Quarry Ridge Project

SCH# 2017092027

Final Environmental Impact Report

Prepared for
Placer County

April 2019

Prepared by

RANEY
PLANNING & MANAGEMENT, INC.
1501 Sports Drive, Suite A, Sacramento, CA 95834

Quarry Ridge Project
Final Environmental Impact Report

SCH# 2017092027

Lead Agency:

County of Placer Community Development Resource Agency
3091 County Center Drive, Suite 190
Auburn, CA 95603

Shirlee Herrington
Environmental Coordination Services
(530) 745-3132

Prepared By:

Raney Planning and Management, Inc.
1501 Sports Drive, Suite A
Sacramento, CA 95834
(916) 372-6100

Contact:
Nick Pappani
Vice President

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1. INTRODUCTION AND LIST OF COMMENTERS

1 INTRODUCTION AND LIST OF COMMENTERS

1.1 Introduction

This Final Environmental Impact Report (EIR) contains agency, group, and public comments received during the public review period of the Quarry Ridge Project (proposed project) Draft EIR. This document has been prepared by Placer County, as Lead Agency, in accordance with the California Environmental Quality Act (CEQA) and the CEQA Guidelines, Section 15132. The Introduction and List of Commenters chapter of the Final EIR discusses the background of the Draft EIR and purpose of the Final EIR, identifies the comment letters received on the Draft EIR, and provides an overview of the Final EIR's organization.

1.2 Background

The Draft EIR identified the proposed project's potential environmental impacts and the mitigation measures that would be required to be implemented. The following environmental analysis chapters are contained in the Draft EIR:

- Noise;
- Transportation and Circulation;
- Statutorily Required Sections; and
- Alternatives.

In accordance with CEQA, a Notice of Completion (NOC) of the Draft EIR was published on the Placer County Community Development Resource Agency website, and the Draft EIR was sent to the State Clearinghouse (SCH#: 2017092027) for distribution to State agencies on January 22, 2019 for a 45-day public review period, ending on March 7, 2019. The Draft EIR was also posted on the Placer County website, and printed copies of the document were made available for review at: 1) the Granite Bay Public Library, located at 6475 Douglas Boulevard, Granite Bay, CA, 2) the Placer County Community Development Resource Agency offices in Auburn, located at 3091 County Center Drive, Auburn, CA, and 3) the County Clerk's Office, located at 2954 Richardson Drive, Auburn, CA. In addition, a public hearing was held on February 14, 2019 to solicit public comments regarding the Draft EIR.

1.3 Purpose of the Final EIR

Under CEQA Guidelines Section 15132, the Final EIR shall consist of:

1. The Draft EIR or a revision of the Draft.
2. Comments and recommendations received on the Draft EIR.
3. A list of persons, organizations, and public agencies commenting on the Draft EIR.

4. The responses to significant environmental points raised in the review process.
5. Any other information added by the Lead Agency.

As required by CEQA Guidelines, Section 15090(a)(1)-(3), a Lead Agency must make the following three determinations in certifying a Final EIR:

1. The Final EIR has been completed in compliance with CEQA.
2. The Final EIR was presented to the decision-making body of the Lead Agency, and the decision-making body reviewed and considered the information in the Final EIR prior to approving the project.
3. The Final EIR reflects the Lead Agency's independent judgment and analysis.

Under CEQA Guidelines Section 15091, a public agency shall not approve or carry out a project for which an EIR has been certified that identifies one or more significant environmental effects of the project unless the public agency makes one or more written findings (Findings of Fact) for each of those significant effects. Findings of Fact must be accompanied by a brief explanation of the rationale for each finding supported by substantial evidence in the record. The Findings of Fact are included in a separate document that will be considered for adoption by the County's decision-makers.

Pursuant to CEQA Guidelines, Section 15093(b), when a Lead Agency approves a project that would result in significant and unavoidable impacts, the agency must state in writing the reasons supporting the action (Statement of Overriding Considerations). The Statement of Overriding Considerations shall be supported by substantial evidence. Here, the proposed project would not result in any project-level or cumulative significant and unavoidable impacts; thus, a Statement of Overriding Considerations is not required.

1.4 List of Commenters

Placer County received eight comment letters during the public comment period on the Draft EIR for the proposed project. The comment letters, presented in the order in which they were received, were authored by the following agencies, groups, and members of the public:

Agencies

Letter 1 ..... Terri Shirhall, City of Roseville
Letter 2 ..... Ralph Gibson, Placer County Museums Division

Groups

Letter 3 ..... Cherilyn Neider, United Auburn Indian Community
Letter 4 ..... Daniel Fonseca, Shingle Springs Band of Miwok Indians
Letter 5 ..... Sandra H. Harris, Granite Bay Community Association

Members of the Public

Letter 6..... Larissa Berry
Letter 7.....Shannon Quin
Letter 8.....Holly Johnson

In addition, verbal comments were provided during the February 14, 2019 public meeting to accept comments on the Draft EIR. The comments from the Draft EIR comment meeting are included as Letter 9.

Letter 9..... Verbal Comments: Draft EIR Public Meeting (February 14, 2019)

1.5 Organization of the Final EIR

The Final EIR is organized into the following chapters:

1. Introduction and List of Commenters

Chapter 1 provides an introduction and overview of the document, describing the background and organization of the Final EIR. Chapter 1 also provides a list of commenters who submitted letters in response to the Draft EIR.

2. Responses to Comments

Chapter 2 presents the comment letters received and responses to each comment. Each comment letter received has been numbered at the top and bracketed to indicate how the letter has been divided into individual comments. Each comment is given a number with the letter number appearing first, followed by the comment number. For example, the first comment in Letter 1 would have the following format: 1-1. The response to each comment will reference the comment number.

3. Revisions to the Draft EIR Text

Chapter 3 summarizes minor changes made to the Draft EIR text since its release.

4. Mitigation Monitoring and Reporting Program

CEQA Guidelines, Section 15097, requires lead agencies to adopt a program for monitoring the mitigation measures required to avoid the significant environmental impacts of a project. The intent of the Mitigation Monitoring and Reporting Program (MMRP) is to ensure implementation of the mitigation measures identified within the EIR for the Quarry Ridge Project.

2. RESPONSES TO COMMENTS

2 RESPONSES TO COMMENTS

This chapter contains responses to each of the comment letters submitted regarding the Quarry Ridge Project Draft EIR. Each bracketed comment letter is followed by numbered responses to each bracketed comment. The responses amplify or clarify information provided in the Draft EIR and/or refer the reader to the appropriate place in the document where the requested information can be found. Comments that are not directly related to environmental issues (e.g., opinions on the merits of the project that are unrelated to its environmental impacts) are either discussed or noted for the record, as appropriate. Where revisions to the Draft EIR text are required in response to the comments, such revisions are noted in the response to the comment, and are also listed in Chapter 3 of this Final EIR. All new text is shown as double underlined and deleted text is shown as ~~struck through~~.

The changes to the analysis contained in the Draft EIR represent only minor clarifications/amplifications and do not constitute significant new information. In accordance with CEQA Guidelines, Section 15088.5, recirculation of the Draft EIR is not required.

Letter 1

CITY OF ROSEVILLE CALIFORNIA

Development Services Department
Planning Division
311 Vernon Street
Roseville, California 95678-2649

March 5, 2019

Ms. Shirlee Herrington
Environmental Coordination Services
Placer County Community Development Resource Agency
3091 County Center Drive, Suite 190
Auburn, CA 95603

Subject: Quarry Ridge Professional Office Park - DEIR Comments

Dear Ms. Herrington:

This comment letter is in response to the County's January 22, 2019 Notice of Availability of the *Quarry Ridge Office Park Draft Environmental Impact Report*. The City is concerned that existing intersection levels of service and congestion will continue to worsen with addition of vehicle trips generated by this and other pending projects proposed east of Sierra College Boulevard.

1-1 Due to existing capacity constraints on eastbound Douglas Boulevard at Sierra College Boulevard, the PM peak hour is experiencing severe congestion. As stated in previous comments submitted by the City for other Placer County development projects along Douglas Boulevard, the City of Roseville is supportive of mitigation fee payment into the County fee program for capacity improvements. Specifically, improvements at Douglas and Sierra College to extend the three eastbound through lanes through Cavitt Stallman Road.

1-2 Should the County have any questions concerning these comments, please don't hesitate to contact Jason Shykowski, Acting Public Works Director, at (916) 774-5331.

Sincerely,

Terri Shirhall
Environmental Coordinator

(916) 774-5276 • (916) 744-5129 *Fax* • (916) 774-5220 *TDD* • planningdivision@roseville.ca.us • www.roseville.ca.us/planning

Letter 1: Terri Shirhall, City of Roseville

Response to Comment 1-1

The County appreciates the City's concern about increased vehicle trips associated with the proposed project and other pending projects east of Sierra College Boulevard. As discussed in Chapter 5, Transportation and Circulation, of the Draft EIR, Mitigation Measure 5-8 would require the project applicant to pay traffic impact mitigation fees pursuant to applicable Ordinances and Resolutions. The current estimate for the total project fees is $504,715.52. Such fees would be used to fund necessary roadway improvements included in the County's Capital Improvement Program (CIP). Currently, the Granite Bay Fee Program includes a planned improvement at the Douglas Boulevard/Sierra College Boulevard intersection to extend the three eastbound lanes through Cavitt Stallman Road. Thus, while the proposed project would not directly improve the identified segment of Douglas Boulevard east of Sierra College Boulevard, the project would provide for a fair-share contribution towards the improvement, as requested in the comment.

It should be noted that the analysis within Chapter 5, Transportation and Circulation, of the Draft EIR includes consideration of pending and approved projects east of Sierra College Boulevard, specifically under the Existing Plus Approved/Pending Projects (EPAP) Condition and the Cumulative Plus Project Condition. In developing the EPAP Condition, Placer County staff identified a list of 33 pending and approved projects within Granite Bay. A complete list of the pending and approved projects analyzed, along with the trip generation for each individual project, is included in Table 16 of the Traffic Impact Analysis (see Appendix E to the Draft EIR). Cumulative conditions were developed using the Future Year 2036 traffic volume forecasts from the County's regional travel demand forecasting model. As discussed in Chapter 5 of the Draft EIR, under both the EPAP Plus Project and Cumulative Plus Project Conditions, the proposed project would not result in any significant impacts to study intersections or roadway segments, using the relevant LOS thresholds. Therefore, the proposed project would not substantially degrade operations or otherwise result in significant impacts to the Douglas Boulevard/Sierra College Boulevard intersection.

Response to Comment 1-2

The comment is a concluding statement and does not address the adequacy of the Draft EIR.

Letter 2

Placer County
Museums Division

101 Maple Street, Auburn CA 95603
Tel (530) 889-6500 ♦ Fax (530) 889-6510

CDRA PROJECT REVIEW

Quarry Ridge Professional Office Park (PLN16-00157)

2-1 I read through the materials provided for the above project and I conducted research of the area at our Archives and Research Facility. I concur with the findings and recommendations by Natural Investigations who performed a pedestrian survey of the area and conducted research.

2-2 Although not related to Cultural Resources, I would add that if any Paleontological resources are discovered during grading activities, that the project coordinator contact Dr. Richard Hilton at Sierra College.

If you have any questions or need further information please feel free to contact me at:

530-889-6502 or rgibson@placer.ca.gov

Letter 2: Ralph Gibson, Placer County Museums Division

Response to Comment 2-1

The comment expresses concurrence with the conclusions presented in the Cultural and Paleontological Resource Inventory prepared for the proposed project by Natural Investigations Company, and does not address the adequacy of the Draft EIR.

Response to Comment 2-2

As discussed on page 49 of the Initial Study prepared for the proposed project, per the Cultural and Paleontological Resources Inventory prepared for the proposed project by Natural Investigations Company, the project site is underlain by Rocklin Pluton, which consists of Mesozoic-aged rocks dated to the Lower Cretaceous period. Because of the geologic process involved in the formation of such rocks (high temperature and pressure at great depth), fossils do not have the potential to occur on the project site. Nonetheless, the comment has been forwarded to the project applicant for their consideration.

Letter 3

From: Cherilyn Neider [mailto:cneider@auburnrancheria.com]
Sent: Tuesday, February 05, 2019 3:40 PM
To: Placer County Environmental Coordination Services; Jennifer Byous
Cc: Matthew Moore; Melodi McAdams
Subject: Notice of Availability of a Draft EIR for the Quarry Ridge Office Park (PLN16-00157)

Good afternoon Jennifer,

3-1 I am writing in response to the recent notice of availability for the Draft EIR for the Quarry Ridge Office Park project. We have reviewed the draft EIR had have a couple of questions and concerns.

3-2 In searching our records we were unable to find a letter notifying the United Auburn Indian Community of AB 52 consultation for this project. Can you provide additional information on the letter referred to on page 10 of the Initial Study?

3-3 There are a number of tribal cultural resources within the vicinity of the project area. In addition to the measures included in the draft EIR, we recommend that the attached measure incorporating a tribal cultural resource awareness training is incorporated as a third measure into the final EIR. Attached you will find a draft measure for the training and a brochure to accompany the training. We request that these measures are included under the section addressing Tribal Cultural Resources.

Thank you for considering these concerns.

Respectfully,
Cherilyn

Cherilyn Neider
Tribal Historic Preservation
United Auburn Indian Community
530.883.2394

Nothing in this e-mail is intended to constitute an electronic signature for purposes of the Electronic Signatures in Global and National Commerce Act (E-Sign Act), 15, U.S.C. §§ 7001 to 7006 or the Uniform Electronic Transactions Act of any state or the federal government unless a specific statement to the contrary is included in this e-mail.

Nothing in this e-mail is intended to constitute an electronic signature for purposes of the Electronic

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Letter 3 Cont'd

Signatures in Global and National Commerce Act (E-Sign Act), 15, U.S.C. §§ 7001 to 7006 or Uniform Electronic Transactions Act of any state or the federal government unless a specific statement to the contrary is included in this e-mail.

3

Letter 3 Cont'd

Tribal Cultural Resource – Awareness Training - Mitigation Measure

A consultant and construction worker tribal cultural resources awareness brochure and training program for all personnel involved in project implementation will be developed in coordination with interested Native American Tribes. The brochure will be distributed and the training will be conducted in coordination with qualified cultural resources specialists and Native American Representatives and Monitors from culturally affiliated Native American Tribes before any stages of project implementation and construction activities begin on the project site. The program will include relevant information regarding sensitive tribal cultural resources, including applicable regulations, protocols for avoidance, and consequences of violating State laws and regulations. The worker cultural resources awareness program will also describe appropriate avoidance and minimization measures for resources that have the potential to be located on the project site and will outline what to do and whom to contact if any potential archaeological resources or artifacts are encountered. The program will also underscore the requirement for confidentiality and culturally-appropriate treatment of any find of significance to Native Americans and behaviors, consistent with Native American Tribal values.

Letter 3: Cherilyn Neider, United Auburn Indian Community

Response to Comment 3-1

The comment is an introductory statement and does not address the adequacy of the Draft EIR.

Response to Comment 3-2

The referenced notification letter was distributed to the United Auburn Indian Community (UAIC) by Placer County on July 15, 2016. In response to the commenter's request, Placer County resubmitted a copy of the original notification letter to the UAIC on February 6, 2019. It should be noted that consultation was confirmed to be "not requested" per a meeting between the UAIC and the County on October 12, 2017.

Response to Comment 3-3

The Draft EIR includes Mitigation Measures V-1 and V-2, which provide for protection of any previously undiscovered cultural resources, including tribal cultural resources, that may be uncovered during ground-disturbing activities associated with the proposed project. Given that the existing mitigation measures provide sufficient protections for tribal cultural resources, the commenter's suggested mitigation will not be incorporated into the EIR. However, the project applicant has expressed that they would be willing to distribute a training brochure provided by UAIC to workers on the project site and/or allow a representative from the UAIC to provide cultural resources awareness training for workers on the project site prior to the initiation of site preparation/grading activities, at the tribe's expense.

Letter 4

SHINGLE SPRINGS BAND
OF MIWOK INDIANS

Shingle Springs Rancheria
(Verona Tract), California
5168 Honpie Road
Placerville, CA 95667
Phone: 530-676-8010
shinglespringsrancheria.com

CULTURAL RESOURCES

February 6, 2019

Placer County Community Development Resource Agency, Environmental Coordination Services
3091 County Center Drive, Suite 190
Auburn, CA 95603

RE: Draft EIR, Quarry Ridge Office Park

Dear To Whom It May Concern,

4-1 Thank you for your letter dated January 22, 2019 in regard to the above mentioned project. Based on the information provided, the Shingle Springs Band Of Miwok Indians is not aware of any known cultural resources on this site. However, SSR would like to have continued consultation through updates, as the project progresses. This will foster a greater communication between the Tribe and your agency.

4-2 SSR would also like to request any and all completed record searches and or surveys that were done in or around the project area up to and including environmental, archaeological and cultural reports. If during the progress of the project new information or human remains are found, we would like to be able to go over our process with you to protect such important and sacred artifacts (especially near rivers and streams).

If such finds are made, please contact Kara Perry, Cultural Outreach Coordinator, at (530) 488-4049 or kperry@ssband.org.
Thank you for providing us with this notice and opportunity to comment.

Sincerely,

Daniel Fonseca
Cultural Resource Director
Tribal Historic Preservation Officer (THPO)
Most Likely Descendant (MLD)

Letter 4: Daniel Fonseca, Shingle Springs Band of Miwok Indians

Response to Comment 4-1

The comment does not address the adequacy of the Draft EIR, but rather requests continued consultation through updates, as the project progresses. The Placer County Community Development Resource Agency will continue to notify the tribe regarding the progress of the proposed project, including the upcoming public hearings.

Response to Comment 4-2

On October 26, 2017, Placer County provided a copy of the Cultural and Paleontological Resources Inventory prepared for the proposed project to the Shingle Springs Band of Miwok Indians. Subsequently, the tribe has not requested any additional information.

Letter 5

GRANITE BAY COMMUNITY ASSOCIATION

P.O. BOX 2704 ★ GRANITE BAY, CALIFORNIA 95746 ★ (916) 791-7427

SANDRA HARRIS
ISSUES COORDINATOR

February 26,2019

Shirlee Herrington
Environmental Coordination Services
Placer County Community Development Resource Agency
3091 County Center Drive, Suite 190
Auburn, CA 95603

sherring@placer.ca.gov

Re: Quarry Ridge Office Park PLNN16-00157

The following comments are in response to the DEIR on the above project:

5-1 On June 3, 2016, the Granite Bay Community Association in response to the Initial Project Application, noted that the Granite Bay Community Plan discouraged two story buildings on Douglas. However, applicant stated that the western most building of the project necessitated two stories, in order to obtain the square footage needed for the building footprint without removing the existing oak trees. The letter noted that was acceptable to save the trees, but the second story should be conditioned that if the trees are removed, the second story is no longer approved.

5-2 The letter also noted that Berg Street is rural from Douglas north. Instead of urban curb, gutter, and sidewalk as proposed in DEIR, a treatment similar to the attractive pedestrian walkway on the west side of Berg along the Grove development extending from Macargo to Olive Ranch Road would better fit the rural character of the road. It is a meandering trail set back from the roadway and bordered by low maintenance landscaped areas.

5-3 In light of all the business/professional development approved and projected for the concentrated area of Berg and Douglas, serious consideration should be given to the environmentally superior Reduced Intensity Alternative in order to lessen the impacts of this development and the several others approved or proposed.

5-4 The landscaped median on Douglas Boulevard enhances the rural atmosphere of Granite Bay and is important to the community. Every project proposed on Douglas Is looking to lessen this median to provide longer turn pockets. This is unacceptable to the community. Other alternatives need to be considered. Perhaps a reduced speed zone posted in that business area? Douglas after crossing Sierra College into Roseville drops to 40 mph in that business area.

5-5 The parcel is elevated above the roadway and borders residential. Outdoor lighting should be at a minimum in off business hours. Perhaps motion sensitive lighting that would come on when activated for pedestrian safety. (The Quarry Ponds buildings to south are outlined in white lights which may be in violation of the Conditions of Approval.)

5-6 A closing observation -- As always, outside traffic using the Douglas corridor is a major concern of the community. In addition, the DEIR notes 33 pending and approved projects in Granite Bay that would generate approximately 11,360 more daily trips. Widening roads and installing traffic signals in Granite Bay doesn't address the problem. Auburn Folsom was widened to 4 lanes and more commuters use it than before because it speeded up commute times. That doesn't fix the traffic problems in Granite Bay, it just encourages more outside traffic.

Granite Bay Community Association

Sandra H Harris

Sandra H. Harris, Secretary

Letter 5: Sandra H. Harris, Granite Bay Community Association

Response to Comment 5-1

The comment does not address the adequacy of the Draft EIR. As discussed on page 25 of the Initial Study prepared for the proposed project, of the 29 existing on-site trees, 10 trees have been recommended for removal due to defects, compromised health, and/or structural stability noted at the time of a field inventory of the project site conducted by Sierra Nevada Arborists on August 17, 2015. Fifteen of the trees would be preserved. Only two healthy trees would require removal as part of the proposed project, neither of which are located within the western portion of the site.

Only one of the proposed office buildings (Building 1) would include two stories. The building would be situated at an angle so as to avoid existing trees near the building footprint. Without the second story, the building would be too small to meet the space requirements identified by the project applicant for this general office building. Furthermore, residents of the existing residential homes to the north of the project site have expressed general support for the proposed second floor on Building 1, provided that the north side of the second-floor deck/patio is screened to protect the privacy of such residents. Such screening elements have been incorporated into the design of the proposed project.

Response to Comment 5-2

The commenter requests different pedestrian treatments along the proposed project's Berg Street frontage and does not address the adequacy of the Draft EIR. The commenter's suggestions related to sidewalk improvements have been forwarded to the decision-makers for their consideration.

Response to Comment 5-3

The comment suggests approval of the Reduced Intensity Alternative, but does not address the adequacy of the Draft EIR. The comment has been forwarded to the decision-makers for their consideration.

Response to Comment 5-4

The comment is assumed to reference Mitigation Measure 5-6 in the Draft EIR, which requires increasing the length of the existing left-turn lane approaching Berg Street (eastbound) and the existing left-turn lane approaching Granite Estates Drive (westbound) along Douglas Boulevard.

In *Preserve Poway v. City of Poway* (2016) 245 Cal.App.4th 560, the Appellate Court evaluated whether community character is a consideration in CEQA and whether changes to community character or social impacts constitute an environmental impact under CEQA. The Court determined CEQA does not require an analysis of subjective psychological feelings or social impacts. Rather, CEQA's overriding and primary goal is to protect the physical environment. CEQA defines a "significant effect on the environment" as "substantial, or potentially substantial, adverse changes in physical conditions ...." (PRC section 21100. subd. (d)). Thus, the commenter's

concern about changes to the rural feel of the project area is not a CEQA issue. Nonetheless, the commenter's suggestions have been forwarded to the decision-makers for their consideration.

Response to Comment 5-5

Mitigation Measure I-1, as included in the Initial Study prepared for the proposed project, requires the following related to on-site lighting:

> *MM I-1:* *Concurrent with submittal of Improvement Plans, a detailed lighting and photometric plan shall be submitted to the DRC for review and approval. The lighting and photometric plan shall include the following provisions:*
>
> - *Parking lot lighting shall be accomplished with pole mounted decorative LED luminaries. The parking lot shall be illuminated by using 14-foot decorative post-top type LED fixtures mounted on metal poles. The pole color shall be such that the pole will blend into the landscape (i.e., black, bronze, or dark bronze). Such luminaires shall also be provided with house side shields to minimize light pollution to the areas outside of the property line.*
> - *The parking lot lighting shall be photocell controlled to provide automatic light reduction by a minimum of 50 percent between the hours of 11 PM and 6 AM. The site lighting shall be dimmed to lower level automatically.*
> - *Landscape lighting may be used to visually accentuate and highlight ornamental shrubs and trees adjacent to buildings and in open spaces. Lighting intensity will be of a level that only highlights shrubs and trees and will not impose glare on any pedestrian or vehicular traffic.*
> - *Architectural lighting shall articulate and animate the particular building design and visibly promote and reinforce pedestrian movement. Indirect wall lighting or "wall washing" and interior illumination (glow) is encouraged in the expression of the building.*
> - *Wall-mounted light fixtures will be permitted only if they have a 90 degree cut off to prevent glare.*
> - *No lighting is permitted on top of structures.*
> - *Pedestrian routes should utilize bollard type lighting rather than pole lights and should be integrated into building and landscape design. Pedestrian-scale light fixtures shall be durable and vandal resistant.*

With implementation of Mitigation Measure I-1, impacts related to creation of new sources of substantial light and glare that would adversely affect day or nighttime views in the area were appropriately determined to be less-than-significant. The mitigation measure requires reduced lighting at night as requested by the comment.

Response to Comment 5-6

The comment does not address the adequacy of the Draft EIR. The commenter's concerns are noted, and have been forwarded to the decision-makers for their consideration.

Letter 6

Shirlee Herrington

From: Larissa Berry <lzberry@peoplepc.com>
Sent: Wednesday, March 06, 2019 8:18 AM
To: Shirlee Herrington
Cc: defendgb@gmail.com; GBCA; AEL-Leslie Warren
Subject: Re: Quarry Ridge Professional Office Park (PLN16-00157), Draft Environmental Impact Report Released

Good morning Ms. Herrington,

Could you please see that my comments are included as part of the Administrative record.

Thank you
Larissa Berry

Planning Commissioners,

6-1 Please accept my comments on the Quarry Ridge Office Park DEIR as part of the administrative record. I will preface my comments by stating that the applicant has worked closely with the immediately adjacent and contiguous parcels to achieve a project acceptable to all. Interactions of this nature should be encouraged and commended by this Commission. The DEIR is also a reasonable length which is not true for a number of massive documents recently dumped on the public in a relatively short period of time in direct conflict with the intent of CEQA to clearly expose impacts and actively seek public participation.

Comments:

6-2 The entitlement requested for "*Granite Bay Community Plan text amendment to modify the setback standard for buildings located on the north side of Douglas Boulevard*" has not been evaluated for impacts on the Aesthetics of the Community Plan identified Scenic Corridor. Adoption and amendment of a General Plan is a "project" under CEQA and therefore, environmental review must be performed. *City of Santa Ana v City of Garden Grove (1979) 100 CA3d 521.* Adopting or amending a general plan must be done so in accordance with Government Code section 35350 *et seq*.

"Right-of-Way. All development on the north side of Douglas west of Auburn-Folsom Road shall be required to dedicate 70 feet of right-of-way as measured from centerline. Building setbacks from the edge of the road right-of-way shall be a minimum of 75 feet. <u>For discretionary permits, a setback of less than 75 feet as otherwise required by the Community Plan may be approved by the Decision-making Body as long as a visual buffer is in place that provides for one or more of the following: 1. Landscaping, building architectural design or other buffer techniques have been incorporated into the project to reduce visual impacts of the project when viewed from the Douglas Boulevard right-of-way; 2. A setback of less than 75 feet would result in increased setbacks from either adjacent properties or on-site resources and/or conditions, which, on balance, result in better overall site planning and design…… on a case-by-case basis</u> ….."

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Letter 6 cont'd

6-3 Zoning ordinance must give enough guidance to provide clear context for planning decisions and approvals with regards to zoning regulations and permits. The lack of a minimum setback negates any **clear** context. Trying to claim an exemption under CEQA will also fail under *Save Our Big Trees v City of Santa Cruz, (2015) 241*. For an exemption, the zoning text amendment must be **more**, **not less restrictive**.

6-4 This Planning Commission recently found a 1.3 acre, rectangular, flat parcel with no topographic limitations to be disadvantaged. Entitling a set-back variance on Douglas. The DEIR should clarify why a parcel with a 20-foot slope differential requiring multiple levels of retaining walls is not disadvantaged; negating the need to re-write the Granite Bay Community Plan.

Respectfully,

Larissa Berry

-----Original Message-----
From: Shirlee Herrington
Sent: Jan 22, 2019 4:07 PM
To:
Subject: Quarry Ridge Professional Office Park (PLN16-00157), Draft Environmental Impact Report Released

Good Afternoon:

The Draft EIR prepared for the subject project is now available on the County's website for public review and can be accessed at this LINK

The 45-day public comment period starts on 01-22-09 and ends on 03-07-19 with a public hearing scheduled on 02-14-19 to receive comments. Attached is the Notice of Availability for your reference.

If you will have comments on the DEIR, please send them to my attention at cdraecs@placer.ca.gov or at the mailing address below.

Thank you,
Shirlee

Shirlee I. Herrington
Environmental Coordination Services
Placer County Community Development Resource Agency
3091 County Center Drive, Suite #190
Auburn, CA 95603
530-745-3132
sherring@placer.ca.gov

2

Letter 6: Larissa Berry

Response to Comment 6-1

The comment does not address the adequacy of the Draft EIR. The commenter's other statements are noted and have been forwarded to the decision-makers for their consideration.

Response to Comment 6-2

As noted on page 3-13 of the Draft EIR, the Community Design Element of the Granite Bay Community Plan (GBCP), Section 4.2.11, Road Corridors, requires a 75-foot building setback along the north side of Douglas Boulevard. As noted by the commenter, the proposed project entitlements include a request to amend this language to enable a building setback of less than 75 feet, for discretionary permits, for approval by the decision-making body, as long as a visual buffer is in place that provides for one or more of the following:

1. Landscaping, building architectural design or other buffer techniques have been incorporated into the project to reduce visual impacts of the project when viewed from the Douglas Boulevard right-of-way;
2. A setback of less than 75 feet would result in increased setbacks from either adjacent properties or on-site resources and/or conditions, which, on balance, result in better overall site planning and design.

The proposed additions were carefully drafted so as to include language akin to performance standards, which are often included in program-level mitigation measures designed to ensure that future projects associated with the program comply with the performance standards and thus avoid environmental impacts (CEQA Guidelines Section 15126.4(a)(1)(B)). A mitigation performance standard is sufficient if it identifies the criteria the agency will apply in determining that the impact will be mitigated. Here, performance standards are added to the setback policy to ensure that a visual buffer is required for each project along the north side of Douglas Boulevard.

The added flexibility that would be provided with the proposed amendment to the building setback standard is also consistent with the Community Design Element of the GBCP, wherein it is stated (GBCP, Community Design, pg. 41):

> Design objectives and principals [sic] form an integral part of the County's land use planning and decision-making processes to achieve the goal of high quality and sustainable physical environments. As guidelines, these recommendations will not regulate with the same rigidity as an ordinance. Rather, it will indicate the County's intent regarding the various components of design. The existing development pattern and natural features of Granite Bay will require a measure of flexibility in the design review process for new development and redevelopment/revitalization projects.

It is instructive that this portion of the GBCP notes that "As guidelines, these recommendations will not regulate with the same rigidity as an ordinance." The proposed amendments to the 75-foot setback standard reflect the GBCP's acknowledgement that the existing development pattern and

natural features of Granite Bay will require a measure of flexibility in the design review process for new development.

Response to Comment 6-3

The comment is not entirely clear. The subject amendment is not related to the Zoning Ordinance, but rather the GBCP. No exemption is being sought for the proposed amendment to the GBCP 75-foot building setback standard. Rather, the proposed amendment is included in the Draft EIR and evaluated at the appropriate level of detail (see pages 1-11 and 1-12, 3-13, and 3-15 of the Draft EIR). For the reasons set forth in Response to Comment 6-2, a minimum building setback distance is not necessary given the performance standards included in the proposed amendment language. It is also noted that the Zoning Ordinance building setbacks would still apply to each project along the north side of Douglas Boulevard.

Response to Comment 6-4

Variances may be granted for Zoning Ordinance standards, but not for General Plan/GBCP policy standards. The 75-foot setback identified in the Community Design Element of the GBCP, Section 4.2.11, Road Corridors, is a standard, rather than a regulation required by an ordinance. As such, relief (i.e., variance) from a development standard cannot be granted, even when conditions warrant such relief (e.g., irregularly shaped parcel and/or slopes greater than 20 percent). Thus, the proposed project is requesting to add language through an amendment to the GBCP, not a variance.

As noted in Response to Comment 6-3 above, the proposed project would be consistent with the minimum setback standards established for the Office and Professional (OP) zoning designation per Section 17.32.010(D) of the Placer County Code. Thus, a zoning variance would not be required for the project.

Letter 7

Shirlee Herrington

From: Shannon Quinn <shannoncts@gmail.com>
Sent: Wednesday, March 06, 2019 3:25 PM
To: Placer County Environmental Coordination Services; Shirlee Herrington
Subject: Quarry Ridge Professional Office Park (PLN16-00157), Draft Environmental Impact Report Comments

Shirlee,

7-1 Please add these comments to the official record for Quarry Ridge Professional Office Park (PLN16-00157), Draft Environmental Impact Report. While I am in complete support of this project, I believe the following items need clarity in the Draft EIR:

7-2 1. This project should seek a right-of-way variance if needed, not a Granite Bay Community Plan Amendment. This attempt fails to provide the public an adequate review of the associated impacts of this amendment as required by CEQA. Other options exist and should be utilized which are far less impactful.

7-3 2. The Sierra College Blvd/Douglas Blvd intersection review utilizes an incorrect threshold level. This intersection falls under the jurisdiction of Roseville and therefore their significance threshold should be employed for analysis of impacts. This project incorrectly places it as a LOS E when the threshold is actually LOS C. As further evidence that this should be the standard, this is also referenced in the traffic study prepared for Whitehawk I & II, by Fehr & Peers. This should be corrected in the Final EIR and evaluated for cumulative impacts. It appears that under EPAP plus project verse just EPAP there is an increase in delay of 8.5 (sec/veh) which would appear considerable for an intersection operating below standard.

7-4 3. Douglas Blvd (from Sierra College to Cavitt Stallman) roadway segment study is incorrectly identified as a 4 lane arterial- High Access Control and then later under cumulative conditions is switched to a 4 lane arterial MAC without explanation- in addition the actual V/C should be reported not just the LOS classification as shown in Table 4. Further discussion as to why Douglas Boulevard was classified as an HAC verse MAC to begin with should occur- it would appear that the number of interruptions to traffic from intersections and driveways play a major role in determining control classification and was not properly evaluated. Again, this is important so that the public is able to adequately assess the impacts, especially when looking across multiple projects and trying to understand cumulative conditions.

Douglas Blvd (Sierra College to Cavitt)-
4 Lane HAC Arterial= 1.19 V/C LOS F
4 Lane MAC Arterial= 1.32 V/C LOS F

Thank you for your consideration.

Sincerely,
Shannon Quinn

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Letter 7: Shannon Quinn

Response to Comment 7-1

The comment is an introductory statement expressing support for the project. Specific concerns raised by the commenter are addressed in the responses below.

Response to Comment 7-2

Please see Responses to Comments 6-2 and 6-4 above.

Response to Comment 7-3

The LOS E minimum operations standard noted for the Douglas Boulevard/Sierra College Boulevard intersection in the Quarry Ridge Draft EIR is appropriate, as the intersection is located within Placer County and is under the County's jurisdiction. Thus, associated revisions to the Quarry Ridge Draft EIR are not necessary. An erratum to the Whitehawk I and II Project's Final EIR was issued by the County to clarify and make the necessary revisions to the traffic section related to the LOS E standard for the Douglas Boulevard/Sierra College Boulevard intersection.

Response to Comment 7-4

In response to the comment, Tables 5-4, 5-9, 5-11, and 5-13 from Chapter 5, Transportation and Circulation, of the Draft EIR are hereby revised as shown on the following pages. In addition, the Traffic Impact Analysis prepared for the proposed project has been revised similarly and is included as Appendix A to this Final EIR.

The classification of Douglas Boulevard between Sierra College Boulevard and Cavitt Stallman Road has been changed to "Arterial – Moderate access control" to reflect the spacing of the signalized intersections, presence of commercial driveways along the roadway segment and to be consistent with the assumptions used for the Whitehawk I and II Projects EIR. The LOS identified for the roadway would remain at LOS F under all scenarios evaluated in the Draft EIR, with and without the addition of traffic from the proposed project. The project's impact is determined based on Placer County's Impact Analysis Methodology of Assessment memorandum. This memorandum states that the project would trigger a significant roadway segment impact if the project increases the volume-to-capacity ratio by 0.05 or adds 100 ADT or more per lane. Because the project's incremental increase in V/C is, at most, 0.009, considering all scenarios, and the project is forecasted to add, at most, 80 ADT per lane to this segment, considering all scenarios, the project's impacts would remain less than significant for the identified segment. Thus, the forgoing revisions do not alter the conclusions presented in the Draft EIR.

Table 5-1
Study Roadway Segment LOS – Existing Condition

Roadway	Segment	Classification	Lanes	ADT	LOS
Douglas Blvd	Sierra College Blvd to Cavitt Stallman Rd	Arterial ~~High~~Moderate	4 ~~to 6~~	47,570	**F**
	Cavitt Stallman Rd to Seeno Ave	Arterial High	4	46,830	**F**
	Seeno Ave to Barton Rd	Arterial High	4	44,800	**F**
	Barton Rd to Auburn-Folsom Rd	Arterial High	4	42,630	**F**
Berg St	Olive Ranch Rd to Douglas Blvd	Arterial Low	2	1,200	A

Source: KD Anderson & Associates, Inc., 2018.

Table 5-9
Study Roadway Segment LOS – Existing Plus Project Condition

Roadway	Segment	Classification	Lanes	Existing		Existing Plus Project			
						ADT			
				ADT	LOS	Project Only	Total	LOS	Change in V/C
Douglas Blvd	Sierra College Blvd to Cavitt Stallman Rd	Arterial ~~High~~Moderate	4	**47,570**	**F**	**320**	**47,890**	**F**	0.00~~8~~9
	Cavitt Stallman Rd to Seeno Ave	Arterial High	4	**46,830**	**F**	**320**	**47,150**	**F**	0.008
	Seeno Ave to Barton Rd	Arterial High	4	**44,800**	**F**	**340**	**45,140**	**F**	0.009
	Berg St to Barton Rd	Arterial High	4	**44,800**	**F**	**190**	**44,990**	**F**	0.005
	Barton Rd to Auburn-Folsom Rd	Arterial High	4	**42,630**	**F**	**110**	**42,740**	**F**	0.003
Berg St	Olive Ranch Rd to Project	Arterial Low	2	1,200	A	40	1,240	A	0.003
	Project to Douglas Blvd	Arterial Low	2	1,200	A	530	1,730	A	0.035

Note: **Bold** indicates applicable LOS threshold exceeded.

Source: KD Anderson & Associates, Inc., 2018.

Table 5-11
Study Roadway Segment LOS – EPAP Plus Project Condition

Roadway	Segment	Classification	Lanes	EPAP		EPAP Plus Project			
						ADT			
				ADT	LOS	Project Only	Total	LOS	Change in V/C
Douglas Blvd	Sierra College Blvd to Cavitt Stallman Rd	Arterial ~~High~~Moderate	4 ~~to 6~~	**51,320**	**F**	**320**	**51,640**	**F**	0.00~~8~~9
	Cavitt Stallman Rd to Seeno Ave	Arterial High	4	**50,160**	**F**	**320**	**50,480**	**F**	0.008
	Seeno Ave to Barton Rd	Arterial High	4	**47,610**	**F**	**340**	**47,950**	**F**	0.009
	Berg St to Barton Rd	Arterial High	4	**45,480**	**F**	**190**	**45,670**	**F**	0.005
	Barton Rd to Auburn-Folsom Rd	Arterial High	4	**44,690**	**F**	**110**	**44,800**	**F**	0.003
Berg St	Olive Ranch Rd to Project	Arterial Low	2	1,460	A	40	1,500	A	0.003
	Project to Douglas Blvd	Arterial Low	2	1,990	A	530	2,520	A	0.035

Note: **Bold** indicates applicable LOS threshold exceeded.

Source: KD Anderson & Associates, Inc., 2018.

Table 5-13
Study Roadway Segment LOS – Cumulative Plus Project Condition

Roadway	Segment	Classification	Lanes	Cumulative No Project		Cumulative Plus Project			
						ADT			
				ADT	LOS	Project Only	Total	LOS	Change in V/C
Douglas Blvd	Sierra College Blvd to Cavitt Stallman Rd	Arterial Moderate	~~4~~ 6	**54,380**	**F**	**32~~3~~0**	**54,700**	**F**	0.00~~8~~6
	Cavitt Stallman Rd to Woodgrove Way	Arterial High	4	**51,980**	**F**	**32~~3~~0**	**52,300**	**F**	0.008
	Woodgrove Way to Seeno Ave	Arterial High	4	**50,510**	**F**	**340**	**50,850**	**F**	0.009
	Seeno Ave to Barton Rd	Arterial High	4	**50,160**	**F**	**340**	**50,500**	**F**	0.009
	Berg St to Barton Rd	Arterial High	4	**47,560**	**F**	**~~188~~90**	**47,750**	**F**	0.005
	Barton Rd to Auburn-Folsom Rd	Arterial High	4	**48,340**	**F**	**11~~2~~0**	**48,450**	**F**	0.003
Berg St	Olive Ranch Rd to Project	Arterial Low	2	1,460	A	40	1,500	A	0.003
	Project to Douglas Blvd	Arterial Low	2	1,420	A	5~~28~~30	1,950	A	0.035

Note: **Bold** indicates applicable LOS threshold exceeded.

Source: KD Anderson & Associates, Inc., 2018.

Letter 8

Shirlee Herrington

From: hollyjesq@aol.com
Sent: Thursday, March 07, 2019 11:14 AM
To: Placer County Environmental Coordination Services
Subject: Comments on Quarry Ridge Office Park, Draft Environmental Impact Report

To Whom It May Concern:

Please ensure that my comments are included in the administrative record on this matter.

8-1 The request to modify the setback standard for the buildings located on the North side of Douglas Boulevard have not been fully evaluated, including, but not limited to, impacts to the Aesthetics and affect on the Scenic Corridor. This is just one of several projects that will be affecting Douglas Boulevard, and the singular as well as cumulative affects have not been evaluated.

8-2 There are also proposed projects on Douglas Boulevard that will affect not only the Scenic aspect of Douglas Boulevard, but also traffic, sewer, etc. There has additionally been a proposal to increase sewer user fees, and it is questionable if this increase is to allow and make it easier for the number of proposed developments in Granite Bay that are seeking to increase usage, one of which would be this proposal.

If the requested setback standard modifies the Community or Granite Bay Plan, then it is a "project" under the California Environmental Quality Act ("CEQA") and, therefore, environmental review must be performed. *City of Santa Ana v City of Garden Grove (1979) 100 CA3d 521.* Adopting or amending a general plan must be done so in accordance with Government Code section 35350 *et seq*.

8-3 "Right-of-Way. All development on the north side of Douglas west of Auburn-Folsom Road shall be required to dedicate 70 feet of right-of-way as measured from centerline. Building setbacks from the edge of the road right-of-way shall be a minimum of 75 feet. For discretionary permits, a setback of less than 75 feet as otherwise required by the Community Plan may be approved by the Decision-making Body as long as a visual buffer is in place that provides for one or more of the following: 1. Landscaping, building architectural design or other buffer techniques have been incorporated into the project to reduce visual impacts of the project when viewed from the Douglas Boulevard right-of-way; 2. A setback of less than 75 feet would result in increased setbacks from either adjacent properties or on-site resources and/or conditions, which, on balance, result in better overall site planning and design…… on a case-by-case basis ….."

The amendment is less restrictive, not more, and does not qualify for an exemption under CEQA. (See, *Save Our Big Trees v City of Santa Cruz, (2015) 241.)*

Please do not allow a reduction in any setback, require that there be the requisite setback on Douglas Boulevard and do not negatively affect the scenic aspect of Douglas Boulevard by approving this draft environmental impact report (DEIR), without modifying to require the requisite amount per the plan and law.

Thank you in advance for your consideration.

Holly Johnson

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LETTER 8: HOLLY JOHNSON

Response to Comment 8-1

Please see Response to Comment 6-2.

Response to Comment 8-2

As discussed on page 58 of the Initial Study prepared for the proposed project, per Section 13.12.270 of the Placer County Code, the project applicant would be required to pay a sewer connection fee to the County prior to connection to the County's existing conveyance system. The County's sewer connection fees are distributed to both Placer County and the City of Roseville for ongoing and future upgrades to the Dry Creek Wastewater Treatment Plant. In addition, the fees are used to help offset additional demands on conveyance infrastructure created by new connections. According to CEQA Section 15130(a)(3), paying a "fair share fee" is permissible as effective mitigation for cumulative impacts if the fees are part of a reasonable plan of actual mitigation that the relevant agency commits itself to implementing. The Placer County Board of Supervisors has determined that a development impact fee is needed in order to finance public improvements to wastewater infrastructure and to pay for the development's fair share of the construction costs of these improvements.

The County has calculated the sewer connection fees for Building 1 of the project to be approximately $17,000. Additional connection fees will be paid by the applicant, on an equivalent dwelling unit basis, prior to issuance of building permits for each building. Furthermore, the Placer County Public Works Department has issued a letter (dated March 10, 2016) stating that the Placer County Sewer Maintenance District would be capable of serving the project pending fulfillment of the District's requirements, including payment of fees, compliance with applicable San Juan Water District ordinances and requirements, and other standard conditions.[1] As such, the proposed project would not result in a cumulatively considerable contribution to sewer capacity impacts associated with cumulative development in the project area.

Chapter 5, Transportation and Circulation, of the Draft EIR includes an analysis of cumulative traffic impacts, including cumulative development in Granite Bay. As discussed under Impacts 5-8 and 5-9 within the Draft EIR, the project's incremental contribution to cumulative impacts to study intersections and roadway segments under the Cumulative Plus Project Condition would not be cumulatively considerable. In addition, as noted under Response to Comment 1-1 above, Mitigation Measure 5-8 from the Draft EIR would require the project applicant to pay traffic impact mitigation fees that would be used to fund necessary roadway improvements included in the County's CIP. Thus, the project would provide for a fair-share contribution to necessary roadway improvements in the project area.

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[1] Placer County Public Works Department. *Requirements for Sewer Service for Berg Street Office Complex, (PLN16-00026) (Approx. 10 EDUs) (APN 048-084-030).* March 10, 2016.

Response to Comment 8-3

Please see Response to Comment 6-2.

Letter 9

Quarry Ridge Draft EIR
Public Comment Meeting Summary

Date: February 14, 2019
Time: 1:30 PM
Location: Placer County Community Development Resource Center
Planning Commission Hearing Room
3091 County Center Drive,
Auburn, CA 95603

I. Verbal Comments (arranged in order of "appearance" of commenter):

Public Comments:

None.

Planning Commission Comments:

9-1
- Commissioner Wayne Nader
  - Commissioner Nader questioned whether a traffic signal was considered at the intersection of Berg Street and Douglas Boulevard.

9-2
- Commissioner Richard Johnson
  - Commissioner Johnson noted that the distance between traffic signals along Douglas helps meter the traffic along Douglas, including at the Berg Street and Douglas Boulevard intersection.

9-3
- Commissioner Sam Cannon
  - Commissioner Cannon questions the security gate access to the parking lot, specifically why and when the gate would be closed.

Letter 9: Public Comment Meeting

Response to Comment 9-1

The Placer County Engineering and Surveying Division has indicated that installation of a traffic signal at the Douglas Boulevard/Berg Street intersection is not supported by the Granite Bay community. Such is evidenced on page 113 of the Circulation Element of the GBCP, Policy 9.1.21, which states the following:

> The community's desire to retain the character of the Country Roadways and the design guidelines for Country Roadways shall be earnestly considered when designing improvements to arterial or collector roads designated as Country Roadways. The County shall strive for a balance between local community desires and engineering solutions and shall present proposed designs to the community for review prior to approval. Upgrades made to minor arterial and collector roads designated as Country Roadways should be limited to critical safety issues and sufficient shoulder for cyclists and pedestrians.

With regard to future signal improvement projects at the intersections of Douglas Boulevard/Berg Street and Douglas Boulevard/Quail Oaks Drive, as well as Auburn Folsom Road/Cavitt-Stallman Road, Footnote 3 of Table 9.6.3 in the Circulation Element of the GBCP states the following:

> It is the desire of the community to avoid these three signal projects. They should be implemented only to correct identified safety or traffic operational problems and only after other measures have been explored and either implemented or rejected. The signals may be necessary as a result of approval of specific land development projects.

In addition, the Douglas Boulevard/Berg Street intersection operates acceptably with the addition of Quarry Ridge traffic under all traffic scenarios evaluated in the EIR (Tables 5-8, 5-10, and 5-12).

Response to Comment 9-2

The comment does not address the adequacy of the Draft EIR.

Response to Comment 9-3

As noted on page 3-5 of the Draft EIR, the proposed security gate would be open during normal business hours and closed with authorized access only during non-business hours. Per the project applicant, the security gate is intended to prevent trespass onto the project site after hours when the proposed offices are closed. Given that views of the proposed parking area from Douglas Boulevard would be obscured by the proposed buildings and landscaping elements, provision of a gated access was deemed necessary to alleviate potential security concerns.

3. REVISIONS TO THE DRAFT EIR TEXT

3 REVISIONS TO THE DRAFT EIR TEXT

3.1 INTRODUCTION

The Revisions to the Draft EIR Text chapter presents minor corrections, additions, and revisions made to the Draft EIR initiated by the Lead Agency (Placer County) based on comments received during the public review period by reviewing agencies and/or the public.

The changes represent minor clarifications/amplifications of the analysis contained in the Draft EIR and do not constitute significant new information that, in accordance with CEQA Guidelines, Section 15088.5, would trigger the need to recirculate portions or all of the Draft EIR.

3.2 DESCRIPTION OF CHANGES

New text is double underlined and deleted text is ~~struck through~~. Text changes are presented in the page order in which they appear in the Draft EIR.

1 Introduction

As a staff-initiated change, footnote 2 on page 1-4 of the Draft EIR is hereby revised as follows:

> [1] Note: While the Transportation Section of the Appendix G Checklist has been updated consistent with Senate Bill 743, deleting reference to level of service, and instead inserting a reference to new Guidelines Section 16054.3, subdivision (b), to focus on vehicle miles traveled where appropriate, this shift in focus on vehicle miles traveled is not required until ~~January~~July 1, 2020.

The forgoing revision is for clarification purposes and does not affect the adequacy of the Draft EIR.

2. Executive Summary

For clarification purposes, Table 2-1 in Chapter 2, Executive Summary, of the Draft EIR is hereby revised to reflect minor revisions made to mitigation measures as part of this Final EIR, as presented throughout this chapter. Rather than include the entirety of Table 2-1 with revisions shown where appropriate, only the impacts for which mitigation has been revised or added are presented in this chapter. The revisions to Table 2-1 are for clarification purposes only and do not change the conclusions of the Draft EIR. Please refer to the end of this chapter for Table 2-1.

4 Noise

In response to a staff-initiated change, Mitigation Measure 4-3(a) on page 4-24 of the Draft EIR is hereby revised as follows:

> Mitigation Measure(s)
> Implementation of the following mitigation measures would reduce the above impact to a *less-than-significant* level.
>
> *4-3(a)* *A Blasting Plan for construction shall be prepared and submitted to the County Planning Services Division at least ten (10) days prior to initiation of construction activities. The plan shall include the following:*

The forgoing revision is for clarification purposes and does not affect the adequacy of the Draft EIR.

5 Transportation and Circulation

Tables 5-4, 5-9, 5-11, and 5-13 from Chapter 5, Transportation and Circulation, of the Draft EIR are hereby revised as shown on the following pages. As discussed under Response to Comment 7-4 in Chapter 2.0 of this EIR, the revisions do not alter the conclusions presented in the Draft EIR.

Other

All references in the EIR to the Placer County Department of Public Works and Facilities (DPWF) are hereby revised to instead reference the Department of Public Works (DPW). These changes have been made simply to reflect recent name changes to County departments.

Table 5-4
Study Roadway Segment LOS – Existing Condition

Roadway	Segment	Classification	Lanes	ADT	LOS
Douglas Blvd	Sierra College Blvd to Cavitt Stallman Rd	Arterial ~~High~~Moderate	4 ~~to 6~~	47,570	F
	Cavitt Stallman Rd to Seeno Ave	Arterial High	4	46,830	F
	Seeno Ave to Barton Rd	Arterial High	4	44,800	F
	Barton Rd to Auburn-Folsom Rd	Arterial High	4	42,630	F
Berg St	Olive Ranch Rd to Douglas Blvd	Arterial Low	2	1,200	A

Source: KD Anderson & Associates, Inc., 2018.

Table 5-9
Study Roadway Segment LOS – Existing Plus Project Condition

Roadway	Segment	Classification	Lanes	Existing		Existing Plus Project			
						ADT			
				ADT	LOS	Project Only	Total	LOS	Change in V/C
Douglas Blvd	Sierra College Blvd to Cavitt Stallman Rd	Arterial ~~High~~Moderate	4	**47,570**	**F**	**320**	**47,890**	**F**	0.00~~8~~9
	Cavitt Stallman Rd to Seeno Ave	Arterial High	4	**46,830**	**F**	**320**	**47,150**	**F**	0.008
	Seeno Ave to Barton Rd	Arterial High	4	**44,800**	**F**	**340**	**45,140**	**F**	0.009
	Berg St to Barton Rd	Arterial High	4	**44,800**	**F**	**190**	**44,990**	**F**	0.005
	Barton Rd to Auburn-Folsom Rd	Arterial High	4	**42,630**	**F**	**110**	**42,740**	**F**	0.003
Berg St	Olive Ranch Rd to Project	Arterial Low	2	1,200	A	40	1,240	A	0.003
	Project to Douglas Blvd	Arterial Low	2	1,200	A	530	1,730	A	0.035

Note: **Bold** indicates applicable LOS threshold exceeded.

Source: KD Anderson & Associates, Inc., 2018.

Table 5-11
Study Roadway Segment LOS – EPAP Plus Project Condition

Roadway	Segment	Classification	Lanes	EPAP		EPAP Plus Project			
						ADT			
				ADT	LOS	Project Only	Total	LOS	Change in V/C
Douglas Blvd	Sierra College Blvd to Cavitt Stallman Rd	Arterial ~~High~~Moderate	4 ~~to 6~~	**51,320**	**F**	**320**	**51,640**	**F**	0.00~~8~~9
	Cavitt Stallman Rd to Seeno Ave	Arterial High	4	**50,160**	**F**	**320**	**50,480**	**F**	0.008
	Seeno Ave to Barton Rd	Arterial High	4	**47,610**	**F**	**340**	**47,950**	**F**	0.009
	Berg St to Barton Rd	Arterial High	4	**45,480**	**F**	**190**	**45,670**	**F**	0.005
	Barton Rd to Auburn-Folsom Rd	Arterial High	4	**44,690**	**F**	**110**	**44,800**	**F**	0.003
Berg St	Olive Ranch Rd to Project	Arterial Low	2	1,460	A	40	1,500	A	0.003
	Project to Douglas Blvd	Arterial Low	2	1,990	A	530	2,520	A	0.035

Note: **Bold** indicates applicable LOS threshold exceeded.

Source: KD Anderson & Associates, Inc., 2018.

Table 5-13
Study Roadway Segment LOS – Cumulative Plus Project Condition

Roadway	Segment	Classification	Lanes	Cumulative No Project		Cumulative Plus Project			
						ADT			
				ADT	LOS	Project Only	Total	LOS	Change in V/C
Douglas Blvd	Sierra College Blvd to Cavitt Stallman Rd	Arterial Moderate	~~4~~ 6	**54,380**	**F**	**32~~3~~0**	**54,700**	**F**	0.00~~8~~6
	Cavitt Stallman Rd to Woodgrove Way	Arterial High	4	**51,980**	**F**	**32~~3~~0**	**52,300**	**F**	0.008
	Woodgrove Way to Seeno Ave	Arterial High	4	**50,510**	**F**	**340**	**50,850**	**F**	0.009
	Seeno Ave to Barton Rd	Arterial High	4	**50,160**	**F**	**340**	**50,500**	**F**	0.009
	Berg St to Barton Rd	Arterial High	4	**47,560**	**F**	**~~188~~90**	**47,750**	**F**	0.005
	Barton Rd to Auburn-Folsom Rd	Arterial High	4	**48,340**	**F**	**11~~2~~0**	**48,450**	**F**	0.003
Berg St	Olive Ranch Rd to Project	Arterial Low	2	1,460	A	40	1,500	A	0.003
	Project to Douglas Blvd	Arterial Low	2	1,420	A	5~~28~~30	1,950	A	0.035

Note: **Bold** indicates applicable LOS threshold exceeded.

Source: KD Anderson & Associates, Inc., 2018.

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance prior to Mitigation	Mitigation Measures	Level of Significance after Mitigation
4. Noise			
4-3 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.	S	*4-3(a)* *A Blasting Plan for construction shall be prepared and submitted to the County Planning Services Division at least ten (10) days prior to initiation of construction activities. The plan shall include the following:* ***(Note: No changes to the remainder of the mitigation measure are proposed or necessary; thus, the remainder of the mitigation measure has not been reproduced here.)***	LS
IX-5. Create or contribute runoff water which would include substantial additional sources of polluted water? (ESD) **IX-6. Otherwise substantially degrade surface water quality?(ESD)** **IX-7. Otherwise substantially degrade ground water quality? (EHS)**	S	*MM IX-5:* *The Improvement Plans shall show water quality treatment facilities/Best Management Practices (BMPs) designed according to the guidance of the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction, for New Development / Redevelopment, and for Industrial and Commercial (or other similar source as approved by the Engineering and Surveying Division (ESD) such as the Stormwater Quality Design Manual for the Sacramento and South Placer Regions).* *Storm drainage from on- and off-site impervious surfaces (including roads) shall be collected and routed through specially designed catch basins, vegetated swales, vaults, infiltration basins, water quality basins, filters, etc. for entrapment of sediment, debris and oils/greases or other identified pollutants, as approved by the Engineering and Surveying Division (ESD). BMPs shall be designed in*	LS

TABLE 2-2
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Level of Significance prior to Mitigation	Mitigation Measures	Level of Significance after Mitigation
		*accordance with the ~~(**CHOOSE ONE:** West **OR** East)~~ Placer Storm Water Quality Design Manual for sizing of permanent post-construction Best Management Practices for stormwater quality protection. No water quality facility construction shall be permitted within any identified wetlands area, floodplain, or right-of-way, except as authorized by project approvals.* *All permanent BMPs shall be maintained as required to ensure effectiveness. The applicant shall provide for the establishment of vegetation, where specified, by means of proper irrigation. Proof of on-going maintenance, such as contractual evidence, shall be provided to ESD upon request. The project owners/permittees shall provide maintenance of these facilities and annually report a certification of completed maintenance to the County DPWF Stormwater Coordinator, unless, and until, a County Service Area is created and said facilities are accepted by the County for maintenance. Contractual evidence of a monthly parking lot sweeping and vacuuming, and catch basin cleaning program shall be provided to the ESD upon request. Failure to do so will be grounds for discretionary permit revocation. Prior to Improvement Plan approval, easements shall be created and offered for dedication to the County for maintenance and access to these facilities in anticipation of possible County maintenance.*	

4. MITIGATION MONITORING AND REPORTING PROGRAM

4 MITIGATION MONITORING AND REPORTING PROGRAM

4.1 Introduction

Section 15097 of the California Environmental Quality Act (CEQA) requires all State and local agencies to establish monitoring or reporting programs for projects approved by a public agency whenever approval involves the adoption of either a "mitigated negative declaration" or specified environmental findings related to environmental impact reports.

The following is the Mitigation Monitoring and Reporting Program (MMRP) for the Quarry Ridge project (proposed project). The intent of the MMRP is to ensure implementation of the mitigation measures identified within the Environmental Impact Report (EIR) for the proposed project. Unless otherwise noted, the cost of implementing the mitigation measures as prescribed by this MMRP shall be funded by the applicant.

4.2 Compliance Checklist

The MMRP contained herein is intended to satisfy the requirements of CEQA as they relate to the EIR and the Initial Study prepared for the proposed project. This MMRP is intended to be used by Placer County staff and mitigation monitoring personnel to ensure compliance with mitigation measures during project implementation. Mitigation measures identified in this MMRP were developed in the EIR and Initial Study.

The EIR presents a detailed set of mitigation measures that will be implemented throughout the lifetime of the project. Mitigation is defined by CEQA Guidelines, Section 15370, as a measure that:

- Avoids the impact altogether by not taking a certain action or parts of an action;
- Minimizes impacts by limiting the degree or magnitude of the action and its implementation;
- Rectifies the impact by repairing, rehabilitating, or restoring the impacted environment;
- Reduces or eliminates the impact over time by preservation and maintenance operations during the life of the project; or
- Compensates for the impact by replacing or providing substitute resources or environments.

The intent of the MMRP is to ensure the implementation of adopted mitigation measures. The MMRP will provide for monitoring of construction activities as necessary and in-the-field identification and resolution of environmental concerns.

Monitoring and documenting the implementation of mitigation measures will be coordinated by Placer County. The table attached to this report identifies the mitigation measure, the monitoring action for the mitigation measure, the responsible party for the monitoring action, and timing of the monitoring action. The applicant will be responsible for fully understanding and effectively implementing the mitigation measures contained within the MMRP. The County will be responsible for monitoring compliance.

4.3 Mitigation Monitoring and Reporting Program

The following table indicates the mitigation measure number, the impact the measure is designed to address, the measure text, the monitoring agency, implementation schedule, and an area for sign-off indicating compliance.

