		3		2	42				

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB	B19
Directions Served	T	R	T
Maximum Queue (ft)	226	63	6
Average Queue (ft)	110	4	0
95th Queue (ft)	191	37	5
Link Distance (ft)	458		128
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		165	
Storage Blk Time (%)	1		
Queuing Penalty (veh)	0		

Network Summary

Network wide Queuing Penalty: 1807

APPENDIX C-IV

YEAR 2045 BUILDOUT PLUS PROJECT TRAFFIC CONDITIONS

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	385	1004	971	878	196	252	415	353	277	205	191	210
Average Queue (ft)	379	815	754	389	90	174	259	220	170	56	94	122
95th Queue (ft)	417	1186	1120	750	170	287	372	305	252	140	198	226
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)		28	2	0								
Queuing Penalty (veh)		0	0	0								
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	80	1			0	1	22		7	0	4	7
Queuing Penalty (veh)	323	5			0	2	60		16	0	10	16

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	B13	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	T	L	L	T	T	TR
Maximum Queue (ft)	249	231	234	183	18	298	335	900	899	894
Average Queue (ft)	136	136	118	56	1	200	317	839	816	802
95th Queue (ft)	268	233	198	130	17	316	387	1009	1030	1055
Link Distance (ft)	333	333	333		334			854	854	854
Upstream Blk Time (%)	2	0						52	40	33
Queuing Penalty (veh)	7	0						0	0	0
Storage Bay Dist (ft)				150		275	275			
Storage Blk Time (%)	0		2	0		7	11	56		
Queuing Penalty (veh)	1		3	0		33	55	252		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	L	T	T	R
Maximum Queue (ft)	114	233	142	119	174	245	470	508	280	211	219	78
Average Queue (ft)	69	59	43	48	68	148	310	340	151	86	95	22
95th Queue (ft)	112	144	97	95	135	278	454	475	247	166	172	55
Link Distance (ft)		749		645	645		542	542		334	334	334
Upstream Blk Time (%)								0		0	0	
Queuing Penalty (veh)								0		2	1	
Storage Bay Dist (ft)	55		85			185			230			
Storage Blk Time (%)	25	5	1			1	25		1	0		
Queuing Penalty (veh)	34	9	2			3	38		8	1		

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B12	B12	SB
Directions Served	L	T	R	L	LT	R	L	T	T	T	T	L
Maximum Queue (ft)	134	237	38	448	404	80	100	216	227	8	12	199
Average Queue (ft)	54	121	10	305	274	3	8	116	121	0	1	69
95th Queue (ft)	134	245	32	404	374	34	48	200	212	5	7	165
Link Distance (ft)		793	793	984	984	984		178	178	340	340	
Upstream Blk Time (%)								1	2			
Queuing Penalty (veh)								8	12			
Storage Bay Dist (ft)	85						95					140
Storage Blk Time (%)	4	43					0	13				0
Queuing Penalty (veh)	3	22					0	3				1

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB	SB	SB	B14	B14
Directions Served	T	T	R	T	T
Maximum Queue (ft)	362	365	200	81	70
Average Queue (ft)	272	273	55	8	7
95th Queue (ft)	378	382	180	42	41
Link Distance (ft)	290	290		772	772
Upstream Blk Time (%)	10	12			
Queuing Penalty (veh)	81	96			
Storage Bay Dist (ft)			140		
Storage Blk Time (%)	37	37			
Queuing Penalty (veh)	22	29			

Intersection: 4: Harbor Blvd & Future Dog Park

Movement	WB	NB	NB	B16	B16	SB	SB	SB	B15
Directions Served	LR	T	T	T	T	L	T	T	T
Maximum Queue (ft)	30	18	43	8	8	63	142	149	4
Average Queue (ft)	8	1	3	0	0	3	17	20	0
95th Queue (ft)	26	10	19	4	6	33	87	94	3
Link Distance (ft)	423	896	896	772	772		1143	1143	542
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)						250			
Storage Blk Time (%)							0		
Queuing Penalty (veh)							0		

Intersection: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	B25	B25	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	T	T	L	T	TR
Maximum Queue (ft)	203	72	64	147	205	178	146	105	110	84	228	250
Average Queue (ft)	88	27	26	71	62	66	53	6	5	31	63	60
95th Queue (ft)	161	64	52	131	158	141	118	68	66	65	159	157
Link Distance (ft)	380	720			173	173	173	425	425		340	340
Upstream Blk Time (%)				0	2	1	0				0	0
Queuing Penalty (veh)				0	11	3	0				1	1
Storage Bay Dist (ft)			65	95						100		
Storage Blk Time (%)		2	0	14	2					0	2	
Queuing Penalty (veh)		1	0	70	2					3	2	

Intersection: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr

Movement	B12
Directions Served	T
Maximum Queue (ft)	9
Average Queue (ft)	0
95th Queue (ft)	6
Link Distance (ft)	178
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	83	239	172	131	229	347	264	512	501	256	257	280
Average Queue (ft)	16	116	43	46	112	156	117	291	297	145	168	125
95th Queue (ft)	52	200	118	99	193	280	246	444	437	229	243	236
Link Distance (ft)		572			726	726		605	605			425
Upstream Blk Time (%)								0				
Queuing Penalty (veh)								0				
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		10	0		1			20			0	0
Queuing Penalty (veh)		9	0		0			20			0	0