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
Chapter 4 – Noise					
4-2	Exposure of persons to or generation of non-transportation noise levels in excess of standards established in the local General Plan, Community Plan or noise ordinance, or applicable standards of other agencies.	*4-2(a) Prior to issuance of building permits for the proposed project, if rooftop condenser HVAC units are proposed on-site, building plans shall show that rooftop mechanical equipment will be shielded to the north by parapets.*	Placer County Community Development Resources Agency	Prior to issuance of building permits	
		4-2(b) Prior to issuance of building permits for the proposed project, if ground-mounted HVAC equipment is proposed on-site, the building plans shall demonstrate that all ground-mounted HVAC equipment will be located 100 feet or further from the northern site boundary. In addition, the building plans shall show that ground-mounted HVAC equipment associated with Building 4 will be located on the west side of the building, breaking the line of sight relative to the eastern project site boundary. In addition, ground-mounted HVAC equipment associated with each of the four proposed buildings shall be located 100 feet or greater from the nearest property lines to the north of the project site.	Placer County Community Development Resources Agency	Prior to issuance of building permits	
4-3	Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.	*4-3(a) A Blasting Plan for construction shall be prepared and submitted to the County Planning Services Division at least ten (10) days prior to any scheduled blasting activities. The plan shall include the following:*	Placer County Planning Services Division	At least ten (10) days prior to any scheduled blasting activities	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		1. The Blasting Plan shall be consistent with the County General Plan Noise Element's Policy 9.A.4. *2. Primary components of the Blasting Plan shall include:* *a. Identification of blast officer;* *b. Scaled drawings of blast locations, and neighboring buildings, streets, or other locations which could be inhabited;* *c. Blasting notification procedures, lead times, and lists of those notified. Public notification to potentially affected vibration receptors describing the expected extent and duration of the blasting;* *d. Description of means for transportation and on-site storage and security of explosives in accordance with local, State and federal regulations;* *e. Minimum acceptable weather conditions for blasting and safety provisions for potential stray current (if electric detonation);* *f. Traffic control standards and traffic safety measures (if*			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		applicable); *g. Requirements for personal protective equipment;* *h. Minimum standoff distances and description of blast impact zones and procedures for clearing and controlling access to blast danger;* *i. Procedures for handling, setting, wiring, and firing explosives, as well as procedures for handling misfires per federal code;* *j. Type and quantity of explosives and description of detonation device. Sequence and schedule of blasting rounds, including general method of excavation, lift heights, etc.;* *k. Methods of matting or covering of blast area to prevent flyrock and excessive air blast pressure;* *l. Description of blast vibration and air blast monitoring programs;* *m. Dust control measures in compliance with applicable air pollution control regulations (to interface with general construction dust control plan);*			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		n. Emergency Action Plan to provide emergency telephone numbers and directions to medical facilities. Procedures for action in the event of injury; *o. Material Safety Data Sheets for each explosive or other hazardous materials to be used;* *p. Evidence of licensing, experience, and qualifications of blasters; and* *q. Description of insurance for the blasting work.* *3. A Blast Survey Workplan shall be prepared by the blaster. The Plan shall establish vibration limits in order to protect structures from blasting activities and identify specific monitoring points. At a minimum, a pre-blast survey shall be conducted of any potentially affected structures and underground utilities within 500 feet of a blast area, as well as the nearest residential structure, prior to blasting. The survey shall include visual inspection of the structures, documentation of structures by means of photographs, video, and a level survey of the ground floor of structures or the crown of major and critical utility lines, and these shall be*			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		submitted to the County. This documentation shall be reviewed with the individual owners prior to any blasting operations. The County and impacted property owners shall be notified at least 48 hours prior to the visual inspections. *4. Vibration and settlement threshold criteria (for example peak particle velocity of 0.5 inches per second) shall be submitted by the blaster to the County for review and approval during the design process. If the settlement or vibration criteria are exceeded at any time or if damage is observed at any of the structures or utilities, then blasting shall immediately cease and the County immediately notified. The stability of segmental retaining walls, existing slopes, creek canals, etc. shall be monitored and any evidence of instability due to blasting operations shall result in immediate termination of blasting. The blaster shall modify the blasting procedures or use alternative means of excavating in order to reduce the vibrations to below the threshold values, prevent further settlement, slope instability, and prevent further damage.*			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		5. Air blast overpressure limits shall be set and monitoring shall be conducted at the property line closest to the blast and at other above ground structures identified in the Plan for vibration monitoring. Air blast overpressure limits shall be in accordance with applicable law and shall be established to prevent damage to adjacent properties, new construction, and to prevent injuries to persons on-site and off-site. *6. Prior to full-scale production blasting, the blaster shall conduct a series of test blasts at the sites where blasting is to occur. The tests shall start with reduced charge weights and shall increase incrementally to that of a full-scale production round. Monitoring shall be conducted as described in the Plan.* *7. Post-construction monitoring of structures to identify (and repair if necessary) all damage, if any, from blasting vibrations. Any damage shall be documented by photograph, video, etc. This documentation shall be reviewed with the individual property owners.* *8. Reports of the results of the blast monitoring shall be provided to the*			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		County, the local fire department, and owners of any buried utilities on or adjacent to the site within 24 hours following blasting. Reports documenting damage, excessive vibrations, etc. shall be provided to the County and impacted property owners.			
		4-3(b) Include the following standard note on the Improvement Plans: In the event of blasting, three copies of an approved plan and permit shall be submitted to the County not less than 10 days prior to the scheduled blasting. A blasting permit must be obtained from the Placer County Sheriff's Office for all blasting to be done in Placer County. Additionally, the County must be notified and give approval for all blasting done within County right-of-way. If utility companies are in the vicinity where blasting is to occur, the appropriate utility companies must be notified to determine possible damage prevention measures. If blasting is required, the blasting schedule shall be approved by the County and any other utility companies with facilities in the area prior to the commencement of work.	Placer County Engineering and Surveying Division Placer County Sheriff's Office	Prior to approval of Improvement Plans	
4-4	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above	*4-4(a) The following notes shall be included in the project's Improvement Plans. Exceptions to allow expanded construction activities shall be reviewed on a case-by-case basis as*	Placer County Community Development Resource	Prior to approval of Improvement Plans	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
	levels existing without the project.	*determined by the Community Development Resource Agency Director and/or County Engineer.* • *Noise-generating construction activities (e.g. construction, alteration or repair activities), including truck traffic coming to and from the project site for any purpose, shall be limited to the hours outlined in Placer County Board of Supervisors Minute Order 90-08; specifically, a) Monday through Friday, 6:00 AM to 8:00 PM (during daylight savings); b) Monday through Friday, 7:00 AM to 8:00 PM (during standard time); and c) Saturdays, 8:00 AM to 6:00 PM.* • *Project construction activities should be limited to daytime hours unless conditions warrant that certain construction activities occur during evening or early morning hours (i.e., extreme heat).* • *All noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with mufflers, air-inlet silencers where appropriate, and any other shrouds, shields, or other noise-reducing features in good operating condition that meet or exceed original factory*	Agency Placer County Planning Services Division		

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		specifications. Mobile or fixed "package" equipment (e.g., arc welders, air compressors) shall be equipped with shrouds and noise-control features that are readily available for that type of equipment. • *All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, State, or local agency shall comply with such regulations while in the course of project activity.* • *Electrically powered equipment shall be used instead of pneumatic or internal combustion-powered equipment, where feasible.* • *Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive receptors.* • *Construction site and access road speed limits shall be established and enforced during the construction period.* • *The use of noise-producing signals, including horns, whistles, alarms, and bells, shall be for safety warning purposes only.* • *Project-related public address or*			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
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		music systems shall not be audible at any adjacent receptor. *4-4(b) Implement Mitigation Measures 4-3(a) and 4-3(b).*	See Mitigation Measures 4-3(a) and 4-3(b)	See Mitigation Measures 4-3(a) and 4-3(b)	
Chapter 5 – Transportation and Circulation					
5-1	Traffic related to construction activities.	*5-1 The Improvement Plans shall include a striping and signing plan and shall include all on- and off-site traffic control devices. Prior to the commencement of construction, a construction signing and traffic control plan shall be provided to the Engineering and Surveying Division for review and approval. The construction signing and traffic control plan shall include (but not be limited to) items such as:* • *Guidance on the number and size of trucks per day entering and leaving the project site;* • *Identification of arrival/departure times that would minimize traffic impacts;* • *Approved truck circulation patterns;* • *Locations of staging areas;* • *Methods for partial/complete street closures (e.g., timing, signage, location and duration restrictions);*	Placer County Engineering and Surveying Division	Prior to approval of Improvement Plans and prior to commencement of construction	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		• *Criteria for use of flaggers and other traffic controls;* • *Preservation of safe and convenient passage for bicyclists and pedestrians through/around construction areas;* • *Monitoring for roadbed damage and timing for completing repairs;* • *Limitations on construction activity during peak/holiday weekends and special events;* • *Preservation of emergency vehicle access;* • *Coordination of construction activities with construction of other projects that occur concurrently in Granite Bay to minimize potential additive construction traffic disruptions, avoid duplicative efforts (e.g., multiple occurrences if similar signage), and maximize effectiveness of traffic mitigation measures (e.g., joint employee alternative transportation programs);* • *Removing traffic obstructions during emergency evacuation events; and* • *Providing a point of contact for Granite Bay residents and guests to obtain construction information, have questions answered, and convey complaints.*			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
5-2	Study intersections under the Existing Plus Project Condition.	*5-2 The Improvement Plans for the initial development phase shall show the construction of a raised median at the existing intersection of Douglas Blvd. / Woodgrove Way / Quail Oaks Drive that will prohibit northbound and southbound left turn movements onto Douglas Blvd. from Woodgrove Way and Quail Oaks Drive. In addition, the raised median shall allow for eastbound and westbound left turn movements onto Quail Oaks Drive and Woodgrove Way from Douglas Blvd. The construction of the new raised median shall also require the reconstruction of the existing landscaped median to a narrower, stamped, colored, concrete median that will provide a 12-foot-wide eastbound left turn lane along Douglas Blvd. The design shall be to the satisfaction of the Department of Public Works and shall conform to any applicable criteria specified in the latest version of the Caltrans Highway Design Manual for a design speed of 55 miles per hour (mph), unless an alternative is approved by the Department of Public Works.* ***(ESD)***	Placer County Department of Public Works Placer County Engineering and Surveying Division	Prior to approval of Improvement Plans	
5-6	Increased impacts to vehicle safety due to roadway design features (i.e. sharp curves or dangerous intersections) or incompatible uses	*5-6 The Improvement Plans shall show the construction of an increase in existing turn lane pocket length of a total of approximately 100 combined feet for the existing left turn lane approaching Berg Street (eastbound) and the existing left turn lane approaching Granite*	Placer County Department of Public Works Placer County Engineering and	Prior to approval of Improvement Plans	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
	(e.g., farm equipment).	*Estates Drive (westbound) along Douglas Blvd. The minimum increase in length for the existing left turn lane approaching Granite Estates Drive shall be 50 feet. The design shall be to the satisfaction of the Department of Public Works and shall conform to any applicable criteria specified in the latest version of the Caltrans Highway Design Manual for a design speed of 55 miles per hour (mph), unless an alternative is approved by the Department of Public Works.*	Surveying Division		
5-8	Study intersections under the Cumulative Plus Project Condition.	*5-8* *Prior to issuance of any Building Permits, this project shall be subject to the payment of traffic impact fees that are in effect in this area (Granite Bay), pursuant to applicable Ordinances and Resolutions. The applicant is notified that the following traffic mitigation fee(s) shall be required and shall be paid to Placer County DPW:* *A. County Wide Traffic Limitation Zone: Article 15.28.010, Placer County Code* *B. South Placer Regional Transportation Authority (SPRTA)* *The current total combined estimated fee is $504,715.52 (based on $7,426 per DUE and 17,000 square feet of office use) The fees were calculated using the information supplied. If either the use or the square footage changes,*	Placer County Department of Public Works	Prior to issuance of any Building Permits	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		then the fees will change. The fees to be paid shall be based on the fee program in effect at the time the application is deemed complete.			
Initial Study					
I-4	Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area.	<u>MM I-1</u>: *Concurrent with submittal of Improvement Plans, a detailed lighting and photometric plan shall be submitted to the DRC for review and approval. The lighting and photometric plan shall include the following provisions:* • *Parking lot lighting shall be accomplished with pole mounted decorative LED luminaries. The parking lot shall be illuminated by using 14-foot decorative post-top type LED fixtures mounted on metal poles. The pole color shall be such that the pole will blend into the landscape (i.e., black, bronze, or dark bronze). Such luminaires shall also be provided with house side shields to minimize light pollution to the areas outside of the property line.* • *The parking lot lighting shall be photocell controlled to provide automatic light reduction by a minimum of 50 percent between the hours of 11 PM and 6 AM. The*	Placer County Community Development Resource Agency Placer County Planning Services Division	Concurrent with submittal of Improvement Plans	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		site lighting shall be dimmed to lower level automatically. • *Landscape lighting may be used to visually accentuate and highlight ornamental shrubs and trees adjacent to buildings and in open spaces. Lighting intensity will be of a level that only highlights shrubs and trees and will not impose glare on any pedestrian or vehicular traffic.* • *Architectural lighting shall articulate and animate the particular building design and visibly promote and reinforce pedestrian movement. Indirect wall lighting or "wall washing" and interior illumination (glow) is encouraged in the expression of the building.* • *Wall-mounted light fixtures will be permitted only if they have a 90 degree cut off to prevent glare.* • *No lighting is permitted on top of structures.* • *Pedestrian routes should utilize bollard type lighting rather than pole lights and should be integrated into building and landscape design. Pedestrian-*			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		scale light fixtures shall be durable and vandal resistant.			
IV-1 IV-2	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the California Department of Fish & Game, U.S. Fish & Wildlife Service or National Oceanic and Atmospheric Administration Fisheries. Substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number of restrict the range of an endangered, rare, or	*<u>MM IV-1</u>: If ground disturbance activities take place during the breeding/nesting season (February 1 through August 31), disturbance of nesting activities could occur. Take of any active raptor nest, as well as nests of other birds protected by the Migratory Bird Treaty Act, is prohibited under California Fish and Game Code sections 3503, 3503.5, and 3513. To avoid impacts to nesting birds, necessary vegetation removal shall occur outside of the typical nesting season (February 1 through August 31). If vegetation removal must occur at any time during the typical nesting season, a pre-construction survey shall be conducted by a qualified biologist no more than 15 days prior to initiation of the proposed development activities.* *The qualified biologist shall conduct a focused survey for active nests of raptors and migratory birds within and in the vicinity of the proposed project site (up to 100 feet beyond the project site boundaries, where possible). If active nests are found, trees/shrubs with nesting birds shall not be disturbed until abandoned by the birds as determined by a*	Placer County Community Development Resource Agency Placer County Planning Services Division	If ground disturbance activities take place during the breeding/nesting season (February 1 through August 31), then no more than 15 days prior to initiation of the proposed development activities	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
	threatened species.	*qualified biologist. If applicable, vegetation removal shall be restricted to a period following fledging of chicks, which typically occurs between late July and early August.* *If an active nest is located within 100 feet (200 feet for raptors) of construction activities, other restrictions may include establishment of exclusion zones (no ingress of personnel or equipment at a minimum radius of 100 feet or 200 feet, as appropriate, around the nest or alteration of the construction schedule. If construction activities cause the nesting bird(s) to vocalize, make defensive flights at intruders, get up from a brooding position, or fly off the nest, then the exclusionary buffer shall be increased, as determined by the qualified biologist, such that activities are far enough from the nest to stop the agitated behavior. The exclusionary buffer shall remain in place until the young have fledged or as otherwise determined by a qualified biologist.*			
IV-7	Conflict with any local policies or ordinances that protect biological resources, including oak woodland resources.	*MM IV-2:* *Prior to any removal of significant trees (equal to, or greater than, six inches DBH or 10 inches DBH aggregate for multi-trunked trees), the project applicant shall obtain a tree removal permit from Placer*	Placer County Community Development Resource Agency	Prior to any removal of significant trees	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		County. In conjunction with submittal of a tree removal permit application, the applicant shall submit a site plan showing all protected trees proposed for removal. In accordance with Chapter 12.16.080 of the Placer County Code, the applicant shall comply with any permit conditions required by the Planning Services Division, which shall include one of the following requirements: 1:1 tree replacement using five-gallon size trees or greater, or in-lieu fees, or a combination of both, in accordance with Section 12.16.080 of the Placer County Code.	Placer County Planning Services Division		
		MM IV-3: Prior to Improvement Plan approval, the plans shall include a list of tree protection methods, for review and approval by the Planning Services Division. The list of tree protection methods shall be implemented during construction of the project. The list of tree protection methods shall include, but not limited to, the following: • *The applicant shall install a four-foot tall, brightly colored (yellow or orange), synthetic mesh material fence around all oak trees to be preserved that are greater than six inches DBH (or 10 inches DBH aggregate for*	Placer County Planning Services Division	Prior to Improvement Plan approval	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		multi-trunked trees). The fencing shall delineate an area that is at least the radius of which is equal to the largest radius of the protected tree's drip line plus one foot. The fence shall be installed prior to any site preparation or construction equipment being moved onsite or any site preparation or construction activities taking place. Development of this site, including grading, shall not be allowed until this condition is satisfied. Any encroachment within the areas listed above, including within driplines of trees to be saved, must first be approved by a designated representative of the Development Review Committee (DRC). Grading, clearing, or storage of equipment or machinery may not occur until a representative of the DRC has inspected and approved all temporary construction fencing. Trees shall be preserved where feasible. This may include the use of retaining walls, planter islands, or other techniques commonly associated with tree preservation. The Improvement			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		Plans shall indicate the location of the fencing and include a note describing the fencing requirements consistent with this mitigation measure. • *The project applicant shall implement the following guidelines before and during grading and construction for protection of all oak trees to be preserved:* o *Plans and specifications shall clearly state protection procedures for oak trees on the project site. The specifications shall also include a provision for remedies if oak trees are damaged;* o *Before construction commences, those oak trees within 25 feet of construction sites shall be pruned by an ASI Certified Arborist and the soil aerated and fertilized;* o *Vehicles, construction equipment, mobile offices, or materials shall not be parked, stored, or operated within the*			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		driplines of oak trees to be preserved; o *Cuts and fills around trees shall be avoided where feasible;* o *Soil surface removal greater than one foot shall not occur within the driplines of oak trees to be preserved. Cuts shall not occur within five feet of their trunks;* o *Earthen fill greater than one foot deep shall not be placed within the driplines of oak trees to be preserved, and fill shall not be placed within five feet of their trunks;* o *Underground utility line trenching shall not be placed within the driplines of oak trees to be preserved where feasible without first obtaining approval from a designated representative of the DRC. If it is necessary to install underground utilities within the driplines of oak*			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		trees, boring or drilling rather than trenching shall be used; o *Paving shall not be placed in the vicinity of oak trees to be preserved (at a minimum, within the dripline of any oak tree) without first obtaining approval from a designated representative of the DRC; and* o *Irrigation lines or sprinklers shall not be allowed within the dripline of native oak trees.* • *If any of the on-site Significant Trees are heavily damaged during construction activities associated with the proposed project, the project applicant shall pay an in-lieu fee for the damaged tree(s) in accordance with Section 12.16.080 of the Placer County Code. Payment of such fees shall be ensured as a standard condition of approval by the Planning Services Division.*			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
V-2	Substantially cause adverse change in the significance of a unique archaeological resource pursuant to CEQA Guidelines, Section 15064.5.	<u>MM V-1</u>: *If any unknown prehistoric or historic artifacts, or other indications of archaeological resources are inadvertently found during ground-disturbing activities associated with the proposed project, all work within 100 feet of the find shall cease and the applicant shall notify the Placer County Community Development Resources Agency and retain an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology, as appropriate, to evaluate the finds. If the resource is determined to be eligible for inclusion in the California Register Historical Resources and project impacts cannot be avoided, data recovery shall be undertaken. Data recovery efforts could range from rapid photographic documentation to extensive excavation depending upon the physical nature of the resource. The degree of effort shall be determined at the discretion of a qualified archaeologist and shall be sufficient to recover data considered important to the area's history and/or prehistory. The language of this mitigation measure shall be included on any future grading plans, utility plans, and improvement drawings approved by the Placer County Engineering and Surveying Division for*	Placer County Community Development Resources Agency Placer County Planning Services Division	During ground-disturbing activities	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		the proposed project.			
V-5	Disturb any human remains, including those interred outside of dedicated cemeteries.	*MM V-2:* *If human remains are encountered on the proposed project site during construction activities, all work within 100 feet of the find must cease, and any necessary steps to ensure the integrity of the immediate area must be taken. The Placer County Coroner shall be immediately notified. If the Coroner determines the remains are of Native American origin, the Coroner shall notify the Native American Heritage Commission (NAHC) within 24 hours. The NAHC shall determine and notify a Most Likely Descendent (MLD). Further actions shall be determined, in part, by the desires of the MLD. The MLD shall be afforded 48 hours to make recommendations regarding the disposition of the remains following notification from the NAHC of the discovery. If the MLD does not make recommendations within 48 hours, the owner shall, with appropriate dignity, reinter the remains in an area of the property secure from further disturbance. Alternatively, if the owner does not accept the MLD's recommendations, the owner or the descendent may request mediation by the NAHC.*	Placer County Community Development Resource Agency Placer County Planning Services Division Placer County Coroner Native American Heritage Commission	During construction	
VI-2	Result in significant disruptions, displacements,	*MM VI-1:* *The applicant shall prepare and submit Improvement Plans, specifications and cost estimates (per the requirements of*	Placer County Engineering and Surveying	Prior to approval of Improvement Plans	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
VI-3	compaction or overcrowding of the soil. Result in substantial change in topography or ground surface relief features.	*Section II of the Land Development Manual [LDM] that are in effect at the time of submittal) to the Engineering and Surveying Division (ESD) for review and approval of each project phase. The plans shall show all physical improvements as required by the conditions for the project as well as pertinent topographical features both on and off site. All existing and proposed utilities and easements, on site and adjacent to the project, which may be affected by planned construction, shall be shown on the plans. All landscaping and irrigation facilities within the public right-of-way (or public easements), or landscaping within sight distance areas at intersections, shall be included in the Improvement Plans. The applicant shall pay plan check and inspection fees and, if applicable, Placer County Fire Department improvement plan review and inspection fees, with the 1st Improvement Plan submittal. (NOTE: Prior to plan approval, all applicable recording and reproduction costs shall be paid). The cost of the above-noted landscape and irrigation facilities shall be included in the estimates used to determine these fees. It is the applicant's responsibility to obtain all required agency signatures on the plans and to secure department approvals. If the*	Division		

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		Design/Site Review process and/or Development Review Committee (DRC) review is required as a condition of approval for the project, said review process shall be completed prior to submittal of Improvement Plans. Record drawings shall be prepared and signed by a California Registered Civil Engineer at the applicant's expense and shall be submitted to the ESD in both hard copy and electronic versions in a format to be approved by the ESD prior to acceptance by the County of site improvements. *Conceptual landscape plans submitted prior to project approval may require modification during the Improvement Plan process to resolve issues of drainage and traffic safety.* *Any Building Permits associated with this project shall not be issued until, at a minimum, the Improvement Plans are approved by the Engineering and Surveying Division.*			
		MM VI-2: *The Improvement Plans shall show all proposed grading, drainage improvements, vegetation and tree removal and all work shall conform to provisions of the County Grading*	Placer County Engineering and Surveying Division	Prior to approval of Improvement Plans	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		Ordinance (Ref. Article 15.48, Placer County Code) and Stormwater Quality Ordinance (Ref. Article 8.28, Placer County Code) that are in effect at the time of submittal. No grading, clearing, or tree disturbance shall occur until the Improvement Plans are approved and all temporary construction fencing has been installed and inspected by a member of the Development Review Committee (DRC). All cut/fill slopes shall be at a maximum of 2:1 (horizontal: vertical) unless a soils report supports a steeper slope and the Engineering and Surveying Division (ESD) concurs with said recommendation. *The applicant shall revegetate all disturbed areas. Revegetation, undertaken from April 1 to October 1, shall include regular watering to ensure adequate growth. A winterization plan shall be provided with project Improvement Plans. It is the applicant's responsibility to ensure proper installation and maintenance of erosion control/winterization before, during, and after project construction. Soil stockpiling or borrow areas, shall have proper erosion control measures applied for the duration of the construction as specified in the Improvement Plans. Provide for*	Development Review Committee		

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		erosion control where roadside drainage is off of the pavement, to the satisfaction of the Engineering and Surveying Division (ESD). *The applicant shall submit to the ESD a letter of credit or cash deposit in the amount of 110 percent of an approved engineer's estimate for winterization and permanent erosion control work prior to Improvement Plan approval to guarantee protection against erosion and improper grading practices. One year after the County's acceptance of improvements as complete, if there are no erosion or runoff issues to be corrected, unused portions of said deposit shall be refunded to the project applicant or authorized agent.* *If, at any time during construction, a field review by County personnel indicates a significant deviation from the proposed grading shown on the Improvement Plans, specifically with regard to slope heights, slope ratios, erosion control, winterization, tree disturbance, and/or pad elevations and configurations, the plans shall be reviewed by the DRC/ESD for a determination of substantial conformance to the project approvals prior to any further work proceeding. Failure of the*			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		DRC/ESD to make a determination of substantial conformance may serve as grounds for the revocation/modification of the project approval by the appropriate hearing body.			
		MM VI-3: The Improvement Plan submittal shall include a final geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer for Engineering and Surveying Division (ESD) review and approval. The report shall address and make recommendations on the following: *A. Road, pavement, and parking area design;* *B. Structural foundations, including retaining wall design (if applicable);* *C. Grading practices;* *D. Erosion/winterization;* *E. Special problems discovered on-site, (i.e., groundwater, expansive/unstable soils, potential for smectite clays etc.); and* *F. Slope stability.* *Once approved by the ESD, two copies of the final report shall be provided to the ESD and one copy to the Building Services*	Placer County Engineering and Surveying Division	Prior to approval of Improvement Plans	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		Division for its use. It is the responsibility of the developer to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.			
VI-5 VI-6	Result in any significant increase in wind or water erosion of soils, either on or off the site. Result in changes in deposition or erosion or changes in siltation which may modify the channel of a river, stream, or lake.	*MM VI-4*: *The Improvement Plans shall show water quality treatment facilities/Best Management Practices (BMPs) designed according to the guidance of the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction, for New Development / Redevelopment, and for Industrial and Commercial (or other similar source as approved by the Engineering and Surveying Division (ESD).* *Storm drainage from on- and off-site impervious surfaces (including roads) shall be collected and routed through specially designed catch basins, vegetated swales, vaults, infiltration basins, water quality basins, filters, etc. for entrapment of sediment, debris and oils/greases or other identified pollutants, as approved by the Engineering and Surveying Division (ESD). BMPs shall be designed in accordance with the West Placer Storm Water Quality Design Manual for sizing of permanent post-construction Best*	Placer County Engineering and Surveying Division	Prior to approval of Improvement Plans	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		Management Practices for stormwater quality protection. No water quality facility construction shall be permitted within any identified wetlands area, floodplain, or right-of-way, except as authorized by project approvals.			
		MM VI-5: Prior to construction commencing, the applicant shall provide evidence to the Engineering and Surveying Division of a WDID number generated from the State Regional Water Quality Control Board's Stormwater Multiple Application & Reports Tracking System (SMARTS). This serves as the Regional Water Quality Control Board approval or permit under the National Pollutant Discharge Elimination System (NPDES) construction stormwater quality permit.	Placer County Engineering and Surveying Division	Prior to commencement of construction	
IX-3 IX-4	Substantially alter the existing drainage pattern of the site or area. Increase the rate or amount of surface runoff.	*MM IX-1: As part of the improvement plan submittal process, the preliminary Drainage Report provided during environmental review shall be submitted in final format. The final Drainage Report may require more detail than that provided in the preliminary report, and will be reviewed in concert with the improvement plans to confirm conformity between the two. The report shall be prepared by a Registered Civil Engineer and shall, at a minimum, include: A written text addressing existing*	Placer County Engineering and Surveying Division	Prior to approval of Improvement Plans	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		conditions, the effects of the proposed improvements, all appropriate calculations, watershed maps, changes in flows and patterns, and proposed on- and off-site improvements and drainage easements to accommodate flows from this project. The report shall identify water quality protection features and methods to be used during construction, as well as long-term post-construction water quality measures. The final Drainage Report shall be prepared in conformance with the requirements of Section 5 of the Land Development Manual and the Placer County Storm Water Management Manual that are in effect at the time of improvement plan submittal			
		MM IX-2: The final Drainage Report shall evaluate the following off-site drainage facilities for condition and capacity and shall be upgraded, replaced, or mitigated as specified by the Engineering and Surveying Division. The Improvement Plans shall provide details of the location and specifications of all proposed off-site drainage facility improvements and drainage easements to accommodate the improvements. Prior to Improvement Plan or Final Parcel Map(s) approval, the applicant shall obtain all drainage	Placer County Engineering and Surveying Division	Prior to approval of Improvement Plans	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		easements and necessary permits required by outside agencies: *A) Shed A - The existing 18-inch culvert at the southeastern site boundary that conveys flows under Berg Street and the existing roadside ditch immediately downstream of the culvert.* *B) Shed B - The existing roadside ditch along Douglas Boulevard and the existing culvert located on the adjacent parcel's frontage approximately 100 feet east of the eastern project boundary.*			
		MM IX-3: This project is subject to the one-time payment of drainage improvement and flood control fees (Strap Ravine) pursuant to the "Dry Creek Watershed Interim Drainage Improvement Ordinance" (Ref. Chapter 15, Article 15.32, Placer County Code.) The current estimated development fee is $1,950 per gross parcel acreage, payable to the Engineering and Surveying Division prior to Building Permit issuance. The fees to be paid shall be based on the fee program in effect at the time that the application is deemed complete.	Placer County Engineering and Surveying Division	Prior to Building Permit issuance	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		MM IX-4: This project is subject to payment of annual drainage improvement and flood control fees (Strap Ravine) pursuant to the "Dry Creek Watershed Interim Drainage Improvement Ordinance" (Ref. Chapter 15, Article 15.32, Placer County Code). Prior to Building Permit issuance, the applicant shall cause the subject property to become a participant in the existing Dry Creek Watershed County Service Area for purposes of collecting these annual assessments. The current estimated annual fee is $252 per gross parcel acreage.	Placer County Engineering and Surveying Division	Prior to Building Permit issuance	
IX-5 IX-6 IX-7	Create or contribute runoff water which would include substantial additional sources of polluted water. Otherwise substantially degrade surface water quality. Otherwise substantially degrade ground water quality.	*MM IX-5: The Improvement Plans shall show water quality treatment facilities/Best Management Practices (BMPs) designed according to the guidance of the California Stormwater Quality Association Stormwater Best Management Practice Handbooks for Construction, for New Development / Redevelopment, and for Industrial and Commercial (or other similar source as approved by the Engineering and Surveying Division (ESD) such as the Stormwater Quality Design Manual for the Sacramento and South Placer Regions).* *Storm drainage from on- and off-site impervious surfaces (including roads)*	Placer County Engineering and Surveying Division	Prior to approval of Improvement Plans	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		shall be collected and routed through specially designed catch basins, vegetated swales, vaults, infiltration basins, water quality basins, filters, etc. for entrapment of sediment, debris and oils/greases or other identified pollutants, as approved by the Engineering and Surveying Division (ESD). BMPs shall be designed in accordance with the West Placer Storm Water Quality Design Manual for sizing of permanent post-construction Best Management Practices for stormwater quality protection. No water quality facility construction shall be permitted within any identified wetlands area, floodplain, or right-of-way, except as authorized by project approvals. *All permanent BMPs shall be maintained as required to ensure effectiveness. The applicant shall provide for the establishment of vegetation, where specified, by means of proper irrigation. Proof of on-going maintenance, such as contractual evidence, shall be provided to ESD upon request. The project owners/permittees shall provide maintenance of these facilities and annually report a certification of completed maintenance to the County DPW Stormwater Coordinator, unless,*			

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		and until, a County Service Area is created and said facilities are accepted by the County for maintenance. Contractual evidence of a monthly parking lot sweeping and vacuuming, and catch basin cleaning program shall be provided to the ESD upon request. Failure to do so will be grounds for discretionary permit revocation. Prior to Improvement Plan approval, easements shall be created and offered for dedication to the County for maintenance and access to these facilities in anticipation of possible County maintenance.			
		MM IX-6: The Improvement Plans shall include the message details, placement, and locations showing that all storm drain inlets and catch basins within the project area shall be permanently marked/embossed with prohibitive language such as "No Dumping! Flows to Creek." or other language and/or graphical icons to discourage illegal dumping as approved by the Engineering and Surveying Division (ESD). ESD-approved signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, shall be posted at public access points along channels and creeks within the project area. The property owner or	Placer County Engineering and Surveying Division	Prior to approval of Improvement Plans	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		Property Owners' association is responsible for maintaining the legibility of stamped messages and signs.			
		<u>MM IX-7</u>: *The Improvement Plans shall show that all stormwater runoff shall be diverted around trash storage areas to minimize contact with pollutants. Trash container areas shall be screened or walled to prevent off-site transport of trash by the forces of water or wind. Trash containers shall not be allowed to leak and must remain covered when not in use.*	Placer County Engineering and Surveying Division	Prior to approval of Improvement Plans	
		<u>MM IX-8</u>: *This project is located within the permit area covered by Placer County's Small Municipal Separate Storm Sewer System (MS4) Permit (State Water Resources Control Board National Pollutant Discharge Elimination System (NPDES)). Project-related stormwater discharges are subject to all applicable requirements of said permit.* *The project shall implement permanent and operational source control measures as applicable. Source control measures shall be designed for pollutant generating activities or sources consistent with recommendations from the California Stormwater Quality Association (CASQA)*	Placer County Engineering and Surveying Division	Prior to approval of Improvement Plans	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		Stormwater BMP Handbook for New Development and Redevelopment, or equivalent manual, and shall be shown on the Improvement Plans. *The project is also required to implement Low Impact Development (LID) standards designed to reduce runoff, treat stormwater, and provide baseline hydromodification management as outlined in the West Placer Storm Water Quality Design Manual.*			
		MM IX-9: Per the State of California NPDES Phase II MS4 Permit, this project is a Regulated Project that creates and/or replaces 5,000 square feet or more of impervious surface. A final Storm Water Quality Plan (SWQP) shall be submitted, either within the final Drainage Report or as a separate document that identifies how this project will meet the Phase II MS4 permit obligations. Site design measures, source control measures, and Low Impact Development (LID) standards, as necessary, shall be incorporated into the design and shown on the Improvement Plans. In addition, per the Phase II MS4 permit, projects creating and/or replacing one acre or more of impervious surface are also required to demonstrate	Placer County Engineering and Surveying Division	Prior to approval of Improvement Plans	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
		hydromodification management of stormwater such that post-project runoff is maintained to equal or below pre-project flow rates for the 2 year, 24-hour storm event, generally by way of infiltration, rooftop and impervious area disconnection, bioretention, and other LID measures that result in post-project flows that mimic pre-project conditions.			
IX-12	Impact the watershed of important surface water resources, including but not limited to Lake Tahoe, Folsom Lake, Hell Hole Reservoir, Rock Creek Reservoir, Sugar Pine Reservoir, French Meadows Reservoir, Combie Lake, and Rollins Lake.	*Implement Mitigation Measures MM VI-1 through -5, MM IX-1, and MM IX-5 through -9.*	See Mitigation Measures MM VI-1 through -5, MM IX-1, and MM IX-5 through -9	See Mitigation Measures MM VI-1 through -5, MM IX-1, and MM IX-5 through -9	
XVIII-1	Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	*Implement Mitigation Measures MM V-1 and MM V-2.*	See Mitigation Measures MM V-1 and MM V-2	See Mitigation Measures MM V-1 and MM V-2	

MITIGATION MONITORING AND REPORTING PROGRAM QUARRY RIDGE PROJECT					
Impact Number	**Impact**	**Mitigation Measure**	**Monitoring Agency**	**Implementation Schedule**	**Sign-off**
XVIII-2	A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.				

APPENDIX

TRAFFIC IMPACT ANALYSIS

FOR

QUARRY RIDGE PROFESSIONAL OFFICE PARK

Placer County, CA

Prepared For:

RANEY PLANNING & MANAGEMENT
1501 Sports Drive
Sacramento, CA 95834

Prepared By:

KDAnderson & Associates, Inc.
3853 Taylor Road, Suite G
Loomis, CA 95650
(916) 660-1555

April 5, 2019

Job No. 5765-20

Quarry Ridge Office 4-1 2019.rpt

KD Anderson & Associates, Inc.

Transportation Engineers

TRAFFIC IMPACT ANALYSIS FOR
QUARRY RIDGE PROFESSIONAL OFFICE PARK
Placer County, CA

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APPENDIX **58**

TRAFFIC IMPACT ANALYSIS FOR
QUARRY RIDGE PROFESSIONAL OFFICE PARK
Placer County

INTRODUCTION

This report summarizes a traffic impact analysis prepared for the **Quarry Ridge Professional Office Park** project proposed in the Placer County community of Granite Bay. The proposed project will rezone 2.8 acres located at the northeast corner of the intersection of Douglas Blvd and Berg Street from RS to OP. The project proposes construction of up to four buildings totaling 17.0 ksf. The project will take access via full access driveway on Berg Street, and no access to Douglas Blvd is proposed.

Scope of Analysis

This analysis is intended to describe the traffic impacts of the project and to identify any circulation / roadway improvements needed to reduce project impacts to a level of insignificance. Toward this end, existing traffic conditions have been evaluated through observation of current weekday a.m. and p.m. peak hour traffic volumes and through review of daily traffic count information provided by Placer County. Future background cumulative traffic conditions have been quantified to two conditions. A short-term cumulative background condition assumed occupancy of other approved / pending projects, and a long term cumulative scenario makes use of Year 2040 data developed for the Granite Bay Circulation Element Update.

Based on initial direction from Placer County staff and the result of an initial screenline assessment this analysis focuses on traffic operations at the following nine (9) locations:

Sierra College Blvd / Douglas Blvd
Douglas Blvd / Woodgrove Way / Quail Oaks Drive
Douglas Blvd / Seeno Avenue
Douglas Blvd / Granite Estates Drive intersection
Douglas Blvd / Berg Street intersection
Douglas Blvd / Barton Road
Douglas Blvd / Sierra College Blvd
Barton Road / Eureka Road
Berg Street / new project access

Project impacts have been quantified and assessed in a manner that is consistent with Placer County policy. Probable project trip generation has been estimated by applying appropriate trip generation rates to the project's land use inventory, and comparable estimates have been made of site development under the current RS zoning. The distribution of project trips was assumed to follow the current travel patterns observed at the existing businesses in the area or based on community demographics. Utilizing the expected distribution, project trips were assigned to the study area street system via the access driveway identified in the proposed site plan. Finally,

roadway and intersection Levels of Service were re-calculated for "plus project" conditions to determine the anticipated impacts of the proposed development on both existing and future traffic conditions.

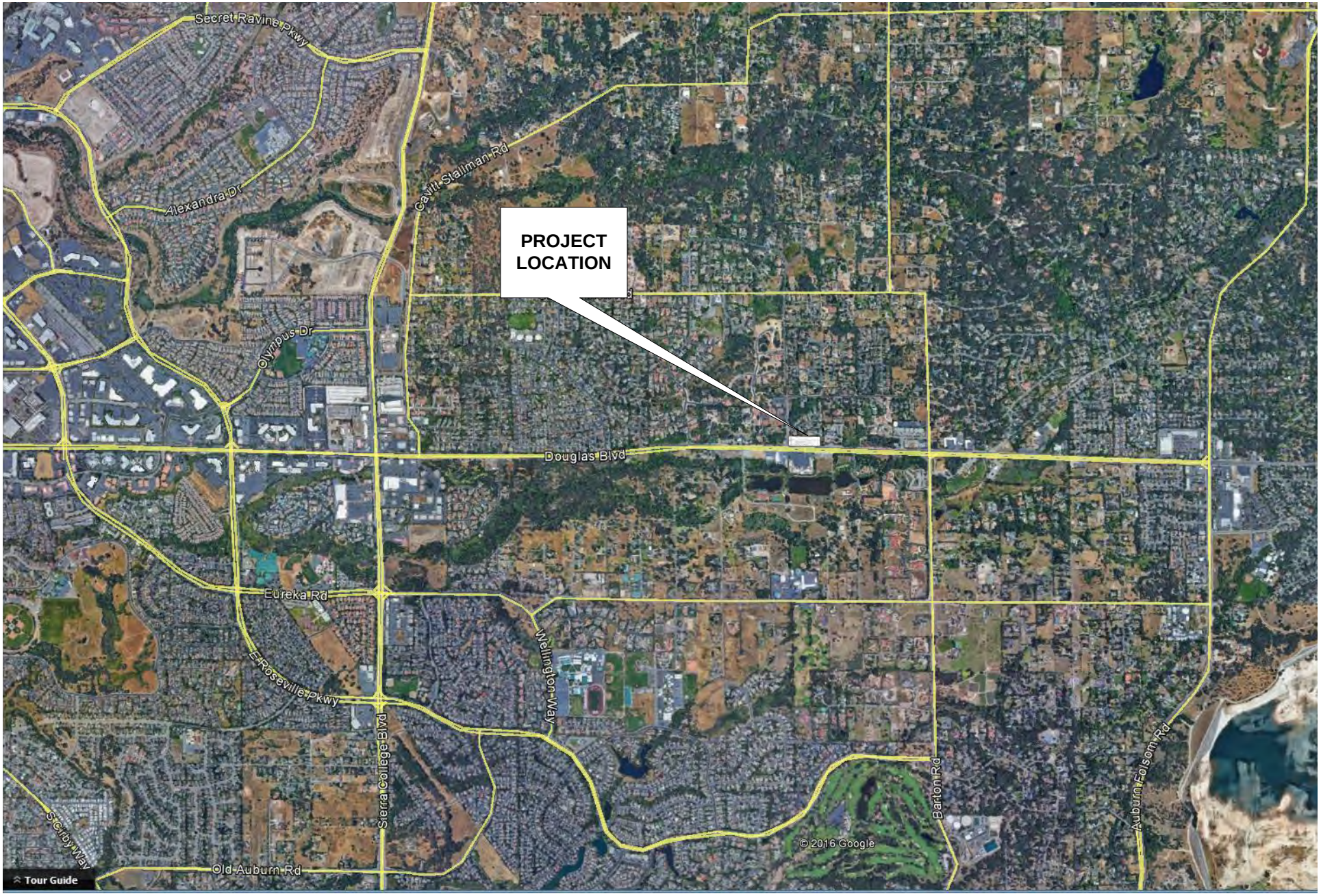
Project Description

The Quarry Ridge Offices project is located on the north side of Douglas Blvd just east of Berg Street, as noted in Figure 1. The Ponds and Quarry Pond retail centers are on the south side of Douglas Blvd directly opposite the project site. The property across Berg Street from the project is currently vacant but is proposed for development with professional / medical offices.

Land Use. As noted in Figure 2 (site plan), the proposed project includes development of four new buildings totaling 17,000 sf that will be devoted to professional office uses (3.0 ksf) and medical office uses (14.0 ksf).

Access. The site plan indicates access to Berg Street, and no access to Douglas Blvd is proposed. The Berg Street access is 230 feet north of Douglas Blvd (centerline to centerline) and 140 feet from Granite Falls Way. Full access is proposed at this location. This access is roughly opposite the driveway proposed by the office project on the west side of Berg Street.

The project would be accompanied by frontage improvements typically required under the Placer County General Plan and Granite Bay Community Plan. Frontage improvements would involve widening the east side of Berg Street to Placer County's Plate 116 standard approach configuration.



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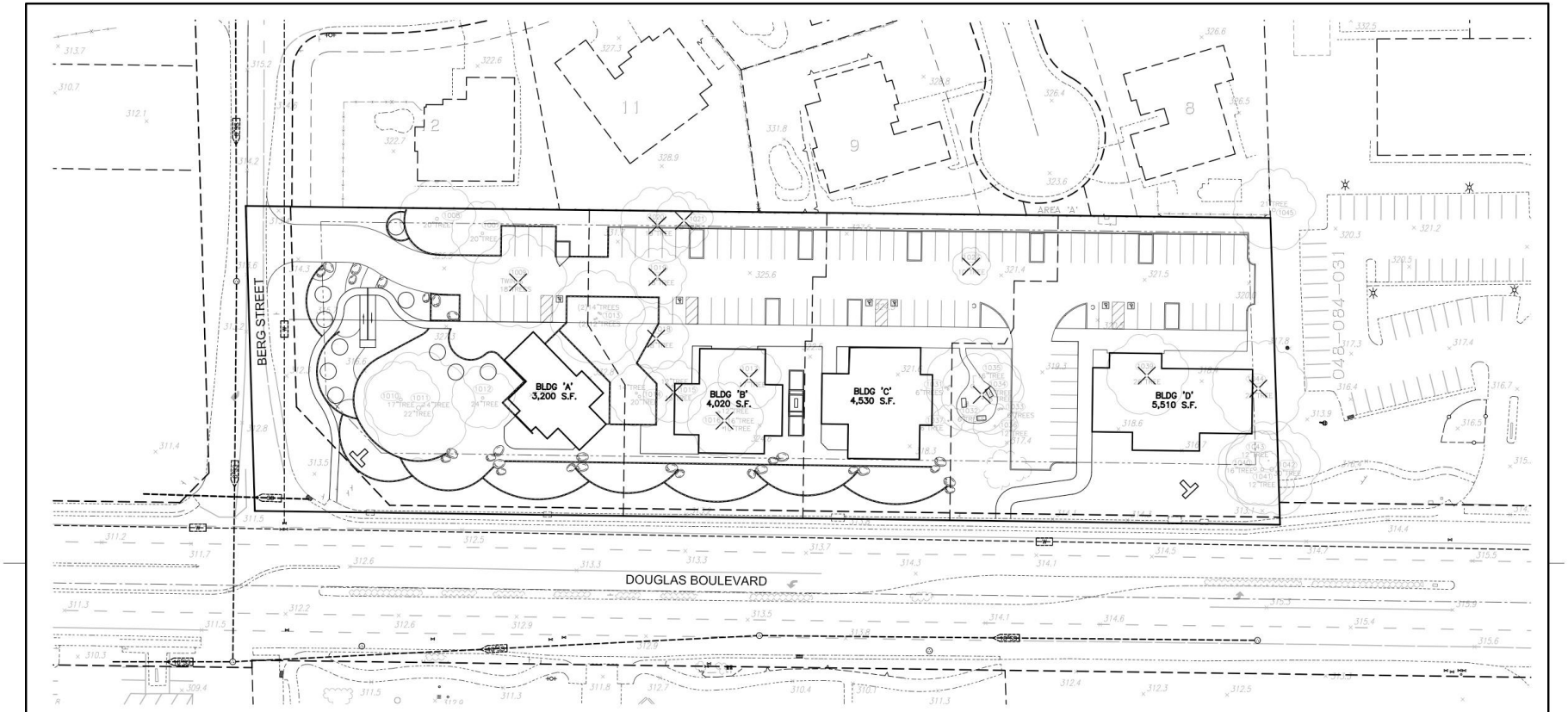
VICINITY MAP

figure 1



PARKING

	USE	SQUARE FOOTAGE	PARKING SPACES
BUILDING A	OFFICE	3,200	11
BUILDING B	MEDICAL OFFICE	4,020	23
BUILDING C	MEDICAL OFFICE	4,530	26
BUILDING D	MEDICAL OFFICE	5,510	32
TOTALS		17,260	92
	TOTAL MEDICAL	14,060	81

SCALE: 1"=30'

GRAPHIC SCALE: 1"=30'

ASSESSOR'S PARCEL NO.
048-084-030

NO.	DESCRIPTION	ENGR INIT	COUNTY APPROVAL APPROVED BY	DATE

PLOT DATE: 01/18/16

SCALE: horiz: 1"=30' vert: N/A
JAN., 2016 (date)
drafted by: DER
designed by: N/A
checked by: DER
field book

BAKER-WILLIAMS ENGINEERING GROUP
Engineering / Surveying / Land Planning / Entitlement Processing / GPS Services
6020 Rutland Drive, Suite 19 ~ Carmichael, CA. 95608
(916) 331-4336 ~ fax (916) 331-4430 ~ office@bwengineers.com

PRELIMINARY SITE PLAN
QUARRY RIDGE PROFESSIONAL OFFICE PARK
PLACER COUNTY CALIFORNIA

SHEET 2 OF 5 SHEETS
15-08-042 JOB NUMBER

15080A2-PREL-SITE-PLAN

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SITE PLAN

figure 2

EXISTING SETTING

Roadways / Intersections

Existing roadways serving this portion of Granite Bay are discussed below.

Douglas Boulevard is a major east-west arterial roadway extending from Vernon Street in Roseville across Interstate 80 through Roseville and into Placer County to Folsom Lake. Douglas Blvd is a six lane facility from Interstate 80 east to Sierra College Blvd through the City of Roseville. Douglas Blvd transitions to a 4-lane divided roadway with left turn channelization east of Sierra College Blvd into the unincorporated community of Granite Bay. The 4-lane section extends past the project site east to Auburn-Folsom Road, and east of Auburn-Folsom Road, Douglas Blvd continues as a 2-lane undivided roadway to the Folsom Lake recreational area. Douglas Blvd is designated a "Scenic" Roadway in the Granite Bay Community Plan Circulation Element.

Access to Douglas Blvd is controlled in many places. A 20' landscaped median exists on Douglas Blvd in the vicinity of the site. Eastbound and westbound left turn lanes are provided at the Berg Street intersection, but a raised median prohibits left turns or through traffic across Douglas Blvd. The posted speed limit on Douglas Blvd is 55 mph.

Daily traffic volume counts conducted in May 2017 indicate that the volume of traffic on Douglas Blvd varies along its length. Immediately east of the Sierra College Blvd intersection the roadway carried about 47,564 vehicles per day. The volume decreased to 40,789 east of Joe Rodgers Road.

Sierra College Blvd is a major north-south arterial roadway that links the Granite Bay area with Sacramento County to the south and with the Roseville – Rocklin area to the north. In the area of the proposed project Sierra College Blvd is a six lane facility that drops to four lanes in the area north of Olympus Drive.

The **Douglas Blvd/ Sierra College Blvd intersection** is controlled by a traffic signal. Each roadway has three through travel lanes in each direction, along with dual left turn lanes. Separate right turn lanes exist on the south, east and west legs of the intersection.

Woodgrove Way – Quail Oaks Drive are local / collector streets that intersect Douglas Blvd west of the project site. Quail Oaks Drive provides access to an existing residential neighborhood north of Douglas Blvd. Woodgrove Way extends south from Douglas Blvd to Greyhawk Drive, which in turn extends south to an intersection on Eureka Blvd. The Woodgrove Way-Greyhawk Drive route is the only link between Douglas Blvd and Eureka Road in the area from Sierra College Blvd to Barton Road. The posted speed limit is 25 mph on this route.

The **Douglas Blvd / Quail Oaks Drive / Woodgrove Way intersection** is controlled by stop signs on the Quail Oaks Drive and Woodgrove Way approaches. Douglas Blvd has two through lanes in each direction at this intersection. A separate right turn lane is provided on the

eastbound Douglas Blvd approach, and the Douglas Blvd approaches also have separate left turn lanes that are 160 to 180 feet long. The Quail Oaks Drive and Woodgrove Way approaches are striped as single lanes, although the Woodgrove Way approach is relatively wide (i.e., 30 feet). Crosswalks are striped across the south leg of the intersection.

Seeno Avenue is a local collector street that extends north from Douglas Blvd to provide access to the Olive Ranch community in Granite Bay. This two lane road is also a route to Greenhills Elementary School. The posted speed limit on Seeno Avenue is 25 mph.

The **Douglas Blvd / Seeno Avenue intersection** is controlled by an actuated traffic signal. Douglas Blvd has two through lanes in each direction at the intersection. Separate left turn / u-turn lanes have been created on eastbound Douglas Blvd (150 feet long) and on westbound Douglas Blvd (80 feet long). The southbound Seeno Avenue approach is a single lane. There are no striped crosswalks at this intersection.

Granite Estates Drive is a local street that extends south from Douglas Blvd to provide access to a developing office park. In the area of the project Granite Estates Drive is roughly 24 feet wide (edge of pavement to edge of pavement). The Granite Estates Drive approach to Douglas Blvd has been improved to satisfy Placer County's Plate 116 standard approach configuration for the design speed of Douglas Blvd serving a rural estate (i.e., 45' radius returns and 175 foot long approach taper).

The **Douglas Blvd / Granite Estates Drive intersection** is currently controlled by a stop sign on the northbound Granite Estates Drive approach. The median is opened and while a westbound left turn lane is provided at the Granite Estates Drive intersection, the raised median prohibits left turns or through traffic across Douglas Blvd. Douglas Blvd is wide enough to accommodate westbound to eastbound u-turns. There are no crosswalks at this intersection.

Berg Street is a two lane collector street that extends for about ½ mile to link Douglas Blvd with Olive Ranch Road. Berg Street is designated a "Country Road" in the Granite Bay Community Plan Circulation Element. The width of Berg Street varies along its length. While the two travel lanes are about 24 feet wide, paved shoulders and intersection approach tapers extend the pavement width in many locations. The speed limit on Berg Street is 35 mph.

The Granite Bay Community Plan indicates that Berg Street carried 700 vehicles per day in 2001. The recent intersection counts conducted for this study indicated that during peak traffic hours Berg Street carried about 111 to 126 vehicles per hour in the area north of Douglas Blvd which is equivalent to roughly 1,200 vehicles per day.

The **Douglas Blvd / Berg Street intersection** is currently controlled by stop signs on the southbound Berg Street approach and the northbound approach from the existing specialty rail center. Both of these approaches are limited to right urns only. Left turn lanes exist on Douglas Blvd approaching the intersection, and Douglas Blvd is wide enough to accommodate u-turns. Both Berg Street approaches are limited to right turns. There are no crosswalks at this intersection.

Macargo Road is a two-lane local street that links Berg Street and Barton Road in the area north of Douglas Blvd.

Barton Road is a two lane north-south arterial street that intersects Douglas Blvd about ½ mile east of Berg Street. Barton Road extends northerly to the Town of Loomis and southerly through Granite Bay to the Sacramento County line. The speed limit on Barton Road is 35 mph in the area north of Douglas Blvd.

The **Douglas Blvd / Barton Road intersection** is controlled by an actuated traffic signal that operates with "split" phases on Barton Road. The northbound Barton Road approach has three lanes that are configured as a left turn, thru+left turn and separate right turn lanes. The southbound has two lanes that are striped as thru+left and separate right turn lanes. Separate left turn lanes are provided on the Douglas Blvd approaches, and there is a right turn lane on the westbound approach as well. Crosswalks are striped across the Barton Road legs and the eastern Douglas Blvd leg of the intersection.

Auburn-Folsom Road is a north-south arterial street that extends from Folsom northerly through Granite Bay to Auburn. Auburn Folsom Road from Folsom to Douglas Blvd has been widened to four lanes as has the short segment north of Douglas Blvd along the existing retail frontage.

The **Douglas Blvd / Auburn Folsom Road intersection** is controlled by a traffic signal. The Auburn Folsom Road approach operate with split phases, and the four lane northbound approach is configured with a left turn, combined left+through lane, through lane and right turn lane. Each approach on Douglas Blvd has two through lanes and separate left turn and right turn lanes, and the eastbound right turn lane is separated from the traffic signal control. Crosswalks are striped across each leg of the intersection.

The **Barton Road / Eureka Road intersection** is controlled by an all-way stop. Three approaches have single lanes, but the southbound approach has a separate right turn lane.

Level of Service

Intersection Methodology. To assess the quality of existing traffic conditions and provide a basis for evaluating project impacts, Levels of Service were calculated for study area intersections. "Level of Service" (LOS) is a qualitative measure of traffic operating conditions whereby a letter grade, "A" through "F", corresponding to progressively worsening traffic operating conditions, is assigned to an intersection or roadway segment. The characteristics associated with the various Levels of Service are presented in the Appendix.

Various procedures are available for calculating Level of Service. Current operations at intersections and at project driveways were assessed using the procedures contained in the *Highway Capacity Manual, 6th Edition.* Evaluation of both signaled and un-signalized intersection Level of Service is linked to the overall intersection Level of Service. Table 1 identifies the typical characteristics of intersection Level of Service grades. At un-signalized intersection Level of Service is supplemented by consideration of the need for traffic signals based on the Traffic Signal Warrant criteria published in the *California Manual of Uniform*

Traffic Control Devices (MUTCD). Peak hour traffic volume warrants have been used to identify needed improvements and/or confirm the significance of impacts at unsignalized locations.

TABLE 1
LEVEL OF SERVICE DEFINITIONS

Level of Service	Signalized Intersection	Unsignalized Intersection	Roadway (Daily)
"A"	Uncongested operations, all queues clear in a single-signal cycle. Average Delay ≤ 10 seconds per vehicle	Little or no delay. Average Delay ≤ 10 sec/veh	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle. Delay > 10 sec/veh and ≤ 20 sec/veh	Short traffic delays. Delay > 10 sec/veh and ≤ 15 sec/veh	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches. Delay >20 sec/veh and < 35 sec/veh	Average traffic delays. Delay > 15 sec/veh and ≤ 25 sec/veh	Ability to maneuver and select operating speed affected.
"D"	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. Delay > 35 sec/veh and < 55 sec/veh	Long traffic delays. Delay > 25 sec/veh and ≤ 35 sec/veh	Unstable flow, speeds and ability to maneuver restricted.
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). Delay >55 sec and ≤ 80 sec/veh	Very long traffic delays, failure, extreme congestion. Delay > 35 sec/veh and ≤ 50 sec/veh	At or near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. Delay > 80 sec/veh	Intersection often blocked by external causes. Delay > 50 sec/veh	Forced flow, breakdown.

Sources: Highway Capacity Manual, 6th Edition, and Transportation Research Board (TRB) Special Report 209.

Placer County General Plan Methodology for Evaluating Roadway Segment Level of Services. The Placer County General Plan presents daily traffic volume levels that are to be indicative of Levels of Service on arterial streets. These volume thresholds are shown in Table 2.

TABLE 2 PLACER COUNTY EVALUATION CRITERIA FOR ROADWAY SEGMENT LEVEL OF SERVICE					
	Maximum Daily Traffic Volume Per Lane Level of Service				
Roadway Capacity Class	**A**	**B**	**C**	**D**	**E**
1. Freeway – Level Terrain	6,300	10,620	13,680	17,740	18,000
2. Freeway – Rolling Terrain	5,290	8,920	11,650	14,070	15,120
3. Freeway – Mountainous Terrain	3,400	5,740	7,490	9,040	9,720
4. Arterial – High Access Control	6,000	7,000	8,000	9,000	10,000
5. Arterial – Moderate Access Control	5,400	6,300	7,200	8,100	9,000
6. Arterial – Low Access Control	4,500	5,250	6,000	6,870	7,500
7. Rural 2-lane Highway – Level Terrain	1,500	2,950	4,800	7,750	12,500
8. Rural 2-lane Highway – Rolling Terrain	800	2,100	3,800	5,700	10,500
9. Rural 2-lane Highway – Mountainous Terrain	400	1,200	2,100	3,400	7,000
Source: Placer County General Plan FEIR					

Standards of Significance. Minimum acceptable Level of Service standards within this area of Placer County are defined by the Granite Bay Community Plan. The Community Plan notes that the Level of Service (LOS) on major roadways (i.e., arterial and collector routes) and intersections shall be at Level C or better during the a.m. and/or p.m. peak hour. The exceptions to this are intersections along Auburn-Folsom from Douglas Blvd southerly and along Douglas Blvd from Auburn-Folsom Road westerly, where the Level of Service shall be LOS E or better during the a.m. and/or p.m. peak hour. Based on this guidance, LOS E is the minimum Level of Service at intersections on Douglas Blvd in the area of the proposed project, and LOS C is the minimum elsewhere.

Placer County has adopted a methodology for determining the significance of traffic impacts within the context of the Level of Service goals established by the General Plan and local community plans. This methodology is noted below.

Roadway Segment Assessment Methodology:

A project may be considered to exceed the minimum LOS policies if;

1) *A roadway segment operating at or above the established Placer County policy without the project will decrease to an unacceptable LOS with the project; or*
2) *A roadway segment currently operating below the applicable established policy will experience an increase in V/C (volume to capacity) ratio of 0.05 or greater; or*
3) *A roadway segment operating below the established acceptable LOS policy experiences an increase in ADT of 100 or more project generated trips, per lane.*

Signalized Intersection Assessment Methodology:

A project may be considered to exceed the minimum LOS policies if;

1) *An intersection operating at or above the established Placer County policies without the project will decrease to an unacceptable LOS with the project; or*
2) *An intersection currently operating below the acceptable LOS established policy will experience an increase in V/C (volume to capacity) ratio of 0.05 or greater; or*
3) *An intersection currently operating below the acceptable LOS policy will experience an increase in overall average intersection delay of 4 seconds or greater.*

Un-signalized Intersection Assessment Methodology:

A project may be considered to exceed the minimum LOS policies if;

1) *An all-way stop or side-street controlled intersection which currently operates at or above the established Placer County policies without the project will deteriorate to an unacceptable LOS with the project and cause the intersection to meet MUTCD traffic signal warrants; or*
2) *An all-way stop or side-street controlled intersection which currently operates below the acceptable LOS established policy and meets MUTCD signal warrants will experience an increase of 2.5 seconds or more with the project.*

Further consideration will be given in situations where the existing level of service is just above or at the approved minimum level of service and any increase in vehicle trips, or even daily fluctuations in traffic, will deteriorate the level of service to an unacceptable level. In such cases, it may be determined by the County that part (2) or (3) of the above exceptions is more applicable and should be used to analyze a proposed project's impacts.

Notes:
(1) Applicable MUTCD signal warrants to be determined in consultation with DPW Transportation Staff.
(2) Intersection Delay for all-ways stop control intersections to be defined as "overall intersection delay" Intersection delay for side-street stop intersections to be defined as the "overall weighted average delay for movements yielding the ROW."

Existing Levels of Service

Intersections. Figure 3 displays existing a.m. and p.m. peak hour traffic volumes at study area intersections identified through traffic counts conducted on May 18, 2017 at all intersections, with the exception of counts at the Douglas Blvd / Granite Estates intersection which we conducted on February 1, 2018. Existing Levels of Service at study intersections were then calculated, delays were rounded to the nearest 0.5 seconds, and the results are summarized in Table 3.

As indicated in Table 3, Levels of Service can be calculated for all of the movements through an intersection where motorists are required to yield right of way. The signalized study intersections operate with overall Levels of Service that satisfy the GBCP's minimum LOS E policy. Two un-signalized intersections operate with overall Levels of Service that exceed the minimum standard. The Douglas Blvd / Woodgrove Way / Quail Oaks Drive intersection operates at LOS F in both the a.m. and p.m. peak hours, and the Barton Road / Eureka Road intersection operates at LOS F in the a.m. peak hour. The Douglas Blvd / Woodgrove Way / Quail Oaks Drive intersection satisfies peak hour warrants in the a.m. peak hour. The Barton Road / Eureka Road intersection carries traffic volumes that satisfy MUTCD peak hour warrants in the a.m. peak hour.

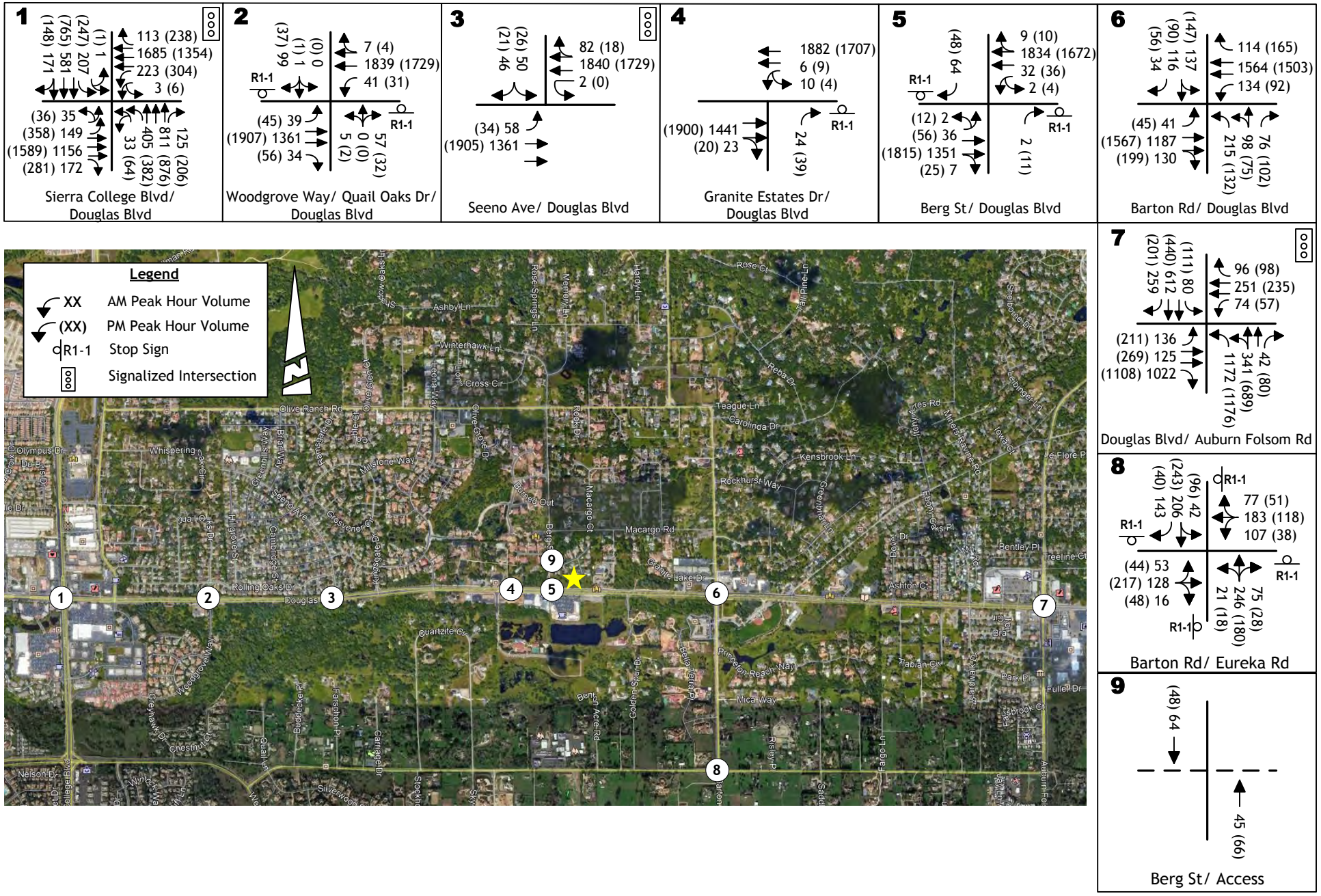
The Granite Bay Community Plan (Table 9.6.3) suggests that two new traffic signals may eventually be needed on Douglas Blvd based on projected traffic volumes but which the community has expressed a desire to avoid. These signals are at the Douglas Blvd / Woodgrove Way / Quail Oaks Drive and Douglas Blvd / Berg Street intersections. The reason that these signals are not desired is that they would impede the free-flow of traffic, potentially resulting in through traffic diverting from Douglas Blvd to other less desirable through routes. In other words, any additional delays along Douglas Blvd may cause through traffic to divert to parallel routes. By keeping Douglas Blvd more free-flowing, through traffic is less likely to divert to other roadways on which through traffic is to be discouraged. The Granite Bay Community Plan further states that these signals should be implemented only to correct identified safety or traffic operational problems and only after other measures have been explored and either implemented or rejected.

In response to current traffic volumes and Community Plan goals and policies, Placer County installed raised medians through the Berg Street intersection that eliminated left turns onto Douglas Blvd as well as cross traffic between Berg Street and the business on the south side of the street. With these restrictions, current traffic volumes at the Berg Street intersection do not reach the level that would satisfy peak hour traffic signal warrants.