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB	B25
Directions Served	T	R	T
Maximum Queue (ft)	317	112	9
Average Queue (ft)	147	9	1
95th Queue (ft)	264	63	9
Link Distance (ft)	425		173
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		165	
Storage Blk Time (%)	4		
Queuing Penalty (veh)	1		

Network Summary

Network wide Queuing Penalty: 1282

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	EB	EB	EB	EB	WB	WB	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	TR	L	L	T	T	T	R	L	L
Maximum Queue (ft)	385	971	950	816	132	253	384	362	295	199	132	290
Average Queue (ft)	359	677	618	287	50	150	274	228	171	102	57	204
95th Queue (ft)	452	1140	1067	568	115	289	358	310	256	184	111	387
Link Distance (ft)		976	976	976			902	902	902			
Upstream Blk Time (%)		17	1	0								
Queuing Penalty (veh)		0	0	0								
Storage Bay Dist (ft)	325				193	193				145	230	230
Storage Blk Time (%)	62	2				0	26		6	2		0
Queuing Penalty (veh)	249	9				0	43		22	8		0

Intersection: 1: Harbor Blvd & Bastanchury Rd

Movement	NB	NB	NB	NB	B13	B13	B13	SB	SB	SB	SB	SB
Directions Served	T	T	T	R	T	T	T	L	L	T	T	TR
Maximum Queue (ft)	418	430	428	210	370	392	397	305	335	902	869	846
Average Queue (ft)	380	384	388	177	248	254	261	295	325	786	645	279
95th Queue (ft)	489	491	481	274	480	481	478	346	377	1111	1067	541
Link Distance (ft)	333	333	333		334	334	334			854	854	854
Upstream Blk Time (%)	52	55	57		5	5	6			71	0	0
Queuing Penalty (veh)	347	368	379		33	30	43			0	0	0
Storage Bay Dist (ft)				150				275	275			
Storage Blk Time (%)	58		65	2				45	83	2		
Queuing Penalty (veh)	114		148	9				146	272	7		

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	EB	EB	EB	WB	WB	NB	NB	NB	B15	B15	SB	SB
Directions Served	L	T	R	L	TR	L	T	TR	T	T	L	T
Maximum Queue (ft)	114	285	144	124	420	245	648	647	1038	1071	169	124
Average Queue (ft)	77	56	52	49	193	113	489	502	347	364	86	42
95th Queue (ft)	123	182	116	99	344	278	774	767	1009	1044	155	93
Link Distance (ft)		749		645	645		542	542	1143	1143		334
Upstream Blk Time (%)							42	45	1	2		
Queuing Penalty (veh)							346	368	11	13		
Storage Bay Dist (ft)	55		85			185					230	
Storage Blk Time (%)	30	1	1			0	53					
Queuing Penalty (veh)	49	2	2			0	27					

Intersection: 2: Harbor Blvd & Valencia Mesa

Movement	SB	SB	B13	B13
Directions Served	T	R	T	T
Maximum Queue (ft)	131	34	7	11
Average Queue (ft)	57	7	0	0
95th Queue (ft)	108	28	4	7
Link Distance (ft)	334	334	333	333
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	B12	B12	B12
Directions Served	L	T	R	L	LT	R	L	T	T	T	T	T
Maximum Queue (ft)	145	354	43	429	392	113	96	266	280	230	249	37
Average Queue (ft)	78	185	18	279	245	7	7	233	239	69	81	2
95th Queue (ft)	161	317	42	396	368	63	57	292	293	203	222	19
Link Distance (ft)		793	793	984	984	984		178	178	340	340	340
Upstream Blk Time (%)								19	22	0	0	
Queuing Penalty (veh)								146	168	1	3	
Storage Bay Dist (ft)	85						95					
Storage Blk Time (%)	7	53						34				
Queuing Penalty (veh)	13	36						3				

Intersection: 3: Harbor Blvd & Valley View/Brea Blvd

Movement	SB	SB	SB	SB	B14	B14
Directions Served	L	T	T	R	T	T
Maximum Queue (ft)	200	361	356	200	30	38
Average Queue (ft)	99	212	220	33	2	2
95th Queue (ft)	196	345	356	128	15	17
Link Distance (ft)		290	290		772	772
Upstream Blk Time (%)		5	6			
Queuing Penalty (veh)		28	36			
Storage Bay Dist (ft)	140			140		
Storage Blk Time (%)	5	25	28	0		
Queuing Penalty (veh)	30	25	14	0		

Intersection: 4: Harbor Blvd & Future Dog Park

Movement	WB	NB	NB	B16	B16	B14	B14	SB	SB	SB
Directions Served	LR	T	T	T	T	T	T	L	T	T
Maximum Queue (ft)	38	430	434	5	10	4	19	33	62	74
Average Queue (ft)	8	71	76	0	0	0	1	3	5	8
95th Queue (ft)	28	369	377	6	8	2	11	18	29	39
Link Distance (ft)	423	896	896	772	772	290	290		1143	1143
Upstream Blk Time (%)		1	1							
Queuing Penalty (veh)		5	6							
Storage Bay Dist (ft)								250		
Storage Blk Time (%)			5							
Queuing Penalty (veh)			0							