TABLE 3 EXISTING PEAK HOUR INTERSECTION LEVELS OF SERVICE					
		AM Peak Hour		PM Peak Hour	
Intersection	**Control**	**LOS**	**Average Delay (sec/veh)**	**LOS**	**Average Delay (sec/veh)**
Douglas Blvd / Sierra College Blvd	Signal	D	43.0	E	60.0
Douglas Blvd / Woodgrove Way	NB/SB Stop				
(overall)		**(F)**	**(63.0)***	**(F)**	**(120.5)**
Eastbound left turn		C	20.0	C	18.0
Westbound left turn		B	14.5	C	20.5
Northbound left+thru+right turn		F	155.5	F	315.5
Southbound left+thru+right turn		E	42.5	F	149.5
Douglas Blvd / Seeno Avenue	Signal	A	6.5	A	7.0
Douglas Blvd / Granite Estates Drive	NB Stop				
(overall)		(C)	(16.0)	(C)	(23.5)
Westbound left turn		B	14.5	C	19.5
Northbound right turn		C	17.0	C	24.5
Douglas Blvd / Berg Street	NB/SB Stop				
(overall)		(C)	(20.0)	(C)	(19.0)
Eastbound left turn		C	20.0	C	18.0
Westbound left turn		B	13.0	C	19.0
Northbound right turn		B	14.5	C	20.0
Southbound right turn		C	23.5	C	20.0
Douglas Blvd / Barton Road	Signal	D	39.0	D	42.5
Douglas Blvd / Auburn – Folsom Road	Signal	D	39.0	D	36.0
Barton Road / Eureka Road	All-way Stop	**F**	**52.5***	C	24.0

(*) am peak hour volumes satisfy MUTCD peak hour warrants

BOLD values exceed the minimum LOS standard



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EXISTING TRAFFIC VOLUMES AND LANE CONFIGURATIONS

figure 3

Roadway Segments Level of Service based on General Plan Standards. Current Daily Traffic volumes have been employed to identify roadway segment Levels of Service based on Placer County General Plan thresholds. As indicated in Table 4, the four lane segments of Douglas Blvd from Sierra College Blvd to Auburn Folsom Road carry traffic volumes that are indicative of LOS F conditions.

TABLE 4
EXISTING ROADWAY SEGMENT LEVELS OF SERVICE

Roadway	Location	Class	Lanes	Existing Conditions	
				Daily Volume	Level of Service
Douglas Blvd	Sierra College Blvd to Cavitt Stallman Rd	Arterial Moderate	4	47,570	**F**
	Cavitt Stallman Rd to Seeno Avenue	Arterial High	4	46,830	**F**
	Seeno Avenue to Barton Road	Arterial High	4	44,800	**F**
	Barton Rd to Auburn Folsom Rd	Arterial High	4	42,630	**F**
Berg Street	Olive Ranch Rd to Douglas Blvd	Arterial Low	2	1,200	A

BOLD values exceed the minimum LOS standard of the GBCP

Planned Improvements / Funding Sources

SPRTA. As a road of regional importance, improvements to Sierra College Blvd are important to both local residents and to the greater South Placer County public. While not uniformly endorsed, a mechanism has been created to accumulate funds towards the cost of installing improvements and to assign responsibility for longer term projects.

Placer County and the cities of Lincoln, Rocklin and Roseville have joined to form the South Placer Regional Transportation Authority (SPRTA). SPRTA is a Joint Powers Authority (JPA) formed for the purpose of implementing a Regional Transportation and Air Quality Mitigation Fee to fund specified regional transportation projects.

SPRTA funding is directed towards projects such as Placer Parkway, Sierra College Blvd widening, Lincoln Bypass, I-80 / Douglas Blvd interchange, SR 65 widening, I-80 / Rocklin Road interchange, Auburn Folsom Road widening and HOV lanes on Interstate 80 through Roseville.

Placer County Traffic Impact Fee Program and CIP. In April 1996, the Placer County Board of Supervisors adopted the Countywide Traffic Impact Fee Program, requiring new development within the County to mitigate impacts to the roadway system by paying traffic impact fees. The fees collected through this program, in addition to other funding sources, make it possible for the County to construct roads and other transportation facilities and improvements needed to accommodate new development. The fee was updated by Placer County in July 2016. The County's fee program and Capital Improvement Program is divided into eleven districts, and the Quarry Ridge Project site is included in the Granite Bay Benefit District.

The Granite Bay Benefit District includes funds for improvements to the Barton Road / Eureka Road intersection where a traffic signal or roundabout is anticipated.

Existing Pedestrian, Bicycle and Transit Facilities

Sidewalks. The GBCP Circulation Element notes that Scenic and Country Roadways normally do not have sidewalks or curbs and gutters, although there are exceptions to this such as Douglas Boulevard and in areas where parcel sizes are less than 0.9 acres. Meandering paths of a native material and paved shoulders take the place of sidewalks. Streetlights are kept to a minimum and are generally only provided at major intersections or where specific significant safety issues make lighting essential.

Today sidewalks exist along the north side of Douglas Blvd from Berg Street west to Roseville. Sidewalks are generally available east of Berg Street but there are short gaps where development has not occurred and sidewalks have not yet been installed. Designated pedestrian crossings on Douglas Blvd are limited. Crosswalks exist at signalized intersections east of the project at Barton Road and at Seeno Avenue, but those locations are at least ½ mile from the project. Under the California Vehicle Code (CVC) legal pedestrian crossings exist at public road intersections such as Douglas Blvd / Berg Street even though the crossing is not marked.

Bicycles and Trails. Trails and bikeways within the GBCP are classified as follows:

- Class I Bikeway (Bike Path) provides a completely separated facility designed for the exclusive use of cycles and pedestrians with minimal crossflows by motorists. Motorized vehicles are not allowed on Class I Bike Paths. Class I bikeways should have a minimum 8 foot width of hard surfaced pavement with 2 foot graded shoulders on either side. Class I Bike Paths that are regional in nature should have a minimum 10 foot paved width. In some cases, a wider shoulder or separated native earth pathway would provide adjacent use for equestrians and those who prefer a native trail surface. Class I Bike Paths must be at least 5 feet from the edge of a paved roadway.

- Class II Bikeway (Bike Lane) provides a restricted right-of-way designated for the exclusive or semi-exclusive use of cycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and crossflows by pedestrians and motorists permitted. Class II Bike Lanes generally require a 6 foot bike lane where posted speeds are greater than 40 mph with a 6 inch white stripe separating the roadway from the bike lane. Class II Bike Lanes are typically maintained as a part of the road system by the Department of Public Works.

- Class III Bikeway (Bike Route) provides a right-of-way designated by signs or permanent markings and shared with pedestrians and motorists. Roadways designated as Class III Bike Routes should have sufficient width to accommodate motorists, bicyclists, and pedestrians. Other than a street sign, there are not special markings required for a Class III Bike Route. Class III Bike Routes are typically maintained as a part of the road system by the Department of Public Works.

- Multiple Use Trails are designed to support pedestrian, cycle, and equestrian traffic. Motorized vehicles are not allowed on Multiple Use Trails. They are generally 6 feet in width but may be reduced in width to accommodate physical and easement restrictions. Depending on the stability of local soil conditions, Multiple Use Trails are constructed of native graded soil, decomposed granite (or similarly graded imported aggregate), or native soil treated with a stabilizing agent.

Existing and Planned Bicycle Facilities. Class II Bike Lanes exist on Douglas Blvd from Sierra College Blvd to Auburn-Folsom Road. A Class I Bike Trail is planned along Douglas Blvd.

Existing and Planned Trails. The intent of the trails system identified in the GBCP is to implement an interconnected system of trails and paths suitable for safe recreation as well as transportation and circulation. This is accomplished with connections between and through future development, thereby providing the feeder system for the major trails and enhancing overall connectivity of the trail system. The local trails should link to regional trails as well as to major residential areas and areas of horse populations, employment centers, park and recreation areas, schools, creek corridors and vista locations.

Today there are no trails in the immediate vicinity of the project. The GBCP Trails Plan notes that a Multi-purpose trail is planned along Berg Street from Douglas Blvd to Olive Ranch Road.

Transit. Limited transit services are provided within Granite Bay, and two adjacent jurisdictions provide transit services which influence travel patterns within Granite Bay.

Placer County Transit. There are no established transit routes in Granite Bay. The community is currently served by a demand responsive public transit system that is operated by the Consolidated Transportation Services Agency (CTSA) under contract to Placer County Transit (PCT). Service is provided Monday through Friday. The service transports patrons to the Sierra Gardens Transfer Center in the City of Roseville where linkages to other PCT routes and to Roseville Transit are available.

Western Placer Consolidated Transportation Services Agency. The Placer County Transportation Planning Agency (PCTPA) has designated the Western Placer Consolidated Transportation Service Agency as the Consolidated Transportation Service Agency (CTSA) to serve western Placer County, which includes the Granite Bay community.

As defined by California law, a CTSA is an agency that coordinates and/or provides transportation services for a particular region. This may include services for the elderly and individuals with disabilities who cannot use conventional transit services. Since June 2008, the CTSA has developed a public/private partnership (Transit Operator Working Group, Seniors First and its key partners) to run three pilot programs that are intended to serve elderly persons and persons with disabilities who are unable to use conventional public transit services.

PROJECT IMPACTS

The traffic impacts associated with the Quarry Ridge Professional Offices project have been determined based on the projected change in operating Levels of Service accompanying the project. Project impacts have been quantified by estimating the number and directional distribution of project trips, superimposing those trips onto current traffic volumes and recalculating Levels of Service.

Trip Generation

The number of automobile trips that will be generated by the project has been estimated through application of trip generation rates acceptable to Placer County. For regular operation of the project applicable trip generation rates were obtained from the Institute of Transportation Engineer's (ITE) publication, *Trip Generation Ninth Edition, 2012,* and Table 5 identifies the trip generation rates employed for this analysis.

Table 6 summarizes total regular weekday trip generation associated with development on this site as proposed. The proposed project would generate 567 daily trips with identified medical and professional office uses. Assuming the entire project was higher generating professional offices, the project would generate 43 trips in the a.m. peak hour and 73 trips during the p.m. peak hour.

TABLE 5
TRIP GENERATION RATES

Description	ITE Category	Unit	Trips per unit						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Typical Office Professional	710 General Office building < 50 ksf	ksf	18.31	88%	12%	2.53	17%	83%	4.27*
Medical / Dental Office	720 Medical Dental Office Building	ksf	36.13	79%	21%	2.39	28%	72%	3.57
Single Family Residential	210 Detached Single Family Residences	dwelling	9.52	25%	75%	0.75	64%	36%	1.00

(*) from Placer County fee program

TABLE 6
TRIP GENERATION FORECASTS

Description	Quantity	Trips per unit						
		Daily	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
Proposed Quarry Ridge Professional Offices								
Professional Office	3.20 ksf	59	7	1	8	2	12	14
Medical Offices	14.06 ksf	508	27	7	34	14	36	50
Total	17.0 ksf	567	34	8	42	16	47	63
100% Office								
Professional Office	17.0 ksf	311	38	5	43	12	61	73

Highlighted value used for impact analysis

Trip Distribution and Assignment

Distribution. The distribution of trips to and from the project site was determined by reviewing current traffic patterns in the area by considering the demographics of the Granite Bay area and through review of assumptions approved for previous traffic studies completed for projects along Douglas Blvd and review of regional traffic model results. Medical office uses would primarily serve Granite Bay area residents but both medical and professional office uses are likely to generate commute trips that could be attracted from a relatively wide region. For this analysis we have employed a distribution pattern that assumes the majority of the project's trips are oriented to the west but that a significant share will be directed to the east into Granite Bay, as shown in Figure 4 and summarized in Table 7.

TABLE 7
TRIP DISTRIBUTION

Direction	Percent of Total New Trips
West via Douglas Blvd beyond Sierra College Blvd	40%
East via Douglas Blvd between Barton Rd and Auburn Folsom Rd	7½%
East on Douglas Blvd beyond Auburn Folsom Road	2½%
North on Barton Road	7½%
South Via Auburn Folsom Road	10%
South via Barton Road	15%
South via Sierra College Blvd	15%
South via Woodgrove Way	2½%
Total	100%

Assignment. The assignment of project trips will reflect the access limitations that exist today on Douglas Blvd or are proposed with the project, as well as travel time along alternative routes.

Inbound traffic is direct. Motorists arriving from the east on Douglas Blvd can simply turn right onto Berg Street and then into the site at the new driveway. Trips arriving from the west on Douglas Blvd will turn left onto Berg Street and then use the new driveway. Trips from the north will simply turn left from Berg Street into the site.

However, due to the median on Douglas Blvd, leaving the site is more difficult. Trips headed west will turn from the driveway onto southbound Berg Street and the right on Douglas Blvd. Heading east is more complicated. Employees, customers and visitors destined for locations to the east can turn onto westbound Douglas Blvd and make a u-turn at the next median opening. The Granite Estates Drive median opening is 800 feet from Berg Street, or roughly 1,000 feet from the project driveway. Alternatively, exiting traffic can turn right onto Berg Street and then use Macargo Road to reach Barton Road and return to Douglas Blvd.

The choice for eastbound routes is likely to be based on distance and travel time. Measured from the driveway to the Douglas Blvd / Barton Road intersection, the Douglas Blvd route is roughly 4,500 feet as is the route via Macargo Road. Because the total distance involved on each alternative route is very similar, the probable travel time is a better indicator of the choice of routes. Accounting for delays along the way, it would take 105 seconds to reach Barton Road using the Douglas Blvd route. While the speed limits are lower, it would take about the same time to reach Douglas Blvd using Macargo Road. However, the times on each route do become different upon reaching the Barton Road intersection, as eastbound traffic on the Douglas Blvd route is more likely to catch a green indication or to face little delay when turning right onto southbound Barton Road. Alternatively, traffic southbound on Barton Road rarely arrives when the traffic signal is in green on Douglas Blvd and extra delay is likely.

Based on this comparison, it is reasonable to expect that motorists headed east on Douglas Blvd beyond Barton Road or south on Barton Road would be split between the two route. However, to provide a "worst case" assessment of impact to the Douglas Blvd / Berg Street intersection, all eastbound traffic was assumed to make a u-turn on Douglas Blvd rather than choosing Macargo Road.

The resulting assignment of trips with the proposed project is summarized in Figure 4.

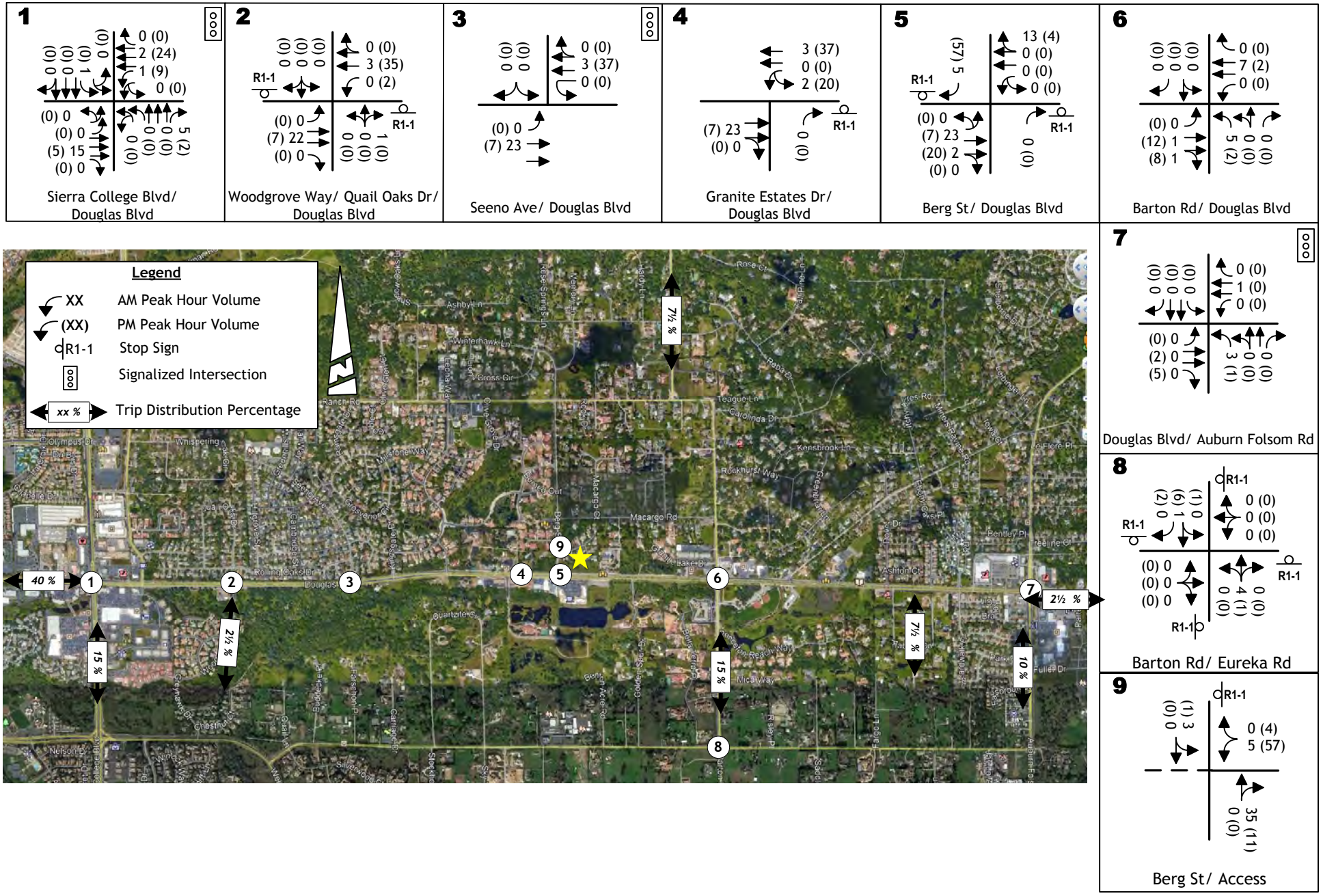

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figure 4

Existing Plus Project Levels of Service

Intersections. Having identified the probable distribution and assignment of project trips, this traffic was superimposed onto current traffic volumes at study intersections and the project driveway. Figure 5 presents the sum of Existing traffic plus Project trips. These volumes were used to identify a.m. and p.m. peak hour Levels of Service, and Table 8 summarizes resulting operations with development of the project.

As shown, the addition of project trips will incrementally increase the length of delays at study intersections. At all but two locations the resulting Levels of Service will continue to satisfy the minimum LOS E standard for Douglas Blvd and minimum C standard elsewhere from the Granite Bay Community Plan. Thus, the impacts of the project are not considered to be significant under CEQA at these locations.

The project's relative impact has been considered at the two intersections where current background conditions already fail to satisfy minimum GBCP standards. The **Douglas Blvd / Woodgrove Way / Quail Oaks Drive intersection** operates with an overall LOS F with and without the project in the a.m. and p.m. peak hour. Because existing and baseline conditions are already deficient, the project's impact is determined based on the incremental change in overall delay and the satisfaction of traffic signal warrants. In this case, the change during the p.m. peak hour exceeds the maximum 2.5 second increment permitted under Placer County guidelines, and as is the case under existing conditions the volume of traffic at the intersection with the project reaches the level that satisfies peak hour traffic signal warrants in the a.m. peak hour. While a traffic signal might be judged to be unjustified at this location since nearly all traffic turns right, satisfaction of signal warrant volume requirements remains the impact criteria. Thus, because the project's incremental change in average delay exceeds 2.5 seconds and peak hour warrant volume requirements are met, **the project's impact is significant at this location, and mitigation is required.**

Mitigation. Alternative mitigations were considered. A traffic signal is not a reasonable choice since a very minimum amount of traffic turns left onto Douglas Blvd and the effects of a new signal on the overall flow of traffic on Douglas Blvd may be contrary to the goals of the GBCP. Prohibiting left turns onto Douglas Blvd and cross traffic is the most reasonable solution. Installing a raised median on Douglas Blvd to eliminate cross traffic while permitting eastbound and westbound left turns from Douglas Blvd onto Quail Oaks Drive and onto Woodgrove Way would result in the intersection operating with an overall LOS C which satisfies the minimum LOS E requirements of the Granite Bay Community Plan. This mitigation is recommended.

This measure would have the effect of diverting cross traffic and left turns to other locations, but the number of diverted vehicles is relatively small. In the a.m. peak hour five (5) northbound vehicles on Woodgrove Way and one (1) southbound vehicle on Quail Oaks Drive would be affected.

The alternative paths for diverted vehicles have been identified. Northbound traffic might logically elect to turn right and make a u-turn at the signalized Douglas Blvd / Seeno Avenue

intersection. U-turns are allowed at this location. The southbound through vehicles which today cross the street to go south on Woodgrove Way may instead turn right and make a u-turn at the Sierra College Blvd or Cavitt Stallman Road signals or use Rolling Hills Drive to access Douglas Blvd at the Seeno Avenue signal. Today westbound U-turns at the Douglas Blvd / Cavitt Stallman Road are not permitted in order to accommodate that traffic signal's existing northbound right-turn-overlap phase, and the signal would need to be modified if it were necessary to allow u-turns at this location. However, the volume of traffic diverted at all these locations would be too small to have an appreciable effect on the operation of these intersections whether Douglas Blvd access is permitted or not. Under either condition the "mitigated" Levels of Service remain within the adopted minimum LOS standard.

The extent to which the Douglas Blvd / Seeno Avenue intersection can accommodate any increased queuing in the eastbound left turn lane caused by this change has been evaluated. The existing lane provided 280 feet of storage, and with the existing 150 foot long bay taper the area available for deceleration and storage is 430 feet. The longest queue occurs in the a.m. peak hour when the 95th percentile queue is forecast to be 100 feet. The resulting space between the queue and beginning of bay taper (i.e., 330 feet), accommodates deceleration to a stop from 40-45 mph (Caltrans HDM Table 405.2B) which satisfies HDM guidelines for a 55 mph design.

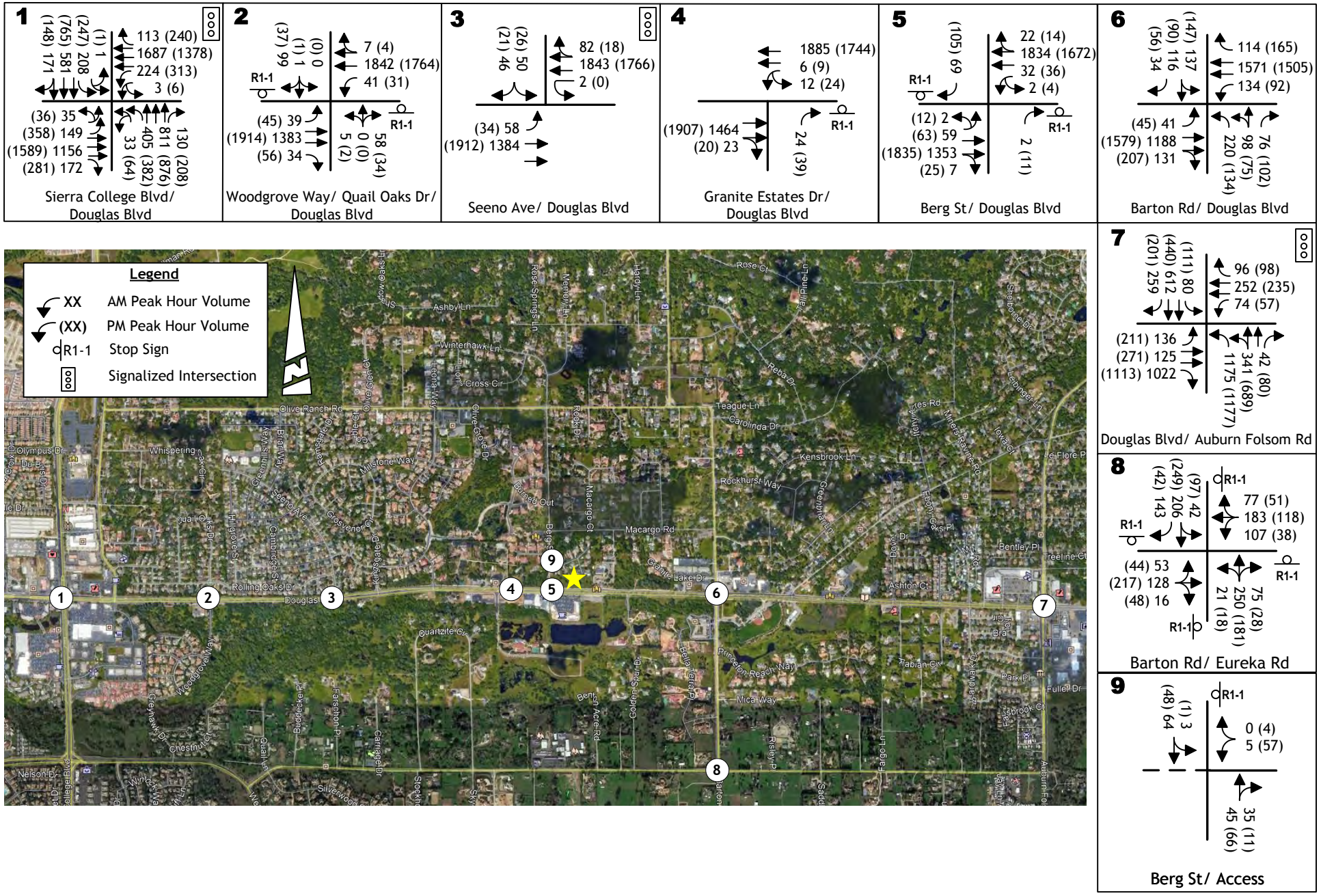
The Douglas Blvd / Woodgrove Way / Quail Oaks Drive intersection will operate with an overall Level of Service of LOS C with the turn prohibitions. With this improvement the project's impact is not significant.

The **Barton Road / Eureka Road intersection** operates at LOS F in the a.m. peak hour with and without the project and satisfies peak hour traffic signal warrants under both scenarios. The change in overall delay is the significance criteria under adopted Methodology of Assessment. Because the project adds traffic to approaches that experience lower individual delay, the overall delay at the intersection is reduced. In this case, the a.m. peak hour delay does not increase by more than the 2.5 second increment permitted under the Methodology of Assessment, the project's impact is not significant, and mitigation is not required.

Roadway Segments. Table 9 identifies the project's daily traffic volume contribution to study area roads and resulting Levels of Service. As indicated while the project will not change the Level of Service occurring on any roadway segment, the project will add traffic to roadways that already are deficient based on General Plan thresholds. In this case the significance of project impact is based on the criteria included under Placer County Methodology of Assessment, and the project contribution has been evaluated accordingly.

The project's incremental change can be described in terms of its change in roadway volume / capacity ratio. In this case, the project's contribution to Douglas Blvd ranges from 0.003 to 0.009. As these changes are less than the 0.050 increment permitted under Placer County methodology, the project's impact is not significant under this metric.

The second criteria is the "vehicles per lane" (vpl) traffic increase. In this case, the project adds 28 to 85 vpl at various locations on Douglas Blvd. Because these increments do not exceed the 100 vpl threshold permitted under Placer County methodology, the project's impact is not significant.



KD Anderson & Associates, Inc.
Transportation Engineers

5765-20 LT 1/17/2019

EXISTING PLUS PROJECT
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

figure 5

TABLE 8
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control	AM Peak Hour				PM Peak Hour			
		Existing		Existing Plus Project		Existing		Existing Plus Project	
		LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)
Douglas Blvd / Sierra College Blvd	Signal	D	43.0	D	43.0	E	60.0	E	60.0
Douglas Blvd / Woodgrove Way	NB/SB Stop								
(overall)		**(F)**	**(63.0)***	**(F)**	**(64.5)***	**(F)**	**(120.5)**	**(F)**	**(123.5)**
Eastbound left turn		C	20.0	C	20.0	C	18.0	C	18.5
Westbound left turn		B	14.5	B	14.5	C	20.5	C	20.5
Northbound left+thru+right turn		F	155.5	F	153.5	F	315.5	F	315.5
Southbound left+thru+right turn		E	42.5	E	46.5	F	149.5	F	150.0
Douglas Blvd / Seeno Avenue	Signal	A	6.5	A	6.5	A	7.0	A	7.0
Douglas Blvd / Granite Estates Drive	NB Stop								
(overall)		(C)	(16.0)	(C)	(16.0)	(C)	(23.5)	(C)	(23.0)
Westbound left turn		B	14.5	B	14.5	C	19.5	C	21.0
Northbound right turn		C	17.0	C	17.0	C	24.5	C	25.0
Douglas Blvd / Berg Street	NB/SB Stop								
(overall)		(C)	(20.0)	(C)	(20.5)	(C)	(19.0)	(C)	(21.5)
Eastbound left turn		C	20.0	C	20.0	C	18.0	C	18.0
Westbound left turn		B	13.0	B	13.0	C	19.0	C	19.0
Northbound right turn		B	14.5	B	14.5	C	20.0	C	20.0
Southbound right turn		C	23.5	C	24.5	C	20.0	C	25.0
Douglas Blvd / Barton Road	Signal	D	39.0	D	39.5	D	42.5	D	45.0
Douglas Blvd / Auburn – Folsom Road	Signal	D	39.0	D	39.0	D	36.0	D	36.0
Barton Road / Eureka Road	All-way Stop	**F**	**52.5***	**F**	**51.5***	C	24.0	C	25.0
Berg Street / Access	WB Stop								
(overall)		-	-	(A)	(8.5)	-	-	(A)	(9.5)
Southbound left turn				A	7.5			A	7.5
Westbound left+right turn				A	9.5			A	9.5

(*) a.m. peak hour volumes satisfy MUTCD peak hour warrants
BOLD values exceed the minimum LOS D standard. **HIGHLIGHTED** values are a significant impact

TABLE 9 EXISTING PLUS PROJECT ROADWAY SEGMENT LEVELS OF SERVICE									
Roadway	**Location**	**Classification**	**Lanes**	**Existing Conditions**		**Existing Plus Quarry Ridge Conditions**			
				Daily Volume	**Level of Service**	**Daily Volume**		**Level of Service**	**Change in V/C**
						Project Alone	**Total**		
Douglas Blvd	Sierra College Blvd to Cavitt Stallman Rd	Arterial Moderate	4	**47,570**	**F**	320	**47,890**	**F**	0.009
	Cavitt Stallman Rd to Seeno Avenue	Arterial High	4	**46,830**	**F**	320	**47,150**	**F**	0.008
	Seeno Avenue to Berg Street	Arterial High	4	**44,800**	**F**	340	**45,140**	**F**	0.009
	Berg Street to Barton Road	Arterial High	4	**44,800**	**F**	190	**44,990**	**F**	0.005
	Barton Road to Auburn Folsom Road	Arterial High	4	**42,630**	**F**	110	**42,540**	**F**	0.003
Berg Street	Olive Ranch Road to Project	Arterial Low	2	1,200	A	40	1,240	A	0.003
	Olive Ranch Road to Douglas Blvd	Arterial Low	2	1,200	A	530	1,730	A	0.035

DOUGLAS BLVD ACCESS DESIGN

Key Issues

Three issues have been evaluated with regards to the project's impact on the local traffic operations on Douglas Blvd in the area of the Granite Drive and Berg Street intersections.

Weaving Across Douglas Blvd. To travel easterly on Douglas Blvd motorists leaving the site will need to turn right onto Douglas Blvd and then use the Granite Estates Drive left turn lane to make a u-turn. The Berg Street intersection is roughly 840 feet from the Granite Estates Drive median break. To use the opening for u-turns, exiting motorists will initially accelerate and then decelerate into the turn pocket. The distance traveled and speed achieved during acceleration and deceleration has been determined from AASHTO guidelines. Table 10 shows the relationship between the available distance from the Berg Street intersection to the end of the left turn lane at Granite Estates Drive as well as the estimated speed achieved by a motorist making the maneuver in this distance. As shown, if there was no queue in the left turn lane, then an exiting motorist could accelerate to 44-45 mph on eastbound Douglas Blvd before slowing to stop in the empty turn lane. If another vehicle was waiting to turn, then the total length would be reduced by 25 feet and the maximum speed would be reduced slightly (i.e., 43-44 mph). In comparison the design speed on Douglas Blvd is 55 mph. so the speed differential is 11 to 12 mph.

The adequacy of this layout is based on the relative difference in speed between weaving and through traffic, as well as the characteristics of traffic flow. Placer County has accepted guidance from the Caltrans Highway Design Manual (HDM) Section 4 which describes the permitted speed differential between decelerating and through traffic at turn lanes. The HDM notes that a differential of up to 20 mph can be accepted. Placer County also considers the relative availability of gaps in through traffic created by up-stream traffic signals.

In this case, because the speed differential is less than 20 mph and the traffic signal at Barton Road is observed to create gaps in westbound traffic the available weaving distance is considered to be adequate.

Weaving across eastbound Douglas Blvd from driveways that are closer to the intersections can be more problematic. For example the speed of motorists leaving the Lake Center driveways and headed eastbound to the Berg Street left turn lane could be much less. The driveway for the nursery west of Berg Street is at the beginning of the westbound left turn lane approaching Granite Estates Drive. Motorists cross Douglas Blvd and enter the turn lane at 10-15 mph.

Weaving across eastbound Douglas Blvd was contemplated in the traffic studies for the Little Sunshine Pre-School and Granite Estates Professional Center on the south side of Douglas Blvd, and improvements have been installed in the area between Granite Estates Drive and Berg Street. The Granite Estates Drive intersection is roughly 840 feet from the next median break on Douglas Blvd at Berg Street. If there was no queue in the left turn lane at Berg Street, then an exiting motorist could accelerate to 44-45 mph on Douglas Blvd before slowing to stop in the empty turn lane. If another vehicle was waiting to turn, then the total length would be reduced

by 25 feet and the maximum speed would be reduced slightly (i.e., 43-44 mph). In comparison the design speed on Douglas Blvd is 55 mph. Based on the distance from Granite Estates Drive to Berg Street, weaving across the lanes should not be a problem.

TABLE 10 SPEED REACHED FROM ACCESS TO U-TURN		
Location	**Distance Traveled**	**Maximum Speed Reached**
Eastbound on Douglas Blvd from Granite Estates Drive to Berg Street	800	44-45 mph
Westbound on Douglas Blvd from Berg Street to Granite Estates Drive	800	44-45 mph
Source: Exhibit 2-24 and 2-25 AASHTO *A Policy on Geometric Design of Highways and Streets, 2012*		

Queuing in Left Turn Lanes. Existing, approved and proposed businesses along Douglas Blvd take access via median openings that are preceded by left / u-turn lanes. The adequacy of these lanes is related to two factors: 1) storage for waiting vehicles, and 2) room for deceleration outside of the flow of through traffic on Douglas Blvd.

To put this issue in perspective, Table 11 identifies the length of left turn lanes and bay tapers at all of the un-signaled locations on Douglas Blvd from the Cavitt Stallman Road intersection to Auburn Folsom Road. The entry speed at the beginning of the bay taper is also presented based on HDM Table 406.3B, which is noted in Table 12. The calculation assumes that no vehicles are queued in the left turn lane.

It is important to note that the length of every un-signalized left turn pocket on Douglas Blvd falls below the design threshold for full deceleration from 55 mph to a stop (i.e., 485 feet), and some slowing in the adjoining travel lanes on Douglas Blvd is required.

TABLE 11 CONFIGURATION OF EXISTING UN-SIGNALIZED LEFT TURN LANES ON DOUGLAS BLVD					
Direction	**Location**	**Dimensions (feet)**			**Entry Speed(*) (mph)**
		Bay Taper	**Left Turn Lane**	**Total**	
Eastbound	Quail Oaks Drive	150	160	310	40
	Kingsgate Drive	150	150	300	39
	Douglas Ranch Drive	200	200	400	47
	Bushnell Gardens Nursery	145	110	255	33
	Berg Street	125	300	425	49
	Church	150	160	300	39
	Plaza Del Lago	120	140	260	33
	Joe Rogers Road	130	120	250	32
	Shady Lane	130	170	300	39
	Granite Bay Library	120	90	210	27
	Dover Drive	120	110	230	30
	Granite Cove Drive	120	120	240	30
	Christy Lane	120	160	280	35
	Rear entrance to Raley's SC	70	50	120	20
	Raley's SC	60	120	180	25
	Raley's SC	50	120	170	25
Westbound	Christy Lane	60	60	120	20
	Arabian Circle	130	110	240	30
	Berg Street	110	340	450	52
	Granite Estates Drive	120	230	350	43
	Kingsgate Drive	100	80	180	25
	Woodgrove Way	100	180	280	35
(*) entry speed per HDM with no vehicles in queue					

TABLE 12 HDM DECELERATION STANDARDS	
Design Speed	**Deceleration Lane Length (feet)**
25	185
30	235
35	275
40	315
45	375
50	435
55	485
60	530
Source: HDM Table 405.2B	

Design Parameters. Tables 13 and 14 identify the volume of traffic anticipated in the existing Douglas Blvd left turn lanes in the immediate area of the proposed project. These tables note the length of storage available in each lane and the peak hour design queue length. The length of queue anticipated in the left turn lanes has been estimated from two standpoints. First, the queue length is identified as a byproduct of Level of Service analysis. Secondly, the storage recommended in the Highway Design Manual (HDM) has been identified. The HDM suggests that un-signalized left turn lanes provide storage equivalent to a two-minute accumulation of peak hour vehicles. However, because the gap in traffic needed for u-turns is longer than for left turns, this analysis assumes a three-minute accumulation for u-turns and a two minute accumulation for left turns. In each case a waiting vehicle is assumed to occupy 25 feet.

The HDM also contains recommended distances for deceleration lane planning. Table 16 presents these recommendations. It is important to note that some deceleration in the adjoining through travel lanes is permitted prior to the bay taper. The HDM indicates that up to 20 mph deceleration prior to the bay taper can be acceptable.

TABLE 13
DOUGLAS BLVD MEDIAN OPENING ASSESSMENT
GRANITE ESTATES DRIVE WESTBOUND LEFT TURN LANE

Condition	Storage Length (feet)	Time Period	Westbound at Granite Estates Dr			
			Volume		Queue (feet)	
			U-turn	Left	HCM	HDM
Existing	230	AM	10	6	<25	<25
		PM	4	9	<25	<25
Existing Plus Quarry Ridge Project		AM	12	6	<25	<25
		PM	24	9	<25	50
Existing Plus Approved / Pending Projects		AM	13	60	<25	75
		PM	20	33	25	75
EPAP Plus Quarry Ridge Project		AM	15	60	<25	75
		PM	40	33	50	100
Year 2036 No Project		AM	13	60	25	75
		PM	20	35	25	75
Year 2036 with Quarry Ridge Project		AM	15	60	25	75
		PM	40	35	50	100

HCM is queue based on Highway Capacity Manual LOS analysis. HDM is storage recommended by Caltrans Highway Design Manual (HDM)..

Evaluation of Westbound Left Turn Lane Deceleration and Storage at Granite Estates Drive. As noted in Table 16, today the westbound left turn lane on Douglas Blvd at Granite Estates Drive is 230 feet long. This lane is preceded by a 120 foot long bay taper. If the Quarry Ridge Professional Offices project proceeds under Existing plus Project conditions then a two car queue is likely in the lane during the p.m. peak hour. The left turn lane has the capacity to provide storage for up to 9 waiting vehicles, so the design is adequate in that regard.

Under EPAP conditions the combination of regional development and the turning requirements of projects in the area of Berg Street will increase the number of vehicles in the westbound left turn lane, and the forecast queues will be longer. Without the Quarry Ridge Professional Offices project, a three car queue is expected during both the a.m. and p.m. peak hour under Existing plus Approved Projects conditions. The addition of Quarry Ridge Professional Offices traffic will increase the queue to four cars in the p.m. peak hour. The left turn lane provides adequate storage for these cars.

The length of queues expected under Year 2036 conditions are similar to those shown under EPAP conditions. With the project, a four car queue is expected, and adequate storage will be available.

To use the left turn lane, motorists will slow to a stop behind the forecast queue, and the adequacy of the remaining area for deceleration has been evaluated. Under Existing plus Project conditions the two car queue leaves 300 feet for deceleration from the beginning of the bay taper to the waiting vehicle. This distance accommodates a stop from 38 mph. As the posted speed limit on this section of Douglas Blvd is 55 mph, the relative difference between through traffic and slowing traffic is 17 mph, which satisfies the HDM guideline for speed differential (i.e., 20 mph).

If background projects are developed under the Existing plus Approved / Pending Projects condition and Year 2036 conditions the maximum queue becomes three vehicles, the deceleration distance is 275 feet and the entering speed is 35 mph. The speed differential is 20 mph, which is the maximum under the HDM guideline.

With development of the project under EPAP or Year 2036 conditions with the longest queues (i.e., four vehicles under) 250 feet will be available for deceleration from the beginning of the bay taper to the waiting vehicle. This distance provides space to decelerate to a stop from 32 mph. As the posted speed limit on this section of Douglas Blvd is 55 mph, the relative difference between through traffic and slowing traffic is 23 mph, which exceeds the HDM guideline for speed differential (i.e., 20 mph). ***Thus, the project's cumulative impact could be considered to be significant, and mitigation is required.*** Mitigation alternatives are discussed in the test which follows.

TABLE 14 DOUGLAS BLVD MEDIAN OPENING ASSESSMENT EASTBOUND BERG STREET LEFT TURN LANE						
	Storage Length (feet)	Time Period	Eastbound at Berg Street			
			Volume		Queue (feet)	
Condition			U-turn	Left	HCM	HDM
Existing	300	AM	2	36	<25	50
		PM	12	56	<25	75
Existing Plus Quarry Ridge Project		AM	2	59	<25	75
		PM	12	63	<25	75
Existing Plus Approved / Pending Projects		AM	45	60	50	125
		PM	56	80	75	150
EPAP Plus Quarry Ridge Project		AM	45	83	75	150
		PM	56	87	75	150
Year 2036 No Project		AM	45	62	75	125
		PM	55	83	75	150
Year 2036 With Quarry Ridge Project		AM	45	85	75	150
		PM	55	90	75	150
HCM is queue based on Highway Capacity Manual LOS analysis. HDM is storage recommended by Caltrans Highway Design Manual (HDM).						

Evaluation of Eastbound Left Turn Lane Deceleration and Storage at Berg Street. The eastbound left turn lane approach at Berg Street is longer and provides additional space for queueing. The 300 foot long left turn lane provides storage for 12 waiting vehicles and is preceded by a 125 foot long bay taper. As noted in Table 14, if the Quarry Ridge Professional Offices project is in operation, then a three car queue could be expected in the a.m. and p.m. peak hour under Existing plus Project conditions. The left turn lane can accommodate this queue. The queue lengthens as other local development occurs and is 150 feet long with Quarry Ridge and other approved / pending projects proceed. Under Year 2036 conditions with Quarry Ridge this queue would also be 150 feet long, which can still be accommodated by the left turn lane.

The effects of queueing on deceleration have been considered. Under Existing plus Project conditions the remaining distance between the beginning of bay taper and waiting vehicles in a three car queue is 350 feet. This distance can accommodate deceleration to a stop from 43 mph, and the difference between through traffic and turning traffic is 12 mph, which is within the HDM guideline.

Under cumulative conditions a six vehicle queue is expected, the distance between beginning of the bay taper and waiting cars is 275 feet. This distance accommodates deceleration from 35 mph, and the difference between this speed and the 55 mph speed limit on Douglas Blvd is 20 mph, which also meets the threshold noted in the HDM.

Improvement Options – Eliminate Landscaped Median. It is possible to make the westbound left turn lane approaching the Granite Estates Drive intersection longer by eliminating the short landscaped median altogether and constructing back-to-back turn lanes in the median area. Another 100 feet could be added to the westbound left turn lane or the 100 foot distance could be split between the back to back turn lanes approaching Granite Estates Drive and Berg Street. Adding 50 feet to each lane would increase the deceleration area behind anticipated queues and increases the permissible entry speed by 5 mph. Under Year 2036 plus Project conditions adding 50 feet to the westbound left turn lane at Granite Estates Drive would yield 300 feet of lane + bay taper behind the queue. This distance accommodates deceleration from 38 mph. The incremental difference between speed limit and entry speed is 18 mph, which would satisfy HDM guidance. Adding the entire 100 feet to this lane would yield 350 feet of deceleration, an entry speed of 43 mph and an incremental difference of 12 mph.

Mitigation. The project proponents shall be responsible for reconstructing the Douglas Blvd median between Granite Estates Drive and Berg Street to provide longer left turn lanes to the satisfaction of the Placer County DPWF. With this improvement the project's cumulative impact is not significant.

BERG STREET ACCESS DESIGN

Proposed Design

The project proposes full access onto Berg Street. The site plan indicates that Berg Street will be widened along the project frontage to meet Plate 116 requirements. With these improvements, the adequacy of the full access at the Berg Street driveway is based on consideration of three factors. First, the sight distance available from the exit has been considered relative to the speed of northbound traffic on Berg Street. Second, the need for a southbound left turn lane to separate project traffic from through traffic has been evaluated. Third, the length of any queue of southbound traffic waiting at the Douglas Blvd intersection relative to the project driveway has also been considered.

Evaluation

Sight Distance. The posted speed limit on Berg Street is 35 mph. The sight distance needed at that speed is noted in Plate 116 of the Placer County standard plans (i.e., 385 feet) and should not be less than the minimum sight distance requirement under Table 201.1 of the Highway Design Manual (i.e. 250 feet). The Plate 116 distance is clearly available looking to the north from the project driveway. Looking to the south, turning vehicles would be visible in the Douglas Blvd intersection at a distance of roughly 220 feet. Because all northbound traffic first makes a left or right turn from Douglas Blvd, the adequacy of the available sight distance should be predicated on the speed of those turning vehicles. In general, the available turning radii would limit the speed of traffic leaving the Douglas Blvd intersection to 20-25 mph. The Plate 116 sight distance requirement for 25 mph is 275 feet, while the minimum is 150 feet. Based on the speed on northbound Berg Street, the sight distance at the driveway (220 feet) which satisfies minimum HDM requirements (150 feet) should be adequate looking south.

Left Turn Lane Channelization. The methodology employed by Caltrans and local agencies was used to quantitatively determine whether a left turn lane is justified in this case. The American Association of State Transportation and Highway Officials (AASHTO) have identified guidelines for the installation of left turn lanes in their publication *A Policy on Geometric Design of Highways and Streets*. These guidelines, which are presented in their Table 9-23 and Table 15 which follows, base the need for a left turn lane on the volume of traffic on the mainline road and the relative percentage of that traffic that turns. These criteria are applicable to intersections where the major street traffic proceeds freely and side street traffic is controlled by stop signs. These guidelines are the basis for determination of left turn warrants at un-signalized intersection based strictly on traffic volumes. A second metric of impact to public safety is also considered by Placer County. Each location is analyzed on an individual basis, and traffic engineering judgment is employed.

The need for the left turn lane could be based on the volumes occurring in the a.m. peak hour when the volume of inbound traffic is highest. Under Cumulative plus Project conditions there would be 5 left turns into the site at this location. The resulting cumulative opposing / advancing volume occurring at the site access have been determined. As noted in Table 15, for the volume of northbound traffic (i.e., 105 vehicles per hour), the advancing volume would need to be in the

range of 600 to 700 vph at 40 mph design to justify a separate left turn lane at the access. The anticipated volume (i.e., 80 vph) falls well outside that range. Therefore, a left turn lane would not be needed under these criteria.

TABLE 15
TRAFFIC VOLUMES JUSTIFYING LEFT TURN LANES

Opposing Volume (veh/hr)	Advancing Volume (veh/hr)			
	5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns
40-mph operating speed				
800	330	240	180	160
600	410	305	225	200
400	510	380	275	245
200	640	470	350	305
105	***80(6%)***			
100	720-	515	390	340-

Source: *A Policy on Geometric Design of Highway and Streets, AASHTO, 2012, Chapter 9.*
Cumulative Plus Project AM Peak Hour Volumes are shown in RED

Southbound Queue. The length of the southbound queue on Berg Street approaching the Douglas Blvd intersection can be identified as a byproduct of the HCM Level of Service calculation. Because Berg Street traffic must turn right, the delays for these motorists are relatively low, and as a result the projected 95th percentile queue is 2 vehicles or less under Cumulative plus Project conditions. At 25 feet per vehicle this queue would extend 50 feet but would not have an appreciable effect on the operation of the site access roughly 170 feet further north. This access as proposed is adequate under these criteria.

Relationship to Douglas Blvd Frontage Improvements

Westbound deceleration on Douglas Blvd. Placer County may require that improvements be made to the project frontage to satisfy Plate 116 requirements. These requirements could include a westbound deceleration taper.

EXISTING PLUS APPROVED / PENDING PROJECTS (EPAP) IMPACTS

This analysis section addresses the relative impacts of the project within the context of other approved and pending development projects in Granite Bay. The main purpose of this assessment is to confirm the adequacy of the configuration of the Granite Drive - Berg Street turn lanes on Douglas Blvd, but traffic conditions at all study intersections have been assessed. This assessment does not however address the long term effects of regional traffic growth which is evaluated in the subsequent Cumulative analysis.

Project Characteristics

Land Use. Placer County staff identified pending and approved projects for this analysis, as noted in Table 16. This list of projects includes those in the immediate area of the proposed project as well as other Granite Bay area projects that had not been occupied when the baseline traffic counts employed for this analysis were collected in 2017. The local projects include:

- Berg Street Medical / Office Complex
- The Ponds Event Pavilion and Office
- Granite Estates Professional Center
- Little Sunshine Pre-School

As indicated, a total of 33 development projects were considered for this analysis.

Trip Generation. Table 16 also indicates the daily and weekday peak hour trip generation associated with the approved / pending projects list. As indicated, these 33 projects could generate 11,360 daily trips, with 898 a.m. and 1,312 p.m. peak hour trips.

TABLE 16
IDENTIFIED APPROVED / PENDING PROJECTS AND TRIP GENERATION

Project	Unit	Quantity	Trips						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Attractions									
The Ponds Pavilion and Office (20.44 ksf Phase 1 and 24 ksf office Phase 2)	Office ksf	40.44	740	90	12	102	29	144	173
Granite Bay Medical Office Complex	MOB ksf	15.9 ksf	575	30	8	38	16	41	57
Granite Estates Professional Center	Office ksf	19.7 ksf[1]	393	25	6	31	12	36	48
Little Sunshine Preschool	Students	144	631	61	54	115	55	62	117
Granite Bay Memory Care	beds	66	176	5	4	9	6	9	15
Ovation Senior Living	beds	114	303	10	6	16	11	14	25
Roseville Congregate Living home	beds	15	40	1	1	2	2	2	4
Amazing Facts	Church ksf	120.2	1,095	42	25	67	32	34	66
Chabad of Roseville[2]	Church ksf students	25.0 130	348	10	4	14	6	6	12
Pardee Court Commercial (net)	ksf	8.8 ksf	360	9	11	20	2	-5	-3
2Placer Retirement Residences	units	145	293	5	4	9	14	11	25
Sehr Winery & Events[3]	Tasting Room Attendees	4.8 ksf 200	212	4	4	8	84	4	88
Hacienda Carnelitas[4]	Event ksf Attendees	8.60 ksf 205	184	2	2	4	82	0	82
St Joseph's Church[5]	Church ksf multipurpose	25.0 16.3	176	7	4	11	5	6	11
Subtotal Non-Residential			5,526	301	145	446	356	364	720

(1) 7,900 sf operating when traffic counts conducted
(2) ITE rates applied to net increase of 12,200 sf of community center and 88 students
(3) Average weekday visitation based on Placer Wineries counts plus 200 person event starting in p.m. peak hour
(4) 205 person event starting in p.m. peak hour
(5) 5.9 ksf multipurpose and 16.5 ksf church already exist

TABLE 16 (continued)
IDENTIFIED APPROVED / PENDING PROJECTS AND TRIP GENERATION

Project	Unit	Quantity	Trips						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Productions									
The Grove at Granite Bay(6)	SFR	32	105	2	6	8	7	4	11
Granite Rock Estates	SFR	16	152	3	9	12	10	6	16
Lake Vista Estates	SFR	15	143	3	8	11	9	6	15
Enclave at Granite Bay	SFR	12	114	2	7	9	8	4	12
Maher Subdivision	SFR	7	67	1	4	5	4	3	7
Rancho Del Oro	SFR	89	847	17	50	67	56	33	89
Whitehawk I (Granite Bay 17)	SFR	24	228	5	13	18	15	9	24
Whitehawk II (Granite Bay 33)	SFR	55	524	10	31	41	35	20	55
Barton Ranch	SFR	10	95	2	6	8	6	4	10
Greyhawk III	SFR/MFR	28 SFR / 44 MFR	523	8	32	40	33	18	51
Park at Granite Bay	SFR	56	533	11	31	42	35	21	56
Hawk Homestead	SFR	108	1,028	20	61	81	69	39	108
Edon Roc II	SFR	6	57	1	4	5	4	2	6
Colinas Estates	SFR	10	95	2	6	8	6	4	10
Eureka at Granite Bay	MFR	28	163	2	10	12	10	5	15
Amazing Facts Residential	SFR	16	152	3	9	12	10	6	16
Pardee Court	MFR	35	204	3	12	15	12	6	18
Premier Granite Bay	MFR	52	302	4	19	23	18	9	27
Residences at Granite Bay Golf	SFR	4	38	1	2	3	3	1	4
Rolling Greens	SFR	9	96	2	5	7	6	3	9
Ventura at Granite Bay	SFR	33	314	6	19	25	21	12	33
Subtotal Residential			5,780	108	344	452	377	215	592
(1) Eleven lots unoccupied when traffic counts conducted									
			Daily trips	AM Peak Hour Trips			PM Peak Hour Trips		
				In	Out	Total	In	Out	Total
TOTAL TRIPS			11,360	409	489	898	733	579	1,312

Traffic Volume Forecasts

Approach. The trips associated with the identified project list were assigned to the Granite Bay circulation network based on distribution assumptions derived from review of other traffic studies, assessment current traffic patterns and relative travel times and review of regional traffic model forecasts. The trip assignment was performed manually using a TRAFFIX local area assignment model to provide adequate detail for assessment of specific intersections. To provide a "worst case" assessment no attempt was made to match trips between productions and attractions as would be the case using a regional model.

Volumes. Figure 6 presents resulting "Existing plus Approved / Pending Projects (EPAP)" peak hour traffic volumes at intersections, while Figure 7 presents the sum of EPAP and Quarry Ridge traffic volumes.

Background EPAP Conditions

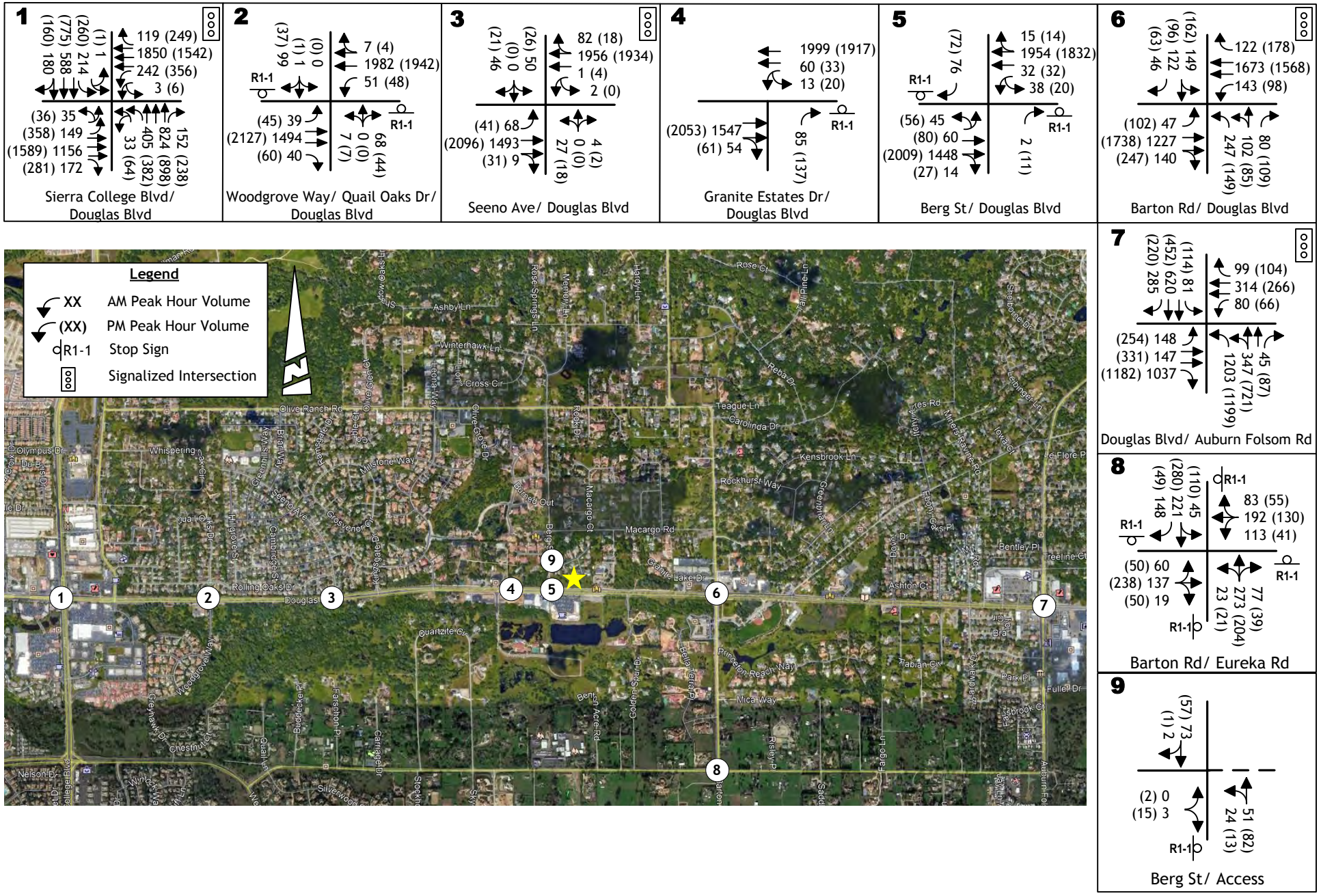
Improvements. Identified approved projects are conditioned to install improvements to study area intersections or will make access improvements. The Ventura at Eureka subdivision will add a westbound left turn lane at the Eureka Road / Barton Road intersection, and this improvement has been assumed. At the Douglas Blvd / Seeno Avenue intersection the Whitehawk II project will be constructing the south leg of the intersection, and at the Quarry Ridge access on Berg Street the Granite Bay Medical Offices will construct their access on the west side of the intersection.

Intersection Levels of Service. Table 17 presents the results of intersection Level of Service calculations for "Existing plus Approved / Pending Projects" conditions. As indicated, three intersections will operate with Levels of Service that do not satisfy minimum standards. The **Douglas Blvd / Woodgrove Way / Quail Oaks Drive intersection** will operate at LOS F in the a.m. and p.m. peak hour. This deficiency also occurs under Existing conditions. while a traffic signal might be considered, the anticipated improvement would be prohibiting left turns from side streets onto Douglas Blvd.

The **Douglas Blvd / Granite Estates Drive intersection** will operate at LOS F in the p.m. peak hour, and measures to improve the overall Level of Service are limited at this side-street stop-controlled intersection. Outbound left turns are already prohibited. Eliminating westbound left turns would actually increase the overall average delay because the individual delay associated with that movement is less than average. A separate eastbound right turn lane could be constructed on Douglas Blvd, but while this treatment would reduce delay for northbound right turns slightly, the overall Level of Service would remain LOS F.

The **Barton Road / Eureka Road intersection** is projected to operate at LOS F in the a.m. and p.m. peak hour if no improvements are made. This deficiency already occurs in the existing a.m. peak hour. The Granite Bay CIP includes a traffic signal at this location, and implementation of a traffic signal with applicable auxiliary lanes would yield LOS C or better conditions.

Roadway Segment Levels of Service Based on General Plan Thresholds. Table 18 identifies projected daily traffic volumes assuming occupancy of approved / pending project. The same locations which are already deficient under existing conditions would continue to operate with Level of Service that falls below the minimums standards of the GBCP. The four lane segments of Douglas Blvd from Cavitt Stallman Road to Auburn Folsom Road would operate at LOS F.



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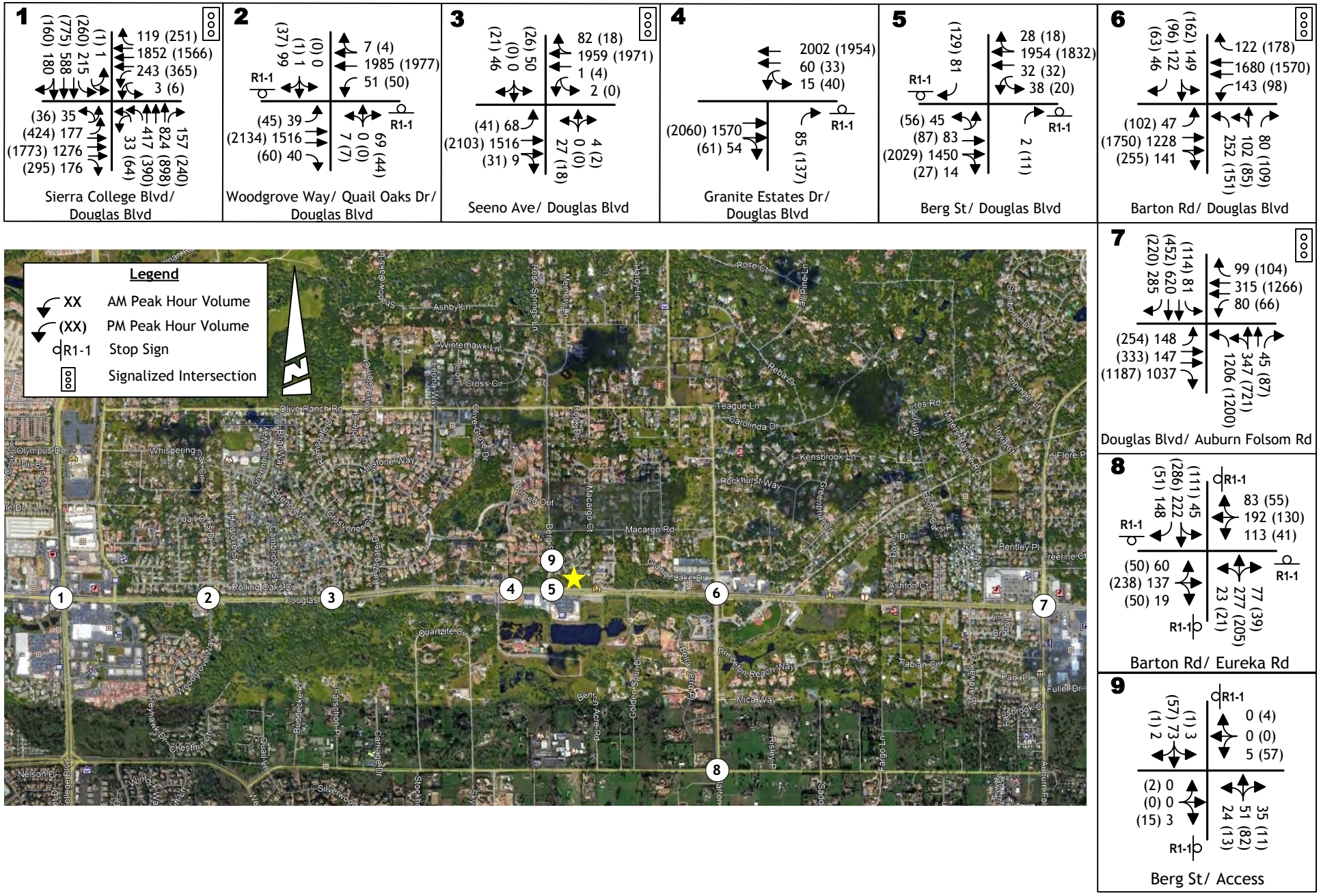
EXISTING PLUS APPROVED PROJECTS
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

figure 6



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EPAP PLUS QUARRY RIDGE
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

figure 7

TABLE 17 EXISTING PLUS APPROVED / PENDING PROJECTS PLUS QUARRY RIDGE PEAK HOUR INTERSECTION LEVELS OF SERVICE									
		AM Peak Hour				PM Peak Hour			
		Existing Plus Approved / Pending Projects		EPAP Plus Project		Existing Plus Approved / Pending Projects		EPAP Plus Project	
Intersection	**Control**	**LOS**	**Average Delay (sec/veh)**	**LOS**	**Average Delay (sec/veh)**	**LOS**	**Average Delay (sec/veh)**	**LOS**	**Average Delay (sec/veh)**
Douglas Blvd / Sierra College Blvd	Signal	D	46.5	D	48.0	E	61.5	E	70.0
Douglas Blvd / Woodgrove Way	NB/SB Stop								
(overall)		**(F)**	**(148.0)**	**(F)**	**(148.0)**	**(F)**	**(243.5)**	**(F)**	**(241.5)**
Eastbound left turn		C	23.0	C	23.0	C	21.5	C	22.0
Westbound left turn		C	16.0	C	16.0	C	27.5	C	27.5
Northbound left+thru+right turn		F	419.0	F	414.0	F	711.0	F	711.0
Southbound left+thru+right turn		F	61.5	F	61.5	F	153.0	F	153.5
Douglas Blvd / Seeno Avenue	Signal	B	15.5	B	15.5	B	16.5	B	17.0
Douglas Blvd / Granite Estates Drive	NB Stop								
(overall)		(C)	(20.5)	(C)	(21.0)	**(F)**	**(57.0)**	**(F)**	**(56.0)**
Westbound left turn		C	18.0	B	18.5	D	27.5	D	31.0
Northbound right turn		C	23.0	C	23.0	F	68.5	F	69.5
Douglas Blvd / Berg Street	NB/SB Stop								
(overall)		(C)	(23.5)	(D)	(25.0)	(D)	(25.5)	(D)	(30.0)
Eastbound left turn		D	26.5	C	29.0	D	27.0	D	28.5
Westbound left turn		B	15.0	B	15.0	C	23.0	C	23.5
Northbound right turn		C	15.5	B	15.5	C	22.5	C	22.5
Southbound right turn		D	28.0	C	29.0	D	25.0	D	34.5
Douglas Blvd / Barton Road	Signal	E	57.5	E	59.0	E	73.5	E	76.5
Douglas Blvd / Auburn – Folsom Road	Signal	D	46.5	D	47.0	D	46.0	D	46.0
Barton Road / Eureka Road	All-way Stop	**F**	**73.5**	**F**	**75.5**	**E**	**44.0**	**E**	**46.0**
Berg Street / Access	EB/WB Stop								
(overall)		(A)	(7.5)	(A)	(8.0)	(A)	(8.0)	(A)	(9.5)
Northbound Left turn		A	7.5	A	7.5	A	7.5	A	7.5
Southbound left turn		-	-	A	7.5	-	-	A	7.5
Eastbound left+right turn		A	8.5	A	8.5	A	9.0	A	9.0
Westbound left+right turn		-	-	B	10.0	-	-	B	10.5

TABLE 18
EXISTING PLUS APPROVED / PENDING PROJECTS AND QUARRY RIDGE
ROADWAY SEGMENT LEVELS OF SERVICE

Roadway	Location	Lanes	Existing Plus Approved / Pending Projects Conditions			EPAP Plus Quarry Ridge Conditions			
			Daily Volume		LOS	Daily Volume		LOS	Change in V/C
			Projects Only	Total		Project Alone	Total		
Douglas Blvd	Sierra College Blvd to Cavitt Stallman Rd	4	3,760	**51,320**	**F**	320	**51,640**	**F**	0.009
	Cavitt Stallman Road to Seeno Avenue	4	3,330	**50,160**	**F**	320	**50,480**	**F**	0.008
	Seeno Avenue to Berg Street	4	2,810	**47,610**	**F**	340	**47,950**	**F**	0.009
	Berg Street to Barton Road	4	2,680	**45,480**	**F**	190	**45,670**	**F**	0.005
	Barton Road to Auburn Folsom Road	4	2,070	**44,690**	**F**	110	**44,800**	**F**	0.003
Berg Street	Olive Ranch Road to Project	2	260	1,460	A	40	1,500	A	0.003
	Olive Ranch Road to Douglas Blvd	2	790	1,990	A	530	2,520	A	0.035

EPAP Plus Quarry Ridge Project Levels of Service

Intersections. As shown in Table 17, the addition of project trips will incrementally increase the length of delays at study intersections. At all but three locations the resulting Levels of Service will continue to satisfy the minimum LOS E standard for Douglas Blvd and minimum C standard elsewhere from the Granite Bay Community Plan. Thus, the impacts of the project are not considered to be significant under CEQA at these locations.