Intersection: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr

Movement	EB	WB	WB	NB	NB	NB	NB	B25	B25	SB	SB	SB
Directions Served	LTR	LT	R	L	T	T	TR	T	T	L	T	TR
Maximum Queue (ft)	321	108	91	152	222	213	234	177	191	92	149	136
Average Queue (ft)	183	50	31	61	114	132	129	16	18	40	63	58
95th Queue (ft)	295	99	70	125	198	199	211	141	147	84	134	120
Link Distance (ft)	380	720			173	173	173	425	425		340	340
Upstream Blk Time (%)	0			0	3	1	2	0	0			
Queuing Penalty (veh)	0			0	25	10	16	0	1			
Storage Bay Dist (ft)			65	95						100		
Storage Blk Time (%)		8	2	9	7					1	4	
Queuing Penalty (veh)		5	1	65	7					7	2	

Intersection: 5: Harbor Blvd & Ralph's Dwy/E Valley View Dr

Movement	B12	B12
Directions Served	T	T
Maximum Queue (ft)	10	10
Average Queue (ft)	0	0
95th Queue (ft)	7	7
Link Distance (ft)	178	178
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	TR	L	L	T
Maximum Queue (ft)	100	206	90	116	671	738	264	644	653	191	204	265
Average Queue (ft)	26	93	33	49	163	439	140	564	577	108	129	107
95th Queue (ft)	71	165	72	98	440	703	300	716	722	169	188	213
Link Distance (ft)		572			726	726		605	605			425
Upstream Blk Time (%)					0	2		25	33			
Queuing Penalty (veh)					0	0		0	0			
Storage Bay Dist (ft)	130		135	200			205			300	300	
Storage Blk Time (%)		5			1		1	50				0
Queuing Penalty (veh)		5			1		5	43				0

Intersection: 6: Harbor Blvd & Berkeley Ave

Movement	SB	SB	B25	B25
Directions Served	T	R	T	T
Maximum Queue (ft)	295	99	10	16
Average Queue (ft)	125	6	0	1
95th Queue (ft)	230	49	7	8
Link Distance (ft)	425		173	173
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		165		
Storage Blk Time (%)	2			
Queuing Penalty (veh)	0			

Network Summary

Network wide Queuing Penalty: 3753

ATTACHMENT F

CITY OF LAGUNA HILLS

City Manager

June 11, 2024

Orange County Transportation Authority
ATTN: Kia Mortazavi, Executive Director, Planning Division
550 South Main Street
P.O. Box 14184
Orange, CA 92863

Subject: Master Plan of Arterial Highways Amendment – Paseo De Valencia and Cabot Road

Dear Mr. Mortazavi:

The City of Laguna Hills is requesting an amendment to the Master Plan of Arterial Highways (MPAH). Paseo De Valencia is identified on the MPAH as a 6-lane divided Major Arterial between Alicia Parkway and La Paz Road but currently built as a 4-lane undivided arterial, and as a 4-lane undivided Secondary Arterial between La Paz Road and Cabot Road within the City of Laguna Hills. Cabot Road is identified on the MPAH as a 4-lane undivided Secondary Arterial between Paseo De Valencia and Oso Parkway. The City is recommending the segment of Paseo De Valencia between Alicia Parkway and La Paz Road to be reclassified as a 2-lane Divided Collector, and the segment between La Paz Road and Cabot Road to be reclassified as a 2-lane Undivided Collector. The City is also recommending the segment of Cabot Road between Paseo De Valencia and Oso Parkway to be reclassified as a 2-lane Divided Collector.

This reclassification will support the City's objective to provide traffic safety and circulation improvements in front of Valencia Elementary School along Paseo De Valencia. School improvements may include all-way stop installations, curb extensions at intersection crossings, and a student pick-up/drop-off lane for queuing vehicles during school loading times. Reclassification will also support the City's objective to accommodate multi-modal improvements along both Paseo De Valencia and Cabot Road. Attachment 'A' illustrates the project limits and proposed improvements.

The reclassification requires lane reduction, which was determined feasible based on Annual Daily Traffic (ADT) data collected in 2022, per the 2023 OCTA Traffic Volume Map (Attachment B). The segment of Paseo De Valencia between Alicia Parkway and La Paz Road has approximately 11,000 ADT, and the segment of Paseo De Valencia between La Paz Road and Cabot Road has approximately 6,000 ADT. Both of these segments are well within the ranges of 9,000 to 15,000 ADT for a Divided Collector and 7,500 to 10,000 ADT for an Undivided Collector identified in the MPAH, respectively. The segment of Cabot Road between Paseo De Valencia and El Paseo has approximately 13,000 to 14,000 ADT and is also within the range of 9,000 to 15,000 ADT for a Divided Collector identified in the MPAH.

Thank you for your attention to this important matter.

If you have any questions about this project, please contact me at jhildenbrand@lagunahillsca.gov or 949/707-2610, or Public Works Director Joe Ames at james@lagunahillsca.gov or 949/707-2655.