The project's relative impact has been considered at the three intersections where EPAP background conditions already fail to satisfy minimum GBCP standards. At each location the applicable Methodology of Assessment criteria has been reviewed. The **Douglas Blvd / Woodgrove Way / Quail Ridge Drive** intersection operates at an overall LOS F with and without the project, and the change in overall delay is the applicable criteria. In this case, because the project adds vehicles to movements with individual delays that are below average, the overall weighted average delay does not increase as a result of the project. Thus the project's impact is not significant.

Similarly, the **Douglas Blvd / Granite Estate Drive intersection** is projected to operate with an overall LOS F with and without the project. Again, because the project adds to movements with lower than average delays, the overall weighted average does not increase, and the projects impact is not significant.

The **Barton Road / Eureka Road intersection** will operate at LOS F with and without the project, and the change in overall day is the significance criteria. In this case, the a.m. peak hour delay increases by 2.0 seconds and the average delay in the p.m. peak hour increases by 2.0 seconds. Because these increases are less than the 2.5 second increment permitted under the Methodology of Assessment, the project's impact is not significant.

Roadway Segments based on General Plan Thresholds. Table 18 identifies the project's daily traffic volume contribution to study area roadway segments under the EPAP background condition and resulting Levels of Service. As indicated the projected conditions exceed GBCP minimum standards on Douglas Blvd, although the project will not change the Level of Service occurring on any roadway segment. The project will add traffic to roadways that are deficient under background conditions based on General Plan thresholds. In this case the significance of project impact is based on the criteria included under Placer County Methodology of assessment, and the project contribution has been evaluated accordingly.

The project's incremental change can be described in terms of its change in roadway volume / capacity ratio. As was the case under Existing plus Project conditions, the project's contribution to Douglas Blvd ranges from 0.003 to 0.009. As these changes are less than the 0.050 increment permitted under Placer County methodology, the project's impact is not significant under this metric.

The second criteria is the "vehicles per lane" (vpl) traffic increase. As was discussed under Existing plus Project conditions, the project adds 30 to 85 vpl at various locations on Douglas Blvd. Because these increments do not exceed the 100 vpl threshold permitted under Placer County methodology, the project's impact is not significant.

CUMULATIVE IMPACTS

This section addresses cumulative impacts occurring as a result of future development in the South Placer area and regional traffic growth on major roads.

Background Assumptions / Approach

Regional Traffic Growth. The impacts of numerous approved / pending projects were evaluated within the context of long term cumulative traffic conditions. Placer County is currently updating the GBCP Circulation Element, and as part of that work an updated regional travel demand forecasting model was created. Baseline Year 2015 and Future Year 2036 daily and peak hour model traffic volume forecasts were provided by Placer County for use in this analysis.

Project Land Use. Because the proposed project has been included in the Year 2036 land use assumptions, for this analysis the long term traffic volume forecasts present the Cumulative plus Project scenario. The Cumulative No Project condition was identified by manually subtracting the proposed project's trips.

Methods. An incremental approach was taken to create the traffic volume employed for the analysis. Year 2016 model and Year 2036 model results were compared at intersections and on roadway segments and the incremental different was identified. These increments were then added to the current intersection or segment traffic volumes to create the adjusted future condition. In addition, the future forecasts were manually adjusted at the Douglas Blvd / Granite Estate and Douglas Blvd / Berg Street intersections to account for the local access limitations created by left turn prohibition and resulting u-turns.

Traffic Volume Forecasts

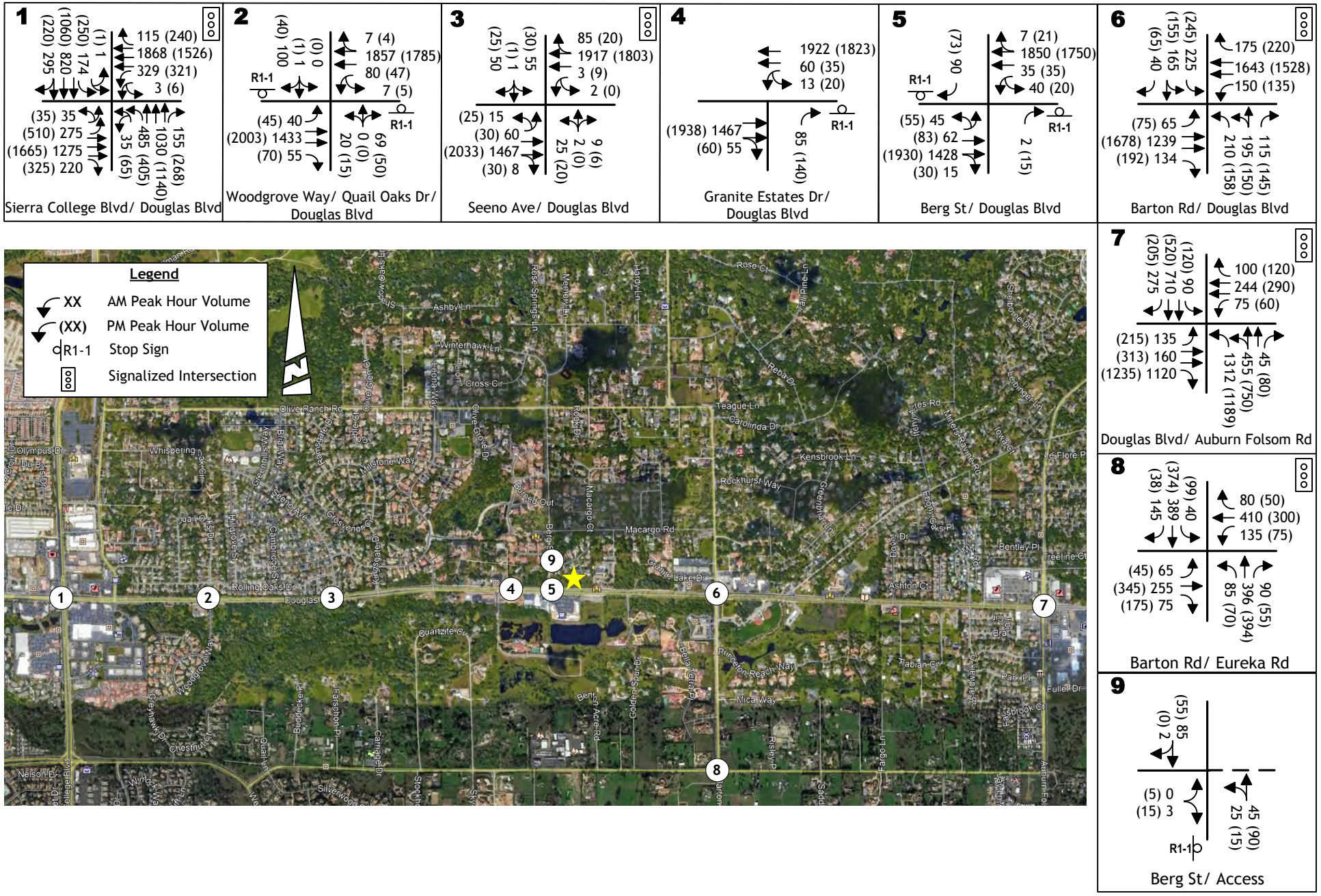
Figure 8 presents background long term Cumulative No Project traffic volumes at study intersections, while Figure 9 presents volumes with the proposed project.

Future Improvements. Local agencies have identified improvements to be constructed in the future whether Quarry Ridge Professional Office Park proceeds or not.

Placer County Countywide Traffic Mitigation Fee Program. Placer County administers the Countywide Traffic Mitigation Fee Program which requires new development to contribute to the cost of circulation system improvements of county wide benefit. Individual benefit districts have been established. The Placer County roads in this analysis are addressed in the Granite Bay Capital Improvement Program (CIP), and the current list of CIP improvements is presented in Table 19. Improvements to study area locations have been assumed to be installed.

In addition, the City of Roseville intends to add a southbound right turn lane at the Douglas Blvd / Sierra College Blvd intersection, and this improvement has been included in the analysis.

TABLE 19 GRANITE BAY FEE DISTRICT / CIP PROJECTS		
Street / Intersection	**Segment**	**Description of Improvements**
Auburn Folsom Rd	Sacramento County to 500' north of Douglas Blvd	Widen to 4-lanes with Class II bike lanes, intersection improvements
	Douglas Blvd to Joe Rodgers Rd	Class II bike lanes / Curb, Gutter and Sidewalk
	At Douglas Blvd	Intersection Improvements
	At Cavitt-Stallman Rd	New Traffic Signal
	Joe Rodgers Rd to Dick Cook Rd	Traffic flow Improvements (e.g. left turn pockets)
Barton Rd	Sacramento County line to Loomis limit	Widen Pavement, Class II bikeway
	At Douglas Blvd	Intersection Improvements (EB right turn lane, SB left turn lane, signal upgrades)
	At East Roseville Parkway	New Traffic Signal
	At Cavitt Stallman Rd	Traffic signal or Roundabout
Berg Street	Olive Ranch Rd to Douglas Blvd	Widen Pavement
Cavitt-Stallman Rd	Cavitt-Stallman South Rd to Barton Rd	Widen Pavement, Class II Bikeway
	Barton Rd to Auburn Folsom Rd	Widen Pavement, Class II Bikeway
	At Laird Rd	Realign Intersection, ROW
Dick Cook Rd	Val Verdi Rd to Auburn Folsom Rd	Widen pavements (per GBCP)
Douglas Blvd	Cavitt Stallman Rd south to Sierra College Blvd	Widen to 6-lanes, Class II bike lanes
	At Sierra College Blvd	Additional turn lanes on Douglas Blvd (dual lefts all approaches) Note: City of Roseville anticipates a southbound right turn lane
East Roseville Pkwy	At Wellington Way	New Traffic Signal
Eureka Rd	Sierra College Blvd to Wellington Way	Widen to 4-lanes with Class II bike lanes
	At Barton Rd	Roundabout or New Traffic Signal
	At Wellington Way	New Traffic Signal
	Wellington Way to Auburn Folsom Rd	Widen pavement, Class II Bike lanes
	At Greyhawk Drive	Intersection improvements (SB left turn lane, EB receiving lane)
Laird Rd	Cavitt Stallman Rd to Loomis Town limits	Widen Pavement, Curve Improvements, Class II Bikeway
Laird Rd to Val Verde Connector	Connector between Laird Road and Val Verde Rd	Construct 2-lane roadway with shoulders
Old Auburn Rd	Sierra College Blvd to Roseville limits	Complete north side of roadway
Olive Ranch Rd	Cavitt Stallman Rd to Barton Rd	Widen Pavement / Reconstruct
Sierra College Blvd	Sacramento Co to Old Auburn Rd	Widen to 6-lanes, class II bike lanes
	At Cavitt Stallman Rd	Partial Signal
	At Eureka Rd	Extend southbound left turn lane
	Old Auburn Rd to Roseville Pkwy	Sidewalk, Curb & Gutter
	Eureka Rd to Cavitt Stallman Rd	Sidewalk, Curb 7 Gutter
Val Verde Rd	Wells Avenue to Dick Cook Rd	Widen Pavement
Wells Avenue	Laird Rd to Val Verde Rd	Widen pavement
	Loomis Town limits to Laird Rd	Widen Pavement
Circulation Update	Fee District	Circulation Element Update
Minor Improvements	Fee District	Minor Improvements required due to increased traffic



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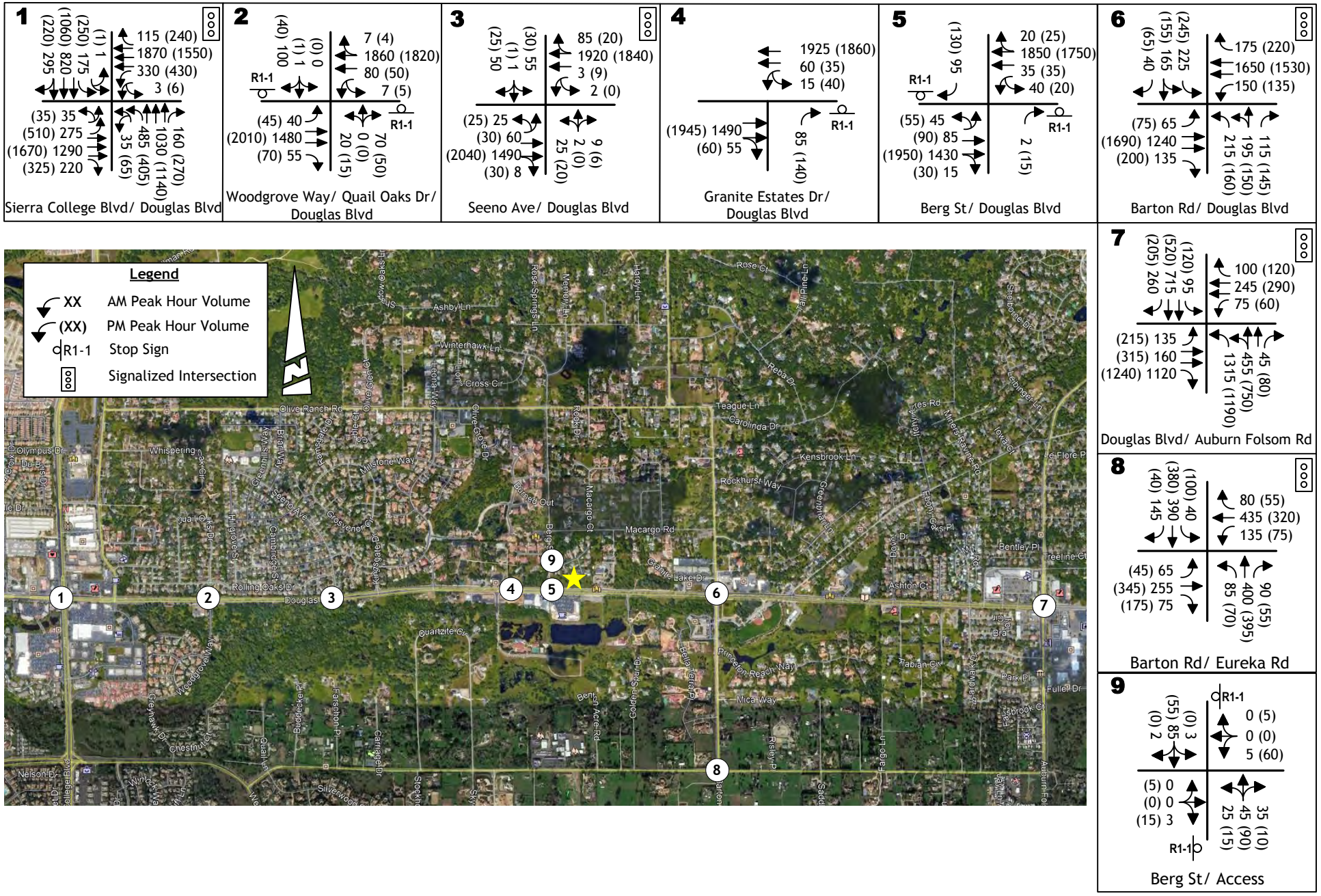
YEAR 2036 WITHOUT PROJECT
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

figure 8



YEAR 2036 PLUS QUARRY RIDGE
TRAFFIC VOLUMES AND LANE CONFIGURATIONS

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figure 9

Cumulative No Project Levels of Service

Intersection Level of Service. Table 20 identifies the long term cumulative Level of Service projected at study intersections under the No Project condition. With one exception, these locations will satisfy the adopted minimum LOS standard.

The Douglas Blvd / Woodgrove Way / Quail Oaks Drive intersection is projected to operate at LOS F in the a.m. and p.m. peak hour if no improvements are made. To improve the Level of Service at this location, the Woodgrove Way and Quail Oaks Drive approaches will need to be limited to right turns only, although left turns from Douglas Blvd can be permitted at each direction. This improvement would yield LOS D at the intersection, and LOS D is within the LOS E minimum established by the Granite Bay Community Plan.

Roadway Segment Levels of Service Based on General Plan Thresholds. Table 21 identifies projected daily traffic volumes under the Cumulative No Project condition. The same locations which are already deficient under existing conditions would continue to operate with Level of Service that exceeds the minimum standards of the GBCP. The four lane segments of Douglas Blvd from Cavitt Stallman Road to Auburn Folsom Road would operate at LOS F.

Cumulative Plus Project Conditions

Intersection Level of Service. Projected cumulative traffic volumes in this area of Granite Bay will increase if the project is developed, and the length of delays experienced during peak hours will increase slightly at study intersections. One location will operate with Level of Service that exceeds minimum standards. As shown in Table 20 without improvements LOS F conditions will remain at the **Douglas Blvd / Woodgrove Way / Quail Oaks Drive intersection.** Because the minimum LOS E standard is exceeded with and without the project, the significance of the project's impact is determined based on the change in overall delay. In this case, because the incremental change is less than the 2.4 second increment permitted under adopted methodology, the project's impact is not significant, and mitigation is not required.

TABLE 20
YEAR 2036 PLUS PROJECT PEAK HOUR INTERSECTION LEVELS OF SERVICE

Intersection	Control	AM Peak Hour				PM Peak Hour			
		Year 2036 No Project		Year 2036 With Project		Year 2036 No Project		Year 2036 with Project	
		LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)	LOS	Average Delay (sec/veh)
Douglas Blvd / Sierra College Blvd	Signal	E	63.0	E	64.5	E	71.5	E	73.0
Douglas Blvd / Woodgrove Way	NB/SB Stop								
(overall)		**(F)**	**(517.0)**	**(F)**	**(519.0)**	**(F)**	**(784.5)**	**(F)**	**(773.5)**
Eastbound left turn		C	20.5	C	20.5	C	18.5	C	19.0
Westbound left turn		C	17.0	C	17.5	C	24.5	C	25.0
Northbound left+thru+right turn		F	>999	F	>999	F	>999	F	>999
Southbound left+thru+right turn		C	55.5	C	56.0	F	141.0	F	141.5
Douglas Blvd / Seeno Avenue	Signal	B	15.0	B	15.5	B	14.5	B	14.5
Douglas Blvd / Granite Estates Drive	NB Stop								
(overall)		(C)	(19.0)	(C)	(19.5)	(E)	(47.0)	(E)	(47.0)
Westbound left turn		C	16.5	C	17.0	C	24.5	D	27.5
Northbound right turn		C	21.0	C	21.5	F	56.0	F	57.5
Douglas Blvd / Berg Street	NB/SB Stop								
(overall)		(C)	(22.0)	(C)	(24.0)	(C)	(23.5)	(D)	(27.0)
Eastbound left turn		D	23.5	D	26.5	C	25.0	D	25.5
Westbound left turn		B	15.0	B	14.5	C	22.0	C	22.5
Northbound right turn		C	15.0	C	15.0	C	21.5	C	22.0
Southbound right turn		D	27.0	D	28.0	C	23.5	D	31.5
Douglas Blvd / Barton Road	Signal	Cc	34.5	D	35.0	C	33.5	C	34.0
Douglas Blvd / Auburn – Folsom Road	Signal	E	51.5	E	52.0	D	49.0	D	49.0
Barton Road / Eureka Road	Signal	C	30.0	C	30.5	C	21.5	C	21.5
	roundabout	C	16.5	C	17.5	B	11.5	B	11.5
Berg Street / Access	EB/WB Stop								
(overall)		(A)	(7.5)	(A)	(8.0)	(A)	(8.5)	(A)	(9.5)
Northbound Left turn		A	7.5	A	7.5	A	7.5	A	7.5
Southbound left turn		-	-	A	7.5	-	-	-	-
Eastbound left+right turn		A	8.5	A	8.5	A	9.0	A	9.0
Westbound left+right turn		-	-	B	10.0	-	-	B	10.5

KDA

TABLE 21
YEAR 2036 WITH QUARRY RIDGE
ROADWAY SEGMENT LEVELS OF SERVICE

Roadway	Location	Class	Lane	Year 2036 No Project		Year 2036 with Quarry Ridge			
				Daily Volume	LOS	Daily Volume		LOS	Change in V/C
						Project Alone	Total		
Douglas Blvd	Sierra College Blvd to Cavitt Stallman Rd	Arterial Moderate Access Control	6	**54,380**	**F**	320	**54,700**	**F**	0.006
	Cavitt Stallman Rd to Woodgrove Way	Arterial High Access control	4	**51,980**	**F**	320	**52,300**	**F**	0.008
	Woodgrove Way to Seeno Avenue		4	**50,510**	**F**	340	**50,850**	**F**	0.009
	Seeno Avenue to Berg Street		4	**50,160**	**F**	340	**50,500**	**F**	0.009
	Berg Street to Barton Rd		4	**47,560**	**F**	190	**47,750**	**F**	0.005
	Barton Rd to Joe Rodgers Rd		4	**48,340**	**F**	110	**48,450**	**F**	0.003
	Joe Rodgers Rd to Auburn Folsom Rd		4	**47,390**	**F**	110	**47,500**	**F**	0.003
Berg Street	Olive Ranch Rd to Project	Arterial Low Access Control	2	1,460	A	40	1,500	A	0.003
	Olive Ranch Rd to Douglas Blvd		2	1,420	A	530	1,950	A	0.035

Roadway Segments based on General Plan Thresholds. Table 25 identifies the project's daily traffic volume contribution to study area roadway segments under the Year 2036 condition and resulting Levels of Service. As indicated the projected conditions exceed GBCP minimum standards on Douglas Blvd, although the project will not change the Level of Service occurring on any roadway segment. The project will add traffic to roadways that are deficient under background conditions based on General Plan thresholds. In this case the significance of project impact is based on the criteria included under Placer County Methodology of Assessment, and the project contribution has been evaluated accordingly.

The project's incremental change can be described in terms of its change in roadway volume / capacity ratio. As was the case under other scenarios, the project's contribution to Douglas Blvd ranges from 0.003 to 0.009. As these changes are less than the 0.050 increment permitted under Placer County methodology, the project's impact is not significant under this metric.

The second criteria is the "vehicles per lane" (vpl) traffic increase. As was discussed under Existing plus Project conditions, the project adds 28 to 85 vpl at various locations on Douglas Blvd. Because these increments do not exceed the 100 vpl threshold permitted under Placer County methodology, the project's impact is not significant.

IMPACTS / MITIGATIONS

Improvements required to mitigate identified deficiencies and reduce project impacts to a less than significant level are summarized in this section.

The Placer County Road Network Traffic Fee Program identifies intersection and roadway improvements needed within various districts in the County. Improvements are intended to be funded in part by the development fee, with State funding, local programs and developer frontage improvements intended to fund the balance of the improvement costs. The project site is located within the Granite Bay Benefit District.

Existing Conditions

Intersection Level of Service. Two intersections operate with Levels of Service that exceed the GBCP's minimum standards.

The Douglas Blvd / Woodgrove Way / Quail Oaks Drive intersection operates at LOS F. Eliminating side street left turns and through traffic while continuing to allow left turns from Douglas Blvd would yield satisfactory Level of Service (i.e., LOS E or better).

The Eureka Road / Barton Road intersection operates at LOS F in the a.m. peak hour. The Granite Bay Fee District / CIP includes funds for a traffic signal or roundabout at this location. Either of which could yield satisfactory operating conditions (i.e., LOS C or better).

No other intersection improvements have been found to be needed through this analysis to address existing conditions. At other locations satisfactory intersection operations are currently experienced and minimum Level of Service goals of the Granite Bay Community Plan are met.

Roadway Segment Level of Service based on General Plan Thresholds. The four lane segments of Douglas Blvd from Sierra College Blvd to Auburn Folsom Road carry daily traffic volumes that yield LOS F under the Placer County General Plan thresholds. Theoretically the road would need to be widened to six lanes. LOS D would result between Sierra College Blvd and Cavitt Stallman Road, and LOS C would result elsewhere. However, the GBCP does not support a six lane roadway and funding for such an improvement has not been identified.

Existing Plus Project Conditions

Intersection Level of Service. No additional intersections will have deficient Level of Service as a result of the project. Development of the proposed project will result in significant impact to the Douglas Blvd / Woodgrove Way / Quail Oak Drive intersection under Placer County Methodology of Assessment.

Mitigation T-1. The project proponents shall be responsible for installing a feature in the median opening that will continue to permit eastbound and westbound left turns from Douglas Blvd onto Quail Oaks Drive and onto Woodgrove Way, while prohibiting northbound and southbound thru

traffic across Douglas Blvd as well as left turns onto Douglas Blvd from either approach. Implementation of this mitigation measure will not only result in this impact of the project being less than significant, but will improve the level of service at the intersection from a currently unacceptable LOS of F (with and without the project) to LOS C.

Roadway Segment Level of Service. Development of the proposed project will not result in significant impacts to roadway segments under Placer County Methodology of Assessment. Thus, no mitigations are required based on Roadway Segment Level of Service.

Douglas Blvd Median Openings. The left turn lanes on Douglas Blvd approaching Berg Street (eastbound) and Granite Estates Drive (westbound) have recently been lengthened, and both provide adequate space for waiting queues. Like other locations on Douglas Blvd both require approaching motorists to slow in the #1 through lane in order to decelerate prior to waiting queues. However, under Existing plus Project conditions the incremental difference in speed between through traffic and vehicles entering the turn lanes satisfies Highway Design Manual guidance. No mitigation is required.

The project will contribute its fair share to the cost of regional circulation system improvements by paying adopted fees and will make frontage and access improvements described herein, and no additional off-site improvements are required to mitigate direct project impacts based on Level of Service.

Existing Plus Approved / Pending Projects

Intersection Level of Service. Three intersections will operate with Levels of Service that exceed the GBCP's minimum standards.

The Douglas Blvd / Woodgrove Way / Quail Oaks Drive intersection will operate at LOS F. Eliminating side street left turns and through traffic while continuing to allow left turns from Douglas Blvd would yield satisfactory Level of Service (i.e., LOS E or better).

The Douglas Blvd / Granite Estates Drive intersection will operate at an overall LOS F. Because outbound left turns are already permitted no other improvements would reduce the overall length of delays at this location.

The Eureka Road / Barton Road intersection will operate at LOS F. The Granite Bay Fee District / CIP includes funds for a traffic signal or roundabout at this location, and either of which could yield satisfactory operating conditions (i.e., LOS C or better).

Roadway Segment Level of Service based on General Plan Thresholds. The four lane segments of Douglas Blvd from Sierra College Blvd to Auburn Folsom Road continue to carry daily traffic volumes that yield LOS F under the Placer County General Plan thresholds. Theoretically the road would need to be widened to six lanes. LOS E would result between Sierra College Blvd and Cavitt Stallman Road, LOS D would generally result between Cavitt Stallman Road and Joe Rodgers and LOS C would east of Joe Rodgers Road. However, the

GBCP does not support a six lane roadway and funding for such an improvement has not been identified.

Douglas Blvd Median Openings. The left turn lanes on Douglas Blvd approaching Berg Street (eastbound) and Granite Estates Drive (westbound) will provide adequate space for waiting queues. Under Existing plus Approved / Pending Projects conditions the incremental difference in speed between through traffic and vehicles entering the turn lanes will satisfies Highway Design Manual guidance. No improvement is required.

EPAP Plus Project Conditions

Intersection Level of Service. No additional intersections will have deficient Level of Service as a result of the project. Development of the proposed project will not result in significant impacts to intersections under Placer County Methodology of Assessment. Thus, no mitigations are required based on intersection Level of Service.

Roadway Segment Level of Service. Development of the proposed project will not result in significant impacts to roadway segments under Placer County Methodology of Assessment. Thus, no mitigations are required based on Roadway Segment Level of Service.

Douglas Blvd Median Openings. Under EPAP Plus Project conditions the incremental difference in speed between through traffic and vehicles entering the turn lane at Granite Estates Drive is 23 mph, which exceeds Highway Design Manual guidance. The existing landscaped median could be eliminated and replaced with a longer turn lane to provide more deceleration space.

Mitigation T-2. The project proponents shall be responsible for modifying the existing median on Douglas Blvd to lengthen the westbound left turn lane at Granite Estates Drive

Cumulative Year 2036 No Project Conditions

Intersections. With anticipated and funded improvements background traffic volumes forecast for the year 2036 will meet minimum GBCP standard at all but one location. The Douglas Blvd / Woodgrove Way / Quail Oaks Drive intersection will operate at Level of Service F, which exceeds the minimum LOS E standard mandated by the Granite Bay Community Plan. To improve the Level of Service at this location, left turns and cross traffic will need to be prohibited. These improvements would result in compliance with current LOS polices.

Roadway Segment Levels of Service Based on General Plan Thresholds. The same locations which are already deficient under Existing conditions would continue to operate with Level of Service that exceeds the minimum standards of the GBCP. The four lane segments of Douglas Blvd from Cavitt Stallman Road to Auburn Folsom Road would operate at LOS F.

Cumulative Year 2036 Plus Project Conditions

Intersections. Development of the project would result in minor increases in the length of delays projected at study area intersections, but the incremental impact of the project is not judged to be significant under Placer County standards. Thus, while the project should contribute its fair share to the cost of regional circulation improvements by paying adopted traffic impact mitigation fees applicable to the Granite Bay area, no other mitigation is needed based on Level of Service.

Roadway Segments based on General Plan Thresholds. The project will add traffic to roadways that are deficient under background conditions based on General Plan thresholds. However, the project's incremental changes in roadway volume / capacity ratio are less than the 0.050 increment permitted under Placer County methodology, the project's impact is not significant under this metric. The project adds fewer than 100 vehicles per day per lane, and because these increments do not exceed the 100 vpl threshold permitted under Placer County methodology, the project's impact is not significant. No mitigation is required

Douglas Blvd Median Openings. Under Year 2036 Plus Project conditions the incremental difference in speed between through traffic and vehicles entering the turn lane at Granite Estates Drive is 23 mph, which exceeds Highway Design Manual guidance. The existing landscaped median could be eliminated and replaced with a longer turn lane to provide more deceleration space.

Mitigation T-2. The project proponents shall be responsible for modifying the existing median on Douglas Blvd to lengthen the westbound left turn lane at Granite Estates Drive.

APPENDIX

National Data and Surveying Services

City of Granite Bay
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Heavy Trucks On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7441-007 Sierra College Blvd & Douglas Blvd
Date : 5/18/2017

Unshifted Count = All Vehicles & Uturns

	Sierra College Blvd Southbound					Douglas Blvd Westbound					Sierra College Blvd Northbound					Douglas Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	32	161	24	0	217	46	326	34	2	408	45	155	31	8	239	35	266	20	1	322	1186	11
7:15	37	176	35	0	248	30	318	26	1	375	70	196	33	6	305	33	267	42	2	344	1272	9
7:30	56	161	26	1	244	43	447	36	1	527	71	246	29	6	352	44	308	34	8	394	1517	16
7:45	72	167	58	0	297	62	395	30	2	489	133	226	29	9	397	42	261	61	3	367	1550	14
Total	197	665	143	1	1006	181	1486	126	6	1799	319	823	122	29	1293	154	1102	157	14	1427	5525	50
8:00	44	124	40	0	208	59	477	29	0	565	83	171	29	10	293	29	323	36	15	403	1469	25
8:15	35	129	47	0	211	59	356	13	0	428	118	168	38	8	332	34	264	41	9	348	1319	17
8:30	33	127	61	0	221	92	402	32	0	526	84	149	50	9	292	60	322	61	7	450	1489	16
8:45	54	161	36	1	252	73	358	28	1	460	101	204	51	19	375	36	271	47	9	363	1450	30
Total	166	541	184	1	892	283	1593	102	1	1979	386	692	168	46	1292	159	1180	185	40	1564	5727	88
16:00	58	148	44	1	251	94	373	45	1	513	95	212	49	14	370	79	394	69	23	565	1699	39
16:15	69	181	40	0	290	66	297	48	5	416	124	265	34	17	440	67	335	65	8	475	1621	30
16:30	48	165	45	0	258	57	341	49	1	448	117	226	40	12	395	62	420	63	7	552	1653	20
16:45	58	163	41	0	262	70	356	61	0	487	92	209	51	16	368	68	370	72	6	516	1633	22
Total	233	657	170	1	1061	287	1367	203	7	1864	428	912	174	59	1573	276	1519	269	44	2108	6606	111
17:00	73	197	42	1	313	74	340	61	2	477	94	189	55	18	356	100	419	76	12	607	1753	33
17:15	71	206	31	0	308	82	336	61	2	481	108	229	52	14	403	105	423	72	11	611	1803	27
17:30	45	199	34	0	278	78	322	55	2	457	88	249	48	16	401	85	377	61	7	530	1666	25
17:45	59	154	29	0	242	76	333	70	2	481	89	183	37	14	323	77	366	45	7	495	1541	23
Total	248	756	136	1	1141	310	1331	247	8	1896	379	850	192	62	1483	367	1585	254	37	2243	6763	108
Grand Total	844	2619	633	4	4100	1061	5777	678	22	7538	1512	3277	656	196	5641	956	5386	865	135	7342	24621	357
Apprch %	20.6%	63.9%	15.4%	0.1%		14.1%	76.6%	9.0%	0.3%		26.8%	58.1%	11.6%	3.5%		13.0%	73.4%	11.8%	1.8%			
Total %	3.4%	10.6%	2.6%	0.0%	16.7%	4.3%	23.5%	2.8%	0.1%	30.6%	6.1%	13.3%	2.7%	0.8%	22.9%	3.9%	21.9%	3.5%	0.5%	29.8%	100.0%	

AM PEAK HOUR	Sierra College Blvd Southbound					Douglas Blvd Westbound					Sierra College Blvd Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	56	161	26	1	244	43	447	36	1	527	71	246	29	6	352	44	308	34	8	394	1517
7:45	72	167	58	0	297	62	395	30	2	489	133	226	29	9	397	42	261	61	3	367	1550
8:00	44	124	40	0	208	59	477	29	0	565	83	171	29	10	293	29	323	36	15	403	1469
8:15	35	129	47	0	211	59	356	13	0	428	118	168	38	8	332	34	264	41	9	348	1319
Total Volume	207	581	171	1	960	223	1675	108	3	2009	405	811	125	33	1374	149	1156	172	35	1512	5855
% App Total	21.6%	60.5%	17.8%	0.1%		11.1%	83.4%	5.4%	0.1%		29.5%	59.0%	9.1%	2.4%		9.9%	76.5%	11.4%	2.3%		
PHF	.719	.870	.737	.250	.808	.899	.878	.750	.375	.889	.761	.824	.822	.825	.865	.847	.895	.705	.583	.938	.944

PM PEAK HOUR	Sierra College Blvd Southbound					Douglas Blvd Westbound					Sierra College Blvd Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	58	163	41	0	262	70	356	61	0	487	92	209	51	16	368	68	370	72	6	516	1633
17:00	73	197	42	1	313	74	340	61	2	477	94	189	55	18	356	100	419	76	12	607	1753
17:15	71	206	31	0	308	82	336	61	2	481	108	229	52	14	403	105	423	72	11	611	1803
17:30	45	199	34	0	278	78	322	55	2	457	88	249	48	16	401	85	377	61	7	530	1666
Total Volume	247	765	148	1	1161	304	1354	238	6	1902	382	876	206	64	1528	358	1589	281	36	2264	6855
% App Total	21.3%	65.9%	12.7%	0.1%		16.0%	71.2%	12.5%	0.3%		25.0%	57.3%	13.5%	4.2%		15.8%	70.2%	12.4%	1.6%		
PHF	.846	.928	.881	.250	.927	.927	.951	.975	.750	.976	.884	.880	.936	.889	.948	.852	.939	.924	.750	.926	.950

Sierra College Blvd & Douglas Blvd

Date: 5/18/2017

Day: Thursday

Project #: 17-7441-007

Peak Hour Summary

	AM Peak Hour	NOON Peak Hour	PM Peak Hour
	07:30 - 08:30		16:45 - 17:45

Southbound Approach (Sierra College Blvd)

AM	171	581	207	1	1069 AM
NOON	0	0	0	0	0 NOON
PM	148	765	247	1	1473 PM

Eastbound Approach (Douglas Blvd)

	AM	NOON	PM
	2286	0	1920
	35	0	36
	149	0	358
	1156	0	1589
	172	0	281

Westbound Approach

	AM	NOON	PM
	108	0	238
	1675	0	1354
	223	0	304
	3	0	6
	1491	0	2048

CONTROL

Northbound Approach

AM	1009	33	405	811	125 AM
NOON	0	0	0	0	0 NOON
PM	1414	64	382	876	206 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		East Leg		West Leg		South Leg
AM	960	1069	2009	0	1902	2286	0	1920	1009	1374
NOON	0	0	1491	0	2048	1512	0	2264	0	0
PM	1161	1473							1414	1528

Total Volume Per Leg

	North Leg	East Leg	West Leg	South Leg
AM	2029	3500	3798	2383
NOON	0	0	0	0
PM	2634	3950	4184	2942

National Data and Surveying Services

City of Granite Bay
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Heavy Trucks On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7441-009 Quail Oaks Dr / Woodgrove Way & Douglas Blvd
Date : 5/18/2017

Unshifted Count = All Vehicles & Uturns

	Quail Oaks Dr / Woodgrove Way Southbound					Douglas Blvd Westbound					Quail Oaks Dr / Woodgrove Way Northbound					Douglas Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	1	0	12	0	13	15	389	1	0	405	2	0	7	0	9	7	285	13	0	305	732	0
7:15	0	1	10	0	11	28	393	0	0	421	0	0	13	0	13	1	342	8	0	351	796	0
7:30	0	0	19	0	19	17	464	1	1	483	0	0	20	0	20	5	380	8	0	393	915	1
7:45	0	1	19	0	20	9	485	1	0	495	3	0	15	0	18	8	316	11	0	335	868	0
Total	1	2	60	0	63	69	1731	3	1	1804	5	0	55	0	60	21	1323	40	0	1384	3311	1
8:00	0	0	18	0	18	8	457	1	0	466	2	0	10	0	12	7	349	10	0	366	862	0
8:15	0	0	43	0	43	6	414	4	0	424	0	0	12	0	12	19	299	5	0	323	802	0
8:30	0	0	37	0	37	13	466	2	0	481	0	0	5	0	5	5	351	10	0	366	889	0
8:45	1	0	25	0	26	16	413	2	1	432	1	0	16	0	17	7	319	7	2	335	810	3
Total	1	0	123	0	124	43	1750	9	1	1803	3	0	43	0	46	38	1318	32	2	1390	3363	3
16:00	1	0	16	1	18	7	403	2	0	412	1	0	9	0	10	14	472	7	0	493	933	1
16:15	0	0	11	0	11	8	407	4	0	419	0	0	11	0	11	10	414	9	1	434	875	1
16:30	0	0	12	0	12	8	477	4	0	489	0	0	8	0	8	9	503	14	2	528	1037	2
16:45	0	0	11	0	11	9	449	1	0	459	0	0	4	0	4	10	463	12	0	485	959	0
Total	1	0	50	1	52	32	1736	11	0	1779	1	0	32	0	33	43	1852	42	3	1940	3804	4
17:00	0	1	7	0	8	10	447	0	0	457	1	0	12	0	13	8	510	11	1	530	1008	1
17:15	0	0	9	0	9	5	428	2	0	435	0	0	14	0	14	15	489	19	0	523	981	0
17:30	0	0	10	0	10	7	408	1	0	416	1	0	2	0	3	9	442	12	0	463	892	0
17:45	0	0	11	0	11	9	428	1	0	438	1	0	8	0	9	19	433	11	1	464	922	1
Total	0	1	37	0	38	31	1711	4	0	1746	3	0	36	0	39	51	1874	53	2	1980	3803	2
Grand Total	3	3	270	1	277	175	6928	27	2	7132	12	0	166	0	178	153	6367	167	7	6694	14281	10
Apprch %	1.1%	1.1%	97.5%	0.4%		2.5%	97.1%	0.4%	0.0%		6.7%	0.0%	93.3%	0.0%		2.3%	95.1%	2.5%	0.1%			
Total %	0.0%	0.0%	1.9%	0.0%	1.9%	1.2%	48.5%	0.2%	0.0%	49.9%	0.1%	0.0%	1.2%	0.0%	1.2%	1.1%	44.6%	1.2%	0.0%	46.9%	100.0%	

AM PEAK HOUR	Quail Oaks Dr / Woodgrove Way Southbound					Douglas Blvd Westbound					Quail Oaks Dr / Woodgrove Way Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	0	19	0	19	17	464	1	1	483	0	0	20	0	20	5	380	8	0	393	915
7:45	0	1	19	0	20	9	485	1	0	495	3	0	15	0	18	8	316	11	0	335	868
8:00	0	0	18	0	18	8	457	1	0	466	2	0	10	0	12	7	349	10	0	366	862
8:15	0	0	43	0	43	6	414	4	0	424	0	0	12	0	12	19	299	5	0	323	802
Total Volume	0	1	99	0	100	40	1820	7	1	1868	5	0	57	0	62	39	1344	34	0	1417	3447
% App Total	0.0%	1.0%	99.0%	0.0%		2.1%	97.4%	0.4%	0.1%		8.1%	0.0%	91.9%	0.0%		2.8%	94.8%	2.4%	0.0%		
PHF	.000	.250	.576	.000	.581	.588	.938	.438	.250	.943	.417	.000	.713	.000	.775	.513	.884	.773	.000	.901	.942

PM PEAK HOUR	Quail Oaks Dr / Woodgrove Way Southbound					Douglas Blvd Westbound					Quail Oaks Dr / Woodgrove Way Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	12	0	12	8	477	4	0	489	0	0	8	0	8	9	503	14	2	528	1037
16:45	0	0	11	0	11	9	449	1	0	459	0	0	4	0	4	10	463	12	0	485	959
17:00	0	1	7	0	8	10	447	0	0	457	1	0	12	0	13	8	510	11	1	530	1008
17:15	0	0	9	0	9	5	428	2	0	435	0	0	14	0	14	15	489	19	0	523	981
Total Volume	0	1	39	0	40	32	1801	7	0	1840	1	0	38	0	39	42	1965	56	3	2066	3985
% App Total	0.0%	2.5%	97.5%	0.0%		1.7%	97.9%	0.4%	0.0%		2.6%	0.0%	97.4%	0.0%		2.0%	95.1%	2.7%	0.1%		
PHF	.000	.250	.813	.000	.833	.800	.944	.438	.000	.941	.250	.000	.679	.000	.696	.700	.963	.737	.375	.975	.961

Quail Oaks Dr / Woodgrove Way & Douglas Blvd

Date: 5/18/2017

Day: Thursday

Project #: 17-7441-009

AM Peak Hour	07:30 - 08:30
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

Peak Hour Summary

Southbound Approach (Quail Oaks Dr / Woodgr)

AM	99	1	0	0	46
NOON	0	0	0	0	0
PM	39	1	0	0	49

Eastbound Approach (Douglas Blvd)

	AM	NOON	PM
	1924	0	1844
	0	0	3
	39	0	42
	1344	0	1965
	34	0	56

Westbound Approach

	AM	NOON	PM
	7	0	7
	1820	0	1801
	40	0	32
	1	0	0
	1402	0	2003

CONTROL

Northbound Approach

AM	75	0	5	0	57
NOON	0	0	0	0	0
PM	89	0	1	0	38

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		East Leg		West Leg		South Leg
AM	100	46	1868	1924	1417	75	
NOON	0	0	0	0	0	0	
PM	40	49	1840	1844	2066	89	39
			2003				

Total Volume Per Leg

	North Leg	East Leg	West Leg	South Leg
AM	146	3270	3341	137
NOON	0	0	0	0
PM	89	3843	3910	128

National Data and Surveying Services

City of Granite Bay
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Heavy Trucks On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7441-010 Seeno Ave & Douglas Blvd
Date : 5/18/2017

Unshifted Count = All Vehicles & Uturns

	Seeno Ave Southbound					Douglas Blvd Westbound					Seeno Ave Northbound					Douglas Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	5	0	22	0	27	0	387	4	0	391	0	0	0	0	0	3	278	0	0	281	699	0
7:15	13	0	16	0	29	0	415	1	0	416	0	0	0	0	0	2	358	0	0	360	805	0
7:30	5	0	14	0	19	0	485	5	1	491	0	0	0	0	0	5	398	0	0	403	913	1
7:45	8	0	10	0	18	0	472	6	1	479	0	0	0	0	0	13	318	0	1	332	829	2
Total	31	0	62	0	93	0	1759	16	2	1777	0	0	0	0	0	23	1352	0	1	1376	3246	3
8:00	7	0	7	0	14	0	464	25	0	489	0	0	0	0	0	17	337	0	0	354	857	0
8:15	30	0	15	0	45	0	449	46	0	495	0	0	0	0	0	22	303	0	0	325	865	0
8:30	34	0	21	0	55	0	433	6	0	439	0	0	0	0	0	4	350	0	0	354	848	0
8:45	6	0	10	0	16	0	399	2	0	401	0	0	0	0	0	9	322	0	0	331	748	0
Total	77	0	53	0	130	0	1745	79	0	1824	0	0	0	0	0	52	1312	0	0	1364	3318	0
16:00	18	0	8	0	26	0	395	7	1	403	0	0	0	0	0	10	476	0	0	486	915	1
16:15	0	0	6	0	6	0	423	5	2	430	0	0	0	0	0	2	425	0	1	428	864	3
16:30	11	0	5	0	16	0	434	5	0	439	0	0	0	0	0	9	471	0	2	482	937	2
16:45	8	0	2	0	10	0	431	7	0	438	0	0	0	0	0	7	441	0	2	450	898	2
Total	37	0	21	0	58	0	1683	24	3	1710	0	0	0	0	0	28	1813	0	5	1846	3614	8
17:00	7	0	9	0	16	0	449	5	0	454	0	0	0	0	0	7	515	0	1	523	993	1
17:15	5	0	12	0	17	0	426	2	0	428	0	0	0	0	0	2	496	0	1	499	944	1
17:30	6	0	8	0	14	0	423	4	0	427	0	0	0	0	0	13	434	0	0	447	888	0
17:45	7	0	5	0	12	0	441	5	1	447	0	0	0	0	0	4	444	0	0	448	907	1
Total	25	0	34	0	59	0	1739	16	1	1756	0	0	0	0	0	26	1889	0	2	1917	3732	3
Grand Total	170	0	170	0	340	0	6926	135	6	7067	0	0	0	0	0	129	6366	0	8	6503	13910	14
Apprch %	50.0%	0.0%	50.0%	0.0%		0.0%	98.0%	1.9%	0.1%		0.0%	0.0%	0.0%	0.0%		2.0%	97.9%	0.0%	0.1%			
Total %	1.2%	0.0%	1.2%	0.0%	2.4%	0.0%	49.8%	1.0%	0.0%	50.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.9%	45.8%	0.0%	0.1%	46.8%	100.0%	

AM PEAK HOUR	Seeno Ave Southbound					Douglas Blvd Westbound					Seeno Ave Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	5	0	14	0	19	0	485	5	1	491	0	0	0	0	0	5	398	0	0	403	913
7:45	8	0	10	0	18	0	472	6	1	479	0	0	0	0	0	13	318	0	1	332	829
8:00	7	0	7	0	14	0	464	25	0	489	0	0	0	0	0	17	337	0	0	354	857
8:15	30	0	15	0	45	0	449	46	0	495	0	0	0	0	0	22	303	0	0	325	865
Total Volume	50	0	46	0	96	0	1870	82	2	1954	0	0	0	0	0	57	1356	0	1	1414	3464
% App Total	52.1%	0.0%	47.9%	0.0%		0.0%	95.7%	4.2%	0.1%		0.0%	0.0%	0.0%	0.0%		4.0%	95.9%	0.0%	0.1%		
PHF	.417	.000	.767	.000	.533	.000	.964	.446	.500	.987	.000	.000	.000	.000	.000	.648	.852	.000	.250	.877	.949

PM PEAK HOUR	Seeno Ave Southbound					Douglas Blvd Westbound					Seeno Ave Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	11	0	5	0	16	0	434	5	0	439	0	0	0	0	0	9	471	0	2	482	937
16:45	8	0	2	0	10	0	431	7	0	438	0	0	0	0	0	7	441	0	2	450	898
17:00	7	0	9	0	16	0	449	5	0	454	0	0	0	0	0	7	515	0	1	523	993
17:15	5	0	12	0	17	0	426	2	0	428	0	0	0	0	0	2	496	0	1	499	944
Total Volume	31	0	28	0	59	0	1740	19	0	1759	0	0	0	0	0	25	1923	0	6	1954	3772
% App Total	52.5%	0.0%	47.5%	0.0%		0.0%	98.9%	1.1%	0.0%		0.0%	0.0%	0.0%	0.0%		1.3%	98.4%	0.0%	0.3%		
PHF	.705	.000	.583	.000	.868	.000	.969	.679	.000	.969	.000	.000	.000	.000	.000	.694	.933	.000	.750	.934	.950

Seeno Ave & Douglas Blvd

Date: 5/18/2017

Day: Thursday

Project #: 17-7441-010

Peak Hour Summary

AM Peak Hour	07:30 - 08:30
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

Southbound Approach (Seeno Ave)

AM	46	0	50	0	139 AM
NOON	0	0	0	0	0 NOON
PM	28	0	31	0	44 PM

Eastbound Approach (Douglas Blvd)

	AM	NOON	PM
	1917	0	1774
	1	0	6
	57	0	25
	1356	0	1923
	0	0	0

Westbound Approach (Douglas Blvd)

	AM	NOON	PM
	82	0	19
	1870	0	1740
	0	0	0
	2	0	0
	1408	0	1954

CONTROL

Northbound Approach

AM	0	0	0	0	0 AM
NOON	0	0	0	0	0 NOON
PM	0	0	0	0	0 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		
AM	96	139	AM
NOON	0	0	NOON
PM	59	44	PM

West Leg AM	West Leg NOON	West Leg PM		East Leg AM	East Leg NOON	East Leg PM
1917	0	1774		1954	0	1759
1414	0	1954		1408	0	1954

	South Leg
AM	0 0
NOON	0 0
PM	0 0

Total Volume Per Leg

	North Leg
AM	235
NOON	0
PM	103

West Leg AM	West Leg NOON	West Leg PM		East Leg AM	East Leg NOON	East Leg PM
3331	0	3728		3362	0	3713

	South Leg
AM	0
NOON	0
PM	0

KD ANDERSON & ASSOCIATES, INC.

5765-20

(916) 660-1555

Granite Bay
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Nothing On Bank 2

File Name : Granite Estates Dr & Douglas Blvd
Date : 2/1/2018

Unshifted Count = All Vehicles & Uturns

	Granite Estates Dr Southbound					Douglas Blvd Westbound					Granite Estates Dr Northbound					Douglas Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	0	0	0	0	0	2	0	0	1	3	0	0	1	0	1	0	291	3	0	294	298	1
7:15	0	0	0	0	0	2	0	0	2	4	0	0	7	0	7	0	365	7	0	372	383	2
7:30	0	0	0	0	0	1	0	0	1	2	0	0	3	0	3	0	435	6	0	441	446	1
7:45	0	0	0	0	0	1	0	0	6	7	0	0	4	0	4	0	320	6	0	326	337	6
Total	0	0	0	0	0	6	0	0	10	16	0	0	15	0	15	0	1411	22	0	1433	1464	10
8:00	0	0	0	0	0	2	0	0	1	3	0	0	10	0	10	0	321	4	0	325	338	1
8:15	0	0	0	0	0	7	0	0	1	8	0	0	6	0	6	0	339	6	0	345	359	1
8:30	0	0	0	0	0	2	0	0	1	3	0	0	10	0	10	0	354	7	0	361	374	1
8:45	0	0	0	0	0	6	0	0	1	7	0	0	8	0	8	0	336	8	0	344	359	1
Total	0	0	0	0	0	17	0	0	4	21	0	0	34	0	34	0	1350	25	0	1375	1430	4
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00	0	0	0	0	0	2	0	0	5	7	0	0	11	0	11	0	474	6	0	480	498	5
16:15	0	0	0	0	0	1	0	0	2	3	0	0	10	0	10	0	402	2	0	404	417	2
16:30	0	0	0	0	0	1	0	0	2	3	0	0	8	0	8	0	465	4	0	469	480	2
16:45	0	0	0	0	0	3	0	0	0	3	0	0	11	0	11	0	473	5	0	478	492	0
Total	0	0	0	0	0	7	0	0	9	16	0	0	40	0	40	0	1814	17	0	1831	1887	9
17:00	0	0	0	0	0	2	0	0	3	5	0	0	10	0	10	0	438	7	0	445	460	3
17:15	0	0	0	0	0	1	0	0	0	1	0	0	13	0	13	0	461	4	0	465	479	0
17:30	0	0	0	0	0	3	0	0	1	4	0	0	5	0	5	0	528	4	0	532	541	1
17:45	0	0	0	0	0	3	0	0	0	3	0	0	4	0	4	0	393	2	0	395	402	0
Total	0	0	0	0	0	9	0	0	4	13	0	0	32	0	32	0	1820	17	0	1837	1882	4
Grand Total	0	0	0	0	0	39	0	0	27	66	0	0	121	0	121	0	6395	81	0	6476	6663	27
Apprch %	0.0%	0.0%	0.0%	0.0%		59.1%	0.0%	0.0%	40.9%		0.0%	0.0%	100.0%	0.0%		0.0%	98.7%	1.3%	0.0%			
Total %	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.0%	0.0%	0.4%	1.0%	0.0%	0.0%	1.8%	0.0%	1.8%	0.0%	96.0%	1.2%	0.0%	97.2%	100.0%	

AM PEAK HOUR	Granite Estates Dr Southbound					Douglas Blvd Westbound					Granite Estates Dr Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	0	0	0	0	2	0	0	2	4	0	0	7	0	7	0	365	7	0	372	383
7:30	0	0	0	0	0	1	0	0	1	2	0	0	3	0	3	0	435	6	0	441	446
7:45	0	0	0	0	0	1	0	0	6	7	0	0	4	0	4	0	320	6	0	326	337
8:00	0	0	0	0	0	2	0	0	1	3	0	0	10	0	10	0	321	4	0	325	338
Total Volume	0	0	0	0	0	6	0	0	10	16	0	0	24	0	24	0	1441	23	0	1464	1504
% App Total	0.0%	0.0%	0.0%	0.0%		37.5%	0.0%	0.0%	62.5%		0.0%	0.0%	100.0%	0.0%		0.0%	98.4%	1.6%	0.0%		
PHF	.000	.000	.000	.000	.000	.750	.000	.000	.417	.571	.000	.000	.600	.000	.600	.000	.828	.821	.000	.830	.843

NOON PEAK	Granite Estates Dr Southbound					Douglas Blvd Westbound					Granite Estates Dr Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 12:00 to 13:00																					
Peak Hour For Entire Intersection Begins at 12:00																					
12:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App Total	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

PM PEAK HOUR	Granite Estates Dr Southbound					Douglas Blvd Westbound					Granite Estates Dr Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	0	0	0	0	0	3	0	0	0	3	0	0	11	0	11	0	473	5	0	478	492
17:00	0	0	0	0	0	2	0	0	3	5	0	0	10	0	10	0	438	7	0	445	460
17:15	0	0	0	0	0	1	0	0	0	1	0	0	13	0	13	0	461	4	0	465	479
17:30	0	0	0	0	0	3	0	0	1	4	0	0	5	0	5	0	528	4	0	532	541
Total Volume	0	0	0	0	0	9	0	0	4	13	0	0	39	0	39	0	1900	20	0	1920	1972
% App Total	0.0%	0.0%	0.0%	0.0%		69.2%	0.0%	0.0%	30.8%		0.0%	0.0%	100.0%	0.0%		0.0%	99.0%	1.0%	0.0%		
PHF	.000	.000	.000	.000	.000	.750	.000	.000	.333	.650	.000	.000	.750	.000	.750	.000	.900	.714	.000	.902	.911

Granite Estates Dr & Douglas Blvd

Date: 2/1/2018

Day: Thursday

Project #: Granite Estates Dr & Douglas Blvd

5765-20

Peak Hour Summary

AM Peak Hour	07:15 - 08:15
NOON Peak Hour	12:00 - 13:00
PM Peak Hour	16:45 - 17:45

Southbound Approach (Granite Estates Dr)

AM	0	0	0	0	0 AM
NOON	0	0	0	0	0 NOON
PM	0	0	0	0	0 PM

Eastbound Approach (Douglas Blvd)

	AM	NOON	PM
	0	0	0
	0	0	0
	0	0	0
	0	0	0
	1441	0	1900
	23	0	20

Westbound Approach

	AM	NOON	PM
	0	0	0
	0	0	0
	6	0	9
	10	0	4
	1475	0	1943

CONTROL

Northbound Approach

AM	29	0	0	0	24 AM
NOON	0	0	0	0	0 NOON
PM	29	0	0	0	39 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	12:00 PM	1:00 PM
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		East Leg		West Leg		South Leg	
					AM	NOON	PM	
AM	0	0	16	0	13	0	0	0
NOON	0	0	1475	0	1943	1464	0	1920
PM	0	0	AM	NOON	PM			
AM	29	24						
NOON	0	0						
PM	29	39						

Total Volume Per Leg

	North Leg	East Leg	West Leg	South Leg
		AM	NOON	PM
AM	0	1491	0	1956
NOON	0	1464	0	1920
PM	0	AM	NOON	PM
AM				53
NOON				0
PM				68

National Data and Surveying Services

City of Granite Bay
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Heavy Trucks On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7441-011 Berg St & Douglas Blvd
Date : 5/18/2017

Unshifted Count = All Vehicles & Uturns

	Berg St Southbound					Douglas Blvd Westbound					Berg St Northbound					Douglas Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	0	0	7	0	7	5	374	0	2	381	0	0	0	0	0	11	271	0	0	282	670	2
7:15	0	0	17	0	17	9	396	2	1	408	0	0	1	0	1	5	357	0	0	362	788	1
7:30	0	0	13	0	13	5	464	3	0	472	0	0	1	0	1	8	371	1	0	380	866	0
7:45	0	0	20	0	20	12	469	3	1	485	0	0	0	0	0	7	334	3	0	344	849	1
Total	0	0	57	0	57	31	1703	8	4	1746	0	0	2	0	2	31	1333	4	0	1368	3173	4
8:00	0	0	15	0	15	8	450	2	1	461	0	0	1	0	1	12	306	1	2	321	798	3
8:15	0	0	16	0	16	7	451	1	0	459	0	0	0	0	0	9	340	2	0	351	826	0
8:30	0	0	18	0	18	11	442	1	1	455	0	0	1	0	1	5	350	0	0	355	829	1
8:45	0	0	20	0	20	13	351	1	1	366	0	0	4	0	4	12	327	8	1	348	738	2
Total	0	0	69	0	69	39	1694	5	3	1741	0	0	6	0	6	38	1323	11	3	1375	3191	6
16:00	0	0	16	0	16	13	393	4	2	412	0	0	3	0	3	17	443	5	1	466	897	3
16:15	0	0	15	0	15	7	384	6	1	398	0	0	3	0	3	7	427	8	0	442	858	1
16:30	0	0	8	0	8	8	425	1	2	436	0	0	4	0	4	8	443	9	1	461	909	3
16:45	0	0	10	0	10	10	412	1	1	424	0	0	2	0	2	14	426	4	4	448	884	5
Total	0	0	49	0	49	38	1614	12	6	1670	0	0	12	0	12	46	1739	26	6	1817	3548	12
17:00	0	0	16	0	16	13	439	2	0	454	0	0	2	0	2	10	479	7	3	499	971	3
17:15	0	0	14	0	14	5	396	6	1	408	0	0	3	0	3	24	467	5	4	500	925	5
17:30	0	0	15	0	15	13	396	5	1	415	0	0	3	0	3	12	423	7	5	447	880	6
17:45	0	0	25	0	25	20	417	4	0	441	0	0	2	0	2	15	413	3	2	433	901	2
Total	0	0	70	0	70	51	1648	17	2	1718	0	0	10	0	10	61	1782	22	14	1879	3677	16
Grand Total	0	0	245	0	245	159	6659	42	15	6875	0	0	30	0	30	176	6177	63	23	6439	13589	38
Apprch %	0.0%	0.0%	100.0%	0.0%		2.3%	96.9%	0.6%	0.2%		0.0%	0.0%	100.0%	0.0%		2.7%	95.9%	1.0%	0.4%			
Total %	0.0%	0.0%	1.8%	0.0%	1.8%	1.2%	49.0%	0.3%	0.1%	50.6%	0.0%	0.0%	0.2%	0.0%	0.2%	1.3%	45.5%	0.5%	0.2%	47.4%	100.0%	

AM PEAK HOUR	Berg St Southbound					Douglas Blvd Westbound					Berg St Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:30 to 08:30																					
Peak Hour For Entire Intersection Begins at 07:30																					
7:30	0	0	13	0	13	5	464	3	0	472	0	0	1	0	1	8	371	1	0	380	866
7:45	0	0	20	0	20	12	469	3	1	485	0	0	0	0	0	7	334	3	0	344	849
8:00	0	0	15	0	15	8	450	2	1	461	0	0	1	0	1	12	306	1	2	321	798
8:15	0	0	16	0	16	7	451	1	0	459	0	0	0	0	0	9	340	2	0	351	826
Total Volume	0	0	64	0	64	32	1834	9	2	1877	0	0	2	0	2	36	1351	7	2	1396	3339
% App Total	0.0%	0.0%	100.0%	0.0%		1.7%	97.7%	0.5%	0.1%		0.0%	0.0%	100.0%	0.0%		2.6%	96.8%	0.5%	0.1%		
PHF	.000	.000	.800	.000	.800	.667	.978	.750	.500	.968	.000	.000	.500	.000	.500	.750	.910	.583	.250	.918	.964

PM PEAK HOUR	Berg St Southbound					Douglas Blvd Westbound					Berg St Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	0	0	8	0	8	8	425	1	2	436	0	0	4	0	4	8	443	9	1	461	909
16:45	0	0	10	0	10	10	412	1	1	424	0	0	2	0	2	14	426	4	4	448	884
17:00	0	0	16	0	16	13	439	2	0	454	0	0	2	0	2	10	479	7	3	499	971
17:15	0	0	14	0	14	5	396	6	1	408	0	0	3	0	3	24	467	5	4	500	925
Total Volume	0	0	48	0	48	36	1672	10	4	1722	0	0	11	0	11	56	1815	25	12	1908	3689
% App Total	0.0%	0.0%	100.0%	0.0%		2.1%	97.1%	0.6%	0.2%		0.0%	0.0%	100.0%	0.0%		2.9%	95.1%	1.3%	0.6%		
PHF	.000	.000	.750	.000	.750	.692	.952	.417	.500	.948	.000	.000	.688	.000	.688	.583	.947	.694	.750	.954	.950