Sincerely,

Jarad Hildenbrand
City Manager

Paseo De Valencia & Cabot Road MPAH Amendment

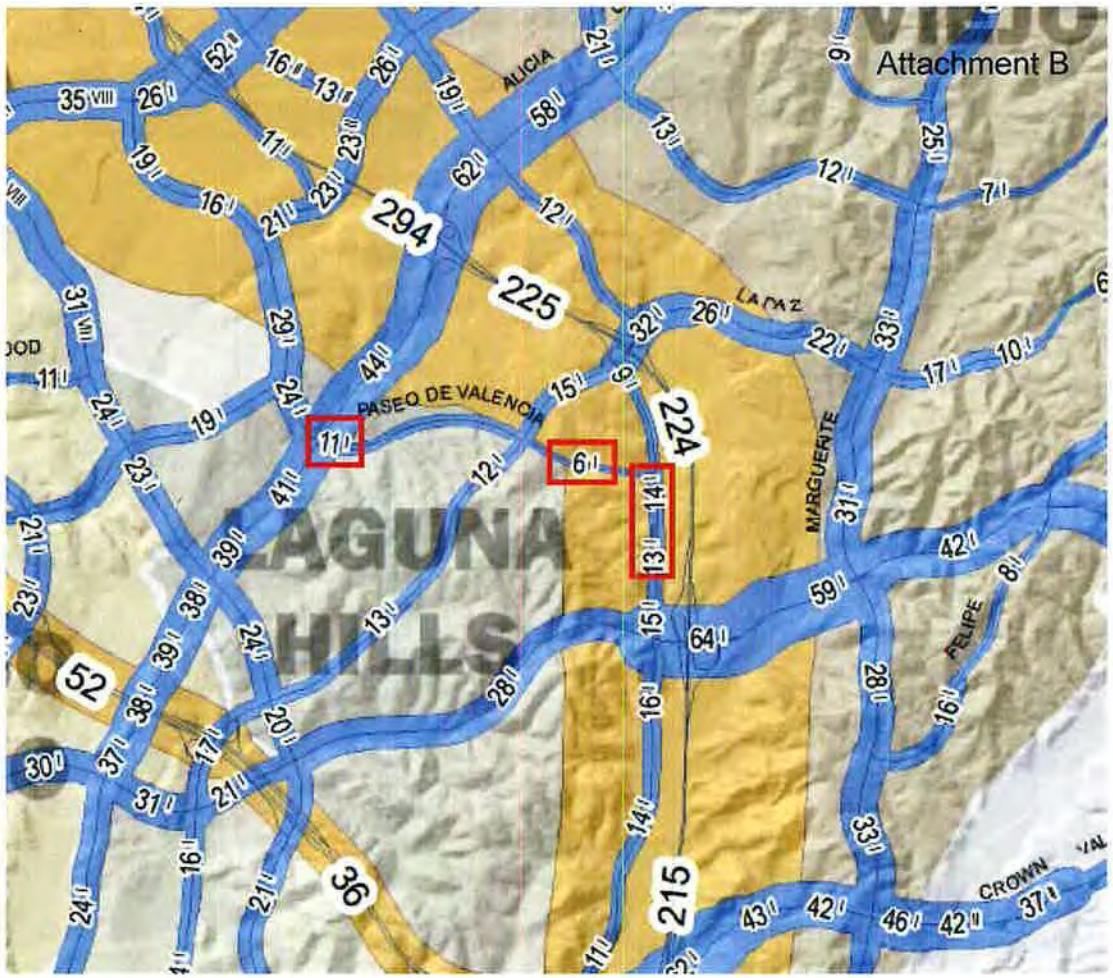
Project Location Map

MARK THOMAS

Legend

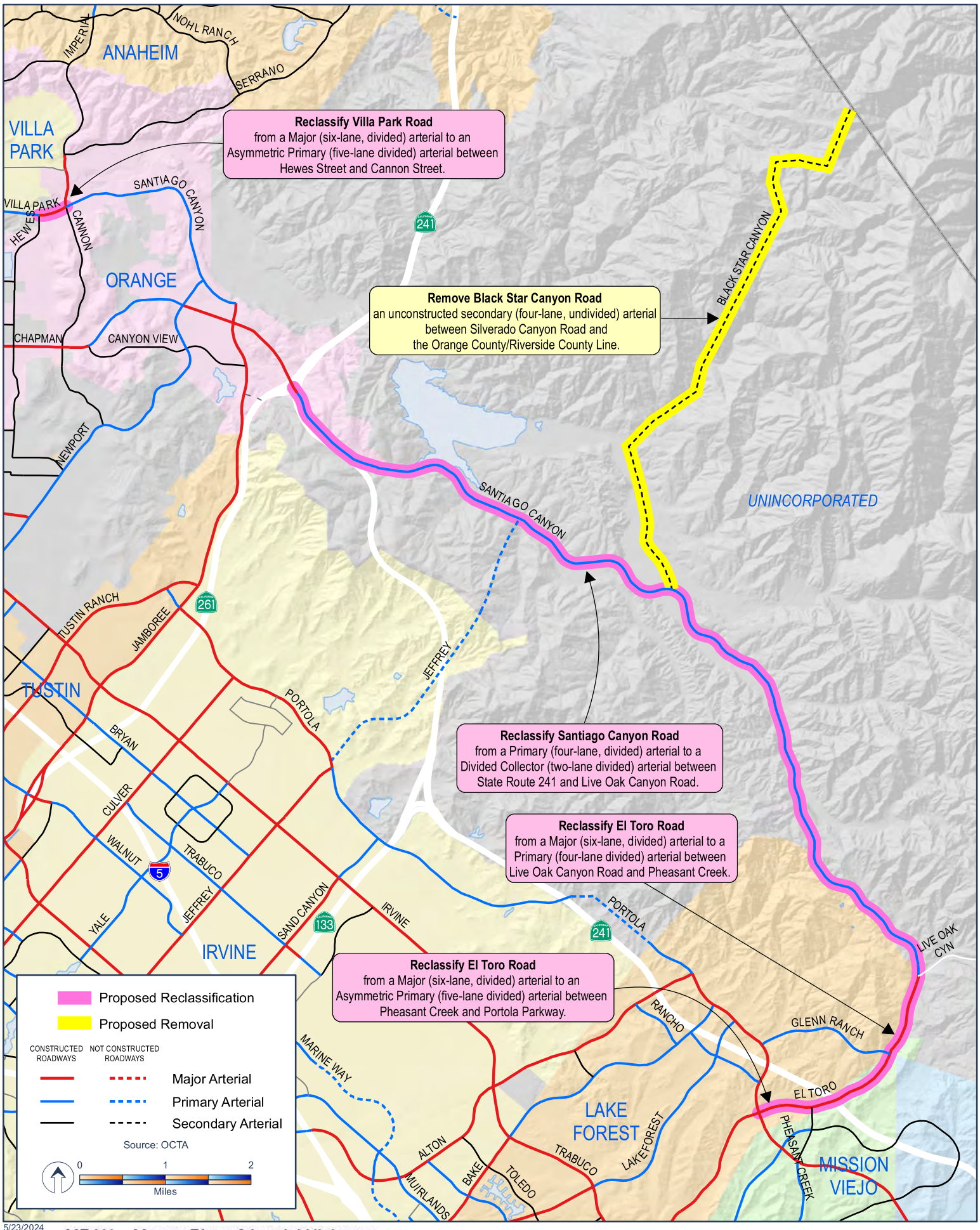
- MPAH Amendment Limits
- Laguna Hills City Boundary