Berg St & Douglas Blvd

Date: 5/18/2017

Day: Thursday

Project #: 17-7441-011

AM Peak Hour	07:30 - 08:30
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

Peak Hour Summary

Southbound Approach (Berg St)

AM	64	0	0	0	45	AM
NOON	0	0	0	0	0	NOON
PM	48	0	0	0	66	PM

Eastbound Approach (Douglas Blvd)

	AM	NOON	PM
	1900	0	1732
	2	0	12
	36	0	56
	1351	0	1815
	7	0	25

Westbound Approach (Douglas Blvd)

	AM	NOON	PM
	9	0	10
	1834	0	1672
	32	0	36
	2	0	4
	1355	0	1830

CONTROL

Northbound Approach

AM	39	0	0	0	2	AM
NOON	0	0	0	0	0	NOON
PM	61	0	0	0	11	PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		East Leg		West Leg		South Leg
AM	64	45	1877	1900	1396	39	2
NOON	0	0	0	0	0	0	0
PM	48	66	1722	1732	1908	61	11
			1355	1900	1396	39	2
			0	0	0	0	0
			1830	1732	1908	61	11

Total Volume Per Leg

	North Leg	East Leg	West Leg	South Leg
AM	109	3232	3296	41
NOON	0	0	0	0
PM	114	3552	3640	72

National Data and Surveying Services

City of Granite Bay
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Heavy Trucks On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7441-012 Barton Rd & Douglas Blvd
Date : 5/18/2017

Unshifted Count = All Vehicles & Uturns

	Barton Rd Southbound					Douglas Blvd Westbound					Barton Rd Northbound					Douglas Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	29	28	10	0	67	40	309	31	0	380	47	7	7	0	61	2	235	22	1	260	768	1
7:15	31	52	13	0	96	65	354	22	0	441	38	18	11	0	67	6	325	37	0	368	972	0
7:30	42	25	8	0	75	26	405	31	0	462	70	36	24	0	130	5	316	36	2	359	1026	2
7:45	24	17	6	0	47	19	422	31	0	472	65	25	30	0	120	11	284	28	4	327	966	4
Total	126	122	37	0	285	150	1490	115	0	1755	220	86	72	0	378	24	1160	123	7	1314	3732	7
8:00	40	22	7	1	70	23	383	30	1	437	42	19	11	0	72	10	262	29	3	304	883	5
8:15	38	27	15	0	80	17	387	37	0	441	49	21	17	0	87	14	275	45	0	334	942	0
8:30	30	18	11	0	59	28	388	37	0	453	44	21	15	0	80	10	318	43	1	372	964	1
8:45	28	21	5	0	54	26	293	34	0	353	39	13	23	0	75	11	259	34	1	305	787	1
Total	136	88	38	1	263	94	1451	138	1	1684	174	74	66	0	314	45	1114	151	5	1315	3576	7
16:00	35	21	9	0	65	18	336	37	0	391	32	19	24	0	75	11	372	57	0	440	971	0
16:15	34	18	10	0	62	22	338	50	2	412	28	17	26	0	71	14	347	62	0	423	968	2
16:30	30	18	15	0	63	26	391	38	2	457	36	21	24	0	81	19	390	41	0	450	1051	2
16:45	35	27	12	0	74	14	362	33	2	411	31	10	34	0	75	7	365	51	0	423	983	2
Total	134	84	46	0	264	80	1427	158	6	1671	127	67	108	0	302	51	1474	211	0	1736	3973	6
17:00	34	17	18	0	69	21	390	44	2	457	34	22	23	0	79	5	414	51	4	474	1079	6
17:15	48	28	11	0	87	19	360	50	6	435	31	22	21	0	74	10	398	56	0	464	1060	6
17:30	50	34	8	0	92	27	368	42	0	437	27	18	20	0	65	11	359	53	5	428	1022	5
17:45	26	19	11	0	56	33	381	47	1	462	39	14	16	0	69	11	357	50	0	418	1005	1
Total	158	98	48	0	304	100	1499	183	9	1791	131	76	80	0	287	37	1528	210	9	1784	4166	18
Grand Total	554	392	169	1	1116	424	5867	594	16	6901	652	303	326	0	1281	157	5276	695	21	6149	15447	38
Apprch %	49.6%	35.1%	15.1%	0.1%		6.1%	85.0%	8.6%	0.2%		50.9%	23.7%	25.4%	0.0%		2.6%	85.8%	11.3%	0.3%			
Total %	3.6%	2.5%	1.1%	0.0%	7.2%	2.7%	38.0%	3.8%	0.1%	44.7%	4.2%	2.0%	2.1%	0.0%	8.3%	1.0%	34.2%	4.5%	0.1%	39.8%	100.0%	

AM PEAK HOUR	Barton Rd Southbound					Douglas Blvd Westbound					Barton Rd Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	31	52	13	0	96	65	354	22	0	441	38	18	11	0	67	6	325	37	0	368	972
7:30	42	25	8	0	75	26	405	31	0	462	70	36	24	0	130	5	316	36	2	359	1026
7:45	24	17	6	0	47	19	422	31	0	472	65	25	30	0	120	11	284	28	4	327	966
8:00	40	22	7	1	70	23	383	30	1	437	42	19	11	0	72	10	262	29	3	304	883
Total Volume	137	116	34	1	288	133	1564	114	1	1812	215	98	76	0	389	32	1187	130	9	1358	3847
% App Total	47.6%	40.3%	11.8%	0.3%		7.3%	86.3%	6.3%	0.1%		55.3%	25.2%	19.5%	0.0%		2.4%	87.4%	9.6%	0.7%		
PHF	.815	.558	.654	.250	.750	.512	.927	.919	.250	.960	.768	.681	.633	.000	.748	.727	.913	.878	.563	.923	.937

PM PEAK HOUR	Barton Rd Southbound					Douglas Blvd Westbound					Barton Rd Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	30	18	15	0	63	26	391	38	2	457	36	21	24	0	81	19	390	41	0	450	1051
16:45	35	27	12	0	74	14	362	33	2	411	31	10	34	0	75	7	365	51	0	423	983
17:00	34	17	18	0	69	21	390	44	2	457	34	22	23	0	79	5	414	51	4	474	1079
17:15	48	28	11	0	87	19	360	50	6	435	31	22	21	0	74	10	398	56	0	464	1060
Total Volume	147	90	56	0	293	80	1503	165	12	1760	132	75	102	0	309	41	1567	199	4	1811	4173
% App Total	50.2%	30.7%	19.1%	0.0%		4.5%	85.4%	9.4%	0.7%		42.7%	24.3%	33.0%	0.0%		2.3%	86.5%	11.0%	0.2%		
PHF	.766	.804	.778	.000	.842	.769	.961	.825	.500	.963	.917	.852	.750	.000	.954	.539	.946	.888	.250	.955	.967

Barton Rd & Douglas Blvd

Date: 5/18/2017

Day: Thursday

Project #: 17-7441-012

Peak Hour Summary

AM Peak Hour	07:15 - 08:15
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

Southbound Approach

Barton Rd

AM	34	116	137	1	245 AM
NOON	0	0	0	0	0 NOON
PM	56	90	147	0	281 PM

Eastbound Approach

Douglas Blvd

	AM	NOON	PM
	1822	0	1695
	9	0	4
	32	0	41
	1187	0	1567
	130	0	199

Westbound Approach

	AM	NOON	PM
	114	0	165
	1564	0	1503
	133	0	80
	1	0	12
	1401	0	1828

CONTROL

Northbound Approach

AM	379	0	215	98	76 AM
NOON	0	0	0	0	0 NOON
PM	369	0	132	75	102 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		East Leg		West Leg		South Leg
AM	288	245	1812	0	1822	0	379
NOON	0	0	1401	0	1358	0	0
PM	293	281	1828	1760	1811	1695	369	309

Total Volume Per Leg

	North Leg	East Leg	West Leg	South Leg
AM	533	3213	3180	768
NOON	0	0	0	0
PM	574	3588	3506	678

National Data and Surveying Services

City of Granite Bay
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Heavy Trucks On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7441-013 Auburn-Folsom Rd & Douglas Blvd
Date : 5/18/2017

Unshifted Count = All Vehicles & Uturns

	Auburn-Folsom Rd Southbound					Douglas Blvd Westbound					Auburn-Folsom Rd Northbound					Douglas Blvd Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	16	135	42	0	193	22	69	10	0	101	257	78	9	0	344	20	19	212	0	251	889	0
7:15	20	167	69	0	256	23	64	27	0	114	259	75	12	0	346	27	24	260	0	311	1027	0
7:30	14	177	57	0	248	21	64	18	0	103	299	85	14	0	398	24	34	306	0	364	1113	0
7:45	23	121	64	0	208	13	64	24	0	101	326	101	7	0	434	49	32	246	0	327	1070	0
Total	73	600	232	0	905	79	261	79	0	419	1141	339	42	0	1522	120	109	1024	0	1253	4099	0
8:00	23	147	69	0	239	17	59	27	0	103	288	80	9	0	377	36	35	210	0	281	1000	0
8:15	23	135	68	0	226	20	65	16	0	101	273	98	12	0	383	35	53	194	0	282	992	0
8:30	26	112	61	0	199	23	56	20	0	99	279	74	4	0	357	31	50	219	0	300	955	0
8:45	24	94	58	0	176	21	59	22	0	102	206	85	11	0	302	41	49	206	0	296	876	0
Total	96	488	256	0	840	81	239	85	0	405	1046	337	36	0	1419	143	187	829	0	1159	3823	0
16:00	28	109	57	0	194	15	45	23	0	83	269	165	17	0	451	52	87	220	0	359	1087	0
16:15	31	100	43	0	174	23	61	25	0	109	290	155	18	0	463	51	70	259	0	380	1126	0
16:30	30	115	57	0	202	15	63	24	0	102	303	182	21	0	506	45	59	284	0	388	1198	0
16:45	34	94	45	0	173	19	57	27	0	103	270	152	19	0	441	58	72	259	0	389	1106	0
Total	123	418	202	0	743	72	226	99	0	397	1132	654	75	0	1861	206	288	1022	0	1516	4517	0
17:00	26	119	42	0	187	15	61	24	0	100	292	170	18	0	480	60	64	281	0	405	1172	0
17:15	21	112	57	0	190	8	54	23	0	85	311	185	22	0	518	48	74	284	0	406	1199	0
17:30	32	129	53	0	214	21	51	23	0	95	269	144	22	0	435	64	68	264	0	396	1140	0
17:45	28	88	44	0	160	20	63	18	0	101	320	163	18	0	501	56	68	249	0	373	1135	0
Total	107	448	196	0	751	64	229	88	0	381	1192	662	80	0	1934	228	274	1078	0	1580	4646	0
Grand Total	399	1954	886	0	3239	296	955	351	0	1602	4511	1992	233	0	6736	697	858	3953	0	5508	17085	0
Apprch %	12.3%	60.3%	27.4%	0.0%		18.5%	59.6%	21.9%	0.0%		67.0%	29.6%	3.5%	0.0%		12.7%	15.6%	71.8%	0.0%			
Total %	2.3%	11.4%	5.2%	0.0%	19.0%	1.7%	5.6%	2.1%	0.0%	9.4%	26.4%	11.7%	1.4%	0.0%	39.4%	4.1%	5.0%	23.1%	0.0%	32.2%	100.0%	

AM PEAK HOUR	Auburn-Folsom Rd Southbound					Douglas Blvd Westbound					Auburn-Folsom Rd Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	20	167	69	0	256	23	64	27	0	114	259	75	12	0	346	27	24	260	0	311	1027
7:30	14	177	57	0	248	21	64	18	0	103	299	85	14	0	398	24	34	306	0	364	1113
7:45	23	121	64	0	208	13	64	24	0	101	326	101	7	0	434	49	32	246	0	327	1070
8:00	23	147	69	0	239	17	59	27	0	103	288	80	9	0	377	36	35	210	0	281	1000
Total Volume	80	612	259	0	951	74	251	96	0	421	1172	341	42	0	1555	136	125	1022	0	1283	4210
% App Total	8.4%	64.4%	27.2%	0.0%		17.6%	59.6%	22.8%	0.0%		75.4%	21.9%	2.7%	0.0%		10.6%	9.7%	79.7%	0.0%		
PHF	.870	.864	.938	.000	.929	.804	.980	.889	.000	.923	.899	.844	.750	.000	.896	.694	.893	.835	.000	.881	.946

PM PEAK HOUR	Auburn-Folsom Rd Southbound					Douglas Blvd Westbound					Auburn-Folsom Rd Northbound					Douglas Blvd Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:30 to 17:30																					
Peak Hour For Entire Intersection Begins at 16:30																					
16:30	30	115	57	0	202	15	63	24	0	102	303	182	21	0	506	45	59	284	0	388	1198
16:45	34	94	45	0	173	19	57	27	0	103	270	152	19	0	441	58	72	259	0	389	1106
17:00	26	119	42	0	187	15	61	24	0	100	292	170	18	0	480	60	64	281	0	405	1172
17:15	21	112	57	0	190	8	54	23	0	85	311	185	22	0	518	48	74	284	0	406	1199
Total Volume	111	440	201	0	752	57	235	98	0	390	1176	689	80	0	1945	211	269	1108	0	1588	4675
% App Total	14.8%	58.5%	26.7%	0.0%		14.6%	60.3%	25.1%	0.0%		60.5%	35.4%	4.1%	0.0%		13.3%	16.9%	69.8%	0.0%		
PHF	.816	.924	.882	.000	.931	.750	.933	.907	.000	.947	.945	.931	.909	.000	.939	.879	.909	.975	.000	.978	.975

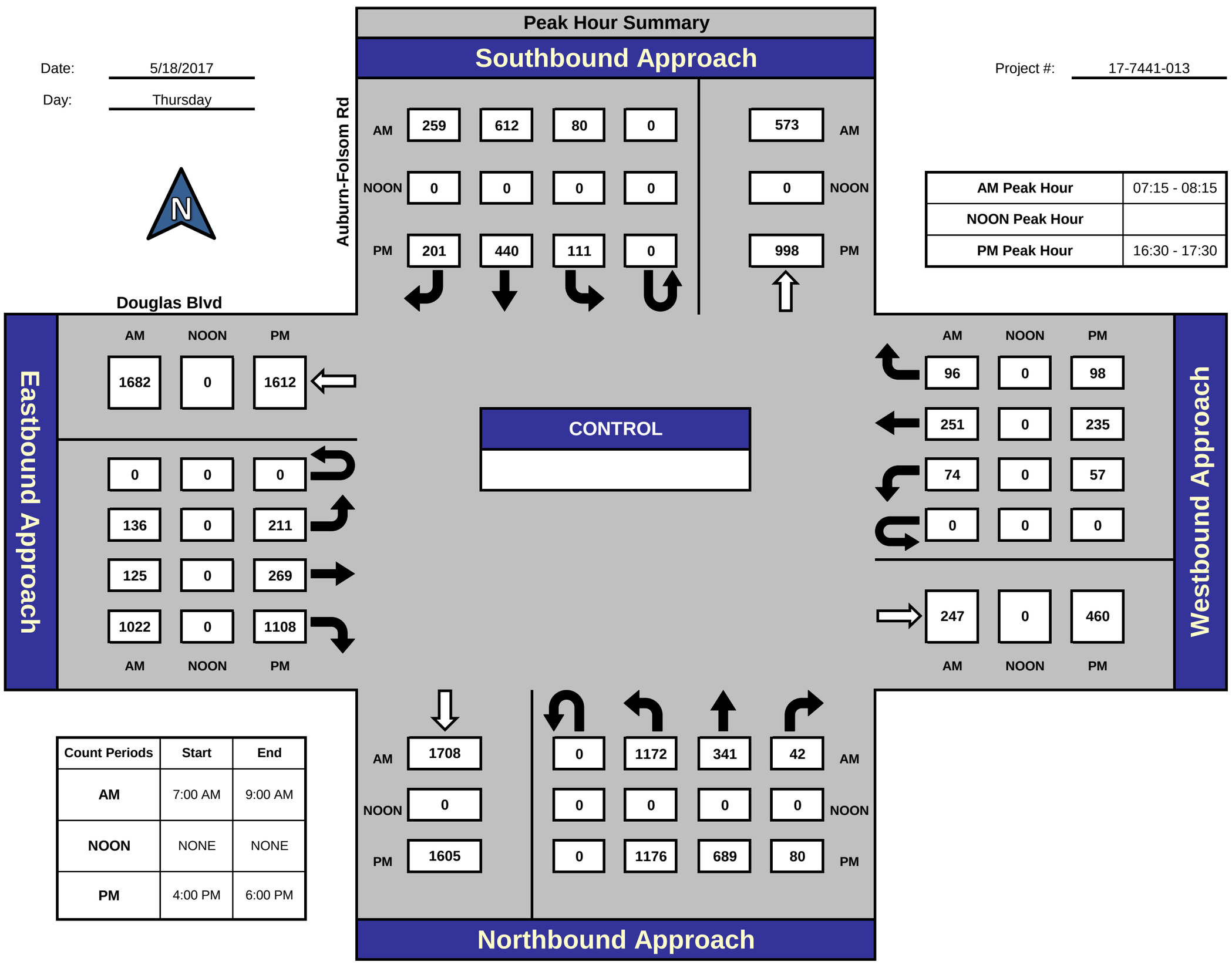
Auburn-Folsom Rd & Douglas Blvd

Date: 5/18/2017

Day: Thursday

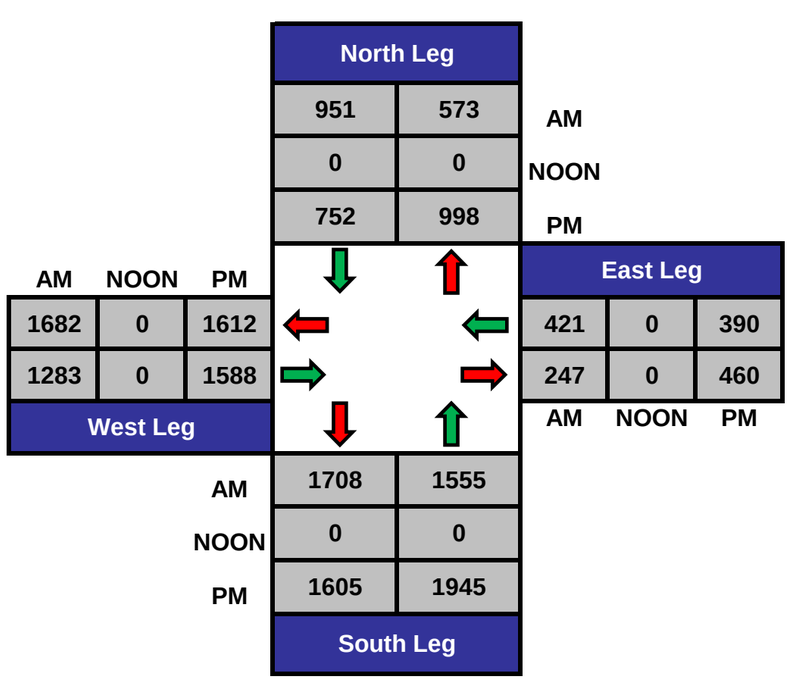
Project #: 17-7441-013

AM Peak Hour	07:15 - 08:15
NOON Peak Hour	
PM Peak Hour	16:30 - 17:30

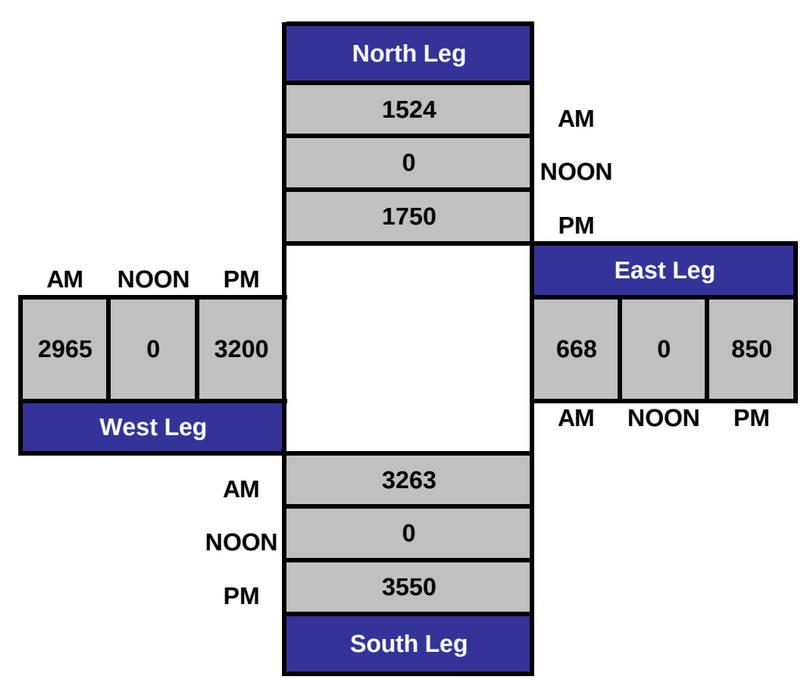


Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



National Data and Surveying Services

City of Granite Bay
All Vehicles & Uturns On Unshifted
Bikes & Peds On Bank 1
Heavy Trucks On Bank 2

(323) 782-0090
info@ndsdata.com

File Name : 17-7441-021 Auburn Folsom Rd & Eureka Dr
Date : 5/18/2017

Unshifted Count = All Vehicles & Uturns

	Auburn Folsom Rd Southbound					Eureka Dr Westbound					Auburn Folsom Rd Northbound					Eureka Dr Eastbound						
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total	Uturns Total
7:00	0	357	41	0	398	1	1	0	0	2	26	308	0	0	334	13	0	24	0	37	771	0
7:15	0	408	53	0	461	0	1	0	0	1	29	370	0	0	399	29	1	35	0	65	926	0
7:30	2	449	52	0	503	0	0	1	0	1	55	371	0	0	426	62	1	41	0	104	1034	0
7:45	0	390	47	0	437	0	0	1	0	1	52	356	0	0	408	17	0	31	0	48	894	0
Total	2	1604	193	0	1799	1	2	2	0	5	162	1405	0	0	1567	121	2	131	0	254	3625	0
8:00	0	355	21	0	376	0	0	0	0	0	44	342	0	0	386	13	0	21	0	34	796	0
8:15	0	344	15	3	362	2	0	1	0	3	29	334	0	0	363	15	1	30	0	46	774	3
8:30	1	316	27	2	346	0	2	0	0	2	26	346	0	1	373	13	1	30	0	44	765	3
8:45	1	309	21	2	333	0	1	0	0	1	29	299	0	1	329	22	0	19	0	41	704	3
Total	2	1324	84	7	1417	2	3	1	0	6	128	1321	0	2	1451	63	2	100	0	165	3039	9
16:00	2	323	20	0	345	0	0	0	0	0	33	460	0	0	493	24	0	55	0	79	917	0
16:15	0	398	25	2	425	0	0	0	0	0	32	448	0	2	482	13	0	46	0	59	966	4
16:30	0	376	19	5	400	0	0	0	0	0	36	464	0	0	500	10	0	51	0	61	961	5
16:45	1	365	16	4	386	0	0	0	0	0	24	457	0	1	482	21	0	55	0	76	944	5
Total	3	1462	80	11	1556	0	0	0	0	0	125	1829	0	3	1957	68	0	207	0	275	3788	14
17:00	0	381	24	1	406	0	0	0	0	0	25	468	0	1	494	15	0	41	0	56	956	2
17:15	1	408	16	3	428	0	0	1	0	1	32	471	0	0	503	19	1	74	0	94	1026	3
17:30	0	407	25	0	432	0	0	1	0	1	31	455	1	0	487	11	0	72	0	83	1003	0
17:45	0	329	27	1	357	0	0	0	0	0	26	466	0	0	492	12	0	43	0	55	904	1
Total	1	1525	92	5	1623	0	0	2	0	2	114	1860	1	1	1976	57	1	230	0	288	3889	6
Grand Total	8	5915	449	23	6395	3	5	5	0	13	529	6415	1	6	6951	309	5	668	0	982	14341	29
Apprch %	0.1%	92.5%	7.0%	0.4%		23.1%	38.5%	38.5%	0.0%		7.6%	92.3%	0.0%	0.1%		31.5%	0.5%	68.0%	0.0%			
Total %	0.1%	41.2%	3.1%	0.2%	44.6%	0.0%	0.0%	0.0%	0.0%	0.1%	3.7%	44.7%	0.0%	0.0%	48.5%	2.2%	0.0%	4.7%	0.0%	6.8%	100.0%	

AM PEAK HOUR	Auburn Folsom Rd Southbound					Eureka Dr Westbound					Auburn Folsom Rd Northbound					Eureka Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 07:15 to 08:15																					
Peak Hour For Entire Intersection Begins at 07:15																					
7:15	0	408	53	0	461	0	1	0	0	1	29	370	0	0	399	29	1	35	0	65	926
7:30	2	449	52	0	503	0	0	1	0	1	55	371	0	0	426	62	1	41	0	104	1034
7:45	0	390	47	0	437	0	0	1	0	1	52	356	0	0	408	17	0	31	0	48	894
8:00	0	355	21	0	376	0	0	0	0	0	44	342	0	0	386	13	0	21	0	34	796
Total Volume	2	1602	173	0	1777	0	1	2	0	3	180	1439	0	0	1619	121	2	128	0	251	3650
% App Total	0.1%	90.2%	9.7%	0.0%		0.0%	33.3%	66.7%	0.0%		11.1%	88.9%	0.0%	0.0%		48.2%	0.8%	51.0%	0.0%		
PHF	.250	.892	.816	.000	.883	.000	.250	.500	.000	.750	.818	.970	.000	.000	.950	.488	.500	.780	.000	.603	.882

PM PEAK HOUR	Auburn Folsom Rd Southbound					Eureka Dr Westbound					Auburn Folsom Rd Northbound					Eureka Dr Eastbound					
START TIME	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	LEFT	THRU	RIGHT	UTURNS	APP.TOTAL	Total
Peak Hour Analysis From 16:45 to 17:45																					
Peak Hour For Entire Intersection Begins at 16:45																					
16:45	1	365	16	4	386	0	0	0	0	0	24	457	0	1	482	21	0	55	0	76	944
17:00	0	381	24	1	406	0	0	0	0	0	25	468	0	1	494	15	0	41	0	56	956
17:15	1	408	16	3	428	0	0	1	0	1	32	471	0	0	503	19	1	74	0	94	1026
17:30	0	407	25	0	432	0	0	1	0	1	31	455	1	0	487	11	0	72	0	83	1003
Total Volume	2	1561	81	8	1652	0	0	2	0	2	112	1851	1	2	1966	66	1	242	0	309	3929
% App Total	0.1%	94.5%	4.9%	0.5%		0.0%	0.0%	100.0%	0.0%		5.7%	94.2%	0.1%	0.1%		21.4%	0.3%	78.3%	0.0%		
PHF	.500	.956	.810	.500	.956	.000	.000	.500	.000	.500	.875	.982	.250	.500	.977	.786	.250	.818	.000	.822	.957

Auburn Folsom Rd & Eureka Dr

Date: 5/18/2017

Day: Thursday

Project #: 17-7441-021

AM Peak Hour	07:15 - 08:15
NOON Peak Hour	
PM Peak Hour	16:45 - 17:45

Peak Hour Summary

Southbound Approach (Auburn Folsom Rd)

AM	173	1602	2	0	1562 AM
NOON	0	0	0	0	0 NOON
PM	81	1561	2	8	1927 PM

Eastbound Approach (Eureka Dr)

	AM	NOON	PM
	354	0	193
	0	0	0
	121	0	66
	2	0	1
	128	0	242

Westbound Approach

	AM	NOON	PM
	2	0	2
	1	0	0
	0	0	0
	0	0	0
	4	0	4

CONTROL

Northbound Approach

AM	1730	0	180	1439	0 AM
NOON	0	0	0	0	0 NOON
PM	1805	2	112	1851	1 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON	NONE	NONE
PM	4:00 PM	6:00 PM

Total Ins & Outs

	North Leg		East Leg		West Leg		South Leg
AM	1777	1562	3	354	251	1730	1730
NOON	0	0	0	0	0	0	0
PM	1652	1927	2	193	309	1805	1966

Total Volume Per Leg

	North Leg	East Leg	West Leg	South Leg
AM	3339	7	605	3349
NOON	0	0	0	0
PM	3579	6	502	3771

Prepared by NDS/ATD

VOLUME

Douglas Blvd Bet. Sierra College Blvd & Cavitt Stallman Rd

Day: Thursday
Date: 5/18/2017

City: Granite Bay
Project #: CA17_7442_001

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	23,106	24,458	47,564

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			36		19		55		12:00			344		390		734	
00:15			29		18		47		12:15			389		344		733	
00:30			24		15		39		12:30			379		380		759	
00:45			16	105	15	67	31	172	12:45			363	1475	412	1526	775	3001
01:00			21		13		34		13:00			378		441		819	
01:15			15		12		27		13:15			385		389		774	
01:30			14		15		29		13:30			382		438		820	
01:45			14	64	14	54	28	118	13:45			371	1516	419	1687	790	3203
02:00			8		10		18		14:00			376		414		790	
02:15			14		5		19		14:15			382		400		782	
02:30			12		5		17		14:30			399		452		851	
02:45			6	40	12	32	18	72	14:45			422	1579	414	1680	836	3259
03:00			10		18		28		15:00			372		462		834	
03:15			10		13		23		15:15			419		448		867	
03:30			16		17		33		15:30			440		449		889	
03:45			21	57	17	65	38	122	15:45			426	1657	430	1789	856	3446
04:00			13		19		32		16:00			458		479		937	
04:15			26		30		56		16:15			475		420		895	
04:30			35		27		62		16:30			466		445		911	
04:45			44	118	47	123	91	241	16:45			471	1870	460	1804	931	3674
05:00			55		50		105		17:00			528		479		1007	
05:15			87		82		169		17:15			527		488		1015	
05:30			113		106		219		17:30			452		452		904	
05:45			112	367	135	373	247	740	17:45			454	1961	455	1874	909	3835
06:00			152		161		313		18:00			432		434		866	
06:15			185		189		374		18:15			394		385		779	
06:30			253		266		519		18:30			326		334		660	
06:45			258	848	319	935	577	1783	18:45			314	1466	292	1445	606	2911
07:00			307		402		709		19:00			283		273		556	
07:15			356		376		732		19:15			302		214		516	
07:30			365		493		858		19:30			233		255		488	
07:45			388	1416	500	1771	888	3187	19:45			255	1073	218	960	473	2033
08:00			360		534		894		20:00			233		227		460	
08:15			358		446		804		20:15			226		207		433	
08:30			374		491		865		20:30			222		179		401	
08:45			382	1474	481	1952	863	3426	20:45			194	875	195	808	389	1683
09:00			312		344		656		21:00			227		188		415	
09:15			312		354		666		21:15			215		158		373	
09:30			291		373		664		21:30			158		139		297	
09:45			314	1229	358	1429	672	2658	21:45			128	728	126	611	254	1339
10:00			258		395		653		22:00			113		105		218	
10:15			328		364		692		22:15			98		108		206	
10:30			320		381		701		22:30			72		79		151	
10:45			312	1218	370	1510	682	2728	22:45			83	366	48	340	131	706
11:00			303		357		660		23:00			75		58		133	
11:15			348		364		712		23:15			56		36		92	
11:30			337		378		715		23:30			61		28		89	
11:45			388	1376	373	1472	761	2848	23:45			36	228	29	151	65	379
TOTALS				8312		9783		18095	TOTALS				14794		14675		29469
SPLIT %				45.9%		54.1%		38.0%	SPLIT %				50.2%		49.8%		62.0%

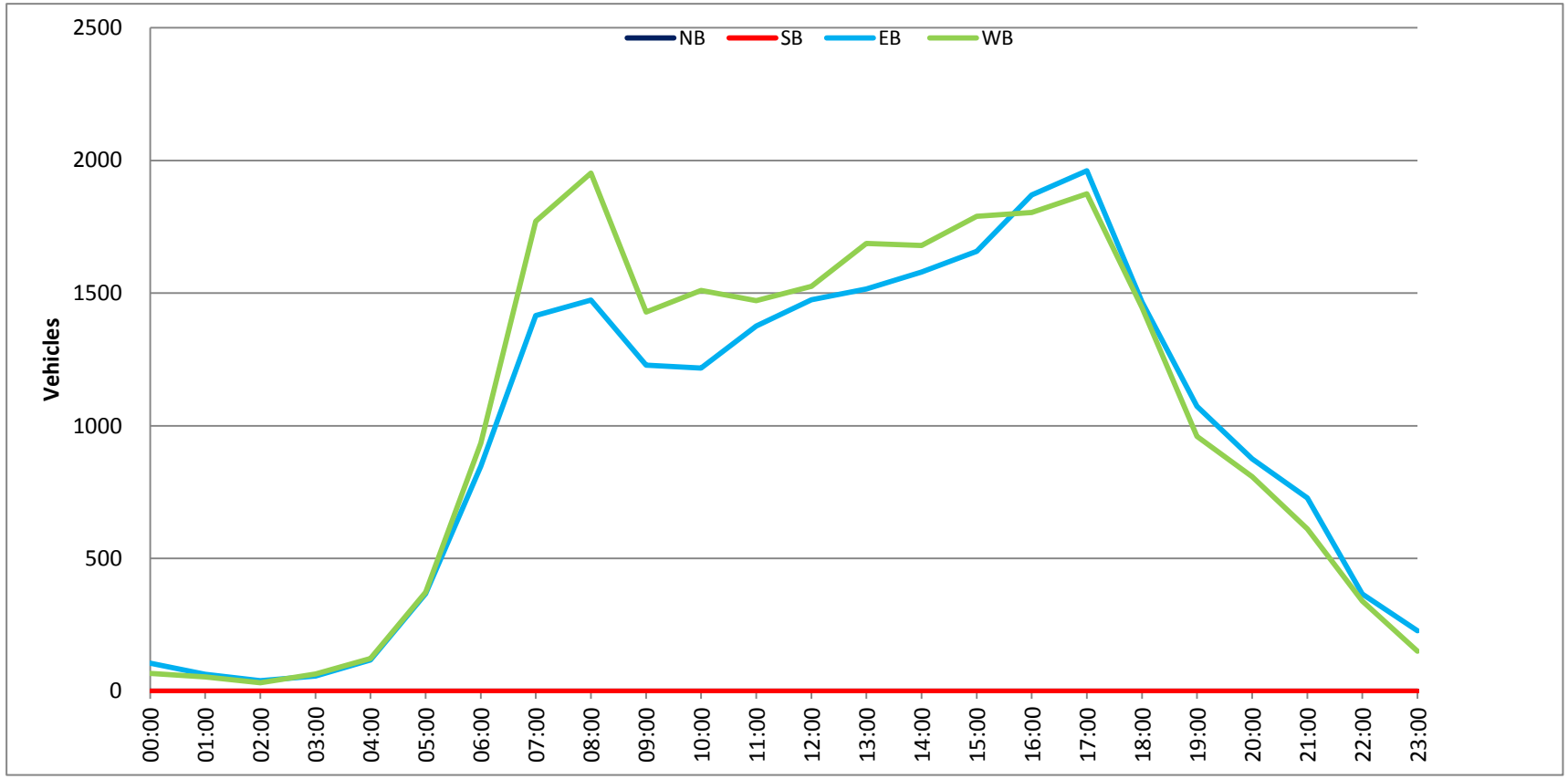
DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	23,106	24,458	47,564

AM Peak Hour			11:45	07:30	07:45	PM Peak Hour			16:30	16:45	16:30
AM Pk Volume			1500	1973	3451	PM Pk Volume			1992	1879	3864
Pk Hr Factor			0.964	0.924	0.965	Pk Hr Factor			0.943	0.963	0.952
7 - 9 Volume	0	0	2890	3723	6613	4 - 6 Volume	0	0	3831	3678	7509
7 - 9 Peak Hour			07:45	07:30	07:45	4 - 6 Peak Hour			16:30	16:45	16:30
7 - 9 Pk Volume	0	0	1480	1973	3451	4 - 6 Pk Volume	0	0	1992	1879	3864
Pk Hr Factor	0.000	0.000	0.954	0.924	0.965	Pk Hr Factor	0.000	0.000	0.943	0.963	0.952

Prepared by NDS/ATD

Project #: CA17_7442_001 **City:** Granite Bay

Location: Douglas Blvd Bet. Sierra College Blvd & **Date:** 5/18/2017



Prepared by NDS/ATD

VOLUME

Douglas Blvd Bet. Cavitt Stallman Rd & Quail Oaks Dr

Day: Thursday
Date: 5/18/2017

City: Granite Bay
Project #: CA17_7442_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	23,450	23,375	46,825

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			34		21		55		12:00			345		367		712	
00:15			30		18		48		12:15			345		321		666	
00:30			26		14		40		12:30			381		331		712	
00:45			15	105	15	68	30	173	12:45			341	1412	380	1399	721	2811
01:00			21		13		34		13:00			390		379		769	
01:15			19		11		30		13:15			374		391		765	
01:30			12		14		26		13:30			390		396		786	
01:45			14	66	13	51	27	117	13:45			392	1546	416	1582	808	3128
02:00			11		8		19		14:00			363		383		746	
02:15			14		5		19		14:15			407		411		818	
02:30			9		5		14		14:30			421		410		831	
02:45			6	40	13	31	19	71	14:45			460	1651	425	1629	885	3280
03:00			7		16		23		15:00			400		460		860	
03:15			9		13		22		15:15			442		444		886	
03:30			17		12		29		15:30			451		432		883	
03:45			12	45	16	57	28	102	15:45			460	1753	427	1763	887	3516
04:00			13		16		29		16:00			483		424		907	
04:15			23		28		51		16:15			460		411		871	
04:30			31		25		56		16:30			477		422		899	
04:45			29	96	48	117	77	213	16:45			479	1899	439	1696	918	3595
05:00			54		53		107		17:00			522		467		989	
05:15			71		78		149		17:15			525		456		981	
05:30			116		104		220		17:30			480		411		891	
05:45			97	338	133	368	230	706	17:45			465	1992	439	1773	904	3765
06:00			143		148		291		18:00			475		423		898	
06:15			183		191		374		18:15			421		370		791	
06:30			260		252		512		18:30			370		318		688	
06:45			260	846	322	913	582	1759	18:45			336	1602	276	1387	612	2989
07:00			308		388		696		19:00			293		270		563	
07:15			352		373		725		19:15			316		201		517	
07:30			371		480		851		19:30			260		236		496	
07:45			358	1389	504	1745	862	3134	19:45			239	1108	203	910	442	2018
08:00			351		475		826		20:00			238		217		455	
08:15			351		470		821		20:15			249		203		452	
08:30			341		471		812		20:30			250		180		430	
08:45			352	1395	461	1877	813	3272	20:45			216	953	169	769	385	1722
09:00			299		334		633		21:00			226		179		405	
09:15			326		337		663		21:15			220		149		369	
09:30			294		340		634		21:30			161		125		286	
09:45			307	1226	361	1372	668	2598	21:45			128	735	128	581	256	1316
10:00			266		343		609		22:00			131		108		239	
10:15			341		353		694		22:15			94		103		197	
10:30			315		362		677		22:30			89		82		171	
10:45			332	1254	353	1411	685	2665	22:45			84	398	40	333	124	731
11:00			328		327		655		23:00			83		61		144	
11:15			337		366		703		23:15			51		32		83	
11:30			309		352		661		23:30			63		27		90	
11:45			388	1362	351	1396	739	2758	23:45			42	239	27	147	69	386
TOTALS				8162		9406		17568	TOTALS				15288		13969		29257
SPLIT %				46.5%		53.5%		37.5%	SPLIT %				52.3%		47.7%		62.5%

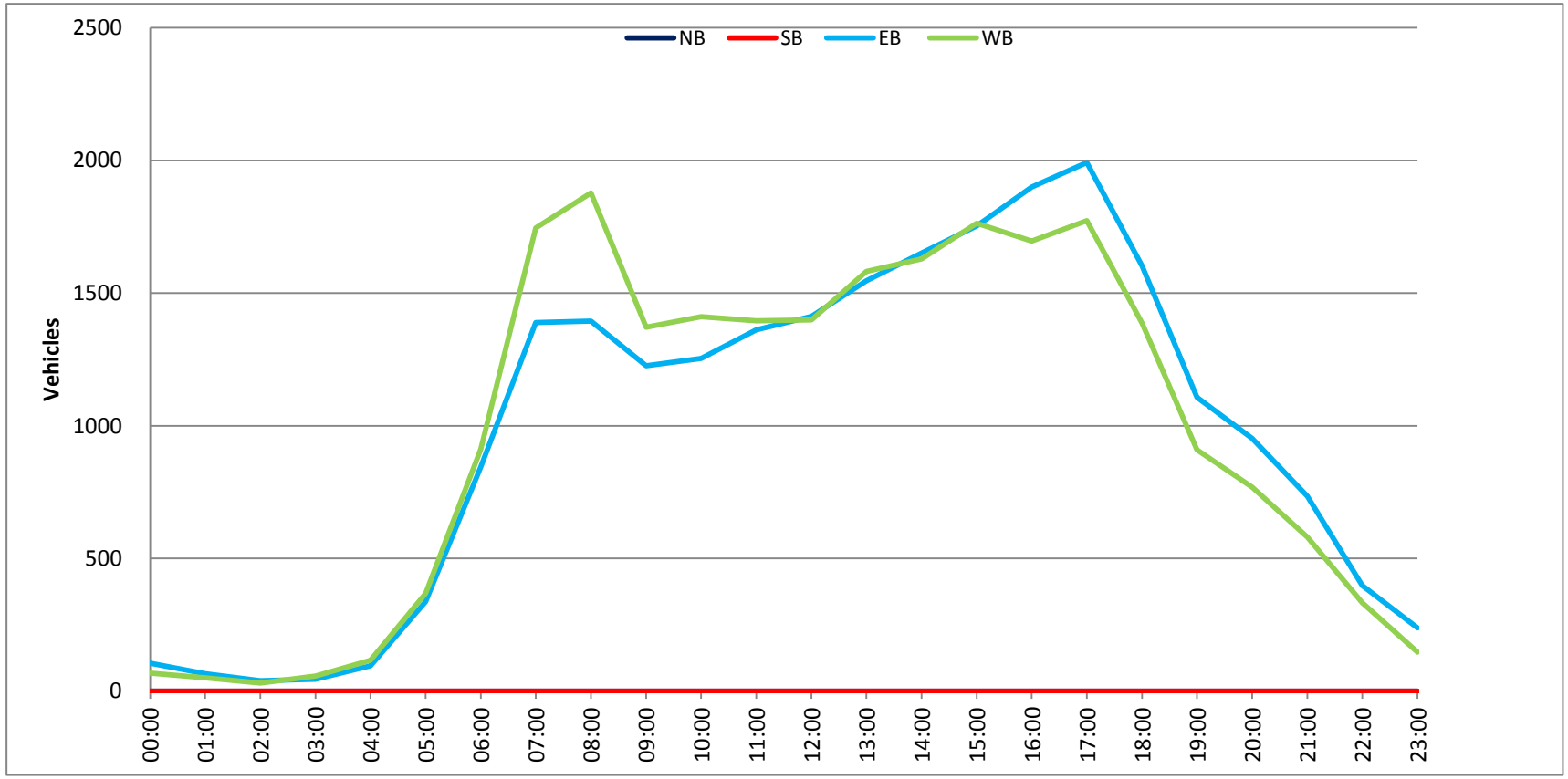
DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	23,450	23,375	46,825

AM Peak Hour			11:45	07:30	07:30	PM Peak Hour			16:45	16:30	16:30
AM Pk Volume			1459	1929	3360	PM Pk Volume			2006	1784	3787
Pk Hr Factor			0.940	0.957	0.974	Pk Hr Factor			0.955	0.955	0.957
7 - 9 Volume	0	0	2784	3622	6406	4 - 6 Volume	0	0	3891	3469	7360
7 - 9 Peak Hour			07:15	07:30	07:30	4 - 6 Peak Hour			16:45	16:30	16:30
7 - 9 Pk Volume	0	0	1432	1929	3360	4 - 6 Pk Volume	0	0	2006	1784	3787
Pk Hr Factor	0.000	0.000	0.965	0.957	0.974	Pk Hr Factor	0.000	0.000	0.955	0.955	0.957

Prepared by NDS/ATD

Project #: CA17_7442_002 **City:** Granite Bay

Location: Douglas Blvd Bet. Cavitt Stallman Rd & Quail **Date:** 5/18/2017



Prepared by NDS/ATD

VOLUME

Douglas Blvd Bet. Seeno Ave & Berg St

Day: Thursday
Date: 5/18/2017

City: Granite Bay
Project #: CA17_7442_004

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	22,219	22,576	44,795

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			32		20		52		12:00			322		351		673	
00:15			31		17		48		12:15			327		294		621	
00:30			16		13		29		12:30			329		337		666	
00:45			21	100	13	63	34	163	12:45			341	1319	347	1329	688	2648
01:00			24		12		36		13:00			299		369		668	
01:15			14		13		27		13:15			364		373		737	
01:30			14		12		26		13:30			356		424		780	
01:45			6	58	7	44	13	102	13:45			390	1409	374	1540	764	2949
02:00			13		11		24		14:00			362		360		722	
02:15			9		9		18		14:15			367		401		768	
02:30			6		6		12		14:30			350		442		792	
02:45			9	37	13	39	22	76	14:45			381	1460	406	1609	787	3069
03:00			9		13		22		15:00			414		454		868	
03:15			7		13		20		15:15			439		417		856	
03:30			17		12		29		15:30			404		407		811	
03:45			9	42	15	53	24	95	15:45			465	1722	419	1697	884	3419
04:00			17		16		33		16:00			434		420		854	
04:15			23		26		49		16:15			442		405		847	
04:30			34		25		59		16:30			475		426		901	
04:45			44	118	43	110	87	228	16:45			472	1823	437	1688	909	3511
05:00			46		53		99		17:00			471		449		920	
05:15			78		73		151		17:15			491		415		906	
05:30			97		101		198		17:30			456		405		861	
05:45			95	316	115	342	210	658	17:45			443	1861	436	1705	879	3566
06:00			114		148		262		18:00			433		417		850	
06:15			203		177		380		18:15			410		349		759	
06:30			240		245		485		18:30			369		315		684	
06:45			263	820	289	859	552	1679	18:45			320	1532	267	1348	587	2880
07:00			232		374		606		19:00			286		250		536	
07:15			326		397		723		19:15			263		217		480	
07:30			377		454		831		19:30			253		226		479	
07:45			318	1253	476	1701	794	2954	19:45			285	1087	191	884	476	1971
08:00			369		467		836		20:00			242		213		455	
08:15			406		462		868		20:15			238		209		447	
08:30			349		447		796		20:30			237		177		414	
08:45			338	1462	400	1776	738	3238	20:45			189	906	166	765	355	1671
09:00			300		334		634		21:00			199		168		367	
09:15			302		305		607		21:15			226		141		367	
09:30			289		341		630		21:30			155		116		271	
09:45			303	1194	334	1314	637	2508	21:45			130	710	128	553	258	1263
10:00			237		326		563		22:00			115		107		222	
10:15			306		332		638		22:15			120		103		223	
10:30			256		338		594		22:30			95		73		168	
10:45			297	1096	340	1336	637	2432	22:45			77	407	44	327	121	734
11:00			315		313		628		23:00			53		57		110	
11:15			308		360		668		23:15			56		31		87	
11:30			310		348		658		23:30			45		25		70	
11:45			346	1279	335	1356	681	2635	23:45			54	208	25	138	79	346
TOTALS				7775		8993		16768	TOTALS				14444		13583		28027
SPLIT %				46.4%		53.6%		37.4%	SPLIT %				51.5%		48.5%		62.6%

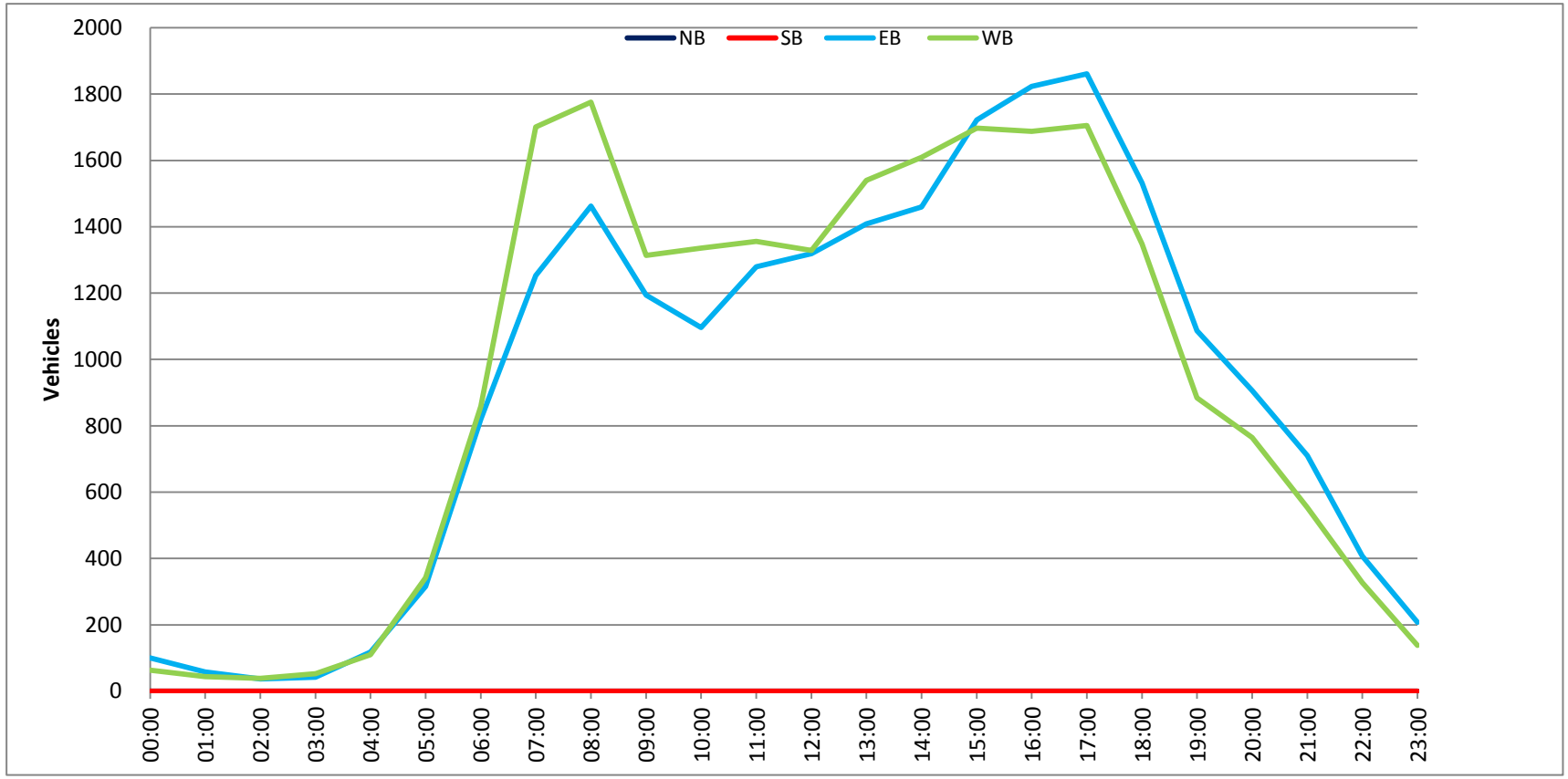
DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	22,219	22,576	44,795

AM Peak Hour			07:30	07:30	07:30	PM Peak Hour			16:30	16:30	16:30
AM Pk Volume			1470	1859	3329	PM Pk Volume			1909	1727	3636
Pk Hr Factor			0.905	0.976	0.959	Pk Hr Factor			0.972	0.962	0.988
7 - 9 Volume	0	0	2715	3477	6192	4 - 6 Volume	0	0	3684	3393	7077
7 - 9 Peak Hour			07:30	07:30	07:30	4 - 6 Peak Hour			16:30	16:30	16:30
7 - 9 Pk Volume	0	0	1470	1859	3329	4 - 6 Pk Volume	0	0	1909	1727	3636
Pk Hr Factor	0.000	0.000	0.905	0.976	0.959	Pk Hr Factor	0.000	0.000	0.972	0.962	0.988

Prepared by NDS/ATD

Project #: CA17_7442_004 **City:** Granite Bay

Location: Douglas Blvd Bet. Seeno Ave & Berg St **Date:** 5/18/2017



Prepared by NDS/ATD

VOLUME

Douglas Blvd Bet. Berg St & Barton Rd

Day: Thursday
Date: 5/18/2017

City: Granite Bay
Project #: CA17_7442_005

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	21,469	21,334	42,803

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			33		18		51		12:00			323		338		661	
00:15			24		16		40		12:15			305		300		605	
00:30			23		13		36		12:30			345		293		638	
00:45			15	95	17	64	32	159	12:45			317	1290	349	1280	666	2570
01:00			19		14		33		13:00			330		346		676	
01:15			16		12		28		13:15			334		346		680	
01:30			11		10		21		13:30			362		370		732	
01:45			9	55	11	47	20	102	13:45			355	1381	366	1428	721	2809
02:00			8		7		15		14:00			355		356		711	
02:15			11		4		15		14:15			382		378		760	
02:30			12		6		18		14:30			381		413		794	
02:45			8	39	11	28	19	67	14:45			406	1524	412	1559	818	3083
03:00			5		11		16		15:00			409		406		815	
03:15			8		12		20		15:15			411		424		835	
03:30			18		14		32		15:30			407		374		781	
03:45			10	41	13	50	23	91	15:45			423	1650	408	1612	831	3262
04:00			11		17		28		16:00			459		372		831	
04:15			19		25		44		16:15			418		413		831	
04:30			31		25		56		16:30			468		407		875	
04:45			32	93	40	107	72	200	16:45			464	1809	395	1587	859	3396
05:00			55		44		99		17:00			470		453		923	
05:15			67		77		144		17:15			490		397		887	
05:30			104		97		201		17:30			434		394		828	
05:45			100	326	108	326	208	652	17:45			420	1814	402	1646	822	3460
06:00			135		138		273		18:00			445		379		824	
06:15			175		158		333		18:15			385		324		709	
06:30			223		246		469		18:30			325		296		621	
06:45			224	757	273	815	497	1572	18:45			297	1452	244	1243	541	2695
07:00			276		350		626		19:00			278		241		519	
07:15			353		378		731		19:15			264		200		464	
07:30			362		465		827		19:30			225		214		439	
07:45			331	1322	443	1636	774	2958	19:45			206	973	196	851	402	1824
08:00			330		462		792		20:00			218		196		414	
08:15			318		447		765		20:15			210		188		398	
08:30			355		412		767		20:30			233		154		387	
08:45			321	1324	369	1690	690	3014	20:45			204	865	151	689	355	1554
09:00			271		312		583		21:00			201		153		354	
09:15			270		302		572		21:15			201		125		326	
09:30			274		297		571		21:30			154		94		248	
09:45			275	1090	340	1251	615	2341	21:45			127	683	104	476	231	1159
10:00			254		305		559		22:00			111		99		210	
10:15			294		301		595		22:15			97		84		181	
10:30			285		324		609		22:30			70		54		124	
10:45			271	1104	324	1254	595	2358	22:45			72	350	42	279	114	629
11:00			307		306		613		23:00			75		51		126	
11:15			299		322		621		23:15			43		27		70	
11:30			294		343		637		23:30			54		21		75	
11:45			320	1220	318	1289	638	2509	23:45			40	212	28	127	68	339
TOTALS				7466		8557		16023	TOTALS				14003		12777		26780
SPLIT %				46.6%		53.4%		37.4%	SPLIT %				52.3%		47.7%		62.6%

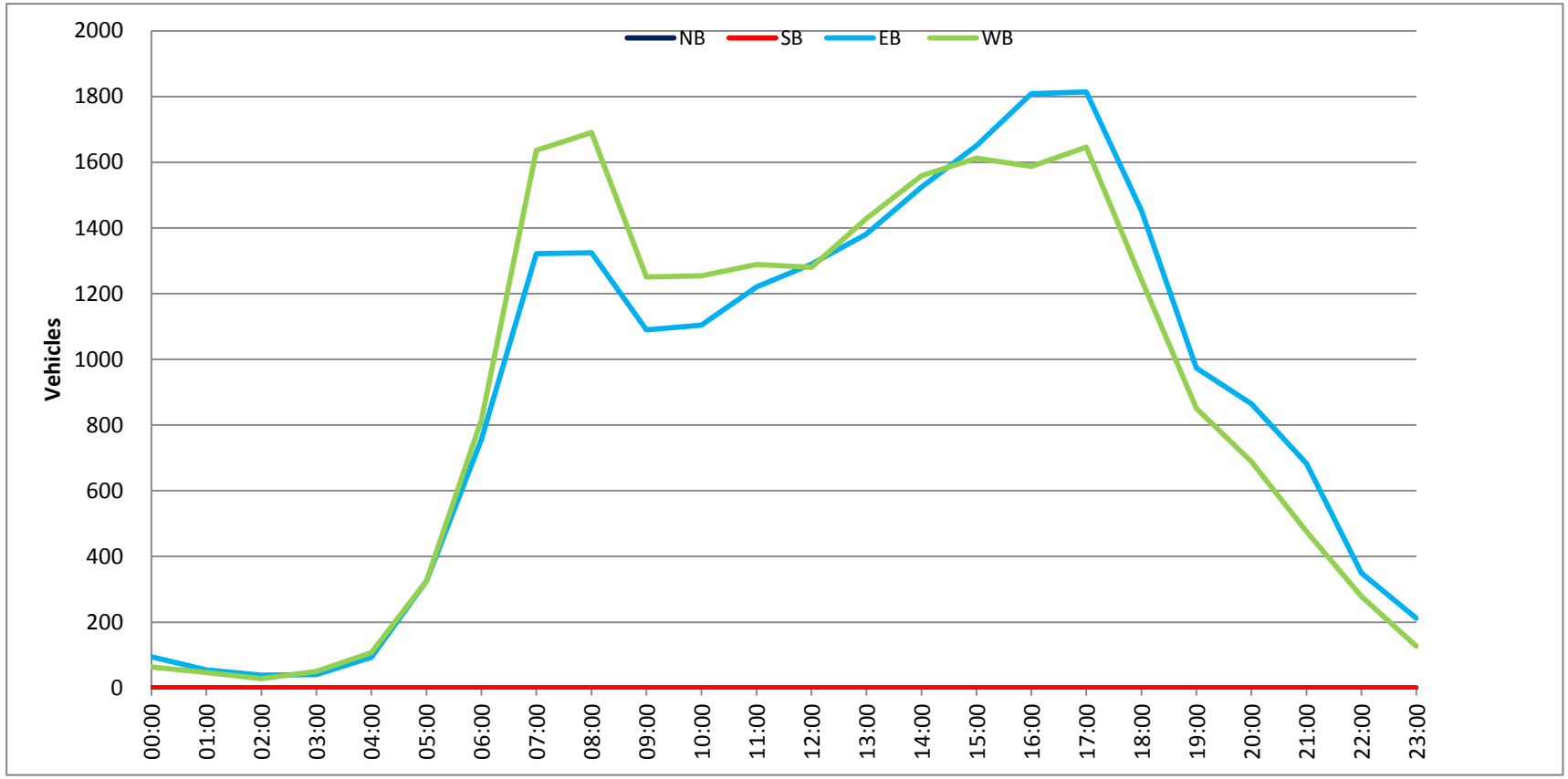
DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	21,469	21,334	42,803

AM Peak Hour			07:15	07:30	07:30	PM Peak Hour			16:30	16:15	16:30
AM Pk Volume			1376	1817	3158	PM Pk Volume			1892	1668	3544
Pk Hr Factor			0.950	0.977	0.955	Pk Hr Factor			0.965	0.921	0.960
7 - 9 Volume	0	0	2646	3326	5972	4 - 6 Volume	0	0	3623	3233	6856
7 - 9 Peak Hour			07:15	07:30	07:30	4 - 6 Peak Hour			16:30	16:15	16:30
7 - 9 Pk Volume	0	0	1376	1817	3158	4 - 6 Pk Volume	0	0	1892	1668	3544
Pk Hr Factor	0.000	0.000	0.950	0.977	0.955	Pk Hr Factor	0.000	0.000	0.965	0.921	0.960

Prepared by NDS/ATD

Project #: CA17_7442_005 **City:** Granite Bay

Location: Douglas Blvd Bet. Berg St & Barton Rd **Date:** 5/18/2017



Prepared by NDS/ATD

VOLUME

Douglas Blvd Bet. Barton Rd & Joe Rodgers Rd

Day: Thursday
Date: 5/18/2017

City: Granite Bay
Project #: CA17_7442_006

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	20,992	21,631	42,623

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			34		15		49		12:00			298		308		606	
00:15			21		19		40		12:15			323		289		612	
00:30			21		13		34		12:30			323		312		635	
00:45			15	91	13	60	28	151	12:45			335	1279	347	1256	682	2535
01:00			19		12		31		13:00			335		364		699	
01:15			12		8		20		13:15			333		365		698	
01:30			9		8		17		13:30			341		390		731	
01:45			8	48	11	39	19	87	13:45			334	1343	354	1473	688	2816
02:00			3		5		8		14:00			352		359		711	
02:15			10		3		13		14:15			370		404		774	
02:30			12		6		18		14:30			357		407		764	
02:45			7	32	11	25	18	57	14:45			400	1479	385	1555	785	3034
03:00			5		9		14		15:00			393		419		812	
03:15			8		12		20		15:15			397		419		816	
03:30			18		16		34		15:30			418		394		812	
03:45			15	46	13	50	28	96	15:45			414	1622	413	1645	827	3267
04:00			13		15		28		16:00			410		396		806	
04:15			18		21		39		16:15			398		410		808	
04:30			29		25		54		16:30			437		438		875	
04:45			29	89	35	96	64	185	16:45			440	1685	417	1661	857	3346
05:00			49		38		87		17:00			441		436		877	
05:15			76		77		153		17:15			461		414		875	
05:30			111		101		212		17:30			422		437		859	
05:45			118	354	102	318	220	672	17:45			391	1715	441	1728	832	3443
06:00			128		139		267		18:00			400		371		771	
06:15			166		171		337		18:15			365		370		735	
06:30			240		236		476		18:30			336		299		635	
06:45			233	767	265	811	498	1578	18:45			292	1393	243	1283	535	2676
07:00			272		369		641		19:00			264		245		509	
07:15			324		416		740		19:15			279		210		489	
07:30			390		462		852		19:30			237		209		446	
07:45			361	1347	456	1703	817	3050	19:45			220	1000	184	848	404	1848
08:00			313		455		768		20:00			213		192		405	
08:15			317		447		764		20:15			210		185		395	
08:30			330		420		750		20:30			215		171		386	
08:45			319	1279	376	1698	695	2977	20:45			188	826	155	703	343	1529
09:00			286		322		608		21:00			190		135		325	
09:15			288		308		596		21:15			194		134		328	
09:30			262		308		570		21:30			153		99		252	
09:45			272	1108	333	1271	605	2379	21:45			119	656	105	473	224	1129
10:00			253		323		576		22:00			107		102		209	
10:15			299		296		595		22:15			78		86		164	
10:30			276		316		592		22:30			68		53		121	
10:45			291	1119	328	1263	619	2382	22:45			69	322	44	285	113	607
11:00			291		294		585		23:00			70		51		121	
11:15			271		321		592		23:15			40		27		67	
11:30			299		320		619		23:30			44		22		66	
11:45			337	1198	320	1255	657	2453	23:45			40	194	32	132	72	326
TOTALS				7478		8589		16067	TOTALS				13514		13042		26556
SPLIT %				46.5%		53.5%		37.7%	SPLIT %				50.9%		49.1%		62.3%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	20,992	21,631	42,623

AM Peak Hour			07:15	07:30	07:30	PM Peak Hour			16:30	17:00	16:30
AM Pk Volume			1388	1820	3201	PM Pk Volume			1779	1728	3484
Pk Hr Factor			0.890	0.985	0.939	Pk Hr Factor			0.965	0.980	0.993
7 - 9 Volume	0	0	2626	3401	6027	4 - 6 Volume	0	0	3400	3389	6789
7 - 9 Peak Hour			07:15	07:30	07:30	4 - 6 Peak Hour			16:30	17:00	16:30
7 - 9 Pk Volume	0	0	1388	1820	3201	4 - 6 Pk Volume	0	0	1779	1728	3484
Pk Hr Factor	0.000	0.000	0.890	0.985	0.939	Pk Hr Factor	0.000	0.000	0.965	0.980	0.993