Attachment B



County of Orange MPAH Amendments

ATTACHMENT G



5/23/2024

MPAH – Master Plan of Arterial Highways

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ATTACHMENT H

March 12, 2024

Consent Form

Project: MPAH Amendment Request for Villa Park Road/Santiago Canyon Road

Lead: Orange County Public Works

Amendment: Reclassification of Villa Park Road/Santiago Canyon Road between Hewes Street and Cannon Street from a 6-lane Major Arterial Highway to a 5-lane Asymmetric Primary Highway

Please select your response below:

☒ We, City of Orange, grant consent to the subject MPAH Amendment Request, and are in support of OCPW being the lead agency in the Amendment efforts.

☐ We, _____, **do not** grant consent to the subject MPAH Amendment Request. Our reasons are attached as a separate page to this form.

_____ 3/12/2024

Signature Date

Frank Sun

Name (Print)

Assistant PW Director/City Engineer

Title

March 4, 2024

Consent Form

Project: MPAH Amendment Request for Villa Park Road/Santiago Canyon Road

Lead: Orange County Public Works

Amendment: Reclassification of Villa Park Road/Santiago Canyon Road between Hewes Street and Cannon Street from a 6-lane Major Arterial Highway to a 5-lane Asymmetric Primary Highway

Please select your response below:

☒ We, CITY OF VILLA PARK, grant consent to the subject MPAH Amendment Request, and are in support of OCPW being the lead agency in the Amendment efforts.

☐ We, _____, **do not** grant consent to the subject MPAH Amendment Request. Our reasons are attached as a separate page to this form.

Hamid Reza Torkamanha
Signature

3/13/2024
Date

HAMID TORKAMANHA
Name (Print)

CITY ENGINEER
Title

ATTACHMENT I

March 25, 2024

Consent Form

Project: MPAH Amendment Request for Santiago Canyon Road, El Toro Road, and Black Star Canyon Road

Lead: Orange County Public Works

Amendment:

- Reclassify Santiago Canyon Road (SCR) between SR-241 and Live Oak Canyon Road from its currently planned designation as a Primary Arterial (four-lane divided roadway) to a Divided Collector (two-lane divided roadway with a center turn-lane)
- Reclassify El Toro Road (ETR) between Live Oak Canyon Road and Portola Parkway from its currently planned designation as a Major Arterial (six-lane divided roadway) to a Primary Arterial (four-lane divided roadway) with the exception that the southern end segment between Pheasant Creek and Portola Parkway remain at its current condition as an asymmetric Primary Arterial (five-lane divided roadway)
- Delete Black Star Canyon Road (BSCR) between Silverado Canyon Road and the Orange County/Riverside County line.

Please select your response below:

☒ We, City of Lake Forest, grant consent to the subject MPAH Amendment Request, and are in support of OCPW being the lead agency in the Amendment efforts.

☐ We, _____, **do not** grant consent to the subject MPAH Amendment Request. Our reasons are attached as a separate page to this form.

Tom Wheeler
_____
Signature

April 9, 2024
Date

Thomas E. Wheeler
Name (Print)

Public Works Director/City Engineer
Title

April 11, 2024

Consent Form

Project: MPAH Amendment Request for Santiago Canyon Road, El Toro Road, and Black Star Canyon Road

Lead: Orange County Public Works

Amendment:

- Reclassify Santiago Canyon Road (SCR) between SR-241 and Live Oak Canyon Road from its currently planned designation as a Primary Arterial (four-lane divided roadway) to a Divided Collector (two-lane divided roadway with a center turn-lane)
- Reclassify El Toro Road (ETR) between Live Oak Canyon Road and Portola Parkway from its currently planned designation as a Major Arterial (six-lane divided roadway) to a Primary Arterial (four-lane divided roadway) with the exception that the southern end segment between Pheasant Creek and Portola Parkway remain at its current condition as an asymmetric Primary Arterial (five-lane divided roadway)
- Delete Black Star Canyon Road (BSCR) between Silverado Canyon Road and the Orange County/Riverside County line.