Prepared by NDS/ATD

Project #: CA17_7442_006 **City:** Granite Bay

Location: Douglas Blvd Bet. Barton Rd & Joe Rodgers **Date:** 5/18/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	1156	172	226	1685	113	438	811	125	208	581	171
Future Volume (veh/h)	184	1156	172	226	1685	113	438	811	125	208	581	171
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
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	200	1257	60	246	1832	0	476	882	0	226	632	138
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	259	1659	508	533	2149		531	1298		288	773	166
Arrive On Green	0.07	0.32	0.32	0.15	0.42	0.00	0.20	0.34	0.00	0.08	0.18	0.18
Sat Flow, veh/h	3456	5106	1564	3456	5106	1585	3456	5106	1585	3456	4202	903
Grp Volume(v), veh/h	200	1257	60	246	1832	0	476	882	0	226	510	260
Grp Sat Flow(s),veh/h/ln	1728	1702	1564	1728	1702	1585	1728	1702	1585	1728	1702	1701
Q Serve(g_s), s	6.8	26.5	2.1	7.8	38.9	0.0	16.1	17.8	0.0	7.7	17.3	17.7
Cycle Q Clear(g_c), s	6.8	26.5	2.1	7.8	38.9	0.0	16.1	17.8	0.0	7.7	17.3	17.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.53
Lane Grp Cap(c), veh/h	259	1659	508	533	2149		531	1298		288	626	313
V/C Ratio(X)	0.77	0.76	0.12	0.46	0.85		0.90	0.68		0.79	0.81	0.83
Avail Cap(c_a), veh/h	461	1659	508	533	2149		605	1298		605	681	340
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	36.3	12.0	46.2	31.4	0.0	46.8	35.5	0.0	53.9	47.0	47.2
Incr Delay (d2), s/veh	1.9	3.3	0.5	0.2	3.6	0.0	13.8	1.6	0.0	1.8	7.6	15.9
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	3.0	11.0	1.2	3.3	15.7	0.0	7.4	6.8	0.0	3.3	7.8	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.3	39.6	12.4	46.4	35.0	0.0	60.6	37.1	0.0	55.8	54.6	63.1
LnGrp LOS	E	D	B	D	C		E	D		E	D	E
Approach Vol, veh/h		1517			2078	A		1358	A		996	
Approach Delay, s/veh		40.7			36.3			45.4			57.1	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.5	45.0	22.4	28.1	13.0	56.5	14.0	36.5
Change Period (Y+Rc), s	6.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	14.0	39.0	21.0	24.0	16.0	39.0	21.0	24.0
Max Q Clear Time (g_c+I1), s	9.8	28.5	18.1	19.7	8.8	40.9	9.7	19.8
Green Ext Time (p_c), s	0.2	7.2	0.3	2.3	0.2	0.0	0.3	2.4

Intersection Summary	
HCM 6th Ctrl Delay	43.0
HCM 6th LOS	D

Notes

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

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

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	39	1361	34	41	1839	7	5	0	57	0	1	99
Future Vol, veh/h	39	1361	34	41	1839	7	5	0	57	0	1	99
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	175	-	-	-	-	125	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	1479	37	45	1999	8	5	0	62	0	1	108

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2007	0	0	1516	0	0	2653	3660	740	2917	3693	1004
Stage 1	-	-	-	-	-	-	1563	1563	-	2093	2093	-
Stage 2	-	-	-	-	-	-	1090	2097	-	824	1600	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	281	-	-	437	-	-	11	5	359	7	5	240
Stage 1	-	-	-	-	-	-	117	171	-	54	92	-
Stage 2	-	-	-	-	-	-	230	92	-	333	164	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	281	-	-	437	-	-	~ 4	4	359	5	4	240
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 4	4	-	5	4	-
Stage 1	-	-	-	-	-	-	100	146	-	46	83	-
Stage 2	-	-	-	-	-	-	112	83	-	234	140	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.3	155.4	42.4
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	4	359	281	-	-	437	-	-	4	240
HCM Lane V/C Ratio	1.359	0.173	0.151	-	-	0.102	-	-	0.272	0.448
HCM Control Delay (s)	$ 1731.9	17.1	20.1	-	-	14.2	-	$ 1111.1		31.6
HCM Lane LOS	F	C	C	-	-	B	-	-	F	D
HCM 95th %tile Q(veh)	1.5	0.6	0.5	-	-	0.3	-	-	0.5	2.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	58	1361	0	2	0	1840	82	0	0	0	50	0
Future Volume (veh/h)	58	1361	0	2	0	1840	82	0	0	0	50	0
Initial Q (Qb), veh	0	0	0		0	0	0				0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		0.98				1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00				1.00	1.00
Work Zone On Approach		No				No						No
Adj Sat Flow, veh/h/ln	1870	1870	1870		1870	1870	1870				1870	1870
Adj Flow Rate, veh/h	63	1479	0		0	2000	87				54	0
Peak Hour Factor	0.92	0.92	0.92		0.92	0.92	0.92				0.92	0.92
Percent Heavy Veh, %	2	2	2		2	2	2				2	2
Cap, veh/h	80	2906	0		3	2529	109				80	0
Arrive On Green	0.05	0.82	0.00		0.00	0.73	0.73				0.04	0.00
Sat Flow, veh/h	1781	3647	0		1781	3467	150				1781	0
Grp Volume(v), veh/h	63	1479	0		0	1017	1070				54	0
Grp Sat Flow(s),veh/h/ln	1781	1777	0		1781	1777	1840				1781	0
Q Serve(g_s), s	2.4	9.0	0.0		0.0	25.0	26.0				2.1	0.0
Cycle Q Clear(g_c), s	2.4	9.0	0.0		0.0	25.0	26.0				2.1	0.0
Prop In Lane	1.00		0.00		1.00		0.08				1.00	
Lane Grp Cap(c), veh/h	80	2906	0		3	1296	1342				80	0
V/C Ratio(X)	0.79	0.51	0.00		0.00	0.78	0.80				0.68	0.00
Avail Cap(c_a), veh/h	592	3440	0		335	1720	1781				875	0
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00				1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00		0.00	1.00	1.00				1.00	0.00
Uniform Delay (d), s/veh	32.7	2.0	0.0		0.0	5.9	6.1				32.6	0.0
Incr Delay (d2), s/veh	6.2	0.1	0.0		0.0	1.8	1.9				3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0				0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.1	0.0		0.0	3.5	3.8				1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.9	2.1	0.0		0.0	7.7	8.0				36.2	0.0
LnGrp LOS	D	A	A		A	A	A				D	A
Approach Vol, veh/h		1542				2087						68
Approach Delay, s/veh		3.6				7.9						35.4
Approach LOS		A				A						D

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	6.1	56.5		6.6	0.0	62.6
Change Period (Y+Rc), s	3.0	6.0		3.5	3.0	6.0
Max Green Setting (Gmax), s	23.0	67.0		34.0	13.0	67.0
Max Q Clear Time (g_c+I1), s	4.4	28.0		4.1	0.0	11.0
Green Ext Time (p_c), s	0.0	22.4		0.2	0.0	14.2

Intersection Summary						
HCM 6th Ctrl Delay			6.6			
HCM 6th LOS			A			

Notes

User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	46
Future Volume (veh/h)	46
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	14
Peak Hour Factor	0.92
Percent Heavy Veh, %	2
Cap, veh/h	71
Arrive On Green	0.04
Sat Flow, veh/h	1585
Grp Volume(v), veh/h	14
Grp Sat Flow(s),veh/h/ln	1585
Q Serve(g_s), s	0.6
Cycle Q Clear(g_c), s	0.6
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	71
V/C Ratio(X)	0.20
Avail Cap(c_a), veh/h	779
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	31.8
Incr Delay (d2), s/veh	0.5
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.0
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	32.3
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1441	23	16	1882	0	24
Future Vol, veh/h	1441	23	16	1882	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1566	25	17	2046	0	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1591	0	-	796
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	408	-	0	330
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	408	-	-	330
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	16.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	330	-	-	408	-
HCM Lane V/C Ratio	0.079	-	-	0.043	-
HCM Control Delay (s)	16.8	-	-	14.2	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	1351	7	34	1834	9	0	0	2	0	0	64
Future Vol, veh/h	38	1351	7	34	1834	9	0	0	2	0	0	64
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	325	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	40	1407	7	35	1910	9	0	0	2	0	0	67

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1919	0	0	1414	0	0	-	-	707	-	-	960
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.92	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	-	-	3.31	-	-	3.31
Pot Cap-1 Maneuver	308	-	-	483	-	-	0	0	380	0	0	259
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	308	-	-	483	-	-	-	-	380	-	-	259
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.2	14.5	23.7
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	380	308	-	-	483	-	-	259
HCM Lane V/C Ratio	0.005	0.129	-	-	0.073	-	-	0.257
HCM Control Delay (s)	14.5	18.4	-	-	13	-	-	23.7
HCM Lane LOS	B	C	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0	0.4	-	-	0.2	-	-	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	1187	130	134	1564	114	215	98	76	137	116	34
Future Volume (veh/h)	41	1187	130	134	1564	114	215	98	76	137	116	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	44	1263	131	143	1664	76	166	191	0	146	123	7
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	56	1367	141	175	1733	755	220	231		166	140	263
Arrive On Green	0.03	0.42	0.42	0.10	0.48	0.48	0.12	0.12	0.00	0.17	0.17	0.17
Sat Flow, veh/h	1795	3276	339	1795	3582	1562	1795	1885	1598	996	839	1576
Grp Volume(v), veh/h	44	688	706	143	1664	76	166	191	0	269	0	7
Grp Sat Flow(s),veh/h/ln	1795	1791	1824	1795	1791	1562	1795	1885	1598	1835	0	1576
Q Serve(g_s), s	2.2	33.1	33.4	7.1	40.7	2.4	8.1	9.0	0.0	13.0	0.0	0.3
Cycle Q Clear(g_c), s	2.2	33.1	33.4	7.1	40.7	2.4	8.1	9.0	0.0	13.0	0.0	0.3
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	0.54		1.00
Lane Grp Cap(c), veh/h	56	747	761	175	1733	755	220	231		306	0	263
V/C Ratio(X)	0.79	0.92	0.93	0.81	0.96	0.10	0.75	0.83		0.88	0.00	0.03
Avail Cap(c_a), veh/h	296	788	802	395	1773	773	395	415		404	0	347
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	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	43.7	25.1	25.2	40.2	22.6	12.7	38.6	39.0	0.0	37.0	0.0	31.7
Incr Delay (d2), s/veh	8.7	15.2	15.8	3.5	12.9	0.0	2.0	2.9	0.0	13.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	15.1	15.6	3.1	17.5	0.7	3.6	4.2	0.0	6.8	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.5	40.3	41.0	43.7	35.6	12.8	40.5	41.8	0.0	50.2	0.0	31.7
LnGrp LOS	D	D	D	D	D	B	D	D		D	A	C
Approach Vol, veh/h		1438			1883			357	A		276	
Approach Delay, s/veh		41.0			35.3			41.2			49.7	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.9	43.9		19.6	5.8	50.0		15.5
Change Period (Y+Rc), s	3.0	6.0		4.4	3.0	6.0		4.4
Max Green Setting (Gmax), s	20.0	40.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	9.1	35.4		15.0	4.2	42.7		11.0
Green Ext Time (p_c), s	0.0	1.4		0.2	0.0	1.3		0.1

Intersection Summary	
HCM 6th Ctrl Delay	38.9
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	125	1022	74	251	96	1172	341	42	80	612	259
Future Volume (veh/h)	136	125	1022	74	251	96	1172	341	42	80	612	259
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	151	139	0	82	279	0	1302	379	0	89	680	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	183	516		105	362		1384	727		384	766	
Arrive On Green	0.10	0.14	0.00	0.06	0.10	0.00	0.39	0.39	0.00	0.21	0.21	0.00
Sat Flow, veh/h	1795	3582	1598	1795	3582	1598	3591	1885	1598	1795	3582	1598
Grp Volume(v), veh/h	151	139	0	82	279	0	1302	379	0	89	680	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1598	1795	1885	1598	1795	1791	1598
Q Serve(g_s), s	8.0	3.4	0.0	4.4	7.4	0.0	34.1	15.1	0.0	4.0	18.0	0.0
Cycle Q Clear(g_c), s	8.0	3.4	0.0	4.4	7.4	0.0	34.1	15.1	0.0	4.0	18.0	0.0
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	183	516		105	362		1384	727		384	766	
V/C Ratio(X)	0.83	0.27		0.78	0.77		0.94	0.52		0.23	0.89	
Avail Cap(c_a), veh/h	460	918		276	735		1657	870		460	918	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.0	37.2	0.0	45.3	42.7	0.0	28.9	23.0	0.0	31.7	37.2	0.0
Incr Delay (d2), s/veh	3.6	0.1	0.0	4.6	1.3	0.0	9.3	0.2	0.0	0.1	8.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.6	1.4	0.0	2.0	3.2	0.0	15.4	6.3	0.0	1.7	8.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.6	37.3	0.0	49.9	44.1	0.0	38.2	23.3	0.0	31.8	45.5	0.0
LnGrp LOS	D	D		D	D		D	C		C	D	
Approach Vol, veh/h		290	A		361	A		1681	A		769	A
Approach Delay, s/veh		42.1			45.4			34.8			43.9	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.7	19.8		26.2	12.9	15.6		42.9
Change Period (Y+Rc), s	3.0	5.7		5.3	3.0	* 5.7		5.3
Max Green Setting (Gmax), s	15.0	25.0		25.0	25.0	* 20		45.0
Max Q Clear Time (g_c+I1), s	6.4	5.4		20.0	10.0	9.4		36.1
Green Ext Time (p_c), s	0.0	0.2		0.9	0.0	0.5		1.5

Intersection Summary	
HCM 6th Ctrl Delay	39.0
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

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

Intersection	
Intersection Delay, s/veh	52.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	128	16	107	183	77	21	246	75	42	206	143
Future Vol, veh/h	53	128	16	107	183	77	21	246	75	42	206	143
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	66	160	20	134	229	96	26	308	94	53	258	179
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay	31.3	47.9	95.1	30
HCM LOS	D	E	F	D

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	6%	27%	37%	0%	17%	0%
Vol Thru, %	72%	65%	63%	0%	83%	0%
Vol Right, %	22%	8%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	342	197	290	77	248	143
LT Vol	21	53	107	0	42	0
Through Vol	246	128	183	0	206	0
RT Vol	75	16	0	77	0	143
Lane Flow Rate	428	246	362	96	310	179
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	1.069	0.668	0.911	0.217	0.774	0.406
Departure Headway (Hd)	9.002	10.145	9.331	8.408	9.303	8.483
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	406	360	392	429	391	427
Service Time	7.002	8.145	7.031	6.108	7.003	6.183
HCM Lane V/C Ratio	1.054	0.683	0.923	0.224	0.793	0.419
HCM Control Delay	95.1	31.3	57	13.4	37.5	16.9
HCM Lane LOS	F	D	F	B	E	C
HCM 95th-tile Q	14.5	4.6	9.5	0.8	6.5	1.9

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1	1	1	1	1	0	1	0	0	0	0	0
Stage 1	1	1	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	1	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	1022	895	1084	1022	895	-	1622	-	-	-	-	-
Stage 1	1022	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	1022	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	895	1084	1022	895	-	1622	-	-	-	-	-
Mov Cap-2 Maneuver	-	895	-	1022	895	-	-	-	-	-	-	-
Stage 1	1022	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	1022	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	394	1589	281	310	1354	238	446	876	206	248	765	148
Future Volume (veh/h)	394	1589	281	310	1354	238	446	876	206	248	765	148
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	419	1690	155	330	1440	0	474	932	0	264	814	137
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	466	1784	553	551	1979		522	1330		313	881	147
Arrive On Green	0.13	0.35	0.35	0.16	0.38	0.00	0.15	0.26	0.00	0.09	0.20	0.20
Sat Flow, veh/h	3483	5147	1596	3483	5147	1598	3483	5147	1598	3483	4439	742
Grp Volume(v), veh/h	419	1690	155	330	1440	0	474	932	0	264	628	323
Grp Sat Flow(s),veh/h/ln	1742	1716	1596	1742	1716	1598	1742	1716	1598	1742	1716	1750
Q Serve(g_s), s	17.8	47.9	7.0	13.2	35.9	0.0	20.1	24.6	0.0	11.2	26.9	27.2
Cycle Q Clear(g_c), s	17.8	47.9	7.0	13.2	35.9	0.0	20.1	24.6	0.0	11.2	26.9	27.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.42
Lane Grp Cap(c), veh/h	466	1784	553	551	1979		522	1330		313	681	347
V/C Ratio(X)	0.90	0.95	0.28	0.60	0.73		0.91	0.70		0.84	0.92	0.93
Avail Cap(c_a), veh/h	534	1784	553	551	1979		604	1330		488	686	350
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.0	47.7	15.8	58.7	39.4	0.0	62.7	50.4	0.0	67.2	59.0	59.1
Incr Delay (d2), s/veh	15.5	12.0	1.3	1.3	2.4	0.0	15.0	1.8	0.0	4.5	18.2	31.1
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	8.7	21.8	4.1	5.8	15.2	0.0	9.8	10.6	0.0	5.1	13.2	14.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.5	59.7	17.1	60.0	41.8	0.0	77.8	52.2	0.0	71.7	77.2	90.2
LnGrp LOS	E	E	B	E	D		E	D		E	E	F
Approach Vol, veh/h		2264			1770	A		1406	A		1215	
Approach Delay, s/veh		60.4			45.2			60.8			79.5	
Approach LOS		E			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.7	58.0	26.5	35.8	24.1	63.7	17.5	44.8
Change Period (Y+Rc), s	6.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	20.0	52.0	26.0	30.0	23.0	51.0	21.0	35.0
Max Q Clear Time (g_c+I1), s	15.2	49.9	22.1	29.2	19.8	37.9	13.2	26.6
Green Ext Time (p_c), s	0.3	1.9	0.4	0.5	0.3	8.1	0.3	4.4

Intersection Summary	
HCM 6th Ctrl Delay	59.9
HCM 6th LOS	E

Notes

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

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

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	1907	56	31	1729	4	2	0	32	0	1	37
Future Vol, veh/h	45	1907	56	31	1729	4	2	0	32	0	1	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	175	-	-	-	-	125	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	48	2029	60	33	1839	4	2	0	34	0	1	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1843	0	0	2089	0	0	3111	4034	1015	3018	4092	922
Stage 1	-	-	-	-	-	-	2125	2125	-	1907	1907	-
Stage 2	-	-	-	-	-	-	986	1909	-	1111	2185	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	330	-	-	265	-	-	5	3	238	6	2	274
Stage 1	-	-	-	-	-	-	52	90	-	71	116	-
Stage 2	-	-	-	-	-	-	268	116	-	225	84	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	330	-	-	265	-	-	-	2	238	4	~ 1	274
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	2	-	4	~ 1	-
Stage 1	-	-	-	-	-	-	44	77	-	61	102	-
Stage 2	-	-	-	-	-	-	199	102	-	165	72	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4		149.6
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	238	330	-	-	265	-	-	1	274
HCM Lane V/C Ratio	-	0.143	0.145	-	-	0.124	-	-	1.064	0.144
HCM Control Delay (s)	-	22.6	17.8	-	-	20.5	-	$	4932.2	20.3
HCM Lane LOS	-	C	C	-	-	C	-	-	F	C
HCM 95th %tile Q(veh)	-	0.5	0.5	-	-	0.4	-	-	0.6	0.5

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	1905	0	0	1729	18	0	0	0	26	0	31
Future Volume (veh/h)	34	1905	0	0	1729	18	0	0	0	26	0	31
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1885	1885				1885	1870	1885
Adj Flow Rate, veh/h	36	2027	0	0	1839	19				28	0	12
Peak Hour Factor	0.94	0.94	0.92	0.92	0.94	0.94				0.94	0.92	0.94
Percent Heavy Veh, %	1	1	1	2	1	1				1	2	1
Cap, veh/h	43	2679	0	3	2451	25				100	0	90
Arrive On Green	0.02	0.75	0.00	0.00	0.67	0.67				0.06	0.00	0.06
Sat Flow, veh/h	1795	3676	0	1781	3631	37				1781	0	1598
Grp Volume(v), veh/h	36	2027	0	0	906	952				28	0	12
Grp Sat Flow(s),veh/h/ln	1795	1791	0	1781	1791	1877				1781	0	1598
Q Serve(g_s), s	1.2	20.2	0.0	0.0	20.4	20.5				0.9	0.0	0.4
Cycle Q Clear(g_c), s	1.2	20.2	0.0	0.0	20.4	20.5				0.9	0.0	0.4
Prop In Lane	1.00		0.00	1.00		0.02				1.00		1.00
Lane Grp Cap(c), veh/h	43	2679	0	3	1209	1267				100	0	90
V/C Ratio(X)	0.83	0.76	0.00	0.00	0.75	0.75				0.28	0.00	0.13
Avail Cap(c_a), veh/h	673	3912	0	378	1956	2051				1946	0	1745
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	29.8	4.5	0.0	0.0	6.6	6.6				27.7	0.0	27.5
Incr Delay (d2), s/veh	13.8	0.5	0.0	0.0	1.0	0.9				1.5	0.0	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
%ile BackOfQ(50%),veh/ln	0.6	0.9	0.0	0.0	3.1	3.3				0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.6	5.0	0.0	0.0	7.5	7.5				29.2	0.0	28.2
LnGrp LOS	D	A	A	A	A	A				C	A	C
Approach Vol, veh/h		2063			1858						40	
Approach Delay, s/veh		5.7			7.5						28.9	
Approach LOS		A			A						C	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	4.5	47.4		9.5	0.0	51.9
Change Period (Y+Rc), s	3.0	6.0		6.0	3.0	6.0
Max Green Setting (Gmax), s	23.0	67.0		67.0	13.0	67.0
Max Q Clear Time (g_c+I1), s	3.2	22.5		2.9	0.0	22.2
Green Ext Time (p_c), s	0.0	18.9		0.2	0.0	23.6

Intersection Summary	
HCM 6th Ctrl Delay	6.8
HCM 6th LOS	A

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1900	20	13	1707	0	39
Future Vol, veh/h	1900	20	13	1707	0	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2065	22	14	1855	0	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2087	0	-	1044
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	262	-	0	226
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	262	-	-	226
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	24.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	226	-	-	262	-
HCM Lane V/C Ratio	0.188	-	-	0.054	-
HCM Control Delay (s)	24.6	-	-	19.5	-
HCM Lane LOS	C	-	-	C	-
HCM 95th %tile Q(veh)	0.7	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	68	1815	25	40	1672	10	0	0	11	0	0	48
Future Vol, veh/h	68	1815	25	40	1672	10	0	0	11	0	0	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	325	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	72	1911	26	42	1760	11	0	0	12	0	0	51

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1771	0	0	1937	0	0	-	-	969	-	-	886
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.92	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	-	-	3.31	-	-	3.31
Pot Cap-1 Maneuver	352	-	-	303	-	-	0	0	255	0	0	290
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	352	-	-	303	-	-	-	-	255	-	-	290
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.4	19.8	20
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	255	352	-	-	303	-	-	290
HCM Lane V/C Ratio	0.045	0.203	-	-	0.139	-	-	0.174
HCM Control Delay (s)	19.8	17.8	-	-	18.8	-	-	20
HCM Lane LOS	C	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	0.1	0.8	-	-	0.5	-	-	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	1567	199	92	1503	165	132	75	102	147	90	56
Future Volume (veh/h)	45	1567	199	92	1503	165	132	75	102	147	90	56
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	46	1615	198	95	1549	128	106	118	0	152	93	13
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	58	1549	187	122	1856	827	154	162		178	109	250
Arrive On Green	0.03	0.48	0.48	0.07	0.51	0.51	0.09	0.09	0.00	0.16	0.16	0.16
Sat Flow, veh/h	1810	3235	390	1810	3610	1609	1810	1900	1610	1143	700	1610
Grp Volume(v), veh/h	46	888	925	95	1549	128	106	118	0	245	0	13
Grp Sat Flow(s),veh/h/ln	1810	1805	1820	1810	1805	1609	1810	1900	1610	1843	0	1610
Q Serve(g_s), s	2.1	40.0	40.0	4.3	30.5	3.5	4.8	5.1	0.0	10.8	0.0	0.6
Cycle Q Clear(g_c), s	2.1	40.0	40.0	4.3	30.5	3.5	4.8	5.1	0.0	10.8	0.0	0.6
Prop In Lane	1.00		0.21	1.00		1.00	1.00		1.00	0.62		1.00
Lane Grp Cap(c), veh/h	58	864	872	122	1856	827	154	162		286	0	250
V/C Ratio(X)	0.79	1.03	1.06	0.78	0.83	0.15	0.69	0.73		0.86	0.00	0.05
Avail Cap(c_a), veh/h	325	864	872	433	1945	867	433	455		441	0	386
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	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.1	21.8	21.8	38.3	17.3	10.7	37.1	37.3	0.0	34.4	0.0	30.0
Incr Delay (d2), s/veh	8.3	37.9	48.0	4.0	2.9	0.0	2.0	2.4	0.0	6.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	22.5	25.2	1.9	10.9	1.0	2.1	2.4	0.0	5.2	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.5	59.7	69.8	42.3	20.2	10.7	39.2	39.6	0.0	40.5	0.0	30.1
LnGrp LOS	D	F	F	D	C	B	D	D		D	A	C
Approach Vol, veh/h		1859			1772			224	A		258	
Approach Delay, s/veh		64.4			20.7			39.4			40.0	
Approach LOS		E			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.6	46.0		17.4	5.7	48.9		11.5
Change Period (Y+Rc), s	3.0	6.0		4.4	3.0	6.0		4.4
Max Green Setting (Gmax), s	20.0	40.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	6.3	42.0		12.8	4.1	32.5		7.1
Green Ext Time (p_c), s	0.0	0.0		0.2	0.0	3.5		0.1

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

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	211	269	1108	57	235	98	1176	689	80	111	440	201
Future Volume (veh/h)	211	269	1108	57	235	98	1176	689	80	111	440	201
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	220	280	0	59	245	0	1225	718	0	116	458	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	253	693		76	339		1461	767		277	553	
Arrive On Green	0.14	0.19	0.00	0.04	0.09	0.00	0.41	0.41	0.00	0.15	0.15	0.00
Sat Flow, veh/h	1795	3582	1598	1795	3582	1598	3591	1885	1598	1795	3582	1598
Grp Volume(v), veh/h	220	280	0	59	245	0	1225	718	0	116	458	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1598	1795	1885	1598	1795	1791	1598
Q Serve(g_s), s	11.4	6.5	0.0	3.1	6.3	0.0	29.2	34.7	0.0	5.6	11.8	0.0
Cycle Q Clear(g_c), s	11.4	6.5	0.0	3.1	6.3	0.0	29.2	34.7	0.0	5.6	11.8	0.0
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	253	693		76	339		1461	767		277	553	
V/C Ratio(X)	0.87	0.40		0.78	0.72		0.84	0.94		0.42	0.83	
Avail Cap(c_a), veh/h	471	940		283	752		1696	891		471	940	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.0	33.6	0.0	45.2	41.9	0.0	25.4	27.0	0.0	36.4	39.0	0.0
Incr Delay (d2), s/veh	3.5	0.1	0.0	6.2	1.1	0.0	3.0	14.6	0.0	0.4	1.2	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	5.0	2.7	0.0	1.5	2.8	0.0	12.1	17.4	0.0	2.4	5.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.6	33.7	0.0	51.3	43.0	0.0	28.4	41.7	0.0	36.8	40.3	0.0
LnGrp LOS	D	C		D	D		C	D		D	D	
Approach Vol, veh/h		500	A		304	A		1943	A		574	A
Approach Delay, s/veh		38.1			44.6			33.3			39.6	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.0	24.1		20.0	16.4	14.7		44.1
Change Period (Y+Rc), s	3.0	5.7		5.3	3.0	* 5.7		5.3
Max Green Setting (Gmax), s	15.0	25.0		25.0	25.0	* 20		45.0
Max Q Clear Time (g_c+I1), s	5.1	8.5		13.8	13.4	8.3		36.7
Green Ext Time (p_c), s	0.0	0.5		0.8	0.1	0.4		2.0

Intersection Summary	
HCM 6th Ctrl Delay	36.1
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

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

Intersection	
Intersection Delay, s/veh	24.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	217	48	38	118	51	18	180	28	96	243	40
Future Vol, veh/h	44	217	48	38	118	51	18	180	28	96	243	40
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	48	238	53	42	130	56	20	198	31	105	267	44
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay	27.4	14.5	19.6	29.2
HCM LOS	D	B	C	D

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	8%	14%	24%	0%	28%	0%
Vol Thru, %	80%	70%	76%	0%	72%	0%
Vol Right, %	12%	16%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	226	309	156	51	339	40
LT Vol	18	44	38	0	96	0
Through Vol	180	217	118	0	243	0
RT Vol	28	48	0	51	0	40
Lane Flow Rate	248	340	171	56	373	44
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	0.537	0.714	0.383	0.112	0.774	0.081
Departure Headway (Hd)	7.781	7.57	8.04	7.192	7.479	6.615
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	462	479	447	498	484	543
Service Time	5.838	5.591	5.796	4.947	5.202	4.338
HCM Lane V/C Ratio	0.537	0.71	0.383	0.112	0.771	0.081
HCM Control Delay	19.6	27.4	15.7	10.9	31.5	9.9
HCM Lane LOS	C	D	C	B	D	A
HCM 95th-tile Q	3.1	5.6	1.8	0.4	6.8	0.3

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1	1	1	1	1	0	1	0	0	0	0	0
Stage 1	1	1	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	1	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	1022	895	1084	1022	895	-	1622	-	-	-	-	-
Stage 1	1022	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	1022	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	895	1084	1022	895	-	1622	-	-	-	-	-
Mov Cap-2 Maneuver	-	895	-	1022	895	-	-	-	-	-	-	-
Stage 1	1022	895	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	1022	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	-	-	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	1156	172	227	1687	113	438	811	130	209	581	171
Future Volume (veh/h)	184	1156	172	227	1687	113	438	811	130	209	581	171
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
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	200	1257	60	247	1834	0	476	882	0	227	632	138
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	259	1659	508	533	2149		531	1297		289	773	166
Arrive On Green	0.07	0.32	0.32	0.15	0.42	0.00	0.20	0.34	0.00	0.08	0.18	0.18
Sat Flow, veh/h	3456	5106	1564	3456	5106	1585	3456	5106	1585	3456	4202	903
Grp Volume(v), veh/h	200	1257	60	247	1834	0	476	882	0	227	510	260
Grp Sat Flow(s),veh/h/ln	1728	1702	1564	1728	1702	1585	1728	1702	1585	1728	1702	1701
Q Serve(g_s), s	6.8	26.5	2.1	7.8	39.0	0.0	16.1	17.8	0.0	7.7	17.3	17.7
Cycle Q Clear(g_c), s	6.8	26.5	2.1	7.8	39.0	0.0	16.1	17.8	0.0	7.7	17.3	17.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.53
Lane Grp Cap(c), veh/h	259	1659	508	533	2149		531	1297		289	626	313
V/C Ratio(X)	0.77	0.76	0.12	0.46	0.85		0.90	0.68		0.79	0.81	0.83
Avail Cap(c_a), veh/h	461	1659	508	533	2149		605	1297		605	681	340
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	36.3	12.0	46.2	31.4	0.0	46.8	35.5	0.0	53.9	47.0	47.2
Incr Delay (d2), s/veh	1.9	3.3	0.5	0.2	3.6	0.0	13.8	1.6	0.0	1.8	7.6	15.9
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	3.0	11.0	1.2	3.3	15.7	0.0	7.4	6.8	0.0	3.4	7.8	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.3	39.6	12.4	46.5	35.0	0.0	60.6	37.1	0.0	55.8	54.6	63.1
LnGrp LOS	E	D	B	D	D		E	D		E	D	E
Approach Vol, veh/h		1517			2081	A		1358	A		997	
Approach Delay, s/veh		40.7			36.4			45.4			57.1	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.5	45.0	22.4	28.1	13.0	56.5	14.0	36.5
Change Period (Y+Rc), s	6.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	14.0	39.0	21.0	24.0	16.0	39.0	21.0	24.0
Max Q Clear Time (g_c+I1), s	9.8	28.5	18.1	19.7	8.8	41.0	9.7	19.8
Green Ext Time (p_c), s	0.2	7.2	0.3	2.3	0.2	0.0	0.3	2.4

Intersection Summary	
HCM 6th Ctrl Delay	43.0
HCM 6th LOS	D

Notes

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

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

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	39	1383	34	41	1842	7	5	0	58	0	1	99
Future Vol, veh/h	39	1383	34	41	1842	7	5	0	58	0	1	99
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	175	-	-	-	-	125	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	1503	37	45	2002	8	5	0	63	0	1	108

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2010	0	0	1540	0	0	2679	3687	752	2932	3720	1005
Stage 1	-	-	-	-	-	-	1587	1587	-	2096	2096	-
Stage 2	-	-	-	-	-	-	1092	2100	-	836	1624	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	280	-	-	427	-	-	11	5	353	7	4	240
Stage 1	-	-	-	-	-	-	113	166	-	53	92	-
Stage 2	-	-	-	-	-	-	229	92	-	328	159	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	280	-	-	427	-	-	~ 4	4	353	5	3	240
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 4	4	-	5	3	-
Stage 1	-	-	-	-	-	-	96	141	-	45	82	-
Stage 2	-	-	-	-	-	-	112	82	-	229	135	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.3	153.5	46.5
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	4	353	280	-	-	427	-	-	3	240
HCM Lane V/C Ratio	1.359	0.179	0.151	-	-	0.104	-	-	0.362	0.448
HCM Control Delay (s)	$ 1731.9	17.4	20.1	-	-	14.4	-	$ 1526.5		31.6
HCM Lane LOS	F	C	C	-	-	B	-	-	F	D
HCM 95th %tile Q(veh)	1.5	0.6	0.5	-	-	0.3	-	-	0.5	2.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	58	1384	0	2	0	1843	82	0	0	0	50	0
Future Volume (veh/h)	58	1384	0	2	0	1843	82	0	0	0	50	0
Initial Q (Qb), veh	0	0	0		0	0	0				0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		0.98				1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00				1.00	1.00
Work Zone On Approach		No				No						No
Adj Sat Flow, veh/h/ln	1870	1870	1870		1870	1870	1870				1870	1870
Adj Flow Rate, veh/h	63	1504	0		0	2003	87				54	0
Peak Hour Factor	0.92	0.92	0.92		0.92	0.92	0.92				0.92	0.92
Percent Heavy Veh, %	2	2	2		2	2	2				2	2
Cap, veh/h	80	2907	0		3	2531	109				80	0
Arrive On Green	0.05	0.82	0.00		0.00	0.73	0.73				0.04	0.00
Sat Flow, veh/h	1781	3647	0		1781	3467	149				1781	0
Grp Volume(v), veh/h	63	1504	0		0	1018	1072				54	0
Grp Sat Flow(s),veh/h/ln	1781	1777	0		1781	1777	1840				1781	0
Q Serve(g_s), s	2.4	9.3	0.0		0.0	25.1	26.2				2.1	0.0
Cycle Q Clear(g_c), s	2.4	9.3	0.0		0.0	25.1	26.2				2.1	0.0
Prop In Lane	1.00		0.00		1.00		0.08				1.00	
Lane Grp Cap(c), veh/h	80	2907	0		3	1297	1343				80	0
V/C Ratio(X)	0.79	0.52	0.00		0.00	0.79	0.80				0.68	0.00
Avail Cap(c_a), veh/h	591	3433	0		334	1716	1777				873	0
HCM Platoon Ratio	1.00	1.00	1.00		1.00	1.00	1.00				1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00		0.00	1.00	1.00				1.00	0.00
Uniform Delay (d), s/veh	32.8	2.0	0.0		0.0	5.9	6.1				32.6	0.0
Incr Delay (d2), s/veh	6.2	0.1	0.0		0.0	1.8	2.0				3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0				0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.1	0.0		0.0	3.5	3.8				1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	39.0	2.1	0.0		0.0	7.7	8.0				36.3	0.0
LnGrp LOS	D	A	A		A	A	A				D	A
Approach Vol, veh/h		1567				2090						68
Approach Delay, s/veh		3.6				7.9						35.5
Approach LOS		A				A						D

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	6.1	56.6		6.6	0.0	62.7
Change Period (Y+Rc), s	3.0	6.0		3.5	3.0	6.0
Max Green Setting (Gmax), s	23.0	67.0		34.0	13.0	67.0
Max Q Clear Time (g_c+I1), s	4.4	28.2		4.1	0.0	11.3
Green Ext Time (p_c), s	0.0	22.5		0.2	0.0	14.6

Intersection Summary			
HCM 6th Ctrl Delay			6.6
HCM 6th LOS			A

Notes

User approved ignoring U-Turning movement.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	46
Future Volume (veh/h)	46
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	14
Peak Hour Factor	0.92
Percent Heavy Veh, %	2
Cap, veh/h	71
Arrive On Green	0.04
Sat Flow, veh/h	1585
Grp Volume(v), veh/h	14
Grp Sat Flow(s),veh/h/ln	1585
Q Serve(g_s), s	0.6
Cycle Q Clear(g_c), s	0.6
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	71
V/C Ratio(X)	0.20
Avail Cap(c_a), veh/h	777
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	31.9
Incr Delay (d2), s/veh	0.5
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.5
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	32.4
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1464	23	18	1885	0	24
Future Vol, veh/h	1464	23	18	1885	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1591	25	20	2049	0	26

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1616	0	-	808
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	399	-	0	324
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	399	-	-	324
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	17.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	324	-	-	399	-
HCM Lane V/C Ratio	0.081	-	-	0.049	-
HCM Control Delay (s)	17.1	-	-	14.5	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	1353	7	34	1834	22	0	0	2	0	0	69
Future Vol, veh/h	61	1353	7	34	1834	22	0	0	2	0	0	69
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	325	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	64	1409	7	35	1910	23	0	0	2	0	0	72

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1933	0	0	1416	0	0	-	-	708	-	-	967
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.92	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	-	-	3.31	-	-	3.31
Pot Cap-1 Maneuver	305	-	-	482	-	-	0	0	379	0	0	256
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	305	-	-	482	-	-	-	-	379	-	-	256
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.2	14.6	24.5
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	379	305	-	-	482	-	-	256
HCM Lane V/C Ratio	0.005	0.208	-	-	0.073	-	-	0.281
HCM Control Delay (s)	14.6	19.9	-	-	13.1	-	-	24.5
HCM Lane LOS	B	C	-	-	B	-	-	C
HCM 95th %tile Q(veh)	0	0.8	-	-	0.2	-	-	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	1188	131	134	1571	114	220	98	76	137	116	34
Future Volume (veh/h)	41	1188	131	134	1571	114	220	98	76	137	116	34
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	44	1264	132	143	1671	76	169	195	0	146	123	7
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	56	1365	142	175	1732	755	223	235		166	140	263
Arrive On Green	0.03	0.42	0.42	0.10	0.48	0.48	0.12	0.12	0.00	0.17	0.17	0.17
Sat Flow, veh/h	1795	3274	341	1795	3582	1562	1795	1885	1598	996	839	1576
Grp Volume(v), veh/h	44	689	707	143	1671	76	169	195	0	269	0	7
Grp Sat Flow(s),veh/h/ln	1795	1791	1824	1795	1791	1562	1795	1885	1598	1835	0	1576
Q Serve(g_s), s	2.2	33.5	33.8	7.2	41.4	2.4	8.3	9.3	0.0	13.1	0.0	0.3
Cycle Q Clear(g_c), s	2.2	33.5	33.8	7.2	41.4	2.4	8.3	9.3	0.0	13.1	0.0	0.3
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	0.54		1.00
Lane Grp Cap(c), veh/h	56	747	761	175	1732	755	223	235		306	0	263
V/C Ratio(X)	0.79	0.92	0.93	0.82	0.96	0.10	0.76	0.83		0.88	0.00	0.03
Avail Cap(c_a), veh/h	294	781	796	392	1758	767	392	411		400	0	344
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	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	44.1	25.3	25.4	40.6	22.9	12.8	38.8	39.2	0.0	37.3	0.0	32.0
Incr Delay (d2), s/veh	8.7	15.6	16.3	3.5	13.8	0.0	2.0	2.9	0.0	13.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	15.4	15.9	3.1	18.0	0.8	3.7	4.3	0.0	6.9	0.0	0.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.8	40.9	41.7	44.0	36.7	12.9	40.8	42.1	0.0	50.9	0.0	32.0
LnGrp LOS	D	D	D	D	D	B	D	D		D	A	C
Approach Vol, veh/h		1440			1890			364	A		276	
Approach Delay, s/veh		41.7			36.3			41.5			50.4	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	44.2		19.7	5.9	50.3		15.8
Change Period (Y+Rc), s	3.0	6.0		4.4	3.0	6.0		4.4
Max Green Setting (Gmax), s	20.0	40.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	9.2	35.8		15.1	4.2	43.4		11.3
Green Ext Time (p_c), s	0.0	1.3		0.2	0.0	0.9		0.1

Intersection Summary		
HCM 6th Ctrl Delay		39.7
HCM 6th LOS		D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	136	125	1022	74	252	96	1175	341	42	80	612	259
Future Volume (veh/h)	136	125	1022	74	252	96	1175	341	42	80	612	259
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	151	139	0	82	280	0	1306	379	0	89	680	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	182	517		105	363		1387	728		384	766	
Arrive On Green	0.10	0.14	0.00	0.06	0.10	0.00	0.39	0.39	0.00	0.21	0.21	0.00
Sat Flow, veh/h	1795	3582	1598	1795	3582	1598	3591	1885	1598	1795	3582	1598
Grp Volume(v), veh/h	151	139	0	82	280	0	1306	379	0	89	680	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1598	1795	1885	1598	1795	1791	1598
Q Serve(g_s), s	8.1	3.4	0.0	4.4	7.5	0.0	34.4	15.1	0.0	4.0	18.0	0.0
Cycle Q Clear(g_c), s	8.1	3.4	0.0	4.4	7.5	0.0	34.4	15.1	0.0	4.0	18.0	0.0
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	182	517		105	363		1387	728		384	766	
V/C Ratio(X)	0.83	0.27		0.78	0.77		0.94	0.52		0.23	0.89	
Avail Cap(c_a), veh/h	458	914		275	731		1650	866		458	914	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	43.1	37.3	0.0	45.5	42.9	0.0	29.0	23.1	0.0	31.8	37.4	0.0
Incr Delay (d2), s/veh	3.6	0.1	0.0	4.6	1.3	0.0	9.5	0.2	0.0	0.1	8.4	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	3.6	1.4	0.0	2.0	3.3	0.0	15.5	6.4	0.0	1.7	8.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.8	37.4	0.0	50.1	44.2	0.0	38.4	23.3	0.0	32.0	45.8	0.0
LnGrp LOS	D	D		D	D		D	C		C	D	
Approach Vol, veh/h		290	A		362	A		1685	A		769	A
Approach Delay, s/veh		42.3			45.6			35.0			44.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.7	19.8		26.2	13.0	15.6		43.1
Change Period (Y+Rc), s	3.0	5.7		5.3	3.0	* 5.7		5.3
Max Green Setting (Gmax), s	15.0	25.0		25.0	25.0	* 20		45.0
Max Q Clear Time (g_c+I1), s	10.4	5.4		20.0	10.1	9.5		36.4
Green Ext Time (p_c), s	0.0	0.2		0.9	0.0	0.5		1.5

Intersection Summary	
HCM 6th Ctrl Delay	39.2
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

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

Intersection	
Intersection Delay, s/veh	51.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	128	16	107	183	77	21	250	75	42	206	143
Future Vol, veh/h	53	128	16	107	183	77	21	250	75	42	206	143
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	66	160	20	134	229	96	26	313	94	53	258	179
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay	30.3	45.3	95.4	28.9
HCM LOS	D	E	F	D

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	6%	27%	37%	0%	17%	0%
Vol Thru, %	72%	65%	63%	0%	83%	0%
Vol Right, %	22%	8%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	346	197	290	77	248	143
LT Vol	21	53	107	0	42	0
Through Vol	250	128	183	0	206	0
RT Vol	75	16	0	77	0	143
Lane Flow Rate	432	246	362	96	310	179
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	1.071	0.654	0.894	0.214	0.761	0.4
Departure Headway (Hd)	8.916	10.091	9.288	8.366	9.241	8.422
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	411	360	392	432	394	431
Service Time	6.916	8.091	6.988	6.066	6.941	6.122
HCM Lane V/C Ratio	1.051	0.683	0.923	0.222	0.787	0.415
HCM Control Delay	95.4	30.3	53.8	13.3	36	16.6
HCM Lane LOS	F	D	F	B	E	C
HCM 95th-tile Q	14.7	4.4	9.1	0.8	6.2	1.9

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	5	0	0	0	45	35	3	64	0
Future Vol, veh/h	0	0	0	5	0	0	0	45	35	3	64	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	0	0	0	49	38	3	70	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	144	163	70	144	144	68	70	0	0	87	0	0
Stage 1	76	76	-	68	68	-	-	-	-	-	-	-
Stage 2	68	87	-	76	76	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	825	729	993	825	747	995	1531	-	-	1509	-	-
Stage 1	933	832	-	942	838	-	-	-	-	-	-	-
Stage 2	942	823	-	933	832	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	823	728	993	823	746	995	1531	-	-	1509	-	-
Mov Cap-2 Maneuver	823	728	-	823	746	-	-	-	-	-	-	-
Stage 1	933	830	-	942	838	-	-	-	-	-	-	-
Stage 2	942	823	-	931	830	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.4	0	0.3
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1531	-	-	-	823	1509	-	-
HCM Lane V/C Ratio	-	-	-	-	0.007	0.002	-	-
HCM Control Delay (s)	0	-	-	0	9.4	7.4	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	394	1589	281	319	1378	240	446	876	208	248	765	148
Future Volume (veh/h)	394	1589	281	319	1378	240	446	876	208	248	765	148
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	419	1690	155	339	1466	0	474	932	0	264	814	137
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	466	1784	553	551	1979		522	1330		313	881	147
Arrive On Green	0.13	0.35	0.35	0.16	0.38	0.00	0.15	0.26	0.00	0.09	0.20	0.20
Sat Flow, veh/h	3483	5147	1596	3483	5147	1598	3483	5147	1598	3483	4439	742
Grp Volume(v), veh/h	419	1690	155	339	1466	0	474	932	0	264	628	323
Grp Sat Flow(s),veh/h/ln	1742	1716	1596	1742	1716	1598	1742	1716	1598	1742	1716	1750
Q Serve(g_s), s	17.8	47.9	7.0	13.6	36.8	0.0	20.1	24.6	0.0	11.2	26.9	27.2
Cycle Q Clear(g_c), s	17.8	47.9	7.0	13.6	36.8	0.0	20.1	24.6	0.0	11.2	26.9	27.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.42
Lane Grp Cap(c), veh/h	466	1784	553	551	1979		522	1330		313	681	347
V/C Ratio(X)	0.90	0.95	0.28	0.61	0.74		0.91	0.70		0.84	0.92	0.93
Avail Cap(c_a), veh/h	534	1784	553	551	1979		604	1330		488	686	350
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.0	47.7	15.8	58.9	39.7	0.0	62.7	50.4	0.0	67.2	59.0	59.1
Incr Delay (d2), s/veh	15.5	12.0	1.3	1.5	2.5	0.0	15.0	1.8	0.0	4.5	18.2	31.1
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	8.7	21.8	4.1	6.0	15.6	0.0	9.8	10.6	0.0	5.1	13.2	14.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.5	59.7	17.1	60.4	42.3	0.0	77.8	52.2	0.0	71.7	77.2	90.2
LnGrp LOS	E	E	B	E	D		E	D		E	E	F
Approach Vol, veh/h		2264			1805	A		1406	A		1215	
Approach Delay, s/veh		60.4			45.7			60.8			79.5	
Approach LOS		E			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.7	58.0	26.5	35.8	24.1	63.7	17.5	44.8
Change Period (Y+Rc), s	6.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	20.0	52.0	26.0	30.0	23.0	51.0	21.0	35.0
Max Q Clear Time (g_c+I1), s	15.6	49.9	22.1	29.2	19.8	38.8	13.2	26.6
Green Ext Time (p_c), s	0.3	1.9	0.4	0.5	0.3	7.8	0.3	4.4

Intersection Summary	
HCM 6th Ctrl Delay	60.0
HCM 6th LOS	E

Notes

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

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

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	1914	56	31	1764	4	2	0	34	0	1	37
Future Vol, veh/h	45	1914	56	31	1764	4	2	0	34	0	1	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	175	-	-	-	-	125	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	48	2036	60	33	1877	4	2	0	36	0	1	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1881	0	0	2096	0	0	3137	4079	1018	3059	4137	941
Stage 1	-	-	-	-	-	-	2132	2132	-	1945	1945	-
Stage 2	-	-	-	-	-	-	1005	1947	-	1114	2192	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	319	-	-	263	-	-	5	3	237	5	2	266
Stage 1	-	-	-	-	-	-	51	89	-	68	111	-
Stage 2	-	-	-	-	-	-	261	111	-	224	83	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	319	-	-	263	-	-	-	2	237	3	~ 1	266
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	2	-	3	~ 1	-
Stage 1	-	-	-	-	-	-	43	76	-	58	97	-
Stage 2	-	-	-	-	-	-	192	97	-	161	71	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4		150.1
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	237	319	-	-	263	-	-	1	266
HCM Lane V/C Ratio	-	0.153	0.15	-	-	0.125	-	-	1.064	0.148
HCM Control Delay (s)	-	22.9	18.3	-	-	20.6	-	$	4932.2	20.9
HCM Lane LOS	-	C	C	-	-	C	-	-	F	C
HCM 95th %tile Q(veh)	-	0.5	0.5	-	-	0.4	-	-	0.6	0.5

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	34	1912	0	0	1766	18	0	0	0	26	0	31
Future Volume (veh/h)	34	1912	0	0	1766	18	0	0	0	26	0	31
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1885	1885				1885	1870	1885
Adj Flow Rate, veh/h	36	2034	0	0	1879	19				28	0	12
Peak Hour Factor	0.94	0.94	0.92	0.92	0.94	0.94				0.94	0.92	0.94
Percent Heavy Veh, %	1	1	1	2	1	1				1	2	1
Cap, veh/h	43	2701	0	3	2478	25				100	0	89
Arrive On Green	0.02	0.75	0.00	0.00	0.68	0.68				0.06	0.00	0.06
Sat Flow, veh/h	1795	3676	0	1781	3632	37				1781	0	1598
Grp Volume(v), veh/h	36	2034	0	0	925	973				28	0	12
Grp Sat Flow(s),veh/h/ln	1795	1791	0	1781	1791	1878				1781	0	1598
Q Serve(g_s), s	1.3	20.4	0.0	0.0	21.4	21.6				1.0	0.0	0.5
Cycle Q Clear(g_c), s	1.3	20.4	0.0	0.0	21.4	21.6				1.0	0.0	0.5
Prop In Lane	1.00		0.00	1.00		0.02				1.00		1.00
Lane Grp Cap(c), veh/h	43	2701	0	3	1222	1281				100	0	89
V/C Ratio(X)	0.83	0.75	0.00	0.00	0.76	0.76				0.28	0.00	0.13
Avail Cap(c_a), veh/h	654	3799	0	367	1900	1992				1889	0	1695
HCM Platoon Ratio	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	0.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	30.7	4.4	0.0	0.0	6.6	6.6				28.6	0.0	28.4
Incr Delay (d2), s/veh	13.5	0.5	0.0	0.0	1.0	1.0				1.5	0.0	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
%ile BackOfQ(50%),veh/ln	0.6	0.9	0.0	0.0	3.3	3.5				0.4	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.2	5.0	0.0	0.0	7.6	7.6				30.1	0.0	29.0
LnGrp LOS	D	A	A	A	A	A				C	A	C
Approach Vol, veh/h		2070			1898						40	
Approach Delay, s/veh		5.6			7.6						29.8	
Approach LOS		A			A						C	

Timer - Assigned Phs	1	2		4	5	6
Phs Duration (G+Y+Rc), s	4.5	49.1		9.5	0.0	53.6
Change Period (Y+Rc), s	3.0	6.0		6.0	3.0	6.0
Max Green Setting (Gmax), s	23.0	67.0		67.0	13.0	67.0
Max Q Clear Time (g_c+I1), s	3.3	23.6		3.0	0.0	22.4
Green Ext Time (p_c), s	0.0	19.5		0.2	0.0	23.7

Intersection Summary	
HCM 6th Ctrl Delay	6.8
HCM 6th LOS	A

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1907	20	33	1744	0	39
Future Vol, veh/h	1907	20	33	1744	0	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2073	22	36	1896	0	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2095	0	-	1048
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	260	-	0	224
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	260	-	-	224
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	24.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	224	-	-	260	-
HCM Lane V/C Ratio	0.189	-	-	0.138	-
HCM Control Delay (s)	24.8	-	-	21.1	-
HCM Lane LOS	C	-	-	C	-
HCM 95th %tile Q(veh)	0.7	-	-	0.5	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	1835	25	40	1672	14	0	0	11	0	0	105
Future Vol, veh/h	75	1835	25	40	1672	14	0	0	11	0	0	105
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	325	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	79	1932	26	42	1760	15	0	0	12	0	0	111

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1775	0	0	1958	0	0	-	-	979	-	-	888
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.92	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	-	-	3.31	-	-	3.31
Pot Cap-1 Maneuver	351	-	-	298	-	-	0	0	251	0	0	289
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	351	-	-	298	-	-	-	-	251	-	-	289
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.4	20	25
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	251	351	-	-	298	-	-	289
HCM Lane V/C Ratio	0.046	0.225	-	-	0.141	-	-	0.382
HCM Control Delay (s)	20	18.2	-	-	19.1	-	-	25
HCM Lane LOS	C	C	-	-	C	-	-	D
HCM 95th %tile Q(veh)	0.1	0.8	-	-	0.5	-	-	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	1579	207	92	1505	165	134	75	102	147	90	56
Future Volume (veh/h)	45	1579	207	92	1505	165	134	75	102	147	90	56
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	46	1628	206	95	1552	128	108	120	0	152	93	13
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	58	1541	191	122	1853	826	156	164		178	109	250
Arrive On Green	0.03	0.48	0.48	0.07	0.51	0.51	0.09	0.09	0.00	0.16	0.16	0.16
Sat Flow, veh/h	1810	3223	400	1810	3610	1609	1810	1900	1610	1143	700	1610
Grp Volume(v), veh/h	46	898	936	95	1552	128	108	120	0	245	0	13
Grp Sat Flow(s),veh/h/ln	1810	1805	1818	1810	1805	1609	1810	1900	1610	1843	0	1610
Q Serve(g_s), s	2.1	40.0	40.0	4.3	30.7	3.5	4.9	5.2	0.0	10.8	0.0	0.6
Cycle Q Clear(g_c), s	2.1	40.0	40.0	4.3	30.7	3.5	4.9	5.2	0.0	10.8	0.0	0.6
Prop In Lane	1.00		0.22	1.00		1.00	1.00		1.00	0.62		1.00
Lane Grp Cap(c), veh/h	58	863	869	122	1853	826	156	164		286	0	250
V/C Ratio(X)	0.79	1.04	1.08	0.78	0.84	0.16	0.69	0.73		0.86	0.00	0.05
Avail Cap(c_a), veh/h	324	863	869	433	1942	865	433	454		441	0	385
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	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	40.2	21.8	21.8	38.4	17.4	10.8	37.1	37.3	0.0	34.4	0.0	30.1
Incr Delay (d2), s/veh	8.3	41.6	53.4	4.0	3.0	0.0	2.0	2.4	0.0	6.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	23.4	26.4	1.9	11.0	1.1	2.1	2.4	0.0	5.2	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	48.5	63.5	75.2	42.4	20.4	10.8	39.2	39.6	0.0	40.6	0.0	30.1
LnGrp LOS	D	F	F	D	C	B	D	D		D	A	C
Approach Vol, veh/h		1880			1775			228	A		258	
Approach Delay, s/veh		68.9			20.9			39.4			40.1	
Approach LOS		E			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.6	46.0		17.4	5.7	48.9		11.6
Change Period (Y+Rc), s	3.0	6.0		4.4	3.0	6.0		4.4
Max Green Setting (Gmax), s	20.0	40.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	6.3	42.0		12.8	4.1	32.7		7.2
Green Ext Time (p_c), s	0.0	0.0		0.2	0.0	3.5		0.1

Intersection Summary	
HCM 6th Ctrl Delay	44.9
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	211	271	1113	57	235	98	1177	689	80	111	440	201
Future Volume (veh/h)	211	271	1113	57	235	98	1177	689	80	111	440	201
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	220	282	0	59	245	0	1226	718	0	116	458	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	253	693		76	339		1461	767		277	553	
Arrive On Green	0.14	0.19	0.00	0.04	0.09	0.00	0.41	0.41	0.00	0.15	0.15	0.00
Sat Flow, veh/h	1795	3582	1598	1795	3582	1598	3591	1885	1598	1795	3582	1598
Grp Volume(v), veh/h	220	282	0	59	245	0	1226	718	0	116	458	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1598	1795	1885	1598	1795	1791	1598
Q Serve(g_s), s	11.4	6.6	0.0	3.1	6.3	0.0	29.3	34.7	0.0	5.6	11.8	0.0
Cycle Q Clear(g_c), s	11.4	6.6	0.0	3.1	6.3	0.0	29.3	34.7	0.0	5.6	11.8	0.0
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	253	693		76	339		1461	767		277	553	
V/C Ratio(X)	0.87	0.41		0.78	0.72		0.84	0.94		0.42	0.83	
Avail Cap(c_a), veh/h	471	940		283	752		1696	891		471	940	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.0	33.6	0.0	45.2	41.9	0.0	25.4	27.0	0.0	36.4	39.0	0.0
Incr Delay (d2), s/veh	3.5	0.1	0.0	6.2	1.1	0.0	3.0	14.6	0.0	0.4	1.2	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	5.0	2.7	0.0	1.5	2.8	0.0	12.1	17.4	0.0	2.4	5.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.6	33.8	0.0	51.3	43.0	0.0	28.4	41.7	0.0	36.8	40.3	0.0
LnGrp LOS	D	C		D	D		C	D		D	D	
Approach Vol, veh/h		502	A		304	A		1944	A		574	A
Approach Delay, s/veh		38.1			44.6			33.3			39.6	
Approach LOS		D			D			C			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.0	24.1		20.0	16.4	14.7		44.1
Change Period (Y+Rc), s	3.0	5.7		5.3	3.0	* 5.7		5.3
Max Green Setting (Gmax), s	15.0	25.0		25.0	25.0	* 20		45.0
Max Q Clear Time (g_c+I1), s	5.1	8.6		13.8	13.4	8.3		36.7
Green Ext Time (p_c), s	0.0	0.5		0.8	0.1	0.4		2.0

Intersection Summary	
HCM 6th Ctrl Delay	36.1
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

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

Intersection	
Intersection Delay, s/veh	24.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	217	48	38	118	51	18	181	28	97	249	42
Future Vol, veh/h	44	217	48	38	118	51	18	181	28	97	249	42
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	48	238	53	42	130	56	20	199	31	107	274	46
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay	27.9	14.7	19.8	30.7
HCM LOS	D	B	C	D

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	8%	14%	24%	0%	28%	0%
Vol Thru, %	80%	70%	76%	0%	72%	0%
Vol Right, %	12%	16%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	227	309	156	51	346	42
LT Vol	18	44	38	0	97	0
Through Vol	181	217	118	0	249	0
RT Vol	28	48	0	51	0	42
Lane Flow Rate	249	340	171	56	380	46
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	0.542	0.719	0.385	0.113	0.792	0.085
Departure Headway (Hd)	7.824	7.618	8.095	7.246	7.498	6.635
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	461	475	444	494	483	541
Service Time	5.885	5.641	5.853	5.004	5.223	4.36
HCM Lane V/C Ratio	0.54	0.716	0.385	0.113	0.787	0.085
HCM Control Delay	19.8	27.9	15.9	10.9	33.2	10
HCM Lane LOS	C	D	C	B	D	A
HCM 95th-tile Q	3.2	5.7	1.8	0.4	7.2	0.3

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	57	0	4	0	66	11	1	48	0
Future Vol, veh/h	0	0	0	57	0	4	0	66	11	1	48	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	62	0	4	0	72	12	1	52	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	134	138	52	132	132	78	52	0	0	84	0	0
Stage 1	54	54	-	78	78	-	-	-	-	-	-	-
Stage 2	80	84	-	54	54	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	838	753	1016	840	759	983	1554	-	-	1513	-	-
Stage 1	958	850	-	931	830	-	-	-	-	-	-	-
Stage 2	929	825	-	958	850	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	834	752	1016	839	758	983	1554	-	-	1513	-	-
Mov Cap-2 Maneuver	834	752	-	839	758	-	-	-	-	-	-	-
Stage 1	958	849	-	931	830	-	-	-	-	-	-	-
Stage 2	925	825	-	957	849	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.6	0	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1554	-	-	-	847	1513	-	-
HCM Lane V/C Ratio	-	-	-	-	0.078	0.001	-	-
HCM Control Delay (s)	0	-	-	0	9.6	7.4	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	184	1156	172	245	1850	119	438	824	152	215	588	180
Future Volume (veh/h)	184	1156	172	245	1850	119	438	824	152	215	588	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
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	200	1257	60	266	2011	0	476	896	0	234	639	148
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	259	1659	508	522	2134		534	1302		296	773	176
Arrive On Green	0.07	0.32	0.32	0.15	0.42	0.00	0.15	0.25	0.00	0.09	0.19	0.19
Sat Flow, veh/h	3456	5106	1564	3456	5106	1585	3456	5106	1585	3456	4151	946
Grp Volume(v), veh/h	200	1257	60	266	2011	0	476	896	0	234	522	265
Grp Sat Flow(s),veh/h/ln	1728	1702	1564	1728	1702	1585	1728	1702	1585	1728	1702	1693
Q Serve(g_s), s	6.8	26.5	2.1	8.5	45.4	0.0	16.2	19.0	0.0	8.0	17.7	18.1
Cycle Q Clear(g_c), s	6.8	26.5	2.1	8.5	45.4	0.0	16.2	19.0	0.0	8.0	17.7	18.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.56
Lane Grp Cap(c), veh/h	259	1659	508	522	2134		534	1302		296	634	315
V/C Ratio(X)	0.77	0.76	0.12	0.51	0.94		0.89	0.69		0.79	0.82	0.84
Avail Cap(c_a), veh/h	461	1659	508	522	2134		605	1302		605	681	339
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.5	36.3	11.9	46.8	33.5	0.0	49.8	40.4	0.0	53.8	46.9	47.1
Incr Delay (d2), s/veh	1.9	3.3	0.5	0.3	9.3	0.0	13.3	1.7	0.0	1.8	8.2	17.1
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	3.0	11.0	1.2	3.6	19.4	0.0	7.8	7.9	0.0	3.5	8.0	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.3	39.6	12.4	47.2	42.8	0.0	63.1	42.1	0.0	55.6	55.2	64.3
LnGrp LOS	E	D	B	D	D		E	D		E	E	E
Approach Vol, veh/h		1517			2277	A		1372	A		1021	
Approach Delay, s/veh		40.7			43.4			49.4			57.6	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.1	45.0	22.5	28.3	13.0	56.1	14.3	36.6
Change Period (Y+Rc), s	6.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	14.0	39.0	21.0	24.0	16.0	39.0	21.0	24.0
Max Q Clear Time (g_c+I1), s	10.5	28.5	18.2	20.1	8.8	47.4	10.0	21.0
Green Ext Time (p_c), s	0.2	7.2	0.3	2.1	0.2	0.0	0.3	1.8

Intersection Summary	
HCM 6th Ctrl Delay	46.4
HCM 6th LOS	D

Notes

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

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

Intersection	
Int Delay, s/veh	10.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	39	1494	40	51	1982	7	7	0	68	0	1	99
Future Vol, veh/h	39	1494	40	51	1982	7	7	0	68	0	1	99
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	175	-	-	-	-	125	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	1624	43	55	2154	8	8	0	74	0	1	108