Please select your response below:

☒ We, The City of Mission Viejo, grant consent to the subject MPAH Amendment Request, and are in support of OCPW being the lead agency in the Amendment efforts.

☐ We, _____, **do not** grant consent to the subject MPAH Amendment Request. Our reasons are attached as a separate page to this form.

_____ April 11, 2024

Signature Date

Mark Chagnon

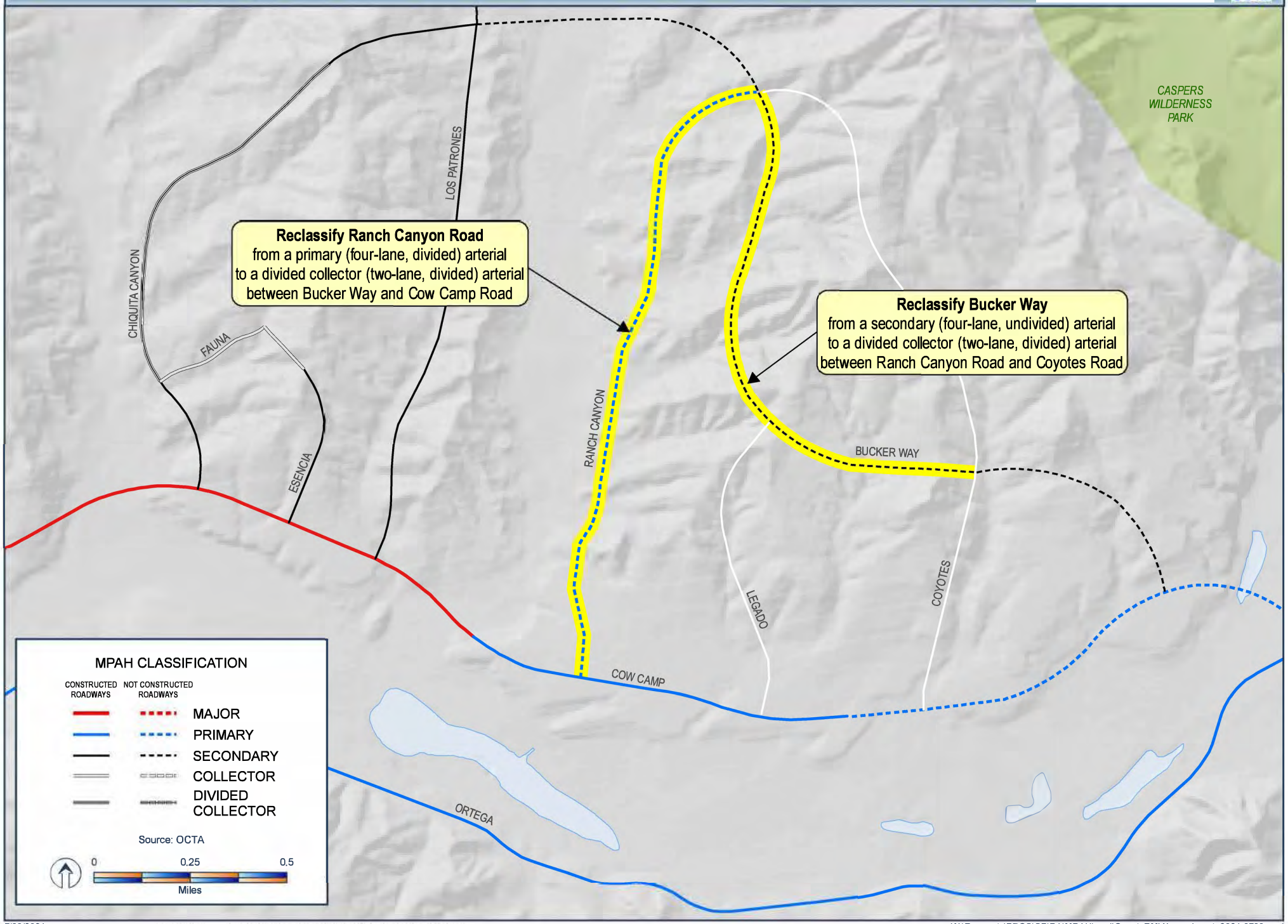
Name (Print)

Director of Public Works

Title

County of Orange MPAH Amendment – Bucker Way and Ranch Canyon Road

ATTACHMENT J



7/30/2024

MPAH – Master Plan of Arterial Highways

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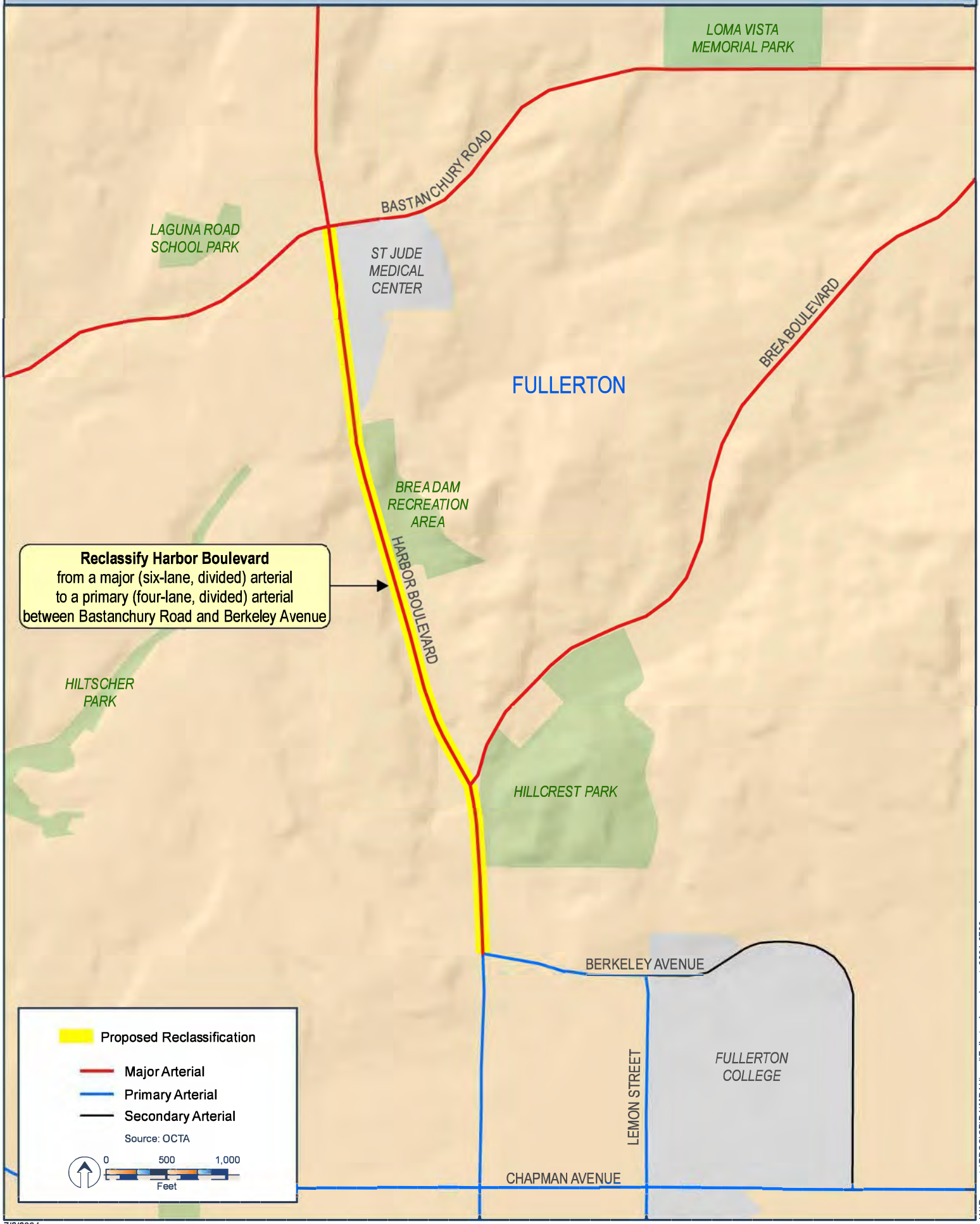
City of Fullerton MPAH Amendment

ATTACHMENT K



7/8/2024

MPAH – Master Plan of Arterial Highways

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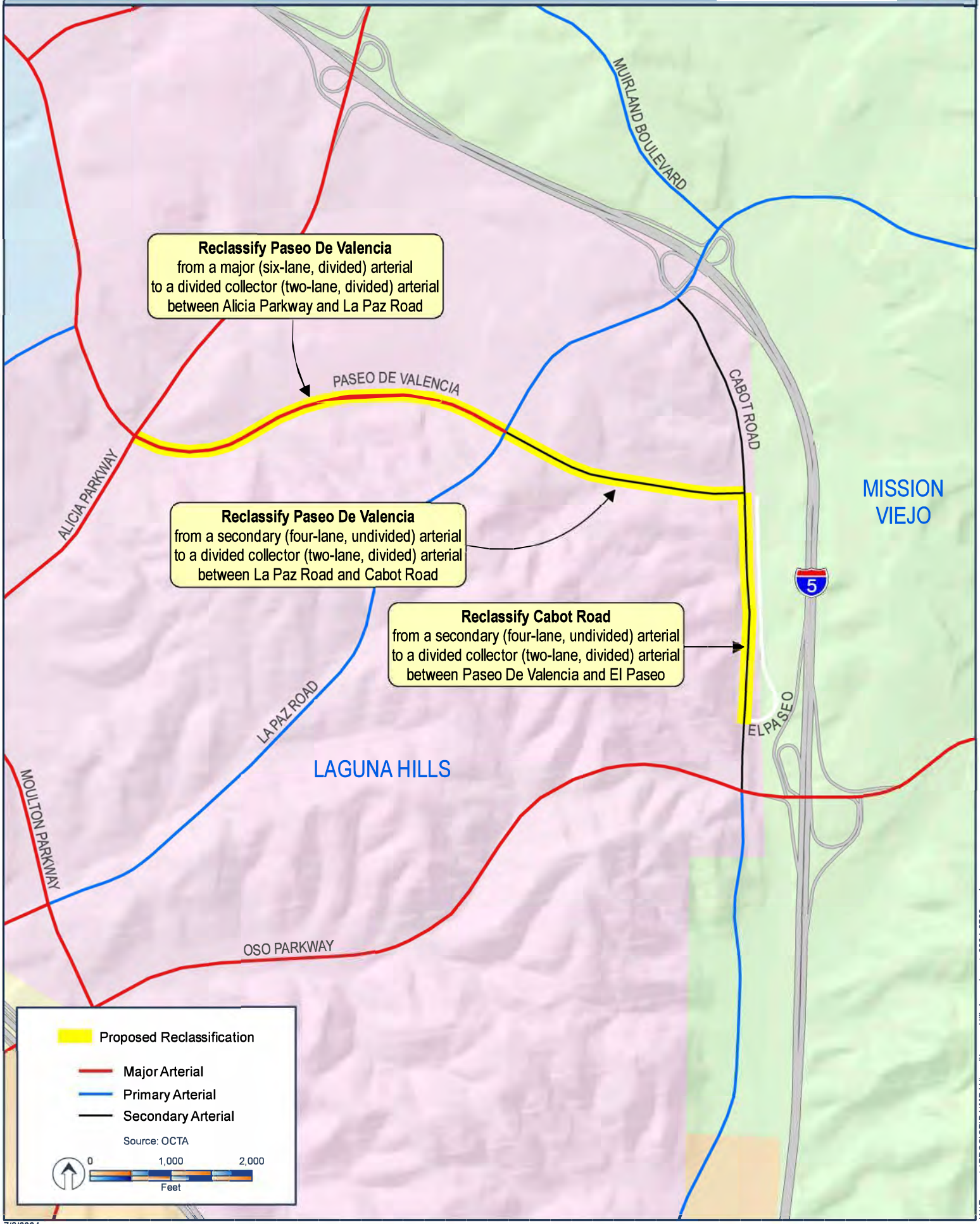
City of Laguna Hills MPAH Amendment