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2162	0	0	1667	0	0	2896	3980	812	3164	4019	1081
Stage 1	-	-	-	-	-	-	1708	1708	-	2268	2268	-
Stage 2	-	-	-	-	-	-	1188	2272	-	896	1751	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	244	-	-	382	-	-	~ 7	3	322	4	3	213
Stage 1	-	-	-	-	-	-	95	145	-	41	75	-
Stage 2	-	-	-	-	-	-	200	75	-	301	138	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	244	-	-	382	-	-	~ 2	2	322	2	2	213
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 2	2	-	2	2	-
Stage 1	-	-	-	-	-	-	79	120	-	34	64	-
Stage 2	-	-	-	-	-	-	83	64	-	192	114	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.4	$ 419.1	61.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	2	322	244	-	-	382	-	-	2	213
HCM Lane V/C Ratio	3.804	0.23	0.174	-	-	0.145	-	-	0.543	0.505
HCM Control Delay (s)	$ 4301.4	19.5	22.8	-	-	16	-		$ 2373.7	38
HCM Lane LOS	F	C	C	-	-	C	-	-	F	E
HCM 95th %tile Q(veh)	2.1	0.9	0.6	-	-	0.5	-	-	0.6	2.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	1493	9	3	1956	82	27	0	4	50	0	46
Future Volume (veh/h)	68	1493	9	3	1956	82	27	0	4	50	0	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	74	1623	10	3	2126	87	29	0	4	54	0	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	2668	16	4	2385	97	48	0	7	79	0	70
Arrive On Green	0.05	0.74	0.74	0.00	0.69	0.69	0.03	0.00	0.03	0.04	0.00	0.04
Sat Flow, veh/h	1781	3621	22	1781	3477	141	1542	0	213	1781	0	1585
Grp Volume(v), veh/h	74	796	837	3	1078	1135	33	0	0	54	0	14
Grp Sat Flow(s),veh/h/ln	1781	1777	1866	1781	1777	1841	1755	0	0	1781	0	1585
Q Serve(g_s), s	3.8	19.6	19.6	0.2	44.4	46.3	1.7	0.0	0.0	2.7	0.0	0.8
Cycle Q Clear(g_c), s	3.8	19.6	19.6	0.2	44.4	46.3	1.7	0.0	0.0	2.7	0.0	0.8
Prop In Lane	1.00		0.01	1.00		0.08	0.88		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	95	1309	1375	4	1219	1263	54	0	0	79	0	70
V/C Ratio(X)	0.78	0.61	0.61	0.70	0.88	0.90	0.61	0.00	0.00	0.68	0.00	0.20
Avail Cap(c_a), veh/h	447	1309	1375	253	1299	1346	345	0	0	661	0	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.8	5.7	5.8	45.7	11.5	11.8	43.9	0.0	0.0	43.2	0.0	42.2
Incr Delay (d2), s/veh	5.0	0.8	0.8	55.5	7.3	8.1	10.4	0.0	0.0	3.9	0.0	0.5
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	1.7	4.2	4.4	0.1	13.4	14.6	0.9	0.0	0.0	1.3	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.9	6.6	6.5	101.2	18.8	19.9	54.3	0.0	0.0	47.0	0.0	42.7
LnGrp LOS	D	A	A	F	B	B	D	A	A	D	A	D
Approach Vol, veh/h		1707			2216			33			68	
Approach Delay, s/veh		8.3			19.5			54.3			46.2	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.9	68.9		7.6	3.2	73.5		7.3
Change Period (Y+Rc), s	3.0	6.0		3.5	3.0	6.0		4.5
Max Green Setting (Gmax), s	23.0	67.0		34.0	13.0	67.0		18.0
Max Q Clear Time (g_c+I1), s	5.8	48.3		4.7	2.2	21.6		3.7
Green Ext Time (p_c), s	0.0	14.6		0.2	0.0	14.6		0.1

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

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1547	54	73	1999	0	85
Future Vol, veh/h	1547	54	73	1999	0	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1682	59	79	2173	0	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1741	0	-	871
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	357	-	0	294
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	357	-	-	294
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	22.8
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	294	-	-	357	-
HCM Lane V/C Ratio	0.314	-	-	0.222	-
HCM Control Delay (s)	22.8	-	-	17.9	-
HCM Lane LOS	C	-	-	C	-
HCM 95th %tile Q(veh)	1.3	-	-	0.8	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	105	1448	14	70	1954	15	0	0	2	0	0	76
Future Vol, veh/h	105	1448	14	70	1954	15	0	0	2	0	0	76
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	325	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	109	1508	15	73	2035	16	0	0	2	0	0	79

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2051	0	0	1523	0	0	-	-	762	-	-	1026
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.92	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	-	-	3.31	-	-	3.31
Pot Cap-1 Maneuver	274	-	-	439	-	-	0	0	350	0	0	234
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	274	-	-	439	-	-	-	-	350	-	-	234
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0.5	15.3	28.1
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	350	274	-	-	439	-	-	234
HCM Lane V/C Ratio	0.006	0.399	-	-	0.166	-	-	0.338
HCM Control Delay (s)	15.3	26.6	-	-	14.8	-	-	28.1
HCM Lane LOS	C	D	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0	1.8	-	-	0.6	-	-	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	1227	140	143	1673	122	247	102	80	149	122	46
Future Volume (veh/h)	47	1227	140	143	1673	122	247	102	80	149	122	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	50	1305	142	152	1780	85	186	217	0	159	130	20
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	64	1326	144	183	1694	739	241	254		177	145	277
Arrive On Green	0.04	0.41	0.41	0.10	0.47	0.47	0.13	0.13	0.00	0.18	0.18	0.18
Sat Flow, veh/h	1795	3259	353	1795	3582	1562	1795	1885	1598	1009	825	1576
Grp Volume(v), veh/h	50	714	733	152	1780	85	186	217	0	289	0	20
Grp Sat Flow(s),veh/h/ln	1795	1791	1822	1795	1791	1562	1795	1885	1598	1835	0	1576
Q Serve(g_s), s	2.7	38.7	39.3	8.2	46.5	3.0	9.8	11.1	0.0	15.2	0.0	1.0
Cycle Q Clear(g_c), s	2.7	38.7	39.3	8.2	46.5	3.0	9.8	11.1	0.0	15.2	0.0	1.0
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	0.55		1.00
Lane Grp Cap(c), veh/h	64	728	741	183	1694	739	241	254		322	0	277
V/C Ratio(X)	0.78	0.98	0.99	0.83	1.05	0.12	0.77	0.86		0.90	0.00	0.07
Avail Cap(c_a), veh/h	274	728	741	365	1694	739	365	383		373	0	321
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	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.0	28.8	29.0	43.3	25.9	14.4	41.1	41.6	0.0	39.7	0.0	33.8
Incr Delay (d2), s/veh	7.3	28.4	30.1	3.6	36.5	0.0	2.4	7.6	0.0	19.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	20.3	21.1	3.6	25.7	1.0	4.4	5.5	0.0	8.4	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.4	57.2	59.1	47.0	62.4	14.5	43.5	49.2	0.0	59.5	0.0	33.9
LnGrp LOS	D	E	E	D	F	B	D	D		E	A	C
Approach Vol, veh/h		1497			2017			403	A		309	
Approach Delay, s/veh		58.0			59.2			46.6			57.8	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.0	46.0		21.7	6.5	52.5		17.6
Change Period (Y+Rc), s	3.0	6.0		4.4	3.0	6.0		4.4
Max Green Setting (Gmax), s	20.0	40.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	10.2	41.3		17.2	4.7	48.5		13.1
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	0.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	57.5
HCM 6th LOS	E

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	147	1037	80	314	99	1203	347	45	81	620	285
Future Volume (veh/h)	148	147	1037	80	314	99	1203	347	45	81	620	285
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	164	163	0	89	349	0	1337	386	0	90	689	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	193	583		113	422		1397	733		378	755	
Arrive On Green	0.11	0.16	0.00	0.06	0.12	0.00	0.39	0.39	0.00	0.21	0.21	0.00
Sat Flow, veh/h	1795	3582	1598	1795	3582	1598	3591	1885	1598	1795	3582	1598
Grp Volume(v), veh/h	164	163	0	89	349	0	1337	386	0	90	689	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1598	1795	1885	1598	1795	1791	1598
Q Serve(g_s), s	9.9	4.4	0.0	5.4	10.5	0.0	40.0	17.4	0.0	4.6	20.7	0.0
Cycle Q Clear(g_c), s	9.9	4.4	0.0	5.4	10.5	0.0	40.0	17.4	0.0	4.6	20.7	0.0
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	193	583		113	422		1397	733		378	755	
V/C Ratio(X)	0.85	0.28		0.79	0.83		0.96	0.53		0.24	0.91	
Avail Cap(c_a), veh/h	407	812		244	649		1465	769		407	812	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.4	40.5	0.0	51.0	47.6	0.0	32.8	25.9	0.0	36.2	42.6	0.0
Incr Delay (d2), s/veh	4.0	0.1	0.0	4.6	2.9	0.0	14.0	0.2	0.0	0.1	13.4	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	4.5	1.9	0.0	2.5	4.8	0.0	19.1	7.5	0.0	2.0	10.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.3	40.6	0.0	55.6	50.5	0.0	46.8	26.1	0.0	36.3	56.0	0.0
LnGrp LOS	D	D		E	D		D	C		D	E	
Approach Vol, veh/h		327	A		438	A		1723	A		779	A
Approach Delay, s/veh		46.5			51.5			42.2			53.7	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.9	23.6		28.5	14.9	18.7		48.2
Change Period (Y+Rc), s	3.0	5.7		5.3	3.0	* 5.7		5.3
Max Green Setting (Gmax), s	15.0	25.0		25.0	25.0	* 20		45.0
Max Q Clear Time (g_c+I1), s	7.4	6.4		22.7	11.9	12.5		42.0
Green Ext Time (p_c), s	0.0	0.3		0.5	0.0	0.5		0.9

Intersection Summary	
HCM 6th Ctrl Delay	46.6
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

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

Intersection	
Intersection Delay, s/veh	73.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	137	19	113	192	83	23	273	77	45	221	148
Future Vol, veh/h	60	137	19	113	192	83	23	273	77	45	221	148
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	75	171	24	141	240	104	29	341	96	56	276	185
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay	38.8	59	148.4	37.4
HCM LOS	E	F	F	E

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	6%	28%	37%	0%	17%	0%
Vol Thru, %	73%	63%	63%	0%	83%	0%
Vol Right, %	21%	9%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	373	216	305	83	266	148
LT Vol	23	60	113	0	45	0
Through Vol	273	137	192	0	221	0
RT Vol	77	19	0	83	0	148
Lane Flow Rate	466	270	381	104	332	185
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	1.218	0.738	0.968	0.238	0.845	0.429
Departure Headway (Hd)	9.404	10.78	9.85	8.922	9.848	9.025
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	392	337	370	405	369	401
Service Time	7.404	8.78	7.55	6.622	7.548	6.725
HCM Lane V/C Ratio	1.189	0.801	1.03	0.257	0.9	0.461
HCM Control Delay	148.4	38.8	71.2	14.4	48.1	18.3
HCM Lane LOS	F	E	F	B	E	C
HCM 95th-tile Q	19.4	5.6	10.8	0.9	7.8	2.1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	3	0	0	0	24	51	0	0	73	2
Future Vol, veh/h	0	0	3	0	0	0	24	51	0	0	73	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	0	0	0	26	55	0	0	79	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	187	187	80	189	188	55	81	0	0	55	0	0
Stage 1	80	80	-	107	107	-	-	-	-	-	-	-
Stage 2	107	107	-	82	81	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	774	708	980	771	707	1012	1517	-	-	1550	-	-
Stage 1	929	828	-	898	807	-	-	-	-	-	-	-
Stage 2	898	807	-	926	828	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	763	695	980	758	694	1012	1517	-	-	1550	-	-
Mov Cap-2 Maneuver	763	695	-	758	694	-	-	-	-	-	-	-
Stage 1	912	828	-	882	792	-	-	-	-	-	-	-
Stage 2	882	792	-	923	828	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	0	2.4	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1517	-	-	980	-	1550	-	-
HCM Lane V/C Ratio	0.017	-	-	0.003	-	-	-	-
HCM Control Delay (s)	7.4	0	-	8.7	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	394	1589	281	361	1542	249	446	898	238	261	775	160
Future Volume (veh/h)	394	1589	281	361	1542	249	446	898	238	261	775	160
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	419	1690	155	384	1640	0	474	955	0	278	824	150
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	466	1784	553	546	1971		522	1318		327	876	158
Arrive On Green	0.13	0.35	0.35	0.16	0.38	0.00	0.15	0.26	0.00	0.09	0.20	0.20
Sat Flow, veh/h	3483	5147	1596	3483	5147	1598	3483	5147	1598	3483	4380	792
Grp Volume(v), veh/h	419	1690	155	384	1640	0	474	955	0	278	644	330
Grp Sat Flow(s),veh/h/ln	1742	1716	1596	1742	1716	1598	1742	1716	1598	1742	1716	1741
Q Serve(g_s), s	17.8	47.9	7.0	15.7	43.3	0.0	20.1	25.4	0.0	11.8	27.7	28.0
Cycle Q Clear(g_c), s	17.8	47.9	7.0	15.7	43.3	0.0	20.1	25.4	0.0	11.8	27.7	28.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	466	1784	553	546	1971		522	1318		327	686	348
V/C Ratio(X)	0.90	0.95	0.28	0.70	0.83		0.91	0.72		0.85	0.94	0.95
Avail Cap(c_a), veh/h	534	1784	553	546	1971		604	1318		488	686	348
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.0	47.7	15.8	59.9	41.9	0.0	62.7	51.0	0.0	66.9	59.1	59.2
Incr Delay (d2), s/veh	15.5	12.0	1.3	3.5	4.3	0.0	15.0	2.2	0.0	6.0	21.0	34.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	21.8	4.1	7.1	18.5	0.0	9.8	11.0	0.0	5.4	13.8	15.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.5	59.7	17.1	63.4	46.2	0.0	77.8	53.1	0.0	72.9	80.1	94.0
LnGrp LOS	E	E	B	E	D		E	D		E	F	F
Approach Vol, veh/h		2264			2024	A		1429	A		1252	
Approach Delay, s/veh		60.4			49.5			61.3			82.1	
Approach LOS		E			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.5	58.0	26.5	36.0	24.1	63.4	18.1	44.4
Change Period (Y+Rc), s	6.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	20.0	52.0	26.0	30.0	23.0	51.0	21.0	35.0
Max Q Clear Time (g_c+I1), s	17.7	49.9	22.1	30.0	19.8	45.3	13.8	27.4
Green Ext Time (p_c), s	0.2	1.9	0.4	0.0	0.3	4.5	0.3	4.2

Intersection Summary	
HCM 6th Ctrl Delay	61.3
HCM 6th LOS	E

Notes

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

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

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	2127	60	48	1942	4	7	0	44	0	1	37
Future Vol, veh/h	45	2127	60	48	1942	4	7	0	44	0	1	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	175	-	-	-	-	125	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	48	2263	64	51	2066	4	7	0	47	0	1	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2070	0	0	2327	0	0	3495	4531	1132	3398	4593	1035
Stage 1	-	-	-	-	-	-	2359	2359	-	2170	2170	-
Stage 2	-	-	-	-	-	-	1136	2172	-	1228	2423	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	269	-	-	213	-	-	~ 2	1	199	3	~ 1	231
Stage 1	-	-	-	-	-	-	37	68	-	48	86	-
Stage 2	-	-	-	-	-	-	217	85	-	190	63	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	269	-	-	213	-	-	-	1	199	2	~ 1	231
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	1	-	2	~ 1	-
Stage 1	-	-	-	-	-	-	30	56	-	39	65	-
Stage 2	-	-	-	-	-	-	135	65	-	119	52	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.7		153
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	199	269	-	-	213	-	-	1	231
HCM Lane V/C Ratio	-	0.235	0.178	-	-	0.24	-	-	1.064	0.17
HCM Control Delay (s)	-	28.6	21.3	-	-	27.2	-	-	$ 4932.2	23.8
HCM Lane LOS	-	D	C	-	-	D	-	-	F	C
HCM 95th %tile Q(veh)	-	0.9	0.6	-	-	0.9	-	-	0.6	0.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	2096	31	4	1934	18	18	0	2	26	0	31
Future Volume (veh/h)	41	2096	31	4	1934	18	18	0	2	26	0	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1885	1885	1870	1870	1870	1870	1870	1885
Adj Flow Rate, veh/h	44	2230	34	4	2057	19	20	0	2	28	0	12
Peak Hour Factor	0.94	0.94	0.92	0.92	0.94	0.94	0.92	0.92	0.92	0.94	0.92	0.94
Percent Heavy Veh, %	1	1	1	2	1	1	2	2	2	2	2	1
Cap, veh/h	56	2536	39	6	2451	23	38	0	4	88	0	79
Arrive On Green	0.03	0.70	0.70	0.00	0.67	0.67	0.02	0.00	0.02	0.05	0.00	0.05
Sat Flow, veh/h	1795	3611	55	1781	3636	34	1601	0	160	1781	0	1598
Grp Volume(v), veh/h	44	1103	1161	4	1011	1065	22	0	0	28	0	12
Grp Sat Flow(s),veh/h/ln	1795	1791	1875	1781	1791	1878	1761	0	0	1781	0	1598
Q Serve(g_s), s	2.1	42.1	42.6	0.2	37.2	37.5	1.1	0.0	0.0	1.3	0.0	0.6
Cycle Q Clear(g_c), s	2.1	42.1	42.6	0.2	37.2	37.5	1.1	0.0	0.0	1.3	0.0	0.6
Prop In Lane	1.00		0.03	1.00		0.02	0.91		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	56	1258	1317	6	1208	1266	42	0	0	88	0	79
V/C Ratio(X)	0.79	0.88	0.88	0.71	0.84	0.84	0.53	0.00	0.00	0.32	0.00	0.15
Avail Cap(c_a), veh/h	469	1363	1427	263	1363	1429	360	0	0	1355	0	1215
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.4	10.2	10.3	43.9	10.7	10.8	42.5	0.0	0.0	40.4	0.0	40.1
Incr Delay (d2), s/veh	8.8	6.4	6.4	45.7	4.3	4.2	10.0	0.0	0.0	2.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	11.7	12.4	0.2	10.6	11.2	0.6	0.0	0.0	0.6	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.2	16.6	16.7	89.5	15.1	15.0	52.5	0.0	0.0	42.4	0.0	40.9
LnGrp LOS	D	B	B	F	B	B	D	A	A	D	A	D
Approach Vol, veh/h		2308			2080			22			40	
Approach Delay, s/veh		17.3			15.2			52.5			42.0	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	65.4		10.4	3.3	67.8		6.6
Change Period (Y+Rc), s	3.0	6.0		6.0	3.0	6.0		4.5
Max Green Setting (Gmax), s	23.0	67.0		67.0	13.0	67.0		18.0
Max Q Clear Time (g_c+I1), s	4.1	39.5		3.3	2.2	44.6		3.1
Green Ext Time (p_c), s	0.0	17.8		0.2	0.0	17.2		0.0

Intersection Summary	
HCM 6th Ctrl Delay	16.7
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2053	61	53	1917	0	137
Future Vol, veh/h	2053	61	53	1917	0	137
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2232	66	58	2084	0	149

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2298	0	-	1149
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	216	-	0	192
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	216	-	-	192
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	68.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	192	-	-	216	-
HCM Lane V/C Ratio	0.776	-	-	0.267	-
HCM Control Delay (s)	68.6	-	-	27.6	-
HCM Lane LOS	F	-	-	D	-
HCM 95th %tile Q(veh)	5.2	-	-	1	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	136	2009	27	52	1832	14	0	0	11	0	0	72
Future Vol, veh/h	136	2009	27	52	1832	14	0	0	11	0	0	72
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	325	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	143	2115	28	55	1928	15	0	0	12	0	0	76

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1943	0	0	2143	0	0	-	-	1072	-	-	972
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.92	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	-	-	3.31	-	-	3.31
Pot Cap-1 Maneuver	302	-	-	252	-	-	0	0	218	0	0	254
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	302	-	-	252	-	-	-	-	218	-	-	254
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.6	22.4	25.1
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	218	302	-	-	252	-	-	254
HCM Lane V/C Ratio	0.053	0.474	-	-	0.217	-	-	0.298
HCM Control Delay (s)	22.4	27.2	-	-	23.2	-	-	25.1
HCM Lane LOS	C	D	-	-	C	-	-	D
HCM 95th %tile Q(veh)	0.2	2.4	-	-	0.8	-	-	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	1738	247	98	1568	178	149	85	109	162	96	63
Future Volume (veh/h)	102	1738	247	98	1568	178	149	85	109	162	96	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	105	1792	248	101	1616	142	121	134	0	167	99	20
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	133	1514	204	129	1705	760	167	175		191	113	266
Arrive On Green	0.07	0.47	0.47	0.07	0.47	0.47	0.09	0.09	0.00	0.16	0.16	0.16
Sat Flow, veh/h	1810	3187	430	1810	3610	1608	1810	1900	1610	1157	686	1610
Grp Volume(v), veh/h	105	994	1046	101	1616	142	121	134	0	266	0	20
Grp Sat Flow(s),veh/h/ln	1810	1805	1812	1810	1805	1608	1810	1900	1610	1842	0	1610
Q Serve(g_s), s	5.2	42.9	42.9	5.0	38.7	4.6	5.9	6.2	0.0	12.7	0.0	0.9
Cycle Q Clear(g_c), s	5.2	42.9	42.9	5.0	38.7	4.6	5.9	6.2	0.0	12.7	0.0	0.9
Prop In Lane	1.00		0.24	1.00		1.00	1.00		1.00	0.63		1.00
Lane Grp Cap(c), veh/h	133	857	861	129	1705	760	167	175		304	0	266
V/C Ratio(X)	0.79	1.16	1.22	0.78	0.95	0.19	0.73	0.77		0.88	0.00	0.08
Avail Cap(c_a), veh/h	300	857	861	400	1797	801	400	420		408	0	356
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	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.2	23.7	23.7	41.3	22.8	13.8	39.9	40.1	0.0	36.8	0.0	31.9
Incr Delay (d2), s/veh	3.8	84.6	107.7	3.9	10.7	0.0	2.3	2.6	0.0	12.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	35.2	40.8	2.2	16.4	1.5	2.6	2.9	0.0	6.6	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.0	108.4	131.4	45.2	33.5	13.8	42.2	42.7	0.0	49.2	0.0	32.0
LnGrp LOS	D	F	F	D	C	B	D	D		D	A	C
Approach Vol, veh/h		2145			1859			255	A		286	
Approach Delay, s/veh		116.5			32.6			42.5			48.0	
Approach LOS		F			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.4	48.9		19.3	9.7	48.7		12.7
Change Period (Y+Rc), s	3.0	6.0		4.4	3.0	6.0		4.4
Max Green Setting (Gmax), s	20.0	40.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	7.0	44.9		14.7	7.2	40.7		8.2
Green Ext Time (p_c), s	0.0	0.0		0.2	0.0	2.1		0.1

Intersection Summary	
HCM 6th Ctrl Delay	73.7
HCM 6th LOS	E

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	254	331	1182	66	266	104	1199	721	87	114	452	220
Future Volume (veh/h)	254	331	1182	66	266	104	1199	721	87	114	452	220
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	265	345	0	69	277	0	1249	751	0	119	471	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	294	767		89	358		1464	769		276	551	
Arrive On Green	0.16	0.21	0.00	0.05	0.10	0.00	0.41	0.41	0.00	0.15	0.15	0.00
Sat Flow, veh/h	1795	3582	1598	1795	3582	1598	3591	1885	1598	1795	3582	1598
Grp Volume(v), veh/h	265	345	0	69	277	0	1249	751	0	119	471	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1598	1795	1885	1598	1795	1791	1598
Q Serve(g_s), s	16.0	9.2	0.0	4.2	8.3	0.0	34.9	43.3	0.0	6.6	14.1	0.0
Cycle Q Clear(g_c), s	16.0	9.2	0.0	4.2	8.3	0.0	34.9	43.3	0.0	6.6	14.1	0.0
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	294	767		89	358		1464	769		276	551	
V/C Ratio(X)	0.90	0.45		0.78	0.77		0.85	0.98		0.43	0.85	
Avail Cap(c_a), veh/h	407	811		244	649		1464	769		407	811	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.3	37.7	0.0	51.9	48.4	0.0	29.7	32.2	0.0	42.3	45.5	0.0
Incr Delay (d2), s/veh	15.2	0.2	0.0	5.4	1.4	0.0	4.9	26.7	0.0	0.4	4.1	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	8.0	3.9	0.0	2.0	3.7	0.0	15.2	24.2	0.0	2.9	6.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.5	37.9	0.0	57.2	49.8	0.0	34.5	58.8	0.0	42.7	49.6	0.0
LnGrp LOS	E	D		E	D		C	E		D	D	
Approach Vol, veh/h		610	A		346	A		2000	A		590	A
Approach Delay, s/veh		47.7			51.3			43.7			48.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.5	29.3		22.3	21.0	16.7		50.3
Change Period (Y+Rc), s	3.0	5.7		5.3	3.0	* 5.7		5.3
Max Green Setting (Gmax), s	15.0	25.0		25.0	25.0	* 20		45.0
Max Q Clear Time (g_c+I1), s	10.2	11.2		16.1	18.0	10.3		45.3
Green Ext Time (p_c), s	0.0	0.6		0.8	0.1	0.4		0.0

Intersection Summary	
HCM 6th Ctrl Delay	45.9
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

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

Intersection	
Intersection Delay, s/veh	43.9
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	238	50	41	130	55	21	204	39	110	280	49
Future Vol, veh/h	50	238	50	41	130	55	21	204	39	110	280	49
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	55	262	55	45	143	60	23	224	43	121	308	54
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay	48.3	18	30.3	62
HCM LOS	E	C	D	F

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	8%	15%	24%	0%	28%	0%
Vol Thru, %	77%	70%	76%	0%	72%	0%
Vol Right, %	15%	15%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	264	338	171	55	390	49
LT Vol	21	50	41	0	110	0
Through Vol	204	238	130	0	280	0
RT Vol	39	50	0	55	0	49
Lane Flow Rate	290	371	188	60	429	54
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	0.705	0.878	0.474	0.138	0.985	0.111
Departure Headway (Hd)	8.746	8.509	9.088	8.234	8.273	7.403
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	412	427	396	435	441	485
Service Time	6.818	6.535	6.859	6.005	6.001	5.131
HCM Lane V/C Ratio	0.704	0.869	0.475	0.138	0.973	0.111
HCM Control Delay	30.3	48.3	19.8	12.3	68.4	11.1
HCM Lane LOS	D	E	C	B	F	B
HCM 95th-tile Q	5.3	9	2.5	0.5	12.3	0.4

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	15	0	0	0	13	82	0	0	57	1
Future Vol, veh/h	2	0	15	0	0	0	13	82	0	0	57	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	16	0	0	0	14	89	0	0	62	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	180	180	63	188	180	89	63	0	0	89	0	0
Stage 1	63	63	-	117	117	-	-	-	-	-	-	-
Stage 2	117	117	-	71	63	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	782	714	1002	772	714	969	1540	-	-	1506	-	-
Stage 1	948	842	-	888	799	-	-	-	-	-	-	-
Stage 2	888	799	-	939	842	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	776	707	1002	753	707	969	1540	-	-	1506	-	-
Mov Cap-2 Maneuver	776	707	-	753	707	-	-	-	-	-	-	-
Stage 1	939	842	-	879	791	-	-	-	-	-	-	-
Stage 2	879	791	-	924	842	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	0	1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1540	-	-	969	-	1506	-	-
HCM Lane V/C Ratio	0.009	-	-	0.019	-	-	-	-
HCM Control Delay (s)	7.4	0	-	8.8	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	1276	176	246	1852	119	450	824	157	216	588	180
Future Volume (veh/h)	212	1276	176	246	1852	119	450	824	157	216	588	180
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
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	230	1387	64	267	2013	0	489	896	0	235	639	148
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	289	1659	508	513	2075		543	1314		297	773	176
Arrive On Green	0.08	0.32	0.32	0.15	0.41	0.00	0.21	0.34	0.00	0.09	0.19	0.19
Sat Flow, veh/h	3456	5106	1564	3456	5106	1585	3456	5106	1585	3456	4151	946
Grp Volume(v), veh/h	230	1387	64	267	2013	0	489	896	0	235	522	265
Grp Sat Flow(s),veh/h/ln	1728	1702	1564	1728	1702	1585	1728	1702	1585	1728	1702	1693
Q Serve(g_s), s	7.8	30.2	2.2	8.6	46.4	0.0	16.5	18.1	0.0	8.0	17.7	18.1
Cycle Q Clear(g_c), s	7.8	30.2	2.2	8.6	46.4	0.0	16.5	18.1	0.0	8.0	17.7	18.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.56
Lane Grp Cap(c), veh/h	289	1659	508	513	2075		543	1314		297	634	315
V/C Ratio(X)	0.80	0.84	0.13	0.52	0.97		0.90	0.68		0.79	0.82	0.84
Avail Cap(c_a), veh/h	461	1659	508	513	2075		605	1314		605	681	339
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	54.0	37.5	11.8	47.1	34.9	0.0	46.6	35.3	0.0	53.8	46.9	47.1
Incr Delay (d2), s/veh	1.9	5.2	0.5	0.4	13.4	0.0	14.7	1.6	0.0	1.8	8.2	17.1
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	12.8	1.3	3.6	20.5	0.0	7.6	6.9	0.0	3.5	8.0	8.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	55.9	42.7	12.3	47.6	48.3	0.0	61.3	36.8	0.0	55.6	55.2	64.3
LnGrp LOS	E	D	B	D	D		E	D		E	E	E
Approach Vol, veh/h		1681			2280	A		1385	A		1022	
Approach Delay, s/veh		43.3			48.2			45.5			57.6	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.8	45.0	22.8	28.3	14.0	54.8	14.3	36.9
Change Period (Y+Rc), s	6.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	14.0	39.0	21.0	24.0	16.0	39.0	21.0	24.0
Max Q Clear Time (g_c+I1), s	10.6	32.2	18.5	20.1	9.8	48.4	10.0	20.1
Green Ext Time (p_c), s	0.2	5.3	0.3	2.1	0.2	0.0	0.3	2.3

Intersection Summary	
HCM 6th Ctrl Delay	47.8
HCM 6th LOS	D

Notes

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

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

Intersection	
Int Delay, s/veh	10.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	39	1516	40	51	1985	7	7	0	69	0	1	99
Future Vol, veh/h	39	1516	40	51	1985	7	7	0	69	0	1	99
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	175	-	-	-	-	125	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	1648	43	55	2158	8	8	0	75	0	1	108

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2166	0	0	1691	0	0	2922	4008	824	3180	4047	1083
Stage 1	-	-	-	-	-	-	1732	1732	-	2272	2272	-
Stage 2	-	-	-	-	-	-	1190	2276	-	908	1775	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	243	-	-	374	-	-	~ 7	3	316	4	3	213
Stage 1	-	-	-	-	-	-	91	141	-	41	75	-
Stage 2	-	-	-	-	-	-	199	74	-	296	134	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	243	-	-	374	-	-	~ 2	2	316	2	2	213
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 2	2	-	2	2	-
Stage 1	-	-	-	-	-	-	75	117	-	34	64	-
Stage 2	-	-	-	-	-	-	83	63	-	187	111	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.4	$ 414.2	61.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	2	316	243	-	-	374	-	-	2	213
HCM Lane V/C Ratio	3.804	0.237	0.174	-	-	0.148	-	-	0.543	0.505
HCM Control Delay (s)	$ 4301.4	19.9	22.9	-	-	16.3	-	$ 2373.7		38
HCM Lane LOS	F	C	C	-	-	C	-	-	F	E
HCM 95th %tile Q(veh)	2.1	0.9	0.6	-	-	0.5	-	-	0.6	2.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	68	1516	9	3	1959	82	27	0	4	50	0	46
Future Volume (veh/h)	68	1516	9	3	1959	82	27	0	4	50	0	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	74	1648	10	3	2129	87	29	0	4	54	0	14
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	95	2669	16	4	2385	97	48	0	7	79	0	70
Arrive On Green	0.05	0.74	0.74	0.00	0.69	0.69	0.03	0.00	0.03	0.04	0.00	0.04
Sat Flow, veh/h	1781	3621	22	1781	3477	141	1542	0	213	1781	0	1585
Grp Volume(v), veh/h	74	808	850	3	1080	1136	33	0	0	54	0	14
Grp Sat Flow(s),veh/h/ln	1781	1777	1866	1781	1777	1841	1755	0	0	1781	0	1585
Q Serve(g_s), s	3.8	20.1	20.2	0.2	44.6	46.4	1.7	0.0	0.0	2.7	0.0	0.8
Cycle Q Clear(g_c), s	3.8	20.1	20.2	0.2	44.6	46.4	1.7	0.0	0.0	2.7	0.0	0.8
Prop In Lane	1.00		0.01	1.00		0.08	0.88		0.12	1.00		1.00
Lane Grp Cap(c), veh/h	95	1310	1376	4	1219	1263	54	0	0	79	0	70
V/C Ratio(X)	0.78	0.62	0.62	0.70	0.89	0.90	0.61	0.00	0.00	0.68	0.00	0.20
Avail Cap(c_a), veh/h	446	1310	1376	252	1297	1345	344	0	0	660	0	587
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.9	5.8	5.8	45.7	11.5	11.8	43.9	0.0	0.0	43.2	0.0	42.3
Incr Delay (d2), s/veh	5.0	0.9	0.8	55.5	7.4	8.2	10.4	0.0	0.0	3.9	0.0	0.5
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	1.7	4.3	4.5	0.1	13.5	14.8	0.9	0.0	0.0	1.3	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.9	6.7	6.7	101.2	18.9	20.0	54.3	0.0	0.0	47.1	0.0	42.8
LnGrp LOS	D	A	A	F	B	B	D	A	A	D	A	D
Approach Vol, veh/h		1732			2219			33			68	
Approach Delay, s/veh		8.4			19.6			54.3			46.2	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.9	68.9		7.6	3.2	73.6		7.3
Change Period (Y+Rc), s	3.0	6.0		3.5	3.0	6.0		4.5
Max Green Setting (Gmax), s	23.0	67.0		34.0	13.0	67.0		18.0
Max Q Clear Time (g_c+I1), s	5.8	48.4		4.7	2.2	22.2		3.7
Green Ext Time (p_c), s	0.0	14.5		0.2	0.0	15.0		0.1

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

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1570	54	75	2002	0	85
Future Vol, veh/h	1570	54	75	2002	0	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1707	59	82	2176	0	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1766	0	-	883
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	349	-	0	289
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	349	-	-	289
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	23.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	289	-	-	349	-
HCM Lane V/C Ratio	0.32	-	-	0.234	-
HCM Control Delay (s)	23.2	-	-	18.4	-
HCM Lane LOS	C	-	-	C	-
HCM 95th %tile Q(veh)	1.3	-	-	0.9	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	118	1450	14	70	1954	28	0	0	2	0	0	81
Future Vol, veh/h	118	1450	14	70	1954	28	0	0	2	0	0	81
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	325	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	123	1510	15	73	2035	29	0	0	2	0	0	84

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2064	0	0	1525	0	0	-	-	763	-	-	1032
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.92	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	-	-	3.31	-	-	3.31
Pot Cap-1 Maneuver	271	-	-	438	-	-	0	0	349	0	0	232
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	271	-	-	438	-	-	-	-	349	-	-	232
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.2	0.5	15.4	29.1
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	349	271	-	-	438	-	-	232
HCM Lane V/C Ratio	0.006	0.454	-	-	0.166	-	-	0.364
HCM Control Delay (s)	15.4	28.9	-	-	14.9	-	-	29.1
HCM Lane LOS	C	D	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0	2.2	-	-	0.6	-	-	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	1228	141	143	1680	122	252	102	80	149	122	46
Future Volume (veh/h)	47	1228	141	143	1680	122	252	102	80	149	122	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	50	1306	143	152	1787	85	188	220	0	159	130	20
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	64	1321	144	183	1691	737	244	256		177	145	277
Arrive On Green	0.04	0.41	0.41	0.10	0.47	0.47	0.14	0.14	0.00	0.18	0.18	0.18
Sat Flow, veh/h	1795	3257	355	1795	3582	1561	1795	1885	1598	1009	825	1576
Grp Volume(v), veh/h	50	715	734	152	1787	85	188	220	0	289	0	20
Grp Sat Flow(s),veh/h/ln	1795	1791	1821	1795	1791	1561	1795	1885	1598	1835	0	1576
Q Serve(g_s), s	2.7	39.0	39.5	8.2	46.5	3.0	10.0	11.3	0.0	15.2	0.0	1.0
Cycle Q Clear(g_c), s	2.7	39.0	39.5	8.2	46.5	3.0	10.0	11.3	0.0	15.2	0.0	1.0
Prop In Lane	1.00		0.19	1.00		1.00	1.00		1.00	0.55		1.00
Lane Grp Cap(c), veh/h	64	727	739	183	1691	737	244	256		322	0	277
V/C Ratio(X)	0.78	0.98	0.99	0.83	1.06	0.12	0.77	0.86		0.90	0.00	0.07
Avail Cap(c_a), veh/h	273	727	739	364	1691	737	364	382		372	0	320
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	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.1	29.0	29.2	43.4	26.0	14.5	41.1	41.7	0.0	39.8	0.0	33.9
Incr Delay (d2), s/veh	7.3	29.4	31.2	3.6	38.7	0.0	2.6	8.2	0.0	20.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	20.6	21.5	3.6	26.2	1.0	4.4	5.6	0.0	8.5	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	54.5	58.4	60.3	47.1	64.8	14.6	43.7	49.9	0.0	59.7	0.0	34.0
LnGrp LOS	D	E	E	D	F	B	D	D		E	A	C
Approach Vol, veh/h		1499			2024			408	A		309	
Approach Delay, s/veh		59.2			61.3			47.0			58.1	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.1	46.0		21.7	6.5	52.5		17.8
Change Period (Y+Rc), s	3.0	6.0		4.4	3.0	6.0		4.4
Max Green Setting (Gmax), s	20.0	40.0		20.0	15.0	45.0		20.0
Max Q Clear Time (g_c+I1), s	10.2	41.5		17.2	4.7	48.5		13.3
Green Ext Time (p_c), s	0.0	0.0		0.1	0.0	0.0		0.2

Intersection Summary	
HCM 6th Ctrl Delay	59.0
HCM 6th LOS	E

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	148	147	1037	80	315	99	1206	347	45	81	620	285
Future Volume (veh/h)	148	147	1037	80	315	99	1206	347	45	81	620	285
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	164	163	0	89	350	0	1340	386	0	90	689	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	193	583		113	423		1398	734		378	754	
Arrive On Green	0.11	0.16	0.00	0.06	0.12	0.00	0.39	0.39	0.00	0.21	0.21	0.00
Sat Flow, veh/h	1795	3582	1598	1795	3582	1598	3591	1885	1598	1795	3582	1598
Grp Volume(v), veh/h	164	163	0	89	350	0	1340	386	0	90	689	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1598	1795	1885	1598	1795	1791	1598
Q Serve(g_s), s	9.9	4.4	0.0	5.4	10.6	0.0	40.2	17.4	0.0	4.6	20.8	0.0
Cycle Q Clear(g_c), s	9.9	4.4	0.0	5.4	10.6	0.0	40.2	17.4	0.0	4.6	20.8	0.0
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	193	583		113	423		1398	734		378	754	
V/C Ratio(X)	0.85	0.28		0.79	0.83		0.96	0.53		0.24	0.91	
Avail Cap(c_a), veh/h	406	809		243	647		1460	767		406	809	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	48.5	40.6	0.0	51.1	47.7	0.0	32.9	25.9	0.0	36.3	42.7	0.0
Incr Delay (d2), s/veh	4.0	0.1	0.0	4.6	3.0	0.0	14.2	0.2	0.0	0.1	13.6	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	4.5	1.9	0.0	2.5	4.8	0.0	19.3	7.5	0.0	2.0	10.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.5	40.7	0.0	55.7	50.7	0.0	47.1	26.2	0.0	36.4	56.3	0.0
LnGrp LOS	D	D		E	D		D	C		D	E	
Approach Vol, veh/h		327	A		439	A		1726	A		779	A
Approach Delay, s/veh		46.6			51.7			42.5			54.0	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.9	23.7		28.6	14.9	18.8		48.4
Change Period (Y+Rc), s	3.0	5.7		5.3	3.0	* 5.7		5.3
Max Green Setting (Gmax), s	15.0	25.0		25.0	25.0	* 20		45.0
Max Q Clear Time (g_c+I1), s	7.4	6.4		22.8	11.9	12.6		42.2
Green Ext Time (p_c), s	0.0	0.3		0.5	0.0	0.5		0.9

Intersection Summary	
HCM 6th Ctrl Delay	46.9
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

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

Intersection	
Intersection Delay, s/veh	75.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	60	137	19	113	192	83	23	277	77	45	222	148
Future Vol, veh/h	60	137	19	113	192	83	23	277	77	45	222	148
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	75	171	24	141	240	104	29	346	96	56	278	185
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay	39	59.4	153.7	37.8
HCM LOS	E	F	F	E

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	6%	28%	37%	0%	17%	0%
Vol Thru, %	73%	63%	63%	0%	83%	0%
Vol Right, %	20%	9%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	377	216	305	83	267	148
LT Vol	23	60	113	0	45	0
Through Vol	277	137	192	0	222	0
RT Vol	77	19	0	83	0	148
Lane Flow Rate	471	270	381	104	334	185
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	1.232	0.738	0.969	0.238	0.848	0.43
Departure Headway (Hd)	9.412	10.825	9.88	8.952	9.875	9.053
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	391	337	370	404	370	400
Service Time	7.412	8.825	7.58	6.652	7.575	6.753
HCM Lane V/C Ratio	1.205	0.801	1.03	0.257	0.903	0.463
HCM Control Delay	153.7	39	71.6	14.4	48.6	18.4
HCM Lane LOS	F	E	F	B	E	C
HCM 95th-tile Q	19.9	5.6	10.8	0.9	7.8	2.1

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	3	5	0	0	24	51	35	3	73	2
Future Vol, veh/h	0	0	3	5	0	0	24	51	35	3	73	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	5	0	0	26	55	38	3	79	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	212	231	80	214	213	74	81	0	0	93	0	0
Stage 1	86	86	-	126	126	-	-	-	-	-	-	-
Stage 2	126	145	-	88	87	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	745	669	980	743	684	988	1517	-	-	1501	-	-
Stage 1	922	824	-	878	792	-	-	-	-	-	-	-
Stage 2	878	777	-	920	823	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	734	656	980	729	670	988	1517	-	-	1501	-	-
Mov Cap-2 Maneuver	734	656	-	729	670	-	-	-	-	-	-	-
Stage 1	905	822	-	862	778	-	-	-	-	-	-	-
Stage 2	862	763	-	915	821	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	10	1.6	0.3
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1517	-	-	980	729	1501	-	-
HCM Lane V/C Ratio	0.017	-	-	0.003	0.007	0.002	-	-
HCM Control Delay (s)	7.4	0	-	8.7	10	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	460	1773	295	371	1566	251	454	898	240	261	775	160
Future Volume (veh/h)	460	1773	295	371	1566	251	454	898	240	261	775	160
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	489	1886	170	395	1666	0	483	955	0	278	824	150
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	530	1784	553	537	1864		531	1330		327	876	158
Arrive On Green	0.15	0.35	0.35	0.15	0.36	0.00	0.15	0.26	0.00	0.09	0.20	0.20
Sat Flow, veh/h	3483	5147	1596	3483	5147	1598	3483	5147	1598	3483	4380	792
Grp Volume(v), veh/h	489	1886	170	395	1666	0	483	955	0	278	644	330
Grp Sat Flow(s),veh/h/ln	1742	1716	1596	1742	1716	1598	1742	1716	1598	1742	1716	1741
Q Serve(g_s), s	20.8	52.0	7.8	16.2	45.8	0.0	20.5	25.3	0.0	11.8	27.7	28.0
Cycle Q Clear(g_c), s	20.8	52.0	7.8	16.2	45.8	0.0	20.5	25.3	0.0	11.8	27.7	28.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.45
Lane Grp Cap(c), veh/h	530	1784	553	537	1864		531	1330		327	686	348
V/C Ratio(X)	0.92	1.06	0.31	0.73	0.89		0.91	0.72		0.85	0.94	0.95
Avail Cap(c_a), veh/h	534	1784	553	537	1864		604	1330		488	686	348
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	62.7	49.0	15.8	60.5	45.1	0.0	62.6	50.6	0.0	66.9	59.1	59.2
Incr Delay (d2), s/veh	21.4	38.2	1.4	4.6	7.1	0.0	15.6	2.0	0.0	6.0	21.0	34.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.6	27.8	4.5	7.4	20.1	0.0	10.1	10.9	0.0	5.4	13.8	15.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.1	87.2	17.3	65.1	52.2	0.0	78.2	52.7	0.0	72.9	80.1	94.0
LnGrp LOS	F	F	B	E	D		E	D		E	F	F
Approach Vol, veh/h		2545			2061	A		1438	A		1252	
Approach Delay, s/veh		82.0			54.6			61.2			82.1	
Approach LOS		F			D			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	29.1	58.0	26.9	36.0	26.8	60.3	18.1	44.8
Change Period (Y+Rc), s	6.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	20.0	52.0	26.0	30.0	23.0	51.0	21.0	35.0
Max Q Clear Time (g_c+I1), s	18.2	54.0	22.5	30.0	22.8	47.8	13.8	27.3
Green Ext Time (p_c), s	0.2	0.0	0.4	0.0	0.0	2.7	0.3	4.2

Intersection Summary	
HCM 6th Ctrl Delay	70.2
HCM 6th LOS	E

Notes

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

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

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	2134	60	50	1977	4	7	0	44	0	1	37
Future Vol, veh/h	45	2134	60	50	1977	4	7	0	44	0	1	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	175	-	-	-	-	125	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	48	2270	64	53	2103	4	7	0	47	0	1	39

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2107	0	0	2334	0	0	3524	4579	1135	3442	4641	1054
Stage 1	-	-	-	-	-	-	2366	2366	-	2211	2211	-
Stage 2	-	-	-	-	-	-	1158	2213	-	1231	2430	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	260	-	-	212	-	-	~ 2	1	198	3	~ 1	224
Stage 1	-	-	-	-	-	-	36	68	-	46	81	-
Stage 2	-	-	-	-	-	-	210	81	-	190	63	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	260	-	-	212	-	-	-	1	198	2	~ 1	224
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	1	-	2	~ 1	-
Stage 1	-	-	-	-	-	-	29	55	-	37	61	-
Stage 2	-	-	-	-	-	-	128	61	-	118	51	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.7		153.7
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	198	260	-	-	212	-	-	1	224
HCM Lane V/C Ratio	-	0.236	0.184	-	-	0.251	-	-	1.064	0.176
HCM Control Delay (s)	-	28.7	21.9	-	-	27.6	-	$	4932.2	24.5
HCM Lane LOS	-	D	C	-	-	D	-	-	F	C
HCM 95th %tile Q(veh)	-	0.9	0.7	-	-	1	-	-	0.6	0.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	2103	31	4	1971	18	18	0	2	26	0	31
Future Volume (veh/h)	41	2103	31	4	1971	18	18	0	2	26	0	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1885	1885	1870	1870	1870	1870	1870	1885
Adj Flow Rate, veh/h	44	2237	34	4	2097	19	20	0	2	28	0	12
Peak Hour Factor	0.94	0.94	0.92	0.92	0.94	0.94	0.92	0.92	0.92	0.94	0.92	0.94
Percent Heavy Veh, %	1	1	1	2	1	1	2	2	2	2	2	1
Cap, veh/h	56	2538	38	6	2454	22	38	0	4	88	0	79
Arrive On Green	0.03	0.70	0.70	0.00	0.67	0.67	0.02	0.00	0.02	0.05	0.00	0.05
Sat Flow, veh/h	1795	3611	55	1781	3636	33	1601	0	160	1781	0	1598
Grp Volume(v), veh/h	44	1106	1165	4	1031	1085	22	0	0	28	0	12
Grp Sat Flow(s),veh/h/ln	1795	1791	1875	1781	1791	1878	1761	0	0	1781	0	1598
Q Serve(g_s), s	2.1	42.4	43.0	0.2	38.9	39.3	1.1	0.0	0.0	1.3	0.0	0.6
Cycle Q Clear(g_c), s	2.1	42.4	43.0	0.2	38.9	39.3	1.1	0.0	0.0	1.3	0.0	0.6
Prop In Lane	1.00		0.03	1.00		0.02	0.91		0.09	1.00		1.00
Lane Grp Cap(c), veh/h	56	1259	1318	6	1209	1268	42	0	0	88	0	79
V/C Ratio(X)	0.79	0.88	0.88	0.71	0.85	0.86	0.53	0.00	0.00	0.32	0.00	0.15
Avail Cap(c_a), veh/h	468	1359	1423	262	1359	1426	359	0	0	1352	0	1213
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	42.5	10.2	10.3	44.0	11.0	11.1	42.6	0.0	0.0	40.5	0.0	40.2
Incr Delay (d2), s/veh	8.8	6.6	6.6	45.7	5.0	4.9	10.0	0.0	0.0	2.0	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	11.8	12.5	0.2	11.4	11.9	0.6	0.0	0.0	0.6	0.0	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	51.3	16.8	16.9	89.6	16.0	16.0	52.6	0.0	0.0	42.5	0.0	41.0
LnGrp LOS	D	B	B	F	B	B	D	A	A	D	A	D
Approach Vol, veh/h		2315			2120			22			40	
Approach Delay, s/veh		17.5			16.1			52.6			42.1	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.7	65.6		10.4	3.3	68.0		6.6
Change Period (Y+Rc), s	3.0	6.0		6.0	3.0	6.0		4.5
Max Green Setting (Gmax), s	23.0	67.0		67.0	13.0	67.0		18.0
Max Q Clear Time (g_c+I1), s	4.1	41.3		3.3	2.2	45.0		3.1
Green Ext Time (p_c), s	0.0	17.5		0.2	0.0	17.0		0.0

Intersection Summary		
HCM 6th Ctrl Delay		17.2
HCM 6th LOS		B

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	2060	61	73	1954	0	137
Future Vol, veh/h	2060	61	73	1954	0	137
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2239	66	79	2124	0	149

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2305	0	-	1153
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	215	-	0	191
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	215	-	-	191
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	69.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	191	-	-	215	-
HCM Lane V/C Ratio	0.78	-	-	0.369	-
HCM Control Delay (s)	69.5	-	-	31.2	-
HCM Lane LOS	F	-	-	D	-
HCM 95th %tile Q(veh)	5.3	-	-	1.6	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	143	2029	27	52	1832	18	0	0	11	0	0	129
Future Vol, veh/h	143	2029	27	52	1832	18	0	0	11	0	0	129
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	325	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	151	2136	28	55	1928	19	0	0	12	0	0	136

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1947	0	0	2164	0	0	-	-	1082	-	-	974
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.92	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	-	-	3.31	-	-	3.31
Pot Cap-1 Maneuver	301	-	-	247	-	-	0	0	215	0	0	253
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	301	-	-	247	-	-	-	-	215	-	-	253
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0.6	22.7	34.6
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	215	301	-	-	247	-	-	253
HCM Lane V/C Ratio	0.054	0.5	-	-	0.222	-	-	0.537
HCM Control Delay (s)	22.7	28.3	-	-	23.7	-	-	34.6
HCM Lane LOS	C	D	-	-	C	-	-	D
HCM 95th %tile Q(veh)	0.2	2.6	-	-	0.8	-	-	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	102	1750	255	98	1570	178	151	85	109	162	96	63
Future Volume (veh/h)	102	1750	255	98	1570	178	151	85	109	162	96	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	105	1804	256	101	1619	142	122	136	0	167	99	20
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	133	1509	208	129	1706	760	168	177		191	113	265
Arrive On Green	0.07	0.48	0.48	0.07	0.47	0.47	0.09	0.09	0.00	0.16	0.16	0.16
Sat Flow, veh/h	1810	3176	439	1810	3610	1608	1810	1900	1610	1157	686	1610
Grp Volume(v), veh/h	105	1004	1056	101	1619	142	122	136	0	266	0	20
Grp Sat Flow(s),veh/h/ln	1810	1805	1810	1810	1805	1608	1810	1900	1610	1842	0	1610
Q Serve(g_s), s	5.2	43.1	43.1	5.0	39.0	4.6	6.0	6.4	0.0	12.8	0.0	1.0
Cycle Q Clear(g_c), s	5.2	43.1	43.1	5.0	39.0	4.6	6.0	6.4	0.0	12.8	0.0	1.0
Prop In Lane	1.00		0.24	1.00		1.00	1.00		1.00	0.63		1.00
Lane Grp Cap(c), veh/h	133	857	860	129	1706	760	168	177		304	0	265
V/C Ratio(X)	0.79	1.17	1.23	0.78	0.95	0.19	0.73	0.77		0.88	0.00	0.08
Avail Cap(c_a), veh/h	299	857	860	399	1789	797	399	418		406	0	355
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	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	41.4	23.8	23.8	41.5	22.9	13.9	40.1	40.2	0.0	37.0	0.0	32.1
Incr Delay (d2), s/veh	3.9	89.1	113.1	3.9	11.0	0.0	2.2	2.7	0.0	12.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	36.3	42.1	2.2	16.6	1.5	2.7	3.0	0.0	6.6	0.0	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.2	113.0	137.0	45.4	33.9	13.9	42.3	42.9	0.0	49.5	0.0	32.1
LnGrp LOS	D	F	F	D	C	B	D	D		D	A	C
Approach Vol, veh/h		2165			1862			258	A		286	
Approach Delay, s/veh		121.4			33.0			42.6			48.3	
Approach LOS		F			C			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.5	49.1		19.4	9.7	48.9		12.8				
Change Period (Y+Rc), s	3.0	6.0		4.4	3.0	6.0		4.4				
Max Green Setting (Gmax), s	20.0	40.0		20.0	15.0	45.0		20.0				
Max Q Clear Time (g_c+I1), s	7.0	45.1		14.8	7.2	41.0		8.4				
Green Ext Time (p_c), s	0.0	0.0		0.2	0.0	2.0		0.1				

Intersection Summary	
HCM 6th Ctrl Delay	76.4
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.
User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	254	333	1187	66	266	104	1200	721	87	114	452	220
Future Volume (veh/h)	254	333	1187	66	266	104	1200	721	87	114	452	220
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	265	347	0	69	277	0	1250	751	0	119	471	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	294	767		89	358		1464	769		276	551	
Arrive On Green	0.16	0.21	0.00	0.05	0.10	0.00	0.41	0.41	0.00	0.15	0.15	0.00
Sat Flow, veh/h	1795	3582	1598	1795	3582	1598	3591	1885	1598	1795	3582	1598
Grp Volume(v), veh/h	265	347	0	69	277	0	1250	751	0	119	471	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1598	1795	1885	1598	1795	1791	1598
Q Serve(g_s), s	16.0	9.3	0.0	4.2	8.3	0.0	34.9	43.3	0.0	6.6	14.1	0.0
Cycle Q Clear(g_c), s	16.0	9.3	0.0	4.2	8.3	0.0	34.9	43.3	0.0	6.6	14.1	0.0
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	294	767		89	358		1464	769		276	551	
V/C Ratio(X)	0.90	0.45		0.78	0.77		0.85	0.98		0.43	0.85	
Avail Cap(c_a), veh/h	407	811		244	649		1464	769		407	811	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	45.3	37.7	0.0	51.9	48.4	0.0	29.7	32.2	0.0	42.3	45.5	0.0
Incr Delay (d2), s/veh	15.2	0.2	0.0	5.4	1.4	0.0	4.9	26.7	0.0	0.4	4.1	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	8.0	3.9	0.0	2.0	3.7	0.0	15.2	24.2	0.0	2.9	6.4	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.5	37.9	0.0	57.2	49.8	0.0	34.6	58.8	0.0	42.7	49.6	0.0
LnGrp LOS	E	D		E	D		C	E		D	D	
Approach Vol, veh/h		612	A		346	A		2001	A		590	A
Approach Delay, s/veh		47.7			51.3			43.7			48.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.5	29.3		22.3	21.0	16.7		50.3
Change Period (Y+Rc), s	3.0	5.7		5.3	3.0	* 5.7		5.3
Max Green Setting (Gmax), s	15.0	25.0		25.0	25.0	* 20		45.0
Max Q Clear Time (g_c+I1), s	10.2	11.3		16.1	18.0	10.3		45.3
Green Ext Time (p_c), s	0.0	0.6		0.8	0.1	0.4		0.0

Intersection Summary	
HCM 6th Ctrl Delay	45.9
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

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

Intersection	
Intersection Delay, s/veh	46.2
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	238	50	41	130	55	21	205	39	111	286	51
Future Vol, veh/h	50	238	50	41	130	55	21	205	39	111	286	51
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	55	262	55	45	143	60	23	225	43	122	314	56
Number of Lanes	0	1	0	0	1	1	0	1	0	0	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	1	2
Conflicting Approach Righ	NB	SB	WB	EB
Conflicting Lanes Right	1	2	2	1
HCM Control Delay	49.5	18.2	31	66.7
HCM LOS	E	C	D	F

Lane	NBLn1	EBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	8%	15%	24%	0%	28%	0%
Vol Thru, %	77%	70%	76%	0%	72%	0%
Vol Right, %	15%	15%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	265	338	171	55	397	51
LT Vol	21	50	41	0	111	0
Through Vol	205	238	130	0	286	0
RT Vol	39	50	0	55	0	51
Lane Flow Rate	291	371	188	60	436	56
Geometry Grp	6	6	7	7	7	7
Degree of Util (X)	0.712	0.884	0.478	0.139	1.006	0.116
Departure Headway (Hd)	8.807	8.572	9.156	8.302	8.305	7.436
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	411	423	393	431	441	483
Service Time	6.881	6.598	6.928	6.073	6.033	5.164
HCM Lane V/C Ratio	0.708	0.877	0.478	0.139	0.989	0.116
HCM Control Delay	31	49.5	20.1	12.4	73.8	11.1
HCM Lane LOS	D	E	C	B	F	B
HCM 95th-tile Q	5.4	9.1	2.5	0.5	12.9	0.4

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	15	57	0	4	13	82	11	1	57	1
Future Vol, veh/h	2	0	15	57	0	4	13	82	11	1	57	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	16	62	0	4	14	89	12	1	62	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	190	194	63	196	188	95	63	0	0	101	0	0
Stage 1	65	65	-	123	123	-	-	-	-	-	-	-
Stage 2	125	129	-	73	65	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	770	701	1002	763	707	962	1540	-	-	1491	-	-
Stage 1	946	841	-	881	794	-	-	-	-	-	-	-
Stage 2	879	789	-	937	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	760	693	1002	744	699	962	1540	-	-	1491	-	-
Mov Cap-2 Maneuver	760	693	-	744	699	-	-	-	-	-	-	-
Stage 1	937	840	-	872	786	-	-	-	-	-	-	-
Stage 2	866	781	-	921	840	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.8	10.2	0.9	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1540	-	-	966	755	1491	-	-
HCM Lane V/C Ratio	0.009	-	-	0.019	0.088	0.001	-	-
HCM Control Delay (s)	7.4	0	-	8.8	10.2	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	275	1275	220	332	1868	115	520	1030	155	175	820	295
Future Volume (veh/h)	275	1275	220	332	1868	115	520	1030	155	175	820	295
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
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	299	1386	112	361	2030	0	565	1120	0	190	891	212
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	327	1621	496	482	1931		517	1486		272	1043	322
Arrive On Green	0.09	0.32	0.32	0.14	0.38	0.00	0.15	0.29	0.00	0.08	0.20	0.20
Sat Flow, veh/h	3456	5106	1563	3456	5106	1585	3456	5106	1585	3456	5106	1576
Grp Volume(v), veh/h	299	1386	112	361	2030	0	565	1120	0	190	891	212
Grp Sat Flow(s),veh/h/ln	1728	1702	1563	1728	1702	1585	1728	1702	1585	1728	1702	1576
Q Serve(g_s), s	10.9	32.3	6.7	12.7	48.0	0.0	19.0	25.3	0.0	6.8	21.3	12.3
Cycle Q Clear(g_c), s	10.9	32.3	6.7	12.7	48.0	0.0	19.0	25.3	0.0	6.8	21.3	12.3
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	327	1621	496	482	1931		517	1486		272	1043	322
V/C Ratio(X)	0.92	0.86	0.23	0.75	1.05		1.09	0.75		0.70	0.85	0.66
Avail Cap(c_a), veh/h	327	1690	517	482	1931		517	1486		299	1086	335
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.0	40.6	31.9	52.5	39.5	0.0	54.0	40.9	0.0	57.0	48.7	28.4
Incr Delay (d2), s/veh	28.7	4.6	0.3	5.7	35.5	0.0	67.0	2.4	0.0	4.9	6.9	5.2
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	5.9	13.7	2.5	5.8	25.4	0.0	12.8	10.6	0.0	3.1	9.5	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.6	45.2	32.2	58.1	75.0	0.0	121.0	43.2	0.0	61.9	55.6	33.6
LnGrp LOS	F	D	C	E	F		F	D		E	E	C
Approach Vol, veh/h		1797			2391	A		1685	A		1293	
Approach Delay, s/veh		51.1			72.4			69.3			52.9	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.7	46.3	25.0	31.9	16.0	54.0	14.0	42.9
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	42.0	19.0	* 27	12.0	48.0	11.0	35.0
Max Q Clear Time (g_c+I1), s	14.7	34.3	21.0	23.3	12.9	50.0	8.8	27.3
Green Ext Time (p_c), s	0.1	6.0	0.0	2.5	0.0	0.0	0.1	4.8

Intersection Summary	
HCM 6th Ctrl Delay	62.8
HCM 6th LOS	E

Notes

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

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

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

Intersection	
Int Delay, s/veh	44.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	1433	55	87	1857	7	20	0	69	0	1	100
Future Vol, veh/h	40	1433	55	87	1857	7	20	0	69	0	1	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	175	-	-	-	-	125	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	1558	60	95	2018	8	22	0	75	0	1	109

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2026	0	0	1618	0	0	2844	3860	779	3077	3916	1013
Stage 1	-	-	-	-	-	-	1644	1644	-	2212	2212	-
Stage 2	-	-	-	-	-	-	1200	2216	-	865	1704	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	276	-	-	399	-	-	~ 8	4	339	5	3	237
Stage 1	-	-	-	-	-	-	104	156	-	45	80	-
Stage 2	-	-	-	-	-	-	196	80	-	315	145	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	276	-	-	399	-	-	~ 2	3	339	3	2	237
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 2	3	-	3	2	-
Stage 1	-	-	-	-	-	-	88	132	-	38	61	-
Stage 2	-	-	-	-	-	-	79	61	-	207	122	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.7	$ 1751.9	55.6
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	2	339	276	-	-	399	-	-	2	237
HCM Lane V/C Ratio	10.87	0.221	0.158	-	-	0.237	-	-	0.543	0.459
HCM Control Delay (s)	$ 7731.8	18.6	20.5	-	-	16.8	-		$ 2373.7	32.4
HCM Lane LOS	F	C	C	-	-	C	-	-	F	D
HCM 95th %tile Q(veh)	4.3	0.8	0.6	-	-	0.9	-	-	0.6	2.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	1467	8	5	1917	85	25	2	9	55	1	50
Future Volume (veh/h)	75	1467	8	5	1917	85	25	2	9	55	1	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		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	1595	9	5	2084	90	27	2	10	60	1	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	103	2717	15	7	2413	103	39	3	14	86	1	78
Arrive On Green	0.06	0.75	0.75	0.00	0.70	0.70	0.03	0.03	0.03	0.05	0.05	0.05
Sat Flow, veh/h	1781	3623	20	1781	3468	149	1198	89	444	1753	29	1585
Grp Volume(v), veh/h	82	782	822	5	1059	1115	39	0	0	61	0	18
Grp Sat Flow(s),veh/h/ln	1781	1777	1867	1781	1777	1840	1731	0	0	1783	0	1585
Q Serve(g_s), s	4.7	20.3	20.4	0.3	46.4	48.4	2.3	0.0	0.0	3.5	0.0	1.1
Cycle Q Clear(g_c), s	4.7	20.3	20.4	0.3	46.4	48.4	2.3	0.0	0.0	3.5	0.0	1.1
Prop In Lane	1.00		0.01	1.00		0.08	0.69		0.26	0.98		1.00
Lane Grp Cap(c), veh/h	103	1332	1400	7	1236	1280	56	0	0	88	0	78
V/C Ratio(X)	0.79	0.59	0.59	0.72	0.86	0.87	0.69	0.00	0.00	0.70	0.00	0.23
Avail Cap(c_a), veh/h	103	1478	1552	52	1426	1477	301	0	0	448	0	399
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.1	5.8	5.8	51.4	11.8	12.1	49.5	0.0	0.0	48.4	0.0	47.3
Incr Delay (d2), s/veh	31.1	0.5	0.5	41.0	4.8	5.3	14.1	0.0	0.0	3.7	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	4.6	4.8	0.2	14.1	15.3	1.2	0.0	0.0	1.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.2	6.3	6.3	92.4	16.7	17.5	63.6	0.0	0.0	52.0	0.0	47.8
LnGrp LOS	E	A	A	F	B	B	E	A	A	D	A	D
Approach Vol, veh/h		1686			2179			39			79	
Approach Delay, s/veh		9.8			17.3			63.6			51.1	
Approach LOS		A			B			E			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.0	77.9		8.6	3.4	83.5		7.9
Change Period (Y+Rc), s	3.0	6.0		3.5	3.0	6.0		4.5
Max Green Setting (Gmax), s	6.0	83.0		26.0	3.0	86.0		18.0
Max Q Clear Time (g_c+I1), s	6.7	50.4		5.5	2.3	22.4		4.3
Green Ext Time (p_c), s	0.0	21.6		0.2	0.0	14.9		0.1

Intersection Summary	
HCM 6th Ctrl Delay	15.2
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1467	55	73	1922	0	85
Future Vol, veh/h	1467	55	73	1922	0	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1595	60	79	2089	0	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1655	0	-	828
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	386	-	0	314
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	386	-	-	314
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	21.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	314	-	-	386	-
HCM Lane V/C Ratio	0.294	-	-	0.206	-
HCM Control Delay (s)	21.2	-	-	16.7	-
HCM Lane LOS	C	-	-	C	-
HCM 95th %tile Q(veh)	1.2	-	-	0.8	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	107	1428	15	75	1850	7	0	0	2	0	0	90
Future Vol, veh/h	107	1428	15	75	1850	7	0	0	2	0	0	90
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	325	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	111	1488	16	78	1927	7	0	0	2	0	0	94

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1934	0	0	1504	0	0	-	-	752	-	-	967
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.92	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	-	-	3.31	-	-	3.31
Pot Cap-1 Maneuver	304	-	-	446	-	-	0	0	355	0	0	256
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	304	-	-	446	-	-	-	-	355	-	-	256
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.6	15.2	27
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	355	304	-	-	446	-	-	256
HCM Lane V/C Ratio	0.006	0.367	-	-	0.175	-	-	0.366
HCM Control Delay (s)	15.2	23.5	-	-	14.8	-	-	27
HCM Lane LOS	C	C	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0	1.6	-	-	0.6	-	-	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	1239	134	150	1643	175	210	195	115	225	165	40
Future Volume (veh/h)	65	1239	134	150	1643	175	210	195	115	225	165	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	69	1318	90	160	1748	80	215	218	0	208	220	14
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	89	1663	742	189	1862	812	246	258		241	253	211
Arrive On Green	0.05	0.46	0.46	0.11	0.52	0.52	0.14	0.14	0.00	0.13	0.13	0.13
Sat Flow, veh/h	1795	3582	1598	1795	3582	1562	1795	1885	1598	1795	1885	1576
Grp Volume(v), veh/h	69	1318	90	160	1748	80	215	218	0	208	220	14
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1562	1795	1885	1598	1795	1885	1576
Q Serve(g_s), s	4.2	34.8	3.6	9.8	51.0	2.9	13.1	12.6	0.0	12.7	12.8	0.9
Cycle Q Clear(g_c), s	4.2	34.8	3.6	9.8	51.0	2.9	13.1	12.6	0.0	12.7	12.8	0.9
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	89	1663	742	189	1862	812	246	258		241	253	211
V/C Ratio(X)	0.78	0.79	0.12	0.85	0.94	0.10	0.87	0.84		0.86	0.87	0.07
Avail Cap(c_a), veh/h	113	2331	1040	290	2684	1170	467	490		364	382	319
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	25.3	17.0	49.0	25.1	13.5	47.2	47.0	0.0	47.3	47.3	42.2
Incr Delay (d2), s/veh	17.4	0.8	0.0	8.4	4.5	0.0	3.8	2.9	0.0	8.8	9.1	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	2.3	13.3	1.2	4.6	20.1	0.9	6.0	6.0	0.0	6.2	6.5	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.9	26.2	17.0	57.4	29.7	13.6	51.0	49.9	0.0	56.1	56.4	42.2
LnGrp LOS	E	C	B	E	C	B	D	D		E	E	D
Approach Vol, veh/h		1477			1988			433	A		442	
Approach Delay, s/veh		27.6			31.2			50.4			55.8	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.7	57.8		19.4	8.5	64.0		19.7
Change Period (Y+Rc), s	3.0	6.0		4.4	3.0	6.0		4.4
Max Green Setting (Gmax), s	18.0	72.6		22.6	7.0	83.6		29.0
Max Q Clear Time (g_c+I1), s	11.8	36.8		14.8	6.2	53.0		15.1
Green Ext Time (p_c), s	0.0	3.0		0.2	0.0	4.9		0.2

Intersection Summary	
HCM 6th Ctrl Delay	34.4
HCM 6th LOS	C

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	160	1120	75	244	100	1312	455	45	90	710	275
Future Volume (veh/h)	135	160	1120	75	244	100	1312	455	45	90	710	275
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	150	178	0	83	271	0	1458	506	0	100	789	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	169	464		104	335		1525	800		424	846	
Arrive On Green	0.09	0.13	0.00	0.06	0.09	0.00	0.42	0.42	0.00	0.24	0.24	0.00
Sat Flow, veh/h	1795	3582	1598	1795	3582	1598	3591	1885	1598	1795	3582	1598
Grp Volume(v), veh/h	150	178	0	83	271	0	1458	506	0	100	789	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1598	1795	1885	1598	1795	1791	1598
Q Serve(g_s), s	10.5	5.8	0.0	5.8	9.5	0.0	50.1	26.9	0.0	5.7	27.5	0.0
Cycle Q Clear(g_c), s	10.5	5.8	0.0	5.8	9.5	0.0	50.1	26.9	0.0	5.7	27.5	0.0
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	169	464		104	335		1525	800		424	846	
V/C Ratio(X)	0.89	0.38		0.80	0.81		0.96	0.63		0.24	0.93	
Avail Cap(c_a), veh/h	169	711		141	678		1796	943		447	891	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.0	50.8	0.0	59.2	56.6	0.0	35.5	28.8	0.0	39.4	47.7	0.0
Incr Delay (d2), s/veh	37.9	0.2	0.0	14.1	1.8	0.0	10.9	0.6	0.0	0.1	15.5	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	6.4	2.5	0.0	3.0	4.3	0.0	23.2	11.9	0.0	2.5	13.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	94.9	51.0	0.0	73.4	58.4	0.0	46.4	29.4	0.0	39.5	63.1	0.0
LnGrp LOS	F	D		E	E		D	C		D	E	
Approach Vol, veh/h		328	A		354	A		1964	A		889	A
Approach Delay, s/veh		71.0			61.9			42.0			60.5	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.4	22.2		35.4	15.0	17.6		59.4
Change Period (Y+Rc), s	3.0	5.7		5.3	3.0	* 5.7		5.3
Max Green Setting (Gmax), s	10.0	25.3		31.7	12.0	* 24		63.7
Max Q Clear Time (g_c+I1), s	7.8	7.8		29.5	12.5	11.5		52.1
Green Ext Time (p_c), s	0.0	0.3		0.6	0.0	0.5		2.0

Intersection Summary	
HCM 6th Ctrl Delay	51.3
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	255	75	135	435	80	85	396	90	40	389	145
Future Volume (veh/h)	65	255	75	135	435	80	85	396	90	40	389	145
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		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	81	319	75	169	544	81	106	495	93	50	486	181
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	105	528	448	211	639	541	137	647	537	73	580	491
Arrive On Green	0.06	0.28	0.28	0.12	0.34	0.34	0.08	0.35	0.35	0.04	0.31	0.31
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1552	1781	1870	1585
Grp Volume(v), veh/h	81	319	75	169	544	81	106	495	93	50	486	181
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1552	1781	1870	1585
Q Serve(g_s), s	3.8	12.5	3.0	7.8	22.9	3.0	4.9	19.9	3.5	2.3	20.5	7.5
Cycle Q Clear(g_c), s	3.8	12.5	3.0	7.8	22.9	3.0	4.9	19.9	3.5	2.3	20.5	7.5
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	105	528	448	211	639	541	137	647	537	73	580	491
V/C Ratio(X)	0.77	0.60	0.17	0.80	0.85	0.15	0.78	0.77	0.17	0.69	0.84	0.37
Avail Cap(c_a), veh/h	263	1007	854	534	1292	1095	326	1348	1118	210	1226	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	39.3	26.3	22.9	36.4	25.9	19.3	38.4	24.6	19.3	40.1	27.2	22.8
Incr Delay (d2), s/veh	11.2	1.1	0.2	7.0	3.3	0.1	9.0	1.9	0.2	10.9	3.3	0.5
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	1.9	5.5	1.1	3.7	10.1	1.1	2.4	8.5	1.2	1.2	9.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.4	27.4	23.1	43.3	29.2	19.5	47.4	26.6	19.4	51.0	30.6	23.2
LnGrp LOS	D	C	C	D	C	B	D	C	B	D	C	C
Approach Vol, veh/h		475			794			694			717	
Approach Delay, s/veh		30.6			31.2			28.8			30.1	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	33.8	14.5	28.4	11.0	30.7	9.5	33.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.0	61.0	25.4	45.6	15.5	55.5	12.5	58.5
Max Q Clear Time (g_c+I1), s	4.3	21.9	9.8	14.5	6.9	22.5	5.8	24.9
Green Ext Time (p_c), s	0.0	3.5	0.4	2.2	0.1	3.7	0.1	4.1

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

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	3	0	0	0	25	45	0	0	85	2
Future Vol, veh/h	0	0	3	0	0	0	25	45	0	0	85	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	0	0	0	27	49	0	0	92	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	196	196	93	198	197	49	94	0	0	49	0	0
Stage 1	93	93	-	103	103	-	-	-	-	-	-	-
Stage 2	103	103	-	95	94	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	763	699	964	761	699	1020	1500	-	-	1558	-	-
Stage 1	914	818	-	903	810	-	-	-	-	-	-	-
Stage 2	903	810	-	912	817	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	752	686	964	747	686	1020	1500	-	-	1558	-	-
Mov Cap-2 Maneuver	752	686	-	747	686	-	-	-	-	-	-	-
Stage 1	897	818	-	886	795	-	-	-	-	-	-	-
Stage 2	886	795	-	909	817	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	0	2.7	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1500	-	-	964	-	1558	-	-
HCM Lane V/C Ratio	0.018	-	-	0.003	-	-	-	-
HCM Control Delay (s)	7.4	0	-	8.7	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	545	1665	325	427	1526	240	470	1140	268	251	1060	220
Future Volume (veh/h)	545	1665	325	427	1526	240	470	1140	268	251	1060	220
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	580	1771	133	454	1623	0	500	1213	0	267	1128	207
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	604	1784	553	488	1681		511	1426		312	1132	351
Arrive On Green	0.17	0.35	0.35	0.14	0.33	0.00	0.20	0.37	0.00	0.06	0.15	0.15
Sat Flow, veh/h	3483	5147	1596	3483	5147	1598	3483	5147	1598	3483	5147	1595
Grp Volume(v), veh/h	580	1771	133	454	1623	0	500	1213	0	267	1128	207
Grp Sat Flow(s),veh/h/ln	1742	1716	1596	1742	1716	1598	1742	1716	1598	1742	1716	1595
Q Serve(g_s), s	24.8	51.4	6.0	19.3	46.5	0.0	21.4	32.5	0.0	11.4	32.9	18.2
Cycle Q Clear(g_c), s	24.8	51.4	6.0	19.3	46.5	0.0	21.4	32.5	0.0	11.4	32.9	18.2
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	604	1784	553	488	1681		511	1426		312	1132	351
V/C Ratio(X)	0.96	0.99	0.24	0.93	0.97		0.98	0.85		0.86	1.00	0.59
Avail Cap(c_a), veh/h	604	1784	553	488	1681		511	1426		325	1132	351
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.5	48.8	15.8	63.8	49.7	0.0	60.1	44.5	0.0	69.5	63.9	57.6
Incr Delay (d2), s/veh	26.8	19.6	1.0	24.4	15.1	0.0	34.1	5.2	0.0	18.0	25.8	3.2
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	13.0	24.5	3.5	10.1	21.7	0.0	11.3	13.4	0.0	5.9	17.3	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	88.3	68.4	16.9	88.2	64.8	0.0	94.3	49.7	0.0	87.6	89.7	60.8
LnGrp LOS	F	E	B	F	E		F	D		F	F	E
Approach Vol, veh/h		2484			2077	A		1713	A		1602	
Approach Delay, s/veh		70.3			69.9			62.7			85.6	
Approach LOS		E			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.0	58.0	26.0	39.0	30.0	55.0	17.4	47.6
Change Period (Y+Rc), s	6.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	21.0	52.0	22.0	33.0	26.0	49.0	14.0	41.0
Max Q Clear Time (g_c+I1), s	21.3	53.4	23.4	34.9	26.8	48.5	13.4	34.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.4	0.0	4.4

Intersection Summary	
HCM 6th Ctrl Delay	71.7
HCM 6th LOS	E

Notes

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

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

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	2003	70	52	1785	4	15	0	50	0	1	40
Future Vol, veh/h	45	2003	70	52	1785	4	15	0	50	0	1	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	175	-	-	-	-	125	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	48	2131	74	55	1899	4	16	0	53	0	1	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1903	0	0	2205	0	0	3287	4240	1066	3173	4312	952
Stage 1	-	-	-	-	-	-	2227	2227	-	2011	2011	-
Stage 2	-	-	-	-	-	-	1060	2013	-	1162	2301	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	313	-	-	238	-	-	~ 4	2	220	4	2	262
Stage 1	-	-	-	-	-	-	45	80	-	61	103	-
Stage 2	-	-	-	-	-	-	241	103	-	209	73	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	313	-	-	238	-	-	-	1	220	2	~ 1	262
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	1	-	2	~ 1	-
Stage 1	-	-	-	-	-	-	38	68	-	52	79	-
Stage 2	-	-	-	-	-	-	153	79	-	134	62	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.7		141.2
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	220	313	-	-	238	-	-	1	262
HCM Lane V/C Ratio	-	0.242	0.153	-	-	0.232	-	-	1.064	0.162
HCM Control Delay (s)	-	26.5	18.6	-	-	24.6	-	$	4932.2	21.4
HCM Lane LOS	-	D	C	-	-	C	-	-	F	C
HCM 95th %tile Q(veh)	-	0.9	0.5	-	-	0.9	-	-	0.6	0.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	2033	30	9	1803	20	20	0	6	30	1	25
Future Volume (veh/h)	55	2033	30	9	1803	20	20	0	6	30	1	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1885	1885	1870	1870	1870	1870	1870	1885
Adj Flow Rate, veh/h	59	2163	33	10	1918	21	22	0	7	32	1	6
Peak Hour Factor	0.94	0.94	0.92	0.92	0.94	0.94	0.92	0.92	0.92	0.94	0.92	0.94
Percent Heavy Veh, %	1	1	1	2	1	1	2	2	2	2	2	1
Cap, veh/h	60	2897	44	12	2815	31	31	0	10	65	2	60
Arrive On Green	0.03	0.80	0.80	0.01	0.78	0.78	0.02	0.00	0.02	0.04	0.04	0.04
Sat Flow, veh/h	1795	3611	55	1781	3628	40	1312	0	417	1730	54	1598
Grp Volume(v), veh/h	59	1070	1126	10	945	994	29	0	0	33	0	6
Grp Sat Flow(s),veh/h/ln	1795	1791	1875	1781	1791	1877	1730	0	0	1784	0	1598
Q Serve(g_s), s	4.9	44.0	44.6	0.8	37.5	37.9	2.5	0.0	0.0	2.7	0.0	0.5
Cycle Q Clear(g_c), s	4.9	44.0	44.6	0.8	37.5	37.9	2.5	0.0	0.0	2.7	0.0	0.5
Prop In Lane	1.00		0.03	1.00		0.02	0.76		0.24	0.97		1.00
Lane Grp Cap(c), veh/h	60	1437	1505	12	1389	1456	40	0	0	67	0	60
V/C Ratio(X)	0.99	0.74	0.75	0.82	0.68	0.68	0.72	0.00	0.00	0.49	0.00	0.10
Avail Cap(c_a), veh/h	60	1437	1505	36	1389	1456	209	0	0	309	0	277
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	72.5	7.3	7.3	74.4	8.0	8.0	72.8	0.0	0.0	70.8	0.0	69.7
Incr Delay (d2), s/veh	110.9	3.5	3.5	37.6	2.7	2.6	20.9	0.0	0.0	5.5	0.0	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	4.1	12.7	13.4	0.5	11.7	12.4	1.4	0.0	0.0	1.4	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	183.3	10.8	10.8	112.0	10.7	10.6	93.7	0.0	0.0	76.3	0.0	70.5
LnGrp LOS	F	B	B	F	B	B	F	A	A	E	A	E
Approach Vol, veh/h		2255			1949			29			39	
Approach Delay, s/veh		15.3			11.2			93.7			75.4	
Approach LOS		B			B			F			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.0	122.4		11.6	4.0	126.3		8.0
Change Period (Y+Rc), s	3.0	6.0		6.0	3.0	6.0		4.5
Max Green Setting (Gmax), s	5.0	81.4		26.0	3.0	83.4		18.1
Max Q Clear Time (g_c+I1), s	6.9	39.9		4.7	2.8	46.6		4.5
Green Ext Time (p_c), s	0.0	20.0		0.1	0.0	23.6		0.1

Intersection Summary	
HCM 6th Ctrl Delay	14.5
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1938	60	55	1823	0	140
Future Vol, veh/h	1938	60	55	1823	0	140
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2107	65	60	1982	0	152

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2172	0	-	1086
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	242	-	0	212
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	242	-	-	212
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	56
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	212	-	-	242	-
HCM Lane V/C Ratio	0.718	-	-	0.247	-
HCM Control Delay (s)	56	-	-	24.7	-
HCM Lane LOS	F	-	-	C	-
HCM 95th %tile Q(veh)	4.7	-	-	0.9	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	138	1930	30	55	1750	21	0	0	15	0	0	73
Future Vol, veh/h	138	1930	30	55	1750	21	0	0	15	0	0	73
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	325	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	145	2032	32	58	1842	22	0	0	16	0	0	77

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1864	0	0	2064	0	0	-	-	1032	-	-	932
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.92	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	-	-	3.31	-	-	3.31
Pot Cap-1 Maneuver	324	-	-	271	-	-	0	0	232	0	0	270
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	324	-	-	271	-	-	-	-	232	-	-	270
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.7	21.6	23.6
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	232	324	-	-	271	-	-	270
HCM Lane V/C Ratio	0.068	0.448	-	-	0.214	-	-	0.285
HCM Control Delay (s)	21.6	24.8	-	-	21.9	-	-	23.6
HCM Lane LOS	C	C	-	-	C	-	-	C
HCM 95th %tile Q(veh)	0.2	2.2	-	-	0.8	-	-	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	1678	192	135	1528	220	158	150	145	245	155	65
Future Volume (veh/h)	75	1678	192	135	1528	220	158	150	145	245	155	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.92	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	77	1730	146	139	1575	185	159	161	0	206	225	22
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	99	1836	802	167	1972	814	191	200		245	257	218
Arrive On Green	0.05	0.51	0.51	0.09	0.55	0.55	0.11	0.11	0.00	0.14	0.14	0.14
Sat Flow, veh/h	1810	3610	1577	1810	3610	1489	1810	1900	1610	1810	1900	1610
Grp Volume(v), veh/h	77	1730	146	139	1575	185	159	161	0	206	225	22
Grp Sat Flow(s),veh/h/ln	1810	1805	1577	1810	1805	1489	1810	1900	1610	1810	1900	1610
Q Serve(g_s), s	4.7	50.7	5.6	8.5	39.4	7.2	9.7	9.3	0.0	12.5	13.0	1.3
Cycle Q Clear(g_c), s	4.7	50.7	5.6	8.5	39.4	7.2	9.7	9.3	0.0	12.5	13.0	1.3
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	99	1836	802	167	1972	814	191	200		245	257	218
V/C Ratio(X)	0.78	0.94	0.18	0.83	0.80	0.23	0.83	0.80		0.84	0.88	0.10
Avail Cap(c_a), veh/h	145	2337	1021	194	2433	1004	468	491		300	315	267
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	52.4	26.0	14.9	50.1	20.5	13.2	49.2	49.0	0.0	47.3	47.6	42.5
Incr Delay (d2), s/veh	8.2	6.7	0.0	20.4	1.3	0.1	3.6	2.9	0.0	13.9	17.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	20.5	1.8	4.6	14.8	2.2	4.5	4.5	0.0	6.5	7.3	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	60.5	32.7	15.0	70.4	21.7	13.2	52.9	51.9	0.0	61.2	65.4	42.6
LnGrp LOS	E	C	B	E	C	B	D	D		E	E	D
Approach Vol, veh/h		1953			1899			320	A		453	
Approach Delay, s/veh		32.4			24.5			52.4			62.4	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.3	63.0		19.6	9.1	67.3		16.2
Change Period (Y+Rc), s	3.0	6.0		4.4	3.0	6.0		4.4
Max Green Setting (Gmax), s	12.0	72.6		18.6	9.0	75.6		29.0
Max Q Clear Time (g_c+I1), s	10.5	52.7		15.0	6.7	41.4		11.7
Green Ext Time (p_c), s	0.0	4.3		0.1	0.0	4.3		0.1

Intersection Summary	
HCM 6th Ctrl Delay	33.5
HCM 6th LOS	C

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	313	1235	60	290	120	1189	750	80	120	520	205
Future Volume (veh/h)	215	313	1235	60	290	120	1189	750	80	120	520	205
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	224	326	0	62	302	0	1239	781	0	125	542	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	242	704		80	380		1534	806		303	605	
Arrive On Green	0.13	0.20	0.00	0.04	0.11	0.00	0.43	0.43	0.00	0.17	0.17	0.00
Sat Flow, veh/h	1795	3582	1598	1795	3582	1598	3591	1885	1598	1795	3582	1598
Grp Volume(v), veh/h	224	326	0	62	302	0	1239	781	0	125	542	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1598	1795	1885	1598	1795	1791	1598
Q Serve(g_s), s	14.6	9.5	0.0	4.1	9.8	0.0	35.8	48.0	0.0	7.4	17.6	0.0
Cycle Q Clear(g_c), s	14.6	9.5	0.0	4.1	9.8	0.0	35.8	48.0	0.0	7.4	17.6	0.0
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	242	704		80	380		1534	806		303	605	
V/C Ratio(X)	0.92	0.46		0.78	0.79		0.81	0.97		0.41	0.90	
Avail Cap(c_a), veh/h	242	828		151	671		1554	816		333	665	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.7	42.1	0.0	56.0	51.7	0.0	29.7	33.2	0.0	44.0	48.2	0.0
Incr Delay (d2), s/veh	37.3	0.2	0.0	5.9	1.4	0.0	3.0	23.9	0.0	0.3	13.2	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	8.8	4.1	0.0	1.9	4.4	0.0	15.3	26.0	0.0	3.2	8.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.9	42.3	0.0	62.0	53.2	0.0	32.7	57.1	0.0	44.3	61.5	0.0
LnGrp LOS	F	D		E	D		C	E		D	E	
Approach Vol, veh/h		550	A		364	A		2020	A		667	A
Approach Delay, s/veh		60.9			54.7			42.1			58.3	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.3	29.0		25.3	19.0	18.3		55.9
Change Period (Y+Rc), s	3.0	5.7		5.3	3.0	* 5.7		5.3
Max Green Setting (Gmax), s	10.0	27.4		22.0	16.0	* 22		51.3
Max Q Clear Time (g_c+I1), s	6.1	11.5		19.6	16.6	11.8		50.0
Green Ext Time (p_c), s	0.0	0.6		0.4	0.0	0.5		0.6

Intersection Summary	
HCM 6th Ctrl Delay	49.2
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	345	175	75	320	55	70	394	55	99	374	38
Future Volume (veh/h)	45	345	175	75	320	55	70	394	55	99	374	38
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	49	379	176	82	352	49	77	433	49	109	411	42
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	86	484	411	117	516	438	113	534	441	141	563	467
Arrive On Green	0.05	0.25	0.25	0.06	0.27	0.27	0.06	0.28	0.28	0.08	0.30	0.30
Sat Flow, veh/h	1810	1900	1610	1810	1900	1610	1810	1900	1569	1810	1900	1573
Grp Volume(v), veh/h	49	379	176	82	352	49	77	433	49	109	411	42
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1810	1900	1610	1810	1900	1569	1810	1900	1573
Q Serve(g_s), s	1.5	10.4	3.6	2.5	9.3	0.9	2.3	11.9	1.3	3.3	10.9	1.1
Cycle Q Clear(g_c), s	1.5	10.4	3.6	2.5	9.3	0.9	2.3	11.9	1.3	3.3	10.9	1.1
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	86	484	411	117	516	438	113	534	441	141	563	467
V/C Ratio(X)	0.57	0.78	0.43	0.70	0.68	0.11	0.68	0.81	0.11	0.77	0.73	0.09
Avail Cap(c_a), veh/h	162	713	604	197	751	636	191	771	637	233	815	675
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	26.1	19.4	8.5	25.6	18.2	6.9	25.7	18.7	14.9	25.3	17.7	14.2
Incr Delay (d2), s/veh	5.8	3.4	0.7	7.5	1.6	0.1	7.1	4.3	0.1	8.6	1.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	4.5	1.7	1.2	3.8	0.4	1.1	5.0	0.4	1.6	4.3	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.8	22.8	9.3	33.2	19.8	7.0	32.7	23.0	15.0	33.9	19.6	14.3
LnGrp LOS	C	C	A	C	B	A	C	C	B	C	B	B
Approach Vol, veh/h		604			483			559			562	
Approach Delay, s/veh		19.6			20.8			23.7			21.9	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	20.2	8.1	18.8	8.0	21.1	7.2	19.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.3	22.7	6.1	21.0	5.9	24.0	5.0	22.1
Max Q Clear Time (g_c+I1), s	5.3	13.9	4.5	12.4	4.3	12.9	3.5	11.3
Green Ext Time (p_c), s	0.0	1.8	0.0	1.9	0.0	1.9	0.0	1.6

Intersection Summary	
HCM 6th Ctrl Delay	21.5
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	15	0	0	0	15	90	0	0	55	0
Future Vol, veh/h	5	0	15	0	0	0	15	90	0	0	55	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	16	0	0	0	16	98	0	0	60	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	190	190	60	198	190	98	60	0	0	98	0	0
Stage 1	60	60	-	130	130	-	-	-	-	-	-	-
Stage 2	130	130	-	68	60	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	770	705	1005	761	705	958	1544	-	-	1495	-	-
Stage 1	951	845	-	874	789	-	-	-	-	-	-	-
Stage 2	874	789	-	942	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	764	697	1005	743	697	958	1544	-	-	1495	-	-
Mov Cap-2 Maneuver	764	697	-	743	697	-	-	-	-	-	-	-
Stage 1	941	845	-	864	780	-	-	-	-	-	-	-
Stage 2	864	780	-	927	845	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	0	1.1	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1544	-	-	932	-	1495	-	-
HCM Lane V/C Ratio	0.011	-	-	0.023	-	-	-	-
HCM Control Delay (s)	7.4	0	-	9	0	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	-	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	310	1290	220	333	1870	115	520	1030	160	176	820	295
Future Volume (veh/h)	310	1290	220	333	1870	115	520	1030	160	176	820	295
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		0.99
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	337	1402	112	362	2033	0	565	1120	0	191	891	212
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	327	1628	498	478	1931		517	1486		272	1043	322
Arrive On Green	0.09	0.32	0.32	0.14	0.38	0.00	0.15	0.29	0.00	0.08	0.20	0.20
Sat Flow, veh/h	3456	5106	1563	3456	5106	1585	3456	5106	1585	3456	5106	1576
Grp Volume(v), veh/h	337	1402	112	362	2033	0	565	1120	0	191	891	212
Grp Sat Flow(s),veh/h/ln	1728	1702	1563	1728	1702	1585	1728	1702	1585	1728	1702	1576
Q Serve(g_s), s	12.0	32.7	6.7	12.8	48.0	0.0	19.0	25.3	0.0	6.8	21.3	12.3
Cycle Q Clear(g_c), s	12.0	32.7	6.7	12.8	48.0	0.0	19.0	25.3	0.0	6.8	21.3	12.3
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	327	1628	498	478	1931		517	1486		272	1043	322
V/C Ratio(X)	1.03	0.86	0.22	0.76	1.05		1.09	0.75		0.70	0.85	0.66
Avail Cap(c_a), veh/h	327	1690	517	478	1931		517	1486		299	1086	335
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.5	40.6	31.7	52.6	39.5	0.0	54.0	40.9	0.0	57.0	48.7	28.4
Incr Delay (d2), s/veh	58.1	4.9	0.3	6.2	36.0	0.0	67.0	2.4	0.0	5.0	6.9	5.2
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	7.8	13.9	2.5	5.8	25.4	0.0	12.8	10.6	0.0	3.1	9.5	5.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	115.6	45.5	32.1	58.8	75.5	0.0	121.0	43.2	0.0	62.0	55.6	33.6
LnGrp LOS	F	D	C	E	F		F	D		E	E	C
Approach Vol, veh/h		1851			2395	A		1685	A		1294	
Approach Delay, s/veh		57.4			73.0			69.3			52.9	
Approach LOS		E			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.5	46.5	25.0	31.9	16.0	54.0	14.0	42.9
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	16.0	42.0	19.0	* 27	12.0	48.0	11.0	35.0
Max Q Clear Time (g_c+I1), s	14.8	34.7	21.0	23.3	14.0	50.0	8.8	27.3
Green Ext Time (p_c), s	0.1	5.7	0.0	2.5	0.0	0.0	0.1	4.8

Intersection Summary	
HCM 6th Ctrl Delay	64.5
HCM 6th LOS	E

Notes

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

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

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

Intersection	
Int Delay, s/veh	44.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	1480	55	85	1860	7	20	0	70	0	1	100
Future Vol, veh/h	40	1480	55	85	1860	7	20	0	70	0	1	100
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	175	-	-	-	-	125	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	1609	60	92	2022	8	22	0	76	0	1	109

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	2030	0	0	1669	0	0	2891	3909	805	3101	3965	1015
Stage 1	-	-	-	-	-	-	1695	1695	-	2210	2210	-
Stage 2	-	-	-	-	-	-	1196	2214	-	891	1755	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	275	-	-	381	-	-	~ 7	3	325	5	3	236
Stage 1	-	-	-	-	-	-	96	147	-	45	81	-
Stage 2	-	-	-	-	-	-	198	80	-	304	137	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	275	-	-	381	-	-	~ 2	2	325	3	2	236
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 2	2	-	3	2	-
Stage 1	-	-	-	-	-	-	81	124	-	38	61	-
Stage 2	-	-	-	-	-	-	80	61	-	196	116	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.8	$ 1733.3	55.8
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	2	325	275	-	-	381	-	-	2	236
HCM Lane V/C Ratio	10.87	0.234	0.158	-	-	0.242	-	-	0.543	0.461
HCM Control Delay (s)	$ 7731.8	19.4	20.5	-	-	17.4	-		$ 2373.7	32.6
HCM Lane LOS	F	C	C	-	-	C	-	-	F	D
HCM 95th %tile Q(veh)	4.3	0.9	0.6	-	-	0.9	-	-	0.6	2.2

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	1490	8	5	1920	85	25	2	9	55	1	50
Future Volume (veh/h)	75	1490	8	5	1920	85	25	2	9	55	1	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		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	82	1620	9	5	2087	90	27	2	10	60	1	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	103	2718	15	7	2415	103	39	3	14	86	1	78
Arrive On Green	0.06	0.75	0.75	0.00	0.70	0.70	0.03	0.03	0.03	0.05	0.05	0.05
Sat Flow, veh/h	1781	3623	20	1781	3468	148	1198	89	444	1753	29	1585
Grp Volume(v), veh/h	82	794	835	5	1061	1116	39	0	0	61	0	18
Grp Sat Flow(s),veh/h/ln	1781	1777	1867	1781	1777	1840	1731	0	0	1783	0	1585
Q Serve(g_s), s	4.7	20.9	20.9	0.3	46.6	48.6	2.3	0.0	0.0	3.5	0.0	1.1
Cycle Q Clear(g_c), s	4.7	20.9	20.9	0.3	46.6	48.6	2.3	0.0	0.0	3.5	0.0	1.1
Prop In Lane	1.00		0.01	1.00		0.08	0.69		0.26	0.98		1.00
Lane Grp Cap(c), veh/h	103	1333	1400	7	1237	1281	56	0	0	88	0	78
V/C Ratio(X)	0.79	0.60	0.60	0.72	0.86	0.87	0.69	0.00	0.00	0.70	0.00	0.23
Avail Cap(c_a), veh/h	103	1475	1550	52	1424	1475	301	0	0	448	0	398
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	48.2	5.8	5.8	51.5	11.9	12.2	49.6	0.0	0.0	48.5	0.0	47.3
Incr Delay (d2), s/veh	31.3	0.5	0.5	41.0	4.9	5.4	14.1	0.0	0.0	3.7	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.9	4.7	5.0	0.2	14.1	15.4	1.2	0.0	0.0	1.6	0.0	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	79.5	6.4	6.4	92.5	16.7	17.6	63.7	0.0	0.0	52.1	0.0	47.9
LnGrp LOS	E	A	A	F	B	B	E	A	A	D	A	D
Approach Vol, veh/h		1711			2182			39			79	
Approach Delay, s/veh		9.9			17.3			63.7			51.2	
Approach LOS		A			B			E			D	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.0	78.1		8.6	3.4	83.7		7.9
Change Period (Y+Rc), s	3.0	6.0		3.5	3.0	6.0		4.5
Max Green Setting (Gmax), s	6.0	83.0		26.0	3.0	86.0		18.0
Max Q Clear Time (g_c+I1), s	6.7	50.6		5.5	2.3	22.9		4.3
Green Ext Time (p_c), s	0.0	21.5		0.2	0.0	15.4		0.1

Intersection Summary	
HCM 6th Ctrl Delay	15.3
HCM 6th LOS	B

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1490	55	75	1925	0	85
Future Vol, veh/h	1490	55	75	1925	0	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1620	60	82	2092	0	92

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1680	0	-	840
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	377	-	0	309
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	377	-	-	309
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	21.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	309	-	-	377	-
HCM Lane V/C Ratio	0.299	-	-	0.216	-
HCM Control Delay (s)	21.5	-	-	17.2	-
HCM Lane LOS	C	-	-	C	-
HCM 95th %tile Q(veh)	1.2	-	-	0.8	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	130	1425	15	75	1850	20	0	0	2	0	0	95
Future Vol, veh/h	130	1425	15	75	1850	20	0	0	2	0	0	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	325	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	135	1484	16	78	1927	21	0	0	2	0	0	99

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1948	0	0	1500	0	0	-	-	750	-	-	974
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.92	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	-	-	3.31	-	-	3.31
Pot Cap-1 Maneuver	300	-	-	448	-	-	0	0	356	0	0	253
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	300	-	-	448	-	-	-	-	356	-	-	253
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.2	0.6	15.2	28.1
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	356	300	-	-	448	-	-	253
HCM Lane V/C Ratio	0.006	0.451	-	-	0.174	-	-	0.391
HCM Control Delay (s)	15.2	26.5	-	-	14.7	-	-	28.1
HCM Lane LOS	C	D	-	-	B	-	-	D
HCM 95th %tile Q(veh)	0	2.2	-	-	0.6	-	-	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	1240	135	150	1650	175	215	195	115	225	165	40
Future Volume (veh/h)	65	1240	135	150	1650	175	215	195	115	225	165	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	69	1319	91	160	1755	80	218	222	0	208	220	14
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	89	1669	744	188	1867	814	249	261		240	252	211
Arrive On Green	0.05	0.47	0.47	0.10	0.52	0.52	0.14	0.14	0.00	0.13	0.13	0.13
Sat Flow, veh/h	1795	3582	1598	1795	3582	1562	1795	1885	1598	1795	1885	1576
Grp Volume(v), veh/h	69	1319	91	160	1755	80	218	222	0	208	220	14
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1562	1795	1885	1598	1795	1885	1576
Q Serve(g_s), s	4.3	35.3	3.7	9.9	52.1	2.9	13.5	13.0	0.0	12.9	13.0	0.9
Cycle Q Clear(g_c), s	4.3	35.3	3.7	9.9	52.1	2.9	13.5	13.0	0.0	12.9	13.0	0.9
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	89	1669	744	188	1867	814	249	261		240	252	211
V/C Ratio(X)	0.78	0.79	0.12	0.85	0.94	0.10	0.88	0.85		0.87	0.87	0.07
Avail Cap(c_a), veh/h	111	2294	1023	285	2642	1152	459	482		358	376	314
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.3	25.6	17.1	49.9	25.5	13.7	47.9	47.7	0.0	48.1	48.1	42.9
Incr Delay (d2), s/veh	18.4	0.9	0.0	9.2	4.9	0.0	3.9	3.0	0.0	9.6	9.8	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	2.3	13.6	1.2	4.8	20.7	1.0	6.2	6.2	0.0	6.3	6.7	0.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.7	26.5	17.2	59.0	30.3	13.7	51.7	50.7	0.0	57.7	58.0	42.9
LnGrp LOS	E	C	B	E	C	B	D	D		E	E	D
Approach Vol, veh/h		1479			1995			440	A		442	
Approach Delay, s/veh		28.0			32.0			51.2			57.4	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	14.9	58.8		19.6	8.6	65.1		20.1				
Change Period (Y+Rc), s	3.0	6.0		4.4	3.0	6.0		4.4				
Max Green Setting (Gmax), s	18.0	72.6		22.6	7.0	83.6		29.0				
Max Q Clear Time (g_c+I1), s	11.9	37.3		15.0	6.3	54.1		15.5				
Green Ext Time (p_c), s	0.0	3.0		0.2	0.0	5.0		0.2				

Intersection Summary	
HCM 6th Ctrl Delay	35.1
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	135	160	1120	75	245	100	1315	455	45	95	715	260
Future Volume (veh/h)	135	160	1120	75	245	100	1315	455	45	95	715	260
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	150	178	0	83	272	0	1461	506	0	106	794	0
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	168	463		104	336		1527	802		425	848	
Arrive On Green	0.09	0.13	0.00	0.06	0.09	0.00	0.43	0.43	0.00	0.24	0.24	0.00
Sat Flow, veh/h	1795	3582	1598	1795	3582	1598	3591	1885	1598	1795	3582	1598
Grp Volume(v), veh/h	150	178	0	83	272	0	1461	506	0	106	794	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1598	1795	1885	1598	1795	1791	1598
Q Serve(g_s), s	10.6	5.8	0.0	5.9	9.5	0.0	50.5	27.0	0.0	6.1	27.9	0.0
Cycle Q Clear(g_c), s	10.6	5.8	0.0	5.9	9.5	0.0	50.5	27.0	0.0	6.1	27.9	0.0
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	168	463		104	336		1527	802		425	848	
V/C Ratio(X)	0.89	0.38		0.80	0.81		0.96	0.63		0.25	0.94	
Avail Cap(c_a), veh/h	168	707		140	673		1784	937		444	886	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	57.5	51.1	0.0	59.6	57.0	0.0	35.7	28.9	0.0	39.7	48.0	0.0
Incr Delay (d2), s/veh	39.4	0.2	0.0	14.5	1.8	0.0	11.1	0.6	0.0	0.1	16.1	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	6.5	2.6	0.0	3.0	4.3	0.0	23.4	12.0	0.0	2.7	13.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	96.8	51.3	0.0	74.2	58.8	0.0	46.8	29.5	0.0	39.8	64.1	0.0
LnGrp LOS	F	D		E	E		D	C		D	E	
Approach Vol, veh/h		328	A		355	A		1967	A		900	A
Approach Delay, s/veh		72.1			62.4			42.3			61.2	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.4	22.3		35.7	15.0	17.7		59.8
Change Period (Y+Rc), s	3.0	5.7		5.3	3.0	* 5.7		5.3
Max Green Setting (Gmax), s	10.0	25.3		31.7	12.0	* 24		63.7
Max Q Clear Time (g_c+I1), s	7.9	7.8		29.9	12.6	11.5		52.5
Green Ext Time (p_c), s	0.0	0.3		0.5	0.0	0.5		2.0

Intersection Summary	
HCM 6th Ctrl Delay	51.9
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	65	255	75	135	435	80	85	400	90	40	390	145
Future Volume (veh/h)	65	255	75	135	435	80	85	400	90	40	390	145
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		0.98	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	81	319	75	169	544	81	106	500	93	50	488	181
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	105	528	447	211	639	541	137	649	538	73	582	493
Arrive On Green	0.06	0.28	0.28	0.12	0.34	0.34	0.08	0.35	0.35	0.04	0.31	0.31
Sat Flow, veh/h	1781	1870	1585	1781	1870	1585	1781	1870	1552	1781	1870	1585
Grp Volume(v), veh/h	81	319	75	169	544	81	106	500	93	50	488	181
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	1870	1585	1781	1870	1552	1781	1870	1585
Q Serve(g_s), s	3.8	12.5	3.0	7.9	22.9	3.0	5.0	20.2	3.5	2.4	20.7	7.5
Cycle Q Clear(g_c), s	3.8	12.5	3.0	7.9	22.9	3.0	5.0	20.2	3.5	2.4	20.7	7.5
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	105	528	447	211	639	541	137	649	538	73	582	493
V/C Ratio(X)	0.77	0.60	0.17	0.80	0.85	0.15	0.78	0.77	0.17	0.69	0.84	0.37
Avail Cap(c_a), veh/h	262	1004	851	533	1288	1091	325	1343	1114	210	1222	1035
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.4	26.4	23.0	36.5	26.0	19.4	38.5	24.7	19.3	40.2	27.3	22.8
Incr Delay (d2), s/veh	11.2	1.1	0.2	7.0	3.3	0.1	9.0	2.0	0.2	11.0	3.3	0.5
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	1.9	5.5	1.1	3.7	10.1	1.1	2.4	8.6	1.2	1.2	9.1	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.6	27.5	23.1	43.5	29.3	19.5	47.5	26.7	19.4	51.2	30.6	23.2
LnGrp LOS	D	C	C	D	C	B	D	C	B	D	C	C
Approach Vol, veh/h		475			794			699			719	
Approach Delay, s/veh		30.7			31.3			28.9			30.2	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.0	34.0	14.5	28.5	11.0	30.9	9.5	33.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	10.0	61.0	25.4	45.6	15.5	55.5	12.5	58.5
Max Q Clear Time (g_c+I1), s	4.4	22.2	9.9	14.5	7.0	22.7	5.8	24.9
Green Ext Time (p_c), s	0.0	3.6	0.4	2.2	0.1	3.7	0.1	4.1

Intersection Summary	
HCM 6th Ctrl Delay	30.3
HCM 6th LOS	C

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	3	5	0	0	25	45	35	3	85	2
Future Vol, veh/h	0	0	3	5	0	0	25	45	35	3	85	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	3	5	0	0	27	49	38	3	92	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	221	240	93	223	222	68	94	0	0	87	0	0
Stage 1	99	99	-	122	122	-	-	-	-	-	-	-
Stage 2	122	141	-	101	100	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	735	661	964	733	677	995	1500	-	-	1509	-	-
Stage 1	907	813	-	882	795	-	-	-	-	-	-	-
Stage 2	882	780	-	905	812	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	723	647	964	719	663	995	1500	-	-	1509	-	-
Mov Cap-2 Maneuver	723	647	-	719	663	-	-	-	-	-	-	-
Stage 1	890	811	-	865	780	-	-	-	-	-	-	-
Stage 2	865	765	-	900	810	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.7	10	1.8	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1500	-	-	964	719	1509	-	-
HCM Lane V/C Ratio	0.018	-	-	0.003	0.008	0.002	-	-
HCM Control Delay (s)	7.4	0	-	8.7	10	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0	0	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	545	1670	325	436	1550	240	470	1140	270	251	1060	220
Future Volume (veh/h)	545	1670	325	436	1550	240	470	1140	270	251	1060	220
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	580	1777	133	464	1649	0	500	1213	0	267	1128	207
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, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	604	1784	553	488	1681		511	1426		312	1132	351
Arrive On Green	0.17	0.35	0.35	0.14	0.33	0.00	0.20	0.37	0.00	0.06	0.15	0.15
Sat Flow, veh/h	3483	5147	1596	3483	5147	1598	3483	5147	1598	3483	5147	1595
Grp Volume(v), veh/h	580	1777	133	464	1649	0	500	1213	0	267	1128	207
Grp Sat Flow(s),veh/h/ln	1742	1716	1596	1742	1716	1598	1742	1716	1598	1742	1716	1595
Q Serve(g_s), s	24.8	51.7	6.0	19.8	47.6	0.0	21.4	32.5	0.0	11.4	32.9	18.2
Cycle Q Clear(g_c), s	24.8	51.7	6.0	19.8	47.6	0.0	21.4	32.5	0.0	11.4	32.9	18.2
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	604	1784	553	488	1681		511	1426		312	1132	351
V/C Ratio(X)	0.96	1.00	0.24	0.95	0.98		0.98	0.85		0.86	1.00	0.59
Avail Cap(c_a), veh/h	604	1784	553	488	1681		511	1426		325	1132	351
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	0.67	0.67	0.67
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	61.5	48.9	15.8	64.0	50.0	0.0	60.1	44.5	0.0	69.5	63.9	57.6
Incr Delay (d2), s/veh	26.8	20.4	1.0	28.6	17.9	0.0	34.1	5.2	0.0	18.0	25.8	3.2
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	13.0	24.8	3.5	10.6	22.6	0.0	11.3	13.4	0.0	5.9	17.3	7.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	88.3	69.3	16.9	92.6	67.9	0.0	94.3	49.7	0.0	87.6	89.7	60.8
LnGrp LOS	F	E	B	F	E		F	D		F	F	E
Approach Vol, veh/h		2490			2113	A		1713	A		1602	
Approach Delay, s/veh		70.9			73.3			62.7			85.6	
Approach LOS		E			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	27.0	58.0	26.0	39.0	30.0	55.0	17.4	47.6
Change Period (Y+Rc), s	6.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0
Max Green Setting (Gmax), s	21.0	52.0	22.0	33.0	26.0	49.0	14.0	41.0
Max Q Clear Time (g_c+I1), s	21.8	53.7	23.4	34.9	26.8	49.6	13.4	34.5
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4

Intersection Summary	
HCM 6th Ctrl Delay	72.8
HCM 6th LOS	E

Notes

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

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

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	2010	70	55	1820	4	15	0	50	0	1	40
Future Vol, veh/h	45	2010	70	55	1820	4	15	0	50	0	1	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	100	175	-	-	-	-	125	-	-	25
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	48	2138	74	59	1936	4	16	0	53	0	1	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1940	0	0	2212	0	0	3321	4292	1069	3221	4364	970
Stage 1	-	-	-	-	-	-	2234	2234	-	2056	2056	-
Stage 2	-	-	-	-	-	-	1087	2058	-	1165	2308	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.52	6.52	6.92	7.52	6.52	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.52	5.52	-	6.52	5.52	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	3.51	4.01	3.31	3.51	4.01	3.31
Pot Cap-1 Maneuver	303	-	-	237	-	-	~ 3	2	219	4	2	255
Stage 1	-	-	-	-	-	-	44	79	-	57	98	-
Stage 2	-	-	-	-	-	-	232	98	-	208	73	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	303	-	-	237	-	-	-	1	219	2	~ 1	255
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	1	-	2	~ 1	-
Stage 1	-	-	-	-	-	-	37	67	-	48	74	-
Stage 2	-	-	-	-	-	-	143	74	-	133	61	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.7		141.7
HCM LOS			-	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	219	303	-	-	237	-	-	1	255
HCM Lane V/C Ratio	-	0.243	0.158	-	-	0.247	-	-	1.064	0.167
HCM Control Delay (s)	-	26.6	19.1	-	-	25.1	-	$	4932.2	21.9
HCM Lane LOS	-	D	C	-	-	D	-	-	F	C
HCM 95th %tile Q(veh)	-	0.9	0.6	-	-	0.9	-	-	0.6	0.6

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	2040	30	9	1840	20	20	0	6	30	1	25
Future Volume (veh/h)	55	2040	30	9	1840	20	20	0	6	30	1	25
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1870	1885	1885	1870	1870	1870	1870	1870	1885
Adj Flow Rate, veh/h	59	2170	33	10	1957	21	22	0	7	32	1	6
Peak Hour Factor	0.94	0.94	0.92	0.92	0.94	0.94	0.92	0.92	0.92	0.94	0.92	0.94
Percent Heavy Veh, %	1	1	1	2	1	1	2	2	2	2	2	1
Cap, veh/h	60	2898	44	12	2816	30	31	0	10	65	2	60
Arrive On Green	0.03	0.80	0.80	0.01	0.78	0.78	0.02	0.00	0.02	0.04	0.04	0.04
Sat Flow, veh/h	1795	3611	55	1781	3629	39	1312	0	417	1730	54	1598
Grp Volume(v), veh/h	59	1073	1130	10	964	1014	29	0	0	33	0	6
Grp Sat Flow(s),veh/h/ln	1795	1791	1875	1781	1791	1877	1730	0	0	1784	0	1598
Q Serve(g_s), s	4.9	44.3	44.9	0.8	39.2	39.5	2.5	0.0	0.0	2.7	0.0	0.5
Cycle Q Clear(g_c), s	4.9	44.3	44.9	0.8	39.2	39.5	2.5	0.0	0.0	2.7	0.0	0.5
Prop In Lane	1.00		0.03	1.00		0.02	0.76		0.24	0.97		1.00
Lane Grp Cap(c), veh/h	60	1437	1505	12	1389	1456	40	0	0	67	0	60
V/C Ratio(X)	0.99	0.75	0.75	0.82	0.69	0.70	0.72	0.00	0.00	0.49	0.00	0.10
Avail Cap(c_a), veh/h	60	1437	1505	36	1389	1456	209	0	0	309	0	277
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	72.5	7.3	7.4	74.4	8.2	8.2	72.8	0.0	0.0	70.8	0.0	69.7
Incr Delay (d2), s/veh	110.9	3.6	3.5	37.6	2.9	2.8	20.9	0.0	0.0	5.5	0.0	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	4.1	12.8	13.5	0.5	12.2	12.9	1.4	0.0	0.0	1.4	0.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	183.3	10.9	10.9	112.0	11.0	11.0	93.7	0.0	0.0	76.3	0.0	70.5
LnGrp LOS	F	B	B	F	B	B	F	A	A	E	A	E
Approach Vol, veh/h		2262			1988			29			39	
Approach Delay, s/veh		15.4			11.5			93.7			75.4	
Approach LOS		B			B			F			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.0	122.4		11.6	4.0	126.3		8.0
Change Period (Y+Rc), s	3.0	6.0		6.0	3.0	6.0		4.5
Max Green Setting (Gmax), s	5.0	81.4		26.0	3.0	83.4		18.1
Max Q Clear Time (g_c+I1), s	6.9	41.5		4.7	2.8	46.9		4.5
Green Ext Time (p_c), s	0.0	20.4		0.1	0.0	23.6		0.1

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

Notes

User approved ignoring U-Turning movement.

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1945	60	75	1860	0	140
Future Vol, veh/h	1945	60	75	1860	0	140
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	200	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2114	65	82	2022	0	152

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	2179	0	-	1090
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	4.14	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	2.22	-	-	3.32
Pot Cap-1 Maneuver	-	-	241	-	0	210
Stage 1	-	-	-	-	0	-
Stage 2	-	-	-	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	241	-	-	210
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	57.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	210	-	-	241	-
HCM Lane V/C Ratio	0.725	-	-	0.338	-
HCM Control Delay (s)	57.3	-	-	27.4	-
HCM Lane LOS	F	-	-	D	-
HCM 95th %tile Q(veh)	4.8	-	-	1.4	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	145	1950	30	55	1750	25	0	0	15	0	0	130
Future Vol, veh/h	145	1950	30	55	1750	25	0	0	15	0	0	130
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	250	-	-	325	-	-	-	-	0	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	153	2053	32	58	1842	26	0	0	16	0	0	137

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1868	0	0	2085	0	0	-	-	1043	-	-	934
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.12	-	-	4.12	-	-	-	-	6.92	-	-	6.92
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.21	-	-	2.21	-	-	-	-	3.31	-	-	3.31
Pot Cap-1 Maneuver	323	-	-	266	-	-	0	0	228	0	0	269
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	323	-	-	266	-	-	-	-	228	-	-	269
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0.7	22	31.5
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	228	323	-	-	266	-	-	269
HCM Lane V/C Ratio	0.069	0.473	-	-	0.218	-	-	0.509
HCM Control Delay (s)	22	25.7	-	-	22.3	-	-	31.5
HCM Lane LOS	C	D	-	-	C	-	-	D
HCM 95th %tile Q(veh)	0.2	2.4	-	-	0.8	-	-	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	1690	200	135	1530	220	160	150	145	245	155	65
Future Volume (veh/h)	75	1690	200	135	1530	220	160	150	145	245	155	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.93	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	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	77	1742	154	139	1577	185	160	162	0	206	225	22
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, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	98	1846	806	167	1981	818	191	201		244	256	217
Arrive On Green	0.05	0.51	0.51	0.09	0.55	0.55	0.11	0.11	0.00	0.13	0.13	0.13
Sat Flow, veh/h	1810	3610	1577	1810	3610	1490	1810	1900	1610	1810	1900	1610
Grp Volume(v), veh/h	77	1742	154	139	1577	185	160	162	0	206	225	22
Grp Sat Flow(s),veh/h/ln	1810	1805	1577	1810	1805	1490	1810	1900	1610	1810	1900	1610
Q Serve(g_s), s	4.8	51.9	6.0	8.6	39.9	7.3	9.9	9.5	0.0	12.7	13.2	1.4
Cycle Q Clear(g_c), s	4.8	51.9	6.0	8.6	39.9	7.3	9.9	9.5	0.0	12.7	13.2	1.4
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	98	1846	806	167	1981	818	191	201		244	256	217
V/C Ratio(X)	0.78	0.94	0.19	0.83	0.80	0.23	0.84	0.81		0.84	0.88	0.10
Avail Cap(c_a), veh/h	143	2300	1005	191	2395	989	461	484		295	310	263
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	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.2	26.3	15.1	50.9	20.6	13.2	50.0	49.8	0.0	48.1	48.4	43.2
Incr Delay (d2), s/veh	9.1	7.1	0.0	21.3	1.3	0.1	3.7	2.9	0.0	14.6	18.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	21.1	2.0	4.7	15.0	2.2	4.6	4.6	0.0	6.6	7.5	0.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	62.3	33.4	15.1	72.2	21.9	13.3	53.7	52.7	0.0	62.7	67.0	43.3
LnGrp LOS	E	C	B	E	C	B	D	D		E	E	D
Approach Vol, veh/h		1973			1901			322	A		453	
Approach Delay, s/veh		33.1			24.7			53.2			63.9	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.5	64.2		19.8	9.2	68.5		16.4
Change Period (Y+Rc), s	3.0	6.0		4.4	3.0	6.0		4.4
Max Green Setting (Gmax), s	12.0	72.6		18.6	9.0	75.6		29.0
Max Q Clear Time (g_c+I1), s	10.6	53.9		15.2	6.8	41.9		11.9
Green Ext Time (p_c), s	0.0	4.3		0.1	0.0	4.3		0.1

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

Notes

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

User approved volume balancing among the lanes for turning movement.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	215	315	1240	60	290	120	1190	750	80	120	520	205
Future Volume (veh/h)	215	315	1240	60	290	120	1190	750	80	120	520	205
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	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h	224	328	0	62	302	0	1240	781	0	125	542	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	242	704		80	380		1534	806		303	605	
Arrive On Green	0.13	0.20	0.00	0.04	0.11	0.00	0.43	0.43	0.00	0.17	0.17	0.00
Sat Flow, veh/h	1795	3582	1598	1795	3582	1598	3591	1885	1598	1795	3582	1598
Grp Volume(v), veh/h	224	328	0	62	302	0	1240	781	0	125	542	0
Grp Sat Flow(s),veh/h/ln	1795	1791	1598	1795	1791	1598	1795	1885	1598	1795	1791	1598
Q Serve(g_s), s	14.6	9.6	0.0	4.1	9.8	0.0	35.8	48.0	0.0	7.4	17.6	0.0
Cycle Q Clear(g_c), s	14.6	9.6	0.0	4.1	9.8	0.0	35.8	48.0	0.0	7.4	17.6	0.0
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	242	704		80	380		1534	806		303	605	
V/C Ratio(X)	0.92	0.47		0.78	0.79		0.81	0.97		0.41	0.90	
Avail Cap(c_a), veh/h	242	828		151	671		1554	816		333	665	
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	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	50.7	42.1	0.0	56.0	51.7	0.0	29.7	33.2	0.0	44.0	48.2	0.0
Incr Delay (d2), s/veh	37.3	0.2	0.0	5.9	1.4	0.0	3.0	23.9	0.0	0.3	13.2	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	8.8	4.1	0.0	1.9	4.4	0.0	15.3	26.0	0.0	3.2	8.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	87.9	42.3	0.0	62.0	53.2	0.0	32.7	57.1	0.0	44.3	61.5	0.0
LnGrp LOS	F	D		E	D		C	E		D	E	
Approach Vol, veh/h		552	A		364	A		2021	A		667	A
Approach Delay, s/veh		60.8			54.7			42.1			58.3	
Approach LOS		E			D			D			E	

Timer - Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.3	29.0		25.3	19.0	18.3		55.9
Change Period (Y+Rc), s	3.0	5.7		5.3	3.0	* 5.7		5.3
Max Green Setting (Gmax), s	10.0	27.4		22.0	16.0	* 22		51.3
Max Q Clear Time (g_c+I1), s	6.1	11.6		19.6	16.6	11.8		50.0
Green Ext Time (p_c), s	0.0	0.6		0.4	0.0	0.5		0.6

Intersection Summary	
HCM 6th Ctrl Delay	49.2
HCM 6th LOS	D

Notes

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

User approved volume balancing among the lanes for turning movement.

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

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	345	175	75	320	55	70	395	65	100	380	40
Future Volume (veh/h)	45	345	175	75	320	55	70	395	65	100	380	40
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.97	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adj Flow Rate, veh/h	49	379	176	82	352	49	77	434	60	110	418	44
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0	0	0	0	0	0	0
Cap, veh/h	86	484	410	116	516	437	113	535	442	142	566	469
Arrive On Green	0.05	0.25	0.25	0.06	0.27	0.27	0.06	0.28	0.28	0.08	0.30	0.30
Sat Flow, veh/h	1810	1900	1610	1810	1900	1610	1810	1900	1569	1810	1900	1573
Grp Volume(v), veh/h	49	379	176	82	352	49	77	434	60	110	418	44
Grp Sat Flow(s),veh/h/ln	1810	1900	1610	1810	1900	1610	1810	1900	1569	1810	1900	1573
Q Serve(g_s), s	1.5	10.4	3.6	2.5	9.3	0.9	2.3	11.9	1.6	3.3	11.1	1.1
Cycle Q Clear(g_c), s	1.5	10.4	3.6	2.5	9.3	0.9	2.3	11.9	1.6	3.3	11.1	1.1
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	86	484	410	116	516	437	113	535	442	142	566	469
V/C Ratio(X)	0.57	0.78	0.43	0.70	0.68	0.11	0.68	0.81	0.14	0.77	0.74	0.09
Avail Cap(c_a), veh/h	161	711	603	197	748	634	190	769	635	232	813	673
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	26.2	19.5	8.6	25.7	18.3	6.9	25.8	18.8	15.1	25.4	17.7	14.2
Incr Delay (d2), s/veh	5.8	3.5	0.7	7.6	1.6	0.1	7.1	4.4	0.1	8.6	2.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	4.5	1.7	1.2	3.8	0.4	1.1	5.1	0.5	1.6	4.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.0	22.9	9.3	33.3	19.9	7.0	32.9	23.1	15.2	33.9	19.8	14.3
LnGrp LOS	C	C	A	C	B	A	C	C	B	C	B	B
Approach Vol, veh/h		604			483			571			572	
Approach Delay, s/veh		19.7			20.9			23.6			22.1	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	20.3	8.1	18.8	8.0	21.2	7.2	19.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	7.3	22.7	6.1	21.0	5.9	24.0	5.0	22.1
Max Q Clear Time (g_c+I1), s	5.3	13.9	4.5	12.4	4.3	13.1	3.5	11.3
Green Ext Time (p_c), s	0.0	1.8	0.0	1.9	0.0	1.9	0.0	1.6

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

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	0	15	60	0	5	15	90	10	0	55	0
Future Vol, veh/h	5	0	15	60	0	5	15	90	10	0	55	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	16	65	0	5	16	98	11	0	60	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	198	201	60	204	196	104	60	0	0	109	0	0
Stage 1	60	60	-	136	136	-	-	-	-	-	-	-
Stage 2	138	141	-	68	60	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	761	695	1005	754	699	951	1544	-	-	1481	-	-
Stage 1	951	845	-	867	784	-	-	-	-	-	-	-
Stage 2	865	780	-	942	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	750	687	1005	736	691	951	1544	-	-	1481	-	-
Mov Cap-2 Maneuver	750	687	-	736	691	-	-	-	-	-	-	-
Stage 1	941	845	-	857	775	-	-	-	-	-	-	-
Stage 2	851	771	-	927	845	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9	10.3	1	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1544	-	-	926	749	1481	-	-
HCM Lane V/C Ratio	0.011	-	-	0.023	0.094	-	-	-
HCM Control Delay (s)	7.4	0	-	9	10.3	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Existing

AM		EB Left	EB Approac	WB Left	WB Approach	NB Left	NB Approach	SB Left	SB Approach	
Woodgrove/Quail Oaks	vol	39		41			62		100	
	delay	20.1		14.2			155.4		42.4	63.0
Granite Estates	vol			18			24			
	delay			14.5			16.8			15.8
Berg	vol	61		34			2		64	
	delay	19.9		13.1			14.5		23.7	19.9
Access	vol									
	delay									#####

Existing Plus Project

AM		EB Left	EB Approach	WB Left	WB Approach	NB Left	NB Approach	SB Left	SB Approach	
Woodgrove/Quail Oaks	vol	39		41			63		100	
	delay	20.1		14.4			153.5		46.5	64.6
Granite Estates	vol			18			24			
	delay			14.5			17.1			16.0
Berg	vol	61		34			2		69	
	delay	19.9		13.1			14.6		24.5	20.4
Access	vol				5				3	
	delay				9.4				7.4	8.7

PM		EB Left	EB Approach	WB Left	WB Approach	NB Left	NB Approach	SB Left	SB Approach	
Woodgrove/Quail Oaks	vol	45		31			34		38	
	delay	17.8		20.5			315.3882		149.6	120.6
Granite Estates	vol			13			39			
	delay			19.5			24.6			23.3
Berg	vol	68		40			11		48	
	delay	17.8		18.8			19.8		20	18.8
Access	vol									
	delay									

PM		EB Left	EB Approach	WB Left	WB Approach	NB Left	NB Approach	SB Left	SB Approach	
Woodgrove/Quail Oaks	vol	45		31			36		38	
	delay	18.3		20.6			315.6706		150.1	123.5
Granite Estates	vol			33			39			
	delay			21.1			24.8			23.1
Berg	vol	75		40			11		105	
	delay	18.2		19.1			20		25	21.5
Access	vol				61				1	
	delay				9.6				7.4	9.6

		EPAP									EPAP PLUS QUARRY RIDGE								
AM		EB		WB		NB		SB			EB		WB		NB		SB		
		Left	Approach	Left	Approach	Left	Approach	Left	Approach		Left	Approach	Left	Approach	Left	Approach	Left	Approach	
Woodgrove/Quail Oaks	vol	39		51			75		100		39		51			76		100	
	delay	22.8		16			419.1		61.4	148.2	22.9		16.3			414.2		61.4	147.9
Granite Estates	vol			73			85						75			85			
	delay			17.9			22.8			20.5			18.4			23.2			21.0
Berg	vol	105		70			2		76		118		70			2		81	
	delay	26.6		14.8			15.3		28.1	23.7	28.9		14.9			15.4		29.1	25.2
Access	vol		3				24					3		5		24		3	
	delay		8.7				7.4			7.5		8.7		10		7.4		7.4	7.9
PM		EB		WB		NB		SB			EB		WB		NB		SB		
		Left	Approach	Left	Approach	Left	Approach	Left	Approach		Left	Approach	Left	Approach	Left	Approach	Left	Approach	
Woodgrove/Quail Oaks	vol	45		48			51		38		45		50			51		38	
	delay	21.3		27.2			710.94902		153	243.6	21.9		27.6			711.03529		153.7	241.7
Granite Estates	vol			53			137						73			137			
	delay			27.6			68.6			57.2			31.2			69.5			56.2
Berg	vol	136		52			11		72		143		52			11		129	
	delay	27.2		23.2			22.4		25.1	25.7	28.3		23.7			22.7		34.6	29.8
Access	vol		17				13					17		61		13		1	
	delay		8.8				7.4			8.2		8.8		10.2		7.4		7.4	9.5

		2035									2036 PLUS QUARRY RIDGE								
AM		EB		WB		NB		SB			EB		WB		NB		SB		
		Left	Approac	Left	Approach	Left	Approach	Left	Approach		Left	Approach	Left	Approach	Left	Approach	Left	Approach	
Woodgrove/Quail Oaks	vol	40		87			89		101		40		85			90		101	
	delay	20.5		16.8			1751.9		55.58	516.8	20.5		17.4			1733.3		55.78	518.8
Granite Estates	vol			73			85						75			85			
	delay			16.7			21.2			19.1			17.2			21.5			19.5
Berg	vol	107		75			2		90		130		75			2		95	
	delay	23.5		14.8			15.2		27	22.2	26.5		14.7			15.2		28.1	24.0
Access	vol		3				25					3		5		25		3	
	delay		8.7				7.4			7.5		8.7		10		7.4		7.4	7.9
PM		EB		WB		NB		SB			EB		WB		NB		SB		
		Left	Approac	Left	Approach	Left	Approach	Left	Approach		Left	Approach	Left	Approach	Left	Approach	Left	Approach	
Woodgrove/Quail Oaks	vol	45		52			65		41		45		55			65		41	
	delay	18.6		24.6			2328.077		141.2	784.4	19.1		25.1			2328.1538		141.7	773.7
Granite Estates	vol			55			140						75			140			
	delay			24.7			56			47.2			27.4			57.3			46.9
Berg	vol	138		55			15		73		145		55			15		130	
	delay	24.8		21.9			21.6		23.6	23.7	25.7		22.3			22		31.5	27.2
Access	vol		20				15					20		65		15			
	delay		9				7.4			8.3		9		10.3		7.4			9.6