ATTACHMENT L



7/8/2024

MPAH – Master Plan of Arterial Highways

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ATTACHMENT M

Status Report on Pending Master Plan of Arterial Highways Amendments

#	City	Street	From	To	Type of Amendment	Status	Board Approval Date
1	Brea / County of Orange	Tonner Canyon Road	Brea Canyon Road	Planned Valencia Avenue	Delete	Amendment expired, requires City to submit a new request.	7/12/2021
2	Brea / County of Orange	Valencia Avenue	Carbon Canyon Road	Planned Tonner Canyon Road	Delete	Amendment expired, requires City to submit a new request.	7/12/2021
3	Costa Mesa	Bluff Road	19th Street	Victoria Street	Delete	On hold pending final consensus between Costa Mesa and Newport Beach on circulation plans.	
4	Costa Mesa	19th Street	Placentia Avenue	west city limit	Reclassify from primary to divided collector	On hold pending final consensus between the cities of Costa Mesa and Newport Beach on circulation plans.	
5	County of Orange / Irvine	Jeffrey Road	SR-241	Santiago Canyon Road	Delete	The amendment was conditionally approved by the Board. Waiting for documentation confirming completion of CEQA and general plan change.	5/8/2017
6	Santa Ana/Orange	Fairhaven Avenue	Grand Avenue	Tustin Avenue	Reclassify from secondary to divided collector	The amendment was conditionally approved by the Board. Waiting for documentation confirming completion of CEQA and general plan change.	11/9/2020
7	Irvine	Red Hill Avenue	MacArthur Boulevard	Main Street	Reclassify from major to primary	The amendment was conditionally approved by the Board. Waiting for documentation confirming completion of CEQA and general plan change.	4/10/2023
8	Fullerton	Associated Road	Bastanchury Road	Imperial Highway	Reclassify from a secondary to a collector	The amendment was conditionally approved by the Board. Waiting for documentation confirming completion of CEQA and general plan change.	4/10/2023
9	County	Villa Park Road	Hewes Street	Cannon Street	Reclassify from a major to a asymmetric primary	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
10	County	Santiago Canyon Road	SR-241	Live Oak Canyon Road	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
11	County	El Toro Road	Live Oak Canyon Road	Portola Parkway	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	

Status Report on Pending Master Plan of Arterial Highways Amendments

#	City	Street	From	To	Type of Amendment	Status	Board Approval Date
12	County	Black Star Canyon Road	Silverado Canyon Road	Orange County/Riverside County Line	Delete	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
13	County	Bucker Way	Ranch Canyon Road	Coyotes Road	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
14	County	Ranch Canyon Road	Bucker Way	Cow Camp Road	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
15	Fullerton	Harbor Boulevard	Bastanchury Road	Berkeley Avenue	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
16	Laguna Hills	Paseo De Valencia	Alicia Parkway	Cabot Road	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
17	Laguna Hills	Cabot Road	Paseo De Valencia	El Paseo	Reclassify	**Amendment will be being presented to the Board for consideration 9/9/2024.**	
MOU	Costa Mesa/ Fountain Valley/ Huntington Beach	Garfield Avenue/ Gisler Avenue Crossing over the Santa Ana River	Santa Ana River Westbank	Santa Ana River Eastbank	Reclassify from secondary to right-of-way reserve status	The cities of Costa Mesa, Fountain Valley, Huntington Beach, and OCTA entered a Memorandum of Understanding (C-6-0834). Reasonable progress has been made on implementation of 19 of the 25 mitigation measures that were specified. All improvements are required to be completed by 2025, at which time OCTA will revisit the designation of the Garfield Avenue/Gisler Avenue Bridge.	

Board – Board of Directors
CEQA – California Environmental Quality Act
MOU – Memorandum of understanding
MPAH – Master Plan of Arterial Highways
OCTA - Orange County Transportation Authority
SR-241 – State Route 241